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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC11753

Sampling Date: 12/06/23



Report to:

AECOM, Inc
7595 Technology Way
Denver, CO 80237
katie.abbott@aecom.com; mark.kromis@aecom.com;
watson.tanji@aecom.com; kristin.rutherford@aecom.com;
ATTN: Katie Abbott

Total number of pages in report: 1139



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

Client Service contact: Terri McNulty-Patterson 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC11753

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC11753-1	12/06/23	09:05	MGJW12/07/23	AQ	Ground Water	AF-RHMW17S-WGN01LF-2312
FC11753-2	12/06/23	09:40	MGJW12/07/23	AQ	Equipment Blank	AF-RHMW17S-WQEB01-2312
FC11753-3	12/06/23	10:40	MGJW12/07/23	AQ	Ground Water	AF-RHMW17D-WGN01LF-2312
FC11753-4	12/06/23	10:10	MGJW12/07/23	AQ	Field Blank Water	AF-RHMW17D-WQFB01-2312
FC11753-5	12/06/23	11:50	MGJW12/07/23	AQ	Ground Water	AF-RHMW17-WGN01LF-2312

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC11753

Site: N6274223F0104 RH Fire Suppression System

Report Date: 12/14/2023 11:47:43 AM

On 12/07/2023, 3 Sample(s), 0 Trip Blank(s), 1 Equip. Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC11753 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA DRAFT 1633

Matrix: AQ

Batch ID: OP524

Sample(s) FC11753-3MS, FC11753-5DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for 3:3 Fluorotelomer carboxylate, ADONA, PFMPA are outside control limits. Probable cause is due to matrix interference.

Sample(s) FC11753-3 have surrogates outside control limits.

FC11753-3 for 13C4-PFBA: Outside control limits.

Matrix: AQ

Batch ID: OP576

OP576-BS: Insufficient sample for MS/MSD.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Client Services (*Signature on File*)

Summary of Hits

Job Number: FC11753
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 12/06/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC11753-1	AF-RHMW17S-WGN01LF-2312					
	Perfluorooctanesulfonic acid	0.91 J	3.5	1.8	ng/l	EPA DRAFT 1633
FC11753-2	AF-RHMW17S-WQEB01-2312					
	No hits reported in this sample.					
FC11753-3	AF-RHMW17D-WGN01LF-2312					
	No hits reported in this sample.					
FC11753-4	AF-RHMW17D-WQFB01-2312					
	No hits reported in this sample.					
FC11753-5	AF-RHMW17-WGN01LF-2312					
	Perfluoropentanoic acid	1.5 J	7.1	1.8	ng/l	EPA DRAFT 1633
	Perfluorohexanoic acid	0.99 J	3.6	1.8	ng/l	EPA DRAFT 1633
	Perfluoroheptanoic acid	0.64 J	3.6	1.8	ng/l	EPA DRAFT 1633

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17S-WGN01LF-2312		
Lab Sample ID:	FC11753-1	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q54993.D	1	12/11/23 02:24	AL	12/08/23 08:50	OP524	S4Q805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	570 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.5 U	14	3.5	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	7.0	1.8	0.82	ng/l	
307-24-4	Perfluorohexanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
375-85-9	Perfluoroheptanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
335-67-1	Perfluorooctanoic acid	0.88 U	3.5	0.88	0.44	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.5	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.5	1.8	0.74	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.5 U	4.4	3.5	0.98	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.5	1.8	0.61	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	0.91	3.5	1.8	0.47	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.5	1.8	0.50	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.5	1.8	0.56	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.5 U	4.4	3.5	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.0 U	18	7.0	2.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.0	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.6	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.5	1.8	0.59	ng/l	
31506-32-8	MeFOSA	3.5 U	7.0	3.5	0.88	ng/l	
4151-50-2	EtFOSA	3.5 U	7.0	3.5	0.88	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17S-WGN01LF-2312		
Lab Sample ID:	FC11753-1	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.5 U	4.4	3.5	0.88	ng/l	
2991-50-6	EtFOSAA	3.5 U	4.4	3.5	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	35	18	3.8	ng/l	
1691-99-2	EtFOSE	18 U	35	18	6.5	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.5	1.8	0.88	ng/l	
919005-14-4	ADONA	3.5 U	7.0	3.5	1.6	ng/l	
377-73-1	PFMPA	1.8 U	7.0	1.8	0.88	ng/l	
863090-89-5	PFMBA	3.5 U	7.0	3.5	1.0	ng/l	
151772-58-6	NFDHA	3.5 U	7.0	3.5	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.5 U	7.0	3.5	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.5 U	7.0	3.5	1.5	ng/l	
113507-82-7	PFEESA	1.8 U	7.0	1.8	0.68	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.8 U	18	8.8	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	88	18	7.7	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	88	18	6.9	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	70%		20-150%
	13C5-PFPeA	112%		20-150%
	13C5-PFHxA	88%		20-150%
	13C4-PFHpA	109%		20-150%
	13C8-PFOA	104%		20-150%
	13C9-PFNA	99%		20-150%
	13C6-PFDA	98%		20-150%
	13C7-PFUnDA	97%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	81%		20-150%
	13C3-PFBS	103%		20-150%
	13C3-PFHxS	106%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17S-WGN01LF-2312		
Lab Sample ID:	FC11753-1	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	92%		20-150%
	13C8-FOSA	80%		20-150%
	d3-MeFOSA	73%		20-150%
	d5-EtFOSA	81%		20-150%
	d3-MeFOSAA	99%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	57%		20-150%
	d9-EtFOSE	73%		20-150%
	13C2-4:2FTS	102%		20-180%
	13C2-6:2FTS	110%		20-180%
	13C2-8:2FTS	107%		20-180%
	13C3-HFPO-DA	90%		20-150%

U = Not detected

LOD = Limit of Detection

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LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17S-WQEB01-2312		
Lab Sample ID:	FC11753-2	Date Sampled:	12/06/23
Matrix:	AQ - Equipment Blank	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q54994.D	1	12/11/23 02:39	AL	12/08/23 08:50	OP524	S4Q805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.6 U	14	3.6	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	7.1	1.8	0.84	ng/l	
307-24-4	Perfluorohexanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
375-85-9	Perfluoroheptanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
335-67-1	Perfluorooctanoic acid	0.89 U	3.6	0.89	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.6	1.8	0.75	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.6	1.8	0.62	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.6	1.8	0.48	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.6	1.8	0.51	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.6	1.8	0.57	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.1 U	18	7.1	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.1	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.7	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.6	1.8	0.60	ng/l	
31506-32-8	MeFOSA	3.6 U	7.1	3.6	0.89	ng/l	
4151-50-2	EtFOSA	3.6 U	7.1	3.6	0.89	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17S-WQEB01-2312		
Lab Sample ID:	FC11753-2	Date Sampled:	12/06/23
Matrix:	AQ - Equipment Blank	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.6 U	4.5	3.6	0.89	ng/l	
2991-50-6	EtFOSAA	3.6 U	4.5	3.6	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	36	18	3.9	ng/l	
1691-99-2	EtFOSE	18 U	36	18	6.6	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.6	1.8	0.89	ng/l	
919005-14-4	ADONA	3.6 U	7.1	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	7.1	1.8	0.89	ng/l	
863090-89-5	PFMBA	3.6 U	7.1	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	7.1	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	7.1	3.6	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	7.1	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	7.1	1.8	0.70	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.9 U	18	8.9	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	89	18	7.8	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	89	18	7.0	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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13C4-PFBA	96%		20-150%
13C5-PFPeA	101%		20-150%
13C5-PFHxA	98%		20-150%
13C4-PFHpA	96%		20-150%
13C8-PFOA	95%		20-150%
13C9-PFNA	94%		20-150%
13C6-PFDA	94%		20-150%
13C7-PFUnDA	87%		20-150%
13C2-PFDoDA	76%		20-150%
13C2-PFTeDA	81%		20-150%
13C3-PFBS	96%		20-150%
13C3-PFHxS	106%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17S-WQEB01-2312		Date Sampled:	12/06/23
Lab Sample ID:	FC11753-2		Date Received:	12/07/23
Matrix:	AQ - Equipment Blank		Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
Project:	N6274223F0104 RH Fire Suppression System			

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	90%		20-150%
	13C8-FOSA	61%		20-150%
	d3-MeFOSA	70%		20-150%
	d5-EtFOSA	84%		20-150%
	d3-MeFOSAA	103%		20-150%
	d5-EtFOSAA	102%		20-150%
	d7-MeFOSE	53%		20-150%
	d9-EtFOSE	70%		20-150%
	13C2-4:2FTS	128%		20-180%
	13C2-6:2FTS	144%		20-180%
	13C2-8:2FTS	131%		20-180%
	13C3-HFPO-DA	88%		20-150%

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 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17D-WGN01LF-2312		
Lab Sample ID:	FC11753-3	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q54995.D	1	12/11/23 02:54	AL	12/08/23 08:50	OP524	S4Q805
Run #2	7Q357.D	1	12/13/23 19:07	MV	12/12/23 09:45	OP576	S7Q11

Run #	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2	60.0 ml	5.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	33 U ^a	130	33	16	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	7.1	1.8	0.84	ng/l	
307-24-4	Perfluorohexanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
375-85-9	Perfluoroheptanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
335-67-1	Perfluorooctanoic acid	0.89 U	3.6	0.89	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.6	1.8	0.75	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.6	1.8	0.62	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.6	1.8	0.48	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.6	1.8	0.51	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.6	1.8	0.57	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.1 U	18	7.1	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.1	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.7	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.8 U	3.6	1.8	0.60	ng/l	
31506-32-8	MeFOSA	3.6 U	7.1	3.6	0.89	ng/l	
4151-50-2	EtFOSA	3.6 U	7.1	3.6	0.89	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WGN01LF-2312		
Lab Sample ID:	FC11753-3	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.6 U	4.5	3.6	0.89	ng/l	
2991-50-6	EtFOSAA	3.6 U	4.5	3.6	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	36	18	3.9	ng/l	
1691-99-2	EtFOSE	18 U	36	18	6.6	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.6	1.8	0.89	ng/l	
919005-14-4	ADONA	3.6 U	7.1	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	7.1	1.8	0.89	ng/l	
863090-89-5	PFMBA	3.6 U	7.1	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	7.1	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	7.1	3.6	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	7.1	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	7.1	1.8	0.70	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.9 U	18	8.9	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	89	18	7.8	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	89	18	7.0	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
13C4-PFBA		5% b	81%	20-150%
13C5-PFPeA		44%	81%	20-150%
13C5-PFHxA		82%	81%	20-150%
13C4-PFHpA		98%	81%	20-150%
13C8-PFOA		96%	81%	20-150%
13C9-PFNA		100%	77%	20-150%
13C6-PFDA		98%	80%	20-150%
13C7-PFUnDA		96%	75%	20-150%
13C2-PFDoDA		87%	73%	20-150%
13C2-PFTeDA		77%	69%	20-150%
13C3-PFBS		86%	76%	20-150%
13C3-PFHxS		94%	80%	20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AF-RHMW17D-WGN01LF-2312		
Lab Sample ID:	FC11753-3	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	88%	113%	20-150%
	13C8-FOSA	82%	68%	20-150%
	d3-MeFOSA	94%	66%	20-150%
	d5-EtFOSA	100%	62%	20-150%
	d3-MeFOSAA	123%	66%	20-150%
	d5-EtFOSAA	126%	63%	20-150%
	d7-MeFOSE	67%	58%	20-150%
	d9-EtFOSE	85%	59%	20-150%
	13C2-4:2FTS	155%	110%	20-180%
	13C2-6:2FTS	118%	83%	20-180%
	13C2-8:2FTS	114%	90%	20-180%
	13C3-HFPO-DA	70%	73%	20-150%

- (a) Result is from Run# 2
- (b) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

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Client Sample ID:	AF-RHMW17D-WQFB01-2312		
Lab Sample ID:	FC11753-4	Date Sampled:	12/06/23
Matrix:	AQ - Field Blank Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q54997.D	1	12/11/23 03:23	AL	12/08/23 08:50	OP524	S4Q805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	550 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.6 U	15	3.6	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	7.3	1.8	0.85	ng/l	
307-24-4	Perfluorohexanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
375-85-9	Perfluoroheptanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
335-67-1	Perfluorooctanoic acid	0.91 U	3.6	0.91	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.6	1.8	0.76	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.6	1.8	0.64	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.6	1.8	0.49	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.6	1.8	0.52	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.6	1.8	0.58	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.3 U	18	7.3	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.7	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.6	1.8	0.61	ng/l	
31506-32-8	MeFOSA	3.6 U	7.3	3.6	0.91	ng/l	
4151-50-2	EtFOSA	3.6 U	7.3	3.6	0.91	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WQFB01-2312		
Lab Sample ID:	FC11753-4	Date Sampled:	12/06/23
Matrix:	AQ - Field Blank Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.6 U	4.5	3.6	0.91	ng/l	
2991-50-6	EtFOSAA	3.6 U	4.5	3.6	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	36	18	4.0	ng/l	
1691-99-2	EtFOSE	18 U	36	18	6.7	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.6	1.8	0.91	ng/l	
919005-14-4	ADONA	3.6 U	7.3	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	7.3	1.8	0.91	ng/l	
863090-89-5	PFMBA	3.6 U	7.3	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	7.3	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	7.3	3.6	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	7.3	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	7.3	1.8	0.71	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.1 U	18	9.1	4.1	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	91	18	7.9	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	91	18	7.1	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	107%		20-150%
	13C5-PFPeA	108%		20-150%
	13C5-PFHxA	102%		20-150%
	13C4-PFHpA	105%		20-150%
	13C8-PFOA	102%		20-150%
	13C9-PFNA	104%		20-150%
	13C6-PFDA	96%		20-150%
	13C7-PFUnDA	100%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	85%		20-150%
	13C3-PFBS	103%		20-150%
	13C3-PFHxS	107%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WQFB01-2312		
Lab Sample ID:	FC11753-4	Date Sampled:	12/06/23
Matrix:	AQ - Field Blank Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	92%		20-150%
	13C8-FOSA	63%		20-150%
	d3-MeFOSA	77%		20-150%
	d5-EtFOSA	86%		20-150%
	d3-MeFOSAA	114%		20-150%
	d5-EtFOSAA	109%		20-150%
	d7-MeFOSE	55%		20-150%
	d9-EtFOSE	74%		20-150%
	13C2-4:2FTS	133%		20-180%
	13C2-6:2FTS	138%		20-180%
	13C2-8:2FTS	130%		20-180%
	13C3-HFPO-DA	93%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17-WGN01LF-2312		
Lab Sample ID:	FC11753-5	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q54998.D	1	12/11/23 03:38	AL	12/08/23 08:50	OP524	S4Q805
Run #2							

Run #	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.6 U	14	3.6	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.5	7.1	1.8	0.84	ng/l	J
307-24-4	Perfluorohexanoic acid	0.99	3.6	1.8	0.45	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.64	3.6	1.8	0.45	ng/l	J
335-67-1	Perfluorooctanoic acid	0.89 U	3.6	0.89	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.6	1.8	0.75	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.6	1.8	0.62	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.6	1.8	0.48	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.6	1.8	0.51	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.6	1.8	0.57	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.1 U	18	7.1	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.1	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.7	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.6	1.8	0.60	ng/l	
31506-32-8	MeFOSA	3.6 U	7.1	3.6	0.89	ng/l	
4151-50-2	EtFOSA	3.6 U	7.1	3.6	0.89	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17-WGN01LF-2312	
Lab Sample ID:	FC11753-5	Date Sampled: 12/06/23
Matrix:	AQ - Ground Water	Date Received: 12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No. Compound Result LOQ LOD DL Units Q

PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.6 U	4.5	3.6	0.89	ng/l
2991-50-6	EtFOSAA	3.6 U	4.5	3.6	1.2	ng/l

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	36	18	3.9	ng/l
1691-99-2	EtFOSE	18 U	36	18	6.6	ng/l

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.6	1.8	0.89	ng/l
919005-14-4	ADONA	3.6 U	7.1	3.6	1.7	ng/l
377-73-1	PFMPA	1.8 U	7.1	1.8	0.89	ng/l
863090-89-5	PFMBA	3.6 U	7.1	3.6	1.0	ng/l
151772-58-6	NFDHA	3.6 U	7.1	3.6	1.1	ng/l

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	7.1	3.6	1.2	ng/l
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	7.1	3.6	1.6	ng/l
113507-82-7	PFEESA	1.8 U	7.1	1.8	0.70	ng/l

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.9 U	18	8.9	4.0	ng/l
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	89	18	7.8	ng/l
812-70-4	7:3 Fluorotelomer carboxylate	18 U	89	18	7.0	ng/l

CAS No. ID Standard Recoveries Run# 1 Run# 2 Limits

13C4-PFBA	106%	20-150%
13C5-PFPeA	113%	20-150%
13C5-PFHxA	112%	20-150%
13C4-PFHpA	108%	20-150%
13C8-PFOA	110%	20-150%
13C9-PFNA	103%	20-150%
13C6-PFDA	105%	20-150%
13C7-PFUnDA	106%	20-150%
13C2-PFDoDA	92%	20-150%
13C2-PFTeDA	87%	20-150%
13C3-PFBS	112%	20-150%
13C3-PFHxS	111%	20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	AF-RHMW17-WGN01LF-2312		
Lab Sample ID:	FC11753-5	Date Sampled:	12/06/23
Matrix:	AQ - Ground Water	Date Received:	12/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	95%		20-150%
	13C8-FOSA	73%		20-150%
	d3-MeFOSA	77%		20-150%
	d5-EtFOSA	88%		20-150%
	d3-MeFOSAA	109%		20-150%
	d5-EtFOSAA	105%		20-150%
	d7-MeFOSE	56%		20-150%
	d9-EtFOSE	75%		20-150%
	13C2-4:2FTS	128%		20-180%
	13C2-6:2FTS	149%		20-180%
	13C2-8:2FTS	137%		20-180%
	13C3-HFPO-DA	99%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits



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Chain of Custody

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FC11753

COC #: 2312AFSG12

SGS - ORLANDO JOB # :

PAGE 1 OF 1

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes			
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PFAS EPA Draft 163</div> <div style="text-align: right;"> <p>Matrix Code 12/6/23</p> </div> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe			
Address: 1001 Bishop St. ste 1600		Street															
City: Honolulu State: HI Zip: 96813		City: Honolulu State: Hawaii															
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 23F0104 - 60697810															
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #															
Sampler(s) Name(s) (Printed) Sampler 1: Alex Gattlin Sampler 2: Johannes Williams		Client Purchase Order # 151253															
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION										LAB USE ONLY		
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	AC	MSGH	PCO3	RESCA	BAR-ZINC	DI WATER		MESH	
1	AF-RHWW17S-WGN01LF-2312	12/06/23	0905	A. Gattlin	GW	3		X									X
2	AF-RHWW17S-WQEB01-2312	12/06/23	0910	A. Gattlin	WW	3		X									X
				INITIAL ASSESSMENT ED LABEL VERIFICATION ED													
Turnaround Time (Business days)		Approved By: / Date:		Data Deliverable Information										Comments / Remarks			
10 Day (Business) 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other				<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S										EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW uninitd Awg: 01b-9750V13)			
Rush T/A Data Available VIA Email or Lablink		Sample Custody must be documented below each time samples change possession, including courier delivery.															
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation			
1 Alex Gattlin	12/14/23	2 Alex Edmonds AECOM	3 Alex Edmonds AECOM	12/16/23	4 Alex Edmonds AECOM	5 Alex Edmonds AECOM	12/17/23	6 Alex Edmonds AECOM	7 Alex Edmonds AECOM	12/17/23	8 Alex Edmonds AECOM	9 Alex Edmonds AECOM	12/17/23	10 Alex Edmonds AECOM			
Lab Use Only: Cooler Temperature (s) Celsius (corrected): 3.6 IR1		http://www.sgs.com/en/terms-and-conditions															

PFAS_COCs_ALL_12042023.xls Rev 031318

3.6 IR1

FC11753: Chain of Custody

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Chain of Custody

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FC11753

COC #: 2312AFSG11

SGS - ORLANDO JOB # :

PAGE 1 OF 1

Client / Reporting Information			Project Information			Analytical Information					Matrix Codes																																																							
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System								DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe																																																							
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Project Manager: Watson Tanji Email: watson.tanji@aecom.com			Fax #																																																															
Phone #: 303-796-4624 / 808-954-4512			Client Purchase Order # 151253																																																															
Sampler(s) Name(s) (Printed)			Sampler 1: Max Gutter Sampler 2: Tehanna Williams																																																															
SGS Orlando Sample #			Field ID / Point of Collection								LAB USE ONLY																																																							
3	AF-RHmw 17D-WGN01LF-2312	12/6/23	1845	M.G.	GW	3	X																																																											
4	AF-RHmw 17D-WQFB01-2312	12/6/23	1810	M.G.	WW	3	X																																																											
<table border="1"> <thead> <tr> <th colspan="4">COLLECTION</th> <th colspan="9">CONTAINER INFORMATION</th> </tr> <tr> <th>DATE</th> <th>TIME</th> <th>SAMPLED BY</th> <th>MATRIX</th> <th>TOTAL # OF BOTTLES</th> <th>OTHER</th> <th>NONE</th> <th>ICI</th> <th>KNO3</th> <th>PAGS</th> <th>PBSC4</th> <th>INCH-ZINAC</th> <th>P WATER</th> <th>MECH</th> </tr> </thead> <tbody> <tr> <td>12/6/23</td> <td>1845</td> <td>M.G.</td> <td>GW</td> <td>3</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12/6/23</td> <td>1810</td> <td>M.G.</td> <td>WW</td> <td>3</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>												COLLECTION				CONTAINER INFORMATION									DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	ICI	KNO3	PAGS	PBSC4	INCH-ZINAC	P WATER	MECH	12/6/23	1845	M.G.	GW	3		X								12/6/23	1810	M.G.	WW	3		X							
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5.1
5



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FC11753

COC #: 2312AFSG10

SGS - ORLANDO JOB #:

PAGE 1 OF 1

Client / Reporting Information		Project Information				Analytical Information										Matrix Codes																					
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System				<table border="1"> <tr> <td>PFAS EPA Draft 1633</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>										PFAS EPA Draft 1633																					DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe
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		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	NO	NO	NACH	PHOS	2-DECA	MACH-ZINC	DI WATER	MEDI	PFAS EPA Draft 1633																				
5	AF-RHMW17-WGN01LF-2312	12/6/23	1150	M Gustin	GW	3	X																														
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http://www.sgs.com/en/terms-and-conditions																																					

PFAS_COCs_ALL_12042023.xls Rev 031318

FC11753: Chain of Custody



SGS - Orlando Sample Receipt Summary

Job Number: fc11753

Client: AECOM

Project: N6274223F0104 RH FIRE SUPPRESSION

Date / Time Received: 12/7/2023 6:30:00 PM

Delivery Method: UNITED CARGO

Airbill #'s: UNITED WAB: 016-97504131

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (4.0);

Cooler Information

Y or N

- 1. Custody Seals Present:
- 2. Custody Seals Intact:
- 3. Temp criteria achieved:
- 4. Cooler temp verification: IR Gun
- 5. Cooler media: Ice (Bag)

Trip Blank Information

Y or N N/A

- 1. Trip Blank present / cooler:
- 2. Trip Blank listed on COC:

W or S N/A

- 3. Type of TB Received

Sample Information

Y or N N/A

- 1. Sample labels present on bottles:
- 2. Samples presented properly:
- 3. Sufficient volume/containers recv'd for analysis:
- 4. Condition of sample: Intact
- 5. Sample recv'd within HT:
- 6. Dates/Times/IDs on COC match sample label:
- 7. VOCs have headspace:
- 8. Bottles received for unspecified tests:
- 9. Compositing instructions clear:
- 10. Voa Soil Kits/Jars received past 48hrs?:
- 11. % Solids Jar Received?:
- 12. Residual Chlorine Present?:

Misc Information

Number of Encores: 25 Gram 5 Gram

Number of Lab Filtered Metals:

Test Strip Lot #s: pH 0-3: 226422

pH 10-12: _____ Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot # _____

Comments

Sample Receipt Summary 112723 EK Technician: ZANEB

Date: 12/7/2023 7:15:47 PM

Reviewer: _____

Date: _____

FC11753: Chain of Custody

Page 4 of 4

5.1
5

QC Evaluation: DOD QSM5.x Limits

Job Number: FC11753
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 12/06/23

QC Sample ID	CAS#	Analyte	Sample Result Type	Result Type	Units	Limits
--------------	------	---------	--------------------	-------------	-------	--------

No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC11753

5.2
5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Injection Standard Area Summaries
- TDCA Retention Time Checks
- Ion Ratio Summaries
- Isotope Dilution Standard Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Instrument Blank

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q805-IBLK	4Q54947.D	1	12/10/23	AL	n/a	n/a	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	0.0018	0.0080	0.0010	ug/l	J
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	0.0046	0.040	0.0044	ug/l	J
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Instrument Blank

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q805-IBLK	4Q54947.D	1	12/10/23	AL	n/a	n/a	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	101% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	97% 20-150%
	13C9-PFNA	101% 20-150%
	13C6-PFDA	98% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	96% 20-150%
	13C2-PFTeDA	101% 20-150%
	13C3-PFBS	96% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	93% 20-150%
	d3-MeFOSAA	88% 20-150%
	d5-EtFOSAA	85% 20-150%
	13C2-4:2FTS	92% 20-180%
	13C2-6:2FTS	83% 20-180%
	13C2-8:2FTS	81% 20-180%

6.1.1
6

Instrument Blank

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S7Q11-IBLK	7Q349.D	1	12/13/23	MV	n/a	n/a	S7Q11

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	

CAS No.	ID Standard Recoveries	Limits	
	13C4-PFBA	100%	20-150%
	13C5-PFPeA	101%	20-150%
	13C5-PFHxA	100%	20-150%
	13C4-PFHpA	101%	20-150%
	13C8-PFOA	97%	20-150%
	13C9-PFNA	101%	20-150%
	13C6-PFDA	104%	20-150%
	13C7-PFUnDA	104%	20-150%
	13C2-PFDoDA	102%	20-150%
	13C2-PFTeDA	108%	20-150%
	13C3-PFBS	95%	20-150%
	13C3-PFHxS	102%	20-150%
	13C8-PFOS	98%	20-150%
	13C8-FOSA	98%	20-150%
	d3-MeFOSA	95%	20-150%
	d5-EtFOSA	95%	20-150%
	d3-MeFOSAA	97%	20-150%
	d5-EtFOSAA	97%	20-150%
	d7-MeFOSE	97%	20-150%
	d9-EtFOSE	96%	20-150%
	13C2-4:2FTS	94%	20-180%
	13C2-6:2FTS	100%	20-180%
	13C2-8:2FTS	101%	20-180%
	13C3-HFPO-DA	96%	20-150%

Continuing Calibration Blank

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q805-ICCB	4Q54989.D	1	12/11/23	AL	n/a	n/a	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q805-ICCB	4Q54989.D	1	12/11/23	AL	n/a	n/a	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	99% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	106% 20-150%
	13C6-PFDA	102% 20-150%
	13C7-PFUnDA	103% 20-150%
	13C2-PFDoDA	95% 20-150%
	13C2-PFTeDA	97% 20-150%
	13C3-PFBS	99% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	93% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSAA	110% 20-150%
	d5-EtFOSAA	108% 20-150%
	13C2-4:2FTS	125% 20-180%
	13C2-6:2FTS	127% 20-180%
	13C2-8:2FTS	129% 20-180%

Continuing Calibration Blank

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q805-ICCB	4Q55001.D	1	12/11/23	AL	n/a	n/a	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q805-ICCB	4Q55001.D	1	12/11/23	AL	n/a	n/a	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	99% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	98% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	97% 20-150%
	13C6-PFDA	95% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	100% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	101% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSAA	108% 20-150%
	d5-EtFOSAA	114% 20-150%
	13C2-4:2FTS	140% 20-180%
	13C2-6:2FTS	139% 20-180%
	13C2-8:2FTS	132% 20-180%

Method Blank Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-MB	4Q54992.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Method Blank Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-MB	4Q54992.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	117% 20-150%
	13C5-PFPeA	120% 20-150%
	13C5-PFHxA	115% 20-150%
	13C4-PFHpA	118% 20-150%
	13C8-PFOA	117% 20-150%
	13C9-PFNA	106% 20-150%
	13C6-PFDA	117% 20-150%
	13C7-PFUnDA	120% 20-150%
	13C2-PFDoDA	103% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	129% 20-150%
	13C3-PFHxS	137% 20-150%
	13C8-PFOS	102% 20-150%
	13C8-FOSA	68% 20-150%
	d3-MeFOSA	73% 20-150%
	d5-EtFOSA	90% 20-150%
	d3-MeFOSAA	130% 20-150%
	d5-EtFOSAA	125% 20-150%
	d7-MeFOSE	52% 20-150%
	d9-EtFOSE	71% 20-150%
	13C2-4:2FTS	135% 20-180%
	13C2-6:2FTS	167% 20-180%
	13C2-8:2FTS	180% 20-180%
	13C3-HFPO-DA	106% 20-150%

Method Blank Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP576-MB	7Q356.D	1	12/13/23	MV	12/12/23	OP576	S7Q11

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.13	0.016	ug/l	

CAS No.	ID Standard Recoveries	Limits	
	13C4-PFBA	99%	20-150%
	13C5-PFPeA	100%	20-150%
	13C5-PFHxA	99%	20-150%
	13C4-PFHpA	97%	20-150%
	13C8-PFOA	100%	20-150%
	13C9-PFNA	99%	20-150%
	13C6-PFDA	99%	20-150%
	13C7-PFUnDA	95%	20-150%
	13C2-PFDoDA	77%	20-150%
	13C2-PFTeDA	63%	20-150%
	13C3-PFBS	100%	20-150%
	13C3-PFHxS	99%	20-150%
	13C8-PFOS	96%	20-150%
	13C8-FOSA	58%	20-150%
	d3-MeFOSA	54%	20-150%
	d5-EtFOSA	55%	20-150%
	d3-MeFOSAA	87%	20-150%
	d5-EtFOSAA	75%	20-150%
	d7-MeFOSE	51%	20-150%
	d9-EtFOSE	56%	20-150%
	13C2-4:2FTS	121%	20-180%
	13C2-6:2FTS	105%	20-180%
	13C2-8:2FTS	117%	20-180%
	13C3-HFPO-DA	94%	20-150%

Blank Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-LLBS	4Q54991.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0323	108	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0161	107	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0081	108	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0083	111	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0086	115	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0088	117	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0087	116	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0082	109	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0088	117	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0087	116	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0076	101	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0071	107	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0073	103	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0070	102	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0081	113	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0073	105	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0089	123	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0080	111	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0079	109	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0356	127	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0294	103	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0359	125	40-150
754-91-6	PFOSA	0.0075	0.0087	116	40-150
31506-32-8	MeFOSA	0.015	0.0136	91	40-150
4151-50-2	EtFOSA	0.015	0.0153	102	40-150
2355-31-9	MeFOSAA	0.0075	0.0092	123	40-150
2991-50-6	EtFOSAA	0.0075	0.0082	109	40-150
24448-09-7	MeFOSE	0.0375	0.0361	96	40-150
1691-99-2	EtFOSE	0.0375	0.0405	108	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0142	95	40-150
919005-14-4	ADONA	0.0142	0.0172	121	40-150
377-73-1	PFMPA	0.015	0.0165	110	40-150
863090-89-5	PFMBA	0.015	0.0155	103	40-150
151772-58-6	NFDHA	0.015	0.0163	109	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0163	116	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0164	116	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-LLBS	4Q54991.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0142	106	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0285	76	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.186	99	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.202	108	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	112%	20-150%
	13C5-PFPeA	110%	20-150%
	13C5-PFHxA	107%	20-150%
	13C4-PFHpA	107%	20-150%
	13C8-PFOA	114%	20-150%
	13C9-PFNA	106%	20-150%
	13C6-PFDA	102%	20-150%
	13C7-PFUnDA	100%	20-150%
	13C2-PFDoDA	96%	20-150%
	13C2-PFTeDA	96%	20-150%
	13C3-PFBS	111%	20-150%
	13C3-PFHxS	112%	20-150%
	13C8-PFOS	106%	20-150%
	13C8-FOSA	70%	20-150%
	d3-MeFOSA	79%	20-150%
	d5-EtFOSA	81%	20-150%
	d3-MeFOSAA	128%	20-150%
	d5-EtFOSAA	125%	20-150%
	d7-MeFOSE	51%	20-150%
	d9-EtFOSE	67%	20-150%
	13C2-4:2FTS	117%	20-180%
	13C2-6:2FTS	156%	20-180%
	13C2-8:2FTS	139%	20-180%
	13C3-HFPO-DA	99%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP576-LLBS	7Q355.D	1	12/13/23	MV	12/12/23	OP576	S7Q11

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.25	0.247	99	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	101%	20-150%
	13C5-PFPeA	103%	20-150%
	13C5-PFHxA	102%	20-150%
	13C4-PFHpA	100%	20-150%
	13C8-PFOA	103%	20-150%
	13C9-PFNA	100%	20-150%
	13C6-PFDA	106%	20-150%
	13C7-PFUnDA	99%	20-150%
	13C2-PFDoDA	94%	20-150%
	13C2-PFTeDA	80%	20-150%
	13C3-PFBS	102%	20-150%
	13C3-PFHxS	103%	20-150%
	13C8-PFOS	101%	20-150%
	13C8-FOSA	79%	20-150%
	d3-MeFOSA	69%	20-150%
	d5-EtFOSA	69%	20-150%
	d3-MeFOSAA	96%	20-150%
	d5-EtFOSAA	92%	20-150%
	d7-MeFOSE	63%	20-150%
	d9-EtFOSE	65%	20-150%
	13C2-4:2FTS	123%	20-180%
	13C2-6:2FTS	113%	20-180%
	13C2-8:2FTS	124%	20-180%
	13C3-HFPO-DA	105%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-B5	4Q54990.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.110	110	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0526	105	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0269	108	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0266	106	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0270	108	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0266	106	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0269	108	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0275	110	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0282	113	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0282	113	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0274	110	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0238	107	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0233	99	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0240	105	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0254	107	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0228	98	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0296	123	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0257	107	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0253	104	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.103	110	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.111	117	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.118	123	40-150
754-91-6	PFOSA	0.025	0.0258	103	40-150
31506-32-8	MeFOSA	0.05	0.0479	96	40-150
4151-50-2	EtFOSA	0.05	0.0455	91	40-150
2355-31-9	MeFOSAA	0.025	0.0289	116	40-150
2991-50-6	EtFOSAA	0.025	0.0286	114	40-150
24448-09-7	MeFOSE	0.125	0.120	96	40-150
1691-99-2	EtFOSE	0.125	0.121	97	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0515	103	40-150
919005-14-4	ADONA	0.0473	0.0584	124	40-150
377-73-1	PFMPA	0.05	0.0491	98	40-150
863090-89-5	PFMBA	0.05	0.0501	100	40-150
151772-58-6	NFDHA	0.05	0.0541	108	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0556	119	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0519	110	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-BS	4Q54990.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0474	107	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.117	94	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.615	98	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.665	106	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	76%	20-150%
	13C5-PFPeA	112%	20-150%
	13C5-PFHxA	106%	20-150%
	13C4-PFHpA	109%	20-150%
	13C8-PFOA	109%	20-150%
	13C9-PFNA	110%	20-150%
	13C6-PFDA	108%	20-150%
	13C7-PFUnDA	110%	20-150%
	13C2-PFDoDA	100%	20-150%
	13C2-PFTeDA	98%	20-150%
	13C3-PFBS	106%	20-150%
	13C3-PFHxS	114%	20-150%
	13C8-PFOS	103%	20-150%
	13C8-FOSA	75%	20-150%
	d3-MeFOSA	78%	20-150%
	d5-EtFOSA	87%	20-150%
	d3-MeFOSAA	122%	20-150%
	d5-EtFOSAA	115%	20-150%
	d7-MeFOSE	57%	20-150%
	d9-EtFOSE	76%	20-150%
	13C2-4:2FTS	134%	20-180%
	13C2-6:2FTS	136%	20-180%
	13C2-8:2FTS	138%	20-180%
	13C3-HFPO-DA	99%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP576-BS ^a	7Q354.D	1	12/13/23	MV	12/12/23	OP576	S7Q11

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.833	0.896	108	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	95%	20-150%
	13C5-PFPeA	95%	20-150%
	13C5-PFHxA	95%	20-150%
	13C4-PFHpA	94%	20-150%
	13C8-PFOA	93%	20-150%
	13C9-PFNA	97%	20-150%
	13C6-PFDA	93%	20-150%
	13C7-PFUnDA	95%	20-150%
	13C2-PFDoDA	92%	20-150%
	13C2-PFTeDA	79%	20-150%
	13C3-PFBS	92%	20-150%
	13C3-PFHxS	94%	20-150%
	13C8-PFOS	89%	20-150%
	13C8-FOSA	72%	20-150%
	d3-MeFOSA	66%	20-150%
	d5-EtFOSA	63%	20-150%
	d3-MeFOSAA	87%	20-150%
	d5-EtFOSAA	85%	20-150%
	d7-MeFOSE	55%	20-150%
	d9-EtFOSE	57%	20-150%
	13C2-4:2FTS	107%	20-180%
	13C2-6:2FTS	104%	20-180%
	13C2-8:2FTS	106%	20-180%
	13C3-HFPO-DA	89%	20-150%

(a) Insufficient sample for MS/MSD.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-MS	4Q54996.D	1	12/11/23	AL	12/08/23	OP524	S4Q805
FC11753-3	4Q54995.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	FC11753-3 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.014 U	0.0909	0.0982	108	40-150	
2706-90-3	Perfluoropentanoic acid	0.0071 U	0.0455	0.0460	101	40-150	
307-24-4	Perfluorohexanoic acid	0.0036 U	0.0227	0.0232	102	40-150	
375-85-9	Perfluoroheptanoic acid	0.0036 U	0.0227	0.0236	104	40-150	
335-67-1	Perfluorooctanoic acid	0.0036 U	0.0227	0.0229	101	40-150	
375-95-1	Perfluorononanoic acid	0.0036 U	0.0227	0.0222	98	40-150	
335-76-2	Perfluorodecanoic acid	0.0036 U	0.0227	0.0222	98	40-150	
2058-94-8	Perfluoroundecanoic acid	0.0036 U	0.0227	0.0258	114	40-150	
307-55-1	Perfluorododecanoic acid	0.0036 U	0.0227	0.0263	116	40-150	
72629-94-8	Perfluorotridecanoic acid	0.0036 U	0.0227	0.0244	107	40-150	
376-06-7	Perfluorotetradecanoic acid	0.0036 U	0.0227	0.0235	103	40-150	
375-73-5	Perfluorobutanesulfonic acid	0.0036 U	0.0202	0.0215	107	40-150	
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0214	0.0232	108	40-150	
355-46-4	Perfluorohexanesulfonic acid	0.0036 U	0.0208	0.0213	103	40-150	
375-92-8	Perfluoroheptanesulfonic acid	0.0036 U	0.0217	0.0229	106	40-150	
1763-23-1	Perfluorooctanesulfonic acid	0.0036 U	0.0211	0.0237	112	40-150	
68259-12-1	Perfluorononanesulfonic acid	0.0036 U	0.0219	0.0303	139	40-150	
335-77-3	Perfluorodecanesulfonic acid	0.0036 U	0.0219	0.0253	115	40-150	
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U	0.022	0.0218	99	40-150	
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	0.0852	0.0908	107	40-150	
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U	0.0864	0.0930	108	40-150	
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	0.0873	0.103	118	40-150	
754-91-6	PFOSA	0.0036 U	0.0227	0.0233	103	40-150	
31506-32-8	MeFOSA	0.0071 U	0.0455	0.0369	81	40-150	
4151-50-2	EtFOSA	0.0071 U	0.0455	0.0398	88	40-150	
2355-31-9	MeFOSAA	0.0045 U	0.0227	0.0265	117	40-150	
2991-50-6	EtFOSAA	0.0045 U	0.0227	0.0233	103	40-150	
24448-09-7	MeFOSE	0.036 U	0.114	0.106	93	40-150	
1691-99-2	EtFOSE	0.036 U	0.114	0.104	92	40-150	
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.0455	0.0468	103	40-150	
919005-14-4	ADONA	0.0071 U	0.043	0.0670	156*	40-150	
377-73-1	PFMPA	0.0071 U	0.0455	0.0156	34*	40-150	
863090-89-5	PFMBA	0.0071 U	0.0455	0.0571	126	40-150	
151772-58-6	NFDHA	0.0071 U	0.0455	0.0288	63	40-150	
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0071 U	0.0425	0.0590	139	40-150	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0071 U	0.043	0.0533	124	40-150	

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-MS	4Q54996.D	1	12/11/23	AL	12/08/23	OP524	S4Q805
FC11753-3	4Q54995.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	FC11753-3 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0071 U	0.0405	0.0441	109	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	0.114	0.227	200*	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.089 U	0.568	0.669	118	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.089 U	0.568	0.686	121	40-150

CAS No.	ID Standard Recoveries	MS	FC11753-3	Limits
	13C4-PFBA	8%* a	5%* a	20-150%
	13C5-PFPeA	48%	44%	20-150%
	13C5-PFHxA	94%	82%	20-150%
	13C4-PFHpA	110%	98%	20-150%
	13C8-PFOA	111%	96%	20-150%
	13C9-PFNA	111%	100%	20-150%
	13C6-PFDA	116%	98%	20-150%
	13C7-PFUnDA	112%	96%	20-150%
	13C2-PFDoDA	95%	87%	20-150%
	13C2-PFTeDA	88%	77%	20-150%
	13C3-PFBS	97%	86%	20-150%
	13C3-PFHxS	114%	94%	20-150%
	13C8-PFOS	98%	88%	20-150%
	13C8-FOSA	95%	82%	20-150%
	d3-MeFOSA	107%	94%	20-150%
	d5-EtFOSA	124%	100%	20-150%
	d3-MeFOSAA	137%	123%	20-150%
	d5-EtFOSAA	161%* a	126%	20-150%
	d7-MeFOSE	76%	67%	20-150%
	d9-EtFOSE	97%	85%	20-150%
	13C2-4:2FTS	175%	155%	20-180%
	13C2-6:2FTS	143%	118%	20-180%
	13C2-8:2FTS	133%	114%	20-180%
	13C3-HFPO-DA	74%	70%	20-150%

(a) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-DUP	4Q54999.D	1	12/11/23	AL	12/08/23	OP524	S4Q805
FC11753-5	4Q54998.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	FC11753-5 ug/l	DUP Q	ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.014 U		ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0015 J		0.0016 J		6	30
307-24-4	Perfluorohexanoic acid	0.00099 J		0.00093 J		6	30
375-85-9	Perfluoroheptanoic acid	0.00064 J		0.00059 J		8	30
335-67-1	Perfluorooctanoic acid	0.0036 U		ND		nc	30
375-95-1	Perfluorononanoic acid	0.0036 U		ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0036 U		ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0036 U		ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0036 U		ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0036 U		ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0036 U		ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0036 U		ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U		ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0036 U		ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0036 U		ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0036 U		ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0036 U		ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0036 U		ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U		ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.018 U		ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U		ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U		ND		nc	30
754-91-6	PFOSA	0.0036 U		ND		nc	30
31506-32-8	MeFOSA	0.0071 U		ND		nc	30
4151-50-2	EtFOSA	0.0071 U		ND		nc	30
2355-31-9	MeFOSAA	0.0045 U		ND		nc	30
2991-50-6	EtFOSAA	0.0045 U		ND		nc	30
24448-09-7	MeFOSE	0.036 U		ND		nc	30
1691-99-2	EtFOSE	0.036 U		ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0036 U		ND		nc	30
919005-14-4	ADONA	0.0071 U		ND		nc	30
377-73-1	PFMPA	0.0071 U		ND		nc	30
863090-89-5	PFMBA	0.0071 U		ND		nc	30
151772-58-6	NFDHA	0.0071 U		ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0071 U		ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0071 U		ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP524-DUP	4Q54999.D	1	12/11/23	AL	12/08/23	OP524	S4Q805
FC11753-5	4Q54998.D	1	12/11/23	AL	12/08/23	OP524	S4Q805

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11753-1, FC11753-2, FC11753-3, FC11753-4, FC11753-5

CAS No.	Compound	FC11753-5 ug/l	DUP Q ug/l	Q RPD	Limits
113507-82-7	PFEESA	0.0071 U	ND	nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	ND	nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.089 U	ND	nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.089 U	ND	nc	30

CAS No.	ID Standard Recoveries	DUP	FC11753-5	Limits
	13C4-PFBA	107%	106%	20-150%
	13C5-PFPeA	111%	113%	20-150%
	13C5-PFHxA	109%	112%	20-150%
	13C4-PFHpA	111%	108%	20-150%
	13C8-PFOA	107%	110%	20-150%
	13C9-PFNA	105%	103%	20-150%
	13C6-PFDA	116%	105%	20-150%
	13C7-PFUnDA	112%	106%	20-150%
	13C2-PFDoDA	99%	92%	20-150%
	13C2-PFTeDA	98%	87%	20-150%
	13C3-PFBS	102%	112%	20-150%
	13C3-PFHxS	113%	111%	20-150%
	13C8-PFOS	96%	95%	20-150%
	13C8-FOSA	80%	73%	20-150%
	d3-MeFOSA	74%	77%	20-150%
	d5-EtFOSA	89%	88%	20-150%
	d3-MeFOSAA	110%	109%	20-150%
	d5-EtFOSAA	107%	105%	20-150%
	d7-MeFOSE	60%	56%	20-150%
	d9-EtFOSE	78%	75%	20-150%
	13C2-4:2FTS	133%	128%	20-180%
	13C2-6:2FTS	145%	149%	20-180%
	13C2-8:2FTS	124%	137%	20-180%
	13C3-HFPO-DA	99%	99%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q805-CC804	Injection Date:	12/11/23
Lab File ID:	4Q54988.D	Injection Time:	01:10
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	47098	2.68	36865	5.33	56101	6.98	20343	7.51	15577	8.00
Check Std ^c	45887	2.70	35806	5.35	55598	6.99	20709	7.52	14356	8.02
Upper Limit ^d	94196	3.10	73730	5.75	112202	7.39	40686	7.92	31154	8.42
Lower Limit ^e	18839	2.30	14746	4.95	22440	6.59	8137	7.12	6231	7.62

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
S4Q805-ICCB	44584	2.69	34862	5.35	54409	6.98	18758	7.52	15147	8.00	1
OP524-BS	36588	2.74	26265	5.36	41315	6.98	15261	7.52	11647	8.00	1
OP524-LLBS	38316	2.75	27620	5.36	41998	6.99	15686	7.52	12536	8.00	1
OP524-MB	33777	2.75	24344	5.36	38479	6.99	14802	7.52	10383	8.02	1
FC11753-1	38620	2.77	27611	5.36	42340	6.99	15729	7.52	11998	8.02	1
FC11753-2	39885	2.75	28205	5.36	45269	6.99	16284	7.52	12604	8.02	1
FC11753-3	39206	2.75	29143	5.36	45105	6.99	16073	7.52	12763	8.00	1
OP524-MS	36710	2.75	28263	5.36	42762	6.99	15597	7.52	11416	8.00	1
FC11753-4	39422	2.75	28289	5.36	44016	6.99	15591	7.52	12622	8.02	1
FC11753-5	37763	2.75	26854	5.36	42678	6.99	15846	7.52	11576	8.02	1
OP524-DUP	38538	2.77	27655	5.36	43423	6.99	15846	7.53	11361	8.02	1
S4Q805-ECC804	45929	2.70	35911	5.36	56744	6.99	20626	7.52	15591	8.00	1

- IS 1 = 13C3-PFBA
- IS 2 = 13C2-PFHxA
- IS 3 = 13C4-PFOA
- IS 4 = 13C5-PFNA
- IS 5 = 13C2-PFDA

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q804-ICC804 4Q54855.D 12/08/23 12:22. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
6

Injection Standard Area Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q805-CC804	Injection Date:	12/11/23
Lab File ID:	4Q54988.D	Injection Time:	01:10
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4896	7.04	6822	8.12
Check Std ^c	4942	7.05	6808	8.13
Upper Limit ^d	9792	7.45	13644	8.53
Lower Limit ^e	1958	6.65	2729	7.73

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q805-ICCB	4796	7.04	6811	8.13	1
OP524-BS	3493	7.04	5164	8.13	1
OP524-LLBS	3712	7.04	5305	8.13	1
OP524-MB	2966	7.05	4675	8.13	1
FC11753-1	3754	7.05	5229	8.13	1
FC11753-2	3576	7.05	5493	8.13	1
FC11753-3	4047	7.04	5068	8.12	1
OP524-MS	3660	7.04	4528	8.12	1
FC11753-4	3672	7.05	5586	8.13	1
FC11753-5	3481	7.04	5513	8.13	1
OP524-DUP	3812	7.05	5666	8.13	1
S4Q805-ECC804	4848	7.05	6887	8.13	1

IS 6 = 18O2-PFHXS
 IS 7 = 13C4-PFOS

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q804-ICC804 4Q54855.D 12/08/23 12:22. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to + 100% of initial cal area.
- (d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
6

Injection Standard Area Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S7Q11-CC11	Injection Date:	12/13/23
Lab File ID:	7Q352.D	Injection Time:	17:58
Instrument ID:	GCMS7Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	47065	2.89	24957	5.55	37000	7.17	15030	7.71	11626	8.21
Check Std ^c	42811	2.91	22435	5.58	33592	7.18	13732	7.72	10438	8.23
Upper Limit ^d	94130	3.31	49914	5.98	74000	7.58	30060	8.12	23252	8.63
Lower Limit ^e	18826	2.51	9983	5.18	14800	6.78	6012	7.32	4650	7.83

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
OP576-BS ^f	50667	2.90	26539	5.55	39406	7.18	15696	7.72	12157	8.21	1
OP576-LLBS	49596	2.90	25984	5.57	37348	7.18	15650	7.72	11791	8.21	1
OP576-MB	52362	2.90	27338	5.57	40631	7.18	16945	7.72	12747	8.21	1
FC11753-3	52626	2.89	27853	5.55	41241	7.18	17130	7.72	12108	8.21	1
OP611-BS	51503	2.90	26911	5.57	40843	7.17	16003	7.72	11976	8.21	1
OP611-LLBS	57311	2.90	30154	5.57	44491	7.17	18191	7.72	14186	8.21	1
OP611-MB	47399	2.90	24532	5.55	35637	7.17	14284	7.72	11114	8.21	1
ZZZZZZ	46176	2.89	24252	5.55	35801	7.18	14477	7.72	10813	8.21	1
ZZZZZZ	57244	2.89	29743	5.55	44613	7.18	17407	7.72	13900	8.21	1
ZZZZZZ	49042	2.89	24721	5.55	38104	7.18	15684	7.72	11847	8.21	1

- IS 1 = 13C3-PFBA
- IS 2 = 13C2-PFHxA
- IS 3 = 13C4-PFOA
- IS 4 = 13C5-PFNA
- IS 5 = 13C2-PFDA

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S7Q11-ICC11 7Q344.D 12/13/23 15:38. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.
- (f) Insufficient sample for MS/MSD.

Injection Standard Area Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S7Q11-CC11	Injection Date:	12/13/23
Lab File ID:	7Q352.D	Injection Time:	17:58
Instrument ID:	GCMS7Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	3696	7.29	4760	8.38
Check Std ^c	2647	7.30	4292	8.39
Upper Limit ^d	7392	7.70	9520	8.79
Lower Limit ^e	1478	6.90	1904	7.99

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
OP576-BS ^f	3951	7.29	5200	8.39	1
OP576-LLBS	3843	7.29	4931	8.39	1
OP576-MB	4004	7.29	5329	8.39	1
FC11753-3	4124	7.29	5276	8.38	1
OP611-BS	3919	7.29	5221	8.39	1
OP611-LLBS	4510	7.29	5696	8.39	1
OP611-MB	3472	7.29	4462	8.38	1
ZZZZZZ	3613	7.29	4507	8.39	1
ZZZZZZ	4532	7.29	5692	8.39	1
ZZZZZZ	3602	7.29	5139	8.39	1

IS 6 = 18O2-PFHXS
 IS 7 = 13C4-PFOS

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S7Q11-ICC11 7Q344.D 12/13/23 15:38. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.
- (f) Insufficient sample for MS/MSD.

TDCA Retention Time Check

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q804-RT	Injection Date:	12/08/23
Lab File ID:	4Q54849.D	Injection Time:	10:54
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.106	--	--
TDCA	6.759	1.347	1.000
TCDCA	6.610	1.496	1.000
TUDCA	5.766	2.340	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q804-IC804	4Q54851.D	12/08/23	11:23	00:29	Mass Calibration Verification
S4Q804-IC804	4Q54852.D	12/08/23	11:38	00:44	Initial cal 1
S4Q804-IC804	4Q54853.D	12/08/23	11:53	00:59	Initial cal 2
S4Q804-IC804	4Q54854.D	12/08/23	12:07	01:13	Initial cal 3
S4Q804-ICC804	4Q54855.D	12/08/23	12:22	01:28	Initial cal 4
S4Q804-IC804	4Q54856.D	12/08/23	12:37	01:43	Initial cal 5
S4Q804-IC804	4Q54857.D	12/08/23	12:52	01:58	Initial cal 6
S4Q804-IC804	4Q54858.D	12/08/23	13:06	02:12	Initial cal 7
S4Q804-IC804	4Q54859.D	12/08/23	13:21	02:27	Initial cal 8
S4Q804-IBLK	4Q54860.D	12/08/23	13:36	02:42	Instrument Blank
S4Q804-IBLK	4Q54860.D	12/08/23	13:36	02:42	Instrument Blank
S4Q804-ICV804	4Q54861.D	12/08/23	13:51	02:57	Initial cal verification 4
S4Q804-ICV804	4Q54862.D	12/08/23	14:05	03:11	Initial cal verification 20
S4Q804-CC804	4Q54863.D	12/08/23	14:20	03:26	Continuing cal 4
S4Q804-CC804	4Q54864.D	12/08/23	14:40	03:46	Continuing cal 1.0LL
OP471-BS	4Q54865.D	12/08/23	14:55	04:01	Blank Spike
OP471-LLBS	4Q54866.D	12/08/23	15:10	04:16	Blank Spike
OP471-MB	4Q54867.D	12/08/23	15:24	04:30	Method Blank
ZZZZZZ	4Q54868.D	12/08/23	15:39	04:45	(unrelated sample)
ZZZZZZ	4Q54869.D	12/08/23	15:54	05:00	(unrelated sample)
ZZZZZZ	4Q54870.D	12/08/23	16:09	05:15	(unrelated sample)
ZZZZZZ	4Q54871.D	12/08/23	16:24	05:30	(unrelated sample)
S4Q804-CC804	4Q54872.D	12/08/23	16:39	05:45	Continuing cal 4
S4Q804-ICCB	4Q54873.D	12/08/23	16:53	05:59	Continuing Calibration Blank
S4Q804-ICCB	4Q54873.D	12/08/23	16:53	05:59	Continuing Calibration Blank
S4Q804-CC804	4Q54881.D	12/08/23	18:52	07:58	Continuing cal 4
S4Q804-ICCB	4Q54882.D	12/08/23	19:06	08:12	Continuing Calibration Blank
S4Q804-ICCB	4Q54882.D	12/08/23	19:06	08:12	Continuing Calibration Blank
OP495-BS	4Q54883.D	12/08/23	19:21	08:27	Blank Spike
OP495-LLBS	4Q54884.D	12/08/23	19:36	08:42	Blank Spike
OP495-MB	4Q54885.D	12/08/23	19:51	08:57	Method Blank
ZZZZZZ	4Q54886.D	12/08/23	20:05	09:11	(unrelated sample)
ZZZZZZ	4Q54887.D	12/08/23	20:20	09:26	(unrelated sample)
FC11715-2	4Q54888.D	12/08/23	20:35	09:41	(used for QC only; not part of job FC11753)

TDCA Retention Time Check

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q804-RT	Injection Date:	12/08/23
Lab File ID:	4Q54849.D	Injection Time:	10:54
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP495-MS	4Q54889.D	12/08/23	20:50	09:56	Matrix Spike
FC11715-3	4Q54890.D	12/08/23	21:04	10:10	(used for QC only; not part of job FC11753)
OP495-DUP	4Q54891.D	12/08/23	21:19	10:25	Duplicate
ZZZZZZ	4Q54892.D	12/08/23	21:34	10:40	(unrelated sample)
S4Q804-CC804	4Q54893.D	12/08/23	21:49	10:55	Continuing cal 4
S4Q804-ICCB	4Q54894.D	12/08/23	22:03	11:09	Continuing Calibration Blank
OP496-BS	4Q54895.D	12/08/23	22:18	11:24	Blank Spike
OP496-LLBS	4Q54896.D	12/08/23	22:33	11:39	Blank Spike
OP496-MB	4Q54897.D	12/08/23	22:48	11:54	Method Blank
ZZZZZZ	4Q54898.D	12/08/23	23:02	12:08	(unrelated sample)
ZZZZZZ	4Q54899.D	12/08/23	23:17	12:23	(unrelated sample)
ZZZZZZ	4Q54901.D	12/08/23	23:47	12:53	(unrelated sample)
ZZZZZZ	4Q54902.D	12/09/23	00:01	13:07	(unrelated sample)
FC11673-1	4Q54903.D	12/09/23	00:16	13:22	(used for QC only; not part of job FC11753)
OP496-MS	4Q54904.D	12/09/23	00:31	13:37	Matrix Spike
S4Q804-CC804	4Q54905.D	12/09/23	00:46	13:52	Continuing cal 4
S4Q804-ICCB	4Q54906.D	12/09/23	01:00	14:06	Continuing Calibration Blank
FC11673-2	4Q54907.D	12/09/23	01:15	14:21	(used for QC only; not part of job FC11753)
OP496-DUP	4Q54908.D	12/09/23	01:30	14:36	Duplicate
ZZZZZZ	4Q54909.D	12/09/23	01:45	14:51	(unrelated sample)
ZZZZZZ	4Q54910.D	12/09/23	01:59	15:05	(unrelated sample)
ZZZZZZ	4Q54911.D	12/09/23	02:14	15:20	(unrelated sample)
OP519-BS	4Q54912.D	12/09/23	02:29	15:35	Blank Spike
OP519-LLBS	4Q54913.D	12/09/23	02:44	15:50	Blank Spike
OP519-MB	4Q54914.D	12/09/23	02:59	16:05	Method Blank
ZZZZZZ	4Q54915.D	12/09/23	03:13	16:19	(unrelated sample)
ZZZZZZ	4Q54916.D	12/09/23	03:28	16:34	(unrelated sample)
S4Q804-CC804	4Q54917.D	12/09/23	03:43	16:49	Continuing cal 4
S4Q804-ICCB	4Q54918.D	12/09/23	03:58	17:04	Continuing Calibration Blank
ZZZZZZ	4Q54919.D	12/09/23	04:12	17:18	(unrelated sample)
ZZZZZZ	4Q54920.D	12/09/23	04:27	17:33	(unrelated sample)
ZZZZZZ	4Q54921.D	12/09/23	04:42	17:48	(unrelated sample)
ZZZZZZ	4Q54922.D	12/09/23	04:57	18:03	(unrelated sample)
ZZZZZZ	4Q54923.D	12/09/23	05:11	18:17	(unrelated sample)
ZZZZZZ	4Q54924.D	12/09/23	05:26	18:32	(unrelated sample)
ZZZZZZ	4Q54925.D	12/09/23	05:41	18:47	(unrelated sample)
ZZZZZZ	4Q54926.D	12/09/23	05:56	19:02	(unrelated sample)
ZZZZZZ	4Q54927.D	12/09/23	06:10	19:16	(unrelated sample)
FC11645-12	4Q54928.D	12/09/23	06:25	19:31	(used for QC only; not part of job FC11753)
S4Q804-CC804	4Q54929.D	12/09/23	06:40	19:46	Continuing cal 4
S4Q804-ICCB	4Q54930.D	12/09/23	06:55	20:01	Continuing Calibration Blank
OP519-MS	4Q54931.D	12/09/23	07:10	20:16	Matrix Spike
ZZZZZZ	4Q54932.D	12/09/23	07:24	20:30	(unrelated sample)
FC11645-14	4Q54933.D	12/09/23	07:39	20:45	(used for QC only; not part of job FC11753)

6.6.1

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TDCA Retention Time Check

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q804-RT	Injection Date:	12/08/23
Lab File ID:	4Q54849.D	Injection Time:	10:54
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP519-DUP	4Q54934.D	12/09/23	07:54	21:00	Duplicate
ZZZZZZ	4Q54935.D	12/09/23	08:09	21:15	(unrelated sample)
ZZZZZZ	4Q54936.D	12/09/23	08:23	21:29	(unrelated sample)
ZZZZZZ	4Q54937.D	12/09/23	08:38	21:44	(unrelated sample)
ZZZZZZ	4Q54938.D	12/09/23	08:53	21:59	(unrelated sample)
S4Q804-ECC804	4Q54940.D	12/09/23	09:22	22:28	Ending cal 4
S4Q804-ICCB	4Q54941.D	12/09/23	09:37	22:43	Continuing Calibration Blank

6.6.1

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TDCA Retention Time Check

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q805-RT	Injection Date:	12/10/23
Lab File ID:	4Q54944.D	Injection Time:	14:20
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.119	--	--
TDCA	6.784	1.335	1.000
TCDCA	6.635	1.484	1.000
TUDCA	5.791	2.328	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q805-IBLK	4Q54947.D	12/10/23	15:05	00:45	Instrument Blank
S4Q805-IBLK	4Q54947.D	12/10/23	15:05	00:45	Instrument Blank
S4Q805-CC804	4Q54948.D	12/10/23	15:19	00:59	Continuing cal 4
S4Q805-CC804	4Q54949.D	12/10/23	15:34	01:14	Continuing cal 1.0LL
ZZZZZ	4Q54950.D	12/10/23	15:49	01:29	(unrelated sample)
ZZZZZ	4Q54953.D	12/10/23	16:34	02:14	(unrelated sample)
S4Q805-CC804	4Q54954.D	12/10/23	16:48	02:28	Continuing cal 4
S4Q805-ICCB	4Q54955.D	12/10/23	17:03	02:43	Continuing Calibration Blank
OP518-BS	4Q54956.D	12/10/23	17:18	02:58	Blank Spike
OP518-LLBS	4Q54957.D	12/10/23	17:33	03:13	Blank Spike
OP518-MB	4Q54958.D	12/10/23	17:47	03:27	Method Blank
ZZZZZ	4Q54959.D	12/10/23	18:02	03:42	(unrelated sample)
ZZZZZ	4Q54960.D	12/10/23	18:17	03:57	(unrelated sample)
ZZZZZ	4Q54961.D	12/10/23	18:32	04:12	(unrelated sample)
ZZZZZ	4Q54962.D	12/10/23	18:46	04:26	(unrelated sample)
ZZZZZ	4Q54963.D	12/10/23	19:01	04:41	(unrelated sample)
S4Q805-CC804	4Q54964.D	12/10/23	19:16	04:56	Continuing cal 4
S4Q805-ICCB	4Q54965.D	12/10/23	19:31	05:11	Continuing Calibration Blank
OP523-BS	4Q54966.D	12/10/23	19:45	05:25	Blank Spike
OP523-LLBS	4Q54967.D	12/10/23	20:00	05:40	Blank Spike
OP523-MB	4Q54968.D	12/10/23	20:15	05:55	Method Blank
ZZZZZ	4Q54969.D	12/10/23	20:30	06:10	(unrelated sample)
FC11645-21	4Q54970.D	12/10/23	20:44	06:24	(used for QC only; not part of job FC11753)
OP523-MS	4Q54971.D	12/10/23	20:59	06:39	Matrix Spike
FC11645-22	4Q54972.D	12/10/23	21:14	06:54	(used for QC only; not part of job FC11753)
ZZZZZ	4Q54974.D	12/10/23	21:44	07:24	(unrelated sample)
S4Q805-CC804	4Q54976.D	12/10/23	22:13	07:53	Continuing cal 4
S4Q805-ICCB	4Q54977.D	12/10/23	22:28	08:08	Continuing Calibration Blank
ZZZZZ	4Q54978.D	12/10/23	22:43	08:23	(unrelated sample)
ZZZZZ	4Q54979.D	12/10/23	22:57	08:37	(unrelated sample)
ZZZZZ	4Q54980.D	12/10/23	23:12	08:52	(unrelated sample)
ZZZZZ	4Q54981.D	12/10/23	23:27	09:07	(unrelated sample)
ZZZZZ	4Q54982.D	12/10/23	23:42	09:22	(unrelated sample)
ZZZZZ	4Q54983.D	12/10/23	23:56	09:36	(unrelated sample)

TDCA Retention Time Check

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q805-RT	Injection Date:	12/10/23
Lab File ID:	4Q54944.D	Injection Time:	14:20
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q54984.D	12/11/23	00:11	09:51	(unrelated sample)
ZZZZZZ	4Q54985.D	12/11/23	00:26	10:06	(unrelated sample)
ZZZZZZ	4Q54986.D	12/11/23	00:41	10:21	(unrelated sample)
ZZZZZZ	4Q54987.D	12/11/23	00:55	10:35	(unrelated sample)
S4Q805-CC804	4Q54988.D	12/11/23	01:10	10:50	Continuing cal 4
S4Q805-ICCB	4Q54989.D	12/11/23	01:25	11:05	Continuing Calibration Blank
OP524-BS	4Q54990.D	12/11/23	01:40	11:20	Blank Spike
OP524-LLBS	4Q54991.D	12/11/23	01:54	11:34	Blank Spike
OP524-MB	4Q54992.D	12/11/23	02:09	11:49	Method Blank
FC11753-1	4Q54993.D	12/11/23	02:24	12:04	AF-RHMW17S-WGN01LF-2312
FC11753-2	4Q54994.D	12/11/23	02:39	12:19	AF-RHMW17S-WQEB01-2312
FC11753-3	4Q54995.D	12/11/23	02:54	12:34	AF-RHMW17D-WGN01LF-2312
OP524-MS	4Q54996.D	12/11/23	03:08	12:48	Matrix Spike
FC11753-4	4Q54997.D	12/11/23	03:23	13:03	AF-RHMW17D-WQFB01-2312
FC11753-5	4Q54998.D	12/11/23	03:38	13:18	AF-RHMW17-WGN01LF-2312
OP524-DUP	4Q54999.D	12/11/23	03:53	13:33	Duplicate
S4Q805-ECC804	4Q55000.D	12/11/23	04:07	13:47	Ending cal 4
S4Q805-ICCB	4Q55001.D	12/11/23	04:22	14:02	Continuing Calibration Blank

6.6.2

6

TDCA Retention Time Check

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S7Q11-RT	Injection Date:	12/13/23
Lab File ID:	7Q338.D	Injection Time:	14:15
Instrument ID:	GCMS7Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.380	--	--
TDCA	6.839	1.541	1.000
TCDCA	6.689	1.691	1.000
TUDCA	5.823	2.557	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S7Q11-IC11	7Q340.D	12/13/23	14:43	00:28	Mass Calibration Verification
S7Q11-IC11	7Q341.D	12/13/23	14:56	00:41	Initial cal 1
S7Q11-IC11	7Q342.D	12/13/23	15:10	00:55	Initial cal 2
S7Q11-IC11	7Q343.D	12/13/23	15:24	01:09	Initial cal 3
S7Q11-ICC11	7Q344.D	12/13/23	15:38	01:23	Initial cal 4
S7Q11-IC11	7Q345.D	12/13/23	15:52	01:37	Initial cal 5
S7Q11-IC11	7Q346.D	12/13/23	16:05	01:50	Initial cal 6
S7Q11-IC11	7Q347.D	12/13/23	16:19	02:04	Initial cal 7
S7Q11-IC11	7Q348.D	12/13/23	16:33	02:18	Initial cal 8
S7Q11-IBLK	7Q349.D	12/13/23	16:47	02:32	Instrument Blank
S7Q11-IBLK	7Q349.D	12/13/23	16:47	02:32	Instrument Blank
S7Q11-ICV11	7Q350.D	12/13/23	17:01	02:46	Initial cal verification 4
S7Q11-ICV11	7Q351.D	12/13/23	17:14	02:59	Initial cal verification 20
S7Q11-CC11	7Q352.D	12/13/23	17:58	03:43	Continuing cal 4
S7Q11-CC11	7Q353.D	12/13/23	18:12	03:57	Continuing cal 1.0LL
OP576-BS	7Q354.D	12/13/23	18:25	04:10	Blank Spike
OP576-LLBS	7Q355.D	12/13/23	18:39	04:24	Blank Spike
OP576-MB	7Q356.D	12/13/23	18:53	04:38	Method Blank
FC11753-3	7Q357.D	12/13/23	19:07	04:52	AF-RHMW17D-WGN01LF-2312
OP611-BS	7Q358.D	12/13/23	19:20	05:05	Blank Spike
OP611-LLBS	7Q359.D	12/13/23	19:34	05:19	Blank Spike
OP611-MB	7Q360.D	12/13/23	19:48	05:33	Method Blank
ZZZZZZ	7Q361.D	12/13/23	20:02	05:47	(unrelated sample)
ZZZZZZ	7Q362.D	12/13/23	20:16	06:01	(unrelated sample)
ZZZZZZ	7Q363.D	12/13/23	20:29	06:14	(unrelated sample)
S7Q11-CC11	7Q364.D	12/13/23	20:43	06:28	Continuing cal 4
S7Q11-ICCB	7Q365.D	12/13/23	20:57	06:42	Continuing Calibration Blank

Ion Ratio Summary

Job Number: FC11753
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q805	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios			
		PFPeA	PFHxA	PFHpA	PFOS
S4Q804-ICC804	4Q54855.D	0	2.8	18.4	52.4
FC11753-1	4Q54993.D				15.9
FC11753-2	4Q54994.D				
FC11753-3	4Q54995.D				
FC11753-4	4Q54997.D				
FC11753-5	4Q54998.D	0	2.7	15.1	

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6	S7	S8
FC11753-1	4Q54993.D	70	112	88	109	104	99	98	97
FC11753-2	4Q54994.D	96	101	98	96	95	94	94	87
FC11753-3	7Q357.D	81	81	81	81	81	77	80	75
FC11753-3	4Q54995.D	5* a	44	82	98	96	100	98	96
FC11753-4	4Q54997.D	107	108	102	105	102	104	96	100
FC11753-5	4Q54998.D	106	113	112	108	110	103	105	106
OP524-BS	4Q54990.D	76	112	106	109	109	110	108	110
OP524-DUP	4Q54999.D	107	111	109	111	107	105	116	112
OP524-LLBS	4Q54991.D	112	110	107	107	114	106	102	100
OP524-MB	4Q54992.D	117	120	115	118	117	106	117	120
OP524-MS	4Q54996.D	8* a	48	94	110	111	111	116	112
OP576-BS	7Q354.D	95	95	95	94	93	97	93	95
OP576-LLBS	7Q355.D	101	103	102	100	103	100	106	99
OP576-MB	7Q356.D	99	100	99	97	100	99	99	95
S4Q805-IBLK	4Q54947.D	101	101	100	99	97	101	98	104
S4Q805-ICCB	4Q54989.D	99	98	97	100	99	106	102	103
S4Q805-ICCB	4Q55001.D	99	98	98	101	100	97	95	104
S7Q11-IBLK	7Q349.D	100	101	100	101	97	101	104	104

Isotope Dilution Standards

Recovery Limits

S1 = 13C4-PFBA	20-150%
S2 = 13C5-PFPeA	20-150%
S3 = 13C5-PFHxA	20-150%
S4 = 13C4-PFHpA	20-150%
S5 = 13C8-PFOA	20-150%
S6 = 13C9-PFNA	20-150%
S7 = 13C6-PFDA	20-150%
S8 = 13C7-PFUnDA	20-150%

(a) Outside control limits.

6.8.1
6

Isotope Dilution Standard Recovery Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S9	S10	S11	S12	S13	S14	S15	S16
FC11753-1	4Q54993.D	89	81	103	106	92	80	73	81
FC11753-2	4Q54994.D	76	81	96	106	90	61	70	84
FC11753-3	7Q357.D	73	69	76	80	113	68	66	62
FC11753-3	4Q54995.D	87	77	86	94	88	82	94	100
FC11753-4	4Q54997.D	89	85	103	107	92	63	77	86
FC11753-5	4Q54998.D	92	87	112	111	95	73	77	88
OP524-BS	4Q54990.D	100	98	106	114	103	75	78	87
OP524-DUP	4Q54999.D	99	98	102	113	96	80	74	89
OP524-LLBS	4Q54991.D	96	96	111	112	106	70	79	81
OP524-LLBS	4Q54992.D	103	99	129	137	102	68	73	90
OP524-MS	4Q54996.D	95	88	97	114	98	95	107	124
OP576-BS	7Q354.D	92	79	92	94	89	72	66	63
OP576-LLBS	7Q355.D	94	80	102	103	101	79	69	69
OP576-MB	7Q356.D	77	63	100	99	96	58	54	55
S4Q805-IBLK	4Q54947.D	96	101	96	98	98	93		
S4Q805-ICCB	4Q54989.D	95	97	99	94	93	95		
S4Q805-ICCB	4Q55001.D	97	100	100	101	91	99		
S7Q11-IBLK	7Q349.D	102	108	95	102	98	98	95	95

Isotope Dilution Standards

Recovery Limits

S9 = 13C2-PFDoDA	20-150%
S10 = 13C2-PFTeDA	20-150%
S11 = 13C3-PFBS	20-150%
S12 = 13C3-PFHxS	20-150%
S13 = 13C8-PFOS	20-150%
S14 = 13C8-FOSA	20-150%
S15 = d3-MeFOSA	20-150%
S16 = d5-EtFOSA	20-150%

6.8.1
6

Isotope Dilution Standard Recovery Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S17	S18	S19	S20	S21	S22	S23	S24
FC11753-1	4Q54993.D	99	98	57	73	102	110	107	90
FC11753-2	4Q54994.D	103	102	53	70	128	144	131	88
FC11753-3	7Q357.D	66	63	58	59	110	83	90	73
FC11753-3	4Q54995.D	123	126	67	85	155	118	114	70
FC11753-4	4Q54997.D	114	109	55	74	133	138	130	93
FC11753-5	4Q54998.D	109	105	56	75	128	149	137	99
OP524-BS	4Q54990.D	122	115	57	76	134	136	138	99
OP524-DUP	4Q54999.D	110	107	60	78	133	145	124	99
OP524-LLBS	4Q54991.D	128	125	51	67	117	156	139	99
OP524-MB	4Q54992.D	130	125	52	71	135	167	180	106
OP524-MS	4Q54996.D	137	161 * a	76	97	175	143	133	74
OP576-BS	7Q354.D	87	85	55	57	107	104	106	89
OP576-LLBS	7Q355.D	96	92	63	65	123	113	124	105
OP576-MB	7Q356.D	87	75	51	56	121	105	117	94
S4Q805-IBLK	4Q54947.D	88	85			92	83	81	
S4Q805-ICCB	4Q54989.D	110	108			125	127	129	
S4Q805-ICCB	4Q55001.D	108	114			140	139	132	
S7Q11-IBLK	7Q349.D	97	97	97	96	94	100	101	96

Isotope Dilution Standards

Recovery Limits

S17 = d3-MeFOSAA	20-150%
S18 = d5-EtFOSAA	20-150%
S19 = d7-MeFOSE	20-150%
S20 = d9-EtFOSE	20-150%
S21 = 13C2-4:2FTS	20-180%
S22 = 13C2-6:2FTS	20-180%
S23 = 13C2-8:2FTS	20-180%
S24 = 13C3-HFPO-DA	20-150%

(a) Outside control limits.

6.8.1
6

Initial Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q804-ICC804
 Lab FileID: 4Q54855.D

Initial Calibration Report

Method Path	Method File	Batch Name	Last Calib Update	Calibration Files	Level Name	1	2	3	4	5	6	7	8	Avg RF	%RSD
D:\MassHunter\methods	1633_120823_S4Q804.quantmethod.xml	D:\MassHunter\Data\120823_1633_S4Q804	12/10/2023 9:56:17 AM	D:\MassHunter\Data\120823_1633_S4Q804\4Q54852.d	1	0.3061	0.2657	0.3201	0.2935	0.3249	0.3318	0.3440	0.3760	0.3203	10.364
D:\MassHunter\Data\120823_1633_S4Q804	1633_S4Q804\4Q54853.d	D:\MassHunter\Data\120823_1633_S4Q804	12/10/2023 9:56:17 AM	D:\MassHunter\Data\120823_1633_S4Q804\4Q54854.d	2	0.0445	0.0423	0.0485	0.0465	0.0500	0.0525	0.0556	0.0674	0.0509	15.552
D:\MassHunter\Data\120823_1633_S4Q804	1633_S4Q804\4Q54855.d	D:\MassHunter\Data\120823_1633_S4Q804	12/10/2023 9:56:17 AM	D:\MassHunter\Data\120823_1633_S4Q804\4Q54856.d	3	0.5830	0.5132	0.5784	0.5423	0.6013	0.6074	0.6372	0.6992	0.5952	9.571
D:\MassHunter\Data\120823_1633_S4Q804	1633_S4Q804\4Q54857.d	D:\MassHunter\Data\120823_1633_S4Q804	12/10/2023 9:56:17 AM	D:\MassHunter\Data\120823_1633_S4Q804\4Q54858.d	4	0.9568	0.8405	0.9679	0.9101	0.9942	1.0205	1.0548	1.1253	0.9838	8.884
D:\MassHunter\Data\120823_1633_S4Q804	1633_S4Q804\4Q54859.d	D:\MassHunter\Data\120823_1633_S4Q804	12/10/2023 9:56:17 AM		5	0.5313	0.4603	0.5378	0.5046	0.5452	0.5528	0.5753	0.6262	0.5417	8.968
					6	0.0555	0.0605	0.0537	0.0521	0.0537	0.0554	0.0552	0.0531	0.0549	4.640
					7	0.7897	0.7008	0.7728	0.7422	0.7921	0.8182	0.8363	0.9300	0.7978	8.555
					8	0.5503	0.5132	0.5932	0.5474	0.6113	0.6260	0.6221	0.6535	0.5896	8.137
					9	0.1290	0.1242	0.1428	0.1312	0.1459	0.1493	0.1496	0.1662	0.1423	9.626
					10	0.0710	0.0646	0.0759	0.0700	0.0773	0.0773	0.0771	0.0837	0.0746	7.829
					11	1.3675	1.1148	1.3865	1.3069	1.4395	1.4941	1.5356	1.6152	1.4075	10.938
					12	0.9501	0.9560	1.0203	0.8991	1.0464	1.0744	1.0973	1.1811	1.0281	8.904
					13	0.5669	0.6340	0.7517	0.6691	0.7093	0.7636	0.8064	0.8739	0.7344	10.956
					14	1.0828	0.7542	0.9499	0.8074	0.9278	0.9351	0.9172	0.9715	0.9182	10.930
					15	0.7452	0.7725	0.8289	0.8403	0.9687	0.9663	1.0092	1.1428	0.9092	14.882
					16										

Generated at 9:56 AM on 12/10/2023

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Initial Calibration Summary

Job Number: FC11753
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q804-ICC804
 Lab FileID: 4Q54855.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.7822	0.8066	0.8860	0.8526	0.9452	0.9770	0.9580	0.9444	0.9002	8.936
T PFTfDA	Avg RF	0.8840	0.8423	1.0192	0.9424	1.0483	1.0843	1.0239	0.9813	0.9782	8.517
I M2-PFTeDA	Avg RF	0.8889	0.7933	0.8442	0.8228	0.8868	0.8790	0.9284	0.9166	0.8700	5.334
T PFTeDA	Avg RF	1.0846	1.0594	1.1081	1.0362	1.1089	1.1291	1.1850	1.2786	1.1237	6.857
I M8-FOSA	Avg RF	0.8212	0.7025	0.7440	0.6879	0.7491	0.8097	0.8264	0.8638	0.7756	8.201
T PFBs	Avg RF	0.6462	0.6394	0.7694	0.7032	0.7896	0.8087	0.8031	0.9159	0.7594	12.214
I M3-PFBs	Avg RF	0.8207	0.7405	0.7614	0.7747	0.8256	0.8360	0.8057	0.8860	0.8063	5.773
T PFBs	Avg RF	0.9965	0.7918	0.9927	0.8838	1.0560	0.9737	1.0728	1.1687	0.9920	11.681
I M3-PFHxS	Avg RF	1.3344	0.9831	1.0162	0.8171	1.0254	0.9794	1.0542	1.1143	1.0405	14.058
T PPFs	Avg RF	0.4194	0.4062	0.5205	0.4491	0.5055	0.4707	0.4888	0.4682	0.4682	8.637
T PPFs	Avg RF	0.6881	0.5153	0.6644	0.6076	0.6981	0.6636	0.7002	0.7851	0.6653	11.782
T PFDods	Avg RF	0.4797	0.4338	0.5055	0.4542	0.5308	0.5160	0.5509	0.5886	0.5074	10.031
I M2-4:2FTS	Avg RF	8.2861	6.9217	9.3603	7.8661	9.1663	8.9966	9.1446	9.1491	8.6113	9.919
T 4:2FTS	Avg RF	5.2673	4.2599	5.3220	4.6911	5.3419	5.7144	6.1540	5.2940	5.2556	11.004
I M2-6:2FTS	Avg RF	2.5839	2.6253	2.8865	2.6058	2.9980	2.7664	2.8184	2.6911	2.7469	5.371
T 6:2FTS	Avg RF	0.7128	0.6906	0.7952	0.6882	0.8090	0.8118	0.8635	0.8864	0.7822	9.818
I M3-MeFOSAA	Avg RF	0.8843	0.7931	0.9794	0.9086	0.9802	1.0122	1.0122	1.0847	0.9569	9.506
T MeFOSAA	Avg RF	6.8601	6.3259	7.4904	7.0857	7.6908	7.9395	7.7679	8.2399	7.4250	8.462
I M3-HFO-DA	Avg RF	2.6270	2.5577	2.9241	2.8189	2.9961	2.9736	2.7780	2.5892	2.7831	6.306
T HFO-DA	Avg RF	2.5355	2.2934	2.8066	2.6559	2.8863	3.0222	2.8897	2.9378	2.7534	8.832
I M5-EFOsAA	Avg RF	0.8896	0.7816	0.9373	0.8988	0.8813	0.9150	0.9808	1.0130	0.9122	7.665
T EFOsAA	Avg RF	1.0315	0.8251	0.9563	0.9324	0.9635	1.0239	1.0619	1.1410	0.9919	9.577
I M7-MeFOSE	Avg RF	0.8987	0.7512	0.8839	0.8453	0.8649	0.9067	0.9353	0.9920	0.8848	7.937
T MeFOSE	Avg RF										



Initial Calibration Summary

Job Number: FC11753
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q804-ICC804
 Lab FileID: 4Q54855.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA		1.0696	0.9403	1.0893	1.0088	1.0409	1.0911	1.0498	1.2250	1.0644	7.650
T EFOSA						ISTD					
I M3-MeFOSA		0.8408	0.8206	0.9137	0.8425	0.9604	0.9087	0.8867	0.9478	0.8901	5.810
T MeFOSA						ISTD					
I 13C4-PFOS		1.4126	1.5182	1.4011	1.4483	1.2800	1.3483	1.3725	1.3217	1.3878	5.394
S d3-MeFOSAA		1.2466	1.3166	1.2468	1.3234	1.1286	1.2828	1.2913	1.3115	1.2660	5.139
S 13C8-PFOS		1.1442	1.2596	1.1560	1.2088	1.1009	1.1868	1.1561	1.1793	1.1740	4.022
S d5-EFOSAA		1.6548	1.6307	1.6536	1.6624	1.5098	1.6077	1.6165	1.6269	1.6203	3.007
S 13C8-FOSA		0.7730	0.8675	0.8184	0.7736	0.7786	0.8043	0.8033	0.7757	0.7993	4.066
S d7-MeFOSE		0.9230	0.9524	0.9249	0.9356	0.8531	0.9361	1.0715	1.1355	0.9665	9.430
S d3-MeFOSA		0.8960	0.9460	0.8963	0.8898	0.8744	0.8708	0.8887	0.8991	0.8951	2.567
S d9-EFOSE		1.0250	1.0731	1.0236	1.0255	1.0008	1.0465	1.1537	1.1295	1.0597	5.197
S d5-EFOSA						ISTD					
I 13C3-PFBA		1.0465	1.0639	1.0577	1.0371	1.0609	1.0528	1.0432	1.0369	1.0499	1.003
S 13C4-PFBA						ISTD					
I 1802-PFHxS		0.1276	0.1370	0.1220	0.1303	0.1164	0.1122	0.1057	0.0982	0.1187	11.020
S 13C2-4:2FTS		1.8131	1.9229	1.8594	1.9060	1.9700	1.9128	1.9485	1.9976	1.9163	3.093
S 13C3-PFBS		0.2640	0.2873	0.2764	0.2858	0.2730	0.2411	0.2118	0.2198	0.2574	11.470
S 13C2-6:2FTS		1.5385	1.5100	1.5928	1.5711	1.5716	1.5475	1.6229	1.5864	1.5676	2.241
S 13C3-PFHxS		0.3451	0.3547	0.3570	0.3726	0.3446	0.3414	0.3232	0.3185	0.3447	5.134
S 13C2-8:2FTS						ISTD					
I 13C4-PFOA		0.9331	0.9424	0.9246	0.9343	0.9235	0.9144	0.9018	0.9170	0.9239	1.395
S 13C8-PFOA						ISTD					
I 13C2-PFDA		0.8353	0.9384	0.9084	0.9152	0.8933	0.9202	0.9111	0.9541	0.9095	3.888
S 13C6-PFDA		1.1268	1.1553	1.1989	1.1360	1.0618	1.0859	0.9602	0.8538	1.0723	10.606
S 13C7-PFUnDA		1.1845	1.2539	1.2555	1.2116	1.2065	1.2397	1.2386	1.4039	1.2493	5.381
S 13C2-PFDODA		1.1634	1.1705	1.2155	1.1490	1.2378	1.3194	1.2237	1.4483	1.2410	8.030
S 13C2-PFTeDA						ISTD					
I 13C5-PFNA		1.0237	0.9403	0.9946	1.0295	1.0403	1.0512	0.9467	0.9858	1.0015	4.182
S 13C9-PFNA						ISTD					
I 13C2-PFHxA		0.5828	0.5642	0.5835	0.5670	0.5890	0.5815	0.5754	0.5470	0.5738	2.399
S 13C5-PPFA		0.9450	0.9031	0.9111	0.9074	0.9401	0.9282	0.9508	0.8835	0.9211	2.561
S 13C5-PFHxA		0.2393	0.2286	0.2283	0.2228	0.2338	0.2258	0.2364	0.2264	0.2302	2.488
S 13C3-HPOD-A		0.9002	0.8934	0.8862	0.8817	0.9044	0.8674	0.8765	0.8390	0.8811	2.375
S 13C4-PFHxA						ISTD					

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q804-ICV804
 Lab FileID: 4Q54861.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\120823_1633_S4Q804\s4q804.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\120823_1633_S4Q804\4Q54852.d
 2:D:\MassHunter\Data\120823_1633_S4Q804\4Q54853.d
 3:D:\MassHunter\Data\120823_1633_S4Q804\4Q54854.d
 4:D:\MassHunter\Data\120823_1633_S4Q804\4Q54855.d
 5:D:\MassHunter\Data\120823_1633_S4Q804\4Q54856.d
 6:D:\MassHunter\Data\120823_1633_S4Q804\4Q54857.d
 7:D:\MassHunter\Data\120823_1633_S4Q804\4Q54858.d
 8:D:\MassHunter\Data\120823_1633_S4Q804\4Q54859.d

Data File: 4Q54861
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.926	-1.5	98.5
13C2-6:2FTS	5.000	5.039	0.8	100.8
13C2-8:2FTS	5.000	4.888	-2.2	97.8
13C2-PFDoDA	1.250	1.185	-5.2	94.8
13C2-PFTeDA	1.250	1.200	-4.0	96.0
13C3-PFBS	2.500	2.479	-0.8	99.2
13C3-PFHxS	2.500	2.549	2.0	102.0
13C4-PFBA	10.000	10.031	0.3	100.3
13C4-PFHpA	2.500	2.518	0.7	100.7
13C5-PFHxA	2.500	2.411	-3.5	96.5
13C5-PFPeA	5.000	5.052	1.0	101.0
13C6-PFDA	1.250	1.210	-3.2	96.8
13C7-PFUnDA	1.250	1.282	2.5	102.5
13C8-FOSA	2.500	2.500	0.0	100.0
13C8-PFOA	2.500	2.449	-2.0	98.0
13C8-PFOS	2.500	2.320	-7.2	92.8
13C9-PFNA	1.250	1.225	-2.0	98.0
4:2FTS	9.375	8.909	-5.0	95.0
6:2FTS	9.500	9.182	-3.3	96.7
8:2FTS	9.600	9.853	2.6	102.6
d3-MeFOSAA	5.000	4.736	-5.3	94.7
EtFOSAA	2.500	2.371	-5.2	94.8
FOSA	2.500	2.384	-4.6	95.4
MeFOSAA	2.500	2.832	13.3	113.3
PFBA	10.000	9.519	-4.8	95.2
PFBS	2.218	2.065	-6.9	93.1
PFDA	2.500	2.335	-6.6	93.4
PFDoDA	2.500	2.476	-1.0	99.0
PFDS	2.413	2.404	-0.4	99.6
PFHpA	2.500	2.366	-5.4	94.6
PFHpS	2.383	2.256	-5.3	94.7
PFHxA	2.500	2.374	-5.1	94.9
PFHxS	2.285	1.932	-15.5	84.5
PFNA	2.500	2.296	-8.2	91.8
PFNS	2.405	2.551	6.1	106.1
PFOA	2.500	2.321	-7.2	92.8
PFOS	2.320	2.237	-3.6	96.4

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q804-ICV804
 Lab FileID: 4Q54861.D

PFPeA	5.000	4.576	-8.5	91.5
PFPeS	2.353	2.204	-6.3	93.7
PFTeDA	2.500	2.431	-2.7	97.3
PFTTrDA	2.500	2.611	4.4	104.4
PFUnDA	2.500	2.446	-2.2	97.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.836	2.3	102.3
13C3-HFPO-DA	10.000	9.732	-2.7	97.3
9C1-PF3ONS	4.675	4.723	1.0	101.0
ADONA	4.725	5.112	8.2	108.2
HFPO-DA	5.000	4.814	-3.7	96.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.548	-7.5	92.5
5:3FTCA	62.400	61.374	-1.6	98.4
7:3FTCA	62.400	61.084	-2.1	97.9
d3-MeFOSA	2.500	2.473	-1.1	98.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.673	-6.5	93.5
EtFOSE	12.500	11.744	-6.0	94.0
MeFOSA	5.000	4.533	-9.3	90.7
MeFOSE	12.500	11.867	-5.1	94.9
PFDoDS	2.425	2.474	2.0	102.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.787	-4.3	95.7
d7-MeFOSE	25.000	23.968	-4.1	95.9
d9-EtFOSE	25.000	24.996	0.0	100.0
d5-EtFOSA	2.500	2.419	-3.2	96.8
NFDHA	5.000	5.047	0.9	100.9
PFMBA	5.000	4.745	-5.1	94.9
PFMPA	5.000	4.674	-6.5	93.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.463	0.3	100.3

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q804-ICV804
 Lab FileID: 4Q54862.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\120823_1633_S4Q804\s4q804.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\120823_1633_S4Q804\4Q54852.d
 2:D:\MassHunter\Data\120823_1633_S4Q804\4Q54853.d
 3:D:\MassHunter\Data\120823_1633_S4Q804\4Q54854.d
 4:D:\MassHunter\Data\120823_1633_S4Q804\4Q54855.d
 5:D:\MassHunter\Data\120823_1633_S4Q804\4Q54856.d
 6:D:\MassHunter\Data\120823_1633_S4Q804\4Q54857.d
 7:D:\MassHunter\Data\120823_1633_S4Q804\4Q54858.d
 8:D:\MassHunter\Data\120823_1633_S4Q804\4Q54859.d

Data File: 4Q54862
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.870	-2.6	97.4
13C2-6:2FTS	5.000	5.005	0.1	100.1
13C2-8:2FTS	5.000	4.978	-0.4	99.6
13C2-PFDoDA	1.250	1.231	-1.5	98.5
13C2-PFTeDA	1.250	1.235	-1.2	98.8
13C3-PFBS	2.500	2.507	0.3	100.3
13C3-PFHxS	2.500	2.576	3.0	103.0
13C4-PFBA	10.000	10.025	0.3	100.3
13C4-PFHpA	2.500	2.423	-3.1	96.9
13C5-PFHxA	2.500	2.387	-4.5	95.5
13C5-PFPeA	5.000	4.972	-0.6	99.4
13C6-PFDA	1.250	1.286	2.9	102.9
13C7-PFUnDA	1.250	1.195	-4.4	95.6
13C8-FOSA	2.500	2.351	-6.0	94.0
13C8-PFOA	2.500	2.471	-1.2	98.8
13C8-PFOS	2.500	2.598	3.9	103.9
13C9-PFNA	1.250	1.280	2.4	102.4
4:2FTS	20.000	19.764	-1.2	98.8
6:2FTS	20.000	20.220	1.1	101.1
8:2FTS	20.000	18.837	-5.8	94.2
d3-MeFOSAA	5.000	4.940	-1.2	98.8
EtFOSAA	20.000	18.868	-5.7	94.3
FOSA	20.000	18.537	-7.3	92.7
MeFOSAA	20.000	20.454	2.3	102.3
PFBA	20.000	18.106	-9.5	90.5
PFBS	20.000	18.997	-5.0	95.0
PFDA	20.000	18.331	-8.3	91.7
PFDoDA	20.000	17.537	-12.3	87.7
PFDS	20.000	18.270	-8.6	91.4
PFHpA	20.000	19.264	-3.7	96.3
PFHpS	20.000	17.835	-10.8	89.2
PFHxA	20.000	20.784	3.9	103.9
PFHxS	20.000	19.687	-1.6	98.4
PFNA	20.000	19.869	-0.7	99.3
PFNS	20.000	19.096	-4.5	95.5
PFOA	20.000	19.084	-4.6	95.4
PFOS	20.000	15.948	-20.3	79.7

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q804-ICV804
 Lab FileID: 4Q54862.D

PFPeA	20.000	18.734	-6.3	93.7
PFPeS	20.000	20.118	0.6	100.6
PFTeDA	20.000	20.701	3.5	103.5
PFTTrDA	20.000	18.556	-7.2	92.8
PFUnDA	20.000	19.442	-2.8	97.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	19.287	-3.6	96.4
13C3-HFPO-DA	10.000	10.008	0.1	100.1
9C1-PF3ONS	20.000	18.678	-6.6	93.4
ADONA	20.000	21.036	5.2	105.2
HFPO-DA	20.000	18.433	-7.8	92.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	18.323	-8.4	91.6
5:3FTCA	20.000	20.793	4.0	104.0
7:3FTCA	20.000	19.323	-3.4	96.6
d3-MeFOSA	2.500	2.626	5.0	105.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	17.593	-12.0	88.0
EtFOSE	100.000	98.043	-2.0	98.0
MeFOSA	20.000	17.902	-10.5	89.5
MeFOSE	100.000	103.457	3.5	103.5
PFDoDS	20.000	17.621	-11.9	88.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.848	-3.0	97.0
d7-MeFOSE	25.000	24.738	-1.0	99.0
d9-EtFOSE	25.000	24.568	-1.7	98.3
d5-EtFOSA	2.500	2.447	-2.1	97.9
NFDHA	20.000	18.485	-7.6	92.4
PFMBA	20.000	19.037	-4.8	95.2
PFMPA	20.000	19.191	-4.0	96.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	17.680	-11.6	88.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-CC804
 Lab FileID: 4Q54949.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121023_1633_S4Q805\s4q805.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\120823_1633_S4Q804\4Q54852.d
 2:D:\MassHunter\Data\120823_1633_S4Q804\4Q54853.d
 3:D:\MassHunter\Data\120823_1633_S4Q804\4Q54854.d
 4:D:\MassHunter\Data\120823_1633_S4Q804\4Q54855.d
 5:D:\MassHunter\Data\120823_1633_S4Q804\4Q54856.d
 6:D:\MassHunter\Data\120823_1633_S4Q804\4Q54857.d
 7:D:\MassHunter\Data\120823_1633_S4Q804\4Q54858.d
 8:D:\MassHunter\Data\120823_1633_S4Q804\4Q54859.d

Data File: 4Q54949
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.883	-2.3	97.7
13C2-6:2FTS	5.000	4.544	-9.1	90.9
13C2-8:2FTS	5.000	4.823	-3.5	96.5
13C2-PFDoDA	1.250	1.273	1.8	101.8
13C2-PFTeDA	1.250	1.262	1.0	101.0
13C3-PFBS	2.500	2.651	6.0	106.0
13C3-PFHxS	2.500	2.693	7.7	107.7
13C4-PFBA	10.000	10.047	0.5	100.5
13C4-PFHpA	2.500	2.489	-0.4	99.6
13C5-PFHxA	2.500	2.411	-3.5	96.5
13C5-PFPeA	5.000	4.940	-1.2	98.8
13C6-PFDA	1.250	1.312	5.0	105.0
13C7-PFUnDA	1.250	1.350	8.0	108.0
13C8-FOSA	2.500	2.524	1.0	101.0
13C8-PFOA	2.500	2.440	-2.4	97.6
13C8-PFOS	2.500	2.413	-3.5	96.5
13C9-PFNA	1.250	1.234	-1.2	98.8
4:2FTS	0.750	0.762	1.6	101.6
6:2FTS	0.760	0.819	7.7	107.7
8:2FTS	0.768	0.763	-0.7	99.3
d3-MeFOSAA	5.000	4.779	-4.4	95.6
EtFOSAA	0.200	0.213	6.5	106.5
FOSA	0.200	0.202	1.2	101.2
MeFOSAA	0.200	0.197	-1.7	98.3
PFBA	0.800	0.776	-3.1	96.9
PFBS	0.177	0.185	4.4	104.4
PFDA	0.200	0.216	8.1	108.1
PFDoDA	0.200	0.221	10.3	110.3
PFDS	0.193	0.204	5.5	105.5
PFHpA	0.200	0.184	-8.2	91.8
PFHpS	0.191	0.139	-27.2	72.8
PFHxA	0.200	0.191	-4.5	95.5
PFHxS	0.183	0.192	5.1	105.1
PFNA	0.200	0.211	5.3	105.3
PFNS	0.192	0.240	25.1	125.1
PFOA	0.200	0.207	3.4	103.4
PFOS	0.186	0.233	25.5	125.5

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-CC804
 Lab FileID: 4Q54949.D

PFPeA	0.400	0.376	-6.0	94.0
PFPeS	0.188	0.222	18.2	118.2
PFTeDA	0.200	0.181	-9.4	90.6
PFTTrDA	0.200	0.195	-2.6	97.4
PFUnDA	0.200	0.186	-7.1	92.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.411	8.8	108.8
13C3-HFPO-DA	10.000	8.898	-11.0	89.0
9C1-PF3ONS	0.374	0.394	5.3	105.3
ADONA	0.378	0.432	14.4	114.4
HFPO-DA	0.400	0.364	-8.9	91.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.839	-16.0	84.0
5:3FTCA	4.992	4.315	-13.6	86.4
7:3FTCA	4.992	4.899	-1.9	98.1
d3-MeFOSA	2.500	2.334	-6.6	93.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.368	-8.1	91.9
EtFOSE	1.000	1.001	0.1	100.1
MeFOSA	0.400	0.387	-3.4	96.6
MeFOSE	1.000	0.976	-2.4	97.6
PFDoDS	0.194	0.205	5.6	105.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.509	-9.8	90.2
d7-MeFOSE	25.000	26.301	5.2	105.2
d9-EtFOSE	25.000	26.012	4.0	104.0
d5-EtFOSA	2.500	2.364	-5.4	94.6
NFDHA	0.400	0.355	-11.3	88.7
PFMBA	0.400	0.363	-9.2	90.8
PFMPA	0.400	0.378	-5.4	94.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.375	5.4	105.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-CC804
 Lab FileID: 4Q54954.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121023_1633_S4Q805\s4q805.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\120823_1633_S4Q804\4Q54852.d
 2:D:\MassHunter\Data\120823_1633_S4Q804\4Q54853.d
 3:D:\MassHunter\Data\120823_1633_S4Q804\4Q54854.d
 4:D:\MassHunter\Data\120823_1633_S4Q804\4Q54855.d
 5:D:\MassHunter\Data\120823_1633_S4Q804\4Q54856.d
 6:D:\MassHunter\Data\120823_1633_S4Q804\4Q54857.d
 7:D:\MassHunter\Data\120823_1633_S4Q804\4Q54858.d
 8:D:\MassHunter\Data\120823_1633_S4Q804\4Q54859.d

Data File: 4Q54954
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.202	4.0	104.0
13C2-6:2FTS	5.000	4.859	-2.8	97.2
13C2-8:2FTS	5.000	5.031	0.6	100.6
13C2-PFDoDA	1.250	1.296	3.7	103.7
13C2-PFTeDA	1.250	1.310	4.8	104.8
13C3-PFBS	2.500	2.523	0.9	100.9
13C3-PFHxS	2.500	2.487	-0.5	99.5
13C4-PFBA	10.000	9.764	-2.4	97.6
13C4-PFHpA	2.500	2.431	-2.8	97.2
13C5-PFHxA	2.500	2.449	-2.0	98.0
13C5-PFPeA	5.000	4.970	-0.6	99.4
13C6-PFDA	1.250	1.353	8.3	108.3
13C7-PFUnDA	1.250	1.349	8.0	108.0
13C8-FOSA	2.500	2.416	-3.4	96.6
13C8-PFOA	2.500	2.382	-4.7	95.3
13C8-PFOS	2.500	2.414	-3.5	96.5
13C9-PFNA	1.250	1.156	-7.5	92.5
4:2FTS	9.375	8.286	-11.6	88.4
6:2FTS	9.500	9.035	-4.9	95.1
8:2FTS	9.600	9.456	-1.5	98.5
d3-MeFOSAA	5.000	4.693	-6.1	93.9
EtFOSAA	2.500	2.365	-5.4	94.6
FOSA	2.500	2.299	-8.1	91.9
MeFOSAA	2.500	2.587	3.5	103.5
PFBA	10.000	9.434	-5.7	94.3
PFBS	2.218	2.043	-7.9	92.1
PFDA	2.500	2.089	-16.5	83.5
PFDoDA	2.500	2.458	-1.7	98.3
PFDS	2.413	2.342	-2.9	97.1
PFHpA	2.500	2.319	-7.2	92.8
PFHpS	2.383	2.258	-5.2	94.8
PFHxA	2.500	2.214	-11.5	88.5
PFHxS	2.285	2.163	-5.3	94.7
PFNA	2.500	2.534	1.4	101.4
PFNS	2.405	2.545	5.8	105.8
PFOA	2.500	2.359	-5.7	94.3
PFOS	2.320	2.156	-7.1	92.9

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-CC804
 Lab FileID: 4Q54954.D

PFPeA	5.000	4.490	-10.2	89.8
PFPeS	2.353	2.272	-3.4	96.6
PFTeDA	2.500	2.279	-8.9	91.1
PFTTrDA	2.500	2.408	-3.7	96.3
PFUnDA	2.500	2.333	-6.7	93.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.045	6.8	106.8
13C3-HFPO-DA	10.000	8.857	-11.4	88.6
9C1-PF3ONS	4.675	5.010	7.2	107.2
ADONA	4.725	5.418	14.7	114.7
HFPO-DA	5.000	4.783	-4.3	95.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	10.959	-12.2	87.8
5:3FTCA	62.400	57.739	-7.5	92.5
7:3FTCA	62.400	58.625	-6.1	93.9
d3-MeFOSA	2.500	2.342	-6.3	93.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.698	-6.0	94.0
EtFOSE	12.500	11.352	-9.2	90.8
MeFOSA	5.000	4.729	-5.4	94.6
MeFOSE	12.500	11.493	-8.1	91.9
PFDoDS	2.425	2.337	-3.6	96.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.876	-2.5	97.5
d7-MeFOSE	25.000	24.344	-2.6	97.4
d9-EtFOSE	25.000	25.011	0.0	100.0
d5-EtFOSA	2.500	2.288	-8.5	91.5
NFDHA	5.000	4.509	-9.8	90.2
PFMBA	5.000	4.575	-8.5	91.5
PFMPA	5.000	4.628	-7.4	92.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.193	-5.8	94.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-CC804
 Lab FileID: 4Q54988.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121023_1633_S4Q805\s4q805.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\120823_1633_S4Q804\4Q54852.d
 2:D:\MassHunter\Data\120823_1633_S4Q804\4Q54853.d
 3:D:\MassHunter\Data\120823_1633_S4Q804\4Q54854.d
 4:D:\MassHunter\Data\120823_1633_S4Q804\4Q54855.d
 5:D:\MassHunter\Data\120823_1633_S4Q804\4Q54856.d
 6:D:\MassHunter\Data\120823_1633_S4Q804\4Q54857.d
 7:D:\MassHunter\Data\120823_1633_S4Q804\4Q54858.d
 8:D:\MassHunter\Data\120823_1633_S4Q804\4Q54859.d

Data File: 4Q54988
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.034	20.7	120.7
13C2-6:2FTS	5.000	5.726	14.5	114.5
13C2-8:2FTS	5.000	6.122	22.4	122.4
13C2-PFDoDA	1.250	1.326	6.1	106.1
13C2-PFTeDA	1.250	1.300	4.0	104.0
13C3-PFBS	2.500	2.317	-7.3	92.7
13C3-PFHxS	2.500	2.427	-2.9	97.1
13C4-PFBA	10.000	9.742	-2.6	97.4
13C4-PFHpA	2.500	2.424	-3.0	97.0
13C5-PFHxA	2.500	2.422	-3.1	96.9
13C5-PFPeA	5.000	4.788	-4.2	95.8
13C6-PFDA	1.250	1.331	6.5	106.5
13C7-PFUnDA	1.250	1.374	9.9	109.9
13C8-FOSA	2.500	2.371	-5.2	94.8
13C8-PFOA	2.500	2.365	-5.4	94.6
13C8-PFOS	2.500	2.323	-7.1	92.9
13C9-PFNA	1.250	1.208	-3.4	96.6
4:2FTS	9.375	8.939	-4.7	95.3
6:2FTS	9.500	9.330	-1.8	98.2
8:2FTS	9.600	9.470	-1.4	98.6
d3-MeFOSAA	5.000	5.563	11.3	111.3
EtFOSAA	2.500	2.371	-5.2	94.8
FOSA	2.500	2.404	-3.9	96.1
MeFOSAA	2.500	2.658	6.3	106.3
PFBA	10.000	9.430	-5.7	94.3
PFBS	2.218	1.994	-10.1	89.9
PFDA	2.500	2.303	-7.9	92.1
PFDoDA	2.500	2.314	-7.5	92.5
PFDS	2.413	2.395	-0.7	99.3
PFHpA	2.500	2.303	-7.9	92.1
PFHpS	2.383	2.278	-4.4	95.6
PFHxA	2.500	2.220	-11.2	88.8
PFHxS	2.285	2.089	-8.6	91.4
PFNA	2.500	2.314	-7.5	92.5
PFNS	2.405	2.799	16.4	116.4
PFOA	2.500	2.369	-5.3	94.7
PFOS	2.320	2.172	-6.4	93.6

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-CC804
 Lab FileID: 4Q54988.D

PFPeA	5.000	4.645	-7.1	92.9
PFPeS	2.353	2.233	-5.1	94.9
PFTeDA	2.500	2.301	-8.0	92.0
PFTTrDA	2.500	2.374	-5.0	95.0
PFUnDA	2.500	2.371	-5.1	94.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.979	5.4	105.4
13C3-HFPO-DA	10.000	8.822	-11.8	88.2
9C1-PF3ONS	4.675	4.974	6.4	106.4
ADONA	4.725	5.363	13.5	113.5
HFPO-DA	5.000	4.444	-11.1	88.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.156	-10.6	89.4
5:3FTCA	62.400	56.486	-9.5	90.5
7:3FTCA	62.400	57.345	-8.1	91.9
d3-MeFOSA	2.500	2.375	-5.0	95.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.507	-9.9	90.1
EtFOSE	12.500	11.728	-6.2	93.8
MeFOSA	5.000	4.795	-4.1	95.9
MeFOSE	12.500	11.337	-9.3	90.7
PFDODS	2.425	2.368	-2.4	97.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.293	5.9	105.9
d7-MeFOSE	25.000	24.086	-3.7	96.3
d9-EtFOSE	25.000	24.724	-1.1	98.9
d5-EtFOSA	2.500	2.572	2.9	102.9
NFDHA	5.000	4.668	-6.6	93.4
PFMBA	5.000	4.582	-8.4	91.6
PFMPA	5.000	4.636	-7.3	92.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.123	-7.3	92.7

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-ECC804
 Lab FileID: 4Q55000.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121023_1633_S4Q805\s4q805.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\120823_1633_S4Q804\4Q54852.d
 2:D:\MassHunter\Data\120823_1633_S4Q804\4Q54853.d
 3:D:\MassHunter\Data\120823_1633_S4Q804\4Q54854.d
 4:D:\MassHunter\Data\120823_1633_S4Q804\4Q54855.d
 5:D:\MassHunter\Data\120823_1633_S4Q804\4Q54856.d
 6:D:\MassHunter\Data\120823_1633_S4Q804\4Q54857.d
 7:D:\MassHunter\Data\120823_1633_S4Q804\4Q54858.d
 8:D:\MassHunter\Data\120823_1633_S4Q804\4Q54859.d

Data File: 4Q55000
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.539	# 30.8	130.8
13C2-6:2FTS	5.000	5.888	17.8	117.8
13C2-8:2FTS	5.000	6.417	28.3	128.3
13C2-PFDoDA	1.250	1.230	-1.6	98.4
13C2-PFTeDA	1.250	1.198	-4.2	95.8
13C3-PFBS	2.500	2.386	-4.6	95.4
13C3-PFHxS	2.500	2.545	1.8	101.8
13C4-PFBA	10.000	9.899	-1.0	99.0
13C4-PFHpA	2.500	2.498	-0.1	99.9
13C5-PFHxA	2.500	2.387	-4.5	95.5
13C5-PFPeA	5.000	4.930	-1.4	98.6
13C6-PFDA	1.250	1.250	0.0	100.0
13C7-PFUnDA	1.250	1.238	-0.9	99.1
13C8-FOSA	2.500	2.466	-1.3	98.7
13C8-PFOA	2.500	2.438	-2.5	97.5
13C8-PFOS	2.500	2.330	-6.8	93.2
13C9-PFNA	1.250	1.212	-3.0	97.0
4:2FTS	9.375	8.838	-5.7	94.3
6:2FTS	9.500	9.864	3.8	103.8
8:2FTS	9.600	9.844	2.5	102.5
d3-MeFOSAA	5.000	5.498	10.0	110.0
EtFOSAA	2.500	2.301	-8.0	92.0
FOSA	2.500	2.349	-6.1	93.9
MeFOSAA	2.500	2.660	6.4	106.4
PFBA	10.000	9.225	-7.8	92.2
PFBS	2.218	2.049	-7.6	92.4
PFDA	2.500	2.264	-9.5	90.5
PFDoDA	2.500	2.450	-2.0	98.0
PFDS	2.413	2.337	-3.2	96.8
PFHpA	2.500	2.300	-8.0	92.0
PFHpS	2.383	2.150	-9.8	90.2
PFHxA	2.500	2.299	-8.0	92.0
PFHxS	2.285	2.147	-6.0	94.0
PFNA	2.500	2.298	-8.1	91.9
PFNS	2.405	2.666	10.9	110.9
PFOA	2.500	2.310	-7.6	92.4
PFOS	2.320	2.164	-6.7	93.3

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q805-ECC804
 Lab FileID: 4Q55000.D

PFPeA	5.000	4.532	-9.4	90.6
PFPeS	2.353	2.111	-10.3	89.7
PFTeDA	2.500	2.305	-7.8	92.2
PFTTrDA	2.500	2.433	-2.7	97.3
PFUnDA	2.500	2.415	-3.4	96.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.059	7.1	107.1
13C3-HFPO-DA	10.000	8.876	-11.2	88.8
9C1-PF3ONS	4.675	4.997	6.9	106.9
ADONA	4.725	5.441	15.2	115.2
HFPO-DA	5.000	4.689	-6.2	93.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.223	-10.1	89.9
5:3FTCA	62.400	59.360	-4.9	95.1
7:3FTCA	62.400	59.299	-5.0	95.0
d3-MeFOSA	2.500	2.380	-4.8	95.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.663	-6.7	93.3
EtFOSE	12.500	11.663	-6.7	93.3
MeFOSA	5.000	4.782	-4.4	95.6
MeFOSE	12.500	11.258	-9.9	90.1
PFDoDS	2.425	2.235	-7.8	92.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.502	10.0	110.0
d7-MeFOSE	25.000	24.350	-2.6	97.4
d9-EtFOSE	25.000	24.579	-1.7	98.3
d5-EtFOSA	2.500	2.457	-1.7	98.3
NFDHA	5.000	4.710	-5.8	94.2
PFMBA	5.000	4.582	-8.4	91.6
PFMPA	5.000	4.559	-8.8	91.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.298	-3.4	96.6

CC Criteria: +/- 30%

Initial Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICC11
 Lab FileID: 7Q344.D

Initial Calibration Report

Method Path	D:\MassHunter\Methods											
Method File	1633_121323_S7Q11A_quantmethod.xml											
Batch Name	D:\MassHunter\Data\121323_1633_S7Q11\QuantResults\S7Q11_batch.h											
Last Calib Update	12/13/2023 8:53:05 PM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
1	D:\MassHunter\Data\121323_1633_S7Q11\7Q341.d											
2	D:\MassHunter\Data\121323_1633_S7Q11\7Q342.d											
3	D:\MassHunter\Data\121323_1633_S7Q11\7Q343.d											
4	D:\MassHunter\Data\121323_1633_S7Q11\7Q344.d											
5	D:\MassHunter\Data\121323_1633_S7Q11\7Q345.d											
6	D:\MassHunter\Data\121323_1633_S7Q11\7Q346.d											
7	D:\MassHunter\Data\121323_1633_S7Q11\7Q347.d											
8	D:\MassHunter\Data\121323_1633_S7Q11\7Q348.d											
Compound												
I M4-PFBA												
T PFBA												
T 3:3FTCA												
I M5-PFPeA												
T PFMPA												
T PFPeA												
T PFMBA												
I M5-PFHxA												
T NFDHA												
T PFHxA												
T PFEEA												
T 5:3FTCA												
T 7:3FTCA												
I M4-PFHpA												
T PFHpA												
I M8-PFOA												
T PFOA												
I M9-PFNA												
T PFNA												
I M6-PFDA												
T PFDA												
I M7-PFUnDA												
T PFUnDA												
I M2-PFDODA												

Generated at 8:53 PM on 12/13/2023



Initial Calibration Summary

Job Number: FC11753
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICC11
 Lab FileID: 7Q344.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.8764	1.0069	0.9537	1.0152	0.9943	1.0218	0.9723	0.9099	0.9688	5.422
T PFTIDA	Avg RF	0.8951	0.9278	0.9158	0.9873	0.9742	0.9882	0.9644	0.8991	0.9440	4.125
I M2-PFTeDA	Avg RF	1.4793	1.5423	1.6202	1.5771	1.5556	1.5379	1.5622	1.4874	1.5452	2.975
T PFTeDA						ISTD					
I M8-FOSA	Avg RF	0.9680	1.0396	1.0480	1.0078	1.0071	0.9999	1.0523	1.0277	1.0188	2.796
T FOSA						ISTD					
I M3-PFBS	Avg RF	0.8453	1.0041	0.9563	0.9551	0.9254	0.9399	0.9816	0.9408	0.9436	4.973
T PFBS						ISTD					
I M3-PFHxS	Avg RF	1.2904	1.2813	1.2076	1.2346	1.1702	1.2089	1.1609	1.1742	1.2160	4.071
T PFPeS	Avg RF	1.0068	1.2725	1.1452	1.1326	1.1067	1.1511	1.1219	1.1513	1.1360	6.396
T PFHxS						ISTD					
I M8-PFOS	Avg RF	1.2329	1.2837	1.2516	1.2513	1.2259	1.2716	1.3062	1.2852	1.2636	2.199
T PFHpS	Avg RF	1.0641	1.2558	1.2828	1.2138	1.1914	1.2254	1.2648	1.2571	1.2194	5.697
T PFOS	Avg RF	1.1954	1.1339	1.1279	1.1268	1.0465	1.0765	1.1186	1.0897	1.1144	4.008
T PFNS	Avg RF	0.8625	0.8631	0.7937	0.7937	0.8047	0.8047	0.8199	0.8237	0.8237	3.968
T PFDS	Avg RF	0.4980	0.4802	0.4909	0.5248	0.4675	0.4754	0.4902	0.4940	0.4901	3.537
T PFDoDS						ISTD					
I M2-4:2FTS	Avg RF	8.0915	7.5234	7.8644	7.7360	7.9346	8.3695	7.7131	7.6218	7.8568	3.488
T 4:2FTS						ISTD					
I M2-6:2FTS	Avg RF	5.3937	5.2536	5.4657	5.9142	5.0930	5.1754	5.2653	4.7156	5.2845	6.456
T 6:2FTS						ISTD					
I M2-8:2FTS	Avg RF	5.0124	4.5256	4.9312	4.8574	4.9490	4.9672	4.6622	4.3211	4.7783	5.220
T 8:2FTS						ISTD					
I M3-MeFOSAA	Avg RF	0.7000	0.9527	0.9328	0.8976	0.8329	0.8887	0.9316	0.9033	0.8800	9.242
T MeFOSAA						ISTD					
I M3-HFO-DA	Avg RF	0.8493	0.8764	1.0039	0.9589	0.9445	1.0396	0.9787	0.9736	0.9531	6.624
T HFO-DA	Avg RF	3.2121	3.3852	3.6024	3.6130	3.6024	3.8521	3.8451	3.6838	3.5692	6.505
T ADONA	Avg RF	1.4815	1.6419	1.5409	1.6803	1.6719	1.8072	1.8106	1.7353	1.6712	7.004
T 9CH-PF3ONS	Avg RF	1.0761	1.1312	1.1106	1.1989	1.2191	1.2845	1.2936	1.2121	1.1908	6.643
T 11CH-PF3OUds						ISTD					
I M5-EFOSAA	Avg RF	0.7337	0.8448	0.7937	0.7716	0.7800	0.8441	0.8547	0.8321	0.8068	5.392
T EFOSAA						ISTD					
I M7-MeFOSE	Avg RF	0.8640	1.0857	1.0800	1.0742	1.0968	1.1172	1.1402	1.1061	1.0705	8.050
T MeFOSE						ISTD					
I M9-EFOSE	Avg RF	0.9019	1.0774	1.0478	1.0588	1.0246	1.0764	1.1321	1.0859	1.0506	6.449
T EFOSE						ISTD					

Generated at 8:53 PM on 12/13/2023

Page 2 of 4

Initial Calibration Summary

Job Number: FC11753
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICC11
 Lab FileID: 7Q344.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA		1.1460	1.2999	1.1294	1.2103	1.2143	1.1861	1.2403	1.2558	1.2103	4.661
T EFOSA	Avg RF					ISTD					
I M3-MeFOSA		1.0146	1.0636	1.0761	1.0636	1.0030	1.0495	1.0491	0.9575	1.0346	3.862
T MeFOSA	Avg RF					ISTD					
I 13C4-PFOS		1.0255	0.9794	0.8881	0.9790	1.0272	0.9740	0.8821	0.9508	0.9633	5.682
S d3-MeFOSAA	Linear					ISTD					
S 13C8-PFOS	Linear	0.9212	0.8659	0.8568	0.8859	0.9267	0.8789	0.8288	0.8693	0.8792	3.695
S d5-EFOSAA	Linear	0.8676	0.8543	0.8037	0.8891	0.8400	0.8036	0.7779	0.8029	0.8299	4.653
S 13C8-FOSA	Linear	1.4001	1.3121	1.2254	1.3535	1.3712	1.3396	1.2094	1.2905	1.3127	5.169
S d7-MeFOSE	Linear	0.5111	0.4879	0.4692	0.4942	0.4977	0.4819	0.4491	0.4834	0.4843	3.889
S d3-MeFOSA	Linear	0.6981	0.6660	0.6435	0.6699	0.7153	0.6835	0.6569	0.7536	0.6859	5.195
S d9-EFOSE	Linear	0.5999	0.5627	0.5507	0.5701	0.5850	0.5551	0.5127	0.5587	0.5619	4.585
S d5-EFOSA	Linear	0.7477	0.6869	0.7187	0.7168	0.7112	0.7263	0.6511	0.6941	0.7066	4.133
I 13C3-PFBA		1.0568	1.0498	1.0583	1.0549	1.0500	1.0597	1.0649	1.0621	1.0571	0.510
S 13C4-PFBA	Linear					ISTD					
I 18O2-PFHxS		0.1088	0.1227	0.1109	0.1102	0.1074	0.0976	0.1064	0.0861	0.1063	10.047
S 13C2-4:2FTS	Linear	1.8174	1.8722	1.8649	1.7758	1.9080	1.8075	1.9189	1.7938	1.8448	2.908
S 13C3-PFBS	Linear	0.2605	0.2780	0.2586	0.2380	0.2765	0.2533	0.2500	0.2144	0.2536	8.145
S 13C2-6:2FTS	Linear	1.4068	1.4069	1.4657	1.4348	1.4685	1.4286	1.5897	1.4227	1.4530	4.128
S 13C3-PFHxS	Linear	0.3564	0.3931	0.3868	0.3804	0.3707	0.3415	0.3656	0.2874	0.3603	9.385
S 13C2-8:2FTS	Linear					ISTD					
I 13C4-PFOA		0.9337	0.9405	0.9504	0.9684	0.9442	0.9661	0.8957	0.9575	0.9446	2.454
S 13C8-PFOA	Linear					ISTD					
I 13C2-PFDA		1.1011	1.1484	1.1251	1.1209	1.0284	1.1029	1.0393	1.0992	1.0957	3.790
S 13C6-PFDA	Linear	1.4007	1.4527	1.4273	1.4331	1.3499	1.3847	1.3231	1.3758	1.3934	3.153
S 13C7-PFUnDA	Linear	1.3573	1.4106	1.4020	1.3243	1.2581	1.3368	1.3570	1.4555	1.3627	4.438
S 13C2-PFDODA	Linear	0.6266	0.6759	0.6281	0.6467	0.6176	0.6623	0.6741	0.7073	0.6548	4.687
S 13C2-PFTeDA	Linear					ISTD					
I 13C5-PFNA		0.8635	0.8047	0.8766	0.8654	0.8714	0.8436	0.8412	0.8860	0.8566	3.027
S 13C9-PFNA	Linear					ISTD					
I 13C2-PFHxA		0.6828	0.6846	0.6797	0.6728	0.6885	0.6723	0.6644	0.6573	0.6753	1.579
S 13C5-PPeA	Linear	1.2226	1.2022	1.2183	1.2099	1.2134	1.2131	1.1836	1.2186	1.2102	1.027
S 13C5-PFHxA	Linear	0.5583	0.5854	0.5916	0.5598	0.5667	0.5287	0.5514	0.5618	0.5630	3.477
S 13C3-HPDOA	Linear	1.0430	1.0568	1.0572	1.0309	1.0700	1.0658	1.0369	1.0383	1.0499	1.379
S 13C4-PFHpA	Linear					ISTD					

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Summary

Job Number: FC11753
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICC11
 Lab FileID: 7Q344.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PBBA	Linear	$y = 1.057065 * x$	
S 13C5-PFPeA	Linear	$y = 0.675301 * x$	
S 13C2-4:2FTS	Linear	$y = 0.106263 * x$	
S 13C3-PFBS	Linear	$y = 1.844828 * x$	
S 13C5-PFHxA	Linear	$y = 1.210225 * x$	
S 13C3-HFPO-DA	Linear	$y = 0.562957 * x$	
S 13C4-PFHpA	Linear	$y = 1.049859 * x$	
S 13C2-6:2FTS	Linear	$y = 0.253646 * x$	
S 13C8-PFOA	Linear	$y = 0.944561 * x$	
S 13C3-PFHxS	Linear	$y = 1.452971 * x$	
S 13C9-PFNA	Linear	$y = 0.856559 * x$	
S 13C2-8:2FTS	Linear	$y = 0.360251 * x$	
S 13C6-PEDA	Linear	$y = 1.095658 * x$	
S d3-MeFOSAA	Linear	$y = 0.963276 * x$	
S 13C8-PFOS	Linear	$y = 0.879181 * x$	
S d5-EFOSAA	Linear	$y = 0.829859 * x$	
S 13C7-PFUIndA	Linear	$y = 1.393419 * x$	
S 13C2-PFDODA	Linear	$y = 1.362693 * x$	
S 13C8-FOSA	Linear	$y = 1.312718 * x$	
S 13C2-PFTeDA	Linear	$y = 0.654807 * x$	
S d7-MeFOSE	Linear	$y = 0.484306 * x$	
S d3-MeFOSA	Linear	$y = 0.685862 * x$	
S d9-EFOSE	Linear	$y = 0.561869 * x$	
S d5-EFOSA	Linear	$y = 0.706599 * x$	

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICV11
 Lab FileID: 7Q350.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121323_1633_S7Q11\S7Q11.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\121323_1633_S7Q11\7Q341.d
 2:D:\MassHunter\Data\121323_1633_S7Q11\7Q342.d
 3:D:\MassHunter\Data\121323_1633_S7Q11\7Q343.d
 4:D:\MassHunter\Data\121323_1633_S7Q11\7Q344.d
 5:D:\MassHunter\Data\121323_1633_S7Q11\7Q345.d
 6:D:\MassHunter\Data\121323_1633_S7Q11\7Q346.d
 7:D:\MassHunter\Data\121323_1633_S7Q11\7Q347.d
 8:D:\MassHunter\Data\121323_1633_S7Q11\7Q348.d

Data File: 7Q350
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.255	5.1	105.1
13C2-6:2FTS	5.000	5.316	6.3	106.3
13C2-8:2FTS	5.000	5.347	6.9	106.9
13C2-PFDoDA	1.250	1.288	3.1	103.1
13C2-PFTeDA	1.250	1.227	-1.8	98.2
13C3-PFBS	2.500	2.589	3.6	103.6
13C3-PFHxS	2.500	2.511	0.4	100.4
13C4-PFBA	10.000	10.019	0.2	100.2
13C4-PFHpA	2.500	2.526	1.0	101.0
13C5-PFHxA	2.500	2.517	0.7	100.7
13C5-PFPeA	5.000	5.054	1.1	101.1
13C6-PFDA	1.250	1.288	3.1	103.1
13C7-PFUnDA	1.250	1.295	3.6	103.6
13C8-FOSA	2.500	2.535	1.4	101.4
13C8-PFOA	2.500	2.427	-2.9	97.1
13C8-PFOS	2.500	2.625	5.0	105.0
13C9-PFNA	1.250	1.212	-3.1	96.9
4:2FTS	9.375	9.627	2.7	102.7
6:2FTS	9.500	9.833	3.5	103.5
8:2FTS	8.500	8.808	3.6	103.6
d3-MeFOSAA	5.000	4.704	-5.9	94.1
EtFOSAA	2.500	2.717	8.7	108.7
FOSA	2.500	2.396	-4.1	95.9
MeFOSAA	2.500	2.783	11.3	111.3
PFBA	10.000	10.053	0.5	100.5
PFBS	2.218	2.215	-0.1	99.9
PFDA	2.500	2.587	3.5	103.5
PFDoDA	2.500	2.476	-1.0	99.0
PFDS	2.413	2.339	-3.1	96.9
PFHpA	2.500	2.510	0.4	100.4
PFHpS	2.383	2.320	-2.6	97.4
PFHxA	2.500	2.513	0.5	100.5
PFHxS	2.285	2.331	2.0	102.0
PFNA	2.500	2.652	6.1	106.1
PFNS	2.405	2.176	-9.5	90.5
PFOA	2.500	2.552	2.1	102.1
PFOS	2.320	2.204	-5.0	95.0

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICV11
 Lab FileID: 7Q350.D

PFPeA	5.000	5.022	0.4	100.4
PFPeS	2.353	2.360	0.3	100.3
PFTeDA	2.500	2.660	6.4	106.4
PFTrDA	2.500	2.612	4.5	104.5
PFUnDA	2.500	2.502	0.1	100.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.207	10.2	110.2
13C3-HFPO-DA	10.000	9.218	-7.8	92.2
9C1-PF3ONS	4.675	5.227	11.8	111.8
ADONA	4.725	5.338	13.0	113.0
HFPO-DA	5.000	5.706	14.1	114.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.367	-0.9	99.1
5:3FTCA	62.400	63.618	2.0	102.0
7:3FTCA	62.400	62.808	0.7	100.7
d3-MeFOSA	2.500	2.316	-7.4	92.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.267	5.3	105.3
EtFOSE	12.500	13.144	5.2	105.2
MeFOSA	5.000	5.414	8.3	108.3
MeFOSE	12.500	12.787	2.3	102.3
PFDoDS	2.425	2.224	-8.3	91.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.658	-6.8	93.2
d7-MeFOSE	25.000	24.061	-3.8	96.2
d9-EtFOSE	25.000	23.695	-5.2	94.8
d5-EtFOSA	2.500	2.346	-6.2	93.8
NFDHA	5.000	4.949	-1.0	99.0
PFMBA	5.000	5.024	0.5	100.5
PFMPA	5.000	5.091	1.8	101.8
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.530	1.8	101.8

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICV11
 Lab FileID: 7Q351.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121323_1633_S7Q11\S7Q11.batch.bin

Level ID: Calibration File
 1:D:\MassHunter\Data\121323_1633_S7Q11\7Q341.d
 2:D:\MassHunter\Data\121323_1633_S7Q11\7Q342.d
 3:D:\MassHunter\Data\121323_1633_S7Q11\7Q343.d
 4:D:\MassHunter\Data\121323_1633_S7Q11\7Q344.d
 5:D:\MassHunter\Data\121323_1633_S7Q11\7Q345.d
 6:D:\MassHunter\Data\121323_1633_S7Q11\7Q346.d
 7:D:\MassHunter\Data\121323_1633_S7Q11\7Q347.d
 8:D:\MassHunter\Data\121323_1633_S7Q11\7Q348.d

Data File: 7Q351
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.420	8.4	108.4
13C2-6:2FTS	5.000	5.132	2.6	102.6
13C2-8:2FTS	5.000	4.711	-5.8	94.2
13C2-PFDoDA	1.250	1.297	3.8	103.8
13C2-PFTeDA	1.250	1.249	-0.1	99.9
13C3-PFBS	2.500	2.331	-6.8	93.2
13C3-PFHxS	2.500	2.342	-6.3	93.7
13C4-PFBA	10.000	9.986	-0.1	99.9
13C4-PFHpA	2.500	2.453	-1.9	98.1
13C5-PFHxA	2.500	2.482	-0.7	99.3
13C5-PFPeA	5.000	5.061	1.2	101.2
13C6-PFDA	1.250	1.194	-4.5	95.5
13C7-PFUnDA	1.250	1.265	1.2	101.2
13C8-FOSA	2.500	2.388	-4.5	95.5
13C8-PFOA	2.500	2.555	2.2	102.2
13C8-PFOS	2.500	2.425	-3.0	97.0
13C9-PFNA	1.250	1.261	0.8	100.8
4:2FTS	20.000	18.859	-5.7	94.3
6:2FTS	20.000	21.367	6.8	106.8
8:2FTS	20.000	18.654	-6.7	93.3
d3-MeFOSAA	5.000	4.598	-8.0	92.0
EtFOSAA	20.000	20.254	1.3	101.3
FOSA	20.000	18.916	-5.4	94.6
MeFOSAA	20.000	20.842	4.2	104.2
PFBA	20.000	18.918	-5.4	94.6
PFBS	20.000	20.130	0.7	100.7
PFDA	20.000	21.100	5.5	105.5
PFDoDA	20.000	17.219	-13.9	86.1
PFDS	20.000	19.113	-4.4	95.6
PFHpA	20.000	19.942	-0.3	99.7
PFHpS	20.000	19.014	-4.9	95.1
PFHxA	20.000	21.085	5.4	105.4
PFHxS	20.000	21.837	9.2	109.2
PFNA	20.000	20.629	3.1	103.1
PFNS	20.000	18.164	-9.2	90.8
PFOA	20.000	18.996	-5.0	95.0
PFOS	20.000	17.875	-10.6	89.4

Initial Calibration Verification

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-ICV11
 Lab FileID: 7Q351.D

PFPeA	20.000	19.551	-2.2	97.8
PFPeS	20.000	21.105	5.5	105.5
PFTeDA	20.000	20.939	4.7	104.7
PFTrDA	20.000	17.704	-11.5	88.5
PFUnDA	20.000	18.633	-6.8	93.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	21.820	9.1	109.1
13C3-HFPO-DA	10.000	9.312	-6.9	93.1
9C1-PF3ONS	20.000	21.257	6.3	106.3
ADONA	20.000	22.088	10.4	110.4
HFPO-DA	20.000	22.585	12.9	112.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	19.731	-1.3	98.7
5:3FTCA	20.000	21.034	5.2	105.2
7:3FTCA	20.000	18.901	-5.5	94.5
d3-MeFOSA	2.500	2.418	-3.3	96.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	17.385	-13.1	86.9
EtFOSE	100.000	104.205	4.2	104.2
MeFOSA	20.000	18.988	-5.1	94.9
MeFOSE	100.000	103.220	3.2	103.2
PFDoDS	20.000	18.216	-8.9	91.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.624	-7.5	92.5
d7-MeFOSE	25.000	24.055	-3.8	96.2
d9-EtFOSE	25.000	22.951	-8.2	91.8
d5-EtFOSA	2.500	2.455	-1.8	98.2
NFDHA	20.000	18.932	-5.3	94.7
PFMBA	20.000	19.707	-1.5	98.5
PFMPA	20.000	19.685	-1.6	98.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	17.827	-10.9	89.1

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-CC11
 Lab FileID: 7Q352.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121323_1633_S7Q11\S7Q11.batch.bin

Level ID: Calibration File
 1:D:\MassHunter\Data\121323_1633_S7Q11\7Q341.d
 2:D:\MassHunter\Data\121323_1633_S7Q11\7Q342.d
 3:D:\MassHunter\Data\121323_1633_S7Q11\7Q343.d
 4:D:\MassHunter\Data\121323_1633_S7Q11\7Q344.d
 5:D:\MassHunter\Data\121323_1633_S7Q11\7Q345.d
 6:D:\MassHunter\Data\121323_1633_S7Q11\7Q346.d
 7:D:\MassHunter\Data\121323_1633_S7Q11\7Q347.d
 8:D:\MassHunter\Data\121323_1633_S7Q11\7Q348.d

Data File: 7Q352
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	8.372	# 67.4	167.4
13C2-6:2FTS	5.000	5.776	15.5	115.5
13C2-8:2FTS	5.000	6.055	21.1	121.1
13C2-PFDoDA	1.250	1.219	-2.5	97.5
13C2-PFTeDA	1.250	1.278	2.2	102.2
13C3-PFBS	2.500	3.036	21.4	121.4
13C3-PFHxS	2.500	2.352	-5.9	94.1
13C4-PFBA	10.000	9.953	-0.5	99.5
13C4-PFHpA	2.500	2.450	-2.0	98.0
13C5-PFHxA	2.500	2.516	0.6	100.6
13C5-PFPeA	5.000	4.960	-0.8	99.2
13C6-PFDA	1.250	1.265	1.2	101.2
13C7-PFUnDA	1.250	1.198	-4.2	95.8
13C8-FOSA	2.500	2.538	1.5	101.5
13C8-PFOA	2.500	2.495	-0.2	99.8
13C8-PFOS	2.500	2.636	5.4	105.4
13C9-PFNA	1.250	1.254	0.3	100.3
4:2FTS	9.375	9.309	-0.7	99.3
6:2FTS	9.500	9.296	-2.1	97.9
8:2FTS	8.500	9.542	12.3	112.3
d3-MeFOSAA	5.000	4.261	-14.8	85.2
EtFOSAA	2.500	2.618	4.7	104.7
FOSA	2.500	2.562	2.5	102.5
MeFOSAA	2.500	2.890	15.6	115.6
PFBA	10.000	10.378	3.8	103.8
PFBS	2.218	2.373	7.0	107.0
PFDA	2.500	2.454	-1.8	98.2
PFDoDA	2.500	2.521	0.9	100.9
PFDS	2.413	2.234	-7.4	92.6
PFHpA	2.500	2.541	1.6	101.6
PFHpS	2.383	2.238	-6.1	93.9
PFHxA	2.500	2.514	0.6	100.6
PFHxS	2.285	2.498	9.3	109.3
PFNA	2.500	2.384	-4.6	95.4
PFNS	2.405	2.142	-11.0	89.0
PFOA	2.500	2.530	1.2	101.2
PFOS	2.320	2.128	-8.3	91.7

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-CC11
 Lab FileID: 7Q352.D

PFPeA	5.000	5.206	4.1	104.1
PFPeS	2.353	3.069	# 30.4	130.4
PFTeDA	2.500	2.556	2.2	102.2
PFTTrDA	2.500	2.646	5.9	105.9
PFUnDA	2.500	2.541	1.6	101.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.138	8.7	108.7
13C3-HFPO-DA	10.000	9.557	-4.4	95.6
9C1-PF3ONS	4.675	4.958	6.0	106.0
ADONA	4.725	4.973	5.3	105.3
HFPO-DA	5.000	5.617	12.3	112.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.717	1.9	101.9
5:3FTCA	62.400	62.399	0.0	100.0
7:3FTCA	62.400	64.989	4.1	104.1
d3-MeFOSA	2.500	2.547	1.9	101.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.158	3.2	103.2
EtFOSE	12.500	13.061	4.5	104.5
MeFOSA	5.000	5.042	0.8	100.8
MeFOSE	12.500	12.772	2.2	102.2
PFDoDS	2.425	2.264	-6.6	93.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.493	-10.1	89.9
d7-MeFOSE	25.000	25.791	3.2	103.2
d9-EtFOSE	25.000	25.002	0.0	100.0
d5-EtFOSA	2.500	2.502	0.1	100.1
NFDHA	5.000	4.973	-0.5	99.5
PFMBA	5.000	5.302	6.0	106.0
PFMPA	5.000	5.151	3.0	103.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.703	5.7	105.7

CC Criteria: +/- 30%

6.9.11
6

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-CC11
 Lab FileID: 7Q353.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121323_1633_S7Q11\S7Q11.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\121323_1633_S7Q11\7Q341.d
 2:D:\MassHunter\Data\121323_1633_S7Q11\7Q342.d
 3:D:\MassHunter\Data\121323_1633_S7Q11\7Q343.d
 4:D:\MassHunter\Data\121323_1633_S7Q11\7Q344.d
 5:D:\MassHunter\Data\121323_1633_S7Q11\7Q345.d
 6:D:\MassHunter\Data\121323_1633_S7Q11\7Q346.d
 7:D:\MassHunter\Data\121323_1633_S7Q11\7Q347.d
 8:D:\MassHunter\Data\121323_1633_S7Q11\7Q348.d

Data File: 7Q353
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.422	28.4	128.4
13C2-6:2FTS	5.000	5.916	18.3	118.3
13C2-8:2FTS	5.000	5.428	8.6	108.6
13C2-PFDoDA	1.250	1.175	-6.0	94.0
13C2-PFTeDA	1.250	1.224	-2.1	97.9
13C3-PFBS	2.500	2.486	-0.6	99.4
13C3-PFHxS	2.500	2.499	0.0	100.0
13C4-PFBA	10.000	9.996	0.0	100.0
13C4-PFHpA	2.500	2.549	2.0	102.0
13C5-PFHxA	2.500	2.585	3.4	103.4
13C5-PFPeA	5.000	5.090	1.8	101.8
13C6-PFDA	1.250	1.249	-0.1	99.9
13C7-PFUnDA	1.250	1.229	-1.7	98.3
13C8-FOSA	2.500	2.423	-3.1	96.9
13C8-PFOA	2.500	2.496	-0.2	99.8
13C8-PFOS	2.500	2.527	1.1	101.1
13C9-PFNA	1.250	1.232	-1.4	98.6
4:2FTS	0.750	0.638	-14.9	85.1
6:2FTS	0.760	0.712	-6.3	93.7
8:2FTS	0.680	0.679	-0.1	99.9
d3-MeFOSAA	5.000	4.944	-1.1	98.9
EtFOSAA	0.200	0.246	23.0	123.0
FOSA	0.200	0.206	3.2	103.2
MeFOSAA	0.200	0.213	6.5	106.5
PFBA	0.800	0.743	-7.2	92.8
PFBS	0.177	0.176	-0.5	99.5
PFDA	0.200	0.200	-0.1	99.9
PFDoDA	0.200	0.204	2.0	102.0
PFDS	0.193	0.192	-0.6	99.4
PFHpA	0.200	0.200	0.1	100.1
PFHpS	0.191	0.177	-7.4	92.6
PFHxA	0.200	0.191	-4.5	95.5
PFHxS	0.183	0.193	5.6	105.6
PFNA	0.200	0.187	-6.7	93.3
PFNS	0.192	0.178	-7.1	92.9
PFOA	0.200	0.189	-5.4	94.6
PFOS	0.186	0.203	9.2	109.2

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-CC11
 Lab FileID: 7Q353.D

PFPeA	0.400	0.373	-6.7	93.3
PFPeS	0.188	0.177	-5.8	94.2
PFTeDA	0.200	0.179	-10.3	89.7
PFTrDA	0.200	0.185	-7.7	92.3
PFUnDA	0.200	0.174	-13.0	87.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.323	-14.5	85.5
13C3-HFPO-DA	10.000	9.826	-1.7	98.3
9C1-PF3ONS	0.374	0.331	-11.5	88.5
ADONA	0.378	0.338	-10.7	89.3
HFPO-DA	0.400	0.415	3.8	103.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.833	-16.5	83.5
5:3FTCA	4.992	4.255	-14.8	85.2
7:3FTCA	4.992	4.278	-14.3	85.7
d3-MeFOSA	2.500	2.430	-2.8	97.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.364	-9.0	91.0
EtFOSE	1.000	0.960	-4.0	96.0
MeFOSA	0.400	0.369	-7.8	92.2
MeFOSE	1.000	0.959	-4.1	95.9
PFDoDS	0.194	0.203	4.6	104.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.782	-4.4	95.6
d7-MeFOSE	25.000	25.484	1.9	101.9
d9-EtFOSE	25.000	25.124	0.5	100.5
d5-EtFOSA	2.500	2.440	-2.4	97.6
NFDHA	0.400	0.350	-12.6	87.4
PFMBA	0.400	0.366	-8.4	91.6
PFMPA	0.400	0.358	-10.5	89.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.315	-11.5	88.5

CC Criteria: +/- 30%

6.9.12
6

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-CC11
 Lab FileID: 7Q364.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\121323_1633_S7Q11\S7Q11.batch.bin

Level ID: Calibration File
 1:D:\MassHunter\Data\121323_1633_S7Q11\7Q341.d
 2:D:\MassHunter\Data\121323_1633_S7Q11\7Q342.d
 3:D:\MassHunter\Data\121323_1633_S7Q11\7Q343.d
 4:D:\MassHunter\Data\121323_1633_S7Q11\7Q344.d
 5:D:\MassHunter\Data\121323_1633_S7Q11\7Q345.d
 6:D:\MassHunter\Data\121323_1633_S7Q11\7Q346.d
 7:D:\MassHunter\Data\121323_1633_S7Q11\7Q347.d
 8:D:\MassHunter\Data\121323_1633_S7Q11\7Q348.d

Data File: 7Q364
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.105	2.1	102.1
13C2-6:2FTS	5.000	4.809	-3.8	96.2
13C2-8:2FTS	5.000	5.173	3.5	103.5
13C2-PFDoDA	1.250	1.274	1.9	101.9
13C2-PFTeDA	1.250	1.236	-1.2	98.8
13C3-PFBS	2.500	2.438	-2.5	97.5
13C3-PFHxS	2.500	2.413	-3.5	96.5
13C4-PFBA	10.000	9.930	-0.7	99.3
13C4-PFHpA	2.500	2.458	-1.7	98.3
13C5-PFHxA	2.500	2.496	-0.2	99.8
13C5-PFPeA	5.000	4.991	-0.2	99.8
13C6-PFDA	1.250	1.256	0.5	100.5
13C7-PFUnDA	1.250	1.265	1.2	101.2
13C8-FOSA	2.500	2.457	-1.7	98.3
13C8-PFOA	2.500	2.512	0.5	100.5
13C8-PFOS	2.500	2.436	-2.6	97.4
13C9-PFNA	1.250	1.208	-3.4	96.6
4:2FTS	9.375	9.345	-0.3	99.7
6:2FTS	9.500	9.854	3.7	103.7
8:2FTS	8.500	8.948	5.3	105.3
d3-MeFOSAA	5.000	4.700	-6.0	94.0
EtFOSAA	2.500	2.582	3.3	103.3
FOSA	2.500	2.416	-3.4	96.6
MeFOSAA	2.500	2.935	17.4	117.4
PFBA	10.000	10.039	0.4	100.4
PFBS	2.218	2.250	1.4	101.4
PFDA	2.500	2.461	-1.6	98.4
PFDoDA	2.500	2.522	0.9	100.9
PFDS	2.413	2.315	-4.1	95.9
PFHpA	2.500	2.569	2.7	102.7
PFHpS	2.383	2.284	-4.1	95.9
PFHxA	2.500	2.495	-0.2	99.8
PFHxS	2.285	2.379	4.1	104.1
PFNA	2.500	2.570	2.8	102.8
PFNS	2.405	2.267	-5.7	94.3
PFOA	2.500	2.484	-0.6	99.4
PFOS	2.320	2.277	-1.9	98.1

Continuing Calibration Summary

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S7Q11-CC11
 Lab FileID: 7Q364.D

PFPeA	5.000	5.039	0.8	100.8
PFPeS	2.353	2.384	1.3	101.3
PFTeDA	2.500	2.591	3.6	103.6
PFTTrDA	2.500	2.484	-0.7	99.3
PFUnDA	2.500	2.543	1.7	101.7
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.204	10.1	110.1
13C3-HFPO-DA	10.000	9.198	-8.0	92.0
9C1-PF3ONS	4.675	5.283	13.0	113.0
ADONA	4.725	5.272	11.6	111.6
HFPO-DA	5.000	5.787	15.7	115.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.270	-1.7	98.3
5:3FTCA	62.400	63.253	1.4	101.4
7:3FTCA	62.400	61.634	-1.2	98.8
d3-MeFOSA	2.500	2.324	-7.0	93.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.222	4.4	104.4
EtFOSE	12.500	12.813	2.5	102.5
MeFOSA	5.000	5.124	2.5	102.5
MeFOSE	12.500	12.809	2.5	102.5
PFDoDS	2.425	2.351	-3.0	97.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.850	-3.0	97.0
d7-MeFOSE	25.000	23.739	-5.0	95.0
d9-EtFOSE	25.000	23.688	-5.2	94.8
d5-EtFOSA	2.500	2.295	-8.2	91.8
NFDHA	5.000	5.041	0.8	100.8
PFMBA	5.000	5.137	2.7	102.7
PFMPA	5.000	5.034	0.7	100.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.588	3.1	103.1

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q804	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q804-RT	4Q54849.D	12/08/23 10:54	n/a	Retention Time Marker
S4Q804-RT	4Q54850.D	12/08/23 11:08	n/a	Retention Time Marker
S4Q804-IC804	4Q54851.D	12/08/23 11:23	n/a	Mass Calibration Verification
S4Q804-IC804	4Q54852.D	12/08/23 11:38	n/a	Initial cal 1
S4Q804-IC804	4Q54853.D	12/08/23 11:53	n/a	Initial cal 2
S4Q804-IC804	4Q54854.D	12/08/23 12:07	n/a	Initial cal 3
S4Q804-ICC804	4Q54855.D	12/08/23 12:22	n/a	Initial cal 4
S4Q804-IC804	4Q54856.D	12/08/23 12:37	n/a	Initial cal 5
S4Q804-IC804	4Q54857.D	12/08/23 12:52	n/a	Initial cal 6
S4Q804-IC804	4Q54858.D	12/08/23 13:06	n/a	Initial cal 7
S4Q804-IC804	4Q54859.D	12/08/23 13:21	n/a	Initial cal 8
S4Q804-IBLK	4Q54860.D	12/08/23 13:36	n/a	Instrument Blank
S4Q804-IBLK	4Q54860.D	12/08/23 13:36	n/a	Instrument Blank
S4Q804-ICV804	4Q54861.D	12/08/23 13:51	n/a	Initial cal verification 4
S4Q804-ICV804	4Q54862.D	12/08/23 14:05	n/a	Initial cal verification 20
S4Q804-CC804	4Q54863.D	12/08/23 14:20	n/a	Continuing cal 4
S4Q804-CC804	4Q54864.D	12/08/23 14:40	n/a	Continuing cal 1.0LL
OP471-BS	4Q54865.D	12/08/23 14:55	OP471	Blank Spike
OP471-LLBS	4Q54866.D	12/08/23 15:10	OP471	Blank Spike
OP471-MB	4Q54867.D	12/08/23 15:24	OP471	Method Blank
ZZZZZZ	4Q54868.D	12/08/23 15:39	OP471	(unrelated sample)
ZZZZZZ	4Q54869.D	12/08/23 15:54	OP471	(unrelated sample)
ZZZZZZ	4Q54870.D	12/08/23 16:09	OP471	(unrelated sample)
ZZZZZZ	4Q54871.D	12/08/23 16:24	OP471	(unrelated sample)
S4Q804-CC804	4Q54872.D	12/08/23 16:39	n/a	Continuing cal 4
S4Q804-ICCB	4Q54873.D	12/08/23 16:53	n/a	Continuing Calibration Blank
S4Q804-ICCB	4Q54873.D	12/08/23 16:53	n/a	Continuing Calibration Blank
S4Q804-CC804	4Q54881.D	12/08/23 18:52	n/a	Continuing cal 4
S4Q804-ICCB	4Q54882.D	12/08/23 19:06	n/a	Continuing Calibration Blank
S4Q804-ICCB	4Q54882.D	12/08/23 19:06	n/a	Continuing Calibration Blank
OP495-BS	4Q54883.D	12/08/23 19:21	OP495	Blank Spike
OP495-LLBS	4Q54884.D	12/08/23 19:36	OP495	Blank Spike
OP495-MB	4Q54885.D	12/08/23 19:51	OP495	Method Blank
ZZZZZZ	4Q54886.D	12/08/23 20:05	OP495	(unrelated sample)
ZZZZZZ	4Q54887.D	12/08/23 20:20	OP495	(unrelated sample)
FC11715-2	4Q54888.D	12/08/23 20:35	OP495	(used for QC only; not part of job FC11753)
OP495-MS	4Q54889.D	12/08/23 20:50	OP495	Matrix Spike
FC11715-3	4Q54890.D	12/08/23 21:04	OP495	(used for QC only; not part of job FC11753)
OP495-DUP	4Q54891.D	12/08/23 21:19	OP495	Duplicate
ZZZZZZ	4Q54892.D	12/08/23 21:34	OP495	(unrelated sample)
S4Q804-CC804	4Q54893.D	12/08/23 21:49	n/a	Continuing cal 4
S4Q804-ICCB	4Q54894.D	12/08/23 22:03	n/a	Continuing Calibration Blank
OP496-BS	4Q54895.D	12/08/23 22:18	OP496	Blank Spike
OP496-LLBS	4Q54896.D	12/08/23 22:33	OP496	Blank Spike
OP496-MB	4Q54897.D	12/08/23 22:48	OP496	Method Blank
ZZZZZZ	4Q54898.D	12/08/23 23:02	OP496	(unrelated sample)

Run Sequence Report

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q804	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
ZZZZZZ	4Q54899.D	12/08/23 23:17	OP496	(unrelated sample)
ZZZZZZ	4Q54901.D	12/08/23 23:47	OP496	(unrelated sample)
ZZZZZZ	4Q54902.D	12/09/23 00:01	OP496	(unrelated sample)
FC11673-1	4Q54903.D	12/09/23 00:16	OP496	(used for QC only; not part of job FC11753)
OP496-MS	4Q54904.D	12/09/23 00:31	OP496	Matrix Spike
S4Q804-CC804	4Q54905.D	12/09/23 00:46	n/a	Continuing cal 4
S4Q804-ICCB	4Q54906.D	12/09/23 01:00	n/a	Continuing Calibration Blank
FC11673-2	4Q54907.D	12/09/23 01:15	OP496	(used for QC only; not part of job FC11753)
OP496-DUP	4Q54908.D	12/09/23 01:30	OP496	Duplicate
ZZZZZZ	4Q54909.D	12/09/23 01:45	OP496	(unrelated sample)
ZZZZZZ	4Q54910.D	12/09/23 01:59	OP496	(unrelated sample)
ZZZZZZ	4Q54911.D	12/09/23 02:14	OP496	(unrelated sample)
OP519-BS	4Q54912.D	12/09/23 02:29	OP519	Blank Spike
OP519-LLBS	4Q54913.D	12/09/23 02:44	OP519	Blank Spike
OP519-MB	4Q54914.D	12/09/23 02:59	OP519	Method Blank
ZZZZZZ	4Q54915.D	12/09/23 03:13	OP519	(unrelated sample)
ZZZZZZ	4Q54916.D	12/09/23 03:28	OP519	(unrelated sample)
S4Q804-CC804	4Q54917.D	12/09/23 03:43	n/a	Continuing cal 4
S4Q804-ICCB	4Q54918.D	12/09/23 03:58	n/a	Continuing Calibration Blank
ZZZZZZ	4Q54919.D	12/09/23 04:12	OP519	(unrelated sample)
ZZZZZZ	4Q54920.D	12/09/23 04:27	OP519	(unrelated sample)
ZZZZZZ	4Q54921.D	12/09/23 04:42	OP519	(unrelated sample)
ZZZZZZ	4Q54922.D	12/09/23 04:57	OP519	(unrelated sample)
ZZZZZZ	4Q54923.D	12/09/23 05:11	OP519	(unrelated sample)
ZZZZZZ	4Q54924.D	12/09/23 05:26	OP519	(unrelated sample)
ZZZZZZ	4Q54925.D	12/09/23 05:41	OP519	(unrelated sample)
ZZZZZZ	4Q54926.D	12/09/23 05:56	OP519	(unrelated sample)
ZZZZZZ	4Q54927.D	12/09/23 06:10	OP519	(unrelated sample)
FC11645-12	4Q54928.D	12/09/23 06:25	OP519	(used for QC only; not part of job FC11753)
S4Q804-CC804	4Q54929.D	12/09/23 06:40	n/a	Continuing cal 4
S4Q804-ICCB	4Q54930.D	12/09/23 06:55	n/a	Continuing Calibration Blank
OP519-MS	4Q54931.D	12/09/23 07:10	OP519	Matrix Spike
ZZZZZZ	4Q54932.D	12/09/23 07:24	OP519	(unrelated sample)
FC11645-14	4Q54933.D	12/09/23 07:39	OP519	(used for QC only; not part of job FC11753)
OP519-DUP	4Q54934.D	12/09/23 07:54	OP519	Duplicate
ZZZZZZ	4Q54935.D	12/09/23 08:09	OP519	(unrelated sample)
ZZZZZZ	4Q54936.D	12/09/23 08:23	OP519	(unrelated sample)
ZZZZZZ	4Q54937.D	12/09/23 08:38	OP519	(unrelated sample)
ZZZZZZ	4Q54938.D	12/09/23 08:53	OP519	(unrelated sample)
S4Q804-ECC804	4Q54940.D	12/09/23 09:22	n/a	Ending cal 4
S4Q804-ICCB	4Q54941.D	12/09/23 09:37	n/a	Continuing Calibration Blank

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Run Sequence Report

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q805	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q805-RT	4Q54944.D	12/10/23 14:20	n/a	Retention Time Marker
S4Q805-RT	4Q54945.D	12/10/23 14:35	n/a	Retention Time Marker
S4Q805-IBLK	4Q54947.D	12/10/23 15:05	n/a	Instrument Blank
S4Q805-IBLK	4Q54947.D	12/10/23 15:05	n/a	Instrument Blank
S4Q805-CC804	4Q54948.D	12/10/23 15:19	n/a	Continuing cal 4
S4Q805-CC804	4Q54949.D	12/10/23 15:34	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q54950.D	12/10/23 15:49	OP519	(unrelated sample)
ZZZZZZ	4Q54953.D	12/10/23 16:34	OP519	(unrelated sample)
S4Q805-CC804	4Q54954.D	12/10/23 16:48	n/a	Continuing cal 4
S4Q805-ICCB	4Q54955.D	12/10/23 17:03	n/a	Continuing Calibration Blank
OP518-BS	4Q54956.D	12/10/23 17:18	OP518	Blank Spike
OP518-LLBS	4Q54957.D	12/10/23 17:33	OP518	Blank Spike
OP518-MB	4Q54958.D	12/10/23 17:47	OP518	Method Blank
ZZZZZZ	4Q54959.D	12/10/23 18:02	OP518	(unrelated sample)
ZZZZZZ	4Q54960.D	12/10/23 18:17	OP518	(unrelated sample)
ZZZZZZ	4Q54961.D	12/10/23 18:32	OP518	(unrelated sample)
ZZZZZZ	4Q54962.D	12/10/23 18:46	OP518	(unrelated sample)
ZZZZZZ	4Q54963.D	12/10/23 19:01	OP518	(unrelated sample)
S4Q805-CC804	4Q54964.D	12/10/23 19:16	n/a	Continuing cal 4
S4Q805-ICCB	4Q54965.D	12/10/23 19:31	n/a	Continuing Calibration Blank
OP523-BS	4Q54966.D	12/10/23 19:45	OP523	Blank Spike
OP523-LLBS	4Q54967.D	12/10/23 20:00	OP523	Blank Spike
OP523-MB	4Q54968.D	12/10/23 20:15	OP523	Method Blank
ZZZZZZ	4Q54969.D	12/10/23 20:30	OP523	(unrelated sample)
FC11645-21	4Q54970.D	12/10/23 20:44	OP523	(used for QC only; not part of job FC11753)
OP523-MS	4Q54971.D	12/10/23 20:59	OP523	Matrix Spike
FC11645-22	4Q54972.D	12/10/23 21:14	OP523	(used for QC only; not part of job FC11753)
ZZZZZZ	4Q54974.D	12/10/23 21:44	OP523	(unrelated sample)
S4Q805-CC804	4Q54976.D	12/10/23 22:13	n/a	Continuing cal 4
S4Q805-ICCB	4Q54977.D	12/10/23 22:28	n/a	Continuing Calibration Blank
ZZZZZZ	4Q54978.D	12/10/23 22:43	OP523	(unrelated sample)
ZZZZZZ	4Q54979.D	12/10/23 22:57	OP523	(unrelated sample)
ZZZZZZ	4Q54980.D	12/10/23 23:12	OP523	(unrelated sample)
ZZZZZZ	4Q54981.D	12/10/23 23:27	OP523	(unrelated sample)
ZZZZZZ	4Q54982.D	12/10/23 23:42	OP523	(unrelated sample)
ZZZZZZ	4Q54983.D	12/10/23 23:56	OP523	(unrelated sample)
ZZZZZZ	4Q54984.D	12/11/23 00:11	OP523	(unrelated sample)
ZZZZZZ	4Q54985.D	12/11/23 00:26	OP523	(unrelated sample)
ZZZZZZ	4Q54986.D	12/11/23 00:41	OP523	(unrelated sample)
ZZZZZZ	4Q54987.D	12/11/23 00:55	OP523	(unrelated sample)
S4Q805-CC804	4Q54988.D	12/11/23 01:10	n/a	Continuing cal 4
S4Q805-ICCB	4Q54989.D	12/11/23 01:25	n/a	Continuing Calibration Blank
OP524-BS	4Q54990.D	12/11/23 01:40	OP524	Blank Spike
OP524-LLBS	4Q54991.D	12/11/23 01:54	OP524	Blank Spike
OP524-MB	4Q54992.D	12/11/23 02:09	OP524	Method Blank
FC11753-1	4Q54993.D	12/11/23 02:24	OP524	AF-RHMW17S-WGN01LF-2312

Run Sequence Report

Job Number: FC11753
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q805	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
FC11753-2	4Q54994.D	12/11/23 02:39	OP524	AF-RHMW17S-WQEB01-2312
FC11753-3	4Q54995.D	12/11/23 02:54	OP524	AF-RHMW17D-WGN01LF-2312
OP524-MS	4Q54996.D	12/11/23 03:08	OP524	Matrix Spike
FC11753-4	4Q54997.D	12/11/23 03:23	OP524	AF-RHMW17D-WQFB01-2312
FC11753-5	4Q54998.D	12/11/23 03:38	OP524	AF-RHMW17-WGN01LF-2312
OP524-DUP	4Q54999.D	12/11/23 03:53	OP524	Duplicate
S4Q805-ECC804	4Q55000.D	12/11/23 04:07	n/a	Ending cal 4
S4Q805-ICCB	4Q55001.D	12/11/23 04:22	n/a	Continuing Calibration Blank

6.10.2
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Run Sequence Report

Job Number: FC11753
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S7Q11	Method: EPA DRAFT 1633	Instrument ID: GCMS7Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S7Q11-RT	7Q338.D	12/13/23 14:15	n/a	Retention Time Marker
S7Q11-RT	7Q339.D	12/13/23 14:29	n/a	Retention Time Marker
S7Q11-IC11	7Q340.D	12/13/23 14:43	n/a	Mass Calibration Verification
S7Q11-IC11	7Q341.D	12/13/23 14:56	n/a	Initial cal 1
S7Q11-IC11	7Q342.D	12/13/23 15:10	n/a	Initial cal 2
S7Q11-IC11	7Q343.D	12/13/23 15:24	n/a	Initial cal 3
S7Q11-ICC11	7Q344.D	12/13/23 15:38	n/a	Initial cal 4
S7Q11-IC11	7Q345.D	12/13/23 15:52	n/a	Initial cal 5
S7Q11-IC11	7Q346.D	12/13/23 16:05	n/a	Initial cal 6
S7Q11-IC11	7Q347.D	12/13/23 16:19	n/a	Initial cal 7
S7Q11-IC11	7Q348.D	12/13/23 16:33	n/a	Initial cal 8
S7Q11-IBLK	7Q349.D	12/13/23 16:47	n/a	Instrument Blank
S7Q11-IBLK	7Q349.D	12/13/23 16:47	n/a	Instrument Blank
S7Q11-ICV11	7Q350.D	12/13/23 17:01	n/a	Initial cal verification 4
S7Q11-ICV11	7Q351.D	12/13/23 17:14	n/a	Initial cal verification 20
S7Q11-CC11	7Q352.D	12/13/23 17:58	n/a	Continuing cal 4
S7Q11-CC11	7Q353.D	12/13/23 18:12	n/a	Continuing cal 1.0LL
OP576-BS	7Q354.D	12/13/23 18:25	OP576	Blank Spike
OP576-LLBS	7Q355.D	12/13/23 18:39	OP576	Blank Spike
OP576-MB	7Q356.D	12/13/23 18:53	OP576	Method Blank
FC11753-3	7Q357.D	12/13/23 19:07	OP576	AF-RHMW17D-WGN01LF-2312
OP611-BS	7Q358.D	12/13/23 19:20	OP611	Blank Spike
OP611-LLBS	7Q359.D	12/13/23 19:34	OP611	Blank Spike
OP611-MB	7Q360.D	12/13/23 19:48	OP611	Method Blank
ZZZZZZ	7Q361.D	12/13/23 20:02	OP611	(unrelated sample)
ZZZZZZ	7Q362.D	12/13/23 20:16	OP611	(unrelated sample)
ZZZZZZ	7Q363.D	12/13/23 20:29	OP611	(unrelated sample)
S7Q11-CC11	7Q364.D	12/13/23 20:43	n/a	Continuing cal 4
S7Q11-ICCB	7Q365.D	12/13/23 20:57	n/a	Continuing Calibration Blank

MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54993.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 2:24:33 AM
 Sample Name : fc11753-1
 Vial : P3-F8
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.777	216.8 -> 171.9	57089	10.00 µg/L	0.103
M5-PFPeA	4.187	268.3 -> 223.0	35581	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	22387	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	26565	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	40547	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	15606	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	10657	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	12441	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	13300	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	12058	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	6743	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	7391	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	6243	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	6084	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	908	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2122	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2772	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	14322	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	22839	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	12028	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	23857	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	34366	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	4493	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	3688	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5229	2.50 µg/L	0.012
13C3-PFBA	2.768	216.0 -> 172.0	38620	5.00 µg/L	0.090
18O2-PFHxS	7.054	403.0 -> 83.9	3754	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	42340	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	11998	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	15729	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	27611	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	908	5.10 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2122	5.49 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.8%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2772	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C2-PFDoDA	8.880	615.1 -> 570.0	13300	1.11 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.7%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12058	1.01 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.0%		
13C3-PFBS	5.215	302.1 -> 79.9	7391	2.57 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C3-PFHxS	7.042	402.1 -> 79.9	6243	2.65 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C4-PFBA	2.777	216.8 -> 171.9	57089	7.04 µg/L	0.103
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 70.4%	
13C4-PFHpA	6.304	367.1 -> 322.0	26565	2.73 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.2%	
13C5-PFHxA	5.359	318.0 -> 273.0	22387	2.20 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.0%	
13C5-PFPeA	4.187	268.3 -> 223.0	35581	5.61 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C6-PFDA	8.017	519.1 -> 474.1	10657	1.22 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C7-PFUnDA	8.461	570.0 -> 525.1	12441	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C8-FOSA	9.806	506.1 -> 77.8	6743	1.99 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.6%	
13C8-PFOA	6.989	421.1 -> 376.0	40547	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C8-PFOS	8.130	507.1 -> 79.9	6084	2.30 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.9%	
13C9-PFNA	7.521	472.1 -> 427.0	15606	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSAA	8.099	573.2 -> 419.0	14322	4.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	22839	8.98 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.8%	
d3-MeFOSA	11.126	515.0 -> 219.0	3688	1.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.0%	
d5-EtFOSAA	8.296	589.2 -> 419.0	12028	4.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d7-MeFOSE	11.034	623.2 -> 58.9	23857	14.27 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 57.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	34366	18.35 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 73.4%	
d5-EtFOSA	11.398	531.1 -> 219.0	4493	2.03 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.1%	

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	5.362	449.0 -> 98.9	0	µg/L	m	1
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	0	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	8.106	413.0 -> 169.0	264	0.10 µg/L	#	21
		498.9 -> 79.9				
PFPeA	4.391	498.9 -> 98.8	42	µg/L	m	1
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

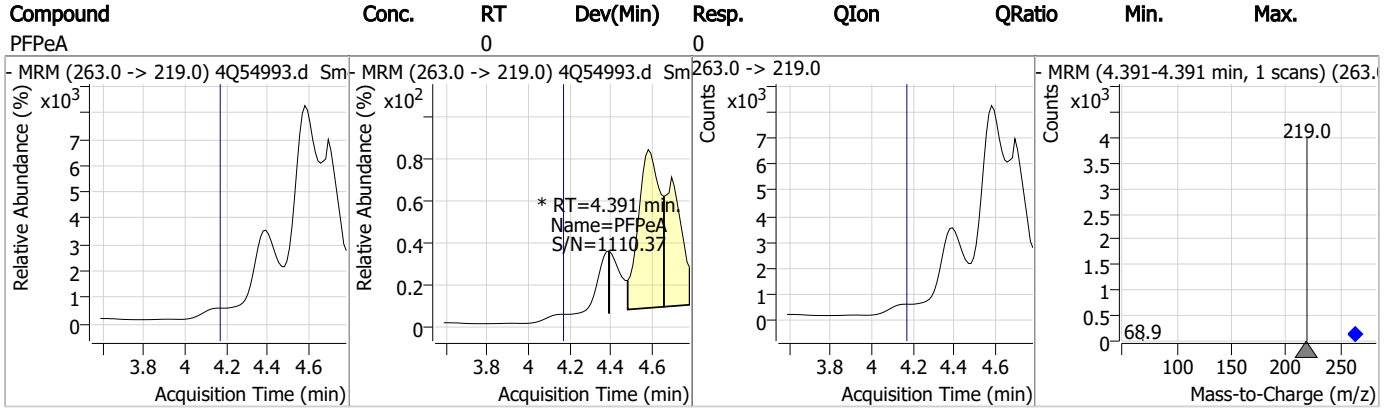
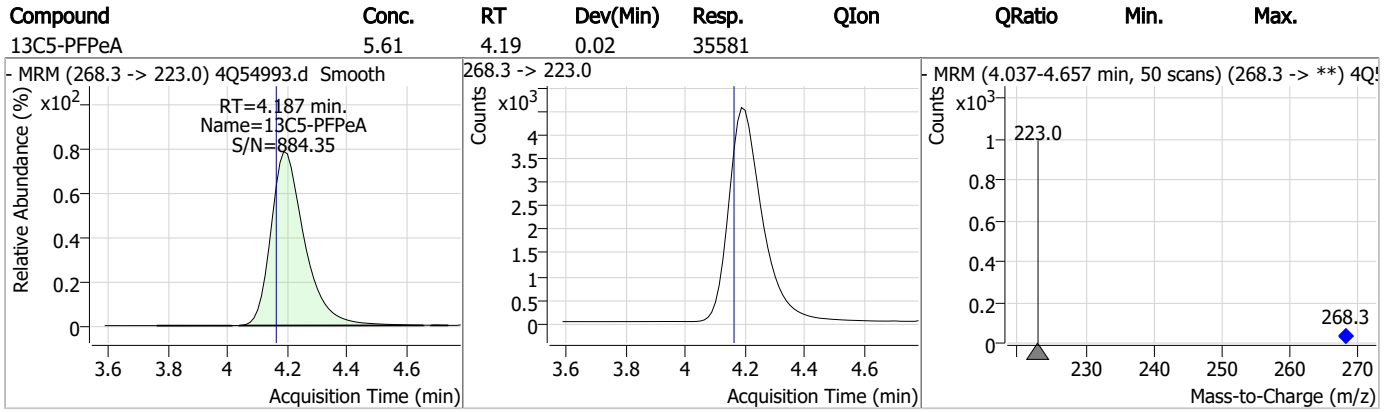
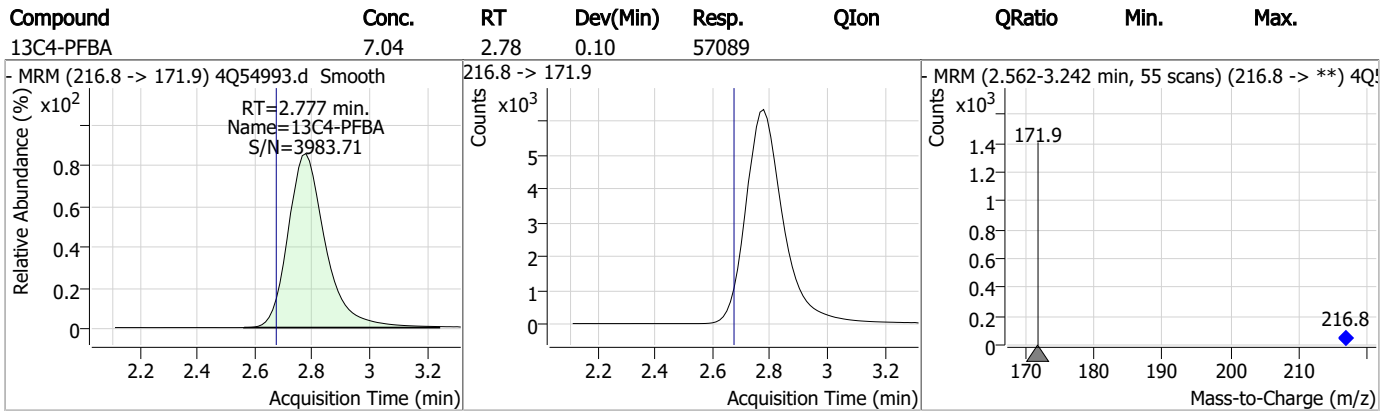
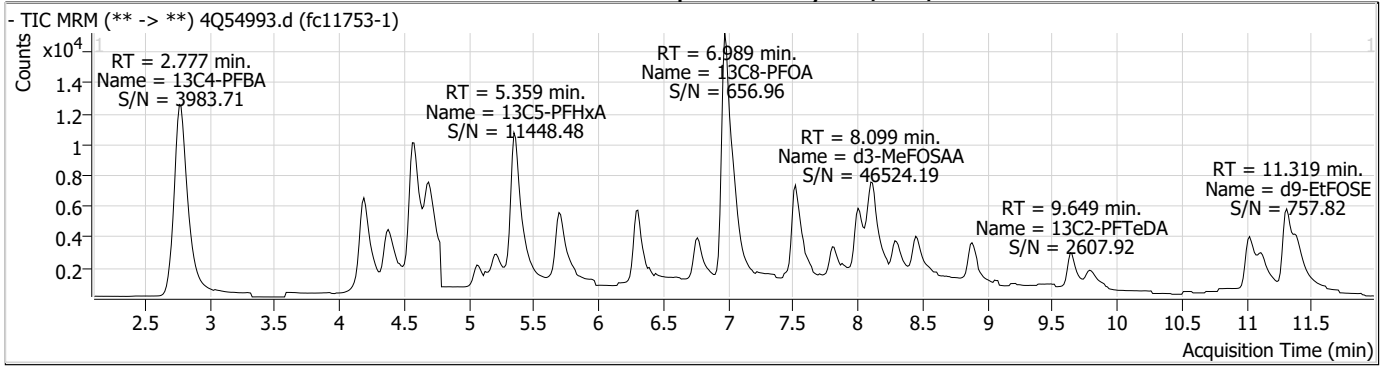
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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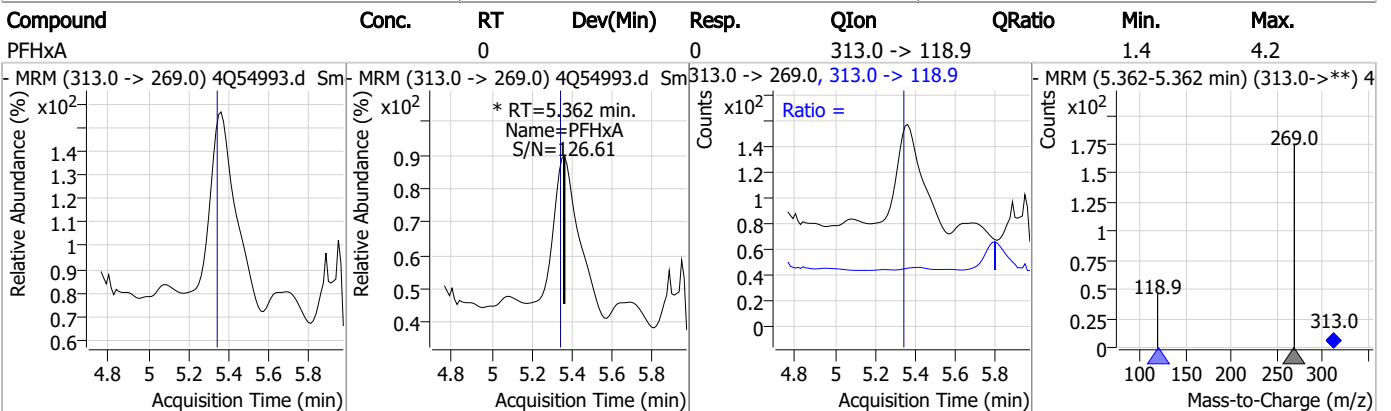
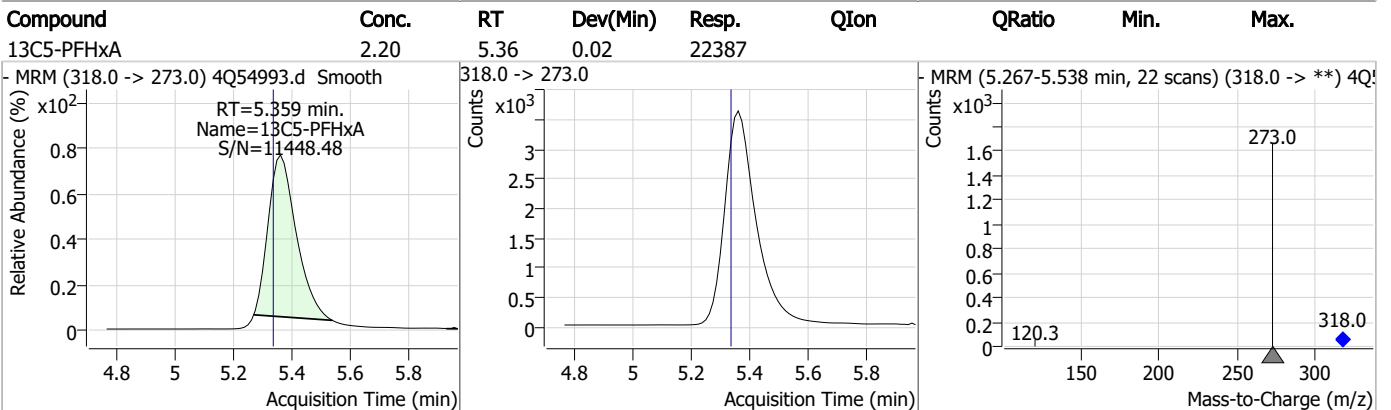
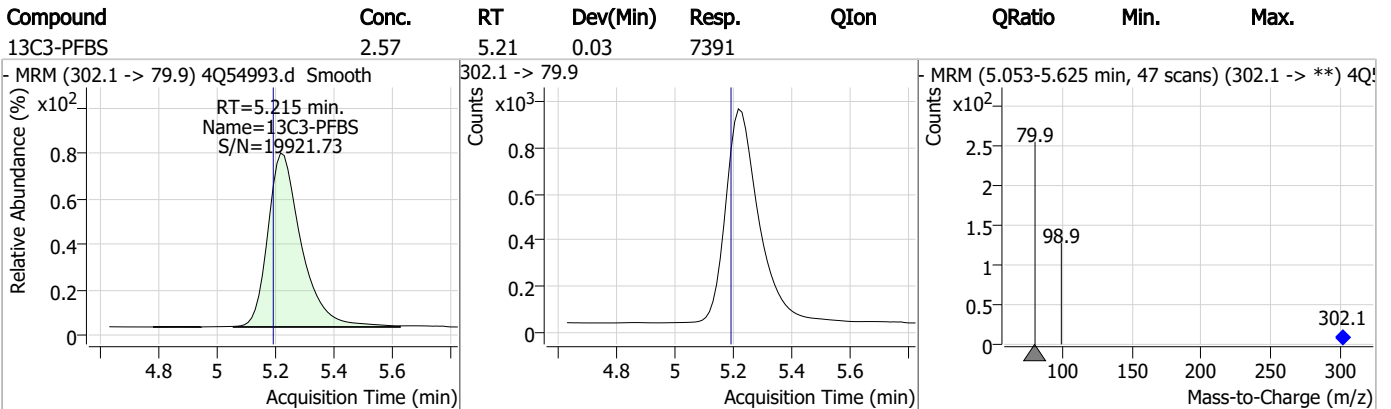
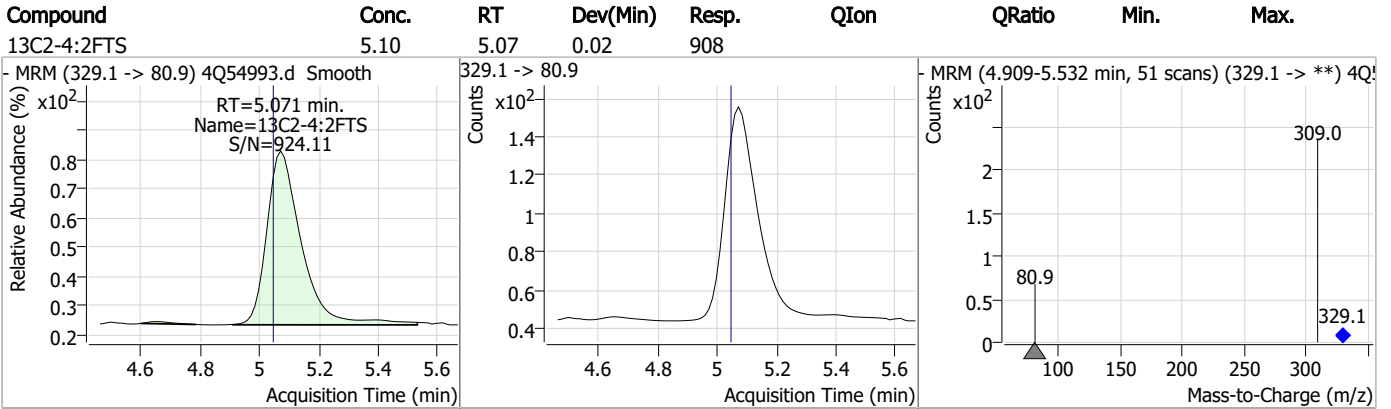
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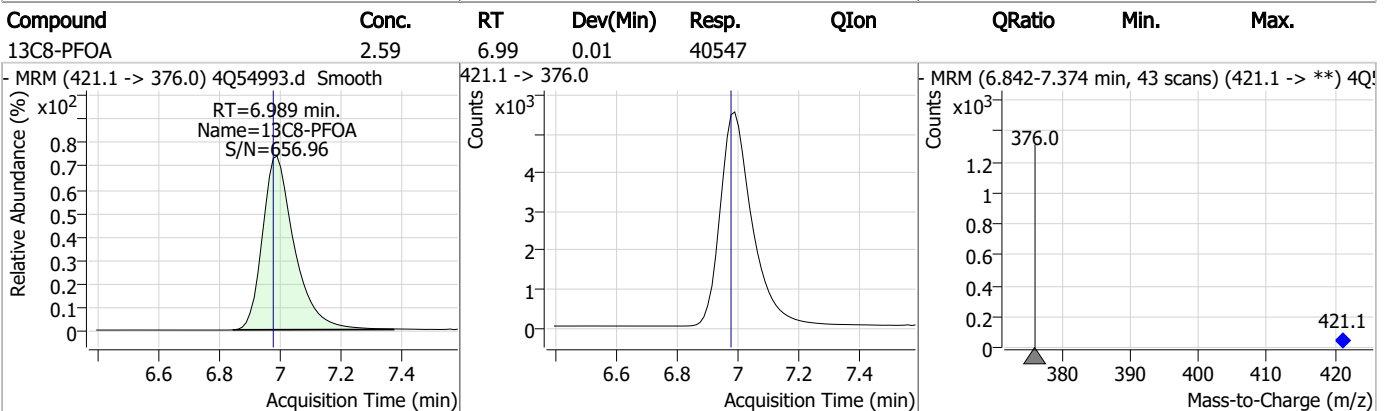
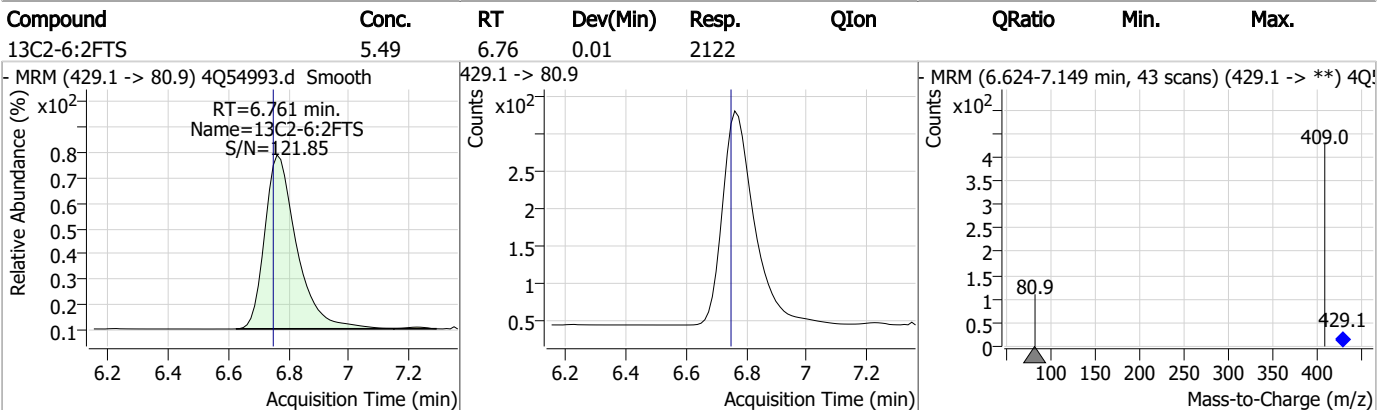
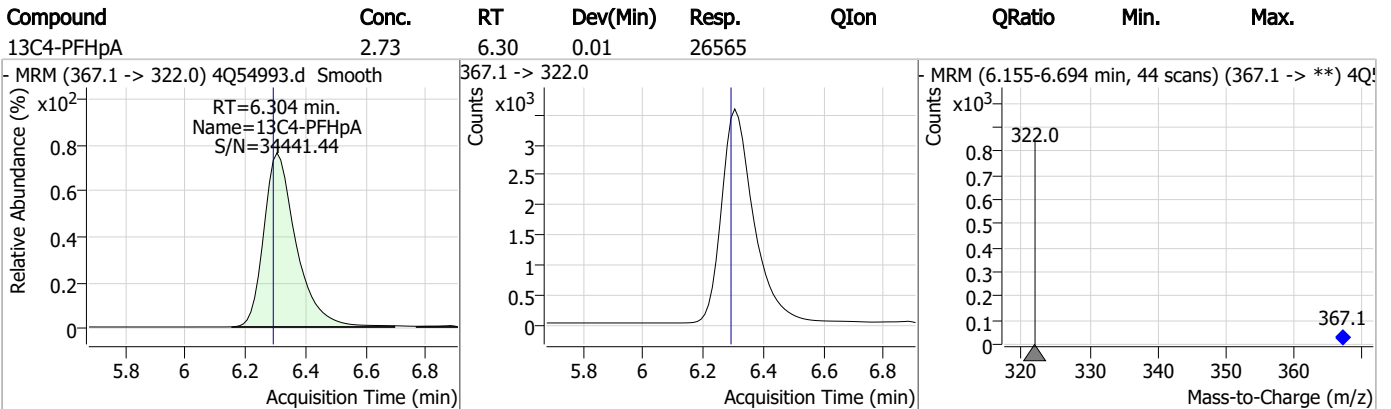
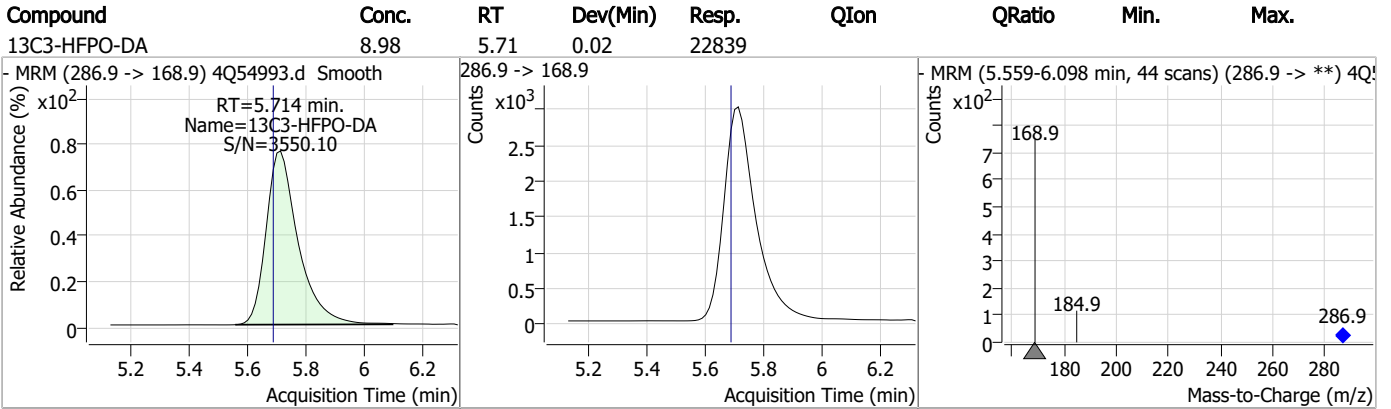
Perfluorinated Compounds by LC/MS/MS



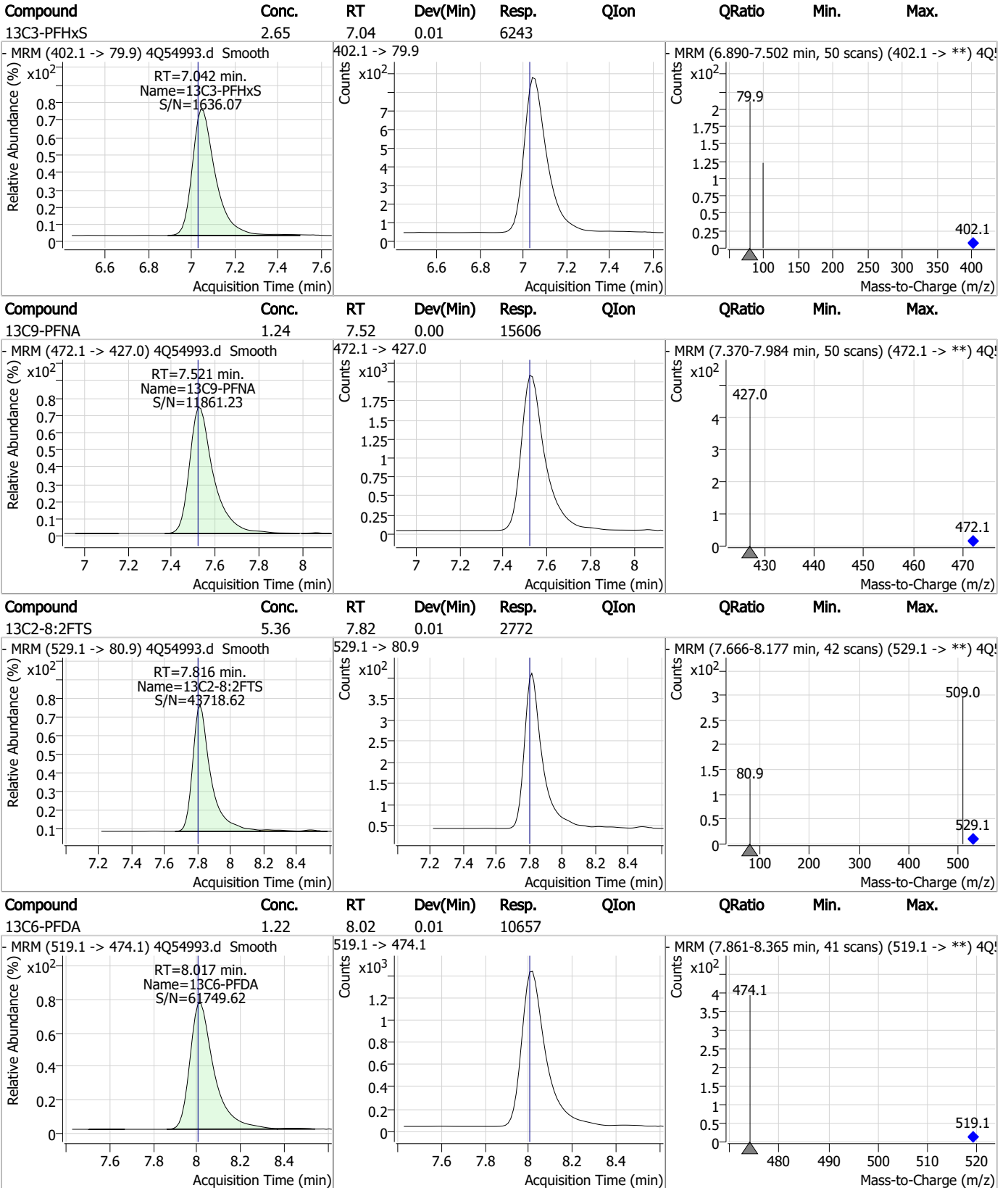
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



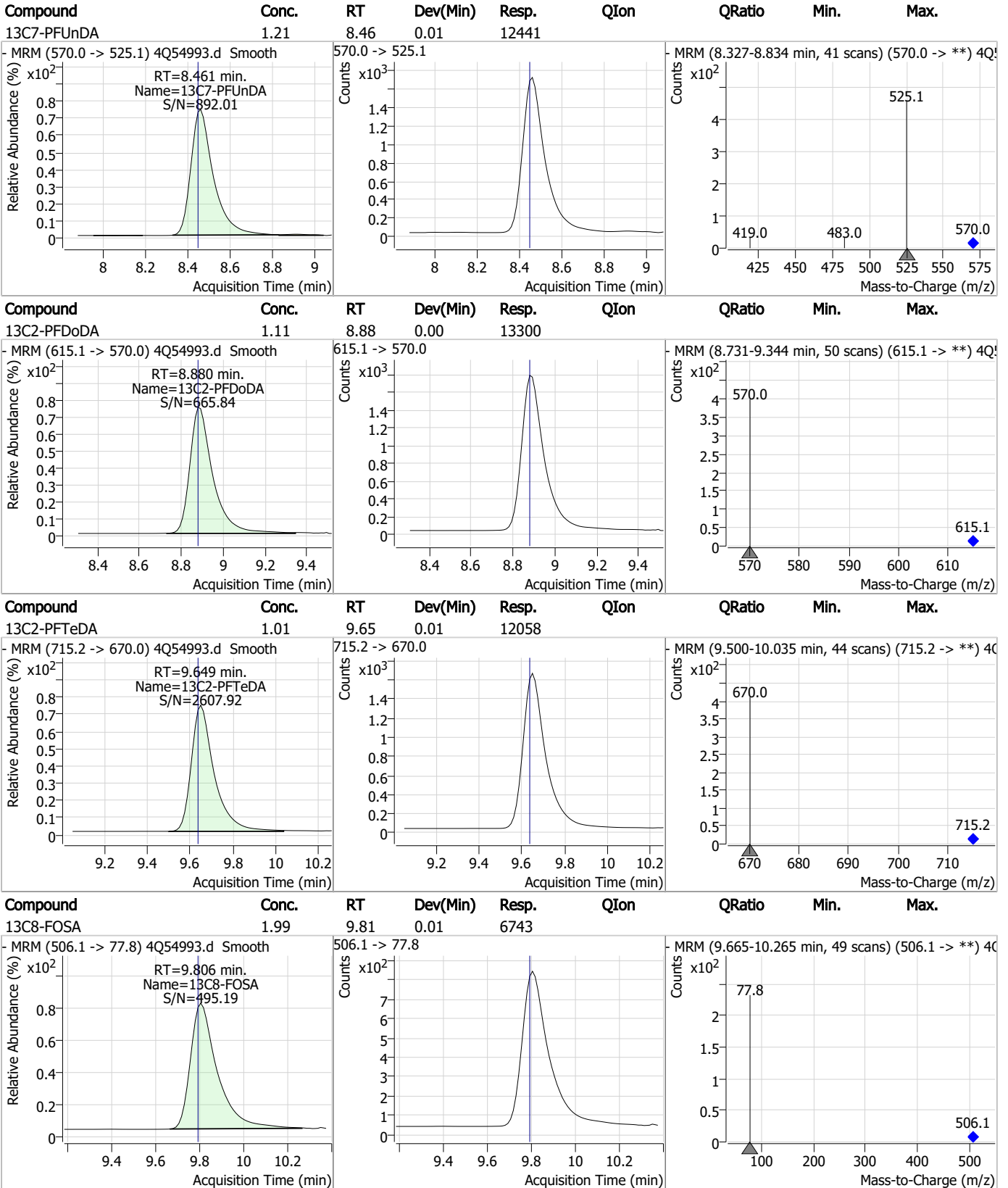
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.93	8.10	0.01	14322				
13C8-PFOS	2.30	8.13	0.01	6084				
PFOS	0.10	8.11	-0.01	264	498.9 -> 98.8	15.9	45.5	136.6
d5-EtFOSAA	4.90	8.30	0.01	12028				

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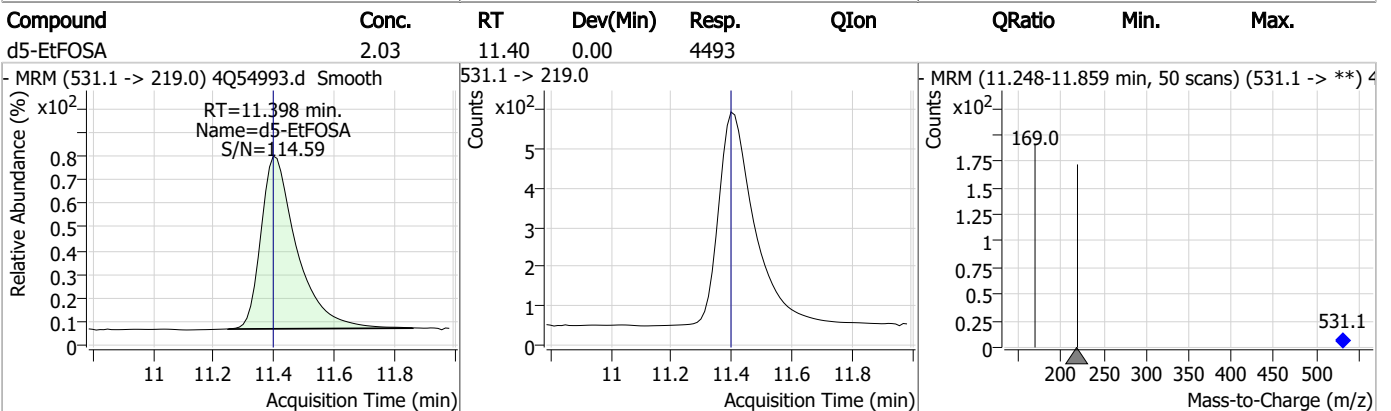
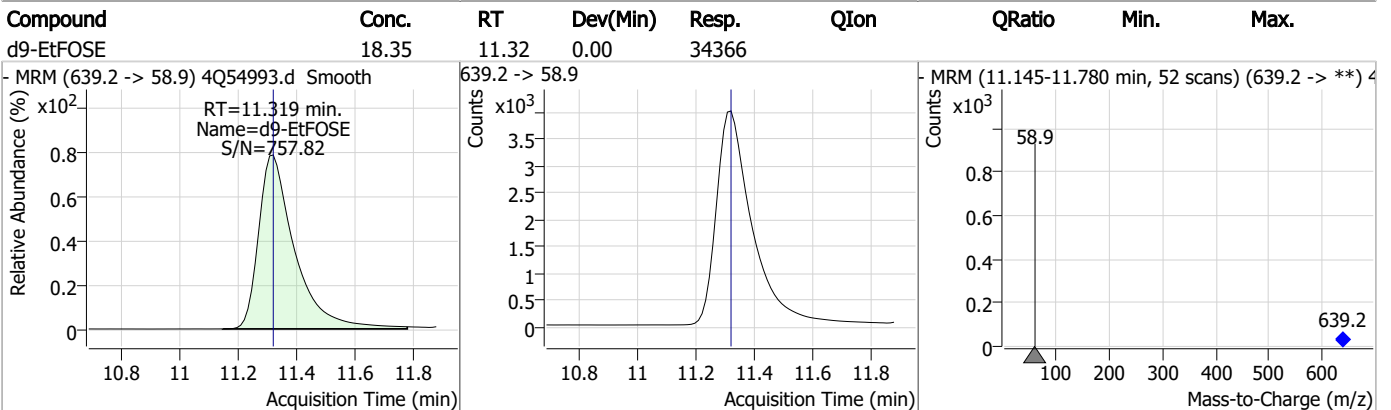
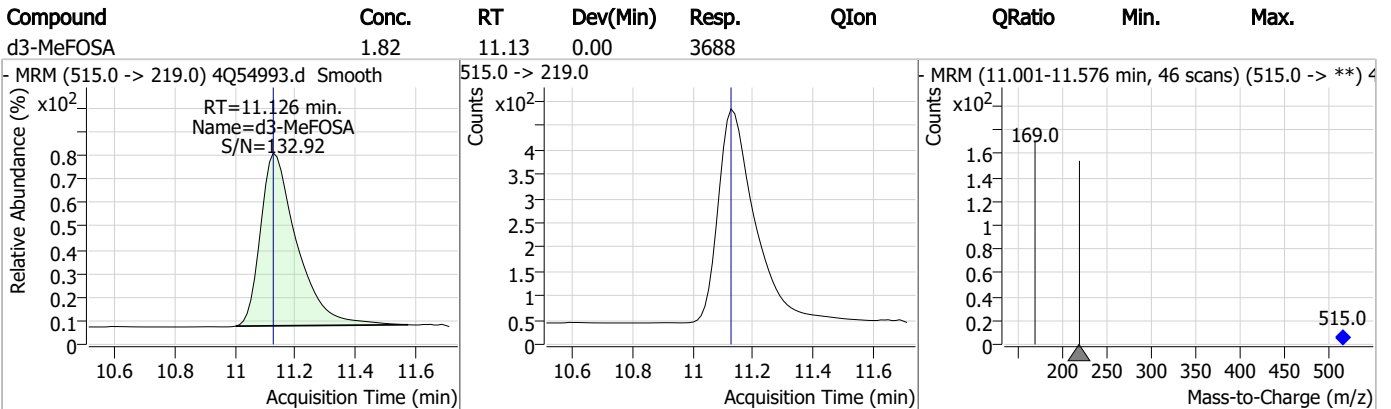
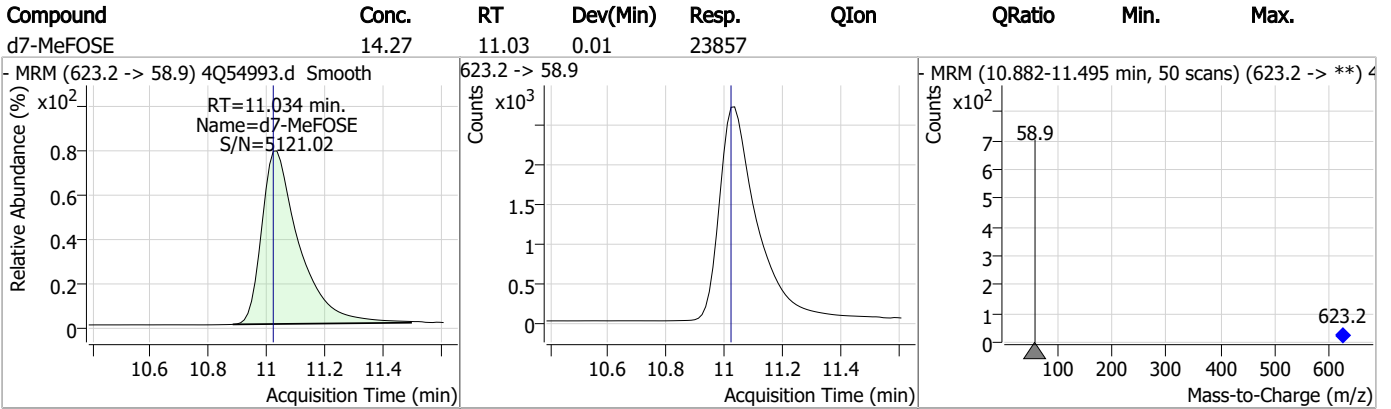
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

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 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 2:39:18 AM
 Sample Name : fc11753-2
 Vial : P3-F9
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.752	216.8 -> 171.9	80358	10.00 µg/L	0.078
M5-PFPeA	4.187	268.3 -> 223.0	32635	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	25355	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	23920	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	39635	2.50 µg/L	0.012
M9-PFNA	7.534	472.1 -> 427.0	15388	1.25 µg/L	0.012
M6-PFDA	8.017	519.1 -> 474.1	10743	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	11777	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	11929	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	12620	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	5419	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	6553	2.50 µg/L	0.025
M3-PFHxS	7.054	402.1 -> 79.9	5964	2.50 µg/L	0.025
M8-PFOS	8.130	507.1 -> 79.9	6234	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1088	5.00 µg/L	0.025
M2-6:2FTS	6.773	429.1 -> 80.9	2659	5.00 µg/L	0.025
M2-8:2FTS	7.816	529.1 -> 80.9	3226	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	15733	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	22765	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	13148	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	23307	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	34540	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	4885	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	3715	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5493	2.50 µg/L	0.012
13C3-PFBA	2.755	216.0 -> 172.0	39885	5.00 µg/L	0.077
18O2-PFHxS	7.054	403.0 -> 83.9	3576	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	45269	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	12604	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	16284	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	28205	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1088	6.41 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.2%		
13C2-6:2FTS	6.773	429.1 -> 80.9	2659	7.22 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 144.4%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3226	6.54 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.9%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11929	0.95 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12620	1.01 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.7%		
13C3-PFBS	5.215	302.1 -> 79.9	6553	2.39 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C3-PFHxS	7.054	402.1 -> 79.9	5964	2.66 µg/L	0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C4-PFBA	2.752	216.8 -> 171.9	80358	9.60 µg/L	0.078
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C4-PFHpA	6.304	367.1 -> 322.0	23920	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C5-PFHxA	5.359	318.0 -> 273.0	25355	2.44 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C5-PFPeA	4.187	268.3 -> 223.0	32635	5.04 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C6-PFDA	8.017	519.1 -> 474.1	10743	1.17 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.7%	
13C7-PFUnDA	8.461	570.0 -> 525.1	11777	1.09 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.1%	
13C8-FOSA	9.806	506.1 -> 77.8	5419	1.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 60.9%	
13C8-PFOA	6.989	421.1 -> 376.0	39635	2.37 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C8-PFOS	8.130	507.1 -> 79.9	6234	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.6%	
13C9-PFNA	7.534	472.1 -> 427.0	15388	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.4%	
d3-MeFOSAA	8.099	573.2 -> 419.0	15733	5.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	22765	8.77 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 87.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	3715	1.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 70.0%	
d5-EtFOSAA	8.296	589.2 -> 419.0	13148	5.10 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
d7-MeFOSE	11.034	623.2 -> 58.9	23307	13.27 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 53.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	34540	17.56 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 70.2%	
d5-EtFOSA	11.398	531.1 -> 219.0	4885	2.10 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.9%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.12

7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.500	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

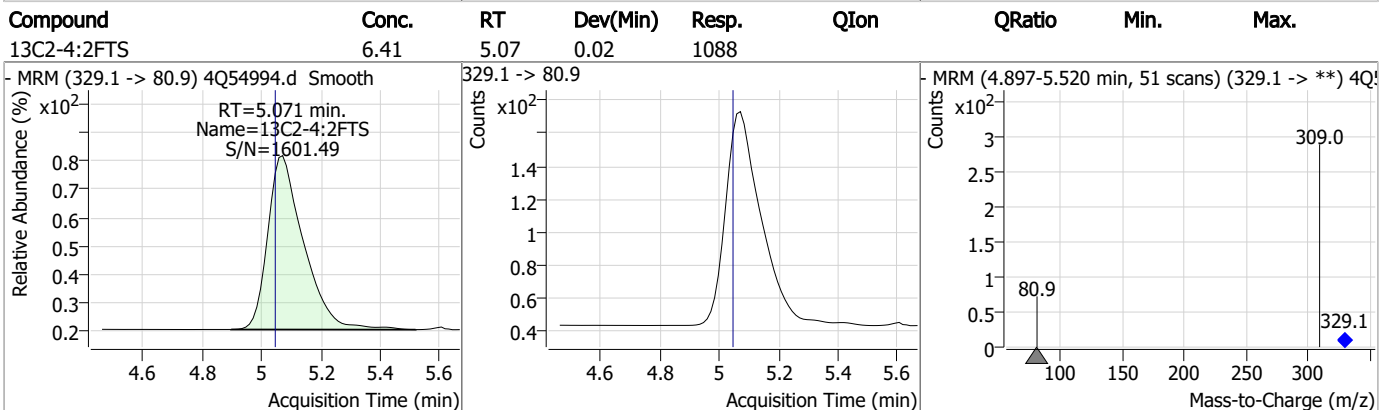
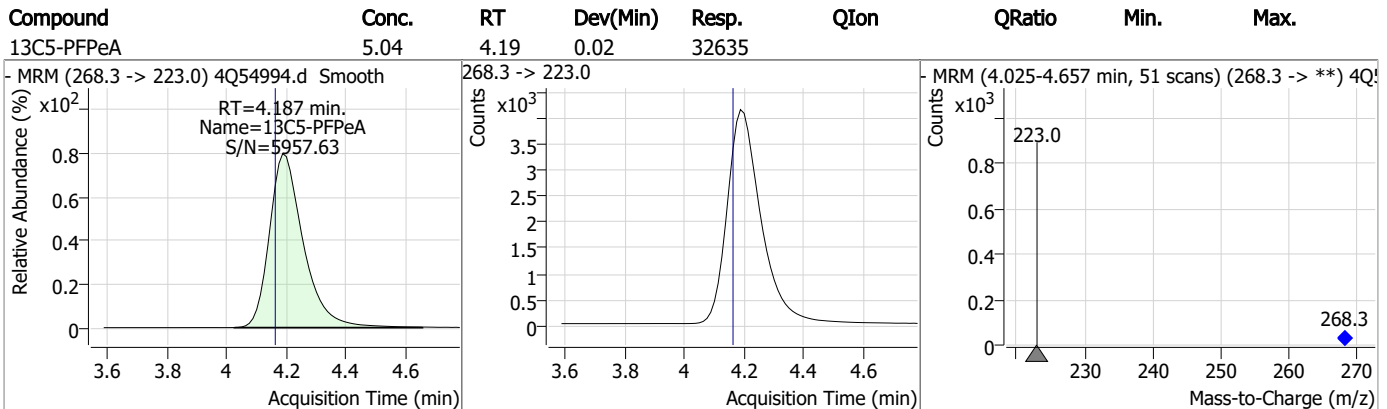
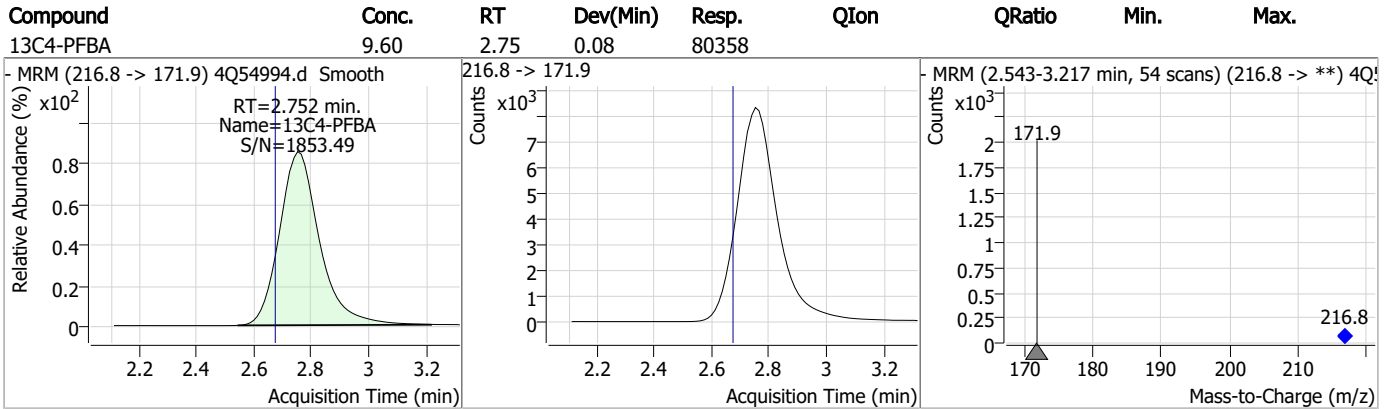
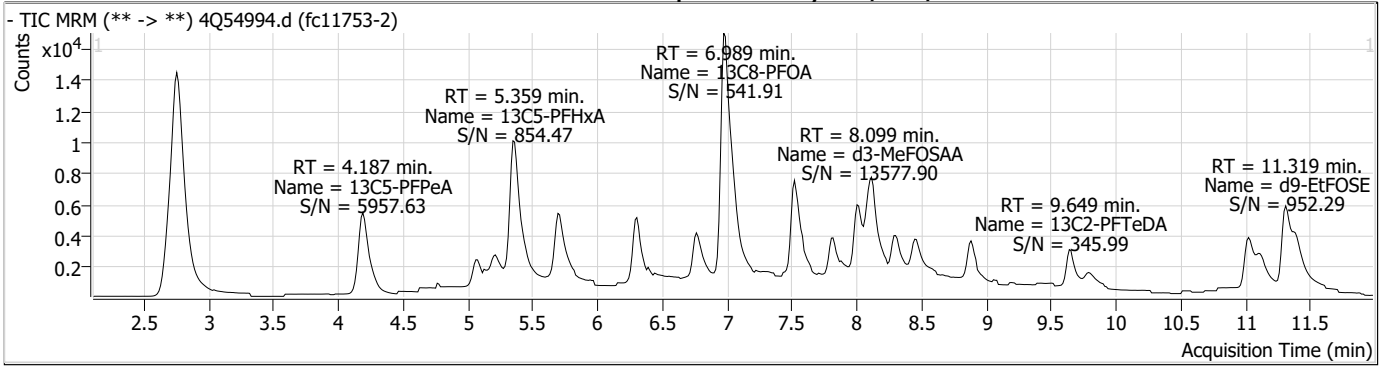
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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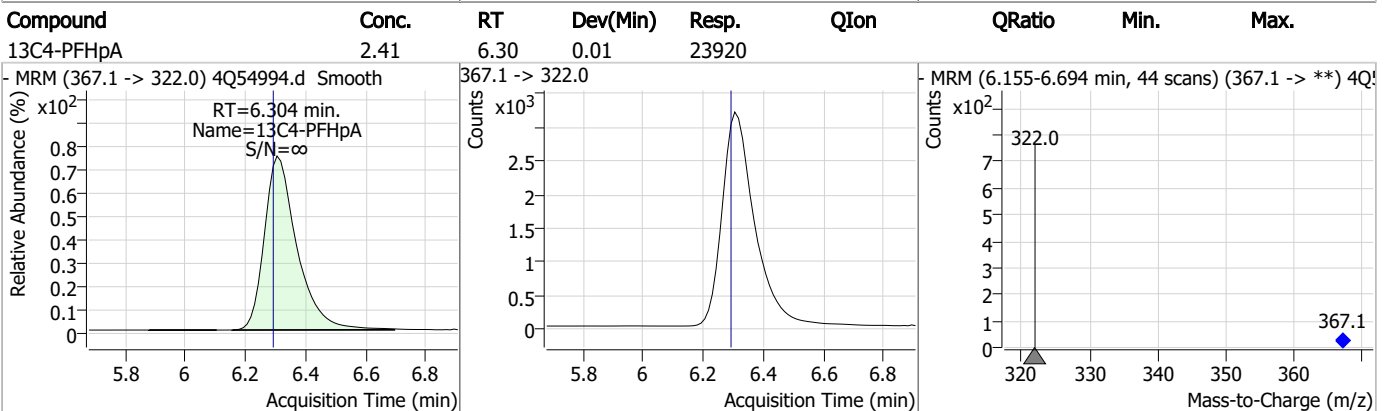
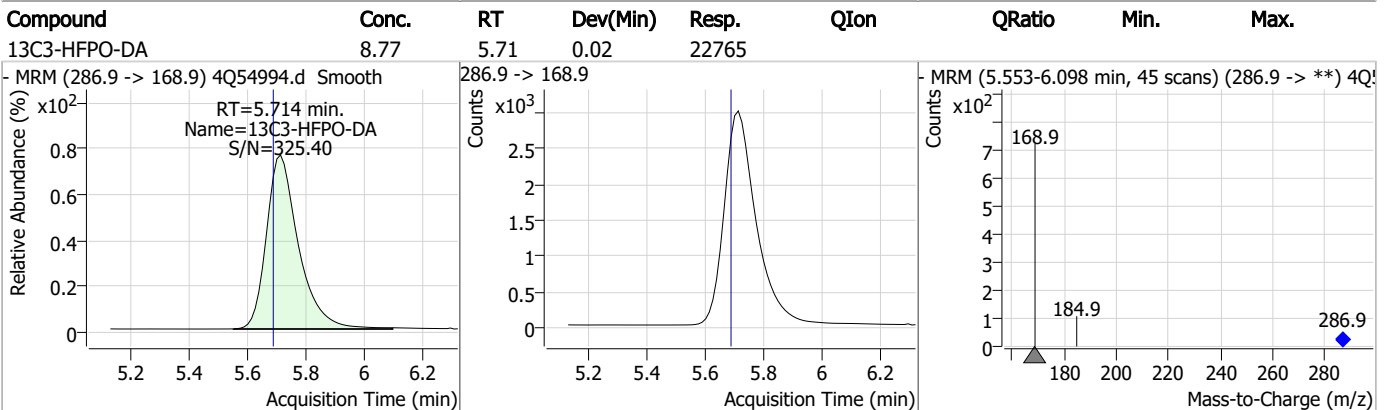
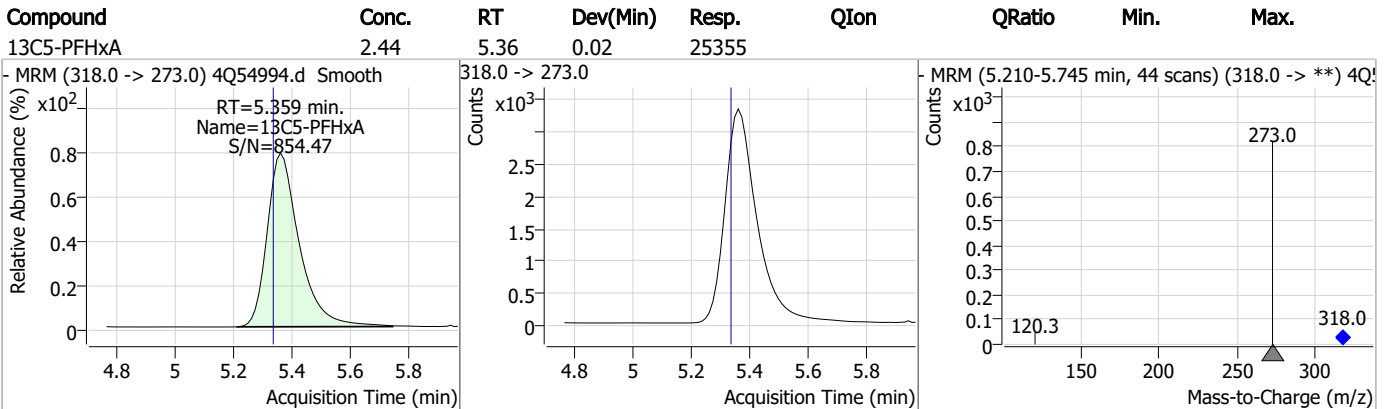
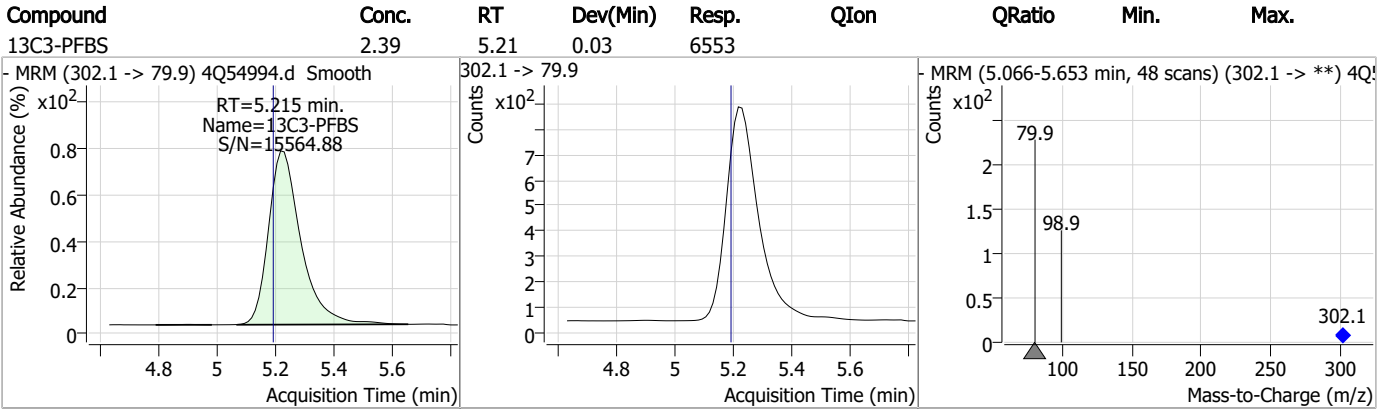
7.1.2
7



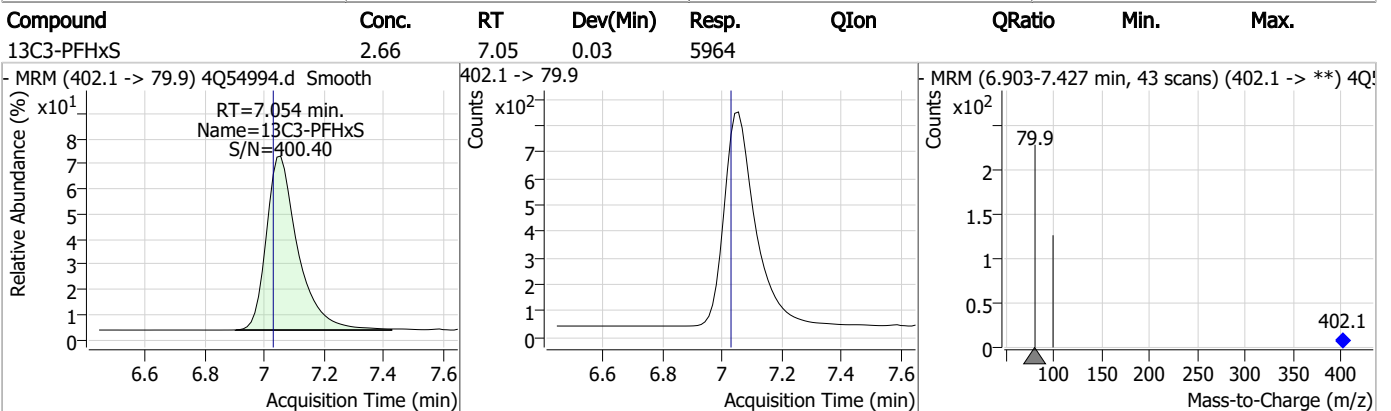
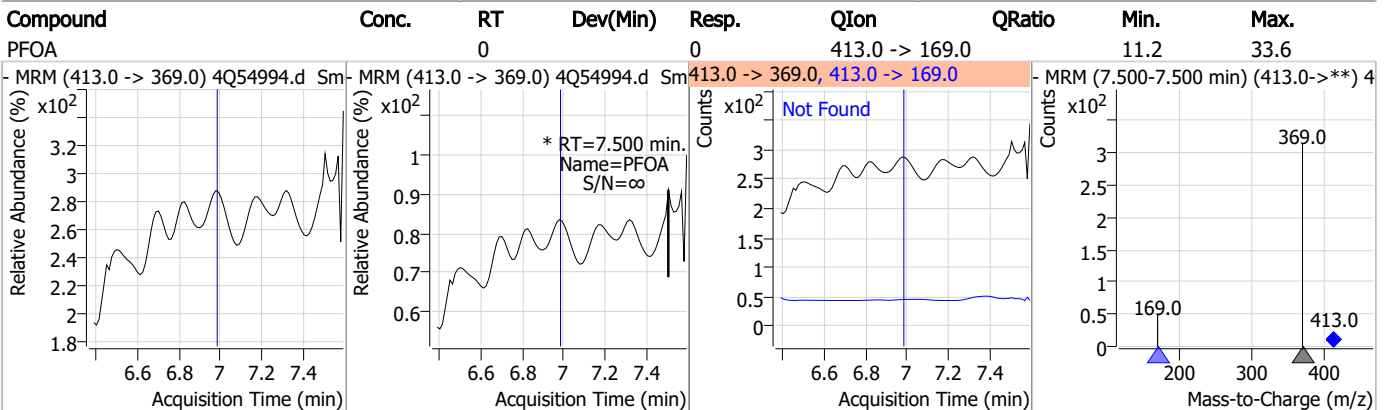
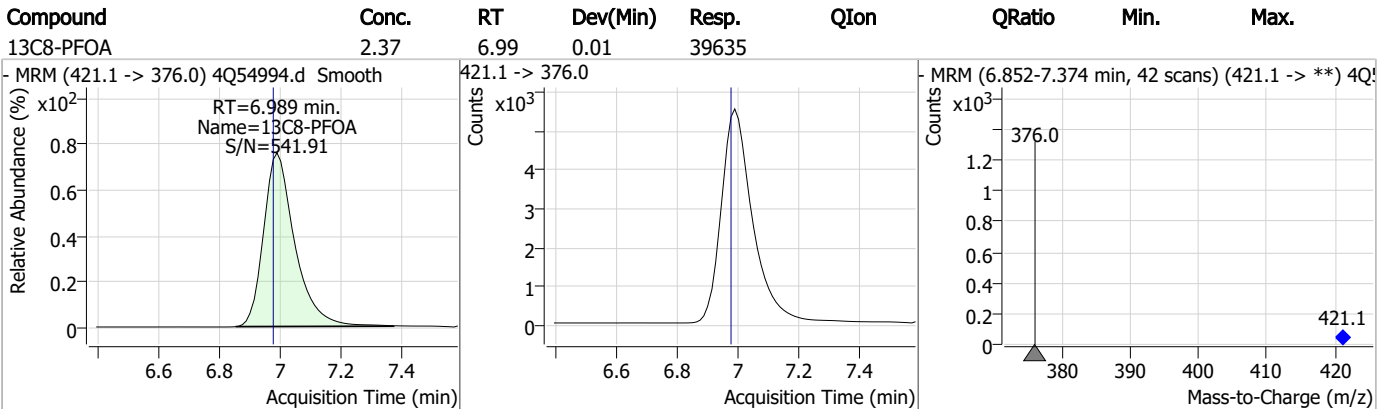
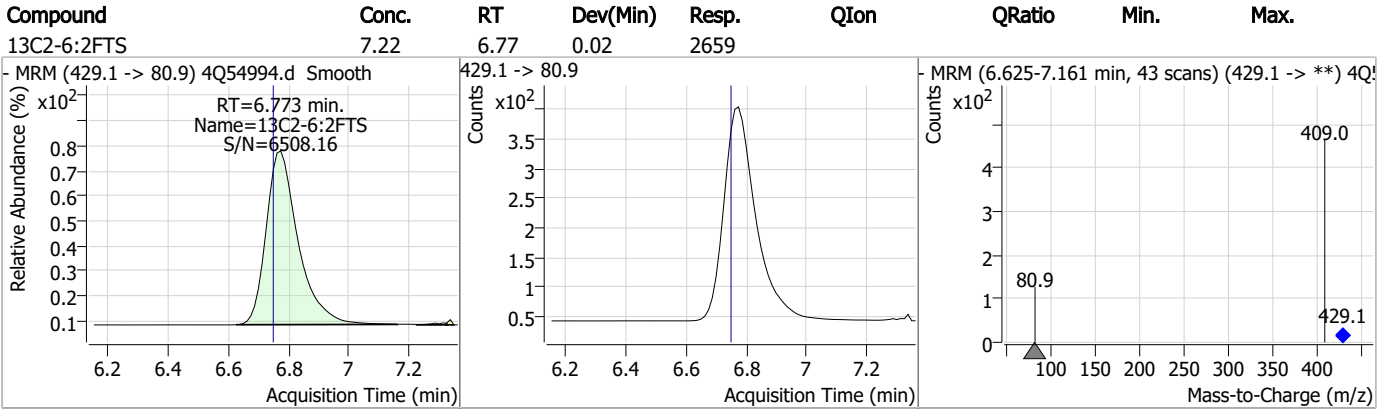
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



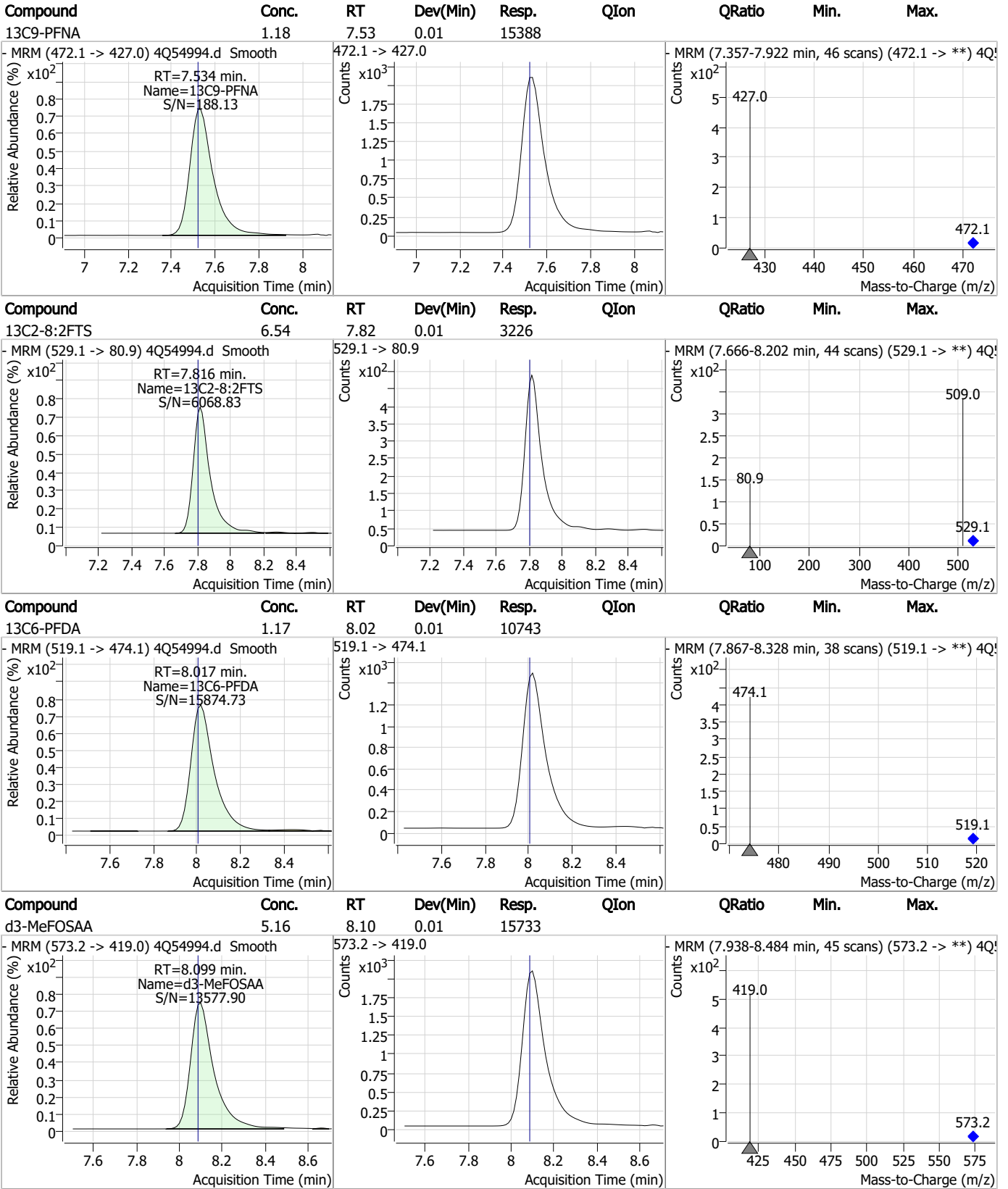
Perfluorinated Compounds by LC/MS/MS



7.1.2

7

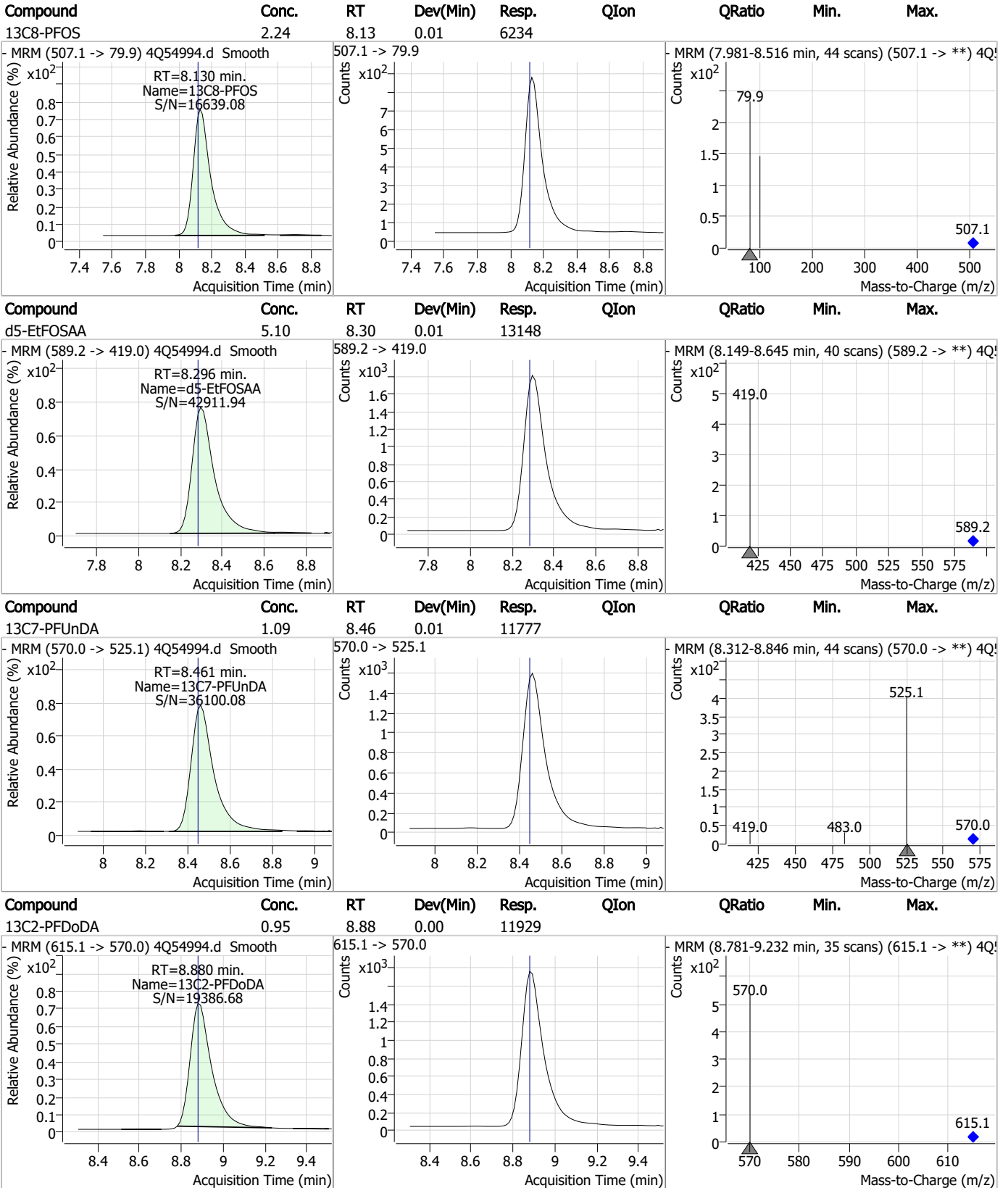
Perfluorinated Compounds by LC/MS/MS



7.1.2

7

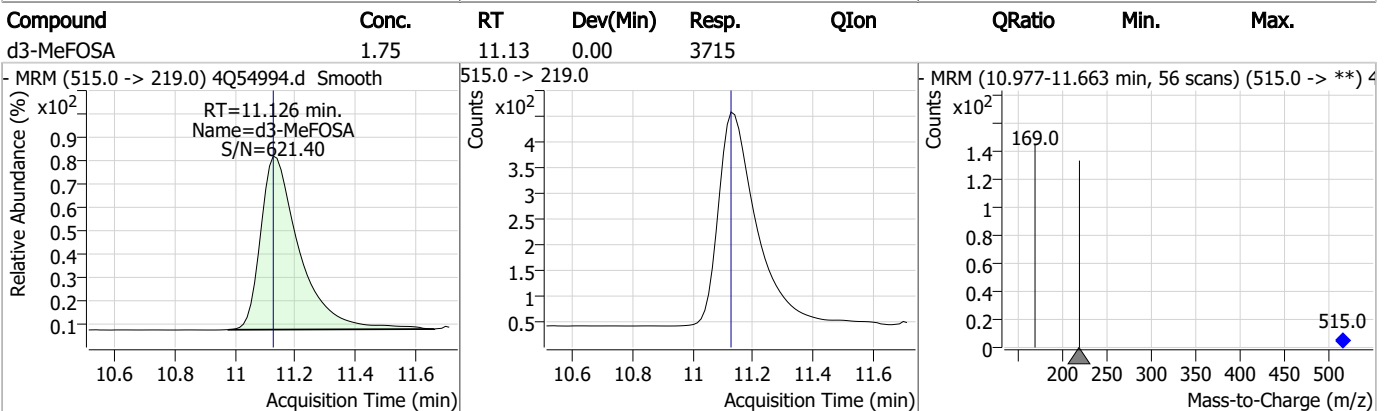
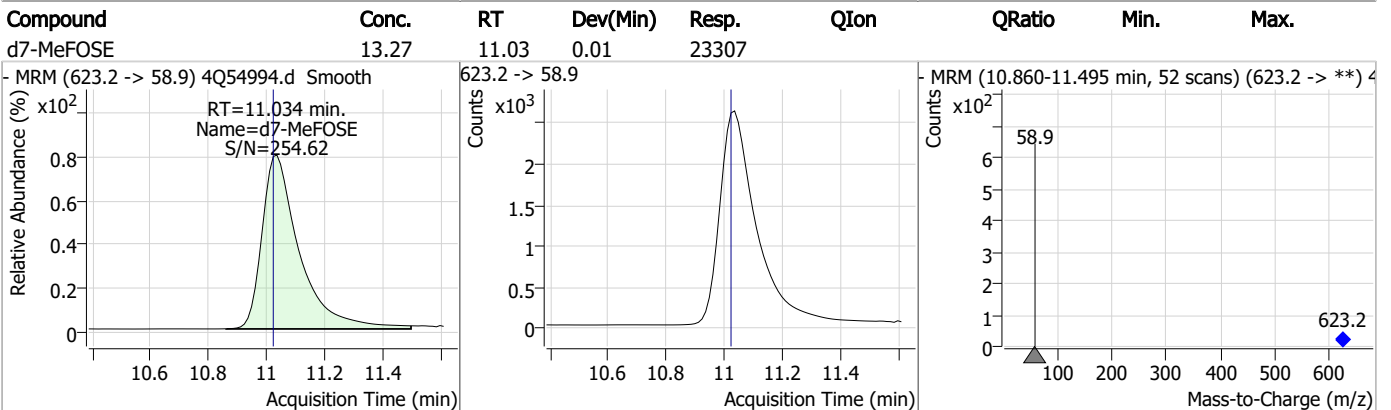
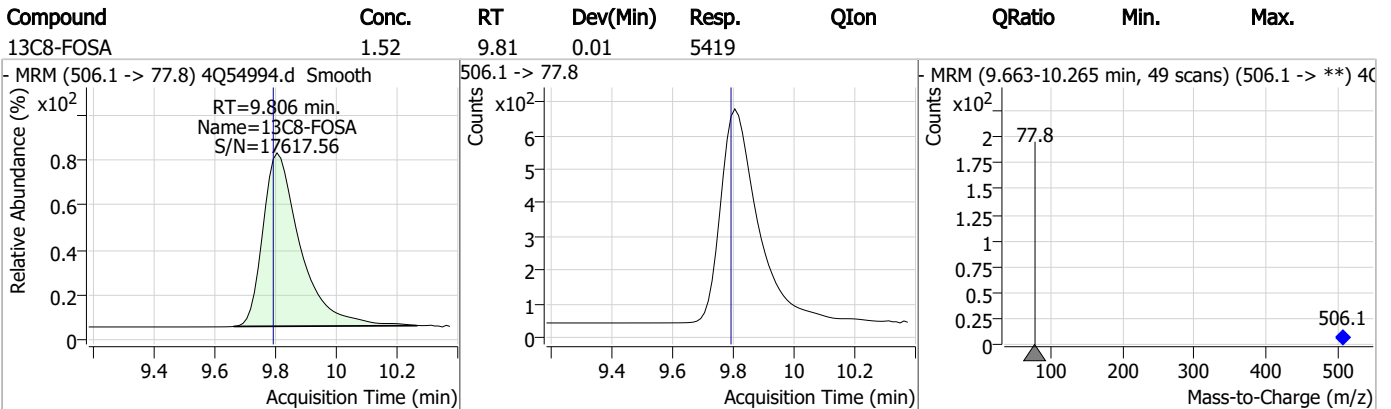
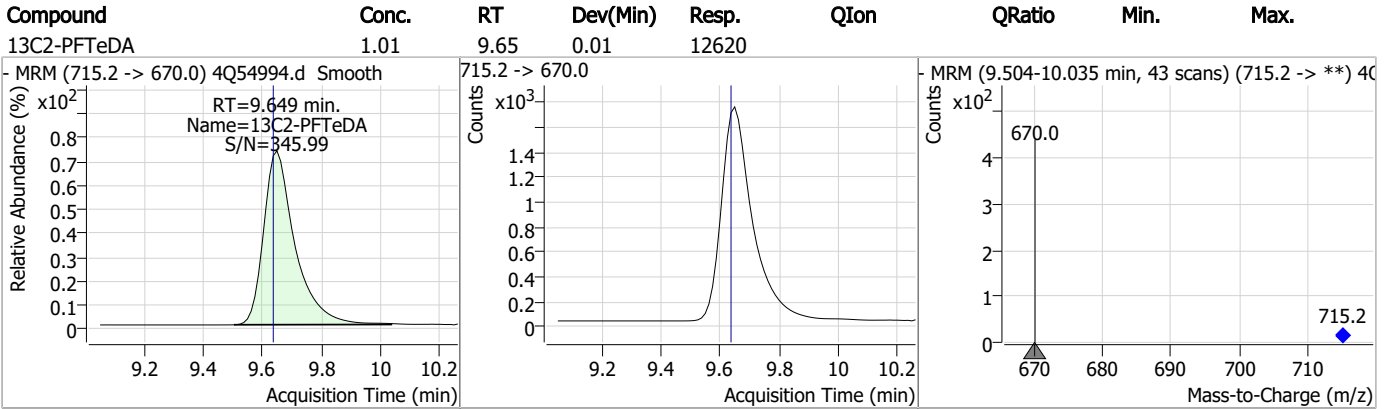
Perfluorinated Compounds by LC/MS/MS



7.1.2

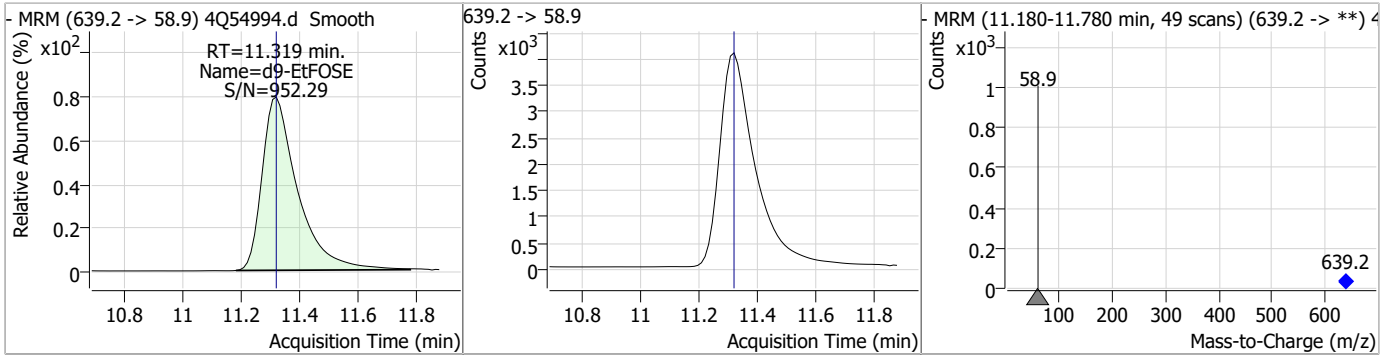
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Perfluorinated Compounds by LC/MS/MS

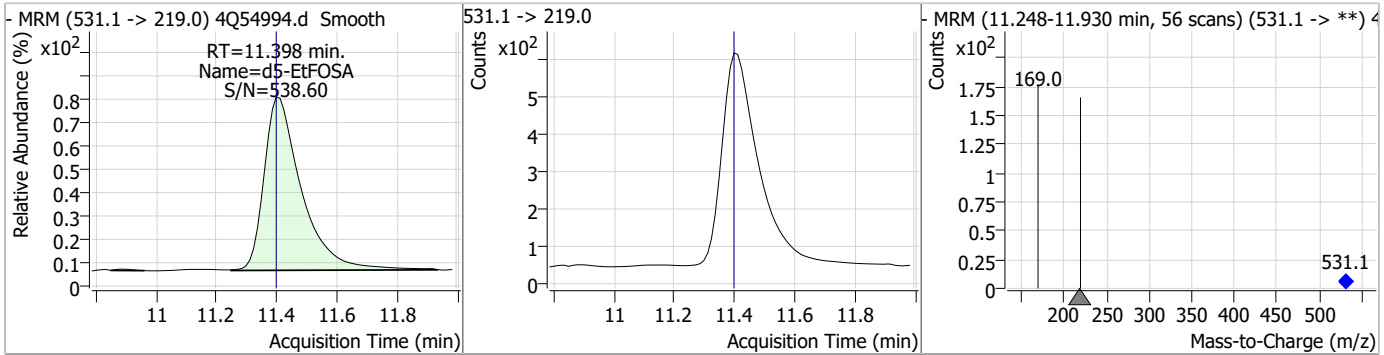


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	17.56	11.32	0.00	34540				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.10	11.40	0.00	4885				



7.1.2
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54995.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 2:54:02 AM
 Sample Name : fc11753-3
 Vial : P4-A1
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.765	216.8 -> 171.9	4187	10.00 µg/L	0.091
M5-PFPeA	4.187	268.3 -> 223.0	14721	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	22129	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	25052	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	39827	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	16133	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	11356	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	13109	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	13911	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	12171	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	6709	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	6681	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	5971	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	5628	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1493	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2465	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	3166	5.00 µg/L	0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	17317	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	18695	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	15009	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	27175	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	38616	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5393	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	4603	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	5068	2.50 µg/L	0.000
13C3-PFBA	2.755	216.0 -> 172.0	39206	5.00 µg/L	0.077
18O2-PFHxS	7.041	403.0 -> 83.9	4047	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	45105	2.50 µg/L	0.012
13C2-PFDA	8.004	515.1 -> 470.1	12763	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	16073	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	29143	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1493	7.77 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 155.4%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2465	5.92 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.3%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3166	5.68 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	13911	1.09 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12171	0.96 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.8%		
13C3-PFBS	5.215	302.1 -> 79.9	6681	2.15 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.2%		
13C3-PFHxS	7.042	402.1 -> 79.9	5971	2.35 µg/L	0.012



7.1.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%		
13C4-PFBA	2.765	216.8 -> 171.9	4187	0.51 µg/L	0.091
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 5.1%		
13C4-PFHpA	6.304	367.1 -> 322.0	25052	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C5-PFHxA	5.359	318.0 -> 273.0	22129	2.06 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 82.4%		
13C5-PFPeA	4.187	268.3 -> 223.0	14721	2.20 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 44.0%		
13C6-PFDA	8.004	519.1 -> 474.1	11356	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C7-PFUnDA	8.461	570.0 -> 525.1	13109	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C8-FOSA	9.806	506.1 -> 77.8	6709	2.04 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 81.7%		
13C8-PFOA	6.989	421.1 -> 376.0	39827	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C8-PFOS	8.130	507.1 -> 79.9	5628	2.19 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.7%		
13C9-PFNA	7.521	472.1 -> 427.0	16133	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
d3-MeFOSAA	8.086	573.2 -> 419.0	17317	6.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.1%		
13C3-HFPO-DA	5.702	286.9 -> 168.9	18695	6.97 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 69.7%		
d3-MeFOSA	11.126	515.0 -> 219.0	4603	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.0%		
d5-EtFOSAA	8.296	589.2 -> 419.0	15009	6.31 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.1%		
d7-MeFOSE	11.034	623.2 -> 58.9	27175	16.77 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 67.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	38616	21.28 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 85.1%		
d5-EtFOSA	11.397	531.1 -> 219.0	5393	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
Target Compounds					QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	6.761	427.1 -> 407.0	813	0.31 µg/L	97
		427.1 -> 80.9	282		
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	8.958	599.0 -> 79.9	0	µg/L m	1

7.1.3

7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	0			
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	7.663	449.0 -> 79.9	0	µg/L	m	1
		449.0 -> 98.9	0			
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	8.961	548.8 -> 79.9	0	µg/L	m	1
		548.8 -> 98.9	0			
PFOA	-	413.0 -> 369.0	-	N.D.		
		413.0 -> 169.0				
PFOS	7.908	498.9 -> 79.9	0	µg/L	m	1
		498.9 -> 98.8	0			
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.115	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9	0			
PFTTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

7.1.3
7



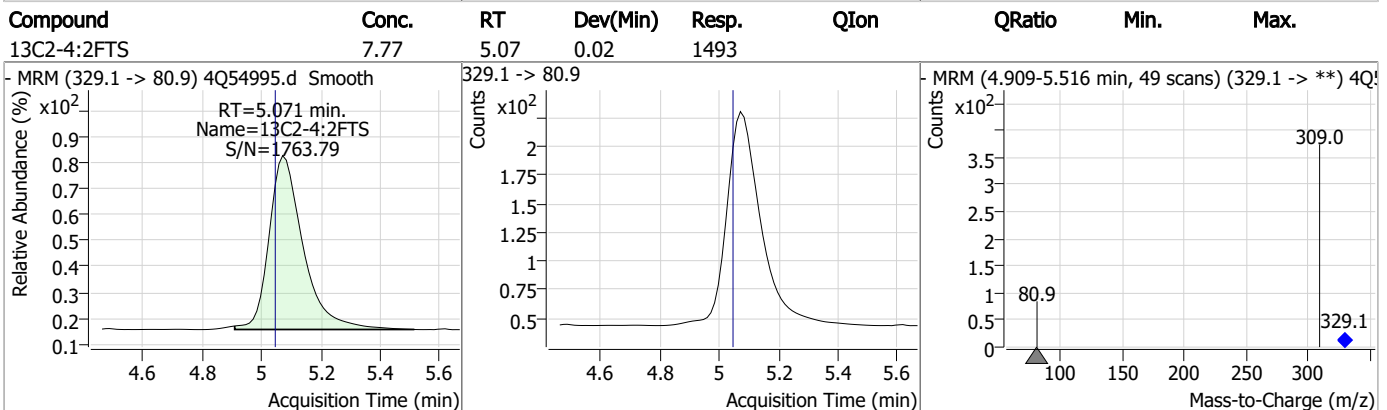
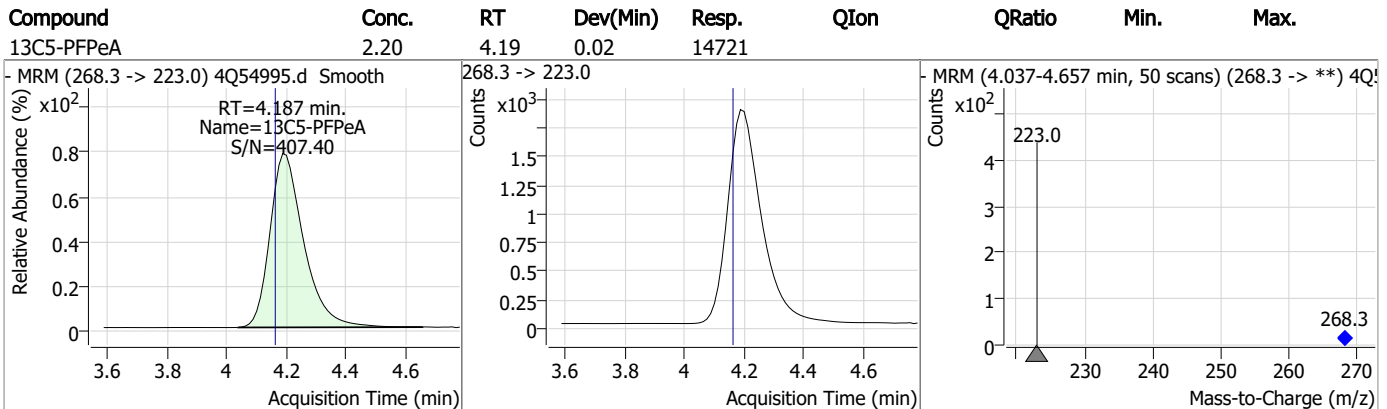
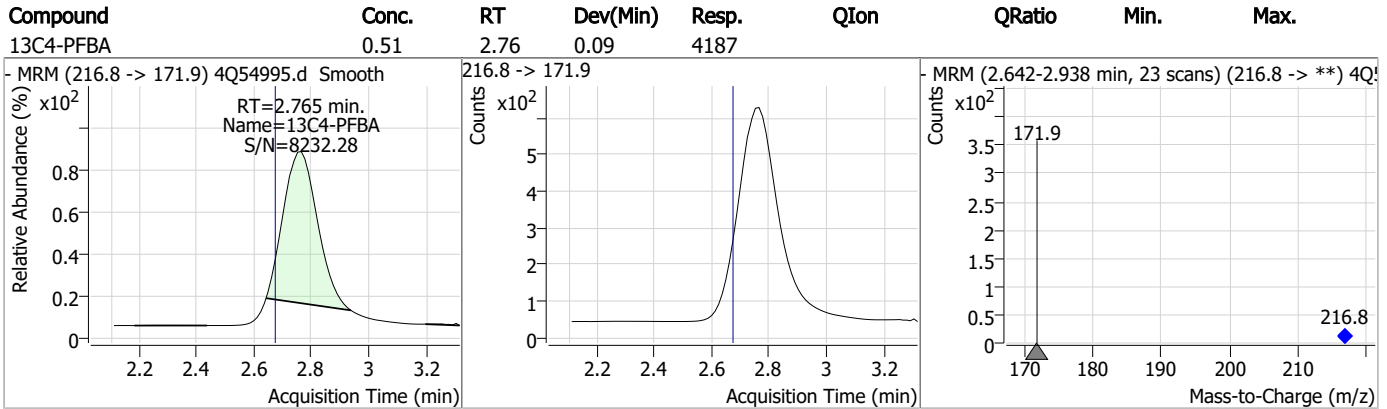
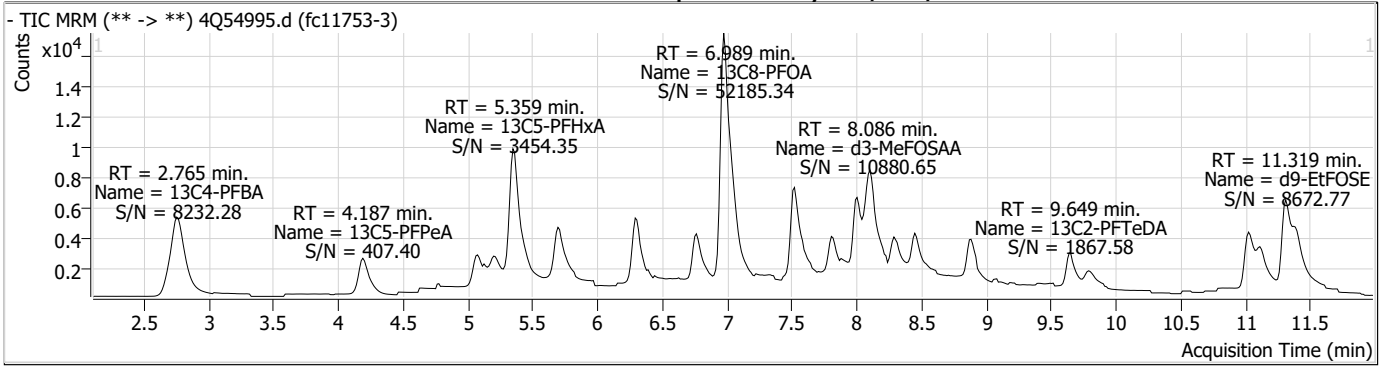
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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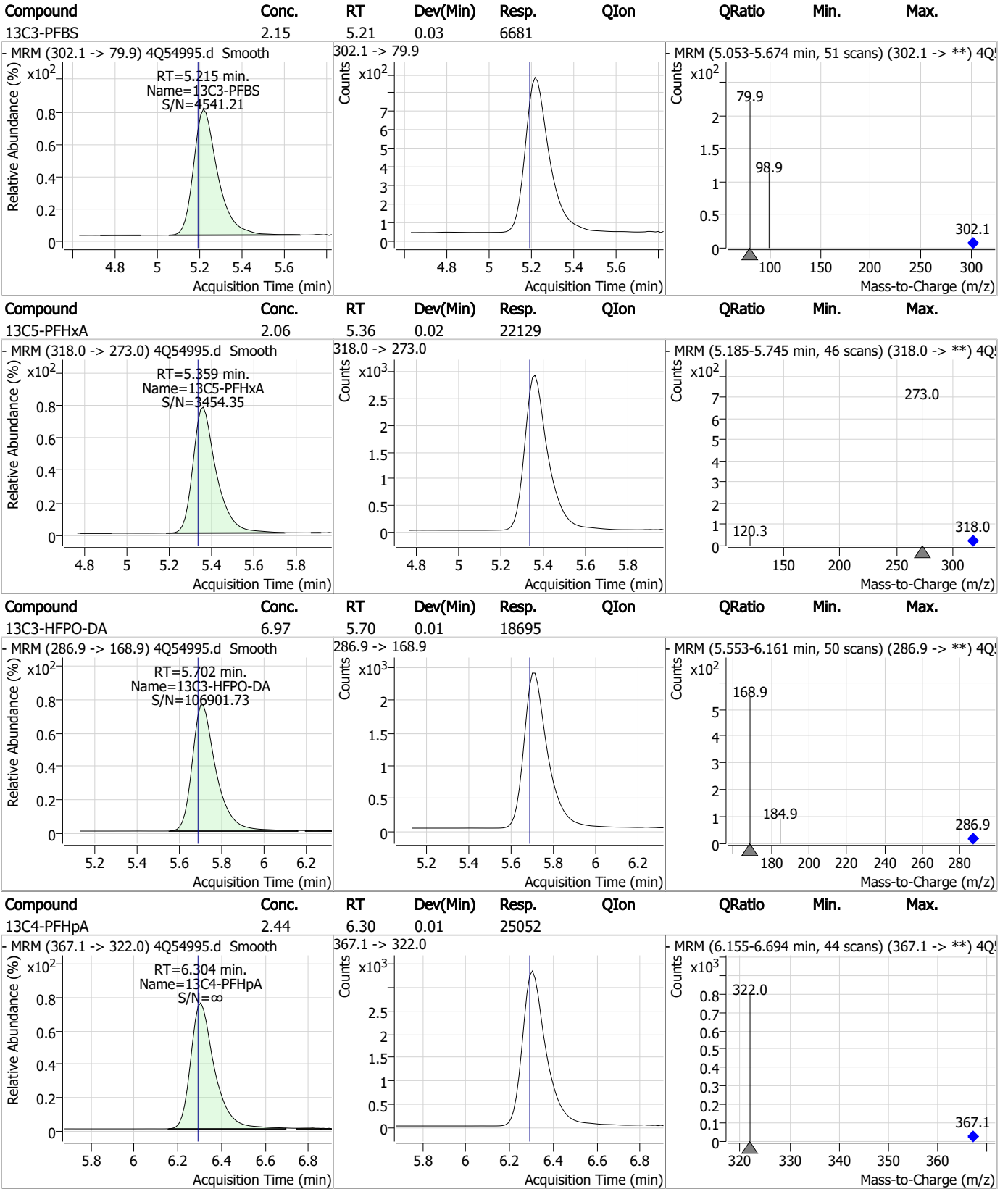
7.1.3
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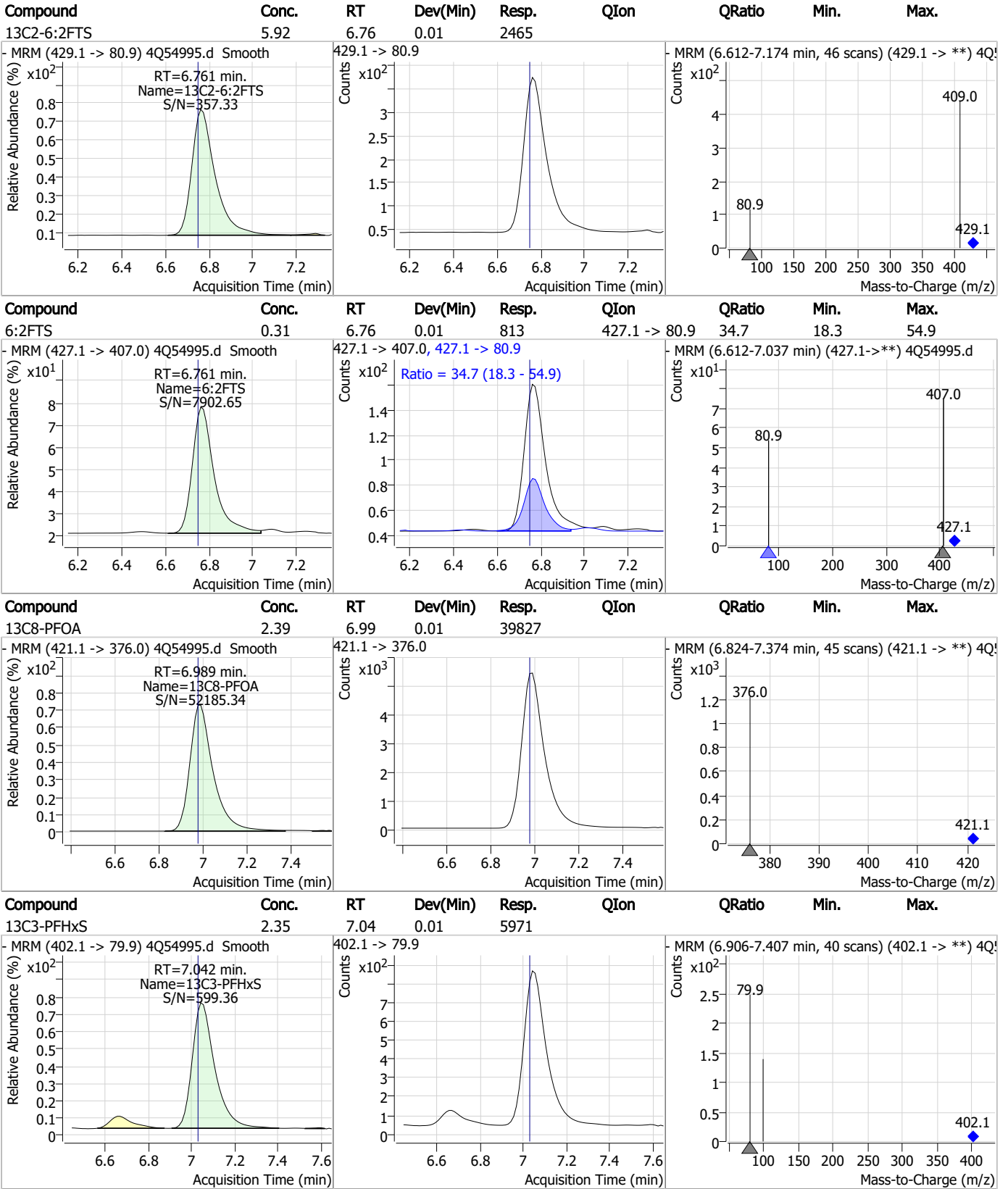
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



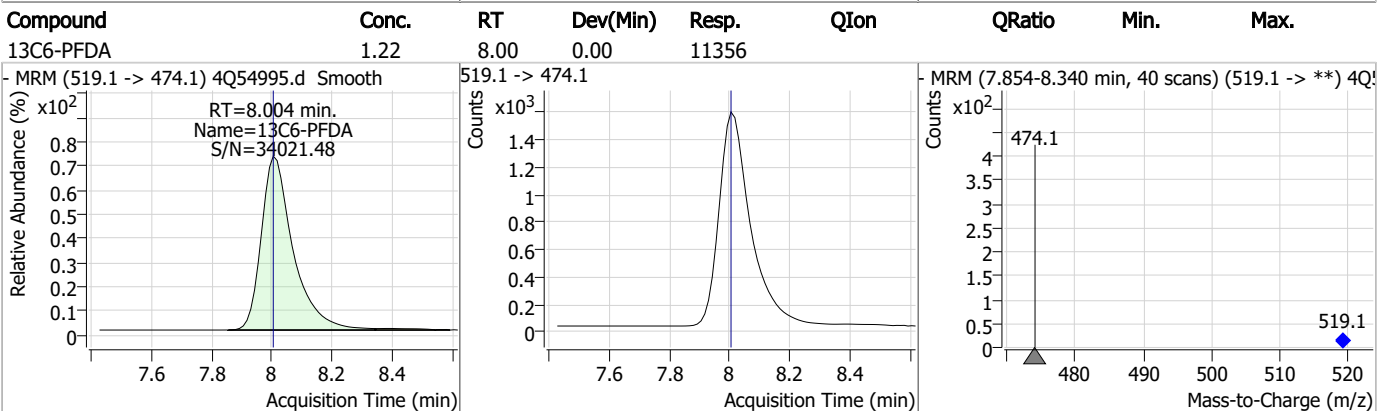
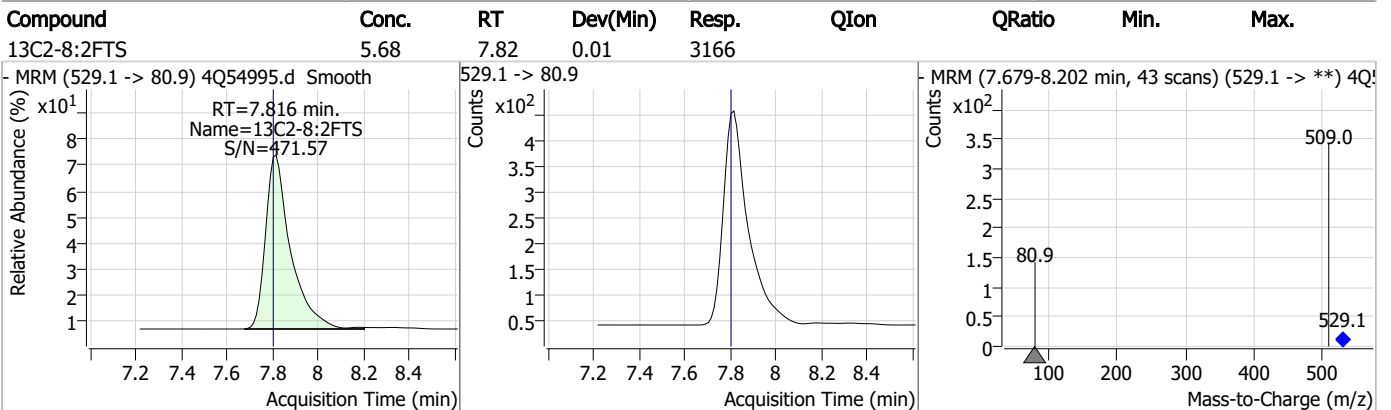
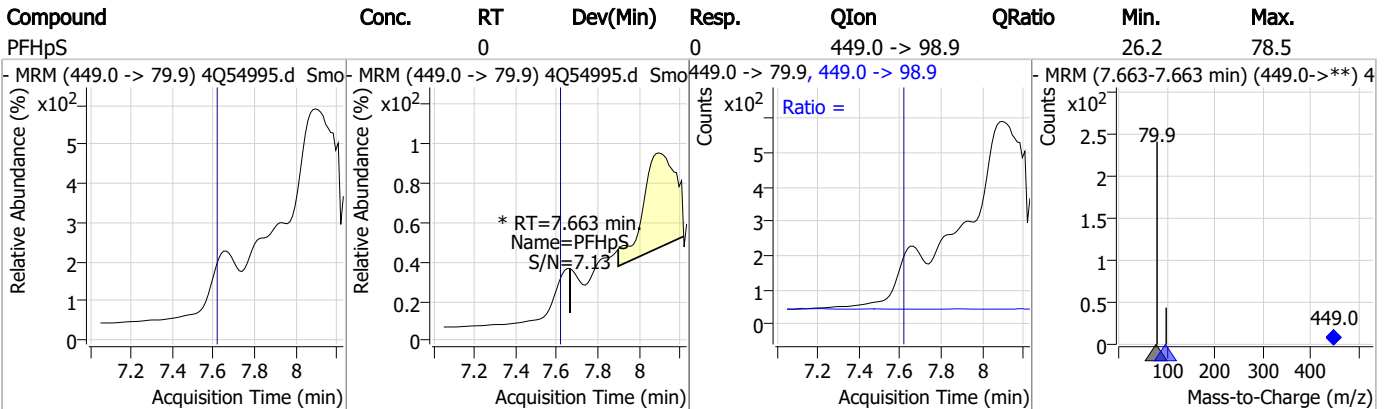
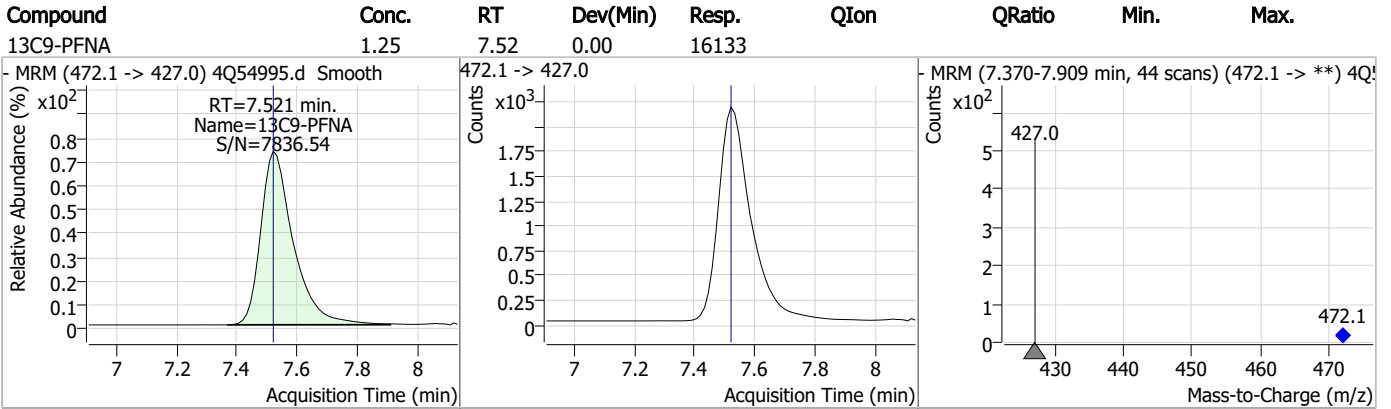
Perfluorinated Compounds by LC/MS/MS



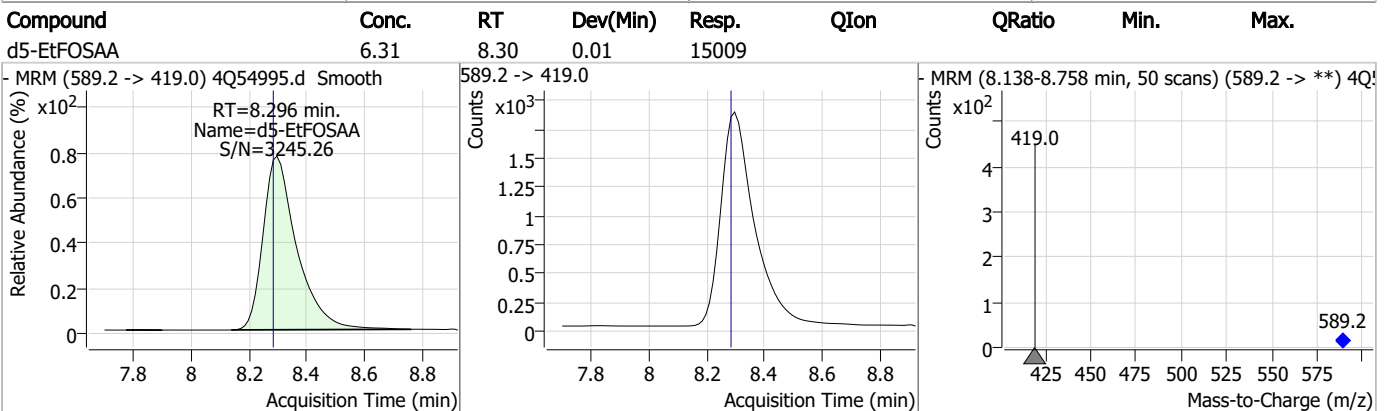
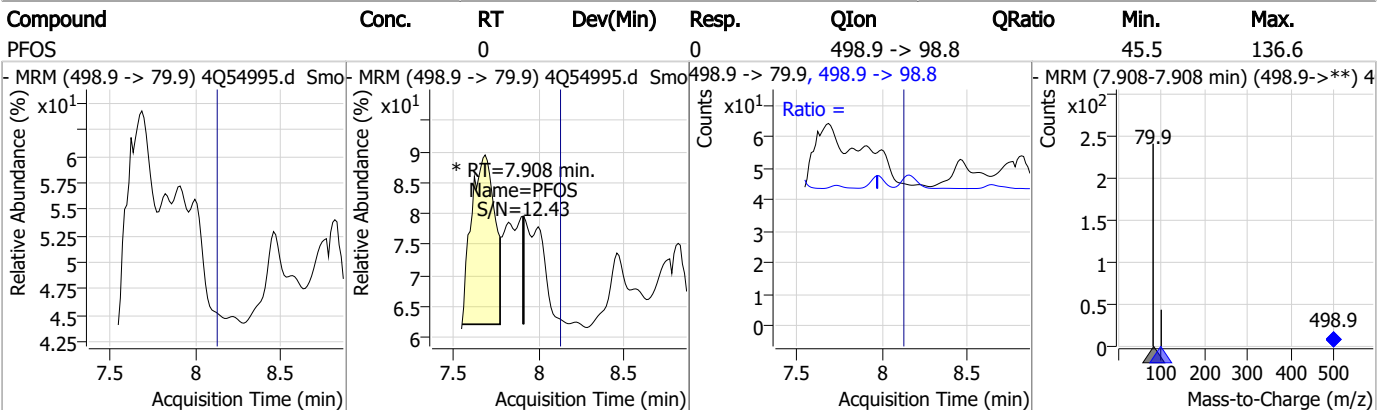
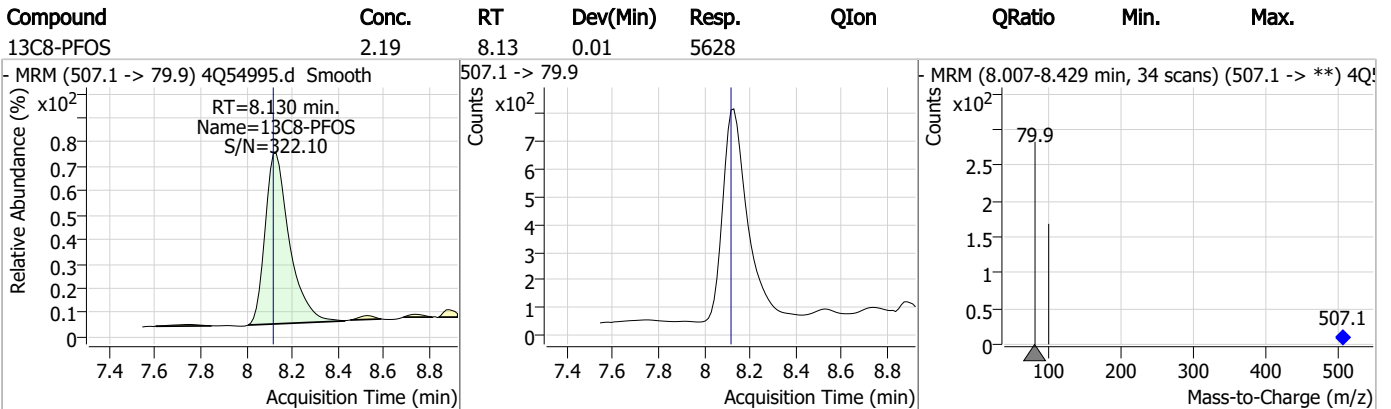
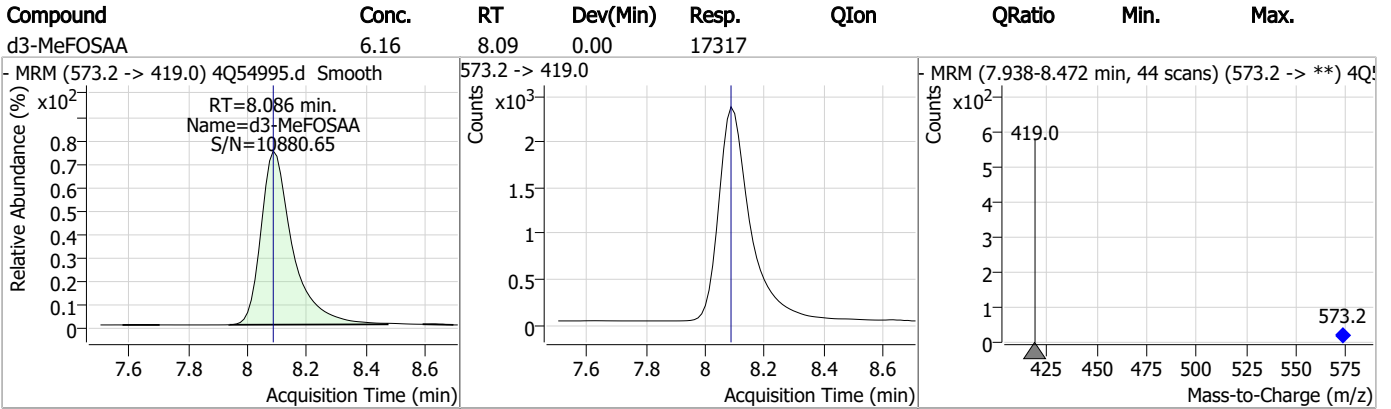
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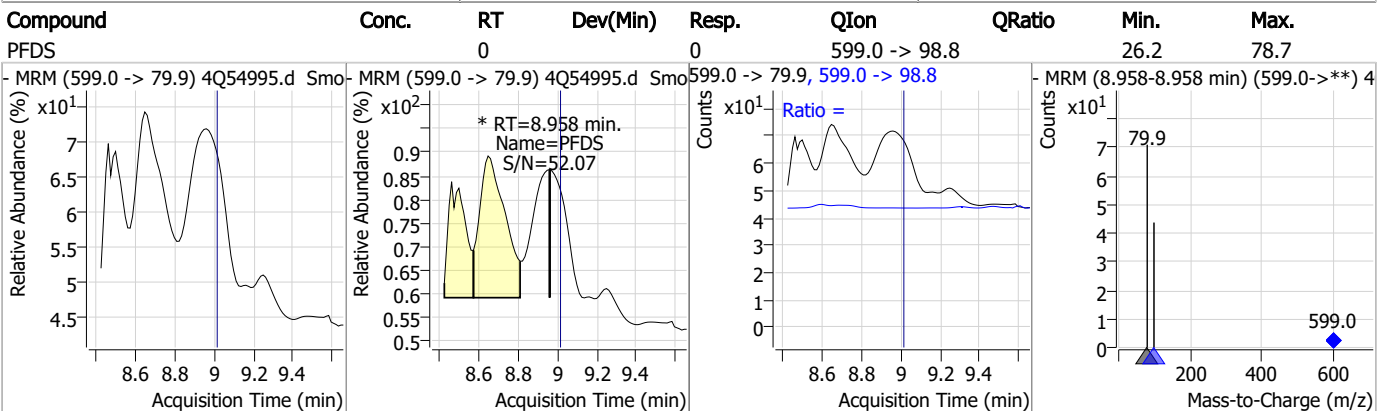
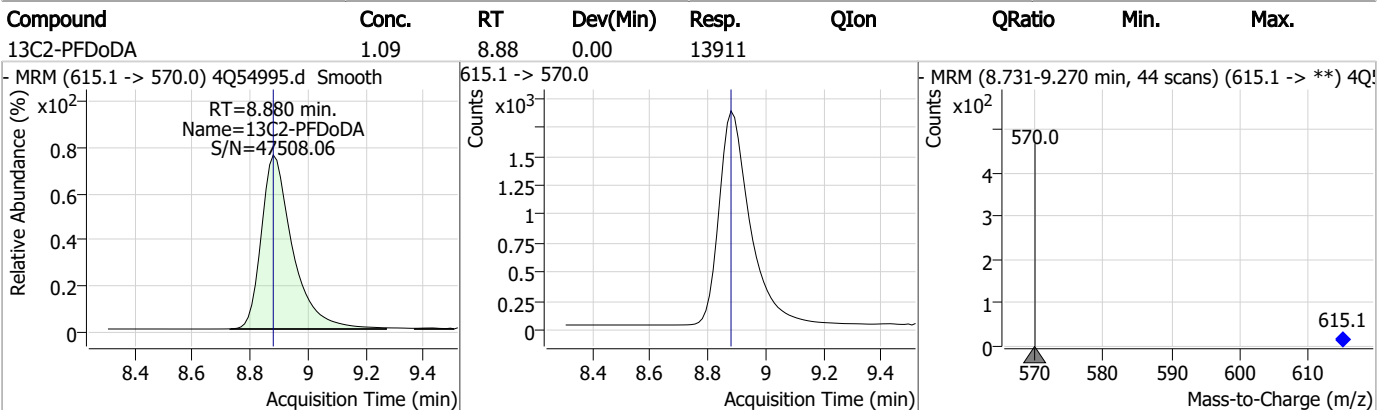
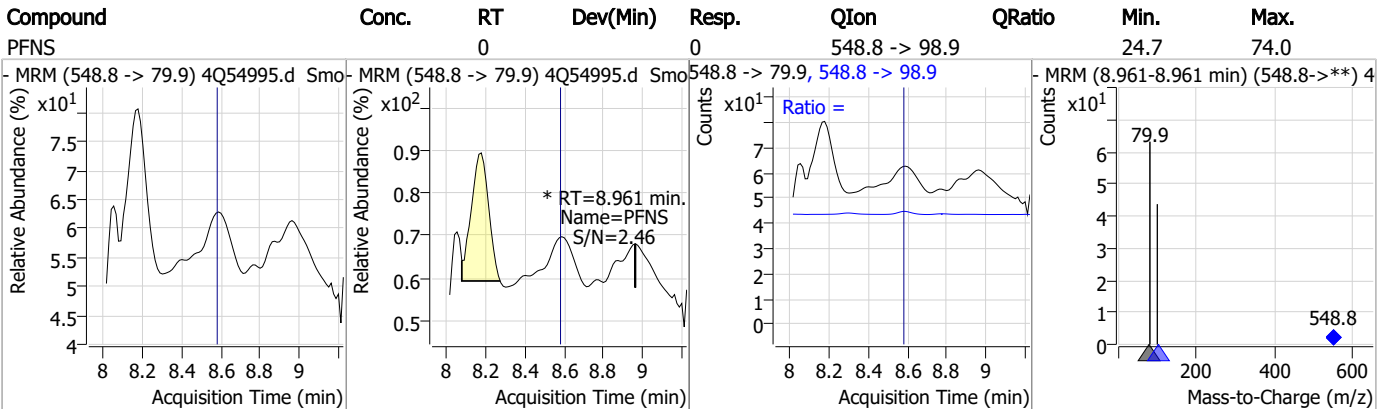
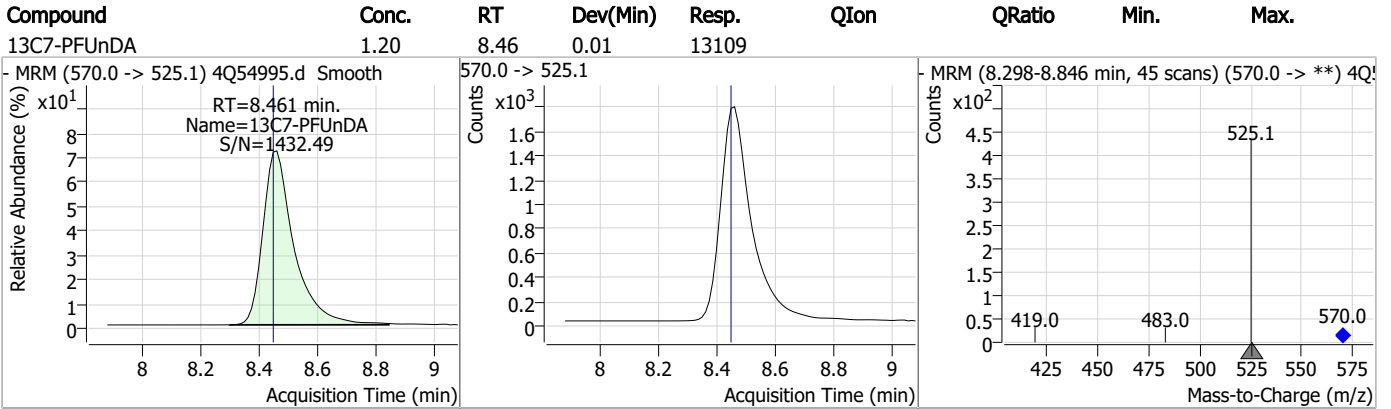
Perfluorinated Compounds by LC/MS/MS



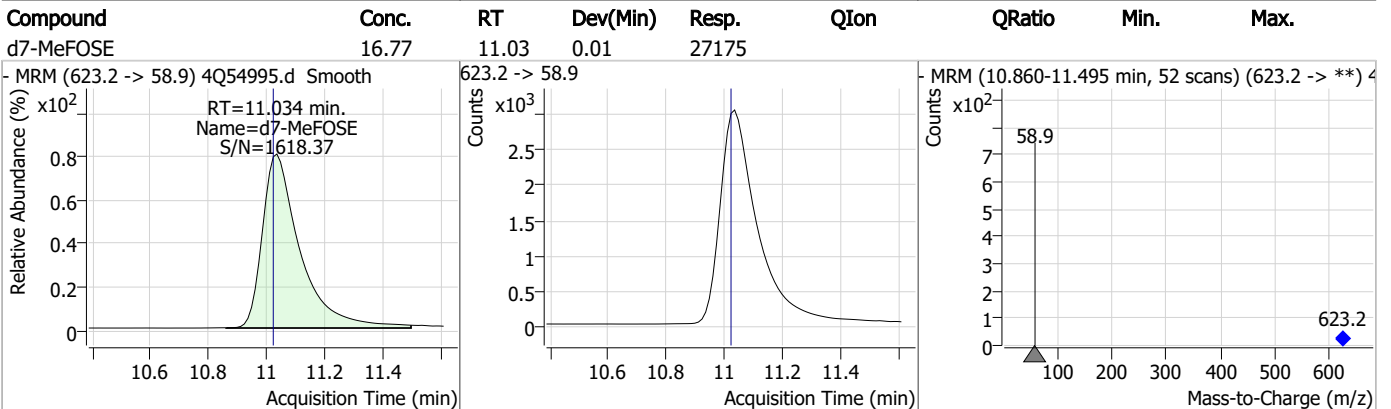
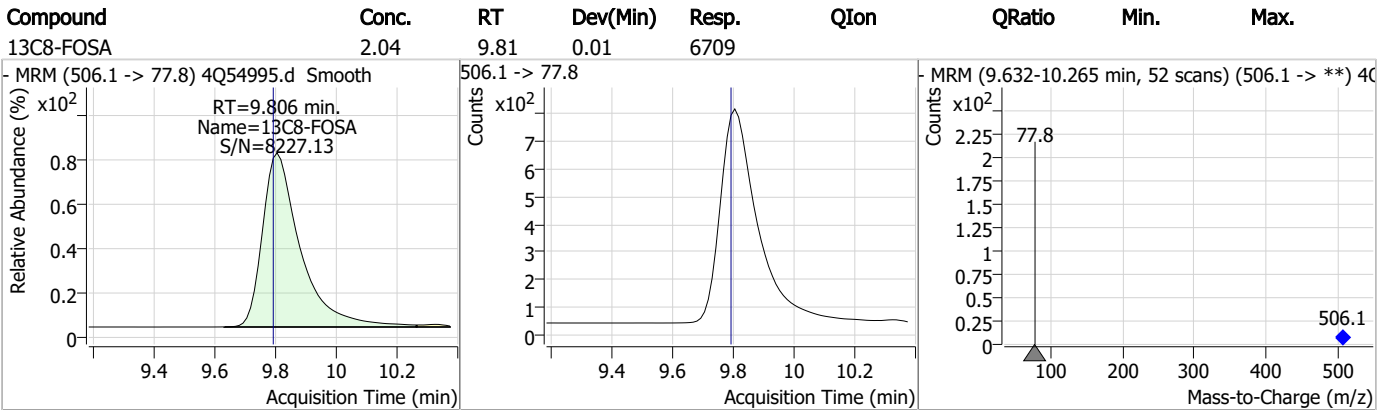
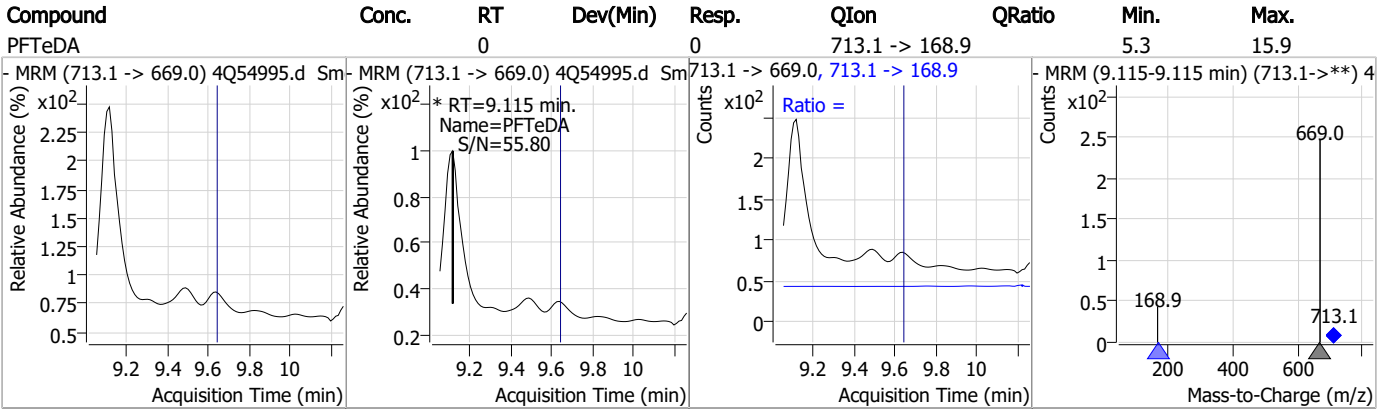
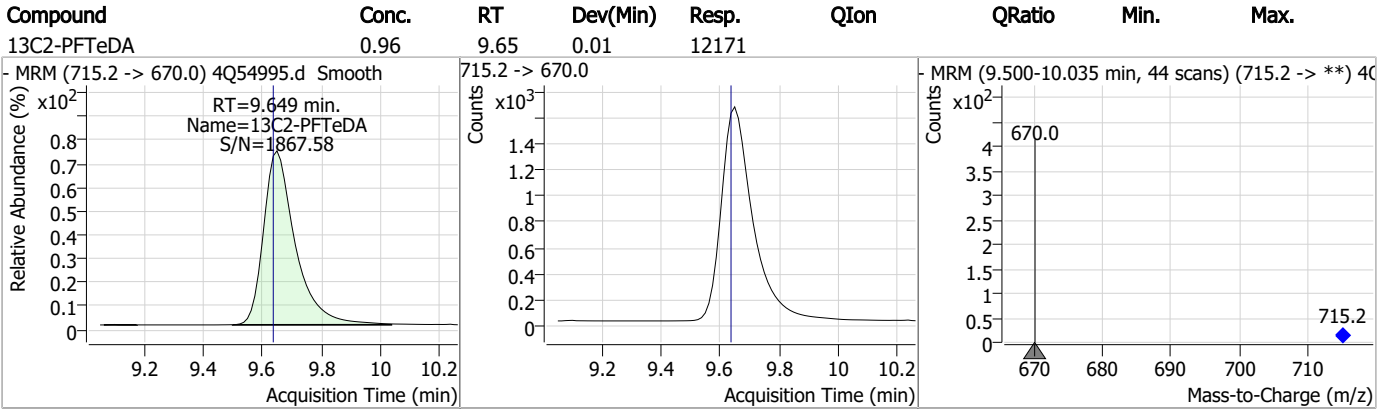
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



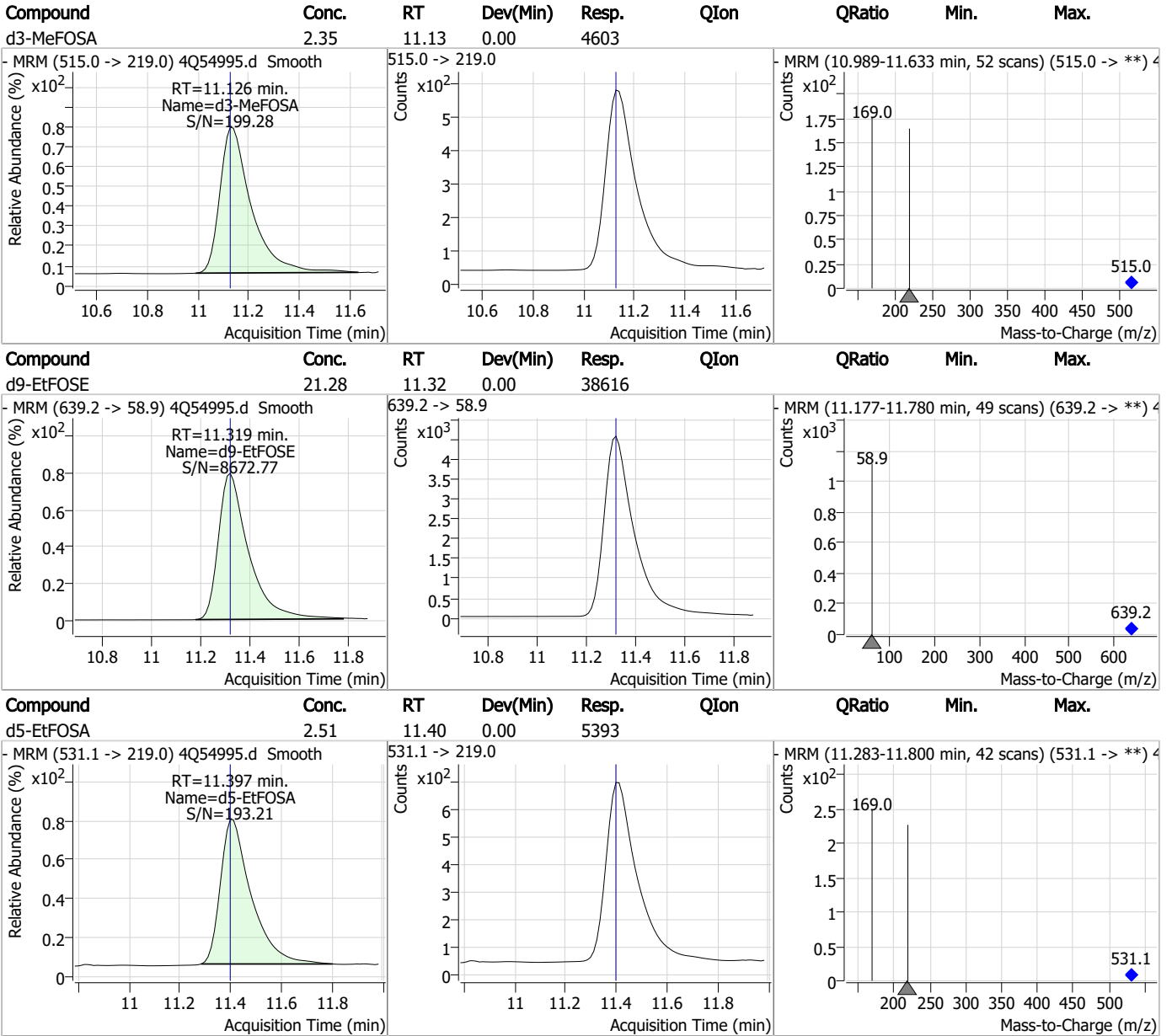
Perfluorinated Compounds by LC/MS/MS



7.1.3

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Perfluorinated Compounds by LC/MS/MS



7.1.3

7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q357.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 7:07:10 PM
 Sample Name : FC11753-3
 Vial : P3-A4
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op576,S7Q11,60,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.897	216.8 -> 171.9	89961	10.00 µg/L	0.000
M5-PFPeA	4.324	268.3 -> 223.0	30462	5.00 µg/L	0.012
M5-PFHxA	5.554	318.0 -> 273.0	27172	2.50 µg/L	0.000
M4-PFHpA	6.521	367.1 -> 322.0	23823	2.50 µg/L	0.012
M8-PFOA	7.177	421.1 -> 376.0	31462	2.50 µg/L	0.012
M9-PFNA	7.720	472.1 -> 427.0	11364	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	10594	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	12618	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	11999	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	5485	1.25 µg/L	0.012
M8-FOSA	9.529	506.1 -> 77.8	4740	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	5811	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	4814	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	5242	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	965	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	1735	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	2664	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	6695	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	45593	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	5491	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	14948	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	17353	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	2312	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	2381	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	5276	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	52626	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	4124	2.50 µg/L	0.000
13C4-PFOA	7.178	417.1 -> 372.0	41241	2.50 µg/L	0.012
13C2-PFDA	8.215	515.1 -> 470.1	12108	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	17130	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	27853	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	965	5.51 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.1%		
13C2-6:2FTS	6.939	429.1 -> 80.9	1735	4.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 82.9%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2664	4.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.7%		
13C2-PFDoDA	9.124	615.1 -> 570.0	11999	0.91 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 72.7%		
13C2-PFTeDA	9.855	715.2 -> 670.0	5485	0.86 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.2%		
13C3-PFBS	5.484	302.1 -> 79.9	5811	1.91 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 76.4%		
13C3-PFHxS	7.293	402.1 -> 79.9	4814	2.01 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.3%	
13C4-PFBA	2.897	216.8 -> 171.9	89961	8.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 80.9%	
13C4-PFHpA	6.521	367.1 -> 322.0	23823	2.04 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.5%	
13C5-PFHxA	5.554	318.0 -> 273.0	27172	2.02 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.6%	
13C5-PFPeA	4.324	268.3 -> 223.0	30462	4.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 81.0%	
13C6-PFDA	8.215	519.1 -> 474.1	10594	1.00 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 79.9%	
13C7-PFUnDA	8.682	570.0 -> 525.1	12618	0.93 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 74.8%	
13C8-FOSA	9.529	506.1 -> 77.8	4740	1.71 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 68.4%	
13C8-PFOA	7.177	421.1 -> 376.0	31462	2.02 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.8%	
13C8-PFOS	8.379	507.1 -> 79.9	5242	2.83 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.0%	
13C9-PFNA	7.720	472.1 -> 427.0	11364	0.97 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 77.4%	
d3-MeFOSAA	8.248	573.2 -> 419.0	6695	3.29 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 65.9%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	45593	7.27 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 72.7%	
d3-MeFOSA	10.656	515.0 -> 219.0	2381	1.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 65.8%	
d5-EtFOSAA	8.456	589.2 -> 419.0	5491	3.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 62.7%	
d7-MeFOSE	10.565	623.2 -> 58.9	14948	14.62 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 58.5%	
d9-EtFOSE	10.810	639.2 -> 58.9	17353	14.63 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 58.5%	
d5-EtFOSA	10.888	531.1 -> 219.0	2312	1.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 62.0%	

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	-	427.1 -> 407.0 427.1 -> 80.9	-	N.D.	
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	9.215	599.0 -> 79.9	0	µg/L	m 1

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	0			
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	7.823	449.0 -> 79.9	0	µg/L	m	1
		449.0 -> 98.9	0			
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	-	413.0 -> 369.0	-	N.D.		
		413.0 -> 169.0				
PFOS	8.318	498.9 -> 79.9	0	µg/L	m	1
		498.9 -> 98.8	0			
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

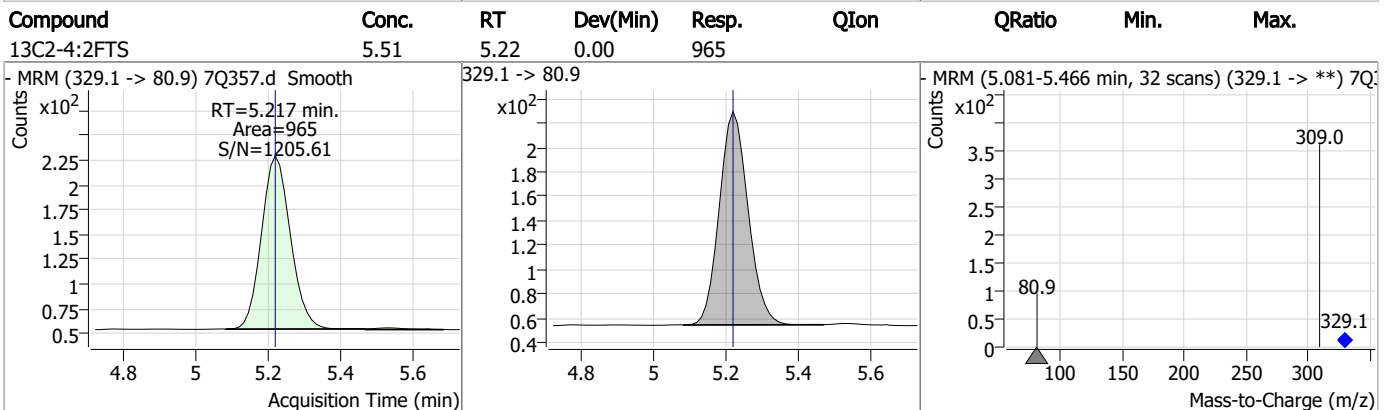
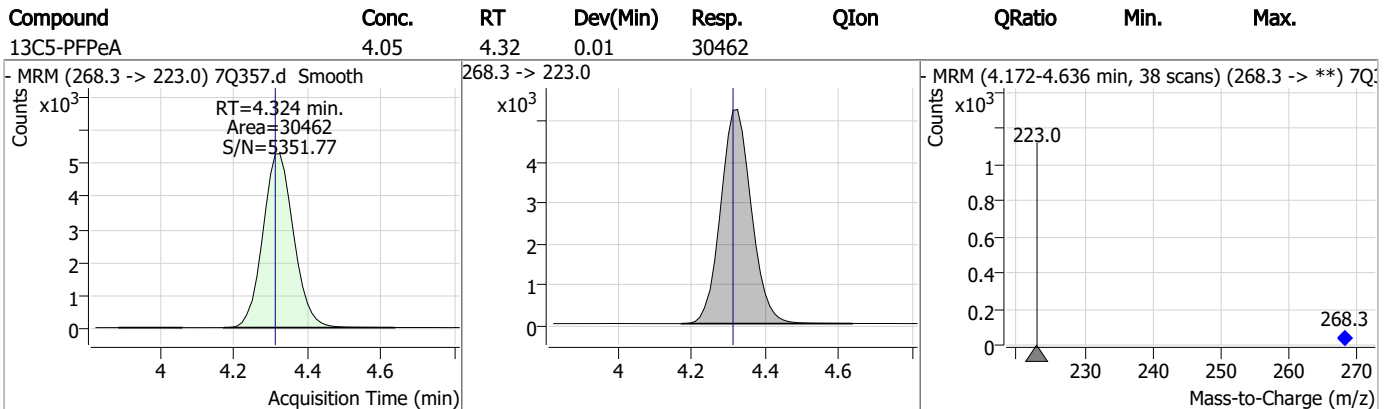
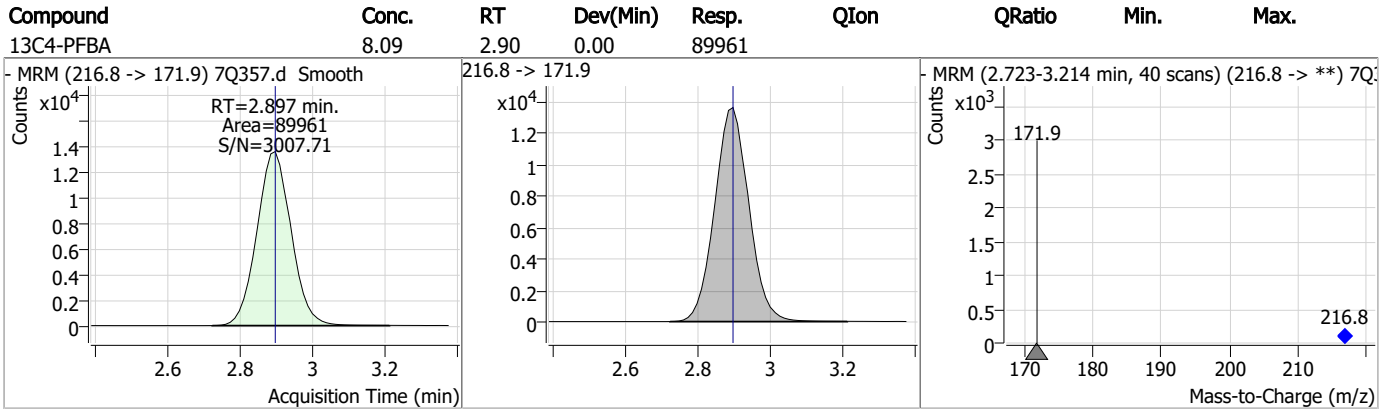
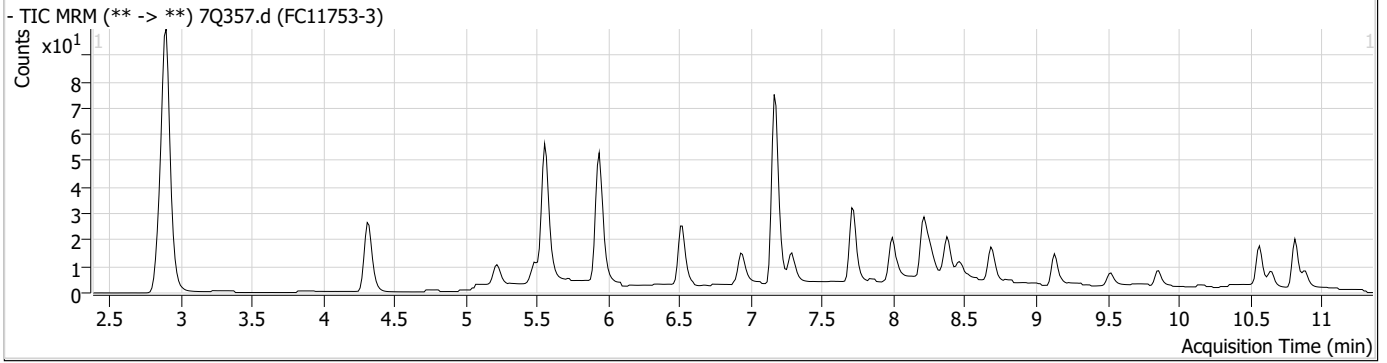
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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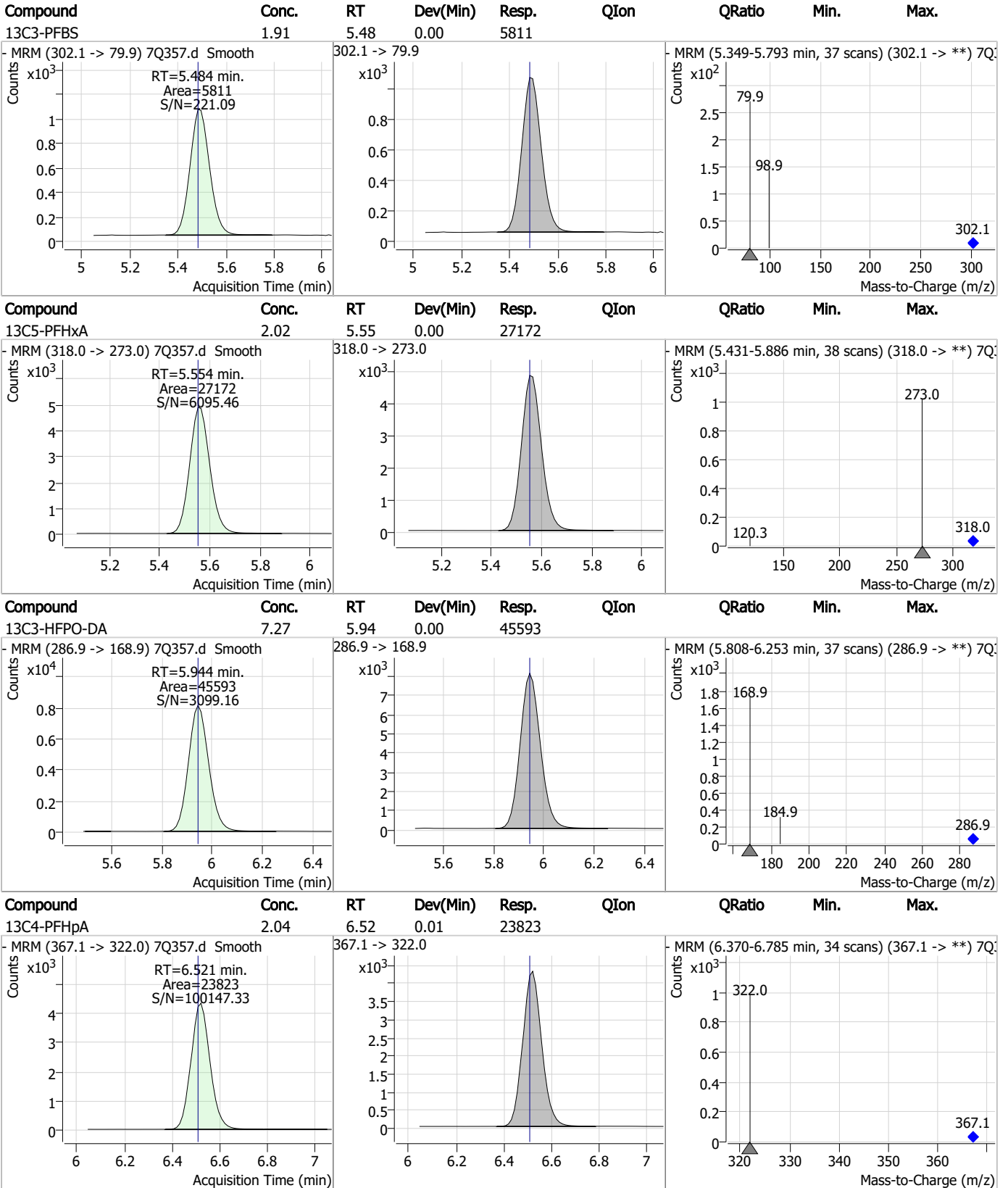
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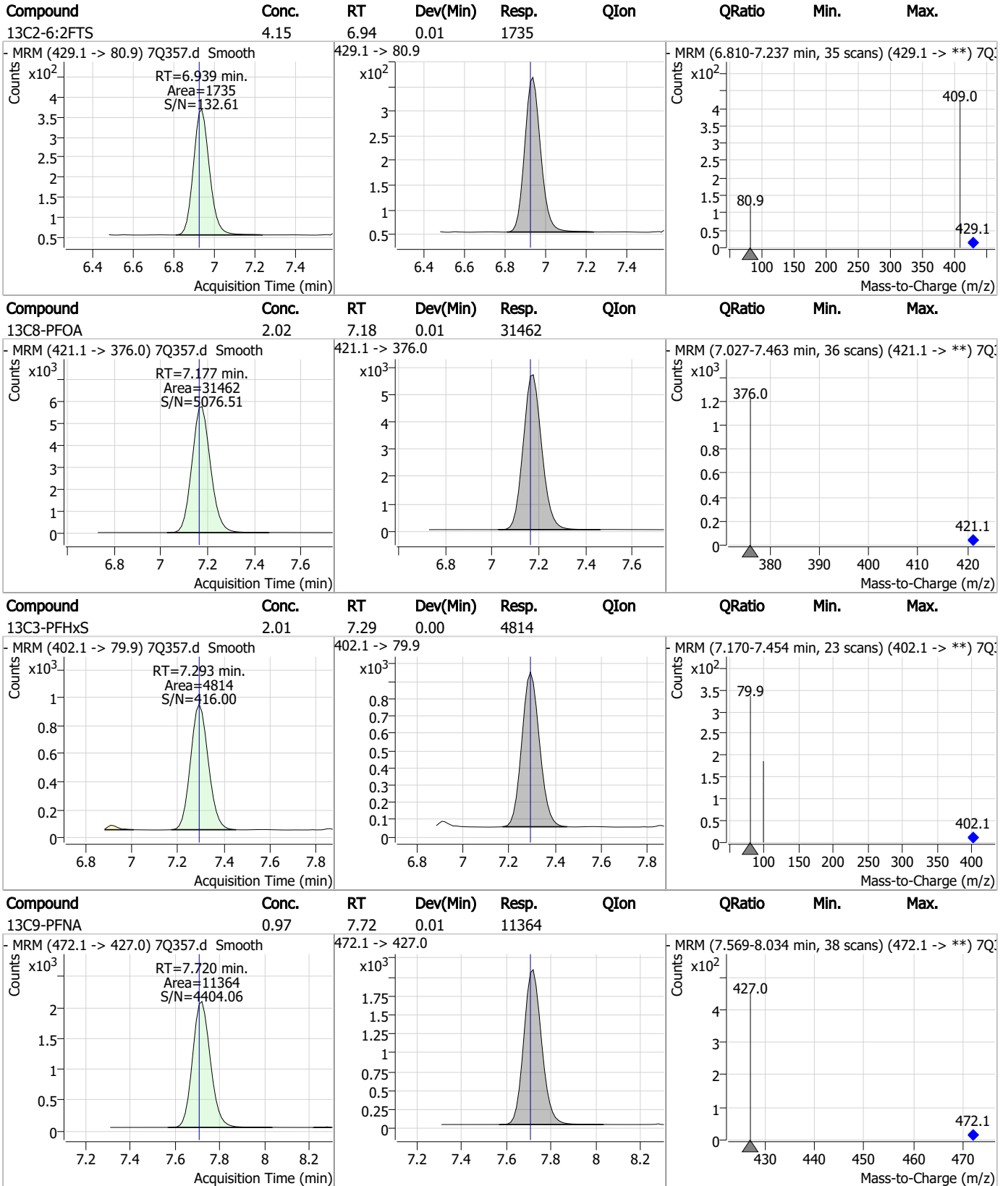
Perfluorinated Compounds by LC/MS/MS



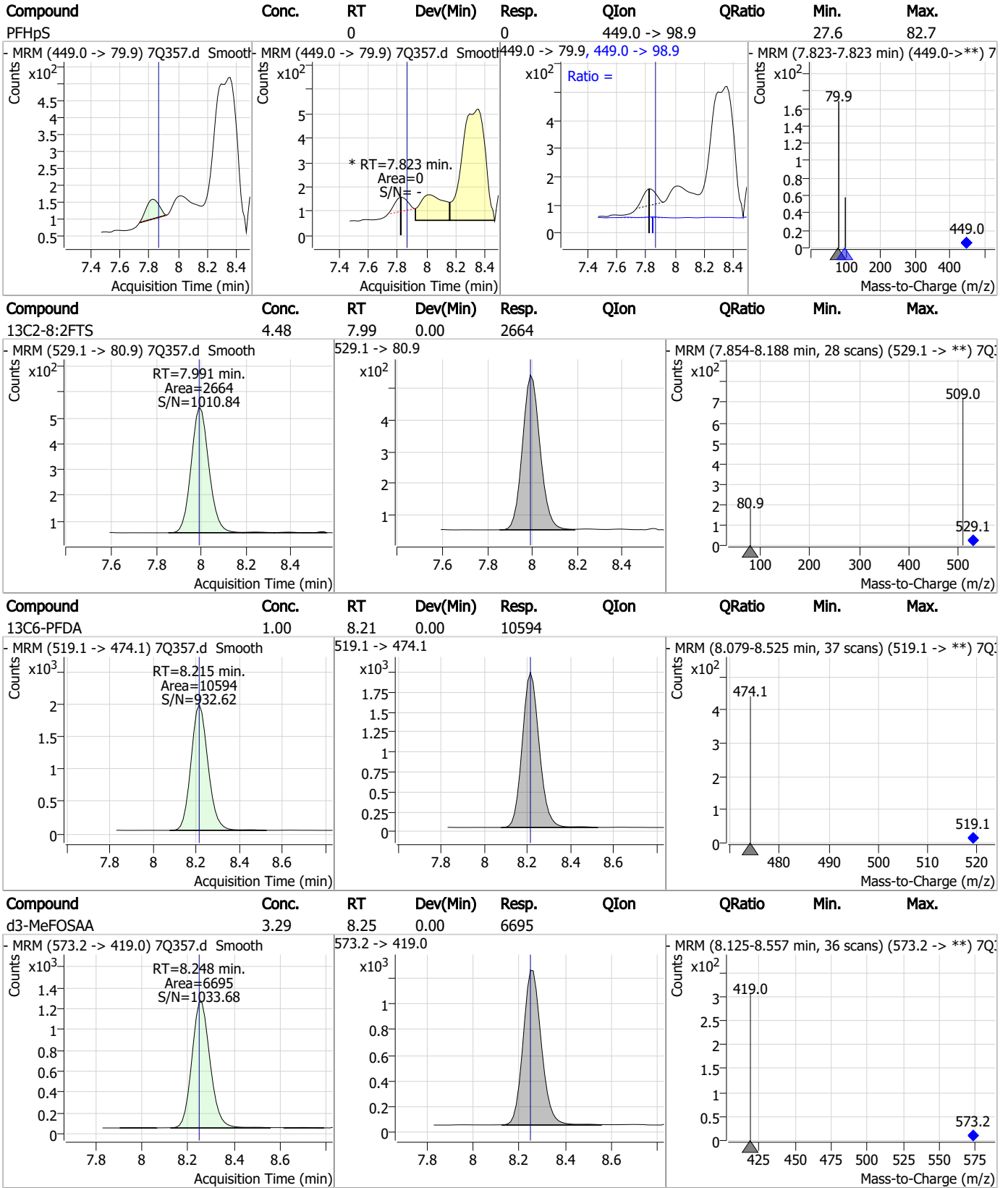
Perfluorinated Compounds by LC/MS/MS



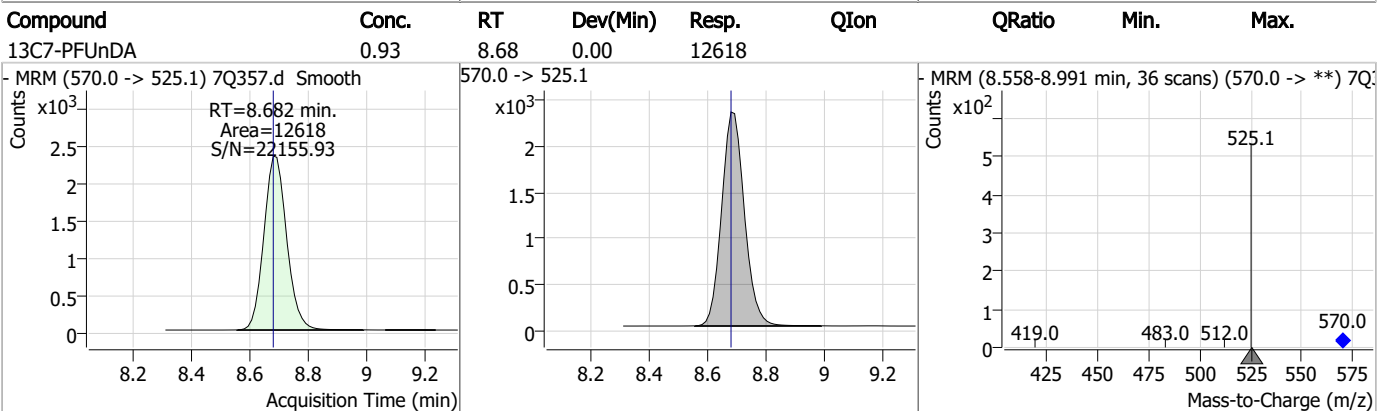
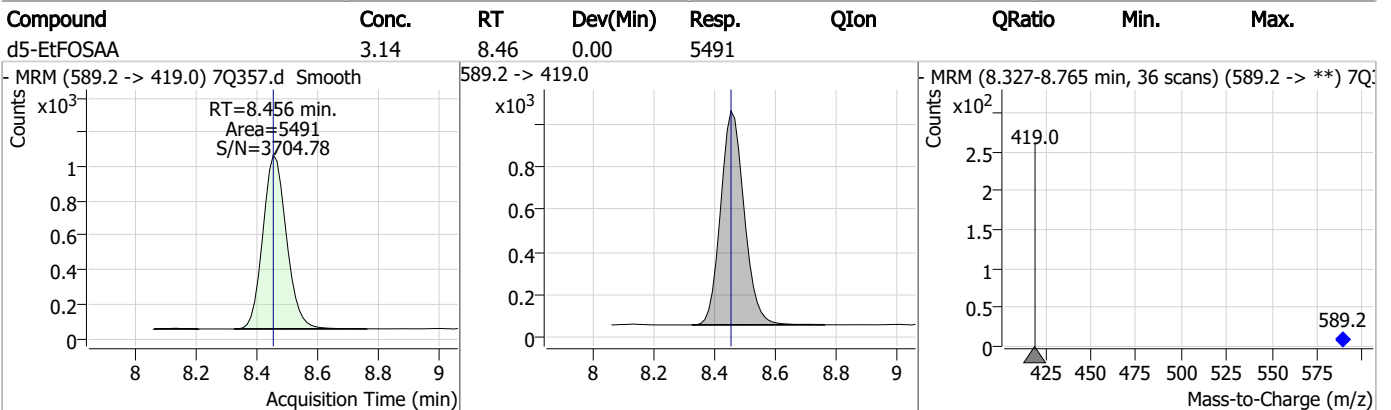
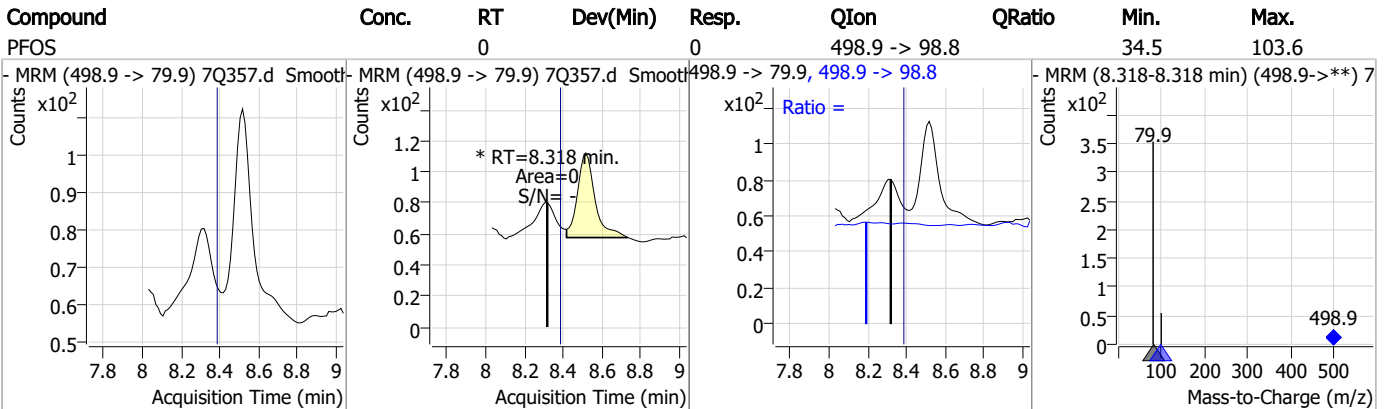
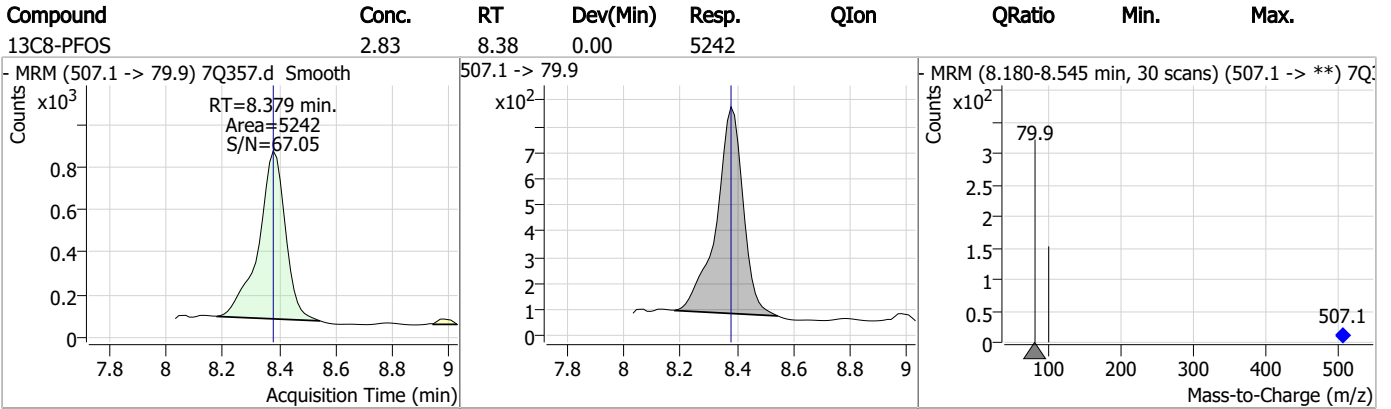
Perfluorinated Compounds by LC/MS/MS



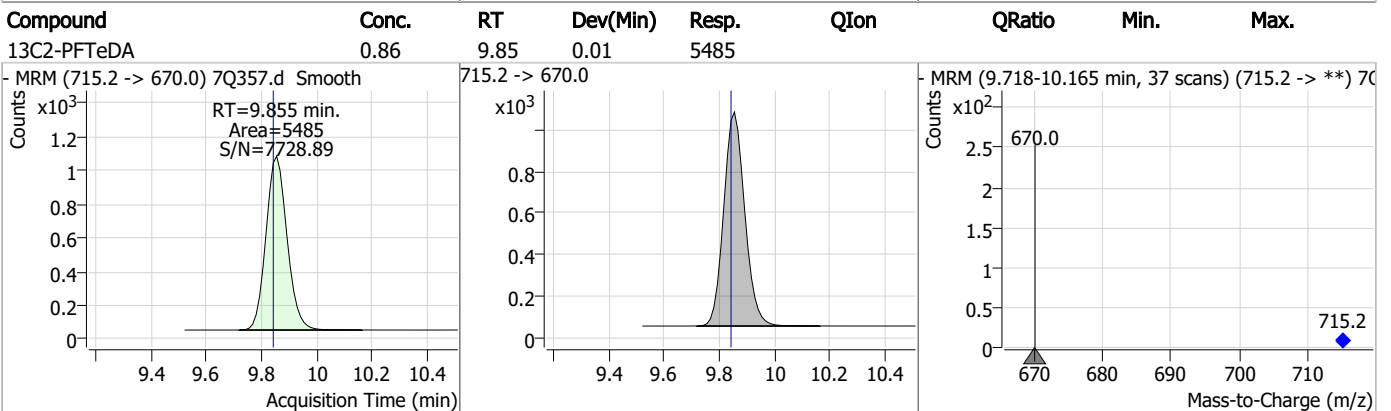
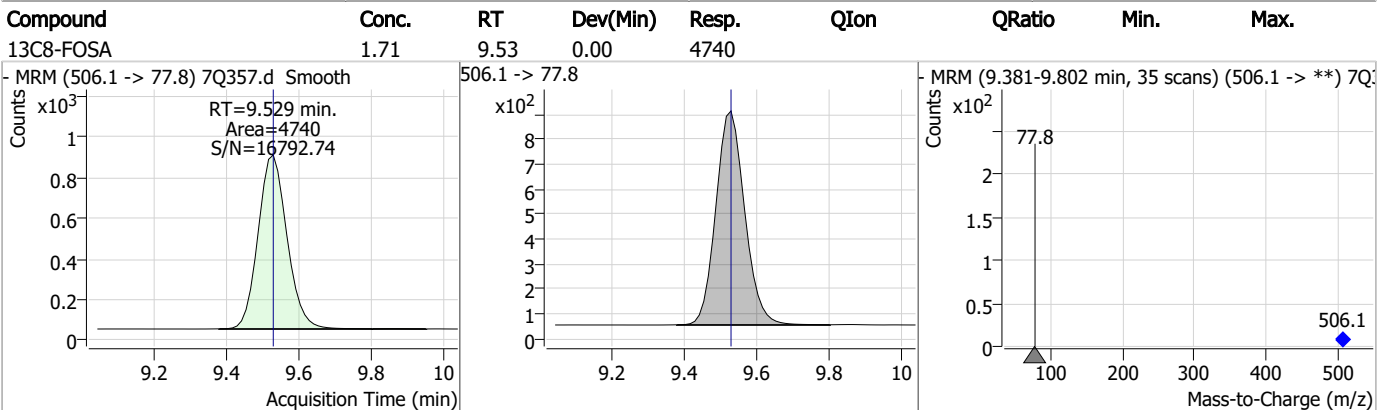
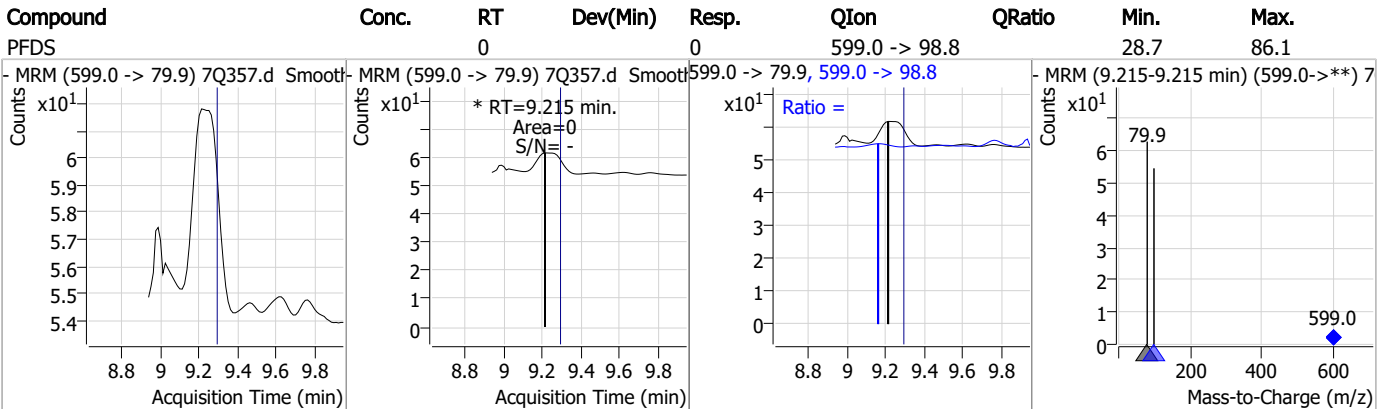
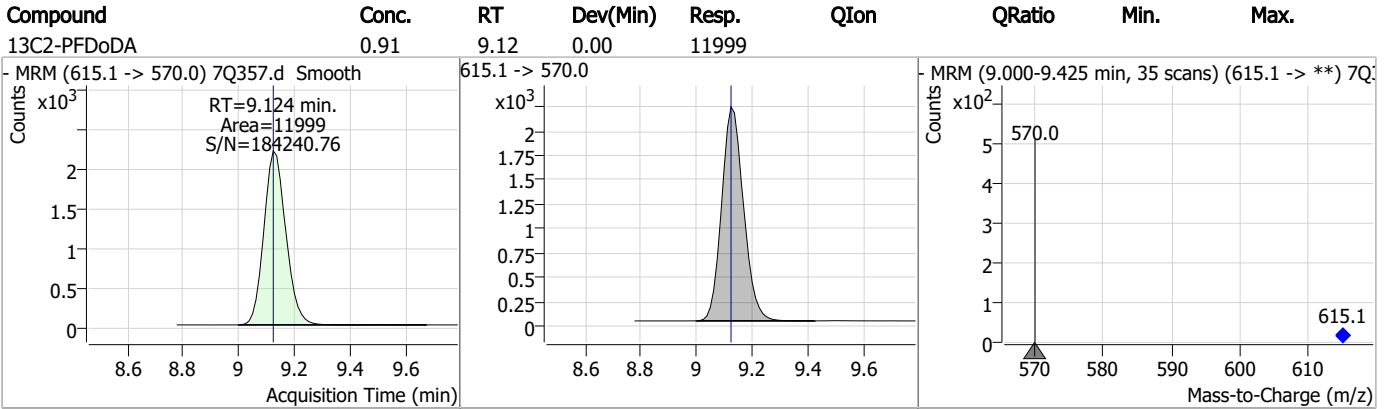
Perfluorinated Compounds by LC/MS/MS



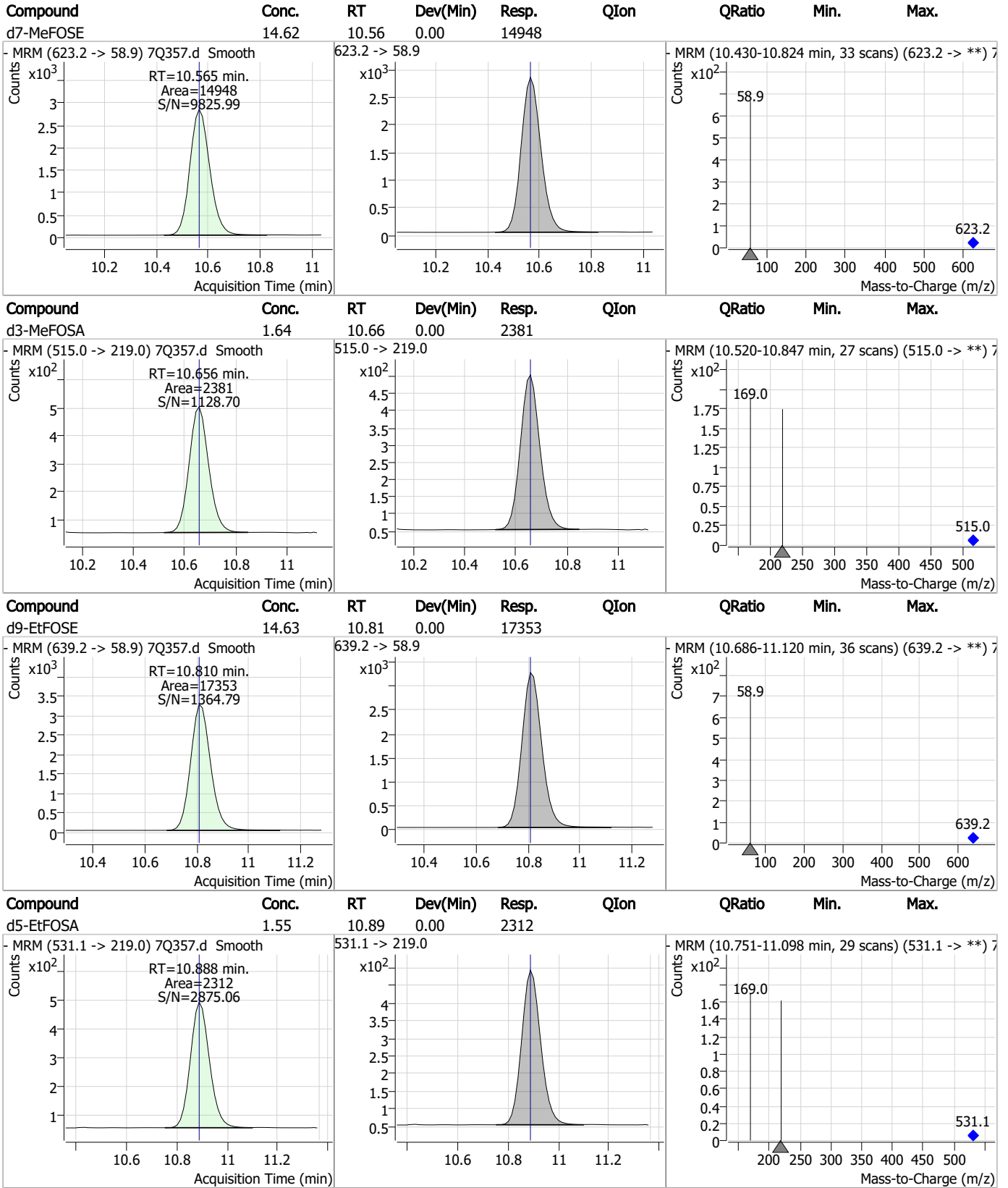
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54997.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 3:23:31 AM
 Sample Name : fc11753-4
 Vial : P4-A3
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.765	216.8 -> 171.9	88685	10.00 µg/L	0.091
M5-PFPeA	4.187	268.3 -> 223.0	35077	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	26558	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	26098	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	41544	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	16239	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	11044	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	13572	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	14094	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	13337	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	5660	2.50 µg/L	0.012
M3-PFBS	5.227	302.1 -> 79.9	7249	2.50 µg/L	0.038
M3-PFHxS	7.054	402.1 -> 79.9	6178	2.50 µg/L	0.025
M8-PFOS	8.130	507.1 -> 79.9	6526	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1163	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2609	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	3292	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	17672	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	24156	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	14241	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	24609	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36802	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5106	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	4169	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5586	2.50 µg/L	0.012
13C3-PFBA	2.755	216.0 -> 172.0	39422	5.00 µg/L	0.077
18O2-PFHxS	7.054	403.0 -> 83.9	3672	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	44016	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	12622	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	15591	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	28289	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1163	6.67 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.4%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2609	6.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.0%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3292	6.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14094	1.12 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	13337	1.06 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 85.1%		
13C3-PFBS	5.227	302.1 -> 79.9	7249	2.58 µg/L	0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C3-PFHxS	7.054	402.1 -> 79.9	6178	2.68 µg/L	0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C4-PFBA	2.765	216.8 -> 171.9	88685	10.71 µg/L	0.091
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C4-PFHpA	6.304	367.1 -> 322.0	26098	2.62 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C5-PFHxA	5.359	318.0 -> 273.0	26558	2.55 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFPeA	4.187	268.3 -> 223.0	35077	5.40 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C6-PFDA	8.017	519.1 -> 474.1	11044	1.20 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C7-PFUnDA	8.461	570.0 -> 525.1	13572	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-FOSA	9.806	506.1 -> 77.8	5660	1.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 62.5%	
13C8-PFOA	6.989	421.1 -> 376.0	41544	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-PFOS	8.130	507.1 -> 79.9	6526	2.31 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C9-PFNA	7.521	472.1 -> 427.0	16239	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.0%	
d3-MeFOSAA	8.099	573.2 -> 419.0	17672	5.70 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.0%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	24156	9.27 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	4169	1.93 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.2%	
d5-EtFOSAA	8.296	589.2 -> 419.0	14241	5.43 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.6%	
d7-MeFOSE	11.034	623.2 -> 58.9	24609	13.78 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	36802	18.40 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 73.6%	
d5-EtFOSA	11.397	531.1 -> 219.0	5106	2.16 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.3%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
		599.0 -> 98.8			
PFHpA	-	363.1 -> 319.0	-	N.D.	
		363.1 -> 169.0			
PFHpS	-	449.0 -> 79.9	-	N.D.	
		449.0 -> 98.9			
PFHxA	-	313.0 -> 269.0	-	N.D.	
		313.0 -> 118.9			
PFHxS	-	398.7 -> 79.9	-	N.D.	
		398.7 -> 98.9			
PFNA	-	463.0 -> 419.0	-	N.D.	
		463.0 -> 219.0			
PFNS	-	548.8 -> 79.9	-	N.D.	
		548.8 -> 98.9			
PFOA	-	413.0 -> 369.0	-	N.D.	
		413.0 -> 169.0			
PFOS	-	498.9 -> 79.9	-	N.D.	
		498.9 -> 98.8			
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.1 -> 79.9	-	N.D.	
		349.1 -> 98.9			
PFTeDA	-	713.1 -> 669.0	-	N.D.	
		713.1 -> 168.9			
PFTTrDA	-	663.0 -> 619.0	-	N.D.	
		663.0 -> 168.9			
PFUnDA	-	563.1 -> 519.0	-	N.D.	
		563.1 -> 269.1			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.	
		632.9 -> 452.9			
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.	
		532.8 -> 353.0			
ADONA	-	376.9 -> 250.9	-	N.D.	
		376.9 -> 84.8			
HFPO-DA	-	284.9 -> 168.9	-	N.D.	
		284.9 -> 184.9			
3:3FTCA	-	241.0 -> 177.0	-	N.D.	
		241.0 -> 117.0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.	
		341.0 -> 217.0			
7:3FTCA	-	441.0 -> 316.9	-	N.D.	
		441.0 -> 336.9			
EtFOSA	-	526.0 -> 219.0	-	N.D.	
		526.0 -> 169.0			
EtFOSE	-	630.0 -> 58.9	-	N.D.	
MeFOSA	-	511.9 -> 219.0	-	N.D.	
		511.9 -> 169.0			
MeFOSE	-	616.1 -> 58.9	-	N.D.	
PFDoDS	-	699.1 -> 79.9	-	N.D.	
		699.1 -> 98.8			
NFDHA	-	295.0 -> 201.0	-	N.D.	
		295.0 -> 84.9			
PFMBA	-	279.0 -> 85.1	-	N.D.	
PFMPA	-	229.0 -> 84.9	-	N.D.	
PFEESA	-	314.8 -> 134.9	-	N.D.	
		314.8 -> 82.9			

= Qualifier out of range, m = manually integrated, + = Area summed

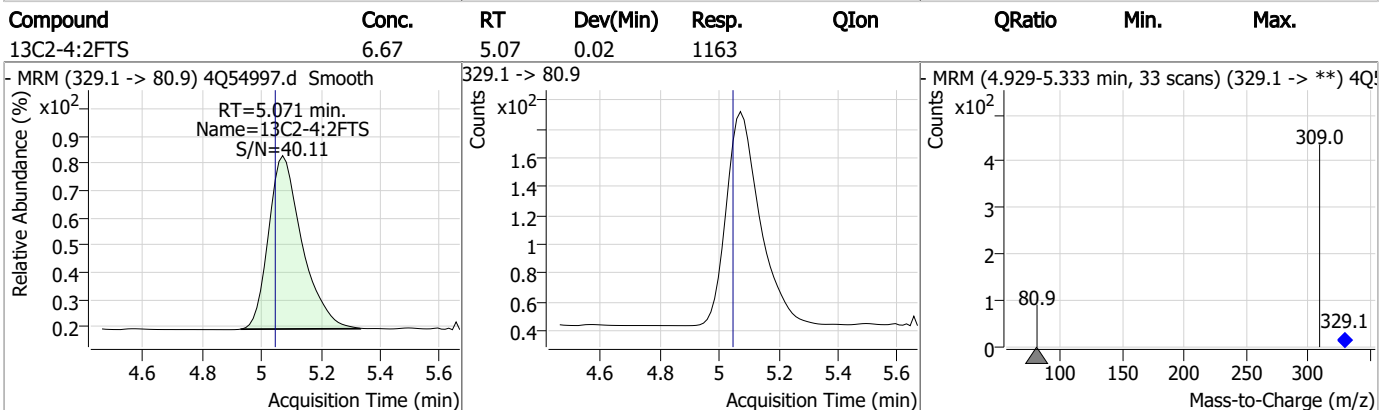
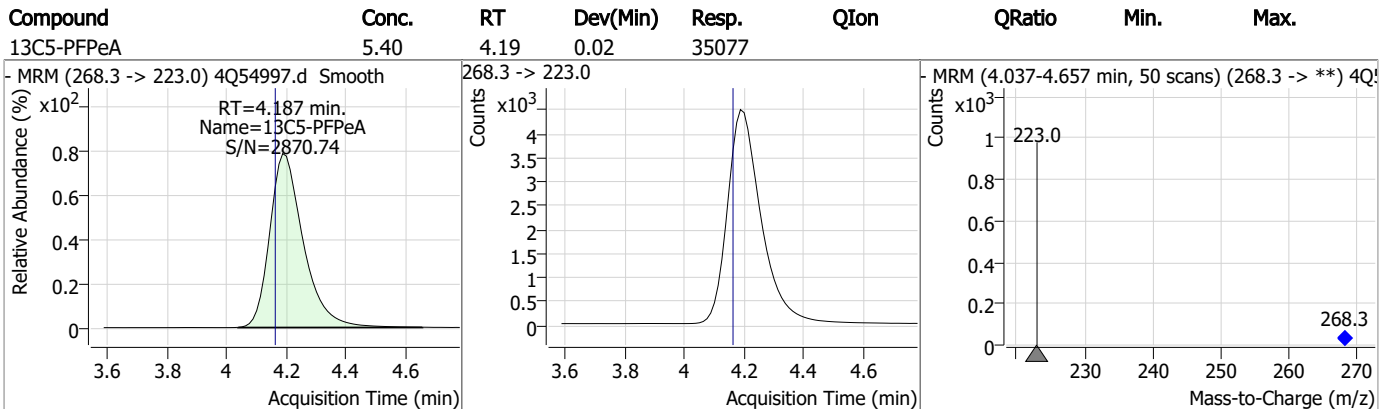
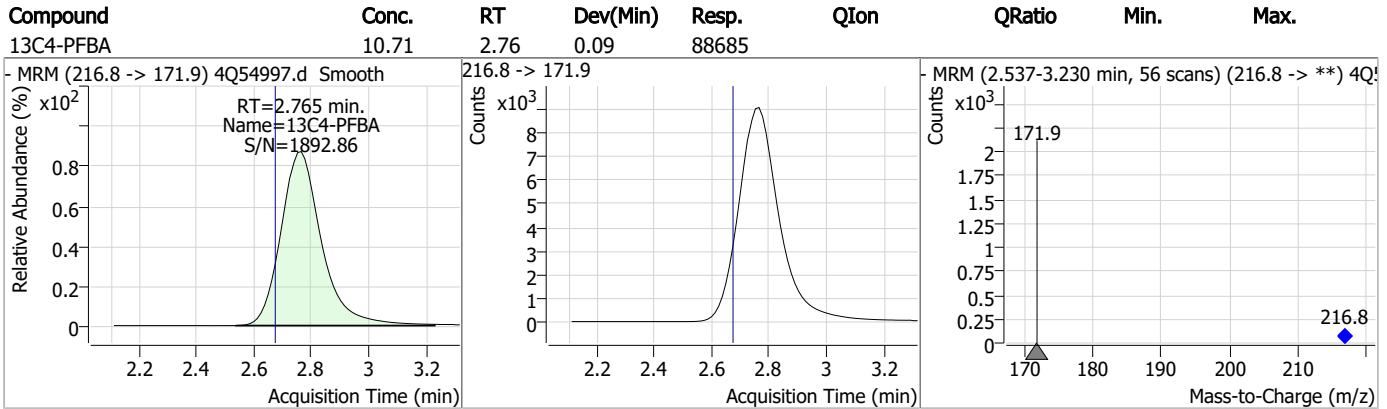
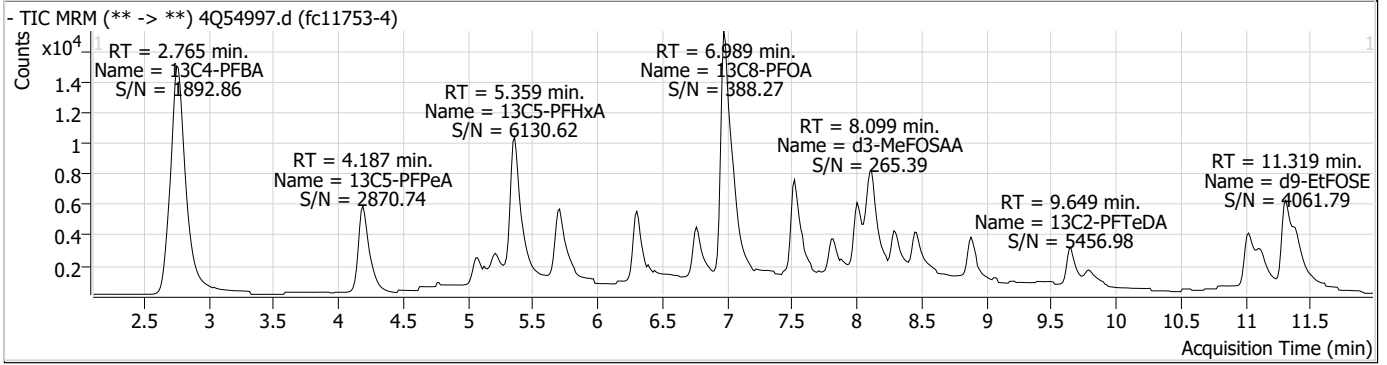
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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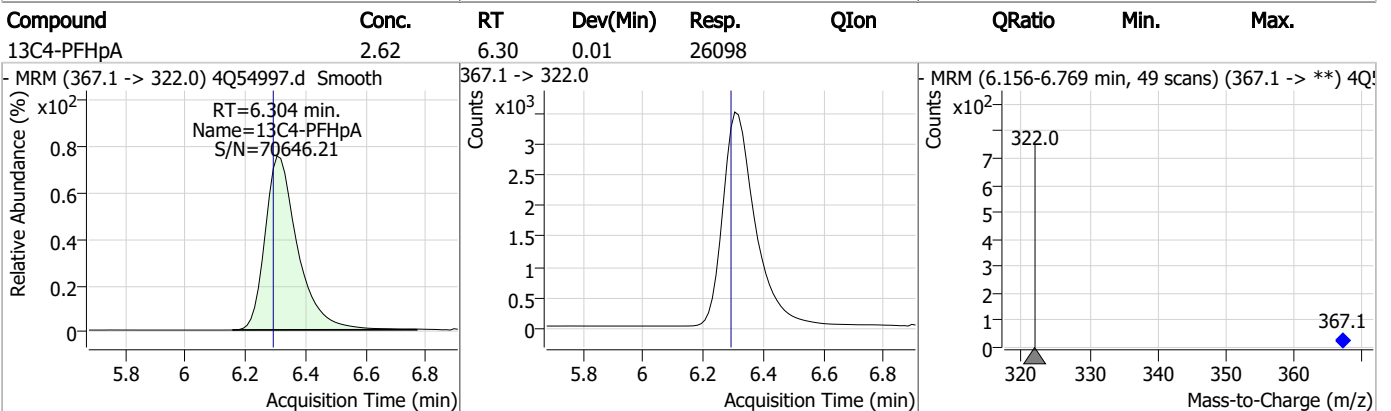
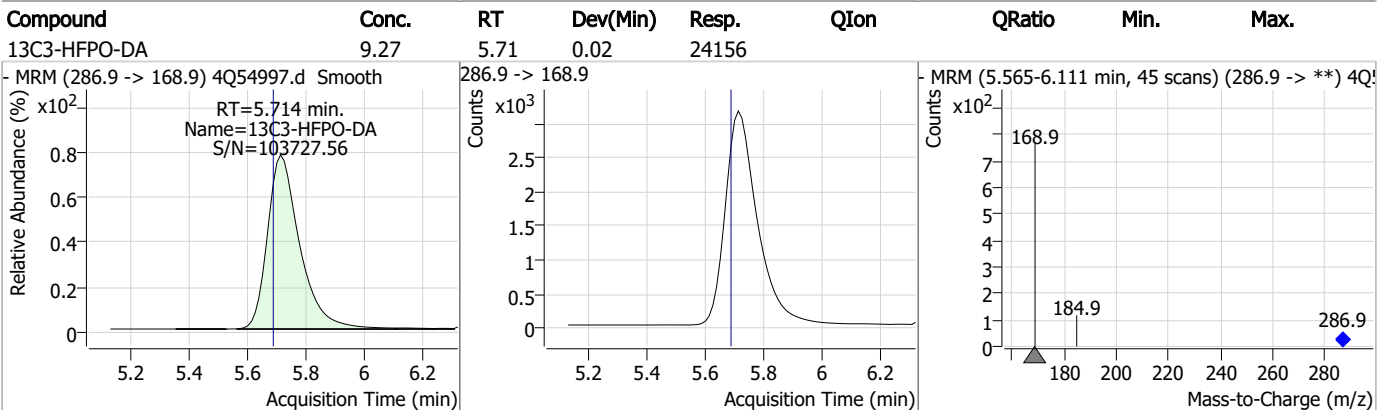
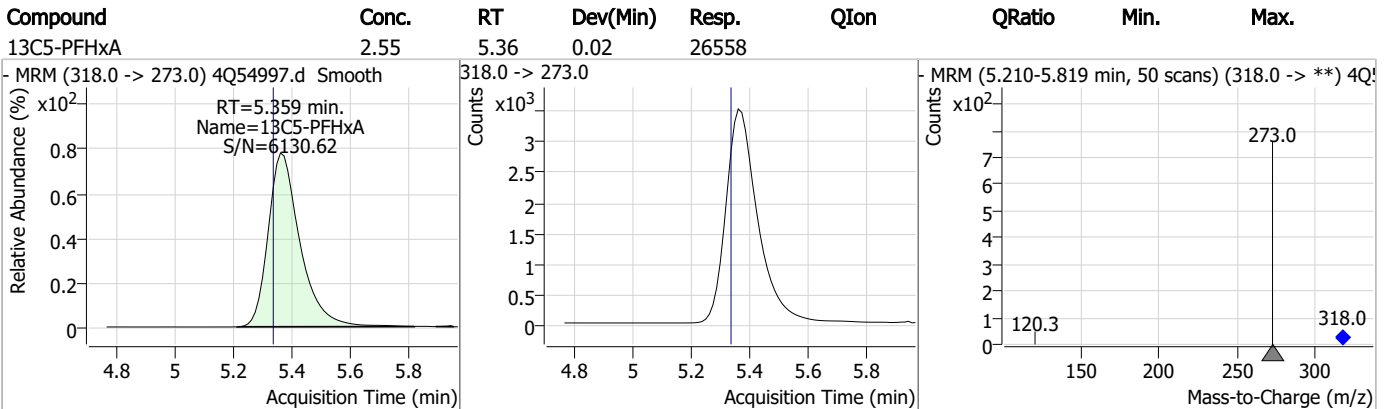
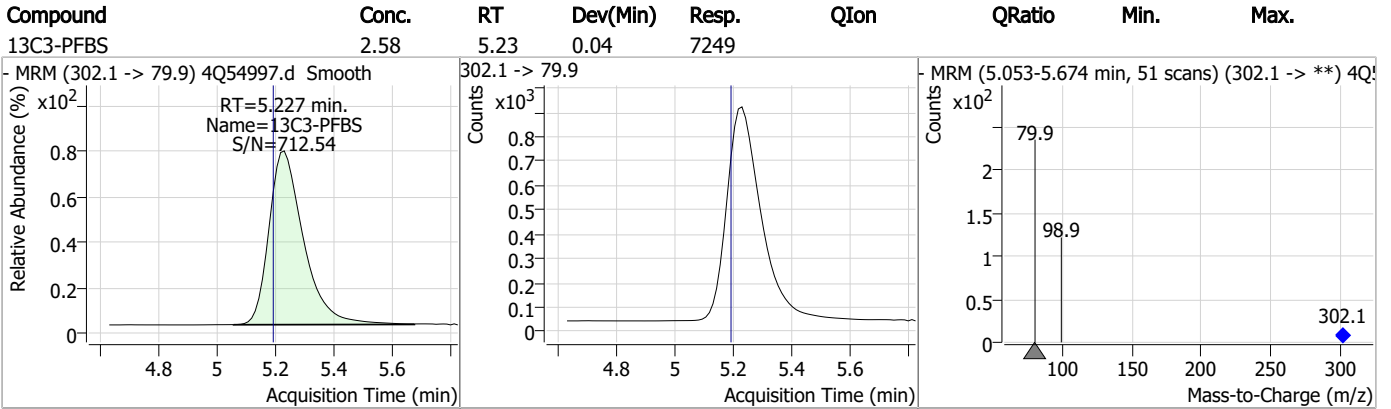
7.1.5
7



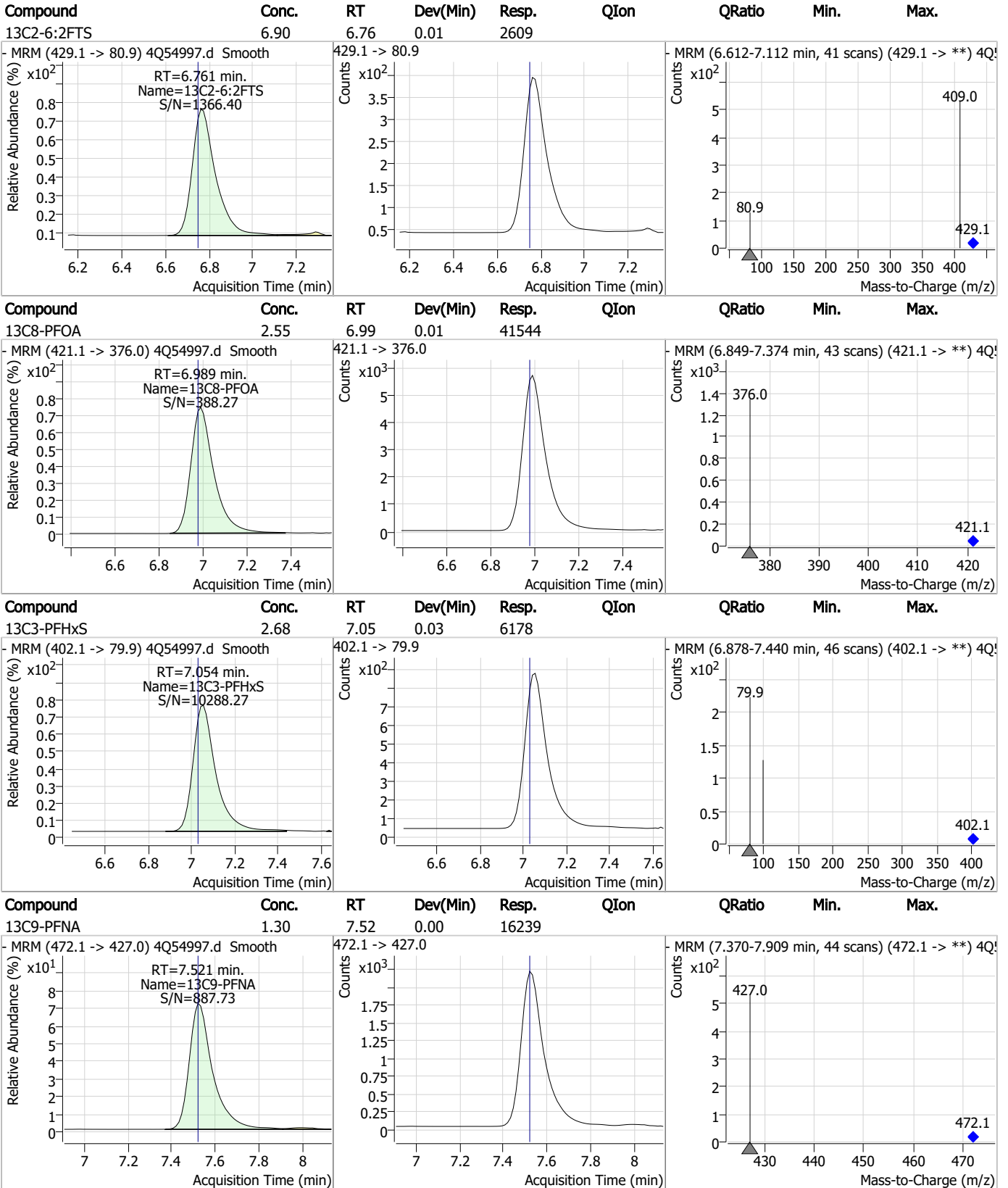
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

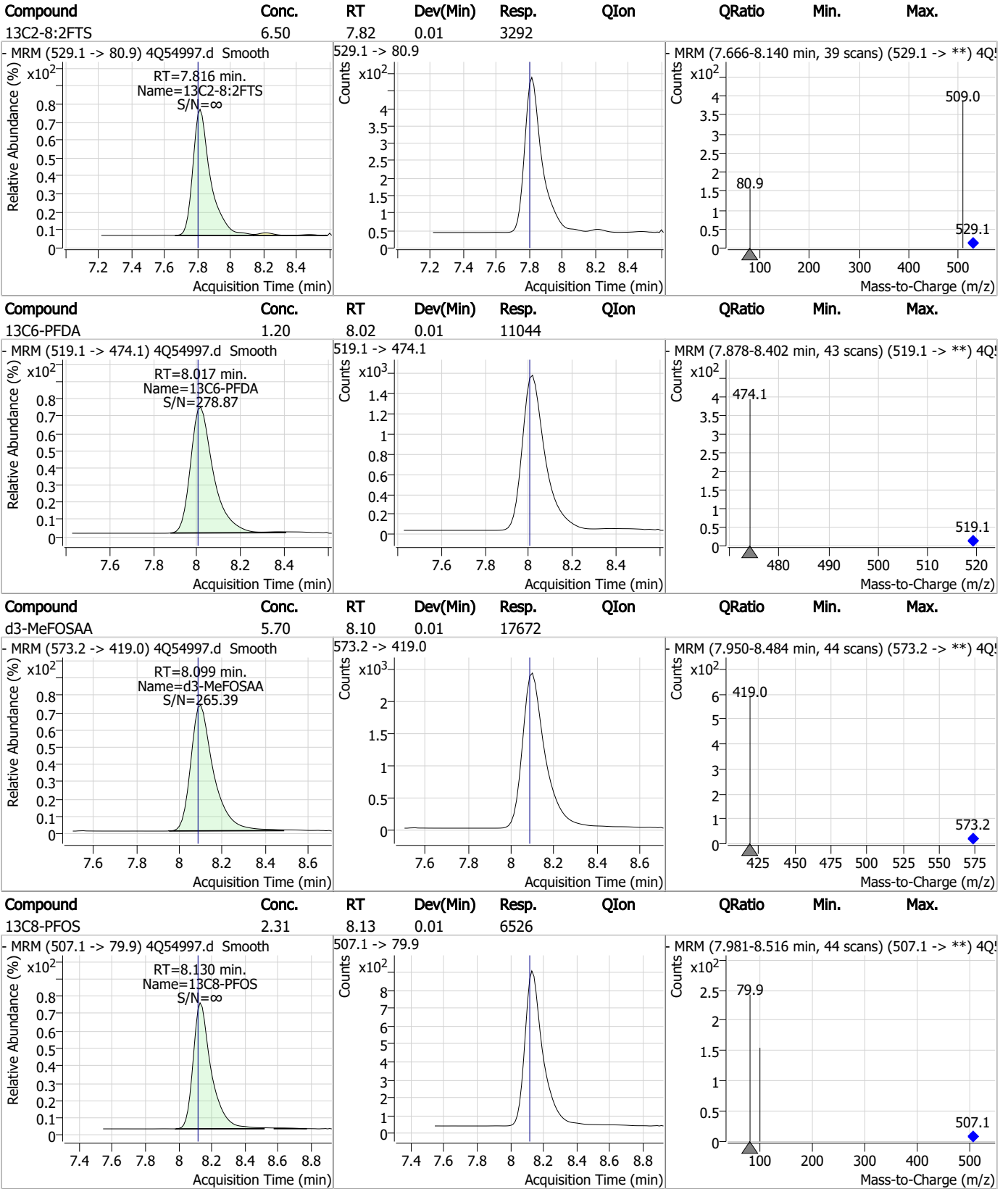


Perfluorinated Compounds by LC/MS/MS



7.1.5
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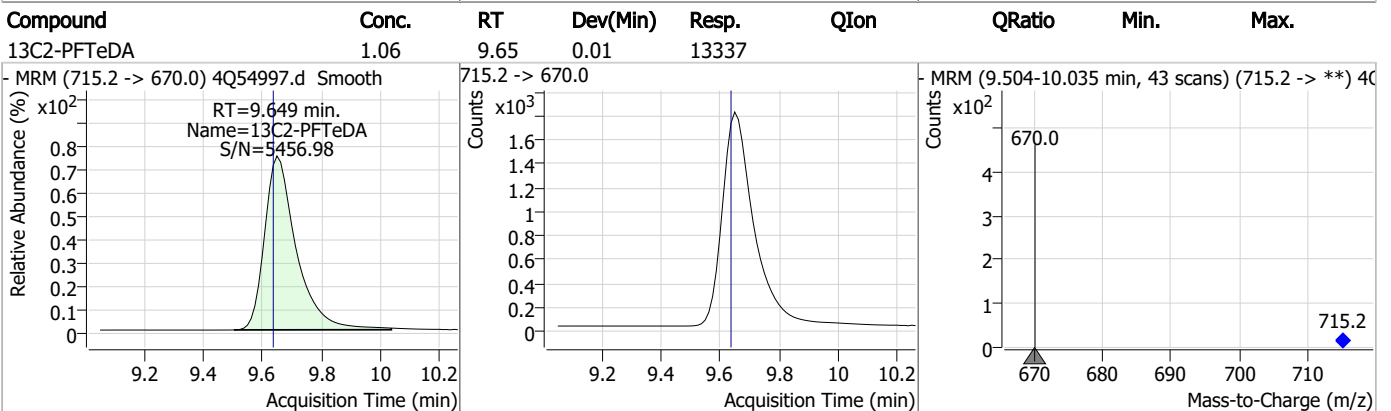
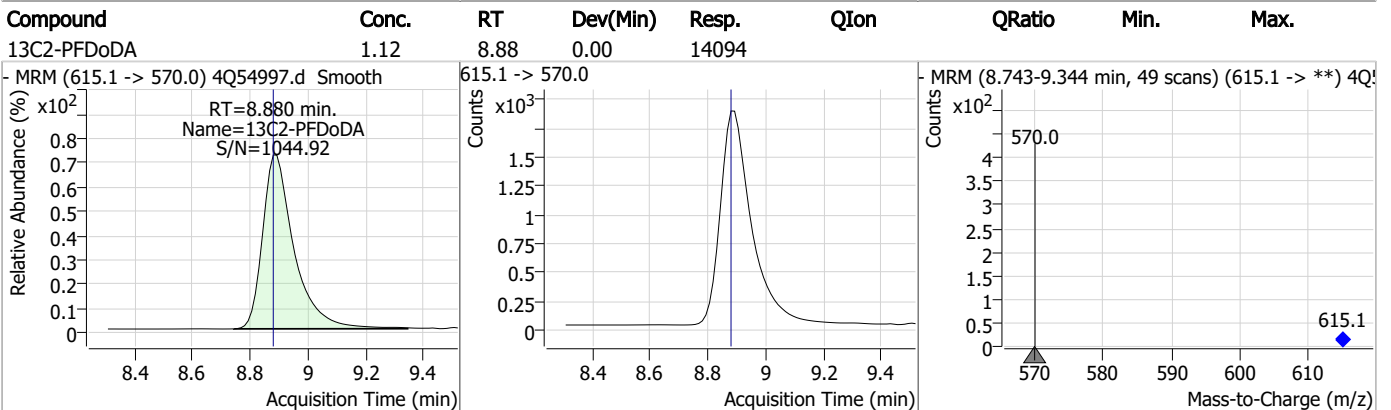
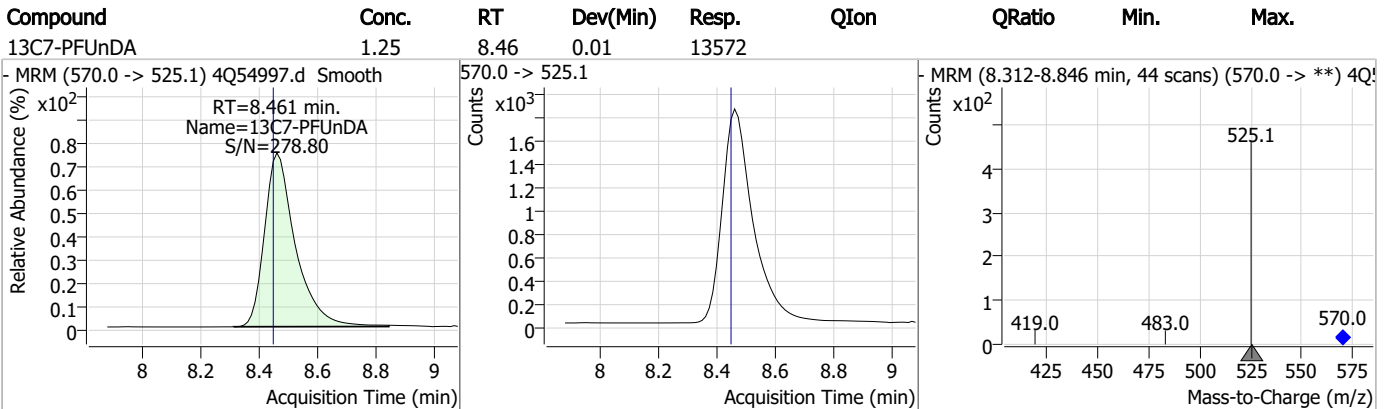
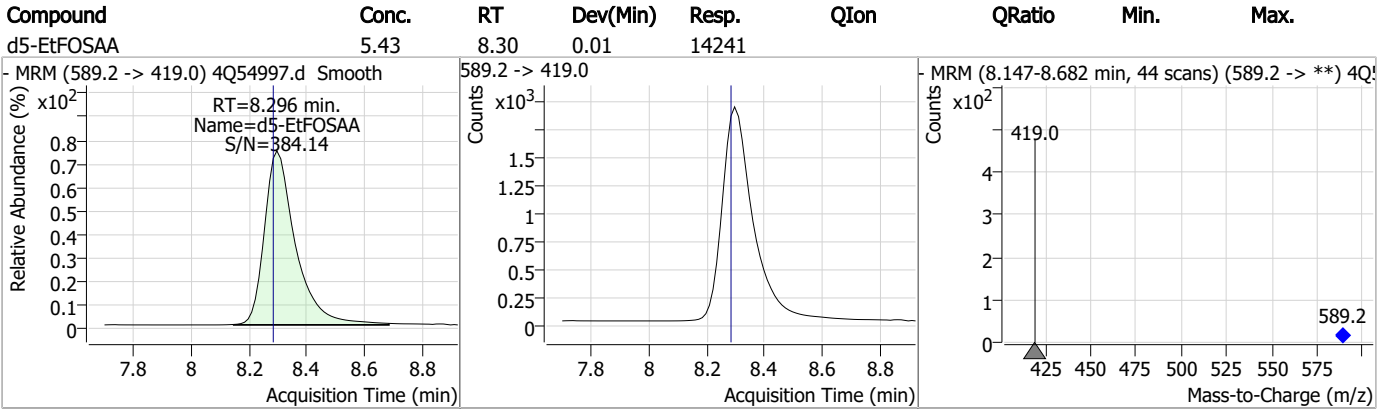
Perfluorinated Compounds by LC/MS/MS



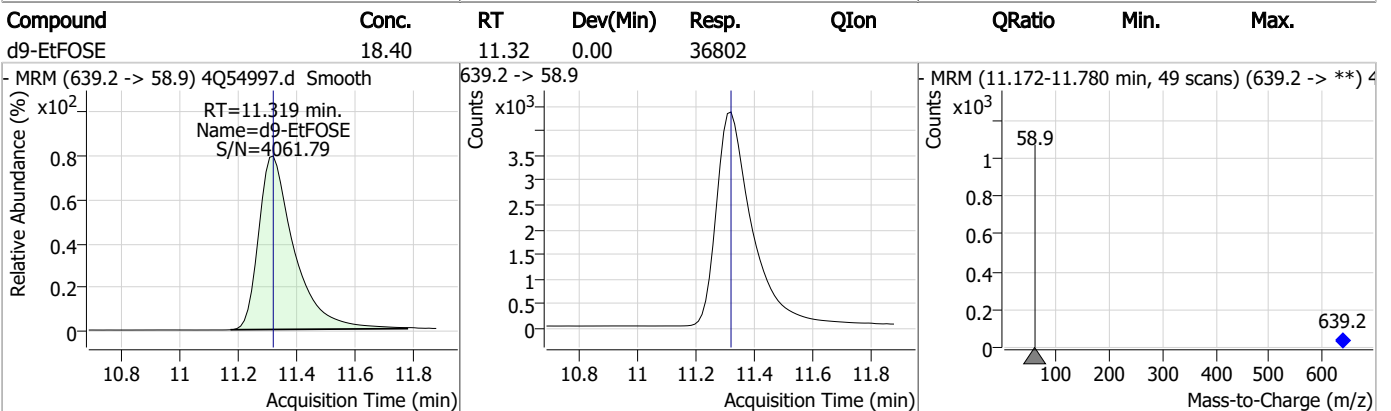
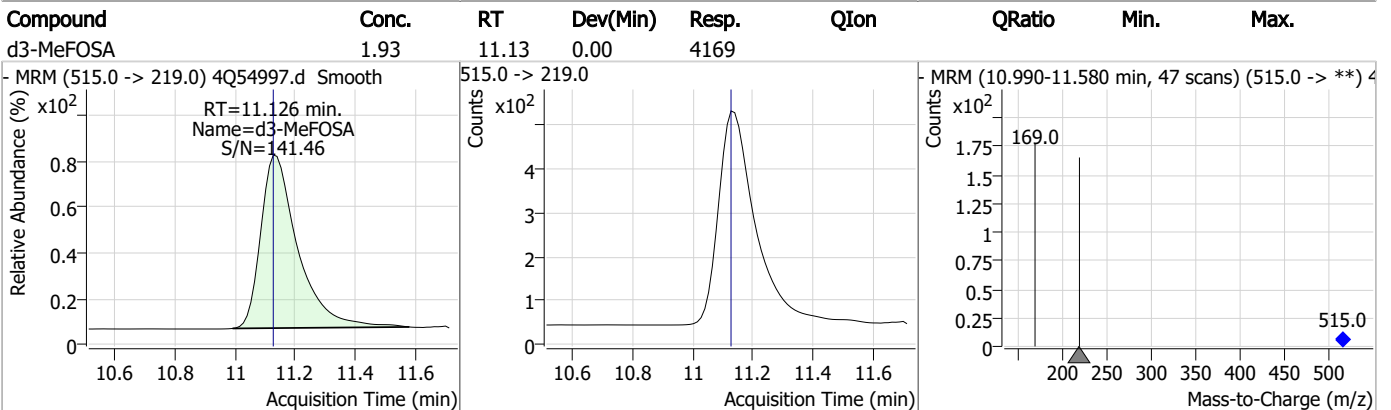
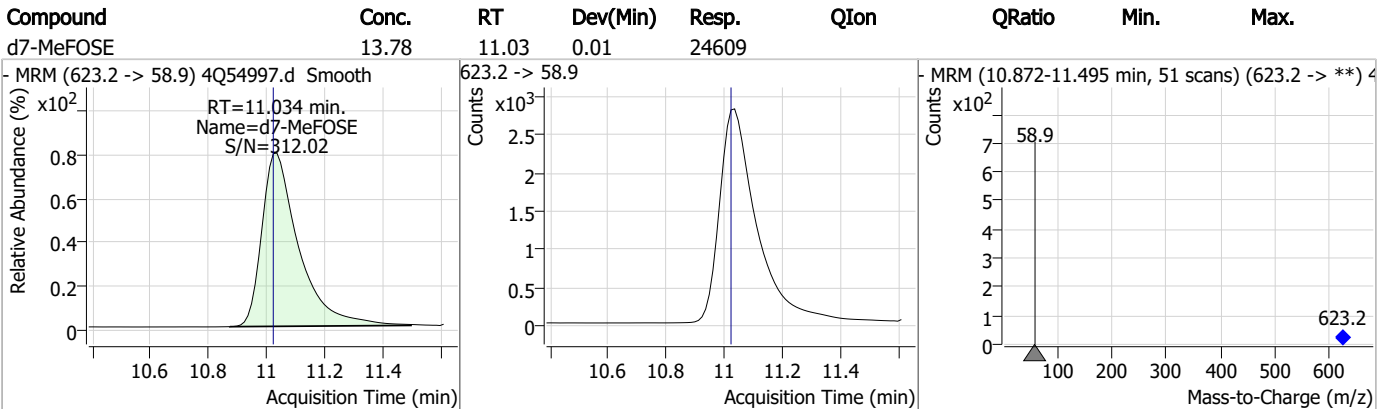
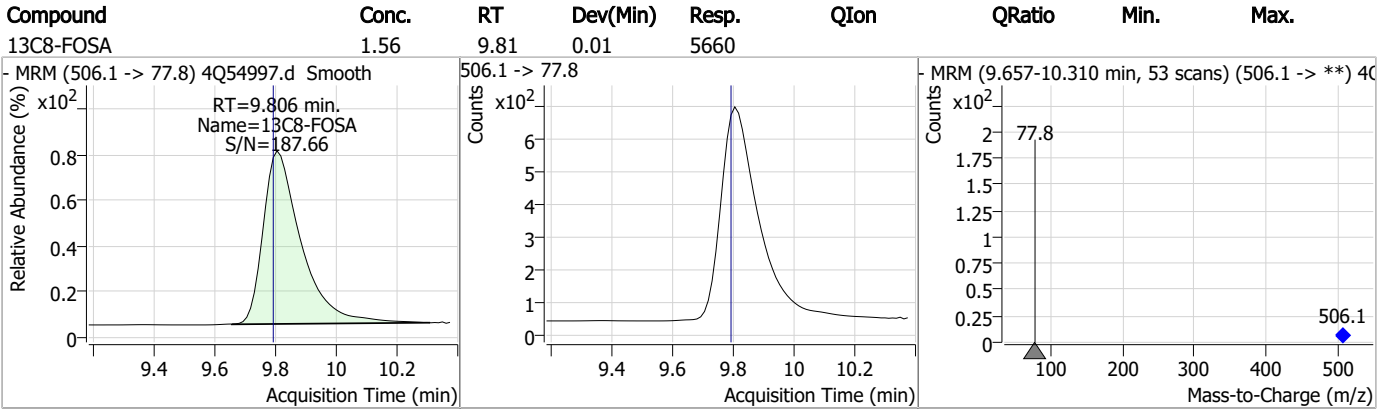
7.15

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Perfluorinated Compounds by LC/MS/MS

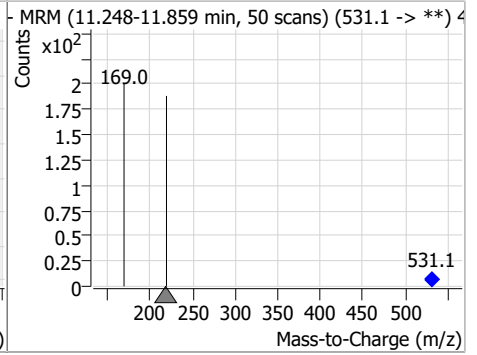
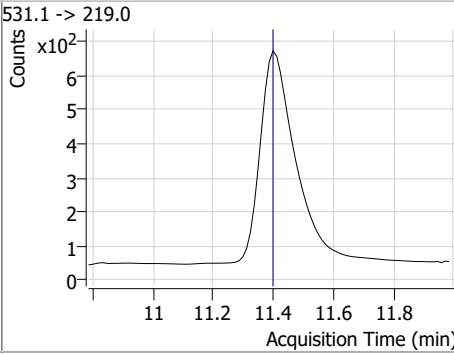
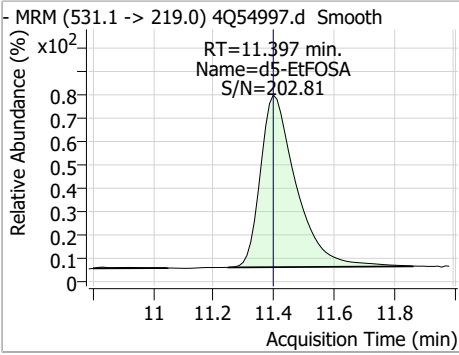


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.16	11.40	0.00	5106				



7.1.5
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54998.d
 Operator : annal
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 Acq. Date-Time : 12/11/2023 3:38:15 AM
 Sample Name : fc11753-5
 Vial : P4-A4
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.765	216.8 -> 171.9	83875	10.00 µg/L	0.091
M5-PFPeA	4.187	268.3 -> 223.0	34775	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	27724	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	25672	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	43218	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	16334	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	11041	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	13101	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	13362	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	12563	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	6564	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	7481	2.50 µg/L	0.025
M3-PFHxS	7.054	402.1 -> 79.9	6077	2.50 µg/L	0.025
M8-PFOS	8.130	507.1 -> 79.9	6606	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1056	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2677	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	3279	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	16712	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	24376	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	13635	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	24615	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	37175	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	5121	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4086	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	5513	2.50 µg/L	0.012
13C3-PFBA	2.755	216.0 -> 172.0	37763	5.00 µg/L	0.077
18O2-PFHxS	7.041	403.0 -> 83.9	3481	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	42678	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	11576	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	15846	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	26854	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1056	6.39 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.8%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2677	7.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 149.4%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3279	6.83 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 136.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	13362	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12563	1.09 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.5%		
13C3-PFBS	5.215	302.1 -> 79.9	7481	2.80 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.2%		
13C3-PFHxS	7.054	402.1 -> 79.9	6077	2.78 µg/L	0.025

7.1.6
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C4-PFBA	2.765	216.8 -> 171.9	83875	10.58 µg/L	0.091
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C4-PFHpA	6.304	367.1 -> 322.0	25672	2.71 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.5%	
13C5-PFHxA	5.359	318.0 -> 273.0	27724	2.80 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C5-PFPeA	4.187	268.3 -> 223.0	34775	5.64 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.8%	
13C6-PFDA	8.017	519.1 -> 474.1	11041	1.31 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C7-PFUnDA	8.461	570.0 -> 525.1	13101	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C8-FOSA	9.806	506.1 -> 77.8	6564	1.84 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.5%	
13C8-PFOA	6.989	421.1 -> 376.0	43218	2.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.6%	
13C8-PFOS	8.130	507.1 -> 79.9	6606	2.37 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C9-PFNA	7.521	472.1 -> 427.0	16334	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.9%	
d3-MeFOSAA	8.099	573.2 -> 419.0	16712	5.46 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.2%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	24376	9.86 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSA	11.139	515.0 -> 219.0	4086	1.92 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 76.7%	
d5-EtFOSAA	8.296	589.2 -> 419.0	13635	5.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.3%	
d7-MeFOSE	11.034	623.2 -> 58.9	24615	13.96 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.9%	
d9-EtFOSE	11.319	639.2 -> 58.9	37175	18.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 75.3%	
d5-EtFOSA	11.398	531.1 -> 219.0	5121	2.19 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.6%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.378	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8				
		363.1 -> 319.0	1032	0.07 µg/L	m	93
PFHpS	-	363.1 -> 169.0	156			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.362	449.0 -> 98.9				
		313.0 -> 269.0	979	0.11 µg/L		100
PFHxS	-	313.0 -> 118.9	26			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.189	498.9 -> 98.8				
		263.0 -> 219.0	1145	0.17 µg/L		100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEESA	-					

= Qualifier out of range, m = manually integrated, + = Area summed

7.1.6
7



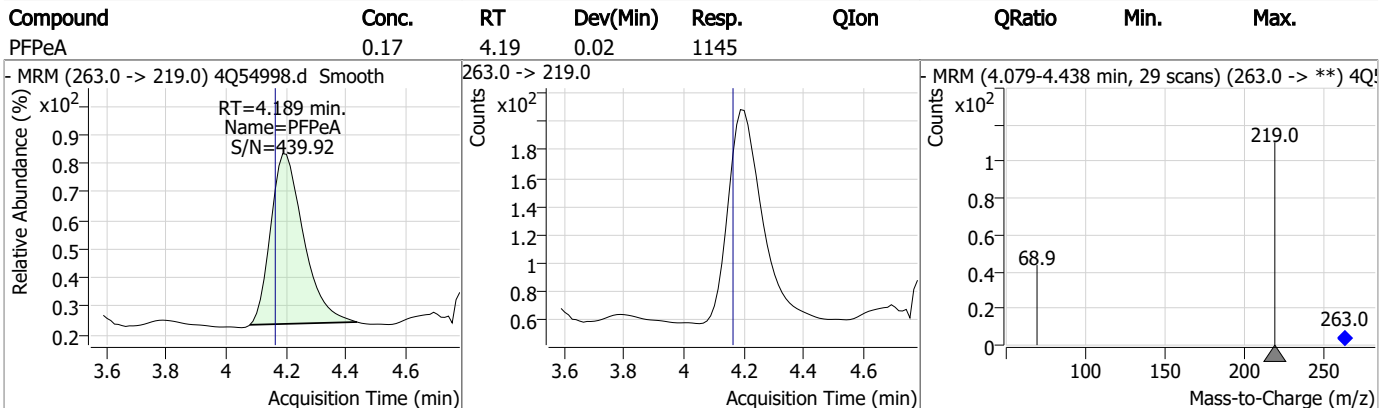
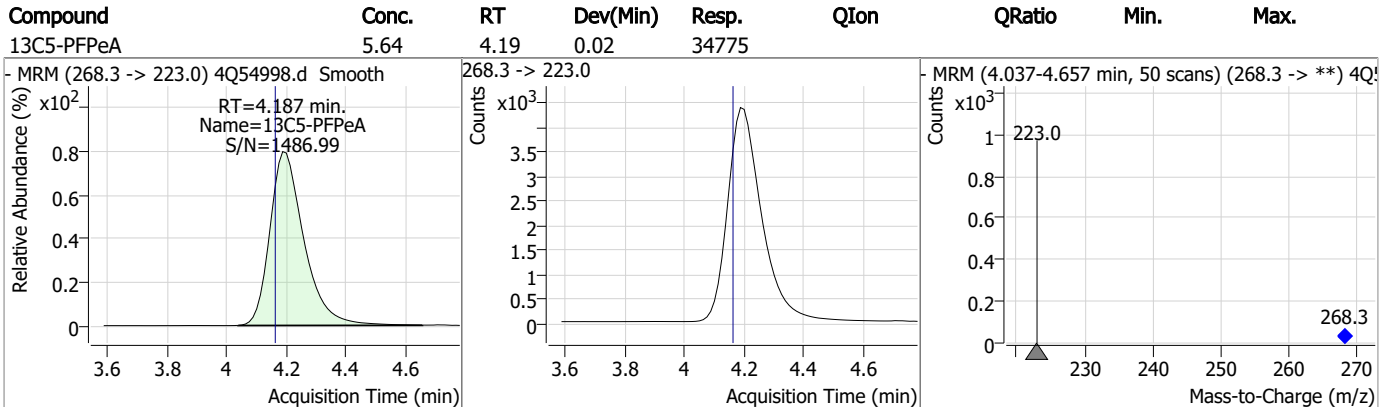
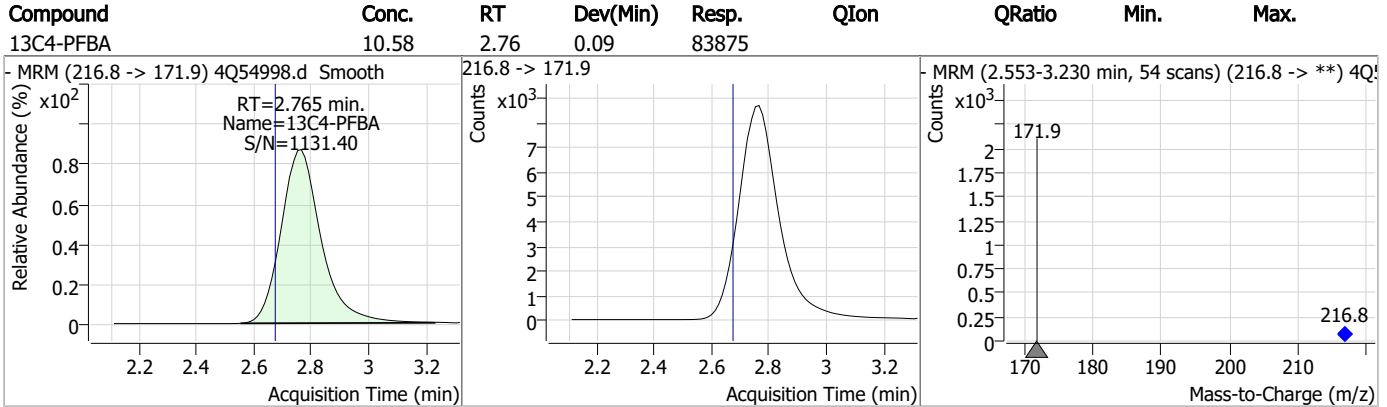
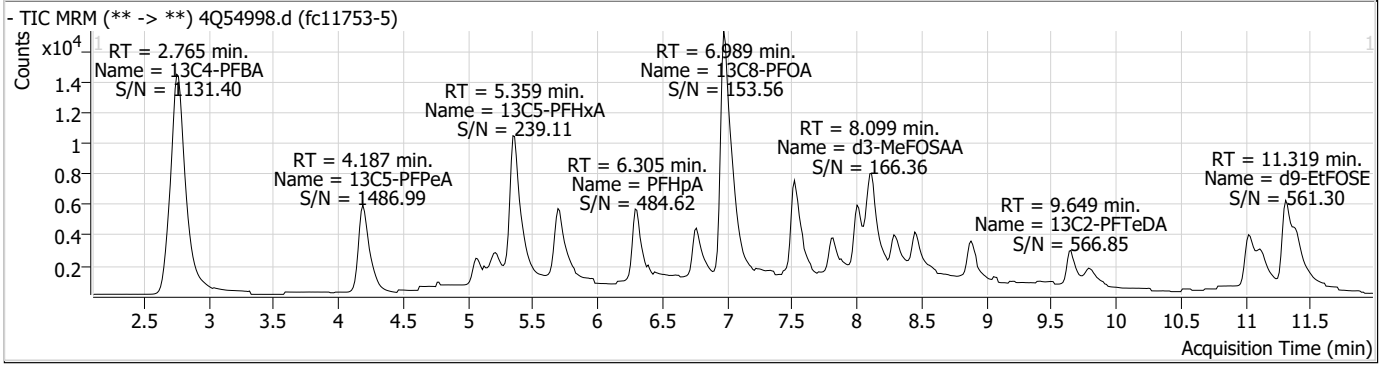
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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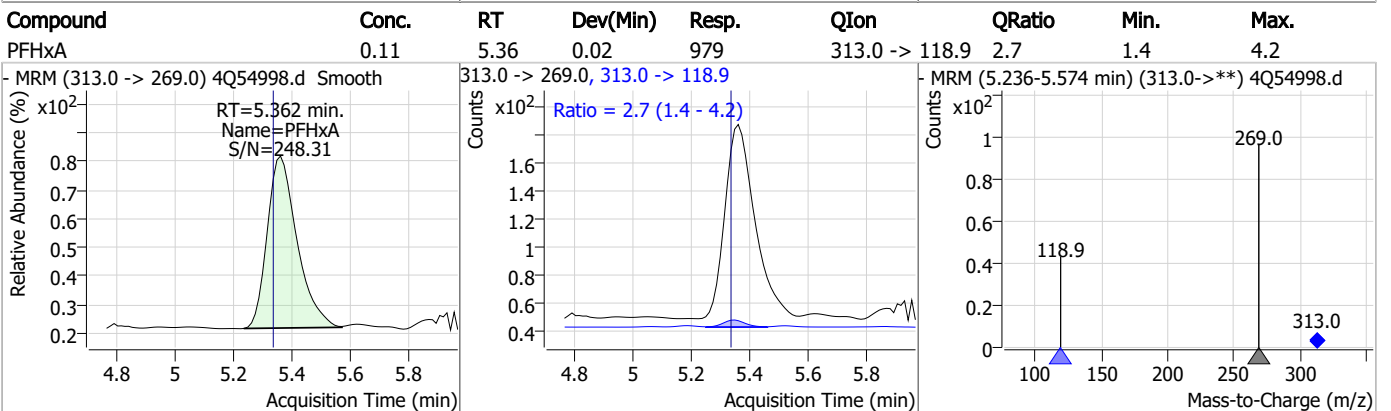
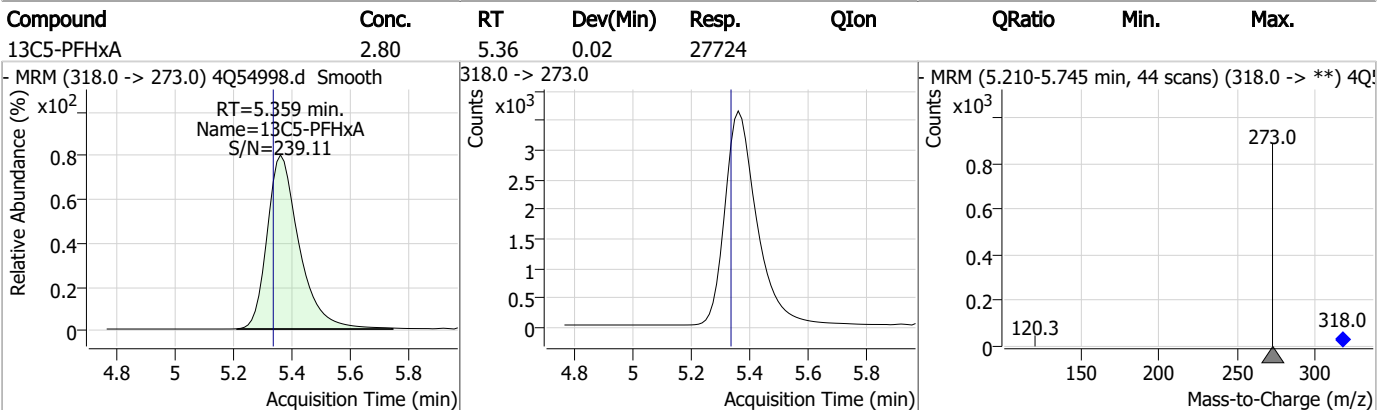
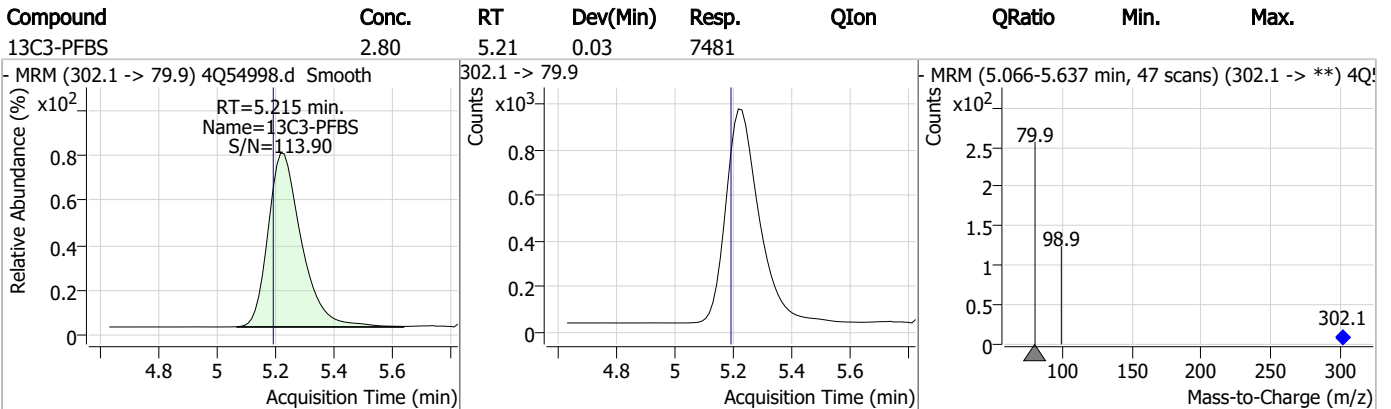
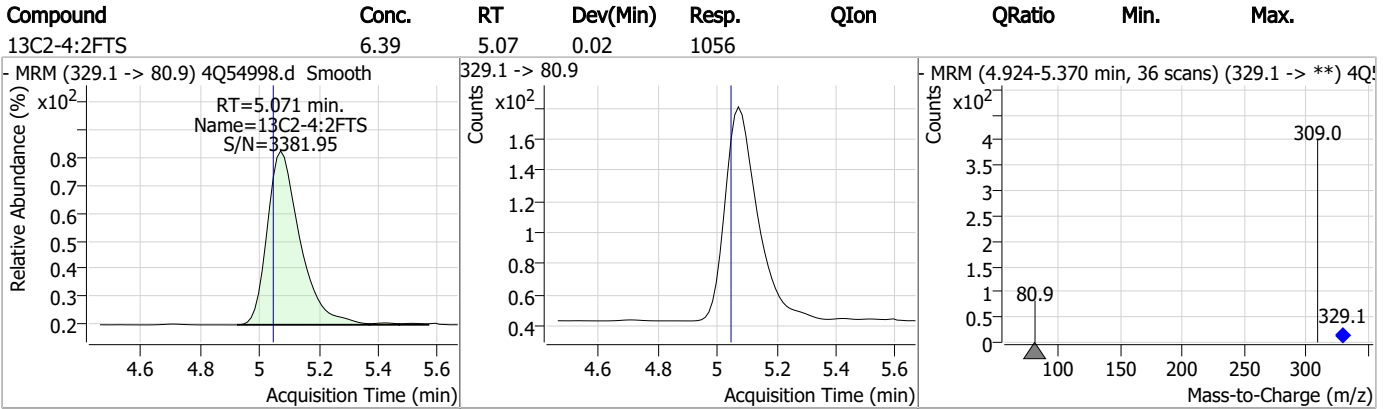
7.1.6
7



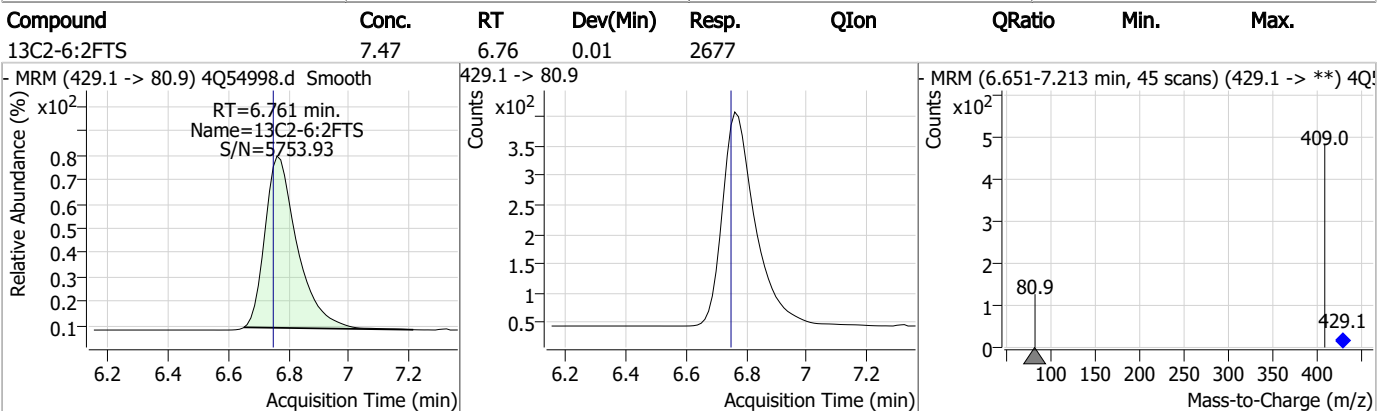
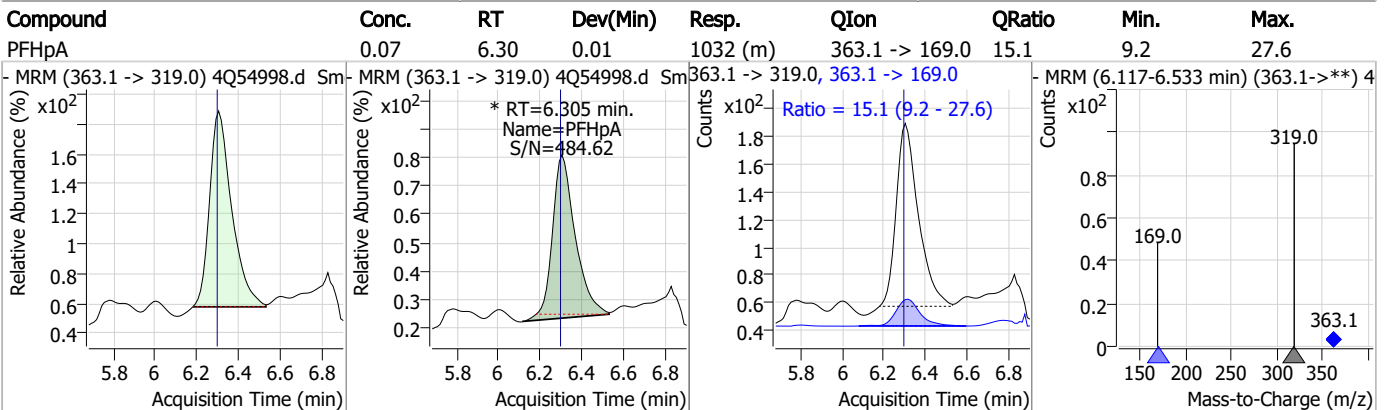
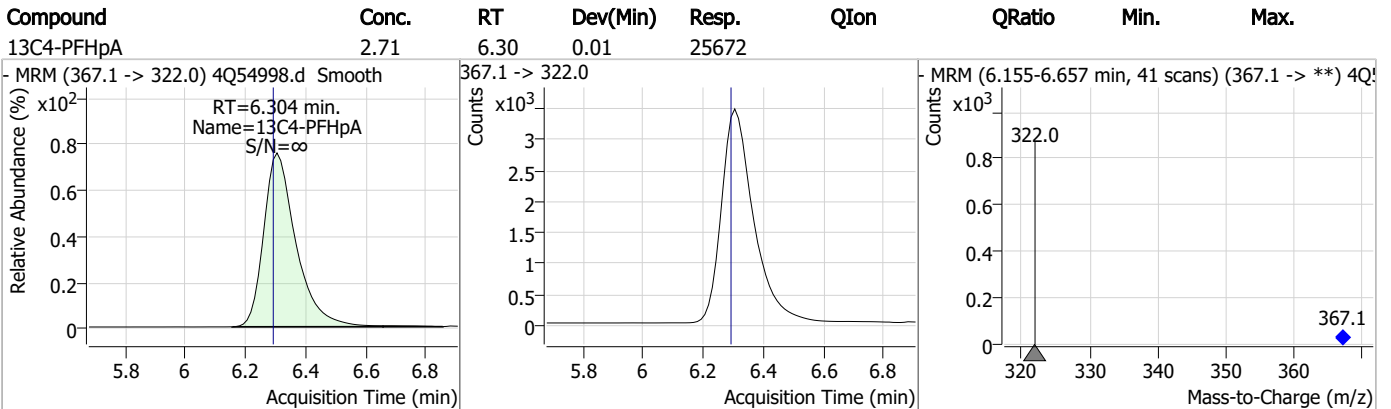
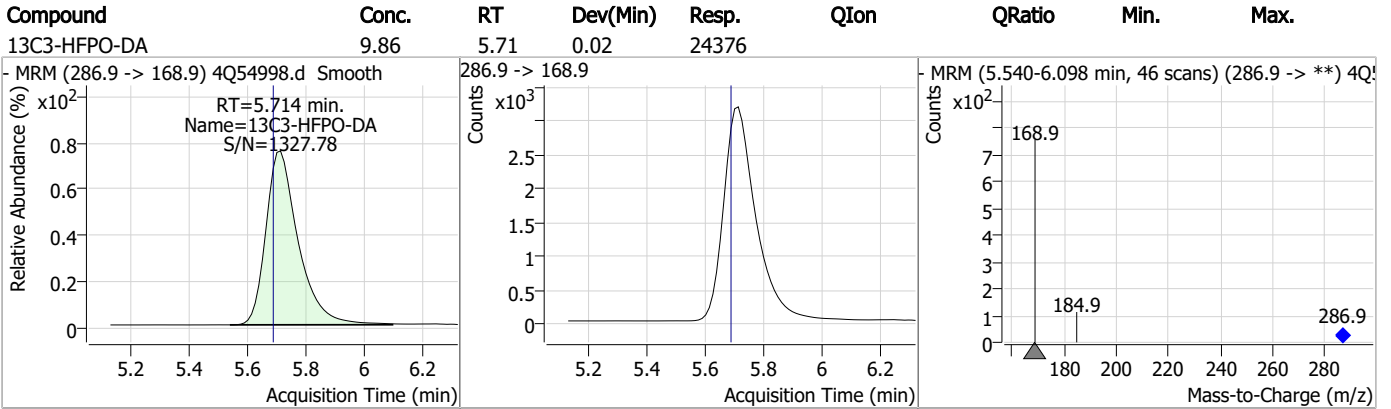
Perfluorinated Compounds by LC/MS/MS



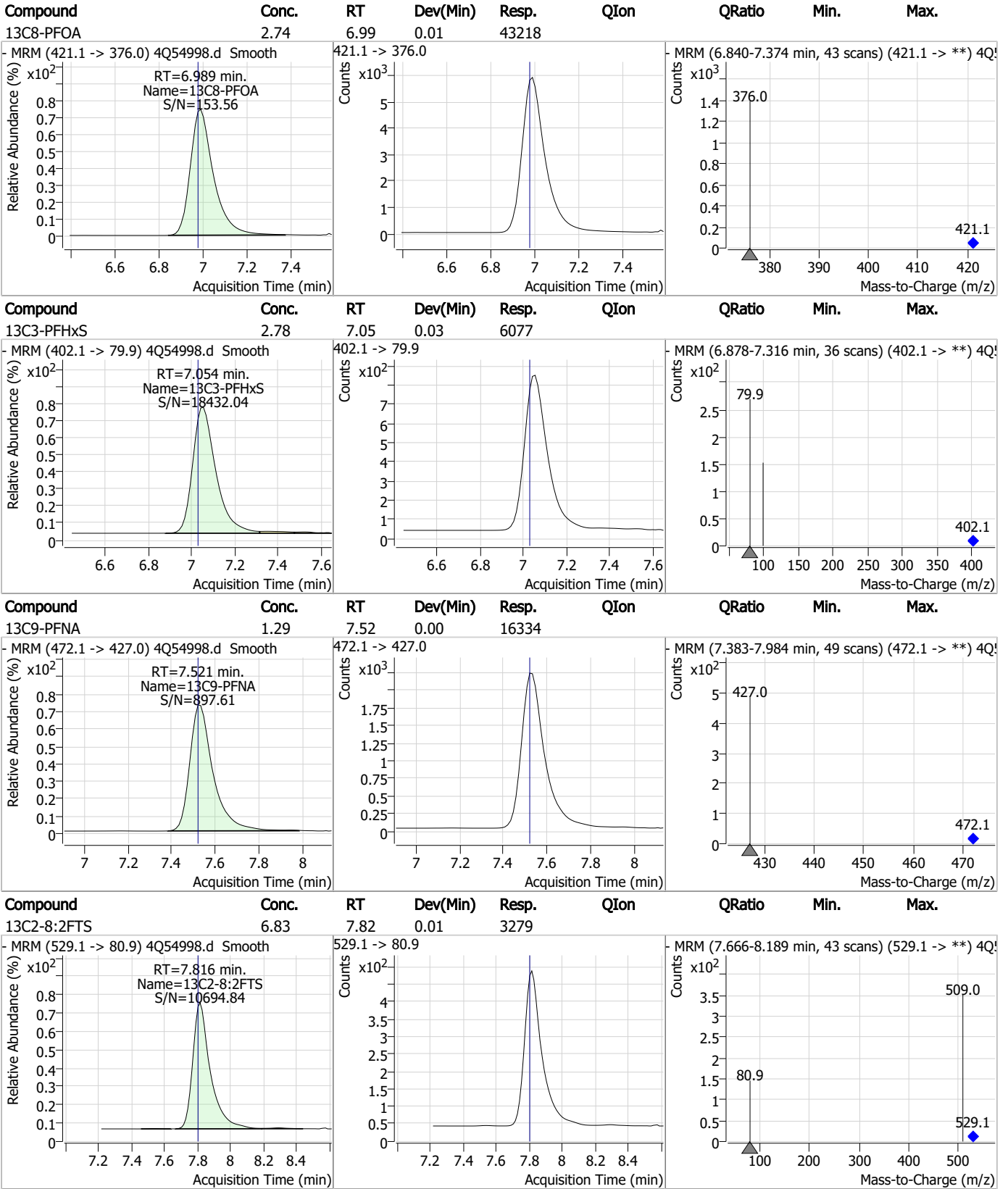
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



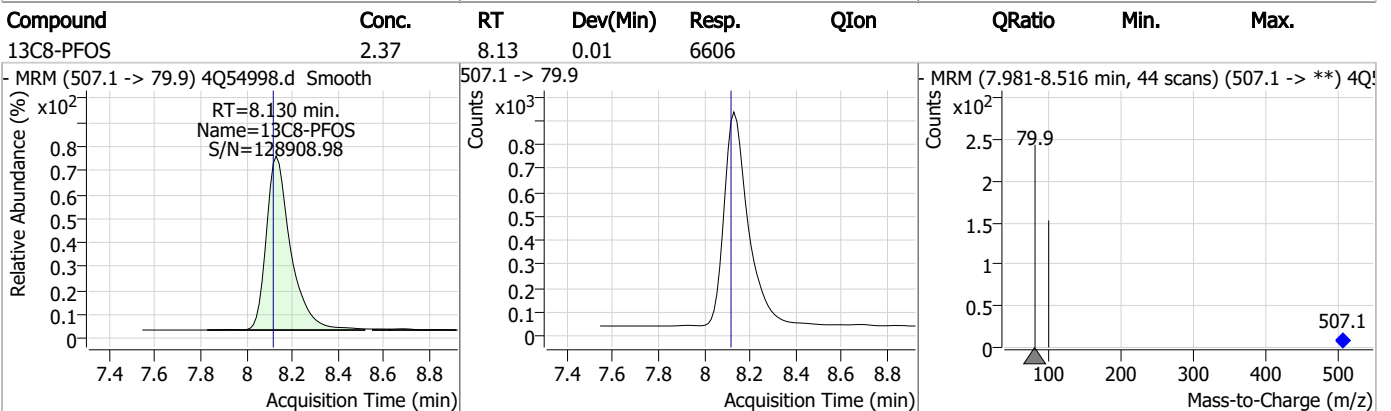
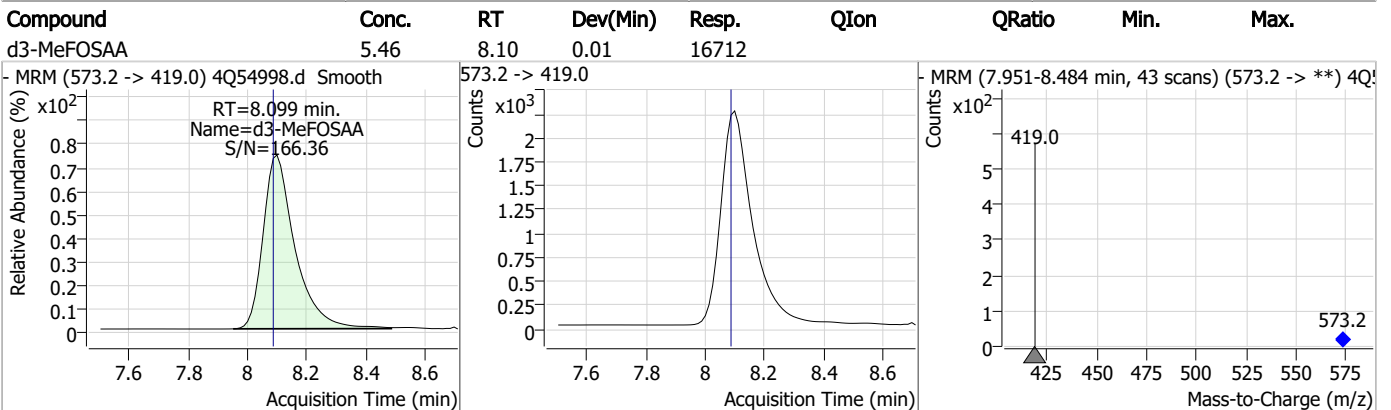
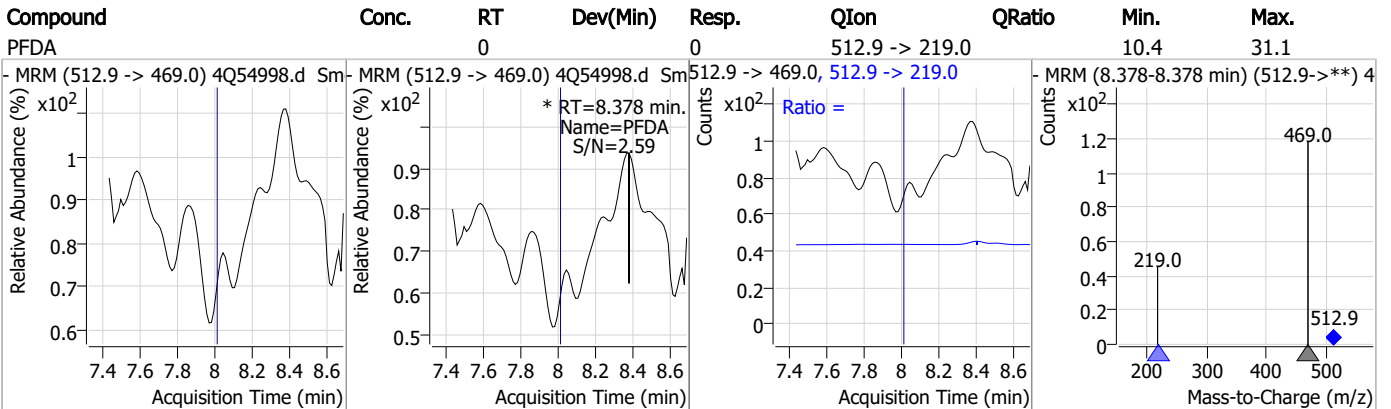
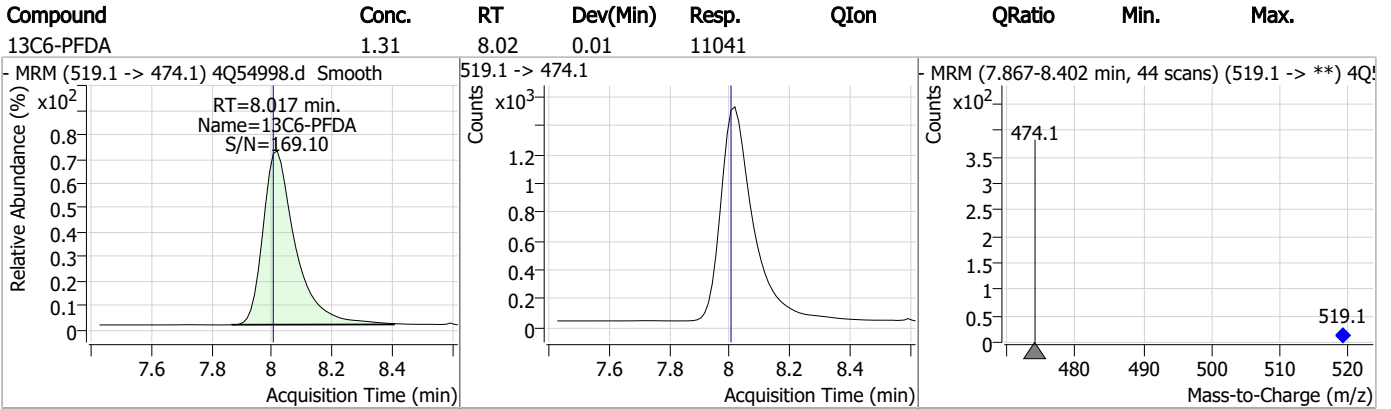
Perfluorinated Compounds by LC/MS/MS



7.1.6
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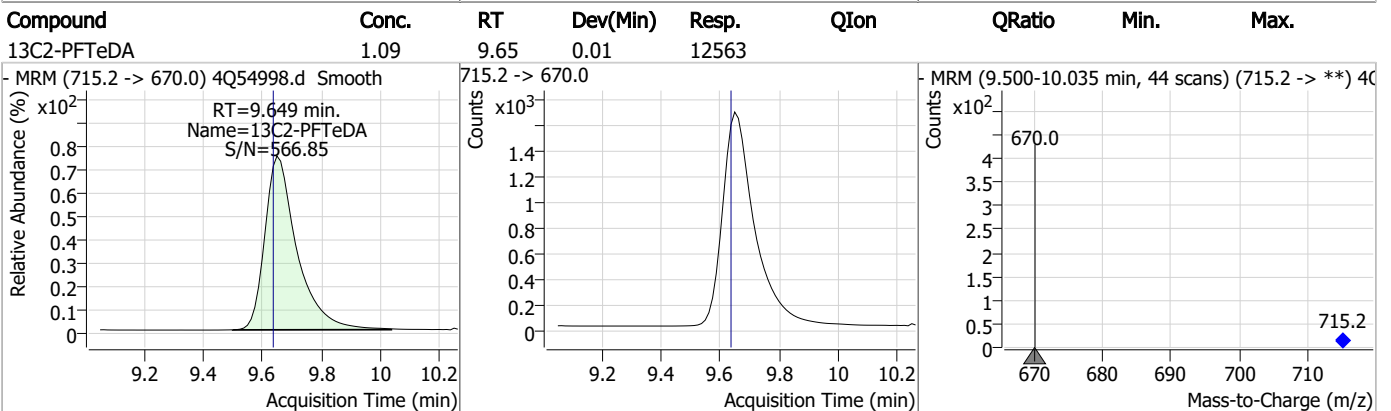
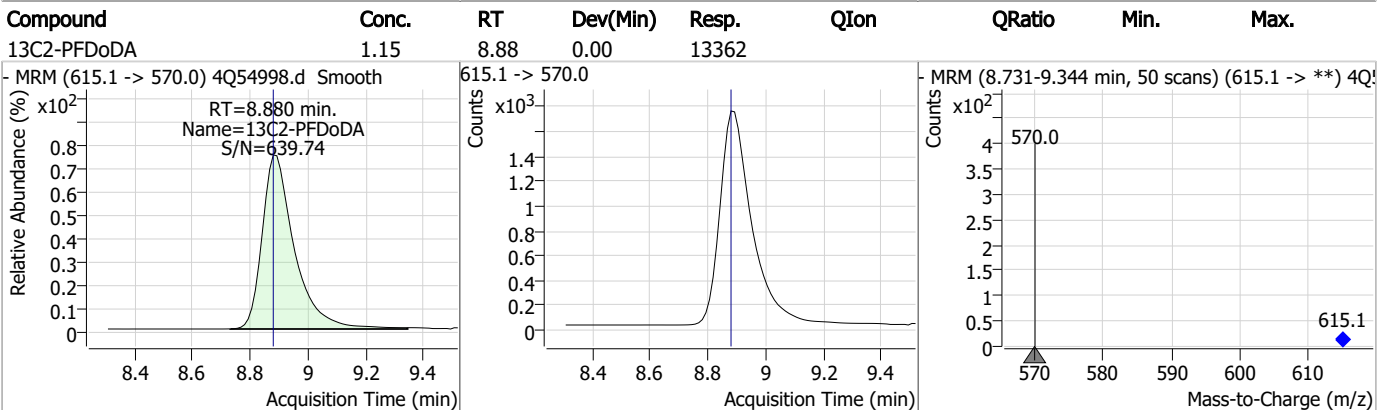
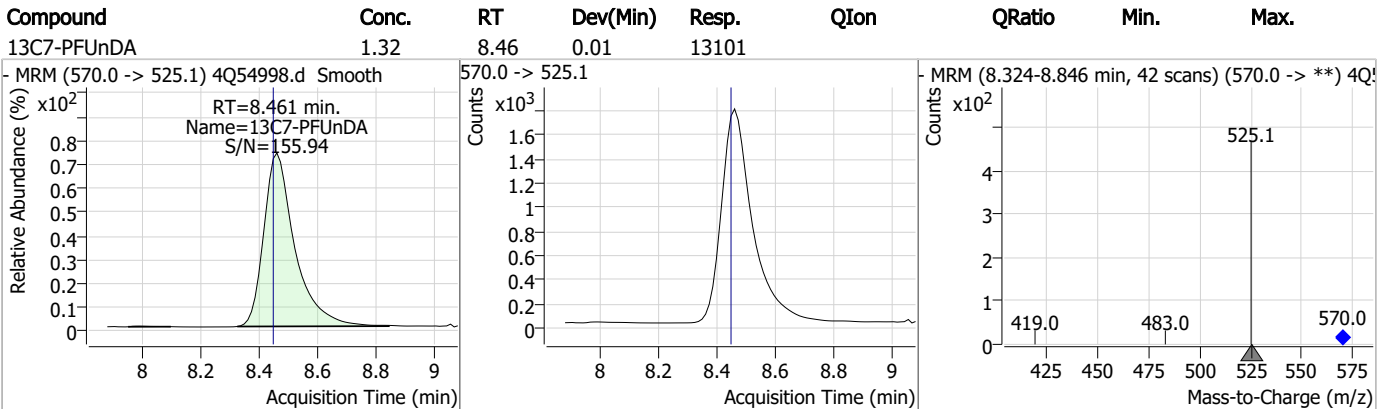
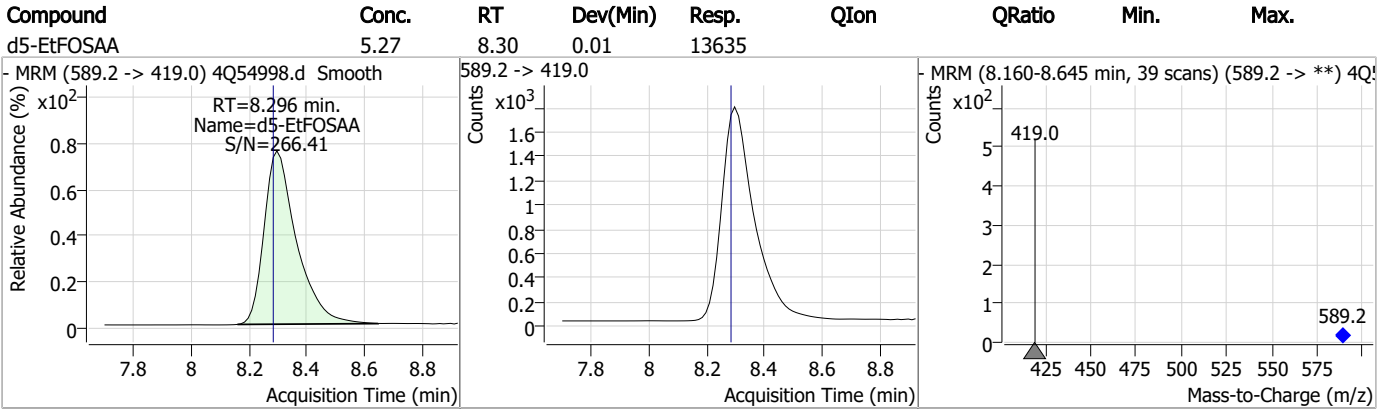
Perfluorinated Compounds by LC/MS/MS



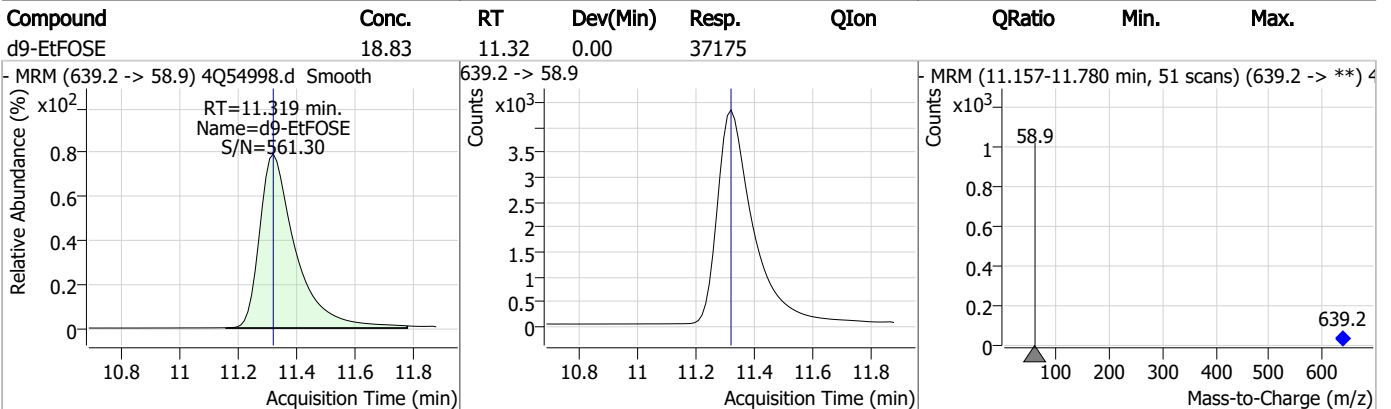
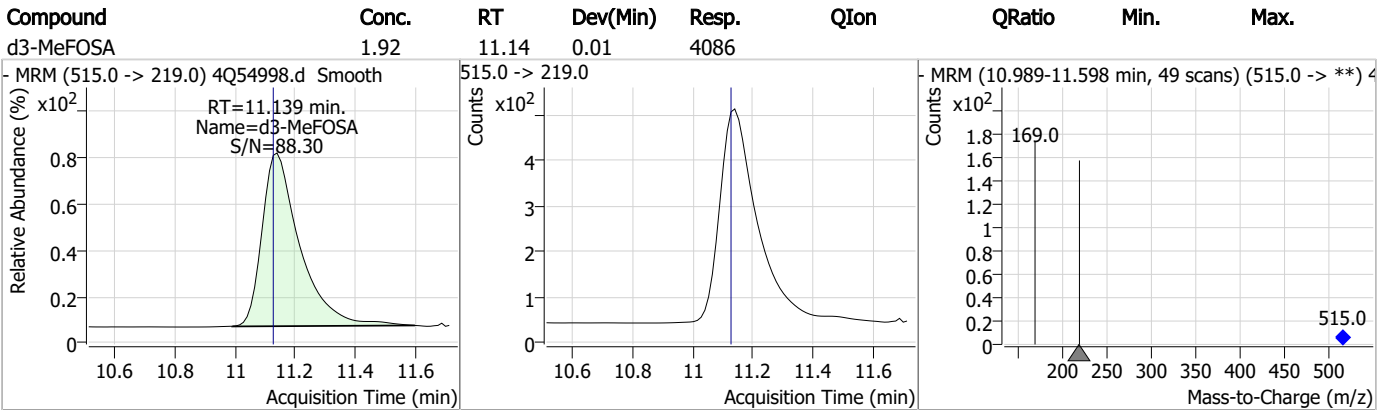
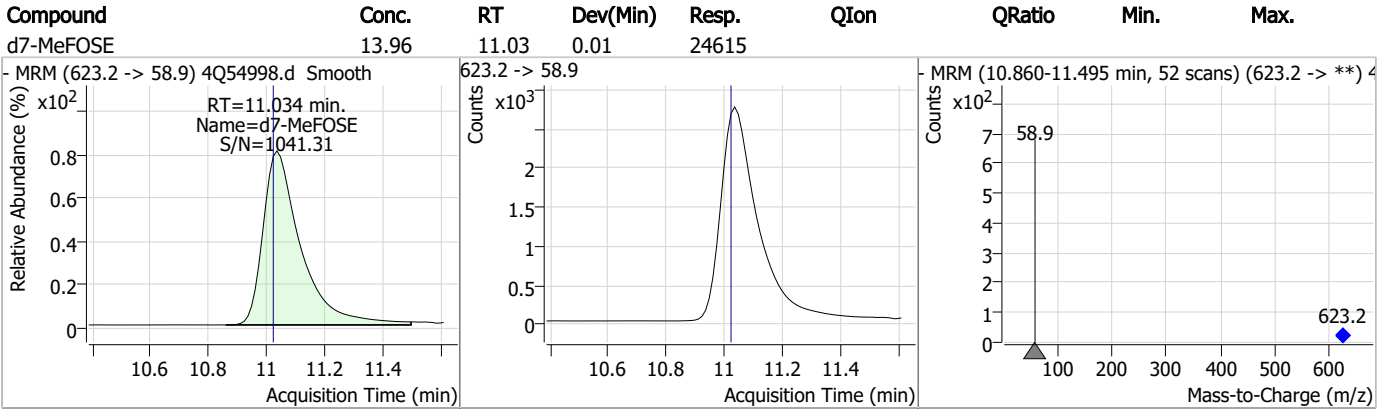
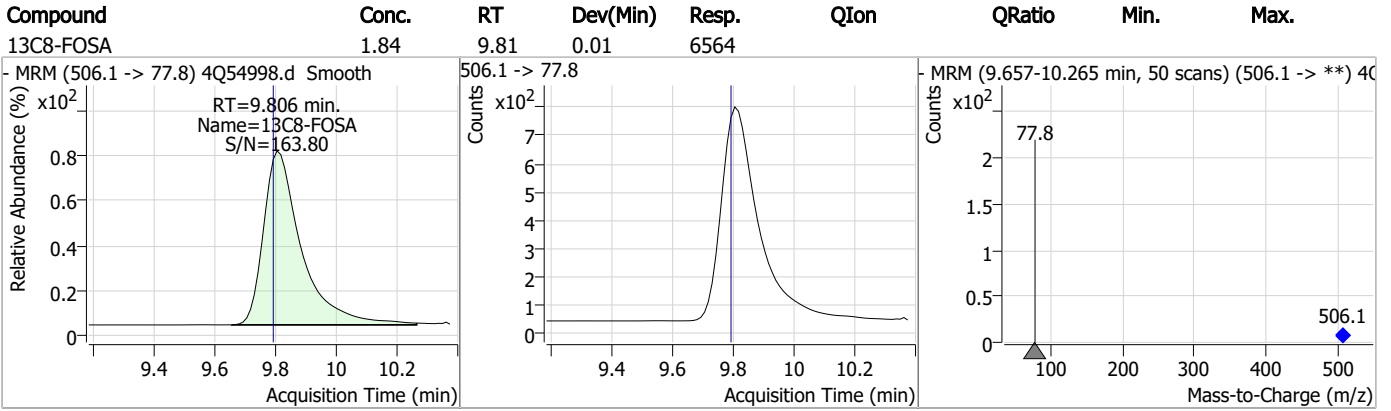
7.1.6

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Perfluorinated Compounds by LC/MS/MS

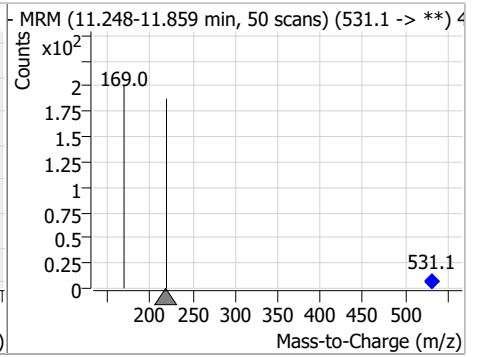
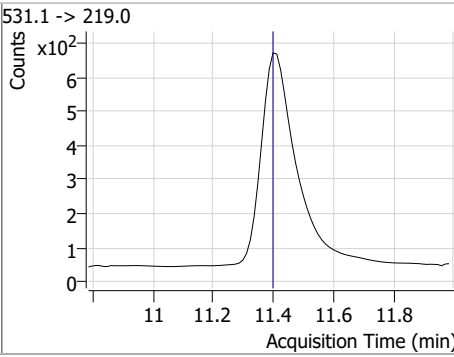
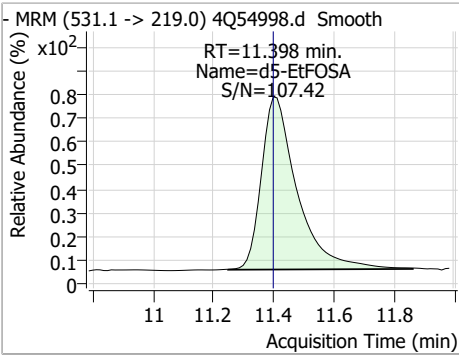


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.19	11.40	0.00	5121				



7.1.6
7

Manual Integration Approval Summary

Sample Number: FC11753-5 Method: EPA DRAFT 1633
Lab FileID: 4Q54998.D Analyst approved: 12/11/23 11:20 Anna Ludwig
Injection Time: 12/11/23 03:38 Supervisor approved: 12/11/23 17:02 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.30	Split peak

7.1.6.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54992.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 2:09:40 AM
 Sample Name : op524-mb
 Vial : P3-F7
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.752	216.8 -> 171.9	83107	10.00 µg/L	0.078
M5-PFPeA	4.187	268.3 -> 223.0	33542	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	25738	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	25359	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	41443	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	15669	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	11081	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	13379	1.25 µg/L	0.012
M2-PFDoDA	8.892	615.1 -> 570.0	13387	1.25 µg/L	0.012
M2-PFTeDA	9.649	715.2 -> 670.0	12760	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	5185	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	7311	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	6374	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	6015	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	947	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2552	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	3679	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	16929	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	23809	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	13731	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	19613	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	29547	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4470	2.50 µg/L	0.012
M3-MeFOSA	11.139	515.0 -> 219.0	3319	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	4675	2.50 µg/L	0.012
13C3-PFBA	2.755	216.0 -> 172.0	33777	5.00 µg/L	0.077
18O2-PFHxS	7.054	403.0 -> 83.9	2966	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	38479	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	10383	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	14802	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	24344	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	947	6.73 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 134.5%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2552	8.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 167.1%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3679	9.00 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 179.9%		
13C2-PFDoDA	8.892	615.1 -> 570.0	13387	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12760	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-PFBS	5.215	302.1 -> 79.9	7311	3.22 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 128.6%		
13C3-PFHxS	7.042	402.1 -> 79.9	6374	3.43 µg/L	0.012

7.2.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 137.1%	
13C4-PFBA	2.752	216.8 -> 171.9	83107	11.72 µg/L	0.078
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 117.2%	
13C4-PFHpA	6.304	367.1 -> 322.0	25359	2.96 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.2%	
13C5-PFHxA	5.359	318.0 -> 273.0	25738	2.87 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.8%	
13C5-PFPeA	4.187	268.3 -> 223.0	33542	6.00 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 120.1%	
13C6-PFDA	8.017	519.1 -> 474.1	11081	1.47 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 117.4%	
13C7-PFUnDA	8.461	570.0 -> 525.1	13379	1.50 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 120.2%	
13C8-FOSA	9.806	506.1 -> 77.8	5185	1.71 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 68.5%	
13C8-PFOA	6.989	421.1 -> 376.0	41443	2.91 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.6%	
13C8-PFOS	8.130	507.1 -> 79.9	6015	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C9-PFNA	7.521	472.1 -> 427.0	15669	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.7%	
d3-MeFOSAA	8.099	573.2 -> 419.0	16929	6.52 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 130.5%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	23809	10.62 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
d3-MeFOSA	11.139	515.0 -> 219.0	3319	1.84 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.5%	
d5-EtFOSAA	8.296	589.2 -> 419.0	13731	6.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 125.1%	
d7-MeFOSE	11.034	623.2 -> 58.9	19613	13.12 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 52.5%	
d9-EtFOSE	11.319	639.2 -> 58.9	29547	17.65 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 70.6%	
d5-EtFOSA	11.410	531.1 -> 219.0	4470	2.26 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.2%	

7.2.1
7

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.053	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.1
7

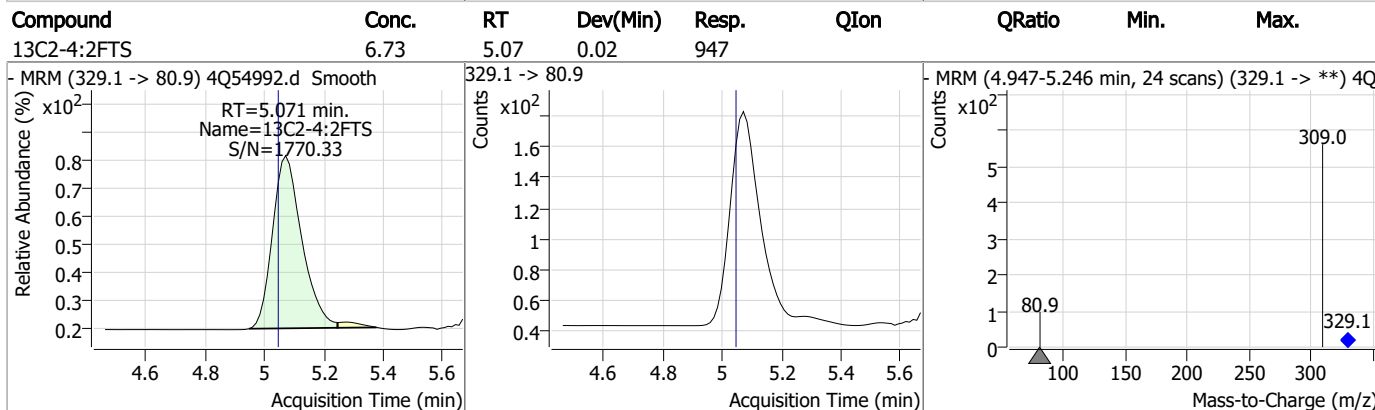
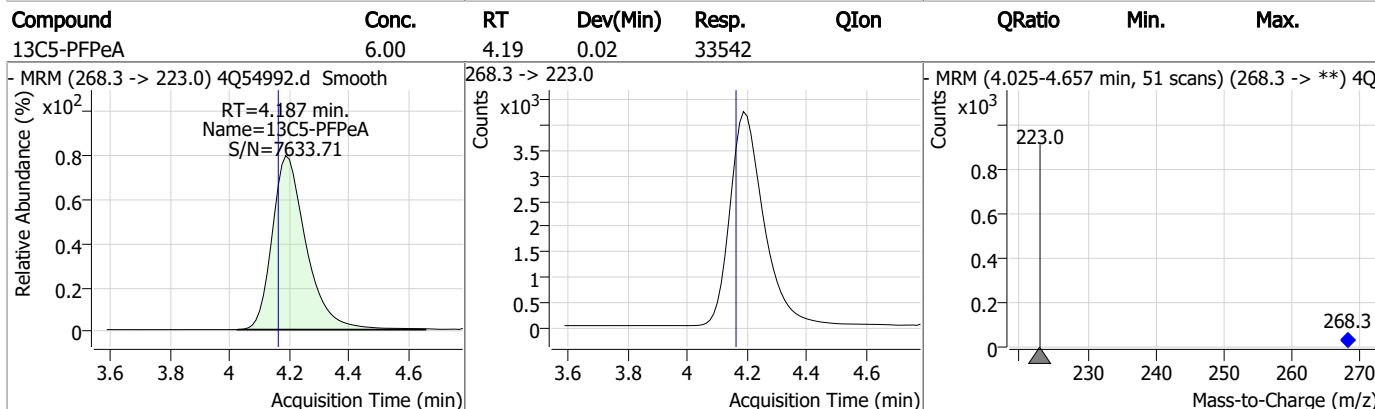
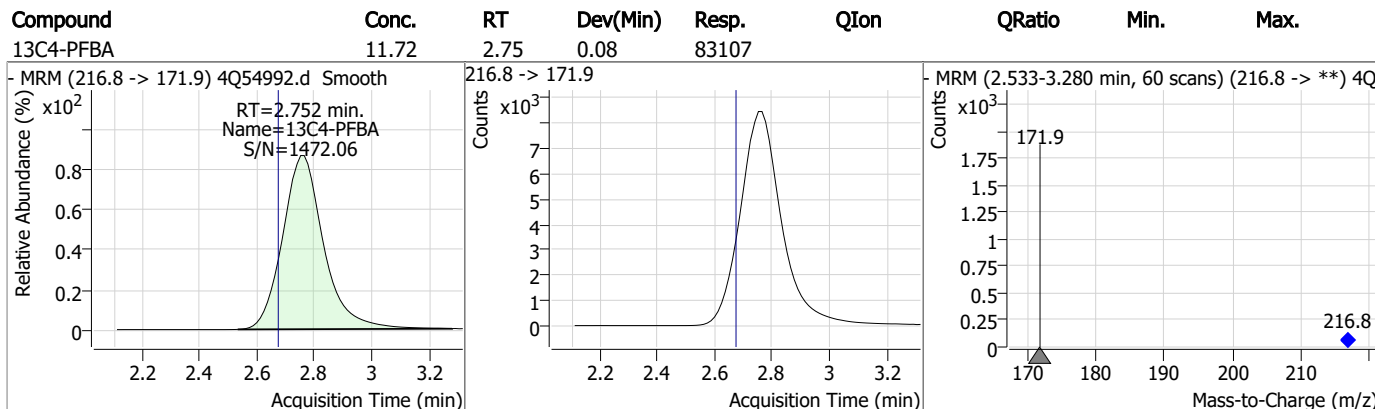
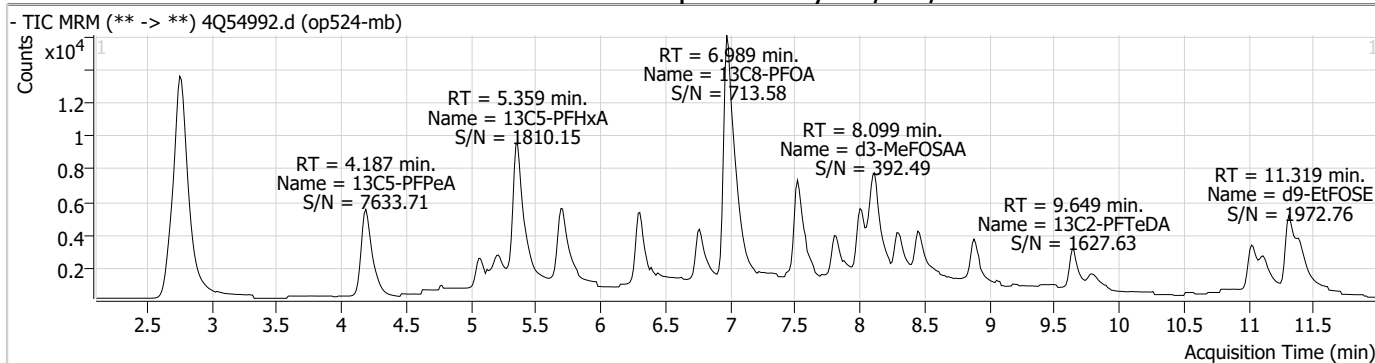
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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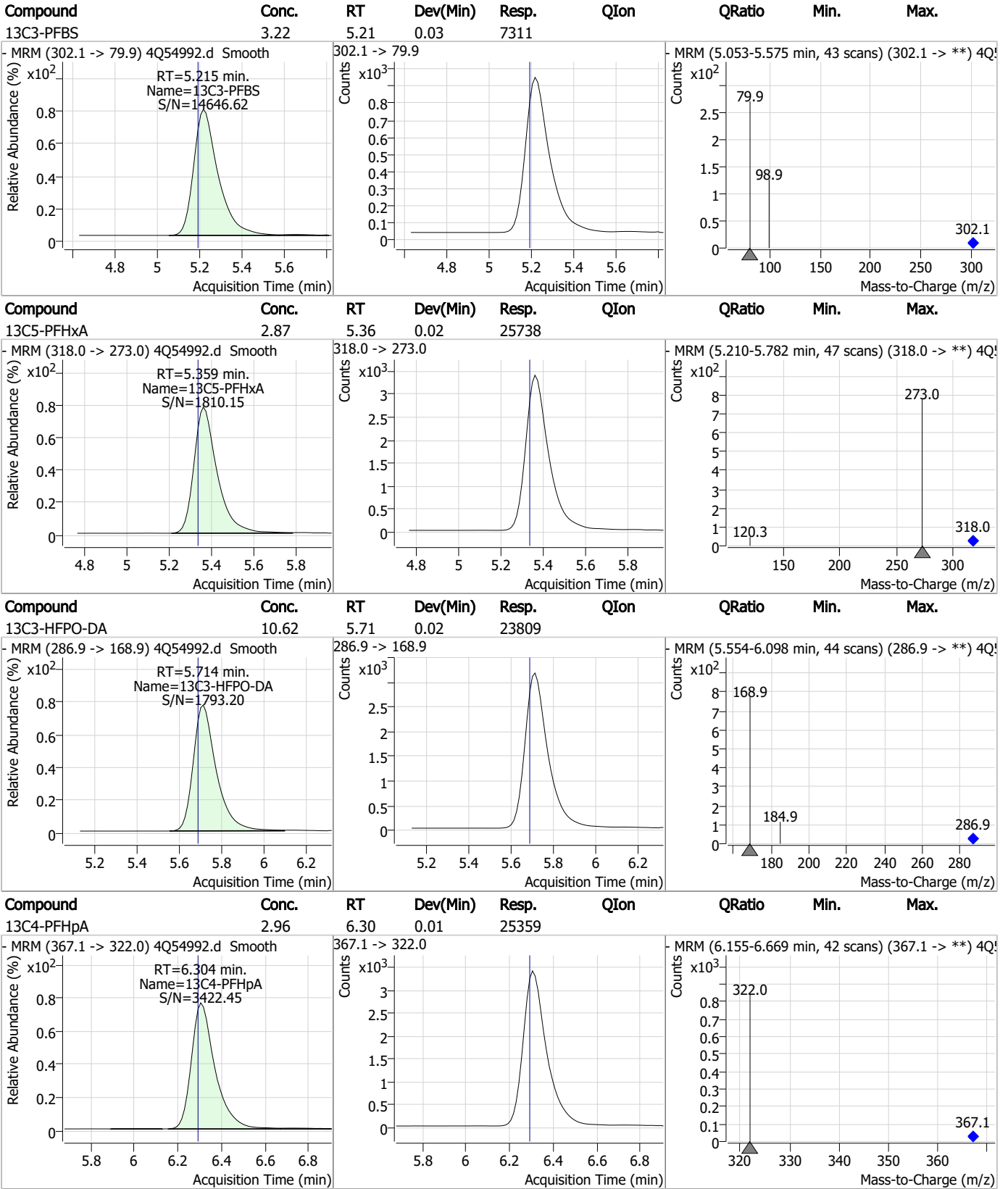
7.2.1

7

Perfluorinated Compounds by LC/MS/MS



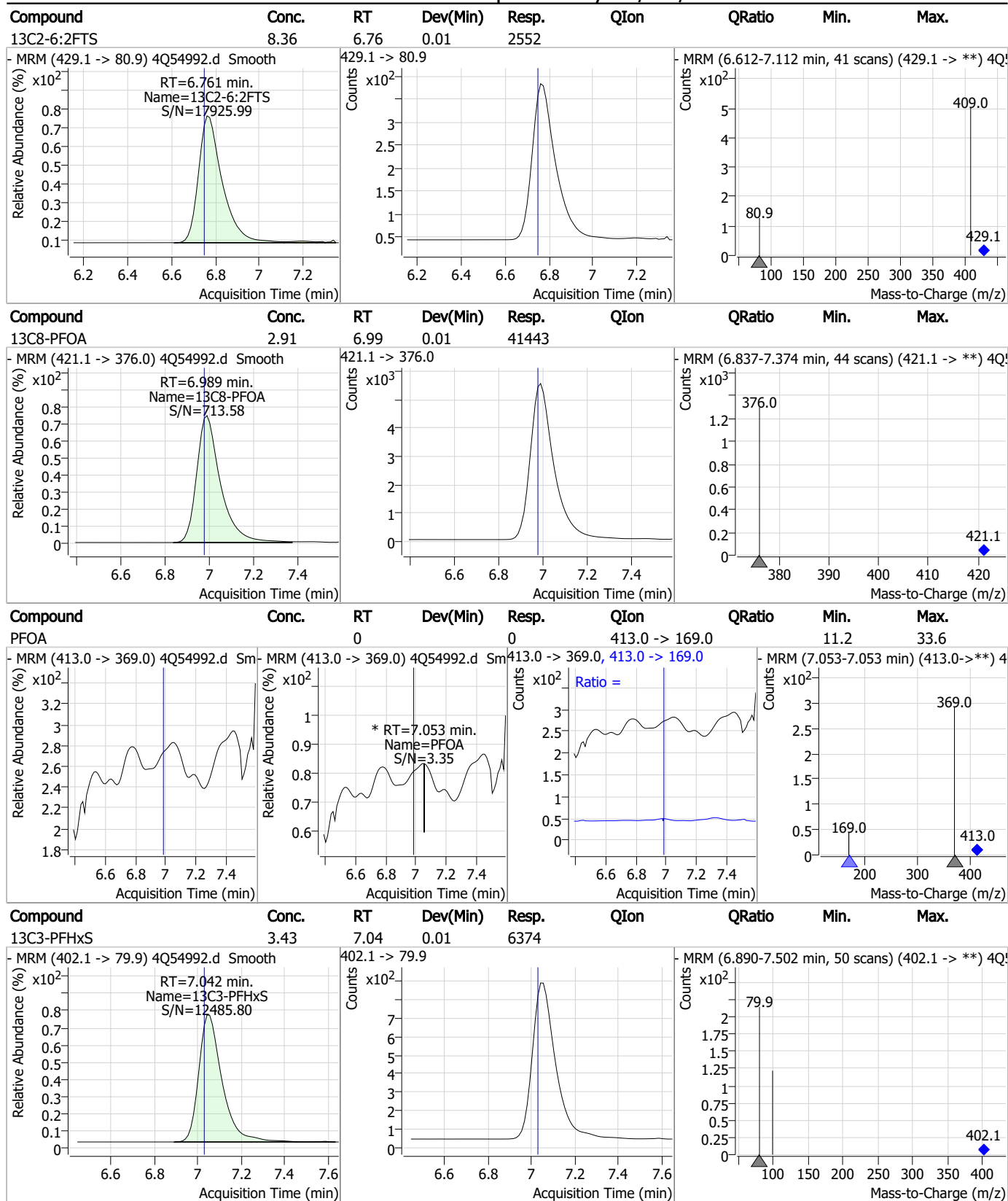
Perfluorinated Compounds by LC/MS/MS



7.2.1

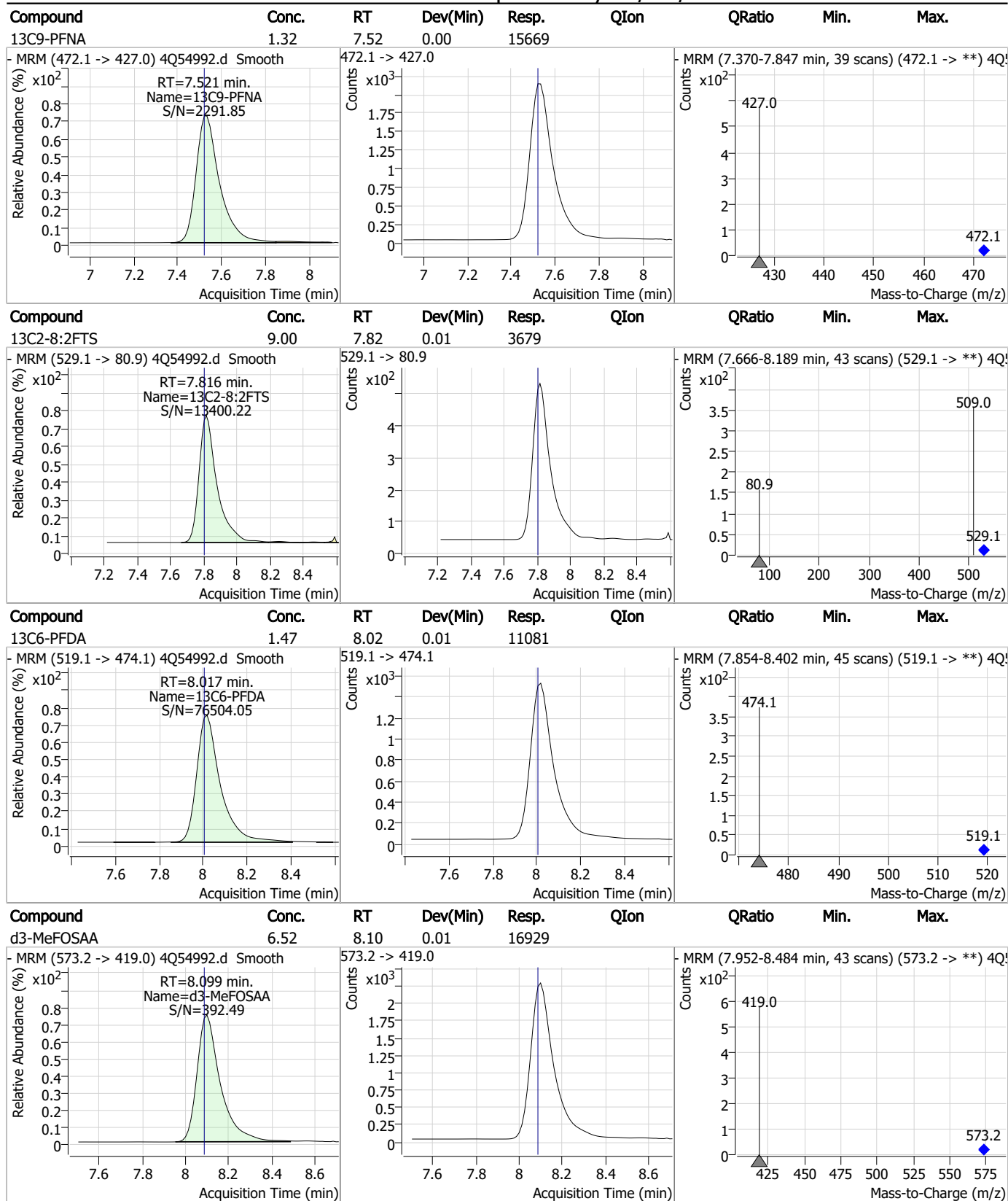
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Perfluorinated Compounds by LC/MS/MS



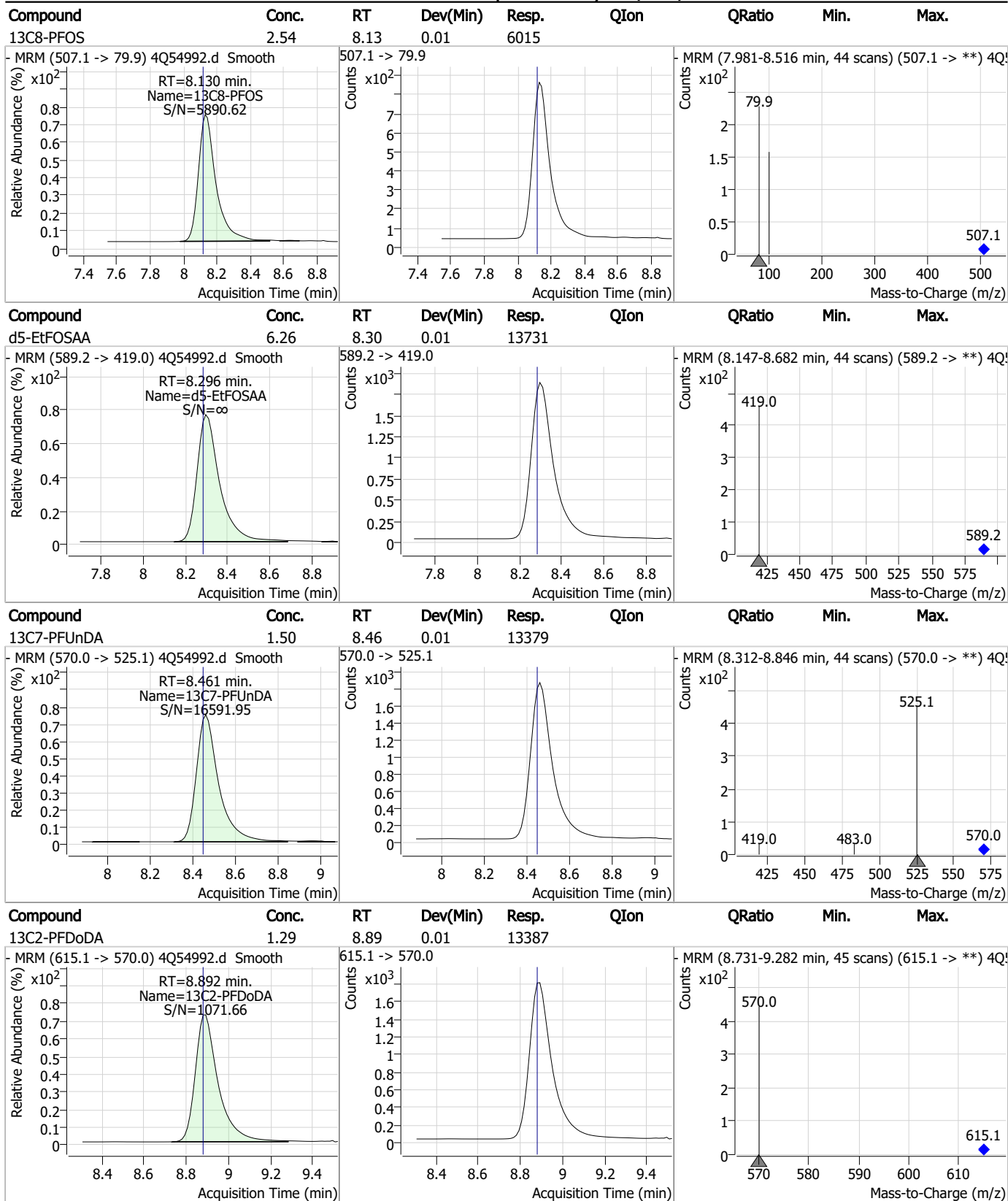
7.2.1
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Perfluorinated Compounds by LC/MS/MS



7.2.1
7

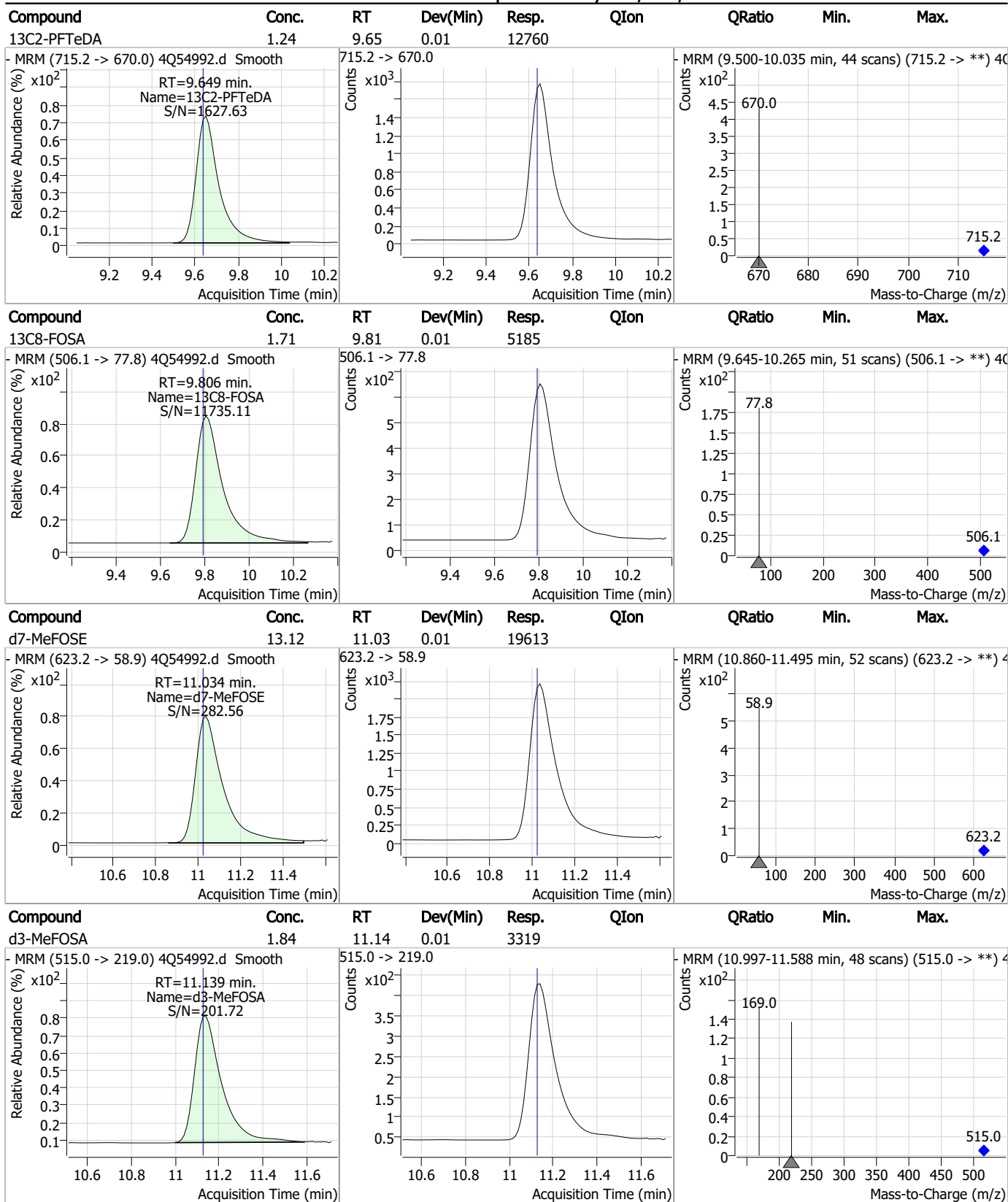
Perfluorinated Compounds by LC/MS/MS



7.2.1

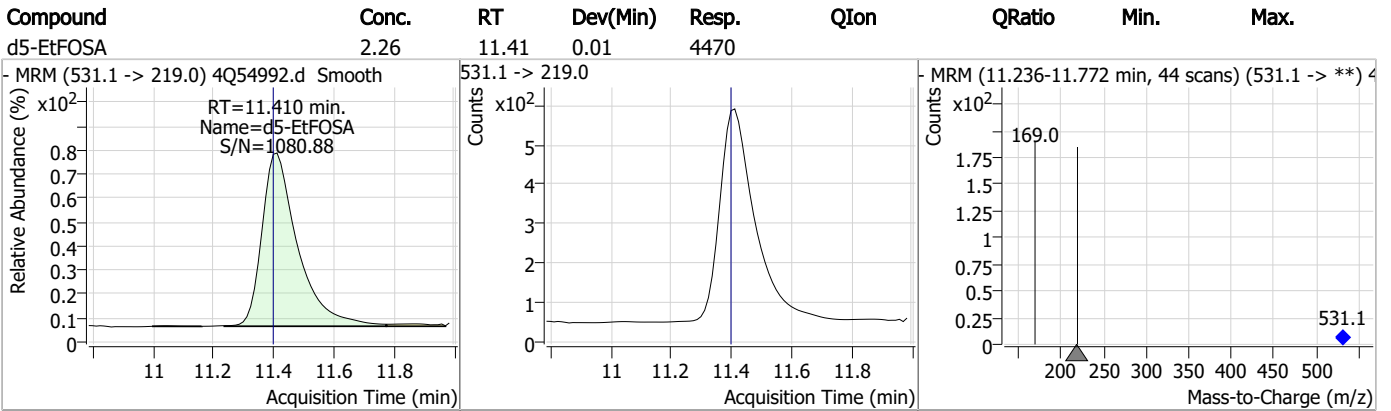
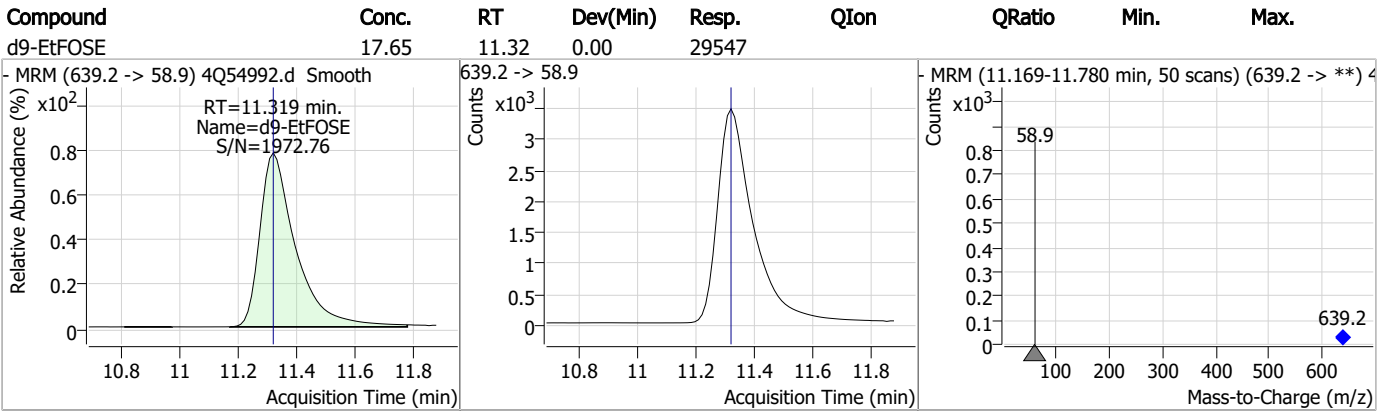
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Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q356.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 6:53:24 PM
 Sample Name : OP576-MB
 Vial : P3-A3
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op576,S7Q11,60,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.897	216.8 -> 171.9	109133	10.00 µg/L	0.000
M5-PFPeA	4.324	268.3 -> 223.0	37107	5.00 µg/L	0.012
M5-PFHxA	5.566	318.0 -> 273.0	32660	2.50 µg/L	0.012
M4-PFHpA	6.521	367.1 -> 322.0	27976	2.50 µg/L	0.012
M8-PFOA	7.177	421.1 -> 376.0	38287	2.50 µg/L	0.012
M9-PFNA	7.720	472.1 -> 427.0	14407	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	13857	1.25 µg/L	0.000
M7-PFUnDA	8.694	570.0 -> 525.1	16831	1.25 µg/L	0.012
M2-PFDoDA	9.124	615.1 -> 570.0	13412	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	5285	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	4088	2.50 µg/L	0.000
M3-PFBS	5.496	302.1 -> 79.9	7403	2.50 µg/L	0.012
M3-PFHxS	7.293	402.1 -> 79.9	5736	2.50 µg/L	0.000
M8-PFOS	8.391	507.1 -> 79.9	4516	2.50 µg/L	0.012
M2-4:2FTS	5.217	329.1 -> 80.9	1030	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	2132	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	3370	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	8925	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	58006	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	6621	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	13197	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	16676	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	2061	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	1984	2.50 µg/L	0.000
13C4-PFOS	8.392	502.8 -> 79.9	5329	2.50 µg/L	0.012
13C3-PFBA	2.901	216.0 -> 172.0	52362	5.00 µg/L	0.012
18O2-PFHxS	7.292	403.0 -> 83.9	4004	2.50 µg/L	0.000
13C4-PFOA	7.178	417.1 -> 372.0	40631	2.50 µg/L	0.012
13C2-PFDA	8.215	515.1 -> 470.1	12747	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	16945	1.25 µg/L	0.012
13C2-PFHxA	5.567	315.1 -> 270.0	27338	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	1030	6.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.1%		
13C2-6:2FTS	6.939	429.1 -> 80.9	2132	5.25 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C2-8:2FTS	7.991	529.1 -> 80.9	3370	5.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.8%		
13C2-PFDoDA	9.124	615.1 -> 570.0	13412	0.97 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 77.2%		
13C2-PFTeDA	9.855	715.2 -> 670.0	5285	0.79 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 63.3%		
13C3-PFBS	5.496	302.1 -> 79.9	7403	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C3-PFHxS	7.293	402.1 -> 79.9	5736	2.46 µg/L	0.000

7.2.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C4-PFBA	2.897	216.8 -> 171.9	109133	9.86 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C4-PFHpA	6.521	367.1 -> 322.0	27976	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C5-PFHxA	5.566	318.0 -> 273.0	32660	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C5-PFPeA	4.324	268.3 -> 223.0	37107	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C6-PFDA	8.215	519.1 -> 474.1	13857	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C7-PFUnDA	8.694	570.0 -> 525.1	16831	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C8-FOSA	9.530	506.1 -> 77.8	4088	1.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 58.4%	
13C8-PFOA	7.177	421.1 -> 376.0	38287	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-PFOS	8.391	507.1 -> 79.9	4516	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C9-PFNA	7.720	472.1 -> 427.0	14407	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSAA	8.261	573.2 -> 419.0	8925	4.35 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.9%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	58006	9.42 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.2%	
d3-MeFOSA	10.656	515.0 -> 219.0	1984	1.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 54.3%	
d5-EtFOSAA	8.456	589.2 -> 419.0	6621	3.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 74.9%	
d7-MeFOSE	10.565	623.2 -> 58.9	13197	12.78 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 51.1%	
d9-EtFOSE	10.810	639.2 -> 58.9	16676	13.92 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.7%	
d5-EtFOSA	10.888	531.1 -> 219.0	2061	1.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 54.7%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

7.2.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
		599.0 -> 98.8			
PFHpA	-	363.1 -> 319.0	-	N.D.	
		363.1 -> 169.0			
PFHpS	-	449.0 -> 79.9	-	N.D.	
		449.0 -> 98.9			
PFHxA	-	313.0 -> 269.0	-	N.D.	
		313.0 -> 118.9			
PFHxS	-	398.7 -> 79.9	-	N.D.	
		398.7 -> 98.9			
PFNA	-	463.0 -> 419.0	-	N.D.	
		463.0 -> 219.0			
PFNS	-	548.8 -> 79.9	-	N.D.	
		548.8 -> 98.9			
PFOA	-	413.0 -> 369.0	-	N.D.	
		413.0 -> 169.0			
PFOS	-	498.9 -> 79.9	-	N.D.	
		498.9 -> 98.8			
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.1 -> 79.9	-	N.D.	
		349.1 -> 98.9			
PFTeDA	-	713.1 -> 669.0	-	N.D.	
		713.1 -> 168.9			
PFTTrDA	-	663.0 -> 619.0	-	N.D.	
		663.0 -> 168.9			
PFUnDA	-	563.1 -> 519.0	-	N.D.	
		563.1 -> 269.1			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.	
		632.9 -> 452.9			
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.	
		532.8 -> 353.0			
ADONA	-	376.9 -> 250.9	-	N.D.	
		376.9 -> 84.8			
HFPO-DA	-	284.9 -> 168.9	-	N.D.	
		284.9 -> 184.9			
3:3FTCA	-	241.0 -> 177.0	-	N.D.	
		241.0 -> 117.0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.	
		341.0 -> 217.0			
7:3FTCA	-	441.0 -> 316.9	-	N.D.	
		441.0 -> 336.9			
EtFOSA	-	526.0 -> 219.0	-	N.D.	
		526.0 -> 169.0			
EtFOSE	-	630.0 -> 58.9	-	N.D.	
MeFOSA	-	511.9 -> 219.0	-	N.D.	
		511.9 -> 169.0			
MeFOSE	-	616.1 -> 58.9	-	N.D.	
PFDoDS	-	699.1 -> 79.9	-	N.D.	
		699.1 -> 98.8			
NFDHA	-	295.0 -> 201.0	-	N.D.	
		295.0 -> 84.9			
PFMBA	-	279.0 -> 85.1	-	N.D.	
PFMPA	-	229.0 -> 84.9	-	N.D.	
PFEESA	-	314.8 -> 134.9	-	N.D.	
		314.8 -> 82.9			

= Qualifier out of range, m = manually integrated, + = Area summed

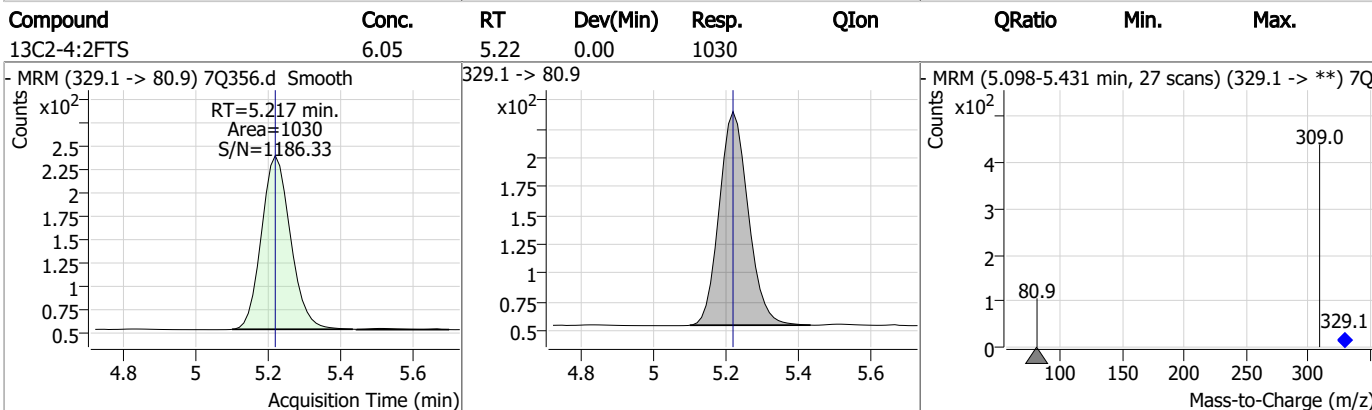
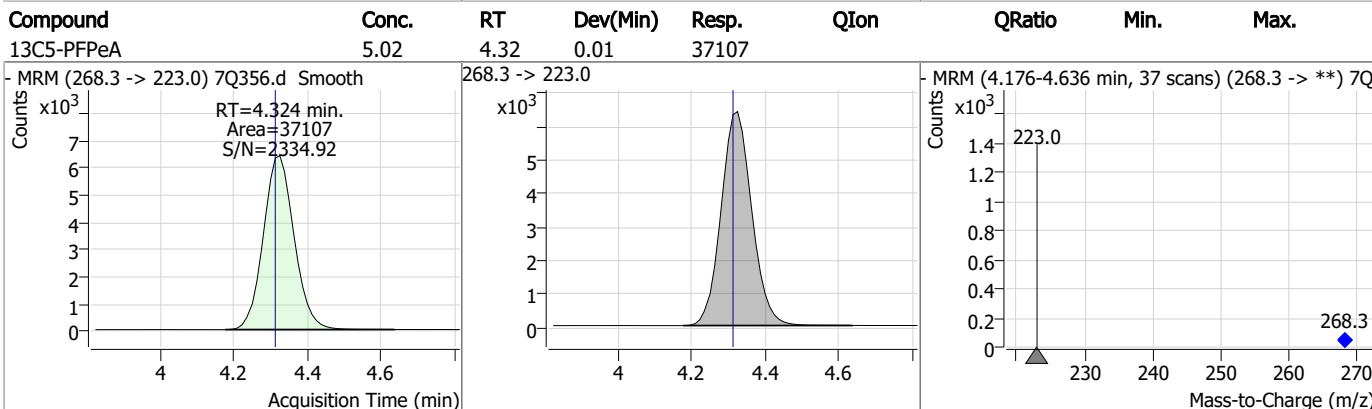
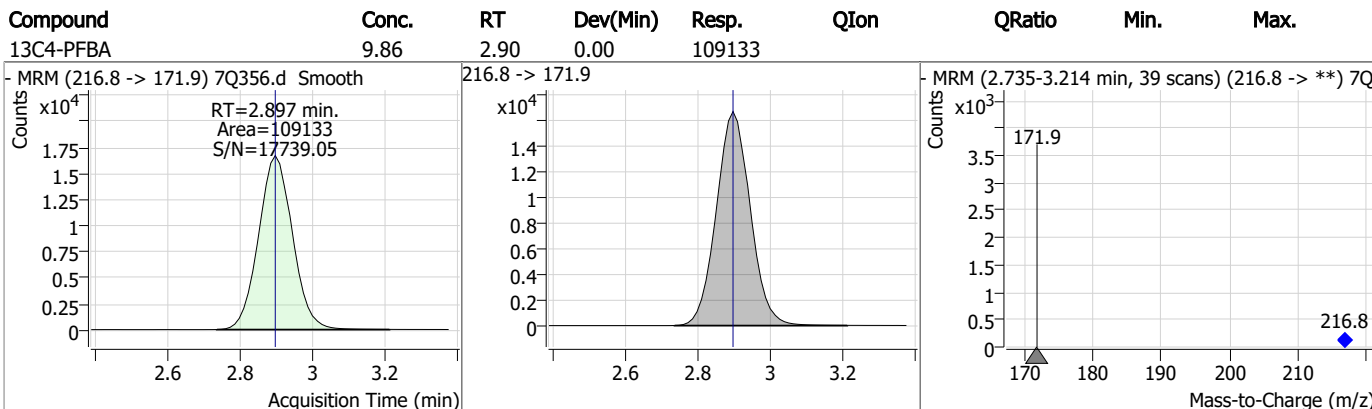
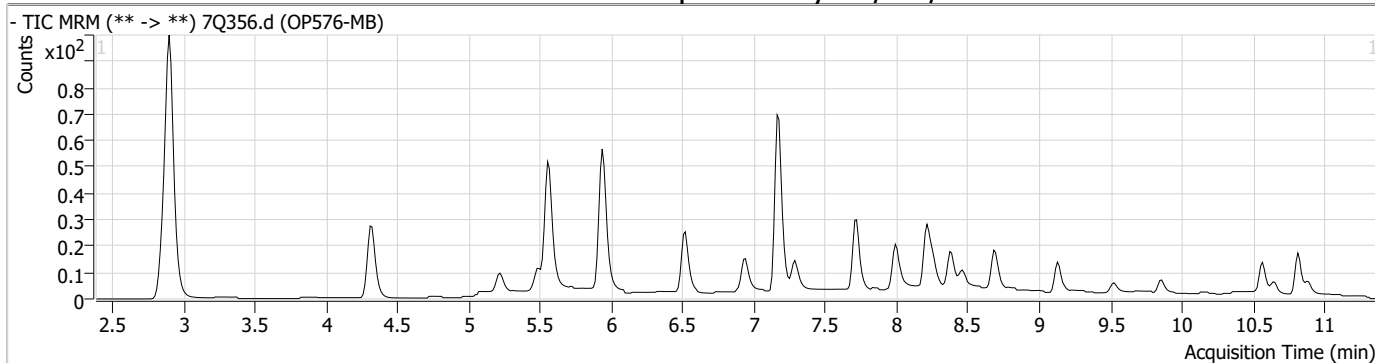
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.2

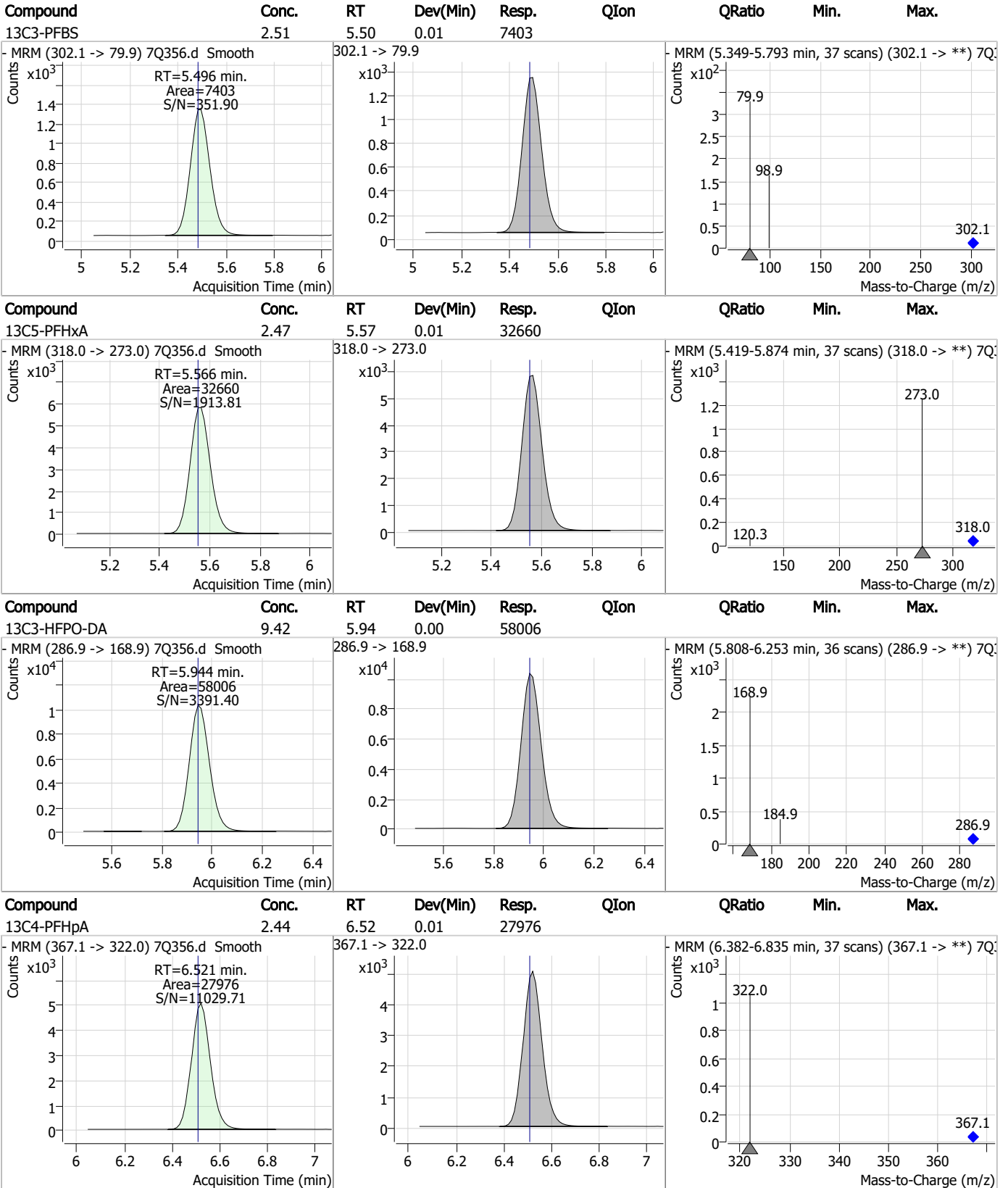
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Perfluorinated Compounds by LC/MS/MS



7.2.2
7

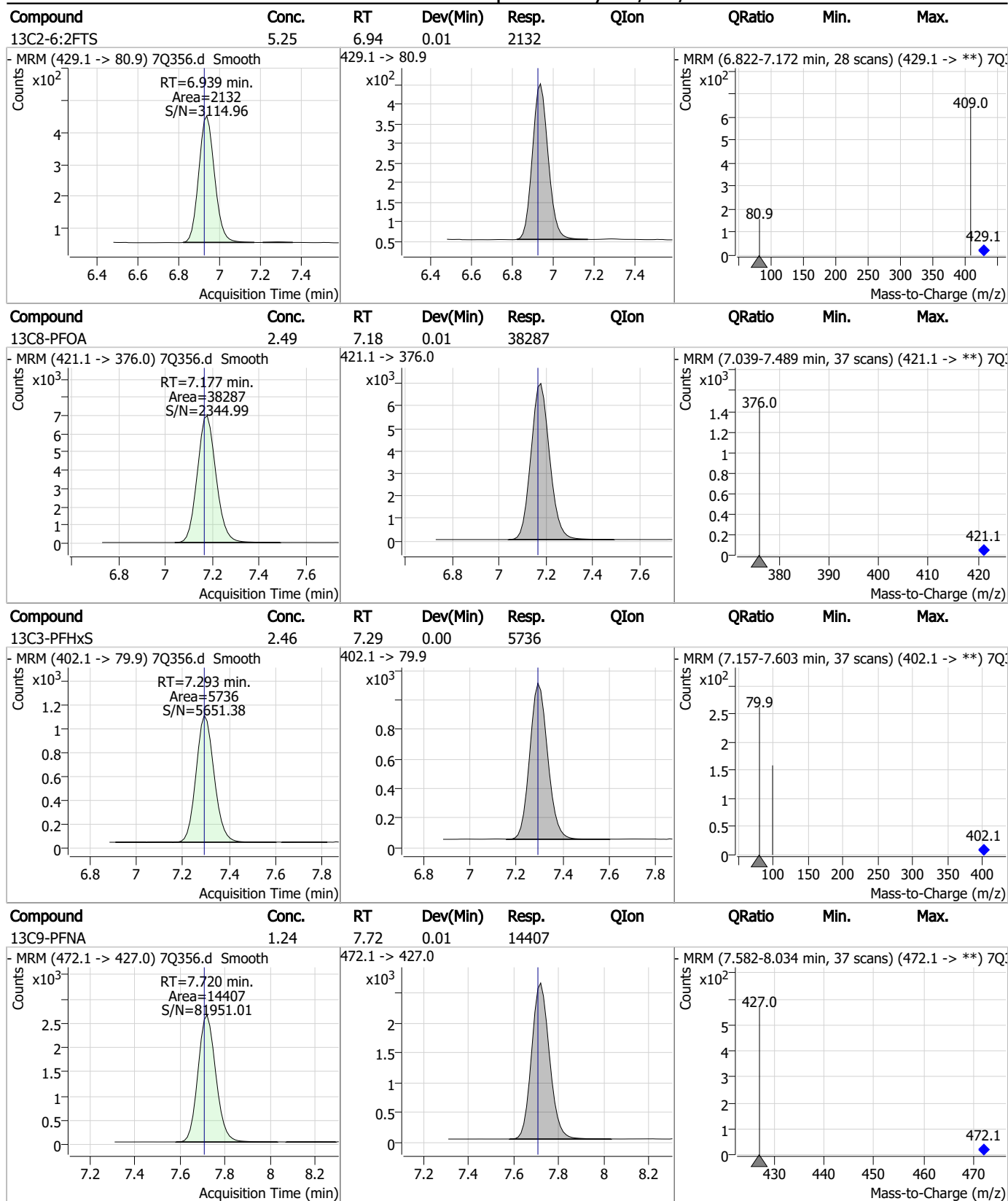
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

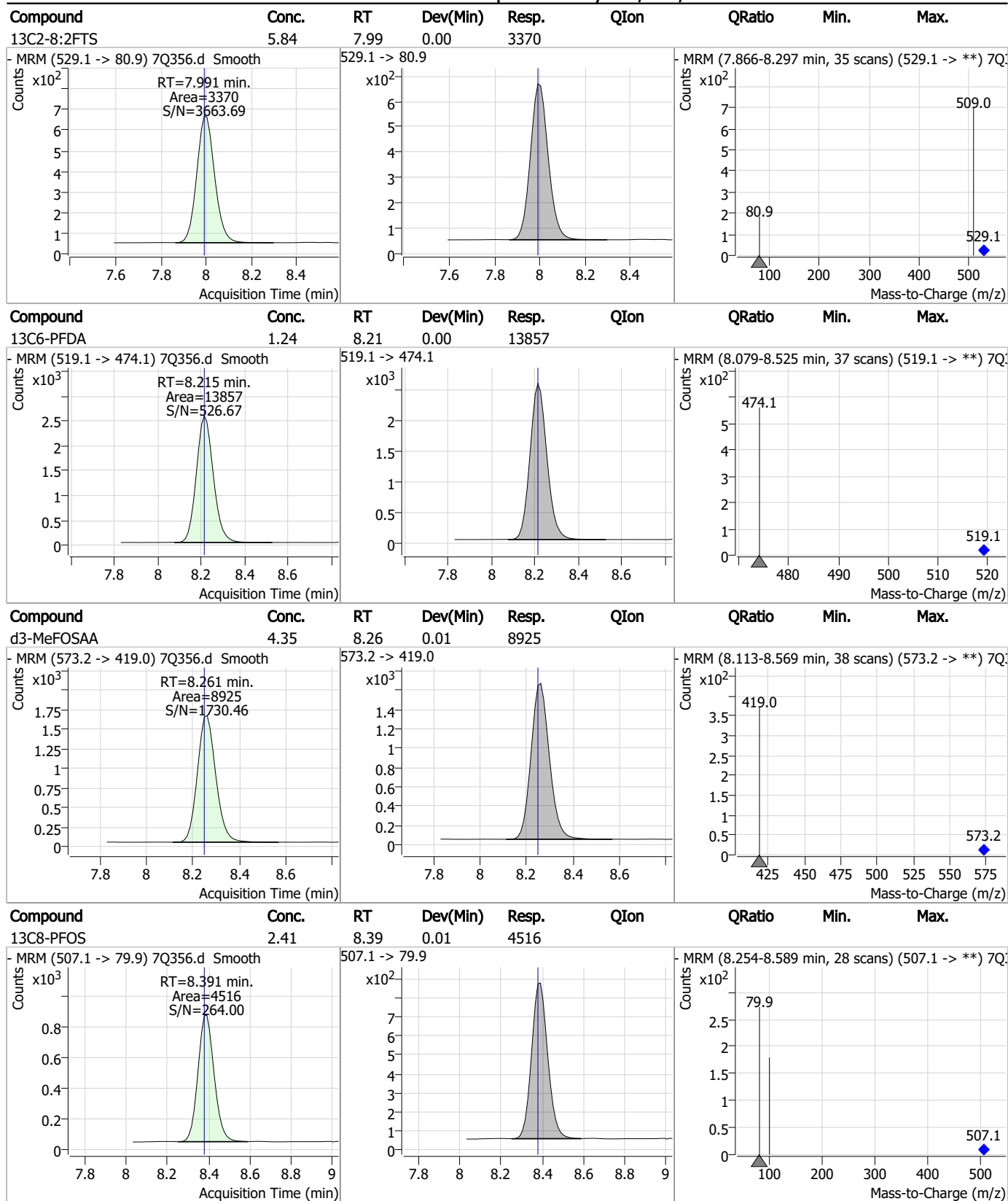
Perfluorinated Compounds by LC/MS/MS



7.2.2
7

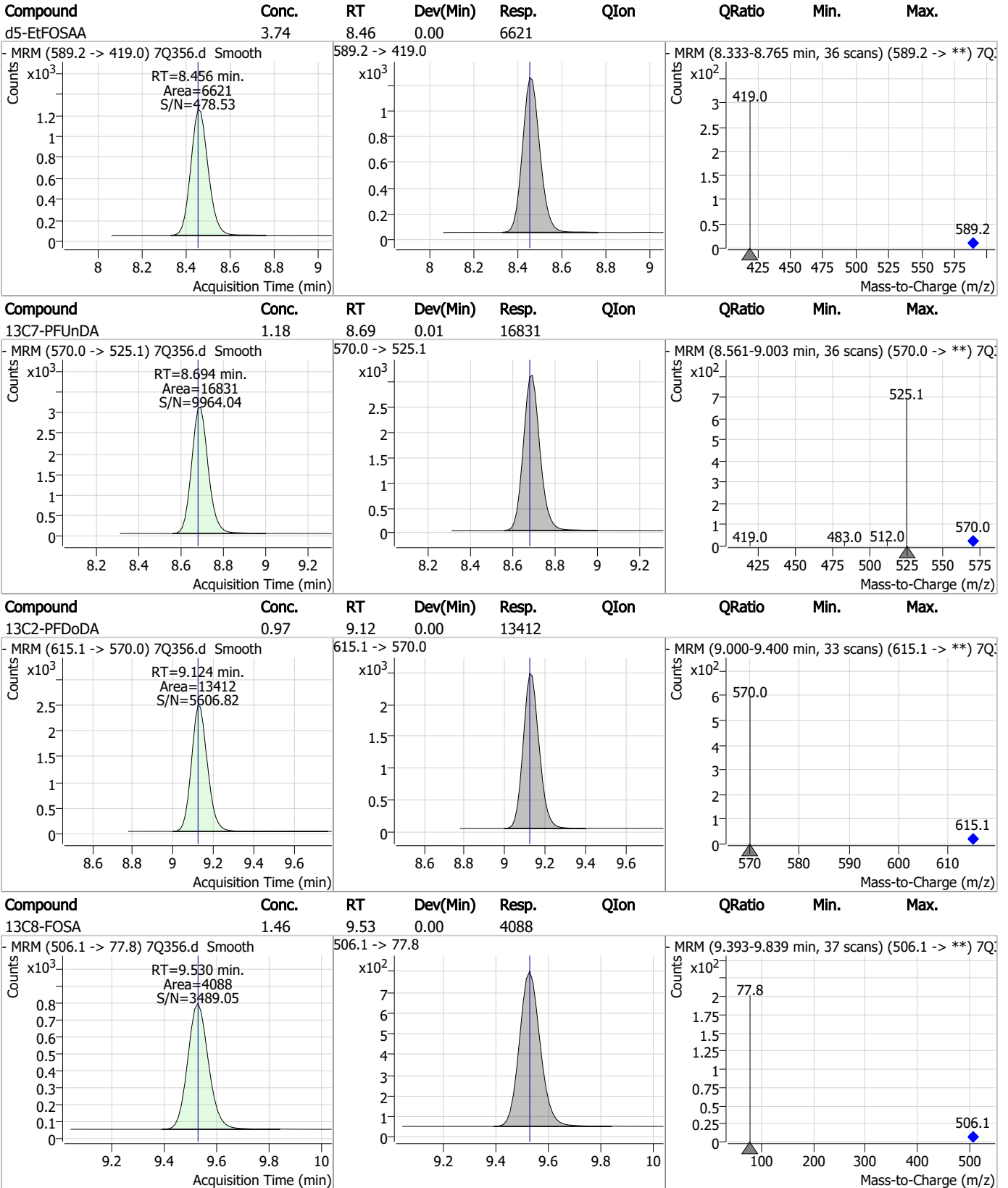


Perfluorinated Compounds by LC/MS/MS



7.2.2
7

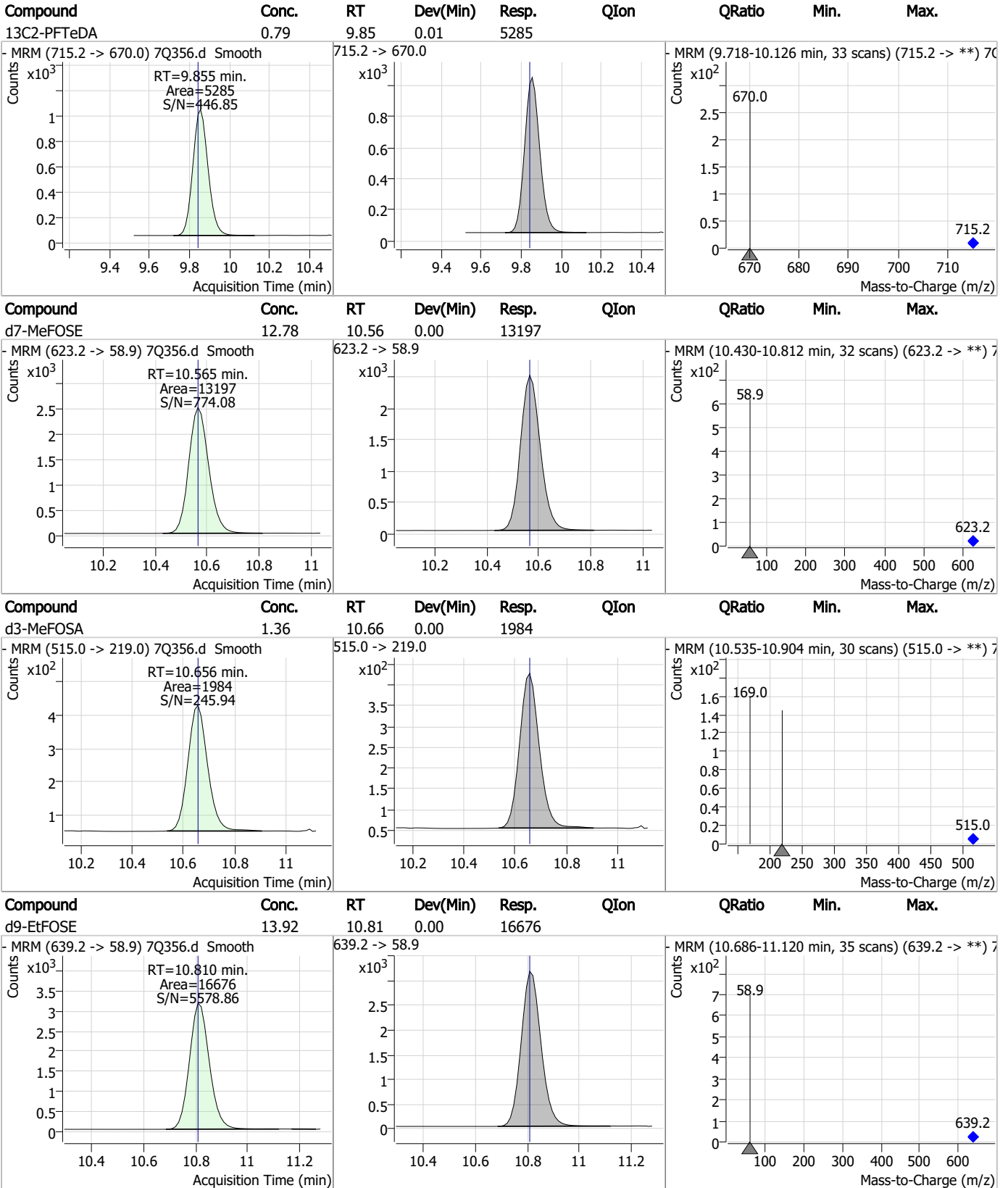
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

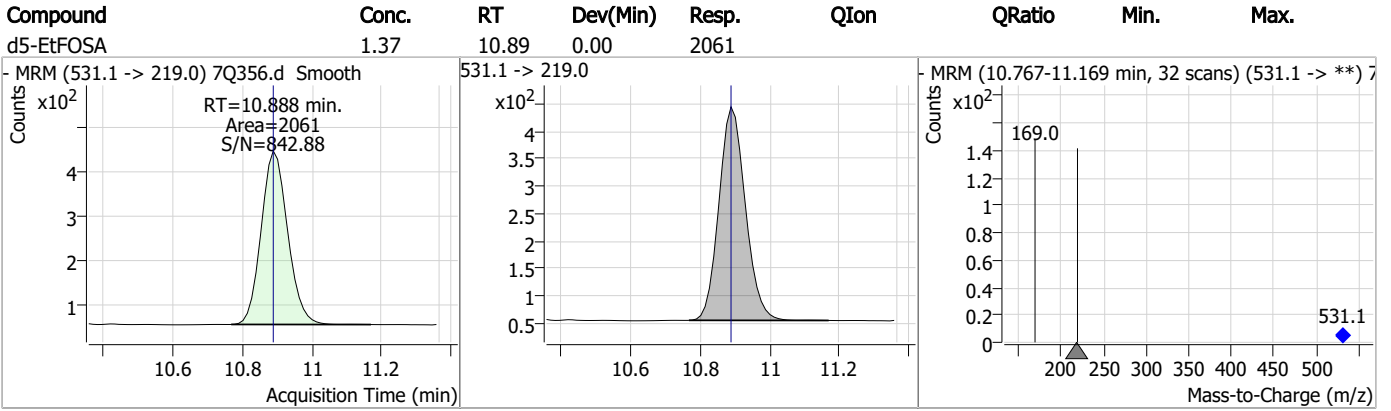
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS



7.22

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54947.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/10/2023 3:05:09 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.724	216.8 -> 171.9	92886	10.00 µg/L	0.050
M5-PFPeA	4.187	268.3 -> 223.0	38302	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	30605	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	28942	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	46810	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	18199	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	12421	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	15525	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	16756	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	17428	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	9958	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	8391	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	7046	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	8132	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	998	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	1955	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2567	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	16078	5.00 µg/L	0.012
M3-HFPO-DA	5.702	286.9 -> 168.9	28953	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	13090	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	54076	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	58852	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6209	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	5764	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	6581	2.50 µg/L	0.012
13C3-PFBA	2.728	216.0 -> 172.0	43811	5.00 µg/L	0.050
18O2-PFHxS	7.041	403.0 -> 83.9	4576	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	52315	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	13924	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	17939	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	33122	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	998	4.59 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.9%		
13C2-6:2FTS	6.761	429.1 -> 80.9	1955	4.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.0%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2567	4.07 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	16756	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	17428	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFBS	5.215	302.1 -> 79.9	8391	2.39 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C3-PFHxS	7.042	402.1 -> 79.9	7046	2.46 µg/L	0.012

7.2.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C4-PFBA	2.724	216.8 -> 171.9	92886	10.10 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.304	367.1 -> 322.0	28942	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFHxA	5.359	318.0 -> 273.0	30605	2.51 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.187	268.3 -> 223.0	38302	5.04 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C6-PFDA	8.017	519.1 -> 474.1	12421	1.23 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C7-PFUnDA	8.461	570.0 -> 525.1	15525	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C8-FOSA	9.806	506.1 -> 77.8	9958	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
13C8-PFOA	6.989	421.1 -> 376.0	46810	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C8-PFOS	8.130	507.1 -> 79.9	8132	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C9-PFNA	7.521	472.1 -> 427.0	18199	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
d3-MeFOSAA	8.099	573.2 -> 419.0	16078	4.40 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.0%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	28953	9.49 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
d3-MeFOSA	11.139	515.0 -> 219.0	5764	2.27 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.6%	
d5-EtFOSAA	8.296	589.2 -> 419.0	13090	4.24 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 84.7%	
d7-MeFOSE	11.034	623.2 -> 58.9	54076	25.70 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d9-EtFOSE	11.319	639.2 -> 58.9	58852	24.97 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d5-EtFOSA	11.397	531.1 -> 219.0	6209	2.23 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.0%	

7.2.3
7

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	-	427.1 -> 407.0 427.1 -> 80.9	-	N.D.	
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	7.860	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	11.399	526.0 -> 219.0	477	0.18 µg/L	m	68
		526.0 -> 169.0	844			
EtFOSE	11.332	630.0 -> 58.9	1236	0.59 µg/L	m	100
		511.9 -> 219.0	0			
MeFOSA	11.140	511.9 -> 169.0	0	µg/L	m	1
		616.1 -> 58.9	997			
MeFOSE	11.047	616.1 -> 58.9	997	0.46 µg/L	m	100
		699.1 -> 79.9	-			
PFDoDS	-	699.1 -> 98.8	-	N.D.		
		295.0 -> 201.0				
NFDHA	-	295.0 -> 84.9	-	N.D.		
		279.0 -> 85.1				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.3
7

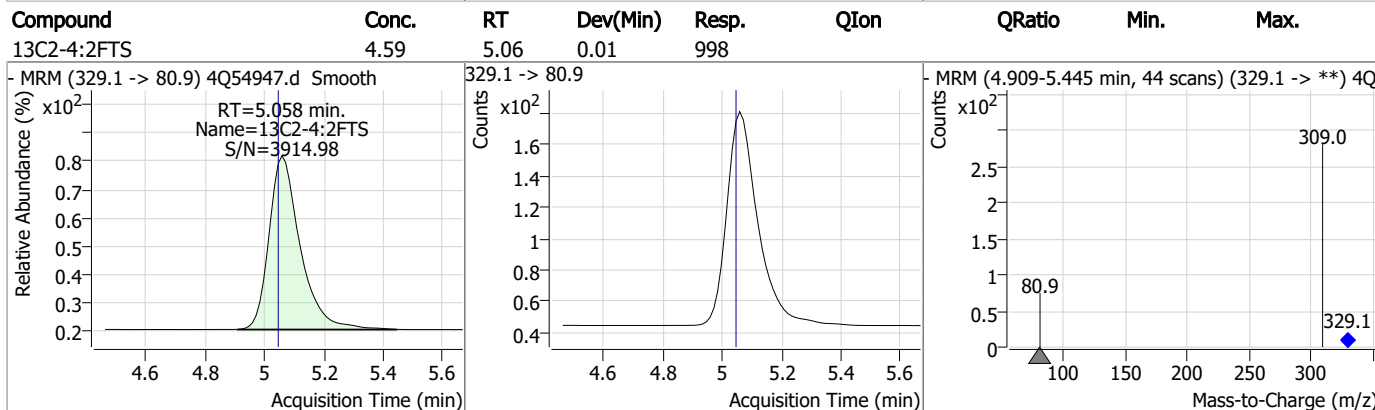
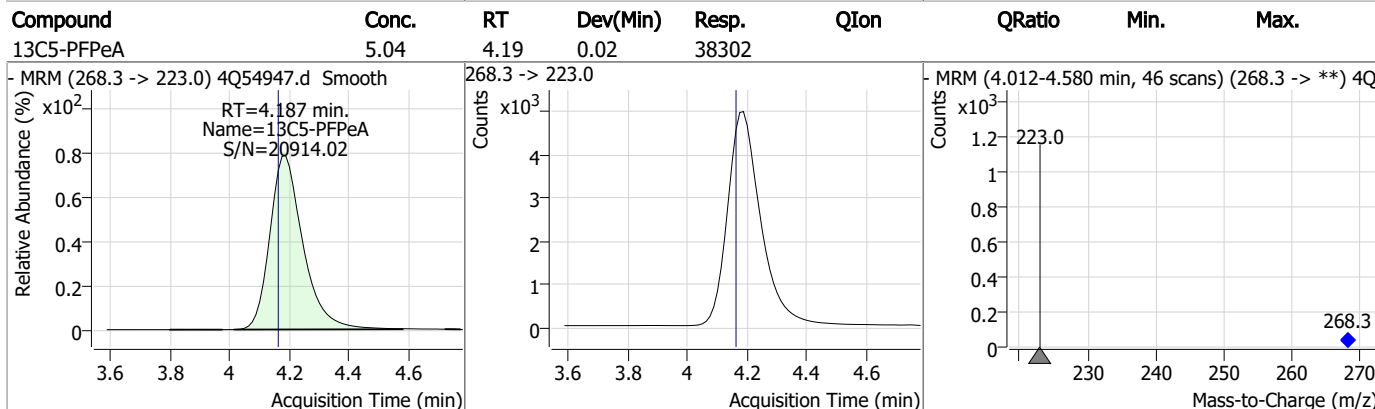
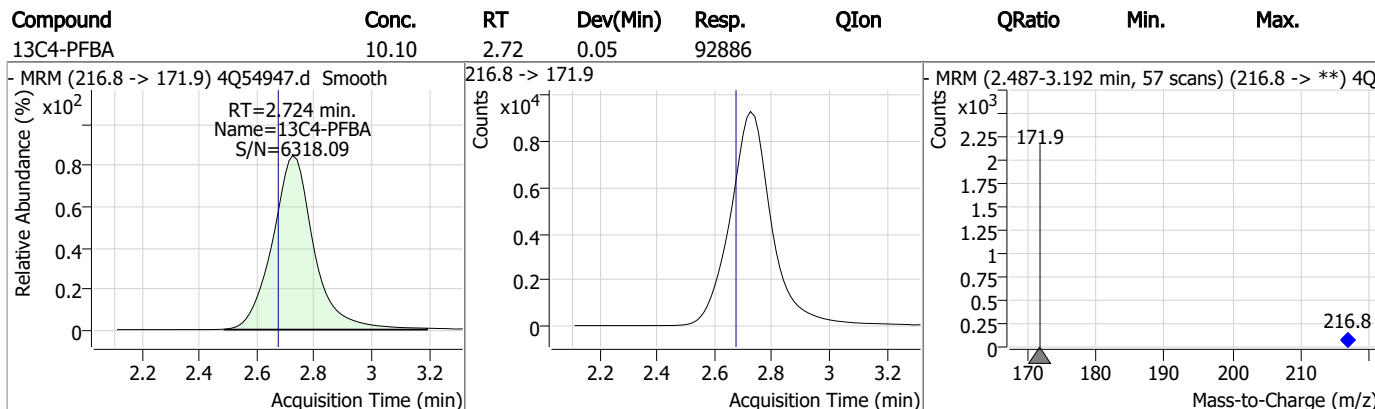
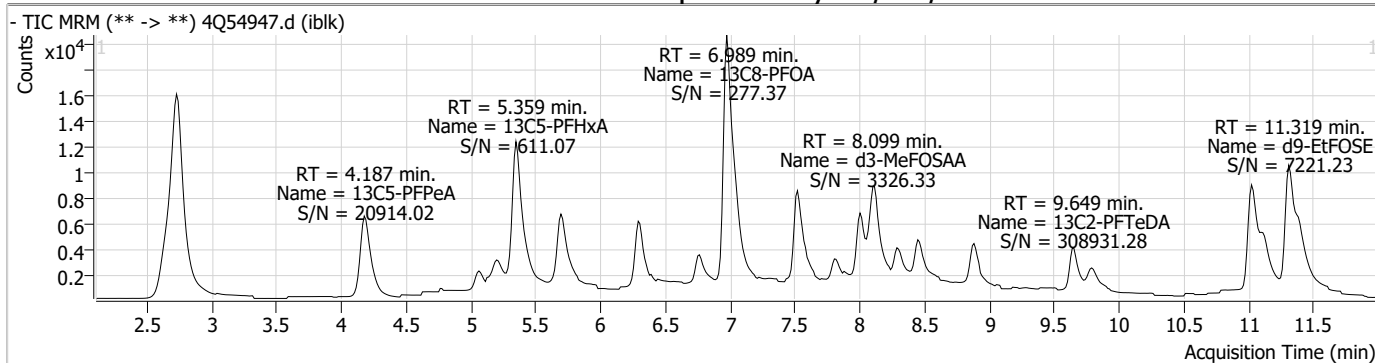
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.3

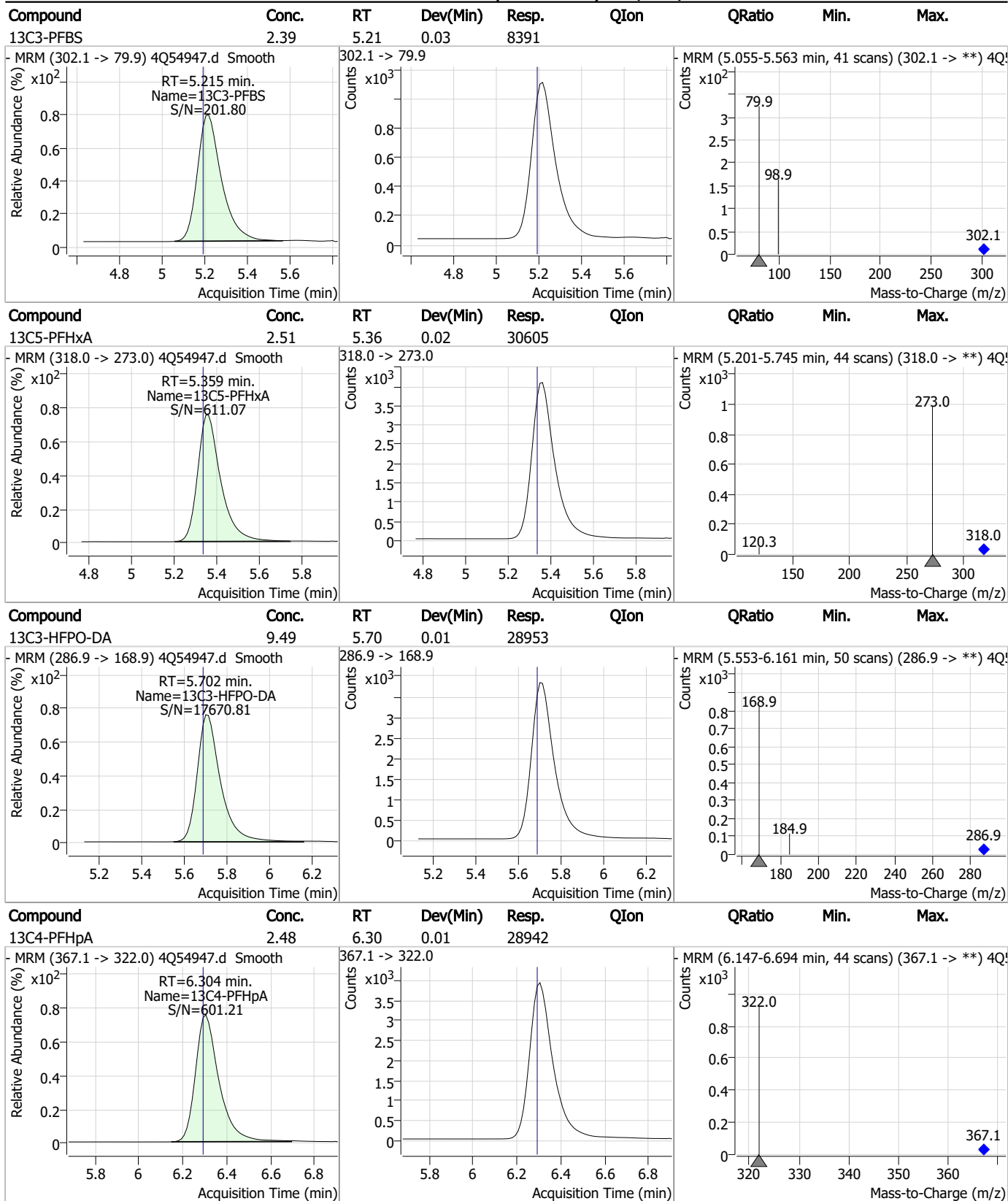
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Perfluorinated Compounds by LC/MS/MS



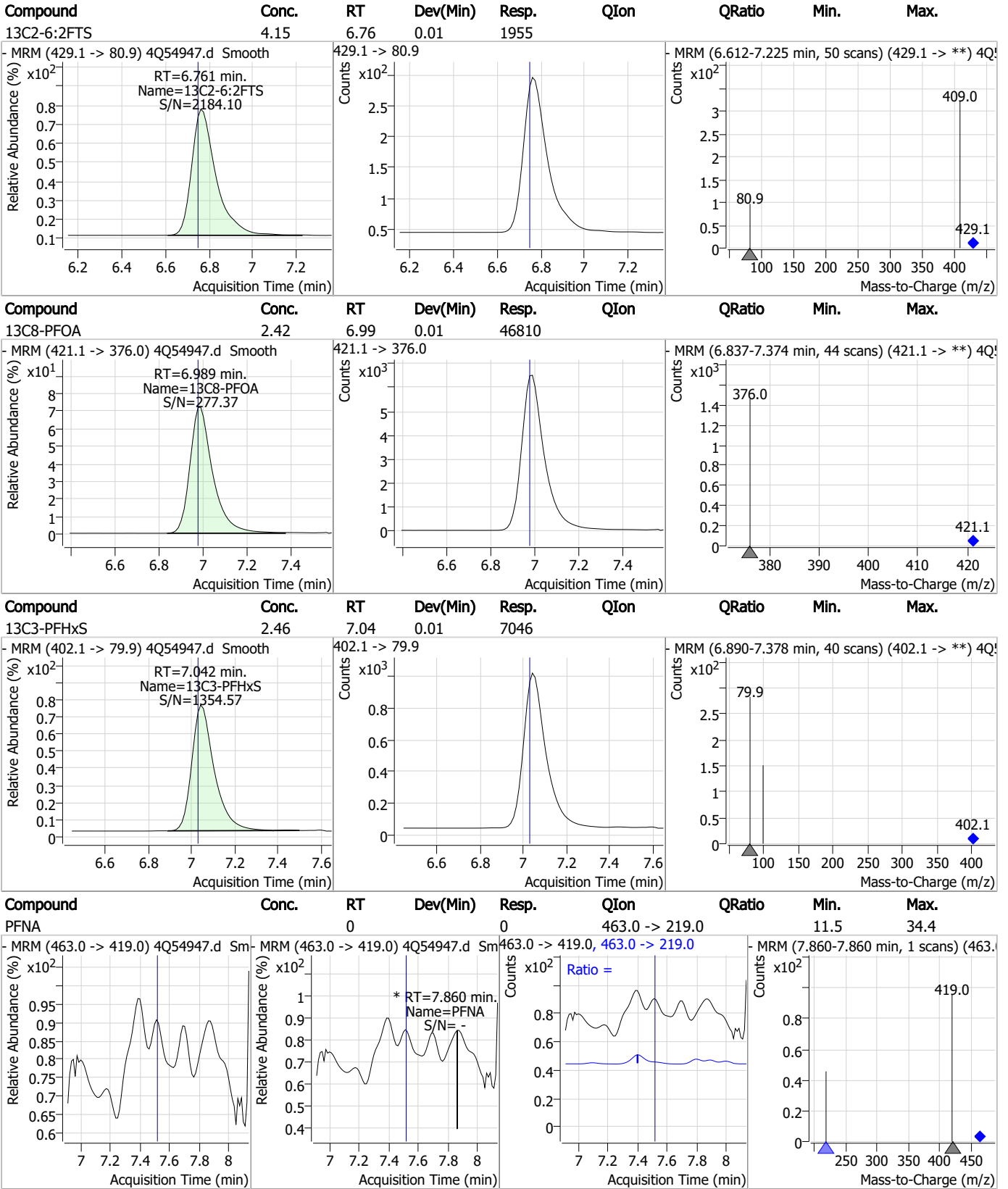
7.2.3
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Perfluorinated Compounds by LC/MS/MS



7.2.3
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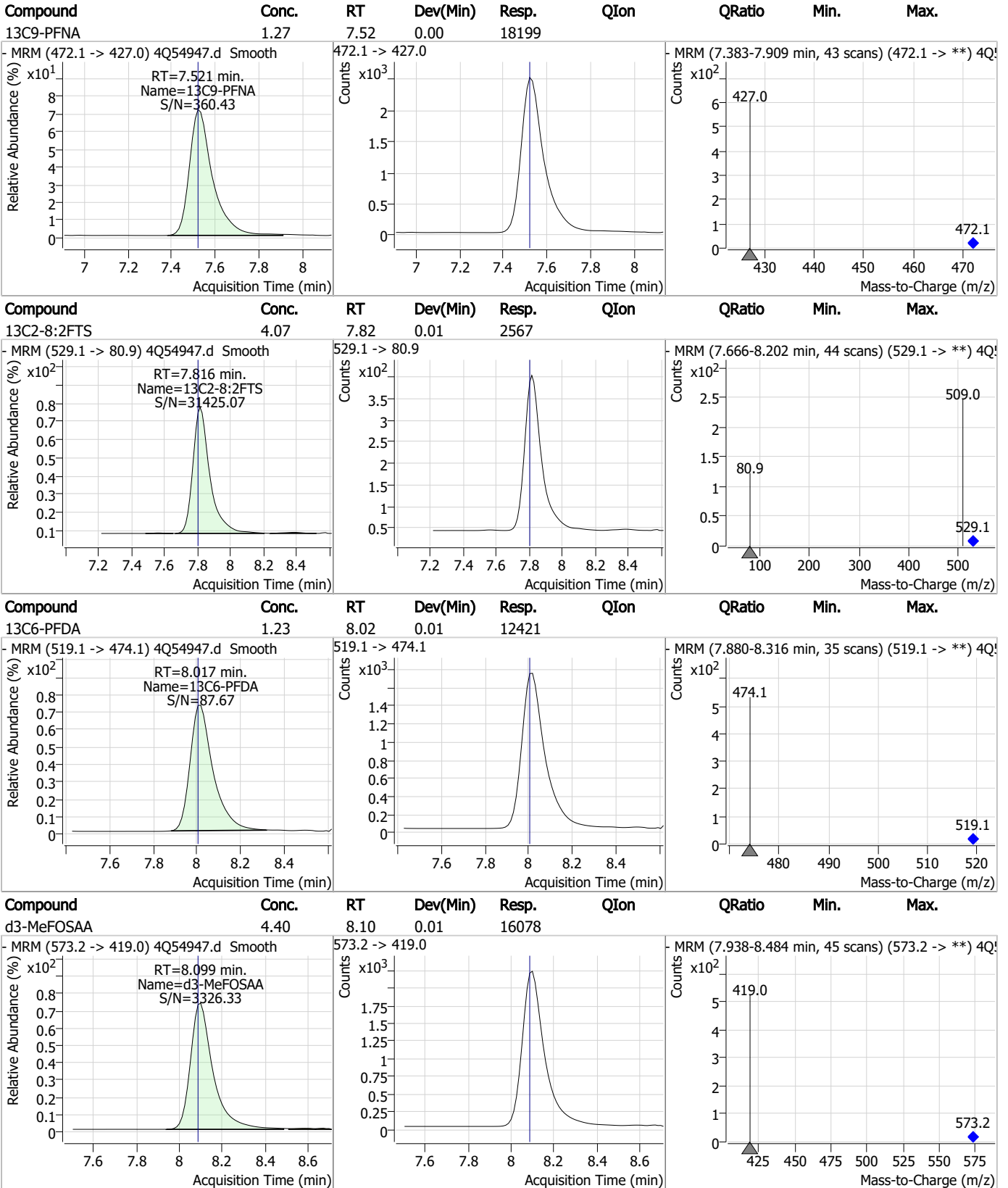
Perfluorinated Compounds by LC/MS/MS



7.2.3

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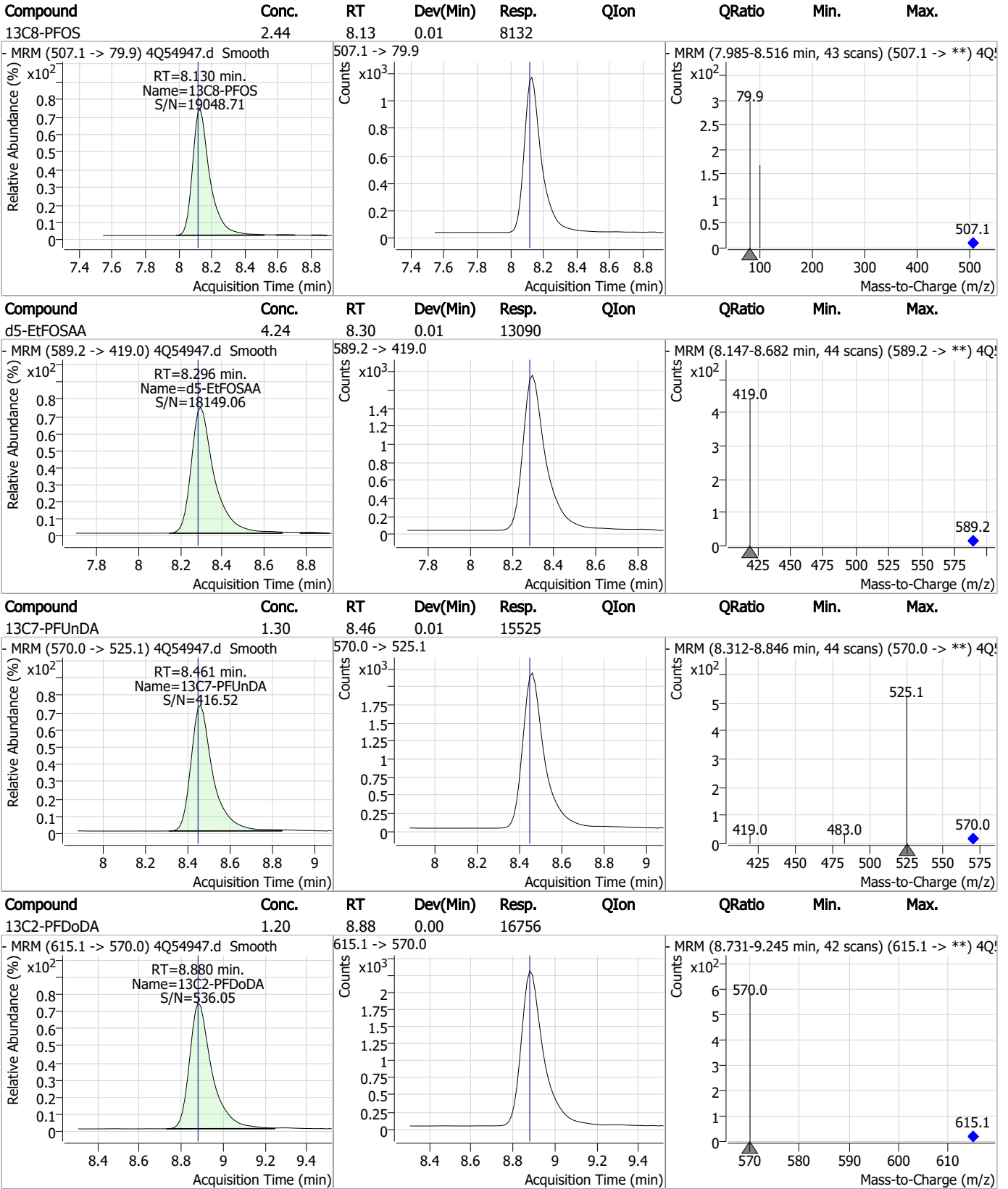
Perfluorinated Compounds by LC/MS/MS



7.2.3

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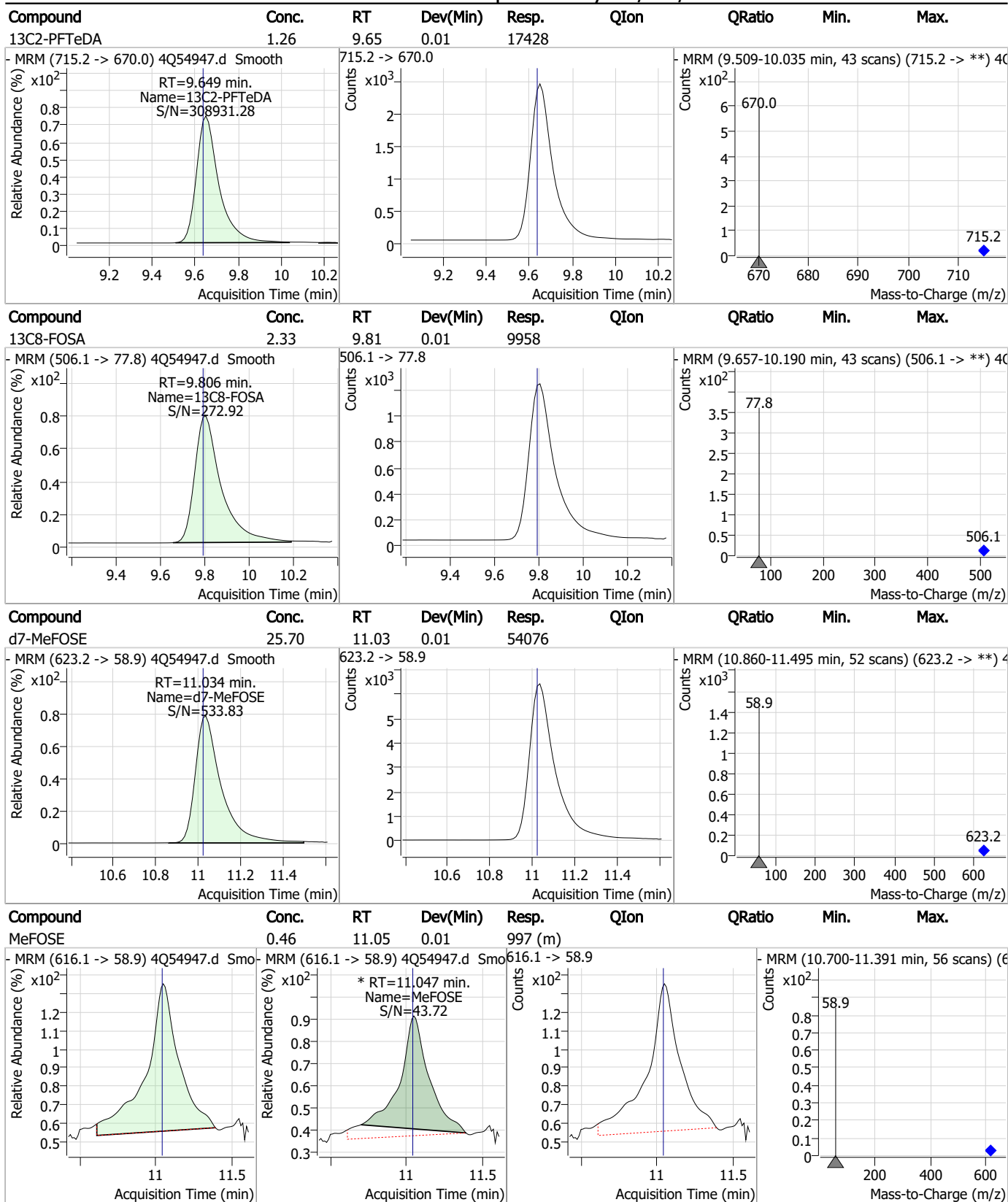
Perfluorinated Compounds by LC/MS/MS



7.2.3

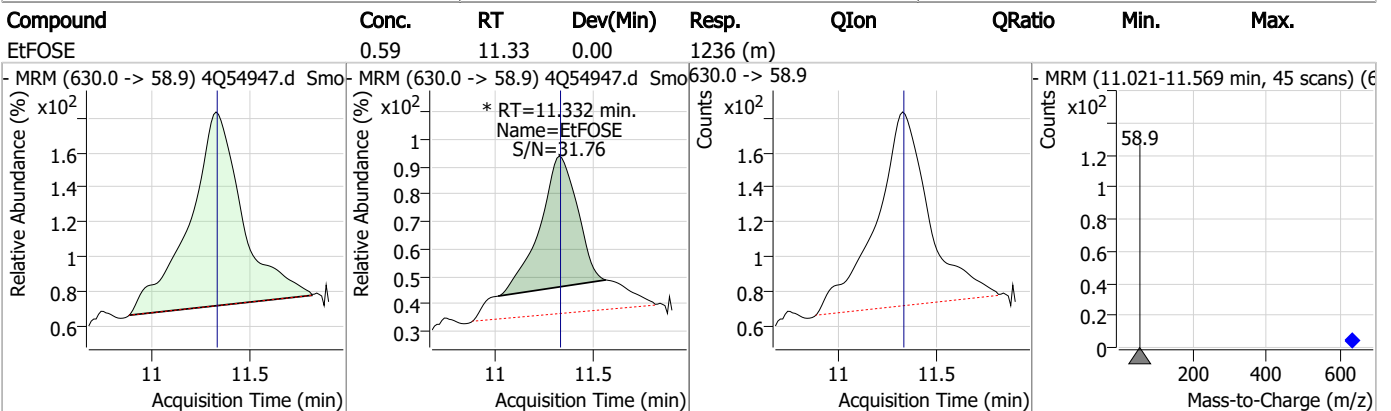
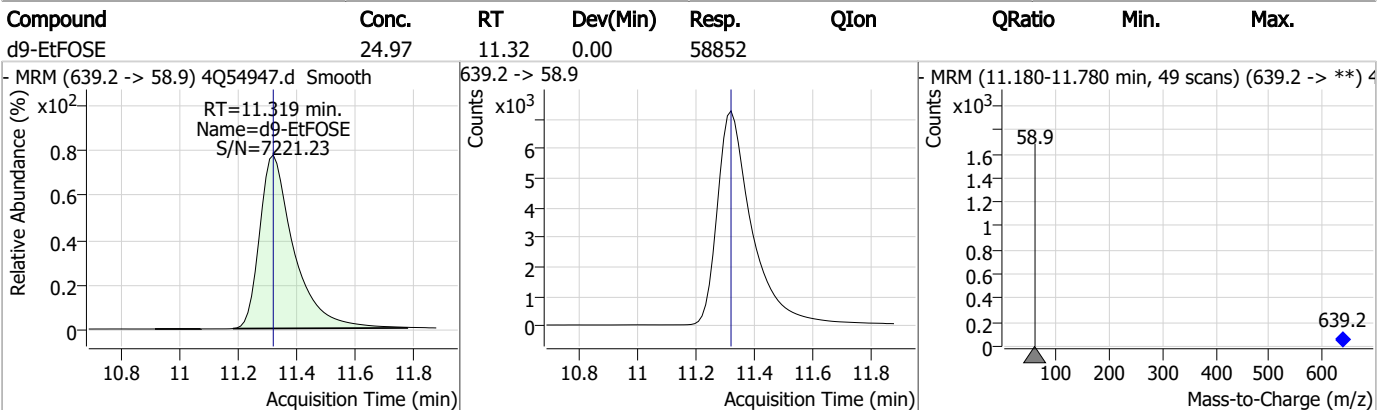
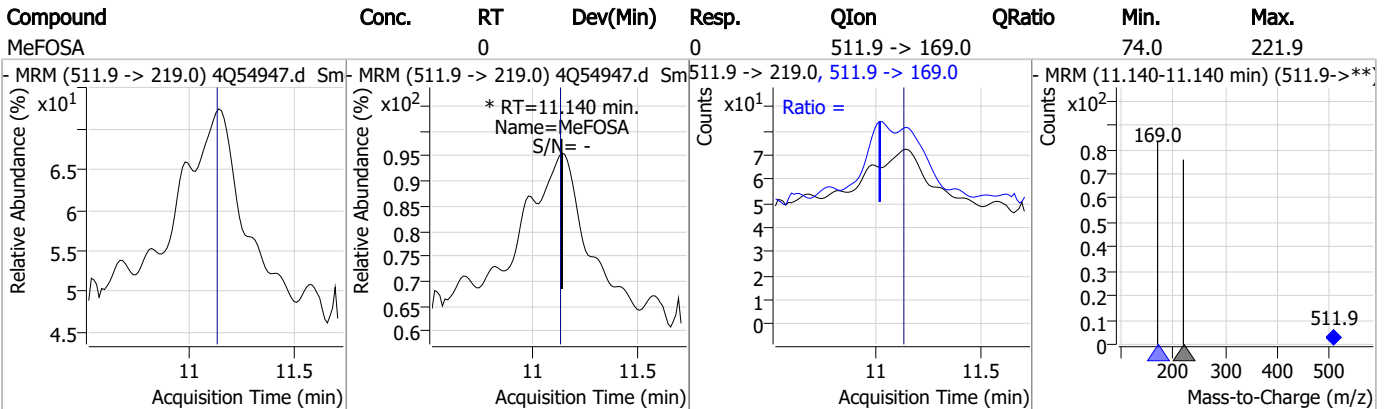
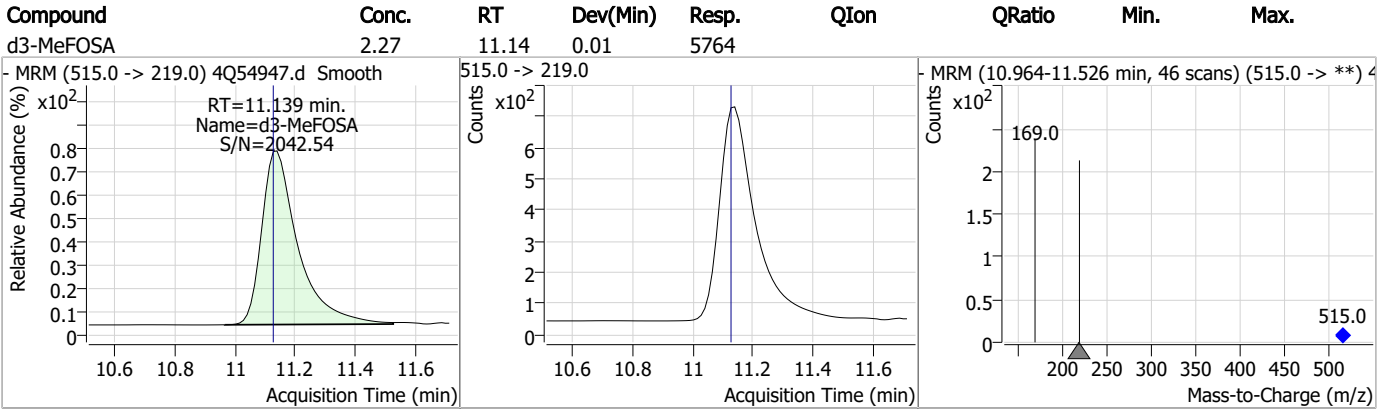
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Perfluorinated Compounds by LC/MS/MS



7.2.3
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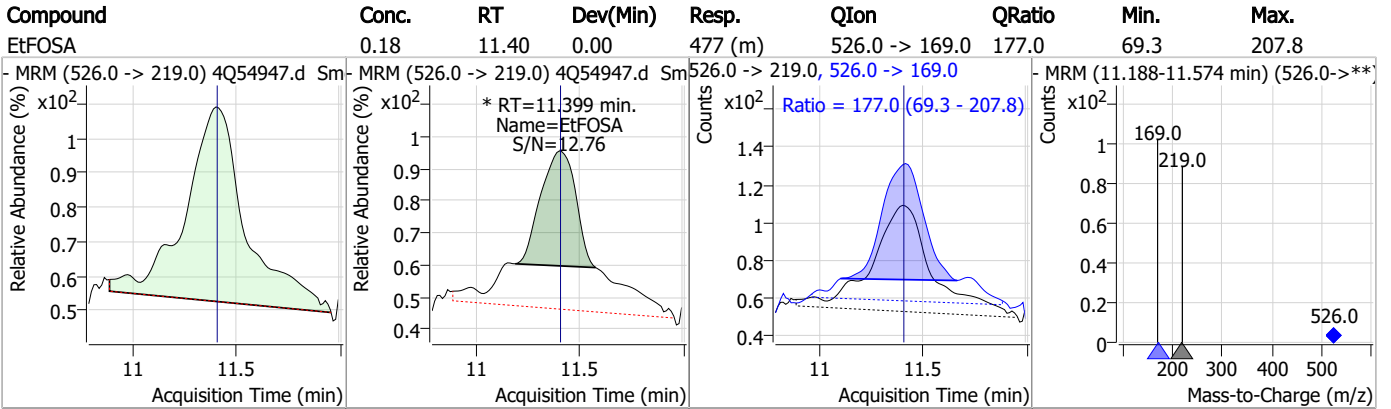
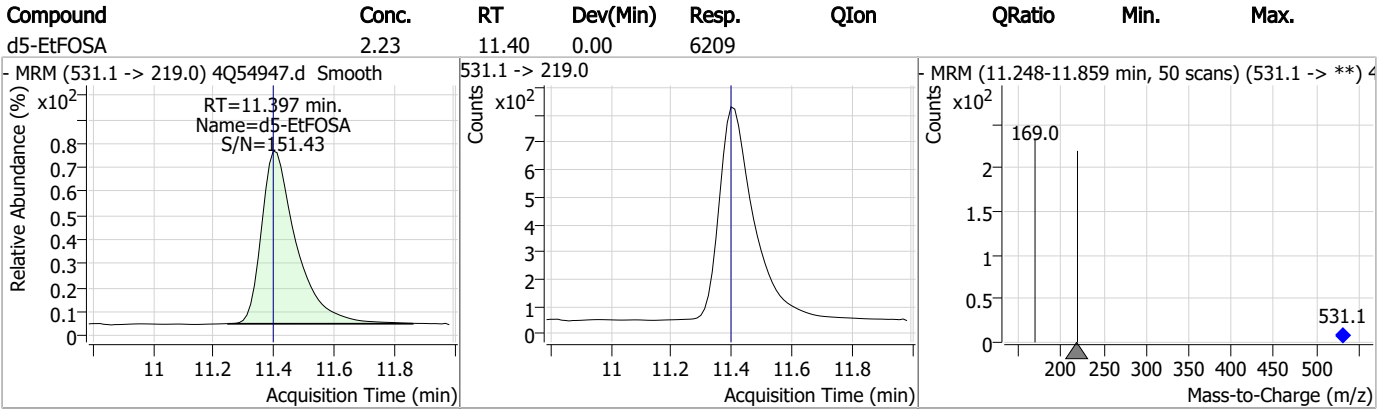
Perfluorinated Compounds by LC/MS/MS



7.2.3

7

Perfluorinated Compounds by LC/MS/MS



7.2.3

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Manual Integration Approval Summary

Sample Number: S4Q805-IBLK Method: EPA DRAFT 1633
Lab FileID: 4Q54947.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/10/23 15:05 Supervisor approved: 12/11/23 15:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
MeFOSE	24448-09-7		11.05	Poorly defined baseline
EtFOSE	1691-99-2		11.33	Poorly defined baseline
EtFOSA	4151-50-2		11.40	Poorly defined baseline

7.2.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54989.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 1:25:25 AM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	92882	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	39120	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	31152	2.50 µg/L	0.012
M4-PFHpA	6.304	367.1 -> 322.0	30702	2.50 µg/L	0.012
M8-PFOA	6.976	421.1 -> 376.0	49994	2.50 µg/L	0.000
M9-PFNA	7.521	472.1 -> 427.0	19841	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	14037	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	16779	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	17917	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	18283	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	10437	2.50 µg/L	0.000
M3-PFBS	5.215	302.1 -> 79.9	9098	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	7055	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	7979	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	1428	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	3125	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	4280	5.00 µg/L	0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	20766	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	28866	10.00 µg/L	0.012
M5-EtFOSAA	8.283	589.2 -> 419.0	17230	5.00 µg/L	0.000
M7-MeFOSE	11.022	623.2 -> 58.9	51192	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	57505	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	6847	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6329	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6811	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	44584	5.00 µg/L	0.013
18O2-PFHxS	7.041	403.0 -> 83.9	4796	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	54409	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	15147	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	18758	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	34862	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1428	6.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.4%		
13C2-6:2FTS	6.761	429.1 -> 80.9	3125	6.33 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.6%		
13C2-8:2FTS	7.816	529.1 -> 80.9	4280	6.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	17917	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C2-PFTeDA	9.649	715.2 -> 670.0	18283	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C3-PFBS	5.215	302.1 -> 79.9	9098	2.47 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-PFHxS	7.042	402.1 -> 79.9	7055	2.35 µg/L	0.012

7.2.4
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.8%	
13C4-PFBA	2.686	216.8 -> 171.9	92882	9.92 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.304	367.1 -> 322.0	30702	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFHxA	5.347	318.0 -> 273.0	31152	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFPeA	4.175	268.3 -> 223.0	39120	4.89 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C6-PFDA	8.004	519.1 -> 474.1	14037	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C7-PFUnDA	8.461	570.0 -> 525.1	16779	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C8-FOSA	9.794	506.1 -> 77.8	10437	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C8-PFOA	6.976	421.1 -> 376.0	49994	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOS	8.130	507.1 -> 79.9	7979	2.31 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.5%	
13C9-PFNA	7.521	472.1 -> 427.0	19841	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
d3-MeFOSAA	8.086	573.2 -> 419.0	20766	5.49 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.8%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	28866	8.99 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d3-MeFOSA	11.126	515.0 -> 219.0	6329	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
d5-EtFOSAA	8.283	589.2 -> 419.0	17230	5.39 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.7%	
d7-MeFOSE	11.022	623.2 -> 58.9	51192	23.51 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	57505	23.58 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.3%	
d5-EtFOSA	11.398	531.1 -> 219.0	6847	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	

7.2.4
7

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.	
		363.1 -> 319.0			
PFHpS	-	363.1 -> 169.0	-	N.D.	
		449.0 -> 79.9			
PFHxA	-	449.0 -> 98.9	-	N.D.	
		313.0 -> 269.0			
PFHxS	-	313.0 -> 118.9	-	N.D.	
		398.7 -> 79.9			
PFNA	-	398.7 -> 98.9	-	N.D.	
		463.0 -> 419.0			
PFNS	-	463.0 -> 219.0	-	N.D.	
		548.8 -> 79.9			
PFOA	-	548.8 -> 98.9	-	N.D.	
		413.0 -> 369.0			
PFOS	-	413.0 -> 169.0	-	N.D.	
		498.9 -> 79.9			
PFPeA	-	498.9 -> 98.8	-	N.D.	
		263.0 -> 219.0			
PFPeS	-	349.1 -> 79.9	-	N.D.	
		349.1 -> 98.9			
PFTeDA	-	713.1 -> 669.0	-	N.D.	
		713.1 -> 168.9			
PFTrDA	-	663.0 -> 619.0	-	N.D.	
		663.0 -> 168.9			
PFUnDA	-	563.1 -> 519.0	-	N.D.	
		563.1 -> 269.1			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.	
		632.9 -> 452.9			
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.	
		532.8 -> 353.0			
ADONA	-	376.9 -> 250.9	-	N.D.	
		376.9 -> 84.8			
HFPO-DA	-	284.9 -> 168.9	-	N.D.	
		284.9 -> 184.9			
3:3FTCA	-	241.0 -> 177.0	-	N.D.	
		241.0 -> 117.0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.	
		341.0 -> 217.0			
7:3FTCA	-	441.0 -> 316.9	-	N.D.	
		441.0 -> 336.9			
EtFOSA	-	526.0 -> 219.0	-	N.D.	
		526.0 -> 169.0			
EtFOSE	-	630.0 -> 58.9	-	N.D.	
		511.9 -> 219.0			
MeFOSA	-	511.9 -> 169.0	-	N.D.	
		616.1 -> 58.9			
MeFOSE	-	699.1 -> 79.9	-	N.D.	
		699.1 -> 98.8			
PFDoDS	-	295.0 -> 201.0	-	N.D.	
		295.0 -> 84.9			
NFDHA	-	279.0 -> 85.1	-	N.D.	
		229.0 -> 84.9			
PFMBA	-	314.8 -> 134.9	-	N.D.	
		314.8 -> 82.9			

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.4
7

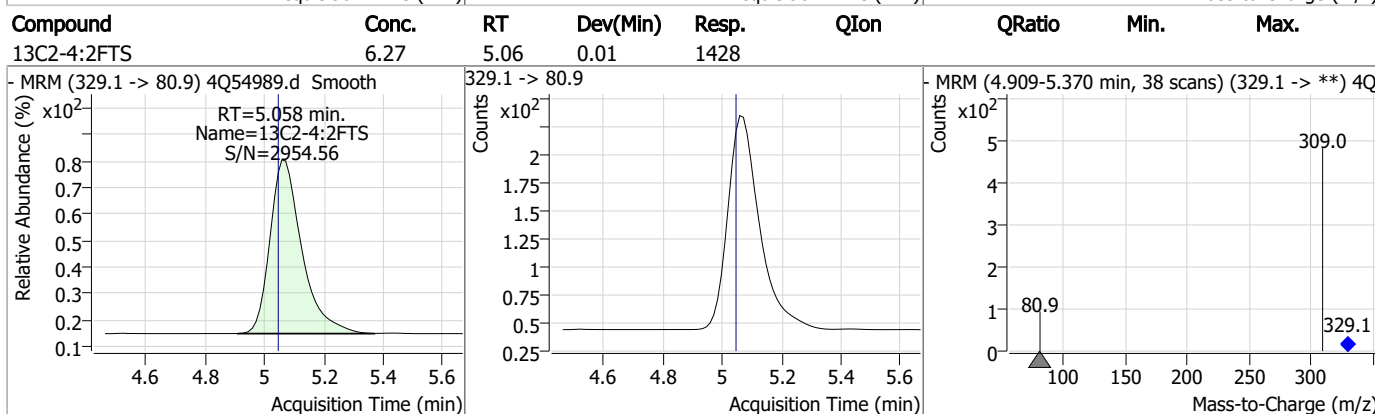
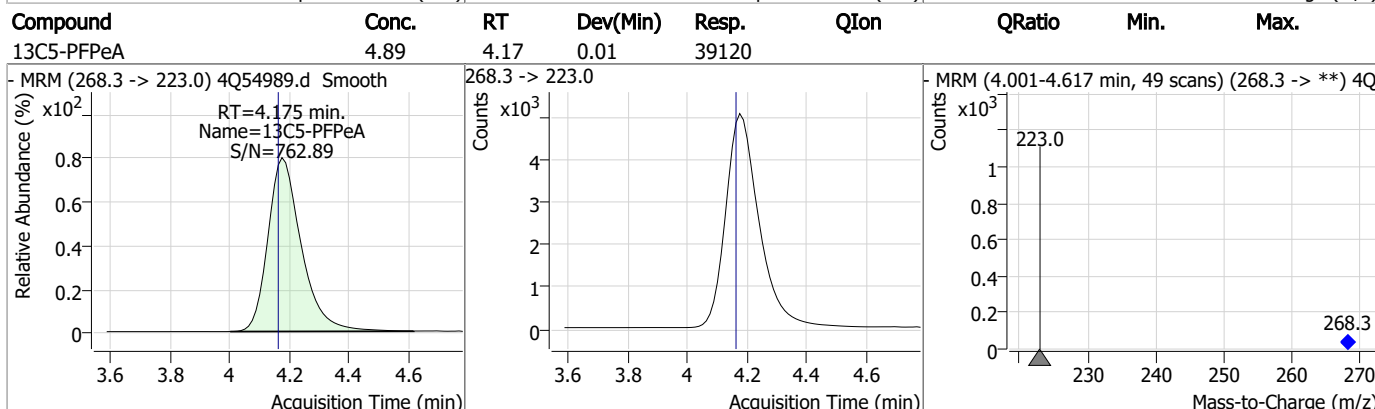
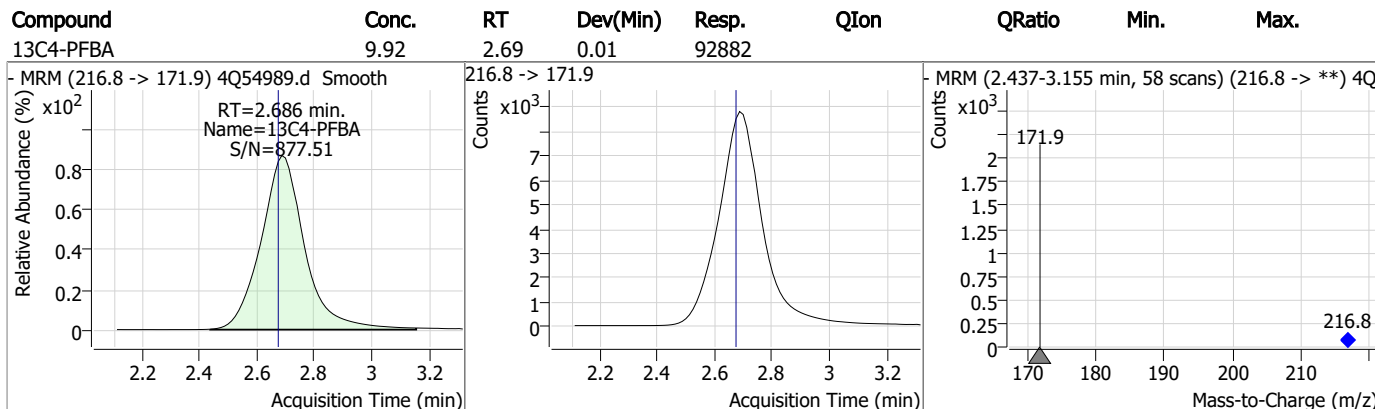
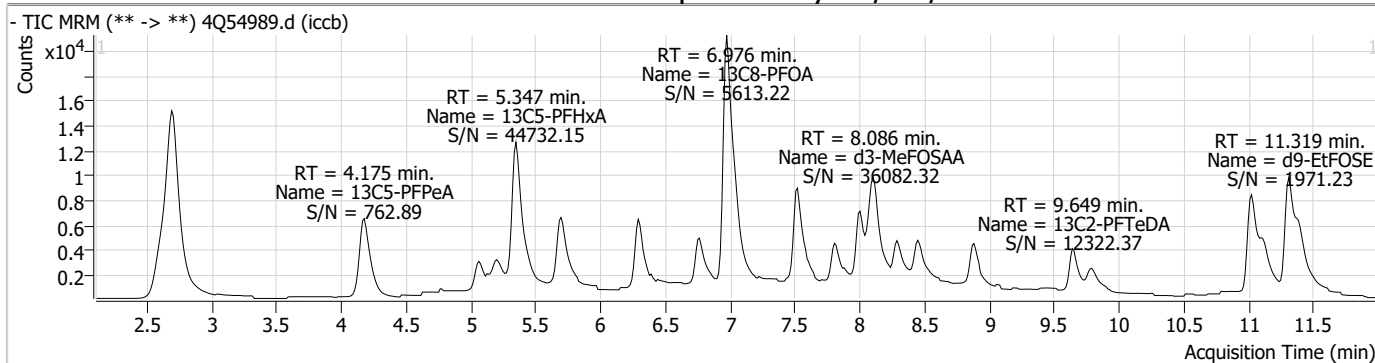
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.4

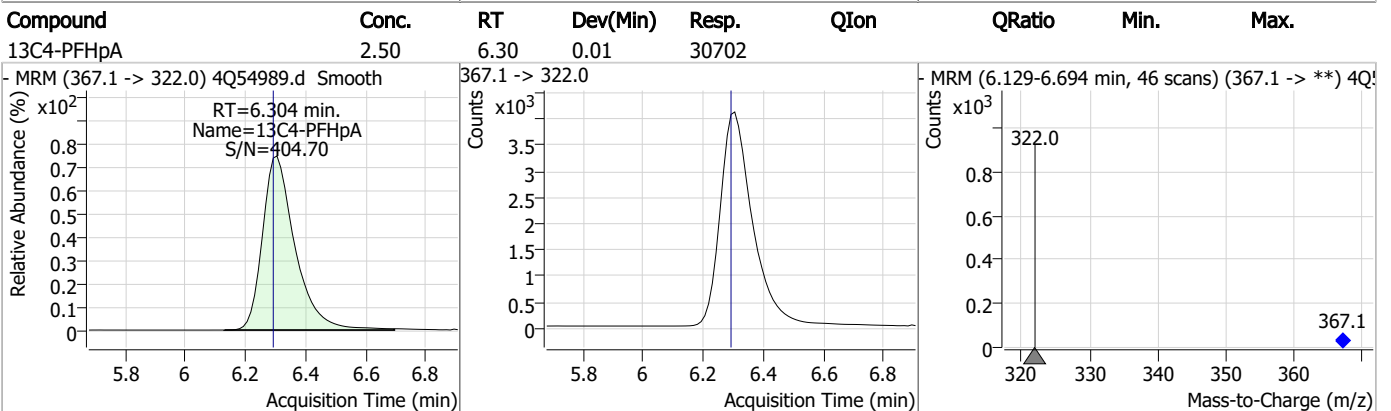
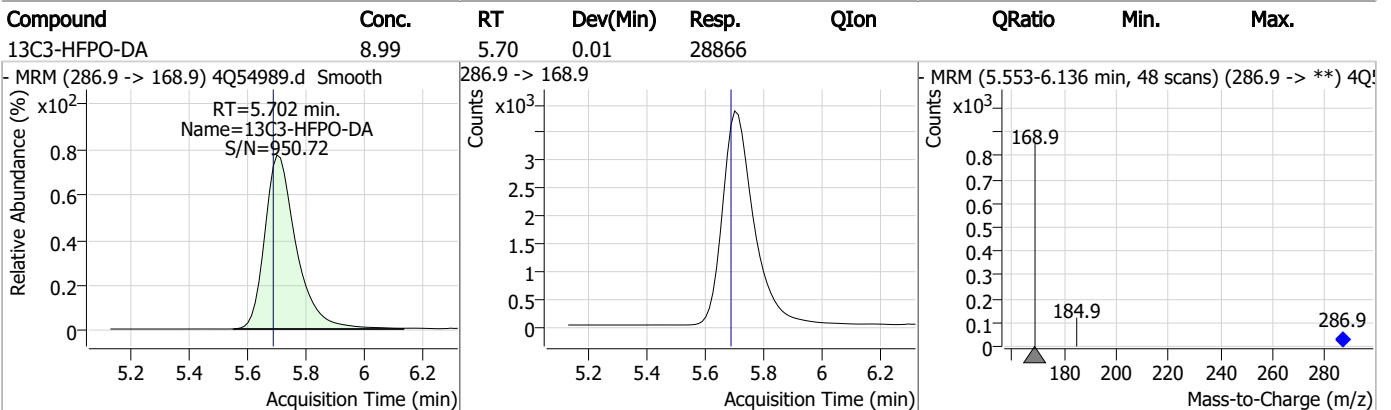
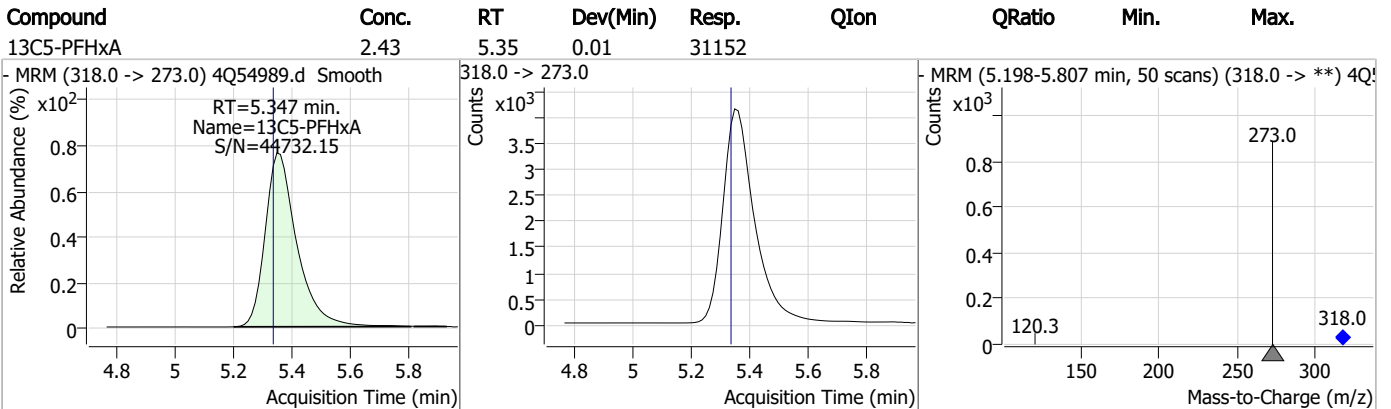
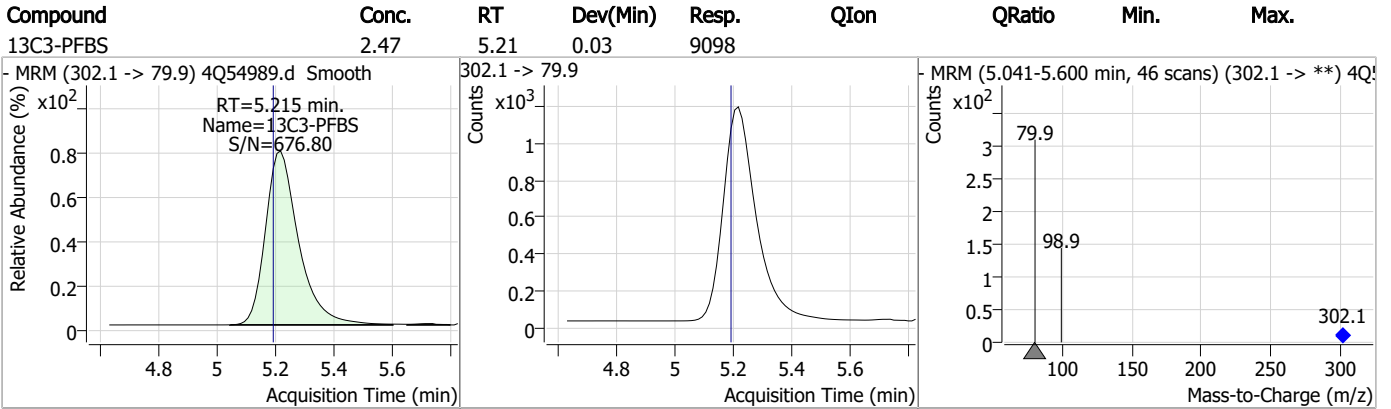
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Perfluorinated Compounds by LC/MS/MS

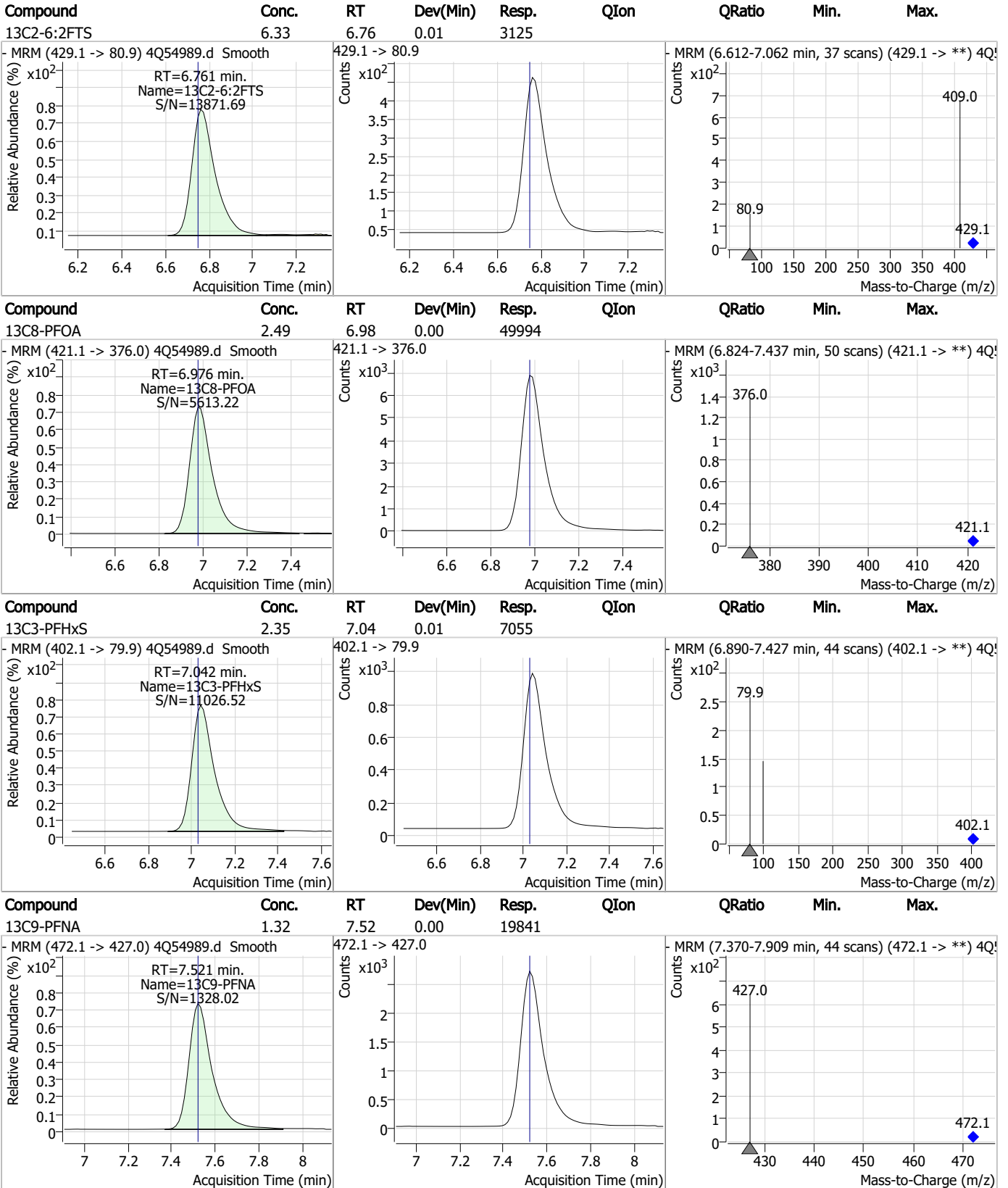


7.2.4
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Perfluorinated Compounds by LC/MS/MS



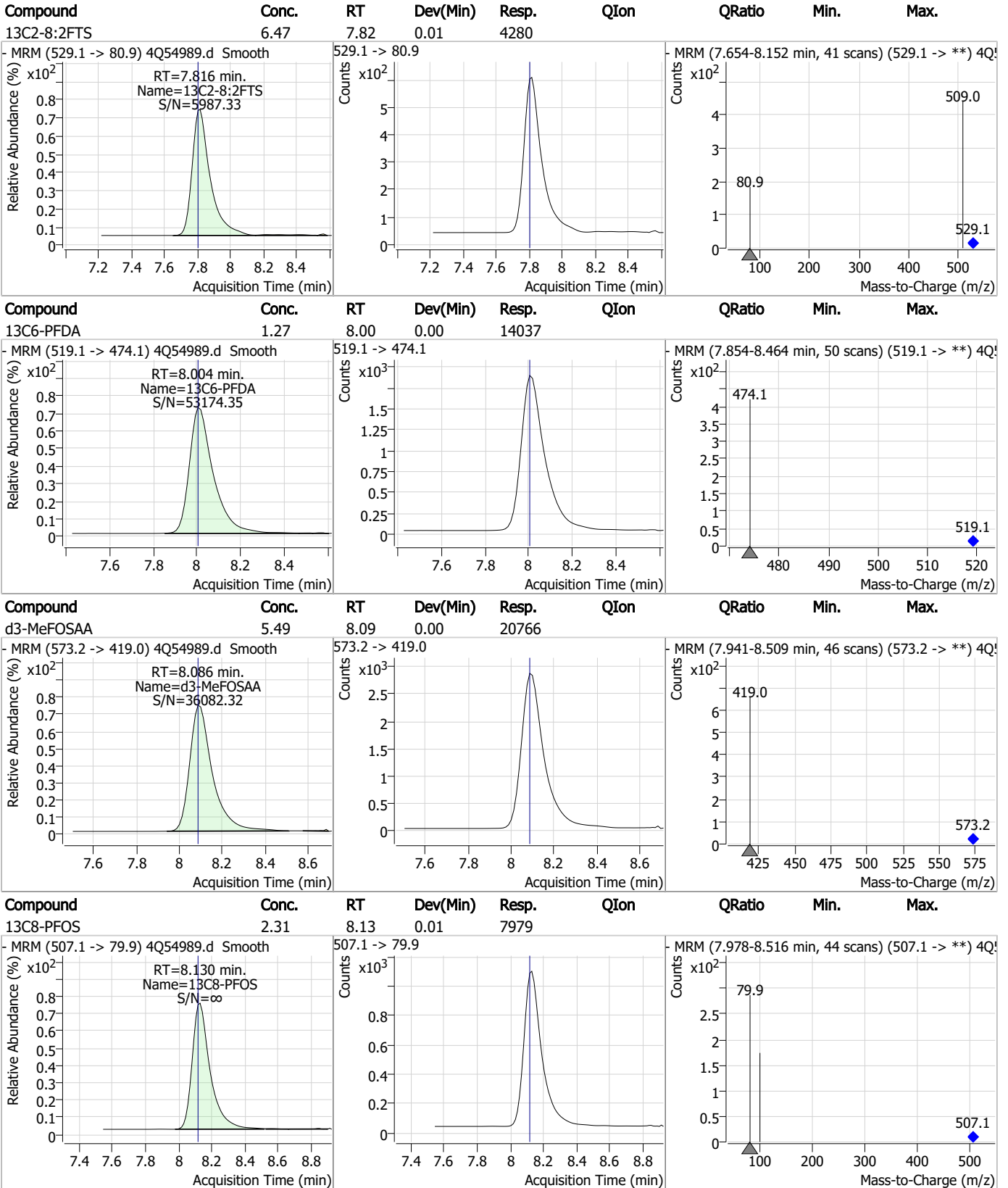
Perfluorinated Compounds by LC/MS/MS



7.2.4

7

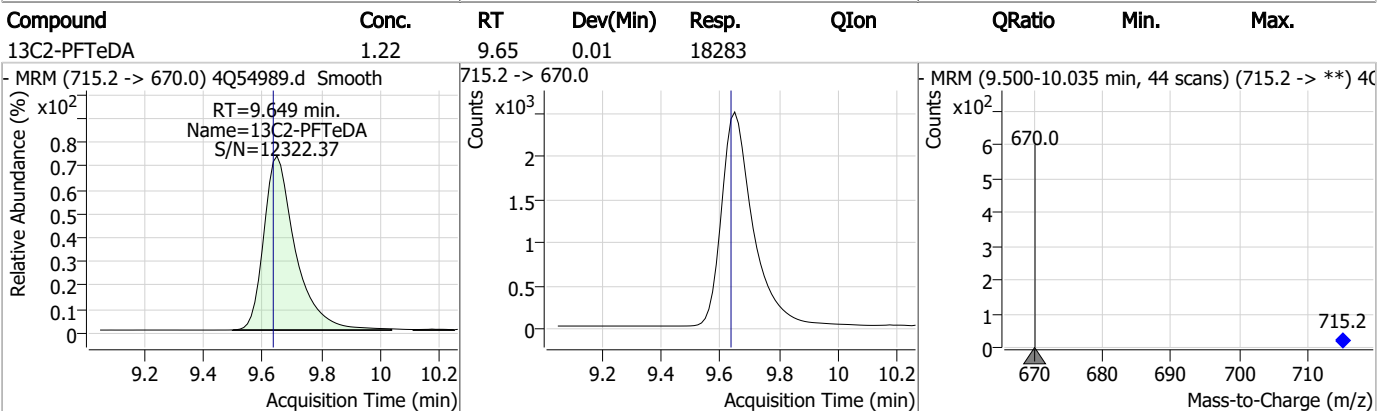
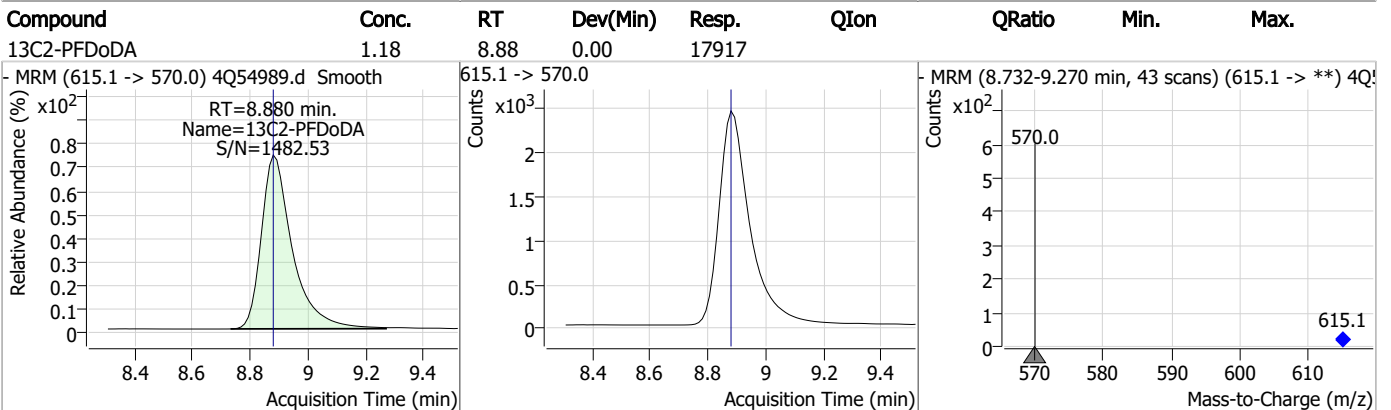
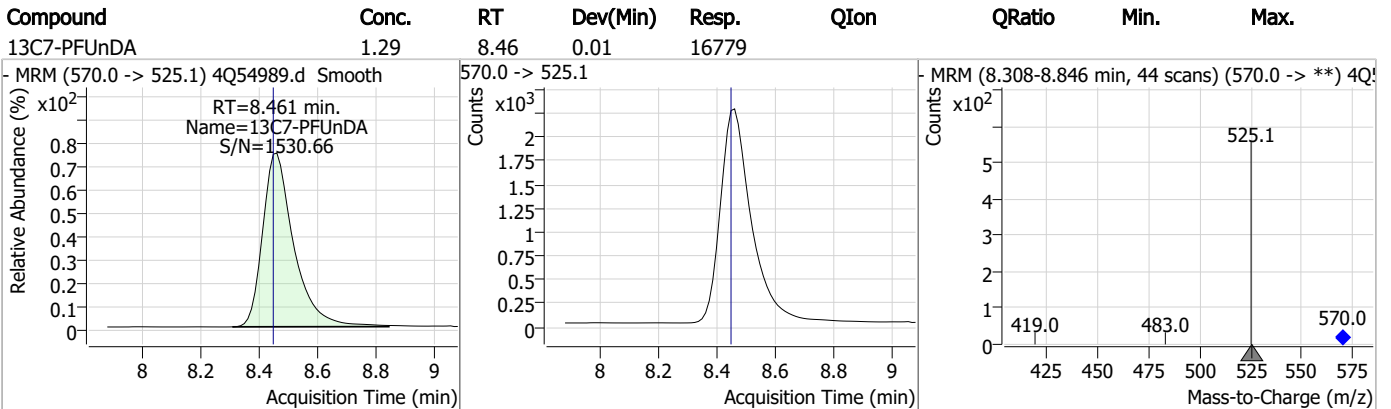
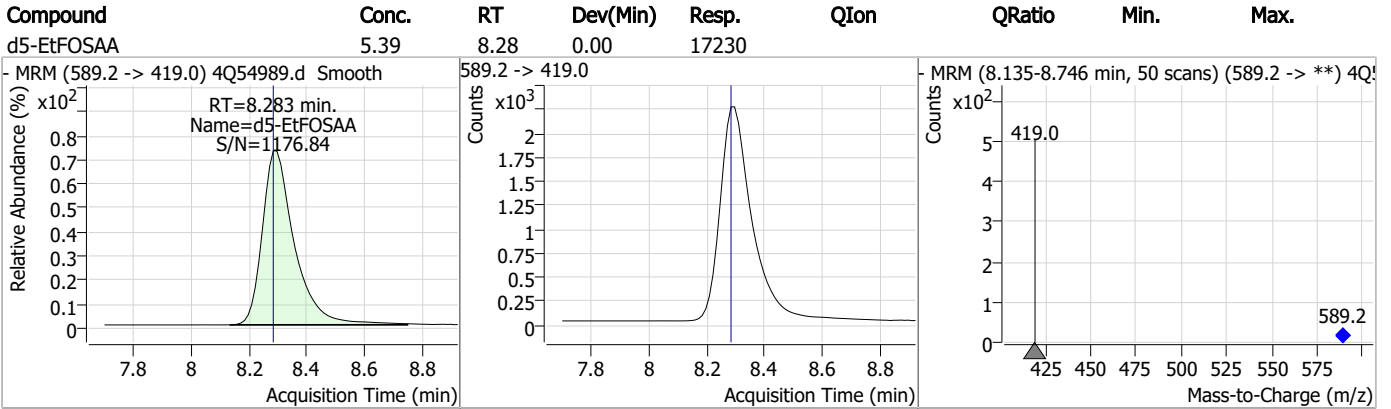
Perfluorinated Compounds by LC/MS/MS



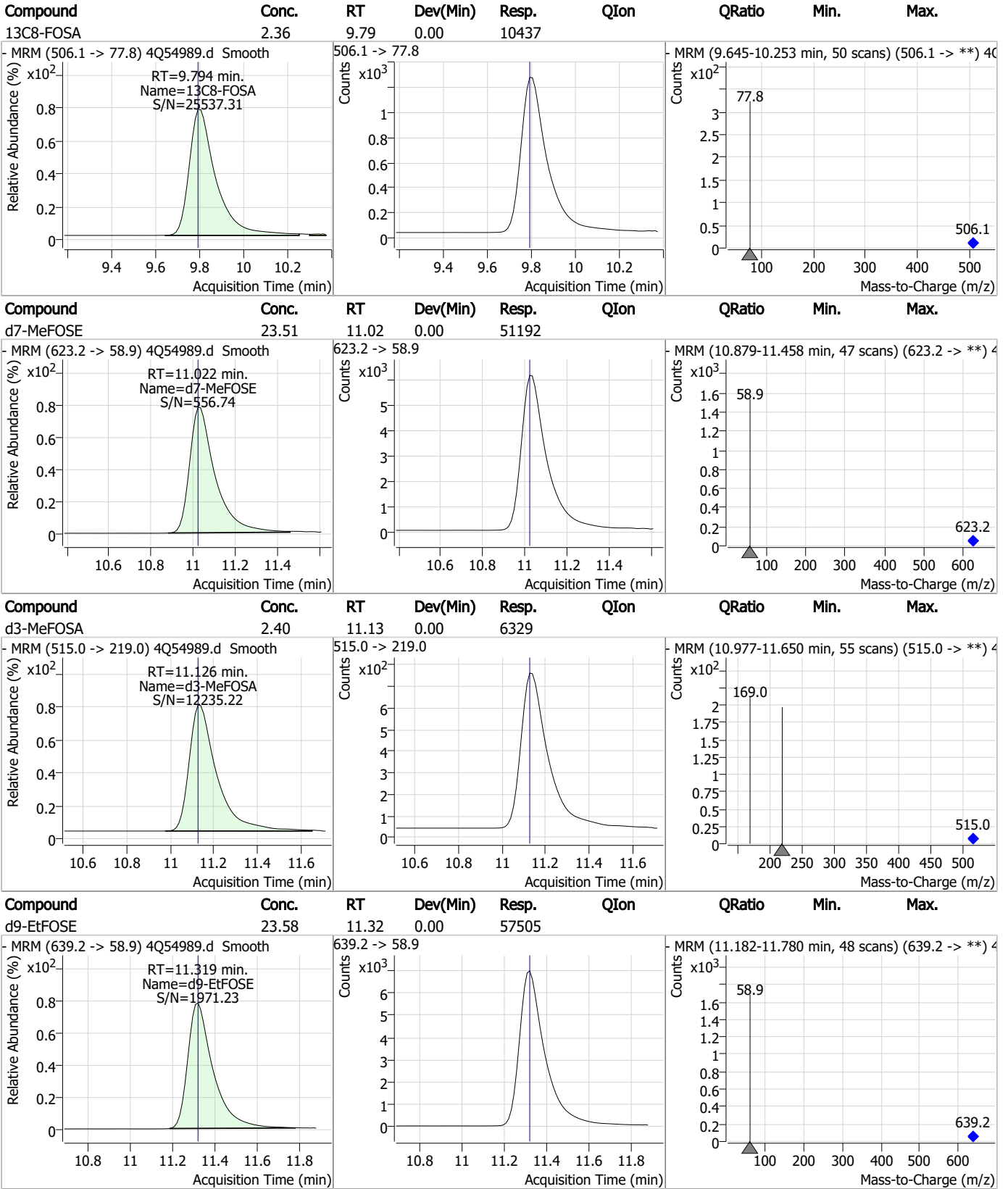
7.2.4

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Perfluorinated Compounds by LC/MS/MS



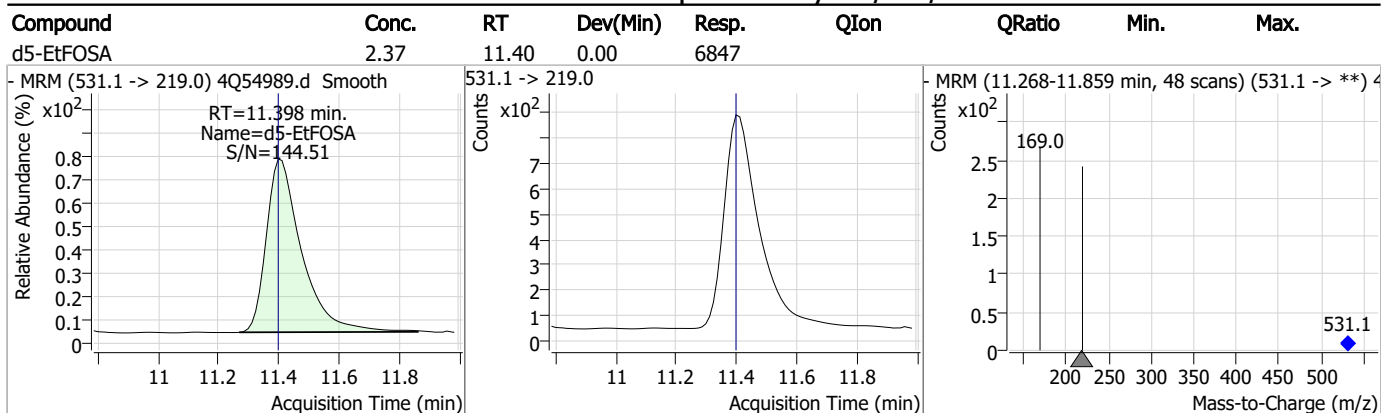
Perfluorinated Compounds by LC/MS/MS



7.2.4

7

Perfluorinated Compounds by LC/MS/MS



7.2.4

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q55001.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 4:22:29 AM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	93150	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	39097	5.00 µg/L	0.013
M5-PFHxA	5.347	318.0 -> 273.0	31402	2.50 µg/L	0.012
M4-PFHpA	6.304	367.1 -> 322.0	30984	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	50858	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	19706	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	13029	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	16866	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	18375	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	18811	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	10876	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	8944	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	7347	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	7835	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	1549	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	3321	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	4225	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	20313	5.00 µg/L	0.012
M3-HFPO-DA	5.702	286.9 -> 168.9	29244	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	18245	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	51504	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	59615	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	7000	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6314	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6799	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	44790	5.00 µg/L	0.013
18O2-PFHxS	7.041	403.0 -> 83.9	4656	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	55067	2.50 µg/L	0.012
13C2-PFDA	8.004	515.1 -> 470.1	15147	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	20366	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	34695	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1549	7.01 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 140.1%		
13C2-6:2FTS	6.761	429.1 -> 80.9	3321	6.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.6%		
13C2-8:2FTS	7.816	529.1 -> 80.9	4225	6.58 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 131.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	18375	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	18811	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C3-PFBS	5.215	302.1 -> 79.9	8944	2.51 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C3-PFHxS	7.042	402.1 -> 79.9	7347	2.52 µg/L	0.012

7.2.5
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFBA	2.686	216.8 -> 171.9	93150	9.90 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C4-PFHpA	6.304	367.1 -> 322.0	30984	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFHxA	5.347	318.0 -> 273.0	31402	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.175	268.3 -> 223.0	39097	4.91 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C6-PFDA	8.004	519.1 -> 474.1	13029	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C7-PFUnDA	8.461	570.0 -> 525.1	16866	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-FOSA	9.806	506.1 -> 77.8	10876	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C8-PFOA	6.989	421.1 -> 376.0	50858	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-PFOS	8.130	507.1 -> 79.9	7835	2.28 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.0%	
13C9-PFNA	7.521	472.1 -> 427.0	19706	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
d3-MeFOSAA	8.099	573.2 -> 419.0	20313	5.38 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	29244	9.16 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.6%	
d3-MeFOSA	11.126	515.0 -> 219.0	6314	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
d5-EtFOSAA	8.296	589.2 -> 419.0	18245	5.71 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.3%	
d7-MeFOSE	11.034	623.2 -> 58.9	51504	23.69 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.8%	
d9-EtFOSE	11.319	639.2 -> 58.9	59615	24.49 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.9%	
d5-EtFOSA	11.397	531.1 -> 219.0	7000	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	

7.25
7

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.	
		363.1 -> 319.0			
PFHpS	-	363.1 -> 169.0	-	N.D.	
		449.0 -> 79.9			
PFHxA	-	449.0 -> 98.9	-	N.D.	
		313.0 -> 269.0			
PFHxS	-	313.0 -> 118.9	-	N.D.	
		398.7 -> 79.9			
PFNA	-	398.7 -> 98.9	-	N.D.	
		463.0 -> 419.0			
PFNS	-	463.0 -> 219.0	-	N.D.	
		548.8 -> 79.9			
PFOA	-	548.8 -> 98.9	-	N.D.	
		413.0 -> 369.0			
PFOS	-	413.0 -> 169.0	-	N.D.	
		498.9 -> 79.9			
PFPeA	-	498.9 -> 98.8	-	N.D.	
		263.0 -> 219.0			
PFPeS	-	349.1 -> 79.9	-	N.D.	
		349.1 -> 98.9			
PFTeDA	-	713.1 -> 669.0	-	N.D.	
		713.1 -> 168.9			
PFTrDA	-	663.0 -> 619.0	-	N.D.	
		663.0 -> 168.9			
PFUnDA	-	563.1 -> 519.0	-	N.D.	
		563.1 -> 269.1			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.	
		632.9 -> 452.9			
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.	
		532.8 -> 353.0			
ADONA	-	376.9 -> 250.9	-	N.D.	
		376.9 -> 84.8			
HFPO-DA	-	284.9 -> 168.9	-	N.D.	
		284.9 -> 184.9			
3:3FTCA	-	241.0 -> 177.0	-	N.D.	
		241.0 -> 117.0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.	
		341.0 -> 217.0			
7:3FTCA	-	441.0 -> 316.9	-	N.D.	
		441.0 -> 336.9			
EtFOSA	-	526.0 -> 219.0	-	N.D.	
		526.0 -> 169.0			
EtFOSE	-	630.0 -> 58.9	-	N.D.	
		511.9 -> 219.0			
MeFOSA	-	511.9 -> 169.0	-	N.D.	
		616.1 -> 58.9			
MeFOSE	-	699.1 -> 79.9	-	N.D.	
		699.1 -> 98.8			
PFDoDS	-	295.0 -> 201.0	-	N.D.	
		295.0 -> 84.9			
NFDHA	-	279.0 -> 85.1	-	N.D.	
		229.0 -> 84.9			
PFMBA	-	314.8 -> 134.9	-	N.D.	
		314.8 -> 82.9			

= Qualifier out of range, m = manually integrated, + = Area summed



7.2.5
7

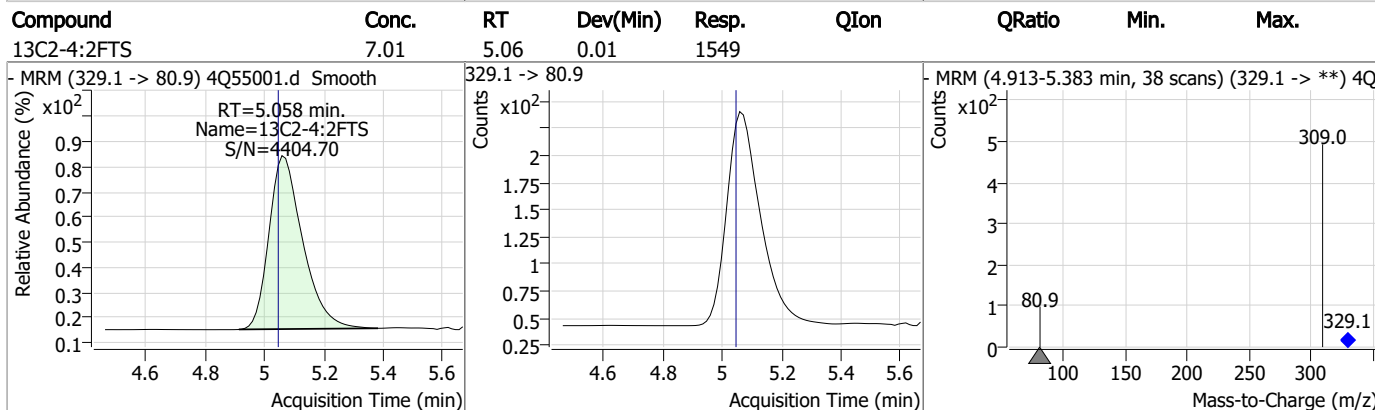
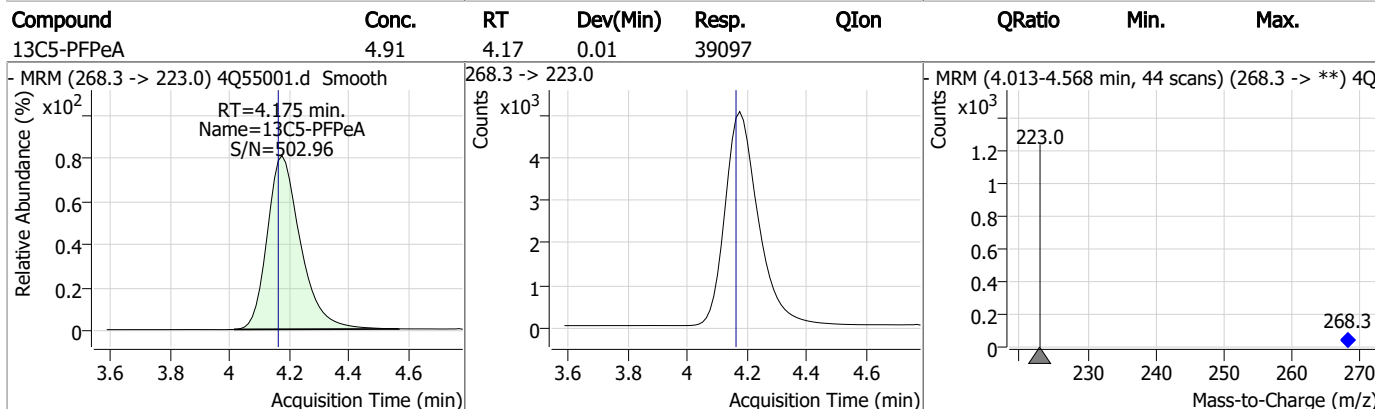
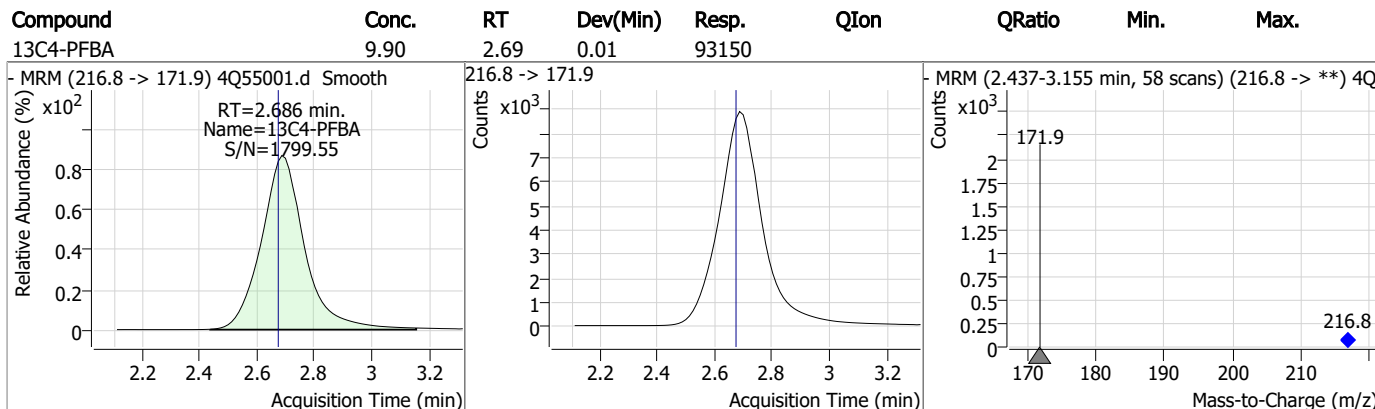
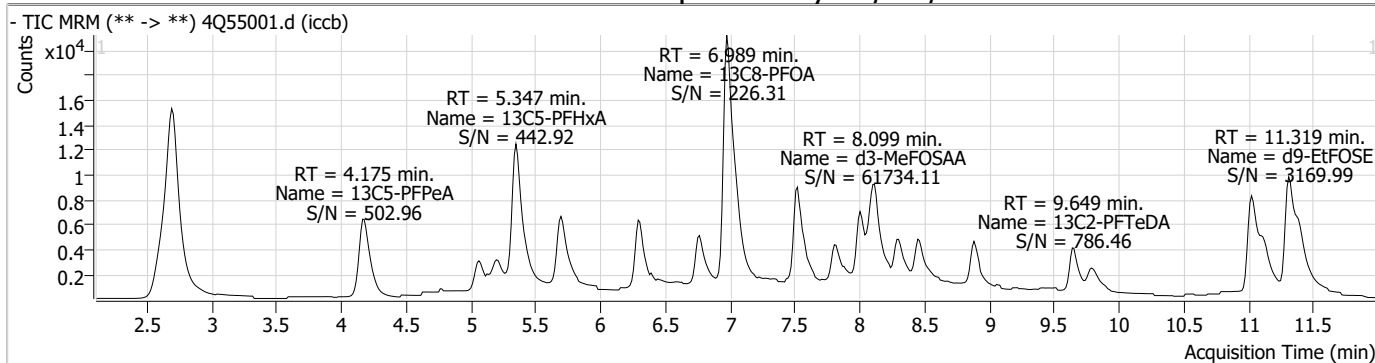
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.5

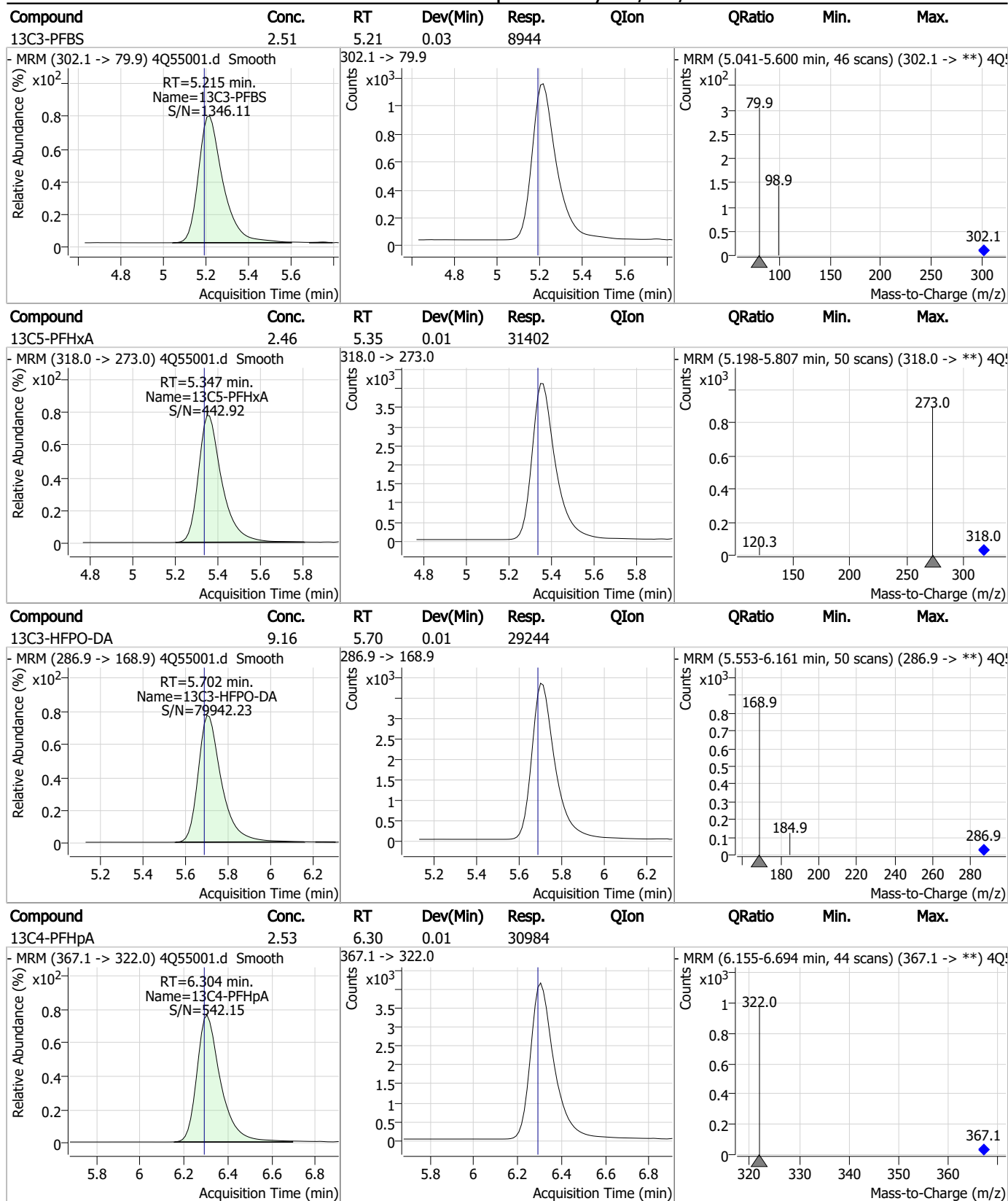
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Perfluorinated Compounds by LC/MS/MS



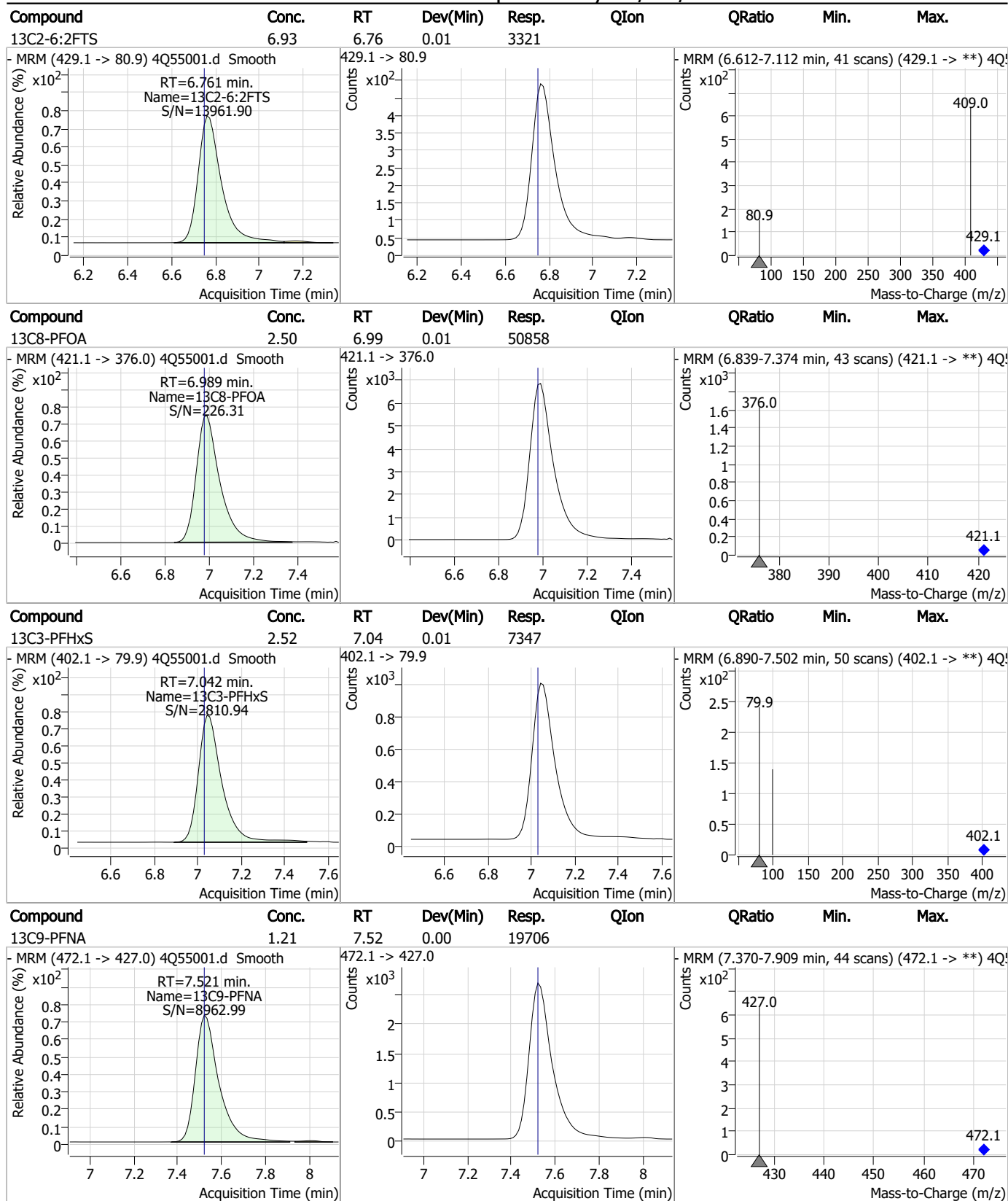
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Perfluorinated Compounds by LC/MS/MS



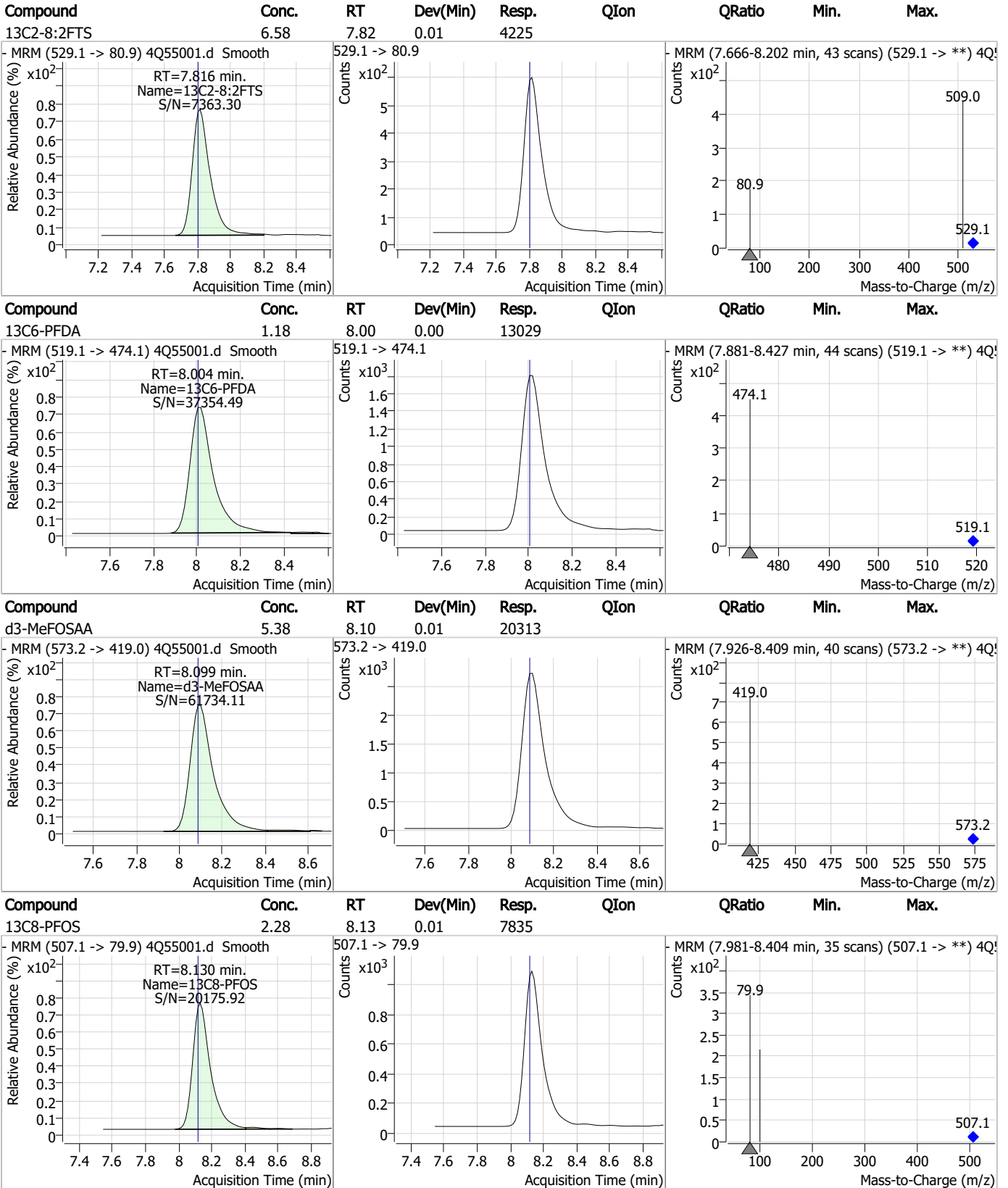
7.25
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Perfluorinated Compounds by LC/MS/MS



7.25
7

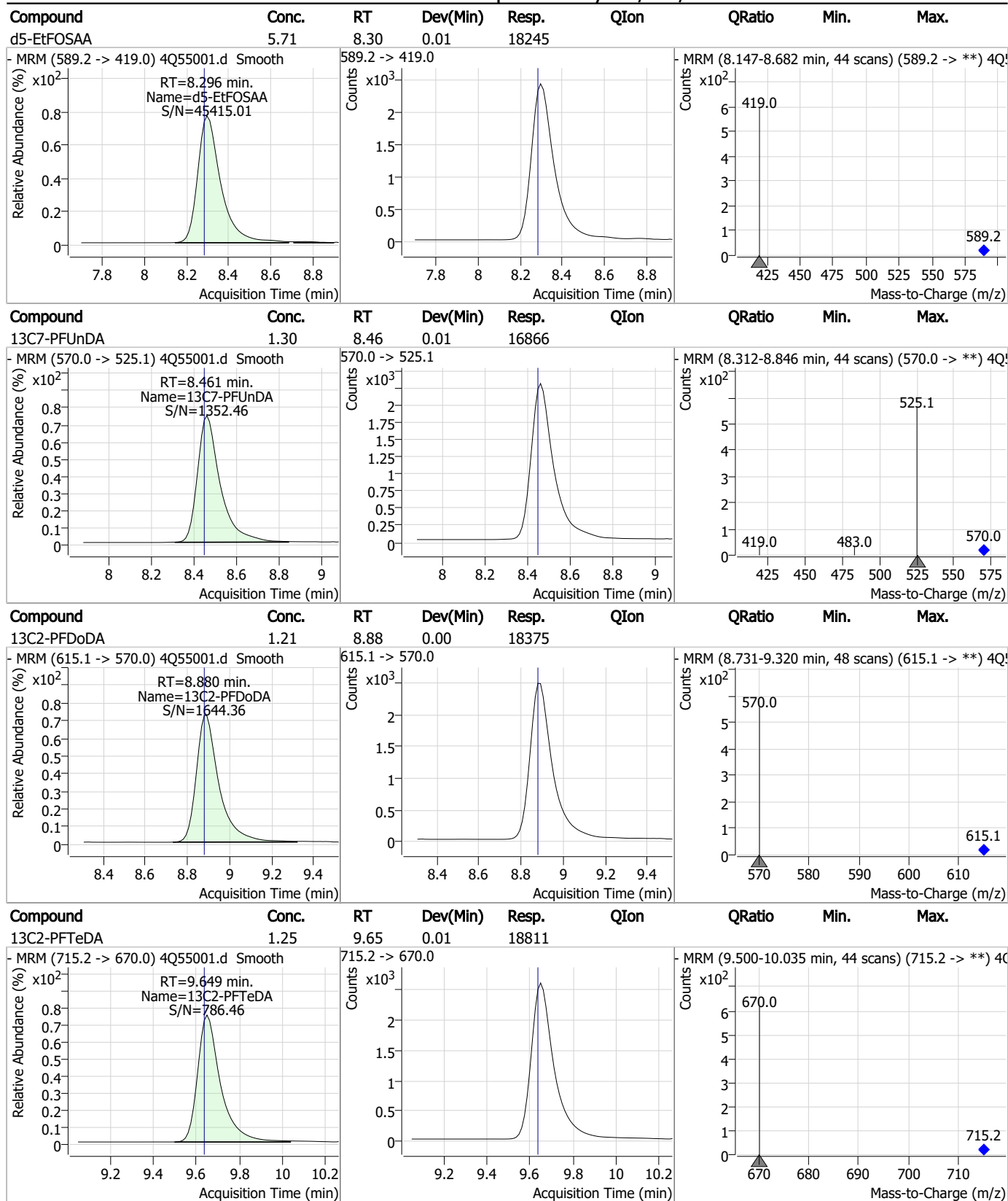
Perfluorinated Compounds by LC/MS/MS



7.2.5

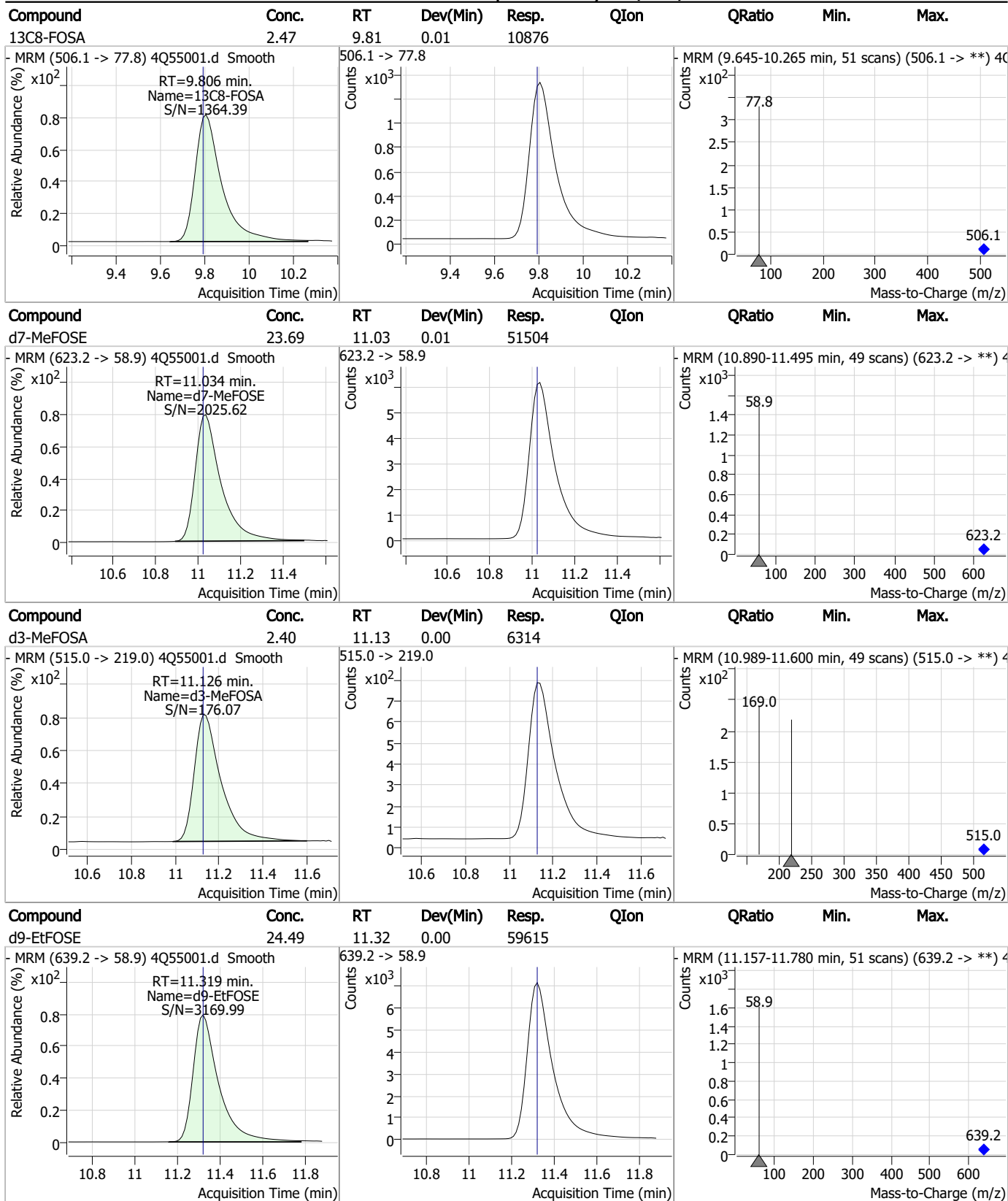
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Perfluorinated Compounds by LC/MS/MS



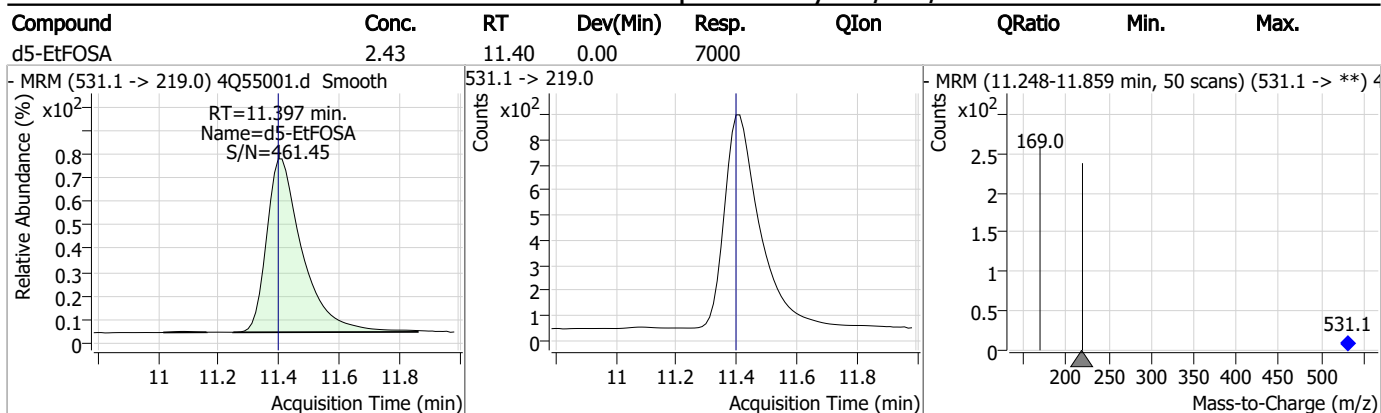
7.25
7

Perfluorinated Compounds by LC/MS/MS



7.25
7

Perfluorinated Compounds by LC/MS/MS



7.2.5

7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q349.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 4:47:24 PM
 Sample Name : IBLK
 Vial : P1-A1
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	101586	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	34377	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	30405	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	26626	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	34971	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	13138	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	13196	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16661	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	15991	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	8167	1.25 µg/L	0.012
M8-FOSA	9.529	506.1 -> 77.8	6358	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6603	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5544	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4293	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	751	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	1909	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	2744	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	9300	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	54148	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	8012	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	23261	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	26643	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3341	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3229	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4963	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	48209	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3753	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	38182	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11552	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15206	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	25150	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	751	4.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C2-6:2FTS	6.939	429.1 -> 80.9	1909	5.01 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2744	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15991	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFTeDA	9.855	715.2 -> 670.0	8167	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C3-PFBS	5.484	302.1 -> 79.9	6603	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C3-PFHxS	7.293	402.1 -> 79.9	5544	2.54 µg/L	0.000

7.2.6
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C4-PFBA	2.885	216.8 -> 171.9	101586	9.97 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C4-PFHpA	6.509	367.1 -> 322.0	26626	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C5-PFHxA	5.554	318.0 -> 273.0	30405	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.312	268.3 -> 223.0	34377	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C6-PFDA	8.215	519.1 -> 474.1	13196	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C7-PFUnDA	8.682	570.0 -> 525.1	16661	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C8-FOSA	9.529	506.1 -> 77.8	6358	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C8-PFOA	7.165	421.1 -> 376.0	34971	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-PFOS	8.379	507.1 -> 79.9	4293	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C9-PFNA	7.720	472.1 -> 427.0	13138	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.9%	
d3-MeFOSAA	8.248	573.2 -> 419.0	9300	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	54148	9.56 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
d3-MeFOSA	10.656	515.0 -> 219.0	3229	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
d5-EtFOSAA	8.456	589.2 -> 419.0	8012	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
d7-MeFOSE	10.565	623.2 -> 58.9	23261	24.19 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d9-EtFOSE	10.810	639.2 -> 58.9	26643	23.89 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.5%	
d5-EtFOSA	10.888	531.1 -> 219.0	3341	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	

7.2.6
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Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.	
		363.1 -> 319.0			
PFHpS	-	363.1 -> 169.0	-	N.D.	
		449.0 -> 79.9			
PFHxA	-	449.0 -> 98.9	-	N.D.	
		313.0 -> 269.0			
PFHxS	-	313.0 -> 118.9	-	N.D.	
		398.7 -> 79.9			
PFNA	-	398.7 -> 98.9	-	N.D.	
		463.0 -> 419.0			
PFNS	-	463.0 -> 219.0	-	N.D.	
		548.8 -> 79.9			
PFOA	-	548.8 -> 98.9	-	N.D.	
		413.0 -> 369.0			
PFOS	-	413.0 -> 169.0	-	N.D.	
		498.9 -> 79.9			
PFPeA	-	498.9 -> 98.8	-	N.D.	
		263.0 -> 219.0			
PFPeS	-	349.1 -> 79.9	-	N.D.	
		349.1 -> 98.9			
PFTeDA	-	713.1 -> 669.0	-	N.D.	
		713.1 -> 168.9			
PFTrDA	-	663.0 -> 619.0	-	N.D.	
		663.0 -> 168.9			
PFUnDA	-	563.1 -> 519.0	-	N.D.	
		563.1 -> 269.1			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.	
		632.9 -> 452.9			
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.	
		532.8 -> 353.0			
ADONA	-	376.9 -> 250.9	-	N.D.	
		376.9 -> 84.8			
HFPO-DA	-	284.9 -> 168.9	-	N.D.	
		284.9 -> 184.9			
3:3FTCA	-	241.0 -> 177.0	-	N.D.	
		241.0 -> 117.0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.	
		341.0 -> 217.0			
7:3FTCA	-	441.0 -> 316.9	-	N.D.	
		441.0 -> 336.9			
EtFOSA	-	526.0 -> 219.0	-	N.D.	
		526.0 -> 169.0			
EtFOSE	-	630.0 -> 58.9	-	N.D.	
		511.9 -> 219.0			
MeFOSA	-	511.9 -> 169.0	-	N.D.	
		616.1 -> 58.9			
MeFOSE	-	699.1 -> 79.9	-	N.D.	
		699.1 -> 98.8			
PFDoDS	-	295.0 -> 201.0	-	N.D.	
		295.0 -> 84.9			
NFDHA	-	279.0 -> 85.1	-	N.D.	
		229.0 -> 84.9			
PFMBA	-	314.8 -> 134.9	-	N.D.	
		314.8 -> 82.9			

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.6
7

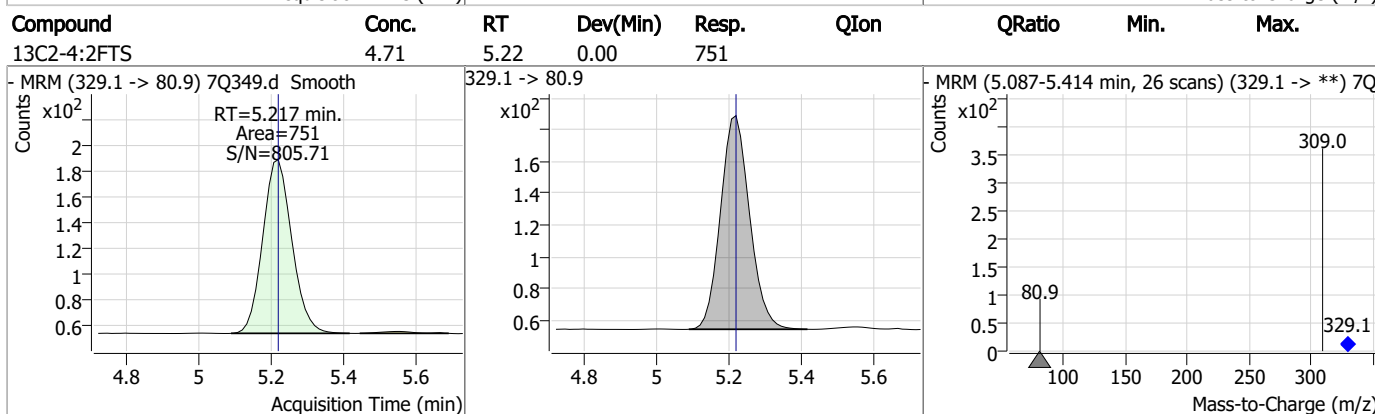
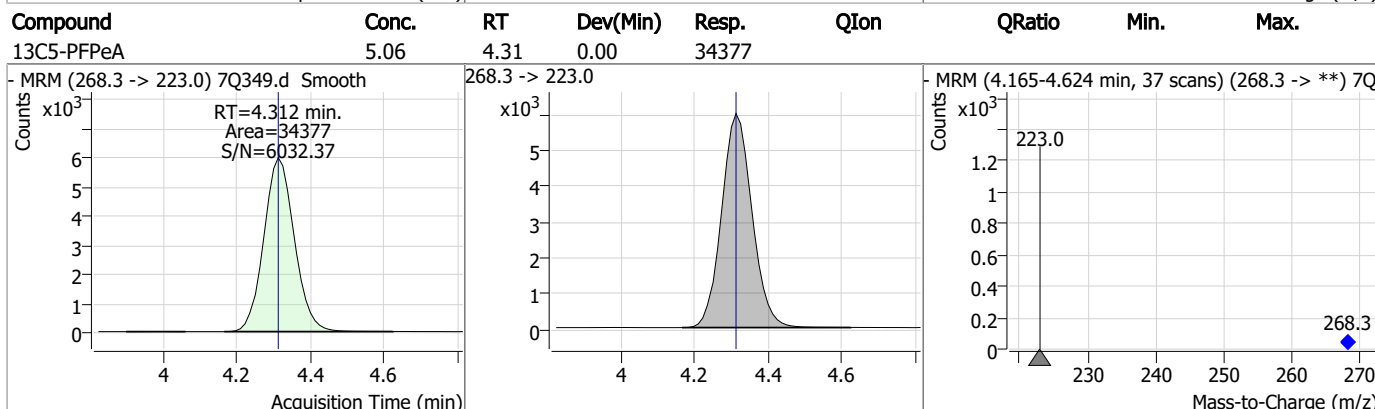
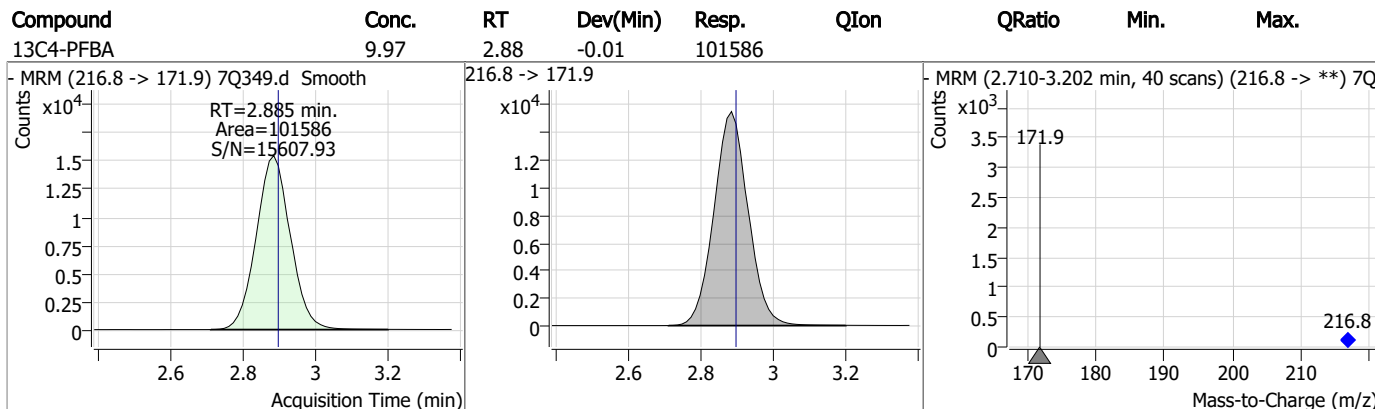
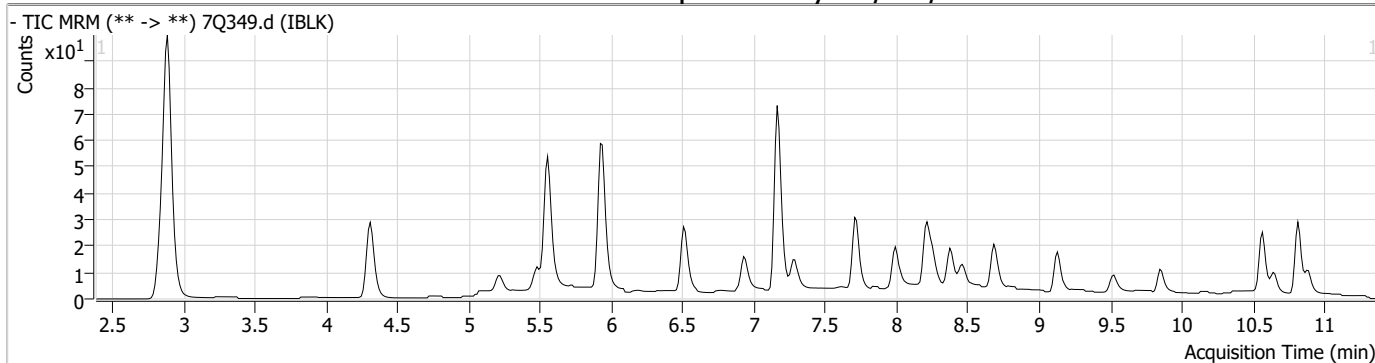
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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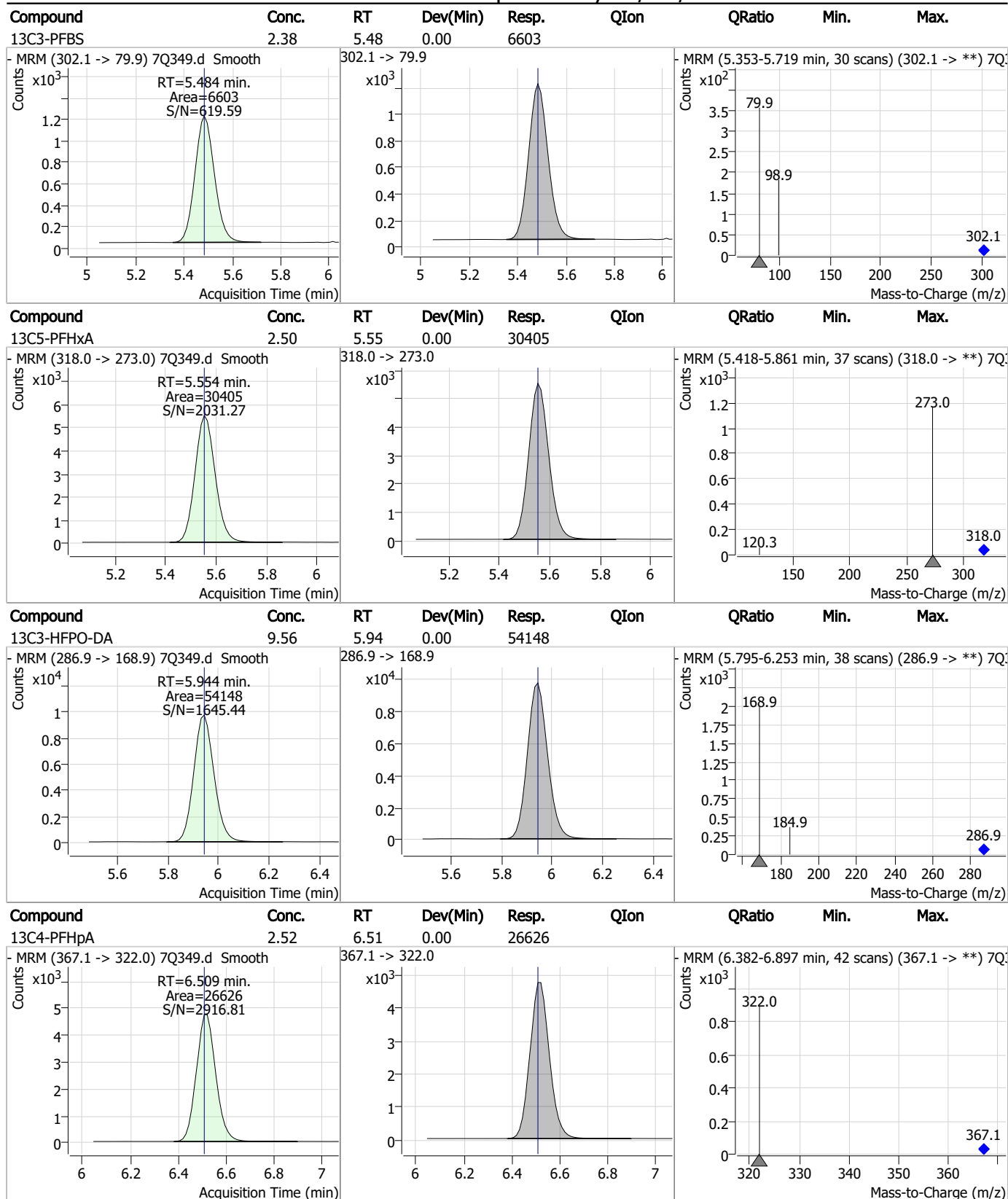
7.2.6

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Perfluorinated Compounds by LC/MS/MS



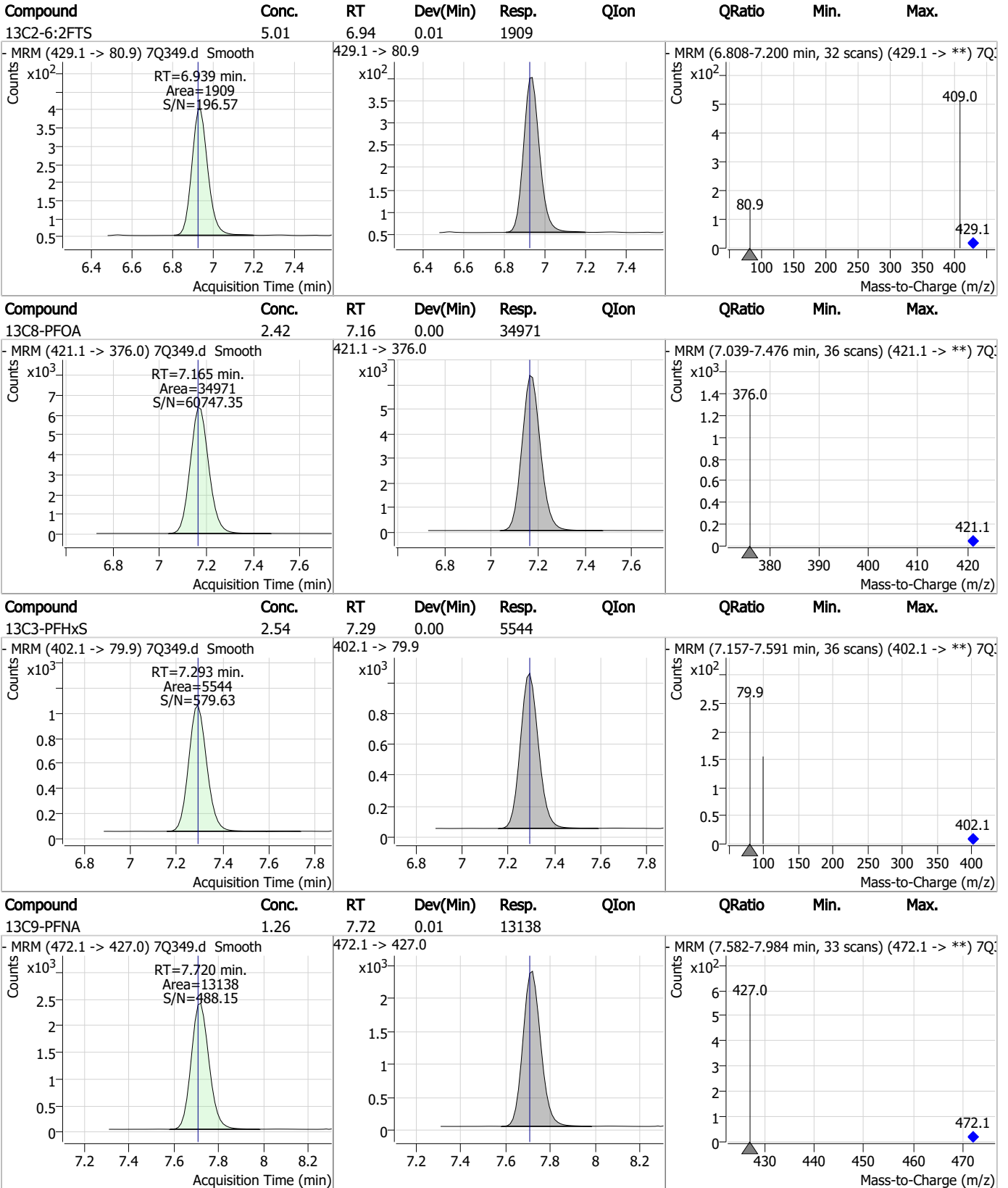
Perfluorinated Compounds by LC/MS/MS



7.2.6

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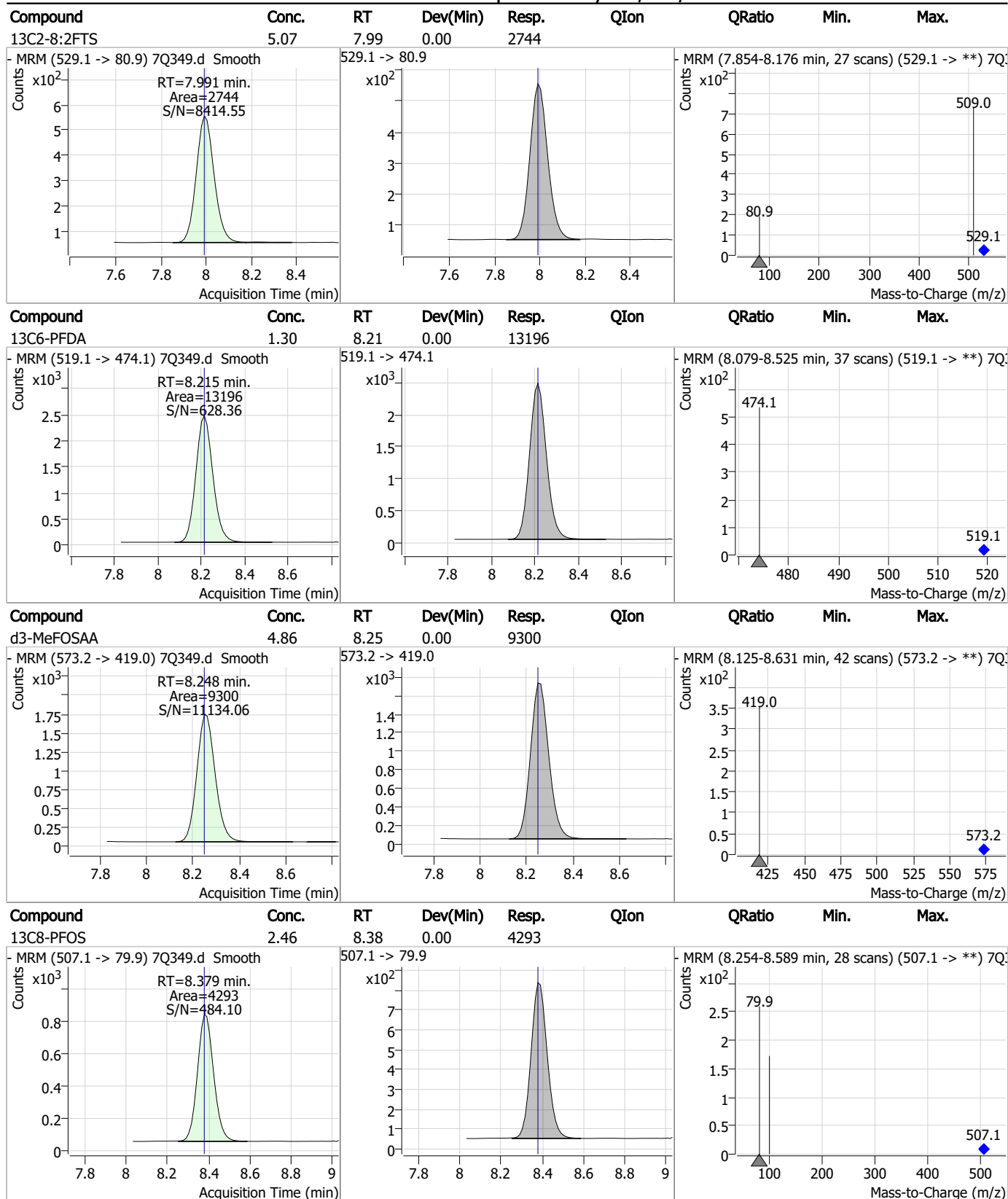
Perfluorinated Compounds by LC/MS/MS



7.2.6

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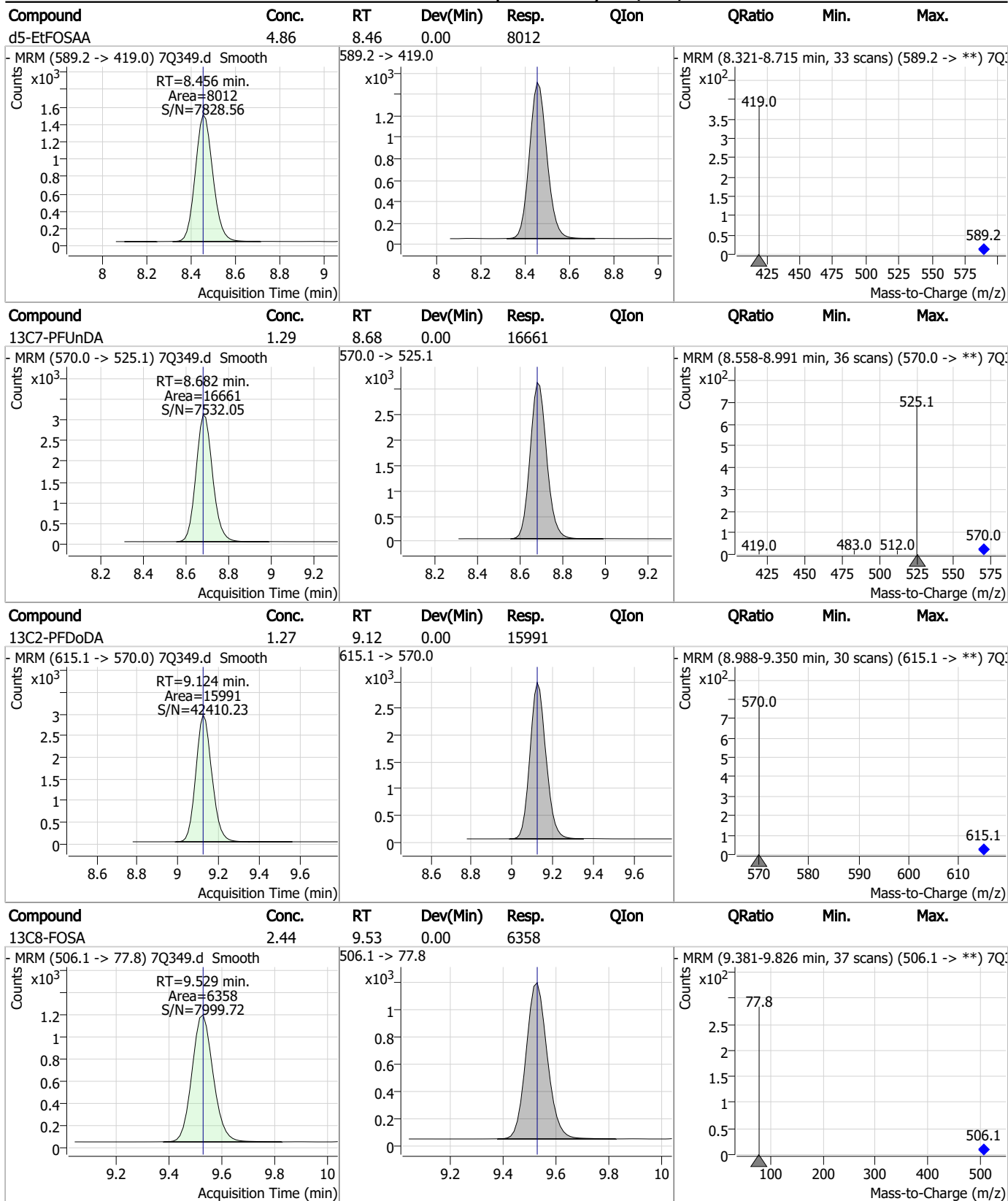
Perfluorinated Compounds by LC/MS/MS



7.2.6

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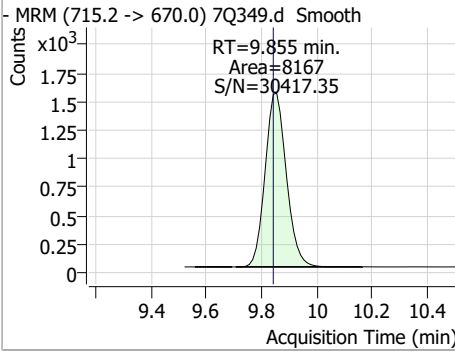
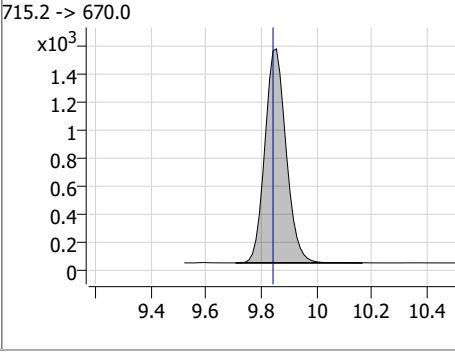
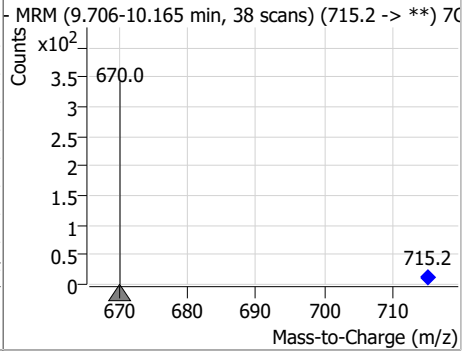
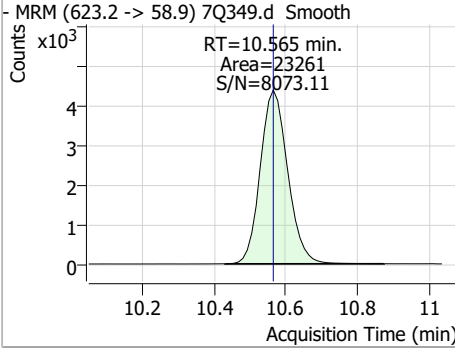
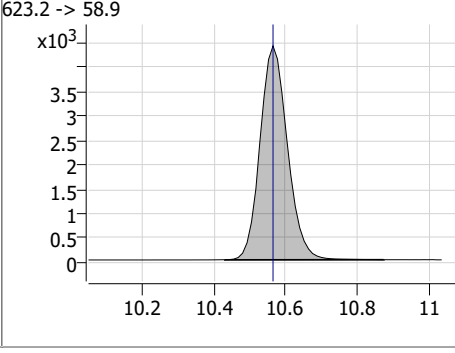
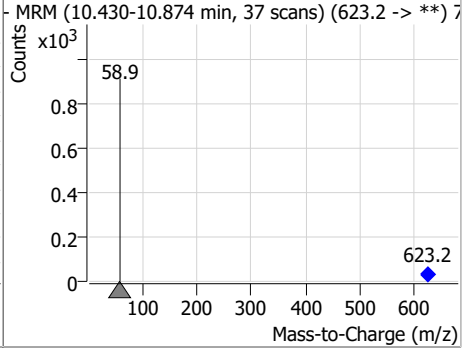
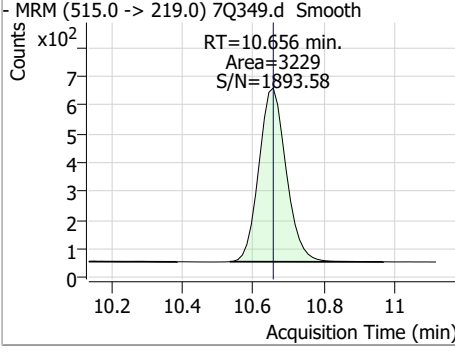
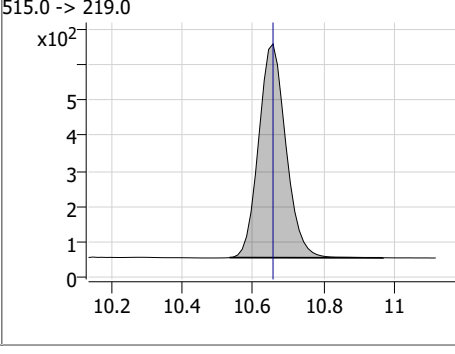
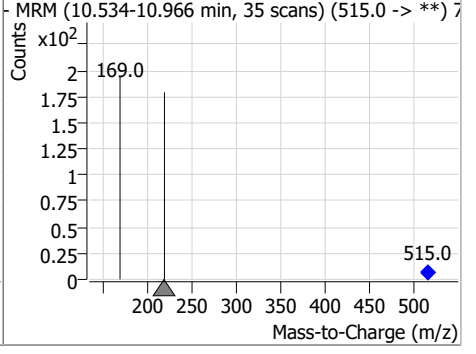
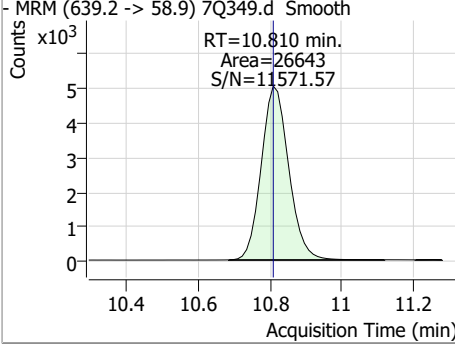
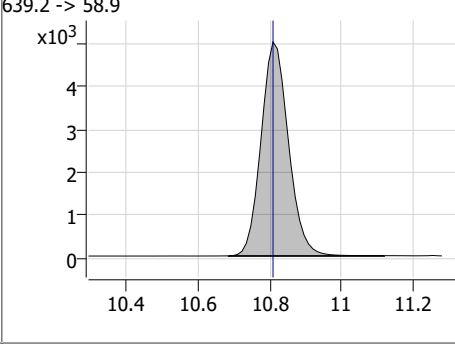
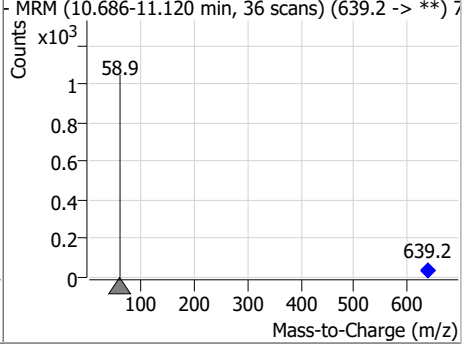
Perfluorinated Compounds by LC/MS/MS



7.2.6
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Perfluorinated Compounds by LC/MS/MS

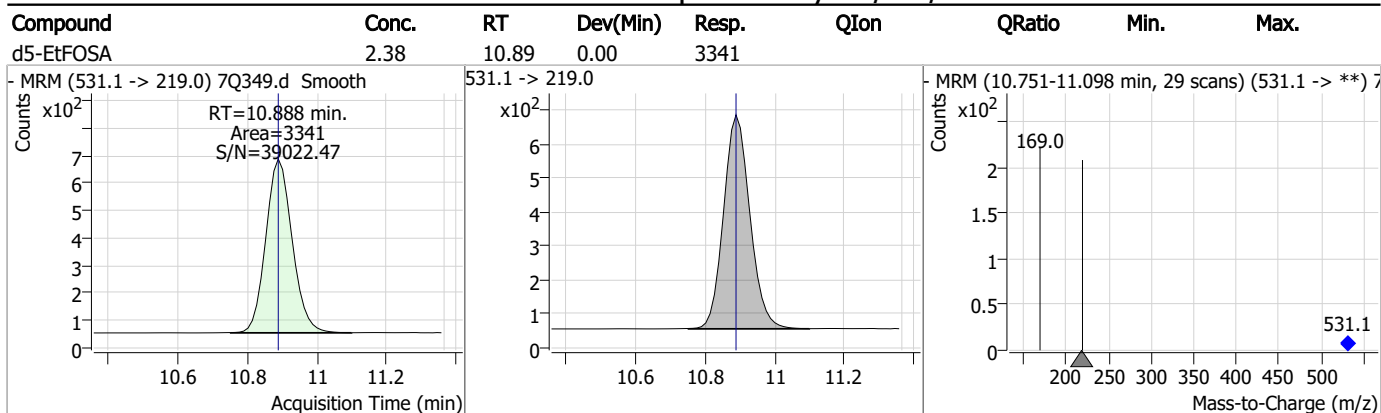
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.35	9.85	0.01	8167				
								
d7-MeFOSE	24.19	10.56	0.00	23261				
								
d3-MeFOSA	2.37	10.66	0.00	3229				
								
d9-EtFOSE	23.89	10.81	0.00	26643				
								

7.2.6

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Perfluorinated Compounds by LC/MS/MS



7.2.6
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54990.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 1:40:10 AM
 Sample Name : op524-bs
 Vial : P3-F5
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.752	216.8 -> 171.9	58578	10.00 µg/L	0.078
M5-PFPeA	4.187	268.3 -> 223.0	33712	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	25729	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	25298	2.50 µg/L	0.012
M8-PFOA	6.976	421.1 -> 376.0	41471	2.50 µg/L	0.000
M9-PFNA	7.521	472.1 -> 427.0	16797	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	11444	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	13779	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	14545	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	14178	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	6234	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	7069	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	6215	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	6739	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	1111	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	2441	5.00 µg/L	0.012
M2-8:2FTS	7.804	529.1 -> 80.9	3332	5.00 µg/L	0.000
M3-MeFOSAA	8.086	573.2 -> 419.0	17438	5.00 µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	23932	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	13925	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	23728	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	34968	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4737	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3913	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5164	2.50 µg/L	0.012
13C3-PFBA	2.743	216.0 -> 172.0	36588	5.00 µg/L	0.065
18O2-PFHxS	7.041	403.0 -> 83.9	3493	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	41315	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	11647	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	15261	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	26265	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1111	6.70 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 134.0%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2441	6.79 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 135.7%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3332	6.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14545	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	14178	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C3-PFBS	5.215	302.1 -> 79.9	7069	2.64 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C3-PFHxS	7.042	402.1 -> 79.9	6215	2.84 µg/L	0.012

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7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C4-PFBA	2.752	216.8 -> 171.9	58578	7.62 µg/L	0.078
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 76.2%		
13C4-PFHpA	6.304	367.1 -> 322.0	25298	2.73 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.3%		
13C5-PFHxA	5.359	318.0 -> 273.0	25729	2.66 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C5-PFPeA	4.187	268.3 -> 223.0	33712	5.59 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.8%		
13C6-PFDA	8.004	519.1 -> 474.1	11444	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C7-PFUnDA	8.461	570.0 -> 525.1	13779	1.38 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C8-FOSA	9.806	506.1 -> 77.8	6234	1.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 74.5%		
13C8-PFOA	6.976	421.1 -> 376.0	41471	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.6%		
13C8-PFOS	8.130	507.1 -> 79.9	6739	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C9-PFNA	7.521	472.1 -> 427.0	16797	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.9%		
d3-MeFOSAA	8.086	573.2 -> 419.0	17438	6.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.7%		
13C3-HFPO-DA	5.714	286.9 -> 168.9	23932	9.90 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
d3-MeFOSA	11.126	515.0 -> 219.0	3913	1.96 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 78.4%		
d5-EtFOSAA	8.296	589.2 -> 419.0	13925	5.74 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.8%		
d7-MeFOSE	11.034	623.2 -> 58.9	23728	14.37 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 57.5%		
d9-EtFOSE	11.319	639.2 -> 58.9	34968	18.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 75.6%		
d5-EtFOSA	11.410	531.1 -> 219.0	4737	2.16 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.6%		
Target Compounds					QValue
4:2FTS	5.072	327.1 -> 307.0	19672	10.29 µg/L	95
		327.1 -> 80.9	7808		
6:2FTS	6.761	427.1 -> 407.0	28349	11.05 µg/L	100
		427.1 -> 80.9	10348		
8:2FTS	7.816	527.1 -> 507.0	20641	11.76 µg/L	95
		527.1 -> 80.8	7690		
EtFOSAA	8.297	584.2 -> 419.1	7276	2.86 µg/L	83
		584.2 -> 526.0	3009		
FOSA	9.798	498.1 -> 77.9	7236	2.58 µg/L	99
		498.1 -> 478.0	231		
MeFOSAA	8.099	570.1 -> 419.0	7230	2.89 µg/L	95
		570.1 -> 483.0	1323		
PFBA	2.746	212.8 -> 168.9	20650	11.01 µg/L	100
PFBS	5.216	298.7 -> 79.9	5213	2.38 µg/L	97
		298.7 -> 98.8	2017		
PFDA	8.005	512.9 -> 469.0	22605	2.69 µg/L	98
		512.9 -> 219.0	4434		
PFDODA	8.880	613.1 -> 569.0	29571	2.82 µg/L	96
		613.1 -> 319.0	5633		
PFDS	9.020	599.0 -> 79.9	4607	2.57 µg/L	95

7.3.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	2258	2.66	µg/L	100
		363.1 -> 319.0	37892			
PFHpS	7.624	363.1 -> 169.0	7031	2.54	µg/L	92
		449.0 -> 79.9	6783			
PFHxA	5.362	449.0 -> 98.9	3175	2.69	µg/L	97
		313.0 -> 269.0	22066			
PFHxS	7.043	313.0 -> 118.9	826	2.40	µg/L	m
		398.7 -> 79.9	4816			
PFNA	7.522	398.7 -> 98.9	2664	2.66	µg/L	99
		463.0 -> 419.0	26223			
PFNS	8.586	463.0 -> 219.0	6217	2.96	µg/L	99
		548.8 -> 79.9	3398			
PFOA	6.978	548.8 -> 98.9	1666	2.70	µg/L	95
		413.0 -> 369.0	45989			
PFOS	8.131	413.0 -> 169.0	9176	2.28	µg/L	m
		498.9 -> 79.9	6383			
PFPeA	4.189	498.9 -> 98.8	3134	5.26	µg/L	100
		263.0 -> 219.0	34889			
PFPeS	6.294	349.1 -> 79.9	4397	2.33	µg/L	88
		349.1 -> 98.9	2193			
PFTeDA	9.650	713.1 -> 669.0	27000	2.74	µg/L	98
		713.1 -> 168.9	2620			
PFTrDA	9.279	663.0 -> 619.0	32051	2.82	µg/L	100
		663.0 -> 168.9	4340			
PFUnDA	8.461	563.1 -> 519.0	27598	2.75	µg/L	98
		563.1 -> 269.1	6046			
11CI-PF3OUdS	9.306	630.9 -> 450.9	34206	5.19	µg/L	100
		632.9 -> 452.9	10738			
9CI-PF3ONS	8.463	530.8 -> 351.0	37004	5.56	µg/L	99
		532.8 -> 353.0	11429			
ADONA	6.568	376.9 -> 250.9	94381	5.84	µg/L	100
		376.9 -> 84.8	22850			
HFPO-DA	5.715	284.9 -> 168.9	11798	5.15	µg/L	99
		284.9 -> 184.9	1058			
3:3FTCA	3.667	241.0 -> 177.0	3496	11.72	µg/L	98
		241.0 -> 117.0	330			
5:3FTCA	6.033	341.0 -> 237.1	90029	61.48	µg/L	100
		341.0 -> 217.0	64171			
7:3FTCA	7.549	441.0 -> 316.9	51073	66.51	µg/L	98
		441.0 -> 336.9	119782			
EtFOSA	11.412	526.0 -> 219.0	9182	4.55	µg/L	99
		526.0 -> 169.0	12820			
EtFOSE	11.332	630.0 -> 58.9	14949	12.08	µg/L	100
		511.9 -> 219.0	6674			
MeFOSA	11.128	511.9 -> 169.0	9375	4.79	µg/L	m
		616.1 -> 58.9	11268			
MeFOSE	11.047	699.1 -> 79.9	3464	11.97	µg/L	100
		699.1 -> 98.8	1928			
PFDoDS	9.777	295.0 -> 201.0	3147	5.41	µg/L	97
		295.0 -> 84.9	771			
NFDHA	5.241	279.0 -> 85.1	18292	5.01	µg/L	100
		229.0 -> 84.9	19708			
PFMBA	3.344	314.8 -> 134.9	28779	4.91	µg/L	100
		314.8 -> 82.9	893			
PFEESA	5.734			4.74	µg/L	98

= Qualifier out of range, m = manually integrated, + = Area summed

7.3.1
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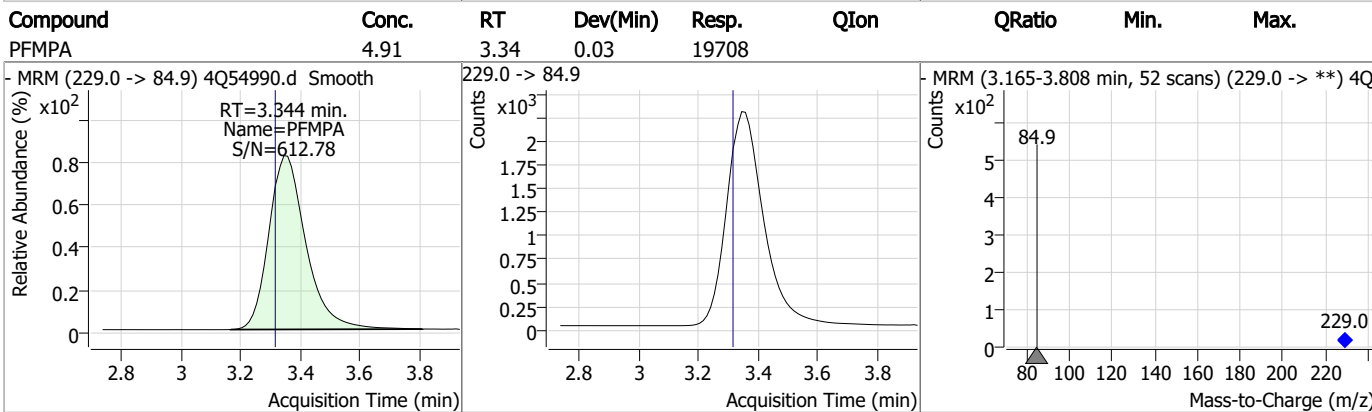
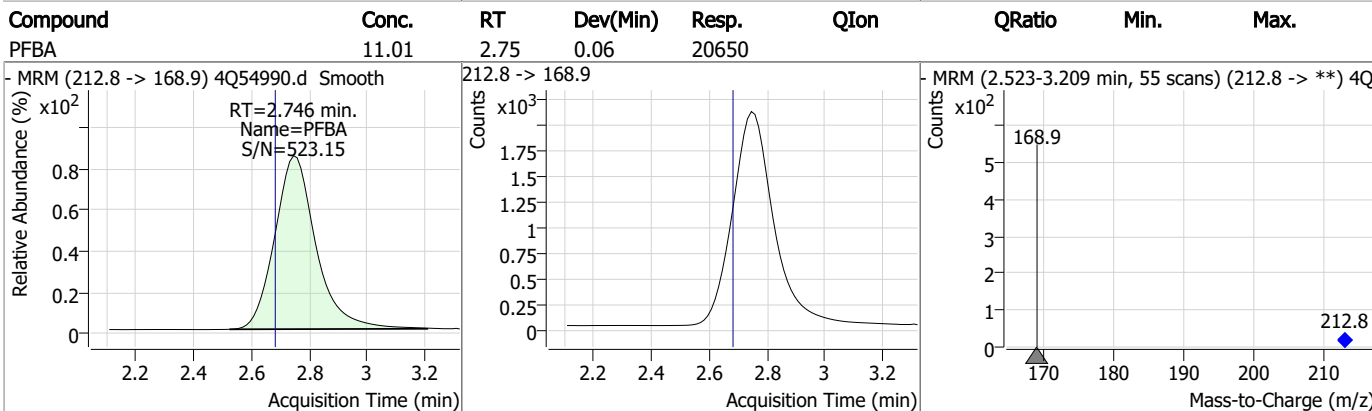
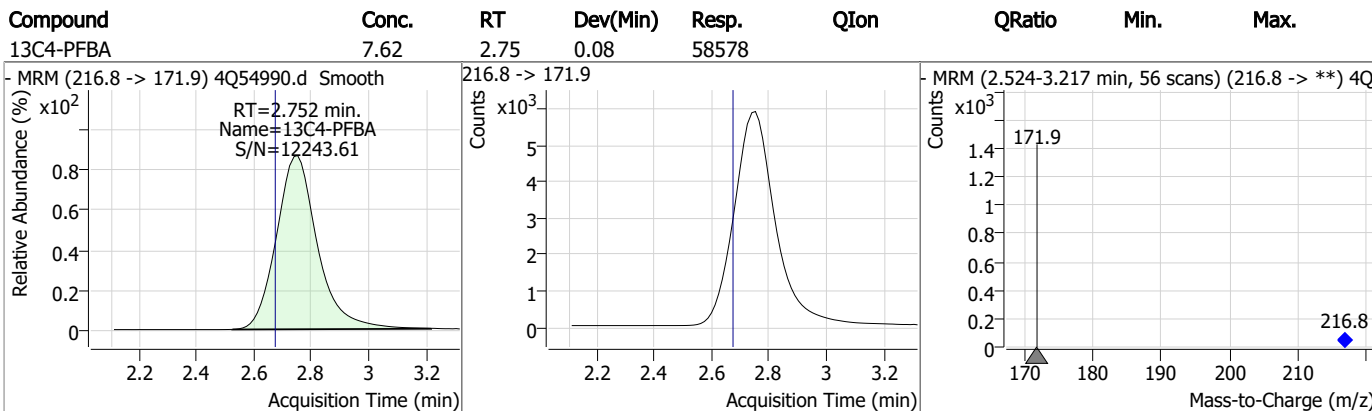
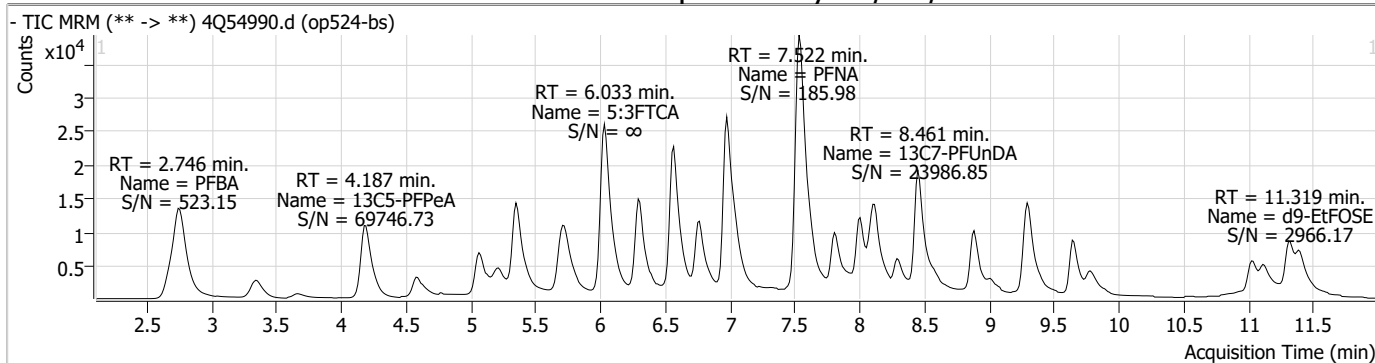
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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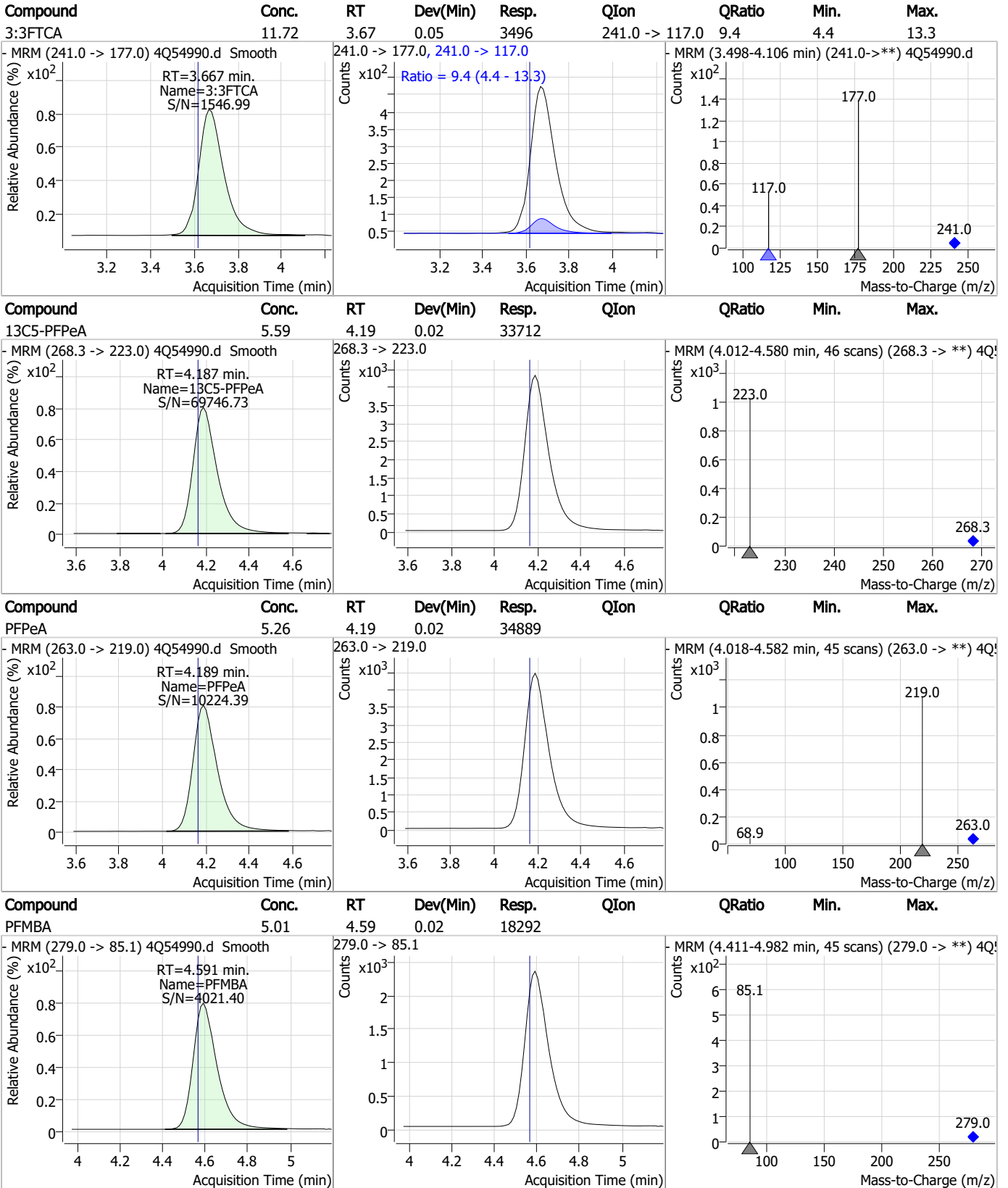
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Perfluorinated Compounds by LC/MS/MS



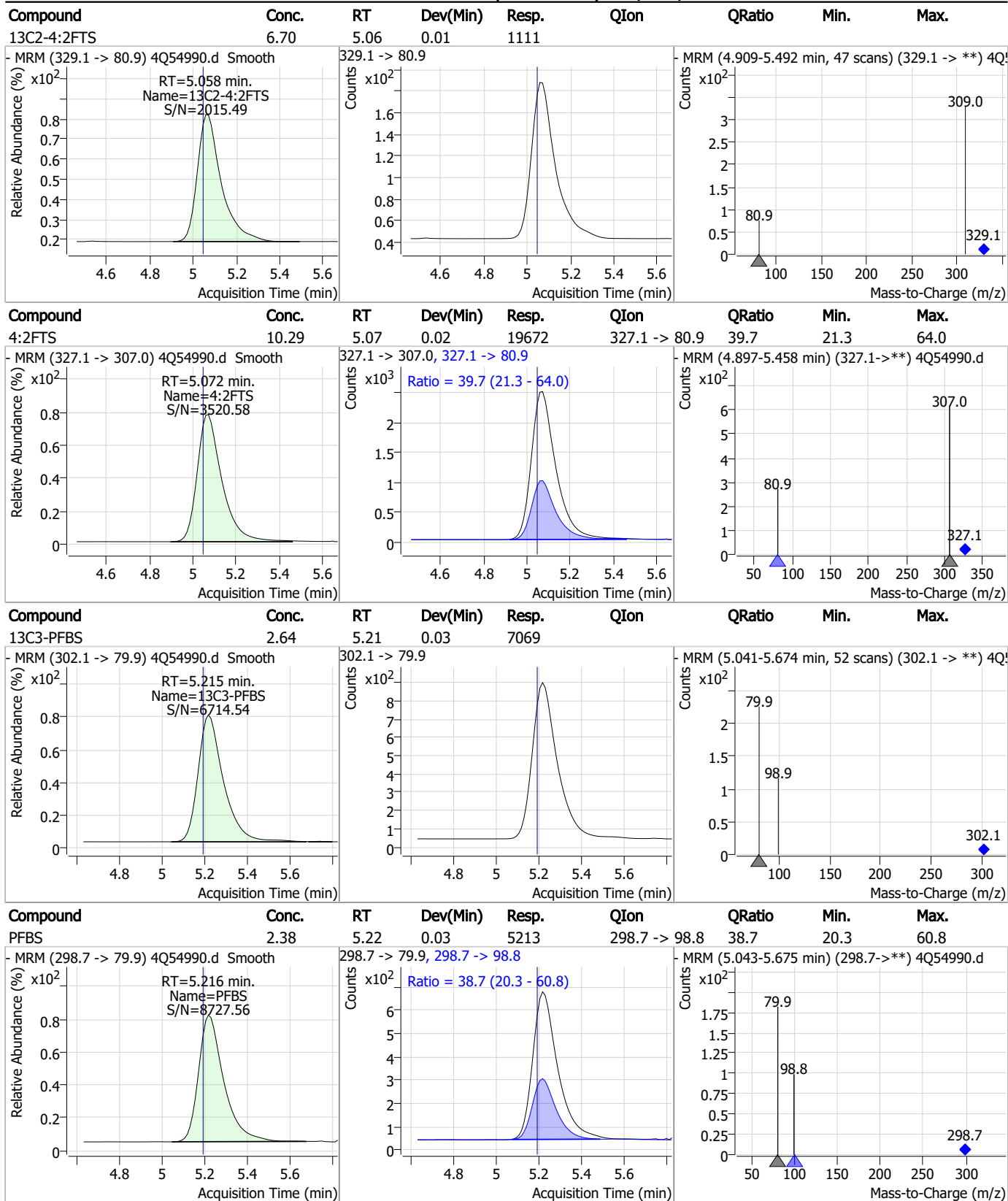
Perfluorinated Compounds by LC/MS/MS



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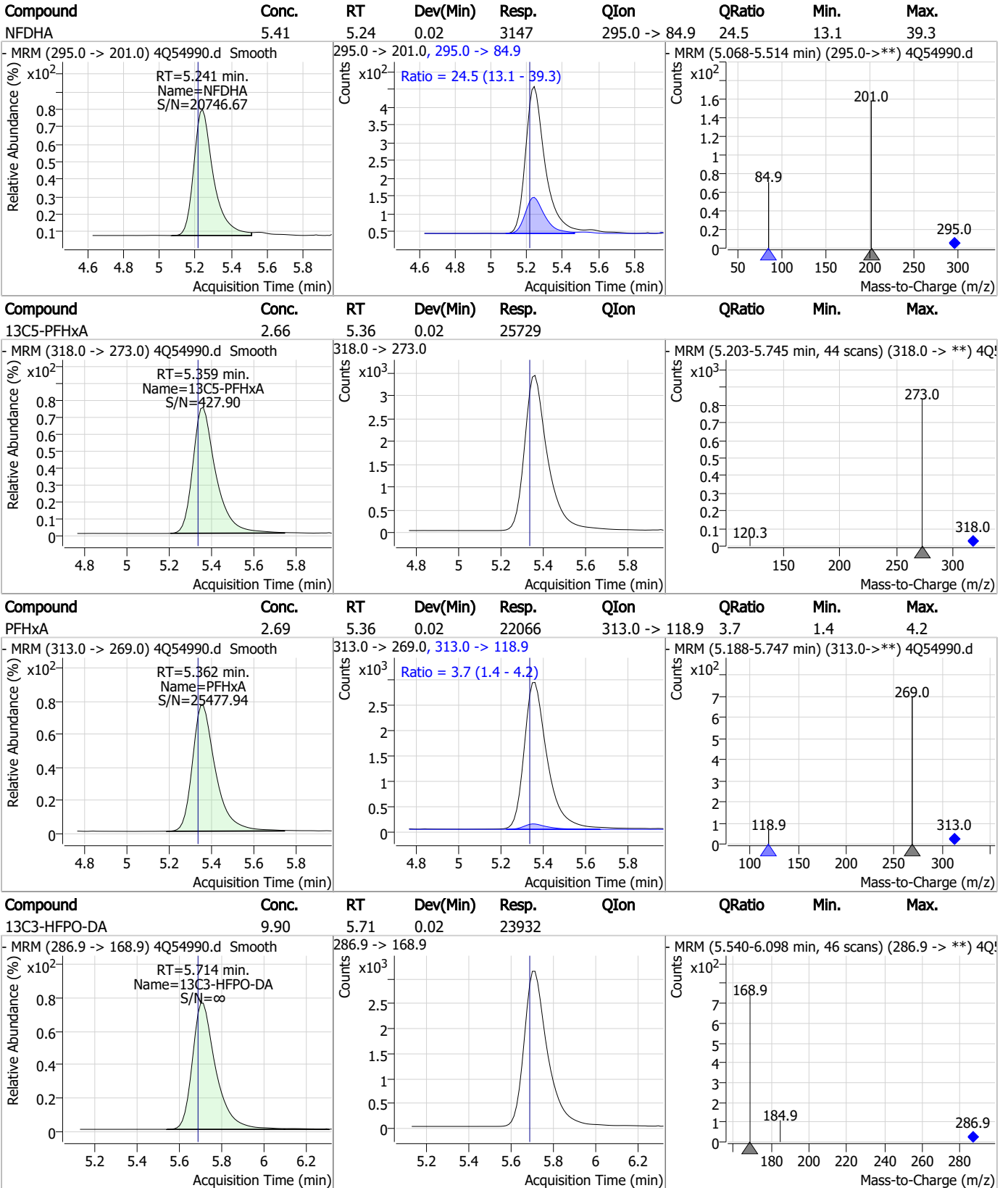
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Perfluorinated Compounds by LC/MS/MS



7.3.1
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Perfluorinated Compounds by LC/MS/MS

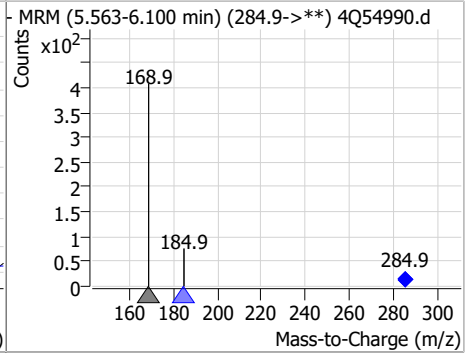
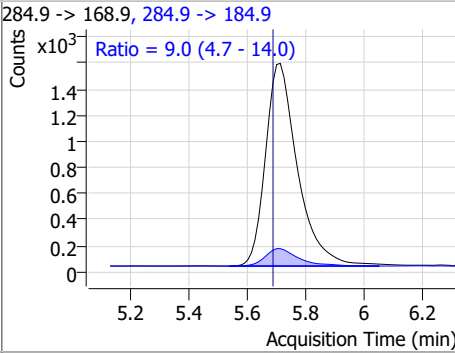
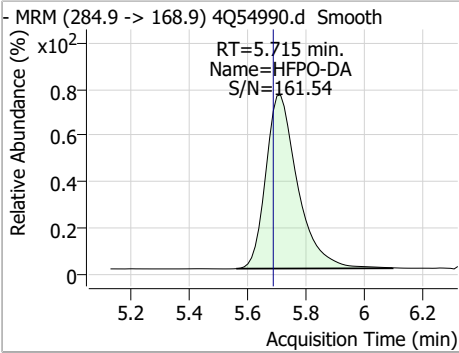


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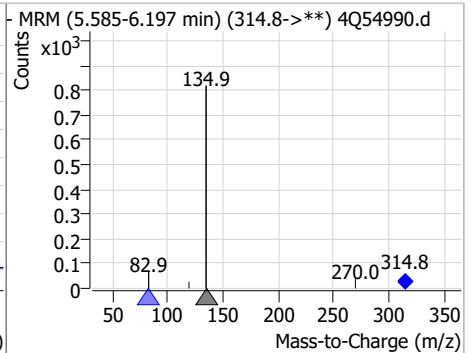
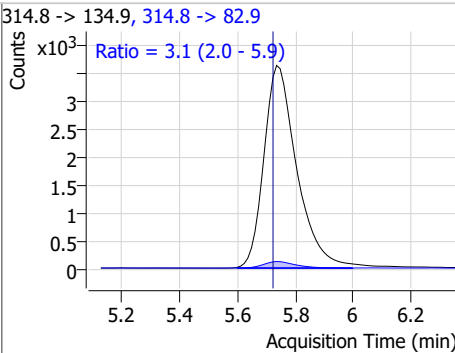
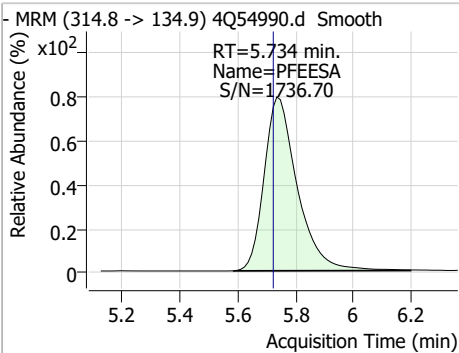
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Perfluorinated Compounds by LC/MS/MS

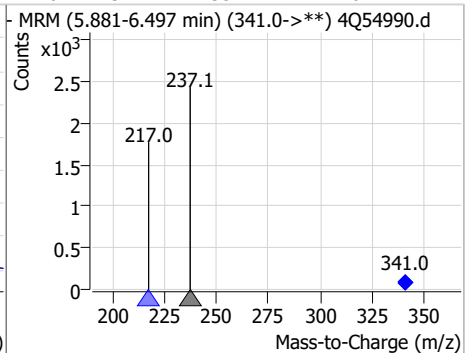
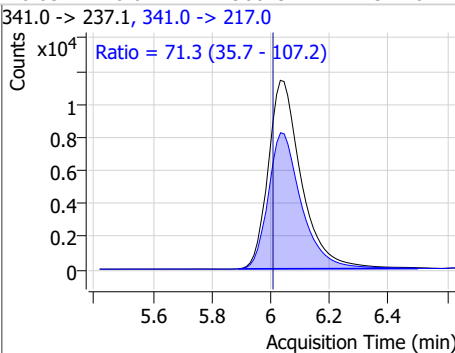
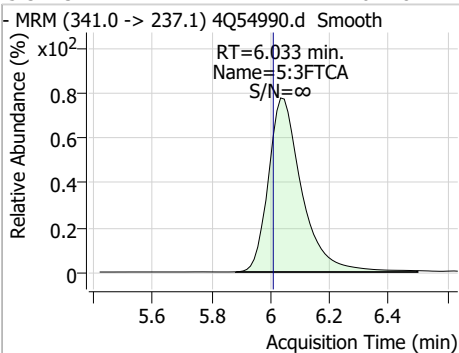
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.15	5.72	0.02	11798	284.9 -> 184.9	9.0	4.7	14.0



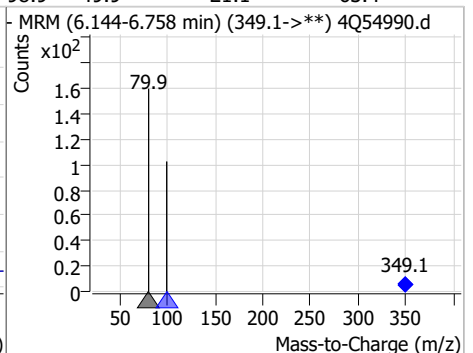
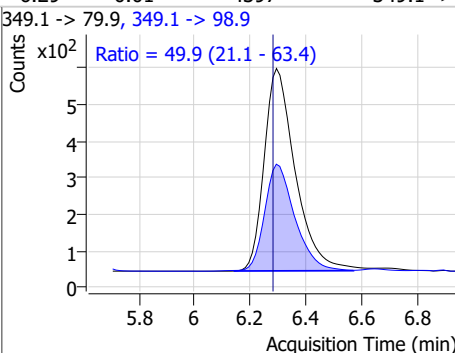
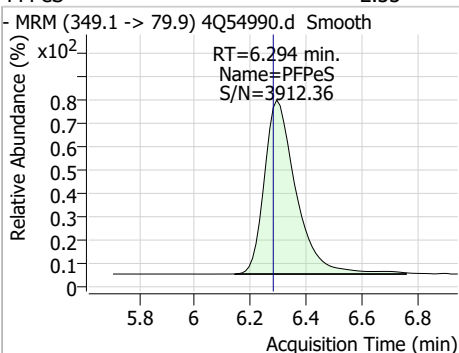
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.74	5.73	0.01	28779	314.8 -> 82.9	3.1	2.0	5.9



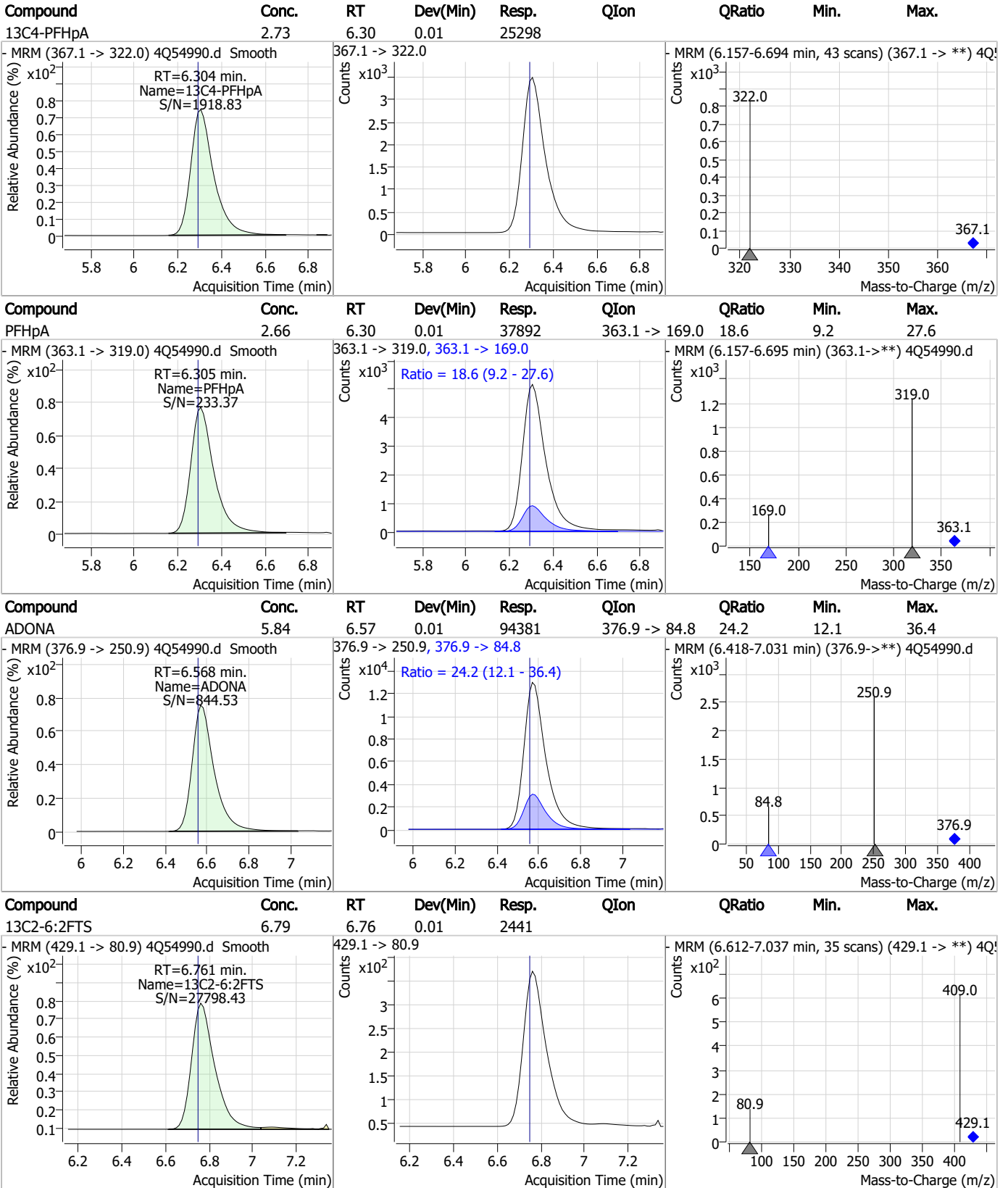
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	61.48	6.03	0.02	90029	341.0 -> 217.0	71.3	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.33	6.29	0.01	4397	349.1 -> 98.9	49.9	21.1	63.4



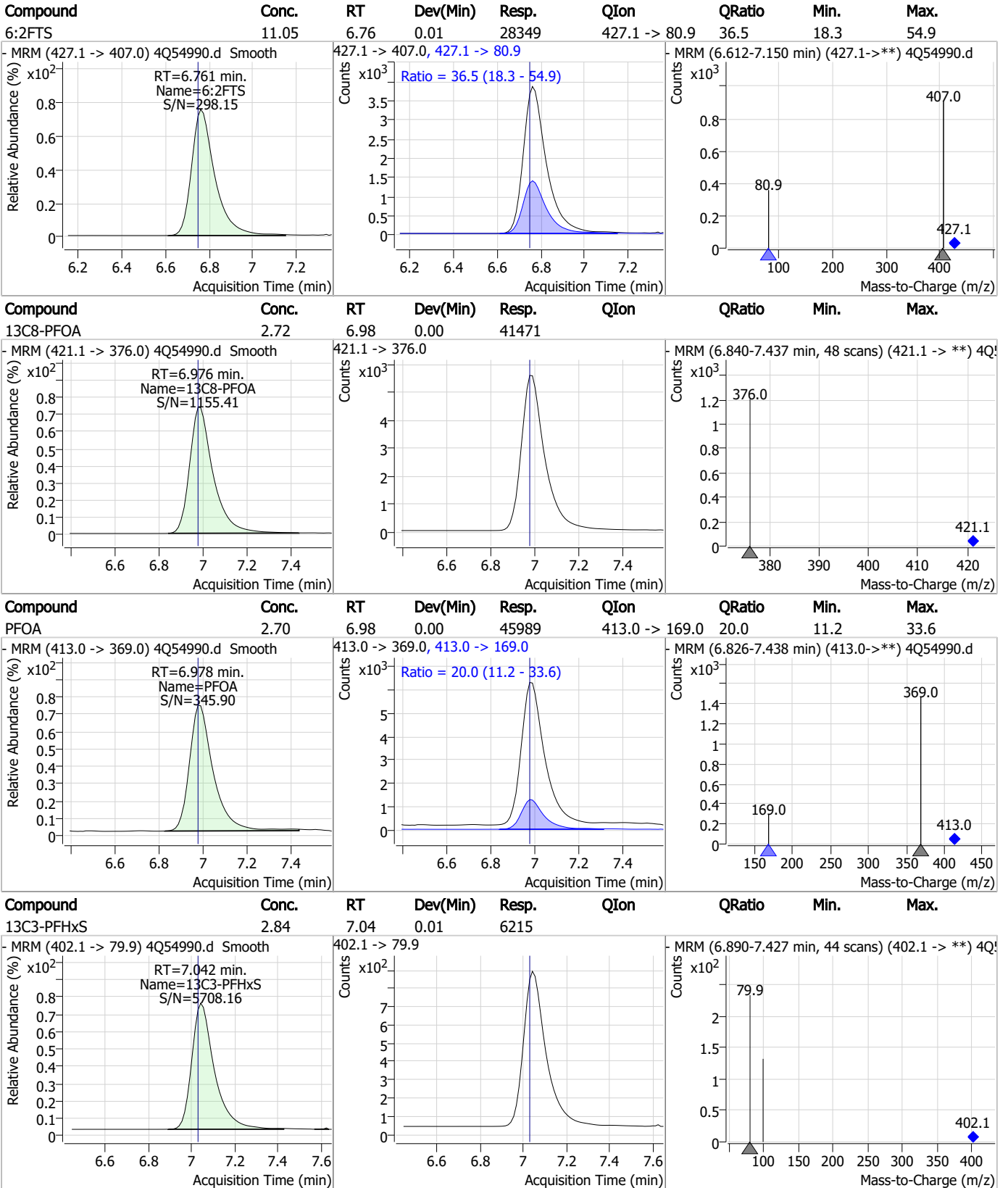
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

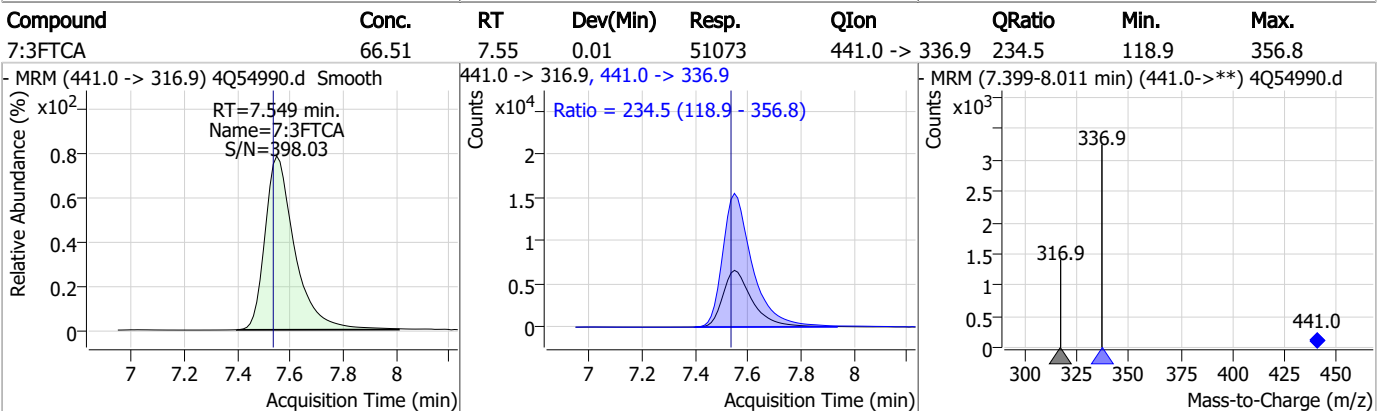
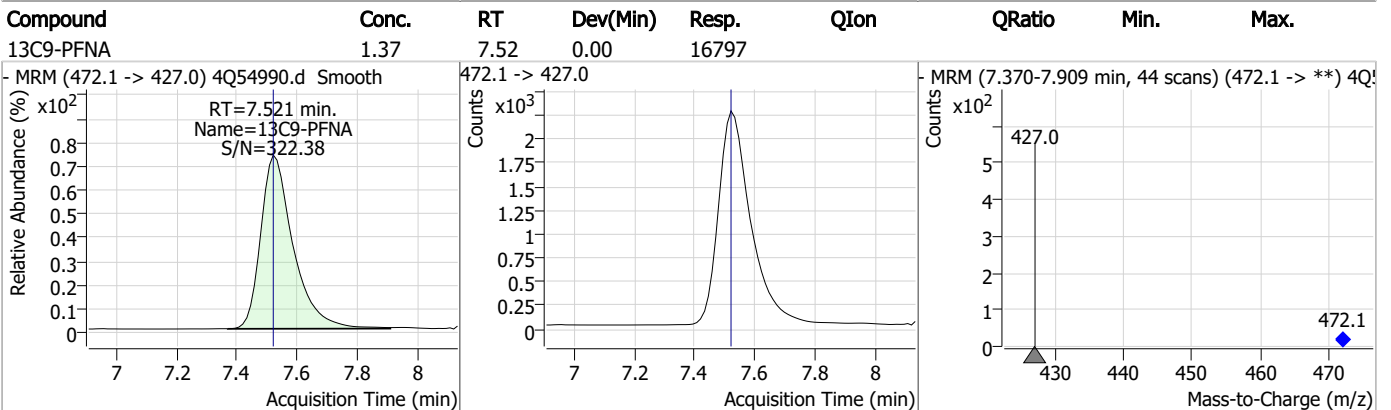
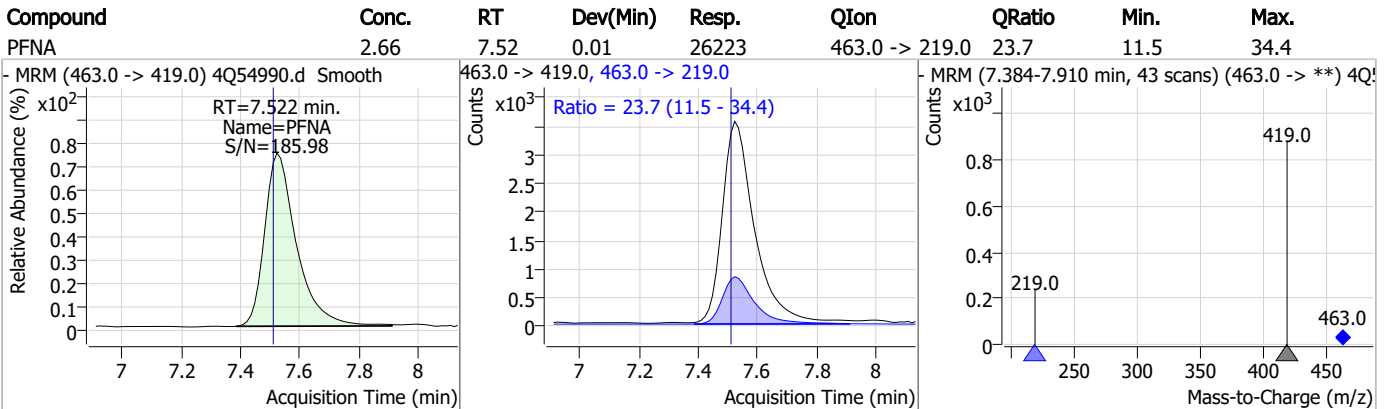
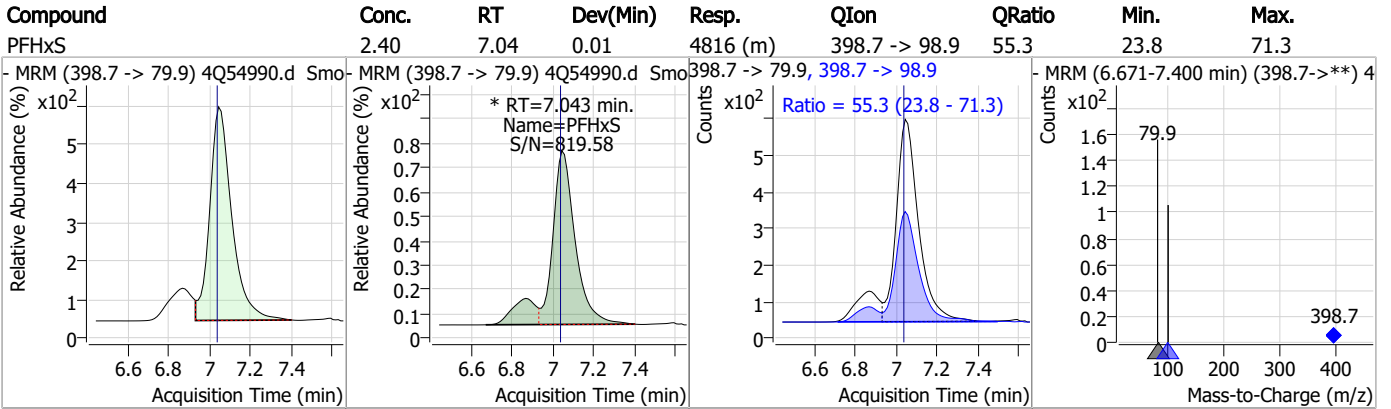


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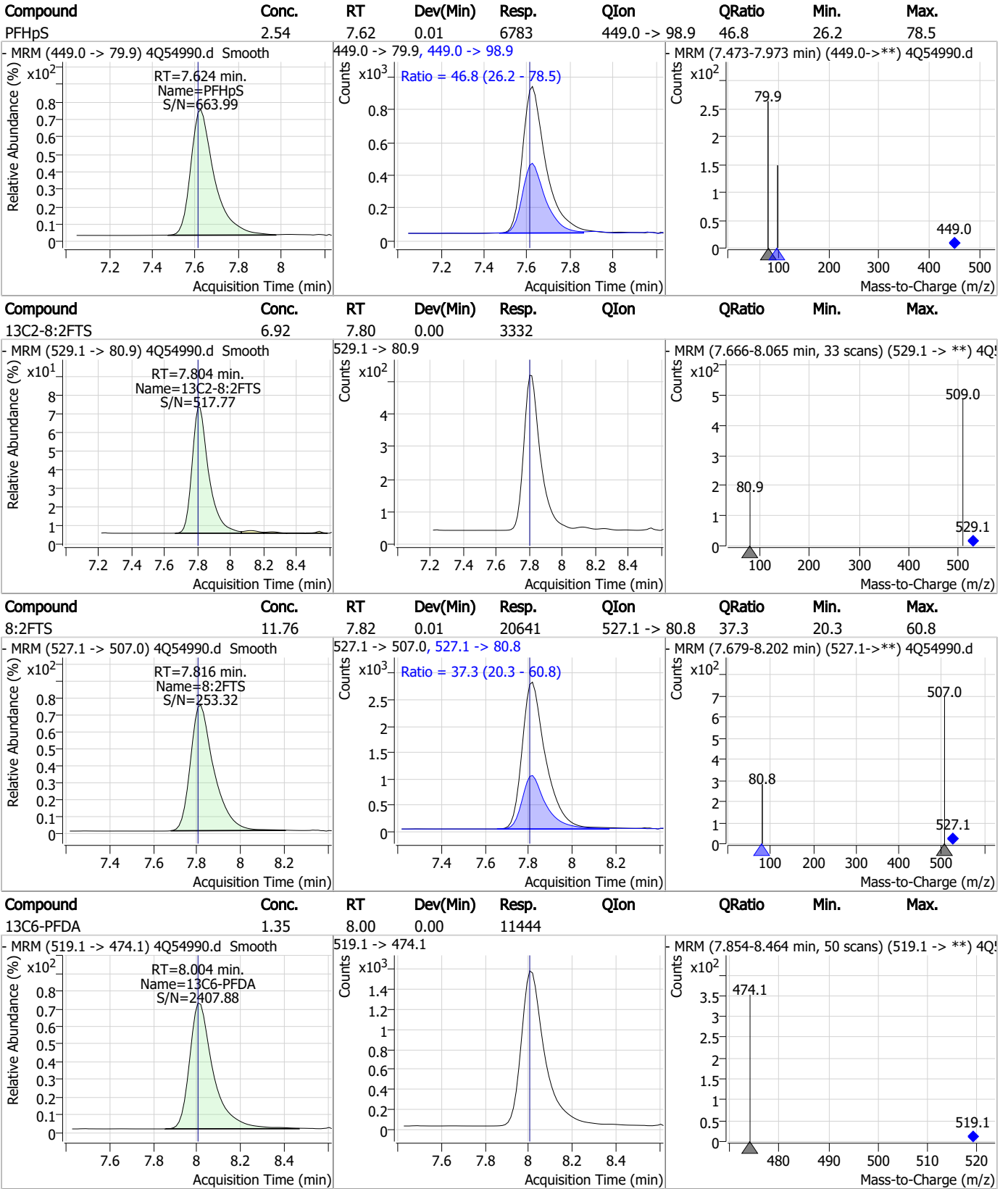
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Perfluorinated Compounds by LC/MS/MS



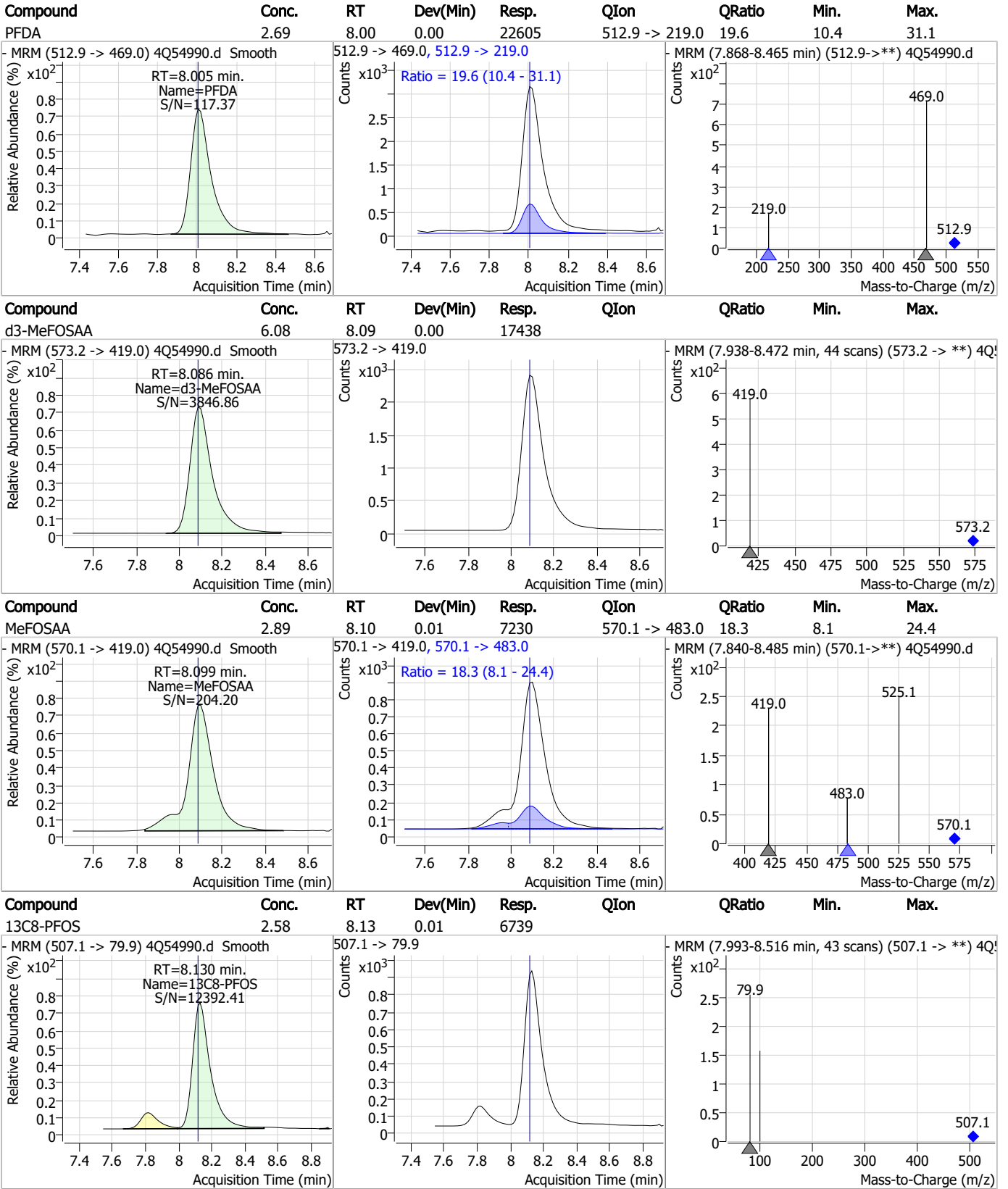
Perfluorinated Compounds by LC/MS/MS



7.3.1

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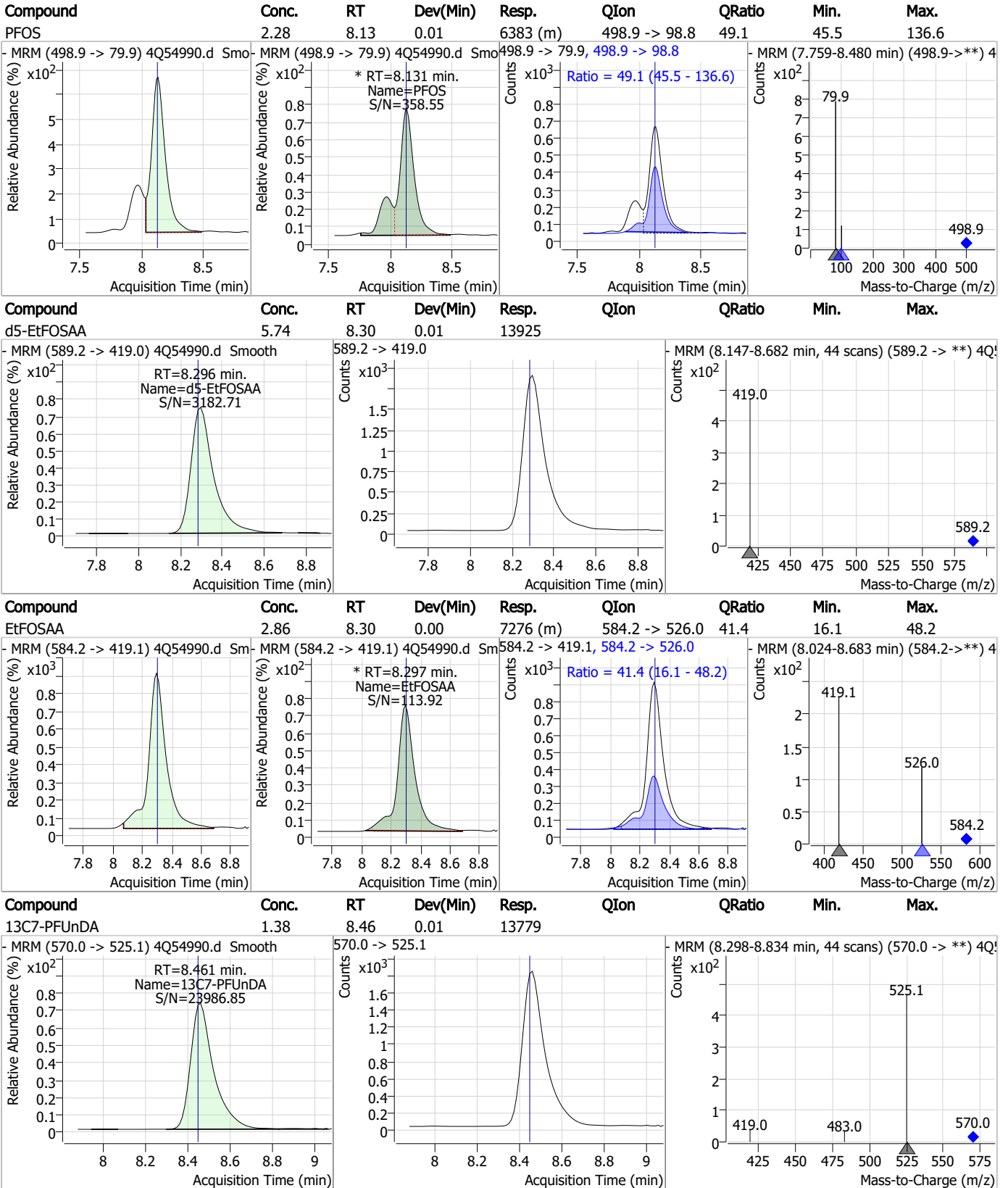
Perfluorinated Compounds by LC/MS/MS



7.3.1

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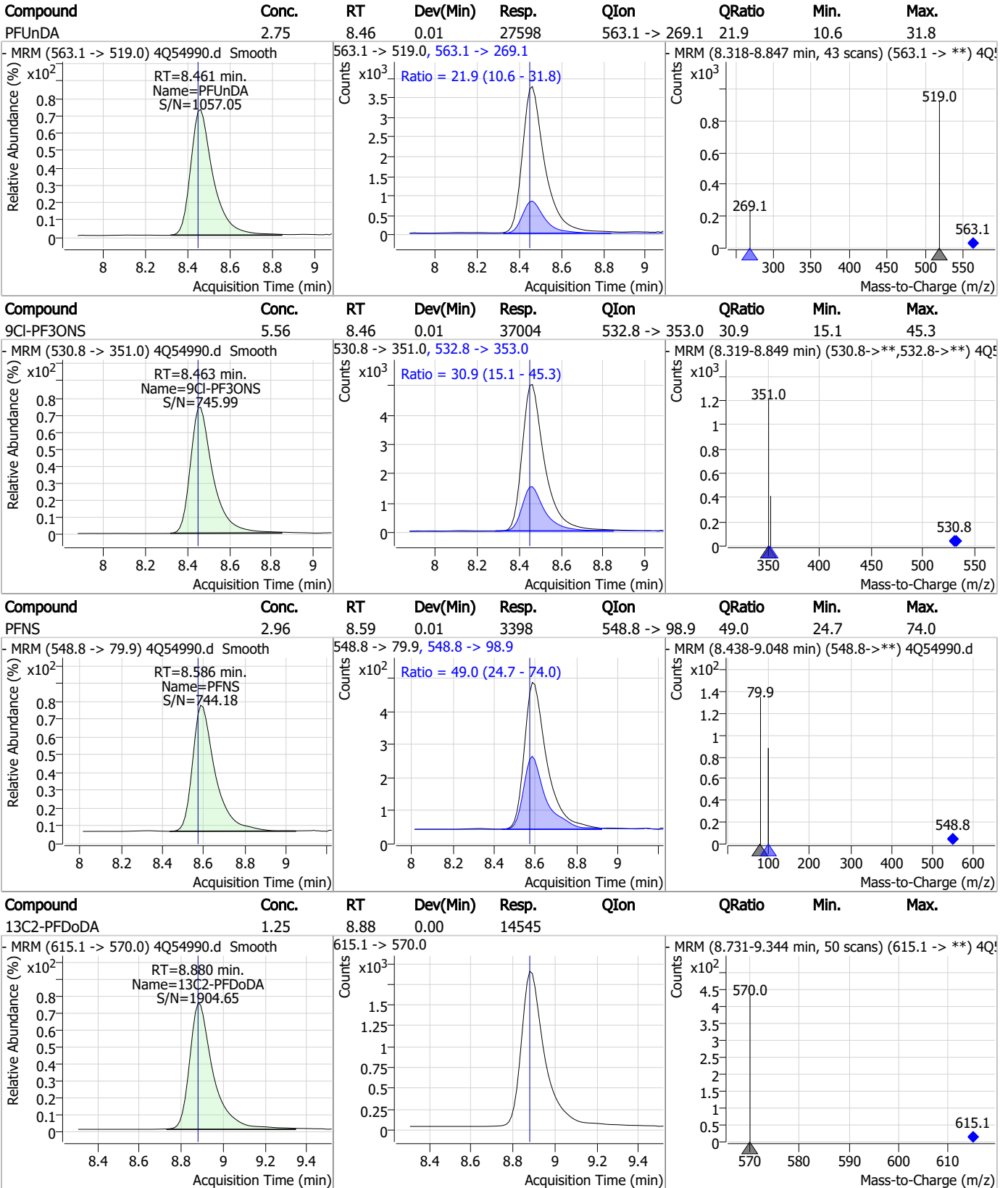
Perfluorinated Compounds by LC/MS/MS



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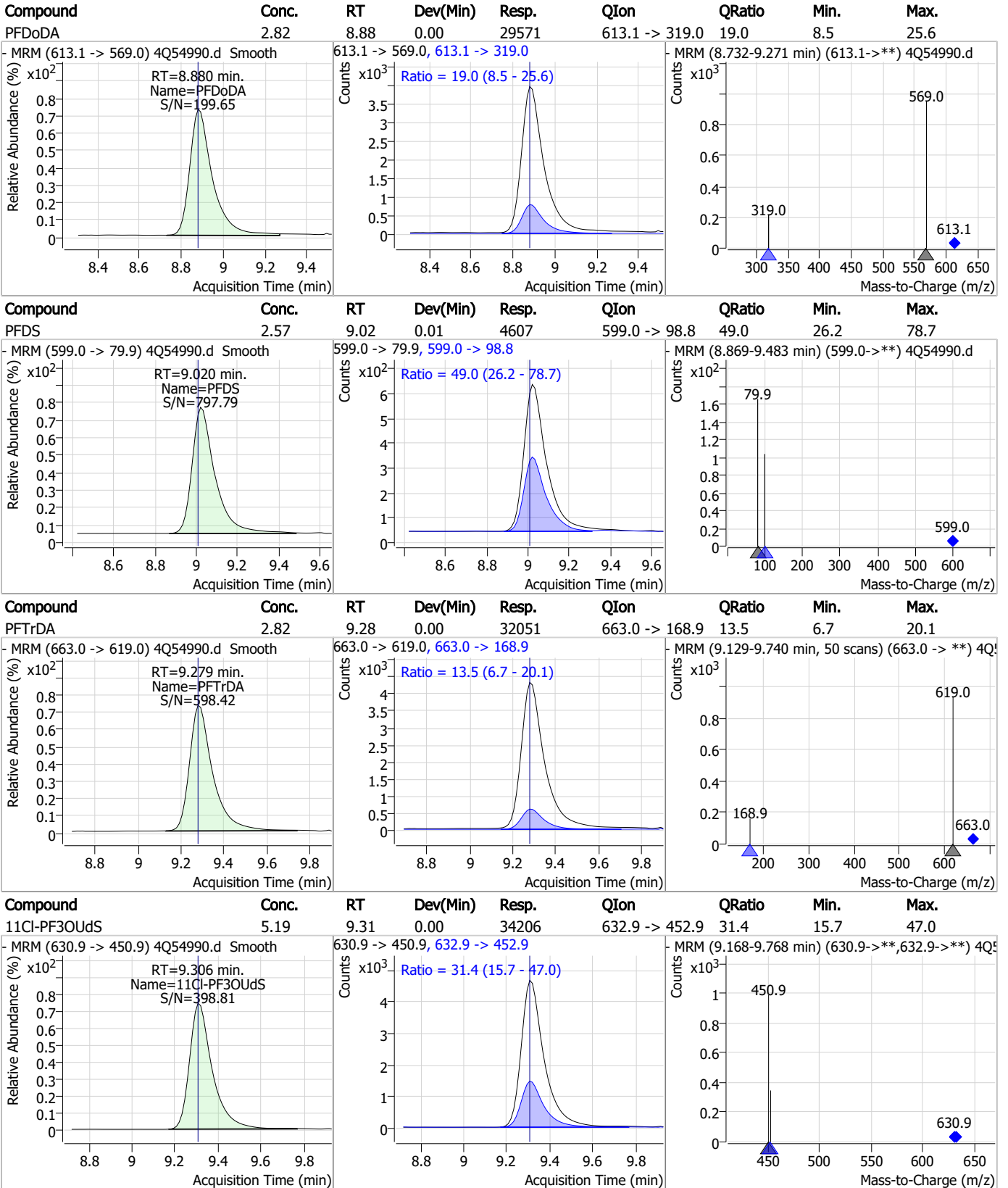
Perfluorinated Compounds by LC/MS/MS



7.3.1

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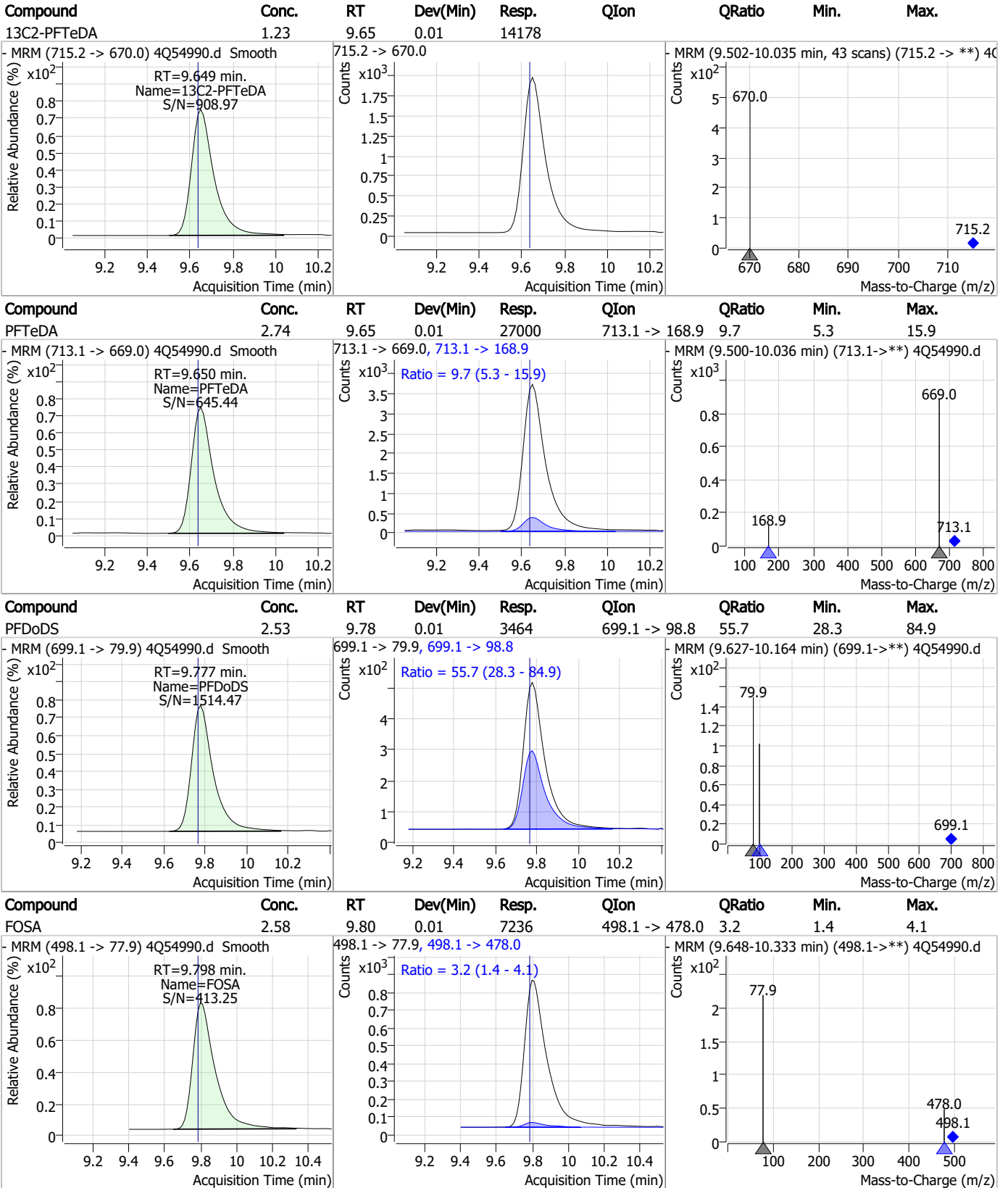
Perfluorinated Compounds by LC/MS/MS



7.3.1

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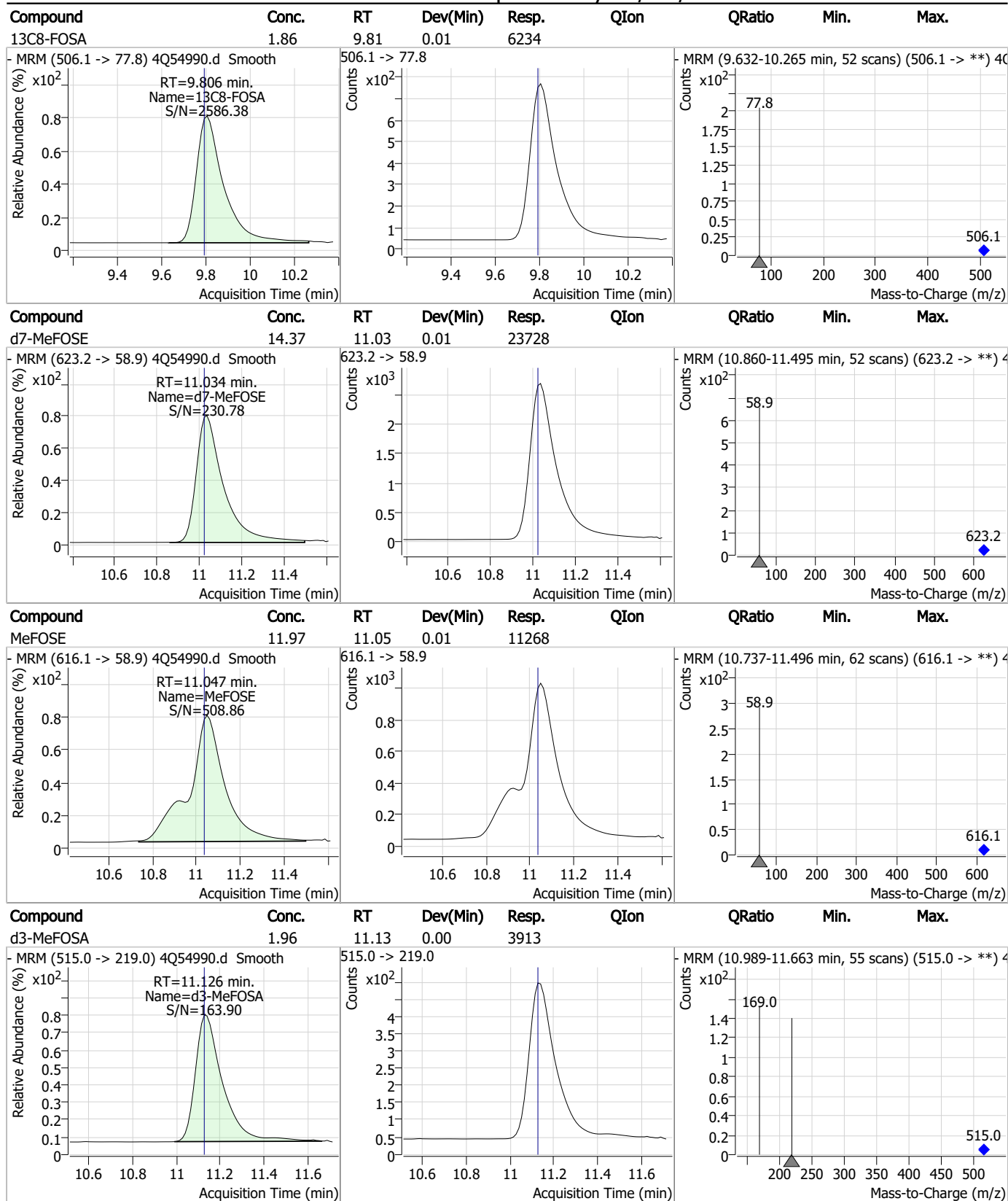
Perfluorinated Compounds by LC/MS/MS



7.3.1

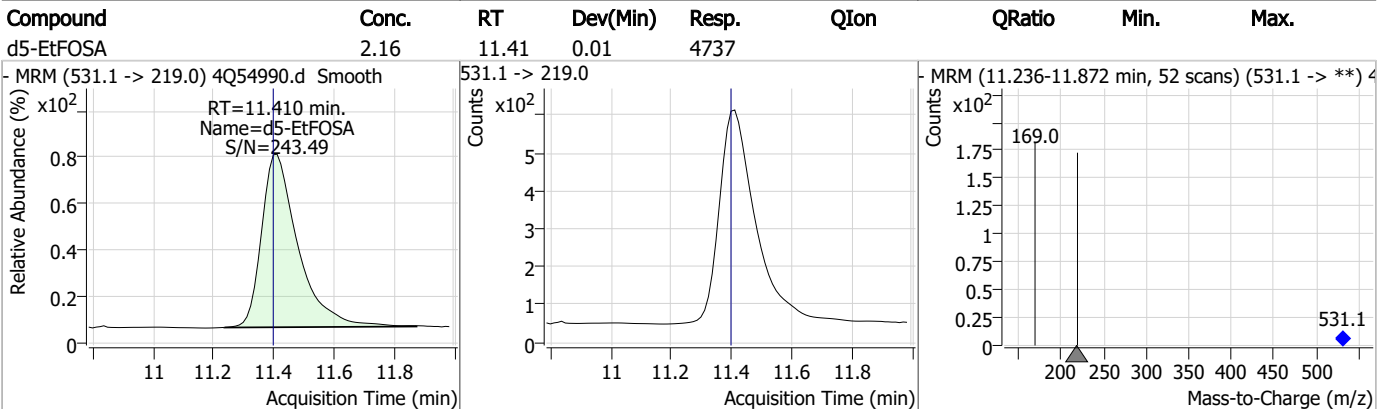
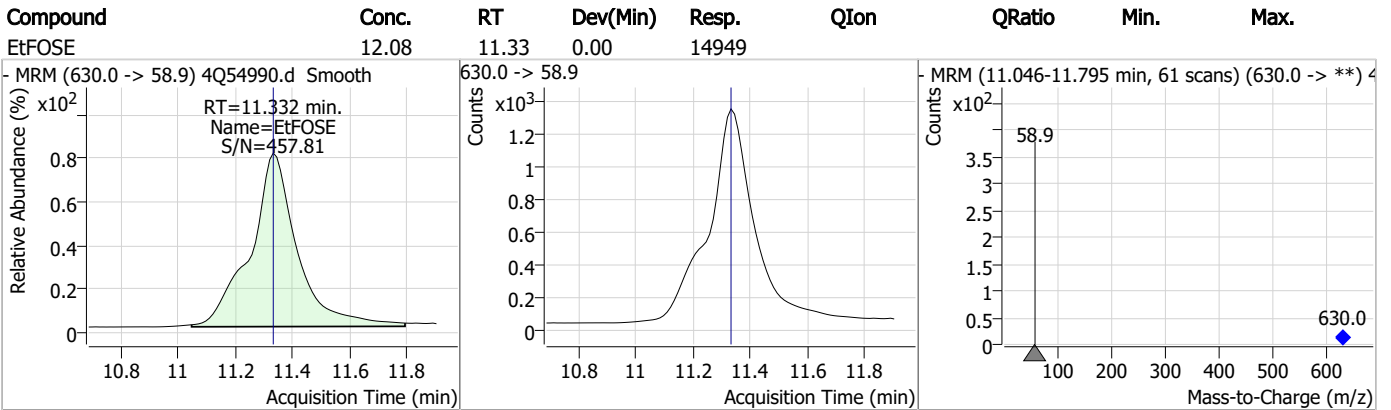
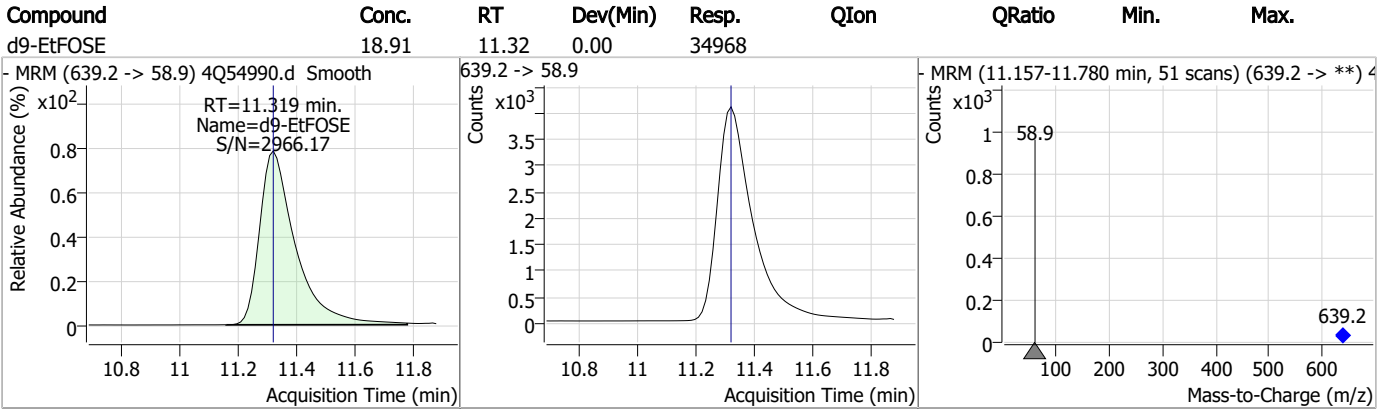
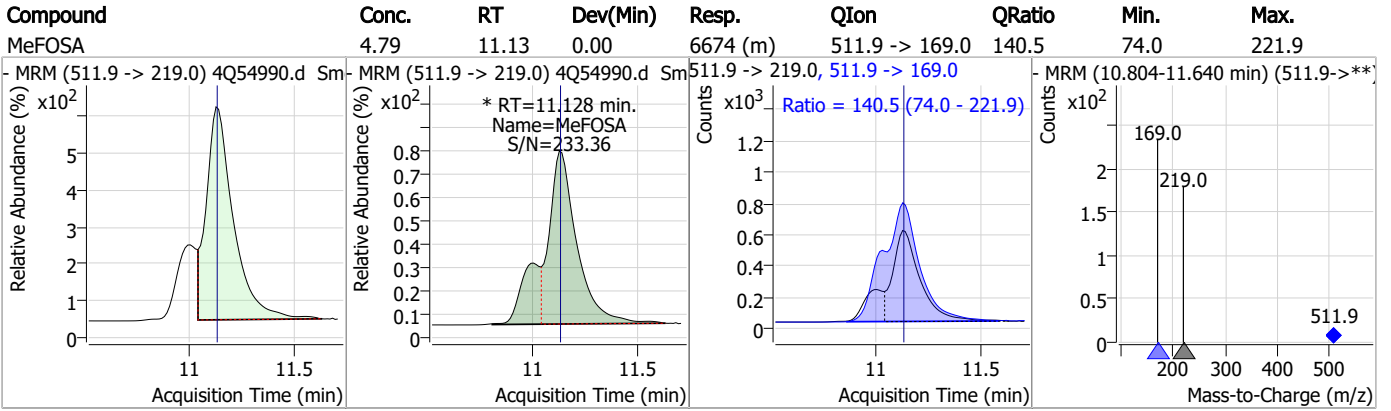
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Perfluorinated Compounds by LC/MS/MS



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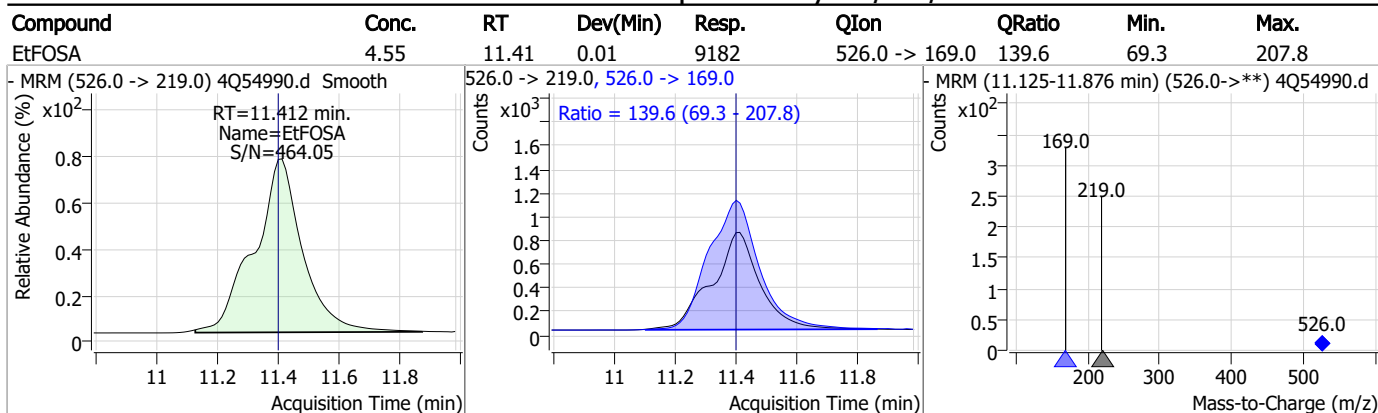
Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS



7.3.1
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Manual Integration Approval Summary

Sample Number: OP524-BS Method: EPA DRAFT 1633
Lab FileID: 4Q54990.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/11/23 01:40 Supervisor approved: 12/11/23 16:49 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.3.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54991.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 1:54:54 AM
 Sample Name : op524-llbs:3
 Vial : P3-F6
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.752	216.8 -> 171.9	90345	10.00 µg/L	0.078
M5-PFPeA	4.187	268.3 -> 223.0	34893	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	27135	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	26071	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	44361	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	16575	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	11626	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	13415	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	14973	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	14885	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	5980	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	7875	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	6488	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	7098	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1031	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2983	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	3563	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	18784	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	25225	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	15513	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	21575	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	31860	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	4541	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4039	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	5305	2.50 µg/L	0.012
13C3-PFBA	2.755	216.0 -> 172.0	38316	5.00 µg/L	0.077
18O2-PFHxS	7.041	403.0 -> 83.9	3712	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	41998	2.50 µg/L	0.012
13C2-PFDA	8.004	515.1 -> 470.1	12536	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	15686	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	27620	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1031	5.85 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.0%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2983	7.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 156.1%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3563	6.96 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14973	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	14885	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C3-PFBS	5.215	302.1 -> 79.9	7875	2.77 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.7%		
13C3-PFHxS	7.042	402.1 -> 79.9	6488	2.79 µg/L	0.012

7.3.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.5%		
13C4-PFBA	2.752	216.8 -> 171.9	90345	11.23 µg/L	0.078
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 112.3%		
13C4-PFHpA	6.304	367.1 -> 322.0	26071	2.68 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C5-PFHxA	5.359	318.0 -> 273.0	27135	2.67 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C5-PFPeA	4.187	268.3 -> 223.0	34893	5.50 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.1%		
13C6-PFDA	8.004	519.1 -> 474.1	11626	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C7-PFUnDA	8.461	570.0 -> 525.1	13415	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C8-FOSA	9.806	506.1 -> 77.8	5980	1.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 69.6%		
13C8-PFOA	6.989	421.1 -> 376.0	44361	2.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.3%		
13C8-PFOS	8.130	507.1 -> 79.9	7098	2.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C9-PFNA	7.521	472.1 -> 427.0	16575	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.5%		
d3-MeFOSAA	8.099	573.2 -> 419.0	18784	6.38 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.6%		
13C3-HFPO-DA	5.714	286.9 -> 168.9	25225	9.92 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
d3-MeFOSA	11.139	515.0 -> 219.0	4039	1.97 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 78.8%		
d5-EtFOSAA	8.296	589.2 -> 419.0	15513	6.23 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.5%		
d7-MeFOSE	11.034	623.2 -> 58.9	21575	12.72 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 50.9%		
d9-EtFOSE	11.319	639.2 -> 58.9	31860	16.77 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 67.1%		
d5-EtFOSA	11.398	531.1 -> 219.0	4541	2.02 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.8%		
Target Compounds					QValue
4:2FTS	5.072	327.1 -> 307.0	6320	3.56 µg/L	98
		327.1 -> 80.9	2607		
6:2FTS	6.761	427.1 -> 407.0	9207	2.94 µg/L	98
		427.1 -> 80.9	3266		
8:2FTS	7.816	527.1 -> 507.0	6740	3.59 µg/L	95
		527.1 -> 80.8	2531		
EtFOSAA	8.297	584.2 -> 419.1	2312	0.82 µg/L	m 99
		584.2 -> 526.0	753		
FOSA	9.798	498.1 -> 77.9	2330	0.87 µg/L	99
		498.1 -> 478.0	71		
MeFOSAA	8.099	570.1 -> 419.0	2472	0.92 µg/L	93
		570.1 -> 483.0	482		
PFBA	2.758	212.8 -> 168.9	9356	3.23 µg/L	100
PFBS	5.216	298.7 -> 79.9	1732	0.71 µg/L	99
		298.7 -> 98.8	687		
PFDA	8.017	512.9 -> 469.0	7413	0.87 µg/L	95
		512.9 -> 219.0	1715		
PFDODA	8.880	613.1 -> 569.0	9484	0.88 µg/L	100
		613.1 -> 319.0	1633		
PFDS	9.020	599.0 -> 79.9	1504	0.80 µg/L	92

7.3.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	709	0.83	µg/L	100
		363.1 -> 319.0	12133			
PFHpS	7.624	363.1 -> 169.0	2231	0.81	µg/L	99
		449.0 -> 79.9	2269			
PFHxA	5.362	449.0 -> 98.9	1201	0.81	µg/L	98
		313.0 -> 269.0	7009			
PFHxS	7.043	313.0 -> 118.9	139	0.70	µg/L	78
		398.7 -> 79.9	1463			
PFNA	7.522	398.7 -> 98.9	912	0.88	µg/L	92
		463.0 -> 419.0	8573			
PFNS	8.586	463.0 -> 219.0	1654	0.89	µg/L	92
		548.8 -> 79.9	1073			
PFOA	6.990	548.8 -> 98.9	471	0.86	µg/L	92
		413.0 -> 369.0	15606			
PFOS	8.131	413.0 -> 169.0	2878	0.73	µg/L	47
		498.9 -> 79.9	2146			
PFPeA	4.189	498.9 -> 98.8	878	1.61	µg/L	100
		263.0 -> 219.0	11083			
PFPeS	6.294	349.1 -> 79.9	1438	0.73	µg/L	100
		349.1 -> 98.9	605			
PFTeDA	9.650	713.1 -> 669.0	7849	0.76	µg/L	98
		713.1 -> 168.9	905			
PFTrDA	9.279	663.0 -> 619.0	10167	0.87	µg/L	99
		663.0 -> 168.9	1389			
PFUnDA	8.461	563.1 -> 519.0	7976	0.82	µg/L	98
		563.1 -> 269.1	1750			
11CI-PF3OUdS	9.306	630.9 -> 450.9	11377	1.64	µg/L	98
		632.9 -> 452.9	3466			
9CI-PF3ONS	8.463	530.8 -> 351.0	11456	1.63	µg/L	99
		532.8 -> 353.0	3543			
ADONA	6.568	376.9 -> 250.9	29320	1.72	µg/L	99
		376.9 -> 84.8	7235			
HFPO-DA	5.715	284.9 -> 168.9	3430	1.42	µg/L	93
		284.9 -> 184.9	411			
3:3FTCA	3.679	241.0 -> 177.0	1312	2.85	µg/L	97
		241.0 -> 117.0	103			
5:3FTCA	6.045	341.0 -> 237.1	28797	18.65	µg/L	98
		341.0 -> 217.0	20113			
7:3FTCA	7.549	441.0 -> 316.9	16364	20.21	µg/L	100
		441.0 -> 336.9	39051			
EtFOSA	11.399	526.0 -> 219.0	2967	1.53	µg/L	99
		526.0 -> 169.0	4064			
EtFOSE	11.332	630.0 -> 58.9	4562	4.05	µg/L	100
		511.9 -> 219.0	1958			
MeFOSA	11.128	511.9 -> 169.0	2903	1.36	µg/L	100
		616.1 -> 58.9	3088			
MeFOSE	11.047	699.1 -> 79.9	1131	3.61	µg/L	100
		699.1 -> 98.8	661			
PFDoDS	9.777	295.0 -> 201.0	1001	0.79	µg/L	97
		295.0 -> 84.9	245			
NFDHA	5.241	279.0 -> 85.1	5851	1.63	µg/L	97
		229.0 -> 84.9	6837			
PFMBA	4.591	314.8 -> 134.9	9107	1.55	µg/L	100
		314.8 -> 82.9	194			
PFMPA	3.357			1.65	µg/L	100
PFEESA	5.734			1.42	µg/L	95

= Qualifier out of range, m = manually integrated, + = Area summed

7.3.2
7

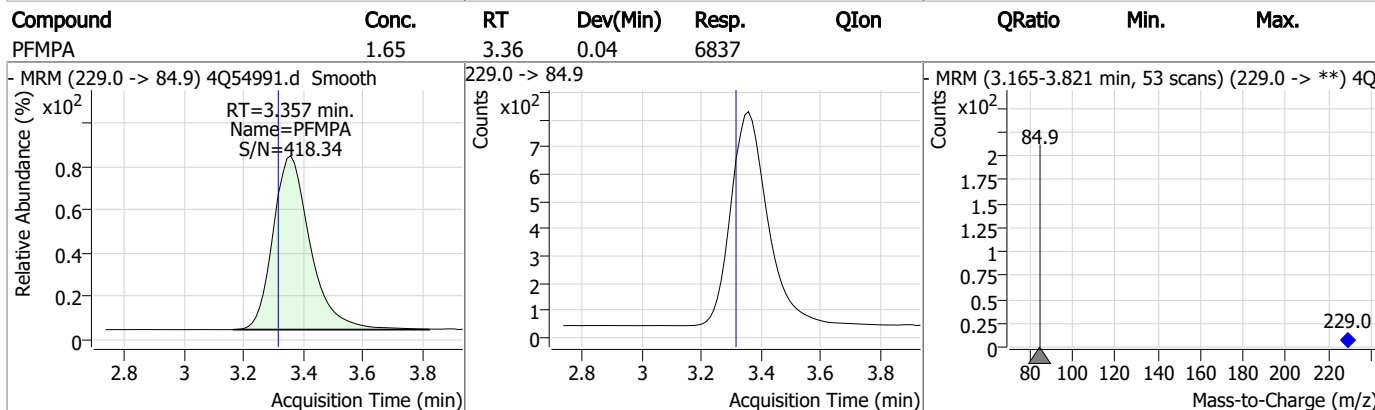
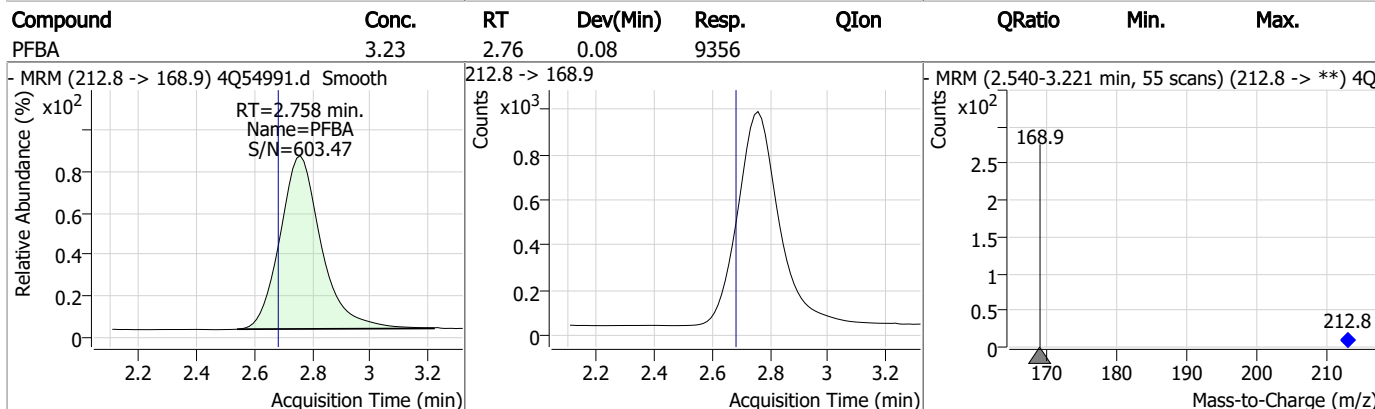
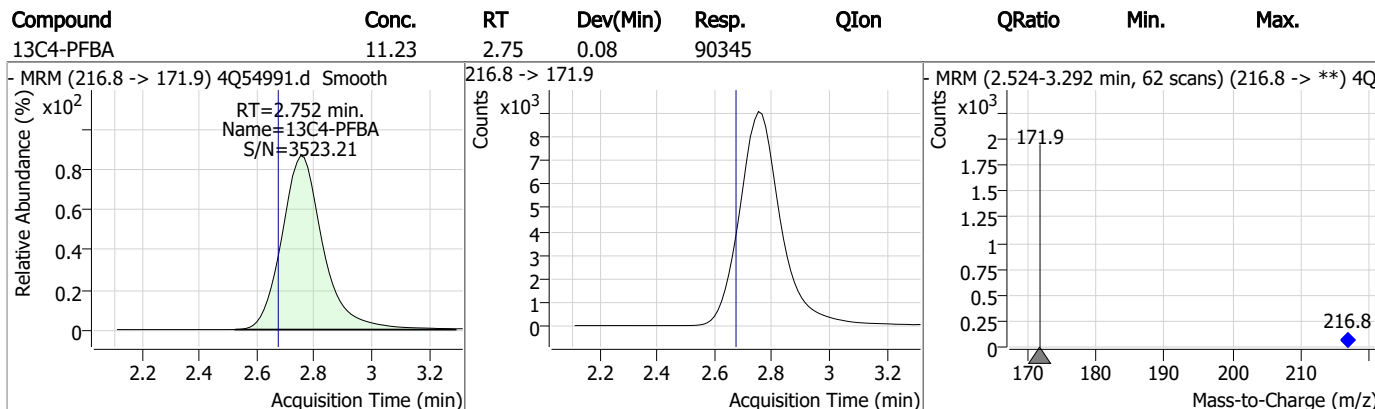
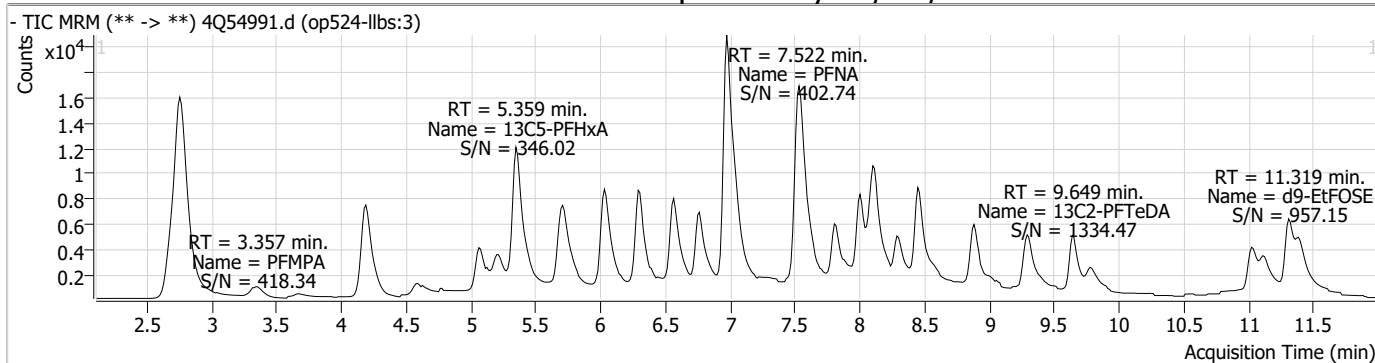
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.3.2

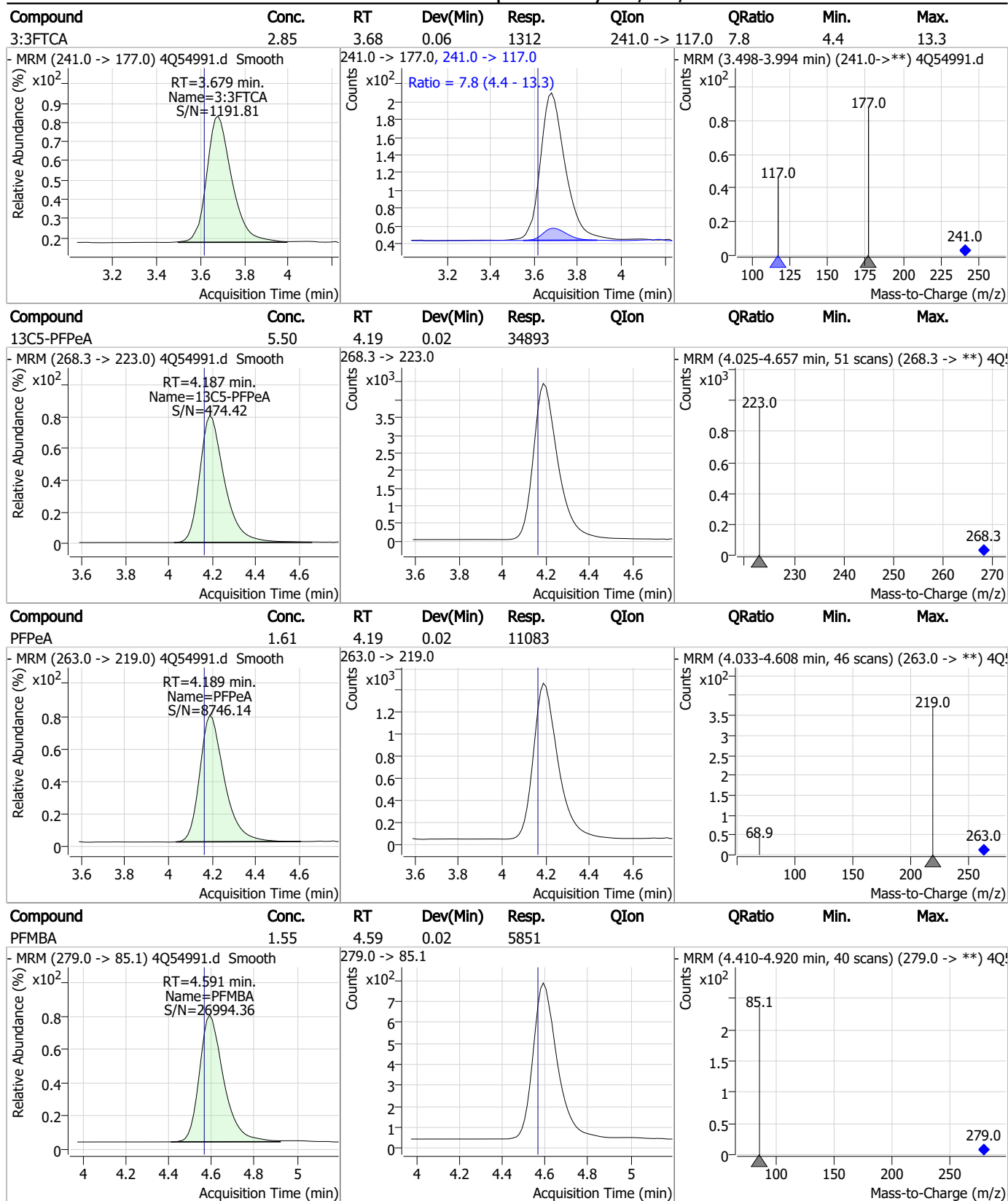
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Perfluorinated Compounds by LC/MS/MS



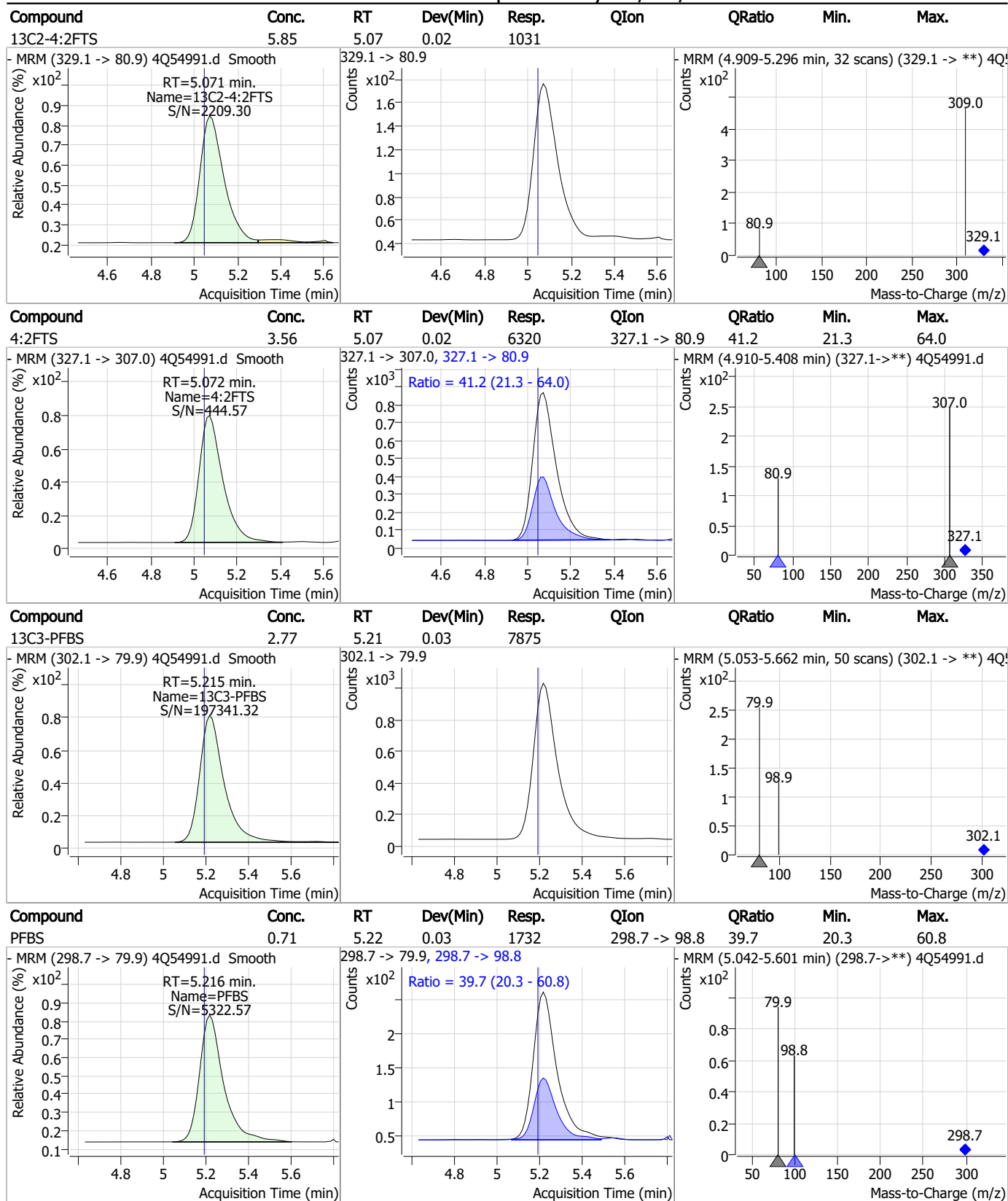
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Perfluorinated Compounds by LC/MS/MS



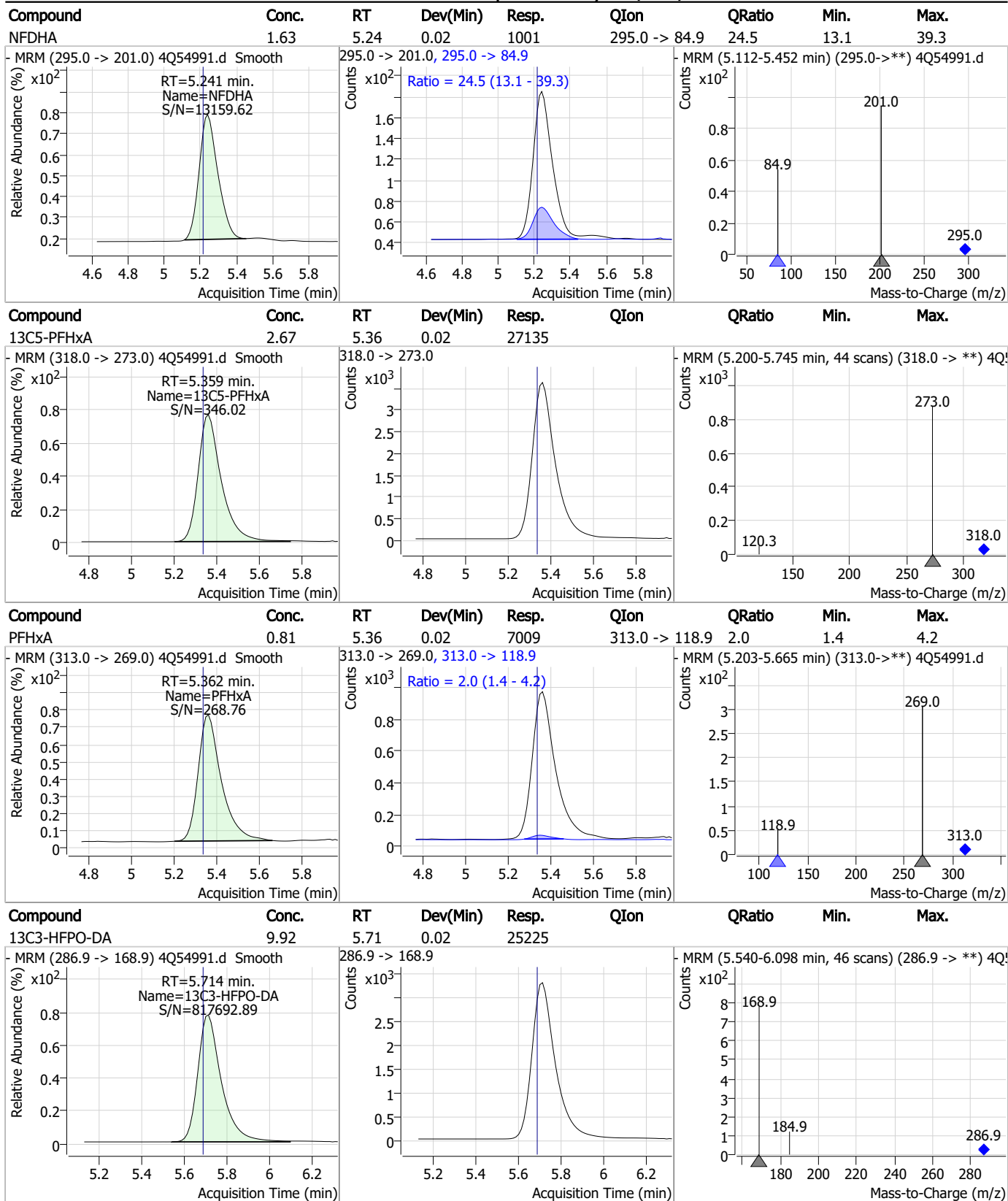
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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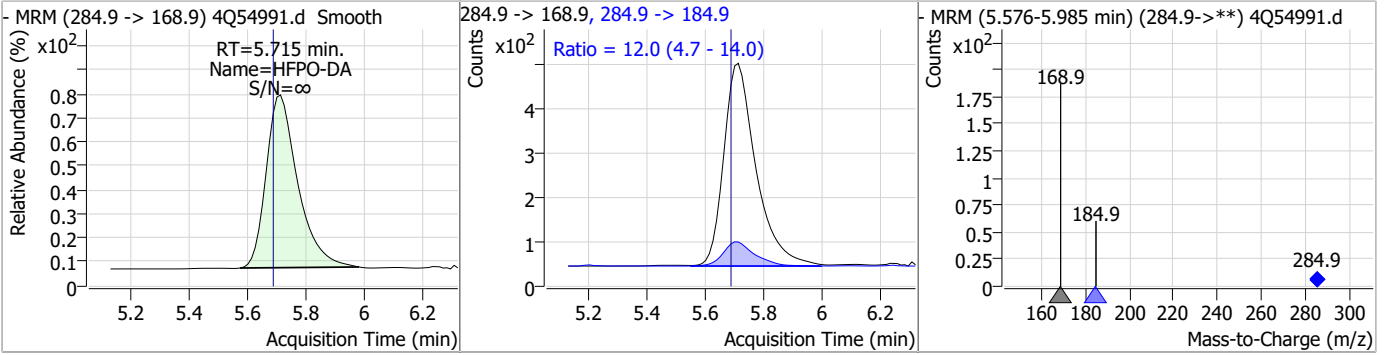
Perfluorinated Compounds by LC/MS/MS



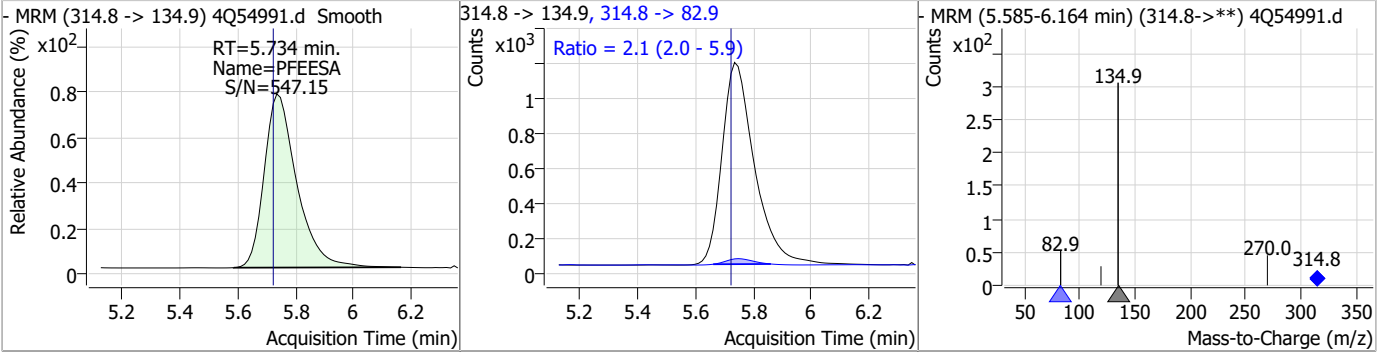
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Perfluorinated Compounds by LC/MS/MS

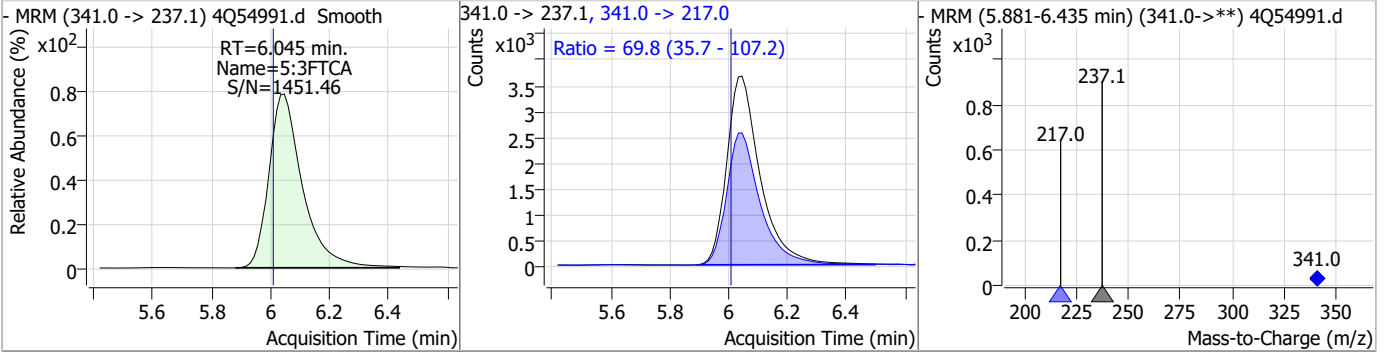
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.42	5.72	0.02	3430	284.9 -> 184.9	12.0	4.7	14.0



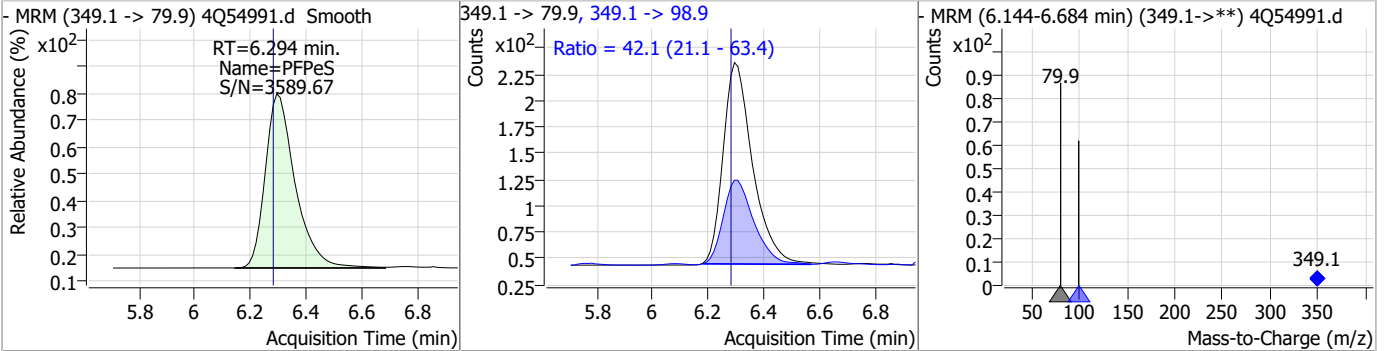
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	1.42	5.73	0.01	9107	314.8 -> 82.9	2.1	2.0	5.9



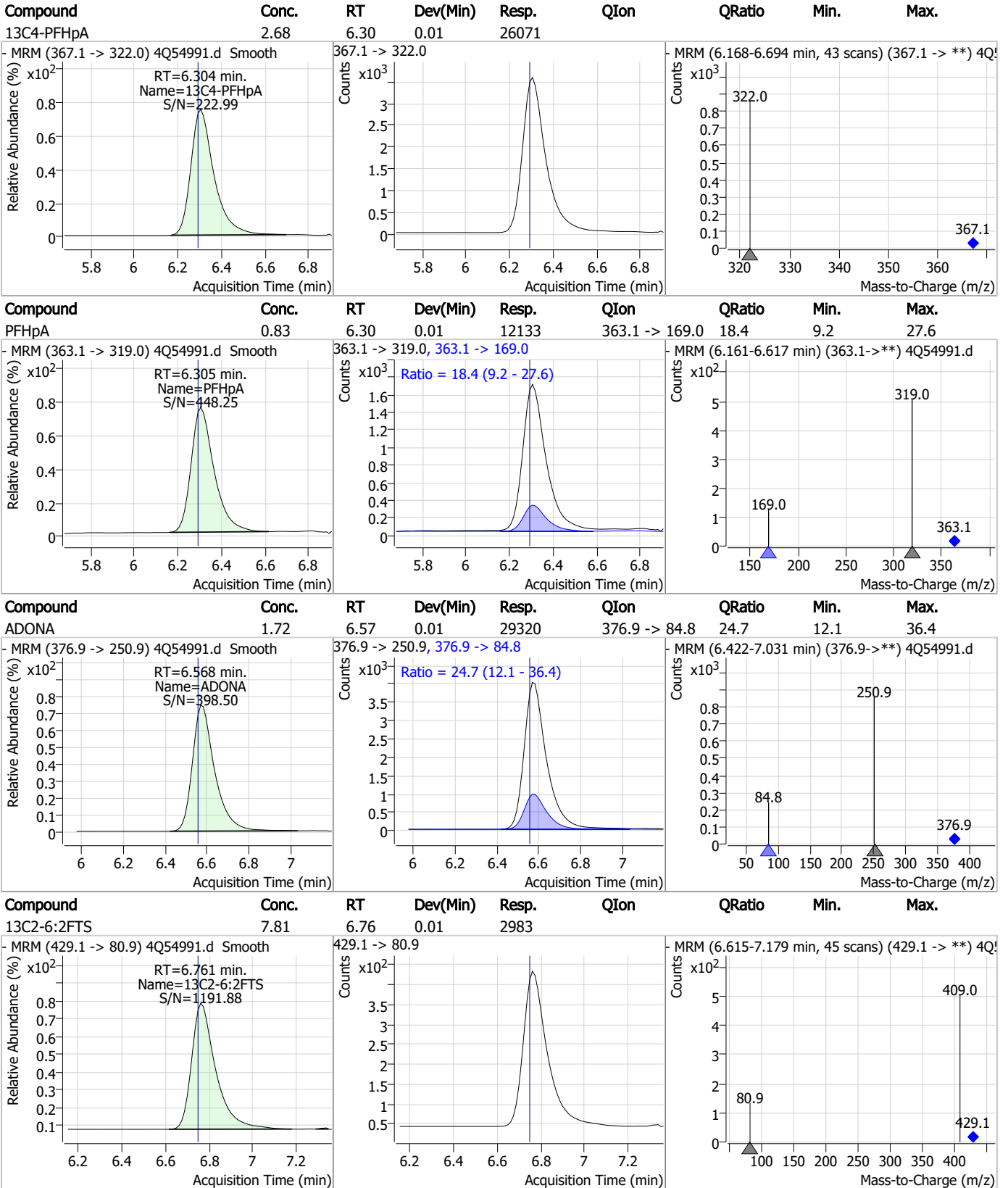
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	18.65	6.05	0.04	28797	341.0 -> 217.0	69.8	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.73	6.29	0.01	1438	349.1 -> 98.9	42.1	21.1	63.4



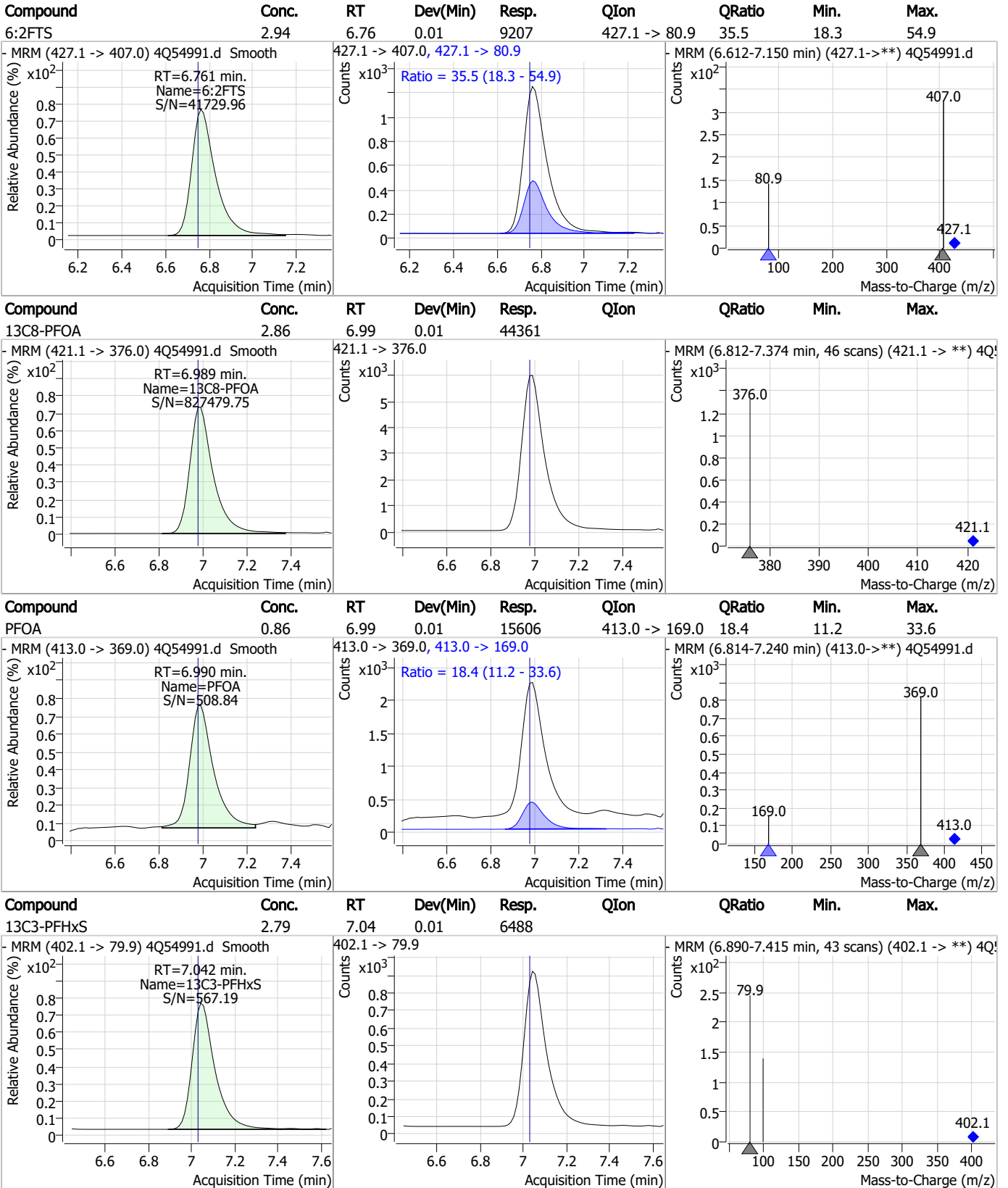
Perfluorinated Compounds by LC/MS/MS



7.3.2

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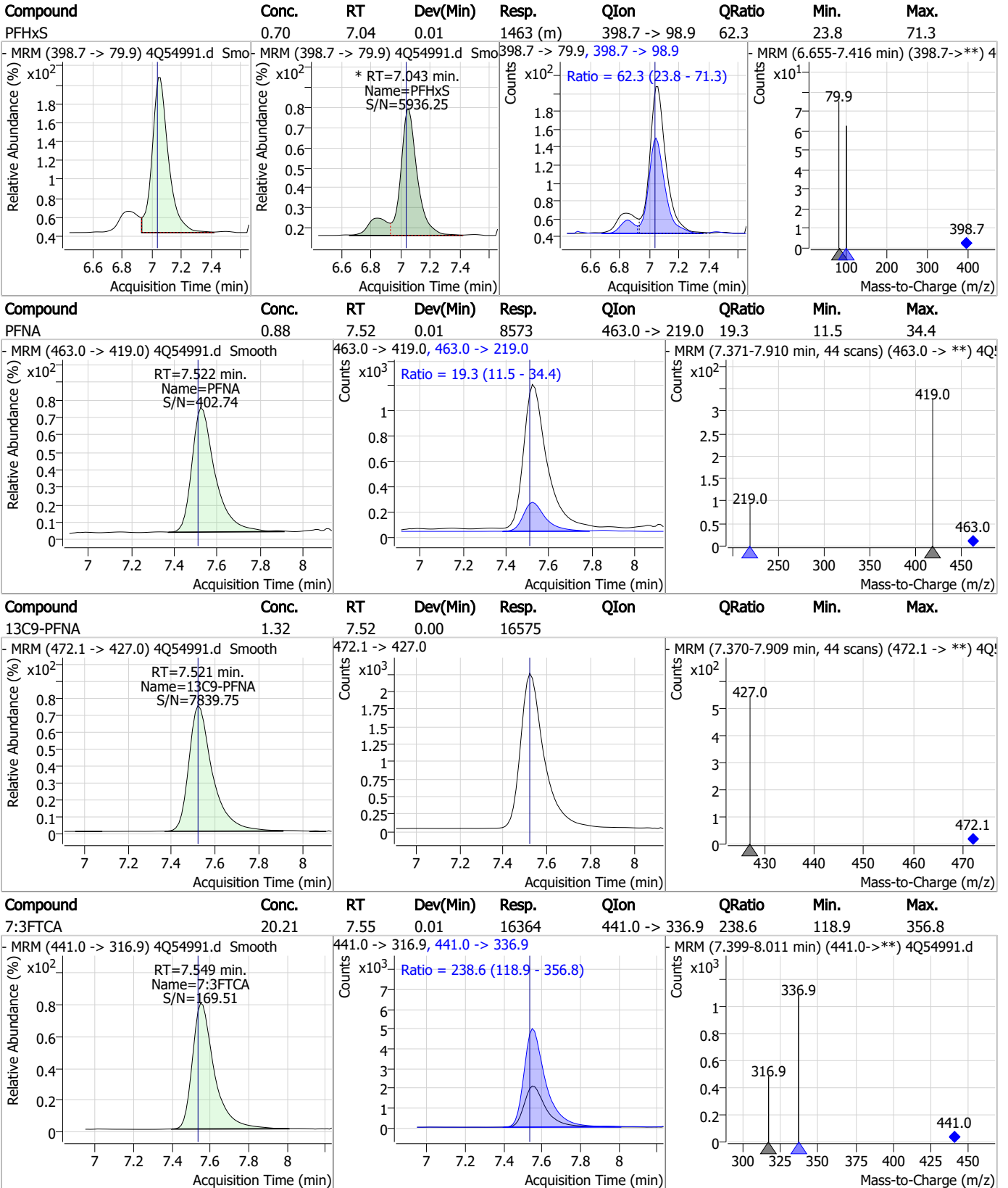
Perfluorinated Compounds by LC/MS/MS



7.3.2
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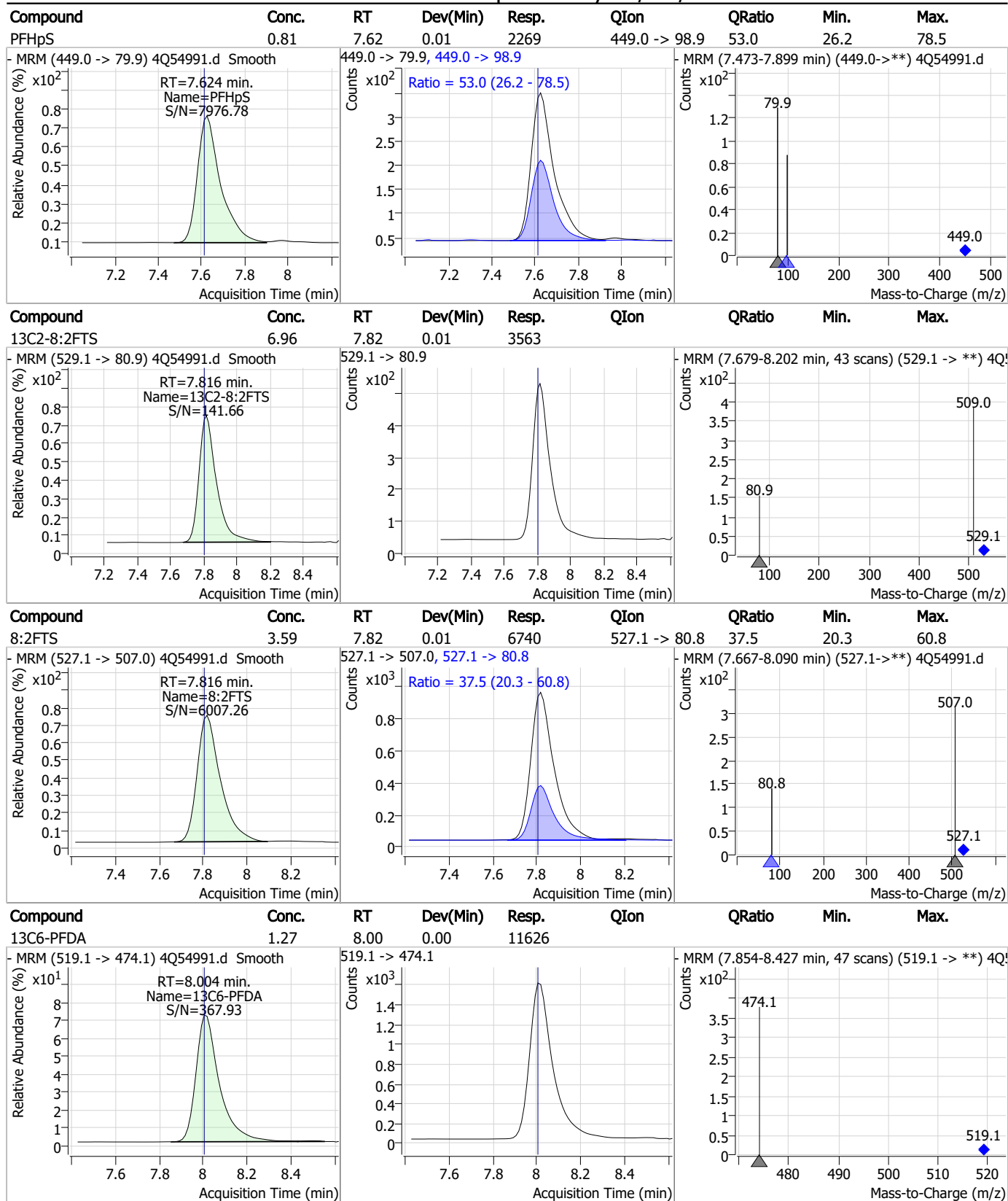
Perfluorinated Compounds by LC/MS/MS



7.3.2

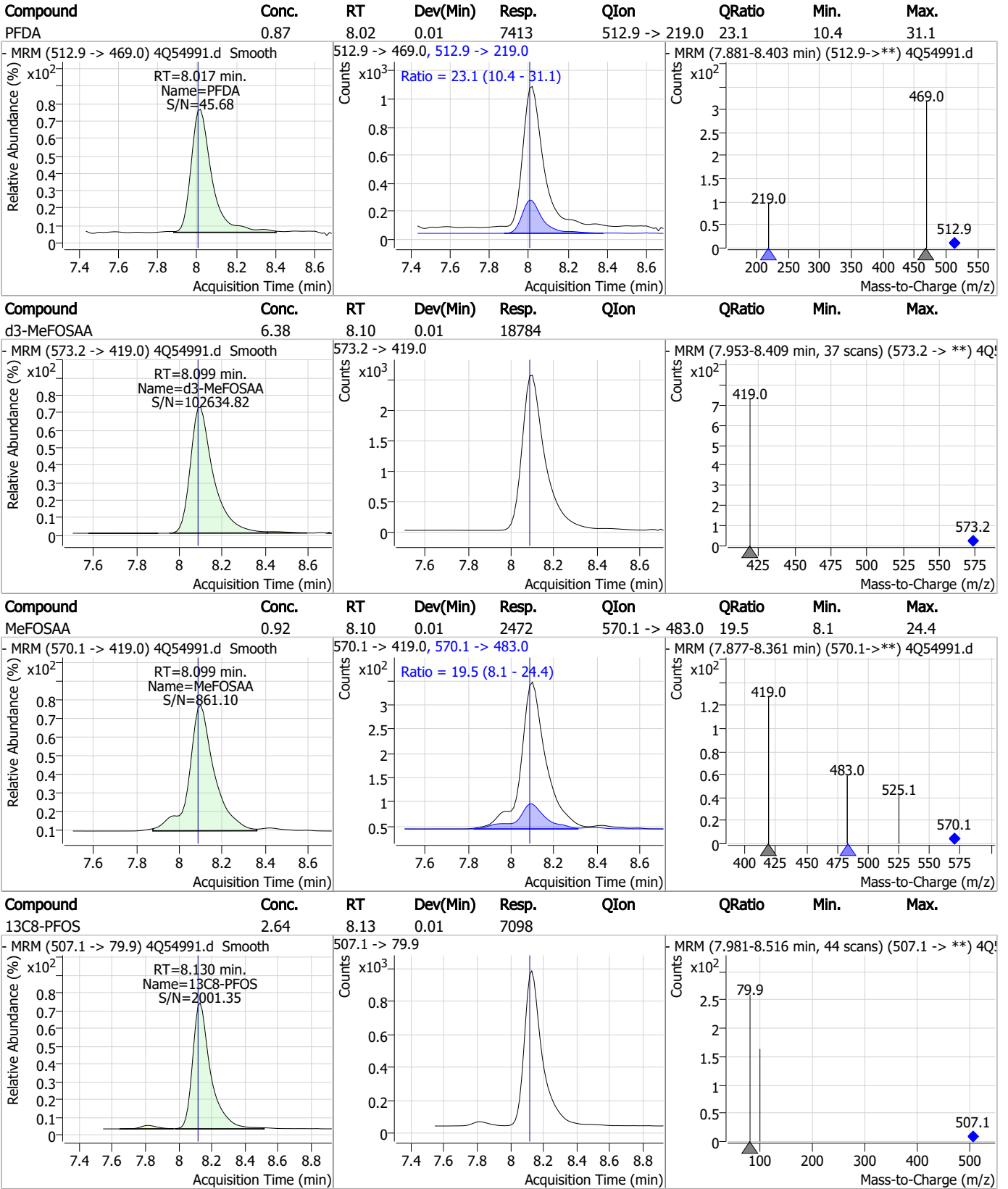
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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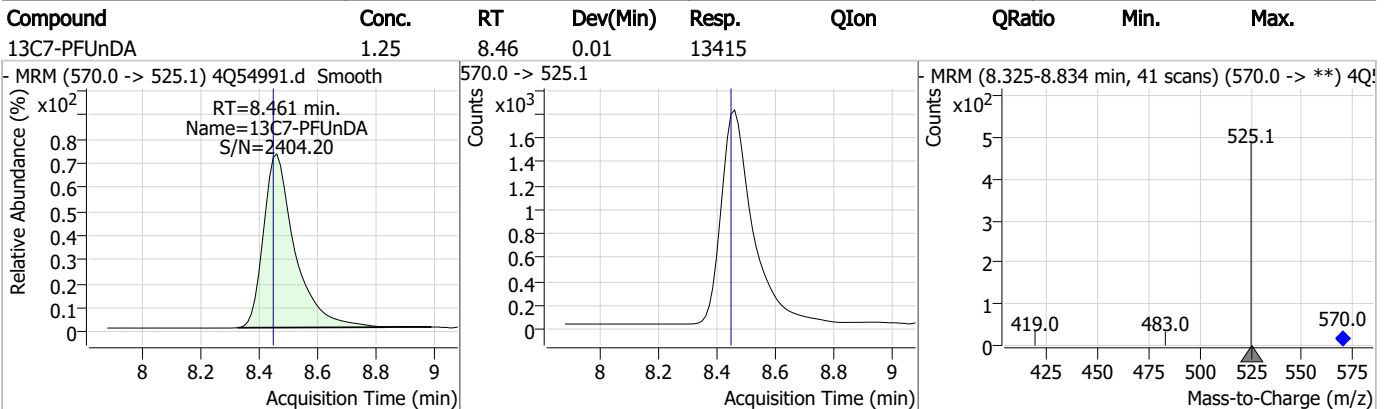
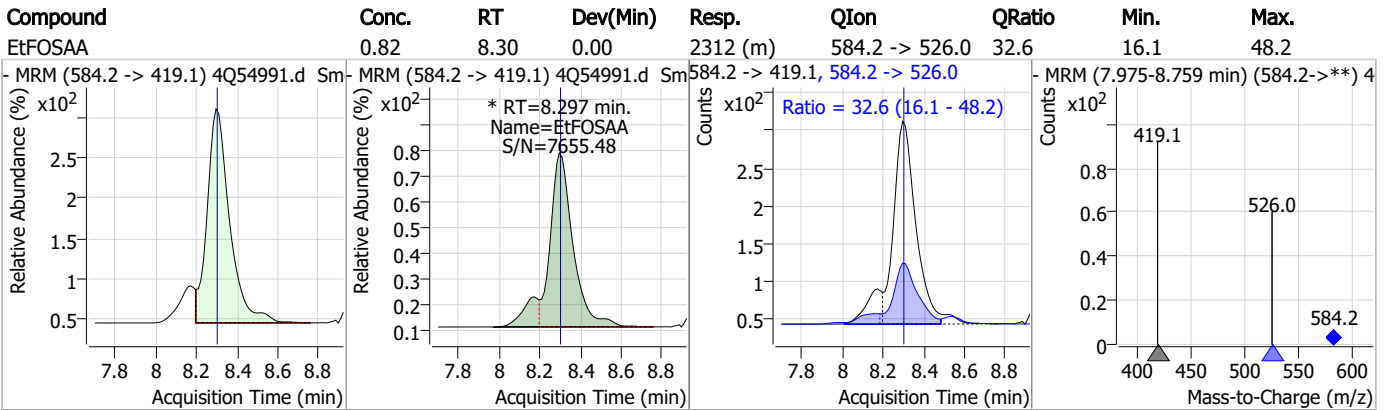
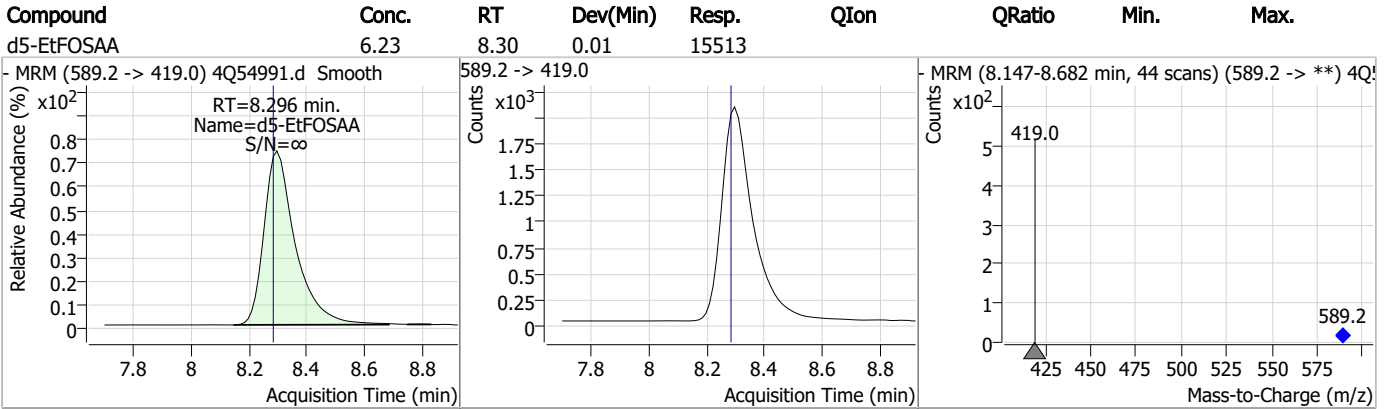
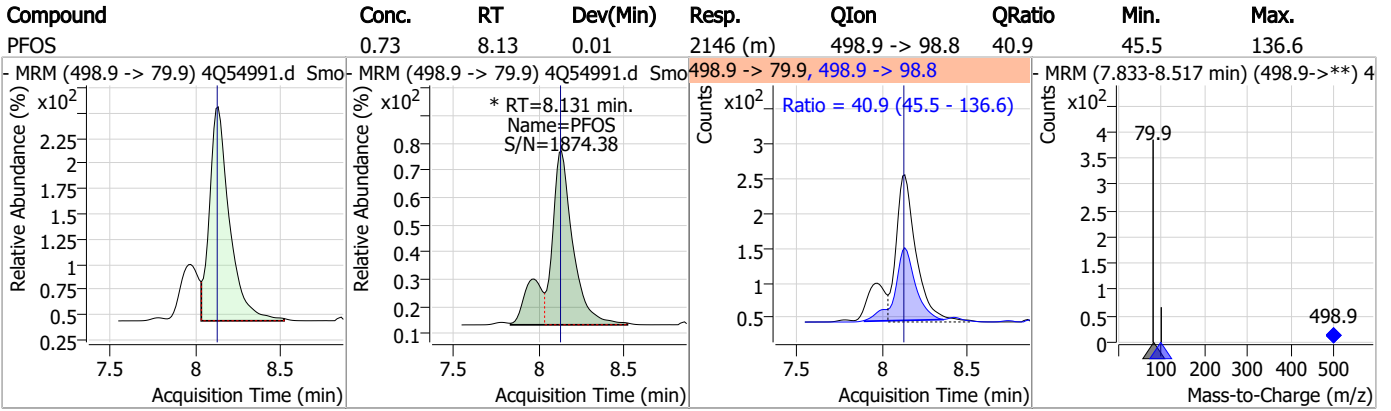
Perfluorinated Compounds by LC/MS/MS



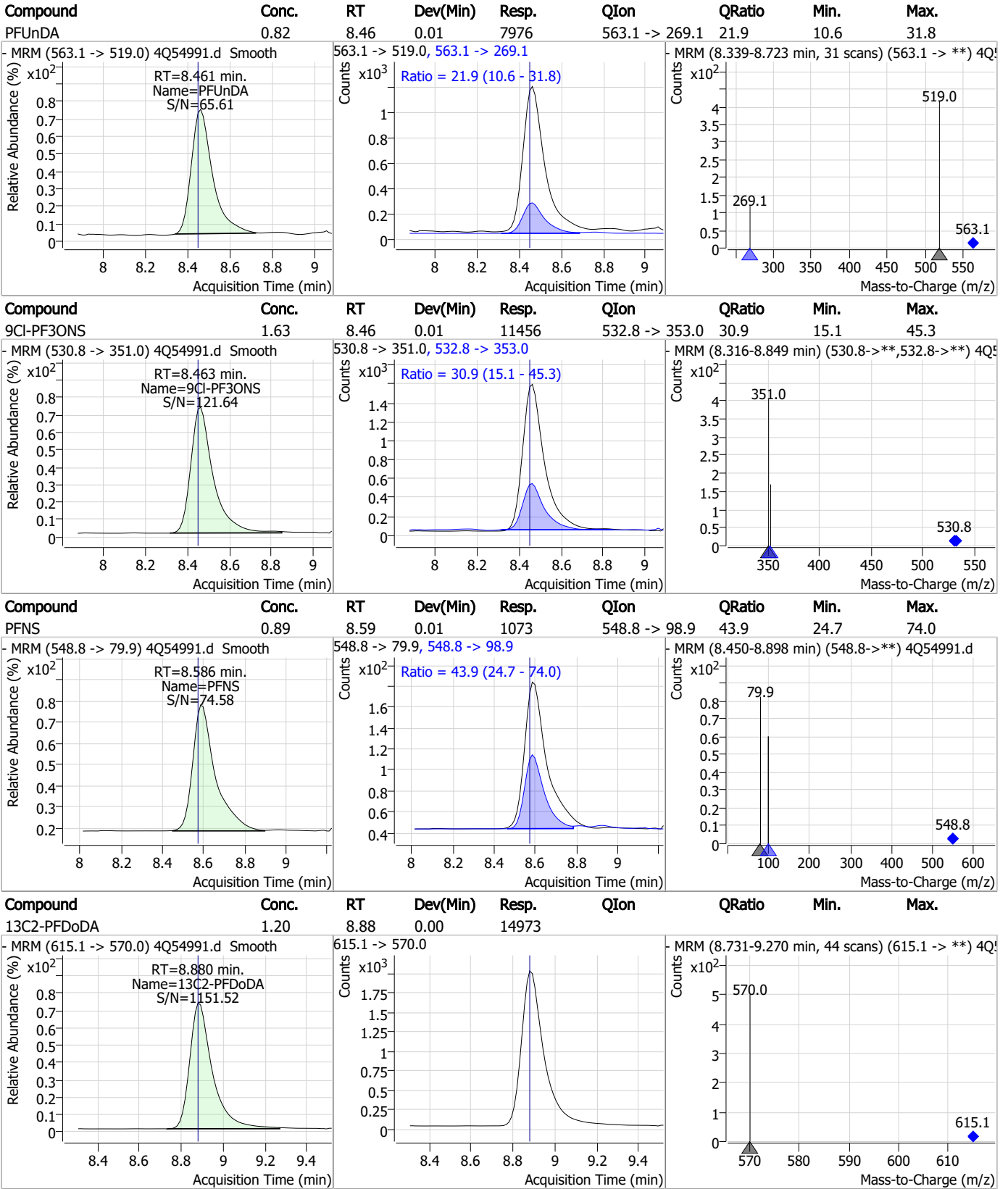
7.3.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

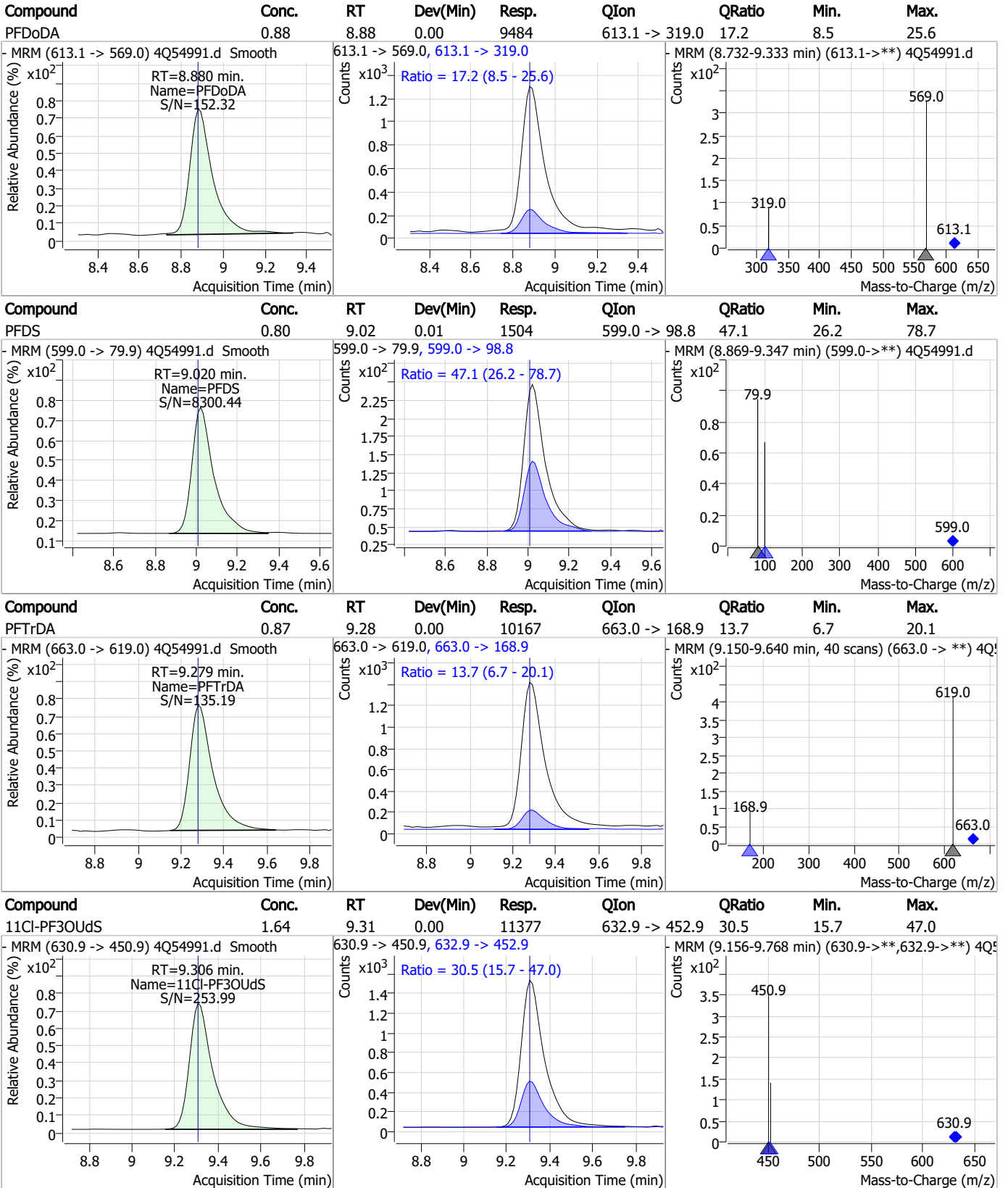


7.3.2

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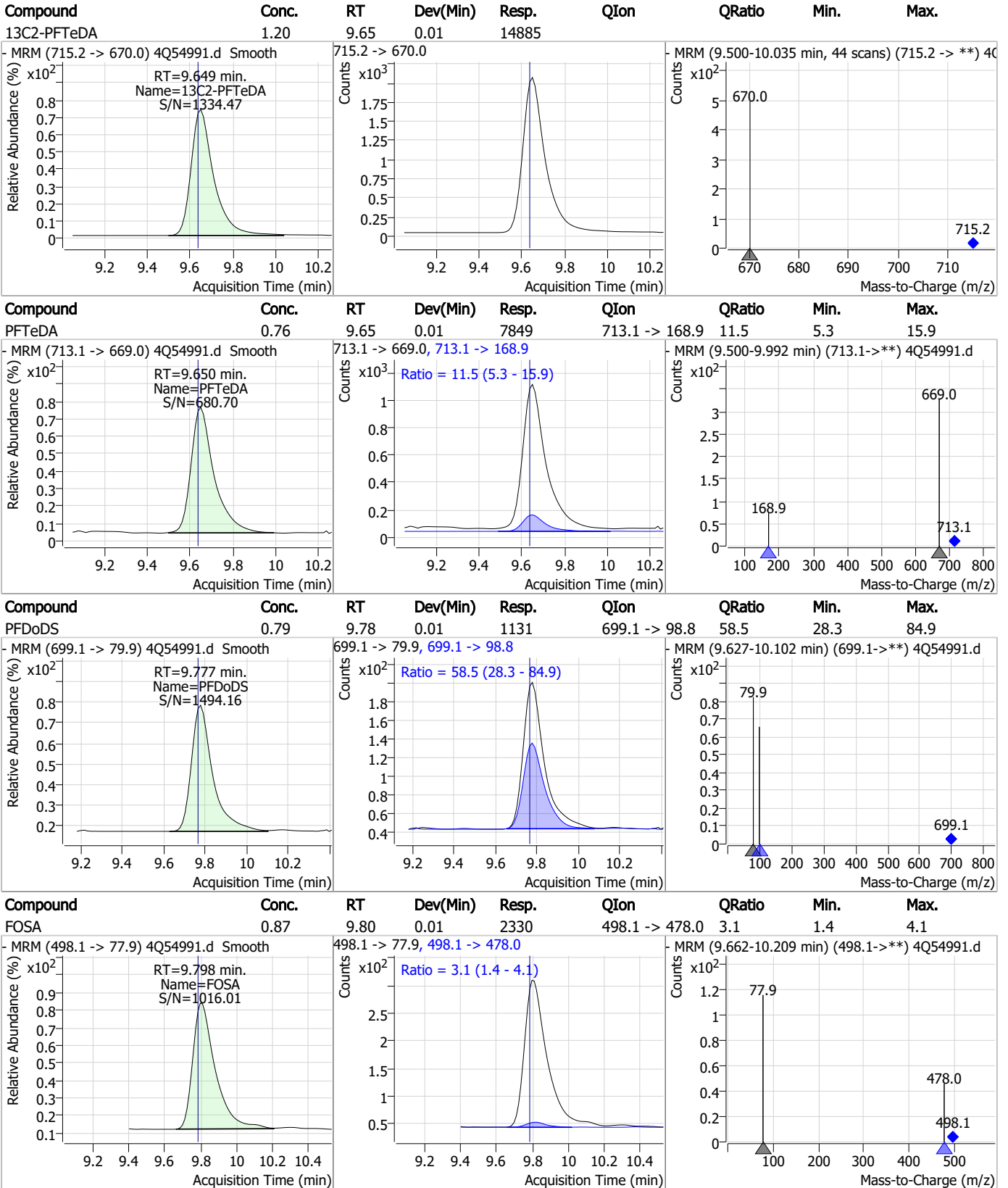
Perfluorinated Compounds by LC/MS/MS



7.3.2

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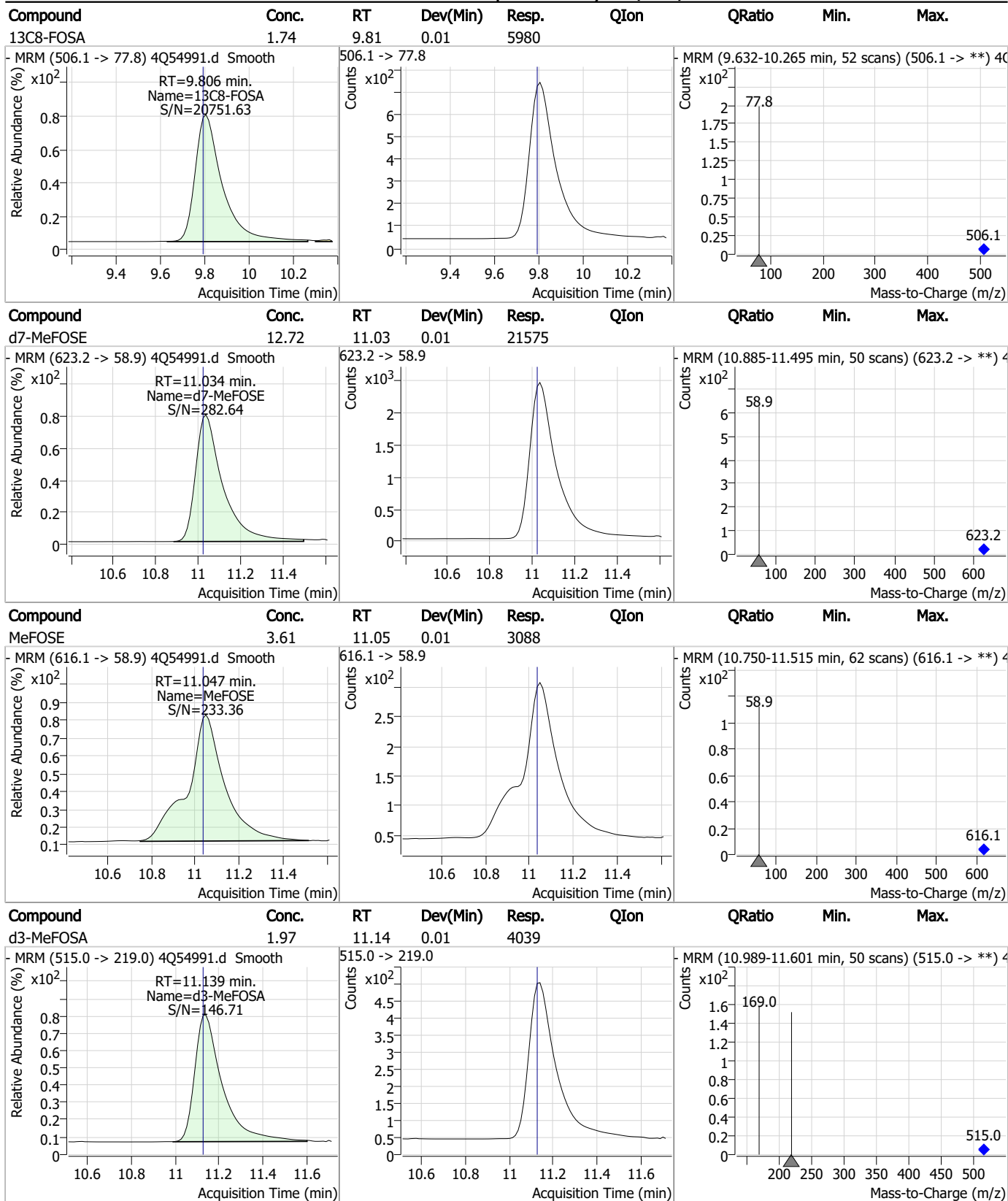
Perfluorinated Compounds by LC/MS/MS



7.3.2

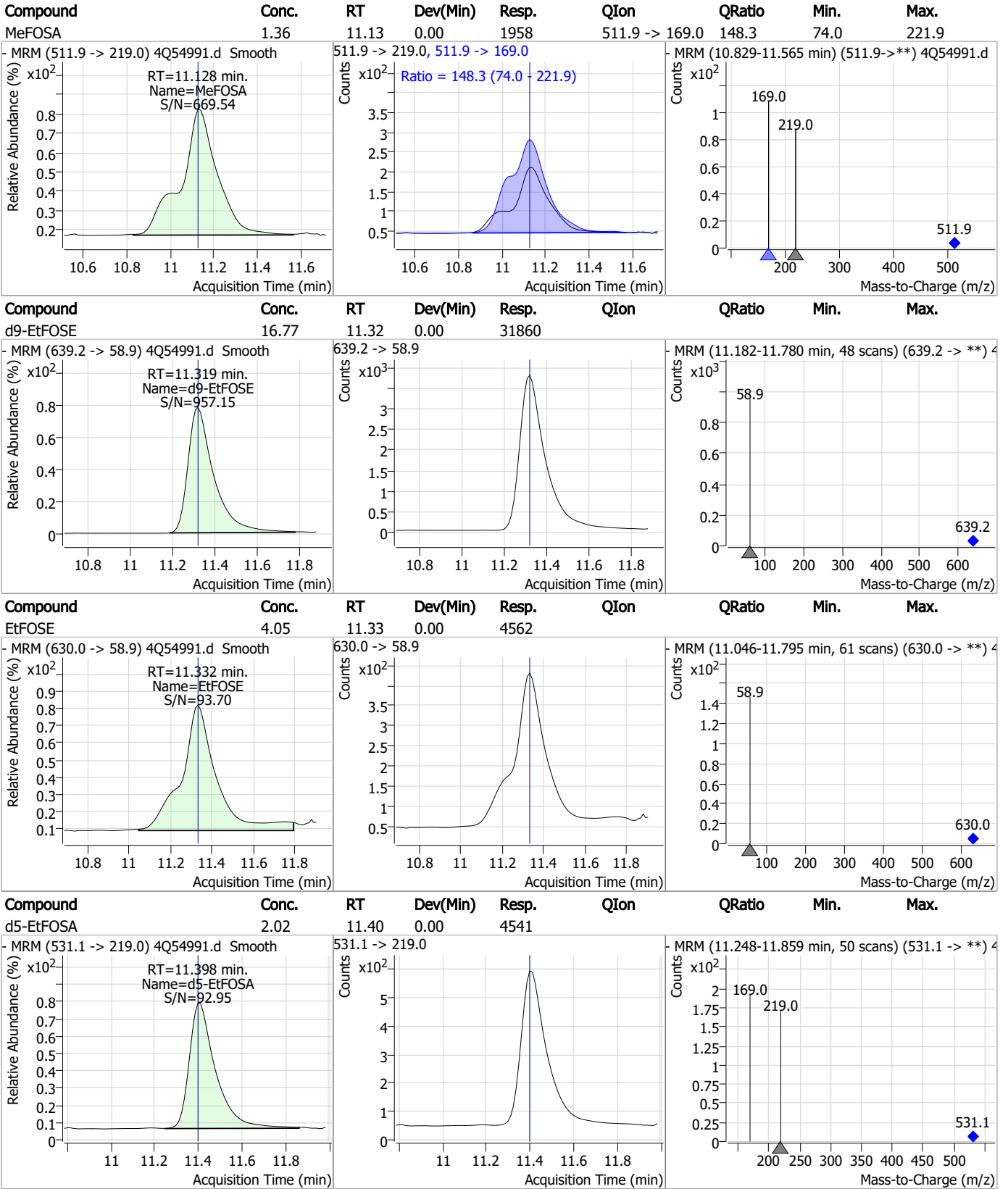
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Perfluorinated Compounds by LC/MS/MS



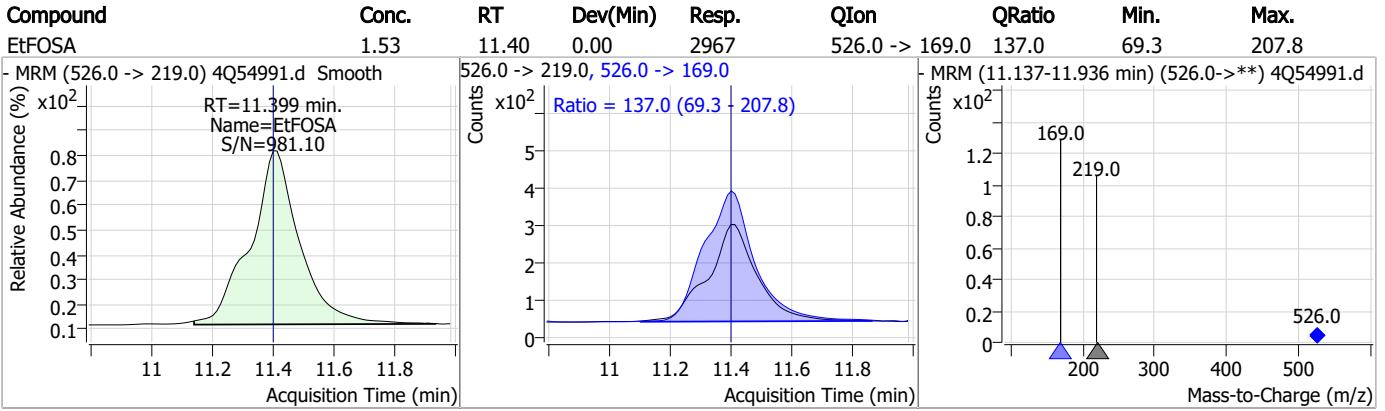
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS



7.3.2

7

Manual Integration Approval Summary

Sample Number: OP524-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q54991.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/11/23 01:54 Supervisor approved: 12/11/23 16:49 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q354.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 6:25:50 PM
 Sample Name : OP576-BS
 Vial : P3-A1
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op576,S7Q11,60,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.897	216.8 -> 171.9	101226	10.00 µg/L	0.000
M5-PFPeA	4.324	268.3 -> 223.0	34185	5.00 µg/L	0.012
M5-PFHxA	5.554	318.0 -> 273.0	30624	2.50 µg/L	0.000
M4-PFHpA	6.521	367.1 -> 322.0	26244	2.50 µg/L	0.012
M8-PFOA	7.177	421.1 -> 376.0	34728	2.50 µg/L	0.012
M9-PFNA	7.720	472.1 -> 427.0	13029	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	12427	1.25 µg/L	0.000
M7-PFUnDA	8.694	570.0 -> 525.1	16119	1.25 µg/L	0.012
M2-PFDoDA	9.124	615.1 -> 570.0	15232	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	6254	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	4895	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6684	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5402	2.50 µg/L	0.000
M8-PFOS	8.391	507.1 -> 79.9	4058	2.50 µg/L	0.012
M2-4:2FTS	5.217	329.1 -> 80.9	902	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	2079	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	3024	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	8722	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	52944	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7299	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	13729	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	16784	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	2313	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	2368	2.50 µg/L	0.000
13C4-PFOS	8.392	502.8 -> 79.9	5200	2.50 µg/L	0.012
13C3-PFBA	2.901	216.0 -> 172.0	50667	5.00 µg/L	0.012
18O2-PFHxS	7.292	403.0 -> 83.9	3951	2.50 µg/L	0.000
13C4-PFOA	7.178	417.1 -> 372.0	39406	2.50 µg/L	0.012
13C2-PFDA	8.215	515.1 -> 470.1	12157	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15696	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	26539	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	902	5.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-6:2FTS	6.939	429.1 -> 80.9	2079	5.19 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-8:2FTS	7.991	529.1 -> 80.9	3024	5.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15232	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.9%		
13C2-PFTeDA	9.855	715.2 -> 670.0	6254	0.98 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 78.6%		
13C3-PFBS	5.484	302.1 -> 79.9	6684	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.7%		
13C3-PFHxS	7.293	402.1 -> 79.9	5402	2.35 µg/L	0.000

7.3.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C4-PFBA	2.897	216.8 -> 171.9	101226	9.45 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C4-PFHpA	6.521	367.1 -> 322.0	26244	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.2%	
13C5-PFHxA	5.554	318.0 -> 273.0	30624	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C5-PFPeA	4.324	268.3 -> 223.0	34185	4.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C6-PFDA	8.215	519.1 -> 474.1	12427	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C7-PFUnDA	8.694	570.0 -> 525.1	16119	1.19 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C8-FOSA	9.530	506.1 -> 77.8	4895	1.79 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 71.7%	
13C8-PFOA	7.177	421.1 -> 376.0	34728	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C8-PFOS	8.391	507.1 -> 79.9	4058	2.22 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.8%	
13C9-PFNA	7.720	472.1 -> 427.0	13029	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
d3-MeFOSAA	8.261	573.2 -> 419.0	8722	4.35 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.1%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	52944	8.86 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.6%	
d3-MeFOSA	10.656	515.0 -> 219.0	2368	1.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 66.4%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7299	4.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 84.6%	
d7-MeFOSE	10.565	623.2 -> 58.9	13729	13.63 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 54.5%	
d9-EtFOSE	10.810	639.2 -> 58.9	16784	14.36 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 57.4%	
d5-EtFOSA	10.888	531.1 -> 219.0	2313	1.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 63.0%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	13999	9.88 µg/L	97
		327.1 -> 80.9	5119		
6:2FTS	6.939	427.1 -> 407.0	21654	9.85 µg/L	100
		427.1 -> 80.9	6788		
8:2FTS	7.992	527.1 -> 507.0	28654	9.92 µg/L	98
		527.1 -> 80.8	7463		
EtFOSAA	8.470	584.2 -> 419.1	3381	2.87 µg/L	m 90
		584.2 -> 526.0	1885		
FOSA	9.532	498.1 -> 77.9	5302	2.66 µg/L	100
		498.1 -> 478.0	218		
MeFOSAA	8.262	570.1 -> 419.0	4631	3.02 µg/L	m 95
		570.1 -> 483.0	906		
PFBA	2.893	212.8 -> 168.9	39421	10.75 µg/L	100
PFBS	5.485	298.7 -> 79.9	5902	2.34 µg/L	96
		298.7 -> 98.8	2542		
PFDA	8.215	512.9 -> 469.0	30256	2.65 µg/L	97
		512.9 -> 219.0	4849		
PFDoDA	9.125	613.1 -> 569.0	30448	2.58 µg/L	96
		613.1 -> 319.0	3528		
PFDS	9.290	599.0 -> 79.9	3264	2.44 µg/L	97

7.3.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1937			
PFHpA	6.522	363.1 -> 319.0	34729	2.68	µg/L	99
		363.1 -> 169.0	6304			
PFHpS	7.873	449.0 -> 79.9	5445	2.65	µg/L	99
		449.0 -> 98.9	2949			
PFHxA	5.556	313.0 -> 269.0	29922	2.65	µg/L	100
		313.0 -> 118.9	1501			
PFHxS	7.294	398.7 -> 79.9	5797	2.36	µg/L	m 91
		398.7 -> 98.9	2981			
PFNA	7.721	463.0 -> 419.0	27214	2.61	µg/L	100
		463.0 -> 219.0	6596			
PFNS	8.870	548.8 -> 79.9	4389	2.43	µg/L	93
		548.8 -> 98.9	2668			
PFOA	7.179	413.0 -> 369.0	46824	2.67	µg/L	100
		413.0 -> 169.0	9034			
PFOS	8.393	498.9 -> 79.9	5082	2.57	µg/L	m 83
		498.9 -> 98.8	2794			
PFPeA	4.314	263.0 -> 219.0	45277	5.31	µg/L	100
PFPeS	6.573	349.1 -> 79.9	6364	2.42	µg/L	98
		349.1 -> 98.9	3219			
PFTeDA	9.855	713.1 -> 669.0	20716	2.68	µg/L	97
		713.1 -> 168.9	1492			
PFTrDA	9.508	663.0 -> 619.0	27244	2.37	µg/L	100
		663.0 -> 168.9	2212			
PFUnDA	8.695	563.1 -> 519.0	27141	2.65	µg/L	98
		563.1 -> 269.1	3826			
11CI-PF3OUdS	9.563	630.9 -> 450.9	31324	4.97	µg/L	98
		632.9 -> 452.9	9949			
9CI-PF3ONS	8.733	530.8 -> 351.0	45611	5.15	µg/L	100
		532.8 -> 353.0	14631			
ADONA	6.771	376.9 -> 250.9	101790	5.39	µg/L	99
		376.9 -> 84.8	29949			
HFPO-DA	5.944	284.9 -> 168.9	29732	5.89	µg/L	98
		284.9 -> 184.9	4377			
3:3FTCA	3.749	241.0 -> 177.0	5456	12.54	µg/L	99
		241.0 -> 117.0	683			
5:3FTCA	6.187	341.0 -> 237.1	95704	65.34	µg/L	99
		341.0 -> 217.0	72244			
7:3FTCA	7.624	441.0 -> 316.9	44035	65.82	µg/L	99
		441.0 -> 336.9	98440			
EtFOSA	10.890	526.0 -> 219.0	6170	5.51	µg/L	m 61
		526.0 -> 169.0	8041			
EtFOSE	10.823	630.0 -> 58.9	9410	13.34	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	5181	5.29	µg/L	m 76
		511.9 -> 169.0	7158			
MeFOSE	10.578	616.1 -> 58.9	7987	13.59	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	1837	2.31	µg/L	91
		699.1 -> 98.8	1028			
NFDHA	5.437	295.0 -> 201.0	13135	5.13	µg/L	99
		295.0 -> 84.9	3431			
PFMBA	4.750	279.0 -> 85.1	29766	5.45	µg/L	100
PFMPA	3.443	229.0 -> 84.9	30801	5.40	µg/L	100
PFEESA	6.051	314.8 -> 134.9	43092	4.78	µg/L	100
		314.8 -> 82.9	1434			

= Qualifier out of range, m = manually integrated, + = Area summed

7.3.3
7

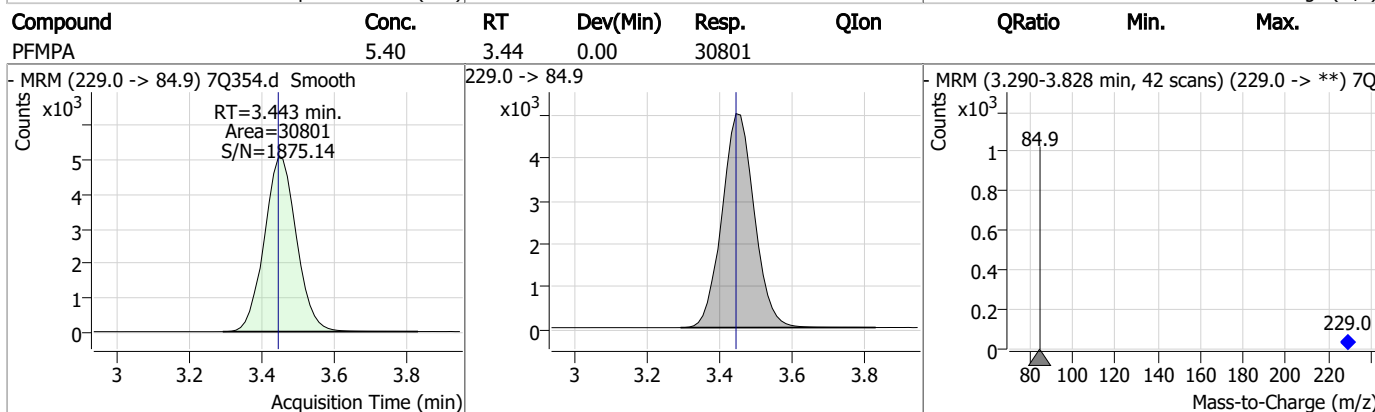
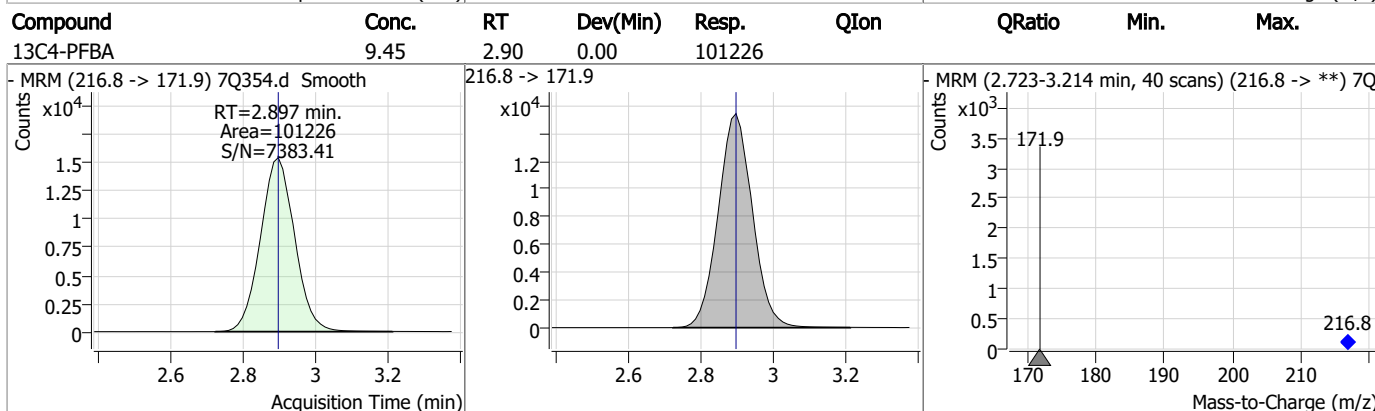
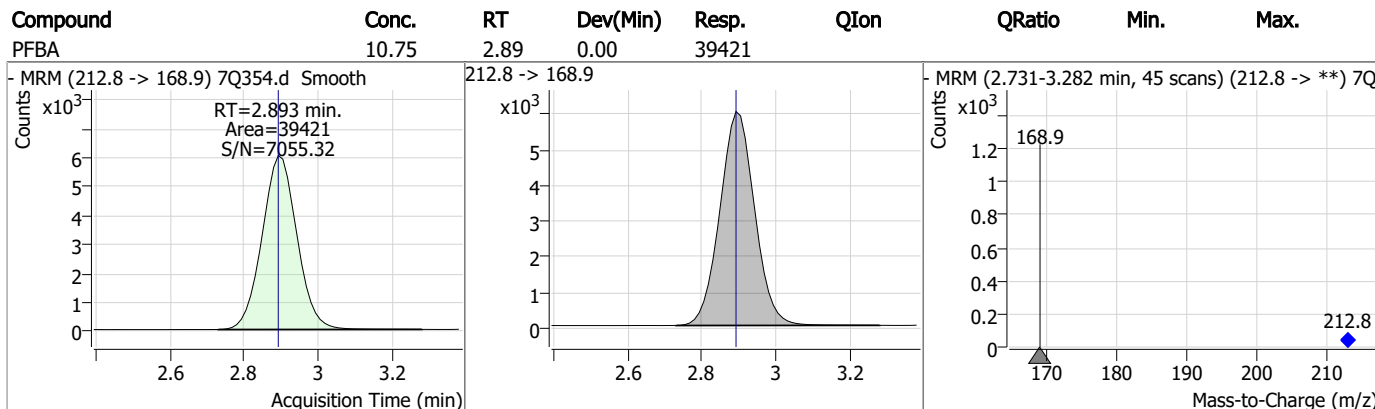
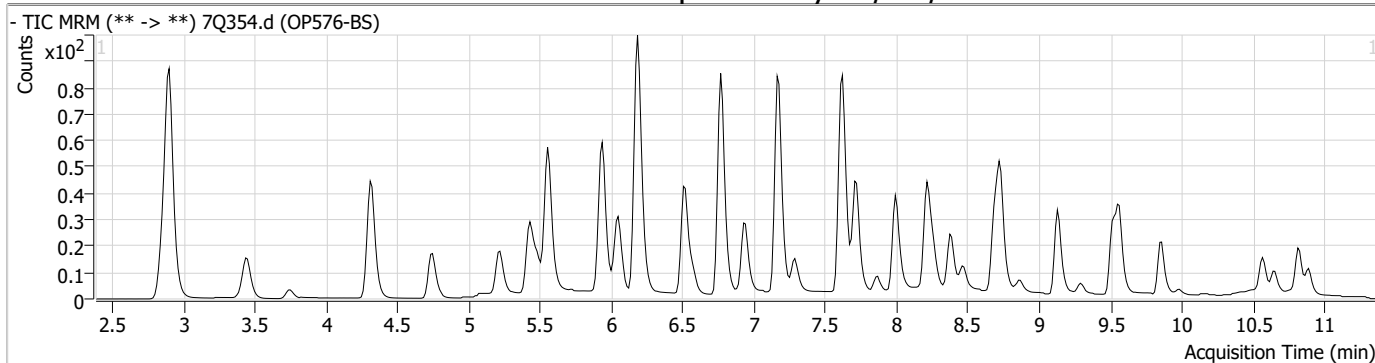
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.3.3

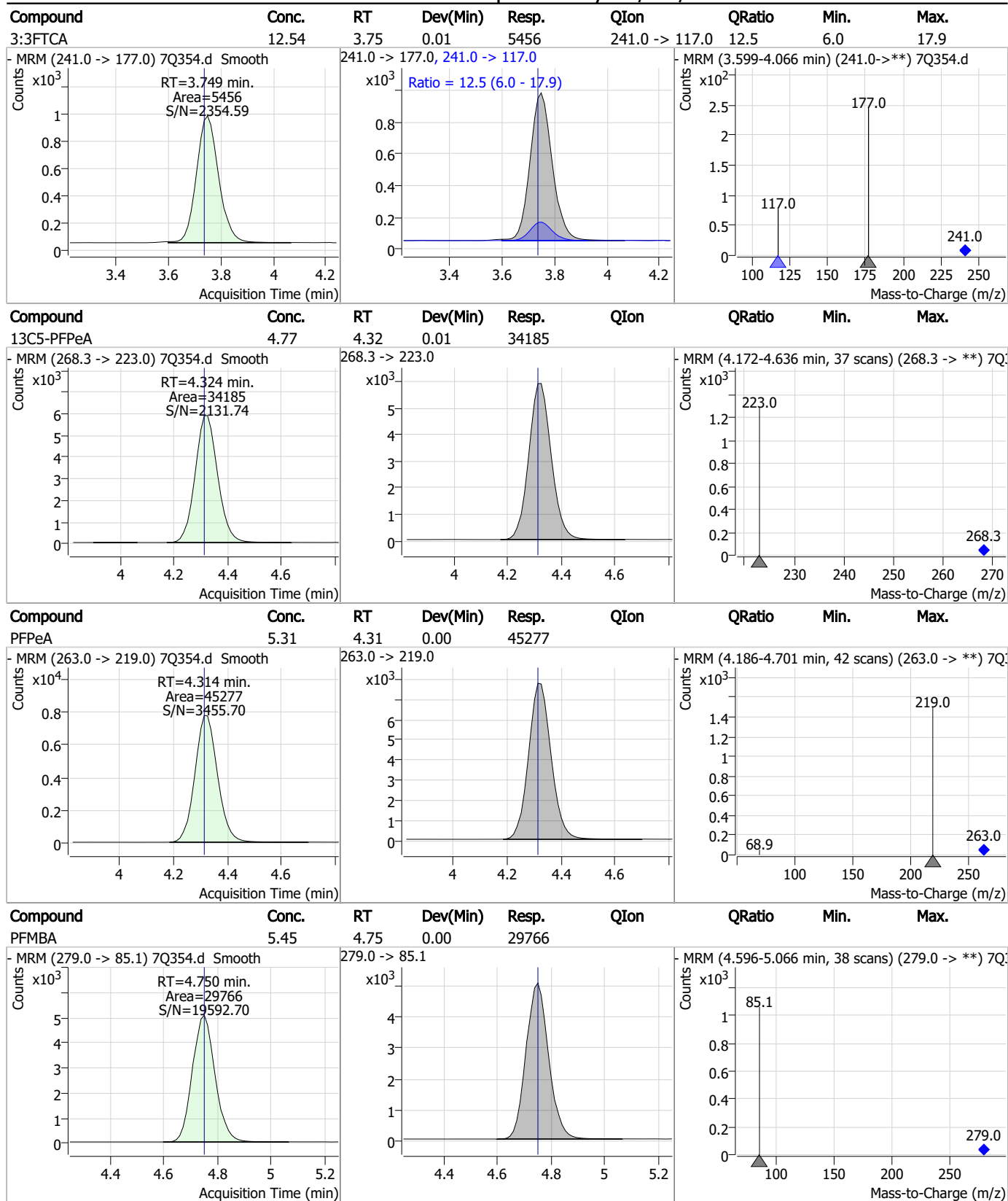
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Perfluorinated Compounds by LC/MS/MS



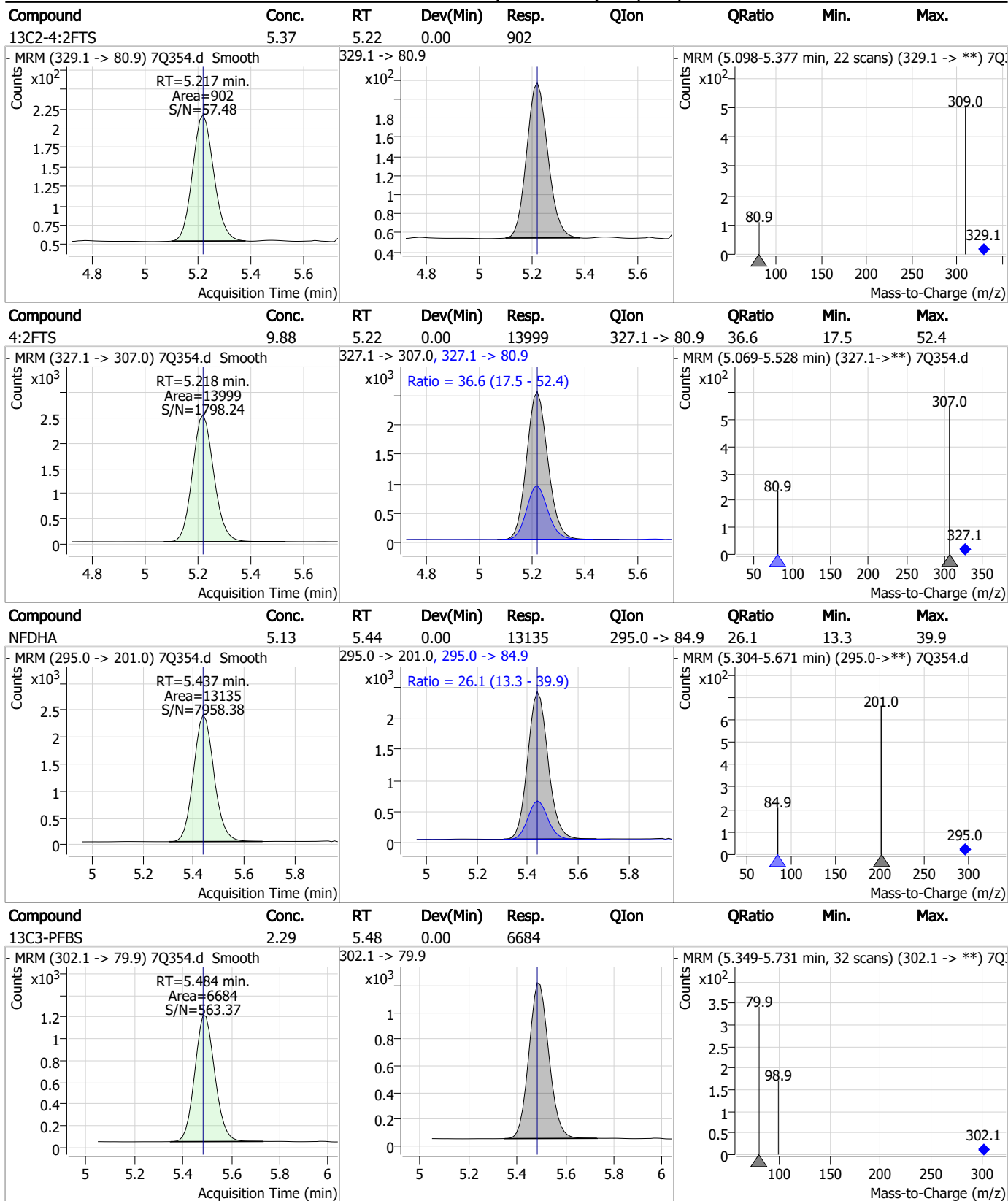
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Perfluorinated Compounds by LC/MS/MS



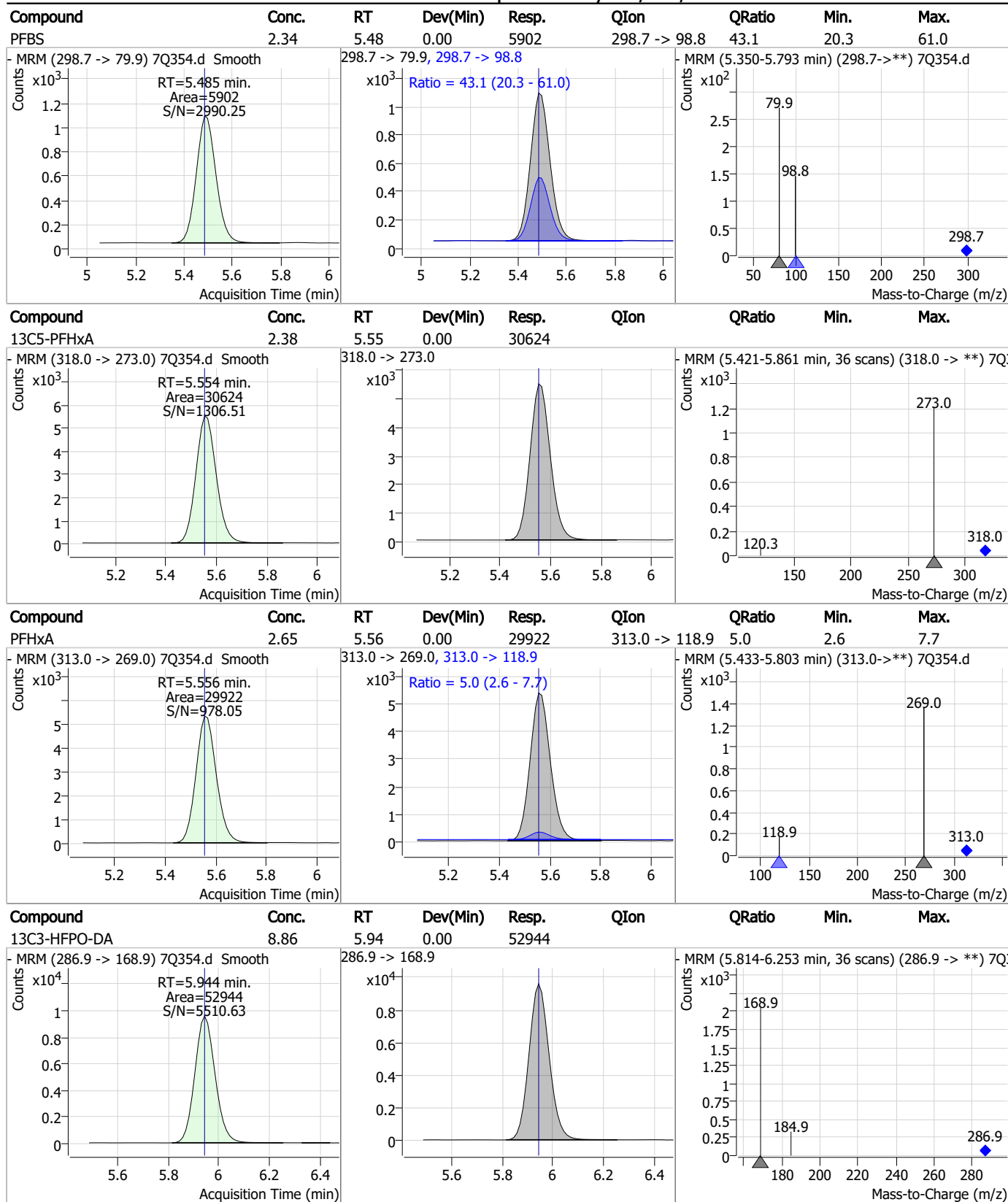
7.3.3
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Perfluorinated Compounds by LC/MS/MS



7.3.3
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Perfluorinated Compounds by LC/MS/MS

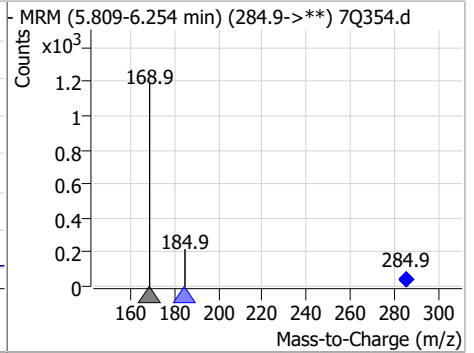
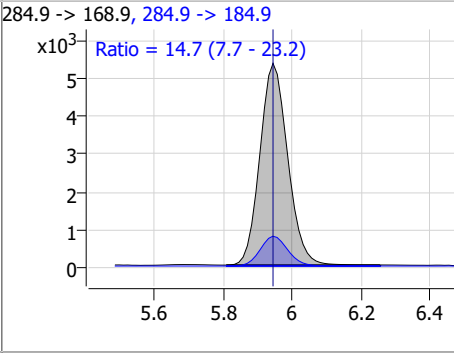
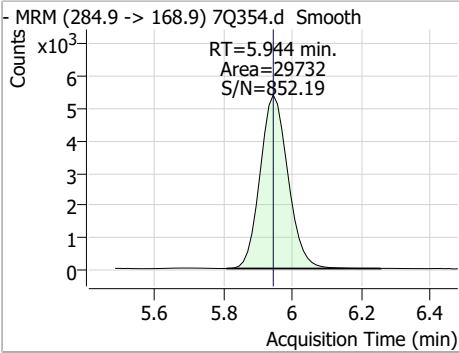


7.3.3
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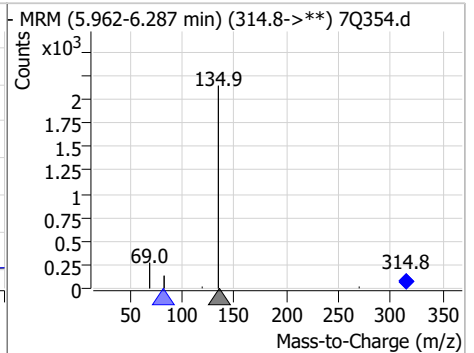
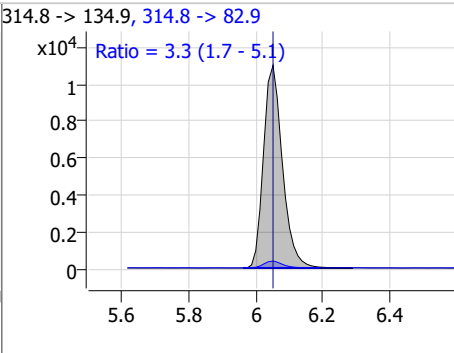
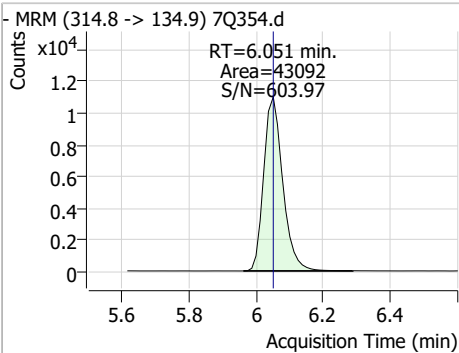


Perfluorinated Compounds by LC/MS/MS

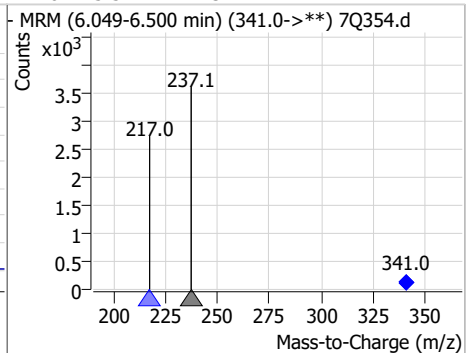
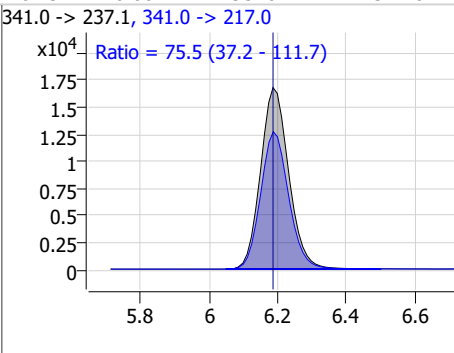
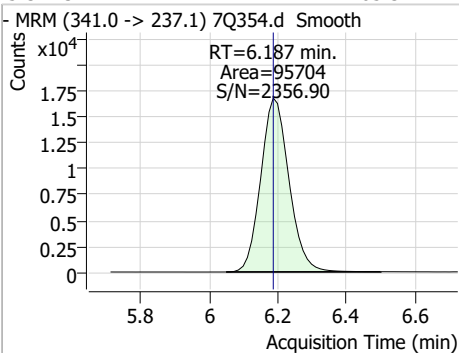
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.89	5.94	0.00	29732	284.9 -> 184.9	14.7	7.7	23.2



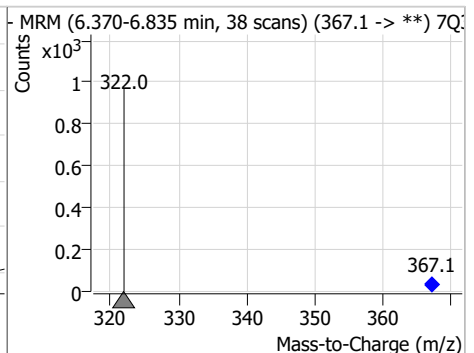
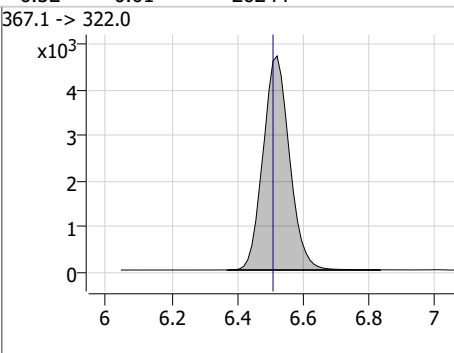
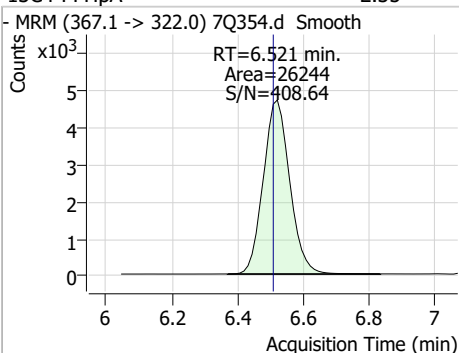
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.78	6.05	0.00	43092	314.8 -> 82.9	3.3	1.7	5.1



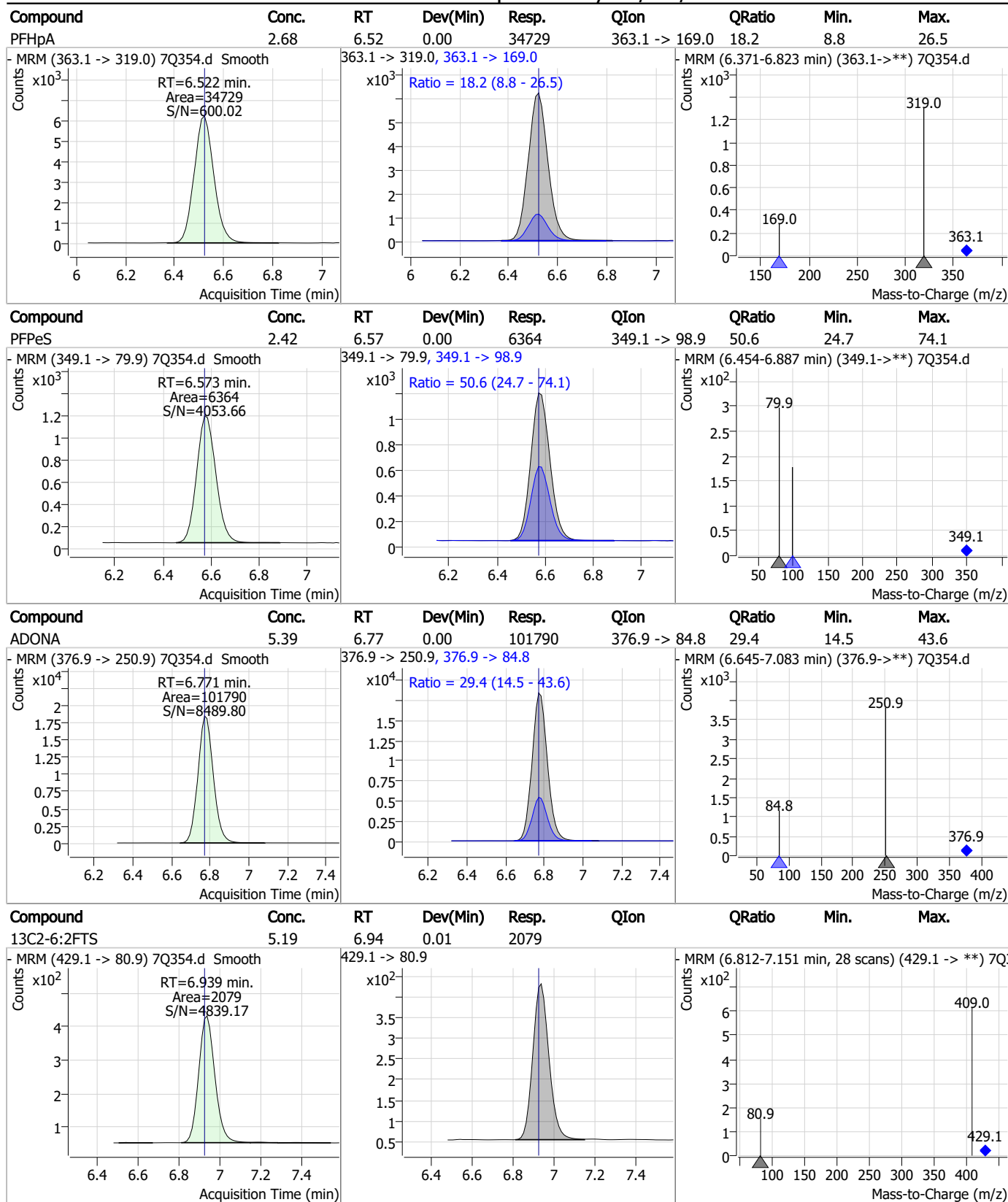
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	65.34	6.19	0.00	95704	341.0 -> 217.0	75.5	37.2	111.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.35	6.52	0.01	26244	367.1 -> 322.0			

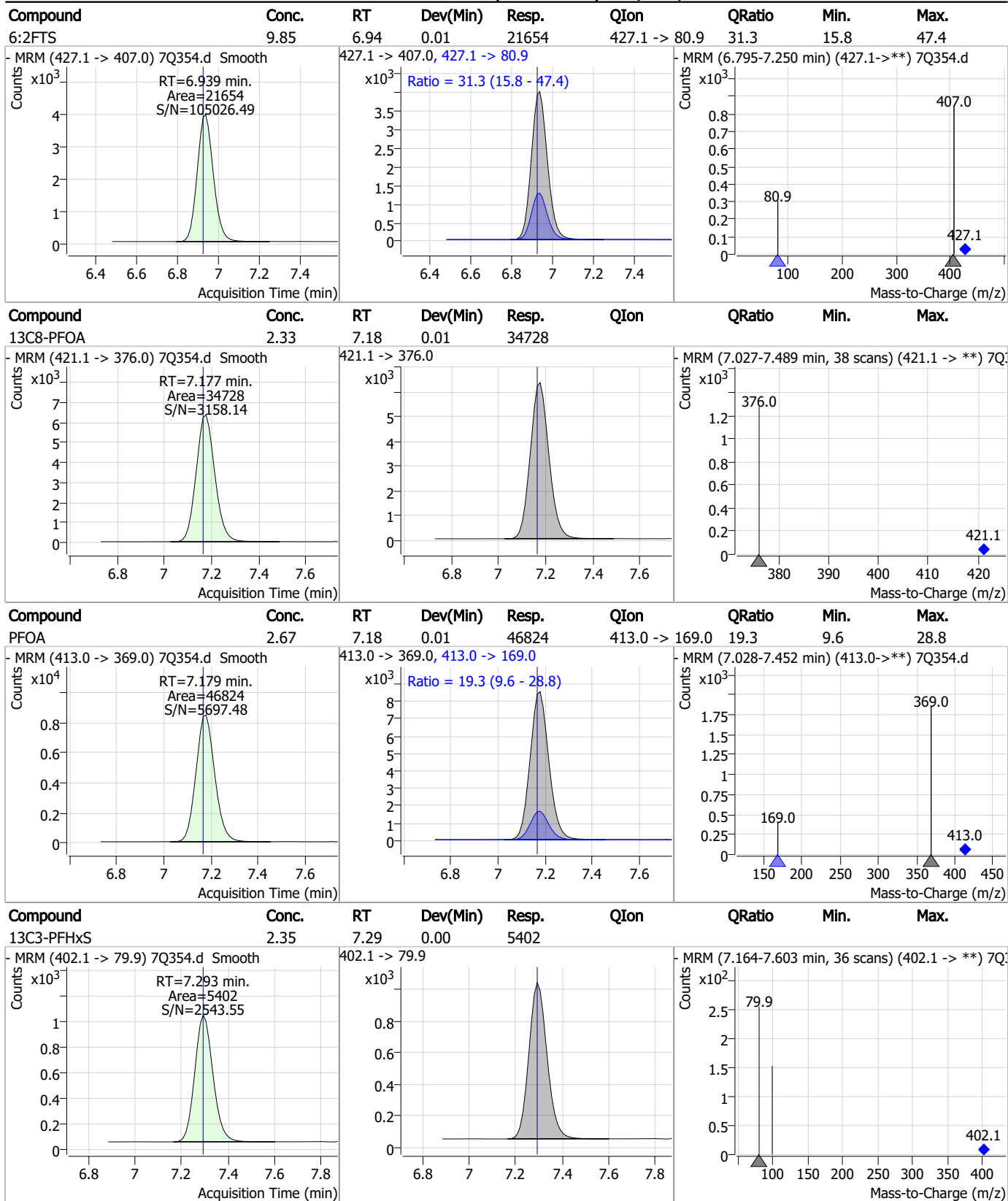


Perfluorinated Compounds by LC/MS/MS



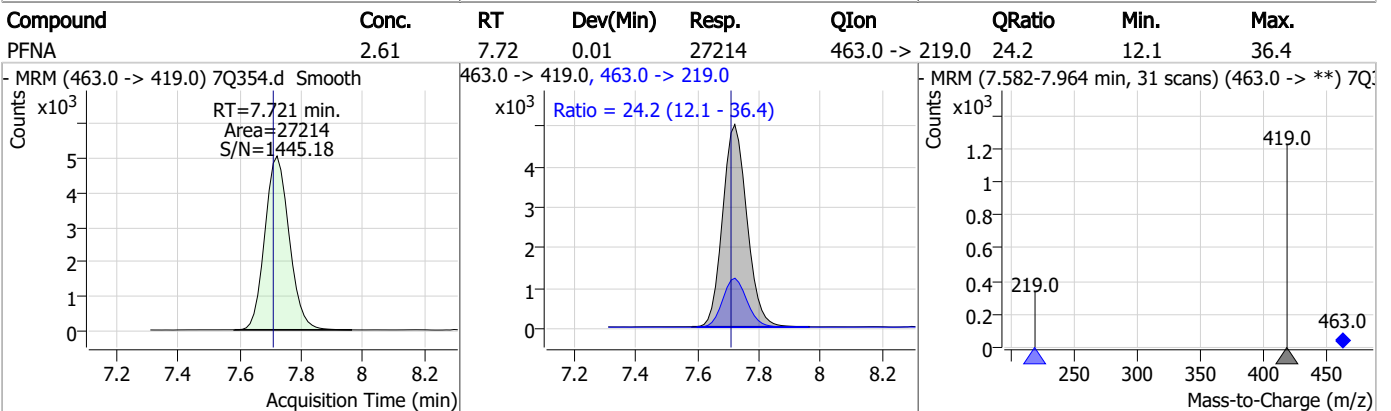
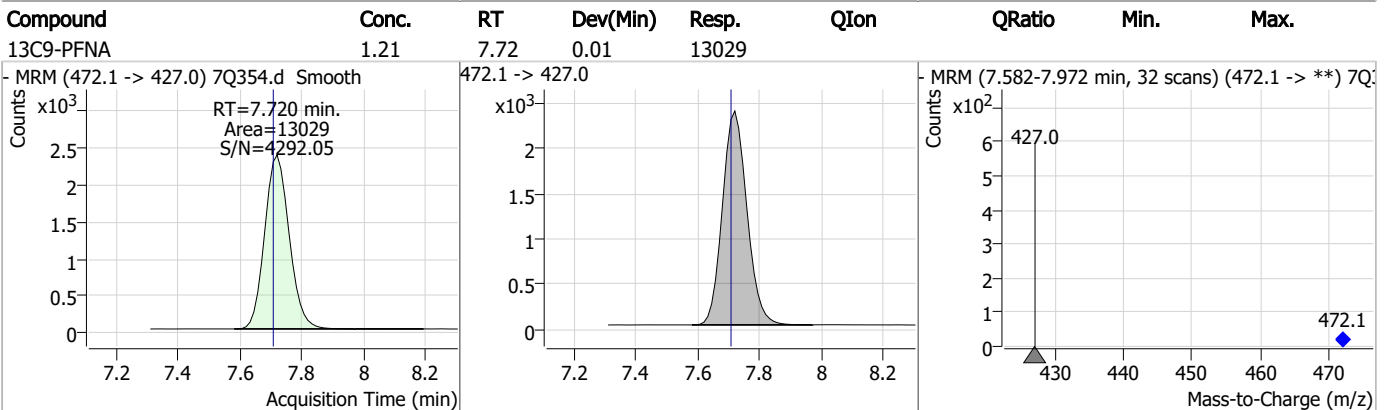
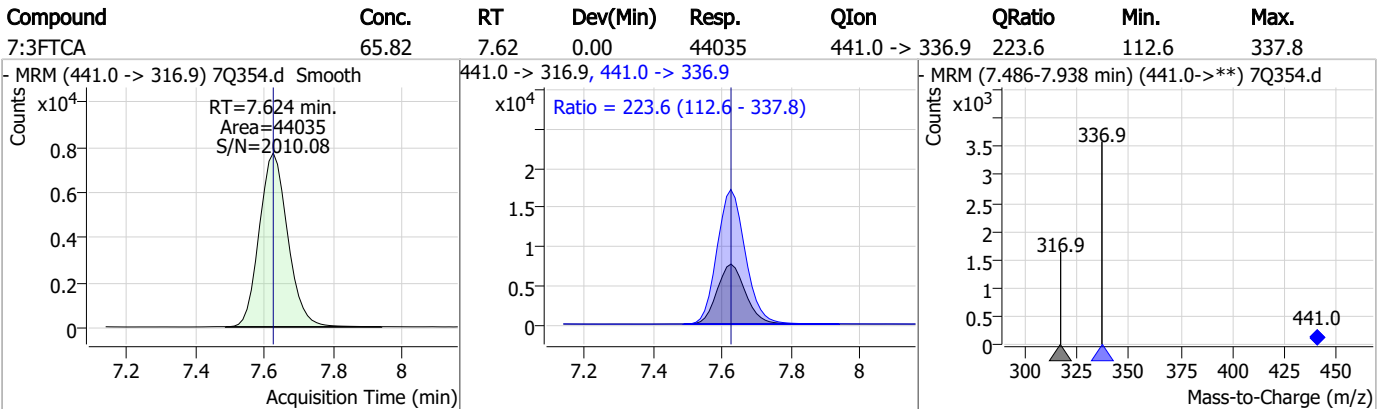
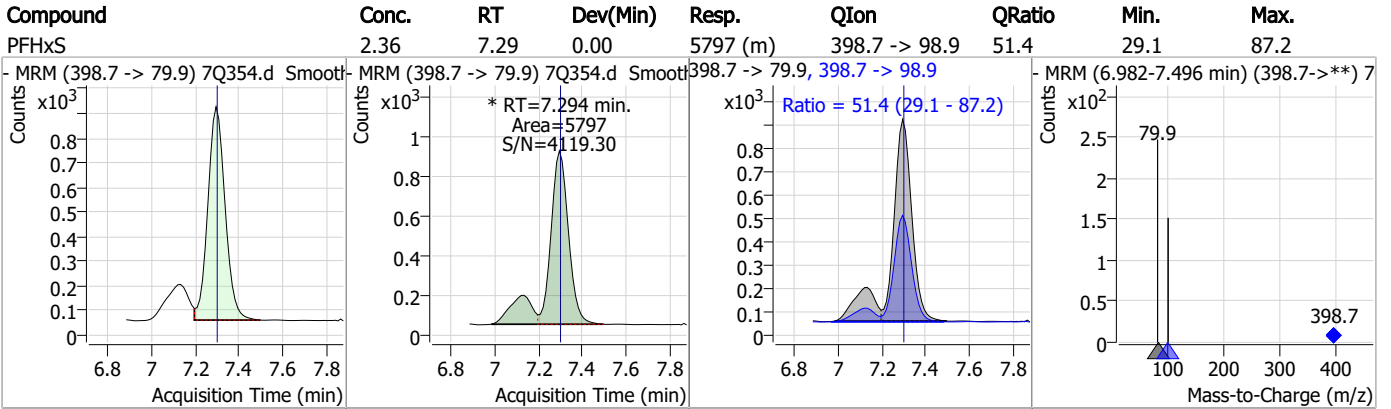
7.3.3
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Perfluorinated Compounds by LC/MS/MS



7.3.3
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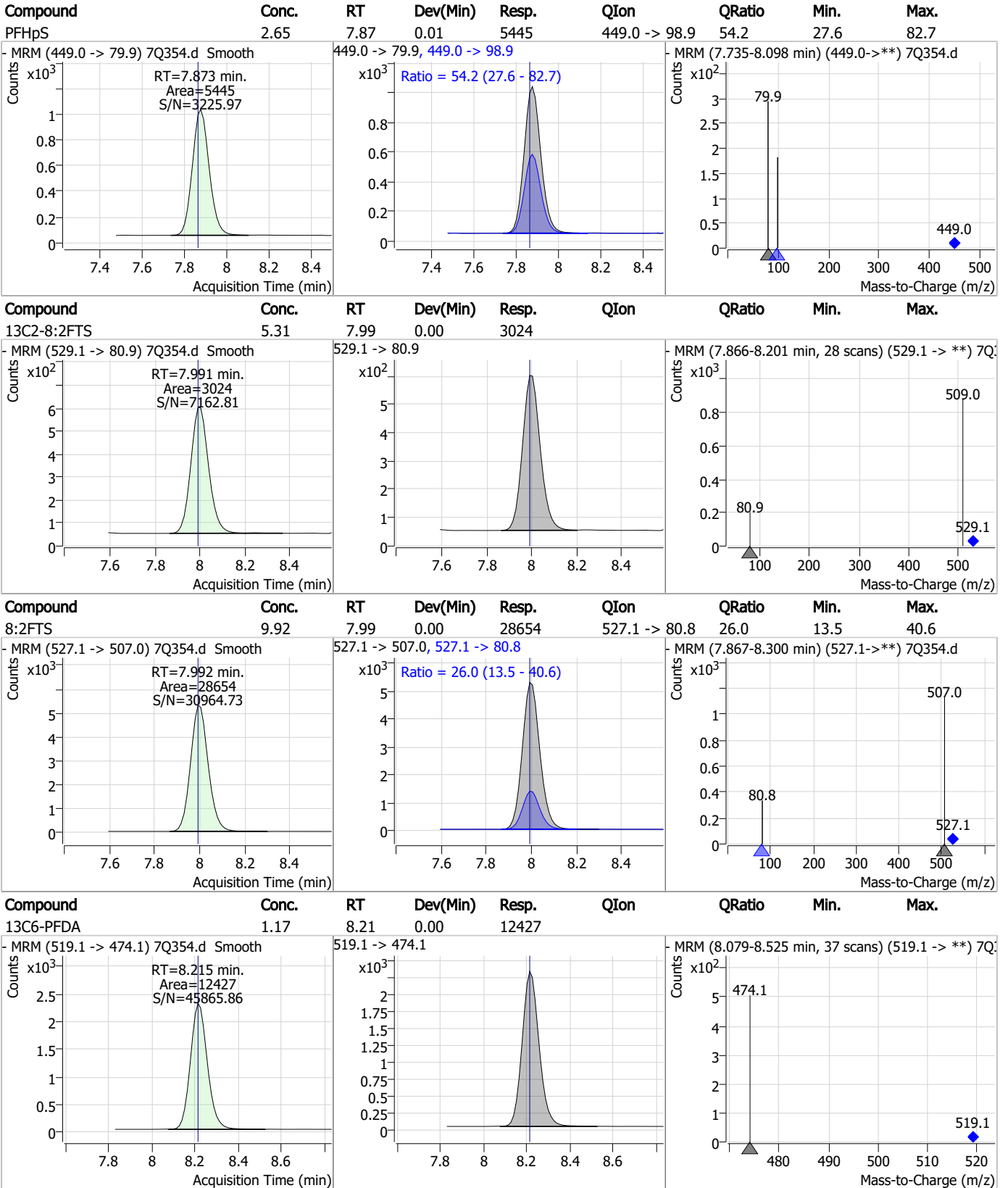
Perfluorinated Compounds by LC/MS/MS



7.3.3

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Perfluorinated Compounds by LC/MS/MS

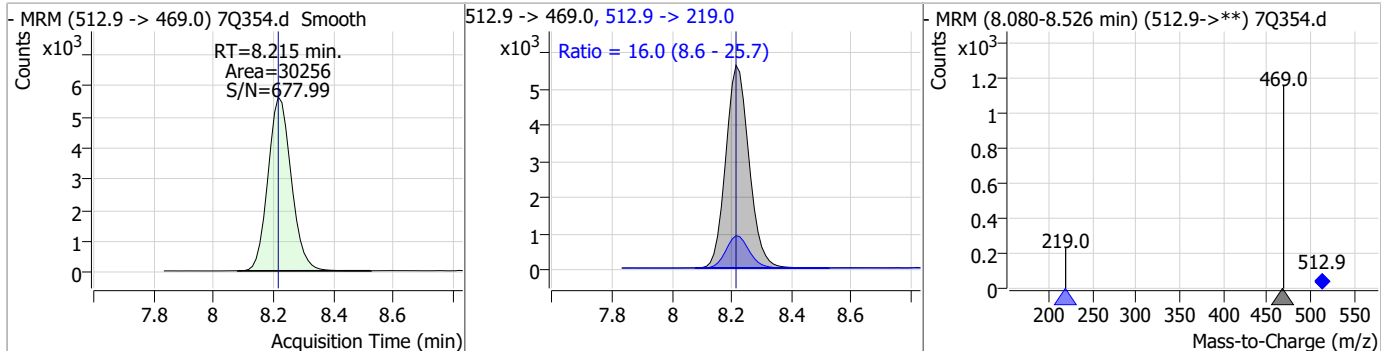


7.3.3

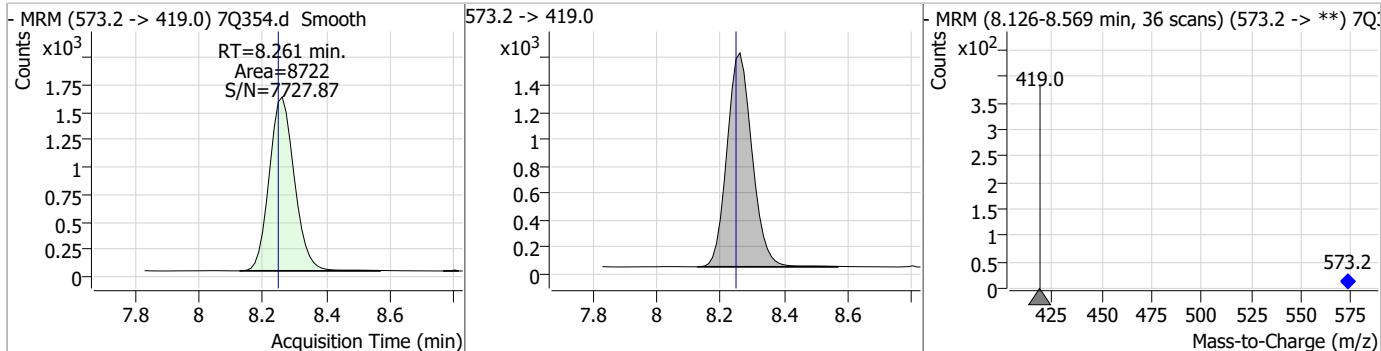
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Perfluorinated Compounds by LC/MS/MS

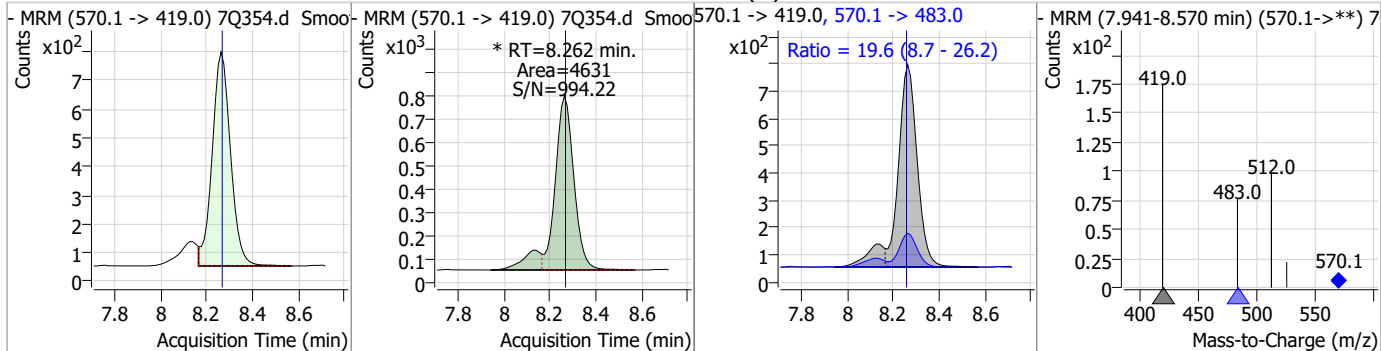
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.65	8.22	0.00	30256	512.9 -> 219.0	16.0	8.6	25.7



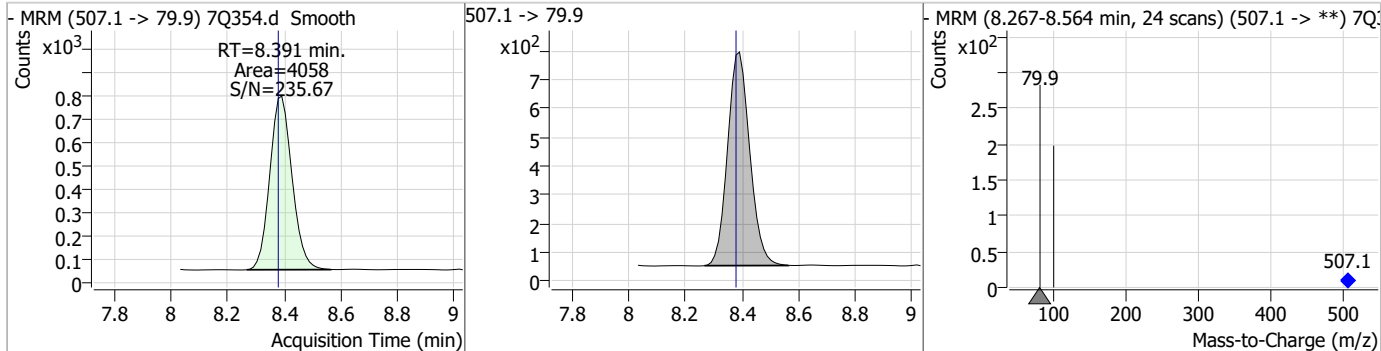
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.35	8.26	0.01	8722				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	3.02	8.26	0.00	4631 (m)	570.1 -> 483.0	19.6	8.7	26.2

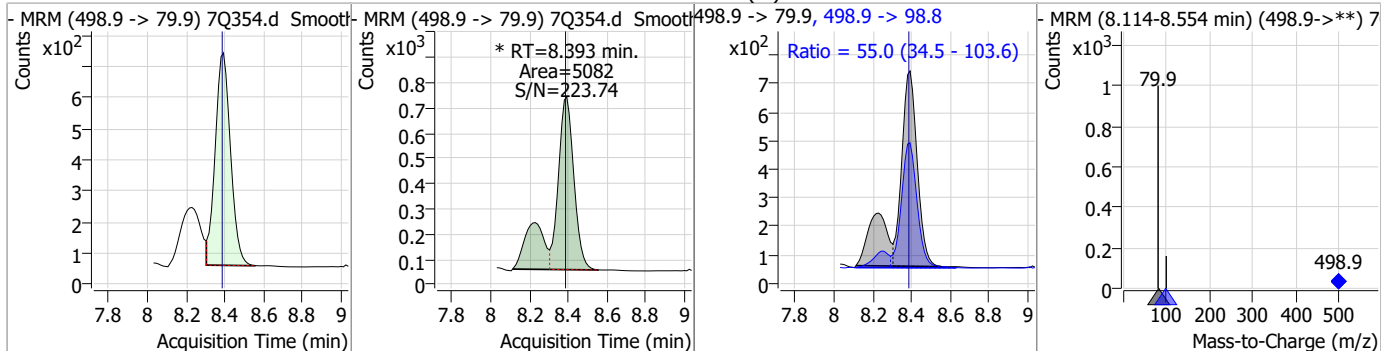


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.22	8.39	0.01	4058				

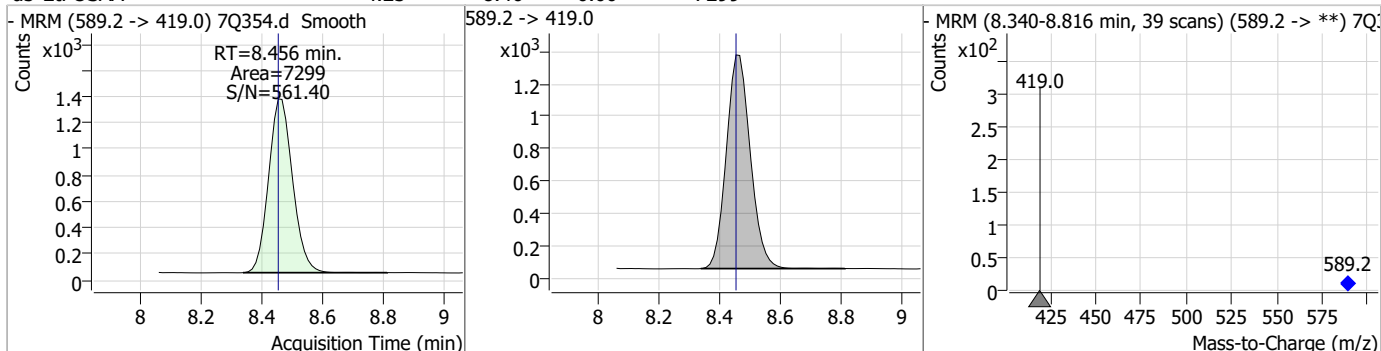


Perfluorinated Compounds by LC/MS/MS

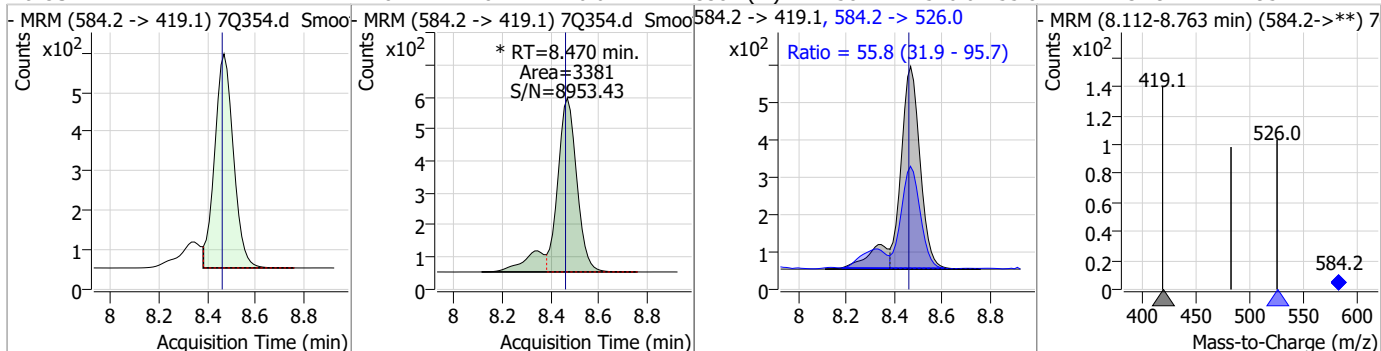
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.57	8.39	0.01	5082 (m)	498.9 -> 98.8	55.0	34.5	103.6



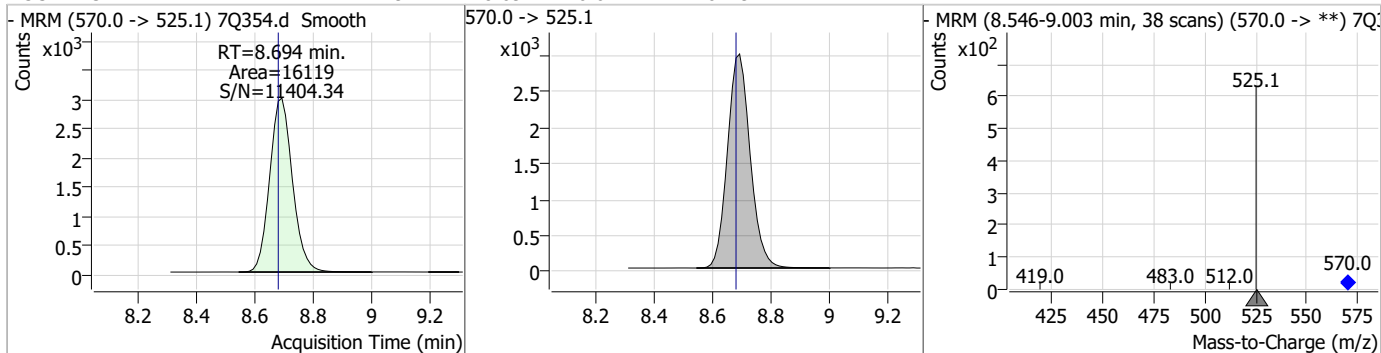
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.23	8.46	0.00	7299				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.87	8.47	0.01	3381 (m)	584.2 -> 526.0	55.8	31.9	95.7

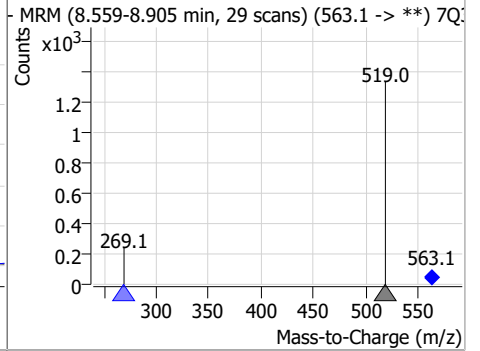
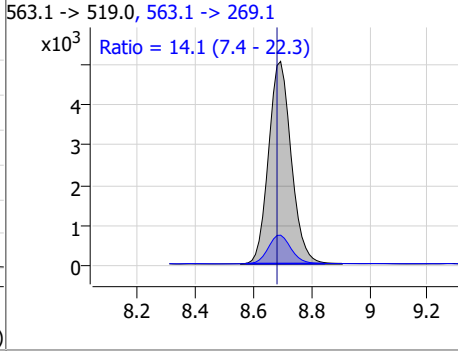
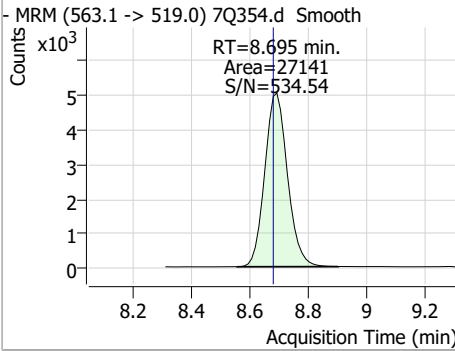


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.19	8.69	0.01	16119				

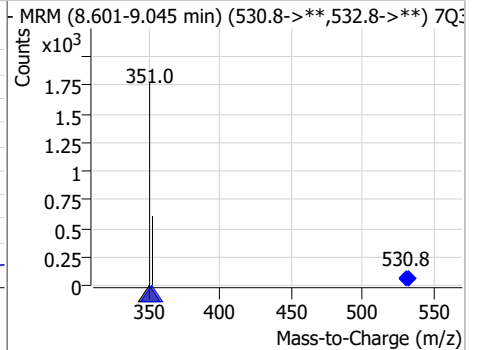
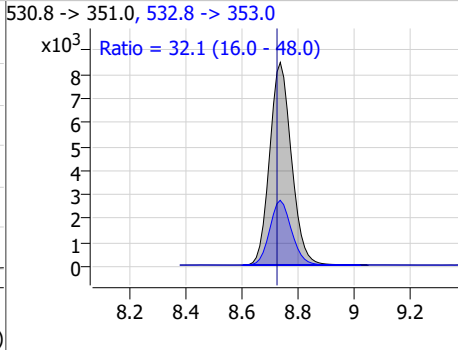
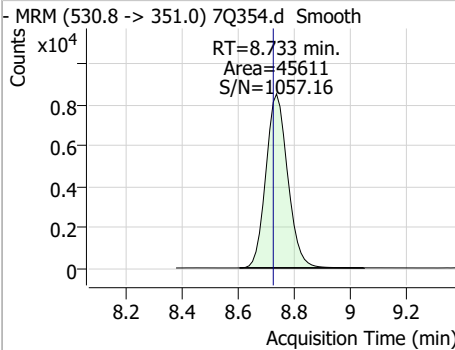


Perfluorinated Compounds by LC/MS/MS

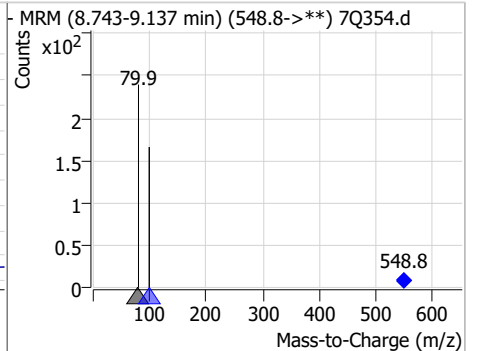
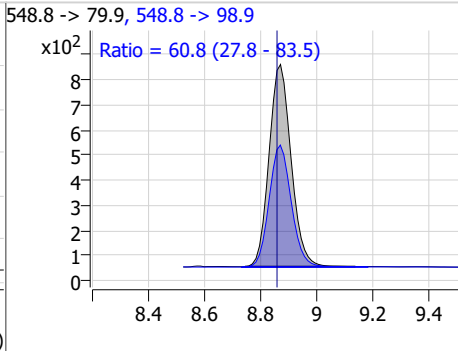
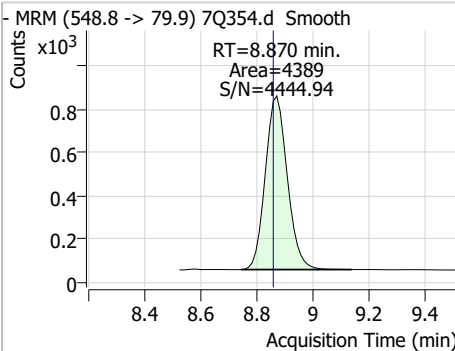
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	2.65	8.69	0.01	27141	563.1 -> 269.1	14.1	7.4	22.3



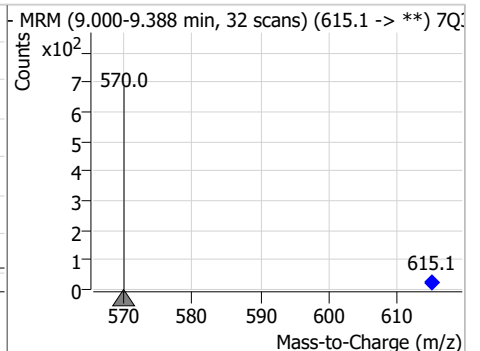
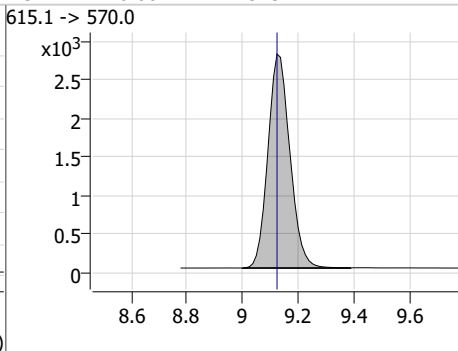
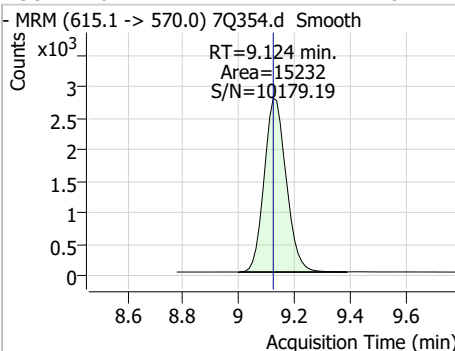
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	5.15	8.73	0.01	45611	532.8 -> 353.0	32.1	16.0	48.0



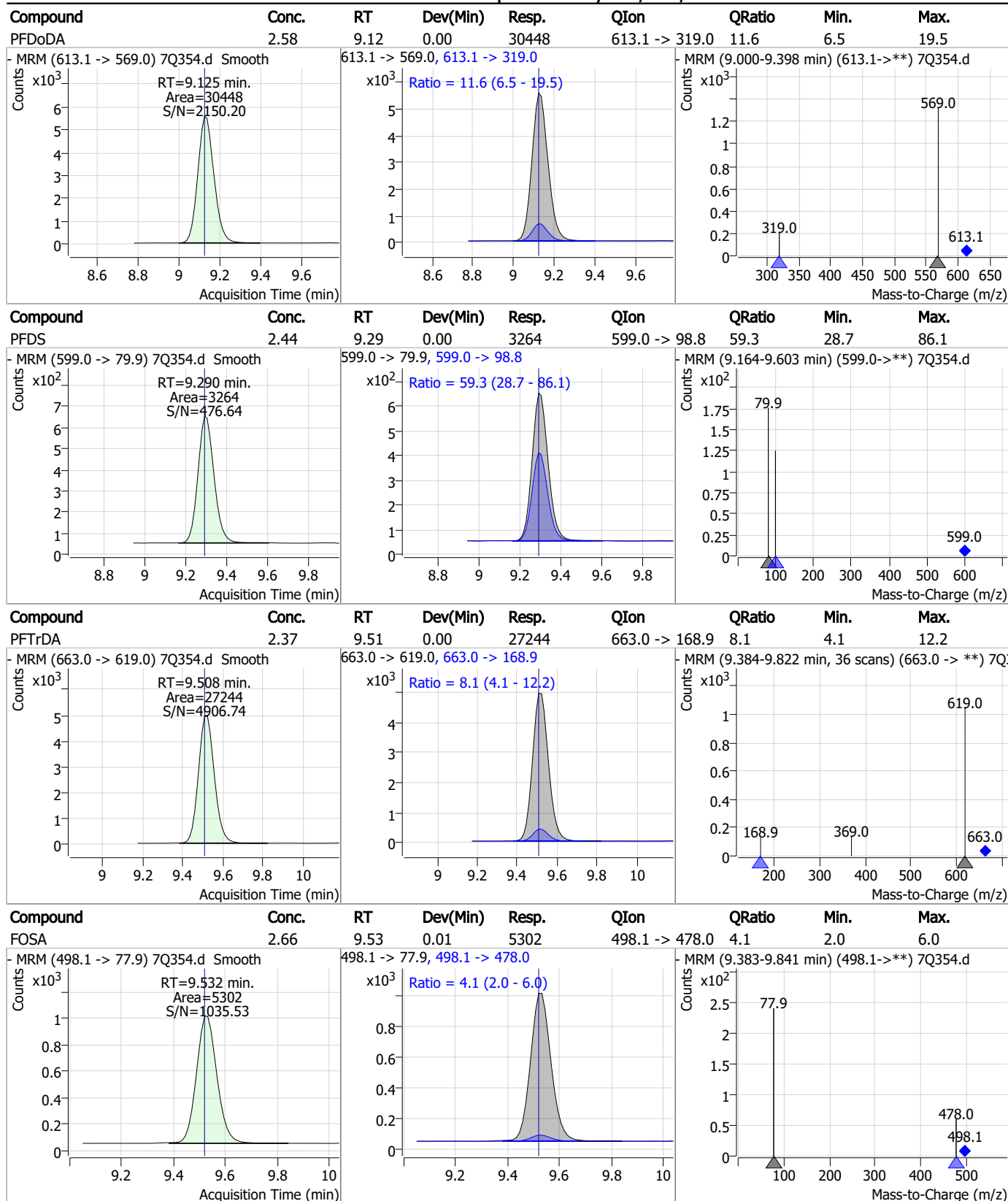
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.43	8.87	0.01	4389	548.8 -> 98.9	60.8	27.8	83.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.15	9.12	0.00	15232	615.1 -> 570.0			

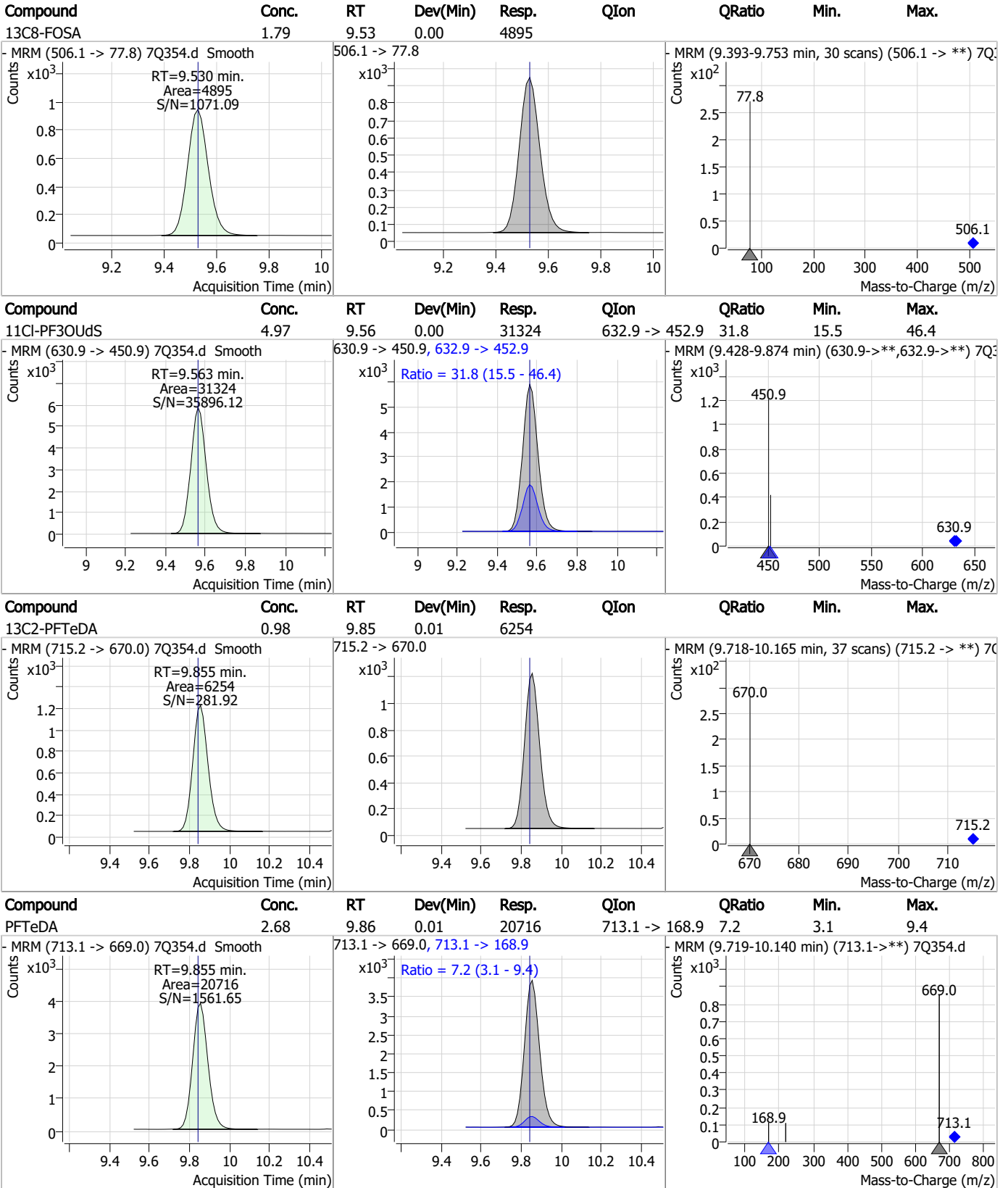


Perfluorinated Compounds by LC/MS/MS



7.3.3
7

Perfluorinated Compounds by LC/MS/MS

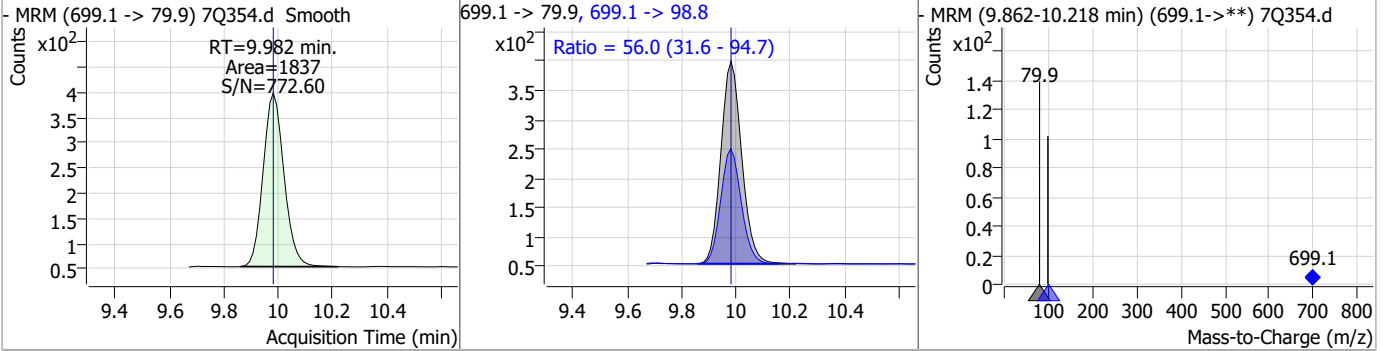


7.3.3

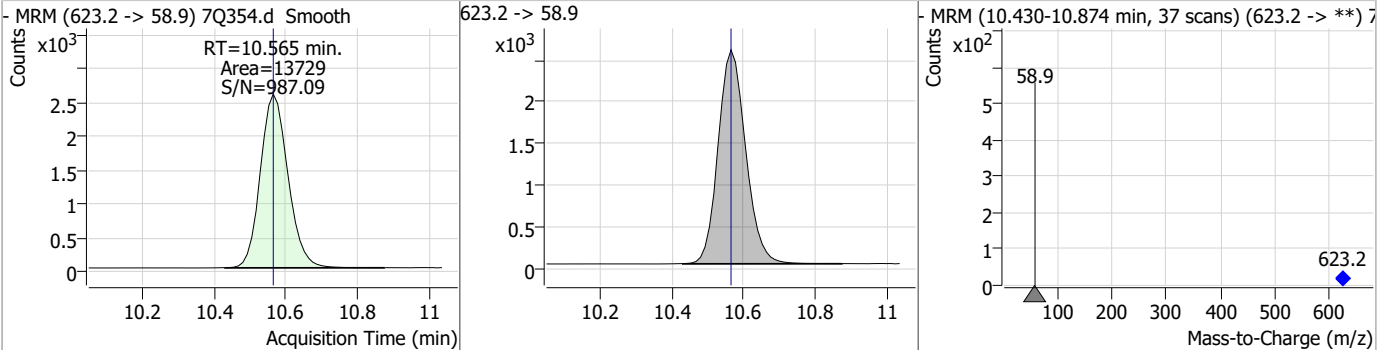
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Perfluorinated Compounds by LC/MS/MS

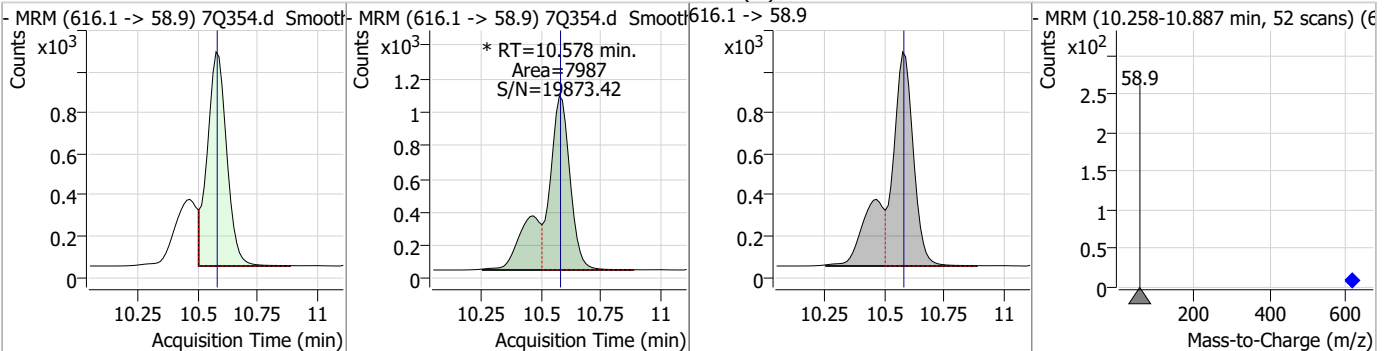
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.31	9.98	0.00	1837	699.1 -> 98.8	56.0	31.6	94.7



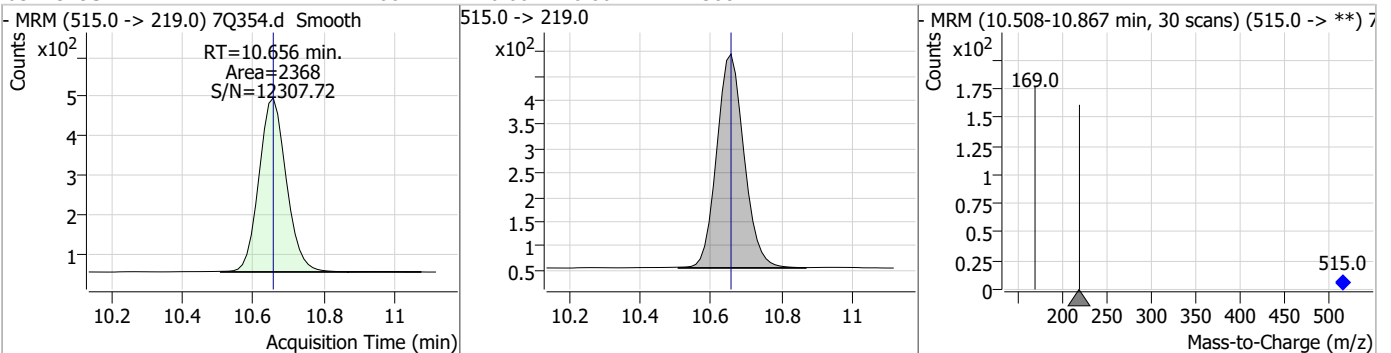
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	13.63	10.56	0.00	13729				



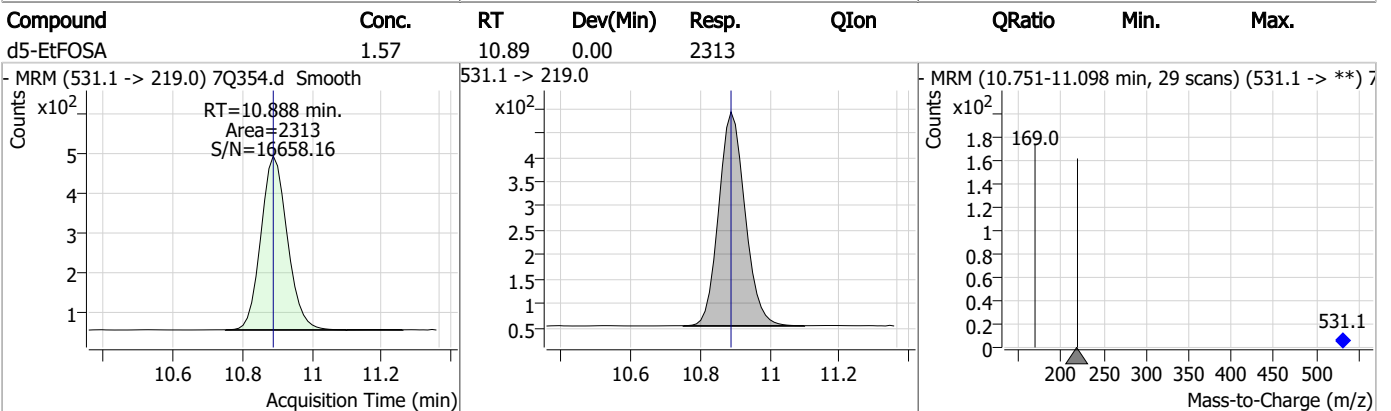
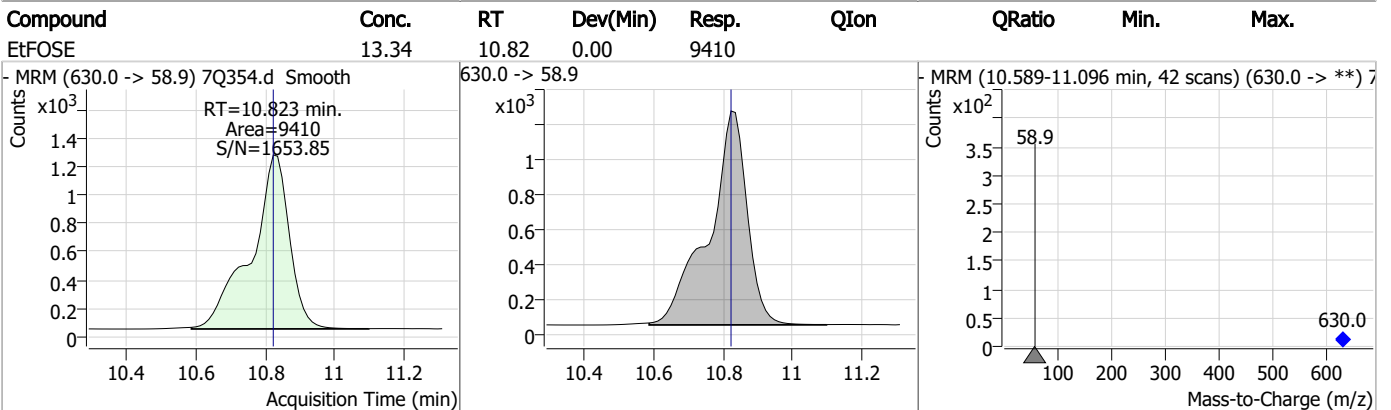
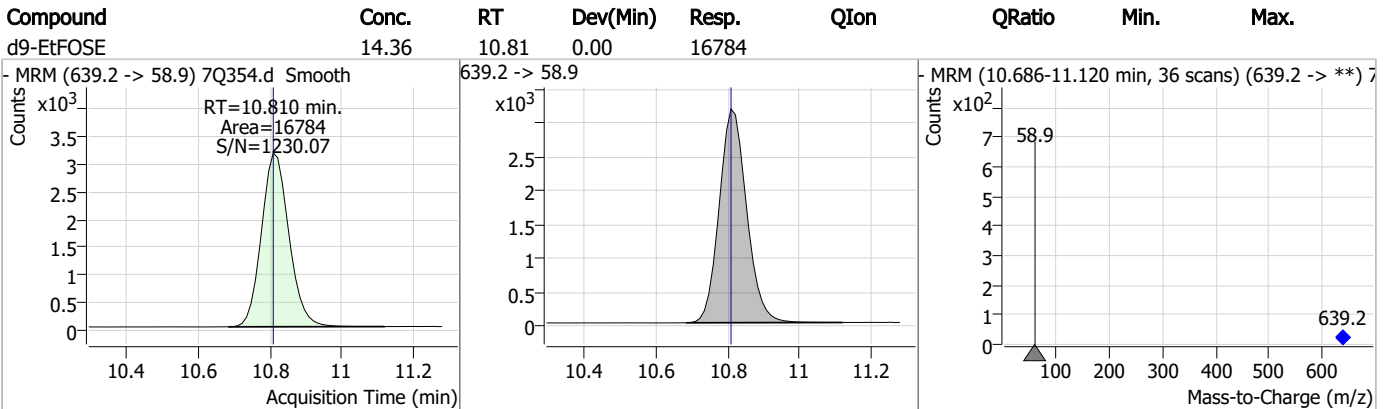
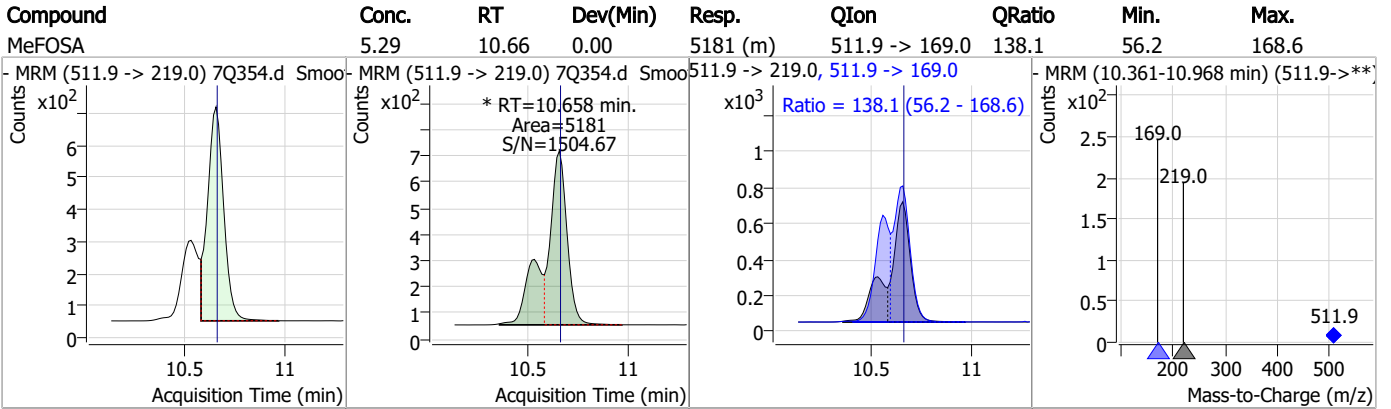
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.59	10.58	0.00	7987 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.66	10.66	0.00	2368				



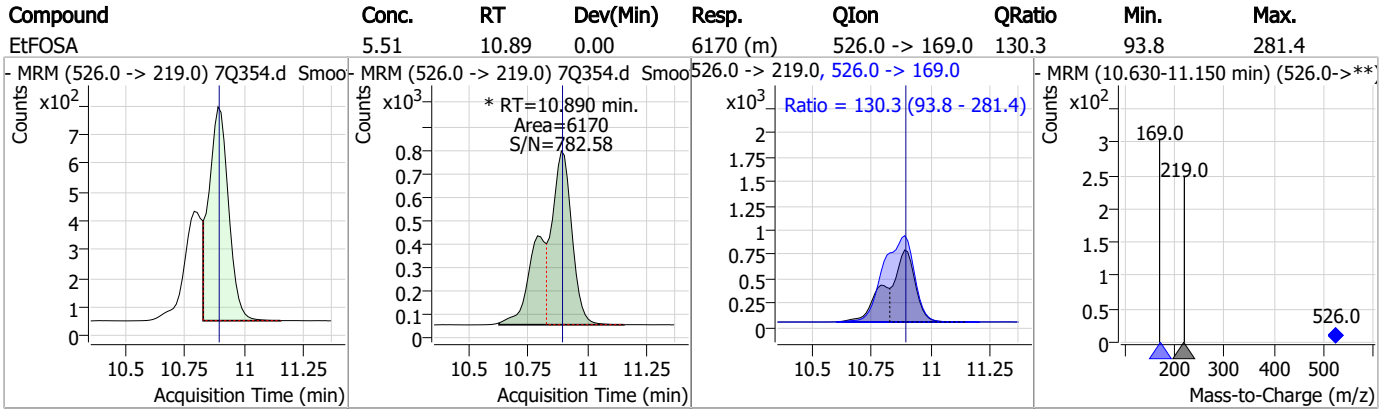
Perfluorinated Compounds by LC/MS/MS



7.3.3

7

Perfluorinated Compounds by LC/MS/MS



7.3.3

7

Manual Integration Approval Summary

Sample Number: OP576-BS Method: EPA DRAFT 1633
Lab FileID: 7Q354.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 18:25 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

7.3.3.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q355.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 6:39:37 PM
 Sample Name : OP576-LLBS:3
 Vial : P3-A2
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op576,S7Q11,60,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.897	216.8 -> 171.9	106386	10.00 µg/L	0.000
M5-PFPeA	4.324	268.3 -> 223.0	36109	5.00 µg/L	0.012
M5-PFHxA	5.566	318.0 -> 273.0	32096	2.50 µg/L	0.012
M4-PFHpA	6.521	367.1 -> 322.0	27259	2.50 µg/L	0.012
M8-PFOA	7.177	421.1 -> 376.0	36171	2.50 µg/L	0.012
M9-PFNA	7.720	472.1 -> 427.0	13427	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	13651	1.25 µg/L	0.000
M7-PFUnDA	8.694	570.0 -> 525.1	16344	1.25 µg/L	0.012
M2-PFDoDA	9.124	615.1 -> 570.0	15044	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	6186	1.25 µg/L	0.012
M8-FOSA	9.529	506.1 -> 77.8	5092	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	7227	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5749	2.50 µg/L	0.000
M8-PFOS	8.391	507.1 -> 79.9	4378	2.50 µg/L	0.012
M2-4:2FTS	5.217	329.1 -> 80.9	1005	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	2206	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	3427	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	9109	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	61307	10.00 µg/L	0.000
M5-EtFOSAA	8.469	589.2 -> 419.0	7562	5.00 µg/L	0.012
M7-MeFOSE	10.565	623.2 -> 58.9	14983	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	18003	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	2395	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	2332	2.50 µg/L	0.000
13C4-PFOS	8.392	502.8 -> 79.9	4931	2.50 µg/L	0.012
13C3-PFBA	2.901	216.0 -> 172.0	49596	5.00 µg/L	0.012
18O2-PFHxS	7.292	403.0 -> 83.9	3843	2.50 µg/L	0.000
13C4-PFOA	7.178	417.1 -> 372.0	37348	2.50 µg/L	0.012
13C2-PFDA	8.215	515.1 -> 470.1	11791	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15650	1.25 µg/L	0.012
13C2-PFHxA	5.567	315.1 -> 270.0	25984	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	1005	6.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.1%		
13C2-6:2FTS	6.939	429.1 -> 80.9	2206	5.66 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.2%		
13C2-8:2FTS	7.991	529.1 -> 80.9	3427	6.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.8%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15044	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C2-PFTeDA	9.855	715.2 -> 670.0	6186	1.00 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.1%		
13C3-PFBS	5.484	302.1 -> 79.9	7227	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C3-PFHxS	7.293	402.1 -> 79.9	5749	2.57 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C4-PFBA	2.897	216.8 -> 171.9	106386	10.15 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C4-PFHpA	6.521	367.1 -> 322.0	27259	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFHxA	5.566	318.0 -> 273.0	32096	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C5-PFPeA	4.324	268.3 -> 223.0	36109	5.14 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C6-PFDA	8.215	519.1 -> 474.1	13651	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C7-PFUnDA	8.694	570.0 -> 525.1	16344	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-FOSA	9.529	506.1 -> 77.8	5092	1.97 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.7%	
13C8-PFOA	7.177	421.1 -> 376.0	36171	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-PFOS	8.391	507.1 -> 79.9	4378	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C9-PFNA	7.720	472.1 -> 427.0	13427	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%	
d3-MeFOSAA	8.261	573.2 -> 419.0	9109	4.79 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	61307	10.48 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.8%	
d3-MeFOSA	10.656	515.0 -> 219.0	2332	1.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 69.0%	
d5-EtFOSAA	8.469	589.2 -> 419.0	7562	4.62 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.4%	
d7-MeFOSE	10.565	623.2 -> 58.9	14983	15.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 62.7%	
d9-EtFOSE	10.810	639.2 -> 58.9	18003	16.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 65.0%	
d5-EtFOSA	10.888	531.1 -> 219.0	2395	1.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 68.7%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	4047	2.56 µg/L	100
		327.1 -> 80.9	1419		
6:2FTS	6.939	427.1 -> 407.0	6610	2.83 µg/L	97
		427.1 -> 80.9	1969		
8:2FTS	7.992	527.1 -> 507.0	8447	2.58 µg/L	99
		527.1 -> 80.8	2347		
EtFOSAA	8.470	584.2 -> 419.1	853	0.70 µg/L	m 90
		584.2 -> 526.0	609		
FOSA	9.532	498.1 -> 77.9	1571	0.76 µg/L	100
		498.1 -> 478.0	63		
MeFOSAA	8.262	570.1 -> 419.0	1235	0.77 µg/L	m 90
		570.1 -> 483.0	162		
PFBA	2.893	212.8 -> 168.9	11442	2.97 µg/L	100
PFBS	5.497	298.7 -> 79.9	1778	0.65 µg/L	100
		298.7 -> 98.8	728		
PFDA	8.215	512.9 -> 469.0	9325	0.74 µg/L	100
		512.9 -> 219.0	1587		
PFDODA	9.125	613.1 -> 569.0	8391	0.72 µg/L	99
		613.1 -> 319.0	1058		
PFDS	9.290	599.0 -> 79.9	864	0.60 µg/L	94

7.3.4
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	534			
PFHpA	6.522	363.1 -> 319.0	10100	0.75	µg/L	98
		363.1 -> 169.0	1704			
PFHpS	7.873	449.0 -> 79.9	1554	0.70	µg/L	97
		449.0 -> 98.9	820			
PFHxA	5.556	313.0 -> 269.0	8669	0.73	µg/L	99
		313.0 -> 118.9	477			
PFHxS	7.294	398.7 -> 79.9	1709	0.65	µg/L	m 94
		398.7 -> 98.9	921			
PFNA	7.721	463.0 -> 419.0	7916	0.74	µg/L	98
		463.0 -> 219.0	1979			
PFNS	8.870	548.8 -> 79.9	1316	0.67	µg/L	98
		548.8 -> 98.9	750			
PFOA	7.179	413.0 -> 369.0	13772	0.75	µg/L	99
		413.0 -> 169.0	2606			
PFOS	8.393	498.9 -> 79.9	1528	0.72	µg/L	m 86
		498.9 -> 98.8	877			
PFPeA	4.327	263.0 -> 219.0	13049	1.45	µg/L	100
PFPeS	6.586	349.1 -> 79.9	1767	0.63	µg/L	97
		349.1 -> 98.9	904			
PFTeDA	9.855	713.1 -> 669.0	5564	0.73	µg/L	99
		713.1 -> 168.9	373			
PFTrDA	9.523	663.0 -> 619.0	7316	0.64	µg/L	100
		663.0 -> 168.9	595			
PFUnDA	8.695	563.1 -> 519.0	8030	0.77	µg/L	96
		563.1 -> 269.1	1306			
11Cl-PF3OUdS	9.563	630.9 -> 450.9	8445	1.16	µg/L	98
		632.9 -> 452.9	2722			
9Cl-PF3ONS	8.733	530.8 -> 351.0	12957	1.26	µg/L	97
		532.8 -> 353.0	4327			
ADONA	6.771	376.9 -> 250.9	29467	1.35	µg/L	99
		376.9 -> 84.8	8668			
HFPO-DA	5.944	284.9 -> 168.9	8478	1.45	µg/L	99
		284.9 -> 184.9	1342			
3:3FTCA	3.749	241.0 -> 177.0	1619	3.54	µg/L	99
		241.0 -> 117.0	191			
5:3FTCA	6.187	341.0 -> 237.1	27158	17.69	µg/L	96
		341.0 -> 217.0	21013			
7:3FTCA	7.624	441.0 -> 316.9	12307	17.55	µg/L	100
		441.0 -> 336.9	27751			
EtFOSA	10.890	526.0 -> 219.0	1631	1.41	µg/L	m 62
		526.0 -> 169.0	2165			
EtFOSE	10.823	630.0 -> 58.9	2817	3.72	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	1523	1.58	µg/L	m 82
		511.9 -> 169.0	2006			
MeFOSE	10.578	616.1 -> 58.9	2260	3.52	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	463	0.54	µg/L	93
		699.1 -> 98.8	269			
NFDHA	5.437	295.0 -> 201.0	3818	1.42	µg/L	100
		295.0 -> 84.9	1011			
PFMBA	4.750	279.0 -> 85.1	8609	1.49	µg/L	100
PFMPA	3.456	229.0 -> 84.9	8805	1.46	µg/L	100
PFEESA	6.051	314.8 -> 134.9	12119	1.28	µg/L	100
		314.8 -> 82.9	407			

= Qualifier out of range, m = manually integrated, + = Area summed

7.3.4
7

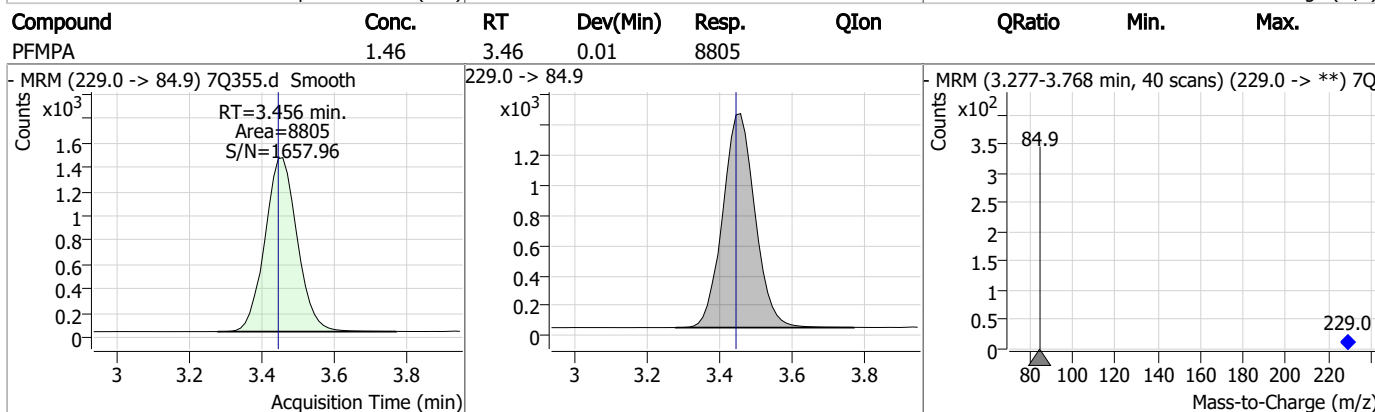
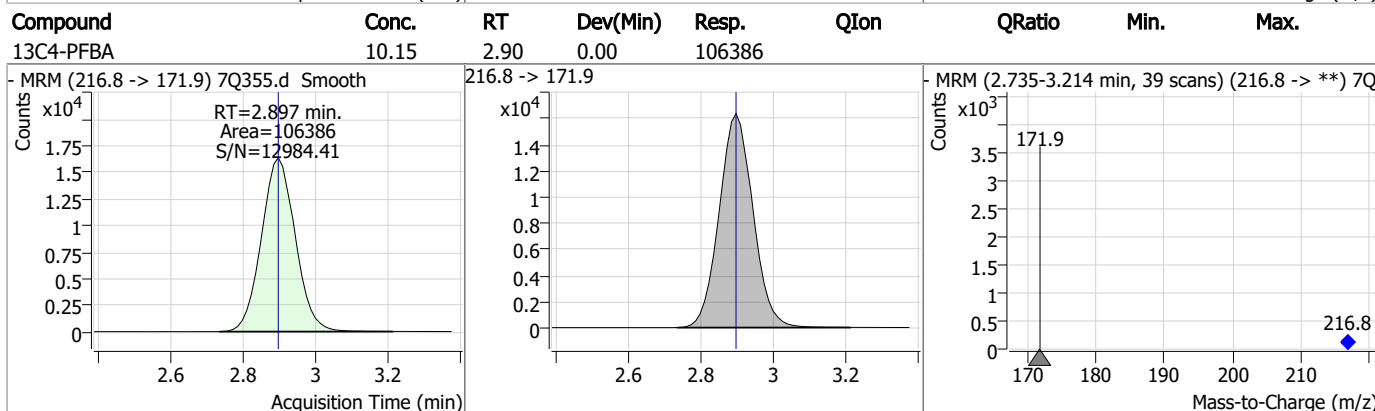
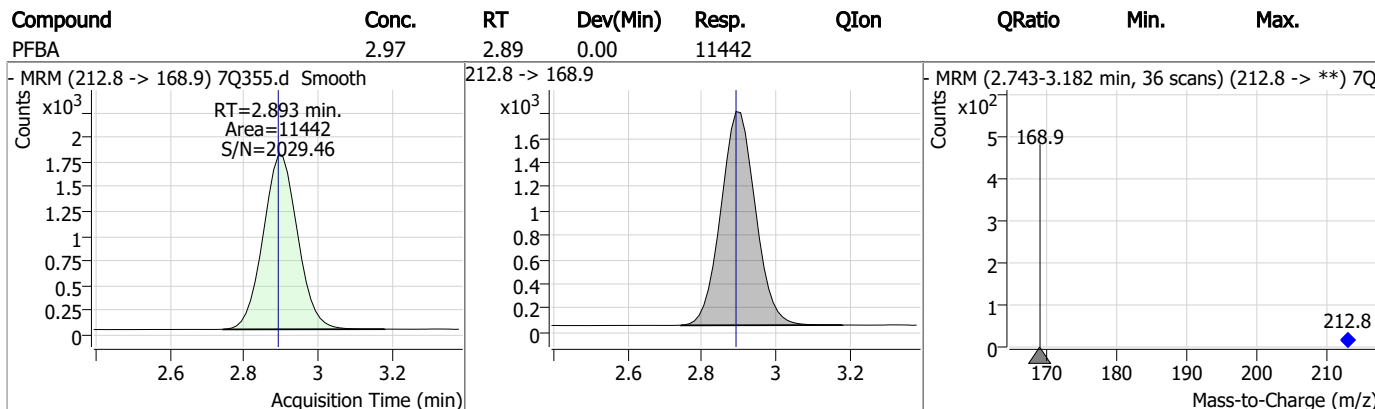
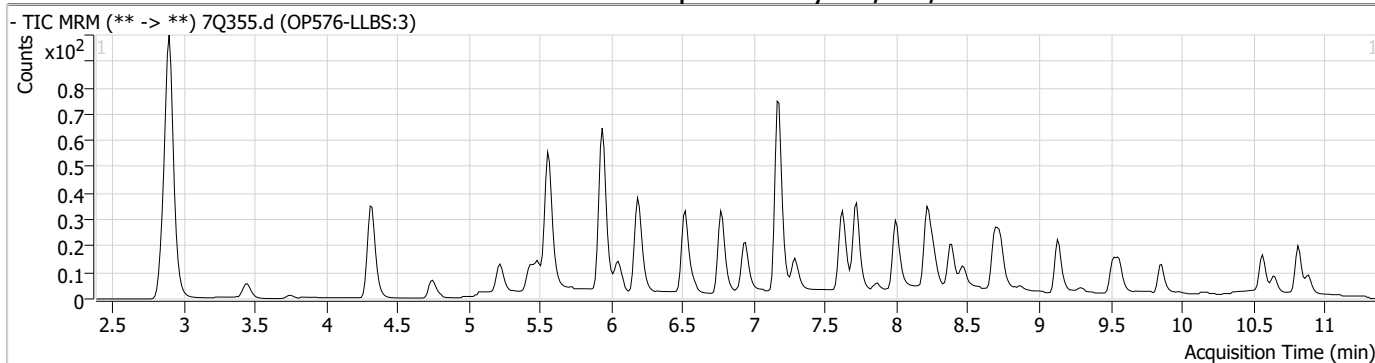
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.3.4

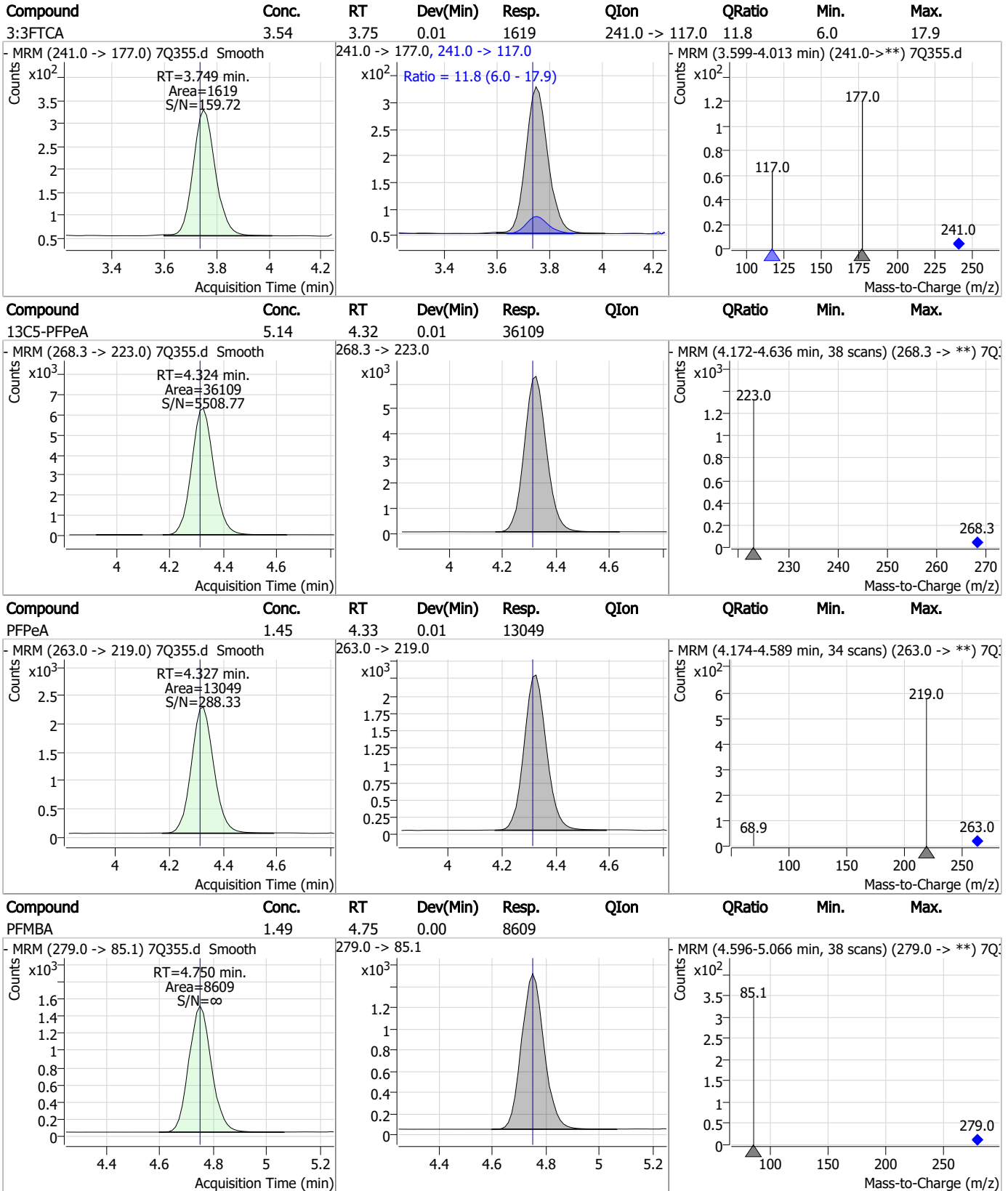
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Perfluorinated Compounds by LC/MS/MS



7.3.4
7

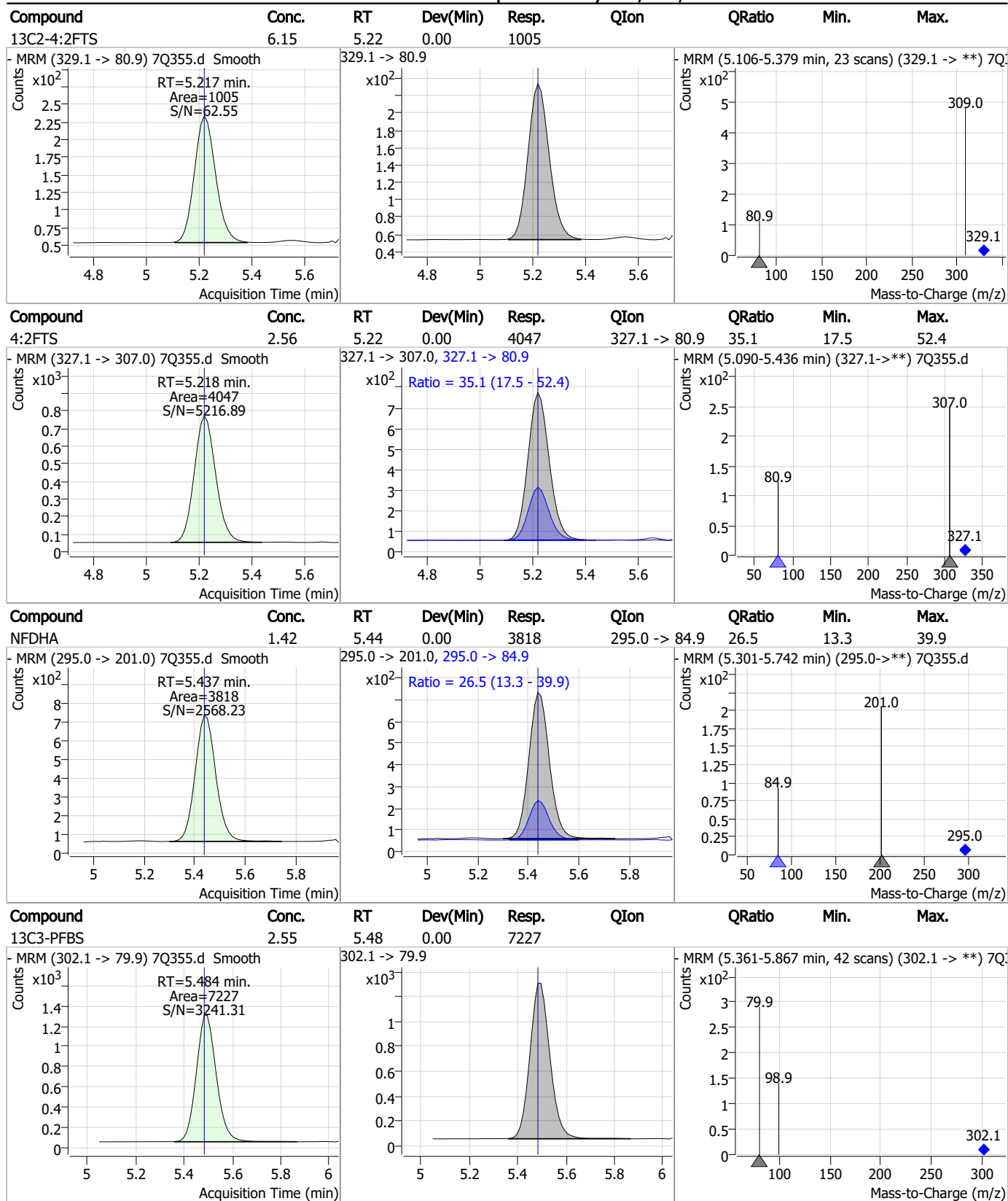
Perfluorinated Compounds by LC/MS/MS



7.3.4

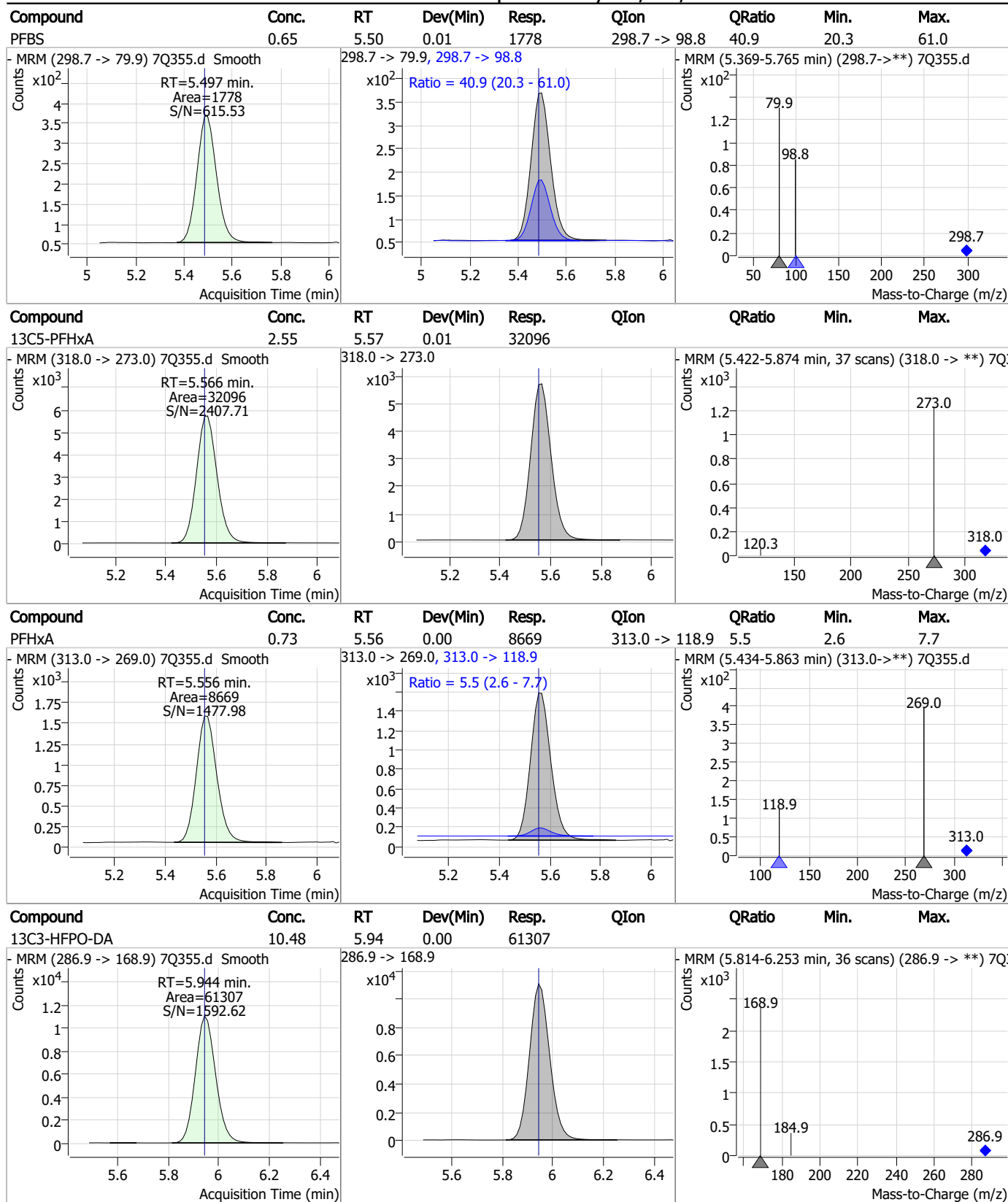
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Perfluorinated Compounds by LC/MS/MS



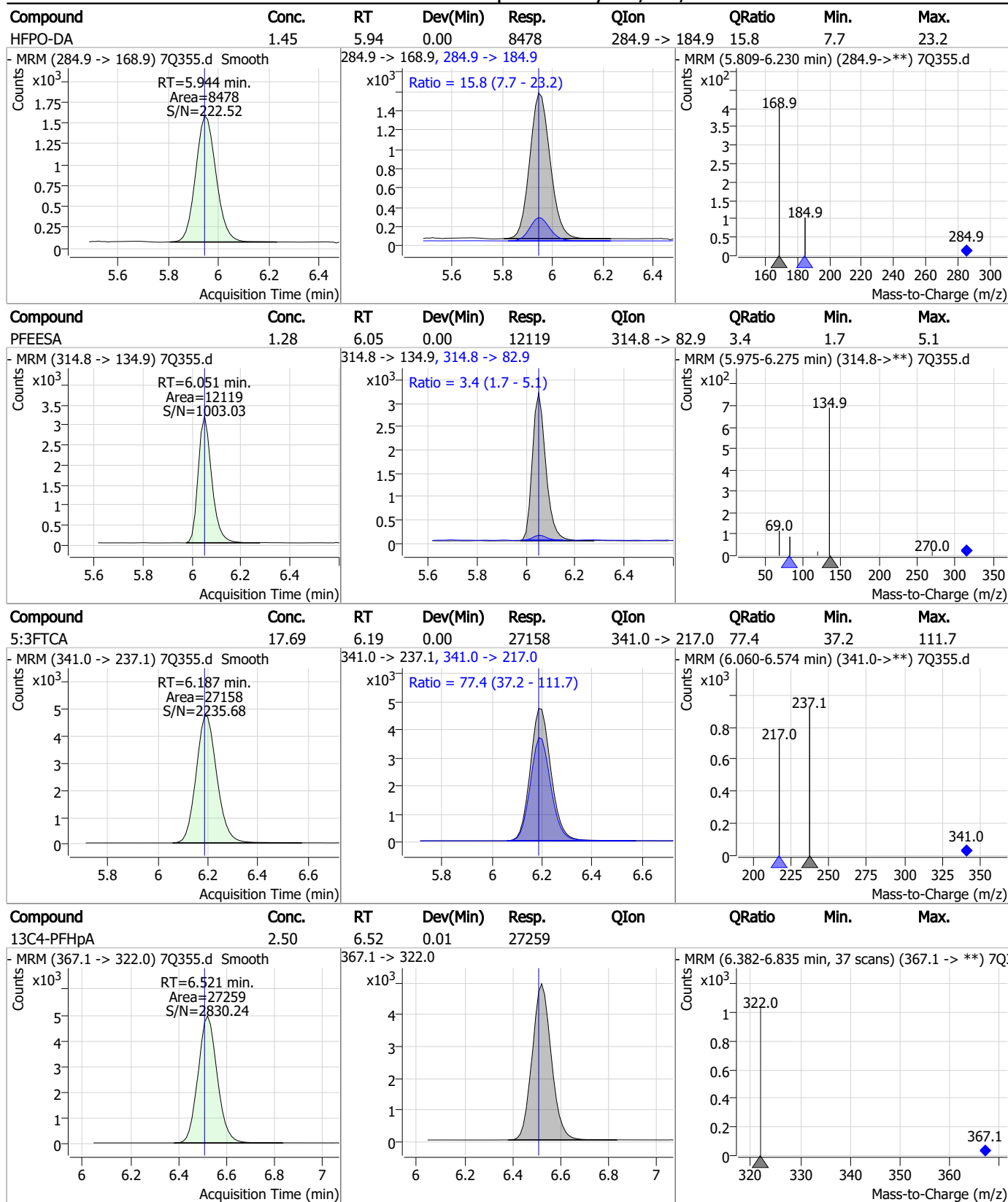
7.3.4
7

Perfluorinated Compounds by LC/MS/MS



7.3.4
7

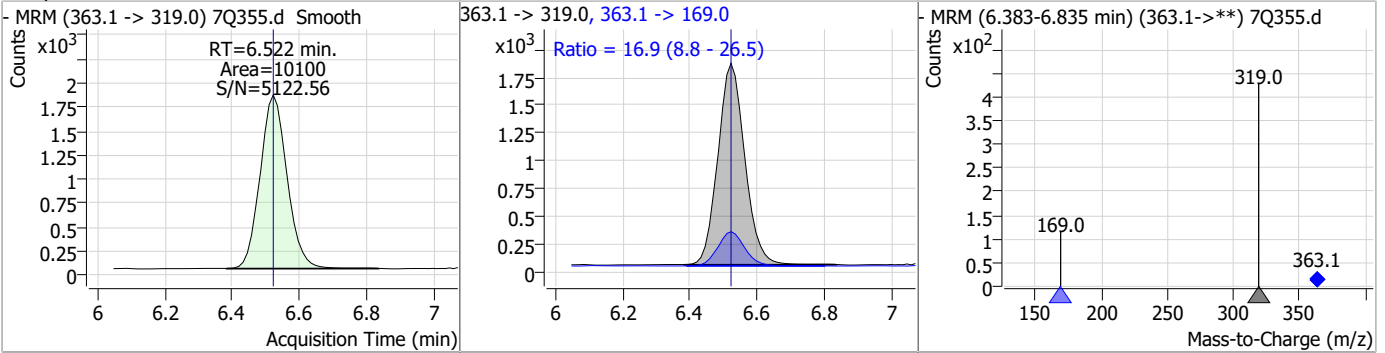
Perfluorinated Compounds by LC/MS/MS



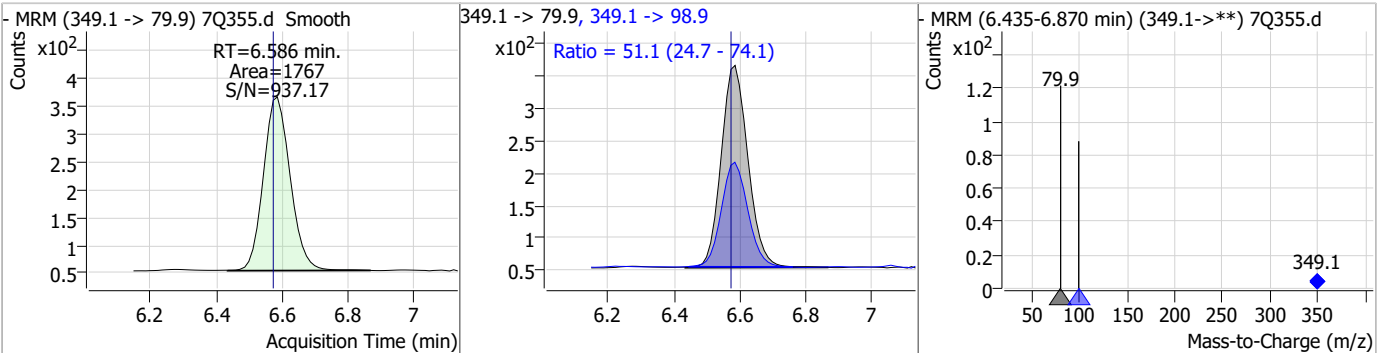
7.3.4
7

Perfluorinated Compounds by LC/MS/MS

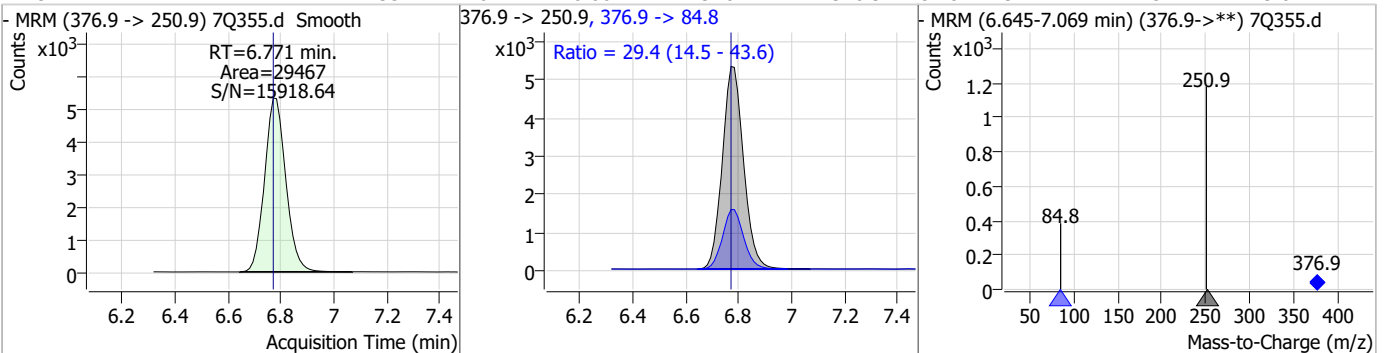
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.75	6.52	0.00	10100	363.1 -> 169.0	16.9	8.8	26.5



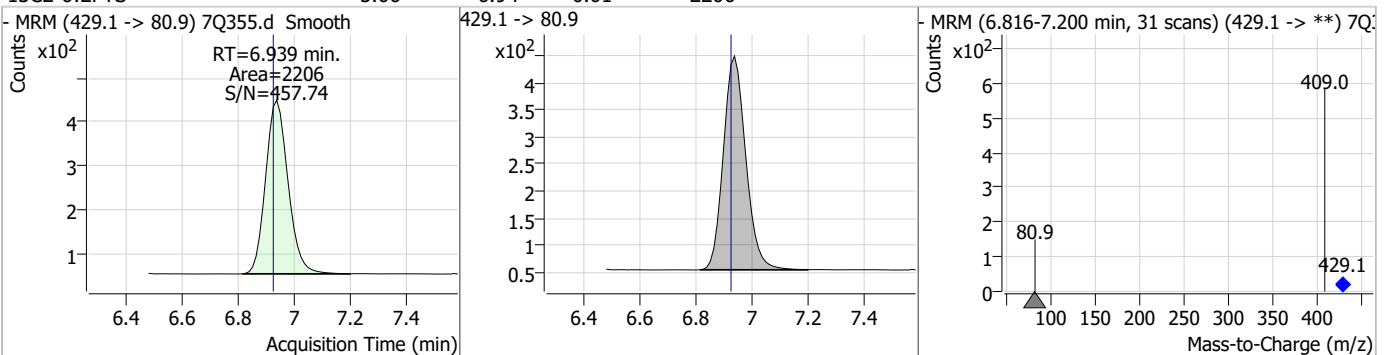
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.63	6.59	0.01	1767	349.1 -> 98.9	51.1	24.7	74.1



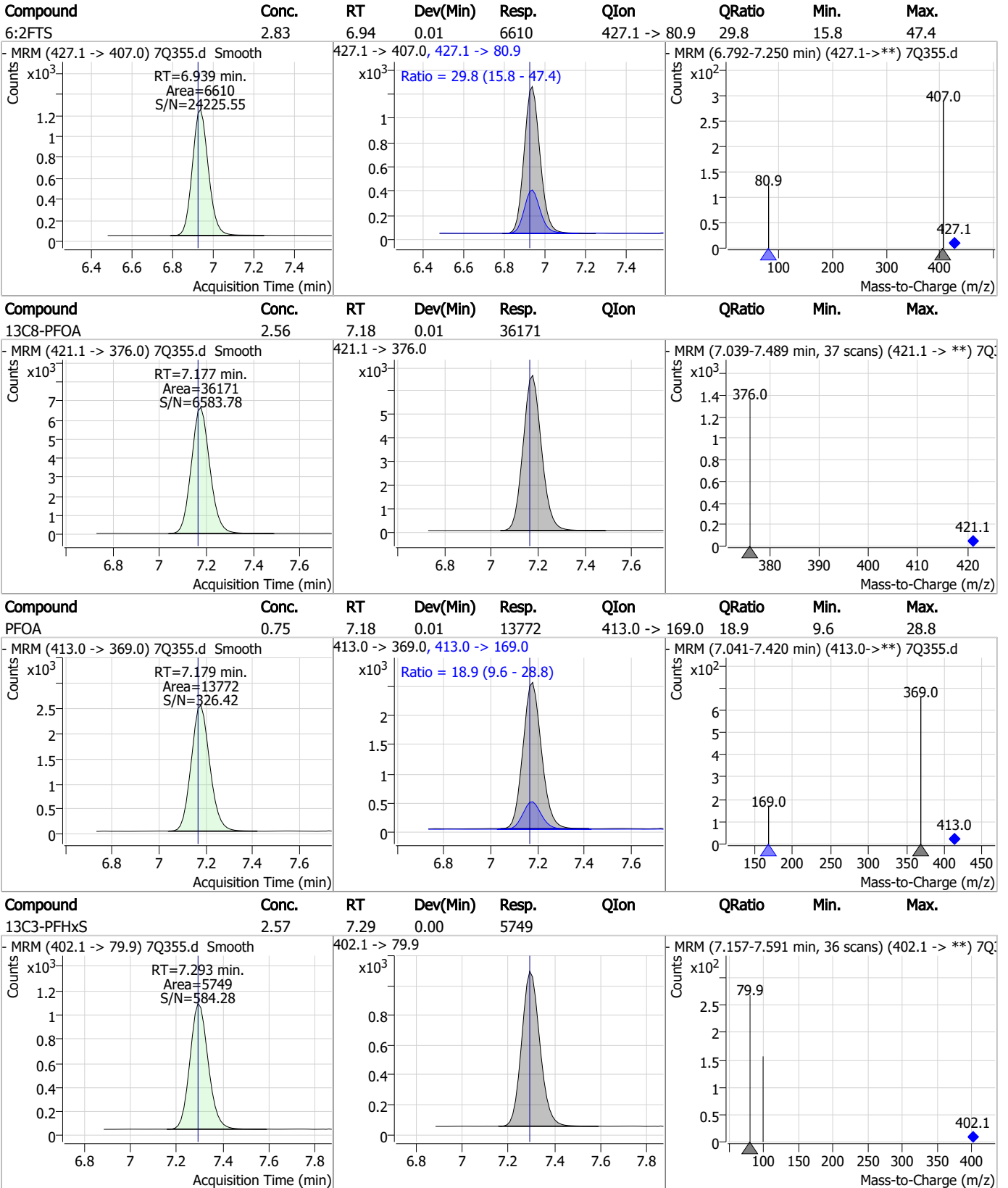
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	1.35	6.77	0.00	29467	376.9 -> 84.8	29.4	14.5	43.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.66	6.94	0.01	2206	429.1 -> 80.9			



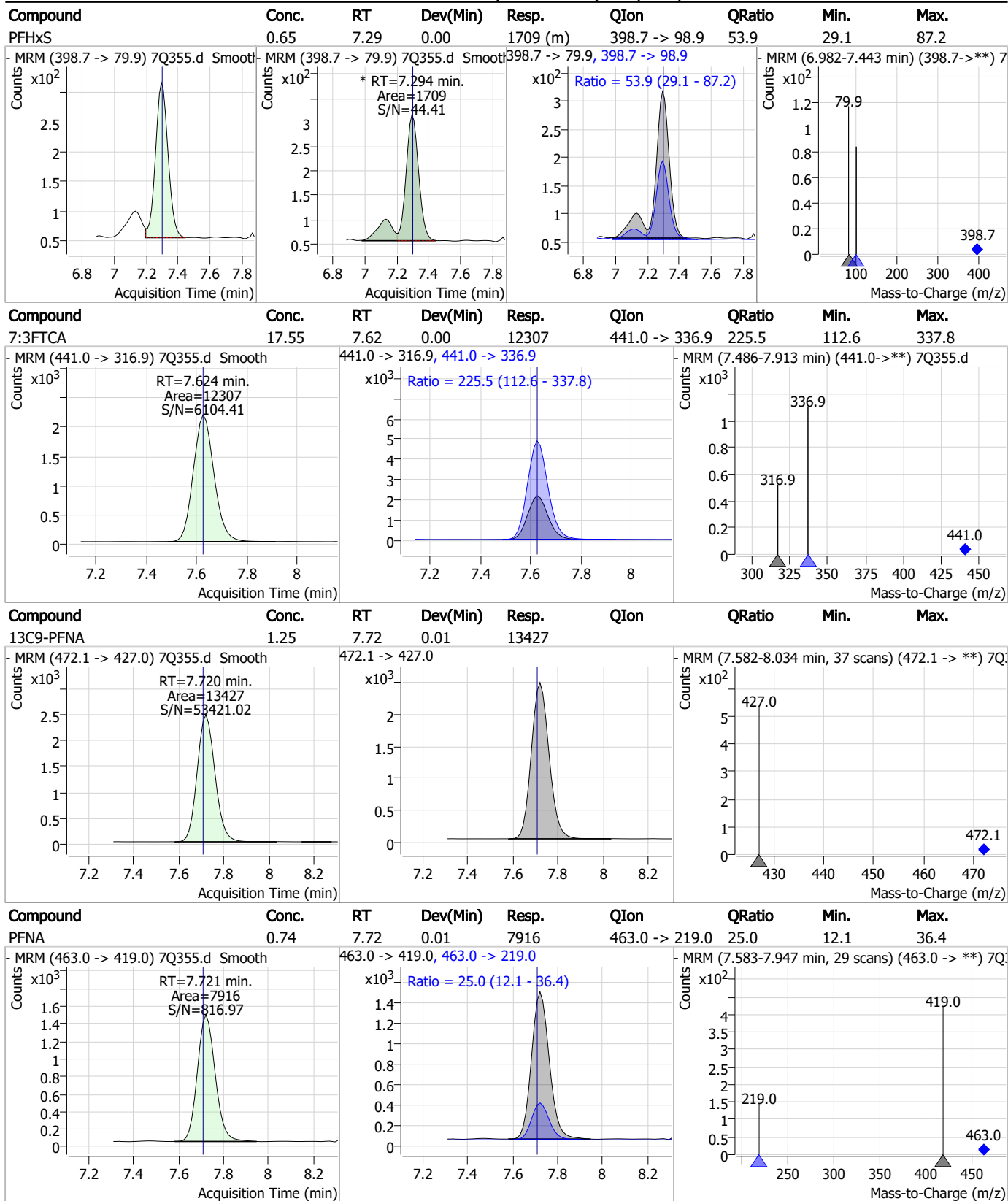
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



7.3.4

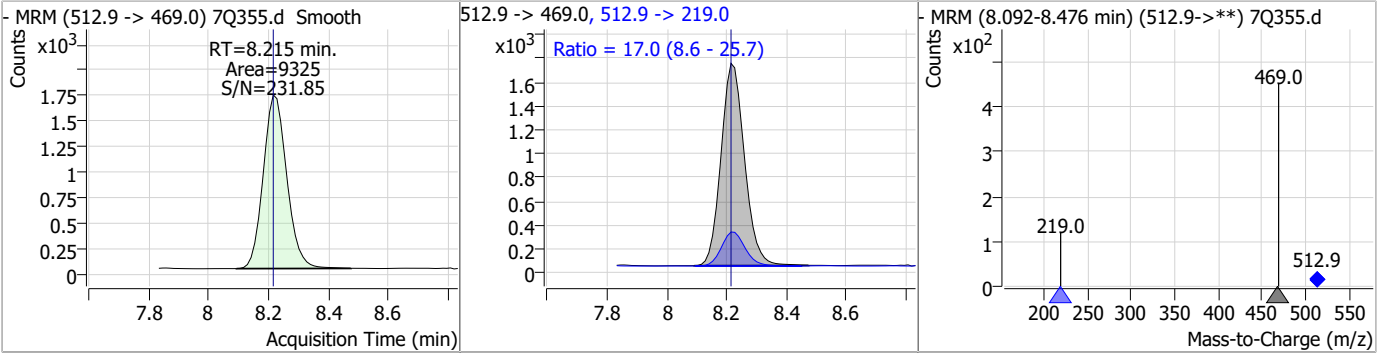
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.70	7.87	0.01	1554	449.0 -> 98.9	52.8	27.6	82.7
13C2-8:2FTS	6.19	7.99	0.00	3427	529.1 -> 80.9			
8:2FTS	2.58	7.99	0.00	8447	527.1 -> 80.8	27.8	13.5	40.6
13C6-PFDA	1.32	8.21	0.00	13651	519.1 -> 474.1			

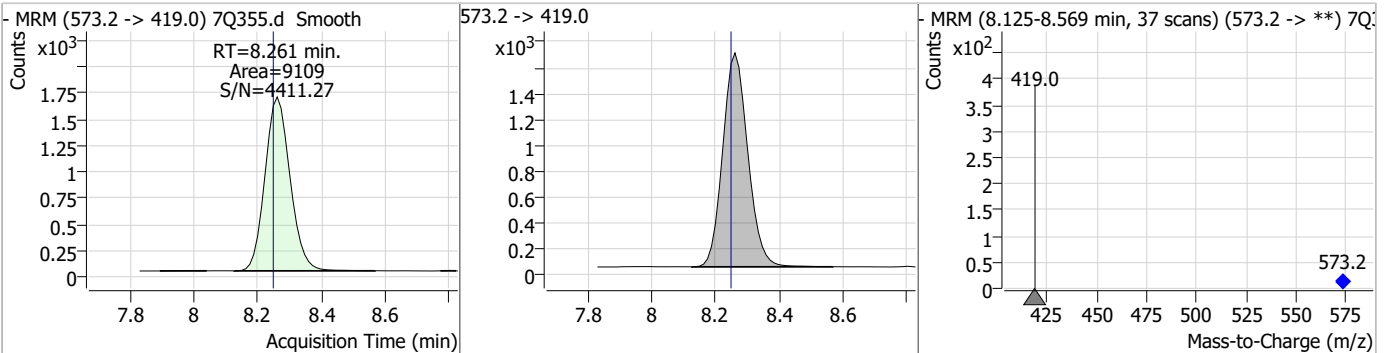
7.3.4
7

Perfluorinated Compounds by LC/MS/MS

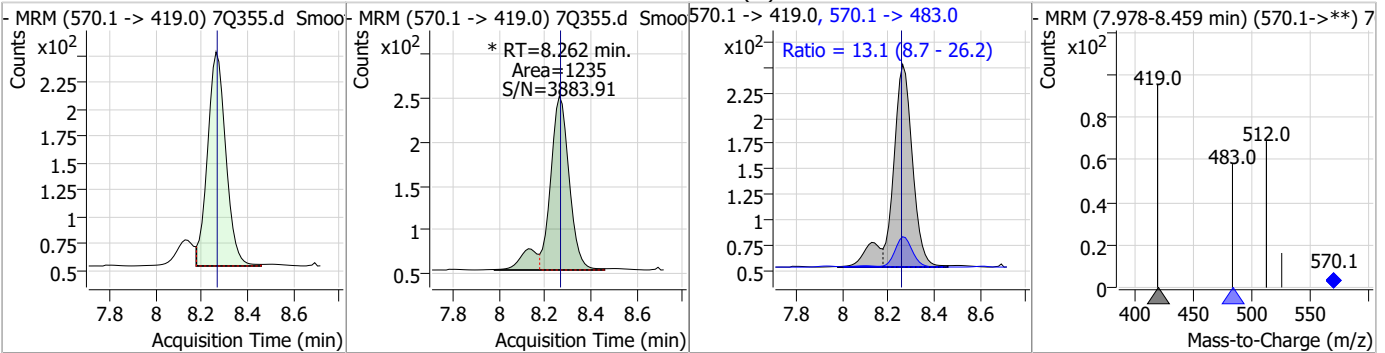
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.74	8.22	0.00	9325	512.9 -> 219.0	17.0	8.6	25.7



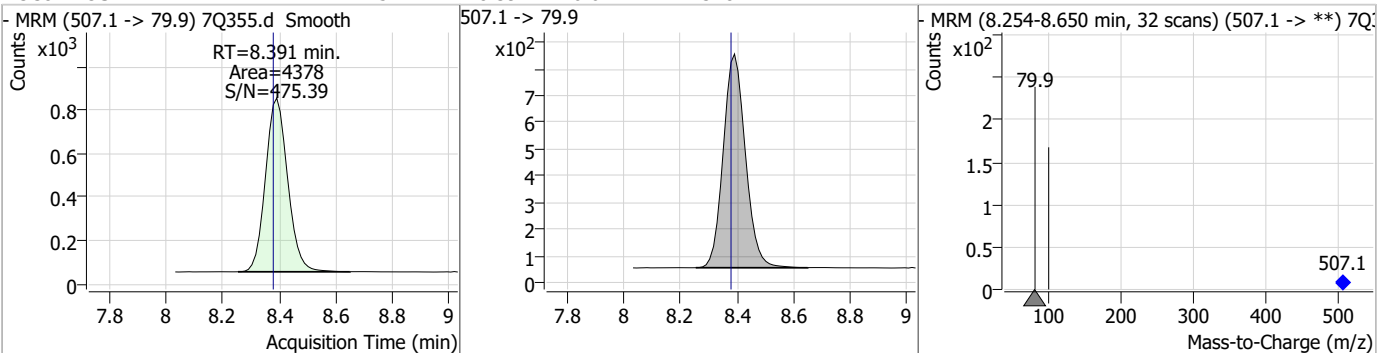
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.79	8.26	0.01	9109				



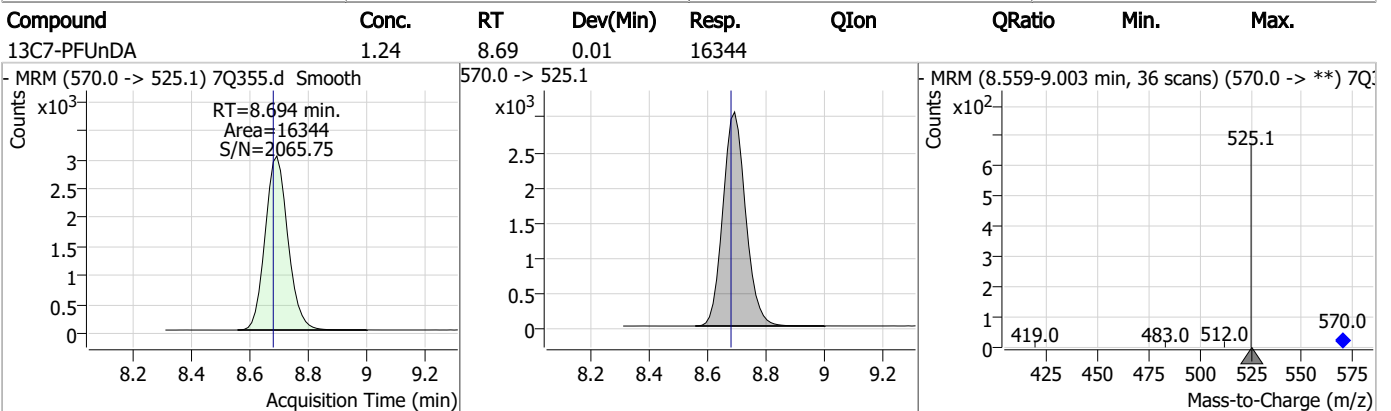
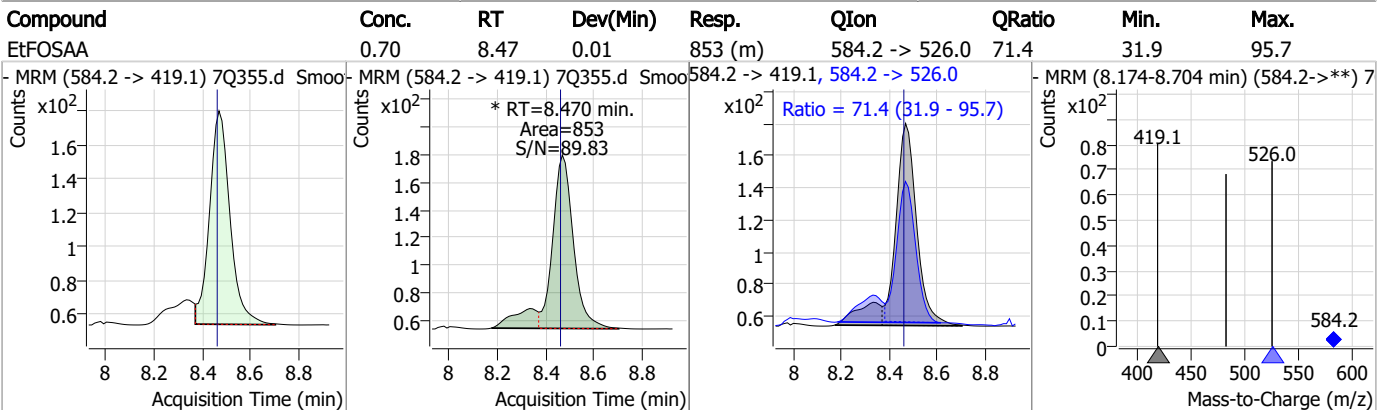
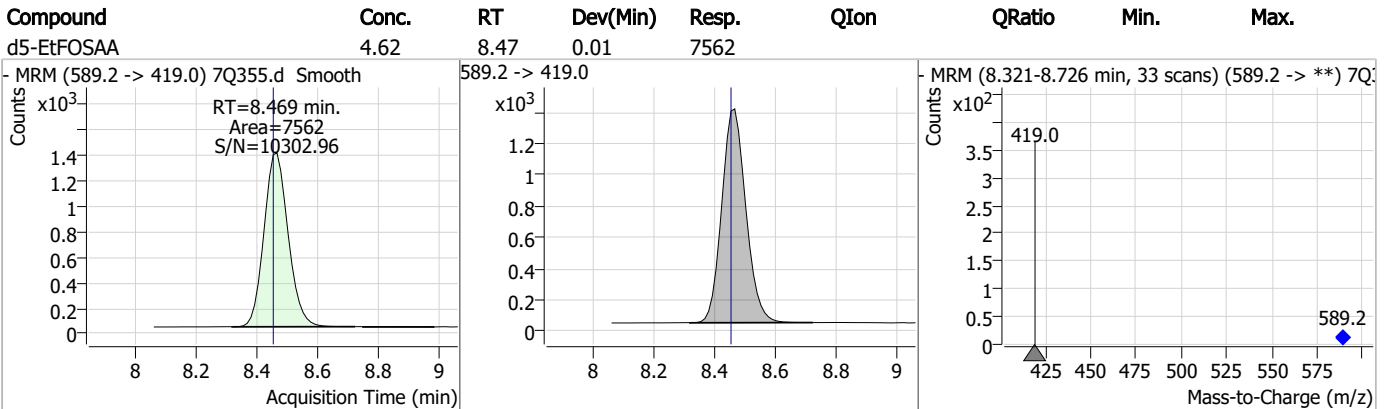
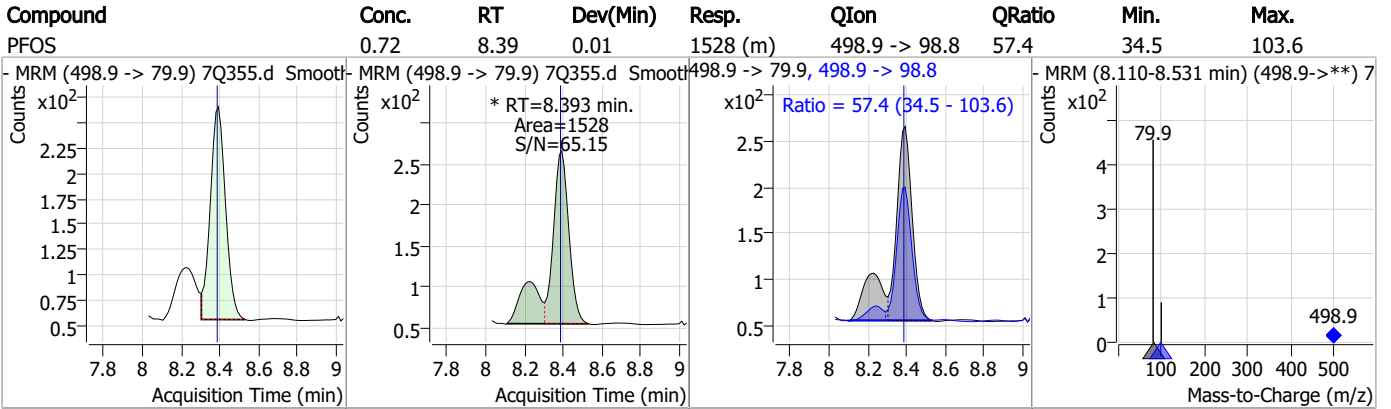
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.77	8.26	0.00	1235 (m)	570.1 -> 483.0	13.1	8.7	26.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.52	8.39	0.01	4378				

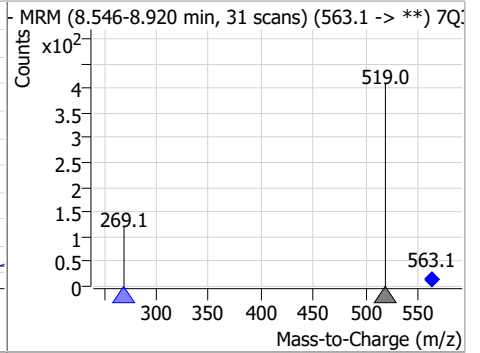
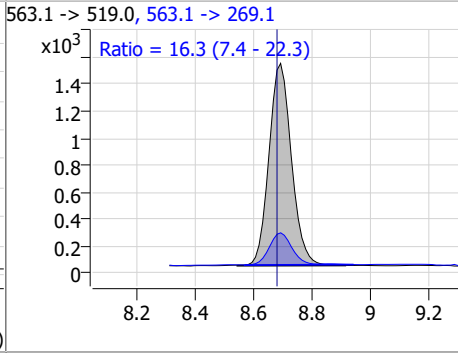
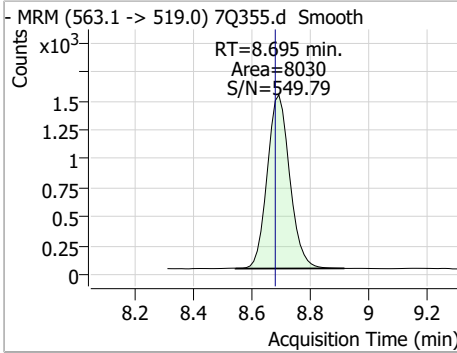


Perfluorinated Compounds by LC/MS/MS

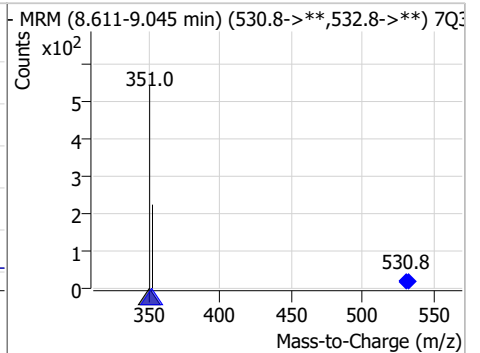
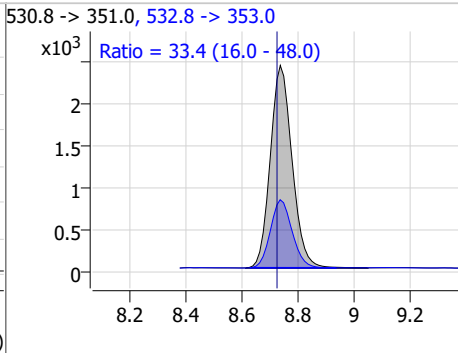
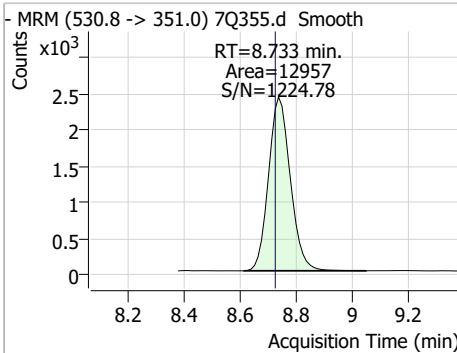


Perfluorinated Compounds by LC/MS/MS

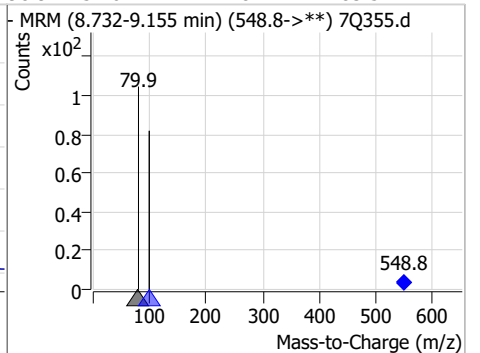
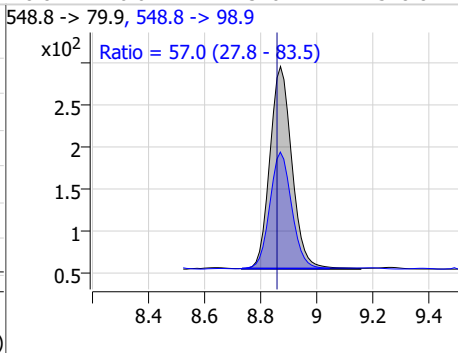
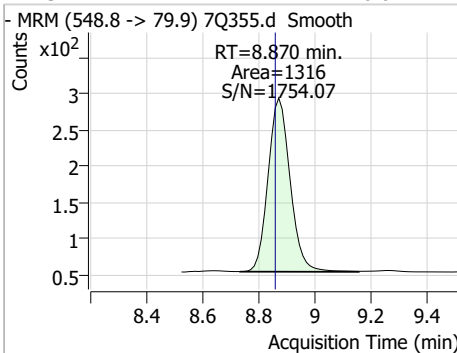
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.77	8.69	0.01	8030	563.1 -> 269.1	16.3	7.4	22.3



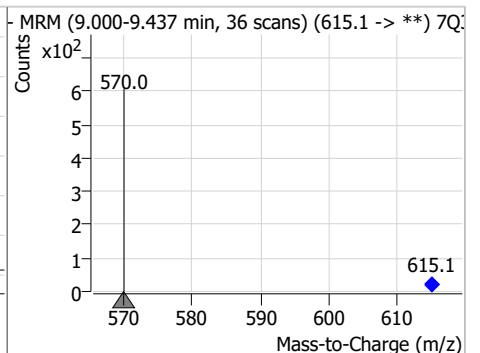
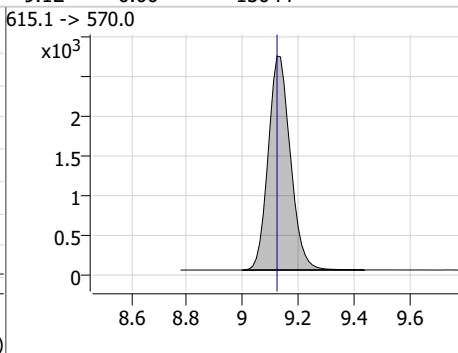
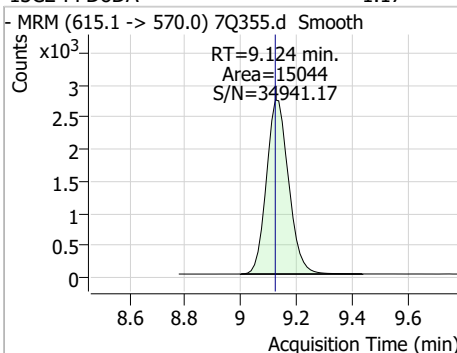
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	1.26	8.73	0.01	12957	532.8 -> 353.0	33.4	16.0	48.0



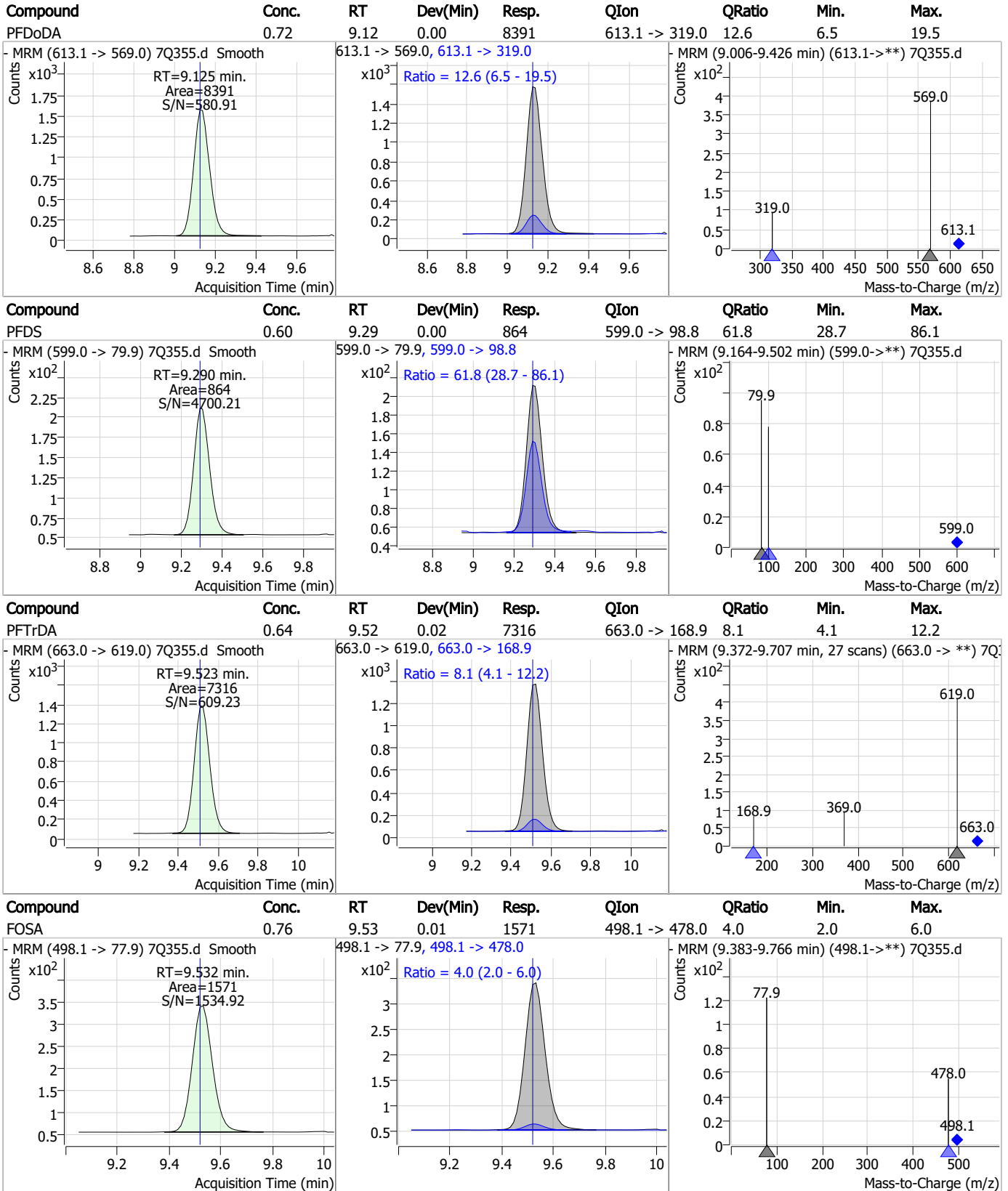
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.67	8.87	0.01	1316	548.8 -> 98.9	57.0	27.8	83.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.17	9.12	0.00	15044	615.1 -> 570.0			



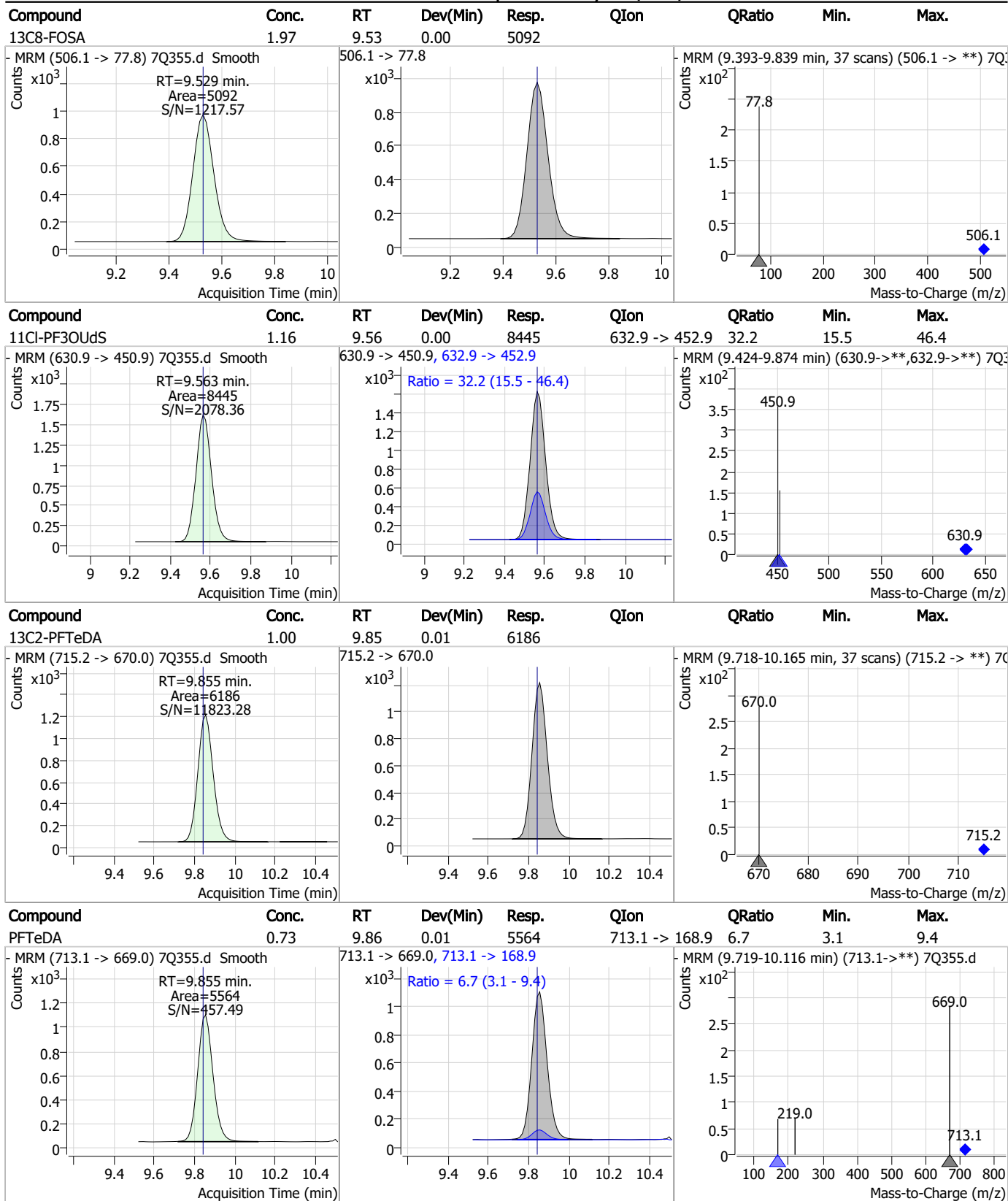
Perfluorinated Compounds by LC/MS/MS



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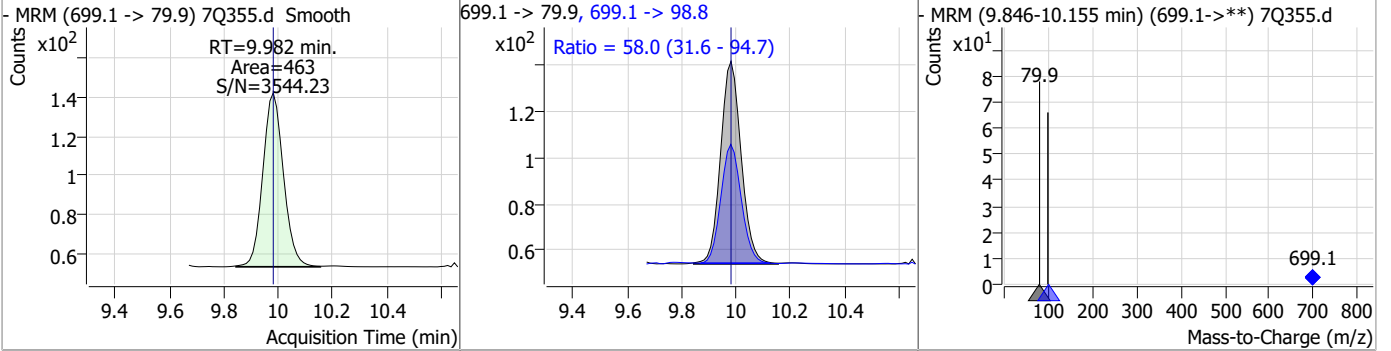
Perfluorinated Compounds by LC/MS/MS



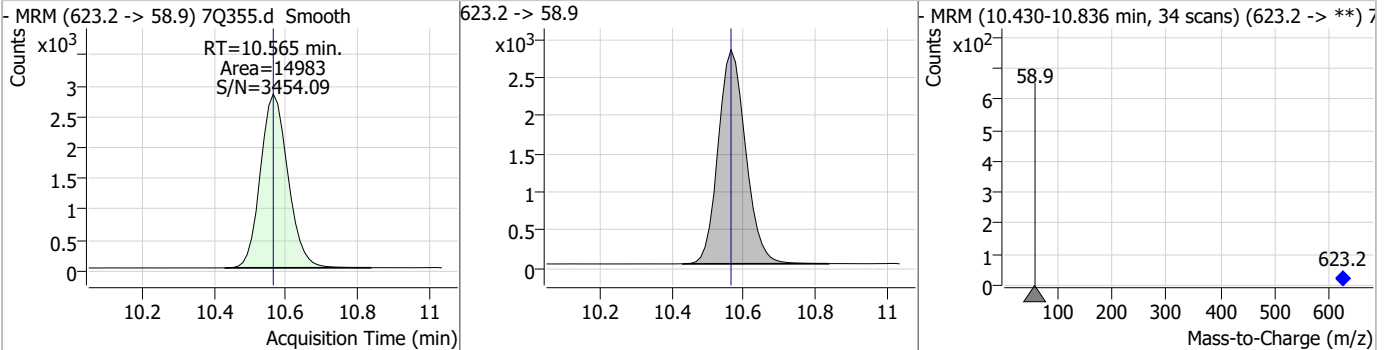
7.3.4
7

Perfluorinated Compounds by LC/MS/MS

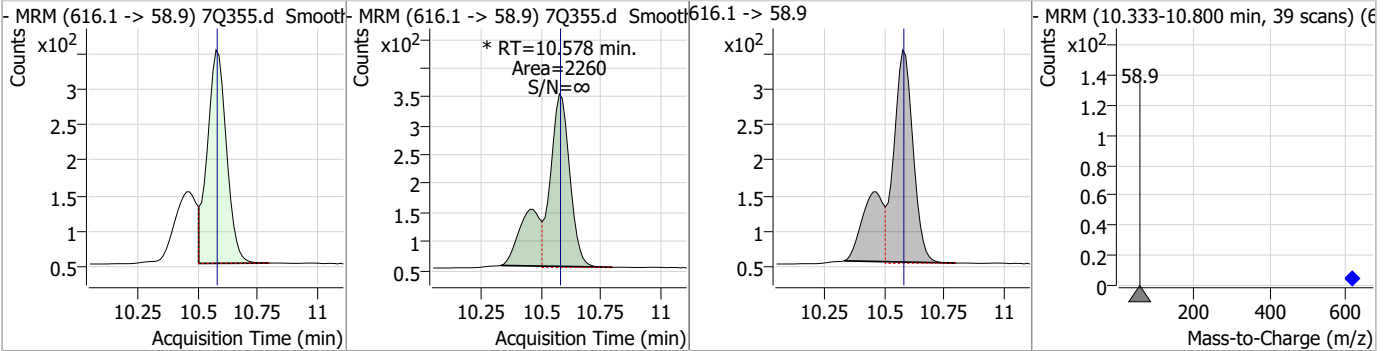
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.54	9.98	0.00	463	699.1 -> 98.8	58.0	31.6	94.7



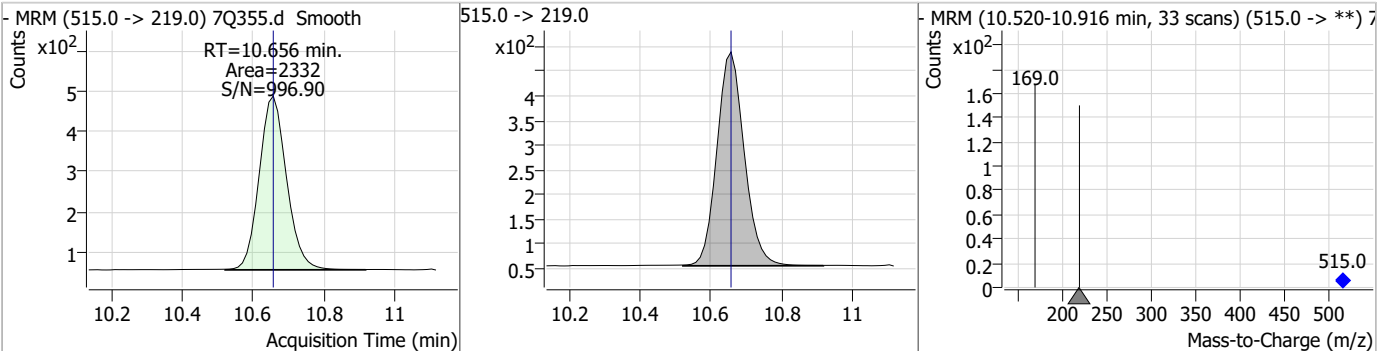
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	15.69	10.56	0.00	14983				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.52	10.58	0.00	2260 (m)				

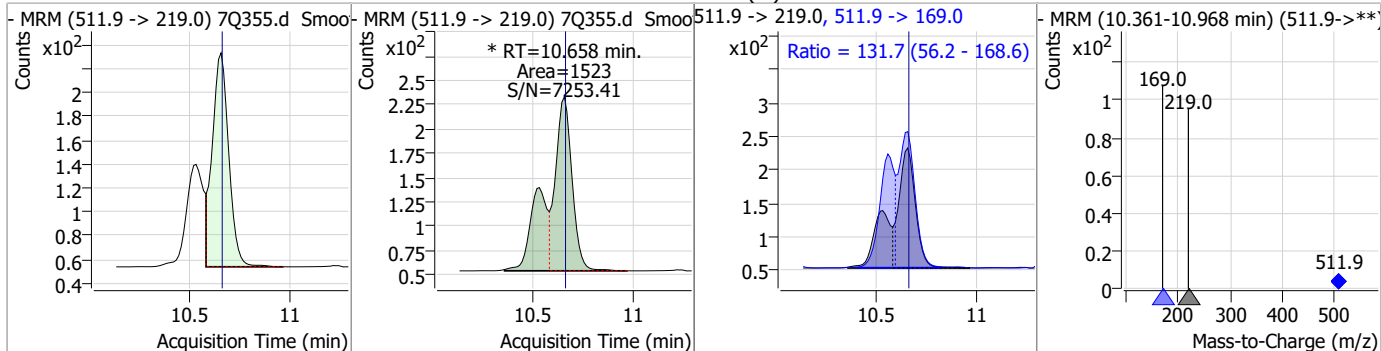


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.72	10.66	0.00	2332				

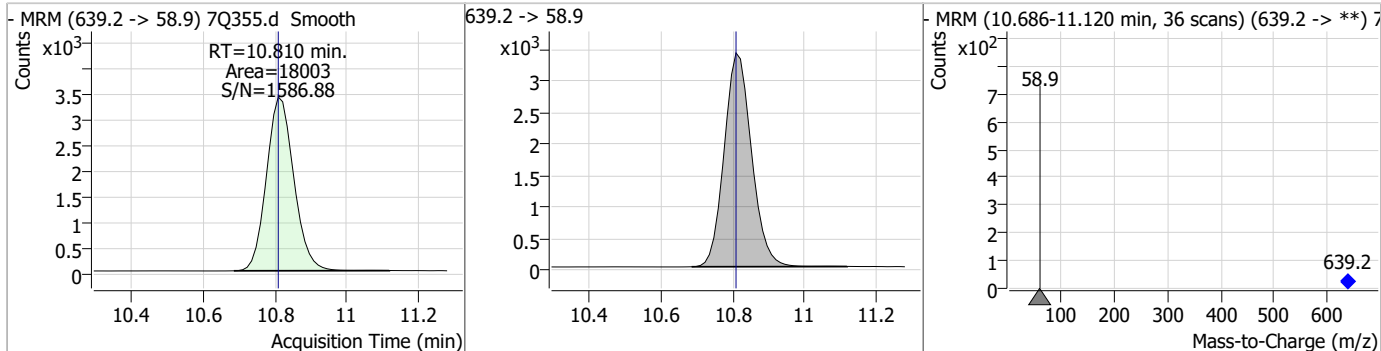


Perfluorinated Compounds by LC/MS/MS

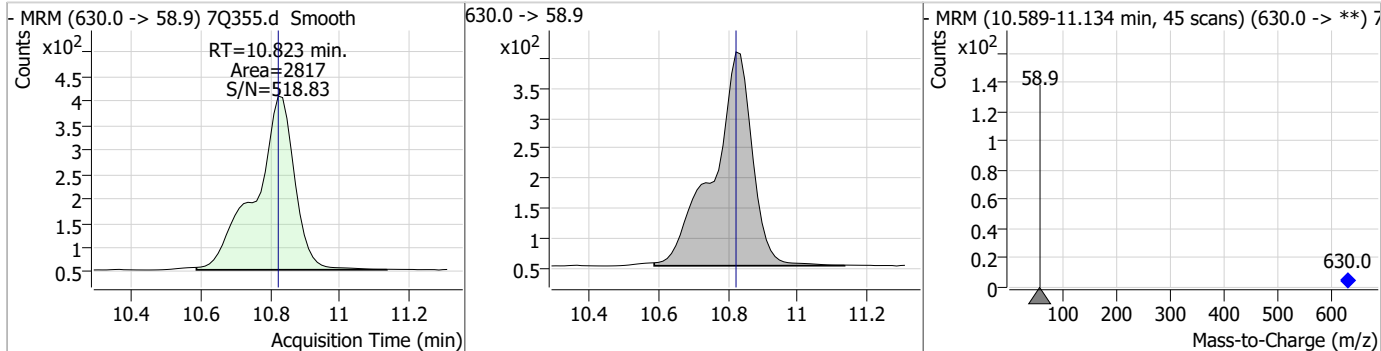
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.58	10.66	0.00	1523 (m)	511.9 -> 169.0	131.7	56.2	168.6



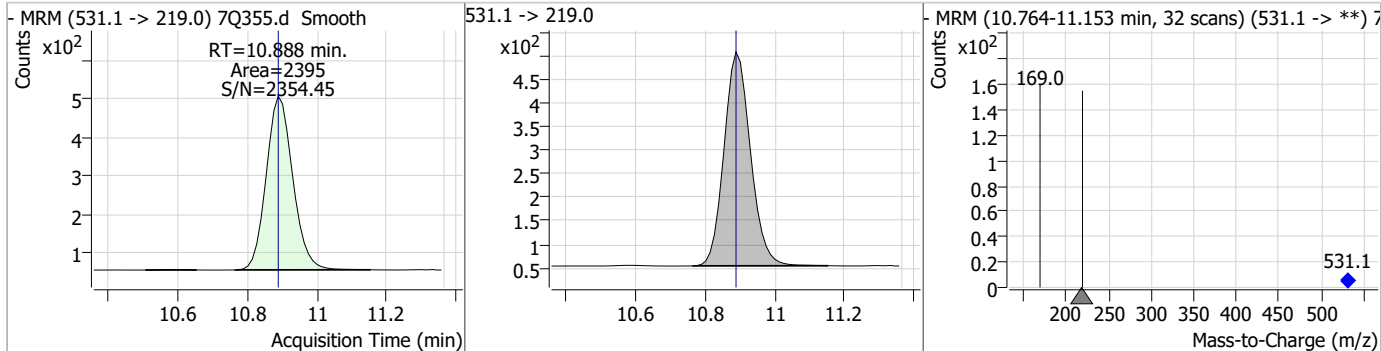
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	16.25	10.81	0.00	18003				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	3.72	10.82	0.00	2817				

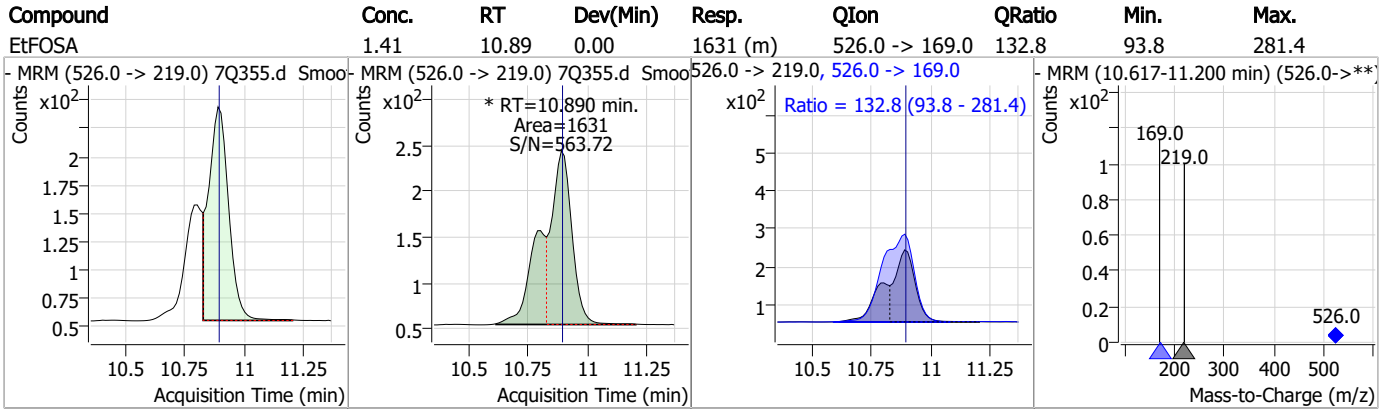


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.72	10.89	0.00	2395				



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: OP576-LLBS Method: EPA DRAFT 1633
Lab FileID: 7Q355.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 18:39 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54996.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 3:08:46 AM
 Sample Name : op524-ms
 Vial : P4-A2
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.765	216.8 -> 171.9	6116	10.00 µg/L	0.091
M5-PFPeA	4.187	268.3 -> 223.0	15684	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	24515	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	27296	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	43665	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	17328	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	12012	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	13701	1.25 µg/L	0.012
M2-PFDoDA	8.892	615.1 -> 570.0	13491	1.25 µg/L	0.012
M2-PFTeDA	9.649	715.2 -> 670.0	12437	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	6933	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	6809	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	6543	2.50 µg/L	0.012
M8-PFOS	8.117	507.1 -> 79.9	5614	2.50 µg/L	0.000
M2-4:2FTS	5.071	329.1 -> 80.9	1520	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2698	5.00 µg/L	0.012
M2-8:2FTS	7.804	529.1 -> 80.9	3365	5.00 µg/L	0.000
M3-MeFOSAA	8.086	573.2 -> 419.0	17235	5.00 µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	19322	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	17121	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	27416	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	39378	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	5951	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	4668	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	4528	2.50 µg/L	0.000
13C3-PFBA	2.755	216.0 -> 172.0	36710	5.00 µg/L	0.077
18O2-PFHxS	7.041	403.0 -> 83.9	3660	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	42762	2.50 µg/L	0.012
13C2-PFDA	8.004	515.1 -> 470.1	11416	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	15597	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	28263	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1520	8.75 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 174.9%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2698	7.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 143.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3365	6.67 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.4%		
13C2-PFDoDA	8.892	615.1 -> 570.0	13491	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12437	1.10 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.8%		
13C3-PFBS	5.215	302.1 -> 79.9	6809	2.43 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C3-PFHxS	7.042	402.1 -> 79.9	6543	2.85 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.0%		
13C4-PFBA	2.765	216.8 -> 171.9	6116	0.79 µg/L	0.091
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 7.9%		
13C4-PFHpA	6.304	367.1 -> 322.0	27296	2.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C5-PFHxA	5.359	318.0 -> 273.0	24515	2.35 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C5-PFPeA	4.187	268.3 -> 223.0	15684	2.42 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 48.4%		
13C6-PFDA	8.004	519.1 -> 474.1	12012	1.45 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 115.7%		
13C7-PFUnDA	8.461	570.0 -> 525.1	13701	1.40 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.9%		
13C8-FOSA	9.806	506.1 -> 77.8	6933	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C8-PFOA	6.989	421.1 -> 376.0	43665	2.76 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.5%		
13C8-PFOS	8.117	507.1 -> 79.9	5614	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C9-PFNA	7.521	472.1 -> 427.0	17328	1.39 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.9%		
d3-MeFOSAA	8.086	573.2 -> 419.0	17235	6.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 137.1%		
13C3-HFPO-DA	5.714	286.9 -> 168.9	19322	7.43 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 74.3%		
d3-MeFOSA	11.126	515.0 -> 219.0	4668	2.67 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.7%		
d5-EtFOSAA	8.296	589.2 -> 419.0	17121	8.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 161.0%		
d7-MeFOSE	11.034	623.2 -> 58.9	27416	18.94 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 75.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	39378	24.29 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.2%		
d5-EtFOSA	11.398	531.1 -> 219.0	5951	3.10 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 124.0%		
Target Compounds					QValue
4:2FTS	5.072	327.1 -> 307.0	26150	9.99 µg/L	99
		327.1 -> 80.9	11018		
6:2FTS	6.761	427.1 -> 407.0	29020	10.23 µg/L	99
		427.1 -> 80.9	10470		
8:2FTS	7.816	527.1 -> 507.0	20160	11.37 µg/L	98
		527.1 -> 80.8	7877		
EtFOSAA	8.297	584.2 -> 419.1	8004	2.56 µg/L	m 81
		584.2 -> 526.0	3428		
FOSA	9.810	498.1 -> 77.9	7981	2.56 µg/L	99
		498.1 -> 478.0	238		
MeFOSAA	8.087	570.1 -> 419.0	7215	2.92 µg/L	90
		570.1 -> 483.0	1482		
PFBA	2.758	212.8 -> 168.9	2115	10.80 µg/L	100
PFBS	5.216	298.7 -> 79.9	4989	2.36 µg/L	94
		298.7 -> 98.8	1826		
PFDA	8.005	512.9 -> 469.0	21543	2.44 µg/L	99
		512.9 -> 219.0	4374		
PFDoDA	8.893	613.1 -> 569.0	28138	2.90 µg/L	98
		613.1 -> 319.0	5018		
PFDS	9.020	599.0 -> 79.9	4158	2.78 µg/L	94

7.4.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	2021	2.59	µg/L	98
		363.1 -> 319.0	39834			
PFHpS	7.624	363.1 -> 169.0	6960	2.52	µg/L	82
		449.0 -> 79.9	5622			
PFHxA	5.362	449.0 -> 98.9	3635	2.55	µg/L	99
		313.0 -> 269.0	19921			
PFHxS	7.043	313.0 -> 118.9	520	2.34	µg/L	99
		398.7 -> 79.9	4941			
PFNA	7.522	398.7 -> 98.9	2318	2.44	µg/L	96
		463.0 -> 419.0	24869			
PFNS	8.599	463.0 -> 219.0	6251	3.33	µg/L	96
		548.8 -> 79.9	3194			
PFOA	6.990	548.8 -> 98.9	1491	2.52	µg/L	95
		413.0 -> 369.0	45226			
PFOS	8.119	413.0 -> 169.0	9067	2.61	µg/L	50
		498.9 -> 79.9	6091			
PFPeA	4.189	498.9 -> 98.8	2688	5.07	µg/L	100
		263.0 -> 219.0	15630			
PFPeS	6.294	349.1 -> 79.9	5063	2.55	µg/L	95
		349.1 -> 98.9	1974			
PFTeDA	9.650	713.1 -> 669.0	22353	2.58	µg/L	100
		713.1 -> 168.9	2333			
PFTrDA	9.292	663.0 -> 619.0	28340	2.68	µg/L	98
		663.0 -> 168.9	4016			
PFUnDA	8.461	563.1 -> 519.0	28278	2.84	µg/L	96
		563.1 -> 269.1	5464			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	31193	5.86	µg/L	99
		632.9 -> 452.9	9592			
9Cl-PF3ONS	8.463	530.8 -> 351.0	34897	6.49	µg/L	100
		532.8 -> 353.0	10476			
ADONA	6.568	376.9 -> 250.9	96231	7.37	µg/L	100
		376.9 -> 84.8	23442			
HFPO-DA	5.715	284.9 -> 168.9	9519	5.15	µg/L	98
		284.9 -> 184.9	977			
3:3FTCA	3.679	241.0 -> 177.0	778	25.00	µg/L	97
		241.0 -> 117.0	60			
5:3FTCA	6.045	341.0 -> 237.1	102643	73.56	µg/L	99
		341.0 -> 217.0	72435			
7:3FTCA	7.549	441.0 -> 316.9	55230	75.48	µg/L	98
		441.0 -> 336.9	129165			
EtFOSA	11.399	526.0 -> 219.0	11094	4.38	µg/L	100
		526.0 -> 169.0	15361			
EtFOSE	11.332	630.0 -> 58.9	15916	11.42	µg/L	100
		511.9 -> 219.0	6748			
MeFOSA	11.128	511.9 -> 169.0	11224	4.06	µg/L	85
		616.1 -> 58.9	12642			
MeFOSE	11.047	699.1 -> 79.9	2737	11.62	µg/L	100
		699.1 -> 98.8	1482			
PFDoDS	9.777	295.0 -> 201.0	1755	2.40	µg/L	97
		295.0 -> 84.9	452			
NFDHA	5.241	279.0 -> 85.1	10669	3.17	µg/L	99
		229.0 -> 84.9	3214			
PFMBA	4.591	314.8 -> 134.9	28021	6.28	µg/L	100
PFMPA	3.357	314.8 -> 82.9	1056	1.72	µg/L	100
PFEESA	5.734			4.85	µg/L	100

= Qualifier out of range, m = manually integrated, + = Area summed

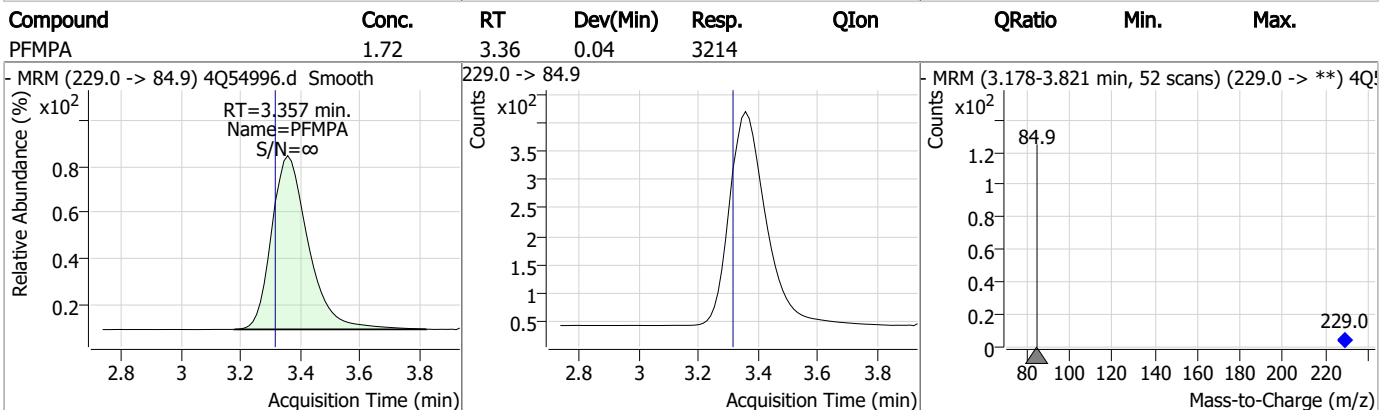
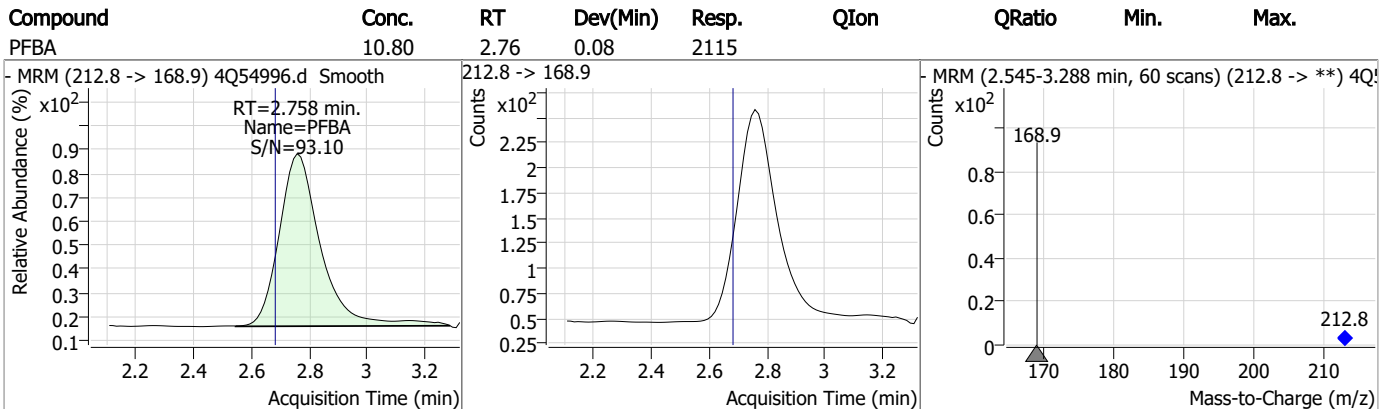
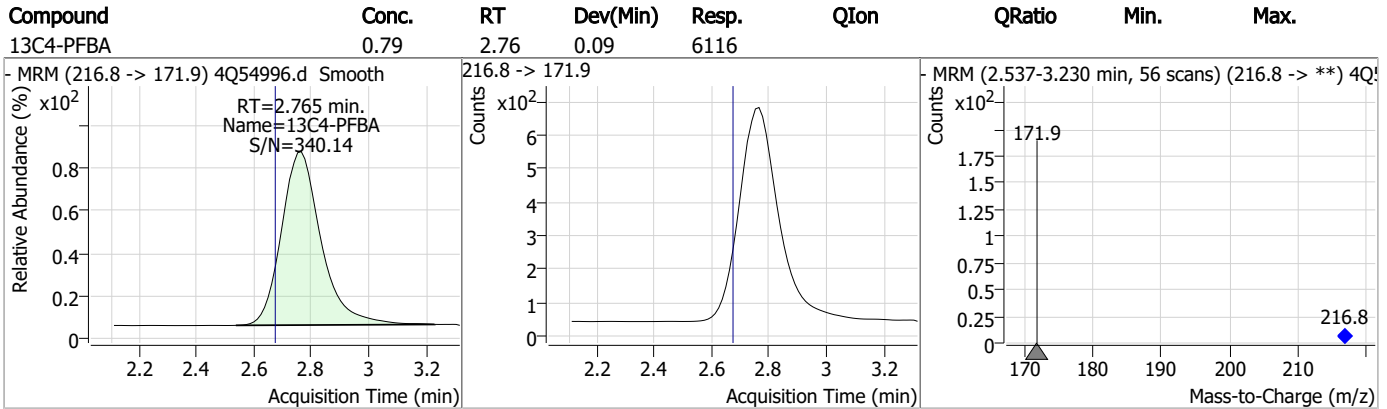
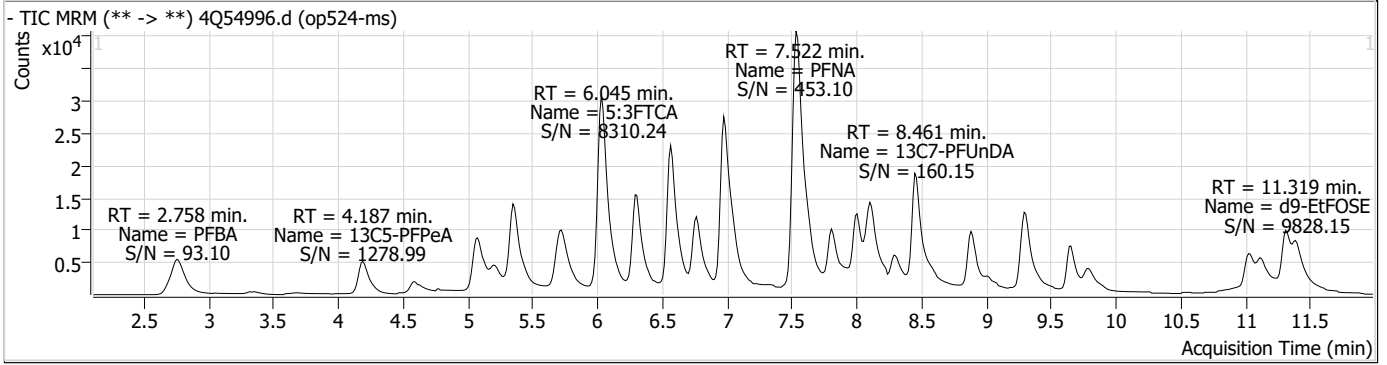
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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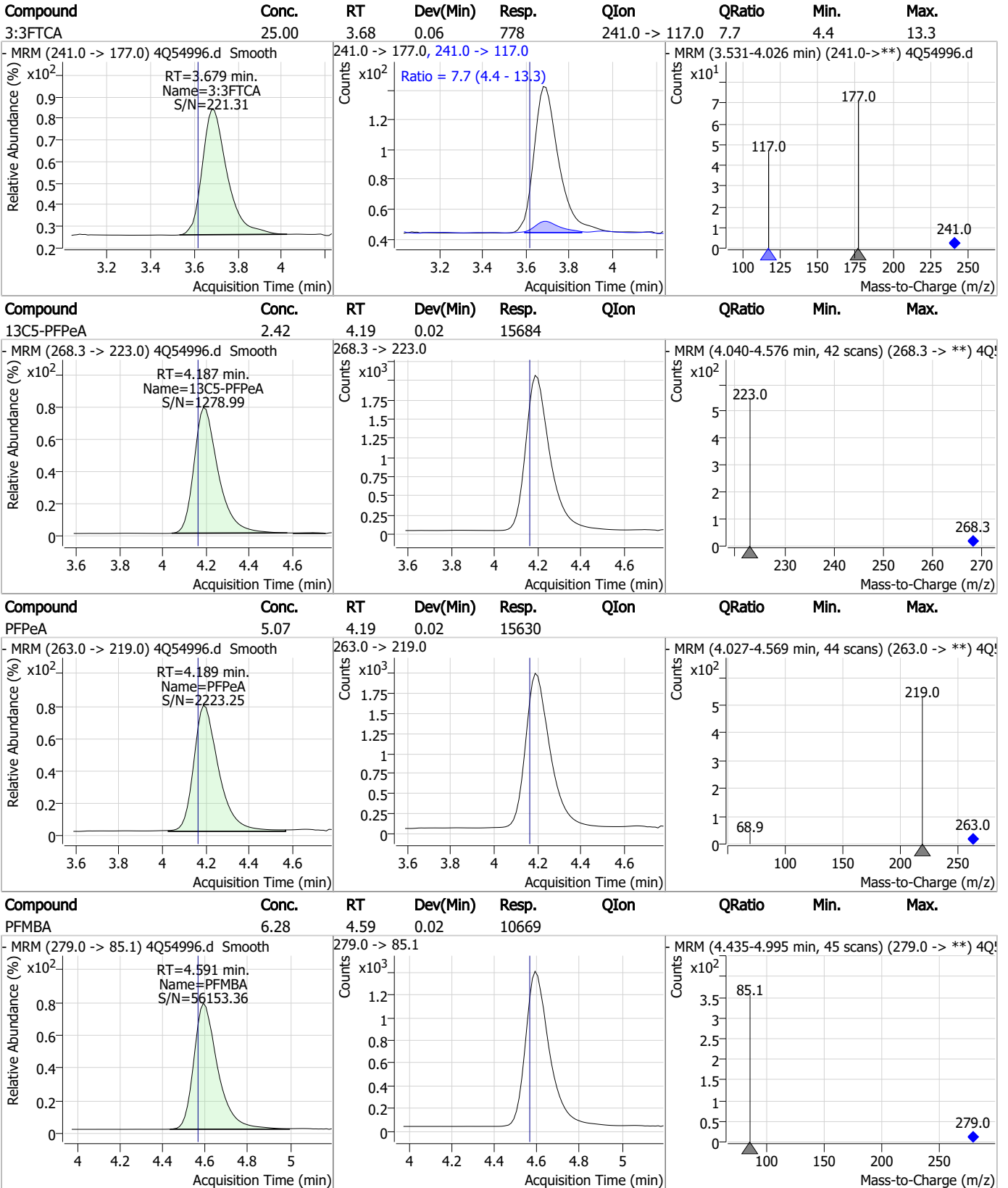
7.4.1

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Perfluorinated Compounds by LC/MS/MS



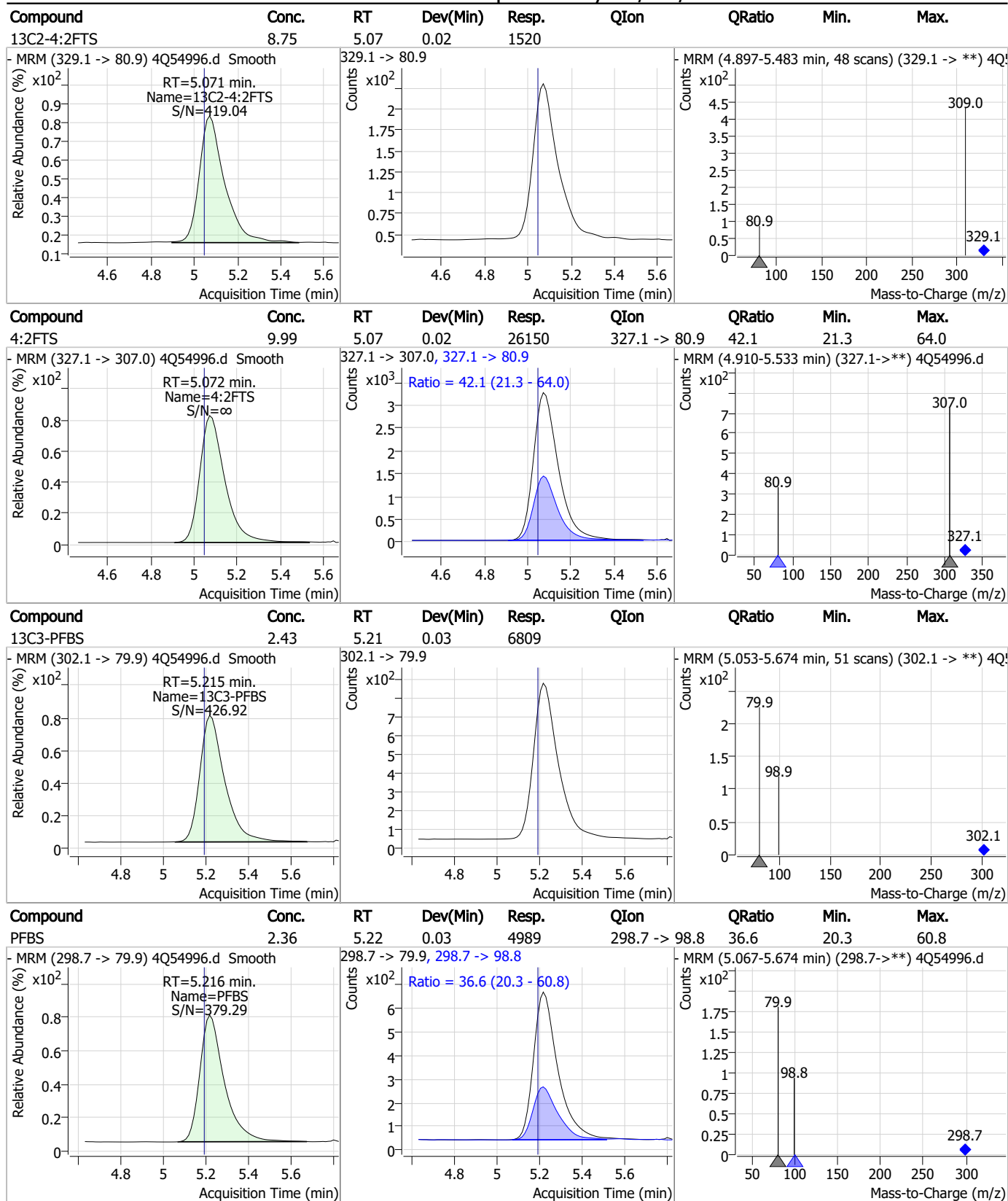
Perfluorinated Compounds by LC/MS/MS



7.4.1

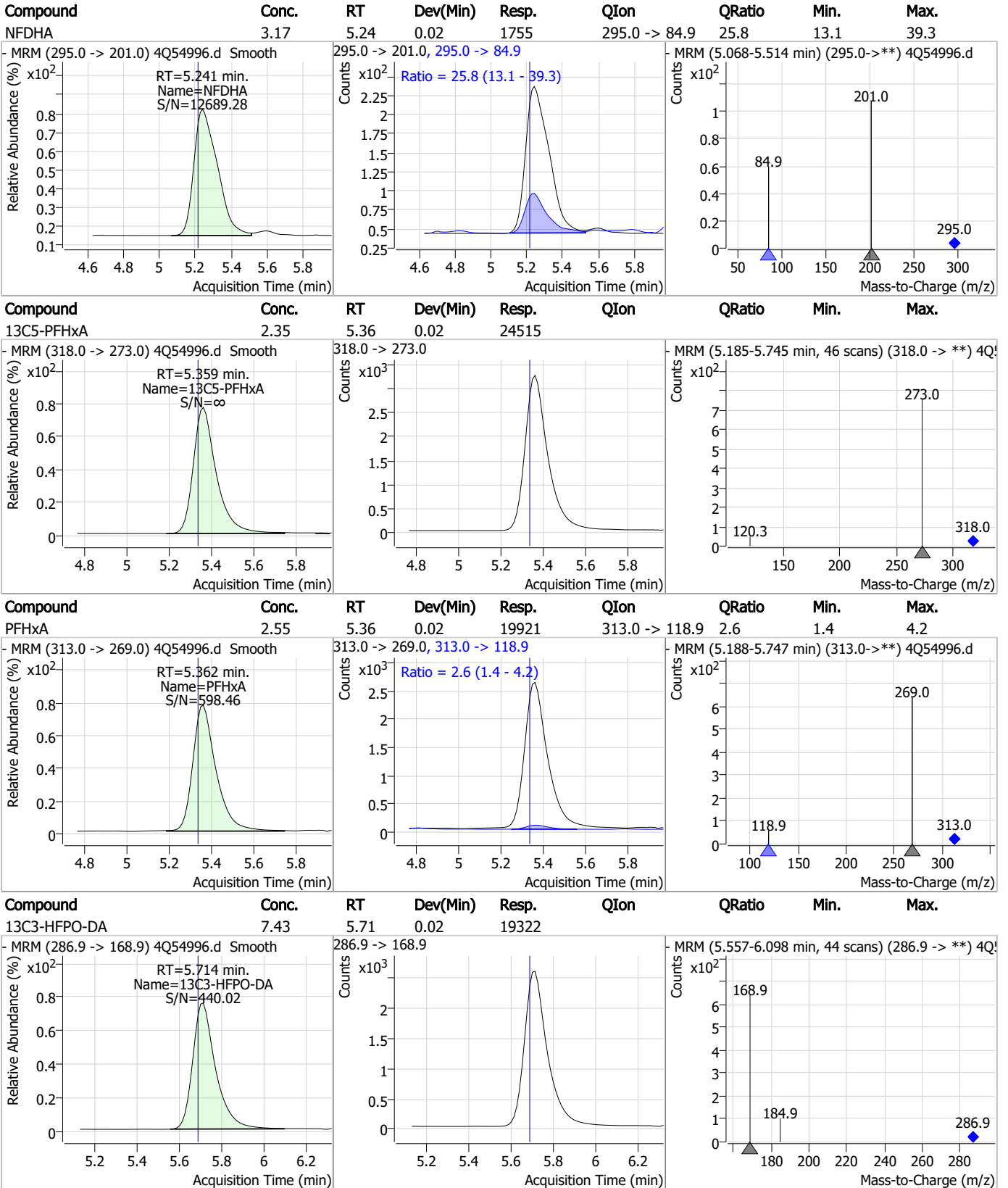
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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Perfluorinated Compounds by LC/MS/MS

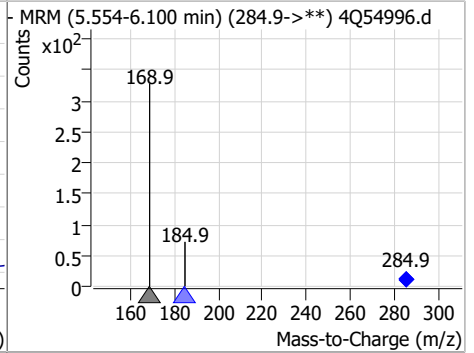
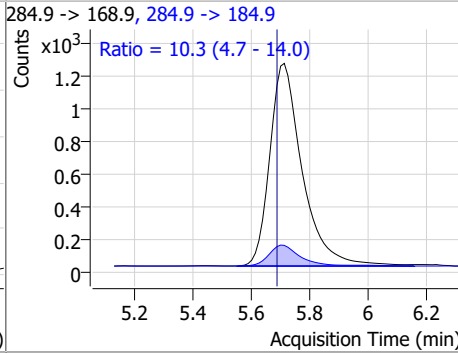
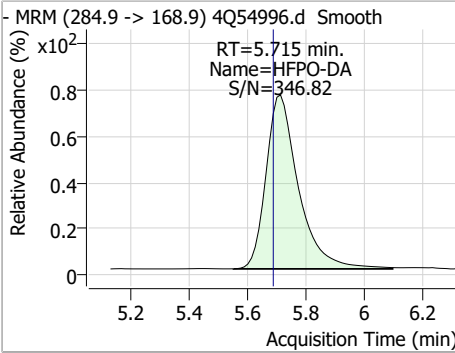


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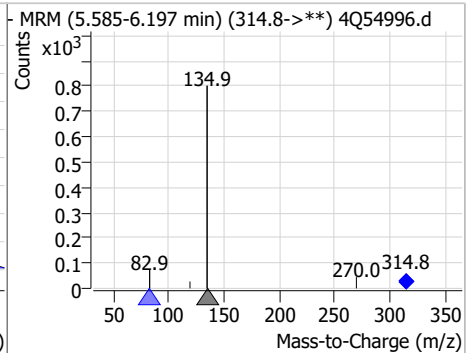
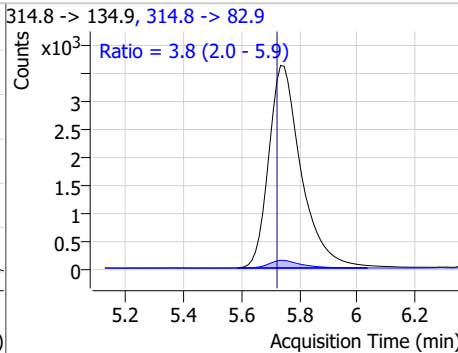
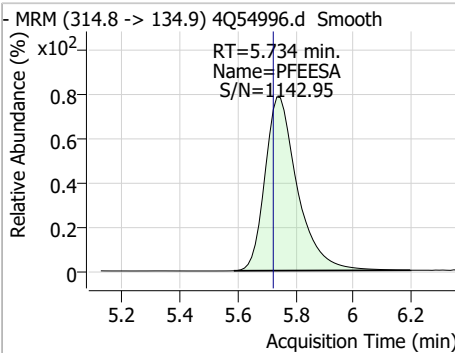
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Perfluorinated Compounds by LC/MS/MS

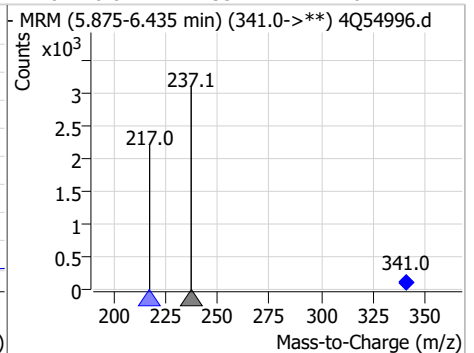
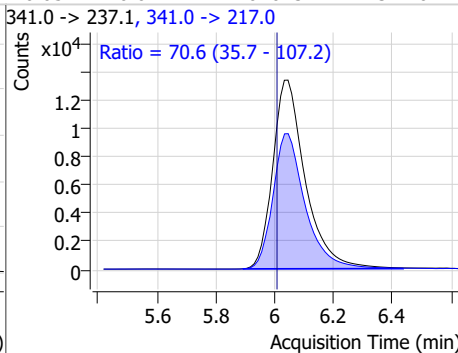
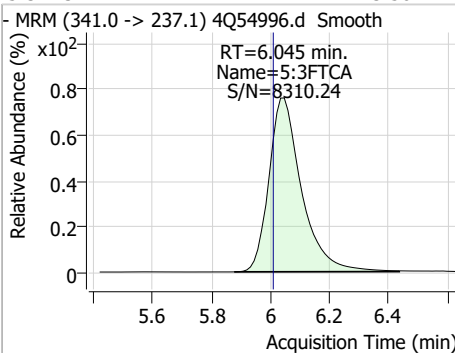
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.15	5.72	0.02	9519	284.9 -> 184.9	10.3	4.7	14.0



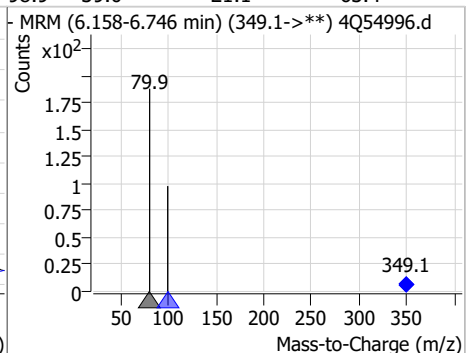
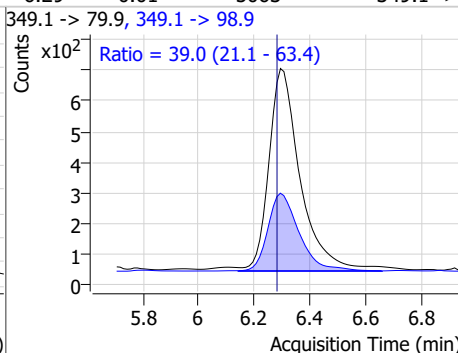
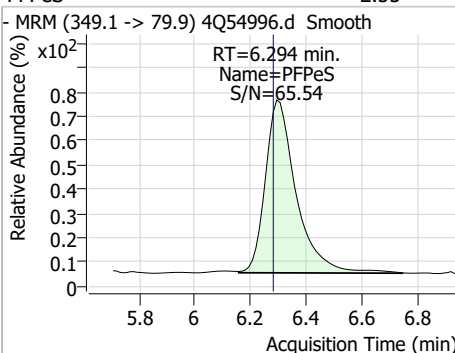
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.85	5.73	0.01	28021	314.8 -> 82.9	3.8	2.0	5.9



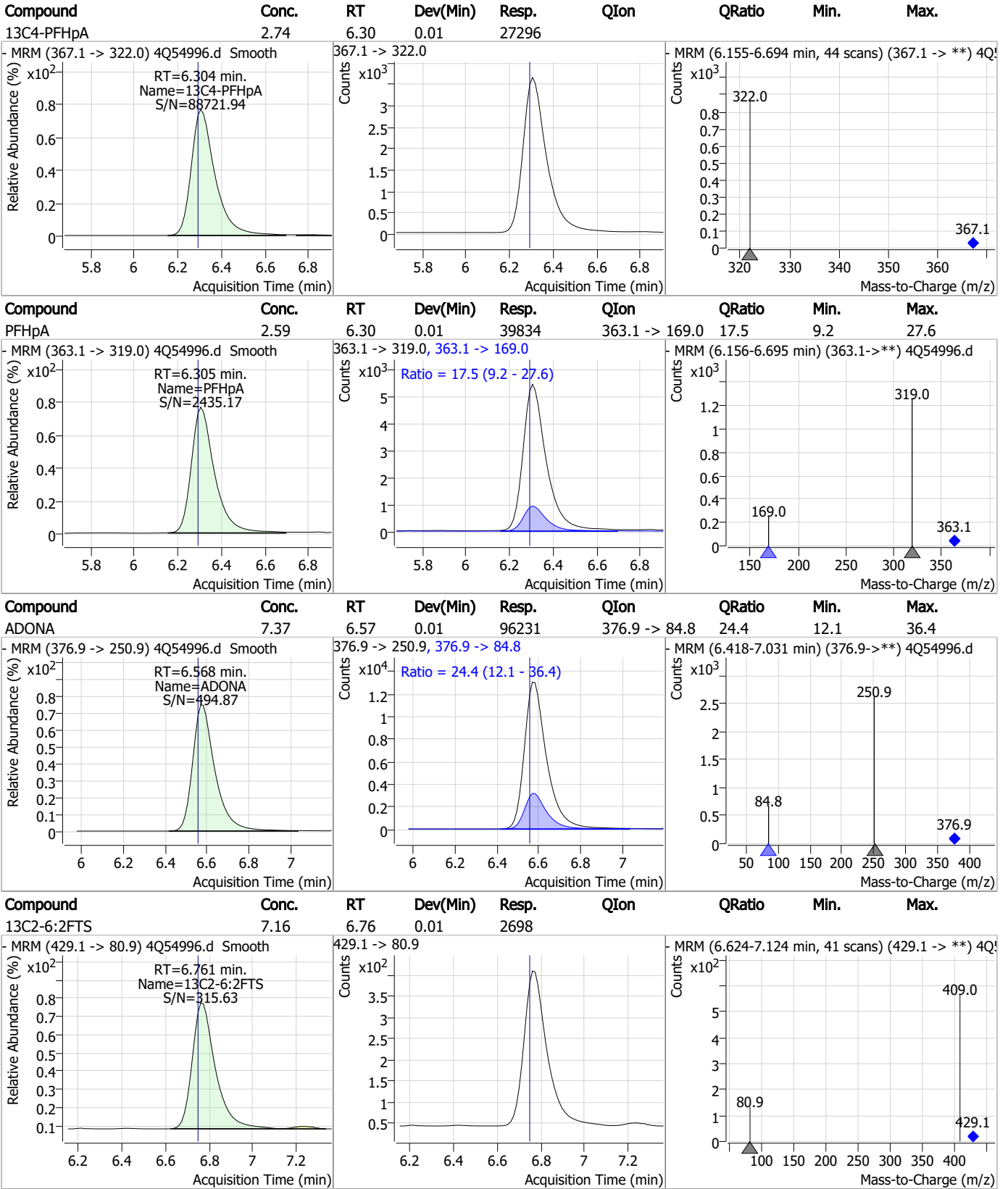
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	73.56	6.05	0.04	102643	341.0 -> 217.0	70.6	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.55	6.29	0.01	5063	349.1 -> 98.9	39.0	21.1	63.4



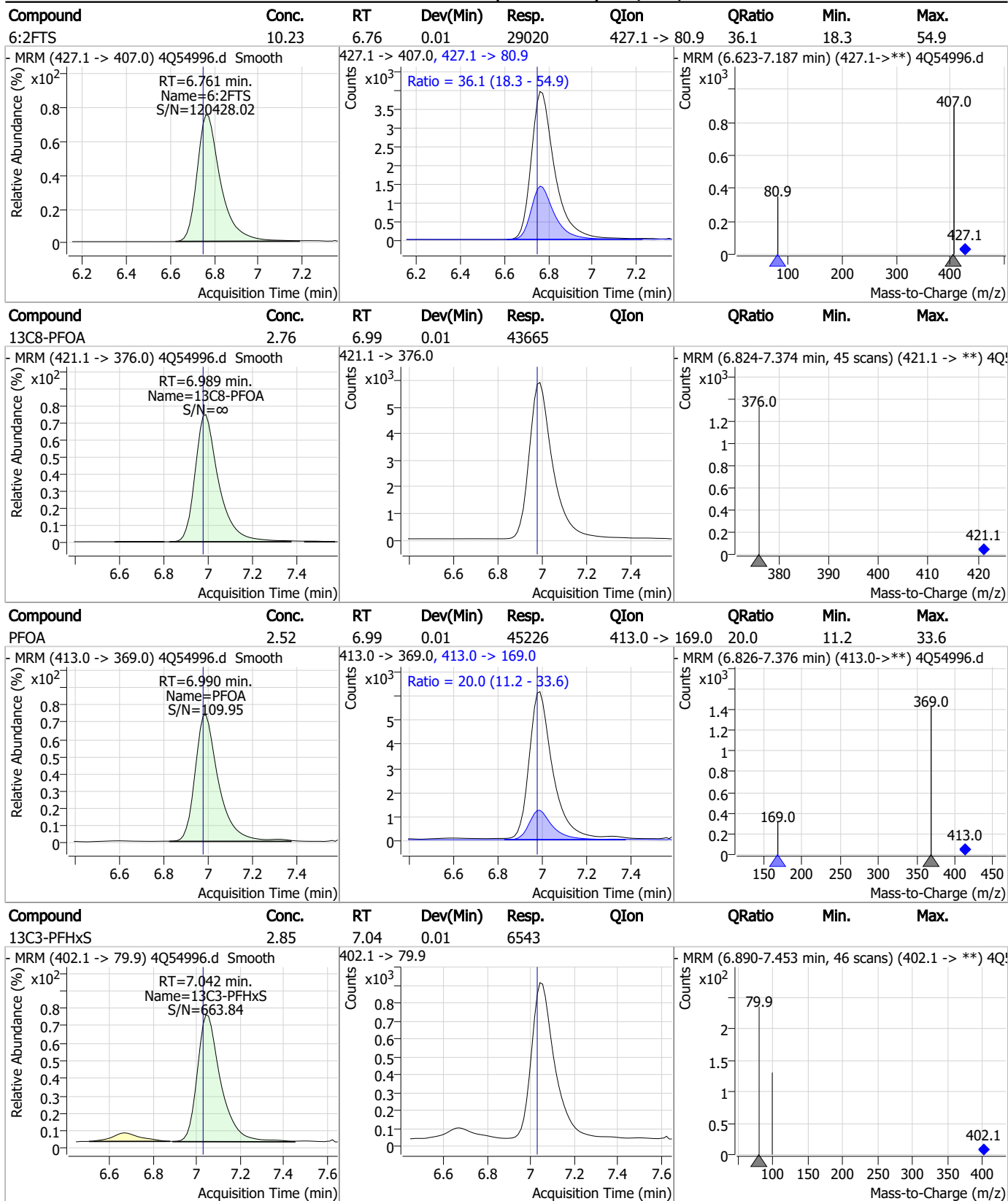
Perfluorinated Compounds by LC/MS/MS



7.4.1

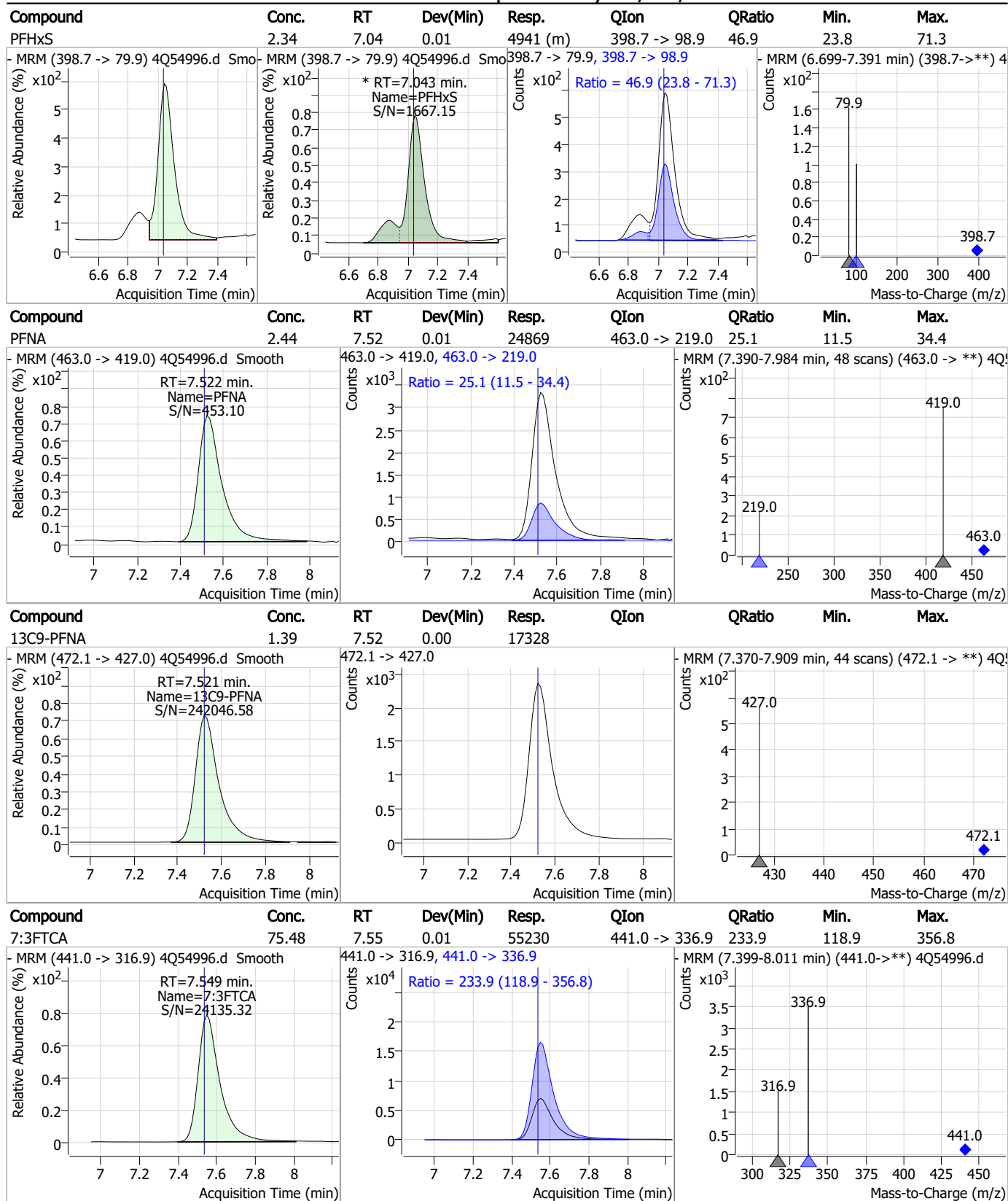
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Perfluorinated Compounds by LC/MS/MS



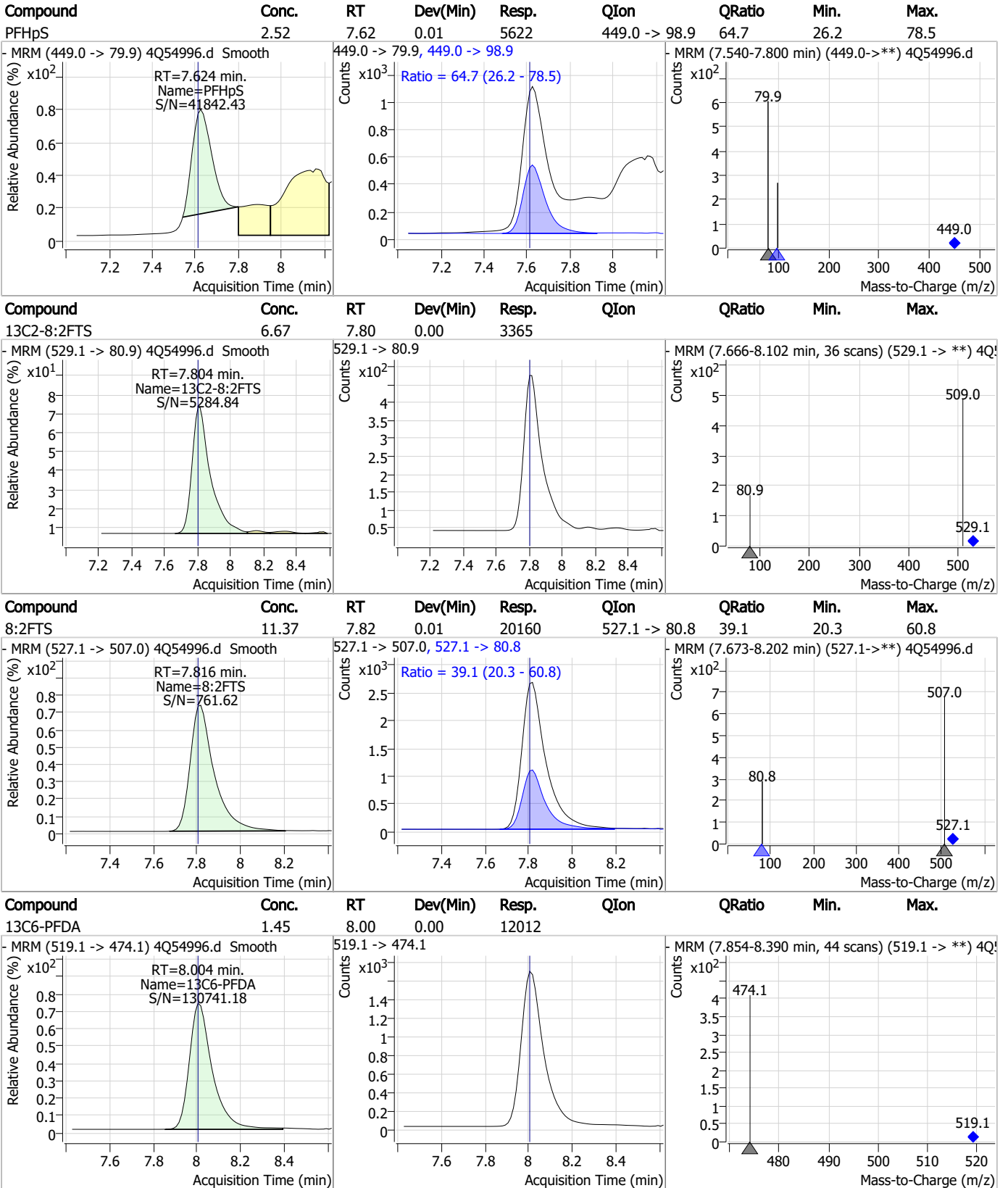
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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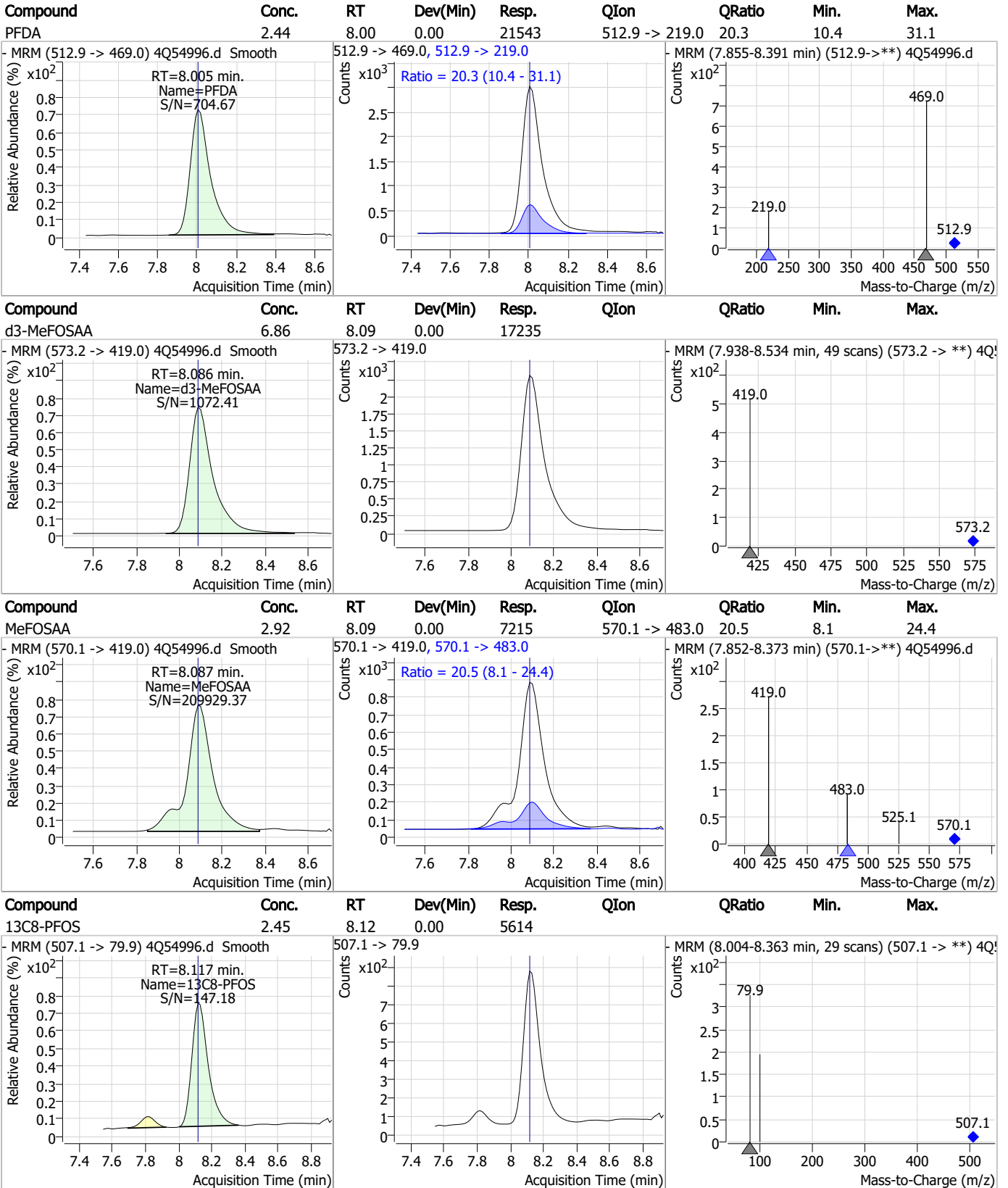
Perfluorinated Compounds by LC/MS/MS



7.4.1

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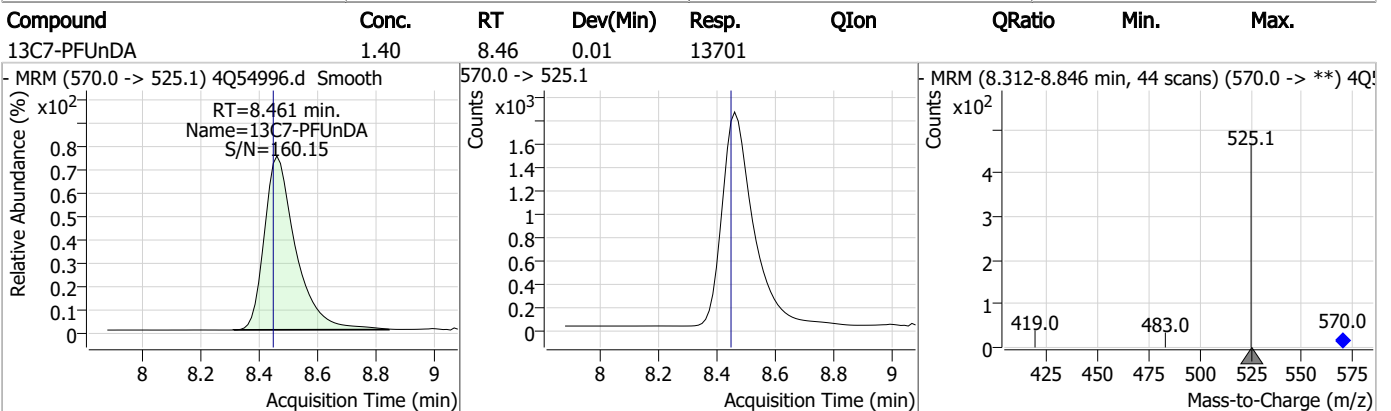
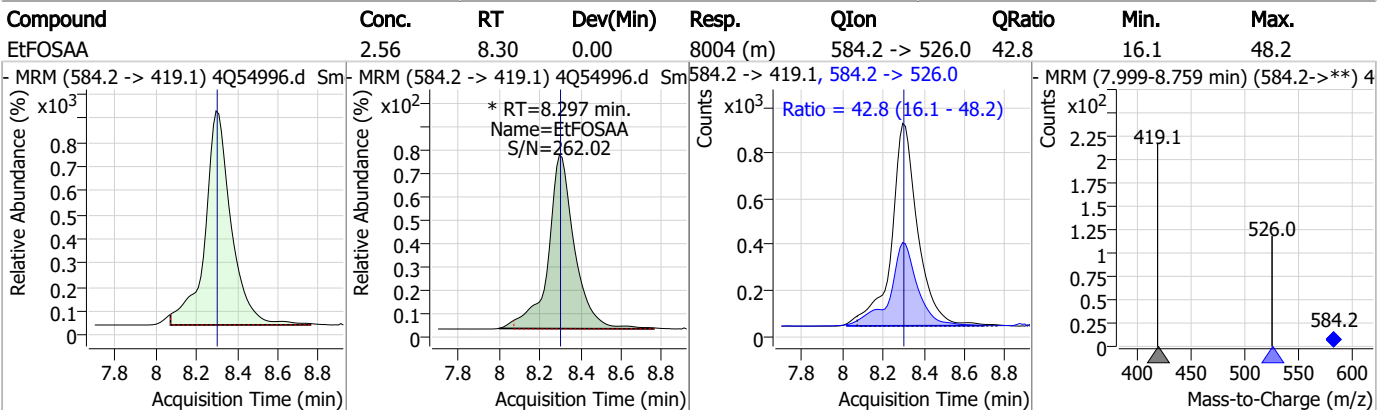
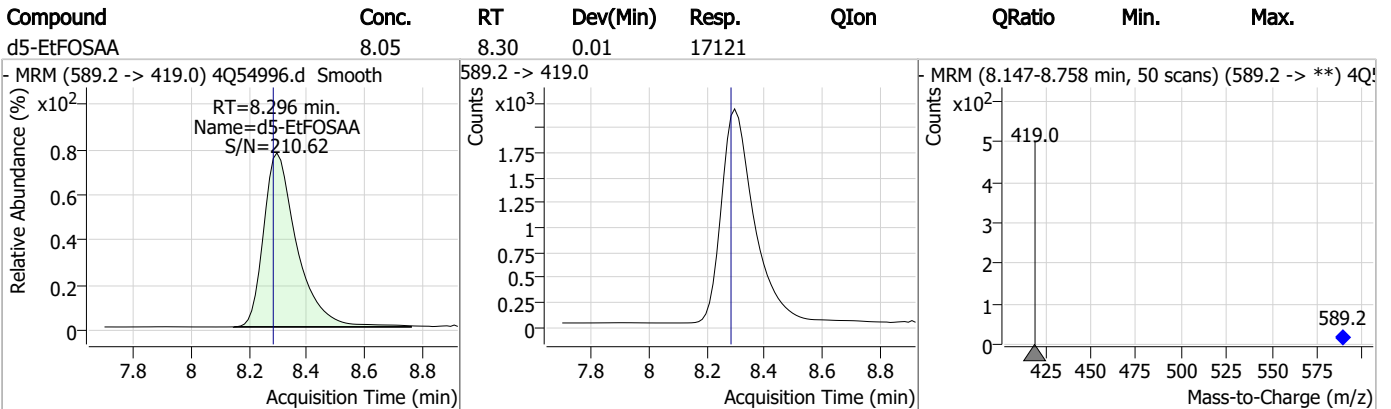
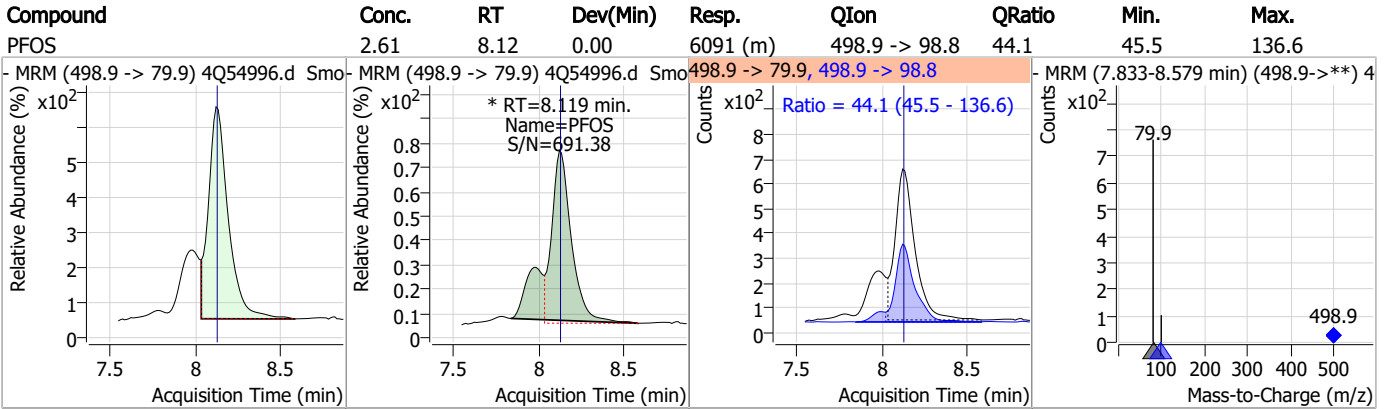
Perfluorinated Compounds by LC/MS/MS



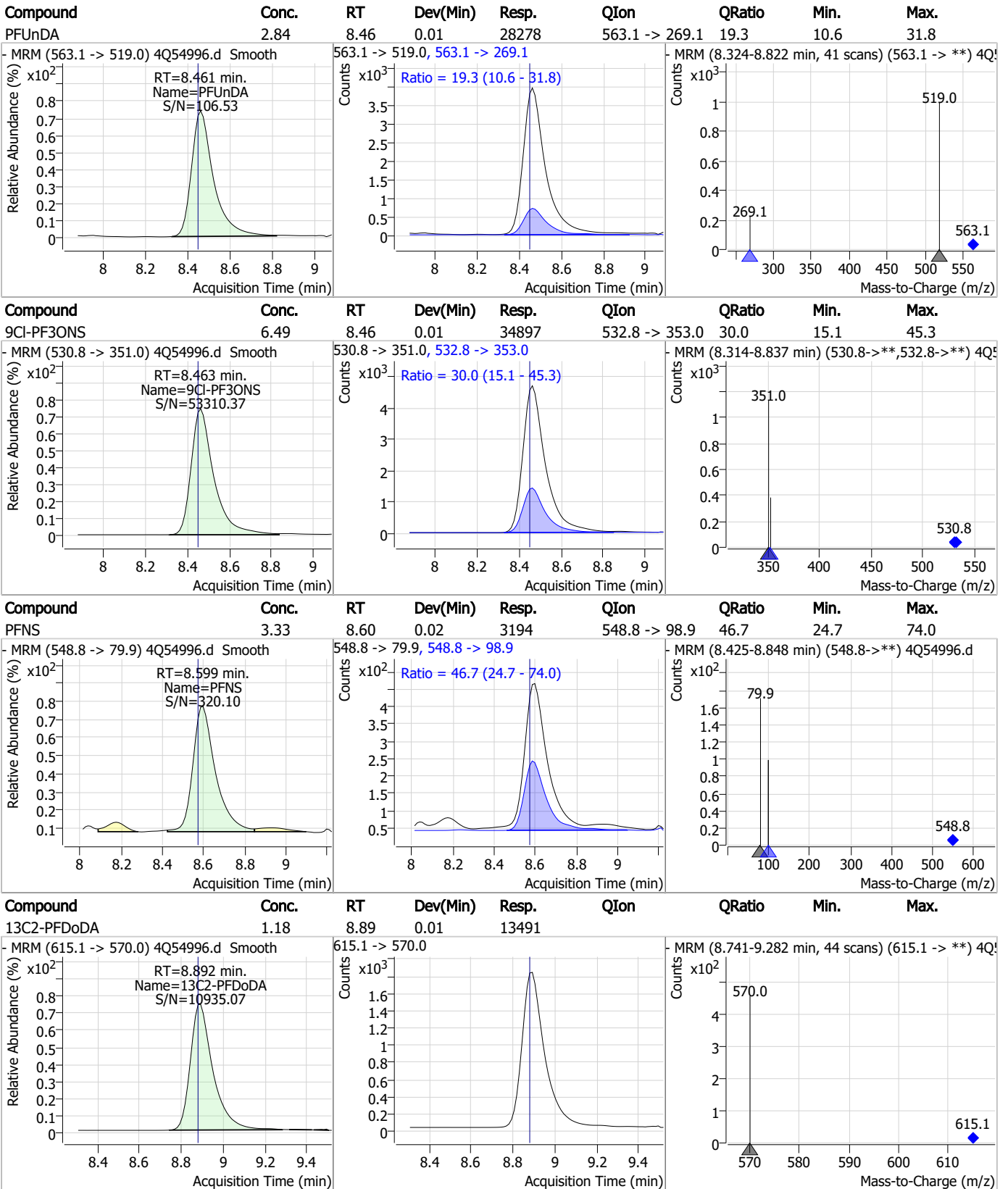
7.4.1

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.4.1

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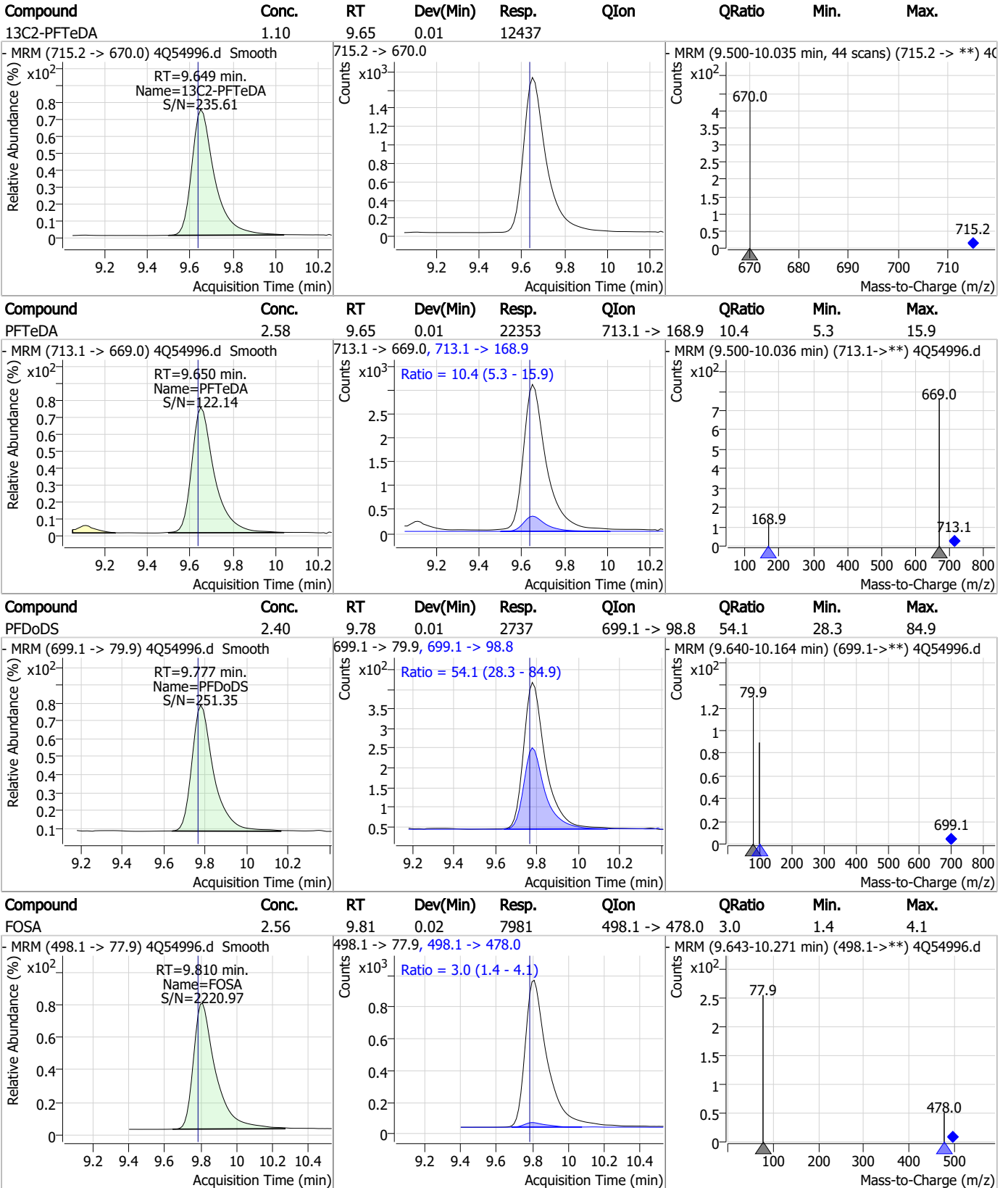
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.90	8.89	0.01	28138	613.1 -> 319.0	17.8	8.5	25.6
PFDS	2.78	9.02	0.01	4158	599.0 -> 98.8	48.6	26.2	78.7
PFTrDA	2.68	9.29	0.01	28340	663.0 -> 168.9	14.2	6.7	20.1
11Cl-PF3OUdS	5.86	9.31	0.00	31193	632.9 -> 452.9	30.7	15.7	47.0

7.4.1

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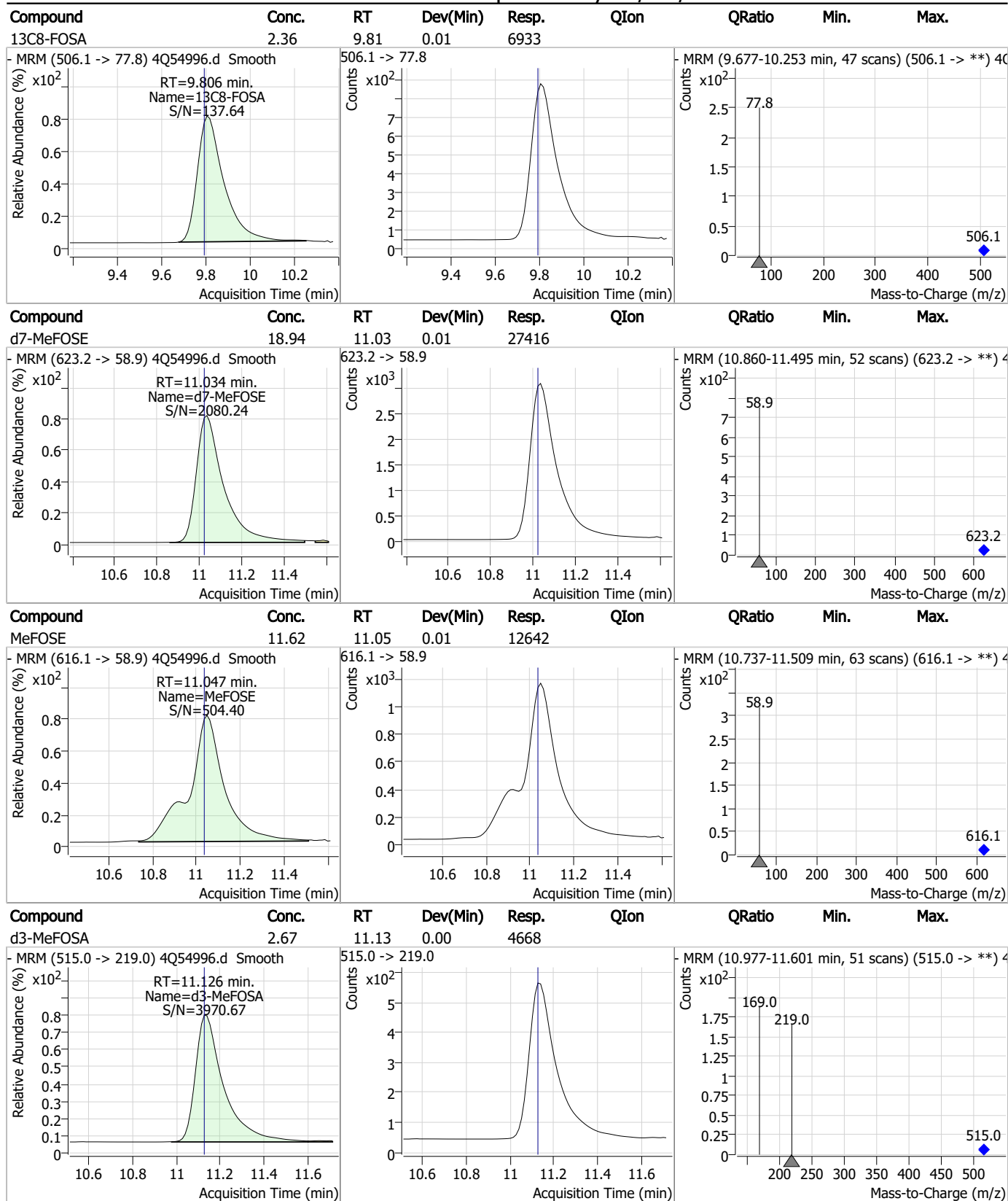
Perfluorinated Compounds by LC/MS/MS



7.4.1

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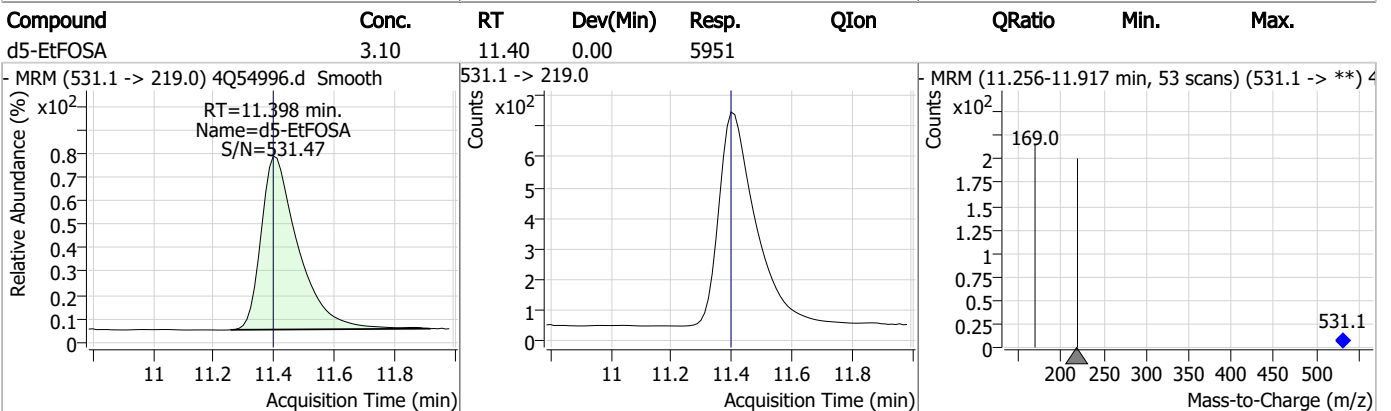
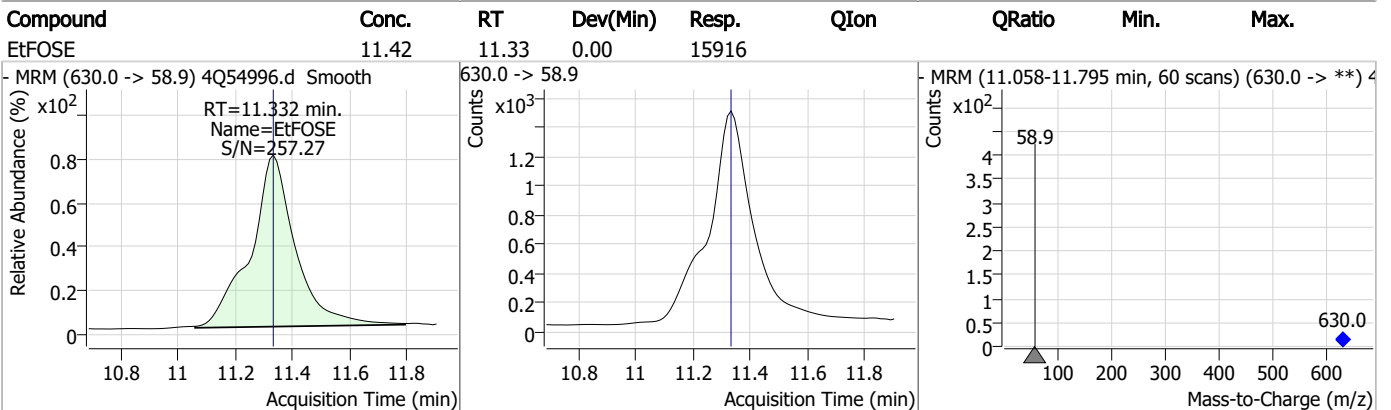
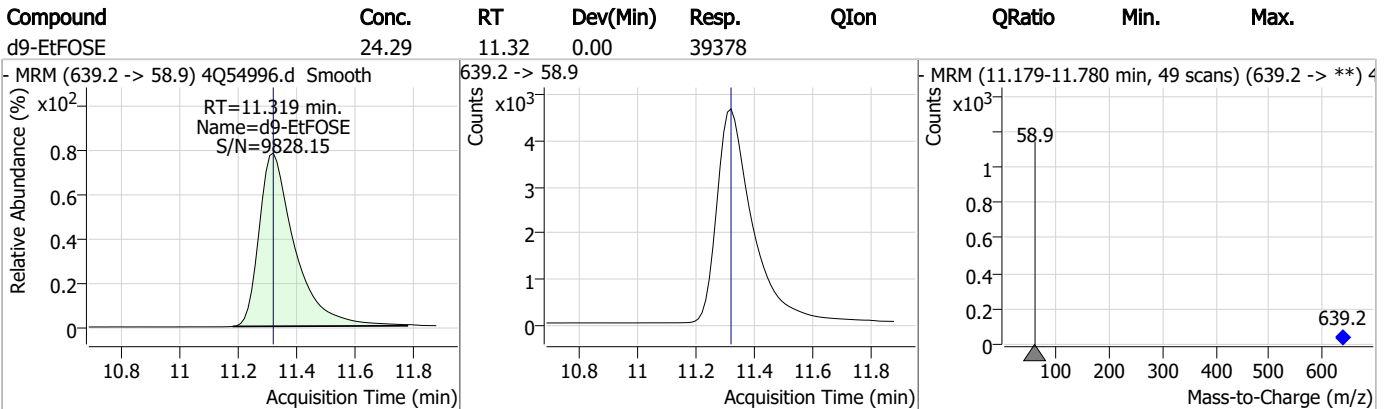
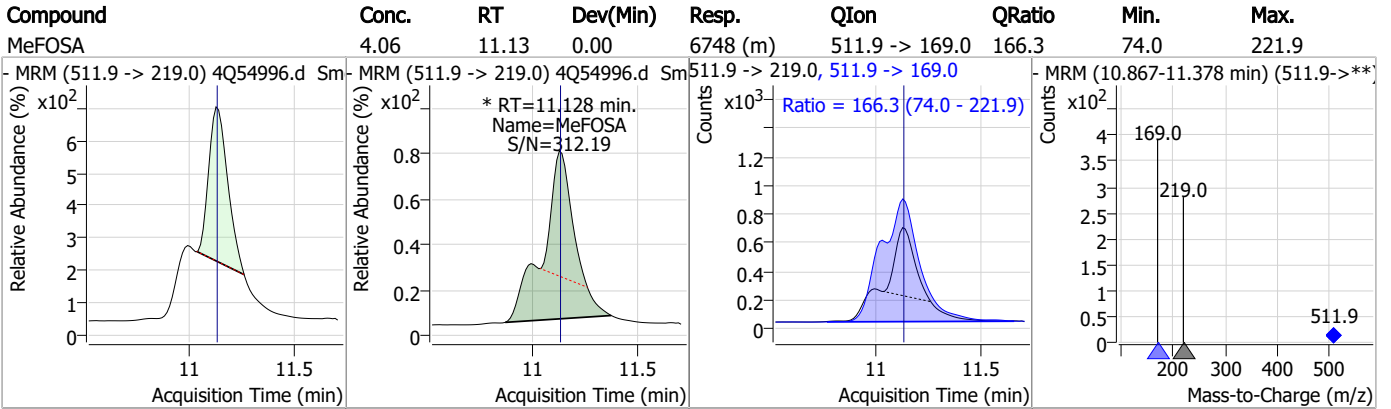
Perfluorinated Compounds by LC/MS/MS



7.4.1
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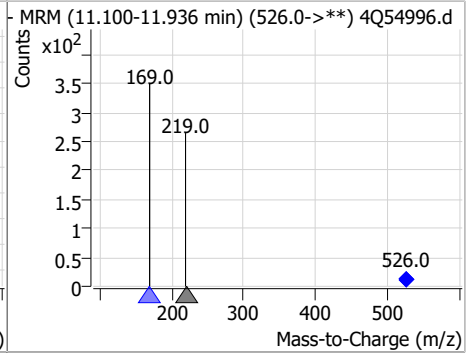
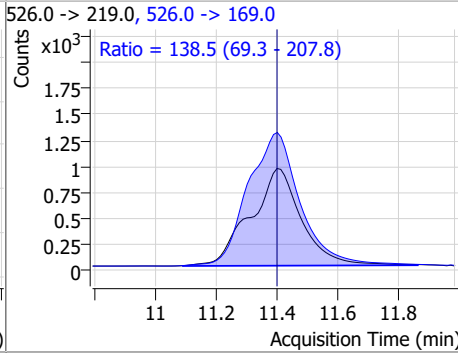
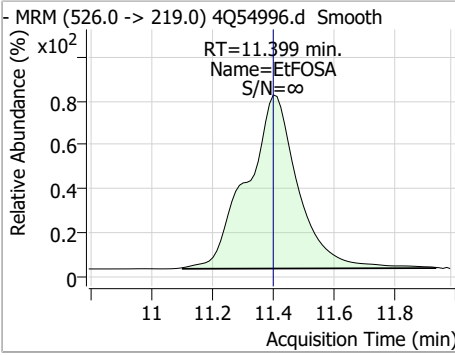


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.38	11.40	0.00	11094	526.0 -> 169.0	138.5	69.3	207.8



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP524-MS Method: EPA DRAFT 1633
Lab FileID: 4Q54996.D Analyst approved: 12/14/23 09:15 Natasha Gumtie
Injection Time: 12/11/23 03:08 Supervisor approved: 12/14/23 11:36 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.4.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54999.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 3:53:01 AM
 Sample Name : op524-dup
 Vial : P4-A5
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP524,S4Q805,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.765	216.8 -> 171.9	86525	10.00 µg/L	0.091
M5-PFPeA	4.187	268.3 -> 223.0	35331	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	27851	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	27009	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	43083	2.50 µg/L	0.012
M9-PFNA	7.534	472.1 -> 427.0	16699	1.25 µg/L	0.012
M6-PFDA	8.017	519.1 -> 474.1	12011	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	13634	1.25 µg/L	0.012
M2-PFDoDA	8.892	615.1 -> 570.0	14090	1.25 µg/L	0.012
M2-PFTeDA	9.649	715.2 -> 670.0	13776	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	7365	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	7449	2.50 µg/L	0.025
M3-PFHxS	7.054	402.1 -> 79.9	6750	2.50 µg/L	0.025
M8-PFOS	8.130	507.1 -> 79.9	6856	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1201	5.00 µg/L	0.025
M2-6:2FTS	6.773	429.1 -> 80.9	2845	5.00 µg/L	0.025
M2-8:2FTS	7.816	529.1 -> 80.9	3264	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	17315	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	25129	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	14216	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	27210	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	39320	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5372	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4048	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5666	2.50 µg/L	0.012
13C3-PFBA	2.768	216.0 -> 172.0	38538	5.00 µg/L	0.090
18O2-PFHxS	7.054	403.0 -> 83.9	3812	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	43423	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	11361	1.25 µg/L	0.013
13C5-PFNA	7.534	468.0 -> 423.0	15846	1.25 µg/L	0.025
13C2-PFHxA	5.360	315.1 -> 270.0	27655	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1201	6.64 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.8%		
13C2-6:2FTS	6.773	429.1 -> 80.9	2845	7.25 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 145.0%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3264	6.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.2%		
13C2-PFDoDA	8.892	615.1 -> 570.0	14090	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	13776	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C3-PFBS	5.215	302.1 -> 79.9	7449	2.55 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C3-PFHxS	7.054	402.1 -> 79.9	6750	2.82 µg/L	0.025

7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.9%	
13C4-PFBA	2.765	216.8 -> 171.9	86525	10.69 µg/L	0.091
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.9%	
13C4-PFHpA	6.304	367.1 -> 322.0	27009	2.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.8%	
13C5-PFHxA	5.359	318.0 -> 273.0	27851	2.73 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.3%	
13C5-PFPeA	4.187	268.3 -> 223.0	35331	5.57 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.3%	
13C6-PFDA	8.017	519.1 -> 474.1	12011	1.45 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 116.2%	
13C7-PFUnDA	8.461	570.0 -> 525.1	13634	1.40 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C8-FOSA	9.806	506.1 -> 77.8	7365	2.01 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.2%	
13C8-PFOA	6.989	421.1 -> 376.0	43083	2.68 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.4%	
13C8-PFOS	8.130	507.1 -> 79.9	6856	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C9-PFNA	7.534	472.1 -> 427.0	16699	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.2%	
d3-MeFOSAA	8.099	573.2 -> 419.0	17315	5.51 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.1%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	25129	9.87 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	4048	1.85 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.9%	
d5-EtFOSAA	8.296	589.2 -> 419.0	14216	5.34 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.9%	
d7-MeFOSE	11.034	623.2 -> 58.9	27210	15.02 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 60.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	39320	19.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.5%	
d5-EtFOSA	11.410	531.1 -> 219.0	5372	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.5%	

7.5.1
7

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.317	599.0 -> 98.8				
		363.1 -> 319.0	949	0.06 µg/L	m	100
PFHpS	-	363.1 -> 169.0	176			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.362	449.0 -> 98.9				
		313.0 -> 269.0	875	0.10 µg/L		97
PFHxS	-	313.0 -> 118.9	34			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.202	498.9 -> 98.8				
		263.0 -> 219.0	1186	0.17 µg/L		100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFMBA	-					
PFMPA	-					
PFEESA	-					

= Qualifier out of range, m = manually integrated, + = Area summed

7.5.1
7

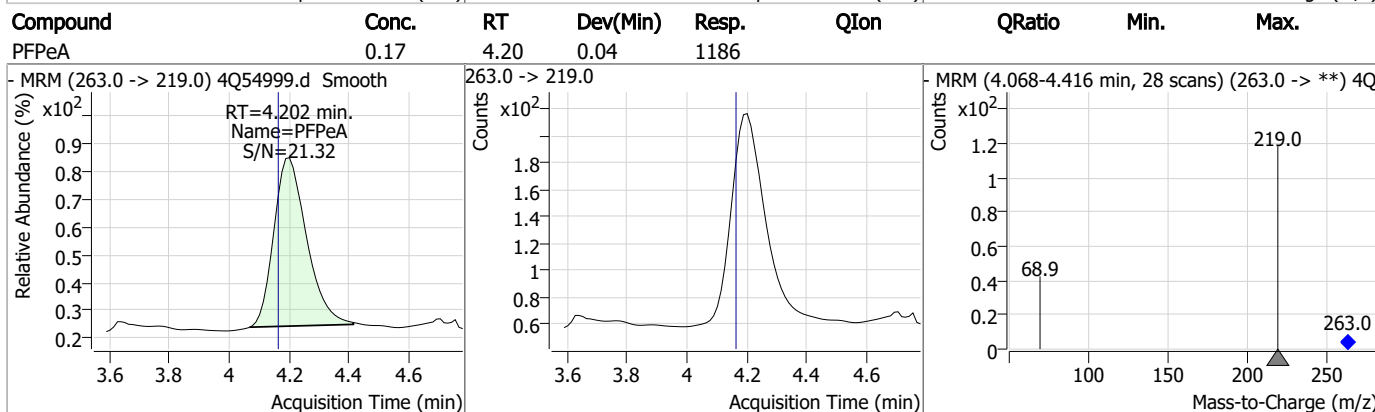
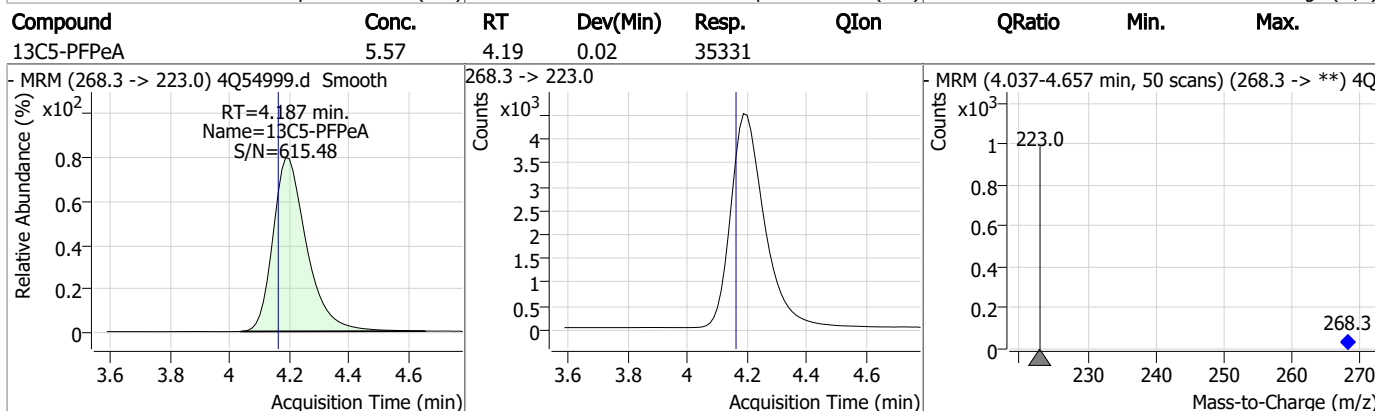
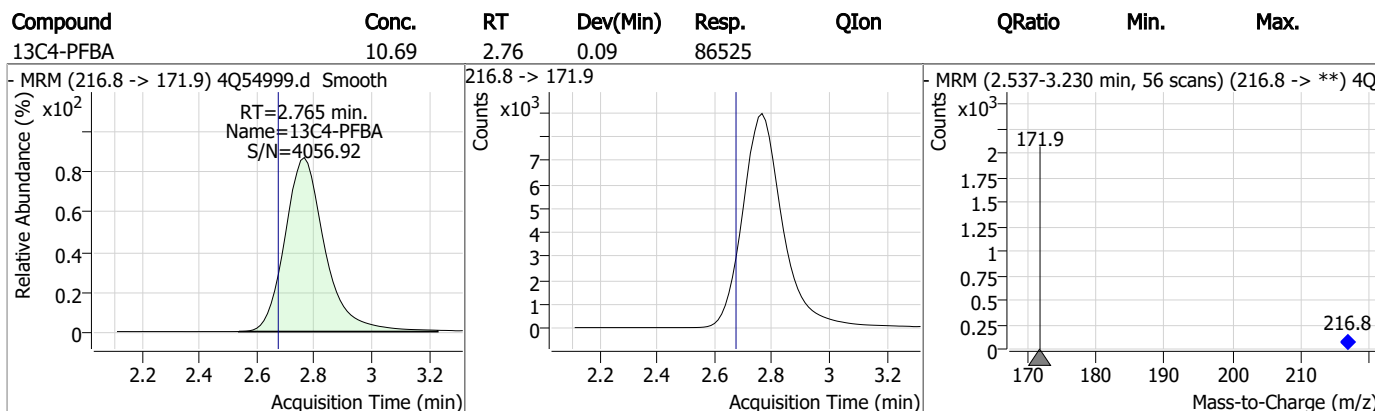
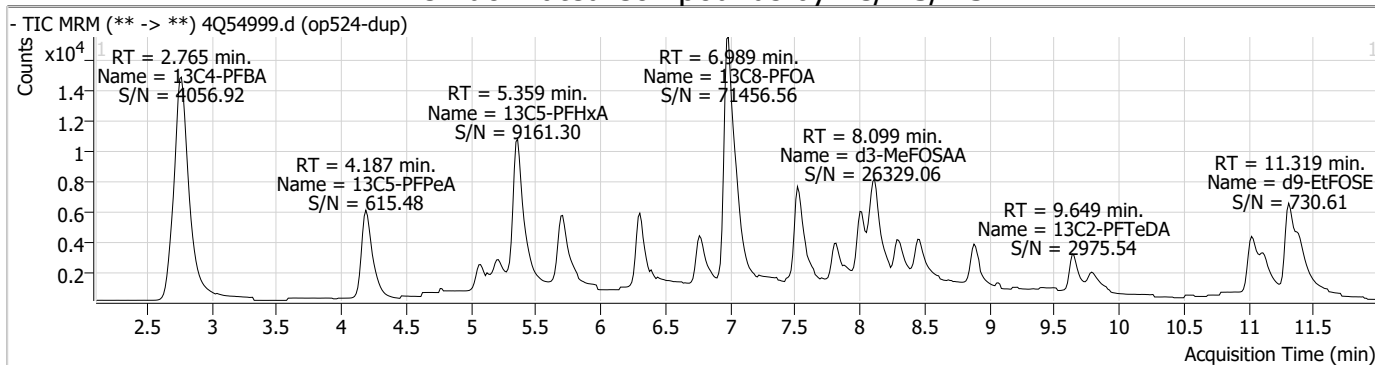
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.5.1

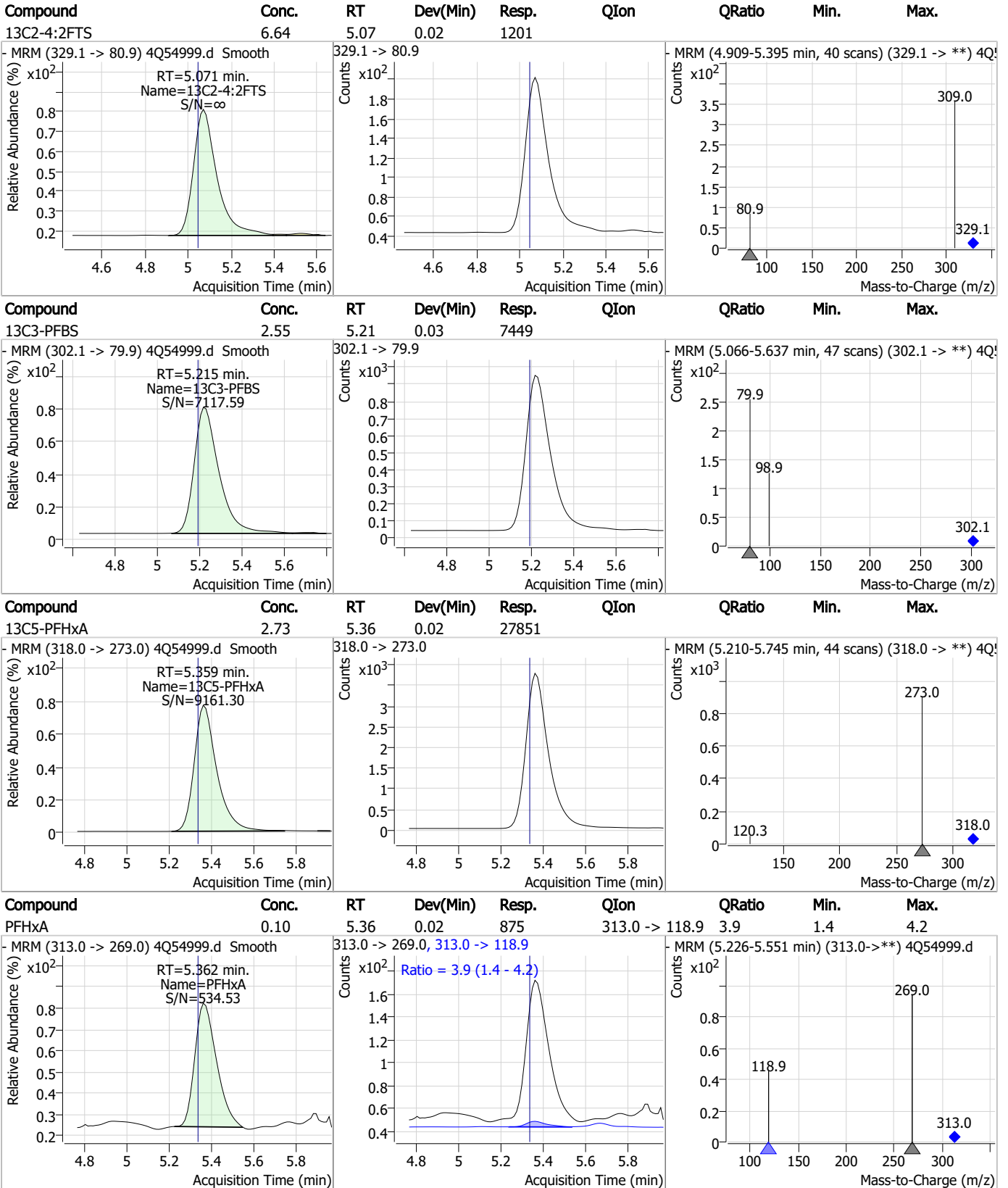
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Perfluorinated Compounds by LC/MS/MS



7.5.1
7

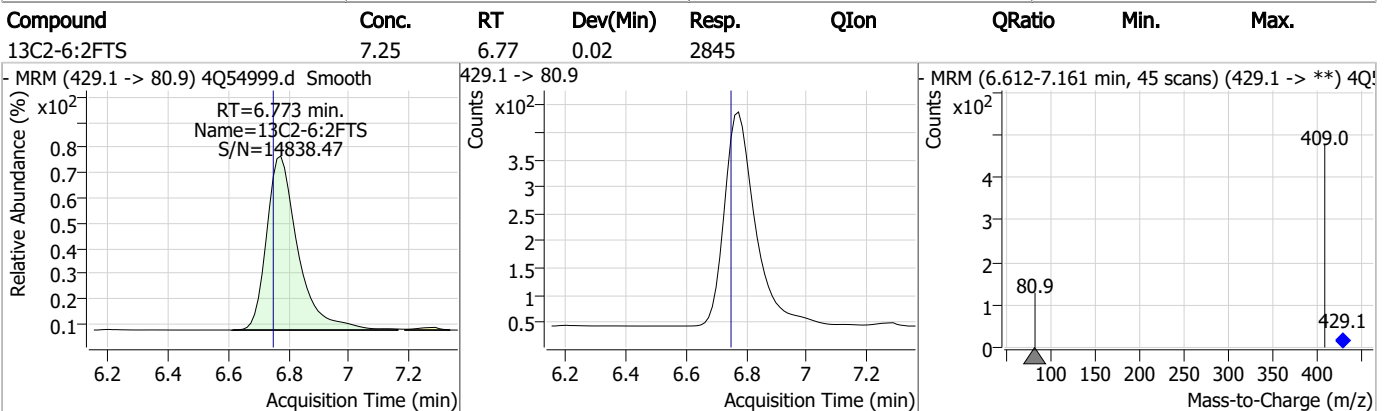
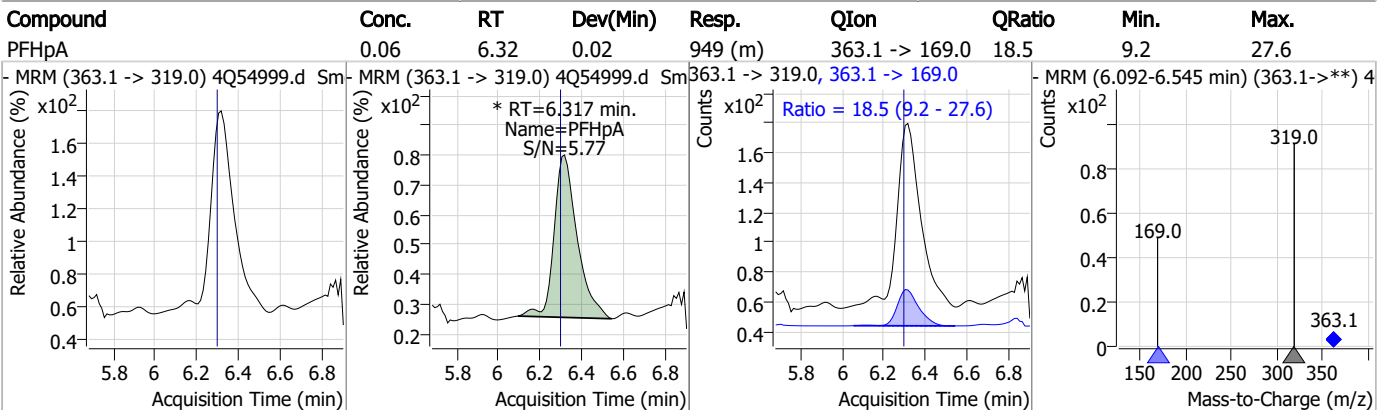
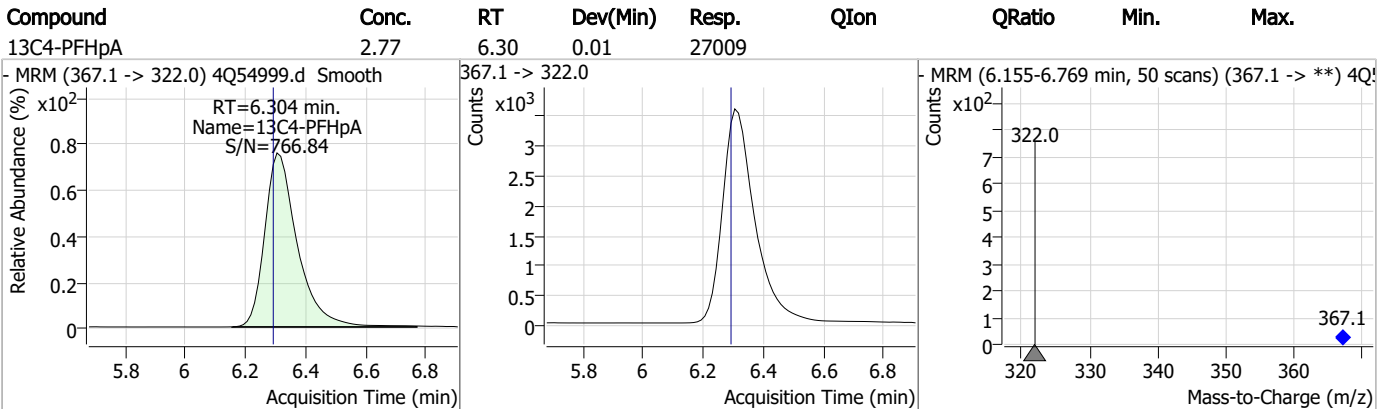
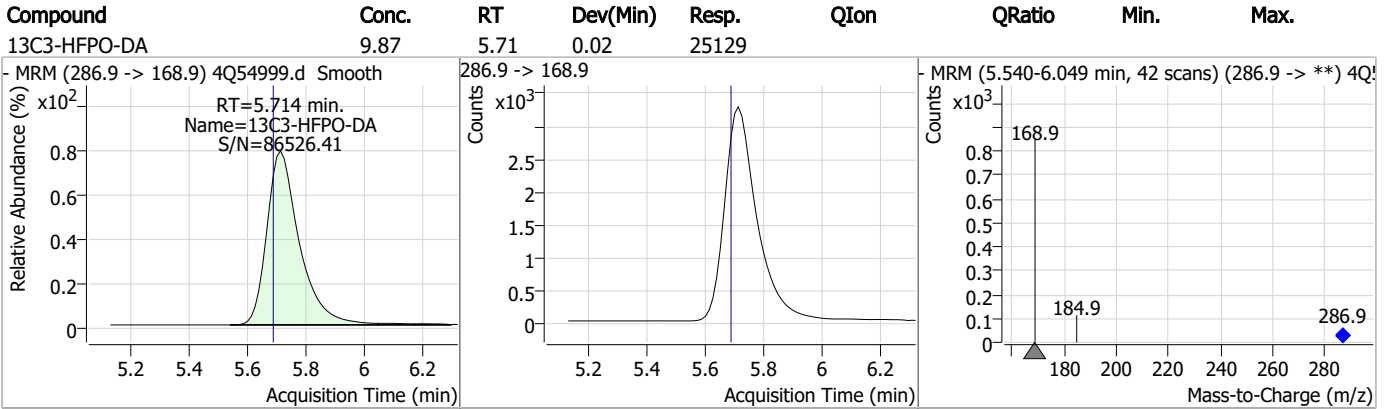
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Perfluorinated Compounds by LC/MS/MS

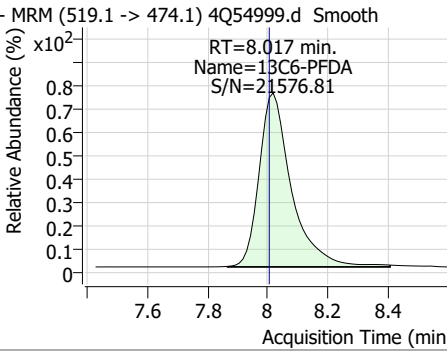
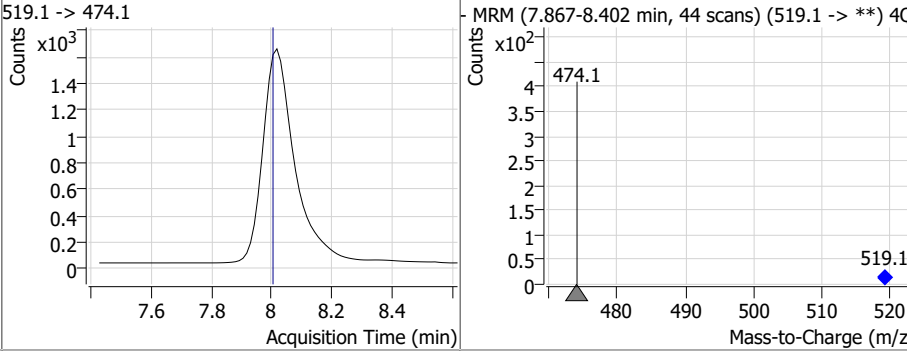
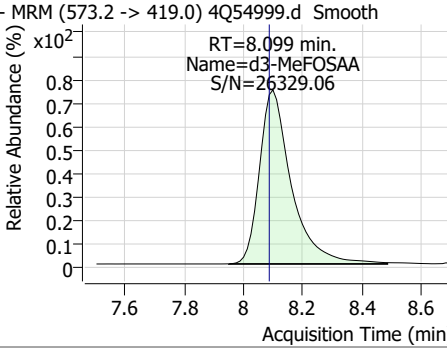
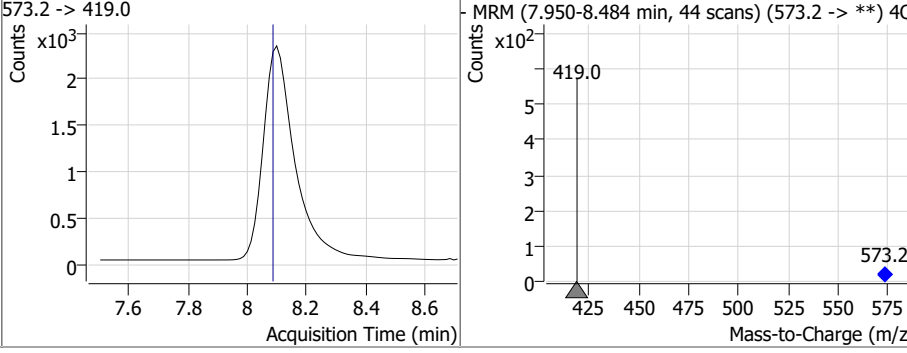
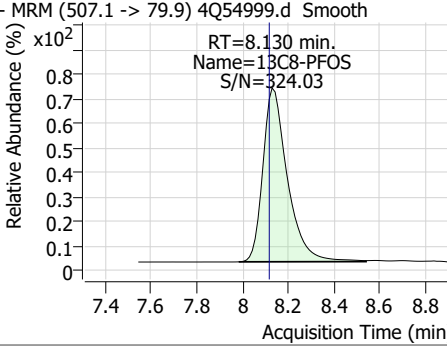
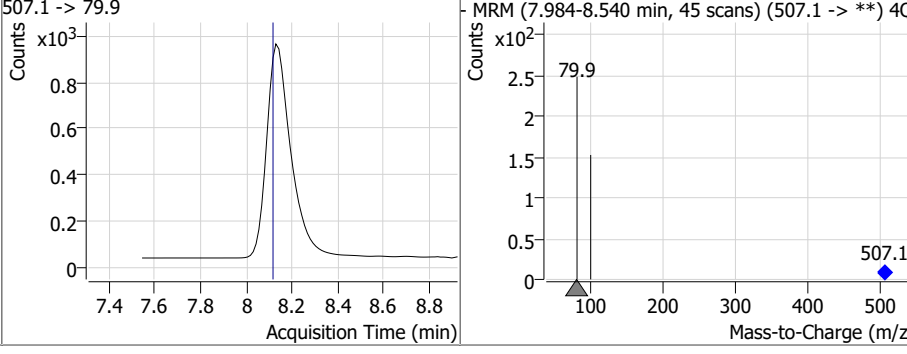
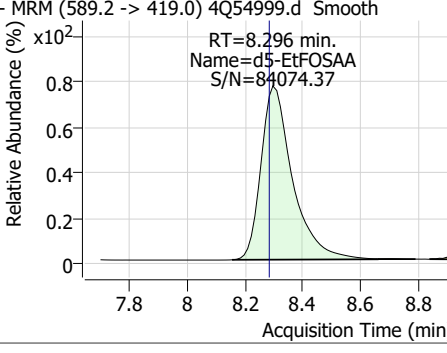
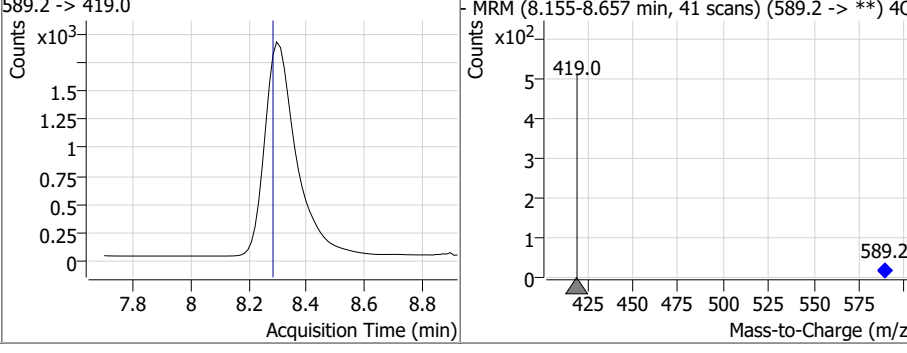


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.68	6.99	0.01	43083				
13C3-PFHxS	2.82	7.05	0.03	6750				
13C9-PFNA	1.32	7.53	0.01	16699				
13C2-8:2FTS	6.21	7.82	0.01	3264				

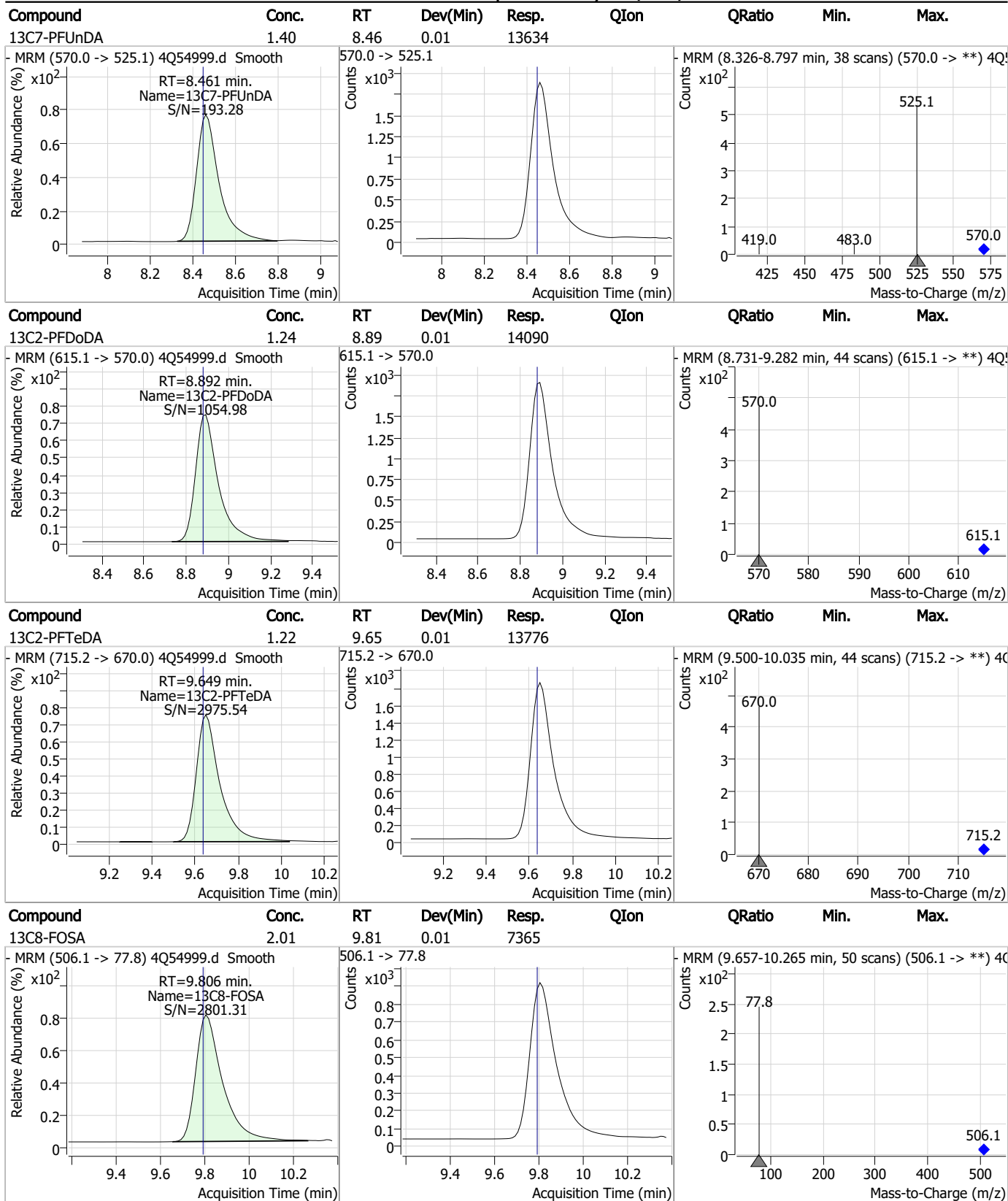
7.5.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	1.45	8.02	0.01	12011				
- MRM (519.1 -> 474.1) 4Q54999.d Smooth RT=8.017 min. Name=13C6-PFDA S/N=21576.81			519.1 -> 474.1 		MRM (7.867-8.402 min, 44 scans) (519.1 -> **) 4Q 			
d3-MeFOSAA	5.51	8.10	0.01	17315				
- MRM (573.2 -> 419.0) 4Q54999.d Smooth RT=8.099 min. Name=d3-MeFOSAA S/N=26329.06			573.2 -> 419.0 		MRM (7.950-8.484 min, 44 scans) (573.2 -> **) 4Q 			
13C8-PFOS	2.39	8.13	0.01	6856				
- MRM (507.1 -> 79.9) 4Q54999.d Smooth RT=8.130 min. Name=13C8-PFOS S/N=324.03			507.1 -> 79.9 		MRM (7.984-8.540 min, 45 scans) (507.1 -> **) 4Q 			
d5-EtFOSAA	5.34	8.30	0.01	14216				
- MRM (589.2 -> 419.0) 4Q54999.d Smooth RT=8.296 min. Name=d5-EtFOSAA S/N=84074.37			589.2 -> 419.0 		MRM (8.155-8.657 min, 41 scans) (589.2 -> **) 4Q 			

7.5.1
7

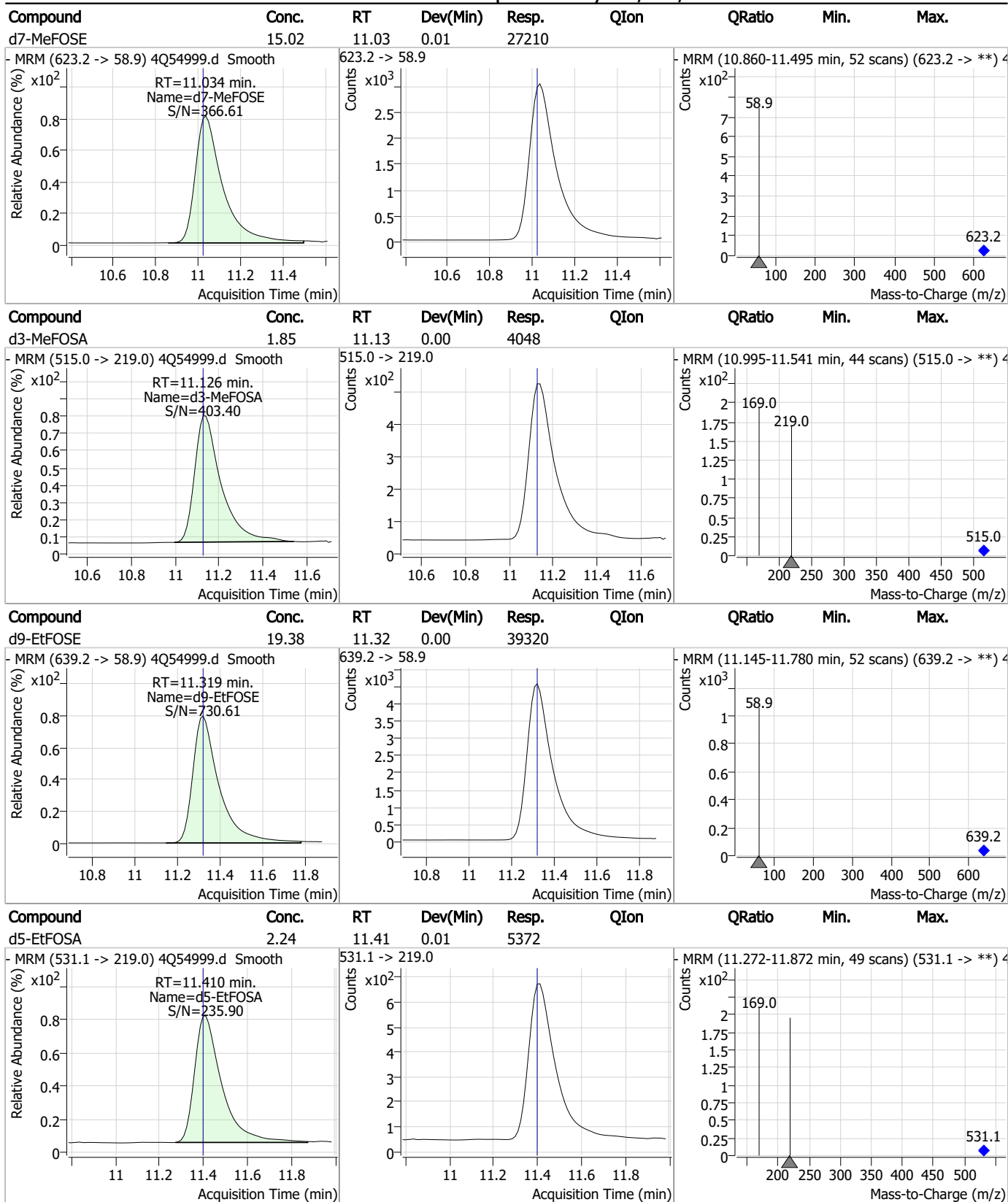
Perfluorinated Compounds by LC/MS/MS



7.5.1
7



Perfluorinated Compounds by LC/MS/MS



7.5.1
7



Manual Integration Approval Summary

Sample Number: OP524-DUP Method: EPA DRAFT 1633
Lab FileID: 4Q54999.D Analyst approved: 12/11/23 17:01 Anna Ludwig
Injection Time: 12/11/23 03:53 Supervisor approved: 12/11/23 17:02 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.32	Split peak

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 12/11/23 15:42

Perfluorinated Compounds by LC/MS/MS

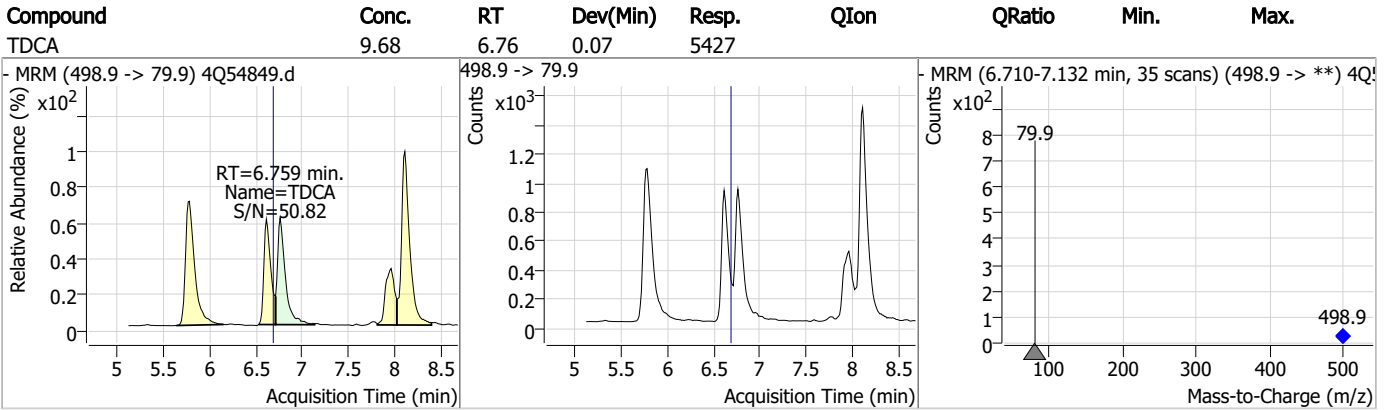
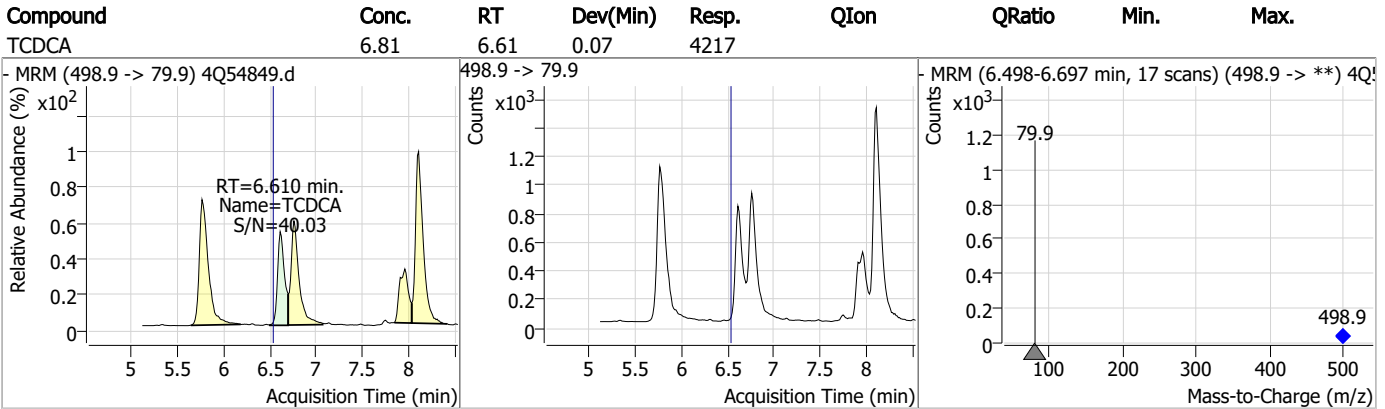
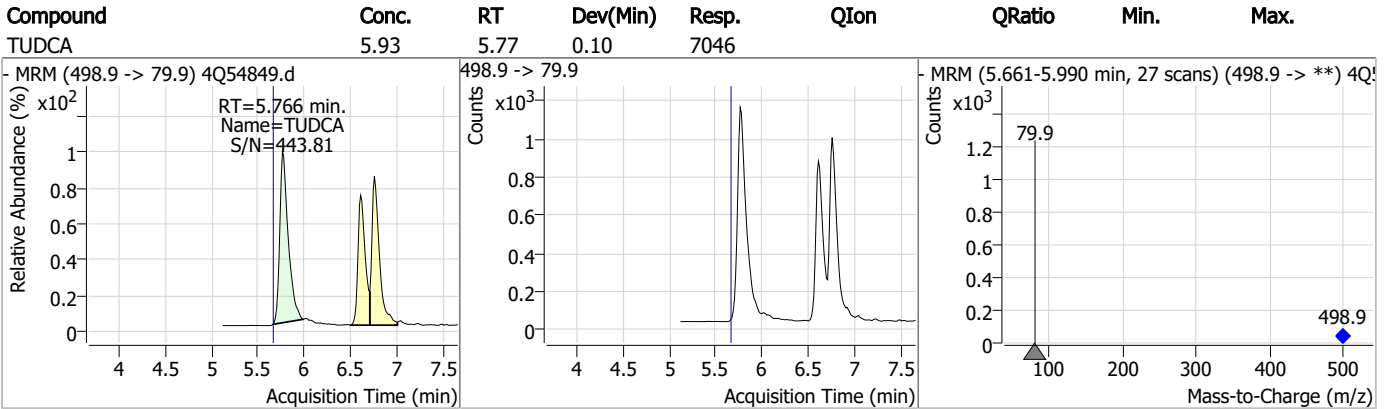
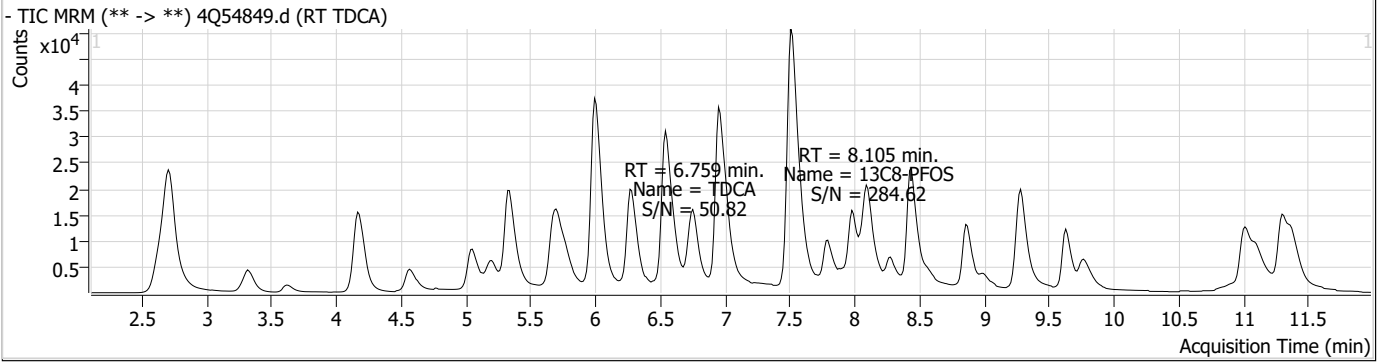
Data File : 4Q54849.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 10:54:00 AM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q804_TDCA.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.105	507.1 -> 79.9	13411	2.50	µg/L	0.062	
13C4-PFOS	8.106	502.8 -> 79.9	10969	2.50	µg/L	0.062	
System Monitoring Compounds							
13C8-PFOS	8.105	507.1 -> 79.9	13411	3.10	µg/L	0.062	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 124.0%				
Target Compounds							
PFOS	8.106	498.9 -> 79.9 498.9 -> 98.8	12889 5873	2.81	µg/L m	92	
TCDCa	6.610	498.9 -> 79.9	4217	6.81	ng/ml	100	
TDCA	6.759	498.9 -> 79.9	5427	9.68	ng/ml	100	
TUDCA	5.766	498.9 -> 79.9	7046	5.93	ng/ml	100	

= Qualifier out of range, m = manually integrated, + = Area summed

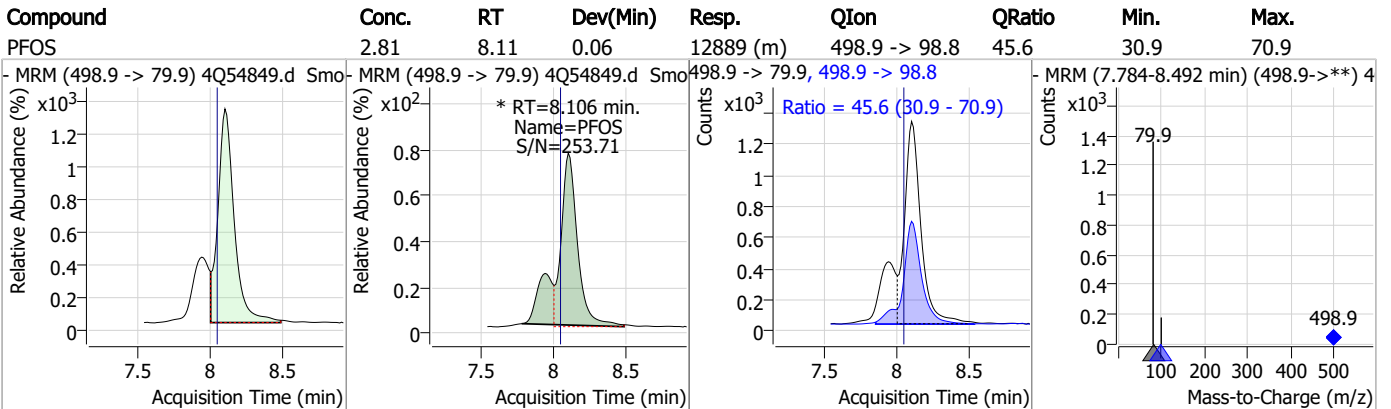
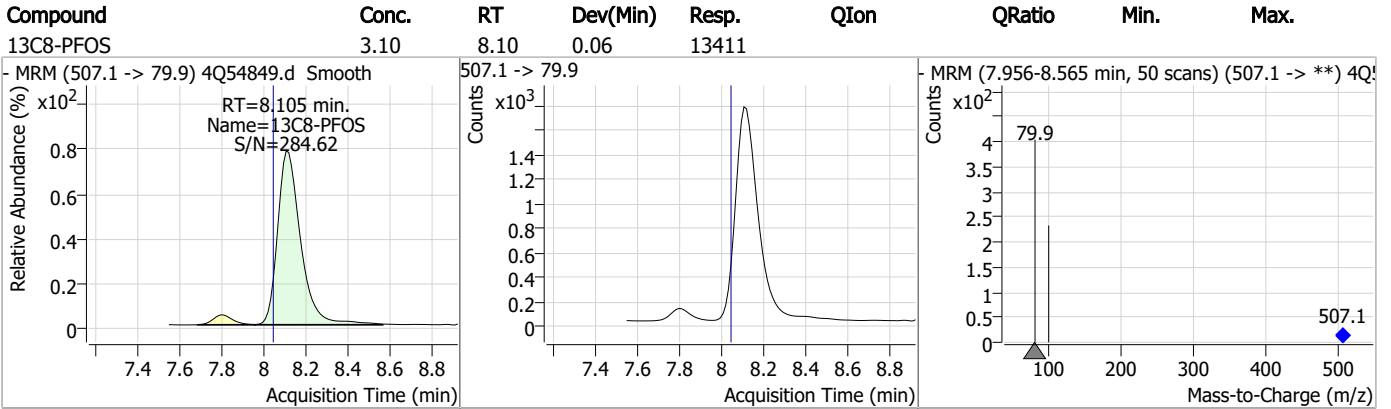
7.6.1
7

Perfluorinated Compounds by LC/MS/MS



7.6.1
7

Perfluorinated Compounds by LC/MS/MS



7.6.1

7



Manual Integration Approval Summary

Sample Number: S4Q804-RT Method: EPA DRAFT 1633
Lab FileID: 4Q54849.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 10:54 Supervisor approved: 12/11/23 15:42 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.11	Split peak

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54850.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 11:08:43 AM
 Sample Name : RT_BR_LN
 Vial : P1-B2
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	109577	10.00 µg/L	0.012
M5-PFPeA	4.162	268.3 -> 223.0	48116	5.00 µg/L	0.000
M5-PFHxA	5.334	318.0 -> 273.0	38330	2.50 µg/L	0.000
M4-PFHpA	6.280	367.1 -> 322.0	35630	2.50 µg/L	-0.012
M8-PFOA	6.964	421.1 -> 376.0	56973	2.50 µg/L	-0.012
M9-PFNA	7.509	472.1 -> 427.0	22614	1.25 µg/L	-0.012
M6-PFDA	7.992	519.1 -> 474.1	16475	1.25 µg/L	-0.012
M7-PFUnDA	8.436	570.0 -> 525.1	18484	1.25 µg/L	-0.012
M2-PFDoDA	8.867	615.1 -> 570.0	20923	1.25 µg/L	-0.012
M2-PFTeDA	9.637	715.2 -> 670.0	21263	1.25 µg/L	0.000
M8-FOSA	9.781	506.1 -> 77.8	11885	2.50 µg/L	-0.012
M3-PFBS	5.190	302.1 -> 79.9	10561	2.50 µg/L	0.000
M3-PFHxS	7.029	402.1 -> 79.9	8520	2.50 µg/L	0.000
M8-PFOS	8.117	507.1 -> 79.9	9271	2.50 µg/L	0.000
M2-4:2FTS	5.046	329.1 -> 80.9	1179	5.00 µg/L	0.000
M2-6:2FTS	6.748	429.1 -> 80.9	2435	5.00 µg/L	0.000
M2-8:2FTS	7.791	529.1 -> 80.9	3373	5.00 µg/L	-0.012
M3-MeFOSAA	8.074	573.2 -> 419.0	20080	5.00 µg/L	-0.012
M3-HFPO-DA	5.689	286.9 -> 168.9	38767	10.00 µg/L	0.000
M5-EtFOSAA	8.271	589.2 -> 419.0	17695	5.00 µg/L	-0.012
M7-MeFOSE	11.022	623.2 -> 58.9	54556	25.00 µg/L	0.000
M9-EtFOSE	11.306	639.2 -> 58.9	65060	25.00 µg/L	-0.012
M5-EtFOSA	11.398	531.1 -> 219.0	7671	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	7453	2.50 µg/L	-0.012
13C4-PFOS	8.106	502.8 -> 79.9	7793	2.50 µg/L	-0.012
13C3-PFBA	2.691	216.0 -> 172.0	52810	5.00 µg/L	0.013
18O2-PFHxS	7.028	403.0 -> 83.9	5235	2.50 µg/L	-0.012
13C4-PFOA	6.964	417.1 -> 372.0	59749	2.50 µg/L	-0.012
13C2-PFDA	7.992	515.1 -> 470.1	17180	1.25 µg/L	-0.012
13C5-PFNA	7.509	468.0 -> 423.0	22242	1.25 µg/L	0.000
13C2-PFHxA	5.335	315.1 -> 270.0	40598	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.046	329.1 -> 80.9	1179	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C2-6:2FTS	6.748	429.1 -> 80.9	2435	4.52 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.4%		
13C2-8:2FTS	7.791	529.1 -> 80.9	3373	4.67 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.5%		
13C2-PFDoDA	8.867	615.1 -> 570.0	20923	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C2-PFTeDA	9.637	715.2 -> 670.0	21263	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C3-PFBS	5.190	302.1 -> 79.9	10561	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C3-PFHxS	7.029	402.1 -> 79.9	8520	2.60 µg/L	0.000

7.6.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C4-PFBA	2.686	216.8 -> 171.9	109577	9.88 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C4-PFHpA	6.280	367.1 -> 322.0	35630	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.334	318.0 -> 273.0	38330	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C5-PFPeA	4.162	268.3 -> 223.0	48116	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C6-PFDA	7.992	519.1 -> 474.1	16475	1.32 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C7-PFUnDA	8.436	570.0 -> 525.1	18484	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-FOSA	9.781	506.1 -> 77.8	11885	2.35 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C8-PFOA	6.964	421.1 -> 376.0	56973	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C8-PFOS	8.117	507.1 -> 79.9	9271	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C9-PFNA	7.509	472.1 -> 427.0	22614	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
d3-MeFOSAA	8.074	573.2 -> 419.0	20080	4.64 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C3-HFPO-DA	5.689	286.9 -> 168.9	38767	10.37 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
d3-MeFOSA	11.114	515.0 -> 219.0	7453	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
d5-EtFOSAA	8.271	589.2 -> 419.0	17695	4.84 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
d7-MeFOSE	11.022	623.2 -> 58.9	54556	21.90 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.6%	
d9-EtFOSE	11.306	639.2 -> 58.9	65060	23.32 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.3%	
d5-EtFOSA	11.398	531.1 -> 219.0	7671	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.9%	
Target Compounds					QValue
4:2FTS	5.047	327.1 -> 307.0	103905	51.16 µg/L	97
		327.1 -> 80.9	42237		
6:2FTS	6.749	427.1 -> 407.0	133922	52.32 µg/L	98
		427.1 -> 80.9	47757		
8:2FTS	7.792	527.1 -> 507.0	96759	54.43 µg/L	98
		527.1 -> 80.8	37751		
EtFOSAA	8.284	584.2 -> 419.1	40376	12.51 µg/L	85
		584.2 -> 526.0	16337		
FOSA	9.785	498.1 -> 77.9	152926	28.63 µg/L	98
		498.1 -> 478.0	5436		
MeFOSAA	8.075	570.1 -> 419.0	42693	14.83 µg/L	93
		570.1 -> 483.0	8287		
PFBA	2.682	212.8 -> 168.9	181473	51.71 µg/L	100
PFBS	5.191	298.7 -> 79.9	36638	11.18 µg/L	97
		298.7 -> 98.8	14206		
PFDA	7.992	512.9 -> 469.0	147416	12.18 µg/L	99
		512.9 -> 219.0	29566		
PFDoDA	8.868	613.1 -> 569.0	208217	13.82 µg/L	100
		613.1 -> 319.0	36008		
PFDS	9.008	599.0 -> 79.9	31505	12.77 µg/L	93

7.6.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.280	599.0 -> 98.8	15050	13.72	µg/L	98
		363.1 -> 319.0	275243			
PFHpS	7.612	363.1 -> 169.0	47994	12.19	µg/L	100
		449.0 -> 79.9	44856			
PFHxA	5.337	449.0 -> 98.9	23353	12.85	µg/L	99
		313.0 -> 269.0	157141			
PFHxS	7.030	313.0 -> 118.9	5108	11.55	µg/L	m
		398.7 -> 79.9	31747			
PFNA	7.371	398.7 -> 98.9	16274	29.01	µg/L	m
		463.0 -> 419.0	385448			
PFNS	8.574	463.0 -> 219.0	96237	13.54	µg/L	95
		548.8 -> 79.9	21414			
PFOA	6.965	548.8 -> 98.9	11287	28.03	µg/L	m
		413.0 -> 369.0	656626			
PFOS	8.106	413.0 -> 169.0	138186	11.98	µg/L	#m
		498.9 -> 79.9	46215			
PFPeA	4.164	498.9 -> 98.8	20888	25.85	µg/L	100
		263.0 -> 219.0	244735			
PFPeS	6.282	349.1 -> 79.9	32626	12.61	µg/L	97
		349.1 -> 98.9	14406			
PFTeDA	9.637	713.1 -> 669.0	198691	13.43	µg/L	99
		713.1 -> 168.9	20078			
PFTrDA	9.267	663.0 -> 619.0	229108	13.99	µg/L	98
		663.0 -> 168.9	32225			
PFUnDA	8.437	563.1 -> 519.0	173424	12.90	µg/L	100
		563.1 -> 269.1	37151			
11CI-PF3OUdS	9.294	630.9 -> 450.9	263908	24.72	µg/L	99
		632.9 -> 452.9	81419			
9CI-PF3ONS	8.438	530.8 -> 351.0	251590	23.32	µg/L	100
		532.8 -> 353.0	76603			
ADONA	6.556	376.9 -> 250.9	696640	26.61	µg/L	100
		376.9 -> 84.8	167896			
HFPO-DA	5.690	284.9 -> 168.9	97169	26.20	µg/L	100
		284.9 -> 184.9	9150			
3:3FTCA	3.617	241.0 -> 177.0	35968	64.47	µg/L	100
		241.0 -> 117.0	3208			
5:3FTCA	6.008	341.0 -> 237.1	698089	319.99	µg/L	100
		341.0 -> 217.0	499659			
7:3FTCA	7.524	441.0 -> 316.9	364678	318.77	µg/L	98
		441.0 -> 336.9	857839			
EtFOSA	11.399	526.0 -> 219.0	145844	44.66	µg/L	96
		526.0 -> 169.0	208885			
EtFOSE	11.320	630.0 -> 58.9	190689	82.82	µg/L	100
		511.9 -> 219.0	115075			
MeFOSA	11.115	511.9 -> 169.0	167905	43.36	µg/L	m
		616.1 -> 58.9	190571			
MeFOSE	11.035	699.1 -> 79.9	24953	88.04	µg/L	100
		699.1 -> 98.8	13582			
PFDoDS	9.765	295.0 -> 201.0	21479	13.26	µg/L	97
		295.0 -> 84.9	5327			
NFDHA	5.216	279.0 -> 85.1	131289	24.79	µg/L	97
		229.0 -> 84.9	145882			
PFMBA	4.566	314.8 -> 134.9	209661	25.19	µg/L	100
		314.8 -> 82.9	7234			
PFMPA	3.315			25.47	µg/L	100
PFEESA	5.722			23.19	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed

7.6.2
7

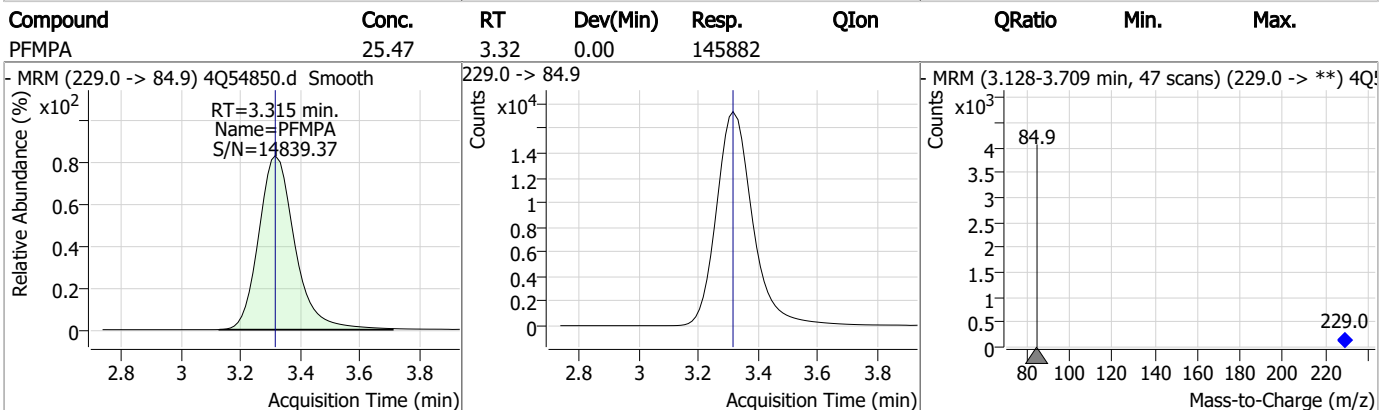
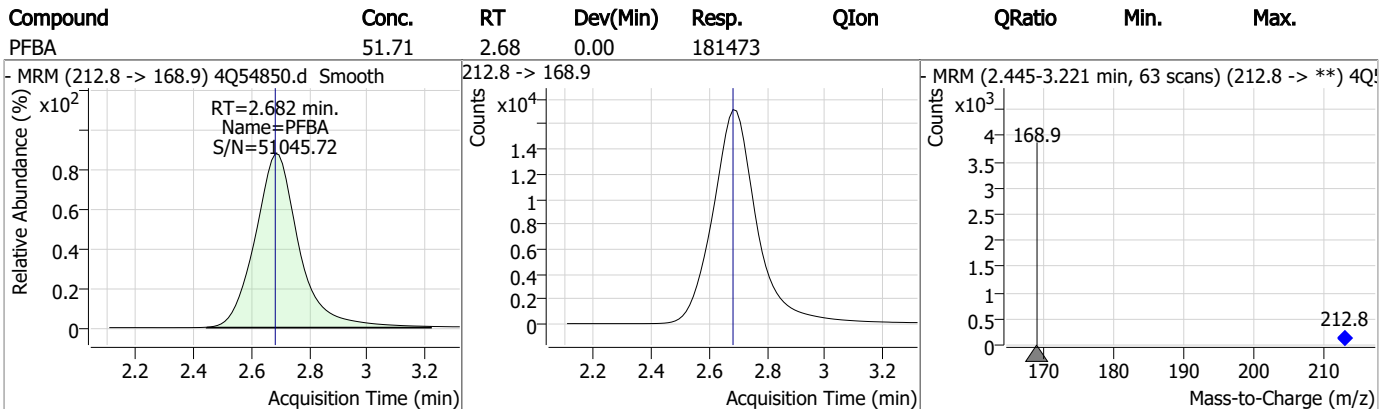
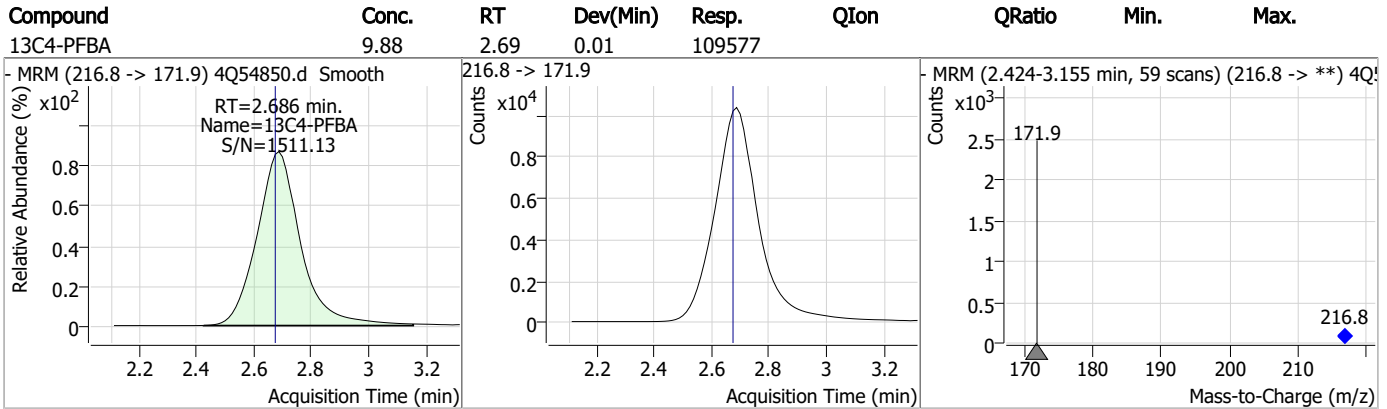
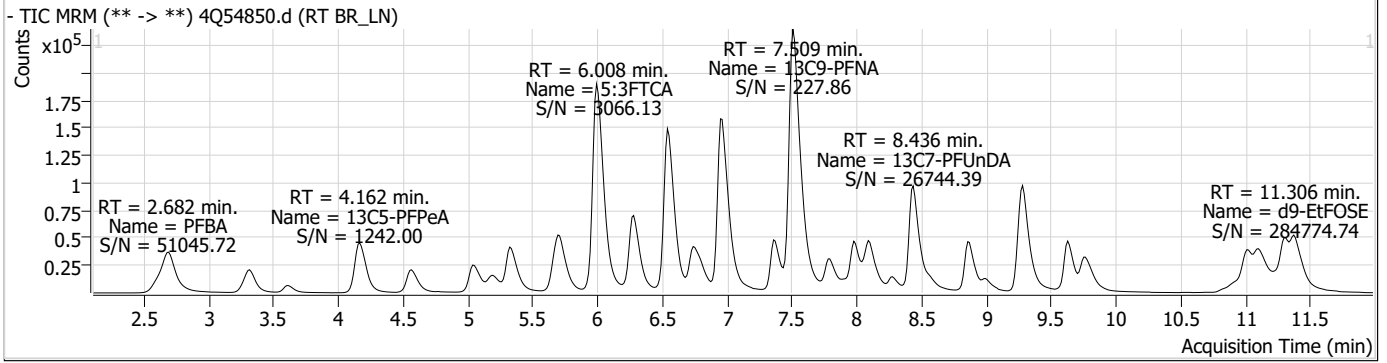
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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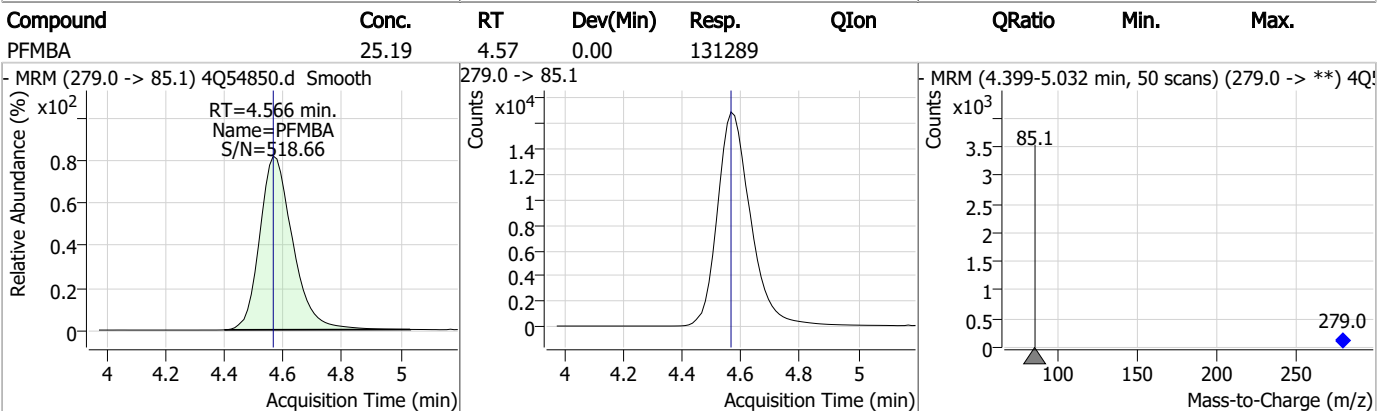
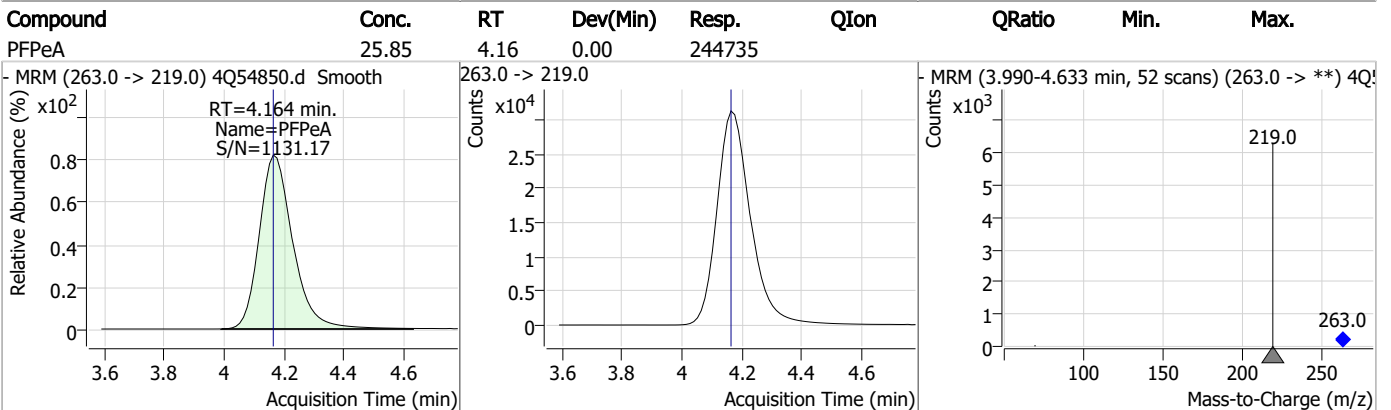
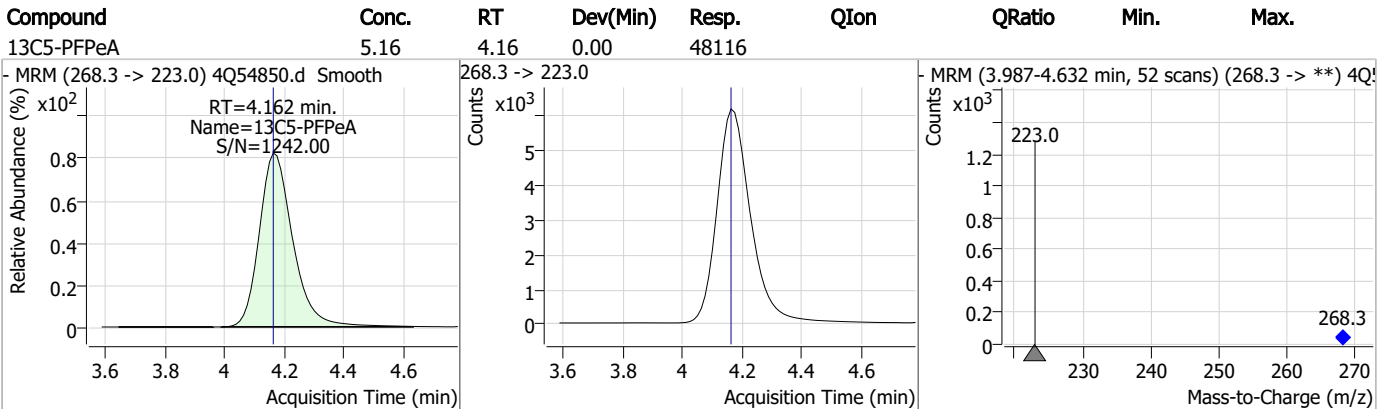
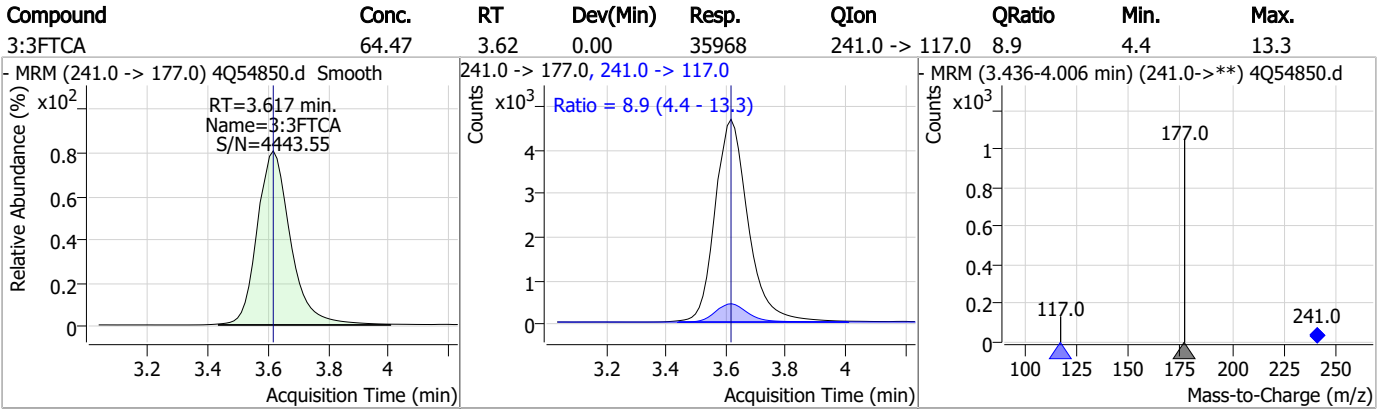
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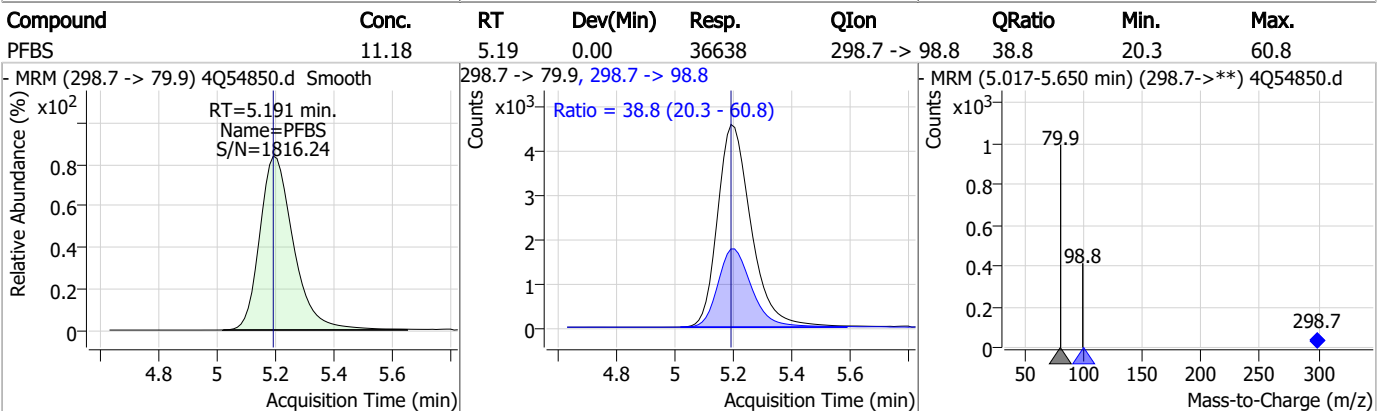
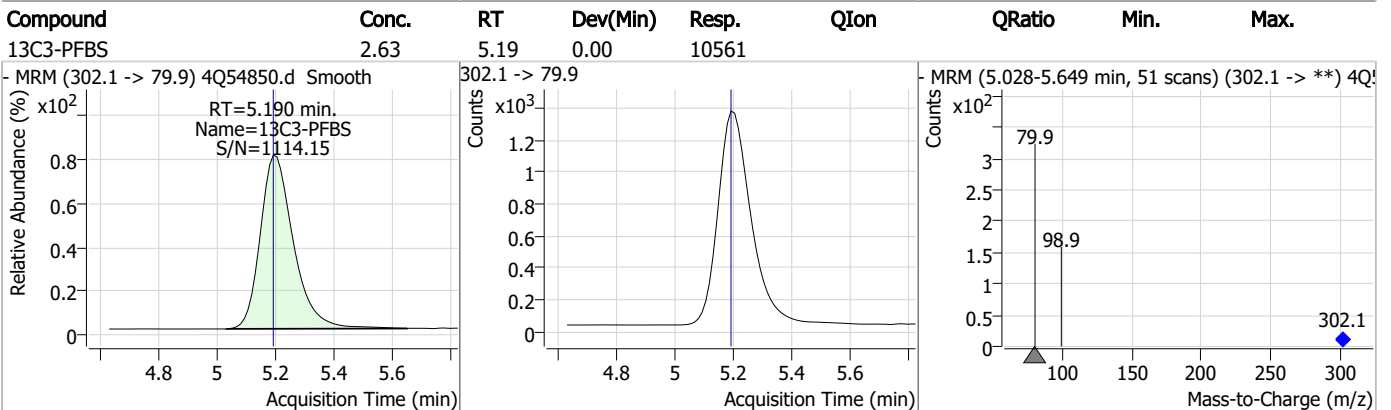
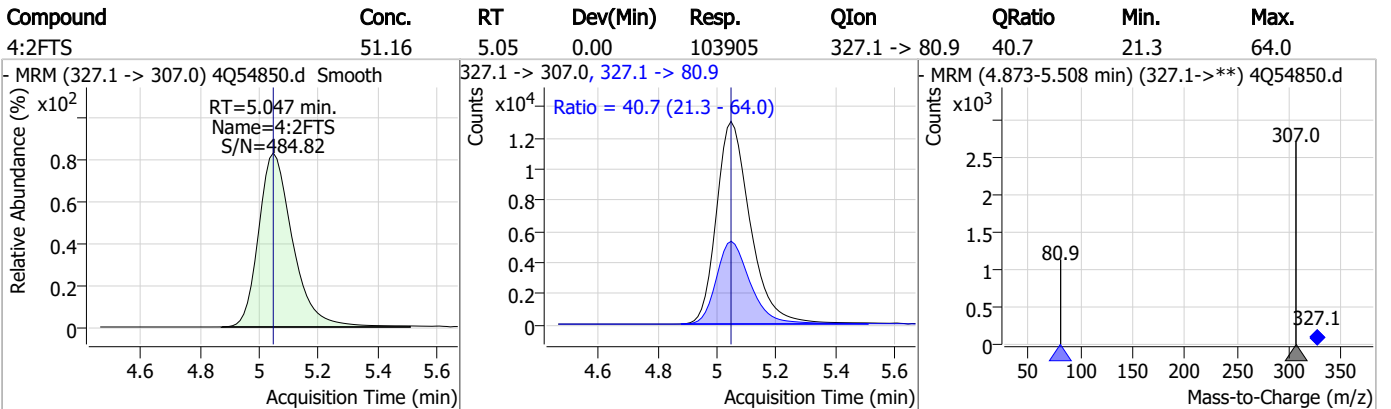
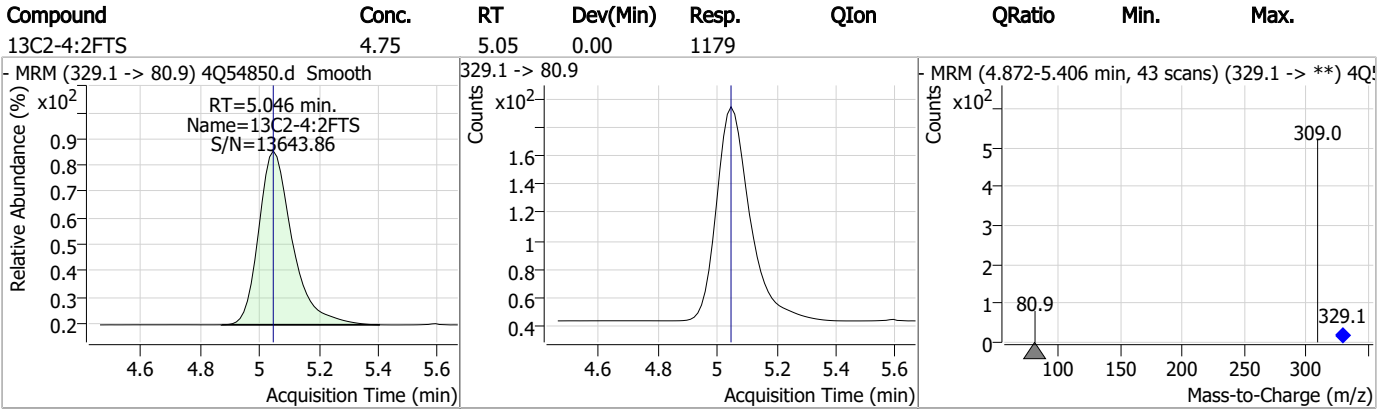
Perfluorinated Compounds by LC/MS/MS



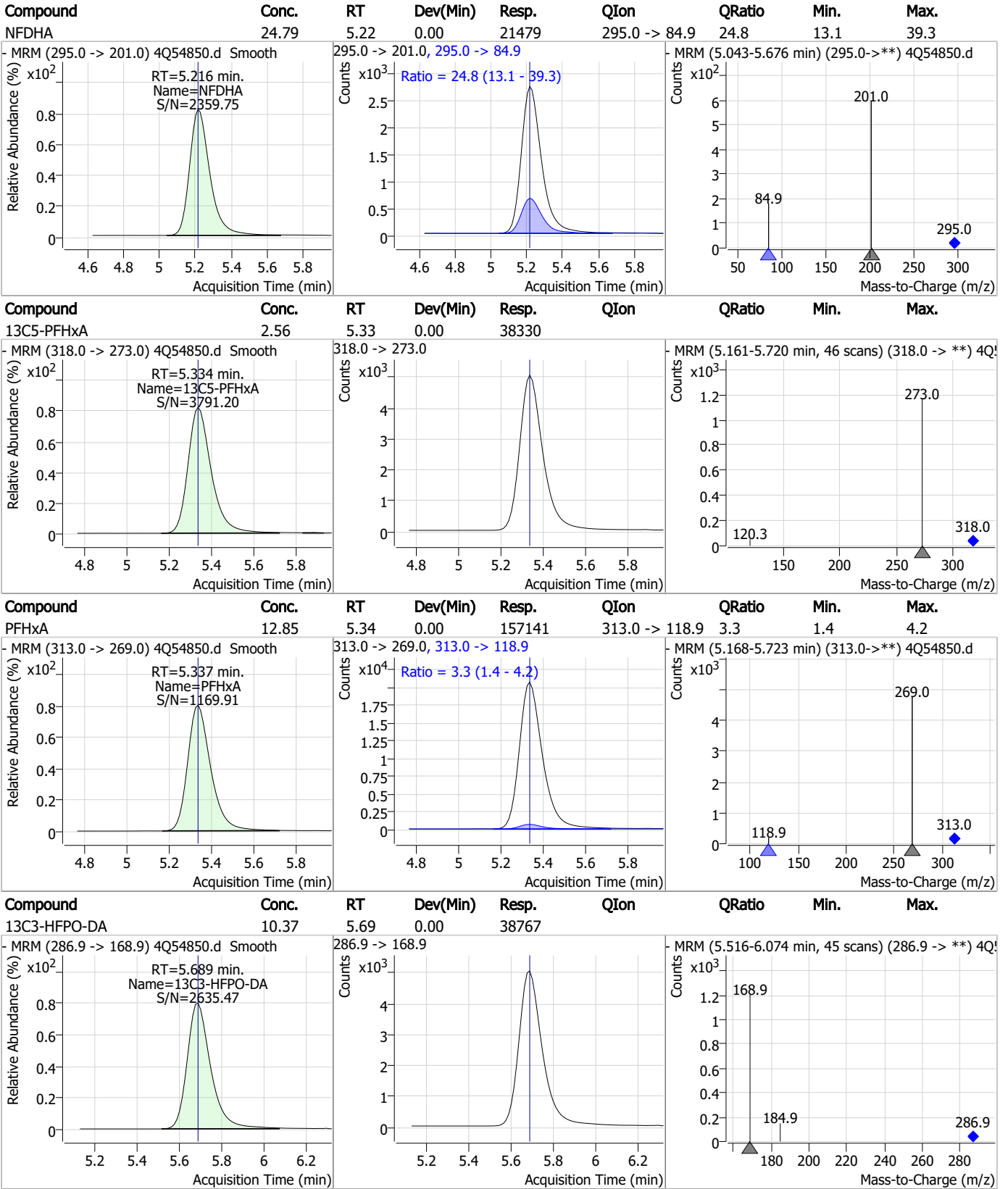
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

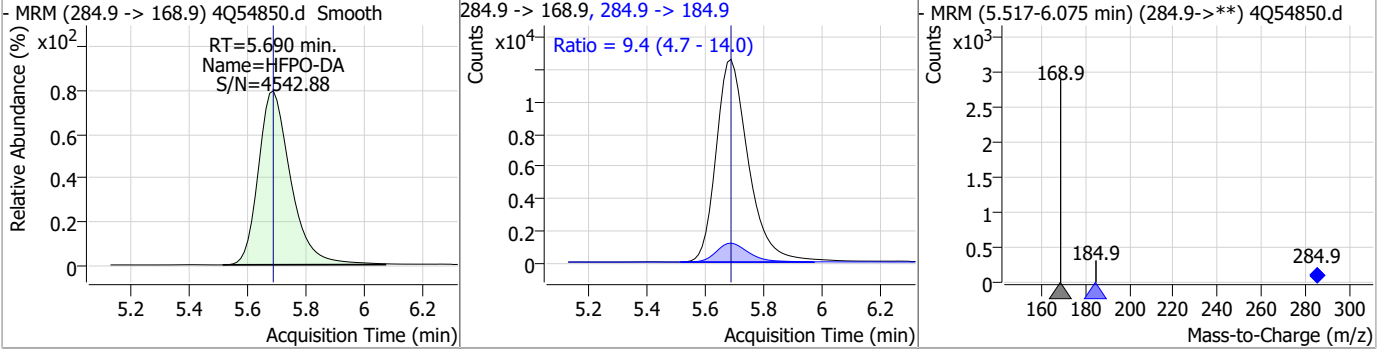


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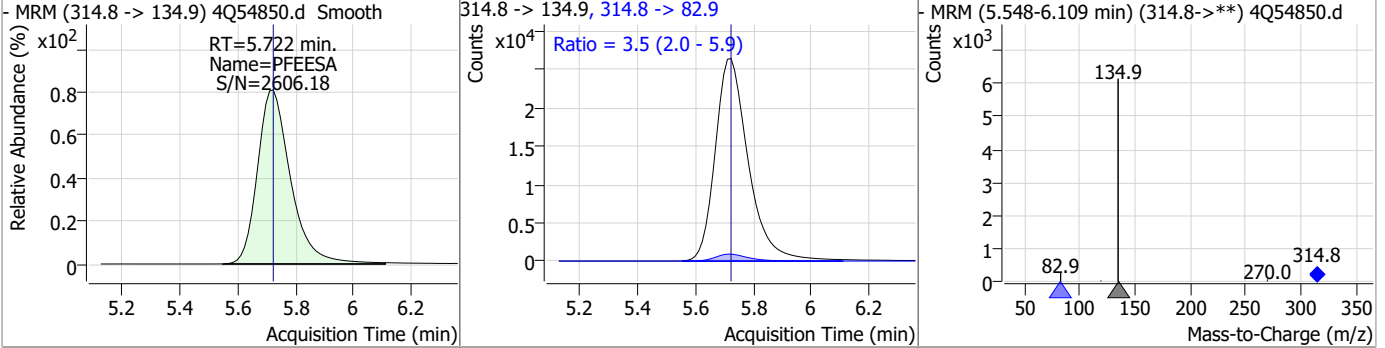
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Perfluorinated Compounds by LC/MS/MS

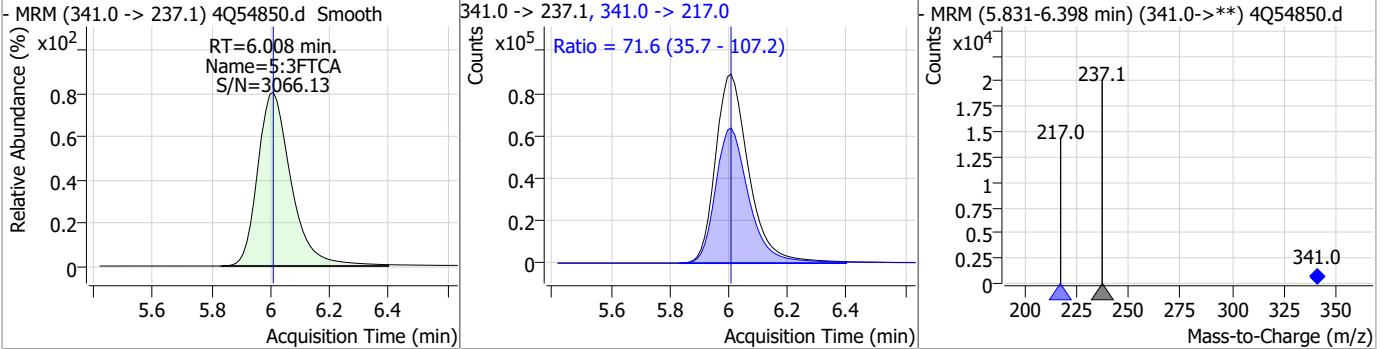
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	26.20	5.69	0.00	97169	284.9 -> 184.9	9.4	4.7	14.0



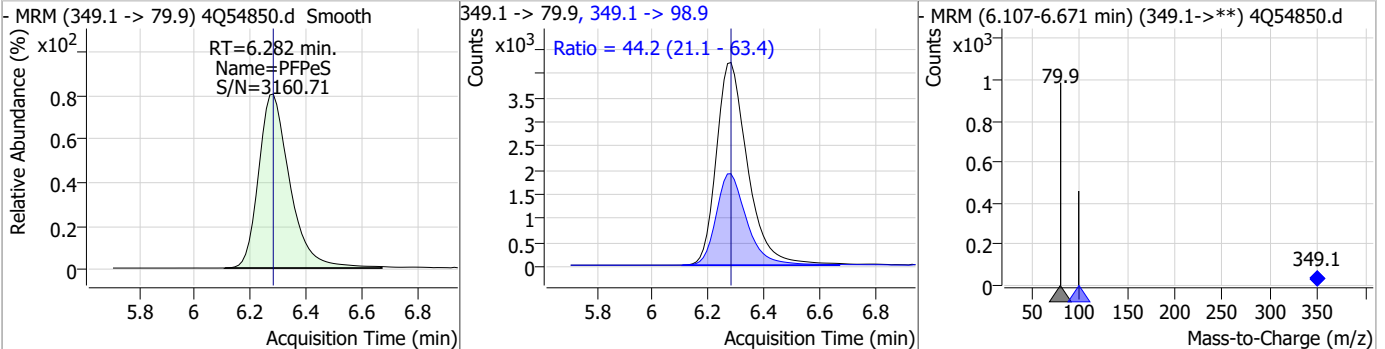
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	23.19	5.72	0.00	209661	314.8 -> 82.9	3.5	2.0	5.9



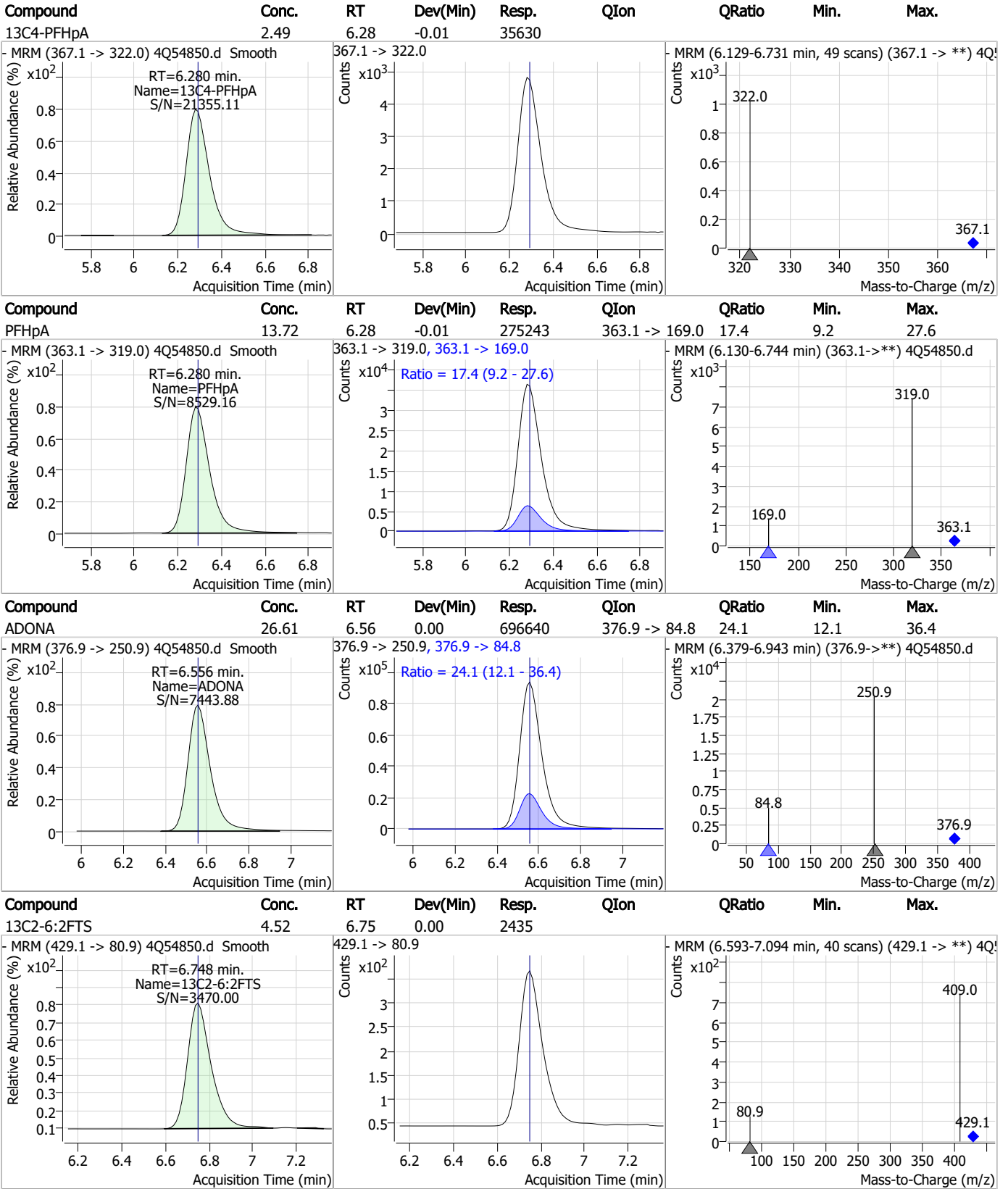
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	319.99	6.01	0.00	698089	341.0 -> 217.0	71.6	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	12.61	6.28	0.00	32626	349.1 -> 98.9	44.2	21.1	63.4



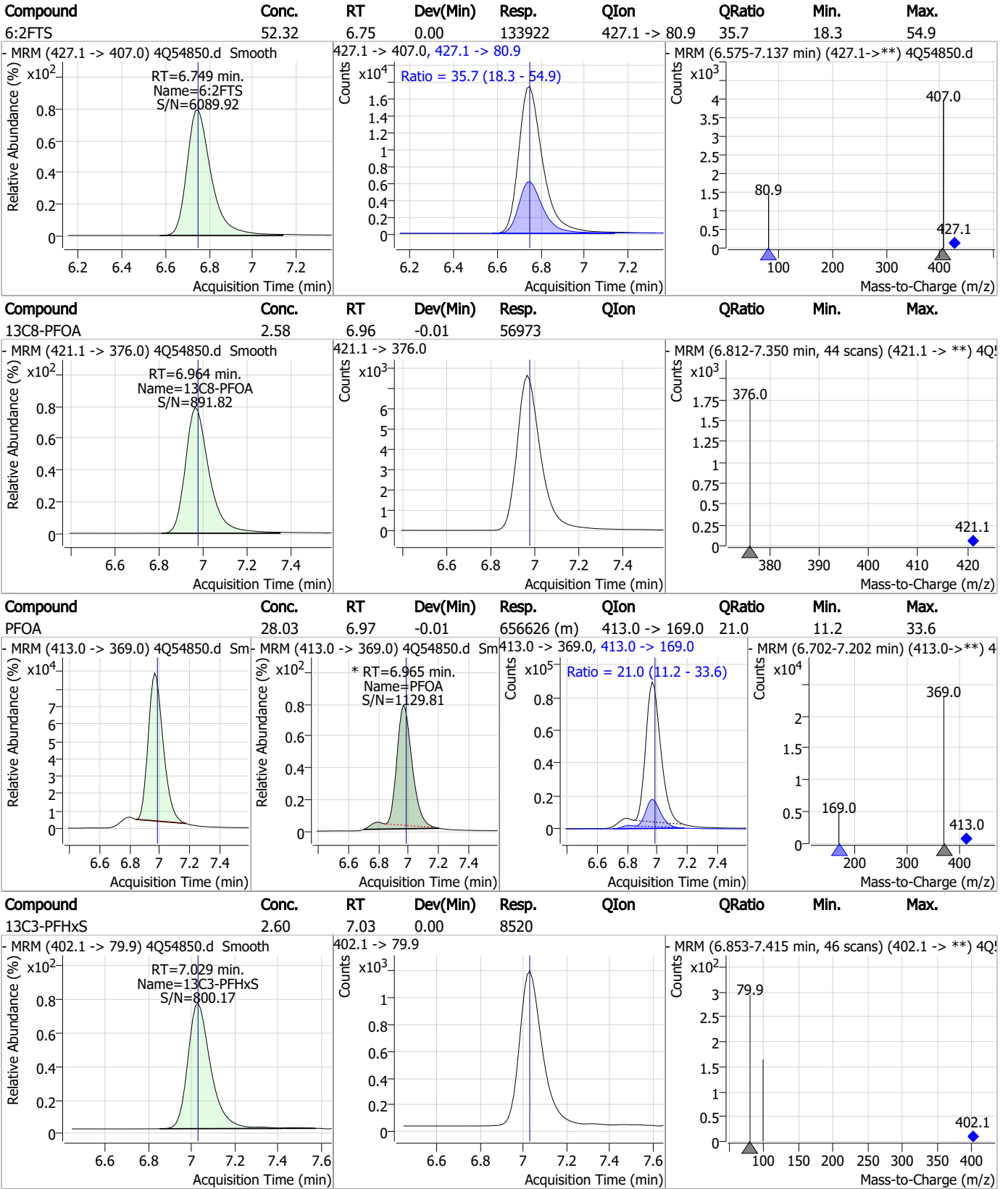
Perfluorinated Compounds by LC/MS/MS



7.6.2

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Perfluorinated Compounds by LC/MS/MS

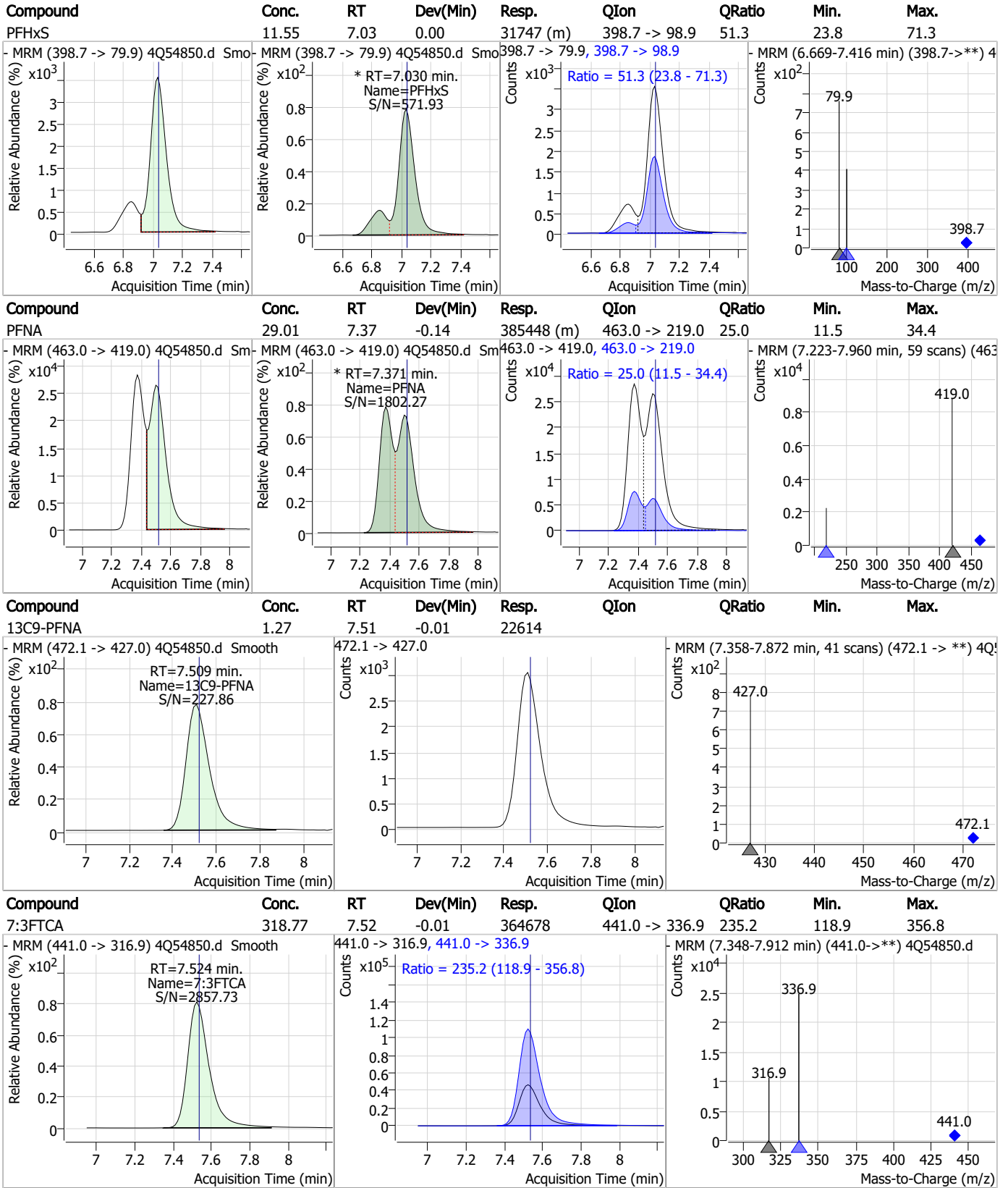


7.6.2

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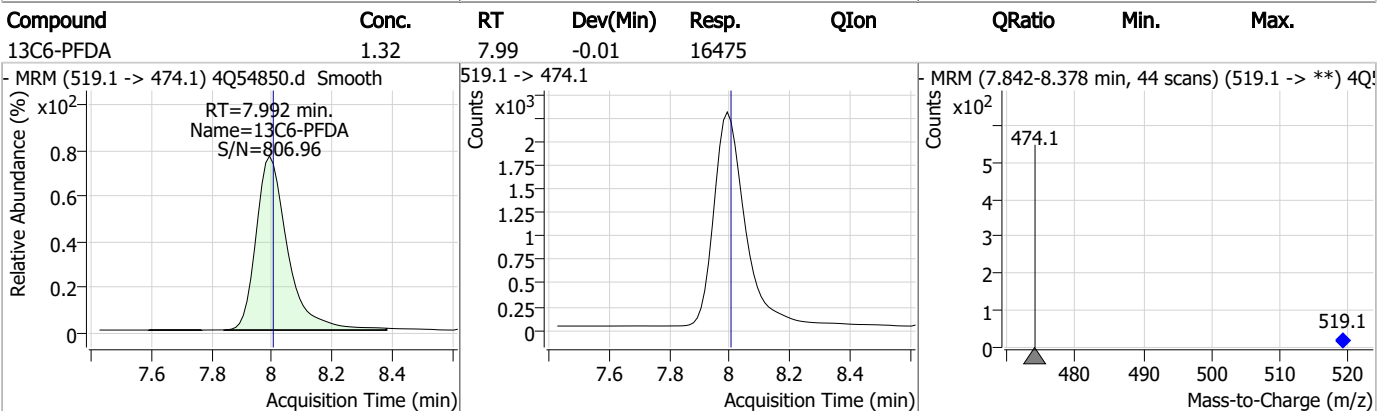
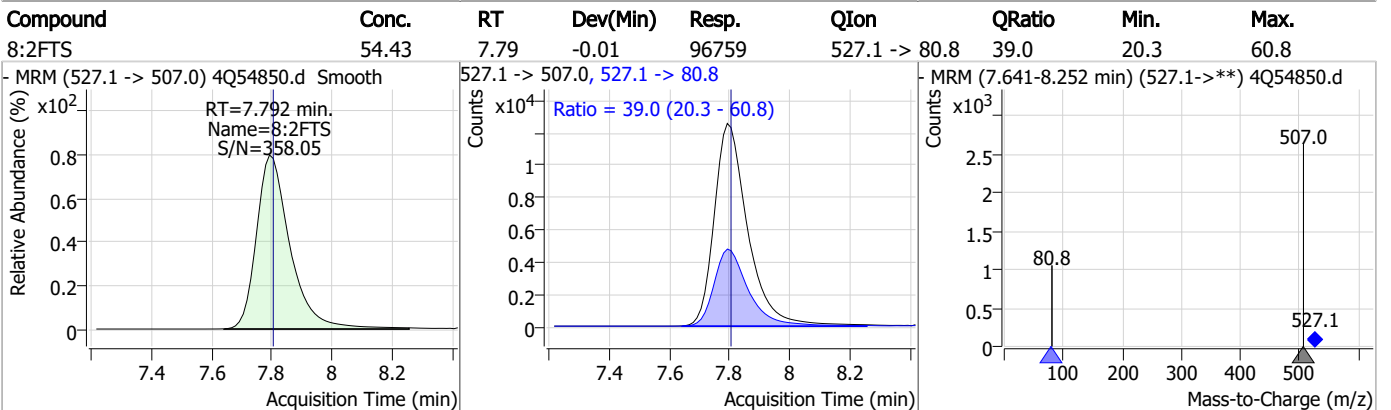
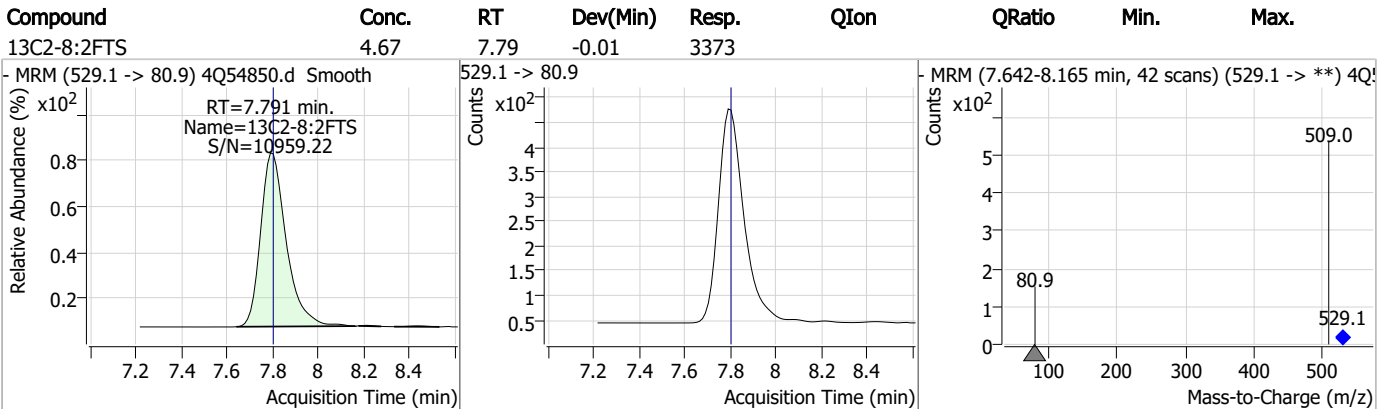
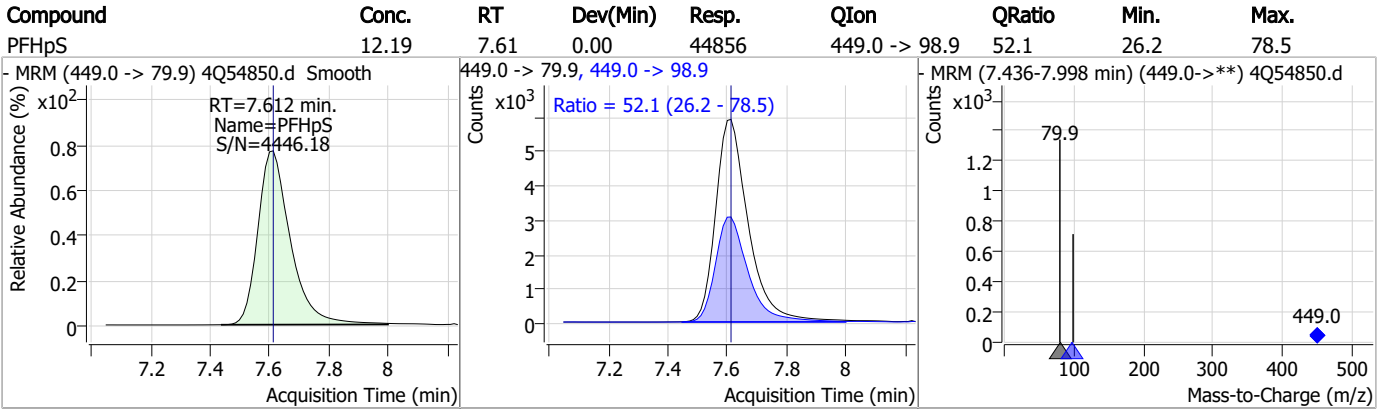
Perfluorinated Compounds by LC/MS/MS



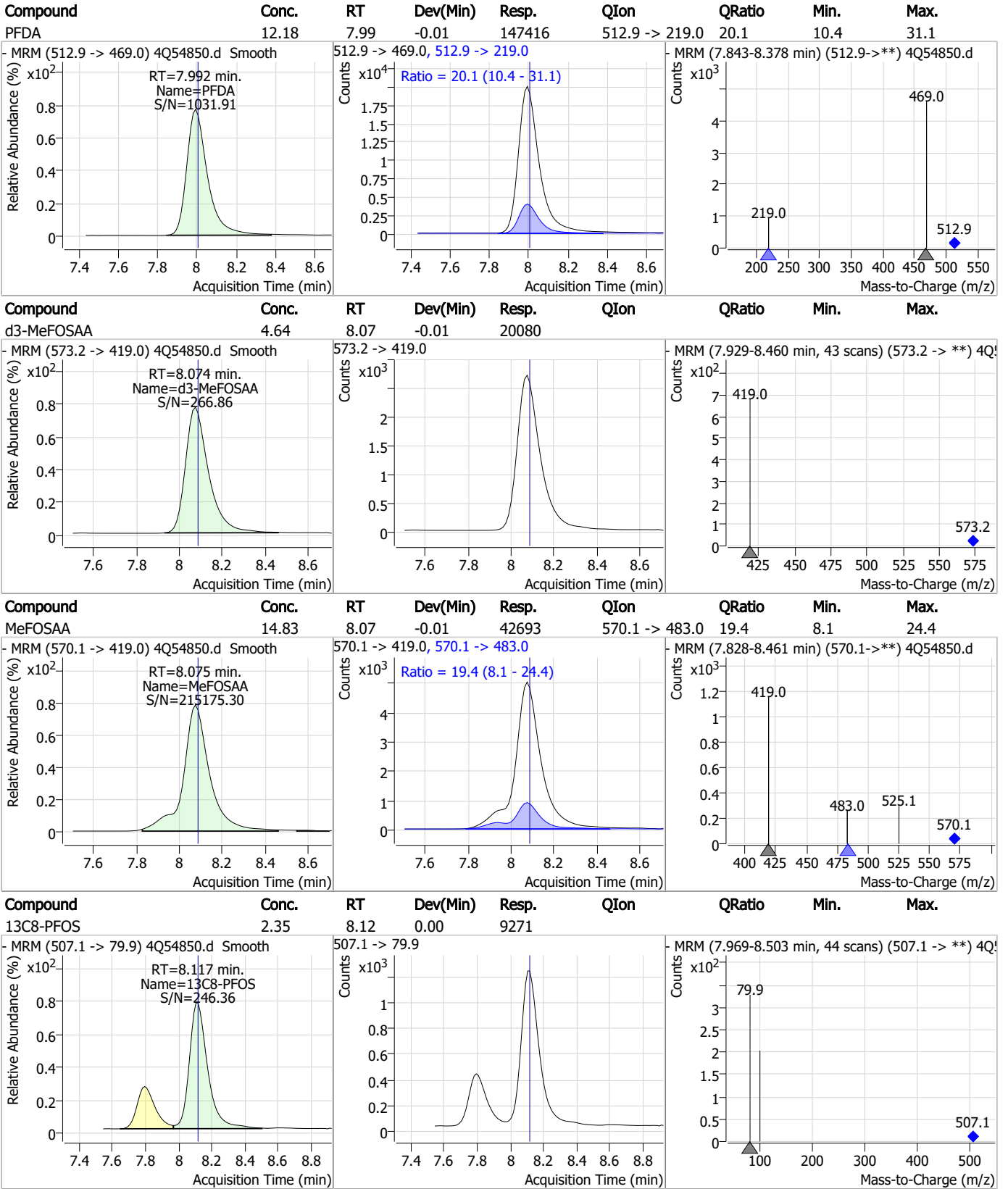
7.6.2

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Perfluorinated Compounds by LC/MS/MS



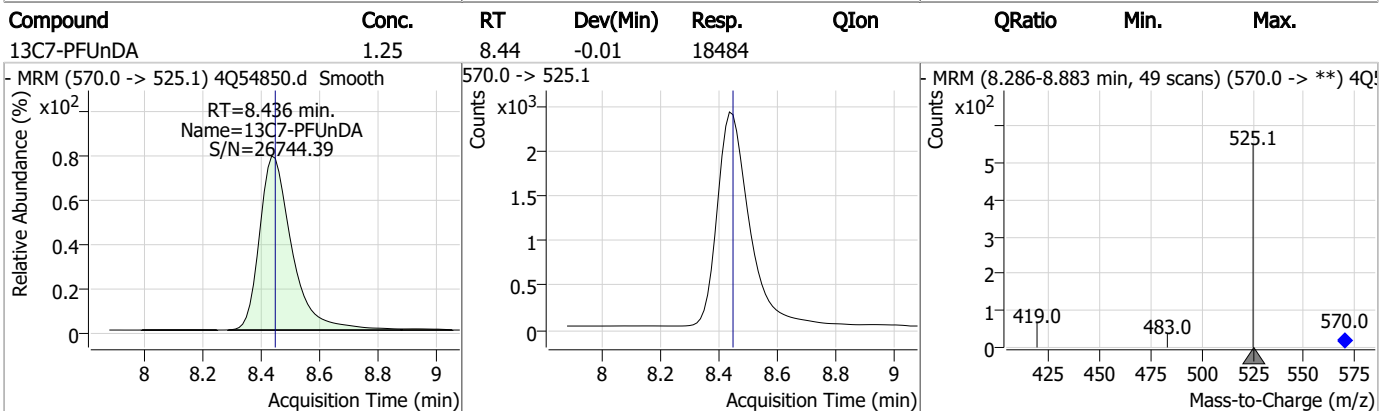
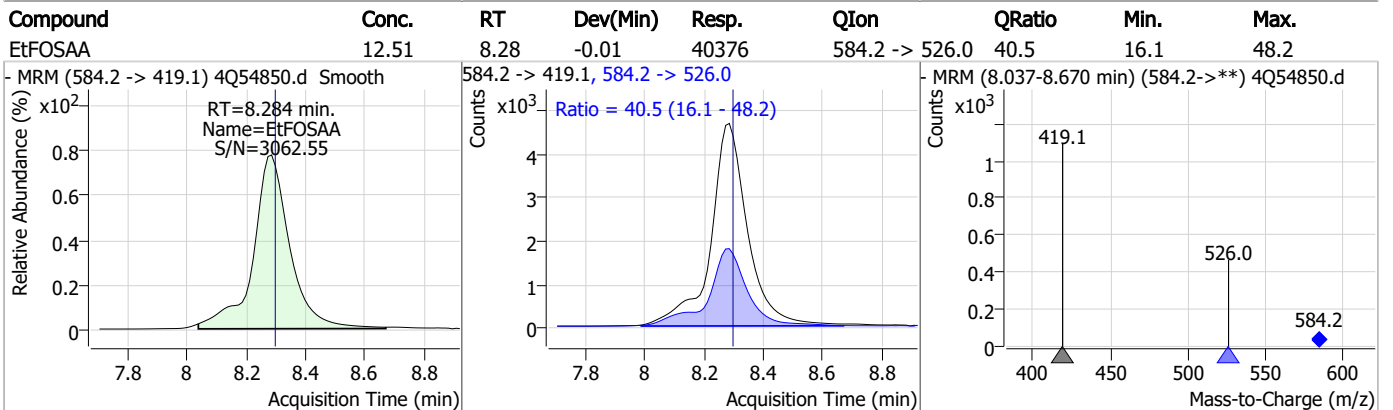
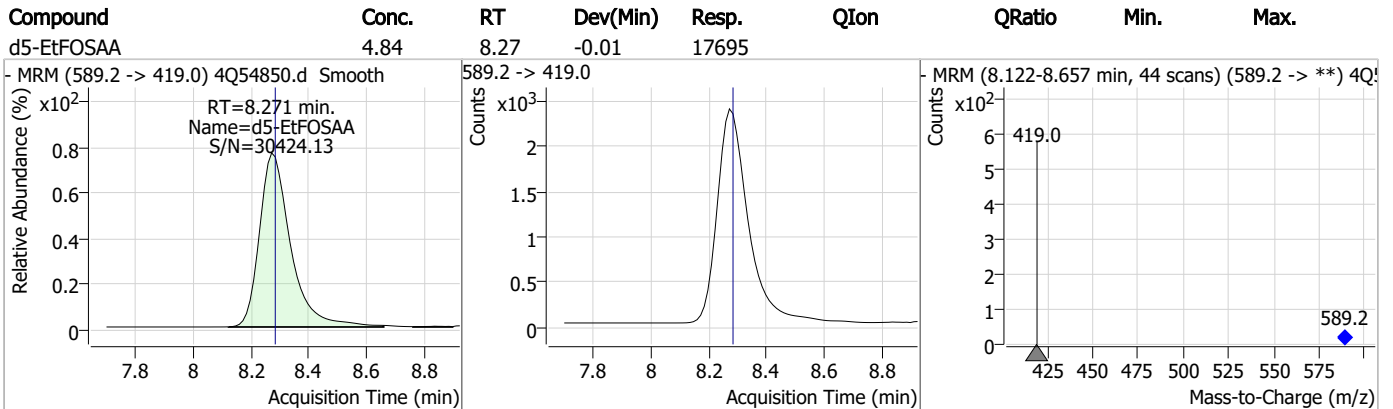
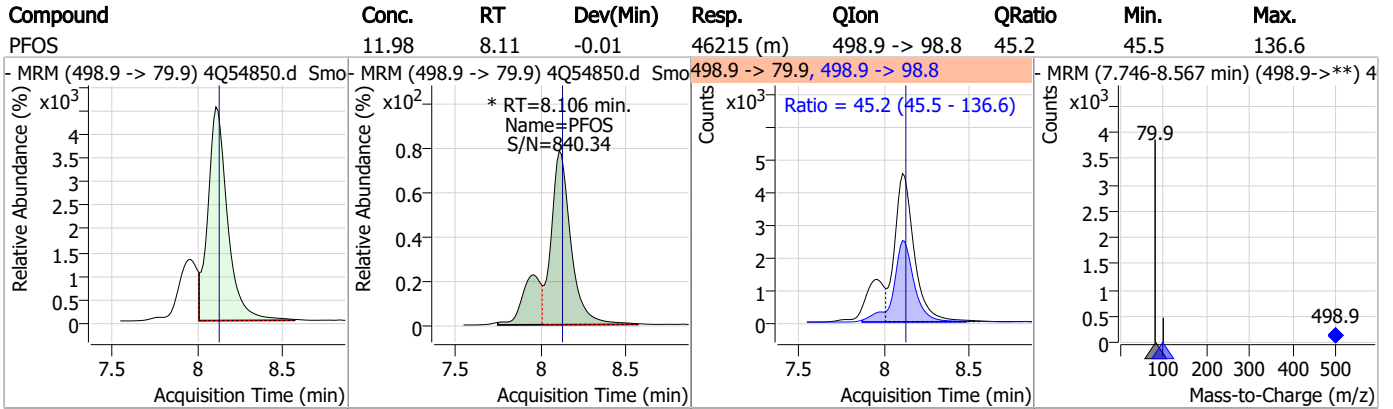
Perfluorinated Compounds by LC/MS/MS



7.6.2

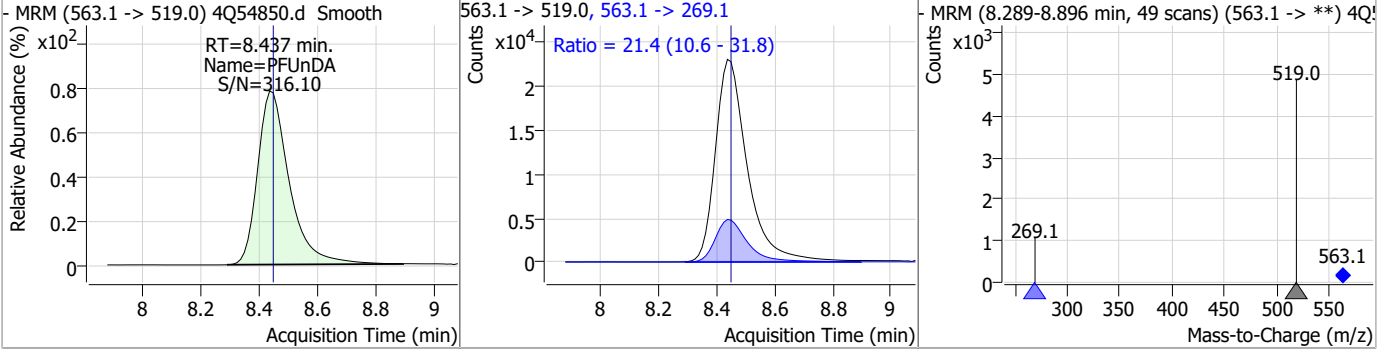
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Perfluorinated Compounds by LC/MS/MS

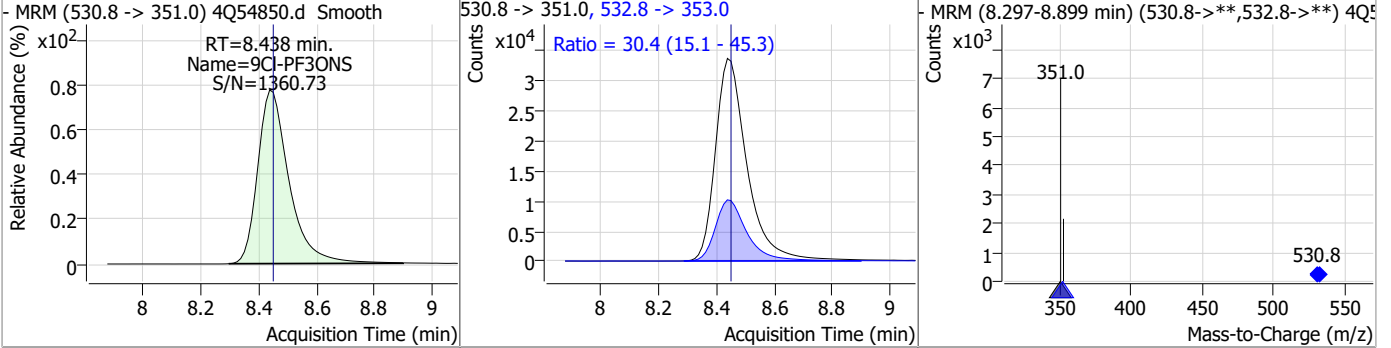


Perfluorinated Compounds by LC/MS/MS

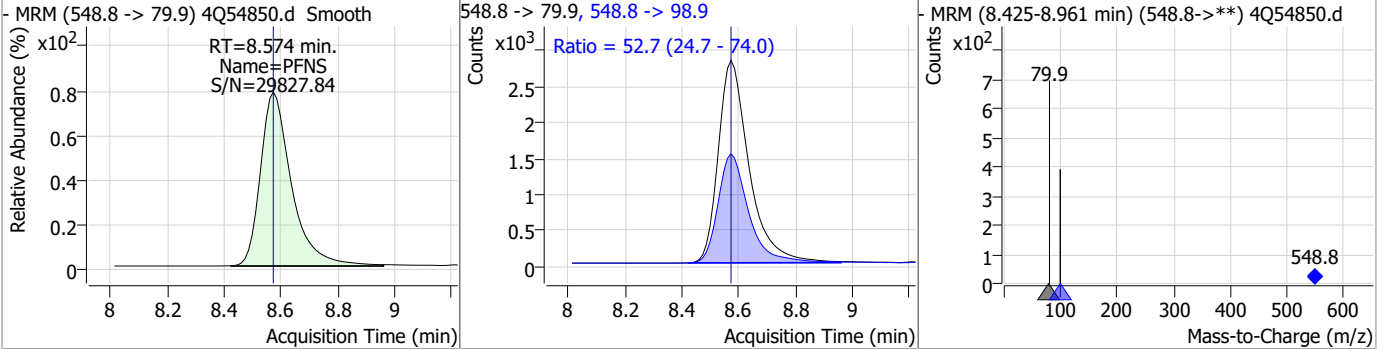
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	12.90	8.44	-0.01	173424	563.1 -> 269.1	21.4	10.6	31.8



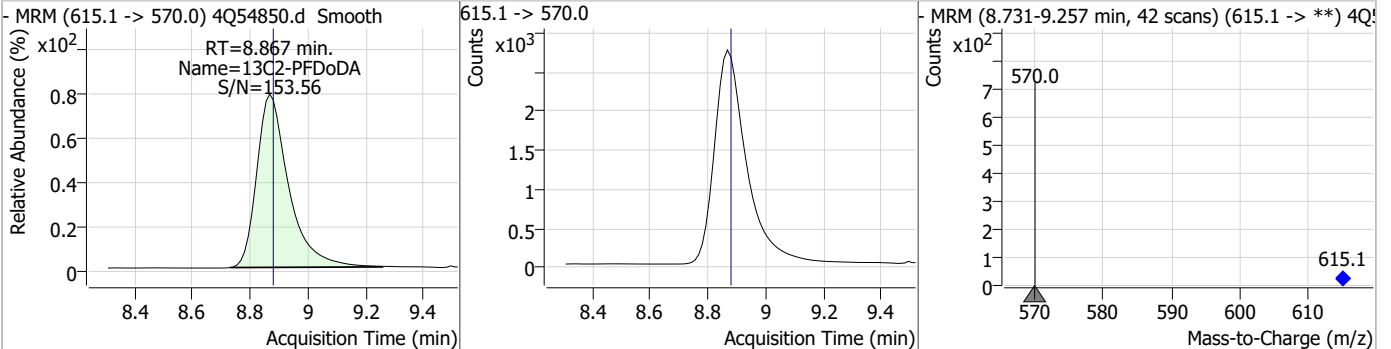
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	23.32	8.44	-0.01	251590	532.8 -> 353.0	30.4	15.1	45.3



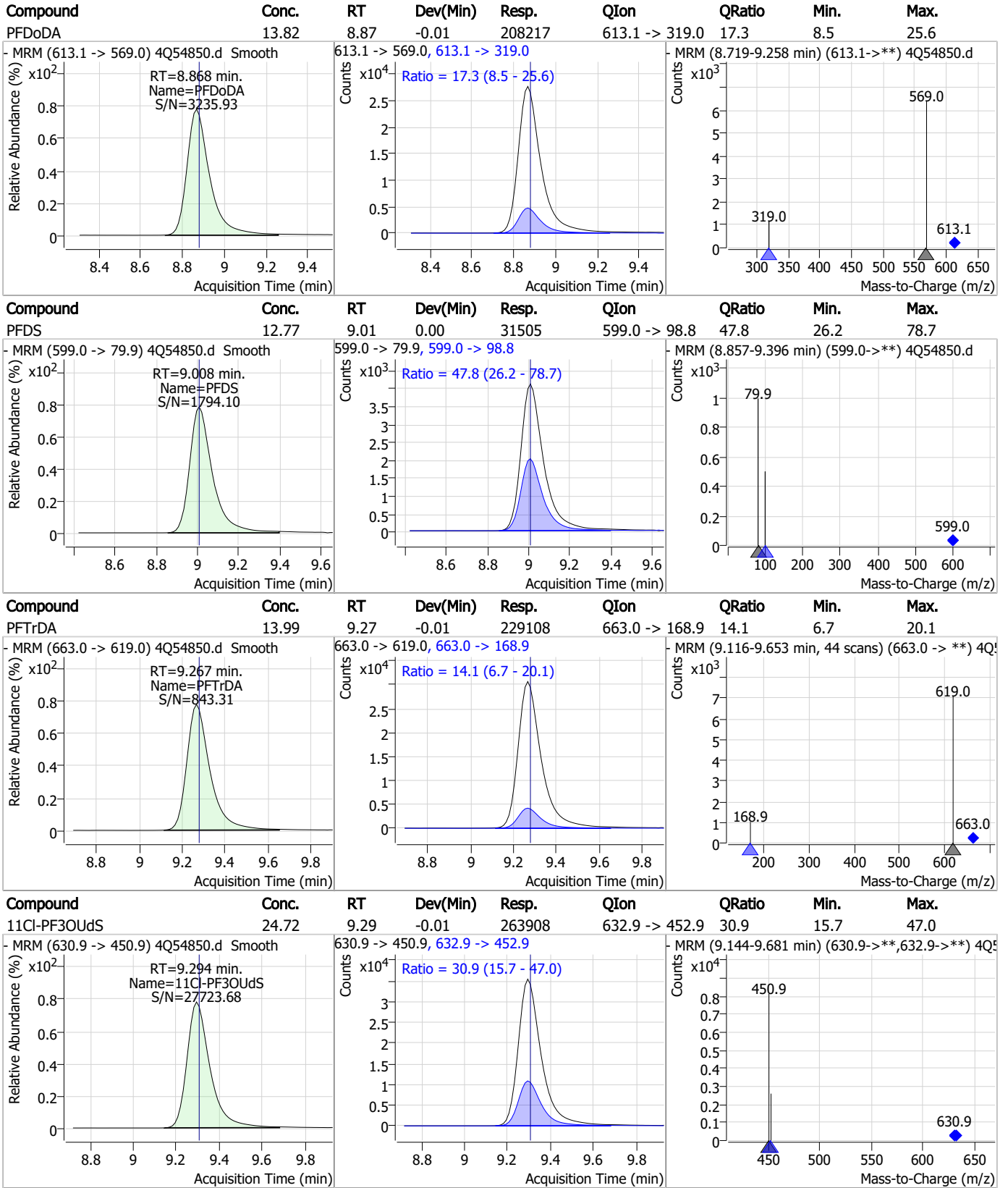
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	13.54	8.57	0.00	21414	548.8 -> 98.9	52.7	24.7	74.0



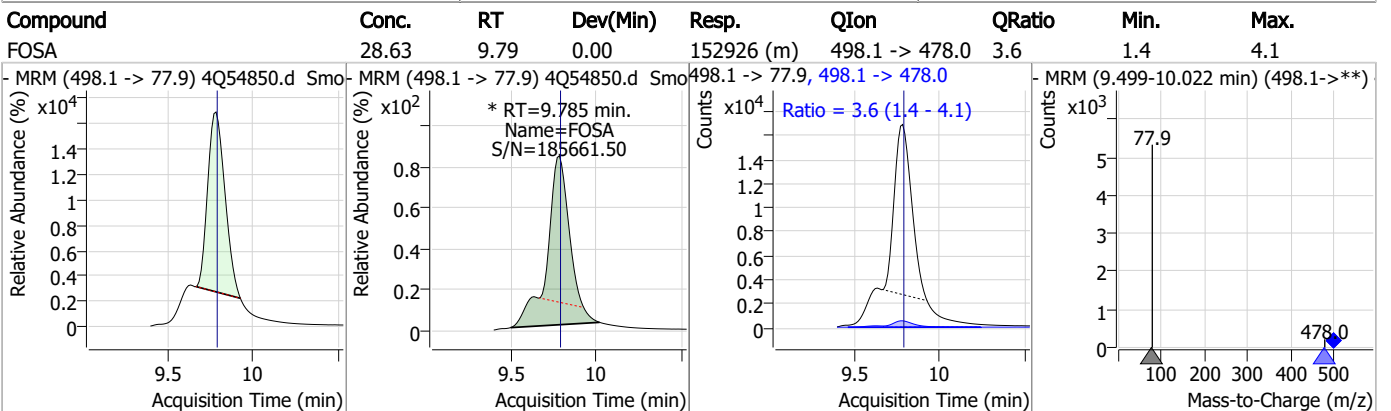
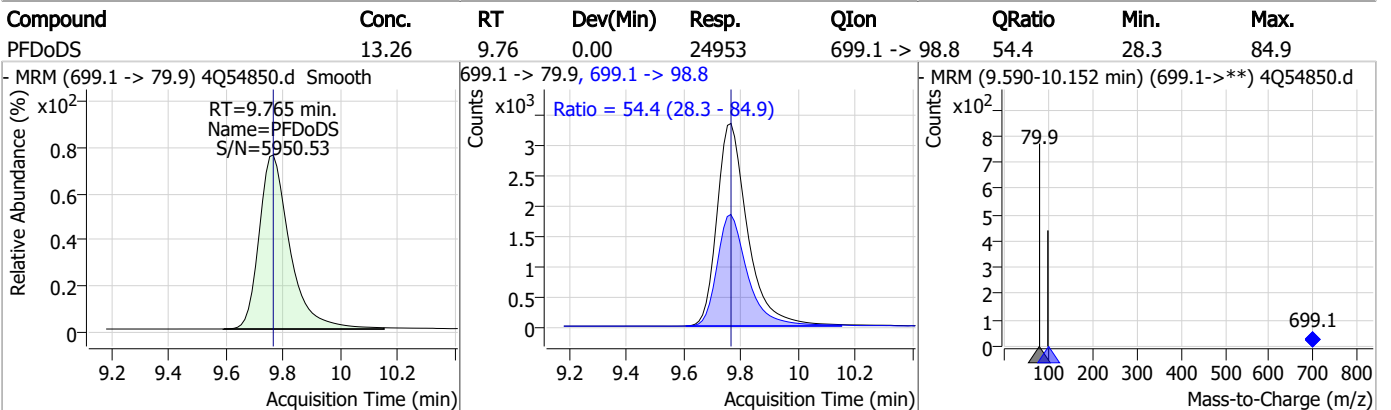
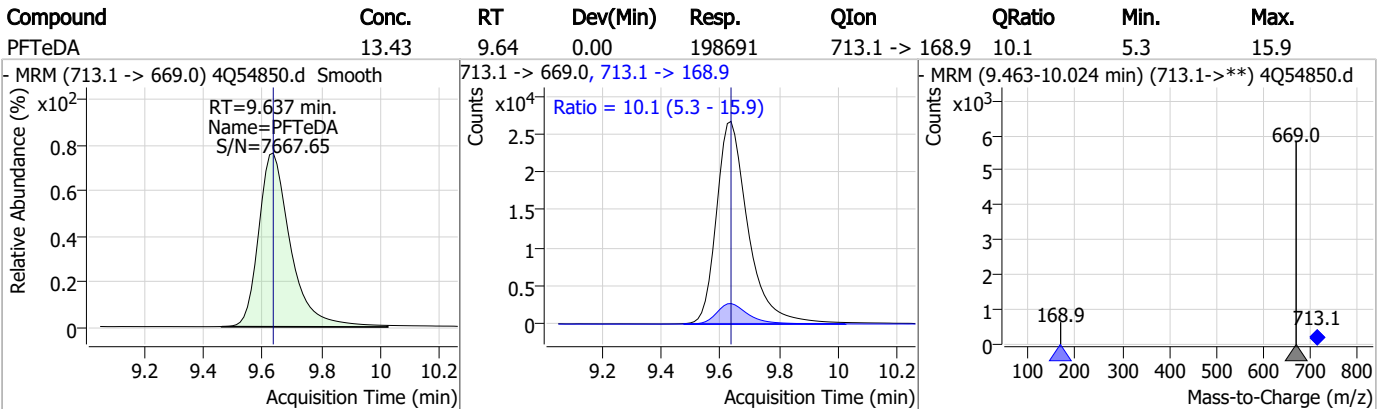
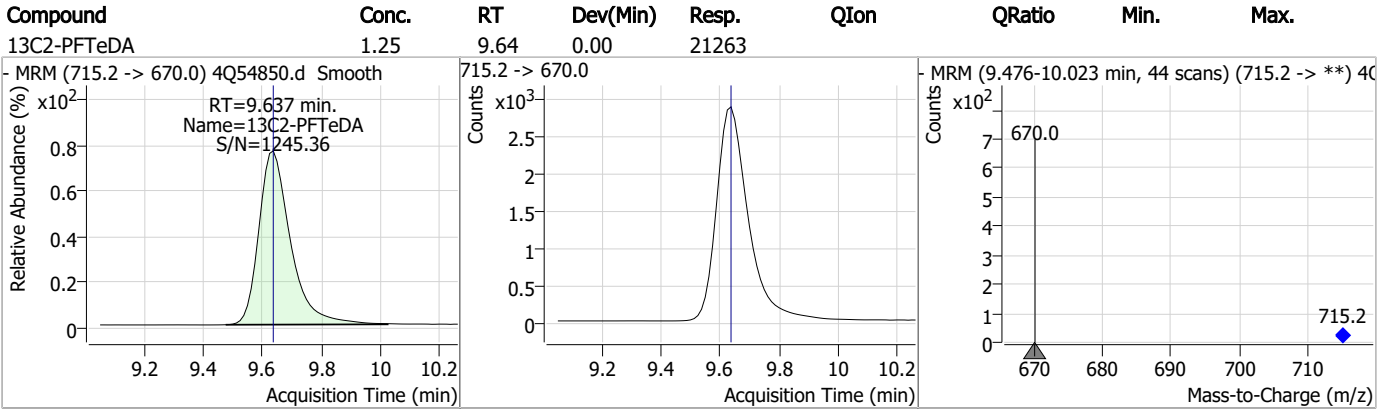
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.22	8.87	-0.01	20923	615.1 -> 570.0	-	-	-



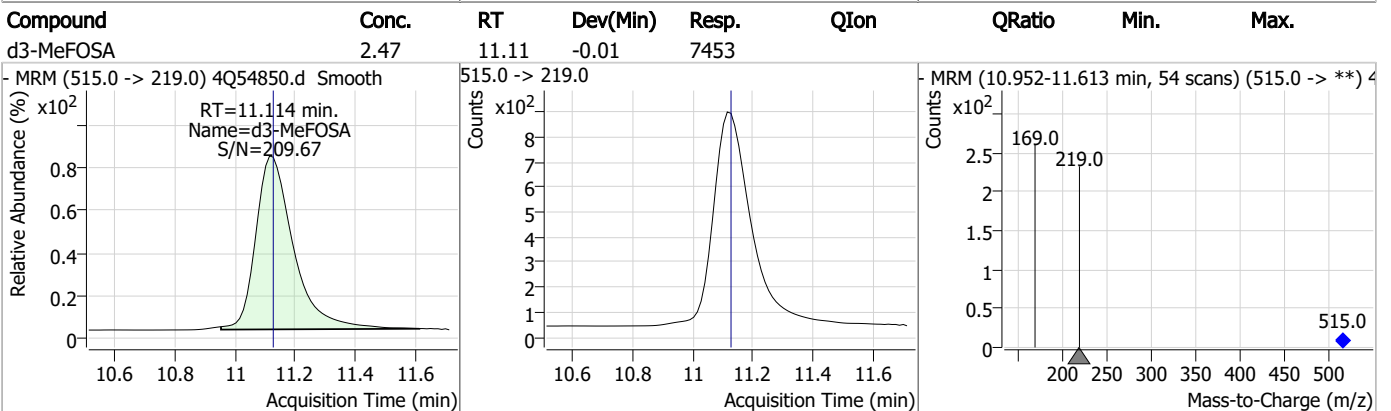
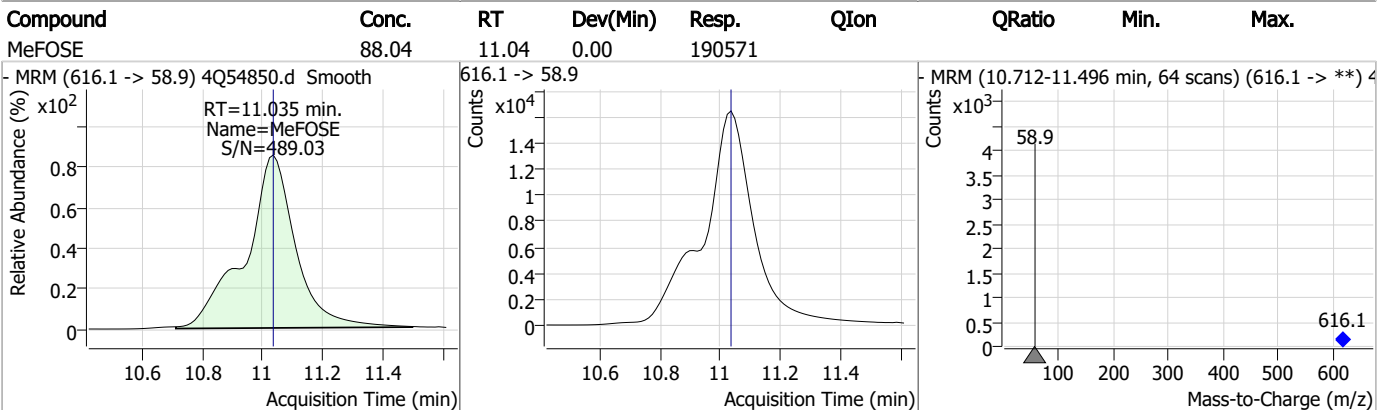
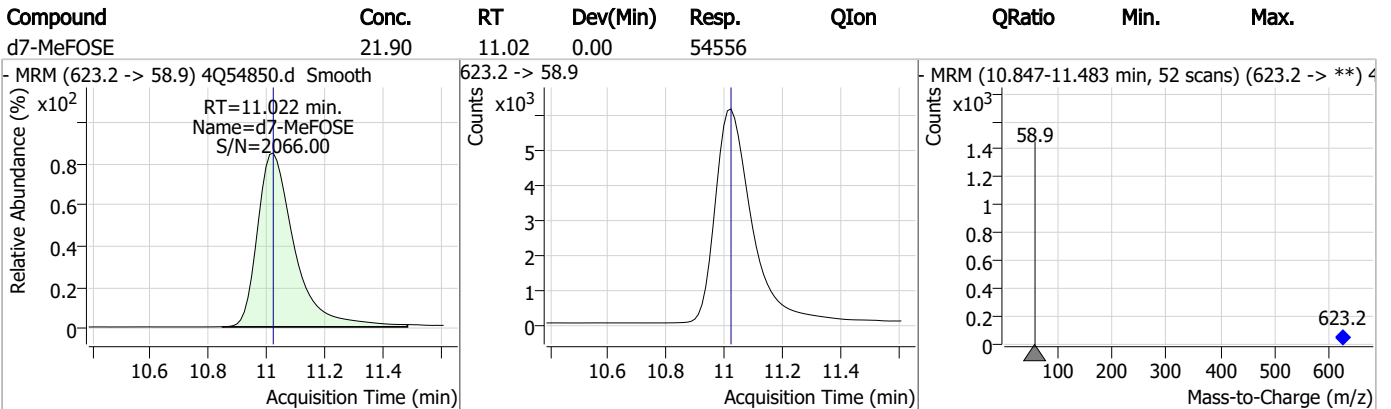
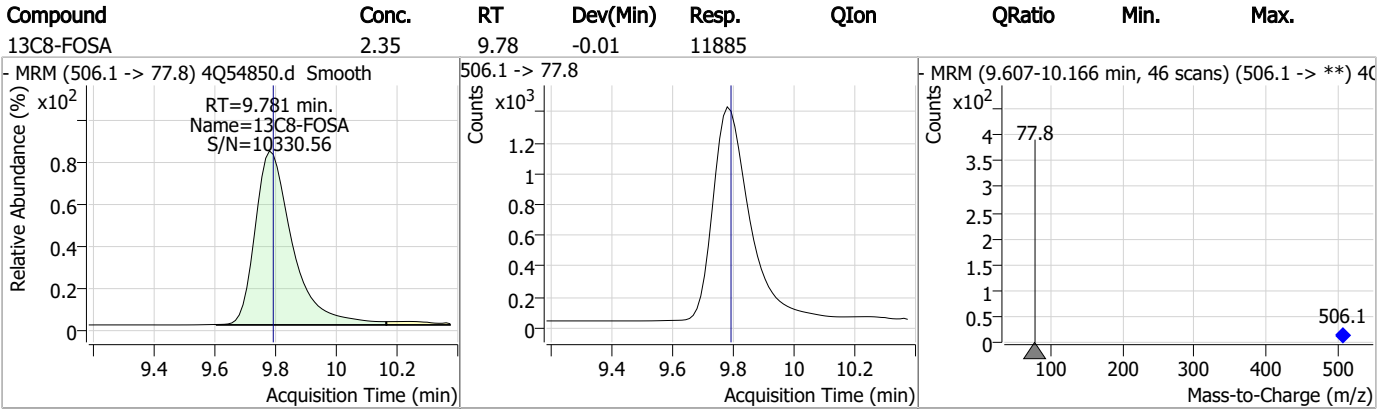
Perfluorinated Compounds by LC/MS/MS



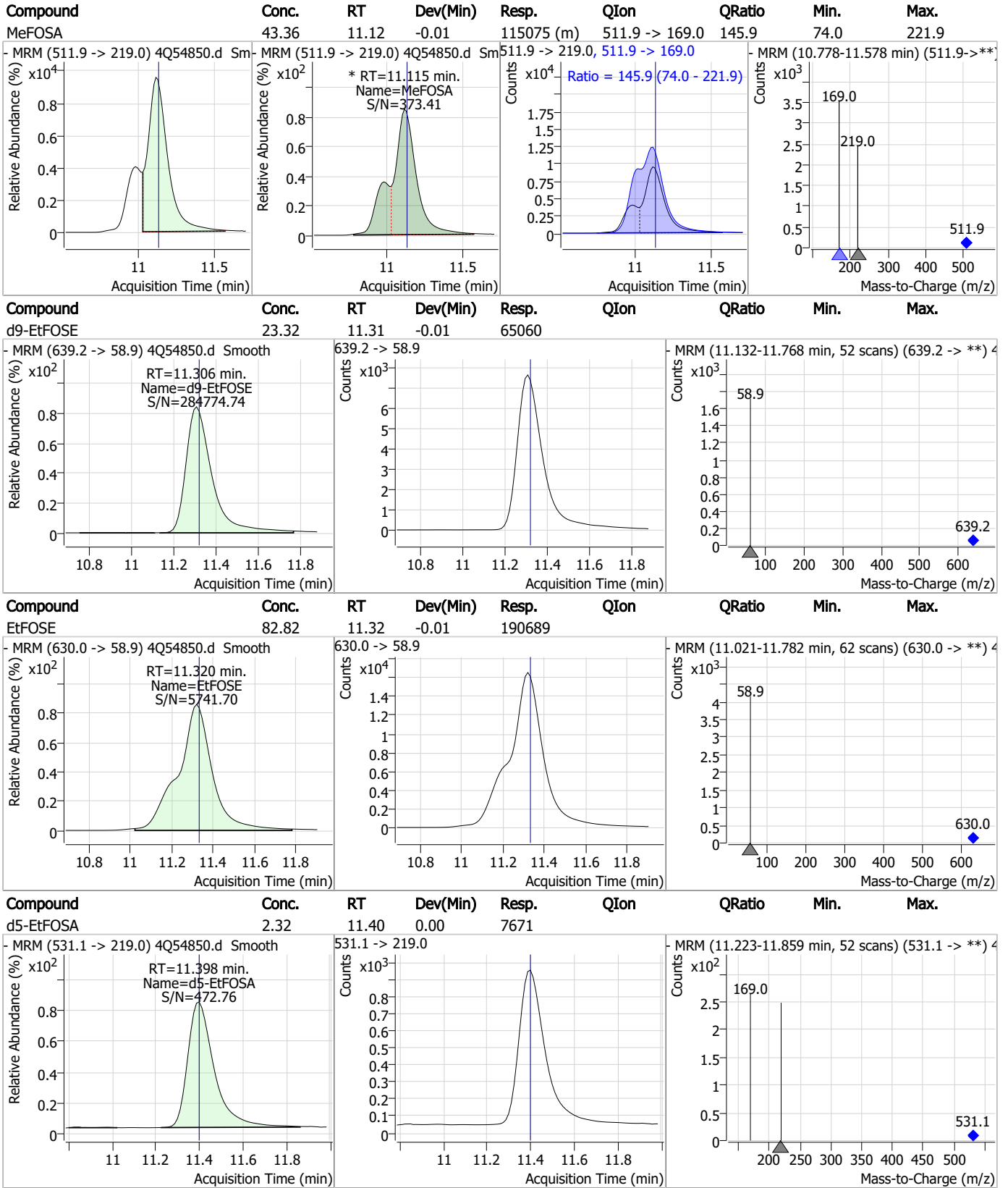
Perfluorinated Compounds by LC/MS/MS



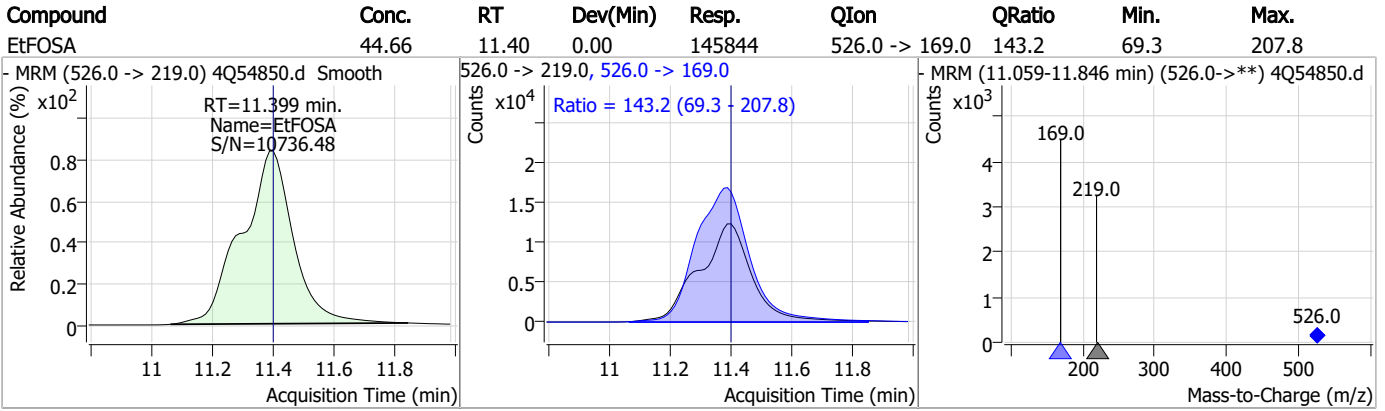
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S4Q804-RT Method: EPA DRAFT 1633
Lab FileID: 4Q54850.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 11:08 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.96	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorononanoic acid	375-95-1		7.37	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.11	Split peak
PFOSA	754-91-6		9.79	Split peak
MeFOSA	31506-32-8		11.12	Split peak

7.6.2.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 12/11/23 15:29

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54944.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/10/2023 2:20:40 PM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q805_TDCA.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.117	507.1 -> 79.9	13623	2.50	µg/L	0.000	
13C4-PFOS	8.118	502.8 -> 79.9	11886	2.50	µg/L	0.000	
System Monitoring Compounds							
13C8-PFOS	8.117	507.1 -> 79.9	13623	2.91	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 116.3%				
Target Compounds							
PFOS	8.119	498.9 -> 79.9 498.9 -> 98.8	12316 6130	2.65	µg/L	m	100
TCDCa	6.635	498.9 -> 79.9	3828	6.09	ng/ml		100
TDCA	6.784	498.9 -> 79.9	4963	8.72	ng/ml		100
TUDCA	5.791	498.9 -> 79.9	6153	5.09	ng/ml		100

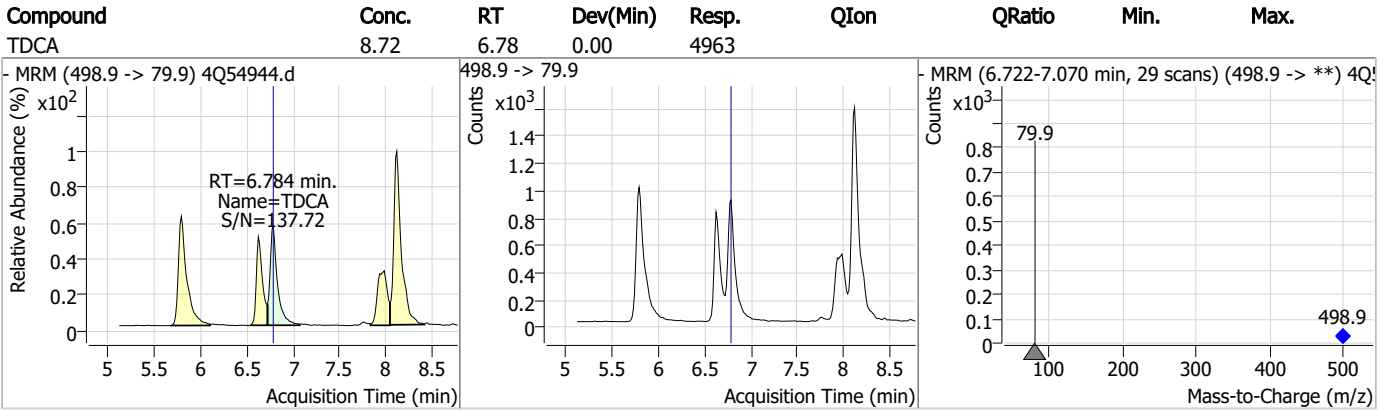
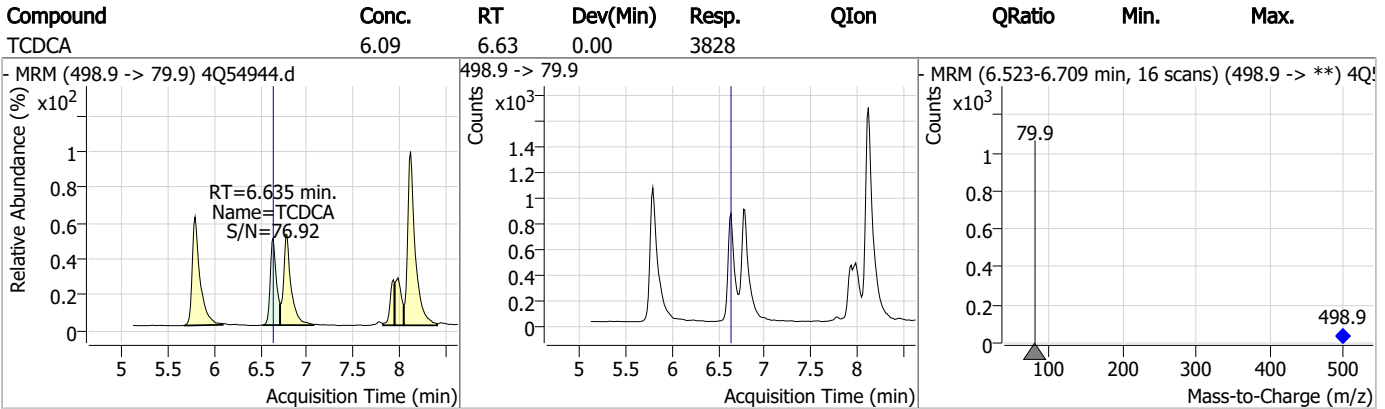
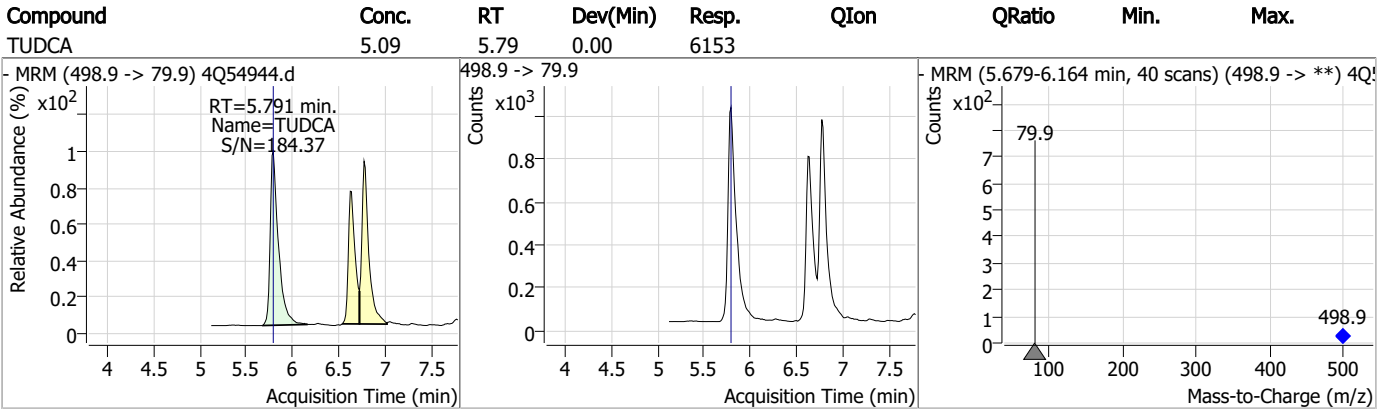
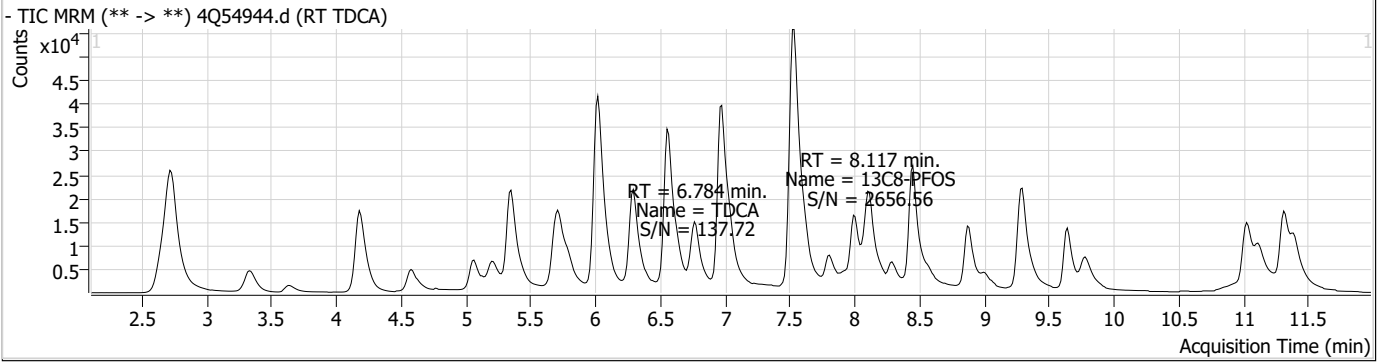
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.3

7



Perfluorinated Compounds by LC/MS/MS

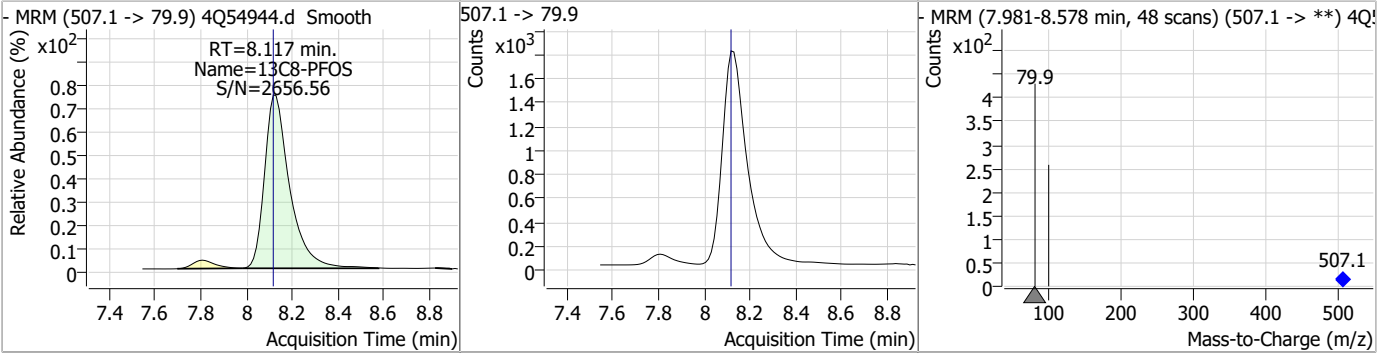


7.6.3

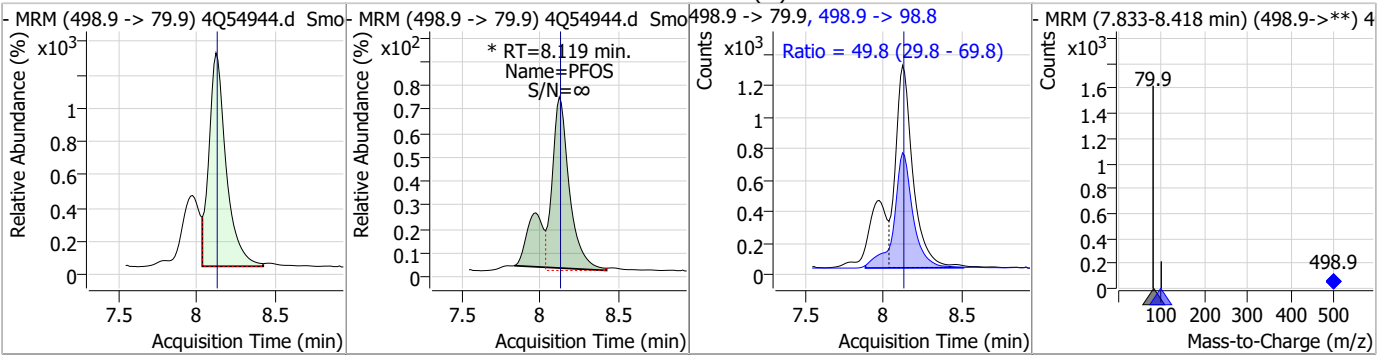
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.91	8.12	0.00	13623				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.65	8.12	0.00	12316 (m)	498.9 -> 98.8	49.8	29.8	69.8



7.6.3

7



Manual Integration Approval Summary

Sample Number: S4Q805-RT Method: EPA DRAFT 1633
Lab FileID: 4Q54944.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/10/23 14:20 Supervisor approved: 12/11/23 15:29 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54945.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/10/2023 2:35:25 PM
 Sample Name : RT_BR_LN
 Vial : P1-B2
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	111831	10.00 µg/L	0.025
M5-PFPeA	4.175	268.3 -> 223.0	48399	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	38298	2.50 µg/L	0.012
M4-PFHpA	6.292	367.1 -> 322.0	36155	2.50 µg/L	0.000
M8-PFOA	6.976	421.1 -> 376.0	53972	2.50 µg/L	0.000
M9-PFNA	7.521	472.1 -> 427.0	21349	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	15716	1.25 µg/L	0.000
M7-PFUnDA	8.449	570.0 -> 525.1	17005	1.25 µg/L	0.000
M2-PFDoDA	8.880	615.1 -> 570.0	20561	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	21904	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	12461	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	10847	2.50 µg/L	0.013
M3-PFHxS	7.042	402.1 -> 79.9	8403	2.50 µg/L	0.012
M8-PFOS	8.117	507.1 -> 79.9	8941	2.50 µg/L	0.000
M2-4:2FTS	5.058	329.1 -> 80.9	1011	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	1950	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2608	5.00 µg/L	0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	17551	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	35936	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	15009	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	54974	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	62931	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	7036	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6909	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	7904	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	53390	5.00 µg/L	0.013
18O2-PFHxS	7.041	403.0 -> 83.9	5692	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	60438	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	15206	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	22017	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	41738	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1011	3.74 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 74.8%		
13C2-6:2FTS	6.761	429.1 -> 80.9	1950	3.33 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 66.5%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2608	3.32 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 66.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	20561	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	21904	1.45 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 116.1%		
13C3-PFBS	5.202	302.1 -> 79.9	10847	2.49 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C3-PFHxS	7.042	402.1 -> 79.9	8403	2.35 µg/L	0.012

7.6.4
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.2%	
13C4-PFBA	2.699	216.8 -> 171.9	111831	9.98 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.292	367.1 -> 322.0	36155	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFHxA	5.347	318.0 -> 273.0	38298	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFPeA	4.175	268.3 -> 223.0	48399	5.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C6-PFDA	8.004	519.1 -> 474.1	15716	1.42 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.6%	
13C7-PFUnDA	8.449	570.0 -> 525.1	17005	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C8-FOSA	9.794	506.1 -> 77.8	12461	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C8-PFOA	6.976	421.1 -> 376.0	53972	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C8-PFOS	8.117	507.1 -> 79.9	8941	2.23 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.4%	
13C9-PFNA	7.521	472.1 -> 427.0	21349	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.8%	
d3-MeFOSAA	8.086	573.2 -> 419.0	17551	4.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 80.0%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	35936	9.35 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.5%	
d3-MeFOSA	11.126	515.0 -> 219.0	6909	2.26 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.4%	
d5-EtFOSAA	8.296	589.2 -> 419.0	15009	4.04 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 80.9%	
d7-MeFOSE	11.022	623.2 -> 58.9	54974	21.75 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	62931	22.24 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.9%	
d5-EtFOSA	11.398	531.1 -> 219.0	7036	2.10 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.0%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	82790	47.54 µg/L	98
		327.1 -> 80.9	34329		
6:2FTS	6.761	427.1 -> 407.0	100419	49.00 µg/L	99
		427.1 -> 80.9	36021		
8:2FTS	7.816	527.1 -> 507.0	68939	50.16 µg/L	96
		527.1 -> 80.8	26292		
EtFOSAA	8.297	584.2 -> 419.1	34206	12.49 µg/L	m 86
		584.2 -> 526.0	13566		
FOSA	9.798	498.1 -> 77.9	167311	29.87 µg/L	m 99
		498.1 -> 478.0	5190		
MeFOSAA	8.087	570.1 -> 419.0	35552	14.13 µg/L	91
		570.1 -> 483.0	7215		
PFBA	2.695	212.8 -> 168.9	188086	52.51 µg/L	100
PFBS	5.203	298.7 -> 79.9	38583	11.47 µg/L	94
		298.7 -> 98.8	14274		
PFDA	8.005	512.9 -> 469.0	141911	12.29 µg/L	99
		512.9 -> 219.0	28454		
PFDoDA	8.880	613.1 -> 569.0	204461	13.81 µg/L	100
		613.1 -> 319.0	35394		
PFDS	9.020	599.0 -> 79.9	32399	13.62 µg/L	95

7.6.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.293	599.0 -> 98.8	15954	13.35	µg/L	98
		363.1 -> 319.0	271653			
PFHpS	7.624	363.1 -> 169.0	48159	13.19	µg/L	98
		449.0 -> 79.9	46804			
PFHxA	5.350	449.0 -> 98.9	23694	12.56	µg/L	99
		313.0 -> 269.0	153534			
PFHxS	7.043	313.0 -> 118.9	4716	11.50	µg/L	m
		398.7 -> 79.9	31177			
PFNA	7.384	398.7 -> 98.9	16356	29.13	µg/L	m
		463.0 -> 419.0	365395			
PFNS	8.586	463.0 -> 219.0	94530	14.64	µg/L	98
		548.8 -> 79.9	22334			
PFOA	6.978	548.8 -> 98.9	11325	31.57	µg/L	m
		413.0 -> 369.0	700736			
PFOS	8.119	413.0 -> 169.0	147205	12.59	µg/L	m
		498.9 -> 79.9	46866			
PFPeA	4.177	498.9 -> 98.8	22520	25.49	µg/L	100
		263.0 -> 219.0	242704			
PFPeS	6.294	349.1 -> 79.9	32544	12.75	µg/L	96
		349.1 -> 98.9	14677			
PFTeDA	9.637	713.1 -> 669.0	196382	12.88	µg/L	99
		713.1 -> 168.9	19905			
PFTrDA	9.279	663.0 -> 619.0	227107	14.11	µg/L	99
		663.0 -> 168.9	31749			
PFUnDA	8.449	563.1 -> 519.0	170769	13.81	µg/L	99
		563.1 -> 269.1	35466			
11CI-PF3OUdS	9.306	630.9 -> 450.9	269213	27.21	µg/L	98
		632.9 -> 452.9	81069			
9CI-PF3ONS	8.451	530.8 -> 351.0	254490	25.45	µg/L	100
		532.8 -> 353.0	76679			
ADONA	6.568	376.9 -> 250.9	697038	28.72	µg/L	99
		376.9 -> 84.8	165254			
HFPO-DA	5.703	284.9 -> 168.9	88012	25.60	µg/L	100
		284.9 -> 184.9	8245			
3:3FTCA	3.630	241.0 -> 177.0	36060	63.33	µg/L	100
		241.0 -> 117.0	3222			
5:3FTCA	6.020	341.0 -> 237.1	697170	319.84	µg/L	100
		341.0 -> 217.0	497372			
7:3FTCA	7.536	441.0 -> 316.9	355961	311.41	µg/L	98
		441.0 -> 336.9	857958			
EtFOSA	11.399	526.0 -> 219.0	141659	47.29	µg/L	100
		526.0 -> 169.0	196846			
EtFOSE	11.332	630.0 -> 58.9	184498	82.84	µg/L	100
		511.9 -> 219.0	111033			
MeFOSA	11.128	511.9 -> 169.0	166194	45.13	µg/L	m
		616.1 -> 58.9	195151			
MeFOSE	11.047	699.1 -> 79.9	25387	89.47	µg/L	m
		699.1 -> 98.8	14136			
PFDoDS	9.764	295.0 -> 201.0	21660	13.99	µg/L	99
		295.0 -> 84.9	5665			
NFDHA	5.229	279.0 -> 85.1	133895	25.02	µg/L	100
		229.0 -> 84.9	149433			
PFMBA	4.578	314.8 -> 134.9	214593	25.54	µg/L	100
		314.8 -> 82.9	7526			
PFMPA	3.315			25.94	µg/L	100
PFEESA	5.734			23.76	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed

7.6.4
7

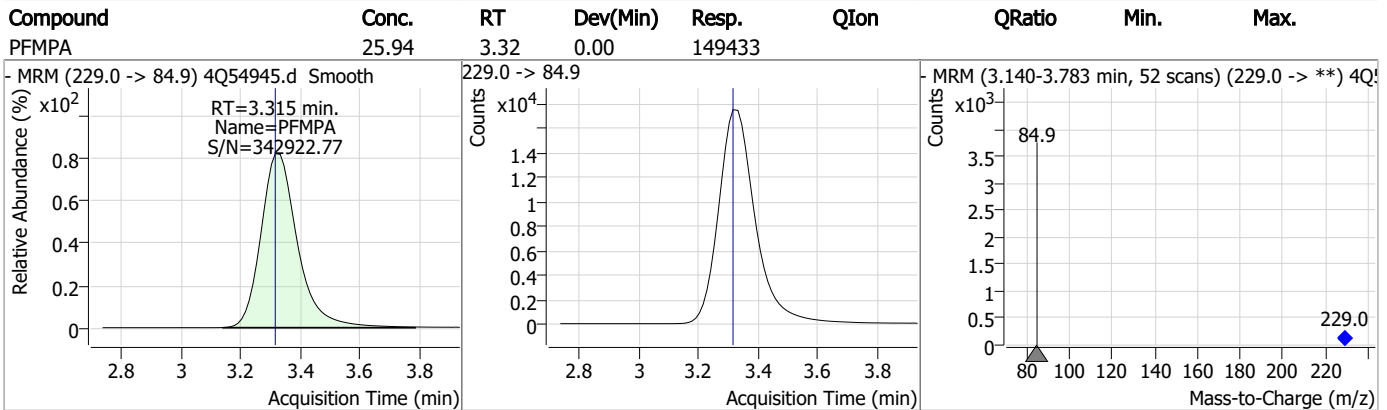
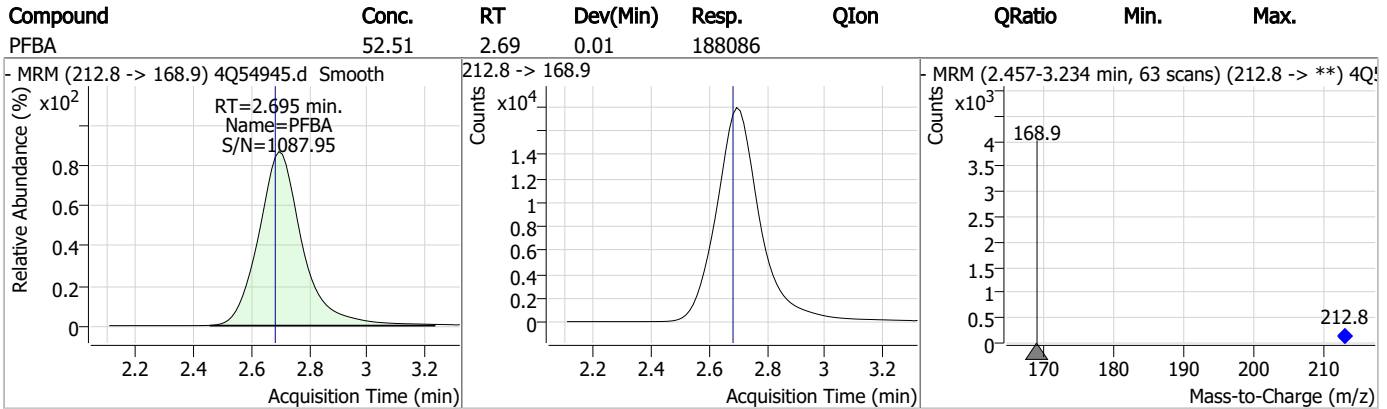
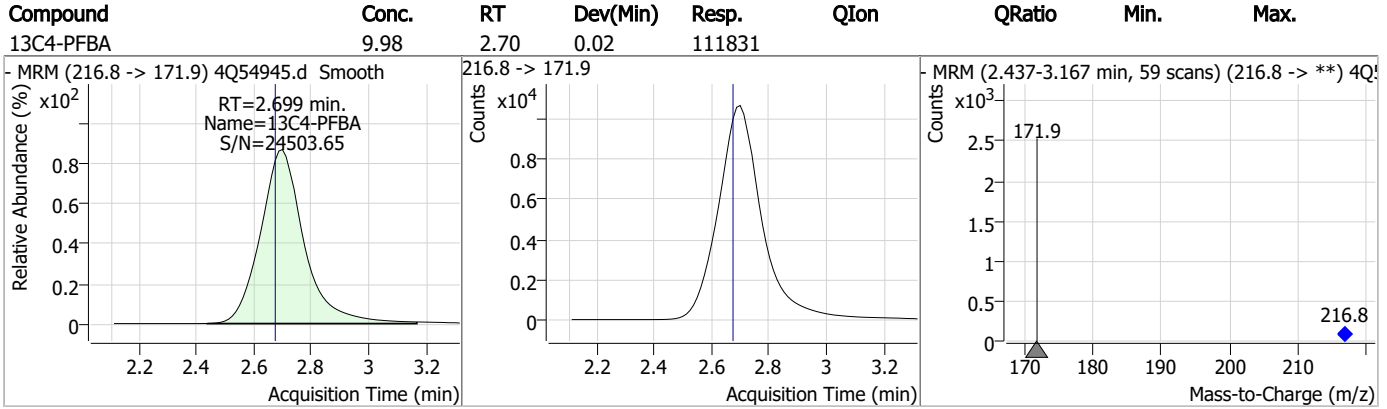
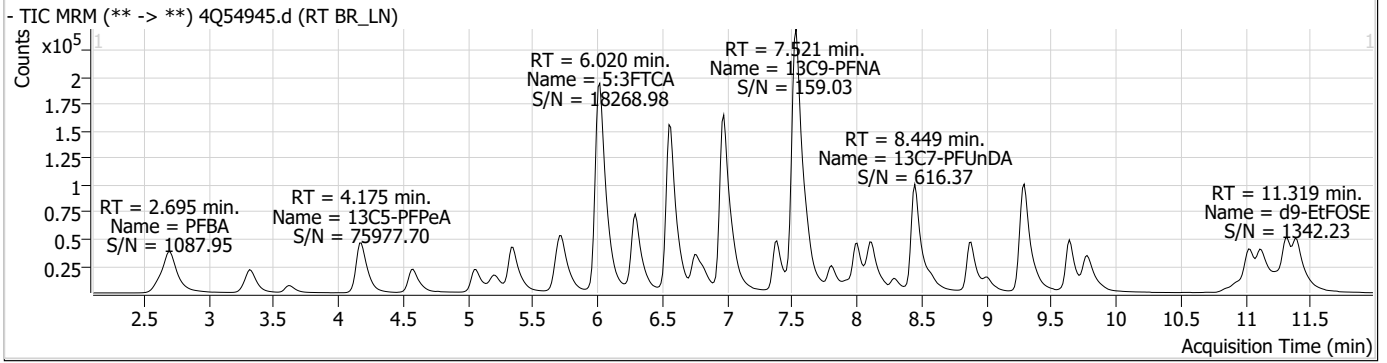
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.4

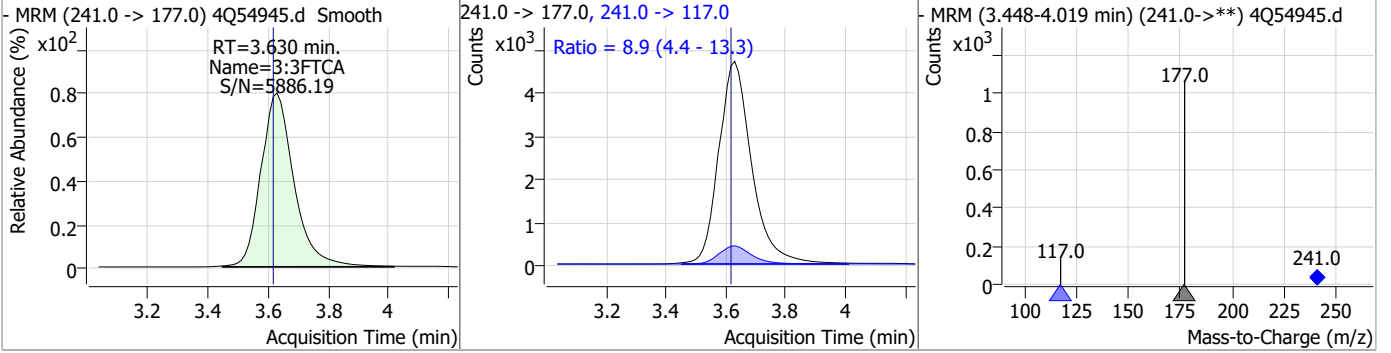
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Perfluorinated Compounds by LC/MS/MS

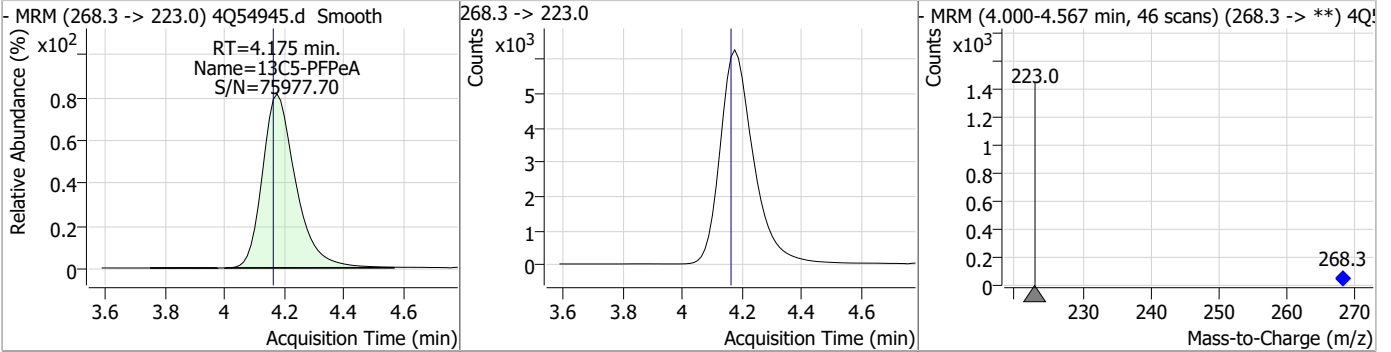


Perfluorinated Compounds by LC/MS/MS

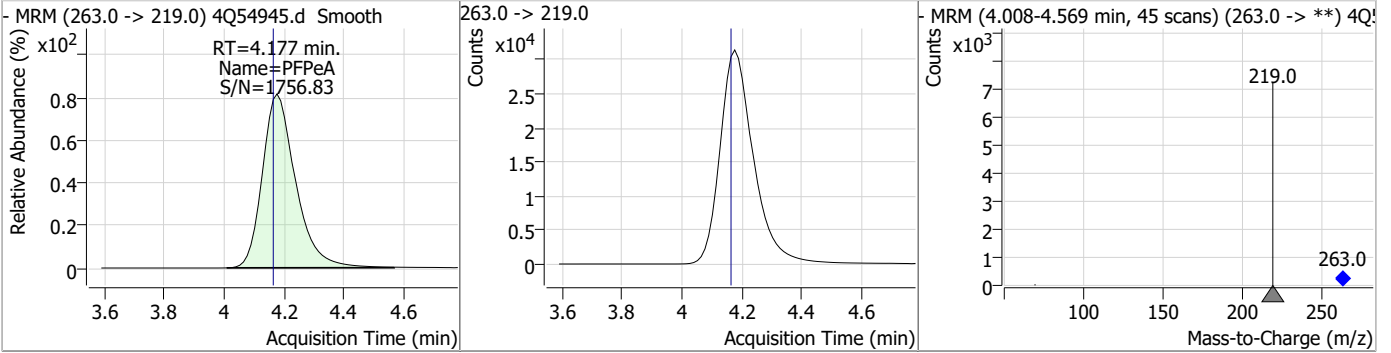
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	63.33	3.63	0.01	36060	241.0 -> 117.0	8.9	4.4	13.3



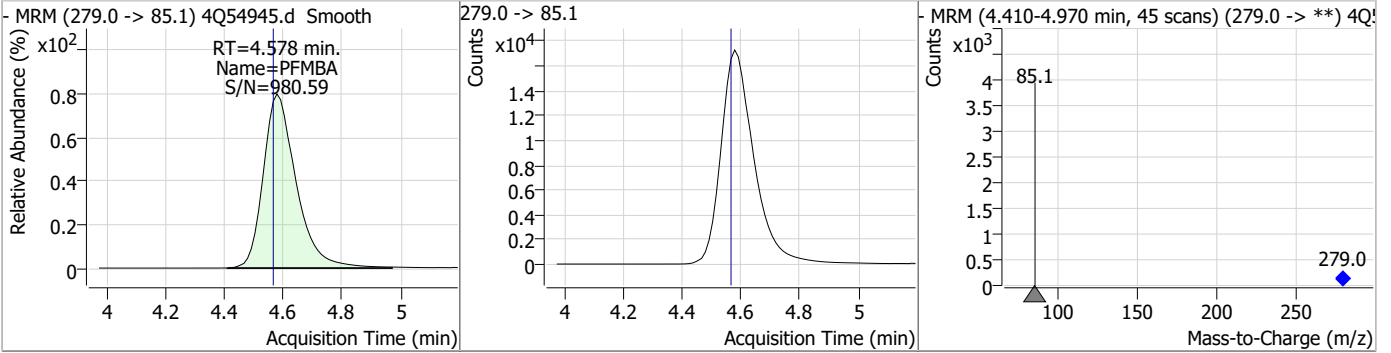
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.05	4.17	0.01	48399	268.3 -> 223.0			



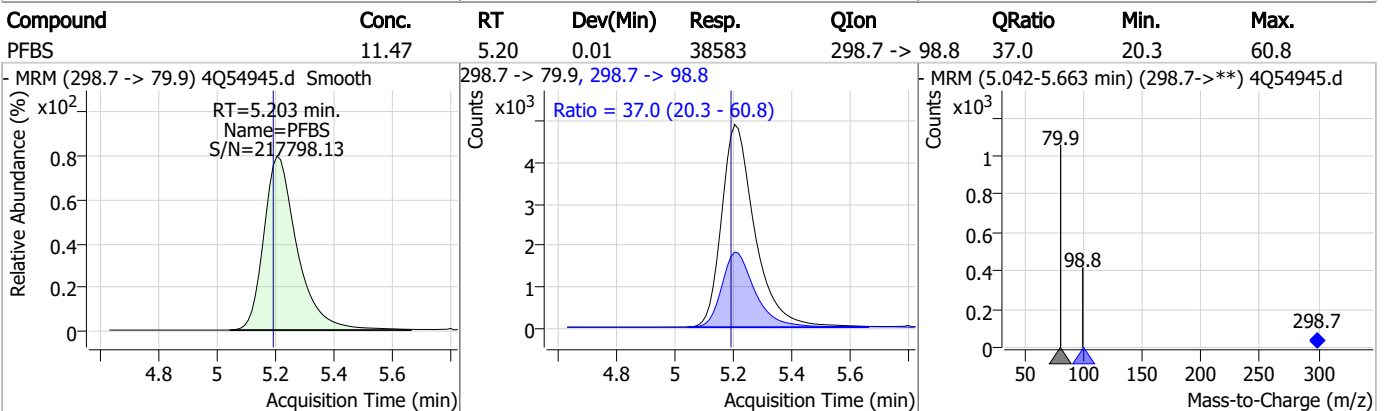
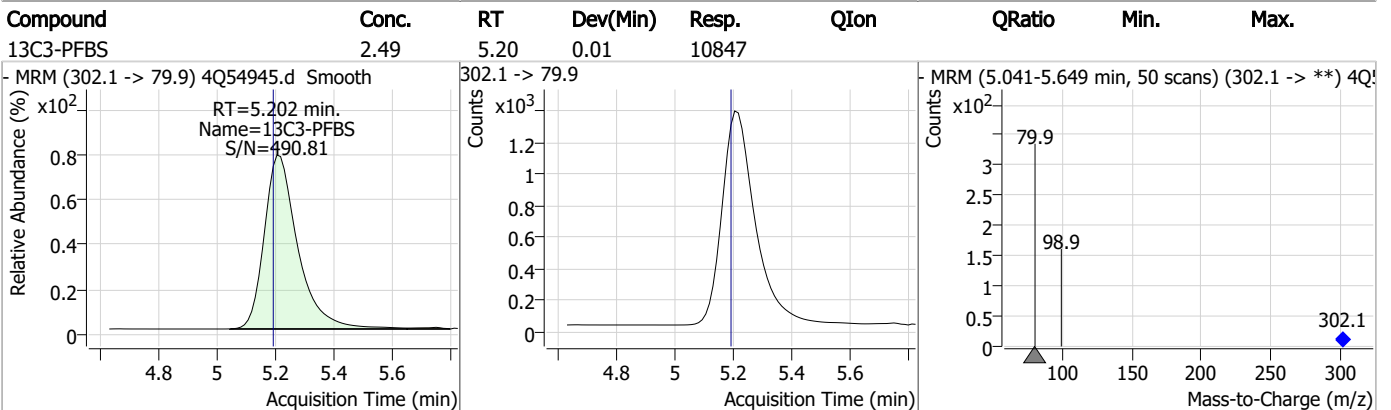
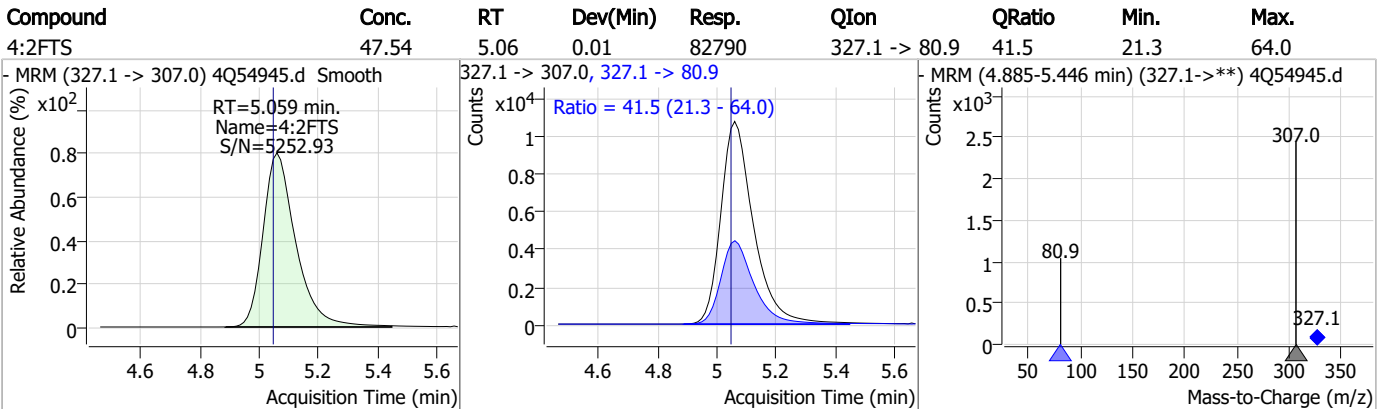
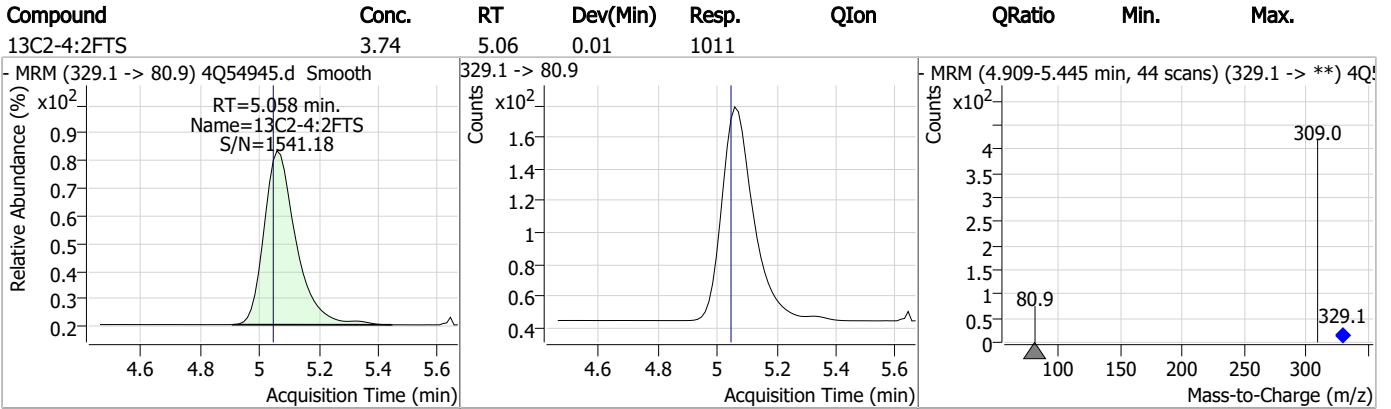
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	25.49	4.18	0.01	242704	263.0 -> 219.0			



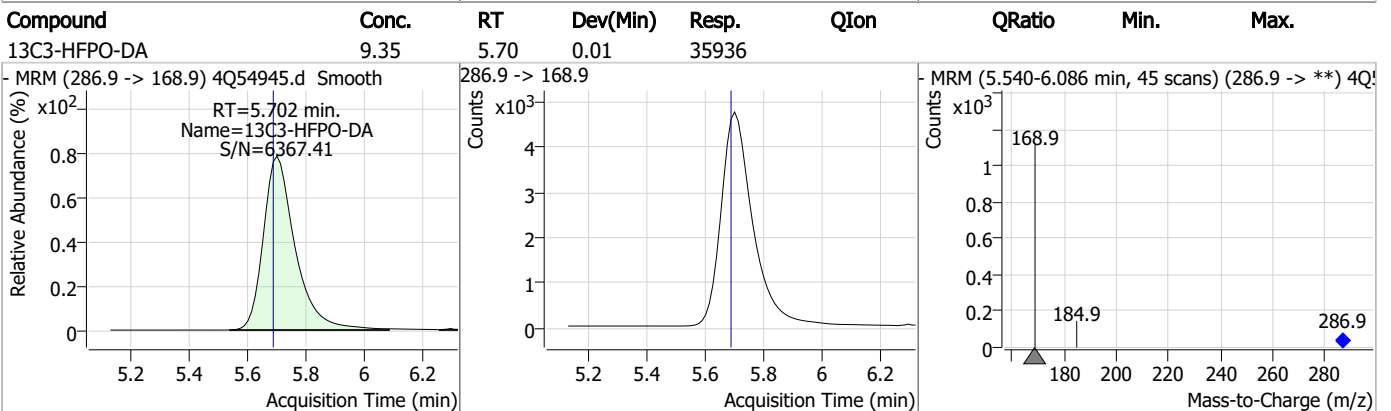
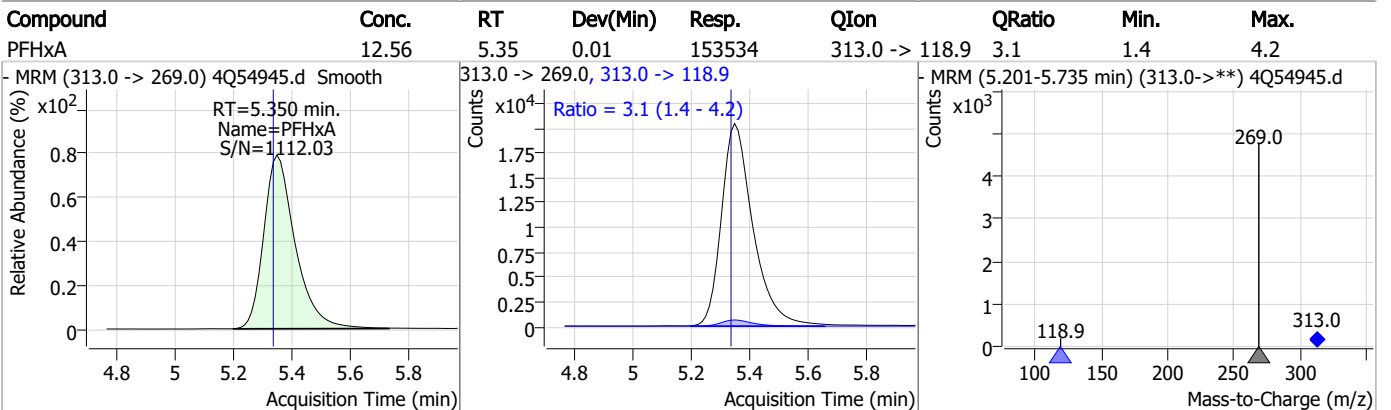
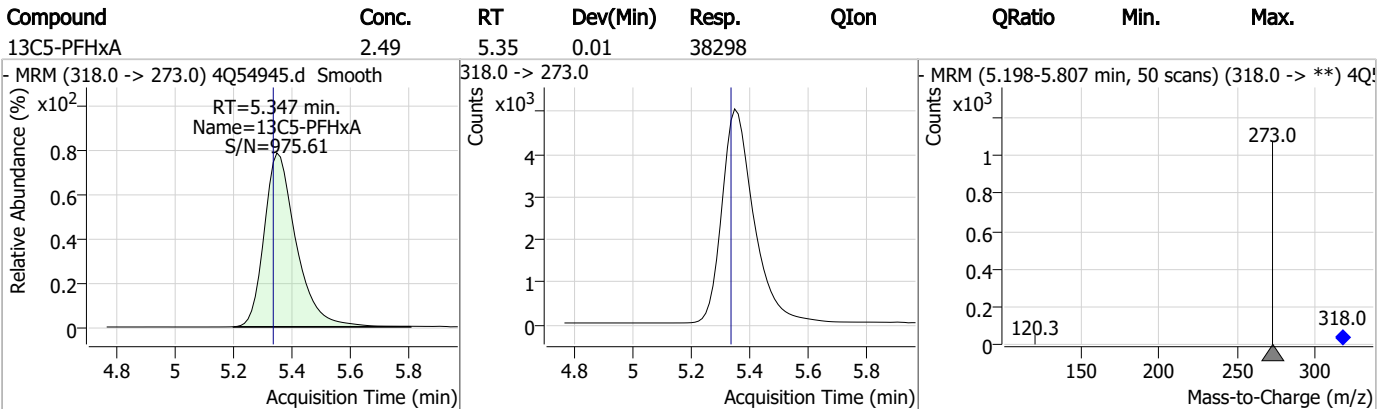
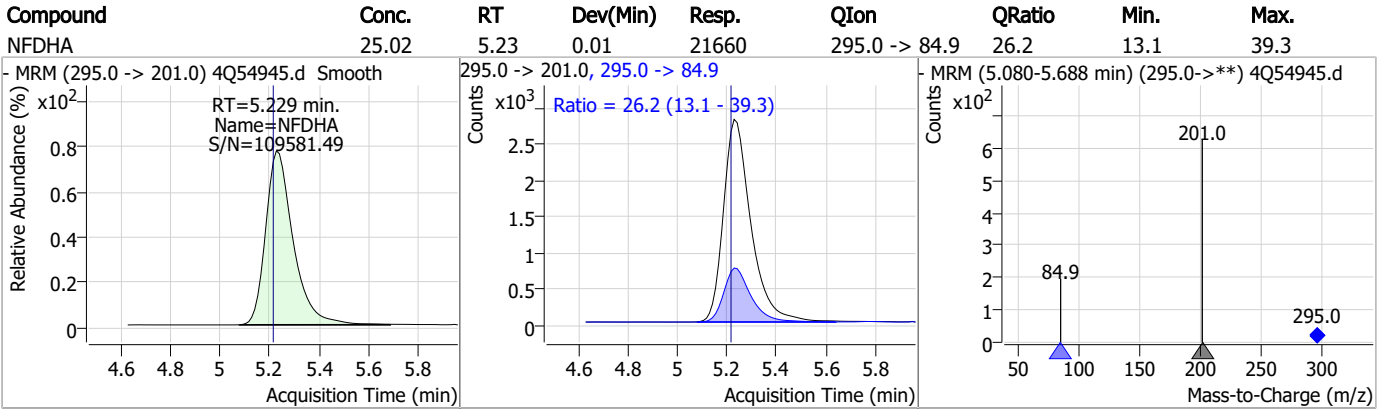
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	25.54	4.58	0.01	133895	279.0 -> 85.1			



Perfluorinated Compounds by LC/MS/MS

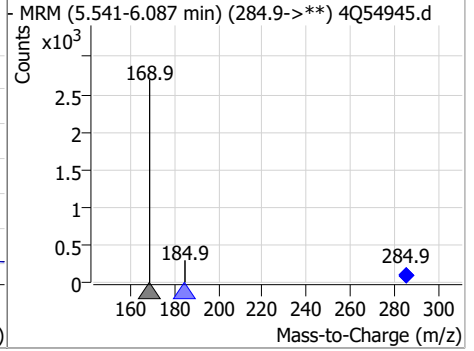
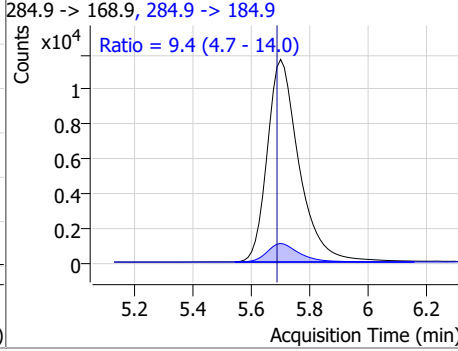
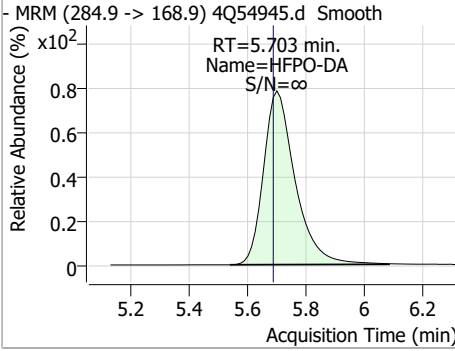


Perfluorinated Compounds by LC/MS/MS

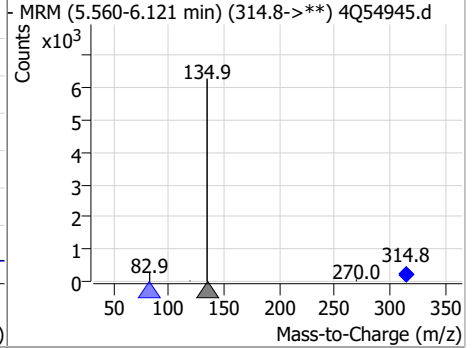
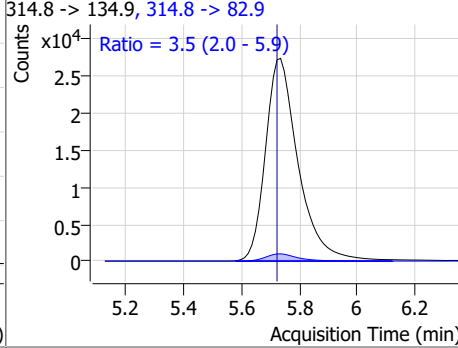
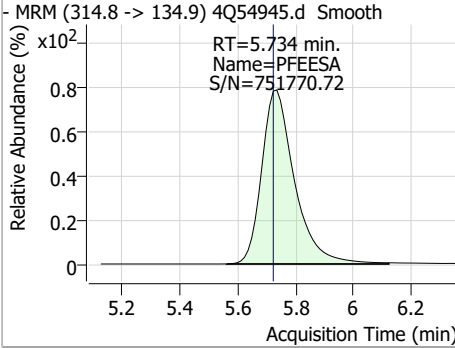


Perfluorinated Compounds by LC/MS/MS

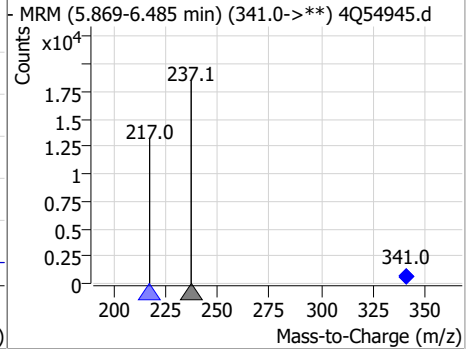
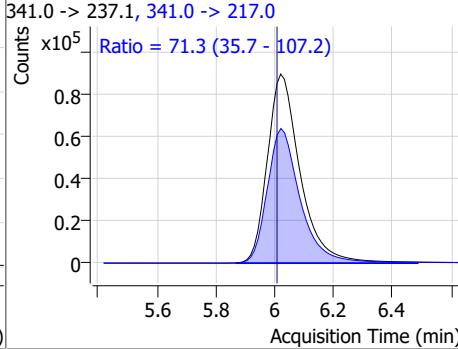
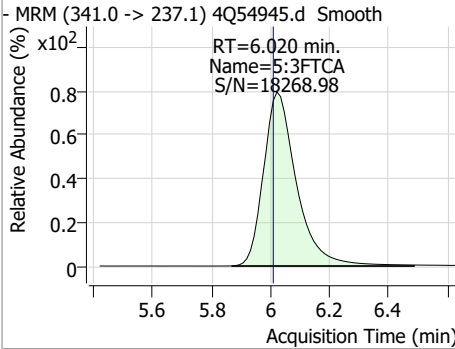
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	25.60	5.70	0.01	88012	284.9 -> 184.9	9.4	4.7	14.0



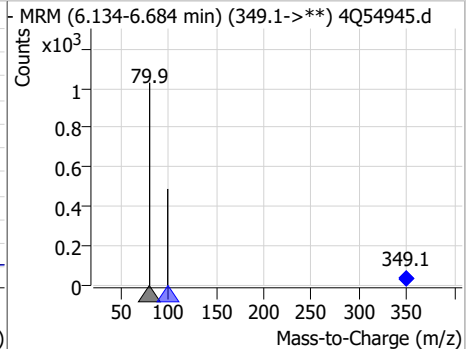
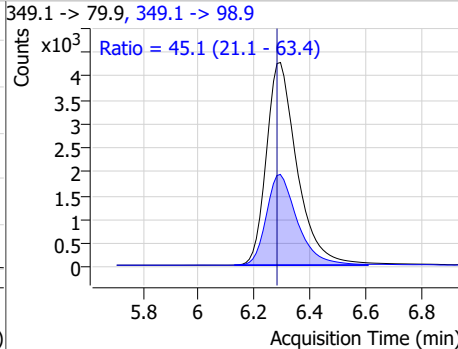
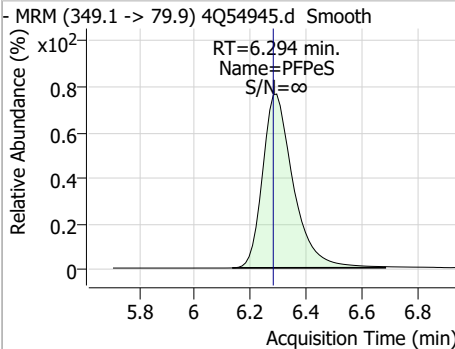
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	23.76	5.73	0.01	214593	314.8 -> 82.9	3.5	2.0	5.9



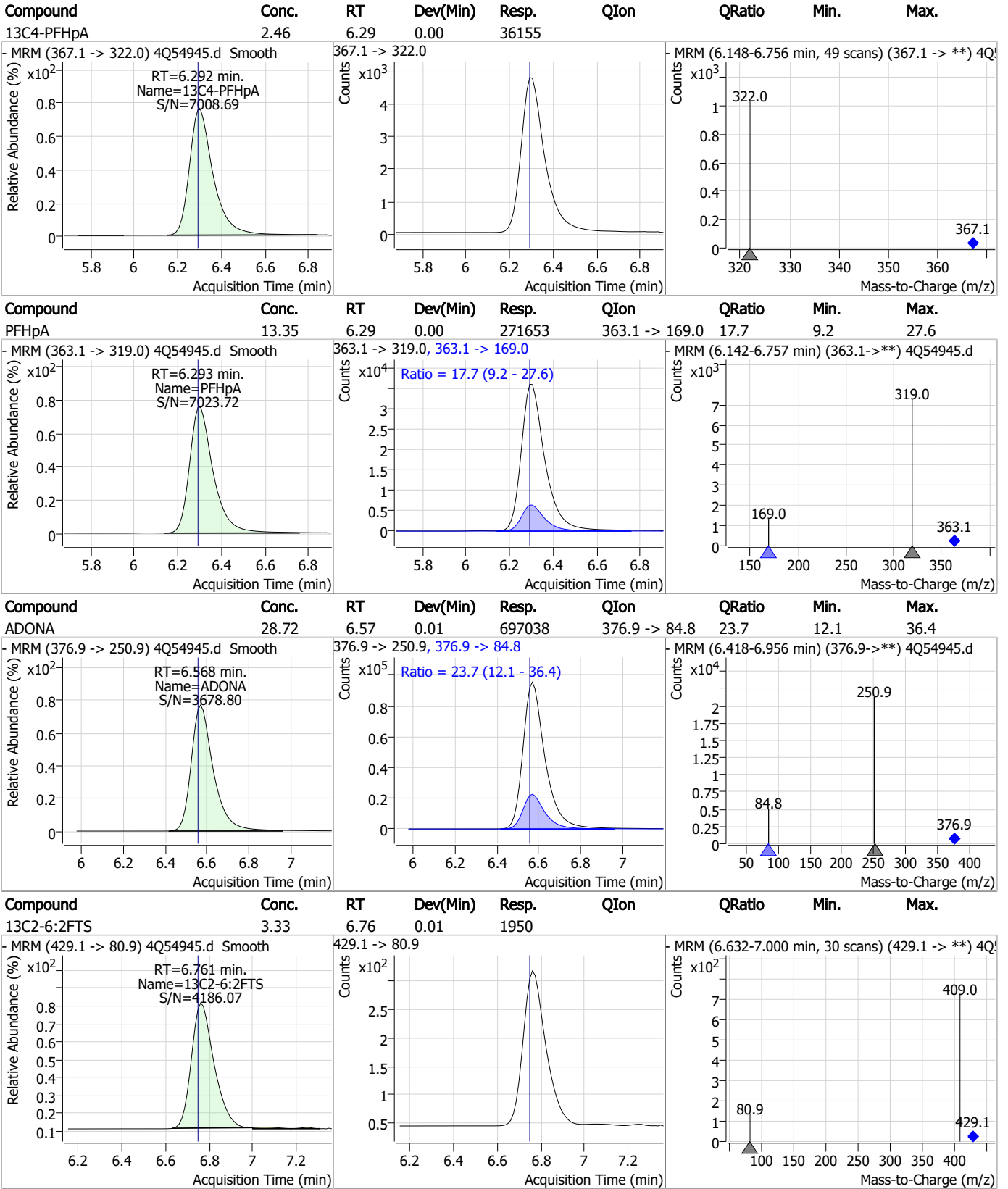
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	319.84	6.02	0.01	697170	341.0 -> 217.0	71.3	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	12.75	6.29	0.01	32544	349.1 -> 98.9	45.1	21.1	63.4



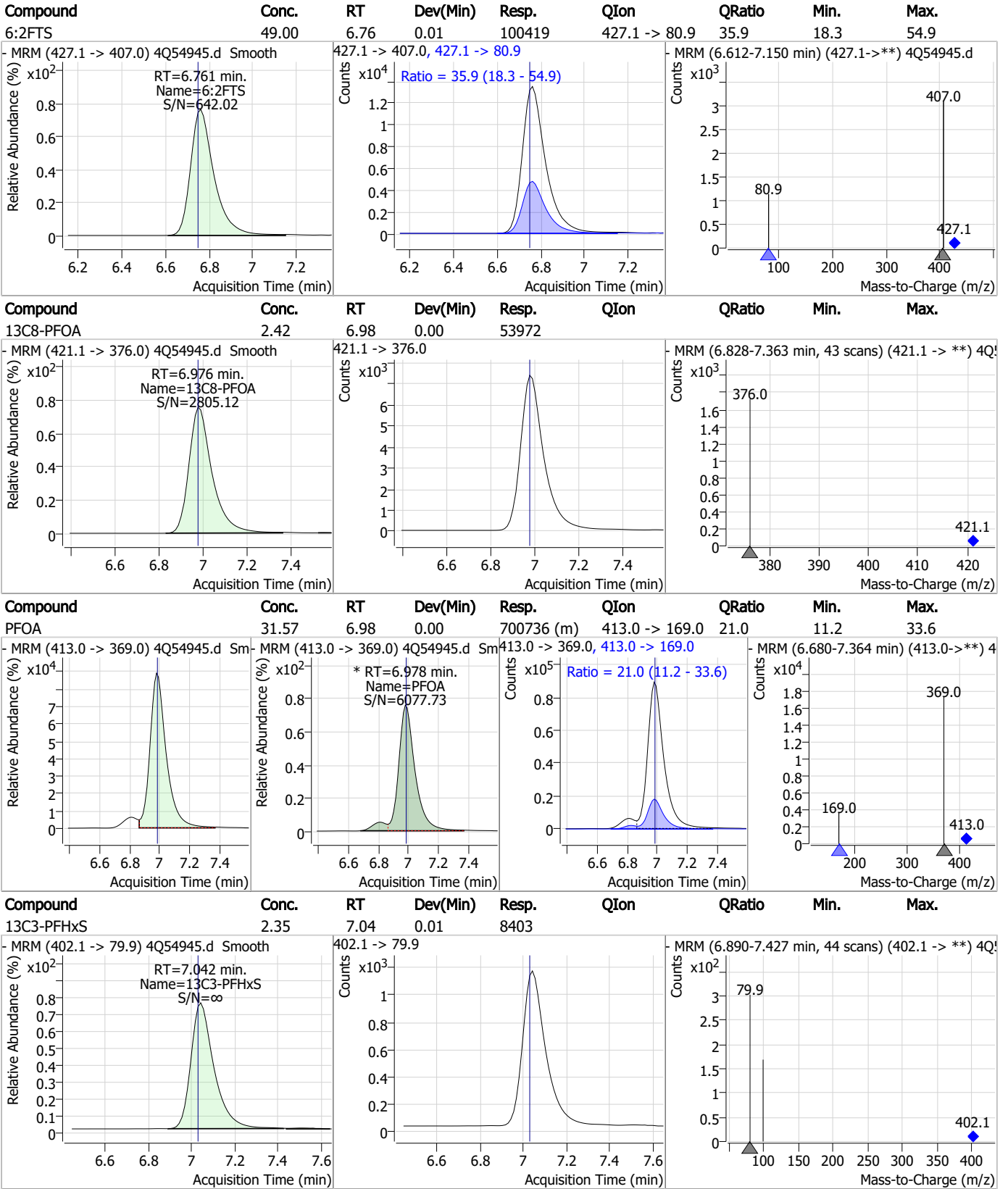
Perfluorinated Compounds by LC/MS/MS



7.6.4

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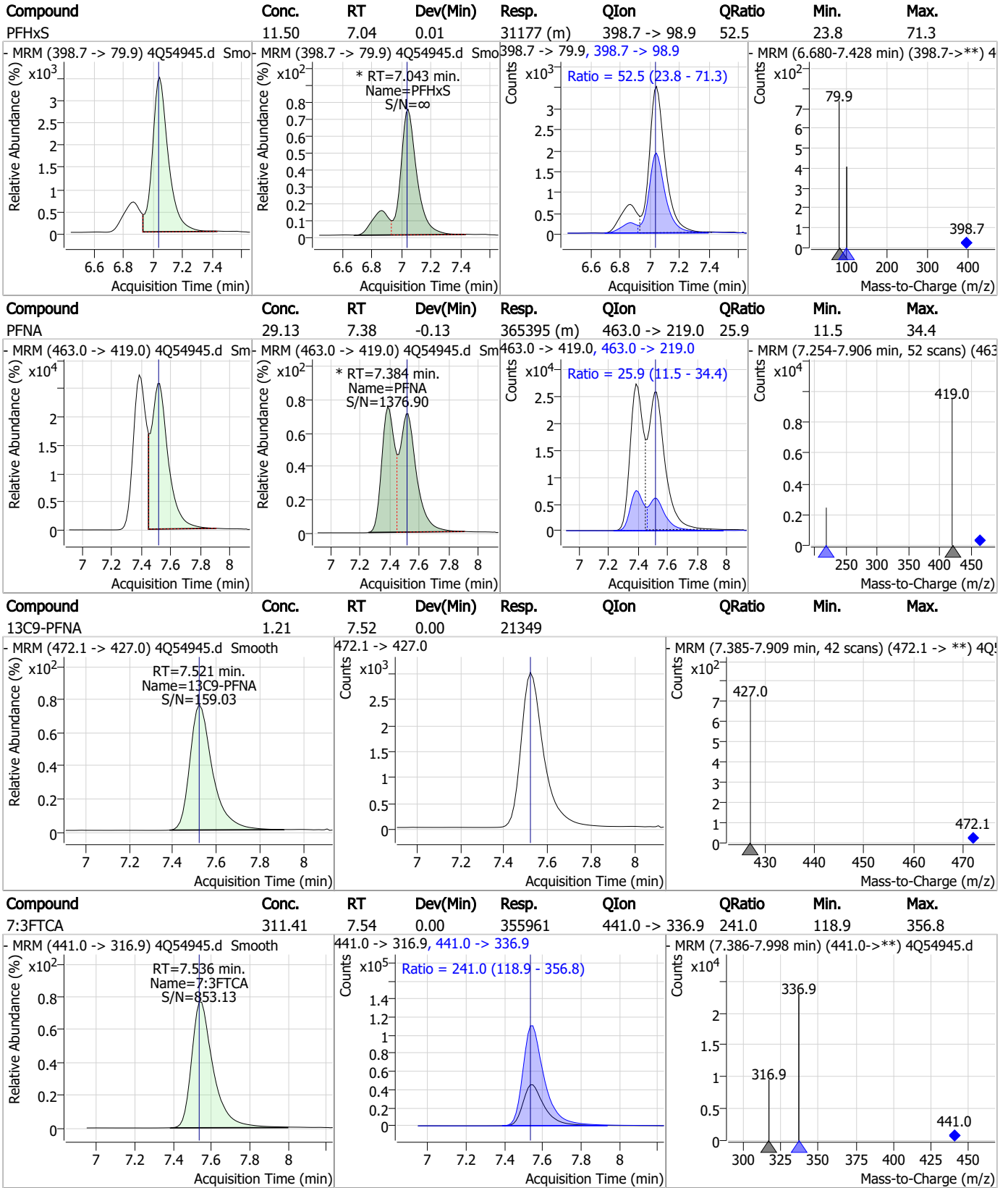
Perfluorinated Compounds by LC/MS/MS



7.6.4

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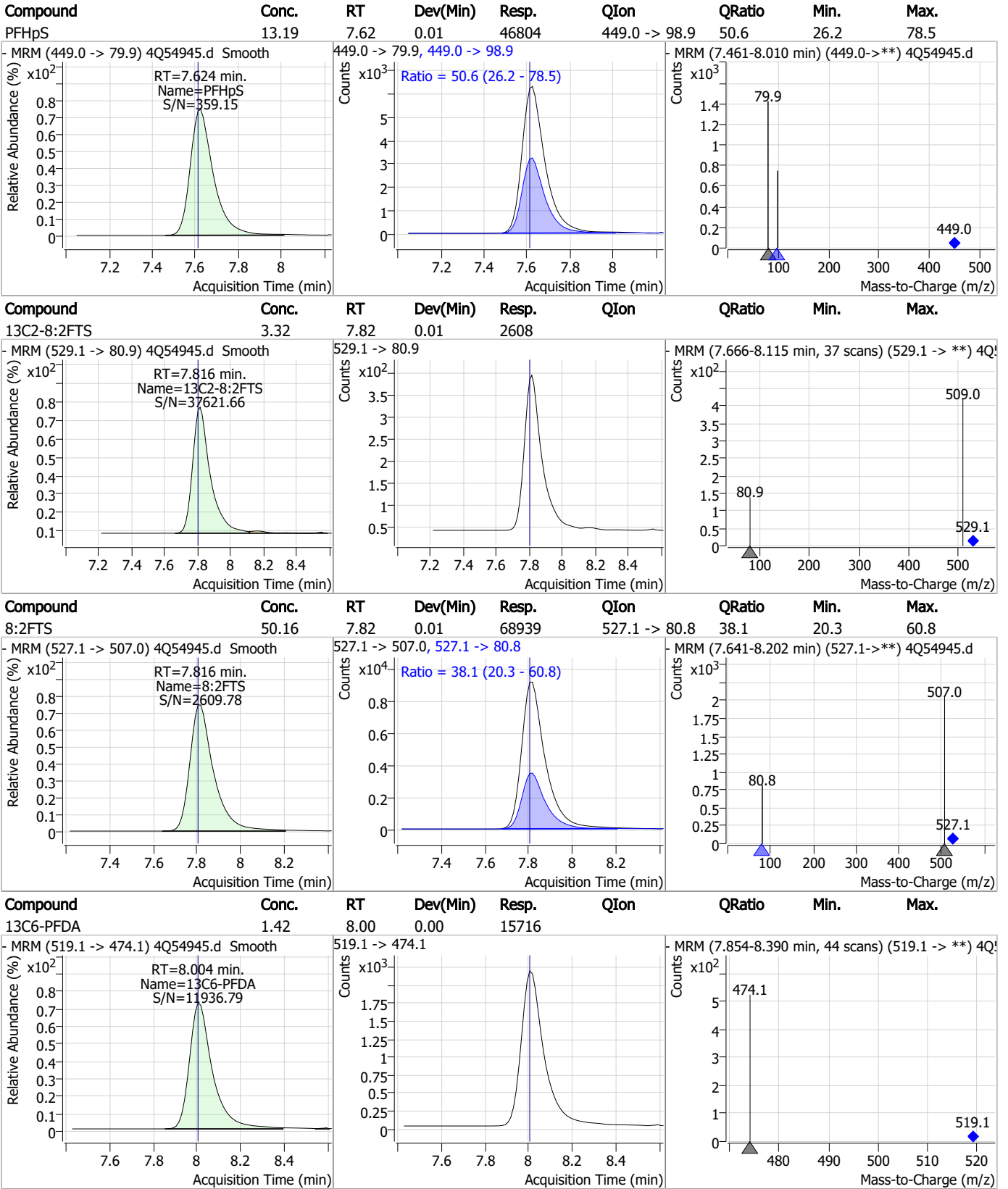
Perfluorinated Compounds by LC/MS/MS



7.6.4

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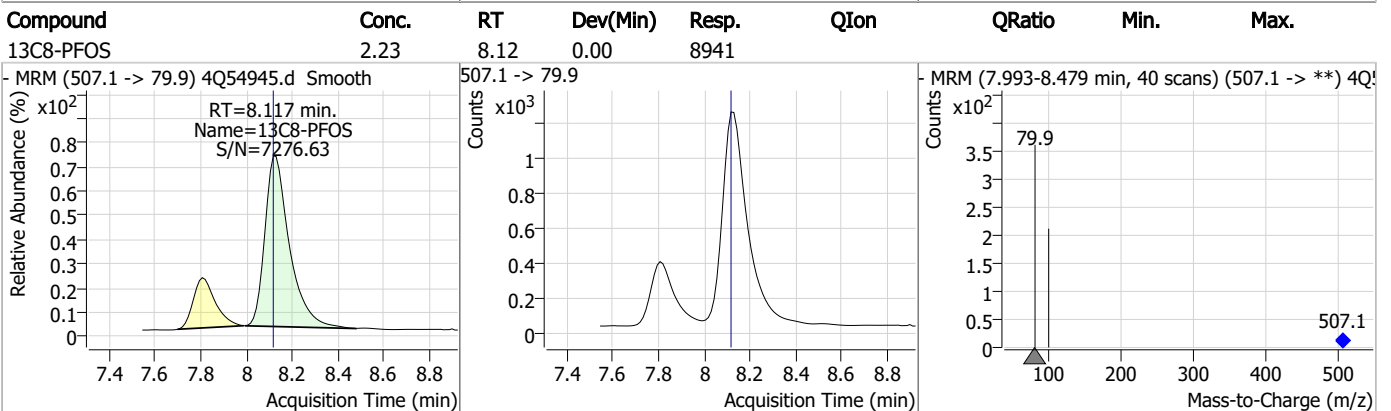
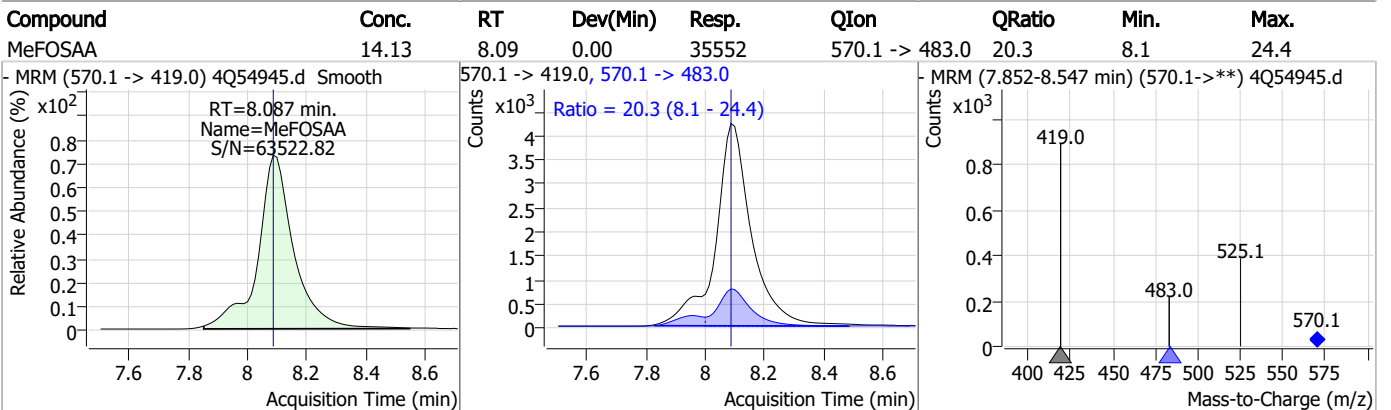
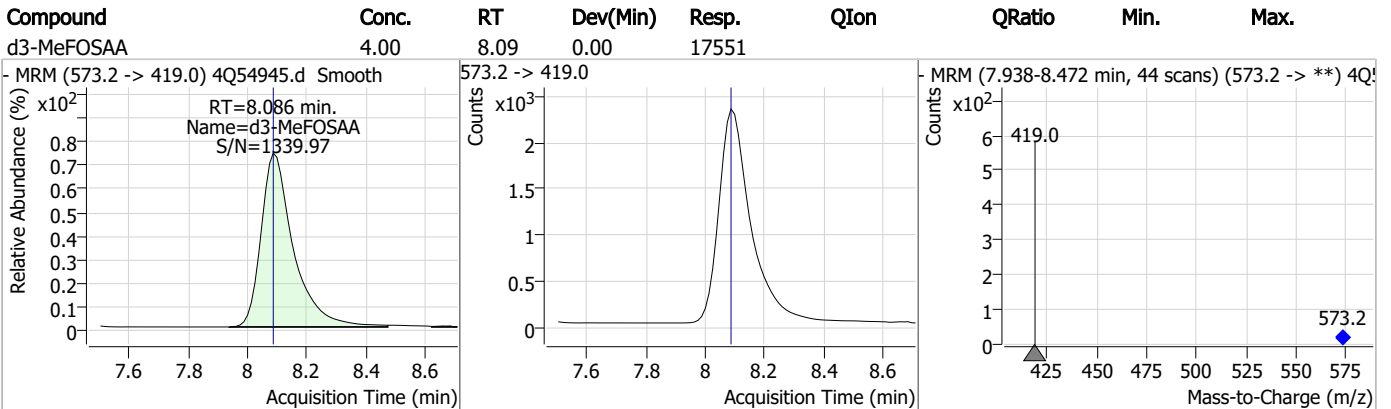
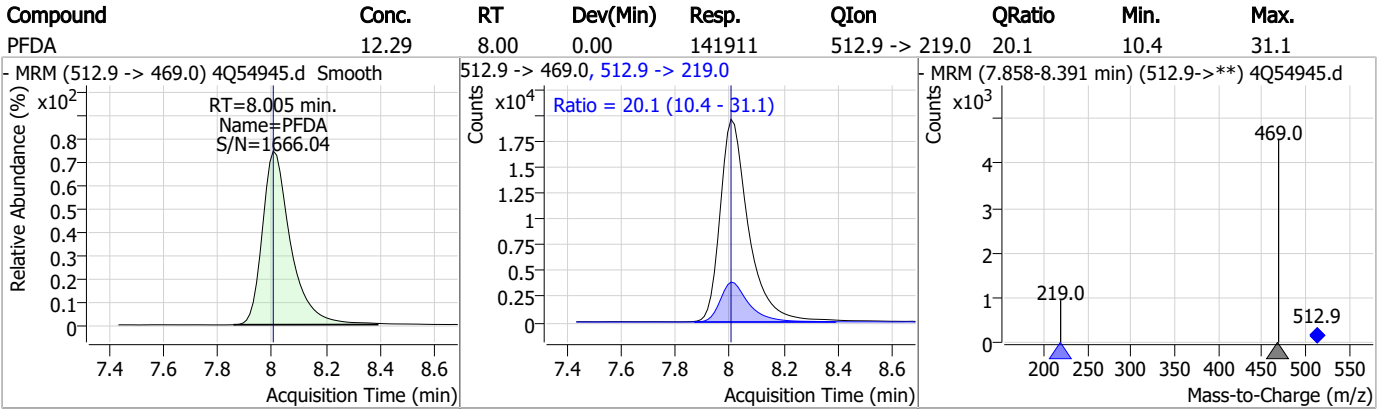
Perfluorinated Compounds by LC/MS/MS



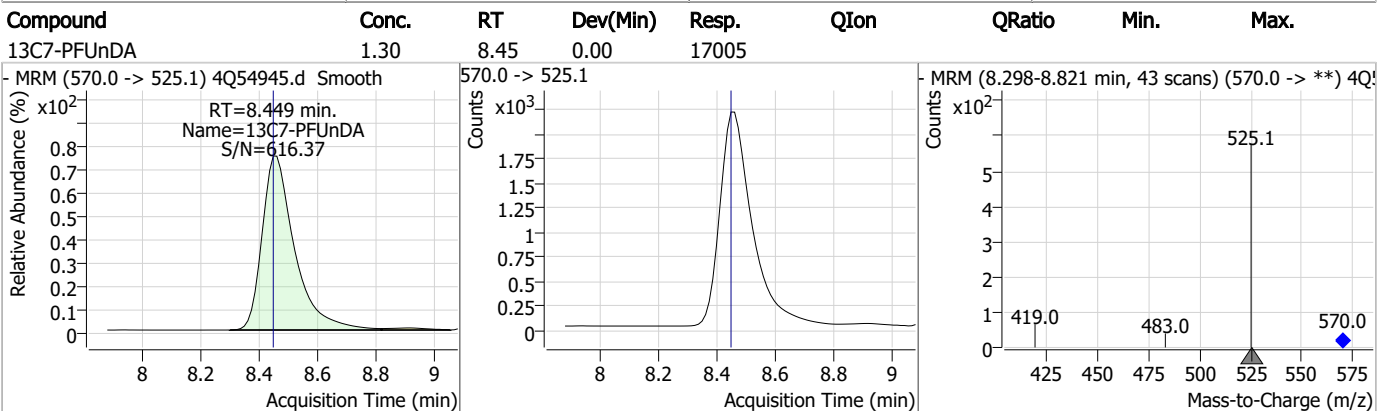
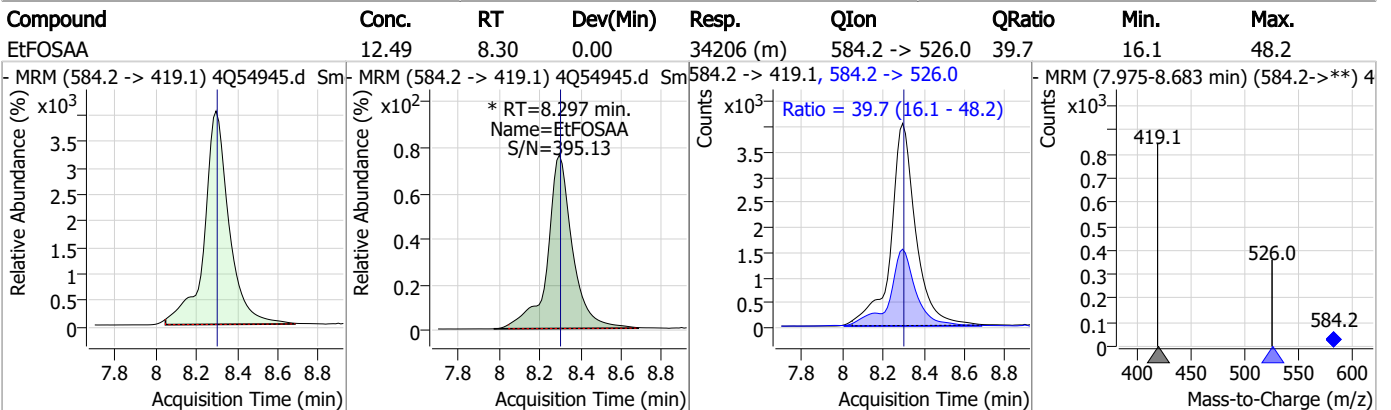
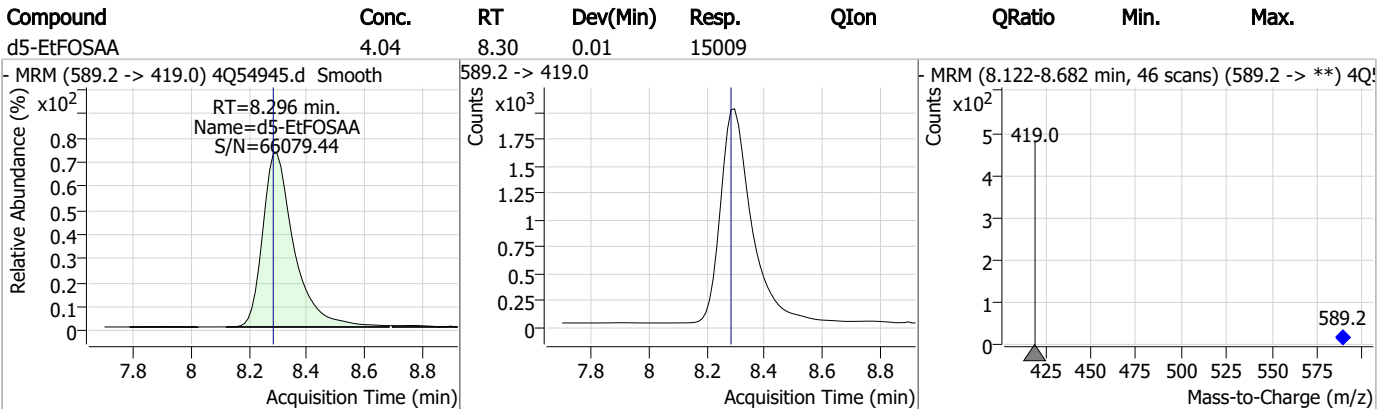
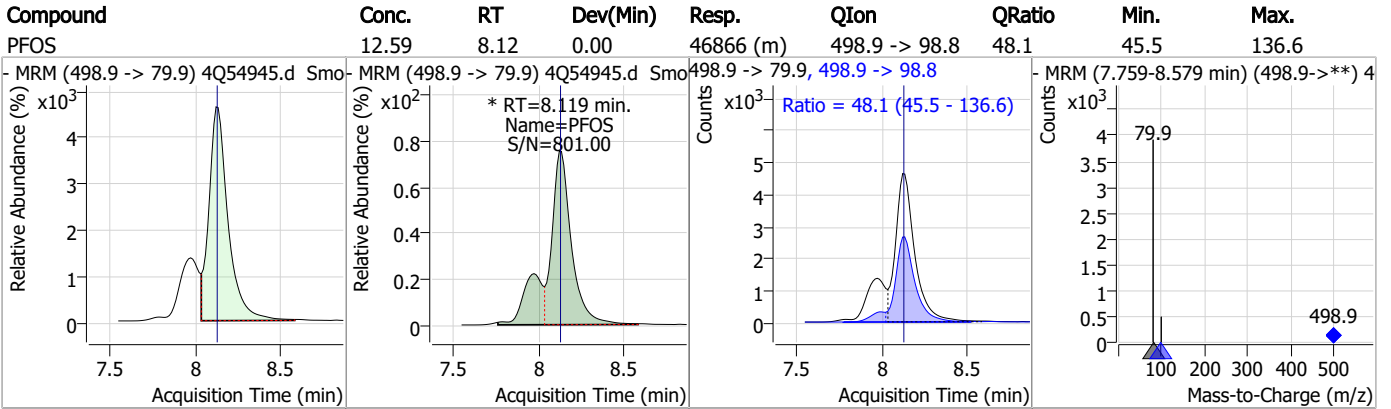
7.6.4

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Perfluorinated Compounds by LC/MS/MS

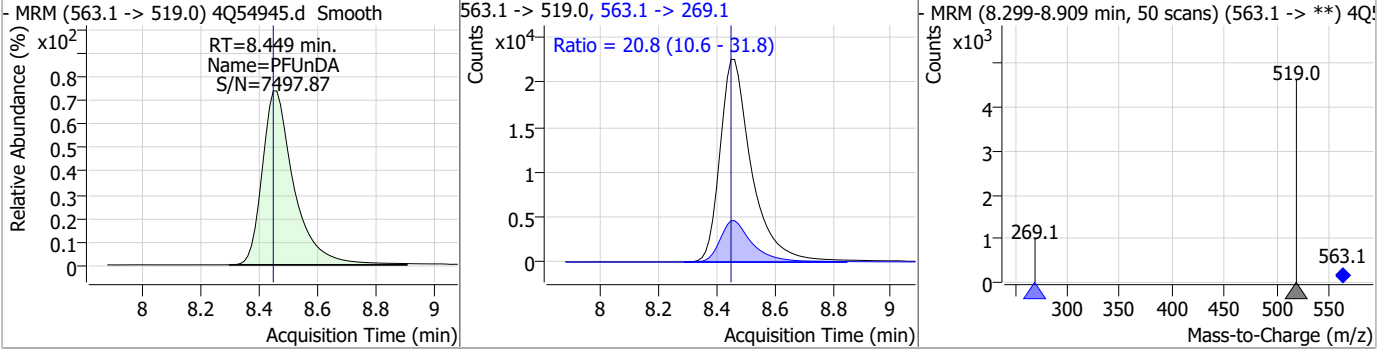


Perfluorinated Compounds by LC/MS/MS

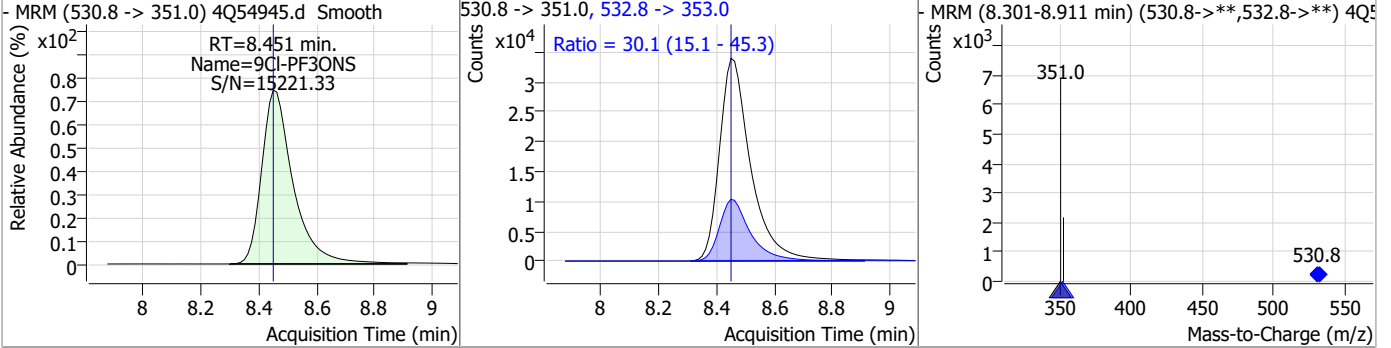


Perfluorinated Compounds by LC/MS/MS

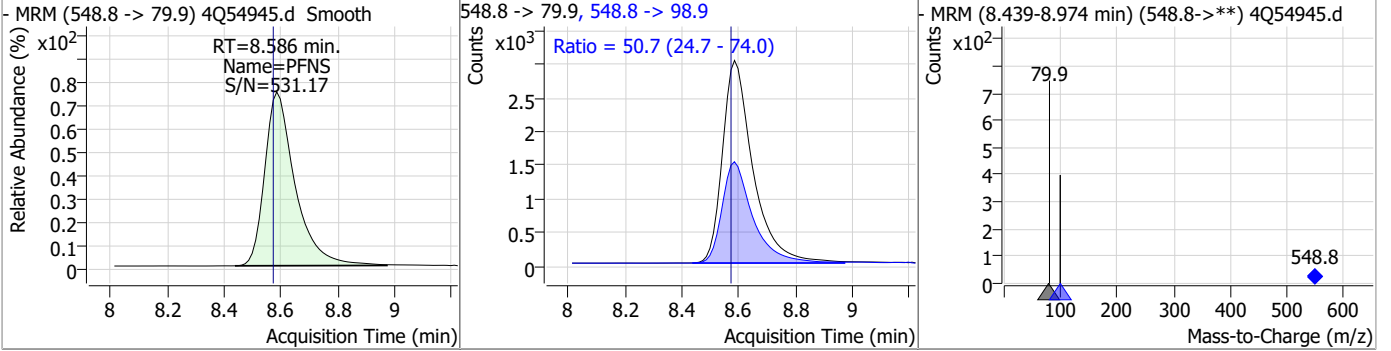
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	13.81	8.45	0.00	170769	563.1 -> 269.1	20.8	10.6	31.8



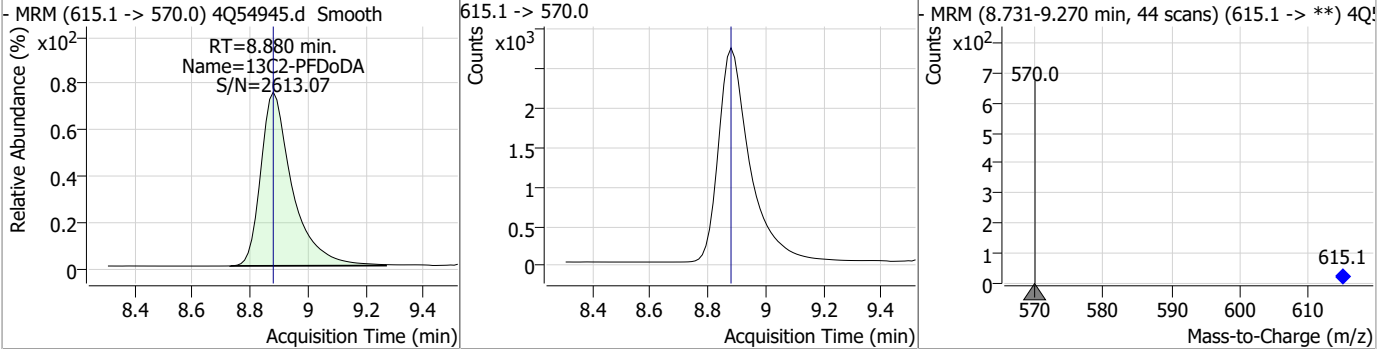
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	25.45	8.45	0.00	254490	532.8 -> 353.0	30.1	15.1	45.3



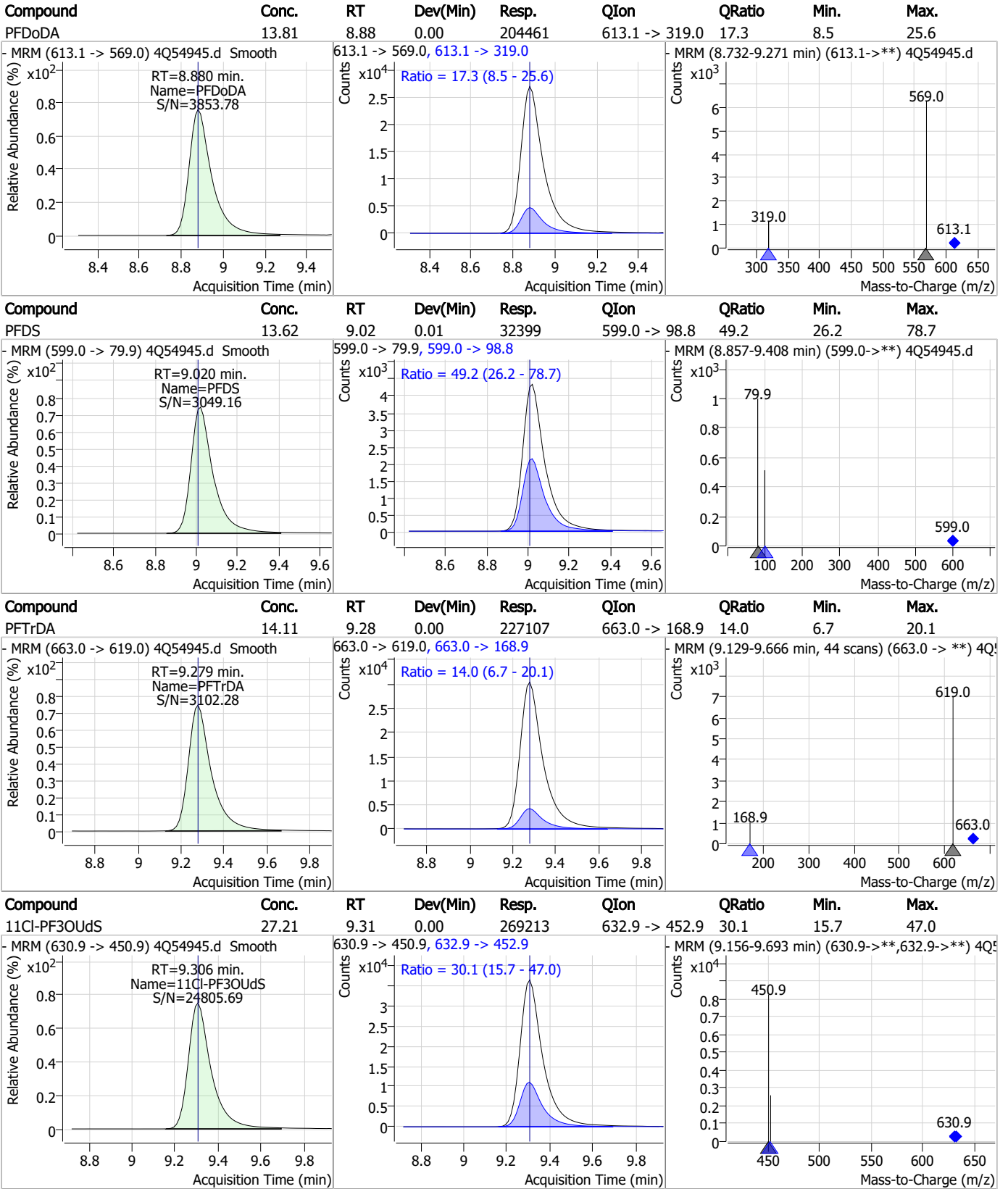
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	14.64	8.59	0.01	22334	548.8 -> 98.9	50.7	24.7	74.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.35	8.88	0.00	20561	615.1 -> 570.0			



Perfluorinated Compounds by LC/MS/MS

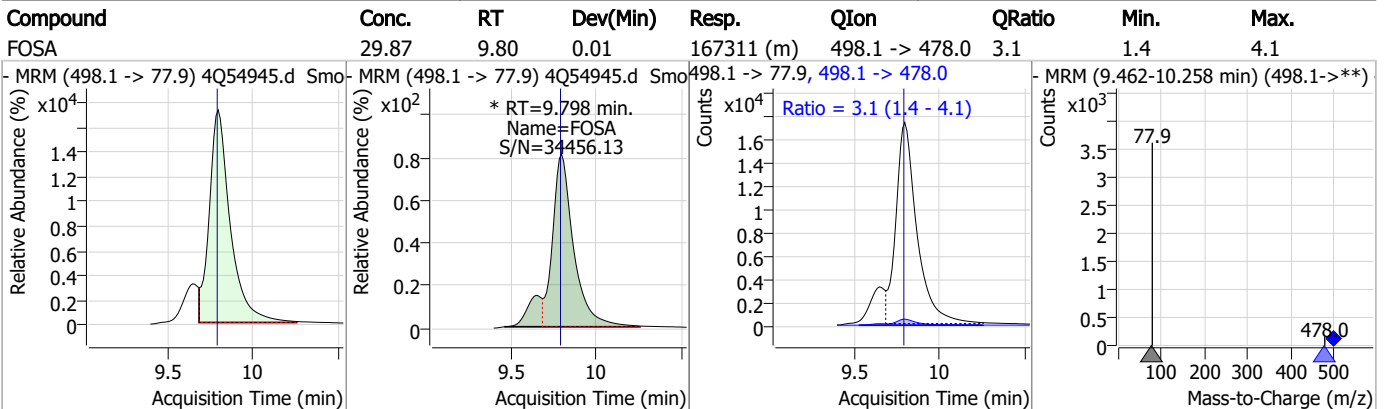
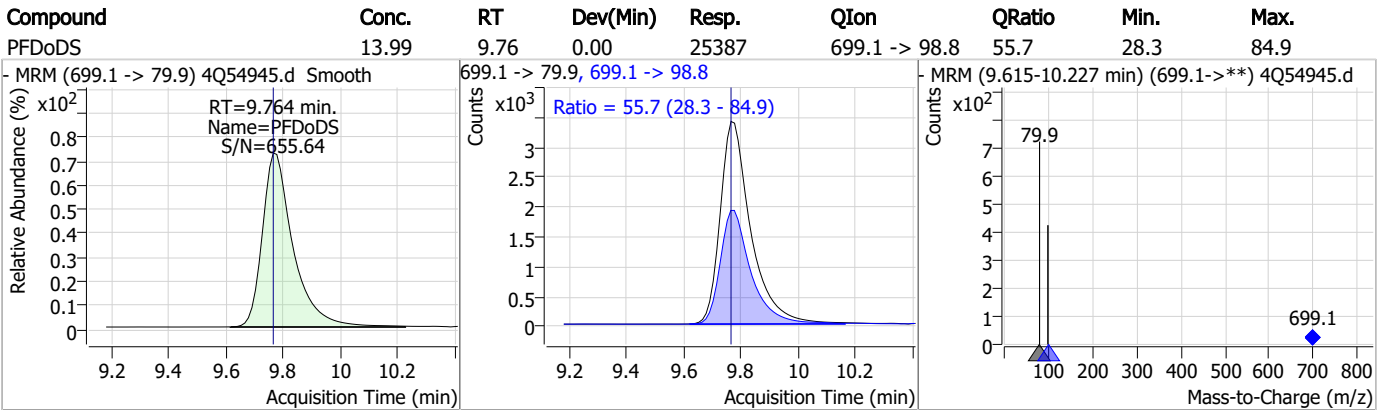
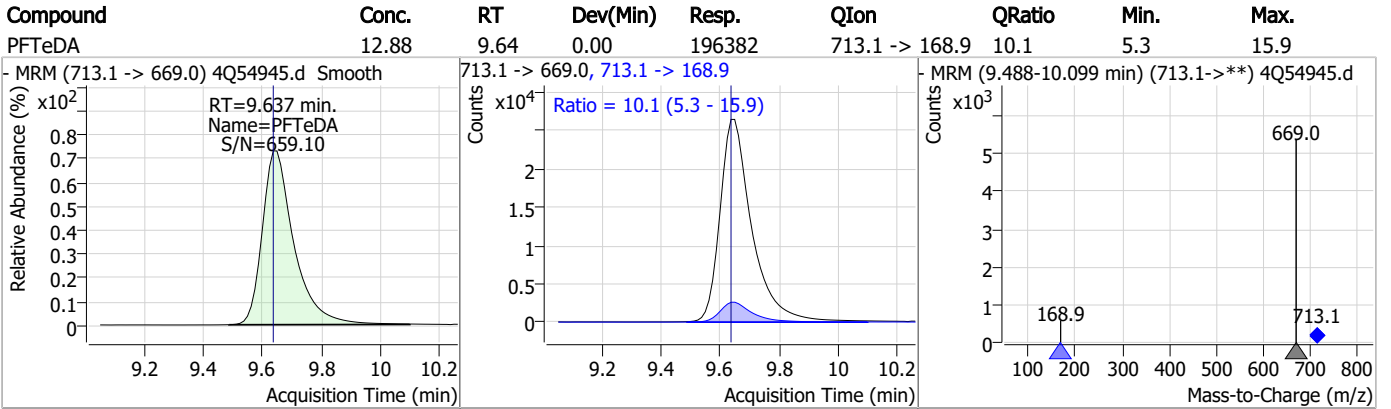
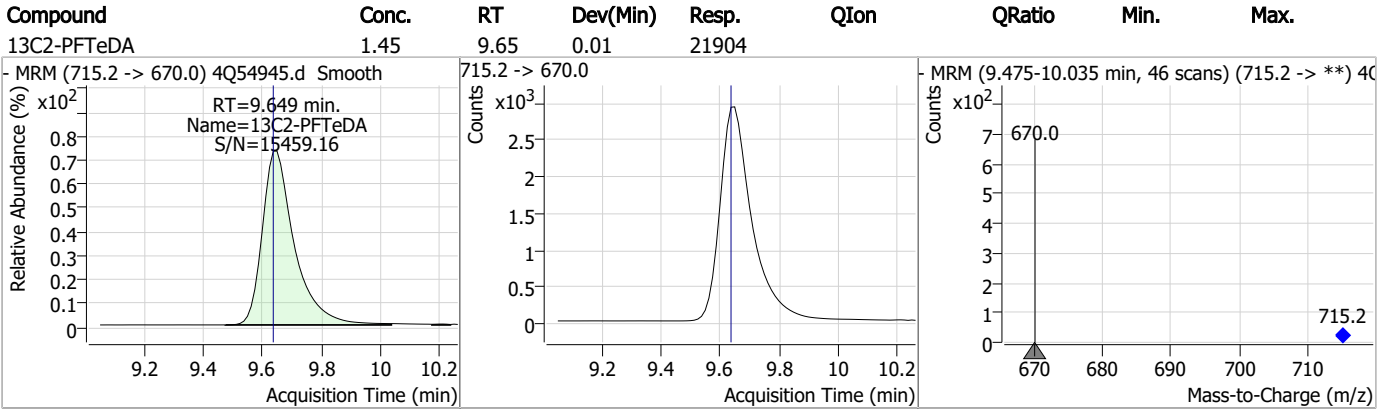


7.6.4

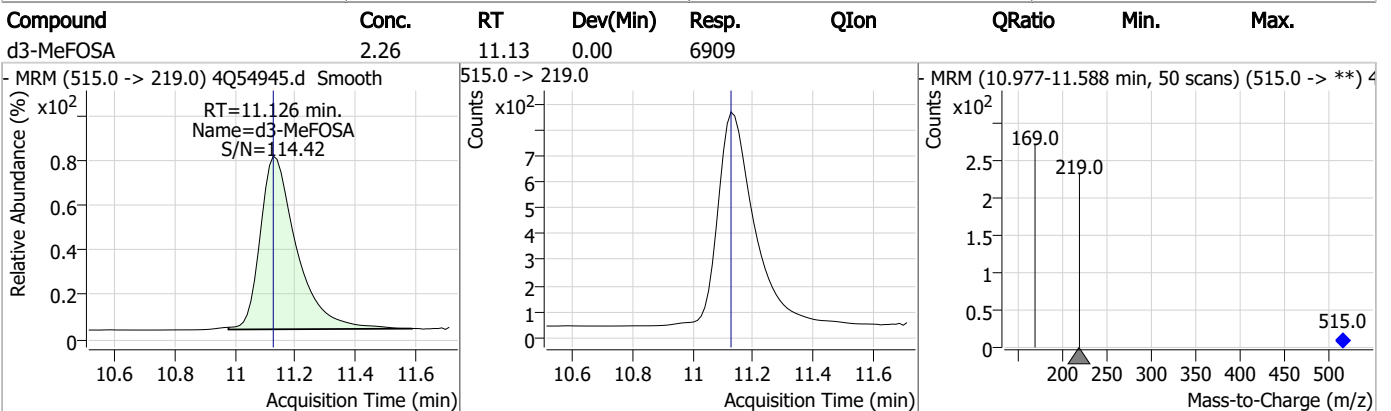
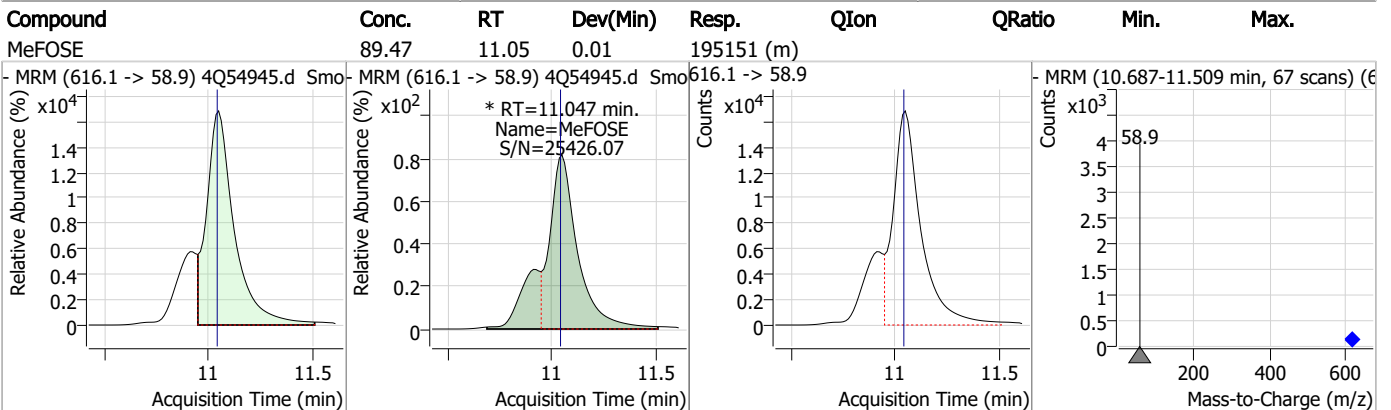
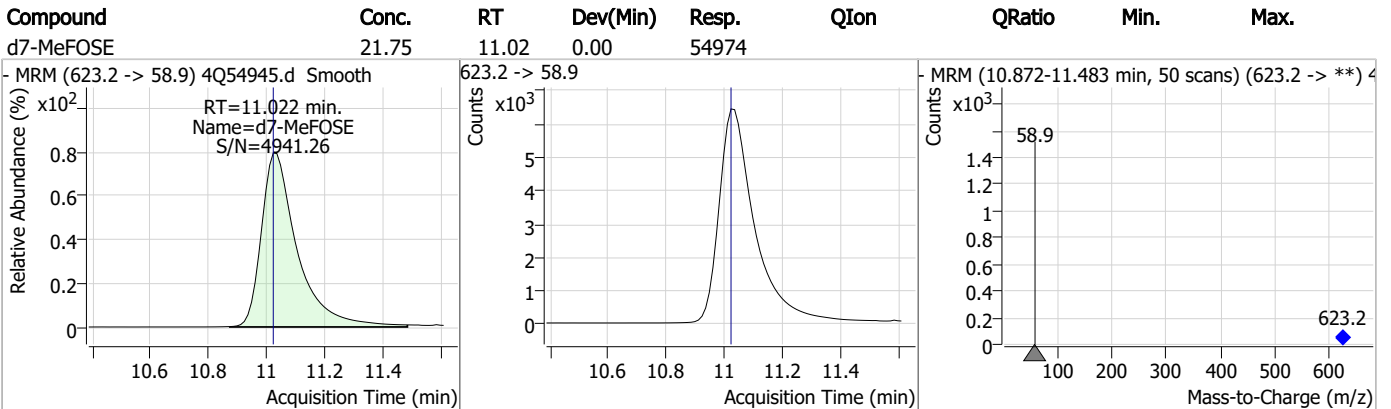
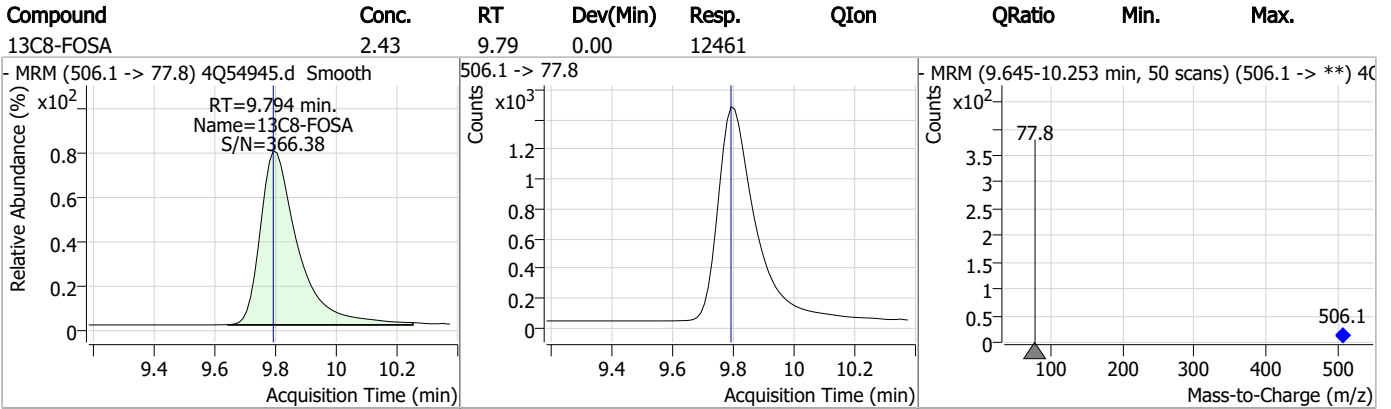
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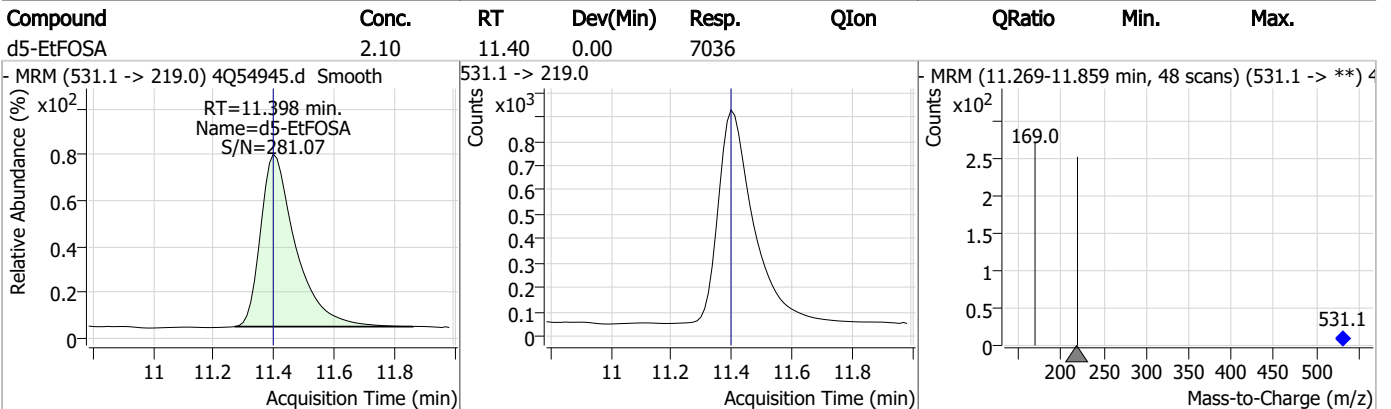
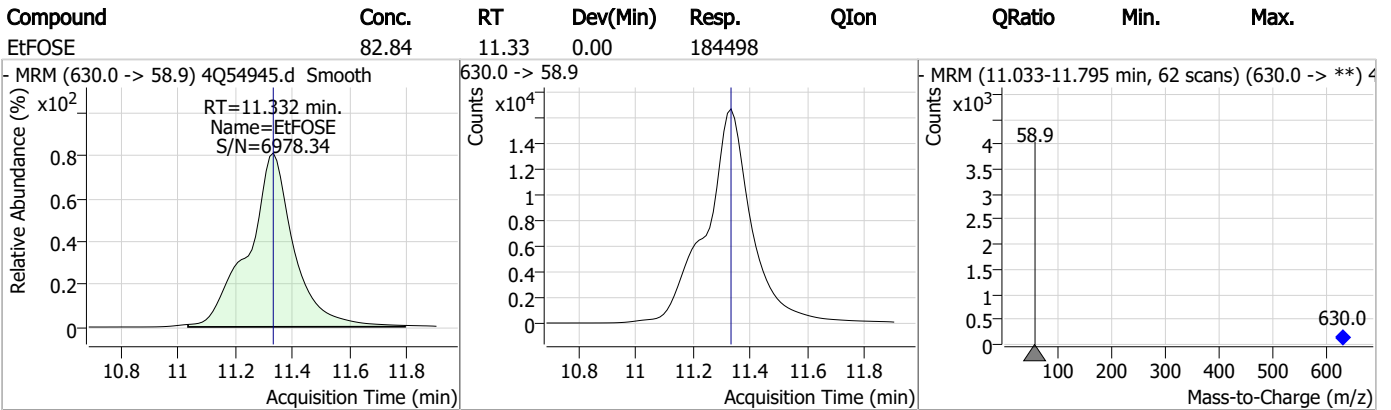
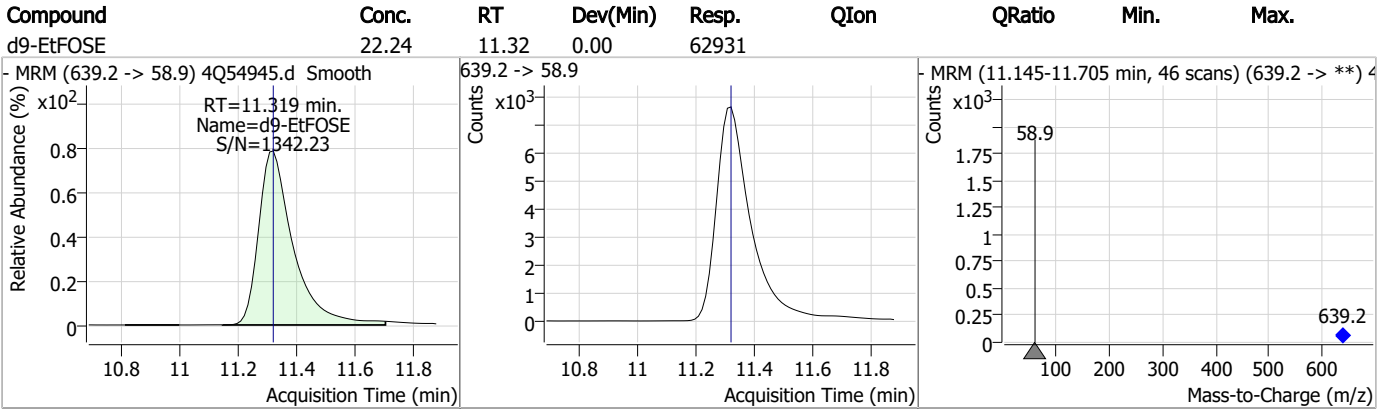
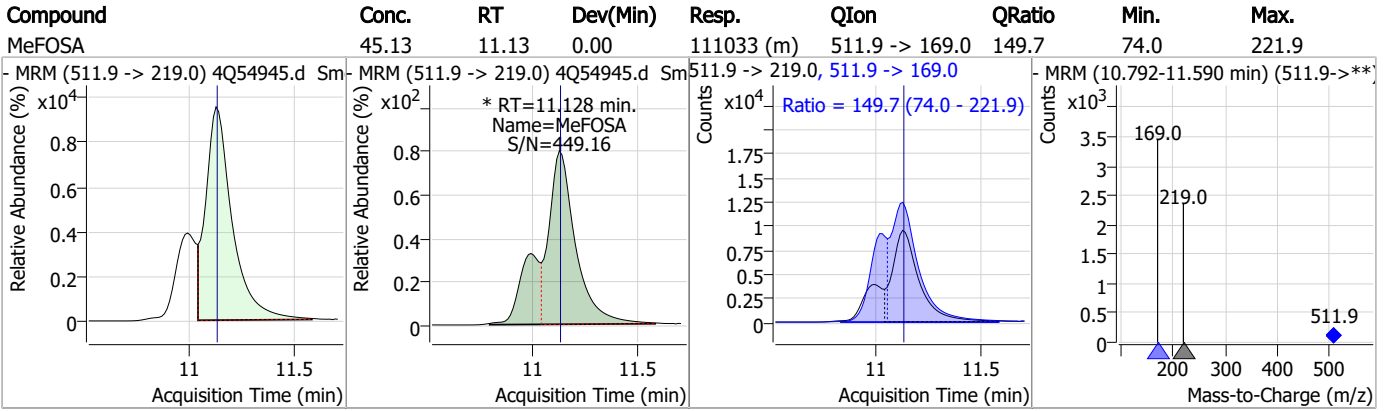
Perfluorinated Compounds by LC/MS/MS



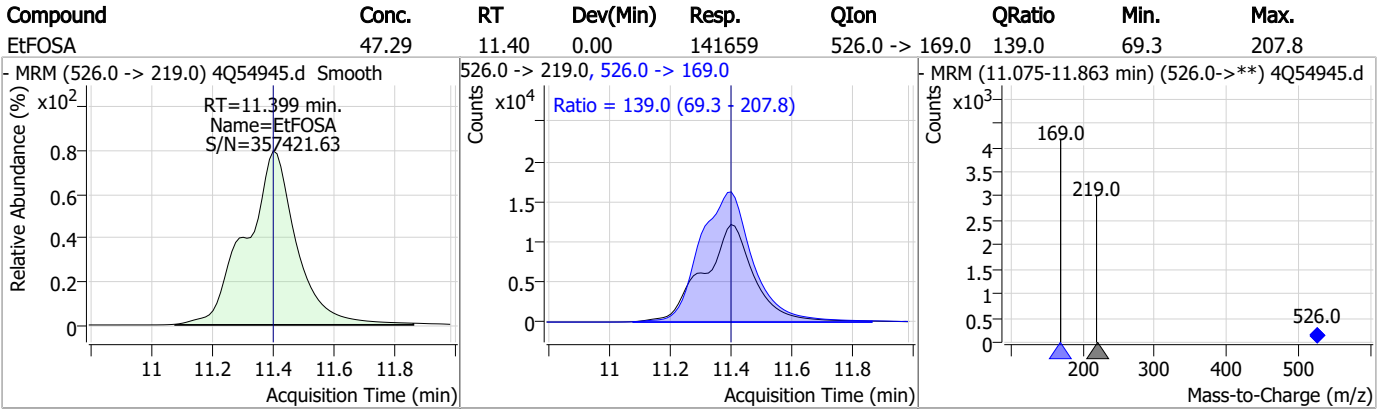
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.4

7

Manual Integration Approval Summary

Sample Number: S4Q805-RT Method: EPA DRAFT 1633
Lab FileID: 4Q54945.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/10/23 14:35 Supervisor approved: 12/11/23 15:29 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.98	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorononanoic acid	375-95-1		7.38	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
PFOSA	754-91-6		9.80	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.6.4.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Mike Eger
 12/14/23 11:35

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q338.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 2:15:38 PM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : S7Q11 TDCA.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.379	507.1 -> 79.9	5938	2.50	µg/L	0.000	
13C4-PFOS	8.379	502.8 -> 79.9	6889	2.50	µg/L	0.000	
System Monitoring Compounds							
13C8-PFOS	8.379	507.1 -> 79.9	5938	2.19	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.5%				
Target Compounds							
PFOS	8.380	498.9 -> 79.9 498.9 -> 98.8	6661 3672	3.28	µg/L	m	100
TCDCa	6.689	498.9 -> 79.9	5641	20.59	ng/ml		100
TDCA	6.839	498.9 -> 79.9	7351	29.62	ng/ml		100
TUDCA	5.823	498.9 -> 79.9	6282	11.93	ng/ml		100

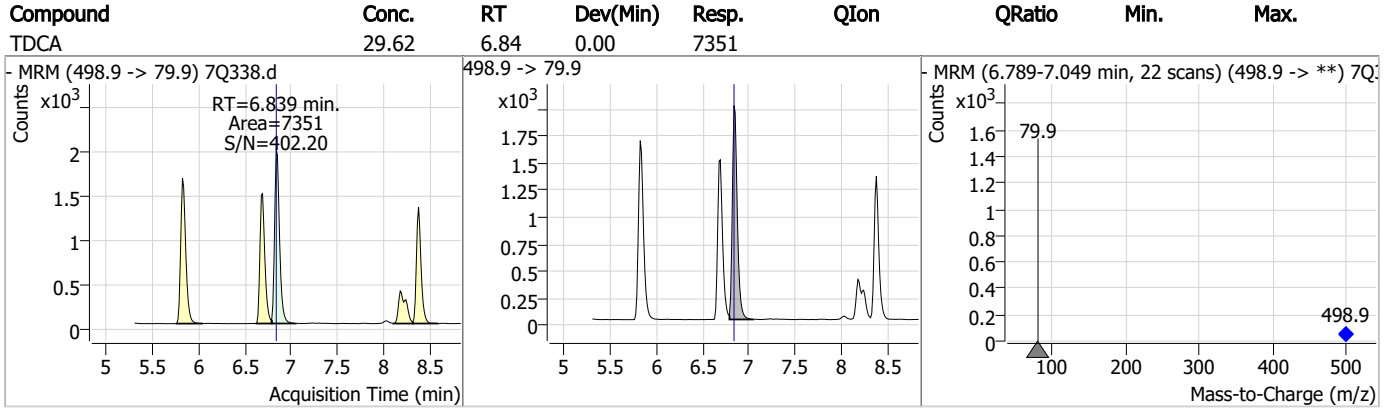
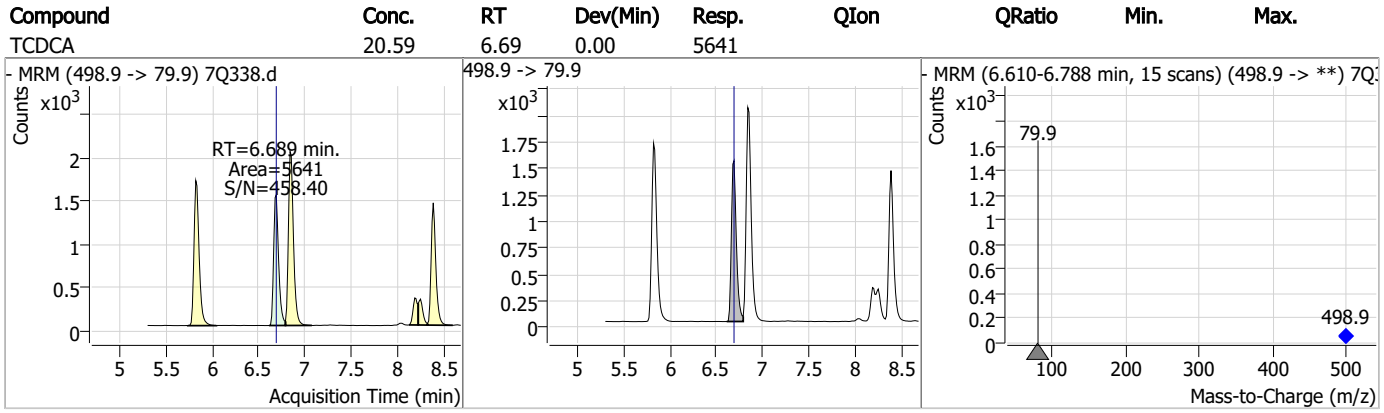
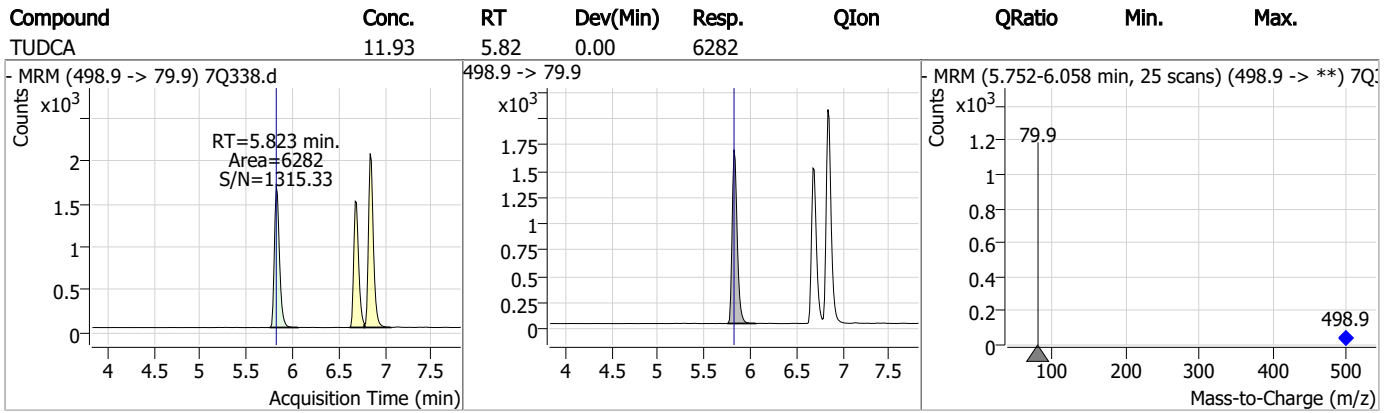
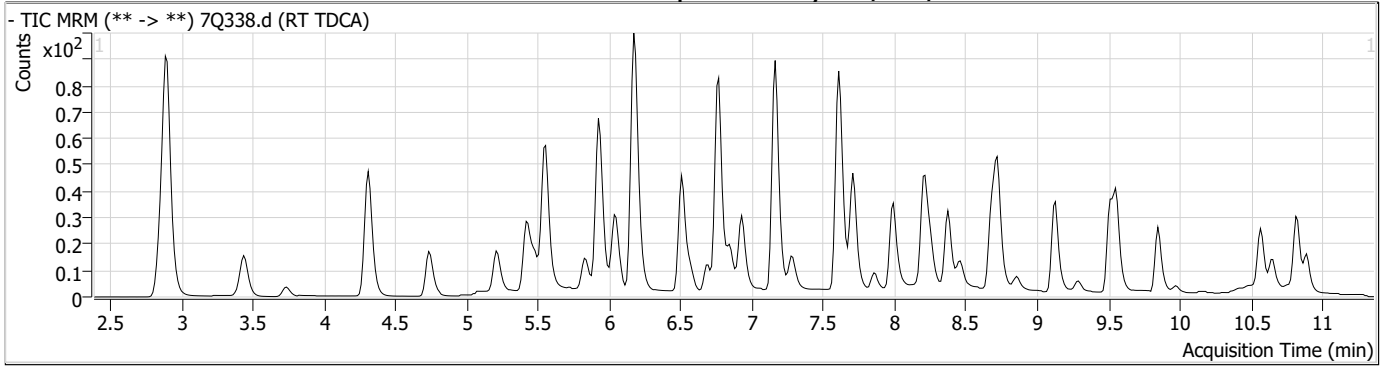
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.5

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Perfluorinated Compounds by LC/MS/MS

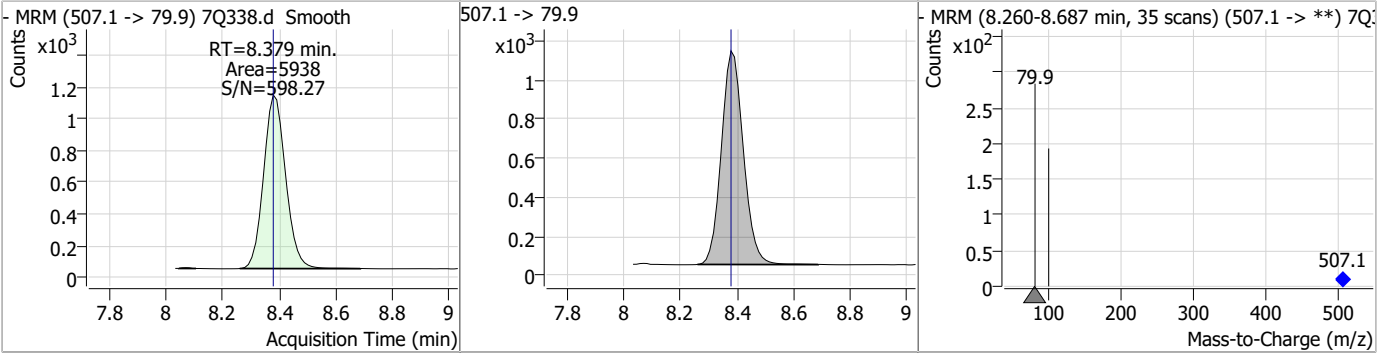


7.6.5
7

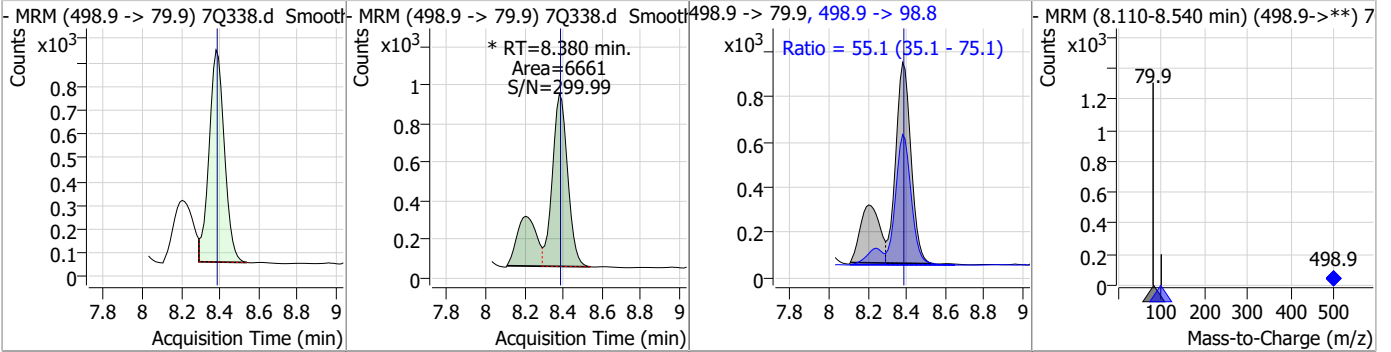


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.19	8.38	0.00	5938				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.28	8.38	0.00	6661 (m)	498.9 -> 98.8	55.1	35.1	75.1



7.6.5

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Manual Integration Approval Summary

Sample Number: S7Q11-RT Method: EPA DRAFT 1633
Lab FileID: 7Q338.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 14:15 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q339.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 2:29:25 PM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	108872	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	37458	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	33029	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	28126	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	37674	2.50 µg/L	0.000
M9-PFNA	7.708	472.1 -> 427.0	13885	1.25 µg/L	0.000
M6-PFDA	8.215	519.1 -> 474.1	13743	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	17638	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	17341	1.25 µg/L	0.000
M2-PFTeDA	9.842	715.2 -> 670.0	8010	1.25 µg/L	0.000
M8-FOSA	9.529	506.1 -> 77.8	6662	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	7495	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5706	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4443	2.50 µg/L	0.000
M2-4:2FTS	5.205	329.1 -> 80.9	802	5.00 µg/L	-0.012
M2-6:2FTS	6.927	429.1 -> 80.9	2007	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2666	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	10074	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	60139	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	8157	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	24983	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	29827	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3753	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3546	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	5471	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	51616	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	4002	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	39366	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	12481	1.25 µg/L	0.000
13C5-PFNA	7.709	468.0 -> 423.0	16769	1.25 µg/L	0.000
13C2-PFHxA	5.555	315.1 -> 270.0	27219	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.205	329.1 -> 80.9	802	4.72 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C2-6:2FTS	6.927	429.1 -> 80.9	2007	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2666	4.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C2-PFDoDA	9.124	615.1 -> 570.0	17341	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C2-PFTeDA	9.842	715.2 -> 670.0	8010	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFBS	5.484	302.1 -> 79.9	7495	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C3-PFHxS	7.293	402.1 -> 79.9	5706	2.45 µg/L	0.000

7.6.6
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C4-PFBA	2.885	216.8 -> 171.9	108872	9.98 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.509	367.1 -> 322.0	28126	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C5-PFHxA	5.554	318.0 -> 273.0	33029	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.312	268.3 -> 223.0	37458	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C6-PFDA	8.215	519.1 -> 474.1	13743	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C7-PFUnDA	8.682	570.0 -> 525.1	17638	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-FOSA	9.529	506.1 -> 77.8	6662	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C8-PFOA	7.165	421.1 -> 376.0	37674	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-PFOS	8.379	507.1 -> 79.9	4443	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.4%	
13C9-PFNA	7.708	472.1 -> 427.0	13885	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.7%	
d3-MeFOSAA	8.248	573.2 -> 419.0	10074	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	60139	9.81 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d3-MeFOSA	10.656	515.0 -> 219.0	3546	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	
d5-EtFOSAA	8.456	589.2 -> 419.0	8157	4.49 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.8%	
d7-MeFOSE	10.565	623.2 -> 58.9	24983	23.57 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.3%	
d9-EtFOSE	10.810	639.2 -> 58.9	29827	24.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d5-EtFOSA	10.888	531.1 -> 219.0	3753	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
Target Compounds					QValue
4:2FTS	5.205	327.1 -> 307.0	56336	44.68 µg/L	98
		327.1 -> 80.9	20276		
6:2FTS	6.927	427.1 -> 407.0	94794	44.69 µg/L	97
		427.1 -> 80.9	28636		
8:2FTS	7.992	527.1 -> 507.0	110060	43.19 µg/L	98
		527.1 -> 80.8	28875		
EtFOSAA	8.458	584.2 -> 419.1	15627	11.87 µg/L	m 95
		584.2 -> 526.0	9374		
FOSA	9.520	498.1 -> 77.9	78527	28.92 µg/L	m 99
		498.1 -> 478.0	3463		
MeFOSAA	8.262	570.1 -> 419.0	20960	11.82 µg/L	m 95
		570.1 -> 483.0	4084		
PFBA	2.881	212.8 -> 168.9	183394	46.51 µg/L	100
PFBS	5.485	298.7 -> 79.9	28790	10.18 µg/L	98
		298.7 -> 98.8	12020		
PFDA	8.215	512.9 -> 469.0	147750	11.71 µg/L	97
		512.9 -> 219.0	23723		
PFDoDA	9.125	613.1 -> 569.0	159013	11.83 µg/L	98
		613.1 -> 319.0	19096		
PFDS	9.290	599.0 -> 79.9	16213	11.08 µg/L	100

7.6.6
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	9259			
PFHpA	6.510	363.1 -> 319.0	169755	12.21	µg/L	100
		363.1 -> 169.0	30085			
PFHpS	7.861	449.0 -> 79.9	25538	11.37	µg/L	99
		449.0 -> 98.9	14255			
PFHxA	5.556	313.0 -> 269.0	144214	11.86	µg/L	99
		313.0 -> 118.9	7048			
PFHxS	7.294	398.7 -> 79.9	28359	10.94	µg/L	m 91
		398.7 -> 98.9	14640			
PFNA	7.570	463.0 -> 419.0	271764	24.47	µg/L	m 99
		463.0 -> 219.0	66844			
PFNS	8.857	548.8 -> 79.9	22091	11.15	µg/L	94
		548.8 -> 98.9	13288			
PFOA	7.167	413.0 -> 369.0	529416	27.84	µg/L	m 99
		413.0 -> 169.0	102862			
PFOS	8.380	498.9 -> 79.9	24382	11.25	µg/L	m 80
		498.9 -> 98.8	12921			
PFPeA	4.314	263.0 -> 219.0	219620	23.50	µg/L	100
PFPeS	6.573	349.1 -> 79.9	30401	10.95	µg/L	98
		349.1 -> 98.9	14632			
PFTeDA	9.843	713.1 -> 669.0	118323	11.95	µg/L	98
		713.1 -> 168.9	8442			
PFTrDA	9.508	663.0 -> 619.0	147760	11.28	µg/L	100
		663.0 -> 168.9	11953			
PFUnDA	8.682	563.1 -> 519.0	132152	11.77	µg/L	99
		563.1 -> 269.1	19037			
11CI-PF3OUdS	9.563	630.9 -> 450.9	166667	23.27	µg/L	99
		632.9 -> 452.9	52121			
9CI-PF3ONS	8.722	530.8 -> 351.0	225514	22.44	µg/L	100
		532.8 -> 353.0	72337			
ADONA	6.771	376.9 -> 250.9	485094	22.60	µg/L	100
		376.9 -> 84.8	142008			
HFPO-DA	5.944	284.9 -> 168.9	142606	24.88	µg/L	100
		284.9 -> 184.9	22389			
3:3FTCA	3.736	241.0 -> 177.0	28095	60.04	µg/L	100
		241.0 -> 117.0	3370			
5:3FTCA	6.174	341.0 -> 237.1	470675	297.94	µg/L	100
		341.0 -> 217.0	350849			
7:3FTCA	7.612	441.0 -> 316.9	211610	293.29	µg/L	99
		441.0 -> 336.9	480795			
EtFOSA	10.890	526.0 -> 219.0	74462	40.99	µg/L	m 61
		526.0 -> 169.0	97628			
EtFOSE	10.835	630.0 -> 58.9	99015	78.99	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	61903	42.18	µg/L	m 78
		511.9 -> 169.0	84325			
MeFOSE	10.578	616.1 -> 58.9	84922	79.38	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	10130	11.63	µg/L	98
		699.1 -> 98.8	6198			
NFDHA	5.425	295.0 -> 201.0	66393	24.04	µg/L	99
		295.0 -> 84.9	18168			
PFMBA	4.738	279.0 -> 85.1	139307	23.27	µg/L	100
PFMPA	3.443	229.0 -> 84.9	146248	23.39	µg/L	100
PFEESA	6.037	314.8 -> 134.9	204489	21.01	µg/L	99
		314.8 -> 82.9	6459			

= Qualifier out of range, m = manually integrated, + = Area summed

7.6.6
7

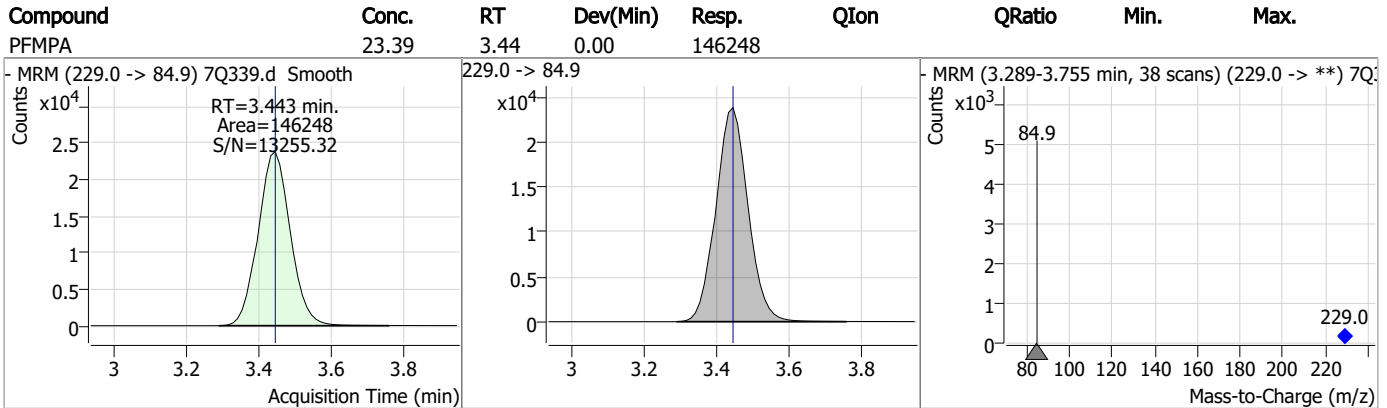
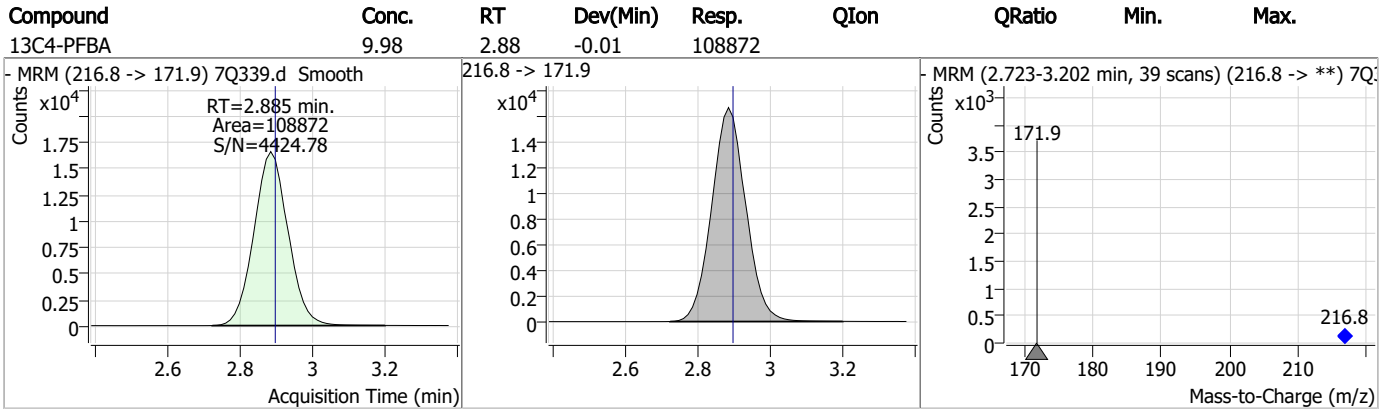
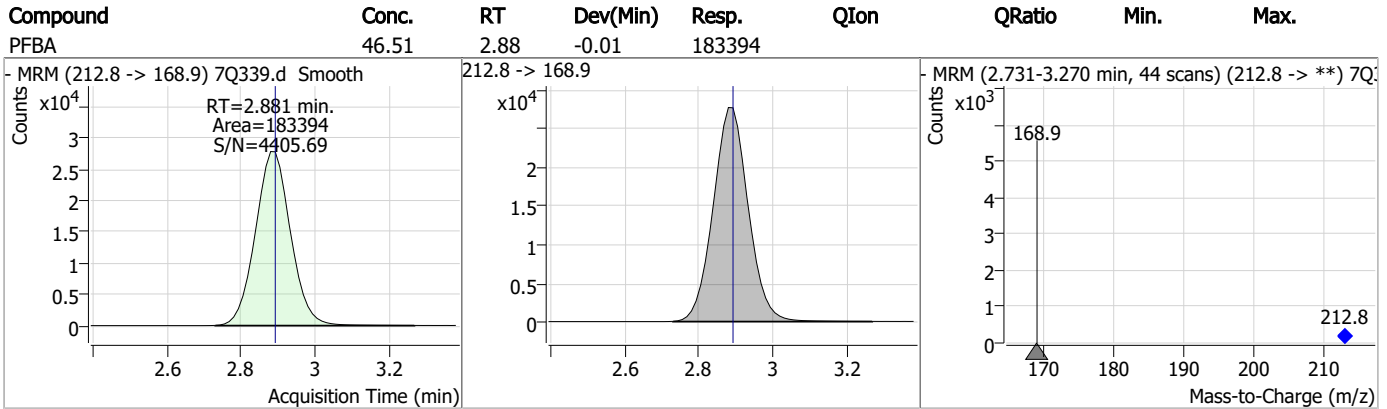
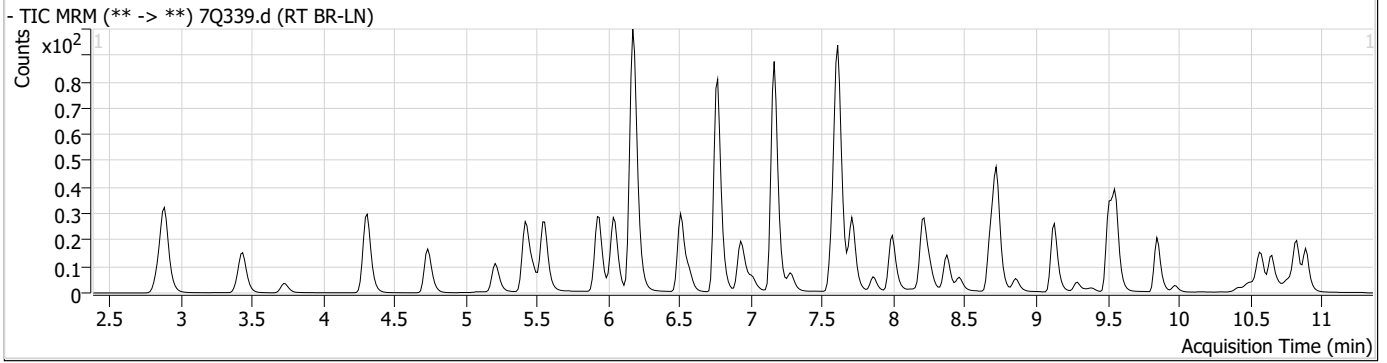
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.6

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Perfluorinated Compounds by LC/MS/MS

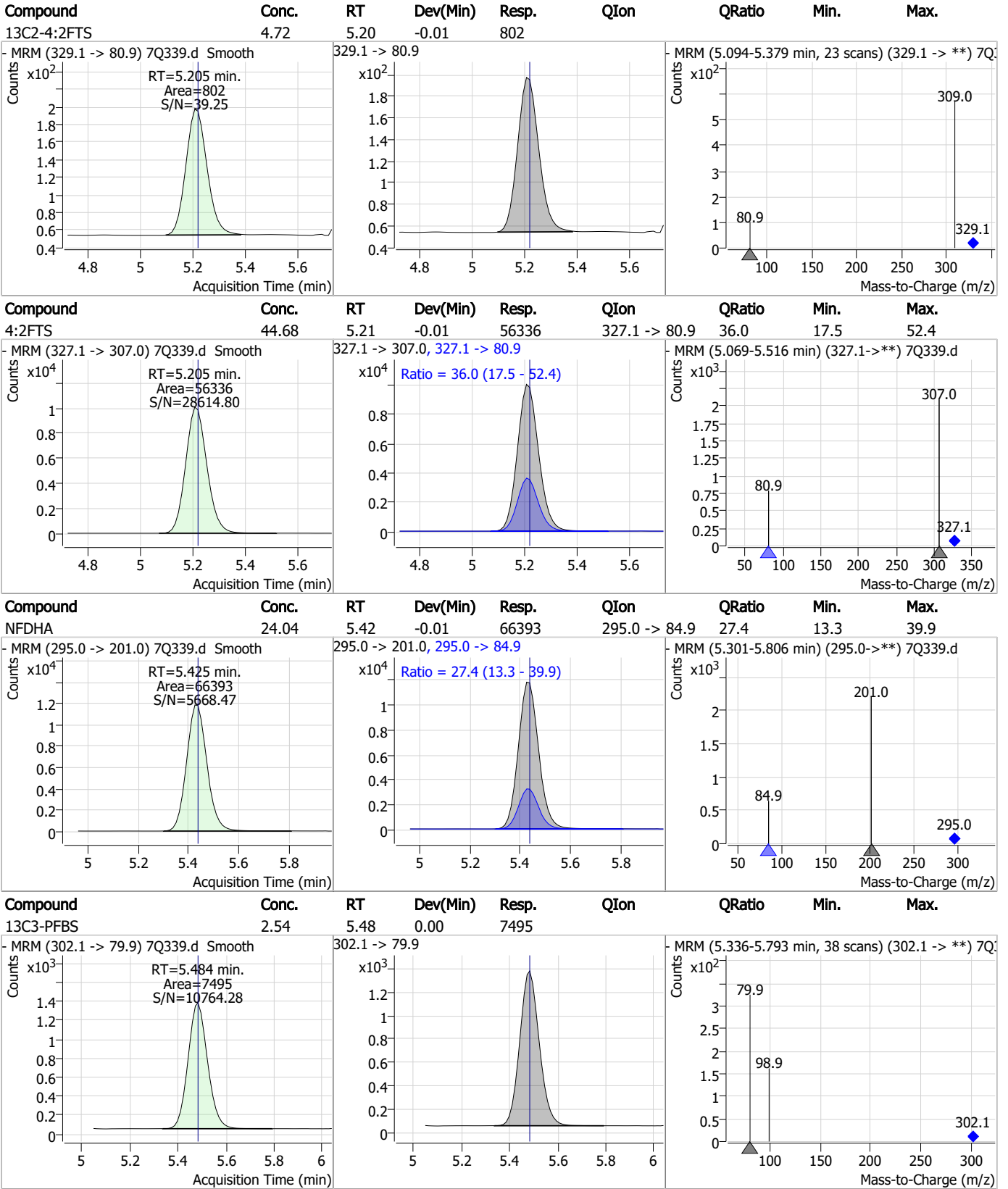


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	60.04	3.74	0.00	28095	241.0 -> 117.0	12.0	6.0	17.9
13C5-PFPeA	5.09	4.31	0.00	37458				
PFPeA	23.50	4.31	0.00	219620				
PFMBA	23.27	4.74	-0.01	139307				

7.6.6
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Perfluorinated Compounds by LC/MS/MS

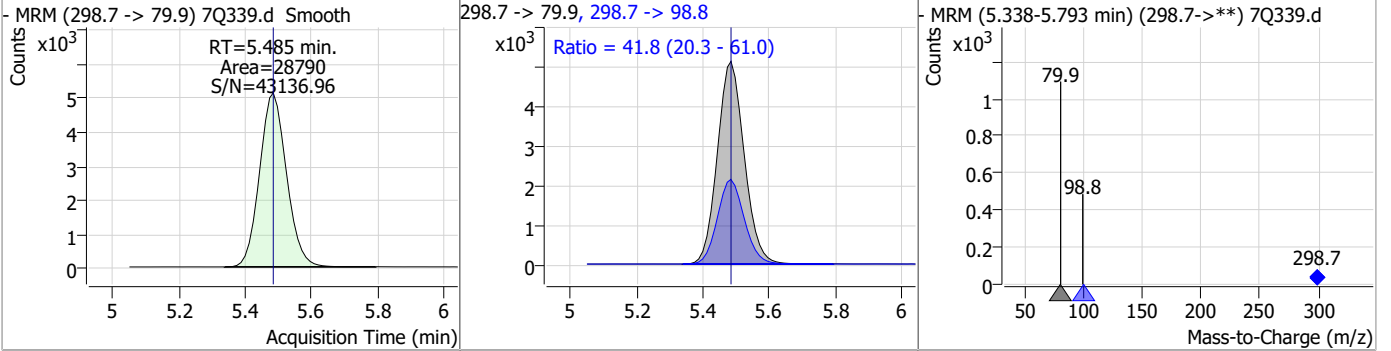


7.6.6

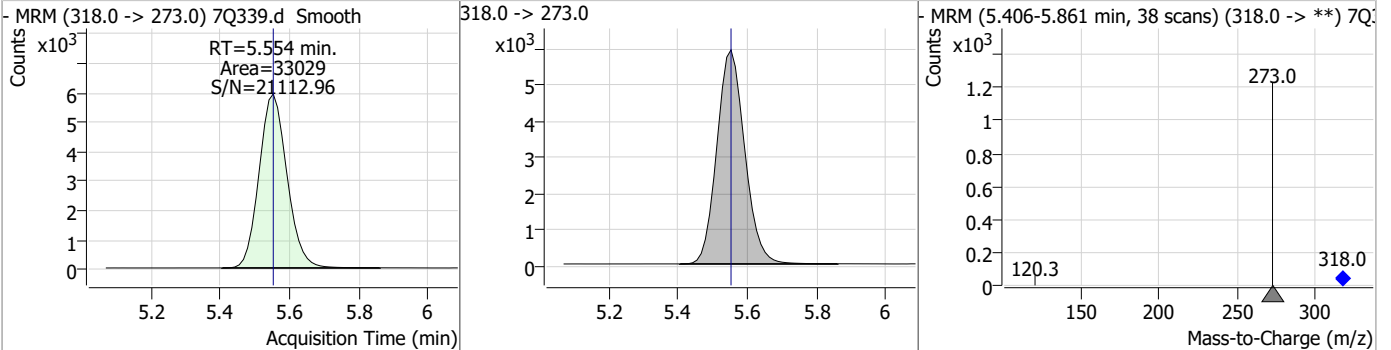
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Perfluorinated Compounds by LC/MS/MS

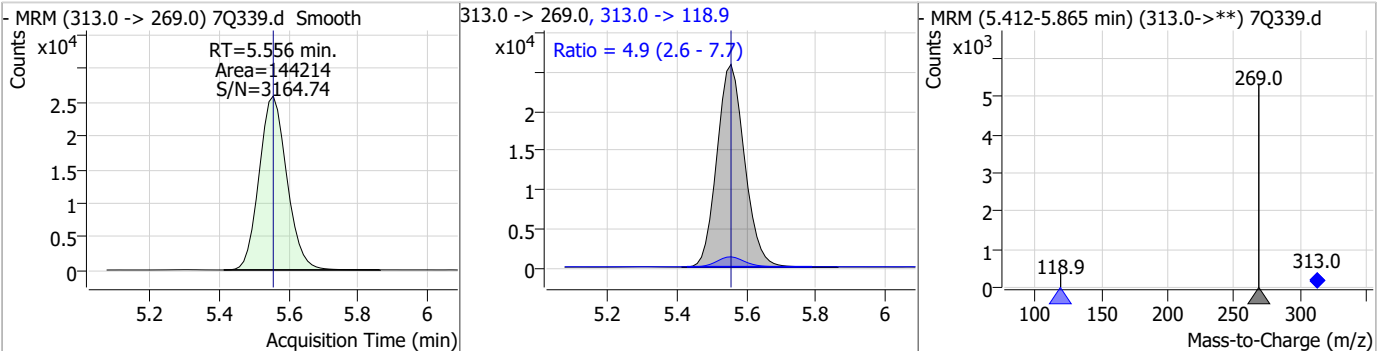
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	10.18	5.48	0.00	28790	298.7 -> 98.8	41.8	20.3	61.0



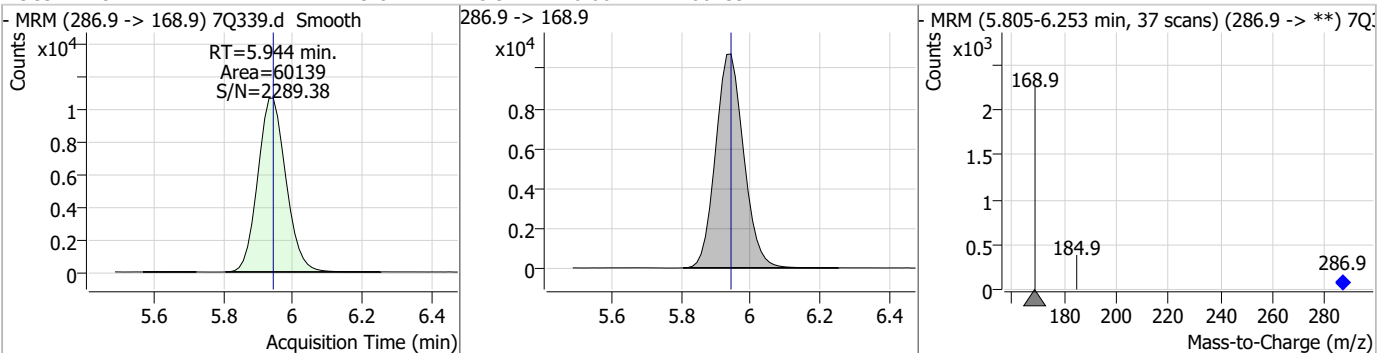
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.55	0.00	33029				



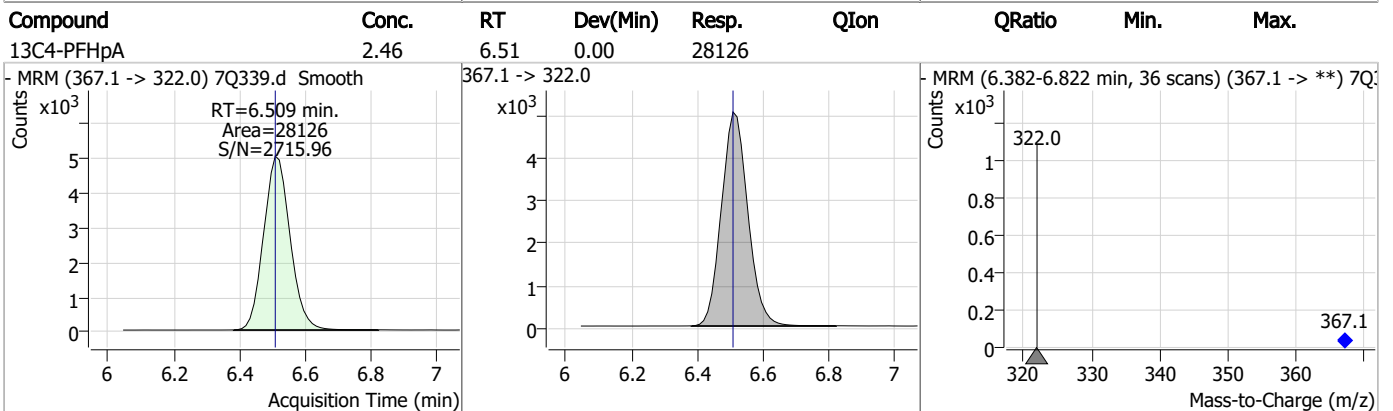
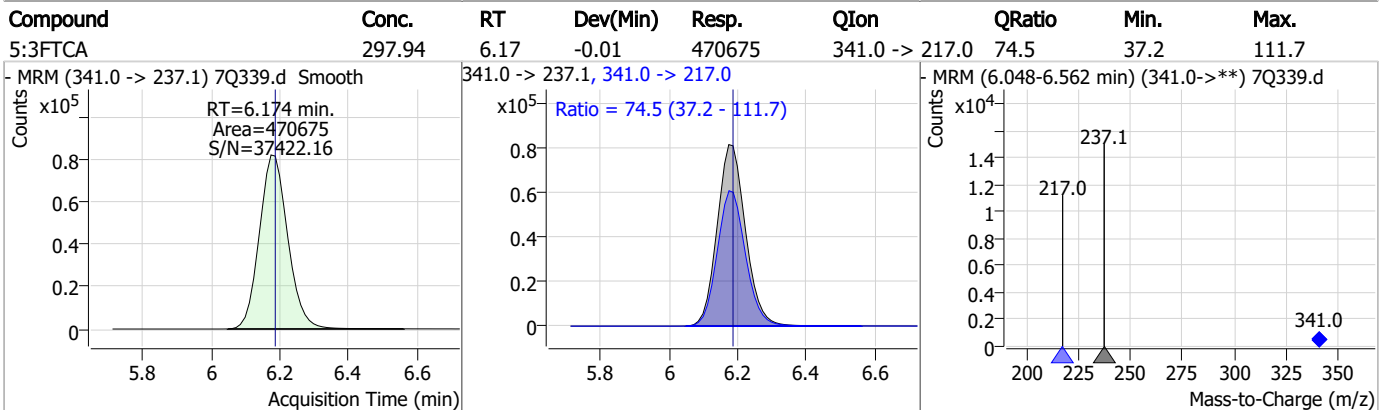
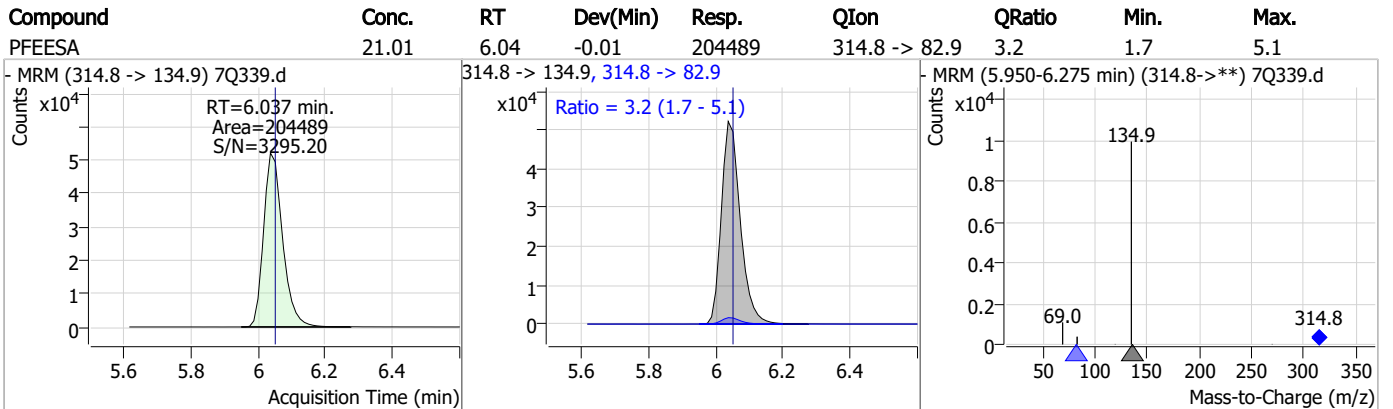
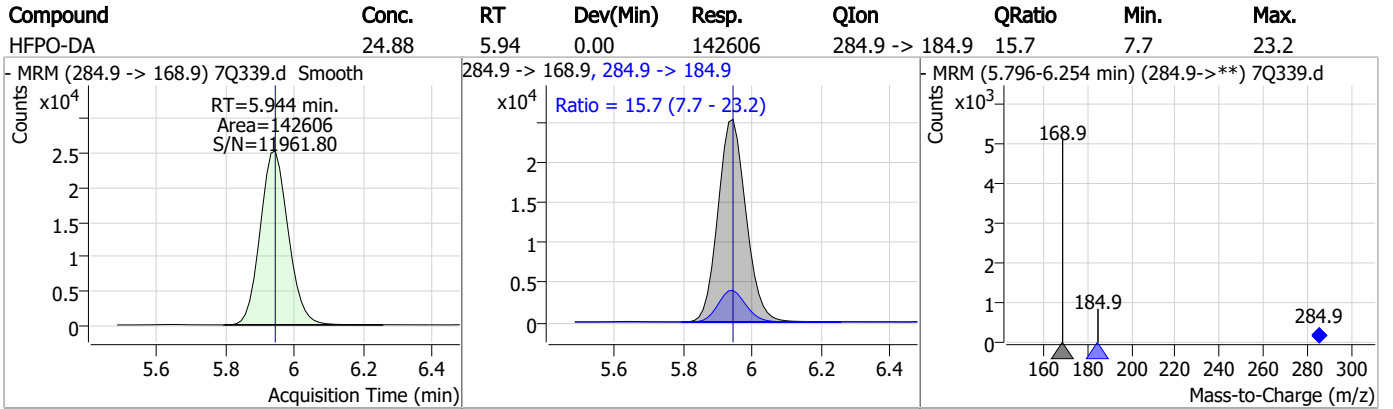
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	11.86	5.56	0.00	144214	313.0 -> 118.9	4.9	2.6	7.7



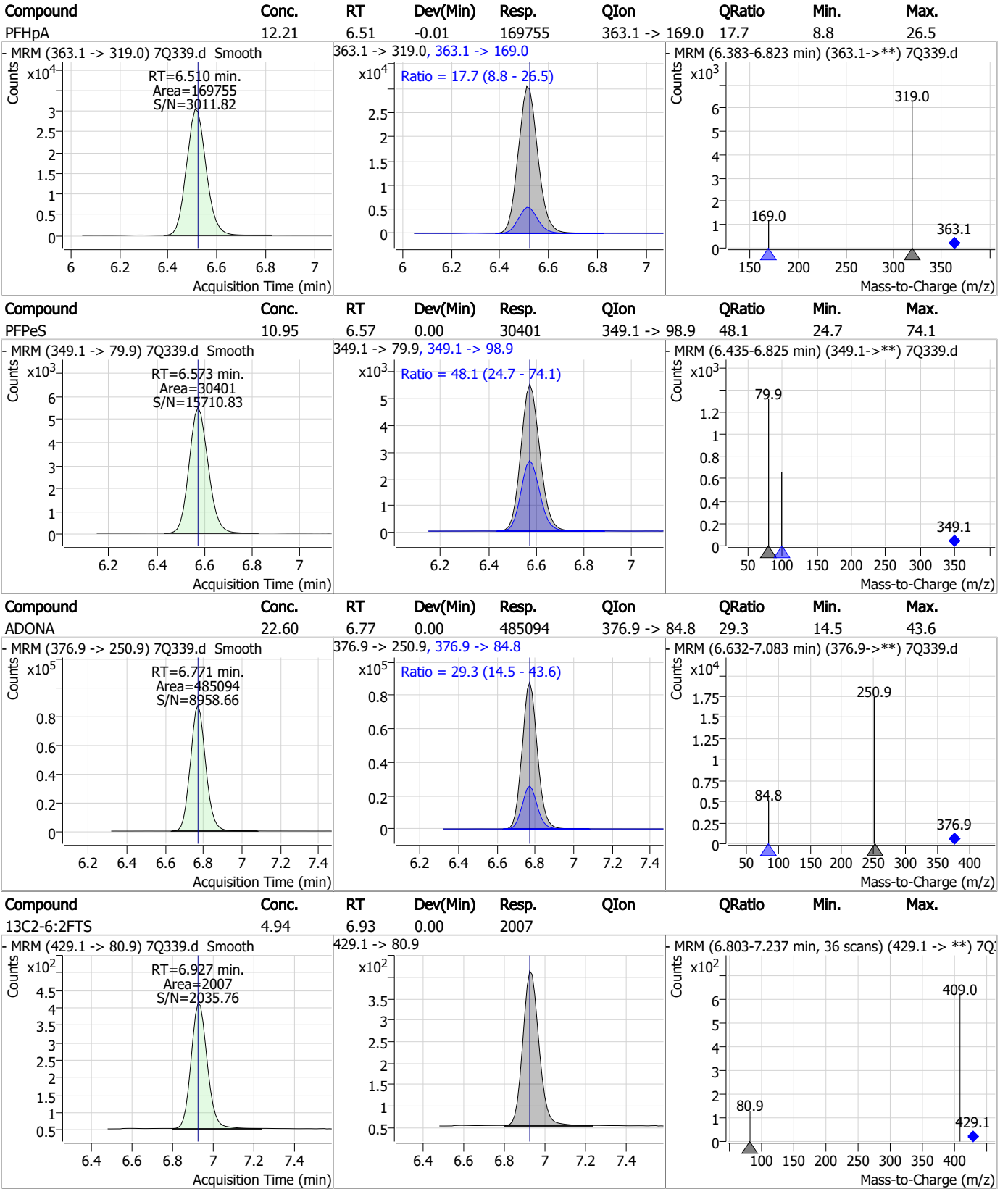
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.81	5.94	0.00	60139				



Perfluorinated Compounds by LC/MS/MS



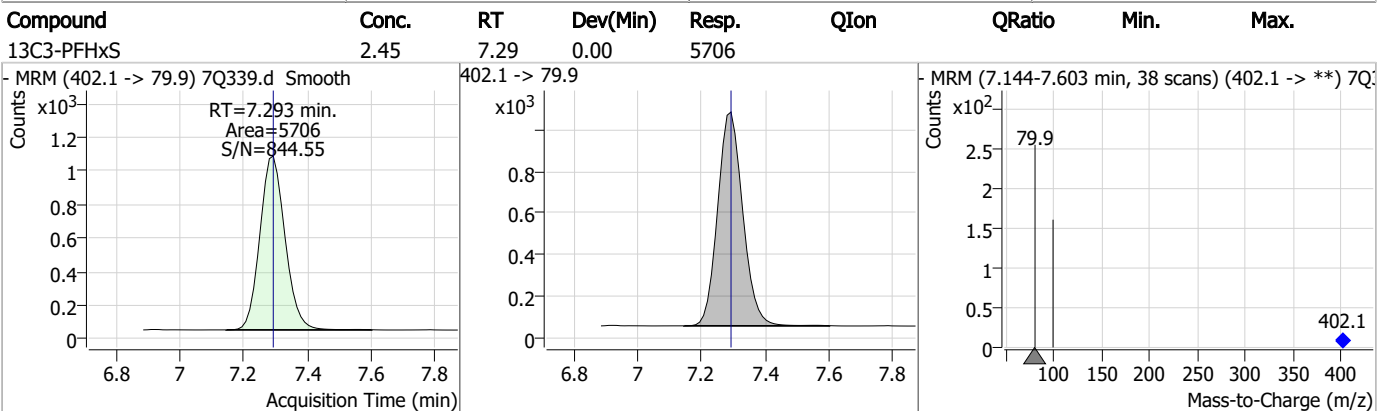
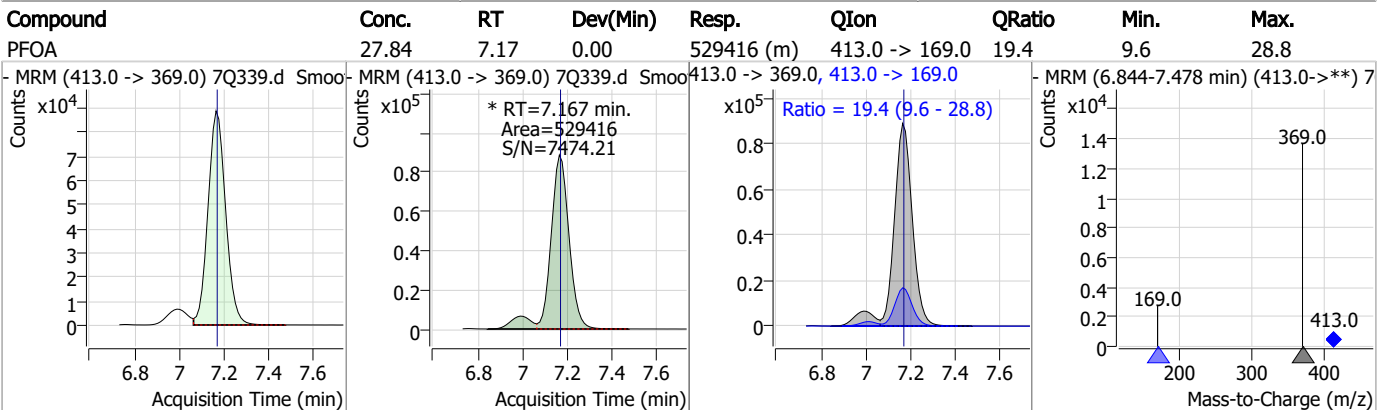
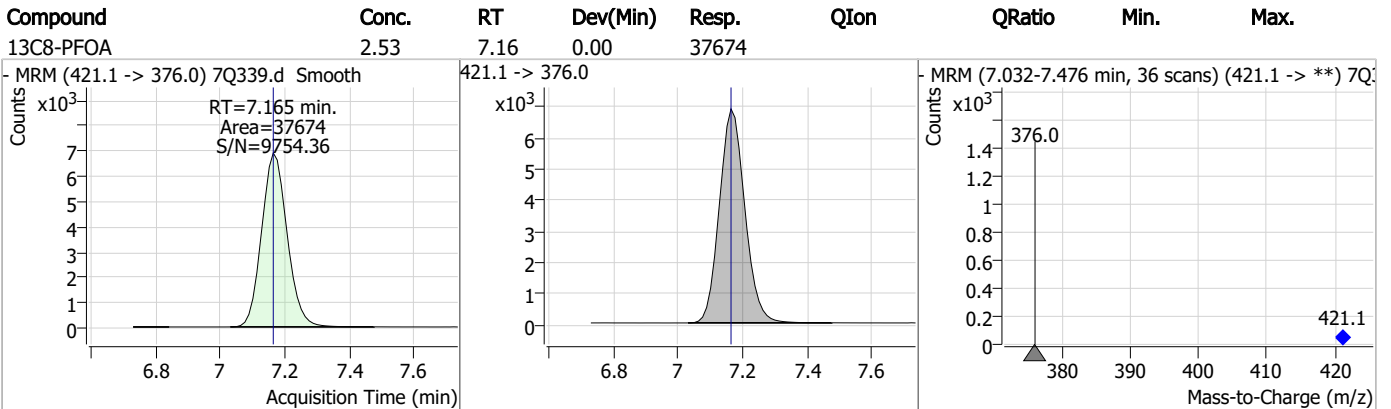
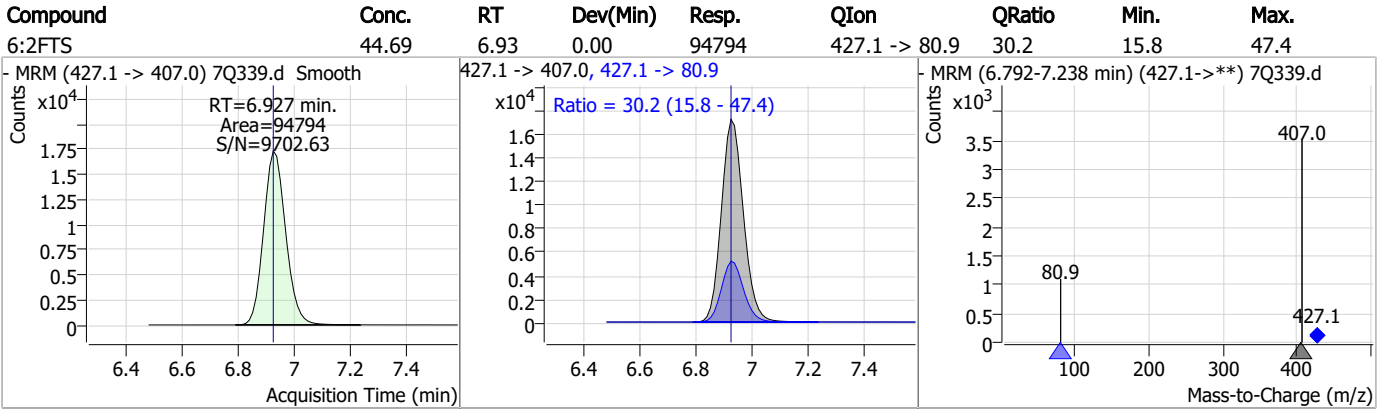
Perfluorinated Compounds by LC/MS/MS



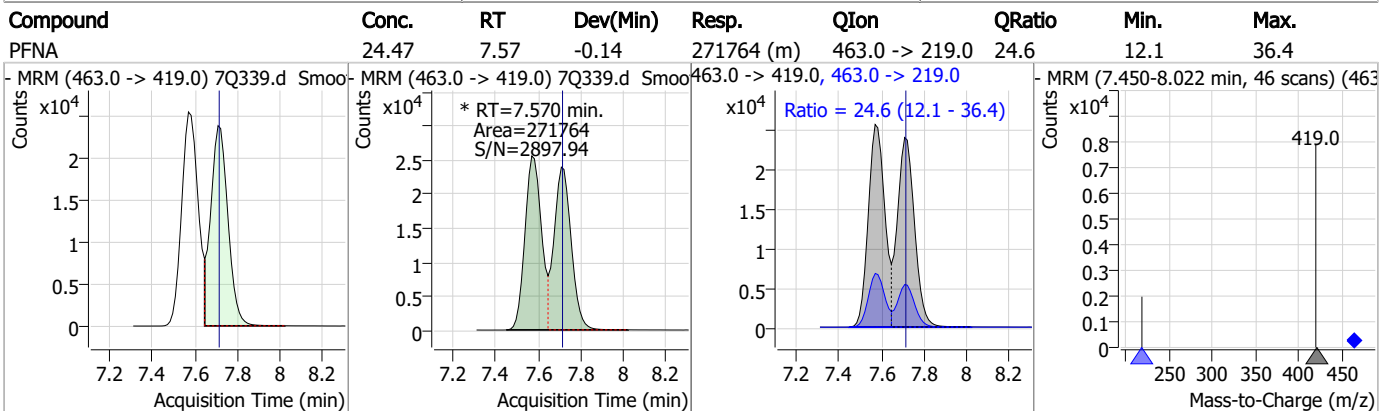
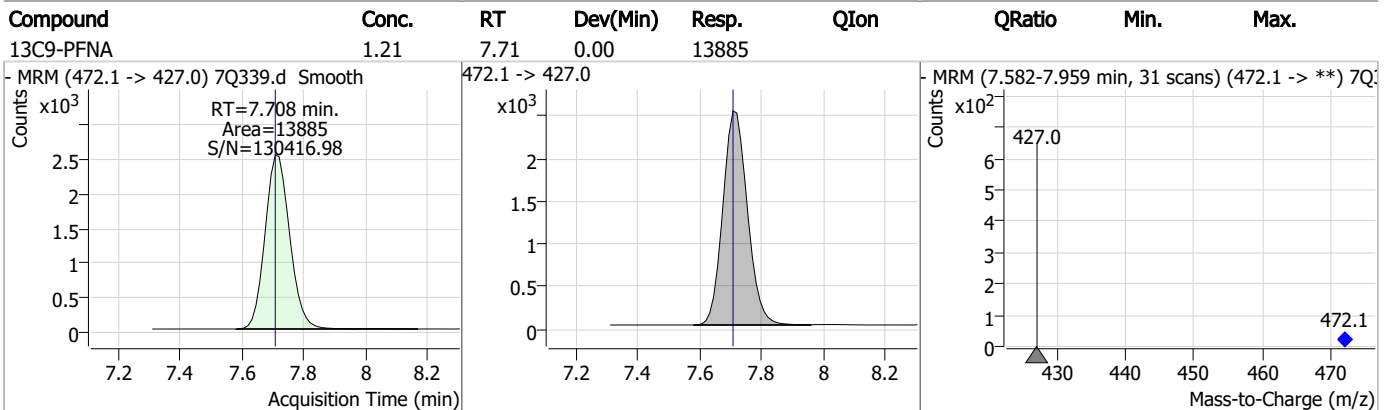
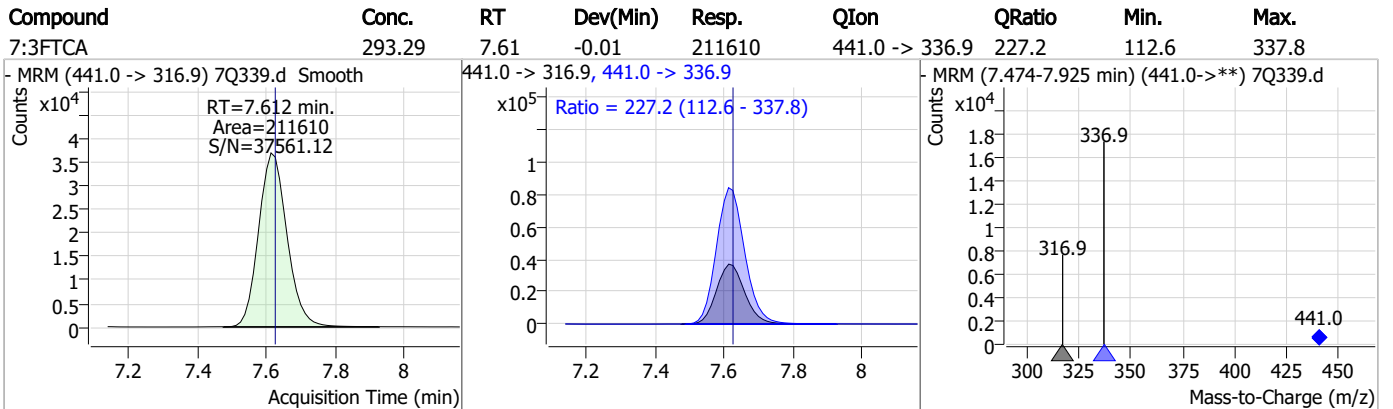
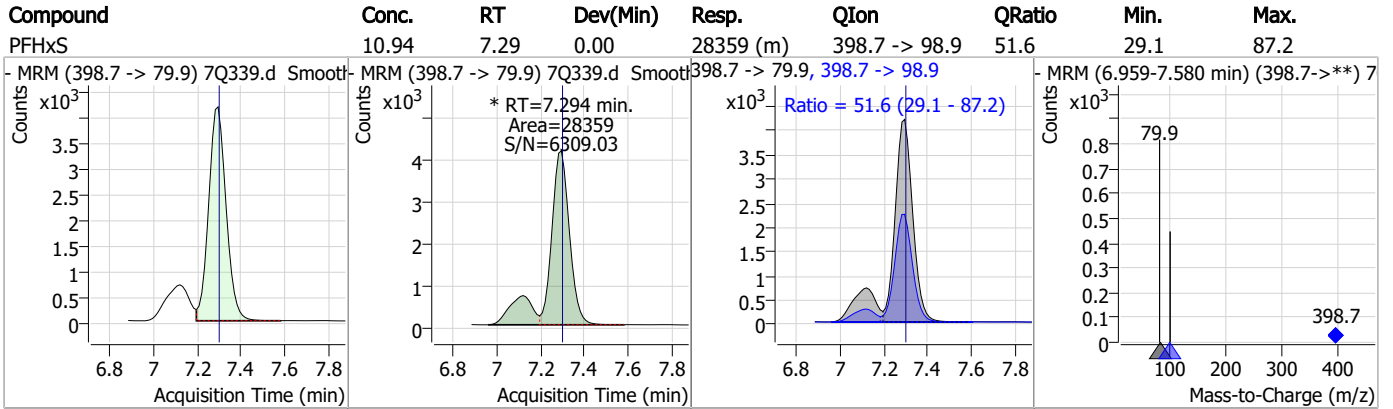
7.6.6

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



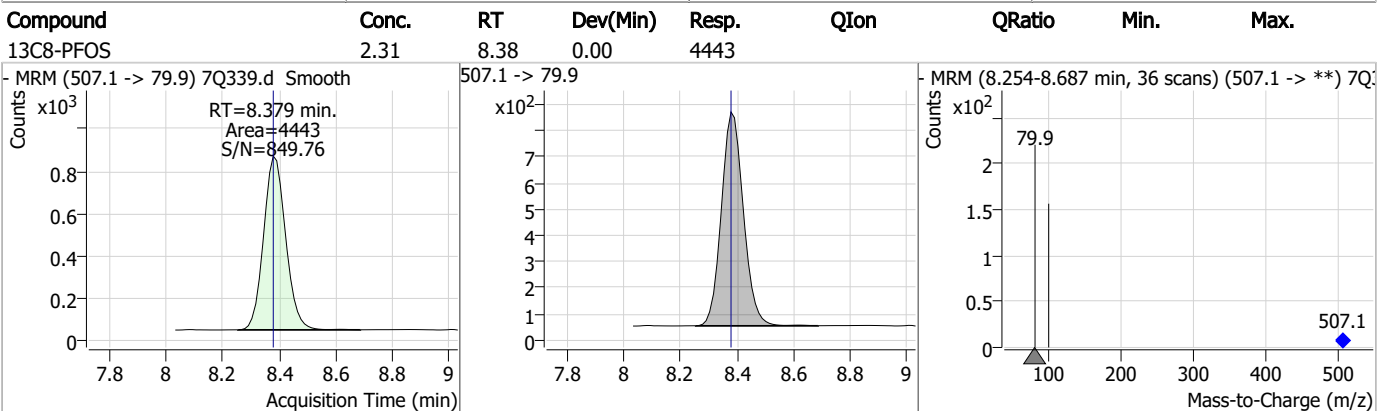
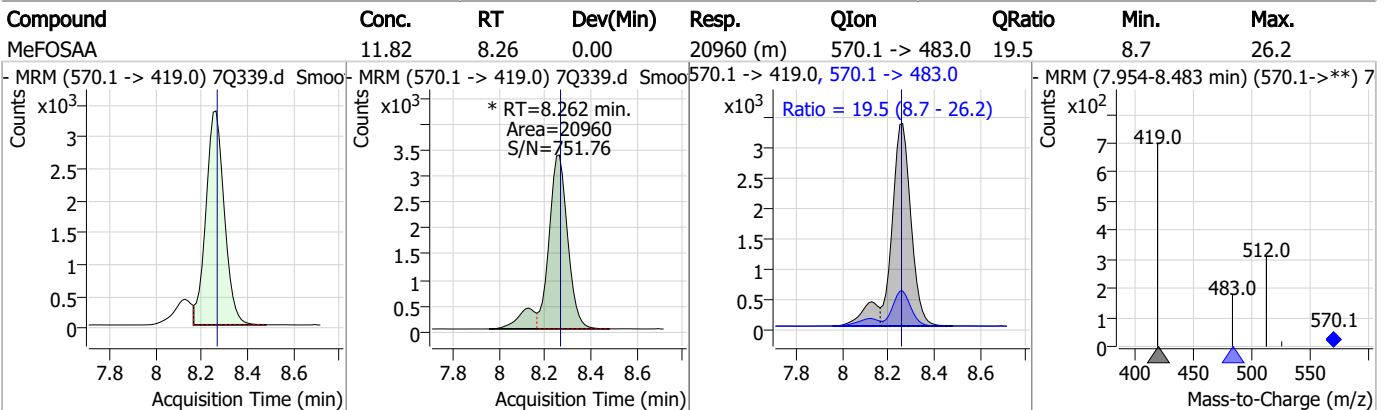
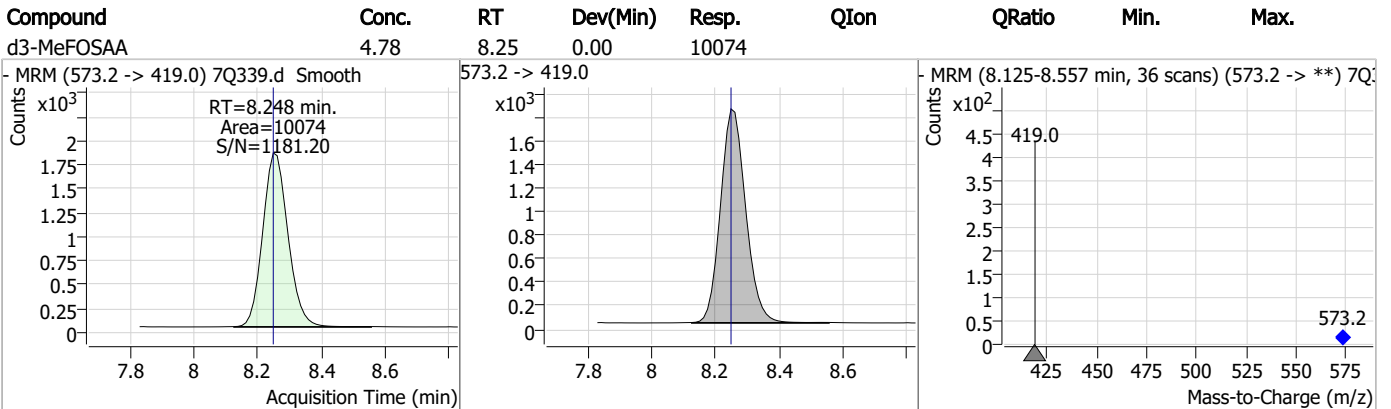
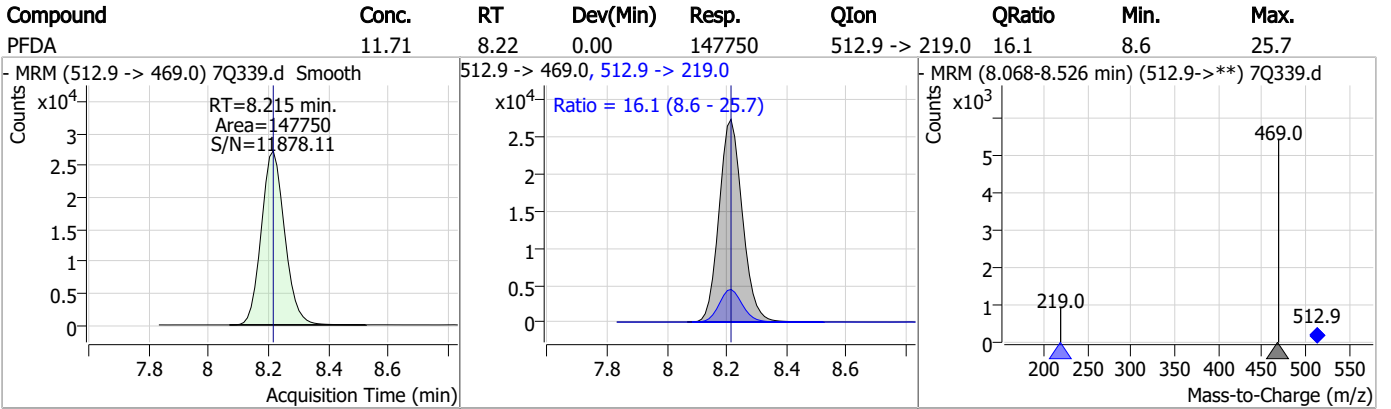
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	11.37	7.86	0.00	25538	449.0 -> 98.9	55.8	27.6	82.7
13C2-8:2FTS	4.62	7.99	0.00	2666	529.1 -> 80.9			
8:2FTS	43.19	7.99	0.00	110060	527.1 -> 80.8	26.2	13.5	40.6
13C6-PFDA	1.26	8.21	0.00	13743	519.1 -> 474.1			

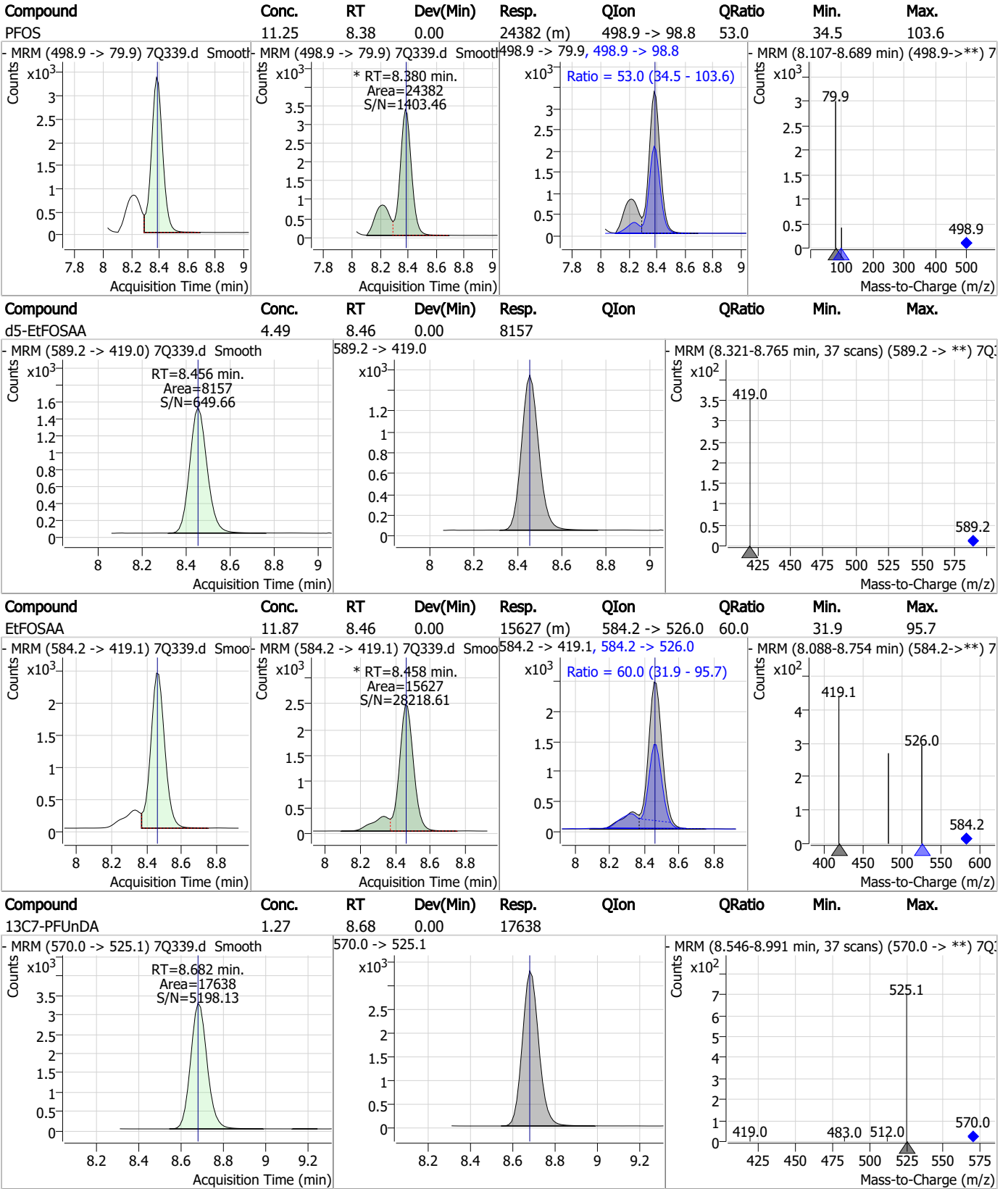
7.6.6

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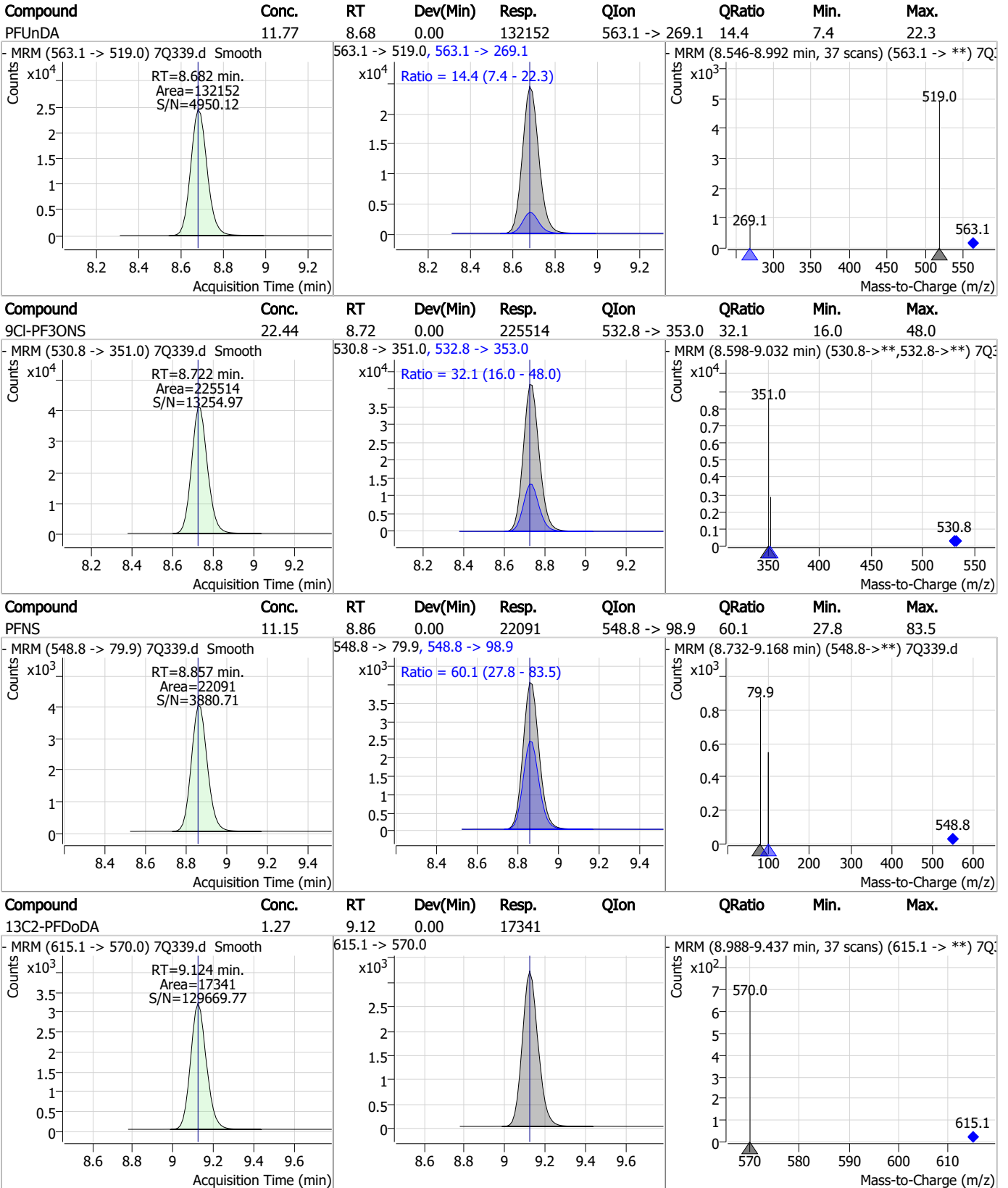
Perfluorinated Compounds by LC/MS/MS



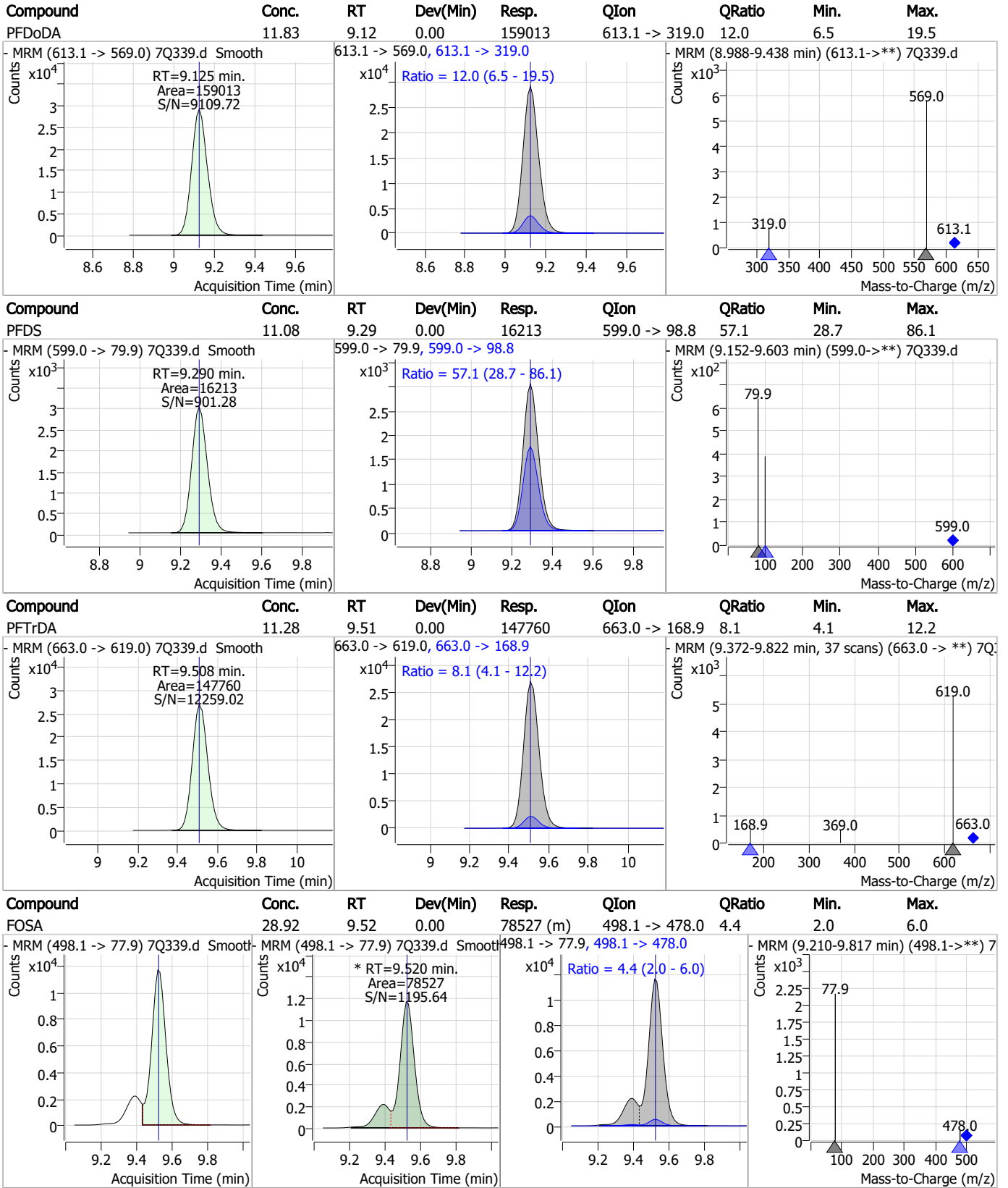
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.6

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Perfluorinated Compounds by LC/MS/MS

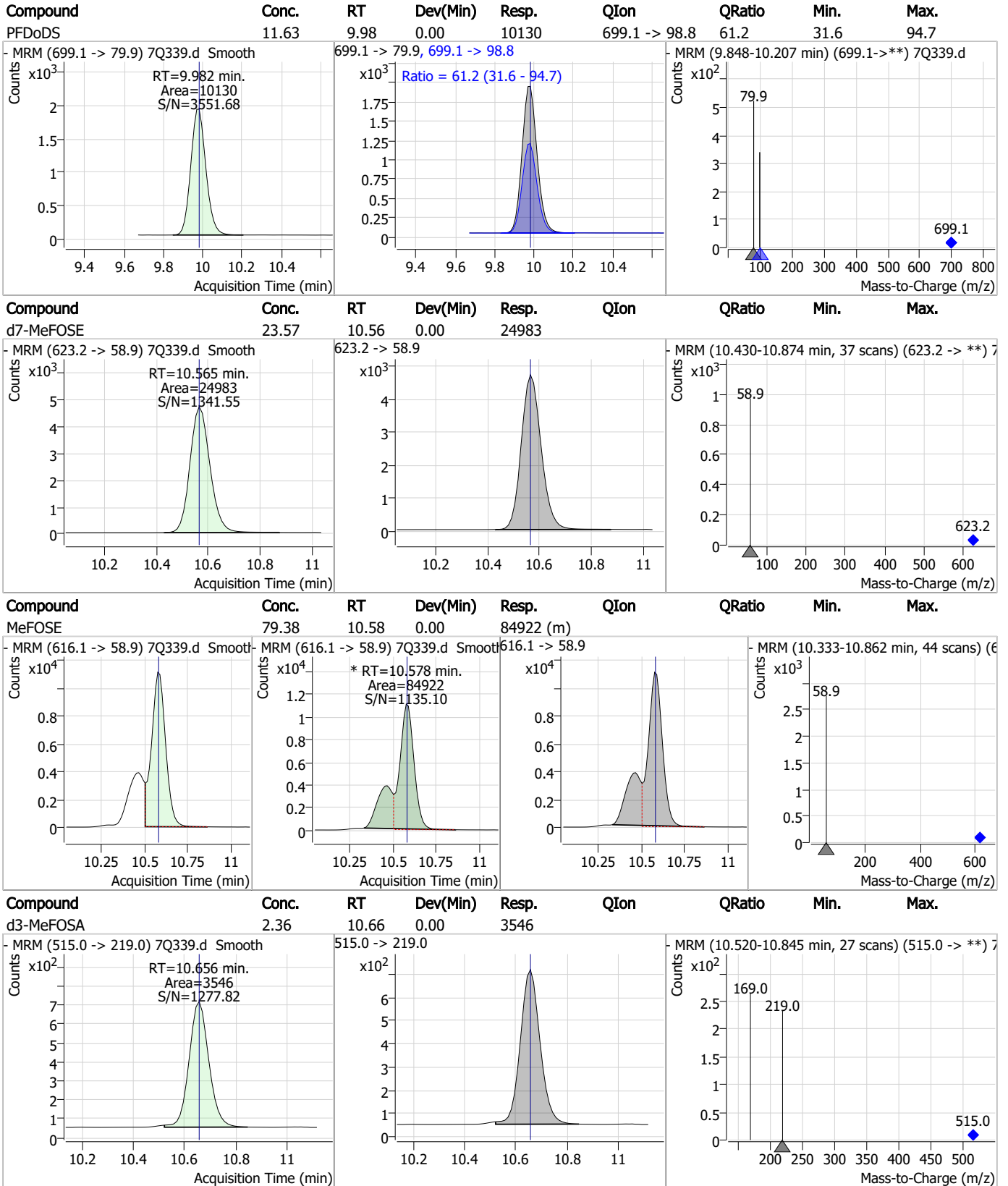
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.32	9.53	0.00	6662				
11Cl-PF3OUds	23.27	9.56	0.00	166667	632.9 -> 452.9	31.3	15.5	46.4
13C2-PFTeDA	1.23	9.84	0.00	8010				
PFTeDA	11.95	9.84	0.00	118323	713.1 -> 168.9	7.1	3.1	9.4

7.6.6

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Perfluorinated Compounds by LC/MS/MS

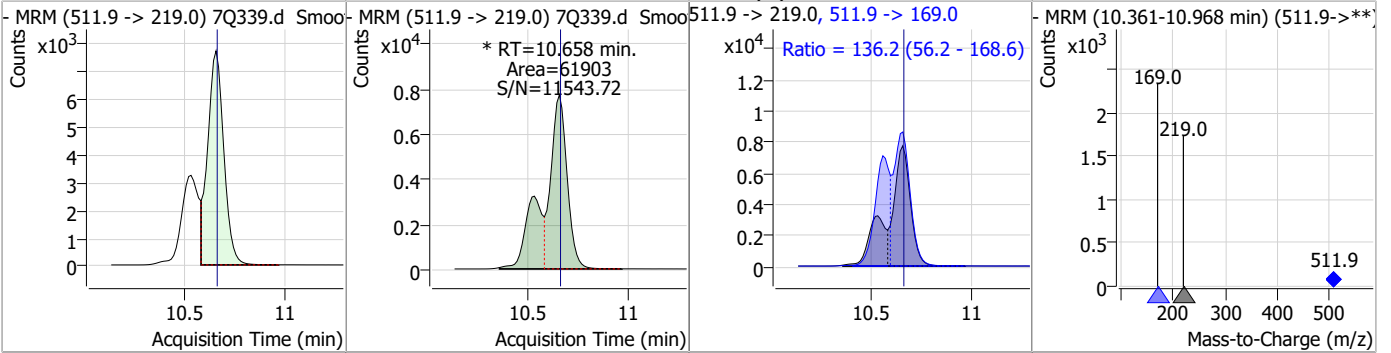


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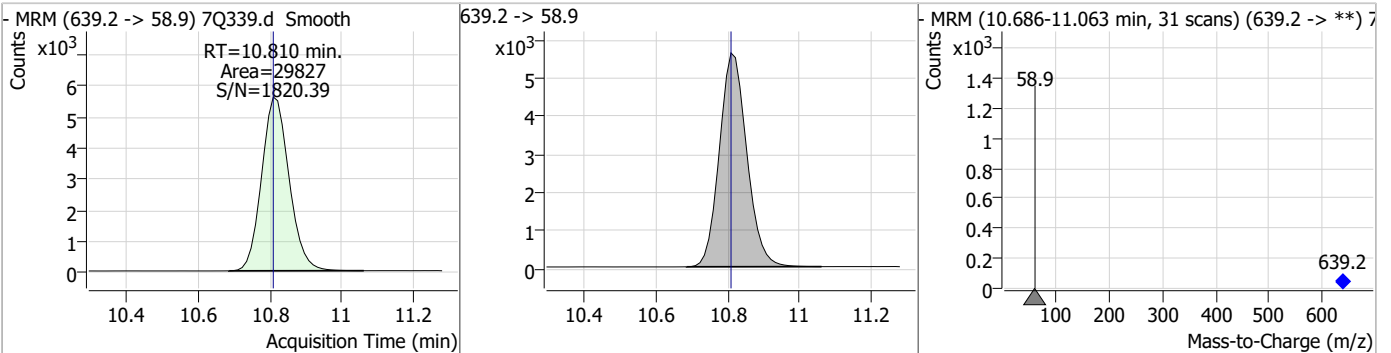
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Perfluorinated Compounds by LC/MS/MS

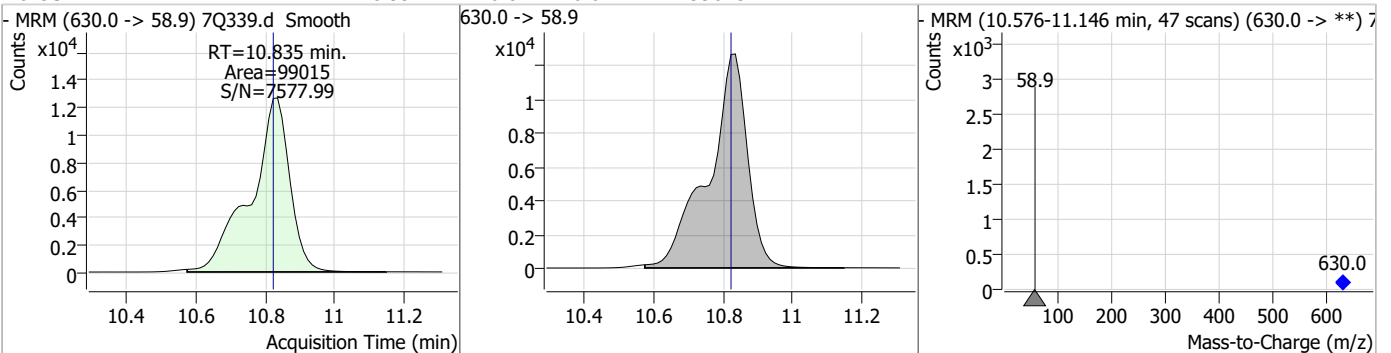
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	42.18	10.66	0.00	61903 (m)	511.9 -> 169.0	136.2	56.2	168.6



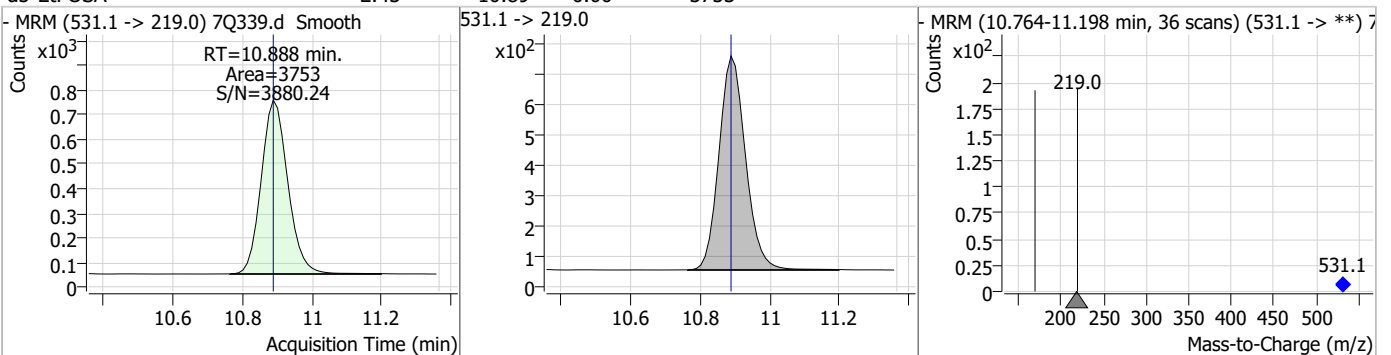
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.26	10.81	0.00	29827				



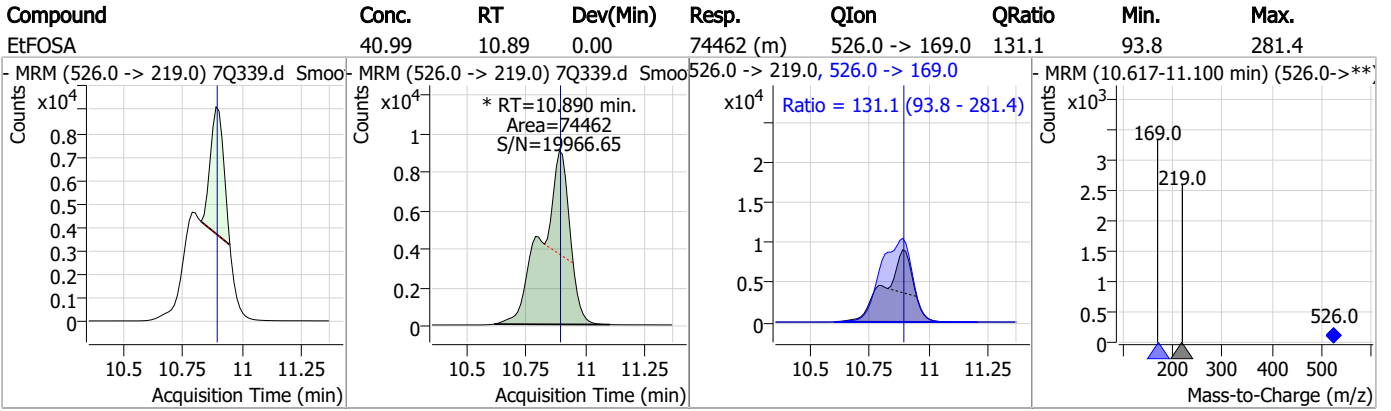
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	78.99	10.84	0.01	99015				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.43	10.89	0.00	3753				



Perfluorinated Compounds by LC/MS/MS



7.6.6

7

Manual Integration Approval Summary

Sample Number: S7Q11-RT Method: EPA DRAFT 1633
Lab FileID: 7Q339.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 14:29 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.17	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorononanoic acid	375-95-1		7.57	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
PFOSA	754-91-6		9.52	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

7.6.6.1
7

QQQ Check Tune Report



Instrument Name LCMS4-Q
MS Model G6470A
MS Instrument Serial SG2004G105
Software_Firmware Version 10.0.142, FW: A.00.08.100
Tune Date & Time 04 December 2023 11:25:52
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.67E+0 [R] (Torr); 3.50E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	4000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	7

QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	0.70	0.72	0.02	Pass	202777
302.00	302.00	0.00	Pass	0.70	0.71	0.01	Pass	118515
601.98	602.01	0.03	Pass	0.70	0.68	-0.02	Pass	292915
1033.99	1034.02	0.03	Pass	0.70	0.69	-0.01	Pass	405873
1633.95	1633.99	0.04	Pass	0.70	0.69	-0.01	Pass	773026
2233.91	2233.91	0.00	Pass	0.70	0.71	0.01	Pass	485475

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.00	0.08	Pass	0.70	0.59	-0.11	Pass	42638
112.99	112.99	0.00	Pass	0.70	0.68	-0.02	Pass	151020
302.00	302.01	0.01	Pass	0.70	0.68	-0.02	Pass	112041
601.98	601.97	-0.01	Pass	0.70	0.68	-0.02	Pass	188919
1033.99	1033.98	-0.01	Pass	0.70	0.67	-0.03	Pass	312165
1633.95	1633.93	-0.02	Pass	0.70	0.70	0.00	Pass	552126
2233.91	2233.91	0.00	Pass	0.70	0.71	0.01	Pass	515692

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.81	-0.18	Pass	1.20	1.65	0.45	Pass	289969
302.00	301.84	-0.16	Pass	1.20	1.25	0.05	Pass	180926
601.98	601.88	-0.10	Pass	1.20	1.14	-0.06	Pass	411910
1033.99	1033.97	-0.02	Pass	1.20	1.14	-0.06	Pass	639151
1633.95	1633.99	0.04	Pass	1.20	1.14	-0.06	Pass	1506417
2233.91	2233.96	0.05	Pass	1.20	1.15	-0.05	Pass	1018316

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.10	0.10	Pass	1.20	1.06	-0.14	Pass	60618
112.99	113.00	0.01	Pass	1.20	1.18	-0.02	Pass	212281
302.00	301.99	-0.01	Pass	1.20	1.35	0.15	Pass	166450
601.98	601.97	-0.01	Pass	1.20	1.40	0.20	Pass	369094
1033.99	1033.98	-0.01	Pass	1.20	1.51	0.31	Pass	664259
1633.95	1633.93	-0.02	Pass	1.20	1.35	0.15	Pass	2016790
2233.91	2233.94	0.03	Pass	1.20	1.17	-0.03	Pass	1372594

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.68	-0.31	Pass	2.50	2.91	0.41	Pass	339595
302.00	301.80	-0.20	Pass	2.50	2.47	-0.03	Pass	223657
601.98	601.80	-0.18	Pass	2.50	2.51	0.01	Pass	634092
1033.99	1033.52	-0.47	Pass	2.50	2.64	0.14	Pass	1351348
1633.95	1633.50	-0.45	Pass	2.50	2.88	0.38	Pass	4706322
2233.91	2233.38	-0.53	Pass	2.50	3.15	0.65	Pass	4309825

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.05	0.05	Pass	2.50	2.36	-0.14	Pass	76756
112.99	112.97	-0.02	Pass	2.50	2.43	-0.07	Pass	291228
302.00	302.00	0.00	Pass	2.50	2.61	0.11	Pass	227107
601.98	601.96	-0.02	Pass	2.50	2.60	0.10	Pass	564001
1033.99	1034.01	0.02	Pass	2.50	2.66	0.16	Pass	1190821
1633.95	1633.98	0.03	Pass	2.50	2.46	-0.04	Pass	4202035
2233.91	2233.90	-0.01	Pass	2.50	2.23	-0.27	Pass	4290357

7.7.1
7

Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54851.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 11:23 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
EiFOSE	1691-99-2		11.32	Split peak
EiFOSA	4151-50-2		11.40	Split peak

7.7.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54852.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 11:38:18 AM
 Sample Name : ic804-1
 Vial : P1-A2
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	95084	10.00 µg/L	0.012
M5-PFPeA	4.162	268.3 -> 223.0	40685	5.00 µg/L	0.000
M5-PFHxA	5.334	318.0 -> 273.0	32988	2.50 µg/L	0.000
M4-PFHpA	6.292	367.1 -> 322.0	31422	2.50 µg/L	0.000
M8-PFOA	6.964	421.1 -> 376.0	51339	2.50 µg/L	-0.012
M9-PFNA	7.509	472.1 -> 427.0	19744	1.25 µg/L	-0.012
M6-PFDA	7.992	519.1 -> 474.1	13003	1.25 µg/L	-0.012
M7-PFUnDA	8.449	570.0 -> 525.1	17542	1.25 µg/L	0.000
M2-PFDoDA	8.867	615.1 -> 570.0	18439	1.25 µg/L	-0.012
M2-PFTeDA	9.637	715.2 -> 670.0	18112	1.25 µg/L	0.000
M8-FOSA	9.781	506.1 -> 77.8	11195	2.50 µg/L	-0.012
M3-PFBS	5.202	302.1 -> 79.9	8909	2.50 µg/L	0.013
M3-PFHxS	7.029	402.1 -> 79.9	7560	2.50 µg/L	0.000
M8-PFOS	8.117	507.1 -> 79.9	8298	2.50 µg/L	0.000
M2-4:2FTS	5.046	329.1 -> 80.9	1254	5.00 µg/L	0.000
M2-6:2FTS	6.748	429.1 -> 80.9	2595	5.00 µg/L	0.000
M2-8:2FTS	7.804	529.1 -> 80.9	3392	5.00 µg/L	0.000
M3-MeFOSAA	8.074	573.2 -> 419.0	19113	5.00 µg/L	-0.012
M3-HFPO-DA	5.689	286.9 -> 168.9	33418	10.00 µg/L	0.000
M5-EtFOSAA	8.283	589.2 -> 419.0	15482	5.00 µg/L	0.000
M7-MeFOSE	11.022	623.2 -> 58.9	52293	25.00 µg/L	0.000
M9-EtFOSE	11.306	639.2 -> 58.9	60619	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	6934	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6245	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	6765	2.50 µg/L	0.000
13C3-PFBA	2.691	216.0 -> 172.0	45431	5.00 µg/L	0.013
18O2-PFHxS	7.028	403.0 -> 83.9	4914	2.50 µg/L	-0.012
13C4-PFOA	6.964	417.1 -> 372.0	55018	2.50 µg/L	-0.012
13C2-PFDA	7.992	515.1 -> 470.1	15568	1.25 µg/L	-0.012
13C5-PFNA	7.509	468.0 -> 423.0	19286	1.25 µg/L	0.000
13C2-PFHxA	5.335	315.1 -> 270.0	34907	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.046	329.1 -> 80.9	1254	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C2-6:2FTS	6.748	429.1 -> 80.9	2595	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3392	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C2-PFDoDA	8.867	615.1 -> 570.0	18439	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-PFTeDA	9.637	715.2 -> 670.0	18112	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C3-PFBS	5.202	302.1 -> 79.9	8909	2.37 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C3-PFHxS	7.029	402.1 -> 79.9	7560	2.45 µg/L	0.000

7.7.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C4-PFBA	2.686	216.8 -> 171.9	95084	9.97 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C4-PFHpA	6.292	367.1 -> 322.0	31422	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C5-PFHxA	5.334	318.0 -> 273.0	32988	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C5-PFPeA	4.162	268.3 -> 223.0	40685	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C6-PFDA	7.992	519.1 -> 474.1	13003	1.15 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.8%	
13C7-PFUnDA	8.449	570.0 -> 525.1	17542	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C8-FOSA	9.781	506.1 -> 77.8	11195	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C8-PFOA	6.964	421.1 -> 376.0	51339	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-PFOS	8.117	507.1 -> 79.9	8298	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C9-PFNA	7.509	472.1 -> 427.0	19744	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
d3-MeFOSAA	8.074	573.2 -> 419.0	19113	5.09 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C3-HFPO-DA	5.689	286.9 -> 168.9	33418	10.40 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d3-MeFOSA	11.126	515.0 -> 219.0	6245	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%	
d5-EtFOSAA	8.283	589.2 -> 419.0	15482	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d7-MeFOSE	11.022	623.2 -> 58.9	52293	24.18 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
d9-EtFOSE	11.306	639.2 -> 58.9	60619	25.02 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d5-EtFOSA	11.397	531.1 -> 219.0	6934	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
Target Compounds					QValue
4:2FTS	5.047	327.1 -> 307.0	1558	0.72 µg/L	98
		327.1 -> 80.9	648		
6:2FTS	6.749	427.1 -> 407.0	2077	0.76 µg/L	93
		427.1 -> 80.9	673		
8:2FTS	7.804	527.1 -> 507.0	1346	0.75 µg/L	98
		527.1 -> 80.8	529		
EtFOSAA	8.284	584.2 -> 419.1	551	0.20 µg/L	96
		584.2 -> 526.0	164		
FOSA	9.785	498.1 -> 77.9	971	0.19 µg/L	97
		498.1 -> 478.0	37		
MeFOSAA	8.075	570.1 -> 419.0	545	0.20 µg/L	96
		570.1 -> 483.0	81		
PFBA	2.695	212.8 -> 168.9	2328	0.76 µg/L	100
PFBS	5.191	298.7 -> 79.9	518	0.19 µg/L	93
		298.7 -> 98.8	234		
PFDA	7.992	512.9 -> 469.0	2253	0.24 µg/L	88
		512.9 -> 219.0	338		
PFDODA	8.868	613.1 -> 569.0	2308	0.17 µg/L	89
		613.1 -> 319.0	503		
PFDS	9.008	599.0 -> 79.9	441	0.20 µg/L	91

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	203			
PFHpA	6.293	363.1 -> 319.0	3438	0.19	µg/L	94
		363.1 -> 169.0	536			
PFHpS	7.612	449.0 -> 79.9	632	0.19	µg/L	91
		449.0 -> 98.9	368			
PFHxA	5.337	313.0 -> 269.0	2084	0.20	µg/L	99
		313.0 -> 118.9	66			
PFHxS	7.030	398.7 -> 79.9	454	0.19	µg/L	m 99
		398.7 -> 98.9	214			
PFNA	7.510	463.0 -> 419.0	2107	0.18	µg/L	m 99
		463.0 -> 219.0	495			
PFNS	8.574	548.8 -> 79.9	267	0.19	µg/L	98
		548.8 -> 98.9	136			
PFOA	6.978	413.0 -> 369.0	3902	0.18	µg/L	98
		413.0 -> 169.0	904			
PFOS	8.119	498.9 -> 79.9	824	0.24	µg/L	#m 40
		498.9 -> 98.8	280			
PFPeA	4.164	263.0 -> 219.0	3114	0.39	µg/L	100
PFPeS	6.282	349.1 -> 79.9	367	0.16	µg/L	99
		349.1 -> 98.9	153			
PFTeDA	9.637	713.1 -> 669.0	2576	0.20	µg/L	97
		713.1 -> 168.9	246			
PFTrDA	9.267	663.0 -> 619.0	2608	0.18	µg/L	88
		663.0 -> 168.9	476			
PFUnDA	8.449	563.1 -> 519.0	2092	0.16	µg/L	90
		563.1 -> 269.1	537			
11Cl-PF3OUdS	9.294	630.9 -> 450.9	3203	0.35	µg/L	97
		632.9 -> 452.9	1047			
9Cl-PF3ONS	8.451	530.8 -> 351.0	3283	0.35	µg/L	98
		532.8 -> 353.0	961			
ADONA	6.556	376.9 -> 250.9	8666	0.38	µg/L	100
		376.9 -> 84.8	2097			
HFPO-DA	5.690	284.9 -> 168.9	1182	0.37	µg/L	96
		284.9 -> 184.9	128			
3:3FTCA	3.617	241.0 -> 177.0	423	0.87	µg/L	99
		241.0 -> 117.0	37			
5:3FTCA	6.008	341.0 -> 237.1	8499	4.53	µg/L	97
		341.0 -> 217.0	5884			
7:3FTCA	7.524	441.0 -> 316.9	4678	4.75	µg/L	88
		441.0 -> 336.9	10190			
EtFOSA	11.399	526.0 -> 219.0	1187	0.40	µg/L	92
		526.0 -> 169.0	1530			
EtFOSE	11.320	630.0 -> 58.9	2179	1.02	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	840	0.38	µg/L	96
		511.9 -> 169.0	1286			
MeFOSE	11.035	616.1 -> 58.9	2158	1.04	µg/L	100
PFDoDS	9.764	699.1 -> 79.9	309	0.18	µg/L	98
		699.1 -> 98.8	179			
NFDHA	5.216	295.0 -> 201.0	293	0.39	µg/L	88
		295.0 -> 84.9	59			
PFMBA	4.566	279.0 -> 85.1	1729	0.39	µg/L	100
PFMPA	3.315	229.0 -> 84.9	1898	0.39	µg/L	100
PFEESA	5.722	314.8 -> 134.9	2585	0.33	µg/L	94
		314.8 -> 82.9	148			

= Qualifier out of range, m = manually integrated, + = Area summed

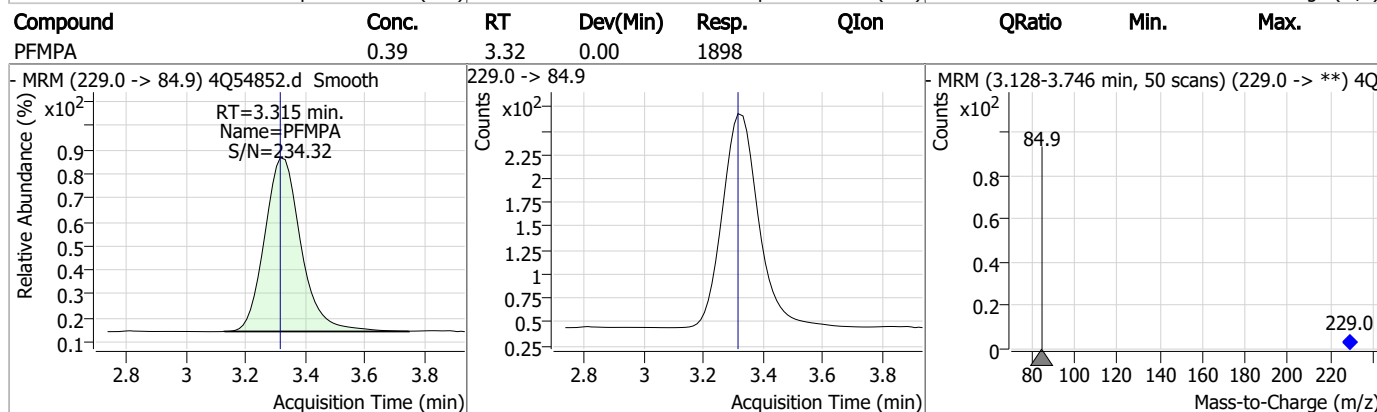
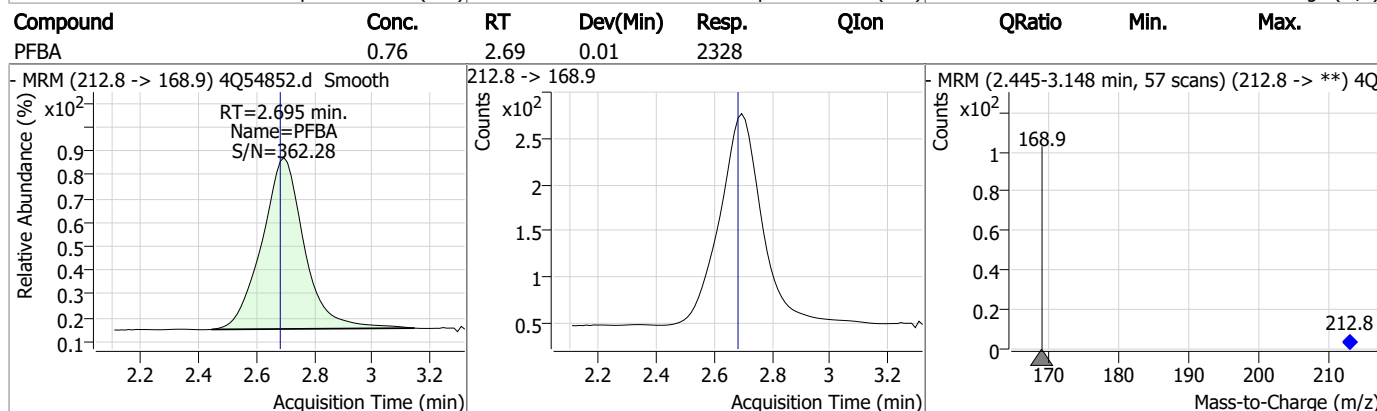
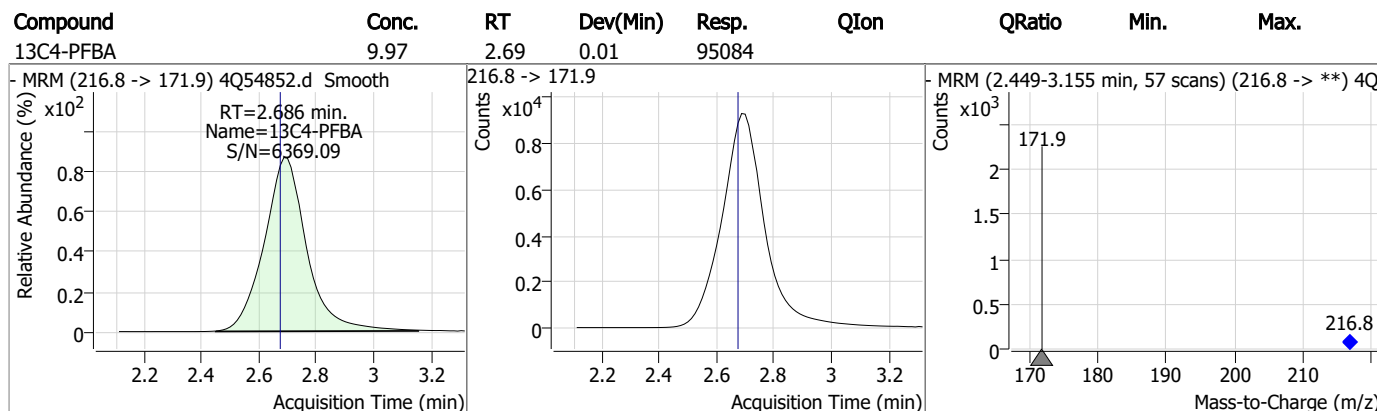
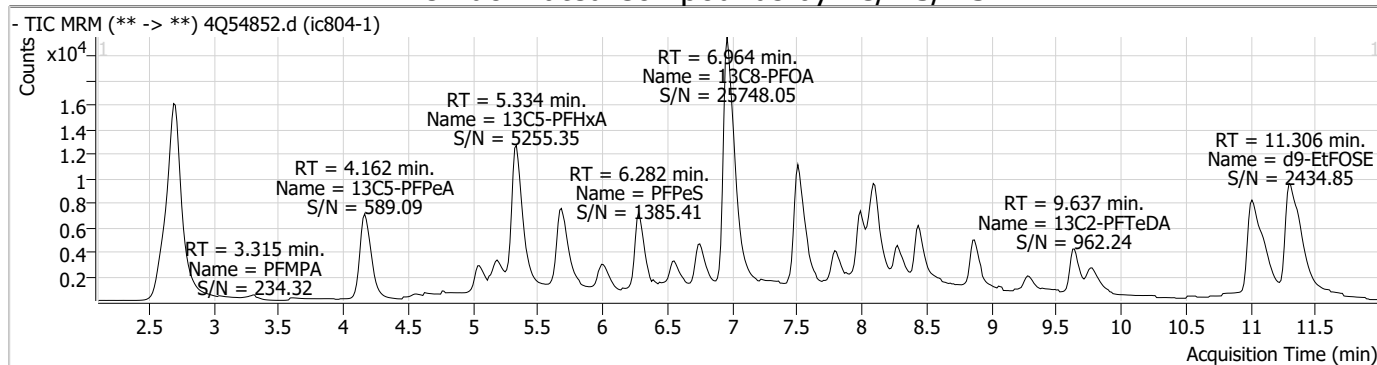
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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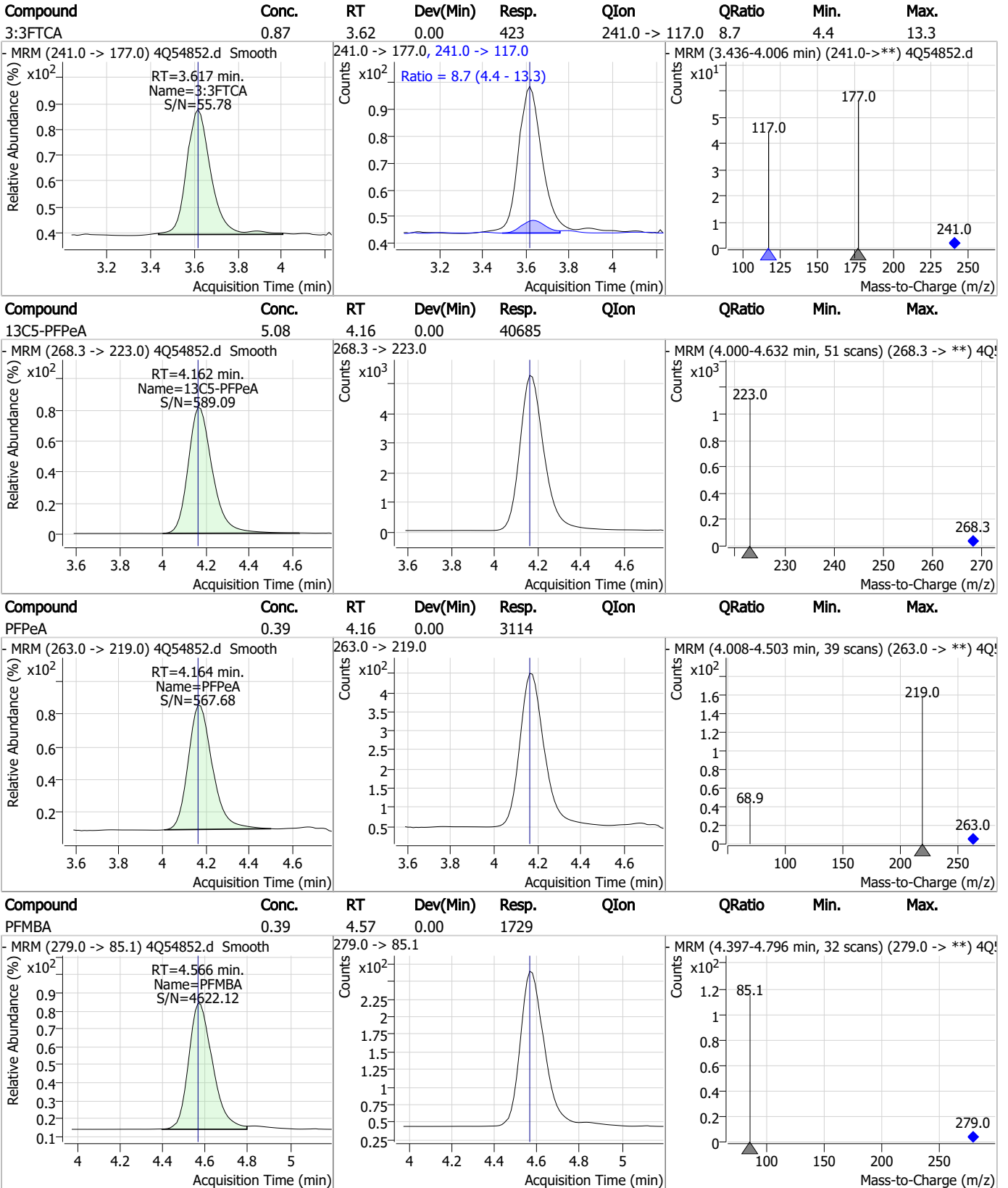
7.7.2
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Perfluorinated Compounds by LC/MS/MS

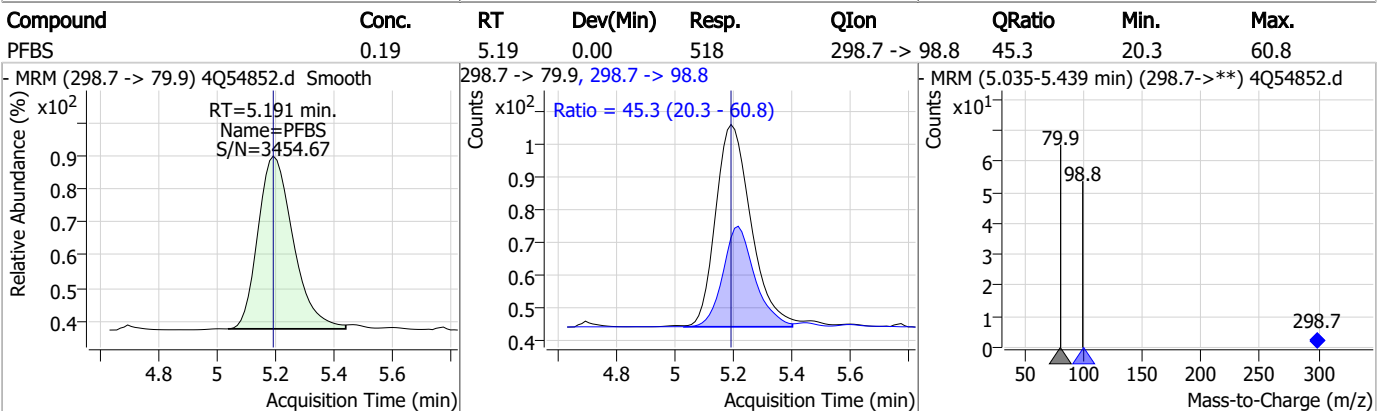
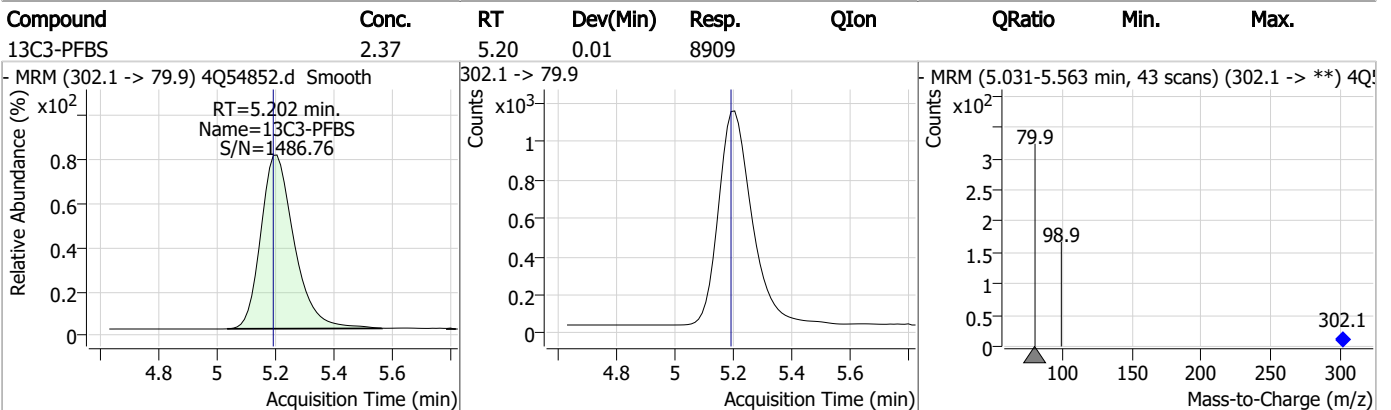
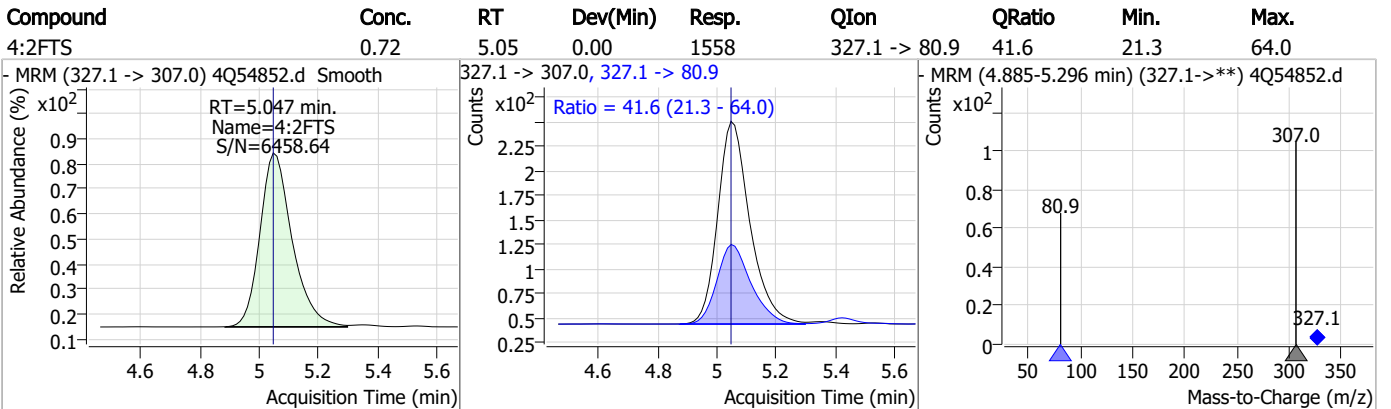
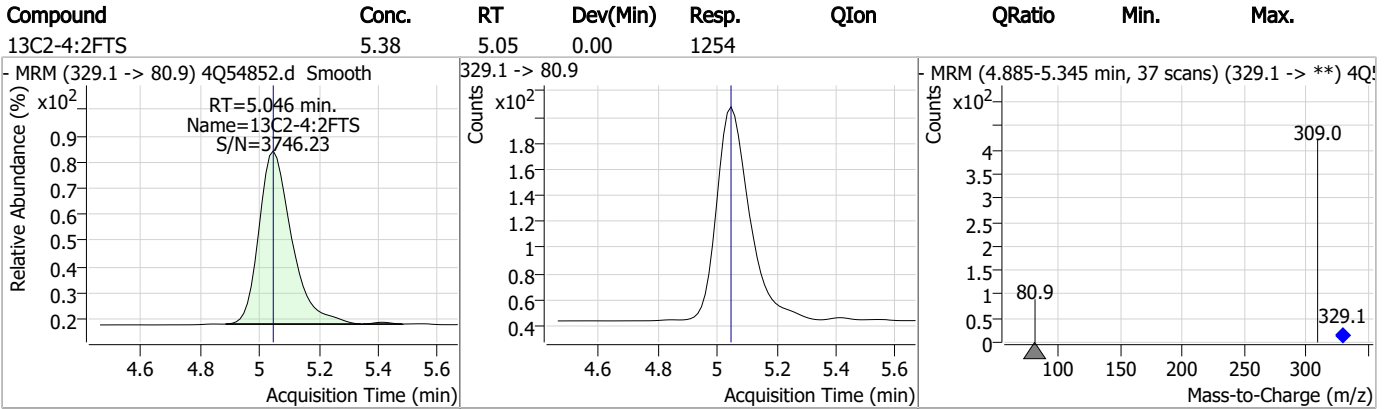


Perfluorinated Compounds by LC/MS/MS



7.7.2
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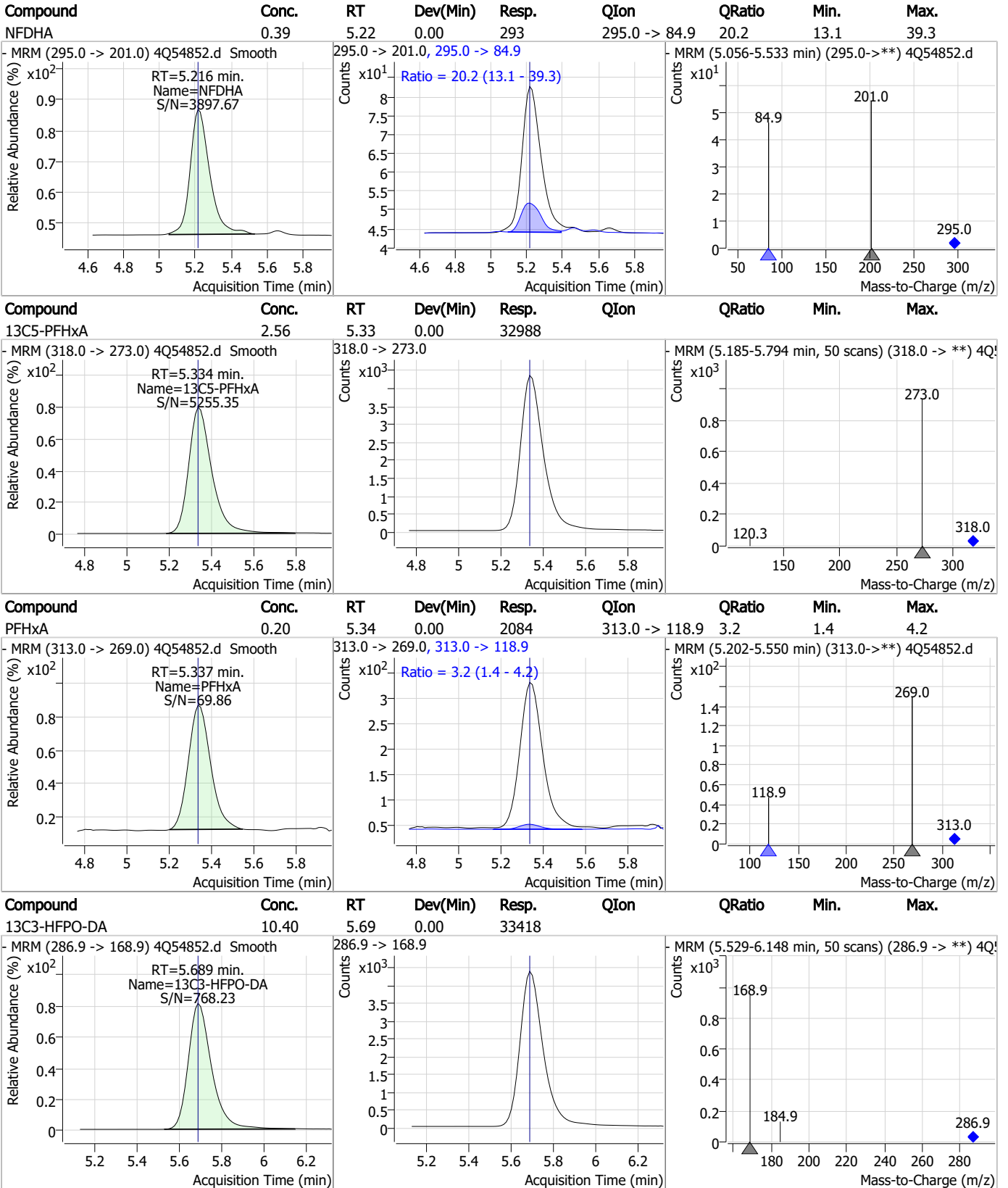
Perfluorinated Compounds by LC/MS/MS



7.7.2

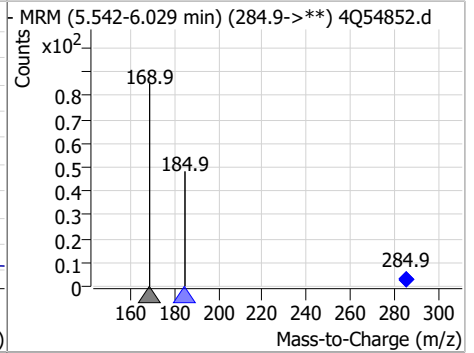
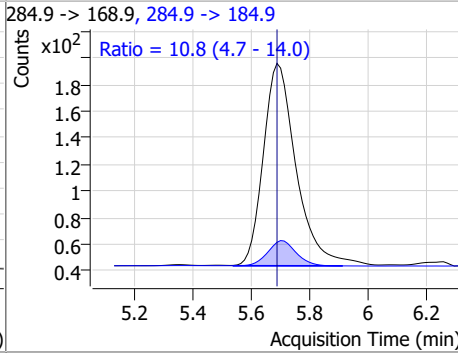
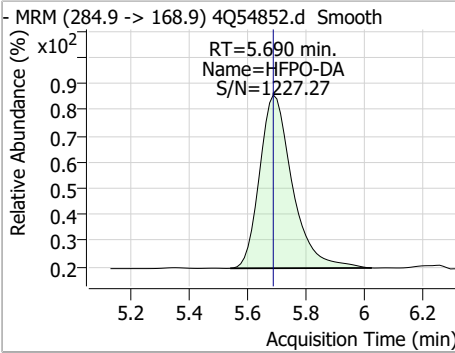
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Perfluorinated Compounds by LC/MS/MS

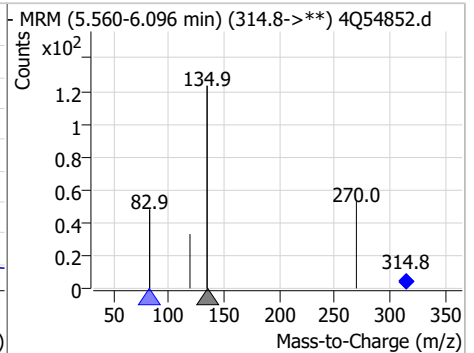
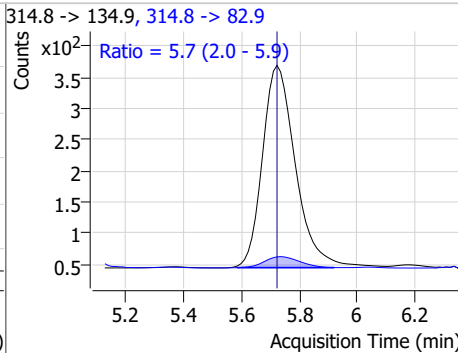
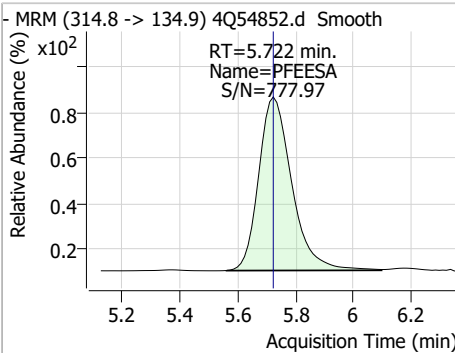


Perfluorinated Compounds by LC/MS/MS

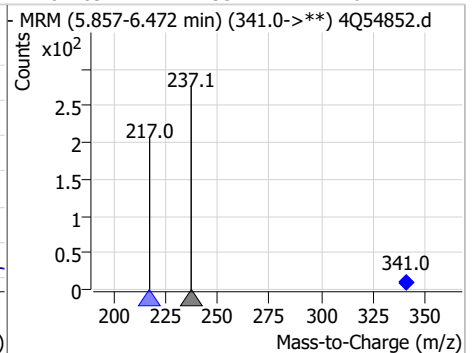
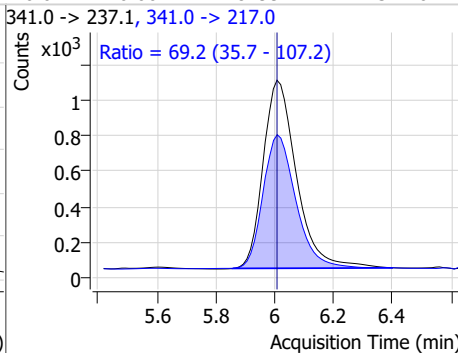
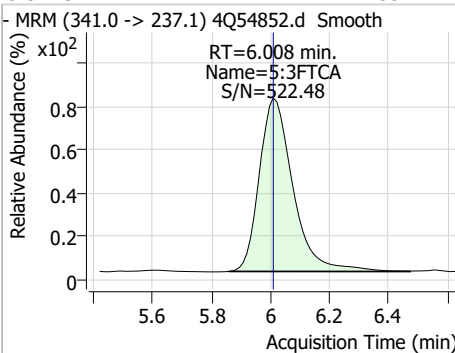
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.37	5.69	0.00	1182	284.9 -> 184.9	10.8	4.7	14.0



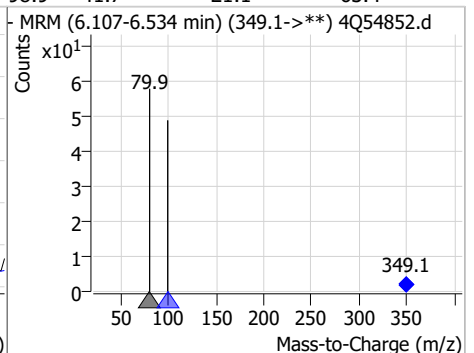
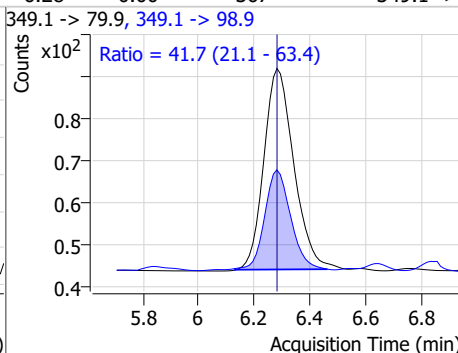
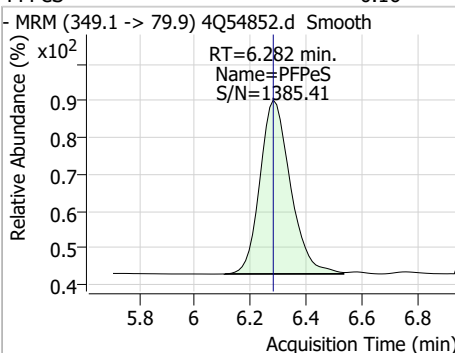
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.33	5.72	0.00	2585	314.8 -> 82.9	5.7	2.0	5.9



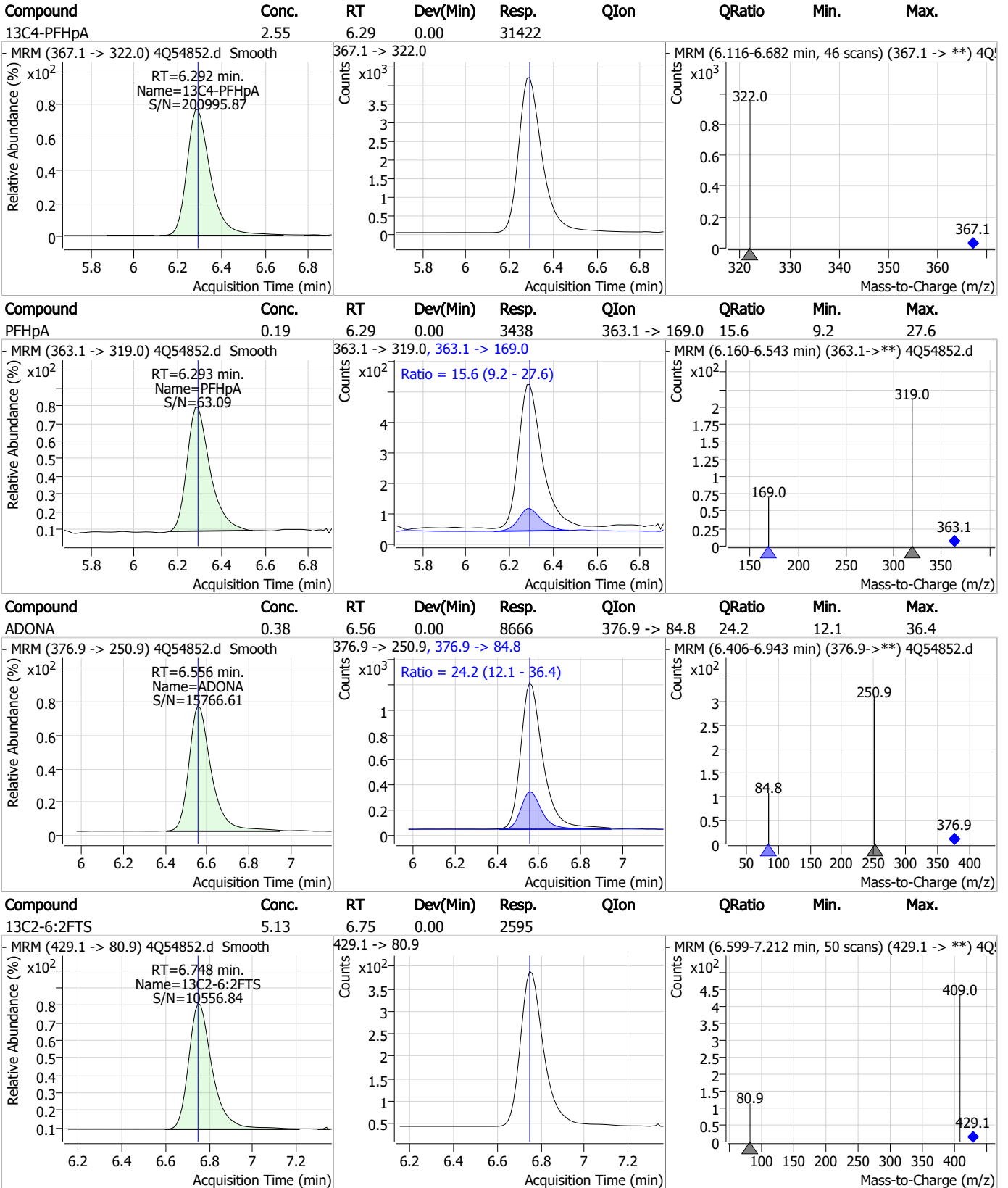
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.53	6.01	0.00	8499	341.0 -> 217.0	69.2	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.16	6.28	0.00	367	349.1 -> 98.9	41.7	21.1	63.4



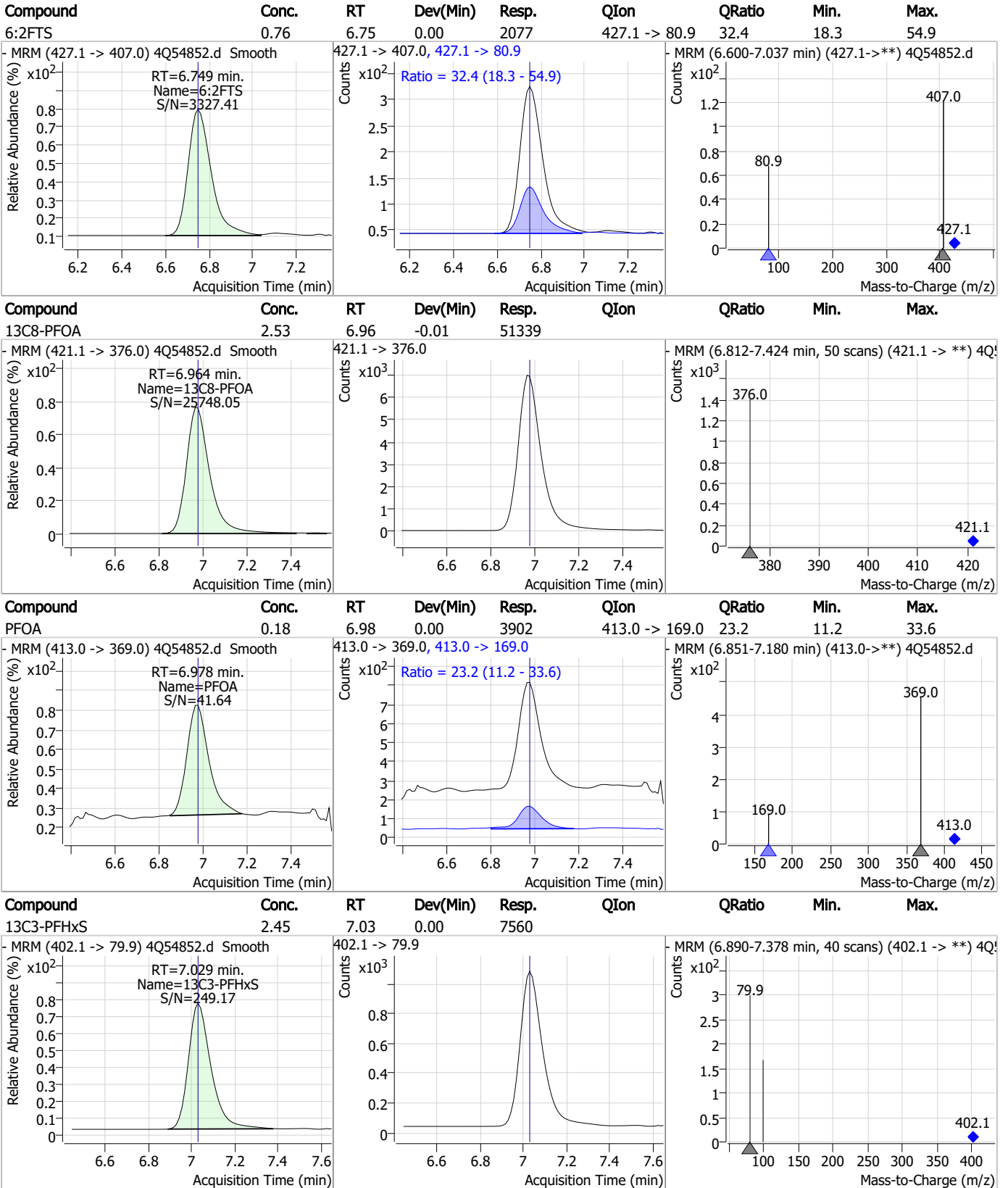
Perfluorinated Compounds by LC/MS/MS



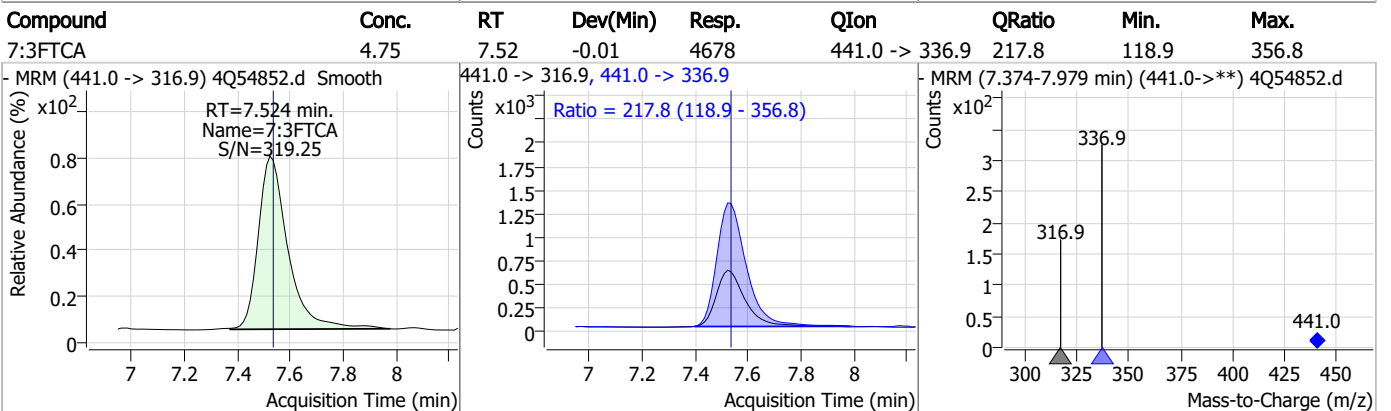
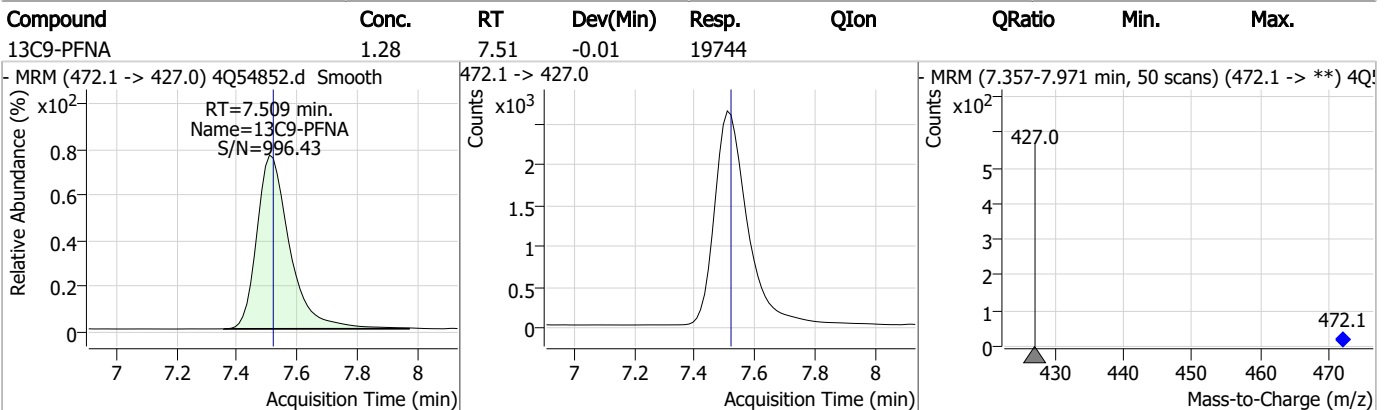
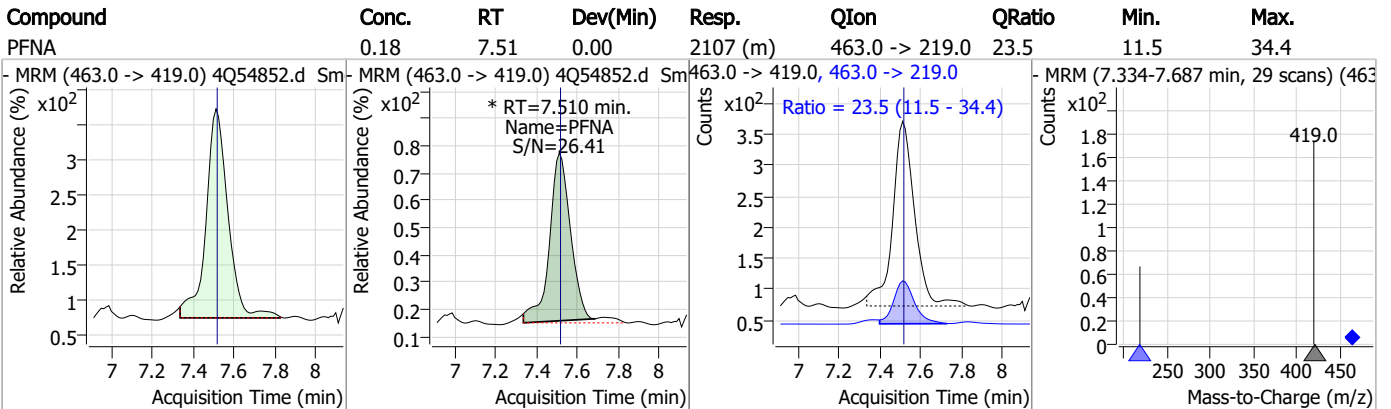
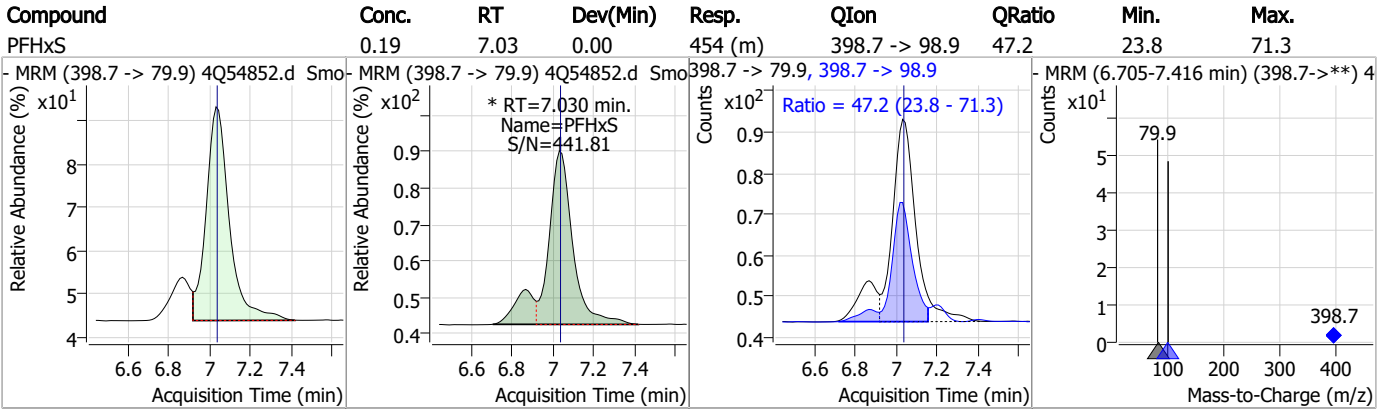
7.7.2

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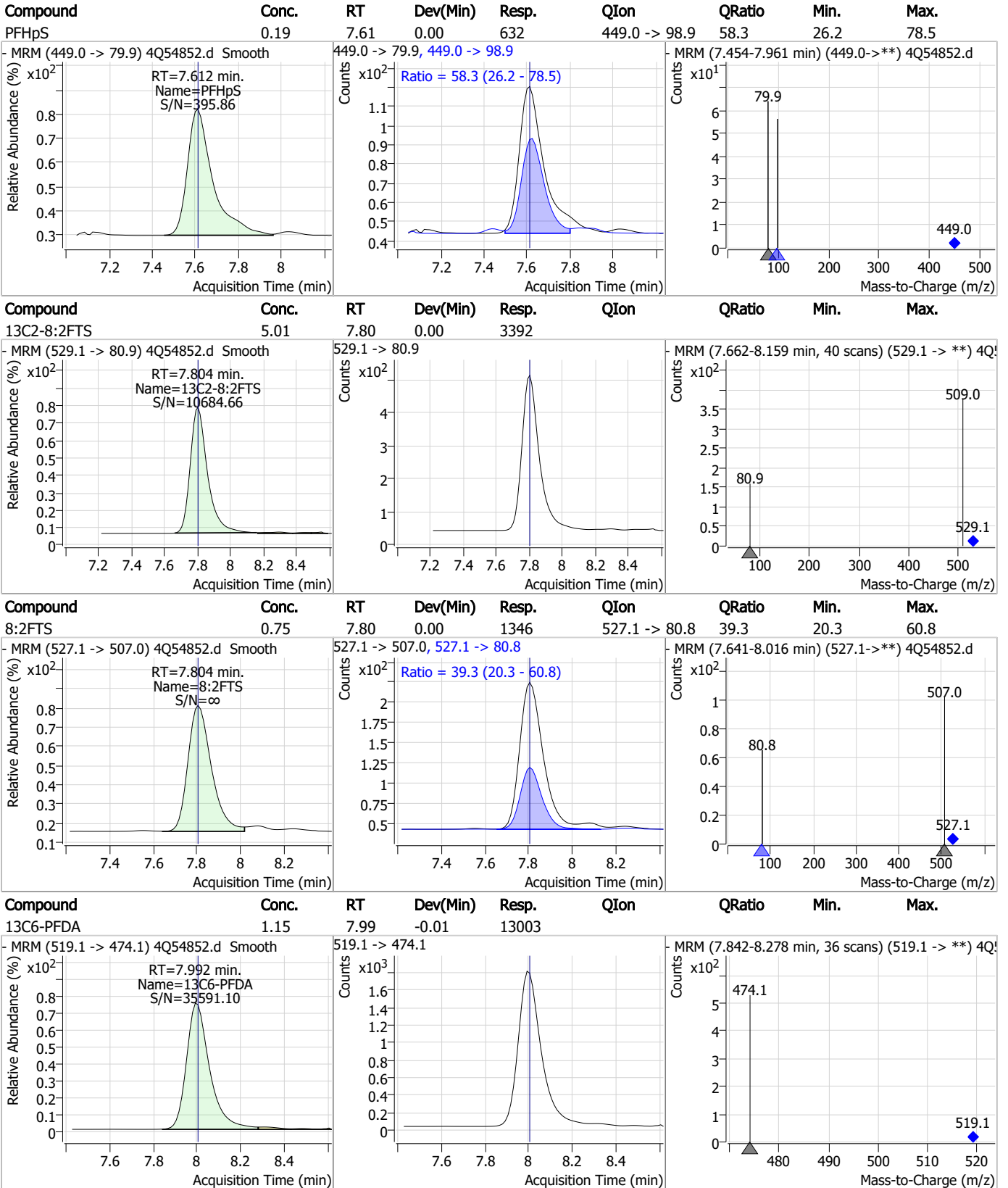
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



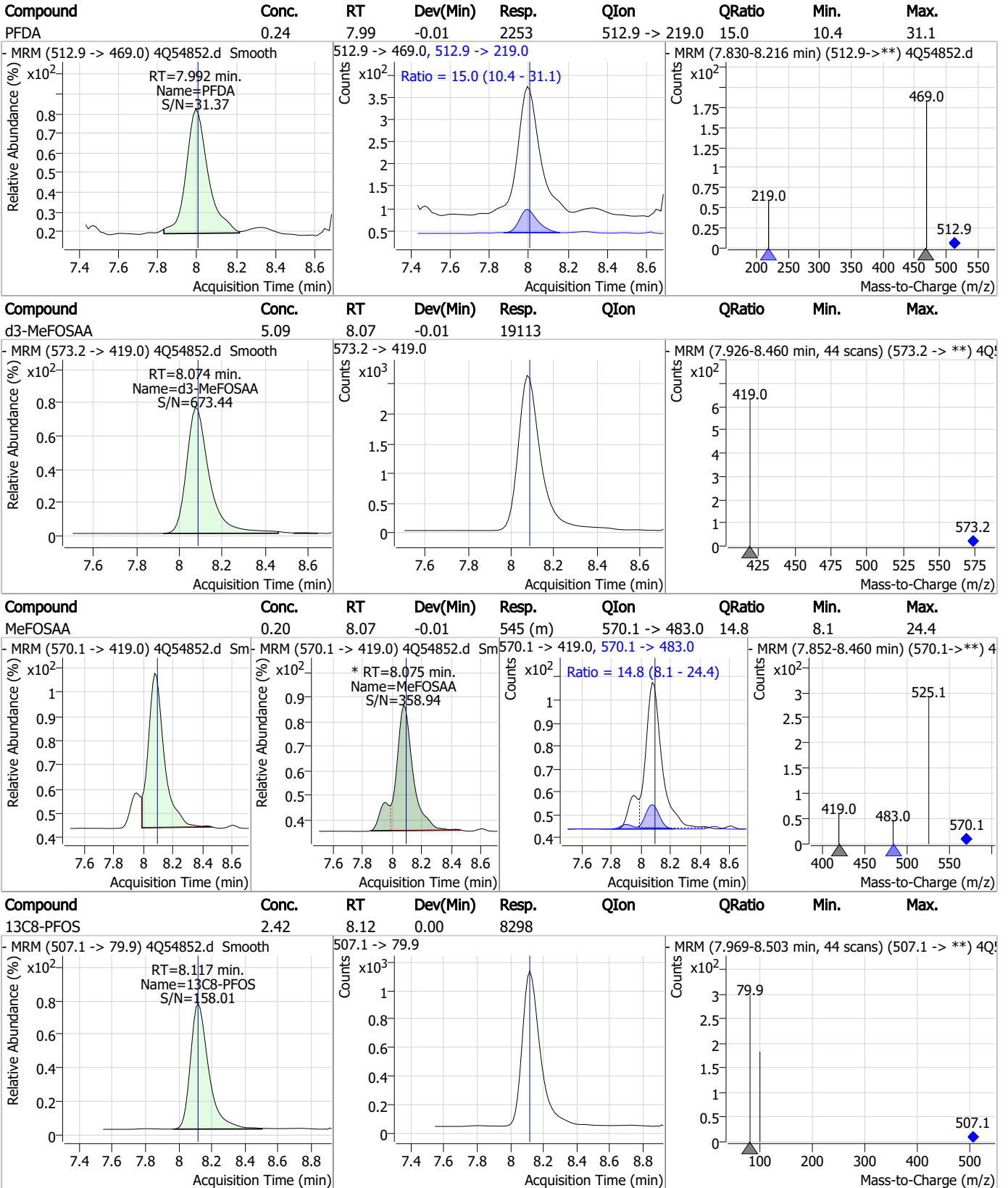
Perfluorinated Compounds by LC/MS/MS



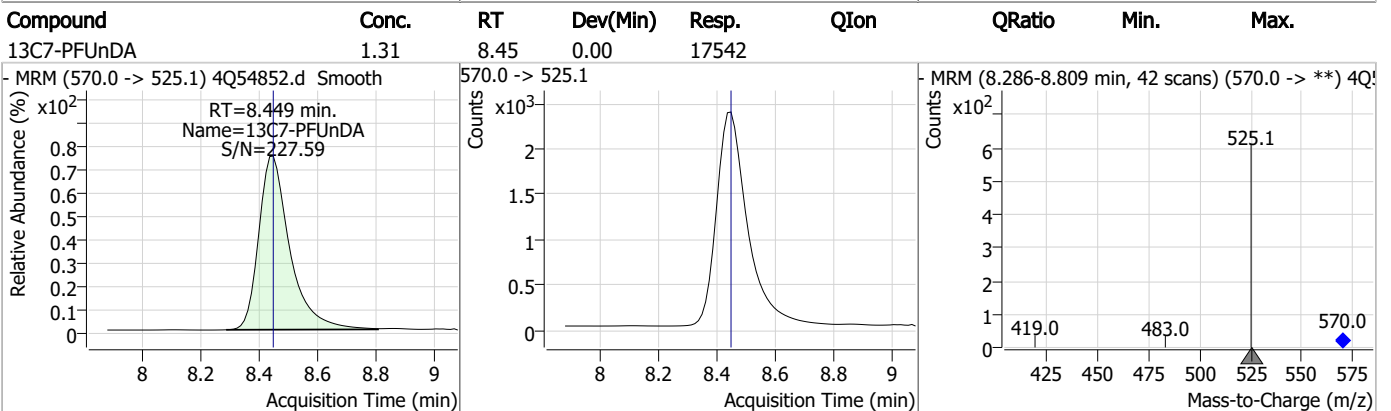
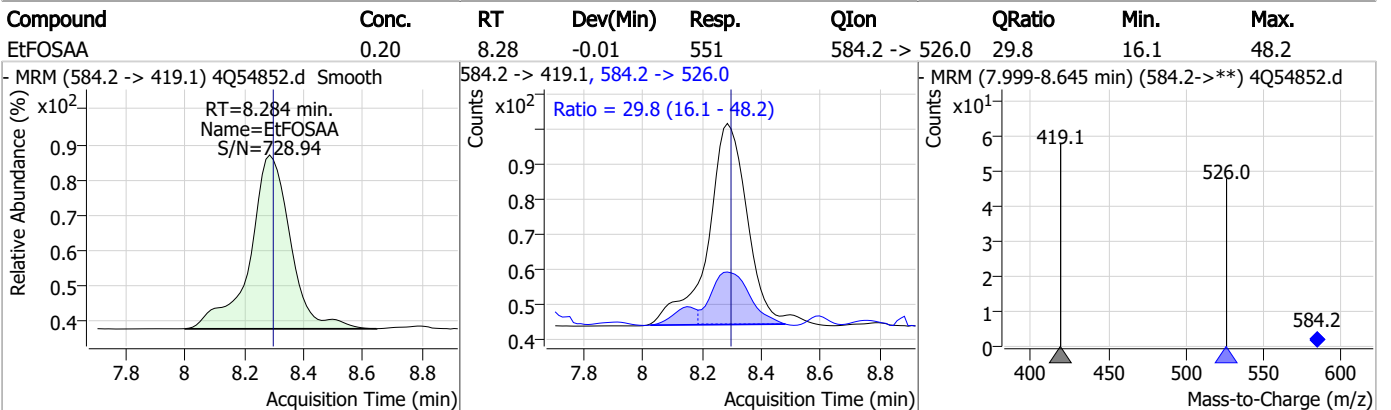
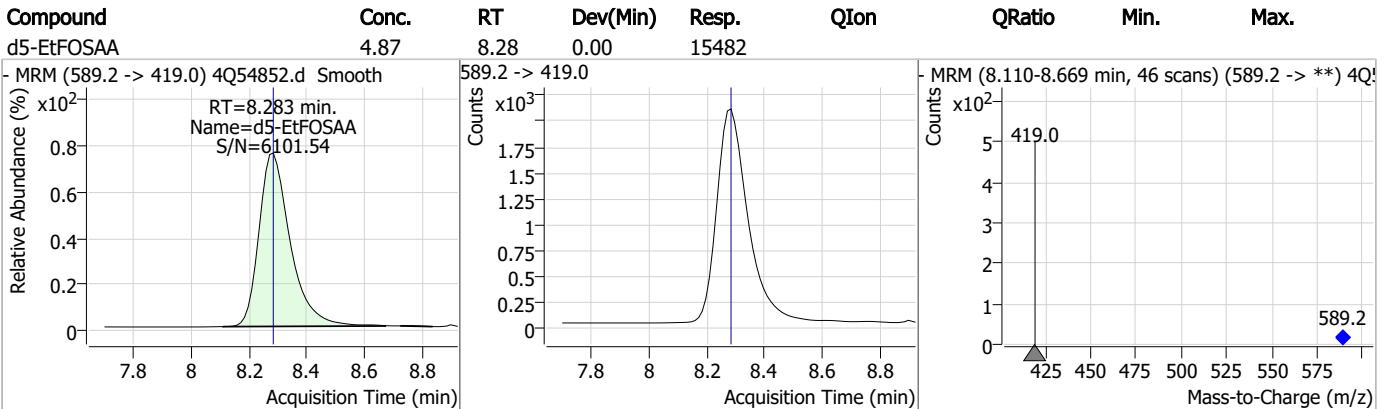
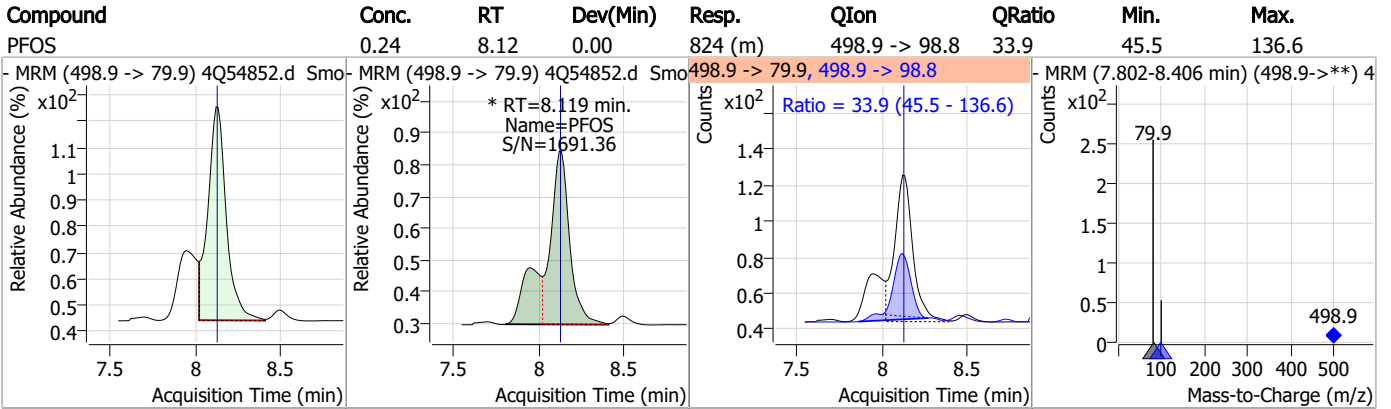
7.7.2

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Perfluorinated Compounds by LC/MS/MS



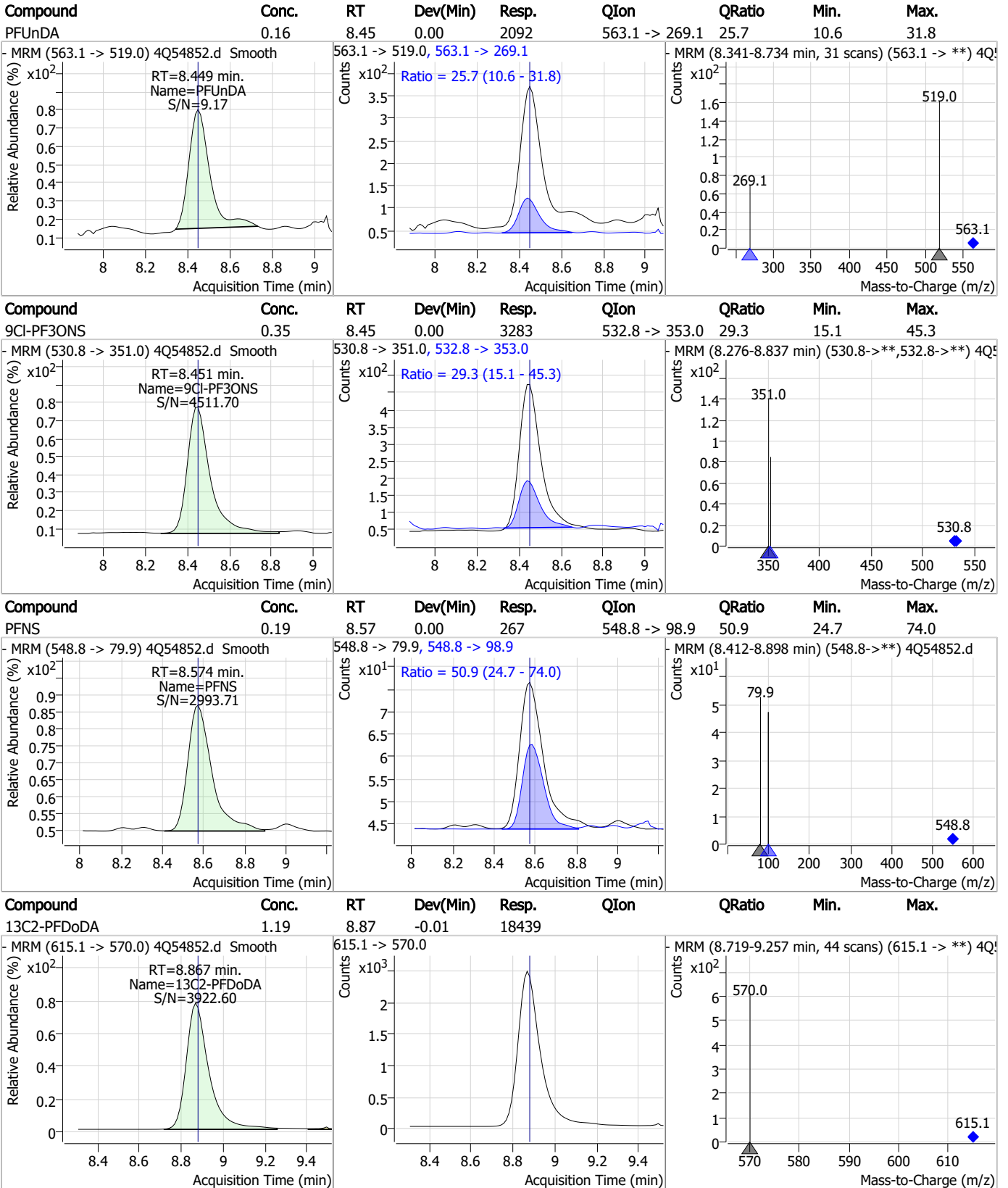
Perfluorinated Compounds by LC/MS/MS



7.7.2

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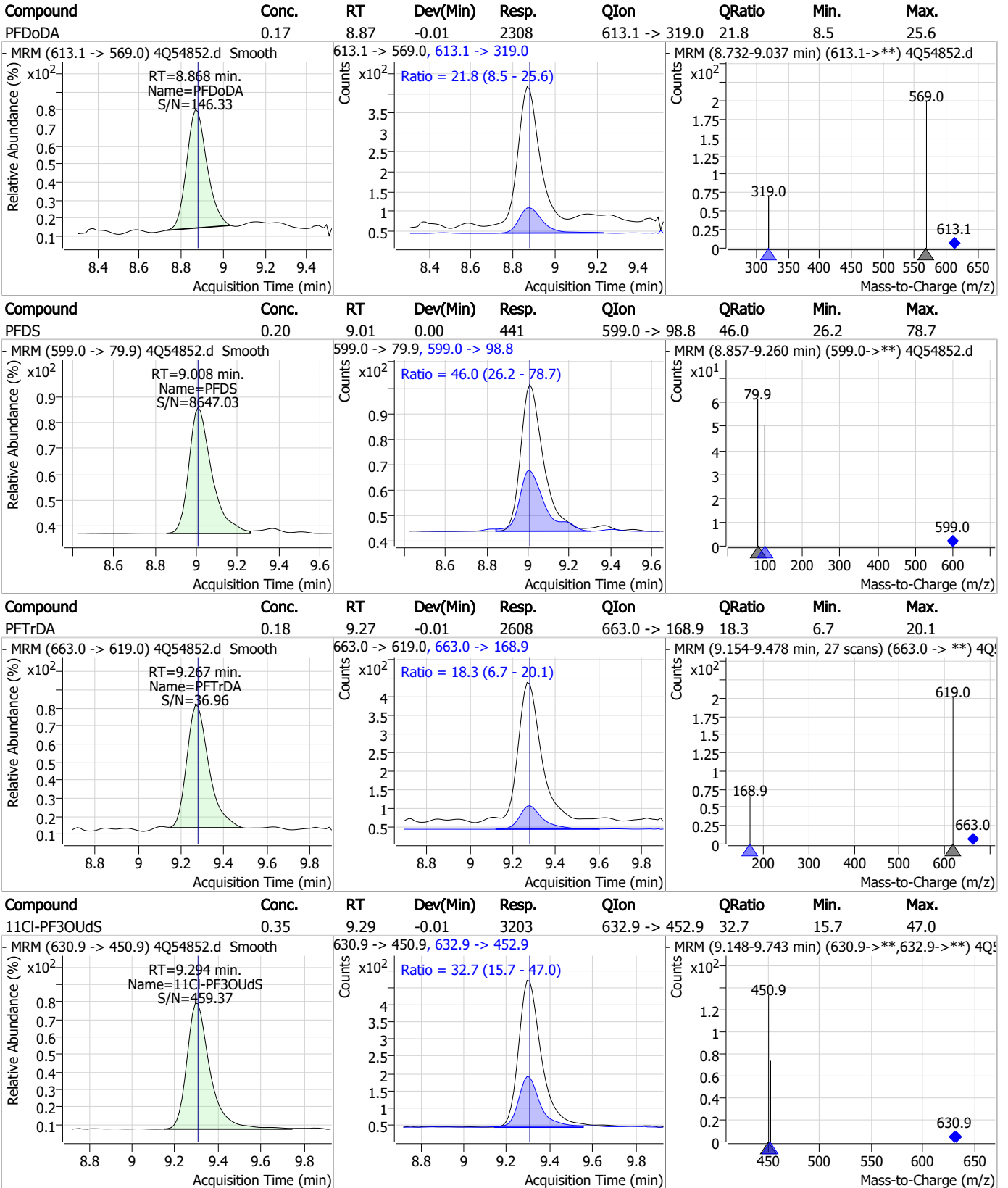
Perfluorinated Compounds by LC/MS/MS



7.7.2

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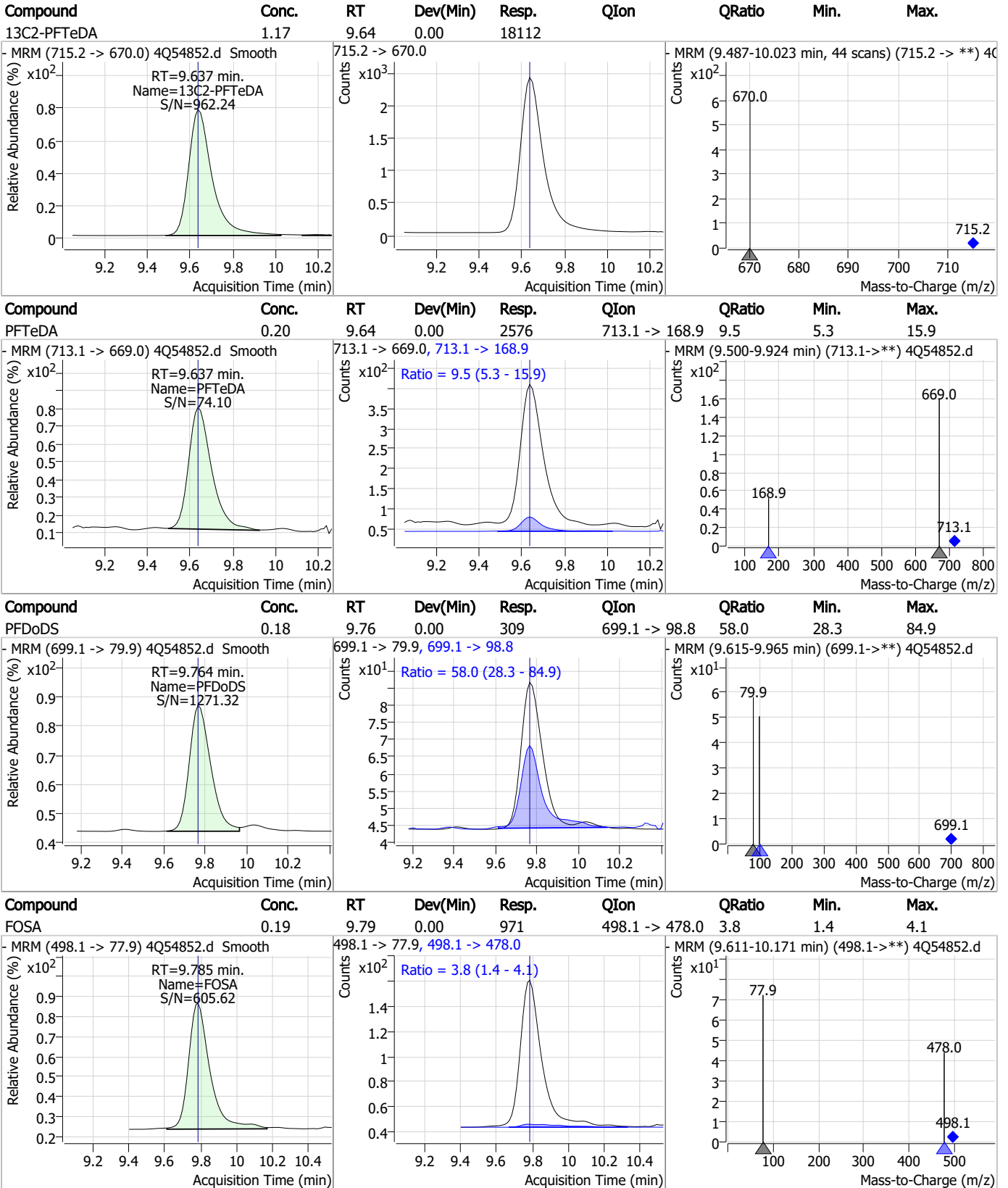
Perfluorinated Compounds by LC/MS/MS



7.7.2

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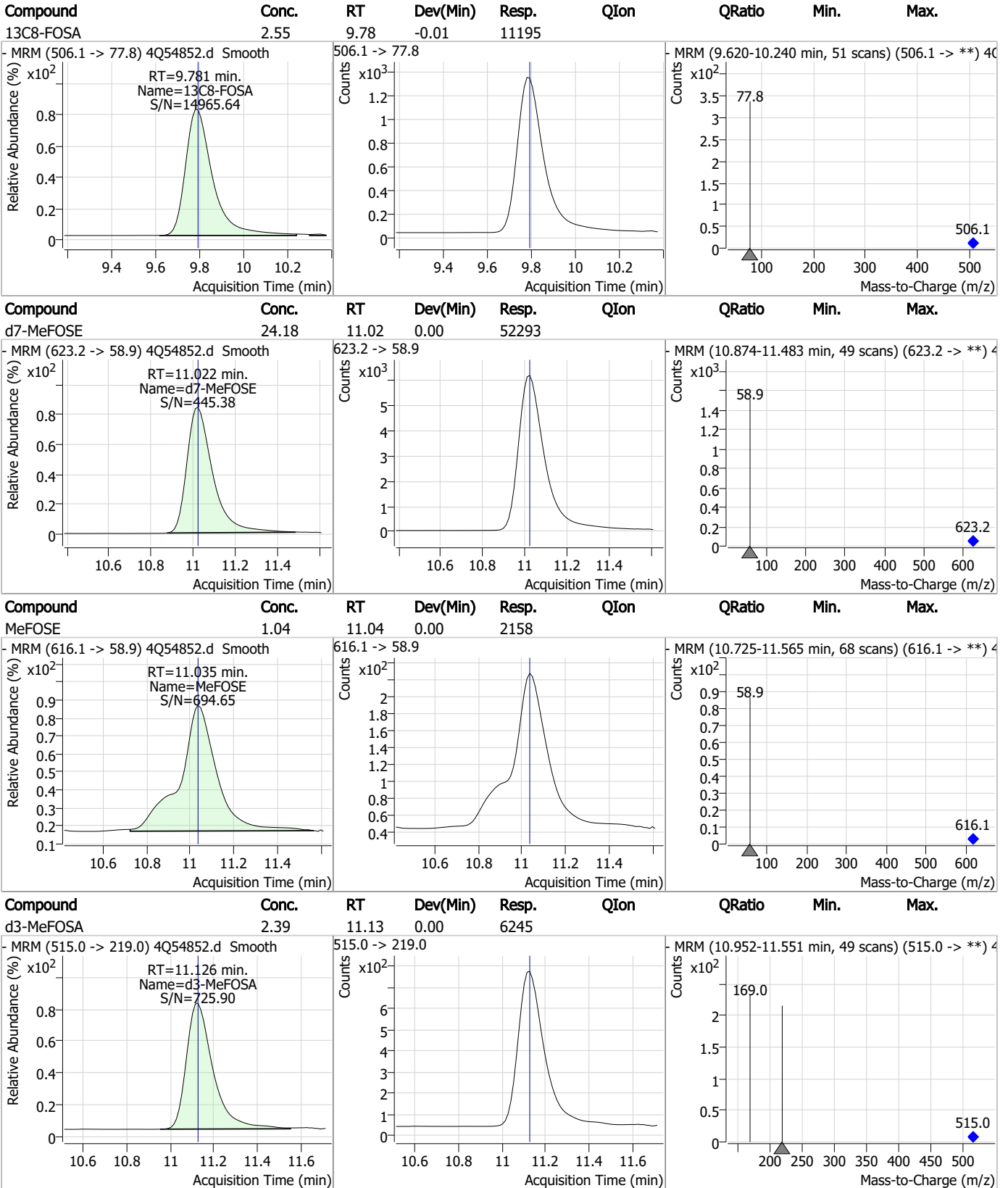
Perfluorinated Compounds by LC/MS/MS



7.7.2

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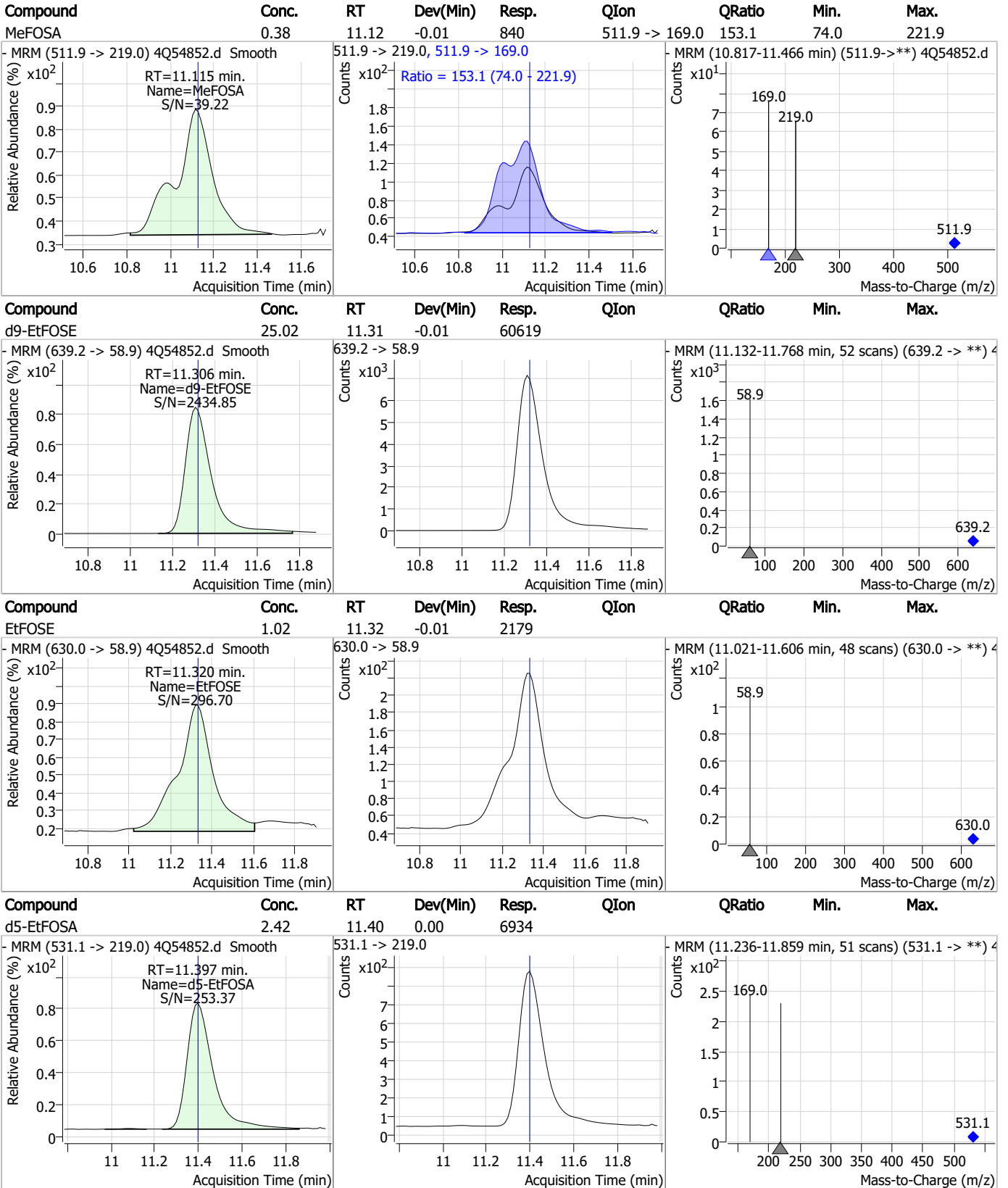
Perfluorinated Compounds by LC/MS/MS



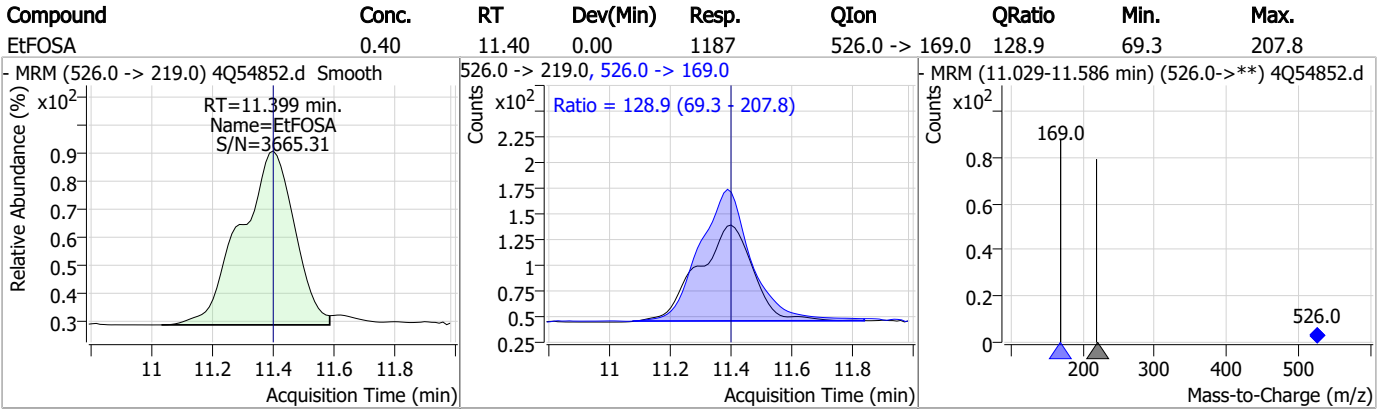
7.7.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.2

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Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54852.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 11:38 Supervisor approved: 12/11/23 15:42 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorononanoic acid	375-95-1		7.51	Poorly defined baseline
MeFOSAA	2355-31-9		8.07	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak

7.7.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54853.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 11:53:03 AM
 Sample Name : ic804-2
 Vial : P1-A3
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	98674	10.00 µg/L	0.012
M5-PFPeA	4.162	268.3 -> 223.0	41310	5.00 µg/L	0.000
M5-PFHxA	5.334	318.0 -> 273.0	33063	2.50 µg/L	0.000
M4-PFHpA	6.292	367.1 -> 322.0	32710	2.50 µg/L	0.000
M8-PFOA	6.976	421.1 -> 376.0	51954	2.50 µg/L	0.000
M9-PFNA	7.509	472.1 -> 427.0	20101	1.25 µg/L	-0.012
M6-PFDA	7.992	519.1 -> 474.1	14794	1.25 µg/L	-0.012
M7-PFUnDA	8.448	570.0 -> 525.1	18213	1.25 µg/L	0.000
M2-PFDoDA	8.880	615.1 -> 570.0	19768	1.25 µg/L	0.000
M2-PFTeDA	9.637	715.2 -> 670.0	18453	1.25 µg/L	0.000
M8-FOSA	9.794	506.1 -> 77.8	10756	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	9554	2.50 µg/L	0.013
M3-PFHxS	7.029	402.1 -> 79.9	7502	2.50 µg/L	0.000
M8-PFOS	8.117	507.1 -> 79.9	8684	2.50 µg/L	0.000
M2-4:2FTS	5.046	329.1 -> 80.9	1362	5.00 µg/L	0.000
M2-6:2FTS	6.748	429.1 -> 80.9	2855	5.00 µg/L	0.000
M2-8:2FTS	7.804	529.1 -> 80.9	3525	5.00 µg/L	0.000
M3-MeFOSAA	8.074	573.2 -> 419.0	20027	5.00 µg/L	-0.012
M3-HFPO-DA	5.689	286.9 -> 168.9	33471	10.00 µg/L	0.000
M5-EtFOSAA	8.283	589.2 -> 419.0	16617	5.00 µg/L	0.000
M7-MeFOSE	11.022	623.2 -> 58.9	57217	25.00 µg/L	0.000
M9-EtFOSE	11.306	639.2 -> 58.9	62397	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	7078	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6282	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	6596	2.50 µg/L	0.000
13C3-PFBA	2.678	216.0 -> 172.0	46375	5.00 µg/L	0.000
18O2-PFHxS	7.041	403.0 -> 83.9	4968	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	55132	2.50 µg/L	0.000
13C2-PFDA	7.992	515.1 -> 470.1	15765	1.25 µg/L	-0.012
13C5-PFNA	7.509	468.0 -> 423.0	21376	1.25 µg/L	0.000
13C2-PFHxA	5.335	315.1 -> 270.0	36612	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.046	329.1 -> 80.9	1362	5.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.5%		
13C2-6:2FTS	6.748	429.1 -> 80.9	2855	5.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3525	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-PFDoDA	8.880	615.1 -> 570.0	19768	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C2-PFTeDA	9.637	715.2 -> 670.0	18453	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C3-PFBS	5.202	302.1 -> 79.9	9554	2.51 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C3-PFHxS	7.029	402.1 -> 79.9	7502	2.41 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C4-PFBA	2.686	216.8 -> 171.9	98674	10.13 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C4-PFHpA	6.292	367.1 -> 322.0	32710	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C5-PFHxA	5.334	318.0 -> 273.0	33063	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C5-PFPeA	4.162	268.3 -> 223.0	41310	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C6-PFDA	7.992	519.1 -> 474.1	14794	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C7-PFUnDA	8.448	570.0 -> 525.1	18213	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C8-FOSA	9.794	506.1 -> 77.8	10756	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C8-PFOA	6.976	421.1 -> 376.0	51954	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C8-PFOS	8.117	507.1 -> 79.9	8684	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C9-PFNA	7.509	472.1 -> 427.0	20101	1.17 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.9%		
d3-MeFOSAA	8.074	573.2 -> 419.0	20027	5.47 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.4%		
13C3-HFPO-DA	5.689	286.9 -> 168.9	33471	9.93 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
d3-MeFOSA	11.126	515.0 -> 219.0	6282	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
d5-EtFOSAA	8.283	589.2 -> 419.0	16617	5.36 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.3%		
d7-MeFOSE	11.022	623.2 -> 58.9	57217	27.13 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 108.5%		
d9-EtFOSE	11.306	639.2 -> 58.9	62397	26.42 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 105.7%		
d5-EtFOSA	11.397	531.1 -> 219.0	7078	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
Target Compounds					QValue
4:2FTS	5.047	327.1 -> 307.0	2828	1.21 µg/L	97
		327.1 -> 80.9	1270		
6:2FTS	6.749	427.1 -> 407.0	3697	1.23 µg/L	92
		427.1 -> 80.9	1539		
8:2FTS	7.804	527.1 -> 507.0	2843	1.53 µg/L	95
		527.1 -> 80.8	1244		
EtFOSAA	8.284	584.2 -> 419.1	1039	0.34 µg/L	m 74
		584.2 -> 526.0	486		
FOSA	9.785	498.1 -> 77.9	1823	0.38 µg/L	98
		498.1 -> 478.0	66		
MeFOSAA	8.075	570.1 -> 419.0	1107	0.39 µg/L	m 81
		570.1 -> 483.0	270		
PFBA	2.682	212.8 -> 168.9	4195	1.33 µg/L	100
PFBS	5.191	298.7 -> 79.9	953	0.32 µg/L	94
		298.7 -> 98.8	349		
PFDA	7.992	512.9 -> 469.0	3570	0.33 µg/L	98
		512.9 -> 219.0	710		
PFDODA	8.880	613.1 -> 569.0	5102	0.36 µg/L	98
		613.1 -> 319.0	920		
PFDS	9.008	599.0 -> 79.9	691	0.30 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	374			
PFHpA	6.293	363.1 -> 319.0	5834	0.32	µg/L	95
		363.1 -> 169.0	1200			
PFHpS	7.612	449.0 -> 79.9	1048	0.30	µg/L	93
		449.0 -> 98.9	596			
PFHxA	5.337	313.0 -> 269.0	3707	0.35	µg/L	99
		313.0 -> 118.9	113			
PFHxS	7.043	398.7 -> 79.9	813	0.34	µg/L	m 95
		398.7 -> 98.9	413			
PFNA	7.510	463.0 -> 419.0	4078	0.35	µg/L	91
		463.0 -> 219.0	1113			
PFNS	8.586	548.8 -> 79.9	543	0.37	µg/L	75
		548.8 -> 98.9	360			
PFOA	6.978	413.0 -> 369.0	7947	0.37	µg/L	99
		413.0 -> 169.0	1760			
PFOS	8.106	498.9 -> 79.9	1267	0.35	µg/L	m 55
		498.9 -> 98.8	611			
PFPeA	4.164	263.0 -> 219.0	5556	0.68	µg/L	100
PFPeS	6.282	349.1 -> 79.9	721	0.32	µg/L	87
		349.1 -> 98.9	363			
PFTeDA	9.637	713.1 -> 669.0	4684	0.36	µg/L	99
		713.1 -> 168.9	509			
PFTrDA	9.279	663.0 -> 619.0	5328	0.34	µg/L	100
		663.0 -> 168.9	721			
PFUnDA	8.449	563.1 -> 519.0	4502	0.34	µg/L	98
		563.1 -> 269.1	916			
11Cl-PF3OUdS	9.294	630.9 -> 450.9	5803	0.63	µg/L	99
		632.9 -> 452.9	1772			
9Cl-PF3ONS	8.451	530.8 -> 351.0	6403	0.69	µg/L	96
		532.8 -> 353.0	1812			
ADONA	6.556	376.9 -> 250.9	16007	0.71	µg/L	100
		376.9 -> 84.8	3845			
HFPO-DA	5.690	284.9 -> 168.9	2124	0.66	µg/L	98
		284.9 -> 184.9	214			
3:3FTCA	3.617	241.0 -> 177.0	834	1.66	µg/L	100
		241.0 -> 117.0	75			
5:3FTCA	6.008	341.0 -> 237.1	16299	8.66	µg/L	96
		341.0 -> 217.0	11080			
7:3FTCA	7.536	441.0 -> 316.9	8481	8.59	µg/L	97
		441.0 -> 336.9	20535			
EtFOSA	11.399	526.0 -> 219.0	2130	0.71	µg/L	99
		526.0 -> 169.0	2984			
EtFOSE	11.320	630.0 -> 58.9	3750	1.70	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	1649	0.74	µg/L	97
		511.9 -> 169.0	2369			
MeFOSE	11.035	616.1 -> 58.9	3777	1.66	µg/L	100
PFDoDS	9.764	699.1 -> 79.9	585	0.33	µg/L	91
		699.1 -> 98.8	368			
NFDHA	5.216	295.0 -> 201.0	640	0.86	µg/L	84
		295.0 -> 84.9	116			
PFMBA	4.566	279.0 -> 85.1	3043	0.68	µg/L	100
PFMPA	3.315	229.0 -> 84.9	3392	0.69	µg/L	100
PFEESA	5.722	314.8 -> 134.9	4832	0.62	µg/L	99
		314.8 -> 82.9	179			

= Qualifier out of range, m = manually integrated, + = Area summed

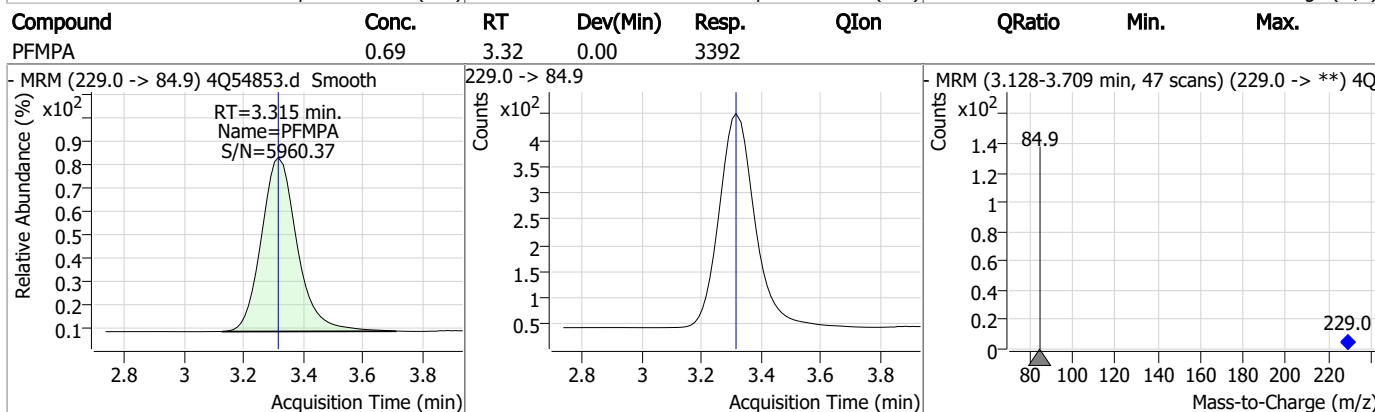
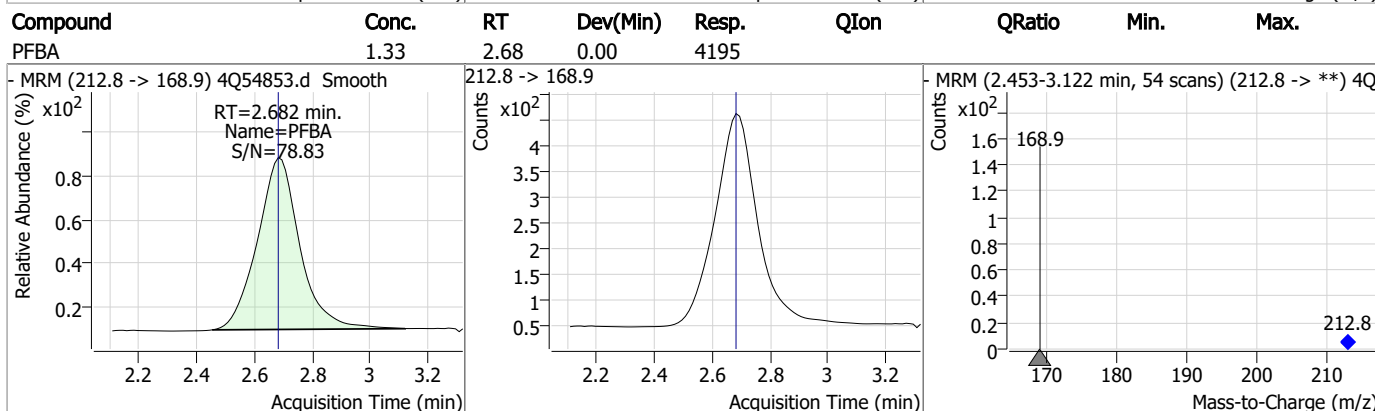
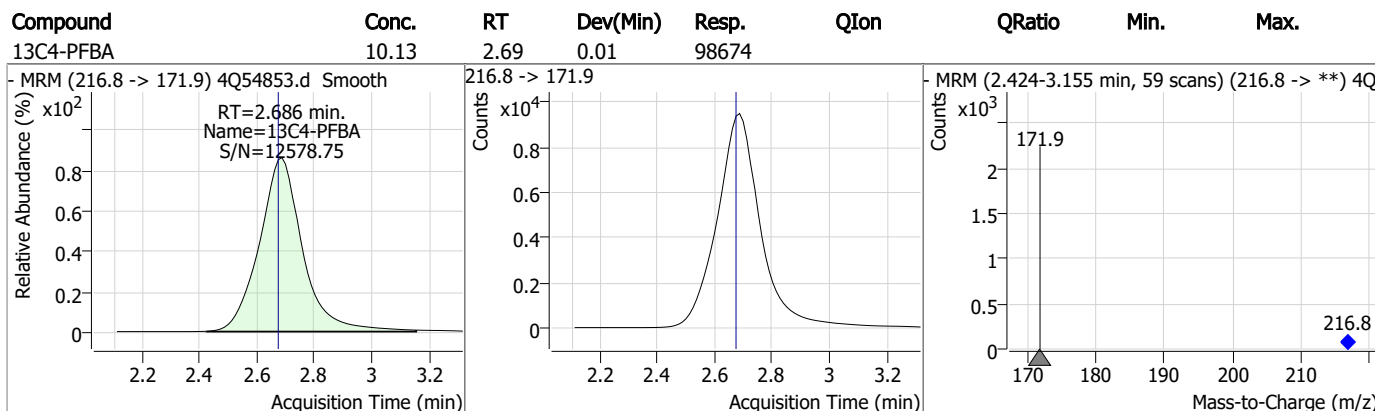
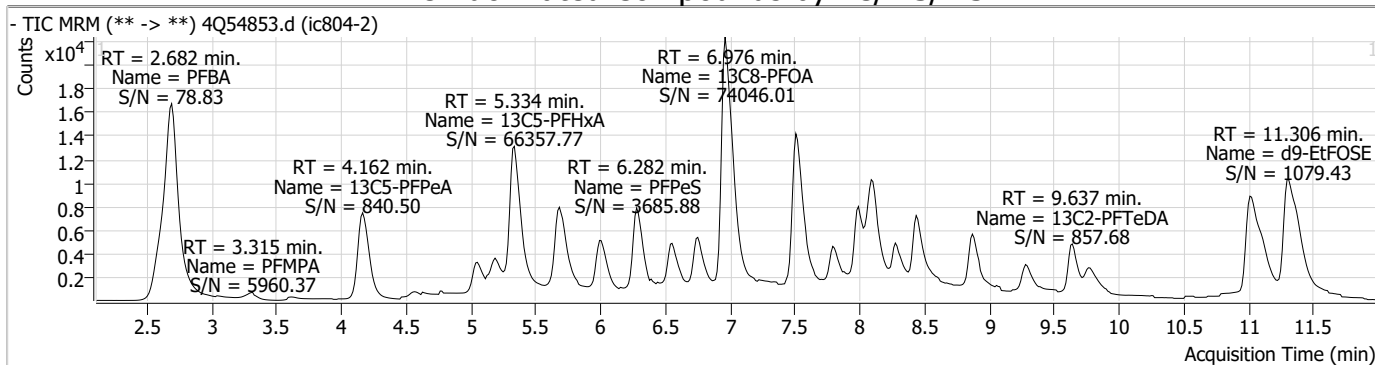
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.3

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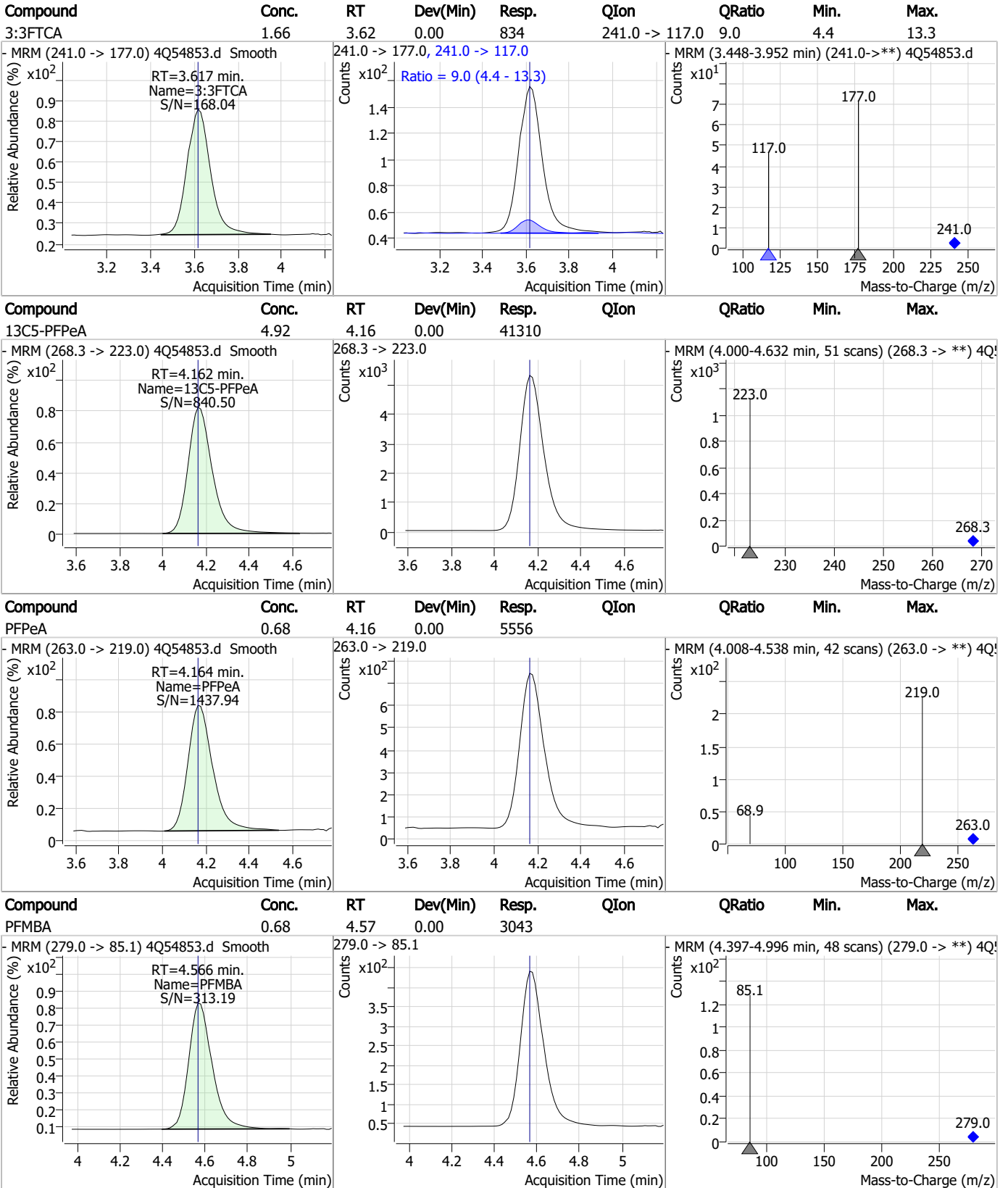
Perfluorinated Compounds by LC/MS/MS



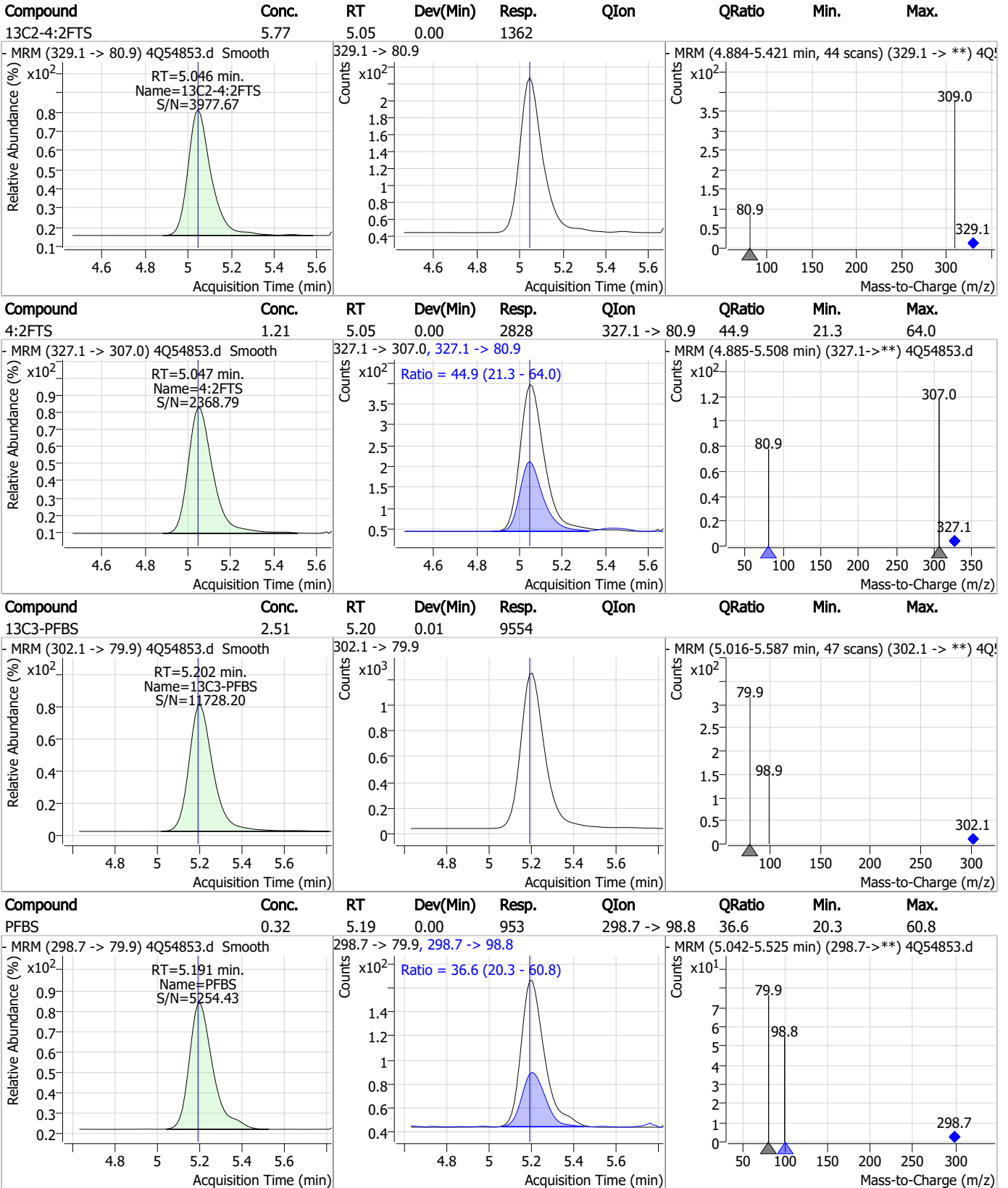
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

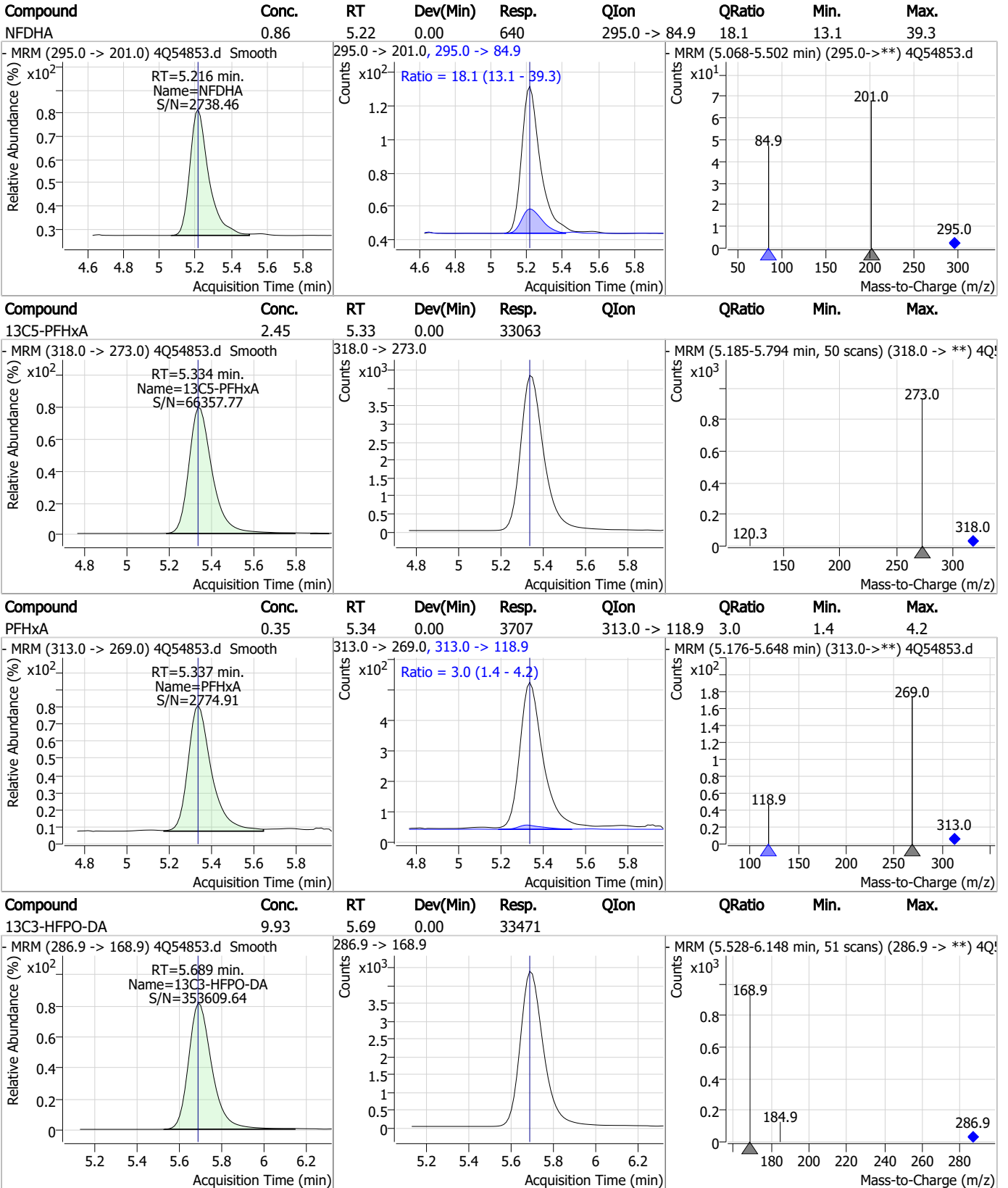


7.7.3

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Perfluorinated Compounds by LC/MS/MS

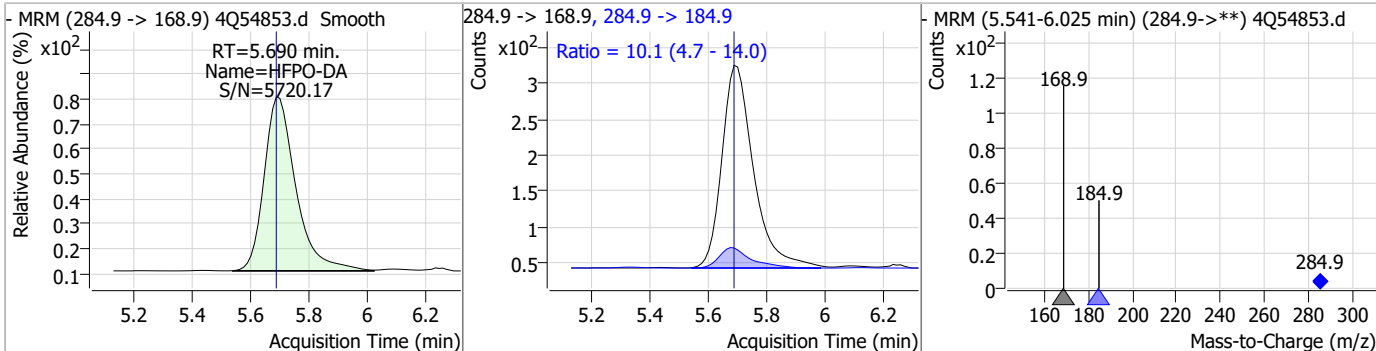


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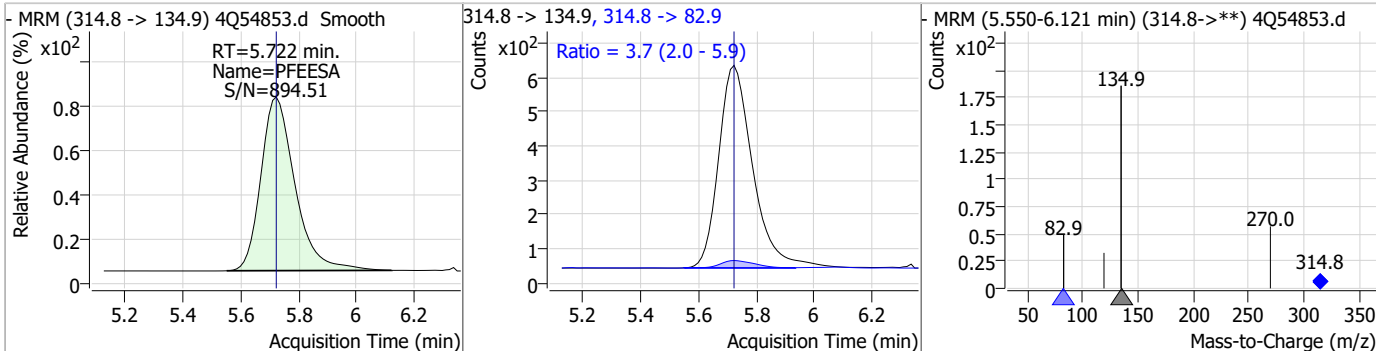
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Perfluorinated Compounds by LC/MS/MS

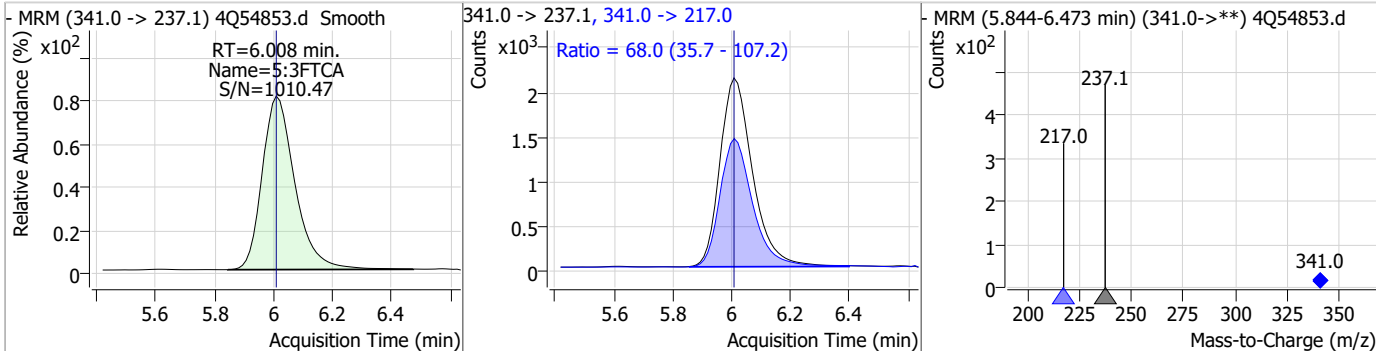
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.66	5.69	0.00	2124	284.9 -> 184.9	10.1	4.7	14.0



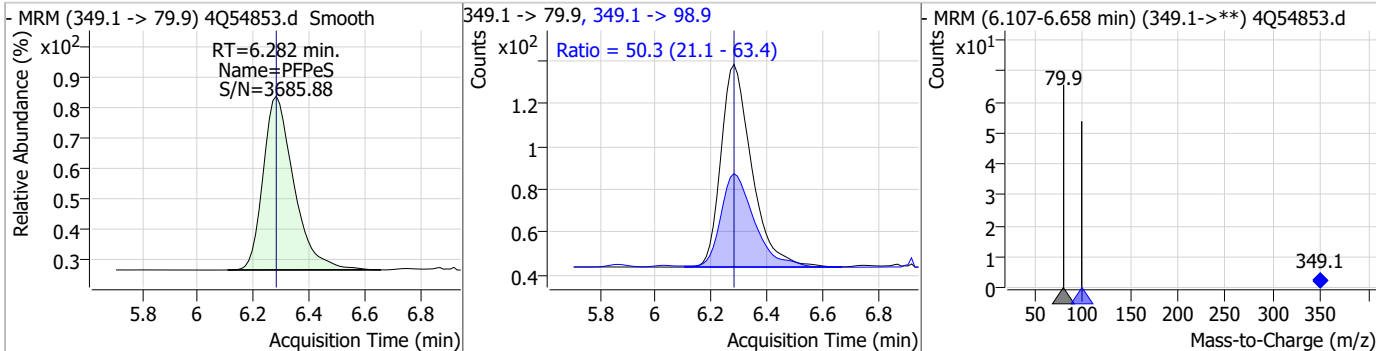
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.62	5.72	0.00	4832	314.8 -> 82.9	3.7	2.0	5.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	8.66	6.01	0.00	16299	341.0 -> 217.0	68.0	35.7	107.2

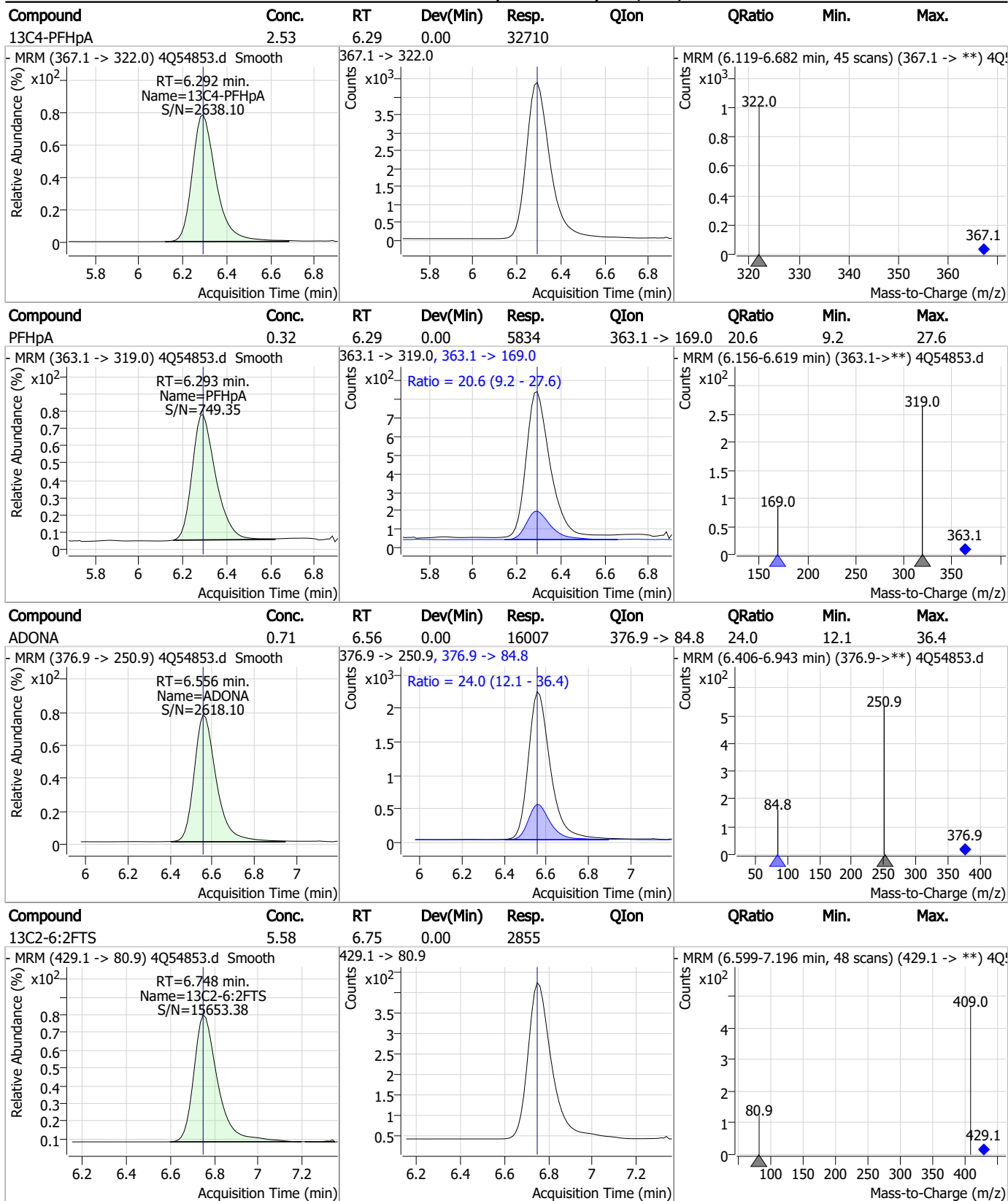


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.32	6.28	0.00	721	349.1 -> 98.9	50.3	21.1	63.4



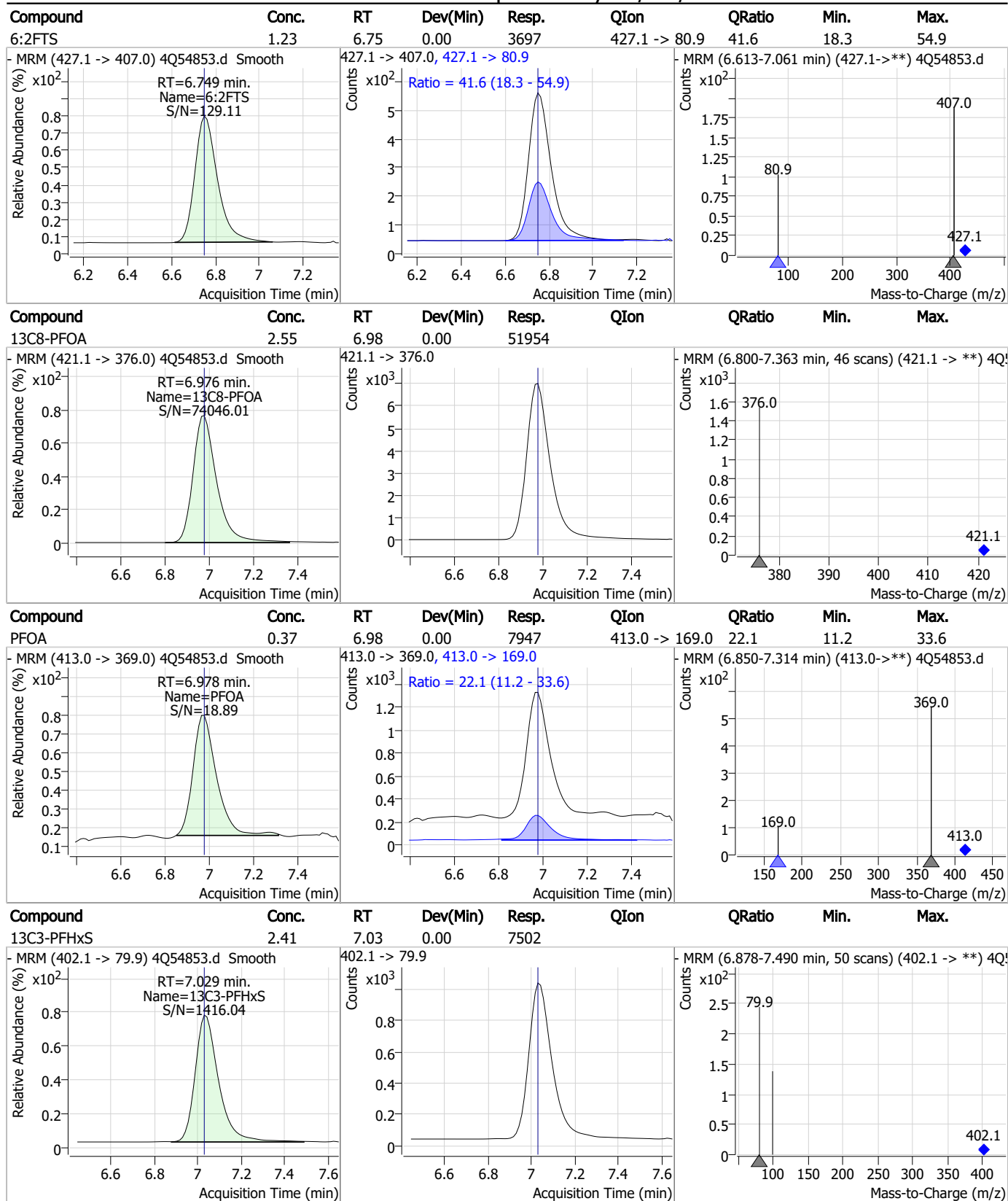
7.7.3
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Perfluorinated Compounds by LC/MS/MS



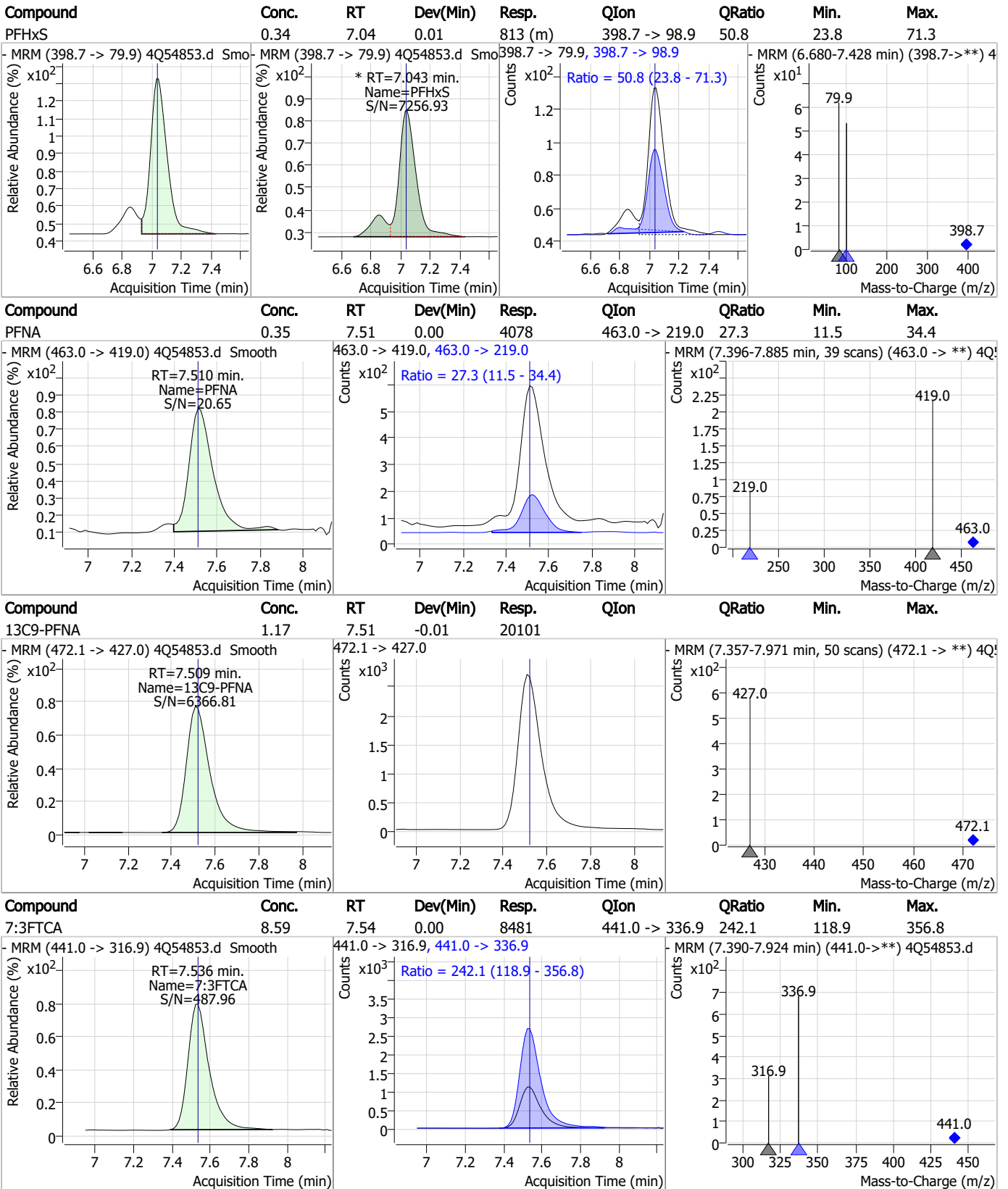
7.7.3
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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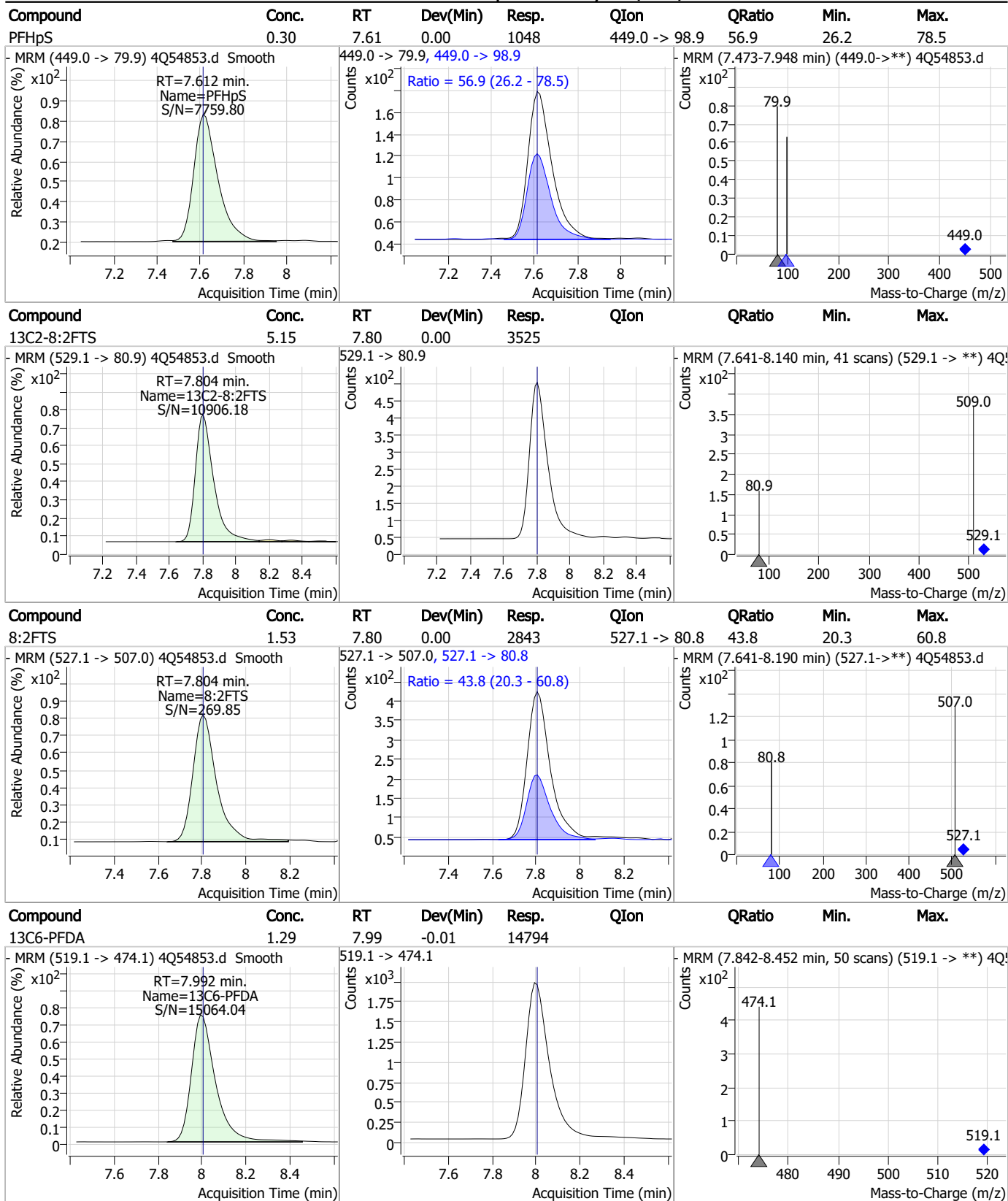
Perfluorinated Compounds by LC/MS/MS



7.7.3

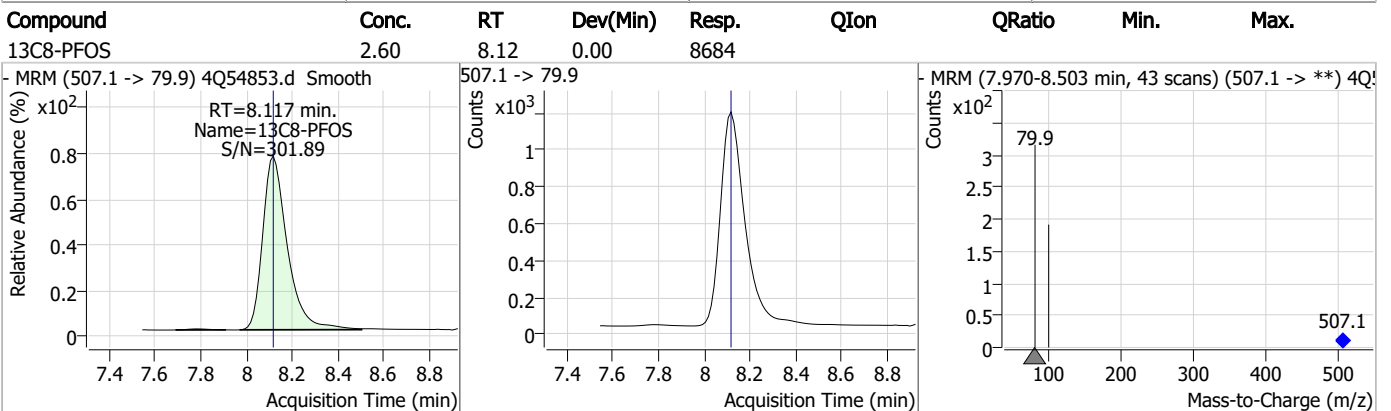
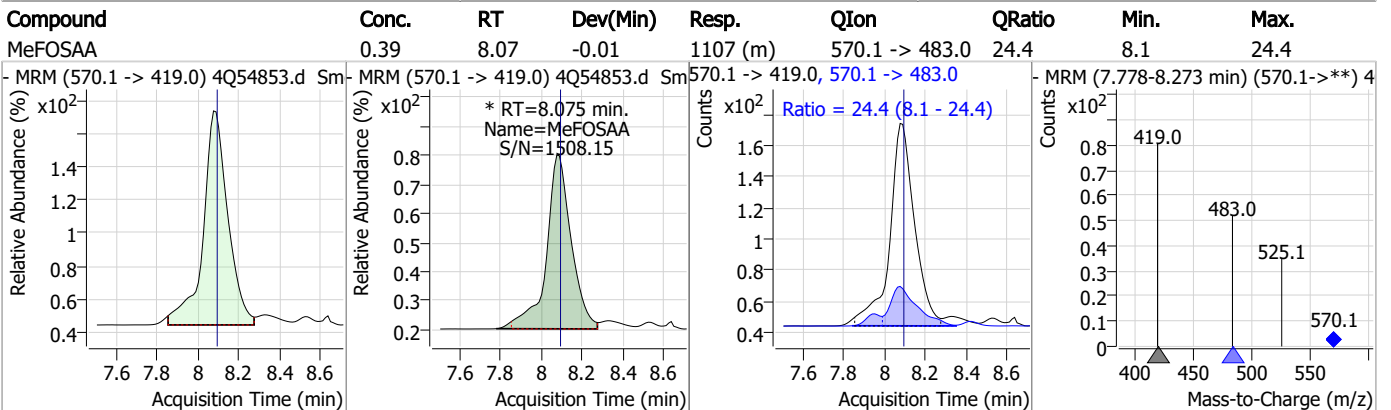
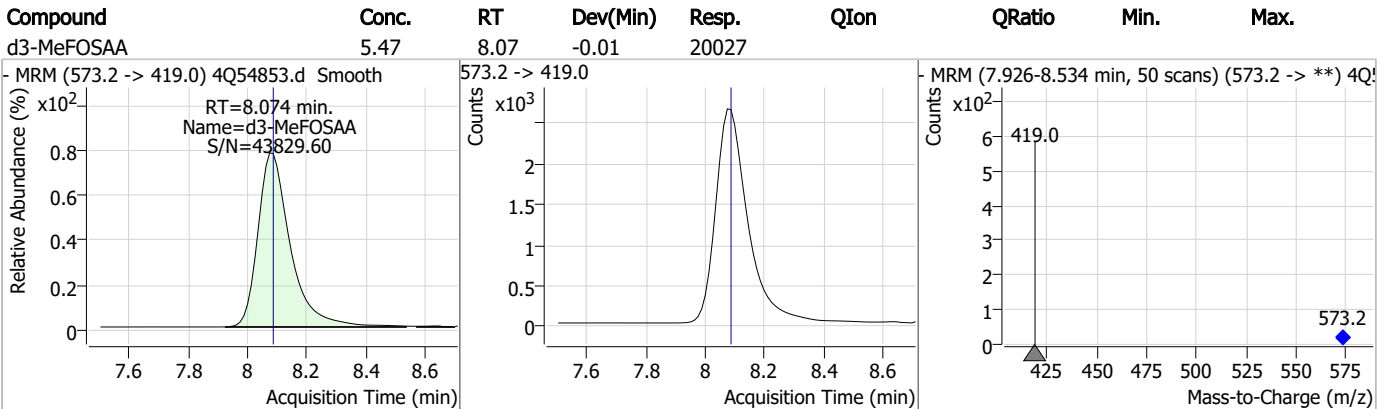
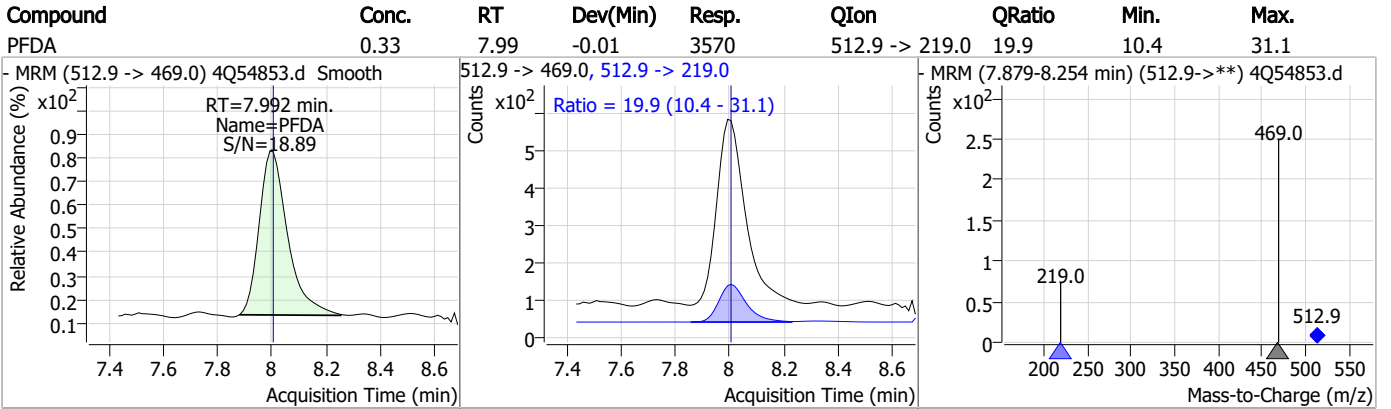
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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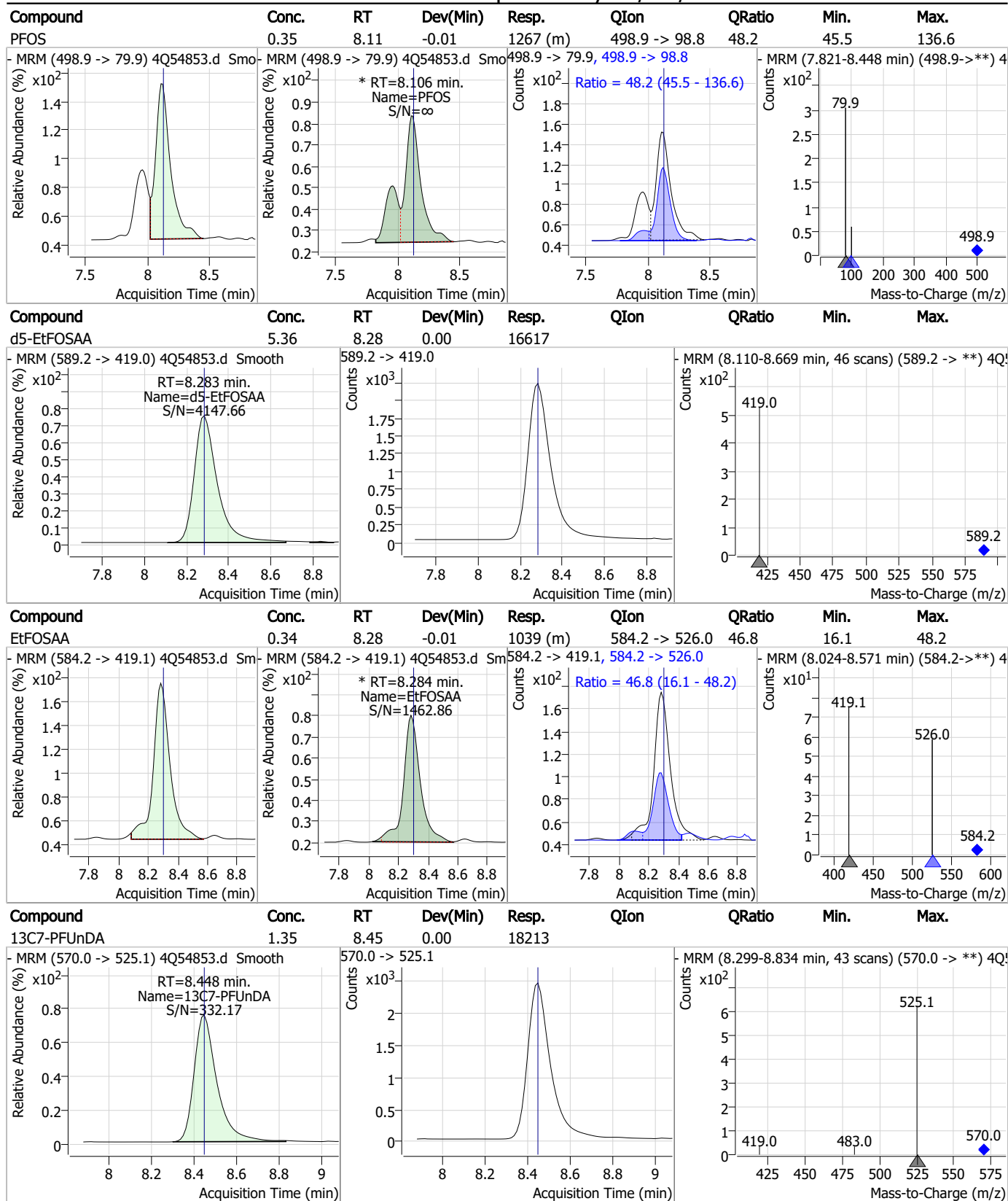
Perfluorinated Compounds by LC/MS/MS



7.7.3

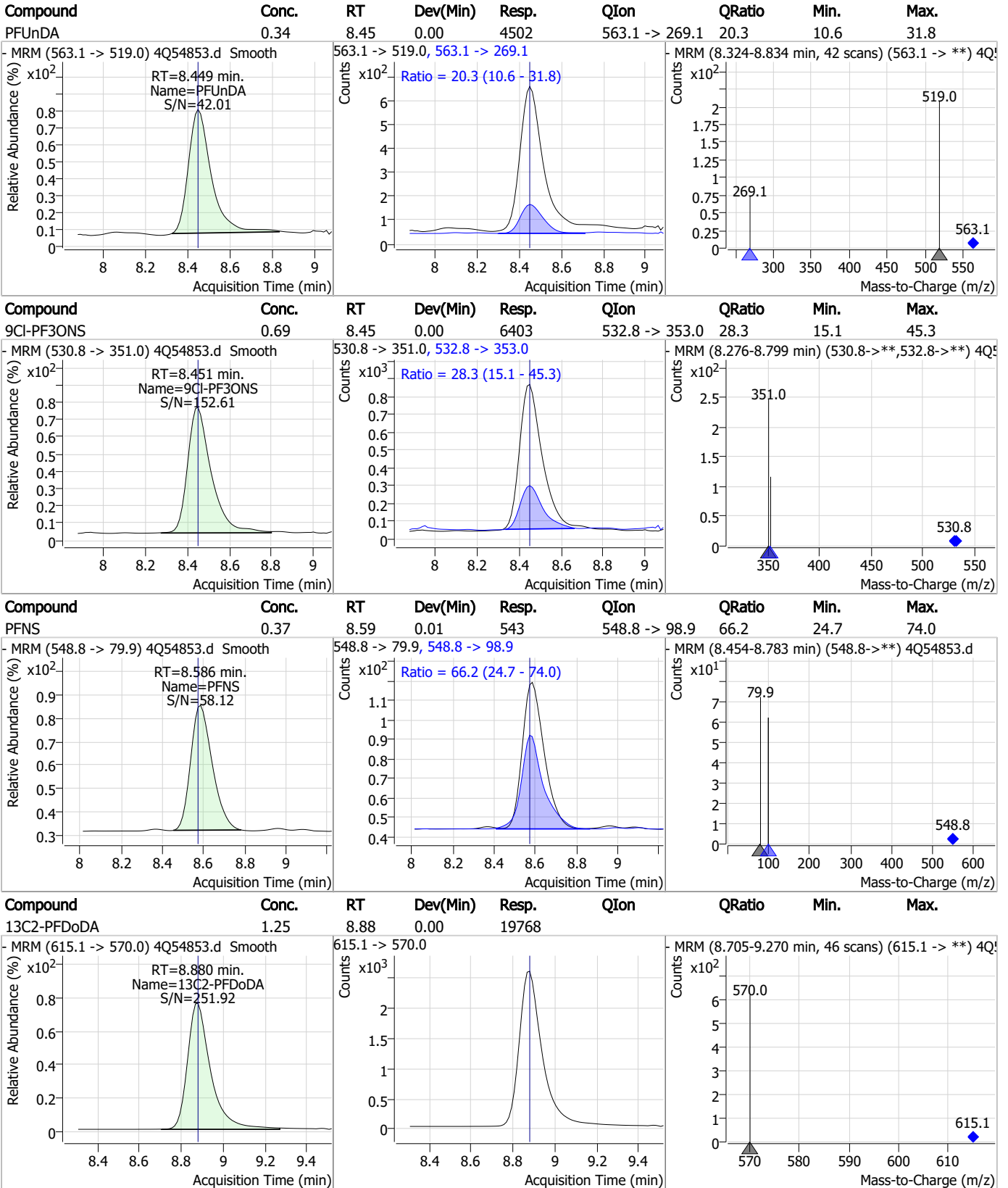
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Perfluorinated Compounds by LC/MS/MS



7.7.3
7

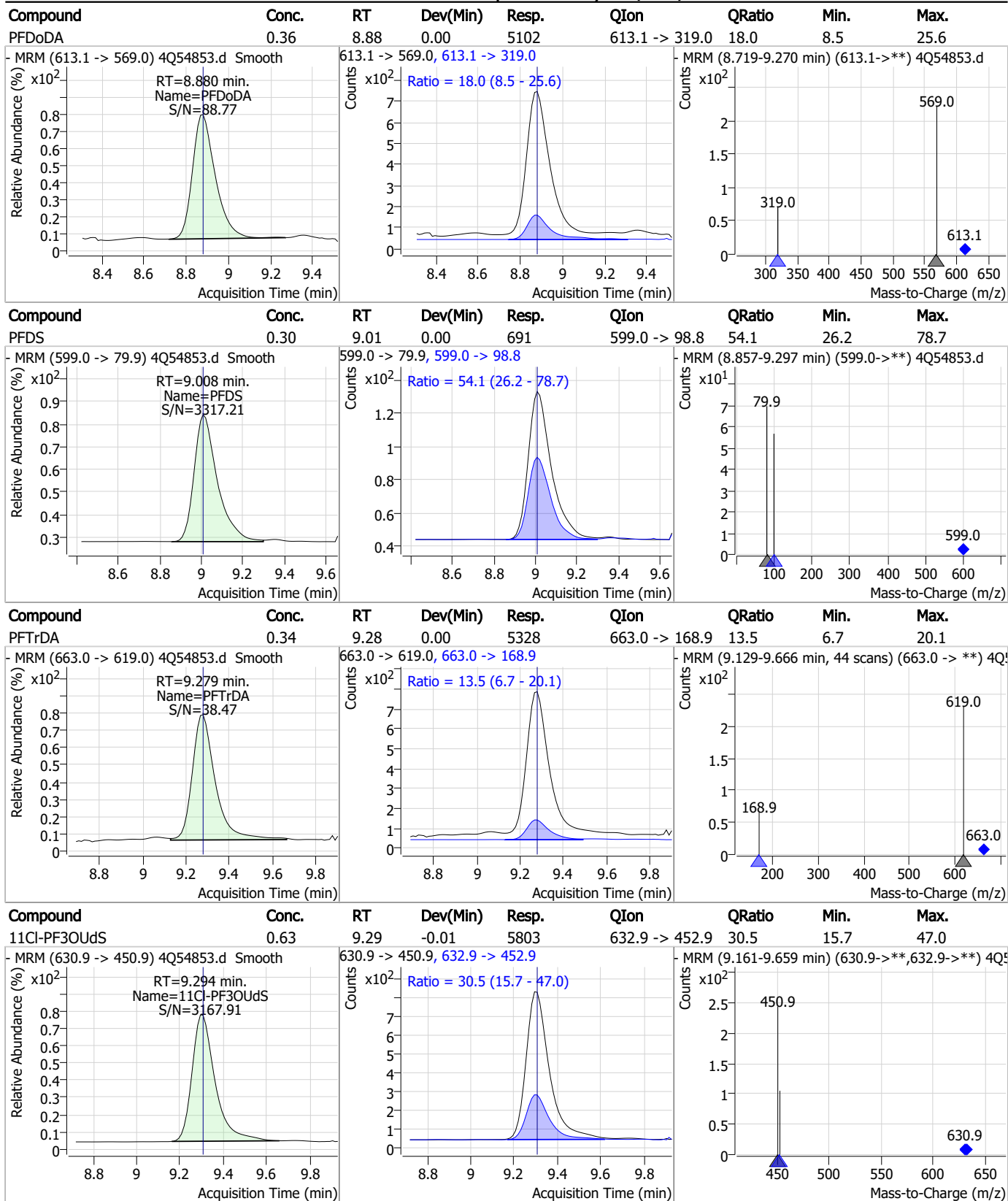
Perfluorinated Compounds by LC/MS/MS



7.7.3

7

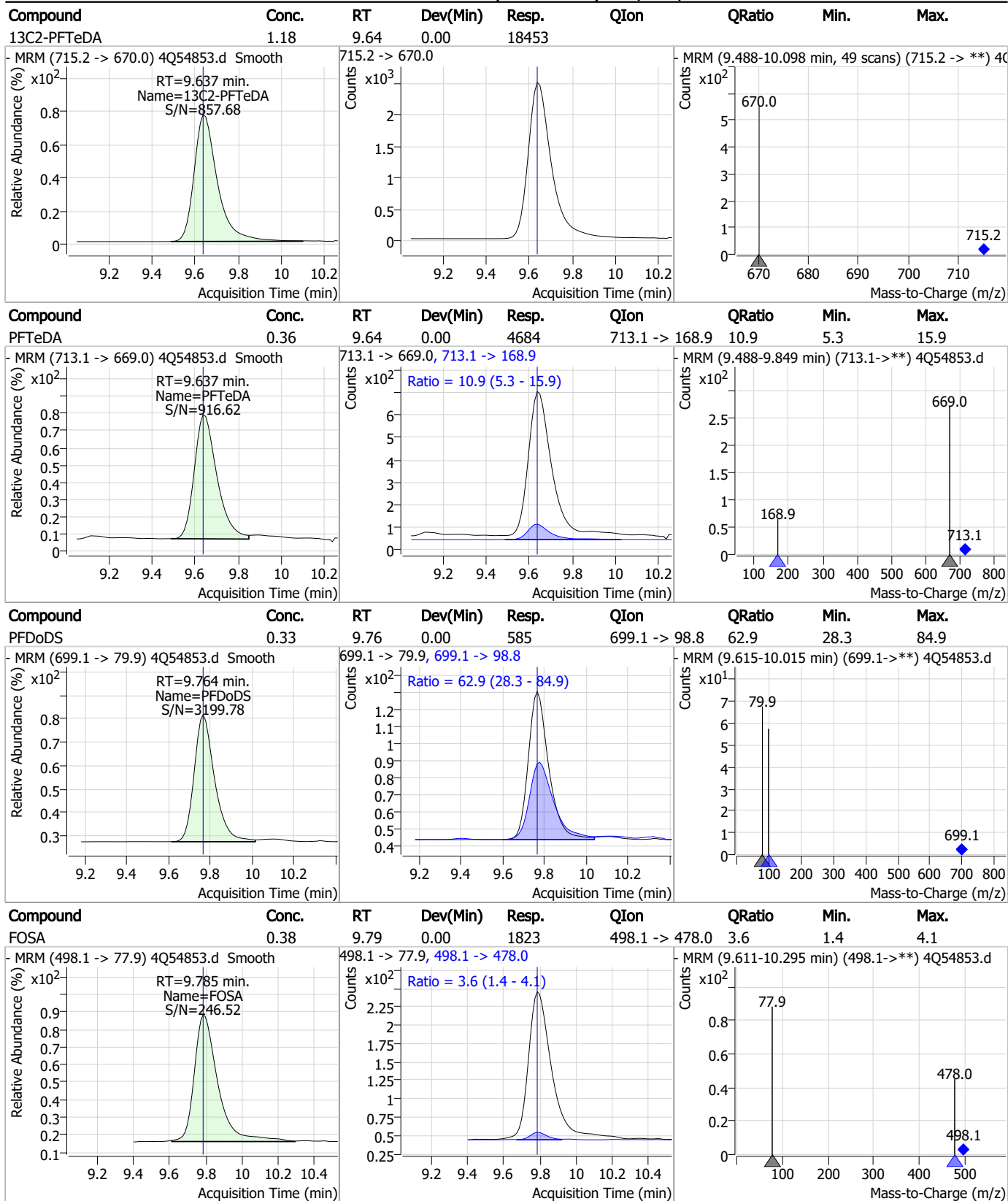
Perfluorinated Compounds by LC/MS/MS



7.7.3

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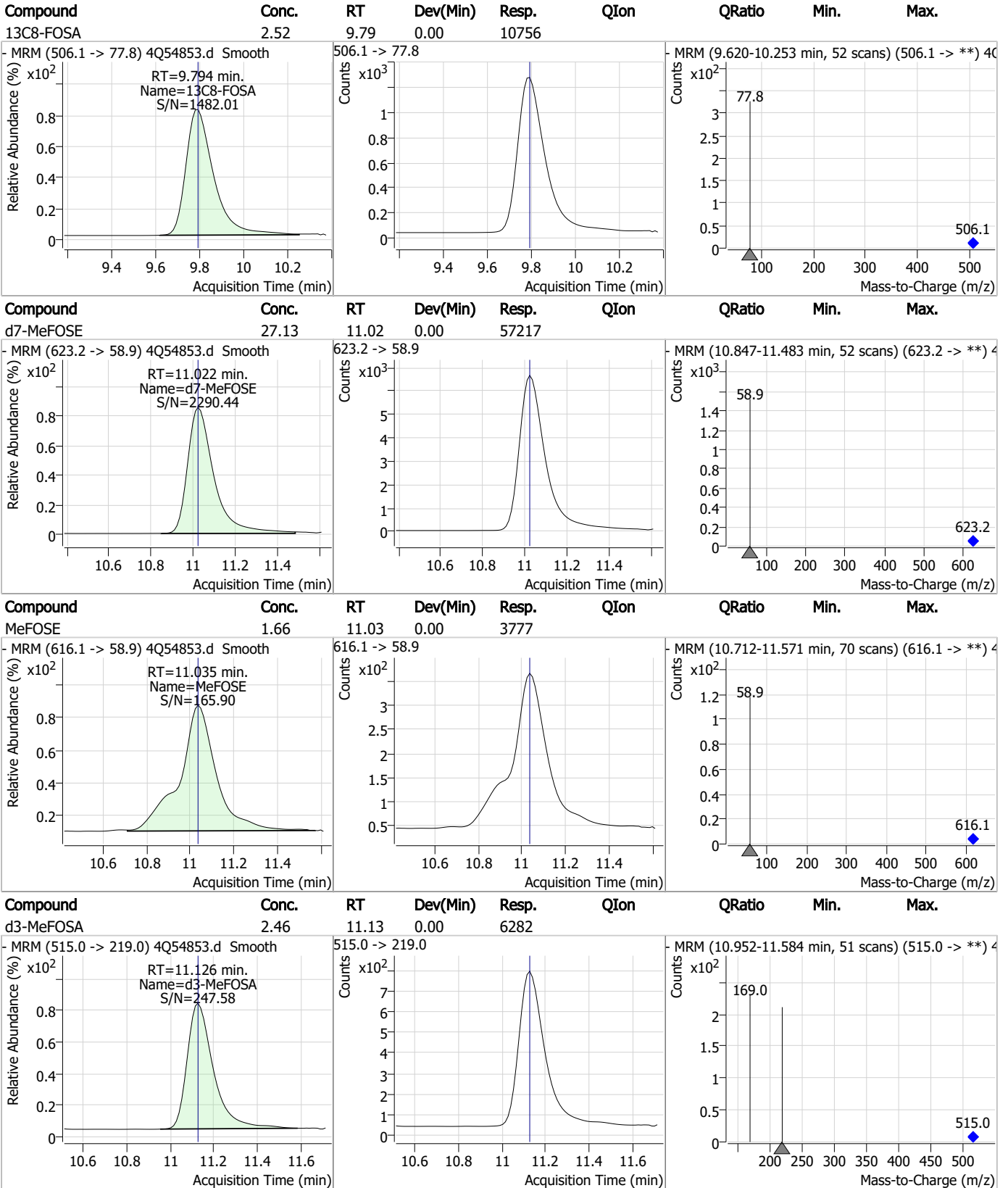
Perfluorinated Compounds by LC/MS/MS



7.7.3

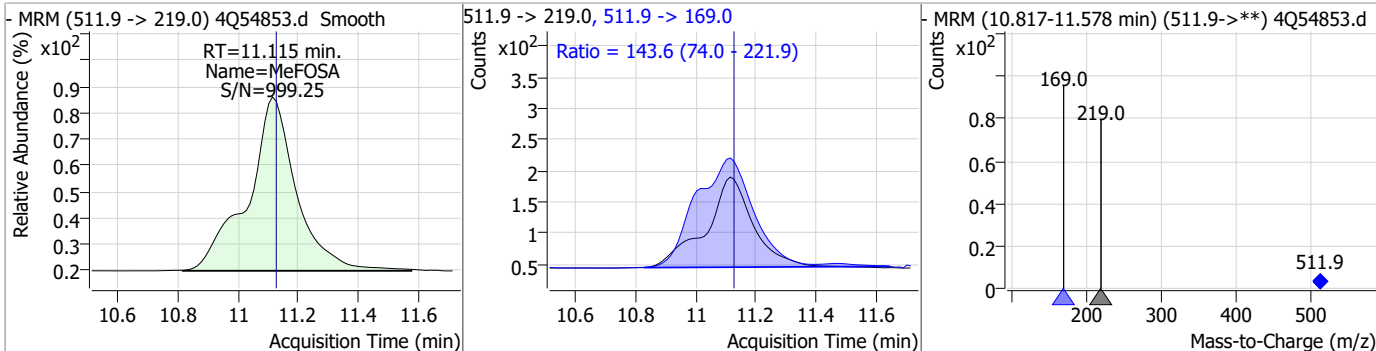
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Perfluorinated Compounds by LC/MS/MS

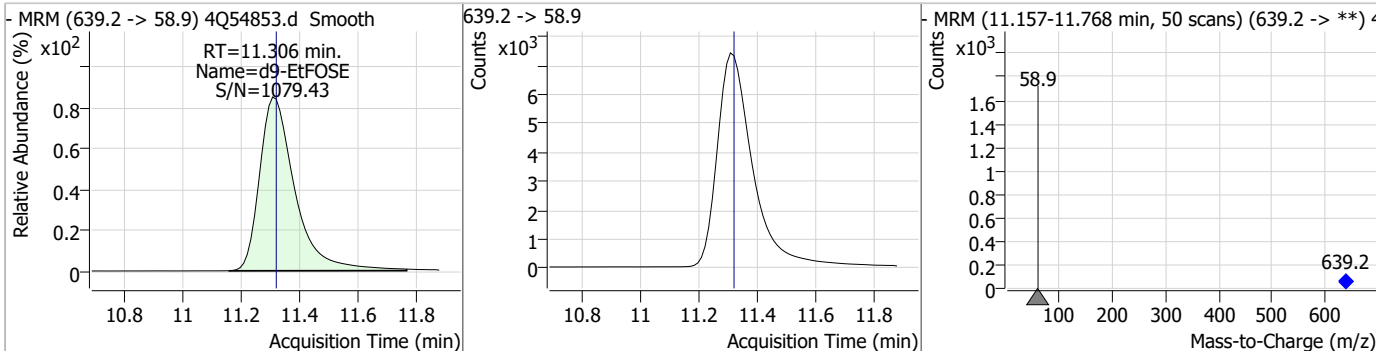


Perfluorinated Compounds by LC/MS/MS

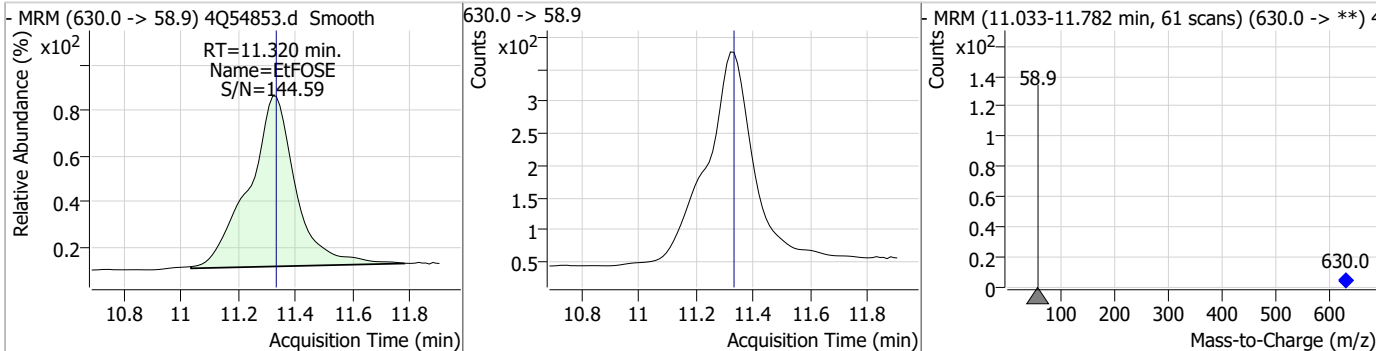
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.74	11.12	-0.01	1649	511.9 -> 169.0	143.6	74.0	221.9



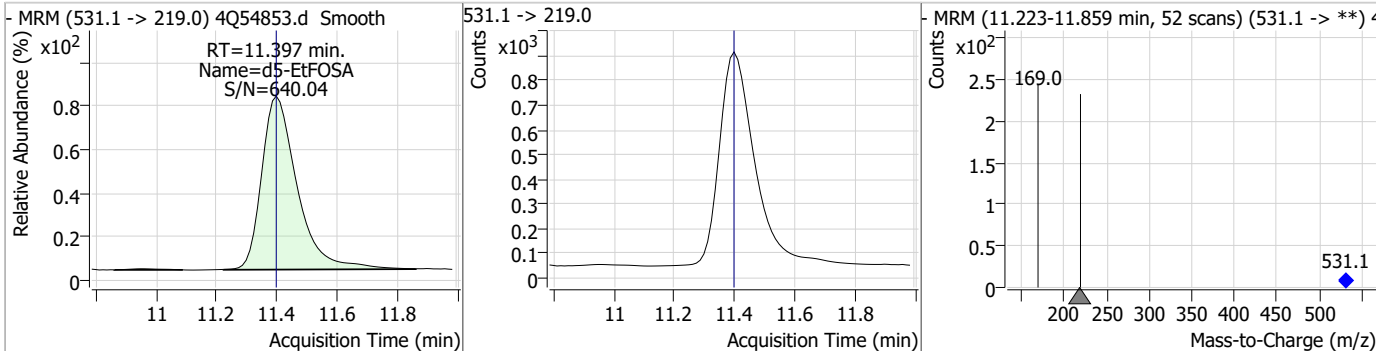
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.42	11.31	-0.01	62397				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	1.70	11.32	-0.01	3750				

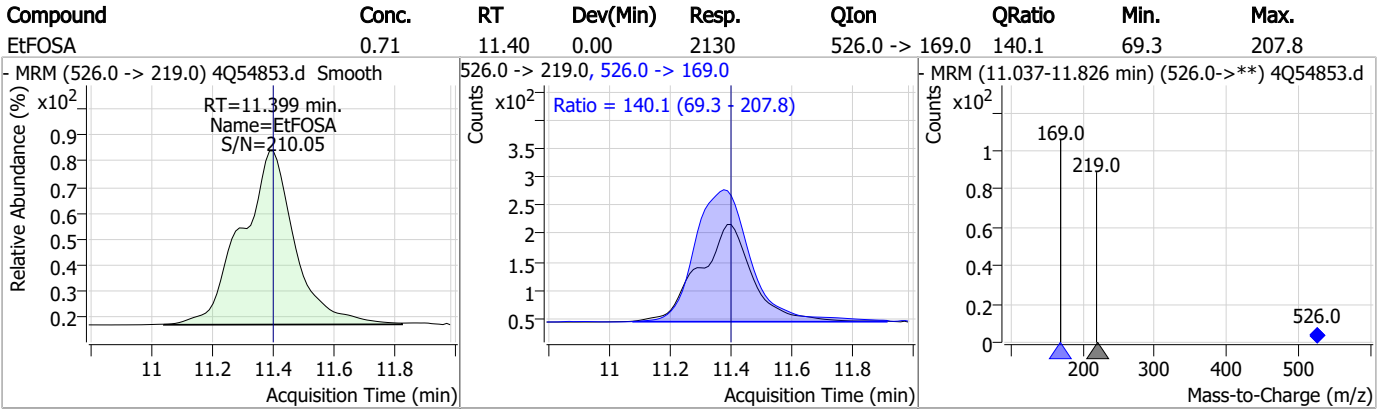


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.53	11.40	0.00	7078				



7.7.3
7

Perfluorinated Compounds by LC/MS/MS



7.7.3

7

Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54853.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 11:53 Supervisor approved: 12/11/23 15:42 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
MeFOSAA	2355-31-9		8.07	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.11	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

7.7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54854.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 12:07:50 PM
 Sample Name : ic804-3
 Vial : P1-A4
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.711	216.8 -> 171.9	115774	10.00 µg/L	0.037
M5-PFPeA	4.175	268.3 -> 223.0	48552	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	37901	2.50 µg/L	0.012
M4-PFHpA	6.292	367.1 -> 322.0	36865	2.50 µg/L	0.000
M8-PFOA	6.976	421.1 -> 376.0	60354	2.50 µg/L	0.000
M9-PFNA	7.509	472.1 -> 427.0	22903	1.25 µg/L	-0.012
M6-PFDA	8.004	519.1 -> 474.1	16089	1.25 µg/L	0.000
M7-PFUnDA	8.448	570.0 -> 525.1	21233	1.25 µg/L	0.000
M2-PFDoDA	8.880	615.1 -> 570.0	22236	1.25 µg/L	0.000
M2-PFTeDA	9.637	715.2 -> 670.0	21528	1.25 µg/L	0.000
M8-FOSA	9.794	506.1 -> 77.8	13023	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	10406	2.50 µg/L	0.013
M3-PFHxS	7.029	402.1 -> 79.9	8915	2.50 µg/L	0.000
M8-PFOS	8.117	507.1 -> 79.9	9820	2.50 µg/L	0.000
M2-4:2FTS	5.058	329.1 -> 80.9	1365	5.00 µg/L	0.012
M2-6:2FTS	6.748	429.1 -> 80.9	3094	5.00 µg/L	0.000
M2-8:2FTS	7.804	529.1 -> 80.9	3996	5.00 µg/L	0.000
M3-MeFOSAA	8.086	573.2 -> 419.0	22070	5.00 µg/L	0.000
M3-HFPO-DA	5.689	286.9 -> 168.9	37989	10.00 µg/L	0.000
M5-EtFOSAA	8.283	589.2 -> 419.0	18209	5.00 µg/L	0.000
M7-MeFOSE	11.022	623.2 -> 58.9	64453	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	70593	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	8062	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	7284	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	7876	2.50 µg/L	0.000
13C3-PFBA	2.703	216.0 -> 172.0	54728	5.00 µg/L	0.025
18O2-PFHxS	7.041	403.0 -> 83.9	5597	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	65274	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	17711	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	23027	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	41601	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1365	5.14 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C2-6:2FTS	6.748	429.1 -> 80.9	3094	5.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3996	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	22236	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-PFTeDA	9.637	715.2 -> 670.0	21528	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C3-PFBS	5.202	302.1 -> 79.9	10406	2.43 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C3-PFHxS	7.029	402.1 -> 79.9	8915	2.54 µg/L	0.000

7.7.4
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C4-PFBA	2.711	216.8 -> 171.9	115774	10.07 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C4-PFHpA	6.292	367.1 -> 322.0	36865	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C5-PFHxA	5.347	318.0 -> 273.0	37901	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C5-PFPeA	4.175	268.3 -> 223.0	48552	5.08 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C6-PFDA	8.004	519.1 -> 474.1	16089	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	21233	1.40 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.8%	
13C8-FOSA	9.794	506.1 -> 77.8	13023	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C8-PFOA	6.976	421.1 -> 376.0	60354	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-PFOS	8.117	507.1 -> 79.9	9820	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C9-PFNA	7.509	472.1 -> 427.0	22903	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSAA	8.086	573.2 -> 419.0	22070	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C3-HFPO-DA	5.689	286.9 -> 168.9	37989	9.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d3-MeFOSA	11.126	515.0 -> 219.0	7284	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.7%	
d5-EtFOSAA	8.283	589.2 -> 419.0	18209	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
d7-MeFOSE	11.022	623.2 -> 58.9	64453	25.60 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d9-EtFOSE	11.319	639.2 -> 58.9	70593	25.03 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d5-EtFOSA	11.398	531.1 -> 219.0	8062	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.6%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	11983	5.10 µg/L	97
		327.1 -> 80.9	4856		
6:2FTS	6.749	427.1 -> 407.0	15644	4.81 µg/L	98
		427.1 -> 80.9	5891		
8:2FTS	7.804	527.1 -> 507.0	11074	5.26 µg/L	99
		527.1 -> 80.8	4537		
EtFOSAA	8.284	584.2 -> 419.1	4267	1.28 µg/L	m 82
		584.2 -> 526.0	1796		
FOSA	9.798	498.1 -> 77.9	7216	1.23 µg/L	98
		498.1 -> 478.0	246		
MeFOSAA	8.087	570.1 -> 419.0	4388	1.39 µg/L	95
		570.1 -> 483.0	811		
PFBA	2.707	212.8 -> 168.9	18532	5.00 µg/L	100
PFBS	5.203	298.7 -> 79.9	3435	1.06 µg/L	100
		298.7 -> 98.8	1403		
PFDA	8.005	512.9 -> 469.0	15282	1.29 µg/L	98
		512.9 -> 219.0	2995		
PFDODA	8.880	613.1 -> 569.0	19702	1.23 µg/L	94
		613.1 -> 319.0	3850		
PFDS	9.020	599.0 -> 79.9	3148	1.20 µg/L	95

7.7.4
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1542			
PFHpA	6.293	363.1 -> 319.0	25557	1.23	µg/L	100
		363.1 -> 169.0	4657			
PFHpS	7.612	449.0 -> 79.9	4644	1.19	µg/L	95
		449.0 -> 98.9	2268			
PFHxA	5.350	313.0 -> 269.0	14645	1.21	µg/L	98
		313.0 -> 118.9	516			
PFHxS	7.043	398.7 -> 79.9	3103	1.08	µg/L	m 99
		398.7 -> 98.9	1497			
PFNA	7.522	463.0 -> 419.0	17217	1.28	µg/L	98
		463.0 -> 219.0	4142			
PFNS	8.586	548.8 -> 79.9	2460	1.47	µg/L	99
		548.8 -> 98.9	1227			
PFOA	6.978	413.0 -> 369.0	30788	1.24	µg/L	98
		413.0 -> 169.0	6561			
PFOS	8.119	498.9 -> 79.9	4630	1.13	µg/L	m 59
		498.9 -> 98.8	2427			
PFPeA	4.177	263.0 -> 219.0	23497	2.46	µg/L	100
PFPeS	6.282	349.1 -> 79.9	3226	1.19	µg/L	97
		349.1 -> 98.9	1426			
PFTeDA	9.637	713.1 -> 669.0	18174	1.21	µg/L	100
		713.1 -> 168.9	1960			
PFTrDA	9.279	663.0 -> 619.0	22663	1.30	µg/L	98
		663.0 -> 168.9	3179			
PFUnDA	8.449	563.1 -> 519.0	17599	1.14	µg/L	96
		563.1 -> 269.1	4089			
11CI-PF3OUdS	9.306	630.9 -> 450.9	25190	2.41	µg/L	97
		632.9 -> 452.9	7448			
9CI-PF3ONS	8.451	530.8 -> 351.0	25966	2.46	µg/L	99
		532.8 -> 353.0	7661			
ADONA	6.568	376.9 -> 250.9	67226	2.62	µg/L	98
		376.9 -> 84.8	15529			
HFPO-DA	5.703	284.9 -> 168.9	9302	2.56	µg/L	98
		284.9 -> 184.9	813			
3:3FTCA	3.630	241.0 -> 177.0	3503	5.94	µg/L	100
		241.0 -> 117.0	308			
5:3FTCA	6.020	341.0 -> 237.1	67567	31.32	µg/L	99
		341.0 -> 217.0	47567			
7:3FTCA	7.536	441.0 -> 316.9	35887	31.73	µg/L	98
		441.0 -> 336.9	84311			
EtFOSA	11.399	526.0 -> 219.0	8782	2.56	µg/L	95
		526.0 -> 169.0	11651			
EtFOSE	11.320	630.0 -> 58.9	15599	6.24	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	6655	2.57	µg/L	m 99
		511.9 -> 169.0	9937			
MeFOSE	11.035	616.1 -> 58.9	15409	6.03	µg/L	100
PFDoDS	9.764	699.1 -> 79.9	2409	1.21	µg/L	95
		699.1 -> 98.8	1273			
NFDHA	5.229	295.0 -> 201.0	2033	2.37	µg/L	91
		295.0 -> 84.9	625			
PFMBA	4.578	279.0 -> 85.1	13057	2.48	µg/L	100
PFMPA	3.332	229.0 -> 84.9	14040	2.43	µg/L	100
PFEESA	5.722	314.8 -> 134.9	20009	2.24	µg/L	99
		314.8 -> 82.9	688			

= Qualifier out of range, m = manually integrated, + = Area summed

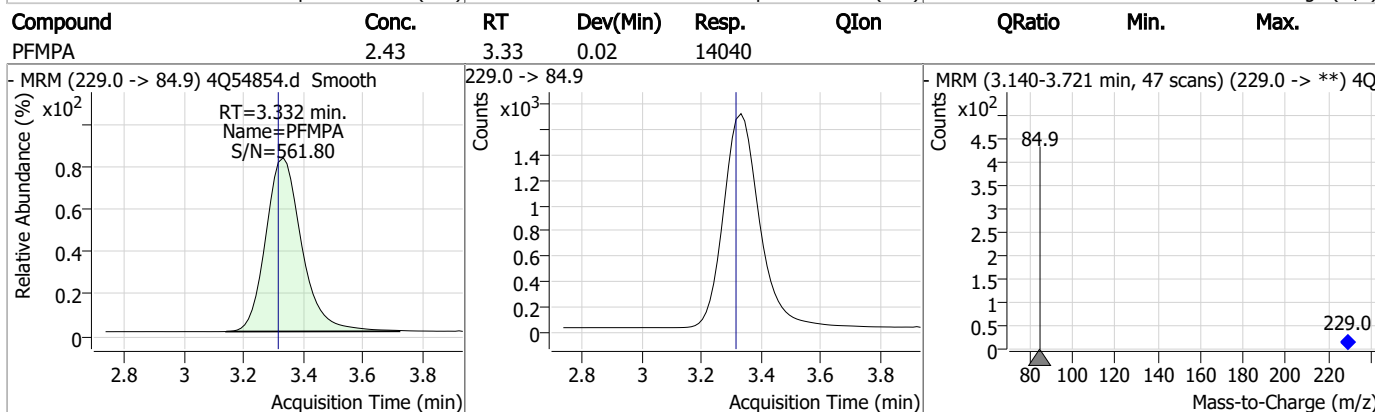
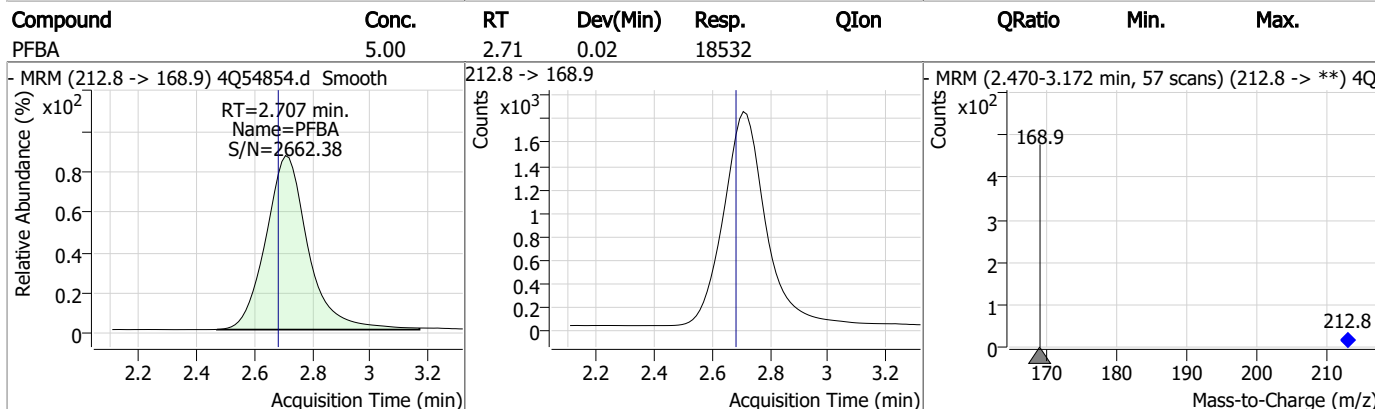
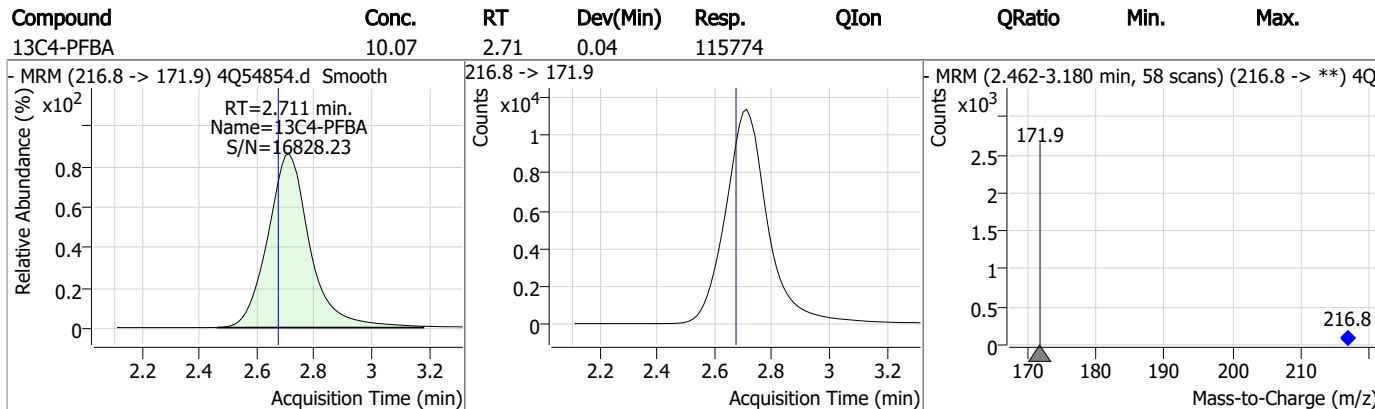
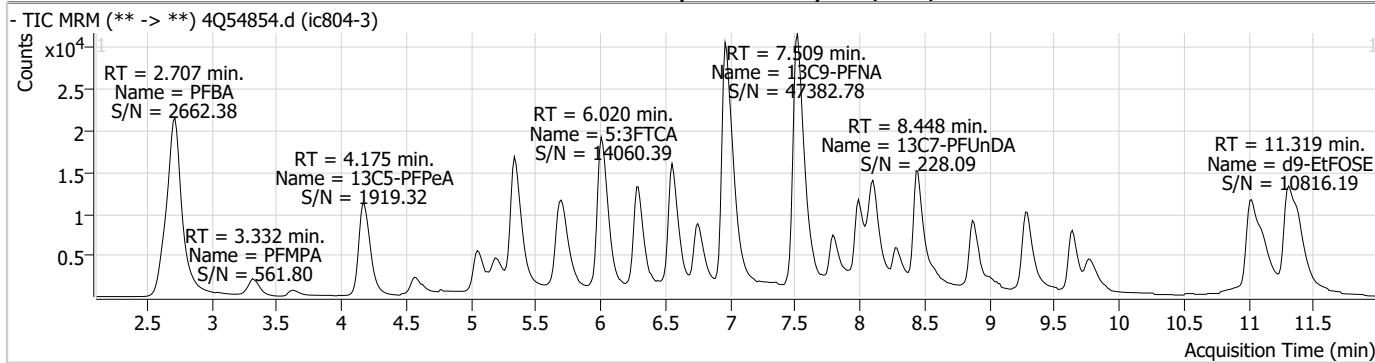
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.4

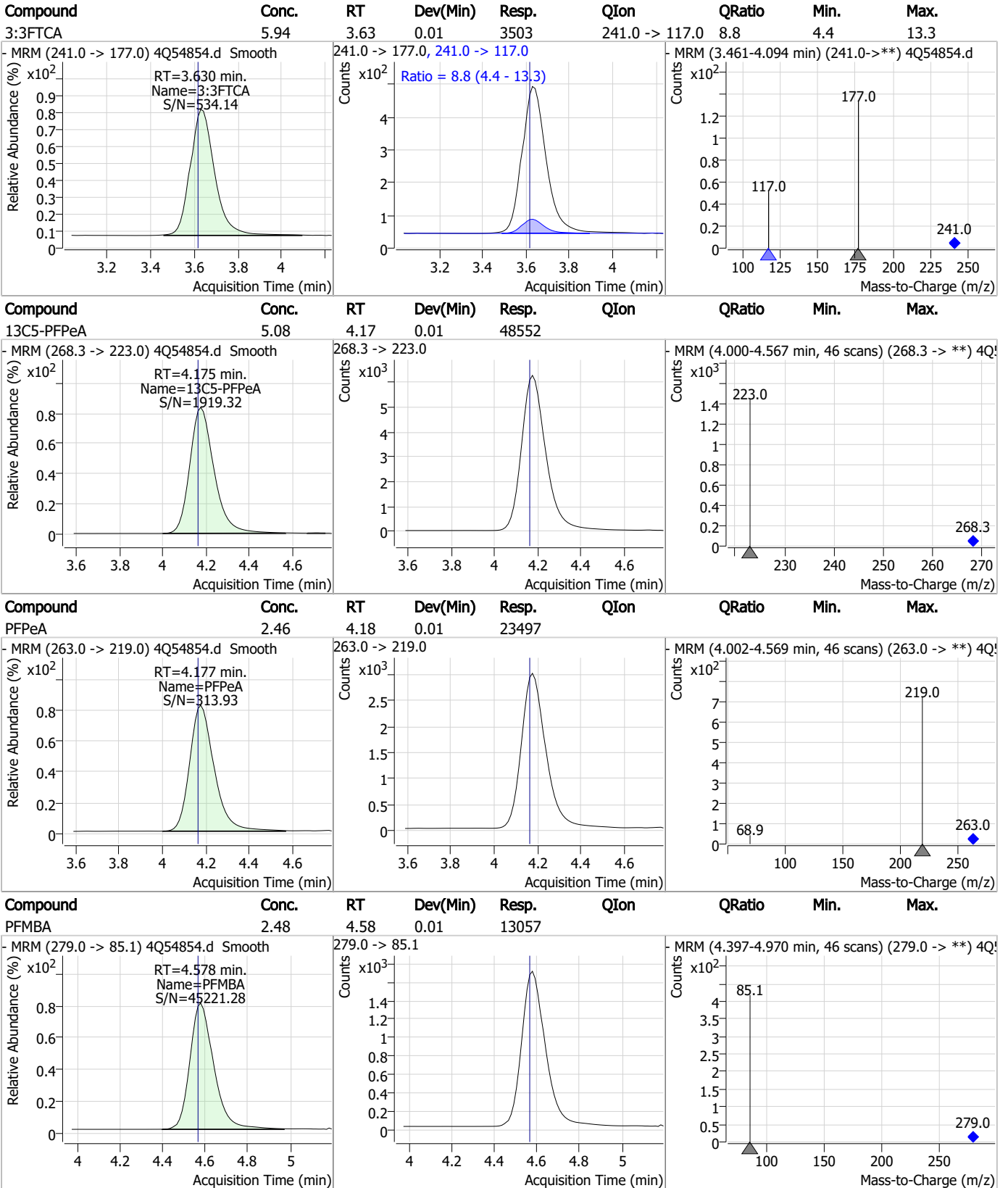
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Perfluorinated Compounds by LC/MS/MS

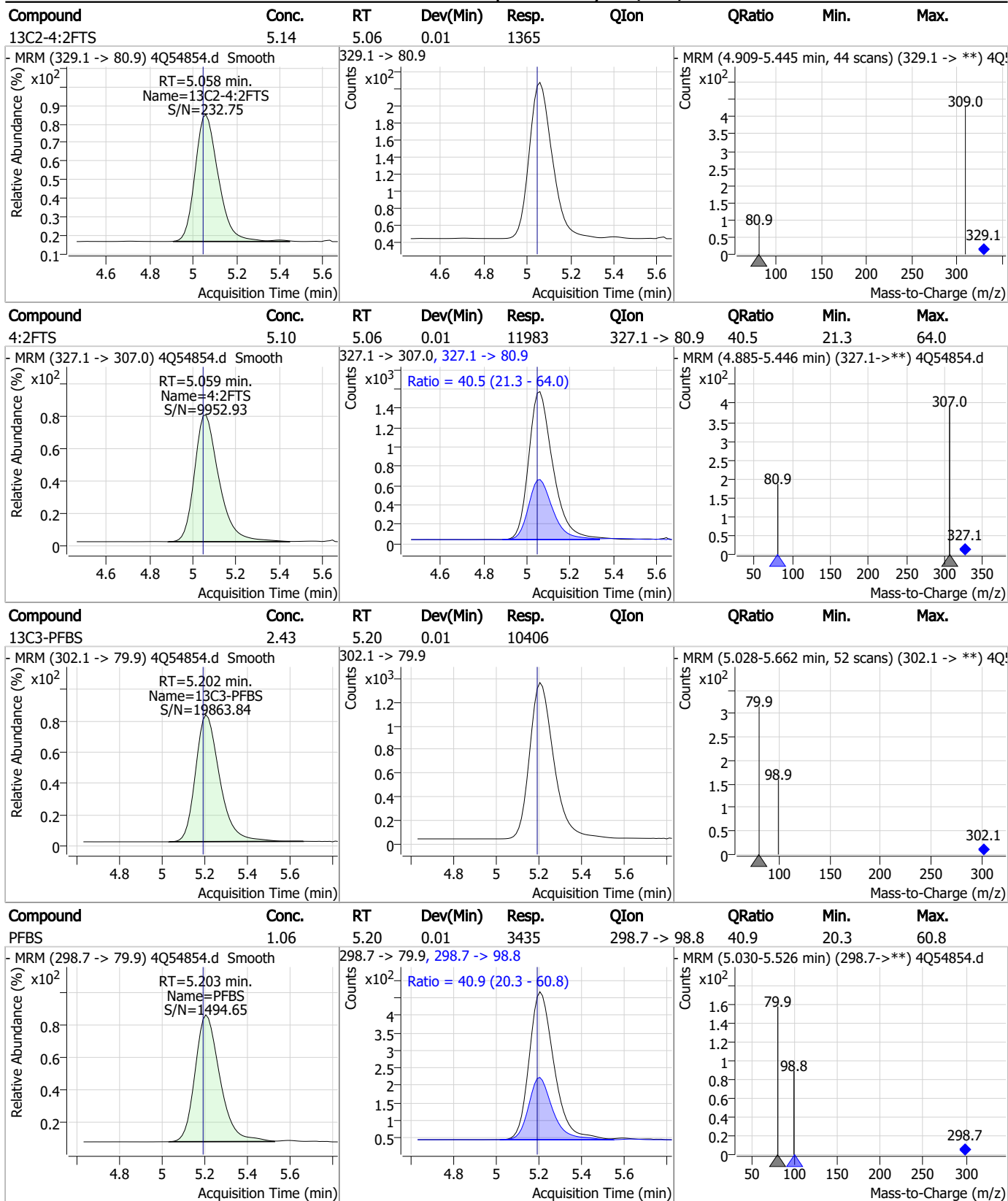


7.7.4
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Perfluorinated Compounds by LC/MS/MS

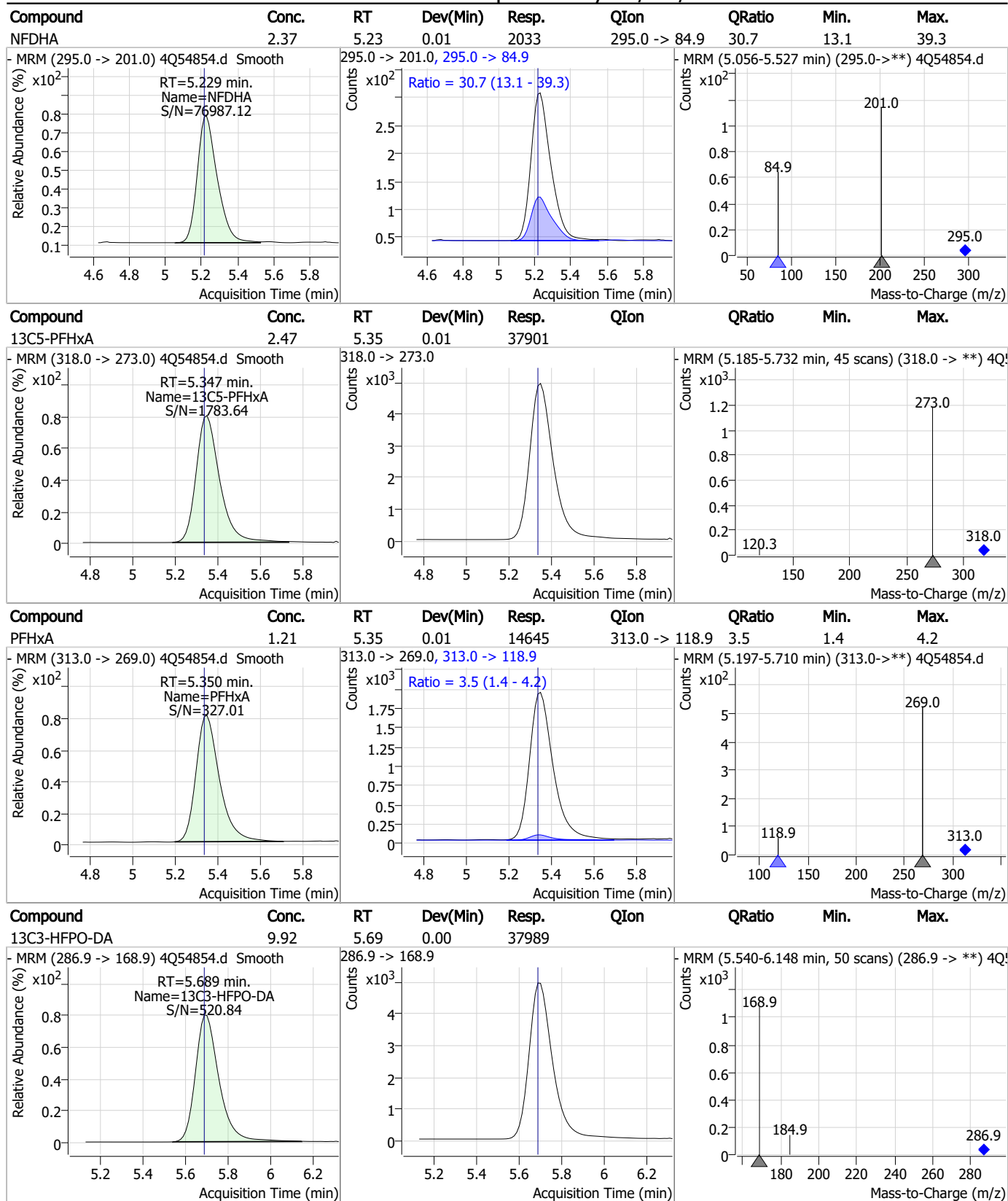


Perfluorinated Compounds by LC/MS/MS



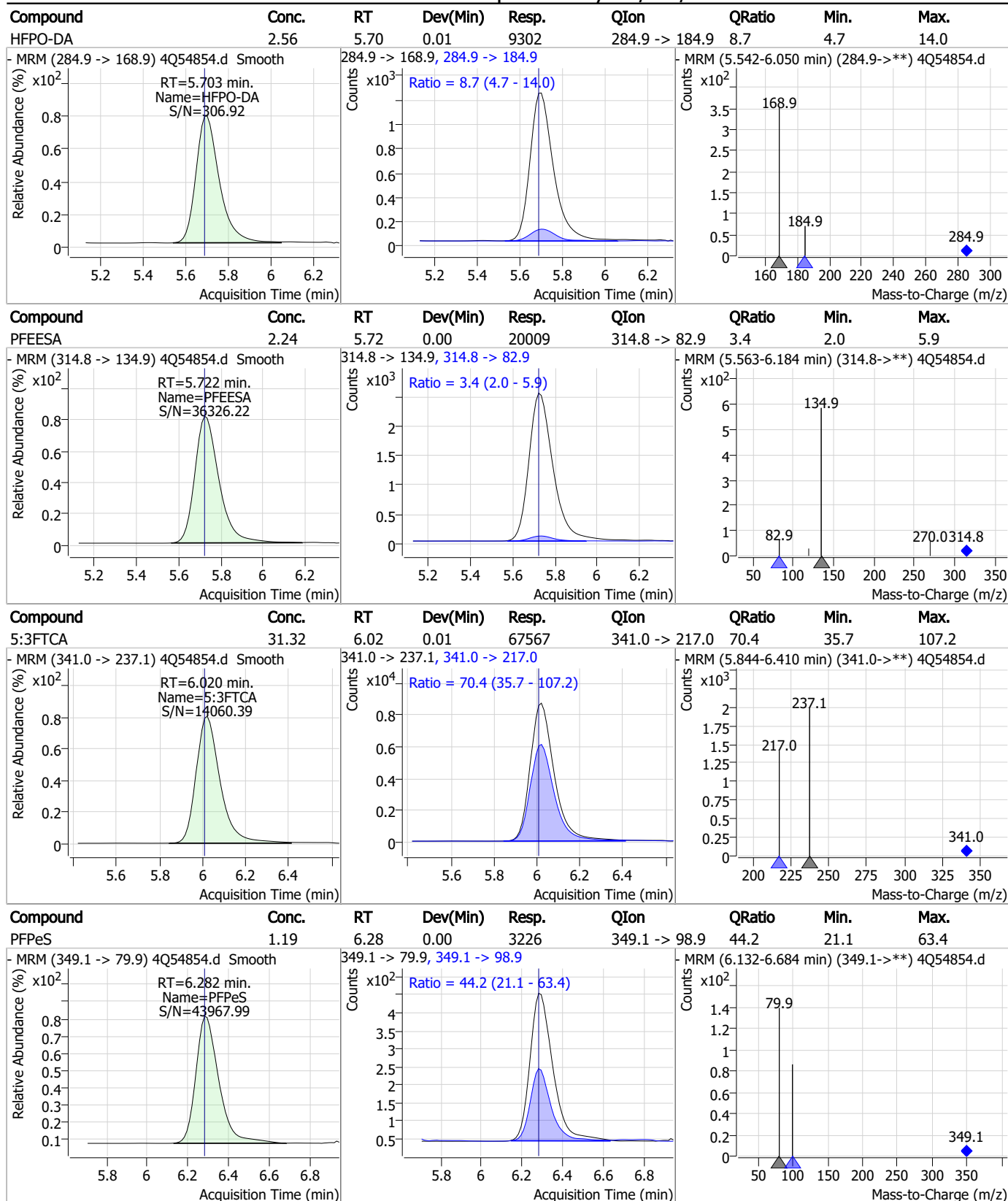
7.7.4
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Perfluorinated Compounds by LC/MS/MS



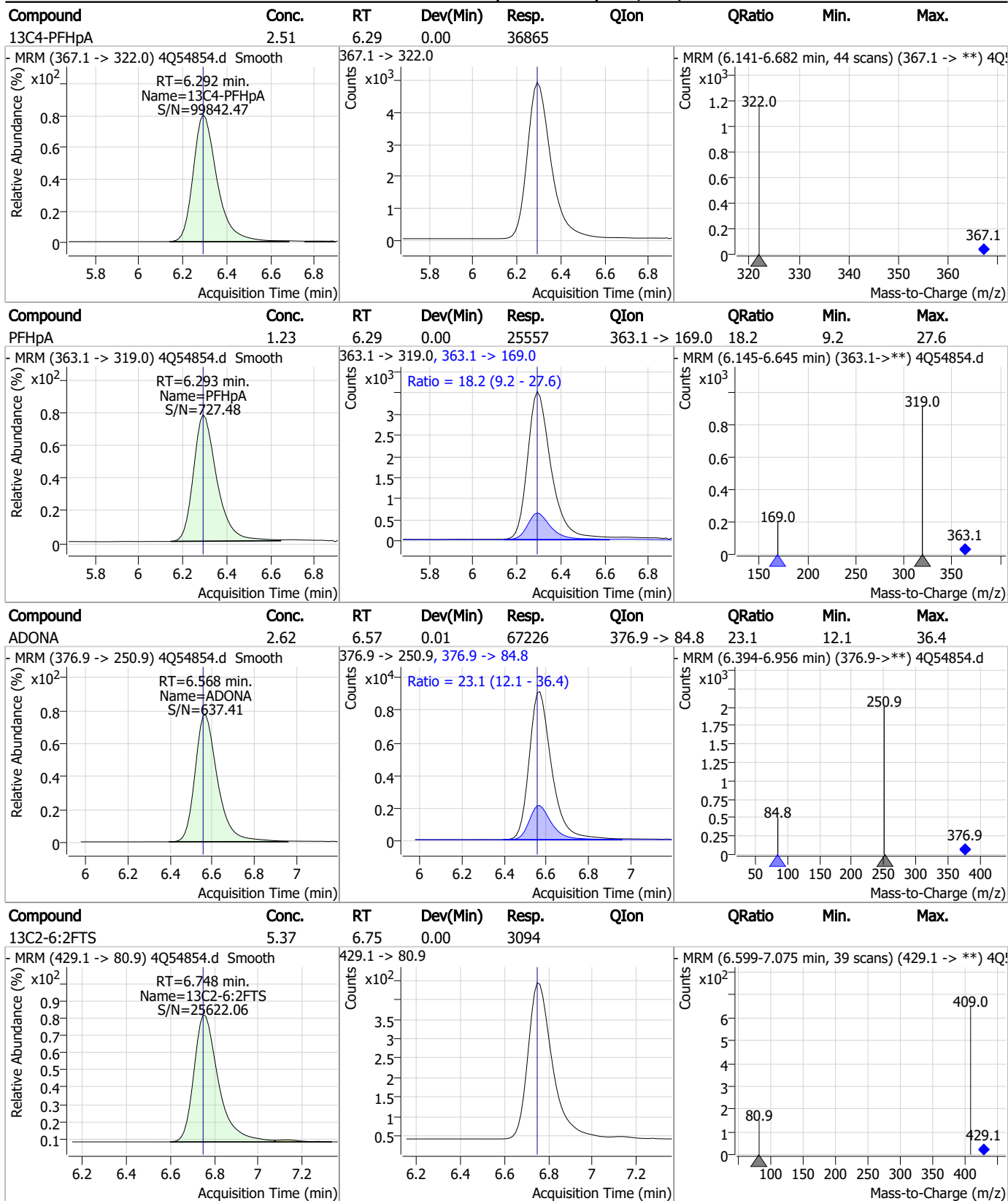
7.7.4
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Perfluorinated Compounds by LC/MS/MS



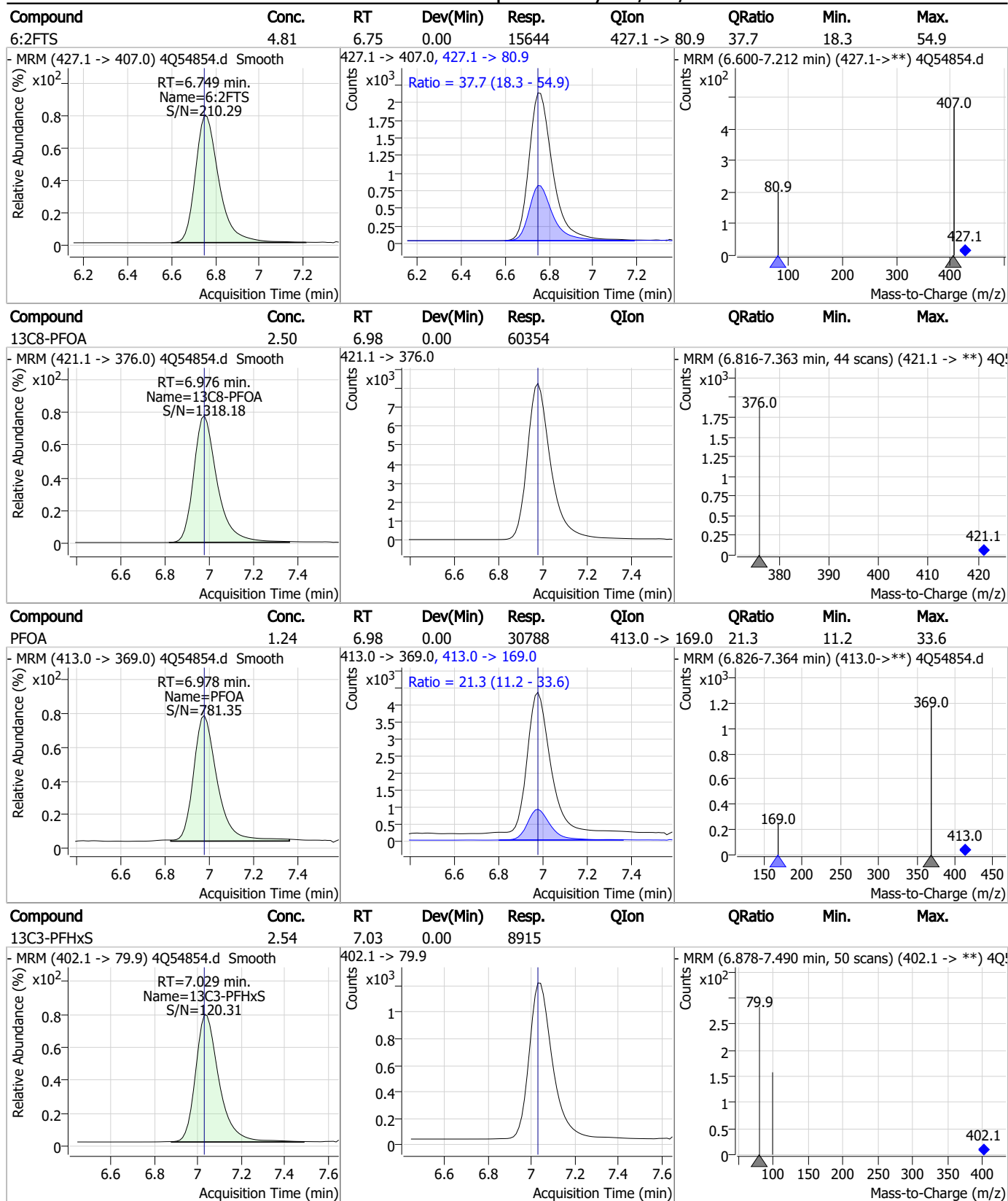
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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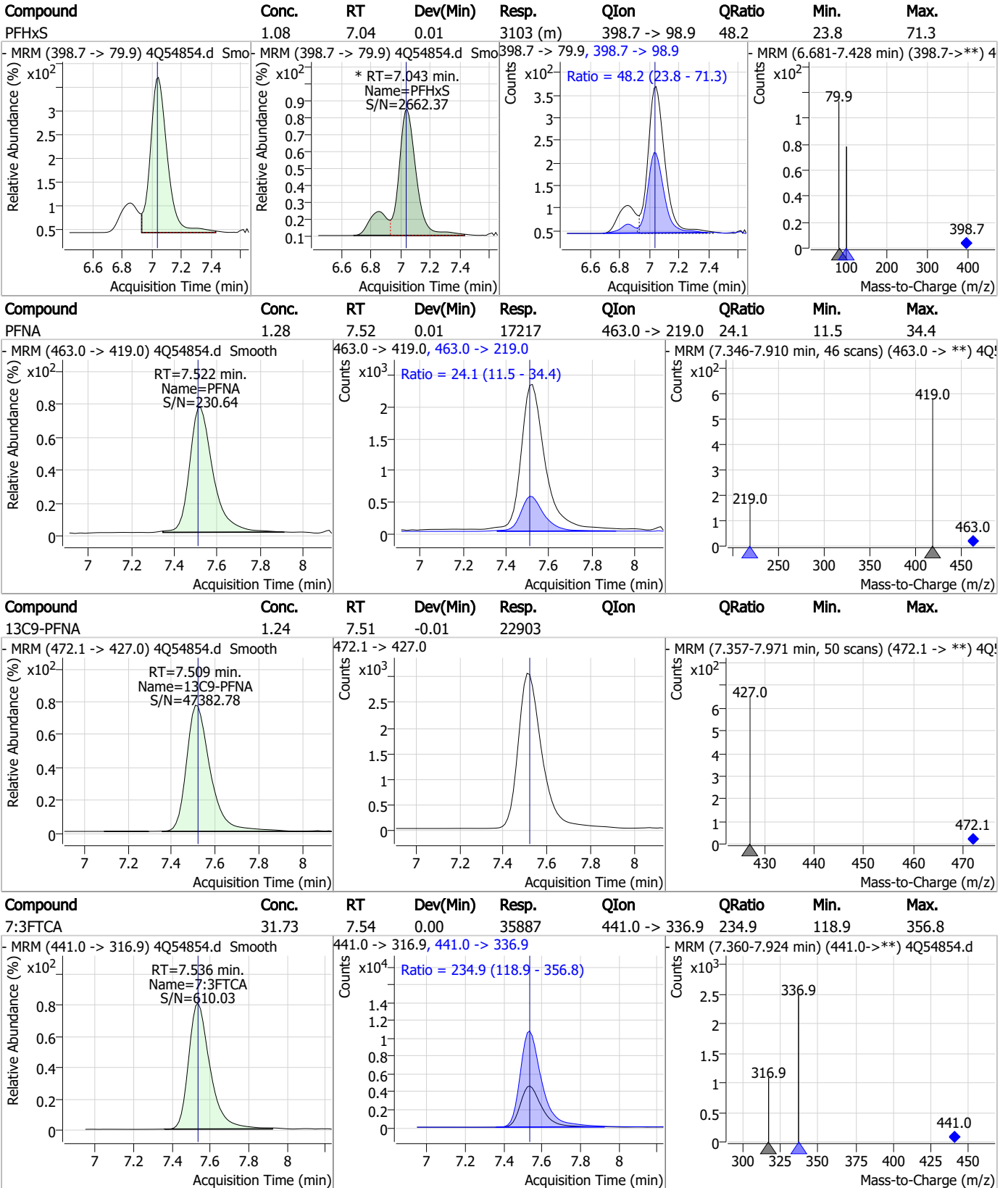
Perfluorinated Compounds by LC/MS/MS



7.7.4

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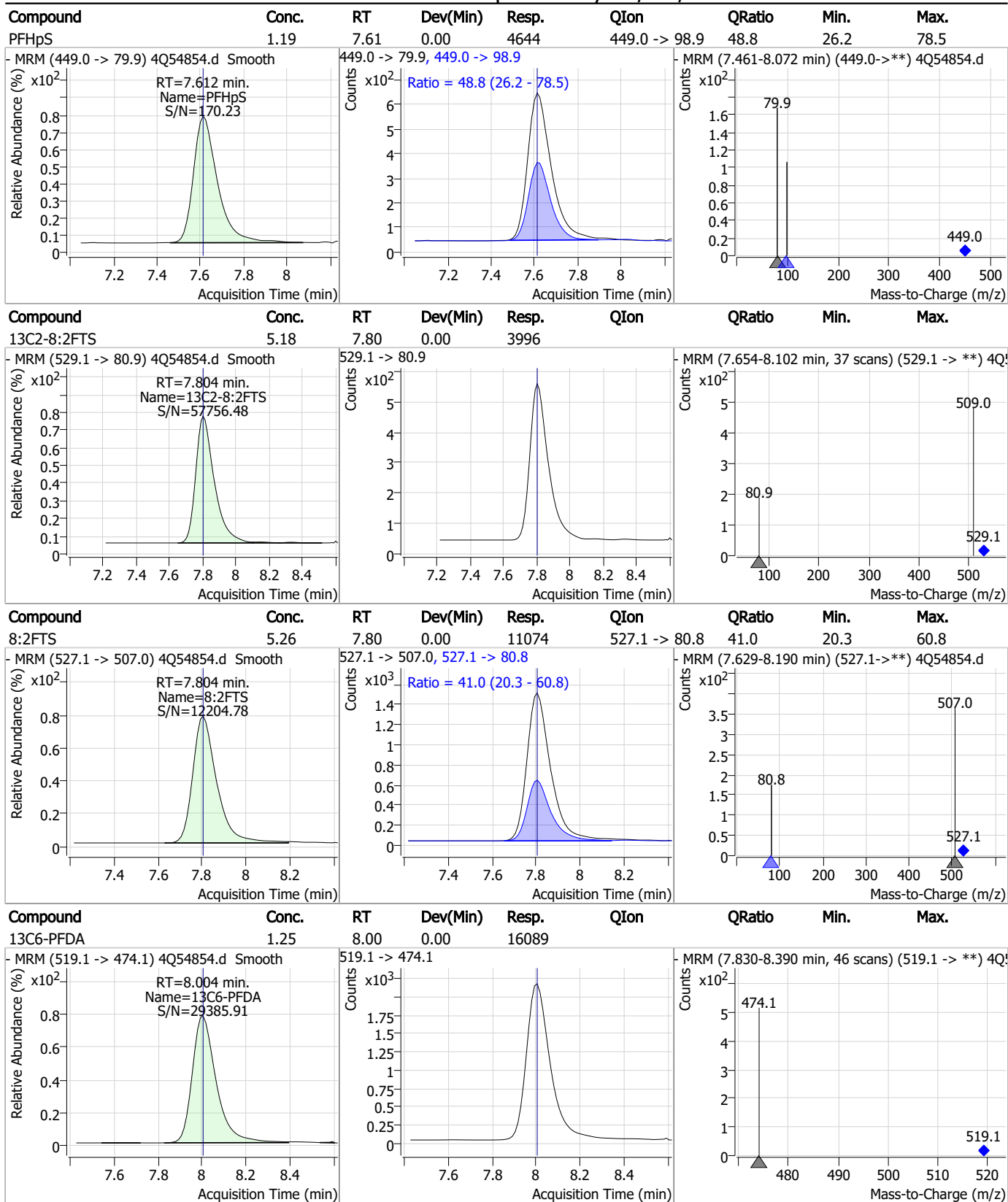
Perfluorinated Compounds by LC/MS/MS



7.7.4

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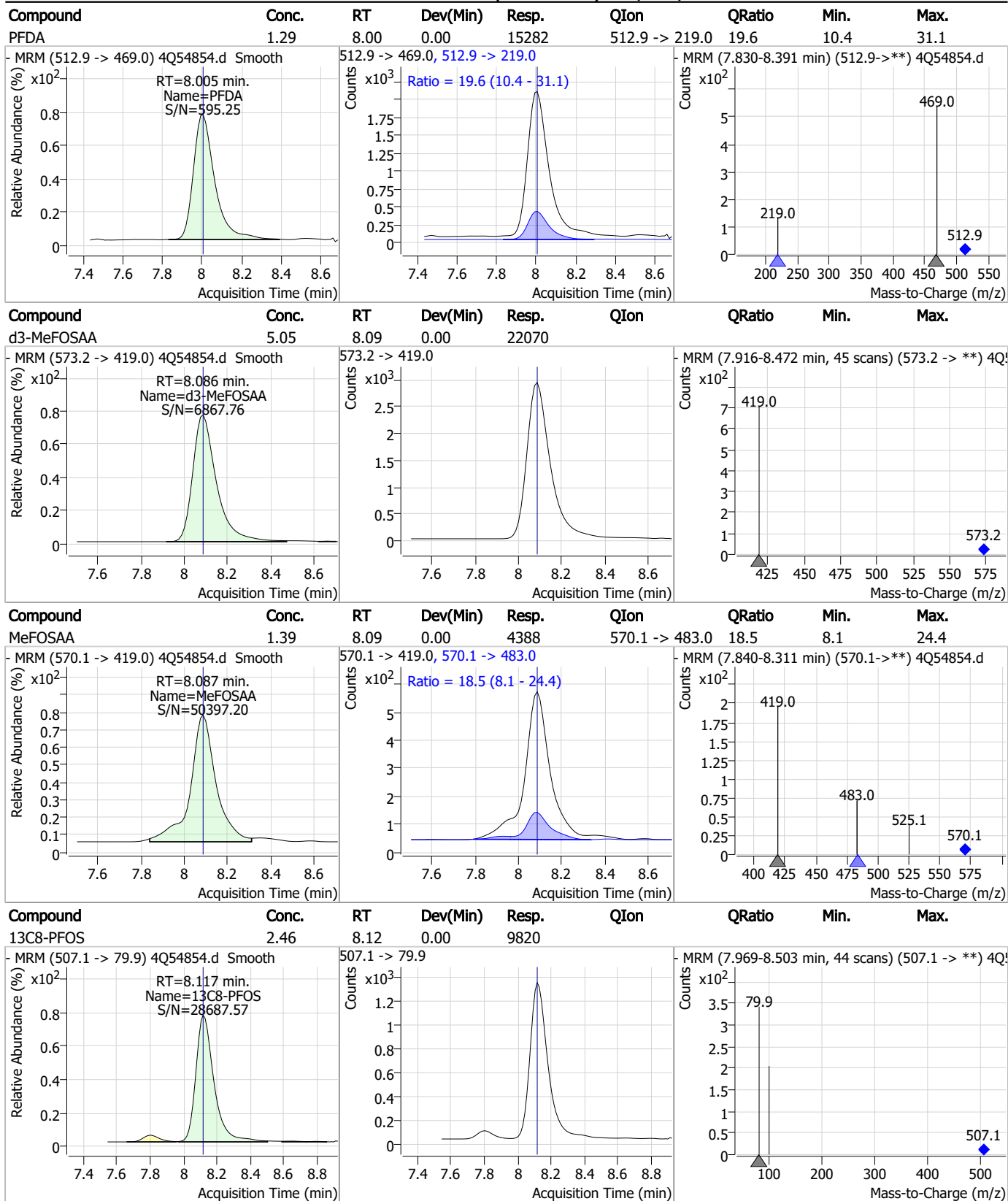
Perfluorinated Compounds by LC/MS/MS



7.7.4

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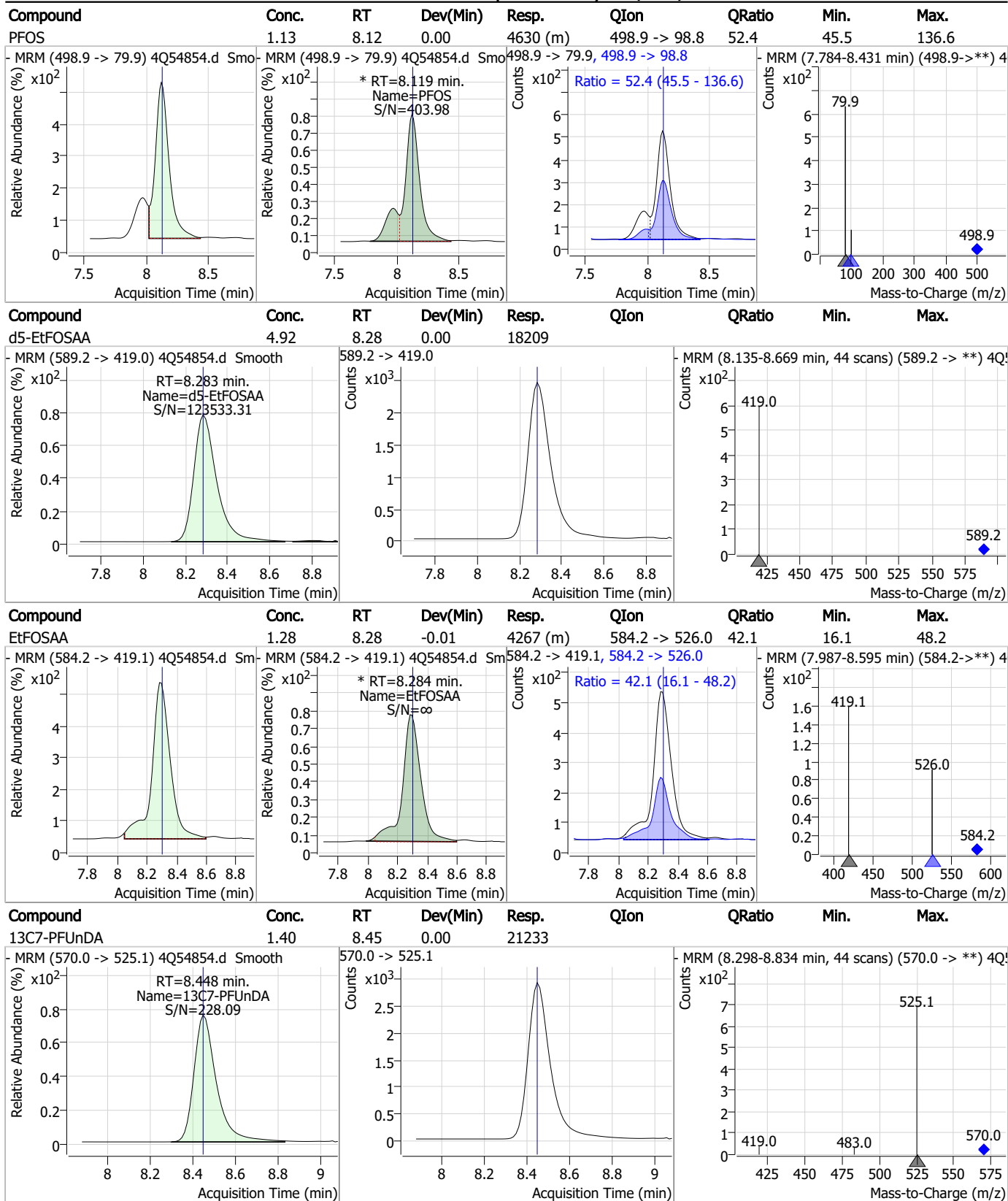
Perfluorinated Compounds by LC/MS/MS



7.7.4

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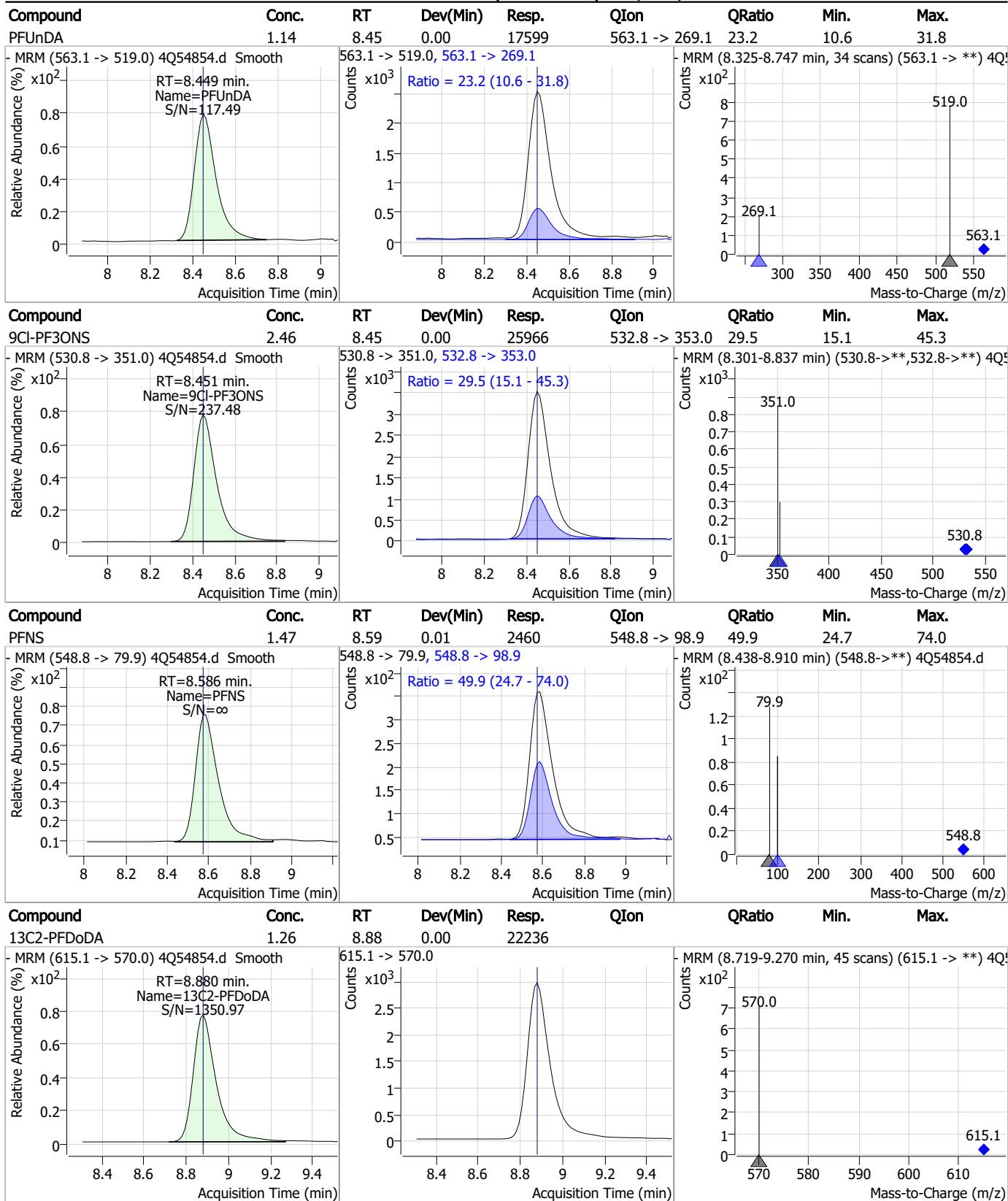
Perfluorinated Compounds by LC/MS/MS



7.7.4

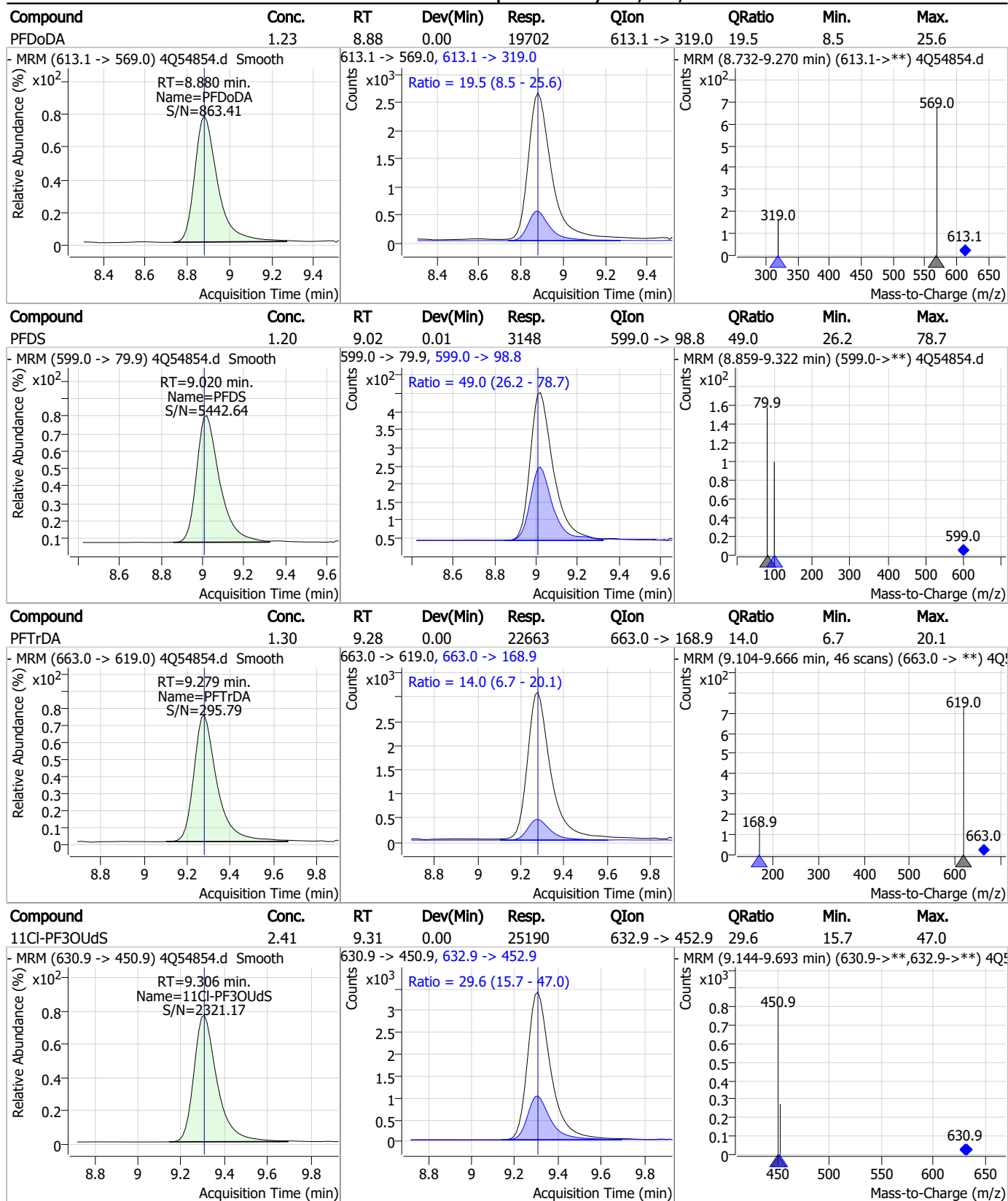
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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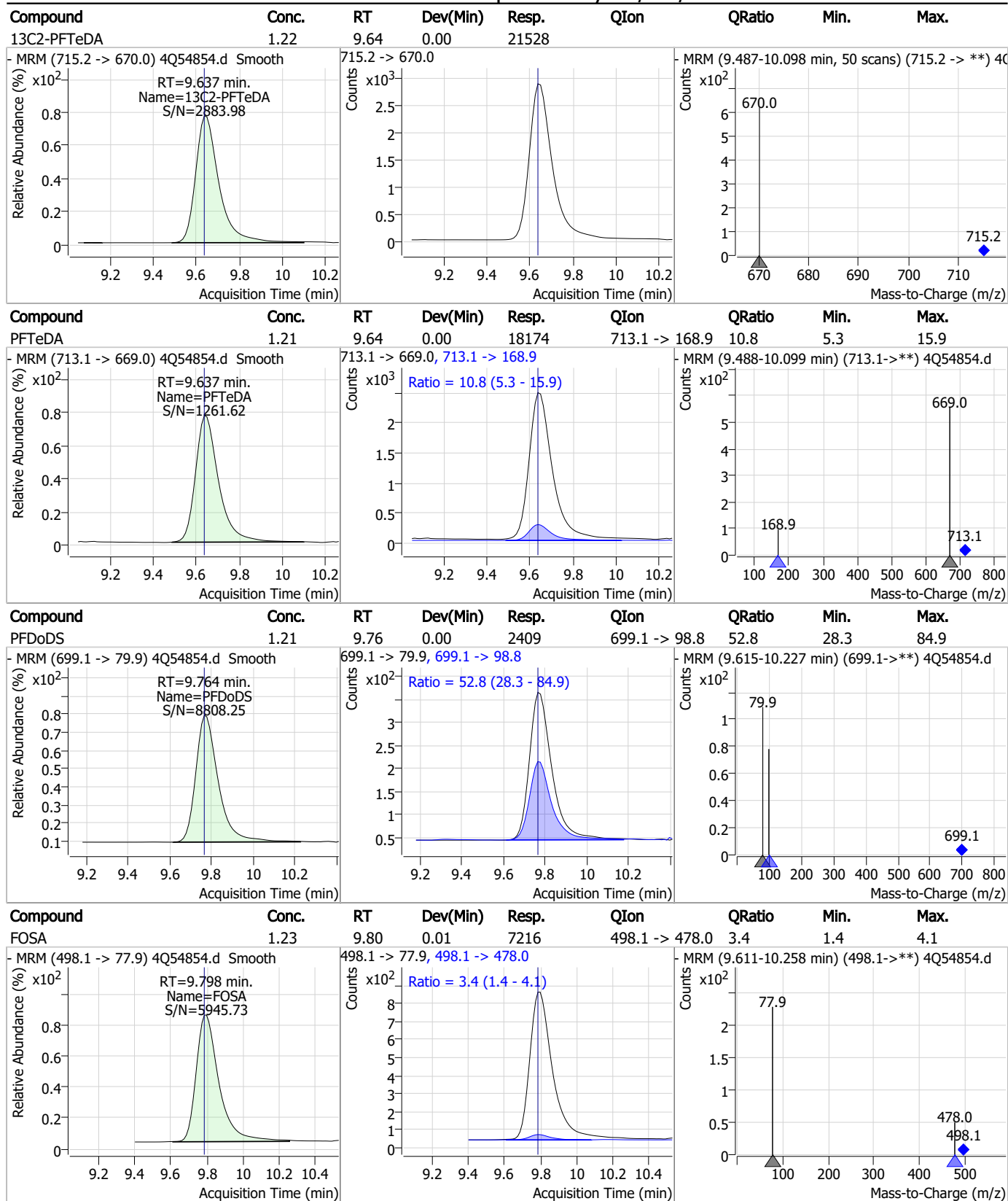
Perfluorinated Compounds by LC/MS/MS



7.7.4
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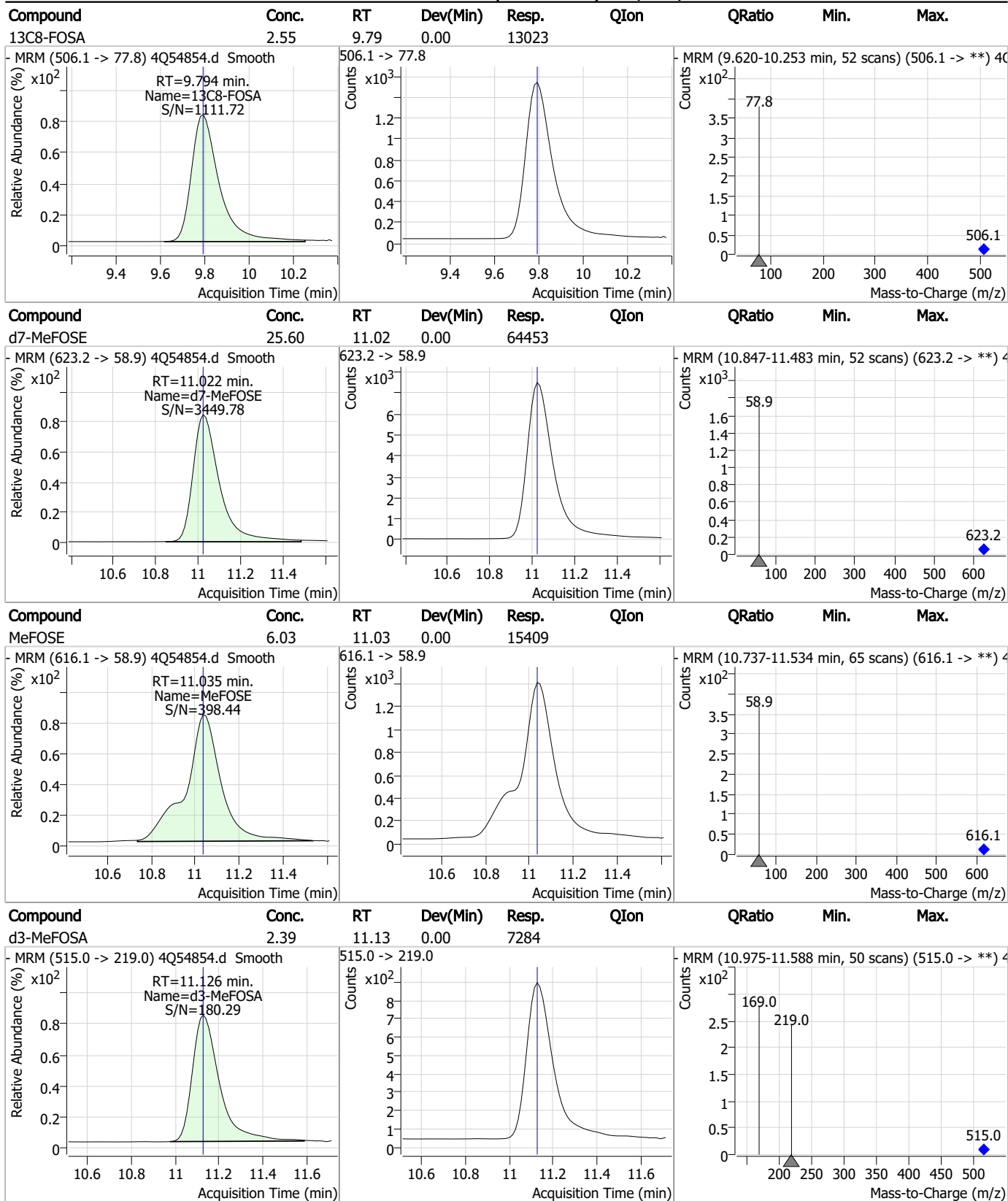


Perfluorinated Compounds by LC/MS/MS



7.7.4
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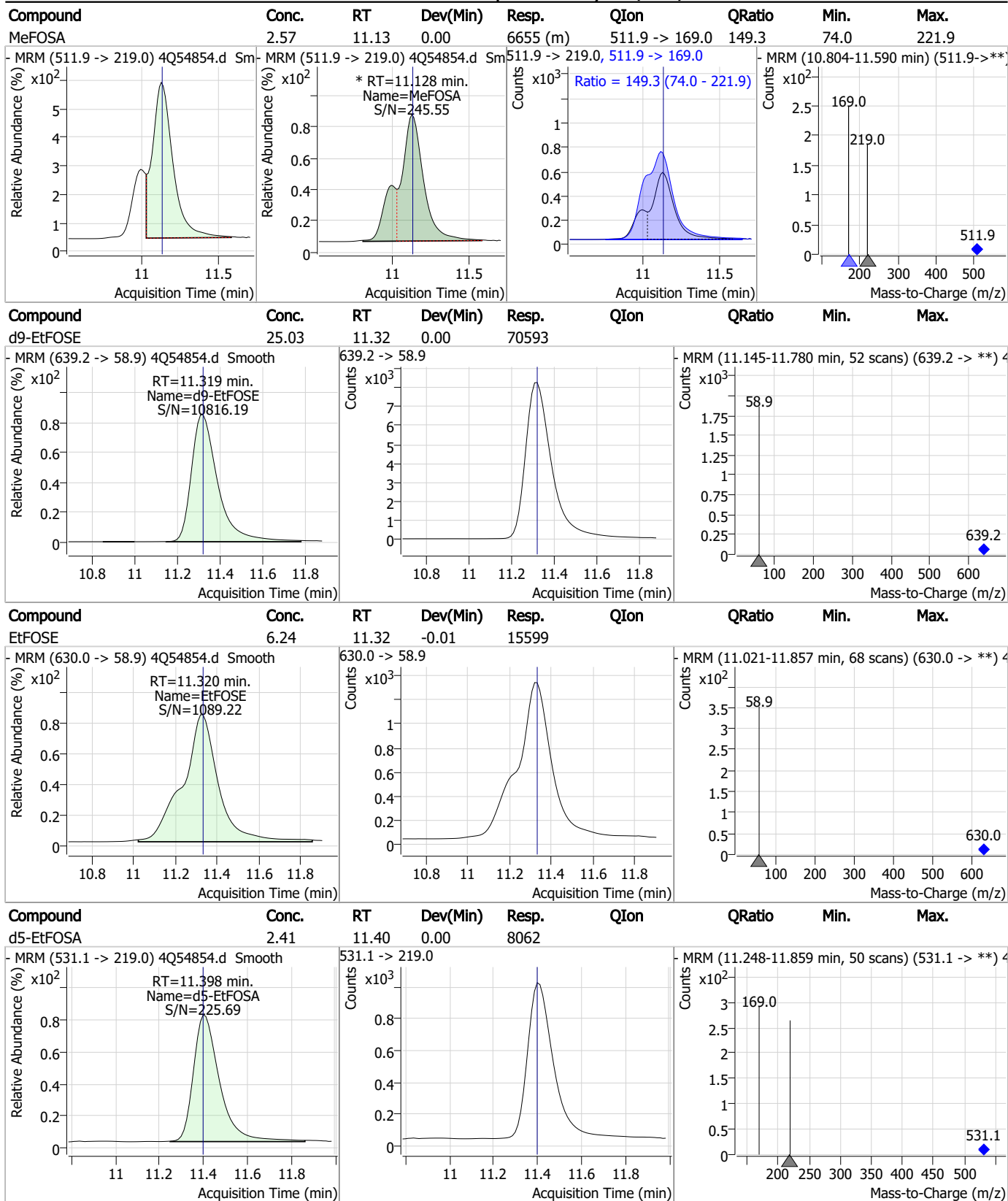
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

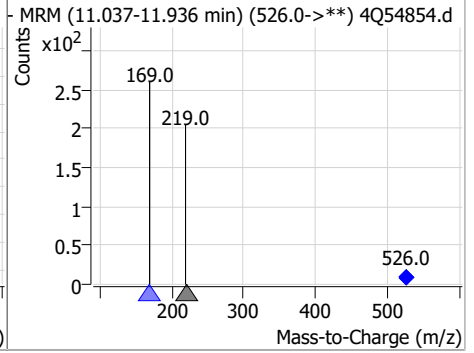
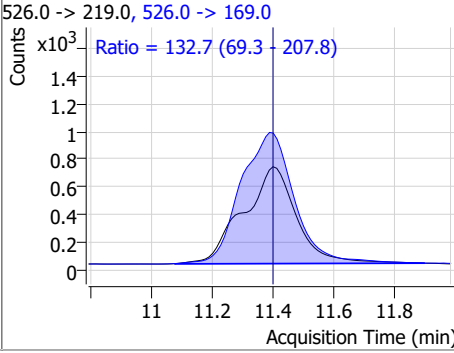
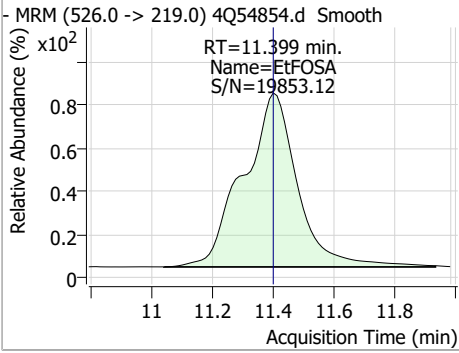
Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.56	11.40	0.00	8782	526.0 -> 169.0	132.7	69.3	207.8



7.7.4

7

Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54854.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 12:07 Supervisor approved: 12/11/23 15:42 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54855.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 12:22:33 PM
 Sample Name : icc804-4
 Vial : P1-A5
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.674	216.8 -> 171.9	104245	10.00 µg/L	0.000
M5-PFPeA	4.162	268.3 -> 223.0	44219	5.00 µg/L	0.000
M5-PFHxA	5.334	318.0 -> 273.0	35384	2.50 µg/L	0.000
M4-PFHpA	6.292	367.1 -> 322.0	34383	2.50 µg/L	0.000
M8-PFOA	6.976	421.1 -> 376.0	55862	2.50 µg/L	0.000
M9-PFNA	7.521	472.1 -> 427.0	22122	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	15377	1.25 µg/L	0.000
M7-PFUnDA	8.449	570.0 -> 525.1	19087	1.25 µg/L	0.000
M2-PFDoDA	8.880	615.1 -> 570.0	20356	1.25 µg/L	0.000
M2-PFTeDA	9.637	715.2 -> 670.0	19306	1.25 µg/L	0.000
M8-FOSA	9.794	506.1 -> 77.8	11663	2.50 µg/L	0.000
M3-PFBS	5.190	302.1 -> 79.9	9879	2.50 µg/L	0.000
M3-PFHxS	7.029	402.1 -> 79.9	8143	2.50 µg/L	0.000
M8-PFOS	8.117	507.1 -> 79.9	9284	2.50 µg/L	0.000
M2-4:2FTS	5.046	329.1 -> 80.9	1351	5.00 µg/L	0.000
M2-6:2FTS	6.748	429.1 -> 80.9	2962	5.00 µg/L	0.000
M2-8:2FTS	7.804	529.1 -> 80.9	3863	5.00 µg/L	0.000
M3-MeFOSAA	8.086	573.2 -> 419.0	20322	5.00 µg/L	0.000
M3-HFPO-DA	5.689	286.9 -> 168.9	34746	10.00 µg/L	0.000
M5-EtFOSAA	8.283	589.2 -> 419.0	16962	5.00 µg/L	0.000
M7-MeFOSE	11.022	623.2 -> 58.9	54274	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	62425	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	7194	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6564	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	7016	2.50 µg/L	0.000
13C3-PFBA	2.678	216.0 -> 172.0	50259	5.00 µg/L	0.000
18O2-PFHxS	7.041	403.0 -> 83.9	5183	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	59791	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	16802	1.25 µg/L	0.000
13C5-PFNA	7.509	468.0 -> 423.0	21489	1.25 µg/L	0.000
13C2-PFHxA	5.335	315.1 -> 270.0	38995	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.046	329.1 -> 80.9	1351	5.49 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.8%		
13C2-6:2FTS	6.748	429.1 -> 80.9	2962	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3863	5.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	20356	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C2-PFTeDA	9.637	715.2 -> 670.0	19306	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C3-PFBS	5.190	302.1 -> 79.9	9879	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C3-PFHxS	7.029	402.1 -> 79.9	8143	2.51 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFBA	2.674	216.8 -> 171.9	104245	9.88 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C4-PFHpA	6.292	367.1 -> 322.0	34383	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C5-PFHxA	5.334	318.0 -> 273.0	35384	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFPeA	4.162	268.3 -> 223.0	44219	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C6-PFDA	8.004	519.1 -> 474.1	15377	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C7-PFUnDA	8.449	570.0 -> 525.1	19087	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.9%	
13C8-FOSA	9.794	506.1 -> 77.8	11663	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-PFOA	6.976	421.1 -> 376.0	55862	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOS	8.117	507.1 -> 79.9	9284	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C9-PFNA	7.521	472.1 -> 427.0	22122	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
d3-MeFOSAA	8.086	573.2 -> 419.0	20322	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C3-HFPO-DA	5.689	286.9 -> 168.9	34746	9.68 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d3-MeFOSA	11.126	515.0 -> 219.0	6564	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
d5-EtFOSAA	8.283	589.2 -> 419.0	16962	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.0%	
d7-MeFOSE	11.022	623.2 -> 58.9	54274	24.20 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d9-EtFOSE	11.319	639.2 -> 58.9	62425	24.85 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
d5-EtFOSA	11.398	531.1 -> 219.0	7194	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
Target Compounds					QValue
4:2FTS	5.047	327.1 -> 307.0	19922	8.56 µg/L	100
		327.1 -> 80.9	8505		
6:2FTS	6.749	427.1 -> 407.0	26403	8.48 µg/L	100
		427.1 -> 80.9	9662		
8:2FTS	7.804	527.1 -> 507.0	19326	9.49 µg/L	100
		527.1 -> 80.8	7827		
EtFOSAA	8.297	584.2 -> 419.1	7623	2.46 µg/L	m 91
		584.2 -> 526.0	2812		
FOSA	9.785	498.1 -> 77.9	12086	2.31 µg/L	100
		498.1 -> 478.0	333		
MeFOSAA	8.087	570.1 -> 419.0	6992	2.40 µg/L	92
		570.1 -> 483.0	1390		
PFBA	2.682	212.8 -> 168.9	30601	9.17 µg/L	100
PFBS	5.191	298.7 -> 79.9	6030	1.97 µg/L	100
		298.7 -> 98.8	2445		
PFDA	8.005	512.9 -> 469.0	24830	2.20 µg/L	100
		512.9 -> 219.0	5147		
PFDODA	8.880	613.1 -> 569.0	34714	2.37 µg/L	100
		613.1 -> 319.0	5925		
PFDS	9.008	599.0 -> 79.9	5445	2.20 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.293	599.0 -> 98.8	2857	2.32	µg/L	100
		363.1 -> 319.0	44937			
PFHpS	7.612	363.1 -> 169.0	8278	2.12	µg/L	100
		449.0 -> 79.9	7822			
PFHxA	5.337	449.0 -> 98.9	4093	2.33	µg/L	100
		313.0 -> 269.0	26261			
PFHxS	7.030	313.0 -> 118.9	730	2.20	µg/L	96
		398.7 -> 79.9	5766			
PFNA	7.510	398.7 -> 98.9	2584	2.28	µg/L	100
		463.0 -> 419.0	29605			
PFNS	8.574	463.0 -> 219.0	6796	2.53	µg/L	100
		548.8 -> 79.9	4011			
PFOA	6.978	548.8 -> 98.9	1979	2.19	µg/L	100
		413.0 -> 369.0	50224			
PFOS	8.119	413.0 -> 169.0	11244	1.82	µg/L	59
		498.9 -> 79.9	7040			
PFPeA	4.164	498.9 -> 98.8	3689	4.63	µg/L	100
		263.0 -> 219.0	40246			
PFPeS	6.282	349.1 -> 79.9	5390	2.18	µg/L	100
		349.1 -> 98.9	2279			
PFTeDA	9.637	713.1 -> 669.0	31768	2.36	µg/L	100
		713.1 -> 168.9	3365			
PFTrDA	9.279	663.0 -> 619.0	38368	2.41	µg/L	100
		663.0 -> 168.9	5134			
PFUnDA	8.449	563.1 -> 519.0	32076	2.31	µg/L	100
		563.1 -> 269.1	6801			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	43604	4.56	µg/L	100
		632.9 -> 452.9	13667			
9Cl-PF3ONS	8.451	530.8 -> 351.0	45789	4.74	µg/L	100
		532.8 -> 353.0	13838			
ADONA	6.556	376.9 -> 250.9	116329	4.96	µg/L	100
		376.9 -> 84.8	28200			
HFPO-DA	5.690	284.9 -> 168.9	15785	4.75	µg/L	100
		284.9 -> 184.9	1478			
3:3FTCA	3.617	241.0 -> 177.0	6043	11.39	µg/L	100
		241.0 -> 117.0	536			
5:3FTCA	6.008	341.0 -> 237.1	115879	57.54	µg/L	100
		341.0 -> 217.0	82812			
7:3FTCA	7.536	441.0 -> 316.9	61800	58.52	µg/L	100
		441.0 -> 336.9	147017			
EtFOSA	11.399	526.0 -> 219.0	14515	4.74	µg/L	100
		526.0 -> 169.0	20110			
EtFOSE	11.332	630.0 -> 58.9	26385	11.94	µg/L	100
		511.9 -> 219.0	11060			
MeFOSA	11.128	511.9 -> 169.0	16360	4.73	µg/L	100
		616.1 -> 58.9	25303			
MeFOSE	11.035	699.1 -> 79.9	4090	11.75	µg/L	100
		699.1 -> 98.8	2314			
PFDoDS	9.764	295.0 -> 201.0	3689	2.17	µg/L	100
		295.0 -> 84.9	968			
NFDHA	5.216	279.0 -> 85.1	22314	4.66	µg/L	100
		229.0 -> 84.9	23979			
PFMBA	3.315	314.8 -> 134.9	34478	4.55	µg/L	100
		314.8 -> 82.9	1352			
PFEESA	5.722			4.13	µg/L	100

= Qualifier out of range, m = manually integrated, + = Area summed

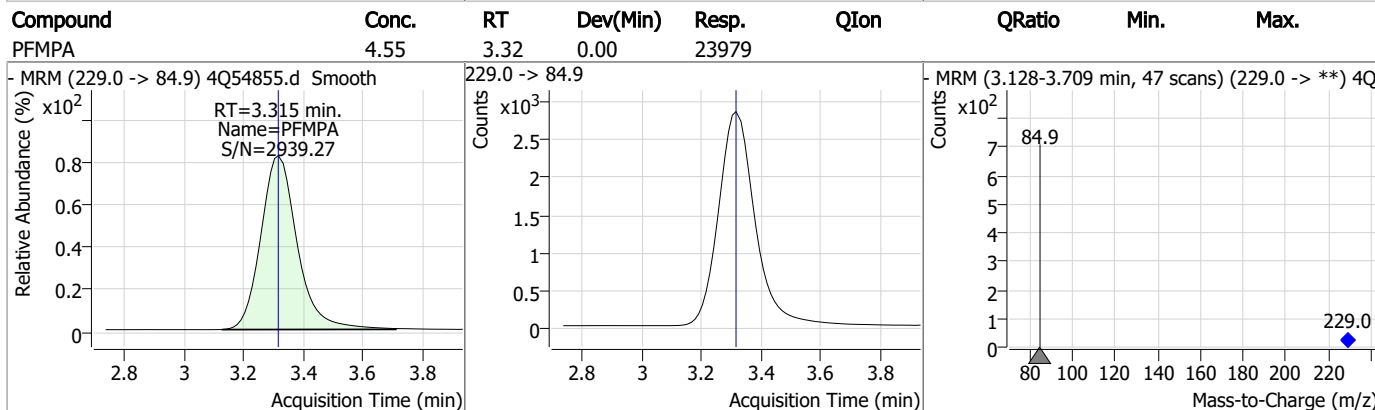
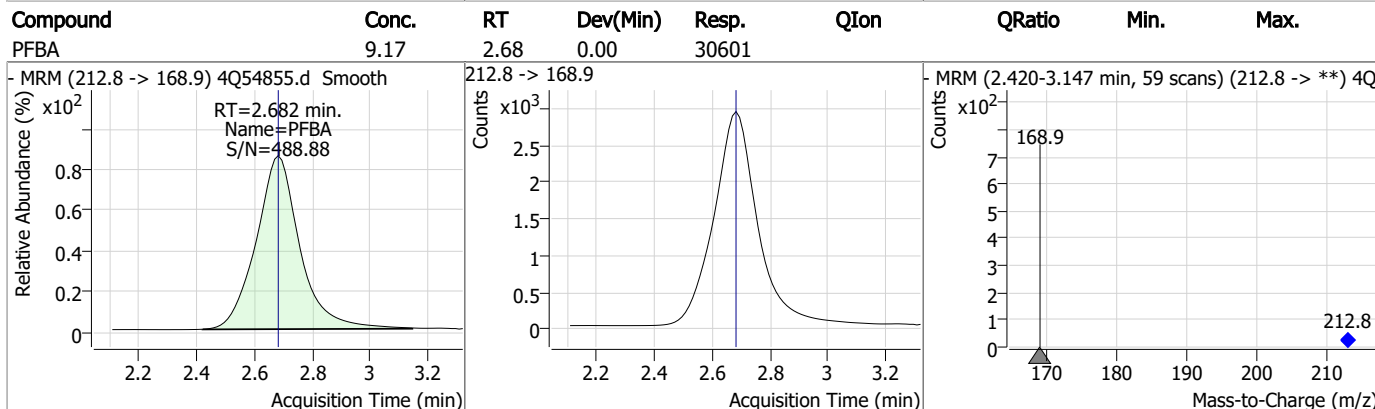
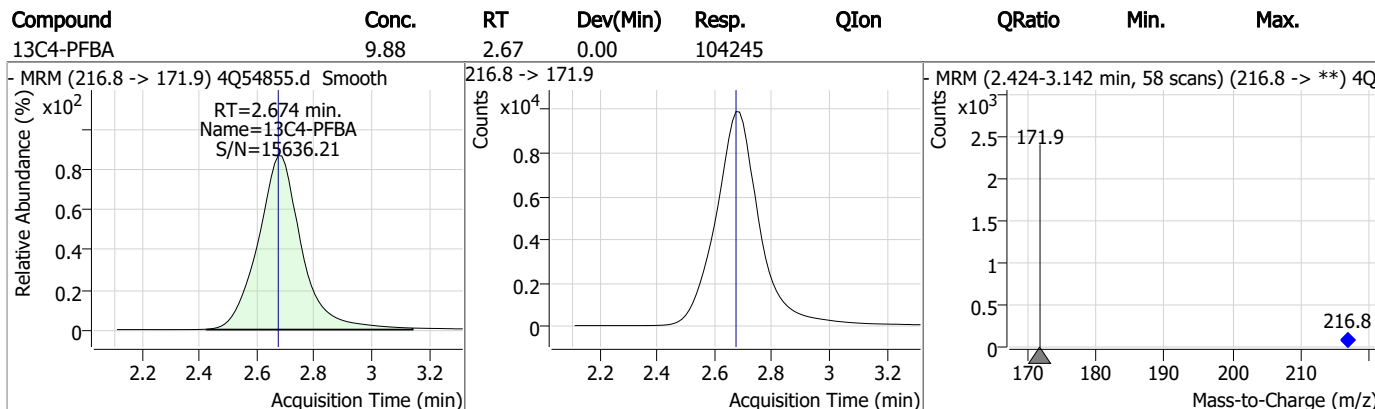
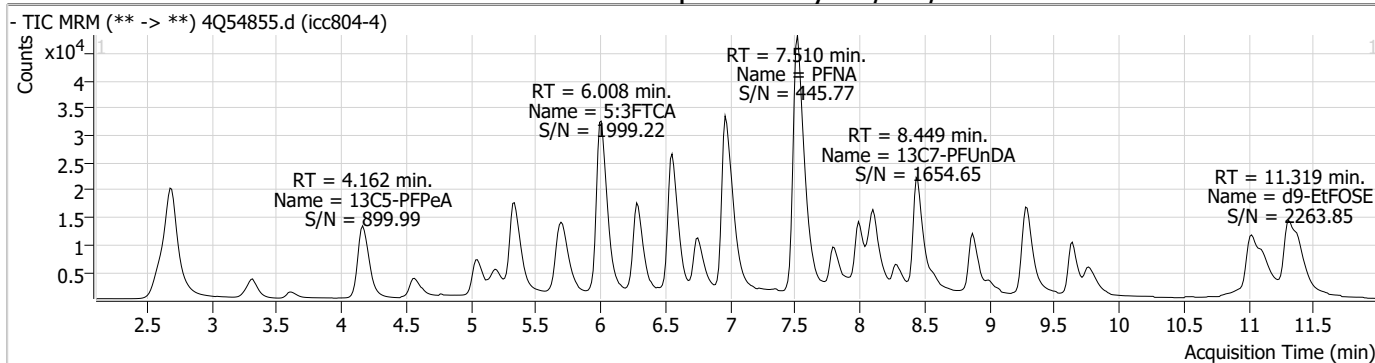
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.7.5

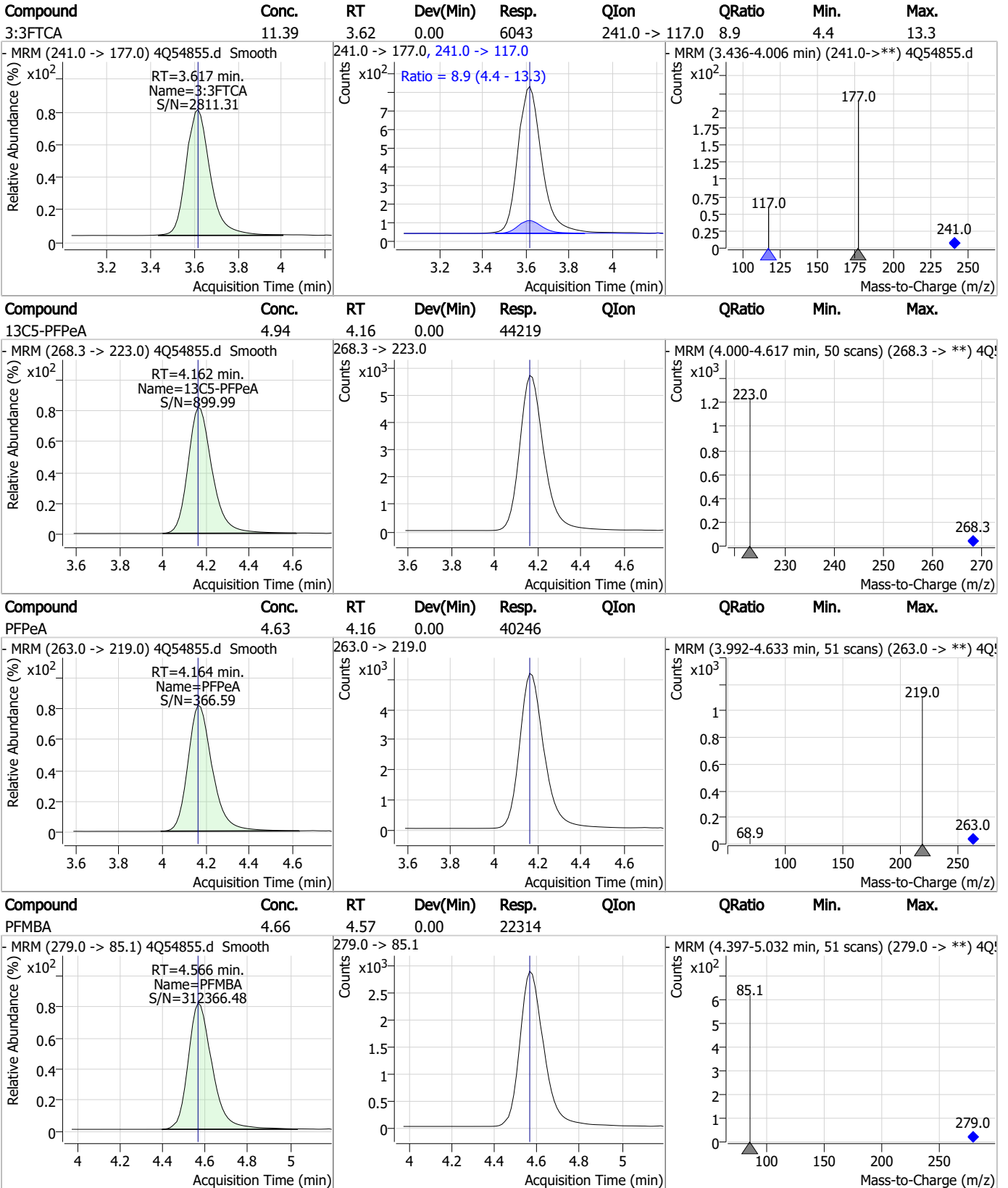
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Perfluorinated Compounds by LC/MS/MS



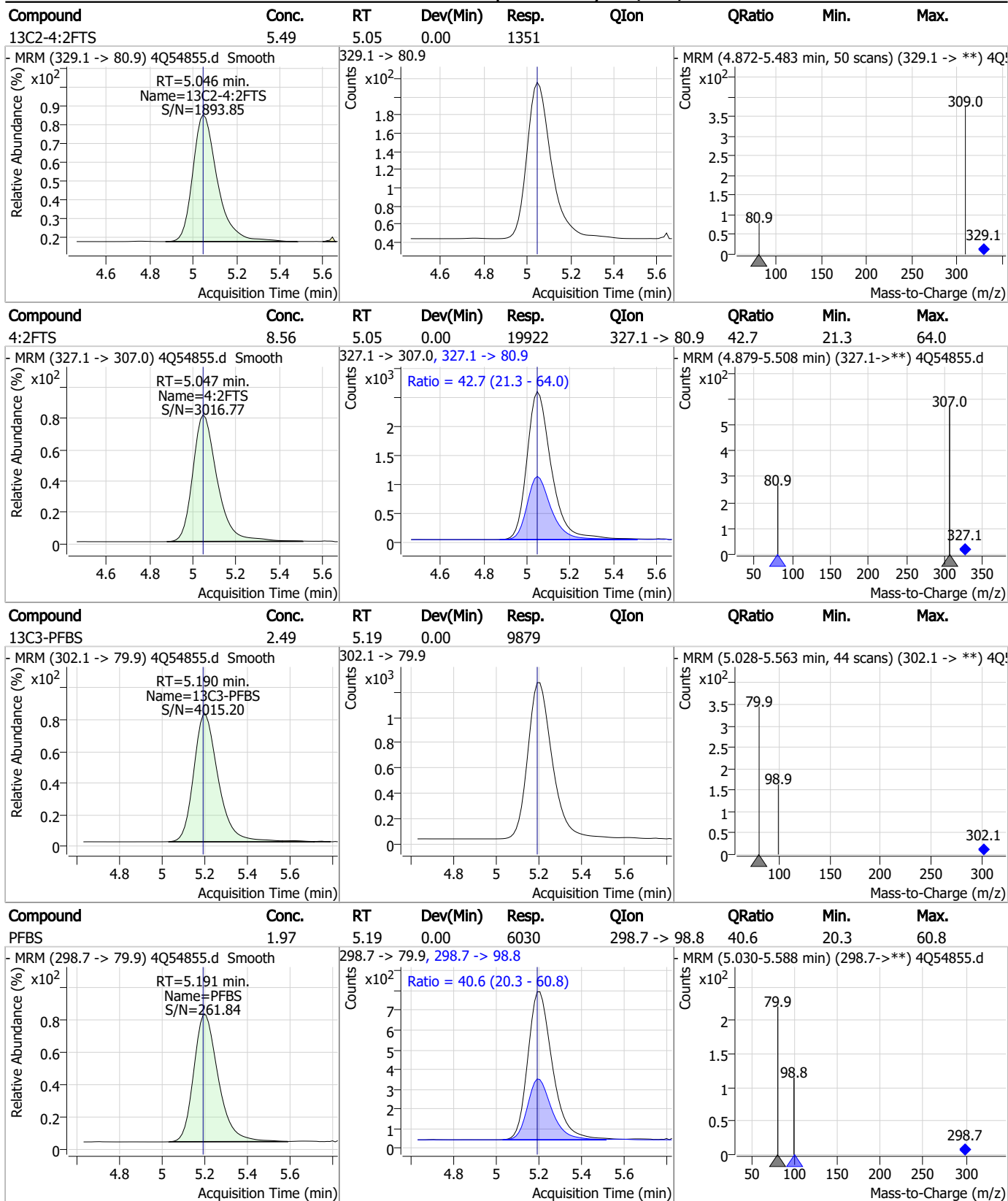
7.7.5
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Perfluorinated Compounds by LC/MS/MS



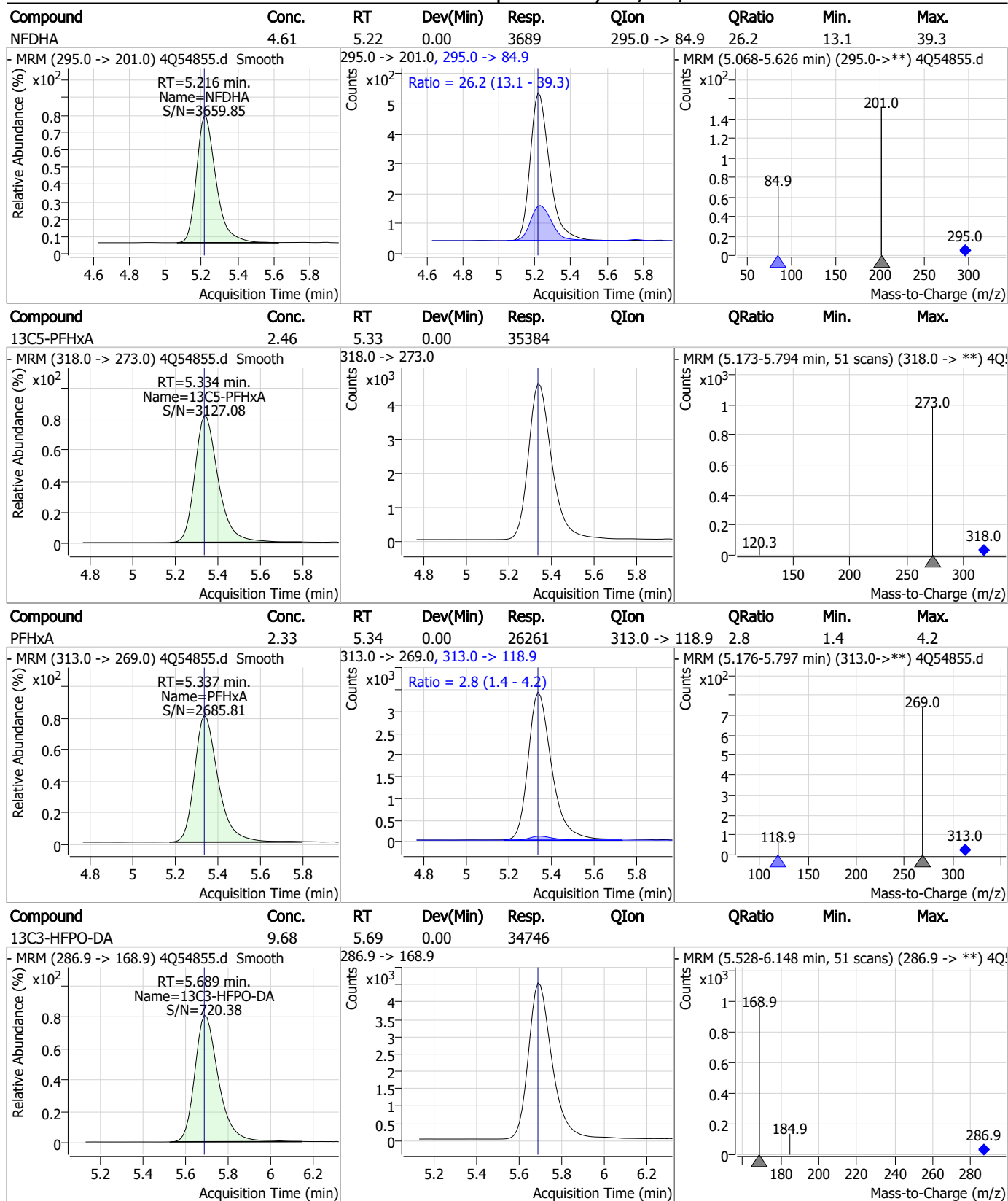
7.7.5
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Perfluorinated Compounds by LC/MS/MS



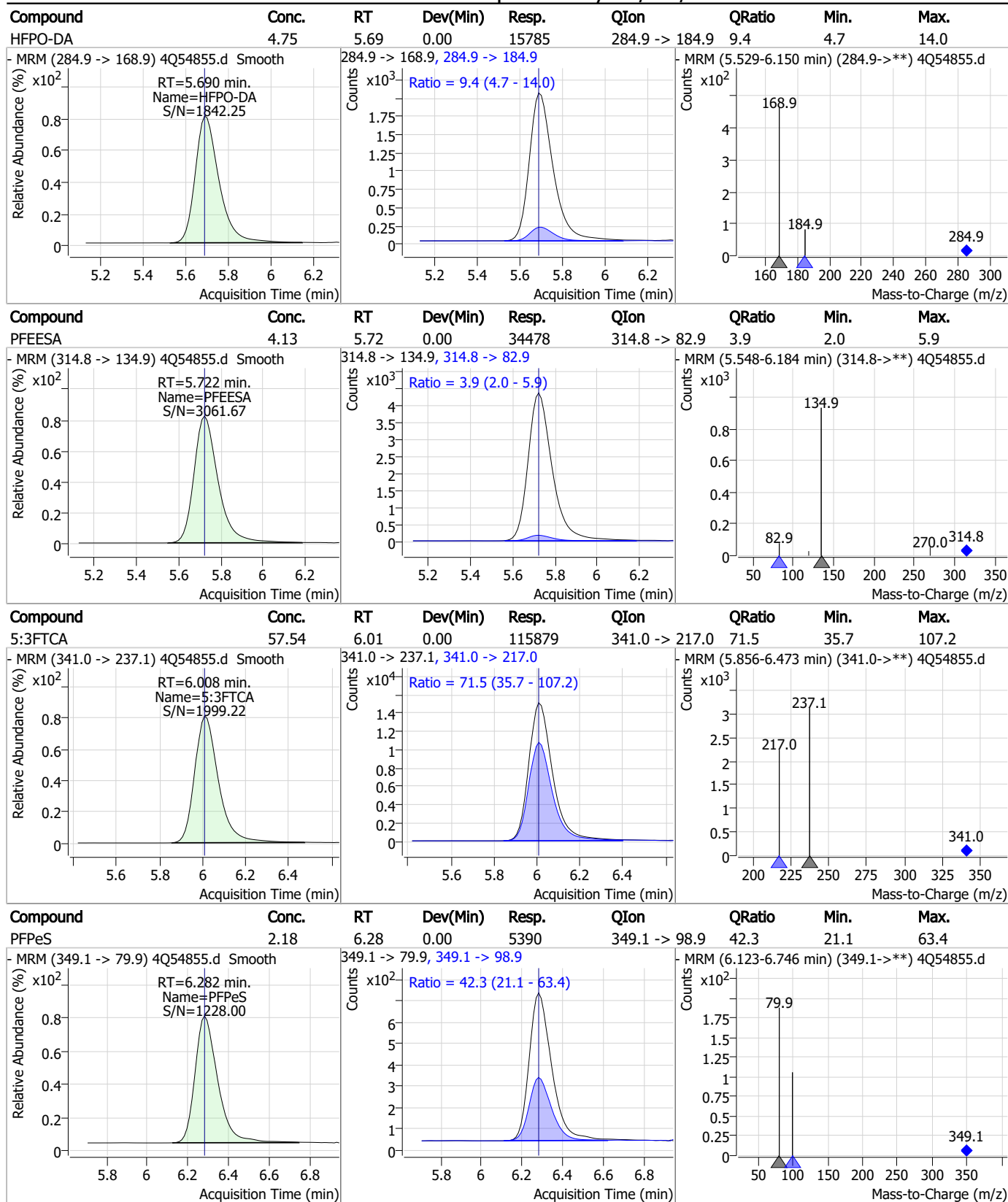
7.7.5
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Perfluorinated Compounds by LC/MS/MS



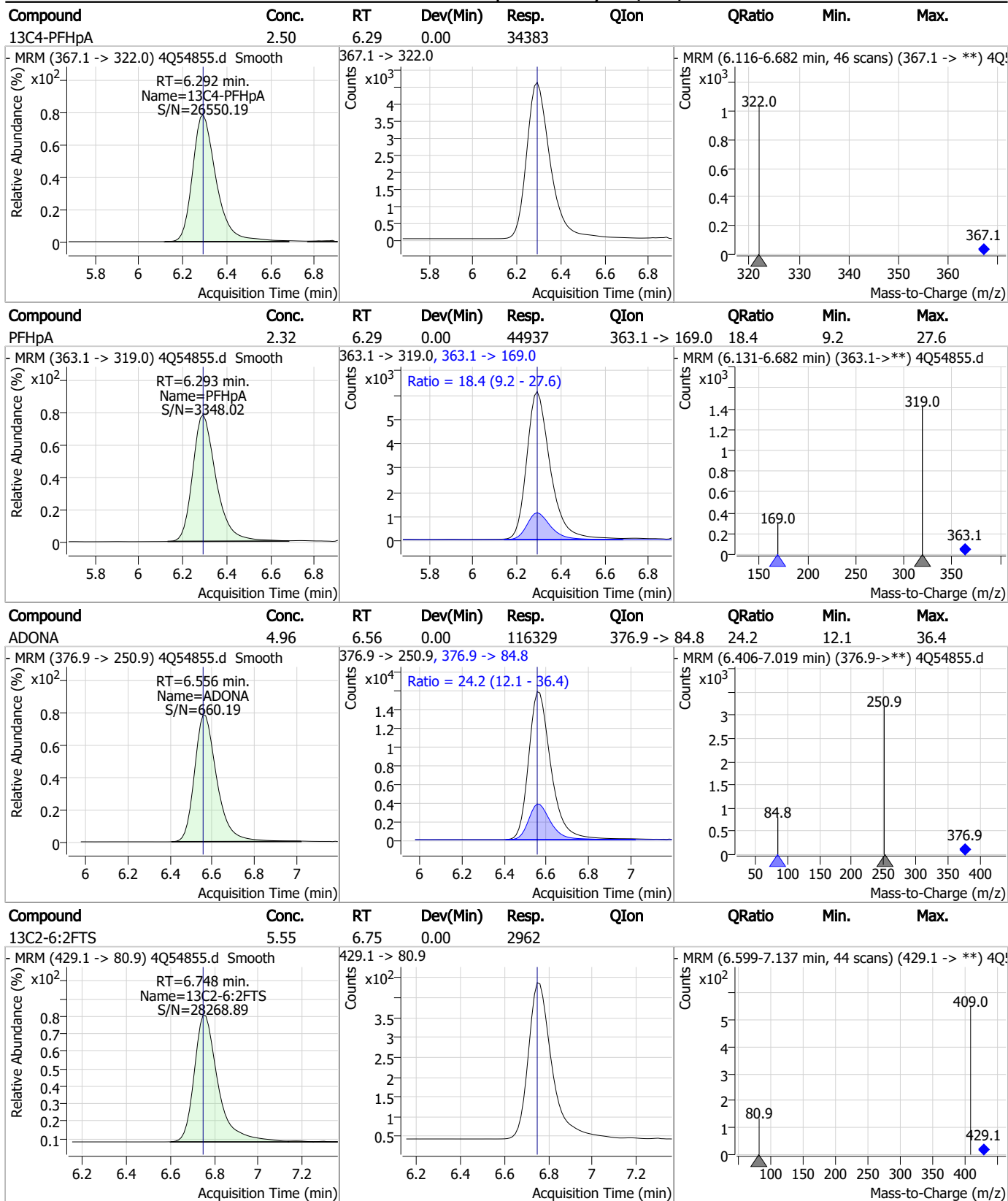
7.7.5
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Perfluorinated Compounds by LC/MS/MS



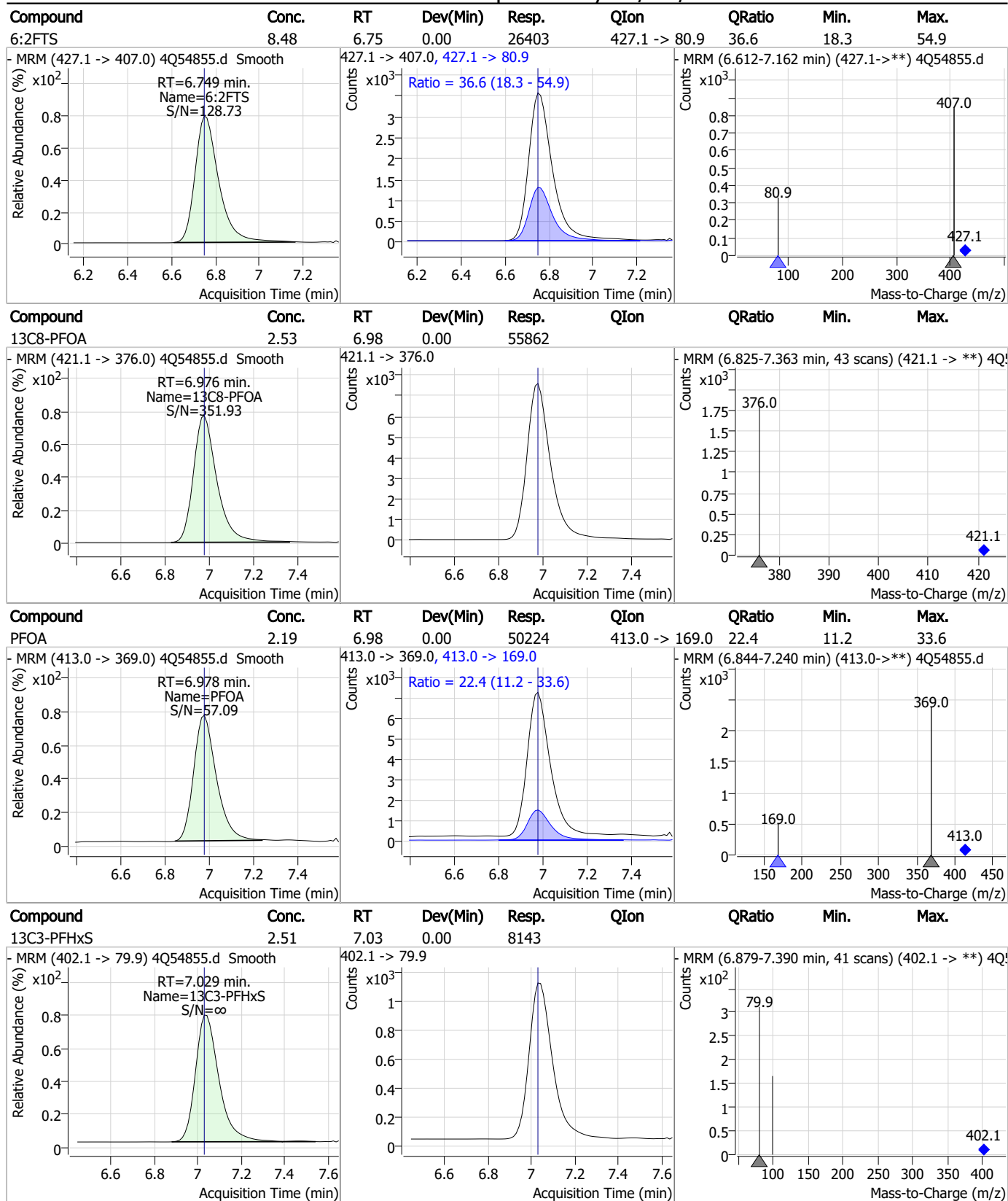
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Perfluorinated Compounds by LC/MS/MS



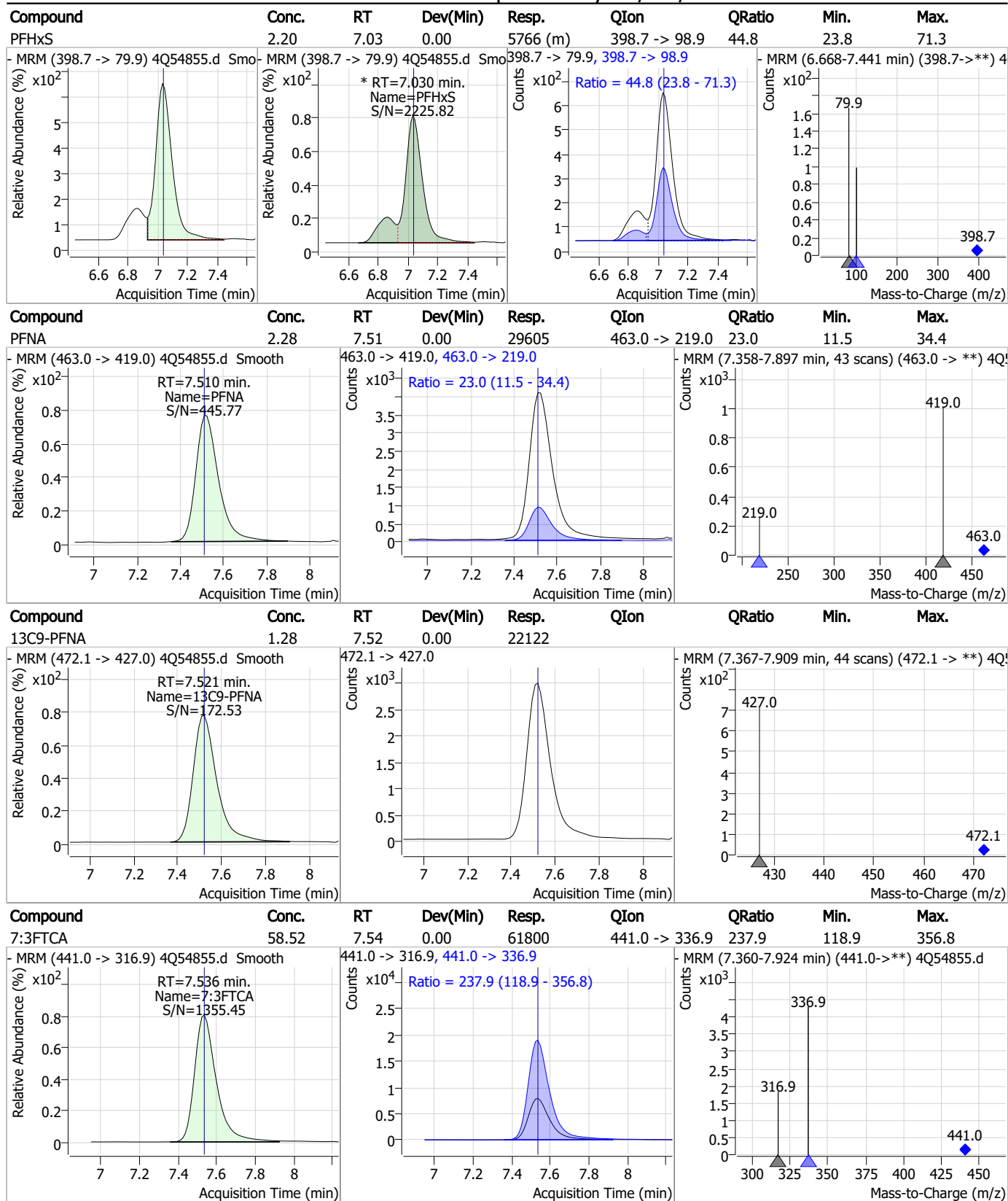
7.7.5
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Perfluorinated Compounds by LC/MS/MS



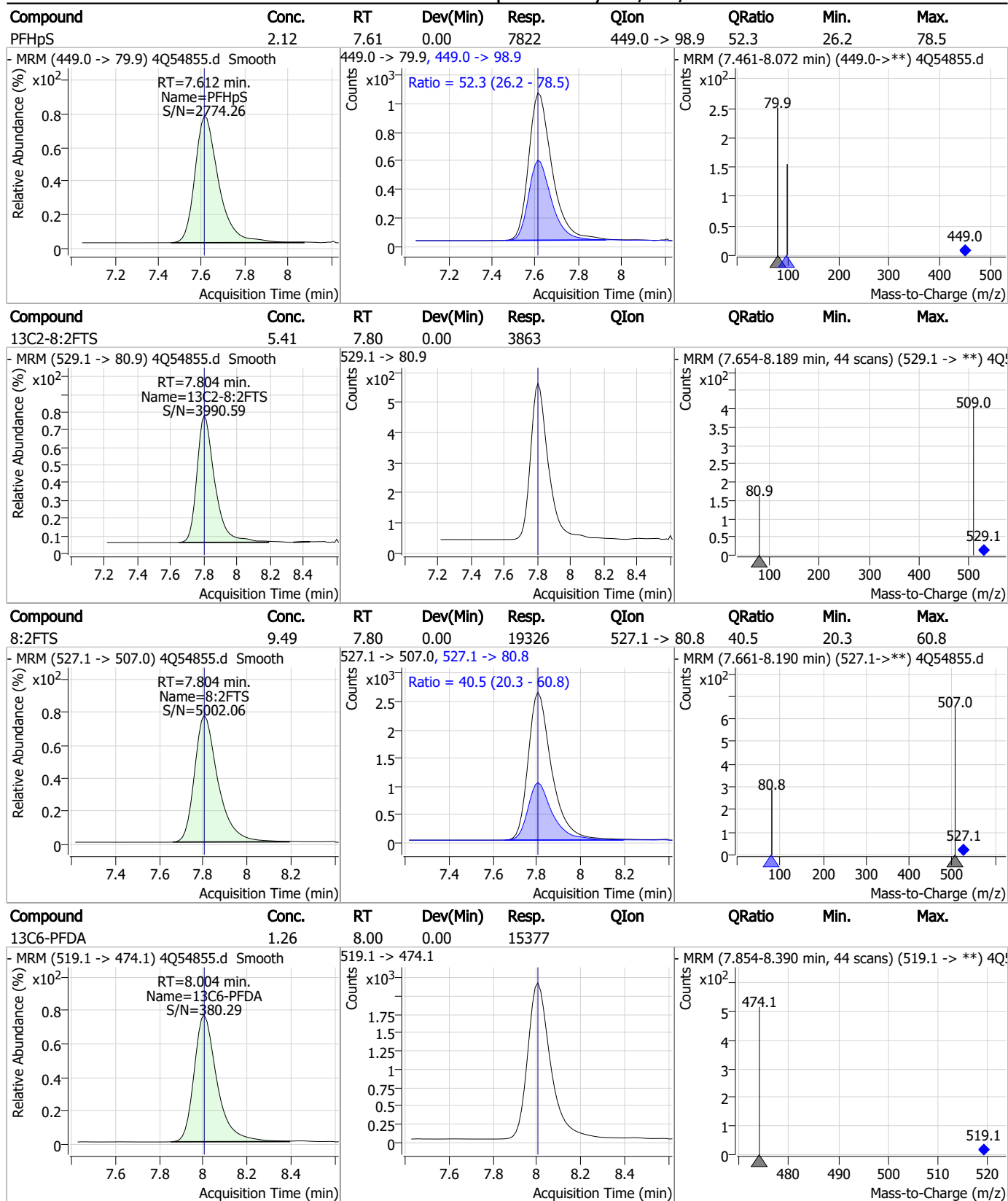
7.7.5
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Perfluorinated Compounds by LC/MS/MS



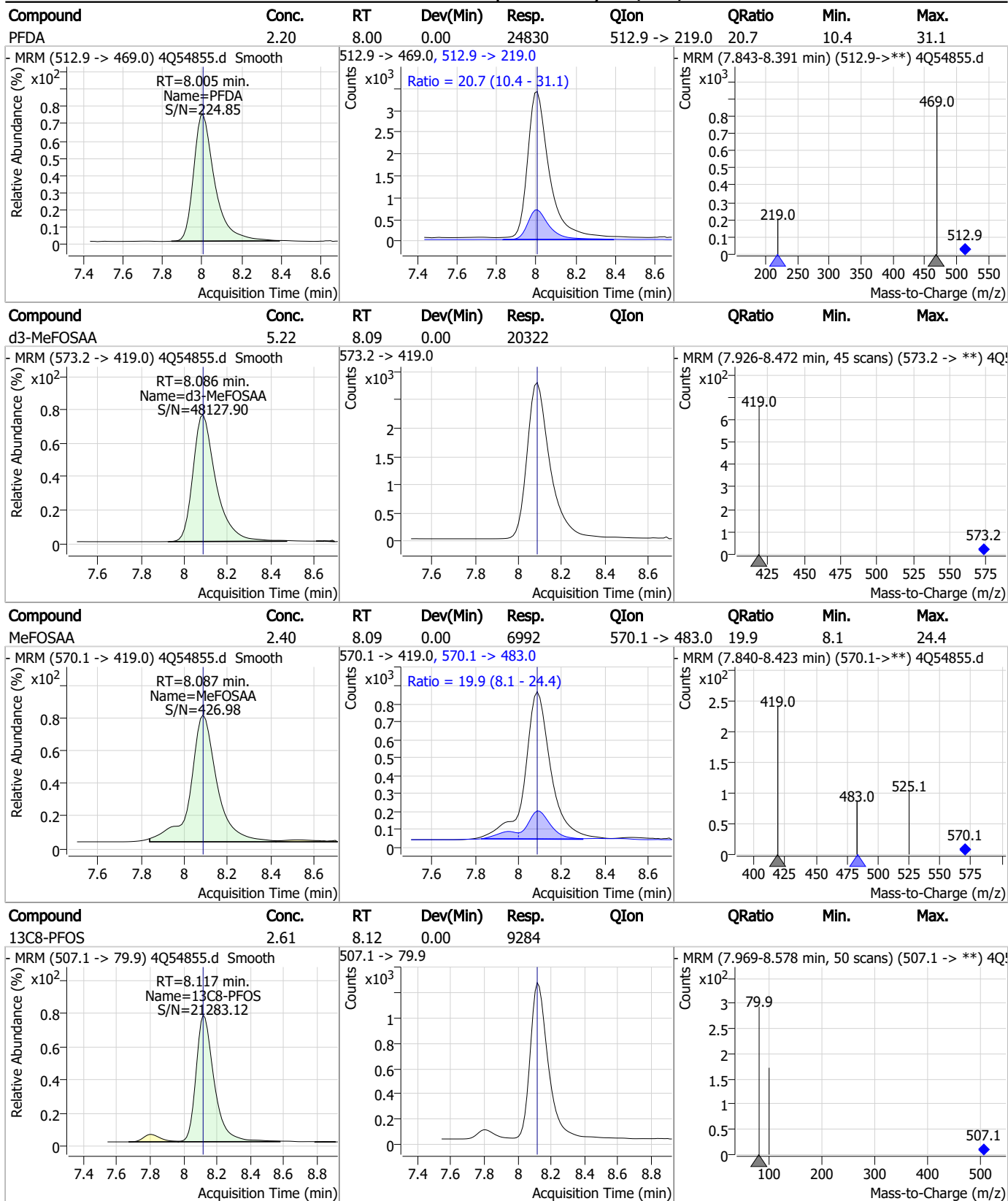
7.7.5
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Perfluorinated Compounds by LC/MS/MS



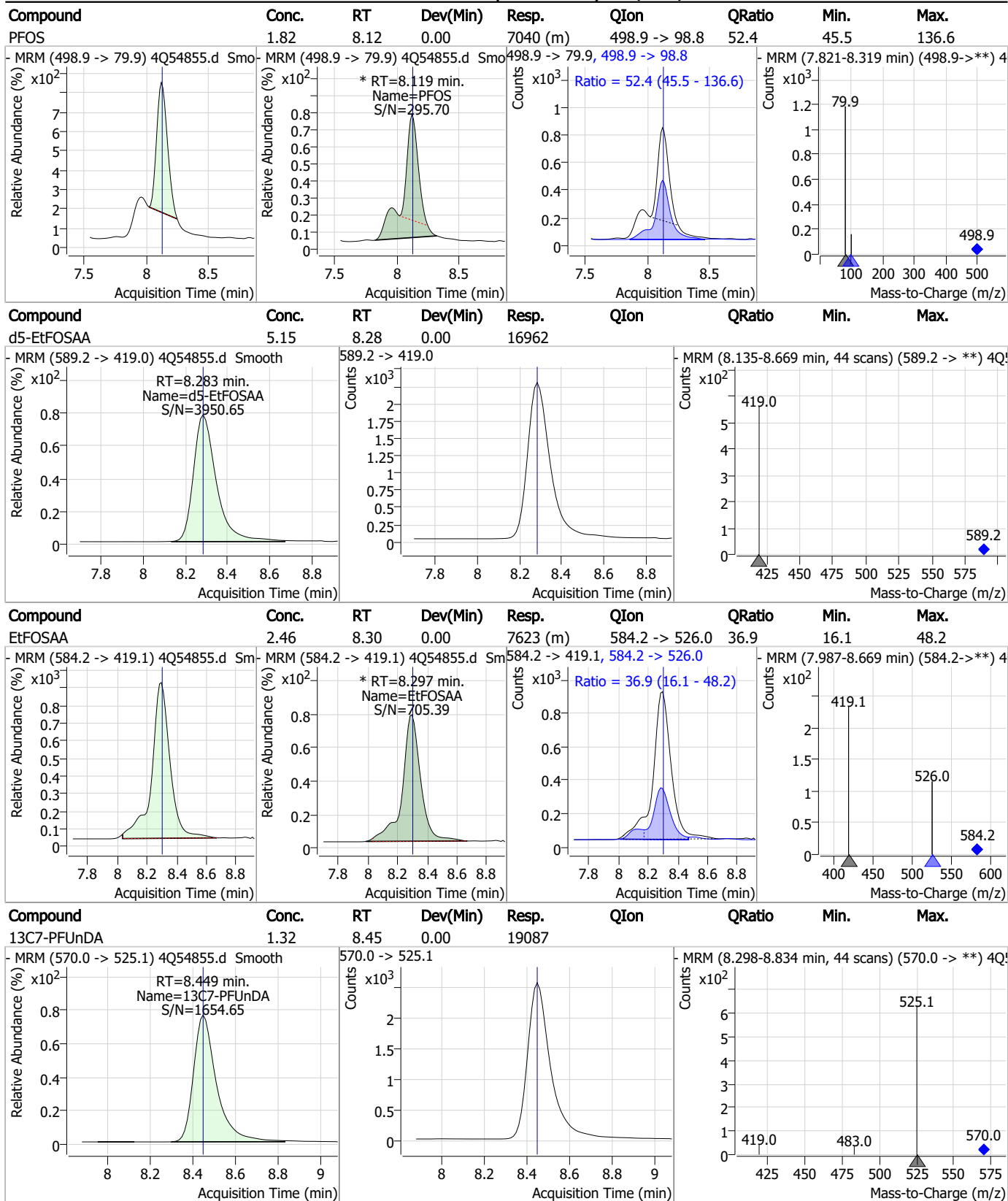
7.7.5
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Perfluorinated Compounds by LC/MS/MS



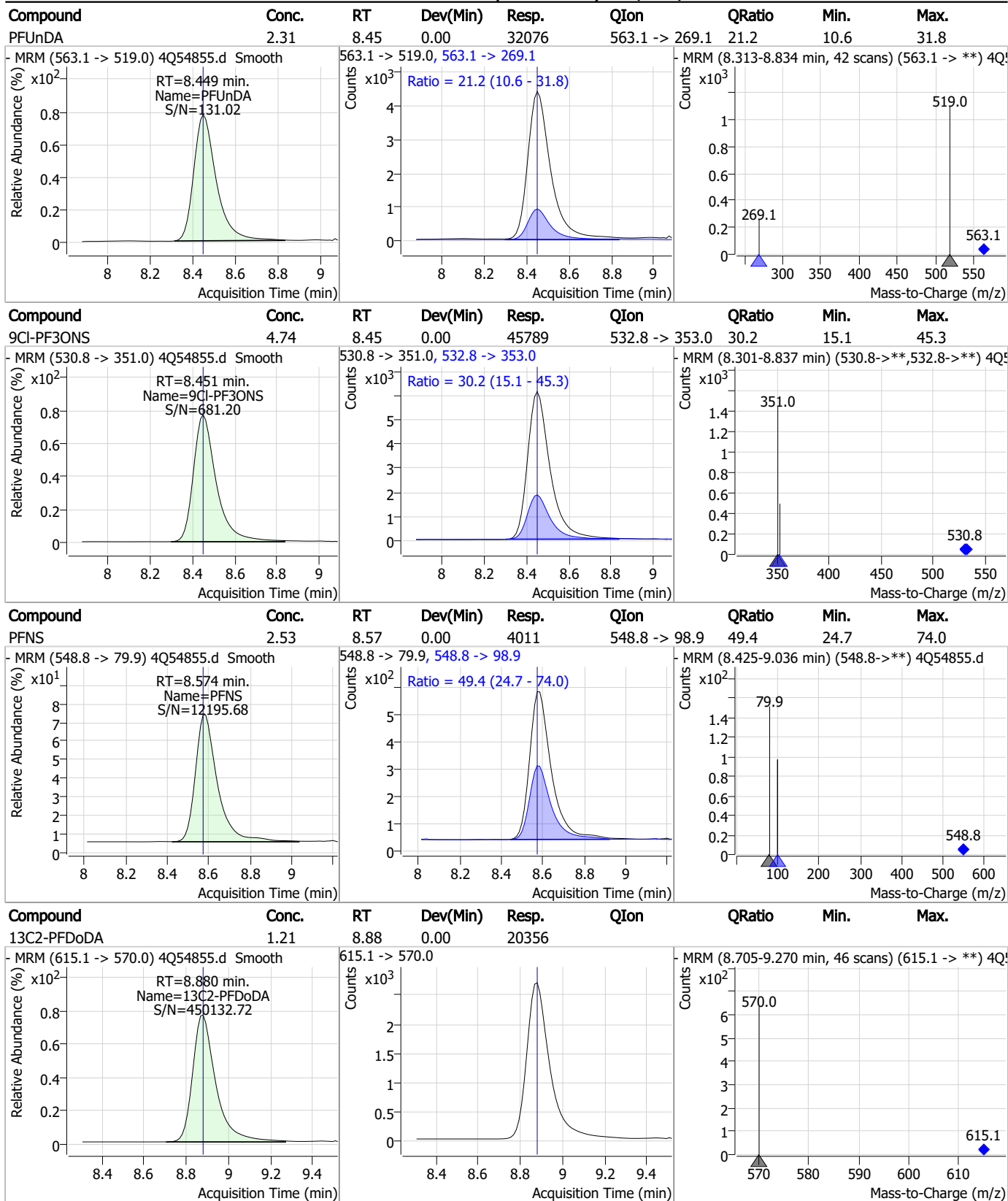
7.7.5
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Perfluorinated Compounds by LC/MS/MS



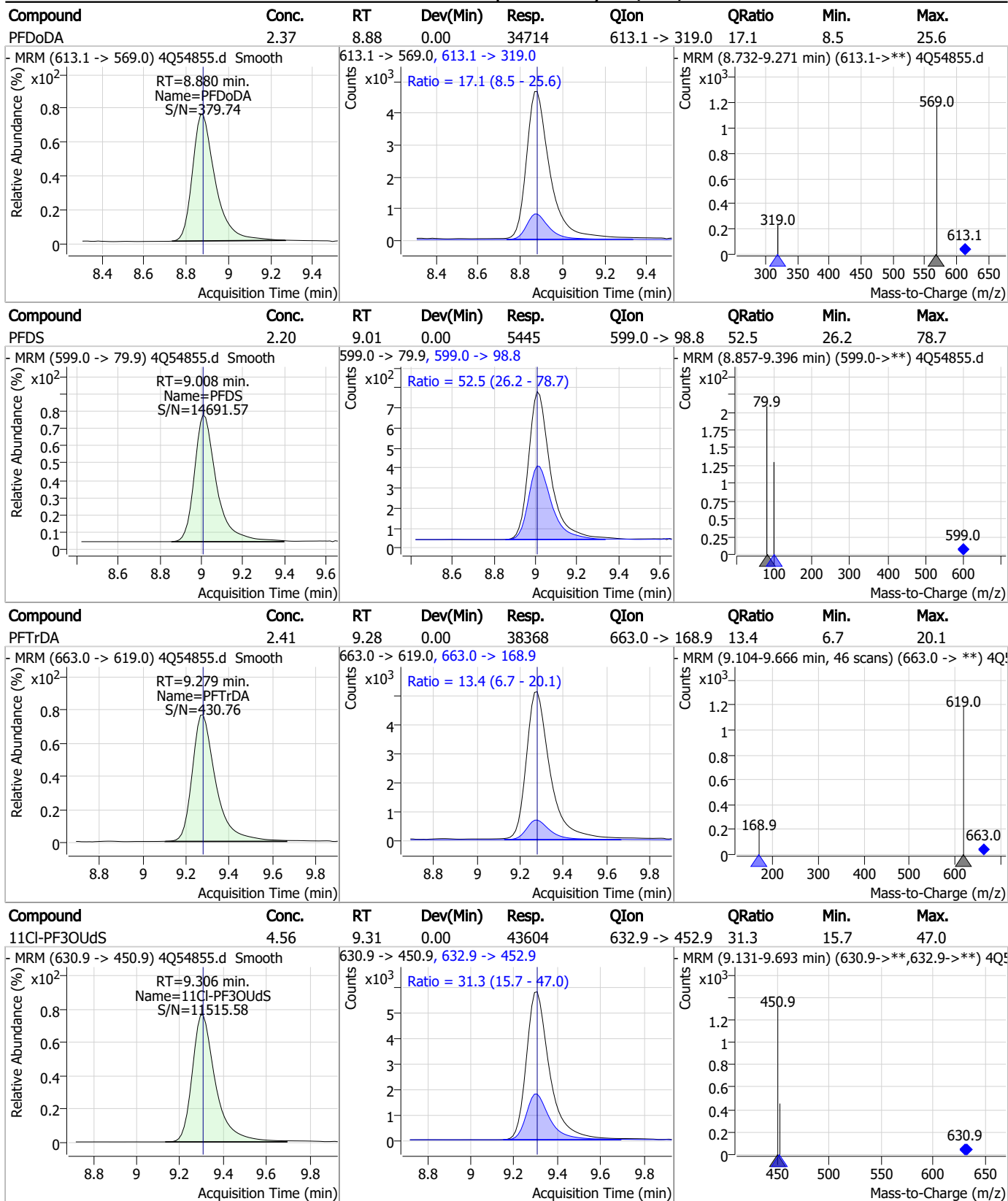
7.7.5
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Perfluorinated Compounds by LC/MS/MS



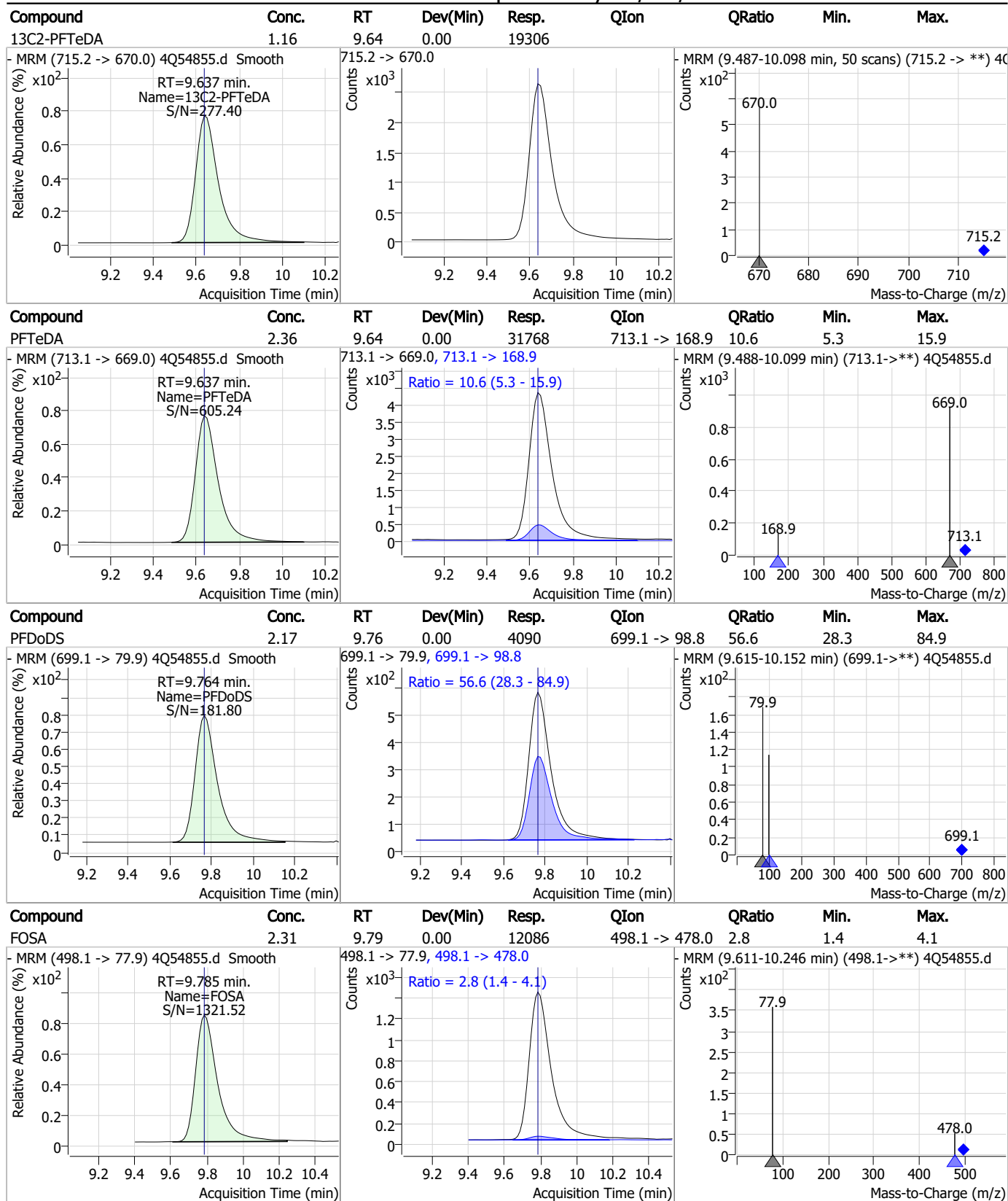
7.7.5
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Perfluorinated Compounds by LC/MS/MS



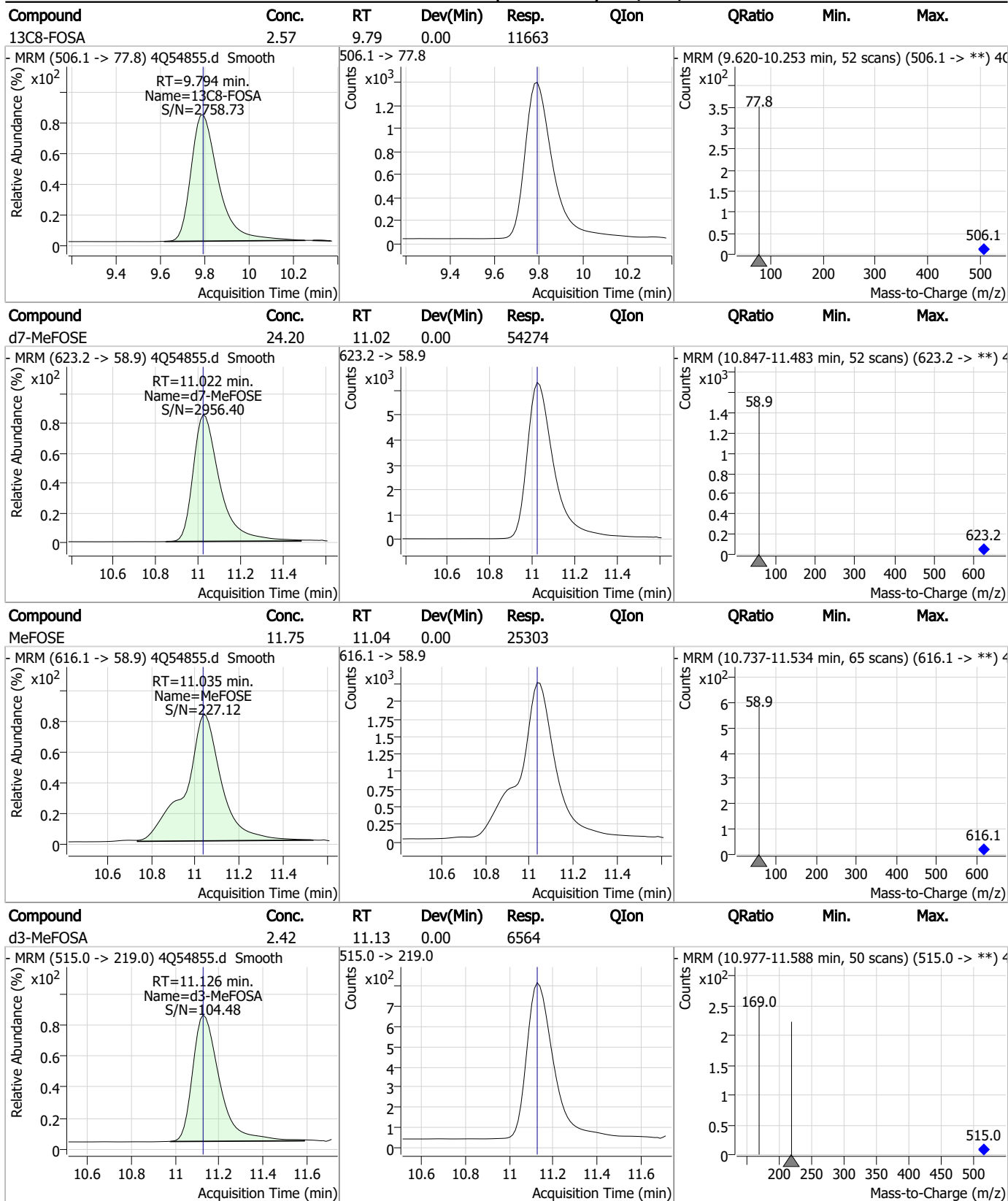
7.7.5
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Perfluorinated Compounds by LC/MS/MS



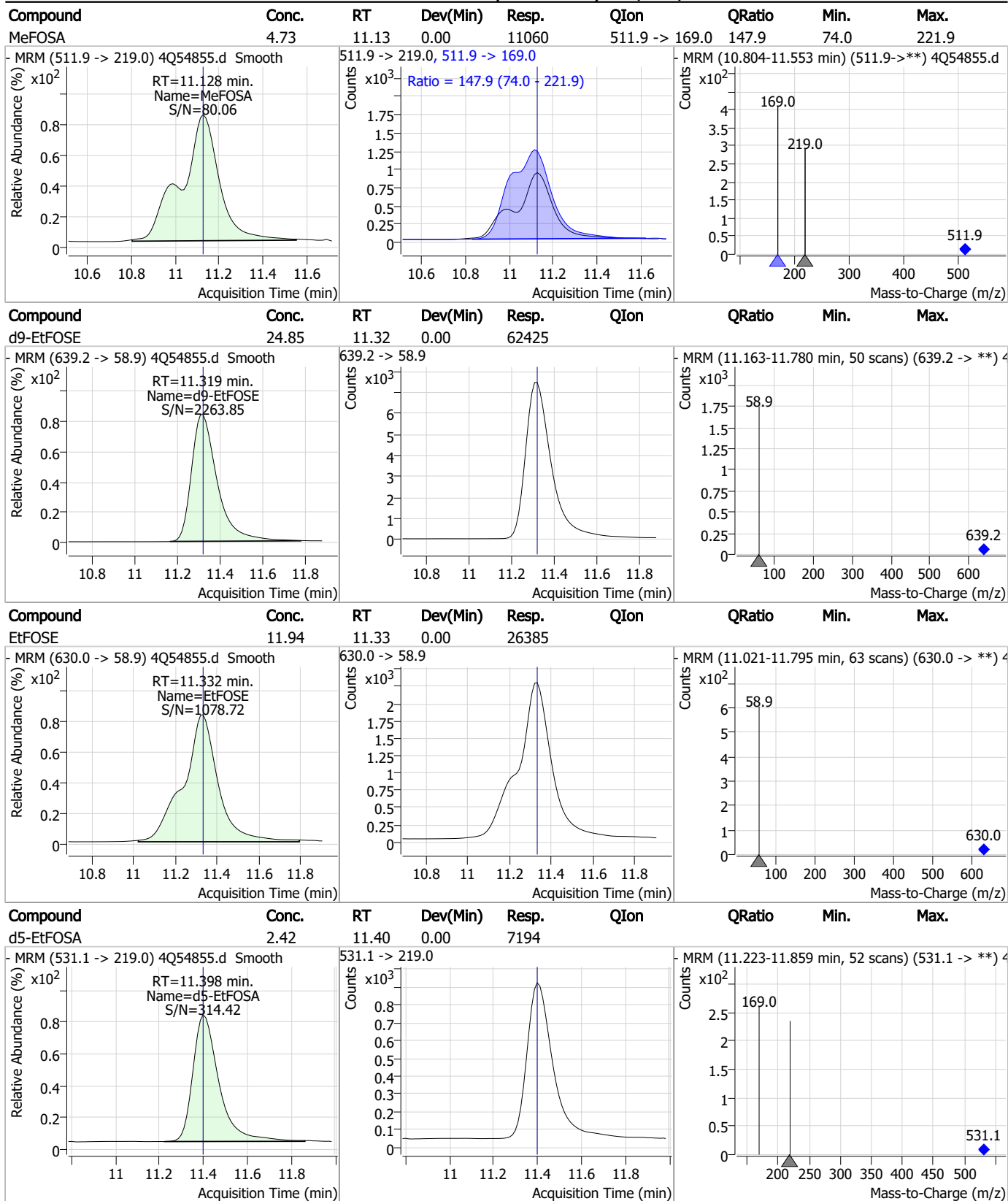
7.7.5
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Perfluorinated Compounds by LC/MS/MS



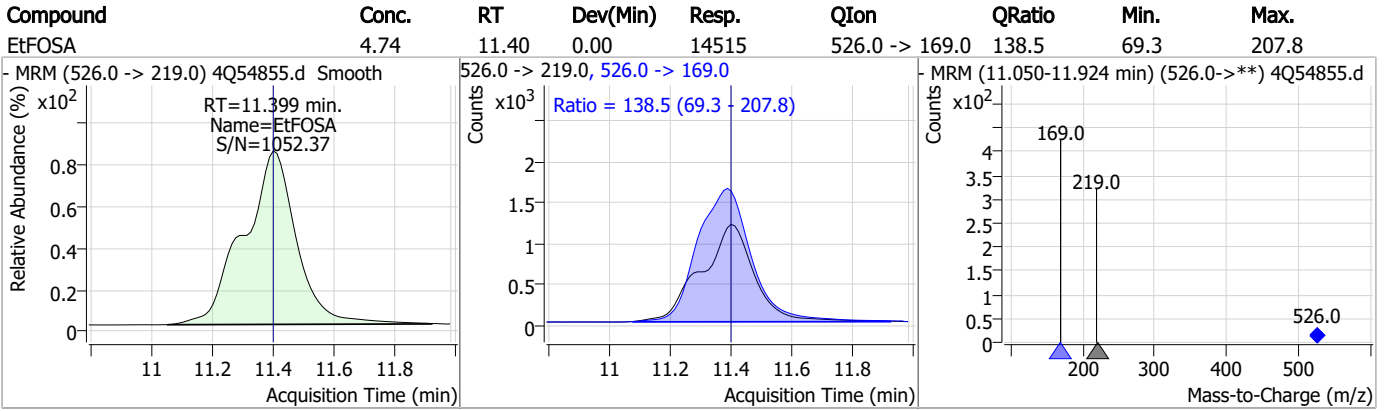
7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5

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Manual Integration Approval Summary

Sample Number: S4Q804-ICC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54855.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 12:22 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

7.7.5.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54856.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 12:37:18 PM
 Sample Name : ic804-5
 Vial : P1-A6
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	115726	10.00 µg/L	0.025
M5-PFPeA	4.175	268.3 -> 223.0	47986	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	38296	2.50 µg/L	0.012
M4-PFHpA	6.292	367.1 -> 322.0	36844	2.50 µg/L	0.000
M8-PFOA	6.976	421.1 -> 376.0	59183	2.50 µg/L	0.000
M9-PFNA	7.521	472.1 -> 427.0	23873	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	15881	1.25 µg/L	0.000
M7-PFUnDA	8.448	570.0 -> 525.1	18876	1.25 µg/L	0.000
M2-PFDoDA	8.880	615.1 -> 570.0	21448	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	22005	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	12630	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	10776	2.50 µg/L	0.013
M3-PFHxS	7.042	402.1 -> 79.9	8597	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	9441	2.50 µg/L	0.012
M2-4:2FTS	5.046	329.1 -> 80.9	1273	5.00 µg/L	0.000
M2-6:2FTS	6.761	429.1 -> 80.9	2987	5.00 µg/L	0.012
M2-8:2FTS	7.804	529.1 -> 80.9	3770	5.00 µg/L	0.000
M3-MeFOSAA	8.086	573.2 -> 419.0	21416	5.00 µg/L	0.000
M3-HFPO-DA	5.689	286.9 -> 168.9	38099	10.00 µg/L	0.000
M5-EtFOSAA	8.283	589.2 -> 419.0	18419	5.00 µg/L	0.000
M7-MeFOSE	11.022	623.2 -> 58.9	65137	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	73150	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	8372	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	7137	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	8365	2.50 µg/L	0.000
13C3-PFBA	2.703	216.0 -> 172.0	54543	5.00 µg/L	0.025
18O2-PFHxS	7.041	403.0 -> 83.9	5470	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	64086	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	17777	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	22949	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	40737	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.046	329.1 -> 80.9	1273	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2987	5.30 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.1%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3770	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	21448	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	22005	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C3-PFBS	5.202	302.1 -> 79.9	10776	2.57 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C3-PFHxS	7.042	402.1 -> 79.9	8597	2.51 µg/L	0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFBA	2.699	216.8 -> 171.9	115726	10.10 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.292	367.1 -> 322.0	36844	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C5-PFHxA	5.347	318.0 -> 273.0	38296	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C5-PFPeA	4.175	268.3 -> 223.0	47986	5.13 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C6-PFDA	8.004	519.1 -> 474.1	15881	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C7-PFUnDA	8.448	570.0 -> 525.1	18876	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C8-FOSA	9.794	506.1 -> 77.8	12630	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
13C8-PFOA	6.976	421.1 -> 376.0	59183	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-PFOS	8.130	507.1 -> 79.9	9441	2.23 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.2%	
13C9-PFNA	7.521	472.1 -> 427.0	23873	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.9%	
d3-MeFOSAA	8.086	573.2 -> 419.0	21416	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C3-HFPO-DA	5.689	286.9 -> 168.9	38099	10.16 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d3-MeFOSA	11.126	515.0 -> 219.0	7137	2.21 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.3%	
d5-EtFOSAA	8.283	589.2 -> 419.0	18419	4.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.8%	
d7-MeFOSE	11.022	623.2 -> 58.9	65137	24.35 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
d9-EtFOSE	11.319	639.2 -> 58.9	73150	24.42 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
d5-EtFOSA	11.398	531.1 -> 219.0	8372	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	43767	19.96 µg/L	100
		327.1 -> 80.9	18556		
6:2FTS	6.761	427.1 -> 407.0	60624	19.31 µg/L	99
		427.1 -> 80.9	21764		
8:2FTS	7.804	527.1 -> 507.0	43403	21.84 µg/L	96
		527.1 -> 80.8	16556		
EtFOSAA	8.297	584.2 -> 419.1	16233	4.83 µg/L	84
		584.2 -> 526.0	6652		
FOSA	9.798	498.1 -> 77.9	28011	4.93 µg/L	99
		498.1 -> 478.0	862		
MeFOSAA	8.087	570.1 -> 419.0	17325	5.64 µg/L	95
		570.1 -> 483.0	3214		
PFBA	2.707	212.8 -> 168.9	75189	20.29 µg/L	100
PFBS	5.203	298.7 -> 79.9	14321	4.28 µg/L	96
		298.7 -> 98.8	5421		
PFDA	8.005	512.9 -> 469.0	58938	5.05 µg/L	99
		512.9 -> 219.0	12040		
PFDODA	8.880	613.1 -> 569.0	81092	5.25 µg/L	98
		613.1 -> 319.0	14458		
PFDS	9.020	599.0 -> 79.9	12720	5.06 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	6206			
PFHpA	6.293	363.1 -> 319.0	106074	5.11	µg/L	99
		363.1 -> 169.0	19185			
PFHpS	7.624	449.0 -> 79.9	19003	5.07	µg/L	97
		449.0 -> 98.9	9558			
PFHxA	5.350	313.0 -> 269.0	60669	4.96	µg/L	99
		313.0 -> 118.9	1879			
PFHxS	7.043	398.7 -> 79.9	12975	4.68	µg/L	m 93
		398.7 -> 98.9	6777			
PFNA	7.522	463.0 -> 419.0	67735	4.83	µg/L	99
		463.0 -> 219.0	15992			
PFNS	8.586	548.8 -> 79.9	9182	5.70	µg/L	97
		548.8 -> 98.9	4702			
PFOA	6.978	413.0 -> 369.0	123853	5.09	µg/L	96
		413.0 -> 169.0	25527			
PFOS	8.119	498.9 -> 79.9	17969	4.57	µg/L	m 56
		498.9 -> 98.8	8931			
PFPeA	4.177	263.0 -> 219.0	95420	10.11	µg/L	100
PFPeS	6.282	349.1 -> 79.9	12775	4.89	µg/L	96
		349.1 -> 98.9	5704			
PFTeDA	9.650	713.1 -> 669.0	78056	5.10	µg/L	100
		713.1 -> 168.9	8142			
PFTrDA	9.279	663.0 -> 619.0	89935	5.36	µg/L	98
		663.0 -> 168.9	12659			
PFUnDA	8.449	563.1 -> 519.0	73145	5.33	µg/L	100
		563.1 -> 269.1	15643			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	103918	9.91	µg/L	99
		632.9 -> 452.9	31700			
9Cl-PF3ONS	8.451	530.8 -> 351.0	106727	10.07	µg/L	99
		532.8 -> 353.0	31589			
ADONA	6.568	376.9 -> 250.9	276896	10.76	µg/L	100
		376.9 -> 84.8	66459			
HFPO-DA	5.703	284.9 -> 168.9	37346	10.24	µg/L	100
		284.9 -> 184.9	3523			
3:3FTCA	3.630	241.0 -> 177.0	14438	24.50	µg/L	100
		241.0 -> 117.0	1281			
5:3FTCA	6.020	341.0 -> 237.1	278851	127.94	µg/L	99
		341.0 -> 217.0	196397			
7:3FTCA	7.536	441.0 -> 316.9	147863	129.37	µg/L	99
		441.0 -> 336.9	349156			
EtFOSA	11.399	526.0 -> 219.0	34857	9.78	µg/L	99
		526.0 -> 169.0	47749			
EtFOSE	11.332	630.0 -> 58.9	63268	24.44	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	27417	10.79	µg/L	m 96
		511.9 -> 169.0	39213			
MeFOSE	11.035	616.1 -> 58.9	62759	24.28	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	9723	5.07	µg/L	97
		699.1 -> 98.8	5323			
NFDHA	5.229	295.0 -> 201.0	8221	9.50	µg/L	96
		295.0 -> 84.9	2314			
PFMBA	4.578	279.0 -> 85.1	52322	10.06	µg/L	100
PFMPA	3.332	229.0 -> 84.9	57711	10.10	µg/L	100
PFEESA	5.722	314.8 -> 134.9	83341	9.23	µg/L	98
		314.8 -> 82.9	2820			

= Qualifier out of range, m = manually integrated, + = Area summed

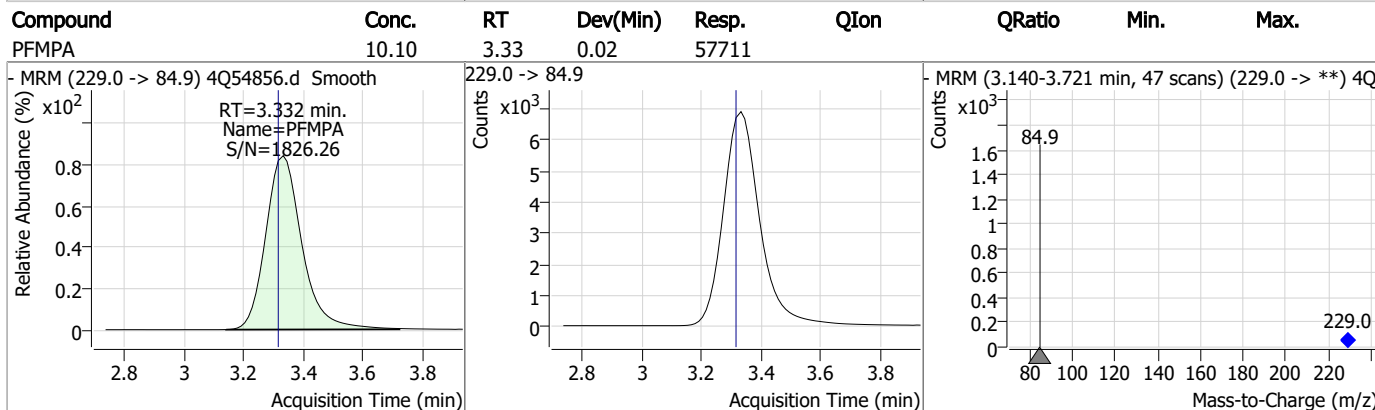
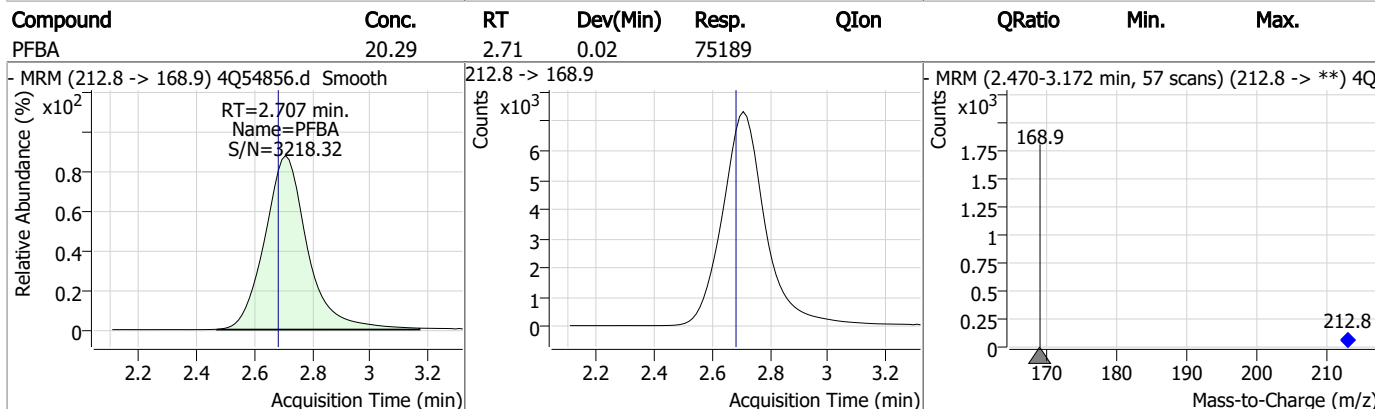
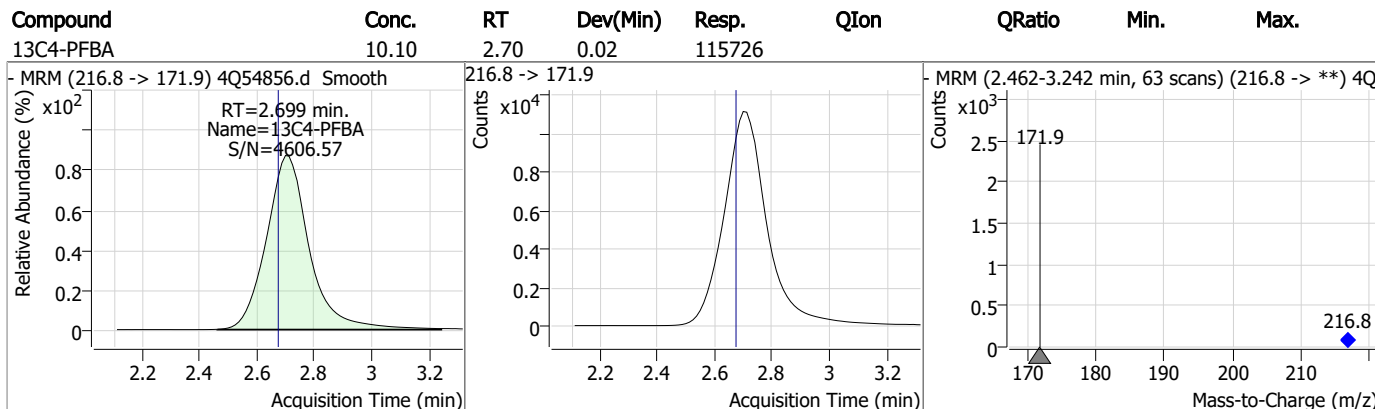
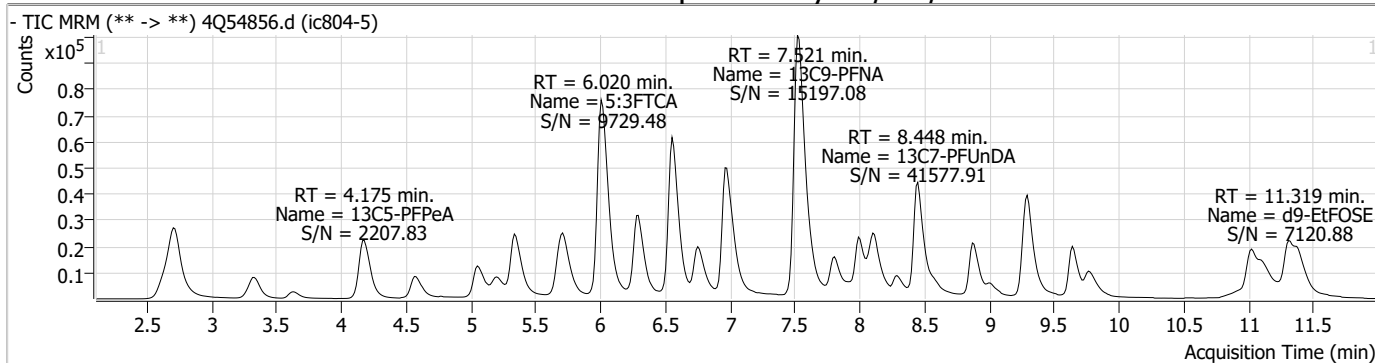
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.6
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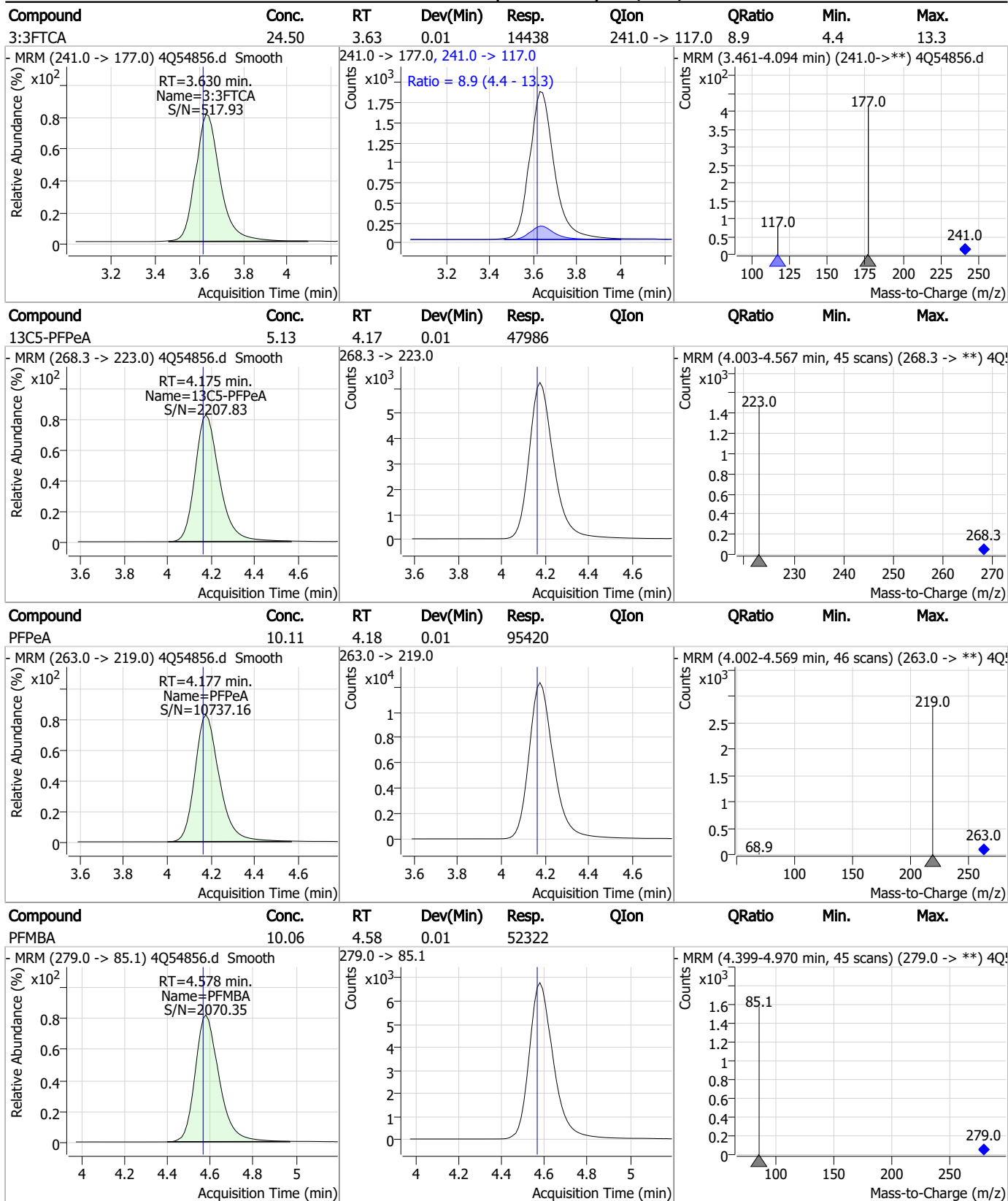


Perfluorinated Compounds by LC/MS/MS



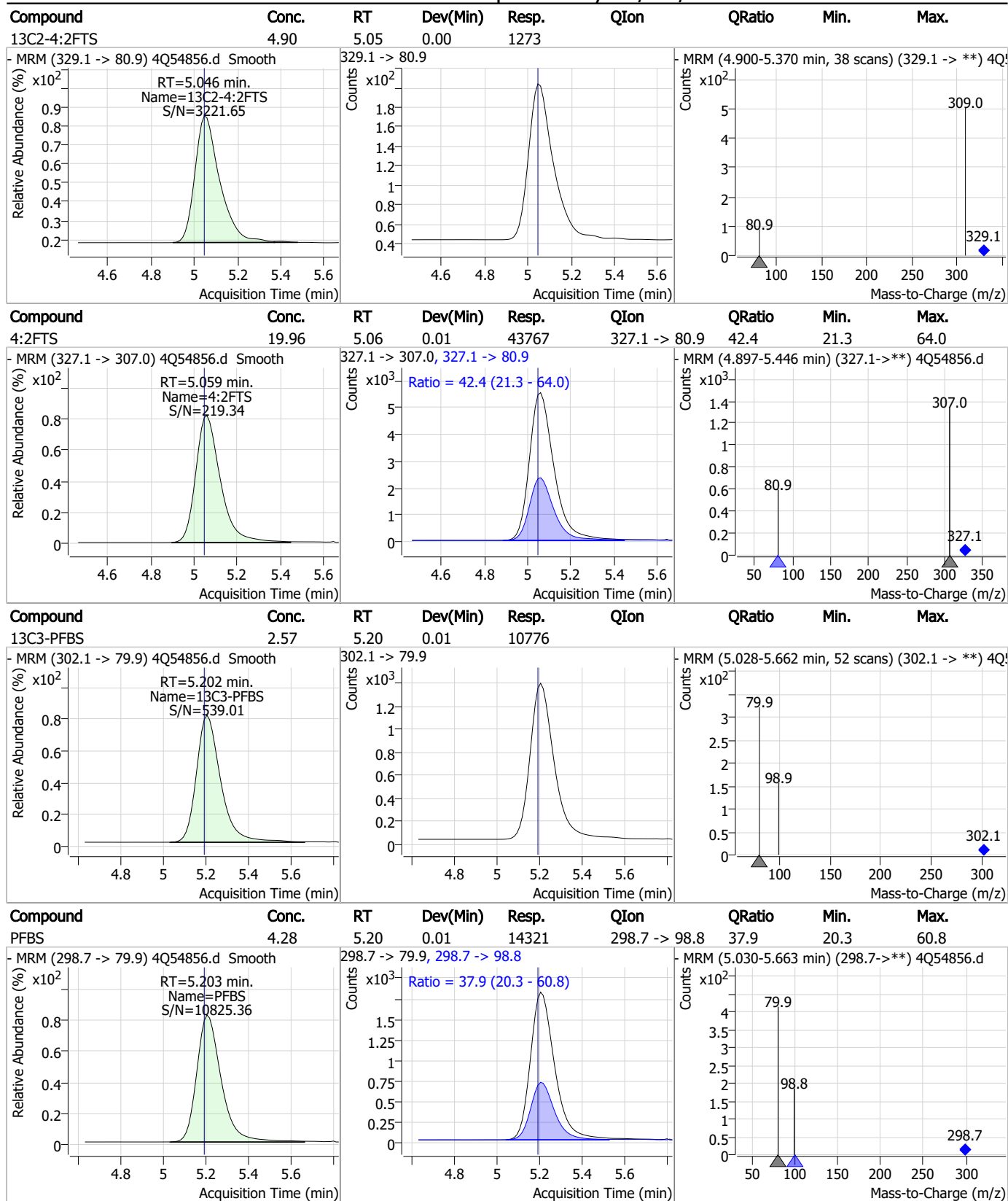
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Perfluorinated Compounds by LC/MS/MS



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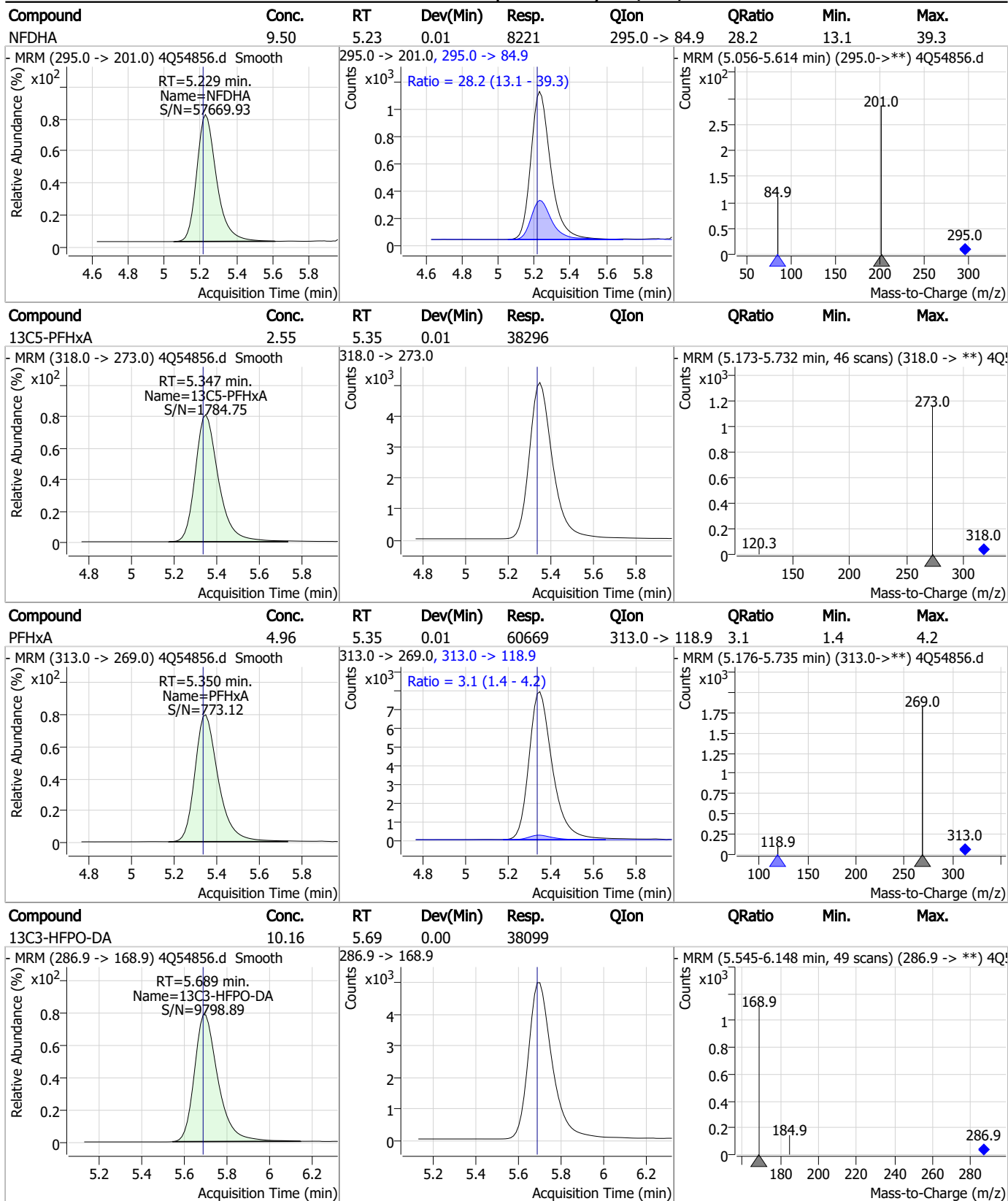
Perfluorinated Compounds by LC/MS/MS



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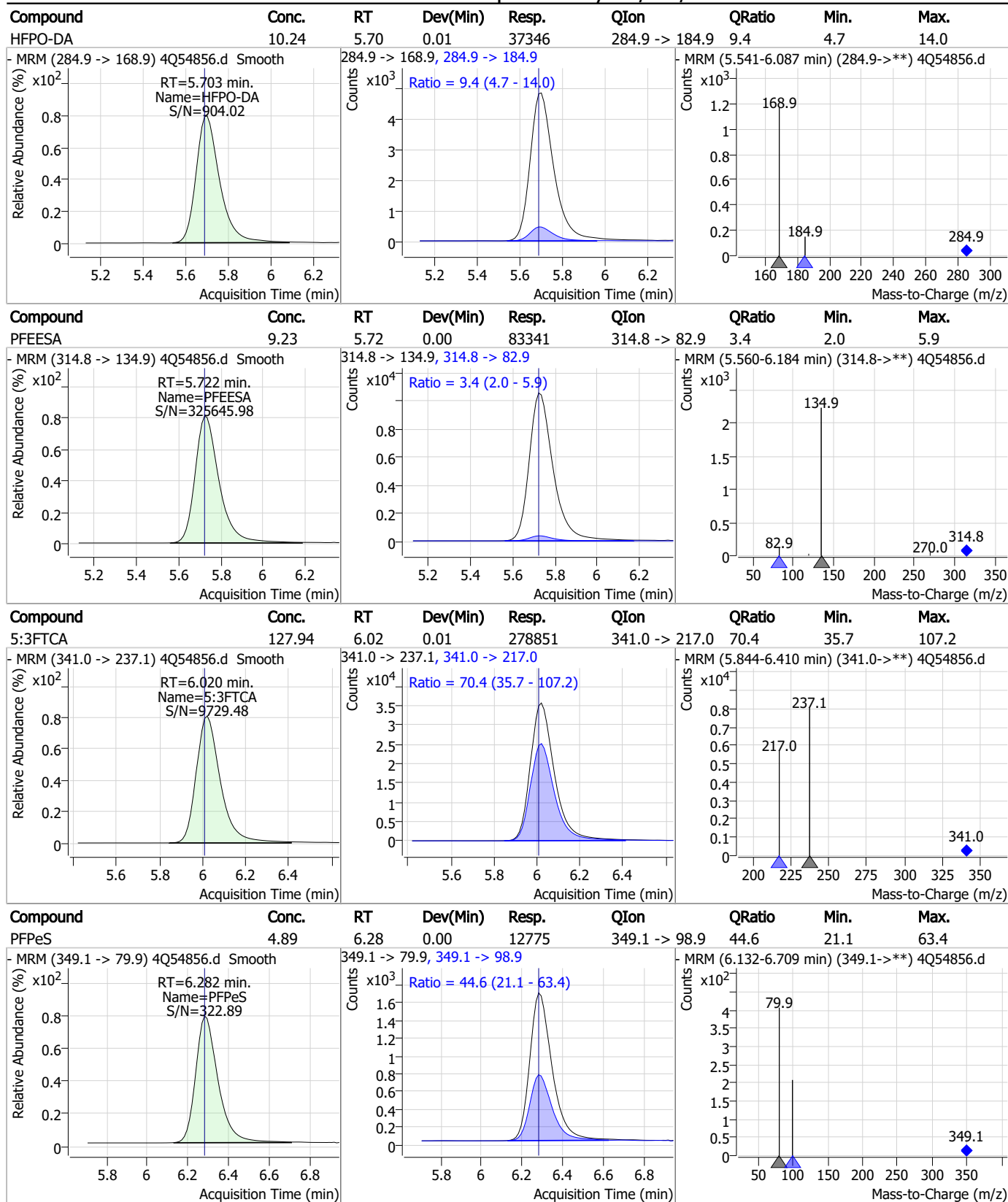
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Perfluorinated Compounds by LC/MS/MS



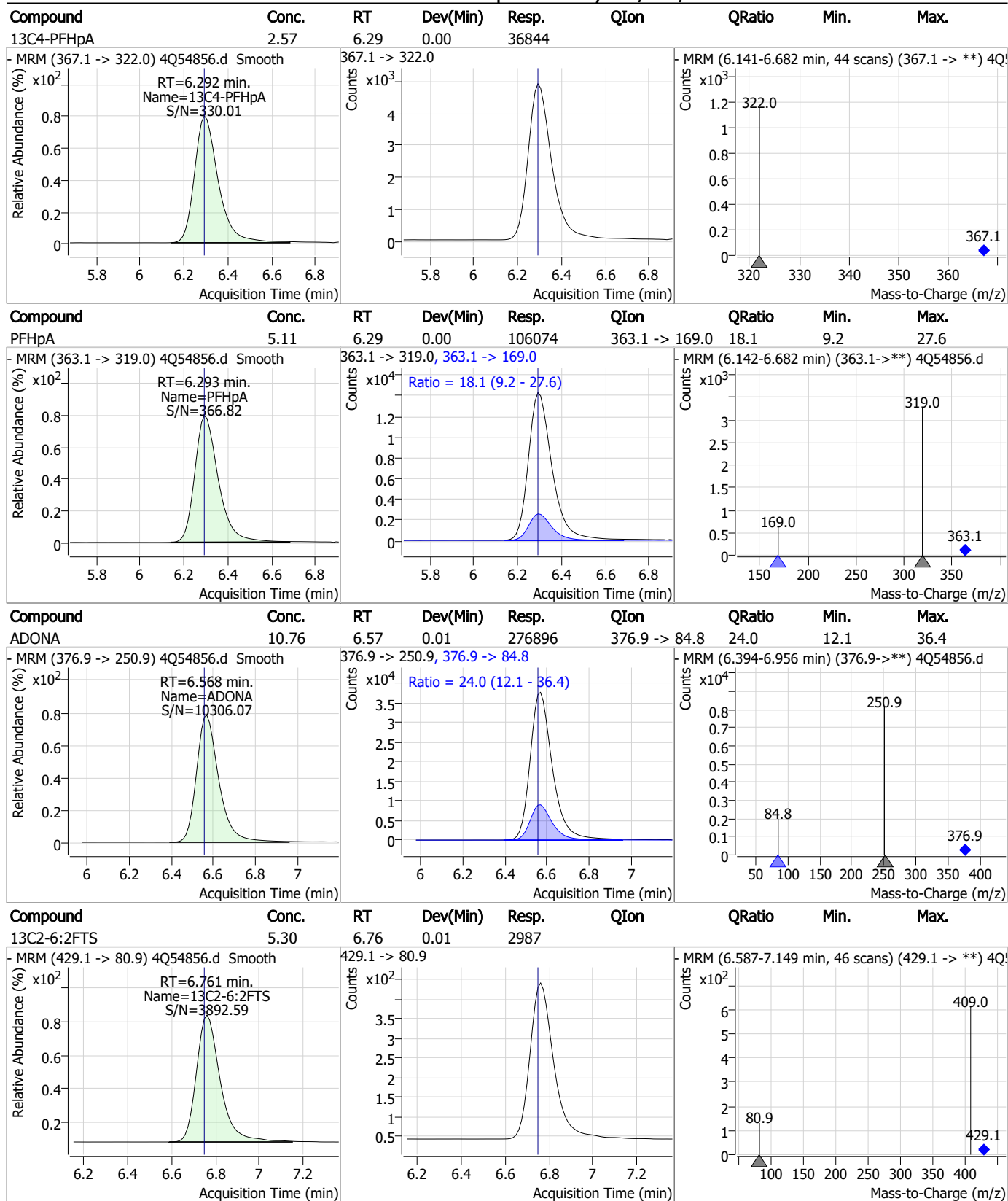
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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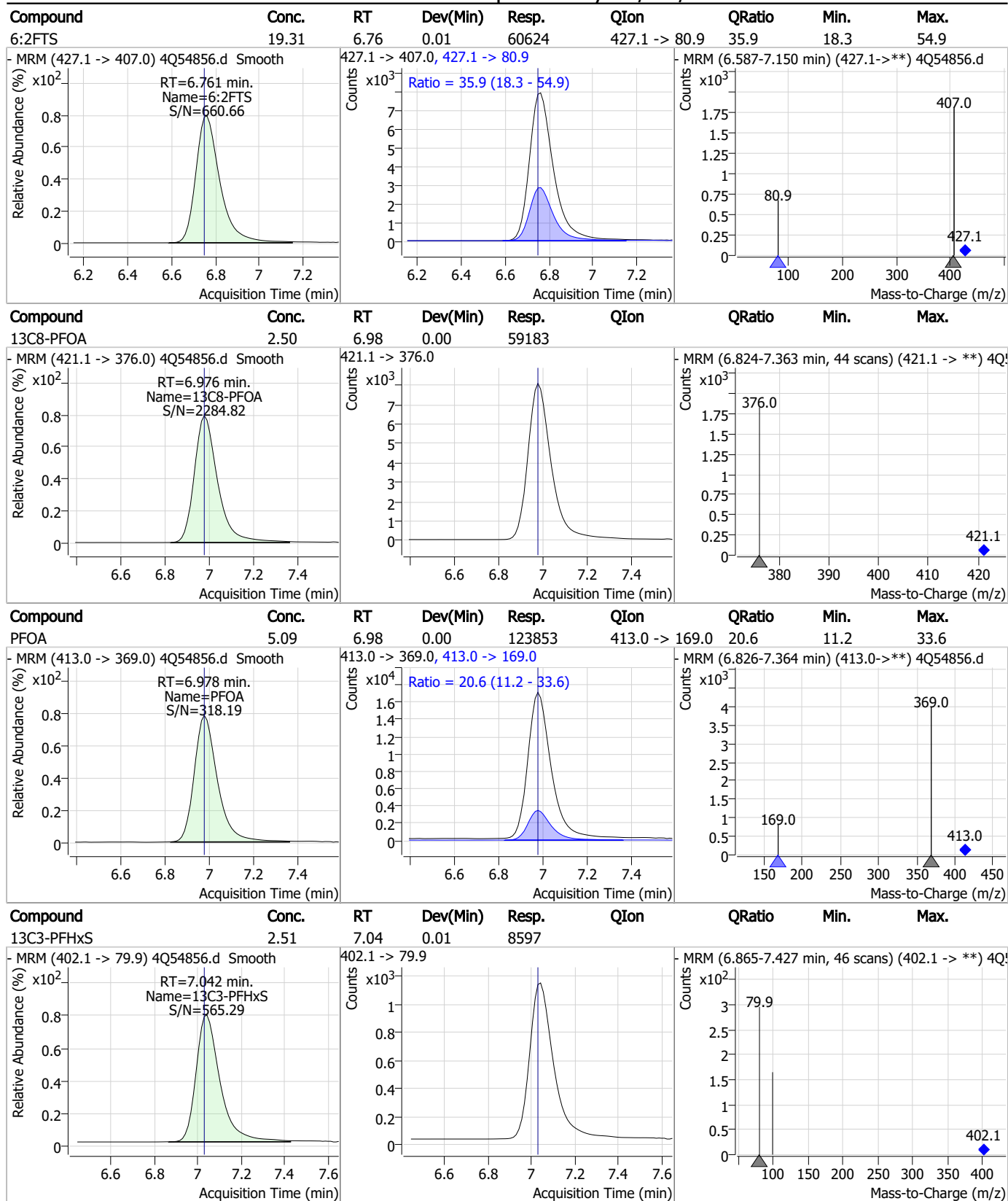
Perfluorinated Compounds by LC/MS/MS



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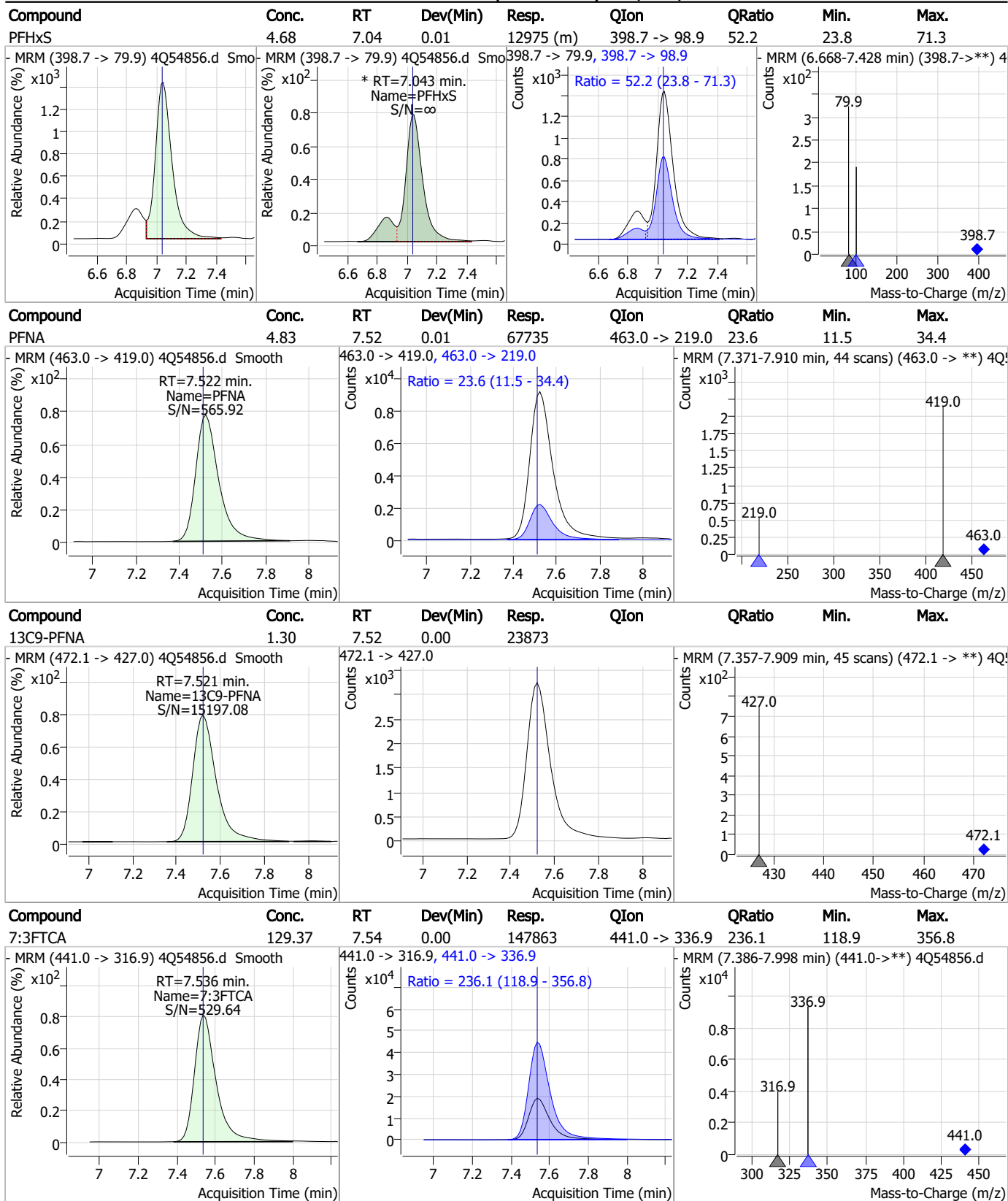
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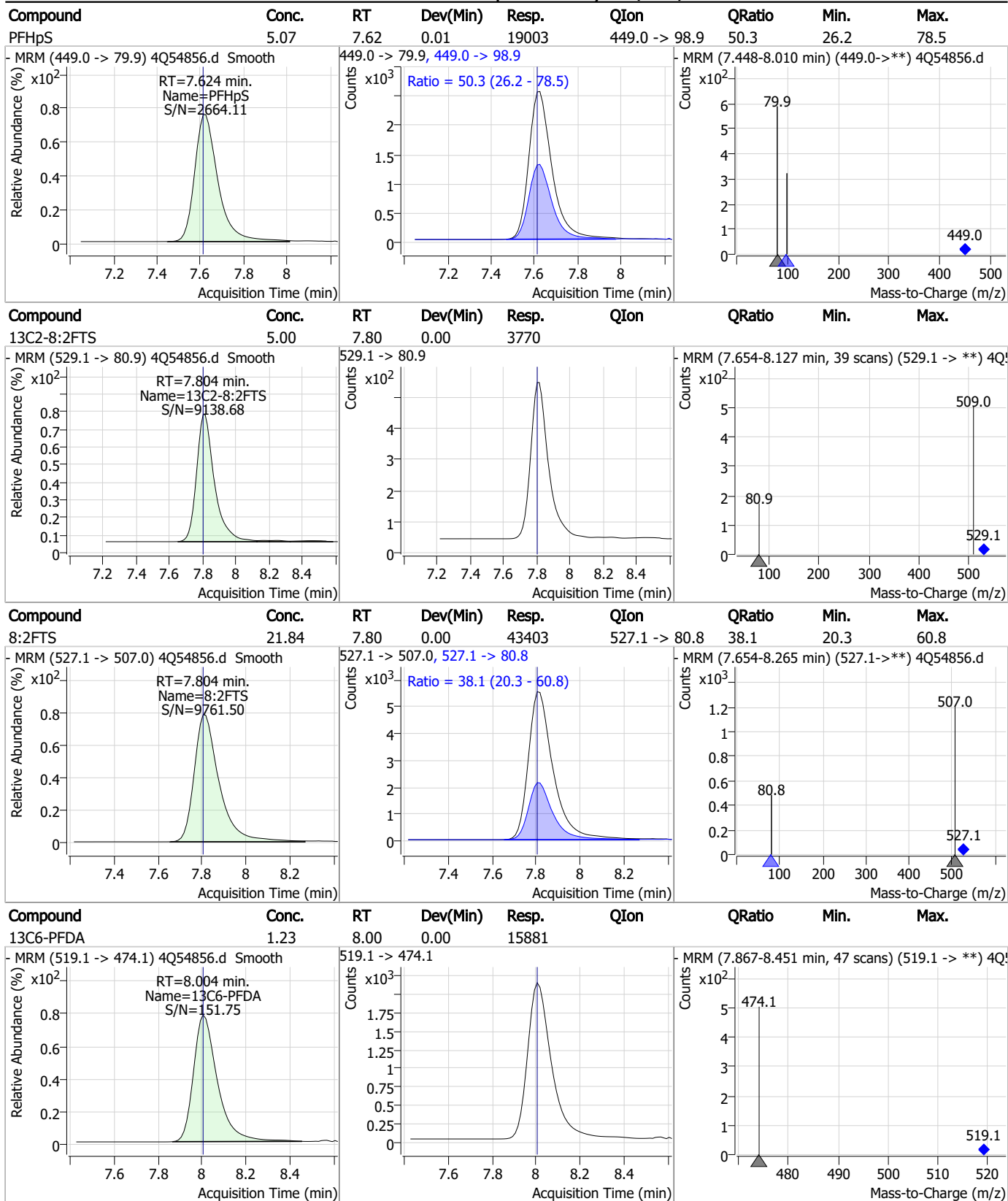
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Perfluorinated Compounds by LC/MS/MS



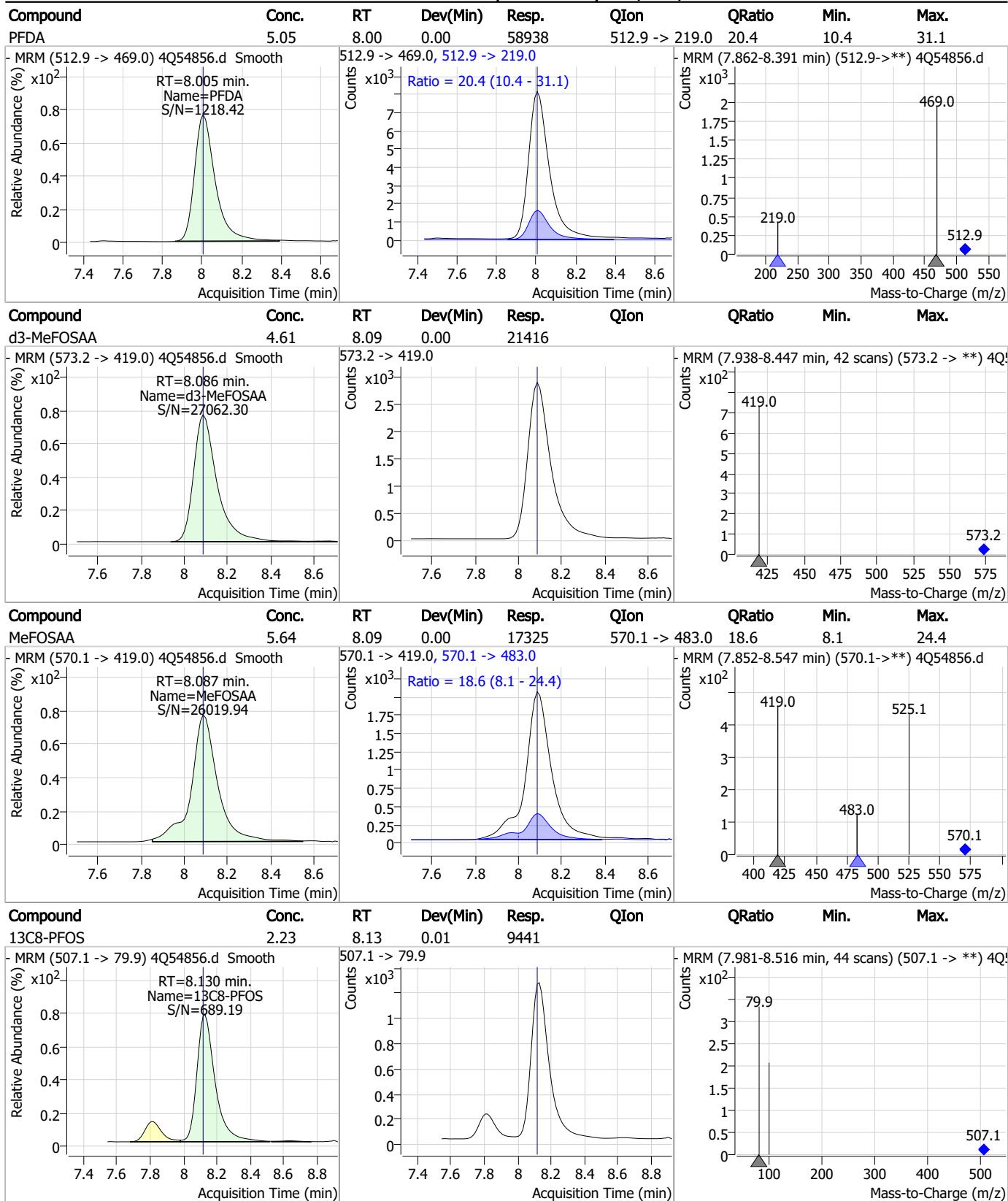
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Perfluorinated Compounds by LC/MS/MS



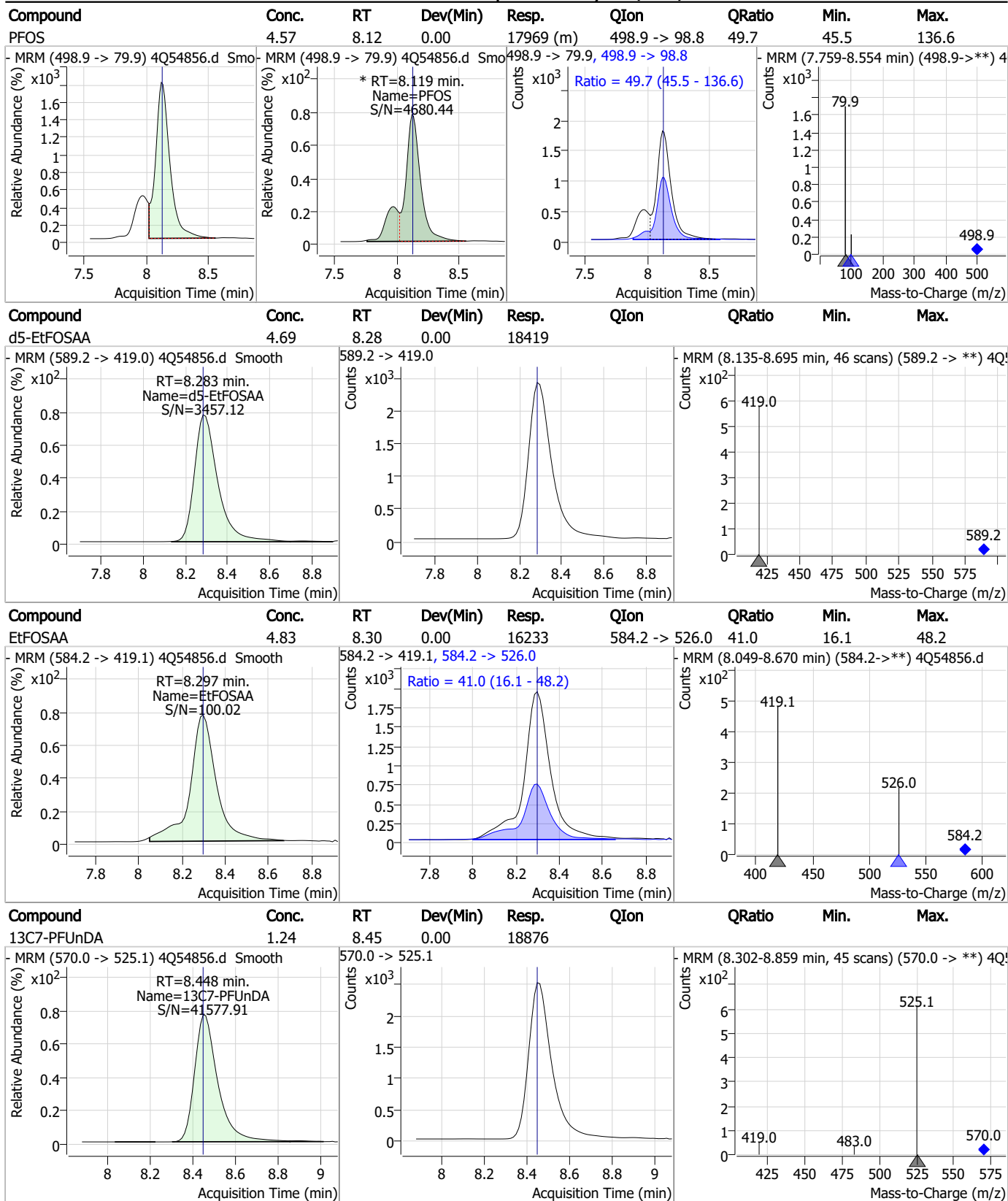
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Perfluorinated Compounds by LC/MS/MS



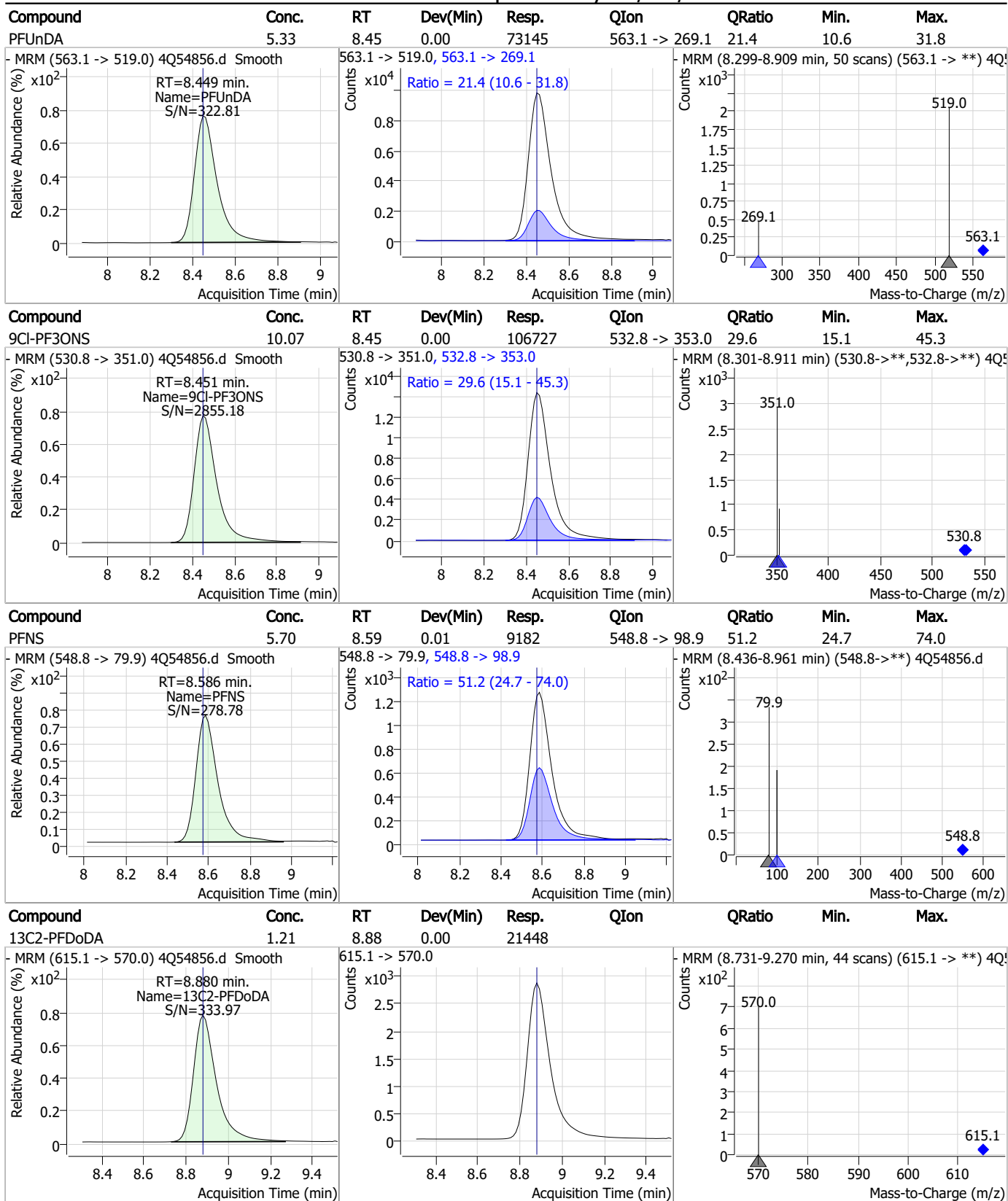
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Perfluorinated Compounds by LC/MS/MS



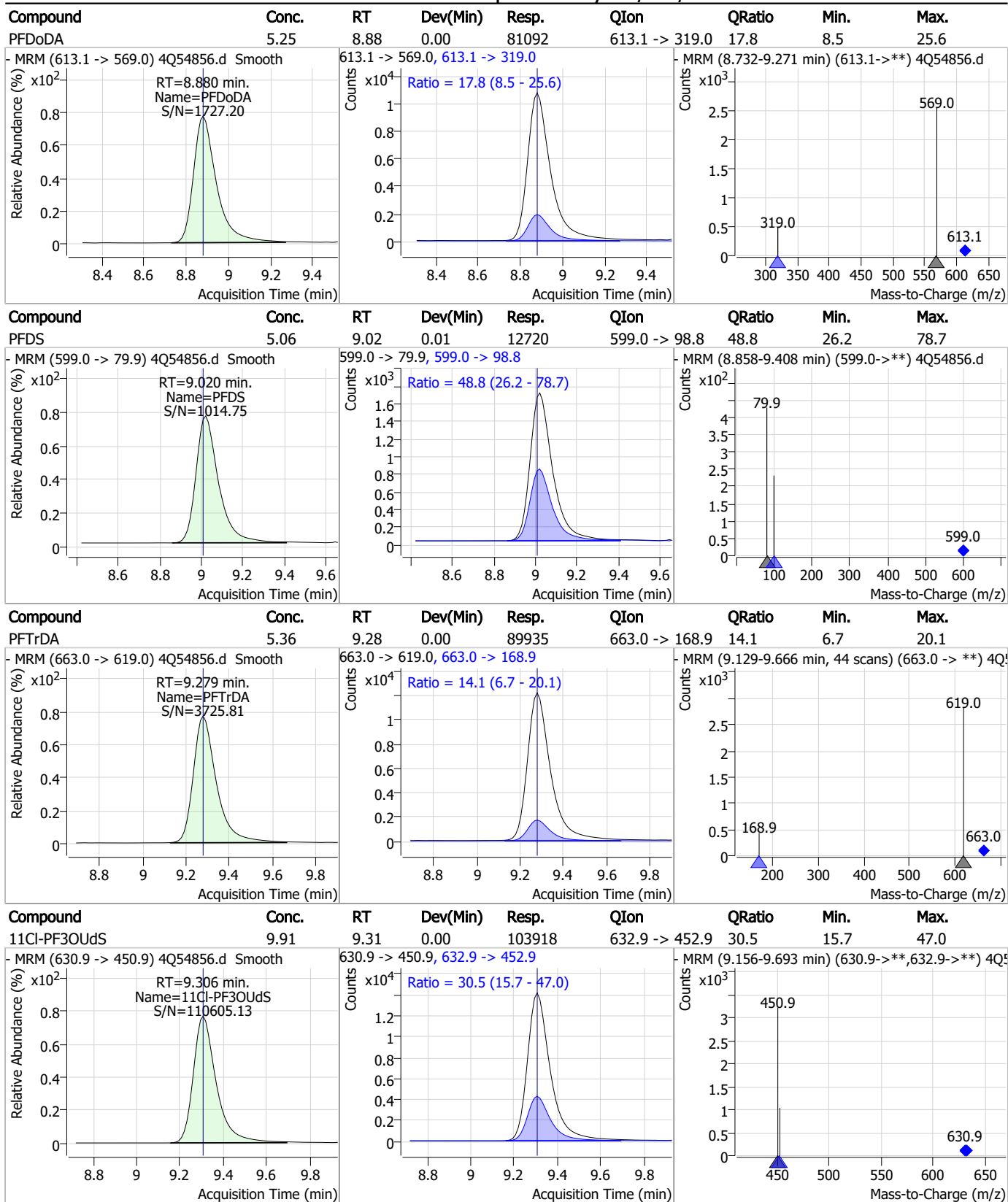
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Perfluorinated Compounds by LC/MS/MS



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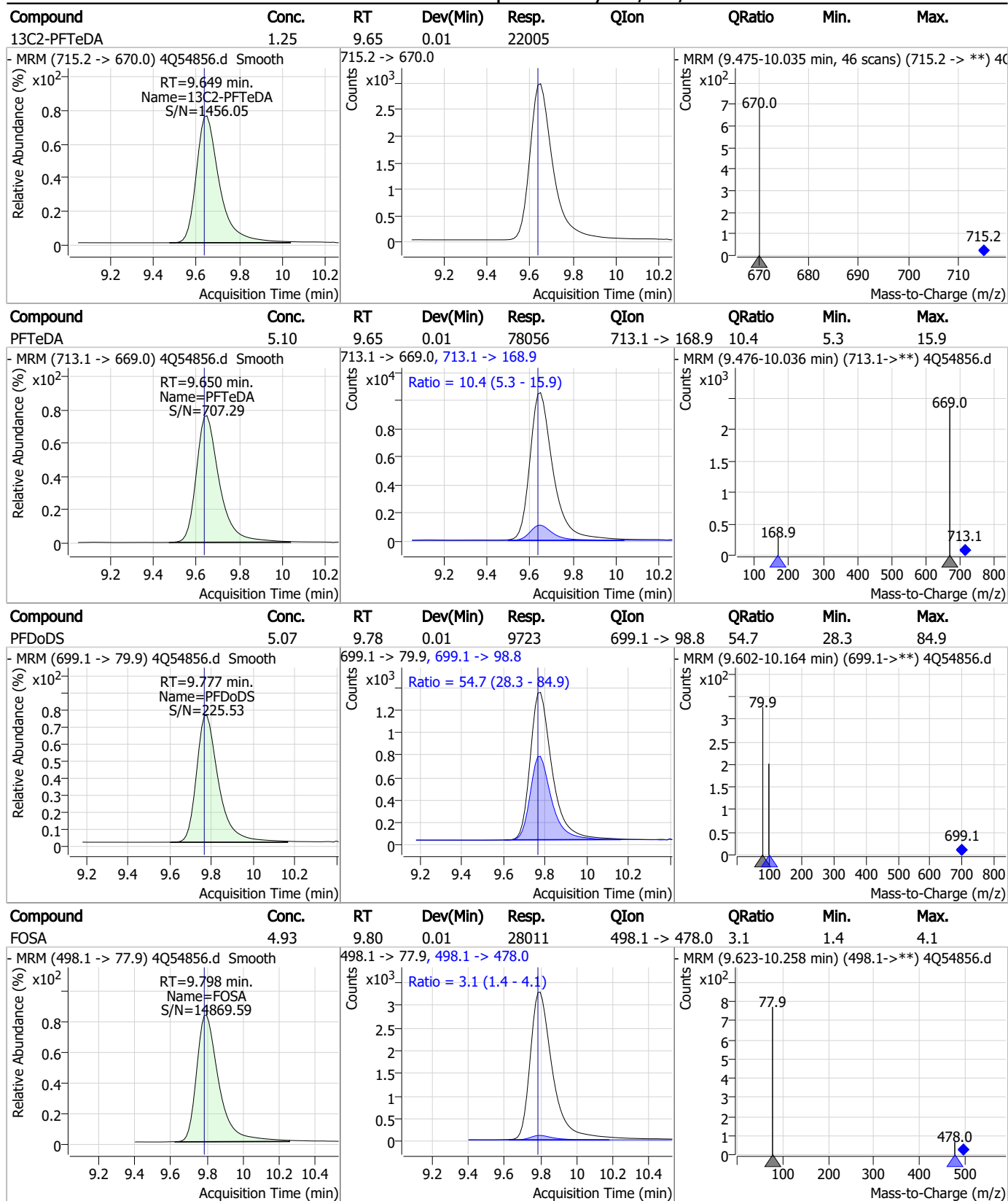
Perfluorinated Compounds by LC/MS/MS



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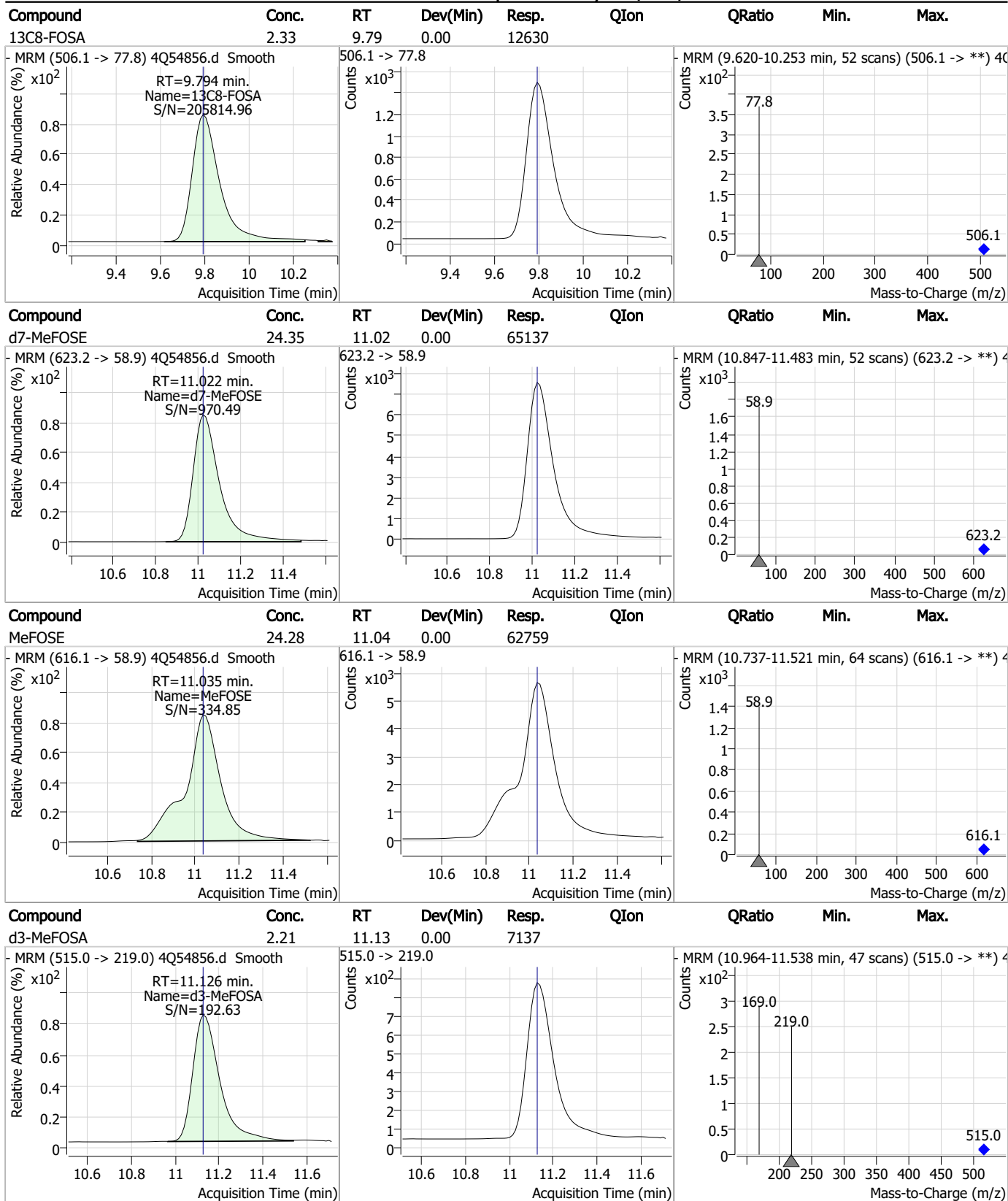
Perfluorinated Compounds by LC/MS/MS



7.7.6

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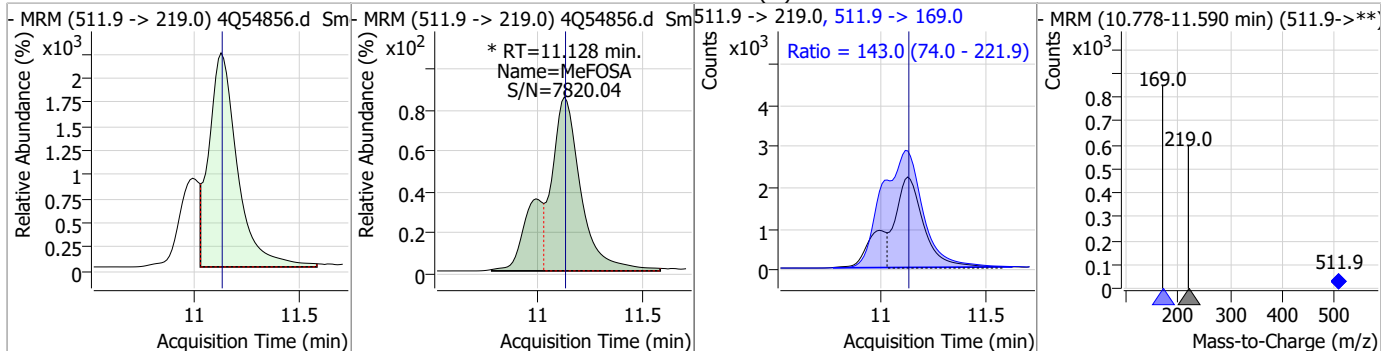
Perfluorinated Compounds by LC/MS/MS



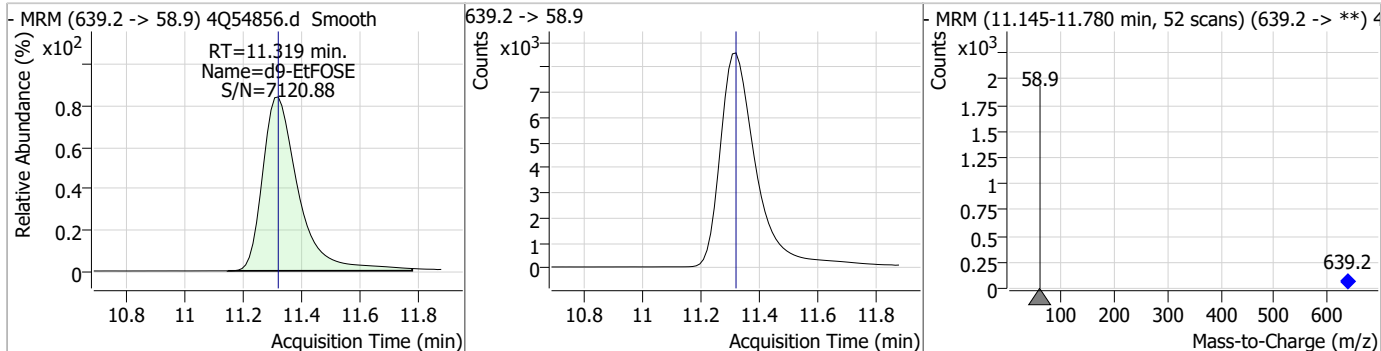
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Perfluorinated Compounds by LC/MS/MS

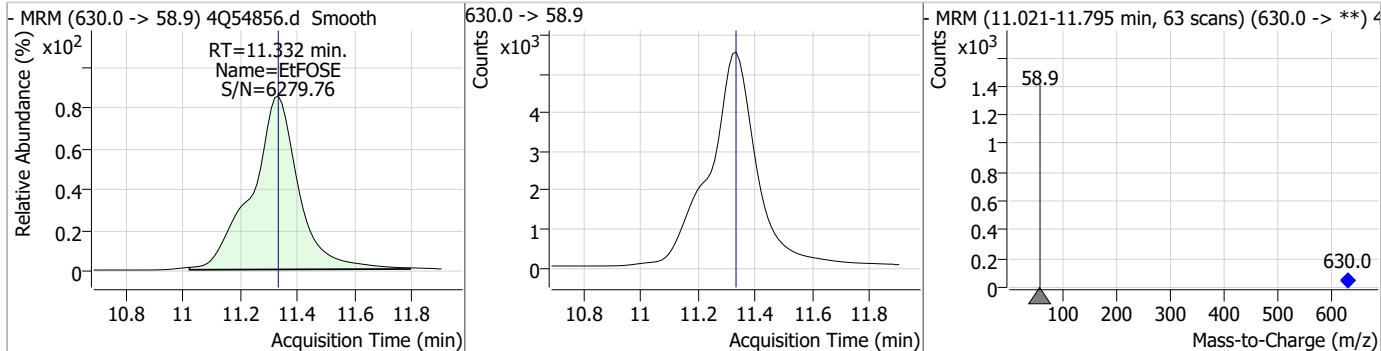
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	10.79	11.13	0.00	27417 (m)	511.9 -> 169.0	143.0	74.0	221.9



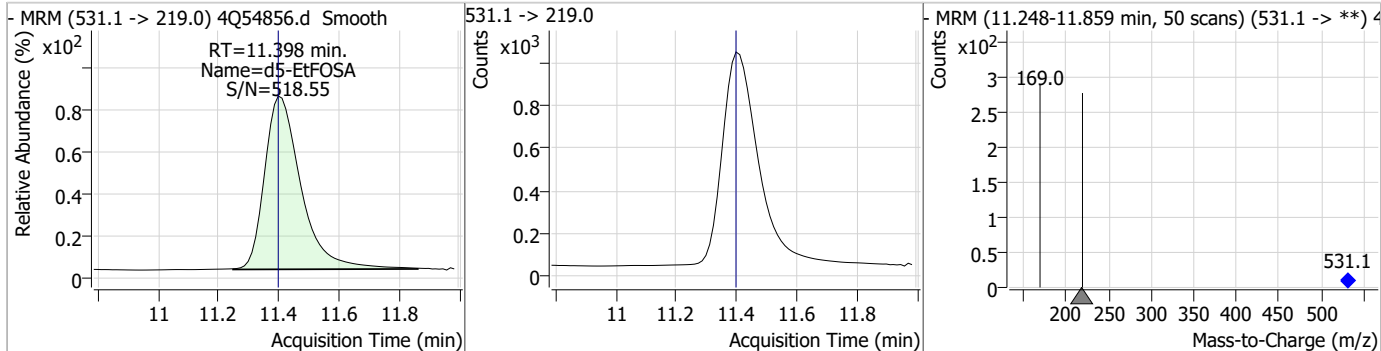
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.42	11.32	0.00	73150				



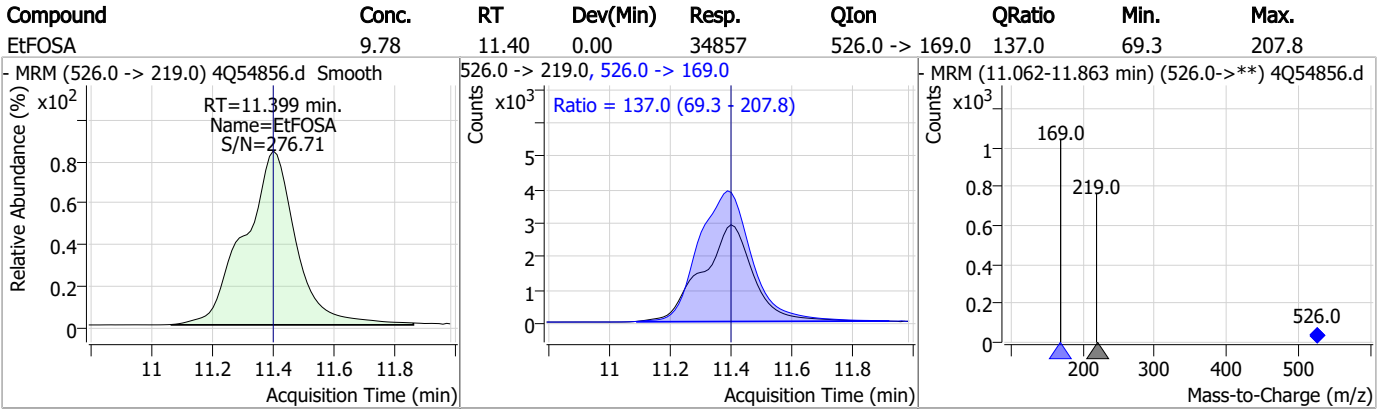
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	24.44	11.33	0.00	63268				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.36	11.40	0.00	8372				



Perfluorinated Compounds by LC/MS/MS



7.7.6

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Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54856.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 12:37 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.6.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54857.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 12:52:03 PM
 Sample Name : ic804-6
 Vial : P1-A7
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	94330	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	40921	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	32657	2.50 µg/L	0.012
M4-PFHpA	6.292	367.1 -> 322.0	30520	2.50 µg/L	0.000
M8-PFOA	6.976	421.1 -> 376.0	49387	2.50 µg/L	0.000
M9-PFNA	7.521	472.1 -> 427.0	19782	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	13327	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	15728	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	17955	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	19109	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	10519	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	8893	2.50 µg/L	0.013
M3-PFHxS	7.042	402.1 -> 79.9	7195	2.50 µg/L	0.012
M8-PFOS	8.117	507.1 -> 79.9	8393	2.50 µg/L	0.000
M2-4:2FTS	5.058	329.1 -> 80.9	1044	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	2242	5.00 µg/L	0.012
M2-8:2FTS	7.804	529.1 -> 80.9	3175	5.00 µg/L	0.000
M3-MeFOSAA	8.086	573.2 -> 419.0	17644	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	31785	10.00 µg/L	0.012
M5-EtFOSAA	8.283	589.2 -> 419.0	15530	5.00 µg/L	0.000
M7-MeFOSE	11.034	623.2 -> 58.9	52624	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	56976	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6847	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6125	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6543	2.50 µg/L	0.012
13C3-PFBA	2.678	216.0 -> 172.0	44798	5.00 µg/L	0.000
18O2-PFHxS	7.041	403.0 -> 83.9	4649	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	54011	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	14483	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	18818	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	35183	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1044	4.73 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2242	4.68 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.7%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3175	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	17955	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	19109	1.33 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C3-PFBS	5.202	302.1 -> 79.9	8893	2.50 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C3-PFHxS	7.042	402.1 -> 79.9	7195	2.47 µg/L	0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFBA	2.686	216.8 -> 171.9	94330	10.03 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFHpA	6.292	367.1 -> 322.0	30520	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C5-PFHxA	5.347	318.0 -> 273.0	32657	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C5-PFPeA	4.175	268.3 -> 223.0	40921	5.07 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C6-PFDA	8.004	519.1 -> 474.1	13327	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C7-PFUnDA	8.461	570.0 -> 525.1	15728	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-FOSA	9.794	506.1 -> 77.8	10519	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C8-PFOA	6.976	421.1 -> 376.0	49387	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C8-PFOS	8.117	507.1 -> 79.9	8393	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C9-PFNA	7.521	472.1 -> 427.0	19782	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.0%	
d3-MeFOSAA	8.086	573.2 -> 419.0	17644	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	31785	9.81 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d3-MeFOSA	11.126	515.0 -> 219.0	6125	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
d5-EtFOSAA	8.283	589.2 -> 419.0	15530	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d7-MeFOSE	11.034	623.2 -> 58.9	52624	25.16 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
d9-EtFOSE	11.319	639.2 -> 58.9	56976	24.32 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
d5-EtFOSA	11.397	531.1 -> 219.0	6847	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	88024	48.97 µg/L	99
		327.1 -> 80.9	37102		
6:2FTS	6.761	427.1 -> 407.0	121720	51.65 µg/L	98
		427.1 -> 80.9	42870		
8:2FTS	7.804	527.1 -> 507.0	84315	50.39 µg/L	99
		527.1 -> 80.8	33462		
EtFOSAA	8.297	584.2 -> 419.1	35526	12.54 µg/L	87
		584.2 -> 526.0	13964		
FOSA	9.798	498.1 -> 77.9	59384	12.56 µg/L	99
		498.1 -> 478.0	1802		
MeFOSAA	8.087	570.1 -> 419.0	35809	14.16 µg/L	90
		570.1 -> 483.0	7309		
PFBA	2.682	212.8 -> 168.9	156501	51.80 µg/L	100
PFBS	5.203	298.7 -> 79.9	31936	11.58 µg/L	97
		298.7 -> 98.8	12389		
PFDA	8.005	512.9 -> 469.0	124626	12.73 µg/L	99
		512.9 -> 219.0	25358		
PFDoDA	8.880	613.1 -> 569.0	175425	13.57 µg/L	99
		613.1 -> 319.0	30723		
PFDS	9.020	599.0 -> 79.9	26875	12.03 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.293	599.0 -> 98.8	13164	13.27	µg/L	100
		363.1 -> 319.0	227994			
PFHpS	7.624	363.1 -> 169.0	41453	11.69	µg/L	98
		449.0 -> 79.9	38943			
PFHxA	5.350	449.0 -> 98.9	19940	12.82	µg/L	99
		313.0 -> 269.0	133602			
PFHxS	7.043	313.0 -> 118.9	4010	11.84	µg/L	91
		398.7 -> 79.9	27487			
PFNA	7.522	398.7 -> 98.9	14719	13.00	µg/L	99
		463.0 -> 419.0	151051			
PFNS	8.586	463.0 -> 219.0	35288	13.27	µg/L	100
		548.8 -> 79.9	19001			
PFOA	6.978	548.8 -> 98.9	9439	13.06	µg/L	95
		413.0 -> 369.0	265296			
PFOS	8.119	413.0 -> 169.0	52916	10.92	µg/L	54
		498.9 -> 79.9	38142			
PFPeA	4.164	498.9 -> 98.8	18194	25.93	µg/L	100
		263.0 -> 219.0	208797			
PFPeS	6.282	349.1 -> 79.9	27378	12.53	µg/L	93
		349.1 -> 98.9	12744			
PFTeDA	9.650	713.1 -> 669.0	167961	12.63	µg/L	100
		713.1 -> 168.9	17868			
PFTrDA	9.279	663.0 -> 619.0	194692	13.86	µg/L	100
		663.0 -> 168.9	26435			
PFUnDA	8.461	563.1 -> 519.0	151981	13.29	µg/L	100
		563.1 -> 269.1	32452			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	226944	25.93	µg/L	100
		632.9 -> 452.9	70717			
9Cl-PF3ONS	8.451	530.8 -> 351.0	220931	24.98	µg/L	99
		532.8 -> 353.0	68319			
ADONA	6.568	376.9 -> 250.9	596187	27.77	µg/L	100
		376.9 -> 84.8	142948			
HFPO-DA	5.703	284.9 -> 168.9	80430	26.45	µg/L	99
		284.9 -> 184.9	7848			
3:3FTCA	3.617	241.0 -> 177.0	30876	64.29	µg/L	99
		241.0 -> 117.0	2685			
5:3FTCA	6.020	341.0 -> 237.1	608405	327.34	µg/L	99
		341.0 -> 217.0	427777			
7:3FTCA	7.536	441.0 -> 316.9	315105	323.29	µg/L	100
		441.0 -> 336.9	752252			
EtFOSA	11.399	526.0 -> 219.0	74708	25.63	µg/L	99
		526.0 -> 169.0	102456			
EtFOSE	11.332	630.0 -> 58.9	129152	64.05	µg/L	100
		511.9 -> 219.0	55657			
MeFOSA	11.128	511.9 -> 169.0	84269	25.52	µg/L	97
		616.1 -> 58.9	134706			
MeFOSE	11.047	699.1 -> 79.9	21005	64.51	µg/L	100
		699.1 -> 98.8	11764			
PFDoDS	9.777	295.0 -> 201.0	18100	12.33	µg/L	99
		295.0 -> 84.9	4691			
NFDHA	5.229	279.0 -> 85.1	113109	24.52	µg/L	99
		229.0 -> 84.9	124273			
PFMBA	4.578	314.8 -> 134.9	181944	25.51	µg/L	100
		314.8 -> 82.9	5894			
PFMPA	3.315			23.62	µg/L	98
PFEESA	5.722					

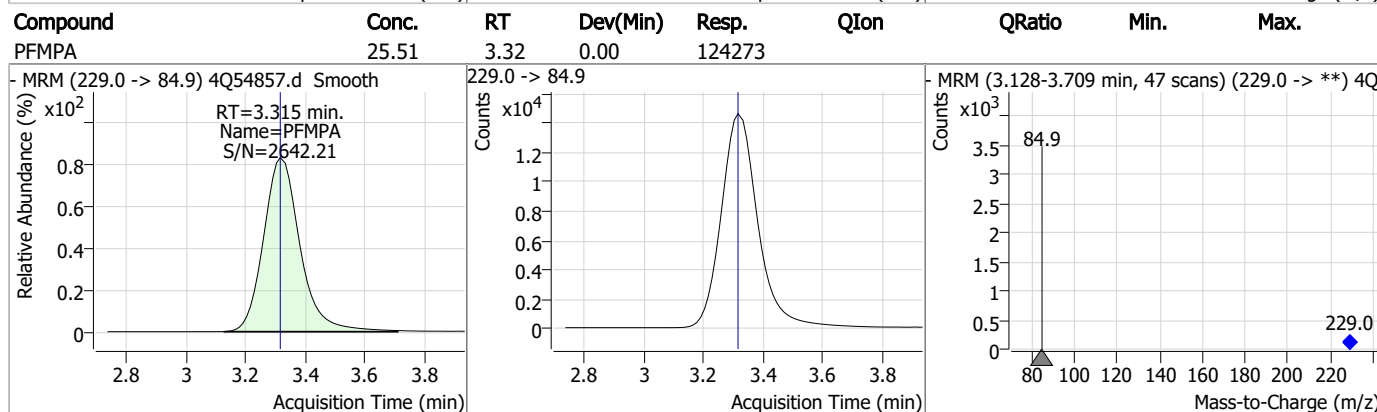
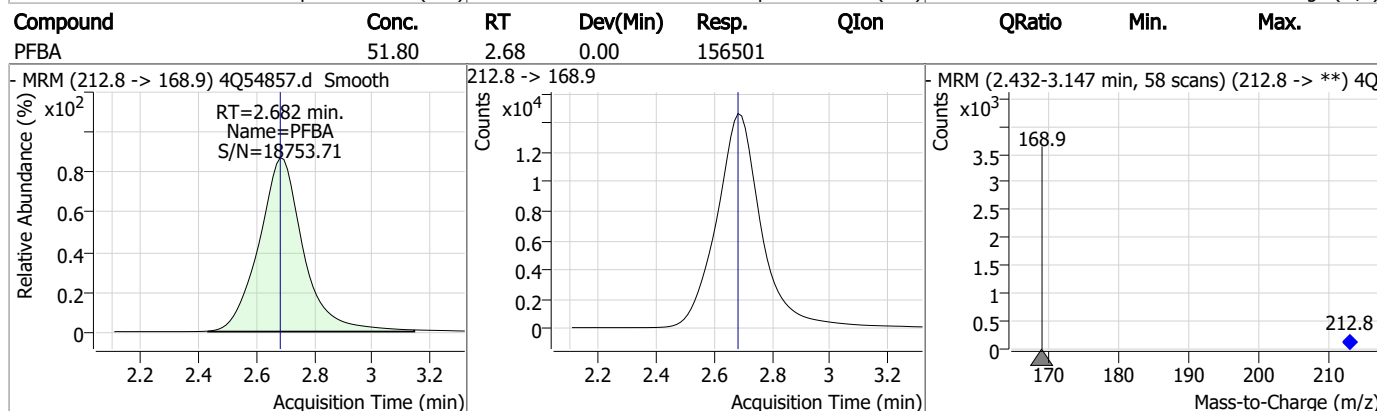
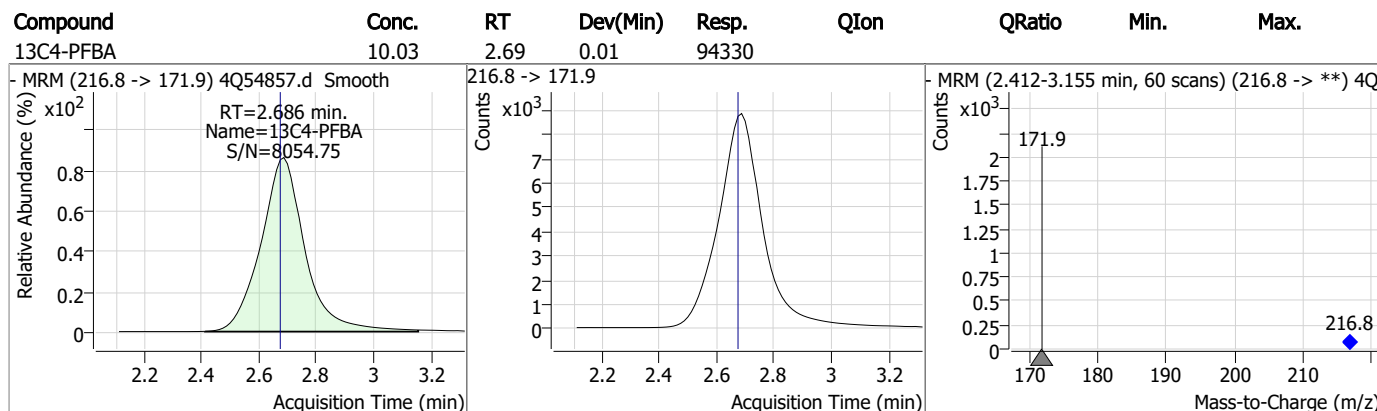
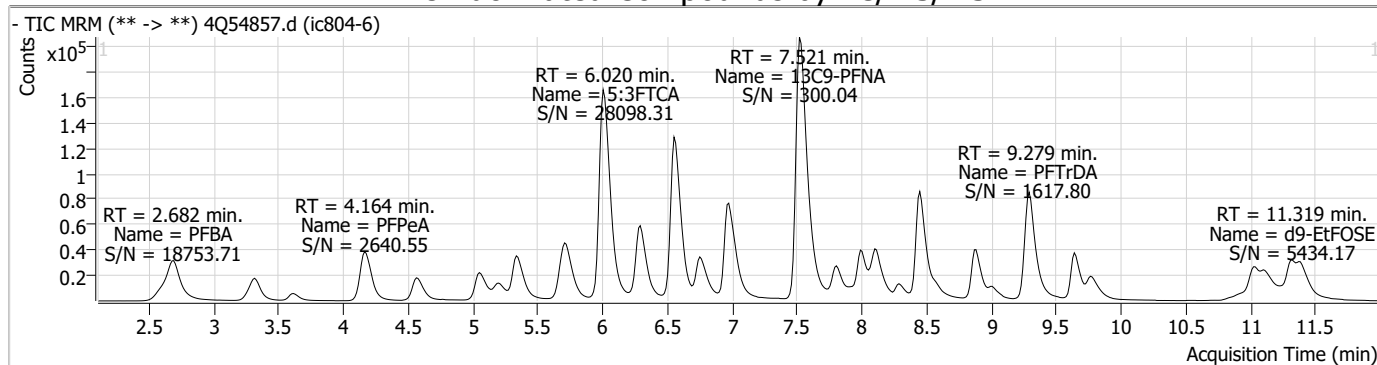
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

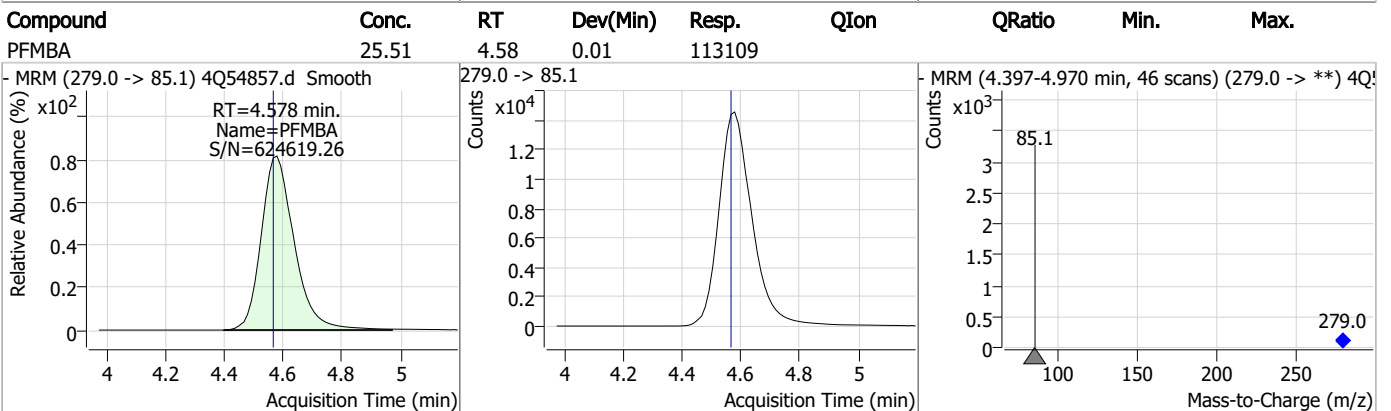
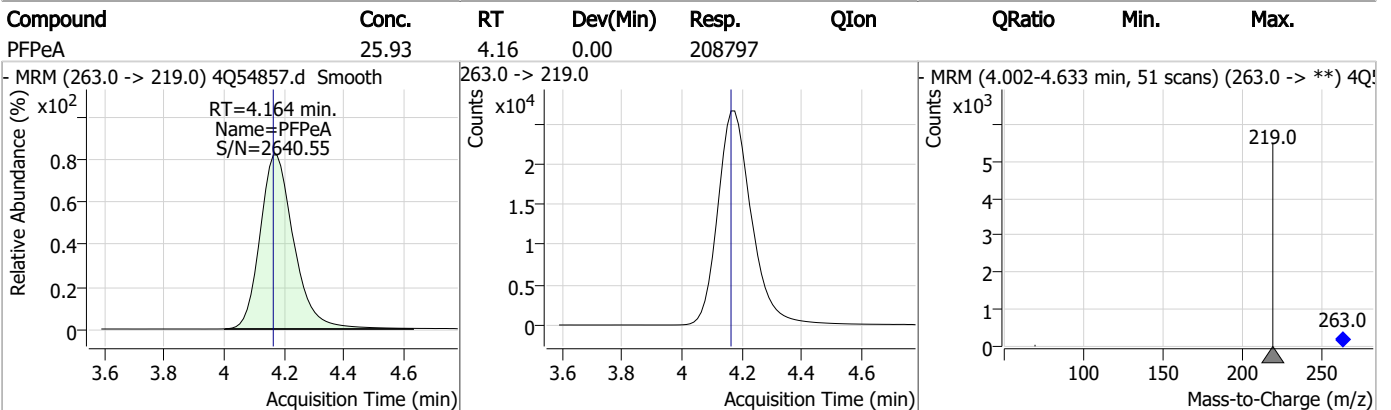
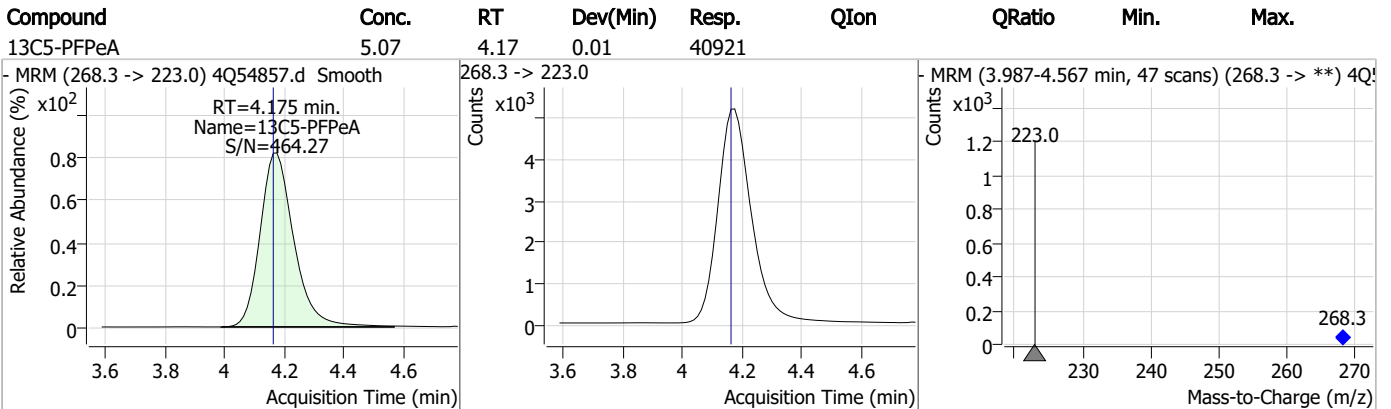
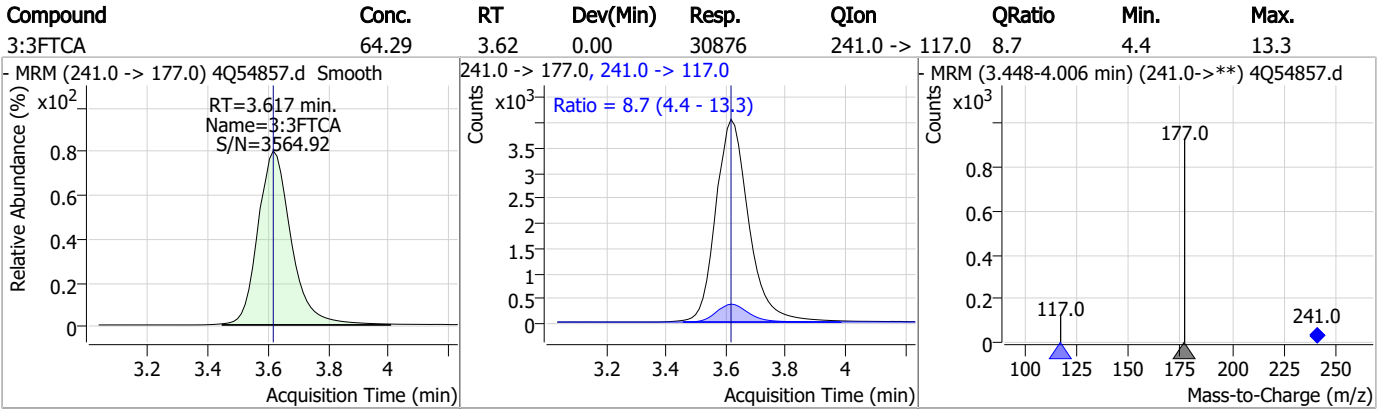
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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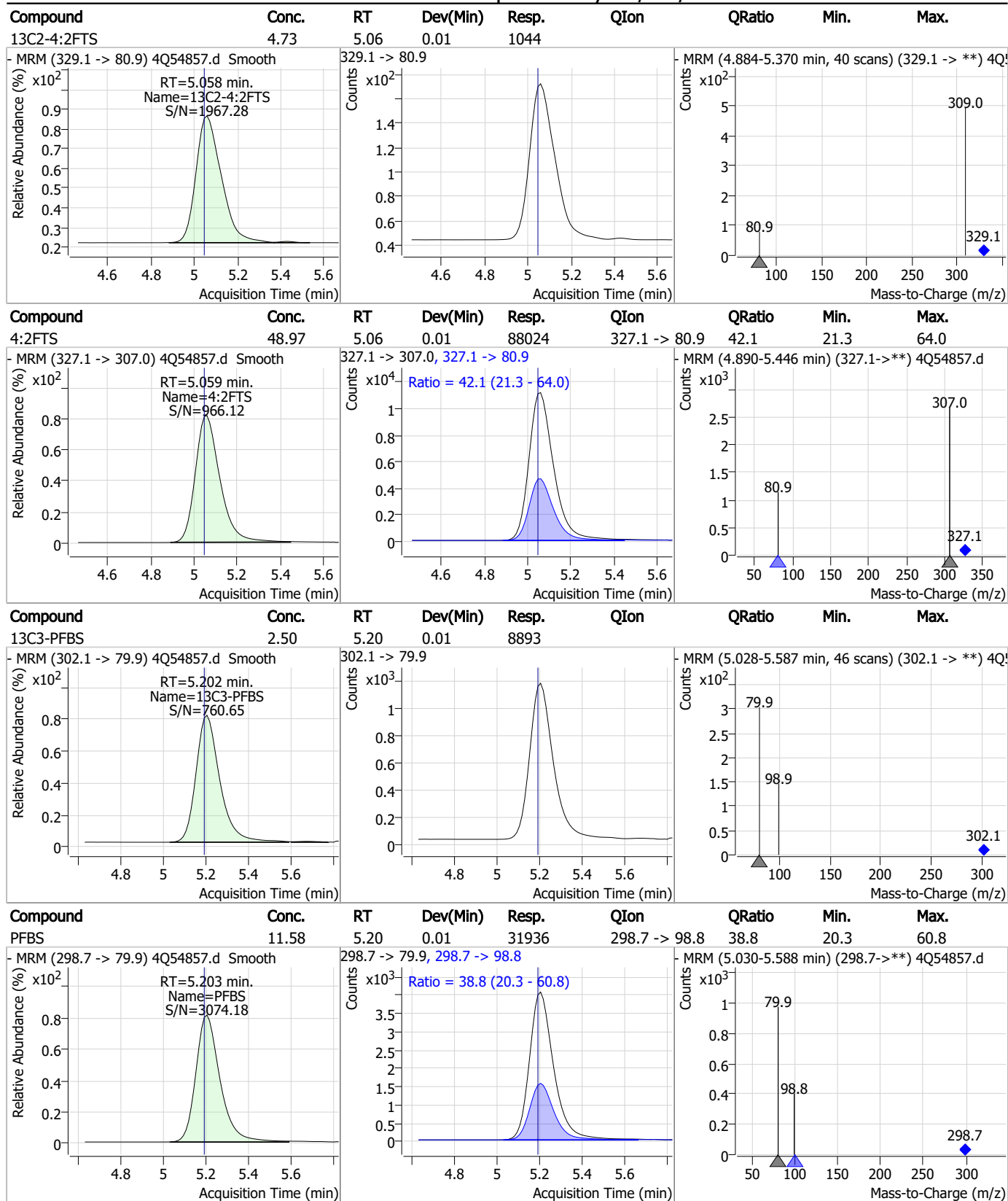
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

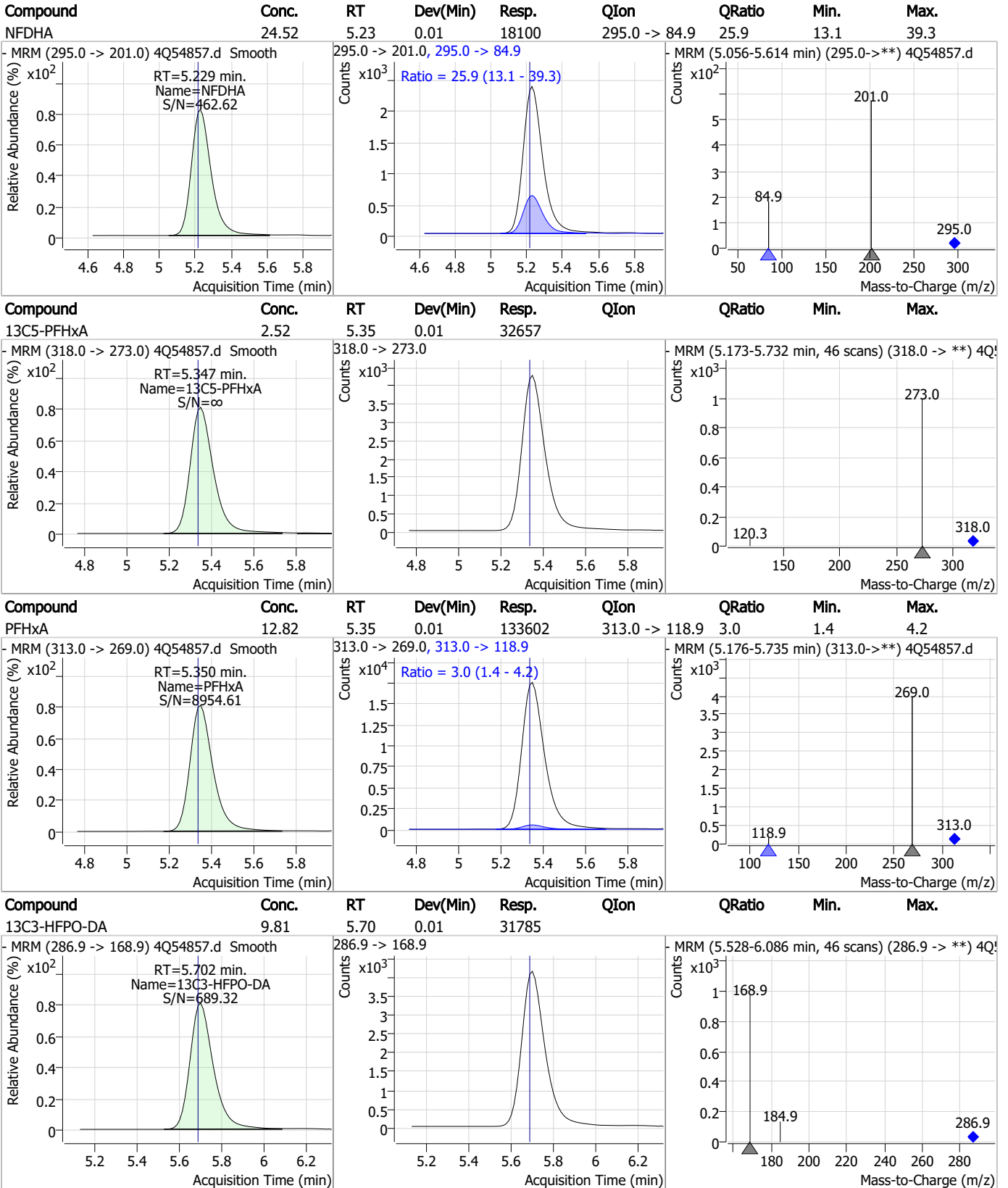


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

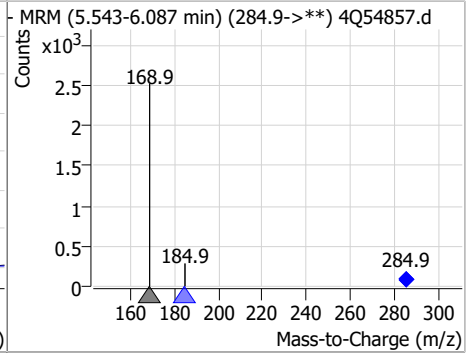
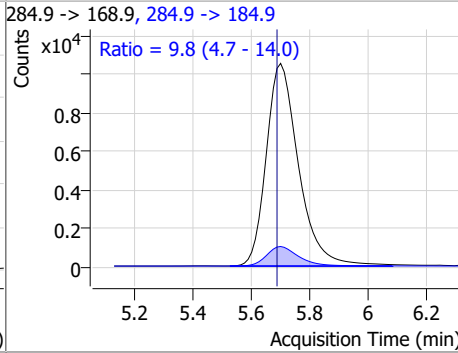
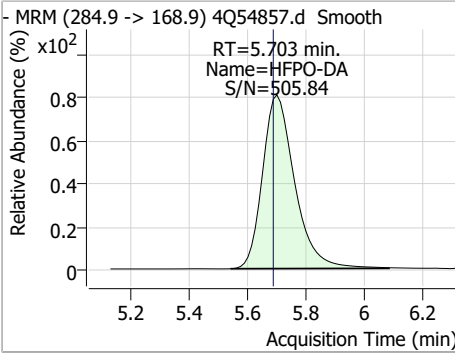


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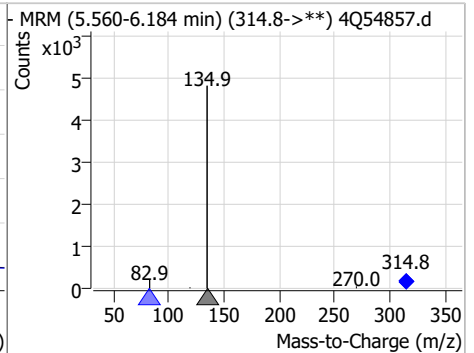
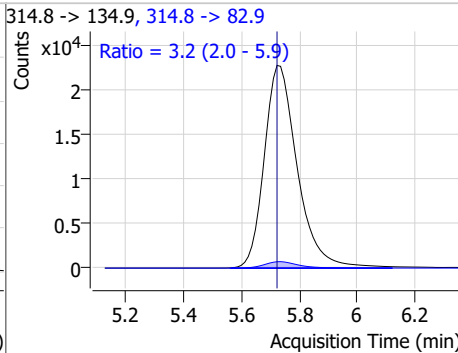
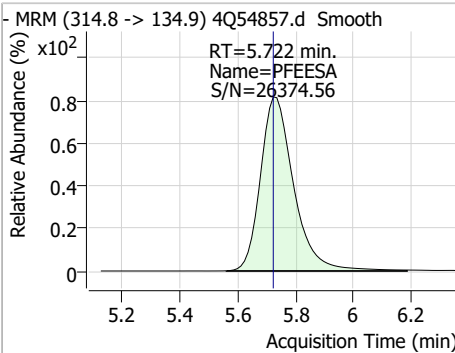
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Perfluorinated Compounds by LC/MS/MS

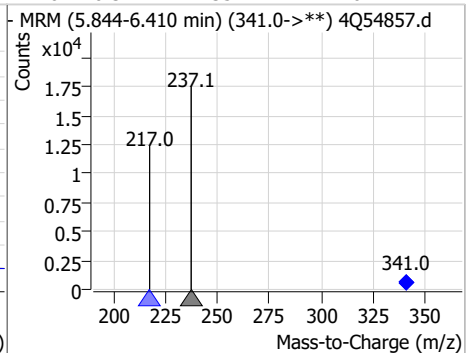
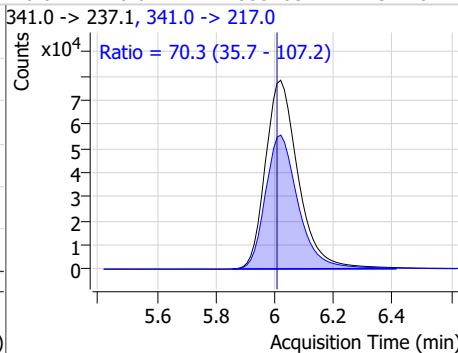
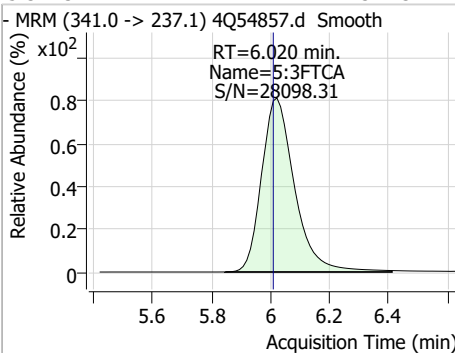
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	26.45	5.70	0.01	80430	284.9 -> 184.9	9.8	4.7	14.0



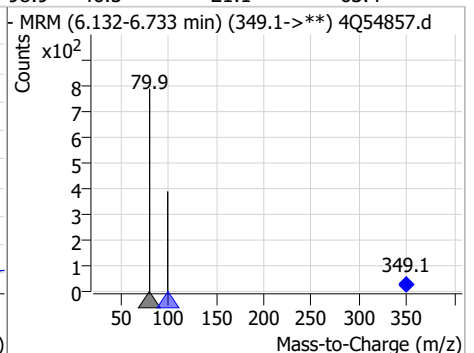
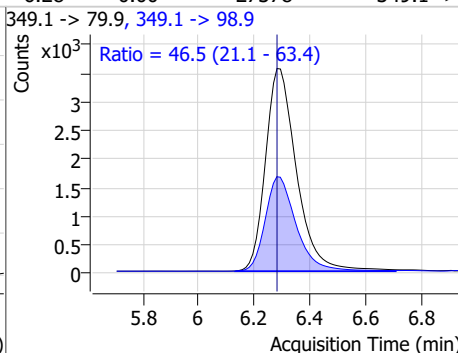
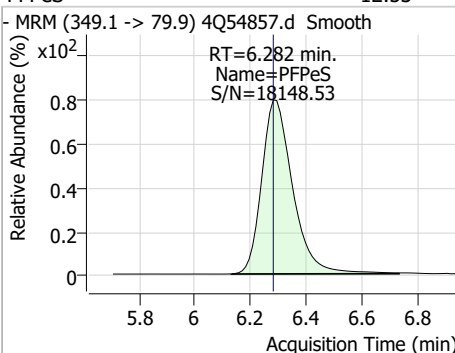
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	23.62	5.72	0.00	181944	314.8 -> 82.9	3.2	2.0	5.9



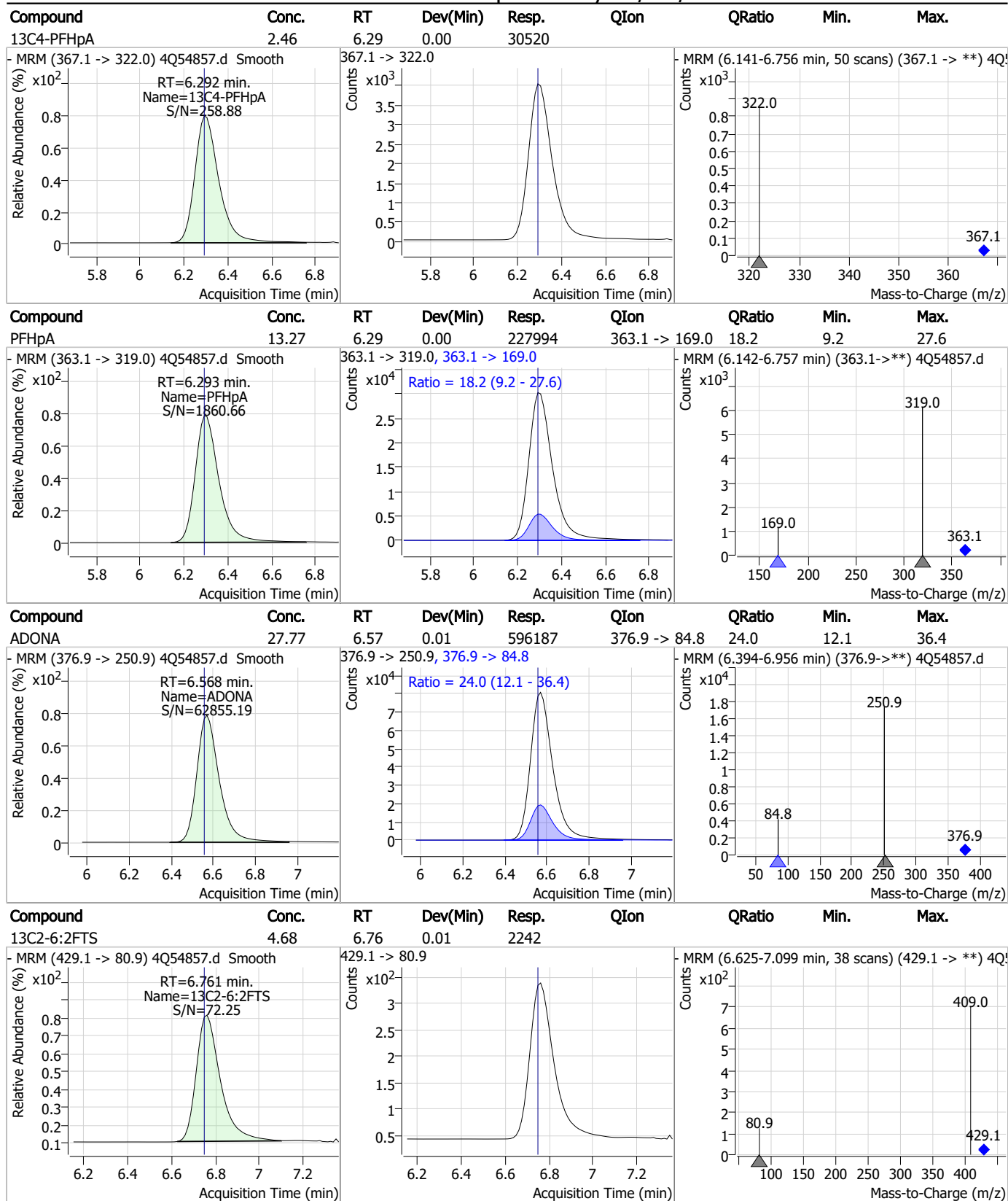
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	327.34	6.02	0.01	608405	341.0 -> 217.0	70.3	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	12.53	6.28	0.00	27378	349.1 -> 98.9	46.5	21.1	63.4

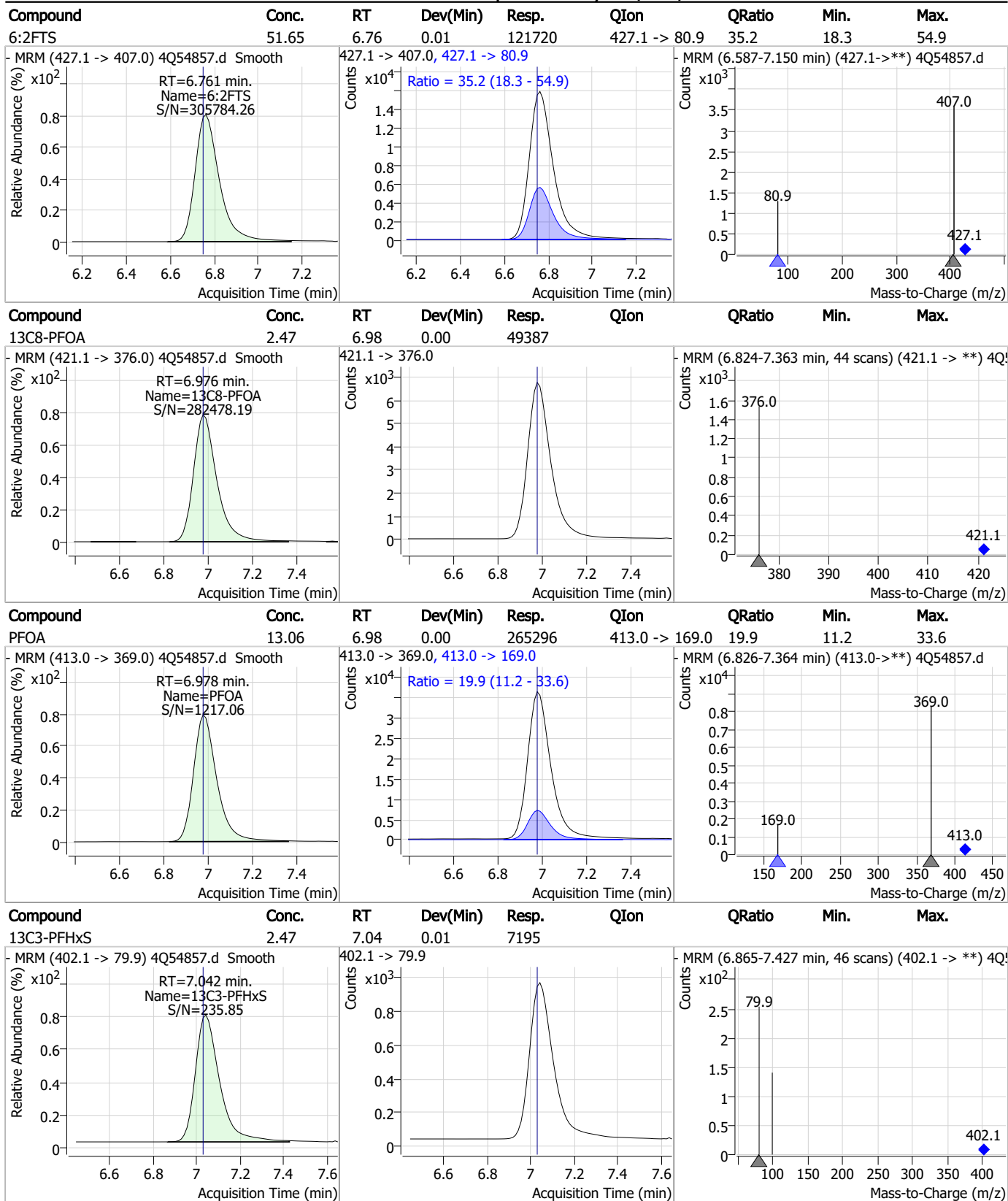


Perfluorinated Compounds by LC/MS/MS



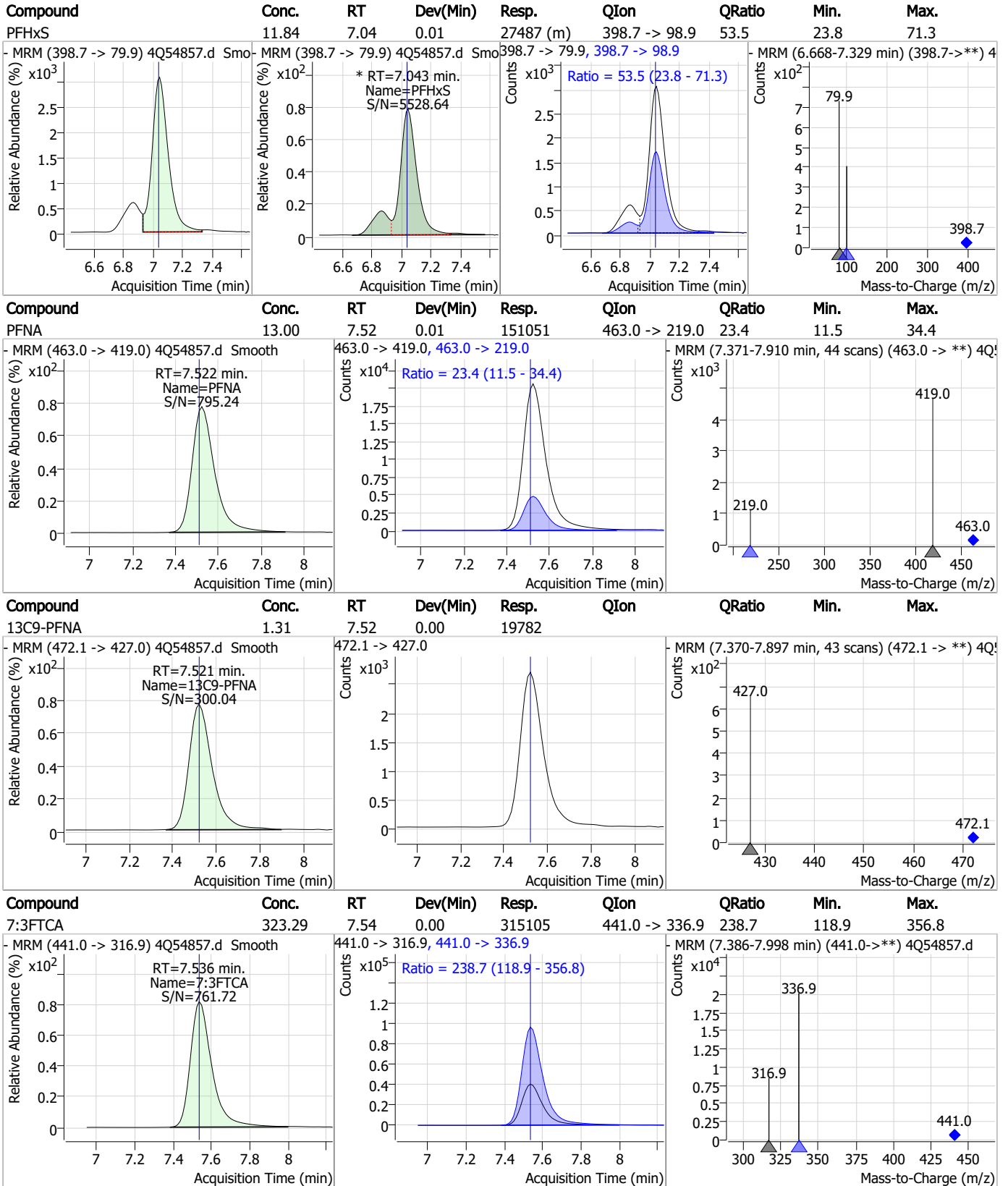
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Perfluorinated Compounds by LC/MS/MS



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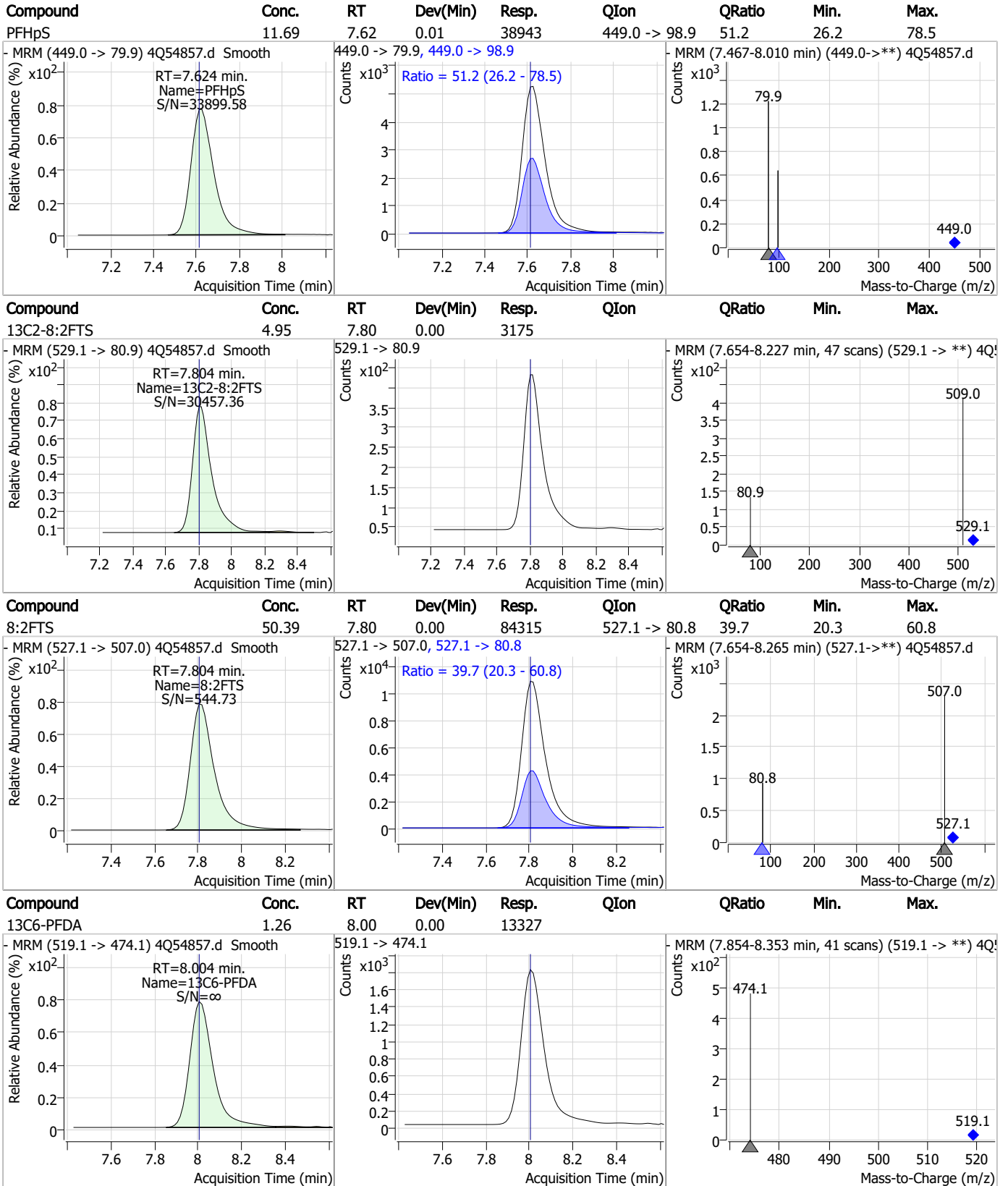
Perfluorinated Compounds by LC/MS/MS



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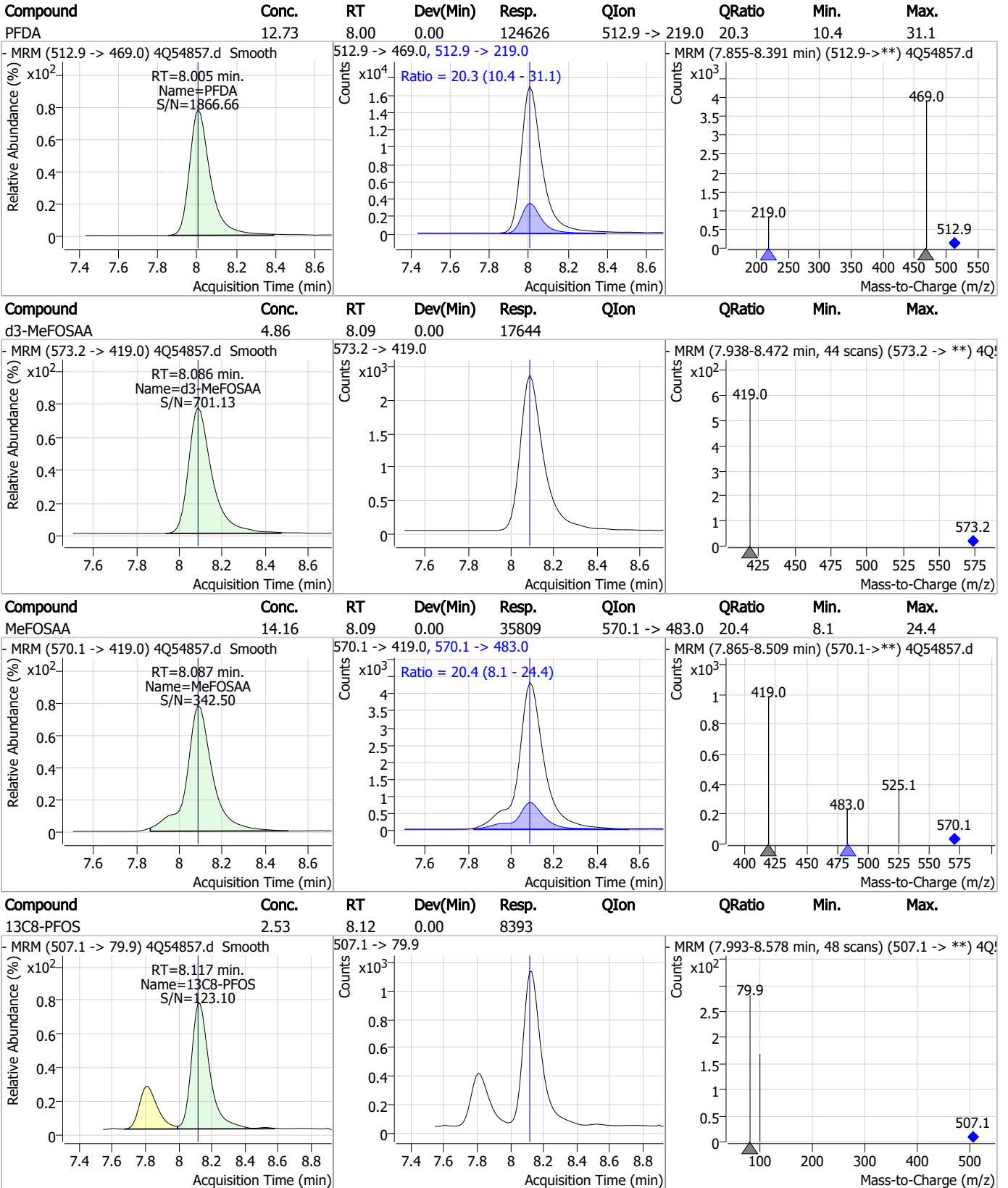
Perfluorinated Compounds by LC/MS/MS



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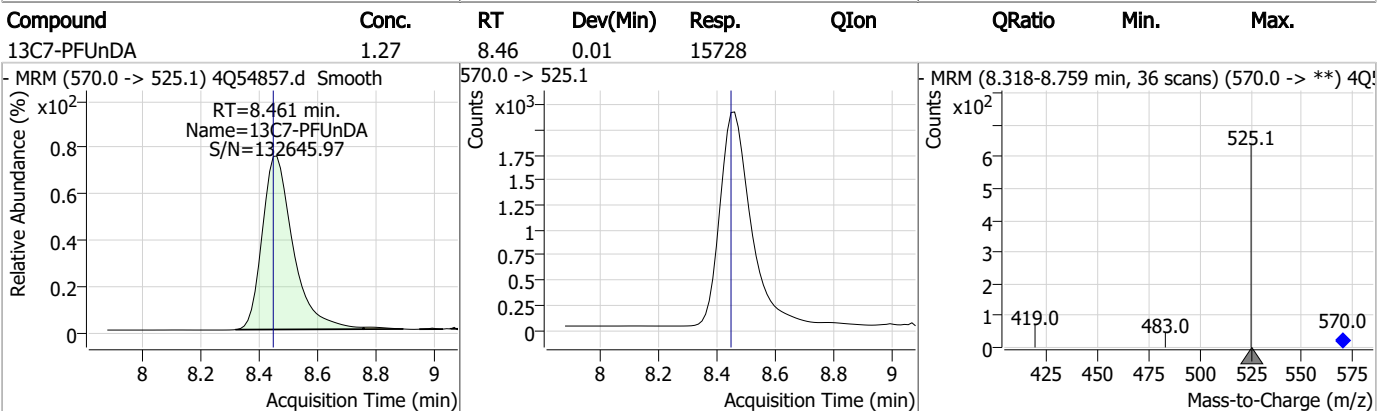
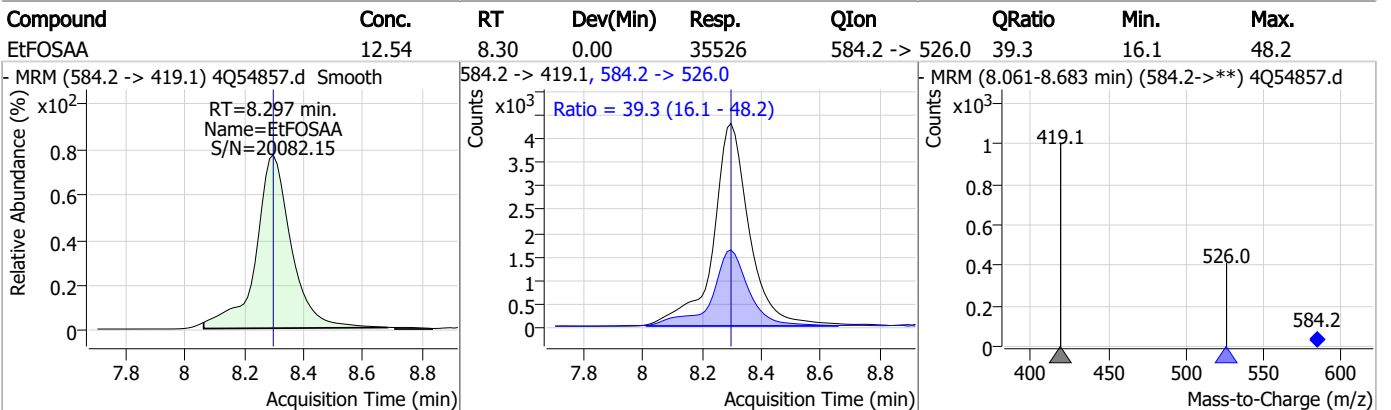
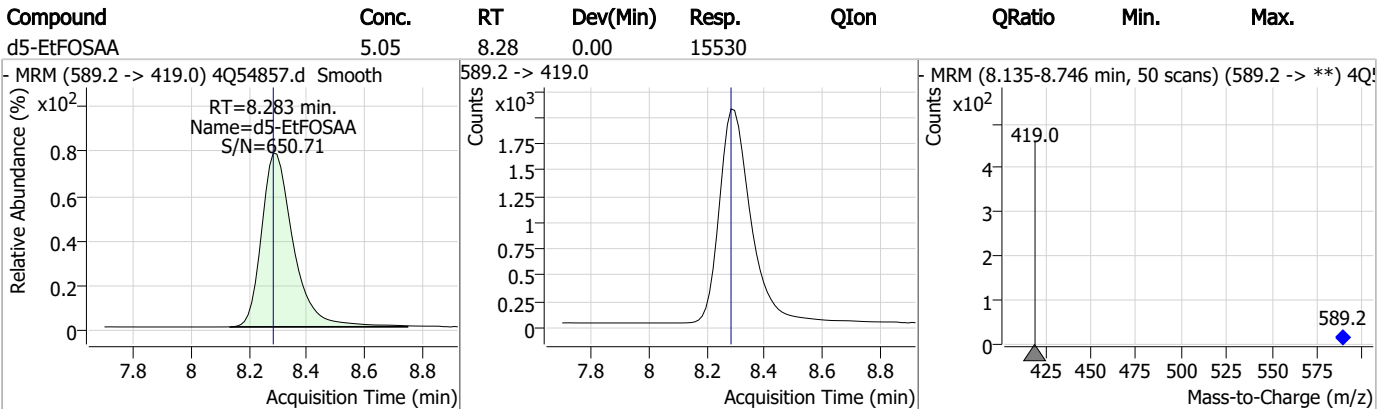
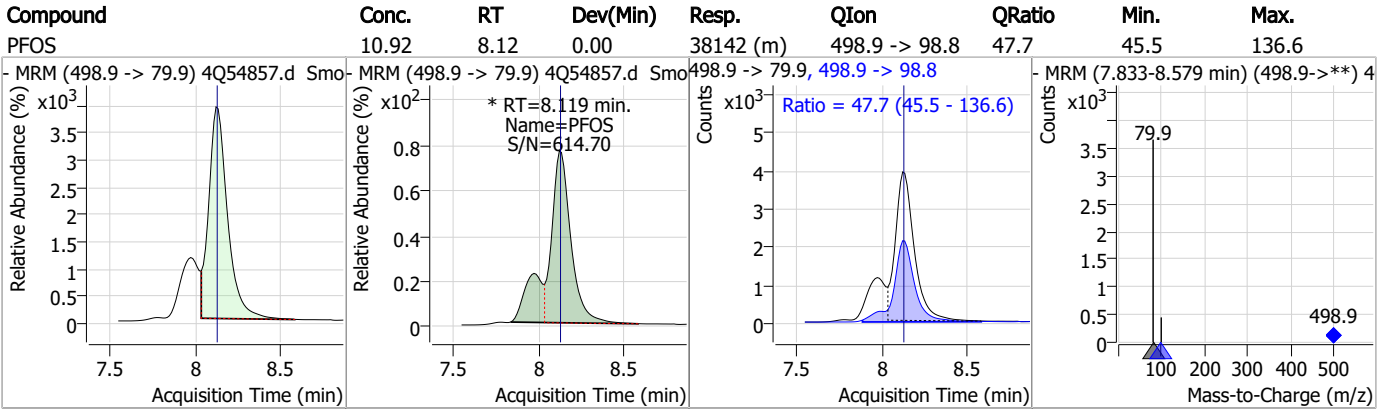
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Perfluorinated Compounds by LC/MS/MS

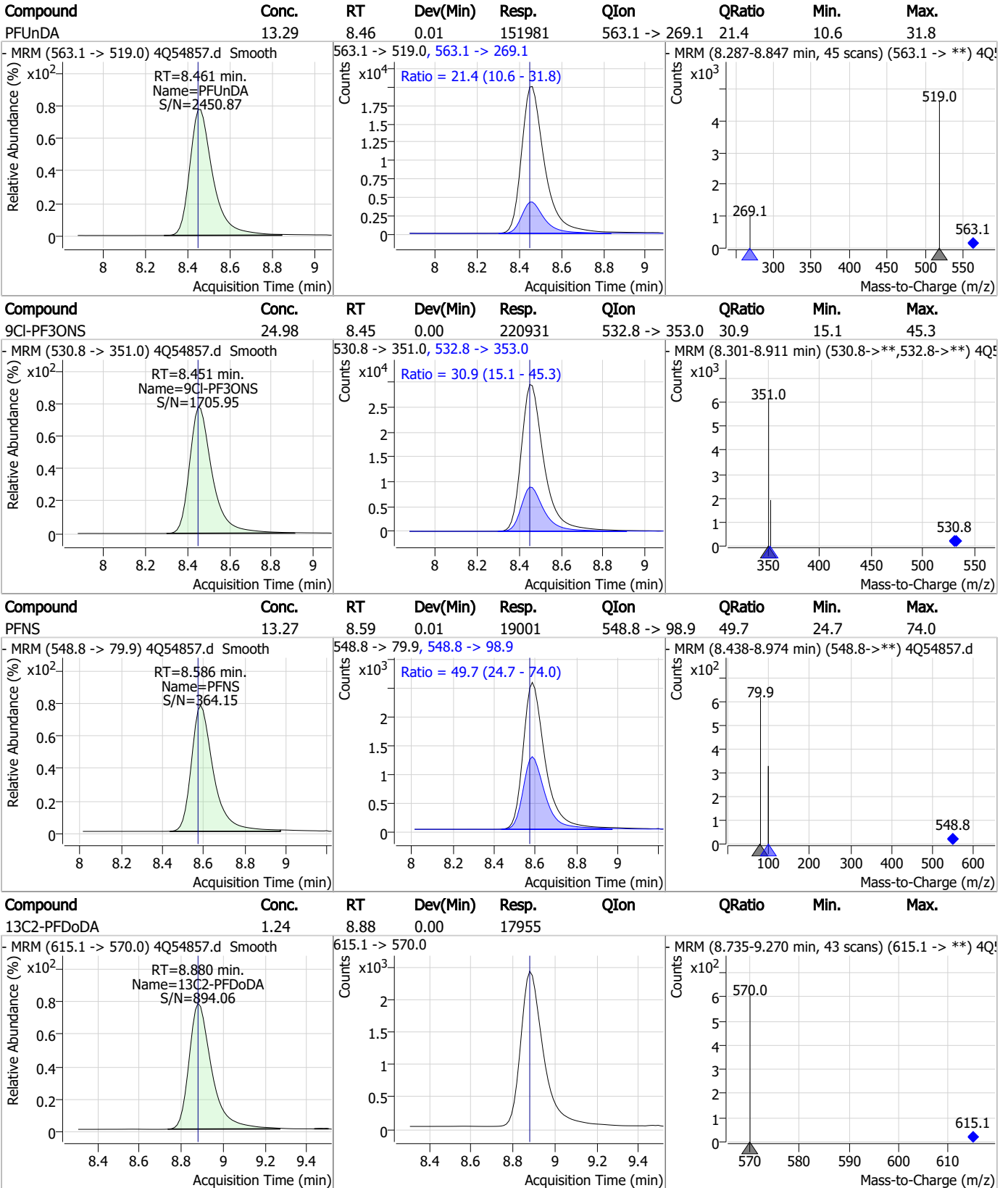


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Perfluorinated Compounds by LC/MS/MS



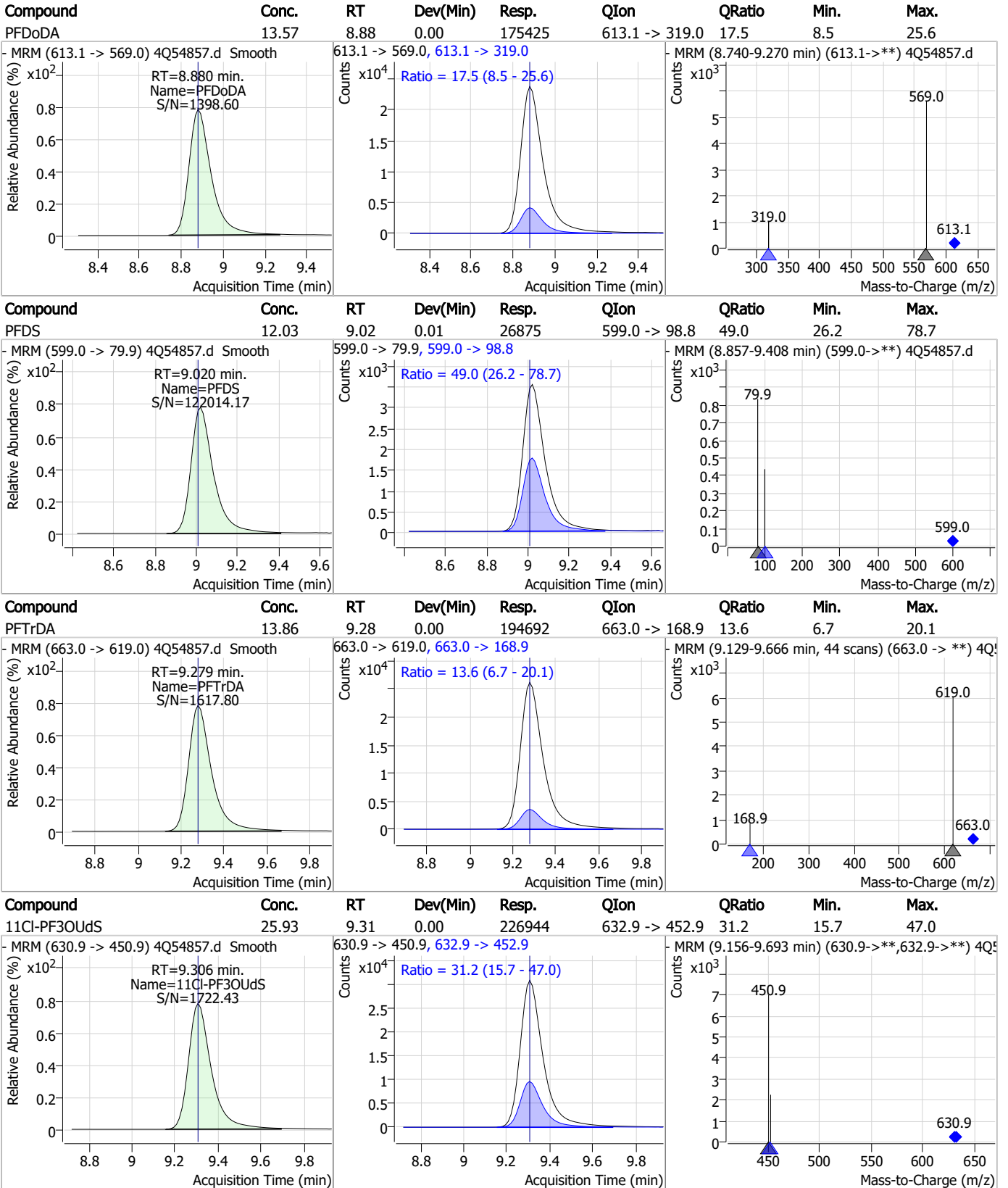
Perfluorinated Compounds by LC/MS/MS



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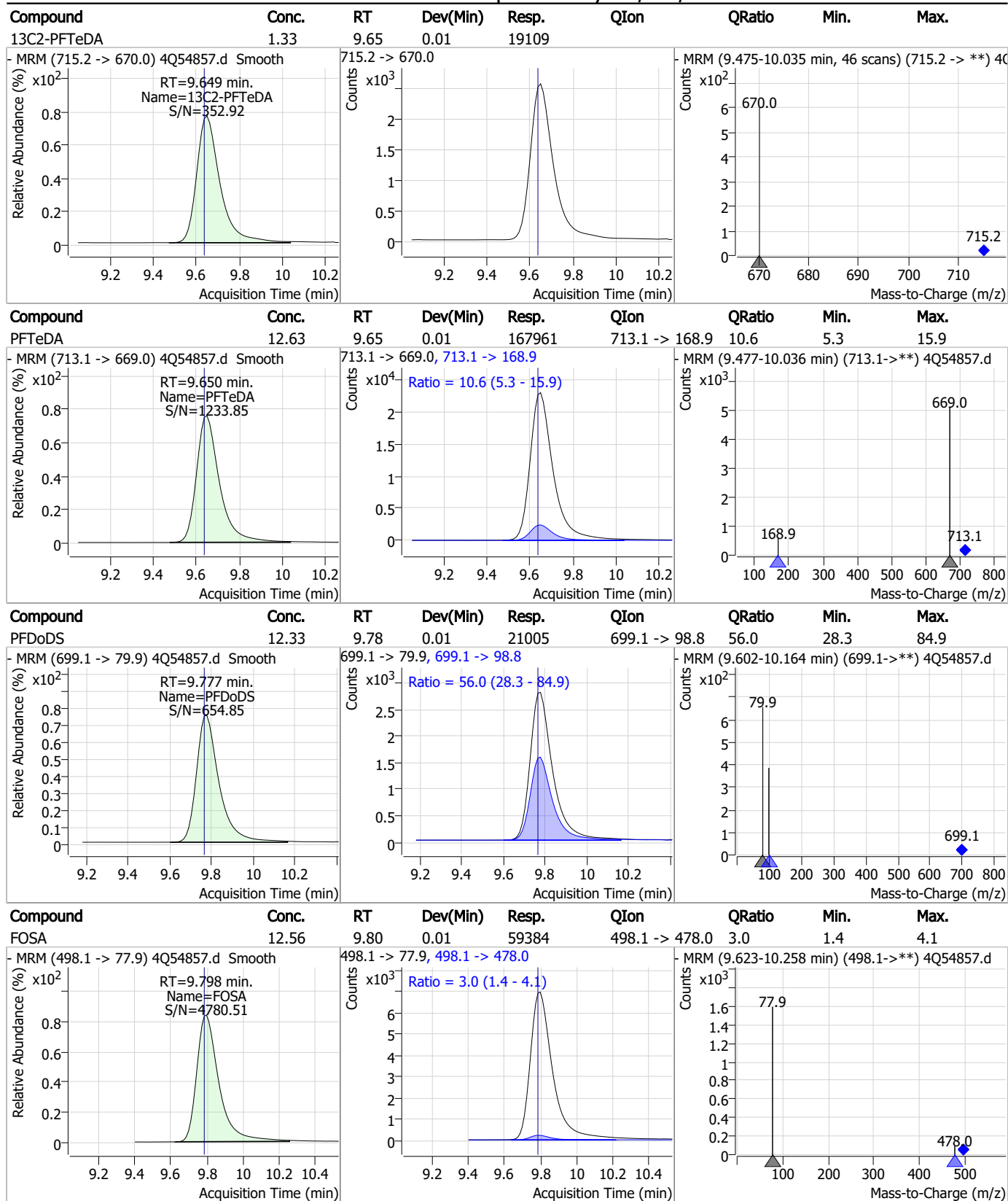
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Perfluorinated Compounds by LC/MS/MS



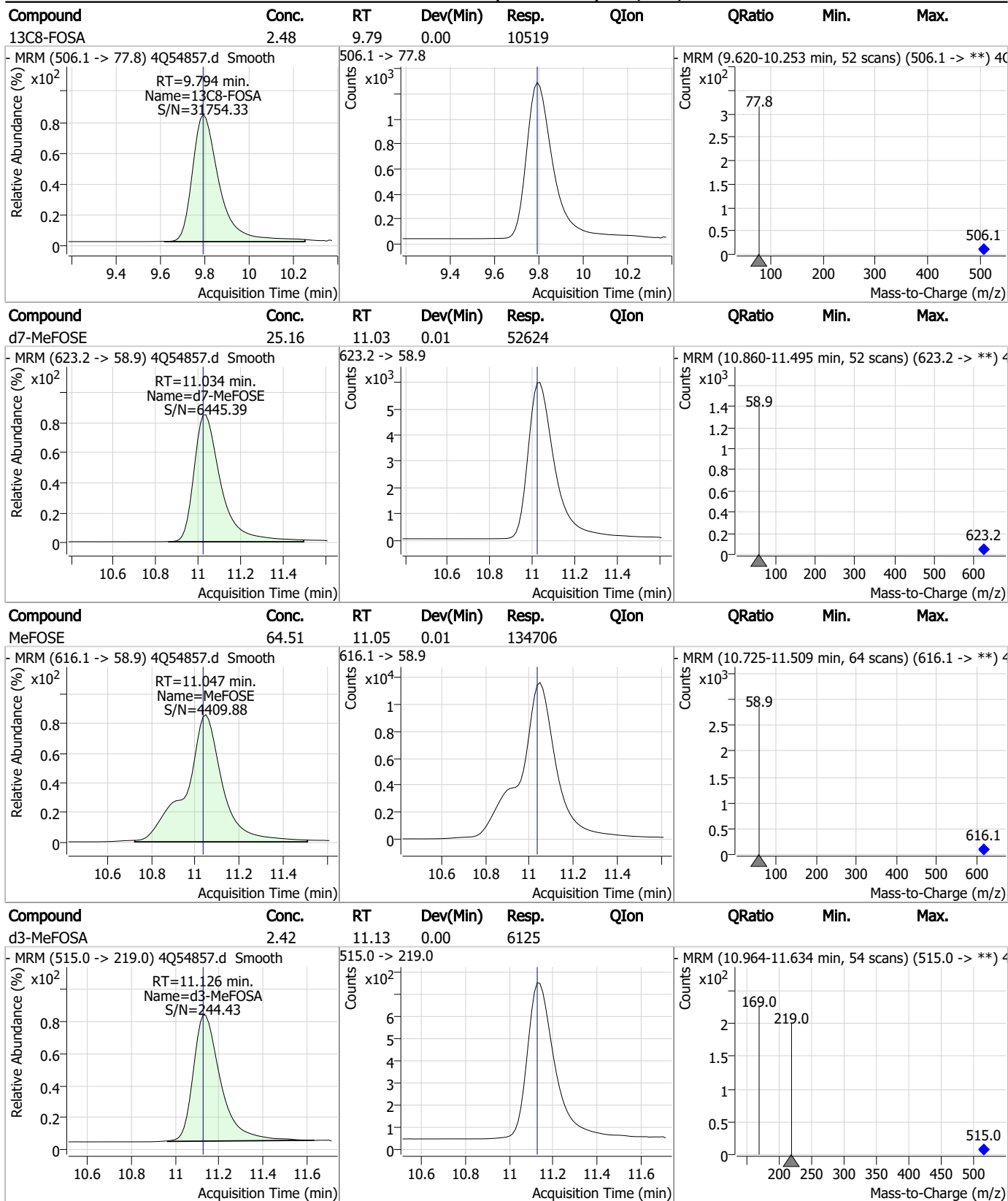
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Perfluorinated Compounds by LC/MS/MS



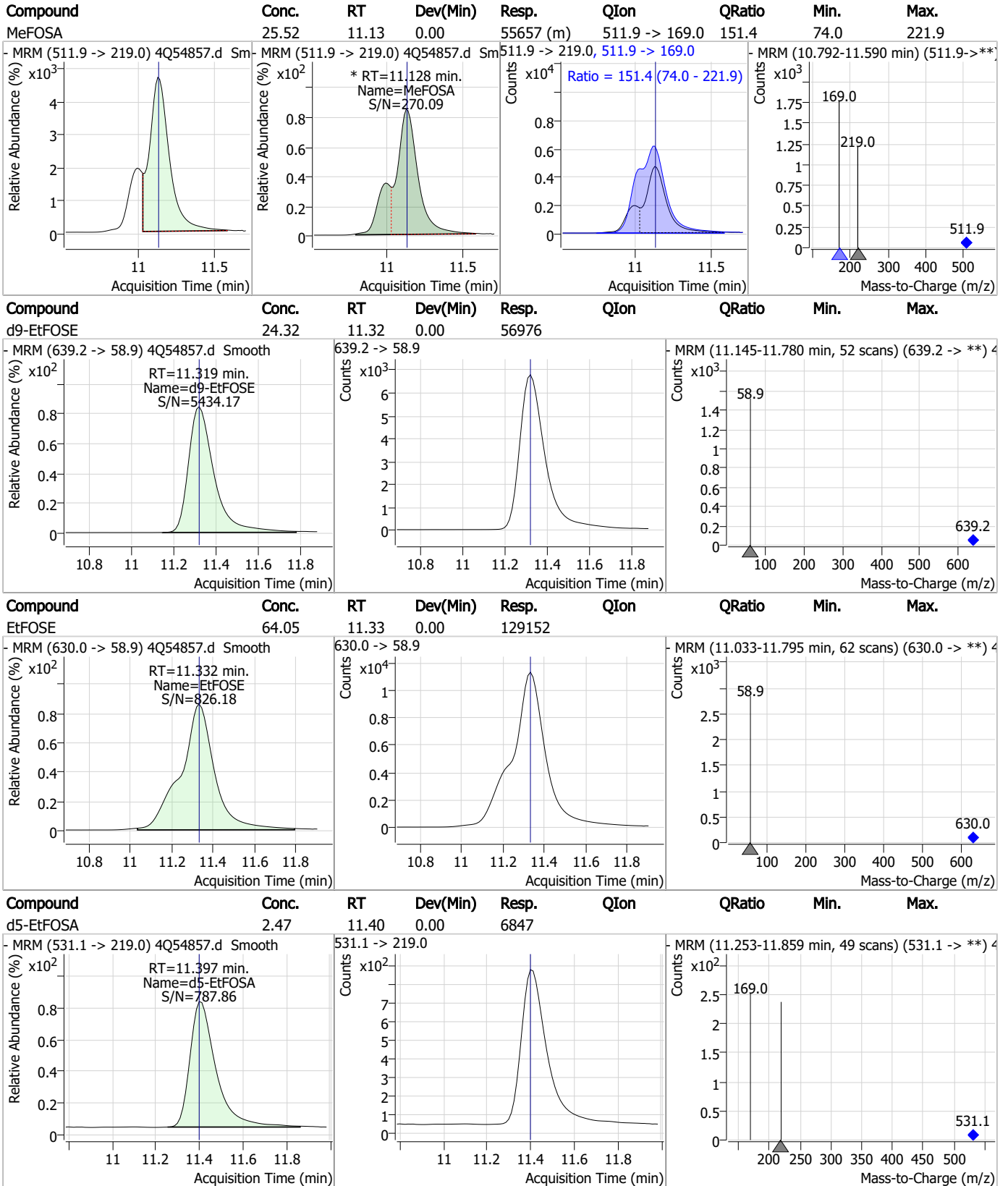
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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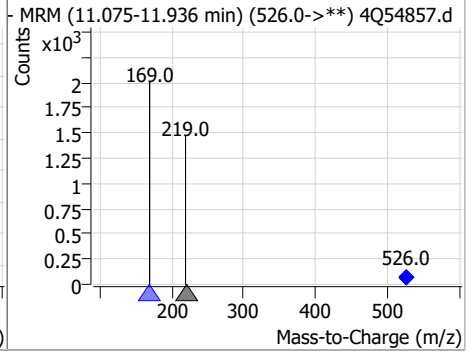
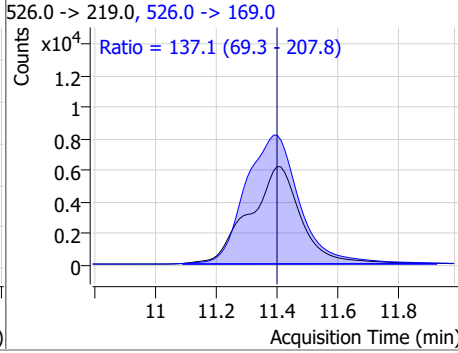
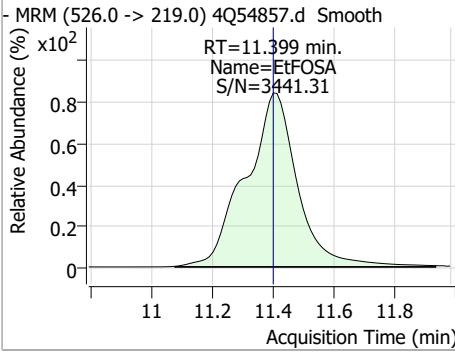
Perfluorinated Compounds by LC/MS/MS



7.7.7
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	25.63	11.40	0.00	74708	526.0 -> 169.0	137.1	69.3	207.8



7.7.7
7

Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54857.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 12:52 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.7.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 12/11/23 15:42

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54858.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 1:06:48 PM
 Sample Name : ic804-7
 Vial : P1-A8
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	87354	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	38177	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	31540	2.50 µg/L	0.012
M4-PFHpA	6.304	367.1 -> 322.0	29075	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	45171	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	17839	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	12956	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	13655	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	17614	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	17401	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	9545	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	8388	2.50 µg/L	0.013
M3-PFHxS	7.042	402.1 -> 79.9	6986	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	7625	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	910	5.00 µg/L	0.012
M2-6:2FTS	6.773	429.1 -> 80.9	1824	5.00 µg/L	0.025
M2-8:2FTS	7.816	529.1 -> 80.9	2782	5.00 µg/L	0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	16209	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	31362	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	13653	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	47430	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	52473	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6812	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	6327	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	5905	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	41866	5.00 µg/L	0.013
18O2-PFHxS	7.041	403.0 -> 83.9	4305	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	50091	2.50 µg/L	0.012
13C2-PFDA	8.004	515.1 -> 470.1	14220	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	18843	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	33172	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	910	4.45 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.1%		
13C2-6:2FTS	6.773	429.1 -> 80.9	1824	4.11 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 82.3%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2782	4.69 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-PFDoDA	8.880	615.1 -> 570.0	17614	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	17401	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFBS	5.202	302.1 -> 79.9	8388	2.54 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C3-PFHxS	7.042	402.1 -> 79.9	6986	2.59 µg/L	0.012

7.7.8
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C4-PFBA	2.686	216.8 -> 171.9	87354	9.94 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C4-PFHpA	6.304	367.1 -> 322.0	29075	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C5-PFHxA	5.347	318.0 -> 273.0	31540	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C5-PFPeA	4.175	268.3 -> 223.0	38177	5.01 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C6-PFDA	8.004	519.1 -> 474.1	12956	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C7-PFUnDA	8.461	570.0 -> 525.1	13655	1.12 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.5%		
13C8-FOSA	9.794	506.1 -> 77.8	9545	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C8-PFOA	6.989	421.1 -> 376.0	45171	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C8-PFOS	8.130	507.1 -> 79.9	7625	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C9-PFNA	7.521	472.1 -> 427.0	17839	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.5%		
d3-MeFOSAA	8.086	573.2 -> 419.0	16209	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-HFPO-DA	5.702	286.9 -> 168.9	31362	10.27 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
d3-MeFOSA	11.139	515.0 -> 219.0	6327	2.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.9%		
d5-EtFOSAA	8.296	589.2 -> 419.0	13653	4.92 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
d7-MeFOSE	11.022	623.2 -> 58.9	47430	25.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d9-EtFOSE	11.319	639.2 -> 58.9	52473	24.82 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
d5-EtFOSA	11.397	531.1 -> 219.0	6812	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.9%		
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	156049	99.56 µg/L	97
		327.1 -> 80.9	64039		
6:2FTS	6.761	427.1 -> 407.0	213255	111.24 µg/L	96
		427.1 -> 80.9	73444		
8:2FTS	7.816	527.1 -> 507.0	150566	102.68 µg/L	97
		527.1 -> 80.8	57915		
EtFOSAA	8.297	584.2 -> 419.1	66954	26.88 µg/L	m 88
		584.2 -> 526.0	26157		
FOSA	9.798	498.1 -> 77.9	113100	26.36 µg/L	99
		498.1 -> 478.0	3609		
MeFOSAA	8.087	570.1 -> 419.0	69981	30.11 µg/L	95
		570.1 -> 483.0	12849		
PFBA	2.682	212.8 -> 168.9	300524	107.42 µg/L	100
PFBS	5.203	298.7 -> 79.9	61484	23.63 µg/L	98
		298.7 -> 98.8	24288		
PFDA	8.005	512.9 -> 469.0	237667	24.97 µg/L	98
		512.9 -> 219.0	46893		
PFDoDA	8.880	613.1 -> 569.0	337475	26.60 µg/L	99
		613.1 -> 319.0	59206		
PFDS	9.020	599.0 -> 79.9	51524	25.39 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	26101			
PFHpA	6.305	363.1 -> 319.0	446479	27.28	µg/L	99
		363.1 -> 169.0	79342			
PFHpS	7.624	449.0 -> 79.9	77955	25.77	µg/L	100
		449.0 -> 98.9	40719			
PFHxA	5.350	313.0 -> 269.0	263757	26.21	µg/L	99
		313.0 -> 118.9	8077			
PFHxS	7.043	398.7 -> 79.9	51447	22.83	µg/L	m 97
		398.7 -> 98.9	25465			
PFNA	7.522	463.0 -> 419.0	287697	27.45	µg/L	98
		463.0 -> 219.0	68946			
PFNS	8.586	548.8 -> 79.9	35851	27.56	µg/L	97
		548.8 -> 98.9	18559			
PFOA	6.990	413.0 -> 369.0	495670	26.68	µg/L	96
		413.0 -> 169.0	101555			
PFOS	8.131	498.9 -> 79.9	74590	23.50	µg/L	m 52
		498.9 -> 98.8	34238			
PFPeA	4.177	263.0 -> 219.0	402705	53.61	µg/L	100
PFPeS	6.294	349.1 -> 79.9	52797	24.88	µg/L	95
		349.1 -> 98.9	24033			
PFTeDA	9.650	713.1 -> 669.0	323093	26.68	µg/L	99
		713.1 -> 168.9	32906			
PFTrDA	9.279	663.0 -> 619.0	360692	26.17	µg/L	99
		663.0 -> 168.9	49646			
PFUnDA	8.461	563.1 -> 519.0	275616	27.75	µg/L	99
		563.1 -> 269.1	59539			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	428216	49.59	µg/L	99
		632.9 -> 452.9	132787			
9Cl-PF3ONS	8.463	530.8 -> 351.0	407311	46.66	µg/L	100
		532.8 -> 353.0	122254			
ADONA	6.568	376.9 -> 250.9	1151101	54.35	µg/L	100
		376.9 -> 84.8	277421			
HFPO-DA	5.703	284.9 -> 168.9	158726	52.89	µg/L	99
		284.9 -> 184.9	15251			
3:3FTCA	3.617	241.0 -> 177.0	60644	136.36	µg/L	100
		241.0 -> 117.0	5330			
5:3FTCA	6.020	341.0 -> 237.1	1177771	656.12	µg/L	98
		341.0 -> 217.0	825148			
7:3FTCA	7.536	441.0 -> 316.9	606563	644.37	µg/L	99
		441.0 -> 336.9	1431693			
EtFOSA	11.399	526.0 -> 219.0	143025	49.31	µg/L	100
		526.0 -> 169.0	198112			
EtFOSE	11.332	630.0 -> 58.9	245376	132.13	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	112208	49.81	µg/L	m 96
		511.9 -> 169.0	159992			
MeFOSE	11.047	616.1 -> 58.9	251819	133.81	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	40747	26.33	µg/L	98
		699.1 -> 98.8	22426			
NFDHA	5.229	295.0 -> 201.0	34793	48.80	µg/L	99
		295.0 -> 84.9	8855			
PFMBA	4.578	279.0 -> 85.1	219615	53.10	µg/L	100
PFMPA	3.315	229.0 -> 84.9	243276	53.53	µg/L	100
PFEESA	5.734	314.8 -> 134.9	349223	46.95	µg/L	98
		314.8 -> 82.9	11549			

= Qualifier out of range, m = manually integrated, + = Area summed

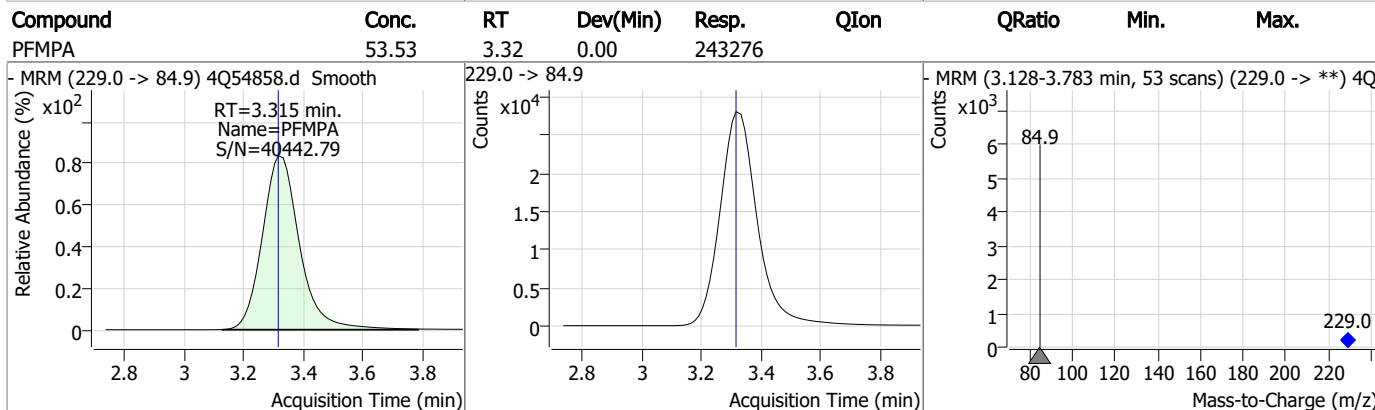
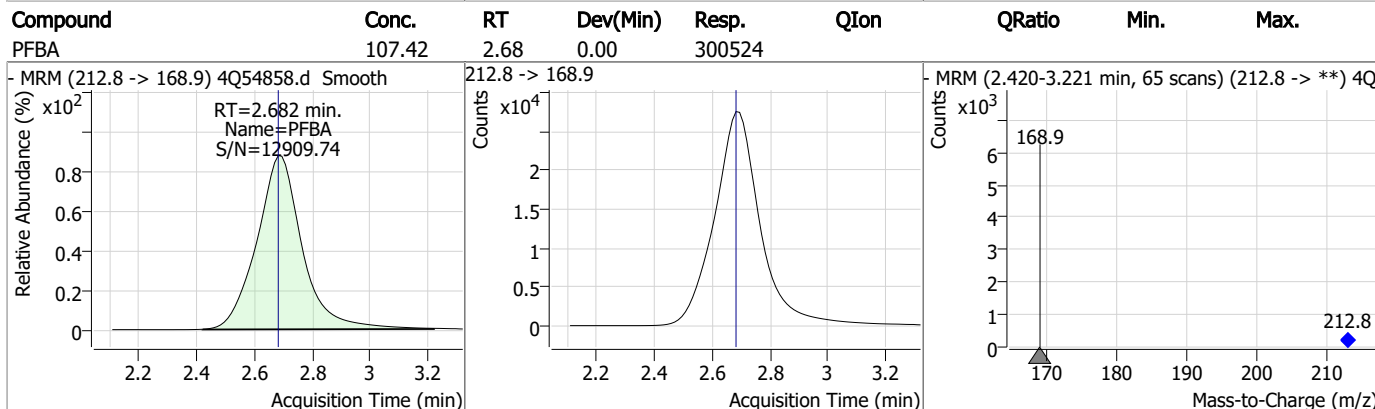
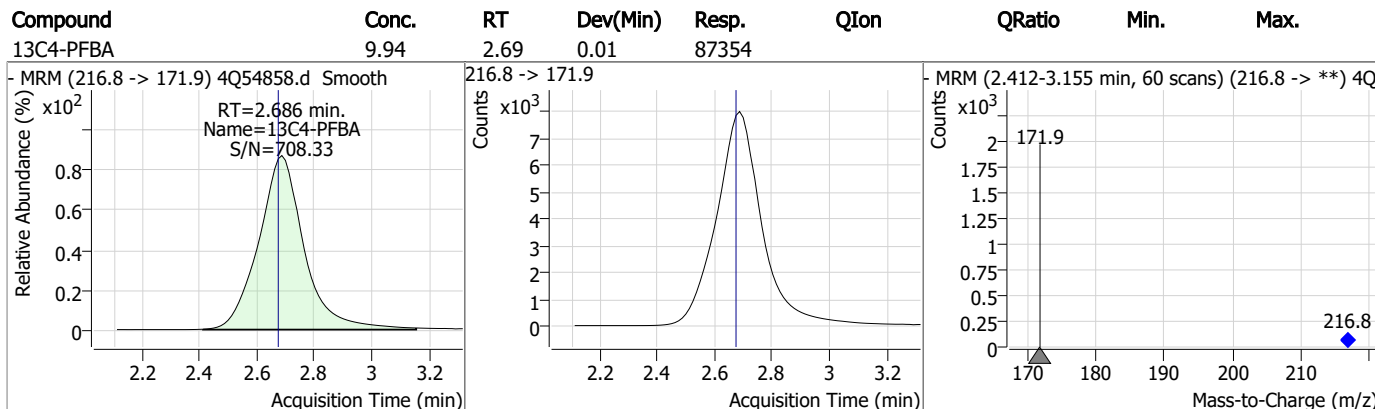
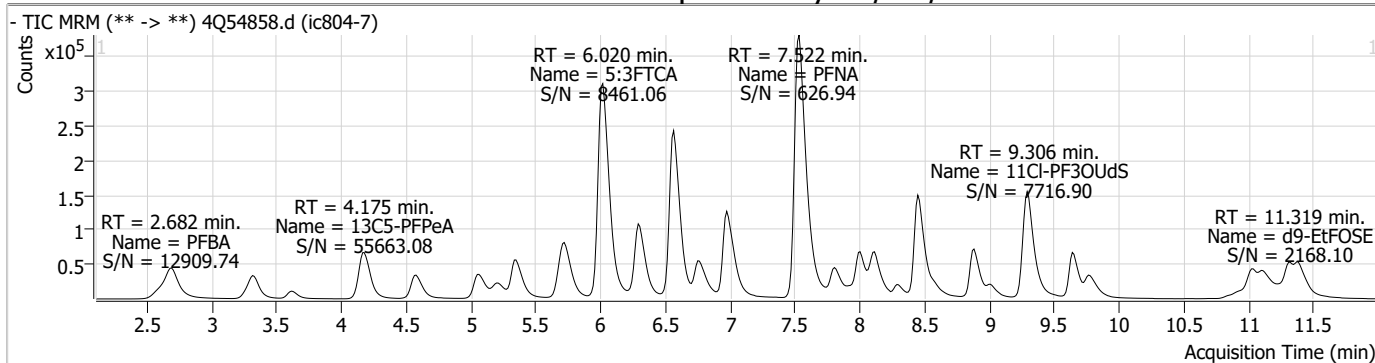
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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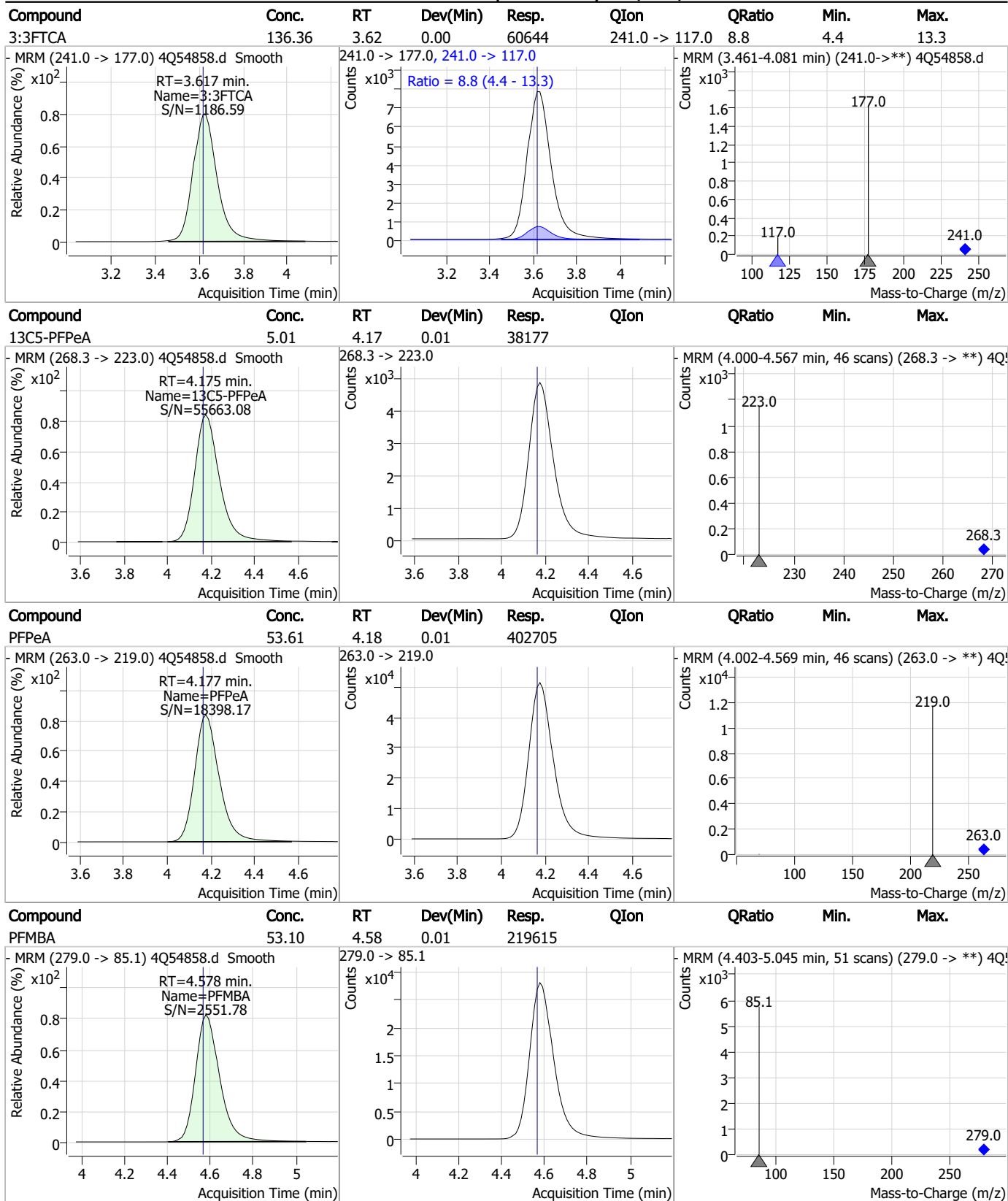
7.7.8
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Perfluorinated Compounds by LC/MS/MS

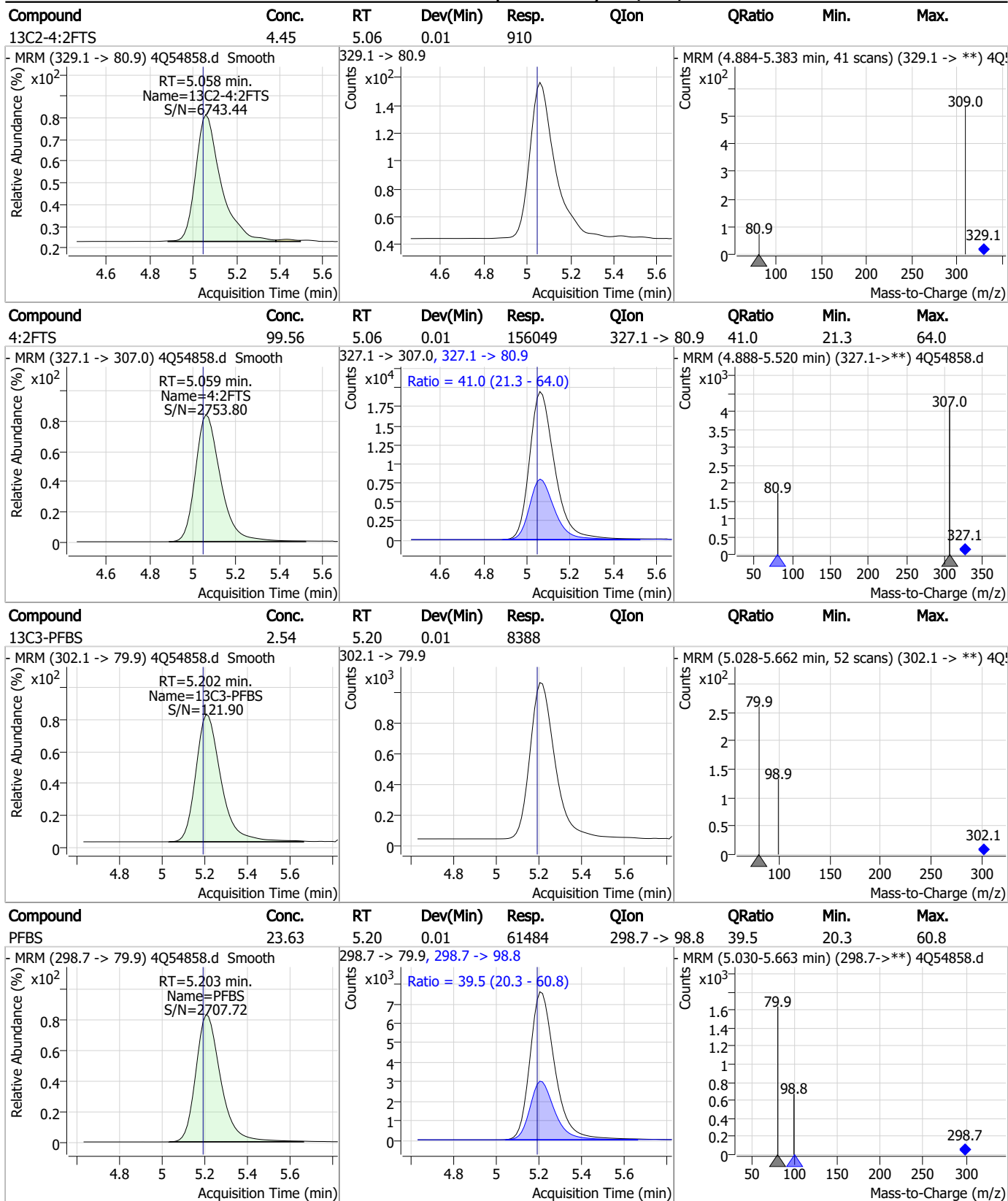


Perfluorinated Compounds by LC/MS/MS



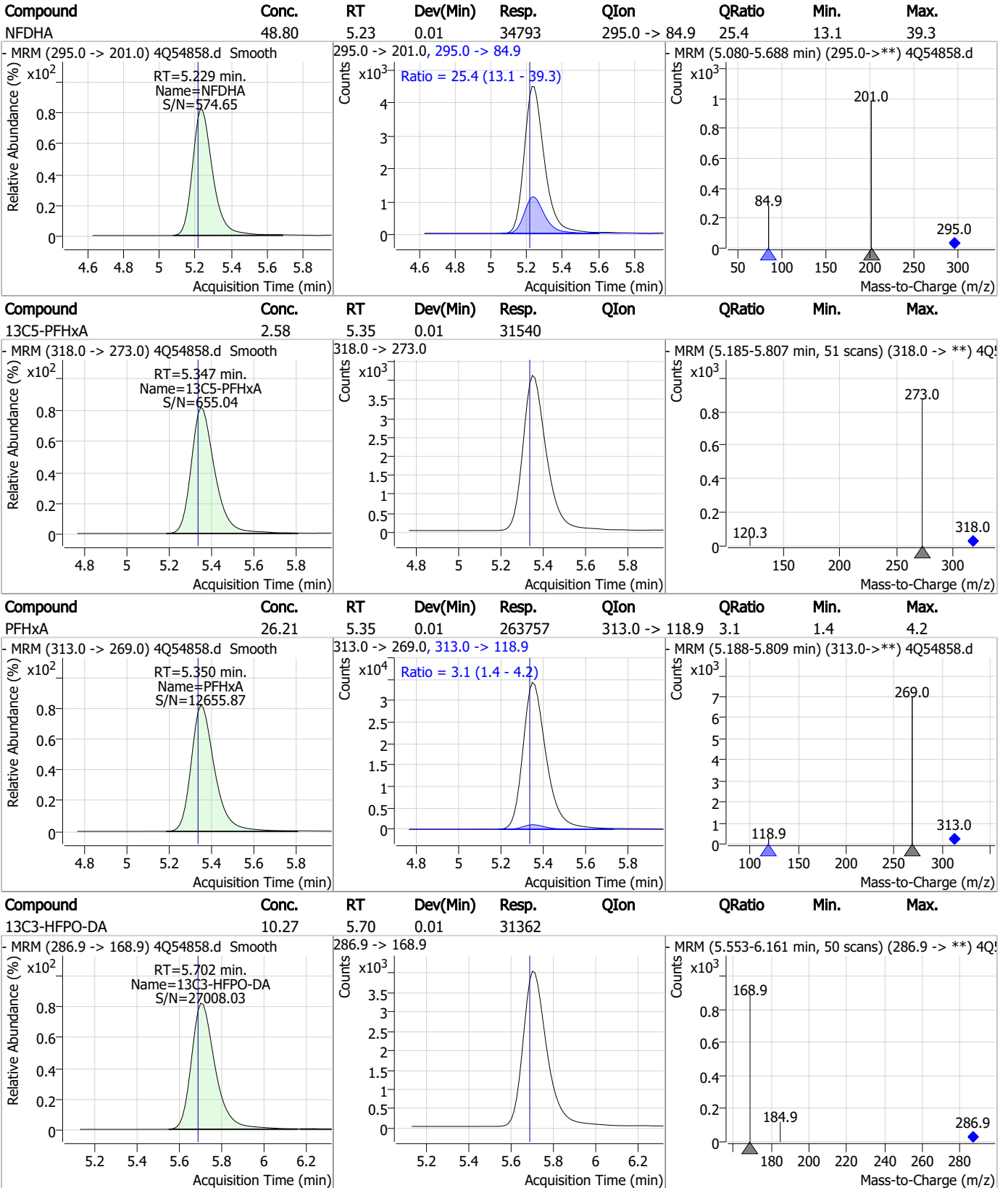
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Perfluorinated Compounds by LC/MS/MS



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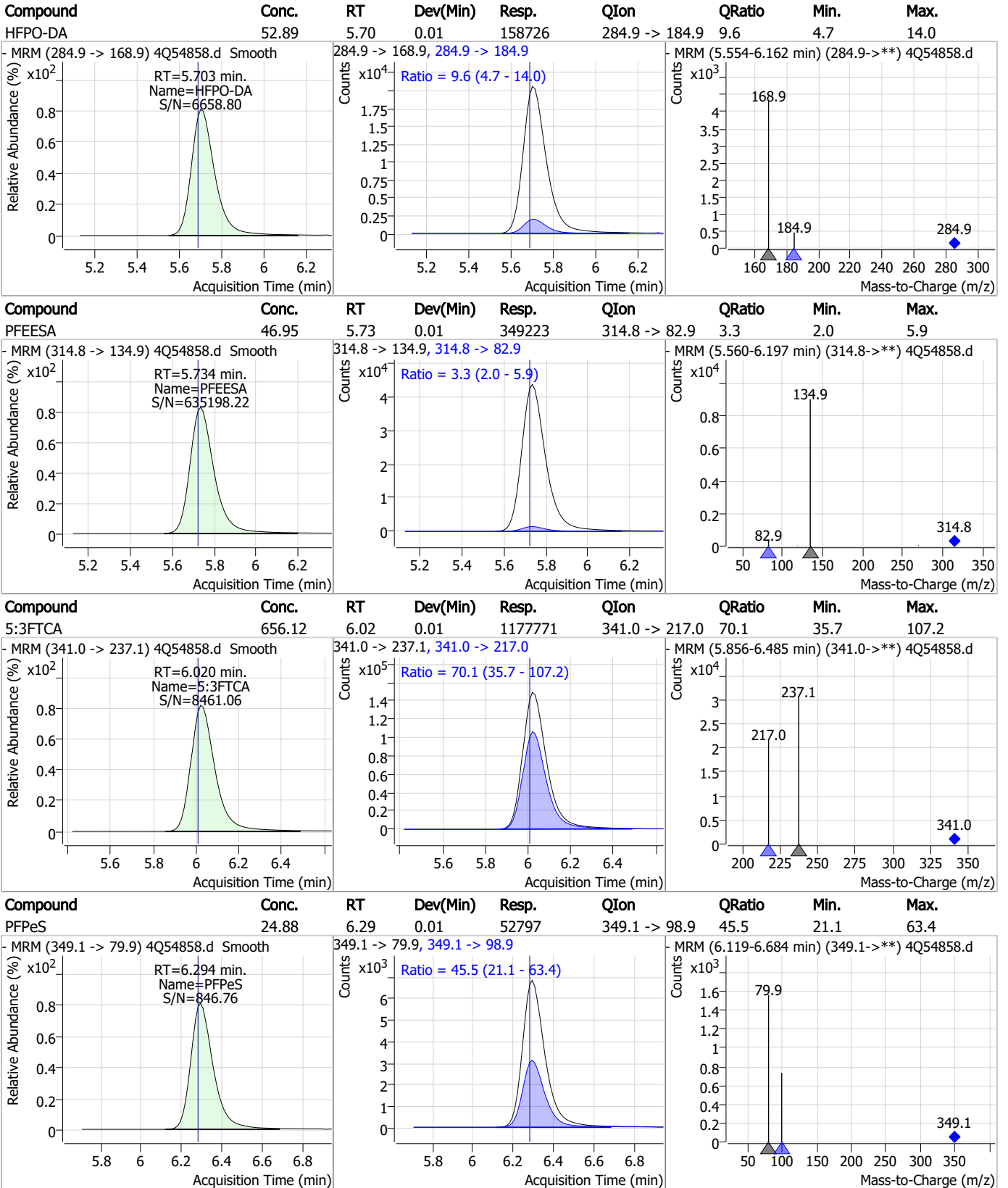
Perfluorinated Compounds by LC/MS/MS



7.7.8

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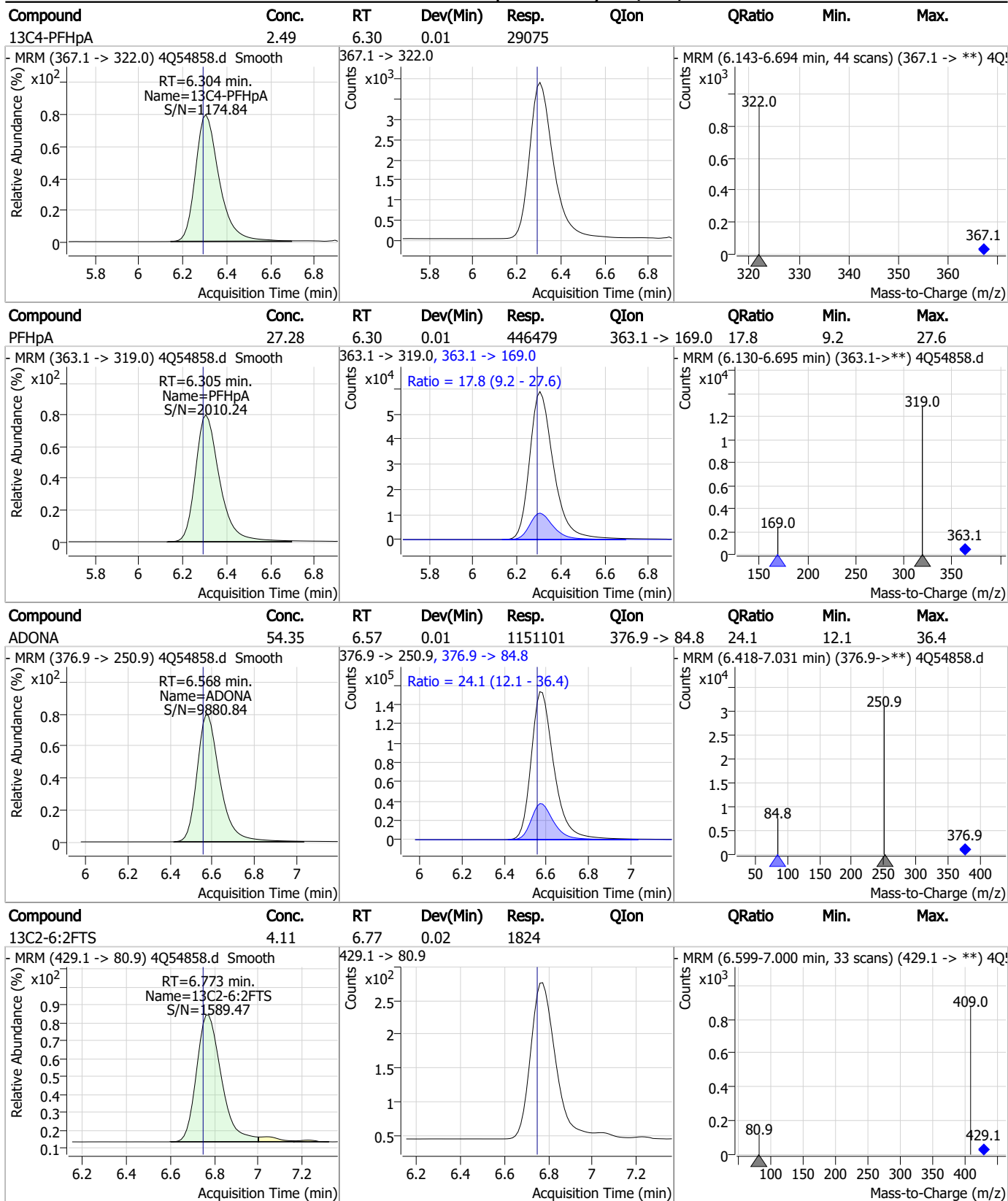
Perfluorinated Compounds by LC/MS/MS



7.7.8

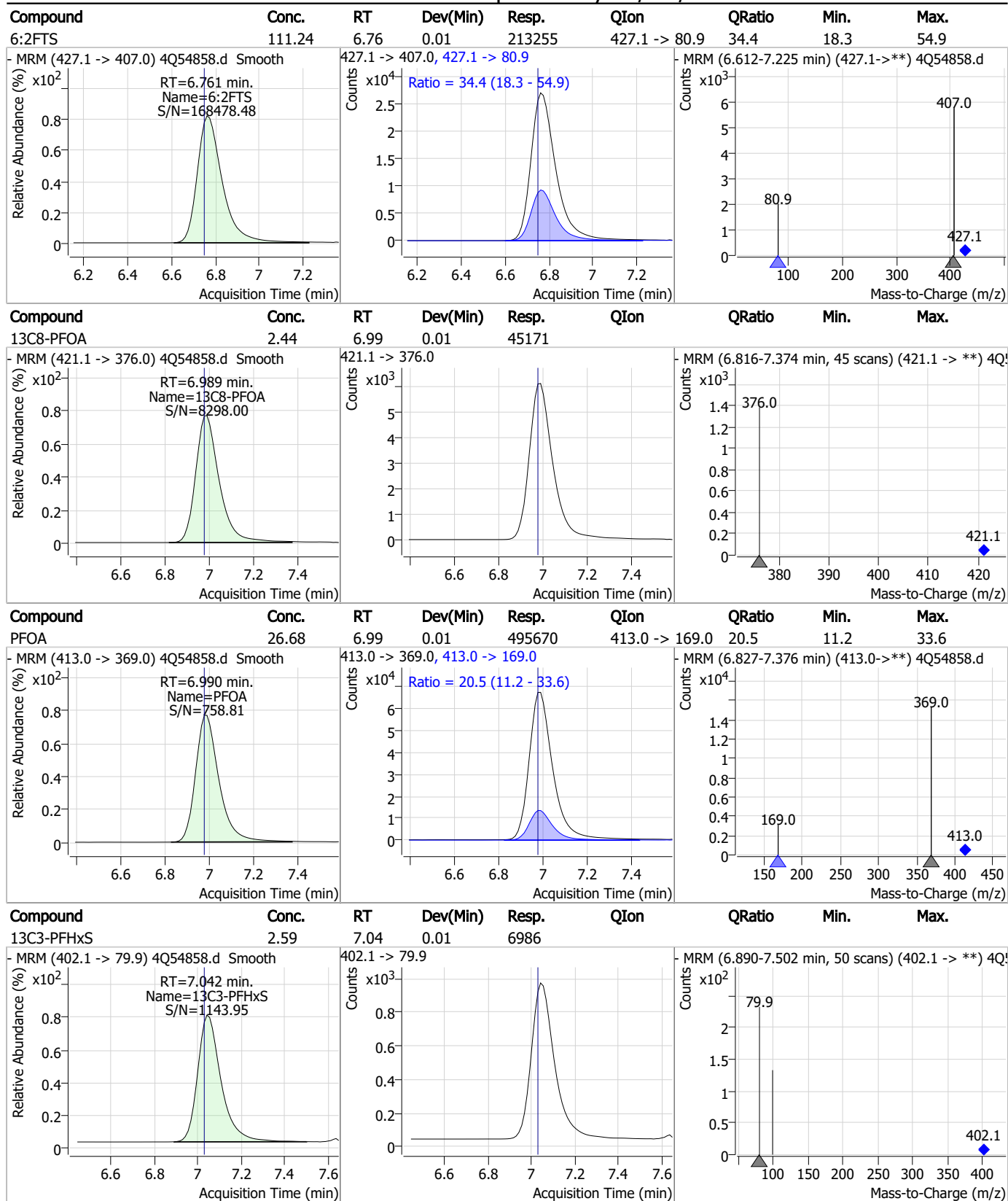
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Perfluorinated Compounds by LC/MS/MS



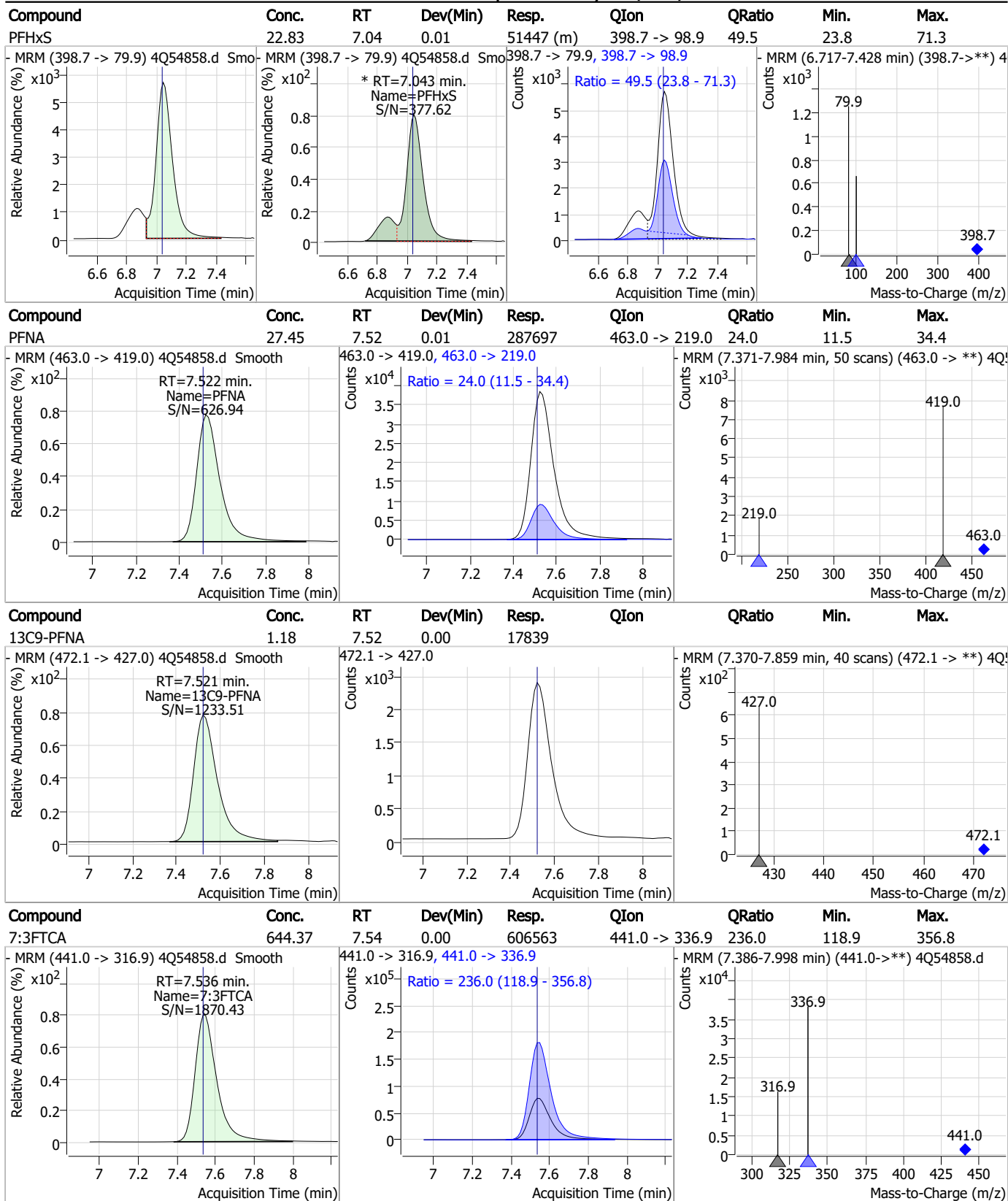
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Perfluorinated Compounds by LC/MS/MS



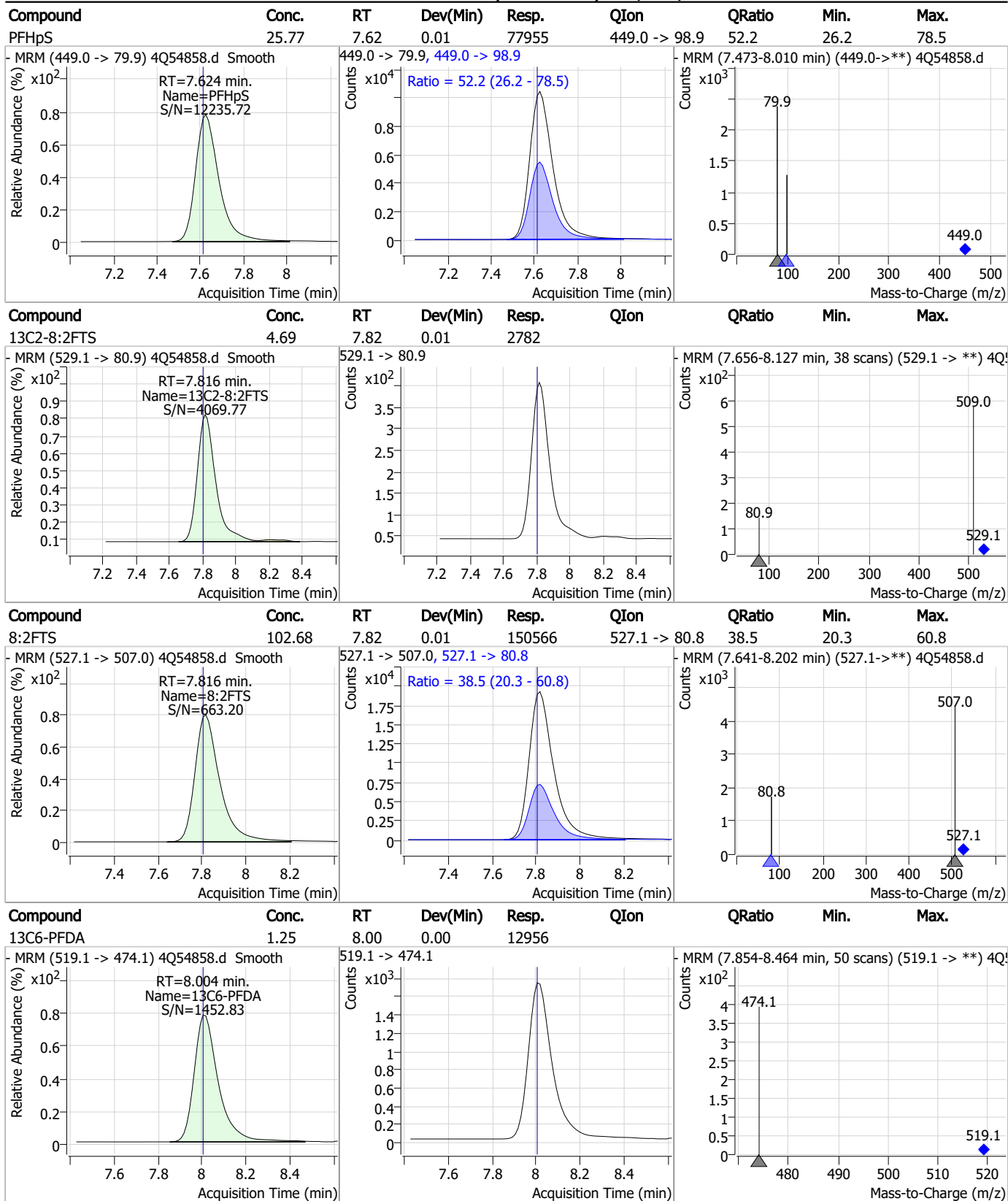
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Perfluorinated Compounds by LC/MS/MS



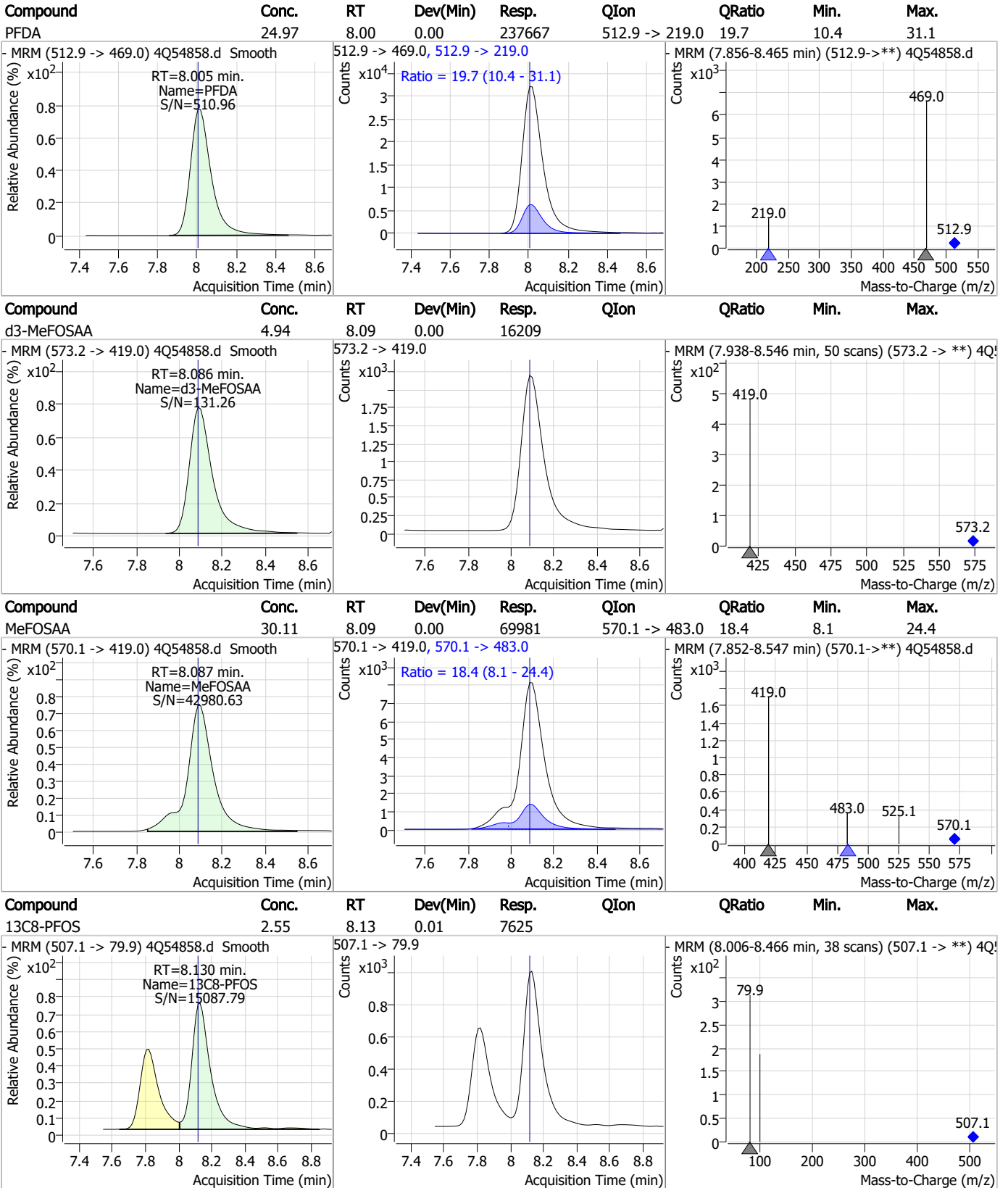
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Perfluorinated Compounds by LC/MS/MS



7.7.8
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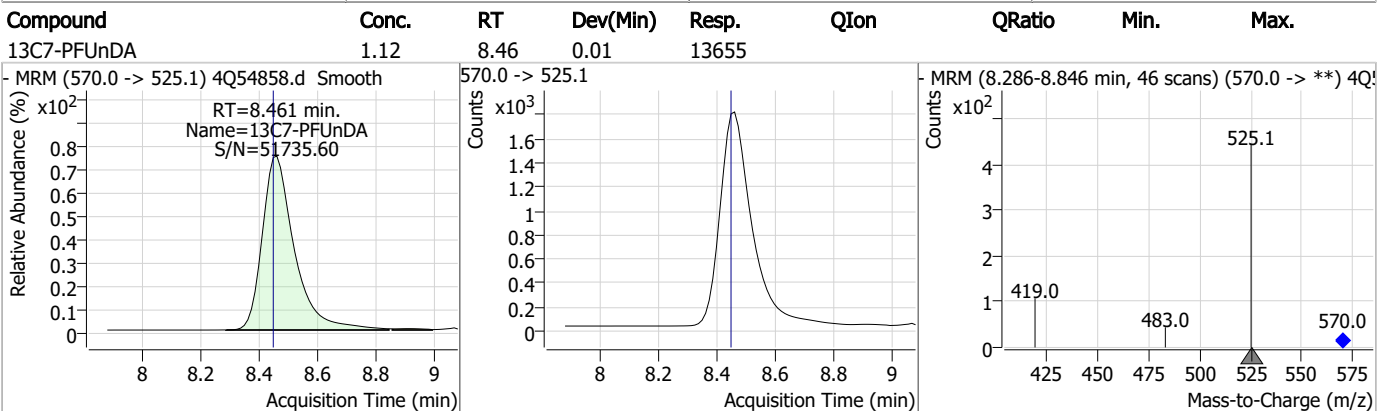
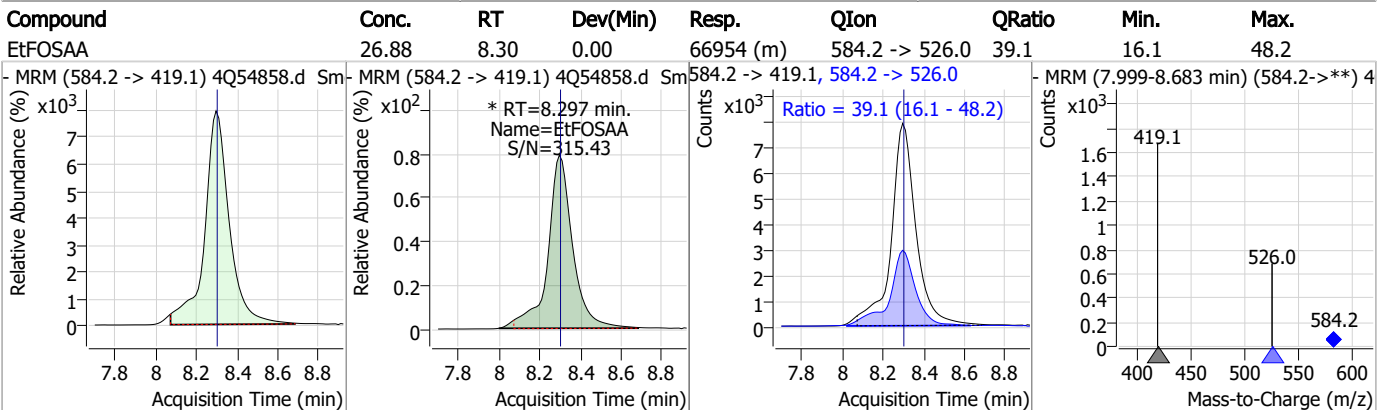
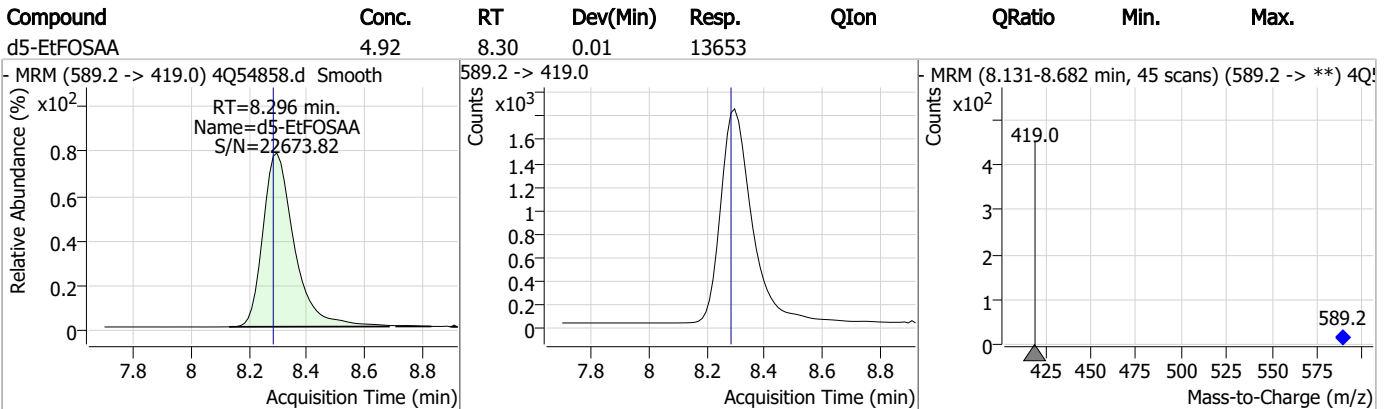
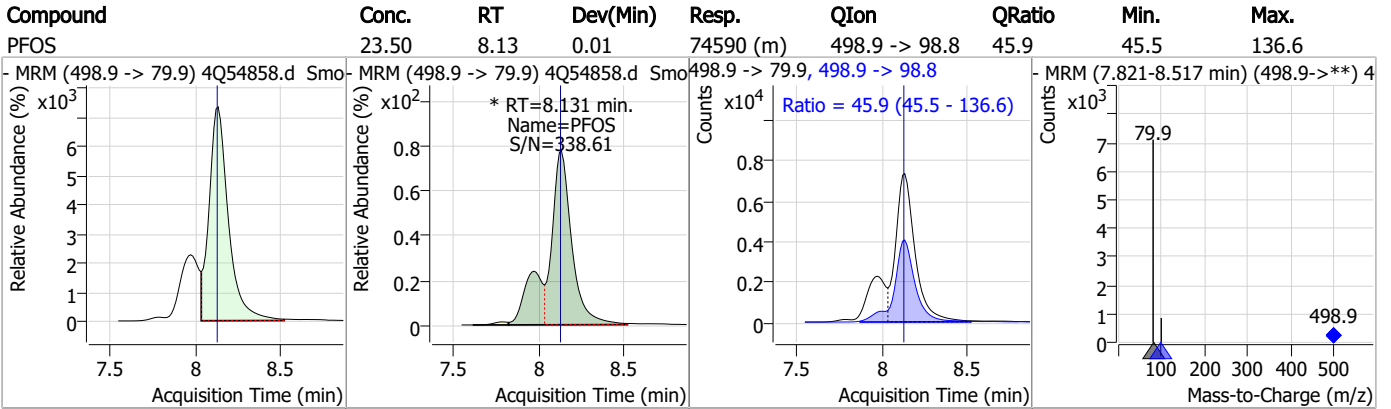
Perfluorinated Compounds by LC/MS/MS



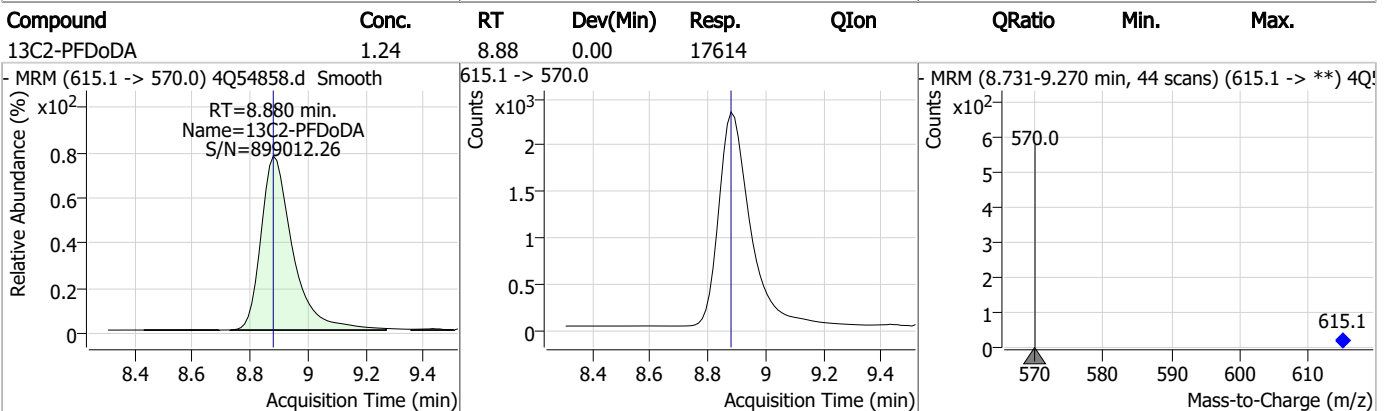
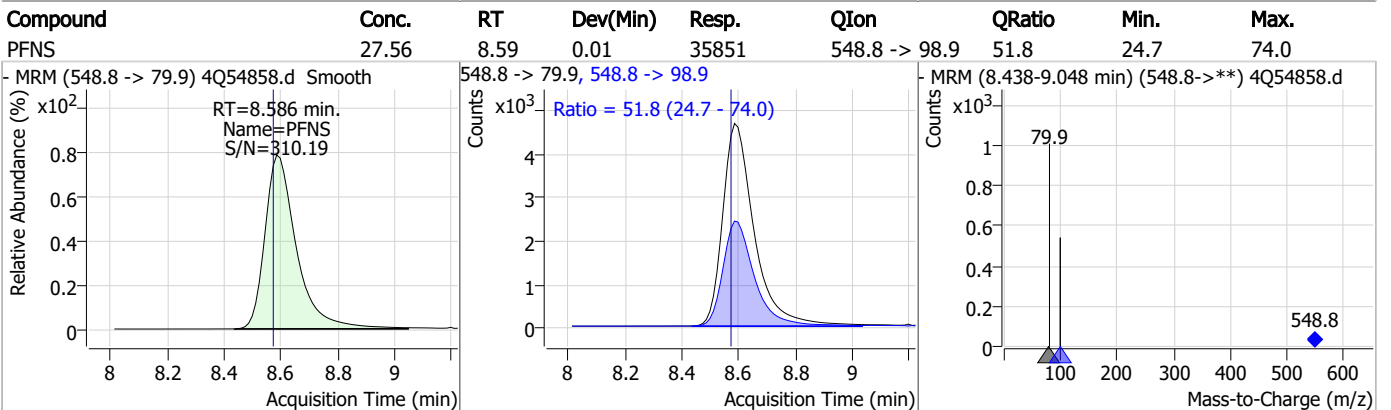
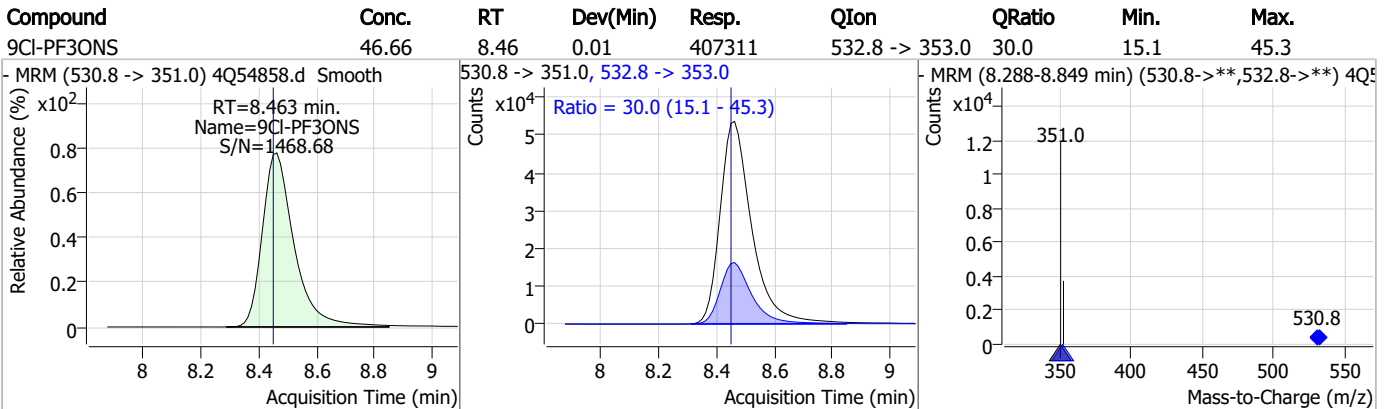
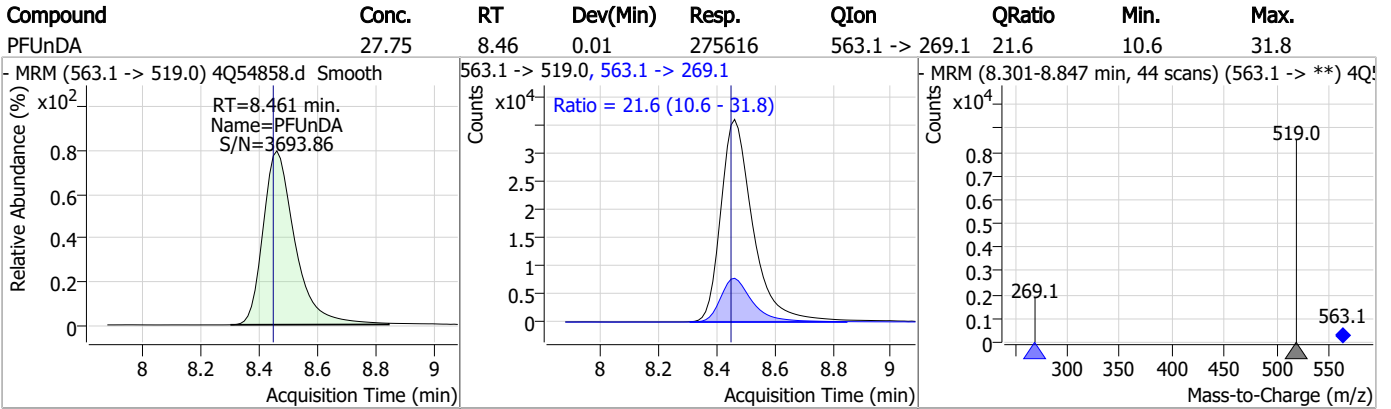
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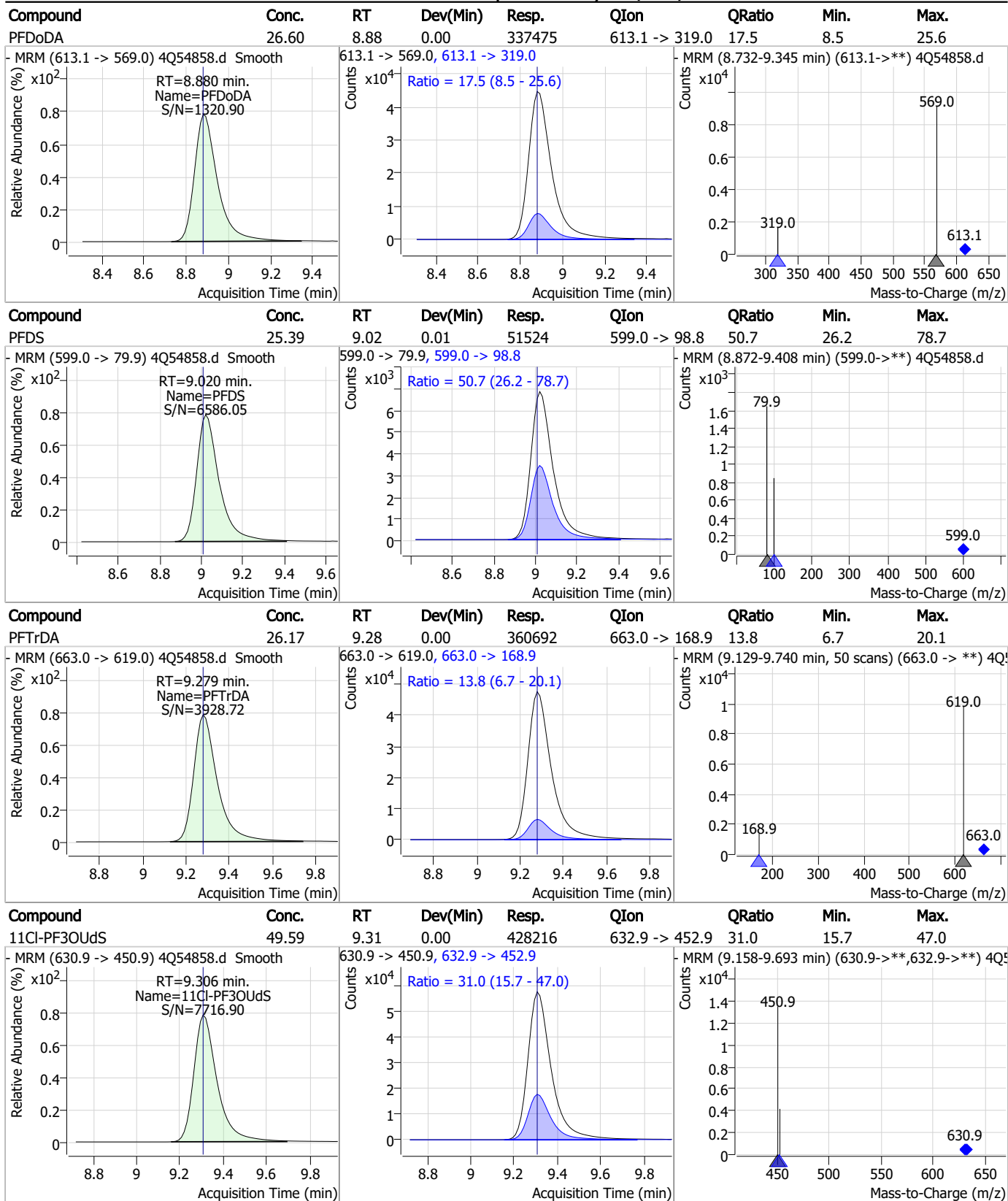
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

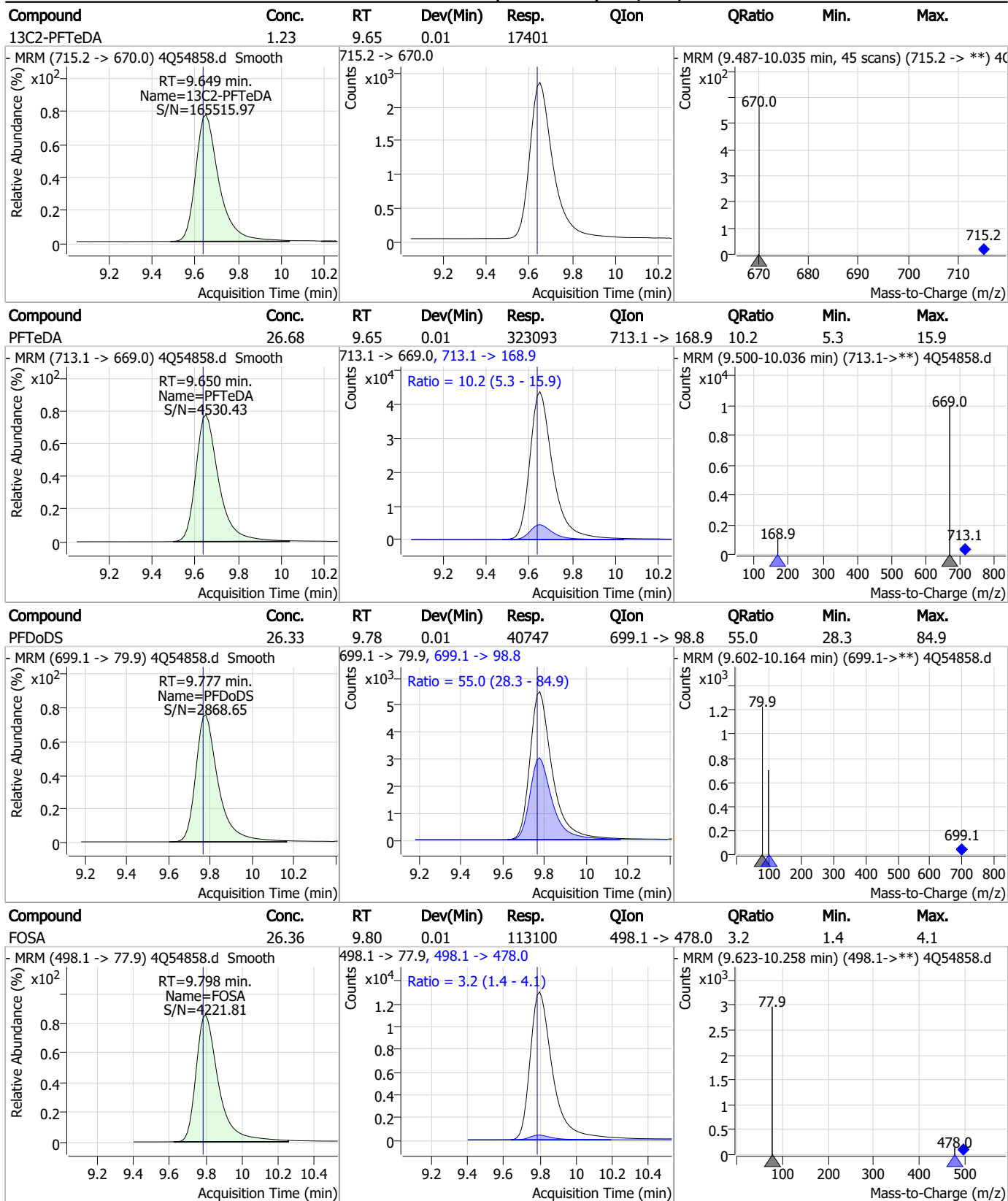


Perfluorinated Compounds by LC/MS/MS



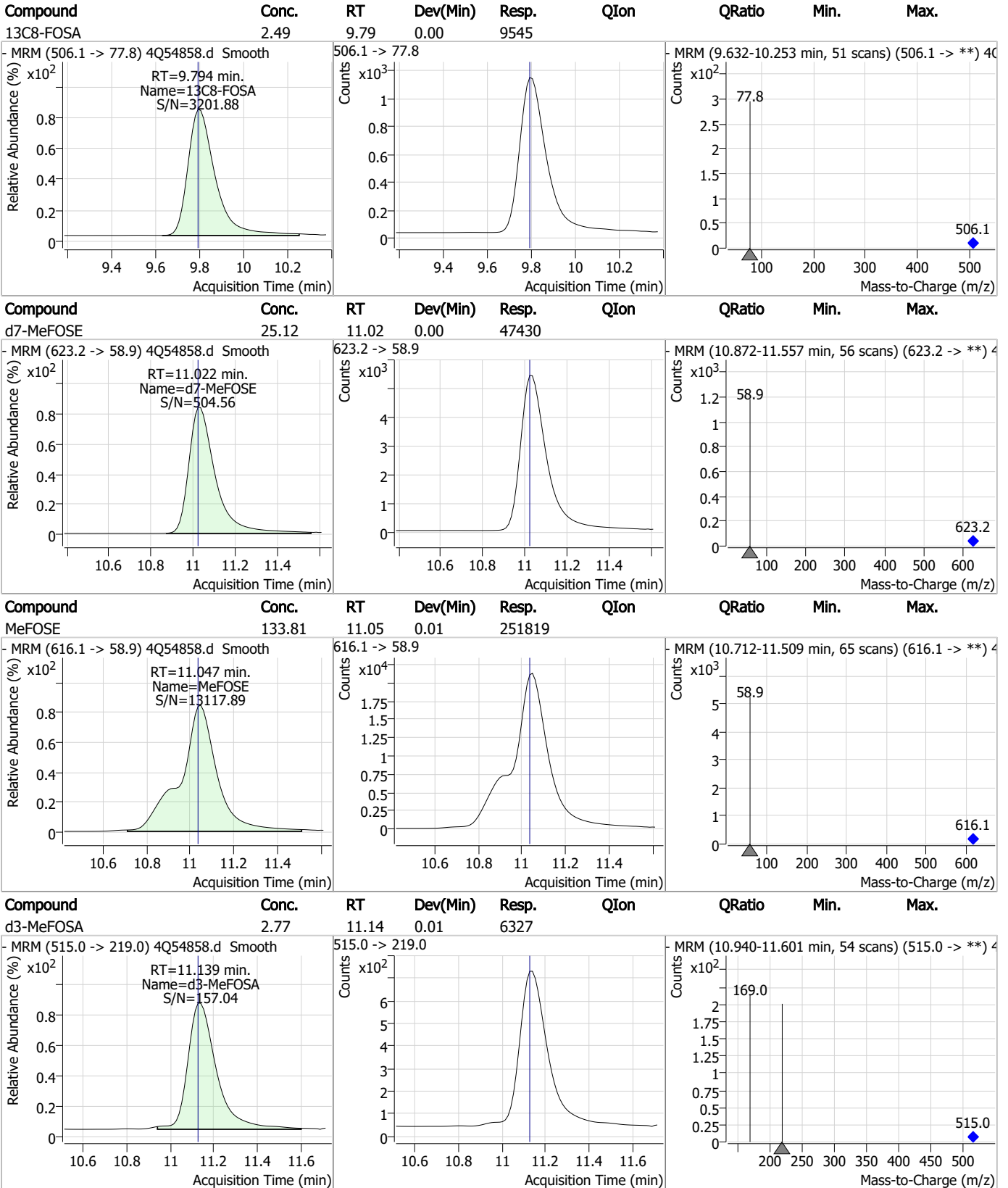
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Perfluorinated Compounds by LC/MS/MS



7.7.8
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Perfluorinated Compounds by LC/MS/MS



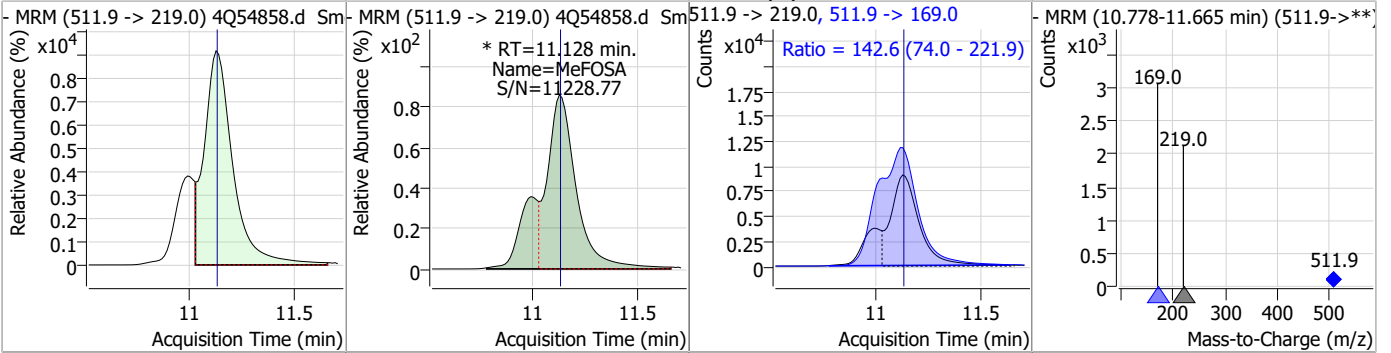
7.7.8

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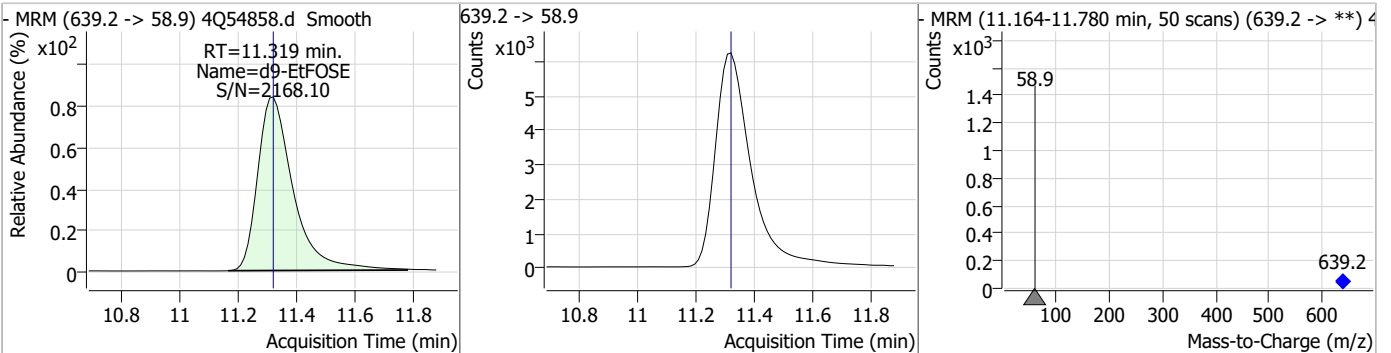


Perfluorinated Compounds by LC/MS/MS

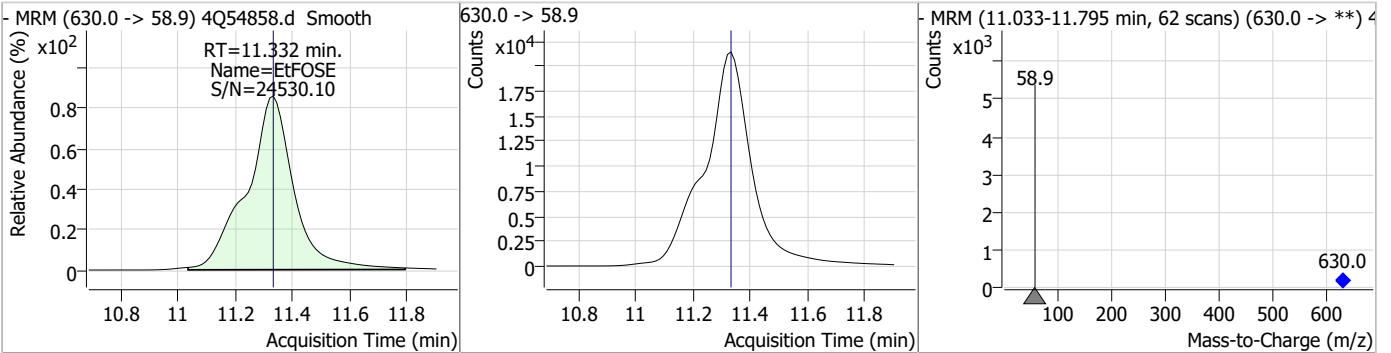
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	49.81	11.13	0.00	112208 (m)	511.9 -> 169.0	142.6	74.0	221.9



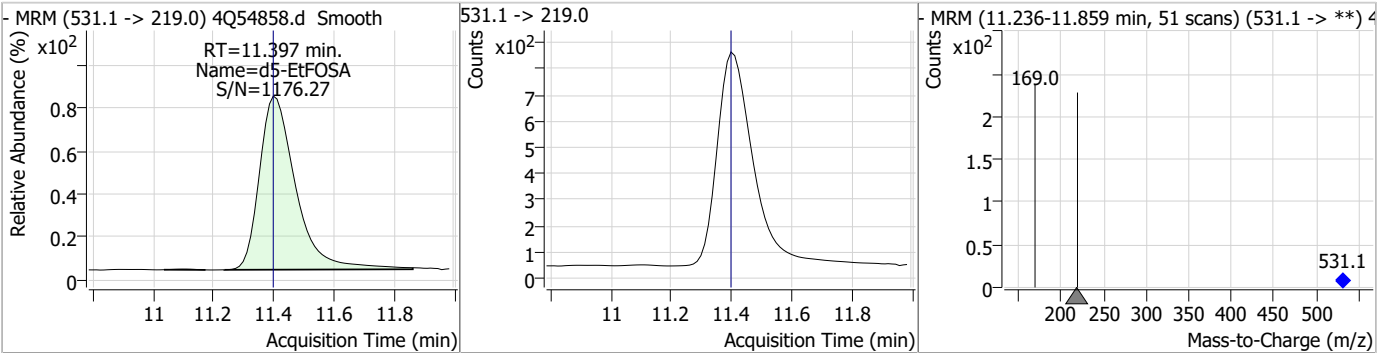
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.82	11.32	0.00	52473				



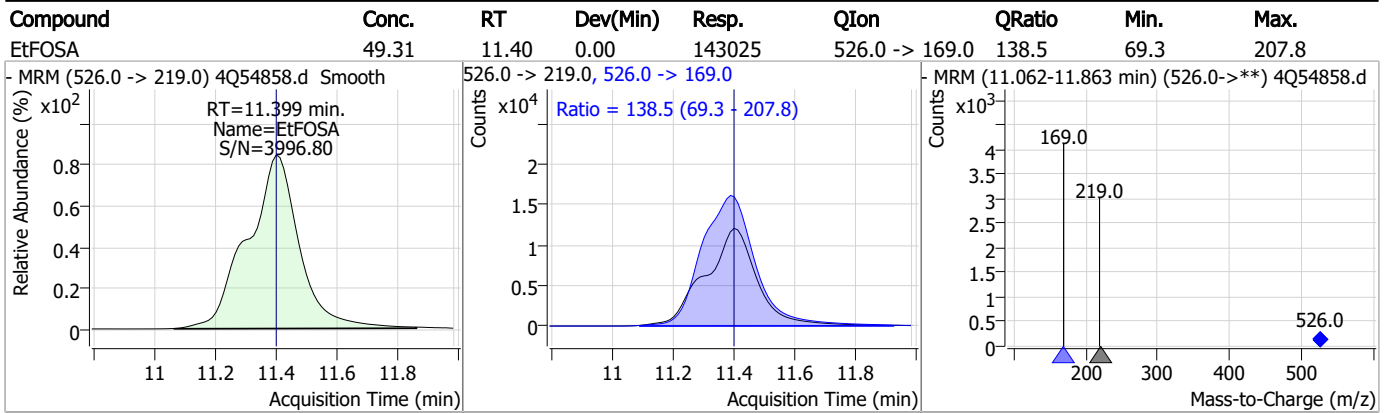
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	132.13	11.33	0.00	245376				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.72	11.40	0.00	6812				



Perfluorinated Compounds by LC/MS/MS



7.7.8
7

Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54858.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 13:06 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.8.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54859.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 1:21:34 PM
 Sample Name : ic804-8
 Vial : P1-A9
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	80421	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	36882	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	29785	2.50 µg/L	0.012
M4-PFHpA	6.304	367.1 -> 322.0	28286	2.50 µg/L	0.012
M8-PFOA	6.976	421.1 -> 376.0	41635	2.50 µg/L	0.000
M9-PFNA	7.521	472.1 -> 427.0	16711	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	11727	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	10494	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	17256	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	17801	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	8957	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	8154	2.50 µg/L	0.013
M3-PFHxS	7.042	402.1 -> 79.9	6475	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	7220	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	802	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	1794	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2600	5.00 µg/L	0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	14553	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	30531	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	12985	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	42706	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	49501	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6219	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6251	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5506	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	38780	5.00 µg/L	0.013
18O2-PFHxS	7.041	403.0 -> 83.9	4082	2.50 µg/L	0.000
13C4-PFOA	6.977	417.1 -> 372.0	45401	2.50 µg/L	0.000
13C2-PFDA	8.004	515.1 -> 470.1	12291	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	16952	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	33713	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	802	4.14 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 82.7%		
13C2-6:2FTS	6.761	429.1 -> 80.9	1794	4.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.4%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2600	4.62 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	17256	1.40 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	17801	1.46 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 116.7%		
13C3-PFBS	5.202	302.1 -> 79.9	8154	2.61 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C3-PFHxS	7.042	402.1 -> 79.9	6475	2.53 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C4-PFBA	2.686	216.8 -> 171.9	80421	9.88 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C4-PFHpA	6.304	367.1 -> 322.0	28286	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C5-PFHxA	5.347	318.0 -> 273.0	29785	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C5-PFPeA	4.175	268.3 -> 223.0	36882	4.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C6-PFDA	8.004	519.1 -> 474.1	11727	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C7-PFUnDA	8.461	570.0 -> 525.1	10494	1.00 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 79.6%	
13C8-FOSA	9.794	506.1 -> 77.8	8957	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-PFOA	6.976	421.1 -> 376.0	41635	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-PFOS	8.130	507.1 -> 79.9	7220	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C9-PFNA	7.521	472.1 -> 427.0	16711	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.4%	
d3-MeFOSAA	8.086	573.2 -> 419.0	14553	4.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	30531	9.84 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
d3-MeFOSA	11.126	515.0 -> 219.0	6251	2.94 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 117.5%	
d5-EtFOSAA	8.296	589.2 -> 419.0	12985	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
d7-MeFOSE	11.034	623.2 -> 58.9	42706	24.26 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	49501	25.11 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
d5-EtFOSA	11.397	531.1 -> 219.0	6219	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.6%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	343778	249.01 µg/L	96
		327.1 -> 80.9	138158		
6:2FTS	6.761	427.1 -> 407.0	451229	239.24 µg/L	98
		427.1 -> 80.9	159618		
8:2FTS	7.816	527.1 -> 507.0	335876	245.10 µg/L	93
		527.1 -> 80.8	122424		
EtFOSAA	8.297	584.2 -> 419.1	164432	69.41 µg/L	87
		584.2 -> 526.0	64387		
FOSA	9.798	498.1 -> 77.9	286320	71.11 µg/L	99
		498.1 -> 478.0	8726		
MeFOSAA	8.087	570.1 -> 419.0	161252	77.28 µg/L	94
		570.1 -> 483.0	30157		
PFBA	2.695	212.8 -> 168.9	755879	293.47 µg/L	100
PFBS	5.203	298.7 -> 79.9	156188	61.74 µg/L	96
		298.7 -> 98.8	59587		
PFDA	8.005	512.9 -> 469.0	569637	66.12 µg/L	99
		512.9 -> 219.0	114800		
PFDoDA	8.880	613.1 -> 569.0	857930	69.04 µg/L	99
		613.1 -> 319.0	151294		
PFDS	9.020	599.0 -> 79.9	136754	71.17 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	67378	71.72	µg/L	99
		363.1 -> 319.0	1142171			
PFHpS	7.624	363.1 -> 169.0	207156	70.17	µg/L	98
		449.0 -> 79.9	201054			
PFHxA	5.350	449.0 -> 98.9	102719	72.86	µg/L	99
		313.0 -> 269.0	692521			
PFHxS	7.043	313.0 -> 118.9	20840	62.77	µg/L	m
		398.7 -> 79.9	131102			
PFNA	7.522	398.7 -> 98.9	66020	74.37	µg/L	98
		463.0 -> 419.0	730193			
PFNS	8.586	463.0 -> 219.0	173369	68.45	µg/L	98
		548.8 -> 79.9	84324			
PFOA	6.978	548.8 -> 98.9	42622	71.80	µg/L	95
		413.0 -> 369.0	1229376			
PFOS	8.131	413.0 -> 169.0	247650	62.11	µg/L	m
		498.9 -> 79.9	186662			
PFPeA	4.177	498.9 -> 98.8	86406	142.99	µg/L	100
		263.0 -> 219.0	1037607			
PFPeS	6.294	349.1 -> 79.9	139528	70.93	µg/L	97
		349.1 -> 98.9	61353			
PFTeDA	9.650	713.1 -> 669.0	815800	65.85	µg/L	100
		713.1 -> 168.9	85092			
PFTrDA	9.279	663.0 -> 619.0	846605	62.70	µg/L	99
		663.0 -> 168.9	116524			
PFUnDA	8.461	563.1 -> 519.0	599583	78.55	µg/L	99
		563.1 -> 269.1	125665			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	1059526	126.03	µg/L	100
		632.9 -> 452.9	331689			
9Cl-PF3ONS	8.463	530.8 -> 351.0	923927	108.73	µg/L	100
		532.8 -> 353.0	278966			
ADONA	6.568	376.9 -> 250.9	2971732	144.12	µg/L	99
		376.9 -> 84.8	704639			
HFPO-DA	5.703	284.9 -> 168.9	413965	141.70	µg/L	99
		284.9 -> 184.9	40451			
3:3FTCA	3.630	241.0 -> 177.0	169213	413.28	µg/L	99
		241.0 -> 117.0	14743			
5:3FTCA	6.020	341.0 -> 237.1	3089388	1822.43	µg/L	100
		341.0 -> 217.0	2207363			
7:3FTCA	7.549	441.0 -> 316.9	1555794	1750.12	µg/L	99
		441.0 -> 336.9	3672355			
EtFOSA	11.399	526.0 -> 219.0	380913	143.87	µg/L	99
		526.0 -> 169.0	530061			
EtFOSE	11.332	630.0 -> 58.9	613834	350.39	µg/L	100
		511.9 -> 219.0	296242			
MeFOSA	11.128	511.9 -> 169.0	433007	133.09	µg/L	m
		616.1 -> 58.9	609091			
MeFOSE	11.047	699.1 -> 79.9	103059	359.46	µg/L	100
		699.1 -> 98.8	58977			
PFDoDS	9.777	295.0 -> 201.0	79128	70.32	µg/L	99
		295.0 -> 84.9	20077			
NFDHA	5.241	279.0 -> 85.1	577375	117.53	µg/L	98
		229.0 -> 84.9	644647			
PFMBA	4.578	314.8 -> 134.9	866197	146.82	µg/L	100
		314.8 -> 82.9	28941			
PFMPA	3.315			123.31	µg/L	98
PFEESA	5.734					

= Qualifier out of range, m = manually integrated, + = Area summed

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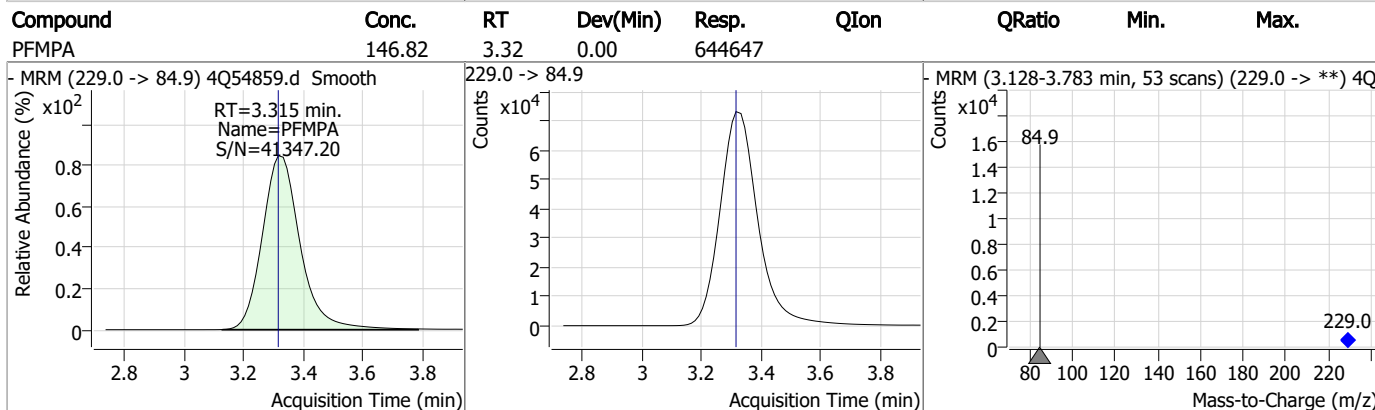
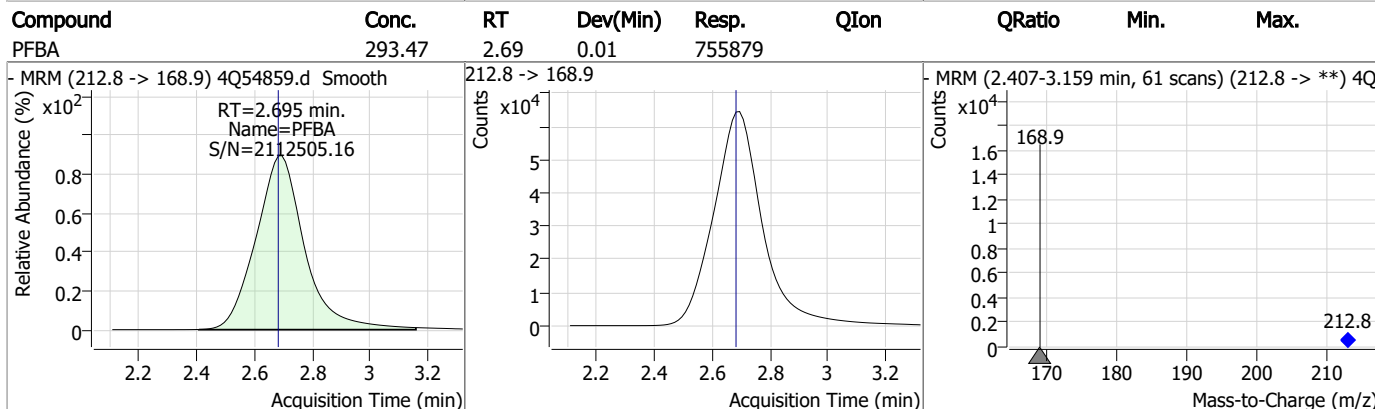
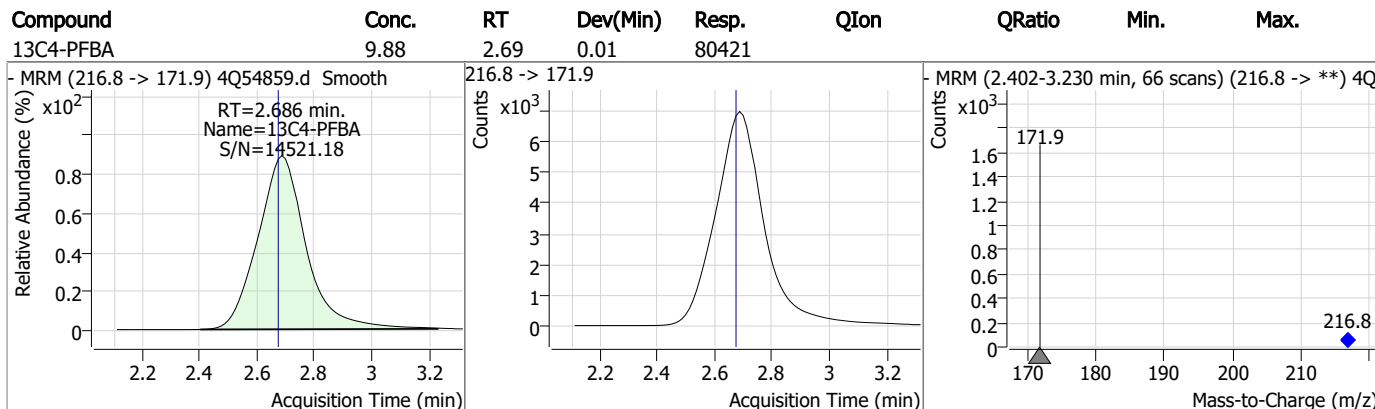
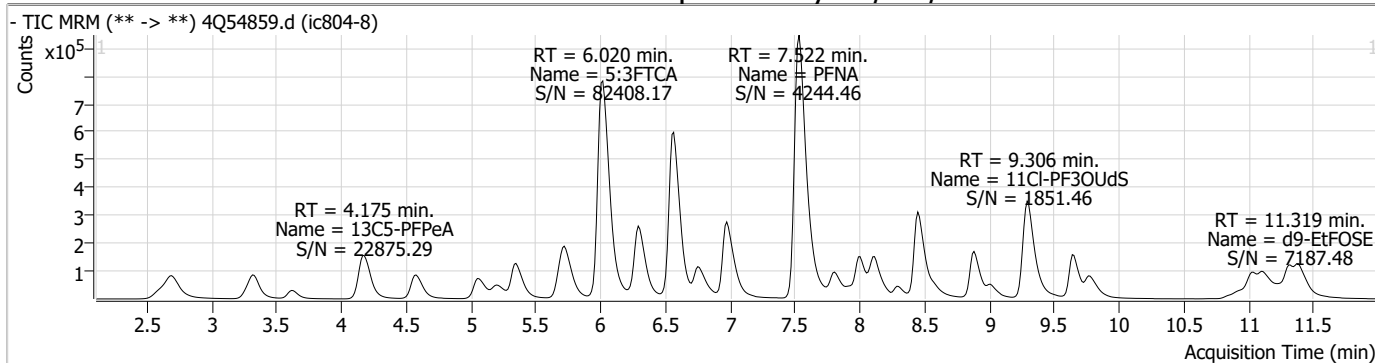
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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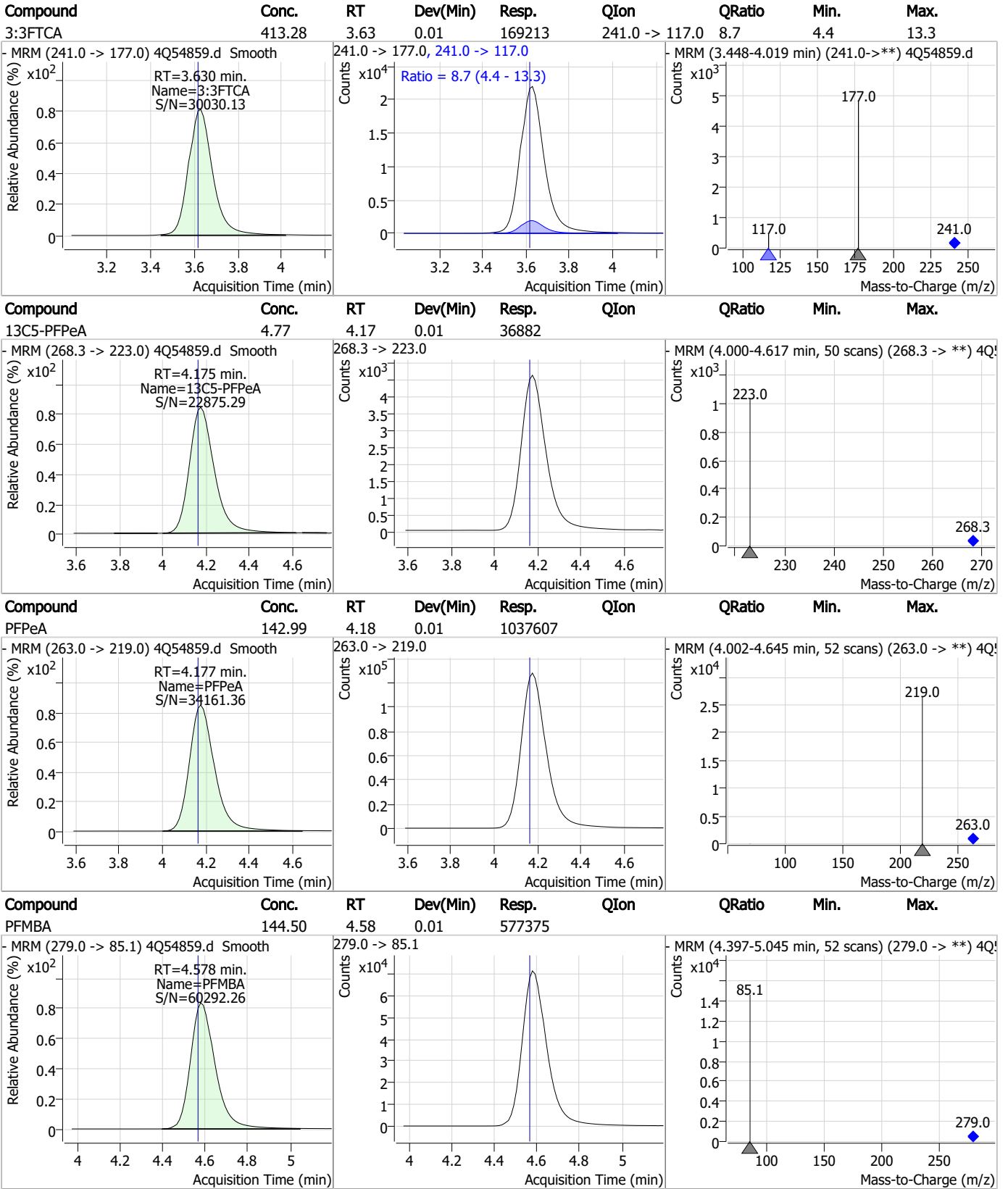
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Perfluorinated Compounds by LC/MS/MS



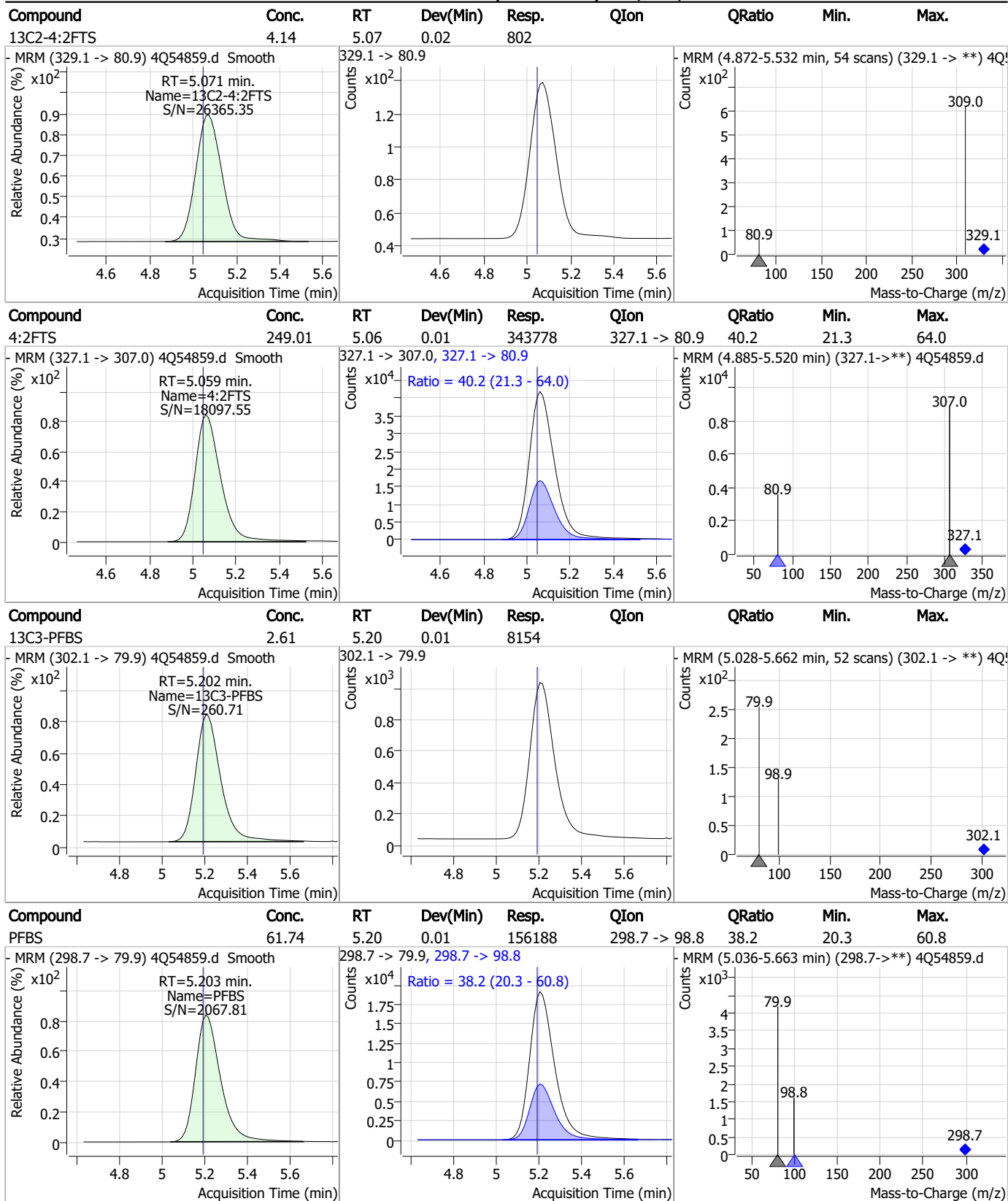
Perfluorinated Compounds by LC/MS/MS



7.7.9

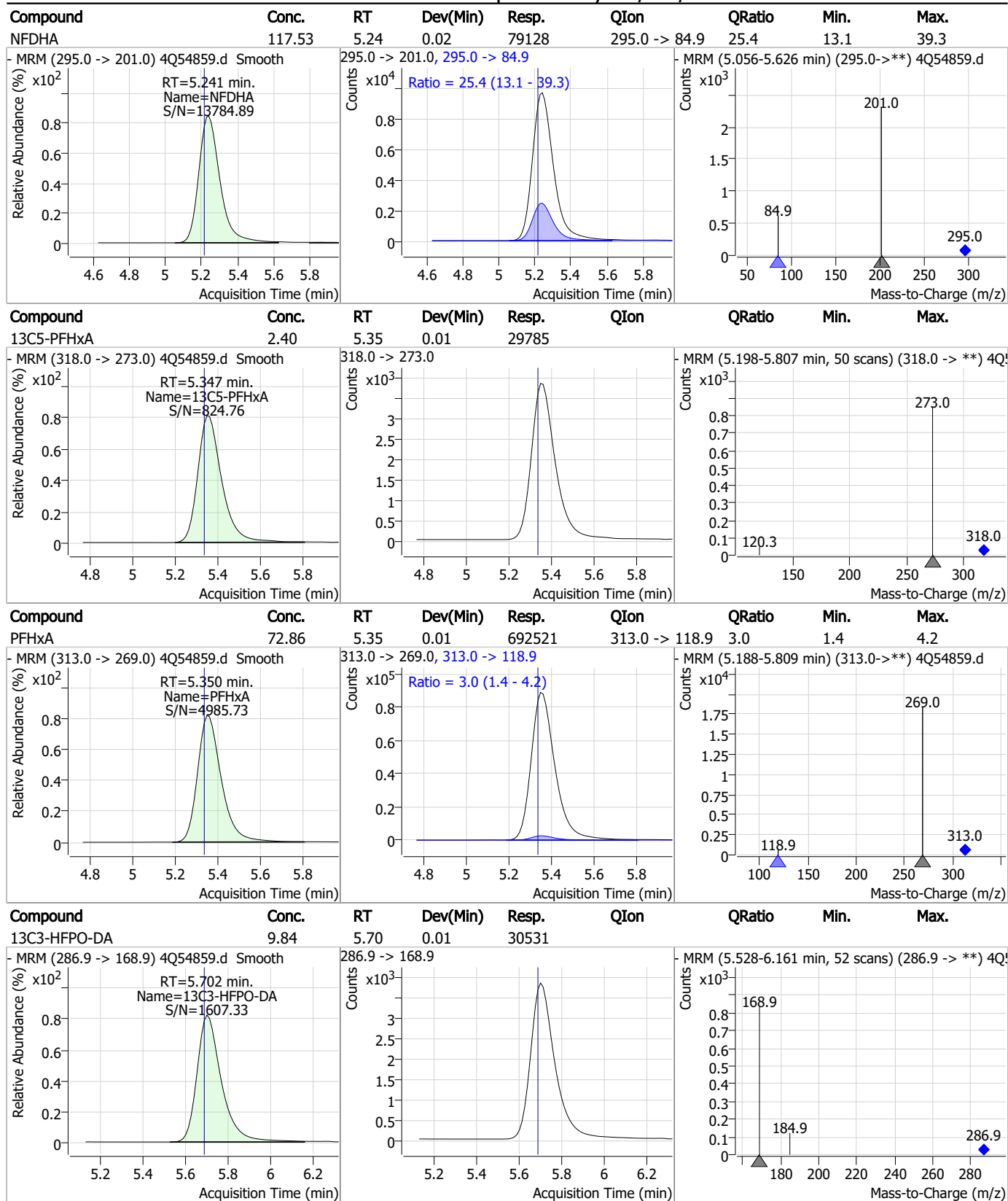
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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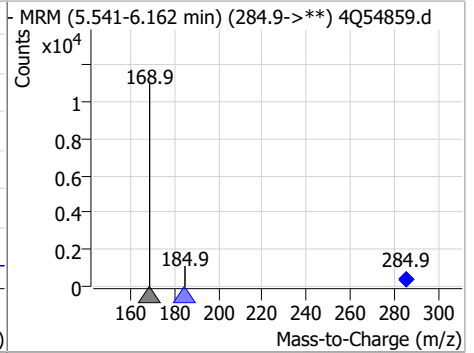
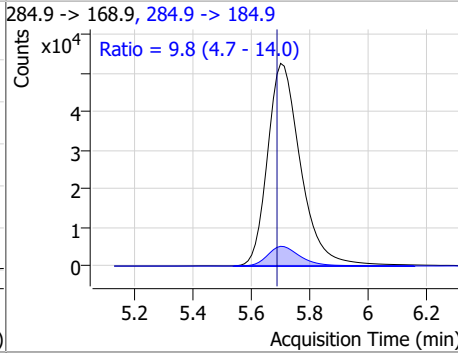
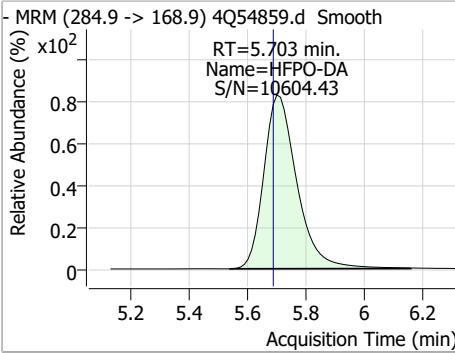
Perfluorinated Compounds by LC/MS/MS



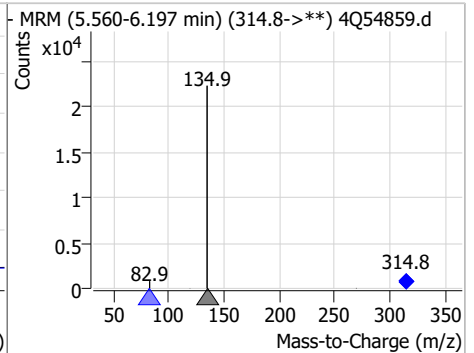
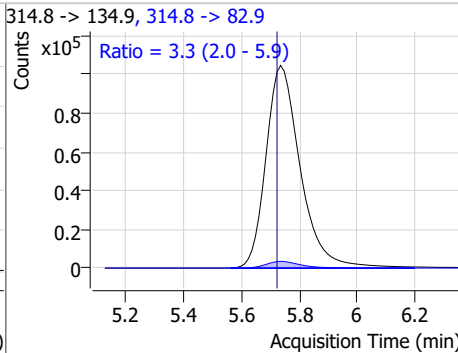
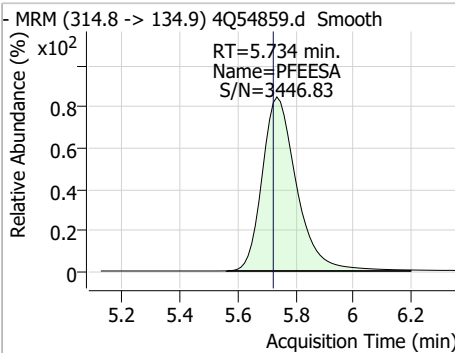
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Perfluorinated Compounds by LC/MS/MS

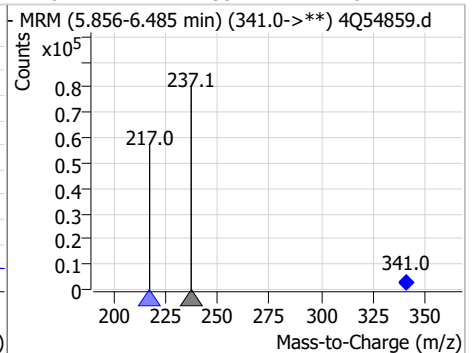
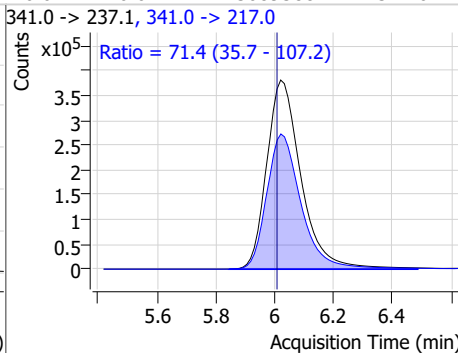
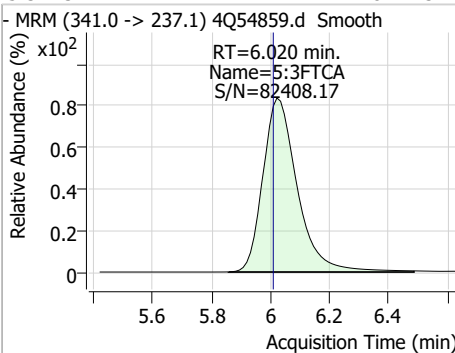
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	141.70	5.70	0.01	413965	284.9 -> 184.9	9.8	4.7	14.0



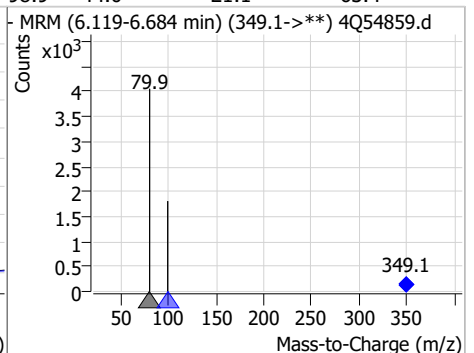
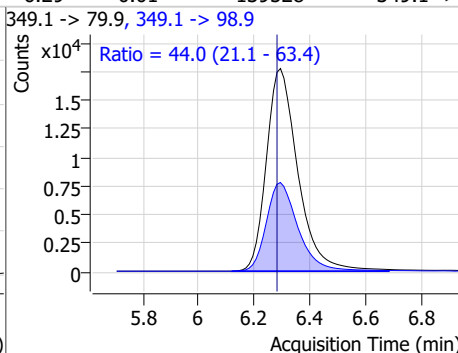
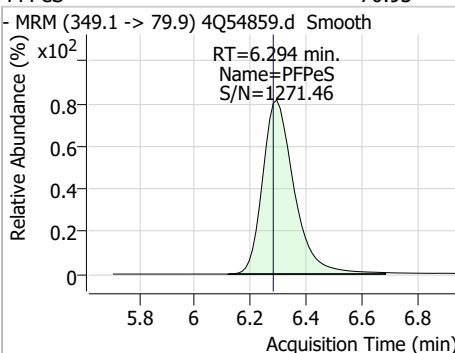
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	123.31	5.73	0.01	866197	314.8 -> 82.9	3.3	2.0	5.9



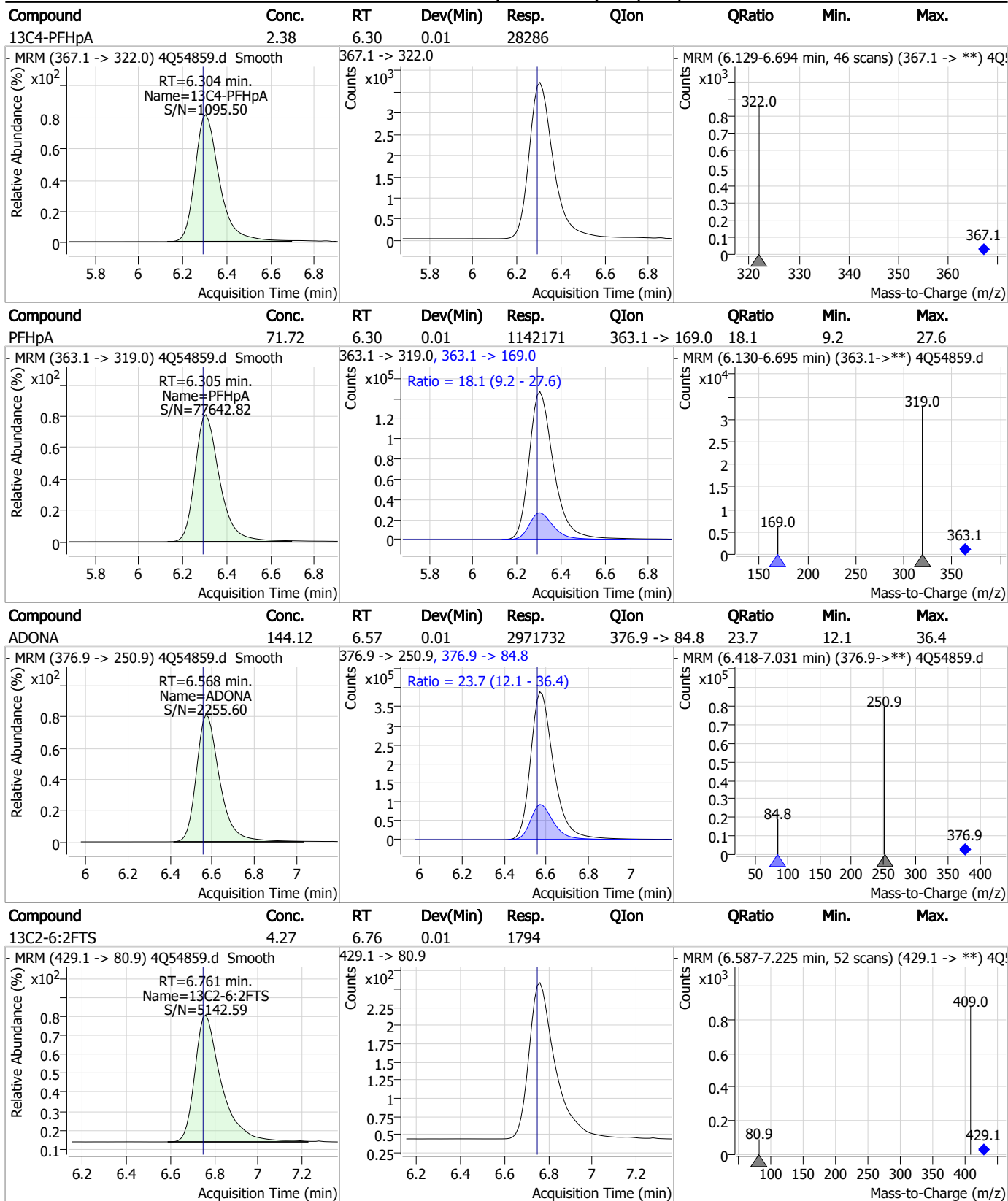
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	1822.43	6.02	0.01	3089388	341.0 -> 217.0	71.4	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	70.93	6.29	0.01	139528	349.1 -> 98.9	44.0	21.1	63.4

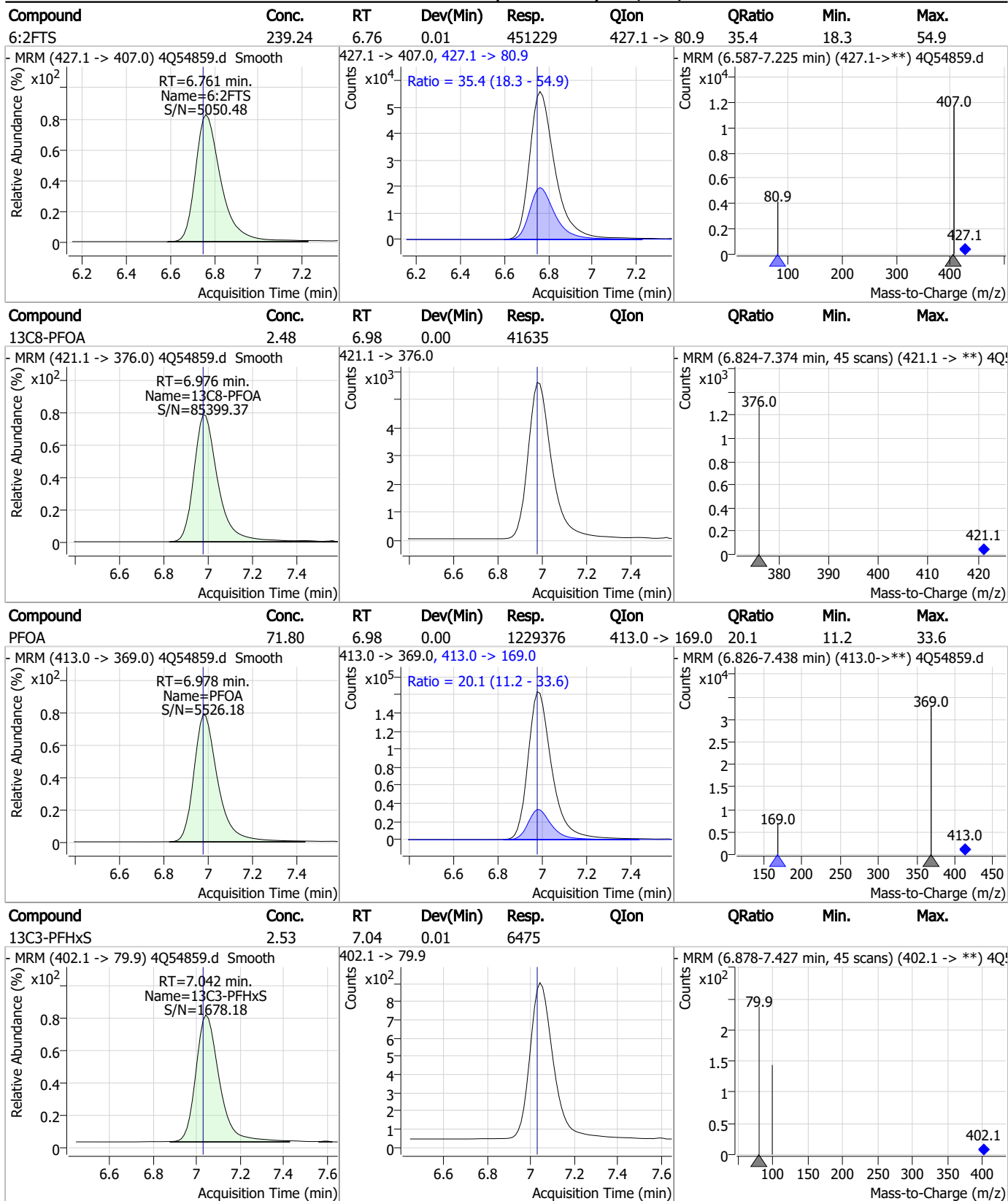


Perfluorinated Compounds by LC/MS/MS



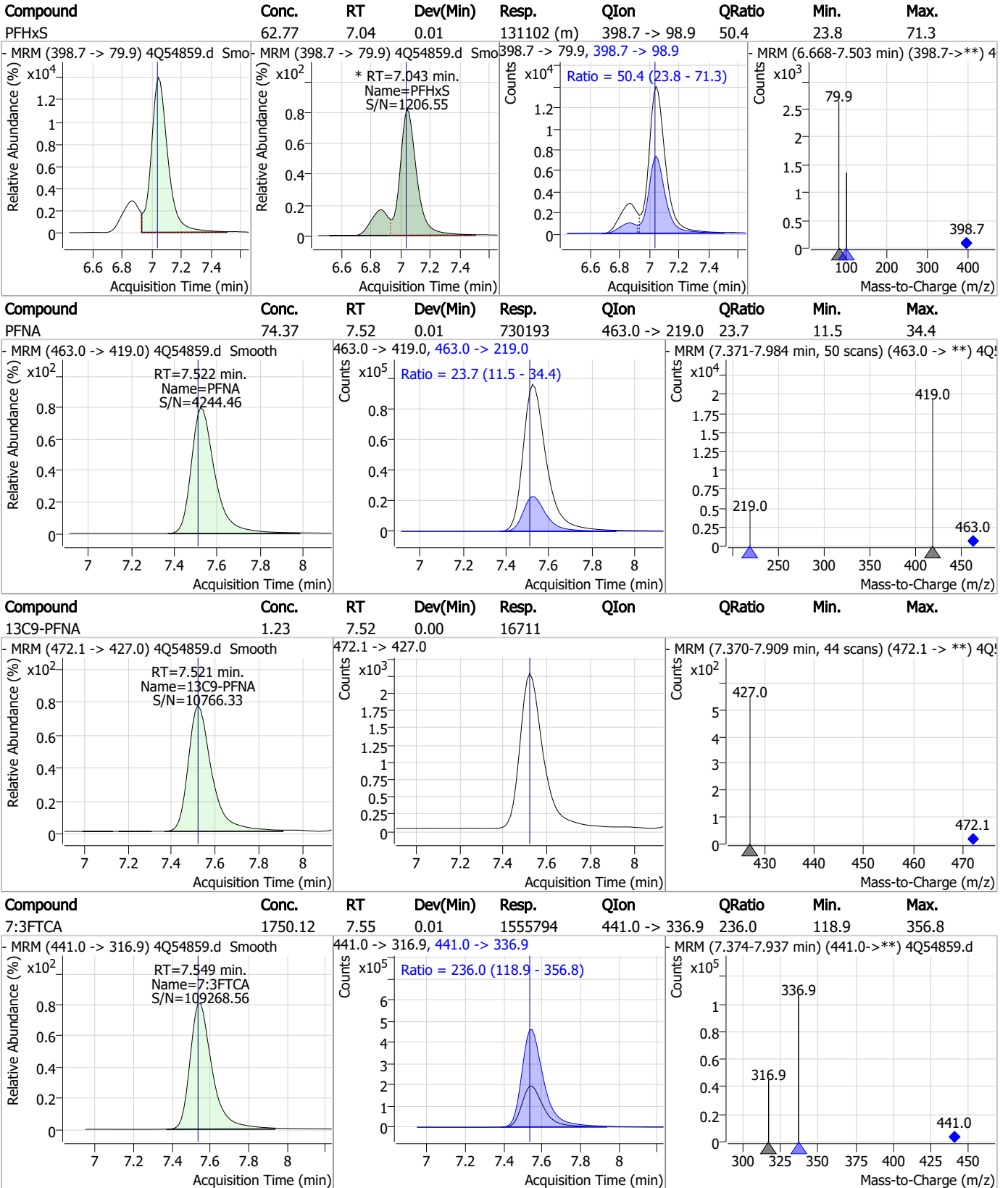
7.7.9
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Perfluorinated Compounds by LC/MS/MS



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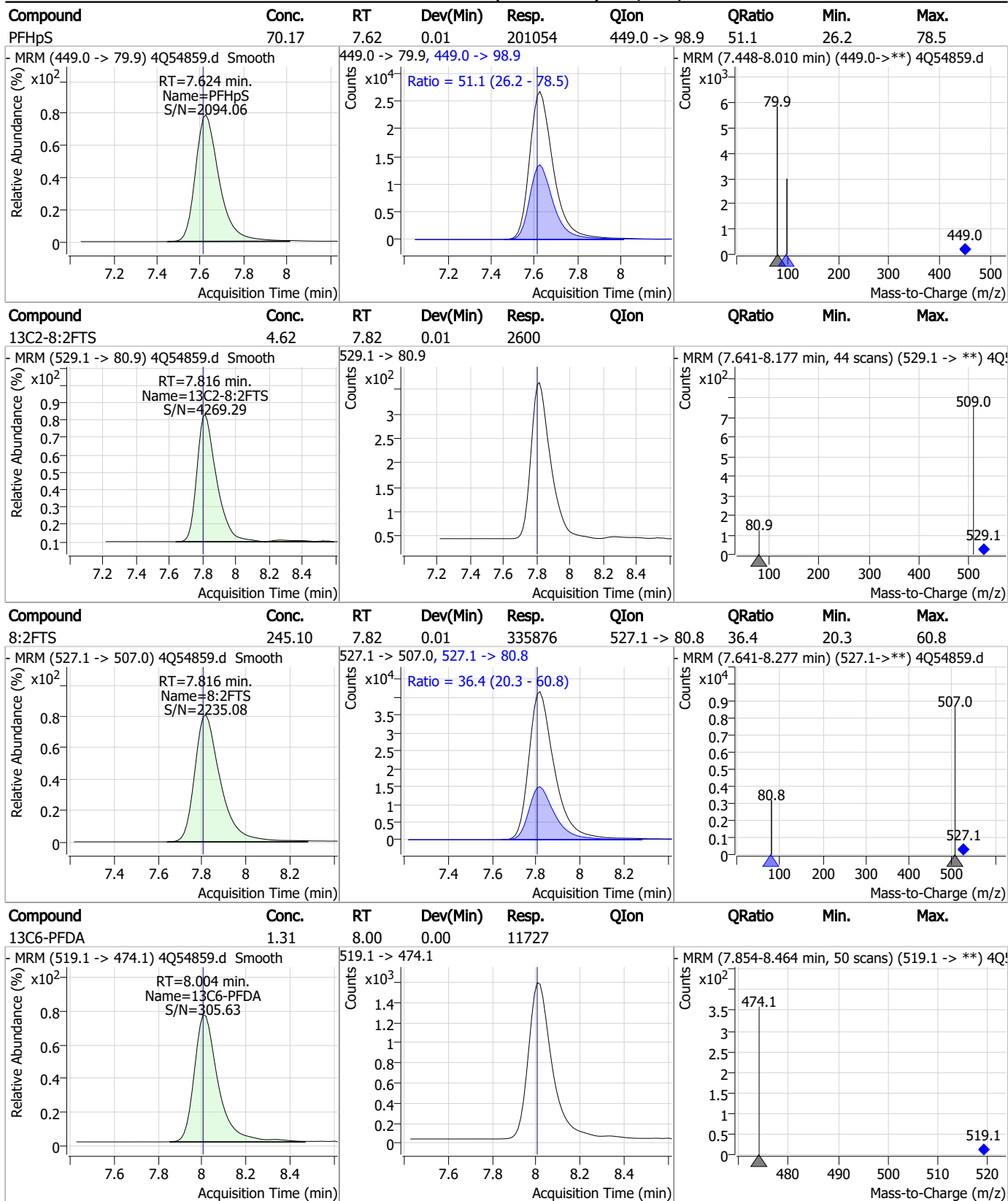
Perfluorinated Compounds by LC/MS/MS



7.7.9

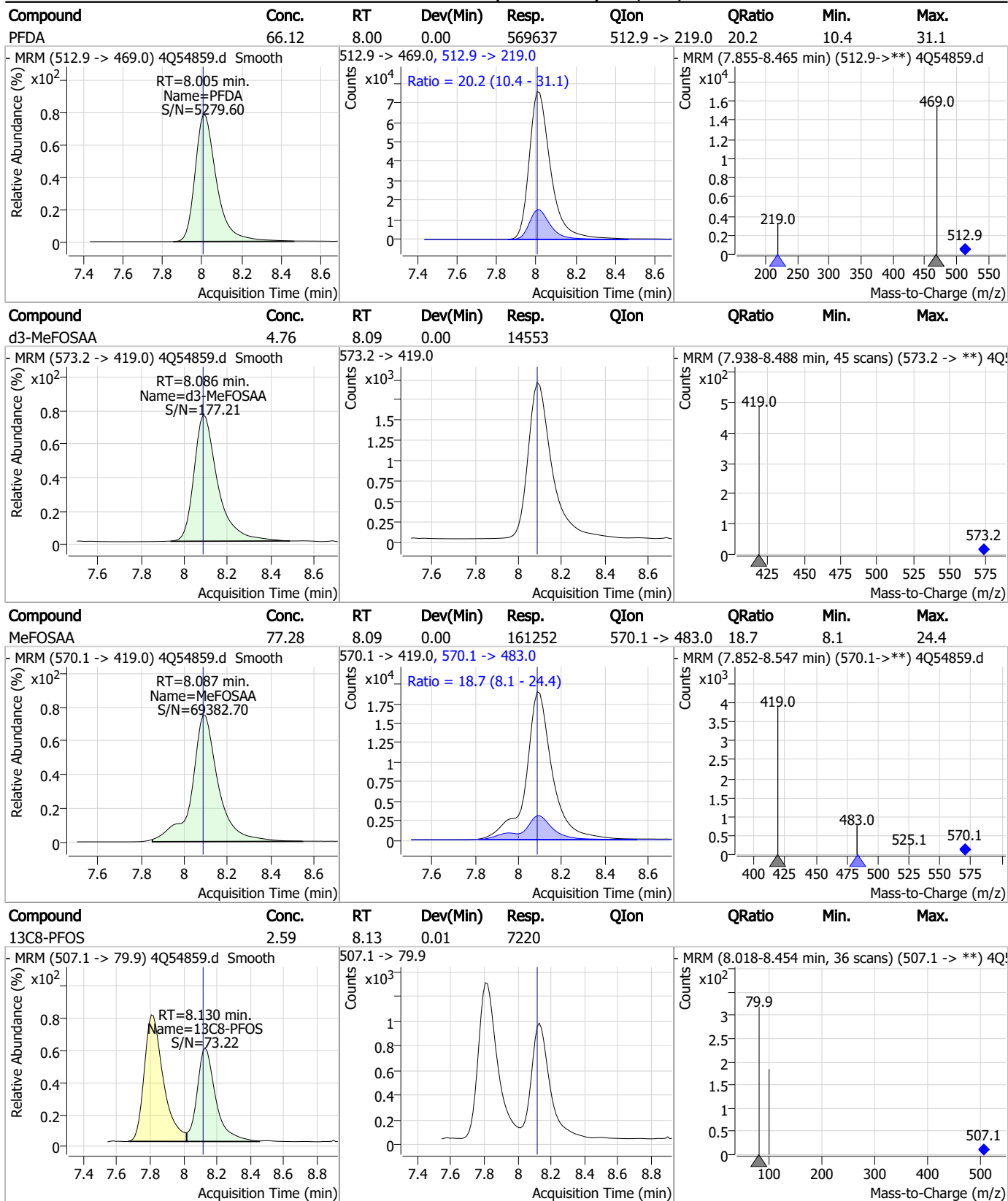
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Perfluorinated Compounds by LC/MS/MS



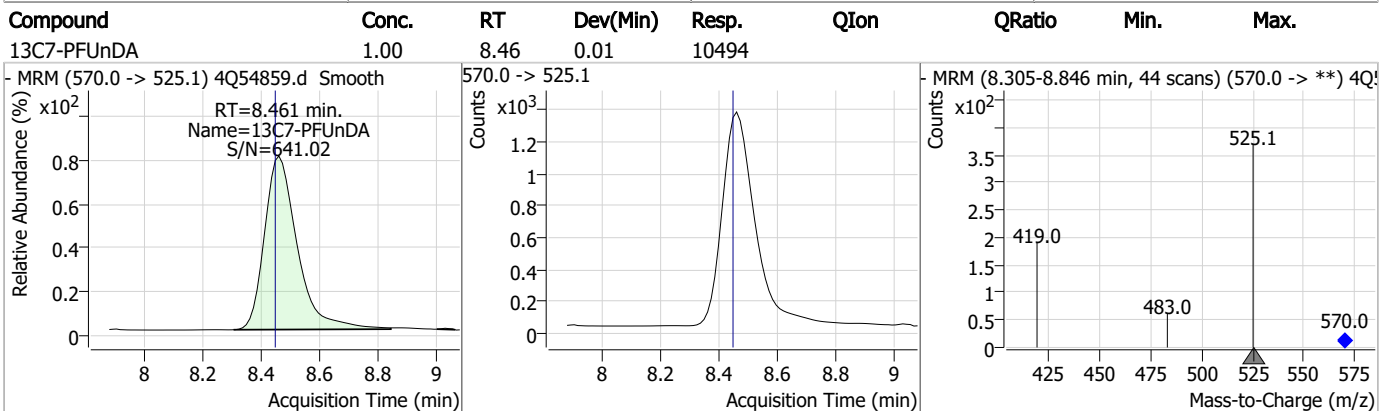
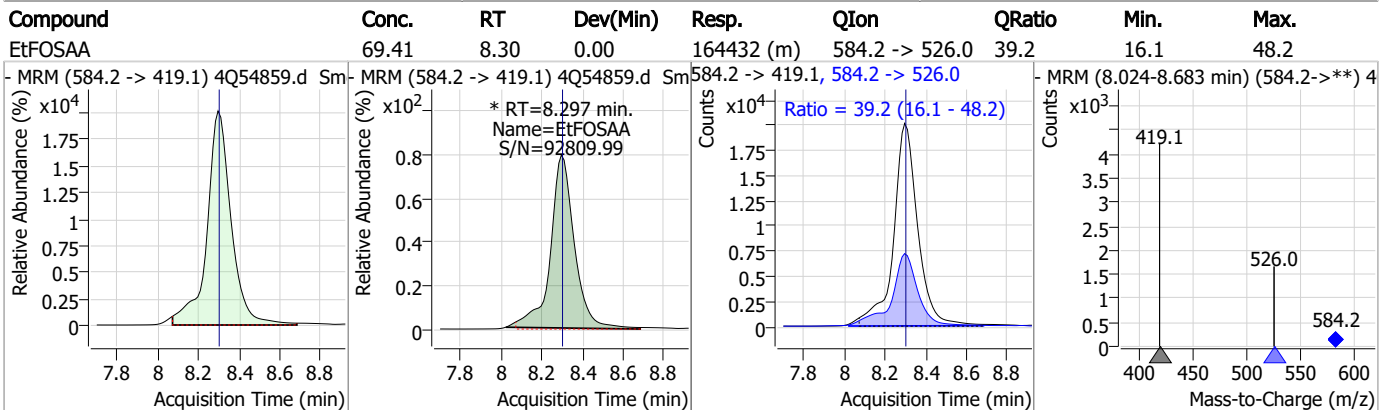
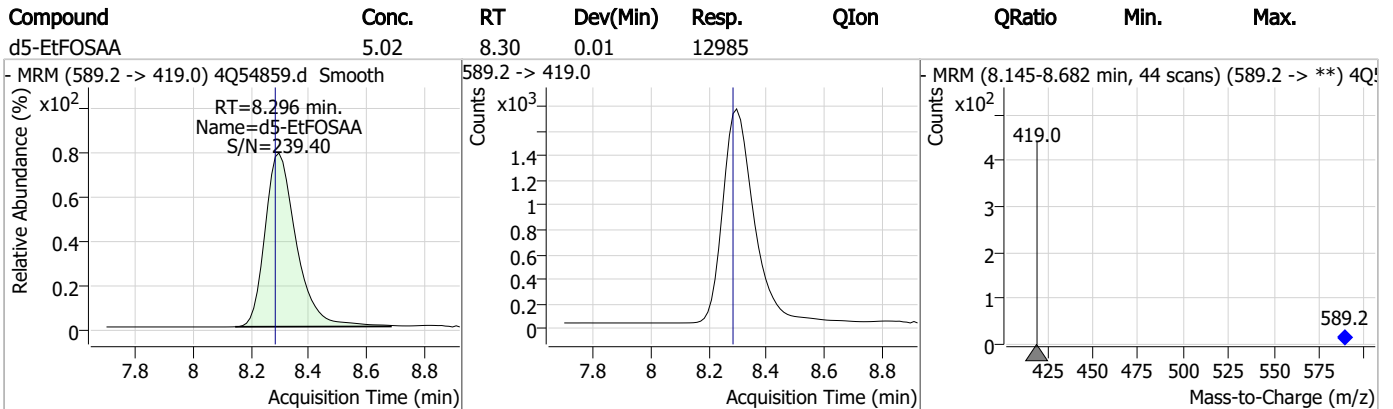
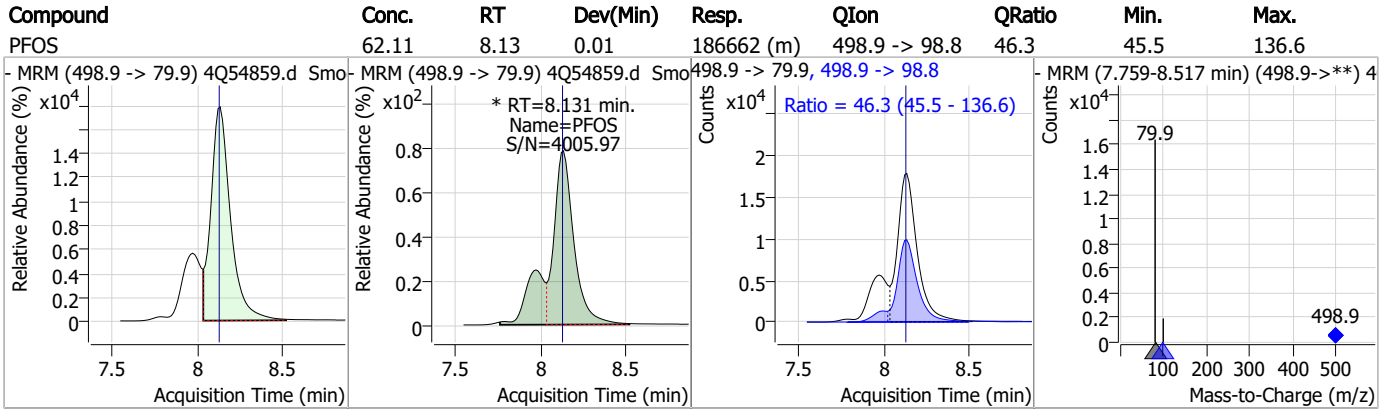
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Perfluorinated Compounds by LC/MS/MS

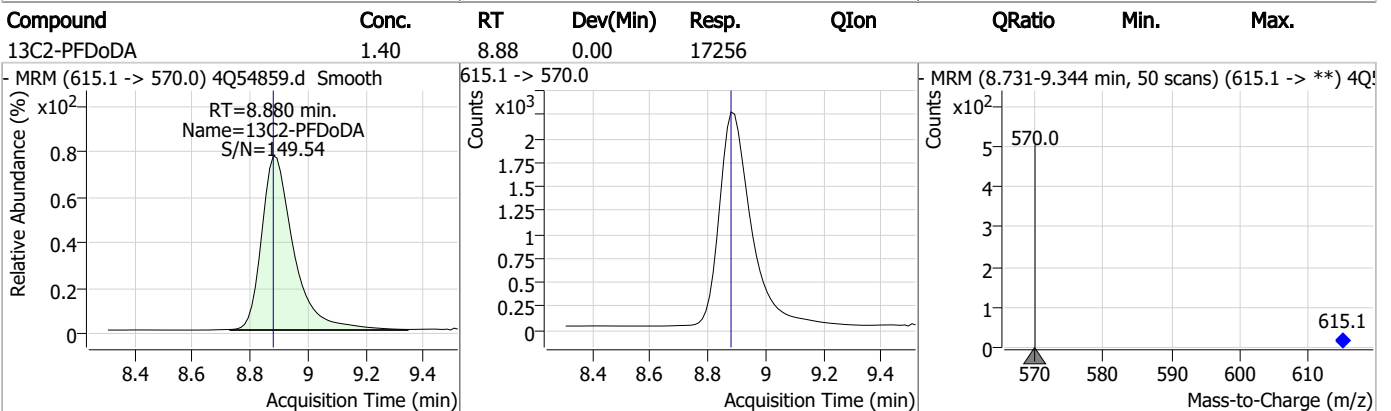
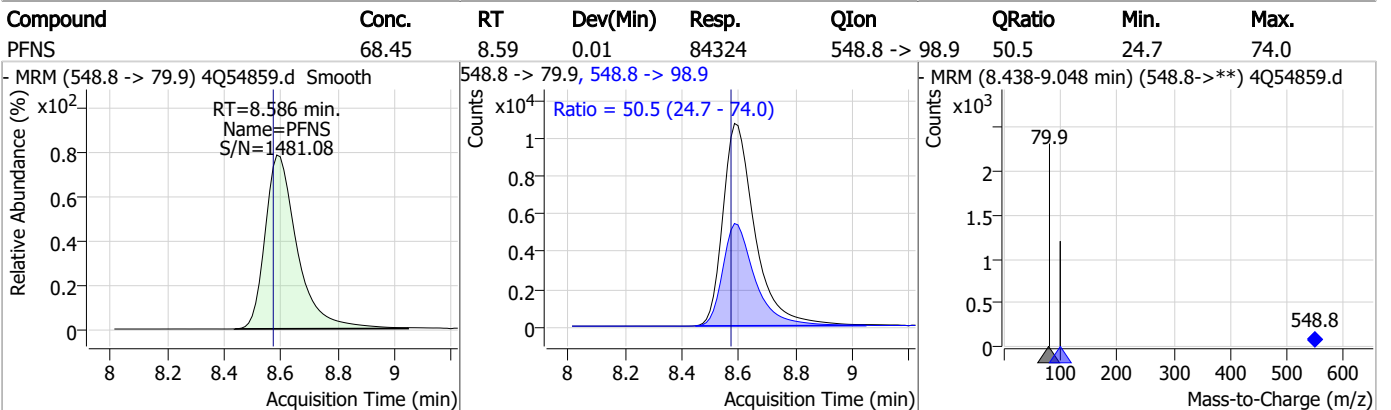
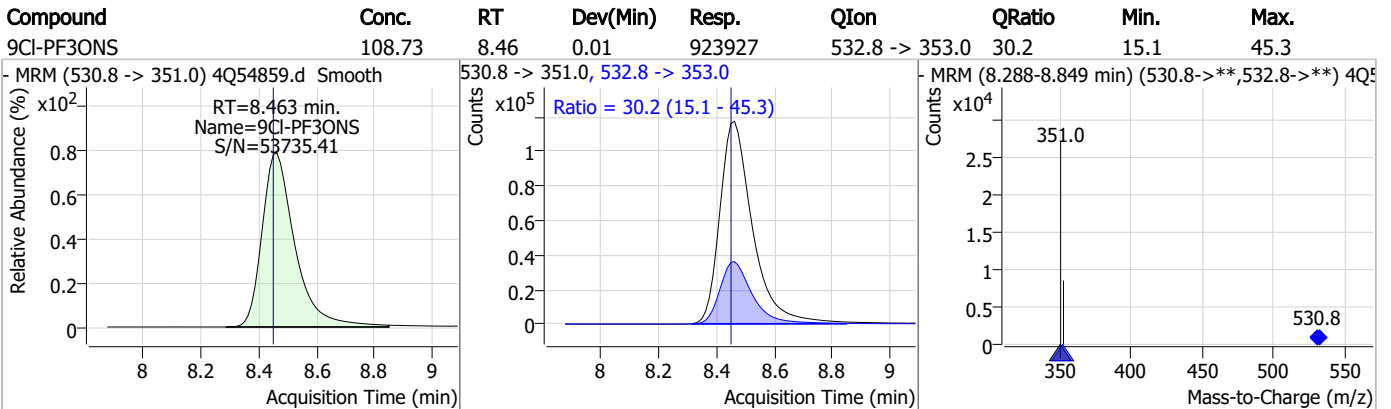
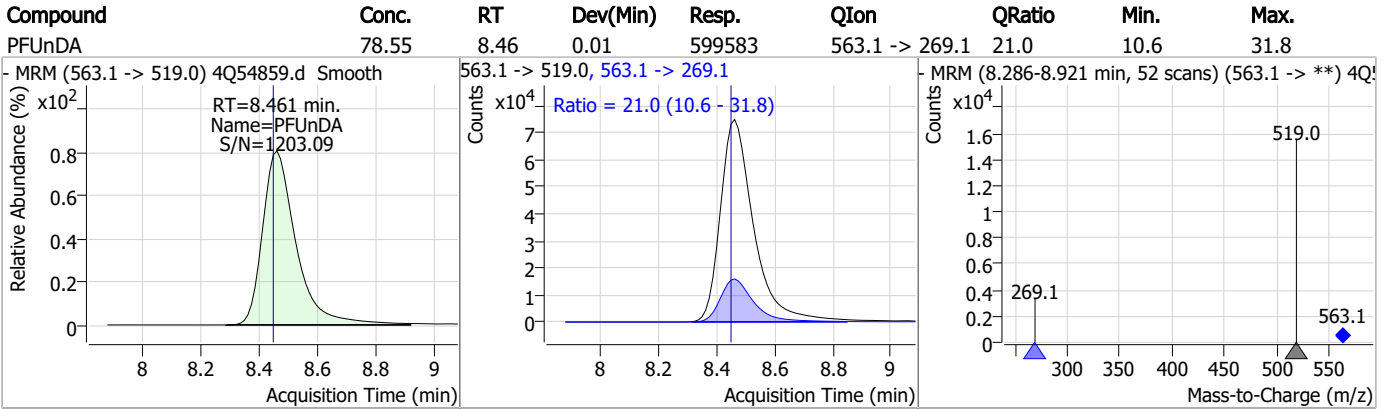


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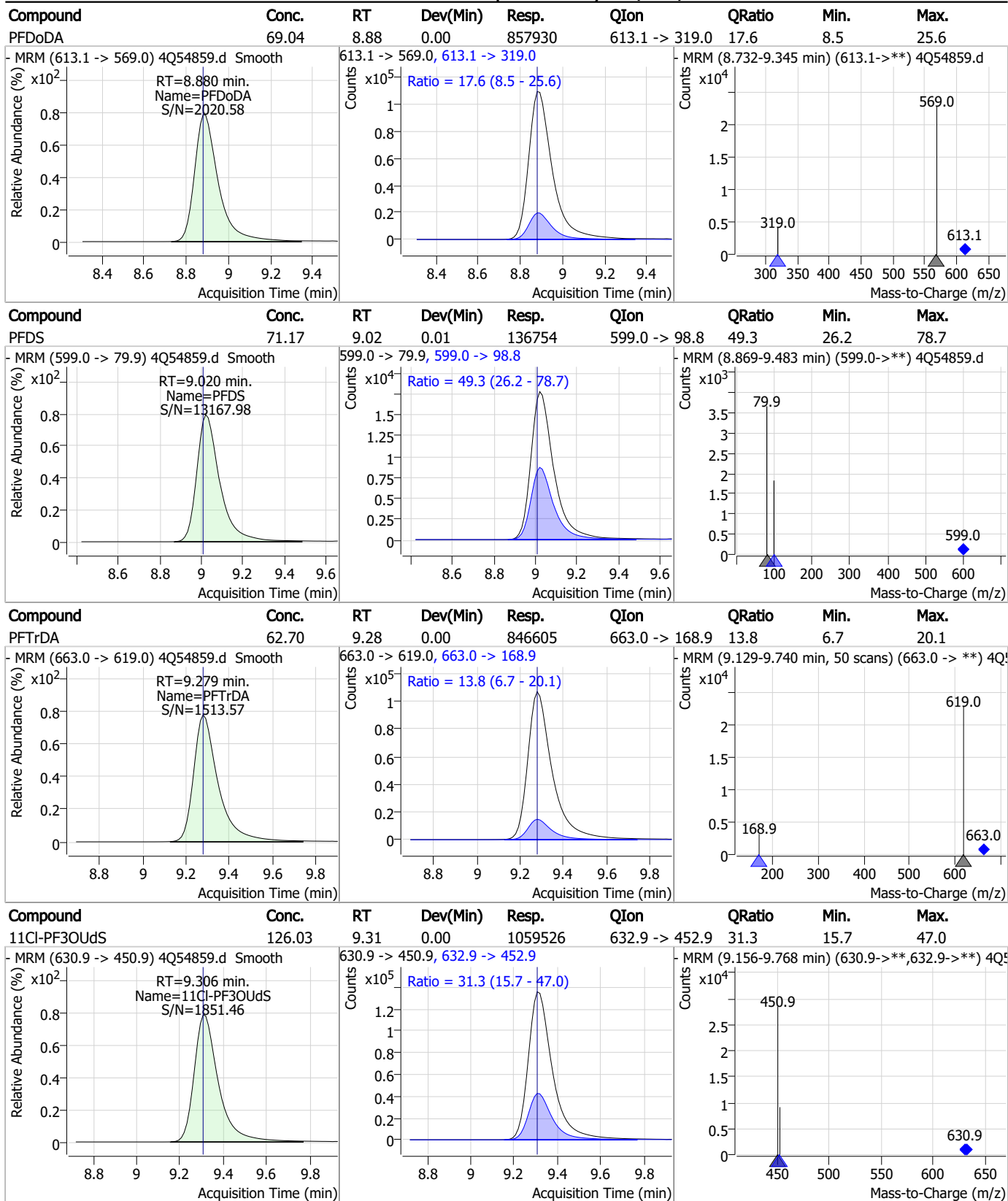
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

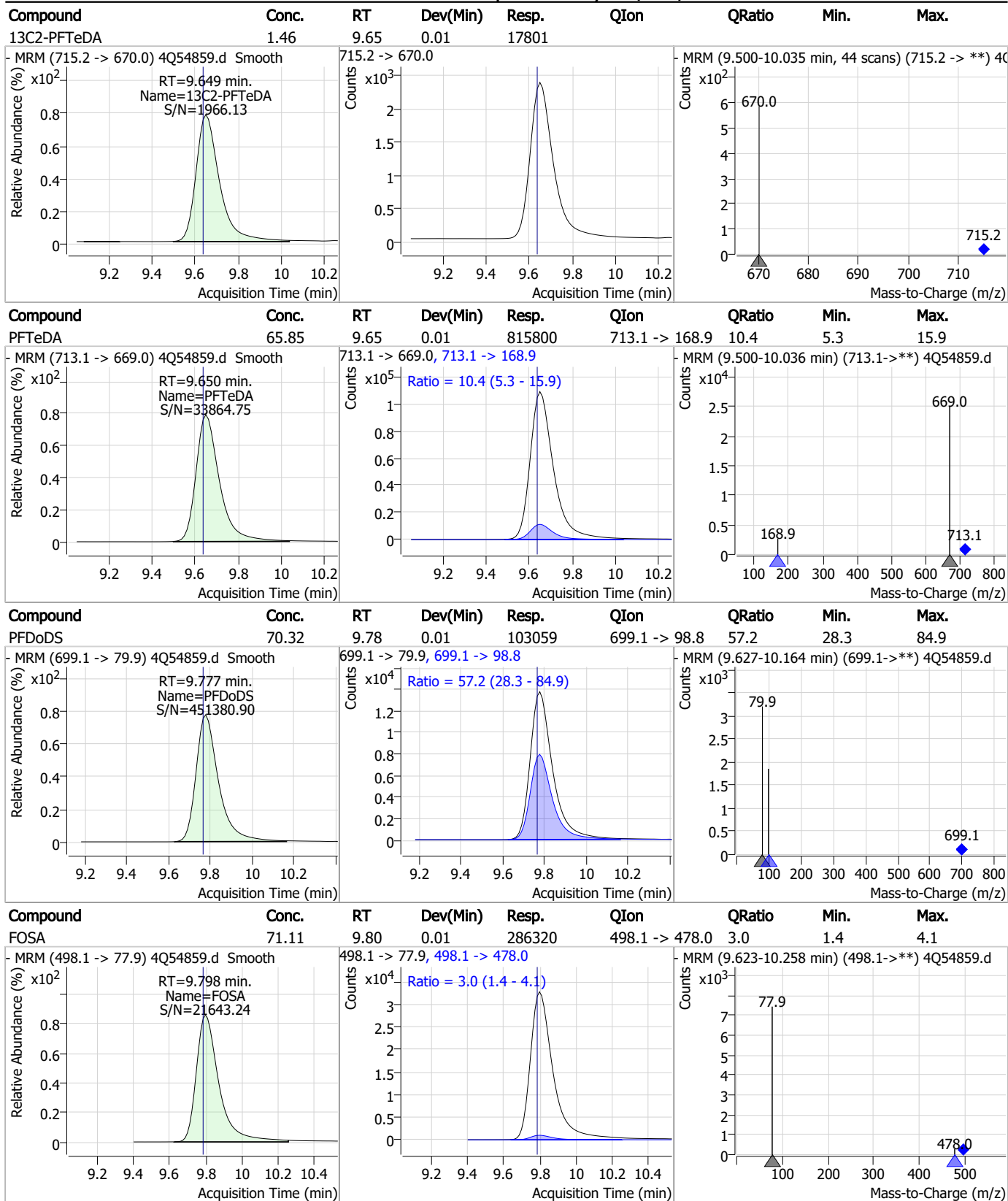


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



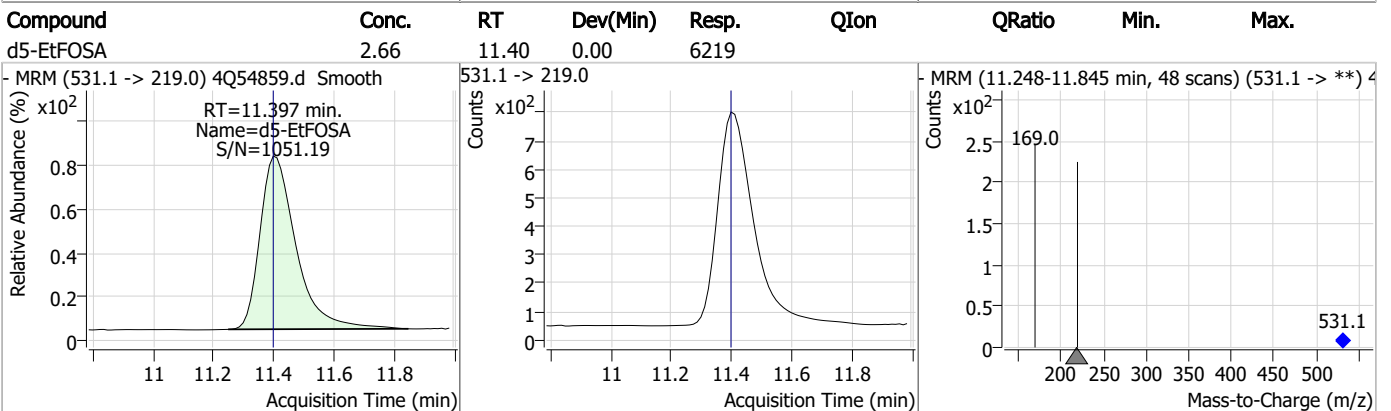
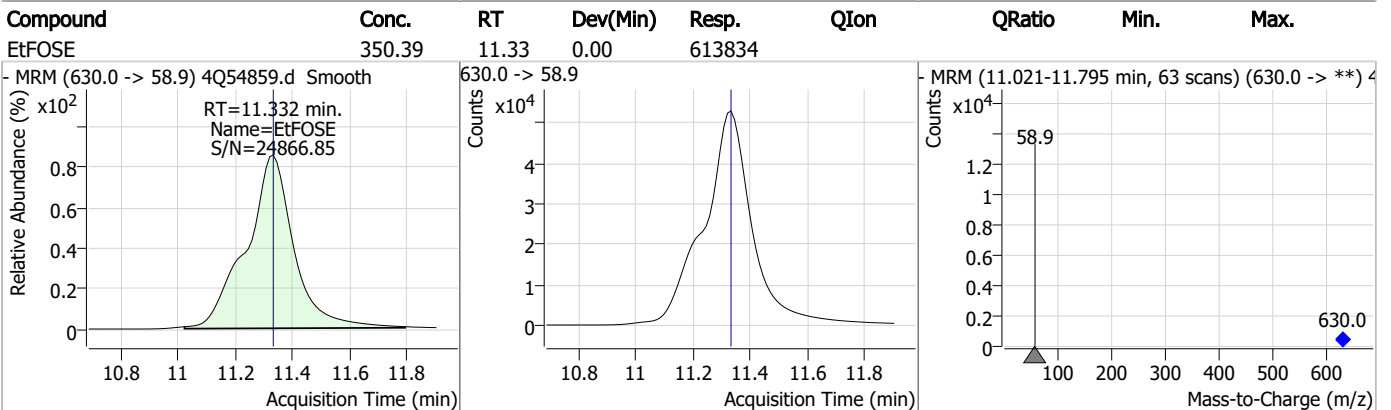
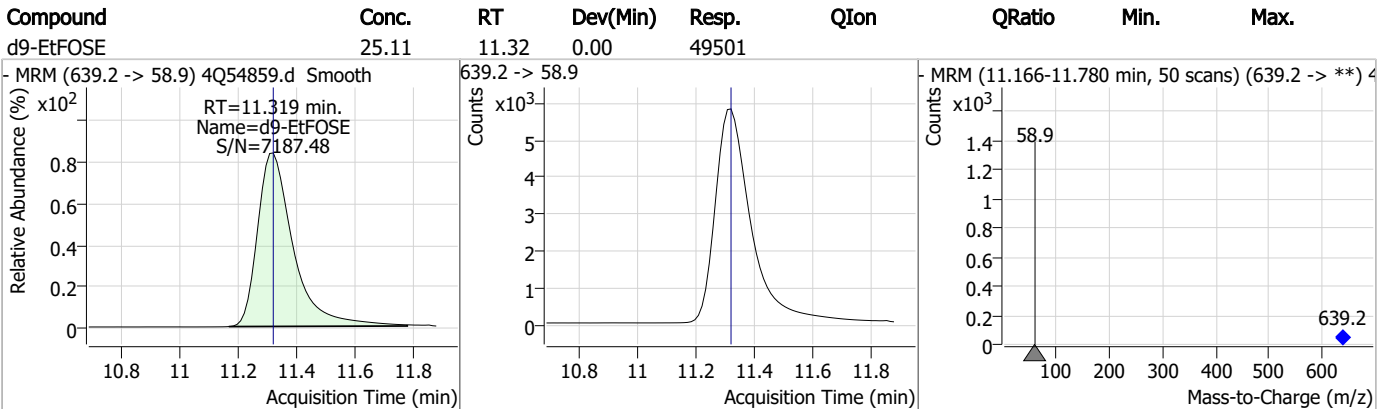
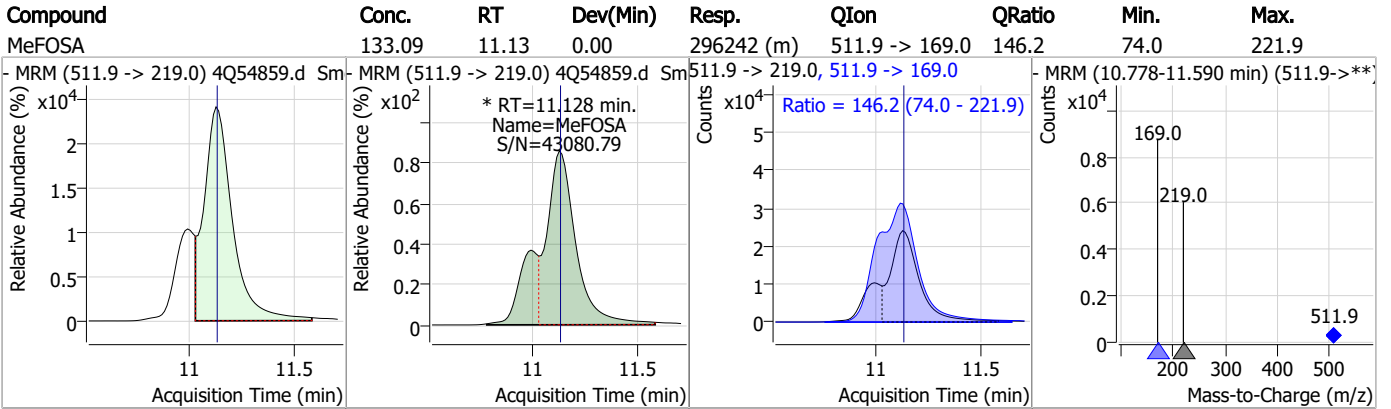
7.7.9
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.51	9.79	0.00	8957				
d7-MeFOSE	24.26	11.03	0.01	42706				
MeFOSE	359.46	11.05	0.01	609091				
d3-MeFOSA	2.94	11.13	0.00	6251				

7.7.9
7

Perfluorinated Compounds by LC/MS/MS

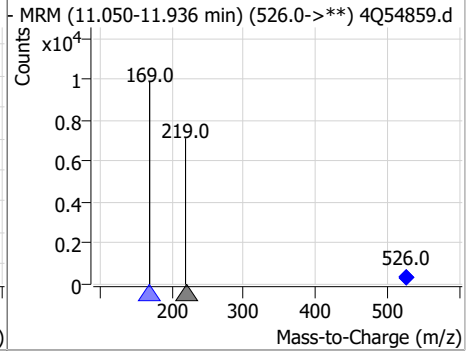
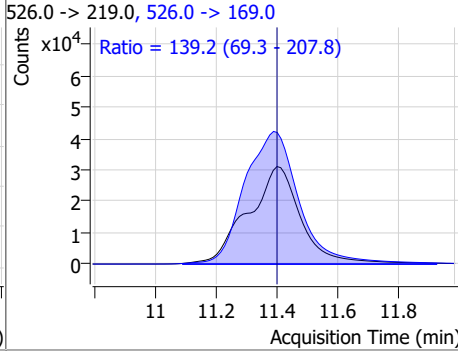
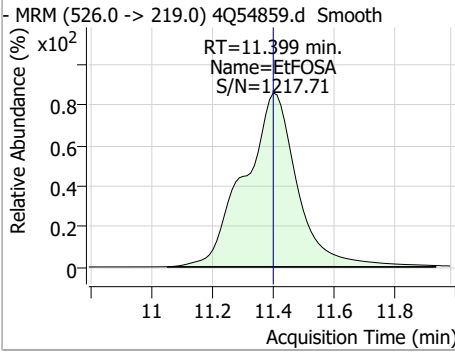


7.7.9

7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	143.87	11.40	0.00	380913	526.0 -> 169.0	139.2	69.3	207.8



7.7.9

7

Manual Integration Approval Summary

Sample Number: S4Q804-IC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54859.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 13:21 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.9.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54861.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 1:51:04 PM
 Sample Name : icv804-4
 Vial : P1-B3
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	97277	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	40979	5.00 µg/L	0.012
M5-PFHxA	5.359	318.0 -> 273.0	31396	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	31363	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	50412	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	19771	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	13441	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	16784	1.25 µg/L	0.012
M2-PFDoDA	8.892	615.1 -> 570.0	18074	1.25 µg/L	0.012
M2-PFTeDA	9.649	715.2 -> 670.0	18182	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	10944	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	9120	2.50 µg/L	0.025
M3-PFHxS	7.054	402.1 -> 79.9	7670	2.50 µg/L	0.025
M8-PFOS	8.130	507.1 -> 79.9	7937	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	1122	5.00 µg/L	0.012
M2-6:2FTS	6.773	429.1 -> 80.9	2490	5.00 µg/L	0.025
M2-8:2FTS	7.816	529.1 -> 80.9	3234	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	17761	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	31663	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	15184	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	51763	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	60457	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	6927	2.50 µg/L	0.012
M3-MeFOSA	11.139	515.0 -> 219.0	6458	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	6755	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	46185	5.00 µg/L	0.013
18O2-PFHxS	7.041	403.0 -> 83.9	4799	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	55697	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	15265	1.25 µg/L	0.013
13C5-PFNA	7.534	468.0 -> 423.0	20143	1.25 µg/L	0.025
13C2-PFHxA	5.360	315.1 -> 270.0	35338	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1122	4.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-6:2FTS	6.773	429.1 -> 80.9	2490	5.04 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3234	4.89 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C2-PFDoDA	8.892	615.1 -> 570.0	18074	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	18182	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C3-PFBS	5.215	302.1 -> 79.9	9120	2.48 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C3-PFHxS	7.054	402.1 -> 79.9	7670	2.55 µg/L	0.025

7.7.10
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C4-PFBA	2.686	216.8 -> 171.9	97277	10.03 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C4-PFHpA	6.304	367.1 -> 322.0	31363	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C5-PFHxA	5.359	318.0 -> 273.0	31396	2.41 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C5-PFPeA	4.175	268.3 -> 223.0	40979	5.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C6-PFDA	8.017	519.1 -> 474.1	13441	1.21 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C7-PFUnDA	8.461	570.0 -> 525.1	16784	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C8-FOSA	9.806	506.1 -> 77.8	10944	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C8-PFOA	6.989	421.1 -> 376.0	50412	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C8-PFOS	8.130	507.1 -> 79.9	7937	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C9-PFNA	7.521	472.1 -> 427.0	19771	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
d3-MeFOSAA	8.099	573.2 -> 419.0	17761	4.74 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C3-HFPO-DA	5.714	286.9 -> 168.9	31663	9.73 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.3%		
d3-MeFOSA	11.139	515.0 -> 219.0	6458	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
d5-EtFOSAA	8.296	589.2 -> 419.0	15184	4.79 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
d7-MeFOSE	11.034	623.2 -> 58.9	51763	23.97 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
d9-EtFOSE	11.319	639.2 -> 58.9	60457	25.00 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
d5-EtFOSA	11.410	531.1 -> 219.0	6927	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.8%		
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	17219	8.91 µg/L	99
		327.1 -> 80.9	7499		
6:2FTS	6.774	427.1 -> 407.0	24030	9.18 µg/L	98
		427.1 -> 80.9	8478		
8:2FTS	7.816	527.1 -> 507.0	16791	9.85 µg/L	98
		527.1 -> 80.8	7038		
EtFOSAA	8.297	584.2 -> 419.1	6568	2.37 µg/L	91
		584.2 -> 526.0	2450	m	
FOSA	9.798	498.1 -> 77.9	11729	2.38 µg/L	99
		498.1 -> 478.0	365		
MeFOSAA	8.099	570.1 -> 419.0	7212	2.83 µg/L	92
		570.1 -> 483.0	1425		
PFBA	2.695	212.8 -> 168.9	29656	9.52 µg/L	100
PFBS	5.216	298.7 -> 79.9	5843	2.07 µg/L	97
		298.7 -> 98.8	2259		
PFDA	8.017	512.9 -> 469.0	23055	2.34 µg/L	99
		512.9 -> 219.0	4654		
PFDODA	8.893	613.1 -> 569.0	32230	2.48 µg/L	97
		613.1 -> 319.0	5876		
PFDS	9.020	599.0 -> 79.9	5077	2.40 µg/L	94

7.7.10
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	2462	2.37	µg/L	99
		363.1 -> 319.0	41778			
PFHpS	7.624	363.1 -> 169.0	7824	2.26	µg/L	94
		449.0 -> 79.9	7107			
PFHxA	5.362	449.0 -> 98.9	4023	2.37	µg/L	99
		313.0 -> 269.0	23780			
PFHxS	7.055	313.0 -> 118.9	751	1.93	µg/L	83
		398.7 -> 79.9	4778			
PFNA	7.534	398.7 -> 98.9	2822	2.30	µg/L	94
		463.0 -> 419.0	26663			
PFNS	8.598	463.0 -> 219.0	6936	2.55	µg/L	87
		548.8 -> 79.9	3455			
PFOA	6.990	548.8 -> 98.9	2025	2.32	µg/L	97
		413.0 -> 369.0	48113			
PFOS	8.131	413.0 -> 169.0	10043	2.24	µg/L	57
		498.9 -> 79.9	7388			
PFPeA	4.177	498.9 -> 98.8	3730	4.58	µg/L	100
		263.0 -> 219.0	36895			
PFPeS	6.294	349.1 -> 79.9	5136	2.20	µg/L	97
		349.1 -> 98.9	2261			
PFTeDA	9.650	713.1 -> 669.0	30770	2.43	µg/L	100
		713.1 -> 168.9	3296			
PFTrDA	9.292	663.0 -> 619.0	36931	2.61	µg/L	98
		663.0 -> 168.9	5315			
PFUnDA	8.461	563.1 -> 519.0	29861	2.45	µg/L	96
		563.1 -> 269.1	6833			
11CI-PF3OUdS	9.319	630.9 -> 450.9	42161	4.84	µg/L	99
		632.9 -> 452.9	12973			
9CI-PF3ONS	8.463	530.8 -> 351.0	41617	4.72	µg/L	100
		532.8 -> 353.0	12486			
ADONA	6.581	376.9 -> 250.9	109312	5.11	µg/L	98
		376.9 -> 84.8	25411			
HFPO-DA	5.715	284.9 -> 168.9	14585	4.81	µg/L	99
		284.9 -> 184.9	1401			
3:3FTCA	3.630	241.0 -> 177.0	5719	11.55	µg/L	100
		241.0 -> 117.0	502			
5:3FTCA	6.033	341.0 -> 237.1	109670	61.37	µg/L	99
		341.0 -> 217.0	77198			
7:3FTCA	7.549	441.0 -> 316.9	57240	61.08	µg/L	97
		441.0 -> 336.9	139284			
EtFOSA	11.412	526.0 -> 219.0	13781	4.67	µg/L	100
		526.0 -> 169.0	19005			
EtFOSE	11.332	630.0 -> 58.9	25128	11.74	µg/L	100
		511.9 -> 219.0	10425			
MeFOSA	11.128	511.9 -> 169.0	14931	4.53	µg/L	96
		616.1 -> 58.9	24373			
MeFOSE	11.047	699.1 -> 79.9	3985	11.87	µg/L	100
		699.1 -> 98.8	2117			
PFDoDS	9.777	295.0 -> 201.0	3581	2.47	µg/L	95
		295.0 -> 84.9	905			
NFDHA	5.241	279.0 -> 85.1	21065	5.05	µg/L	98
		229.0 -> 84.9	22799			
PFMBA	4.578	314.8 -> 134.9	33047	4.67	µg/L	100
		314.8 -> 82.9	1135			
PFMPA	3.332			4.46	µg/L	99
PFEESA	5.734					

= Qualifier out of range, m = manually integrated, + = Area summed

7.7.10
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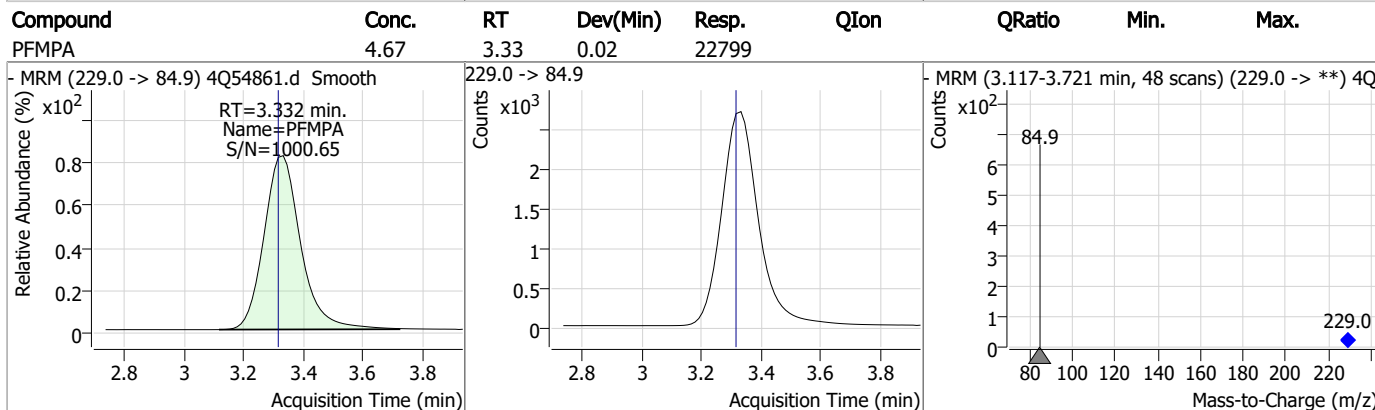
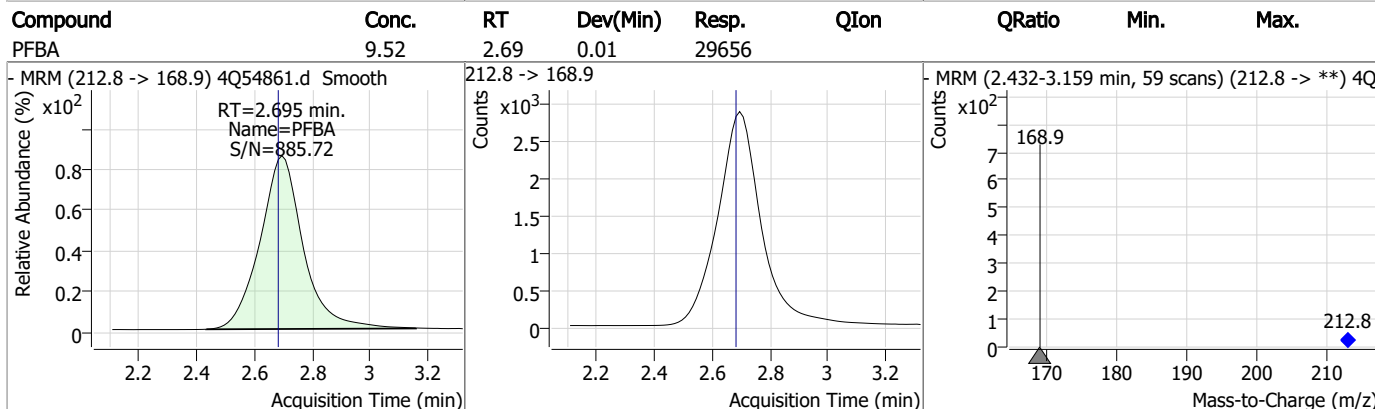
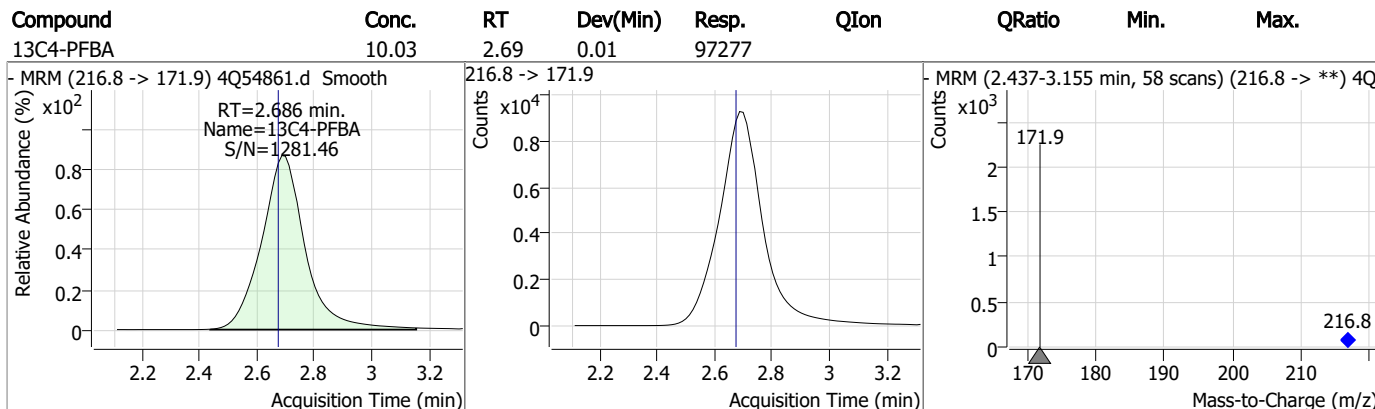
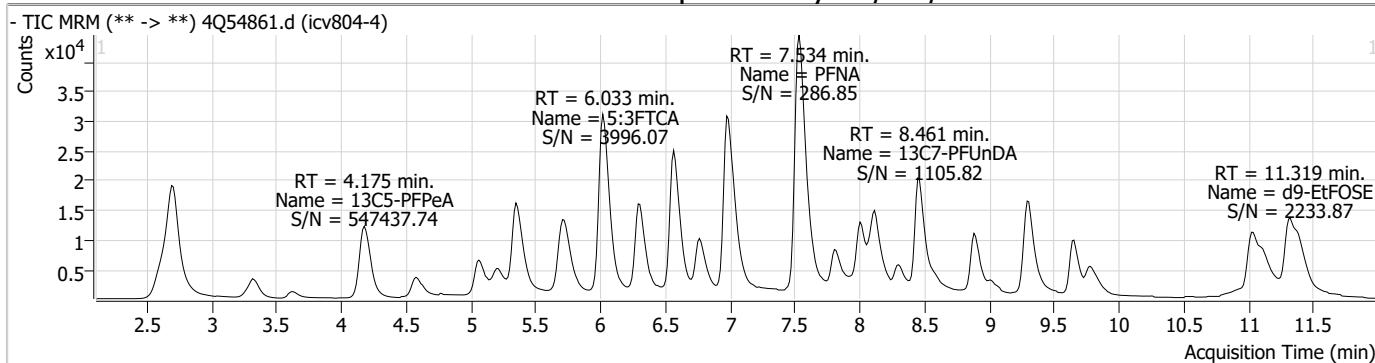
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.10

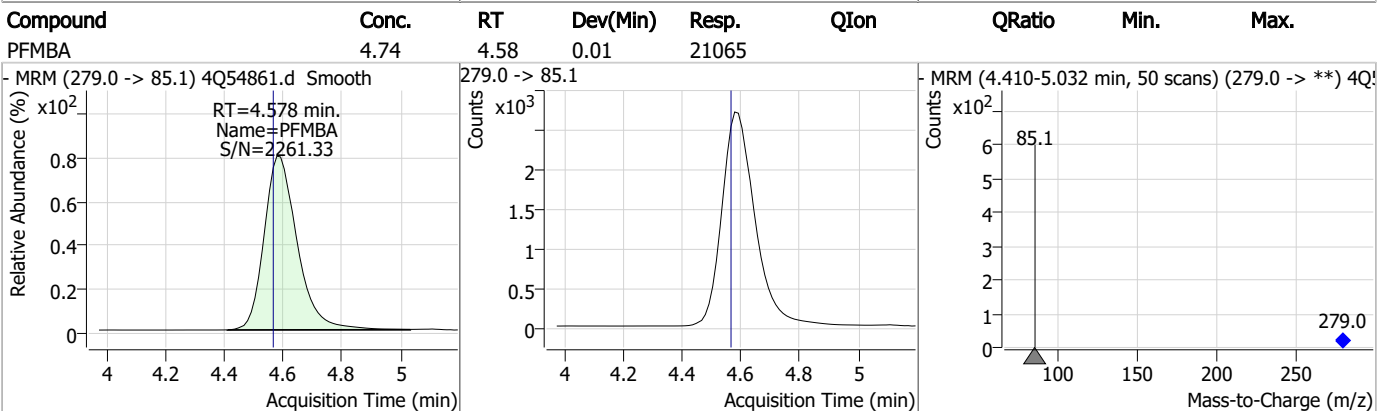
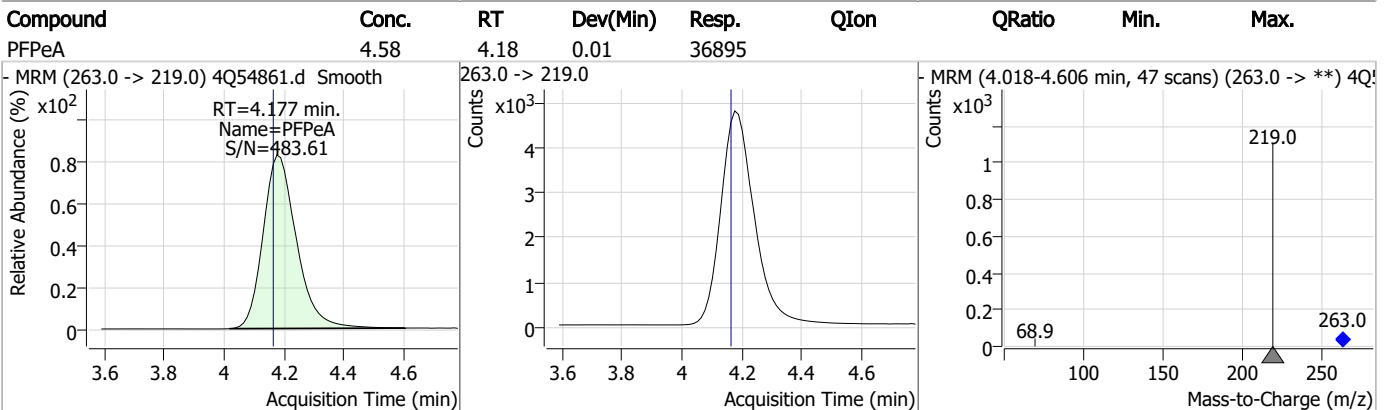
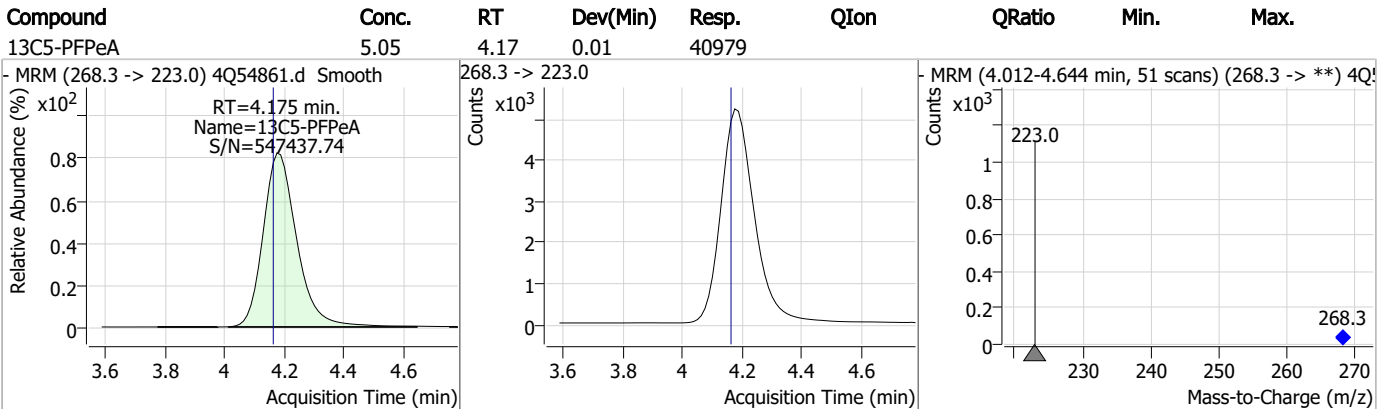
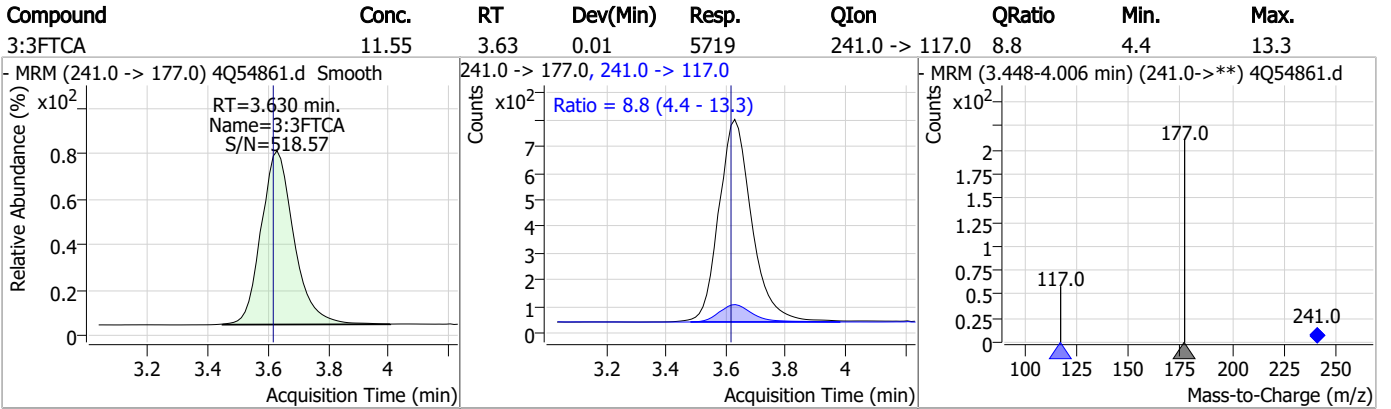
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Perfluorinated Compounds by LC/MS/MS

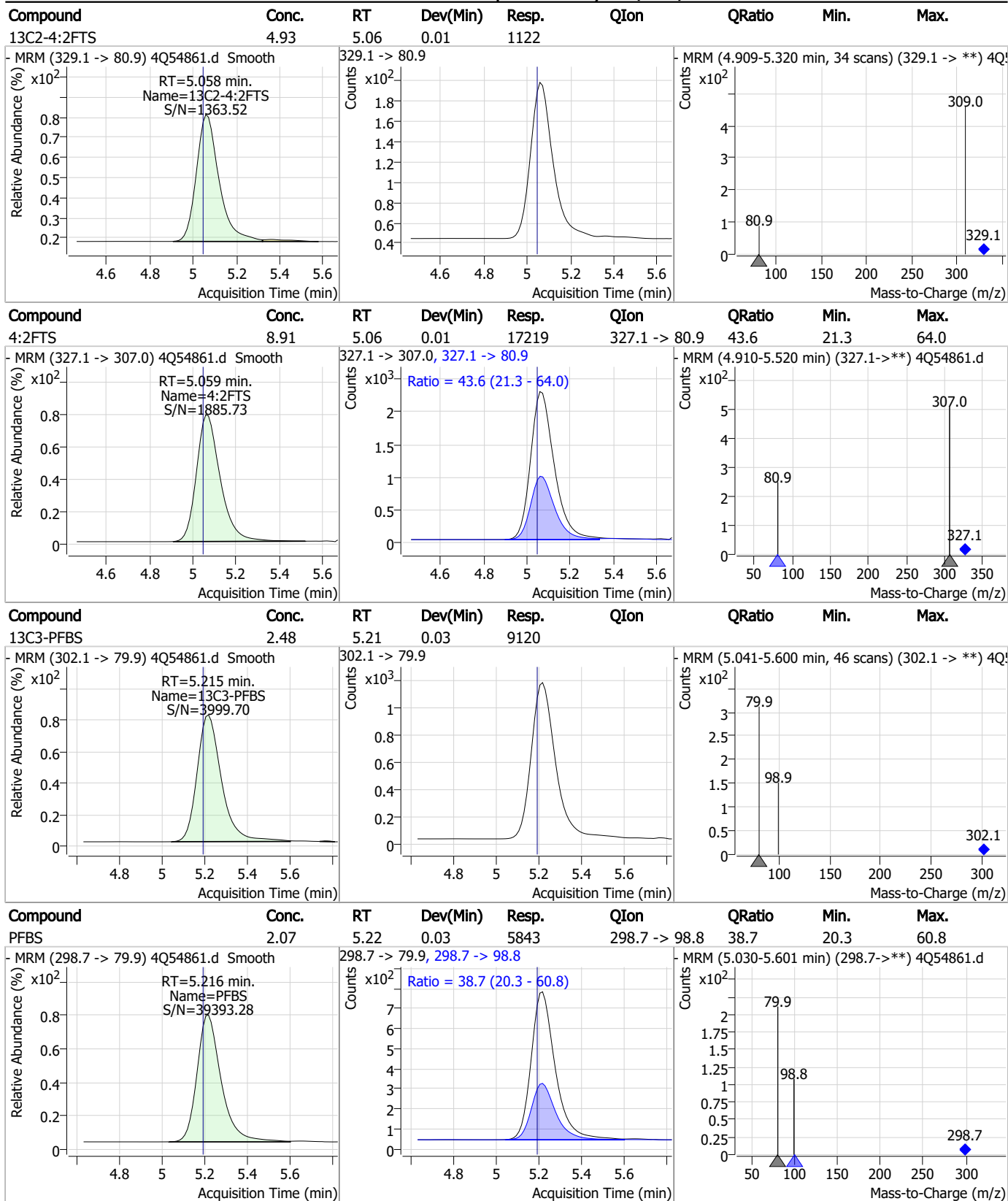


7.7.10
7

Perfluorinated Compounds by LC/MS/MS

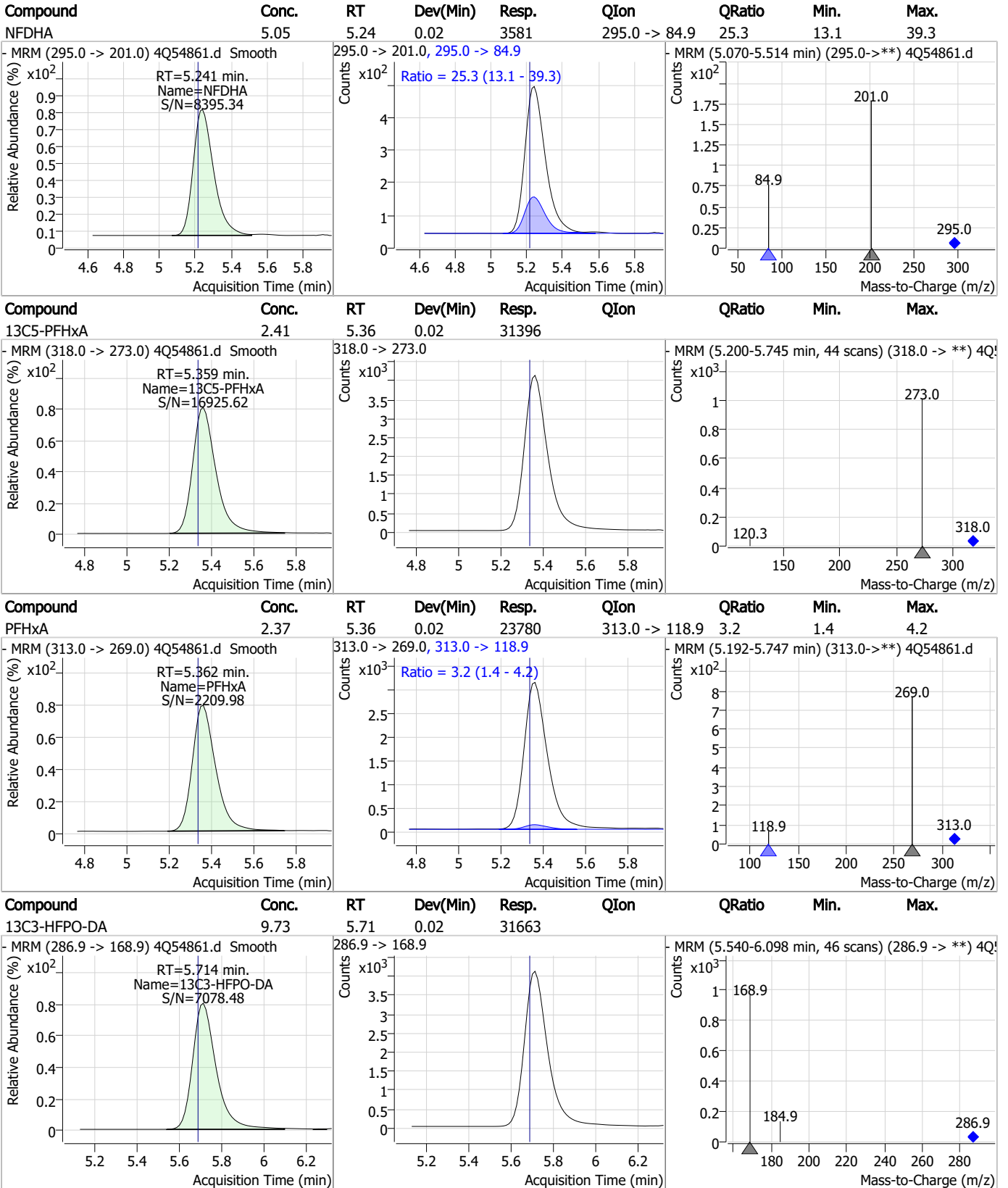


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS

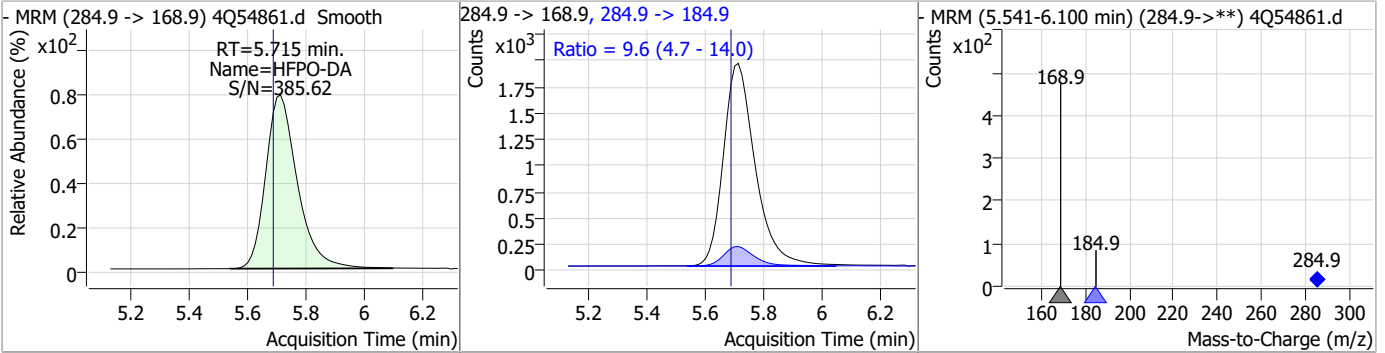


7.7.10 7

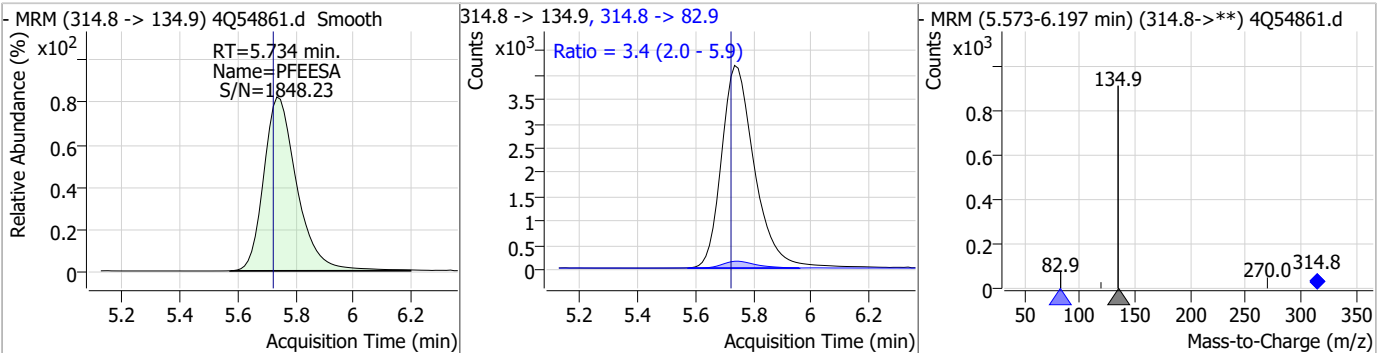


Perfluorinated Compounds by LC/MS/MS

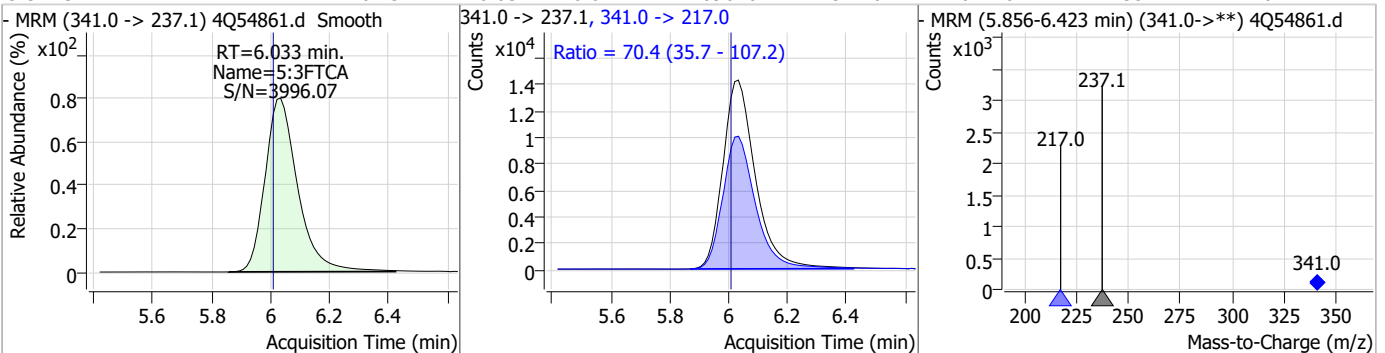
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.81	5.72	0.02	14585	284.9 -> 184.9	9.6	4.7	14.0



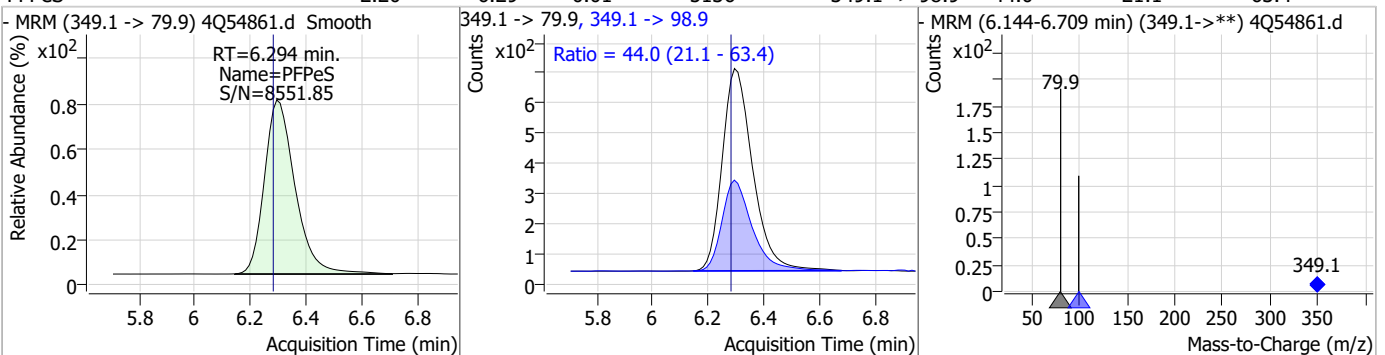
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.46	5.73	0.01	33047	314.8 -> 82.9	3.4	2.0	5.9



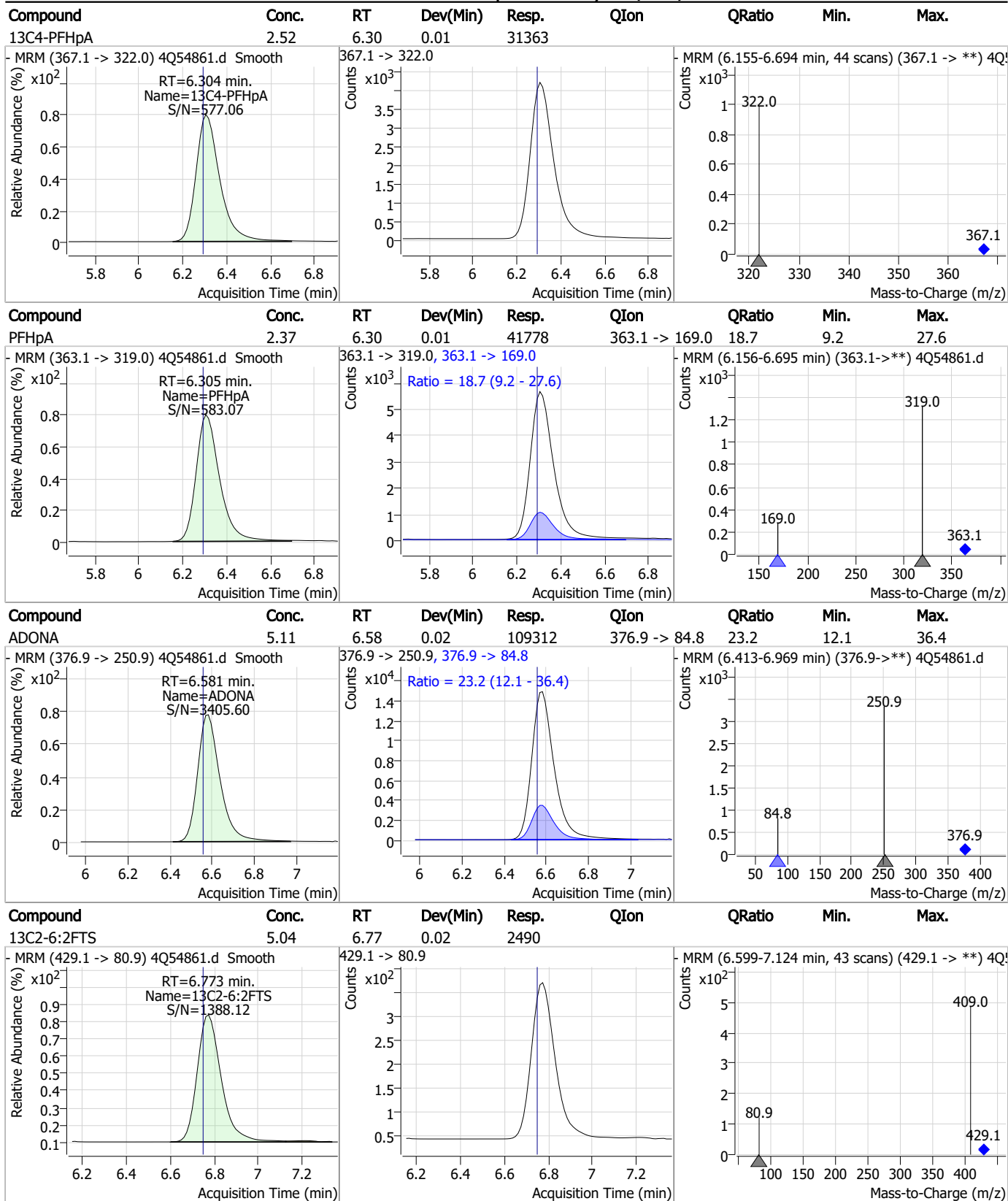
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	61.37	6.03	0.02	109670	341.0 -> 217.0	70.4	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.20	6.29	0.01	5136	349.1 -> 98.9	44.0	21.1	63.4

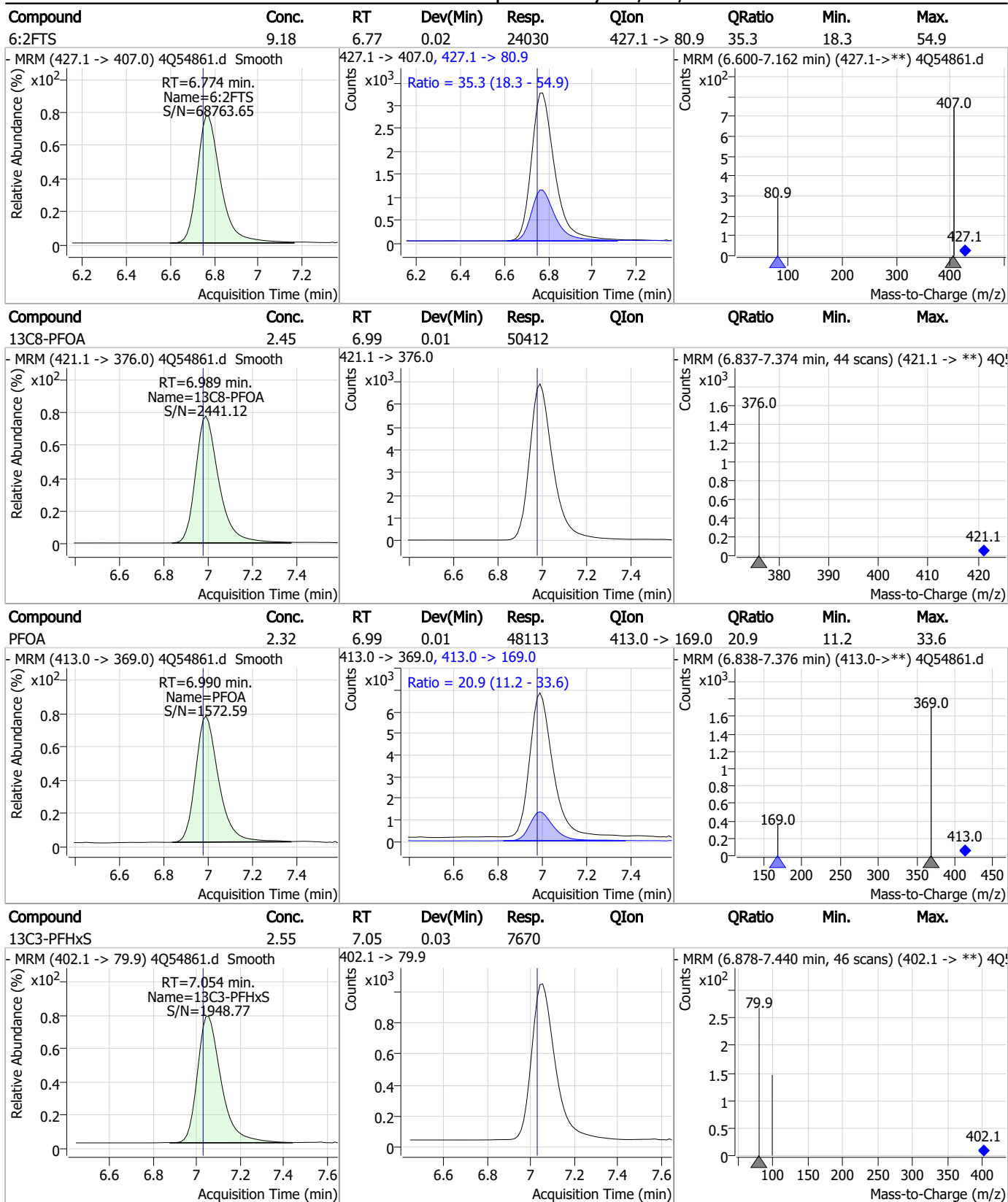


Perfluorinated Compounds by LC/MS/MS



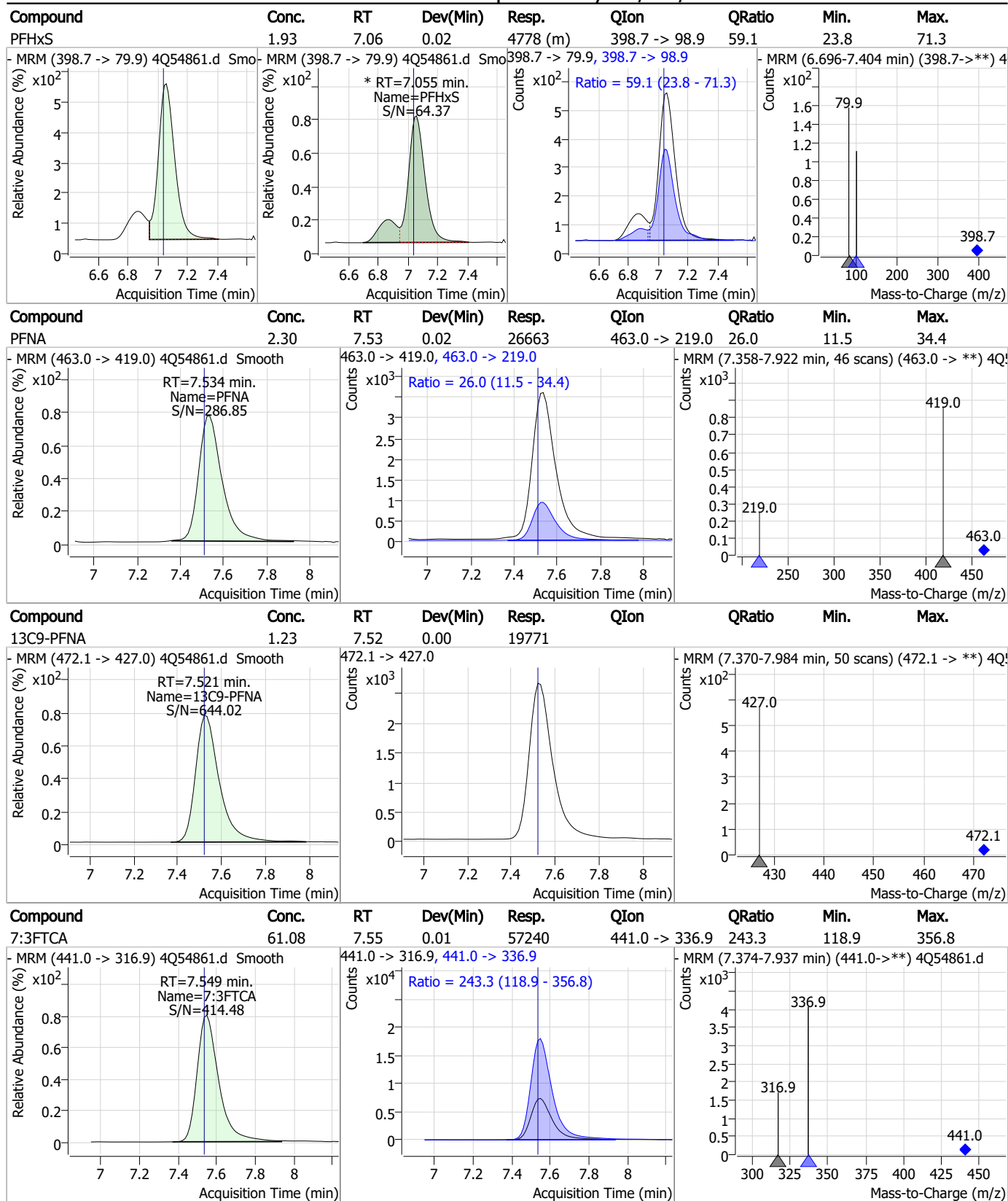
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



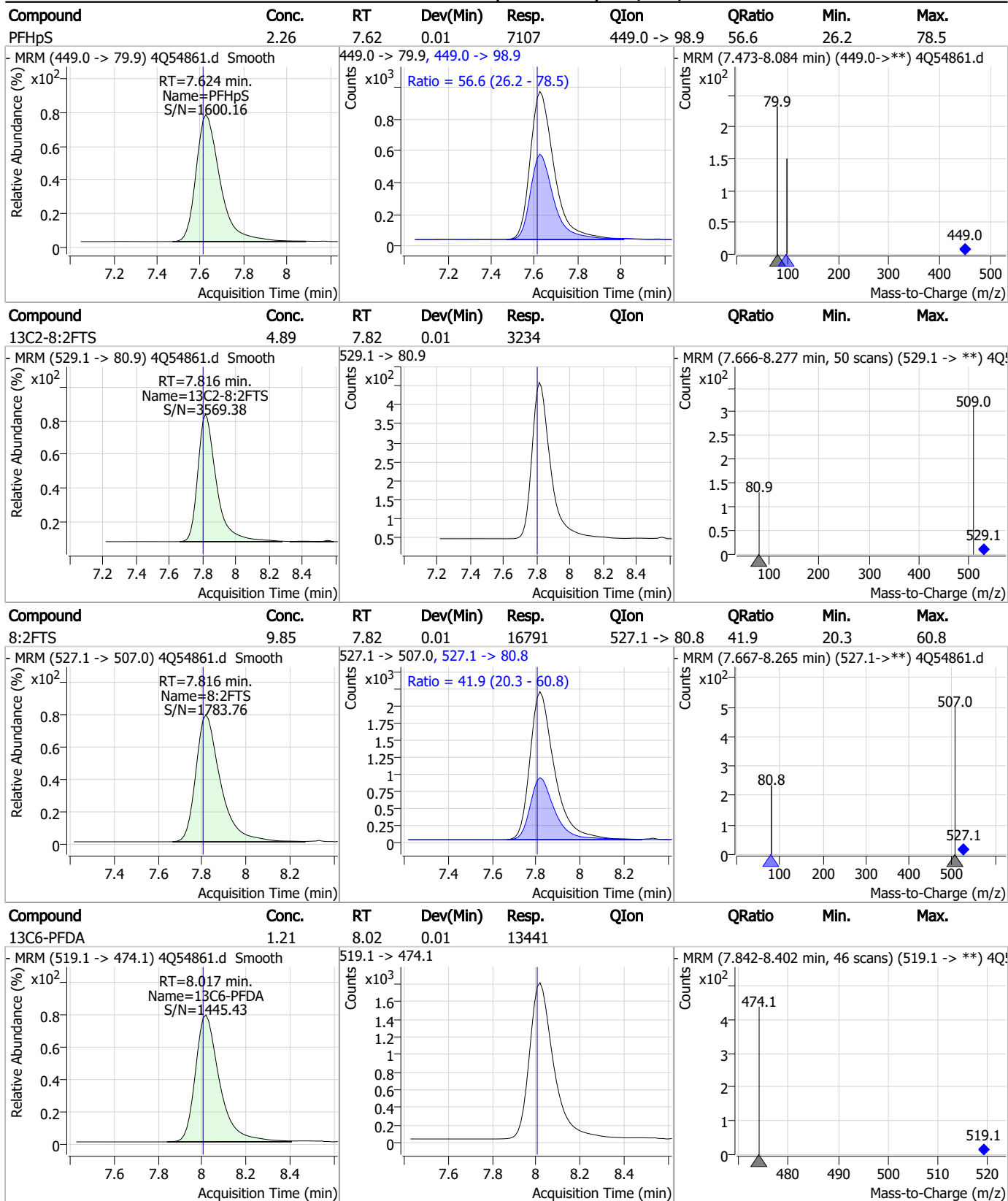
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



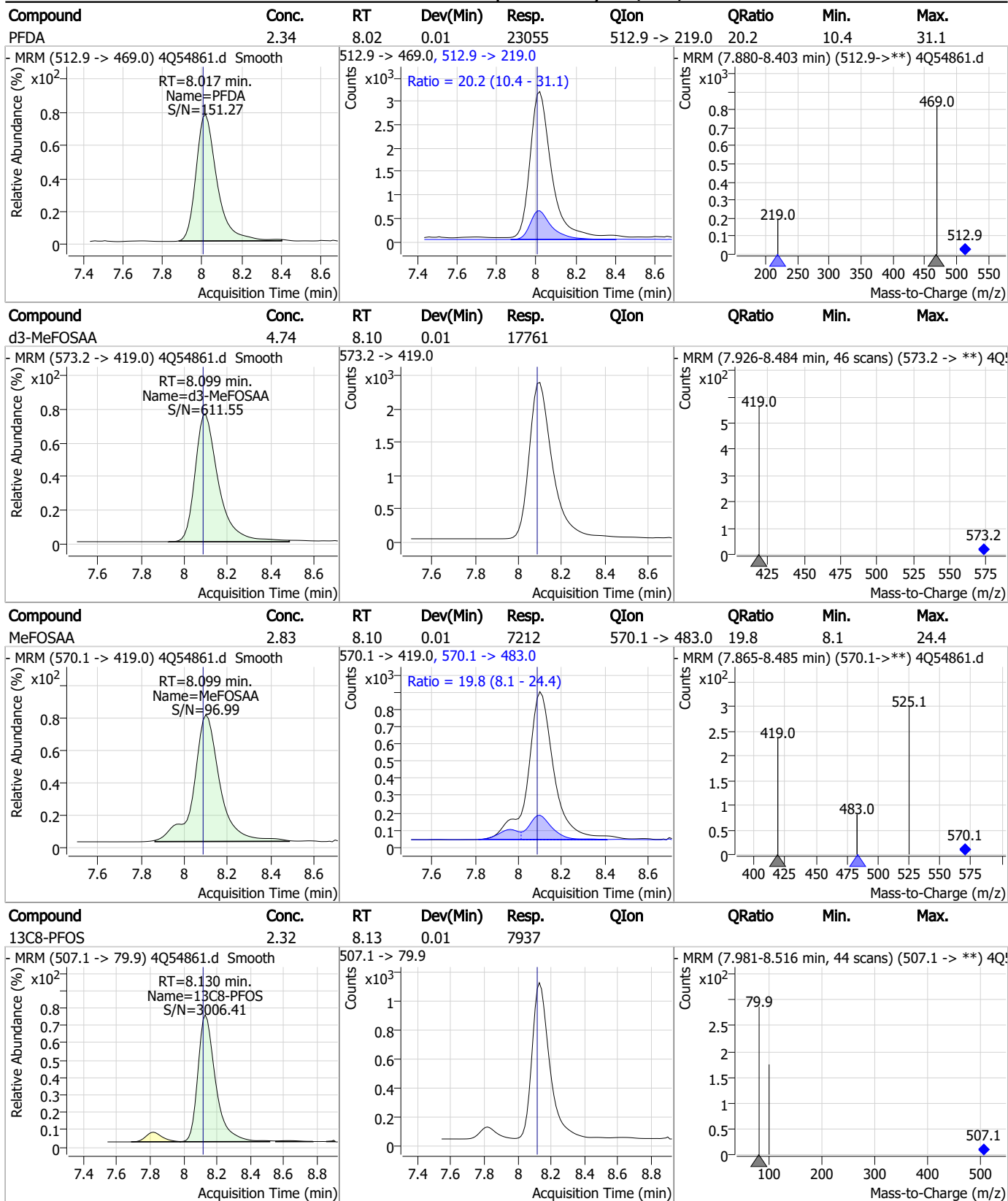
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



7.7.10
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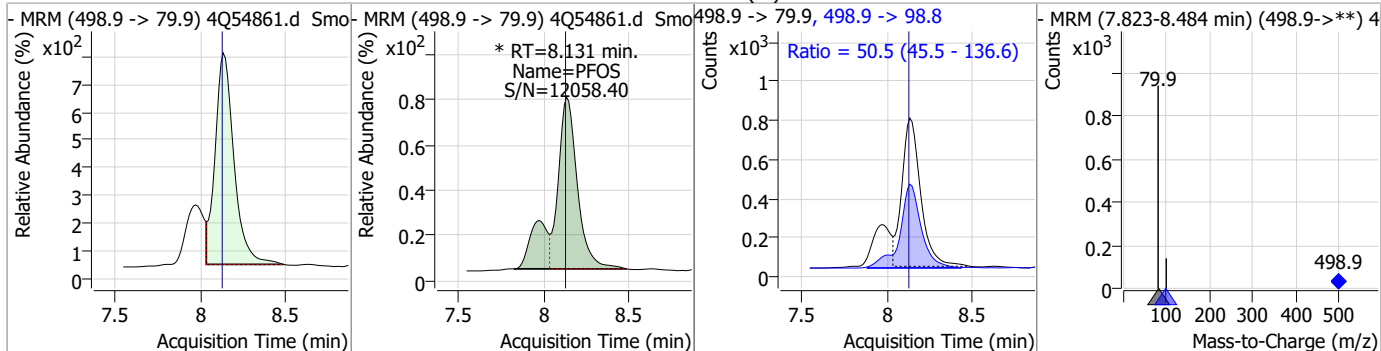
Perfluorinated Compounds by LC/MS/MS



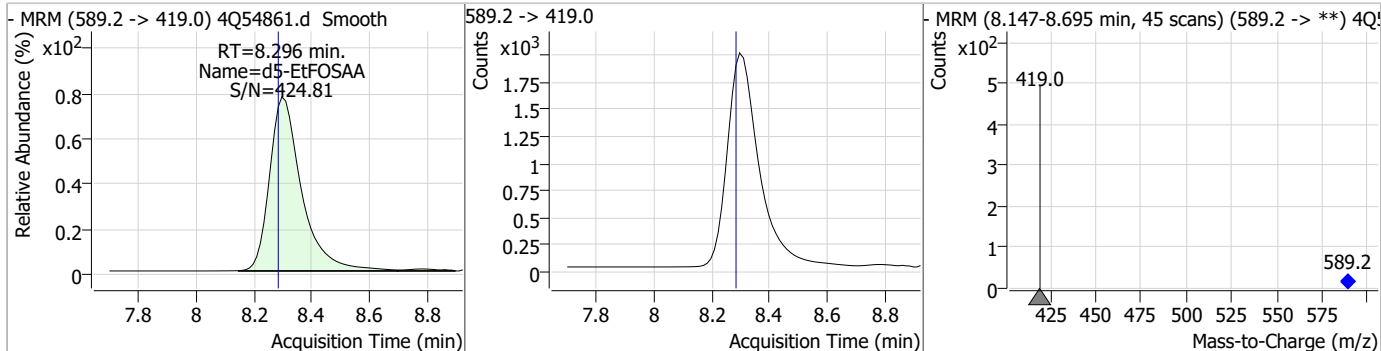
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

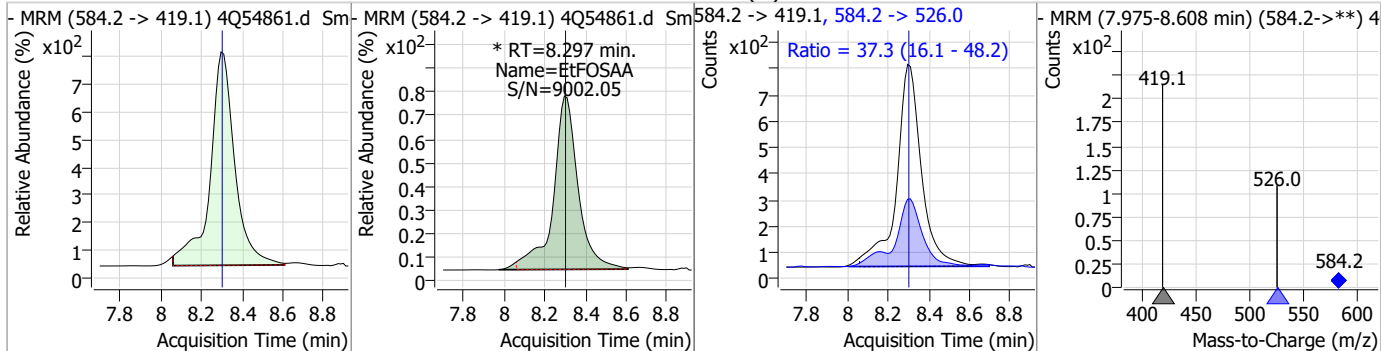
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.24	8.13	0.01	7388 (m)	498.9 -> 98.8	50.5	45.5	136.6



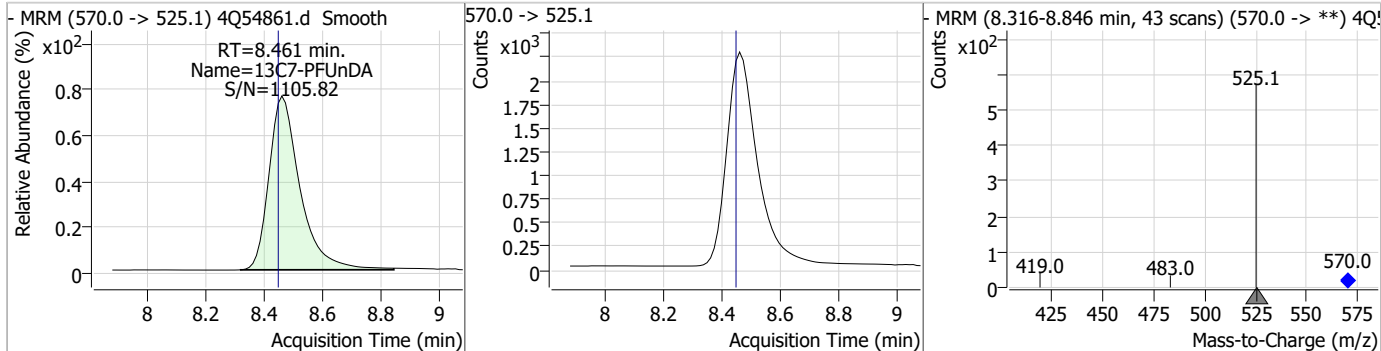
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.79	8.30	0.01	15184				



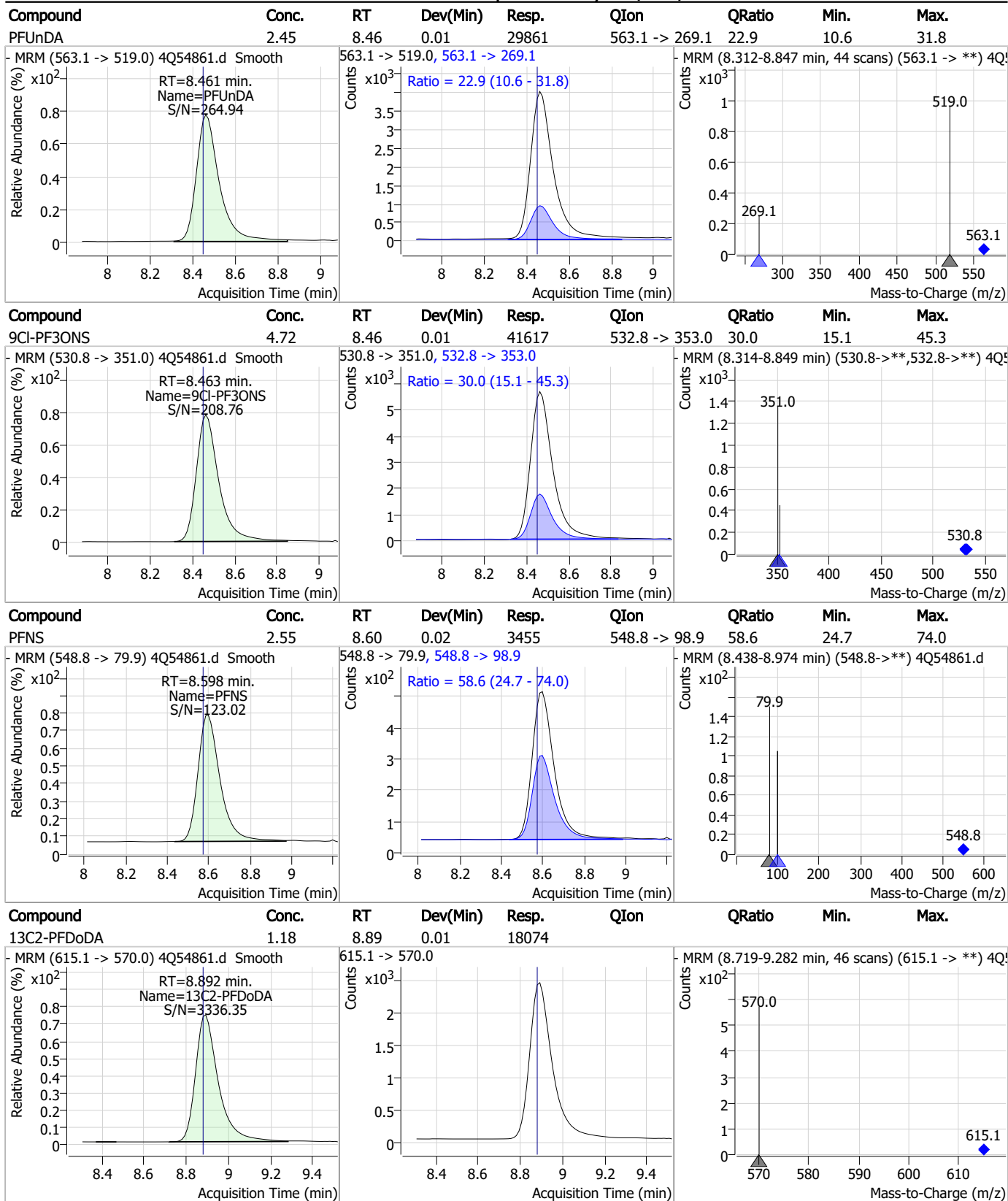
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.37	8.30	0.00	6568 (m)	584.2 -> 526.0	37.3	16.1	48.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.28	8.46	0.01	16784				

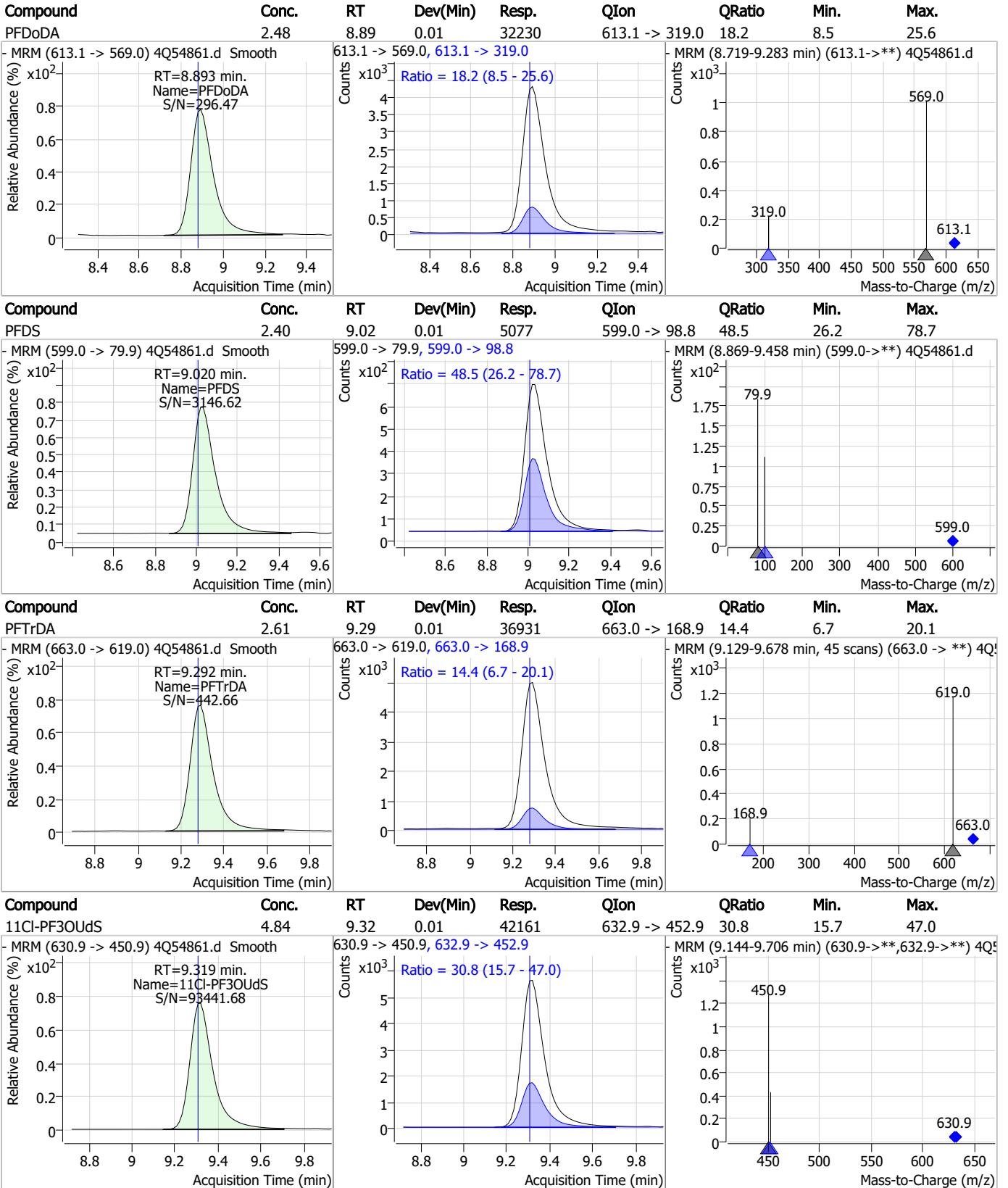


Perfluorinated Compounds by LC/MS/MS



7.7.10
7

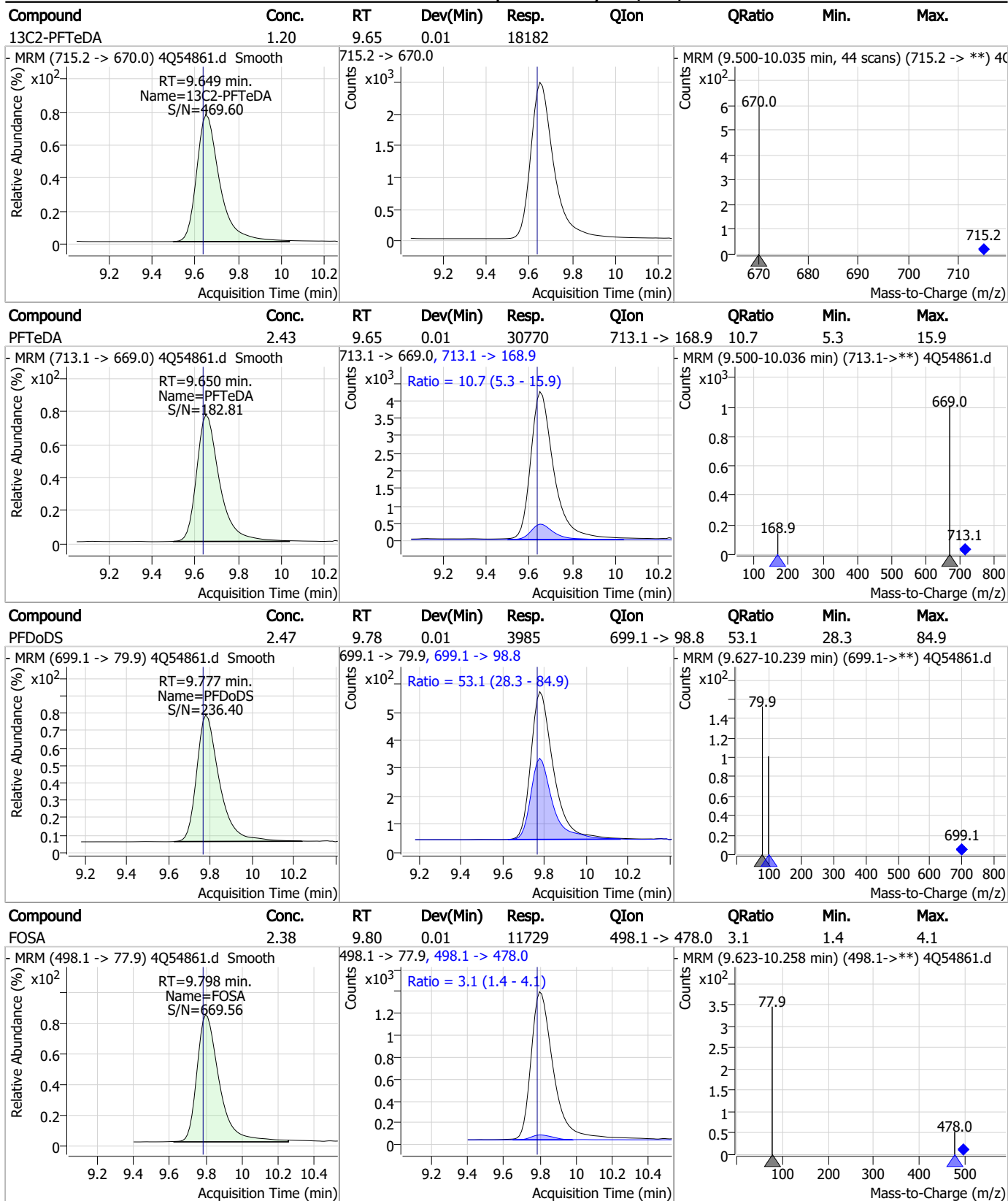
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

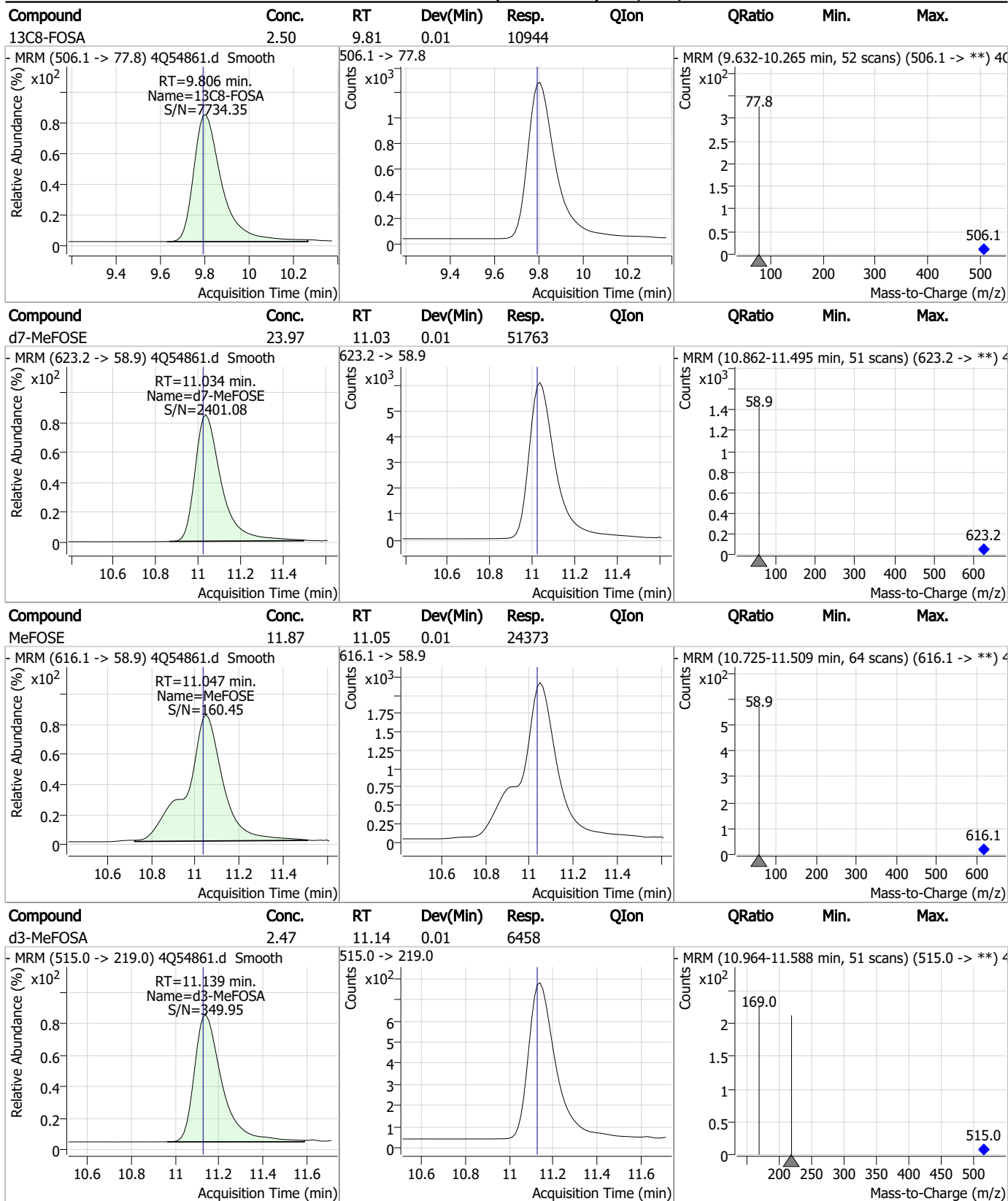


Perfluorinated Compounds by LC/MS/MS



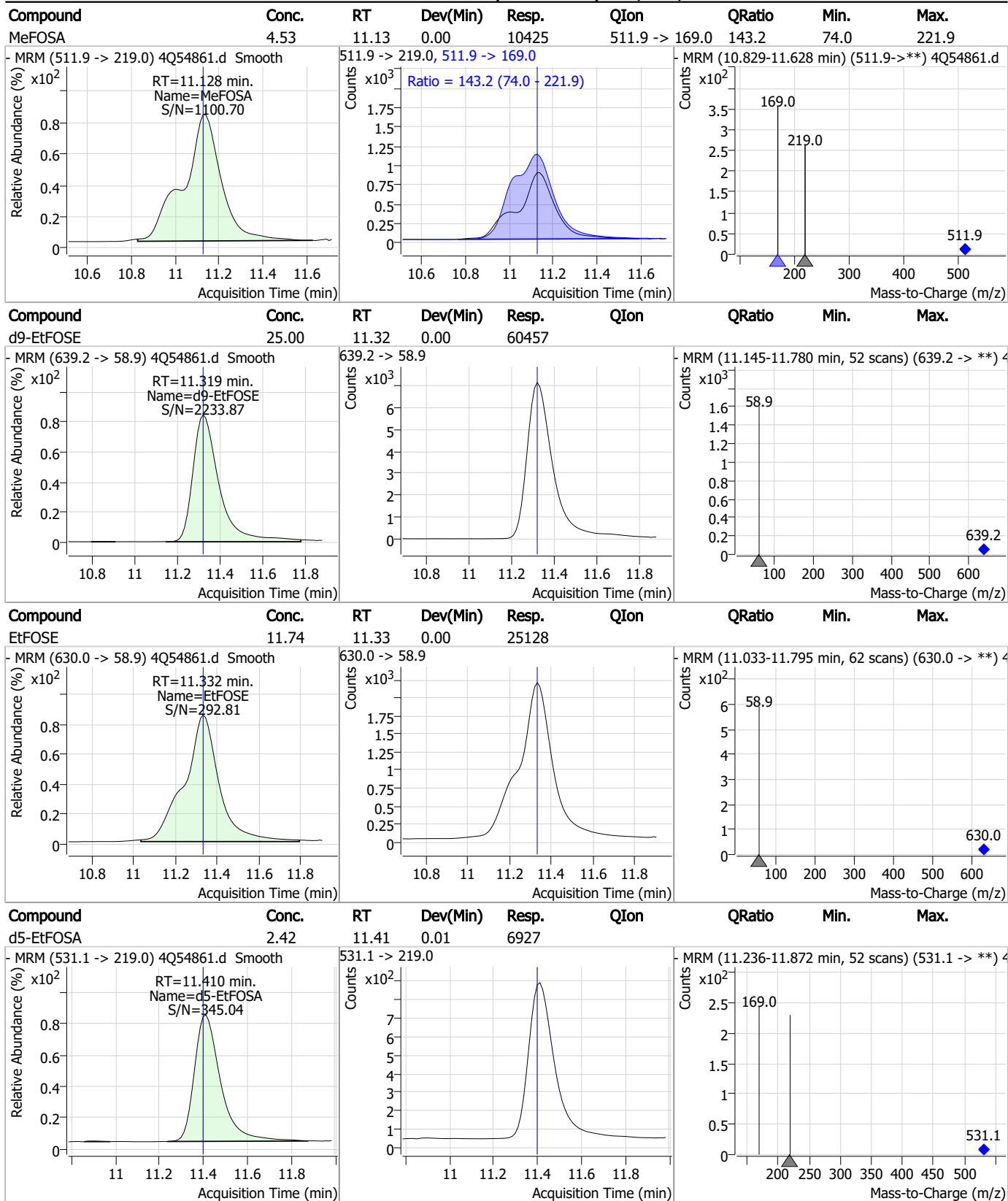
7.7.10
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Perfluorinated Compounds by LC/MS/MS



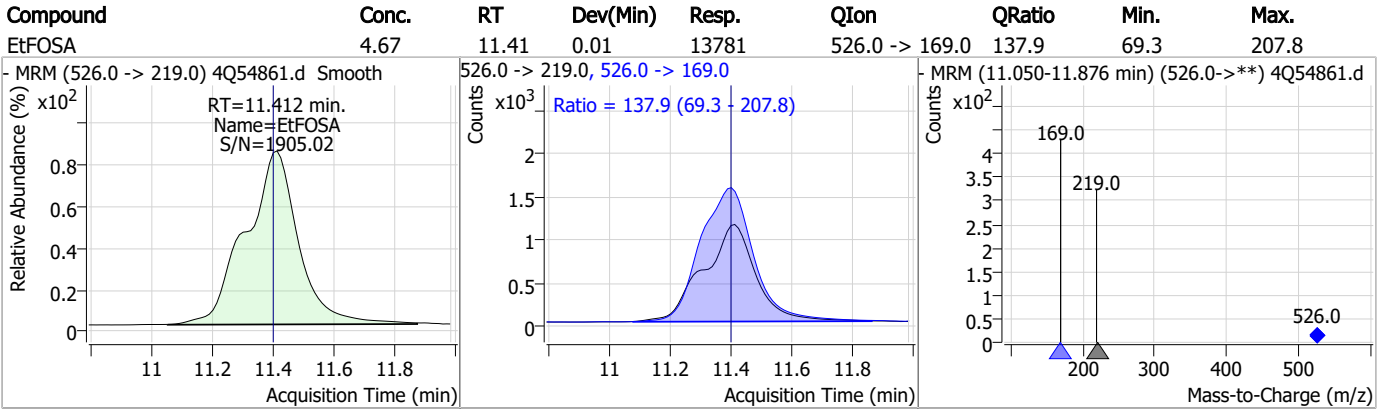
7.7.10
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Perfluorinated Compounds by LC/MS/MS



7.7.10
7

Perfluorinated Compounds by LC/MS/MS



7.7.10
7

Manual Integration Approval Summary

Sample Number: S4Q804-ICV804 Method: EPA DRAFT 1633
Lab FileID: 4Q54861.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 13:51 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

7.7.10.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54862.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/8/2023 2:05:49 PM
 Sample Name : icv804-20
 Vial : P1-B4
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q804.batch.bin
 Sample Information : OP99999,S4Q804,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	101781	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	42215	5.00 µg/L	0.012
M5-PFHxA	5.359	318.0 -> 273.0	32530	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	31586	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	50492	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	20056	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	14427	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	15810	1.25 µg/L	0.012
M2-PFDoDA	8.892	615.1 -> 570.0	18974	1.25 µg/L	0.012
M2-PFTeDA	9.649	715.2 -> 670.0	18902	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	10206	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	9077	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	7629	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	8811	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1092	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2434	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	3241	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	18370	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	34086	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	15250	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	52980	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	58926	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	6948	2.50 µg/L	0.012
M3-MeFOSA	11.139	515.0 -> 219.0	6801	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	6698	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	48350	5.00 µg/L	0.013
18O2-PFHxS	7.054	403.0 -> 83.9	4724	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	55296	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	15417	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	19563	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	36994	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1092	4.87 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2434	5.00 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C2-8:2FTS	7.816	529.1 -> 80.9	3241	4.98 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-PFDoDA	8.892	615.1 -> 570.0	18974	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-PFTeDA	9.649	715.2 -> 670.0	18902	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C3-PFBS	5.215	302.1 -> 79.9	9077	2.51 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C3-PFHxS	7.042	402.1 -> 79.9	7629	2.58 µg/L	0.012

7.7.11
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C4-PFBA	2.686	216.8 -> 171.9	101781	10.03 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFHpA	6.304	367.1 -> 322.0	31586	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C5-PFHxA	5.359	318.0 -> 273.0	32530	2.39 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C5-PFPeA	4.175	268.3 -> 223.0	42215	4.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C6-PFDA	8.017	519.1 -> 474.1	14427	1.29 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C7-PFUnDA	8.461	570.0 -> 525.1	15810	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C8-FOSA	9.806	506.1 -> 77.8	10206	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C8-PFOA	6.989	421.1 -> 376.0	50492	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-PFOS	8.130	507.1 -> 79.9	8811	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C9-PFNA	7.521	472.1 -> 427.0	20056	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
d3-MeFOSAA	8.099	573.2 -> 419.0	18370	4.94 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	34086	10.01 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d3-MeFOSA	11.139	515.0 -> 219.0	6801	2.63 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
d5-EtFOSAA	8.296	589.2 -> 419.0	15250	4.85 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d7-MeFOSE	11.034	623.2 -> 58.9	52980	24.74 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	58926	24.57 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
d5-EtFOSA	11.410	531.1 -> 219.0	6948	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	37172	19.76 µg/L	99
		327.1 -> 80.9	16008		
6:2FTS	6.761	427.1 -> 407.0	51737	20.22 µg/L	99
		427.1 -> 80.9	18541		
8:2FTS	7.816	527.1 -> 507.0	32179	18.84 µg/L	99
		527.1 -> 80.8	12849		
EtFOSAA	8.297	584.2 -> 419.1	52493	18.87 µg/L	86
		584.2 -> 526.0	20880		
FOSA	9.798	498.1 -> 77.9	85040	18.54 µg/L	99
		498.1 -> 478.0	2721		
MeFOSAA	8.099	570.1 -> 419.0	53868	20.45 µg/L	92
		570.1 -> 483.0	10660		
PFBA	2.695	212.8 -> 168.9	59022	18.11 µg/L	100
PFBS	5.216	298.7 -> 79.9	53494	19.00 µg/L	96
		298.7 -> 98.8	20335		
PFDA	8.017	512.9 -> 469.0	194270	18.33 µg/L	99
		512.9 -> 219.0	39089		
PFDoDA	8.893	613.1 -> 569.0	239635	17.54 µg/L	99
		613.1 -> 319.0	41582		
PFDS	9.020	599.0 -> 79.9	42841	18.27 µg/L	96

7.7.11
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	21323	19.26	µg/L	98
		363.1 -> 319.0	342573			
PFHpS	7.624	363.1 -> 169.0	60415	17.83	µg/L	98
		449.0 -> 79.9	62357			
PFHxA	5.362	449.0 -> 98.9	31850	20.78	µg/L	99
		313.0 -> 269.0	215751			
PFHxS	7.043	313.0 -> 118.9	6422	19.69	µg/L	99
		398.7 -> 79.9	48440			
PFNA	7.534	398.7 -> 98.9	23389	19.87	µg/L	99
		463.0 -> 419.0	234109			
PFNS	8.598	463.0 -> 219.0	54990	19.10	µg/L	95
		548.8 -> 79.9	28708			
PFOA	6.990	548.8 -> 98.9	15106	19.08	µg/L	96
		413.0 -> 369.0	396269			
PFOS	8.131	413.0 -> 169.0	81598	15.95	µg/L	50
		498.9 -> 79.9	58487			
PFPeA	4.177	498.9 -> 98.8	25463	18.73	µg/L	100
		263.0 -> 219.0	155608			
PFPeS	6.294	349.1 -> 79.9	46622	20.12	µg/L	97
		349.1 -> 98.9	20746			
PFTeDA	9.650	713.1 -> 669.0	272338	20.70	µg/L	99
		713.1 -> 168.9	28147			
PFTrDA	9.292	663.0 -> 619.0	275521	18.56	µg/L	99
		663.0 -> 168.9	38050			
PFUnDA	8.461	563.1 -> 519.0	223580	19.44	µg/L	99
		563.1 -> 269.1	46531			
11CI-PF3OUdS	9.319	630.9 -> 450.9	181022	19.29	µg/L	99
		632.9 -> 452.9	55928			
9CI-PF3ONS	8.463	530.8 -> 351.0	177189	18.68	µg/L	100
		532.8 -> 353.0	53407			
ADONA	6.568	376.9 -> 250.9	484269	21.04	µg/L	99
		376.9 -> 84.8	115482			
HFPO-DA	5.715	284.9 -> 168.9	60120	18.43	µg/L	97
		284.9 -> 184.9	6239			
3:3FTCA	3.630	241.0 -> 177.0	9495	18.32	µg/L	99
		241.0 -> 117.0	893			
5:3FTCA	6.020	341.0 -> 237.1	38497	20.79	µg/L	99
		341.0 -> 217.0	27164			
7:3FTCA	7.549	441.0 -> 316.9	18761	19.32	µg/L	91
		441.0 -> 336.9	41930			
EtFOSA	11.412	526.0 -> 219.0	52039	17.59	µg/L	78
		526.0 -> 169.0	57998			
EtFOSE	11.345	630.0 -> 58.9	204459	98.04	µg/L	100
		511.9 -> 219.0	43350			
MeFOSA	11.140	511.9 -> 169.0	49296	17.90	µg/L	73
		616.1 -> 58.9	217476			
MeFOSE	11.047	699.1 -> 79.9	31515	103.46	µg/L	100
		699.1 -> 98.8	17491			
PFDoDS	9.777	295.0 -> 201.0	13592	17.62	µg/L	99
		295.0 -> 84.9	3599			
NFDHA	5.241	279.0 -> 85.1	87069	18.48	µg/L	99
		229.0 -> 84.9	96445			
PFMBA	4.578	314.8 -> 134.9	135646	19.04	µg/L	100
		314.8 -> 82.9	4597			
PFMPA	3.332			19.19	µg/L	100
PFEESA	5.734			17.68	µg/L	98

= Qualifier out of range, m = manually integrated, + = Area summed

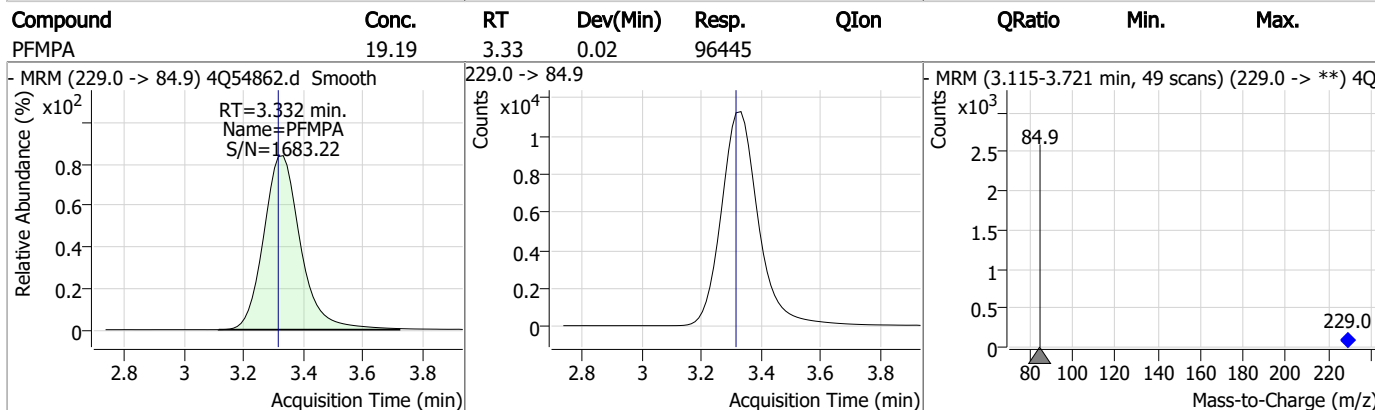
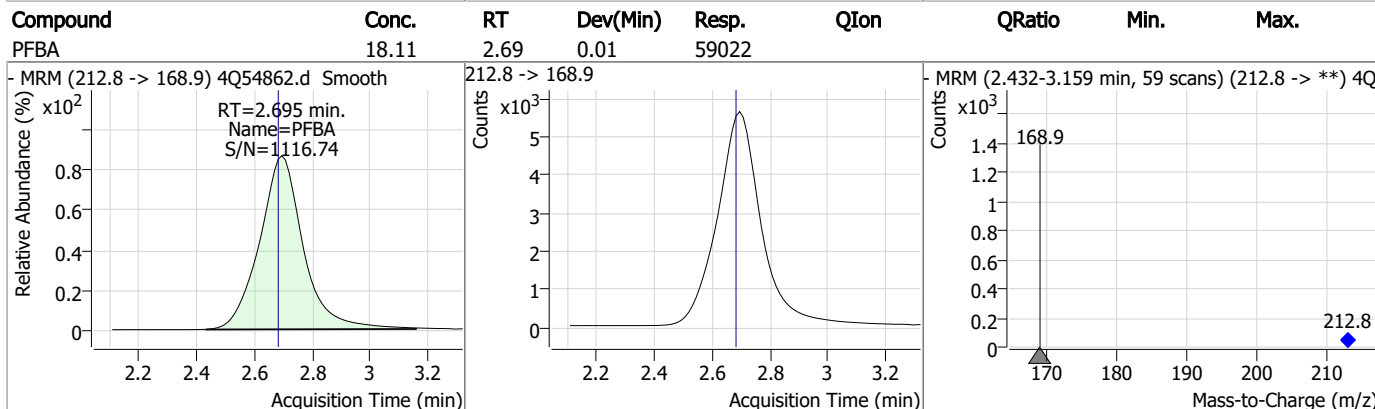
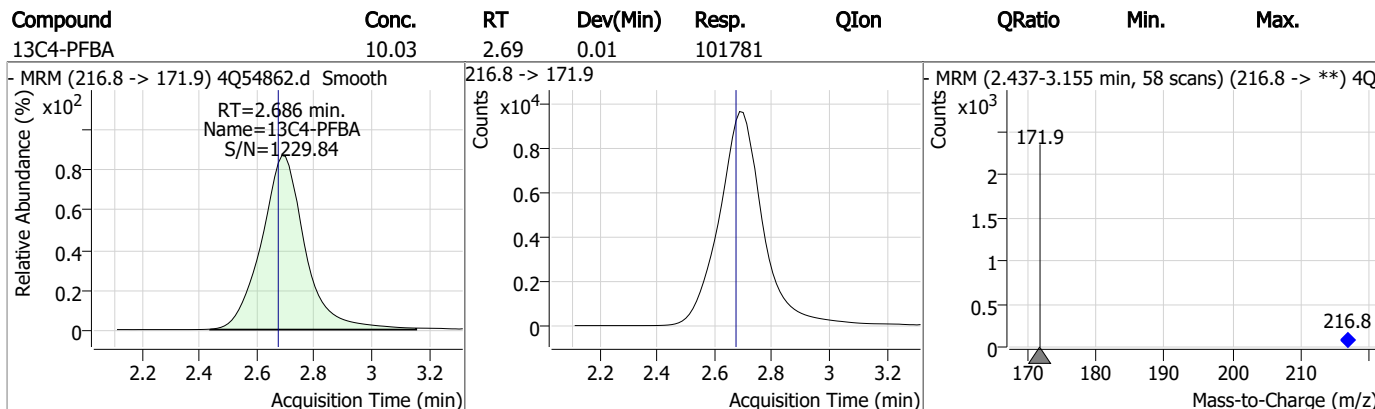
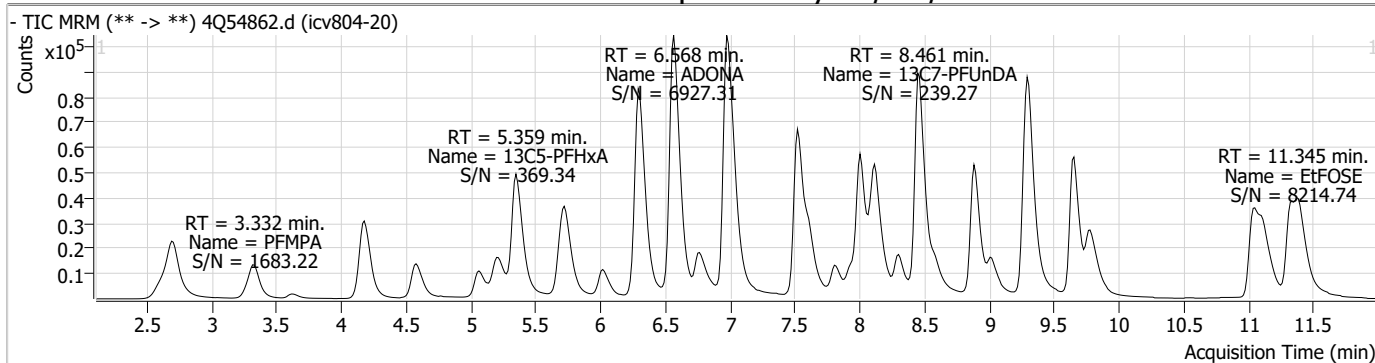
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.11

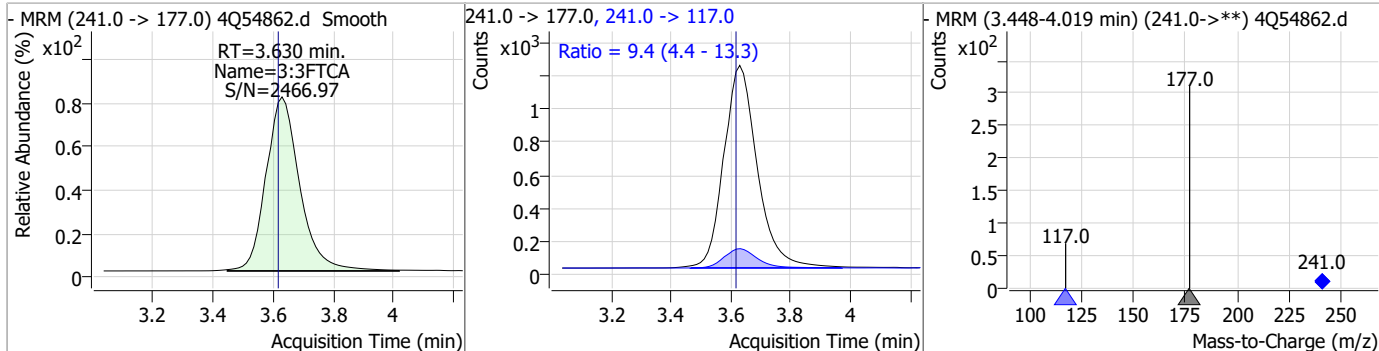
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Perfluorinated Compounds by LC/MS/MS

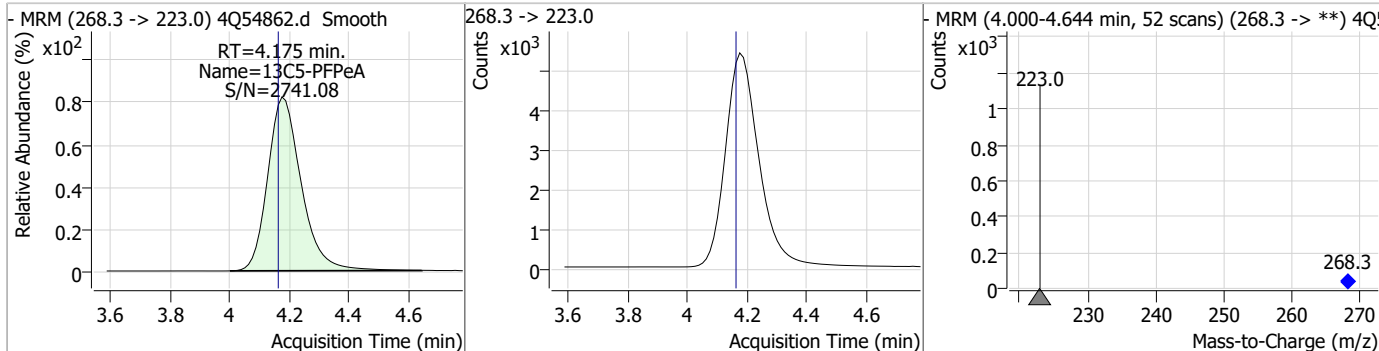


Perfluorinated Compounds by LC/MS/MS

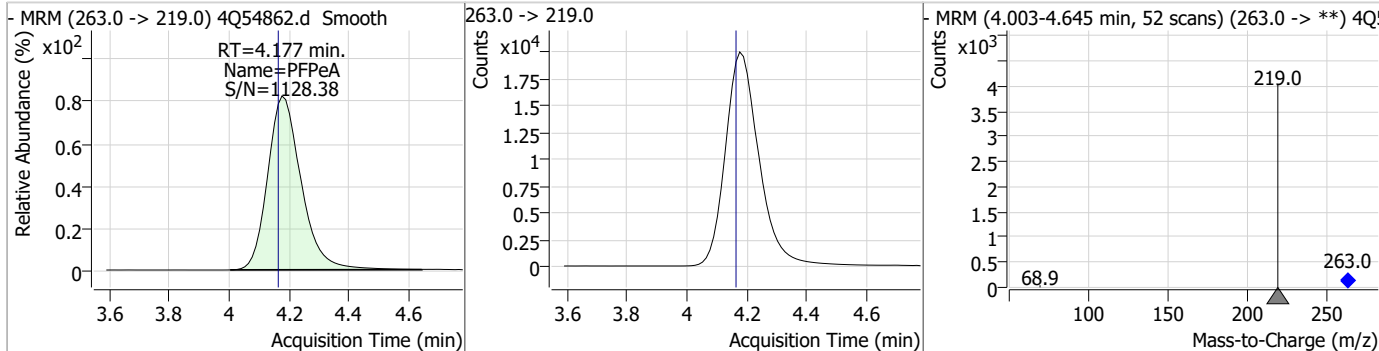
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	18.32	3.63	0.01	9495	241.0 -> 117.0	9.4	4.4	13.3



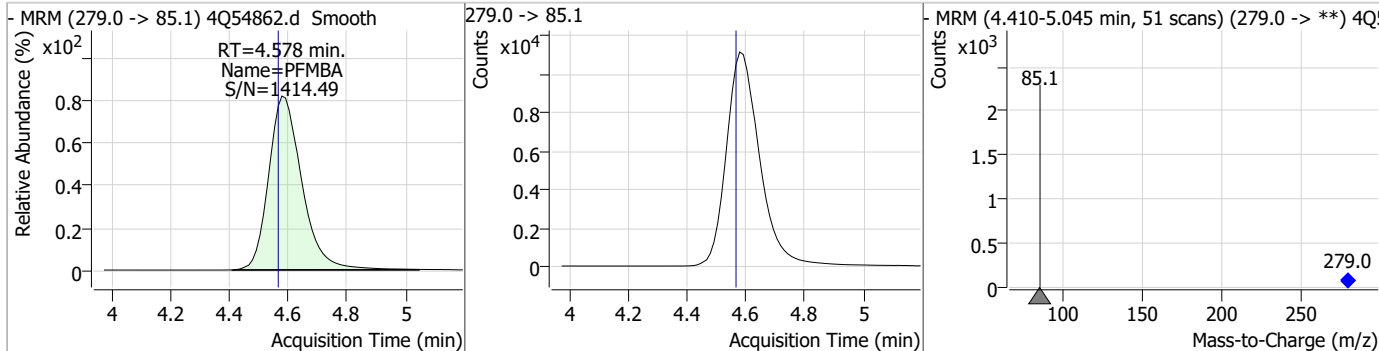
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.97	4.17	0.01	42215				



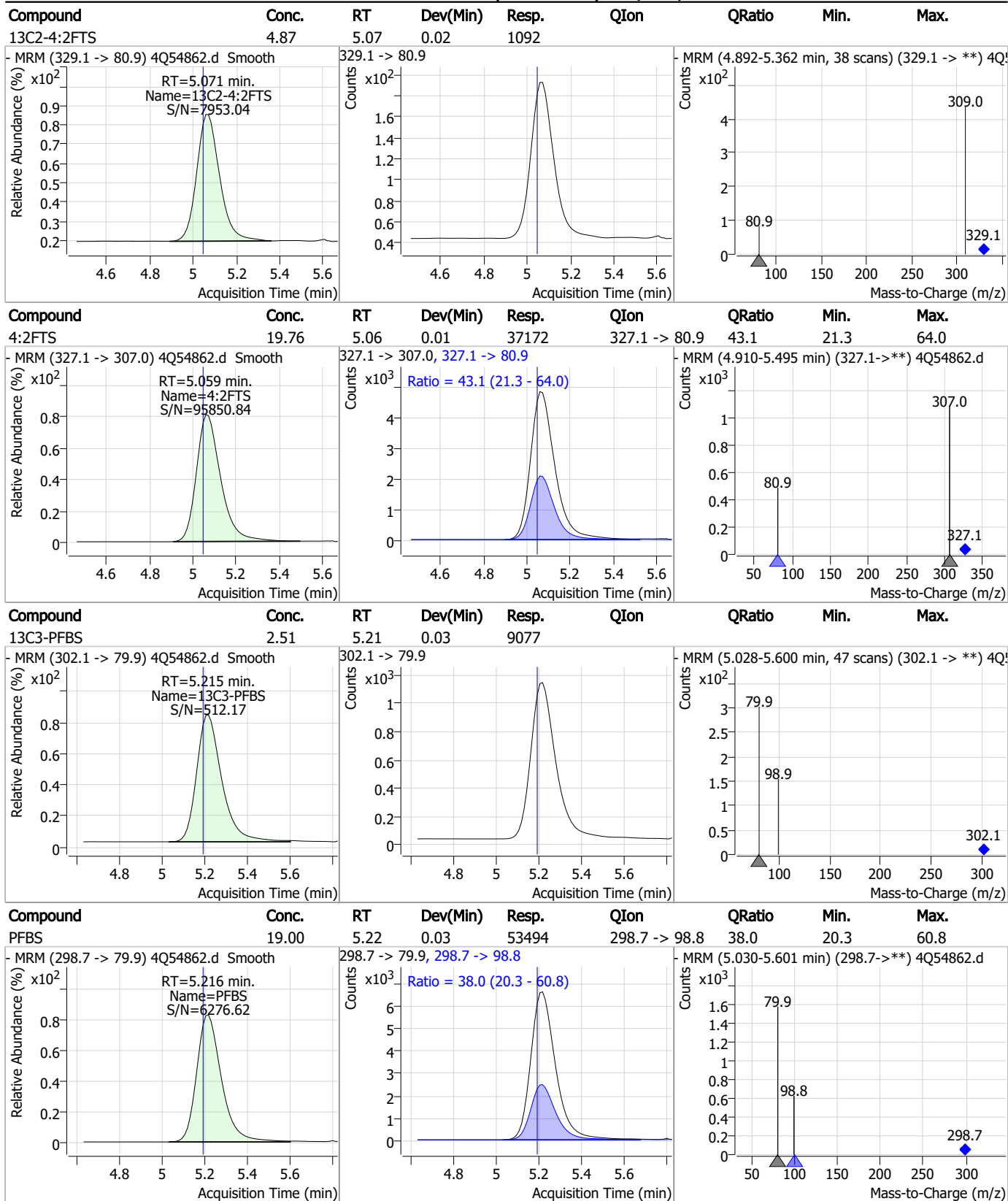
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	18.73	4.18	0.01	155608				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	19.04	4.58	0.01	87069				

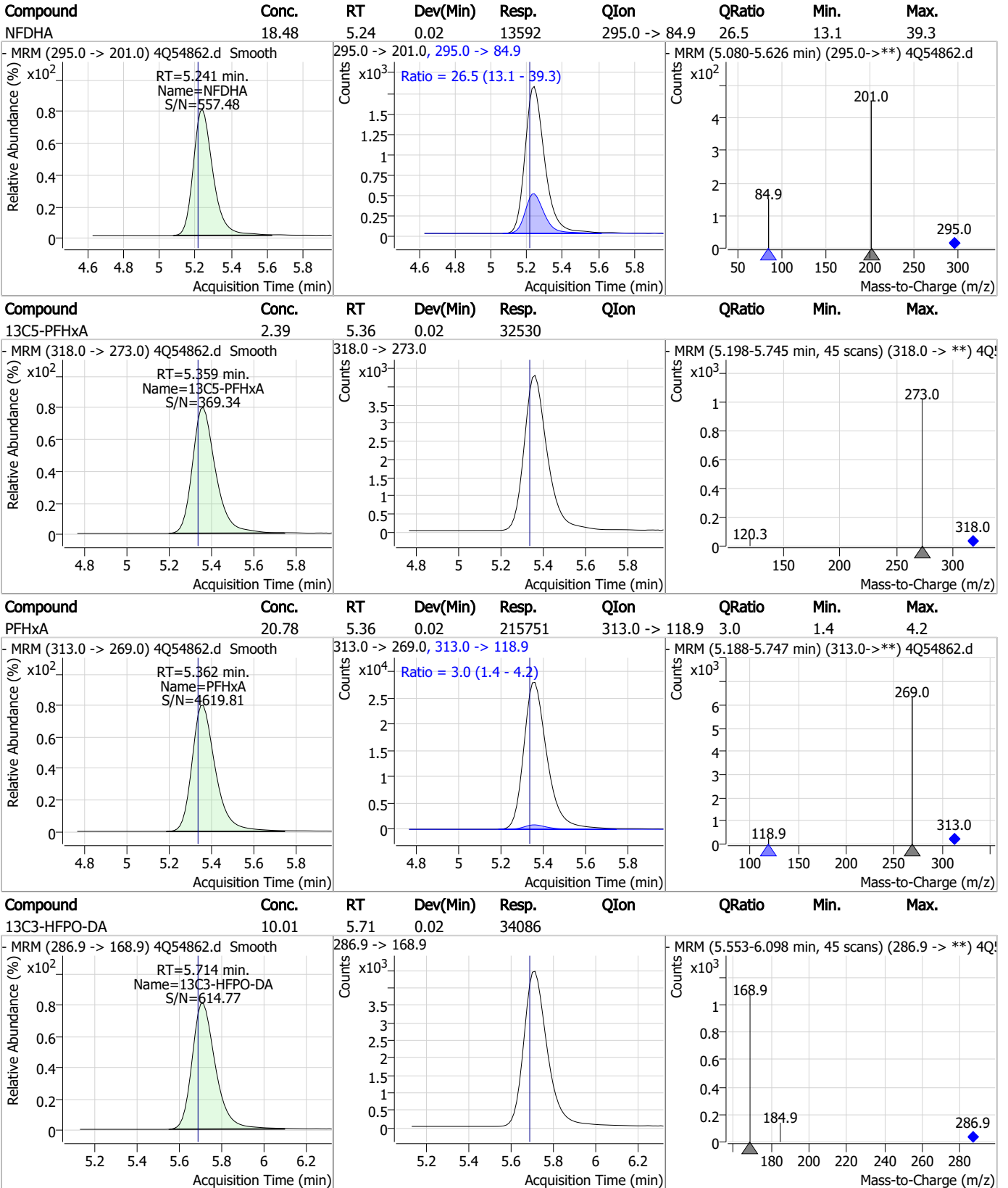


Perfluorinated Compounds by LC/MS/MS



7.7.11
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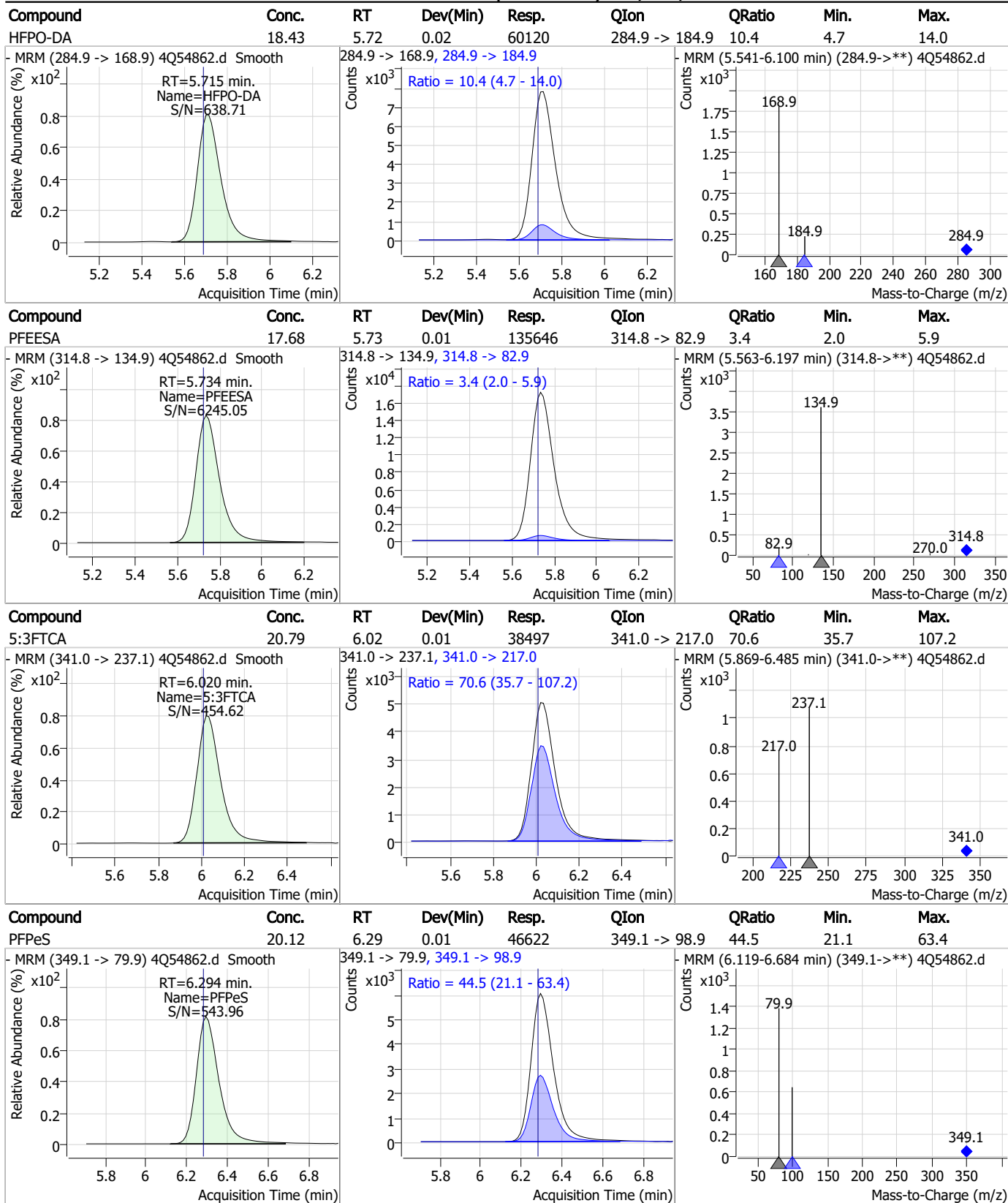
Perfluorinated Compounds by LC/MS/MS



7.7.11

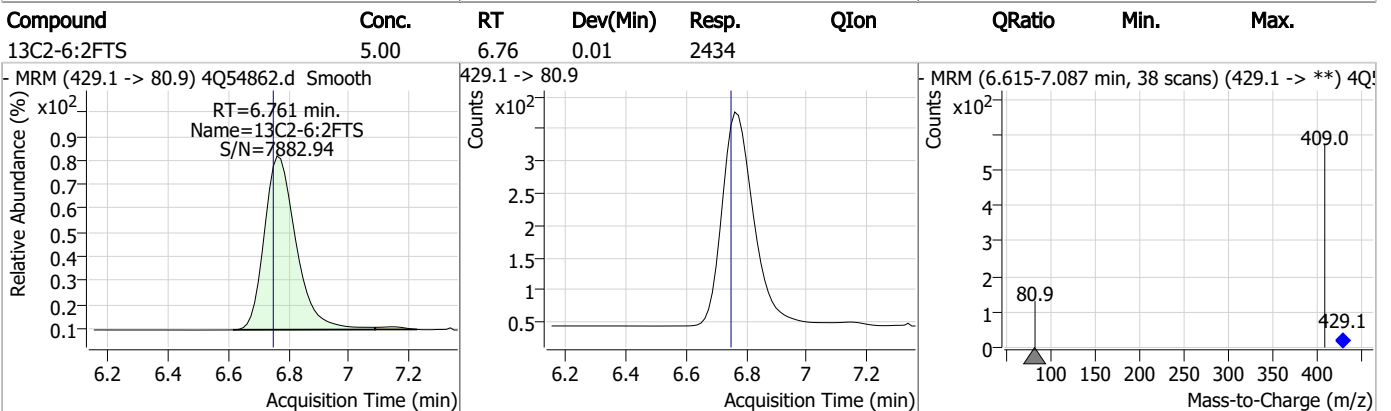
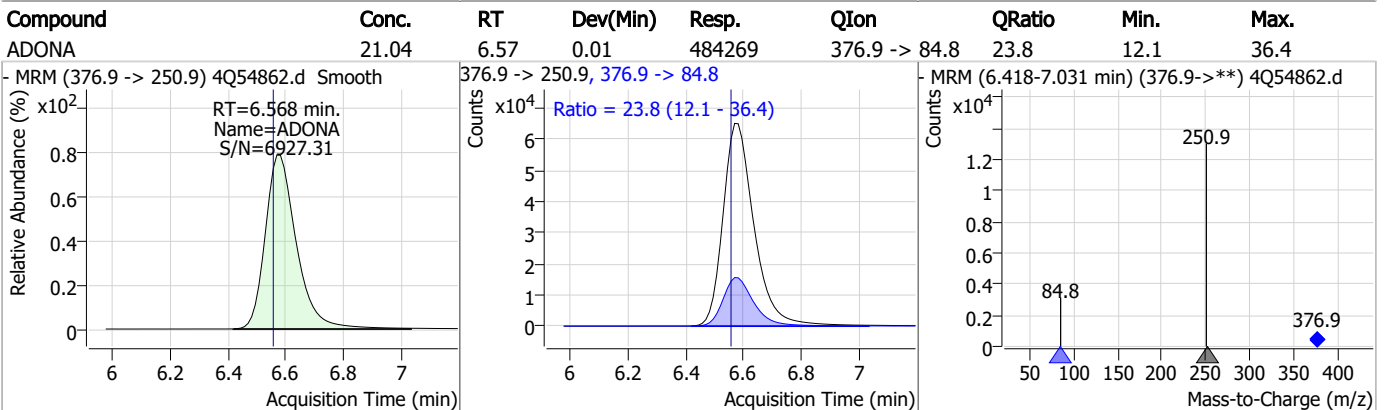
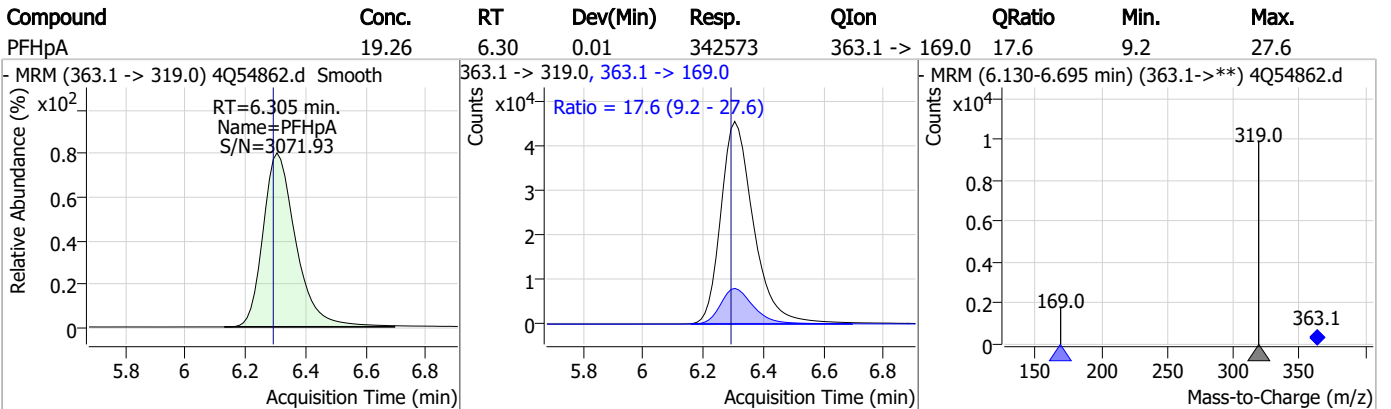
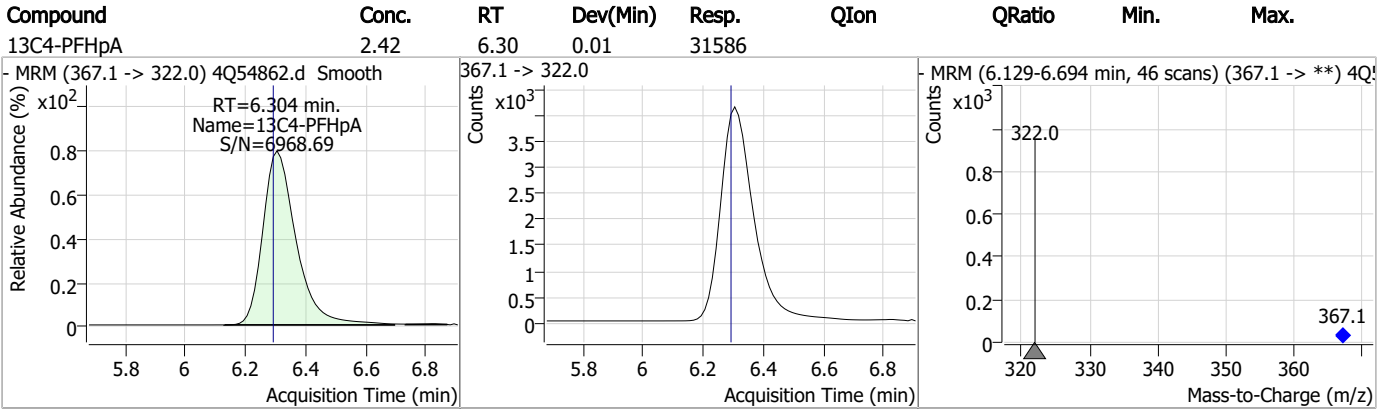
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Perfluorinated Compounds by LC/MS/MS

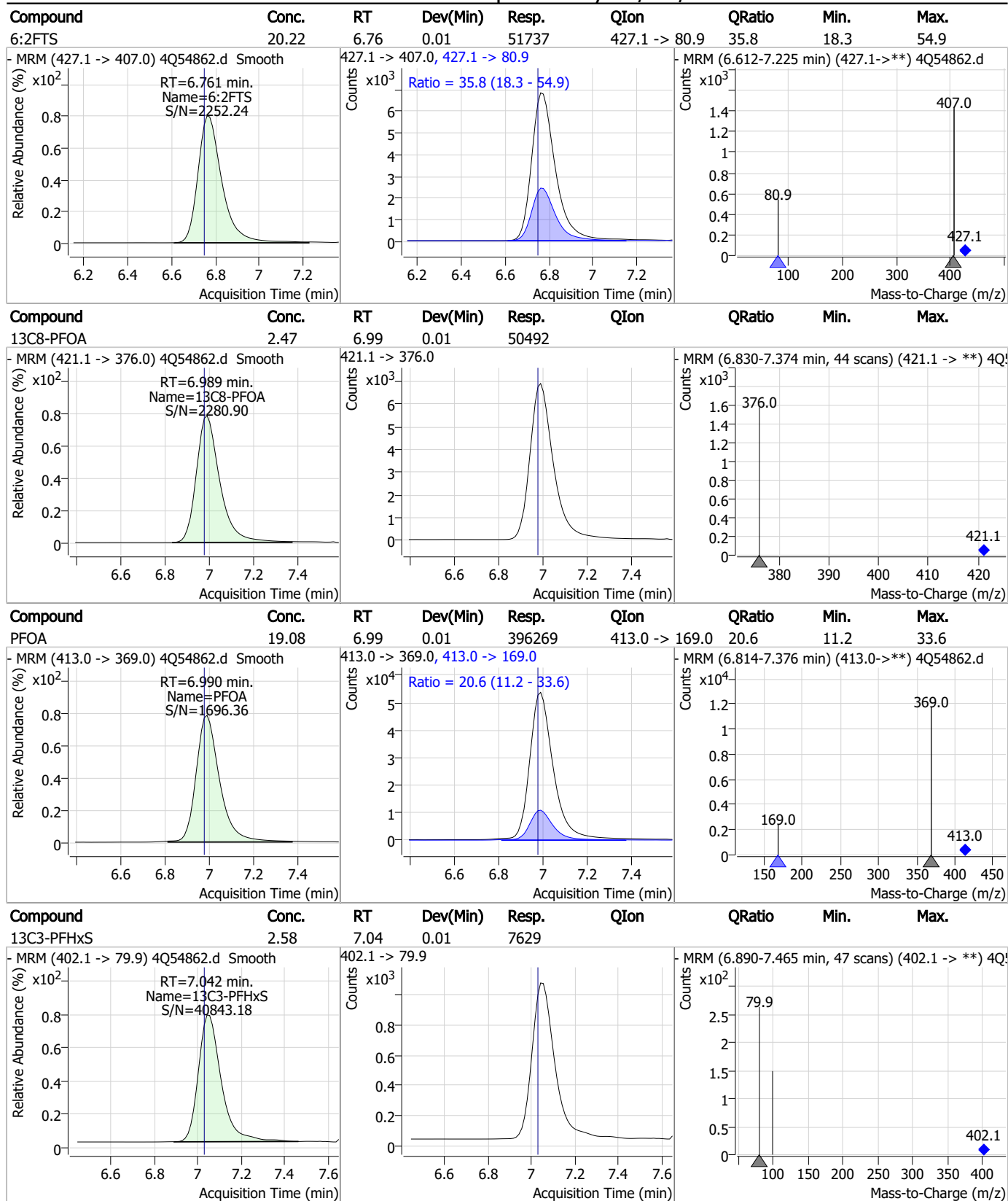


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Perfluorinated Compounds by LC/MS/MS



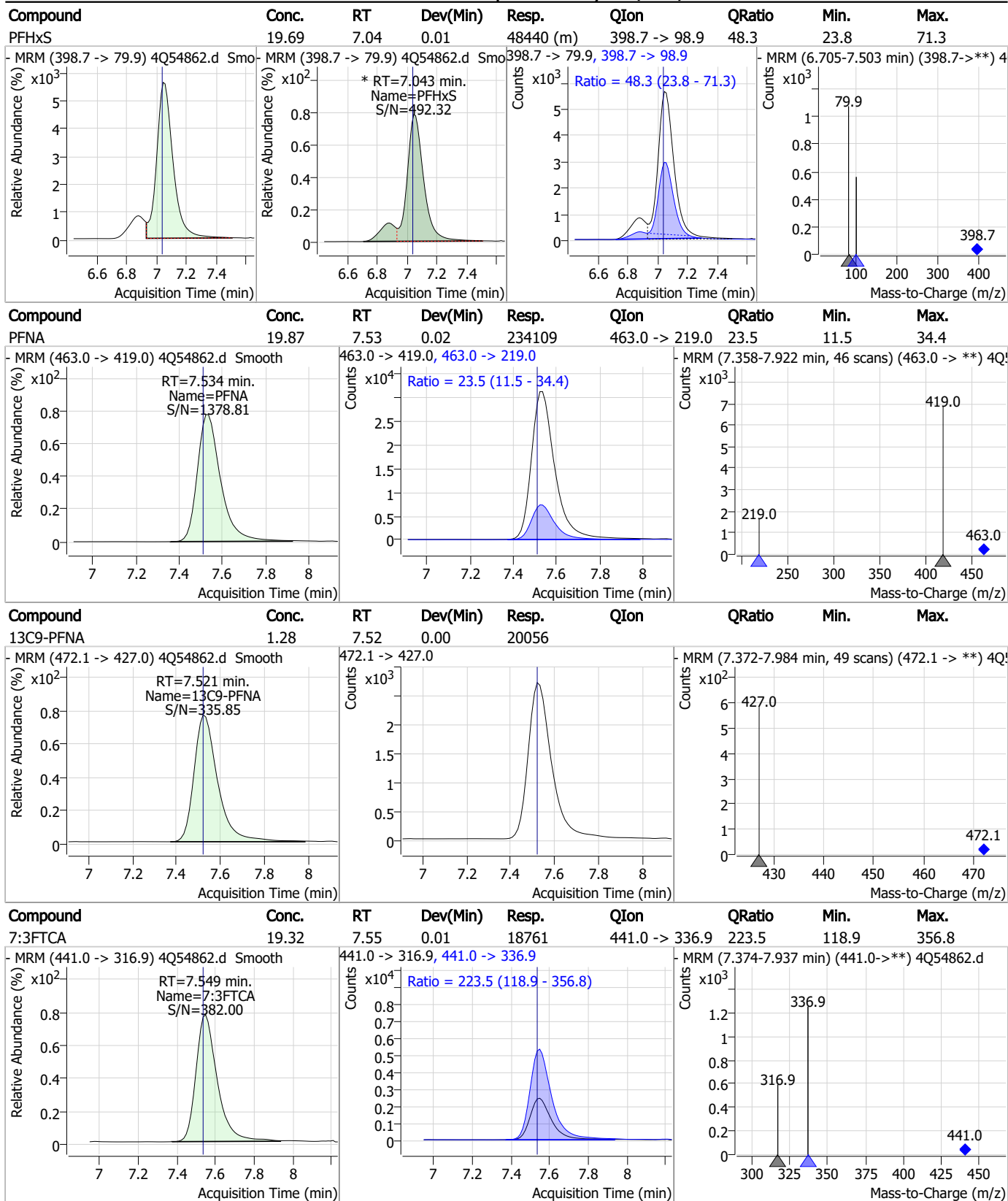
Perfluorinated Compounds by LC/MS/MS



7.7.11

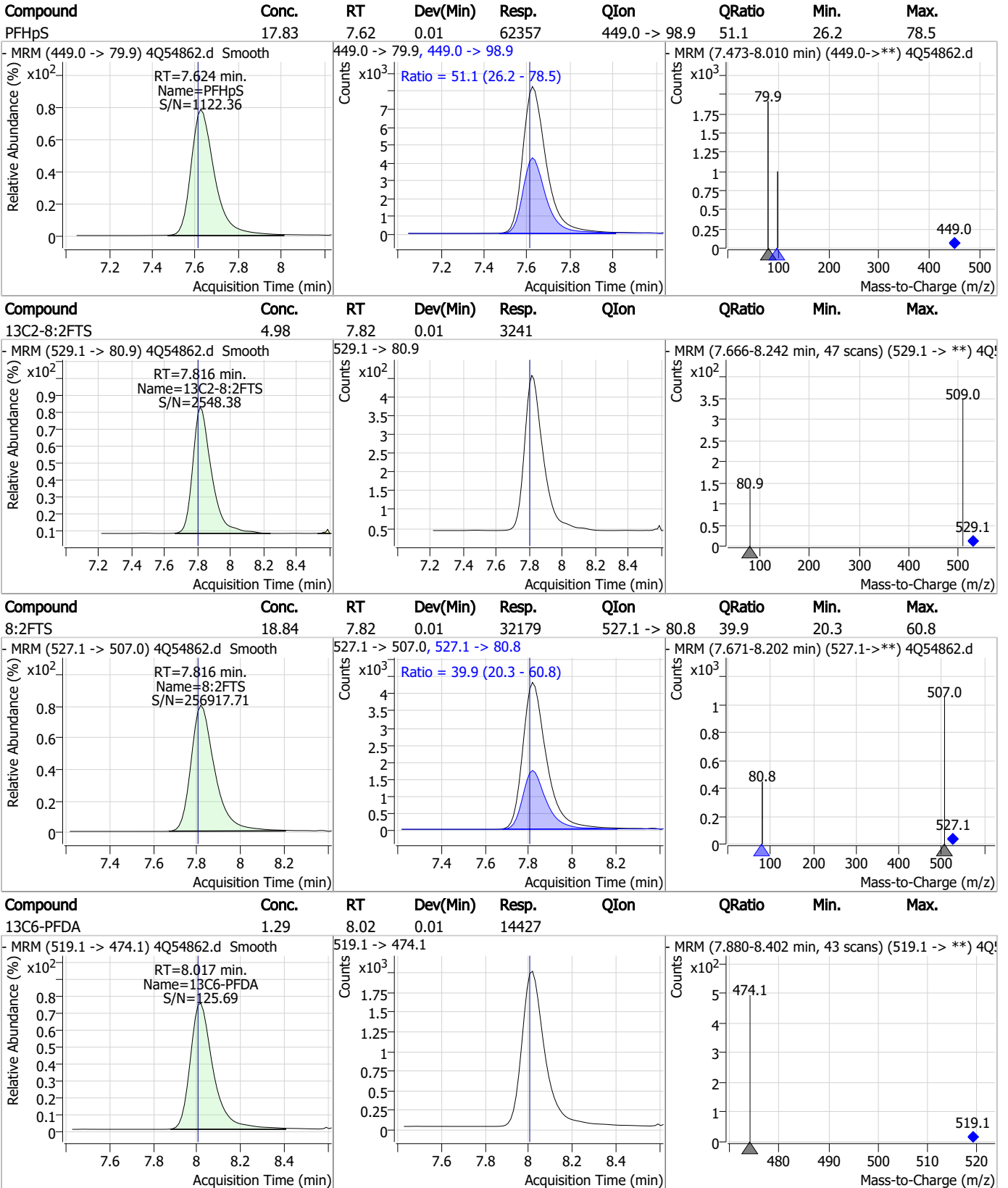
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

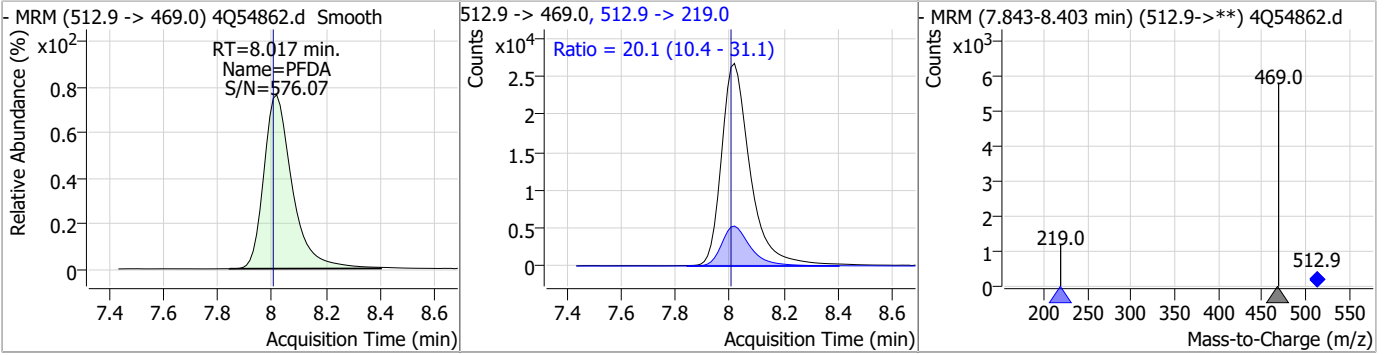


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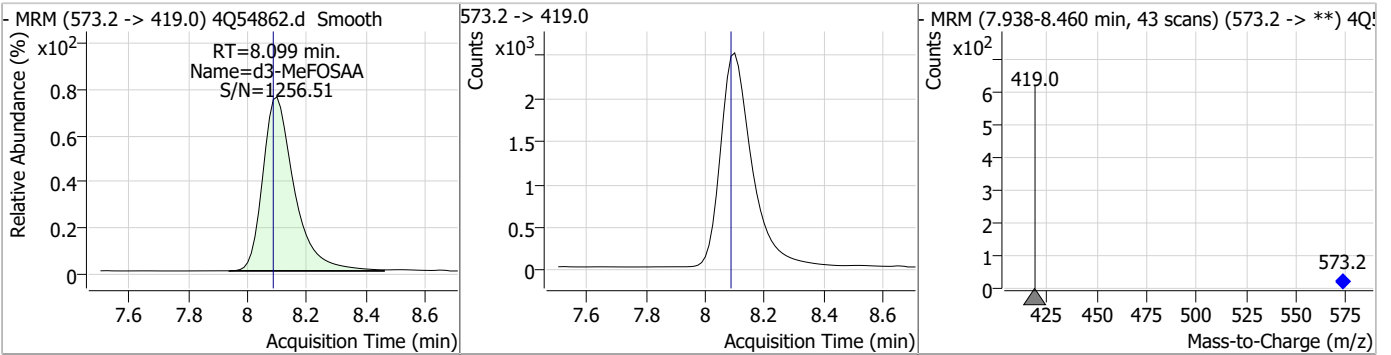
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Perfluorinated Compounds by LC/MS/MS

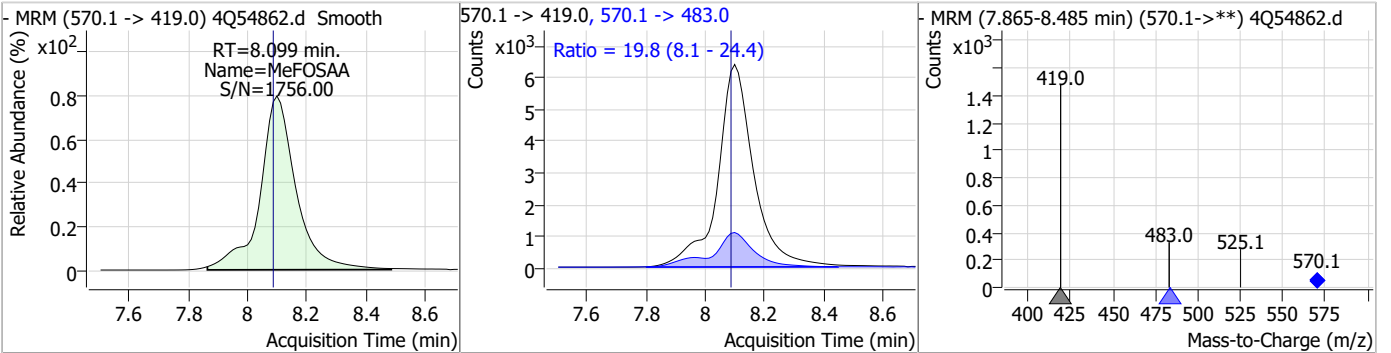
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	18.33	8.02	0.01	194270	512.9 -> 219.0	20.1	10.4	31.1



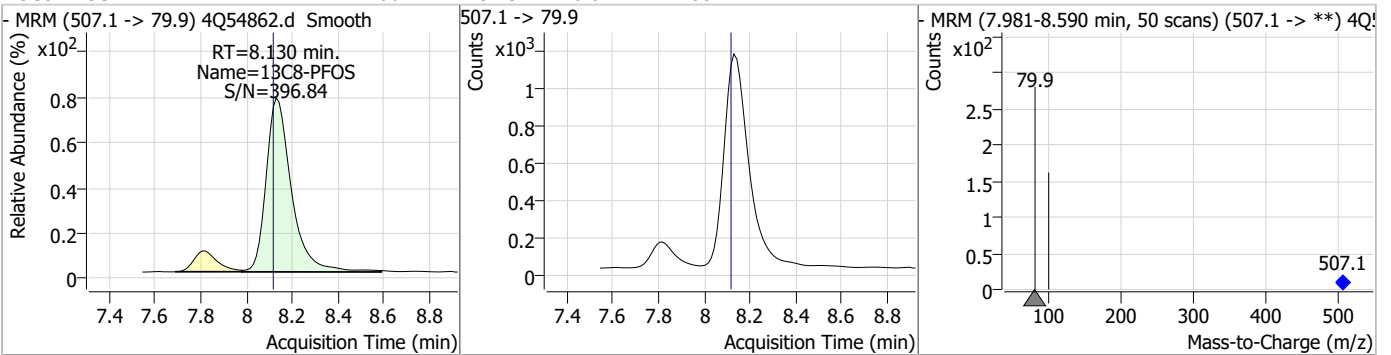
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.94	8.10	0.01	18370				



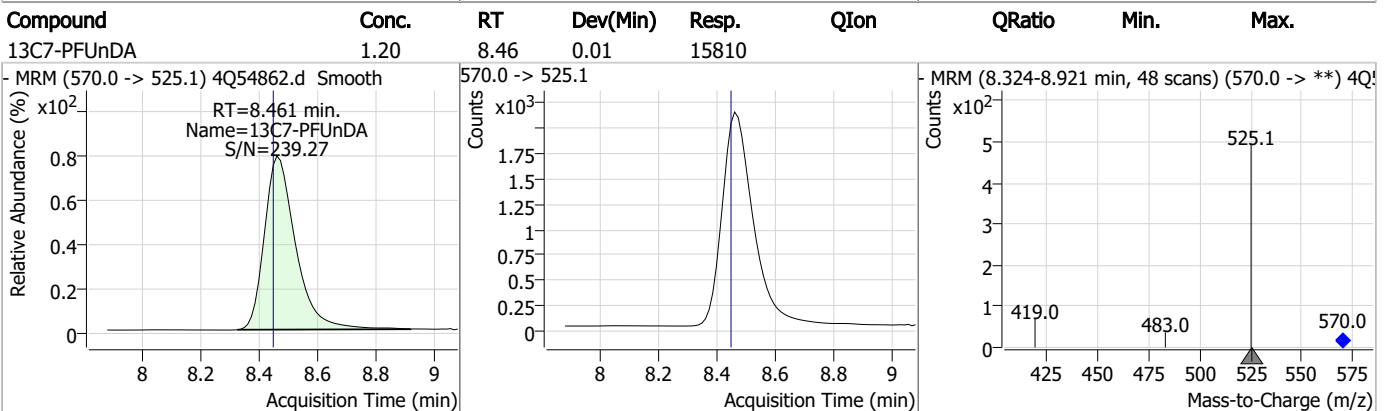
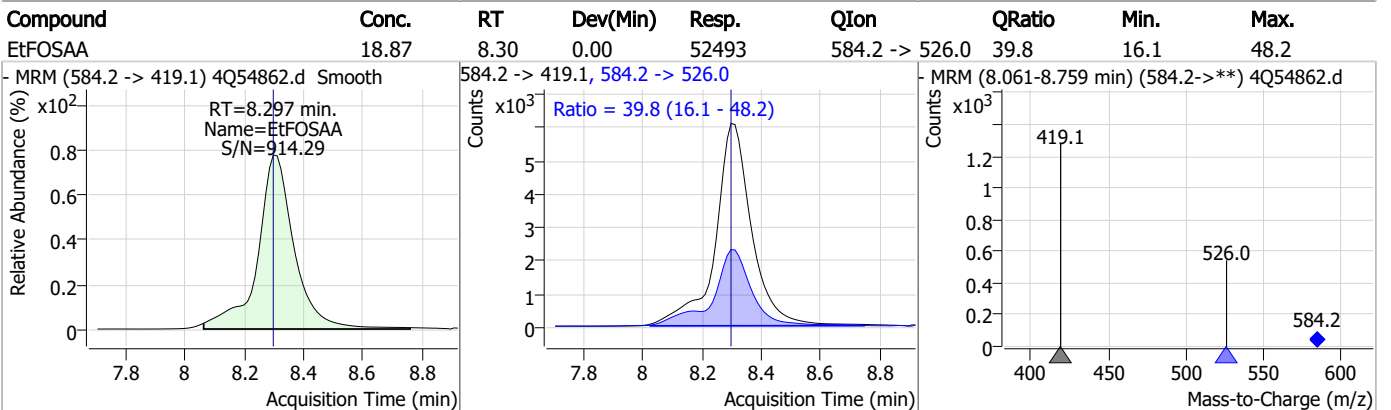
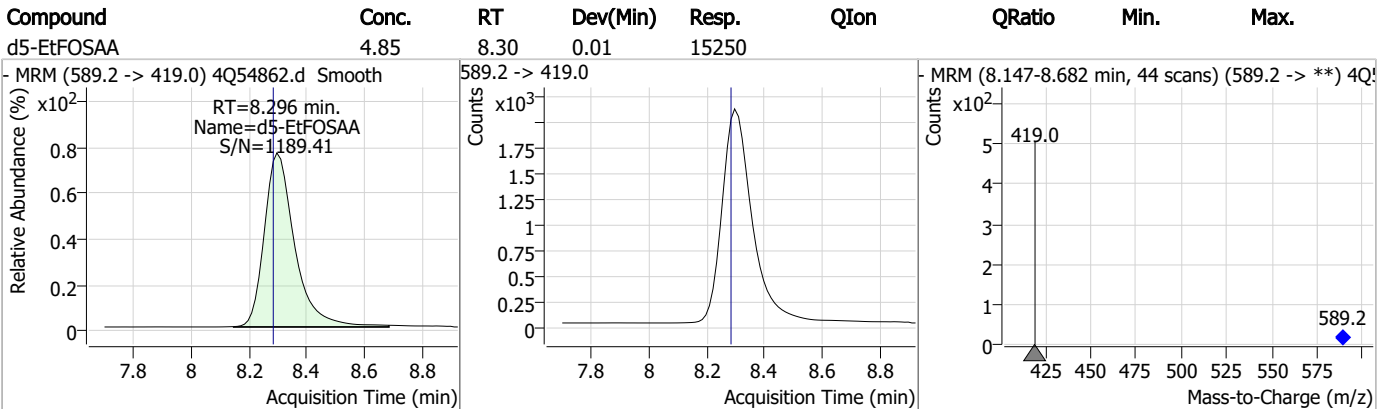
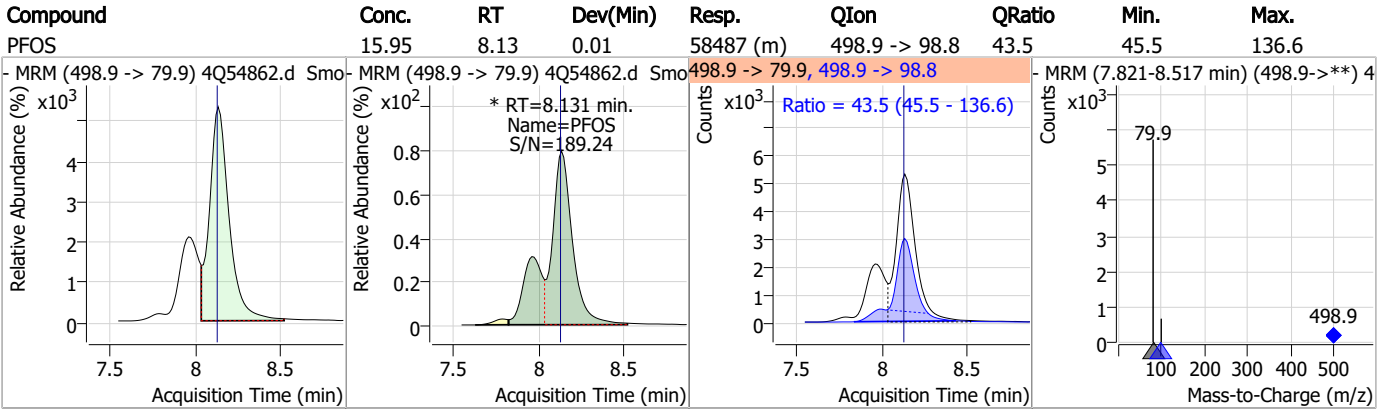
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.45	8.10	0.01	53868	570.1 -> 483.0	19.8	8.1	24.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.60	8.13	0.01	8811				



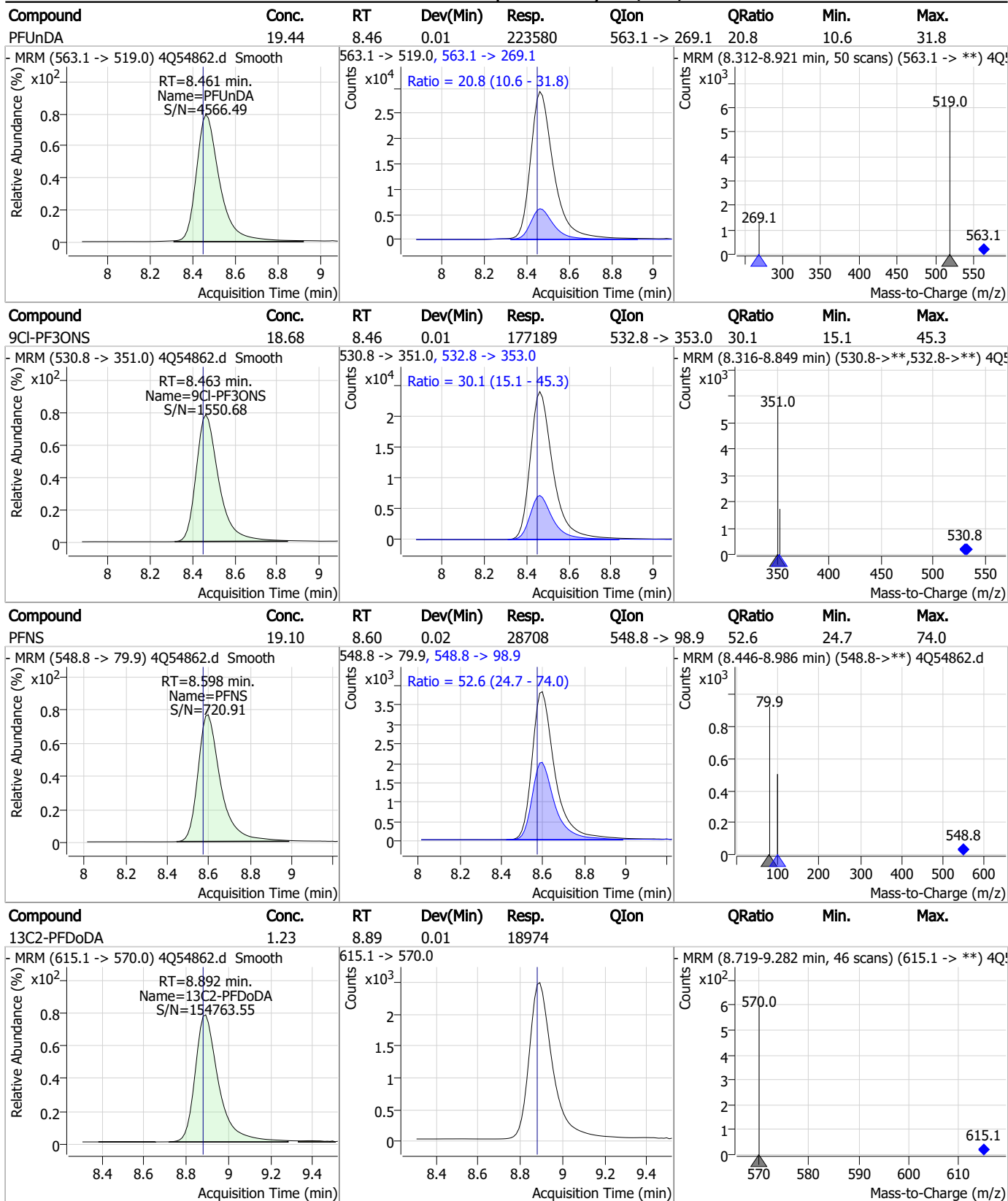
Perfluorinated Compounds by LC/MS/MS



7.7.11
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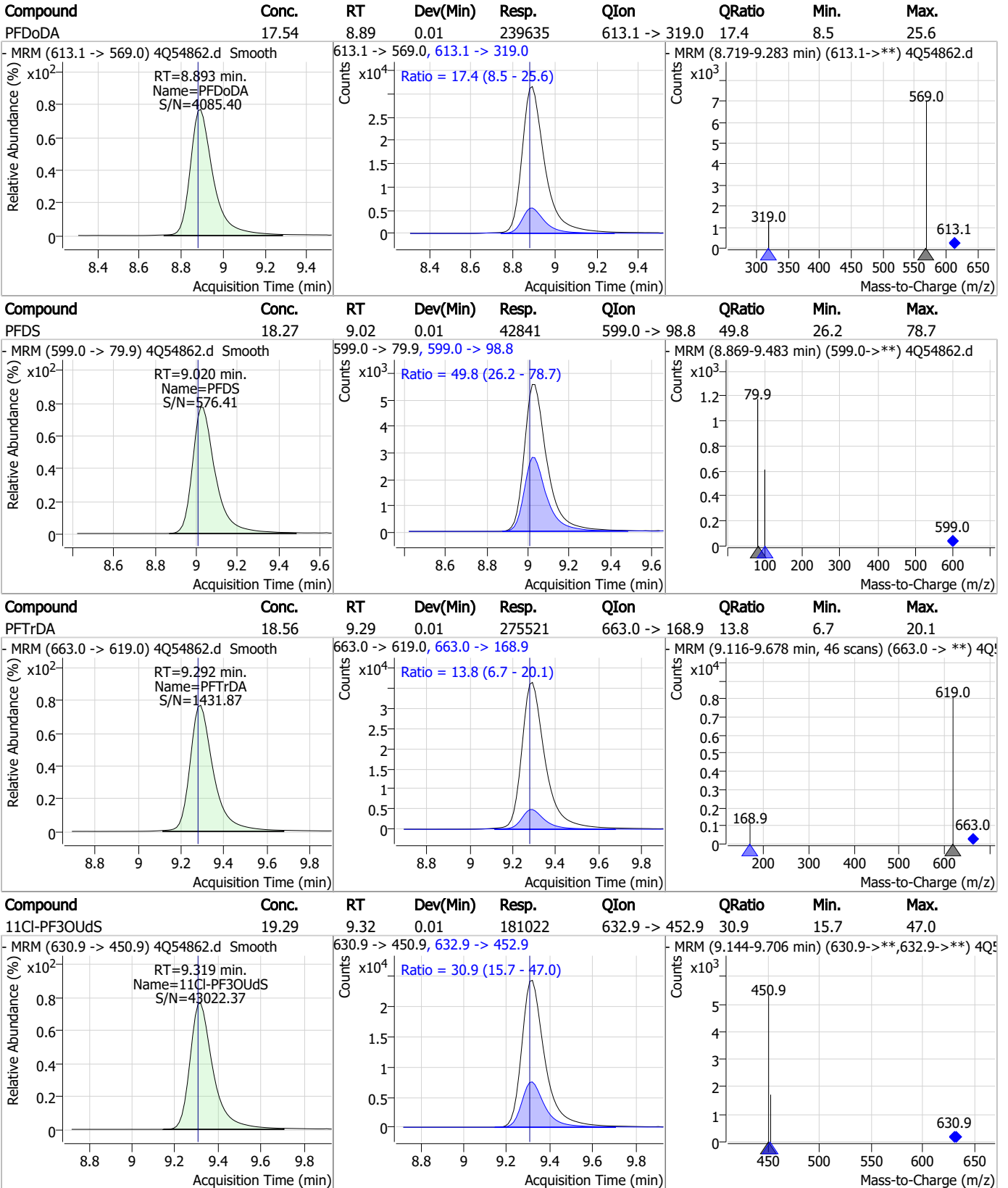


Perfluorinated Compounds by LC/MS/MS



7.7.11
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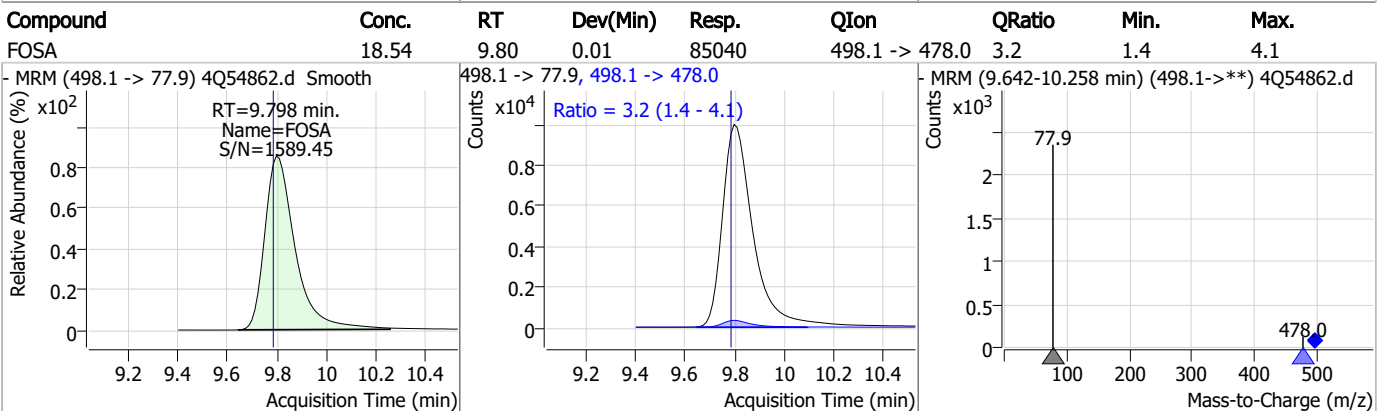
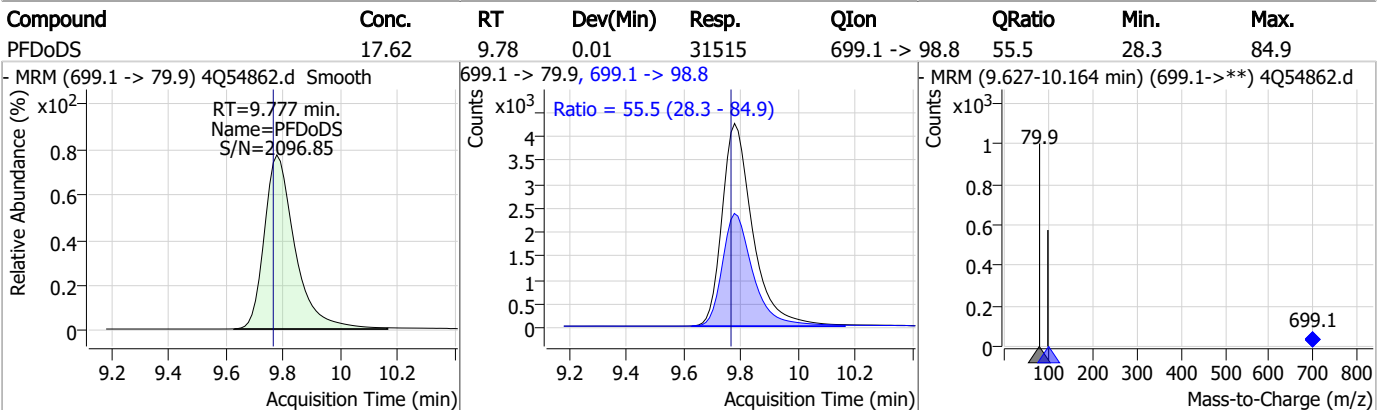
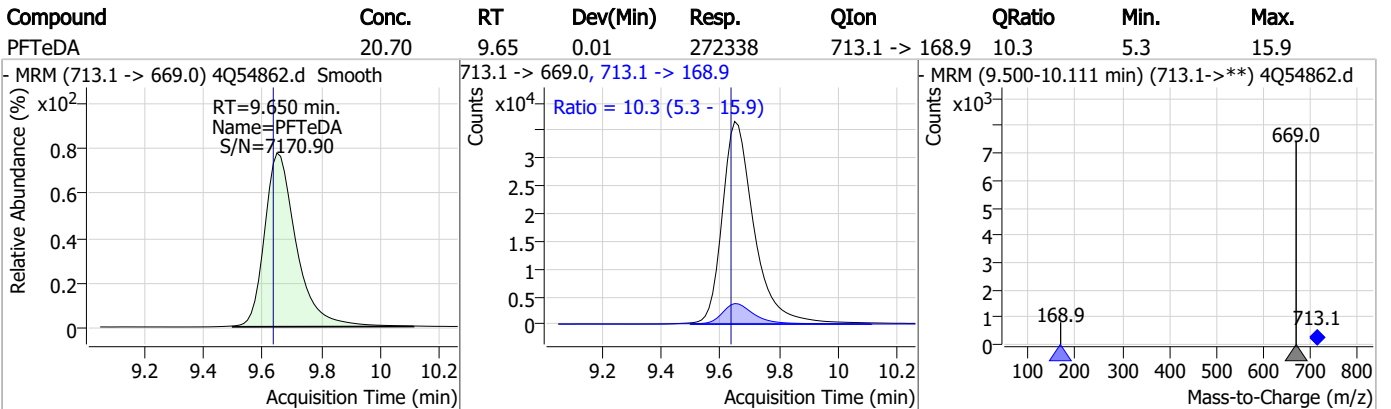
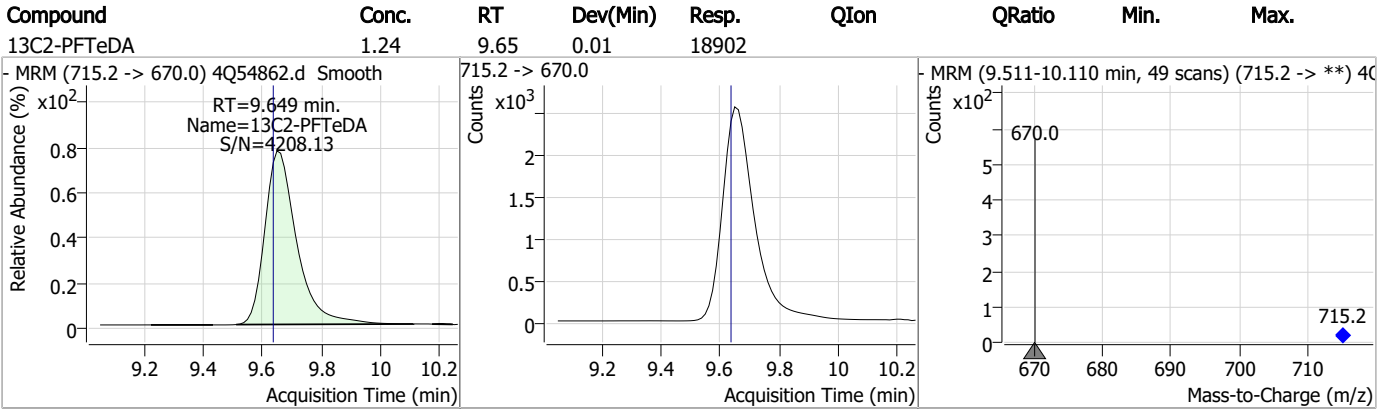
Perfluorinated Compounds by LC/MS/MS



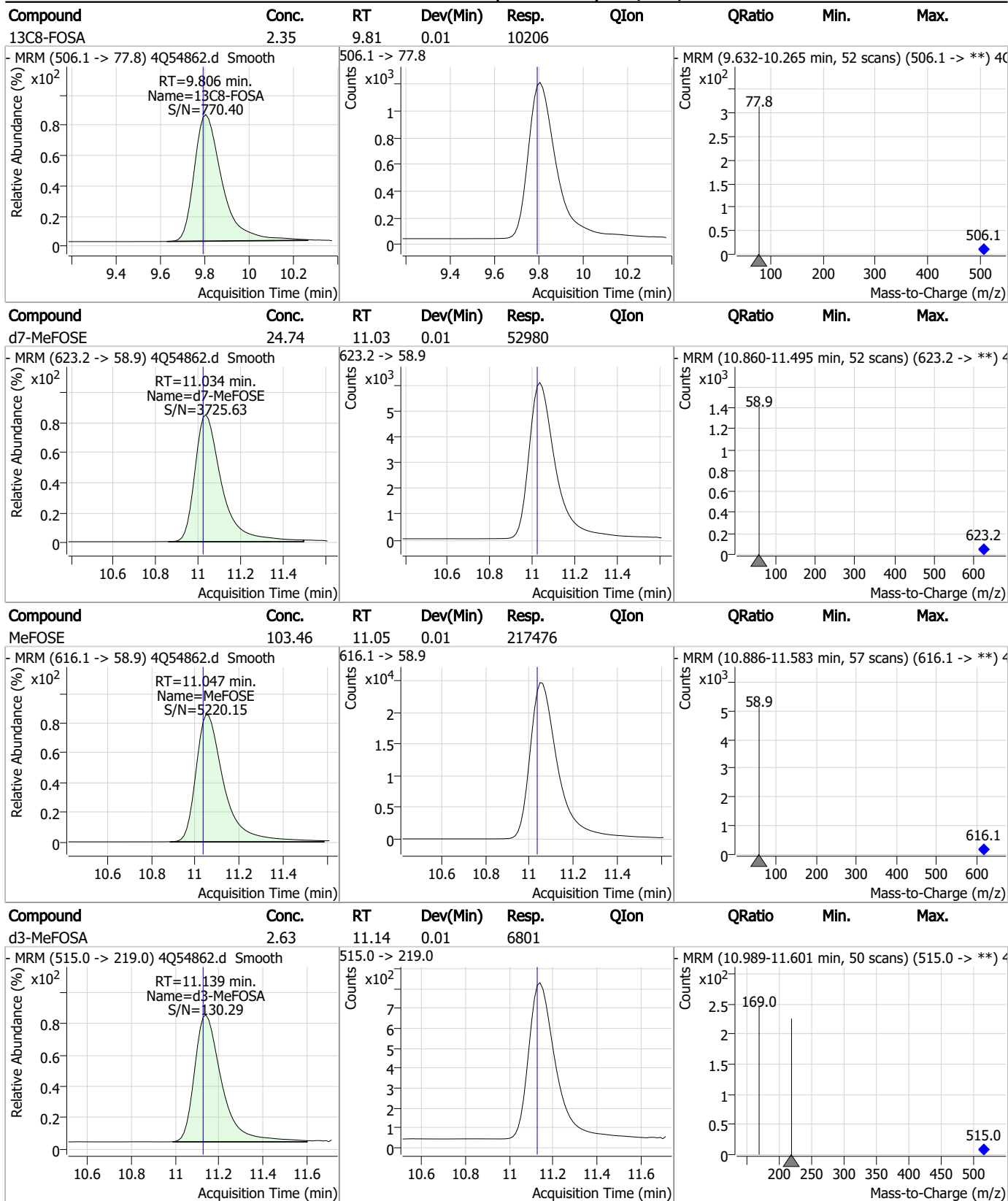
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Perfluorinated Compounds by LC/MS/MS

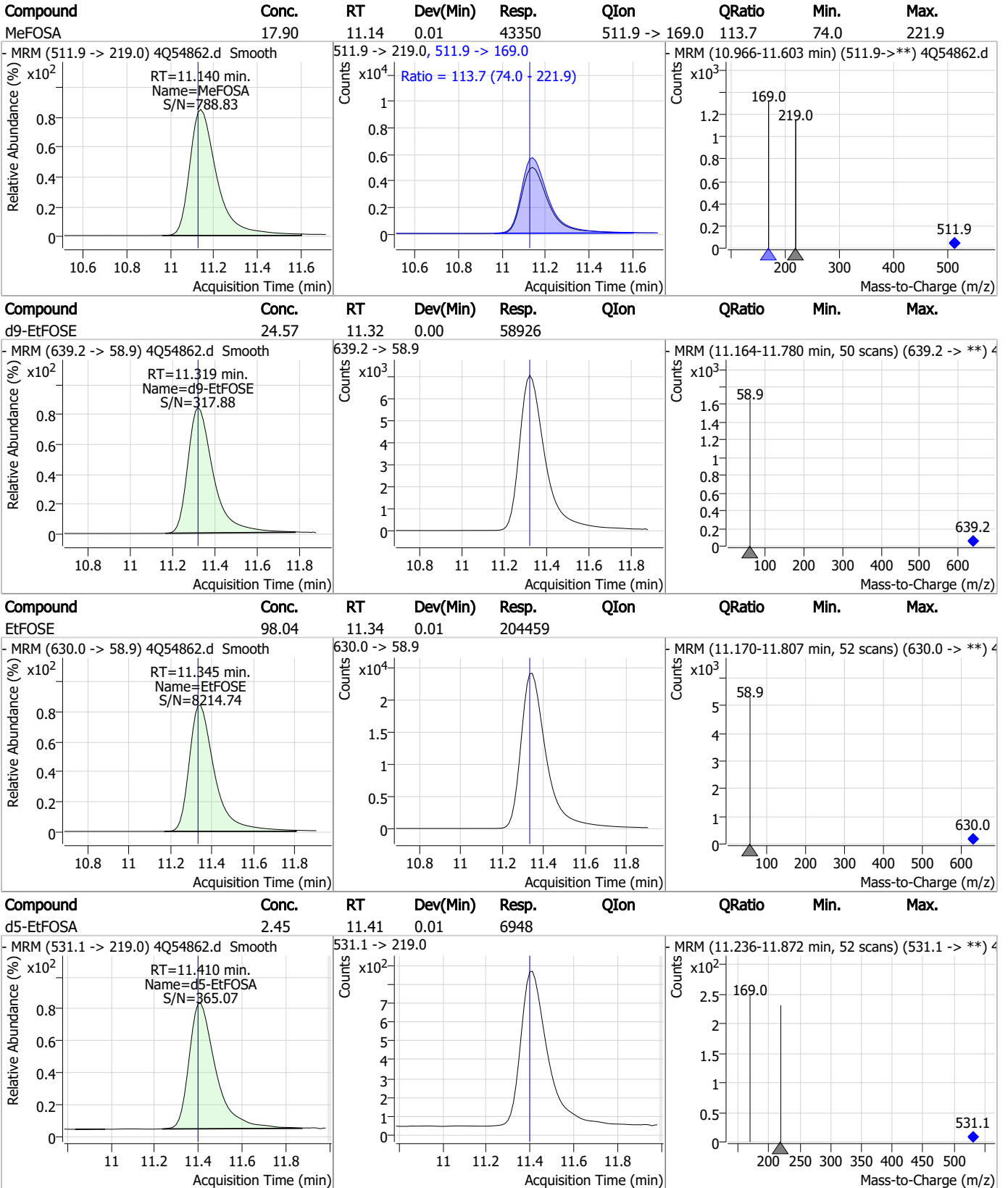


Perfluorinated Compounds by LC/MS/MS



7.7.11
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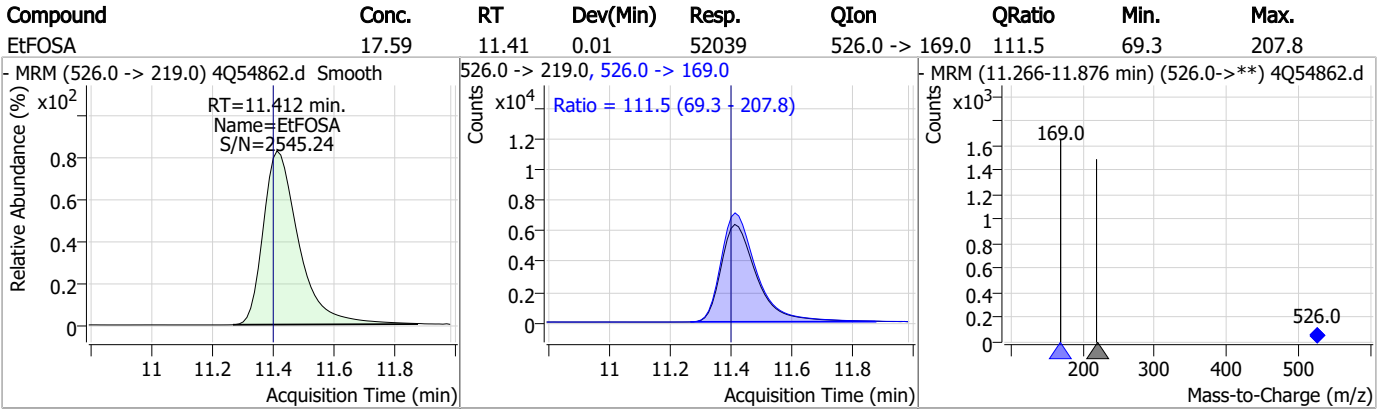
Perfluorinated Compounds by LC/MS/MS



7.7.11
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Perfluorinated Compounds by LC/MS/MS



7.7.11

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Manual Integration Approval Summary

Sample Number: S4Q804-ICV804 Method: EPA DRAFT 1633
Lab FileID: 4Q54862.D Analyst approved: 12/10/23 12:52 Anna Ludwig
Injection Time: 12/08/23 14:05 Supervisor approved: 12/11/23 15:42 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak

7.7.11.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54949.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/10/2023 3:34:40 PM
 Sample Name : cc804-1.0LL
 Vial : P1-A2
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	95638	10.00 µg/L	0.012
M5-PFPeA	4.175	268.3 -> 223.0	40215	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	31515	2.50 µg/L	0.012
M4-PFHpA	6.304	367.1 -> 322.0	31121	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	49427	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	18777	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	13664	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	16585	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	18214	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	17938	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	10798	2.50 µg/L	0.012
M3-PFBS	5.202	302.1 -> 79.9	9048	2.50 µg/L	0.013
M3-PFHxS	7.042	402.1 -> 79.9	7519	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	8066	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	1032	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	2083	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2961	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	17511	5.00 µg/L	0.012
M3-HFPO-DA	5.702	286.9 -> 168.9	29057	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	13977	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	55504	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	61478	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	6614	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	5956	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	6601	2.50 µg/L	0.012
13C3-PFBA	2.691	216.0 -> 172.0	45333	5.00 µg/L	0.013
18O2-PFHxS	7.041	403.0 -> 83.9	4453	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	54825	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	14315	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	18986	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	35470	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1032	4.88 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2083	4.54 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.9%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2961	4.82 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	18214	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	17938	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C3-PFBS	5.202	302.1 -> 79.9	9048	2.65 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C3-PFHxS	7.042	402.1 -> 79.9	7519	2.69 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C4-PFBA	2.686	216.8 -> 171.9	95638	10.05 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	6.304	367.1 -> 322.0	31121	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.347	318.0 -> 273.0	31515	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C5-PFPeA	4.175	268.3 -> 223.0	40215	4.94 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C6-PFDA	8.017	519.1 -> 474.1	13664	1.31 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C7-PFUnDA	8.461	570.0 -> 525.1	16585	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C8-FOSA	9.806	506.1 -> 77.8	10798	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-PFOA	6.989	421.1 -> 376.0	49427	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C8-PFOS	8.130	507.1 -> 79.9	8066	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C9-PFNA	7.521	472.1 -> 427.0	18777	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
d3-MeFOSAA	8.099	573.2 -> 419.0	17511	4.78 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	29057	8.90 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.0%	
d3-MeFOSA	11.139	515.0 -> 219.0	5956	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
d5-EtFOSAA	8.296	589.2 -> 419.0	13977	4.51 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.2%	
d7-MeFOSE	11.034	623.2 -> 58.9	55504	26.30 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.2%	
d9-EtFOSE	11.319	639.2 -> 58.9	61478	26.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d5-EtFOSA	11.398	531.1 -> 219.0	6614	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.6%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	1354	0.76 µg/L	100
		327.1 -> 80.9	577		
6:2FTS	6.761	427.1 -> 407.0	1793	0.82 µg/L	96
		427.1 -> 80.9	611		
8:2FTS	7.816	527.1 -> 507.0	1190	0.76 µg/L	99
		527.1 -> 80.8	471		
EtFOSAA	8.297	584.2 -> 419.1	543	0.21 µg/L	m 97
		584.2 -> 526.0	165		
FOSA	9.810	498.1 -> 77.9	983	0.20 µg/L	99
		498.1 -> 478.0	25		
MeFOSAA	8.112	570.1 -> 419.0	493	0.20 µg/L	91
		570.1 -> 483.0	99		
PFBA	2.695	212.8 -> 168.9	2376	0.78 µg/L	100
PFBS	5.203	298.7 -> 79.9	519	0.18 µg/L	97
		298.7 -> 98.8	201		
PFDA	8.005	512.9 -> 469.0	2171	0.22 µg/L	96
		512.9 -> 219.0	404		
PFDODA	8.880	613.1 -> 569.0	2893	0.22 µg/L	99
		613.1 -> 319.0	479		
PFDS	9.020	599.0 -> 79.9	437	0.20 µg/L	91

7.7.12
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	258			
PFHpA	6.305	363.1 -> 319.0	3216	0.18	µg/L	100
		363.1 -> 169.0	595			
PFHpS	7.637	449.0 -> 79.9	445	0.14	µg/L	64
		449.0 -> 98.9	347			
PFHxA	5.350	313.0 -> 269.0	1921	0.19	µg/L	100
		313.0 -> 118.9	54			
PFHxS	7.043	398.7 -> 79.9	466	0.19	µg/L	m 95
		398.7 -> 98.9	236			
PFNA	7.522	463.0 -> 419.0	2323	0.21	µg/L	97
		463.0 -> 219.0	568			
PFNS	8.598	548.8 -> 79.9	330	0.24	µg/L	82
		548.8 -> 98.9	203			
PFOA	6.990	413.0 -> 369.0	4203	0.21	µg/L	96
		413.0 -> 169.0	858			
PFOS	8.119	498.9 -> 79.9	784	0.23	µg/L	#m 49
		498.9 -> 98.8	331			
PFPeA	4.177	263.0 -> 219.0	2976	0.38	µg/L	100
PFPeS	6.294	349.1 -> 79.9	508	0.22	µg/L	81
		349.1 -> 98.9	155			
PFTeDA	9.650	713.1 -> 669.0	2263	0.18	µg/L	97
		713.1 -> 168.9	218			
PFTrDA	9.279	663.0 -> 619.0	2777	0.19	µg/L	99
		663.0 -> 168.9	381			
PFUnDA	8.461	563.1 -> 519.0	2241	0.19	µg/L	96
		563.1 -> 269.1	429			
11CI-PF3OUdS	9.306	630.9 -> 450.9	3290	0.41	µg/L	97
		632.9 -> 452.9	1089			
9CI-PF3ONS	8.463	530.8 -> 351.0	3184	0.39	µg/L	94
		532.8 -> 353.0	1072			
ADONA	6.568	376.9 -> 250.9	8486	0.43	µg/L	99
		376.9 -> 84.8	2114			
HFPO-DA	5.703	284.9 -> 168.9	1013	0.36	µg/L	88
		284.9 -> 184.9	139			
3:3FTCA	3.630	241.0 -> 177.0	409	0.84	µg/L	91
		241.0 -> 117.0	50			
5:3FTCA	6.033	341.0 -> 237.1	7739	4.31	µg/L	98
		341.0 -> 217.0	5679			
7:3FTCA	7.549	441.0 -> 316.9	4608	4.90	µg/L	88
		441.0 -> 336.9	10029			
EtFOSA	11.412	526.0 -> 219.0	1035	0.37	µg/L	m 85
		526.0 -> 169.0	1621			
EtFOSE	11.332	630.0 -> 58.9	2179	1.00	µg/L	100
MeFOSA	11.140	511.9 -> 219.0	820	0.39	µg/L	m 96
		511.9 -> 169.0	1254			
MeFOSE	11.047	616.1 -> 58.9	2149	0.98	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	335	0.20	µg/L	97
		699.1 -> 98.8	182			
NFDHA	5.229	295.0 -> 201.0	253	0.35	µg/L	90
		295.0 -> 84.9	79			
PFMBA	4.578	279.0 -> 85.1	1582	0.36	µg/L	100
PFMPA	3.315	229.0 -> 84.9	1811	0.38	µg/L	100
PFEESA	5.734	314.8 -> 134.9	2788	0.38	µg/L	96
		314.8 -> 82.9	70			

= Qualifier out of range, m = manually integrated, + = Area summed

7.7.12
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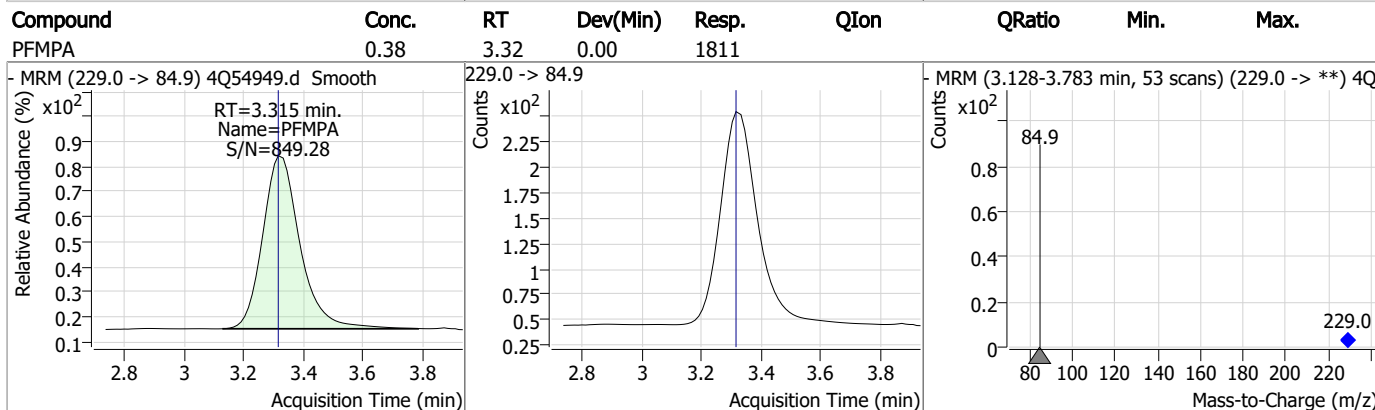
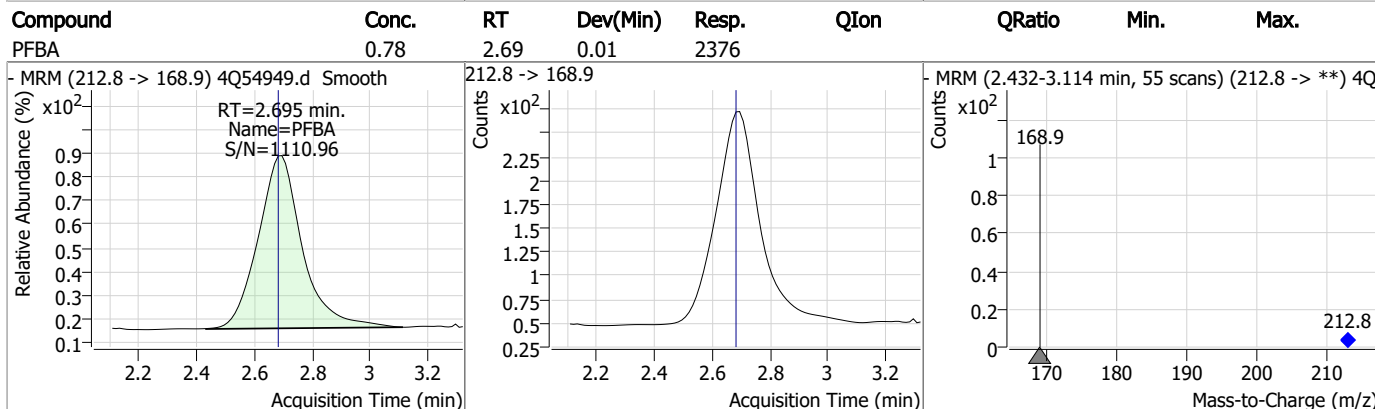
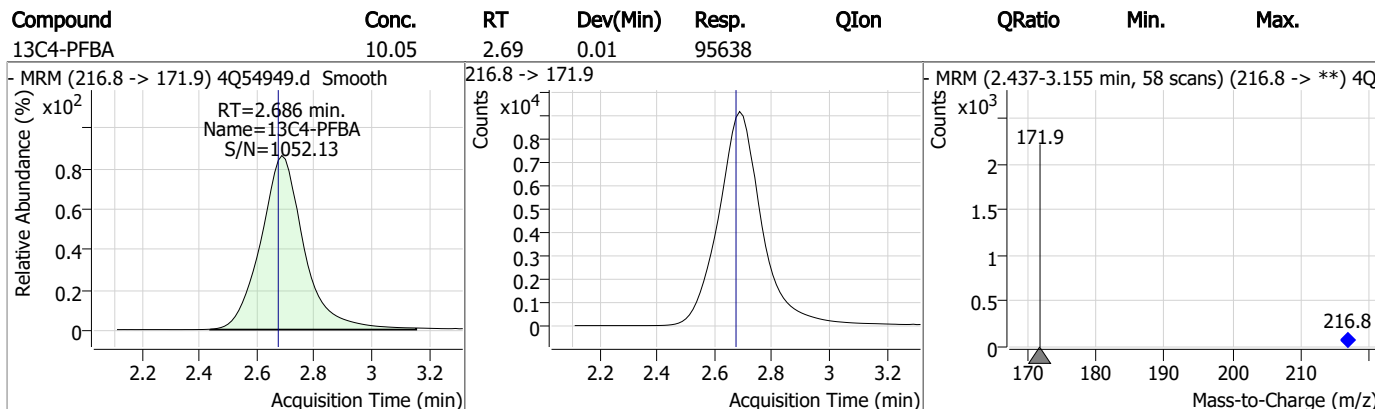
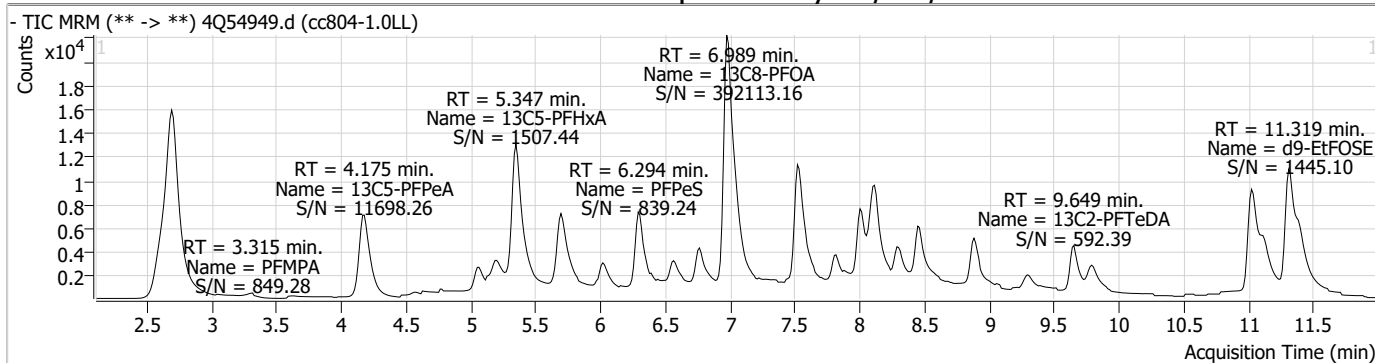
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.7.12

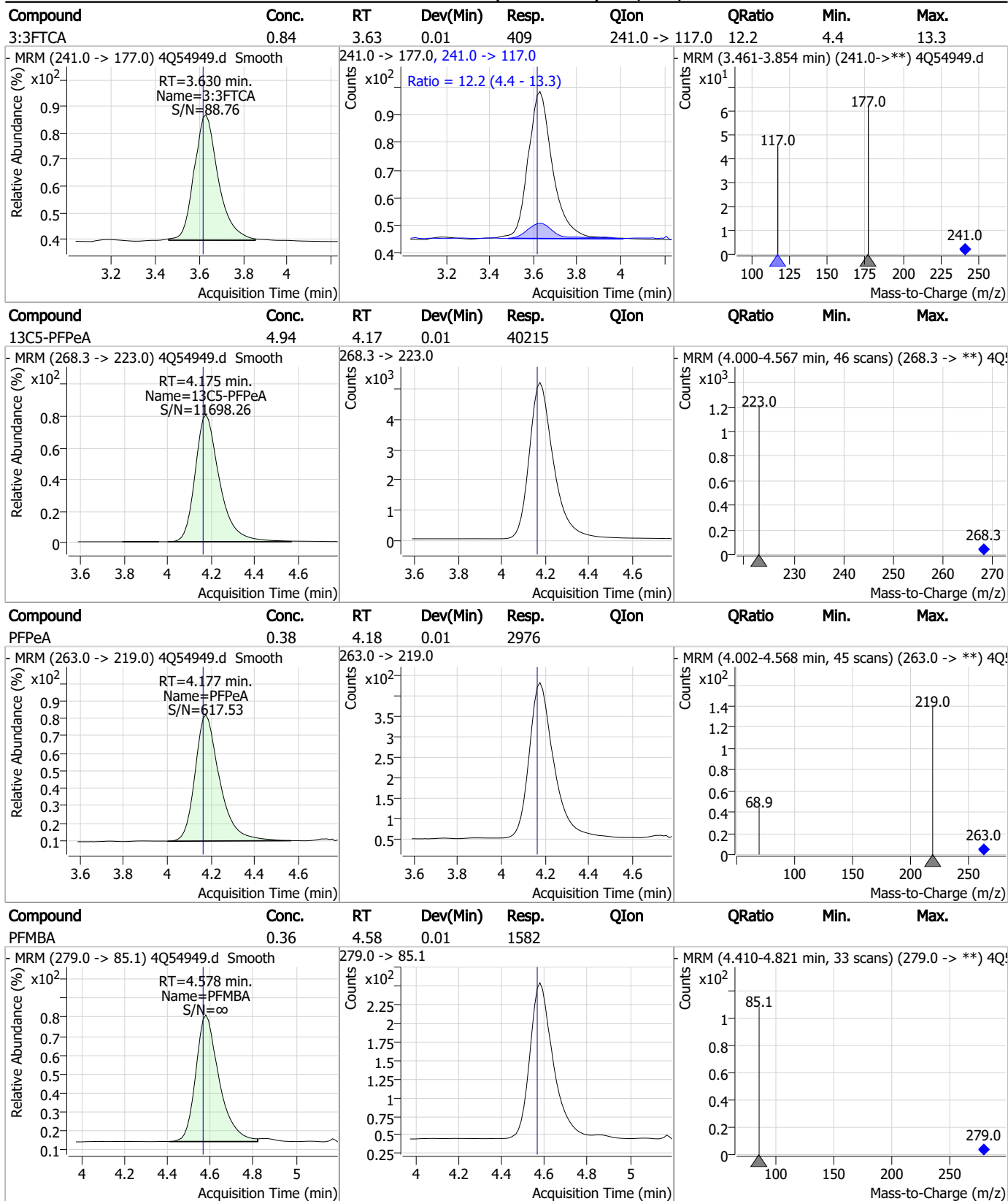
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Perfluorinated Compounds by LC/MS/MS



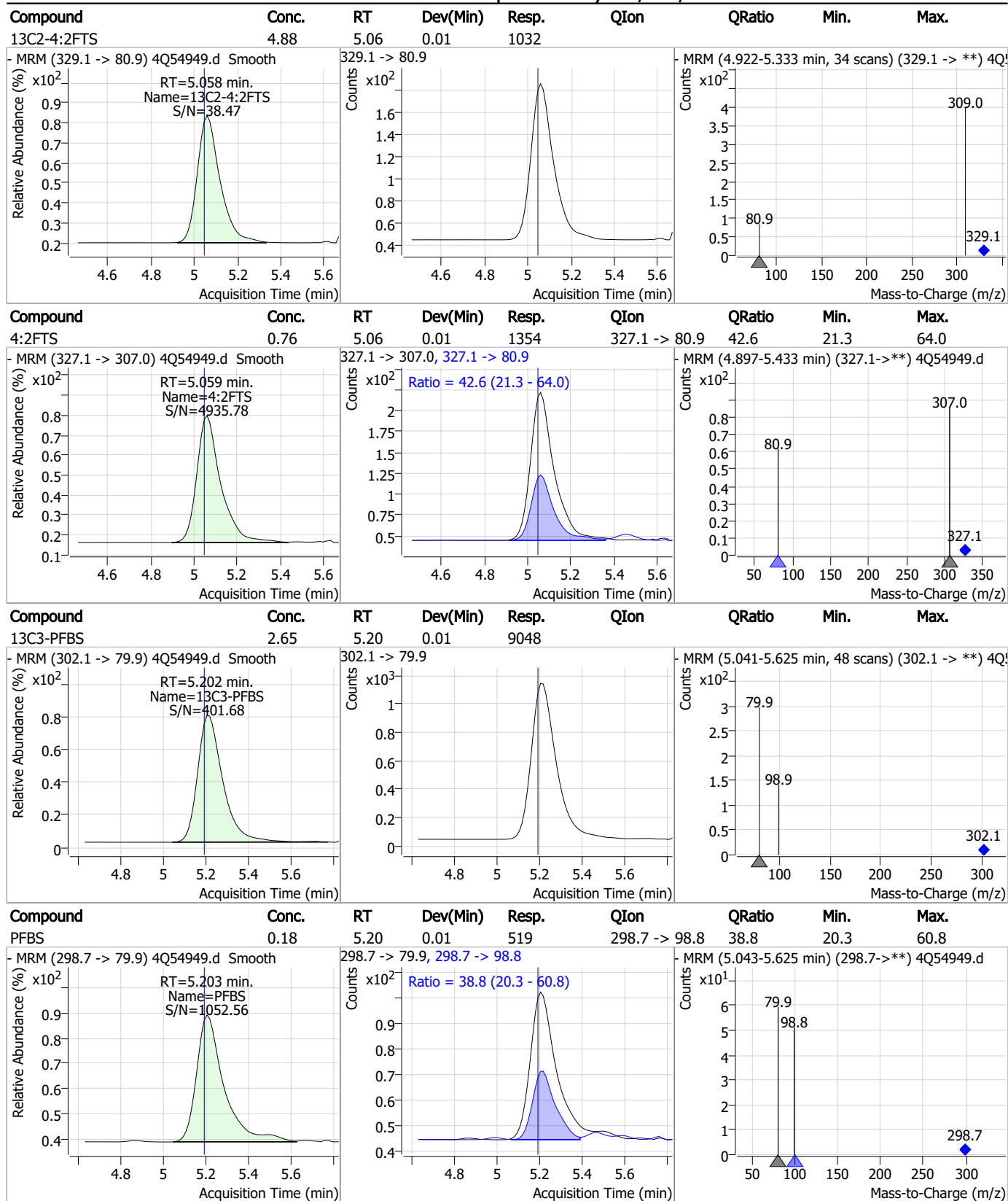
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Perfluorinated Compounds by LC/MS/MS



7.7.12
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Perfluorinated Compounds by LC/MS/MS

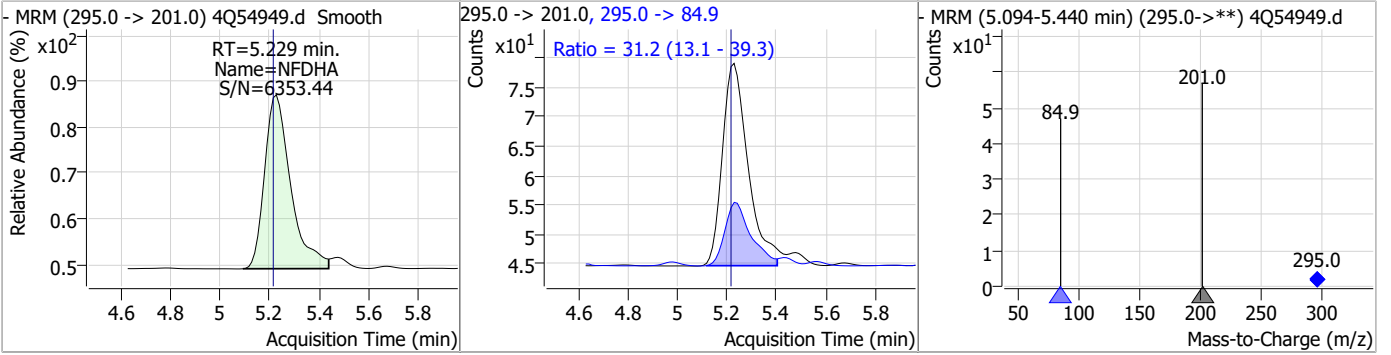


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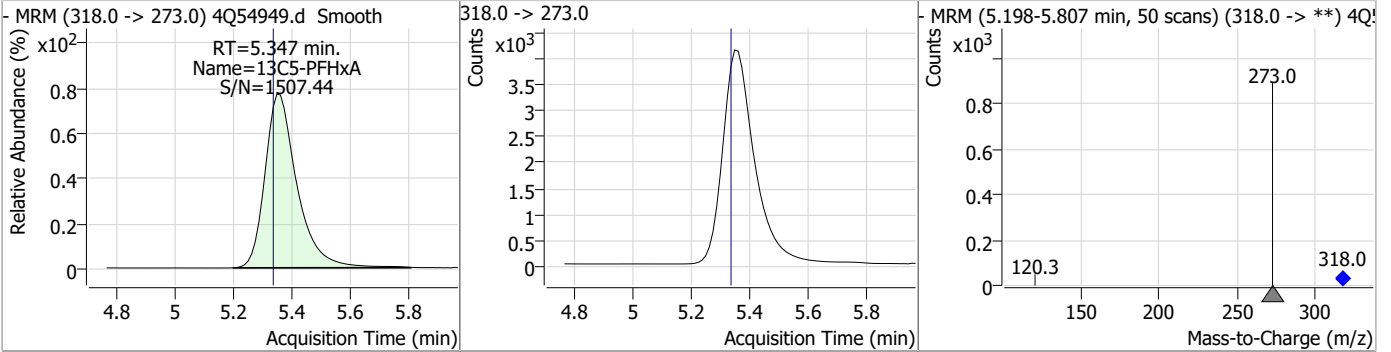
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Perfluorinated Compounds by LC/MS/MS

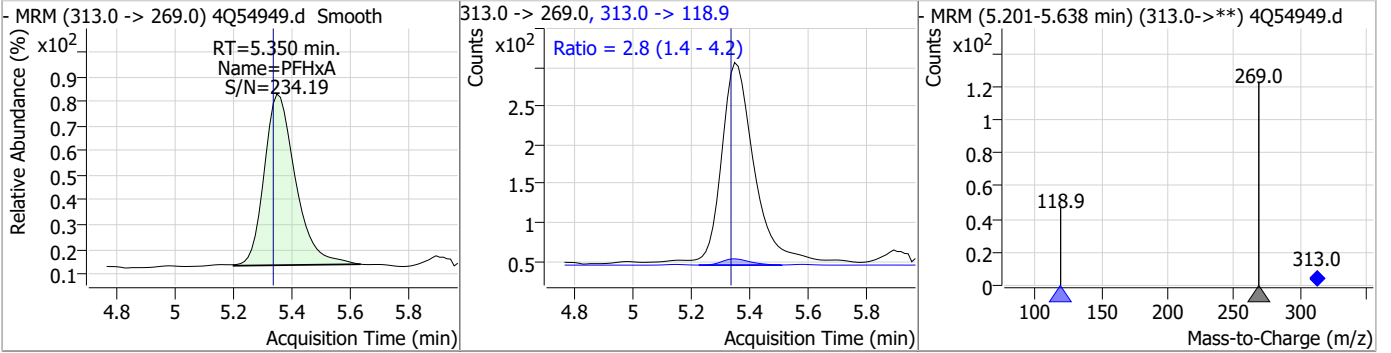
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	0.35	5.23	0.01	253	295.0 -> 84.9	31.2	13.1	39.3



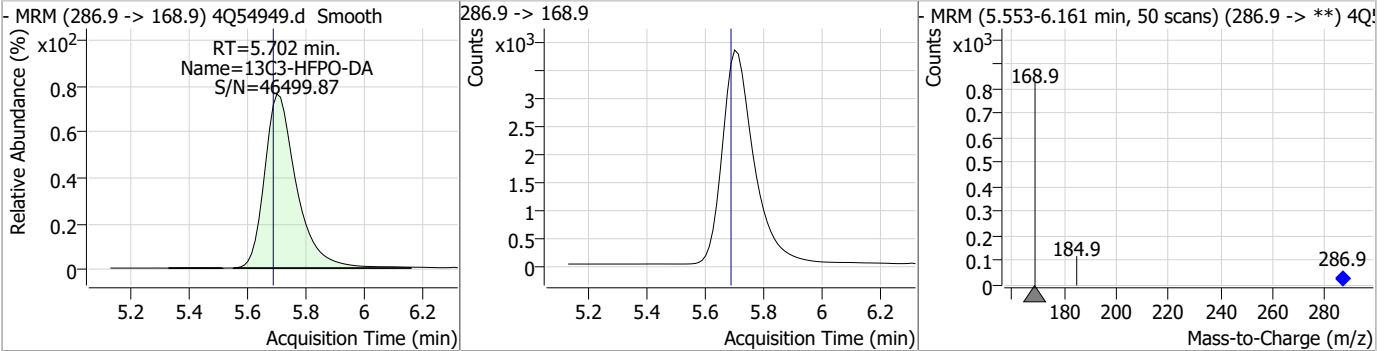
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.41	5.35	0.01	31515				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.19	5.35	0.01	1921	313.0 -> 118.9	2.8	1.4	4.2

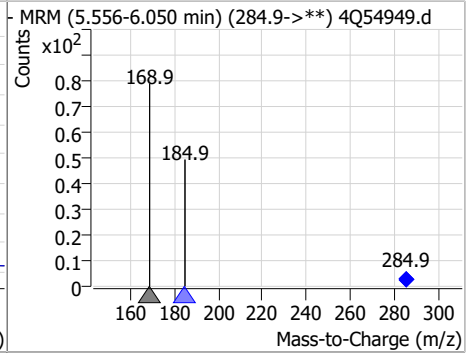
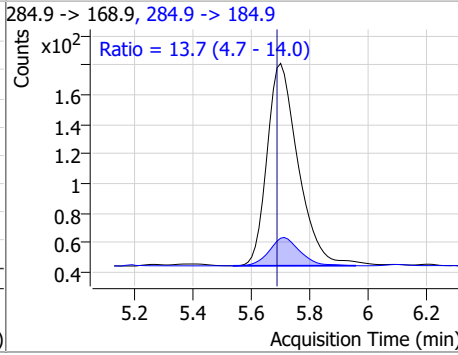
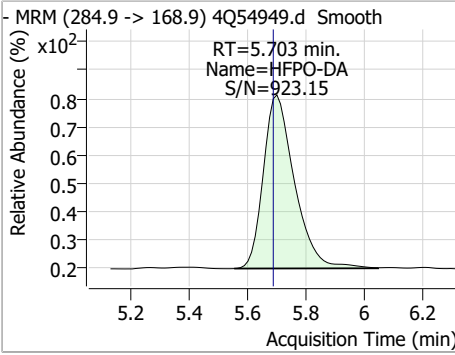


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.90	5.70	0.01	29057				

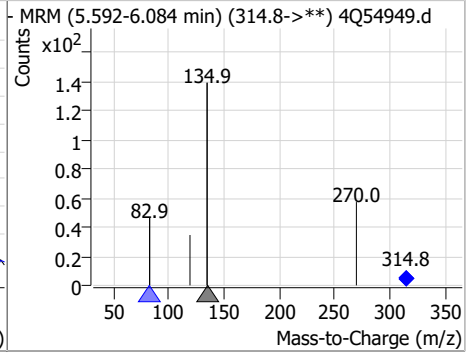
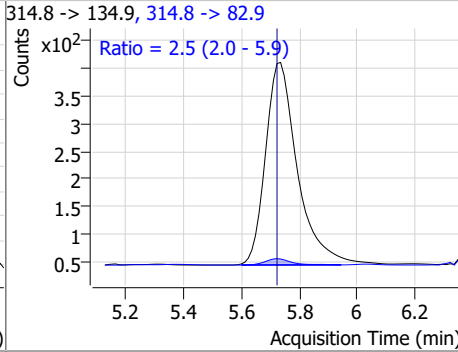
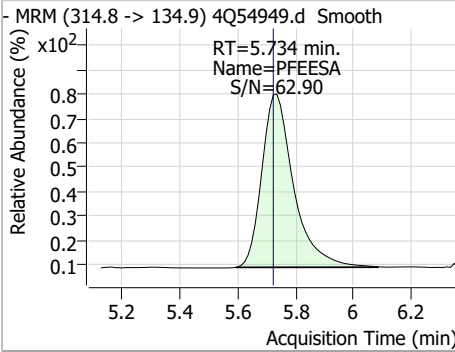


Perfluorinated Compounds by LC/MS/MS

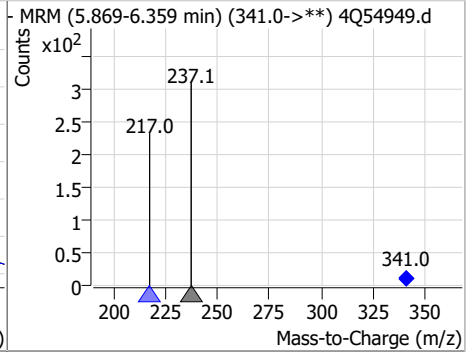
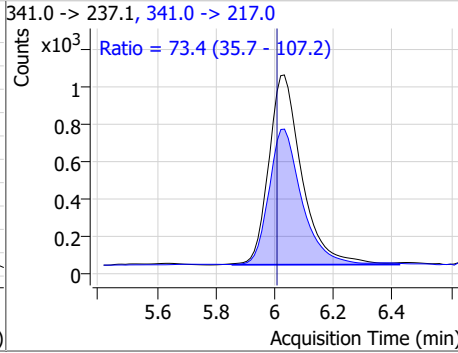
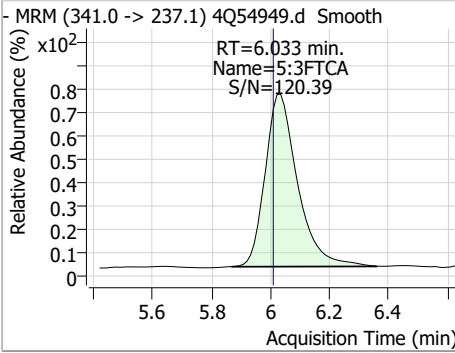
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.36	5.70	0.01	1013	284.9 -> 184.9	13.7	4.7	14.0



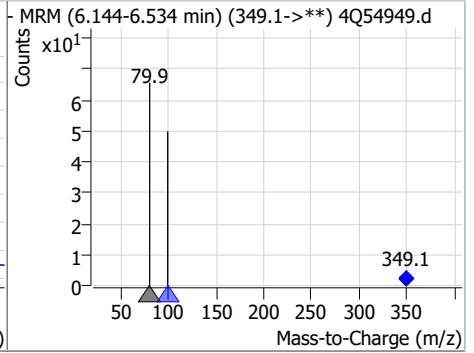
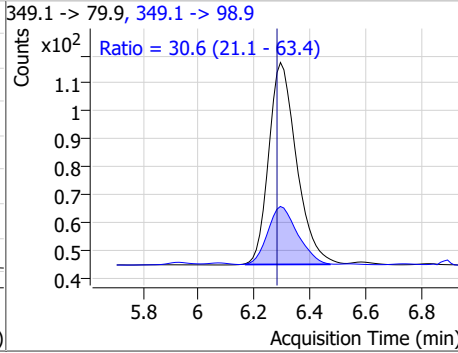
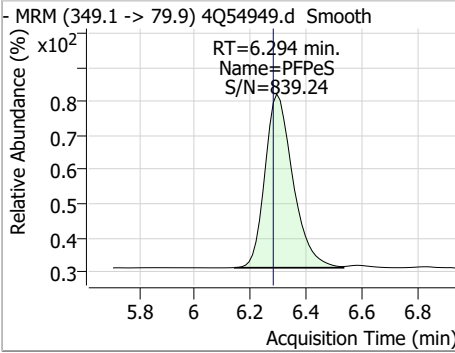
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.38	5.73	0.01	2788	314.8 -> 82.9	2.5	2.0	5.9



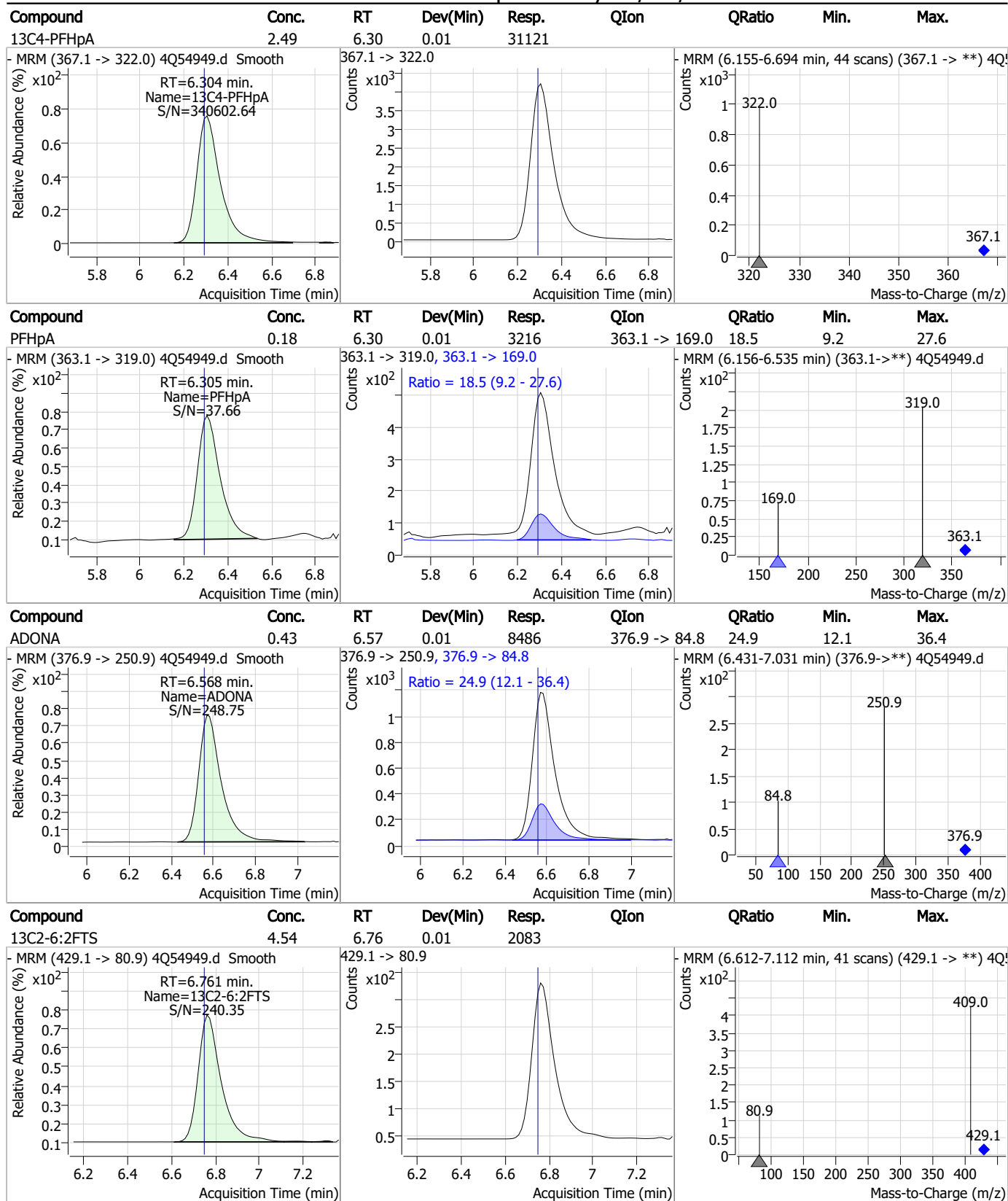
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.31	6.03	0.02	7739	341.0 -> 217.0	73.4	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.22	6.29	0.01	508	349.1 -> 98.9	30.6	21.1	63.4

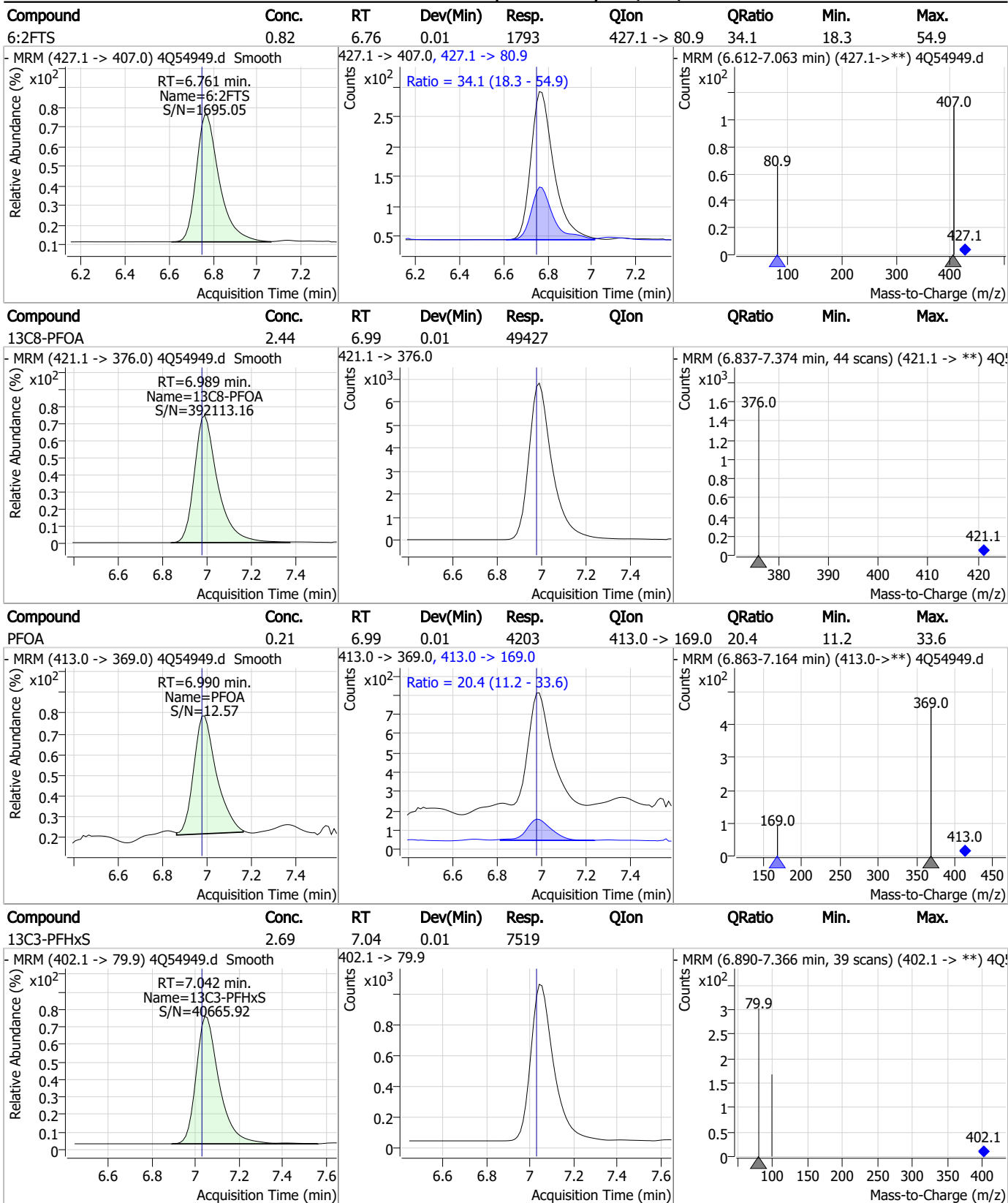


Perfluorinated Compounds by LC/MS/MS



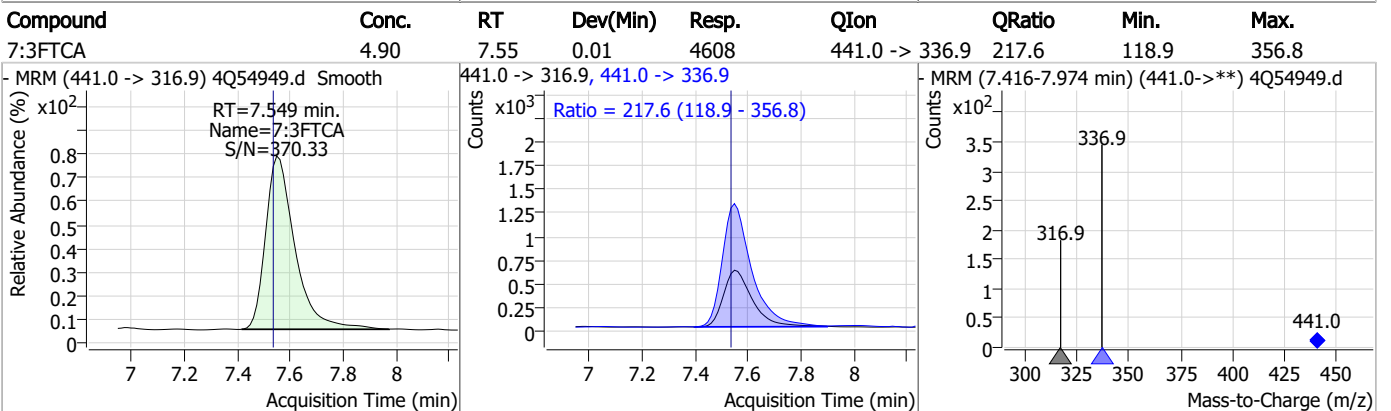
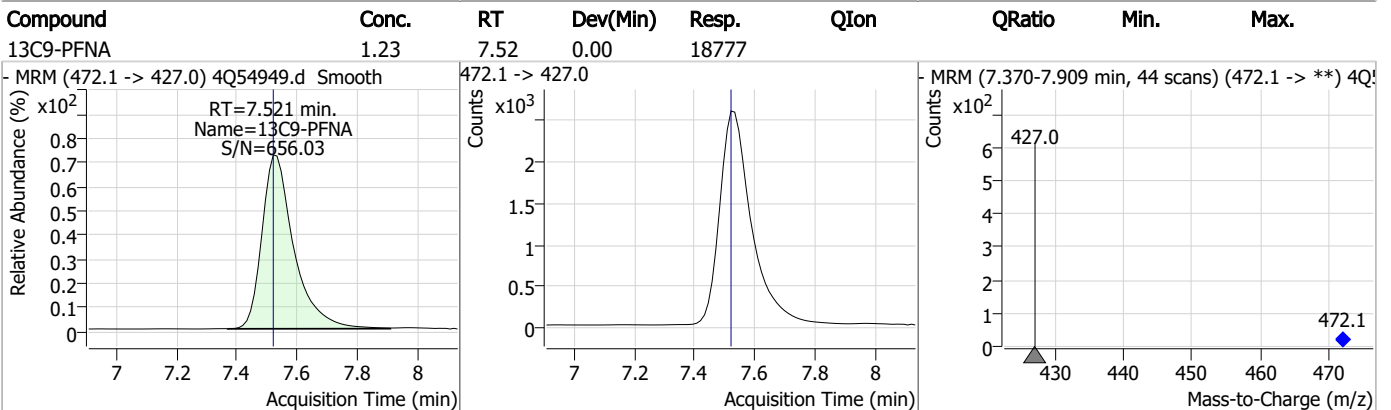
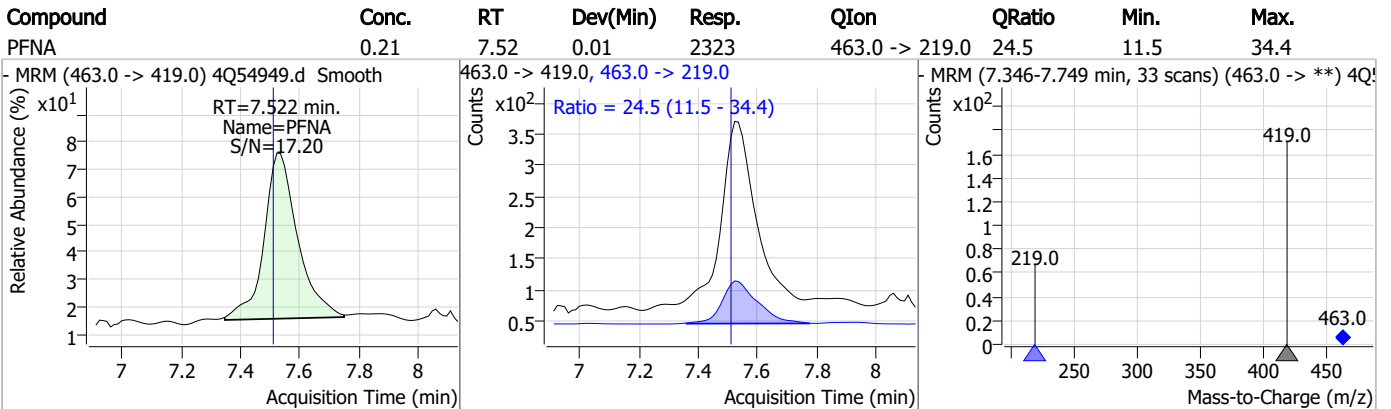
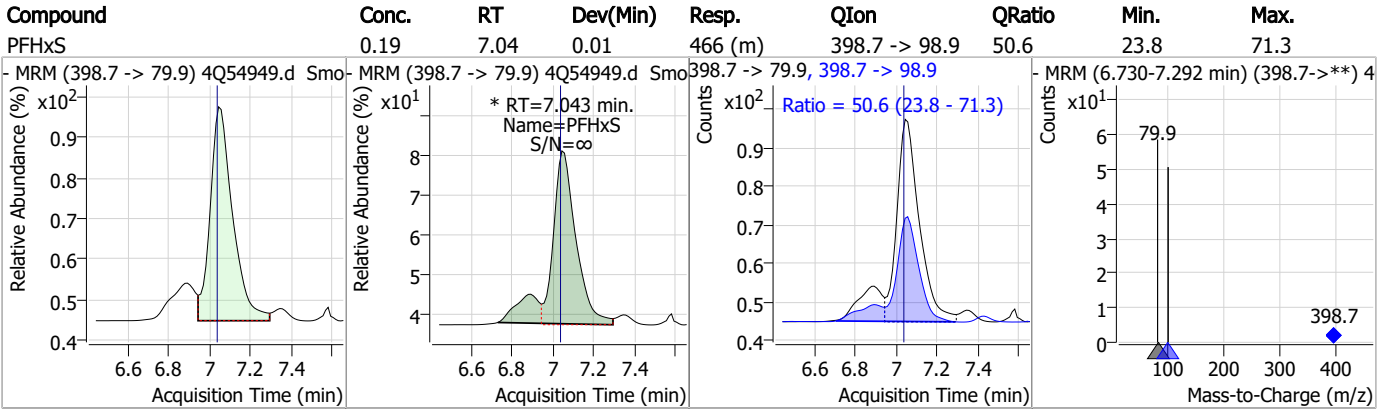
7.7.12
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Perfluorinated Compounds by LC/MS/MS



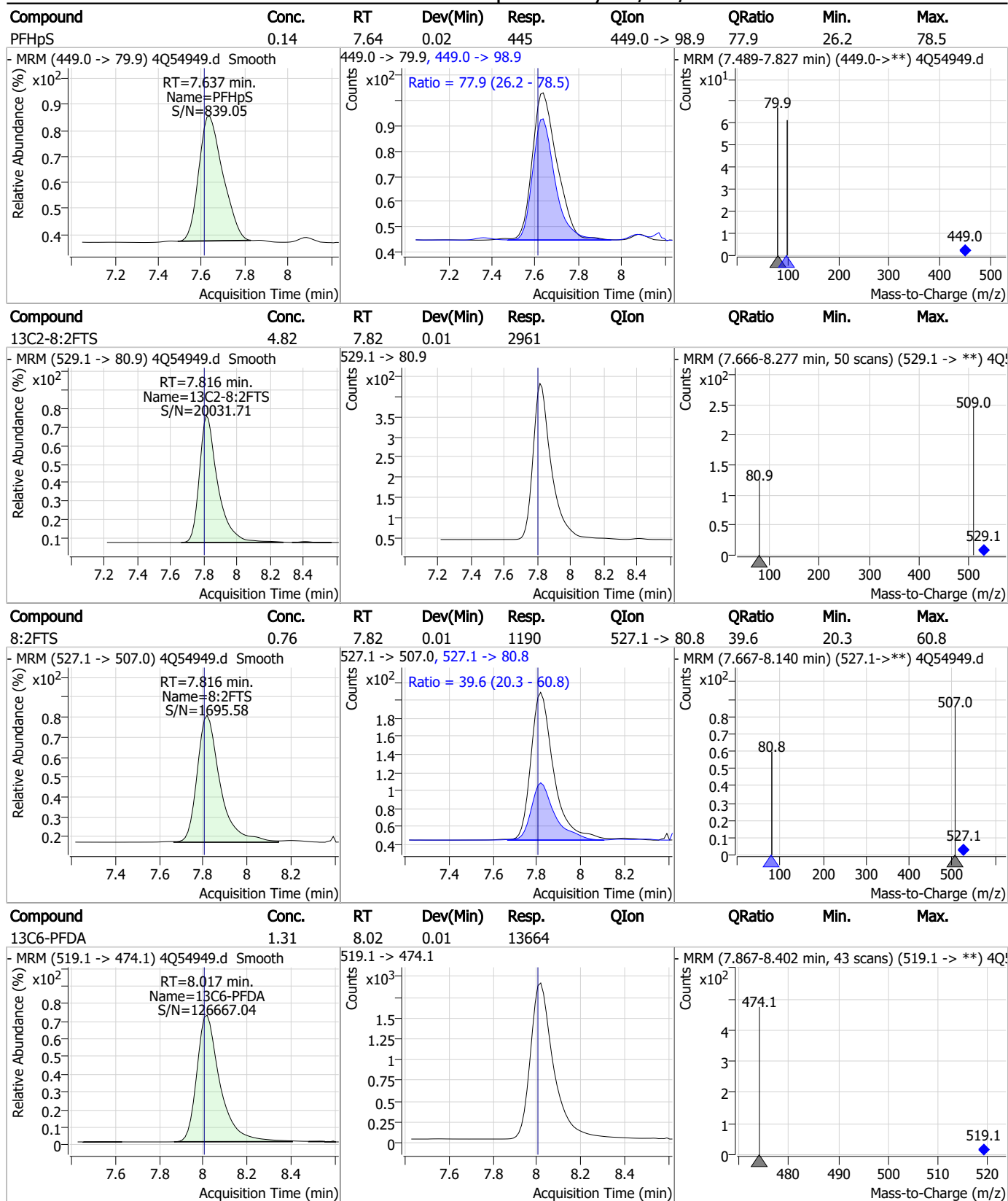
7.7.12
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Perfluorinated Compounds by LC/MS/MS



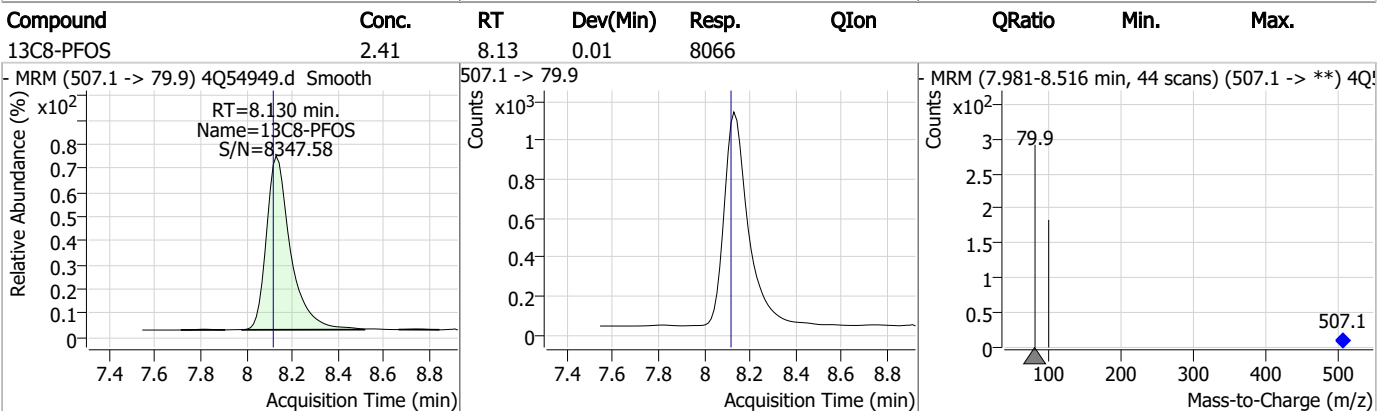
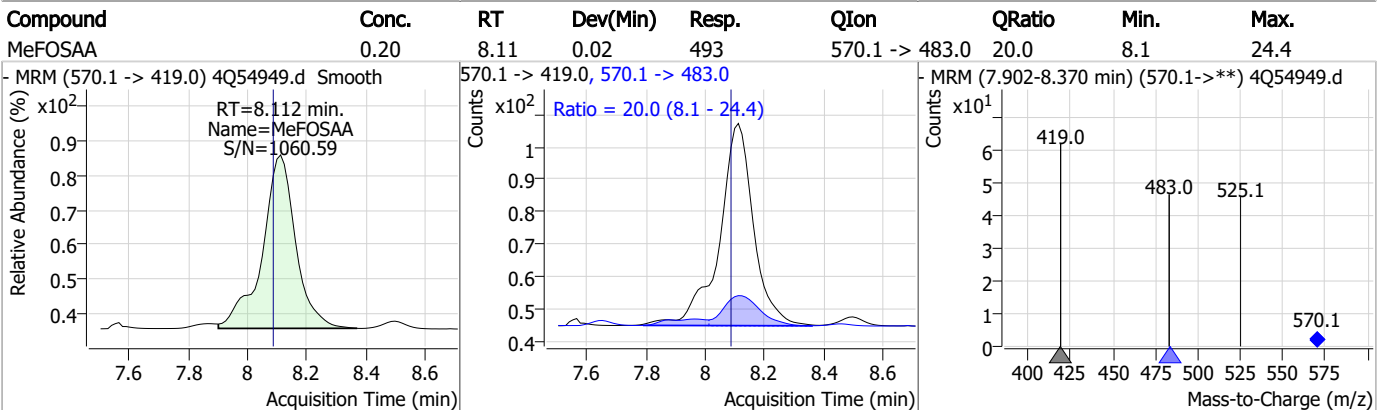
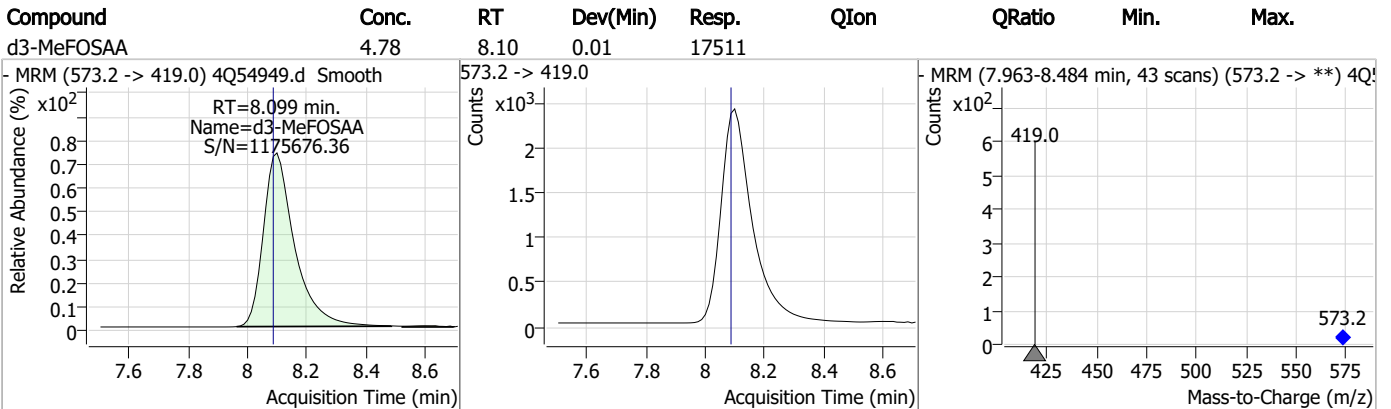
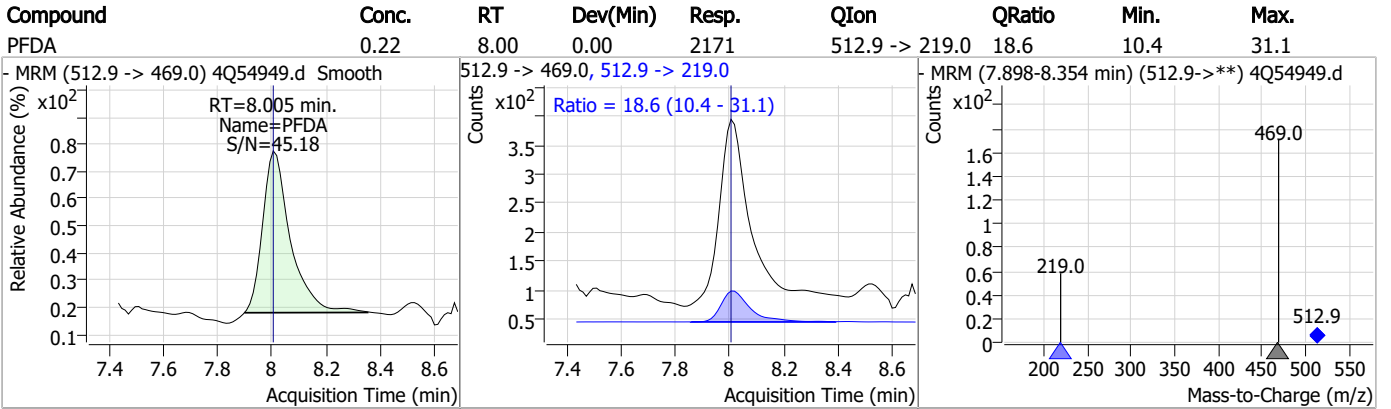
7.7.12 7

Perfluorinated Compounds by LC/MS/MS



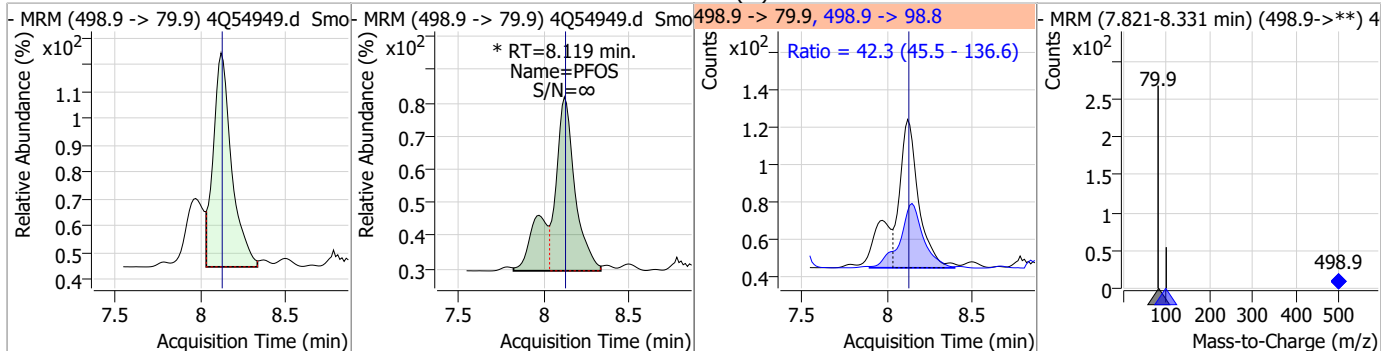
7.7.12 7

Perfluorinated Compounds by LC/MS/MS

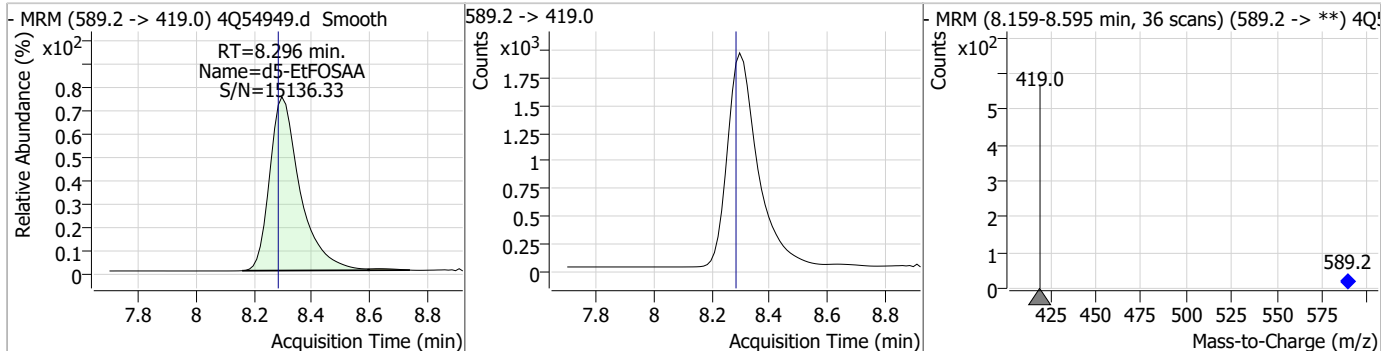


Perfluorinated Compounds by LC/MS/MS

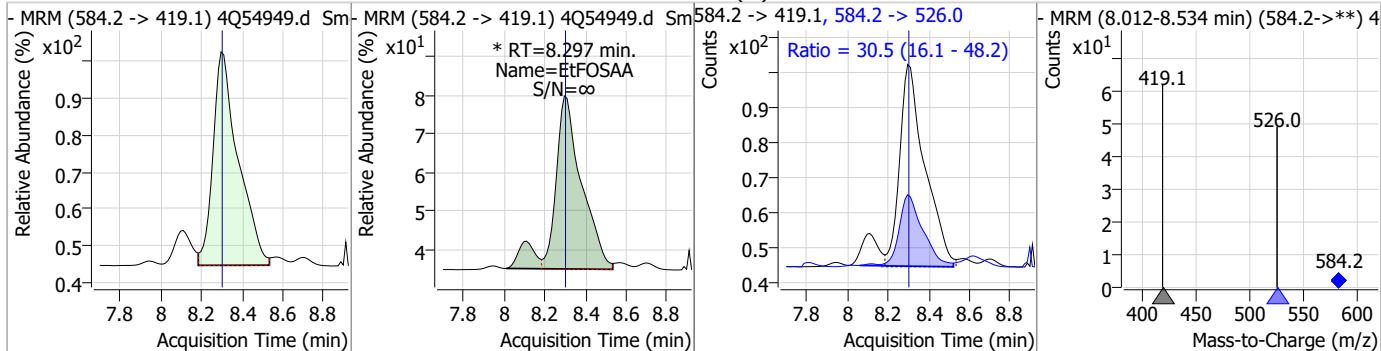
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.23	8.12	0.00	784 (m)	498.9 -> 98.8	42.3	45.5	136.6



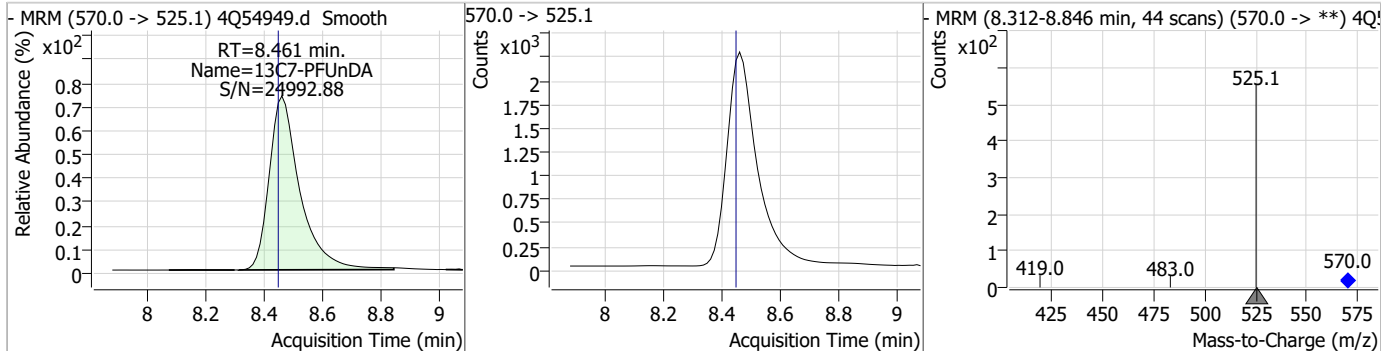
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.51	8.30	0.01	13977				



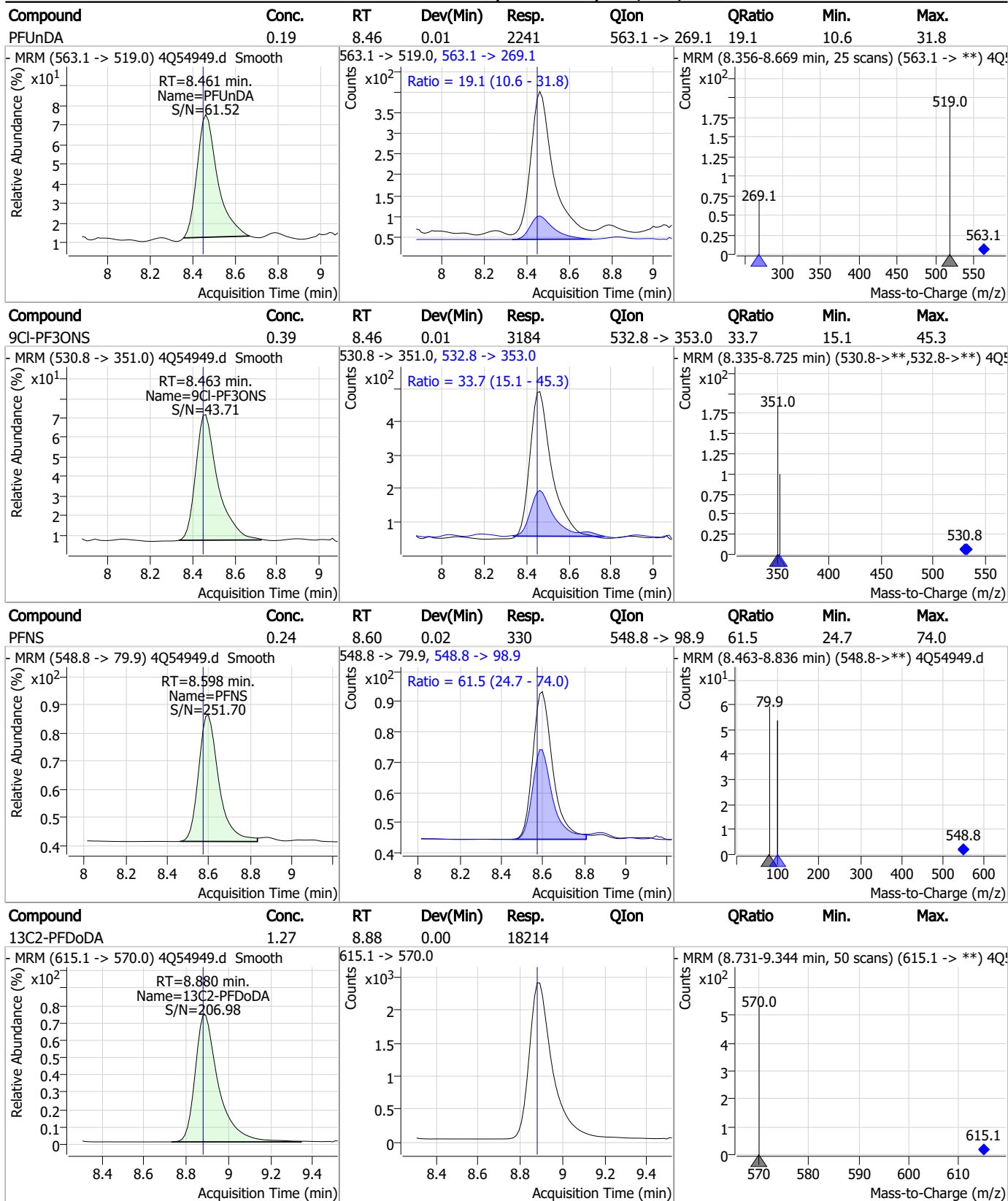
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.21	8.30	0.00	543 (m)	584.2 -> 526.0	30.5	16.1	48.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.35	8.46	0.01	16585				

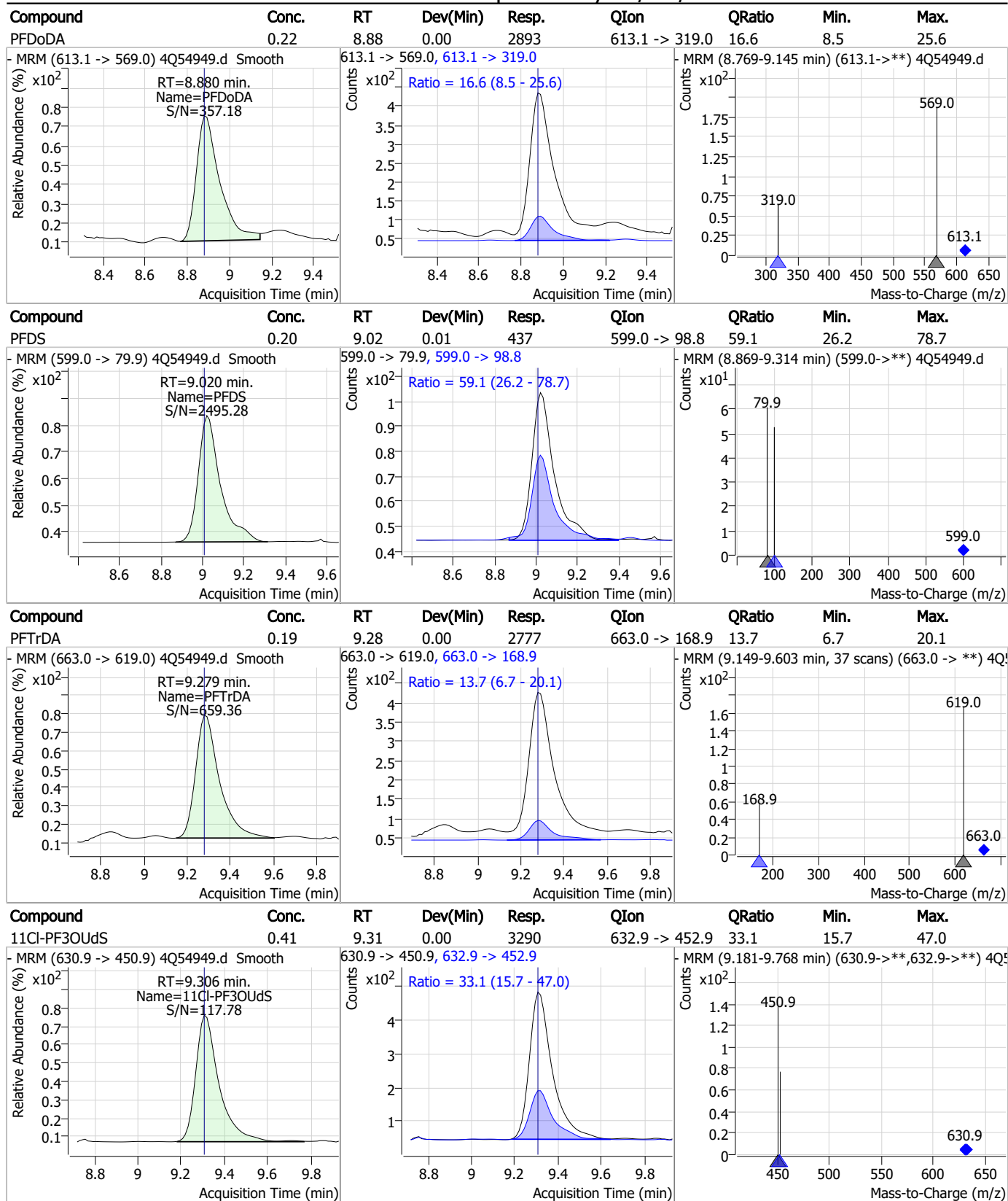


Perfluorinated Compounds by LC/MS/MS



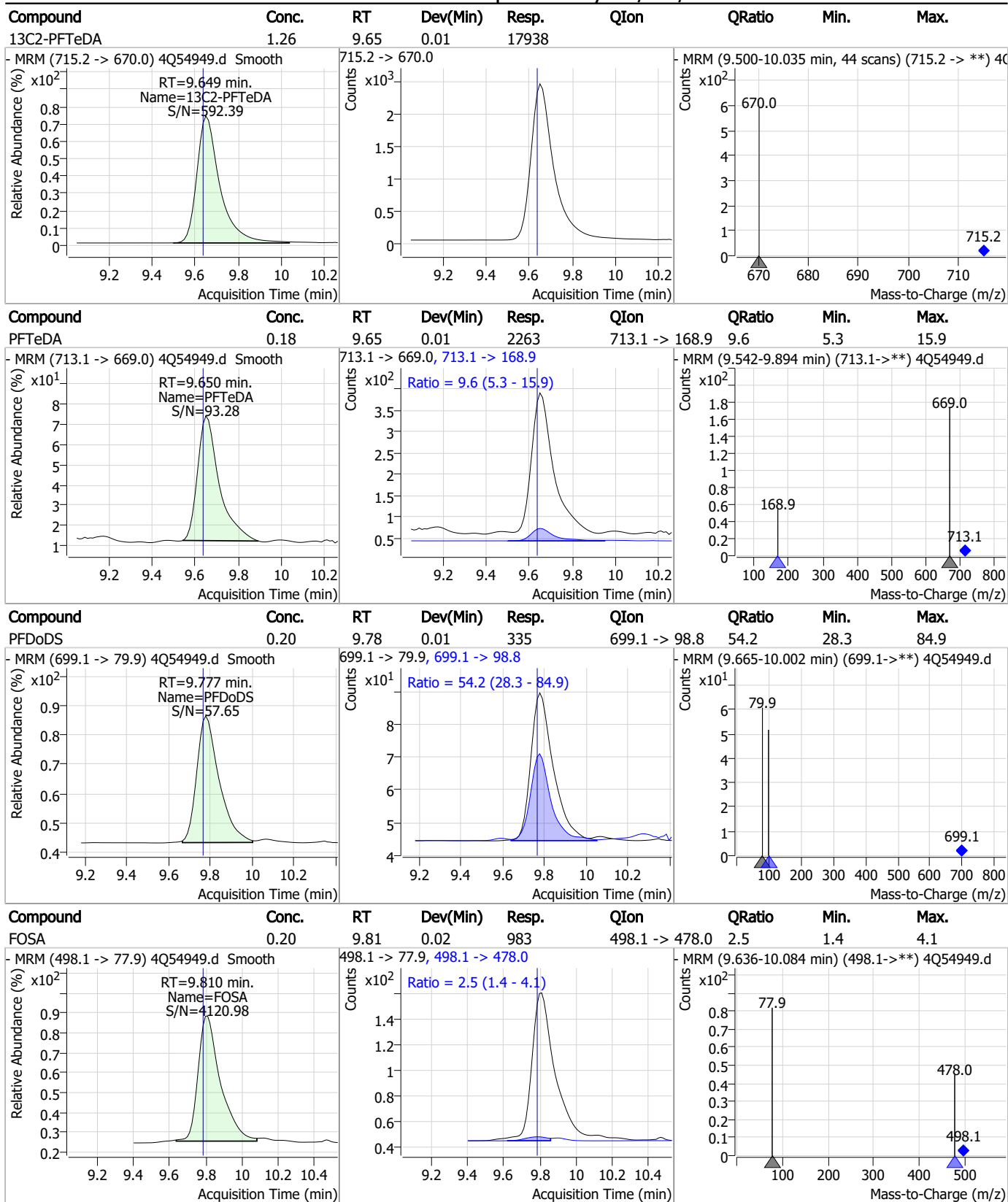
7.7.12
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Perfluorinated Compounds by LC/MS/MS



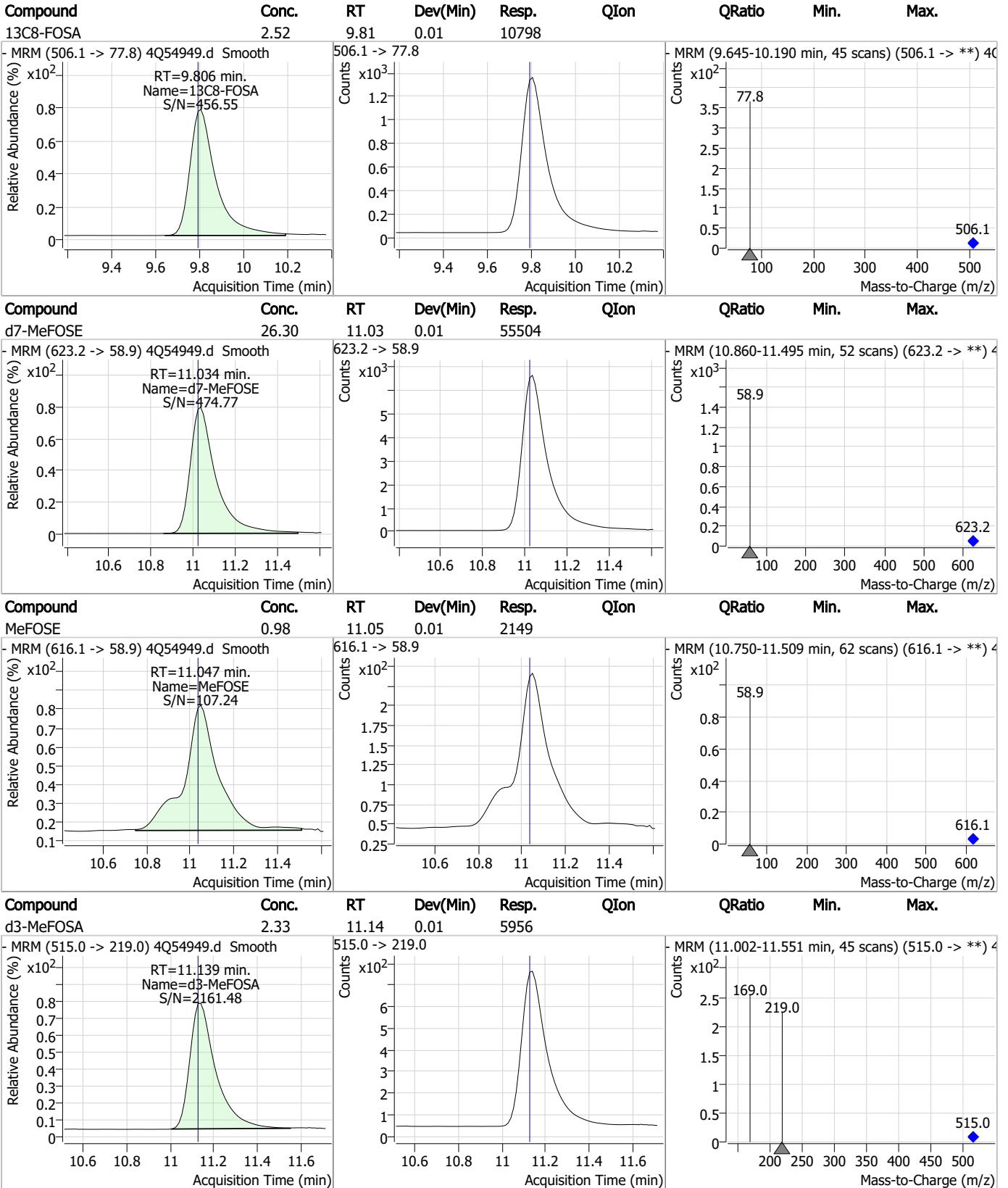
7.7.12 7

Perfluorinated Compounds by LC/MS/MS



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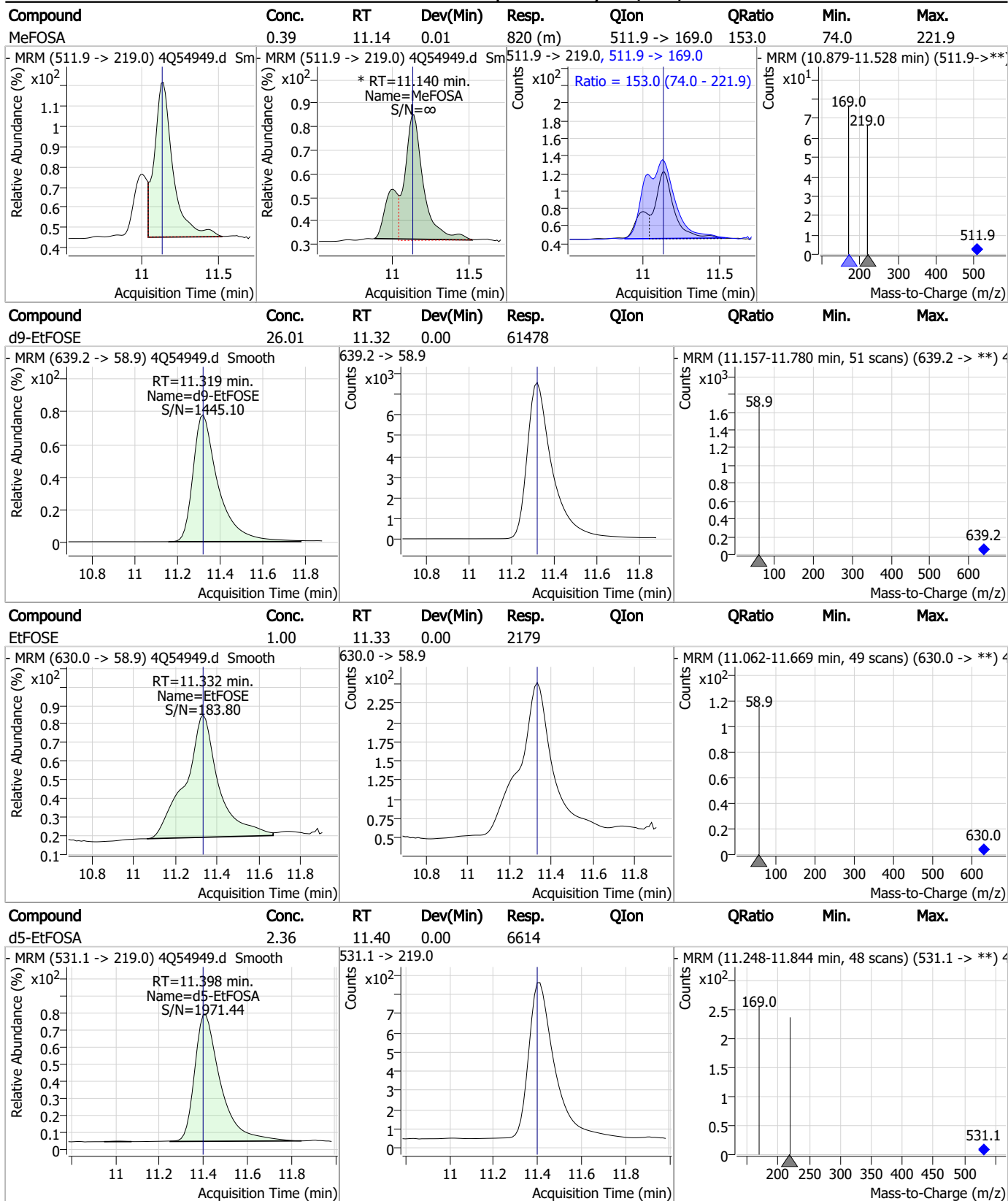
Perfluorinated Compounds by LC/MS/MS



7.7.12

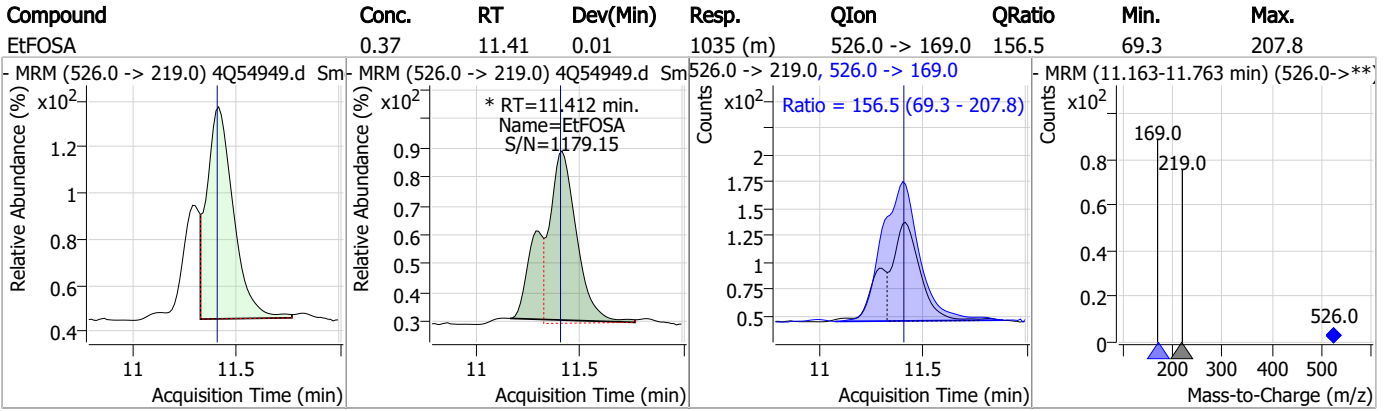


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q805-CC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54949.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/10/23 15:34 Supervisor approved: 12/11/23 15:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.14	Split peak
EtFOSA	4151-50-2		11.41	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54954.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/10/2023 4:48:50 PM
 Sample Name : cc804-4
 Vial : P1-A5
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.674	216.8 -> 171.9	91464	10.00 µg/L	0.000
M5-PFPeA	4.175	268.3 -> 223.0	39045	5.00 µg/L	0.012
M5-PFHxA	5.347	318.0 -> 273.0	30889	2.50 µg/L	0.012
M4-PFHpA	6.304	367.1 -> 322.0	29329	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	47808	2.50 µg/L	0.012
M9-PFNA	7.534	472.1 -> 427.0	18336	1.25 µg/L	0.012
M6-PFDA	8.017	519.1 -> 474.1	13838	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	16269	1.25 µg/L	0.012
M2-PFDoDA	8.892	615.1 -> 570.0	18209	1.25 µg/L	0.012
M2-PFTeDA	9.649	715.2 -> 670.0	18281	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	10409	2.50 µg/L	0.012
M3-PFBS	5.202	302.1 -> 79.9	8840	2.50 µg/L	0.013
M3-PFHxS	7.054	402.1 -> 79.9	7128	2.50 µg/L	0.025
M8-PFOS	8.130	507.1 -> 79.9	8124	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	1129	5.00 µg/L	0.012
M2-6:2FTS	6.773	429.1 -> 80.9	2287	5.00 µg/L	0.025
M2-8:2FTS	7.828	529.1 -> 80.9	3170	5.00 µg/L	0.025
M3-MeFOSAA	8.099	573.2 -> 419.0	17318	5.00 µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	27913	10.00 µg/L	0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	15223	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	51740	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	59532	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	6448	2.50 µg/L	0.012
M3-MeFOSA	11.139	515.0 -> 219.0	6020	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	6648	2.50 µg/L	0.012
13C3-PFBA	2.678	216.0 -> 172.0	44612	5.00 µg/L	0.000
18O2-PFHxS	7.054	403.0 -> 83.9	4571	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	54312	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	14054	1.25 µg/L	0.013
13C5-PFNA	7.534	468.0 -> 423.0	19798	1.25 µg/L	0.025
13C2-PFHxA	5.348	315.1 -> 270.0	34230	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1129	5.20 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-6:2FTS	6.773	429.1 -> 80.9	2287	4.86 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-8:2FTS	7.828	529.1 -> 80.9	3170	5.03 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C2-PFDoDA	8.892	615.1 -> 570.0	18209	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-PFTeDA	9.649	715.2 -> 670.0	18281	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C3-PFBS	5.202	302.1 -> 79.9	8840	2.52 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFHxS	7.054	402.1 -> 79.9	7128	2.49 µg/L	0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFBA	2.674	216.8 -> 171.9	91464	9.76 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C4-PFHpA	6.304	367.1 -> 322.0	29329	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C5-PFHxA	5.347	318.0 -> 273.0	30889	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFPeA	4.175	268.3 -> 223.0	39045	4.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C6-PFDA	8.017	519.1 -> 474.1	13838	1.35 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C7-PFUnDA	8.461	570.0 -> 525.1	16269	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C8-FOSA	9.806	506.1 -> 77.8	10409	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C8-PFOA	6.989	421.1 -> 376.0	47808	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C8-PFOS	8.130	507.1 -> 79.9	8124	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C9-PFNA	7.534	472.1 -> 427.0	18336	1.16 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.5%	
d3-MeFOSAA	8.099	573.2 -> 419.0	17318	4.69 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.9%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	27913	8.86 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.6%	
d3-MeFOSA	11.139	515.0 -> 219.0	6020	2.34 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
d5-EtFOSAA	8.296	589.2 -> 419.0	15223	4.88 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d7-MeFOSE	11.034	623.2 -> 58.9	51740	24.34 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
d9-EtFOSE	11.319	639.2 -> 58.9	59532	25.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
d5-EtFOSA	11.410	531.1 -> 219.0	6448	2.29 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.5%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	16107	8.29 µg/L	100
		327.1 -> 80.9	6843		
6:2FTS	6.774	427.1 -> 407.0	21718	9.04 µg/L	98
		427.1 -> 80.9	8178		
8:2FTS	7.816	527.1 -> 507.0	15799	9.46 µg/L	98
		527.1 -> 80.8	6167		
EtFOSAA	8.310	584.2 -> 419.1	6569	2.37 µg/L	90
		584.2 -> 526.0	2466		
FOSA	9.810	498.1 -> 77.9	10755	2.30 µg/L	99
		498.1 -> 478.0	344		
MeFOSAA	8.099	570.1 -> 419.0	6424	2.59 µg/L	89
		570.1 -> 483.0	1339		
PFBA	2.682	212.8 -> 168.9	27635	9.43 µg/L	100
PFBS	5.203	298.7 -> 79.9	5602	2.04 µg/L	95
		298.7 -> 98.8	2102		
PFDA	8.017	512.9 -> 469.0	21230	2.09 µg/L	100
		512.9 -> 219.0	4428		
PFDODA	8.893	613.1 -> 569.0	32239	2.46 µg/L	99
		613.1 -> 319.0	5321		
PFDS	9.020	599.0 -> 79.9	5064	2.34 µg/L	92

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	2382	2.32	µg/L	99
		363.1 -> 319.0	38291			
PFHpS	7.624	363.1 -> 169.0	6918	2.26	µg/L	95
		449.0 -> 79.9	7281			
PFHxA	5.350	449.0 -> 98.9	3550	2.21	µg/L	98
		313.0 -> 269.0	21821			
PFHxS	7.055	313.0 -> 118.9	721	2.16	µg/L	94
		398.7 -> 79.9	4973			
PFNA	7.534	398.7 -> 98.9	2547	2.53	µg/L	97
		463.0 -> 419.0	27302			
PFNS	8.599	463.0 -> 219.0	6624	2.55	µg/L	97
		548.8 -> 79.9	3528			
PFOA	6.990	548.8 -> 98.9	1804	2.36	µg/L	97
		413.0 -> 369.0	46374			
PFOS	8.131	413.0 -> 169.0	9658	2.16	µg/L	51
		498.9 -> 79.9	7289			
PFPeA	4.177	498.9 -> 98.8	3274	4.49	µg/L	100
		263.0 -> 219.0	34494			
PFPeS	6.294	349.1 -> 79.9	4920	2.27	µg/L	97
		349.1 -> 98.9	2173			
PFTeDA	9.650	713.1 -> 669.0	28994	2.28	µg/L	100
		713.1 -> 168.9	3032			
PFTrDA	9.292	663.0 -> 619.0	34320	2.41	µg/L	99
		663.0 -> 168.9	4701			
PFUnDA	8.461	563.1 -> 519.0	27607	2.33	µg/L	99
		563.1 -> 269.1	5972			
11Cl-PF3OUdS	9.319	630.9 -> 450.9	38773	5.04	µg/L	100
		632.9 -> 452.9	12238			
9Cl-PF3ONS	8.463	530.8 -> 351.0	38923	5.01	µg/L	95
		532.8 -> 353.0	12816			
ADONA	6.581	376.9 -> 250.9	102133	5.42	µg/L	99
		376.9 -> 84.8	24379			
HFPO-DA	5.703	284.9 -> 168.9	12774	4.78	µg/L	100
		284.9 -> 184.9	1220			
3:3FTCA	3.617	241.0 -> 177.0	5103	10.96	µg/L	100
		241.0 -> 117.0	460			
5:3FTCA	6.033	341.0 -> 237.1	101508	57.74	µg/L	100
		341.0 -> 217.0	72350			
7:3FTCA	7.549	441.0 -> 316.9	54048	58.62	µg/L	99
		441.0 -> 336.9	129665			
EtFOSA	11.412	526.0 -> 219.0	12898	4.70	µg/L	98
		526.0 -> 169.0	18121			
EtFOSE	11.332	630.0 -> 58.9	23918	11.35	µg/L	100
		511.9 -> 219.0	10135			
MeFOSA	11.140	511.9 -> 169.0	14556	4.73	µg/L	97
		616.1 -> 58.9	23594			
MeFOSE	11.047	699.1 -> 79.9	3855	11.49	µg/L	100
		699.1 -> 98.8	2206			
PFDoDS	9.777	295.0 -> 201.0	3148	2.34	µg/L	99
		295.0 -> 84.9	857			
NFDHA	5.229	279.0 -> 85.1	19352	4.51	µg/L	98
		229.0 -> 84.9	21511			
PFMBA	4.578	314.8 -> 134.9	30544	4.63	µg/L	100
		314.8 -> 82.9	1085			
PFMPA	3.315			4.19	µg/L	99
PFEESA	5.734					

= Qualifier out of range, m = manually integrated, + = Area summed

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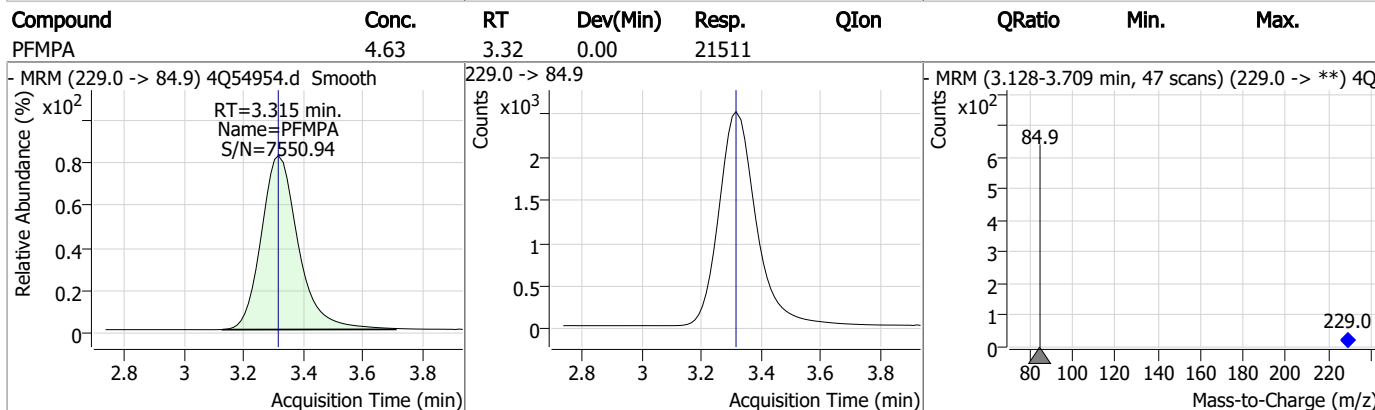
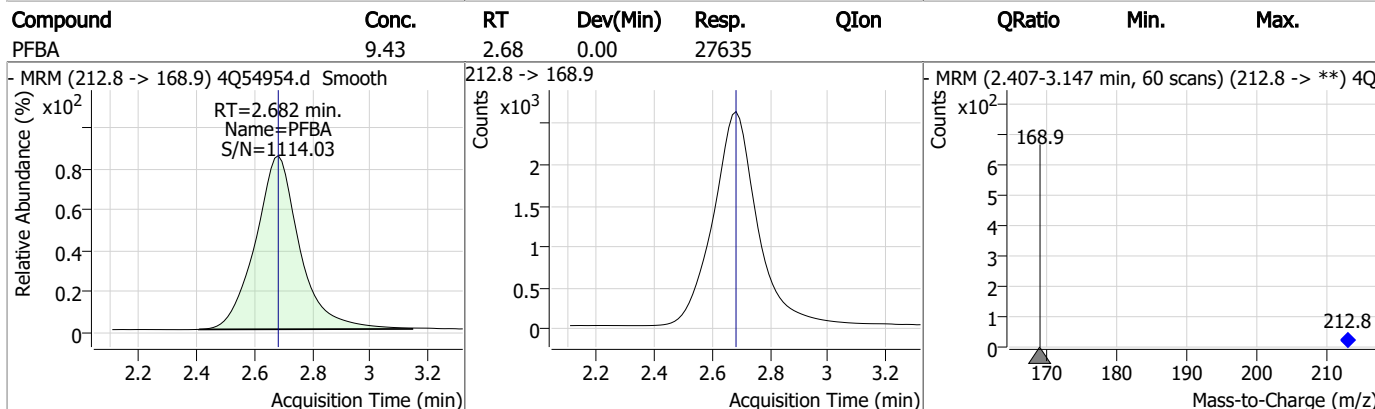
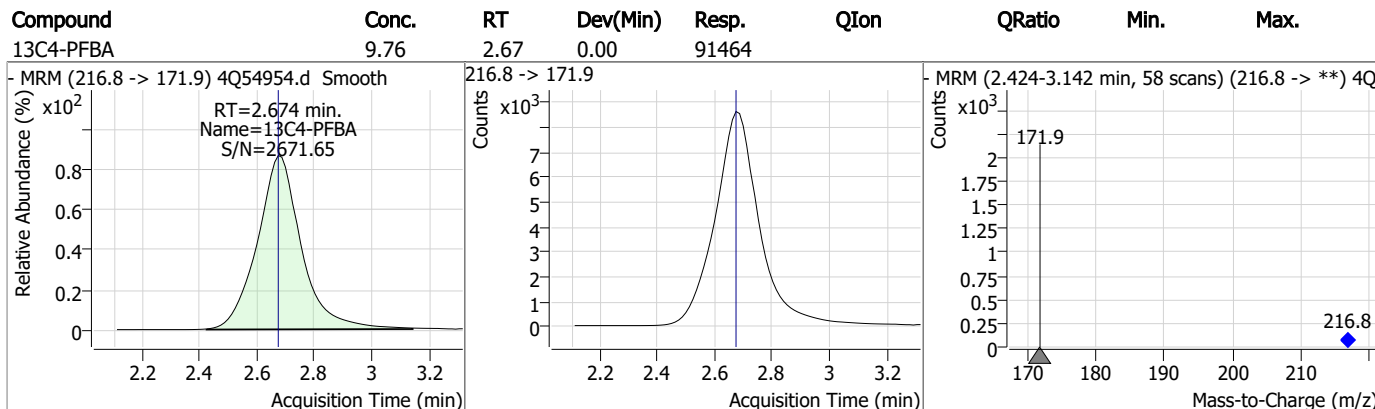
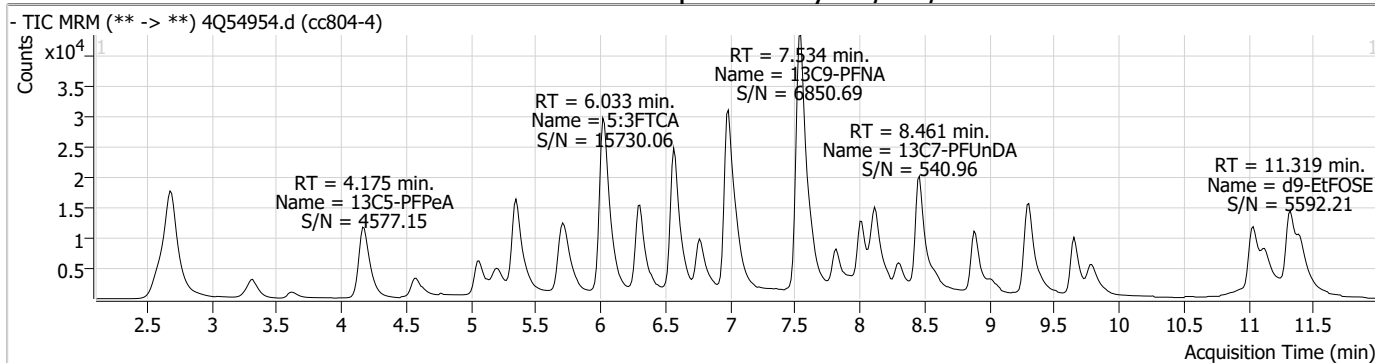
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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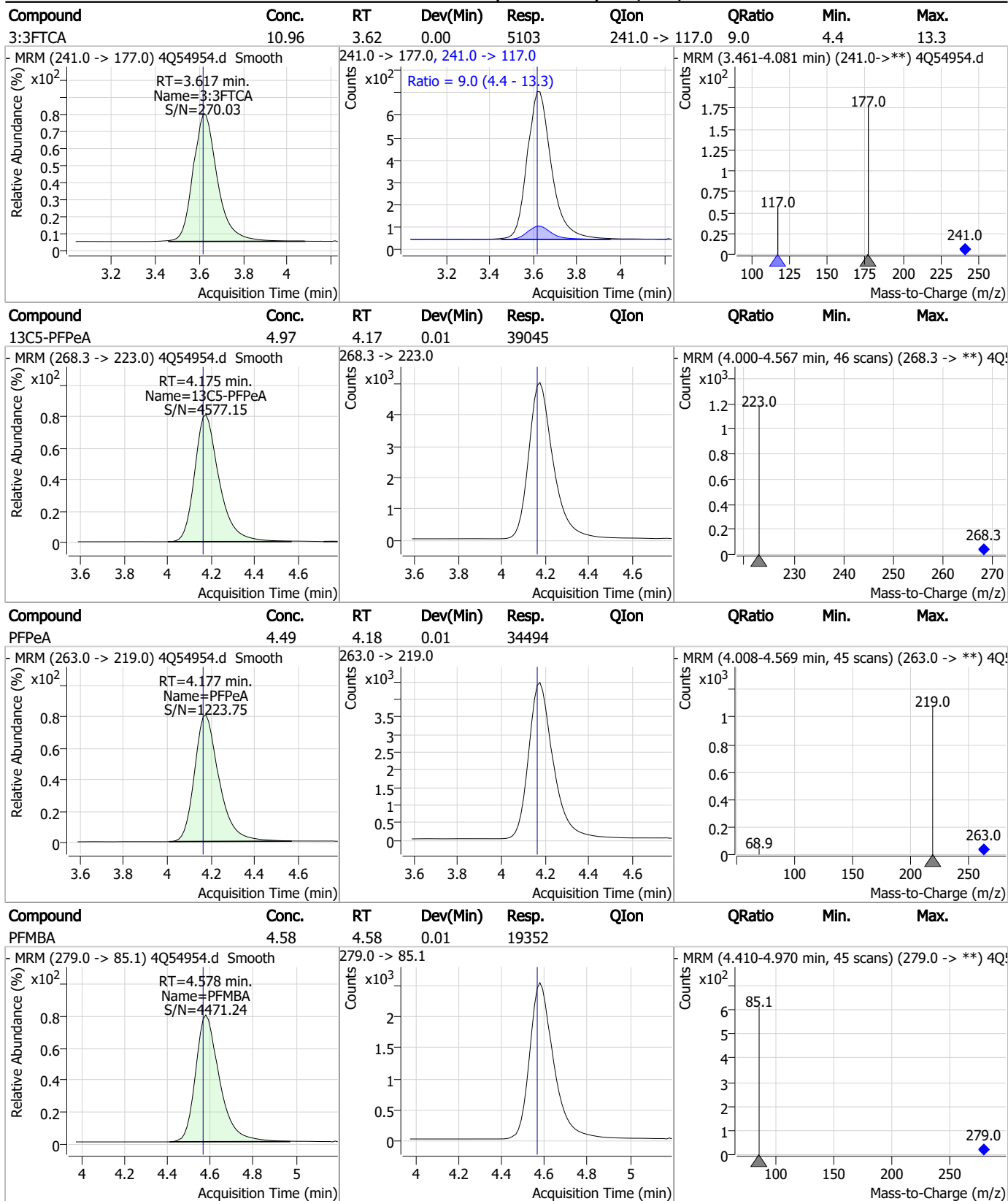
7.7.13

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Perfluorinated Compounds by LC/MS/MS

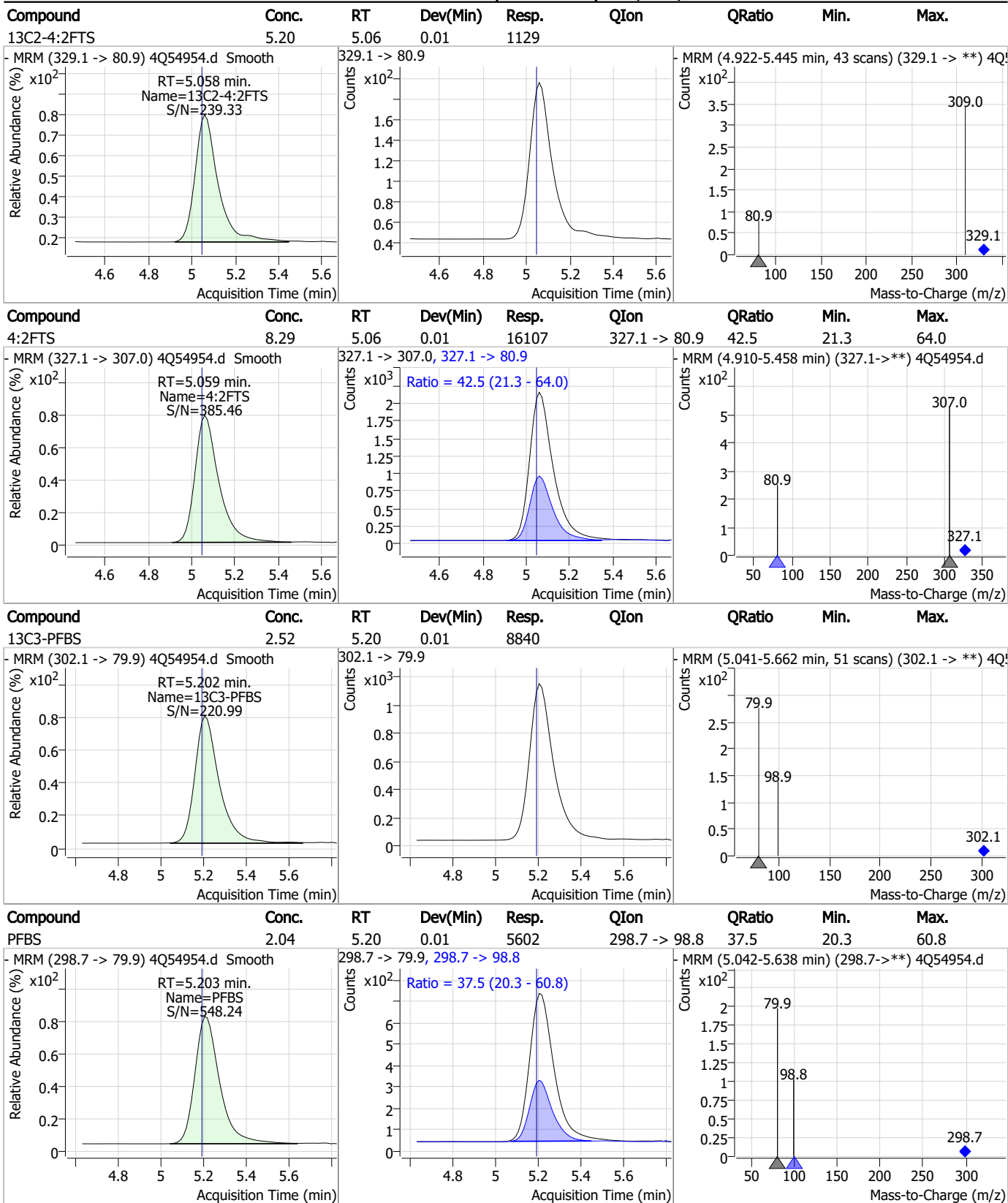


Perfluorinated Compounds by LC/MS/MS



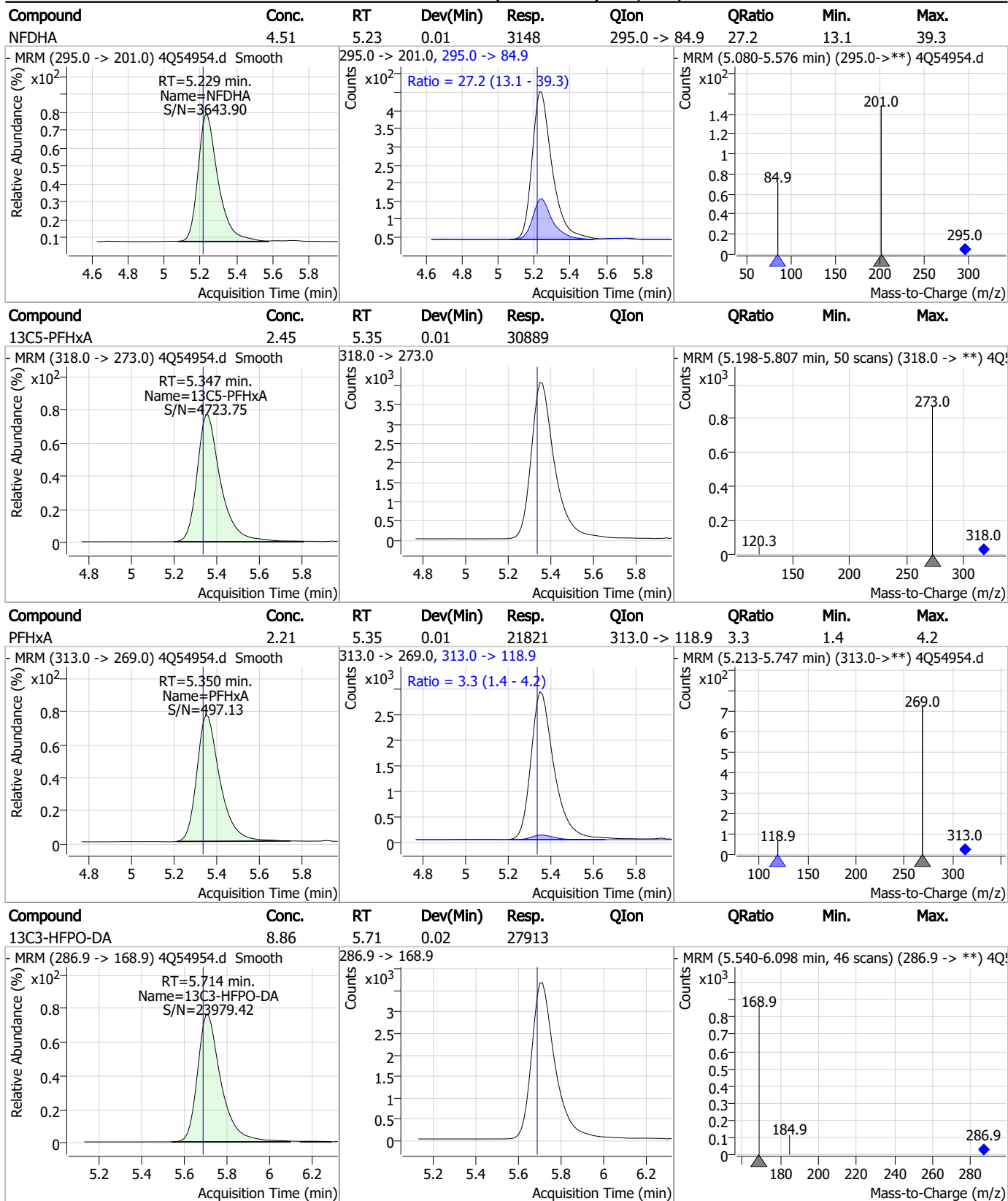
7.7.13
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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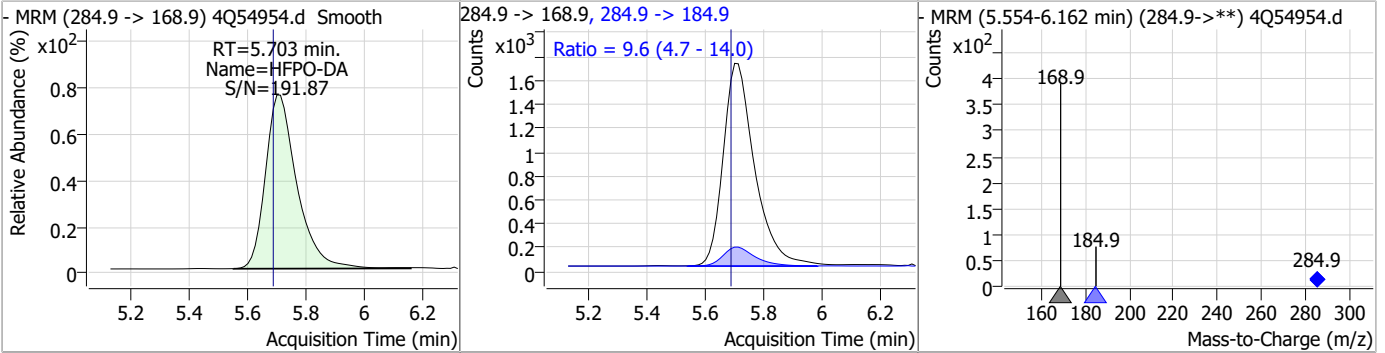
Perfluorinated Compounds by LC/MS/MS



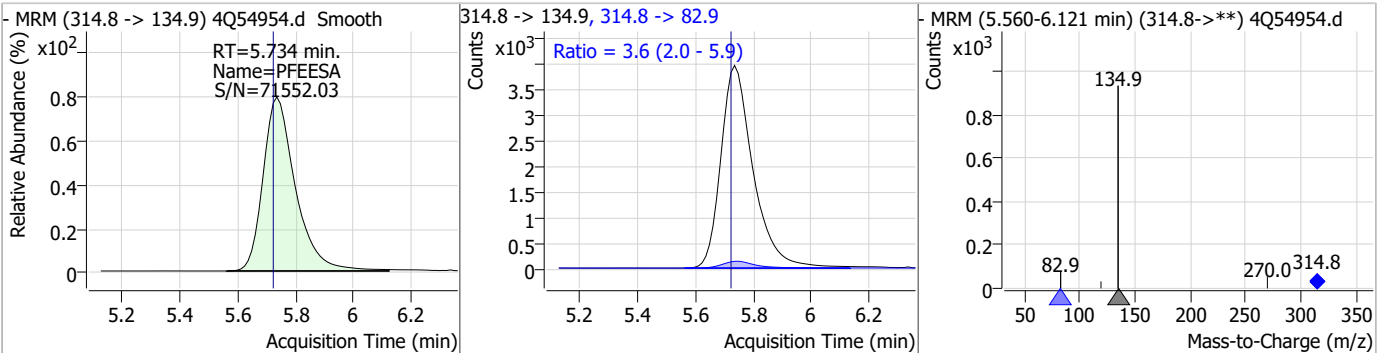
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Perfluorinated Compounds by LC/MS/MS

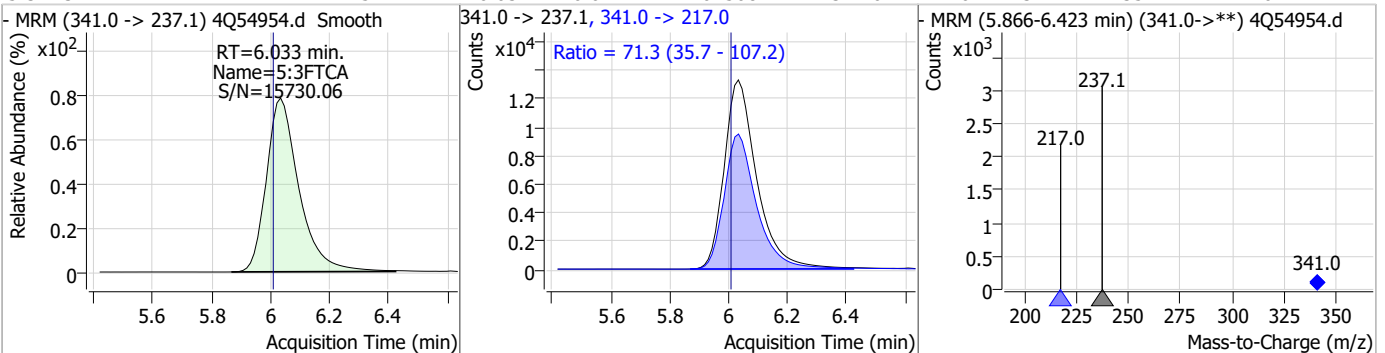
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.78	5.70	0.01	12774	284.9 -> 184.9	9.6	4.7	14.0



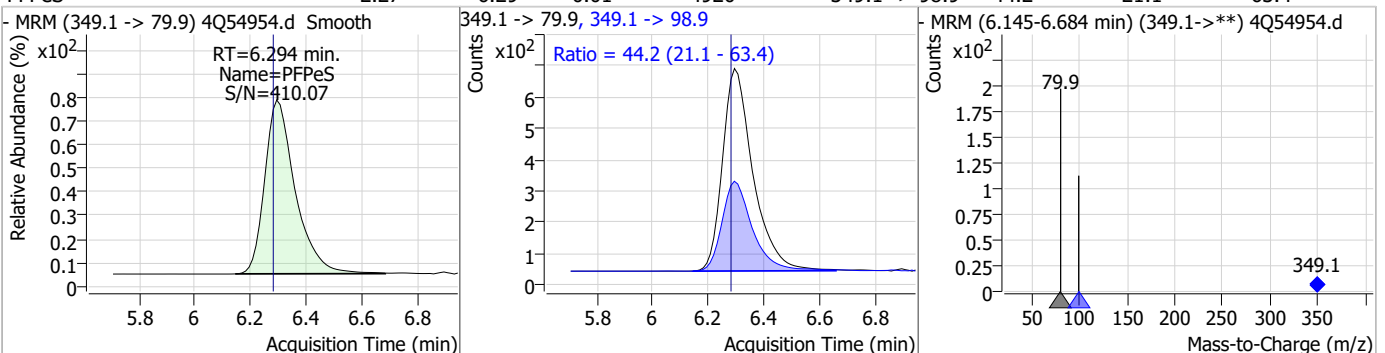
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.19	5.73	0.01	30544	314.8 -> 82.9	3.6	2.0	5.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	57.74	6.03	0.02	101508	341.0 -> 217.0	71.3	35.7	107.2

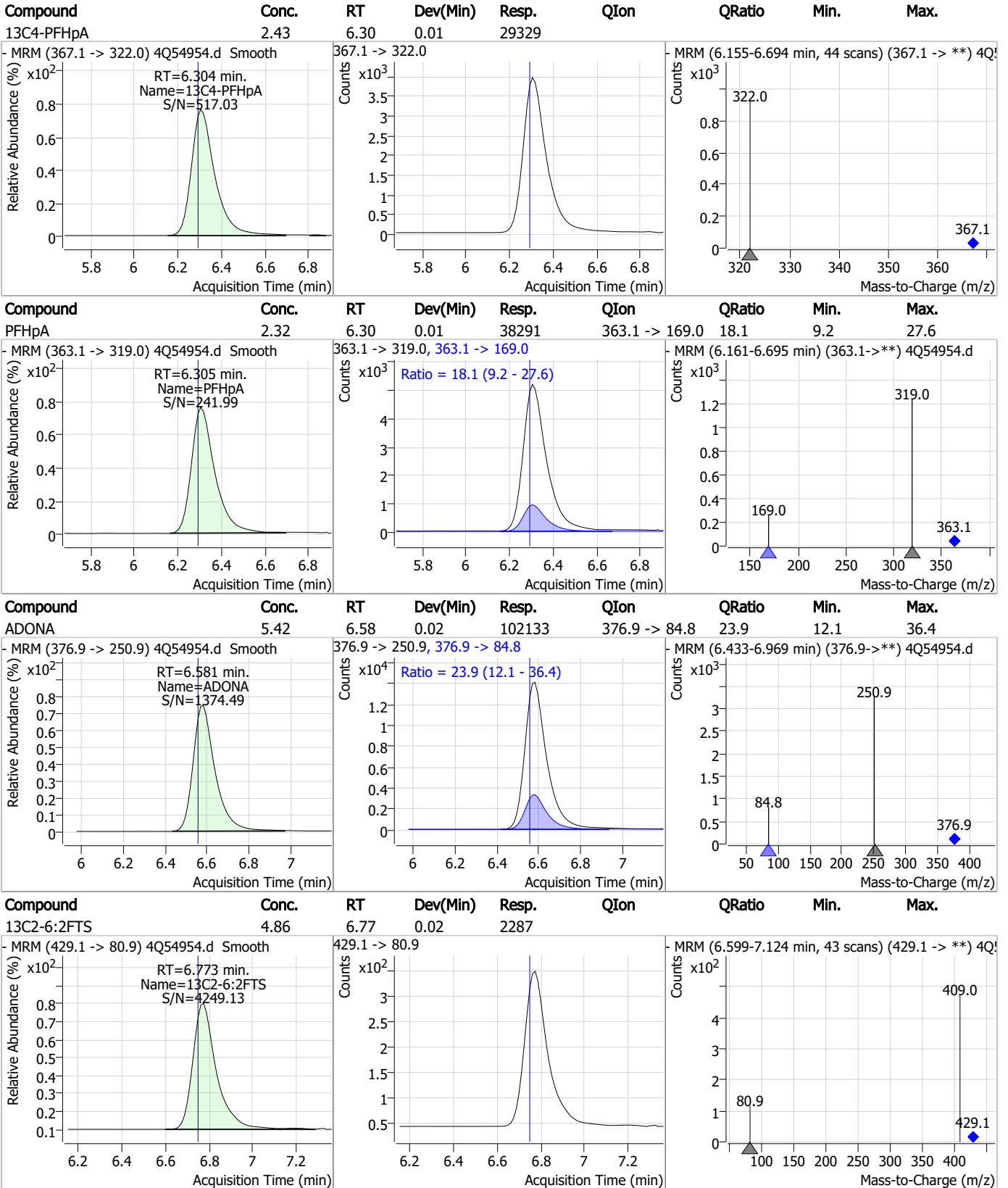


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.27	6.29	0.01	4920	349.1 -> 98.9	44.2	21.1	63.4



7.7.13 7

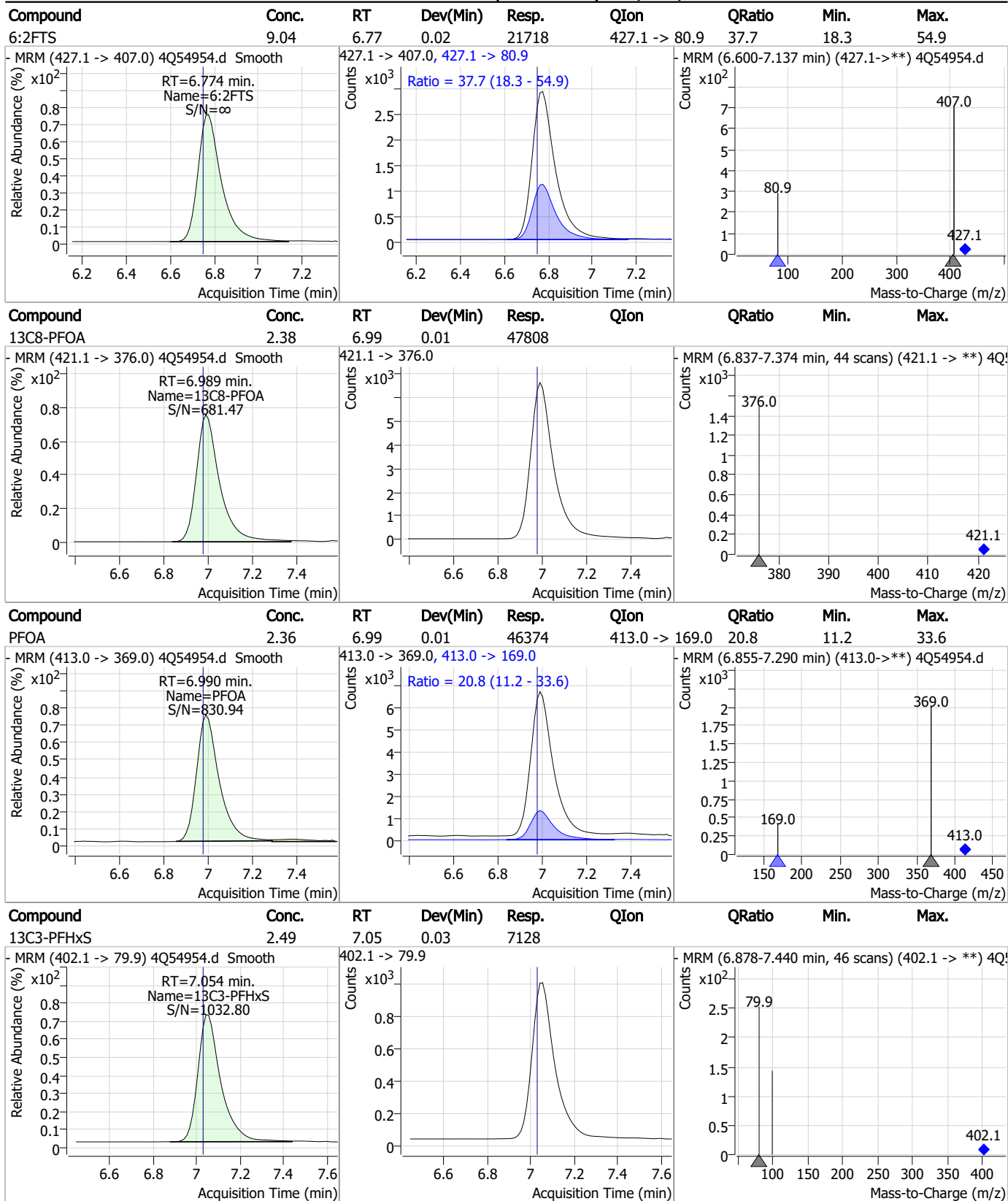
Perfluorinated Compounds by LC/MS/MS



7.7.13 7

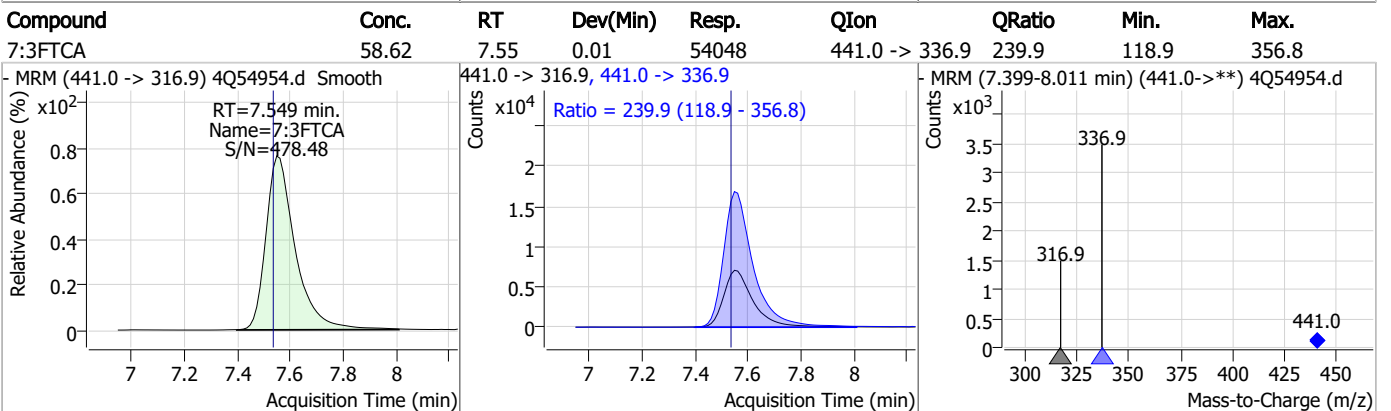
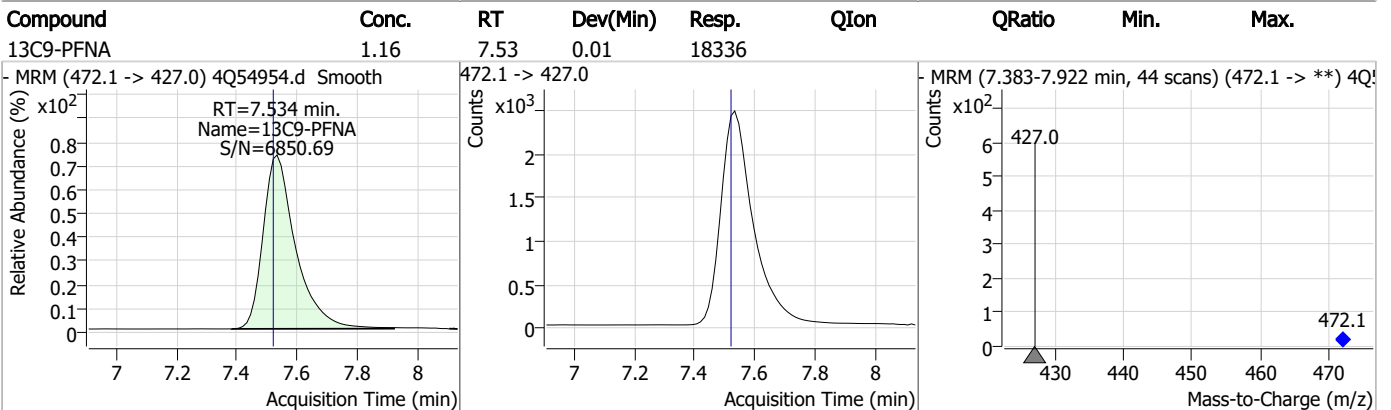
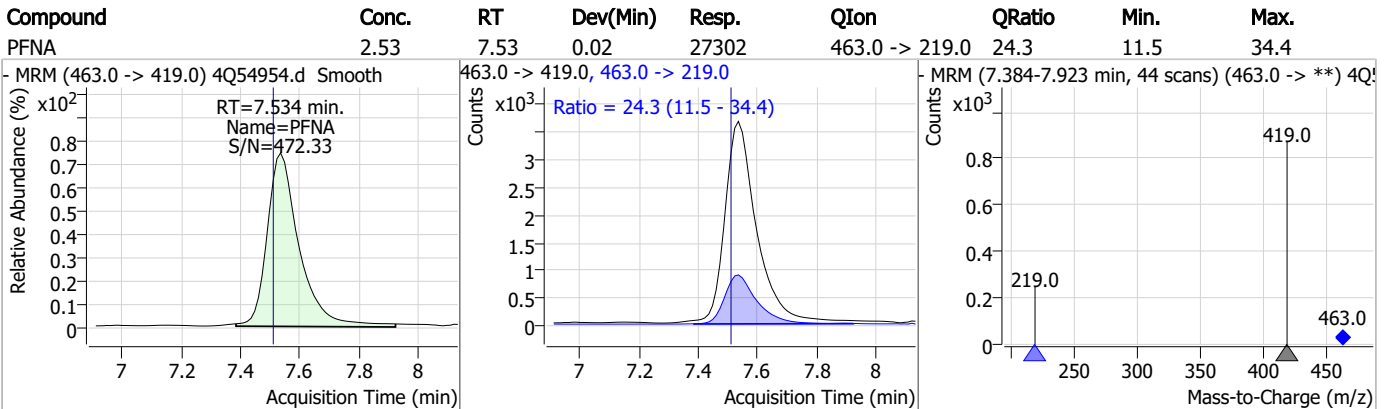
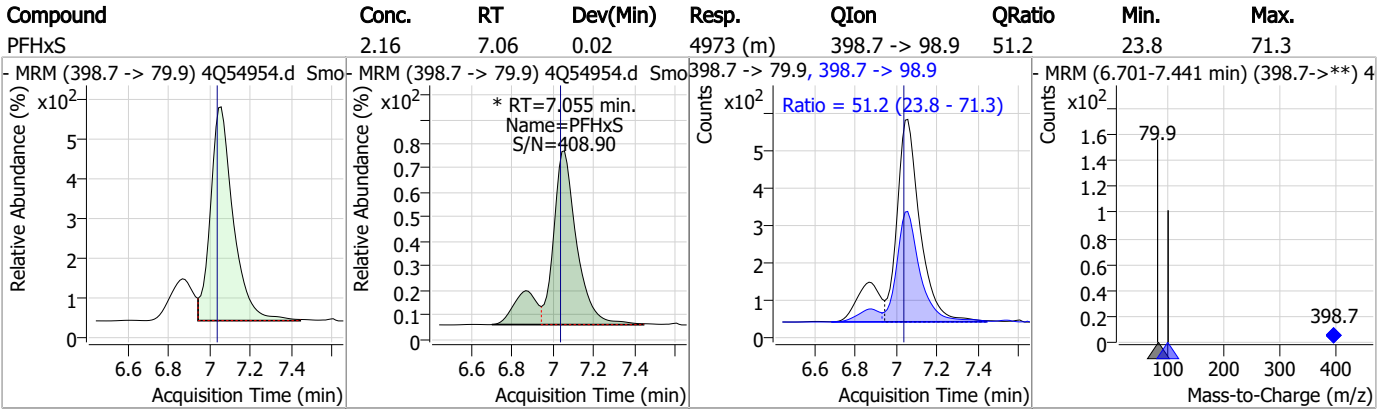


Perfluorinated Compounds by LC/MS/MS



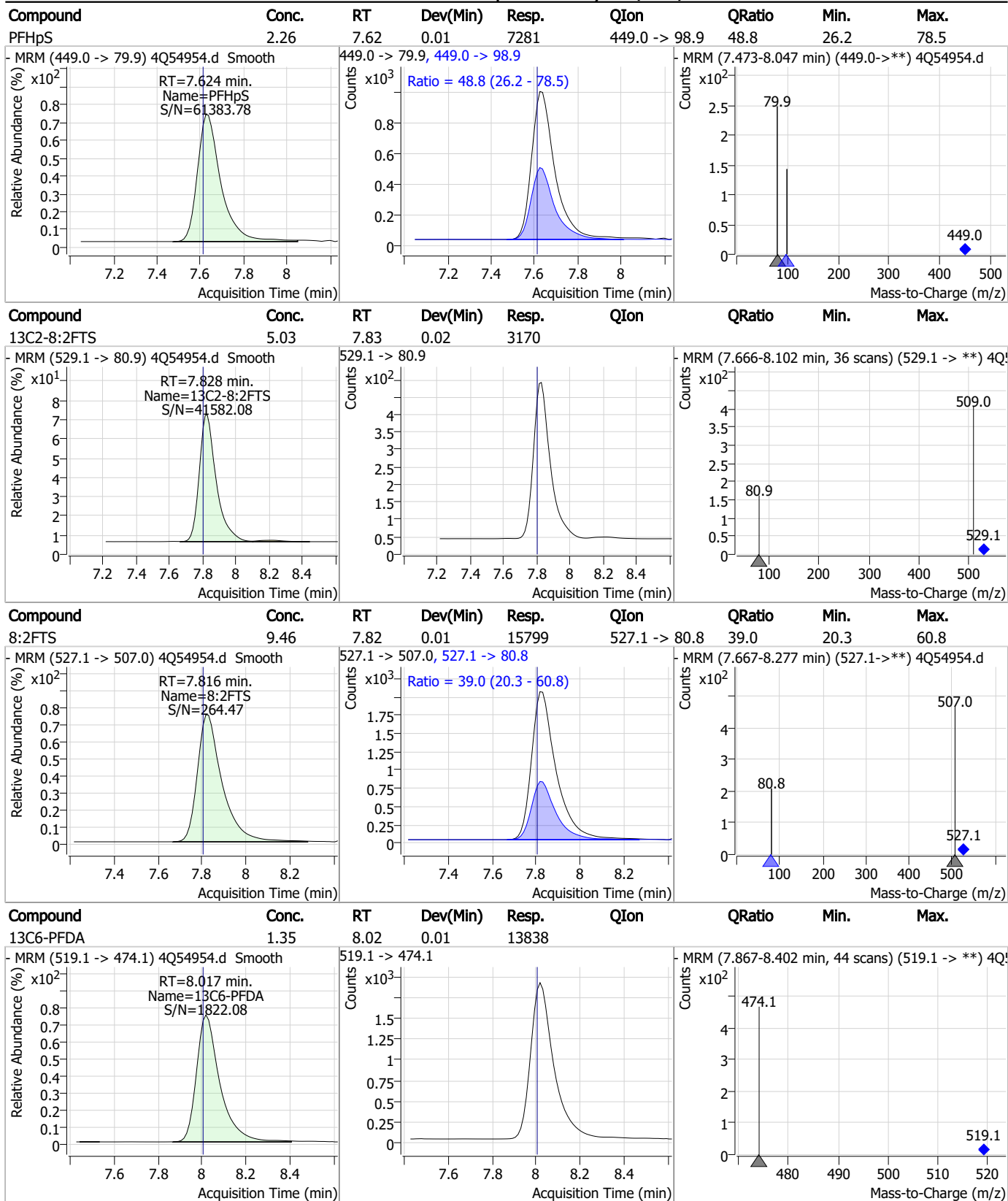
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Perfluorinated Compounds by LC/MS/MS



7.7.13 7

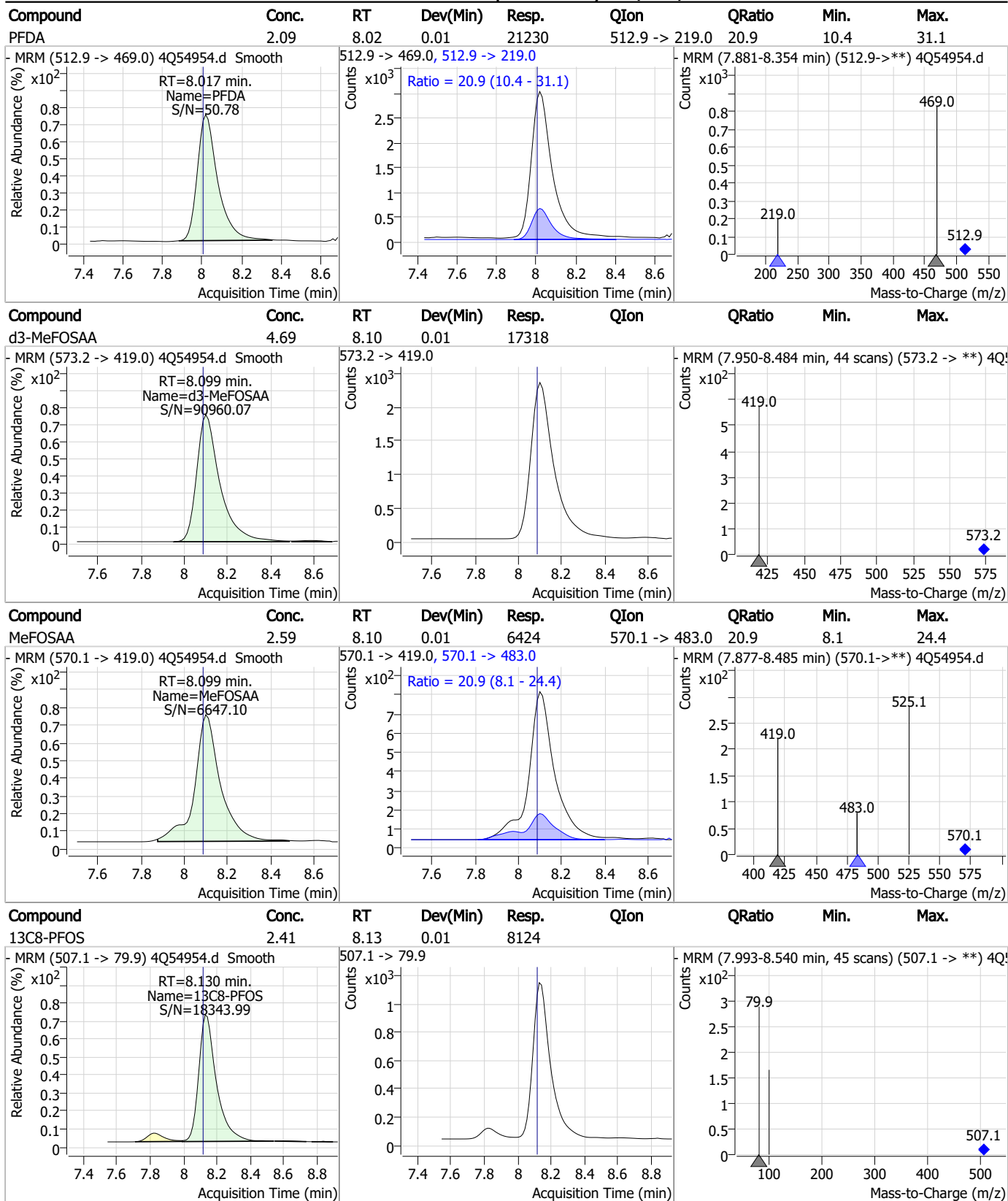
Perfluorinated Compounds by LC/MS/MS



7.7.13
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Perfluorinated Compounds by LC/MS/MS

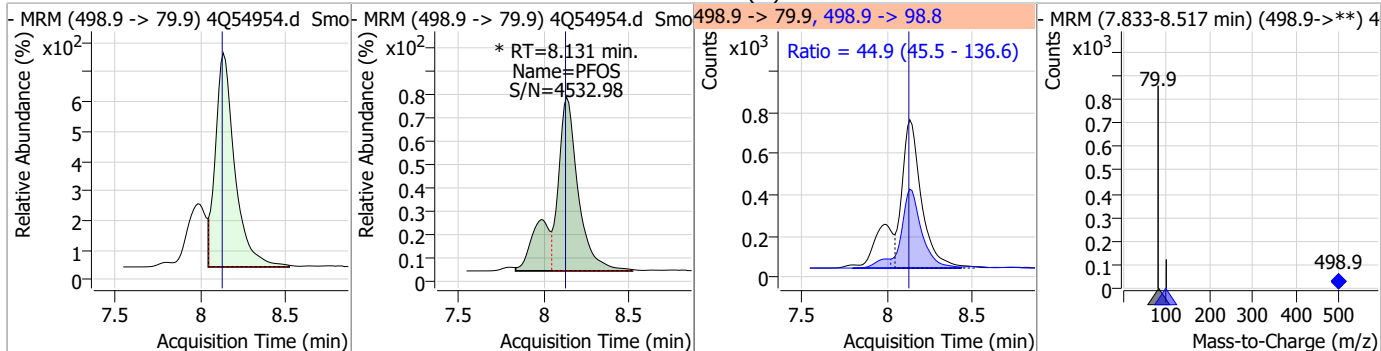


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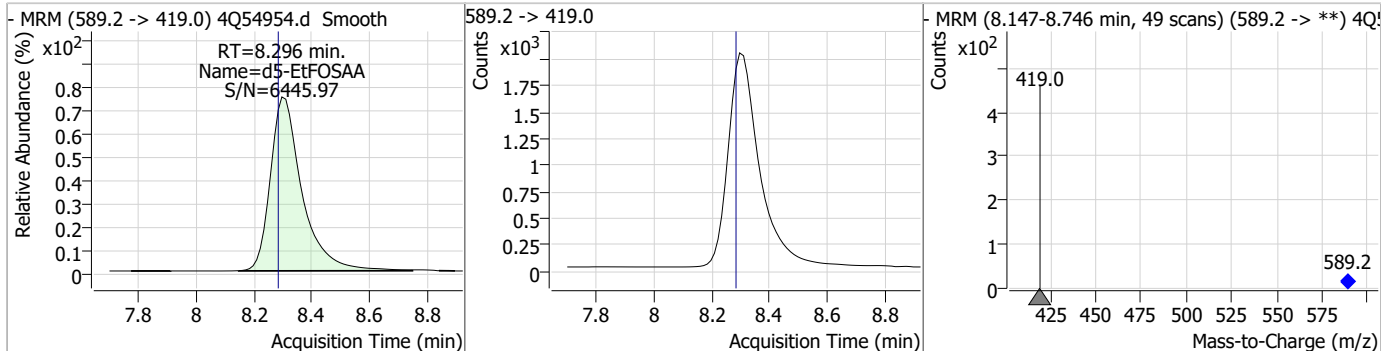


Perfluorinated Compounds by LC/MS/MS

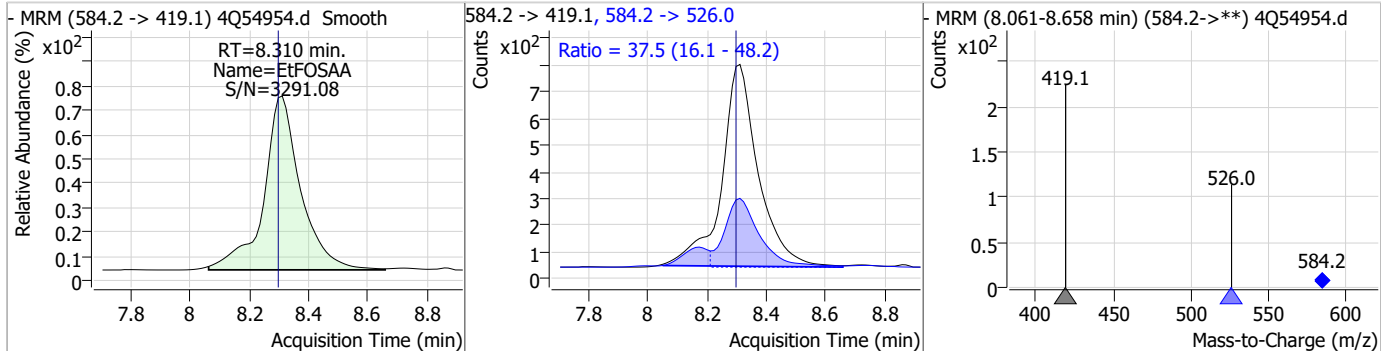
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.16	8.13	0.01	7289 (m)	498.9 -> 98.8	44.9	45.5	136.6



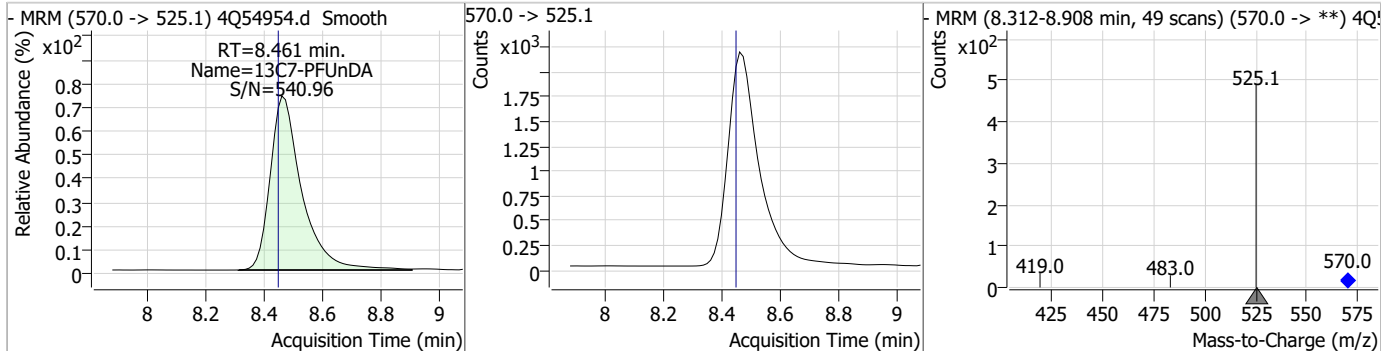
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.88	8.30	0.01	15223				



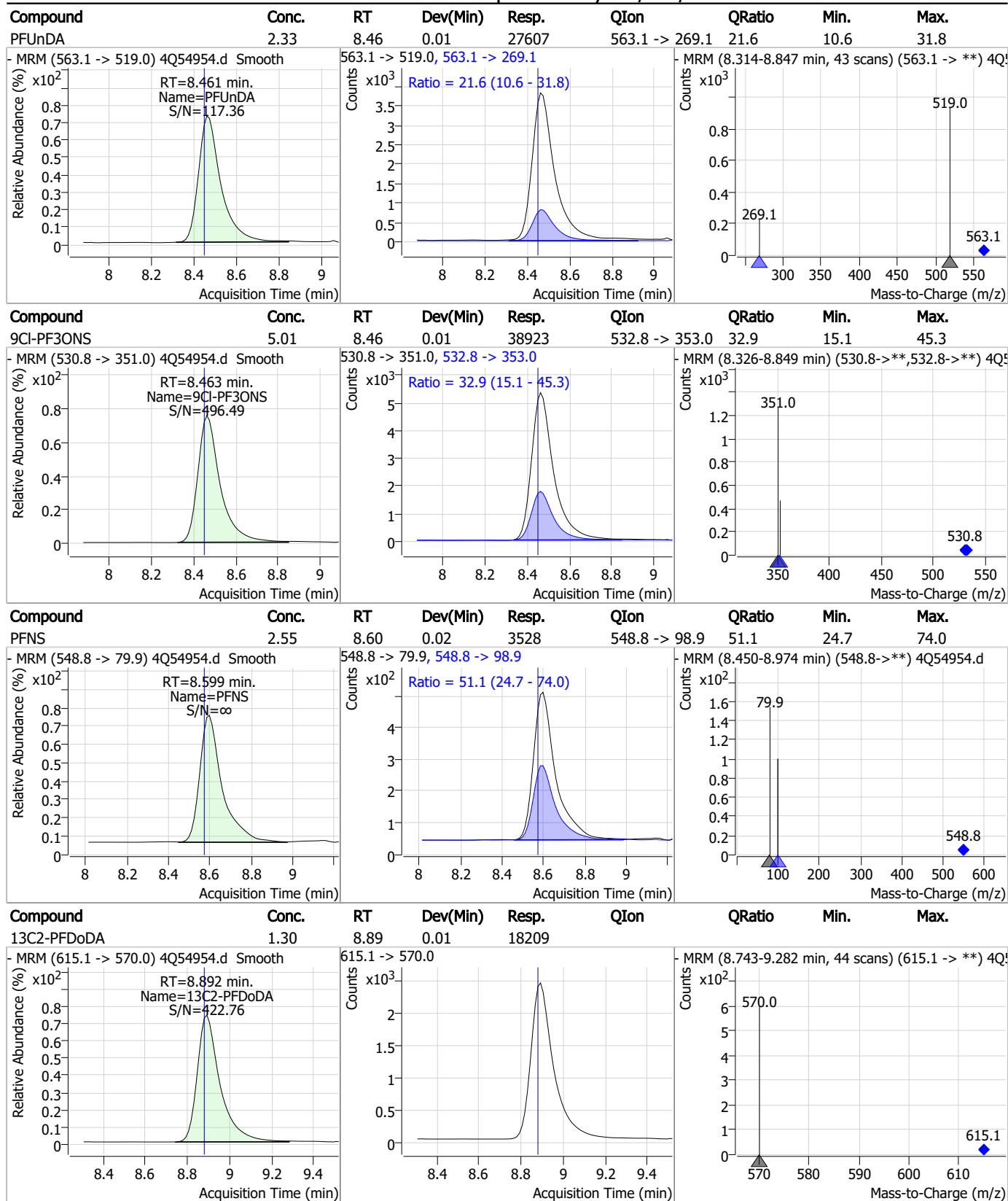
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.37	8.31	0.01	6569	584.2 -> 526.0	37.5	16.1	48.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.35	8.46	0.01	16269				



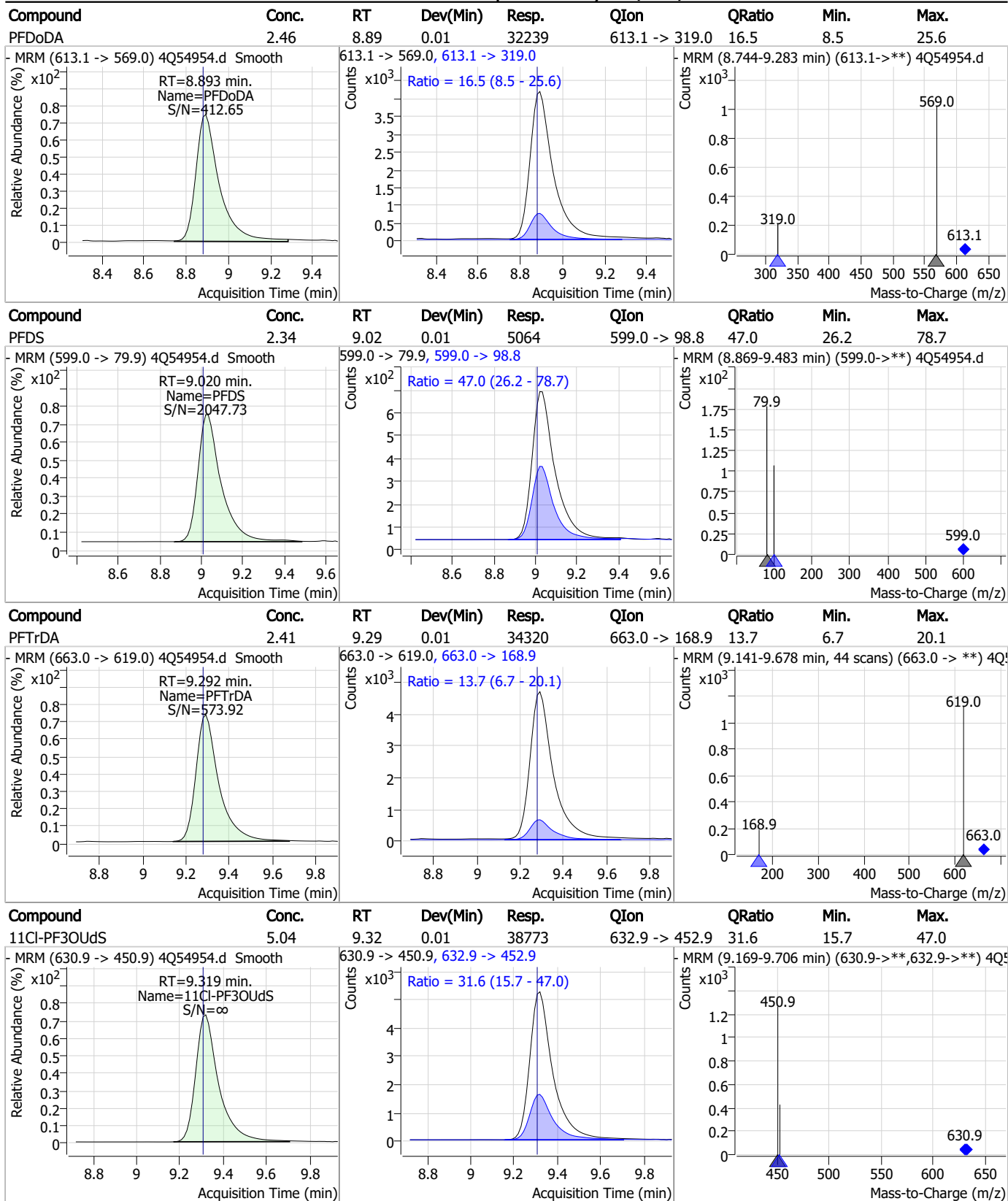
Perfluorinated Compounds by LC/MS/MS



7.7.13

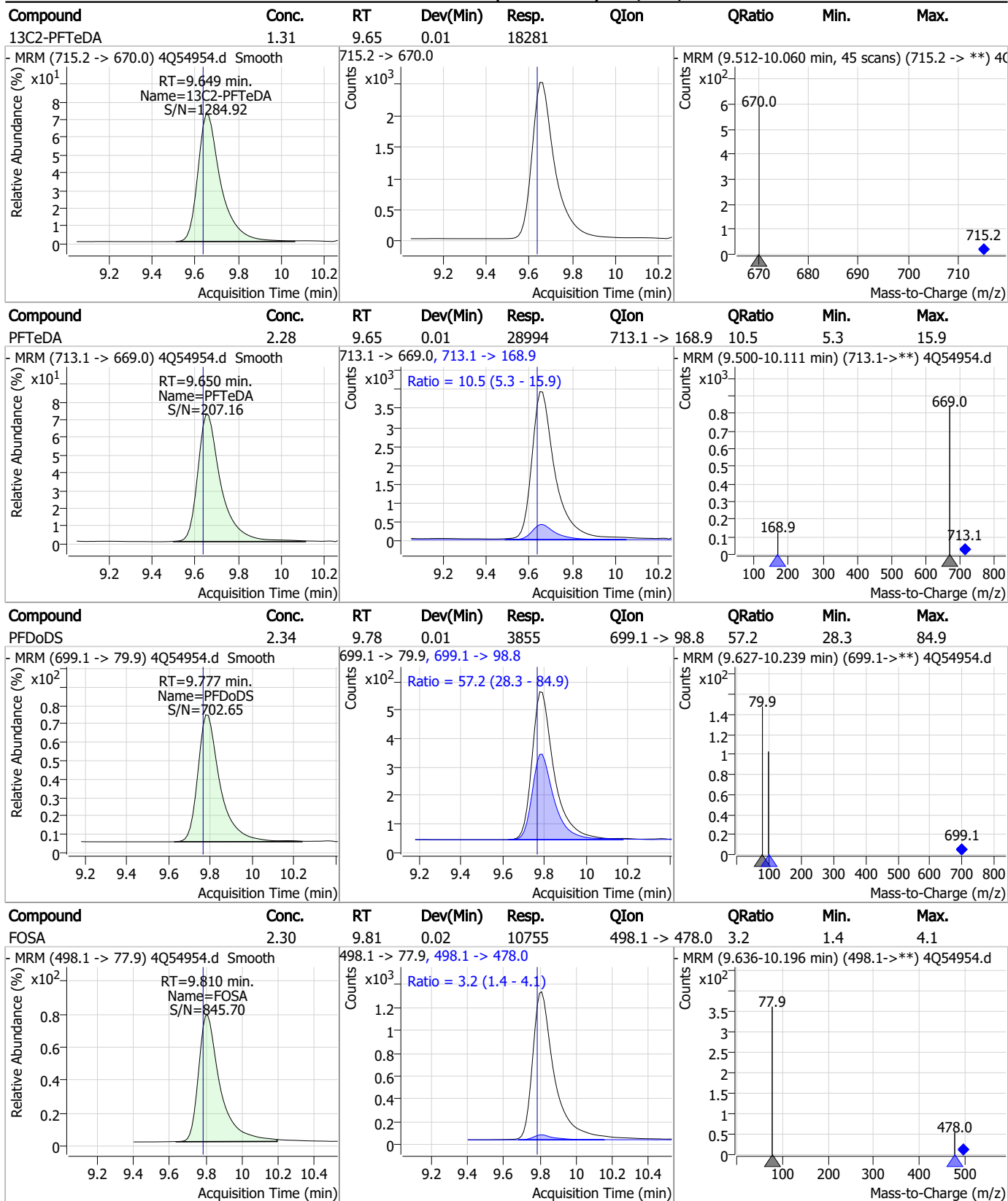
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Perfluorinated Compounds by LC/MS/MS



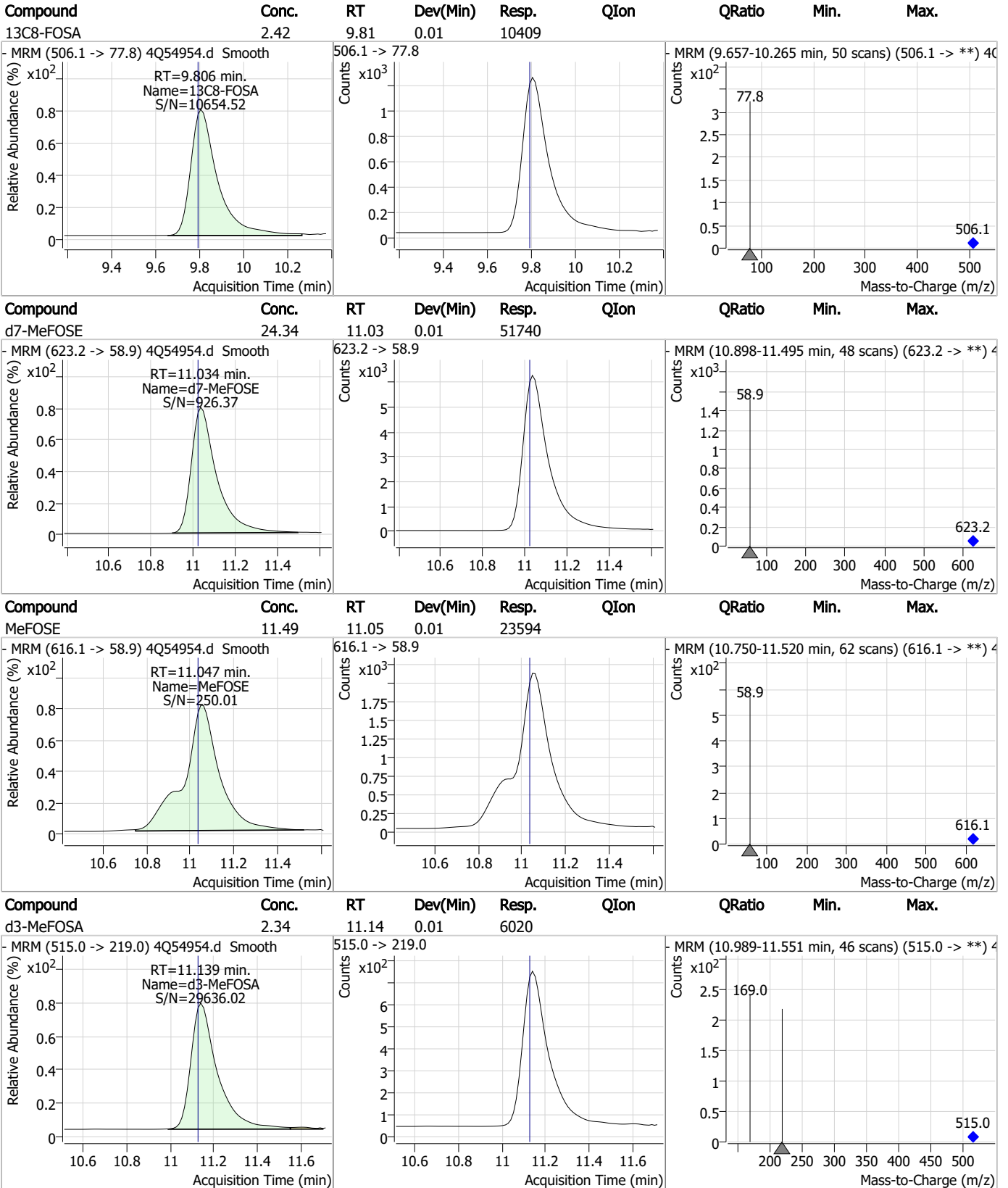
7.7.13
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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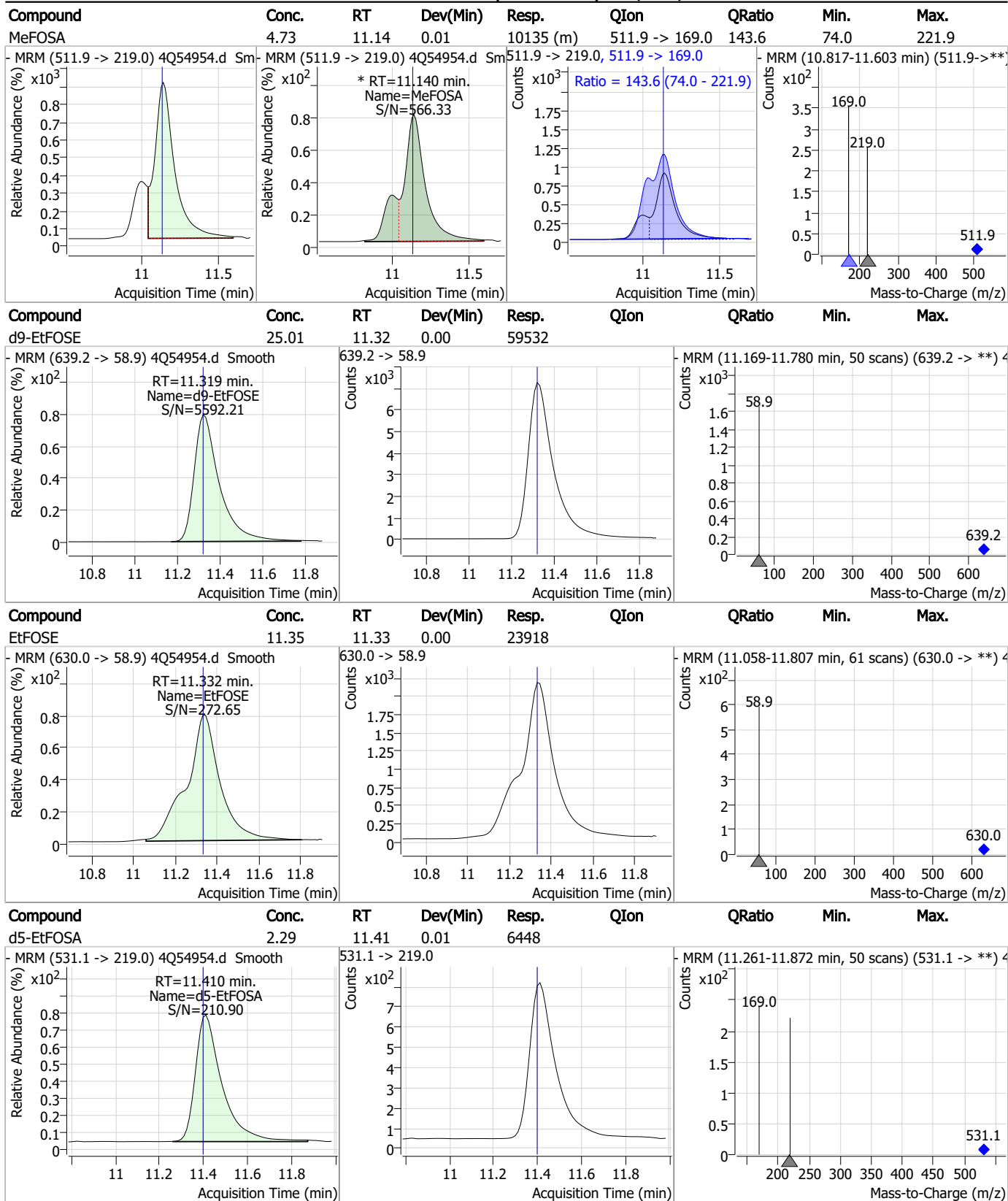
Perfluorinated Compounds by LC/MS/MS



7.7.13
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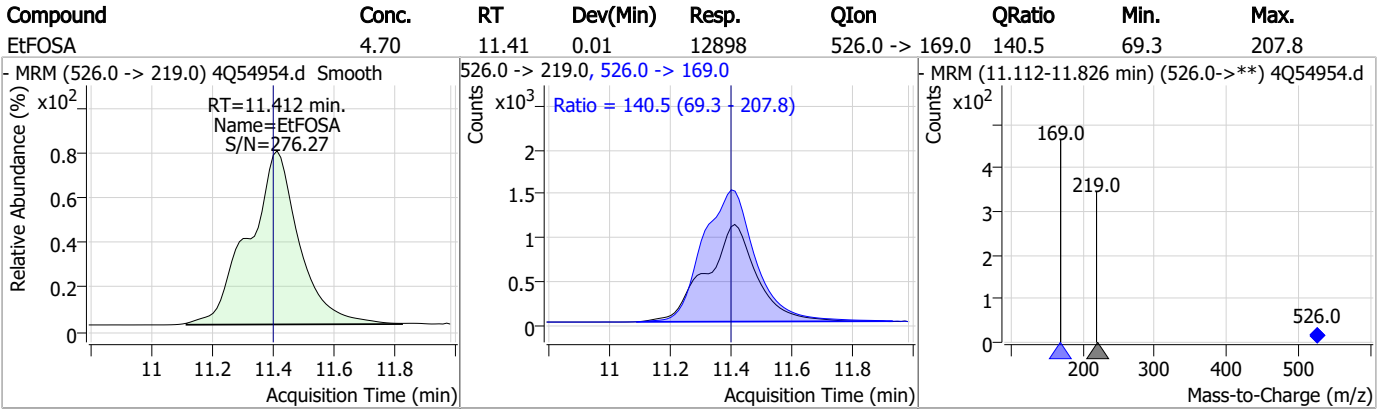


Perfluorinated Compounds by LC/MS/MS



7.7.13
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Perfluorinated Compounds by LC/MS/MS



7.7.13

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Manual Integration Approval Summary

Sample Number: S4Q805-CC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54954.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/10/23 16:48 Supervisor approved: 12/11/23 15:29 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
MeFOSA	31506-32-8		11.14	Split peak

7.7.13.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54988.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 1:10:41 AM
 Sample Name : cc804-4
 Vial : P1-A5
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	93866	10.00 µg/L	0.025
M5-PFPeA	4.175	268.3 -> 223.0	39350	5.00 µg/L	0.013
M5-PFHxA	5.347	318.0 -> 273.0	31956	2.50 µg/L	0.012
M4-PFHpA	6.304	367.1 -> 322.0	30595	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	48591	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	20042	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	13908	1.25 µg/L	0.013
M7-PFUnDA	8.461	570.0 -> 525.1	16922	1.25 µg/L	0.012
M2-PFDoDA	8.892	615.1 -> 570.0	19032	1.25 µg/L	0.012
M2-PFTeDA	9.649	715.2 -> 670.0	18530	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	10460	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	8778	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	7522	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	8009	2.50 µg/L	0.012
M2-4:2FTS	5.058	329.1 -> 80.9	1416	5.00 µg/L	0.012
M2-6:2FTS	6.761	429.1 -> 80.9	2913	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	4171	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	21023	5.00 µg/L	0.012
M3-HFPO-DA	5.702	286.9 -> 168.9	29082	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	16921	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	52425	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	60268	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	7422	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	6251	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6808	2.50 µg/L	0.012
13C3-PFBA	2.703	216.0 -> 172.0	45887	5.00 µg/L	0.025
18O2-PFHxS	7.054	403.0 -> 83.9	4942	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	55598	2.50 µg/L	0.012
13C2-PFDA	8.017	515.1 -> 470.1	14356	1.25 µg/L	0.013
13C5-PFNA	7.522	468.0 -> 423.0	20709	1.25 µg/L	0.012
13C2-PFHxA	5.348	315.1 -> 270.0	35806	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.058	329.1 -> 80.9	1416	6.03 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.7%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2913	5.73 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.5%		
13C2-8:2FTS	7.816	529.1 -> 80.9	4171	6.12 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.4%		
13C2-PFDoDA	8.892	615.1 -> 570.0	19032	1.33 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	18530	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C3-PFBS	5.215	302.1 -> 79.9	8778	2.32 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.7%		
13C3-PFHxS	7.042	402.1 -> 79.9	7522	2.43 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C4-PFBA	2.699	216.8 -> 171.9	93866	9.74 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C4-PFHpA	6.304	367.1 -> 322.0	30595	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C5-PFHxA	5.347	318.0 -> 273.0	31956	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C5-PFPeA	4.175	268.3 -> 223.0	39350	4.79 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C6-PFDA	8.017	519.1 -> 474.1	13908	1.33 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C7-PFUnDA	8.461	570.0 -> 525.1	16922	1.37 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.9%		
13C8-FOSA	9.806	506.1 -> 77.8	10460	2.37 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C8-PFOA	6.989	421.1 -> 376.0	48591	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C8-PFOS	8.130	507.1 -> 79.9	8009	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C9-PFNA	7.521	472.1 -> 427.0	20042	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
d3-MeFOSAA	8.099	573.2 -> 419.0	21023	5.56 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.3%		
13C3-HFPO-DA	5.702	286.9 -> 168.9	29082	8.82 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 88.2%		
d3-MeFOSA	11.126	515.0 -> 219.0	6251	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.0%		
d5-EtFOSAA	8.296	589.2 -> 419.0	16921	5.29 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
d7-MeFOSE	11.022	623.2 -> 58.9	52425	24.09 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
d9-EtFOSE	11.319	639.2 -> 58.9	60268	24.72 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
d5-EtFOSA	11.397	531.1 -> 219.0	7422	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.9%		
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	21795	8.94 µg/L	95
		327.1 -> 80.9	8598		
6:2FTS	6.761	427.1 -> 407.0	28573	9.33 µg/L	98
		427.1 -> 80.9	10765		
8:2FTS	7.816	527.1 -> 507.0	20818	9.47 µg/L	99
		527.1 -> 80.8	8248		
EtFOSAA	8.297	584.2 -> 419.1	7319	2.37 µg/L	m 93
		584.2 -> 526.0	2649		
FOSA	9.798	498.1 -> 77.9	11301	2.40 µg/L	100
		498.1 -> 478.0	326		
MeFOSAA	8.099	570.1 -> 419.0	8011	2.66 µg/L	99
		570.1 -> 483.0	1350		
PFBA	2.695	212.8 -> 168.9	28350	9.43 µg/L	100
PFBS	5.216	298.7 -> 79.9	5431	1.99 µg/L	98
		298.7 -> 98.8	2138		
PFDA	8.017	512.9 -> 469.0	23524	2.30 µg/L	97
		512.9 -> 219.0	4588		
PFDoDA	8.893	613.1 -> 569.0	31713	2.31 µg/L	98
		613.1 -> 319.0	5761		
PFDS	9.020	599.0 -> 79.9	5105	2.40 µg/L	90

7.7.14
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2326			
PFHpA	6.305	363.1 -> 319.0	39676	2.30	µg/L	99
		363.1 -> 169.0	7564			
PFHpS	7.624	449.0 -> 79.9	7240	2.28	µg/L	99
		449.0 -> 98.9	3846			
PFHxA	5.350	313.0 -> 269.0	22639	2.22	µg/L	99
		313.0 -> 118.9	743			
PFHxS	7.043	398.7 -> 79.9	5068	2.09	µg/L	m 95
		398.7 -> 98.9	2563			
PFNA	7.522	463.0 -> 419.0	27241	2.31	µg/L	99
		463.0 -> 219.0	6381			
PFNS	8.598	548.8 -> 79.9	3825	2.80	µg/L	96
		548.8 -> 98.9	2004			
PFOA	6.990	413.0 -> 369.0	47329	2.37	µg/L	94
		413.0 -> 169.0	9205			
PFOS	8.131	498.9 -> 79.9	7239	2.17	µg/L	m 55
		498.9 -> 98.8	3516			
PFPeA	4.177	263.0 -> 219.0	35961	4.64	µg/L	100
PFPeS	6.294	349.1 -> 79.9	5103	2.23	µg/L	96
		349.1 -> 98.9	2296			
PFTeDA	9.650	713.1 -> 669.0	29677	2.30	µg/L	100
		713.1 -> 168.9	3101			
PFTrDA	9.279	663.0 -> 619.0	35363	2.37	µg/L	98
		663.0 -> 168.9	5026			
PFUnDA	8.461	563.1 -> 519.0	29190	2.37	µg/L	100
		563.1 -> 269.1	6184			
11CI-PF3OUdS	9.306	630.9 -> 450.9	39872	4.98	µg/L	100
		632.9 -> 452.9	12434			
9CI-PF3ONS	8.463	530.8 -> 351.0	40262	4.97	µg/L	97
		532.8 -> 353.0	12839			
ADONA	6.568	376.9 -> 250.9	105338	5.36	µg/L	99
		376.9 -> 84.8	25143			
HFPO-DA	5.703	284.9 -> 168.9	12367	4.44	µg/L	98
		284.9 -> 184.9	1240			
3:3FTCA	3.630	241.0 -> 177.0	5332	11.16	µg/L	99
		241.0 -> 117.0	497			
5:3FTCA	6.033	341.0 -> 237.1	102737	56.49	µg/L	100
		341.0 -> 217.0	73531			
7:3FTCA	7.549	441.0 -> 316.9	54694	57.35	µg/L	97
		441.0 -> 336.9	132936			
EtFOSA	11.399	526.0 -> 219.0	14242	4.51	µg/L	99
		526.0 -> 169.0	19874			
EtFOSE	11.332	630.0 -> 58.9	25016	11.73	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	10671	4.79	µg/L	m 97
		511.9 -> 169.0	15324			
MeFOSE	11.047	616.1 -> 58.9	23581	11.34	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3849	2.37	µg/L	96
		699.1 -> 98.8	2288			
NFDHA	5.229	295.0 -> 201.0	3372	4.67	µg/L	97
		295.0 -> 84.9	943			
PFMBA	4.578	279.0 -> 85.1	19534	4.58	µg/L	100
PFMPA	3.332	229.0 -> 84.9	21719	4.64	µg/L	100
PFEESA	5.734	314.8 -> 134.9	31076	4.12	µg/L	99
		314.8 -> 82.9	1059			

= Qualifier out of range, m = manually integrated, + = Area summed

7.7.14
7

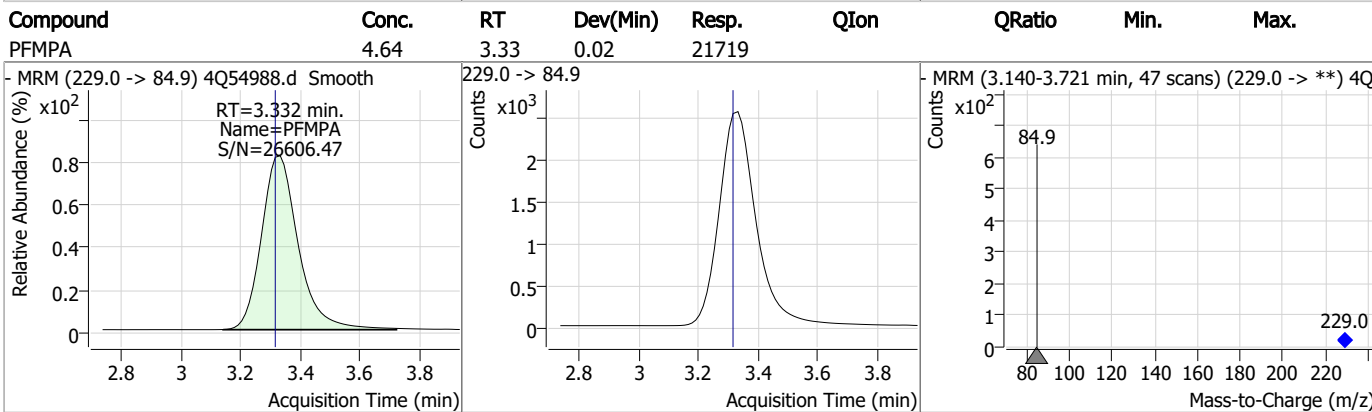
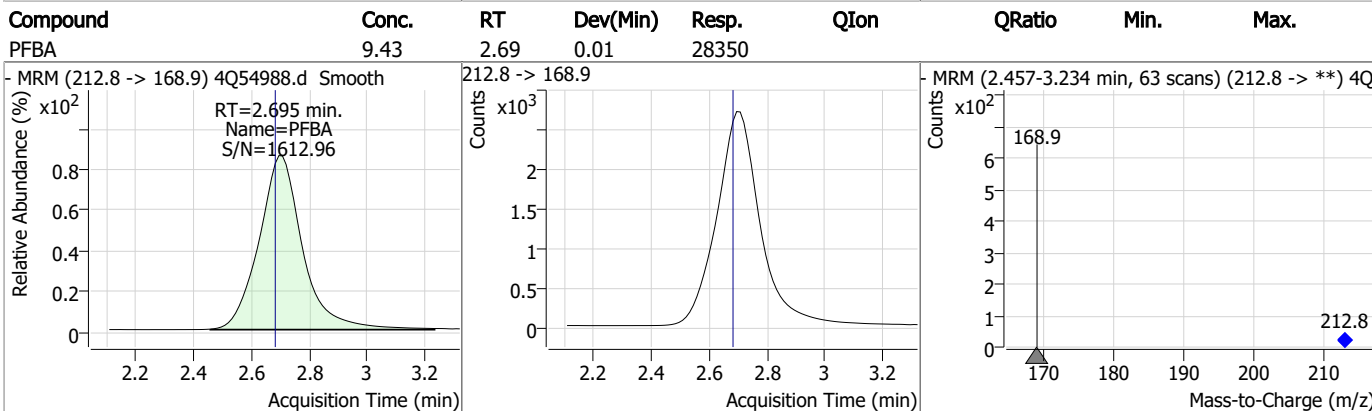
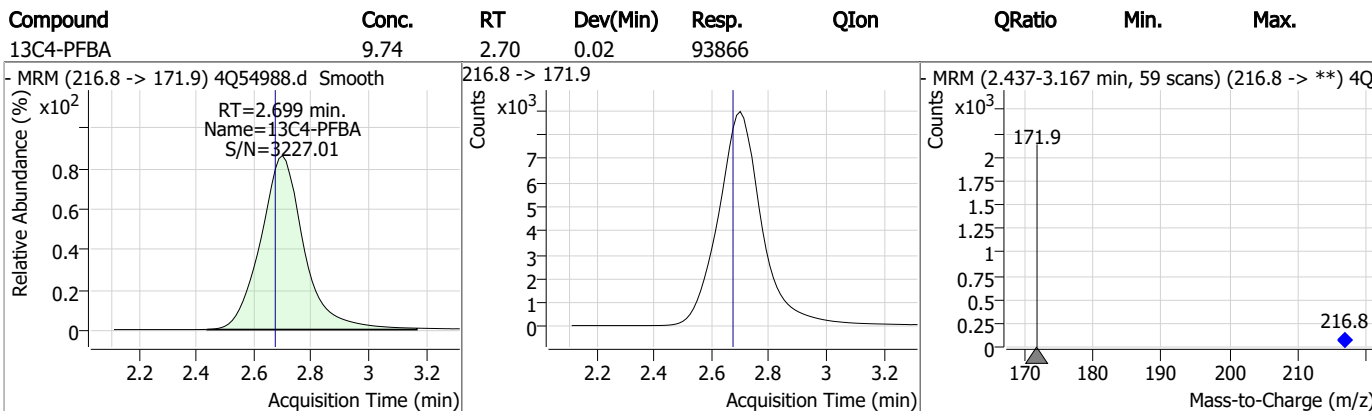
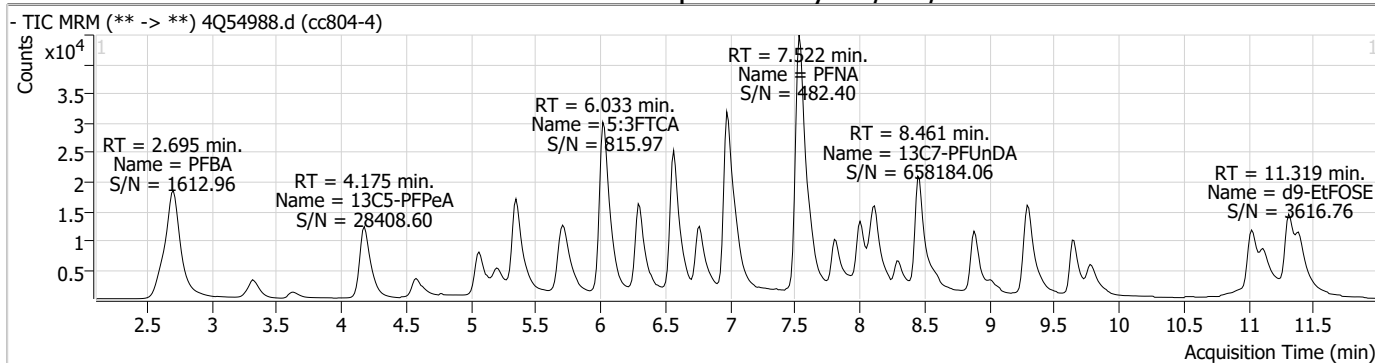
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.14

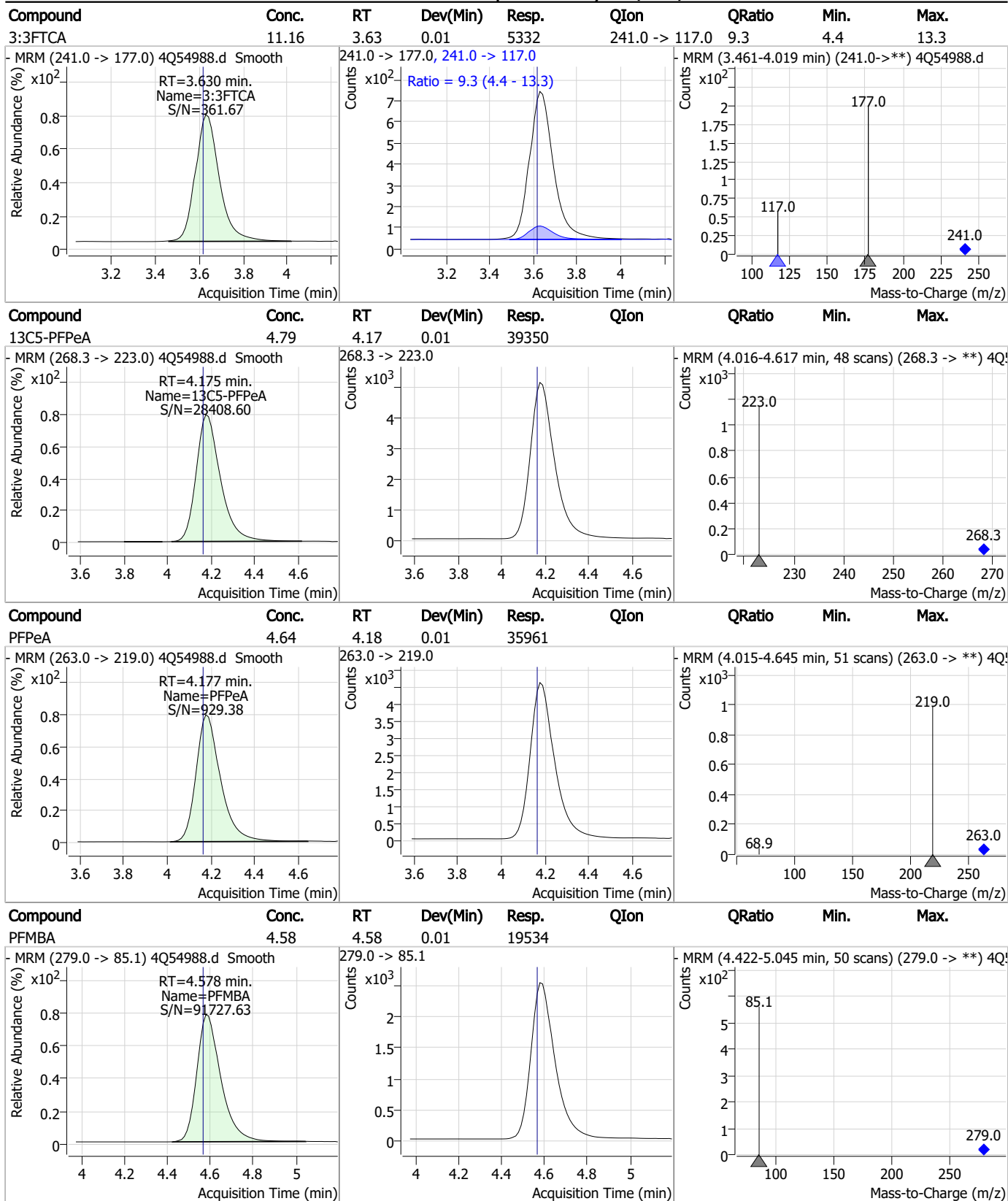
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Perfluorinated Compounds by LC/MS/MS



7.7.14
7

Perfluorinated Compounds by LC/MS/MS



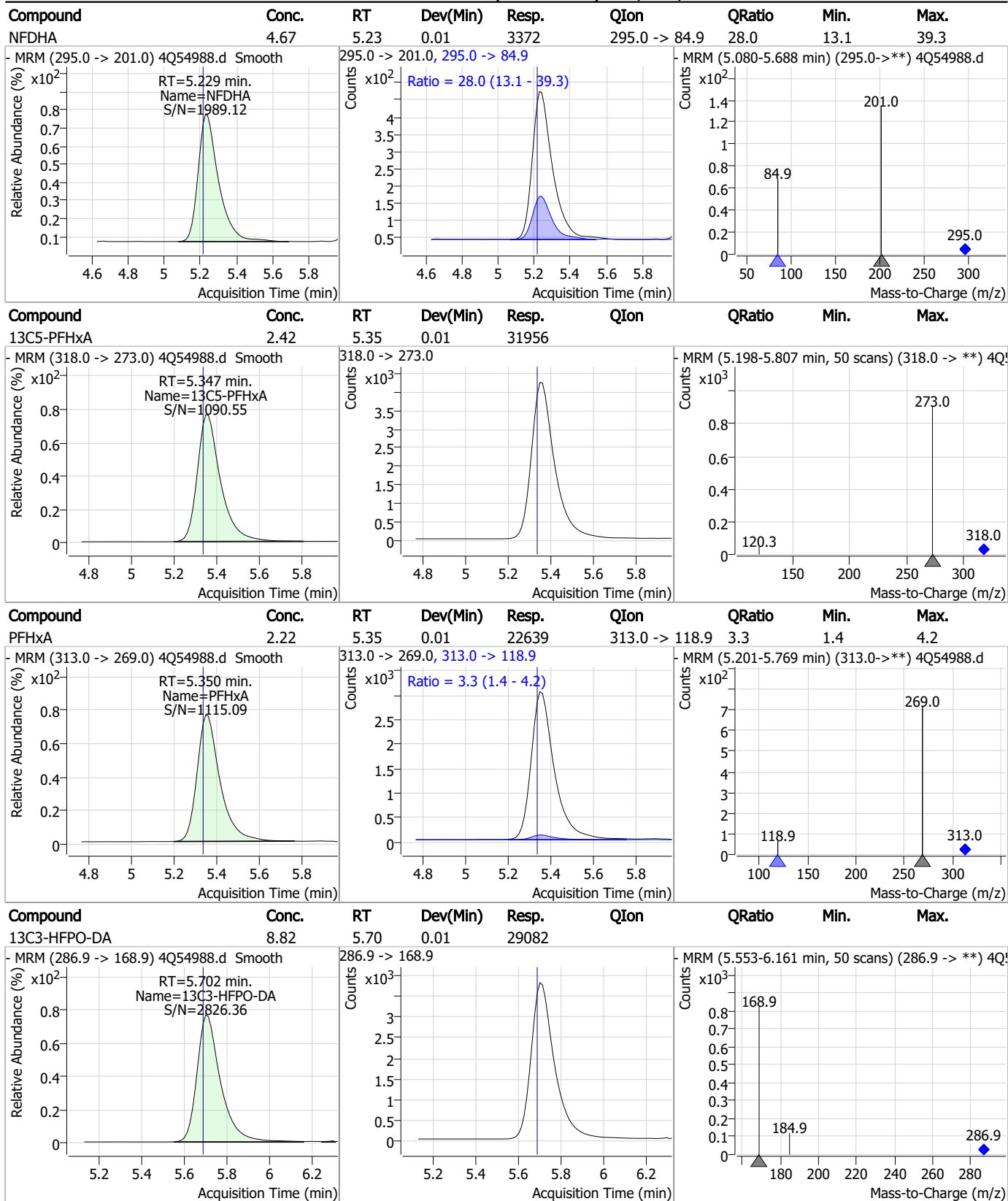
7.7.14
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	6.03	5.06	0.01	1416				
4:2FTS	8.94	5.06	0.01	21795	327.1 -> 80.9	39.4	21.3	64.0
13C3-PFBS	2.32	5.21	0.03	8778				
PFBS	1.99	5.22	0.03	5431	298.7 -> 98.8	39.4	20.3	60.8

7.7.14
7

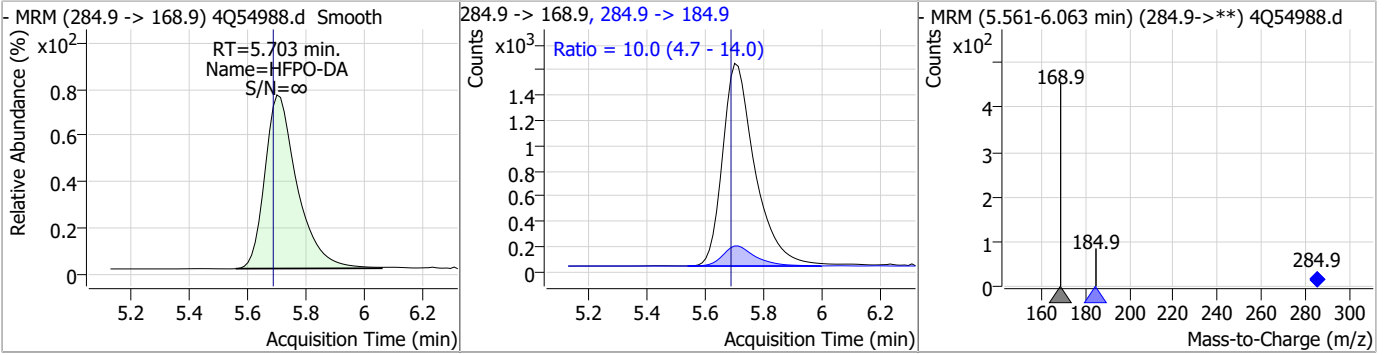
Perfluorinated Compounds by LC/MS/MS



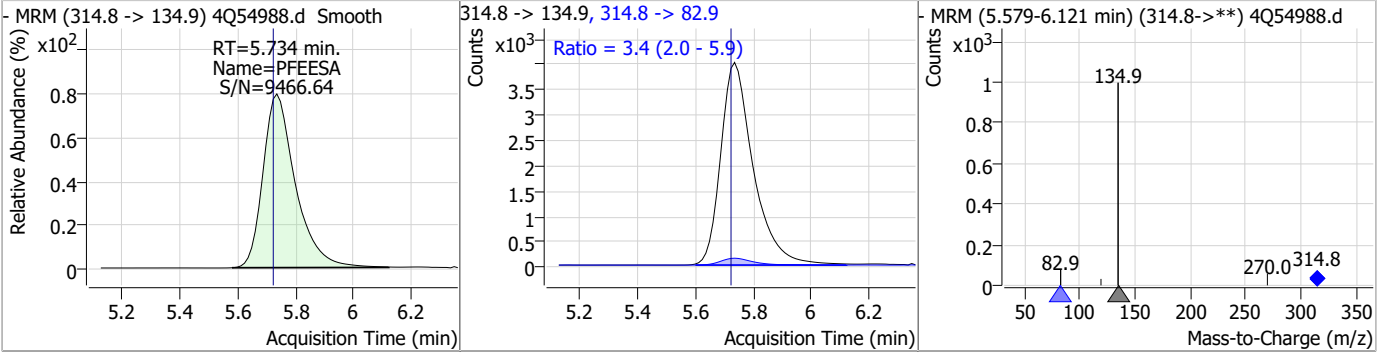
7.7.14
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Perfluorinated Compounds by LC/MS/MS

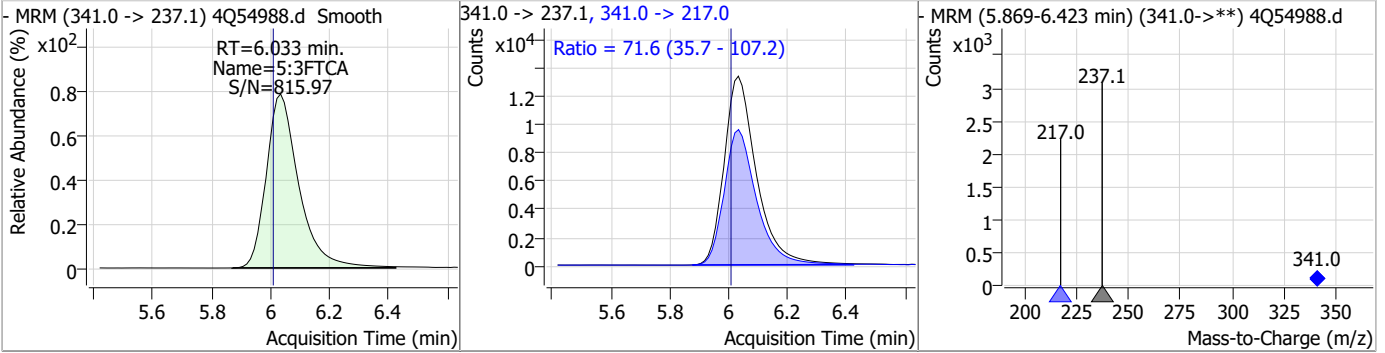
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.44	5.70	0.01	12367	284.9 -> 184.9	10.0	4.7	14.0



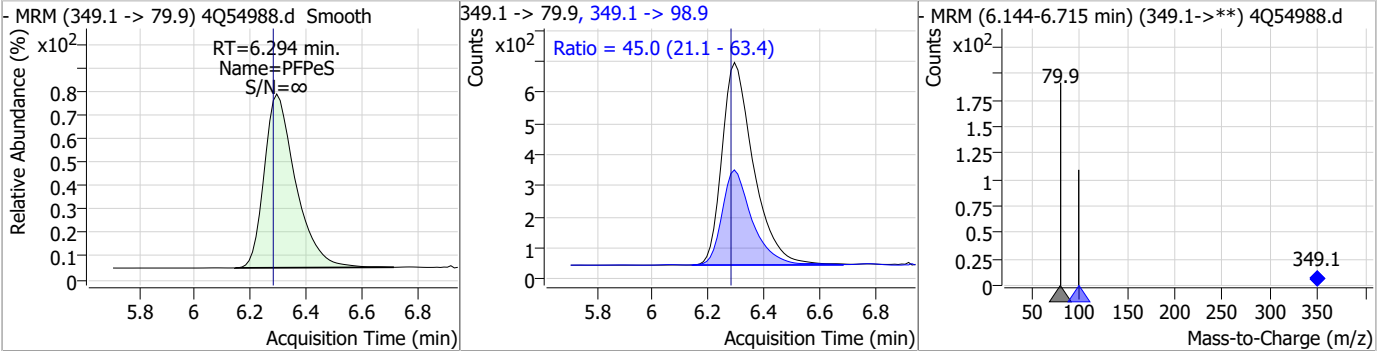
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.12	5.73	0.01	31076	314.8 -> 82.9	3.4	2.0	5.9



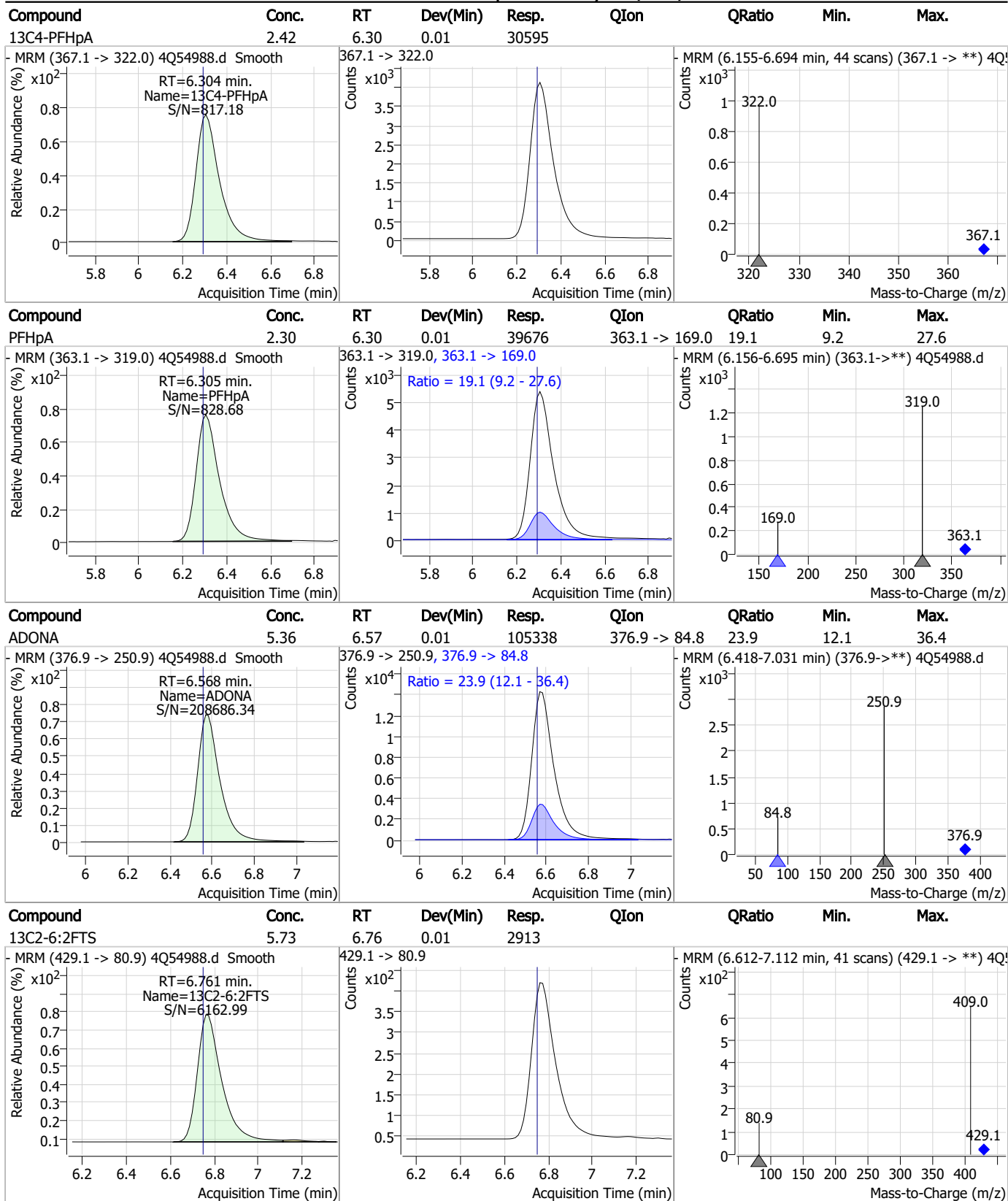
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	56.49	6.03	0.02	102737	341.0 -> 217.0	71.6	35.7	107.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.23	6.29	0.01	5103	349.1 -> 98.9	45.0	21.1	63.4

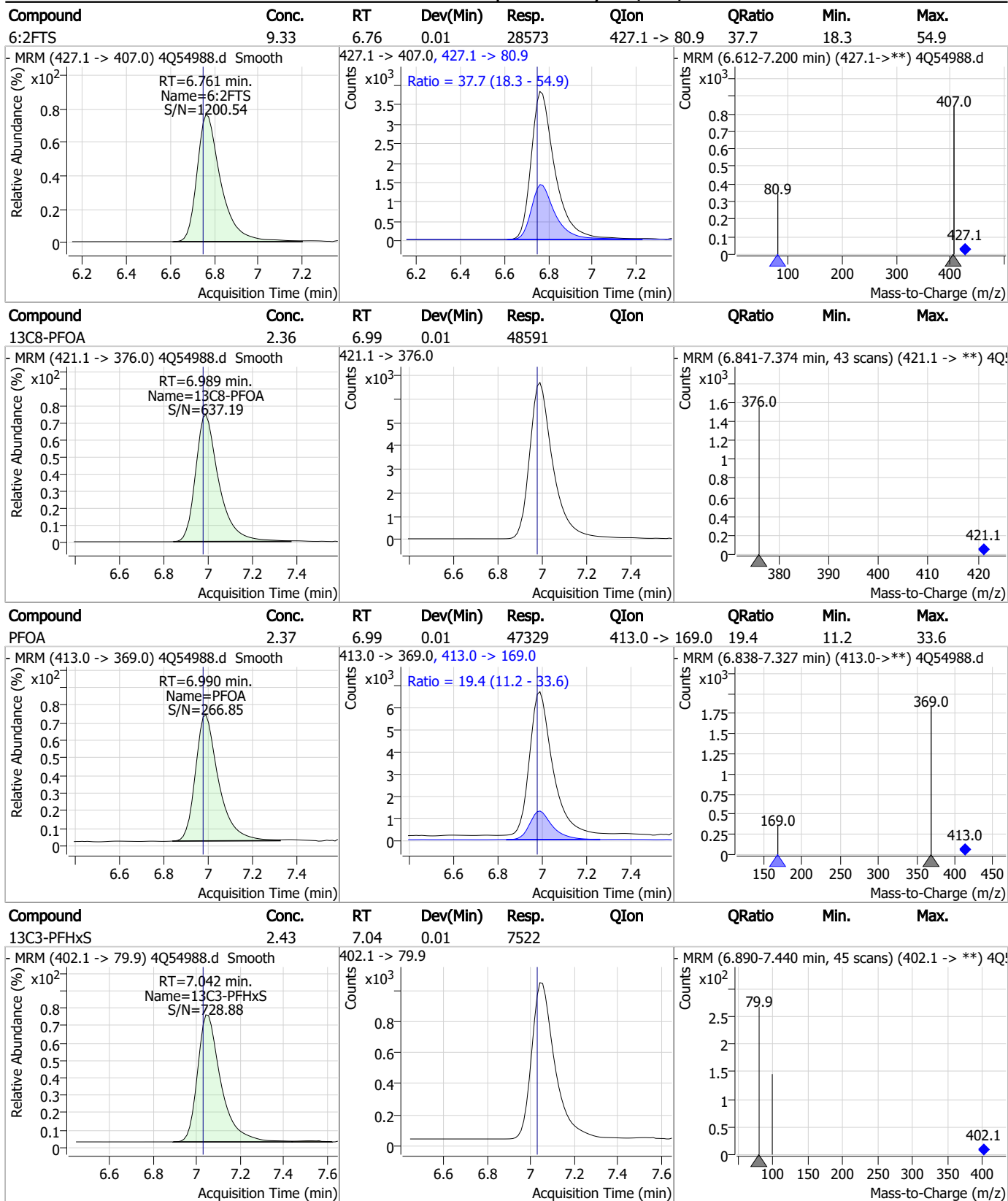


Perfluorinated Compounds by LC/MS/MS



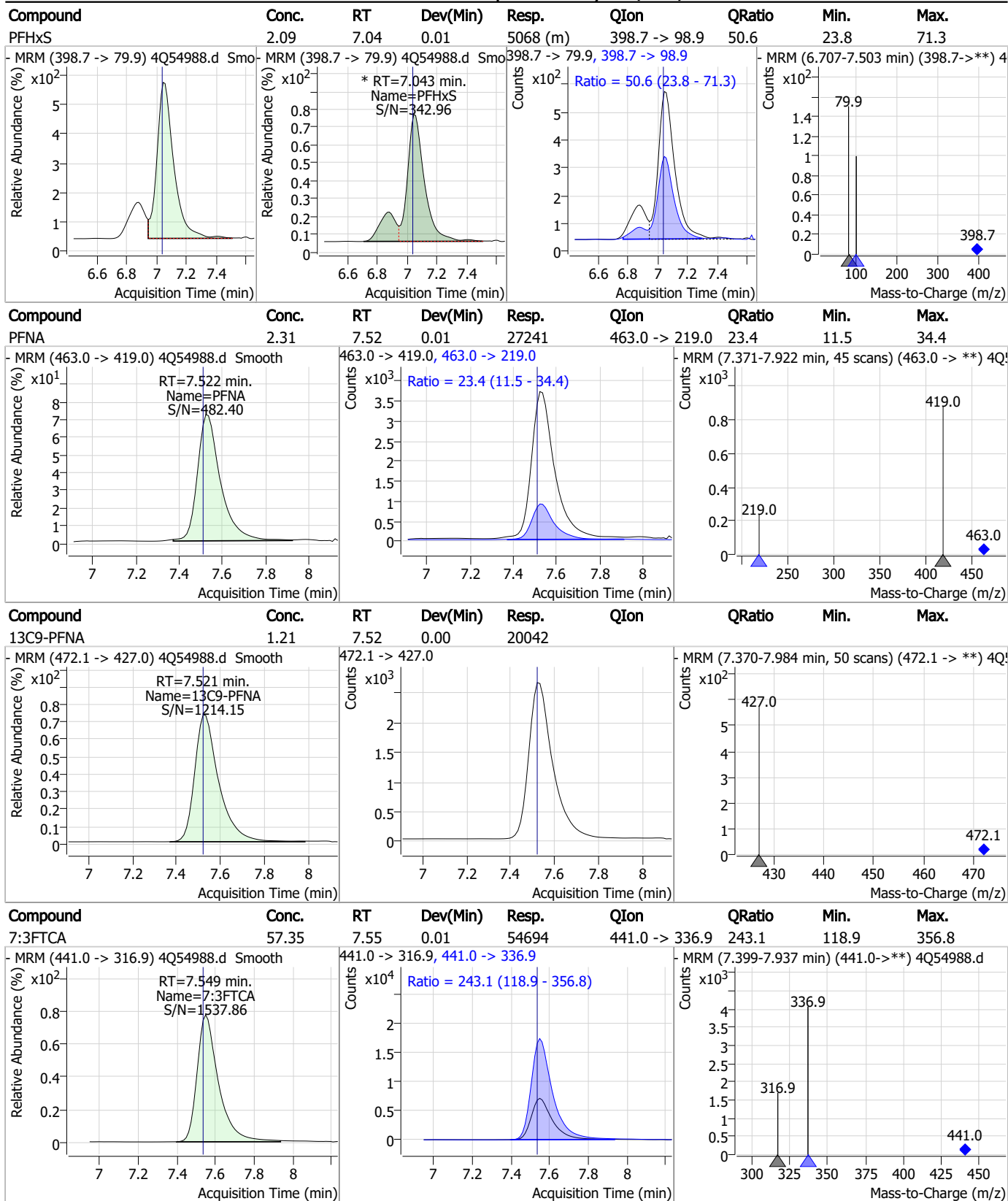
7.7.14
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Perfluorinated Compounds by LC/MS/MS



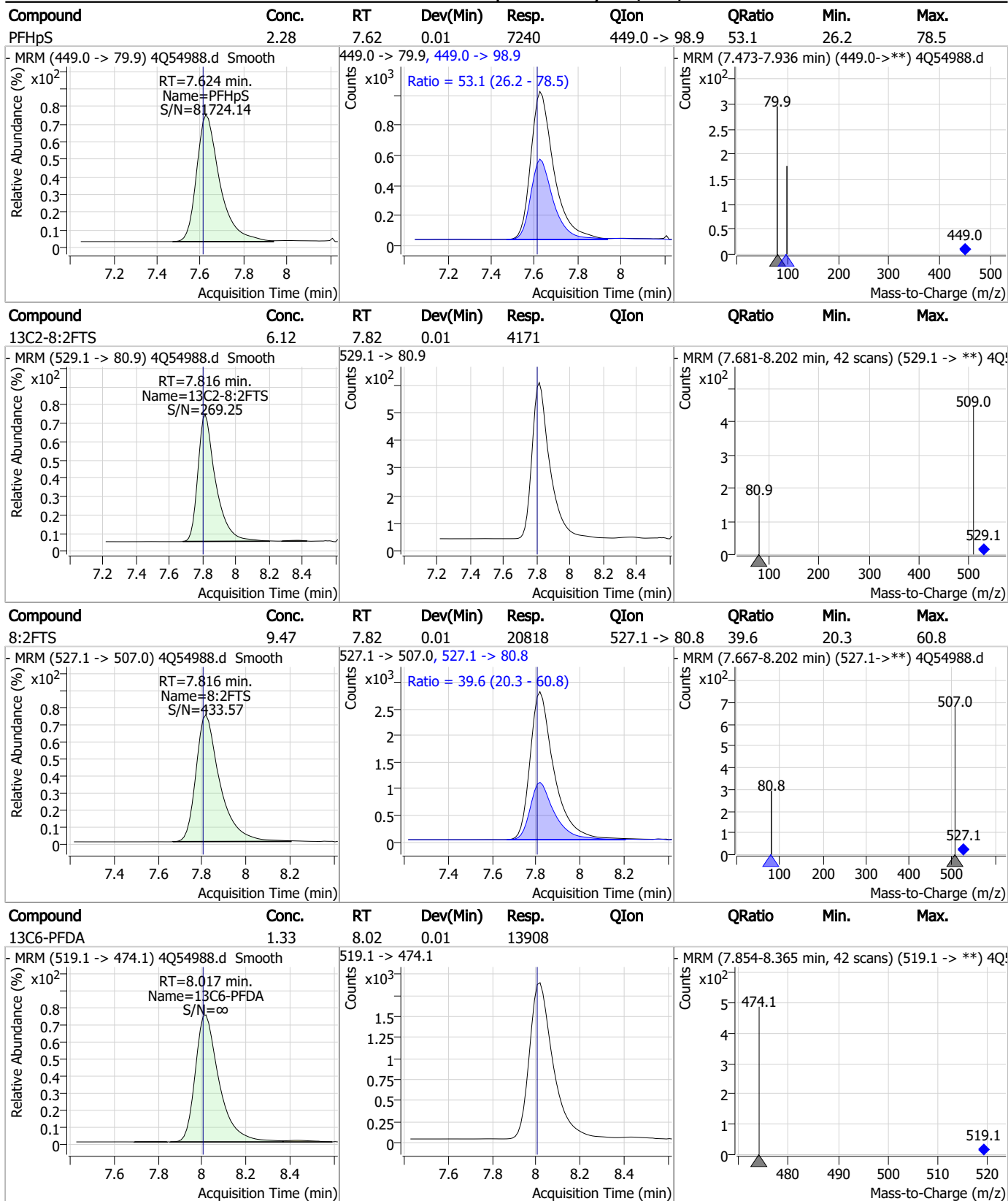
7.7.14
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Perfluorinated Compounds by LC/MS/MS



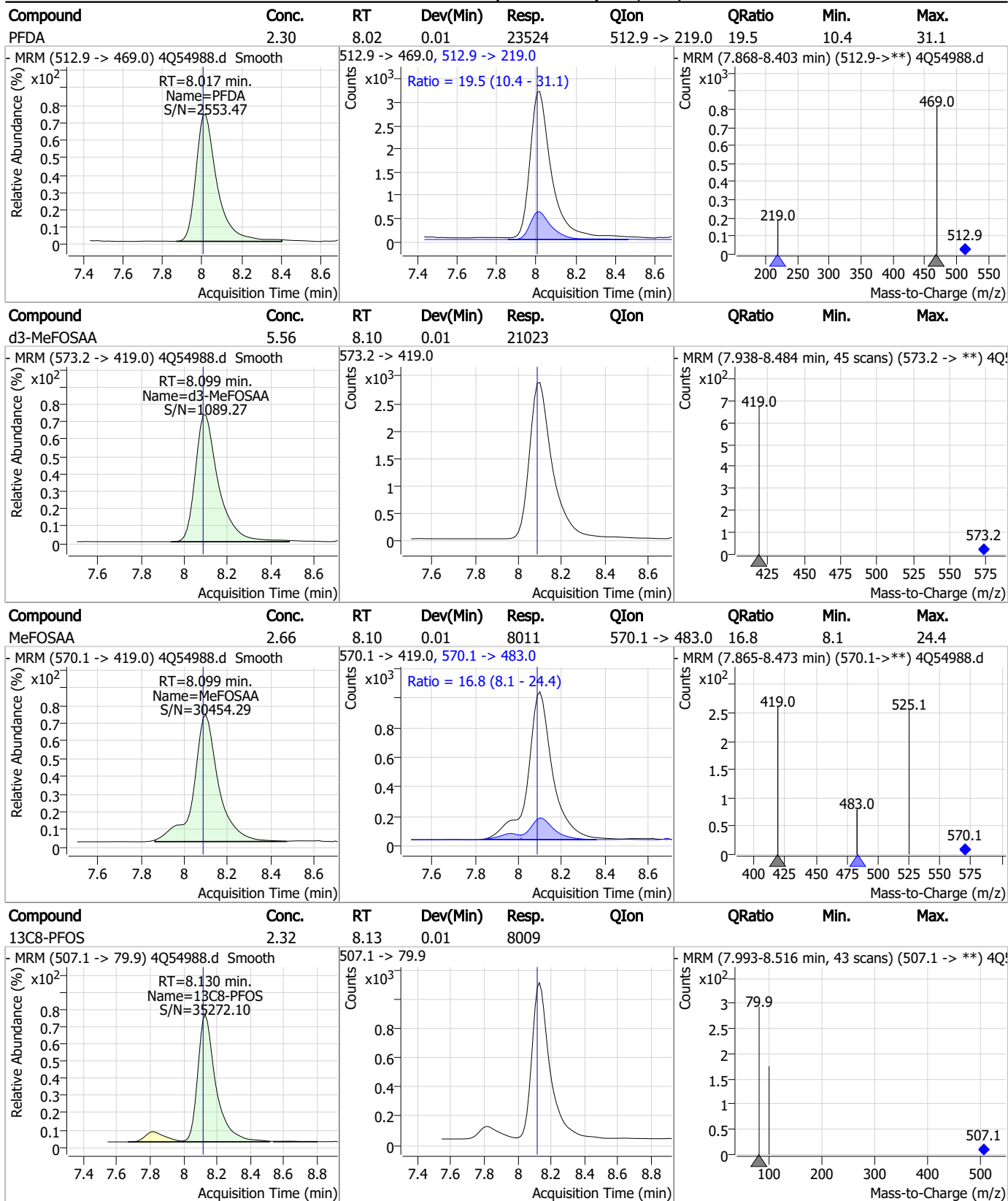
7.7.14

Perfluorinated Compounds by LC/MS/MS



7.7.14
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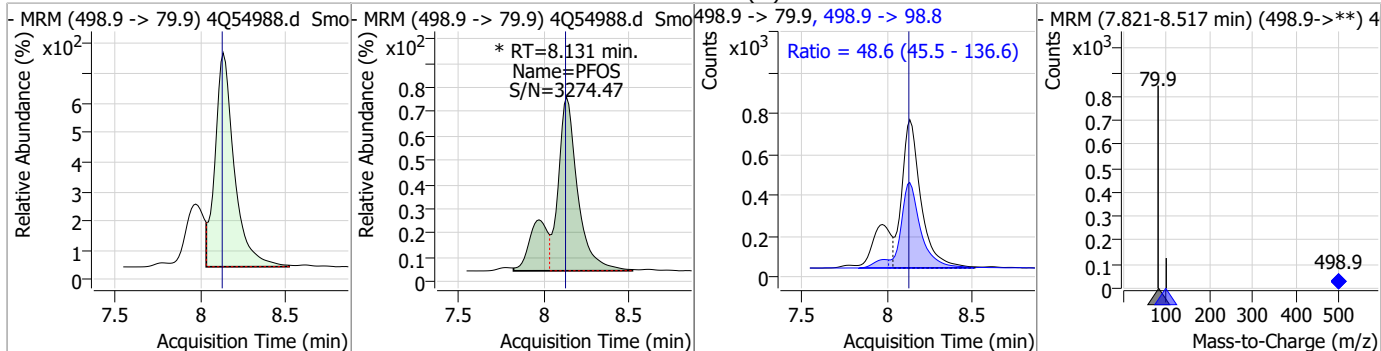
Perfluorinated Compounds by LC/MS/MS



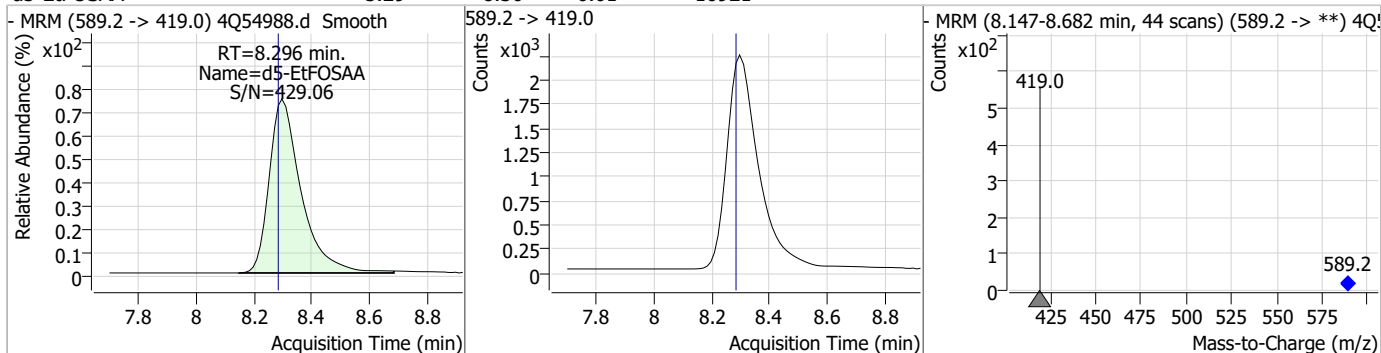
7.7.14
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Perfluorinated Compounds by LC/MS/MS

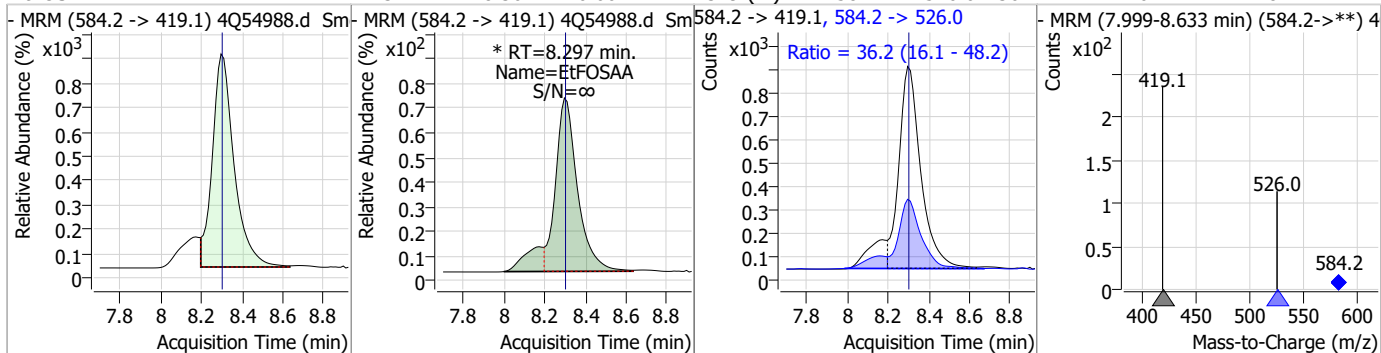
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.17	8.13	0.01	7239 (m)	498.9 -> 98.8	48.6	45.5	136.6



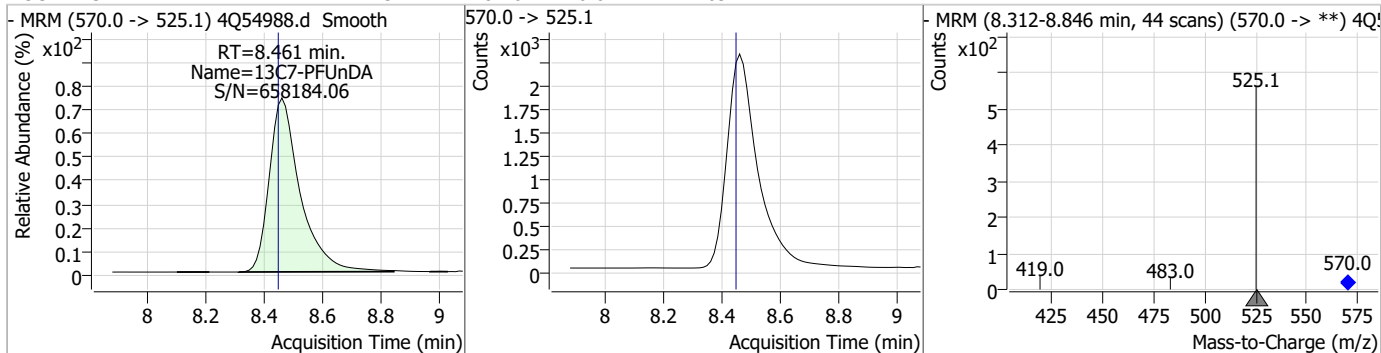
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.29	8.30	0.01	16921				



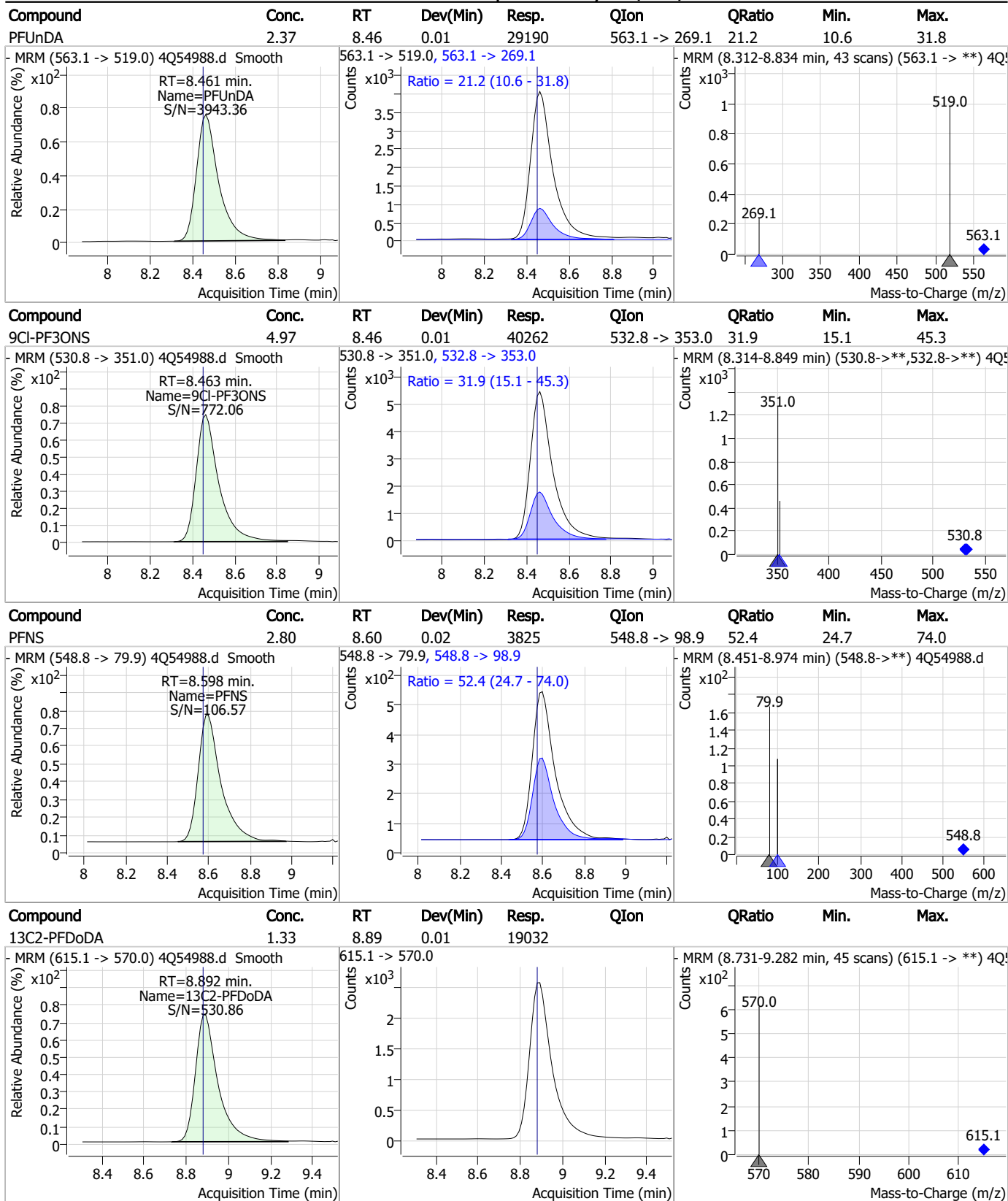
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.37	8.30	0.00	7319 (m)	584.2 -> 526.0	36.2	16.1	48.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.37	8.46	0.01	16922				

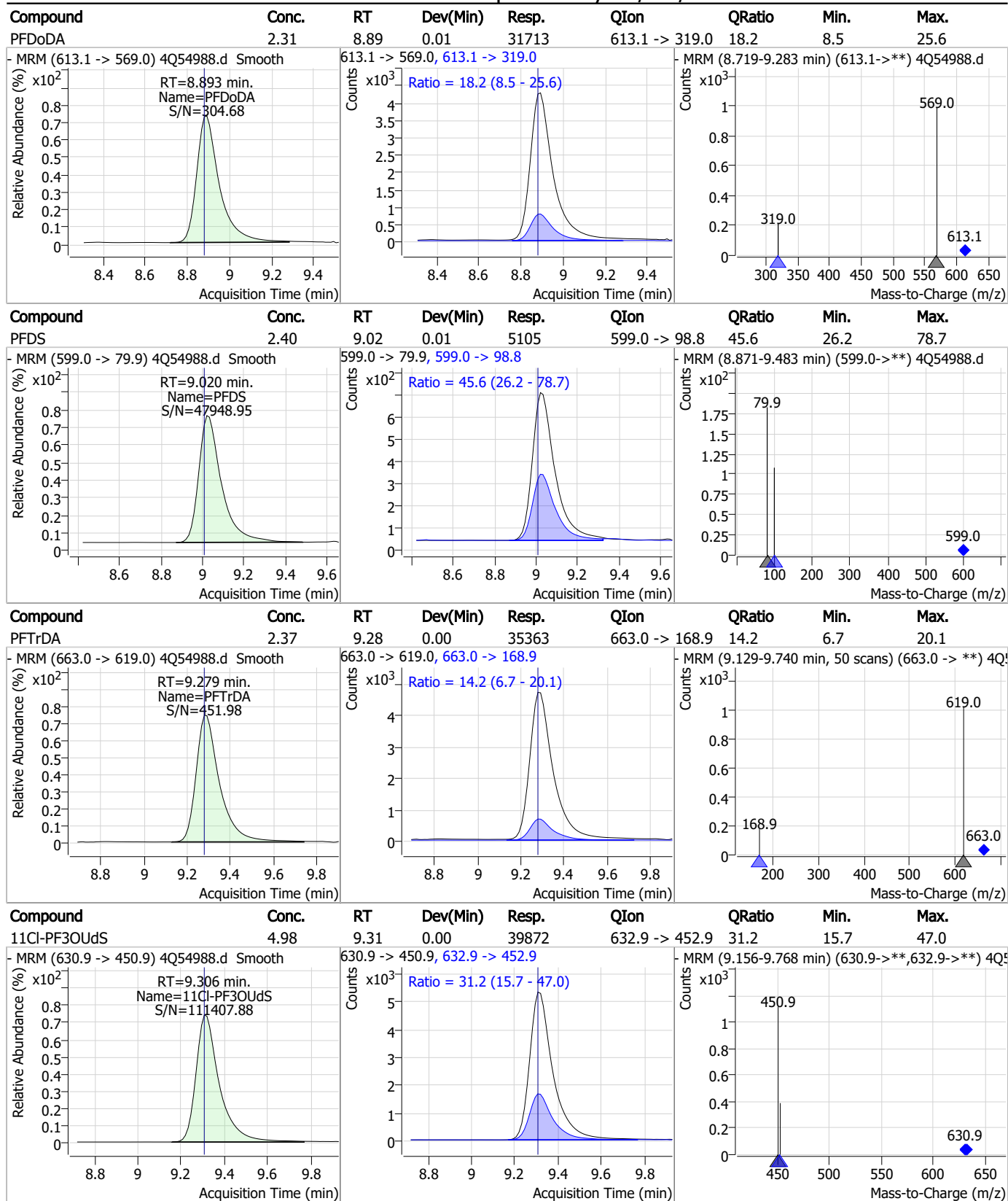


Perfluorinated Compounds by LC/MS/MS



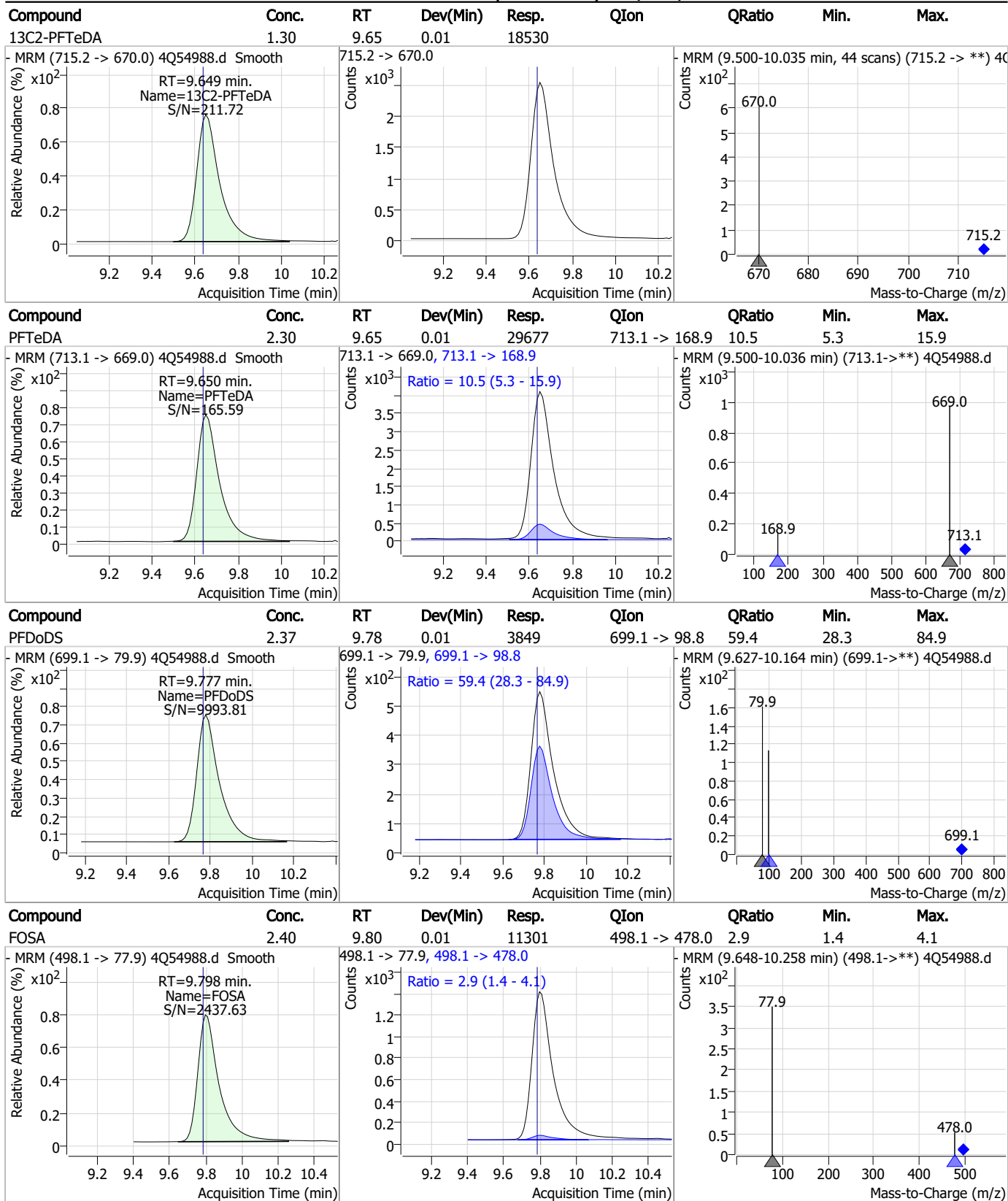
7.7.14
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Perfluorinated Compounds by LC/MS/MS



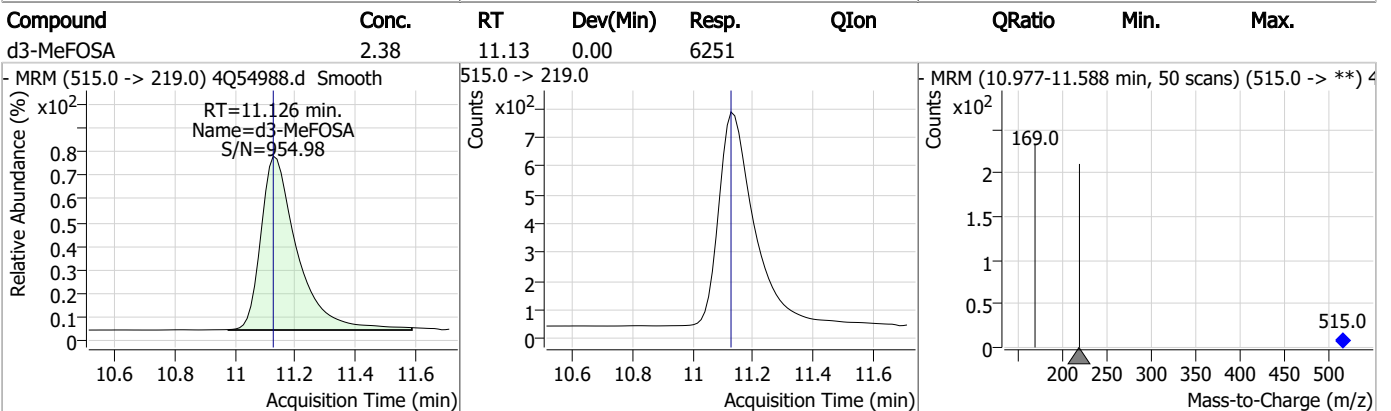
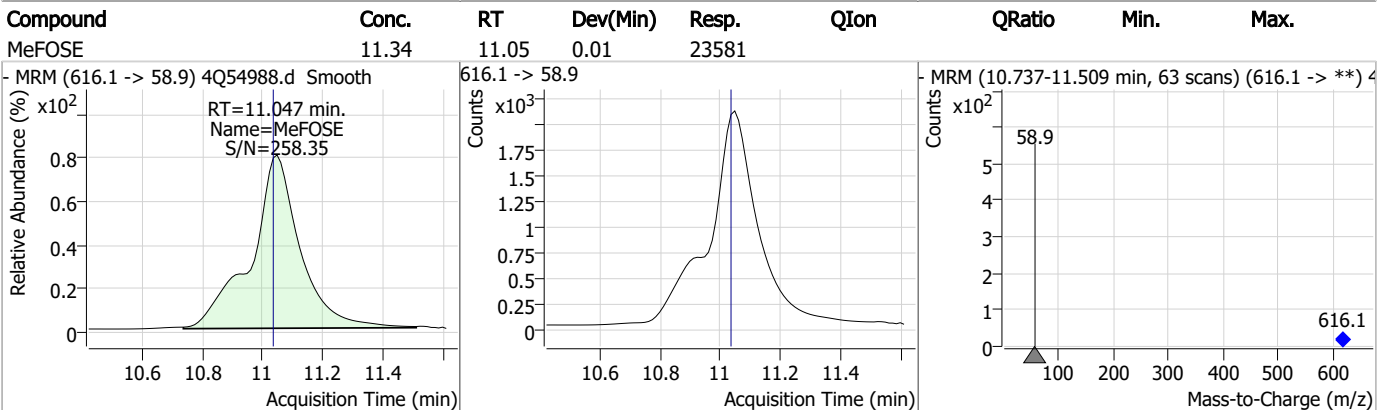
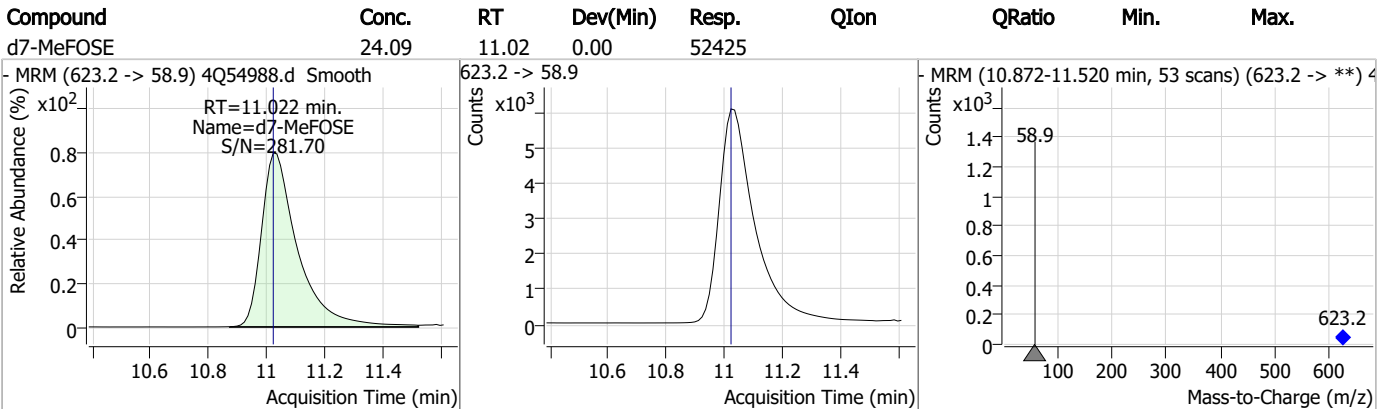
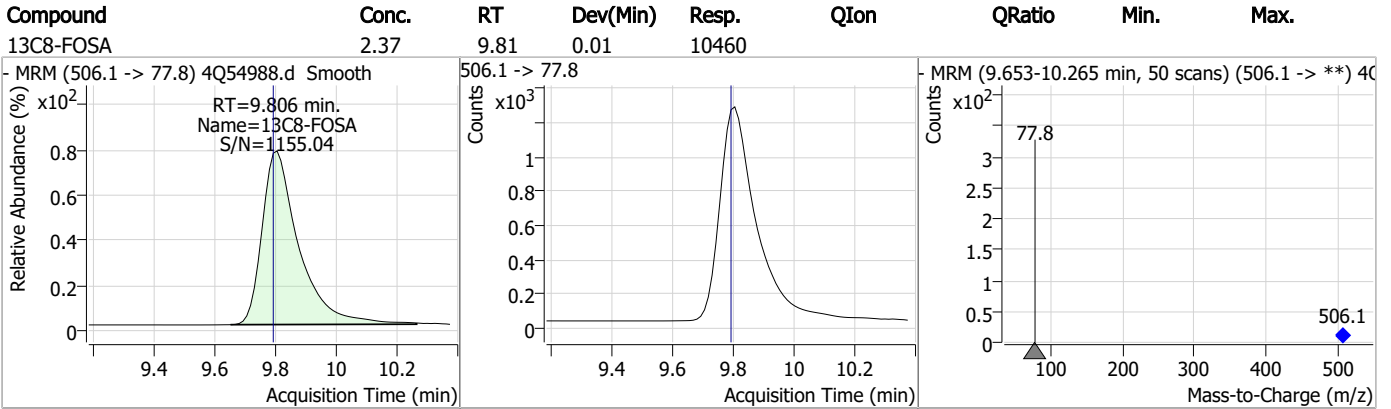
7.7.14
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Perfluorinated Compounds by LC/MS/MS



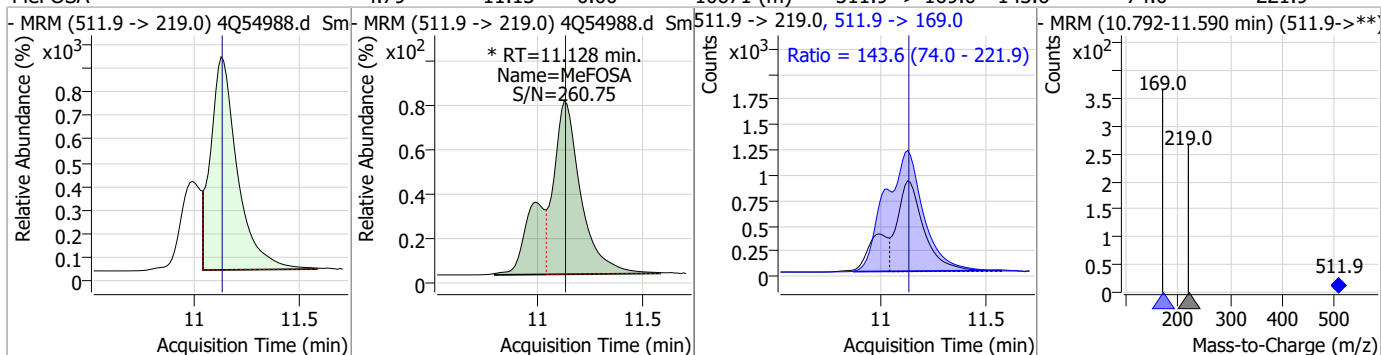
7.7.14
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Perfluorinated Compounds by LC/MS/MS

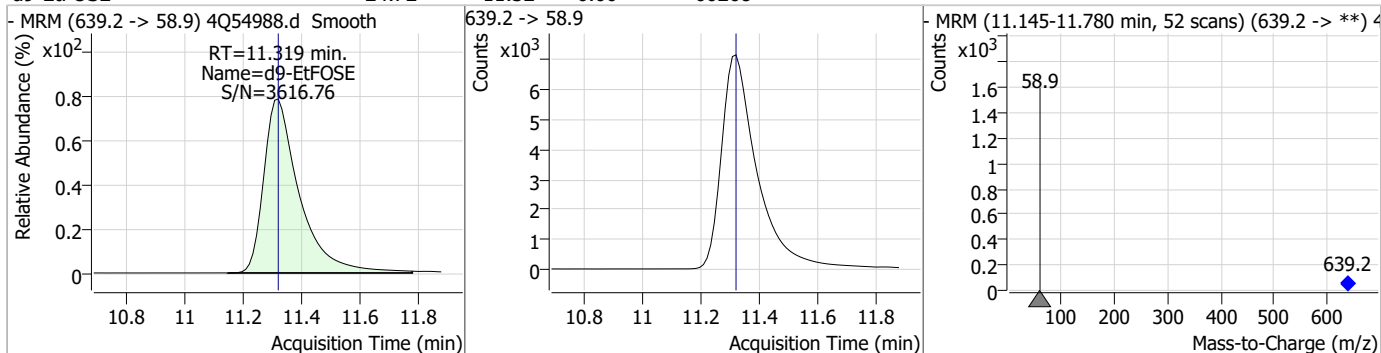


Perfluorinated Compounds by LC/MS/MS

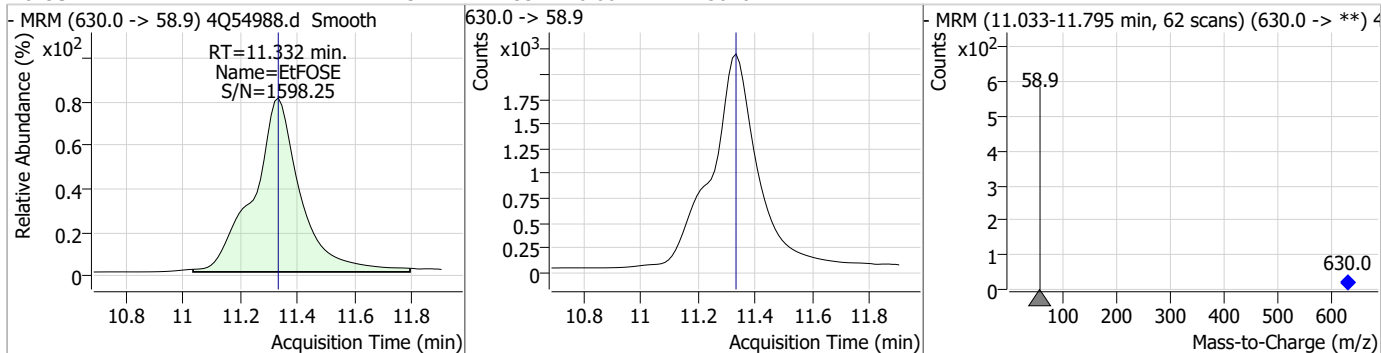
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.79	11.13	0.00	10671 (m)	511.9 -> 169.0	143.6	74.0	221.9



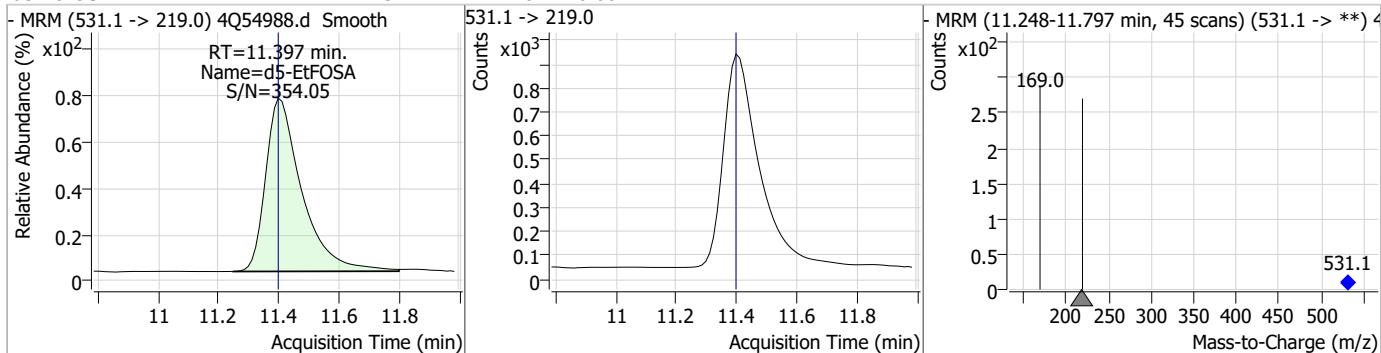
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.72	11.32	0.00	60268				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.73	11.33	0.00	25016				

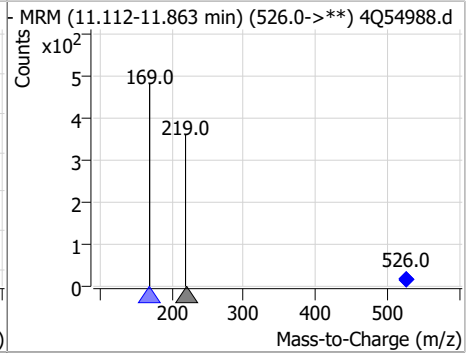
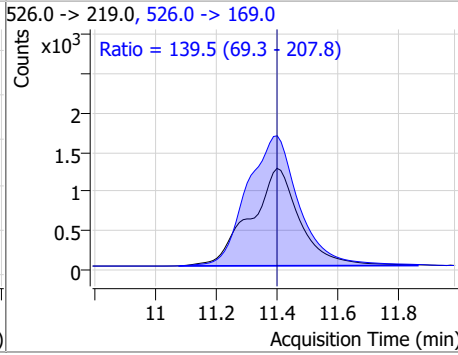
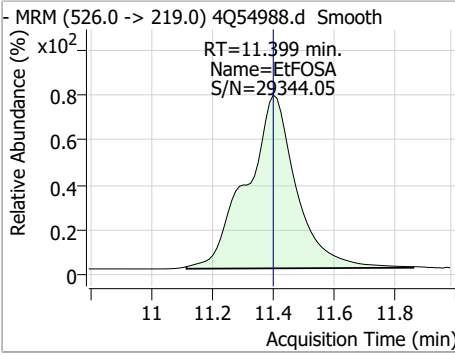


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.57	11.40	0.00	7422				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.51	11.40	0.00	14242	526.0 -> 169.0	139.5	69.3	207.8



7.7.14
7

Manual Integration Approval Summary

Sample Number: S4Q805-CC804 Method: EPA DRAFT 1633
Lab FileID: 4Q54988.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/11/23 01:10 Supervisor approved: 12/11/23 15:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.14.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q55000.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 12/11/2023 4:07:46 AM
 Sample Name : ecc804-4
 Vial : P1-A5
 DA Method File : 1633_120823_S4Q804.quantmethod.xml
 Batch Name : s4q805.batch.bin
 Sample Information : OP99999,S4Q805,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	95464	10.00 µg/L	0.025
M5-PFPeA	4.187	268.3 -> 223.0	40634	5.00 µg/L	0.025
M5-PFHxA	5.359	318.0 -> 273.0	31583	2.50 µg/L	0.025
M4-PFHpA	6.304	367.1 -> 322.0	31620	2.50 µg/L	0.012
M8-PFOA	6.989	421.1 -> 376.0	51117	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	20033	1.25 µg/L	0.000
M6-PFDA	8.004	519.1 -> 474.1	14185	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	16562	1.25 µg/L	0.012
M2-PFDoDA	8.880	615.1 -> 570.0	19173	1.25 µg/L	0.000
M2-PFTeDA	9.649	715.2 -> 670.0	18538	1.25 µg/L	0.012
M8-FOSA	9.806	506.1 -> 77.8	11010	2.50 µg/L	0.012
M3-PFBS	5.215	302.1 -> 79.9	8865	2.50 µg/L	0.025
M3-PFHxS	7.042	402.1 -> 79.9	7736	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	8125	2.50 µg/L	0.012
M2-4:2FTS	5.071	329.1 -> 80.9	1505	5.00 µg/L	0.025
M2-6:2FTS	6.761	429.1 -> 80.9	2939	5.00 µg/L	0.012
M2-8:2FTS	7.816	529.1 -> 80.9	4289	5.00 µg/L	0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	21021	5.00 µg/L	0.012
M3-HFPO-DA	5.702	286.9 -> 168.9	29345	10.00 µg/L	0.012
M5-EtFOSAA	8.296	589.2 -> 419.0	17794	5.00 µg/L	0.012
M7-MeFOSE	11.034	623.2 -> 58.9	53618	25.00 µg/L	0.012
M9-EtFOSE	11.319	639.2 -> 58.9	60614	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	7172	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	6337	2.50 µg/L	0.012
13C4-PFOS	8.130	502.8 -> 79.9	6887	2.50 µg/L	0.012
13C3-PFBA	2.703	216.0 -> 172.0	45929	5.00 µg/L	0.025
18O2-PFHxS	7.054	403.0 -> 83.9	4848	2.50 µg/L	0.013
13C4-PFOA	6.989	417.1 -> 372.0	56744	2.50 µg/L	0.012
13C2-PFDA	8.004	515.1 -> 470.1	15591	1.25 µg/L	0.000
13C5-PFNA	7.522	468.0 -> 423.0	20626	1.25 µg/L	0.012
13C2-PFHxA	5.360	315.1 -> 270.0	35911	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.071	329.1 -> 80.9	1505	6.54 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.8%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2939	5.89 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.8%		
13C2-8:2FTS	7.816	529.1 -> 80.9	4289	6.42 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	19173	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	18538	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C3-PFBS	5.215	302.1 -> 79.9	8865	2.39 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C3-PFHxS	7.042	402.1 -> 79.9	7736	2.54 µg/L	0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C4-PFBA	2.699	216.8 -> 171.9	95464	9.90 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C4-PFHpA	6.304	367.1 -> 322.0	31620	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C5-PFHxA	5.359	318.0 -> 273.0	31583	2.39 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C5-PFPeA	4.187	268.3 -> 223.0	40634	4.93 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C6-PFDA	8.004	519.1 -> 474.1	14185	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C7-PFUnDA	8.461	570.0 -> 525.1	16562	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C8-FOSA	9.806	506.1 -> 77.8	11010	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C8-PFOA	6.989	421.1 -> 376.0	51117	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C8-PFOS	8.130	507.1 -> 79.9	8125	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C9-PFNA	7.521	472.1 -> 427.0	20033	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.0%		
d3-MeFOSAA	8.099	573.2 -> 419.0	21021	5.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.0%		
13C3-HFPO-DA	5.702	286.9 -> 168.9	29345	8.88 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 88.8%		
d3-MeFOSA	11.139	515.0 -> 219.0	6337	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.2%		
d5-EtFOSAA	8.296	589.2 -> 419.0	17794	5.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.0%		
d7-MeFOSE	11.034	623.2 -> 58.9	53618	24.35 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
d9-EtFOSE	11.319	639.2 -> 58.9	60614	24.58 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
d5-EtFOSA	11.398	531.1 -> 219.0	7172	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
Target Compounds					QValue
4:2FTS	5.072	327.1 -> 307.0	22907	8.84 µg/L	97
		327.1 -> 80.9	9348		
6:2FTS	6.761	427.1 -> 407.0	30470	9.86 µg/L	98
		427.1 -> 80.9	10749		
8:2FTS	7.816	527.1 -> 507.0	22251	9.84 µg/L	98
		527.1 -> 80.8	8777		
EtFOSAA	8.297	584.2 -> 419.1	7470	2.30 µg/L	m 88
		584.2 -> 526.0	2900		
FOSA	9.798	498.1 -> 77.9	11624	2.35 µg/L	98
		498.1 -> 478.0	405		
MeFOSAA	8.099	570.1 -> 419.0	8016	2.66 µg/L	89
		570.1 -> 483.0	1693		
PFBA	2.707	212.8 -> 168.9	28203	9.22 µg/L	100
PFBS	5.216	298.7 -> 79.9	5635	2.05 µg/L	99
		298.7 -> 98.8	2321		
PFDA	8.017	512.9 -> 469.0	23587	2.26 µg/L	100
		512.9 -> 219.0	4896		
PFDODA	8.880	613.1 -> 569.0	33828	2.45 µg/L	99
		613.1 -> 319.0	5701		
PFDS	9.020	599.0 -> 79.9	5053	2.34 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	2470	2.30	µg/L	98
		363.1 -> 319.0	40947			
PFHpS	7.624	363.1 -> 169.0	7238	2.15	µg/L	98
		449.0 -> 79.9	6934			
PFHxA	5.362	449.0 -> 98.9	3727	2.30	µg/L	98
		313.0 -> 269.0	23169			
PFHxS	7.043	313.0 -> 118.9	787	2.15	µg/L	96
		398.7 -> 79.9	5357			
PFNA	7.522	398.7 -> 98.9	2703	2.30	µg/L	95
		463.0 -> 419.0	27049			
PFNS	8.586	463.0 -> 219.0	6831	2.67	µg/L	100
		548.8 -> 79.9	3696			
PFOA	6.978	548.8 -> 98.9	1829	2.31	µg/L	97
		413.0 -> 369.0	48550			
PFOS	8.131	413.0 -> 169.0	10063	2.16	µg/L	50
		498.9 -> 79.9	7317			
PFPeA	4.189	498.9 -> 98.8	3186	4.53	µg/L	100
		263.0 -> 219.0	36231			
PFPeS	6.294	349.1 -> 79.9	4960	2.11	µg/L	94
		349.1 -> 98.9	2285			
PFTeDA	9.650	713.1 -> 669.0	29745	2.31	µg/L	99
		713.1 -> 168.9	3251			
PFTrDA	9.279	663.0 -> 619.0	36506	2.43	µg/L	99
		663.0 -> 168.9	5005			
PFUnDA	8.461	563.1 -> 519.0	29089	2.41	µg/L	99
		563.1 -> 269.1	6284			
11CI-PF3OUdS	9.306	630.9 -> 450.9	40872	5.06	µg/L	99
		632.9 -> 452.9	12519			
9CI-PF3ONS	8.463	530.8 -> 351.0	40807	5.00	µg/L	97
		532.8 -> 353.0	13016			
ADONA	6.568	376.9 -> 250.9	107834	5.44	µg/L	99
		376.9 -> 84.8	26466			
HFPO-DA	5.715	284.9 -> 168.9	13166	4.69	µg/L	97
		284.9 -> 184.9	1375			
3:3FTCA	3.642	241.0 -> 177.0	5455	11.22	µg/L	100
		241.0 -> 117.0	492			
5:3FTCA	6.033	341.0 -> 237.1	106701	59.36	µg/L	99
		341.0 -> 217.0	75309			
7:3FTCA	7.549	441.0 -> 316.9	55896	59.30	µg/L	99
		441.0 -> 336.9	134005			
EtFOSA	11.399	526.0 -> 219.0	14239	4.66	µg/L	97
		526.0 -> 169.0	20288			
EtFOSE	11.332	630.0 -> 58.9	25020	11.66	µg/L	100
		511.9 -> 219.0	10791			
MeFOSA	11.128	511.9 -> 169.0	15984	4.78	µg/L	100
		616.1 -> 58.9	23950			
MeFOSE	11.047	699.1 -> 79.9	3687	11.26	µg/L	100
		699.1 -> 98.8	2204			
PFDoDS	9.777	295.0 -> 201.0	3362	2.24	µg/L	96
		295.0 -> 84.9	976			
NFDHA	5.241	279.0 -> 85.1	20173	4.71	µg/L	94
		229.0 -> 84.9	22054			
PFMBA	4.591	314.8 -> 134.9	32015	4.58	µg/L	100
PFMPA	3.332	314.8 -> 82.9	1174	4.56	µg/L	100
PFEESA	5.734			4.30	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed



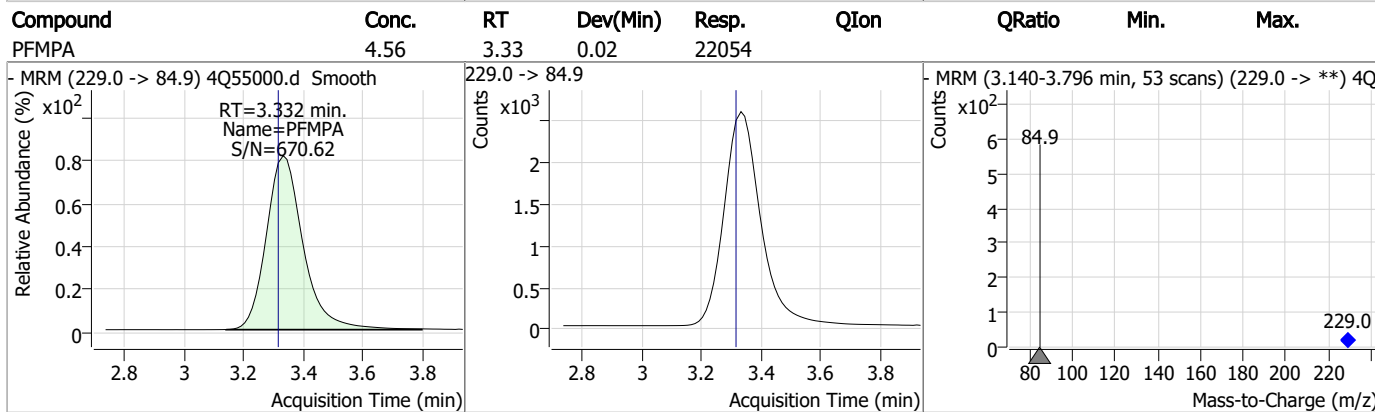
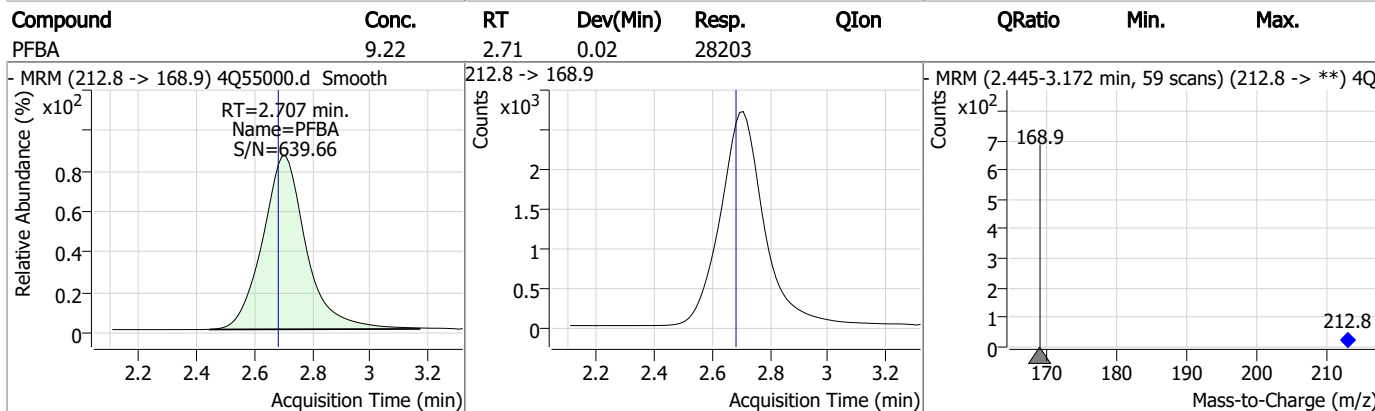
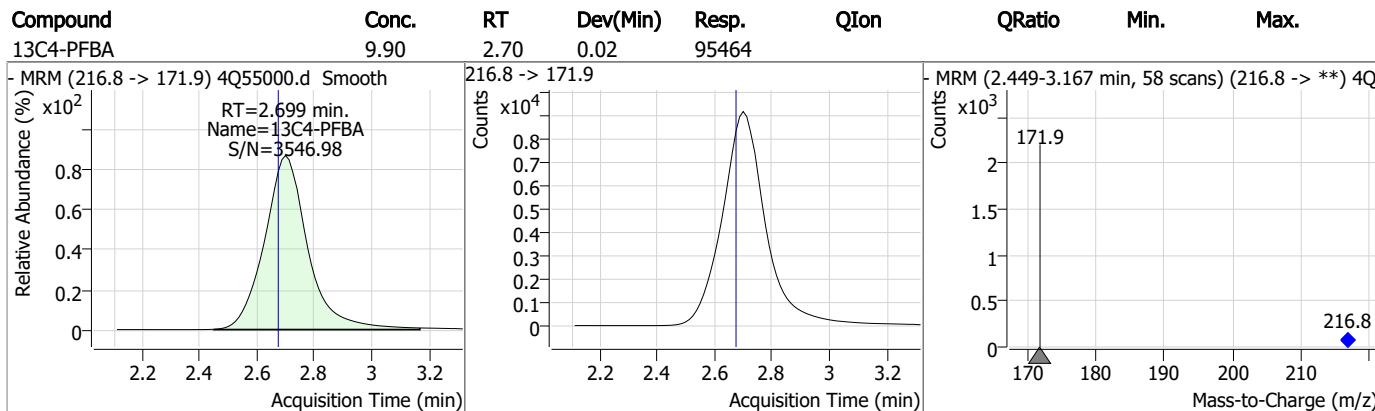
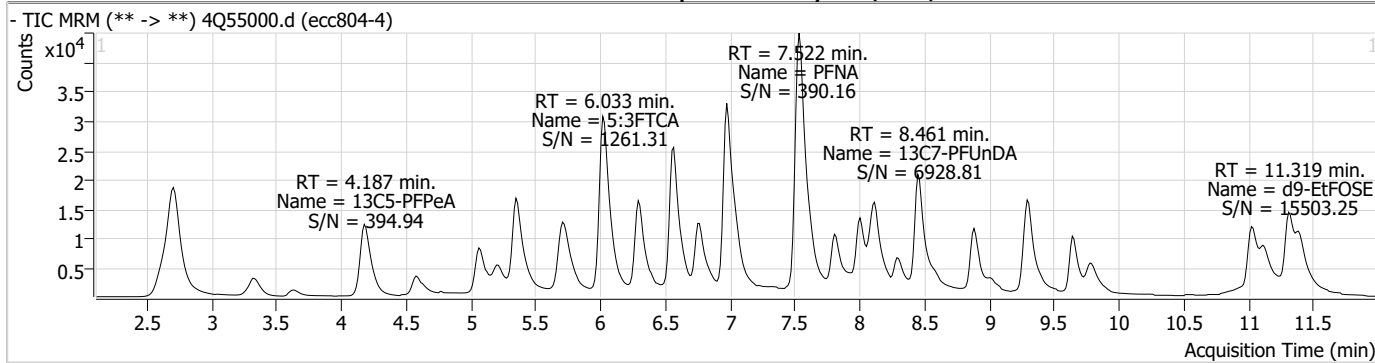
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.15

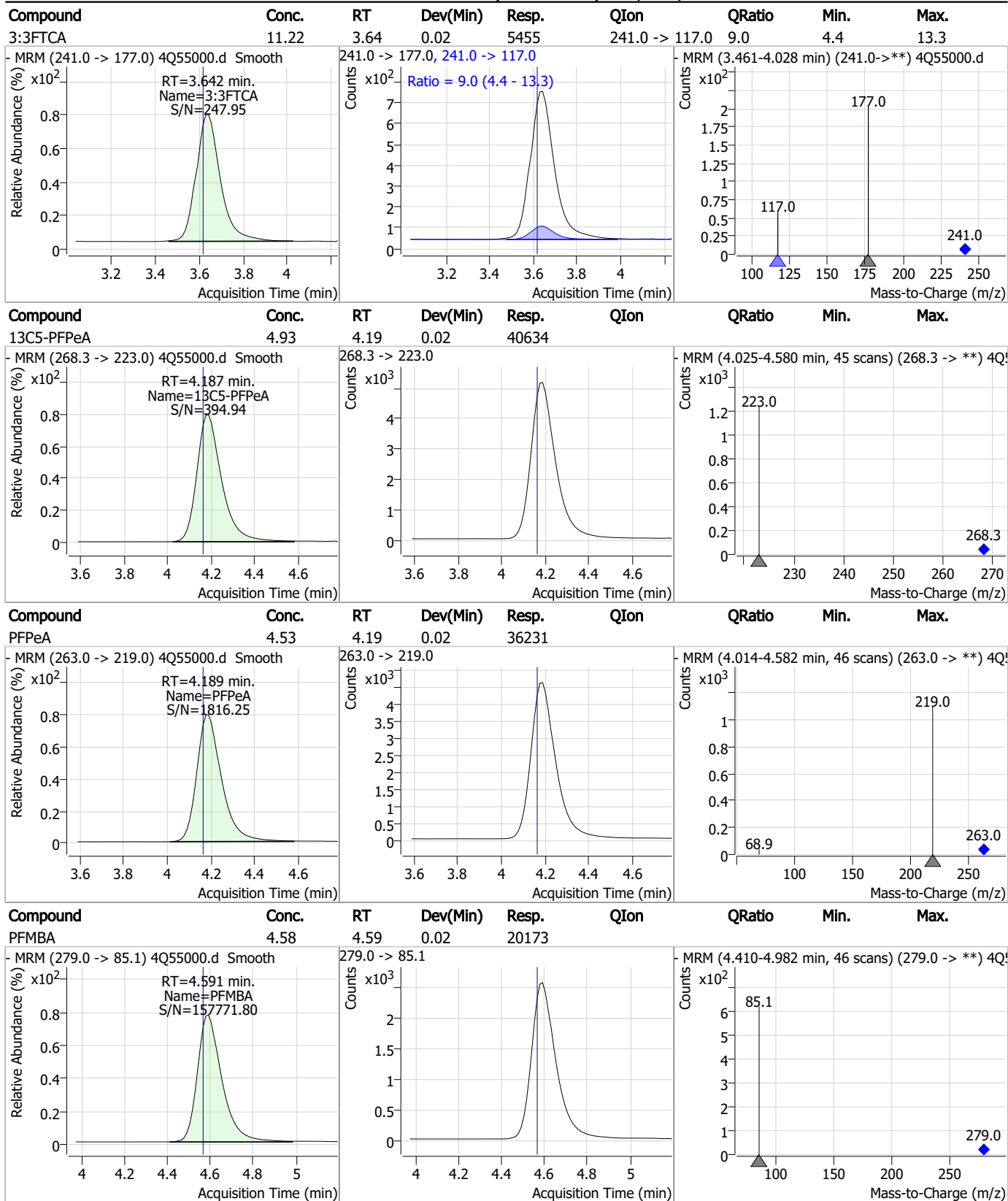
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Perfluorinated Compounds by LC/MS/MS



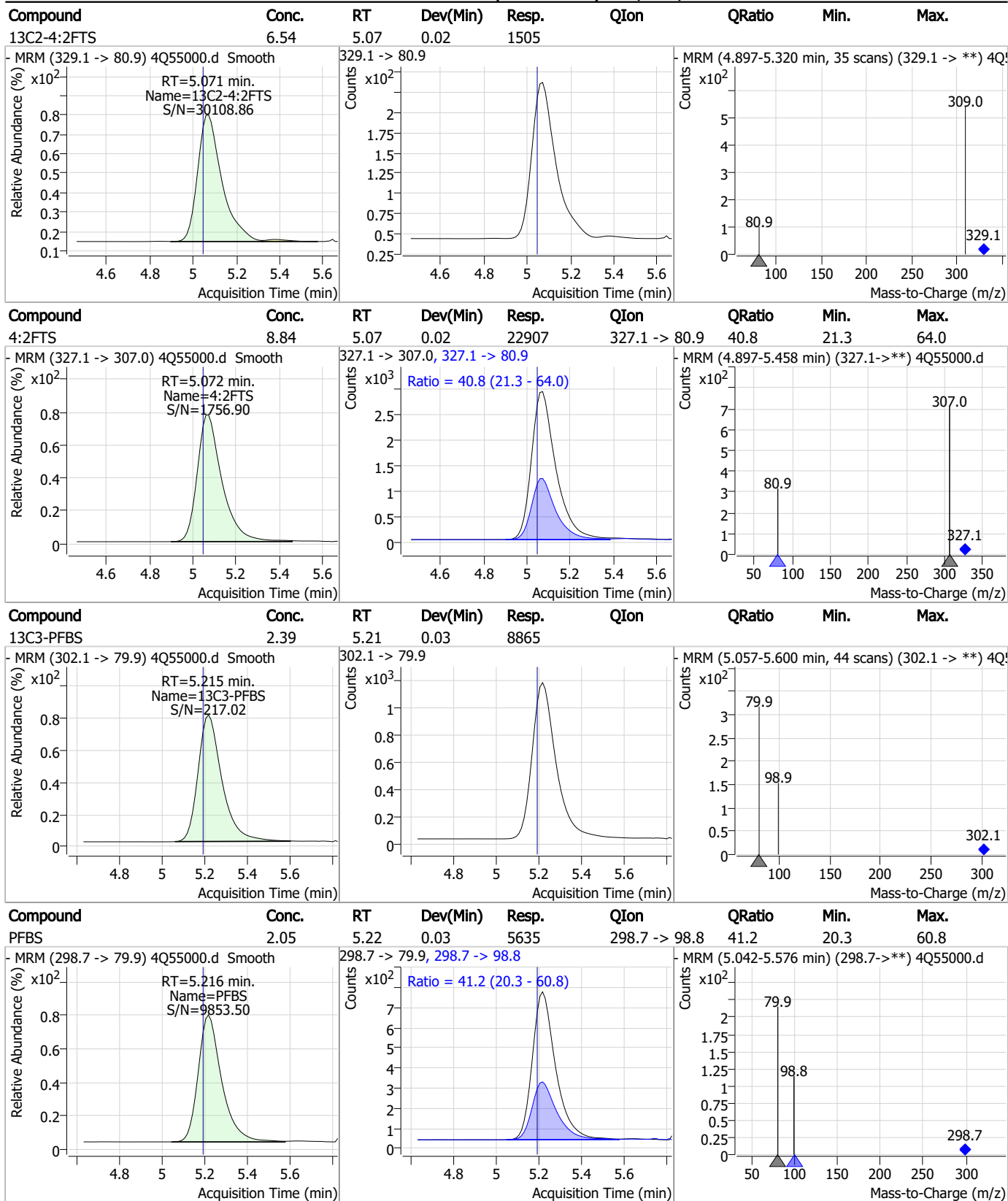
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Perfluorinated Compounds by LC/MS/MS



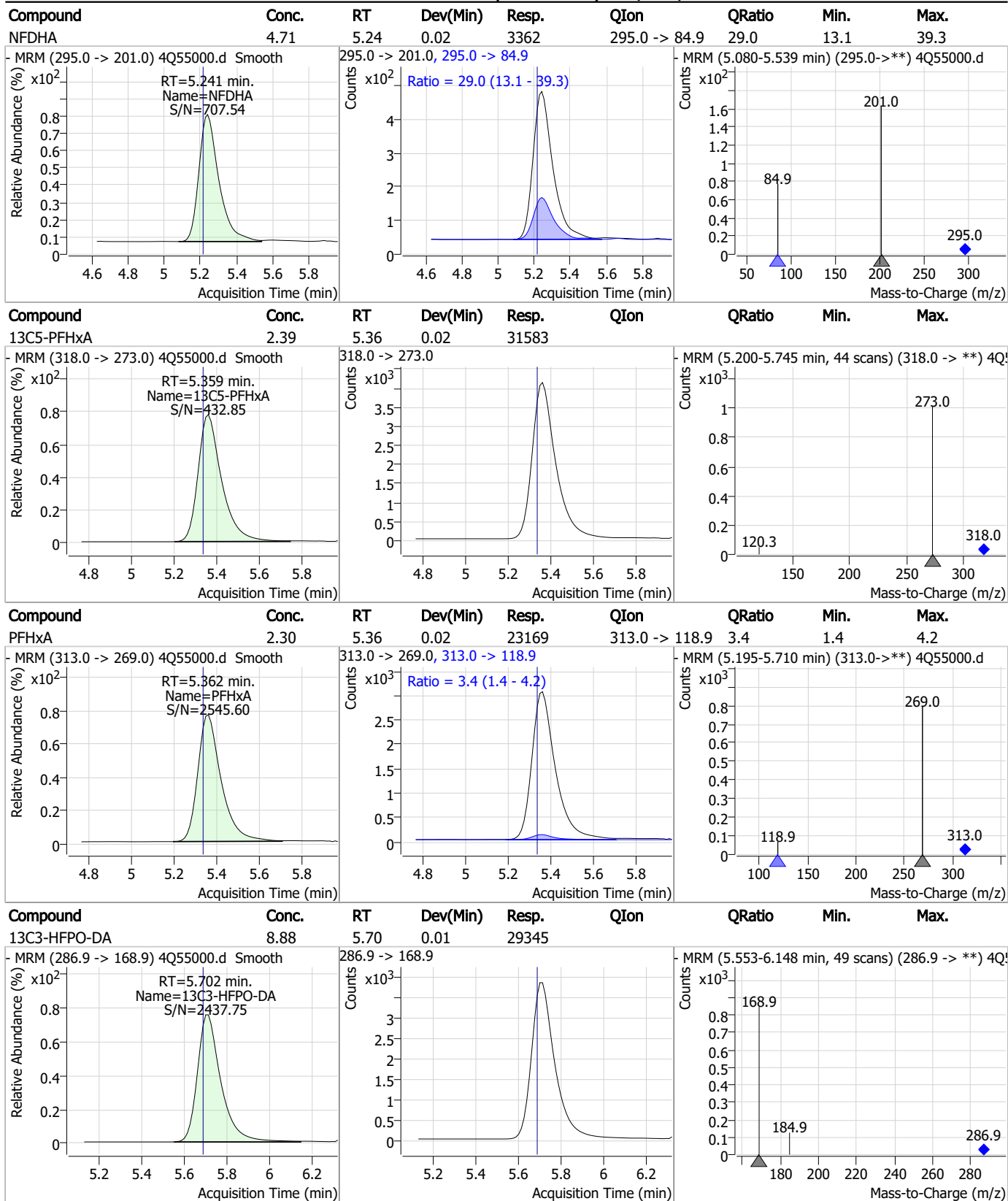
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Perfluorinated Compounds by LC/MS/MS



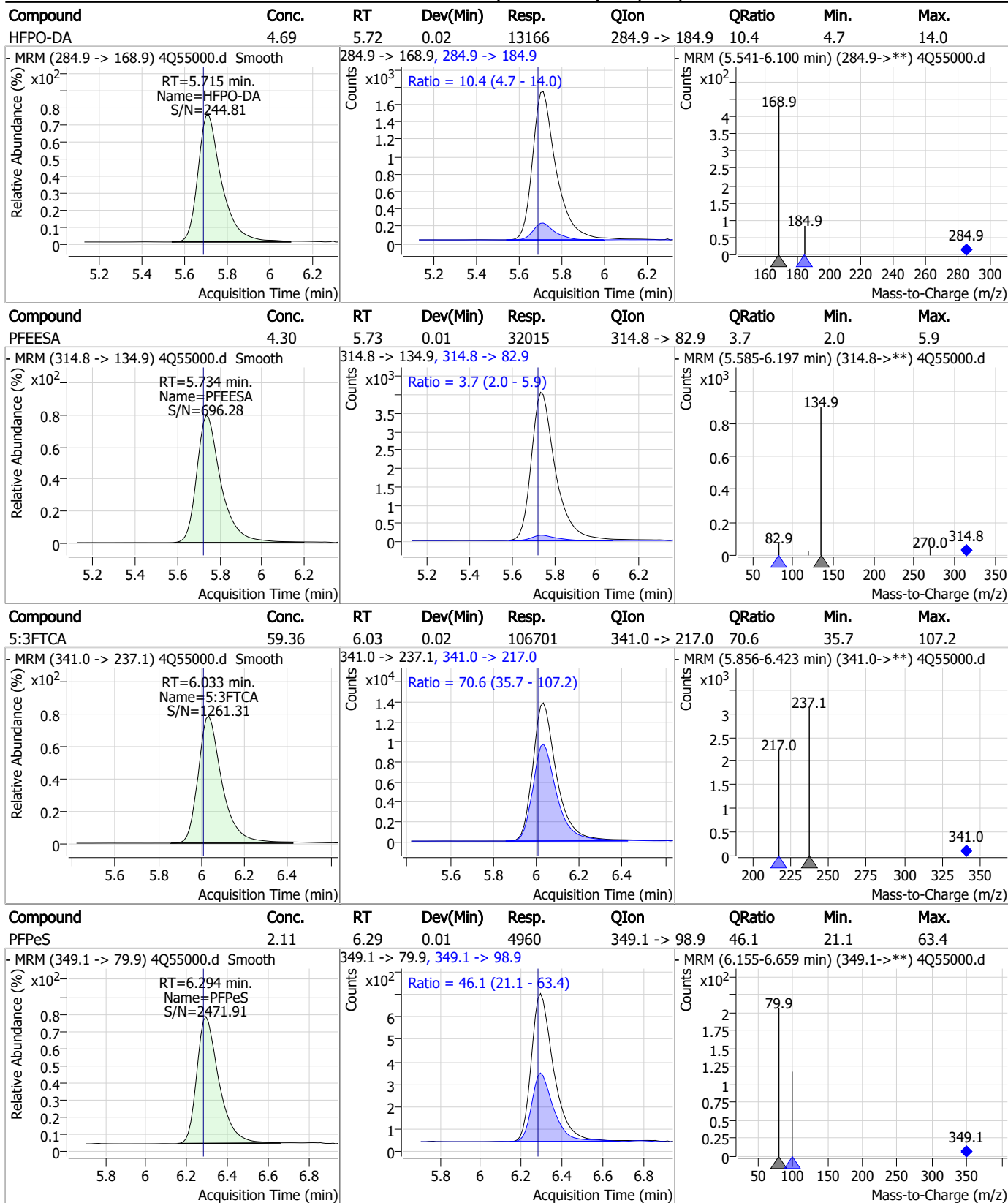
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Perfluorinated Compounds by LC/MS/MS



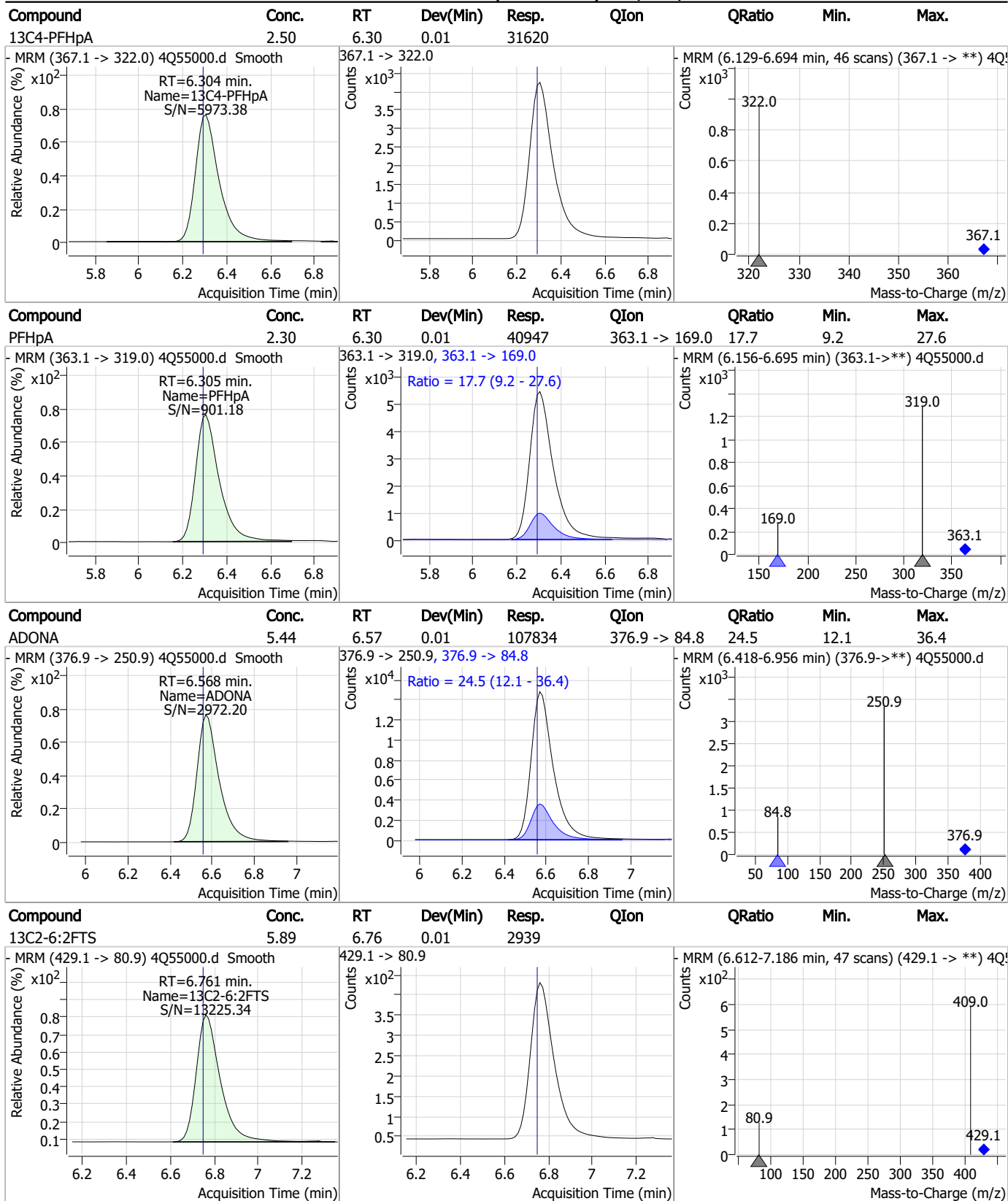
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Perfluorinated Compounds by LC/MS/MS



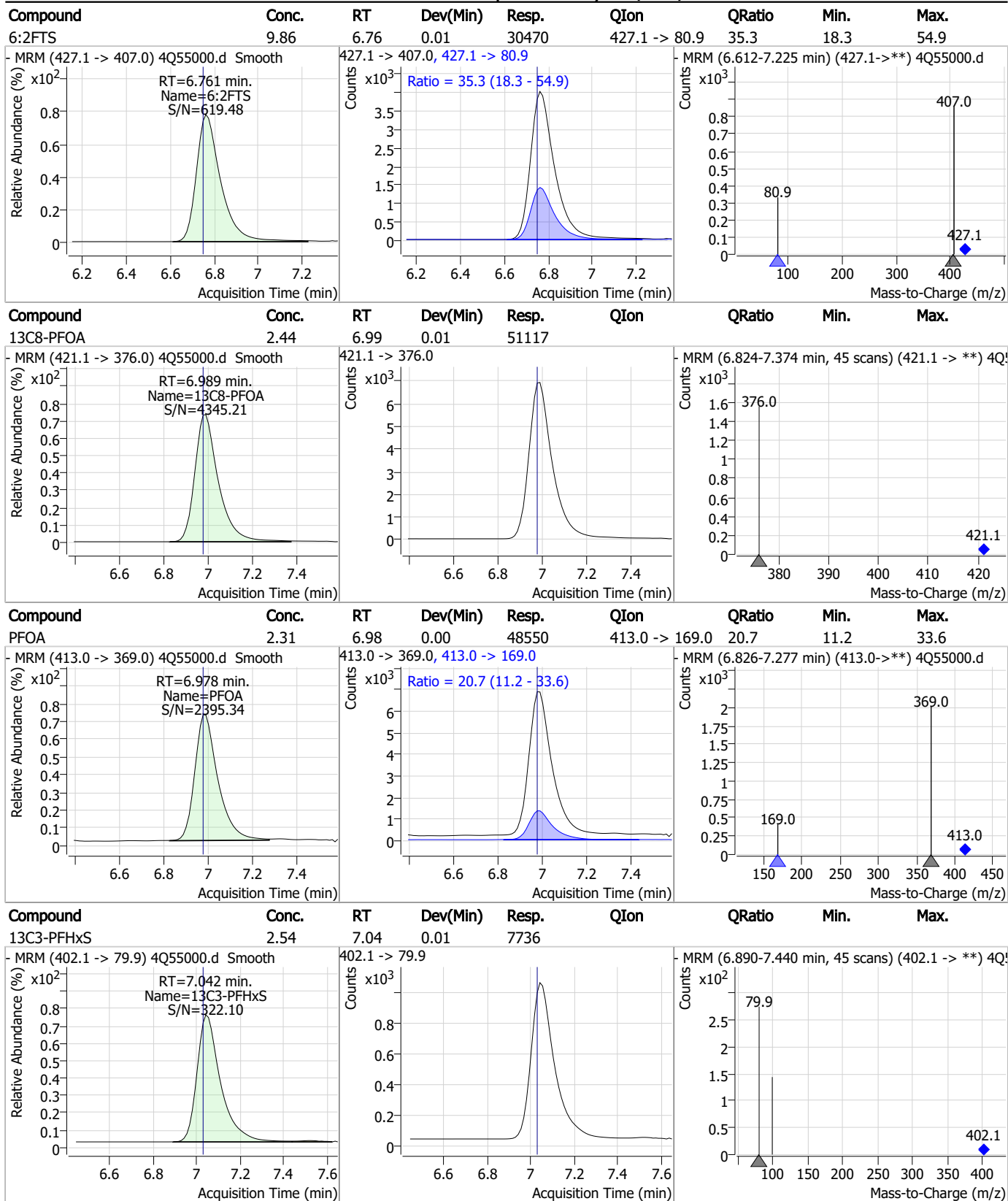
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Perfluorinated Compounds by LC/MS/MS



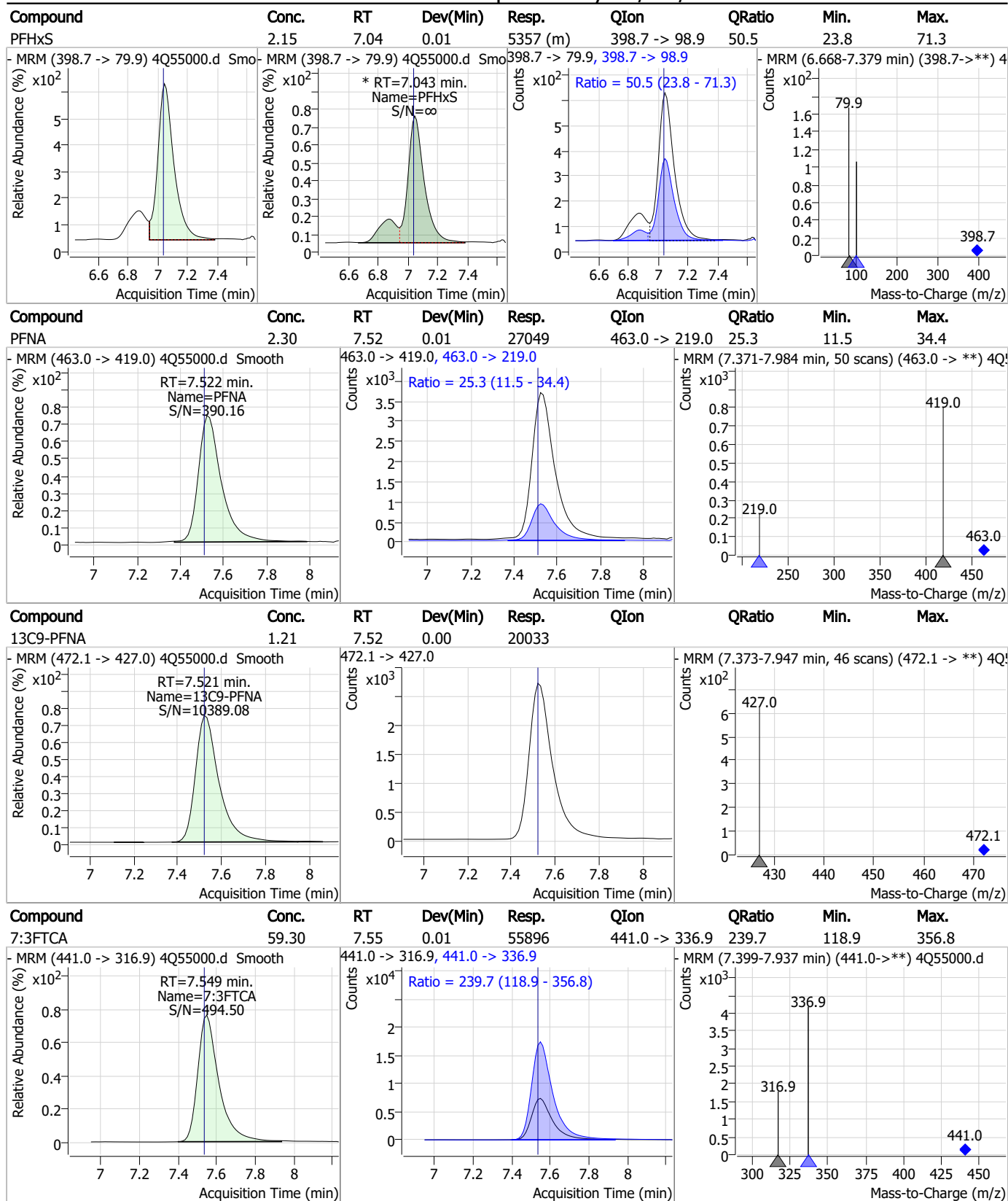
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Perfluorinated Compounds by LC/MS/MS



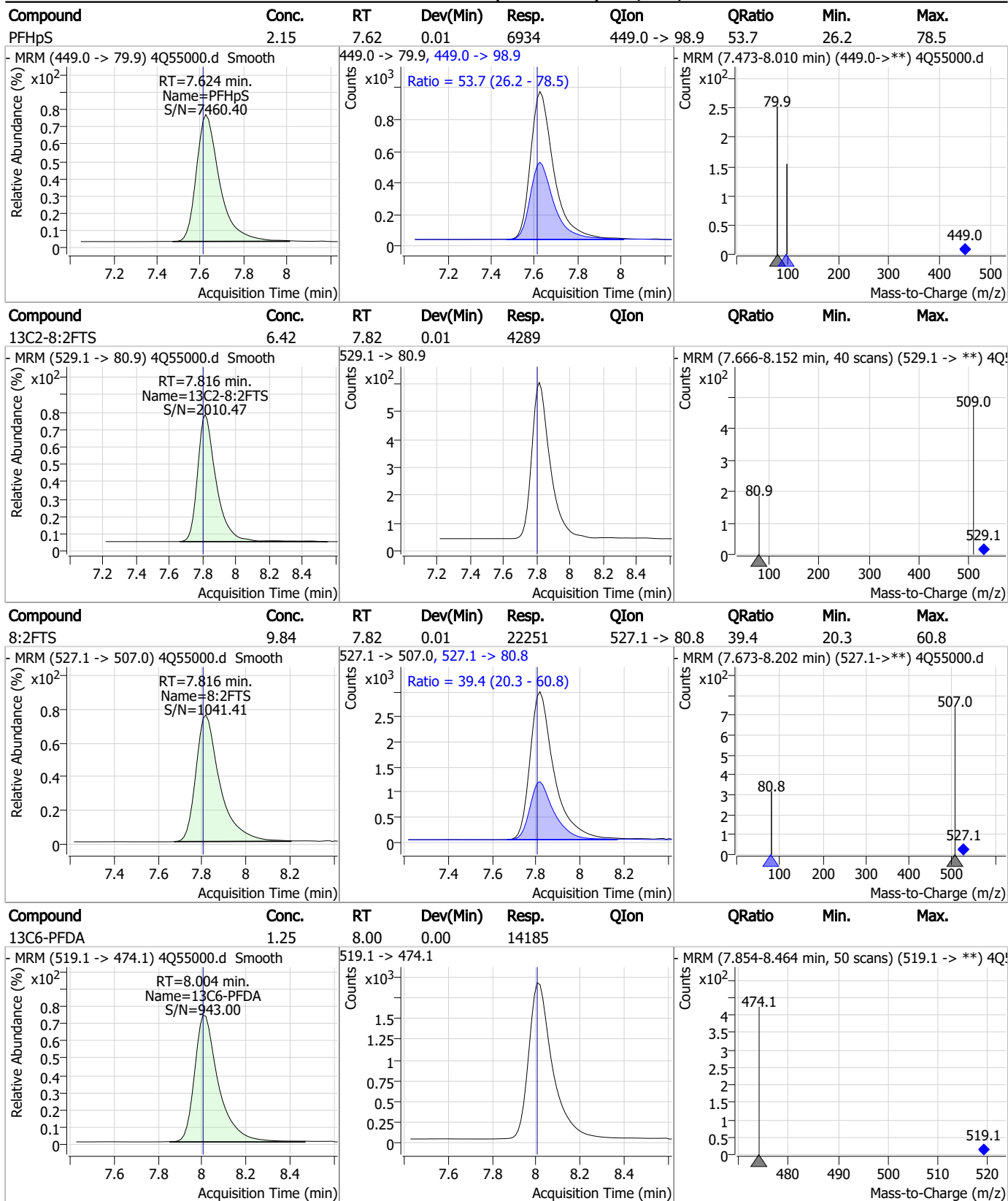
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Perfluorinated Compounds by LC/MS/MS



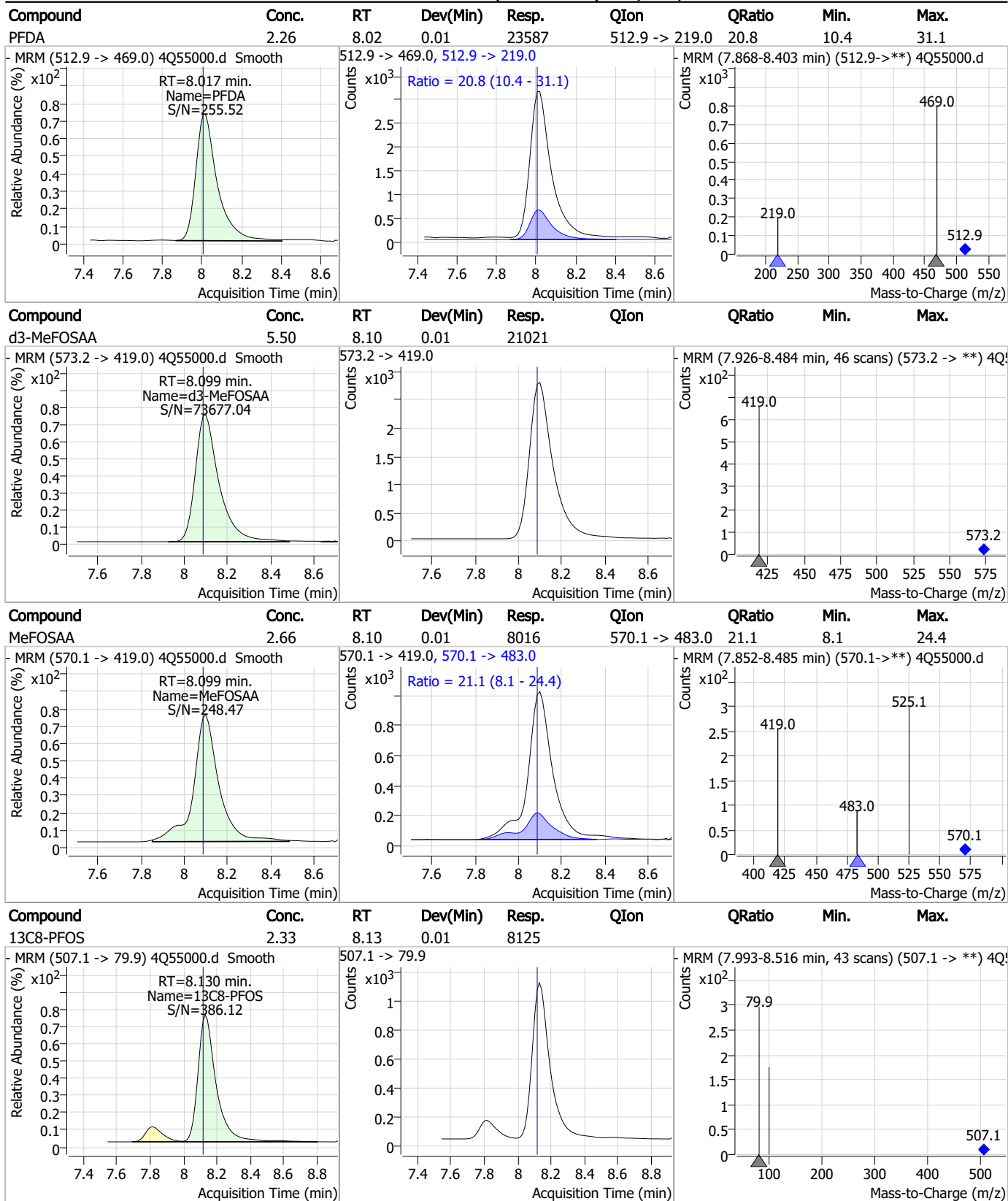
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Perfluorinated Compounds by LC/MS/MS



7.7.15
7

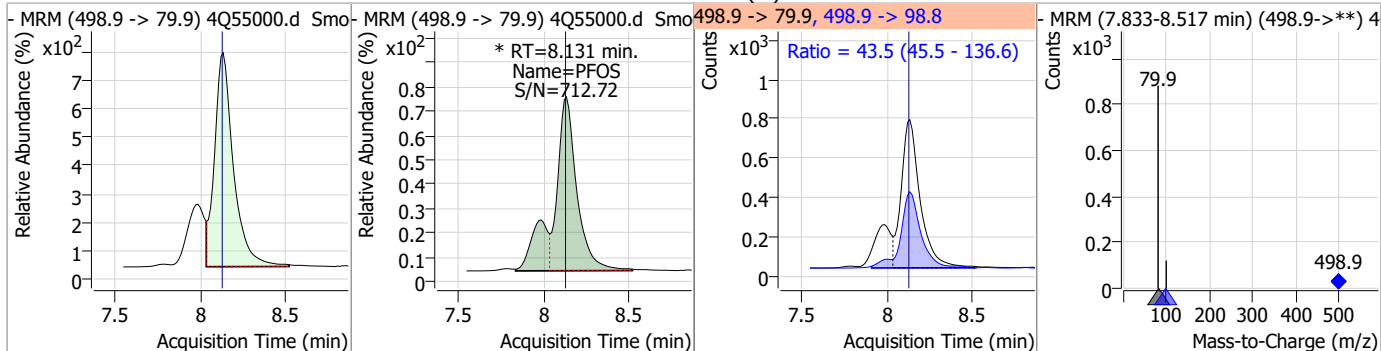
Perfluorinated Compounds by LC/MS/MS



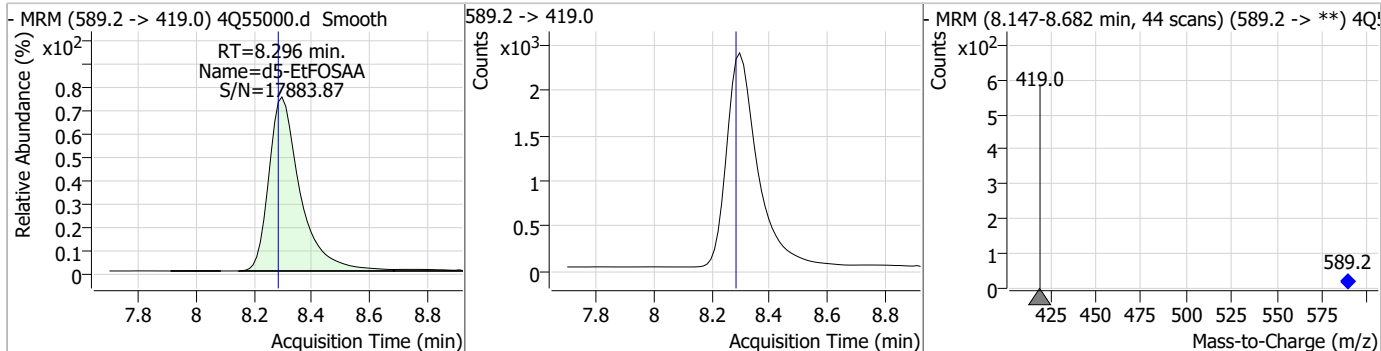
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Perfluorinated Compounds by LC/MS/MS

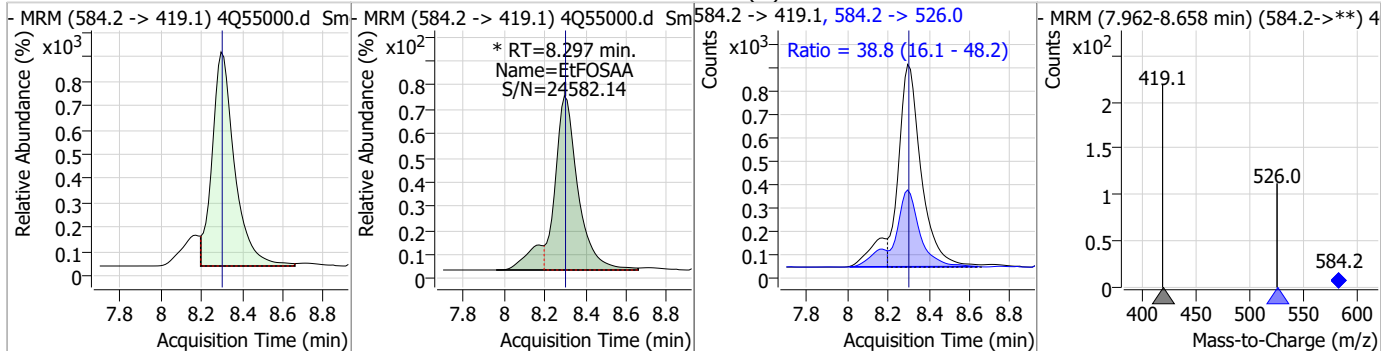
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.16	8.13	0.01	7317 (m)	498.9 -> 98.8	43.5	45.5	136.6



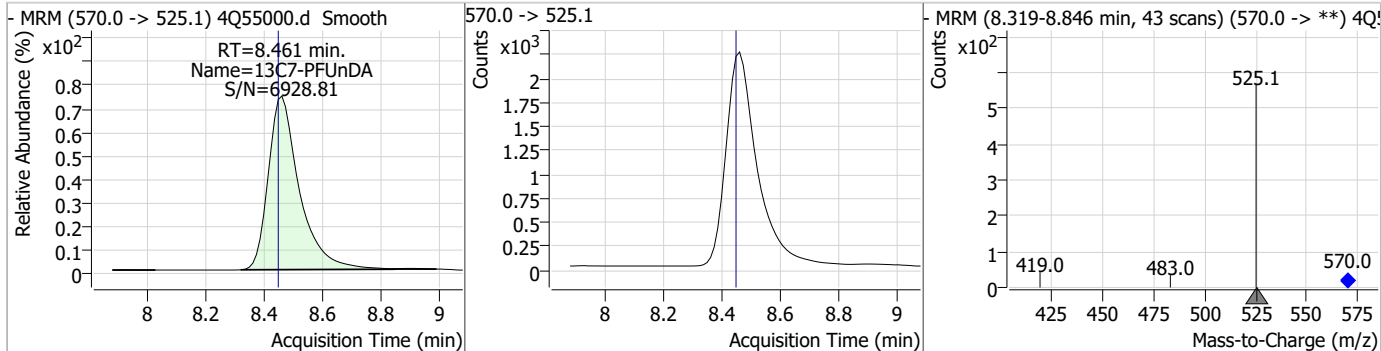
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.50	8.30	0.01	17794				



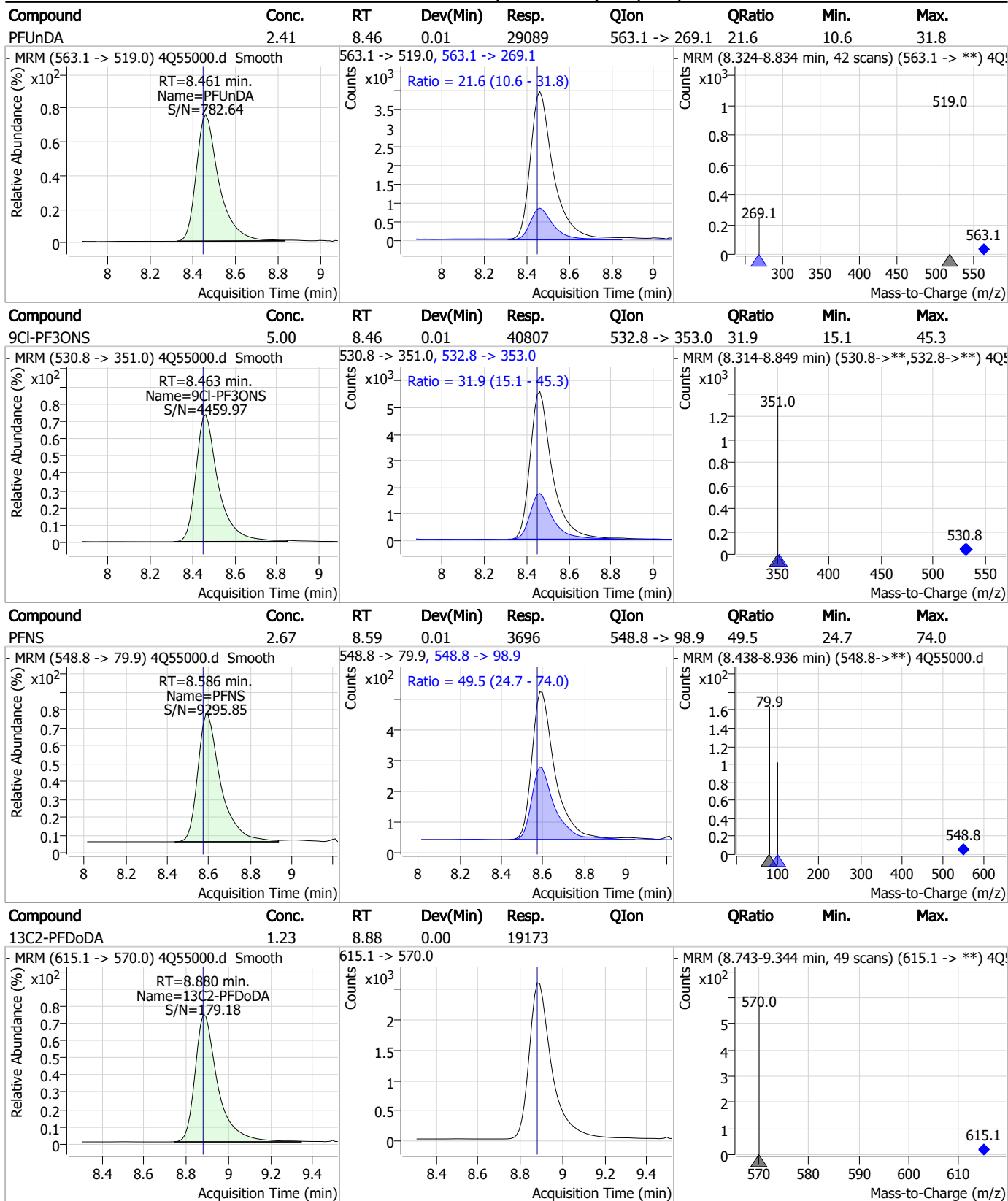
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.30	8.30	0.00	7470 (m)	584.2 -> 526.0	38.8	16.1	48.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.24	8.46	0.01	16562				



Perfluorinated Compounds by LC/MS/MS



7.7.15
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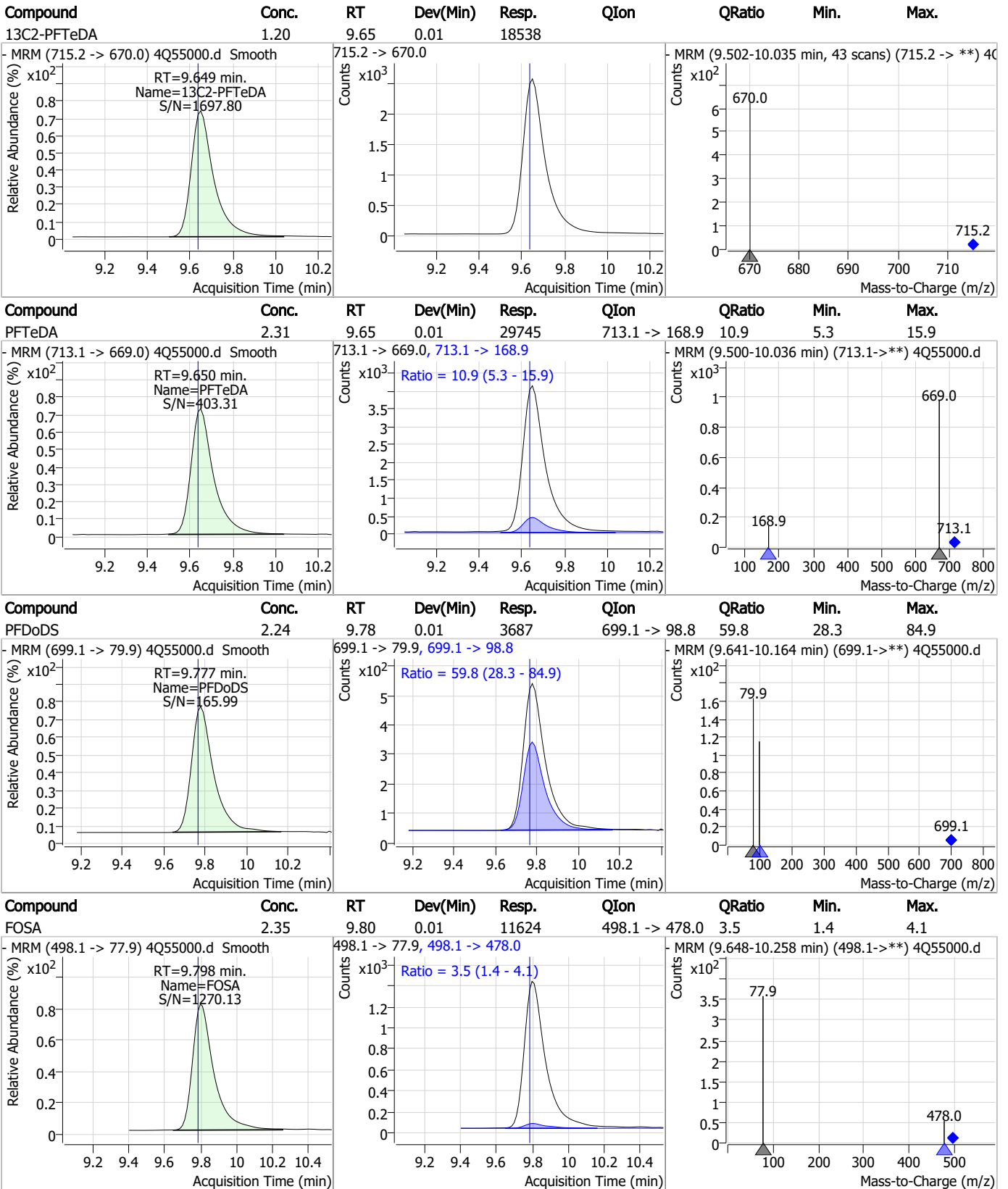
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.45	8.88	0.00	33828	613.1 -> 319.0	16.9	8.5	25.6
PFDS	2.34	9.02	0.01	5053	599.0 -> 98.8	48.9	26.2	78.7
PFTTrDA	2.43	9.28	0.00	36506	663.0 -> 168.9	13.7	6.7	20.1
11Cl-PF3OUdS	5.06	9.31	0.00	40872	632.9 -> 452.9	30.6	15.7	47.0

7.7.15
7

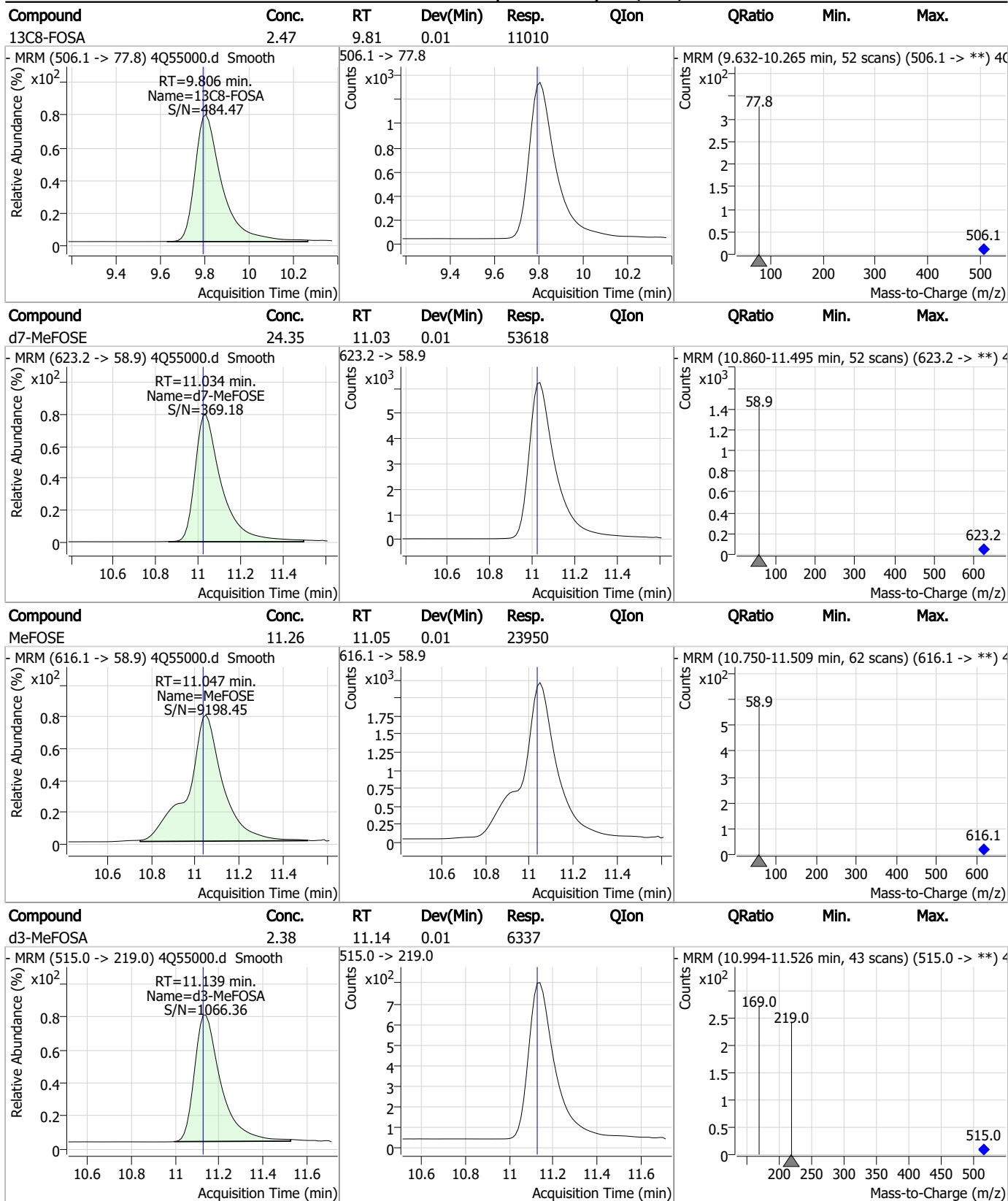


Perfluorinated Compounds by LC/MS/MS



7.7.15 7

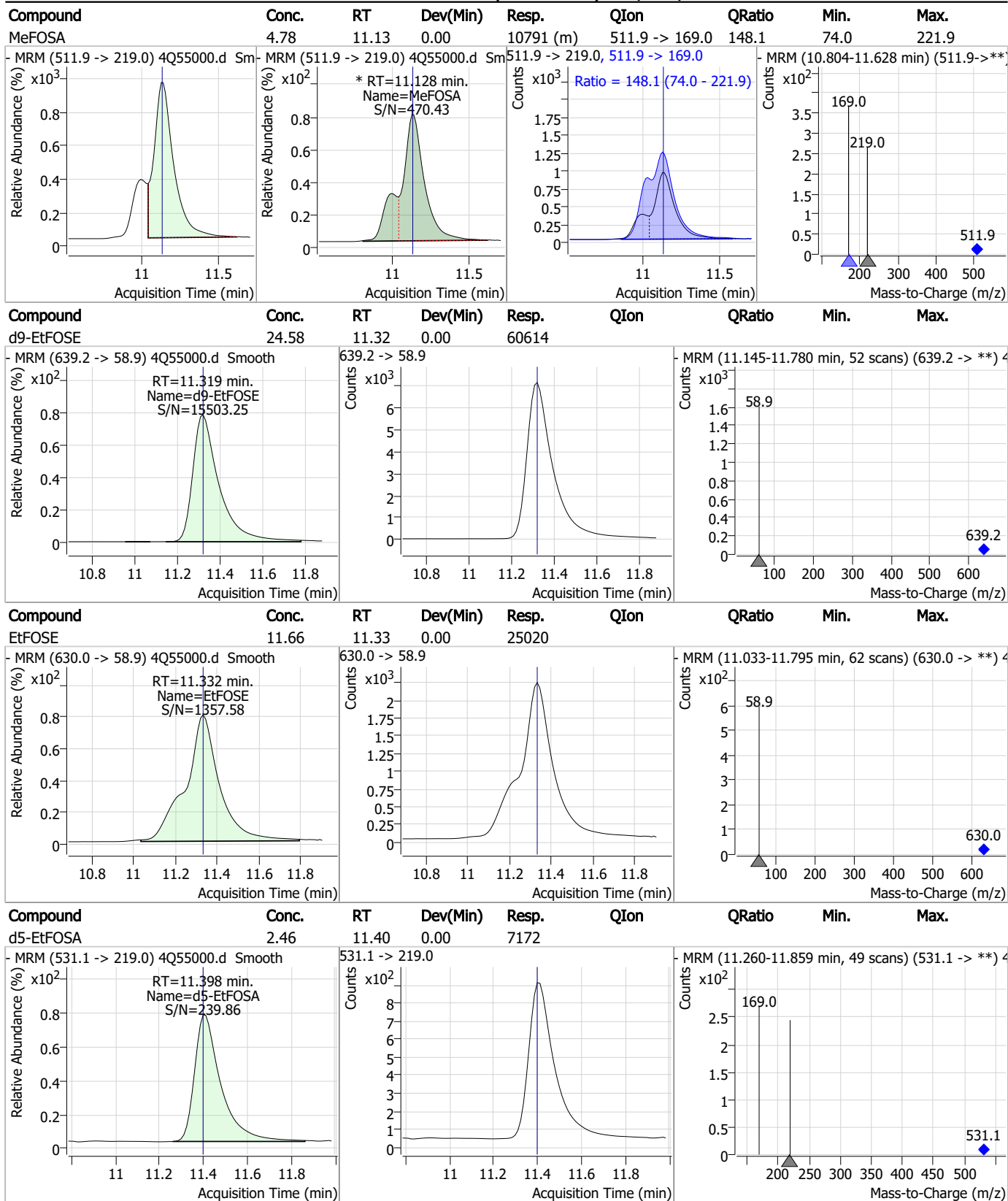
Perfluorinated Compounds by LC/MS/MS



7.7.15
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Perfluorinated Compounds by LC/MS/MS

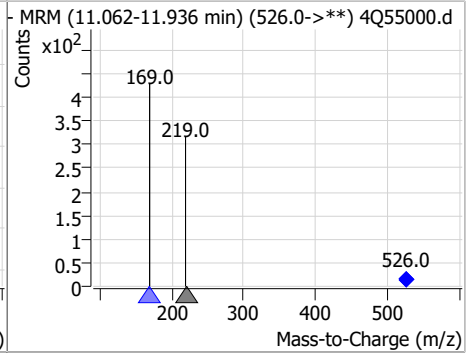
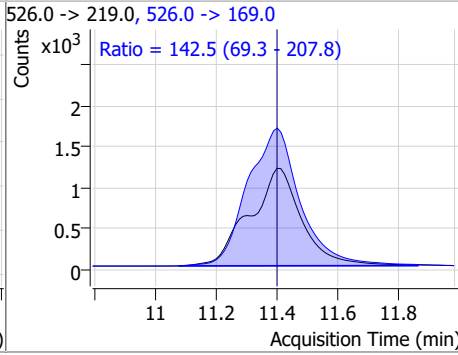
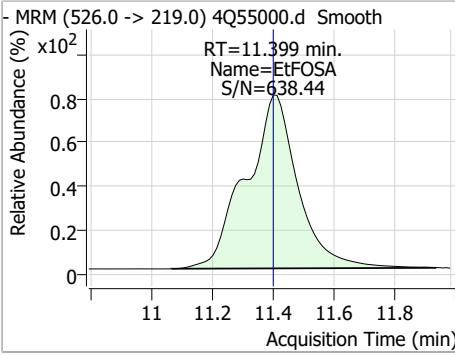


7.7.15
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	4.66	11.40	0.00	14239	526.0 -> 169.0	142.5	69.3	207.8



7.7.15
7



Manual Integration Approval Summary

Sample Number: S4Q805-ECC804 Method: EPA DRAFT 1633
Lab FileID: 4Q55000.D Analyst approved: 12/11/23 11:01 Anna Ludwig
Injection Time: 12/11/23 04:07 Supervisor approved: 12/11/23 15:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.15.1

7

QQQ Check Tune Report



Instrument Name LCMS-7Q
MS Model G6495C
MS Instrument Serial SG1929D203
Software_Firmware Version 10.1.67, FW: A.00.08.112
Tune Date & Time 06 December 2023 14:58:21
File Path D:\MassHunter\Tune\QQQ\G6495C\atunes.tune.xml
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.94E+0 [R] (Torr); 3.64E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	220
Gas Flow (l/min)	14
Nebulizer (psi)	20
Capillary (V)	3000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	11

7.7.16
7

QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit HP and LP Funnel RF as shown in Tune Parameters

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	0.70	0.68	-0.02	Pass	867315
302.00	301.97	-0.03	Pass	0.70	0.75	0.05	Pass	1021571
601.98	601.92	-0.06	Pass	0.70	0.76	0.06	Pass	6679314
1033.99	1033.92	-0.07	Pass	0.70	0.73	0.03	Pass	1060858
1633.95	1633.89	-0.06	Pass	0.70	0.76	0.06	Pass	1812894
2233.91	2233.84	-0.07	Pass	0.70	0.77	0.07	Pass	1398573

Analyzer: MS2 Polarity: Negative Width: Unit HP and LP Funnel RF as shown in Tune Parameters

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.03	0.03	Pass	0.70	0.66	-0.04	Pass	268578
112.99	112.92	-0.07	Pass	0.70	0.75	0.05	Pass	1271828
302.00	301.93	-0.07	Pass	0.70	0.71	0.01	Pass	1025170
601.98	601.93	-0.05	Pass	0.70	0.69	-0.01	Pass	5800883
1033.99	1034.00	0.01	Pass	0.70	0.66	-0.04	Pass	866097
1633.95	1633.90	-0.05	Pass	0.70	0.67	-0.03	Pass	1122598
2233.91	2233.85	-0.06	Pass	0.70	0.70	0.00	Pass	715073

Analyzer: MS1 Polarity: Negative Width: Wide HP Funnel RF: 45Vp-p LP Funnel RF: 45Vp-p

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	1.20	1.20	0.00	Pass	569680
302.00	301.97	-0.03	Pass	1.20	1.41	0.21	Pass	922483
601.98	601.88	-0.10	Pass	1.20	1.59	0.39	Pass	6497183
1033.99	1033.92	-0.07	Pass	1.20	1.52	0.32	Pass	837052
1633.95	1633.85	-0.10	Pass	1.20	1.43	0.23	Pass	1374550
2233.91	2233.89	-0.02	Pass	1.20	1.40	0.20	Pass	1133296

Analyzer: MS2 Polarity: Negative Width: Wide HP Funnel RF: 45Vp-p LP Funnel RF: 45Vp-p

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.03	0.03	Pass	1.20	1.11	-0.09	Pass	191377
112.99	112.94	-0.05	Pass	1.20	1.20	0.00	Pass	1151896
302.00	301.95	-0.05	Pass	1.20	1.43	0.23	Pass	988102
601.98	601.92	-0.06	Pass	1.20	1.57	0.37	Pass	6206261
1033.99	1033.98	-0.01	Pass	1.20	1.54	0.34	Pass	854981
1633.95	1633.88	-0.07	Pass	1.20	1.45	0.25	Pass	1207610
2233.91	2233.84	-0.07	Pass	1.20	1.10	-0.10	Pass	725005

Analyzer: MS1 Polarity: Negative Width: Widest HP Funnel RF: 45Vp-p LP Funnel RF: 45Vp-p

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.99	0.00	Pass	2.50	2.44	-0.06	Pass	700663
302.00	301.97	-0.03	Pass	2.50	2.63	0.13	Pass	1114094
601.98	601.63	-0.35	Pass	2.50	2.88	0.38	Pass	7366566
1033.99	1033.90	-0.09	Pass	2.50	2.63	0.13	Pass	1269731
1633.95	1633.80	-0.15	Pass	2.50	2.47	-0.03	Pass	2379708
2233.91	2233.66	-0.25	Pass	2.50	2.39	-0.11	Pass	2300668

Analyzer: MS2 Polarity: Negative Width: Widest HP Funnel RF: 45Vp-p LP Funnel RF: 45Vp-p

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	68.96	-0.04	Pass	2.50	2.61	0.11	Pass	225749
112.99	112.91	-0.08	Pass	2.50	2.68	0.18	Pass	1452792
302.00	301.96	-0.04	Pass	2.50	2.86	0.36	Pass	1290741
601.98	601.94	-0.04	Pass	2.50	3.08	0.58	Pass	7403788
1033.99	1033.96	-0.03	Pass	2.50	2.96	0.46	Pass	1319278
1633.95	1633.93	-0.02	Pass	2.50	2.65	0.15	Pass	2476379
2233.91	2233.77	-0.14	Pass	2.50	2.48	-0.02	Pass	2049048

7.7.16
7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q341.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 2:56:58 PM
 Sample Name : ic11-1
 Vial : P1-A2
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	96944	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	32747	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	29316	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	25010	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	33427	2.50 µg/L	0.000
M9-PFNA	7.708	472.1 -> 427.0	12485	1.25 µg/L	0.000
M6-PFDA	8.215	519.1 -> 474.1	12397	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	15771	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	15282	1.25 µg/L	0.000
M2-PFTeDA	9.842	715.2 -> 670.0	7055	1.25 µg/L	0.000
M8-FOSA	9.529	506.1 -> 77.8	6104	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6676	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5167	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4016	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	799	5.00 µg/L	0.000
M2-6:2FTS	6.927	429.1 -> 80.9	1913	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2618	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	8942	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	53549	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7565	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	22283	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	26155	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3260	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3044	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4360	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	45866	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3673	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	35800	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11259	1.25 µg/L	0.000
13C5-PFNA	7.709	468.0 -> 423.0	14458	1.25 µg/L	0.000
13C2-PFHxA	5.555	315.1 -> 270.0	23979	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	799	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-6:2FTS	6.927	429.1 -> 80.9	1913	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2618	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15282	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-PFTeDA	9.842	715.2 -> 670.0	7055	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C3-PFBS	5.484	302.1 -> 79.9	6676	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C3-PFHxS	7.293	402.1 -> 79.9	5167	2.42 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C4-PFBA	2.885	216.8 -> 171.9	96944	10.00 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFHpA	6.509	367.1 -> 322.0	25010	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFHxA	5.554	318.0 -> 273.0	29316	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C5-PFPeA	4.312	268.3 -> 223.0	32747	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C6-PFDA	8.215	519.1 -> 474.1	12397	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C7-PFUnDA	8.682	570.0 -> 525.1	15771	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C8-FOSA	9.529	506.1 -> 77.8	6104	2.67 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C8-PFOA	7.165	421.1 -> 376.0	33427	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOS	8.379	507.1 -> 79.9	4016	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C9-PFNA	7.708	472.1 -> 427.0	12485	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
d3-MeFOSAA	8.248	573.2 -> 419.0	8942	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	53549	9.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d3-MeFOSA	10.656	515.0 -> 219.0	3044	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7565	5.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
d7-MeFOSE	10.565	623.2 -> 58.9	22283	26.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.5%	
d9-EtFOSE	10.810	639.2 -> 58.9	26155	26.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.8%	
d5-EtFOSA	10.888	531.1 -> 219.0	3260	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.8%	
Target Compounds					QValue
4:2FTS	5.205	327.1 -> 307.0	970	0.77 µg/L	100
		327.1 -> 80.9	338		
6:2FTS	6.927	427.1 -> 407.0	1569	0.78 µg/L	94
		427.1 -> 80.9	441		
8:2FTS	7.992	527.1 -> 507.0	1785	0.71 µg/L	97
		527.1 -> 80.8	458		
EtFOSAA	8.470	584.2 -> 419.1	222	0.18 µg/L	m 90
		584.2 -> 526.0	124		
FOSA	9.520	498.1 -> 77.9	473	0.19 µg/L	# 90
		498.1 -> 478.0	35		
MeFOSAA	8.250	570.1 -> 419.0	250	0.16 µg/L	m 90
		570.1 -> 483.0	55		
PFBA	2.893	212.8 -> 168.9	2628	0.75 µg/L	100
PFBS	5.485	298.7 -> 79.9	400	0.16 µg/L	93
		298.7 -> 98.8	181		
PFDA	8.215	512.9 -> 469.0	2198	0.19 µg/L	95
		512.9 -> 219.0	334		
PFDODA	9.125	613.1 -> 569.0	2143	0.18 µg/L	98
		613.1 -> 319.0	266		
PFDS	9.290	599.0 -> 79.9	267	0.20 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	156			
PFHpA	6.510	363.1 -> 319.0	2355	0.19	µg/L	99
		363.1 -> 169.0	421			
PFHpS	7.861	449.0 -> 79.9	378	0.19	µg/L	93
		449.0 -> 98.9	229			
PFHxA	5.556	313.0 -> 269.0	1952	0.18	µg/L	94
		313.0 -> 118.9	136			
PFHxS	7.294	398.7 -> 79.9	381	0.16	µg/L	m 94
		398.7 -> 98.9	205			
PFNA	7.709	463.0 -> 419.0	1842	0.18	µg/L	96
		463.0 -> 219.0	412			
PFNS	8.870	548.8 -> 79.9	369	0.21	µg/L	99
		548.8 -> 98.9	204			
PFOA	7.167	413.0 -> 369.0	3255	0.19	µg/L	96
		413.0 -> 169.0	688			
PFOS	8.380	498.9 -> 79.9	318	0.16	µg/L	m 94
		498.9 -> 98.8	204			
PFPeA	4.314	263.0 -> 219.0	3070	0.38	µg/L	100
PFPeS	6.573	349.1 -> 79.9	501	0.20	µg/L	79
		349.1 -> 98.9	174			
PFTeDA	9.855	713.1 -> 669.0	1670	0.19	µg/L	98
		713.1 -> 168.9	114			
PFTrDA	9.508	663.0 -> 619.0	2189	0.19	µg/L	96
		663.0 -> 168.9	204			
PFUnDA	8.682	563.1 -> 519.0	1859	0.19	µg/L	98
		563.1 -> 269.1	257			
11CI-PF3OUdS	9.563	630.9 -> 450.9	2178	0.34	µg/L	94
		632.9 -> 452.9	606			
9CI-PF3ONS	8.733	530.8 -> 351.0	2967	0.33	µg/L	98
		532.8 -> 353.0	984			
ADONA	6.771	376.9 -> 250.9	6502	0.34	µg/L	99
		376.9 -> 84.8	1918			
HFPO-DA	5.944	284.9 -> 168.9	1819	0.36	µg/L	99
		284.9 -> 184.9	291			
3:3FTCA	3.736	241.0 -> 177.0	371	0.89	µg/L	100
		241.0 -> 117.0	44			
5:3FTCA	6.187	341.0 -> 237.1	6232	4.44	µg/L	98
		341.0 -> 217.0	4535			
7:3FTCA	7.612	441.0 -> 316.9	2908	4.54	µg/L	94
		441.0 -> 336.9	6263			
EtFOSA	10.890	526.0 -> 219.0	598	0.38	µg/L	m 57
		526.0 -> 169.0	744			
EtFOSE	10.823	630.0 -> 58.9	944	0.86	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	494	0.39	µg/L	m 82
		511.9 -> 169.0	650			
MeFOSE	10.578	616.1 -> 58.9	770	0.81	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	155	0.20	µg/L	91
		699.1 -> 98.8	109			
NFDHA	5.437	295.0 -> 201.0	932	0.38	µg/L	91
		295.0 -> 84.9	204			
PFMBA	4.738	279.0 -> 85.1	1883	0.36	µg/L	100
PFMPA	3.443	229.0 -> 84.9	1901	0.35	µg/L	100
PFEESA	6.037	314.8 -> 134.9	2810	0.33	µg/L	97
		314.8 -> 82.9	123			

= Qualifier out of range, m = manually integrated, + = Area summed

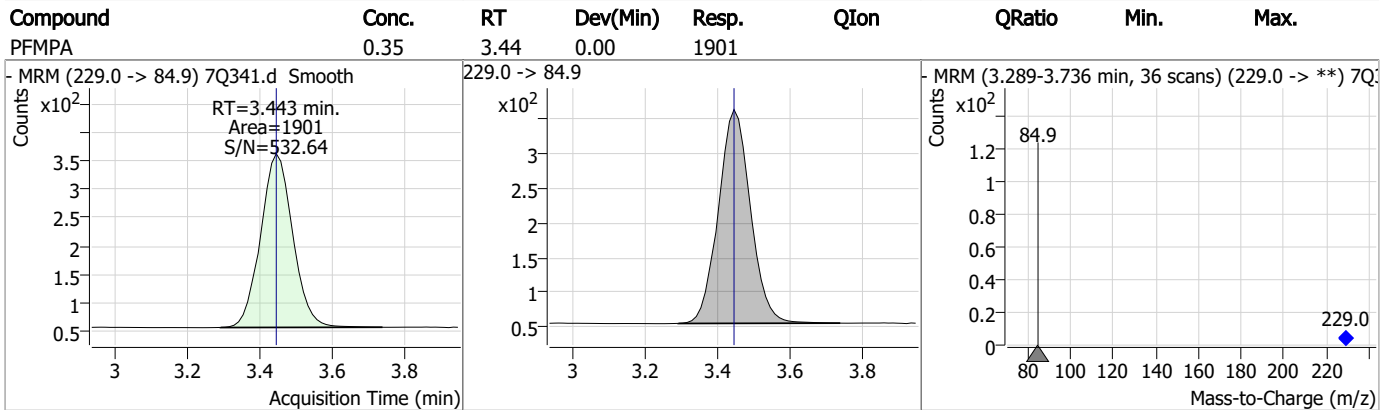
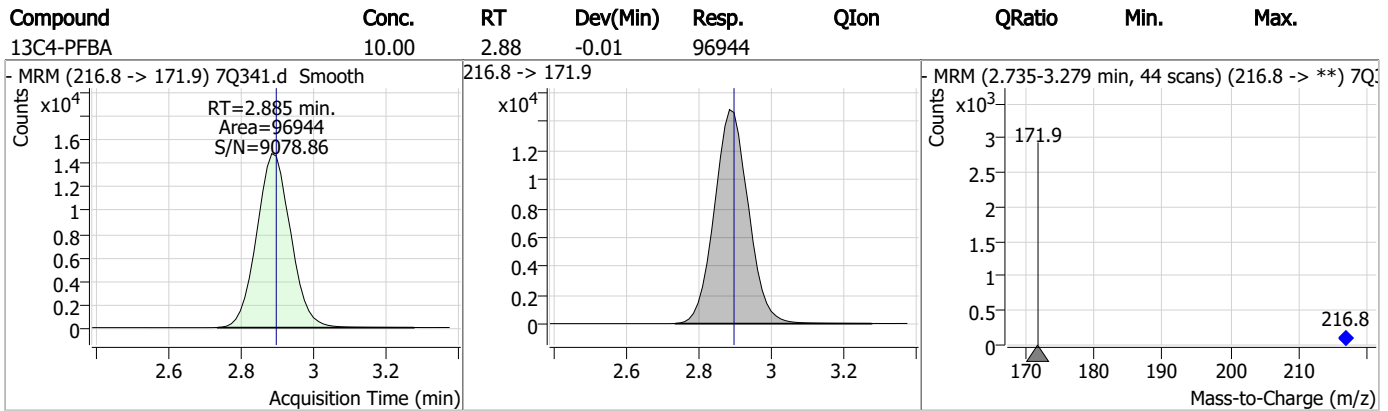
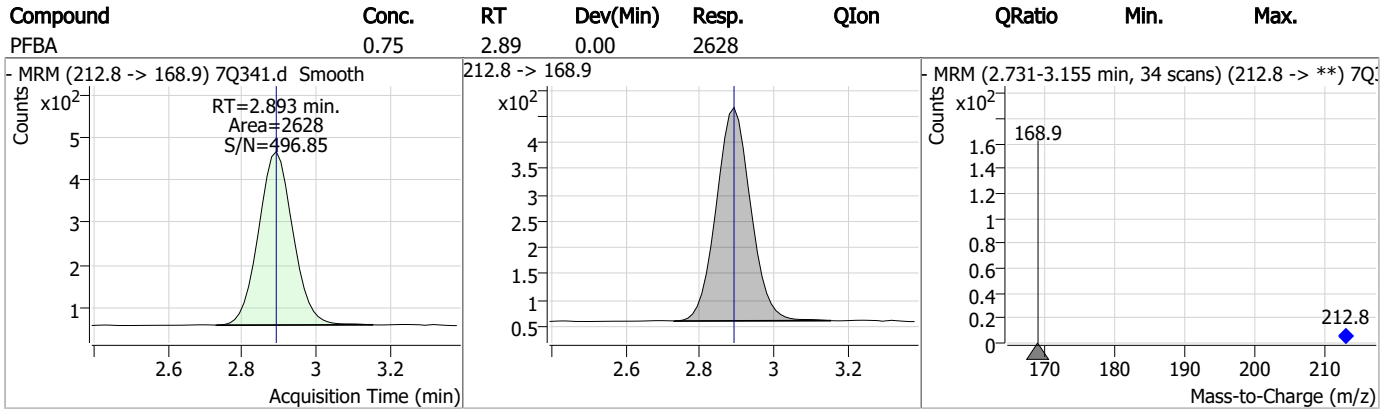
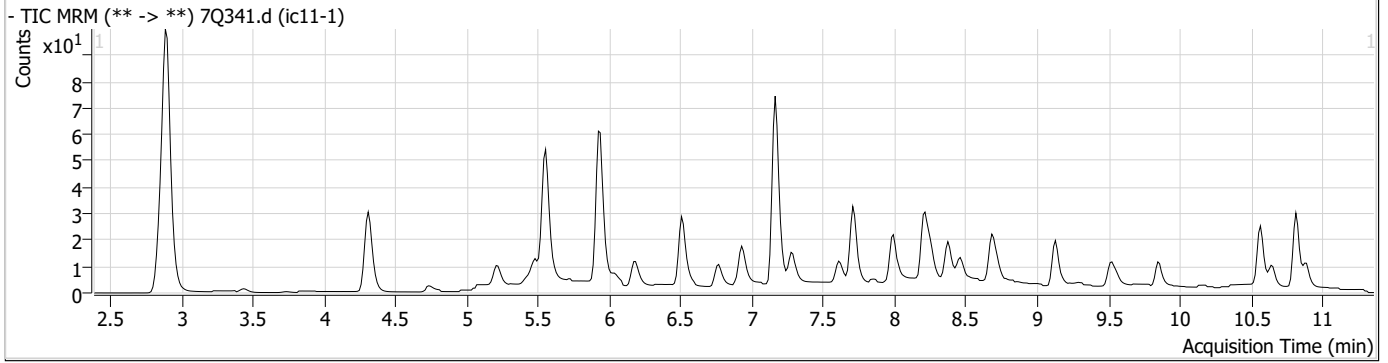
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.17
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Perfluorinated Compounds by LC/MS/MS

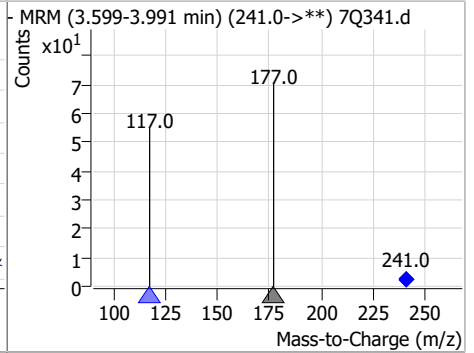
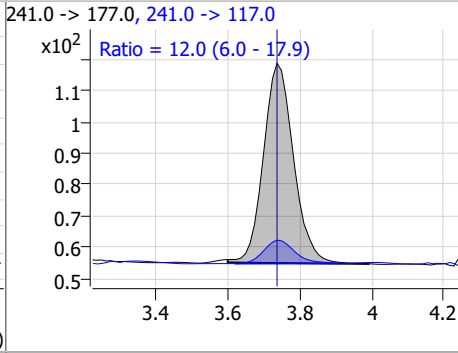
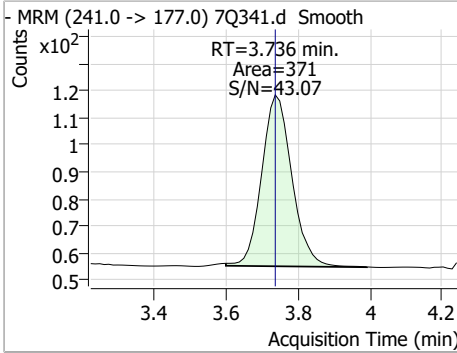


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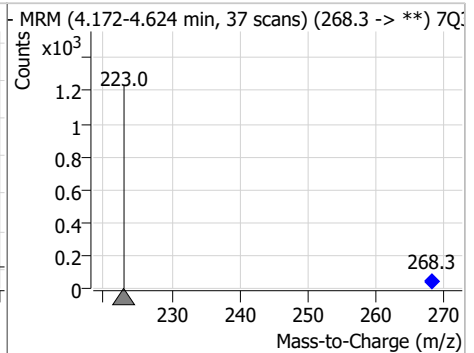
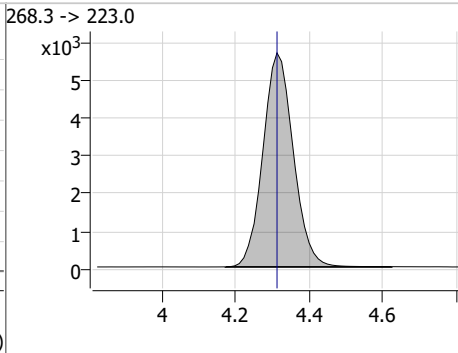
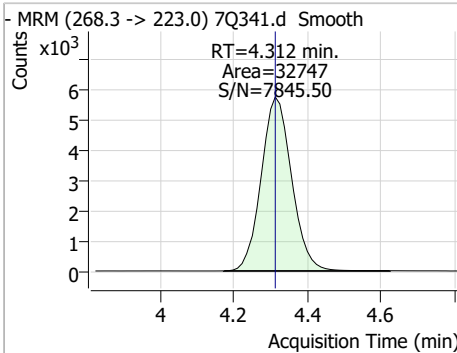
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Perfluorinated Compounds by LC/MS/MS

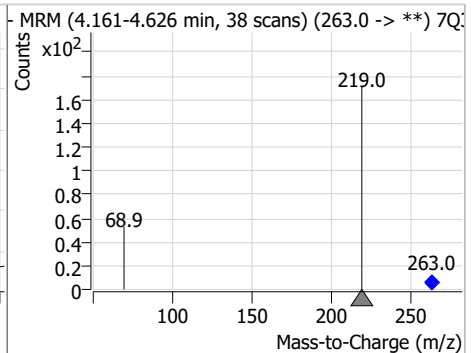
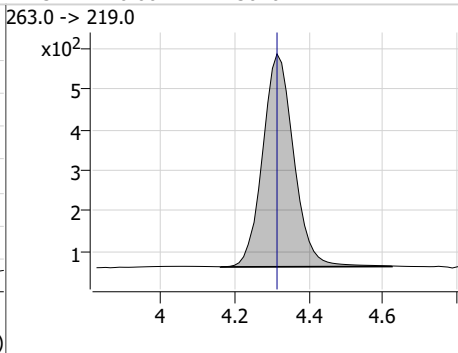
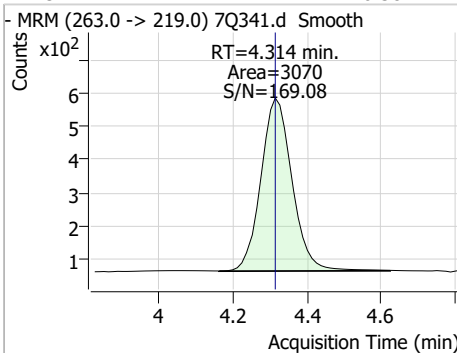
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	0.89	3.74	0.00	371	241.0 -> 117.0	12.0	6.0	17.9



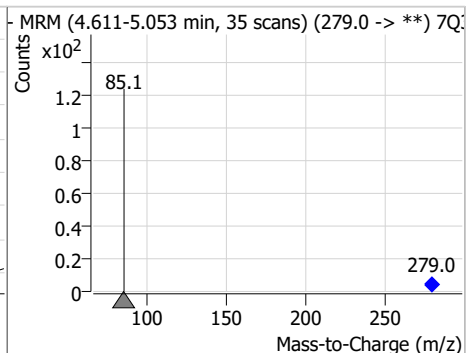
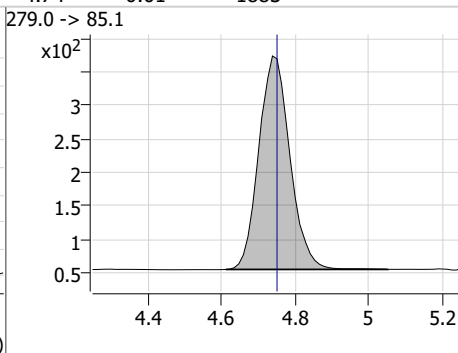
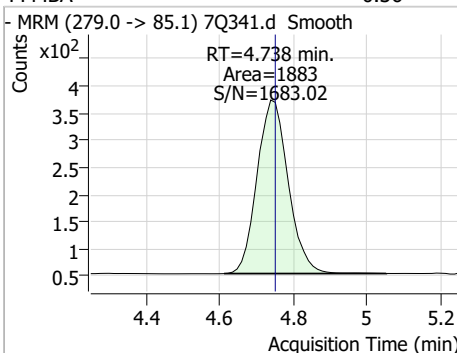
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.06	4.31	0.00	32747				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.38	4.31	0.00	3070				

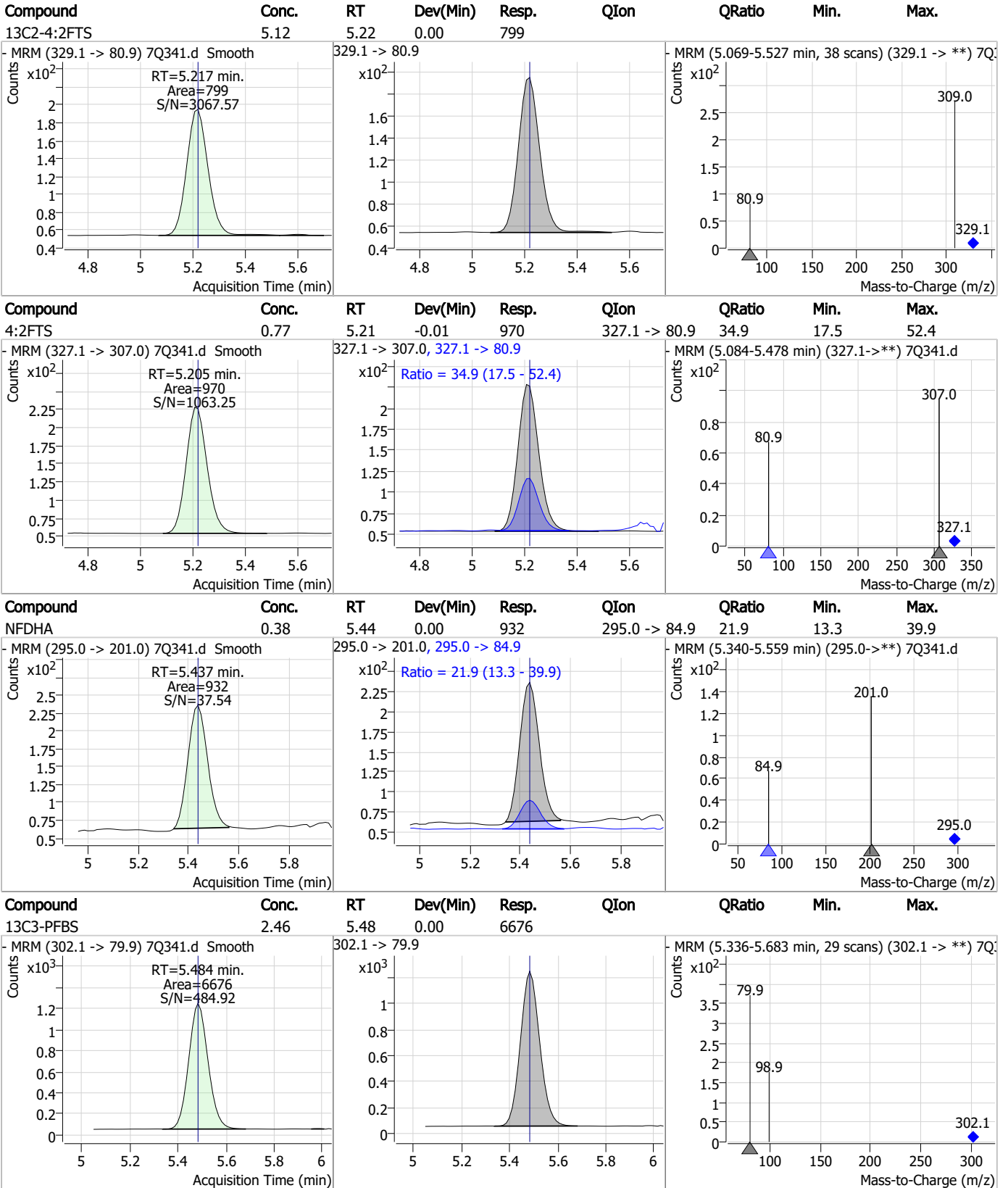


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	0.36	4.74	-0.01	1883				



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Perfluorinated Compounds by LC/MS/MS

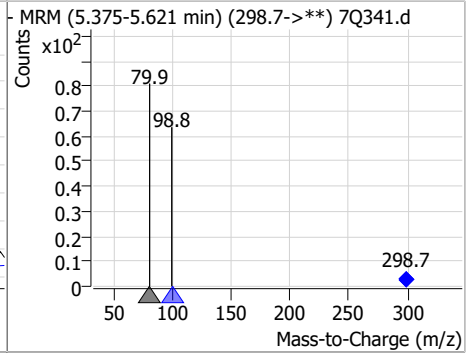
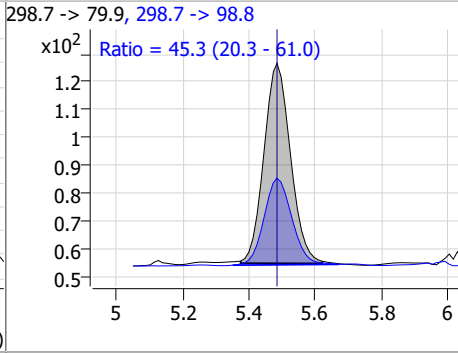
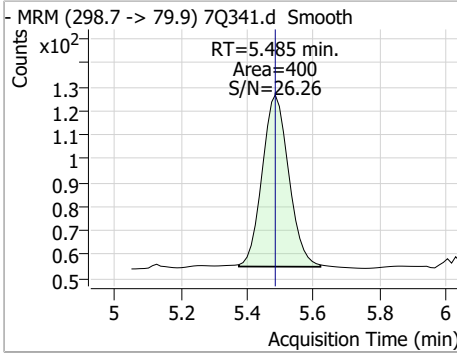


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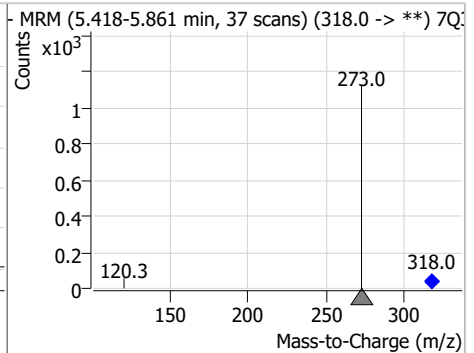
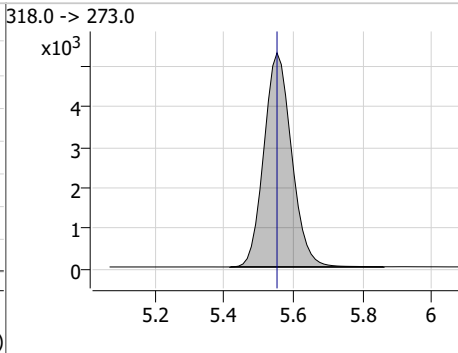
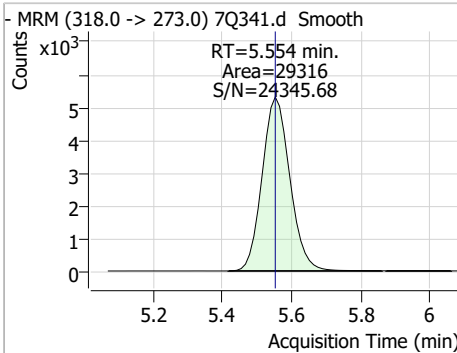
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Perfluorinated Compounds by LC/MS/MS

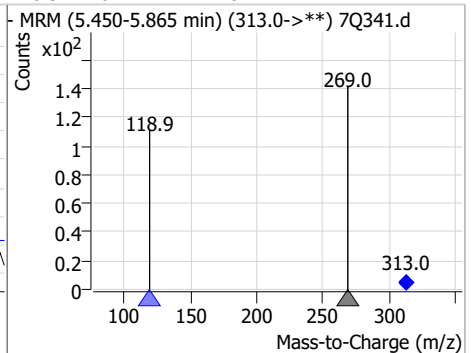
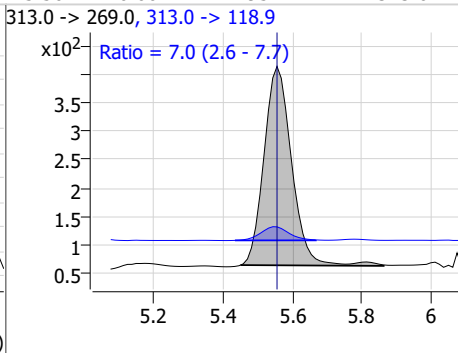
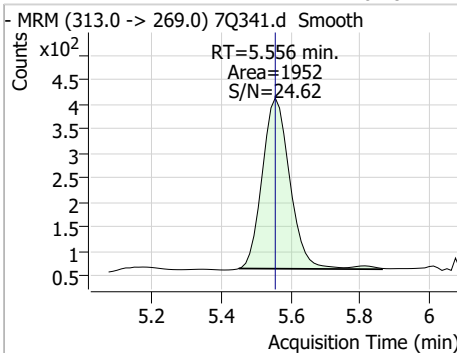
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.16	5.48	0.00	400	298.7 -> 98.8	45.3	20.3	61.0



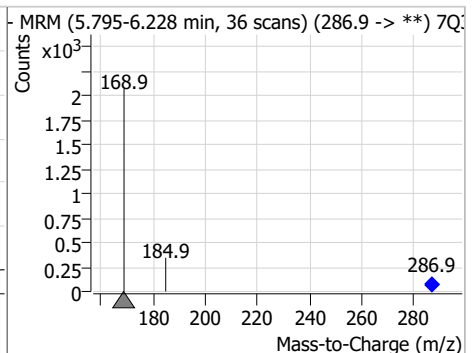
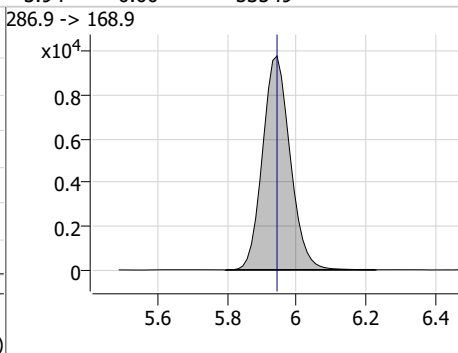
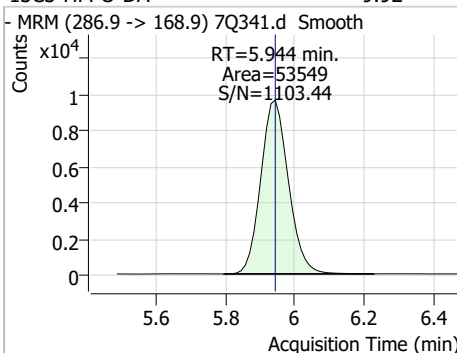
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.53	5.55	0.00	29316				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.18	5.56	0.00	1952	313.0 -> 118.9	7.0	2.6	7.7



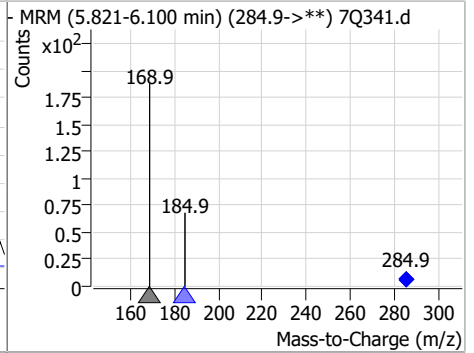
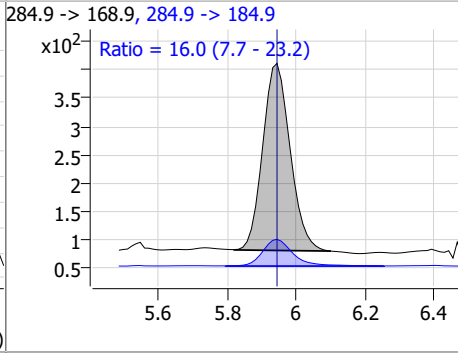
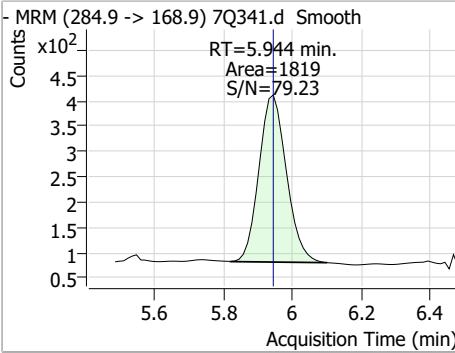
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.92	5.94	0.00	53549				



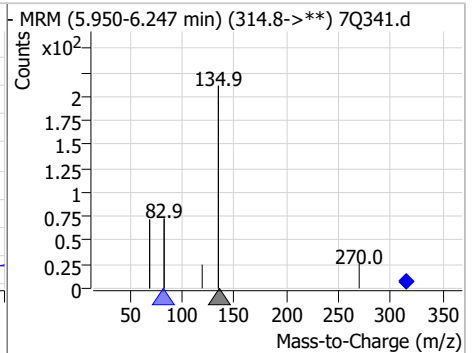
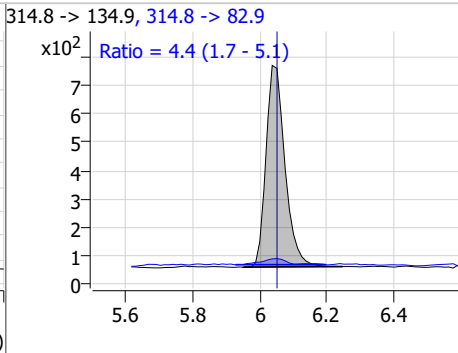
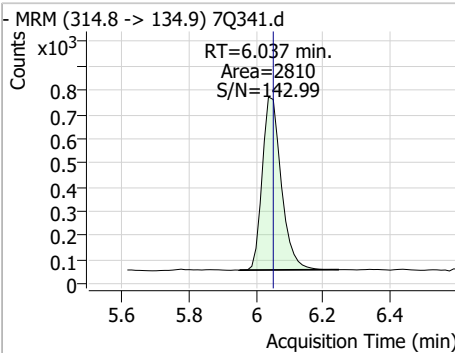
7.7.17

Perfluorinated Compounds by LC/MS/MS

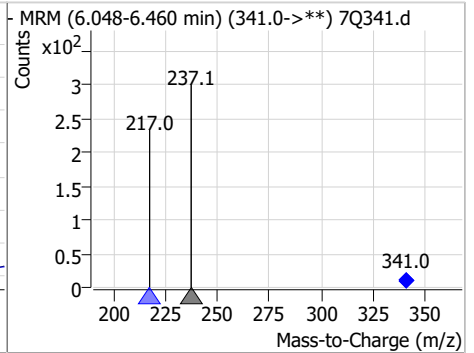
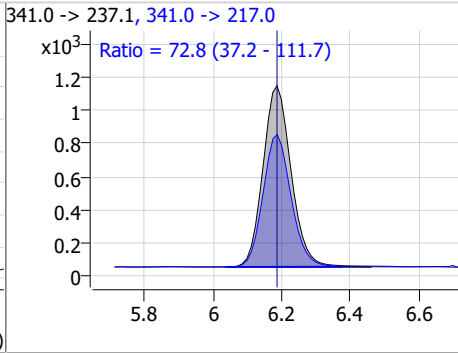
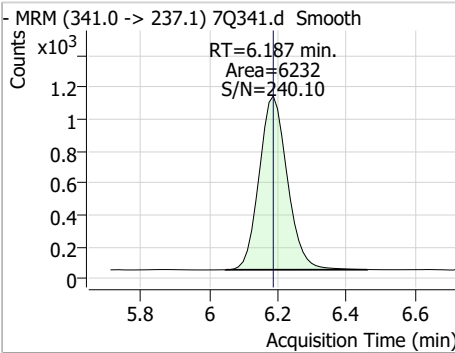
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.36	5.94	0.00	1819	284.9 -> 184.9	16.0	7.7	23.2



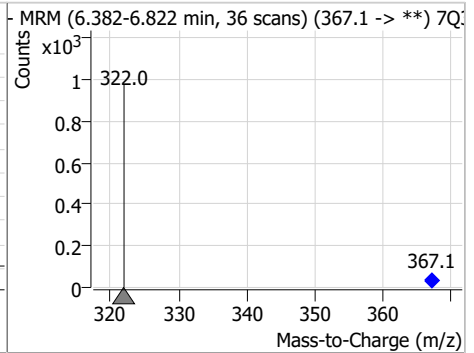
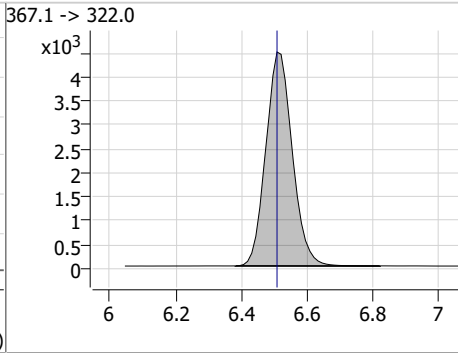
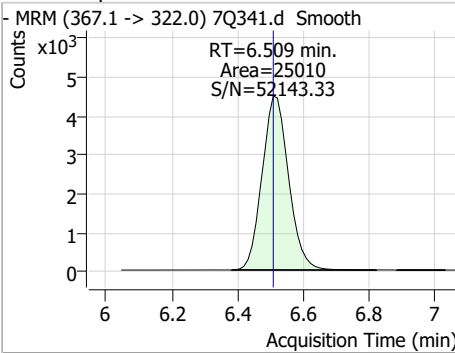
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.33	6.04	-0.01	2810	314.8 -> 82.9	4.4	1.7	5.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.44	6.19	0.00	6232	341.0 -> 217.0	72.8	37.2	111.7

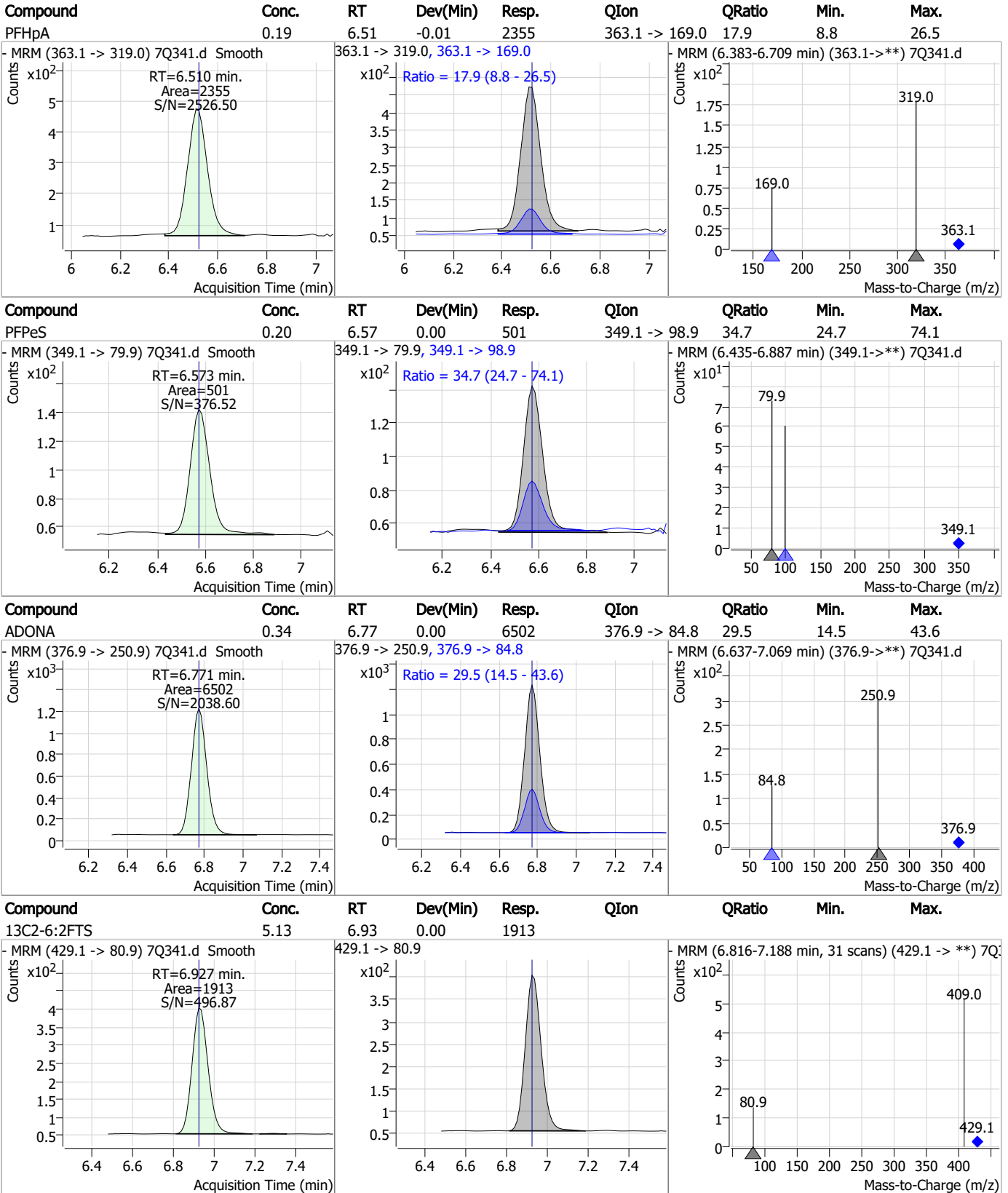


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.48	6.51	0.00	25010	367.1 -> 322.0			



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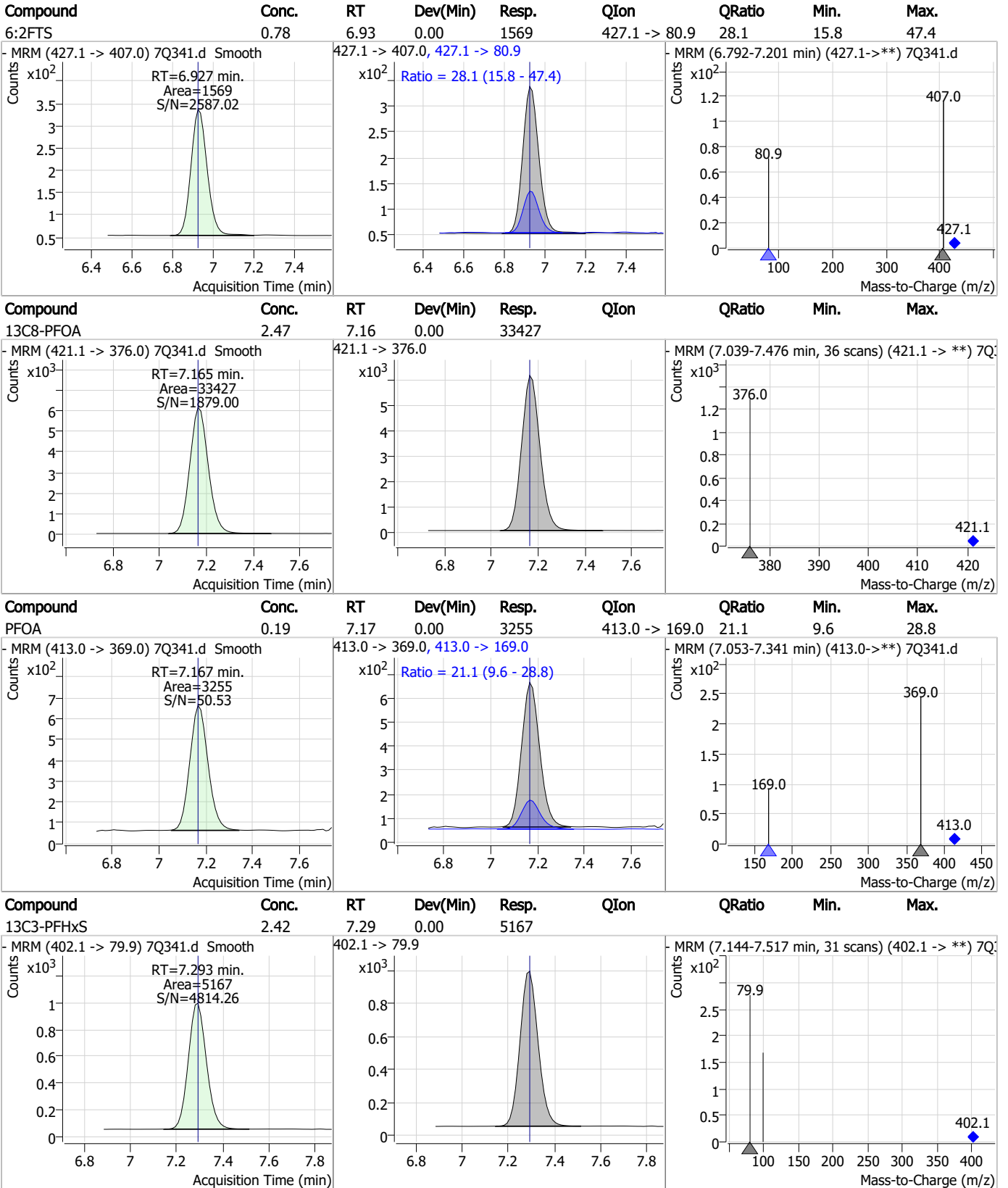
Perfluorinated Compounds by LC/MS/MS



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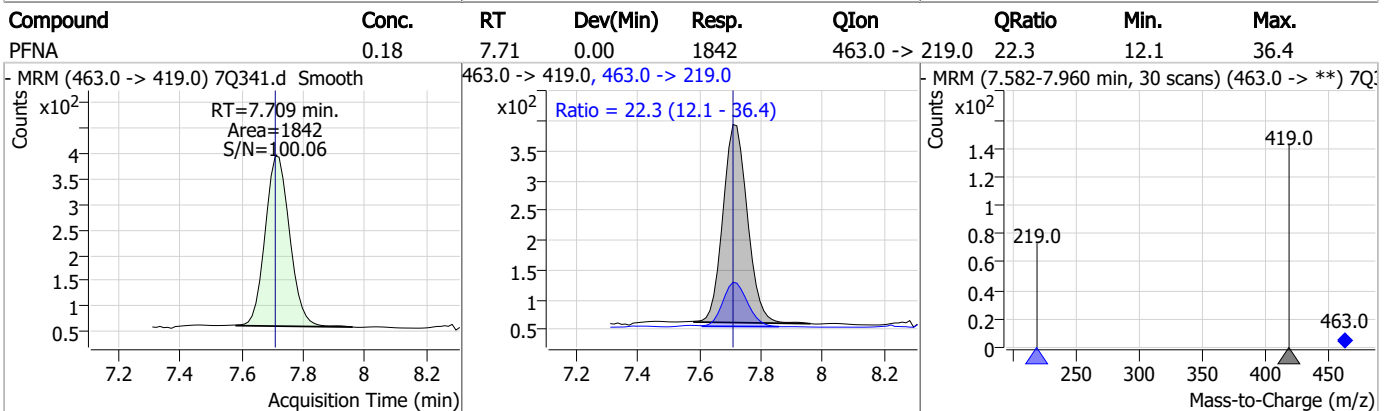
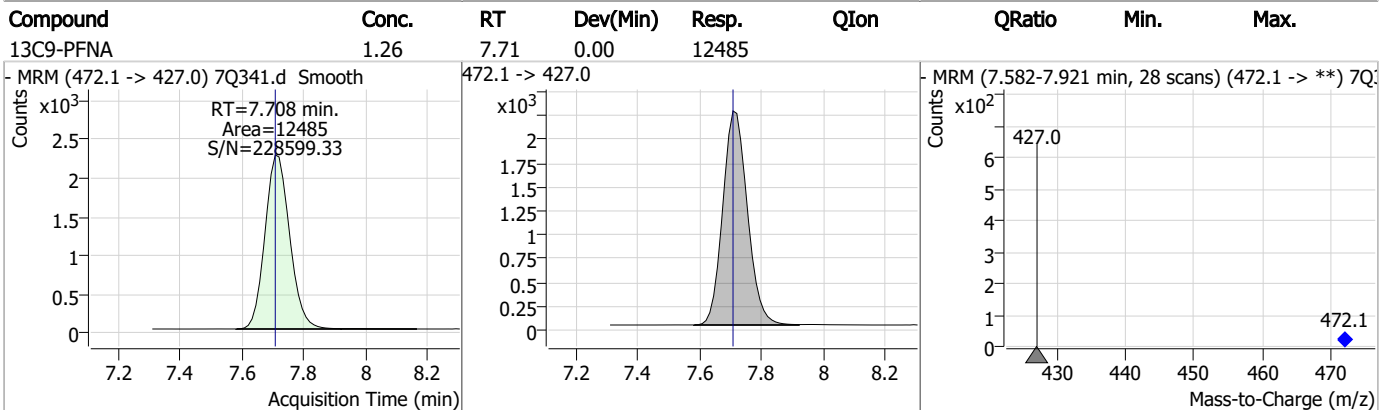
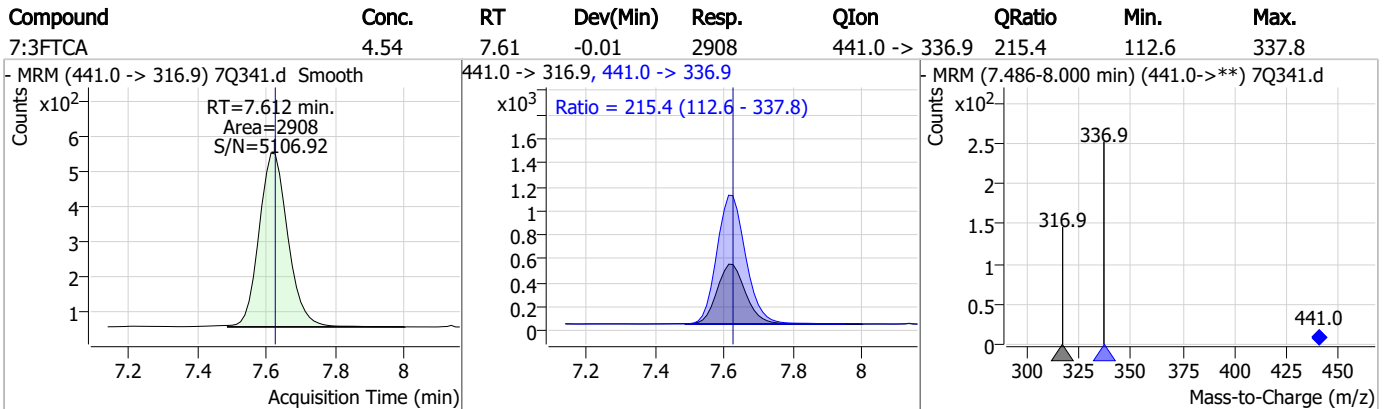
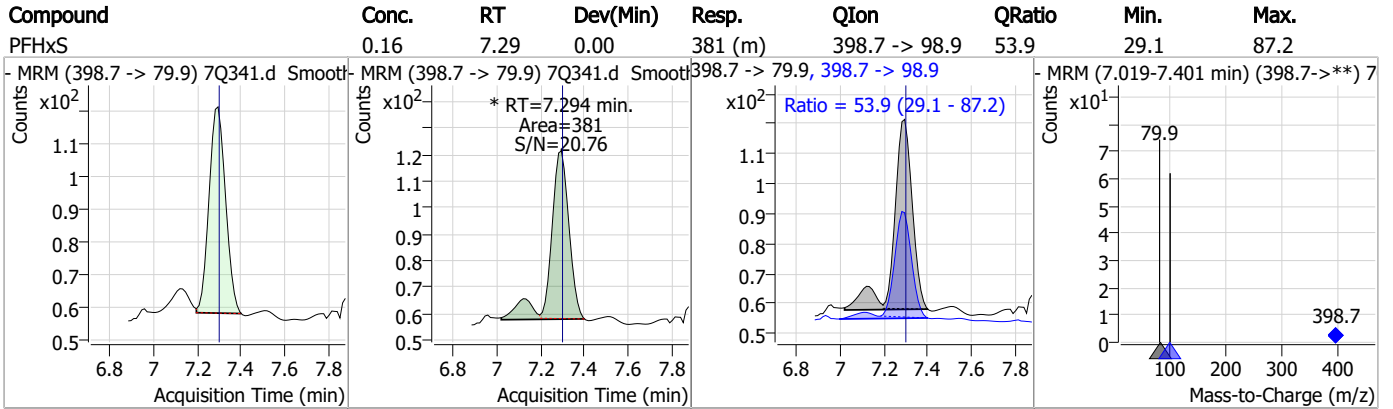
Perfluorinated Compounds by LC/MS/MS



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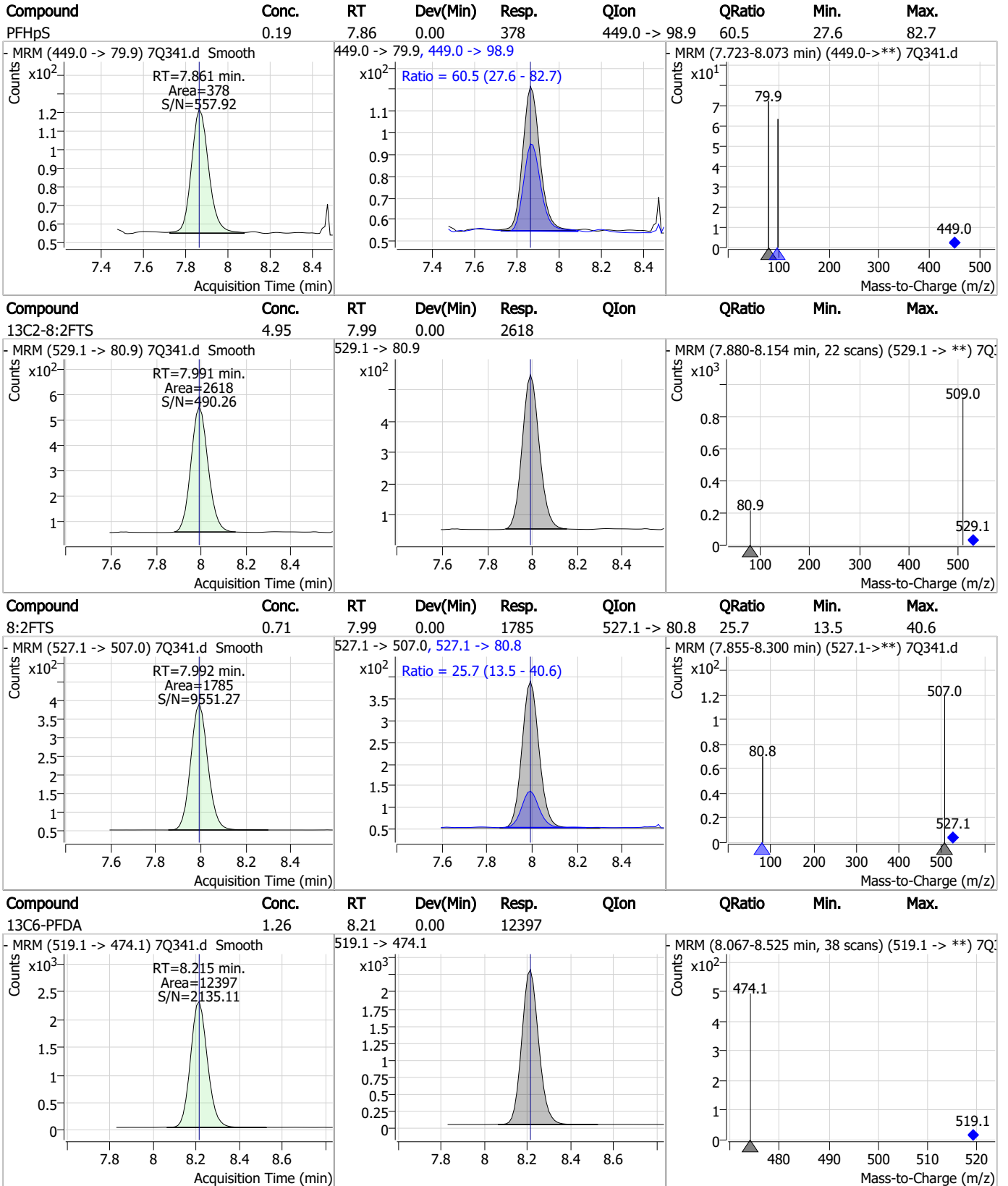


Perfluorinated Compounds by LC/MS/MS



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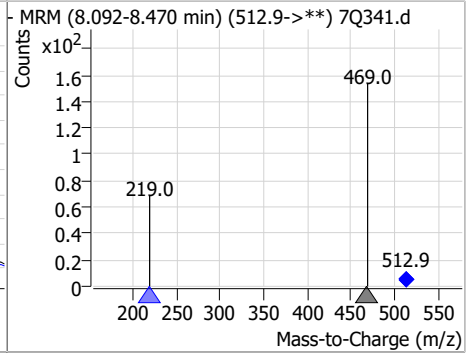
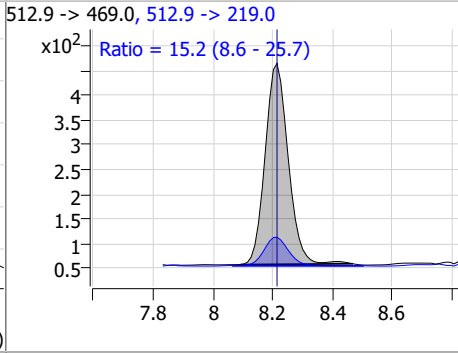
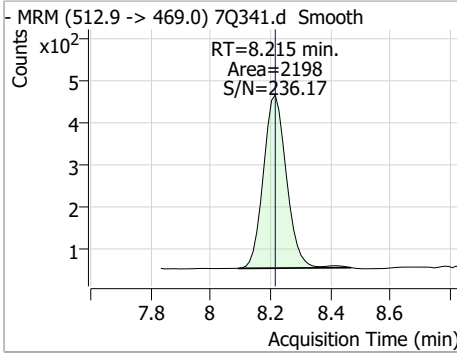
Perfluorinated Compounds by LC/MS/MS



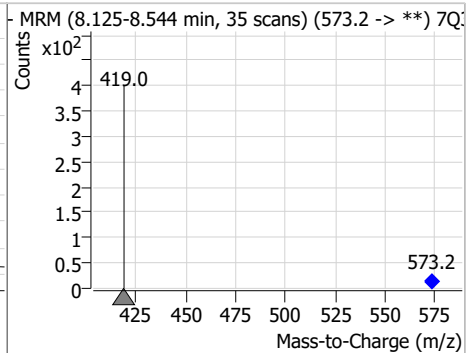
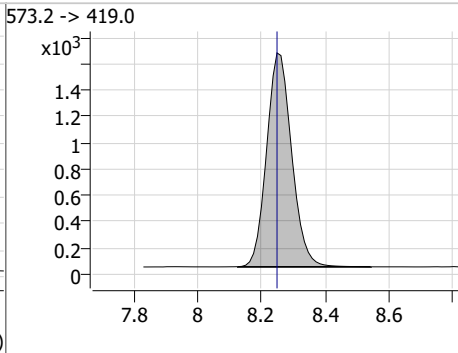
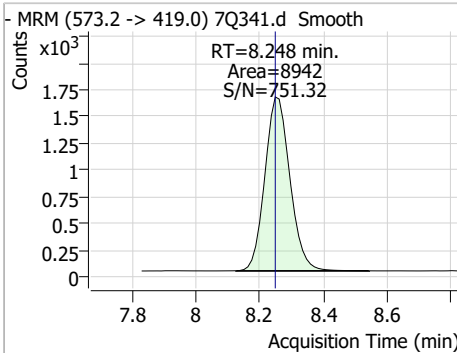
7.7.17

Perfluorinated Compounds by LC/MS/MS

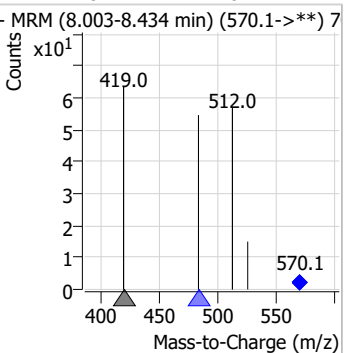
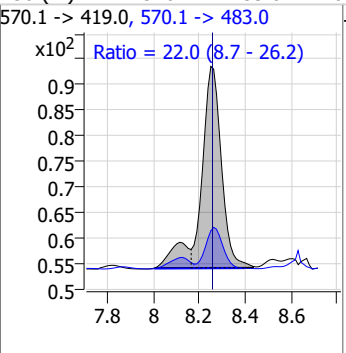
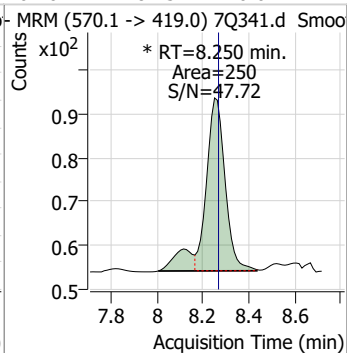
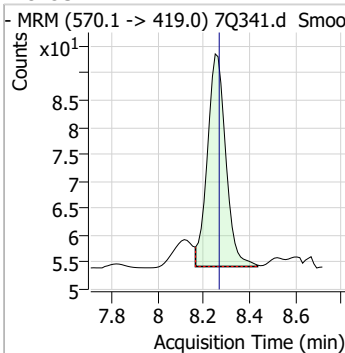
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.19	8.22	0.00	2198	512.9 -> 219.0	15.2	8.6	25.7



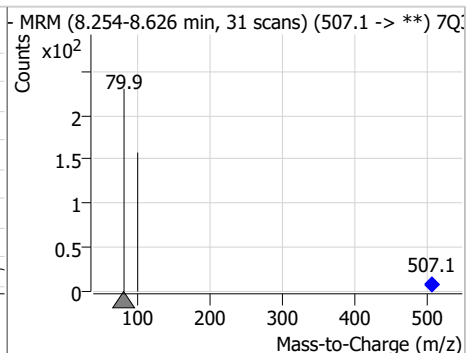
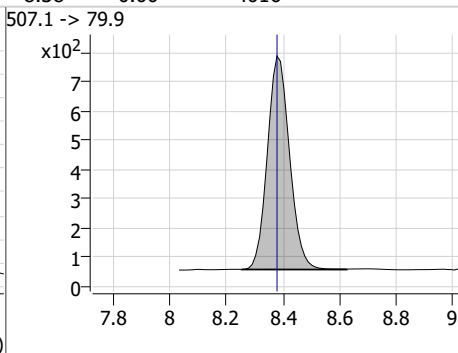
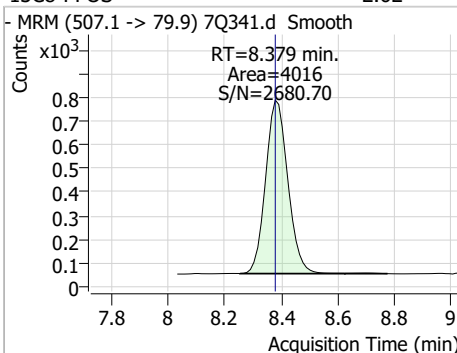
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.32	8.25	0.00	8942				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.16	8.25	-0.01	250 (m)	570.1 -> 483.0	22.0	8.7	26.2

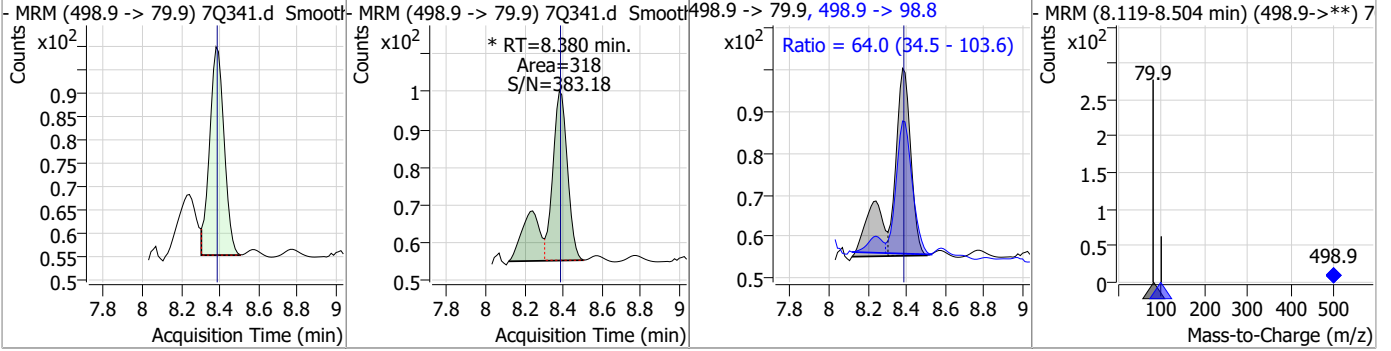


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.62	8.38	0.00	4016				

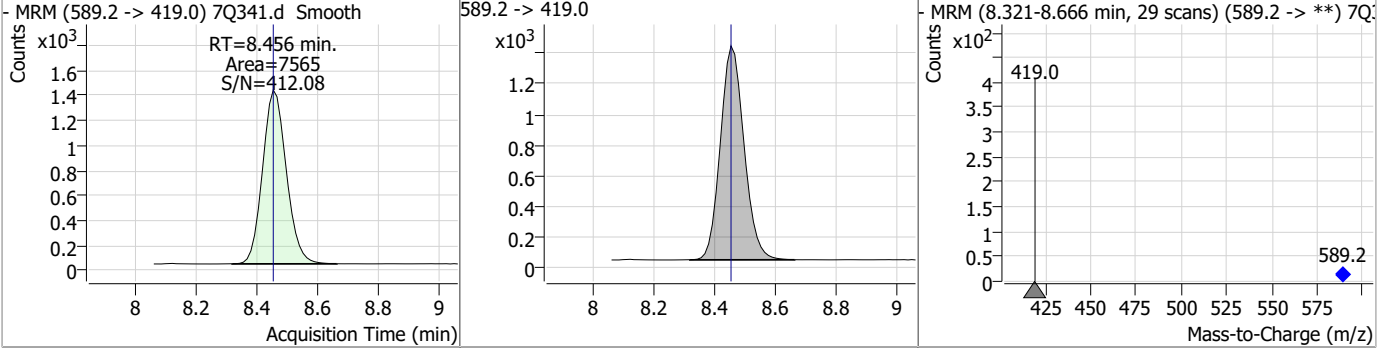


Perfluorinated Compounds by LC/MS/MS

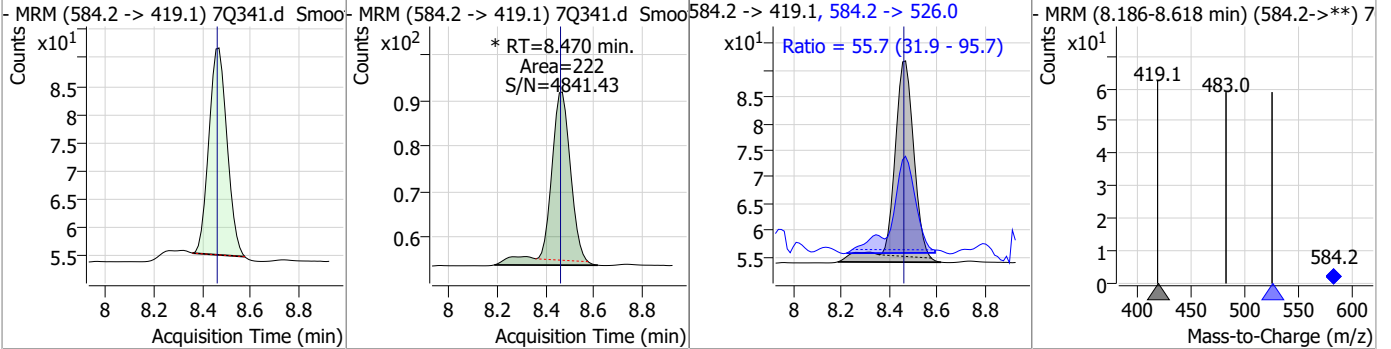
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.16	8.38	0.00	318 (m)	498.9 -> 98.8	64.0	34.5	103.6



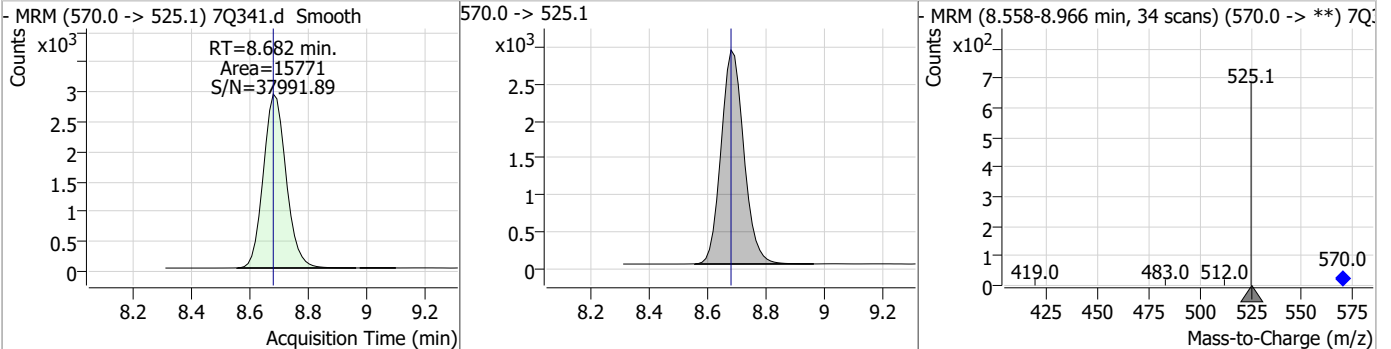
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.23	8.46	0.00	7565				



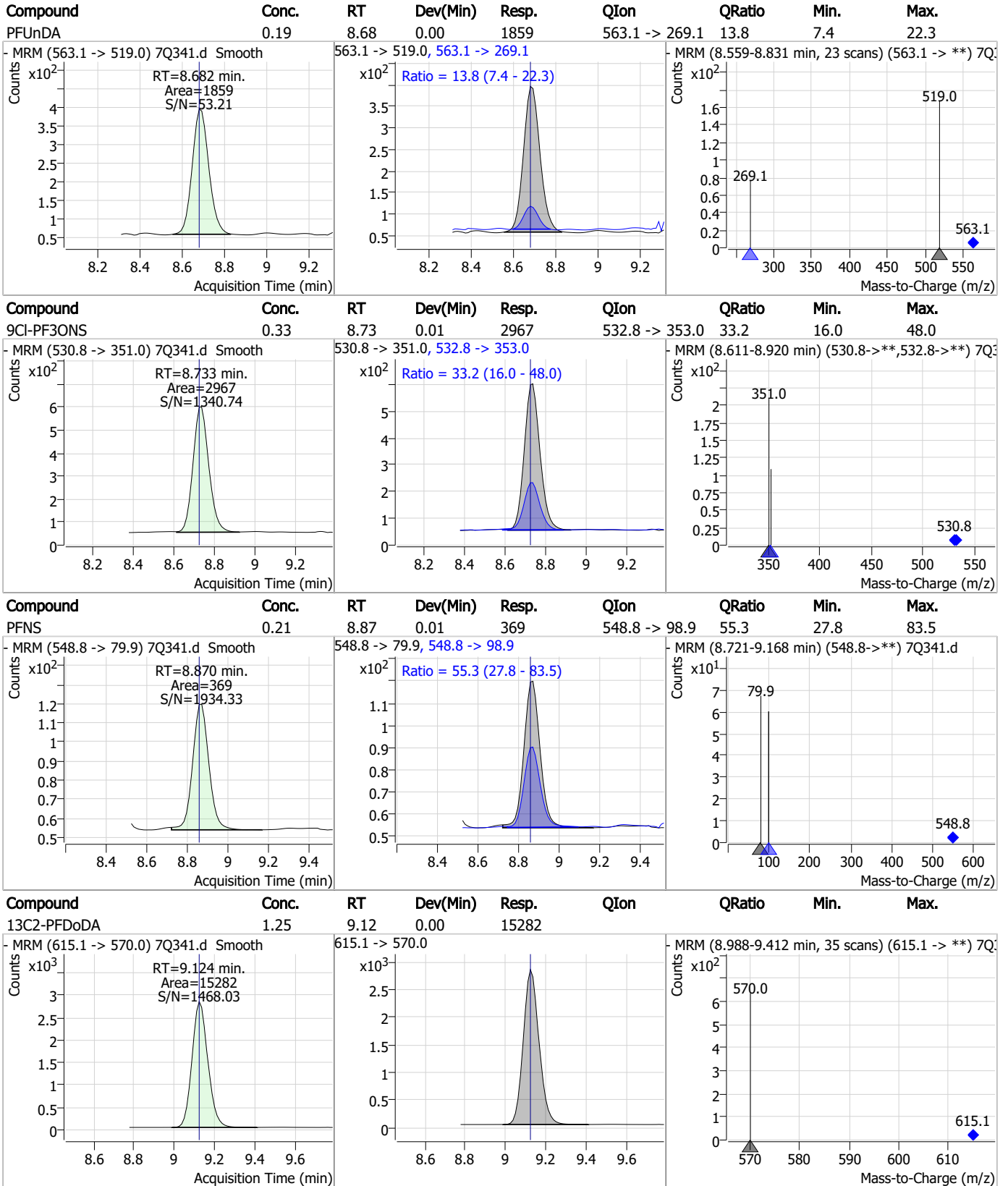
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.18	8.47	0.01	222 (m)	584.2 -> 526.0	55.7	31.9	95.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.26	8.68	0.00	15771				



Perfluorinated Compounds by LC/MS/MS

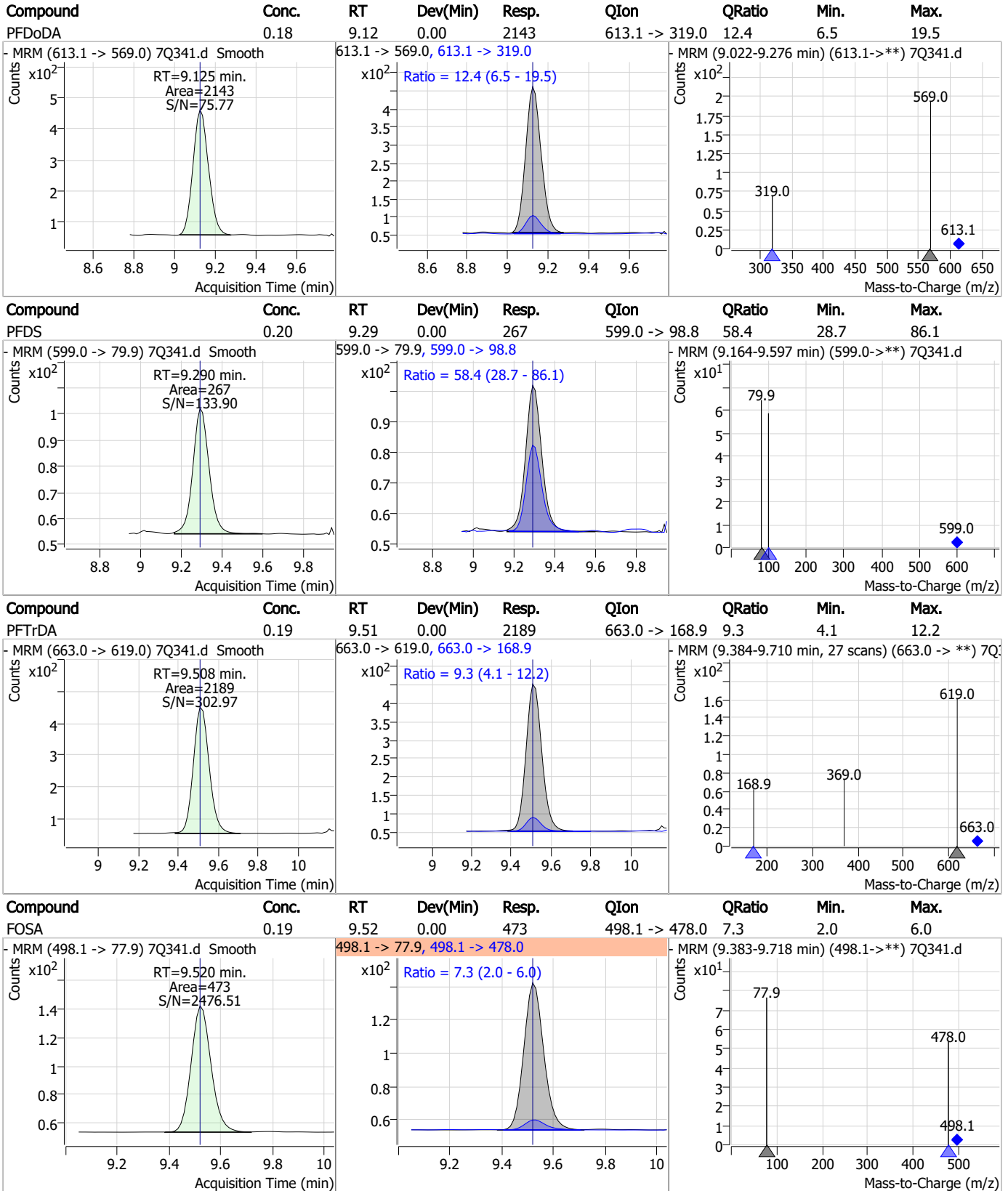


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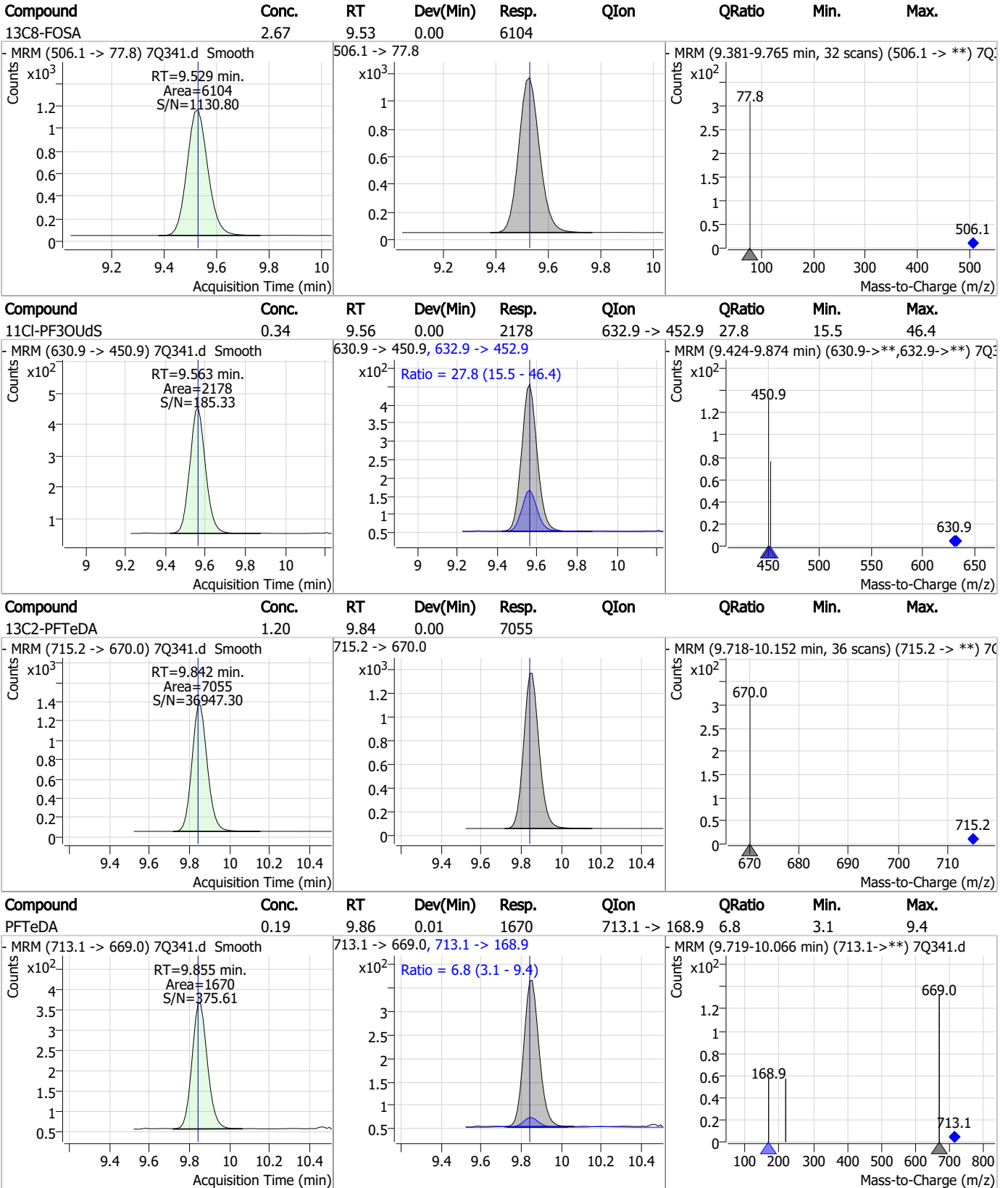


Perfluorinated Compounds by LC/MS/MS



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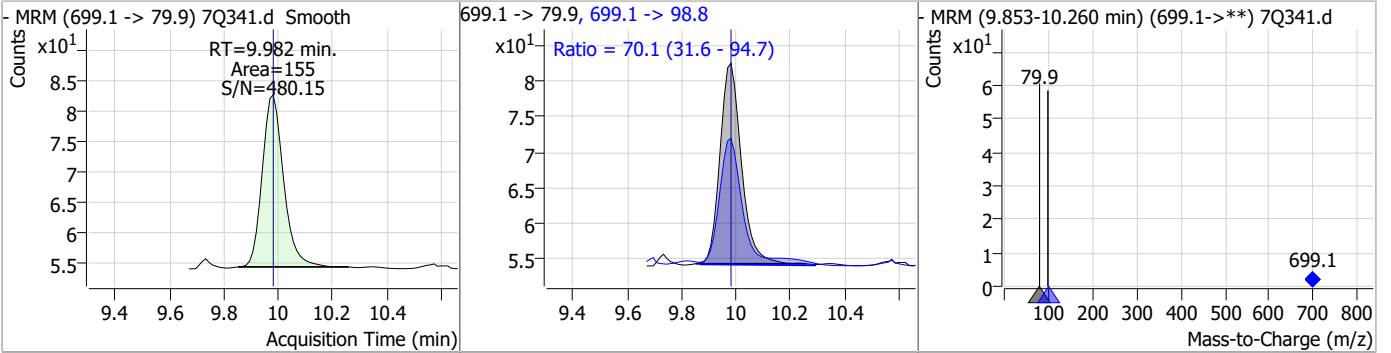
Perfluorinated Compounds by LC/MS/MS



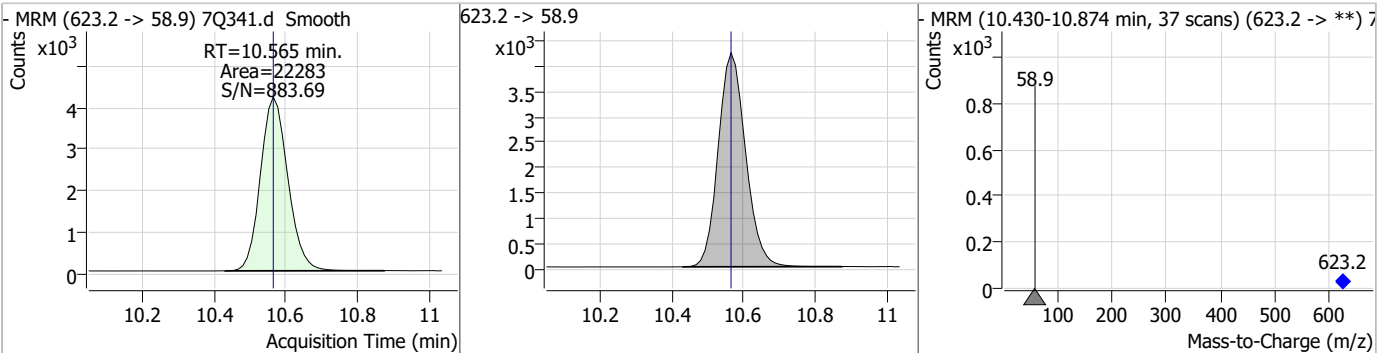
7.7.17

Perfluorinated Compounds by LC/MS/MS

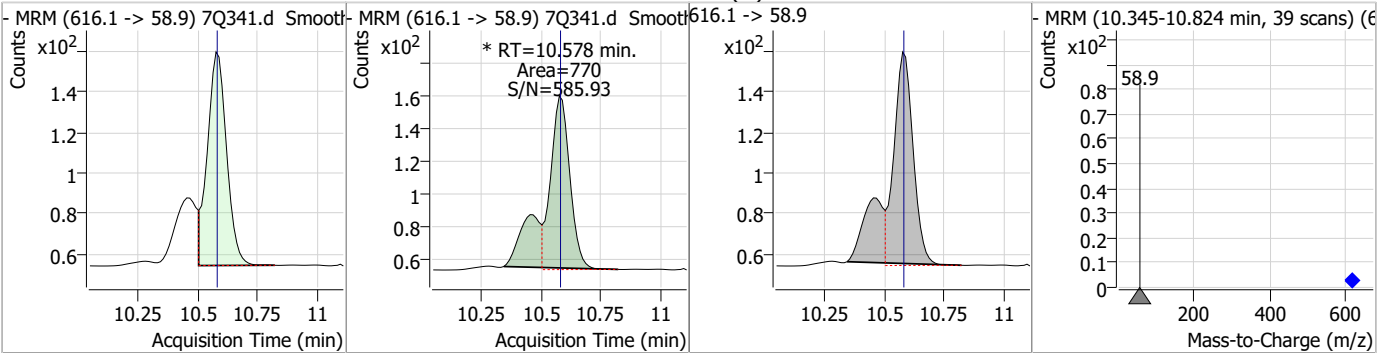
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.20	9.98	0.00	155	699.1 -> 98.8	70.1	31.6	94.7



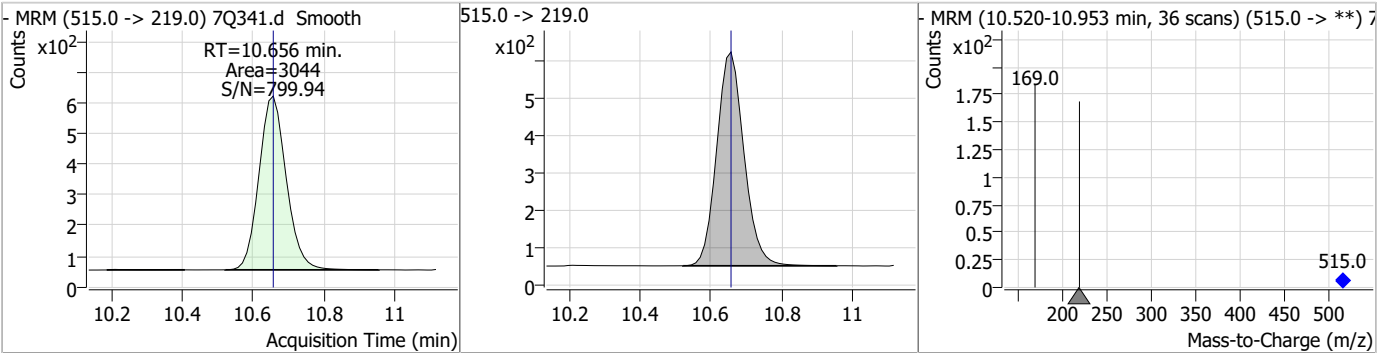
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.38	10.56	0.00	22283				



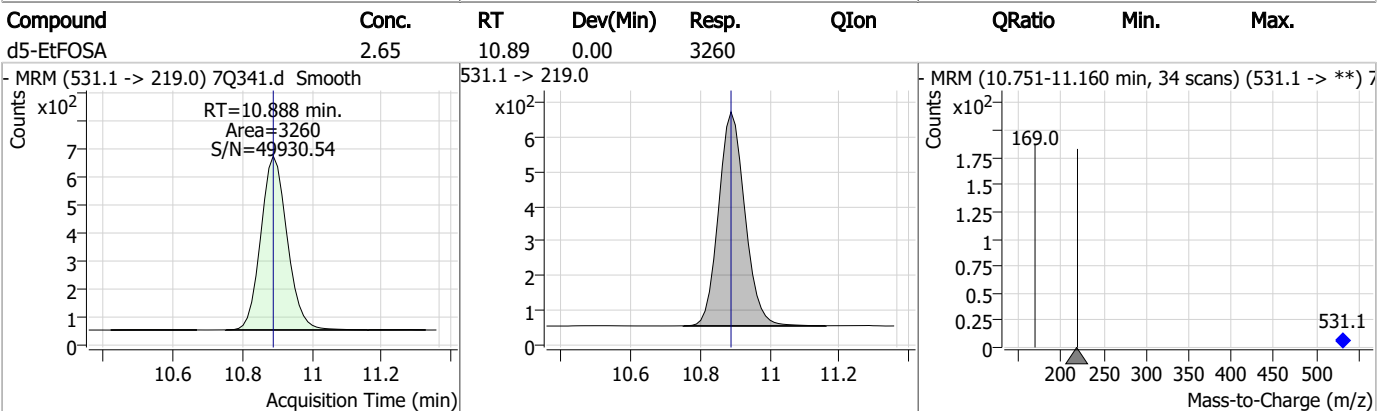
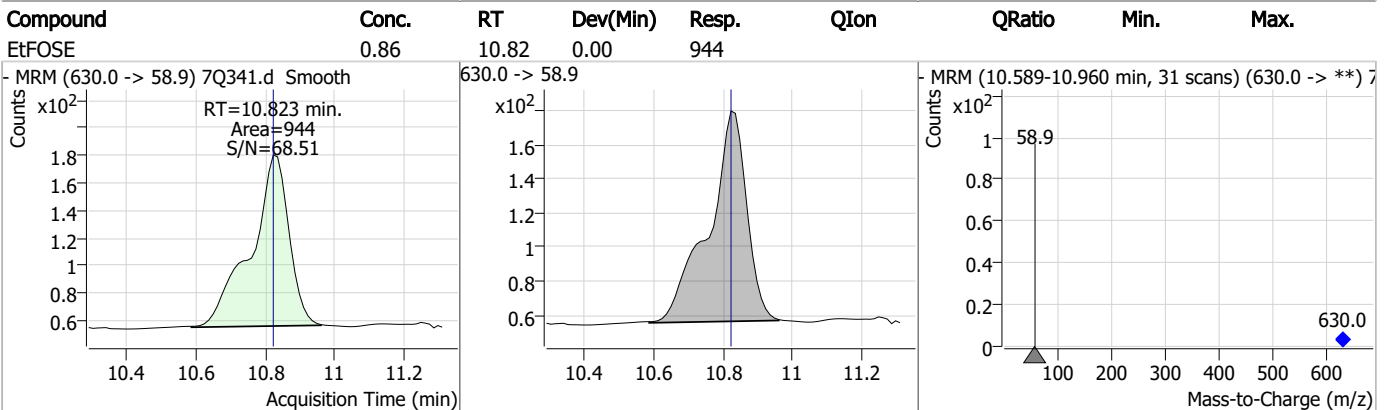
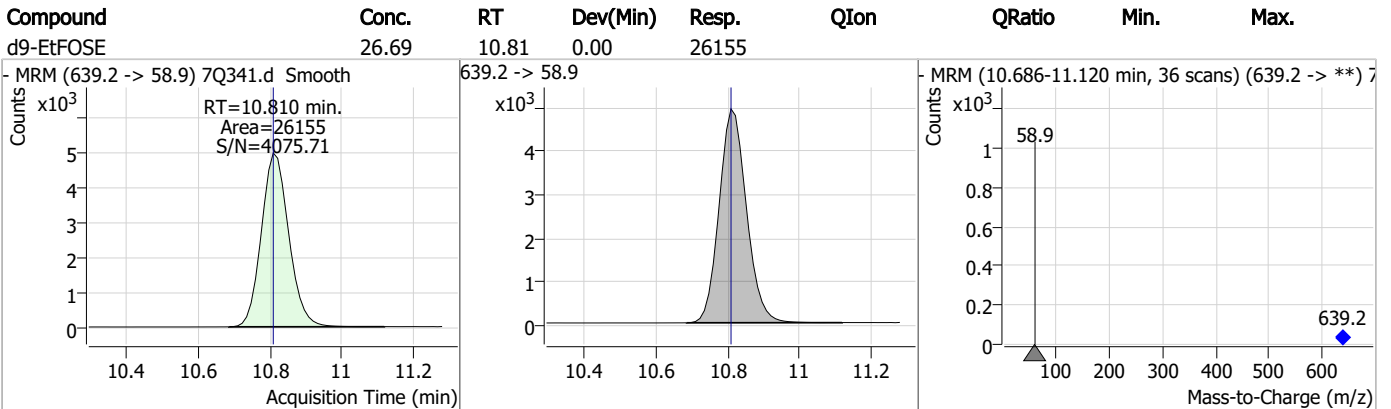
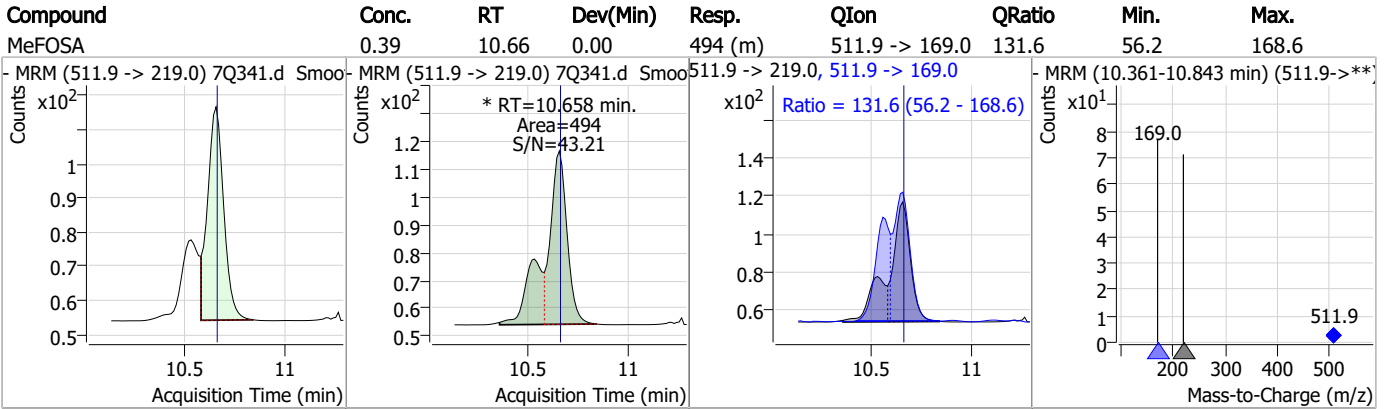
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.81	10.58	0.00	770 (m)				



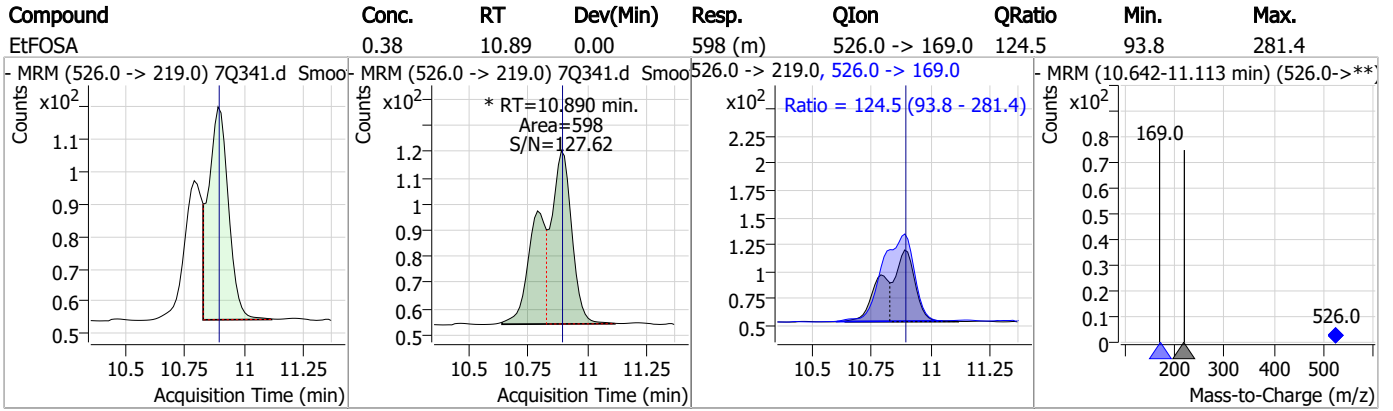
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.54	10.66	0.00	3044				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-IC11 Method: EPA DRAFT 1633
Lab FileID: 7Q341.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 14:56 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q342.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 3:10:50 PM
 Sample Name : ic11-2
 Vial : P1-A3
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	101387	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	34127	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	29964	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	26339	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	35424	2.50 µg/L	0.000
M9-PFNA	7.708	472.1 -> 427.0	12423	1.25 µg/L	0.000
M6-PFDA	8.215	519.1 -> 474.1	12789	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16178	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	15710	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7527	1.25 µg/L	0.012
M8-FOSA	9.529	506.1 -> 77.8	6184	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6836	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5137	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4081	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	896	5.00 µg/L	0.000
M2-6:2FTS	6.927	429.1 -> 80.9	2030	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2871	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	9233	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	58365	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	8053	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	22994	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	26523	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3238	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3139	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4713	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	48290	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3651	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	37664	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11137	1.25 µg/L	0.000
13C5-PFNA	7.709	468.0 -> 423.0	15437	1.25 µg/L	0.000
13C2-PFHxA	5.555	315.1 -> 270.0	24924	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	896	5.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.4%		
13C2-6:2FTS	6.927	429.1 -> 80.9	2030	5.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2871	5.46 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.1%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15710	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7527	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C3-PFBS	5.484	302.1 -> 79.9	6836	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C3-PFHxS	7.293	402.1 -> 79.9	5137	2.42 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C4-PFBA	2.885	216.8 -> 171.9	101387	9.93 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C4-PFHpA	6.509	367.1 -> 322.0	26339	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFHxA	5.554	318.0 -> 273.0	29964	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFPeA	4.312	268.3 -> 223.0	34127	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C6-PFDA	8.215	519.1 -> 474.1	12789	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C7-PFUnDA	8.682	570.0 -> 525.1	16178	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C8-FOSA	9.529	506.1 -> 77.8	6184	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-PFOA	7.165	421.1 -> 376.0	35424	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C8-PFOS	8.379	507.1 -> 79.9	4081	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C9-PFNA	7.708	472.1 -> 427.0	12423	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.9%	
d3-MeFOSAA	8.248	573.2 -> 419.0	9233	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	58365	10.40 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d3-MeFOSA	10.656	515.0 -> 219.0	3139	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
d5-EtFOSAA	8.456	589.2 -> 419.0	8053	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
d7-MeFOSE	10.565	623.2 -> 58.9	22994	25.18 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
d9-EtFOSE	10.810	639.2 -> 58.9	26523	25.04 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
d5-EtFOSA	10.888	531.1 -> 219.0	3238	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	2022	1.44 µg/L	99
		327.1 -> 80.9	720		
6:2FTS	6.927	427.1 -> 407.0	3243	1.51 µg/L	98
		427.1 -> 80.9	1052		
8:2FTS	7.992	527.1 -> 507.0	3992	1.45 µg/L	99
		527.1 -> 80.8	1096		
EtFOSAA	8.458	584.2 -> 419.1	544	0.42 µg/L	m 92
		584.2 -> 526.0	381		
FOSA	9.520	498.1 -> 77.9	1029	0.41 µg/L	97
		498.1 -> 478.0	50		
MeFOSAA	8.262	570.1 -> 419.0	704	0.43 µg/L	m 94
		570.1 -> 483.0	142		
PFBA	2.893	212.8 -> 168.9	5933	1.62 µg/L	100
PFBS	5.485	298.7 -> 79.9	975	0.38 µg/L	94
		298.7 -> 98.8	430		
PFDA	8.215	512.9 -> 469.0	5039	0.43 µg/L	96
		512.9 -> 219.0	786		
PFDODA	9.125	613.1 -> 569.0	5062	0.42 µg/L	98
		613.1 -> 319.0	625		
PFDS	9.290	599.0 -> 79.9	547	0.41 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	307			
PFHpA	6.510	363.1 -> 319.0	5138	0.39	µg/L	98
		363.1 -> 169.0	953			
PFHpS	7.861	449.0 -> 79.9	798	0.39	µg/L	83
		449.0 -> 98.9	537			
PFHxA	5.556	313.0 -> 269.0	4661	0.42	µg/L	99
		313.0 -> 118.9	258			
PFHxS	7.282	398.7 -> 79.9	1009	0.43	µg/L	m 92
		398.7 -> 98.9	528			
PFNA	7.709	463.0 -> 419.0	4191	0.42	µg/L	99
		463.0 -> 219.0	1041			
PFNS	8.857	548.8 -> 79.9	713	0.39	µg/L	86
		548.8 -> 98.9	471			
PFOA	7.167	413.0 -> 369.0	7076	0.40	µg/L	98
		413.0 -> 169.0	1434			
PFOS	8.380	498.9 -> 79.9	761	0.38	µg/L	m 90
		498.9 -> 98.8	462			
PFPeA	4.314	263.0 -> 219.0	6831	0.80	µg/L	100
PFPeS	6.573	349.1 -> 79.9	990	0.40	µg/L	96
		349.1 -> 98.9	464			
PFTeDA	9.855	713.1 -> 669.0	3715	0.40	µg/L	97
		713.1 -> 168.9	274			
PFTrDA	9.508	663.0 -> 619.0	4664	0.39	µg/L	98
		663.0 -> 168.9	411			
PFUnDA	8.682	563.1 -> 519.0	4146	0.40	µg/L	100
		563.1 -> 269.1	617			
11CI-PF3OUdS	9.563	630.9 -> 450.9	4992	0.72	µg/L	97
		632.9 -> 452.9	1630			
9CI-PF3ONS	8.722	530.8 -> 351.0	7168	0.73	µg/L	97
		532.8 -> 353.0	2164			
ADONA	6.771	376.9 -> 250.9	14937	0.72	µg/L	100
		376.9 -> 84.8	4381			
HFPO-DA	5.944	284.9 -> 168.9	4092	0.74	µg/L	92
		284.9 -> 184.9	764			
3:3FTCA	3.736	241.0 -> 177.0	844	1.94	µg/L	100
		241.0 -> 117.0	102			
5:3FTCA	6.187	341.0 -> 237.1	14053	9.81	µg/L	98
		341.0 -> 217.0	10655			
7:3FTCA	7.612	441.0 -> 316.9	6694	10.23	µg/L	91
		441.0 -> 336.9	14145			
EtFOSA	10.890	526.0 -> 219.0	1347	0.86	µg/L	m 56
		526.0 -> 169.0	1660			
EtFOSE	10.823	630.0 -> 58.9	2286	2.05	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	1068	0.82	µg/L	m 80
		511.9 -> 169.0	1428			
MeFOSE	10.578	616.1 -> 58.9	1997	2.03	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	304	0.38	µg/L	93
		699.1 -> 98.8	208			
NFDHA	5.437	295.0 -> 201.0	2268	0.91	µg/L	97
		295.0 -> 84.9	573			
PFMBA	4.750	279.0 -> 85.1	4311	0.79	µg/L	100
PFMPA	3.443	229.0 -> 84.9	4595	0.81	µg/L	100
PFEESA	6.037	314.8 -> 134.9	6245	0.71	µg/L	100
		314.8 -> 82.9	209			

= Qualifier out of range, m = manually integrated, + = Area summed

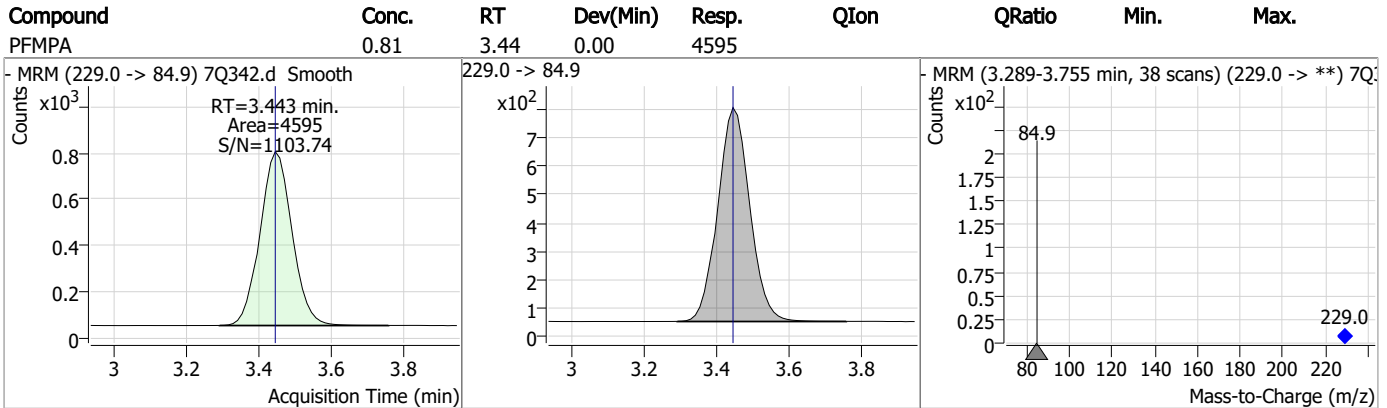
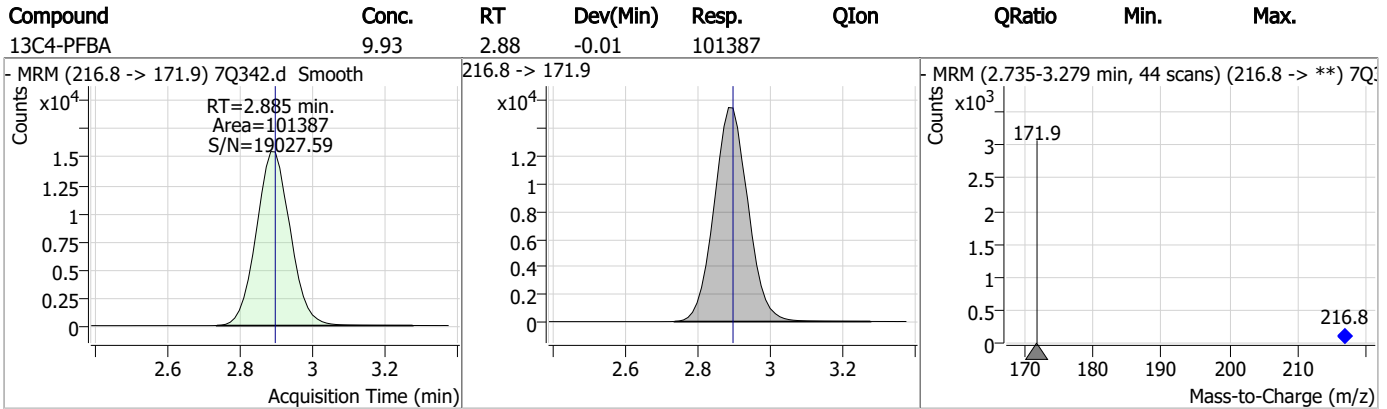
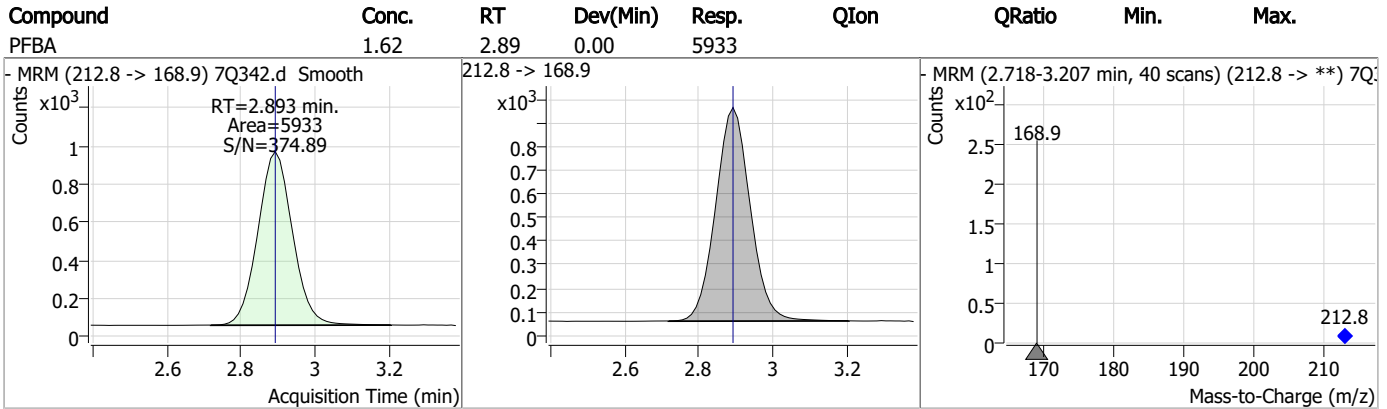
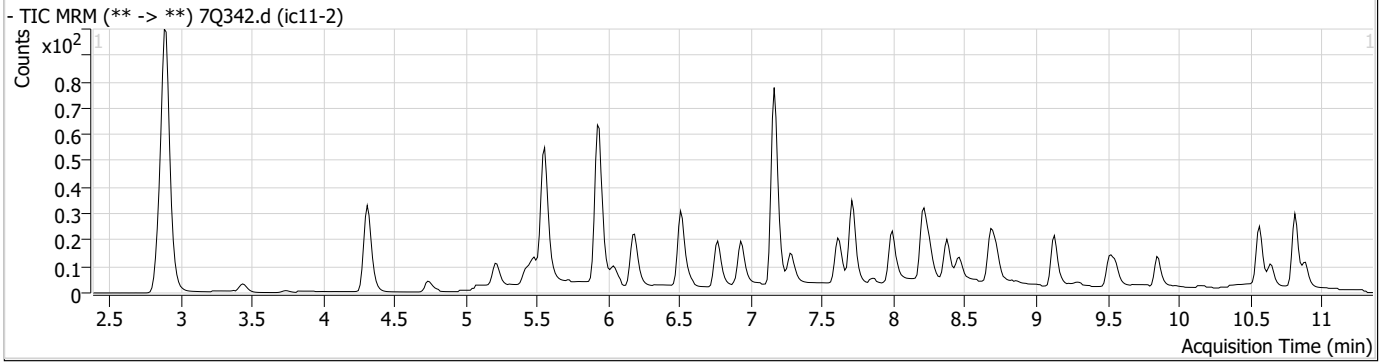
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.18

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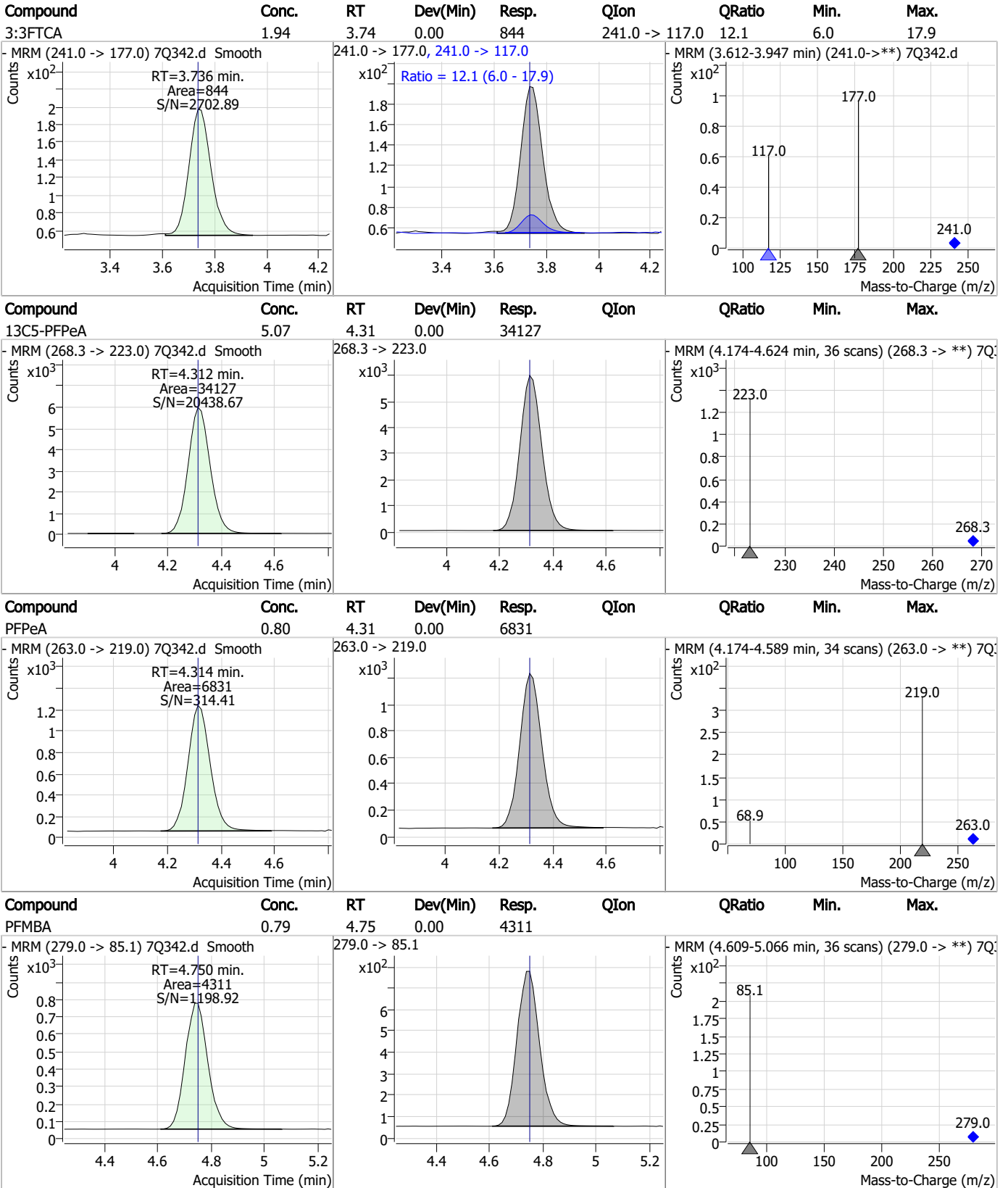
Perfluorinated Compounds by LC/MS/MS



7.7.18

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Perfluorinated Compounds by LC/MS/MS

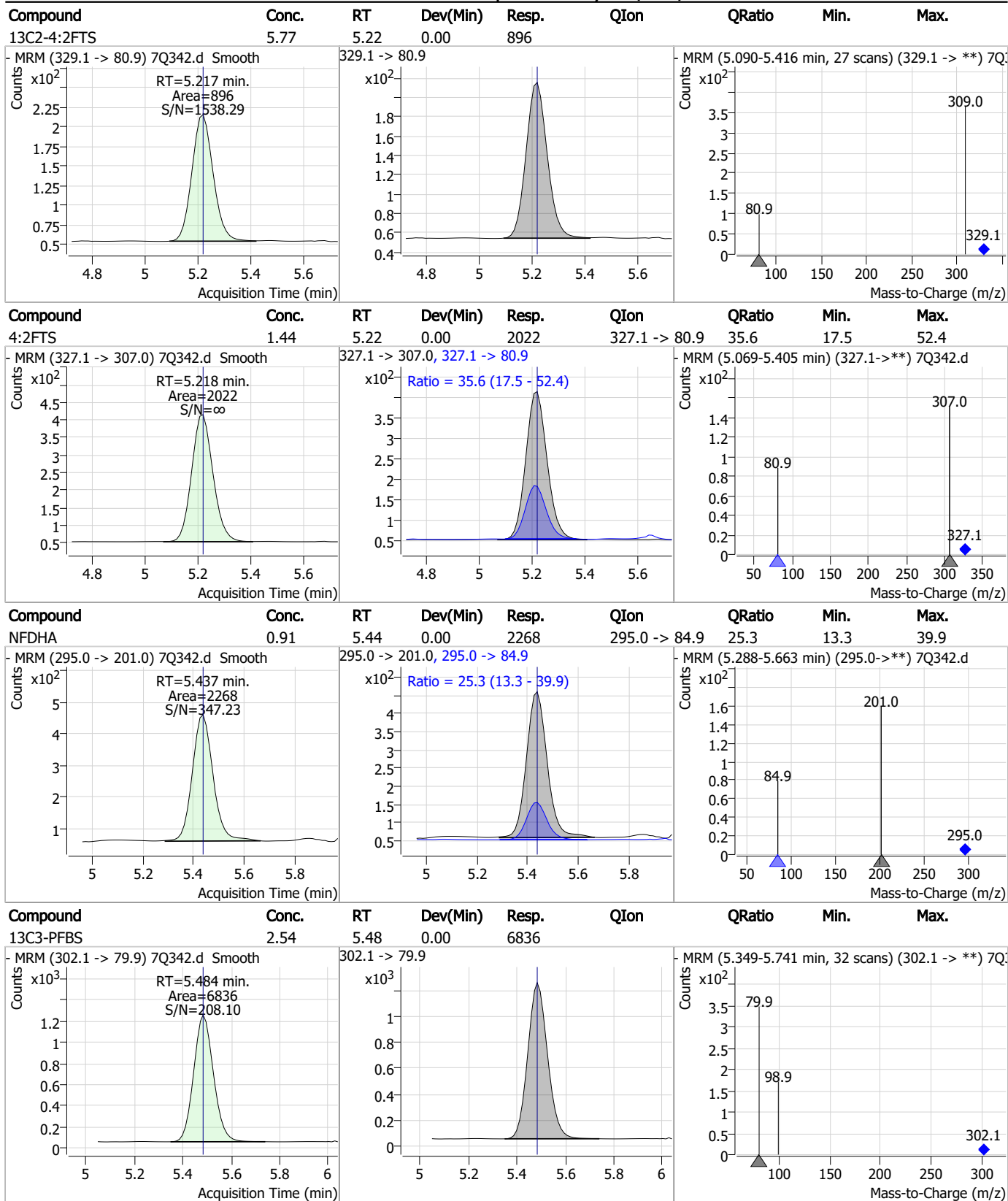


7.7.18

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Perfluorinated Compounds by LC/MS/MS



7.7.18 7

Perfluorinated Compounds by LC/MS/MS

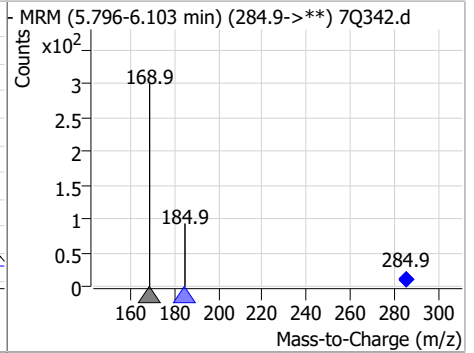
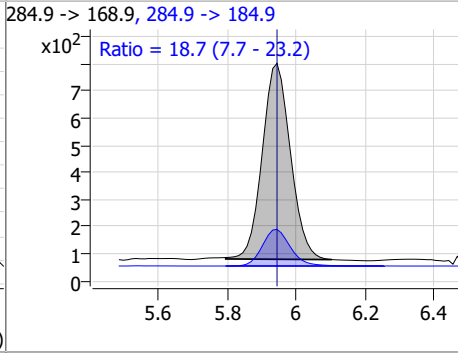
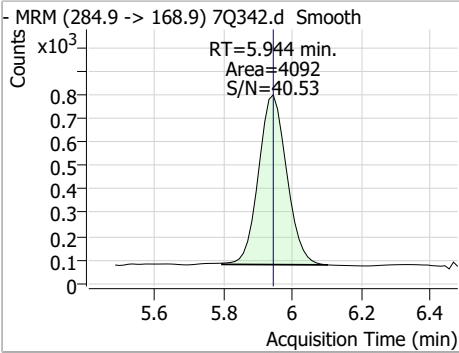
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.38	5.48	0.00	975	298.7 -> 98.8	44.1	20.3	61.0
13C5-PFHxA	2.48	5.55	0.00	29964				
PFHxA	0.42	5.56	0.00	4661	313.0 -> 118.9	5.5	2.6	7.7
13C3-HFPO-DA	10.40	5.94	0.00	58365				

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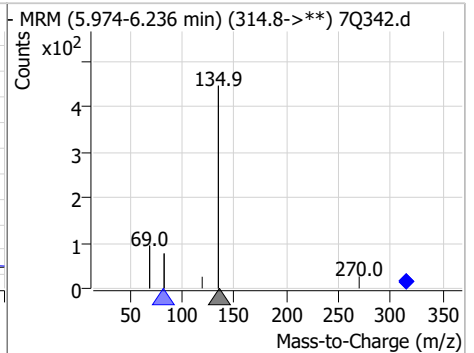
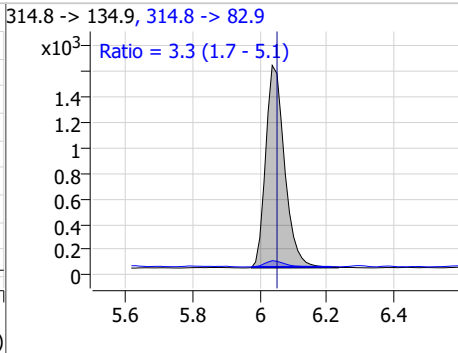
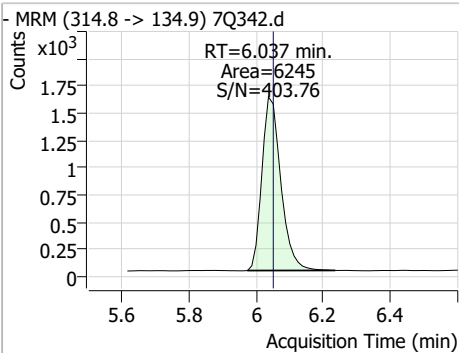


Perfluorinated Compounds by LC/MS/MS

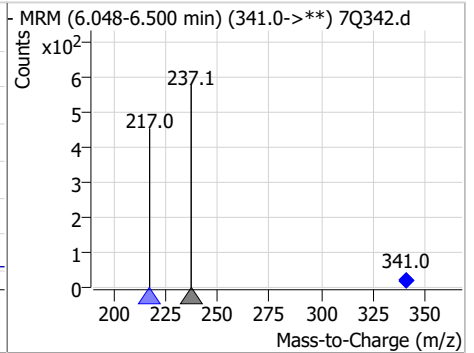
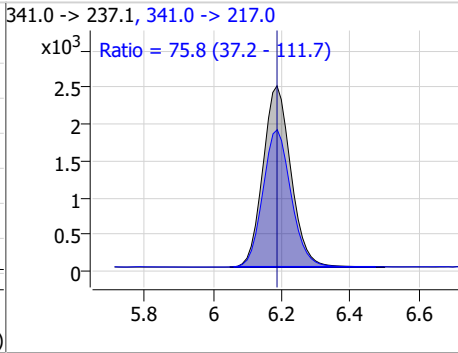
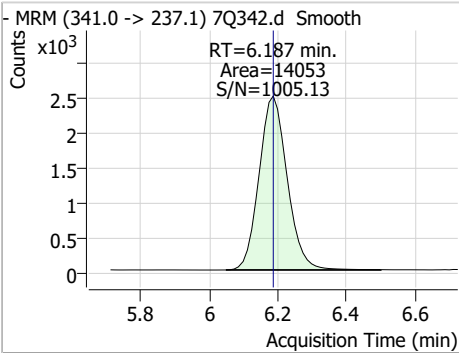
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.74	5.94	0.00	4092	284.9 -> 184.9	18.7	7.7	23.2



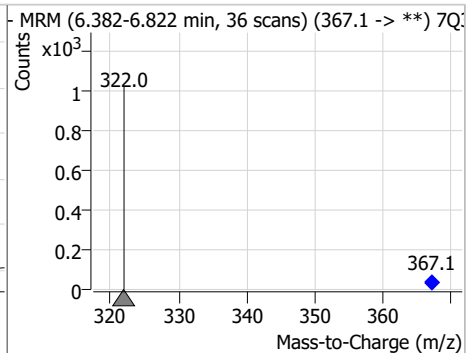
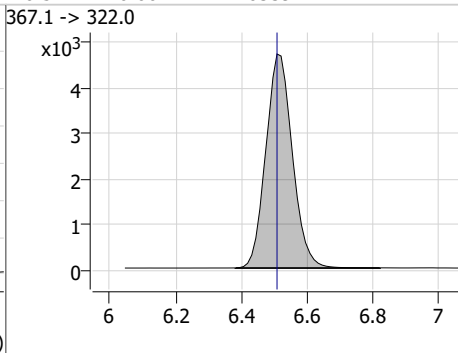
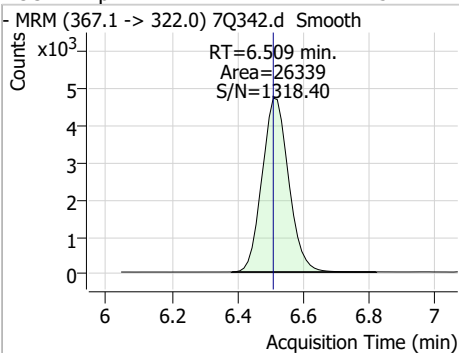
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.71	6.04	-0.01	6245	314.8 -> 82.9	3.3	1.7	5.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	9.81	6.19	0.00	14053	341.0 -> 217.0	75.8	37.2	111.7

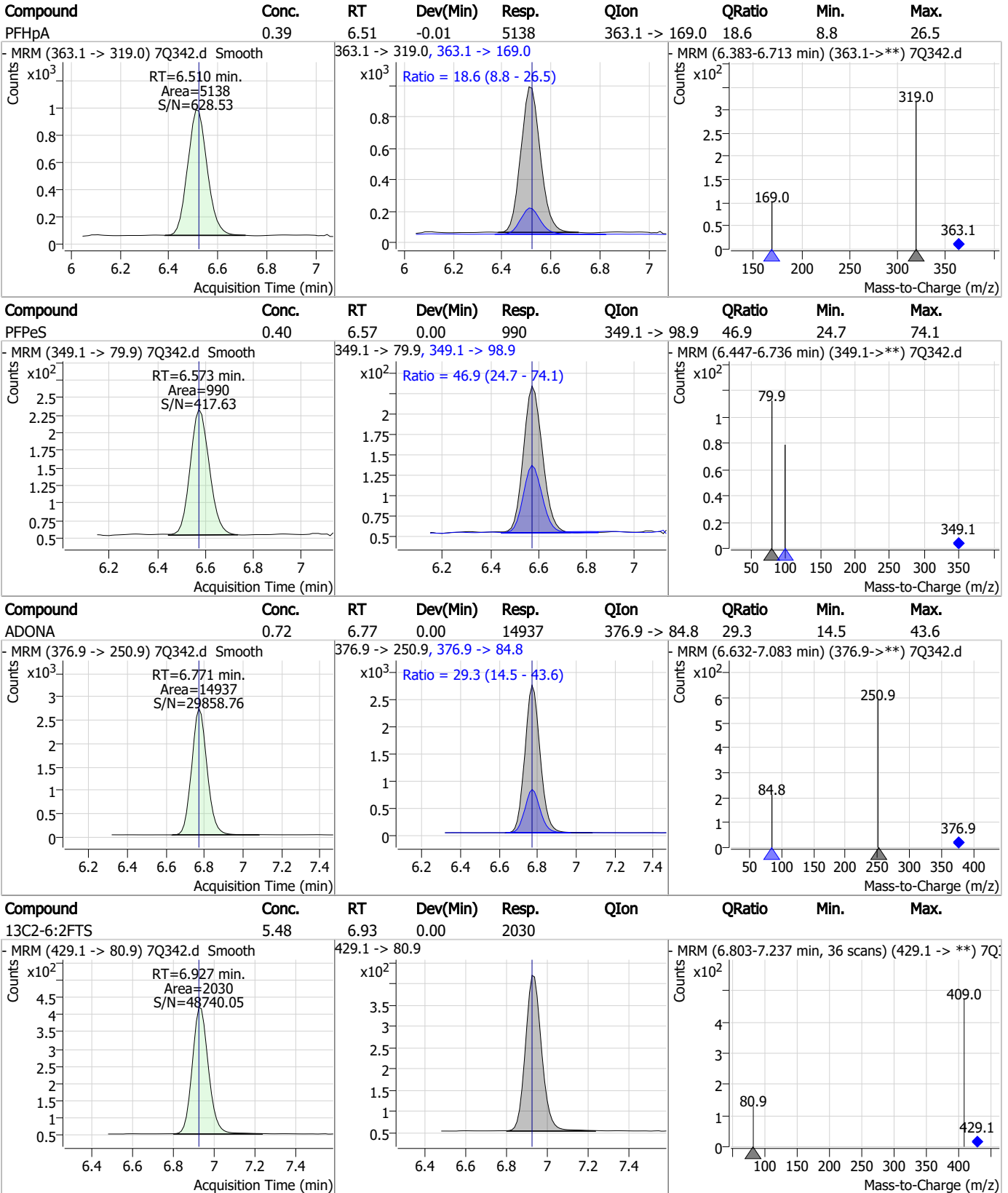


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.52	6.51	0.00	26339	367.1 -> 322.0			



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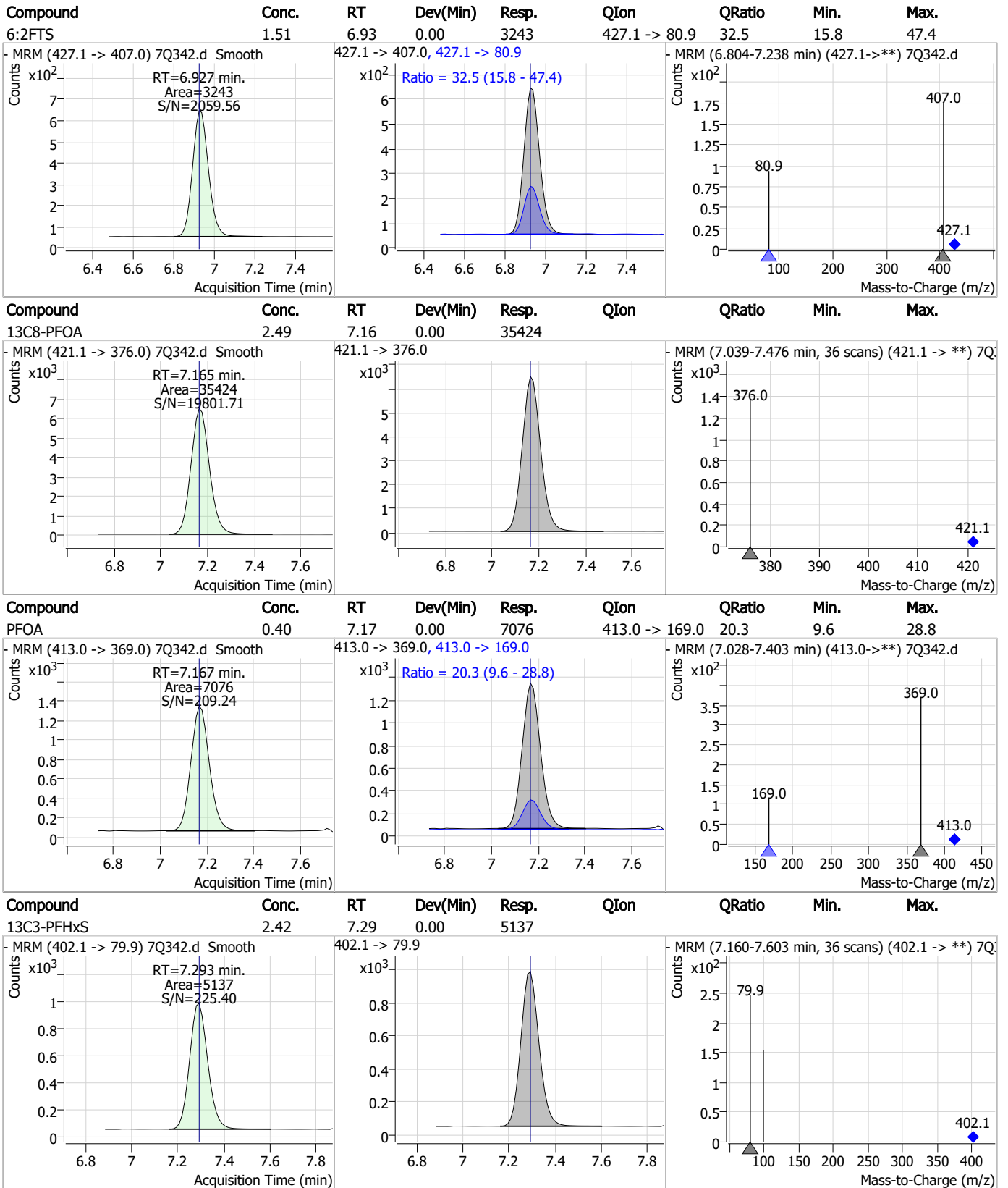
Perfluorinated Compounds by LC/MS/MS



7.7.18 7



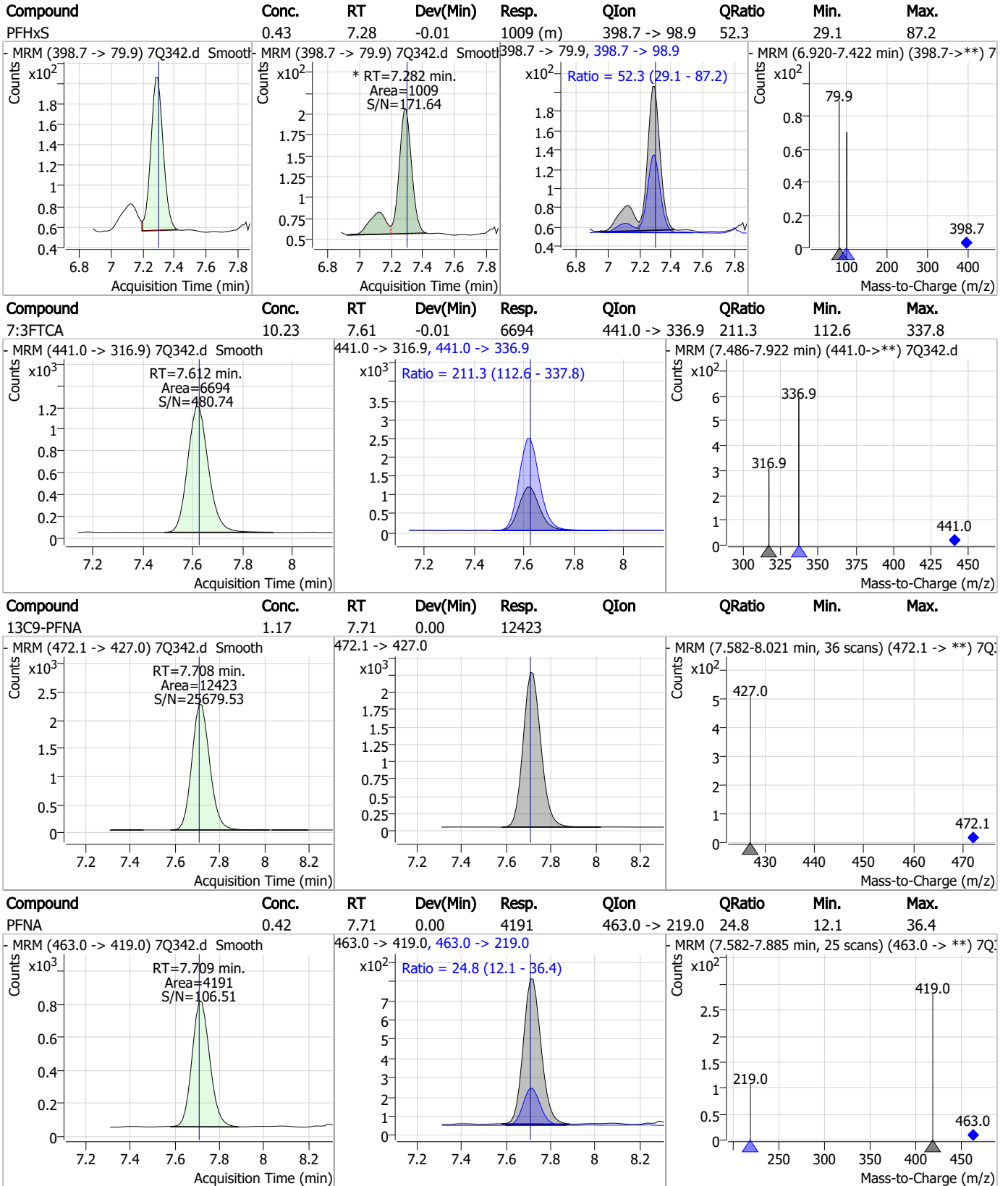
Perfluorinated Compounds by LC/MS/MS



7.7.18 7



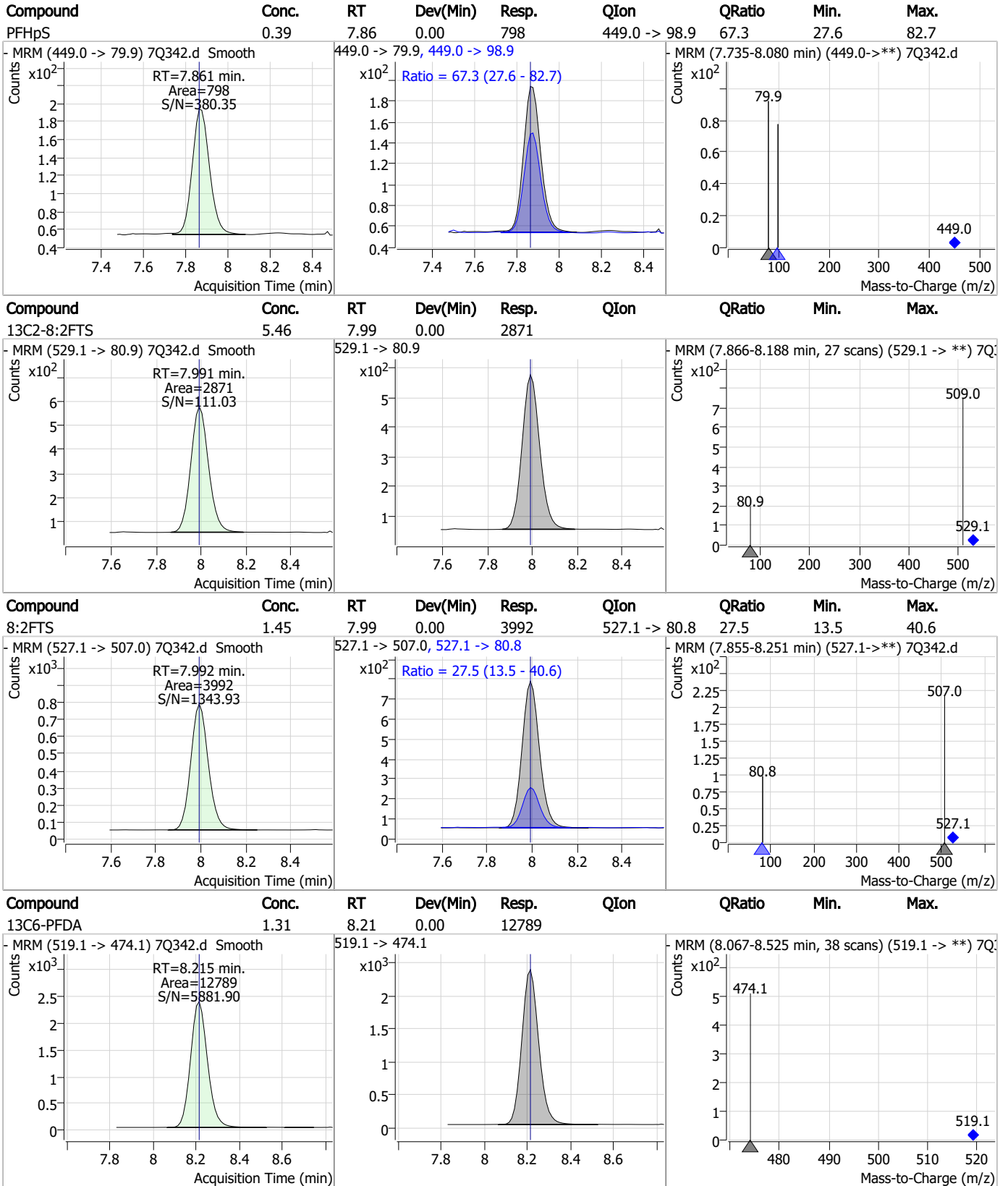
Perfluorinated Compounds by LC/MS/MS



7.7.18 7



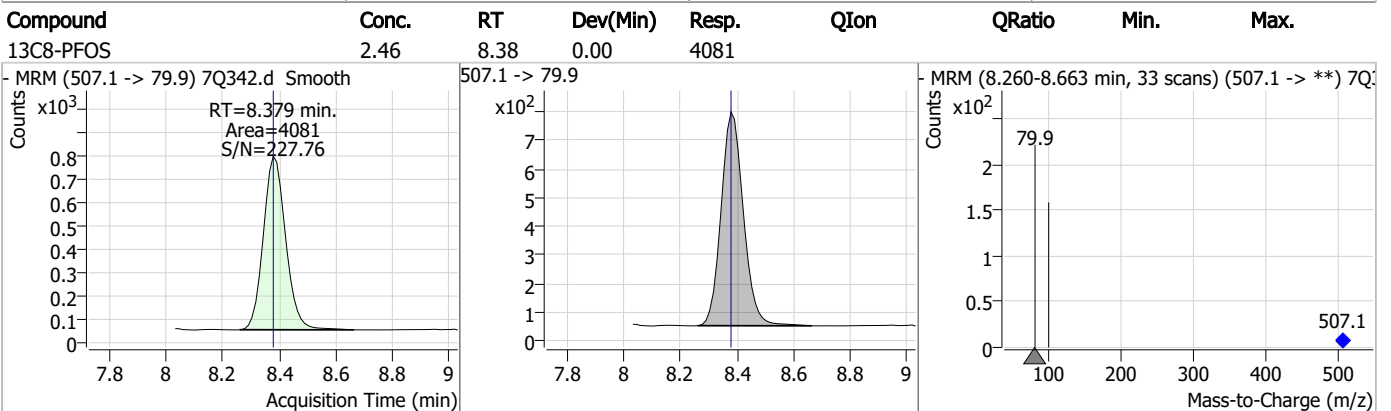
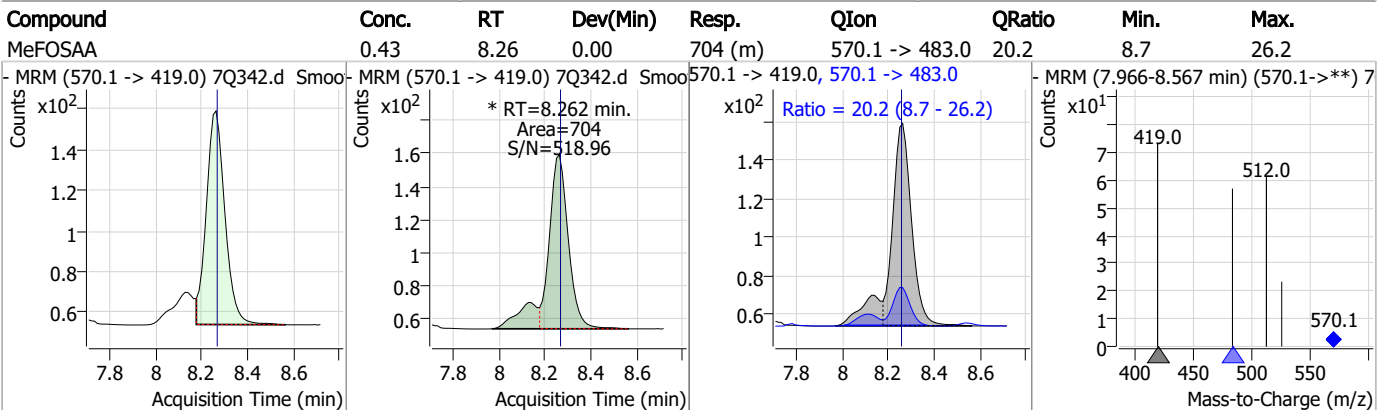
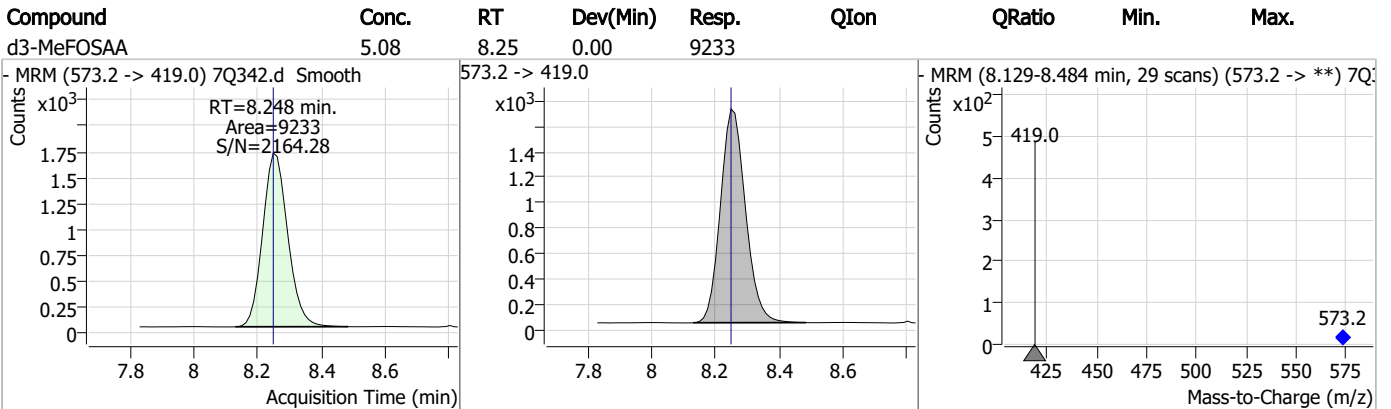
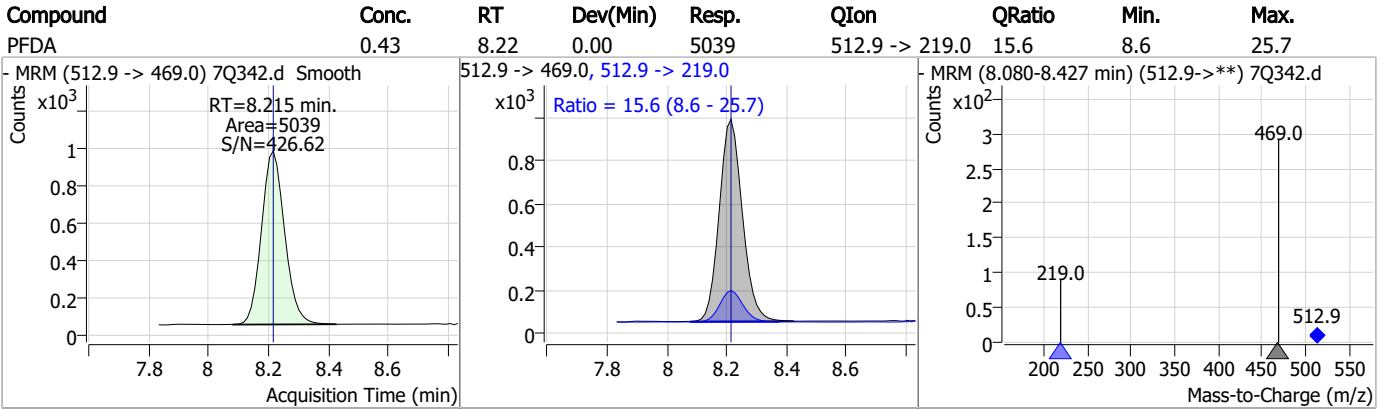
Perfluorinated Compounds by LC/MS/MS



7.7.18 7



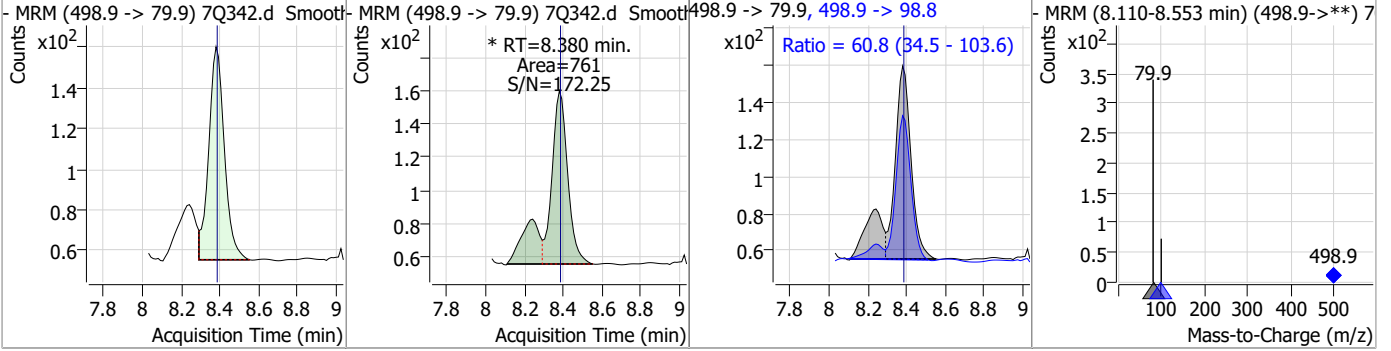
Perfluorinated Compounds by LC/MS/MS



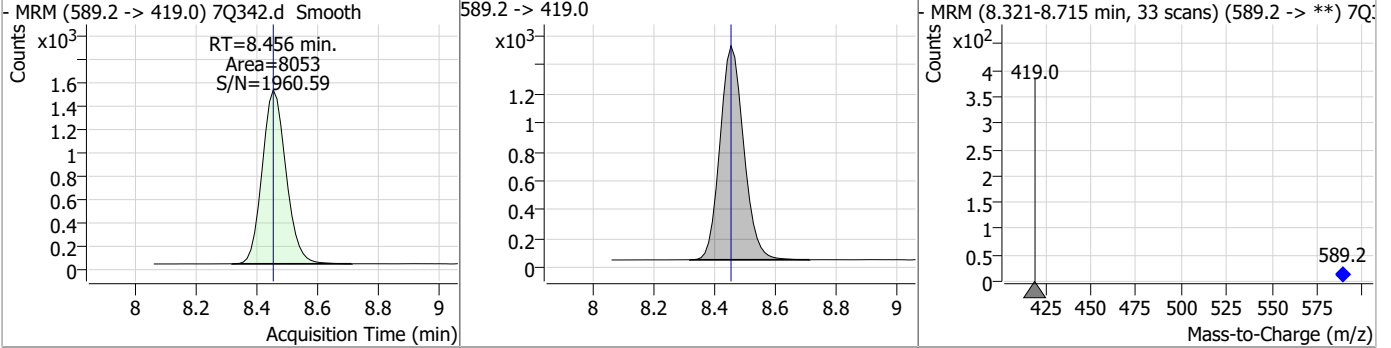
7.7.18 7

Perfluorinated Compounds by LC/MS/MS

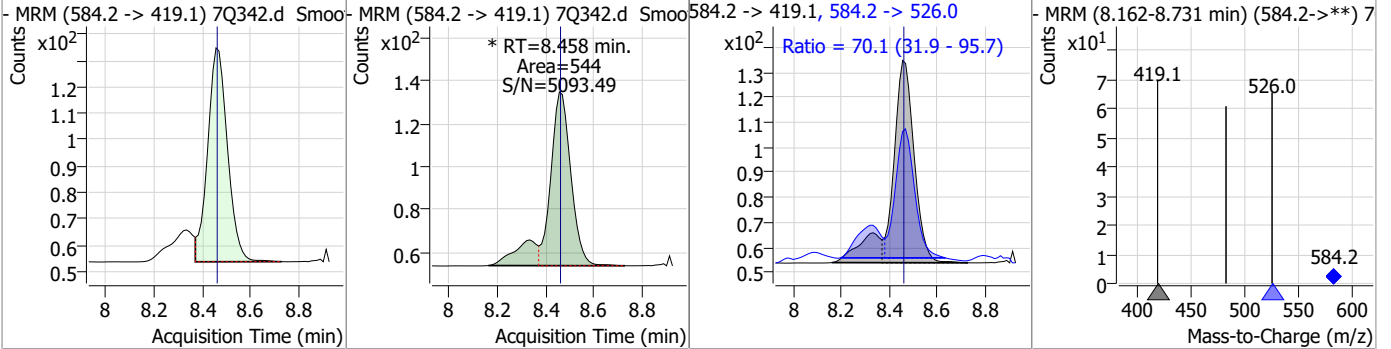
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.38	8.38	0.00	761 (m)	498.9 -> 98.8	60.8	34.5	103.6



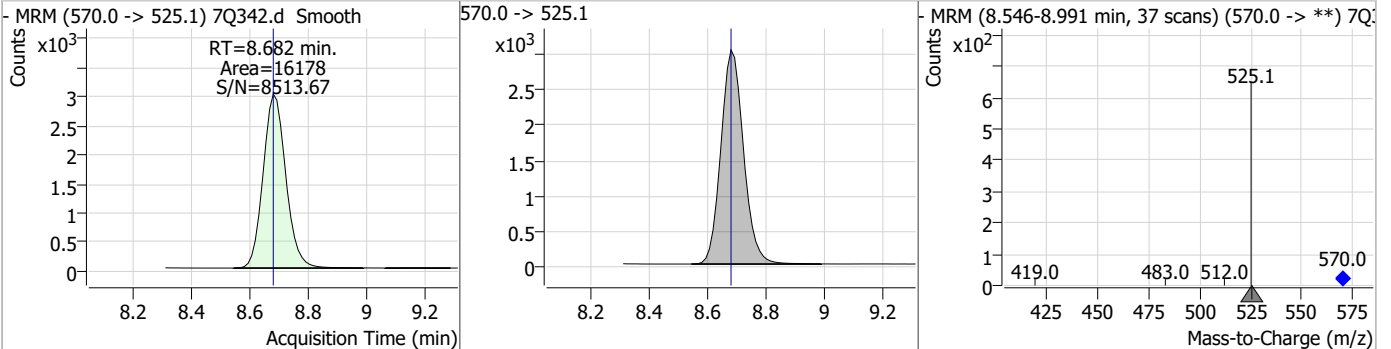
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.15	8.46	0.00	8053				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.42	8.46	0.00	544 (m)	584.2 -> 526.0	70.1	31.9	95.7

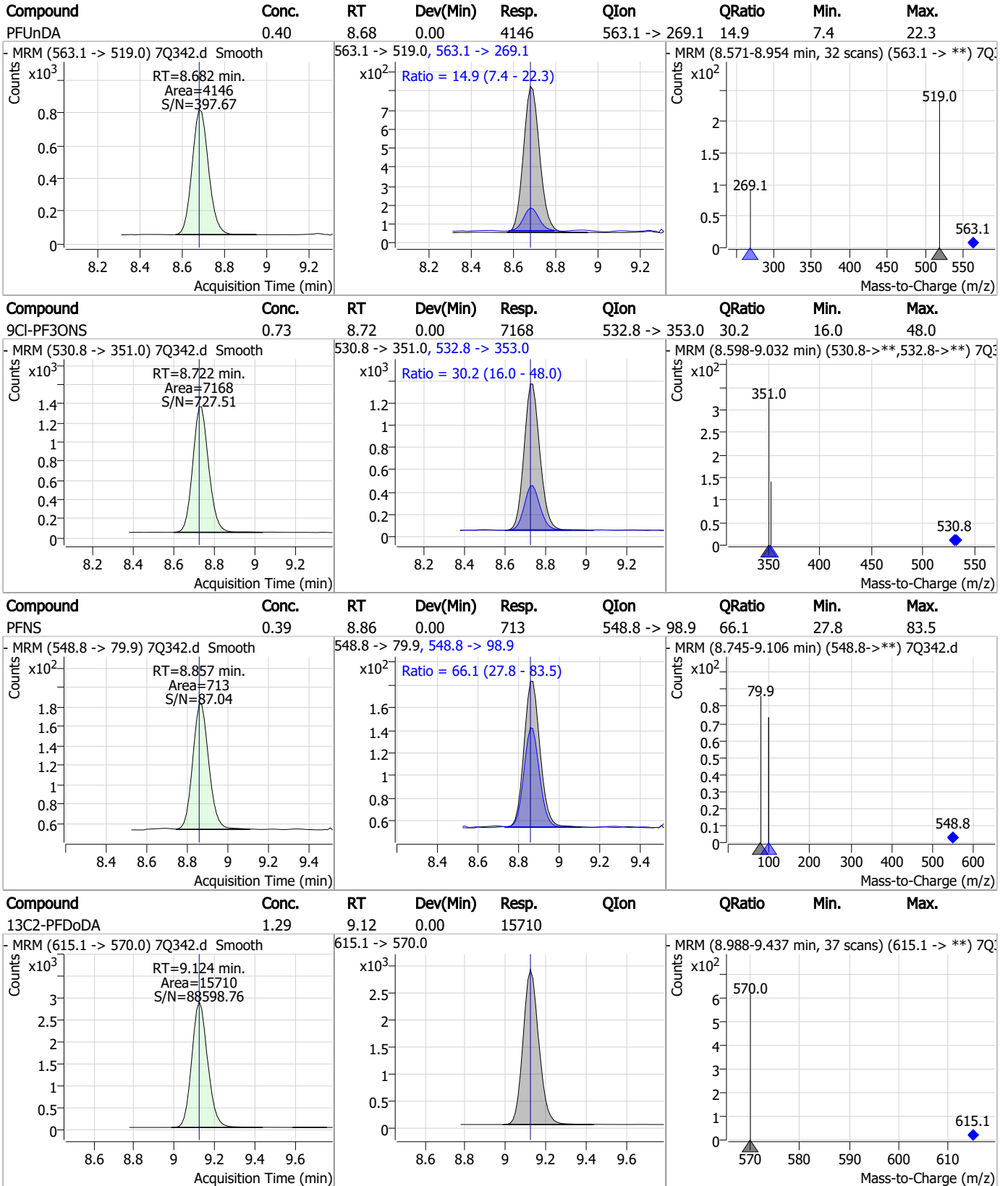


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.30	8.68	0.00	16178				



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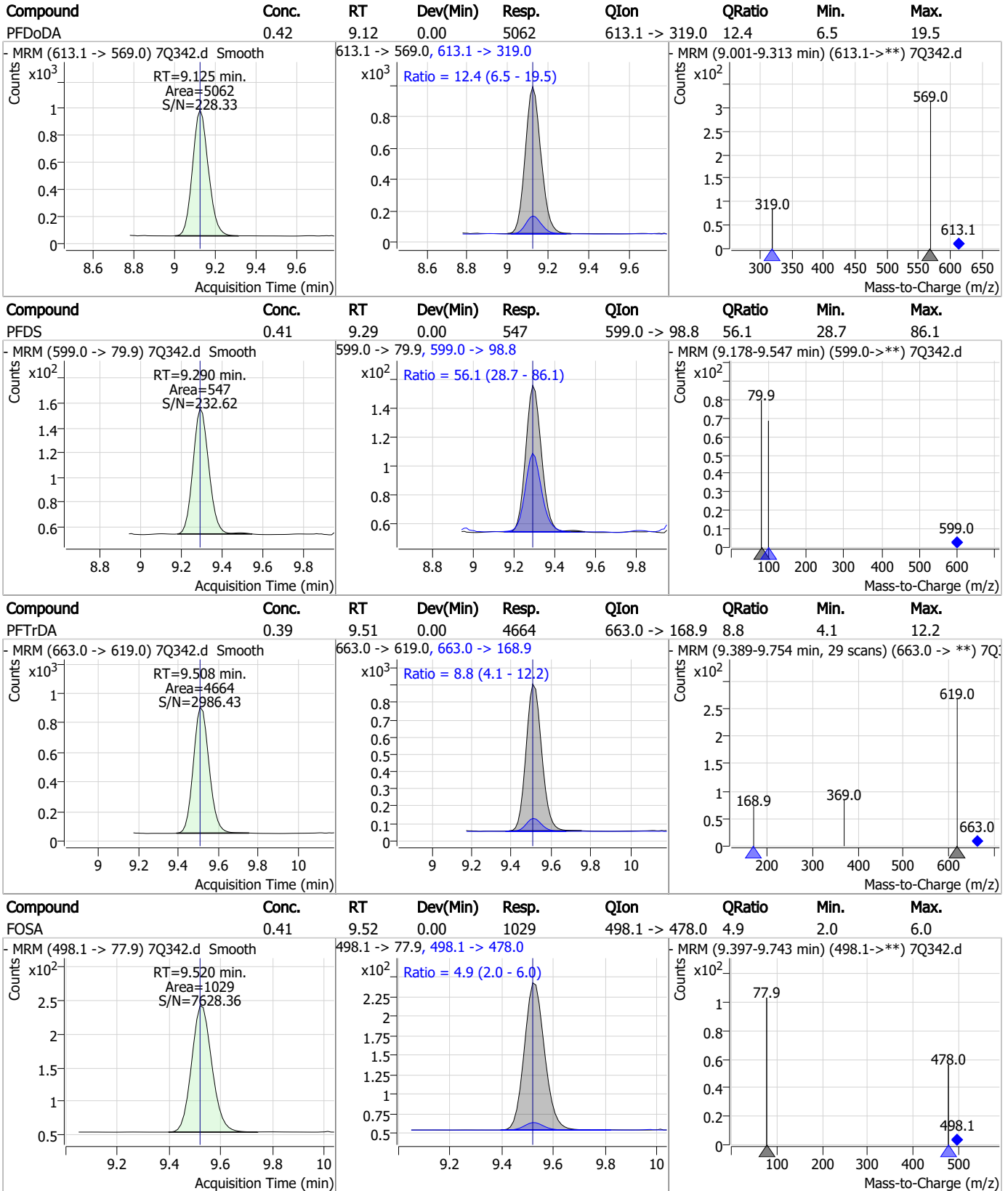
Perfluorinated Compounds by LC/MS/MS



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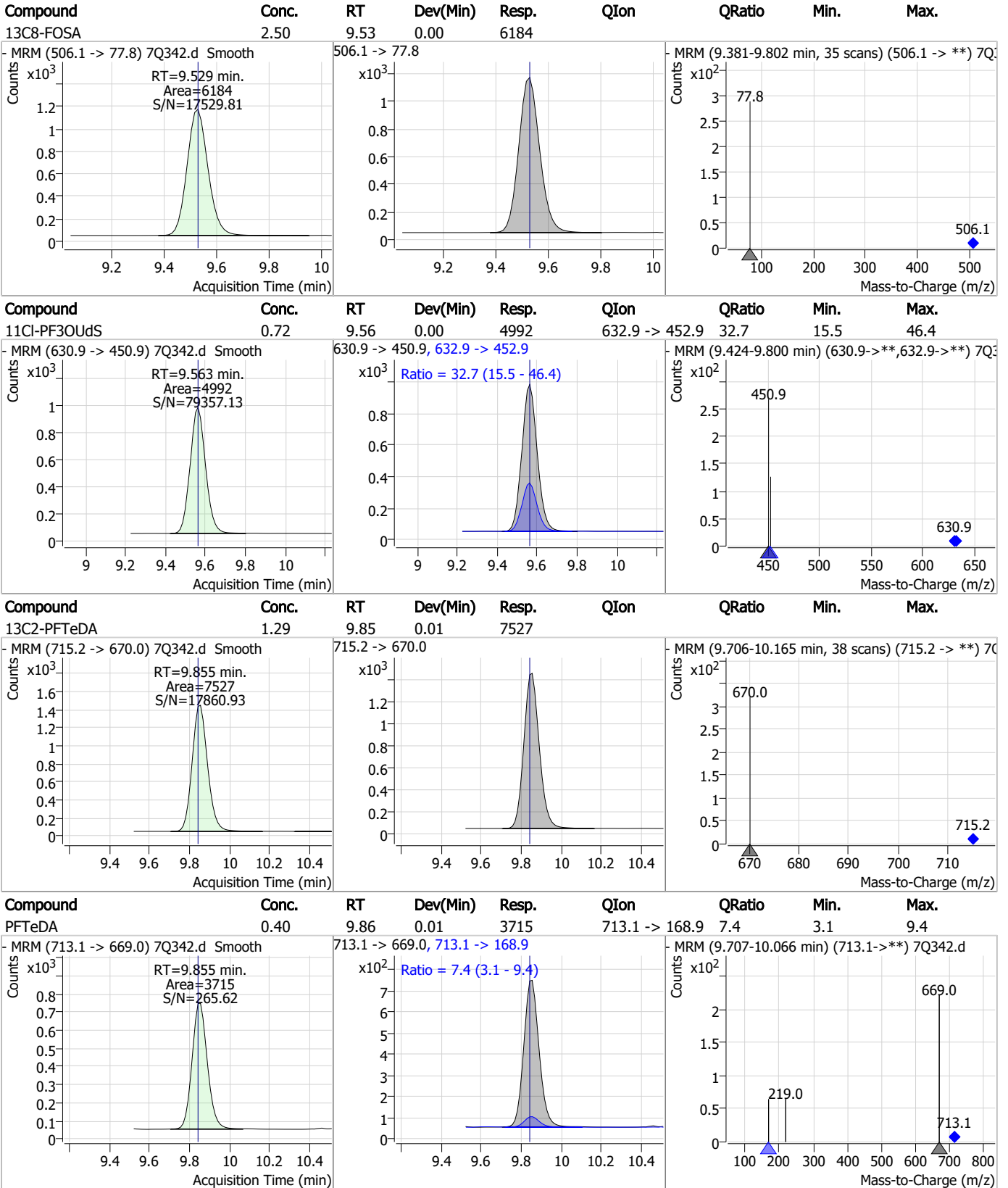
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

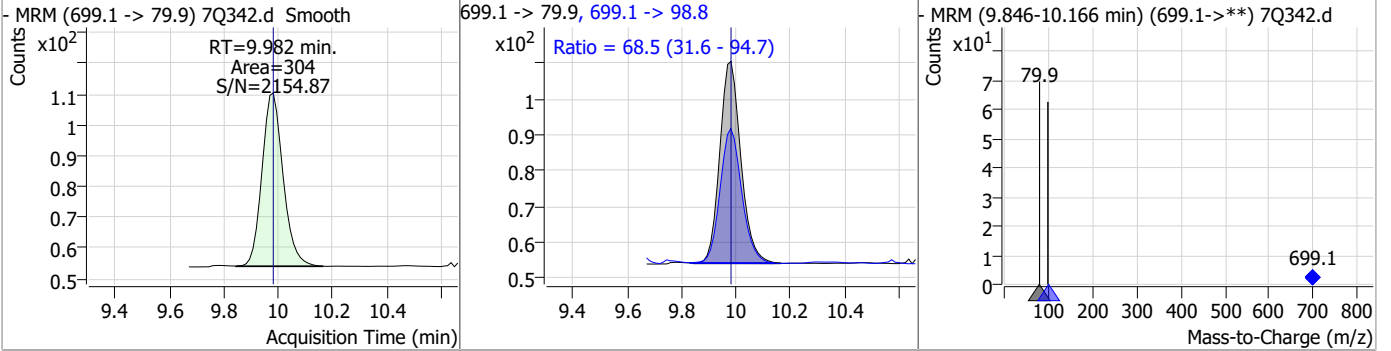


7.7.18 7

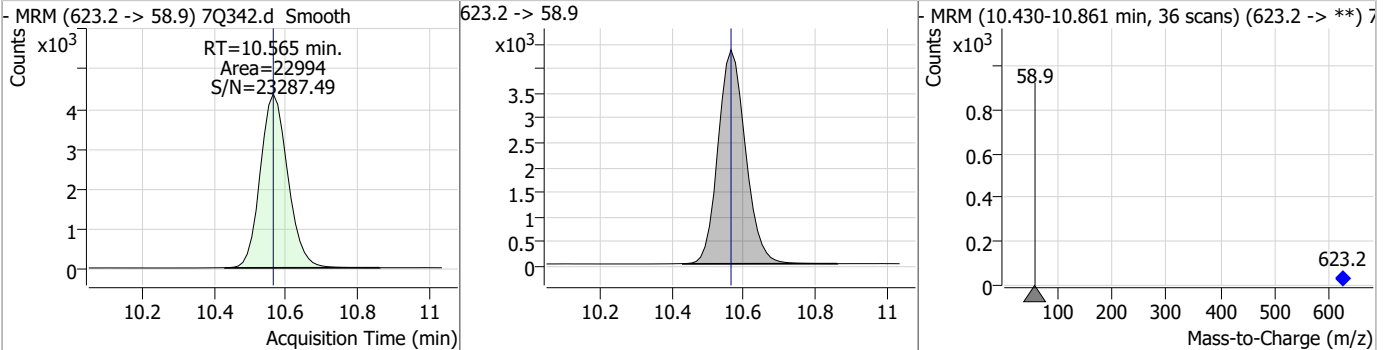


Perfluorinated Compounds by LC/MS/MS

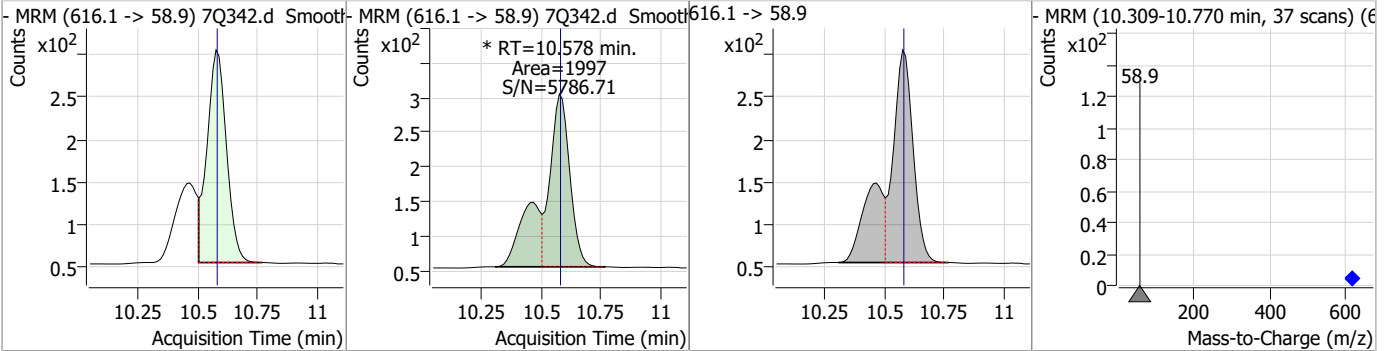
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.38	9.98	0.00	304	699.1 -> 98.8	68.5	31.6	94.7



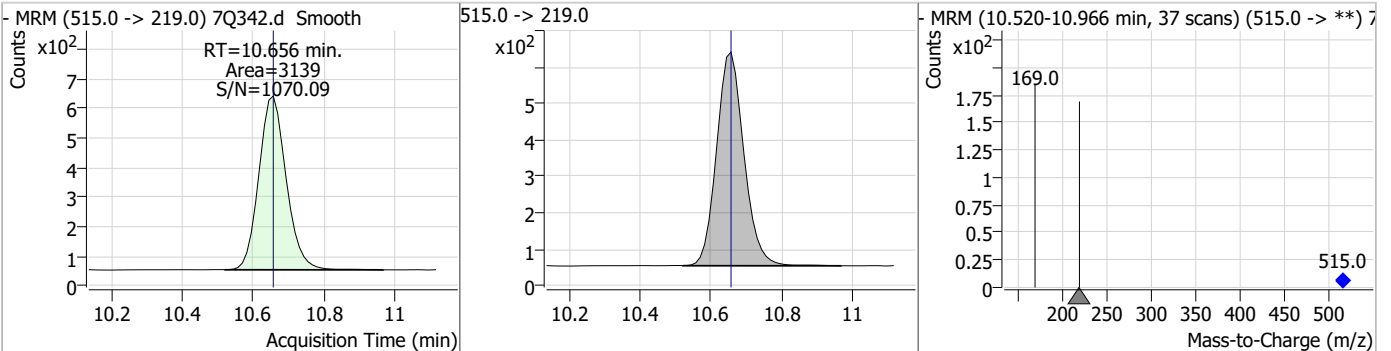
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.18	10.56	0.00	22994				



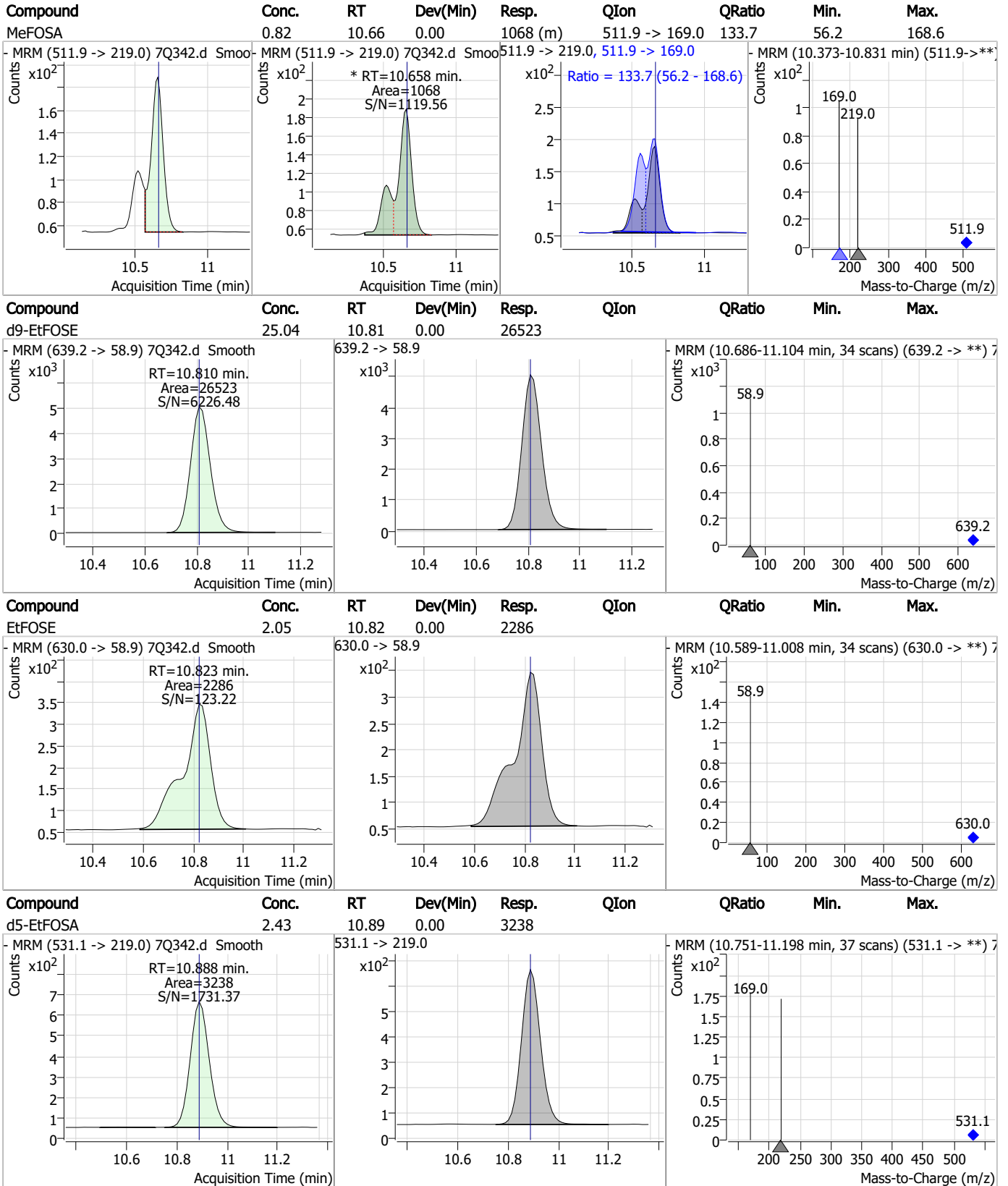
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	2.03	10.58	0.00	1997 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.43	10.66	0.00	3139				



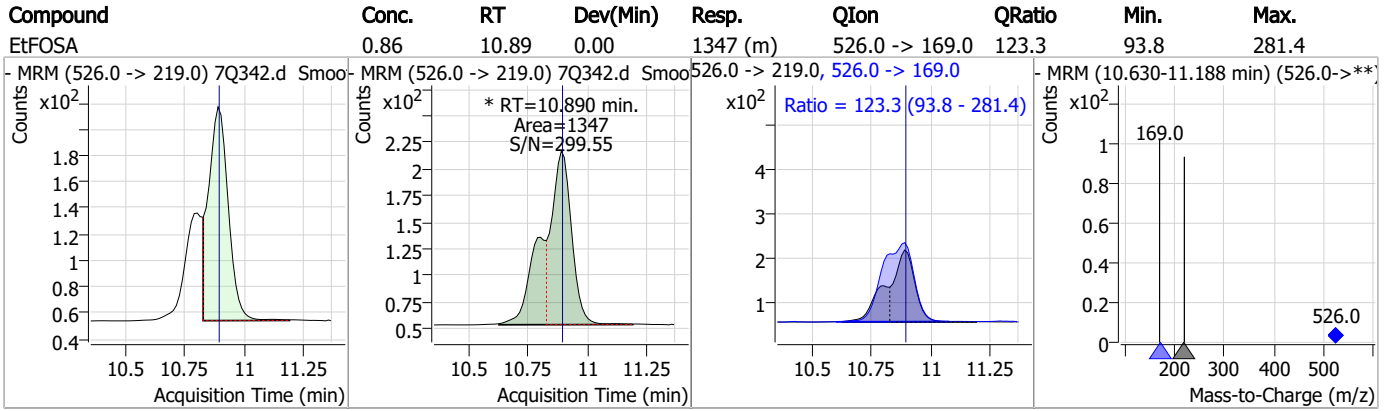
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-IC11 Method: EPA DRAFT 1633
Lab FileID: 7Q342.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 15:10 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.28	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q343.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 3:24:37 PM
 Sample Name : ic11-3
 Vial : P1-A4
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	103418	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	34724	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	31120	2.50 µg/L	0.000
M4-PFHpA	6.521	367.1 -> 322.0	27004	2.50 µg/L	0.012
M8-PFOA	7.165	421.1 -> 376.0	36082	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	13485	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	13336	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16918	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	16618	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7444	1.25 µg/L	0.012
M8-FOSA	9.529	506.1 -> 77.8	6142	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	7028	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5524	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4294	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	836	5.00 µg/L	0.000
M2-6:2FTS	6.927	429.1 -> 80.9	1949	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2915	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	8903	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	60444	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	8057	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	23516	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	27603	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3602	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3226	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	5012	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	48861	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3769	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	37967	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11853	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15384	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	25543	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	836	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C2-6:2FTS	6.927	429.1 -> 80.9	1949	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2915	5.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-PFDoDA	9.124	615.1 -> 570.0	16618	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7444	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C3-PFBS	5.484	302.1 -> 79.9	7028	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	7.293	402.1 -> 79.9	5524	2.52 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFBA	2.885	216.8 -> 171.9	103418	10.01 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.521	367.1 -> 322.0	27004	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFHxA	5.554	318.0 -> 273.0	31120	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFPeA	4.312	268.3 -> 223.0	34724	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C6-PFDA	8.215	519.1 -> 474.1	13336	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.682	570.0 -> 525.1	16918	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-FOSA	9.529	506.1 -> 77.8	6142	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C8-PFOA	7.165	421.1 -> 376.0	36082	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C8-PFOS	8.379	507.1 -> 79.9	4294	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C9-PFNA	7.720	472.1 -> 427.0	13485	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.3%	
d3-MeFOSAA	8.261	573.2 -> 419.0	8903	4.61 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	60444	10.51 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
d3-MeFOSA	10.656	515.0 -> 219.0	3226	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.8%	
d5-EtFOSAA	8.456	589.2 -> 419.0	8057	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d7-MeFOSE	10.565	623.2 -> 58.9	23516	24.22 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d9-EtFOSE	10.810	639.2 -> 58.9	27603	24.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d5-EtFOSA	10.888	531.1 -> 219.0	3602	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	6165	4.69 µg/L	100
		327.1 -> 80.9	2151		
6:2FTS	6.939	427.1 -> 407.0	10119	4.91 µg/L	99
		427.1 -> 80.9	3148		
8:2FTS	7.992	527.1 -> 507.0	12220	4.39 µg/L	98
		527.1 -> 80.8	3200		
EtFOSAA	8.470	584.2 -> 419.1	1599	1.23 µg/L	m 95
		584.2 -> 526.0	961		
FOSA	9.520	498.1 -> 77.9	3219	1.29 µg/L	99
		498.1 -> 478.0	137		
MeFOSAA	8.262	570.1 -> 419.0	2076	1.33 µg/L	m 89
		570.1 -> 483.0	459		
PFBA	2.893	212.8 -> 168.9	18378	4.91 µg/L	100
PFBS	5.485	298.7 -> 79.9	2981	1.12 µg/L	99
		298.7 -> 98.8	1237		
PFDA	8.215	512.9 -> 469.0	14500	1.18 µg/L	98
		512.9 -> 219.0	2339		
PFDODA	9.125	613.1 -> 569.0	15848	1.23 µg/L	98
		613.1 -> 319.0	1954		
PFDS	9.290	599.0 -> 79.9	1747	1.23 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	959			
PFHpA	6.522	363.1 -> 319.0	16437	1.23	µg/L	100
		363.1 -> 169.0	2916			
PFHpS	7.873	449.0 -> 79.9	2561	1.18	µg/L	99
		449.0 -> 98.9	1427			
PFHxA	5.556	313.0 -> 269.0	13971	1.22	µg/L	99
		313.0 -> 118.9	654			
PFHxS	7.294	398.7 -> 79.9	2892	1.15	µg/L	m 93
		398.7 -> 98.9	1535			
PFNA	7.721	463.0 -> 419.0	12988	1.20	µg/L	96
		463.0 -> 219.0	2905			
PFNS	8.857	548.8 -> 79.9	2331	1.22	µg/L	99
		548.8 -> 98.9	1314			
PFOA	7.167	413.0 -> 369.0	21936	1.20	µg/L	99
		413.0 -> 169.0	4125			
PFOS	8.380	498.9 -> 79.9	2556	1.22	µg/L	m 77
		498.9 -> 98.8	1289			
PFPeA	4.314	263.0 -> 219.0	21271	2.46	µg/L	100
PFPeS	6.573	349.1 -> 79.9	3138	1.17	µg/L	95
		349.1 -> 98.9	1450			
PFTeDA	9.855	713.1 -> 669.0	12061	1.31	µg/L	99
		713.1 -> 168.9	795			
PFTrDA	9.508	663.0 -> 619.0	15218	1.21	µg/L	100
		663.0 -> 168.9	1207			
PFUnDA	8.682	563.1 -> 519.0	13164	1.22	µg/L	95
		563.1 -> 269.1	2206			
11CI-PF3OUdS	9.563	630.9 -> 450.9	15860	2.20	µg/L	99
		632.9 -> 452.9	4971			
9CI-PF3ONS	8.733	530.8 -> 351.0	21771	2.16	µg/L	99
		532.8 -> 353.0	7118			
ADONA	6.771	376.9 -> 250.9	47984	2.22	µg/L	99
		376.9 -> 84.8	14132			
HFPO-DA	5.944	284.9 -> 168.9	15170	2.63	µg/L	99
		284.9 -> 184.9	2298			
3:3FTCA	3.736	241.0 -> 177.0	2723	6.13	µg/L	99
		241.0 -> 117.0	332			
5:3FTCA	6.187	341.0 -> 237.1	45762	30.74	µg/L	99
		341.0 -> 217.0	34371			
7:3FTCA	7.624	441.0 -> 316.9	20322	29.89	µg/L	100
		441.0 -> 336.9	45724			
EtFOSA	10.890	526.0 -> 219.0	4068	2.33	µg/L	m 61
		526.0 -> 169.0	5337			
EtFOSE	10.823	630.0 -> 58.9	7231	6.23	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	3471	2.60	µg/L	m 82
		511.9 -> 169.0	4583			
MeFOSE	10.578	616.1 -> 58.9	6349	6.31	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	1023	1.21	µg/L	96
		699.1 -> 98.8	616			
NFDHA	5.437	295.0 -> 201.0	6548	2.52	µg/L	98
		295.0 -> 84.9	1687			
PFMBA	4.750	279.0 -> 85.1	13804	2.49	µg/L	100
PFMPA	3.443	229.0 -> 84.9	14301	2.47	µg/L	100
PFEESA	6.051	314.8 -> 134.9	20303	2.21	µg/L	100
		314.8 -> 82.9	711			

= Qualifier out of range, m = manually integrated, + = Area summed

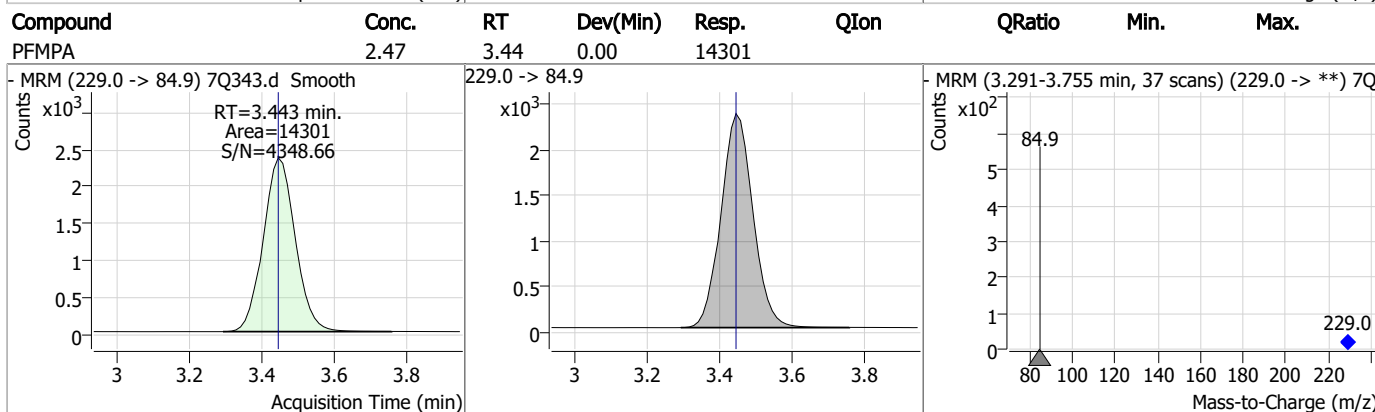
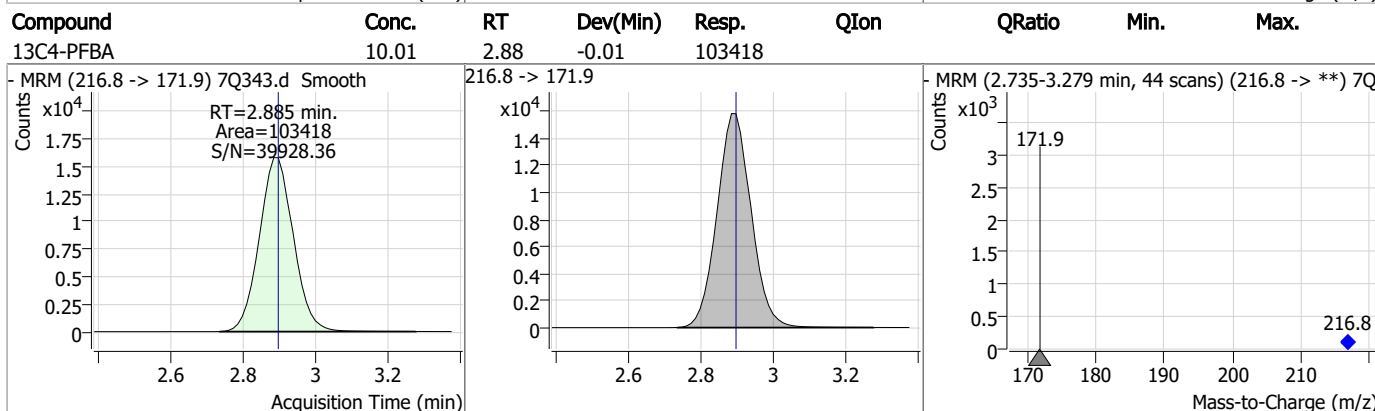
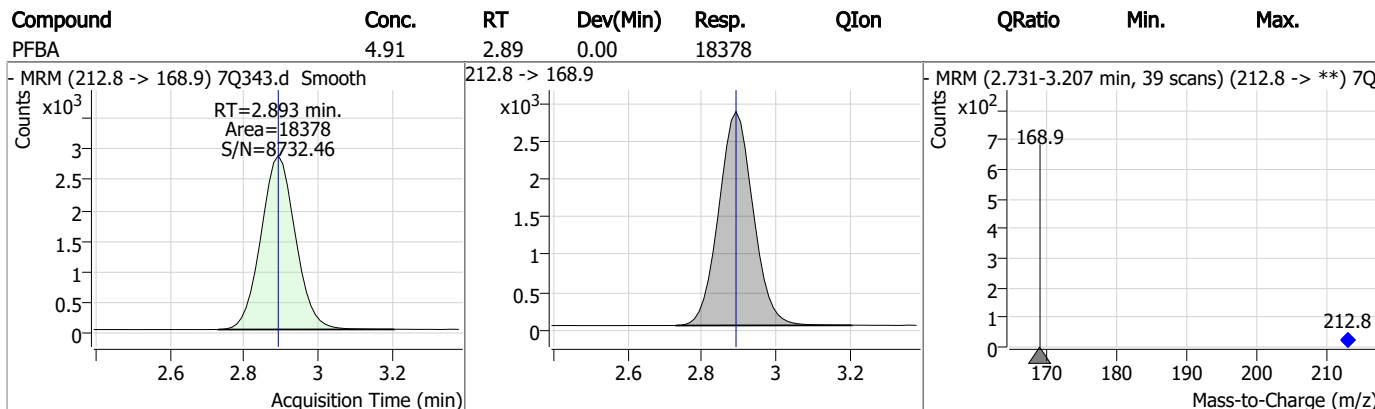
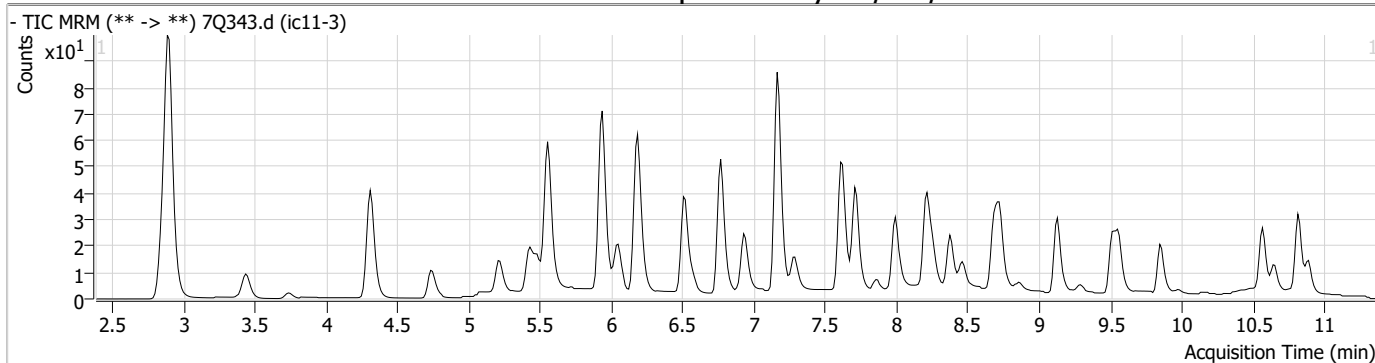
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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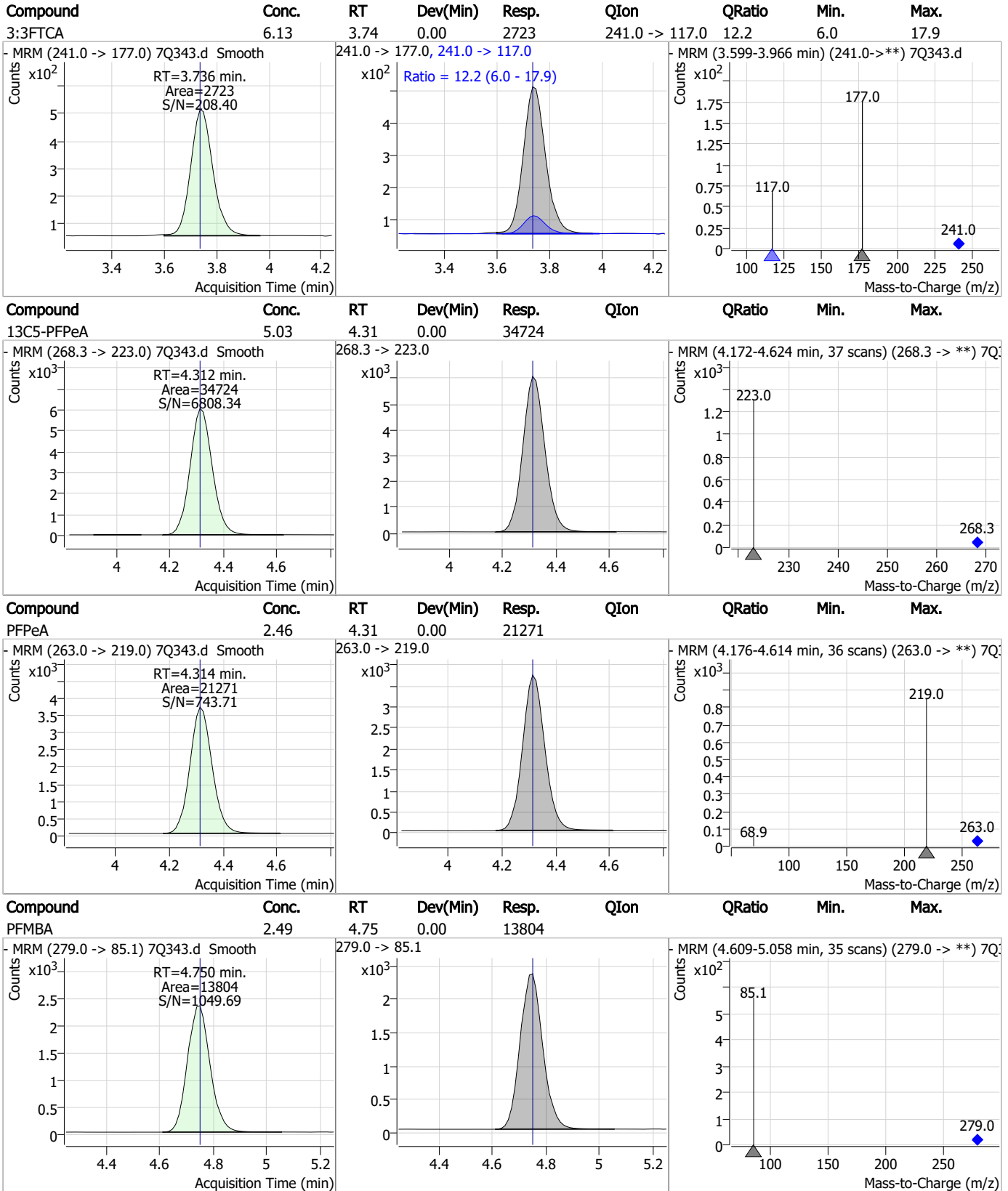
7.7.19
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

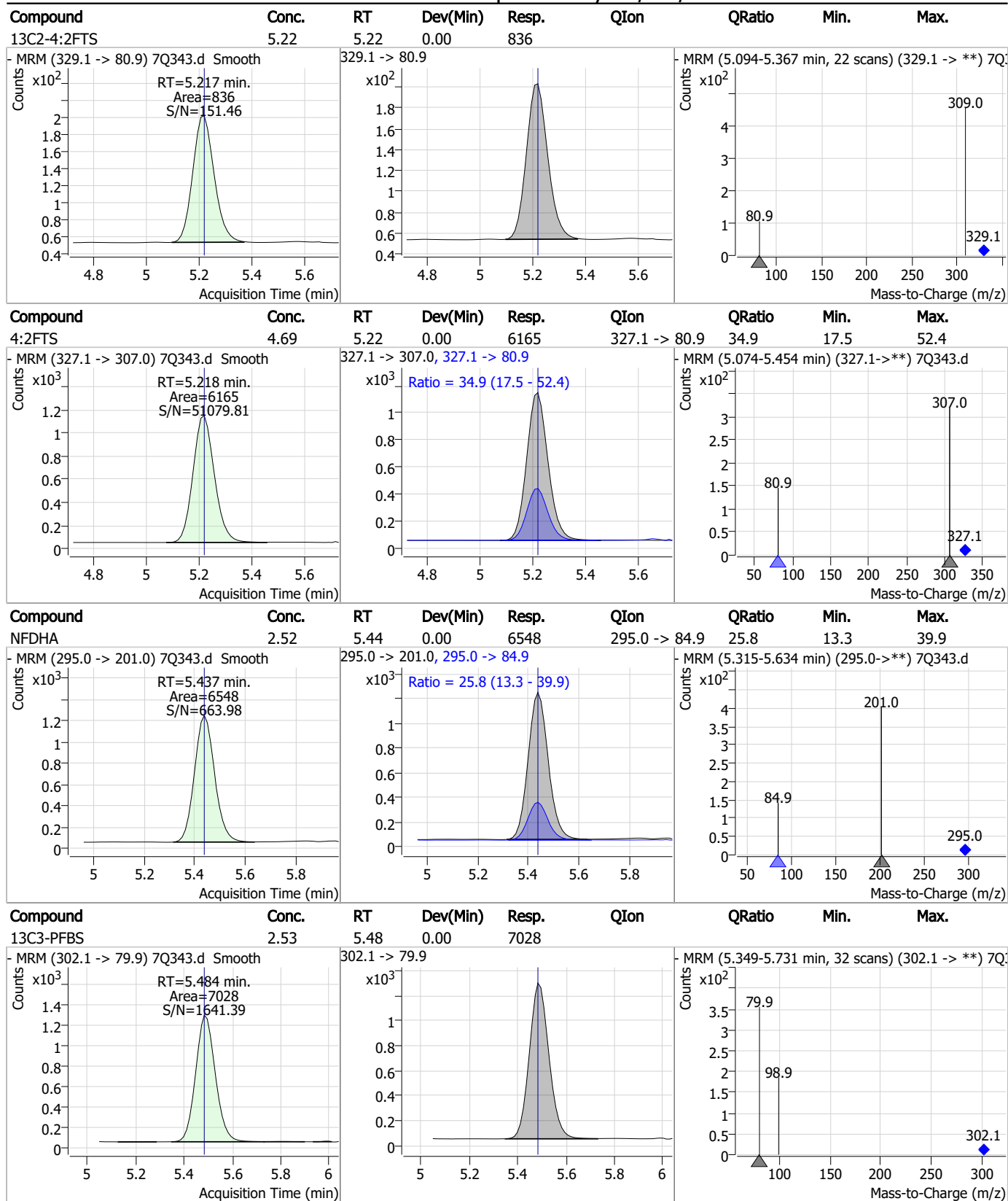


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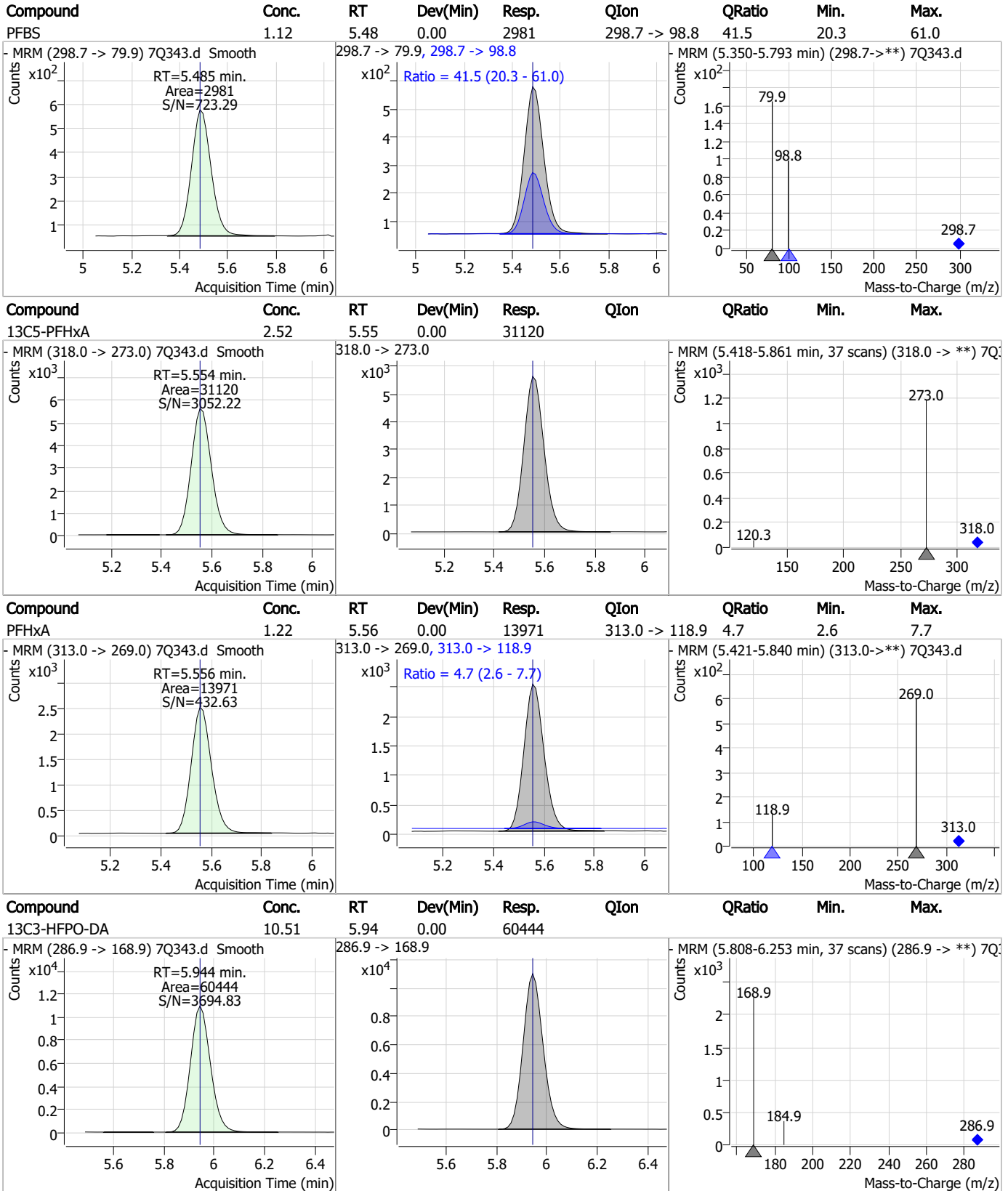
Perfluorinated Compounds by LC/MS/MS



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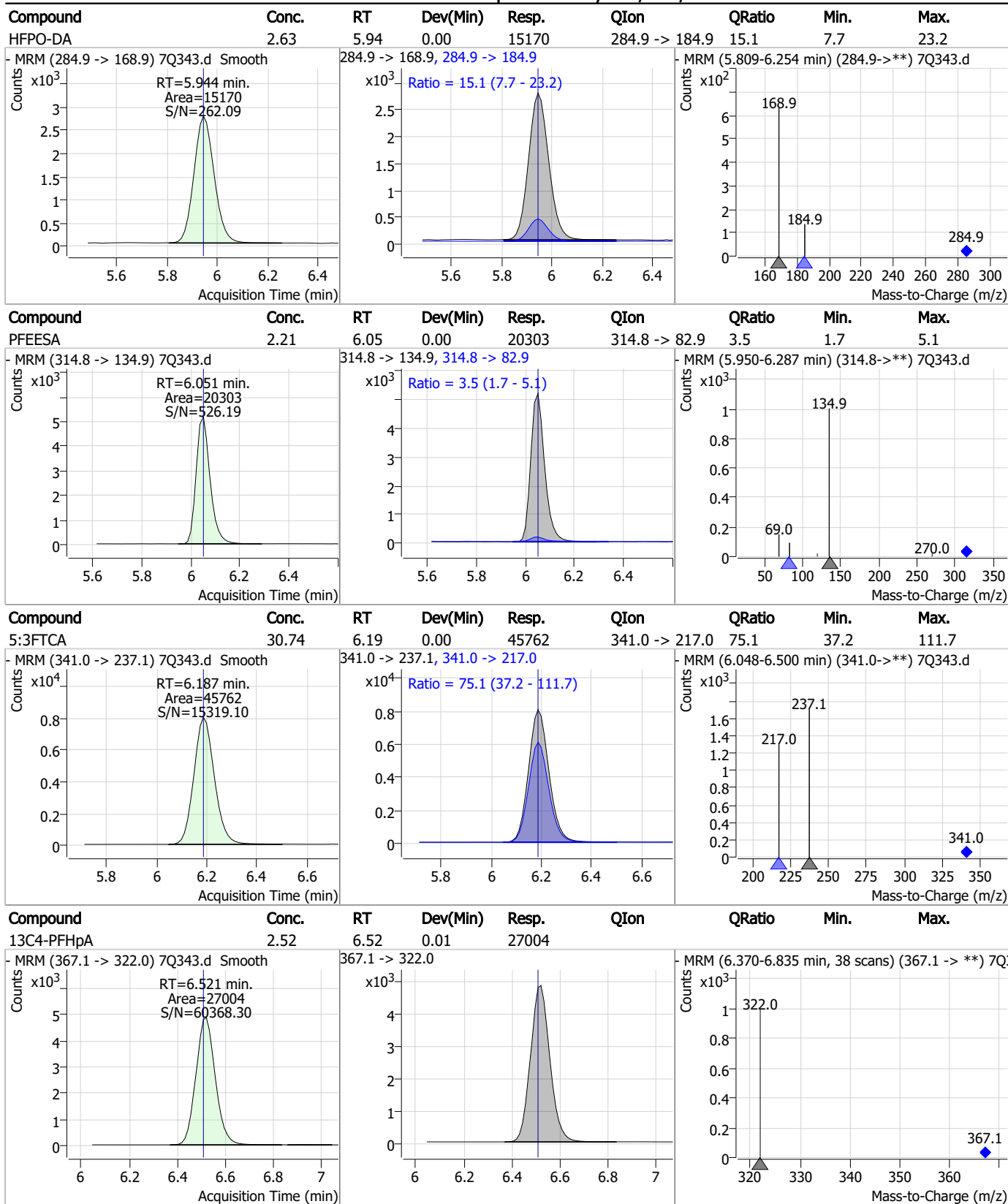
Perfluorinated Compounds by LC/MS/MS



7.7.19 7



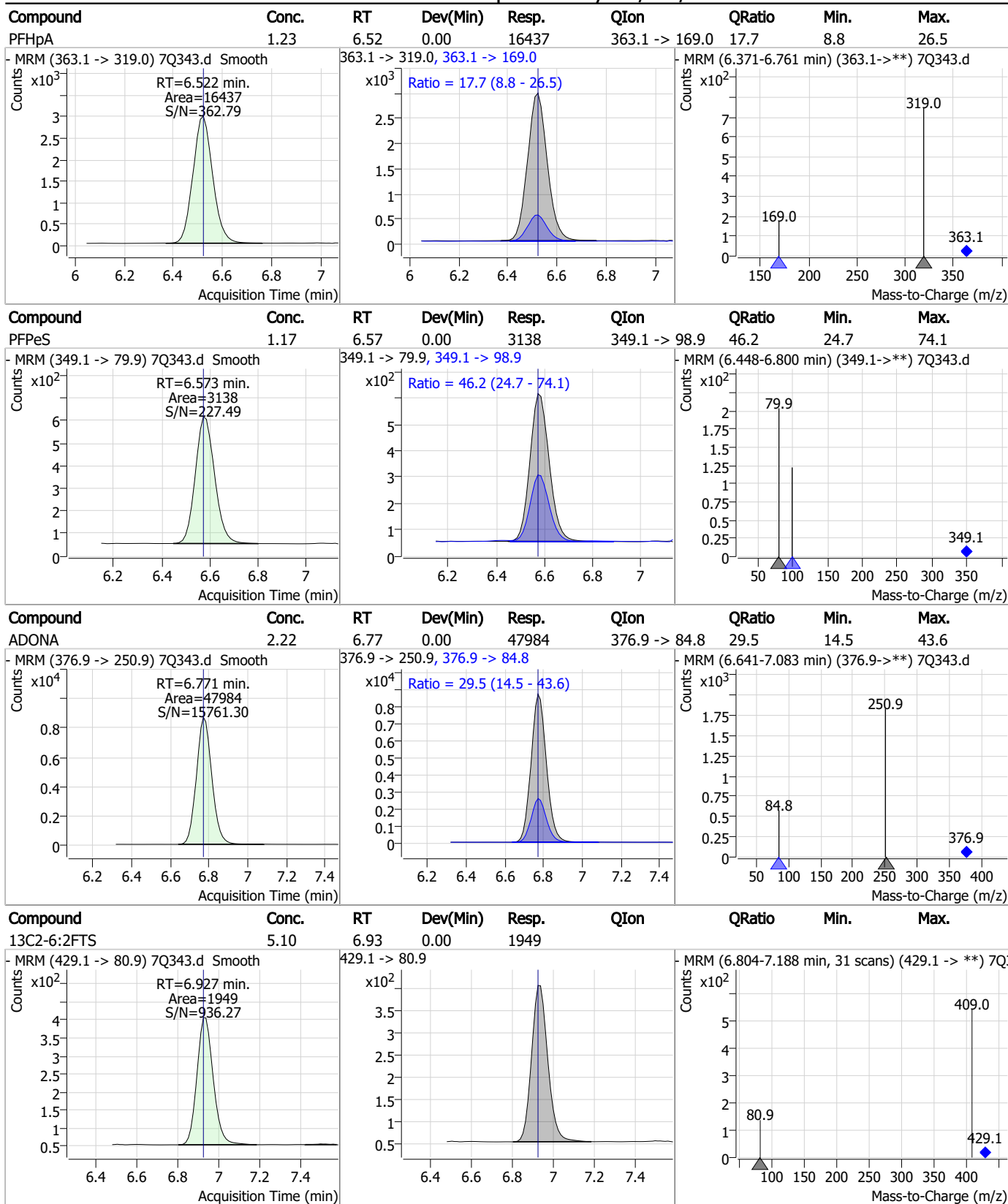
Perfluorinated Compounds by LC/MS/MS



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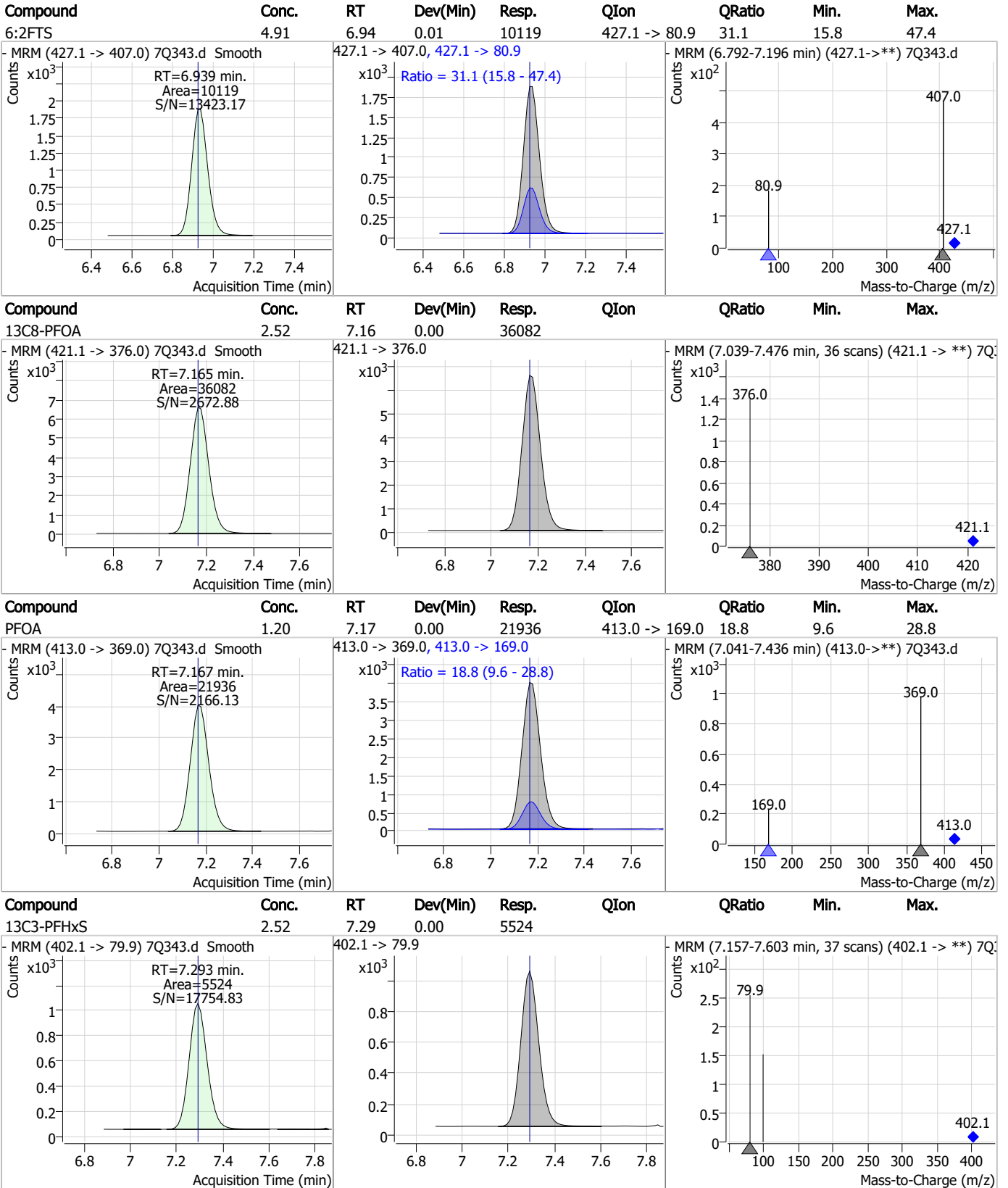
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7.7.19

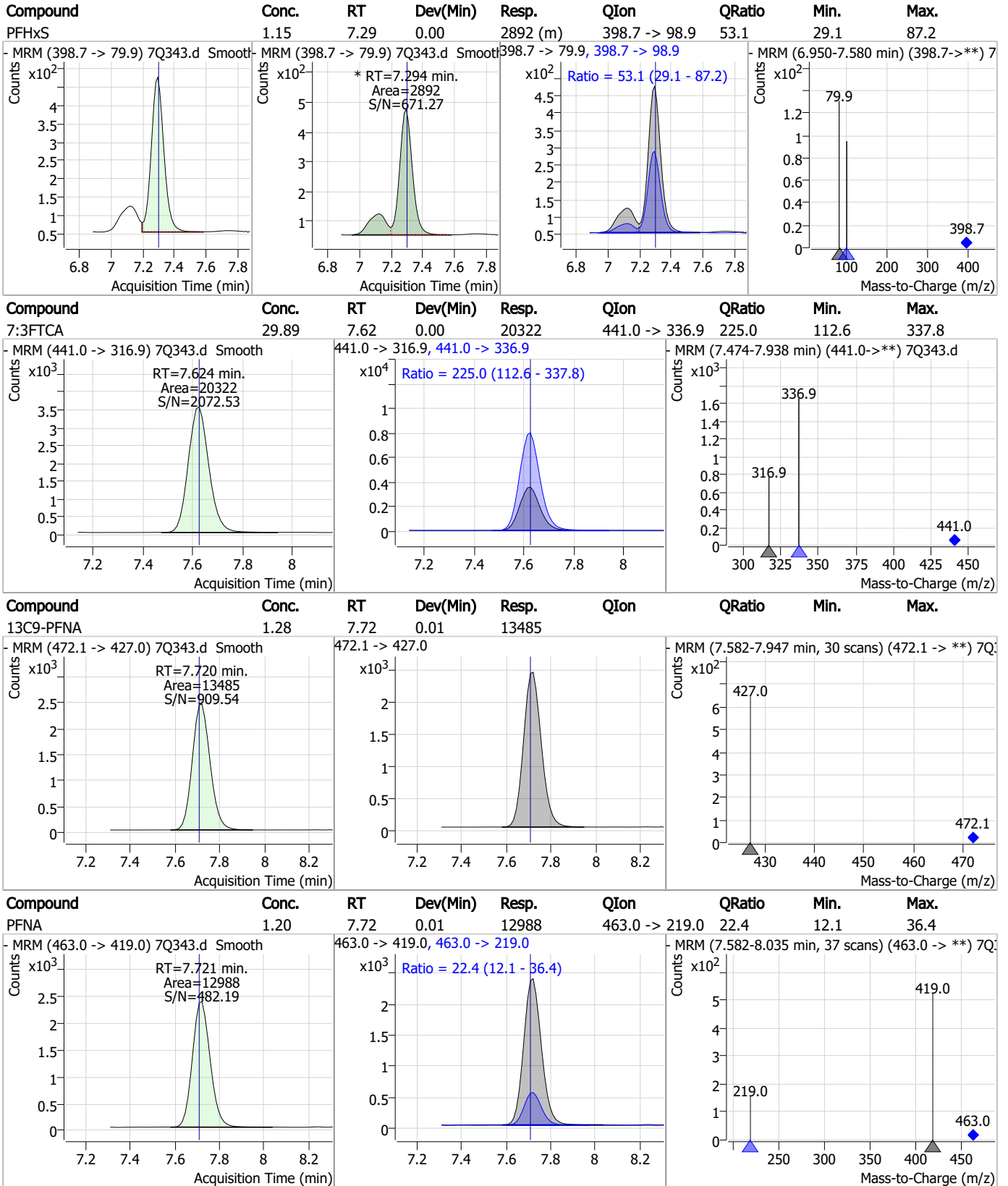
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Perfluorinated Compounds by LC/MS/MS



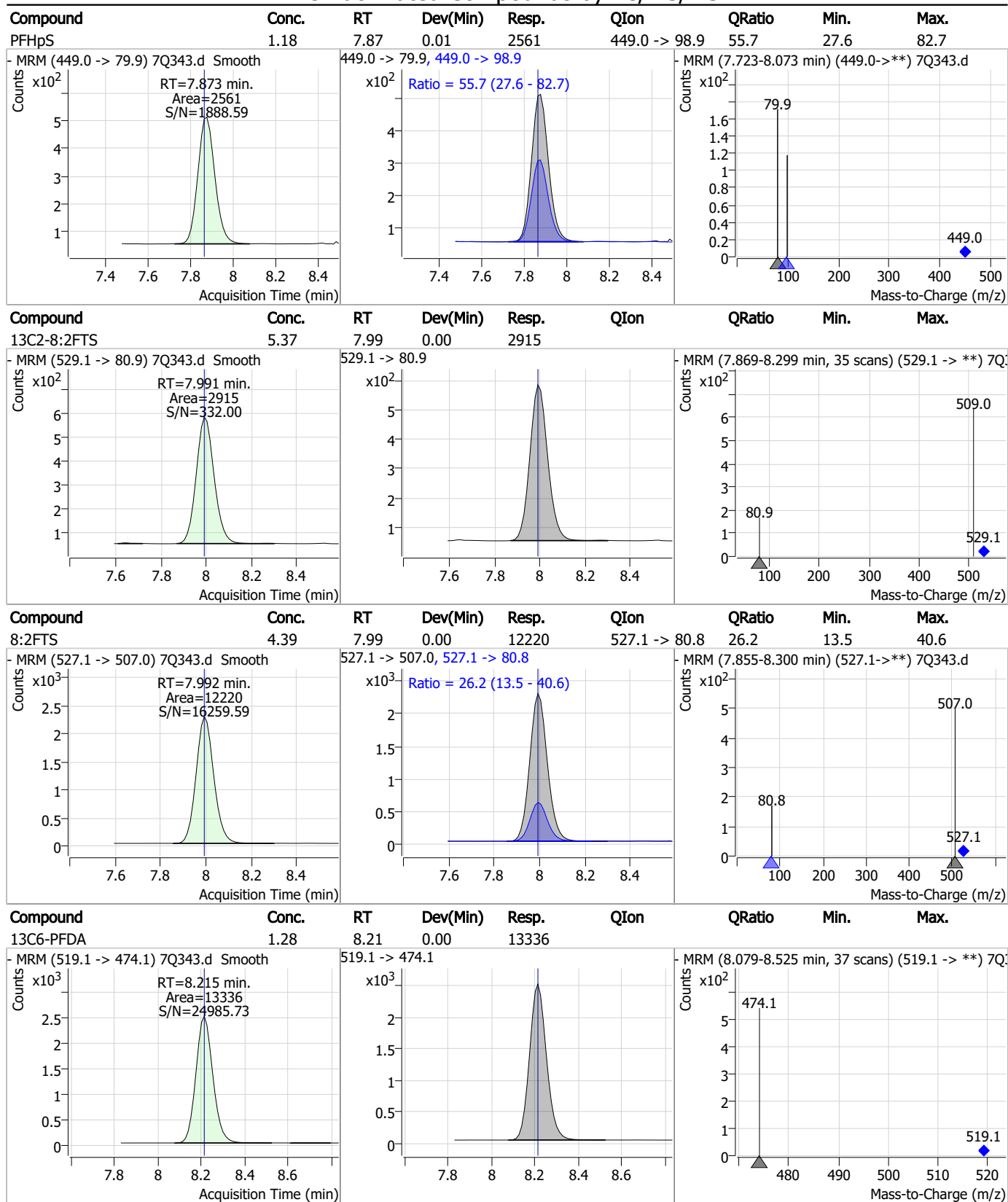
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Perfluorinated Compounds by LC/MS/MS



7.7.19 7

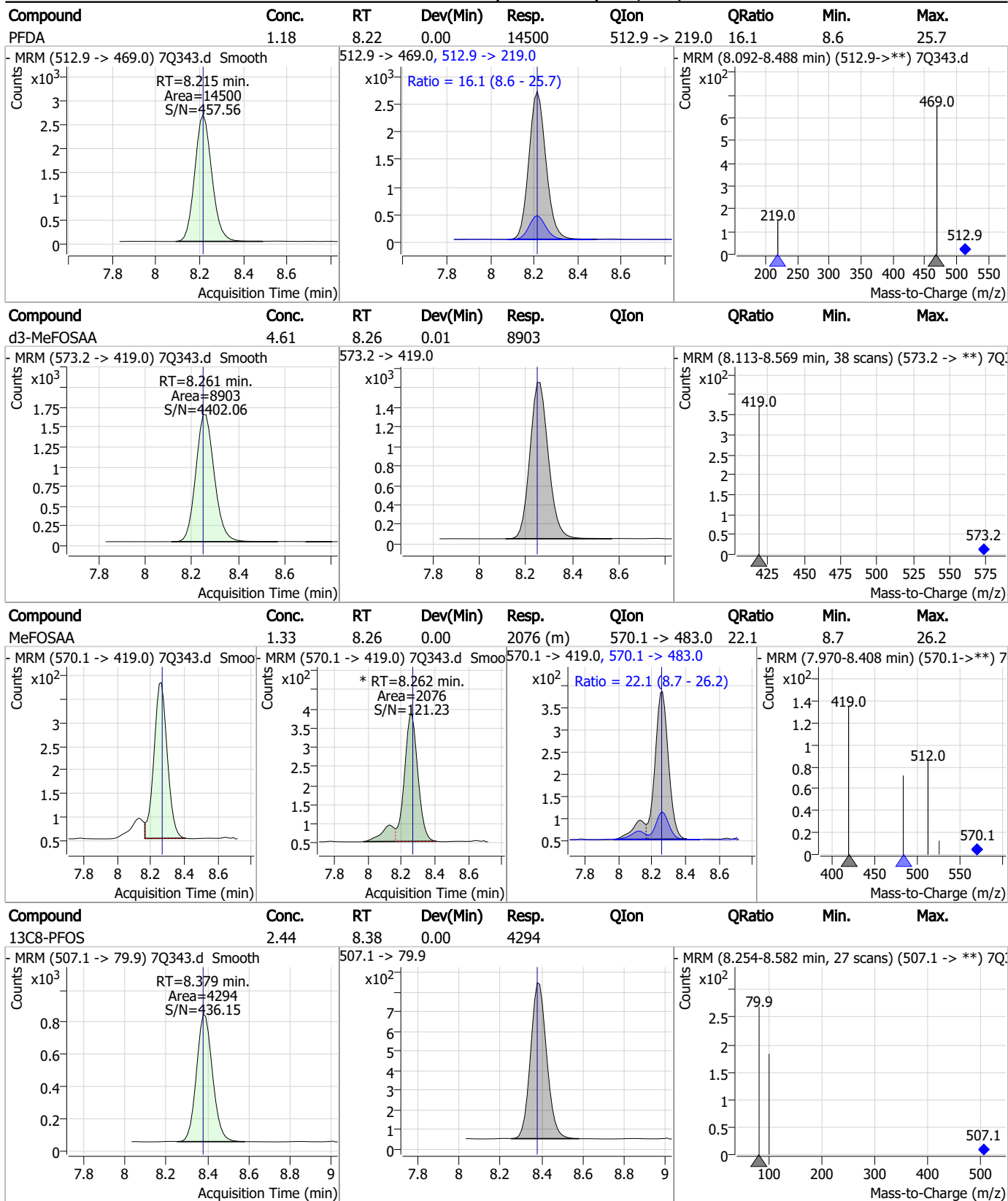
Perfluorinated Compounds by LC/MS/MS



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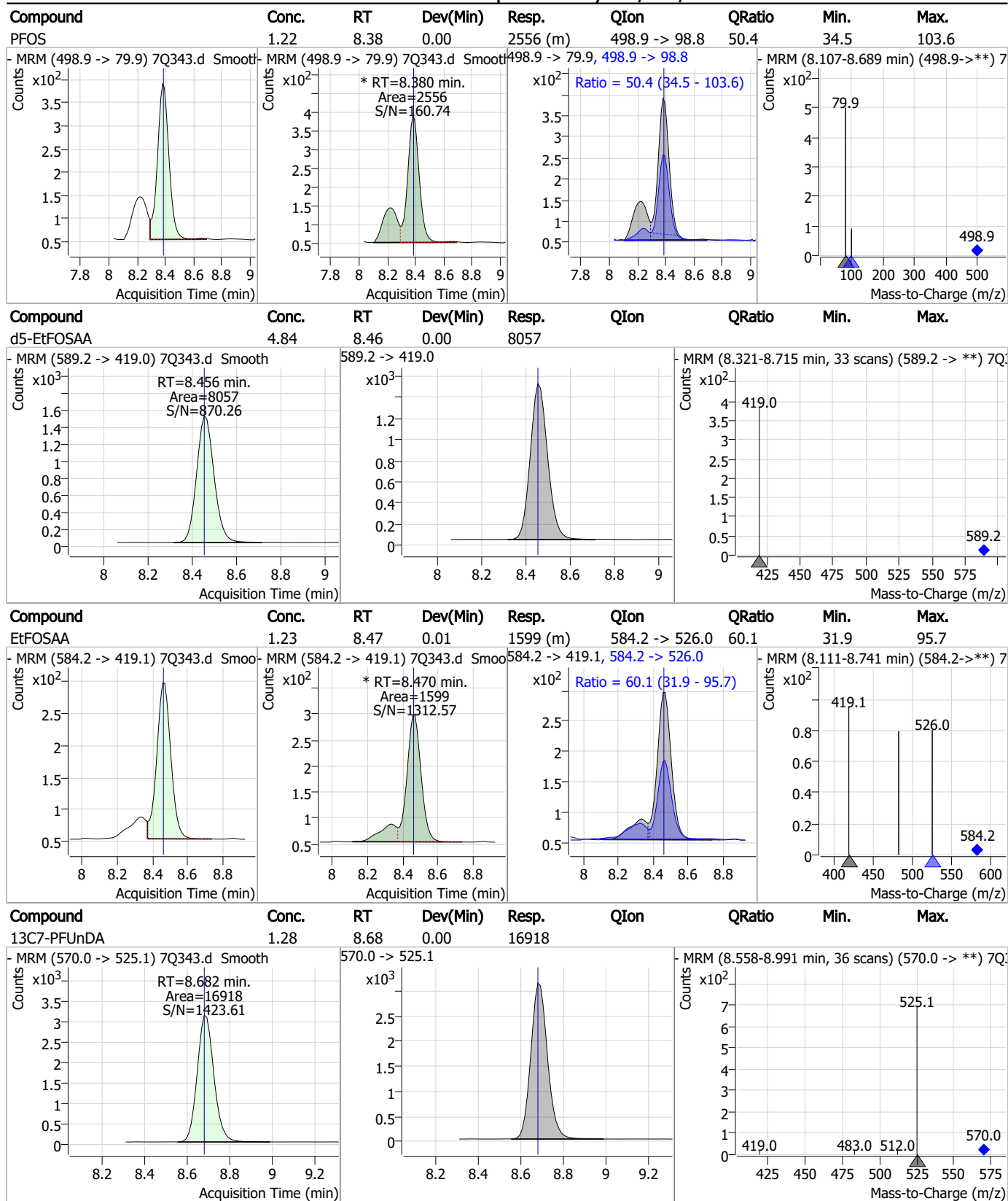
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Perfluorinated Compounds by LC/MS/MS



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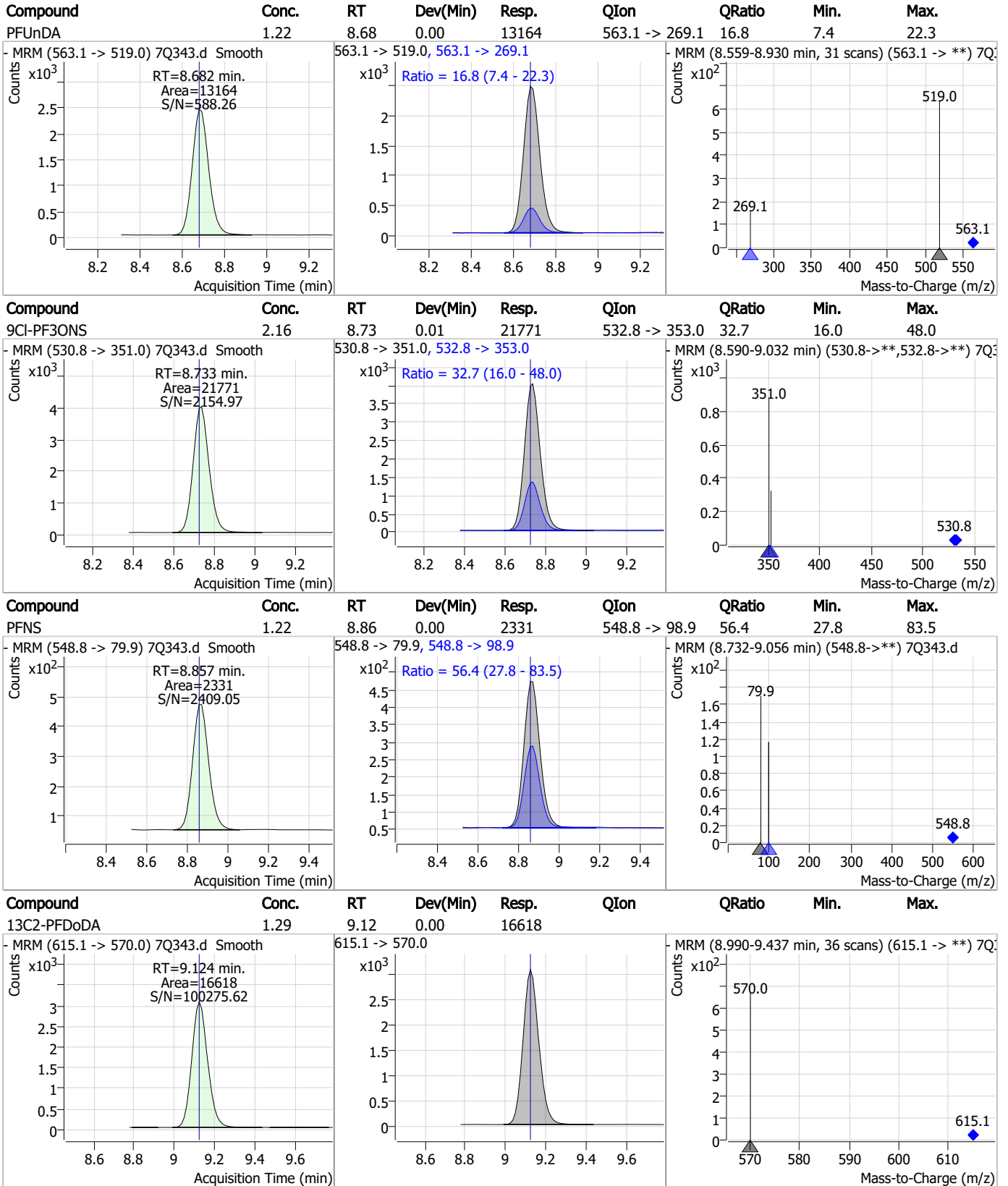
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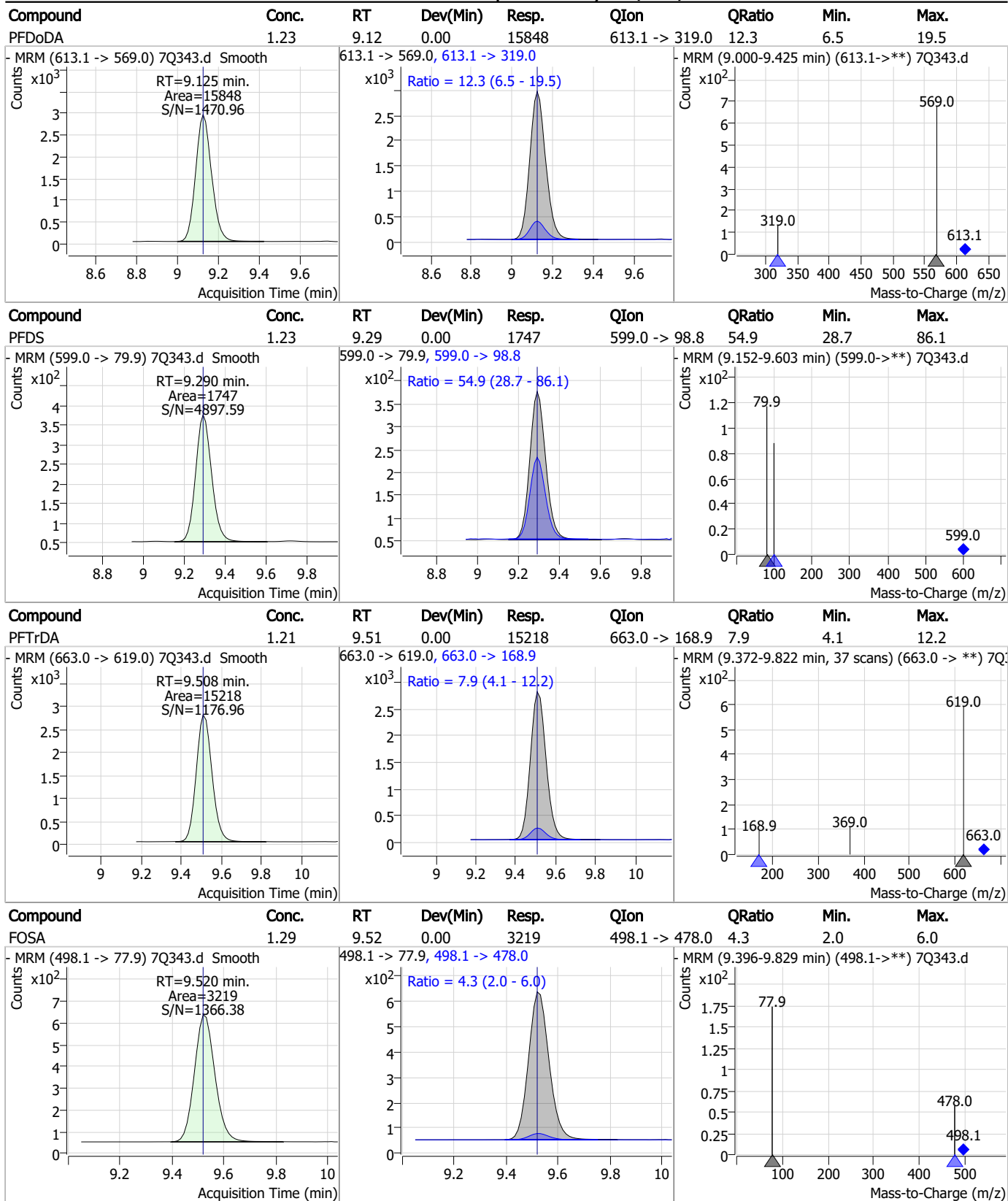
Perfluorinated Compounds by LC/MS/MS



7.7.19 7



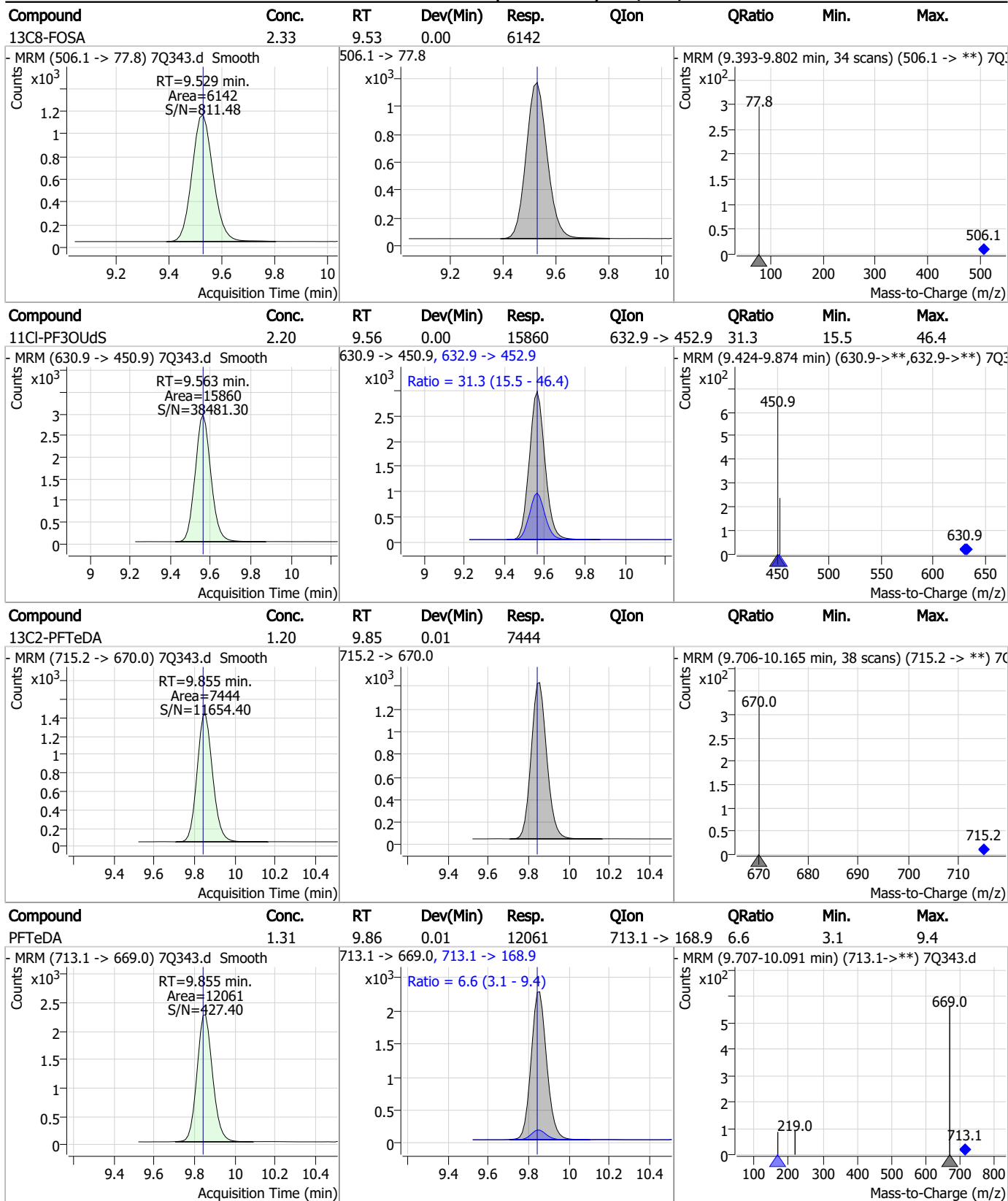
Perfluorinated Compounds by LC/MS/MS



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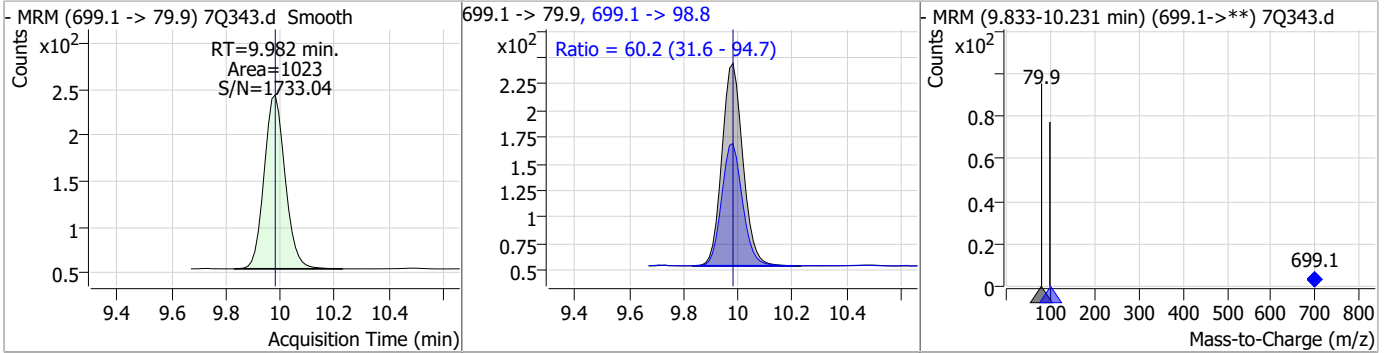
Perfluorinated Compounds by LC/MS/MS



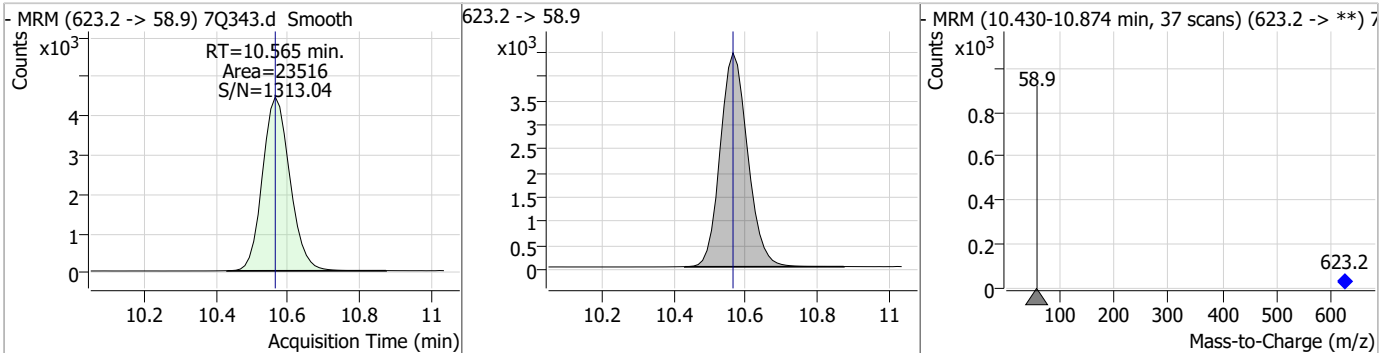
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Perfluorinated Compounds by LC/MS/MS

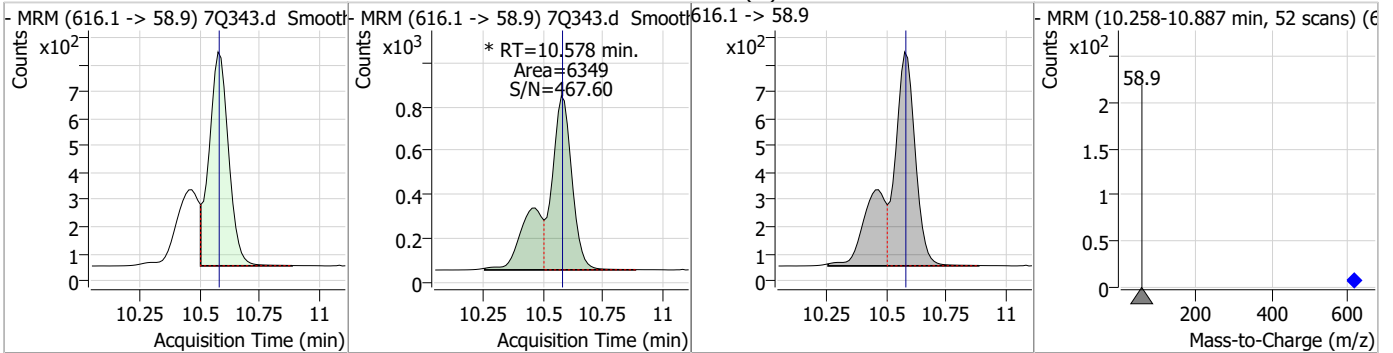
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.21	9.98	0.00	1023	699.1 -> 98.8	60.2	31.6	94.7



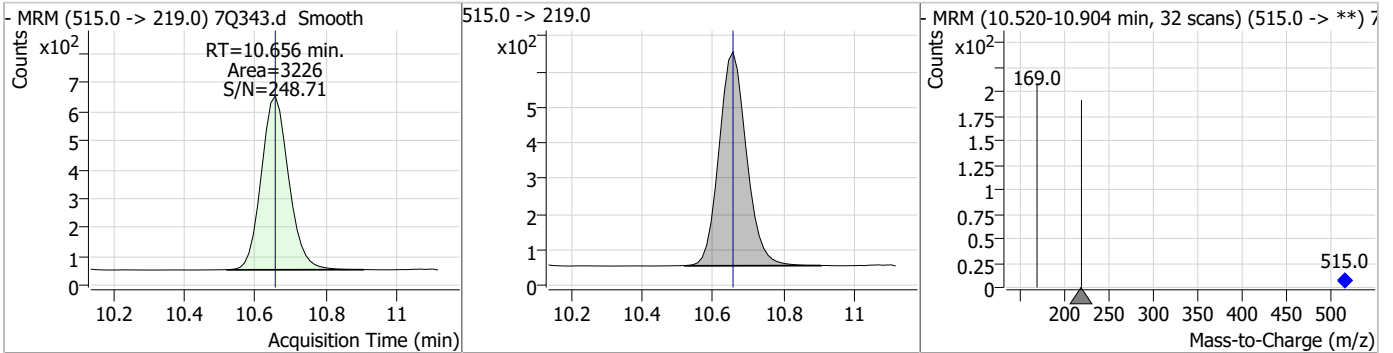
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.22	10.56	0.00	23516				



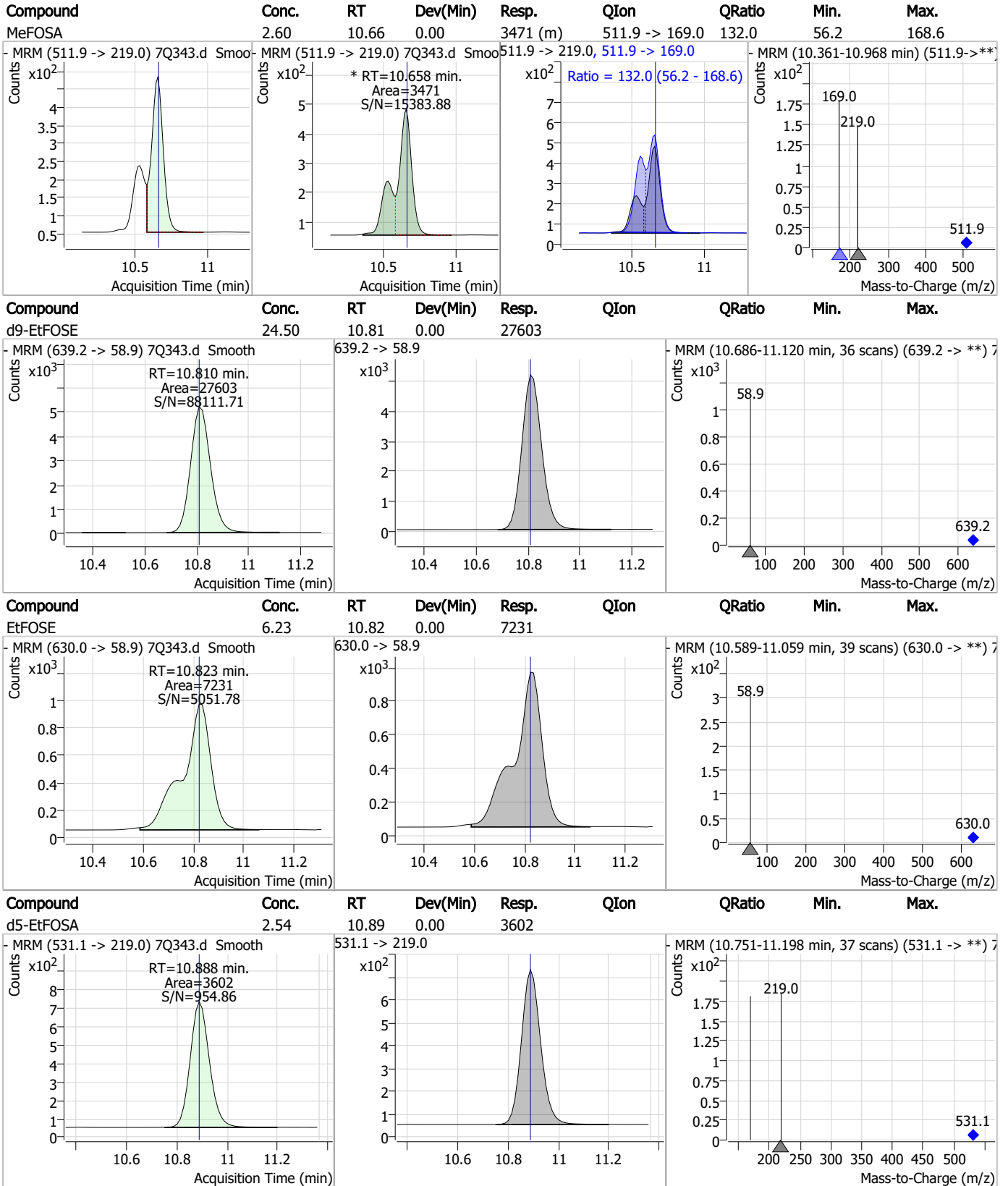
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	6.31	10.58	0.00	6349 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	10.66	0.00	3226				



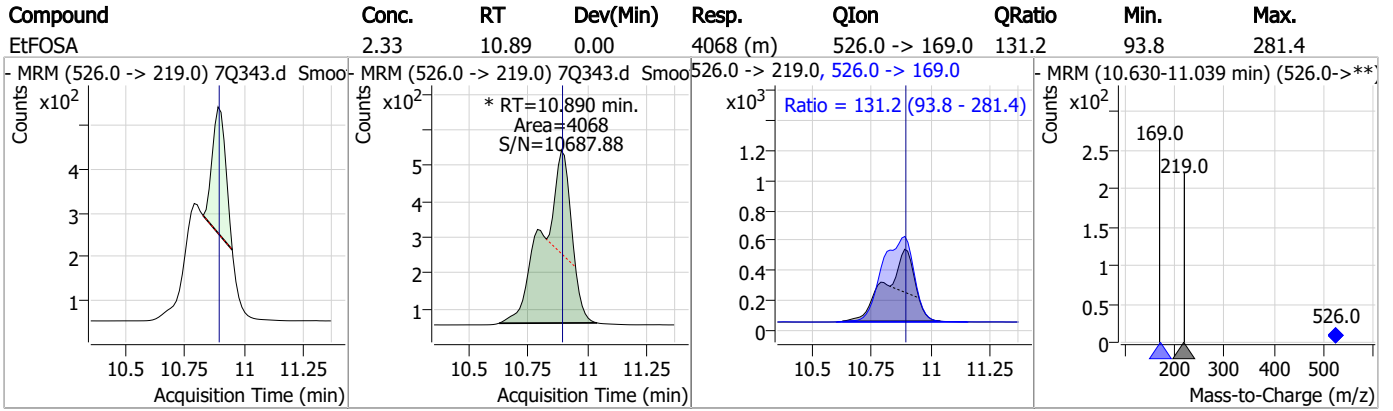
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-IC11 Method: EPA DRAFT 1633
Lab FileID: 7Q343.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 15:24 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q344.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 3:38:23 PM
 Sample Name : icc11-4
 Vial : P1-A5
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.897	216.8 -> 171.9	96582	10.00 µg/L	0.000
M5-PFPeA	4.312	268.3 -> 223.0	32493	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	29218	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	24896	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	34152	2.50 µg/L	0.000
M9-PFNA	7.708	472.1 -> 427.0	12318	1.25 µg/L	0.000
M6-PFDA	8.215	519.1 -> 474.1	12693	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16229	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	14997	1.25 µg/L	0.000
M2-PFTeDA	9.842	715.2 -> 670.0	7323	1.25 µg/L	0.000
M8-FOSA	9.529	506.1 -> 77.8	6081	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6384	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5158	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	3980	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	792	5.00 µg/L	0.000
M2-6:2FTS	6.927	429.1 -> 80.9	1711	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2735	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	8796	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	54076	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7988	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	22204	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	25610	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3220	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3010	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4492	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	45777	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3595	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	35264	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11324	1.25 µg/L	0.000
13C5-PFNA	7.709	468.0 -> 423.0	14234	1.25 µg/L	0.000
13C2-PFHxA	5.555	315.1 -> 270.0	24148	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	792	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-6:2FTS	6.927	429.1 -> 80.9	1711	4.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2735	5.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C2-PFDoDA	9.124	615.1 -> 570.0	14997	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-PFTeDA	9.842	715.2 -> 670.0	7323	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C3-PFBS	5.484	302.1 -> 79.9	6384	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C3-PFHxS	7.293	402.1 -> 79.9	5158	2.47 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFBA	2.897	216.8 -> 171.9	96582	9.98 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.509	367.1 -> 322.0	24896	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFHxA	5.554	318.0 -> 273.0	29218	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFPeA	4.312	268.3 -> 223.0	32493	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C6-PFDA	8.215	519.1 -> 474.1	12693	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C7-PFUnDA	8.682	570.0 -> 525.1	16229	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C8-FOSA	9.529	506.1 -> 77.8	6081	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C8-PFOA	7.165	421.1 -> 376.0	34152	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-PFOS	8.379	507.1 -> 79.9	3980	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C9-PFNA	7.708	472.1 -> 427.0	12318	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
d3-MeFOSAA	8.248	573.2 -> 419.0	8796	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	54076	9.94 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
d3-MeFOSA	10.656	515.0 -> 219.0	3010	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7988	5.36 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.1%	
d7-MeFOSE	10.565	623.2 -> 58.9	22204	25.51 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
d9-EtFOSE	10.810	639.2 -> 58.9	25610	25.37 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
d5-EtFOSA	10.888	531.1 -> 219.0	3220	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	11492	9.23 µg/L	99
		327.1 -> 80.9	4082		
6:2FTS	6.927	427.1 -> 407.0	19227	10.63 µg/L	99
		427.1 -> 80.9	5924		
8:2FTS	7.992	527.1 -> 507.0	22586	8.64 µg/L	99
		527.1 -> 80.8	6006		
EtFOSAA	8.458	584.2 -> 419.1	3082	2.39 µg/L	m 92
		584.2 -> 526.0	1780		
FOSA	9.520	498.1 -> 77.9	6128	2.47 µg/L	100
		498.1 -> 478.0	251		
MeFOSAA	8.262	570.1 -> 419.0	3948	2.55 µg/L	m 93
		570.1 -> 483.0	806		
PFBA	2.893	212.8 -> 168.9	35288	10.09 µg/L	100
PFBS	5.485	298.7 -> 79.9	5409	2.25 µg/L	93
		298.7 -> 98.8	2443		
PFDA	8.215	512.9 -> 469.0	27757	2.38 µg/L	98
		512.9 -> 219.0	4564		
PFDODA	9.125	613.1 -> 569.0	30449	2.62 µg/L	98
		613.1 -> 319.0	3773		
PFDS	9.290	599.0 -> 79.9	3049	2.33 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1777			
PFHpA	6.522	363.1 -> 319.0	31120	2.53	µg/L	100
		363.1 -> 169.0	5484			
PFHpS	7.861	449.0 -> 79.9	4747	2.36	µg/L	93
		449.0 -> 98.9	2850			
PFHxA	5.556	313.0 -> 269.0	26631	2.48	µg/L	99
		313.0 -> 118.9	1458			
PFHxS	7.294	398.7 -> 79.9	5339	2.28	µg/L	m 92
		398.7 -> 98.9	2770			
PFNA	7.709	463.0 -> 419.0	24994	2.54	µg/L	99
		463.0 -> 219.0	5912			
PFNS	8.857	548.8 -> 79.9	4314	2.43	µg/L	96
		548.8 -> 98.9	2536			
PFOA	7.167	413.0 -> 369.0	43107	2.50	µg/L	100
		413.0 -> 169.0	8259			
PFOS	8.380	498.9 -> 79.9	4483	2.31	µg/L	m 80
		498.9 -> 98.8	2364			
PFPeA	4.314	263.0 -> 219.0	40538	5.00	µg/L	100
PFPeS	6.573	349.1 -> 79.9	5993	2.39	µg/L	99
		349.1 -> 98.9	2932			
PFTeDA	9.843	713.1 -> 669.0	23098	2.55	µg/L	97
		713.1 -> 168.9	1702			
PFTrDA	9.508	663.0 -> 619.0	29612	2.61	µg/L	100
		663.0 -> 168.9	2417			
PFUnDA	8.682	563.1 -> 519.0	25508	2.47	µg/L	98
		563.1 -> 269.1	3590			
11CI-PF3OUdS	9.563	630.9 -> 450.9	30633	4.76	µg/L	98
		632.9 -> 452.9	9788			
9CI-PF3ONS	8.722	530.8 -> 351.0	42479	4.70	µg/L	100
		532.8 -> 353.0	13694			
ADONA	6.771	376.9 -> 250.9	92315	4.78	µg/L	100
		376.9 -> 84.8	26726			
HFPO-DA	5.944	284.9 -> 168.9	25927	5.03	µg/L	98
		284.9 -> 184.9	3832			
3:3FTCA	3.736	241.0 -> 177.0	5187	12.49	µg/L	99
		241.0 -> 117.0	642			
5:3FTCA	6.187	341.0 -> 237.1	87070	62.31	µg/L	99
		341.0 -> 217.0	65453			
7:3FTCA	7.624	441.0 -> 316.9	39161	61.36	µg/L	100
		441.0 -> 336.9	88018			
EtFOSA	10.890	526.0 -> 219.0	7795	5.00	µg/L	m 61
		526.0 -> 169.0	10185			
EtFOSE	10.823	630.0 -> 58.9	13558	12.60	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	6402	5.14	µg/L	m 79
		511.9 -> 169.0	8648			
MeFOSE	10.578	616.1 -> 58.9	11926	12.54	µg/L	m 100
PFDoS	9.982	699.1 -> 79.9	2026	2.60	µg/L	94
		699.1 -> 98.8	1180			
NFDHA	5.437	295.0 -> 201.0	12173	4.98	µg/L	94
		295.0 -> 84.9	3585			
PFMBA	4.750	279.0 -> 85.1	26207	5.05	µg/L	100
PFMPA	3.443	229.0 -> 84.9	27480	5.07	µg/L	100
PFEESA	6.051	314.8 -> 134.9	38875	4.52	µg/L	100
		314.8 -> 82.9	1342			

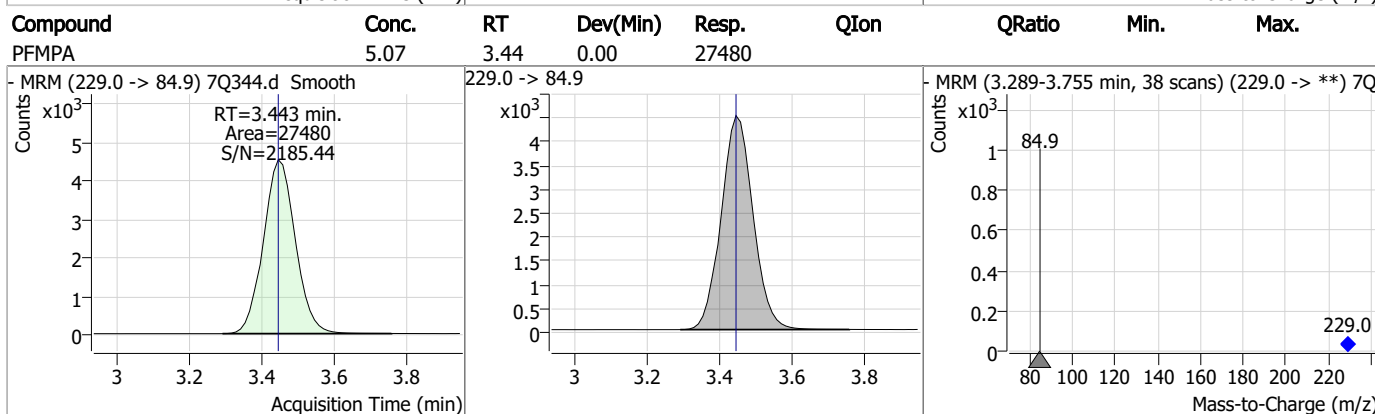
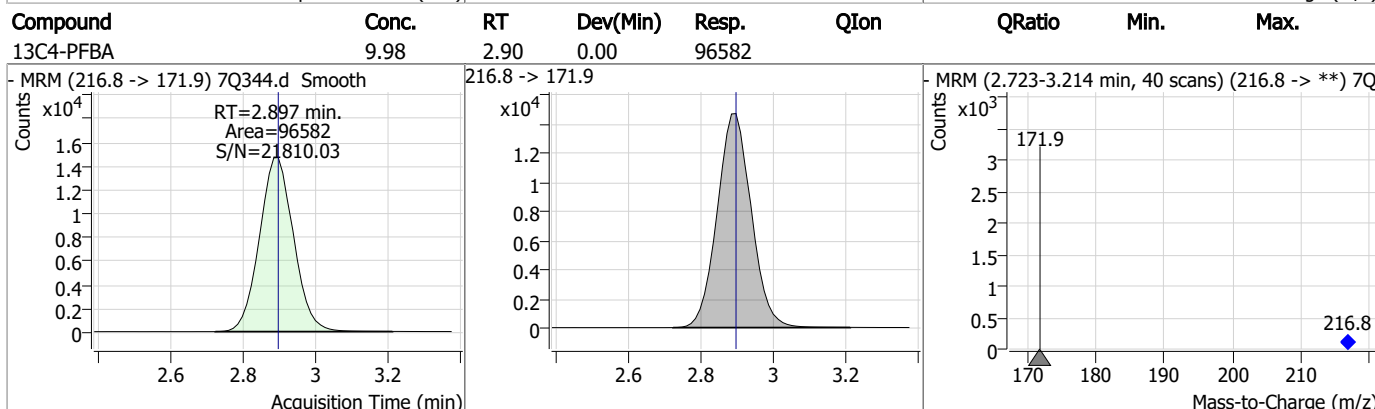
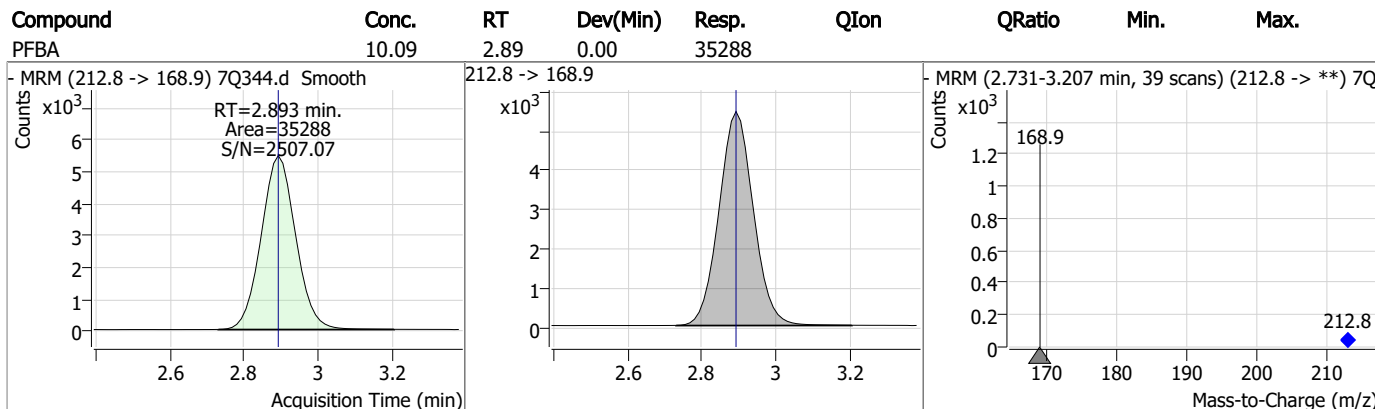
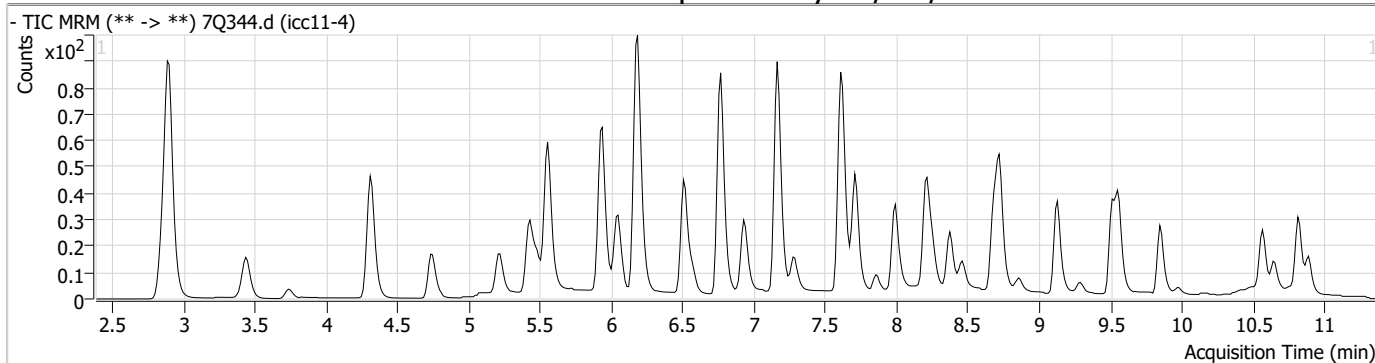
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

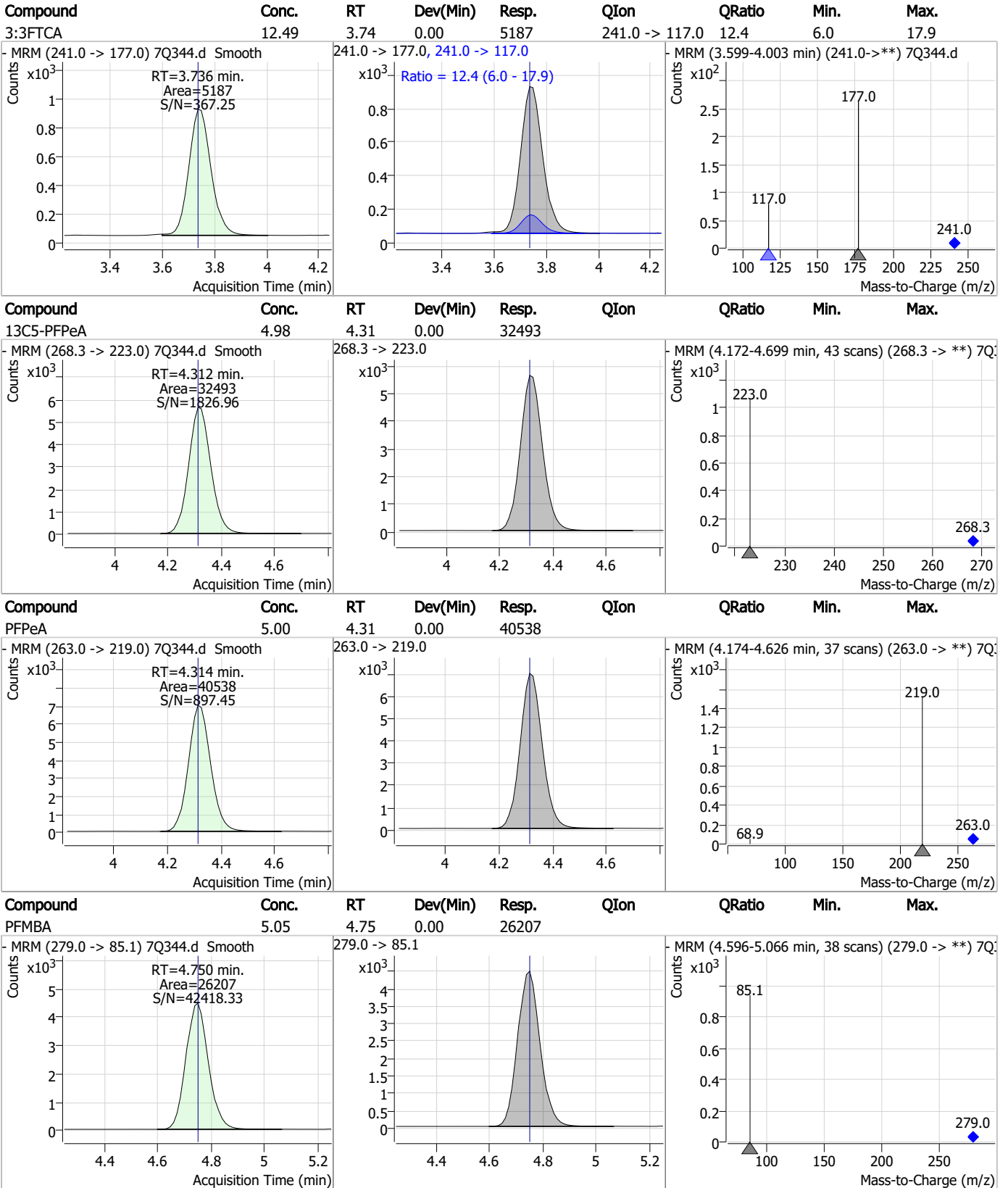
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.20
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Perfluorinated Compounds by LC/MS/MS



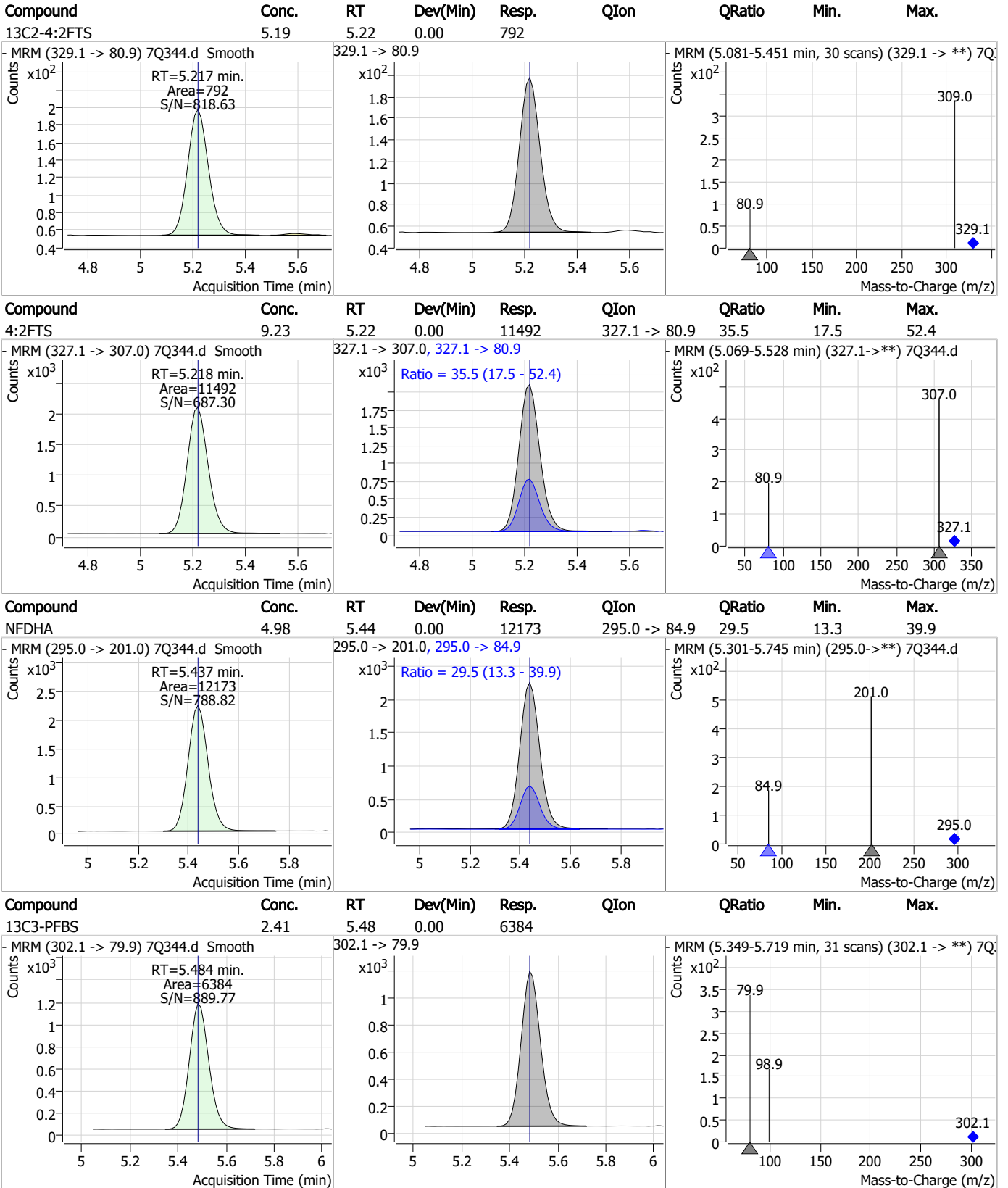
Perfluorinated Compounds by LC/MS/MS



7.7.20

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Perfluorinated Compounds by LC/MS/MS

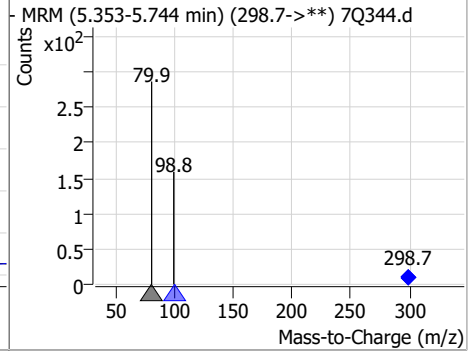
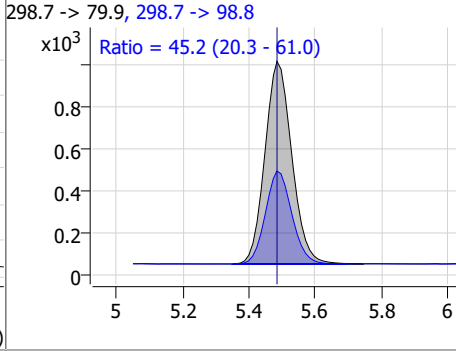
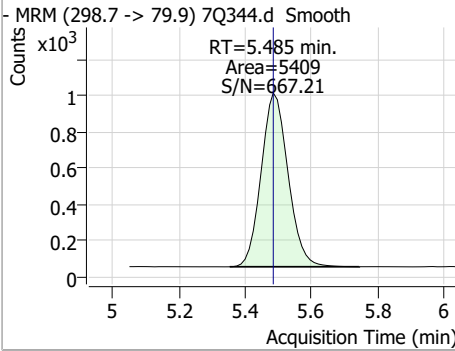


7.7.20

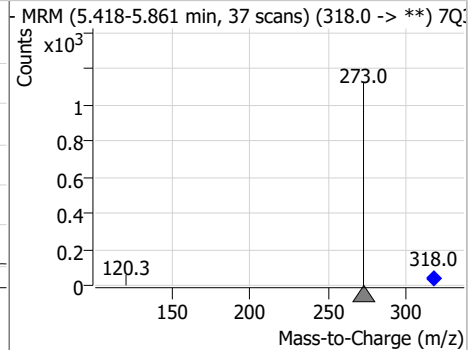
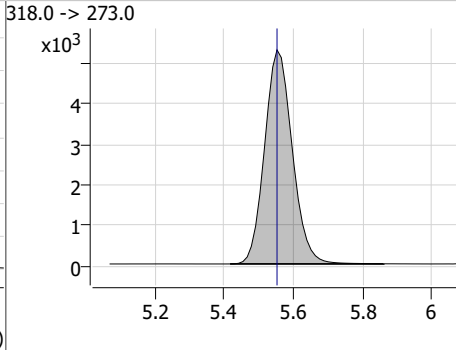
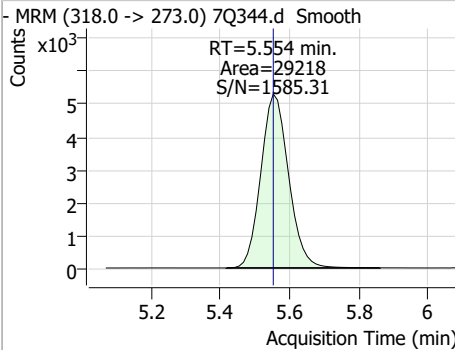
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Perfluorinated Compounds by LC/MS/MS

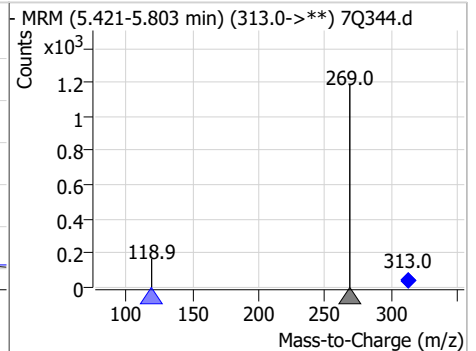
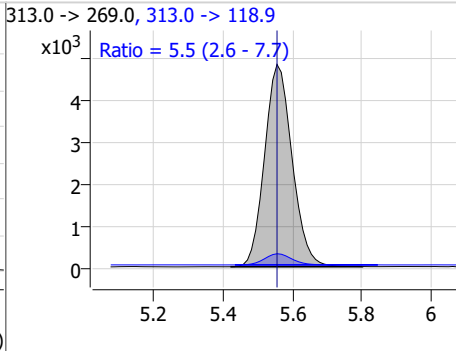
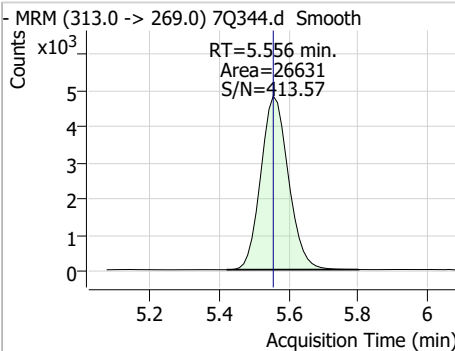
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.25	5.48	0.00	5409	298.7 -> 98.8	45.2	20.3	61.0



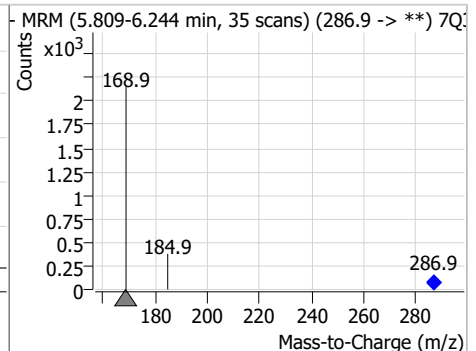
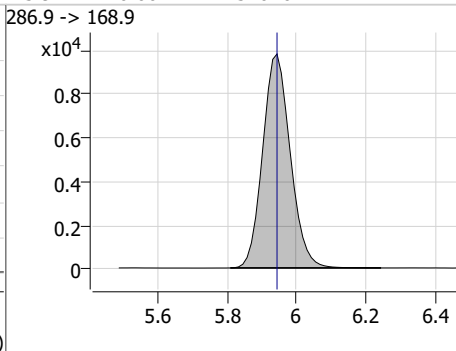
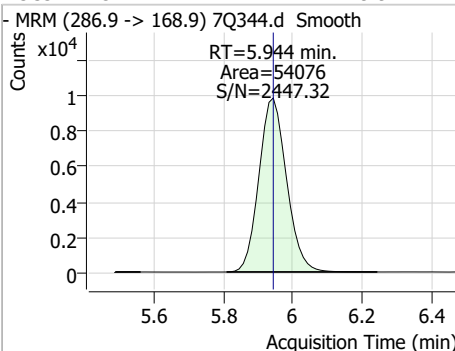
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.50	5.55	0.00	29218				



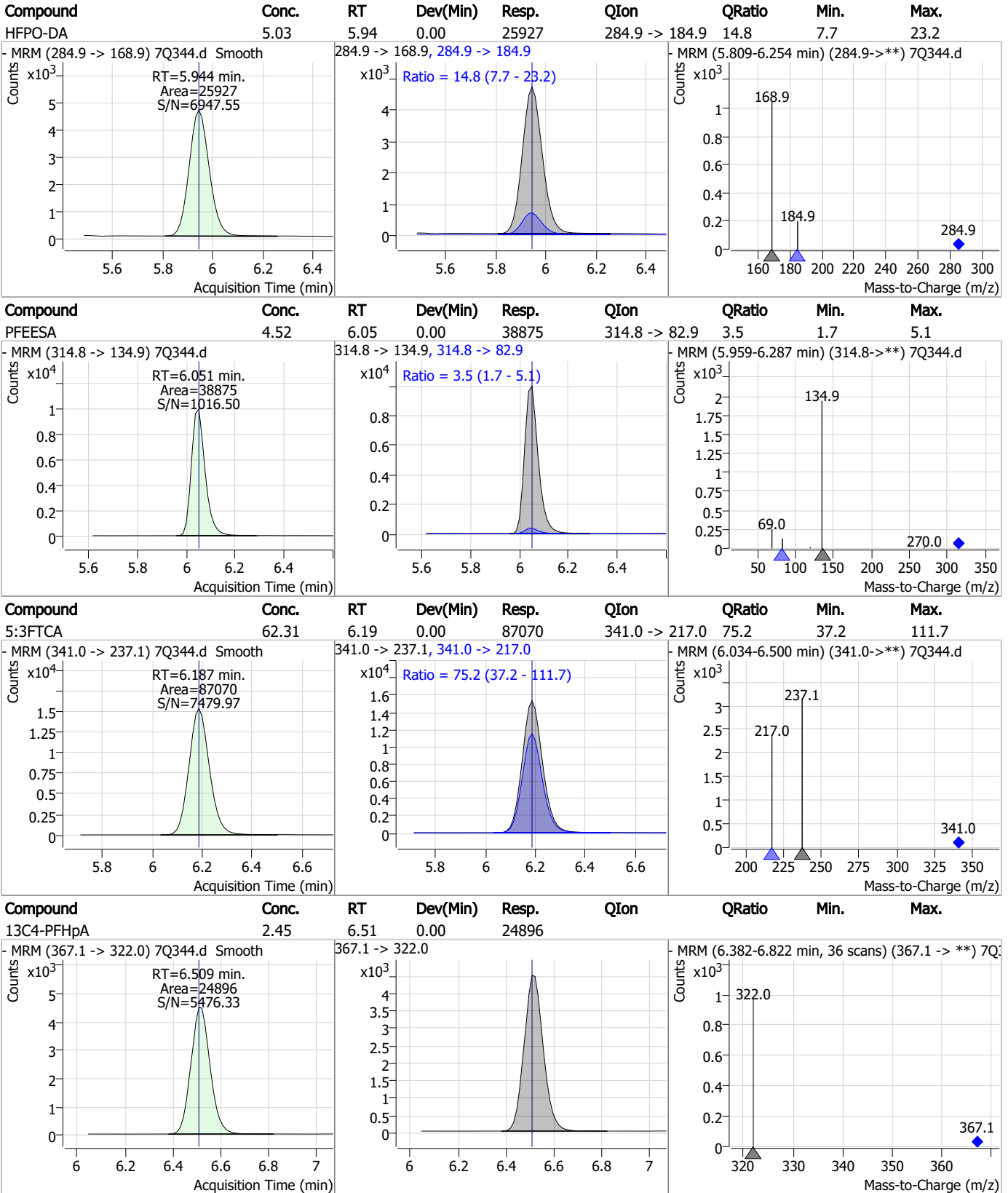
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.48	5.56	0.00	26631	313.0 -> 118.9	5.5	2.6	7.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.94	5.94	0.00	54076				



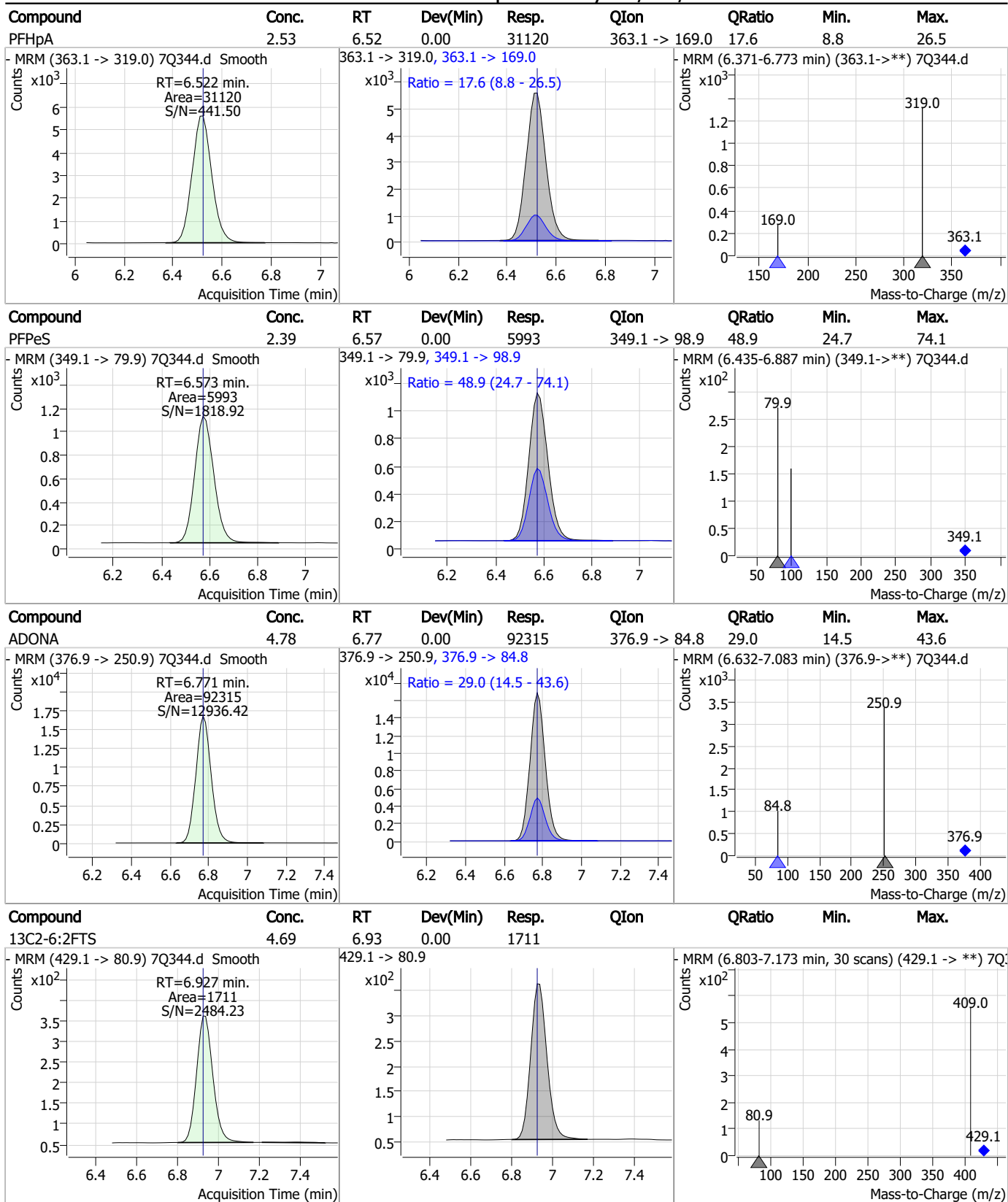
Perfluorinated Compounds by LC/MS/MS



7.7.20
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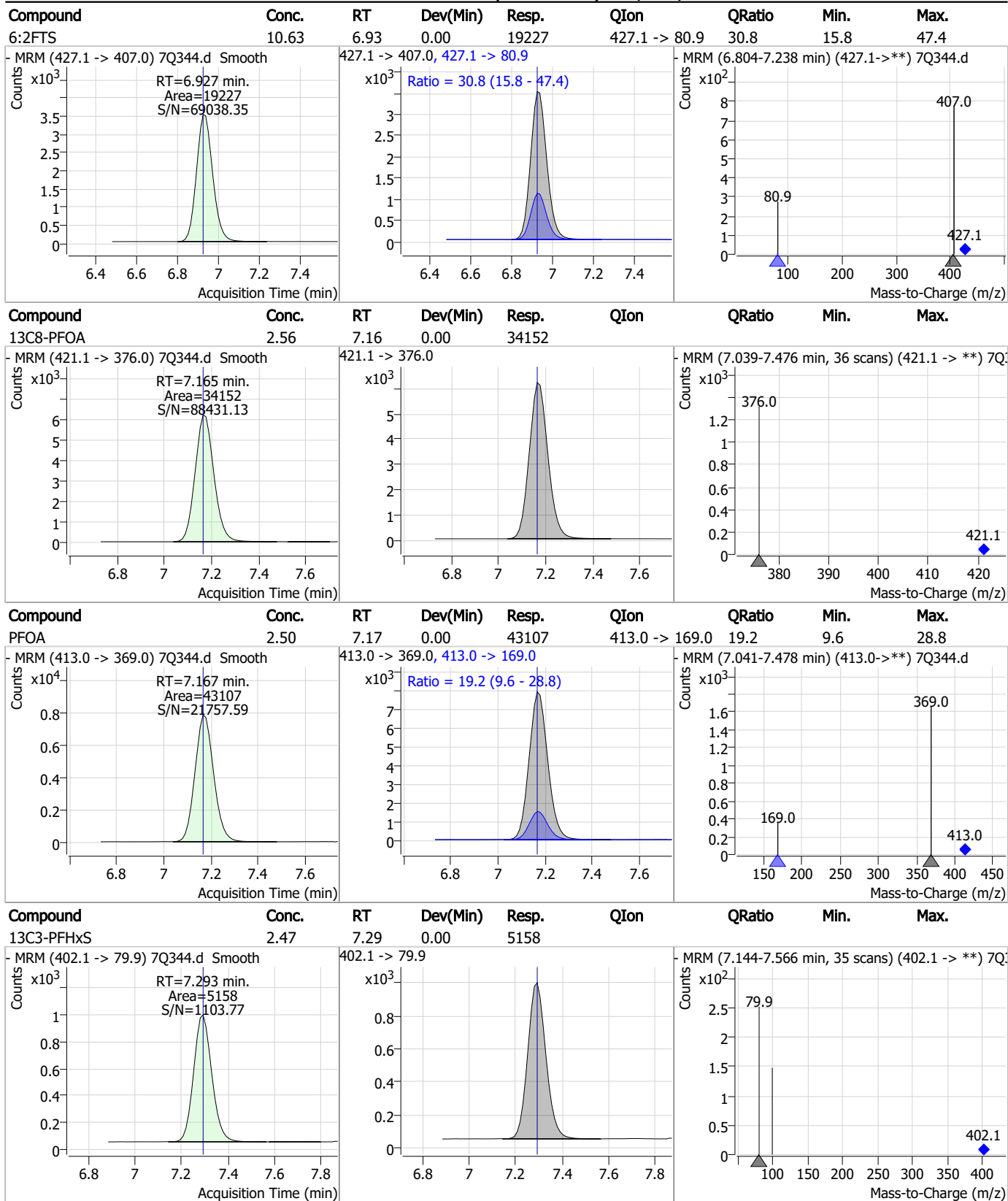


Perfluorinated Compounds by LC/MS/MS



7.7.20
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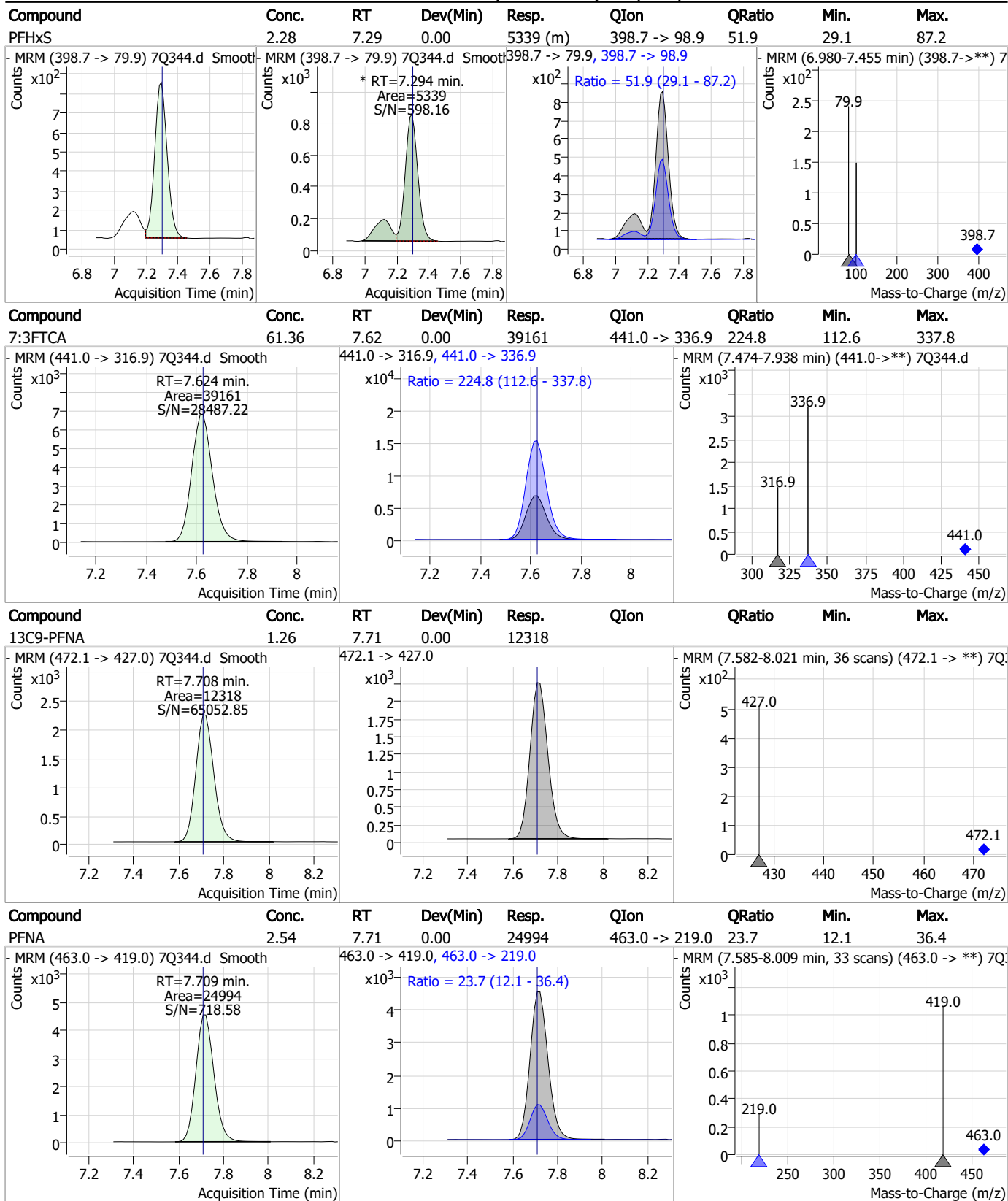
Perfluorinated Compounds by LC/MS/MS



7.7.20

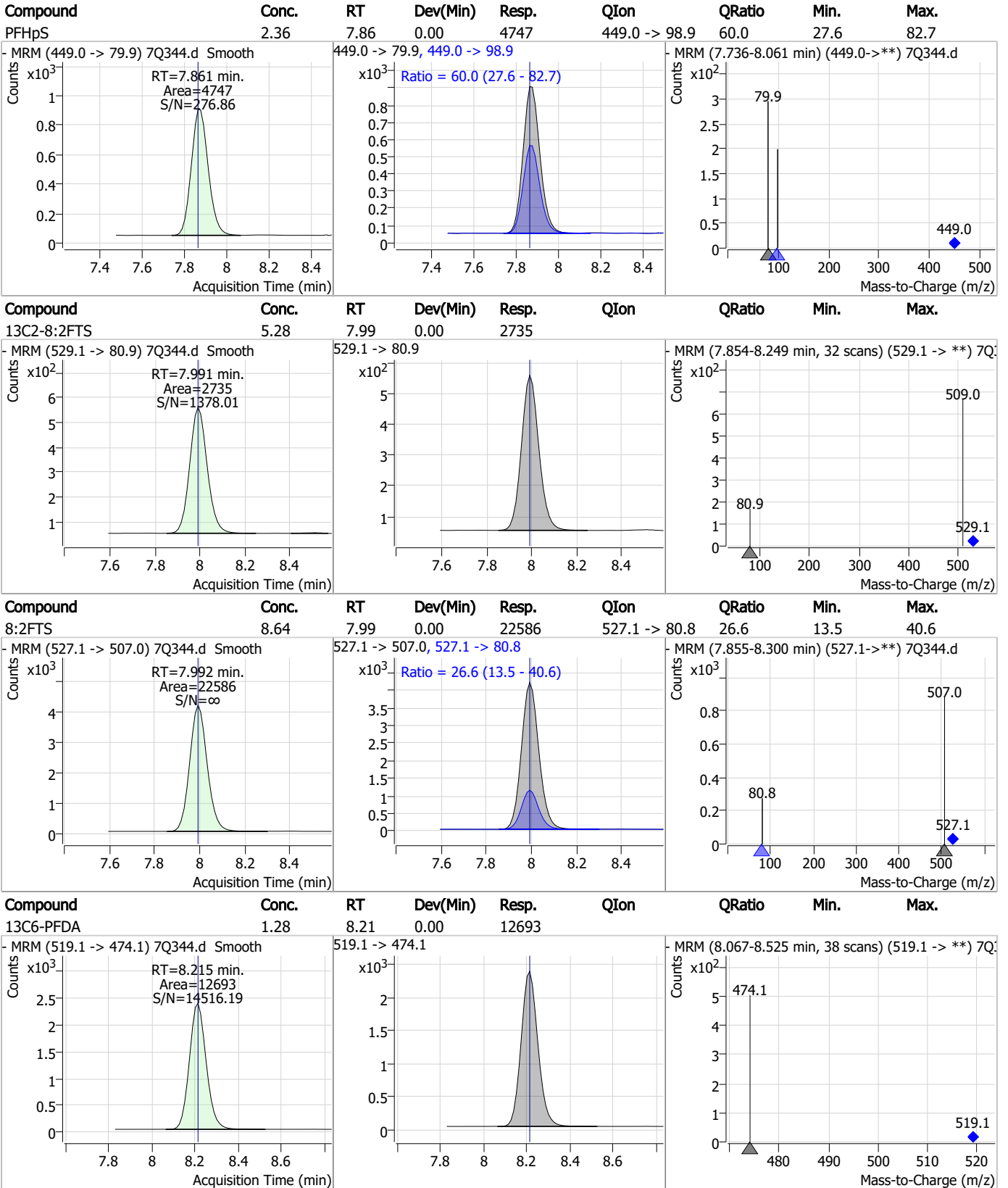
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Perfluorinated Compounds by LC/MS/MS



7.7.20 7

Perfluorinated Compounds by LC/MS/MS

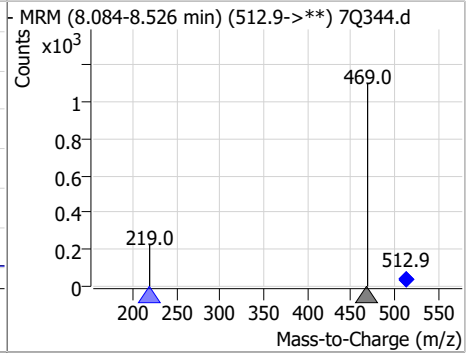
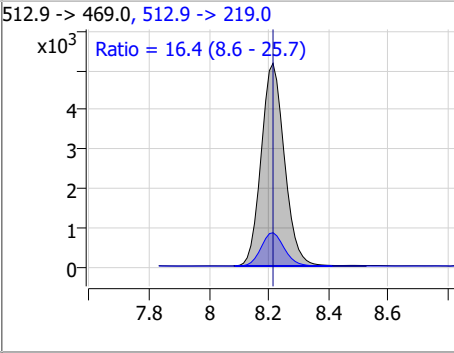
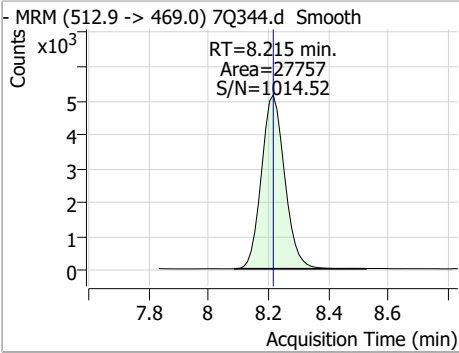


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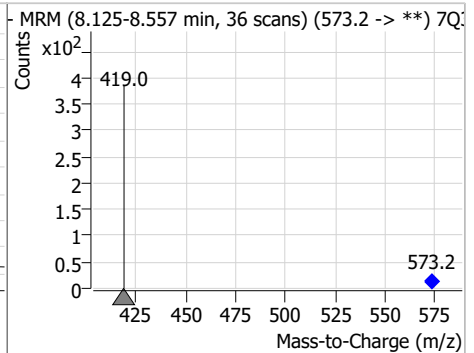
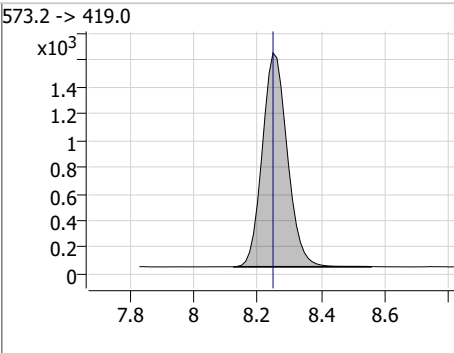
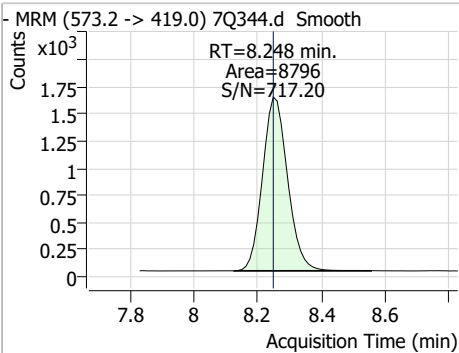
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Perfluorinated Compounds by LC/MS/MS

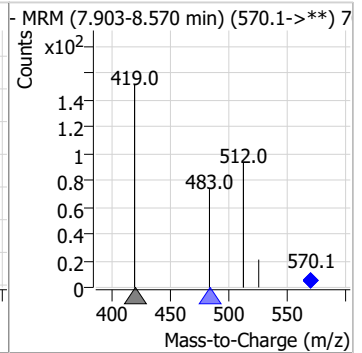
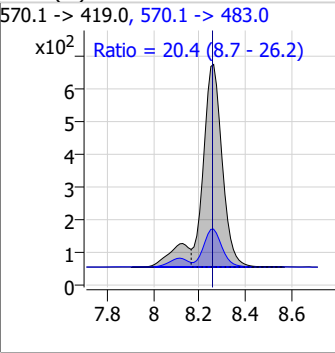
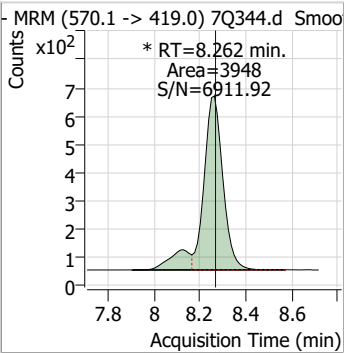
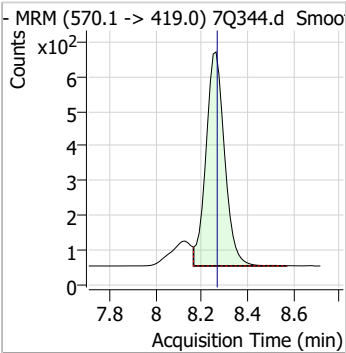
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.38	8.22	0.00	27757	512.9 -> 219.0	16.4	8.6	25.7



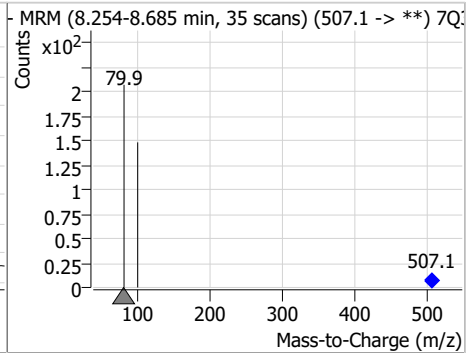
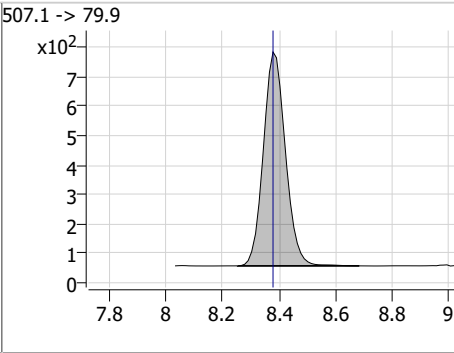
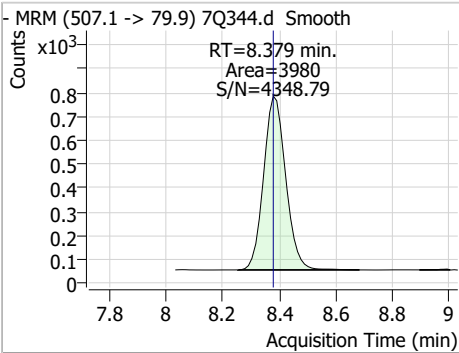
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.08	8.25	0.00	8796				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.55	8.26	0.00	3948 (m)	570.1 -> 483.0	20.4	8.7	26.2

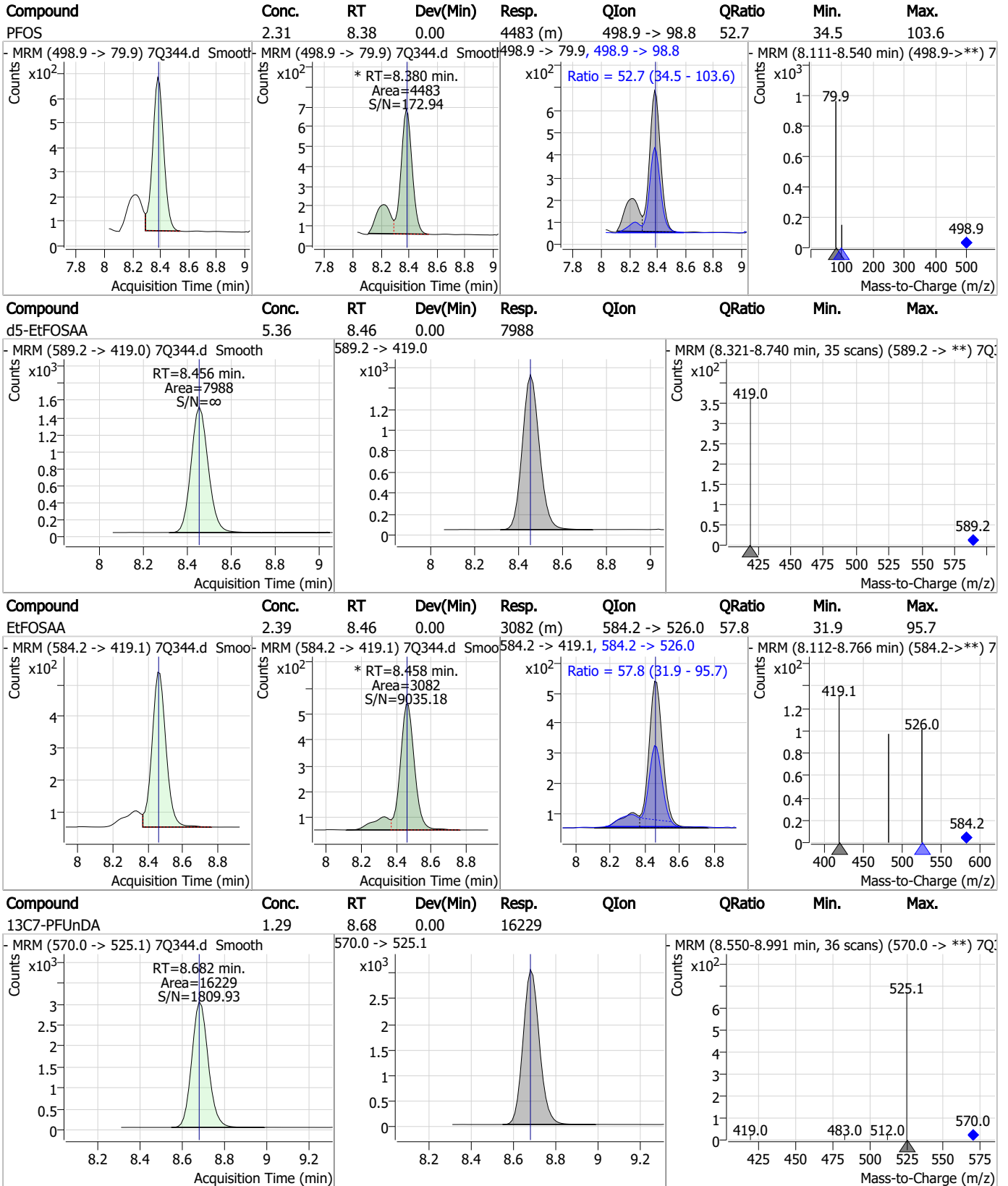


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.52	8.38	0.00	3980				



7.7.20
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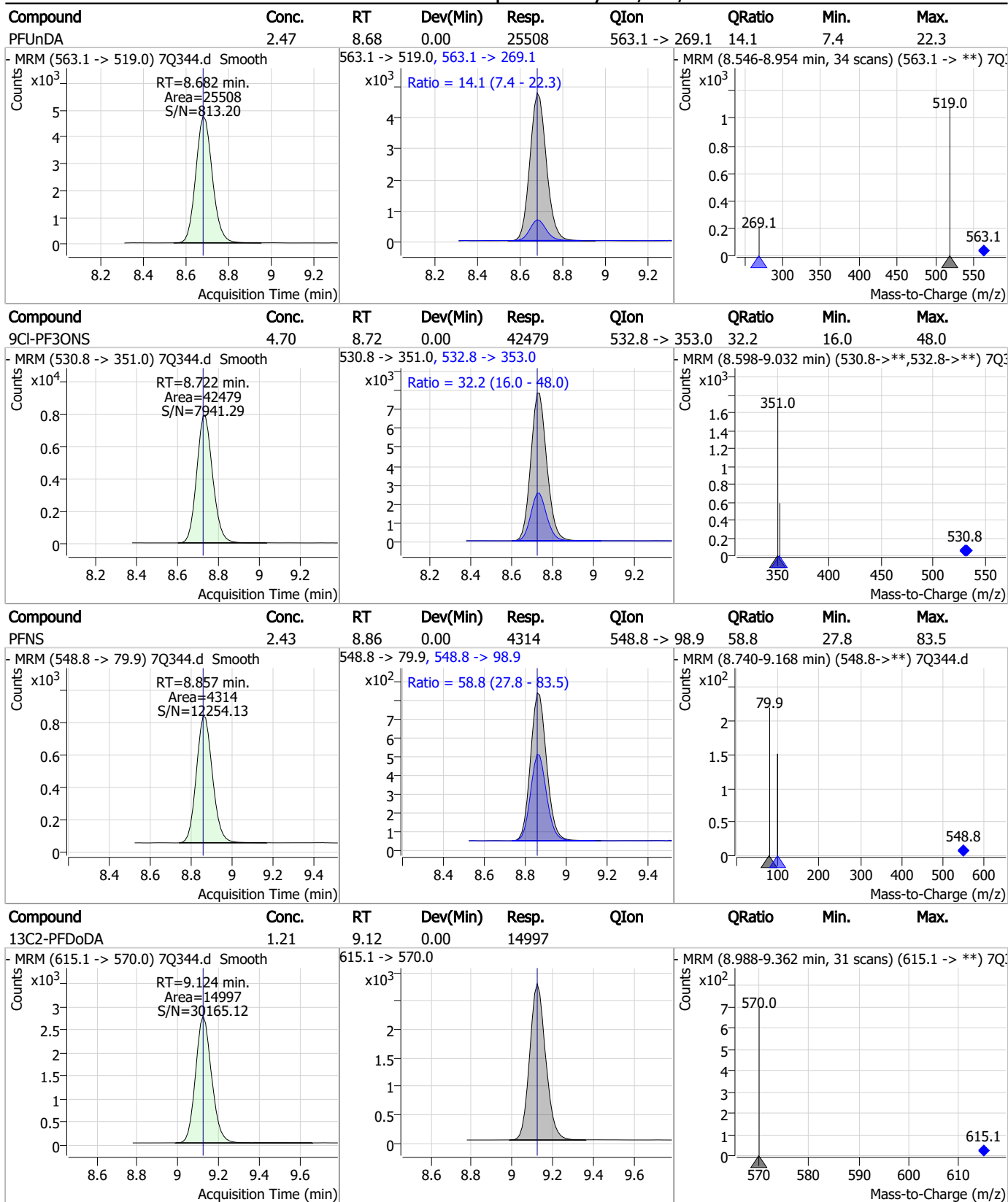
Perfluorinated Compounds by LC/MS/MS



7.7.20 7



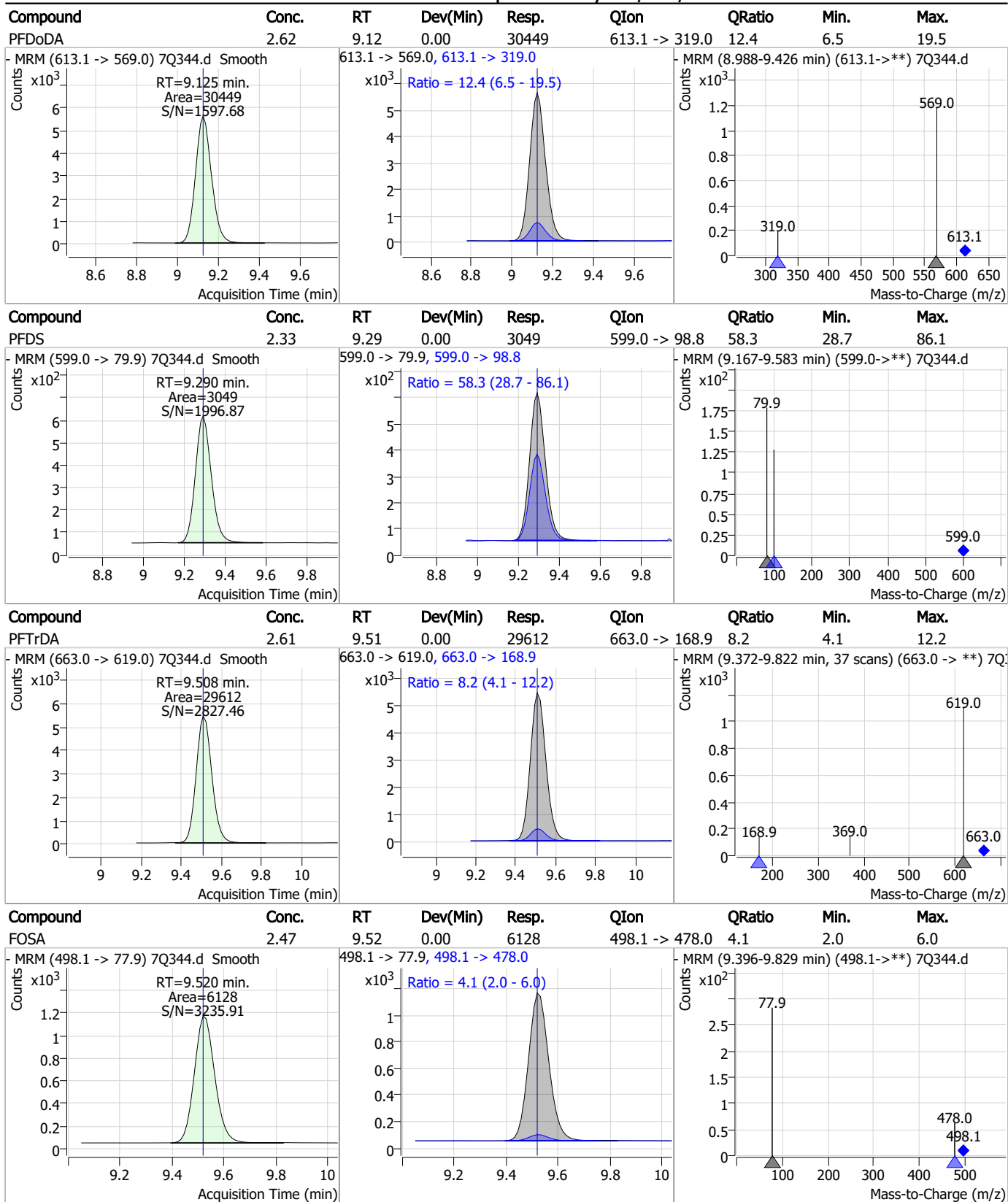
Perfluorinated Compounds by LC/MS/MS



7.7.20

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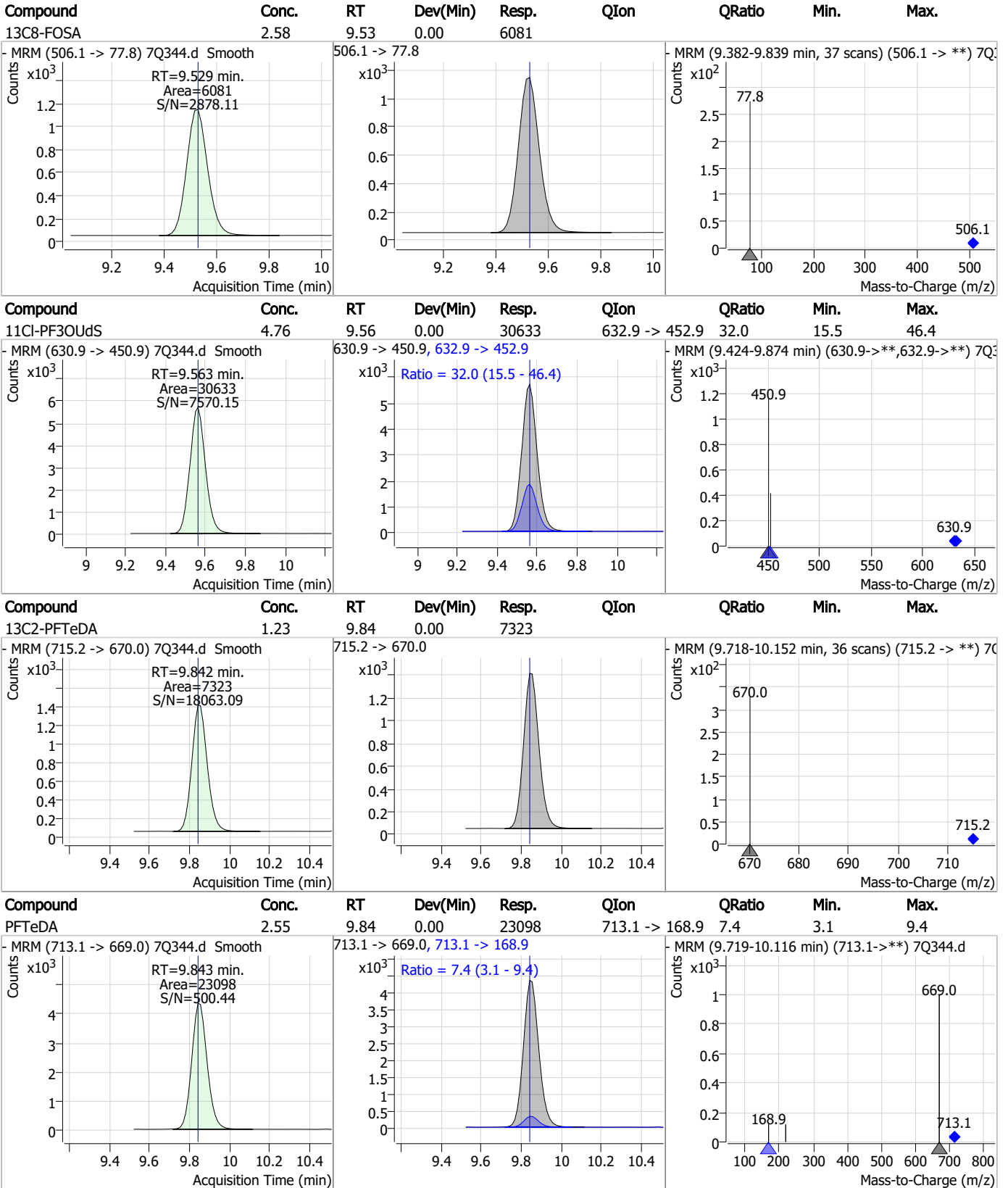
Perfluorinated Compounds by LC/MS/MS



7.7.20

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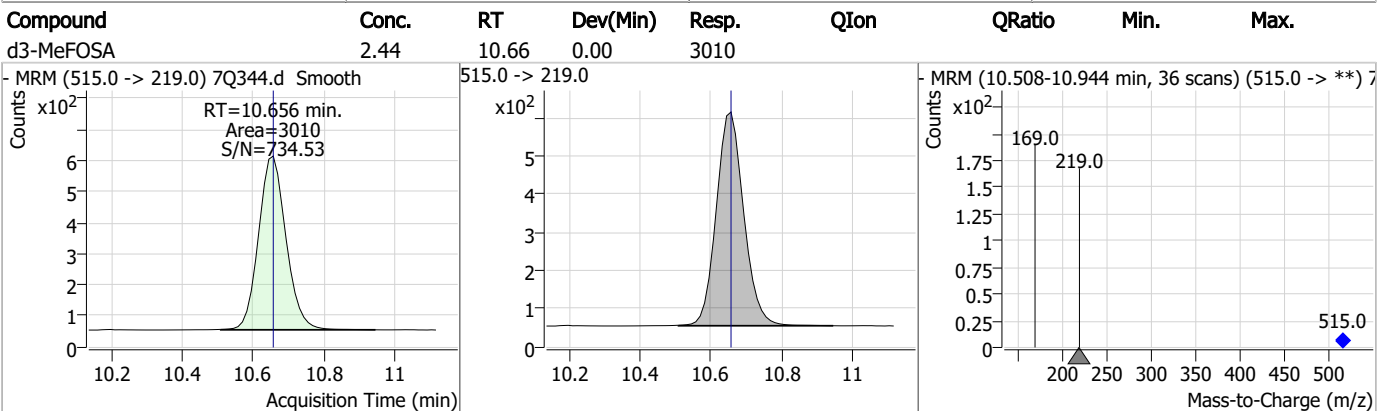
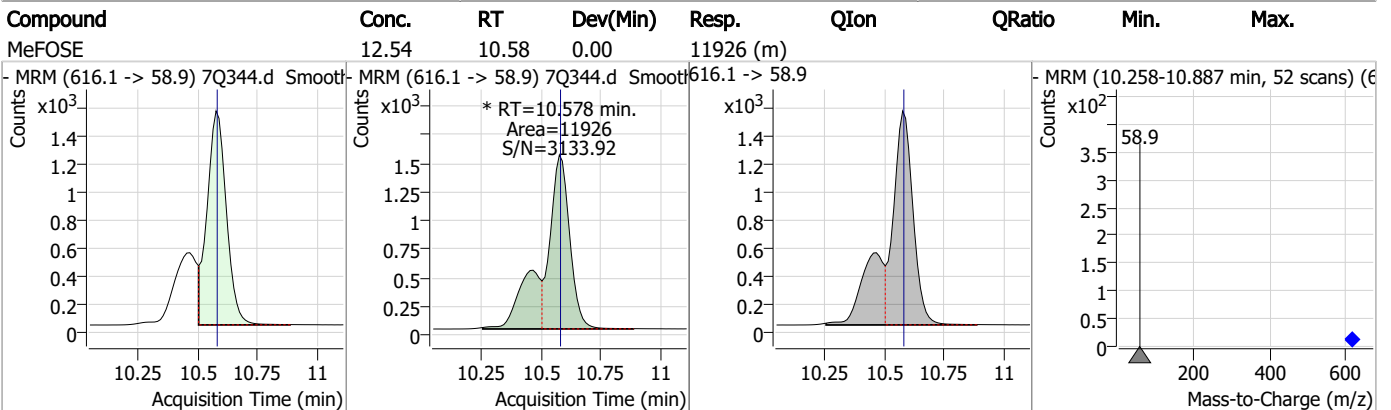
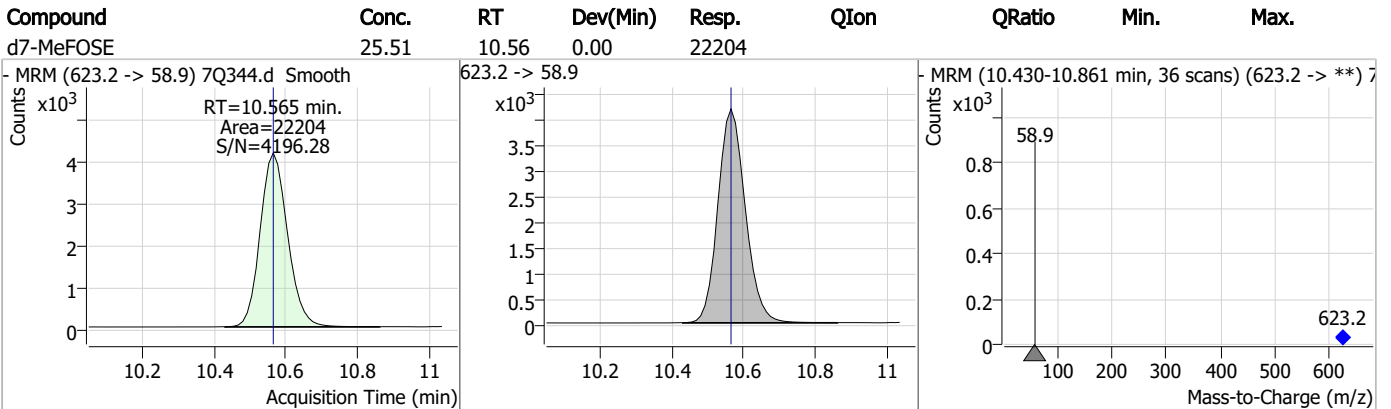
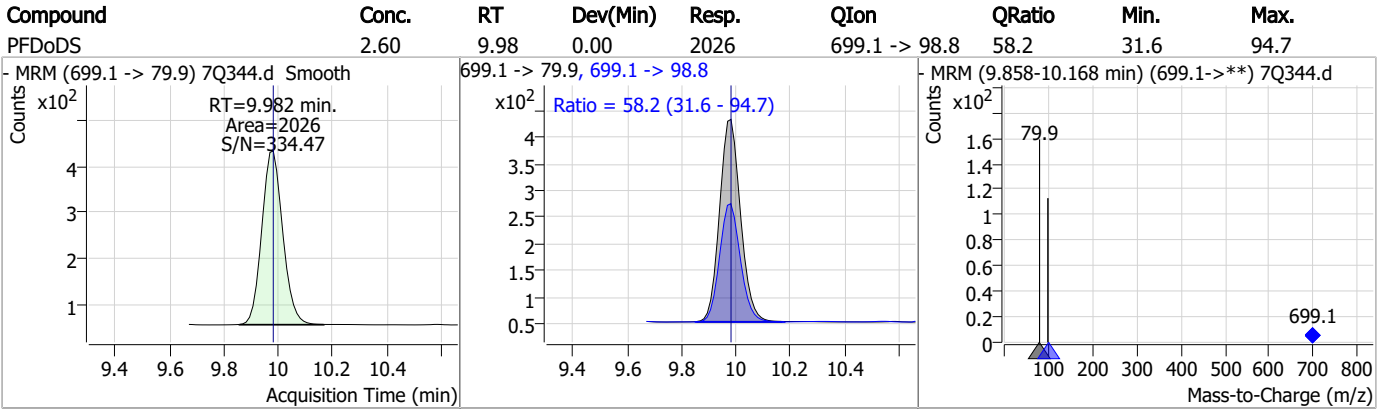
Perfluorinated Compounds by LC/MS/MS



7.7.20 7



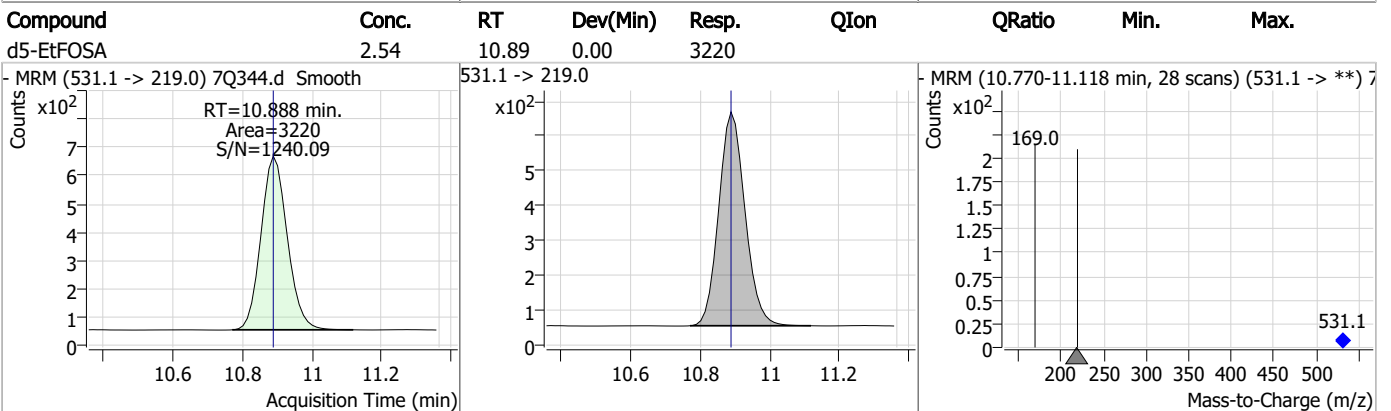
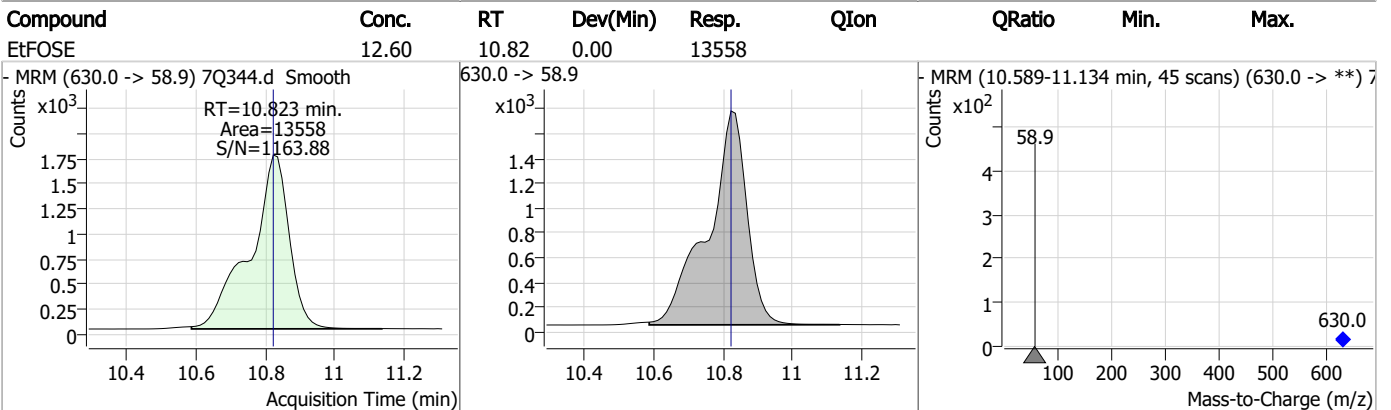
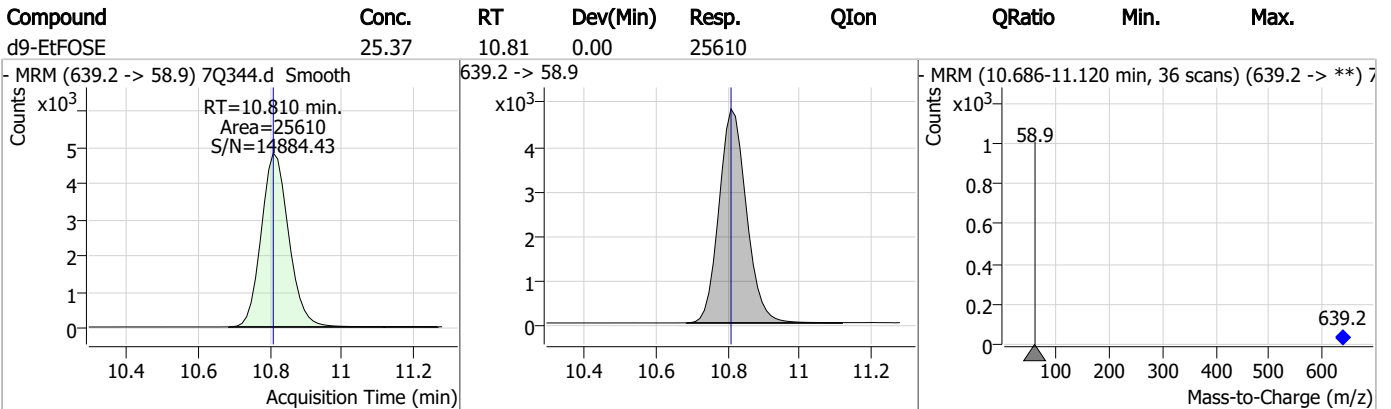
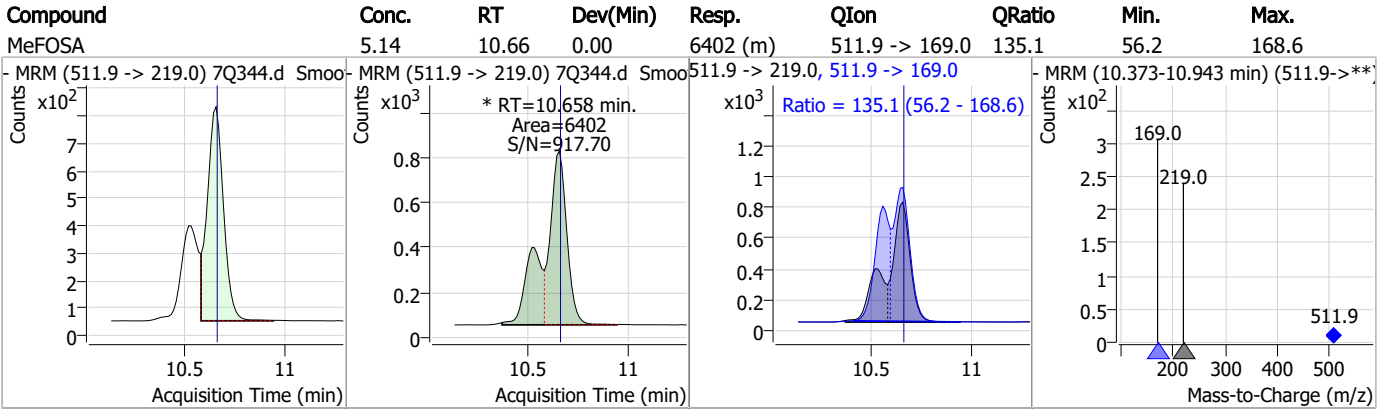
Perfluorinated Compounds by LC/MS/MS



7.7.20 7



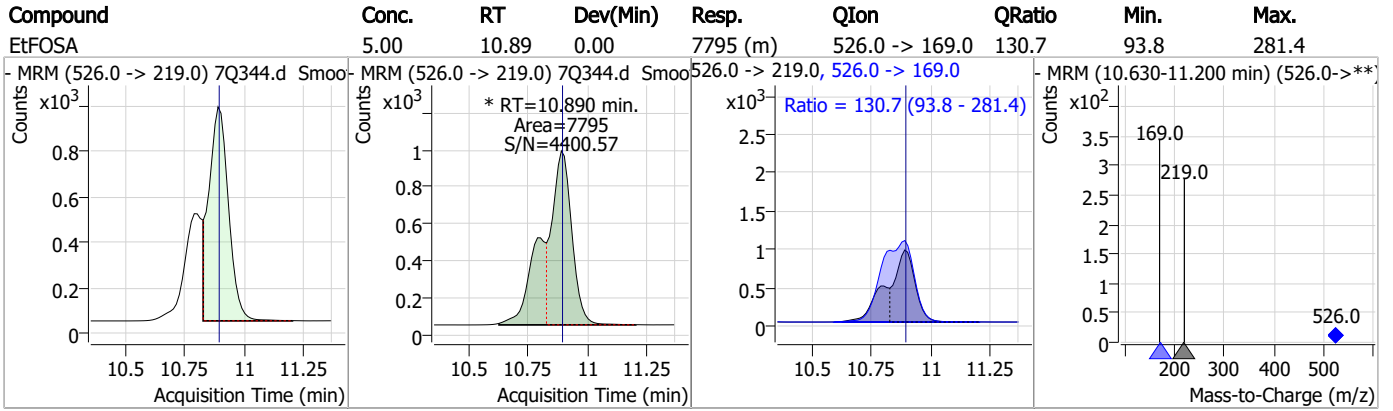
Perfluorinated Compounds by LC/MS/MS



7.7.20 7



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-ICC11 Method: EPA DRAFT 1633
Lab FileID: 7Q344.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 15:38 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q345.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 3:52:12 PM
 Sample Name : ic11-5
 Vial : P1-A6
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	103410	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	34983	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	30827	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	27185	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	35258	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	13514	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	13023	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	17094	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	15931	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7820	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	6456	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	7180	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5526	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4363	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	809	5.00 µg/L	0.000
M2-6:2FTS	6.927	429.1 -> 80.9	2081	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2790	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	9672	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	57589	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7909	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	23431	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	27543	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3348	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3368	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4708	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	49244	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3763	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	37343	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	12663	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15508	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	25406	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	809	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-6:2FTS	6.927	429.1 -> 80.9	2081	5.45 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.0%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2790	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15931	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7820	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C3-PFBS	5.484	302.1 -> 79.9	7180	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C3-PFHxS	7.293	402.1 -> 79.9	5526	2.53 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C4-PFBA	2.885	216.8 -> 171.9	103410	9.93 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C4-PFHpA	6.509	367.1 -> 322.0	27185	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	5.554	318.0 -> 273.0	30827	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.312	268.3 -> 223.0	34983	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C6-PFDA	8.215	519.1 -> 474.1	13023	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.9%	
13C7-PFUnDA	8.682	570.0 -> 525.1	17094	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C8-FOSA	9.530	506.1 -> 77.8	6456	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C8-PFOA	7.165	421.1 -> 376.0	35258	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-PFOS	8.379	507.1 -> 79.9	4363	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C9-PFNA	7.720	472.1 -> 427.0	13514	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.7%	
d3-MeFOSAA	8.261	573.2 -> 419.0	9672	5.33 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	57589	10.07 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
d3-MeFOSA	10.656	515.0 -> 219.0	3368	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.3%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7909	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d7-MeFOSE	10.565	623.2 -> 58.9	23431	25.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d9-EtFOSE	10.810	639.2 -> 58.9	27543	26.03 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.1%	
d5-EtFOSA	10.888	531.1 -> 219.0	3348	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	24062	18.94 µg/L	100
		327.1 -> 80.9	8437		
6:2FTS	6.927	427.1 -> 407.0	40277	18.31 µg/L	98
		427.1 -> 80.9	12346		
8:2FTS	7.992	527.1 -> 507.0	46947	17.61 µg/L	99
		527.1 -> 80.8	12534		
EtFOSAA	8.470	584.2 -> 419.1	6169	4.83 µg/L	m 96
		584.2 -> 526.0	4124		
FOSA	9.520	498.1 -> 77.9	13003	4.94 µg/L	98
		498.1 -> 478.0	590		
MeFOSAA	8.262	570.1 -> 419.0	8056	4.73 µg/L	m 91
		570.1 -> 483.0	1731		
PFBA	2.893	212.8 -> 168.9	74092	19.78 µg/L	100
PFBS	5.485	298.7 -> 79.9	11787	4.35 µg/L	100
		298.7 -> 98.8	4816		
PFDA	8.215	512.9 -> 469.0	60014	5.02 µg/L	98
		512.9 -> 219.0	9843		
PFDoDA	9.125	613.1 -> 569.0	63362	5.13 µg/L	98
		613.1 -> 319.0	7679		
PFDS	9.290	599.0 -> 79.9	6523	4.54 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3819			
PFHpA	6.522	363.1 -> 319.0	66661	4.96	µg/L	100
		363.1 -> 169.0	11704			
PFHpS	7.873	449.0 -> 79.9	10194	4.62	µg/L	100
		449.0 -> 98.9	5627			
PFHxA	5.556	313.0 -> 269.0	55710	4.91	µg/L	100
		313.0 -> 118.9	2802			
PFHxS	7.294	398.7 -> 79.9	11180	4.45	µg/L	m 92
		398.7 -> 98.9	5858			
PFNA	7.721	463.0 -> 419.0	52599	4.87	µg/L	97
		463.0 -> 219.0	11849			
PFNS	8.870	548.8 -> 79.9	8785	4.52	µg/L	95
		548.8 -> 98.9	5216			
PFOA	7.167	413.0 -> 369.0	88795	4.99	µg/L	100
		413.0 -> 169.0	17091			
PFOS	8.380	498.9 -> 79.9	9648	4.53	µg/L	m 81
		498.9 -> 98.8	5185			
PFPeA	4.314	263.0 -> 219.0	86182	9.87	µg/L	100
PFPeS	6.574	349.1 -> 79.9	12170	4.53	µg/L	100
		349.1 -> 98.9	6007			
PFTeDA	9.855	713.1 -> 669.0	48662	5.03	µg/L	98
		713.1 -> 168.9	3364			
PFTrDA	9.508	663.0 -> 619.0	62083	5.16	µg/L	100
		663.0 -> 168.9	5057			
PFUnDA	8.682	563.1 -> 519.0	53149	4.89	µg/L	100
		563.1 -> 269.1	7895			
11CI-PF3OUdS	9.563	630.9 -> 450.9	66346	9.67	µg/L	99
		632.9 -> 452.9	20047			
9CI-PF3ONS	8.733	530.8 -> 351.0	90026	9.35	µg/L	100
		532.8 -> 353.0	28595			
ADONA	6.771	376.9 -> 250.9	196047	9.54	µg/L	100
		376.9 -> 84.8	56760			
HFPO-DA	5.944	284.9 -> 168.9	54391	9.91	µg/L	97
		284.9 -> 184.9	9025			
3:3FTCA	3.736	241.0 -> 177.0	10749	24.18	µg/L	99
		241.0 -> 117.0	1266			
5:3FTCA	6.187	341.0 -> 237.1	186958	126.80	µg/L	100
		341.0 -> 217.0	139681			
7:3FTCA	7.624	441.0 -> 316.9	84682	125.75	µg/L	98
		441.0 -> 336.9	188228			
EtFOSA	10.890	526.0 -> 219.0	16262	10.03	µg/L	m 61
		526.0 -> 169.0	21222			
EtFOSE	10.823	630.0 -> 58.9	28220	24.38	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	13510	9.69	µg/L	m 77
		511.9 -> 169.0	18537			
MeFOSE	10.578	616.1 -> 58.9	25700	25.61	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	3957	4.63	µg/L	97
		699.1 -> 98.8	2399			
NFDHA	5.437	295.0 -> 201.0	25647	9.95	µg/L	98
		295.0 -> 84.9	7045			
PFMBA	4.738	279.0 -> 85.1	55614	9.95	µg/L	100
PFMPA	3.443	229.0 -> 84.9	57702	9.88	µg/L	100
PFEESA	6.051	314.8 -> 134.9	81422	8.96	µg/L	100
		314.8 -> 82.9	2836			

= Qualifier out of range, m = manually integrated, + = Area summed

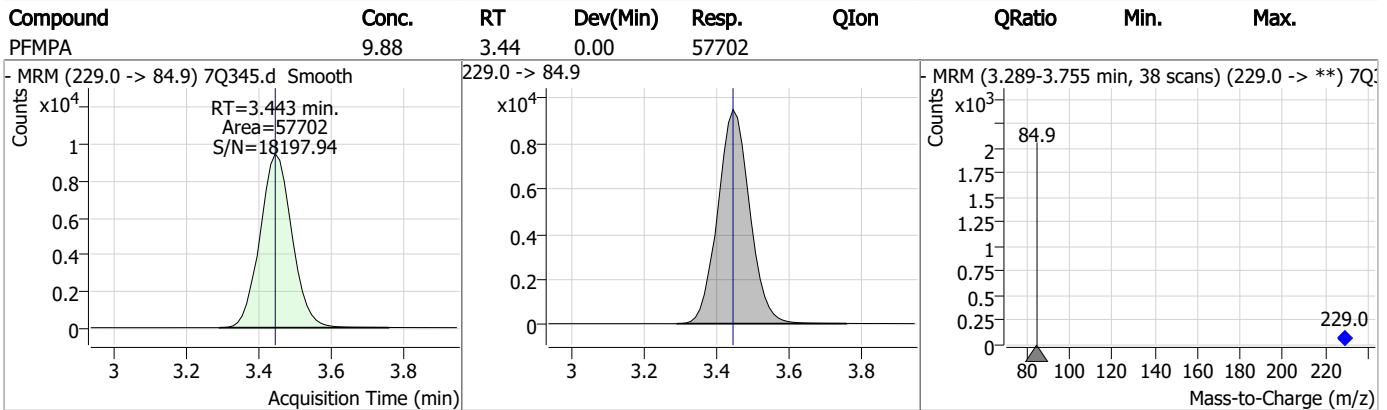
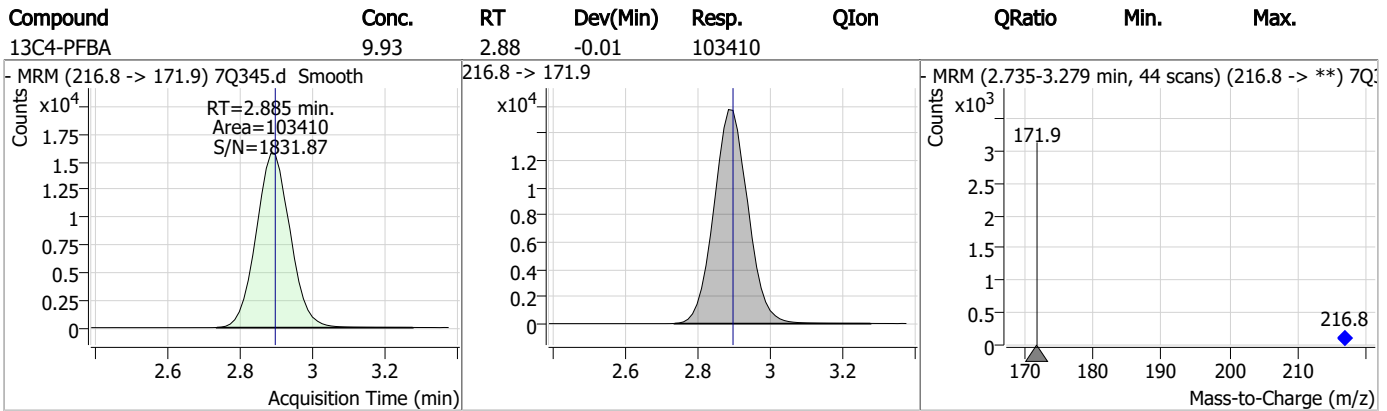
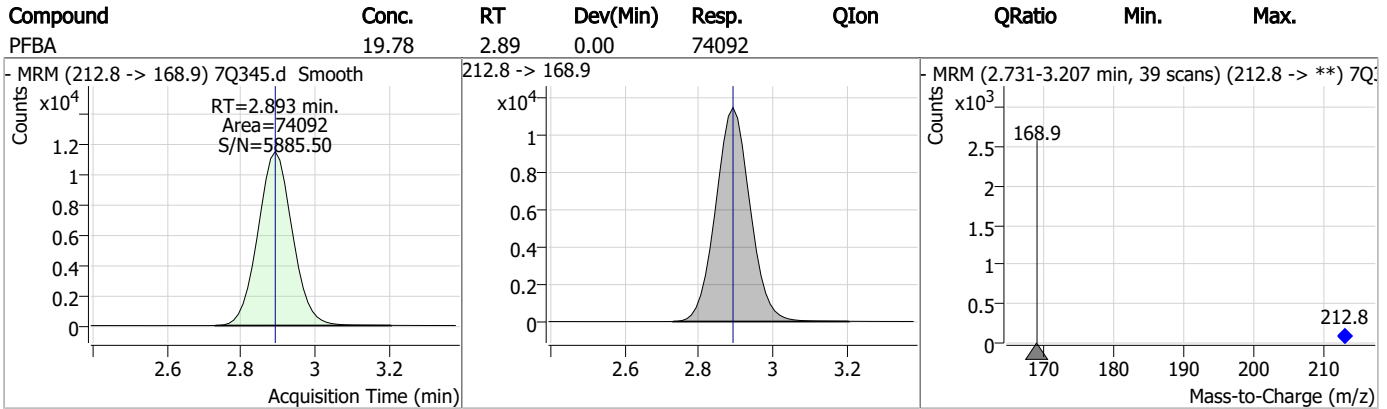
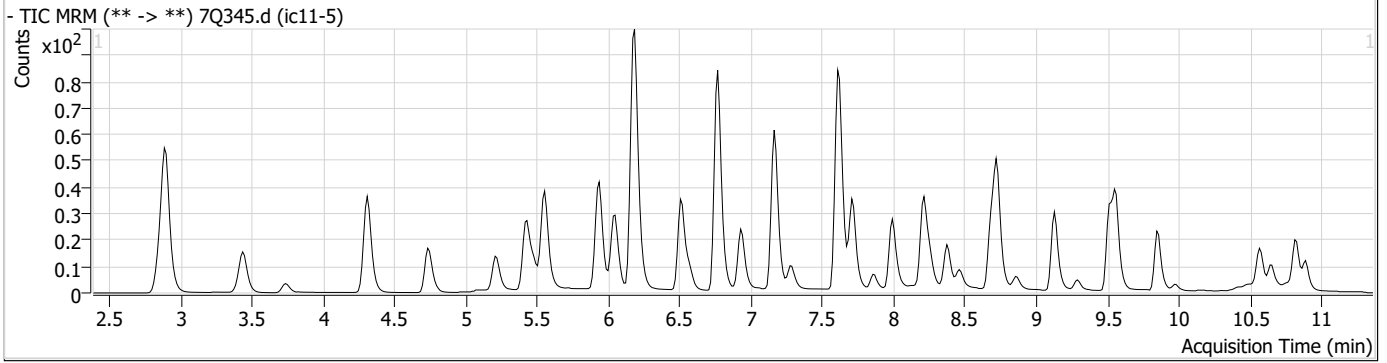
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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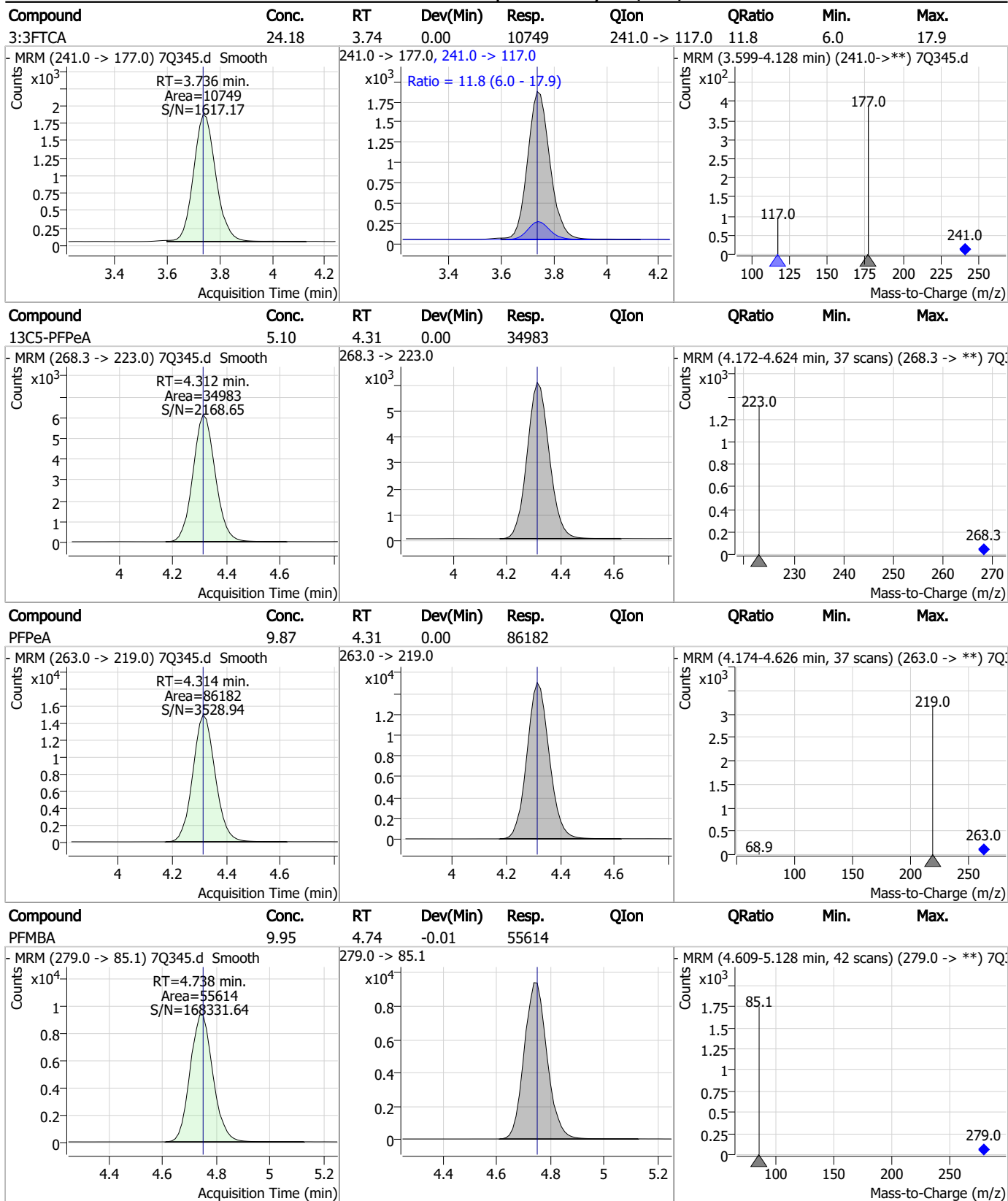
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Perfluorinated Compounds by LC/MS/MS



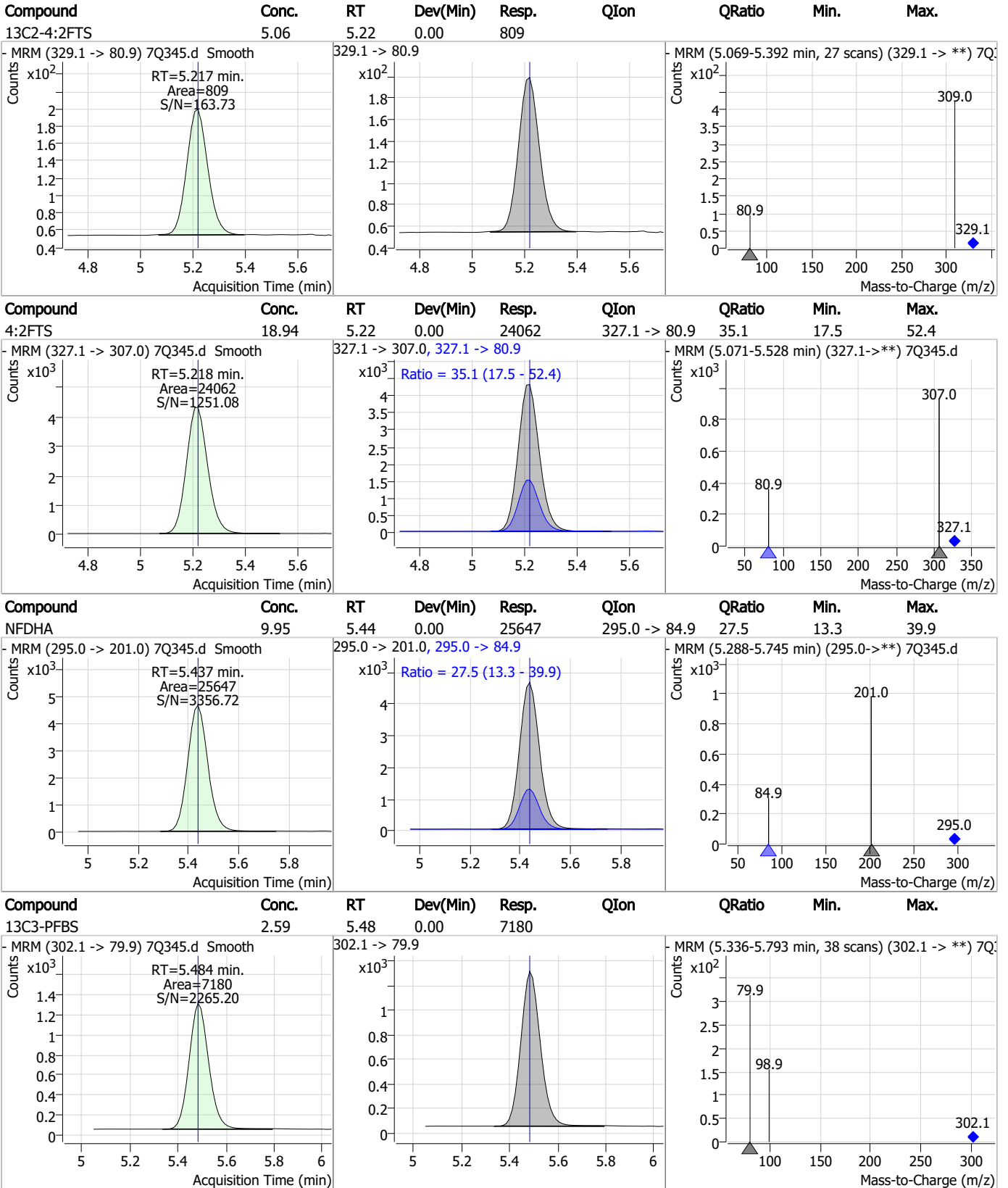
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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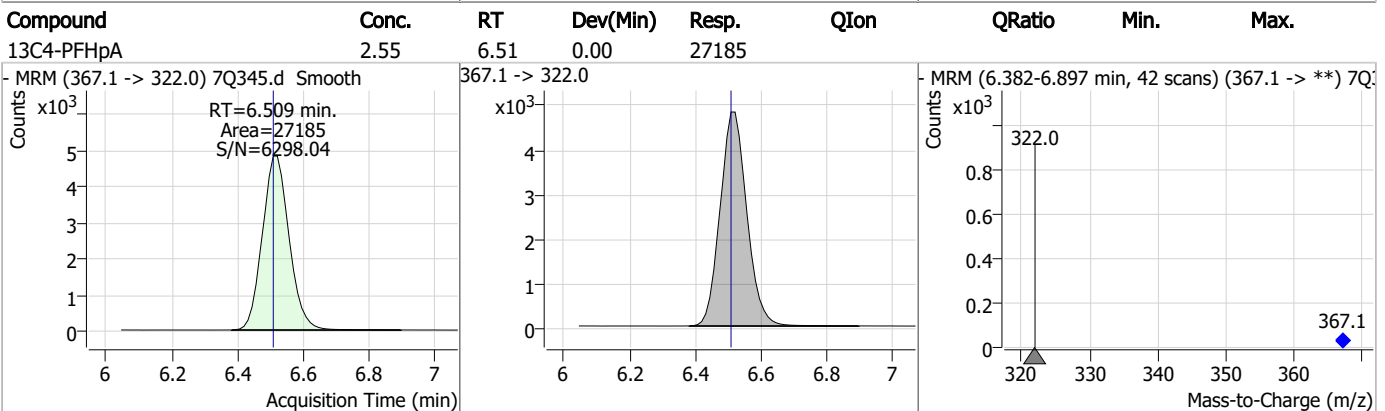
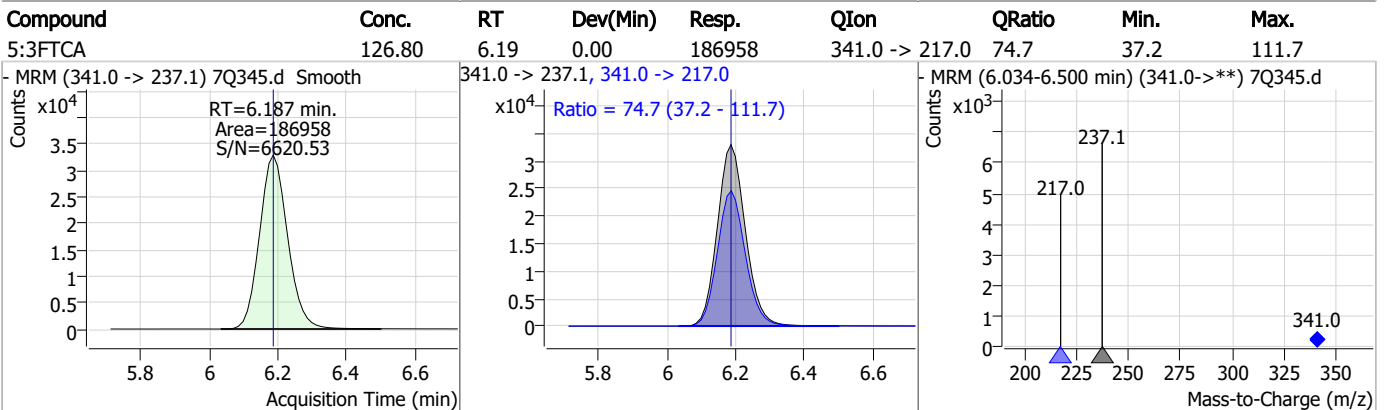
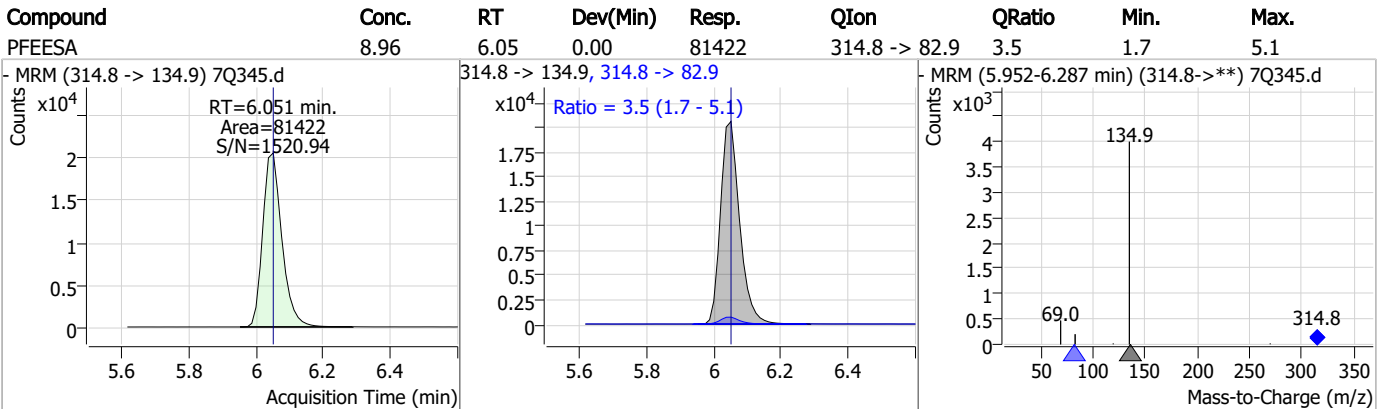
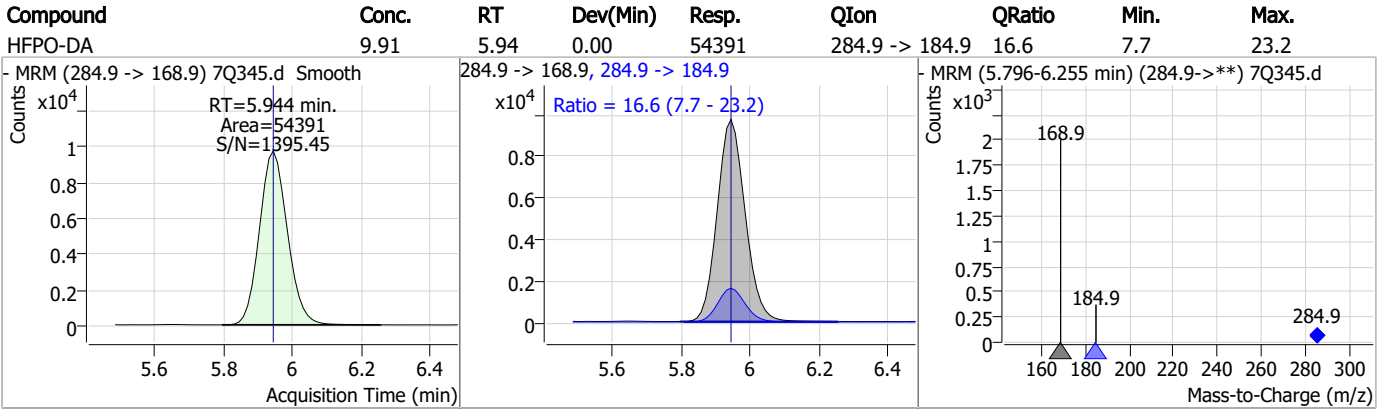
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.35	5.48	0.00	11787	298.7 -> 98.8	40.9	20.3	61.0
13C5-PFHxA	2.51	5.55	0.00	30827	318.0 -> 273.0			
PFHxA	4.91	5.56	0.00	55710	313.0 -> 118.9	5.0	2.6	7.7
13C3-HFPO-DA	10.07	5.94	0.00	57589	286.9 -> 168.9			

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Perfluorinated Compounds by LC/MS/MS

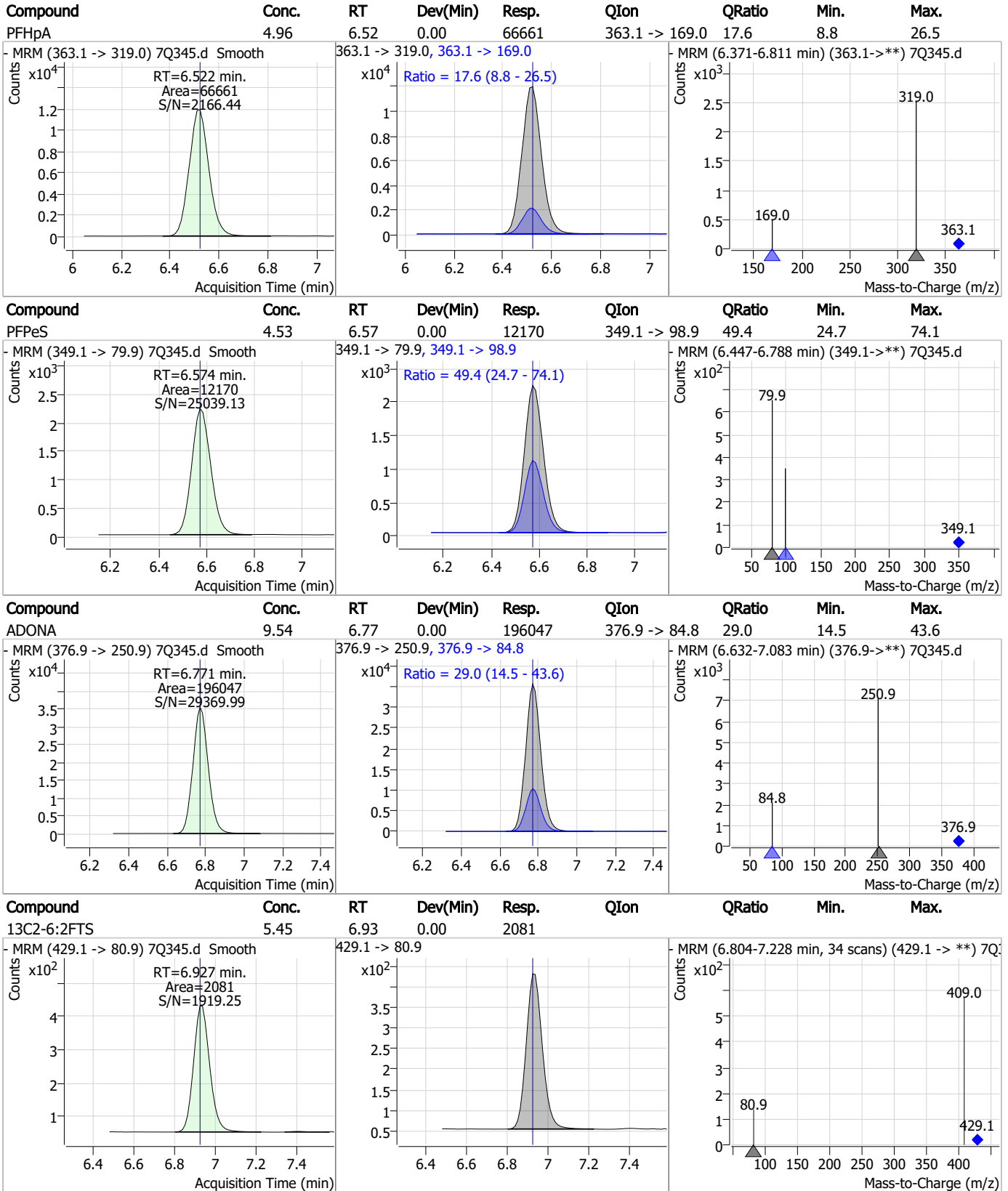


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Perfluorinated Compounds by LC/MS/MS

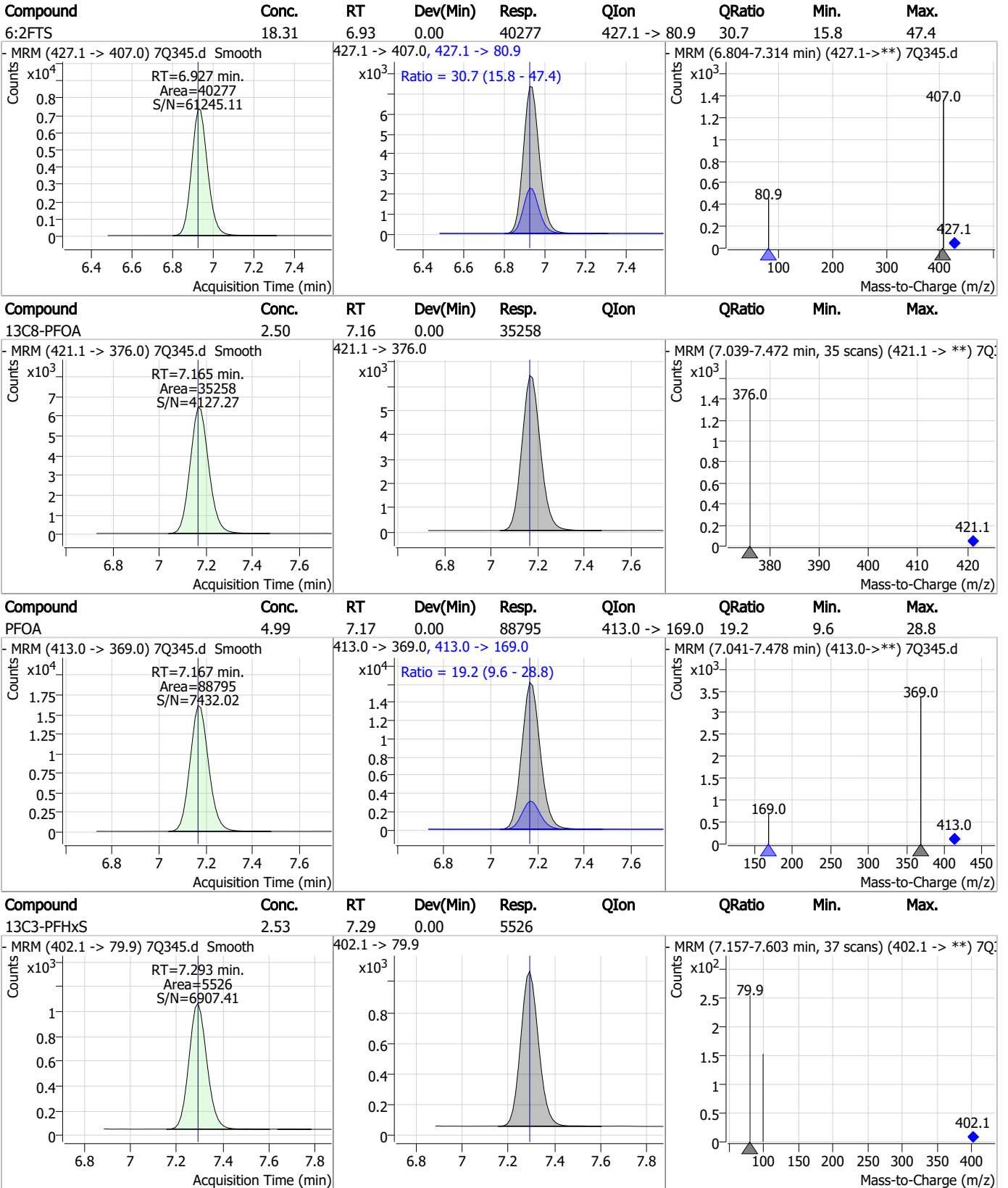


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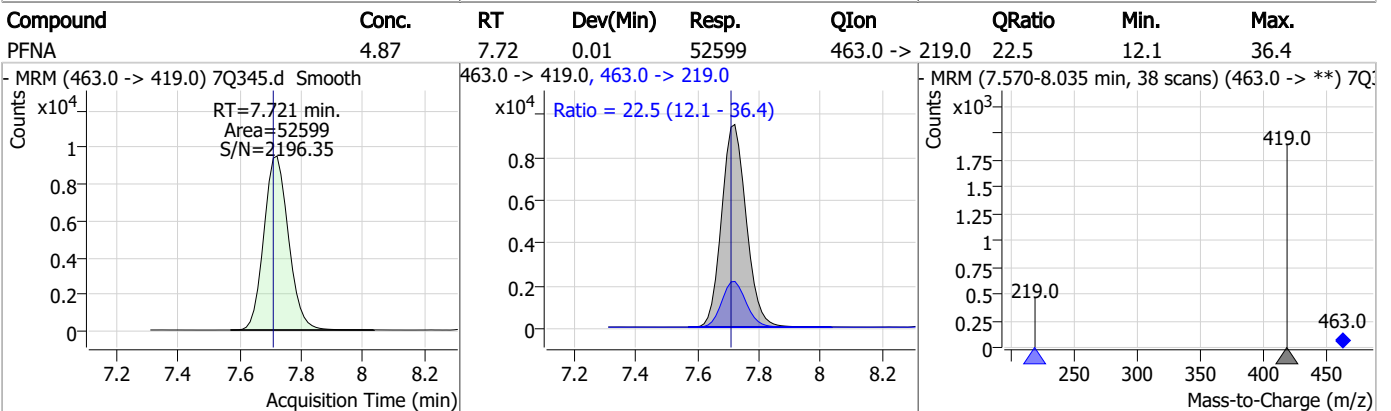
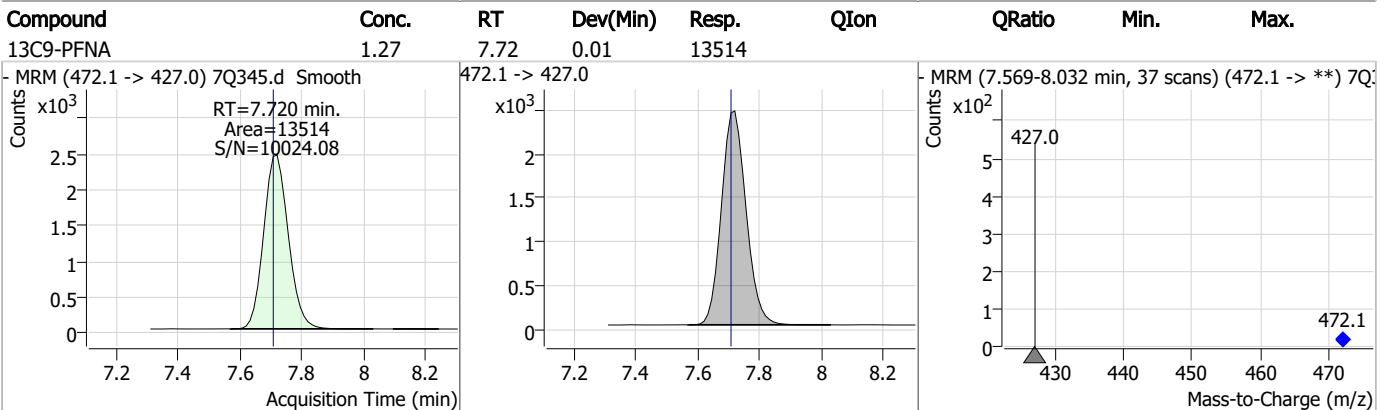
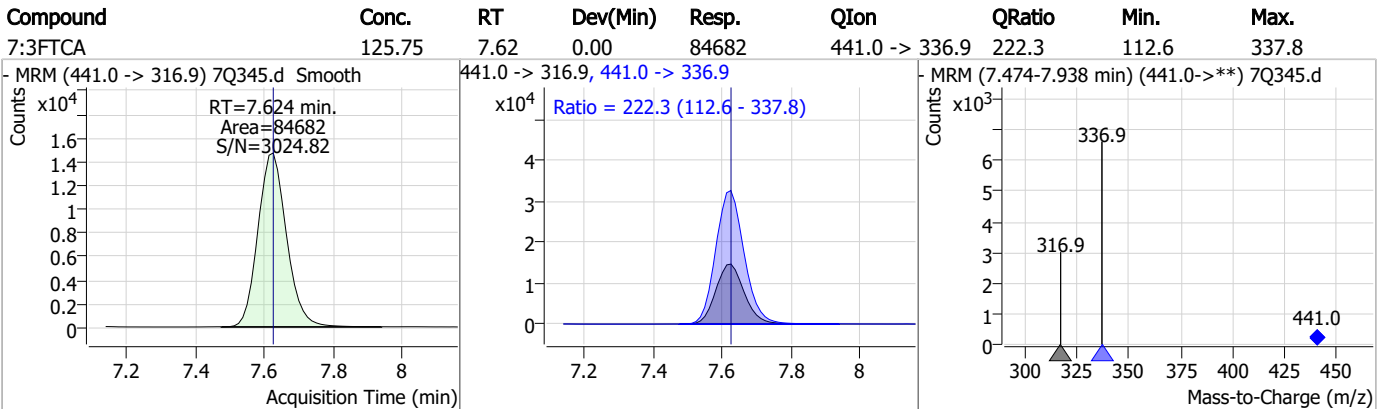
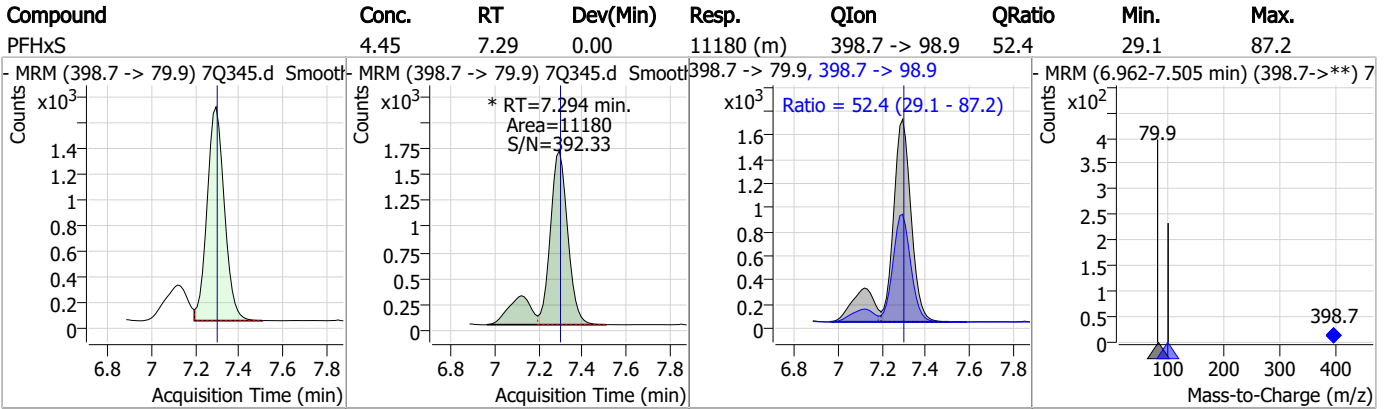
Perfluorinated Compounds by LC/MS/MS



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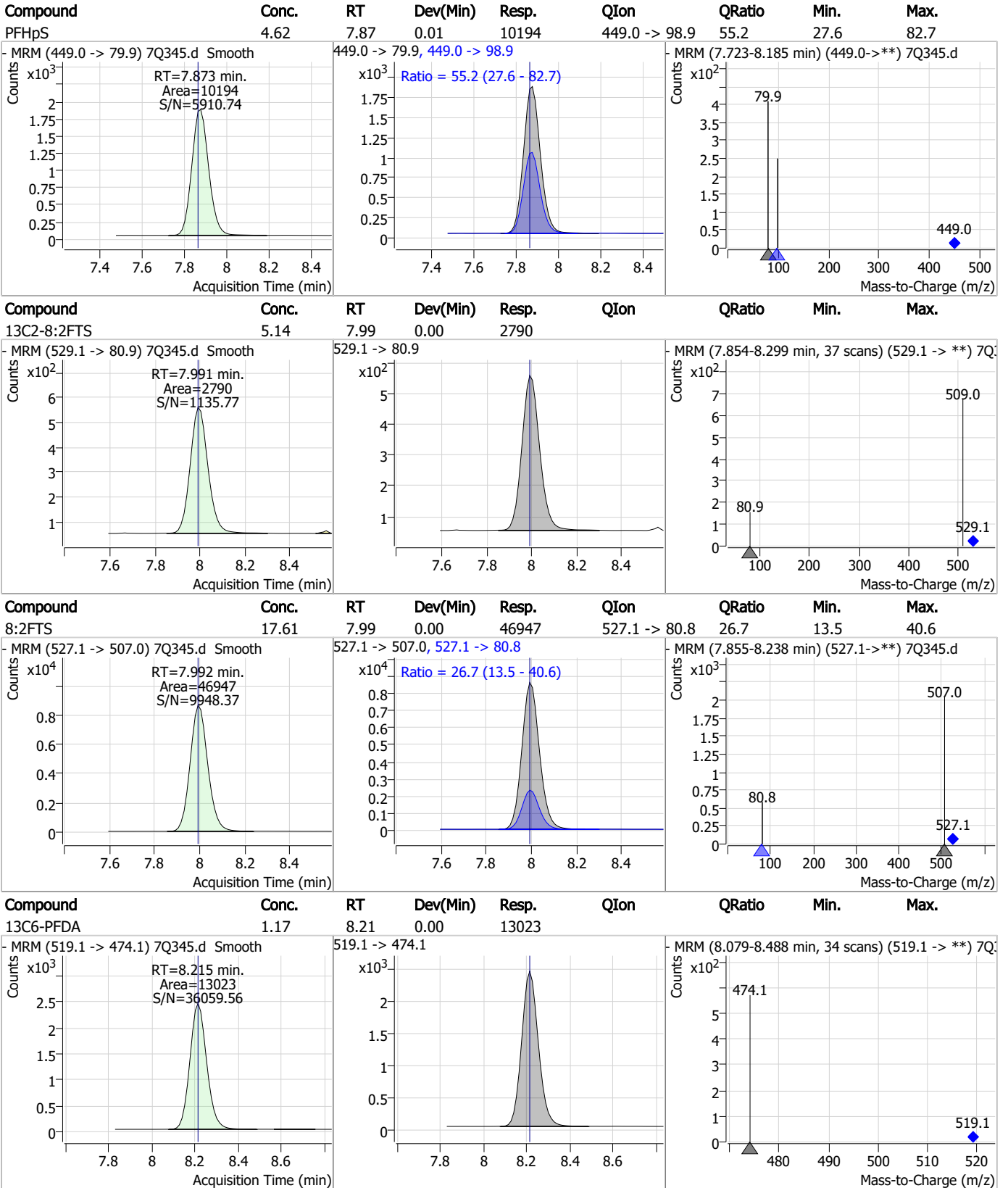
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Perfluorinated Compounds by LC/MS/MS



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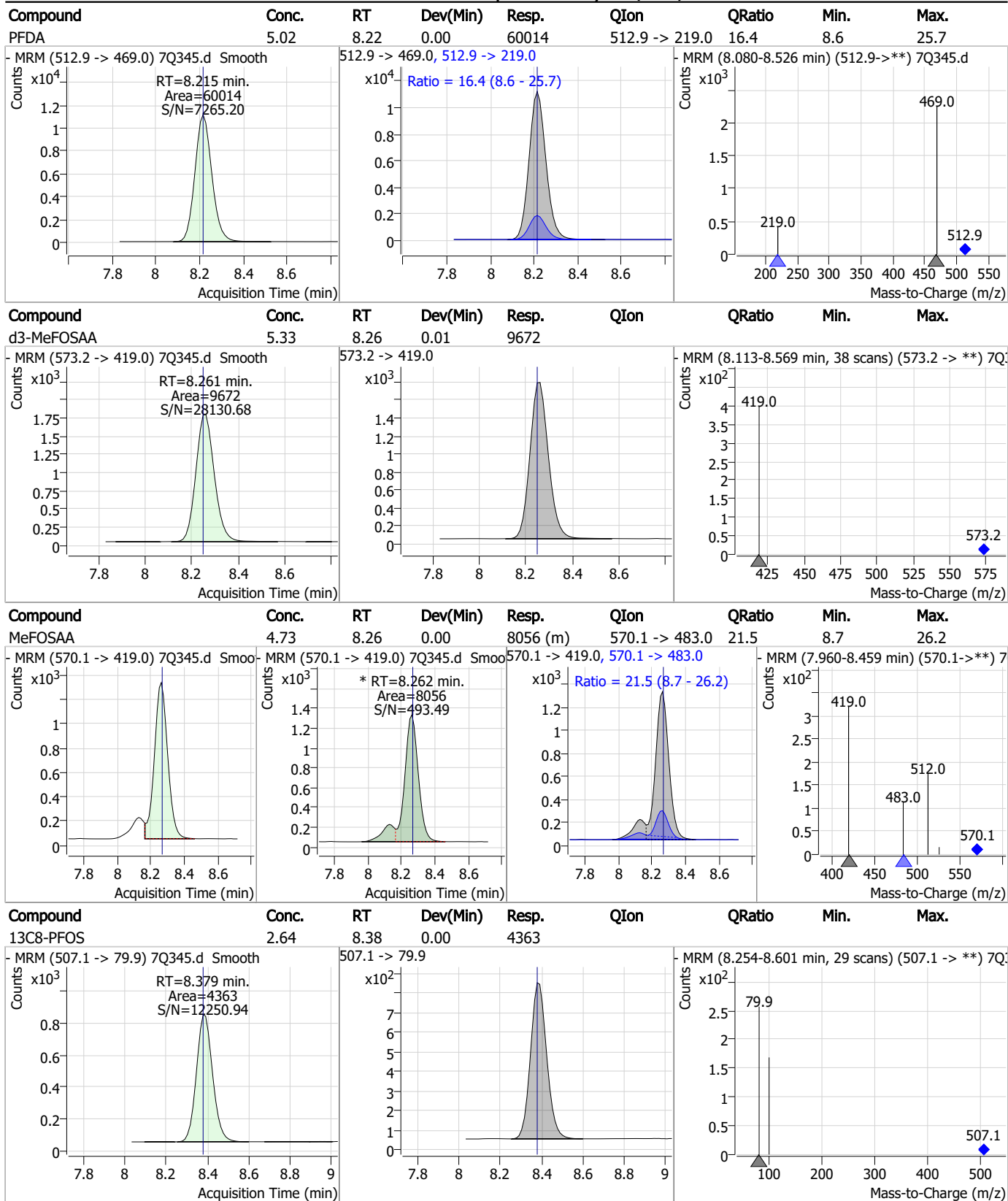
Perfluorinated Compounds by LC/MS/MS



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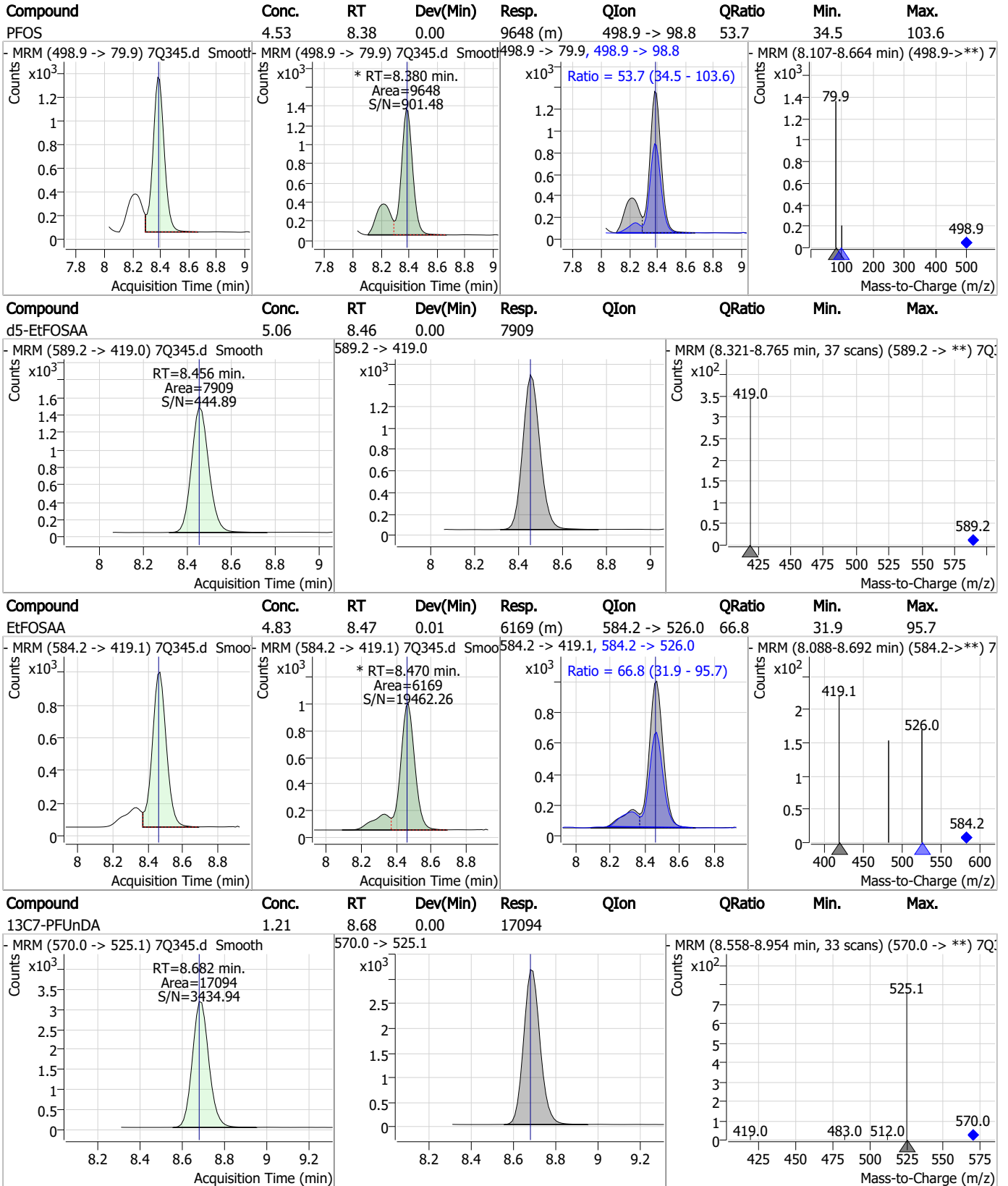


Perfluorinated Compounds by LC/MS/MS



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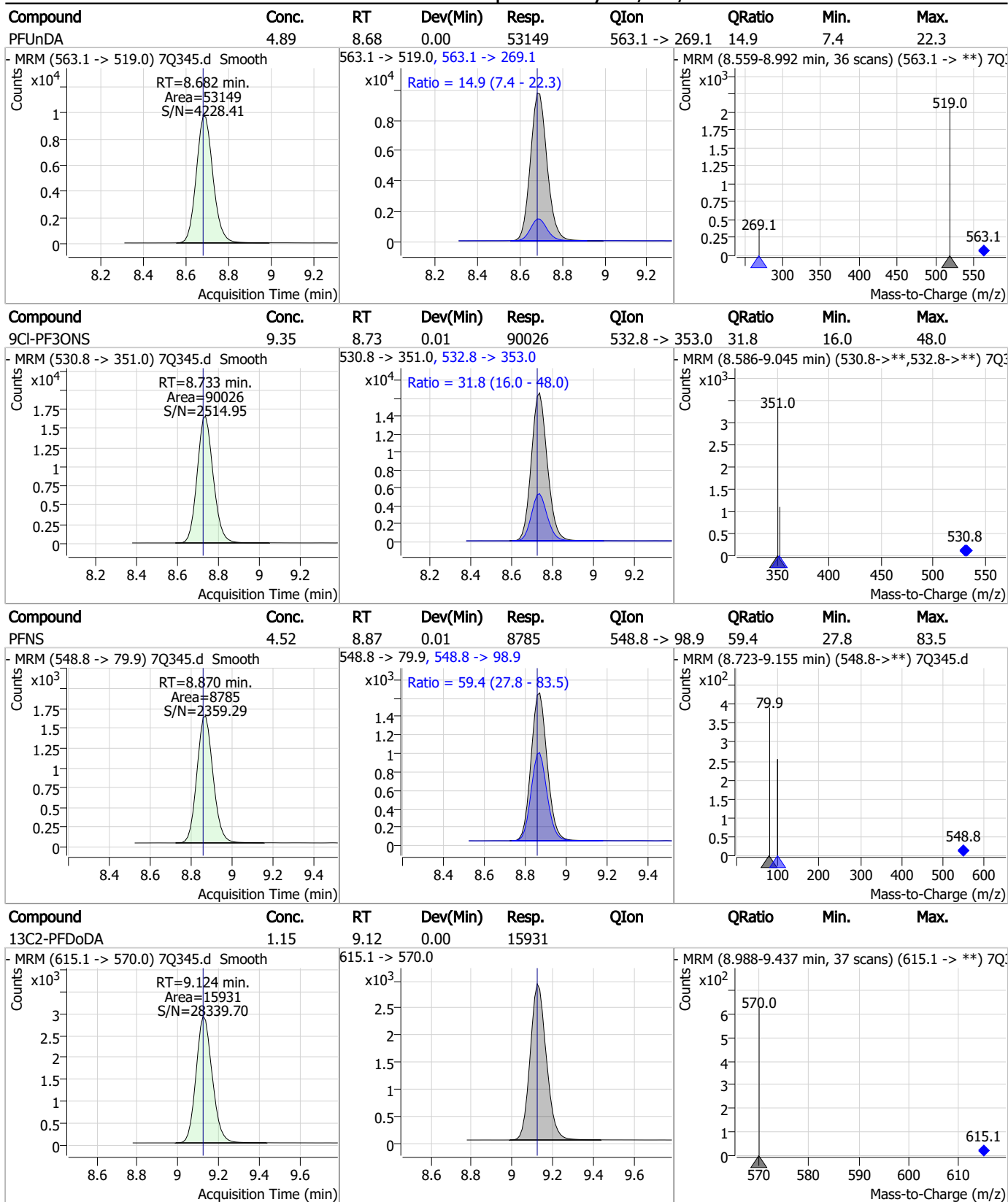
Perfluorinated Compounds by LC/MS/MS



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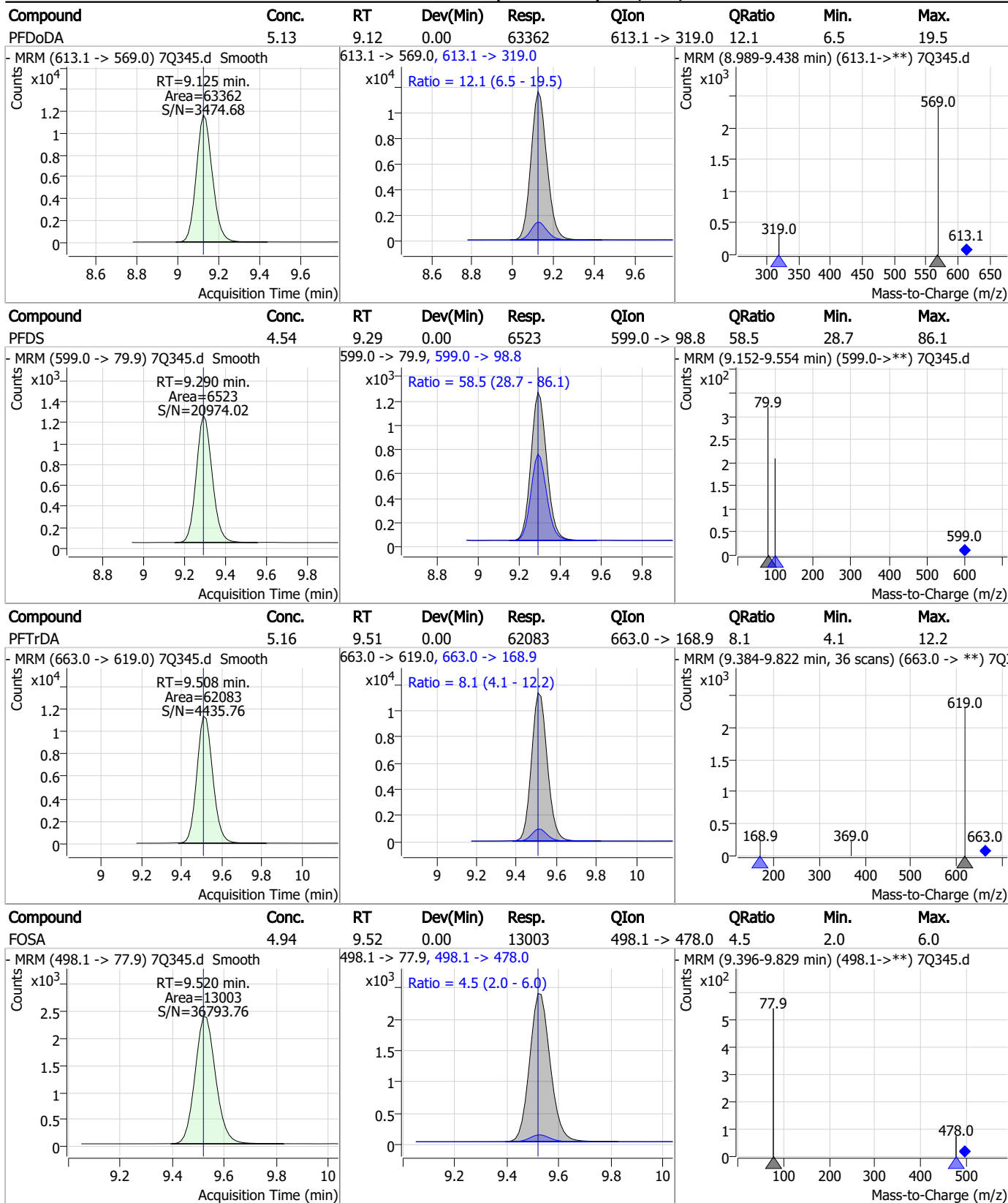
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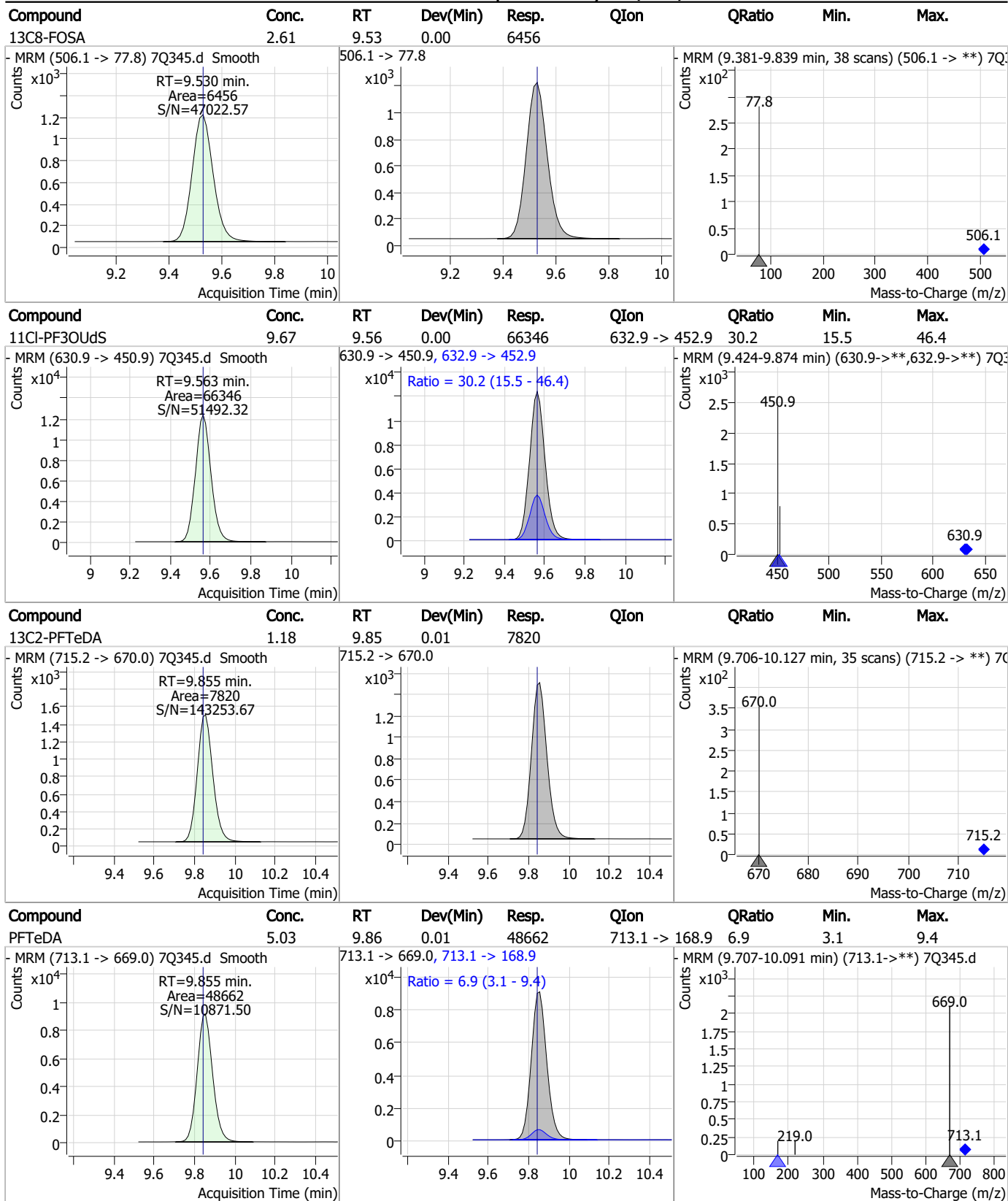
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Perfluorinated Compounds by LC/MS/MS



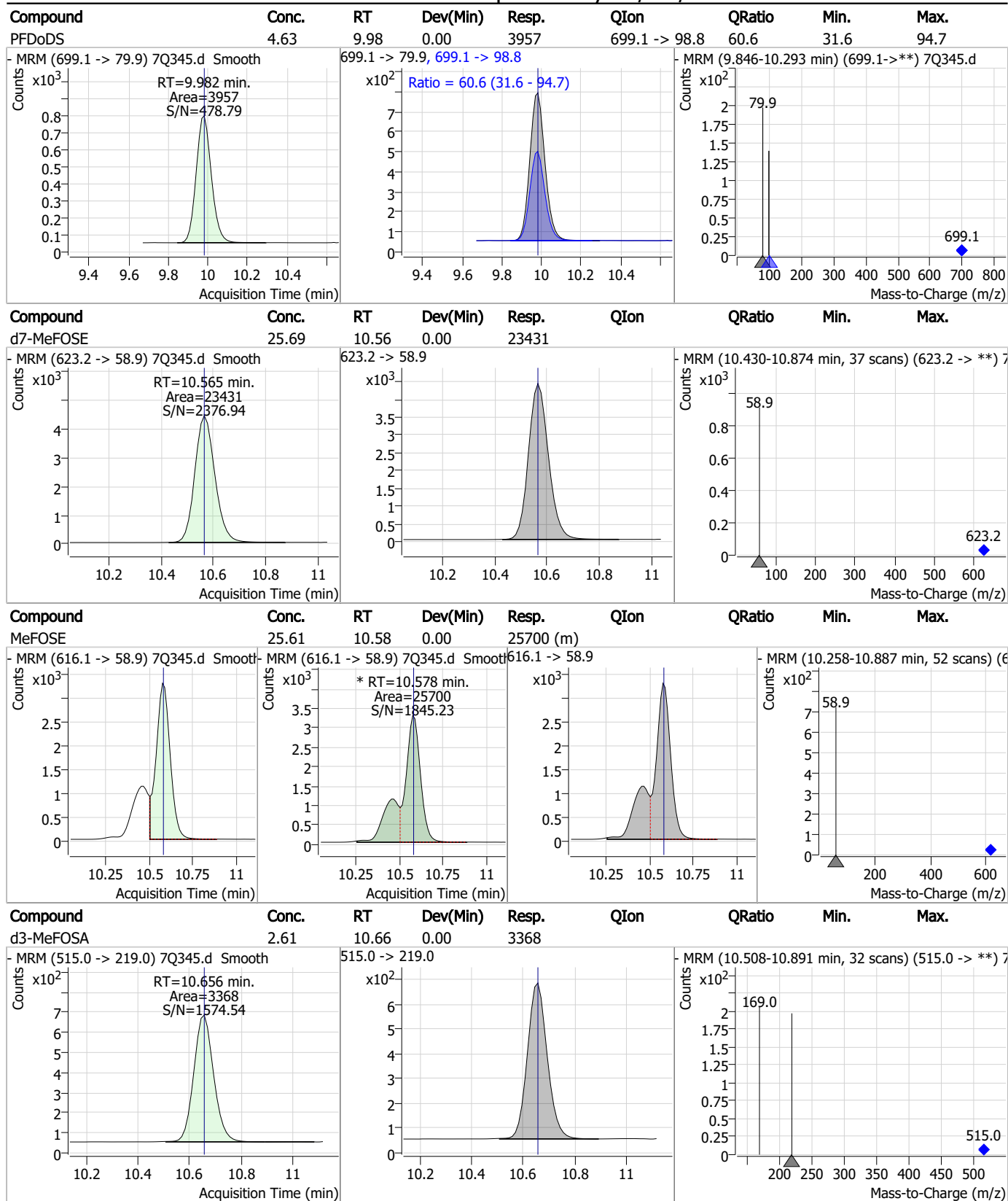
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Perfluorinated Compounds by LC/MS/MS



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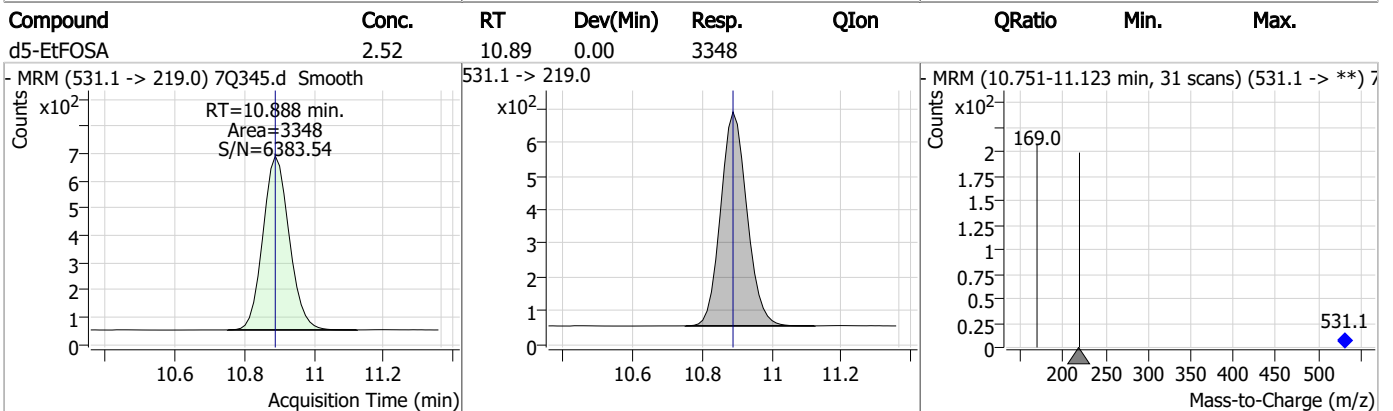
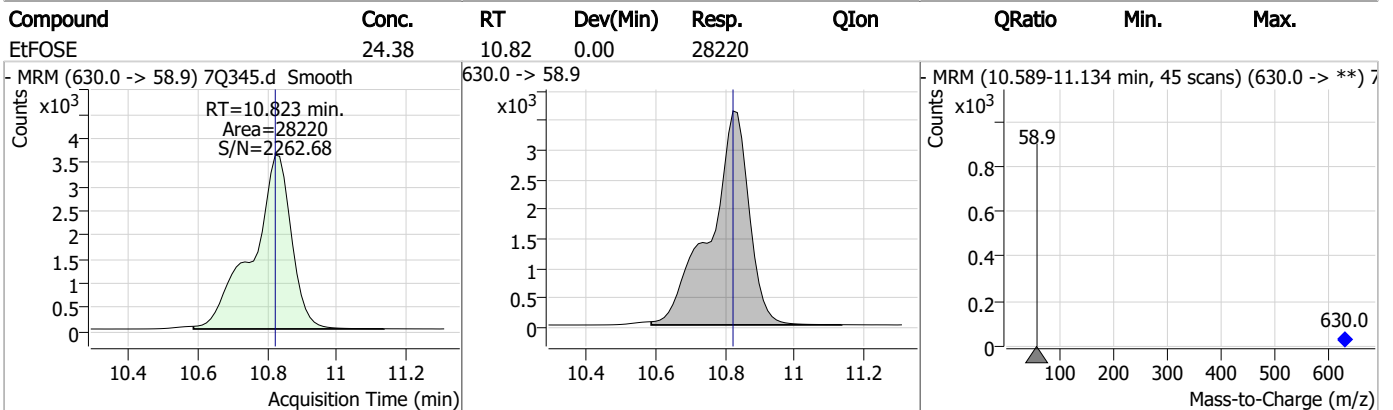
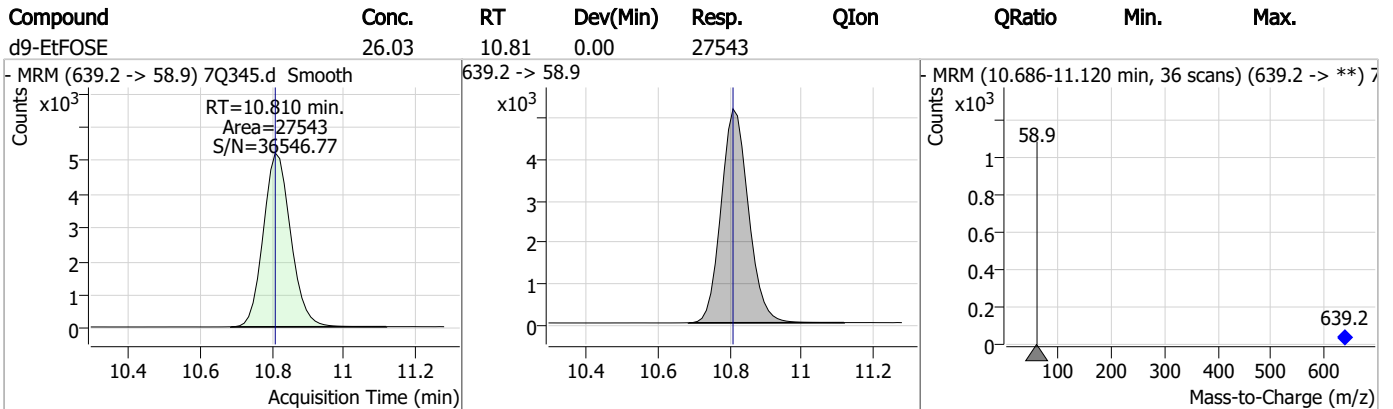
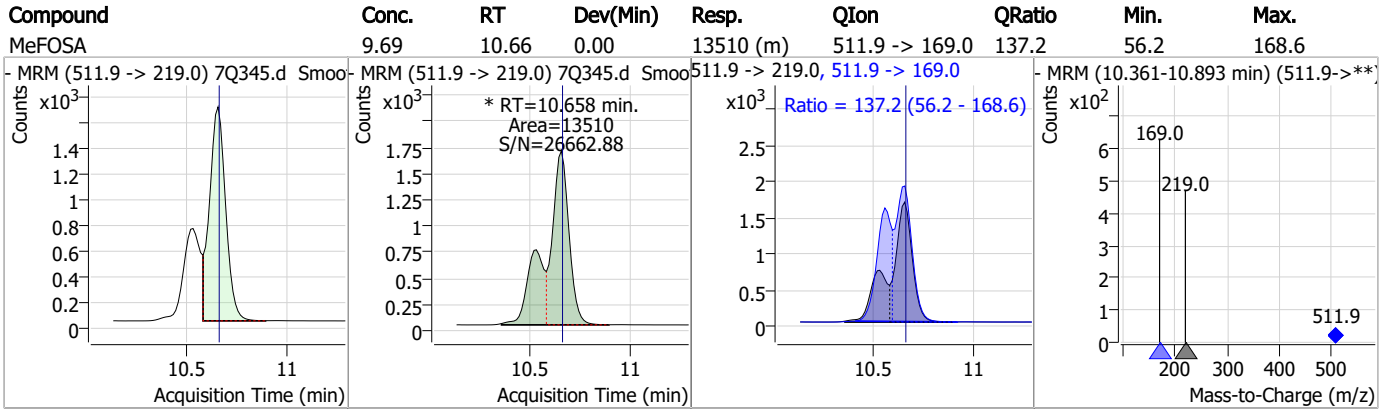
Perfluorinated Compounds by LC/MS/MS



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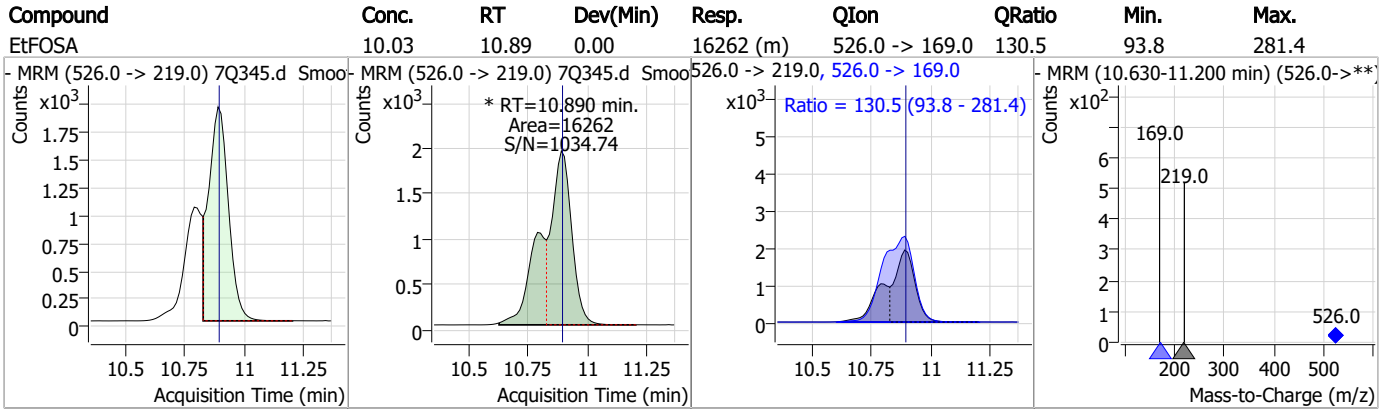
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-IC11 Method: EPA DRAFT 1633
Lab FileID: 7Q345.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 15:52 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q346.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 4:05:59 PM
 Sample Name : ic11-6
 Vial : P1-A7
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	102134	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	34251	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	30904	2.50 µg/L	0.000
M4-PFHpA	6.521	367.1 -> 322.0	27149	2.50 µg/L	0.012
M8-PFOA	7.177	421.1 -> 376.0	36471	2.50 µg/L	0.012
M9-PFNA	7.720	472.1 -> 427.0	13240	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	12916	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16216	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	15656	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7756	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	6450	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6843	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5409	2.50 µg/L	0.000
M8-PFOS	8.391	507.1 -> 79.9	4232	2.50 µg/L	0.012
M2-4:2FTS	5.217	329.1 -> 80.9	739	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	1918	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	2586	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	9380	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	53867	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7739	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	23204	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	26729	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3497	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3291	2.50 µg/L	0.000
13C4-PFOS	8.392	502.8 -> 79.9	4815	2.50 µg/L	0.012
13C3-PFBA	2.889	216.0 -> 172.0	48189	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3786	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	37750	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11711	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15694	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	25474	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	739	4.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C2-6:2FTS	6.939	429.1 -> 80.9	1918	4.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2586	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15656	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7756	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFBS	5.484	302.1 -> 79.9	6843	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFHxS	7.293	402.1 -> 79.9	5409	2.46 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C4-PFBA	2.885	216.8 -> 171.9	102134	10.03 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFHpA	6.521	367.1 -> 322.0	27149	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.554	318.0 -> 273.0	30904	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFPeA	4.312	268.3 -> 223.0	34251	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C6-PFDA	8.215	519.1 -> 474.1	12916	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C7-PFUnDA	8.682	570.0 -> 525.1	16216	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C8-FOSA	9.530	506.1 -> 77.8	6450	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOA	7.177	421.1 -> 376.0	36471	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C8-PFOS	8.391	507.1 -> 79.9	4232	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C9-PFNA	7.720	472.1 -> 427.0	13240	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
d3-MeFOSAA	8.261	573.2 -> 419.0	9380	5.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	53867	9.39 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.9%	
d3-MeFOSA	10.656	515.0 -> 219.0	3291	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7739	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d7-MeFOSE	10.565	623.2 -> 58.9	23204	24.88 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
d9-EtFOSE	10.810	639.2 -> 58.9	26729	24.70 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
d5-EtFOSA	10.888	531.1 -> 219.0	3497	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	57962	49.93 µg/L	100
		327.1 -> 80.9	20424		
6:2FTS	6.939	427.1 -> 407.0	94293	46.52 µg/L	99
		427.1 -> 80.9	29074		
8:2FTS	7.992	527.1 -> 507.0	109180	44.18 µg/L	100
		527.1 -> 80.8	29578		
EtFOSAA	8.470	584.2 -> 419.1	16330	13.08 µg/L	m 94
		584.2 -> 526.0	9695		
FOSA	9.520	498.1 -> 77.9	32249	12.27 µg/L	100
		498.1 -> 478.0	1330		
MeFOSAA	8.262	570.1 -> 419.0	20841	12.62 µg/L	m 96
		570.1 -> 483.0	3982		
PFBA	2.893	212.8 -> 168.9	184945	50.00 µg/L	100
PFBS	5.485	298.7 -> 79.9	28527	11.05 µg/L	100
		298.7 -> 98.8	11659		
PFDA	8.215	512.9 -> 469.0	149699	12.62 µg/L	97
		512.9 -> 219.0	23622		
PFDoDA	9.125	613.1 -> 569.0	159968	13.18 µg/L	98
		613.1 -> 319.0	19425		
PFDS	9.290	599.0 -> 79.9	16434	11.79 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	9116			
PFHpA	6.522	363.1 -> 319.0	167606	12.49	µg/L	99
		363.1 -> 169.0	29968			
PFHpS	7.873	449.0 -> 79.9	25643	11.99	µg/L	97
		449.0 -> 98.9	14756			
PFHxA	5.556	313.0 -> 269.0	143873	12.65	µg/L	100
		313.0 -> 118.9	7291			
PFHxS	7.294	398.7 -> 79.9	28454	11.58	µg/L	m 93
		398.7 -> 98.9	14977			
PFNA	7.721	463.0 -> 419.0	132486	12.51	µg/L	97
		463.0 -> 219.0	29959			
PFNS	8.870	548.8 -> 79.9	21913	11.62	µg/L	95
		548.8 -> 98.9	13051			
PFOA	7.167	413.0 -> 369.0	225386	12.24	µg/L	100
		413.0 -> 169.0	43583			
PFOS	8.380	498.9 -> 79.9	24063	11.66	µg/L	m 82
		498.9 -> 98.8	13118			
PFPeA	4.314	263.0 -> 219.0	215969	25.27	µg/L	100
PFPeS	6.573	349.1 -> 79.9	30766	11.69	µg/L	100
		349.1 -> 98.9	15224			
PFTeDA	9.855	713.1 -> 669.0	119287	12.44	µg/L	98
		713.1 -> 168.9	8177			
PFTrDA	9.508	663.0 -> 619.0	154713	13.09	µg/L	100
		663.0 -> 168.9	12484			
PFUnDA	8.682	563.1 -> 519.0	134451	13.03	µg/L	100
		563.1 -> 269.1	19738			
11Cl-PF3OUdS	9.563	630.9 -> 450.9	163470	25.49	µg/L	99
		632.9 -> 452.9	51085			
9Cl-PF3ONS	8.733	530.8 -> 351.0	227550	25.28	µg/L	98
		532.8 -> 353.0	69971			
ADONA	6.771	376.9 -> 250.9	490227	25.50	µg/L	99
		376.9 -> 84.8	141334			
HFPO-DA	5.944	284.9 -> 168.9	139995	27.27	µg/L	99
		284.9 -> 184.9	21377			
3:3FTCA	3.736	241.0 -> 177.0	27558	62.78	µg/L	100
		241.0 -> 117.0	3315			
5:3FTCA	6.187	341.0 -> 237.1	468543	316.99	µg/L	99
		341.0 -> 217.0	352138			
7:3FTCA	7.624	441.0 -> 316.9	211014	312.58	µg/L	98
		441.0 -> 336.9	467706			
EtFOSA	10.890	526.0 -> 219.0	41480	24.50	µg/L	m 60
		526.0 -> 169.0	53444			
EtFOSE	10.823	630.0 -> 58.9	71929	64.03	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	34539	25.36	µg/L	m 80
		511.9 -> 169.0	46194			
MeFOSE	10.578	616.1 -> 58.9	64810	65.22	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	9759	11.76	µg/L	99
		699.1 -> 98.8	6049			
NFDHA	5.437	295.0 -> 201.0	62381	24.14	µg/L	99
		295.0 -> 84.9	16797			
PFMBA	4.750	279.0 -> 85.1	139775	25.54	µg/L	100
PFMPA	3.443	229.0 -> 84.9	146351	25.59	µg/L	100
PFEESA	6.051	314.8 -> 134.9	205603	22.58	µg/L	99
		314.8 -> 82.9	6646			

= Qualifier out of range, m = manually integrated, + = Area summed

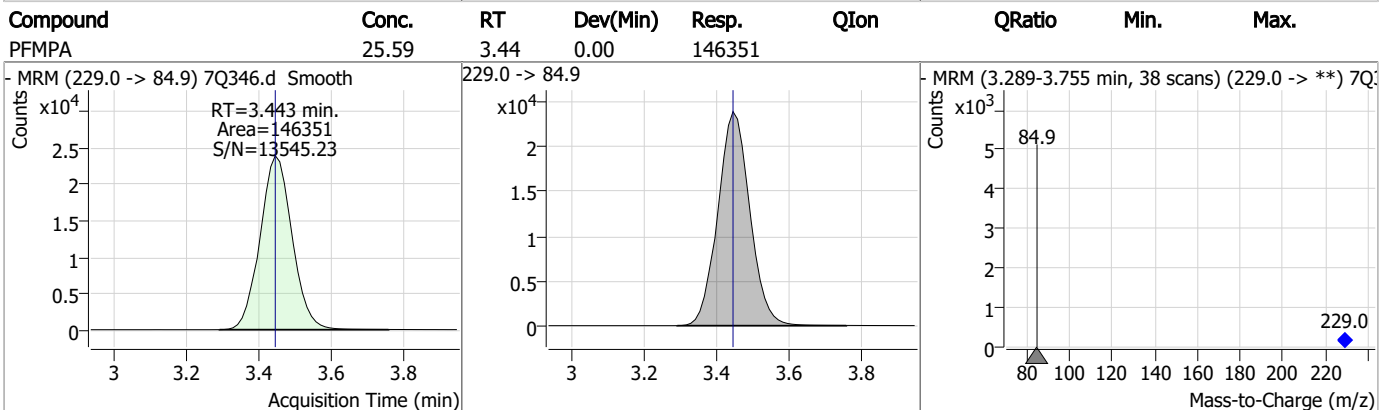
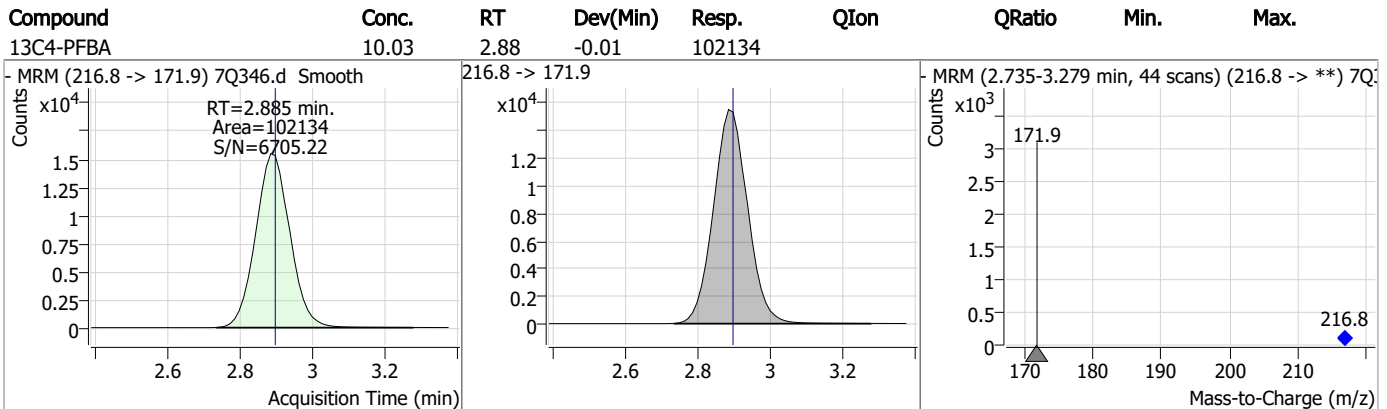
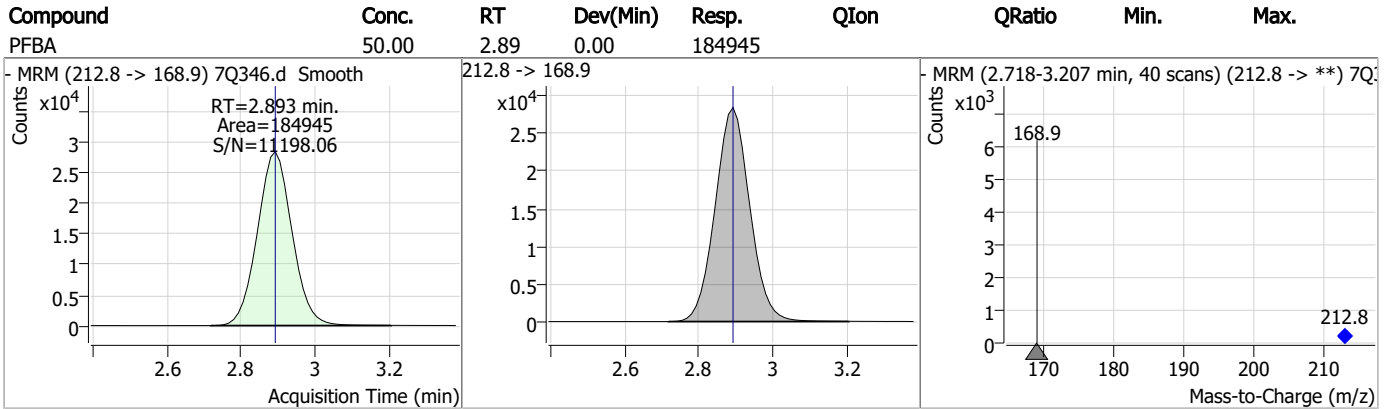
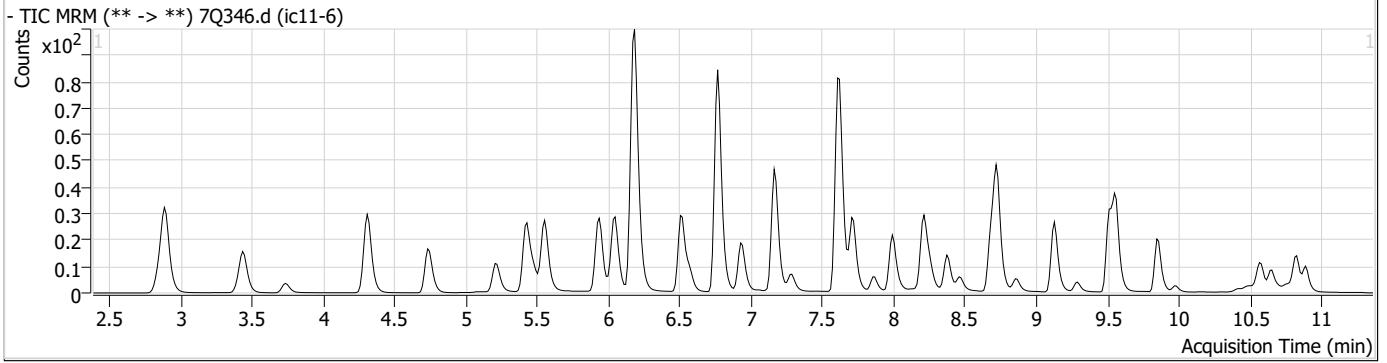
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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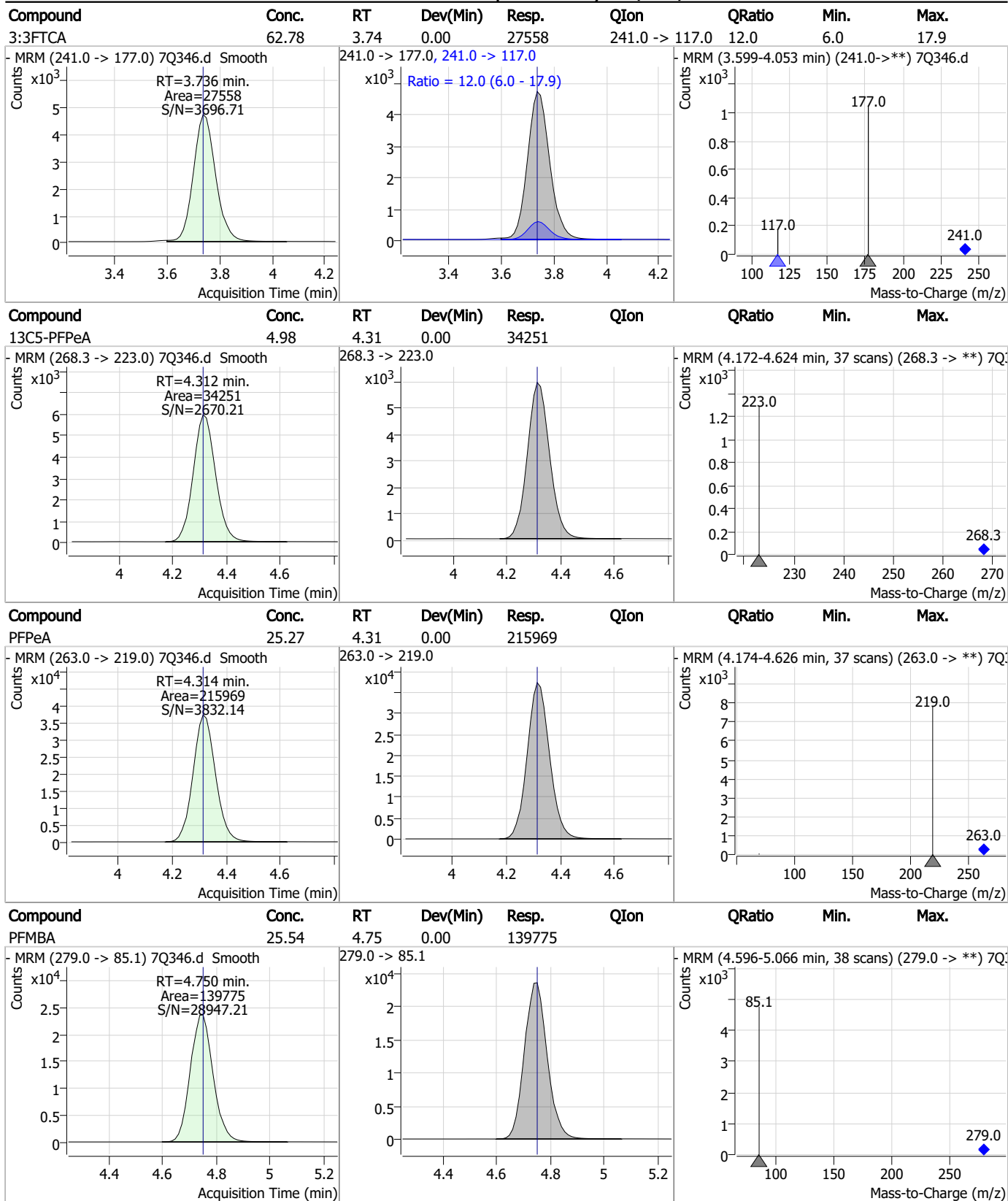
7.7.22
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Perfluorinated Compounds by LC/MS/MS

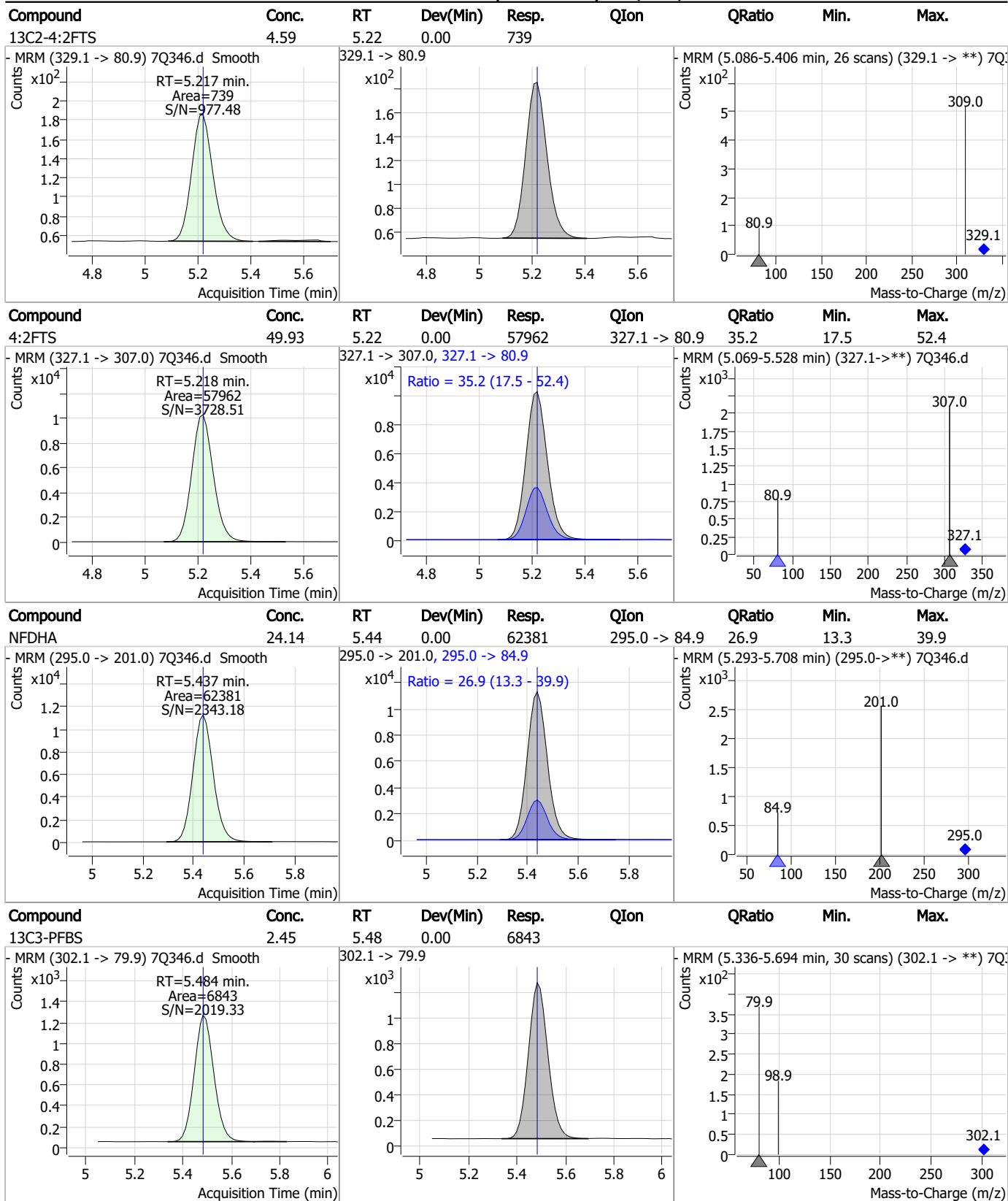


Perfluorinated Compounds by LC/MS/MS



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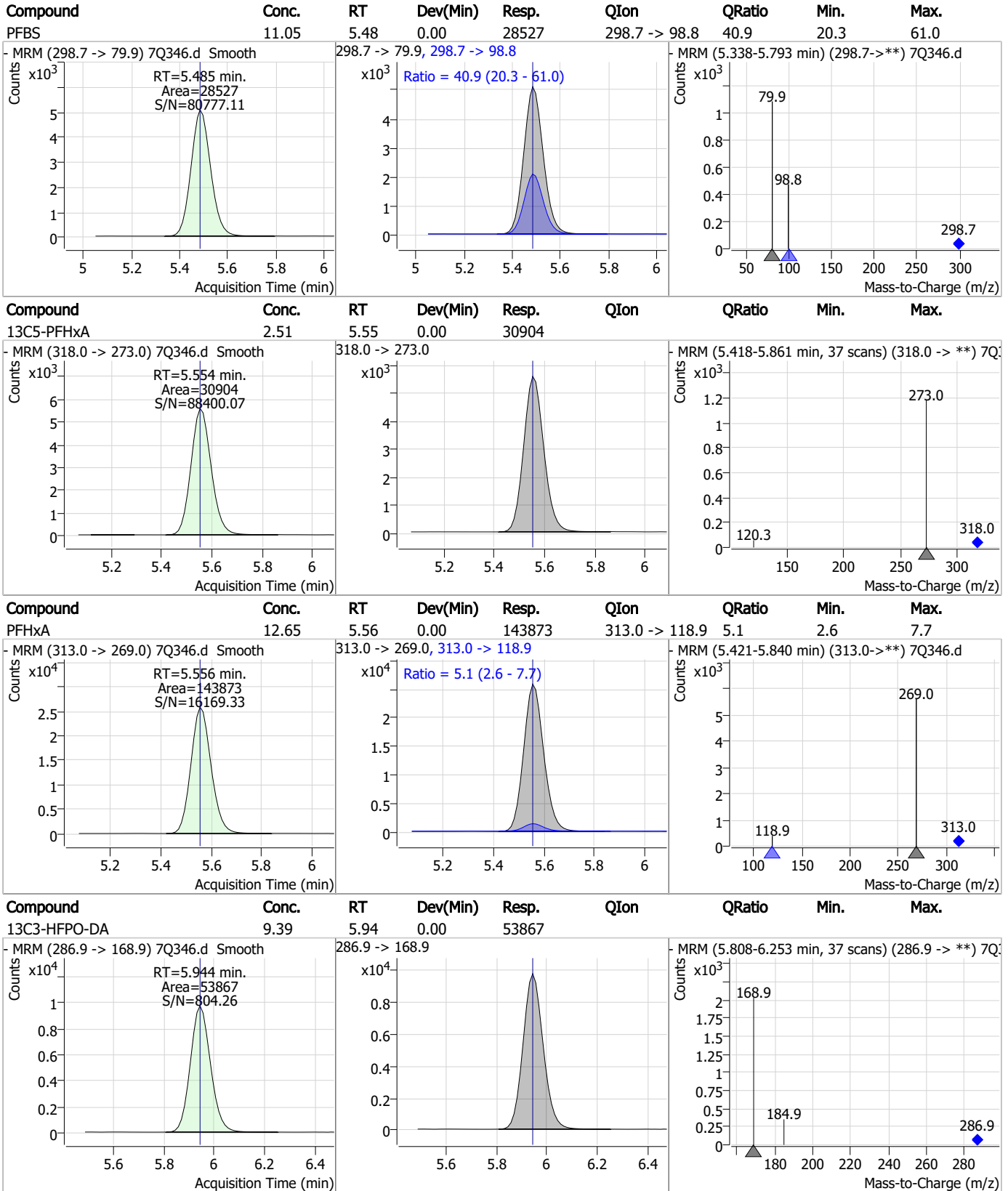
Perfluorinated Compounds by LC/MS/MS



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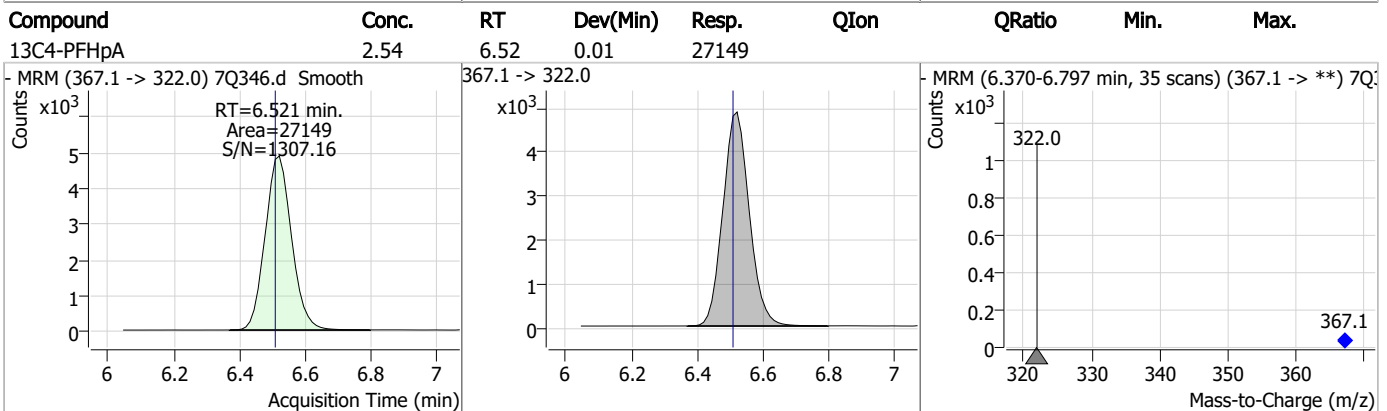
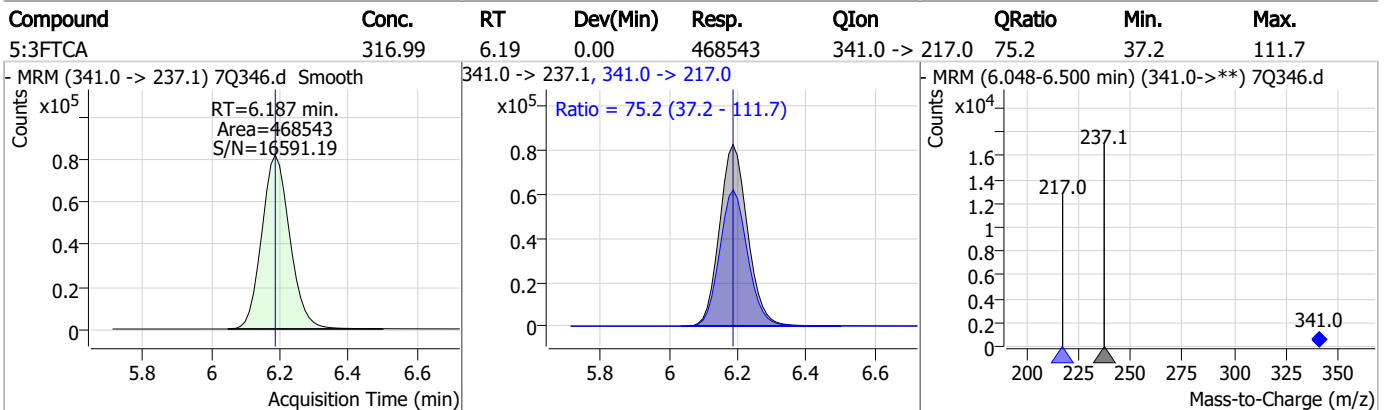
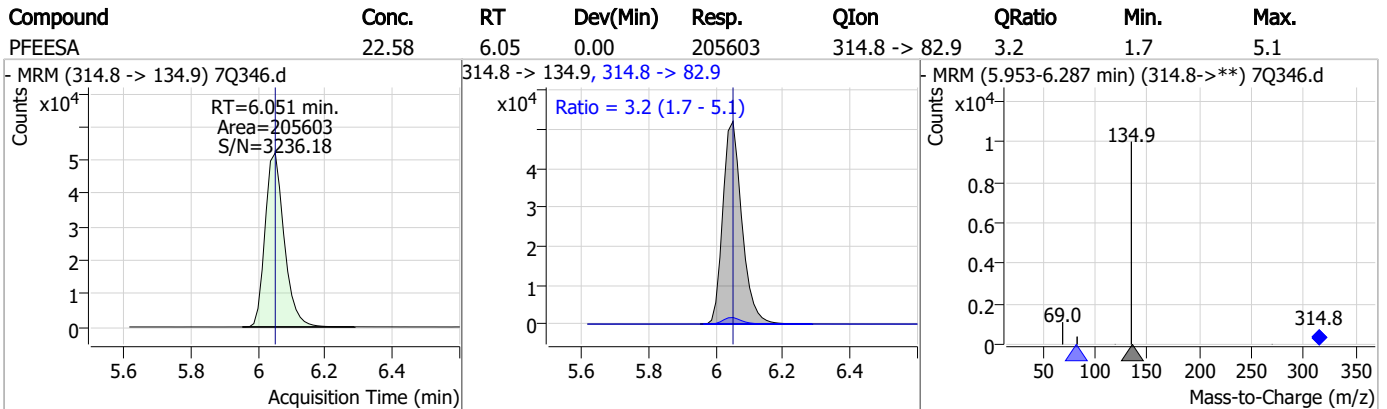
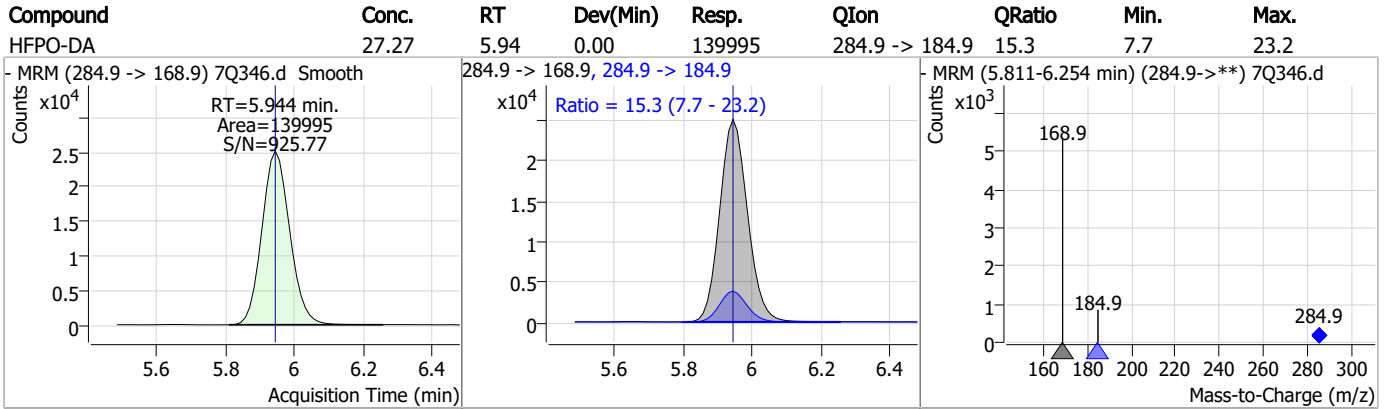
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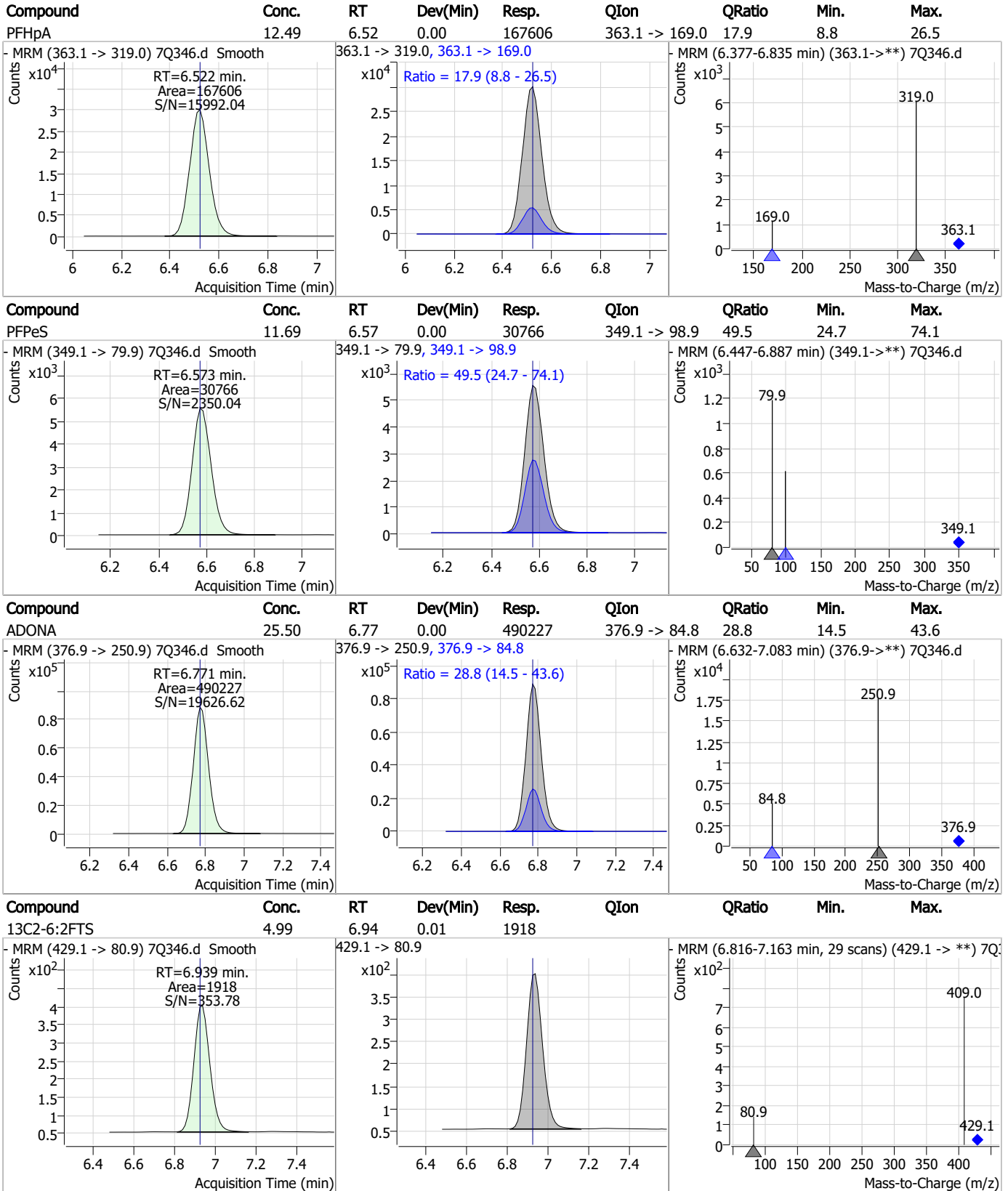
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Perfluorinated Compounds by LC/MS/MS



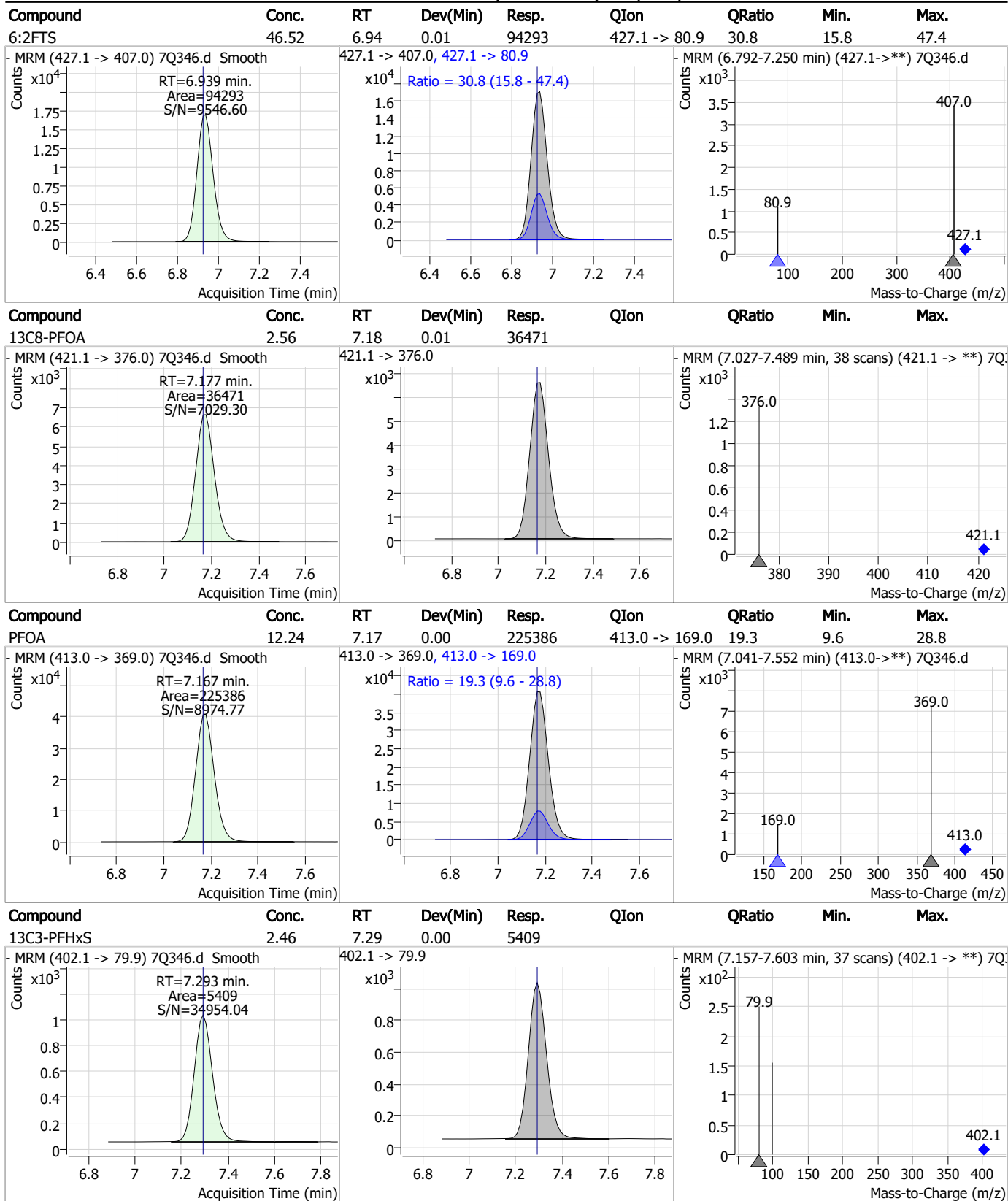
7.7.22 7

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7.7.22 7

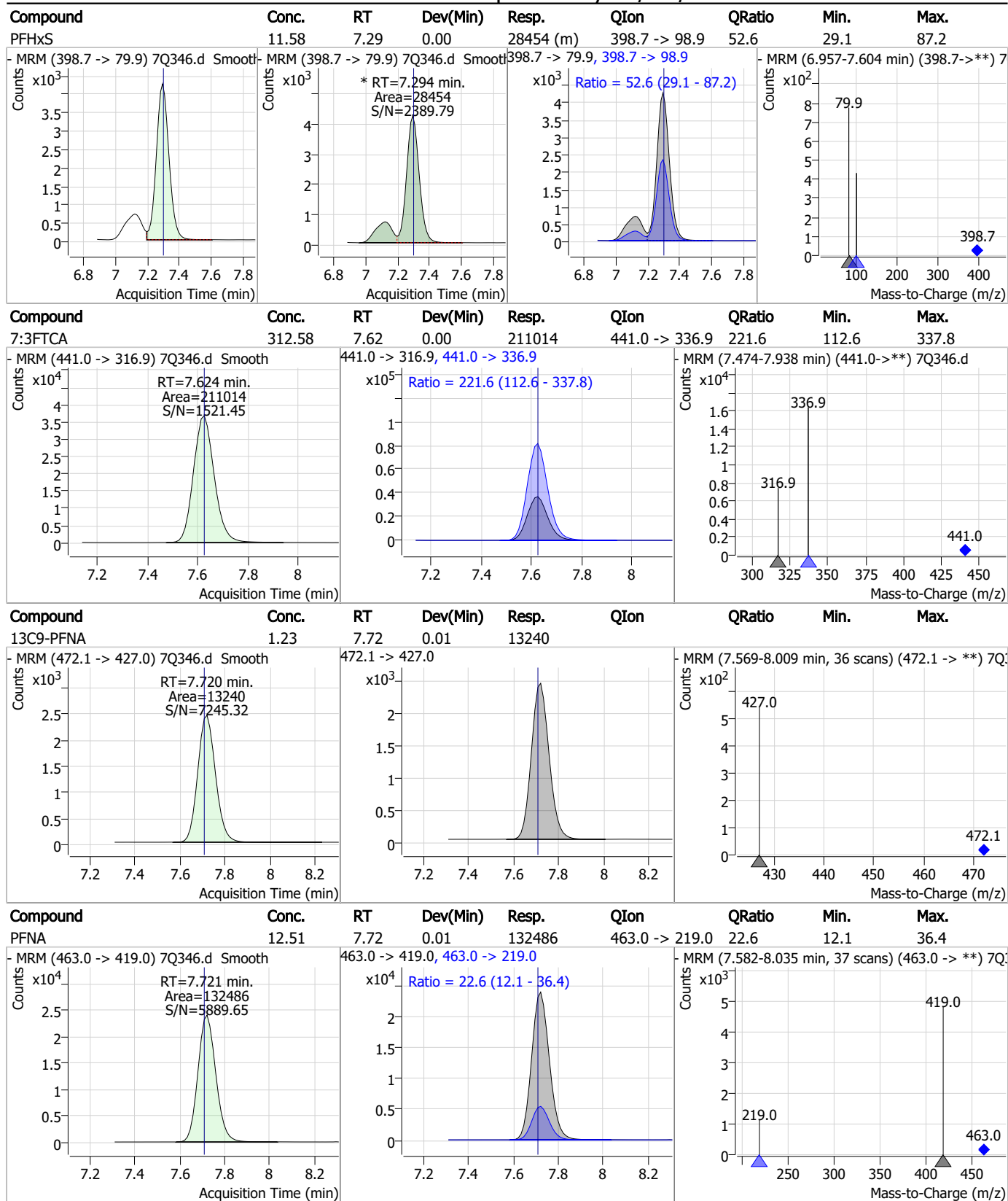
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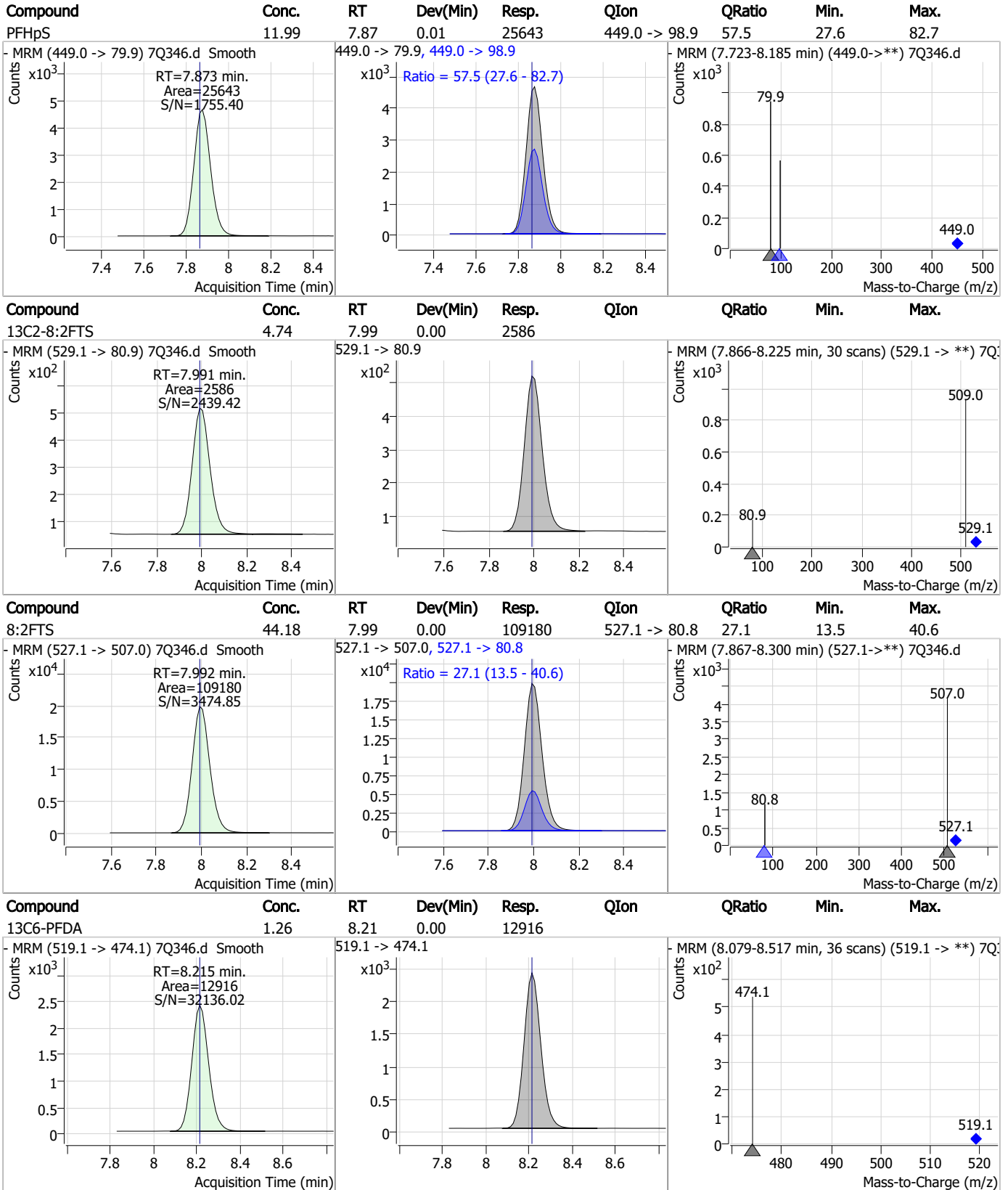
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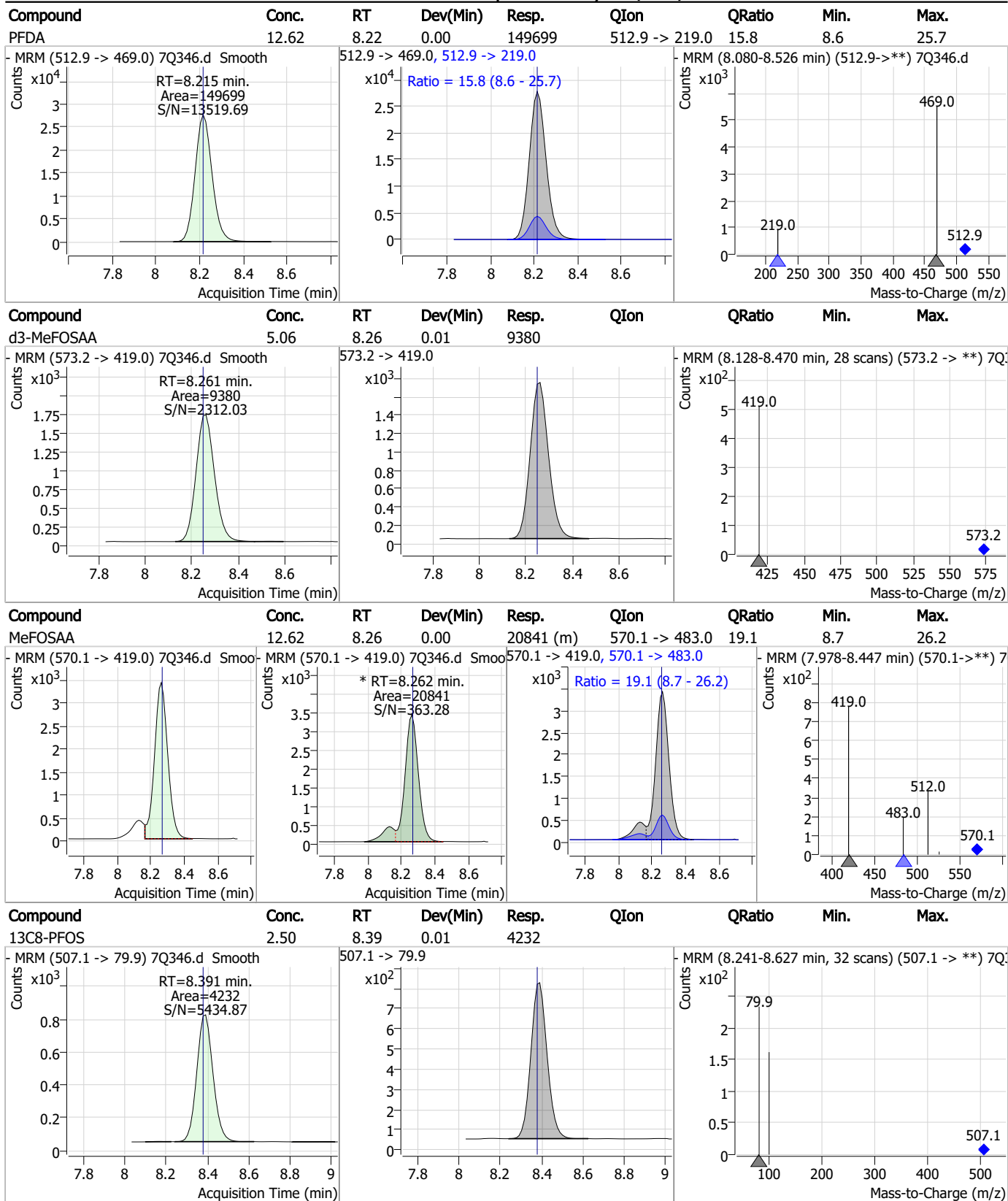
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7.7.22 7

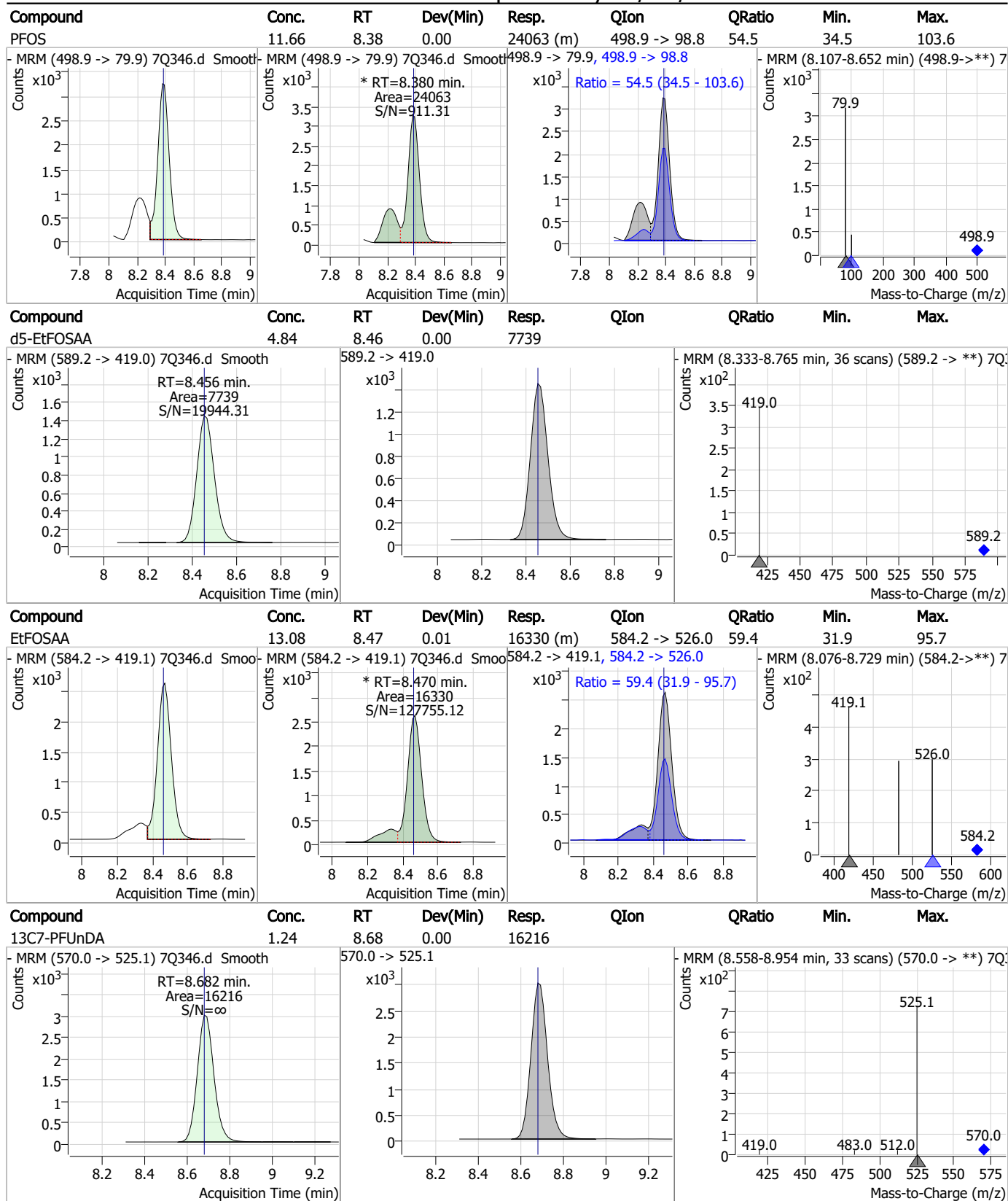


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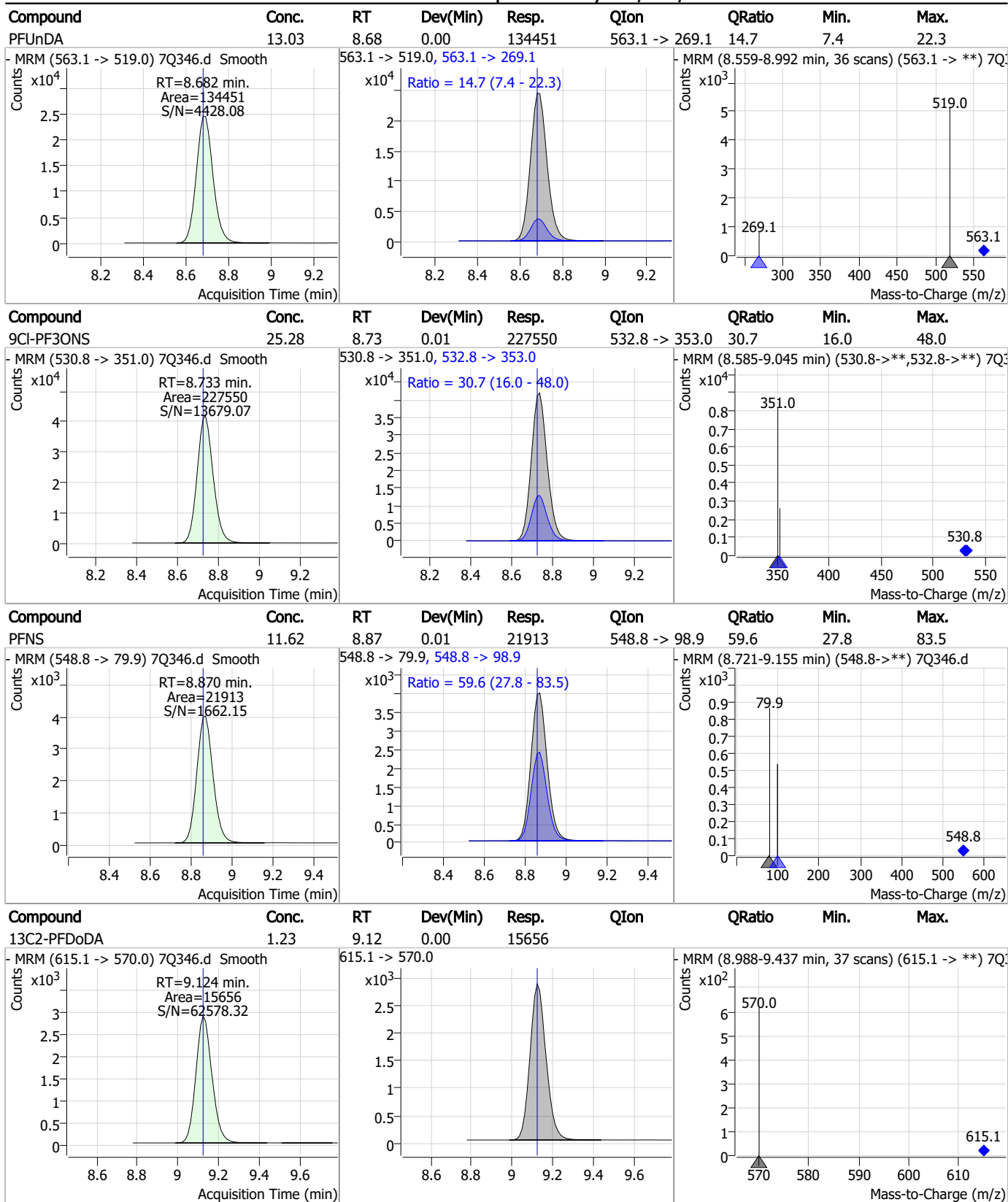
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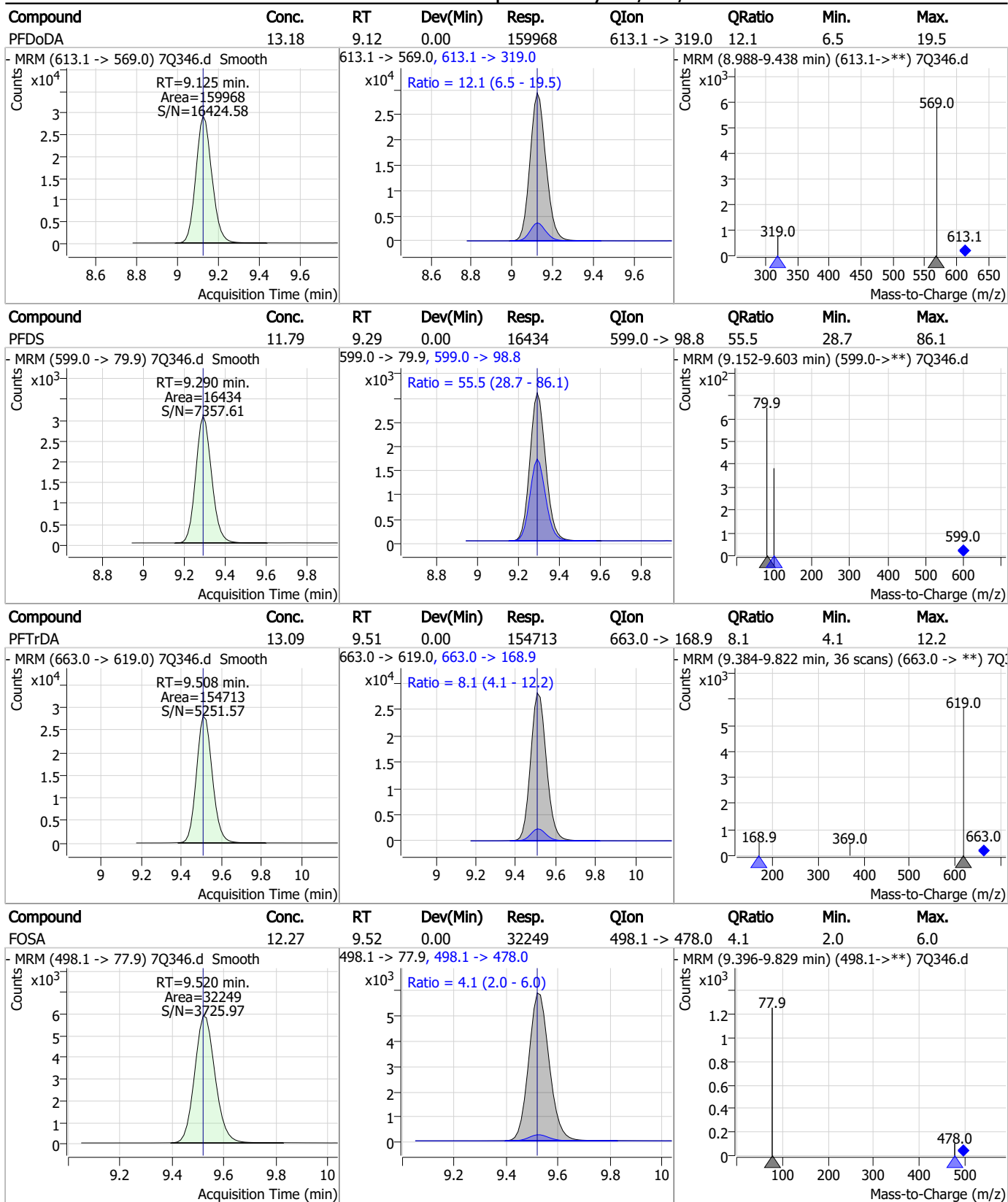
Perfluorinated Compounds by LC/MS/MS



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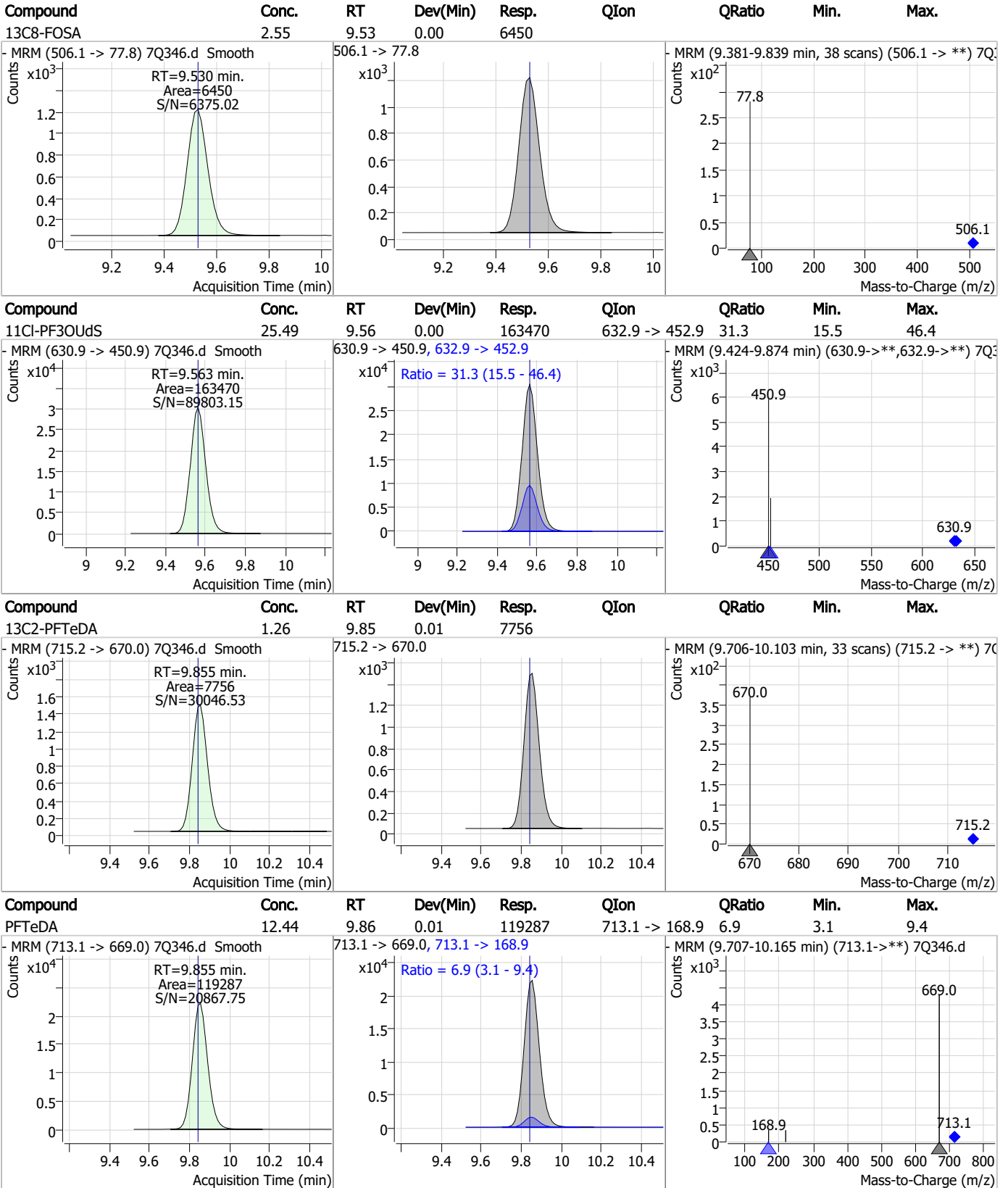
Perfluorinated Compounds by LC/MS/MS



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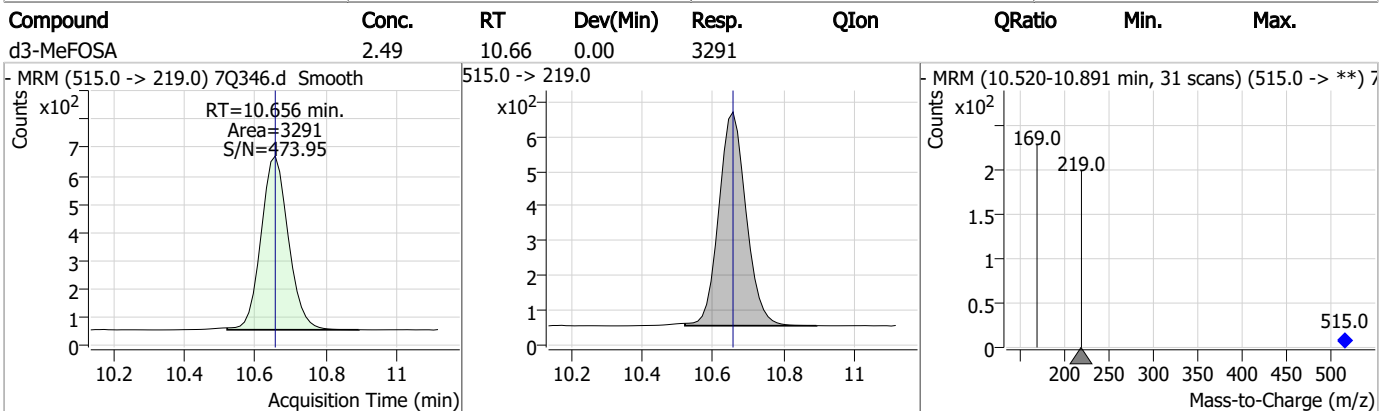
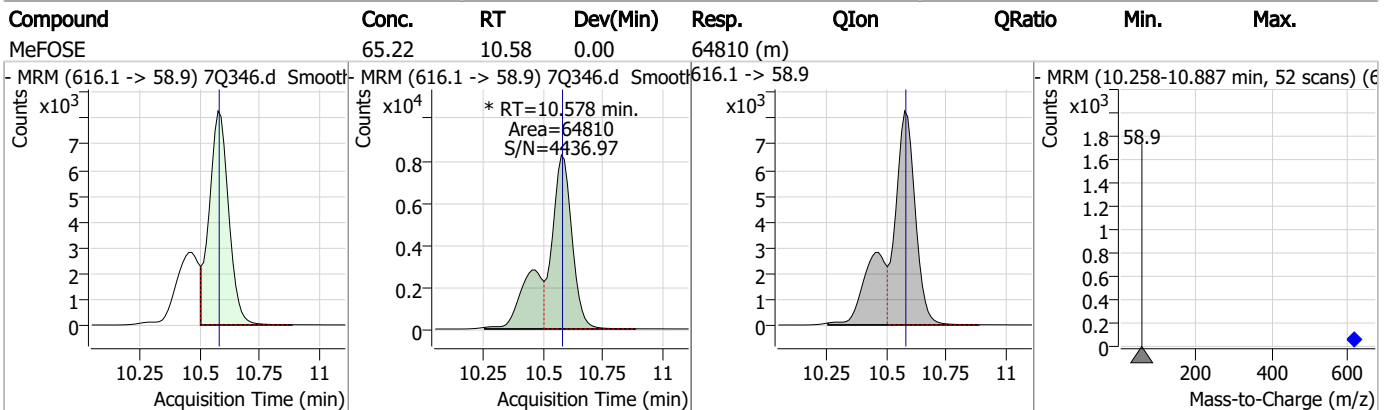
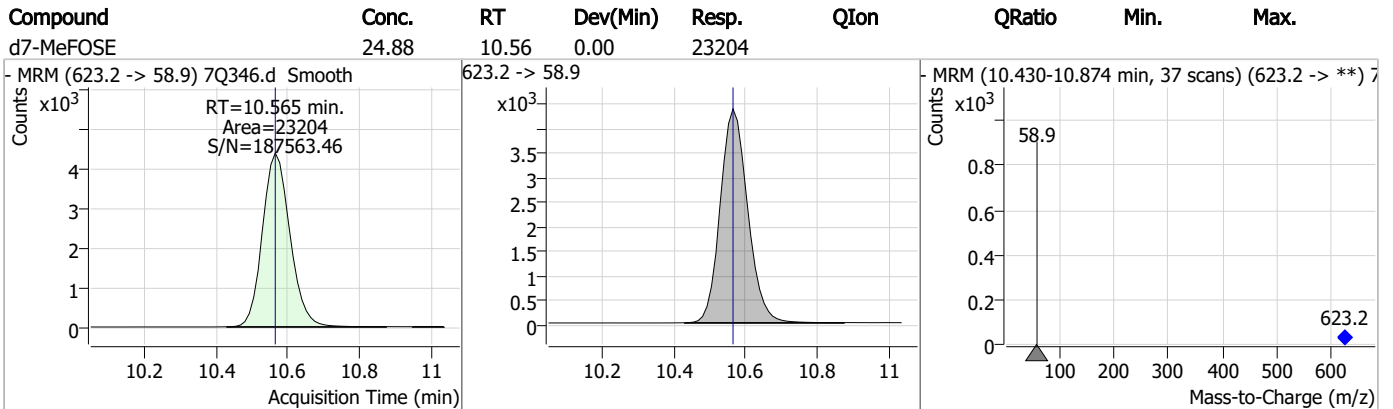
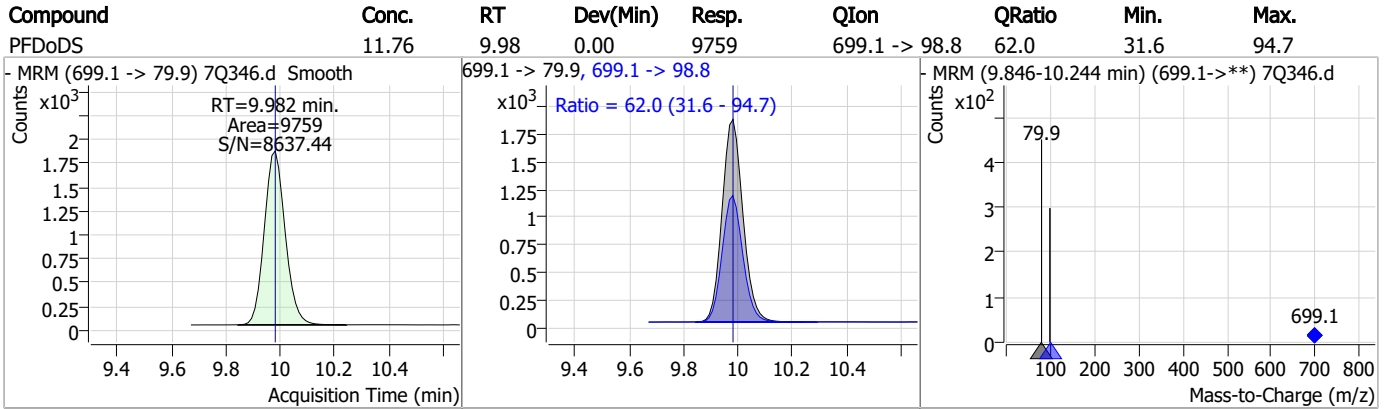
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Perfluorinated Compounds by LC/MS/MS

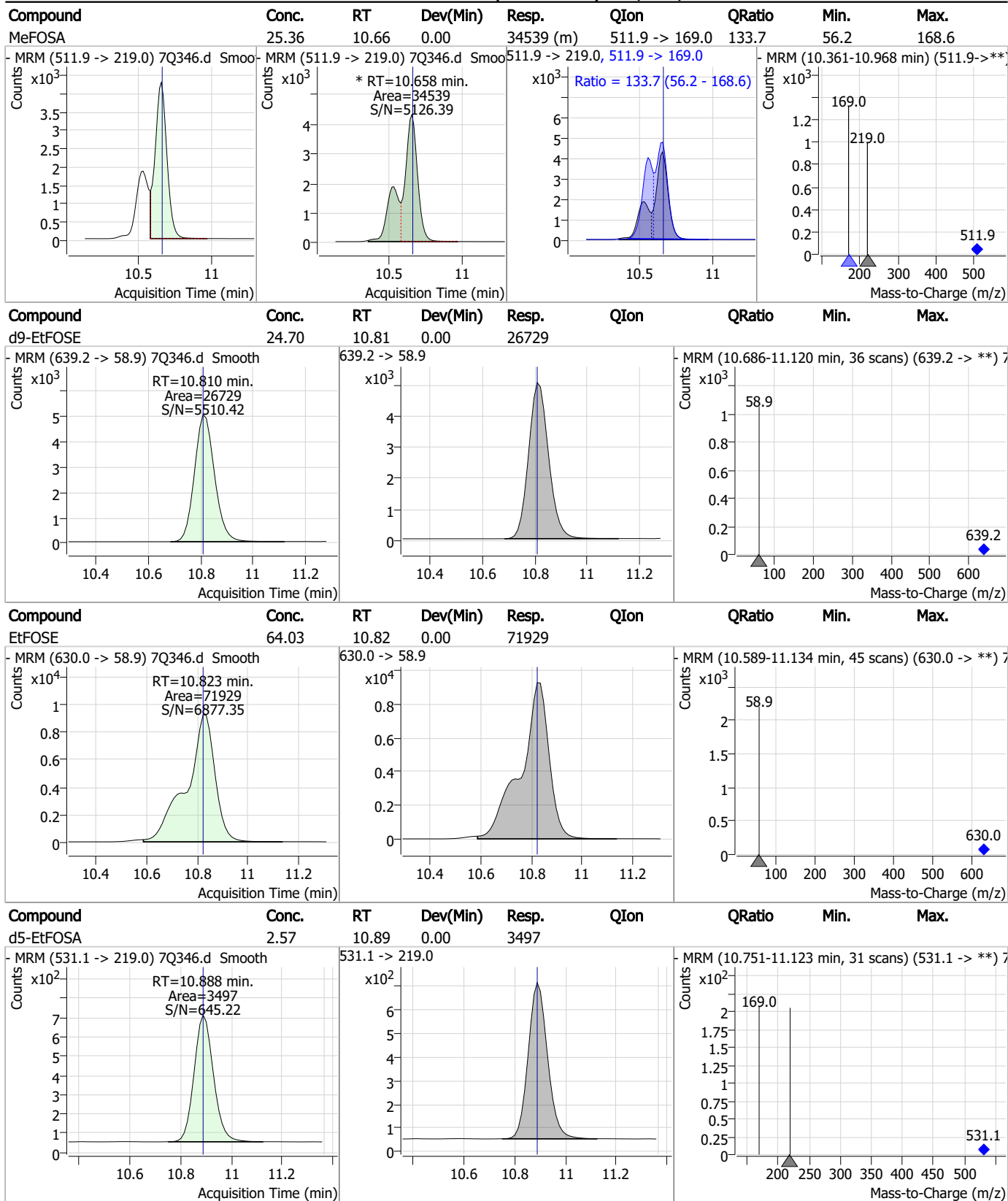


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Perfluorinated Compounds by LC/MS/MS



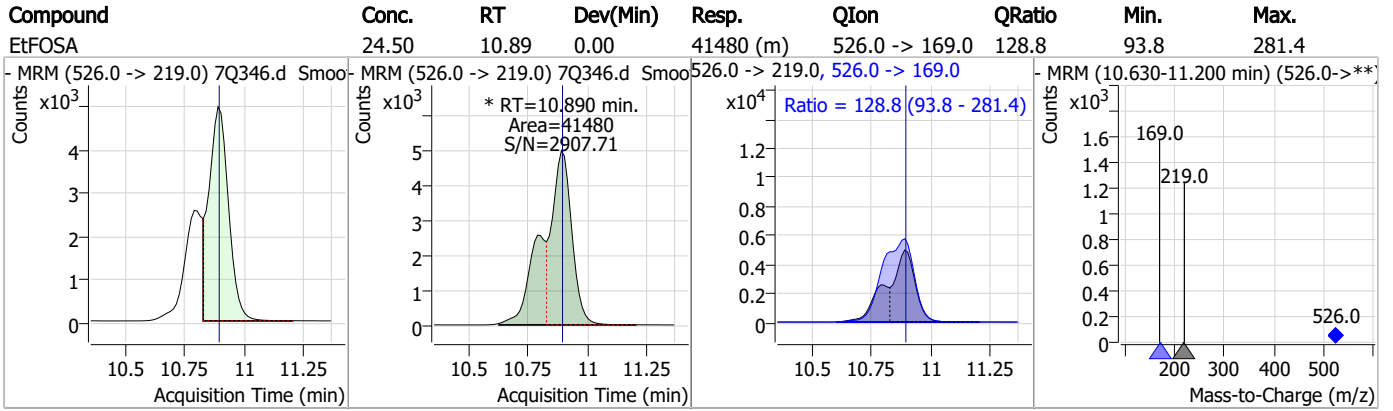
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-IC11 Method: EPA DRAFT 1633
Lab FileID: 7Q346.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 16:05 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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7

Manual Integrations
APPROVED
(compounds with "m" flag)

Mike Eger
12/14/23 11:35

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q347.d
Operator : marthav
Acq. Method : 1633full.m
Acq. Date-Time : 12/13/2023 4:19:48 PM
Sample Name : ic11-7
Vial : P1-A8
DA Method File : 1633_121323_S7Q11A.quantmethod.xml
Batch Name : S7Q11.batch.bin
Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	96859	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	33084	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	29468	2.50 µg/L	0.000
M4-PFHpA	6.521	367.1 -> 322.0	25815	2.50 µg/L	0.012
M8-PFOA	7.165	421.1 -> 376.0	33473	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	12393	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	12164	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	15485	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	15882	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7889	1.25 µg/L	0.012
M8-FOSA	9.529	506.1 -> 77.8	6144	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6687	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5540	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4210	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	742	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	1742	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	2548	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	8963	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	54913	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7903	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	22815	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	26048	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3308	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3337	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	5080	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	45477	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3485	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	37373	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11703	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	14734	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	24897	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	742	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-6:2FTS	6.939	429.1 -> 80.9	1742	4.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2548	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15882	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7889	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.484	302.1 -> 79.9	6687	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C3-PFHxS	7.293	402.1 -> 79.9	5540	2.74 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C4-PFBA	2.885	216.8 -> 171.9	96859	10.07 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C4-PFHpA	6.521	367.1 -> 322.0	25815	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C5-PFHxA	5.554	318.0 -> 273.0	29468	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C5-PFPeA	4.312	268.3 -> 223.0	33084	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C6-PFDA	8.215	519.1 -> 474.1	12164	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C7-PFUnDA	8.682	570.0 -> 525.1	15485	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C8-FOSA	9.529	506.1 -> 77.8	6144	2.30 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C8-PFOA	7.165	421.1 -> 376.0	33473	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C8-PFOS	8.379	507.1 -> 79.9	4210	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	
13C9-PFNA	7.720	472.1 -> 427.0	12393	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.2%	
d3-MeFOSAA	8.261	573.2 -> 419.0	8963	4.58 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.6%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	54913	9.79 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.9%	
d3-MeFOSA	10.656	515.0 -> 219.0	3337	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7903	4.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.7%	
d7-MeFOSE	10.565	623.2 -> 58.9	22815	23.18 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 92.7%	
d9-EtFOSE	10.810	639.2 -> 58.9	26048	22.81 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.3%	
d5-EtFOSA	10.888	531.1 -> 219.0	3308	2.30 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	107287	92.04 µg/L	99
		327.1 -> 80.9	38038		
6:2FTS	6.939	427.1 -> 407.0	174289	94.65 µg/L	98
		427.1 -> 80.9	53352		
8:2FTS	7.992	527.1 -> 507.0	201985	82.94 µg/L	99
		527.1 -> 80.8	53234		
EtFOSAA	8.470	584.2 -> 419.1	33777	26.48 µg/L	m 95
		584.2 -> 526.0	20306		
FOSA	9.520	498.1 -> 77.9	64652	25.82 µg/L	99
		498.1 -> 478.0	2722		
MeFOSAA	8.262	570.1 -> 419.0	41748	26.47 µg/L	m 92
		570.1 -> 483.0	8768		
PFBA	2.893	212.8 -> 168.9	367465	104.75 µg/L	100
PFBS	5.485	298.7 -> 79.9	58222	23.07 µg/L	99
		298.7 -> 98.8	23480		
PFDA	8.215	512.9 -> 469.0	296143	26.51 µg/L	98
		512.9 -> 219.0	47905		
PFDoDA	9.125	613.1 -> 569.0	308822	25.09 µg/L	98
		613.1 -> 319.0	37905		
PFDS	9.290	599.0 -> 79.9	33313	24.01 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	18505			
PFHpA	6.522	363.1 -> 319.0	332892	26.09	µg/L	99
		363.1 -> 169.0	60416			
PFHpS	7.873	449.0 -> 79.9	52410	24.63	µg/L	99
		449.0 -> 98.9	28706			
PFHxA	5.556	313.0 -> 269.0	290576	26.79	µg/L	99
		313.0 -> 118.9	14208			
PFHxS	7.294	398.7 -> 79.9	56806	22.57	µg/L	m 93
		398.7 -> 98.9	29840			
PFNA	7.721	463.0 -> 419.0	266240	26.86	µg/L	97
		463.0 -> 219.0	60654			
PFNS	8.870	548.8 -> 79.9	45308	24.14	µg/L	95
		548.8 -> 98.9	26772			
PFOA	7.167	413.0 -> 369.0	460031	27.22	µg/L	99
		413.0 -> 169.0	86890			
PFOS	8.380	498.9 -> 79.9	49418	24.06	µg/L	m 81
		498.9 -> 98.8	26507			
PFPeA	4.314	263.0 -> 219.0	432929	52.45	µg/L	100
PFPeS	6.574	349.1 -> 79.9	60517	22.46	µg/L	100
		349.1 -> 98.9	29755			
PFTeDA	9.855	713.1 -> 669.0	246486	25.27	µg/L	98
		713.1 -> 168.9	17148			
PFTrDA	9.508	663.0 -> 619.0	306329	25.54	µg/L	100
		663.0 -> 168.9	24472			
PFUnDA	8.682	563.1 -> 519.0	261869	26.57	µg/L	99
		563.1 -> 269.1	37842			
11Cl-PF3OUdS	9.563	630.9 -> 450.9	335631	51.33	µg/L	100
		632.9 -> 452.9	104112			
9Cl-PF3ONS	8.733	530.8 -> 351.0	464808	50.65	µg/L	98
		532.8 -> 353.0	144037			
ADONA	6.771	376.9 -> 250.9	997661	50.90	µg/L	100
		376.9 -> 84.8	288322			
HFPO-DA	5.944	284.9 -> 168.9	268705	51.34	µg/L	98
		284.9 -> 184.9	44298			
3:3FTCA	3.736	241.0 -> 177.0	55701	133.80	µg/L	100
		241.0 -> 117.0	6743			
5:3FTCA	6.187	341.0 -> 237.1	943636	669.52	µg/L	100
		341.0 -> 217.0	698833			
7:3FTCA	7.612	441.0 -> 316.9	430411	668.63	µg/L	98
		441.0 -> 336.9	952666			
EtFOSA	10.890	526.0 -> 219.0	82052	51.24	µg/L	m 61
		526.0 -> 169.0	107278			
EtFOSE	10.823	630.0 -> 58.9	147442	134.69	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	70022	50.70	µg/L	m 82
		511.9 -> 169.0	92093			
MeFOSE	10.578	616.1 -> 58.9	130074	133.14	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	20021	24.25	µg/L	96
		699.1 -> 98.8	12060			
NFDHA	5.437	295.0 -> 201.0	127994	51.95	µg/L	100
		295.0 -> 84.9	34173			
PFMBA	4.750	279.0 -> 85.1	279347	52.83	µg/L	100
PFMPA	3.443	229.0 -> 84.9	292842	53.02	µg/L	100
PFEESA	6.051	314.8 -> 134.9	409864	47.20	µg/L	99
		314.8 -> 82.9	12989			

= Qualifier out of range, m = manually integrated, + = Area summed

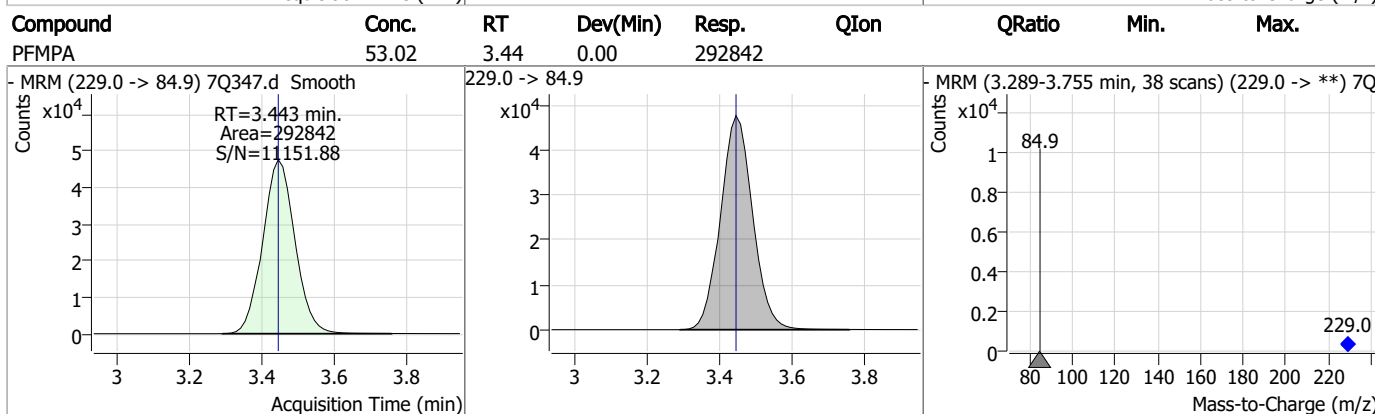
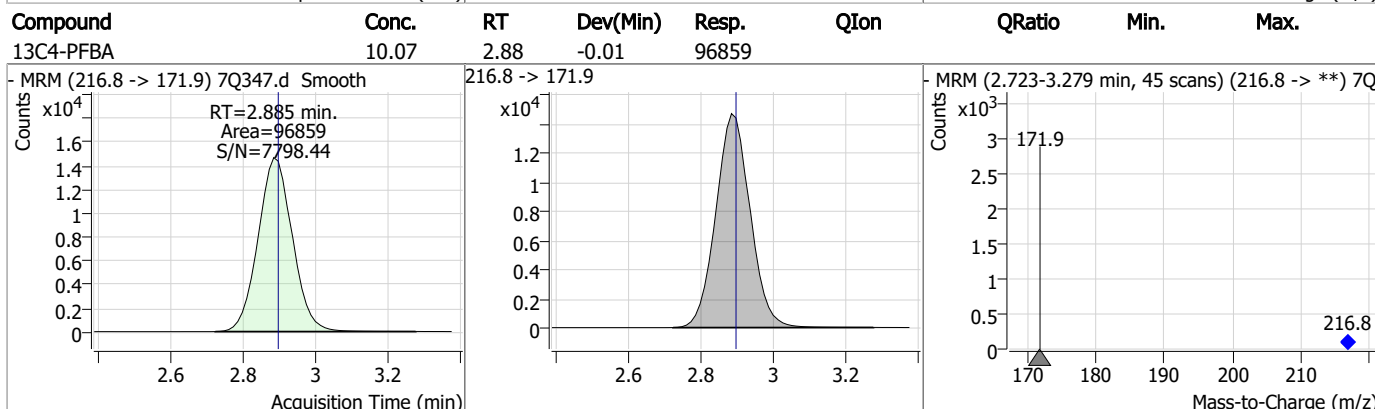
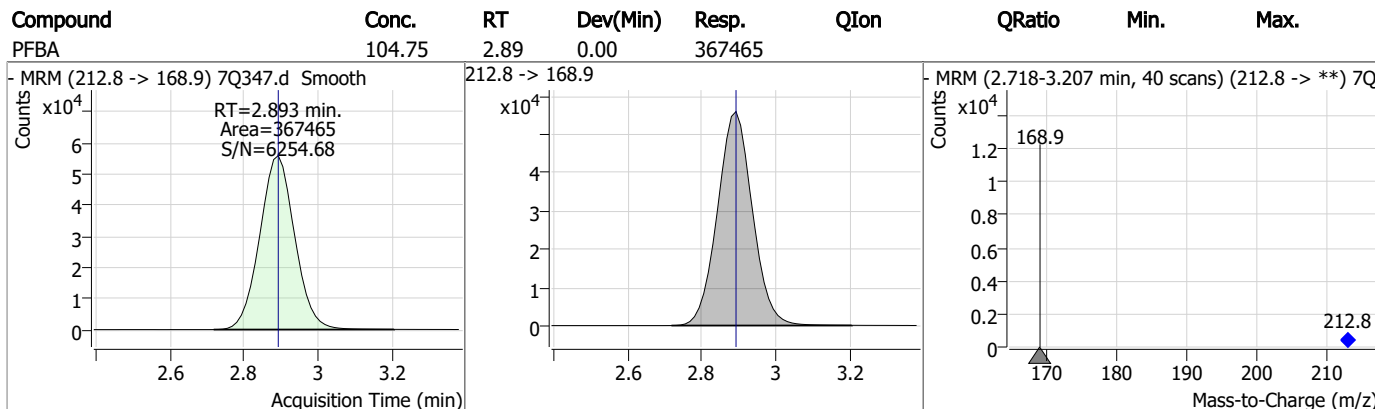
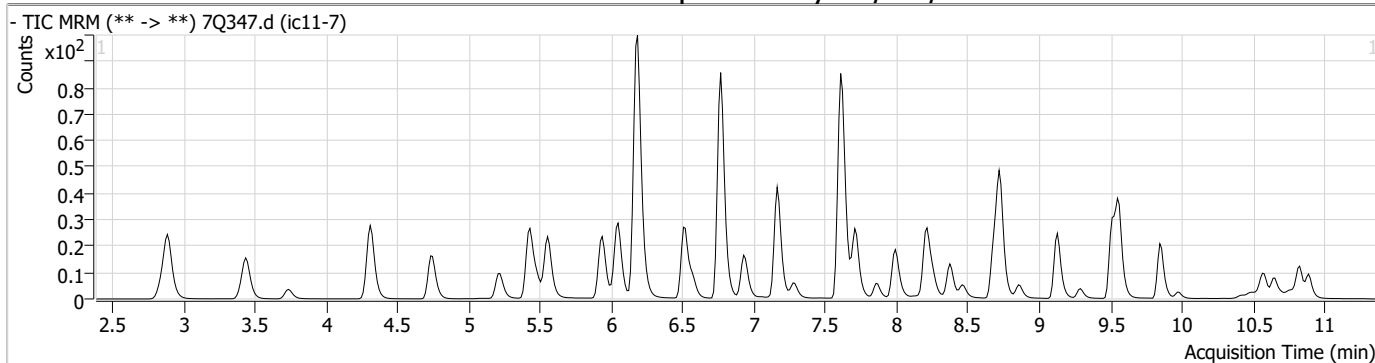
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.23

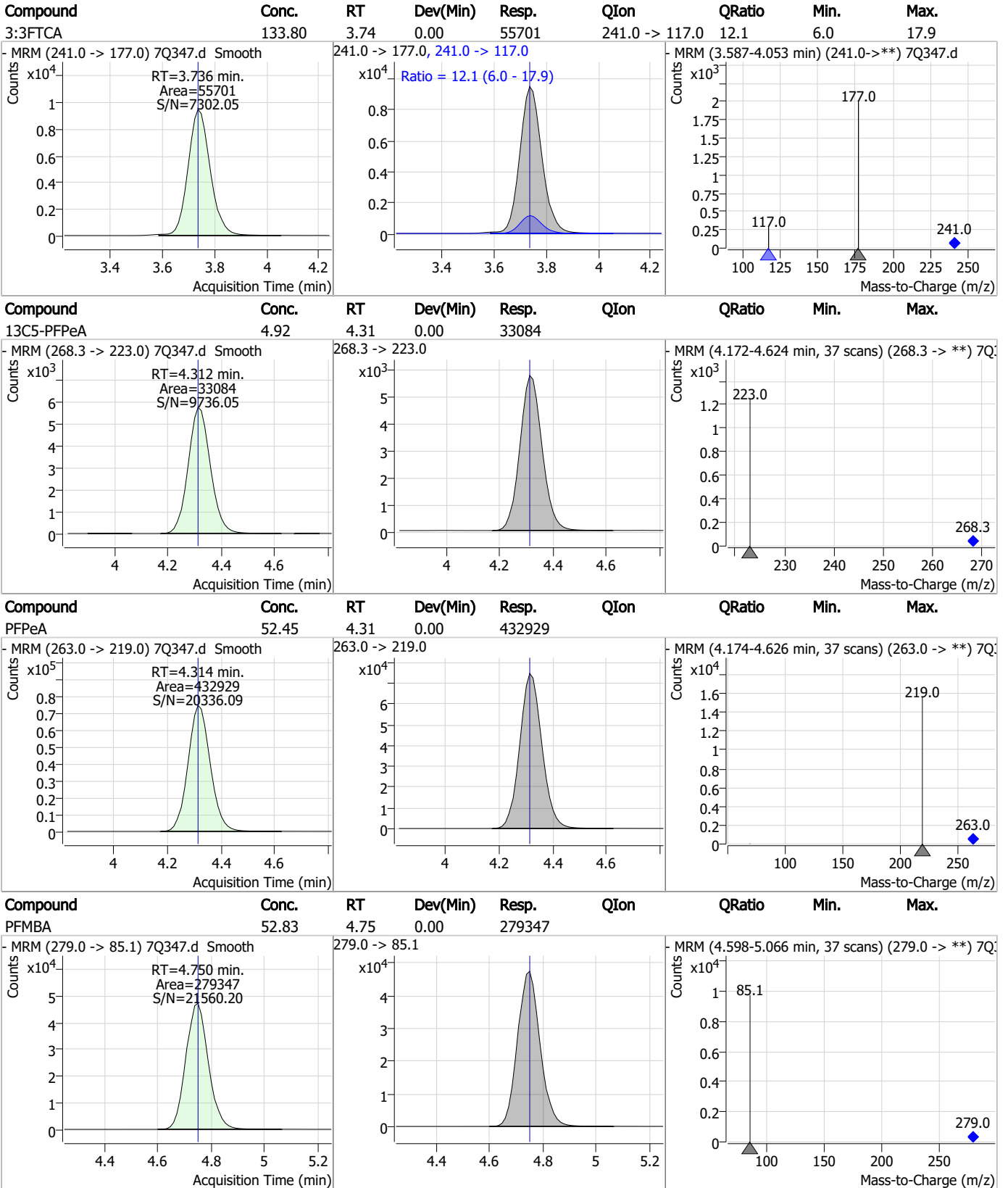
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Perfluorinated Compounds by LC/MS/MS



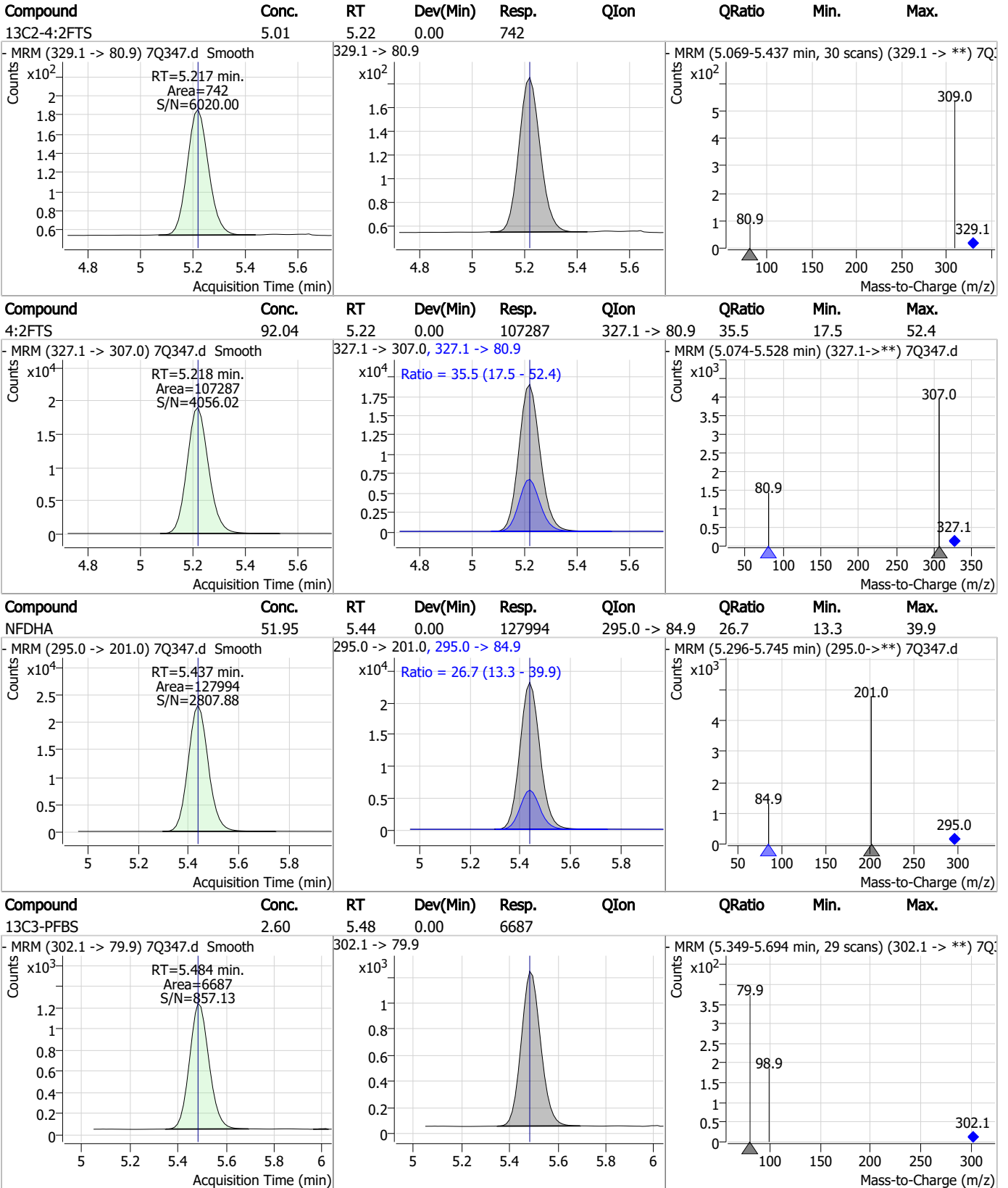
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Perfluorinated Compounds by LC/MS/MS



7.7.23 7

Perfluorinated Compounds by LC/MS/MS

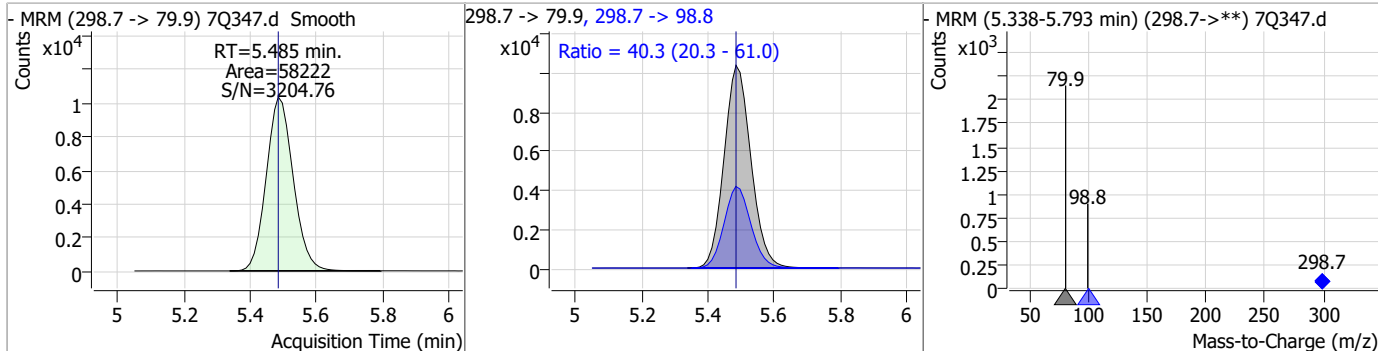


7.7.23 7

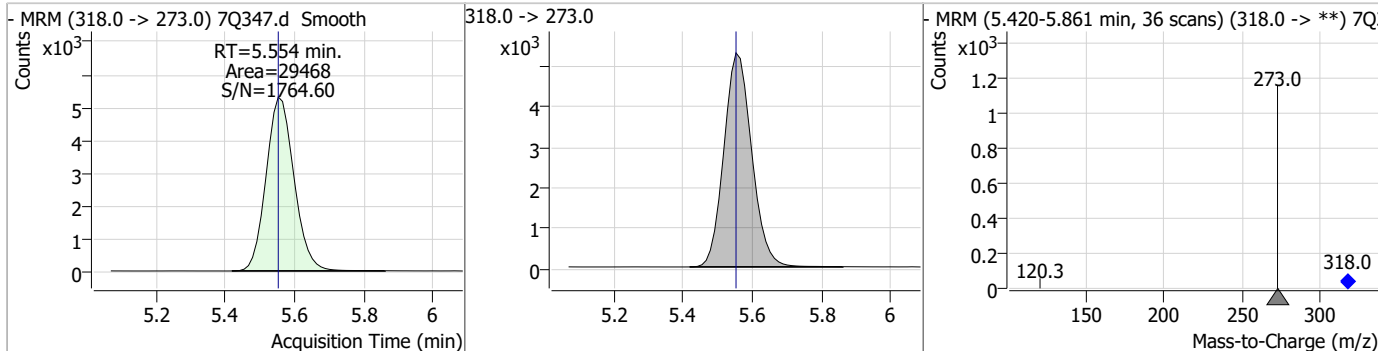


Perfluorinated Compounds by LC/MS/MS

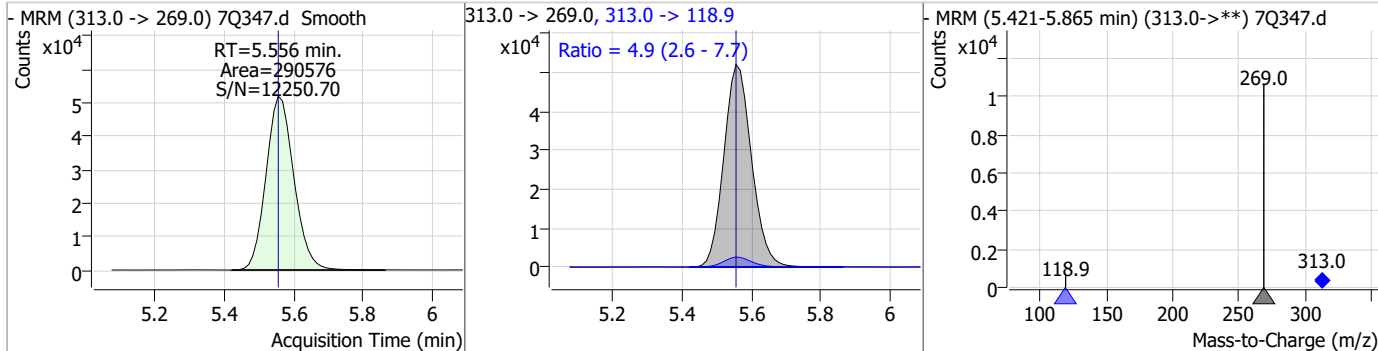
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	23.07	5.48	0.00	58222	298.7 -> 98.8	40.3	20.3	61.0



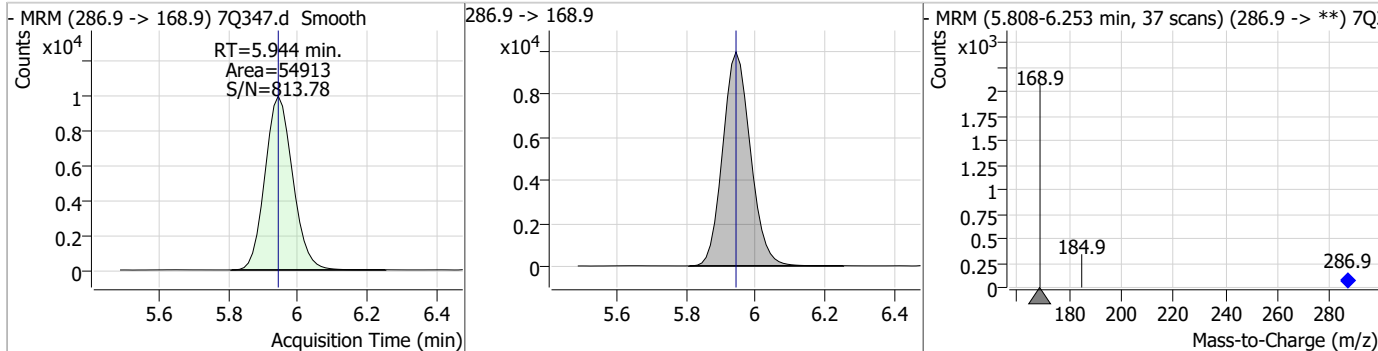
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.44	5.55	0.00	29468				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	26.79	5.56	0.00	290576	313.0 -> 118.9	4.9	2.6	7.7



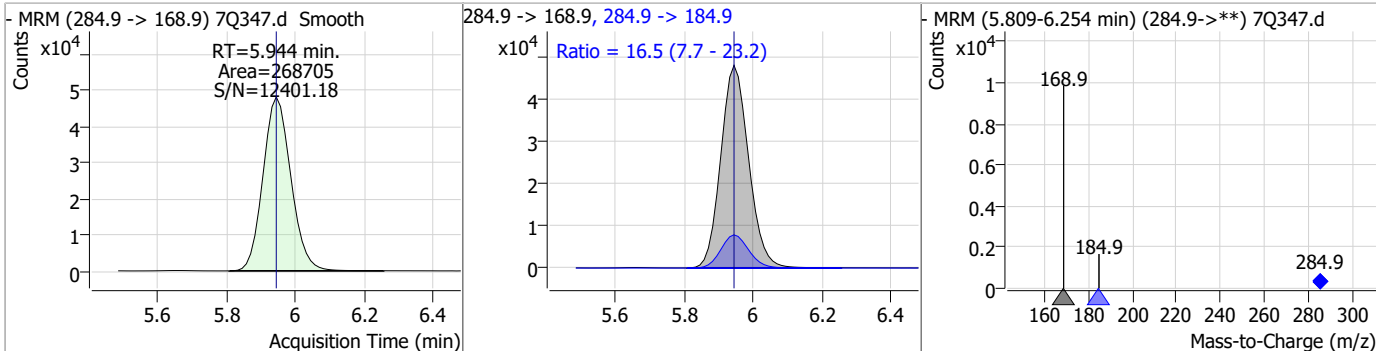
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.79	5.94	0.00	54913				



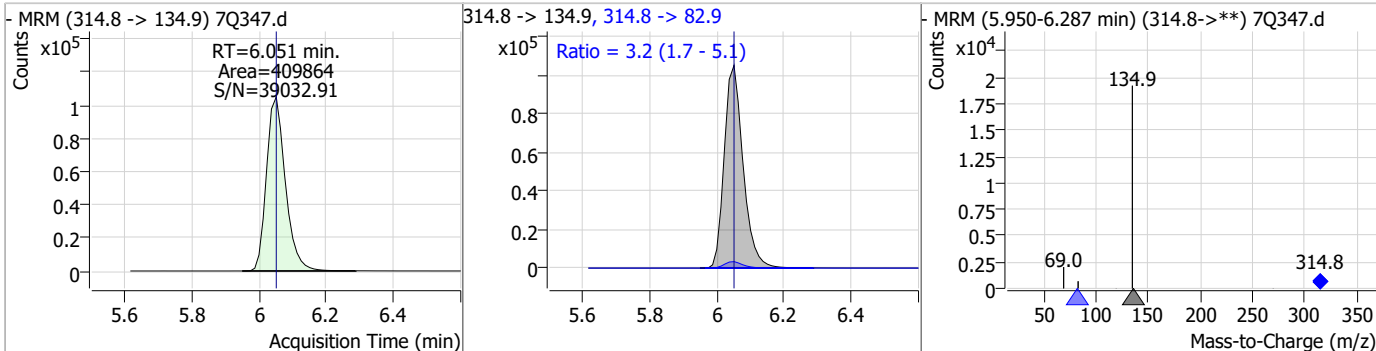
7.7.23 7

Perfluorinated Compounds by LC/MS/MS

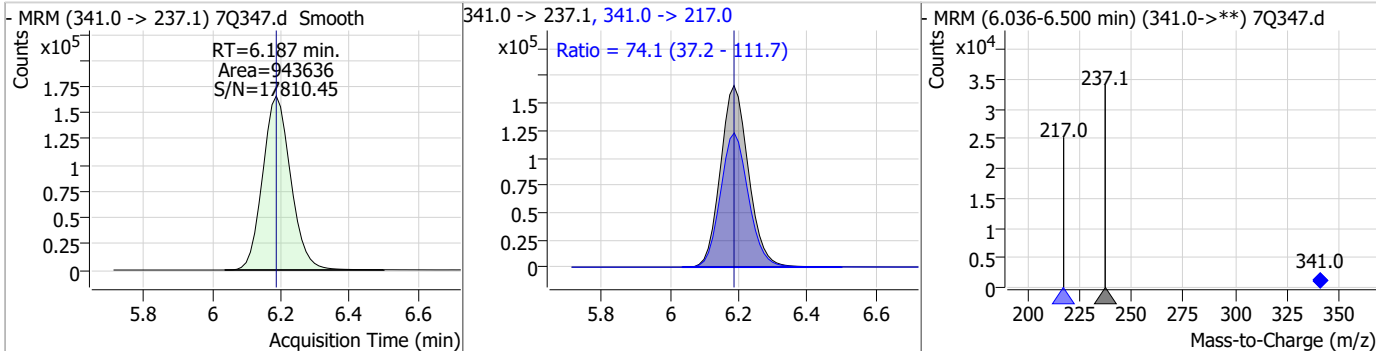
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	51.34	5.94	0.00	268705	284.9 -> 184.9	16.5	7.7	23.2



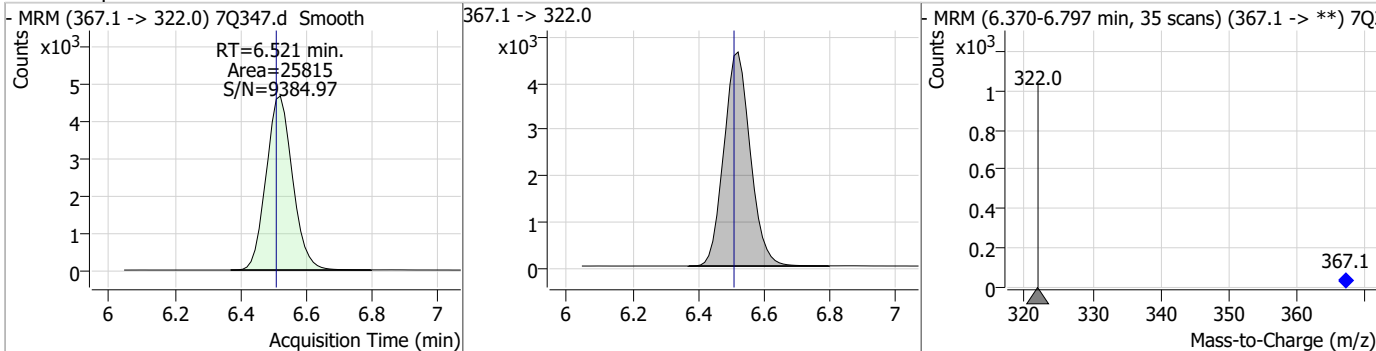
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	47.20	6.05	0.00	409864	314.8 -> 82.9	3.2	1.7	5.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	669.52	6.19	0.00	943636	341.0 -> 217.0	74.1	37.2	111.7

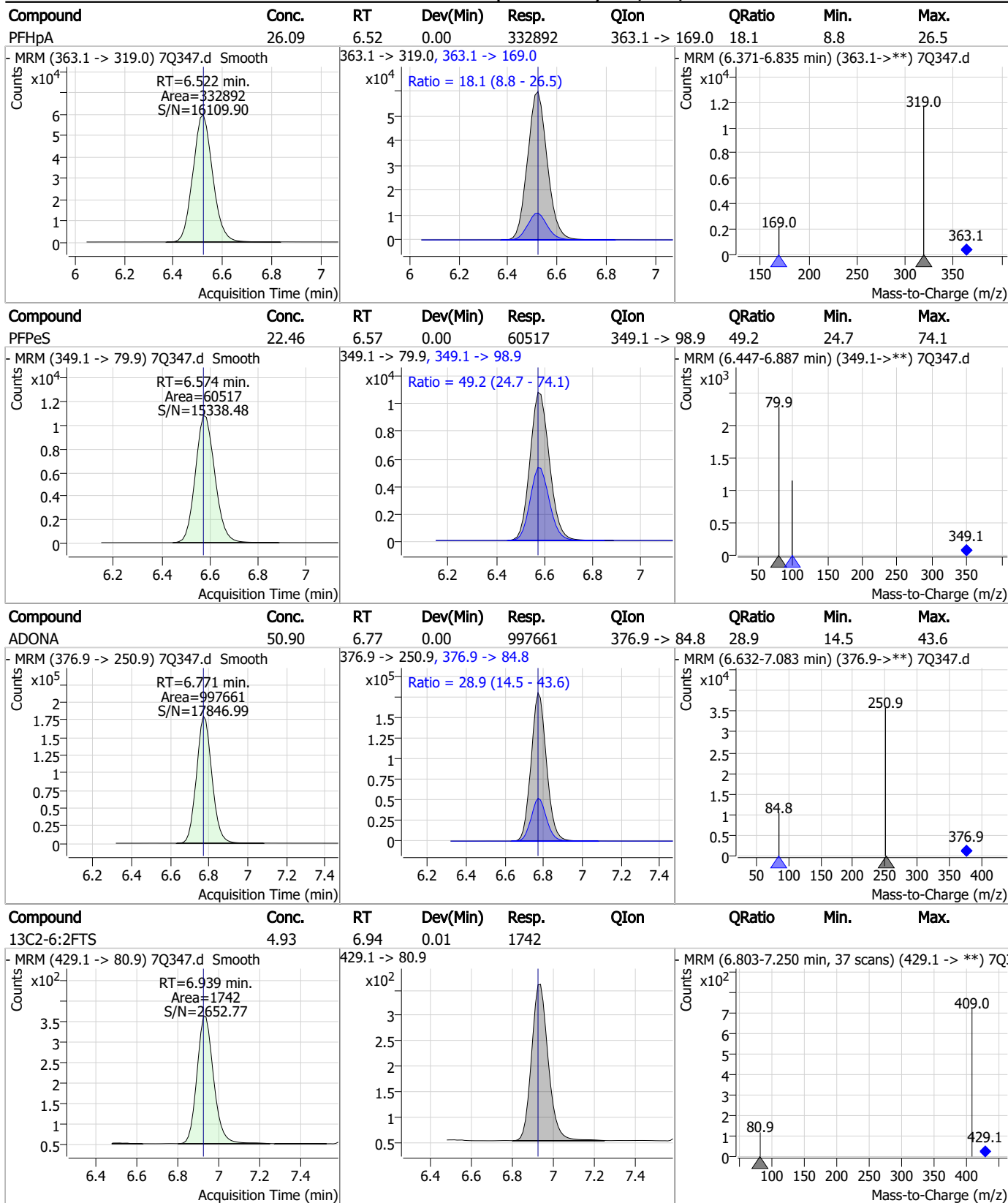


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.47	6.52	0.01	25815	367.1 -> 322.0			



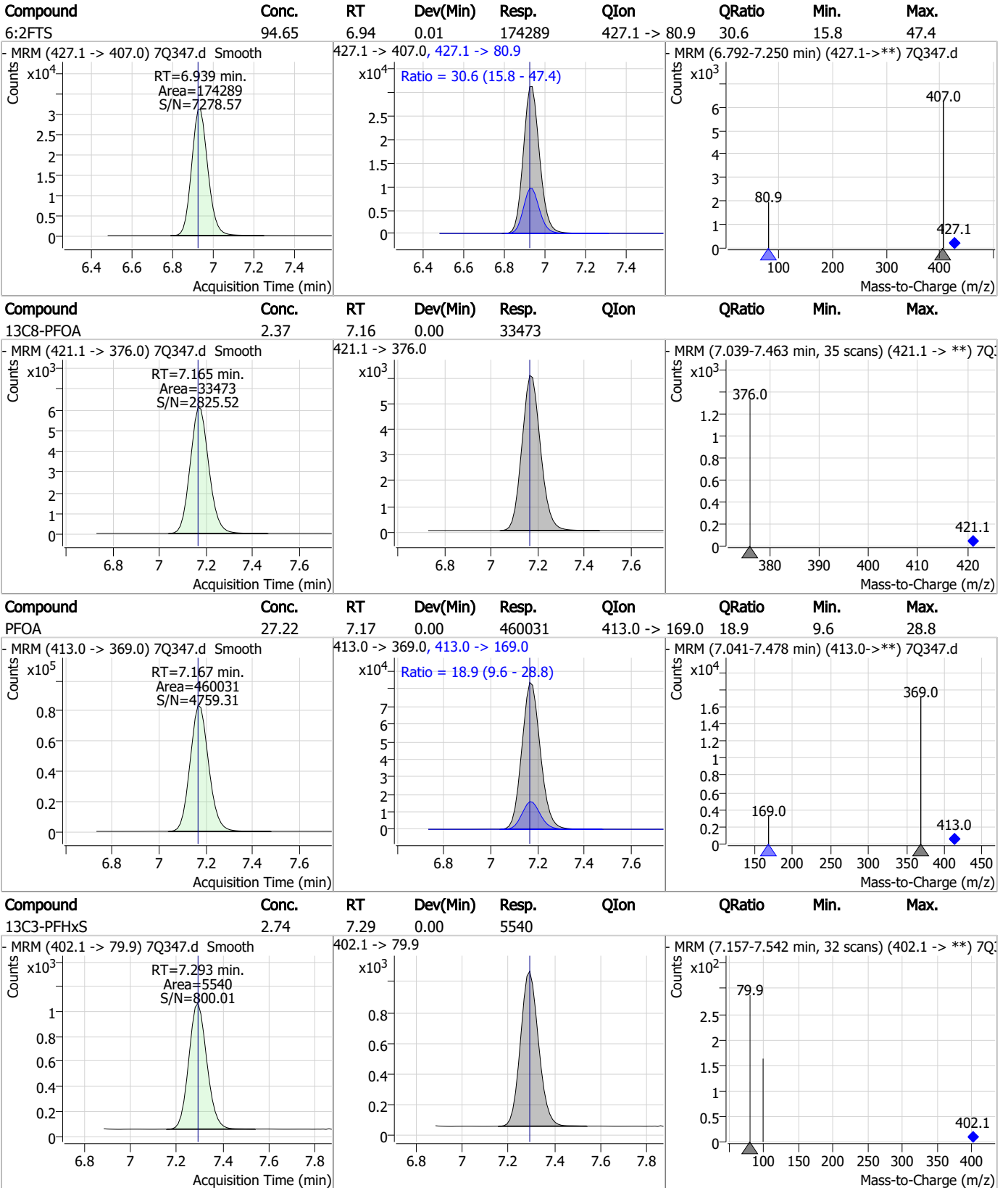
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Perfluorinated Compounds by LC/MS/MS



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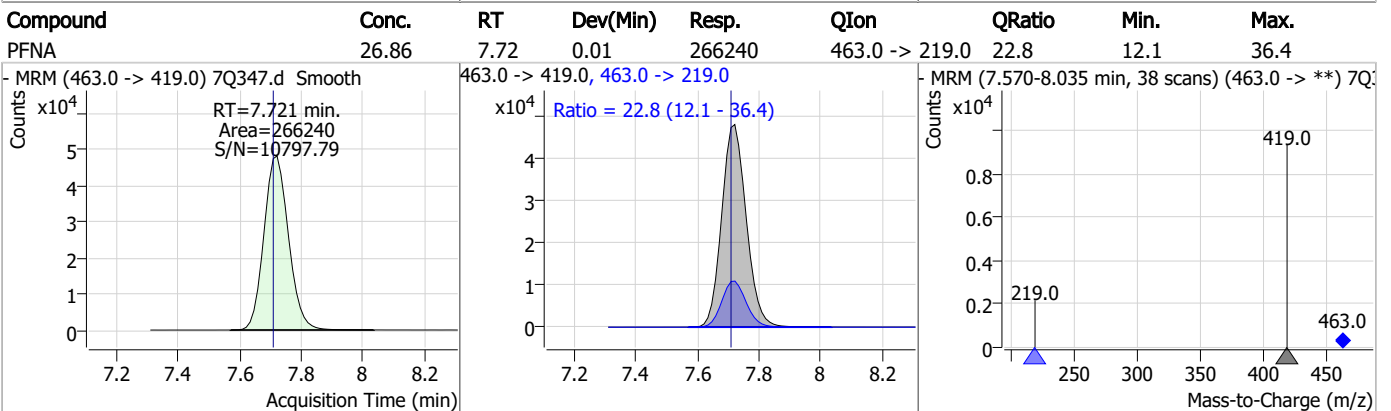
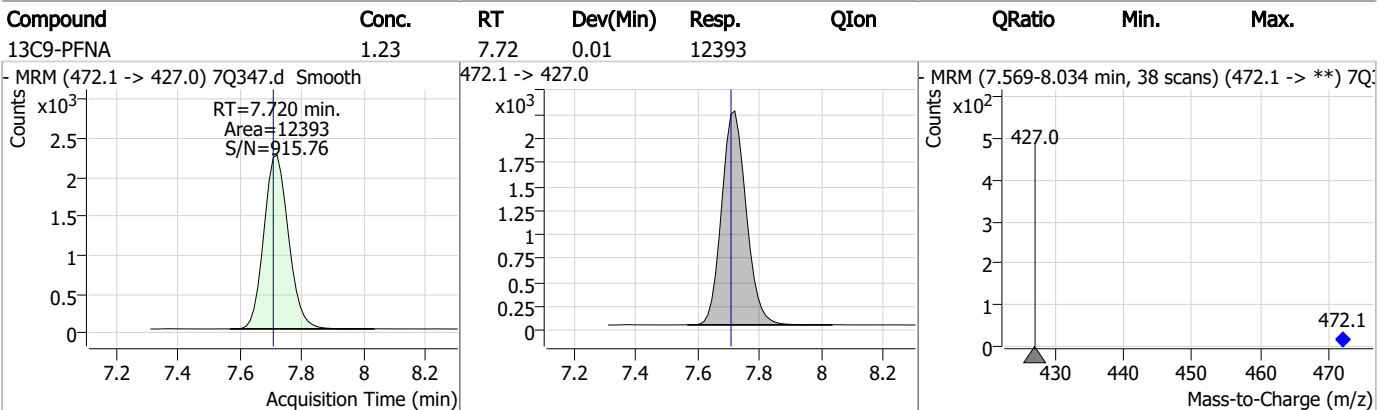
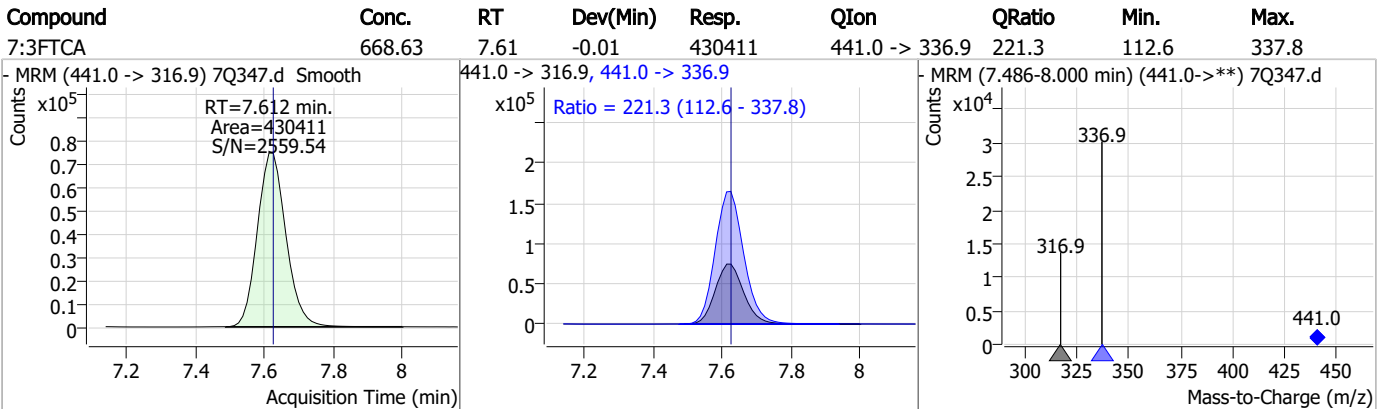
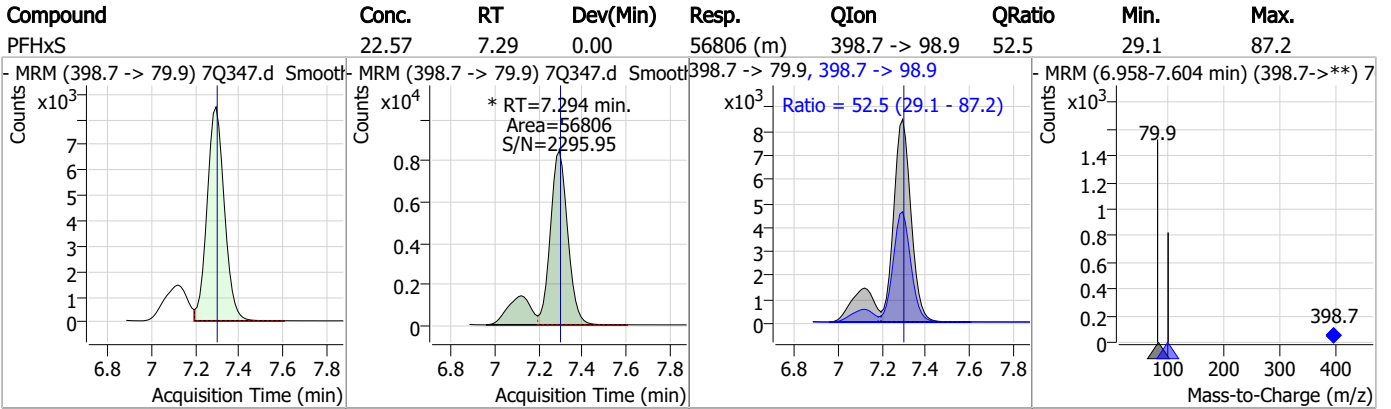
Perfluorinated Compounds by LC/MS/MS



7.7.23 7



Perfluorinated Compounds by LC/MS/MS



7.7.23 7



Perfluorinated Compounds by LC/MS/MS

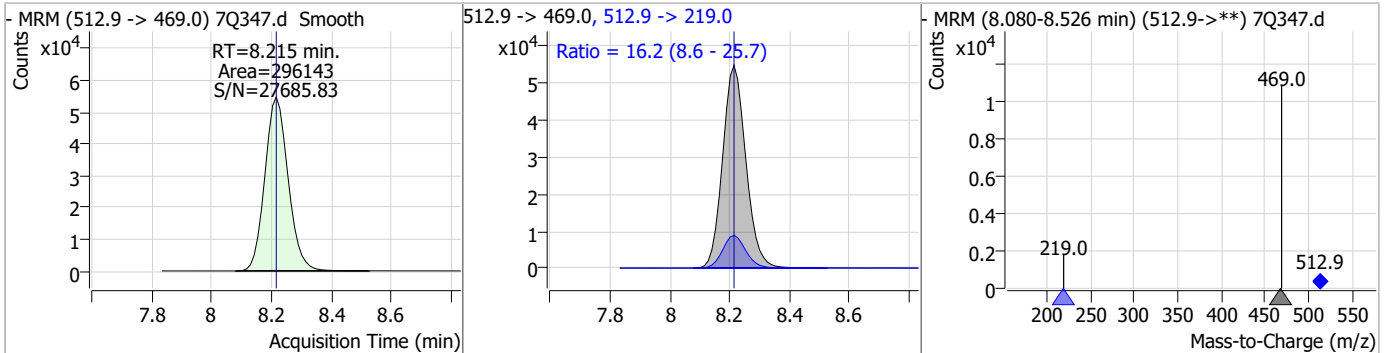
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	24.63	7.87	0.01	52410	449.0 -> 98.9	54.8	27.6	82.7
13C2-8:2FTS	5.07	7.99	0.00	2548	529.1 -> 80.9			
8:2FTS	82.94	7.99	0.00	201985	527.1 -> 80.8	26.4	13.5	40.6
13C6-PFDA	1.19	8.21	0.00	12164	519.1 -> 474.1			

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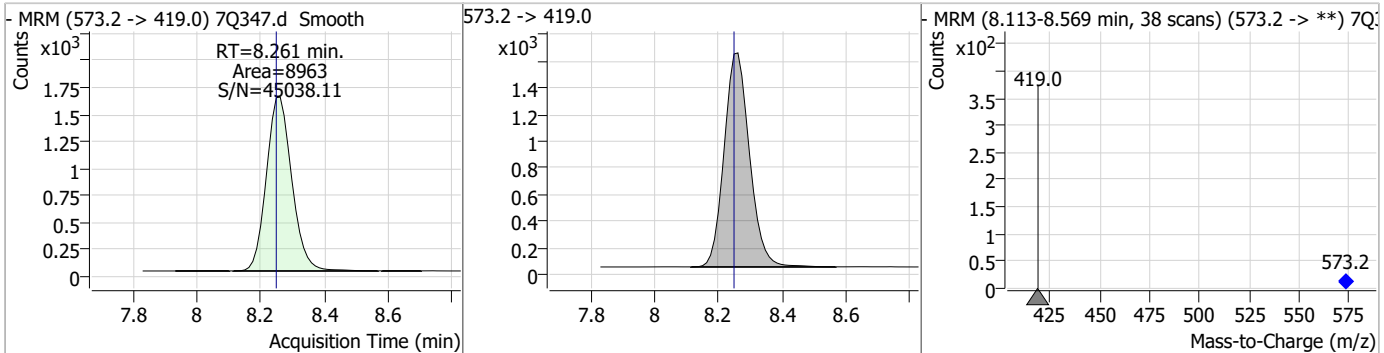


Perfluorinated Compounds by LC/MS/MS

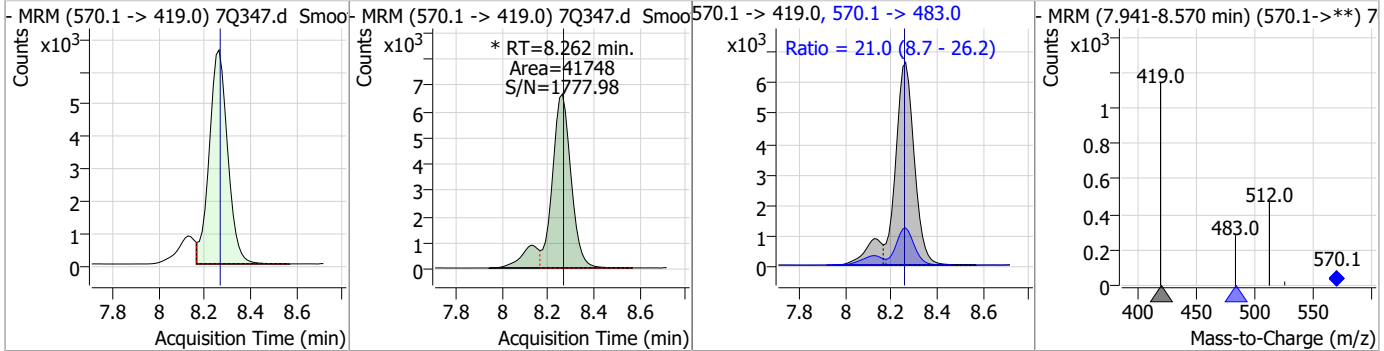
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	26.51	8.22	0.00	296143	512.9 -> 219.0	16.2	8.6	25.7



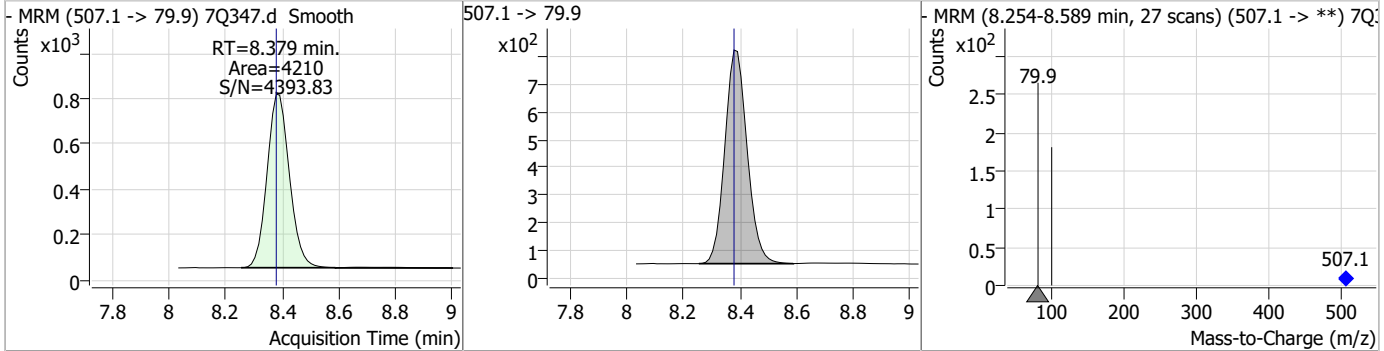
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.58	8.26	0.01	8963				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	26.47	8.26	0.00	41748 (m)	570.1 -> 483.0	21.0	8.7	26.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.36	8.38	0.00	4210				

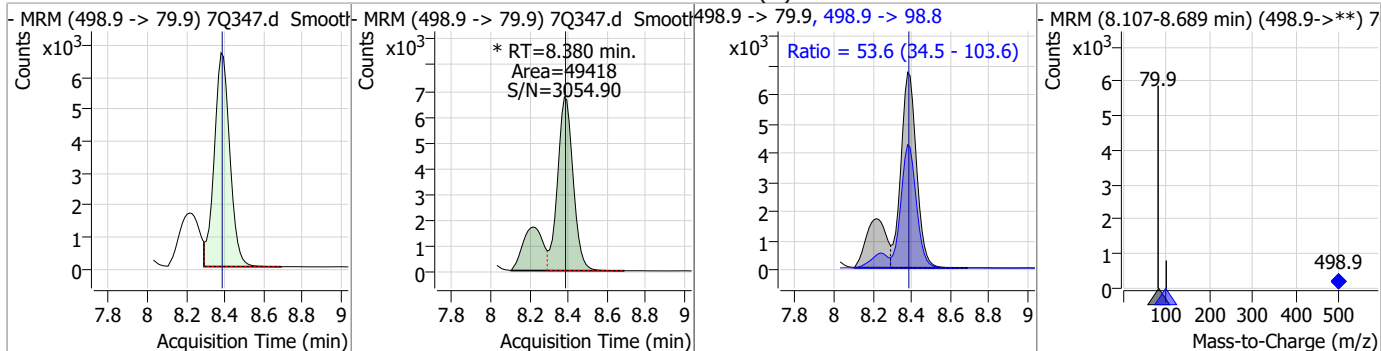


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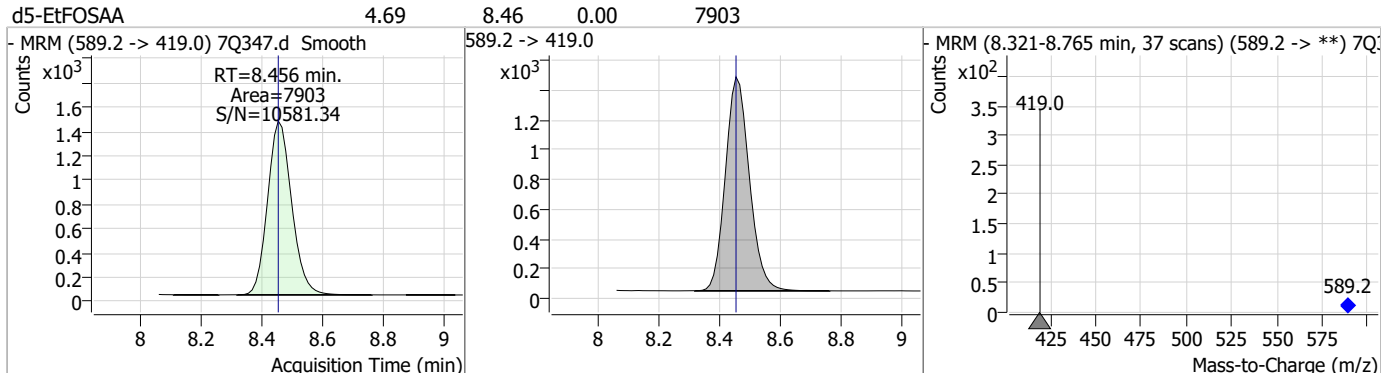


Perfluorinated Compounds by LC/MS/MS

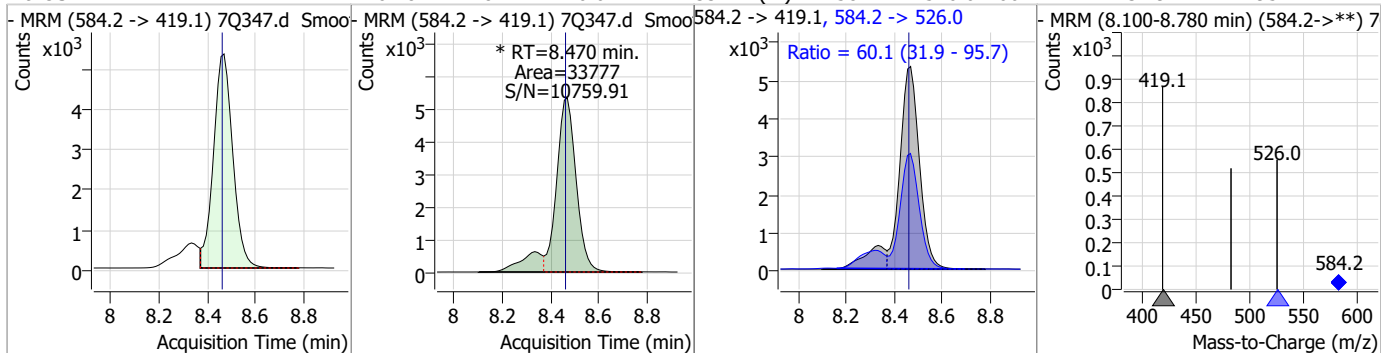
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	24.06	8.38	0.00	49418 (m)	498.9 -> 98.8	53.6	34.5	103.6



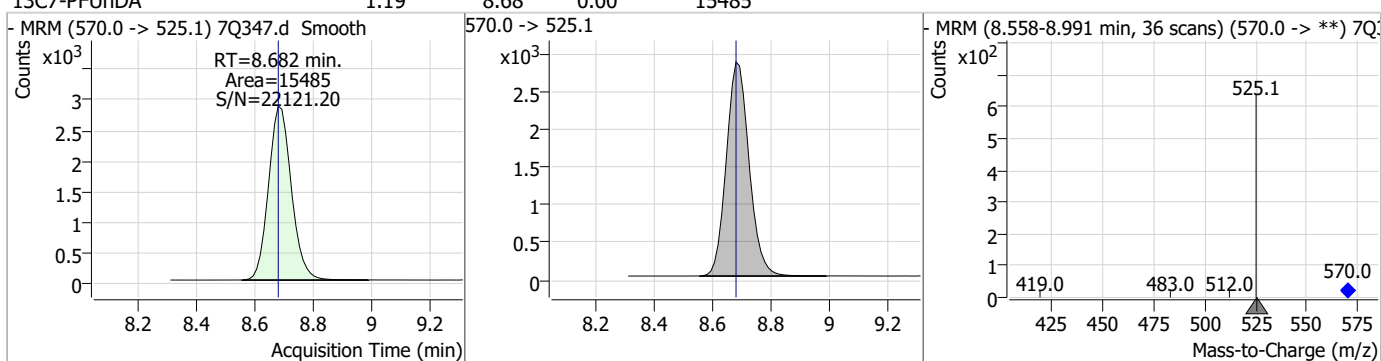
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.69	8.46	0.00	7903				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	26.48	8.47	0.01	33777 (m)	584.2 -> 526.0	60.1	31.9	95.7

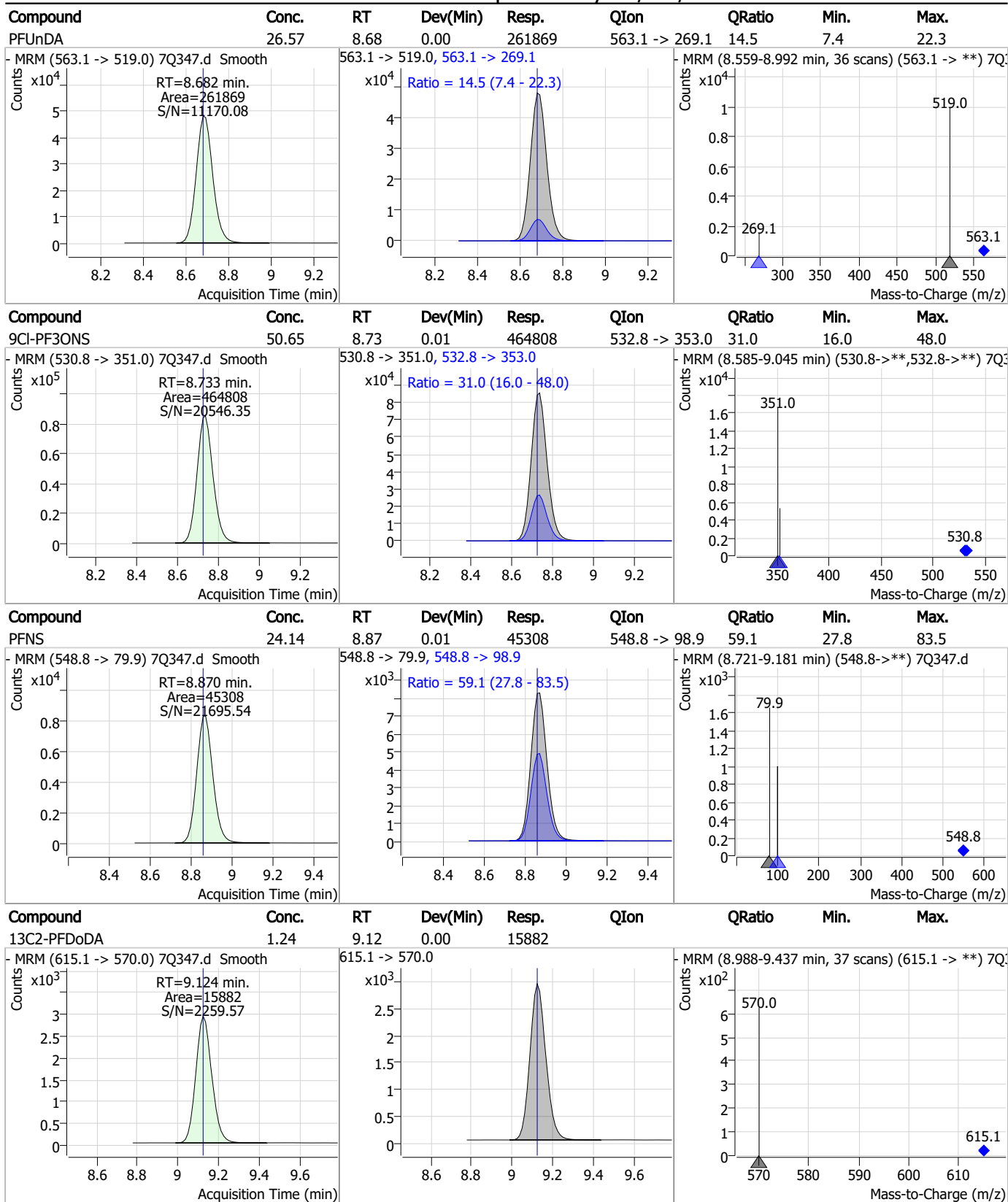


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.19	8.68	0.00	15485				



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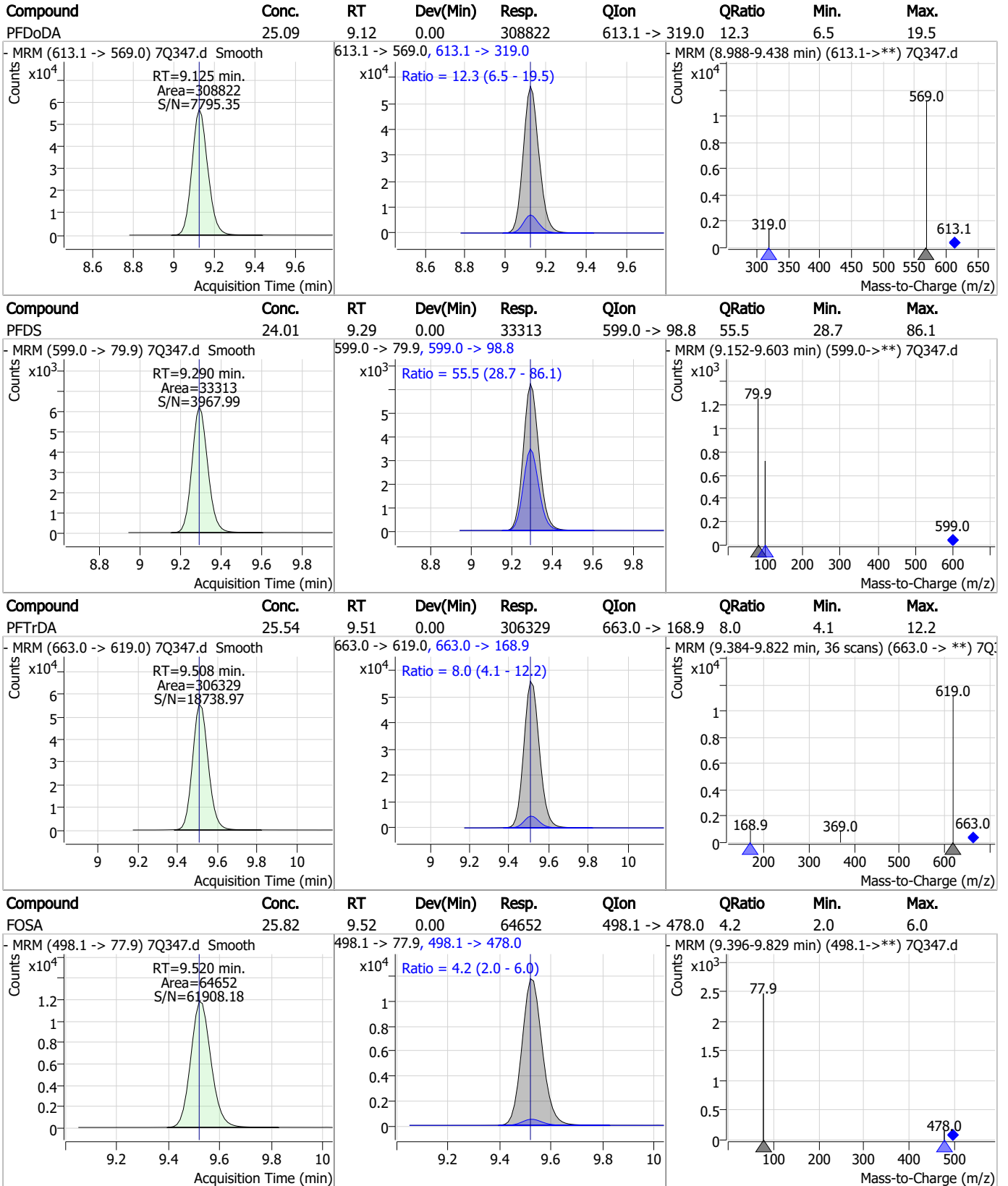
Perfluorinated Compounds by LC/MS/MS



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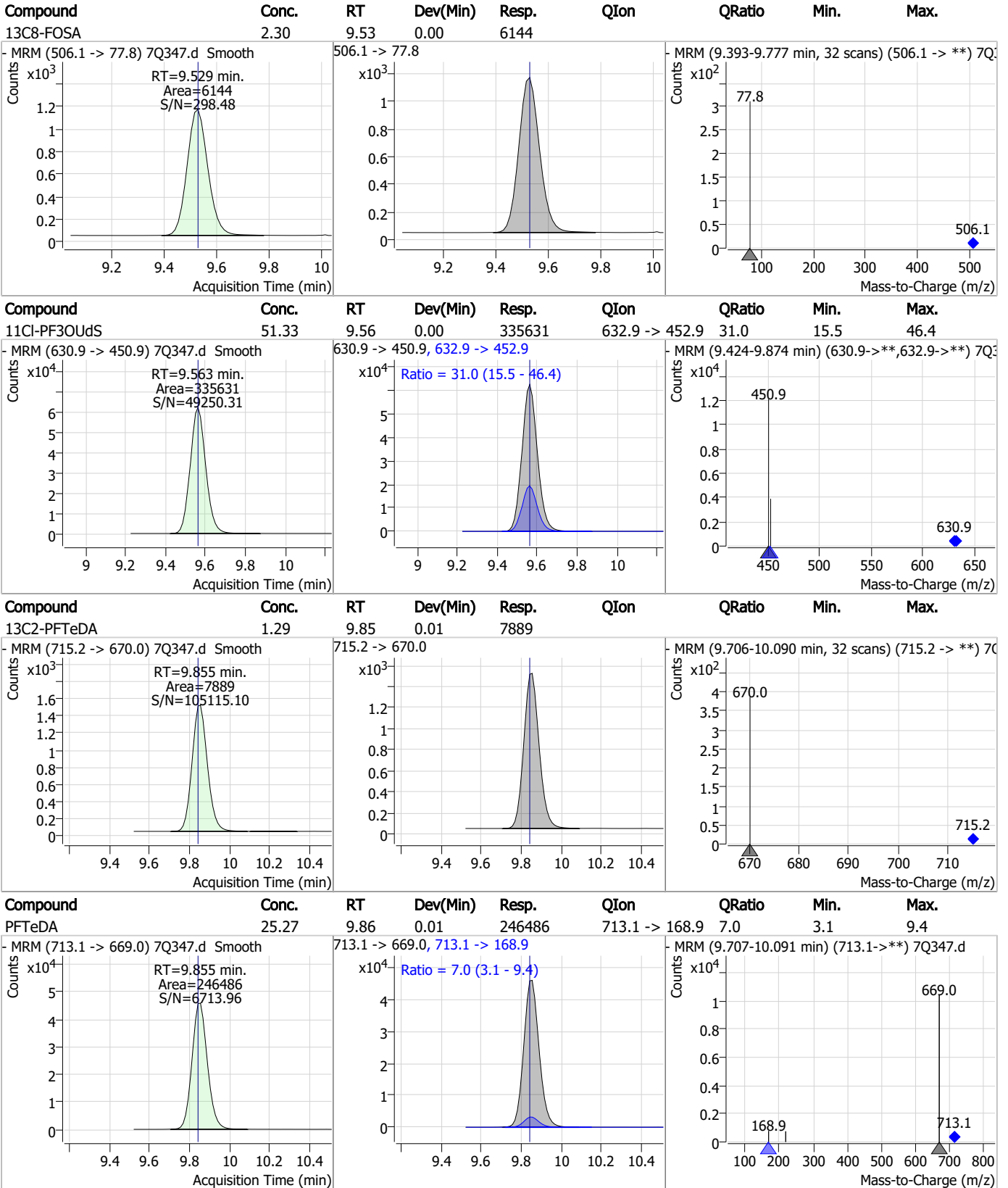
Perfluorinated Compounds by LC/MS/MS



7.7.23 7



Perfluorinated Compounds by LC/MS/MS

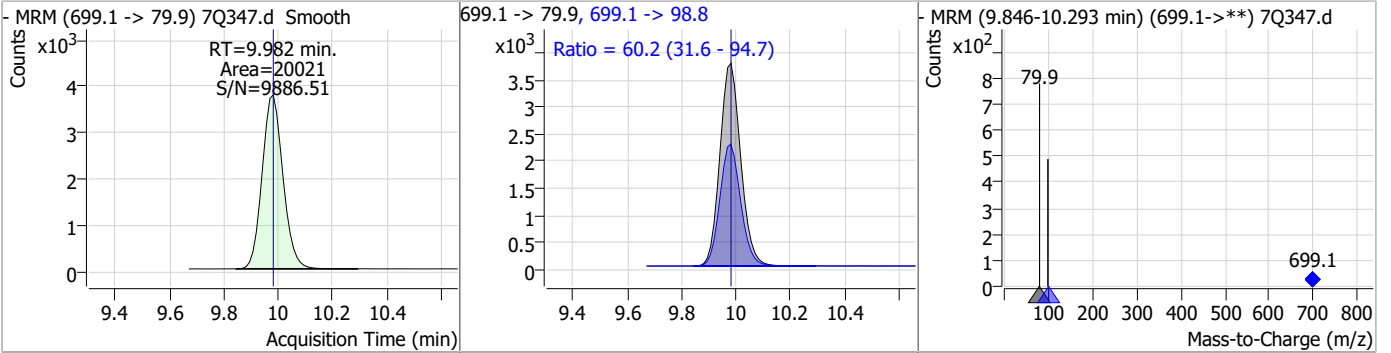


7.7.23 7

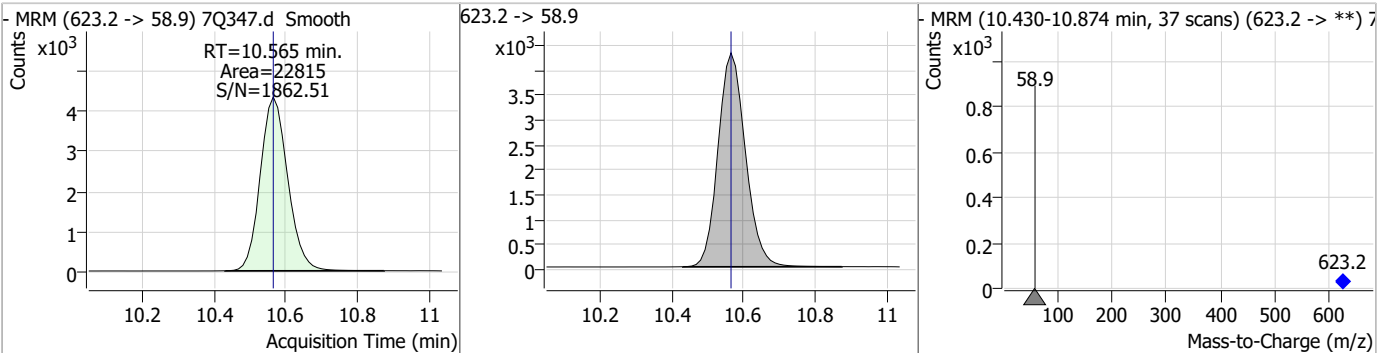


Perfluorinated Compounds by LC/MS/MS

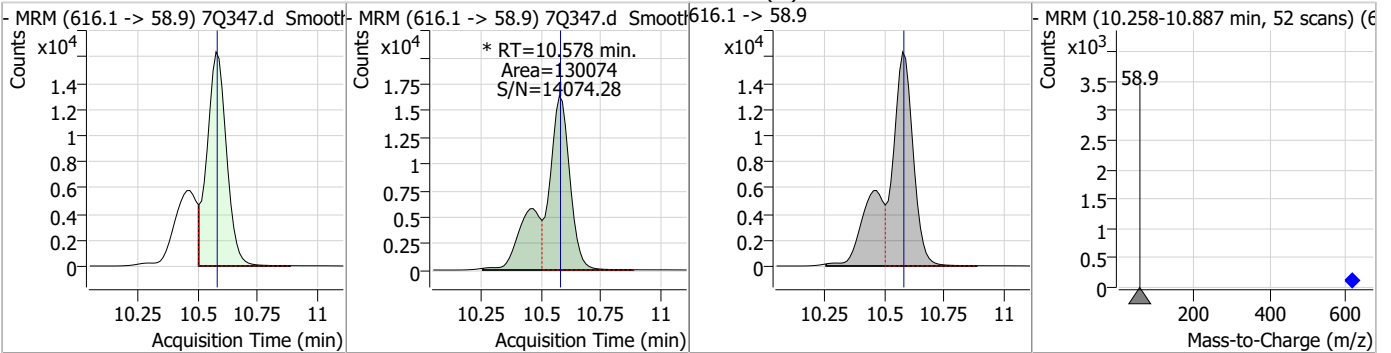
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	24.25	9.98	0.00	20021	699.1 -> 98.8	60.2	31.6	94.7



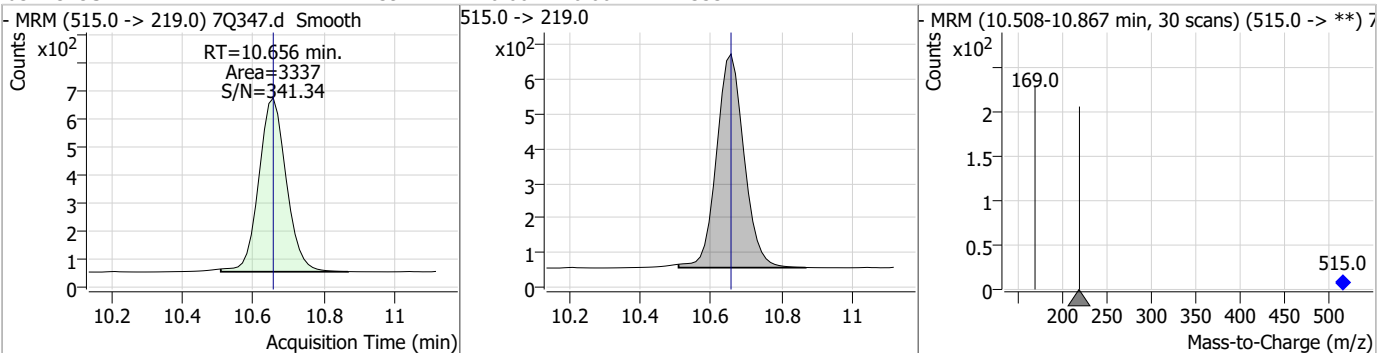
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.18	10.56	0.00	22815				



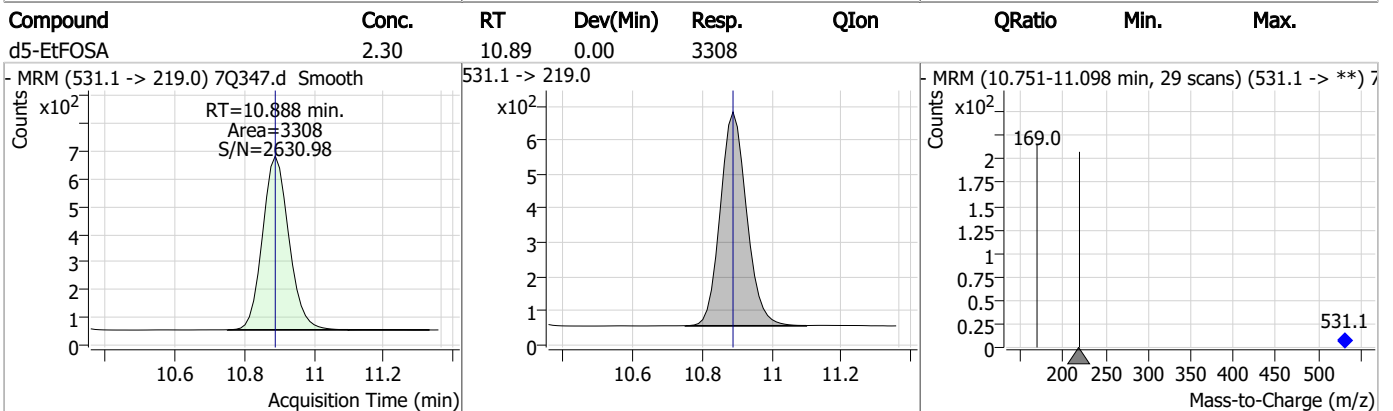
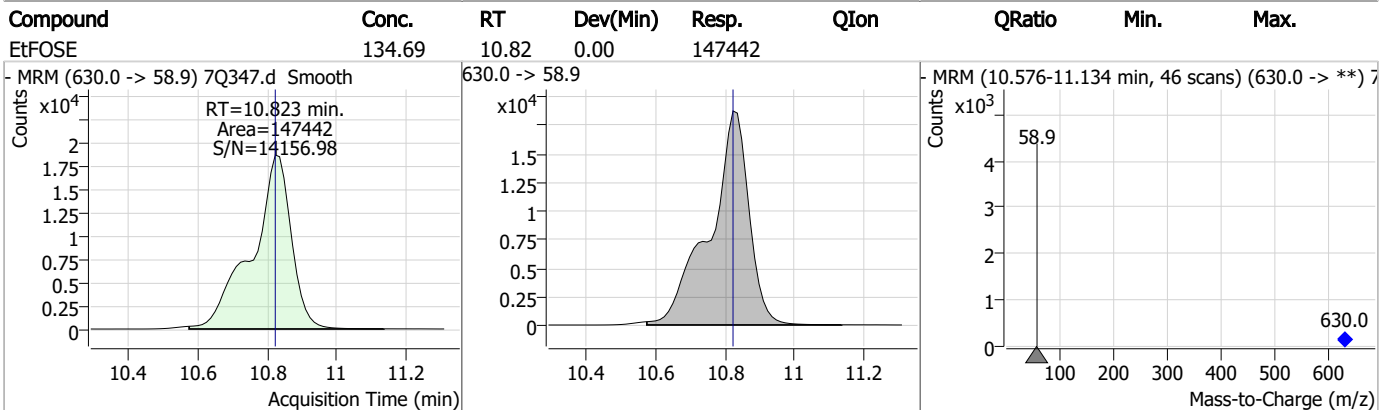
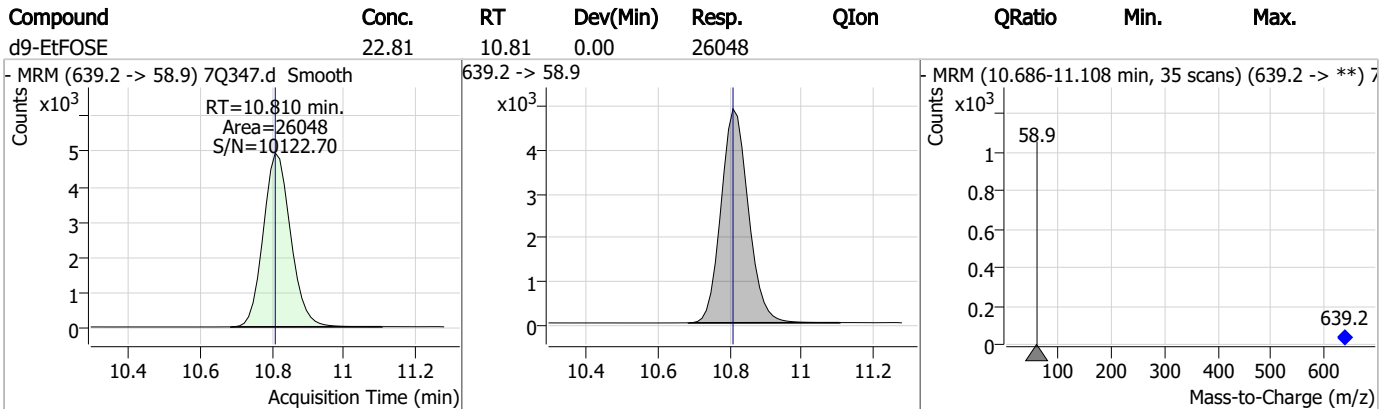
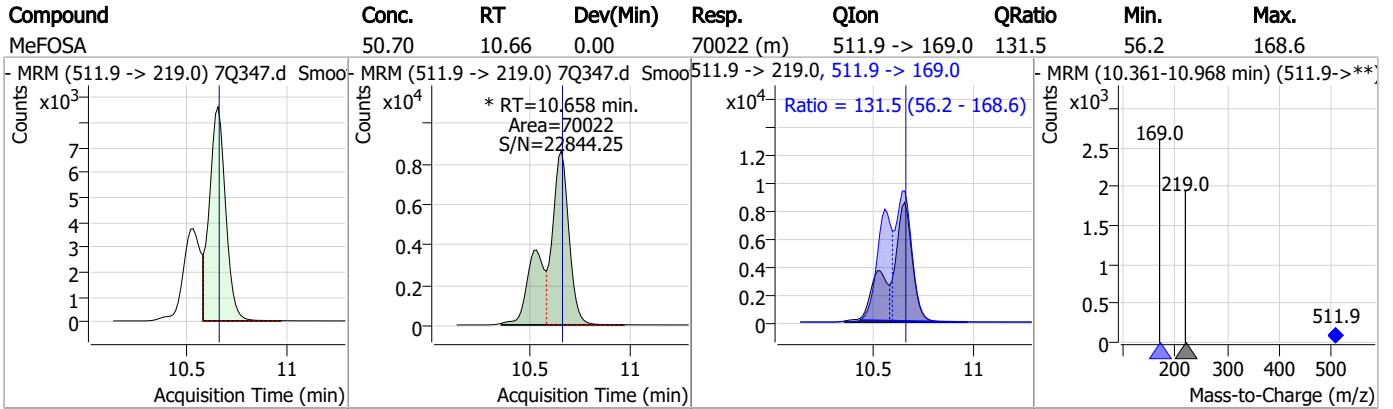
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	133.14	10.58	0.00	130074 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.39	10.66	0.00	3337				



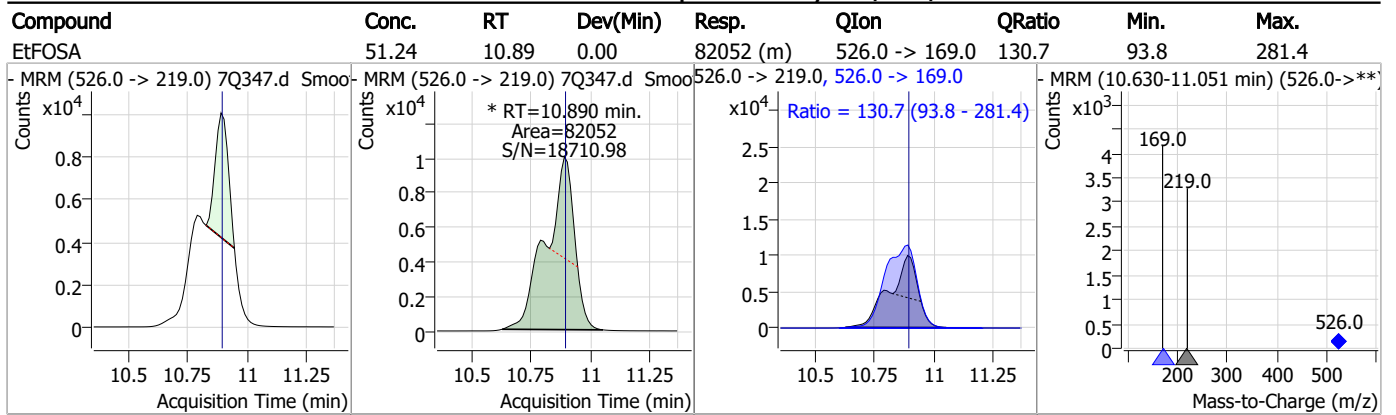
Perfluorinated Compounds by LC/MS/MS



7.7.23 7



Perfluorinated Compounds by LC/MS/MS



7.7.23
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Manual Integration Approval Summary

Sample Number: S7Q11-IC11 Method: EPA DRAFT 1633
Lab FileID: 7Q347.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 16:19 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

7.7.23.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 7Q348.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 4:33:36 PM
 Sample Name : ic11-8
 Vial : P1-A9
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	95189	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	33242	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	30815	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	26257	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	35272	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	13106	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	12485	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	15626	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	16531	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	8034	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	6326	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6895	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5468	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4261	2.50 µg/L	0.000
M2-4:2FTS	5.205	329.1 -> 80.9	662	5.00 µg/L	-0.012
M2-6:2FTS	6.927	429.1 -> 80.9	1648	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2209	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	9322	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	56824	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7872	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	23696	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	27388	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3402	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3694	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4902	2.50 µg/L	0.000
13C3-PFBA	2.877	216.0 -> 172.0	44813	5.00 µg/L	-0.012
18O2-PFHxS	7.292	403.0 -> 83.9	3844	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	36840	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11358	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	14793	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	25288	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.205	329.1 -> 80.9	662	4.05 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.0%		
13C2-6:2FTS	6.927	429.1 -> 80.9	1648	4.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.5%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2209	3.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 79.8%		
13C2-PFDoDA	9.124	615.1 -> 570.0	16531	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.8%		
13C2-PFTeDA	9.855	715.2 -> 670.0	8034	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C3-PFBS	5.484	302.1 -> 79.9	6895	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.293	402.1 -> 79.9	5468	2.45 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C4-PFBA	2.885	216.8 -> 171.9	95189	10.05 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C4-PFHpA	6.509	367.1 -> 322.0	26257	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C5-PFHxA	5.554	318.0 -> 273.0	30815	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C5-PFPeA	4.312	268.3 -> 223.0	33242	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C6-PFDA	8.215	519.1 -> 474.1	12485	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C7-PFUnDA	8.682	570.0 -> 525.1	15626	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C8-FOSA	9.530	506.1 -> 77.8	6326	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C8-PFOA	7.165	421.1 -> 376.0	35272	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C8-PFOS	8.379	507.1 -> 79.9	4261	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C9-PFNA	7.720	472.1 -> 427.0	13106	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
d3-MeFOSAA	8.261	573.2 -> 419.0	9322	4.94 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-HFPO-DA	5.944	286.9 -> 168.9	56824	9.98 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
d3-MeFOSA	10.656	515.0 -> 219.0	3694	2.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.9%		
d5-EtFOSAA	8.456	589.2 -> 419.0	7872	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
d7-MeFOSE	10.565	623.2 -> 58.9	23696	24.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
d9-EtFOSE	10.810	639.2 -> 58.9	27388	24.86 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
d5-EtFOSA	10.888	531.1 -> 219.0	3402	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	236358	227.37 µg/L	99
		327.1 -> 80.9	81513		
6:2FTS	6.927	427.1 -> 407.0	369141	211.93 µg/L	98
		427.1 -> 80.9	112641		
8:2FTS	7.992	527.1 -> 507.0	405769	192.17 µg/L	99
		527.1 -> 80.8	107094		
EtFOSAA	8.470	584.2 -> 419.1	81876	64.46 µg/L	m 94
		584.2 -> 526.0	48529		
FOSA	9.520	498.1 -> 77.9	162537	63.05 µg/L	100
		498.1 -> 478.0	6653		
MeFOSAA	8.262	570.1 -> 419.0	105259	64.16 µg/L	m 95
		570.1 -> 483.0	20692		
PFBA	2.881	212.8 -> 168.9	886107	257.02 µg/L	100
PFBS	5.485	298.7 -> 79.9	143844	55.28 µg/L	99
		298.7 -> 98.8	58030		
PFDA	8.215	512.9 -> 469.0	709408	61.87 µg/L	97
		512.9 -> 219.0	114170		
PFDoDA	9.125	613.1 -> 569.0	752107	58.70 µg/L	99
		613.1 -> 319.0	94885		
PFDS	9.290	599.0 -> 79.9	84660	60.30 µg/L	96

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	46336			
PFHpA	6.522	363.1 -> 319.0	833469	64.23	µg/L	99
		363.1 -> 169.0	151877			
PFHpS	7.873	449.0 -> 79.9	130484	60.58	µg/L	99
		449.0 -> 98.9	72881			
PFHxA	5.556	313.0 -> 269.0	714428	62.99	µg/L	100
		313.0 -> 118.9	35714			
PFHxS	7.294	398.7 -> 79.9	143866	57.89	µg/L	m 91
		398.7 -> 98.9	74060			
PFNA	7.721	463.0 -> 419.0	652316	62.24	µg/L	98
		463.0 -> 219.0	150991			
PFNS	8.870	548.8 -> 79.9	111678	58.79	µg/L	94
		548.8 -> 98.9	66996			
PFOA	7.167	413.0 -> 369.0	1131142	63.53	µg/L	99
		413.0 -> 169.0	210888			
PFOS	8.380	498.9 -> 79.9	124282	59.79	µg/L	m 80
		498.9 -> 98.8	65940			
PFPeA	4.314	263.0 -> 219.0	1066413	128.57	µg/L	100
PFPeS	6.574	349.1 -> 79.9	151056	56.79	µg/L	100
		349.1 -> 98.9	74533			
PFTeDA	9.855	713.1 -> 669.0	597442	60.16	µg/L	98
		713.1 -> 168.9	42295			
PFTrDA	9.508	663.0 -> 619.0	743202	59.53	µg/L	99
		663.0 -> 168.9	58738			
PFUnDA	8.682	563.1 -> 519.0	633216	63.67	µg/L	99
		563.1 -> 269.1	90459			
11Cl-PF3OUdS	9.563	630.9 -> 450.9	813629	120.24	µg/L	99
		632.9 -> 452.9	256639			
9Cl-PF3ONS	8.733	530.8 -> 351.0	1152493	121.36	µg/L	99
		532.8 -> 353.0	359793			
ADONA	6.771	376.9 -> 250.9	2472720	121.92	µg/L	99
		376.9 -> 84.8	707748			
HFPO-DA	5.944	284.9 -> 168.9	691524	127.68	µg/L	98
		284.9 -> 184.9	114181			
3:3FTCA	3.736	241.0 -> 177.0	141410	345.64	µg/L	100
		241.0 -> 117.0	16833			
5:3FTCA	6.174	341.0 -> 237.1	2373555	1610.45	µg/L	100
		341.0 -> 217.0	1774601			
7:3FTCA	7.612	441.0 -> 316.9	1088943	1617.70	µg/L	100
		441.0 -> 336.9	2447372			
EtFOSA	10.890	526.0 -> 219.0	213643	129.71	µg/L	m 59
		526.0 -> 169.0	274386			
EtFOSE	10.823	630.0 -> 58.9	371746	322.99	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	176873	115.69	µg/L	m 81
		511.9 -> 169.0	234512			
MeFOSE	10.578	616.1 -> 58.9	327632	322.89	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	51049	61.10	µg/L	95
		699.1 -> 98.8	30322			
NFDHA	5.437	295.0 -> 201.0	294580	114.34	µg/L	97
		295.0 -> 84.9	82840			
PFMBA	4.738	279.0 -> 85.1	687472	129.41	µg/L	100
PFMPA	3.443	229.0 -> 84.9	728666	131.30	µg/L	100
PFEESA	6.037	314.8 -> 134.9	1010434	111.28	µg/L	100
		314.8 -> 82.9	32732			

= Qualifier out of range, m = manually integrated, + = Area summed

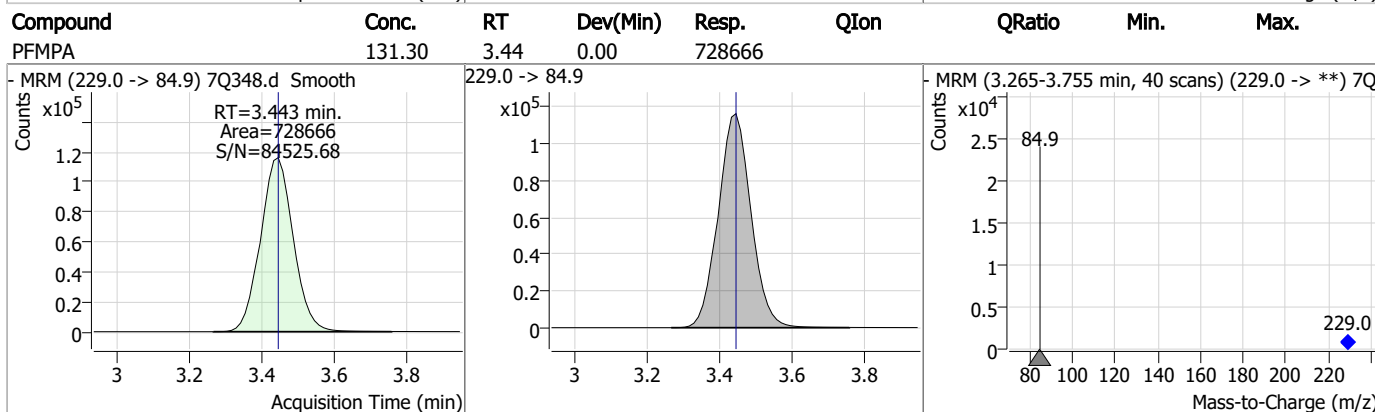
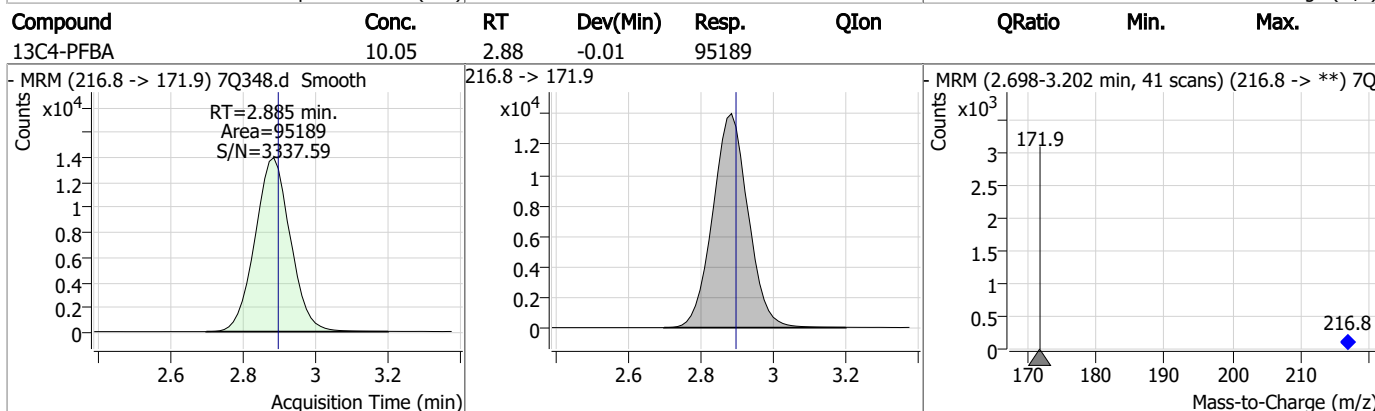
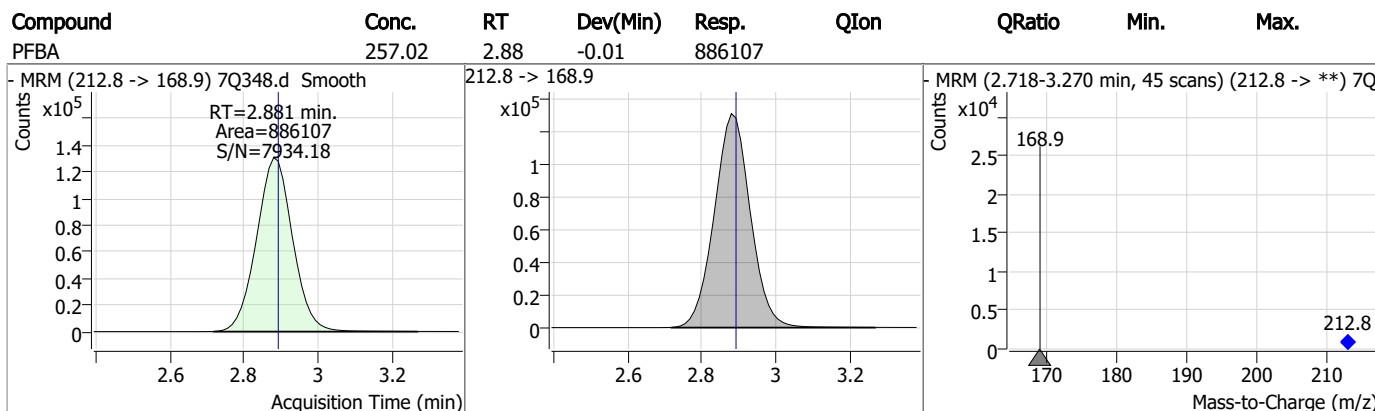
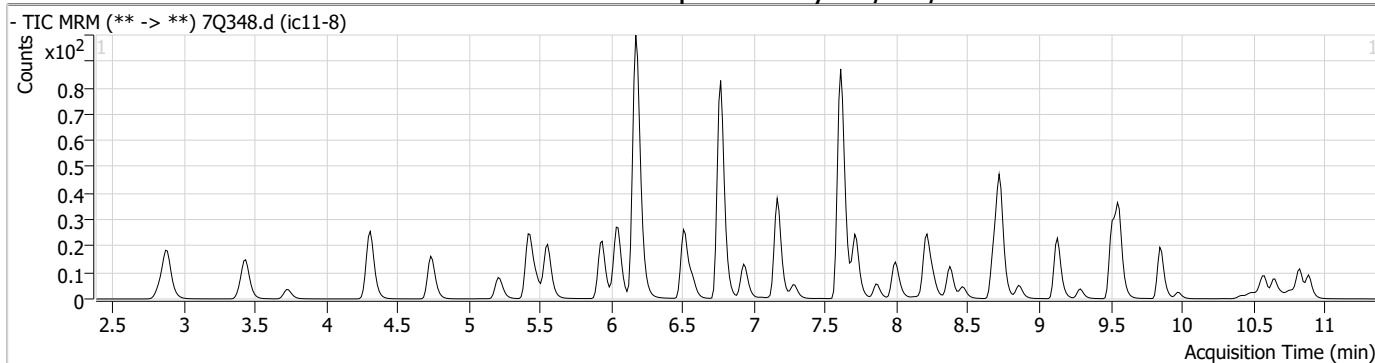
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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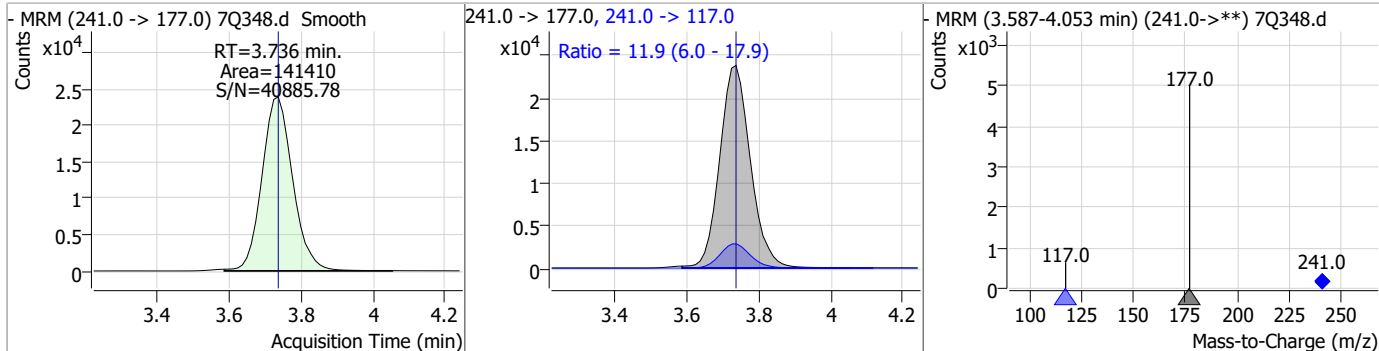
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Perfluorinated Compounds by LC/MS/MS

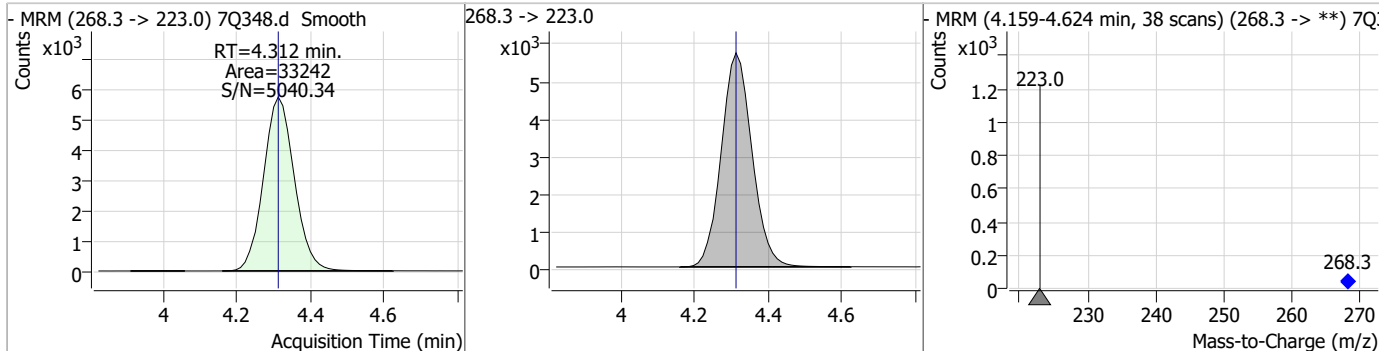


Perfluorinated Compounds by LC/MS/MS

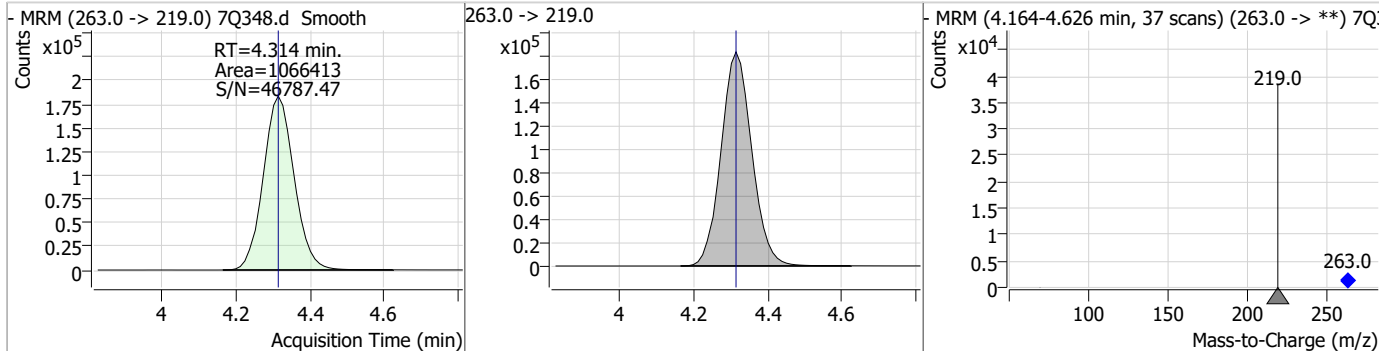
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	345.64	3.74	0.00	141410	241.0 -> 117.0	11.9	6.0	17.9



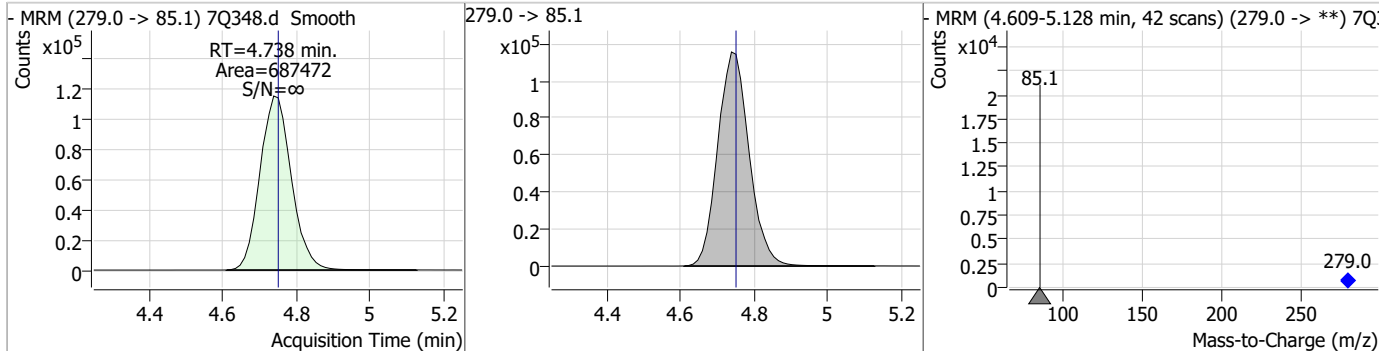
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.87	4.31	0.00	33242				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	128.57	4.31	0.00	1066413				

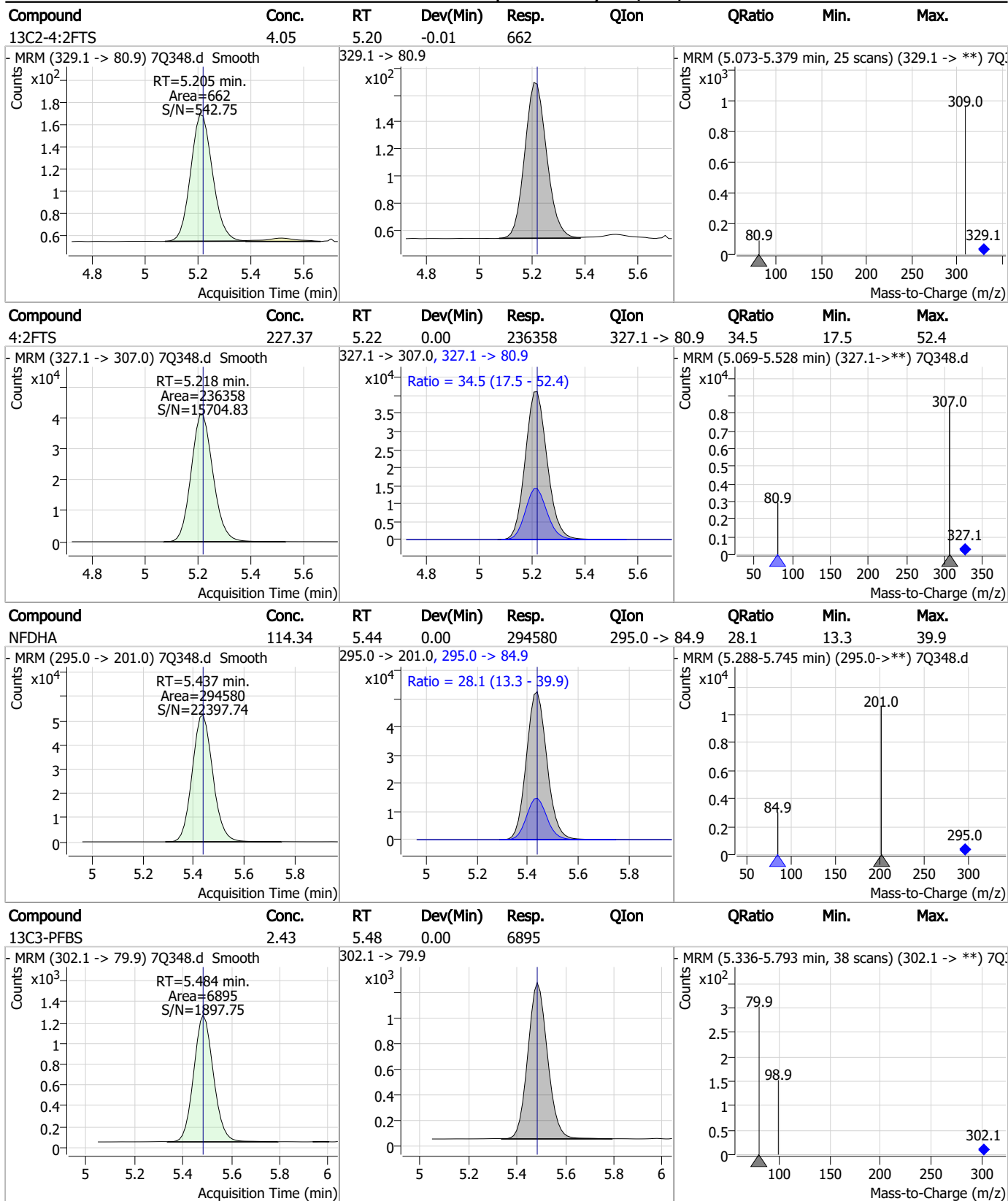


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	129.41	4.74	-0.01	687472				



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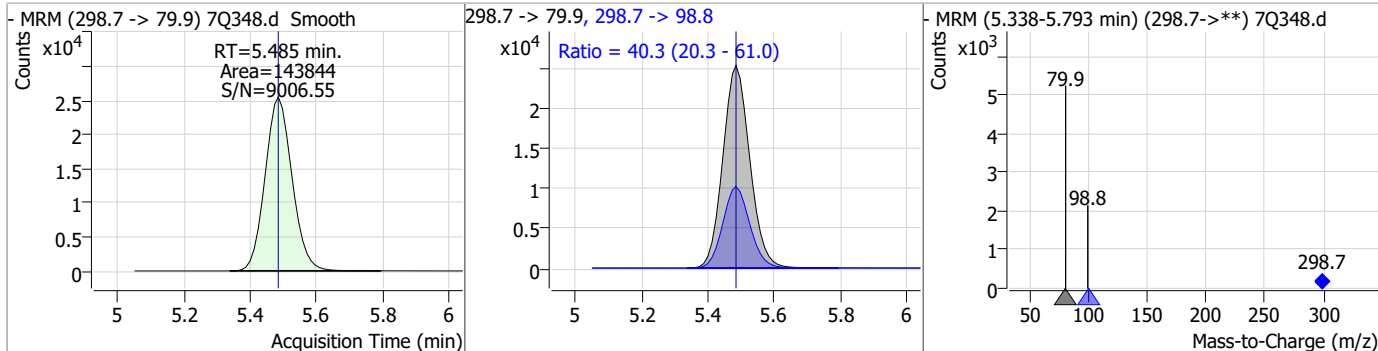
Perfluorinated Compounds by LC/MS/MS



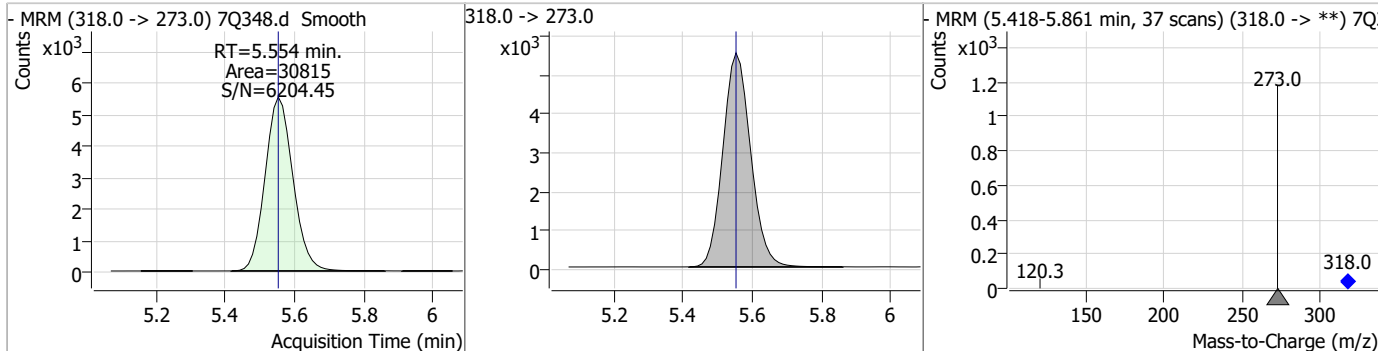
7.7.24 7

Perfluorinated Compounds by LC/MS/MS

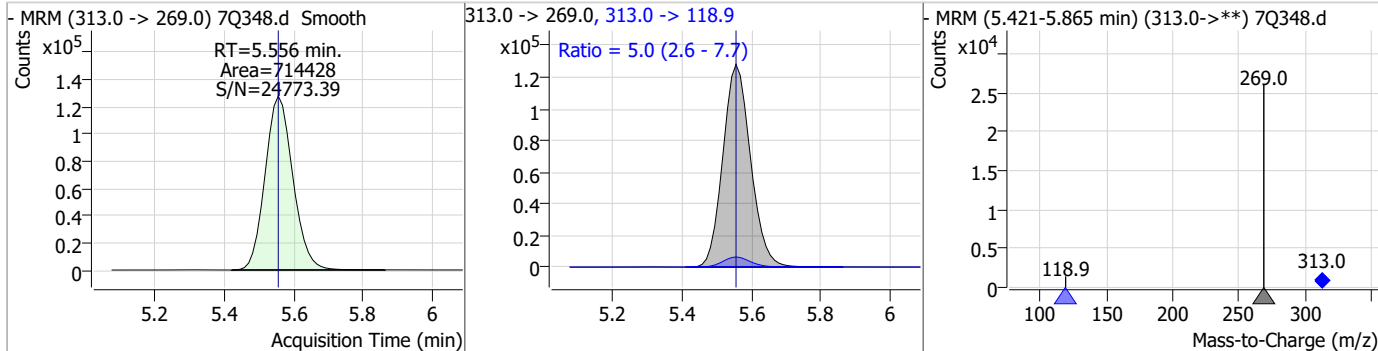
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	55.28	5.48	0.00	143844	298.7 -> 98.8	40.3	20.3	61.0



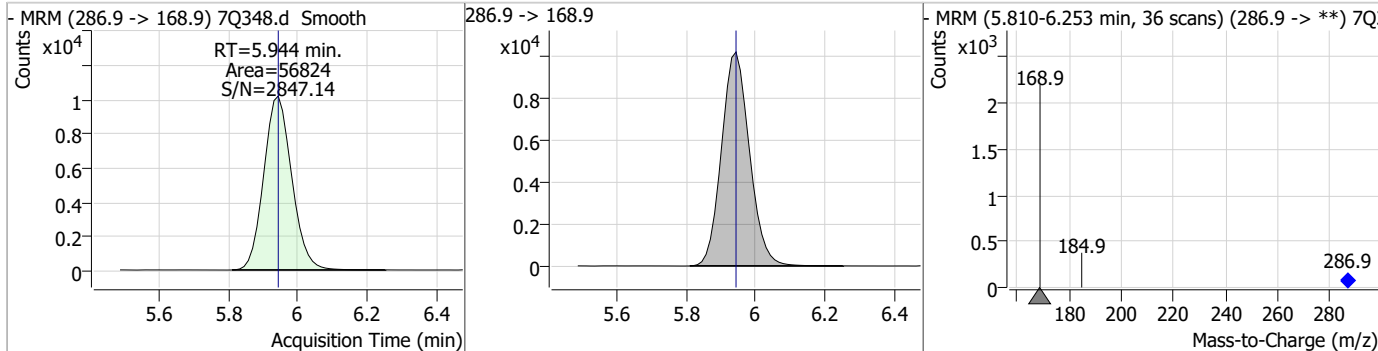
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.52	5.55	0.00	30815				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	62.99	5.56	0.00	714428	313.0 -> 118.9	5.0	2.6	7.7

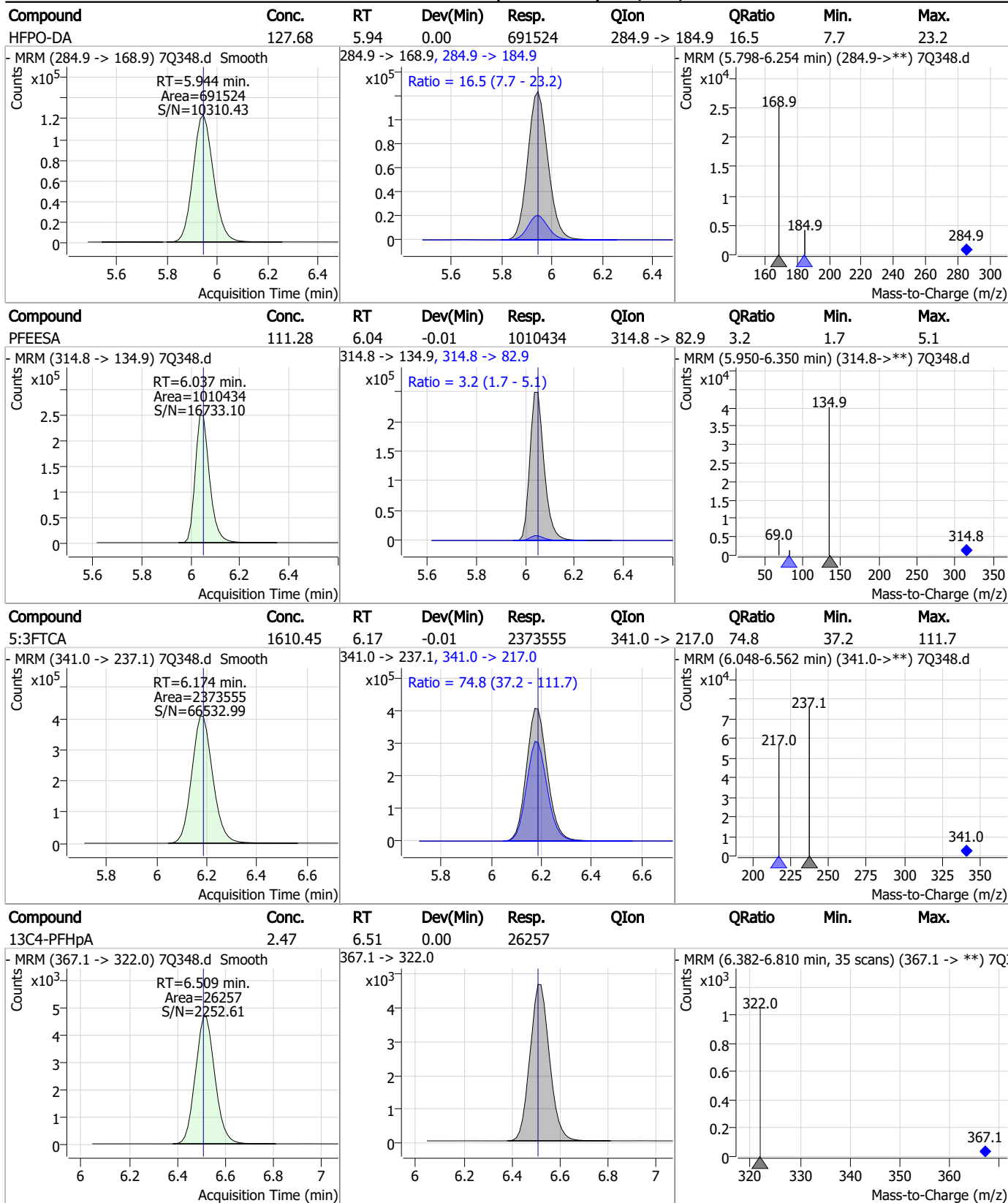


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.98	5.94	0.00	56824				



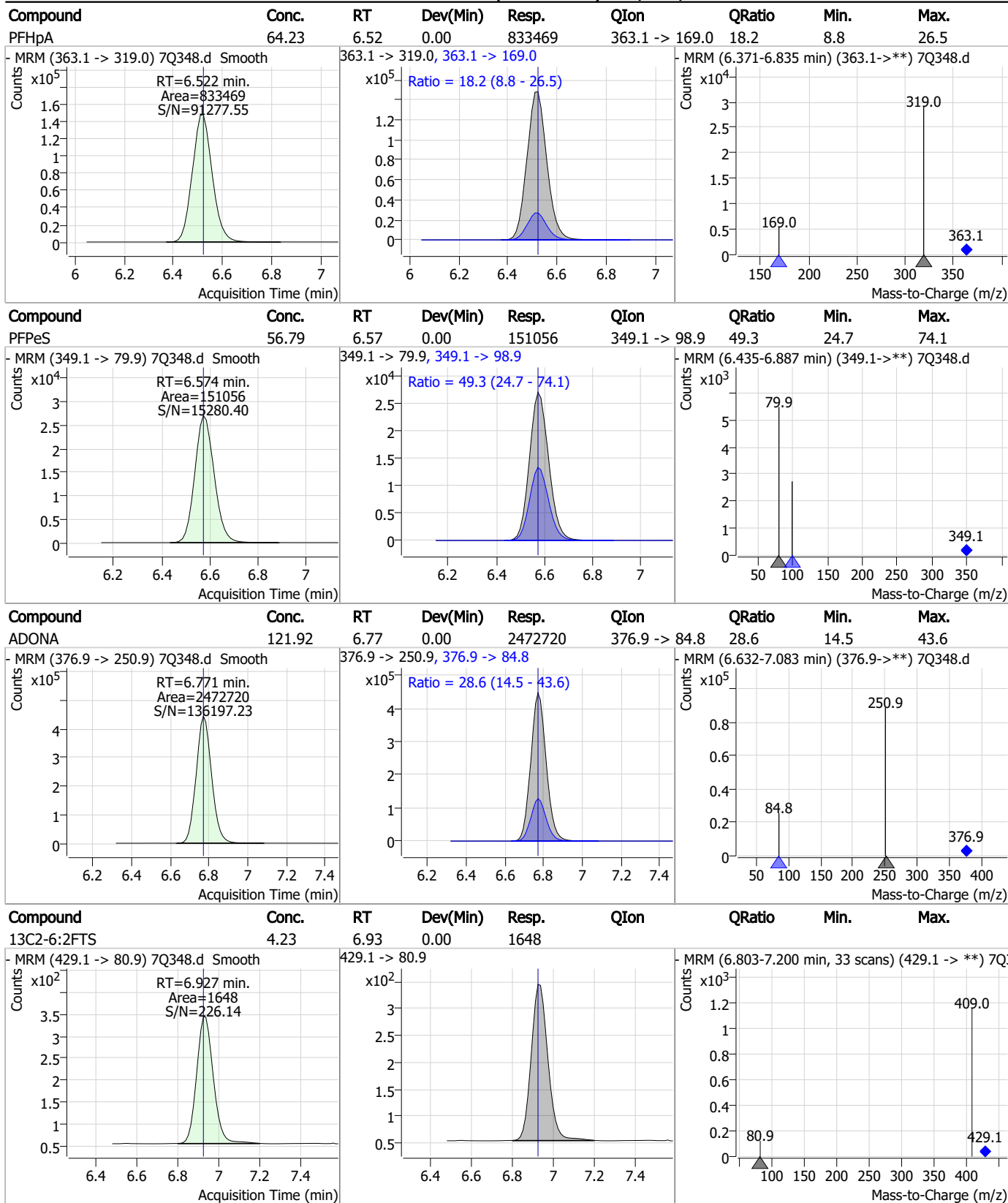
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Perfluorinated Compounds by LC/MS/MS



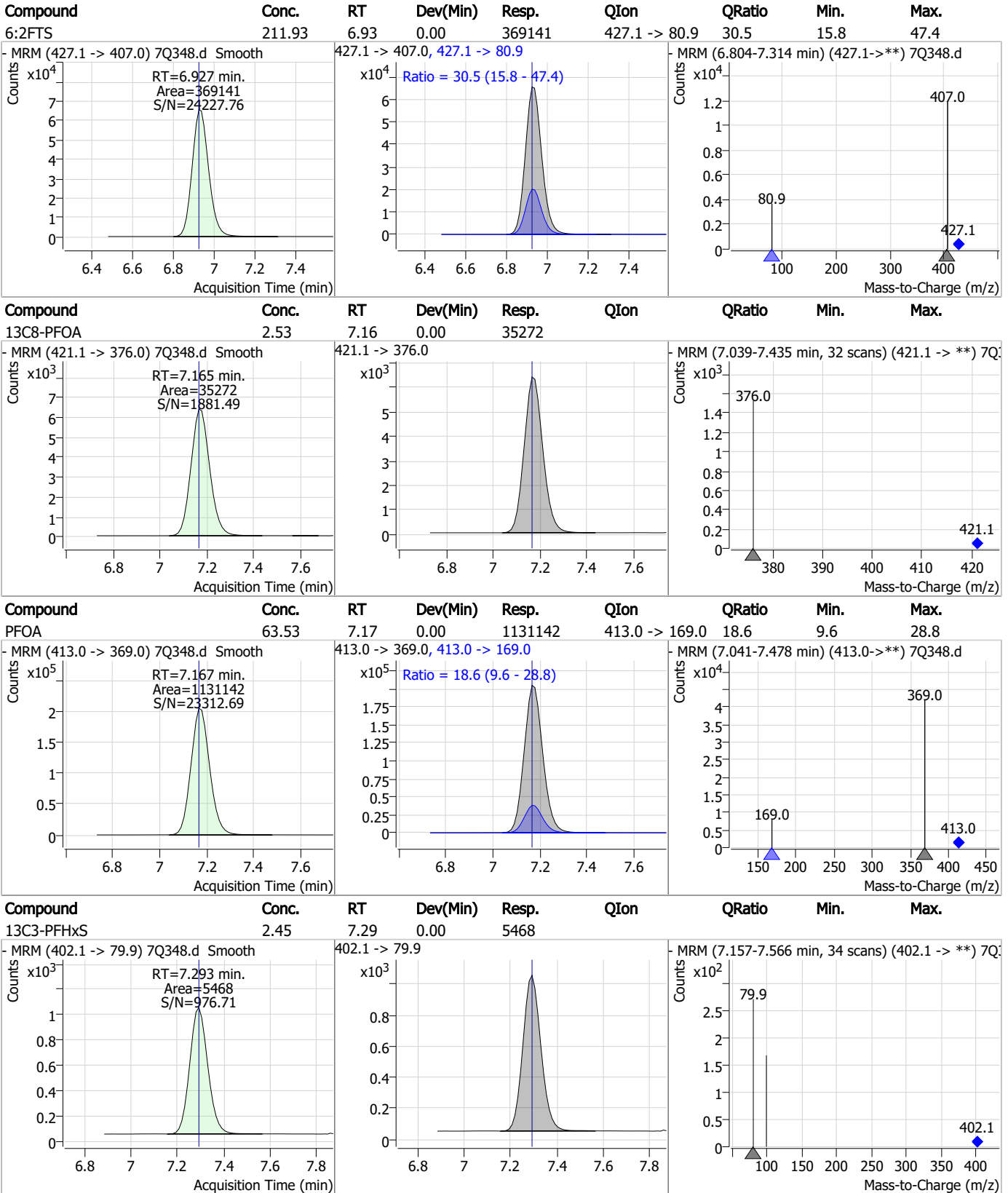
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Perfluorinated Compounds by LC/MS/MS



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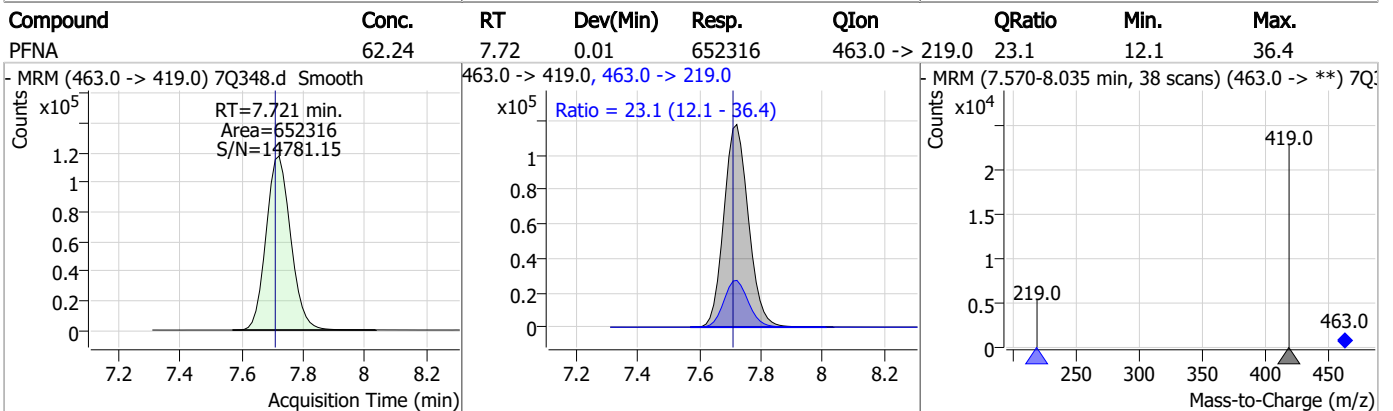
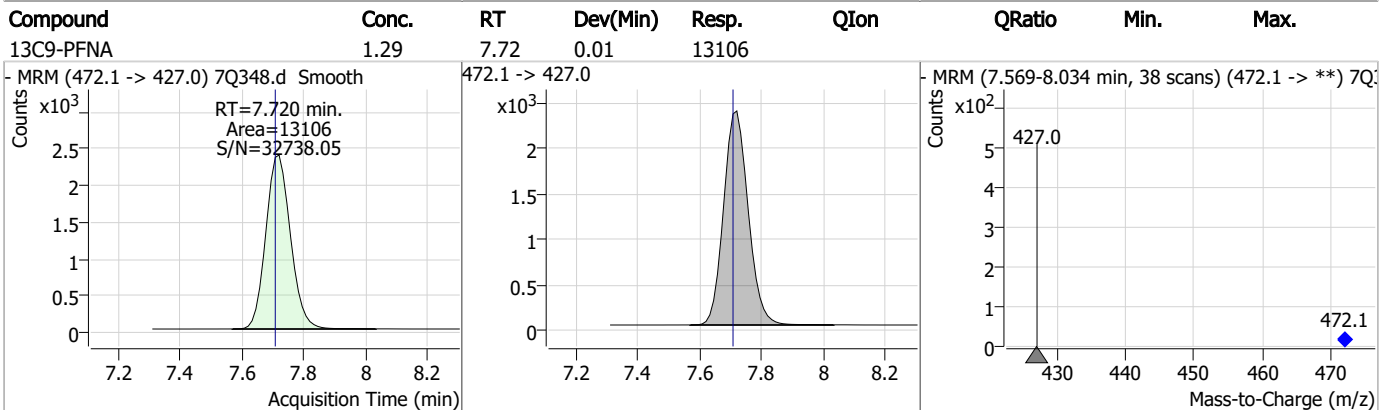
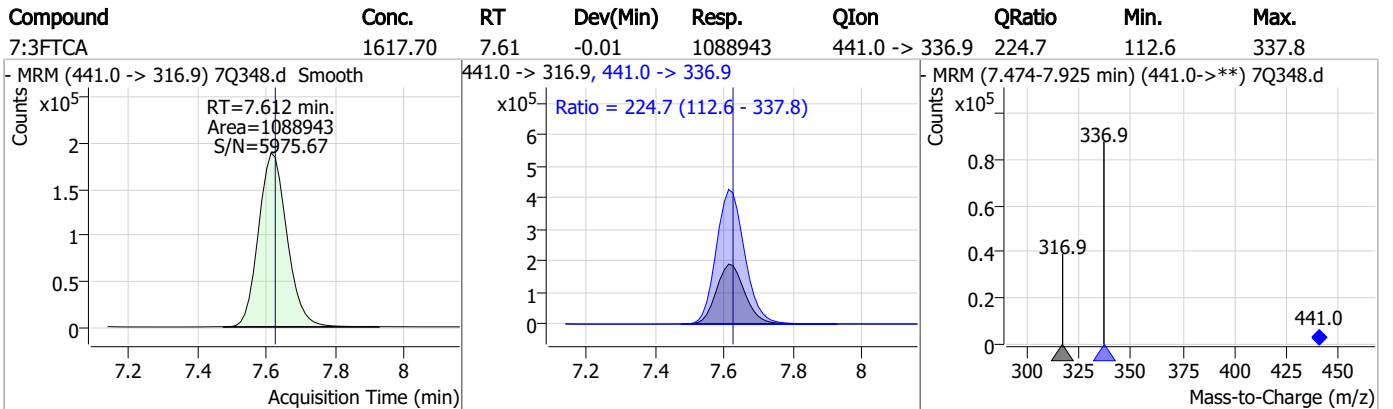
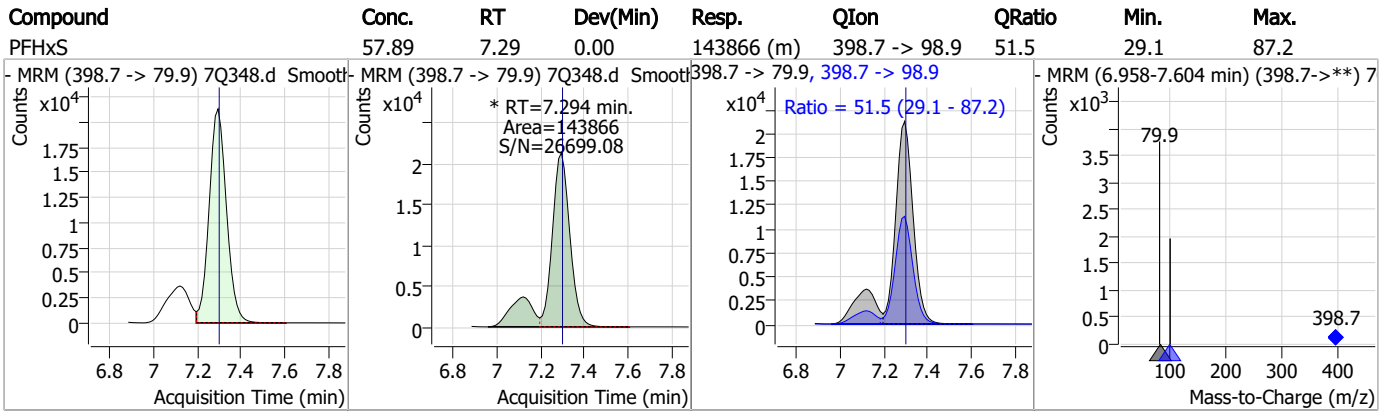
Perfluorinated Compounds by LC/MS/MS



7.7.24

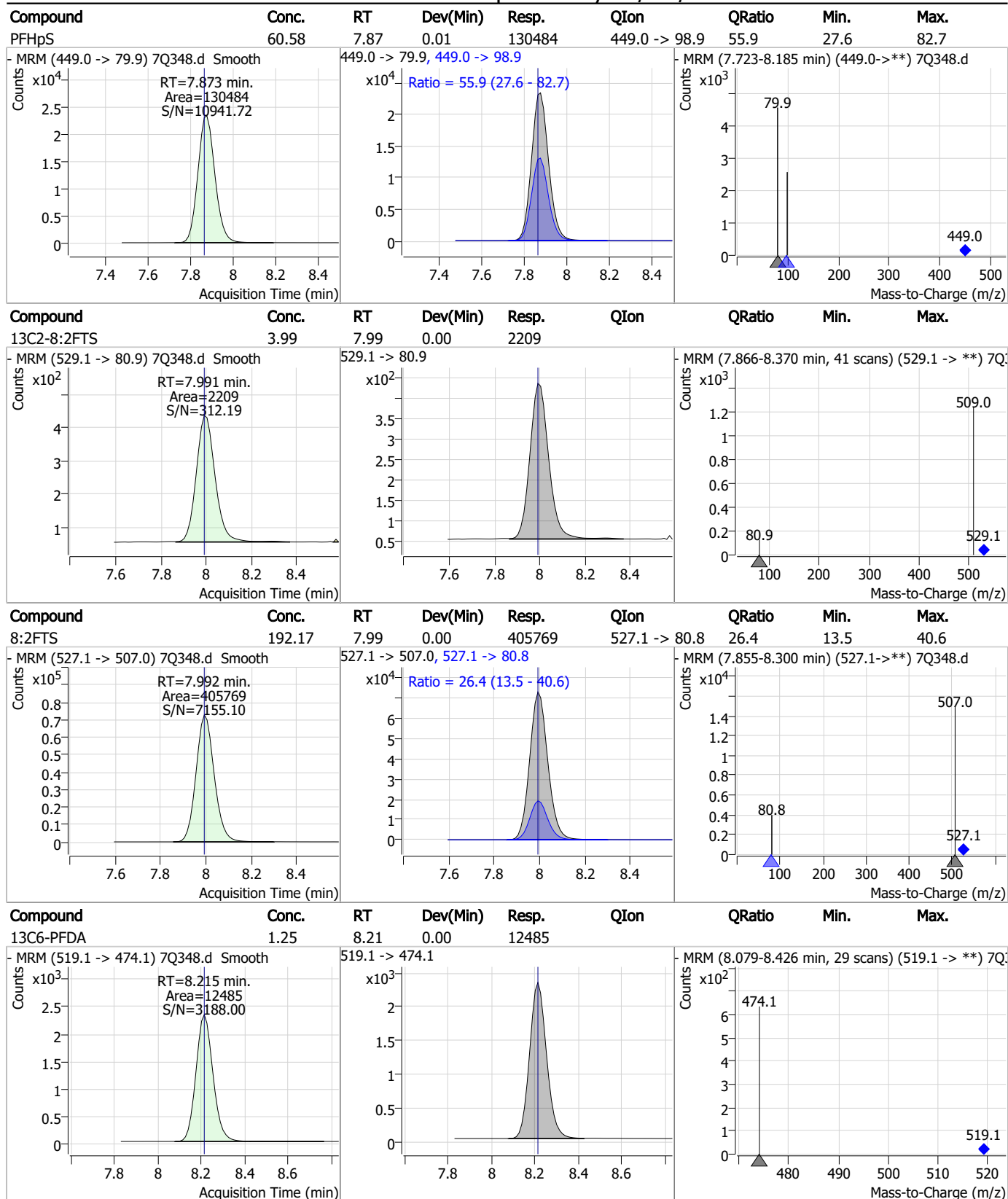


Perfluorinated Compounds by LC/MS/MS



7.7.24 7

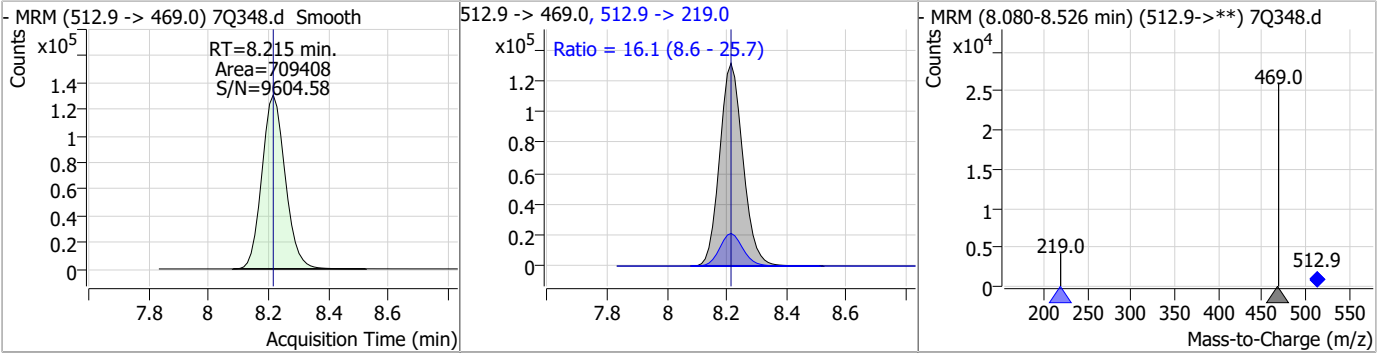
Perfluorinated Compounds by LC/MS/MS



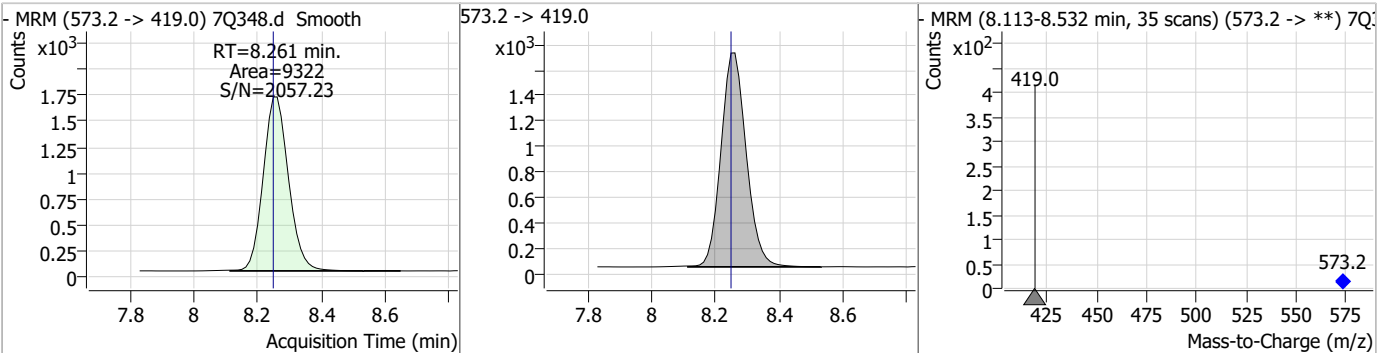
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Perfluorinated Compounds by LC/MS/MS

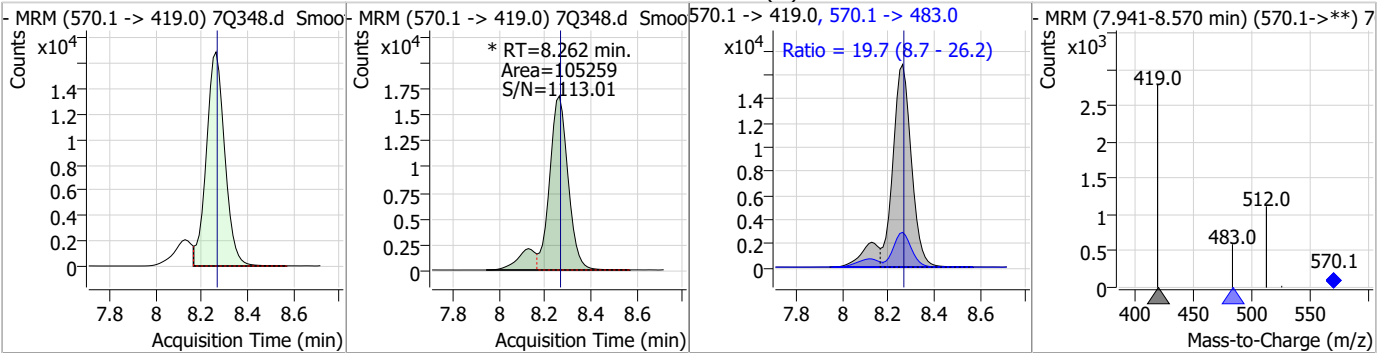
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	61.87	8.22	0.00	709408	512.9 -> 219.0	16.1	8.6	25.7



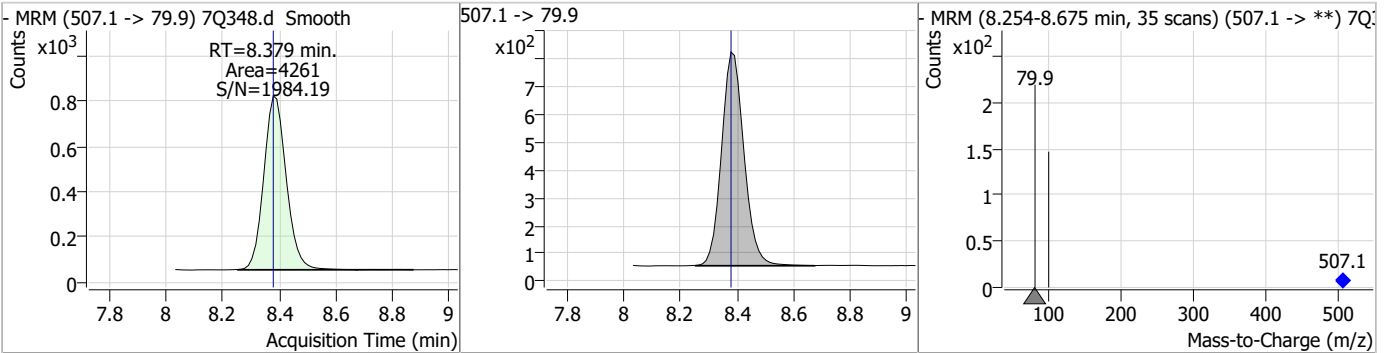
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.94	8.26	0.01	9322				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	64.16	8.26	0.00	105259 (m)	570.1 -> 483.0	19.7	8.7	26.2



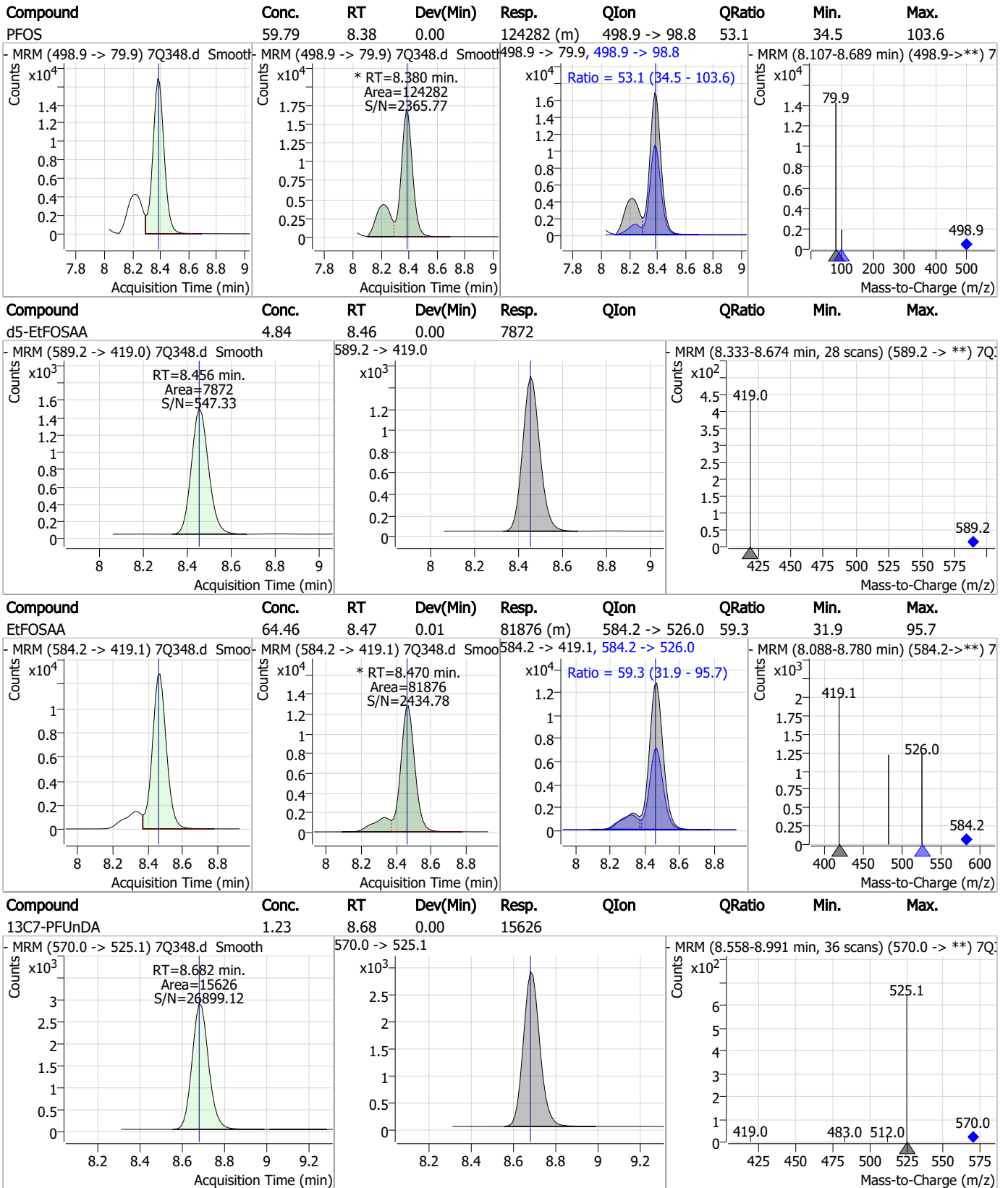
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.47	8.38	0.00	4261				



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Perfluorinated Compounds by LC/MS/MS

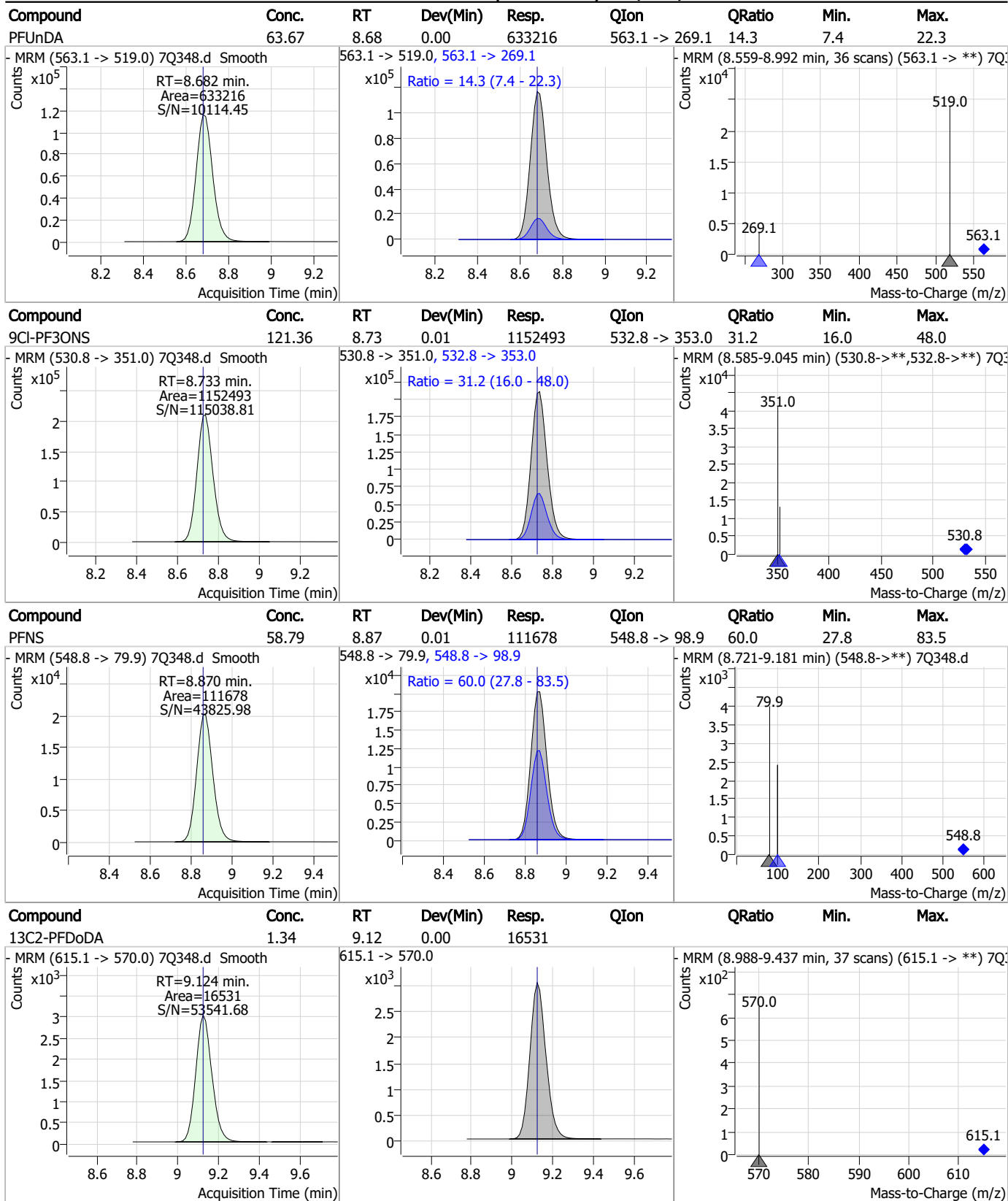


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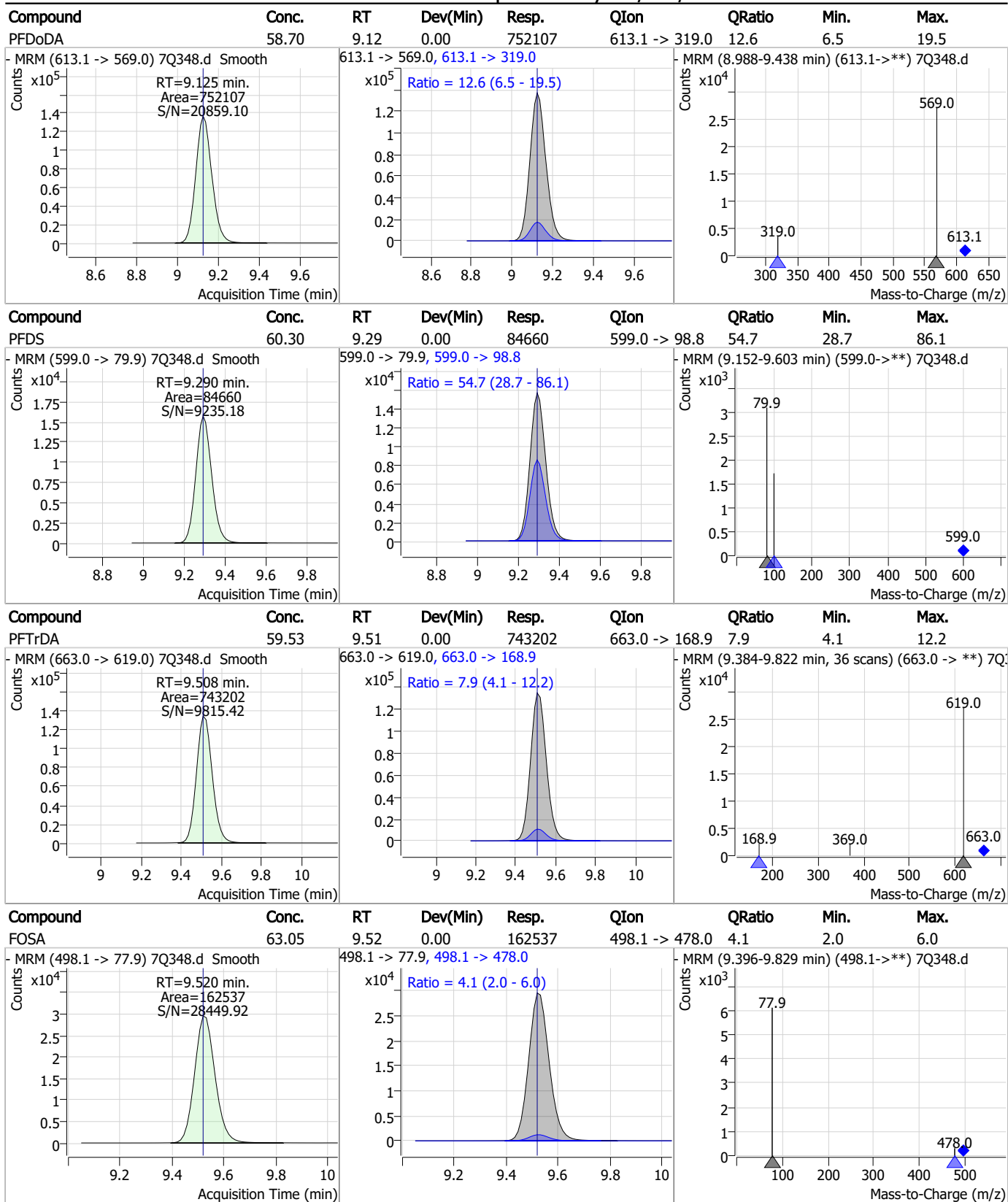


Perfluorinated Compounds by LC/MS/MS



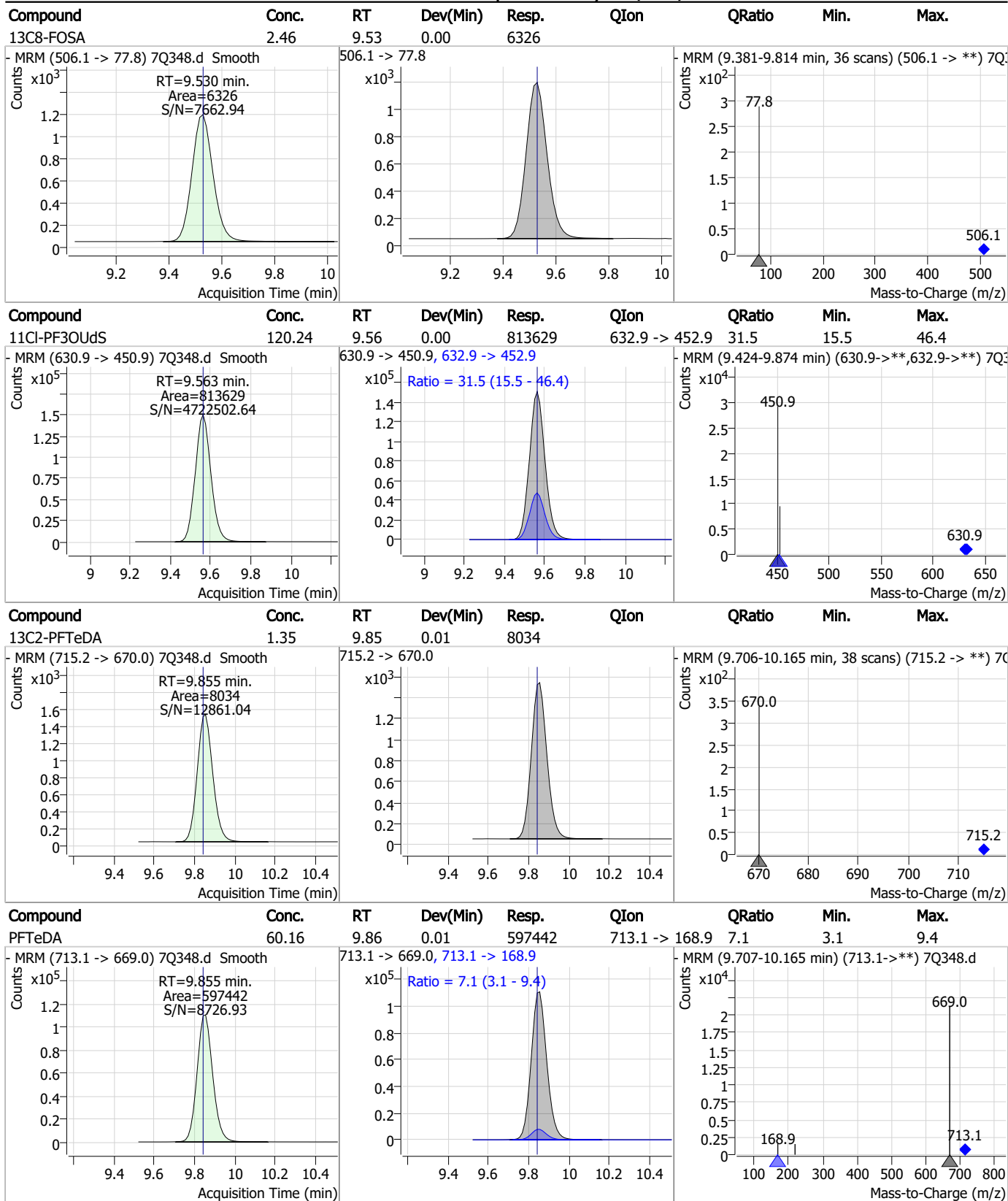
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

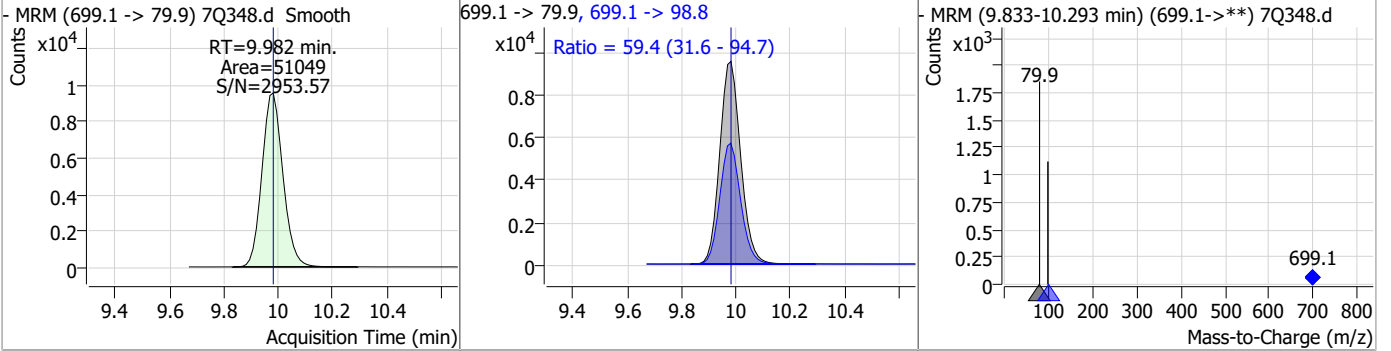


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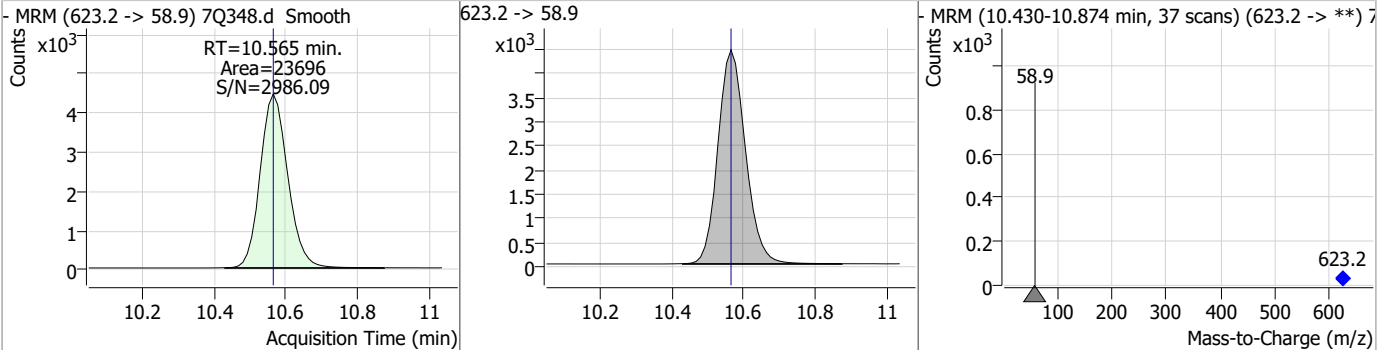
7

Perfluorinated Compounds by LC/MS/MS

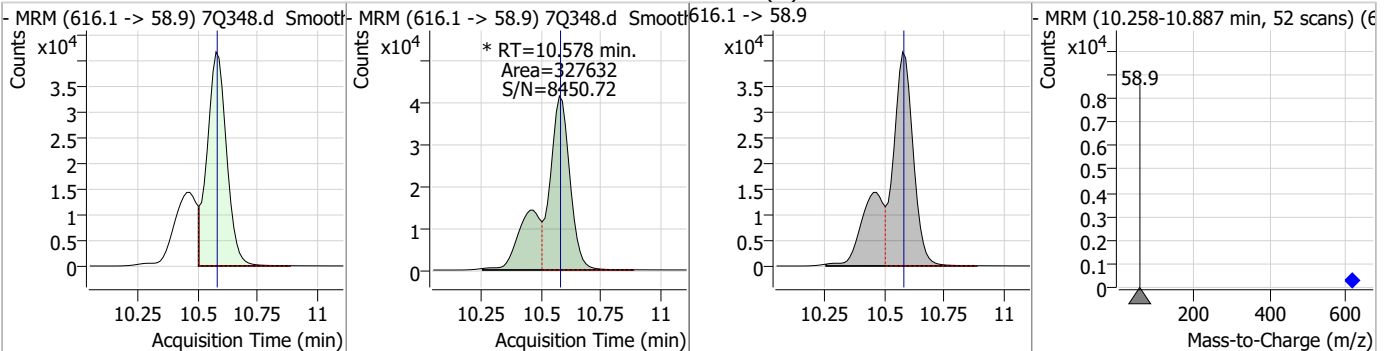
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	61.10	9.98	0.00	51049	699.1 -> 98.8	59.4	31.6	94.7



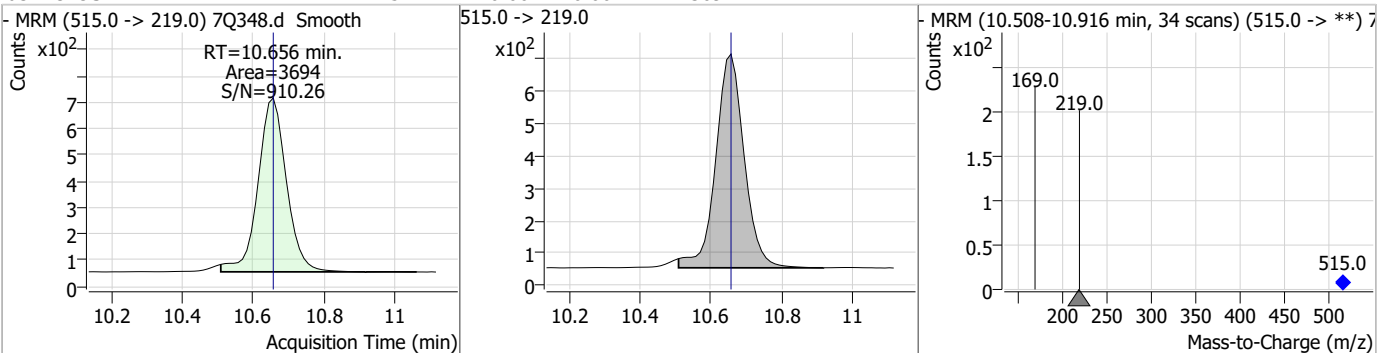
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.95	10.56	0.00	23696				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	322.89	10.58	0.00	327632 (m)				

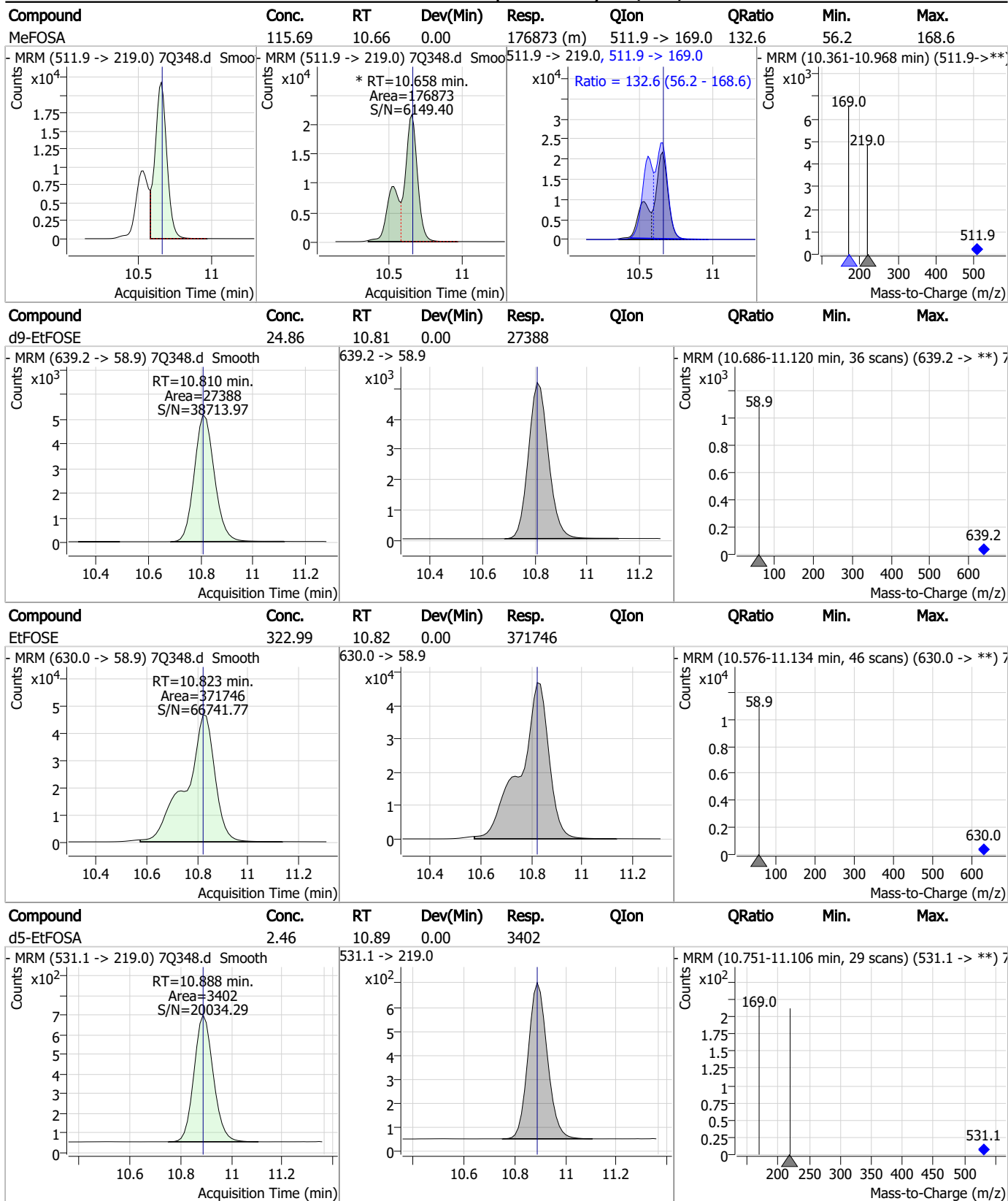


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.75	10.66	0.00	3694				



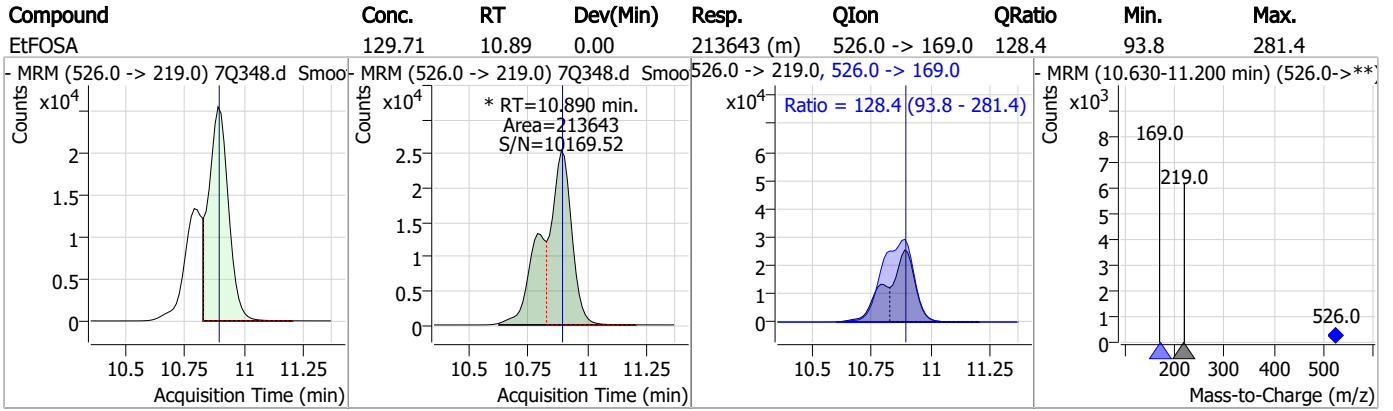
7.7.24
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-IC11 Method: EPA DRAFT 1633
Lab FileID: 7Q348.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 16:33 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

7.7.24.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q350.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 5:01:12 PM
 Sample Name : icv11-4
 Vial : P1-B1
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	103828	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	34864	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	31119	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	27090	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	36314	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	13191	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	13147	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16807	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	16351	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7486	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	6617	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	7179	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5484	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4589	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	839	5.00 µg/L	0.000
M2-6:2FTS	6.927	429.1 -> 80.9	2027	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2895	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	9009	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	53007	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7686	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	23170	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	26471	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3296	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3159	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4971	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	49017	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3757	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	39607	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11643	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15889	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	25537	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	839	5.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.1%		
13C2-6:2FTS	6.927	429.1 -> 80.9	2027	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2895	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C2-PFDoDA	9.124	615.1 -> 570.0	16351	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7486	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-PFBS	5.484	302.1 -> 79.9	7179	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C3-PFHxS	7.293	402.1 -> 79.9	5484	2.51 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFBA	2.885	216.8 -> 171.9	103828	10.02 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.509	367.1 -> 322.0	27090	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C5-PFHxA	5.554	318.0 -> 273.0	31119	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFPeA	4.312	268.3 -> 223.0	34864	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C6-PFDA	8.215	519.1 -> 474.1	13147	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C7-PFUnDA	8.682	570.0 -> 525.1	16807	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C8-FOSA	9.530	506.1 -> 77.8	6617	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOA	7.165	421.1 -> 376.0	36314	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C8-PFOS	8.379	507.1 -> 79.9	4589	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C9-PFNA	7.720	472.1 -> 427.0	13191	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
d3-MeFOSAA	8.248	573.2 -> 419.0	9009	4.70 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	53007	9.22 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.2%	
d3-MeFOSA	10.656	515.0 -> 219.0	3159	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.6%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7686	4.66 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.2%	
d7-MeFOSE	10.565	623.2 -> 58.9	23170	24.06 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
d9-EtFOSE	10.810	639.2 -> 58.9	26471	23.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.8%	
d5-EtFOSA	10.888	531.1 -> 219.0	3296	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.8%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	12698	9.63 µg/L	99
		327.1 -> 80.9	4521		
6:2FTS	6.927	427.1 -> 407.0	21062	9.83 µg/L	99
		427.1 -> 80.9	6590		
8:2FTS	7.992	527.1 -> 507.0	24368	8.81 µg/L	99
		527.1 -> 80.8	6515		
EtFOSAA	8.470	584.2 -> 419.1	3370	2.72 µg/L	m 95
		584.2 -> 526.0	2283		
FOSA	9.520	498.1 -> 77.9	6462	2.40 µg/L	98
		498.1 -> 478.0	295		
MeFOSAA	8.262	570.1 -> 419.0	4412	2.78 µg/L	m 93
		570.1 -> 483.0	910		
PFBA	2.893	212.8 -> 168.9	37806	10.05 µg/L	100
PFBS	5.485	298.7 -> 79.9	6002	2.22 µg/L	97
		298.7 -> 98.8	2322		
PFDA	8.215	512.9 -> 469.0	31239	2.59 µg/L	99
		512.9 -> 219.0	5213		
PFDoDA	9.125	613.1 -> 569.0	31372	2.48 µg/L	100
		613.1 -> 319.0	4094		
PFDS	9.290	599.0 -> 79.9	3536	2.34 µg/L	91

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1794			
PFHpA	6.510	363.1 -> 319.0	33598	2.51	µg/L	99
		363.1 -> 169.0	6008			
PFHpS	7.873	449.0 -> 79.9	5382	2.32	µg/L	99
		449.0 -> 98.9	3027			
PFHxA	5.556	313.0 -> 269.0	28787	2.51	µg/L	99
		313.0 -> 118.9	1570			
PFHxS	7.294	398.7 -> 79.9	5808	2.33	µg/L	m 94
		398.7 -> 98.9	3118			
PFNA	7.721	463.0 -> 419.0	27974	2.65	µg/L	98
		463.0 -> 219.0	6434			
PFNS	8.870	548.8 -> 79.9	4451	2.18	µg/L	93
		548.8 -> 98.9	2714			
PFOA	7.167	413.0 -> 369.0	46780	2.55	µg/L	98
		413.0 -> 169.0	8596			
PFOS	8.380	498.9 -> 79.9	4933	2.20	µg/L	m 85
		498.9 -> 98.8	2795			
PFPeA	4.314	263.0 -> 219.0	43682	5.02	µg/L	100
PFPeS	6.574	349.1 -> 79.9	6294	2.36	µg/L	99
		349.1 -> 98.9	3070			
PFTeDA	9.855	713.1 -> 669.0	24617	2.66	µg/L	98
		713.1 -> 168.9	1758			
PFTrDA	9.508	663.0 -> 619.0	32256	2.61	µg/L	99
		663.0 -> 168.9	2476			
PFUnDA	8.682	563.1 -> 519.0	26761	2.50	µg/L	100
		563.1 -> 269.1	3971			
11CI-PF3OUdS	9.563	630.9 -> 450.9	32866	5.21	µg/L	100
		632.9 -> 452.9	10186			
9CI-PF3ONS	8.733	530.8 -> 351.0	46303	5.23	µg/L	100
		532.8 -> 353.0	14846			
ADONA	6.771	376.9 -> 250.9	100996	5.34	µg/L	99
		376.9 -> 84.8	28767			
HFPO-DA	5.944	284.9 -> 168.9	28825	5.71	µg/L	99
		284.9 -> 184.9	4365			
3:3FTCA	3.736	241.0 -> 177.0	5519	12.37	µg/L	99
		241.0 -> 117.0	676			
5:3FTCA	6.187	341.0 -> 237.1	94688	63.62	µg/L	99
		341.0 -> 217.0	71062			
7:3FTCA	7.624	441.0 -> 316.9	42696	62.81	µg/L	99
		441.0 -> 336.9	95114			
EtFOSA	10.890	526.0 -> 219.0	8404	5.27	µg/L	m 57
		526.0 -> 169.0	10560			
EtFOSE	10.823	630.0 -> 58.9	14622	13.14	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	7077	5.41	µg/L	m 81
		511.9 -> 169.0	9426			
MeFOSE	10.578	616.1 -> 58.9	12687	12.79	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	2001	2.22	µg/L	96
		699.1 -> 98.8	1328			
NFDHA	5.437	295.0 -> 201.0	12875	4.95	µg/L	98
		295.0 -> 84.9	3561			
PFMBA	4.750	279.0 -> 85.1	27994	5.02	µg/L	100
PFMPA	3.443	229.0 -> 84.9	29632	5.09	µg/L	100
PFEESA	6.037	314.8 -> 134.9	41541	4.53	µg/L	100
		314.8 -> 82.9	1445			

= Qualifier out of range, m = manually integrated, + = Area summed

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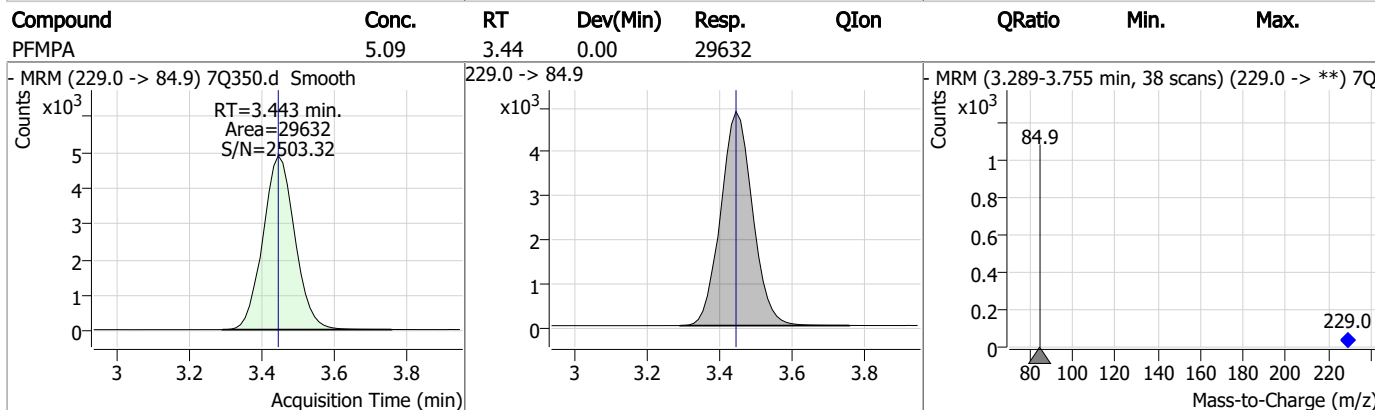
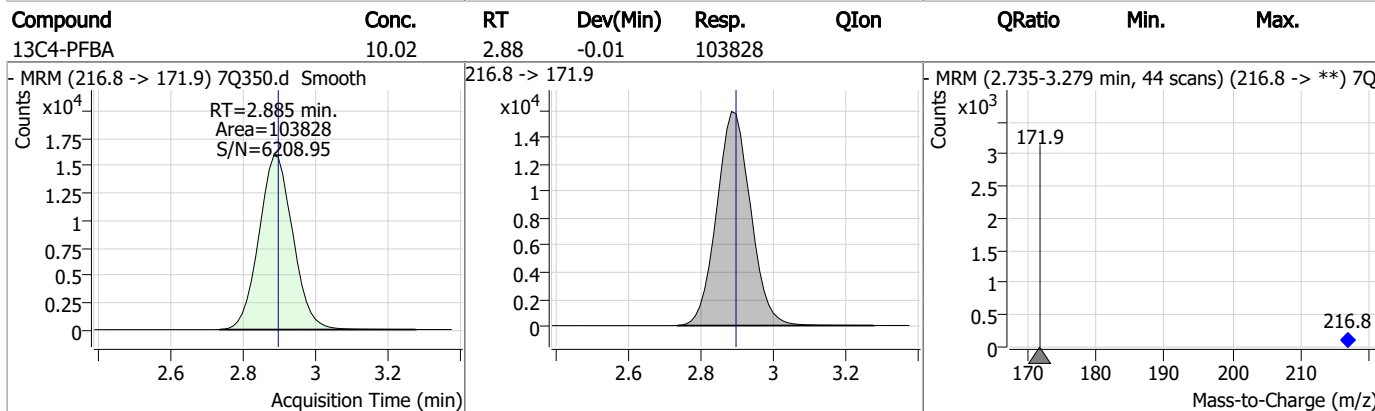
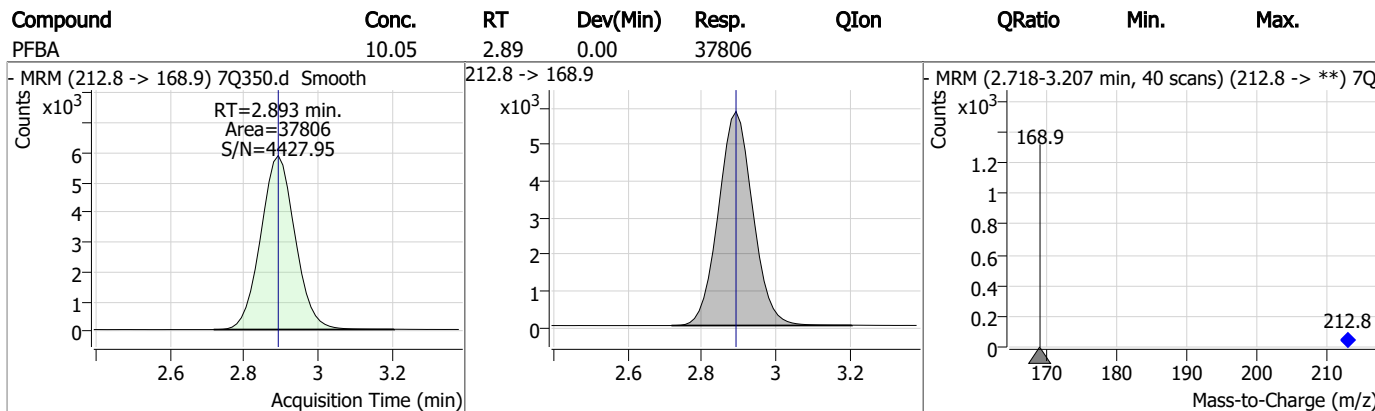
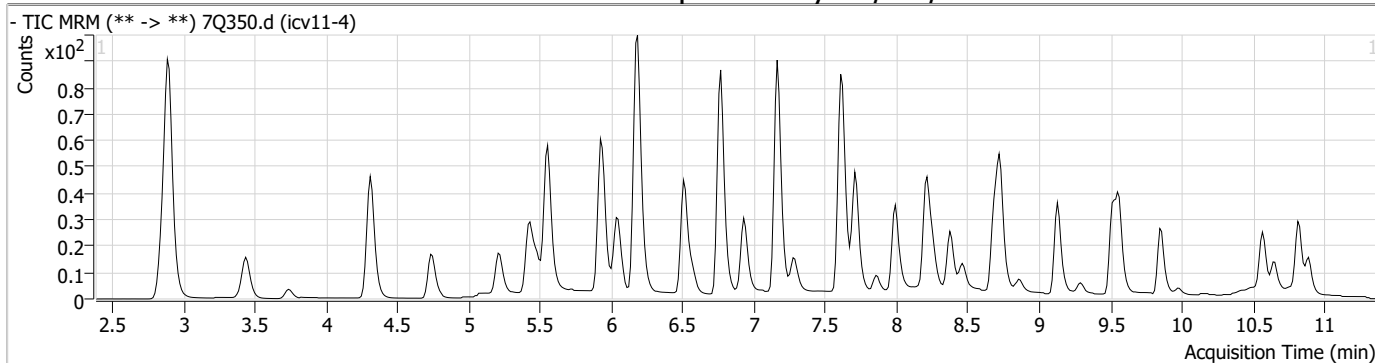
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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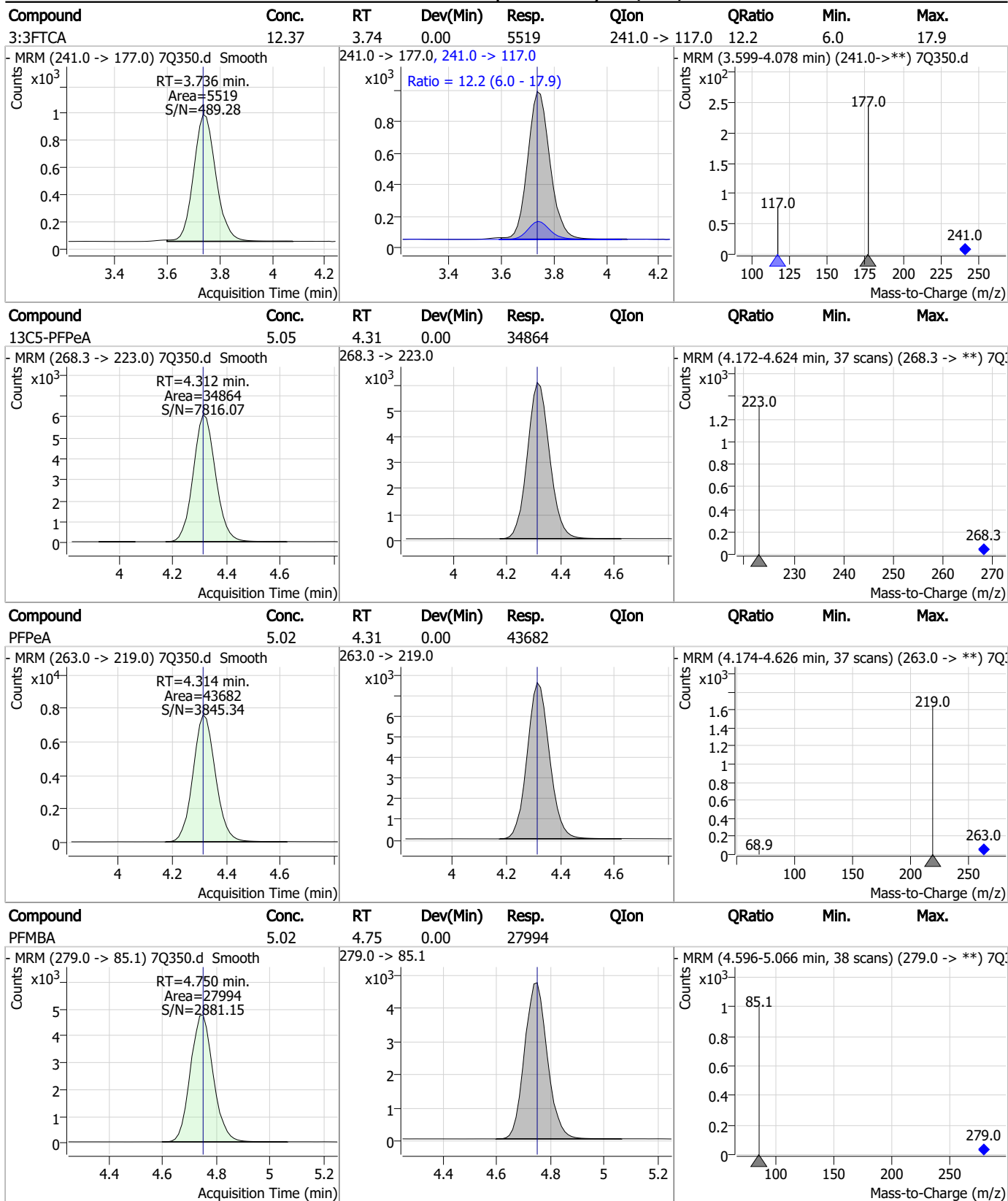
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Perfluorinated Compounds by LC/MS/MS



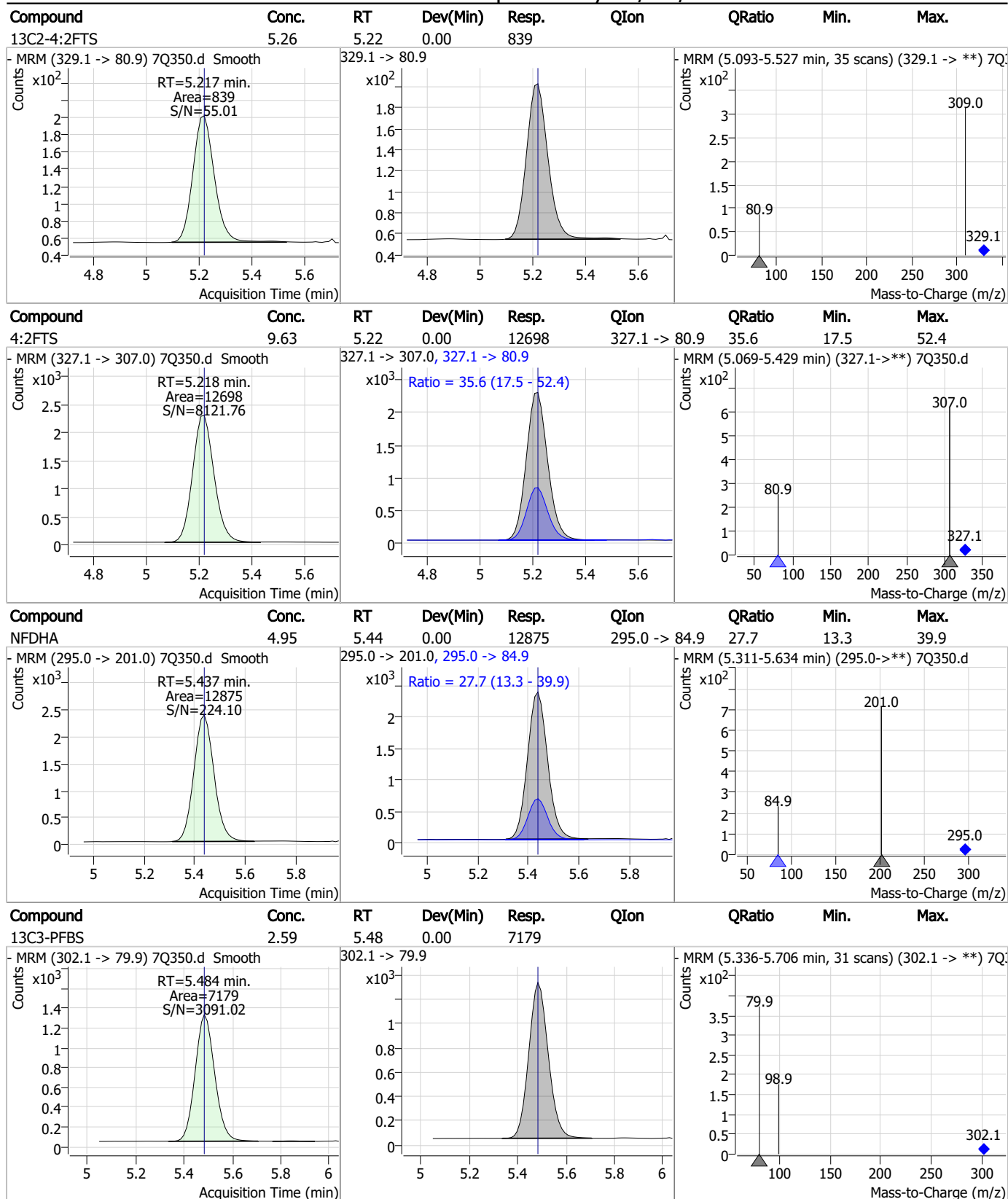
Perfluorinated Compounds by LC/MS/MS



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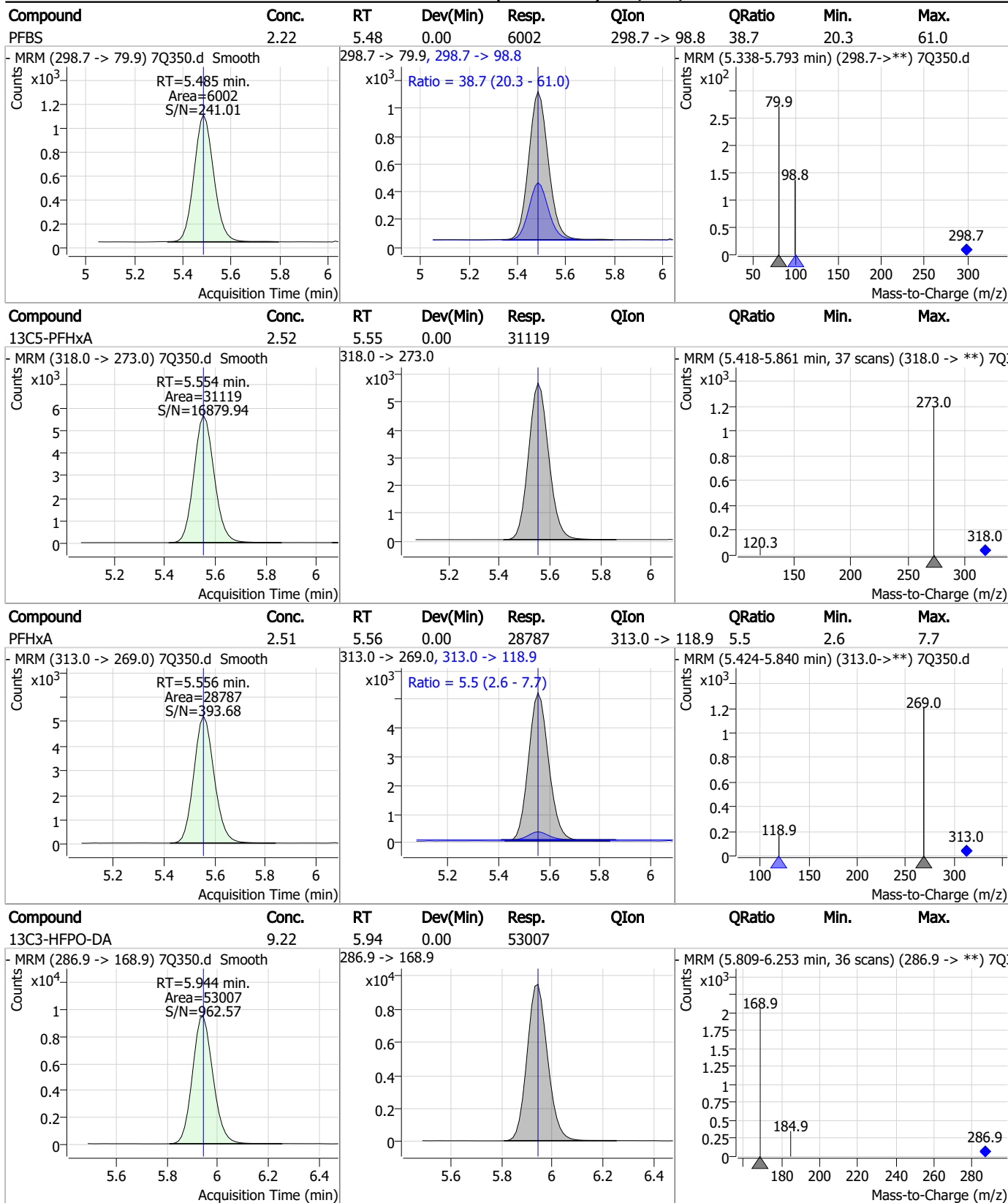
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Perfluorinated Compounds by LC/MS/MS



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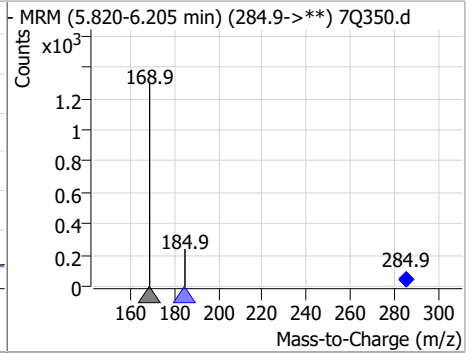
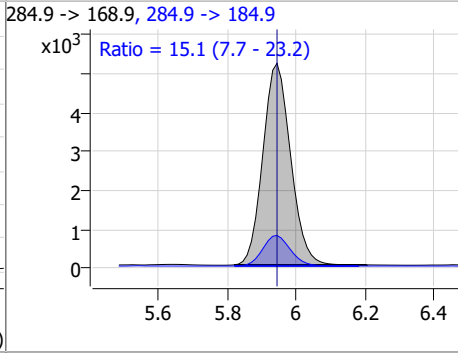
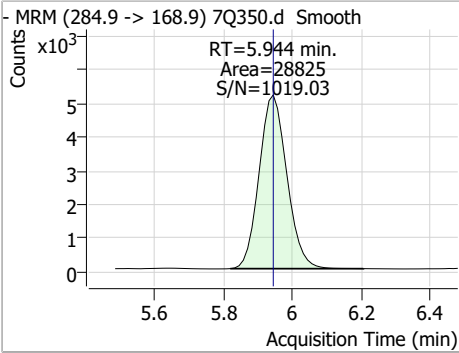
Perfluorinated Compounds by LC/MS/MS



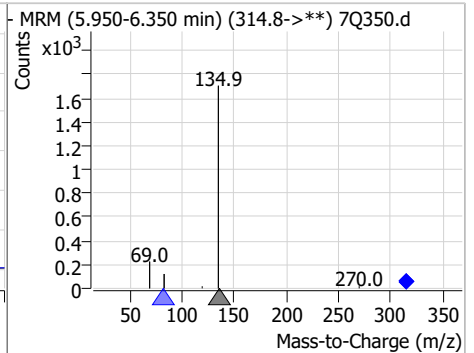
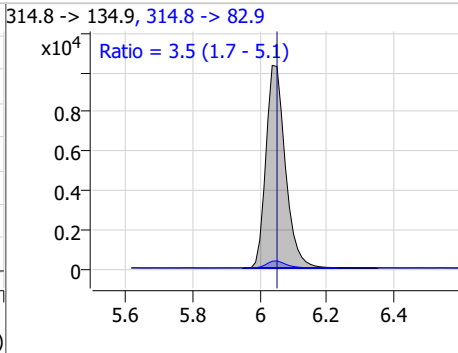
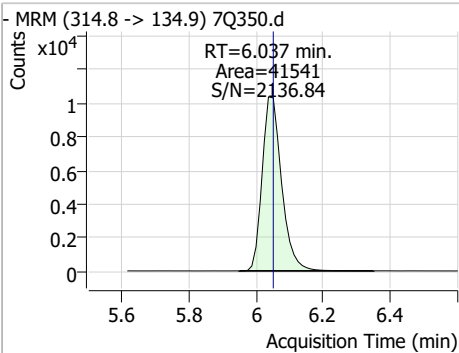
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Perfluorinated Compounds by LC/MS/MS

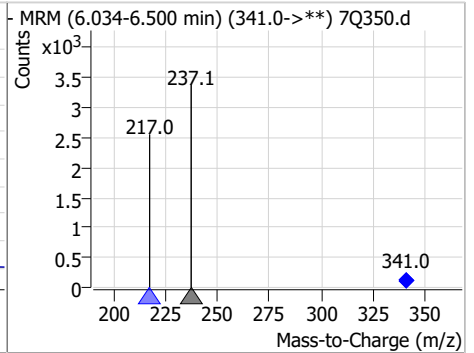
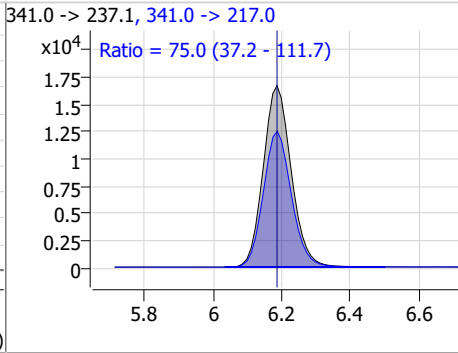
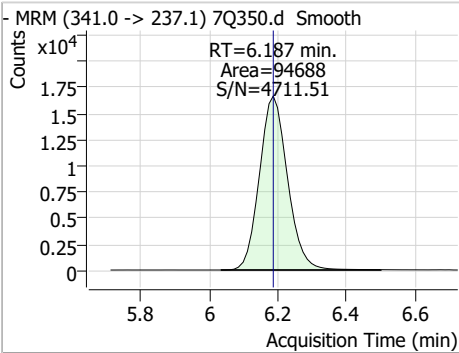
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.71	5.94	0.00	28825	284.9 -> 184.9	15.1	7.7	23.2



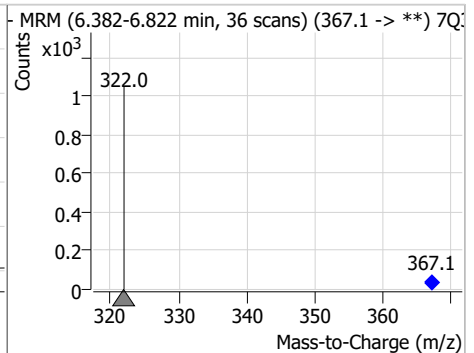
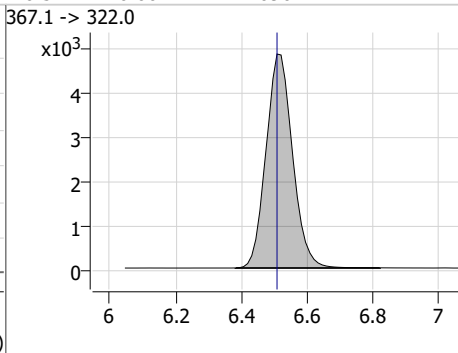
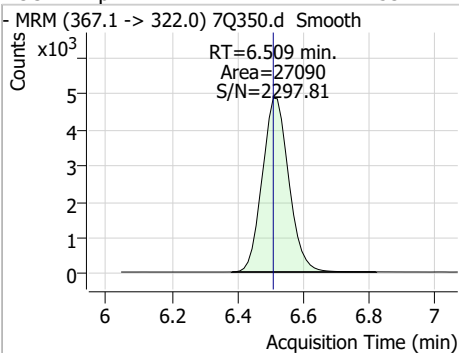
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.53	6.04	-0.01	41541	314.8 -> 82.9	3.5	1.7	5.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	63.62	6.19	0.00	94688	341.0 -> 217.0	75.0	37.2	111.7

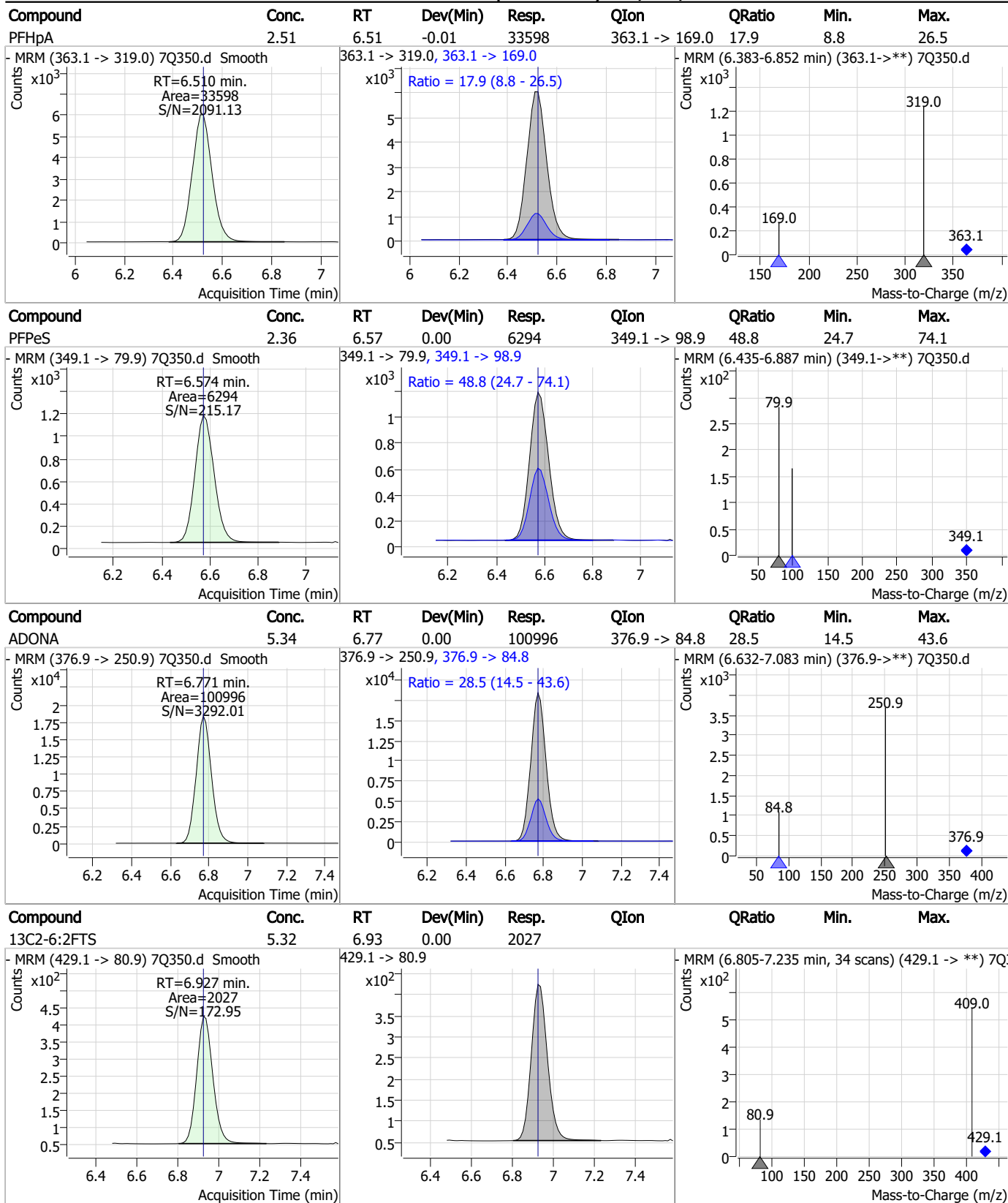


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.53	6.51	0.00	27090	367.1 -> 322.0	-	-	-



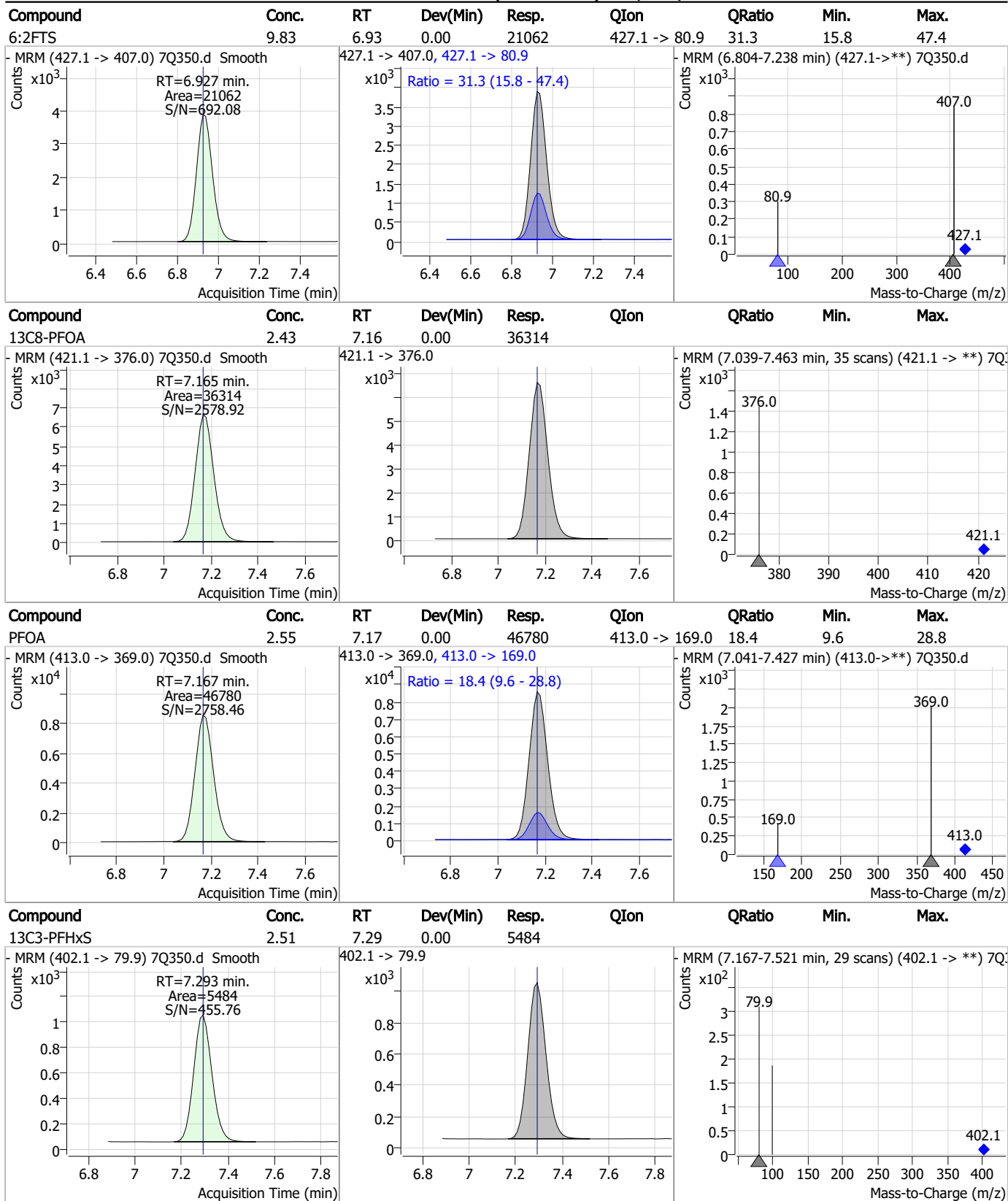
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

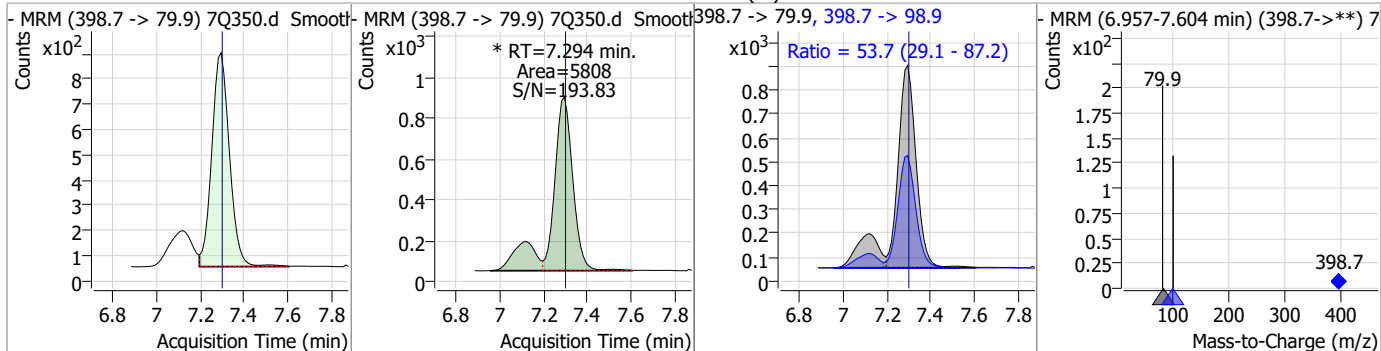


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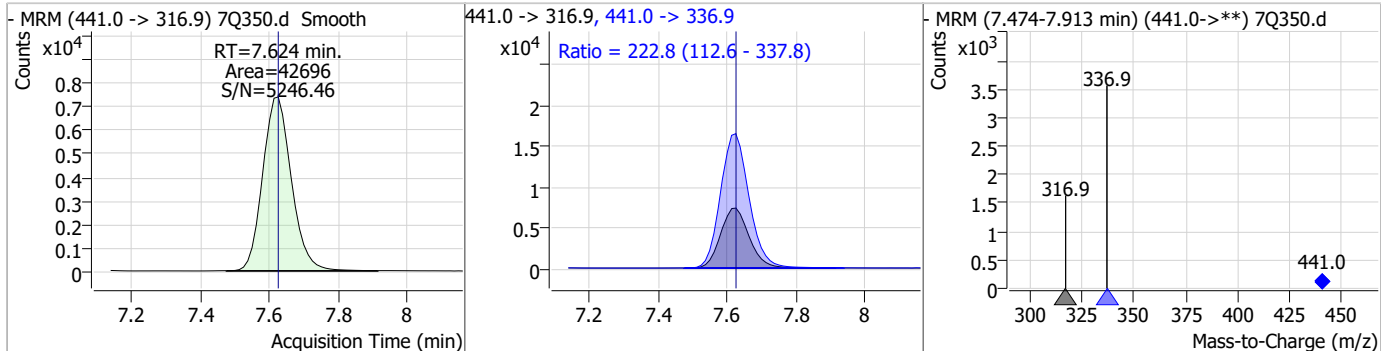
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Perfluorinated Compounds by LC/MS/MS

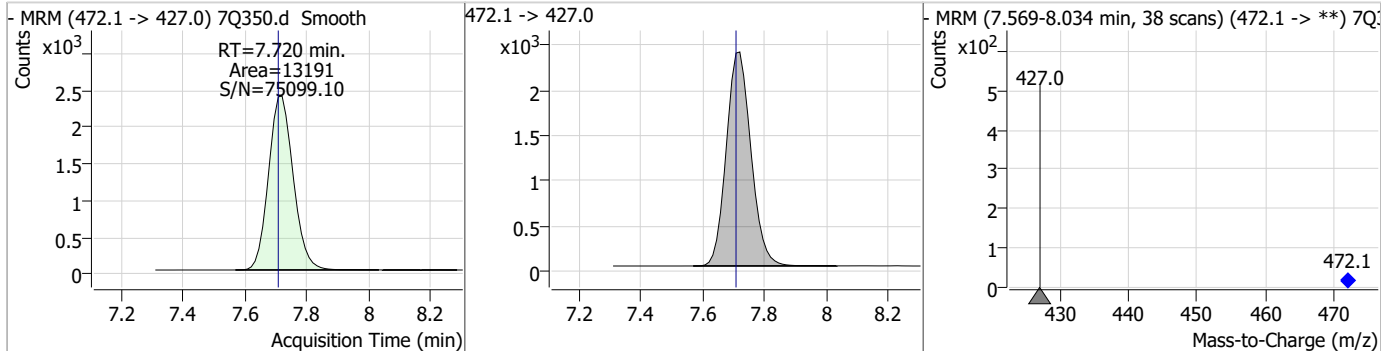
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.33	7.29	0.00	5808 (m)	398.7 -> 98.9	53.7	29.1	87.2



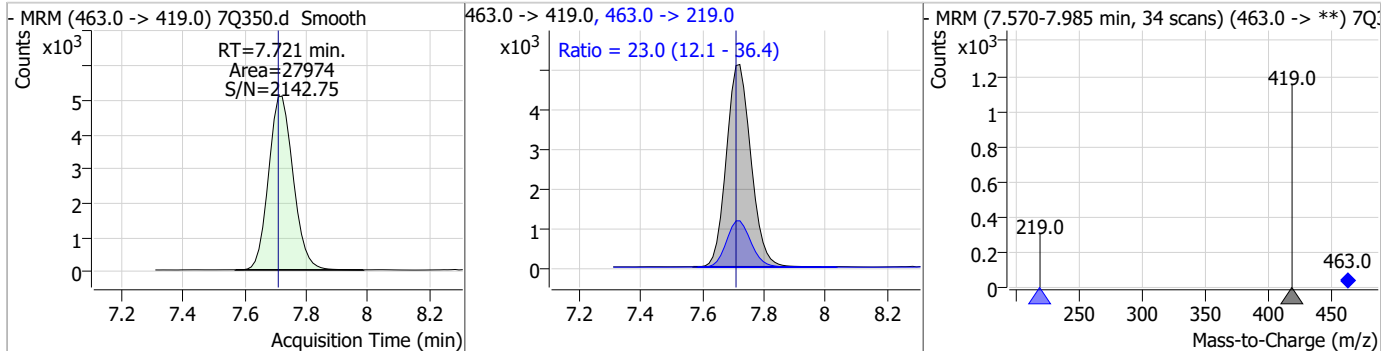
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	62.81	7.62	0.00	42696	441.0 -> 336.9	222.8	112.6	337.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.21	7.72	0.01	13191				

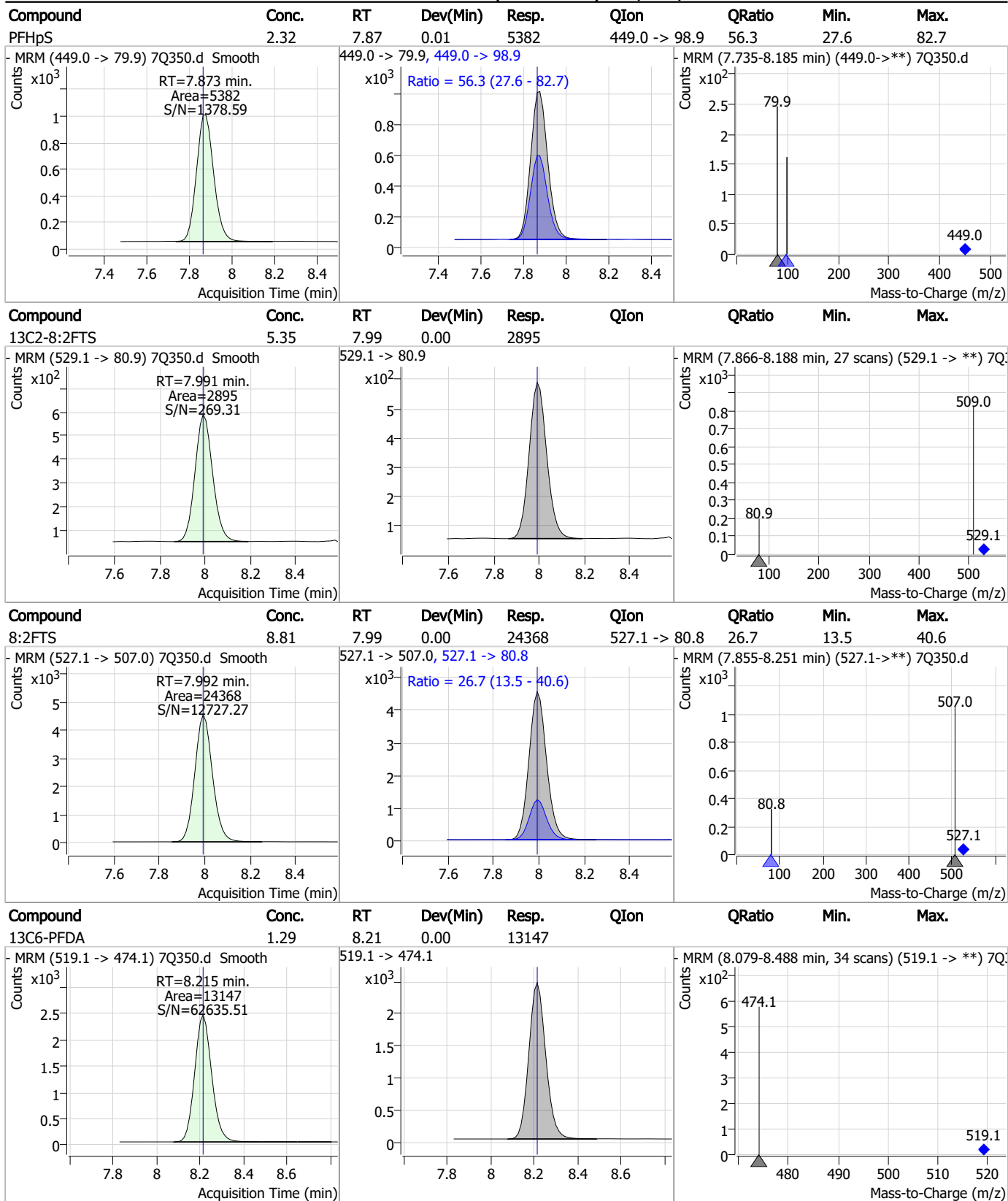


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.65	7.72	0.01	27974	463.0 -> 219.0	23.0	12.1	36.4



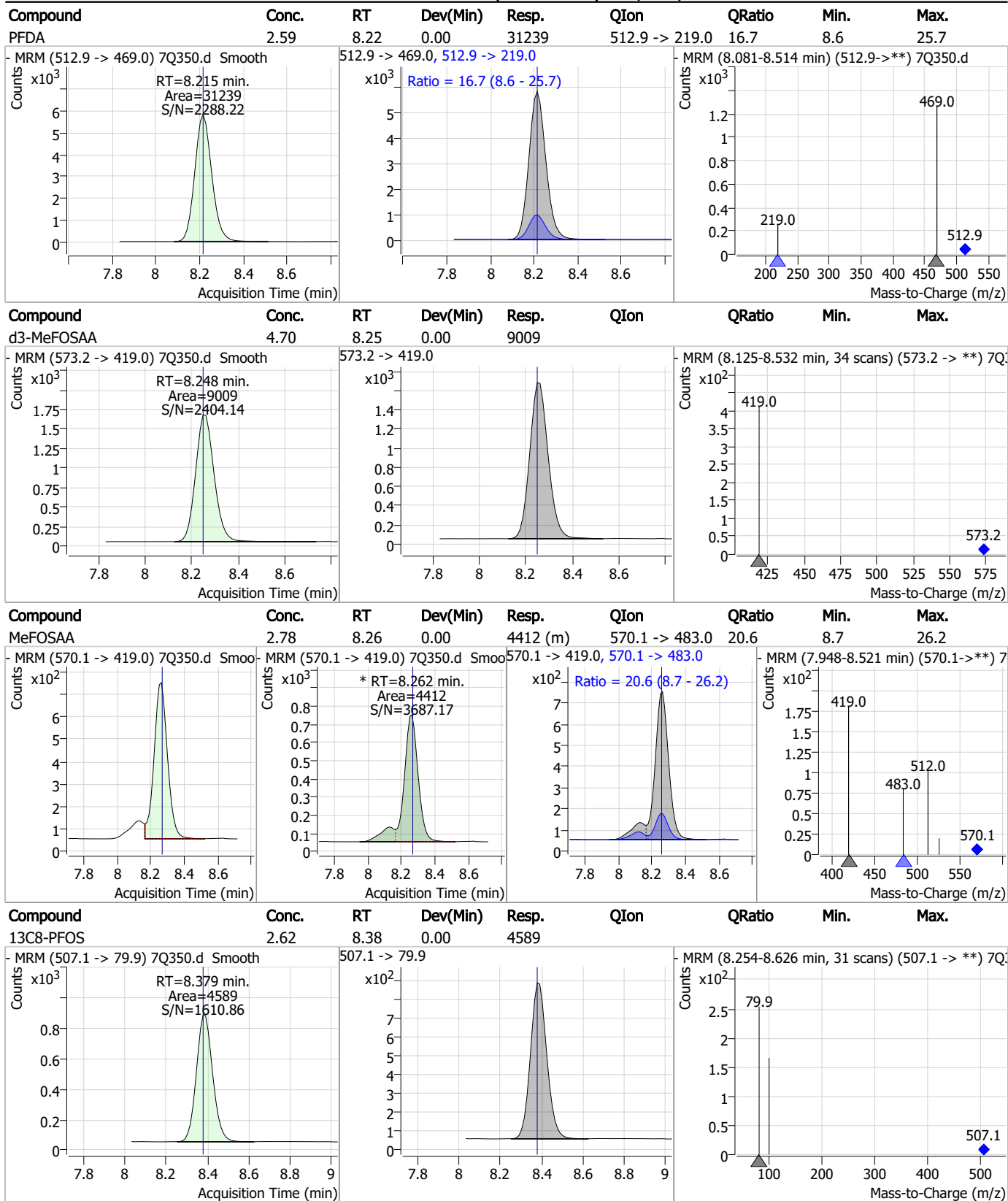
7.7.25
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Perfluorinated Compounds by LC/MS/MS



7.7.25
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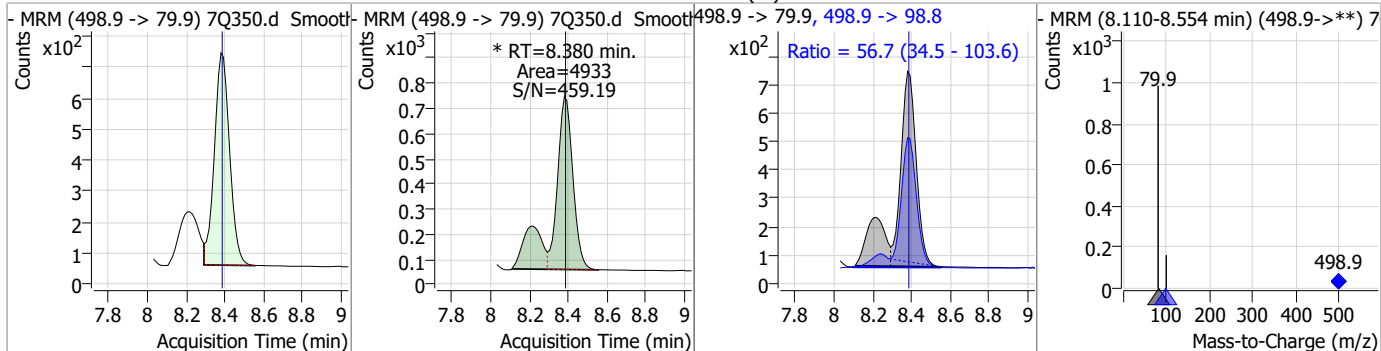
Perfluorinated Compounds by LC/MS/MS



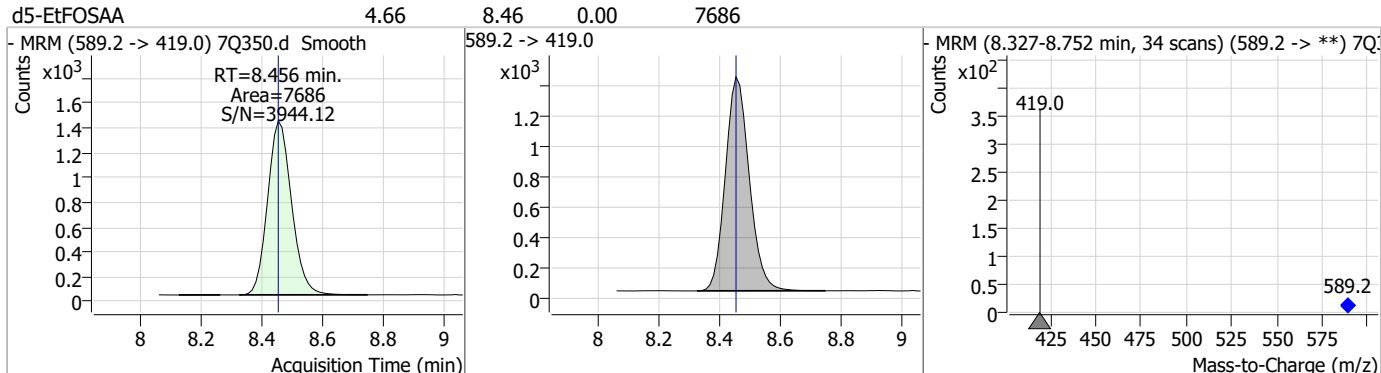
7.7.25
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Perfluorinated Compounds by LC/MS/MS

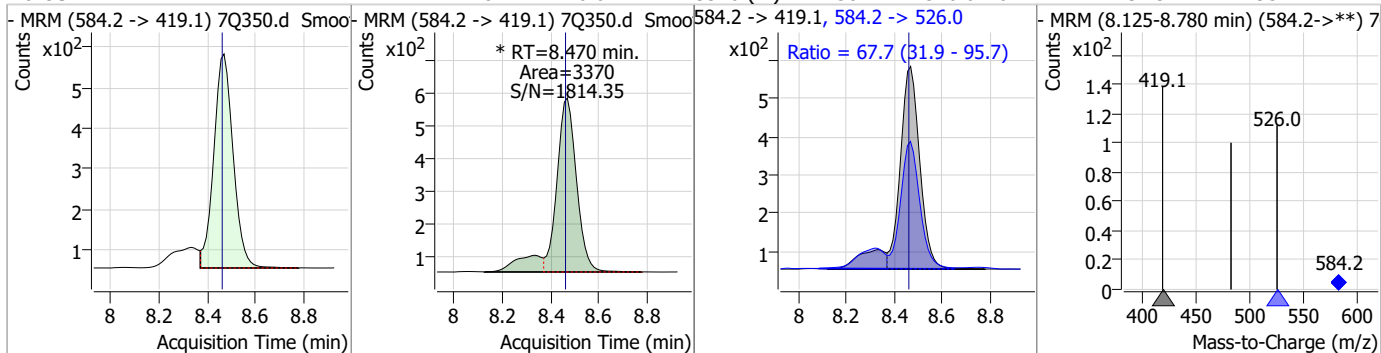
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.20	8.38	0.00	4933 (m)	498.9 -> 98.8	56.7	34.5	103.6



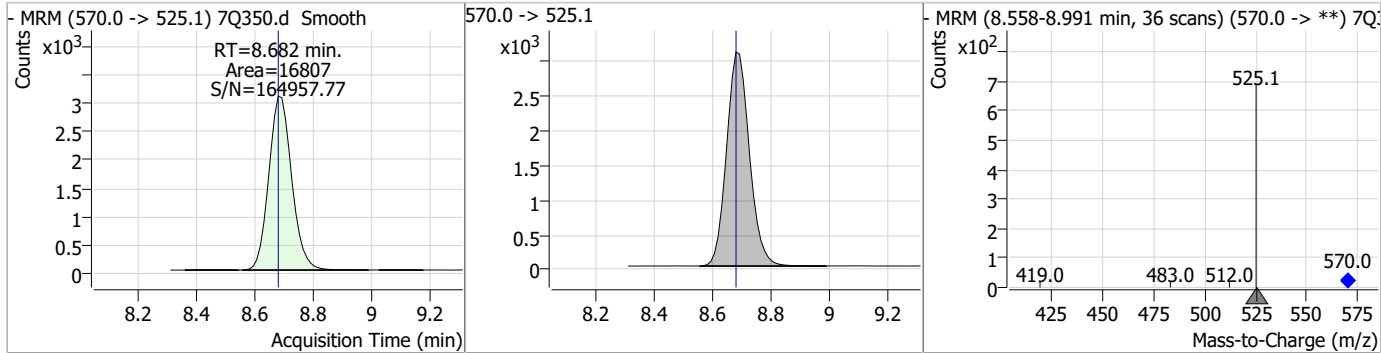
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.66	8.46	0.00	7686				



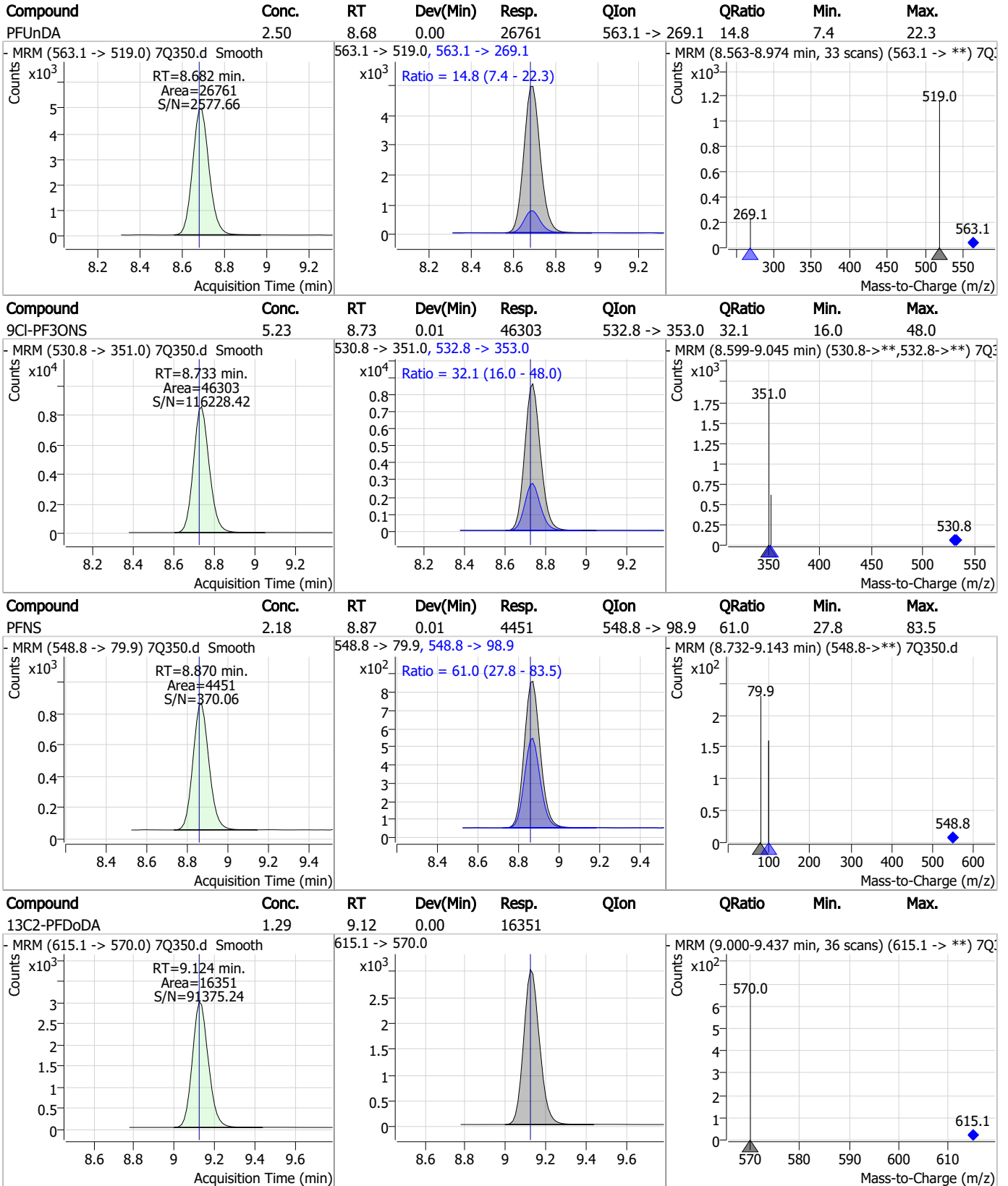
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.72	8.47	0.01	3370 (m)	584.2 -> 526.0	67.7	31.9	95.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.29	8.68	0.00	16807				



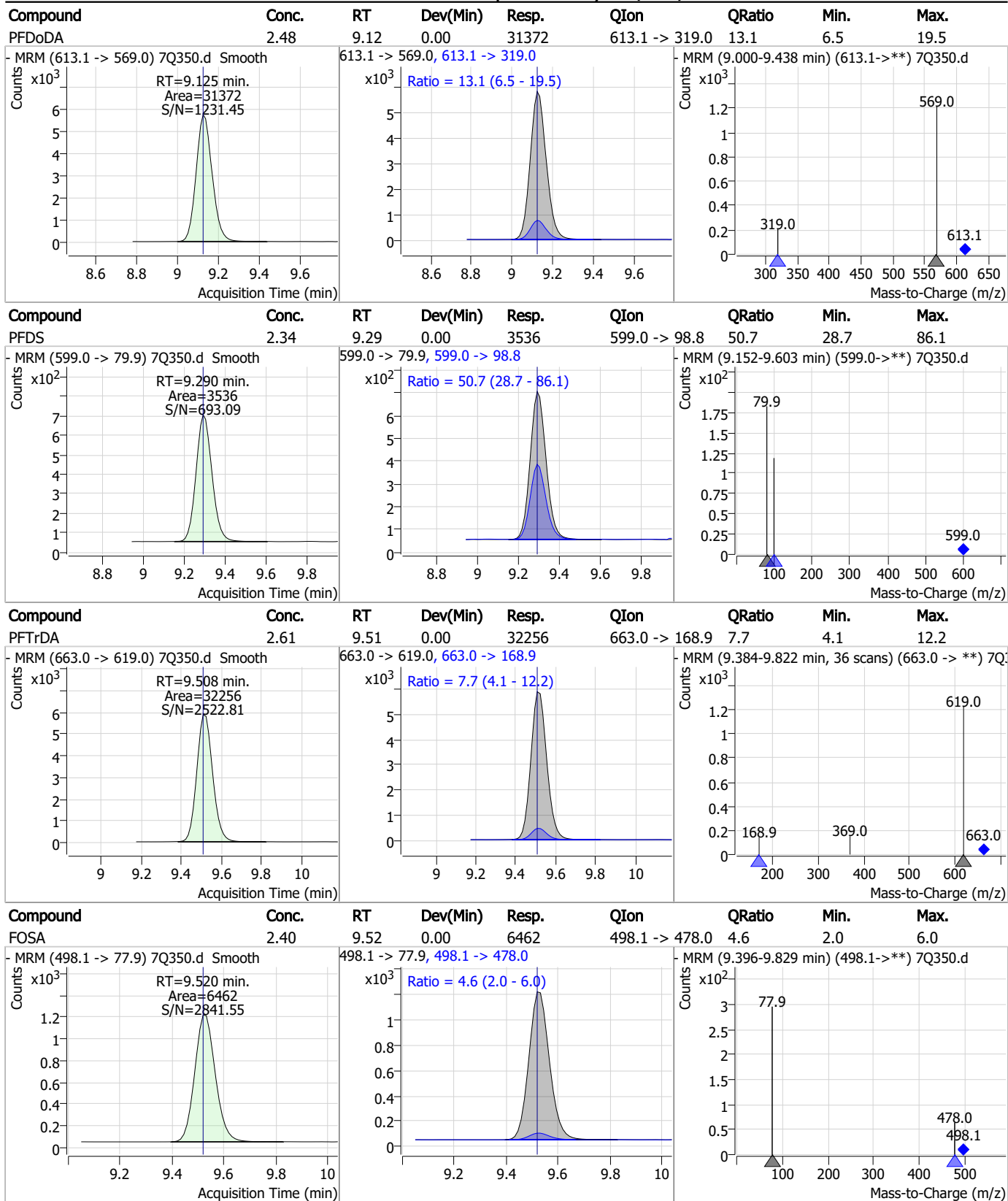
Perfluorinated Compounds by LC/MS/MS



7.7.25 7

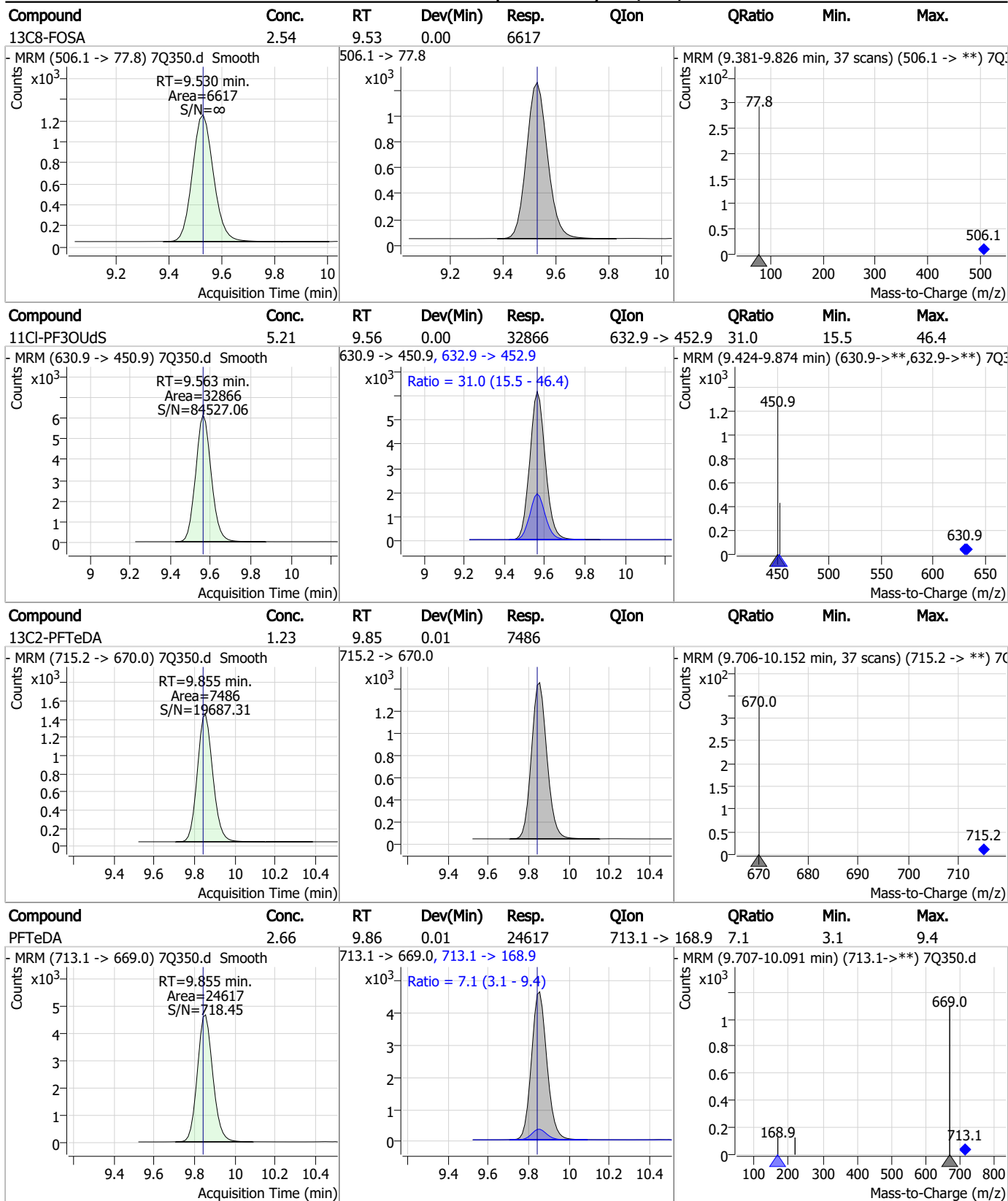


Perfluorinated Compounds by LC/MS/MS



7.7.25
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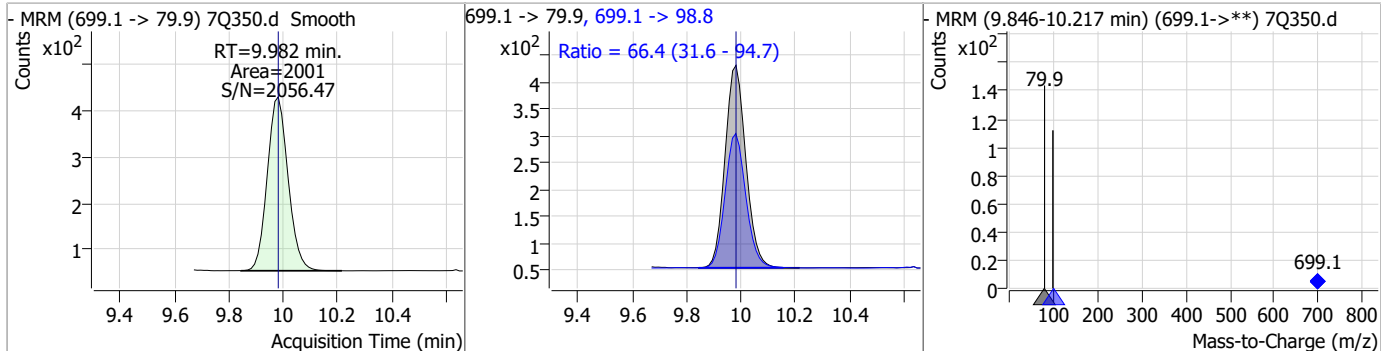
Perfluorinated Compounds by LC/MS/MS



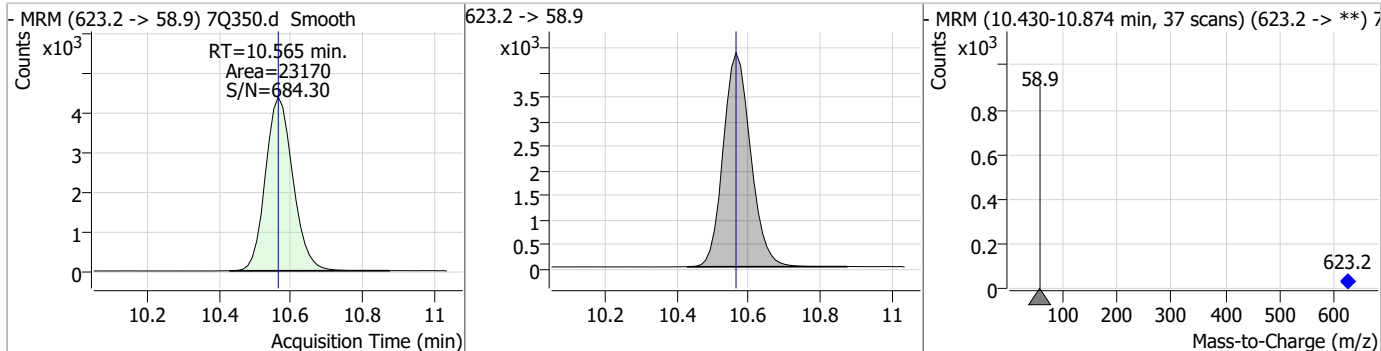
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Perfluorinated Compounds by LC/MS/MS

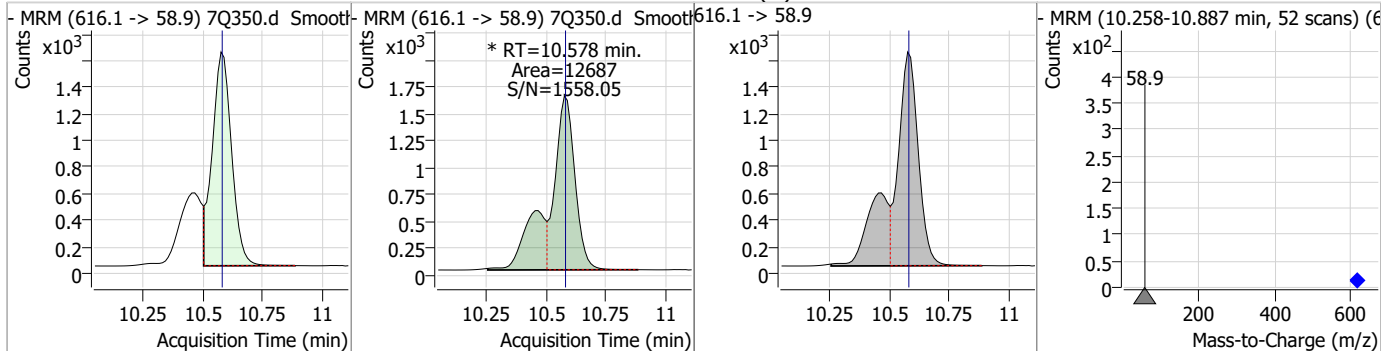
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.22	9.98	0.00	2001	699.1 -> 98.8	66.4	31.6	94.7



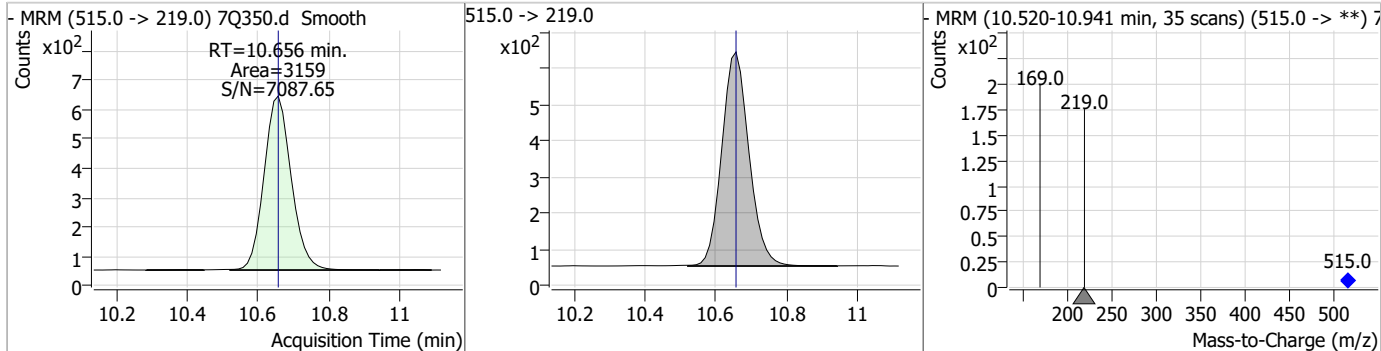
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.06	10.56	0.00	23170				



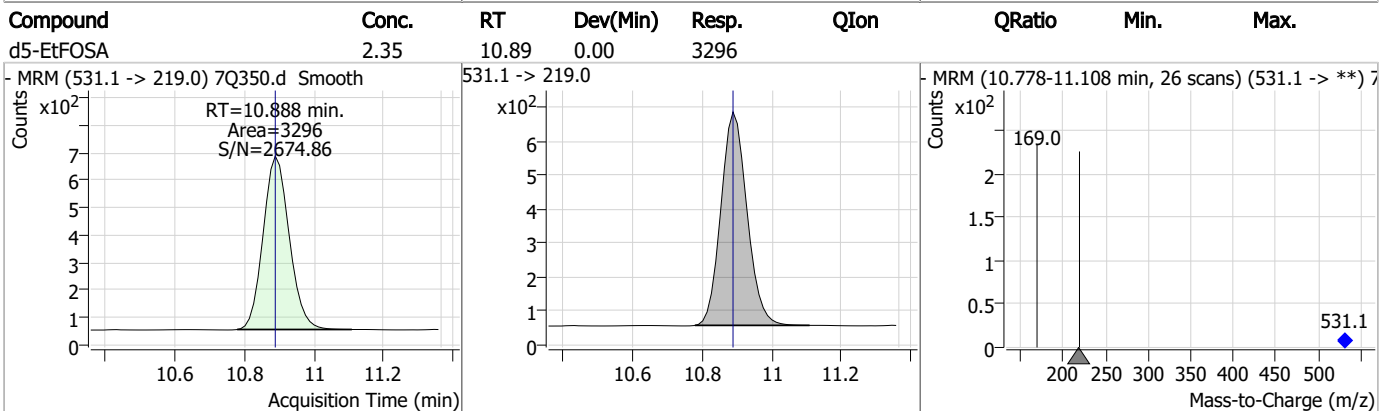
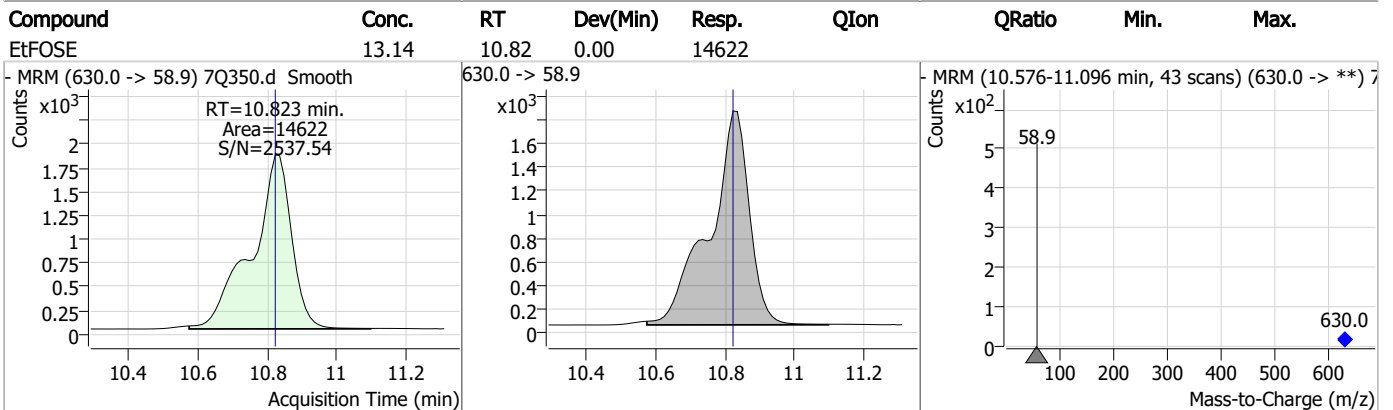
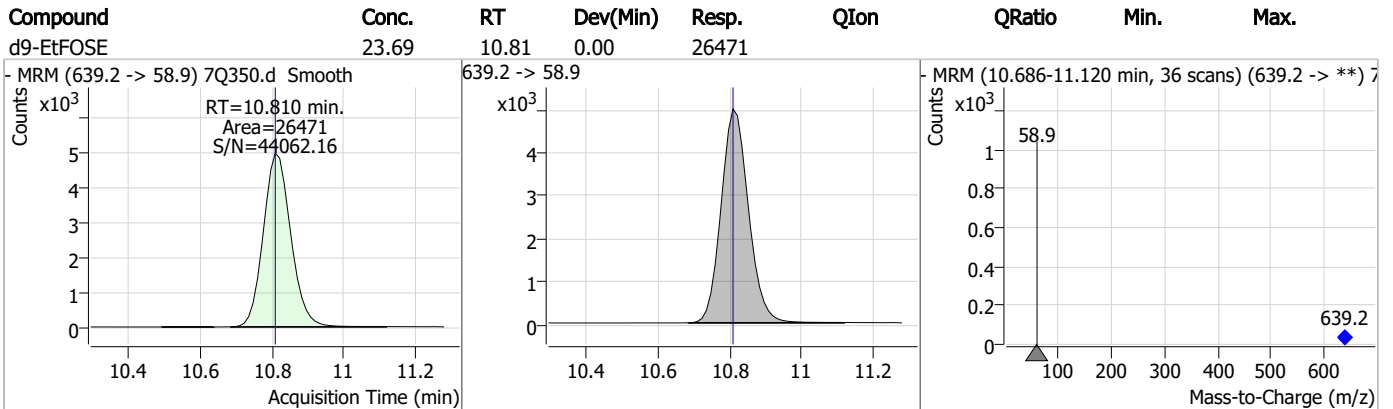
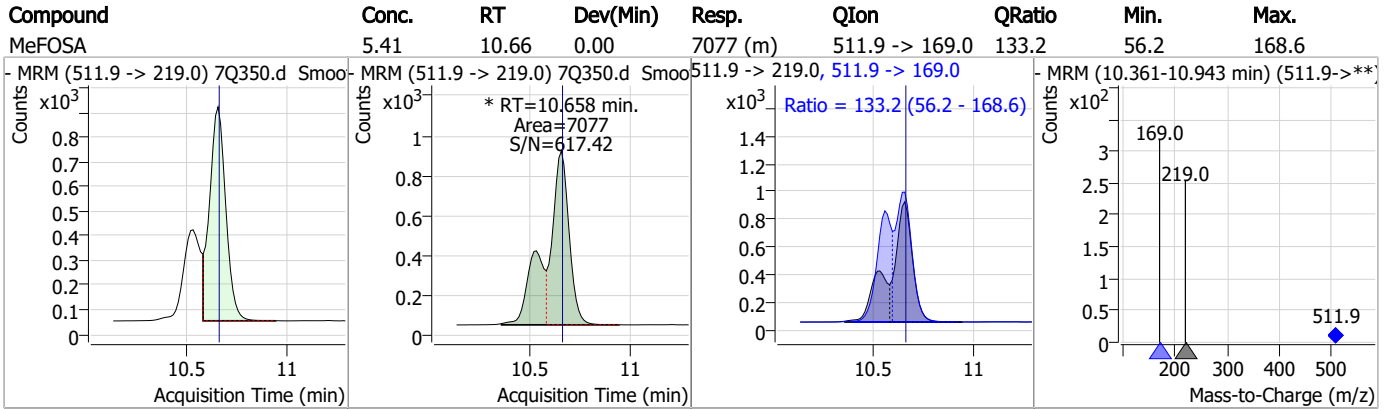
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.79	10.58	0.00	12687 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.32	10.66	0.00	3159				



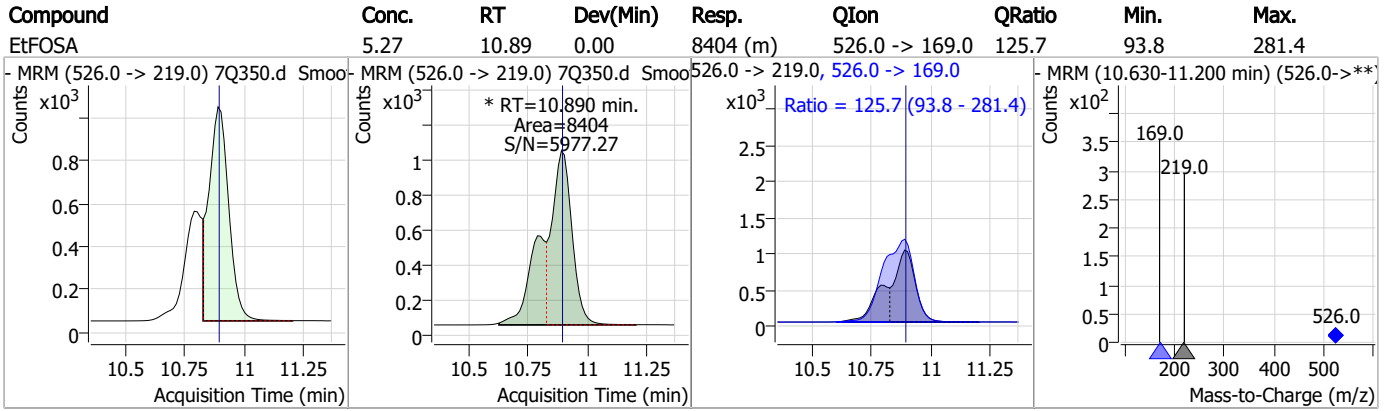
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-ICV11 Method: EPA DRAFT 1633
Lab FileID: 7Q350.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 17:01 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

7.7.25.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q351.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 5:14:58 PM
 Sample Name : icv11-20
 Vial : P1-B2
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.885	216.8 -> 171.9	101924	10.00 µg/L	-0.012
M5-PFPeA	4.312	268.3 -> 223.0	34436	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	30270	2.50 µg/L	0.000
M4-PFHpA	6.509	367.1 -> 322.0	25945	2.50 µg/L	0.000
M8-PFOA	7.165	421.1 -> 376.0	35938	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	12972	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	12163	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16393	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	16431	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7601	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	6292	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6588	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5214	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4279	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	882	5.00 µg/L	0.000
M2-6:2FTS	6.927	429.1 -> 80.9	1994	5.00 µg/L	0.000
M2-8:2FTS	7.991	529.1 -> 80.9	2600	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	8892	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	52825	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7703	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	23388	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	25888	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3483	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3330	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	5019	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	48280	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3830	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	37232	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11622	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	15017	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	25191	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	882	5.42 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C2-6:2FTS	6.927	429.1 -> 80.9	1994	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2600	4.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C2-PFDoDA	9.124	615.1 -> 570.0	16431	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7601	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C3-PFBS	5.484	302.1 -> 79.9	6588	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C3-PFHxS	7.293	402.1 -> 79.9	5214	2.34 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
13C4-PFBA	2.885	216.8 -> 171.9	101924	9.99 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.509	367.1 -> 322.0	25945	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C5-PFHxA	5.554	318.0 -> 273.0	30270	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFPeA	4.312	268.3 -> 223.0	34436	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C6-PFDA	8.215	519.1 -> 474.1	12163	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C7-PFUnDA	8.682	570.0 -> 525.1	16393	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C8-FOSA	9.530	506.1 -> 77.8	6292	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C8-PFOA	7.165	421.1 -> 376.0	35938	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-PFOS	8.379	507.1 -> 79.9	4279	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C9-PFNA	7.720	472.1 -> 427.0	12972	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
d3-MeFOSAA	8.248	573.2 -> 419.0	8892	4.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C3-HFPO-DA	5.944	286.9 -> 168.9	52825	9.31 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
d3-MeFOSA	10.656	515.0 -> 219.0	3330	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
d5-EtFOSAA	8.456	589.2 -> 419.0	7703	4.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.5%	
d7-MeFOSE	10.565	623.2 -> 58.9	23388	24.05 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
d9-EtFOSE	10.810	639.2 -> 58.9	25888	22.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.8%	
d5-EtFOSA	10.888	531.1 -> 219.0	3483	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	26147	18.86 µg/L	99
		327.1 -> 80.9	9290		
6:2FTS	6.927	427.1 -> 407.0	45038	21.37 µg/L	97
		427.1 -> 80.9	13526		
8:2FTS	7.992	527.1 -> 507.0	46353	18.65 µg/L	99
		527.1 -> 80.8	12422		
EtFOSAA	8.470	584.2 -> 419.1	25177	20.25 µg/L	m 97
		584.2 -> 526.0	15381		
FOSA	9.520	498.1 -> 77.9	48504	18.92 µg/L	99
		498.1 -> 478.0	2058		
MeFOSAA	8.262	570.1 -> 419.0	32616	20.84 µg/L	m 95
		570.1 -> 483.0	6426		
PFBA	2.893	212.8 -> 168.9	69836	18.92 µg/L	100
PFBS	5.485	298.7 -> 79.9	50057	20.13 µg/L	100
		298.7 -> 98.8	20366		
PFDA	8.215	512.9 -> 469.0	235709	21.10 µg/L	97
		512.9 -> 219.0	37660		
PFDoDA	9.125	613.1 -> 569.0	219283	17.22 µg/L	97
		613.1 -> 319.0	26090		
PFDS	9.290	599.0 -> 79.9	26950	19.11 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.522	599.0 -> 98.8	15037	19.94	µg/L	99
		363.1 -> 319.0	255695			
PFHpS	7.861	363.1 -> 169.0	45949	19.01	µg/L	99
		449.0 -> 79.9	41126			
PFHxA	5.556	449.0 -> 98.9	23108	21.08	µg/L	100
		313.0 -> 269.0	234924			
PFHxS	7.294	313.0 -> 118.9	12117	21.84	µg/L	89
		398.7 -> 79.9	51738			
PFNA	7.721	398.7 -> 98.9	25883	20.63	µg/L	98
		463.0 -> 419.0	214007			
PFNS	8.870	463.0 -> 219.0	49606	18.16	µg/L	96
		548.8 -> 79.9	34650			
PFOA	7.167	548.8 -> 98.9	20371	19.00	µg/L	100
		413.0 -> 369.0	344625			
PFOS	8.380	413.0 -> 169.0	65898	17.88	µg/L	78
		498.9 -> 79.9	37312			
PFPeA	4.314	498.9 -> 98.8	18998	19.55	µg/L	100
		263.0 -> 219.0	167985			
PFPeS	6.573	349.1 -> 79.9	53525	21.11	µg/L	99
		349.1 -> 98.9	26670			
PFTeDA	9.855	713.1 -> 669.0	196751	20.94	µg/L	97
		713.1 -> 168.9	14277			
PFTrDA	9.508	663.0 -> 619.0	219693	17.70	µg/L	100
		663.0 -> 168.9	18137			
PFUnDA	8.682	563.1 -> 519.0	194390	18.63	µg/L	99
		563.1 -> 269.1	28279			
11Cl-PF3OUdS	9.563	630.9 -> 450.9	137254	21.82	µg/L	100
		632.9 -> 452.9	42149			
9Cl-PF3ONS	8.733	530.8 -> 351.0	187658	21.26	µg/L	99
		532.8 -> 353.0	58946			
ADONA	6.771	376.9 -> 250.9	416456	22.09	µg/L	100
		376.9 -> 84.8	120175			
HFPO-DA	5.944	284.9 -> 168.9	113712	22.59	µg/L	98
		284.9 -> 184.9	16550			
3:3FTCA	3.736	241.0 -> 177.0	8643	19.73	µg/L	99
		241.0 -> 117.0	1067			
5:3FTCA	6.187	341.0 -> 237.1	30453	21.03	µg/L	99
		341.0 -> 217.0	22855			
7:3FTCA	7.624	441.0 -> 316.9	12498	18.90	µg/L	98
		441.0 -> 336.9	27780			
EtFOSA	10.890	526.0 -> 219.0	29310	17.38	µg/L	43
		526.0 -> 169.0	30496			
EtFOSE	10.835	630.0 -> 58.9	113367	104.20	µg/L	100
		511.9 -> 219.0	26167			
MeFOSA	10.658	511.9 -> 169.0	28639	18.99	µg/L	97
		616.1 -> 58.9	103375			
MeFOSE	10.578	699.1 -> 79.9	15283	103.22	µg/L	100
		699.1 -> 98.8	9386			
PFDoDS	9.982	295.0 -> 201.0	47912	18.22	µg/L	98
		295.0 -> 84.9	12973			
NFDHA	5.437	279.0 -> 85.1	108452	18.93	µg/L	99
		229.0 -> 84.9	113164			
PFMBA	4.750	314.8 -> 134.9	158999	19.71	µg/L	100
		314.8 -> 82.9	5055			
PFMPA	3.443			19.68	µg/L	100
PFEESA	6.051			17.83	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed



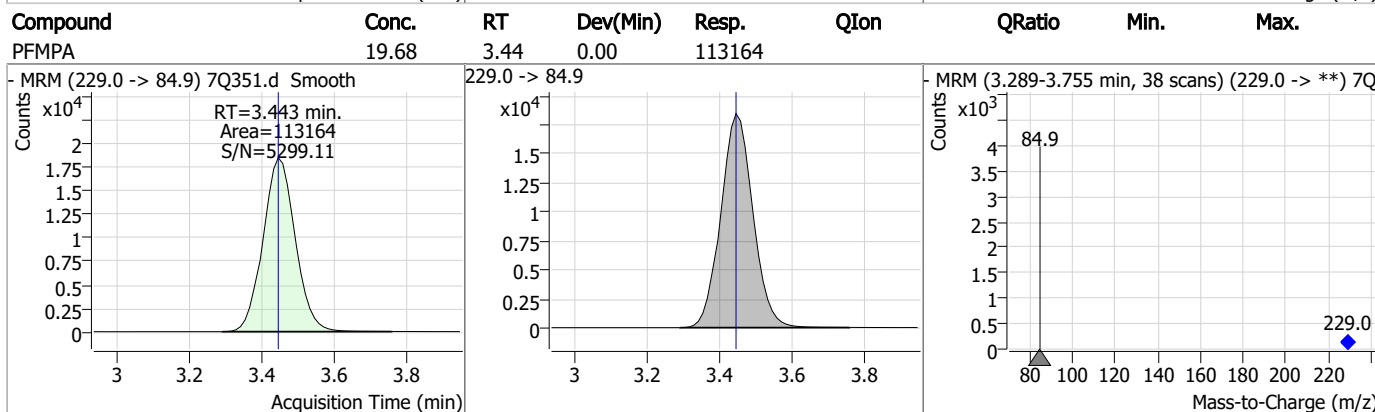
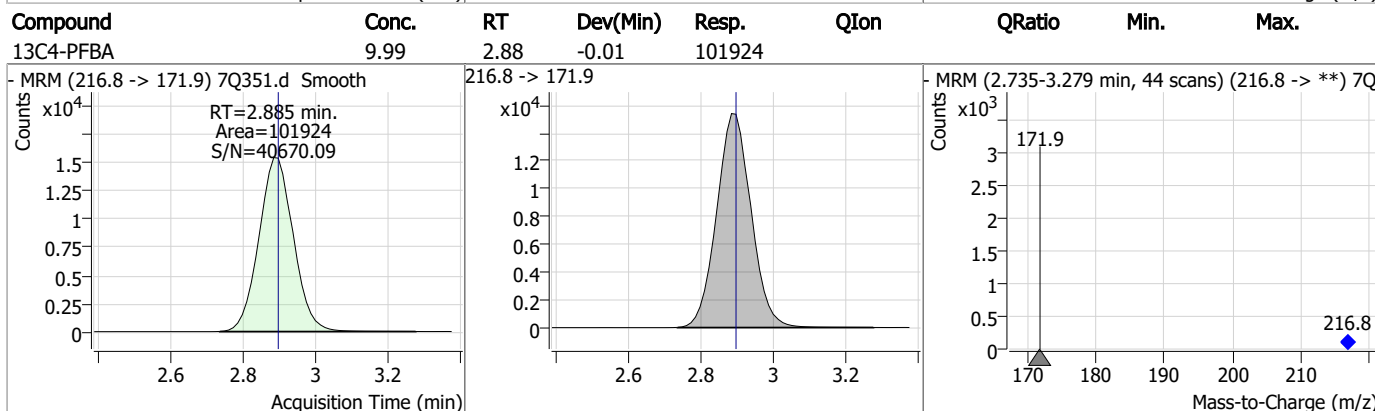
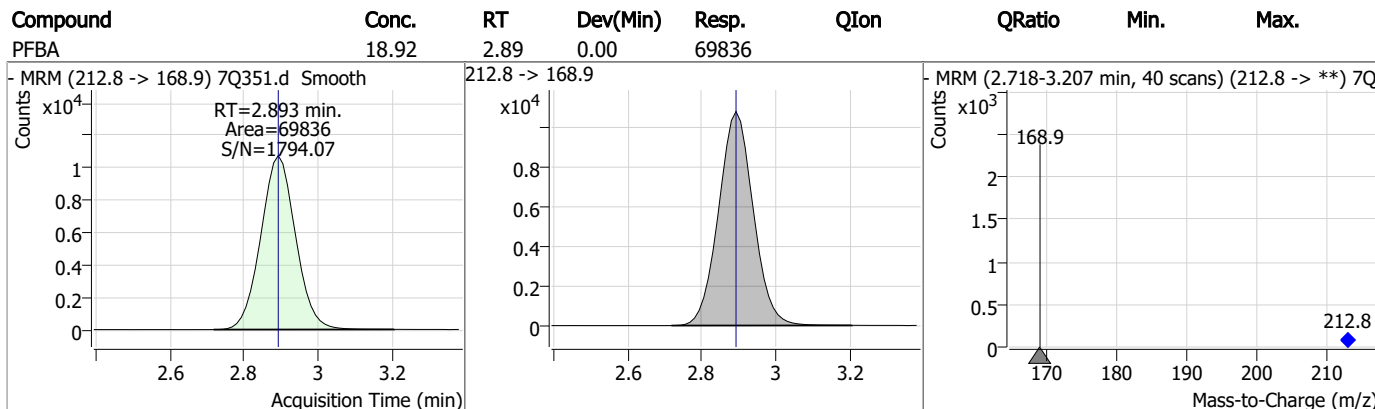
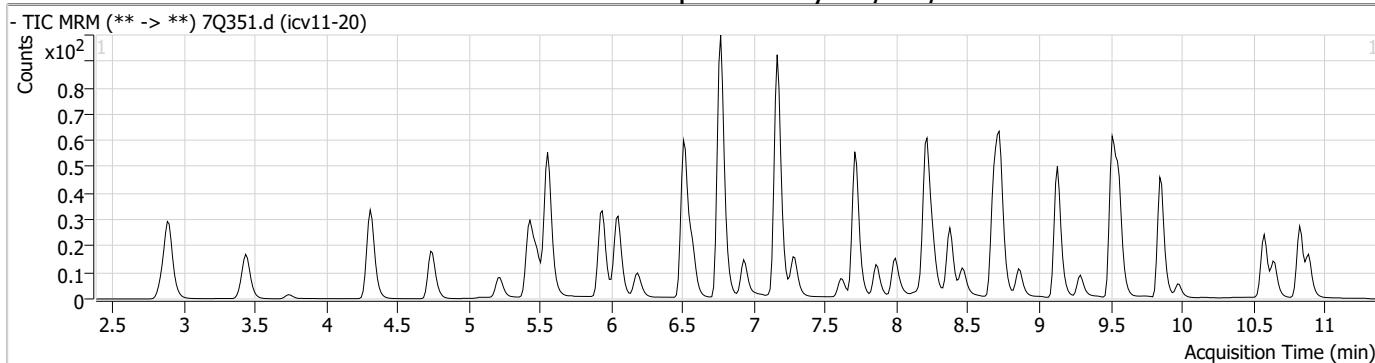
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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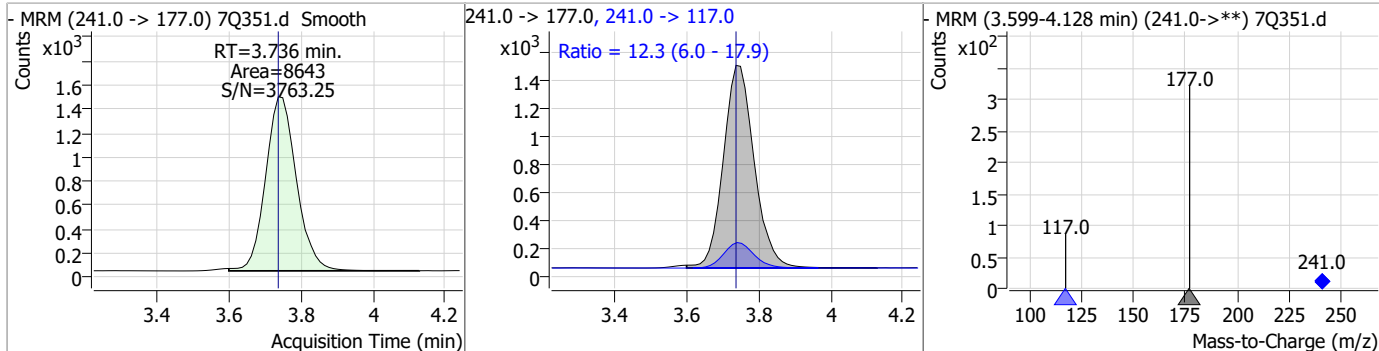
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Perfluorinated Compounds by LC/MS/MS

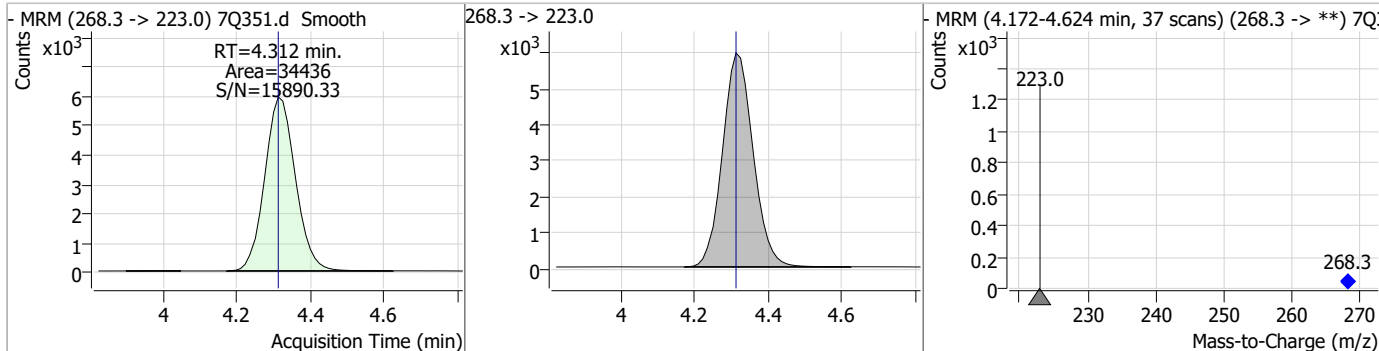


Perfluorinated Compounds by LC/MS/MS

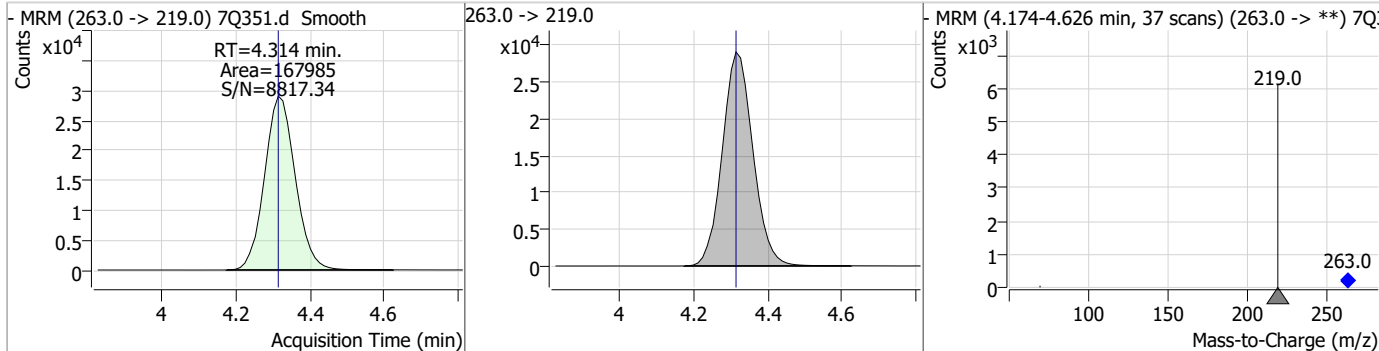
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	19.73	3.74	0.00	8643	241.0 -> 117.0	12.3	6.0	17.9



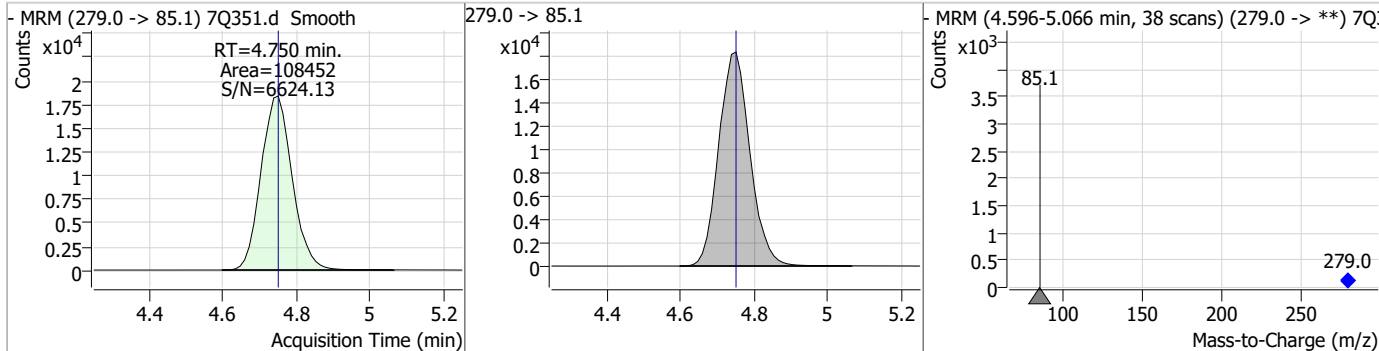
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.06	4.31	0.00	34436				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.55	4.31	0.00	167985				

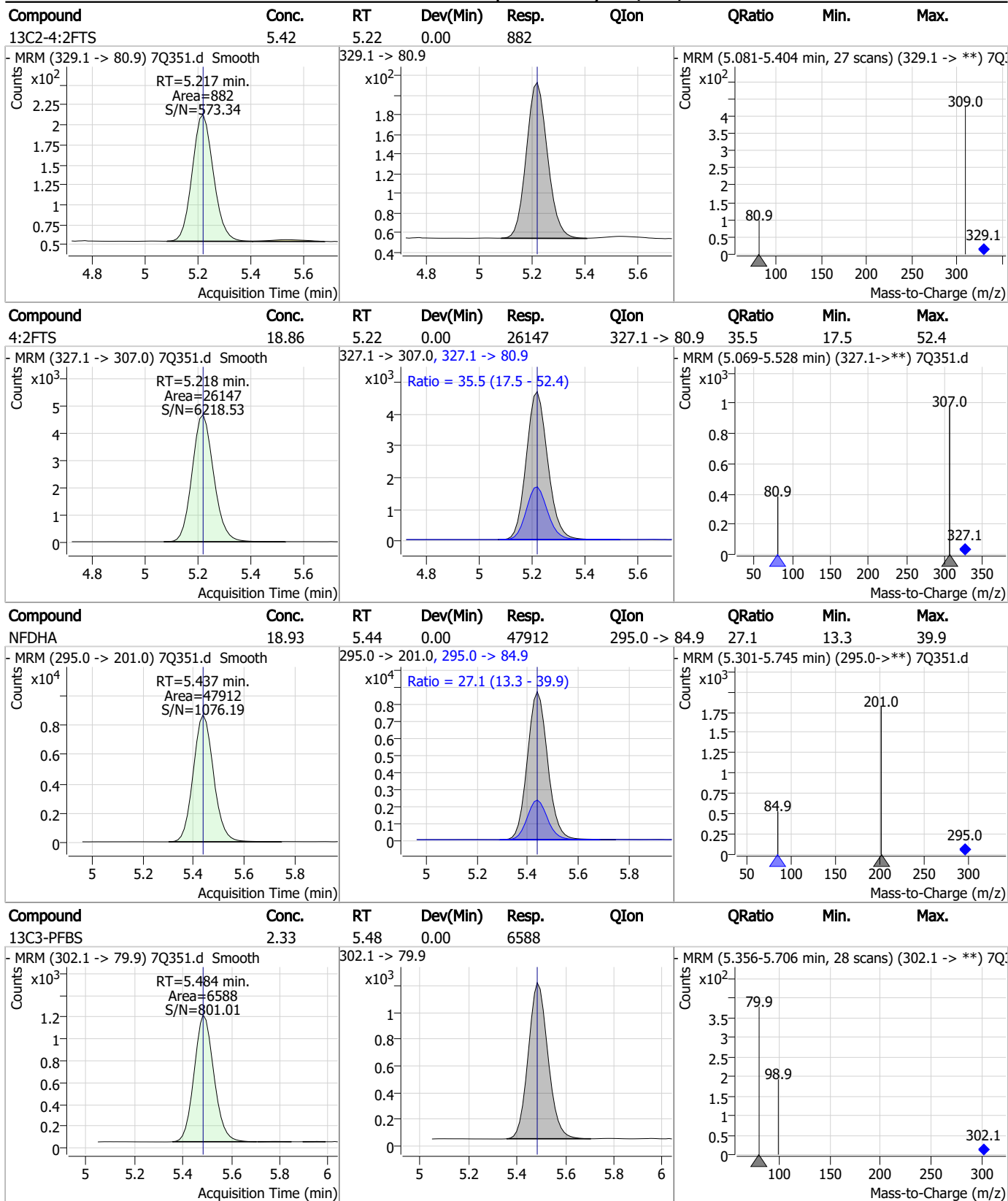


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	19.71	4.75	0.00	108452				



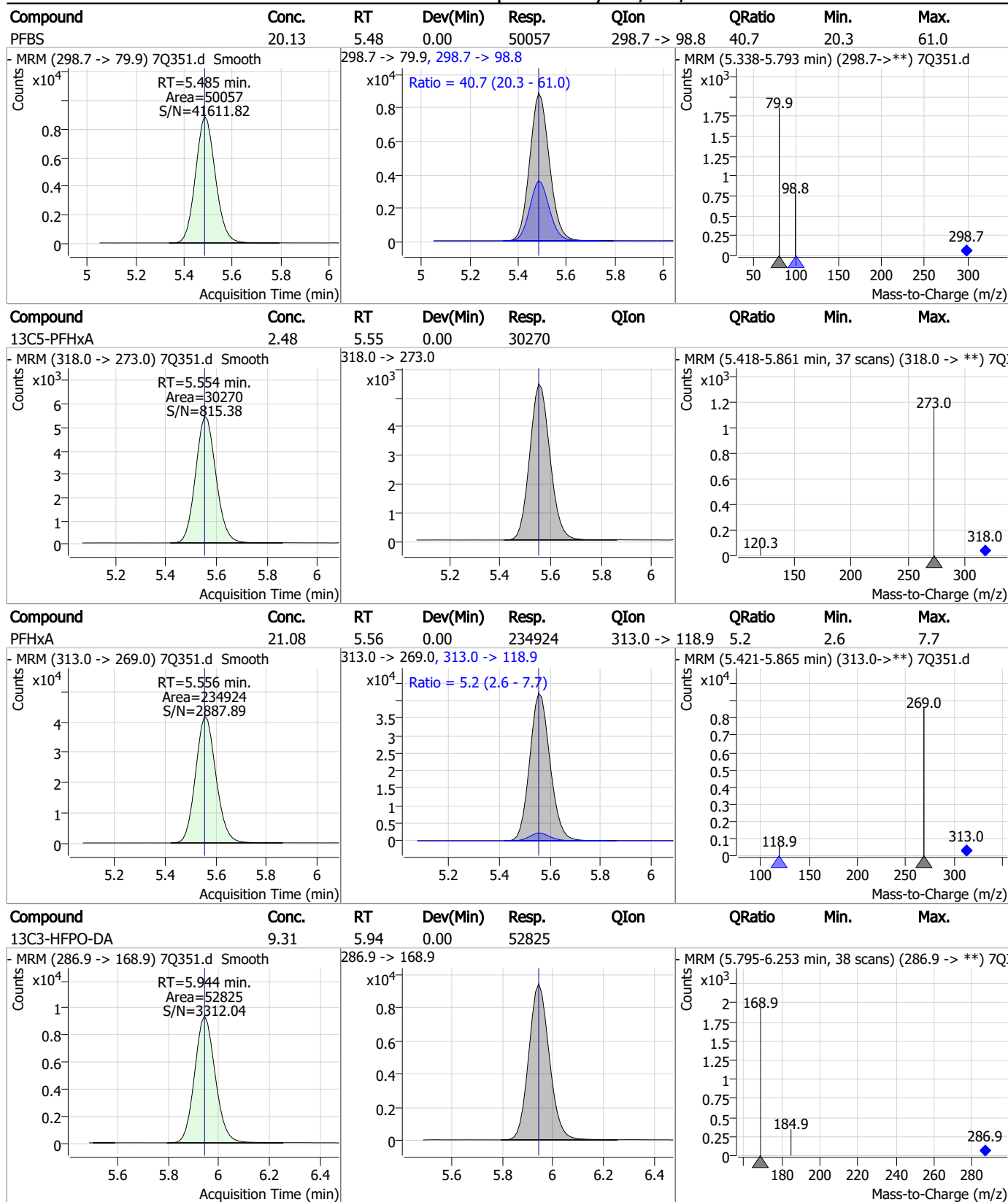
7.7.26
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Perfluorinated Compounds by LC/MS/MS



7.7.26
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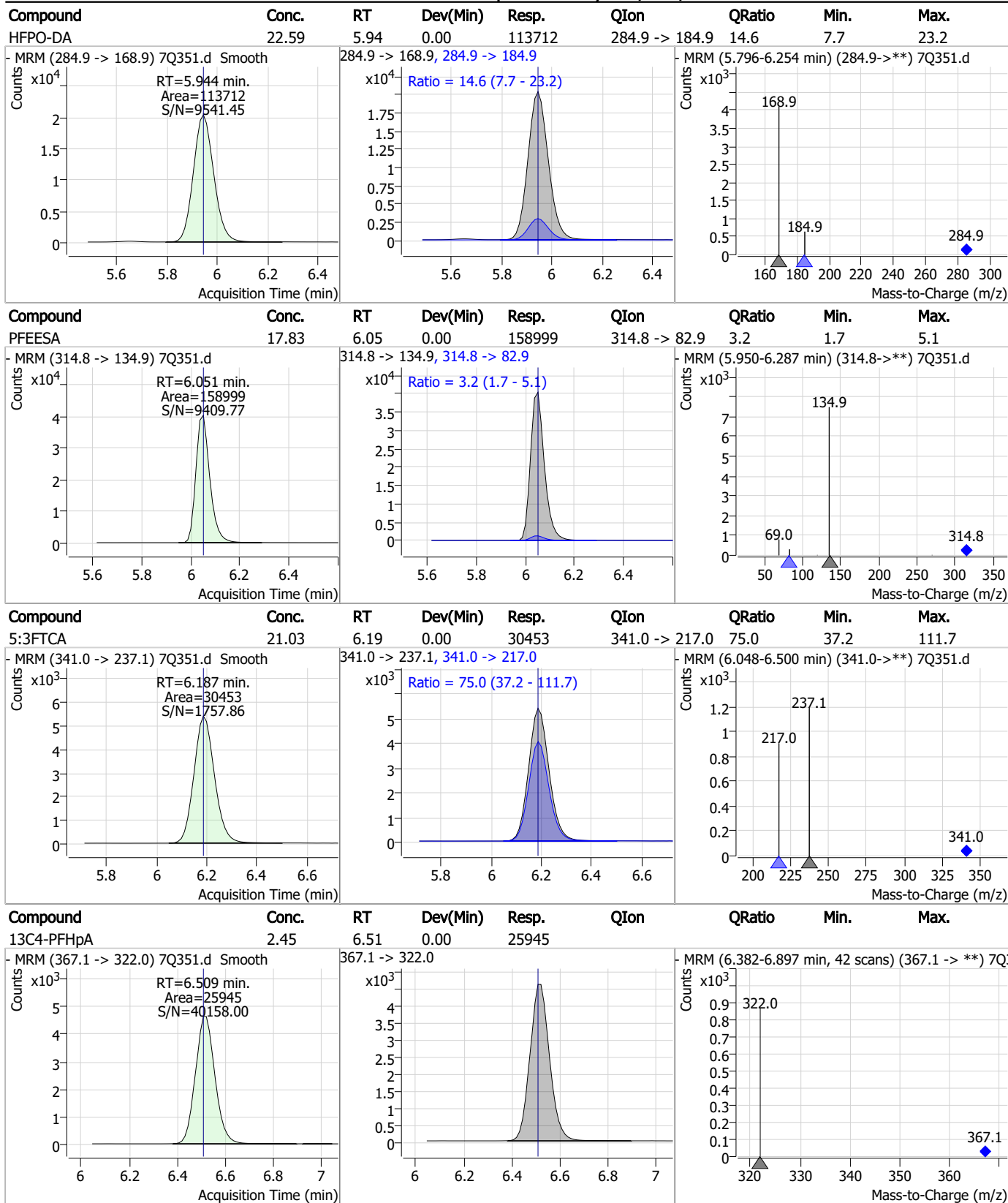
Perfluorinated Compounds by LC/MS/MS



7.7.26

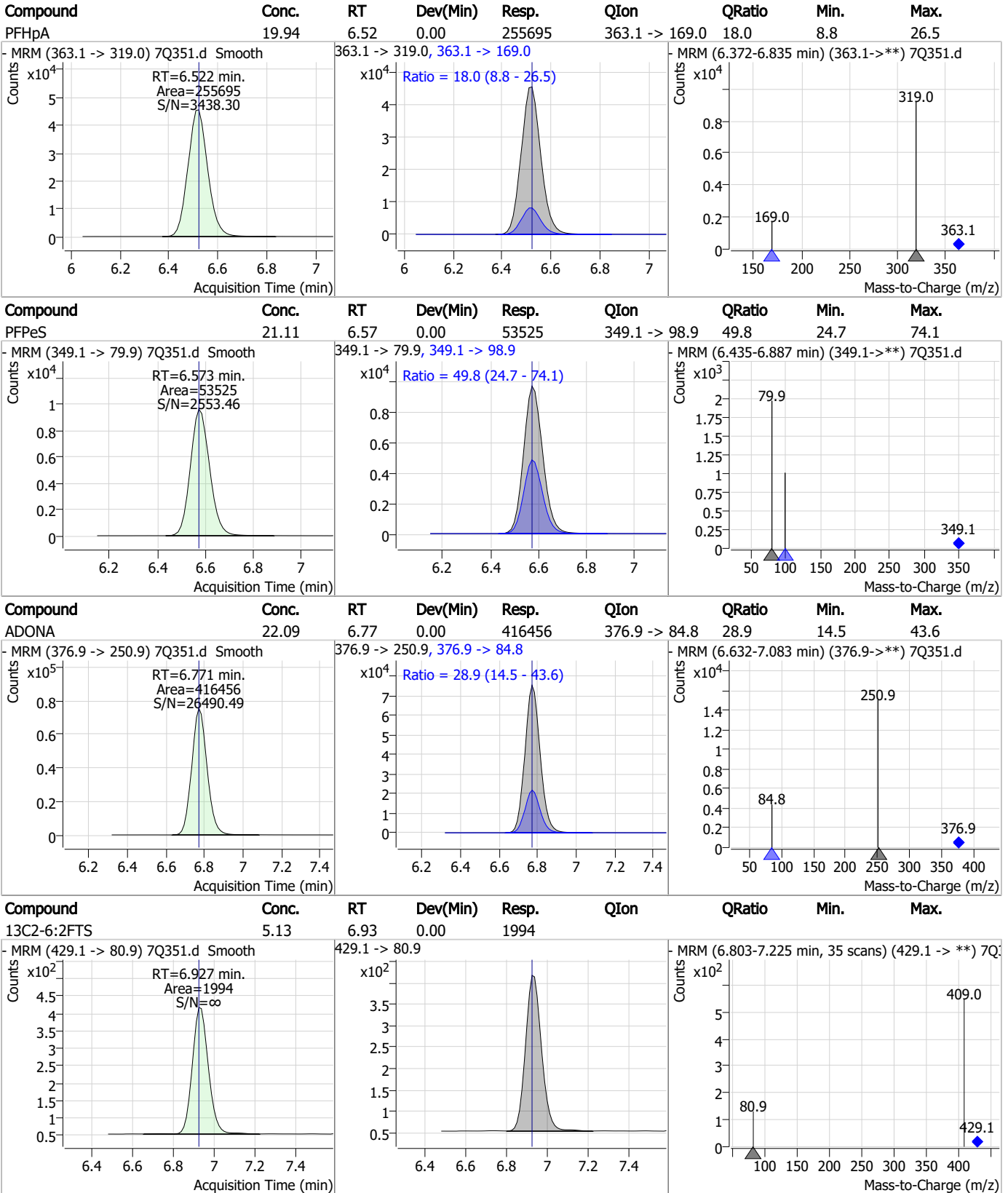
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Perfluorinated Compounds by LC/MS/MS



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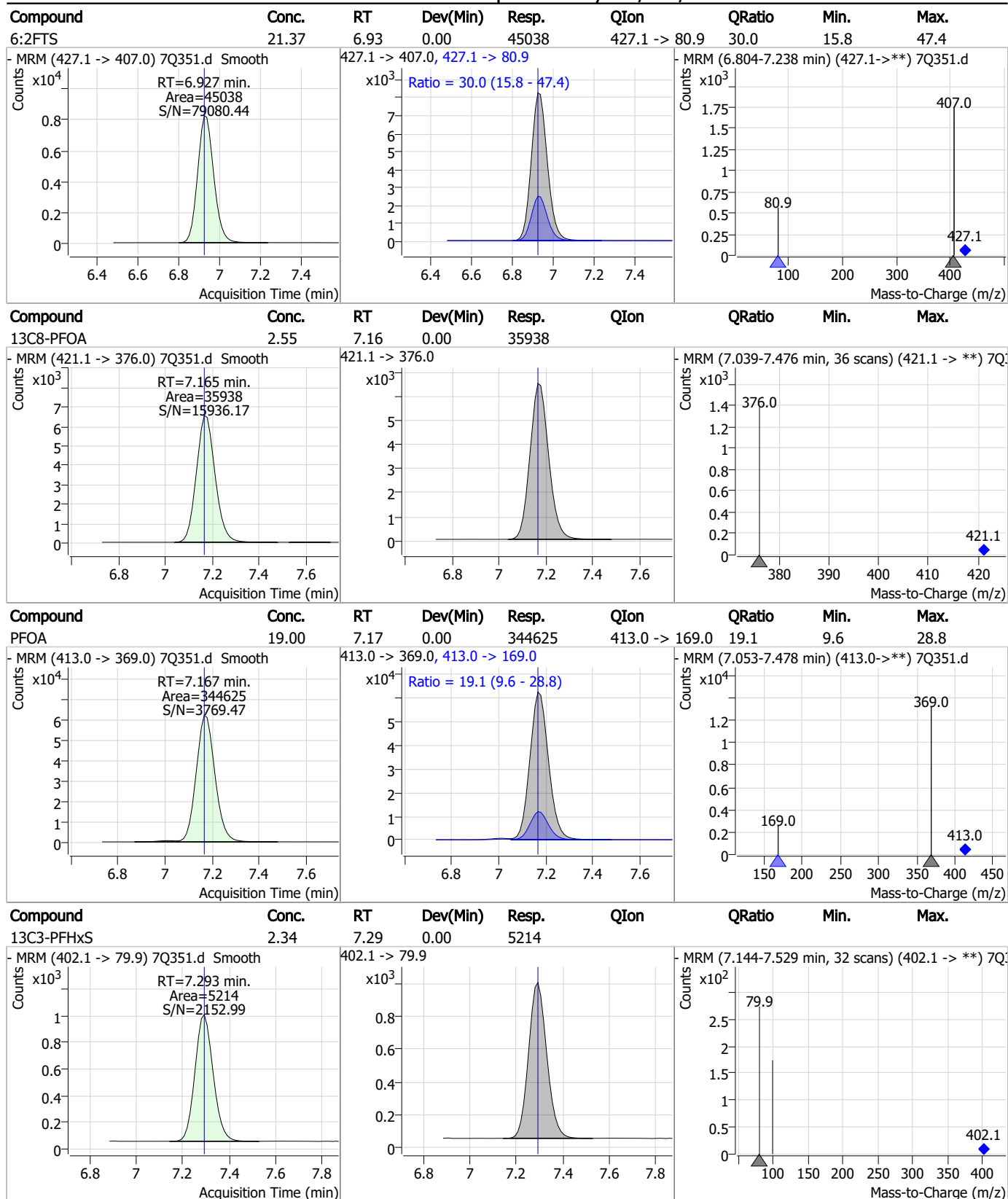
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

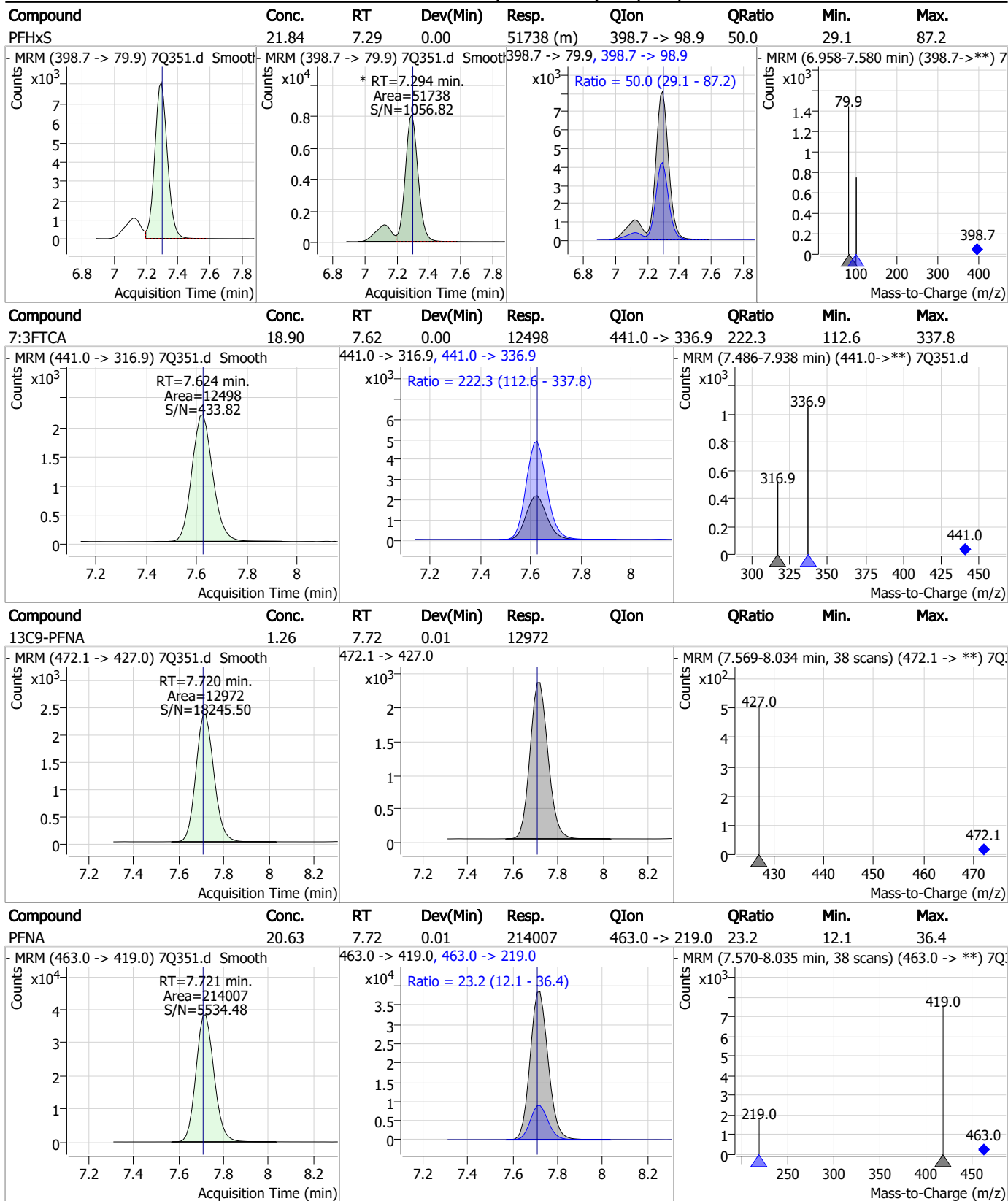


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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

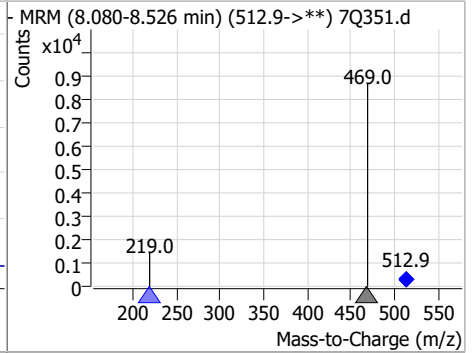
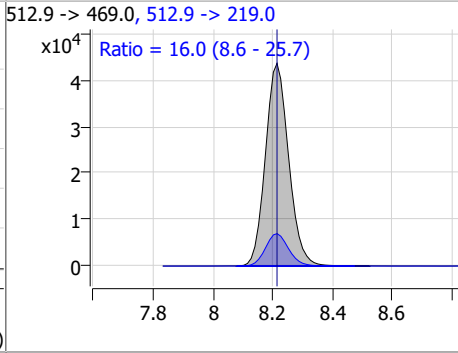
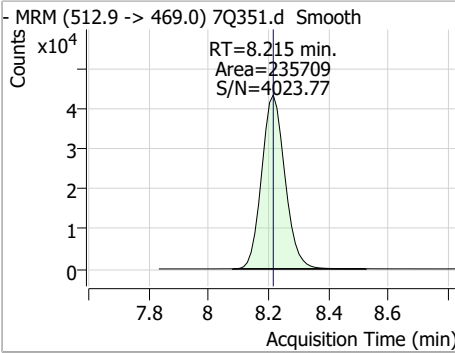
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	19.01	7.86	0.00	41126	449.0 -> 98.9	56.2	27.6	82.7
13C2-8:2FTS	4.71	7.99	0.00	2600	529.1 -> 80.9	-	-	-
8:2FTS	18.65	7.99	0.00	46353	527.1 -> 80.8	26.8	13.5	40.6
13C6-PFDA	1.19	8.21	0.00	12163	519.1 -> 474.1	-	-	-

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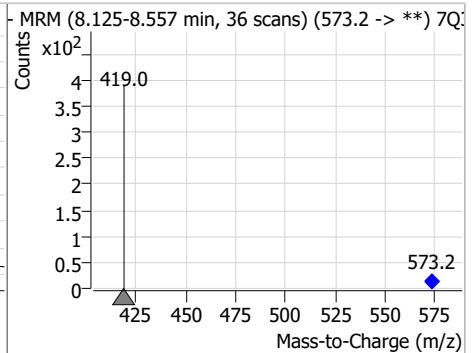
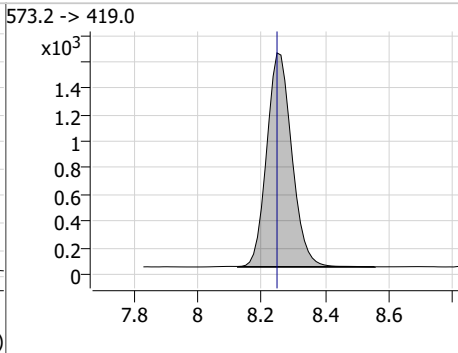
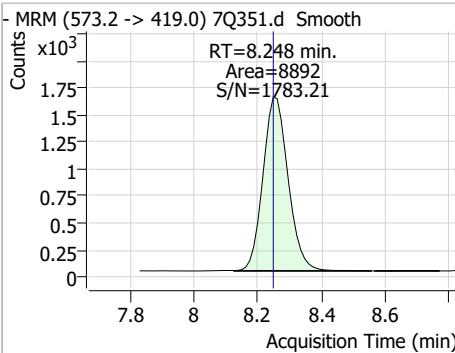
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Perfluorinated Compounds by LC/MS/MS

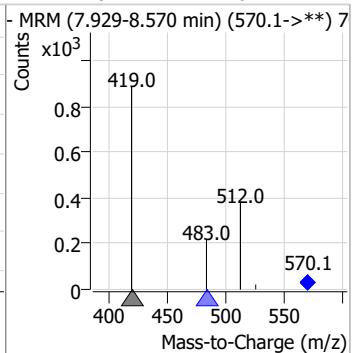
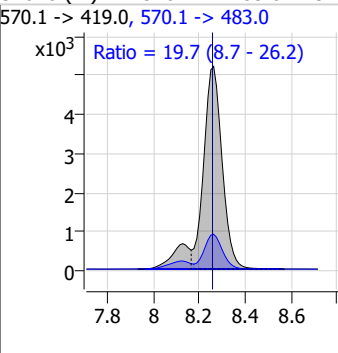
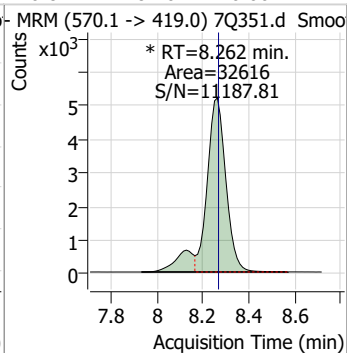
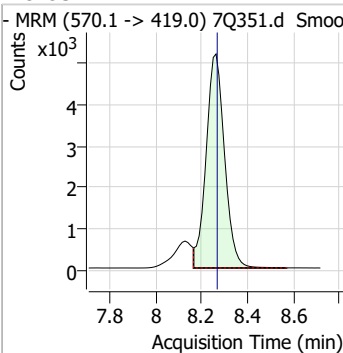
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	21.10	8.22	0.00	235709	512.9 -> 219.0	16.0	8.6	25.7



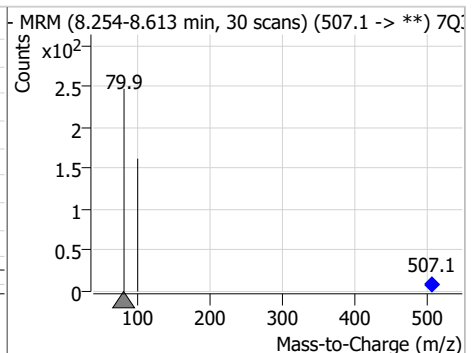
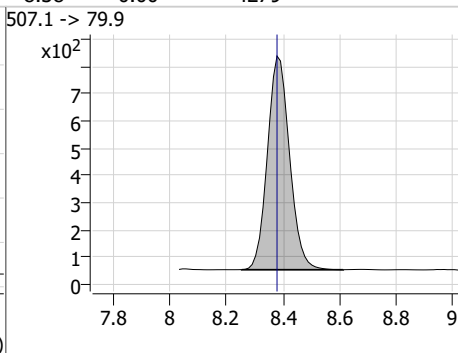
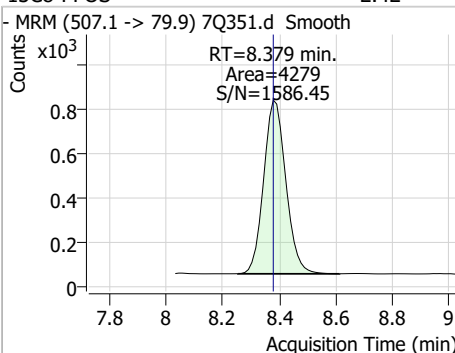
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.60	8.25	0.00	8892				



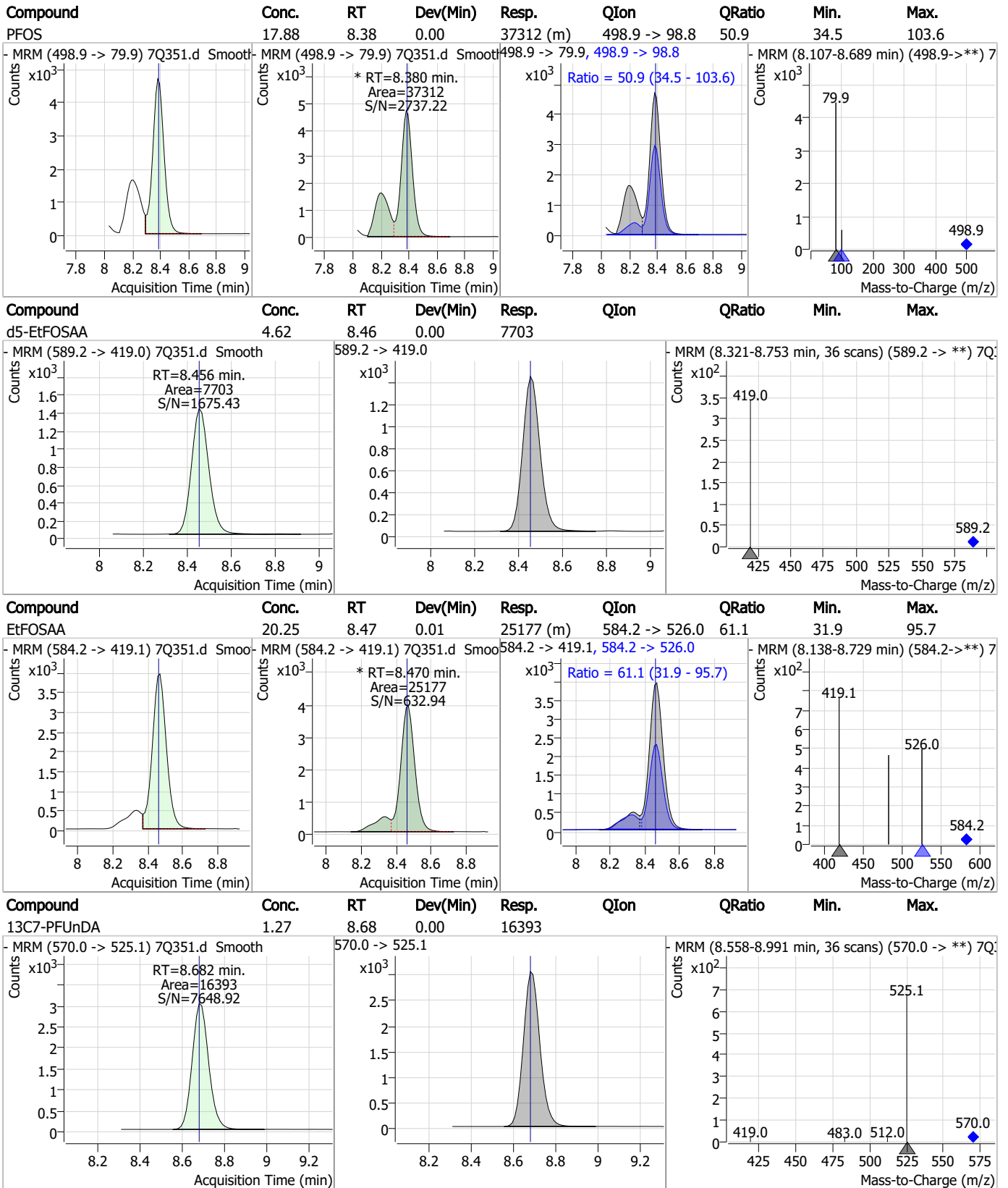
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.84	8.26	0.00	32616 (m)	570.1 -> 483.0	19.7	8.7	26.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.42	8.38	0.00	4279				



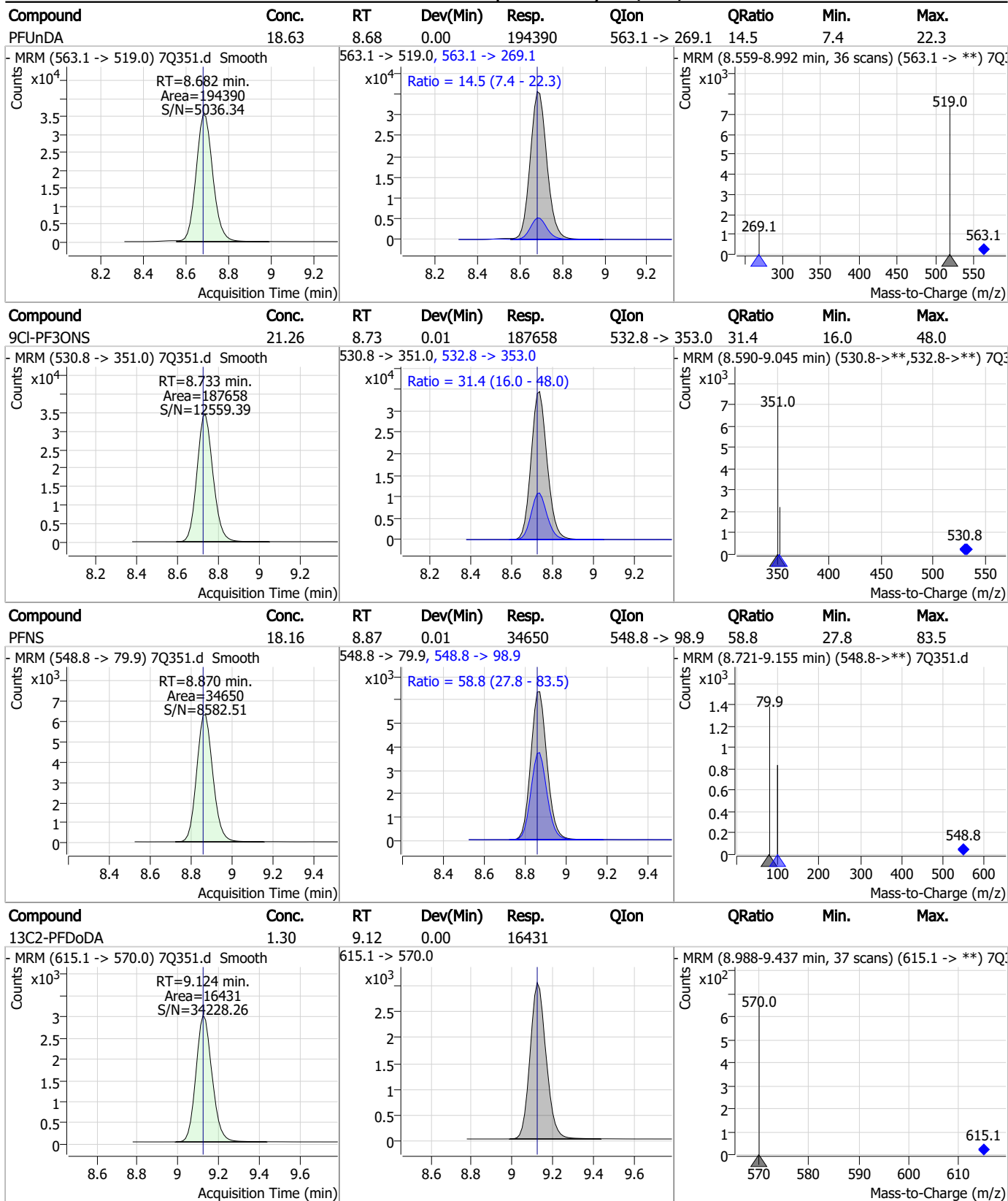
Perfluorinated Compounds by LC/MS/MS



7.7.26 7

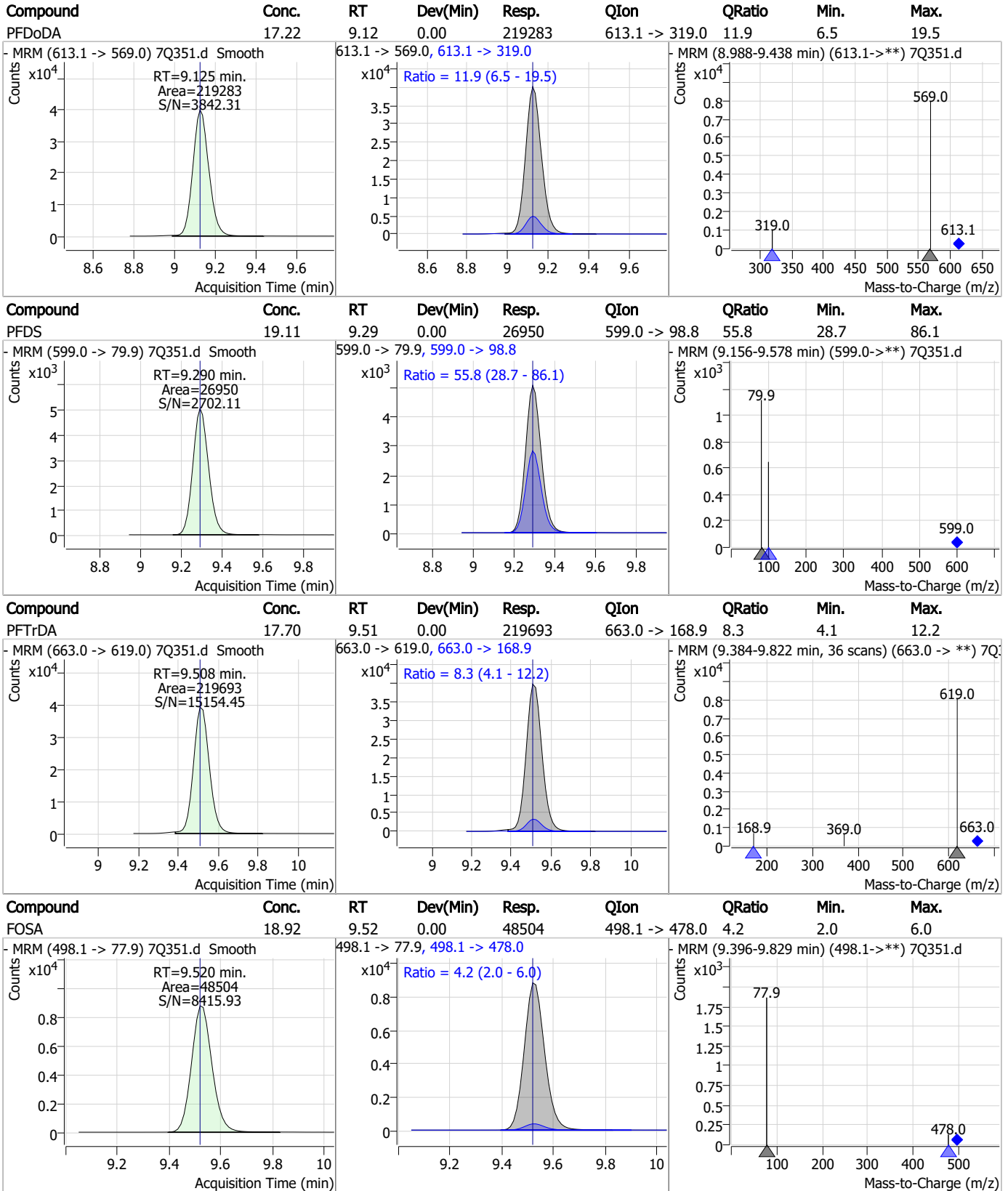


Perfluorinated Compounds by LC/MS/MS



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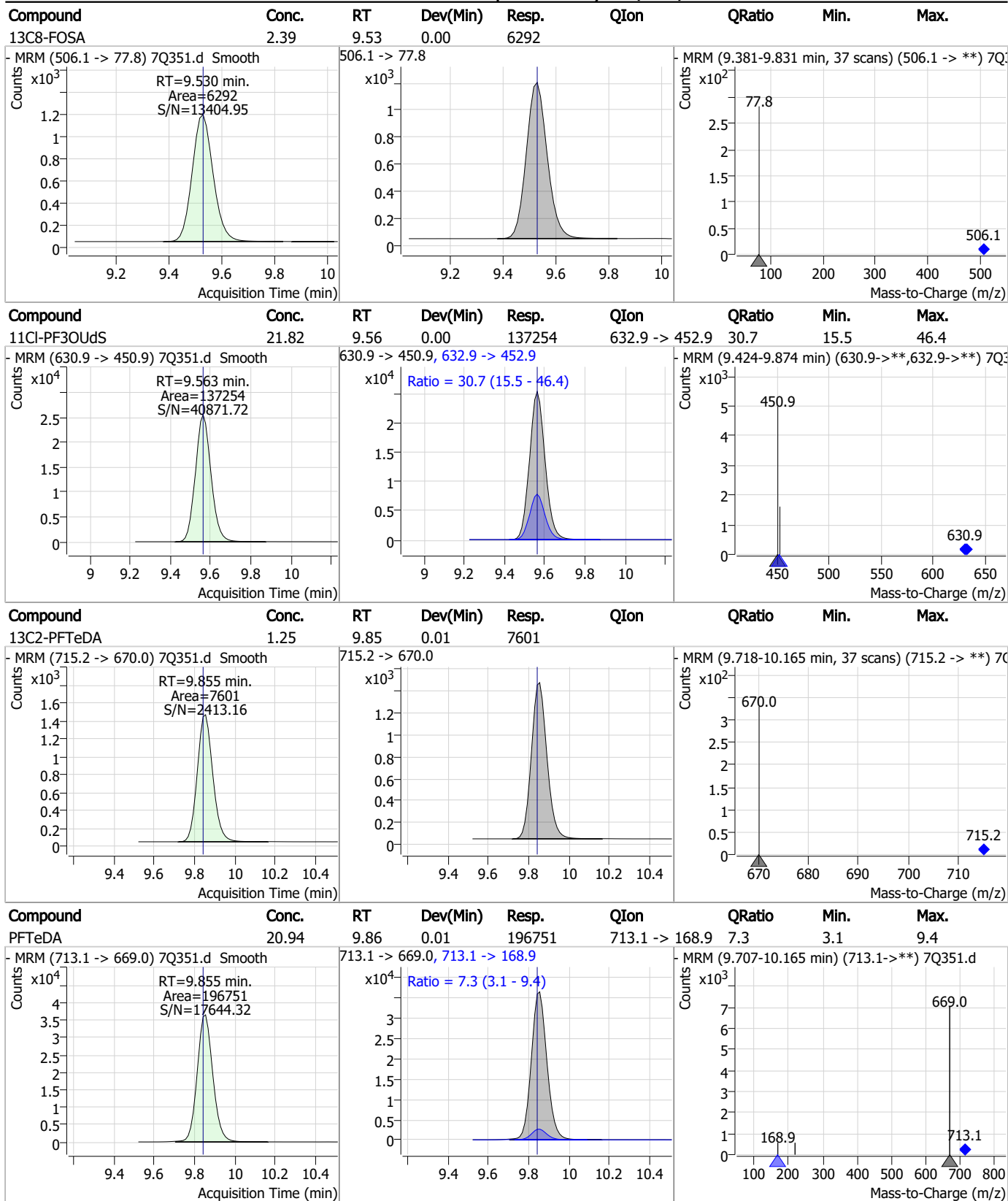
Perfluorinated Compounds by LC/MS/MS



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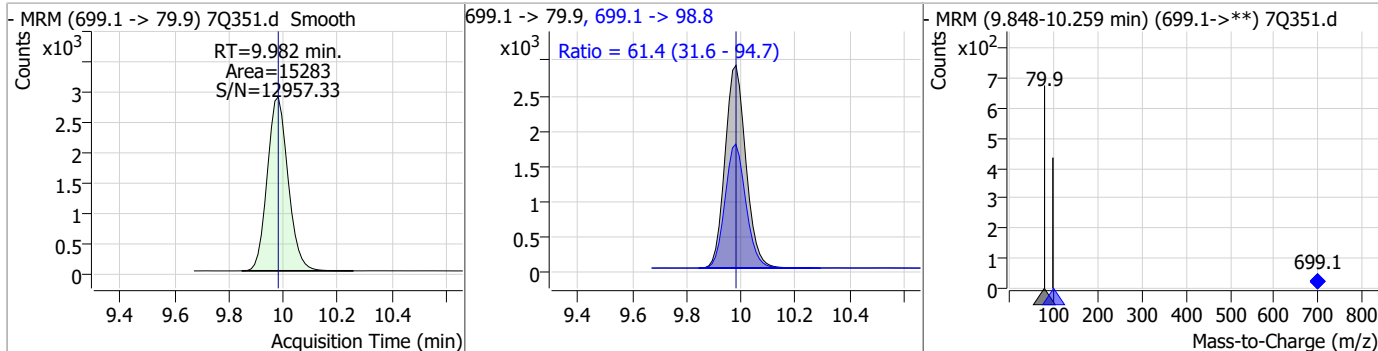
Perfluorinated Compounds by LC/MS/MS



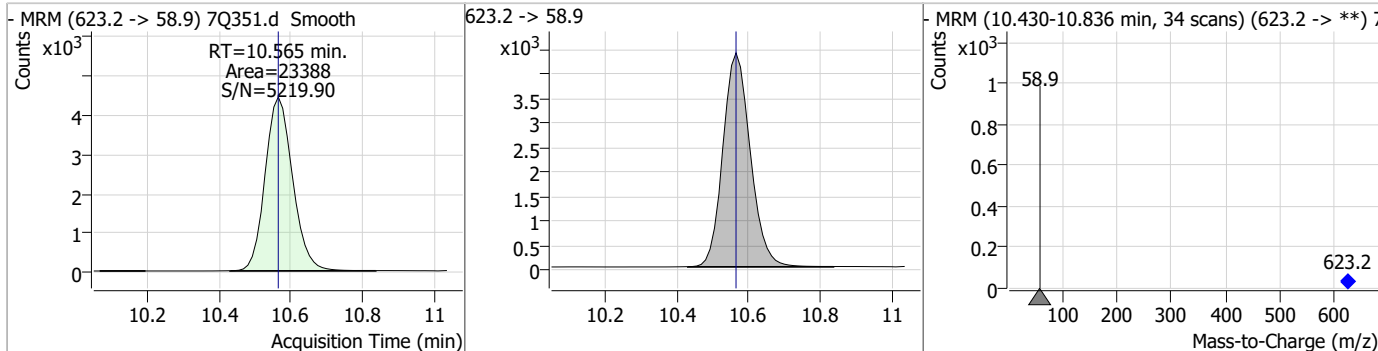
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Perfluorinated Compounds by LC/MS/MS

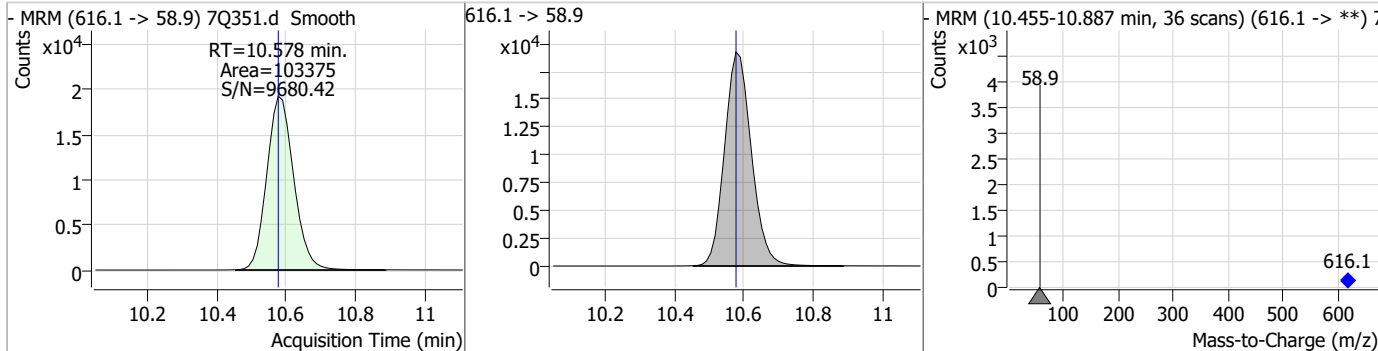
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	18.22	9.98	0.00	15283	699.1 -> 98.8	61.4	31.6	94.7



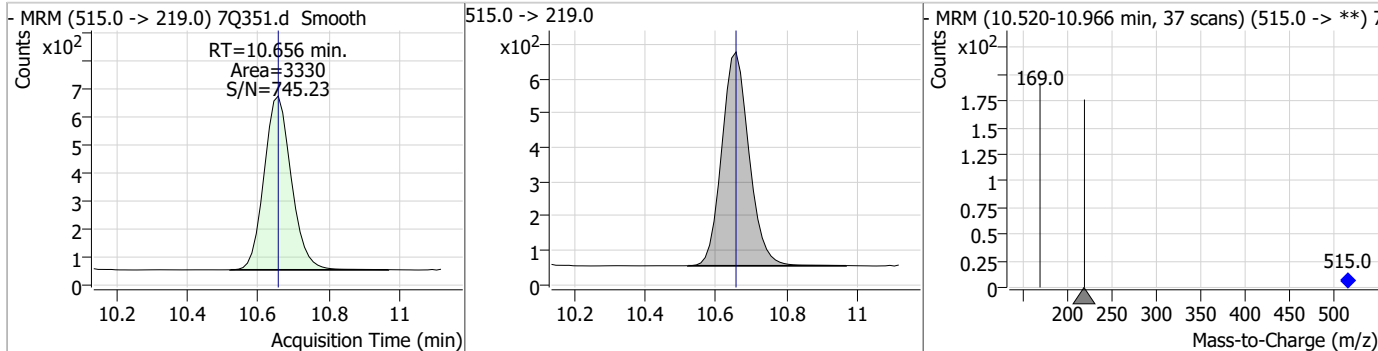
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.05	10.56	0.00	23388				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	103.22	10.58	0.00	103375				

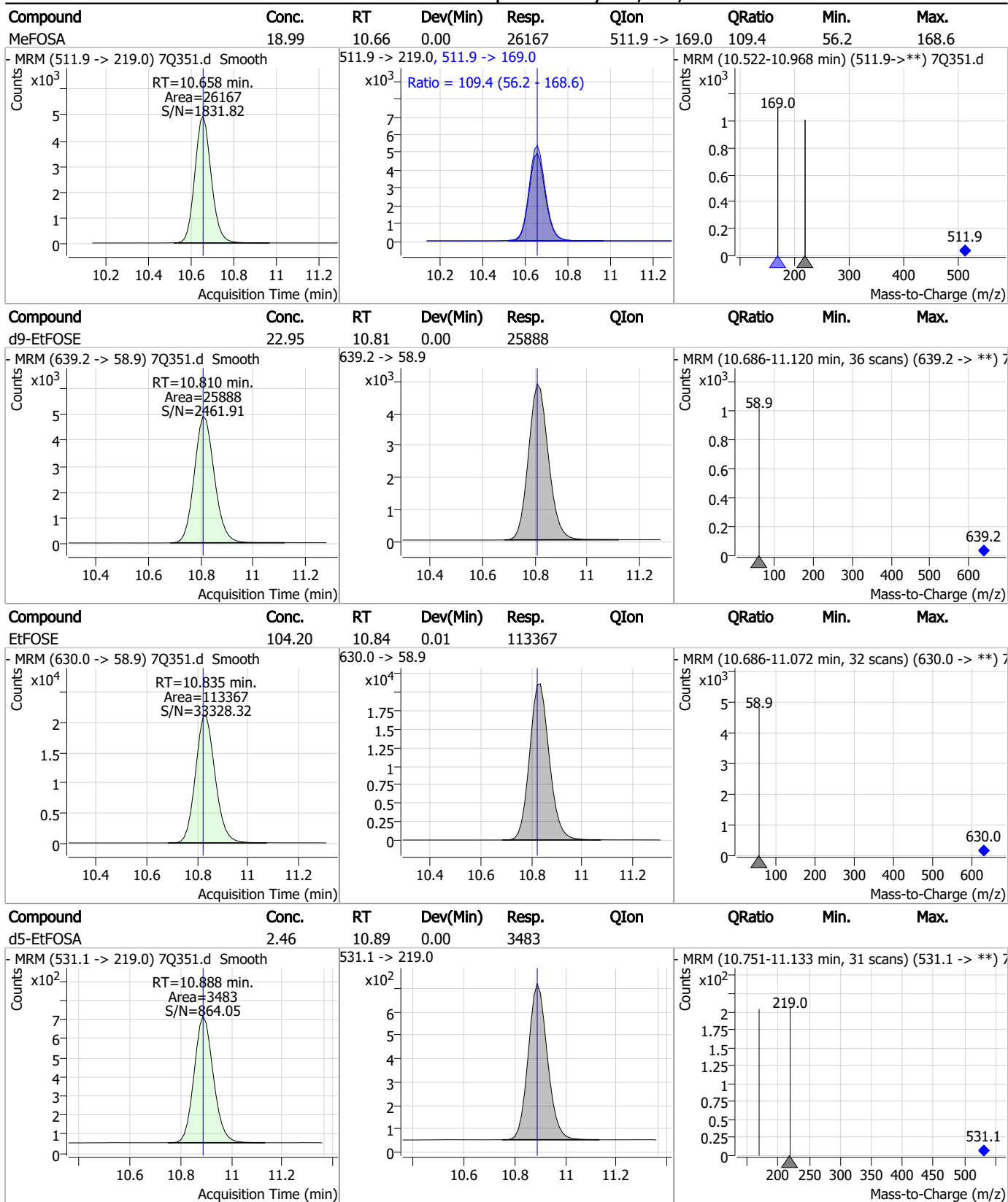


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.42	10.66	0.00	3330				



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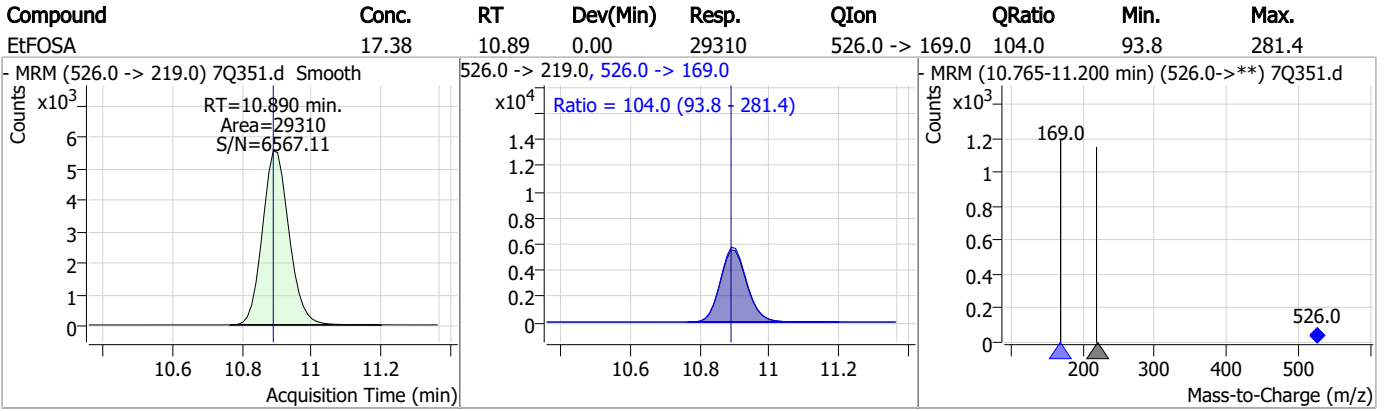
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-ICV11 Method: EPA DRAFT 1633
Lab FileID: 7Q351.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 17:14 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.47	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q352.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 5:58:18 PM
 Sample Name : cc11-4
 Vial : P1-A5
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.910	216.8 -> 171.9	90081	10.00 µg/L	0.012
M5-PFPeA	4.337	268.3 -> 223.0	30057	5.00 µg/L	0.025
M5-PFHxA	5.578	318.0 -> 273.0	27322	2.50 µg/L	0.025
M4-PFHpA	6.534	367.1 -> 322.0	23087	2.50 µg/L	0.025
M8-PFOA	7.177	421.1 -> 376.0	31664	2.50 µg/L	0.012
M9-PFNA	7.720	472.1 -> 427.0	11797	1.25 µg/L	0.012
M6-PFDA	8.227	519.1 -> 474.1	11572	1.25 µg/L	0.012
M7-PFUnDA	8.694	570.0 -> 525.1	13934	1.25 µg/L	0.012
M2-PFDoDA	9.136	615.1 -> 570.0	13870	1.25 µg/L	0.012
M2-PFTeDA	9.855	715.2 -> 670.0	6988	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	5718	2.50 µg/L	0.000
M3-PFBS	5.508	302.1 -> 79.9	5930	2.50 µg/L	0.025
M3-PFHxS	7.305	402.1 -> 79.9	3619	2.50 µg/L	0.012
M8-PFOS	8.391	507.1 -> 79.9	3978	2.50 µg/L	0.012
M2-4:2FTS	5.242	329.1 -> 80.9	942	5.00 µg/L	0.025
M2-6:2FTS	6.951	429.1 -> 80.9	1551	5.00 µg/L	0.025
M2-8:2FTS	8.004	529.1 -> 80.9	2310	5.00 µg/L	0.012
M3-MeFOSAA	8.261	573.2 -> 419.0	7046	5.00 µg/L	0.012
M3-HFPO-DA	5.956	286.9 -> 168.9	48283	10.00 µg/L	0.012
M5-EtFOSAA	8.469	589.2 -> 419.0	6401	5.00 µg/L	0.012
M7-MeFOSE	10.565	623.2 -> 58.9	21443	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	24116	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3035	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	2999	2.50 µg/L	0.000
13C4-PFOS	8.392	502.8 -> 79.9	4292	2.50 µg/L	0.012
13C3-PFBA	2.914	216.0 -> 172.0	42811	5.00 µg/L	0.025
18O2-PFHxS	7.304	403.0 -> 83.9	2647	2.50 µg/L	0.012
13C4-PFOA	7.178	417.1 -> 372.0	33592	2.50 µg/L	0.012
13C2-PFDA	8.227	515.1 -> 470.1	10438	1.25 µg/L	0.012
13C5-PFNA	7.721	468.0 -> 423.0	13732	1.25 µg/L	0.012
13C2-PFHxA	5.579	315.1 -> 270.0	22435	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.242	329.1 -> 80.9	942	8.37 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 167.4%		
13C2-6:2FTS	6.951	429.1 -> 80.9	1551	5.78 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.5%		
13C2-8:2FTS	8.004	529.1 -> 80.9	2310	6.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.1%		
13C2-PFDoDA	9.136	615.1 -> 570.0	13870	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C2-PFTeDA	9.855	715.2 -> 670.0	6988	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFBS	5.508	302.1 -> 79.9	5930	3.04 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 121.4%		
13C3-PFHxS	7.305	402.1 -> 79.9	3619	2.35 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C4-PFBA	2.910	216.8 -> 171.9	90081	9.95 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.534	367.1 -> 322.0	23087	2.45 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFHxA	5.578	318.0 -> 273.0	27322	2.52 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C5-PFPeA	4.337	268.3 -> 223.0	30057	4.96 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C6-PFDA	8.227	519.1 -> 474.1	11572	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C7-PFUnDA	8.694	570.0 -> 525.1	13934	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-FOSA	9.530	506.1 -> 77.8	5718	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C8-PFOA	7.177	421.1 -> 376.0	31664	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-PFOS	8.391	507.1 -> 79.9	3978	2.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C9-PFNA	7.720	472.1 -> 427.0	11797	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
d3-MeFOSAA	8.261	573.2 -> 419.0	7046	4.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 85.2%	
13C3-HFPO-DA	5.956	286.9 -> 168.9	48283	9.56 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
d3-MeFOSA	10.656	515.0 -> 219.0	2999	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
d5-EtFOSAA	8.469	589.2 -> 419.0	6401	4.49 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d7-MeFOSE	10.565	623.2 -> 58.9	21443	25.79 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
d9-EtFOSE	10.810	639.2 -> 58.9	24116	25.00 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
d5-EtFOSA	10.888	531.1 -> 219.0	3035	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
Target Compounds					QValue
4:2FTS	5.230	327.1 -> 307.0	13780	9.31 µg/L	99
		327.1 -> 80.9	4906		
6:2FTS	6.952	427.1 -> 407.0	15243	9.30 µg/L	99
		427.1 -> 80.9	4765		
8:2FTS	8.005	527.1 -> 507.0	21062	9.54 µg/L	99
		527.1 -> 80.8	5774		
EtFOSAA	8.470	584.2 -> 419.1	2704	2.62 µg/L	m 91
		584.2 -> 526.0	1534		
FOSA	9.532	498.1 -> 77.9	5970	2.56 µg/L	100
		498.1 -> 478.0	239		
MeFOSAA	8.262	570.1 -> 419.0	3583	2.89 µg/L	m 94
		570.1 -> 483.0	716		
PFBA	2.918	212.8 -> 168.9	33861	10.38 µg/L	100
PFBS	5.509	298.7 -> 79.9	5310	2.37 µg/L	97
		298.7 -> 98.8	2061		
PFDA	8.228	512.9 -> 469.0	26085	2.45 µg/L	99
		512.9 -> 219.0	4356		
PFDODA	9.137	613.1 -> 569.0	27105	2.52 µg/L	98
		613.1 -> 319.0	3349		
PFDS	9.302	599.0 -> 79.9	2928	2.23 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.534	599.0 -> 98.8	1689	2.54	µg/L	100
		363.1 -> 319.0	28991			
PFHpS	7.873	363.1 -> 169.0	5080	2.24	µg/L	95
		449.0 -> 79.9	4500			
PFHxA	5.580	449.0 -> 98.9	2663	2.51	µg/L	100
		313.0 -> 269.0	25284			
PFHxS	7.306	313.0 -> 118.9	1282	2.50	µg/L	m
		398.7 -> 79.9	4108			
PFNA	7.721	398.7 -> 98.9	2070	2.38	µg/L	99
		463.0 -> 419.0	22493			
PFNS	8.870	463.0 -> 219.0	5552	2.14	µg/L	91
		548.8 -> 79.9	3797			
PFOA	7.179	548.8 -> 98.9	2353	2.53	µg/L	100
		413.0 -> 369.0	40445			
PFOS	8.393	413.0 -> 169.0	7844	2.13	µg/L	m
		498.9 -> 79.9	4129			
PFPeA	4.339	498.9 -> 98.8	2256	5.21	µg/L	100
		263.0 -> 219.0	39039			
PFPeS	6.586	349.1 -> 79.9	5403	3.07	µg/L	96
		349.1 -> 98.9	2527			
PFTeDA	9.855	713.1 -> 669.0	22078	2.56	µg/L	97
		713.1 -> 168.9	1596			
PFTrDA	9.523	663.0 -> 619.0	27719	2.65	µg/L	100
		663.0 -> 168.9	2282			
PFUnDA	8.695	563.1 -> 519.0	22530	2.54	µg/L	99
		563.1 -> 269.1	3269			
11CI-PF3OUdS	9.563	630.9 -> 450.9	29541	5.14	µg/L	99
		632.9 -> 452.9	8958			
9CI-PF3ONS	8.733	530.8 -> 351.0	40003	4.96	µg/L	98
		532.8 -> 353.0	12372			
ADONA	6.784	376.9 -> 250.9	85706	4.97	µg/L	100
		376.9 -> 84.8	24853			
HFPO-DA	5.957	284.9 -> 168.9	25851	5.62	µg/L	98
		284.9 -> 184.9	3759			
3:3FTCA	3.774	241.0 -> 177.0	4924	12.72	µg/L	98
		241.0 -> 117.0	620			
5:3FTCA	6.211	341.0 -> 237.1	81541	62.40	µg/L	98
		341.0 -> 217.0	61752			
7:3FTCA	7.636	441.0 -> 316.9	38788	64.99	µg/L	98
		441.0 -> 336.9	86224			
EtFOSA	10.890	526.0 -> 219.0	7578	5.16	µg/L	m
		526.0 -> 169.0	9676			
EtFOSE	10.823	630.0 -> 58.9	13237	13.06	µg/L	100
		511.9 -> 219.0	6258			
MeFOSA	10.658	511.9 -> 169.0	8656	5.04	µg/L	m
		616.1 -> 58.9	11727			
MeFOSE	10.578	699.1 -> 79.9	1765	12.77	µg/L	m
		699.1 -> 98.8	1059			
PFDoDS	9.982	295.0 -> 201.0	11359	2.26	µg/L	96
		295.0 -> 84.9	2965			
NFDHA	5.462	279.0 -> 85.1	25469	4.97	µg/L	99
		229.0 -> 84.9	25845			
PFMBA	4.775	314.8 -> 134.9	37865	5.30	µg/L	100
		314.8 -> 82.9	1228			
PFMPA	3.468			5.15	µg/L	100
PFEESA	6.064			4.70	µg/L	100

= Qualifier out of range, m = manually integrated, + = Area summed

7.7.27
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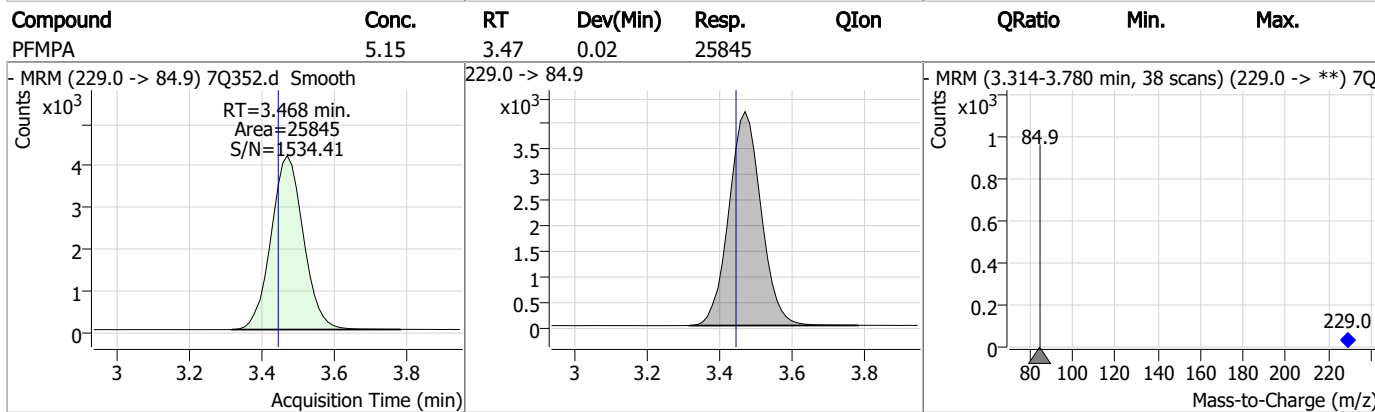
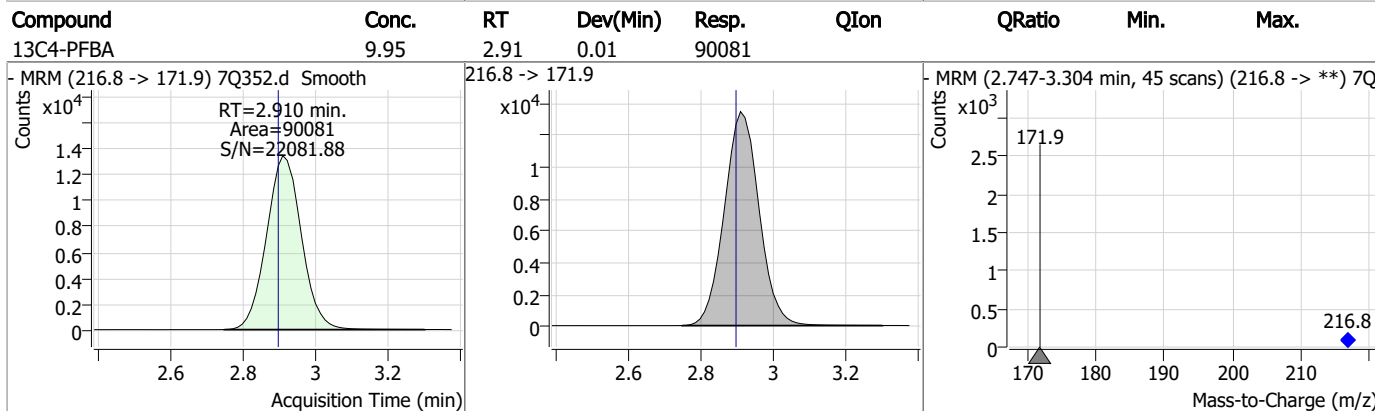
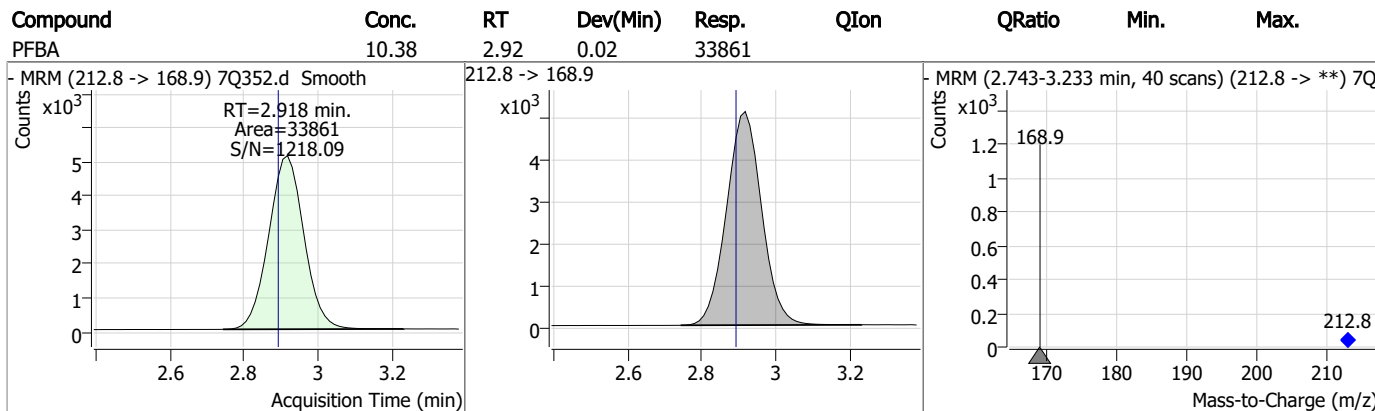
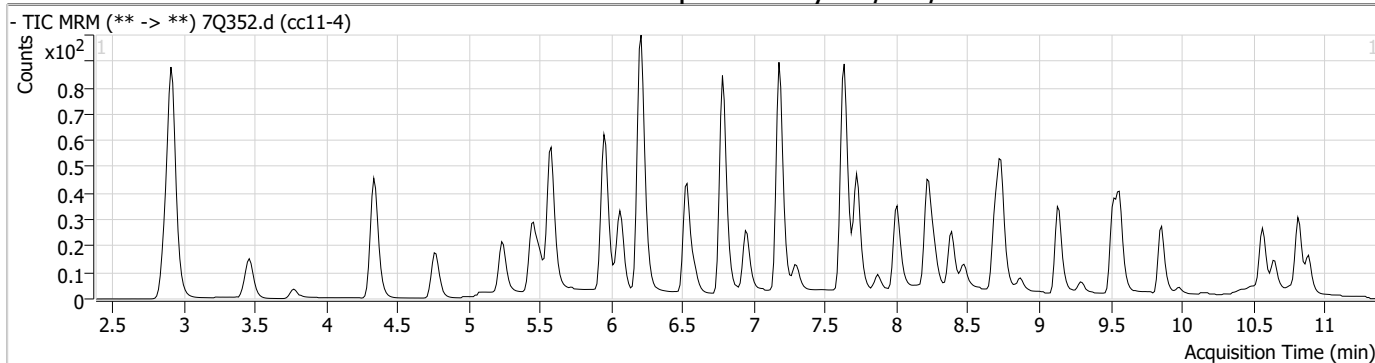
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.27

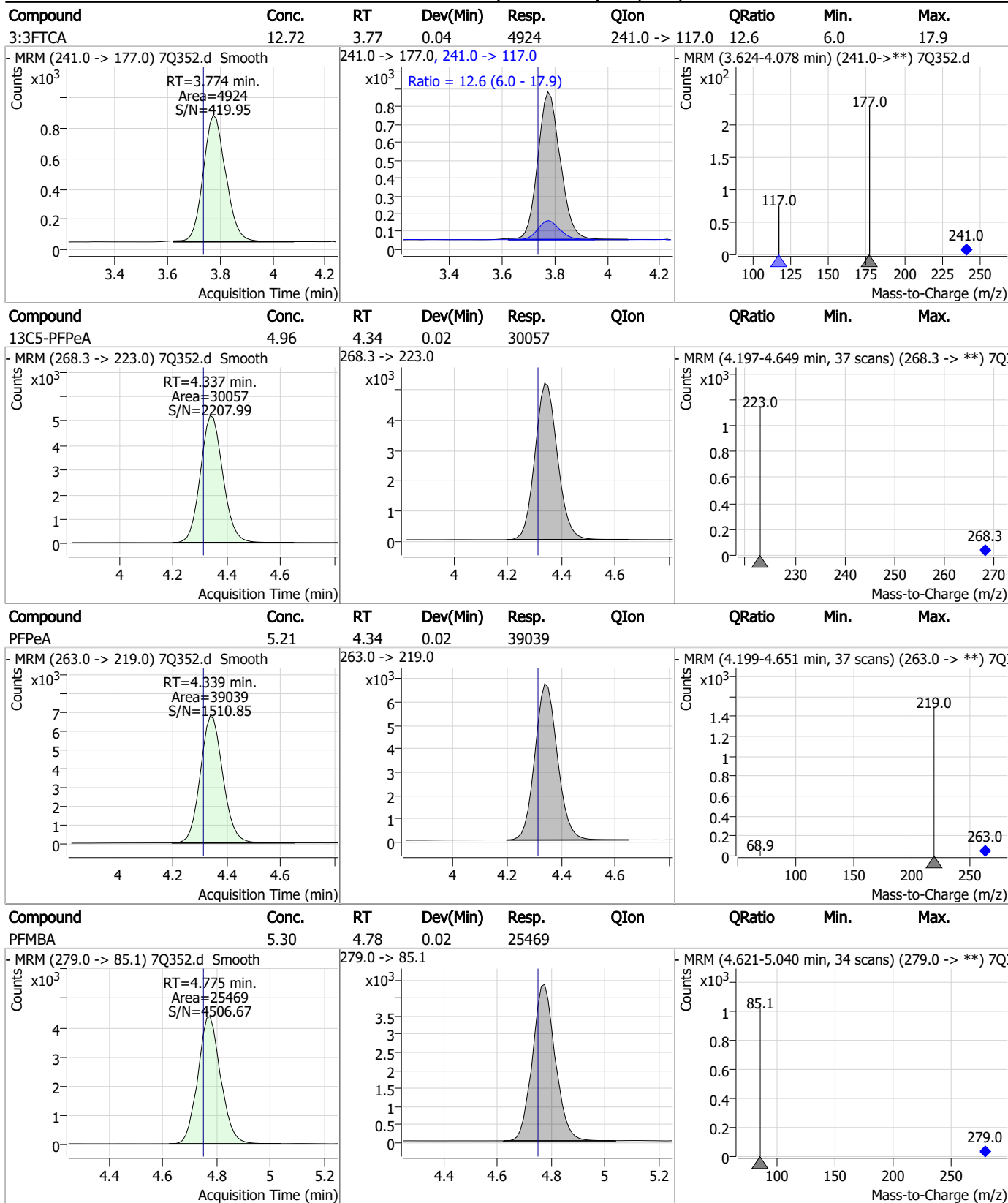
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Perfluorinated Compounds by LC/MS/MS



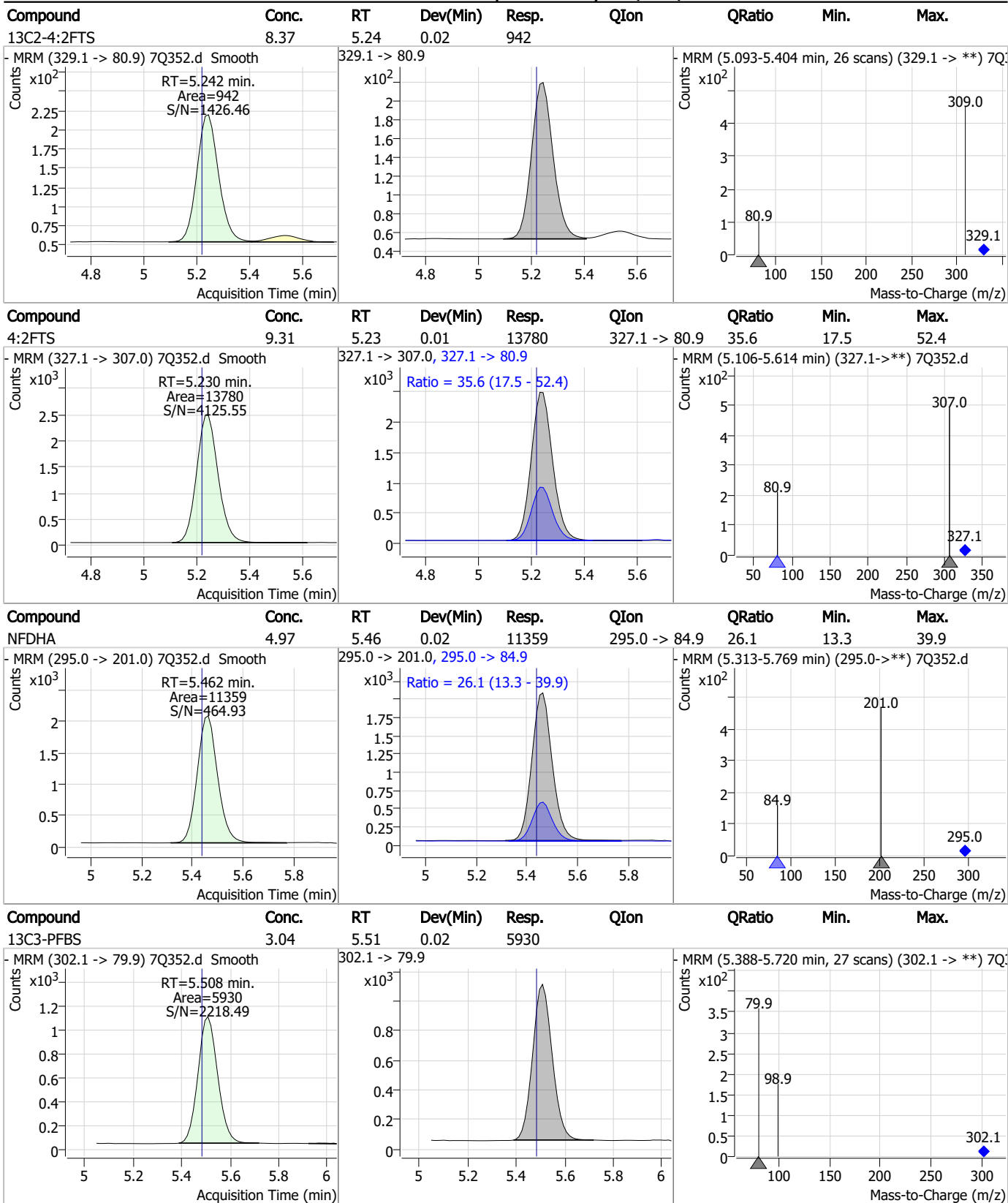
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Perfluorinated Compounds by LC/MS/MS



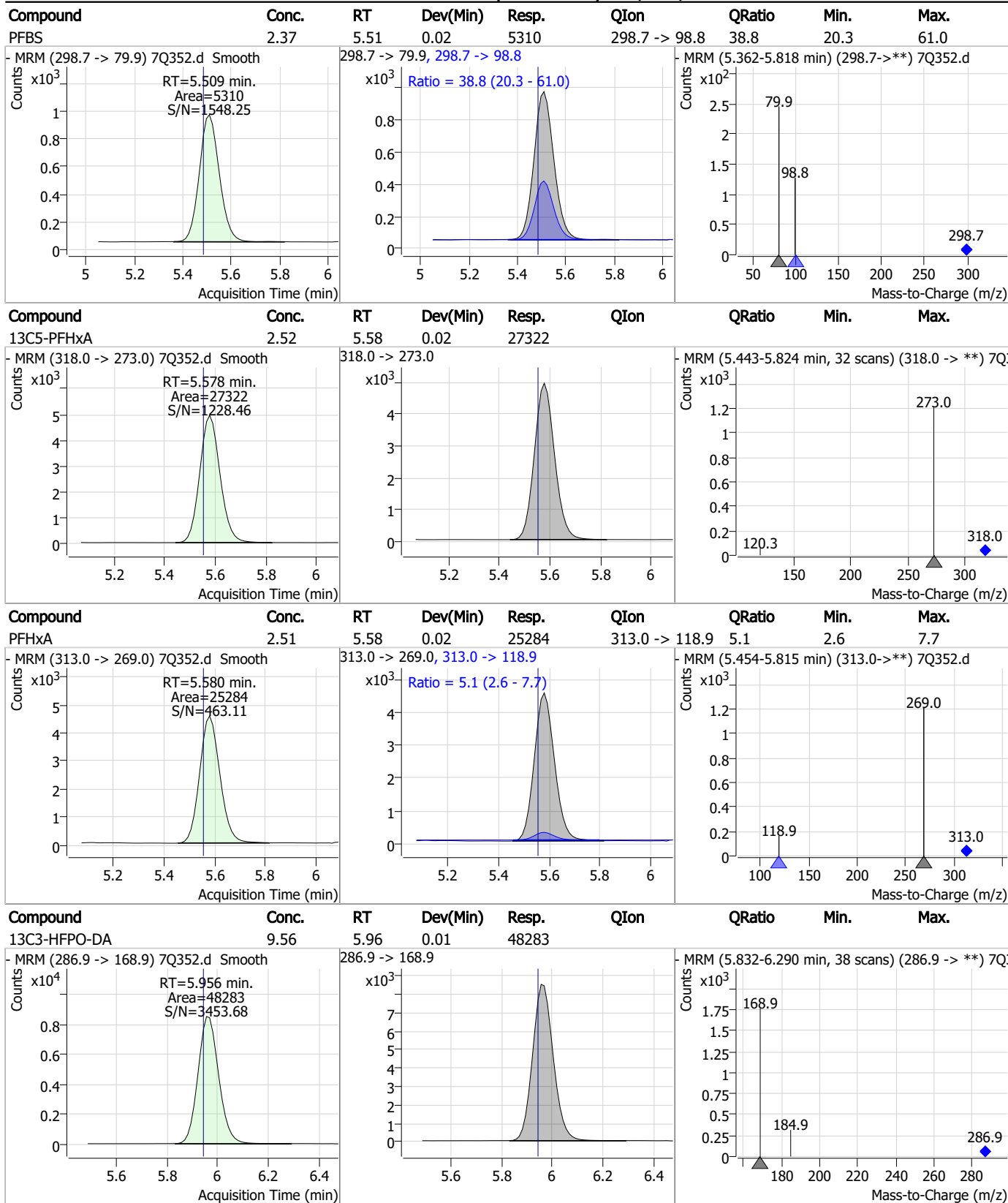
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Perfluorinated Compounds by LC/MS/MS



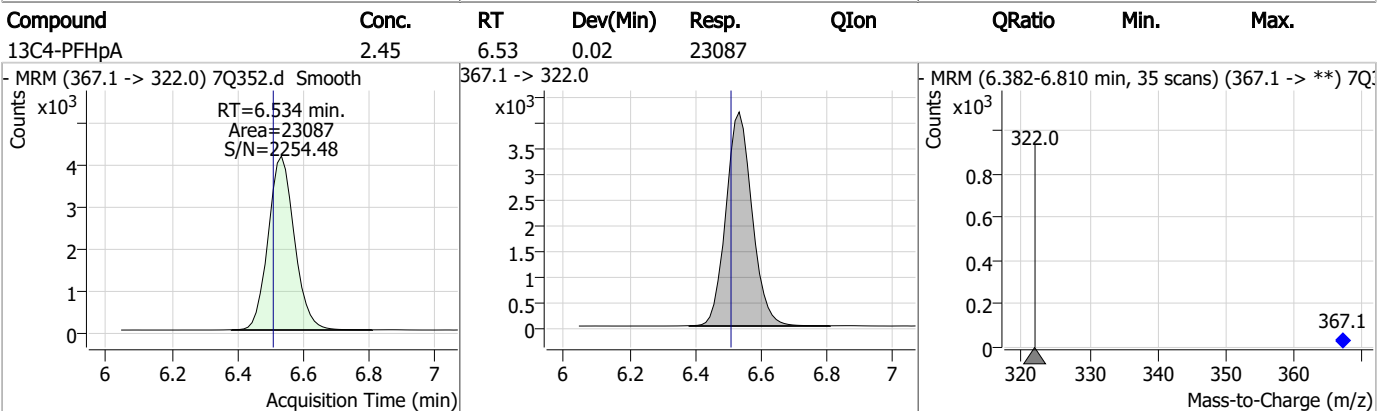
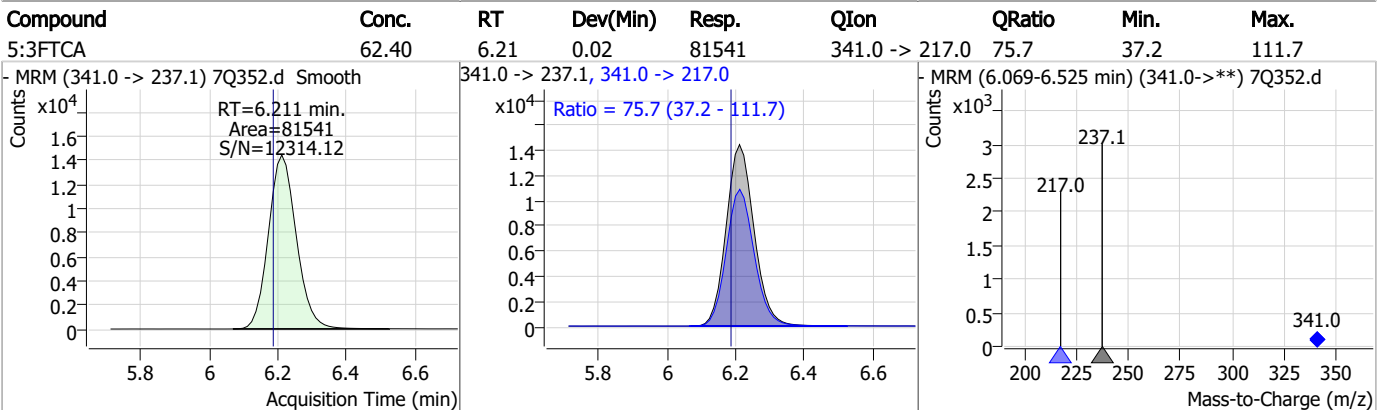
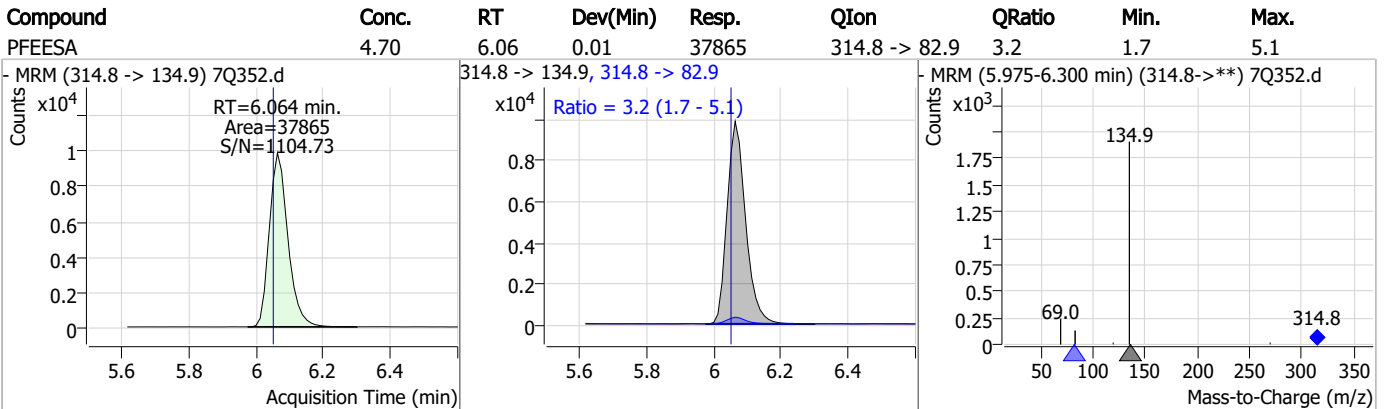
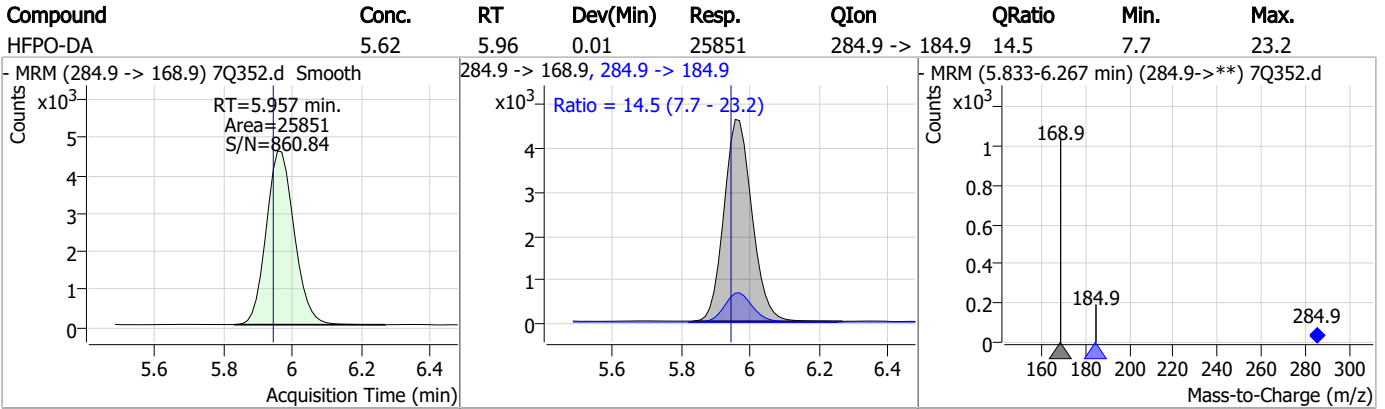
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Perfluorinated Compounds by LC/MS/MS

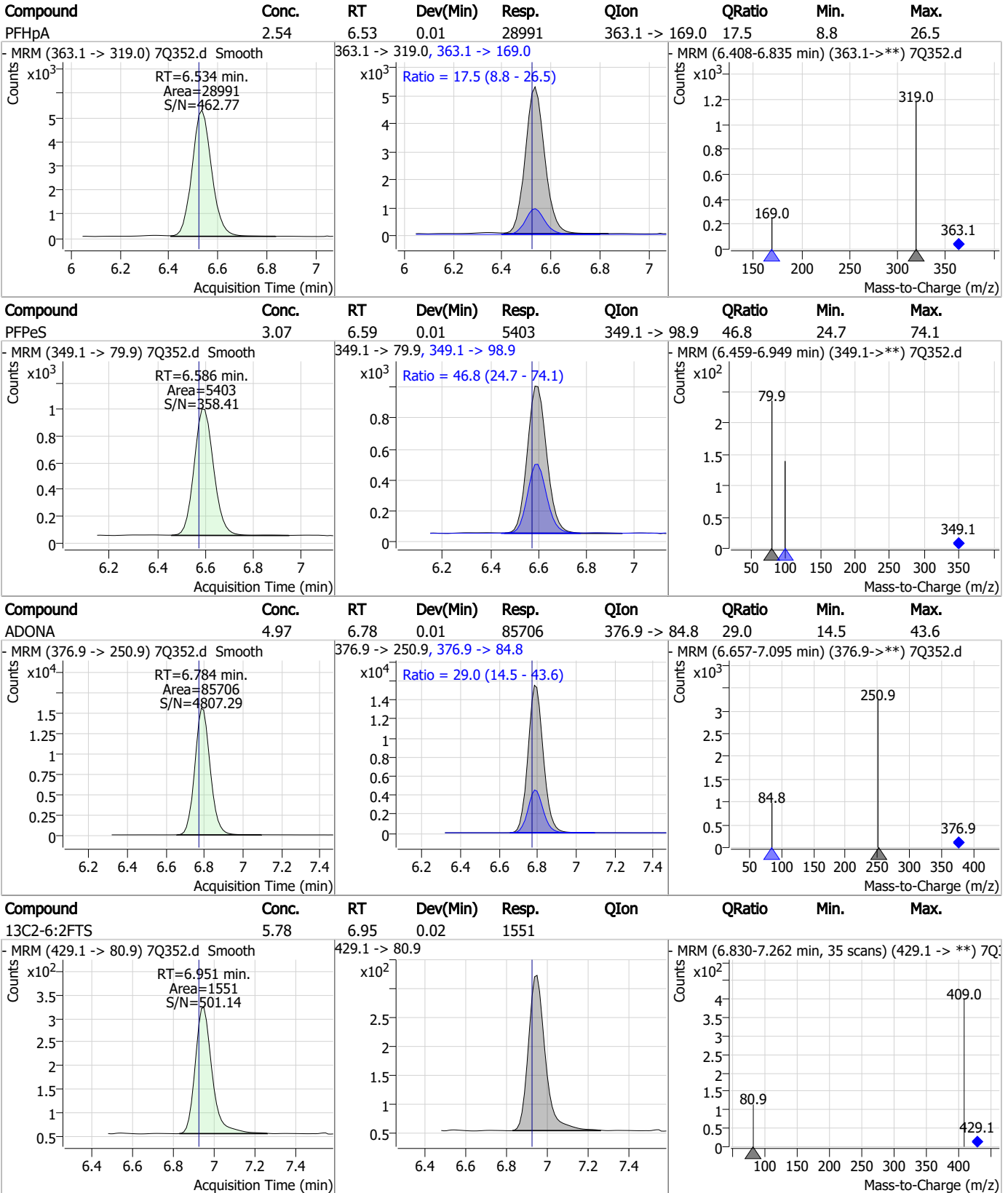


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Perfluorinated Compounds by LC/MS/MS



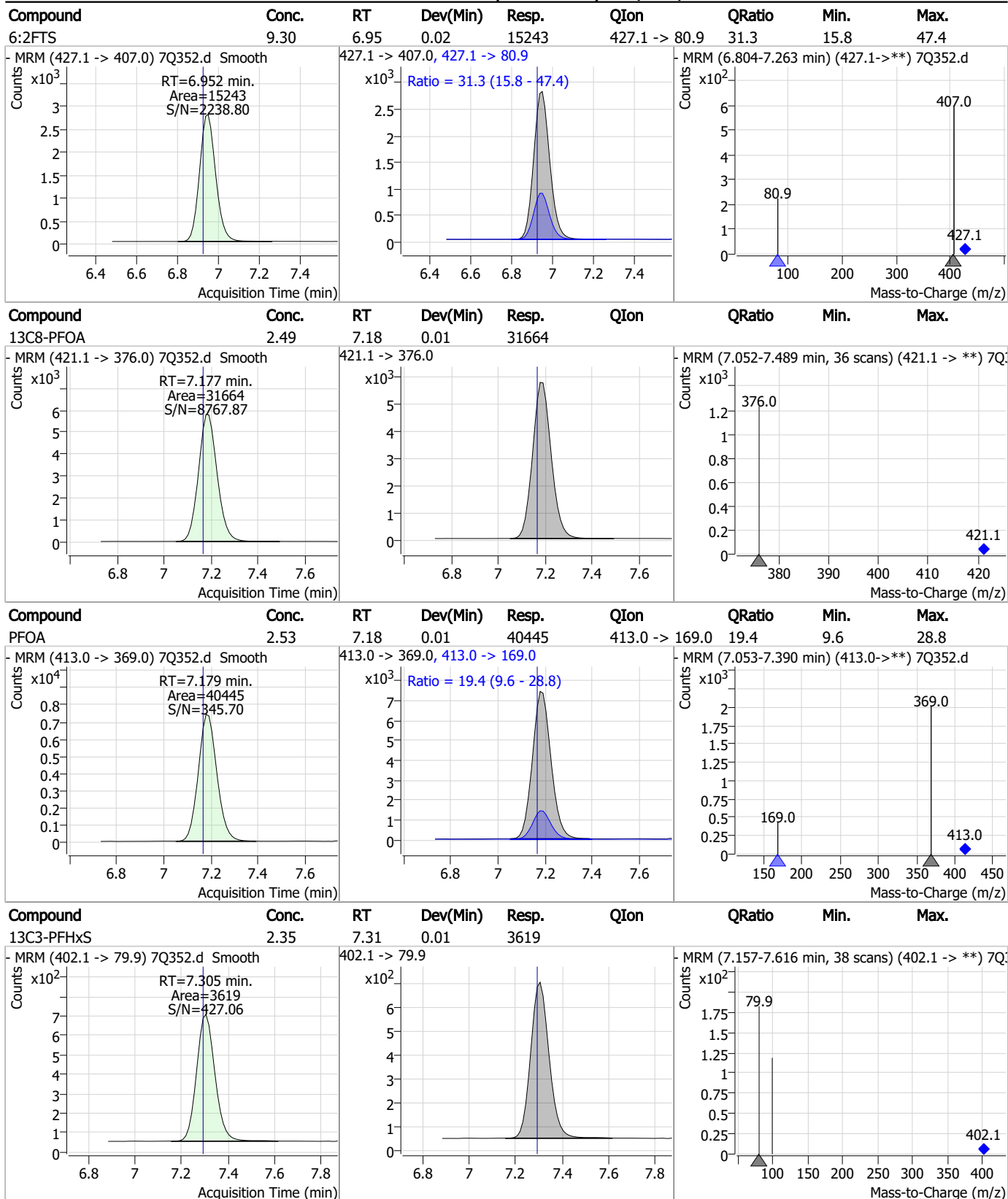
Perfluorinated Compounds by LC/MS/MS



7.7.27 7



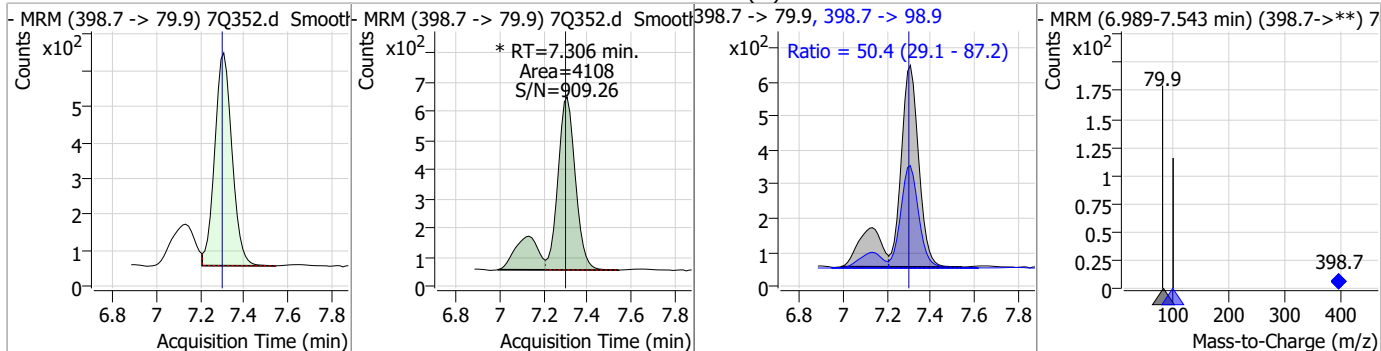
Perfluorinated Compounds by LC/MS/MS



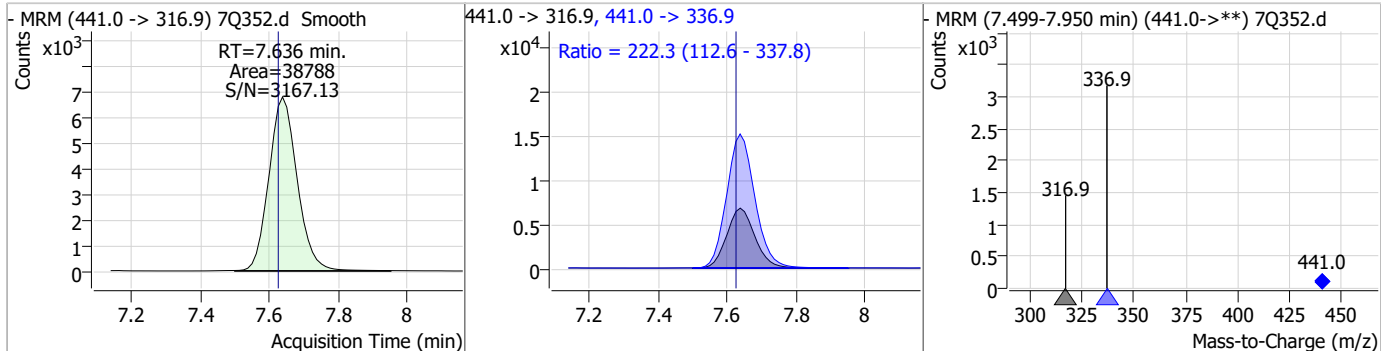
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Perfluorinated Compounds by LC/MS/MS

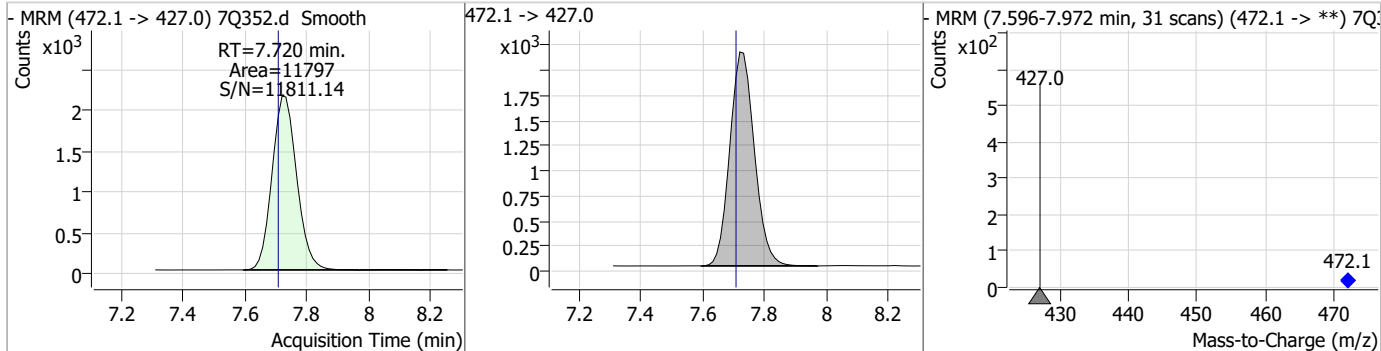
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.50	7.31	0.01	4108 (m)	398.7 -> 98.9	50.4	29.1	87.2



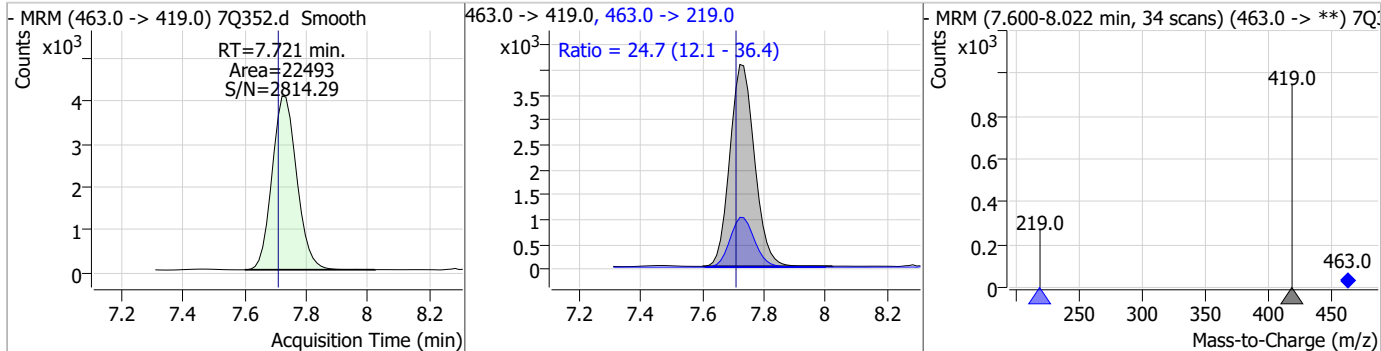
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	64.99	7.64	0.01	38788	441.0 -> 336.9	222.3	112.6	337.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.25	7.72	0.01	11797	472.1 -> 427.0	31	427.1	472.0

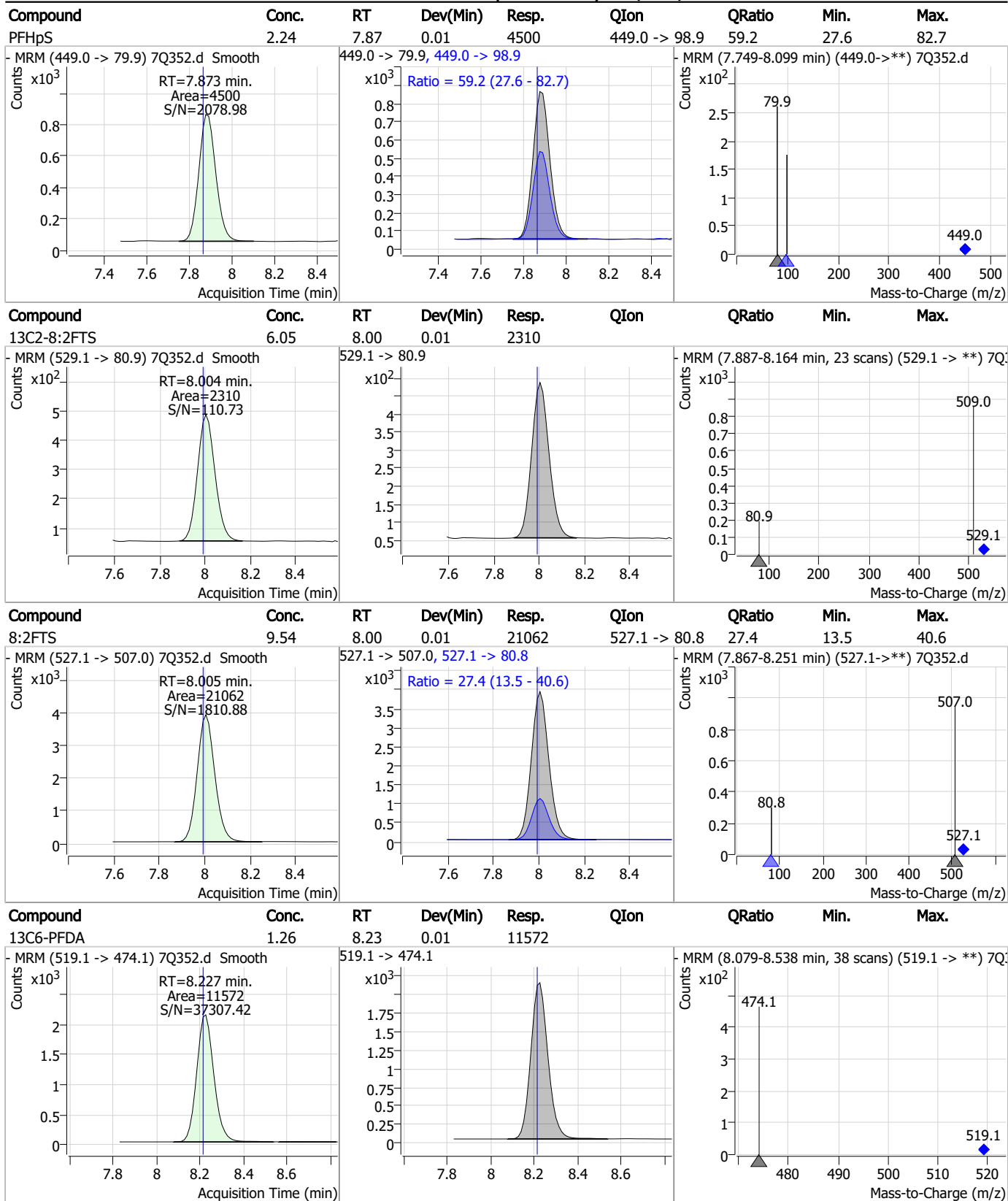


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.38	7.72	0.01	22493	463.0 -> 219.0	24.7	12.1	36.4



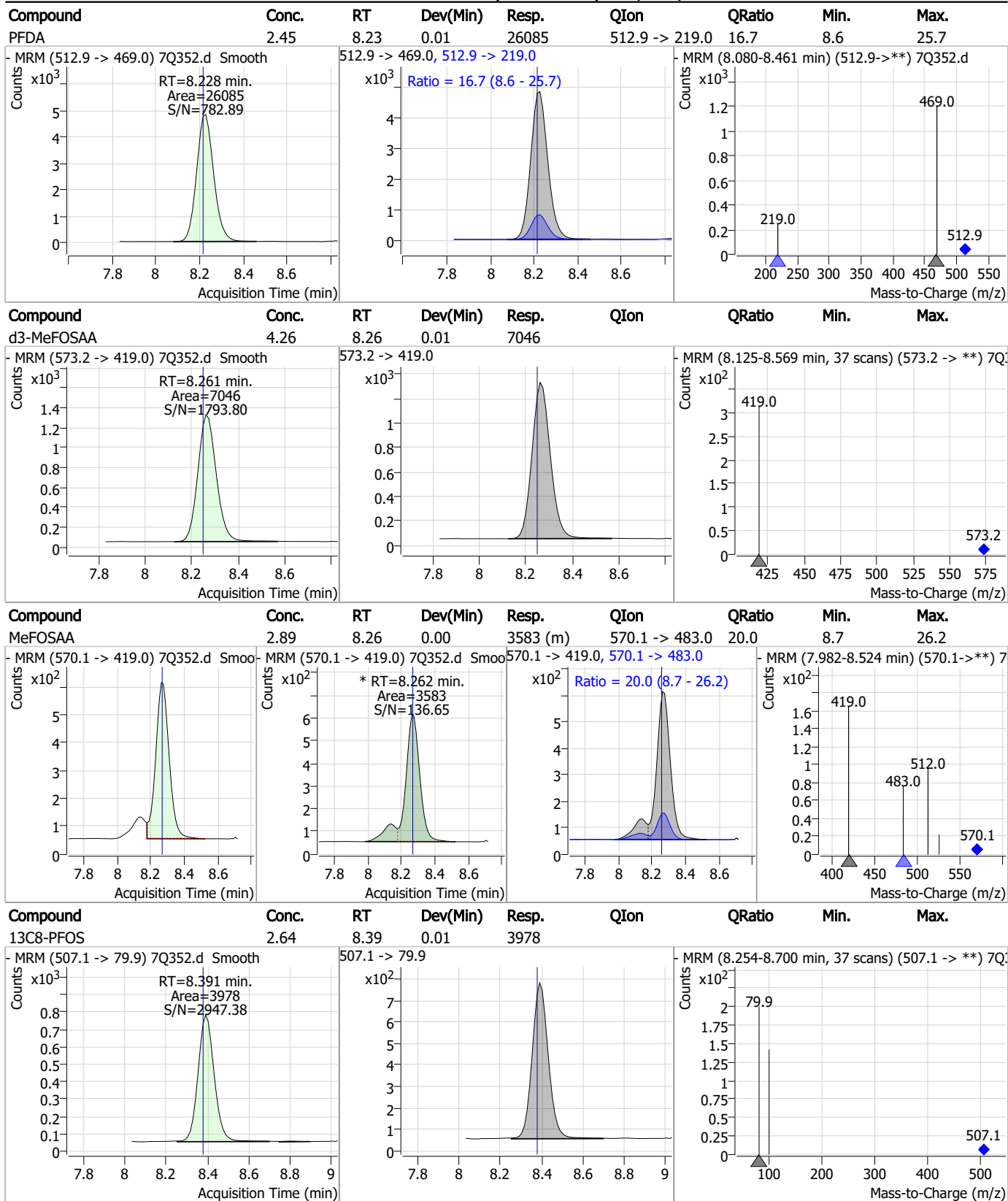
7.7.27 7

Perfluorinated Compounds by LC/MS/MS



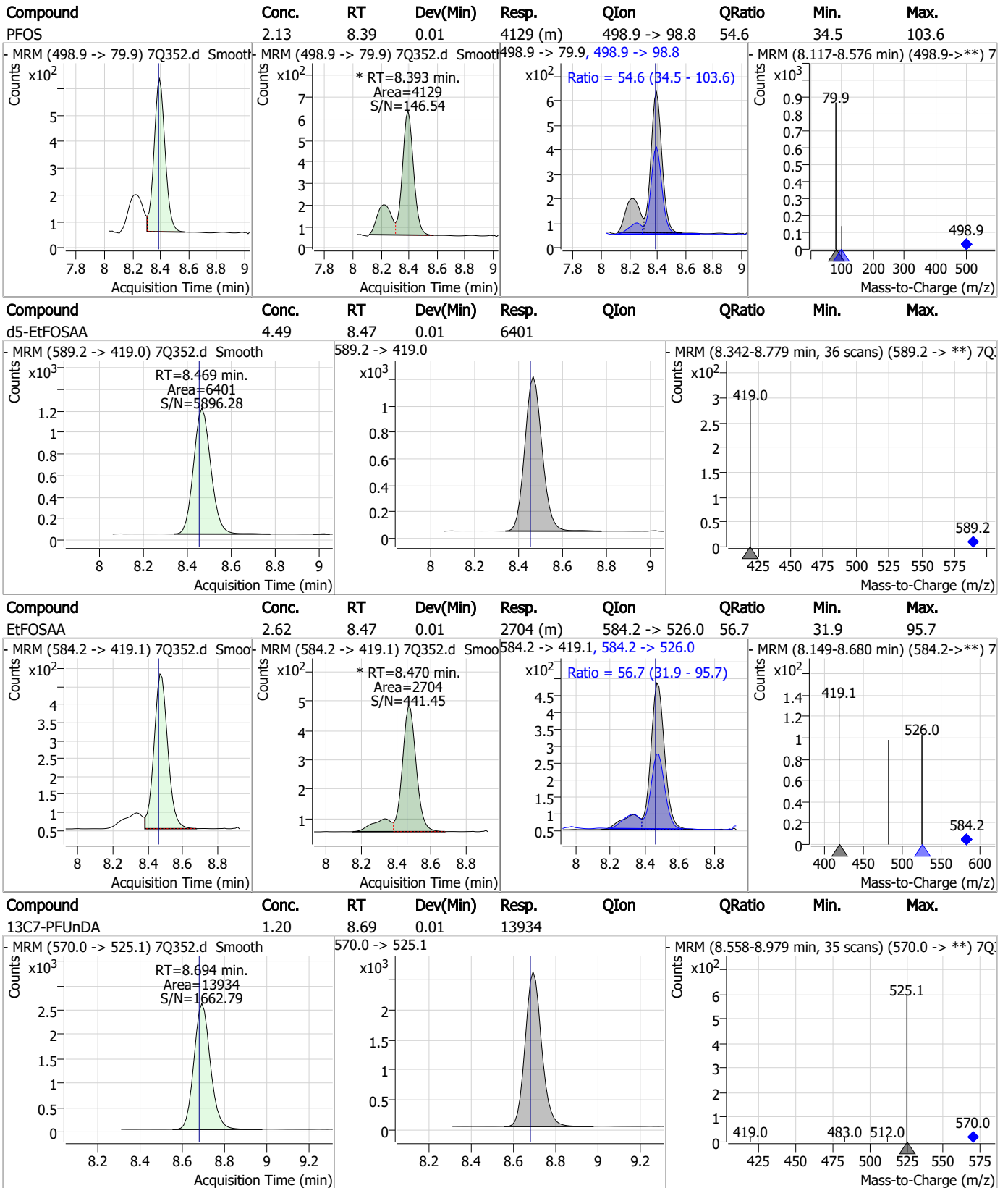
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Perfluorinated Compounds by LC/MS/MS



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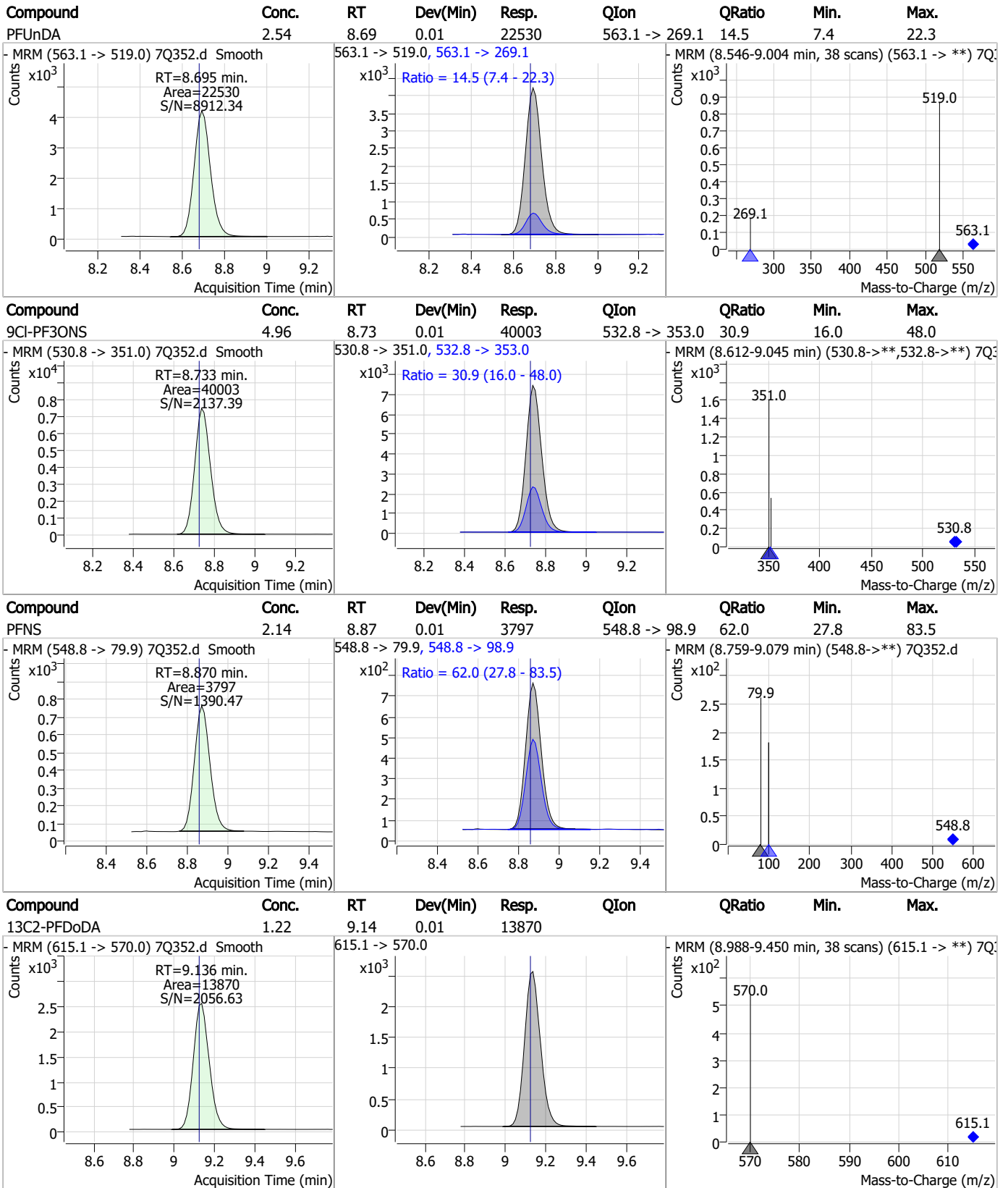
Perfluorinated Compounds by LC/MS/MS



7.7.27 7



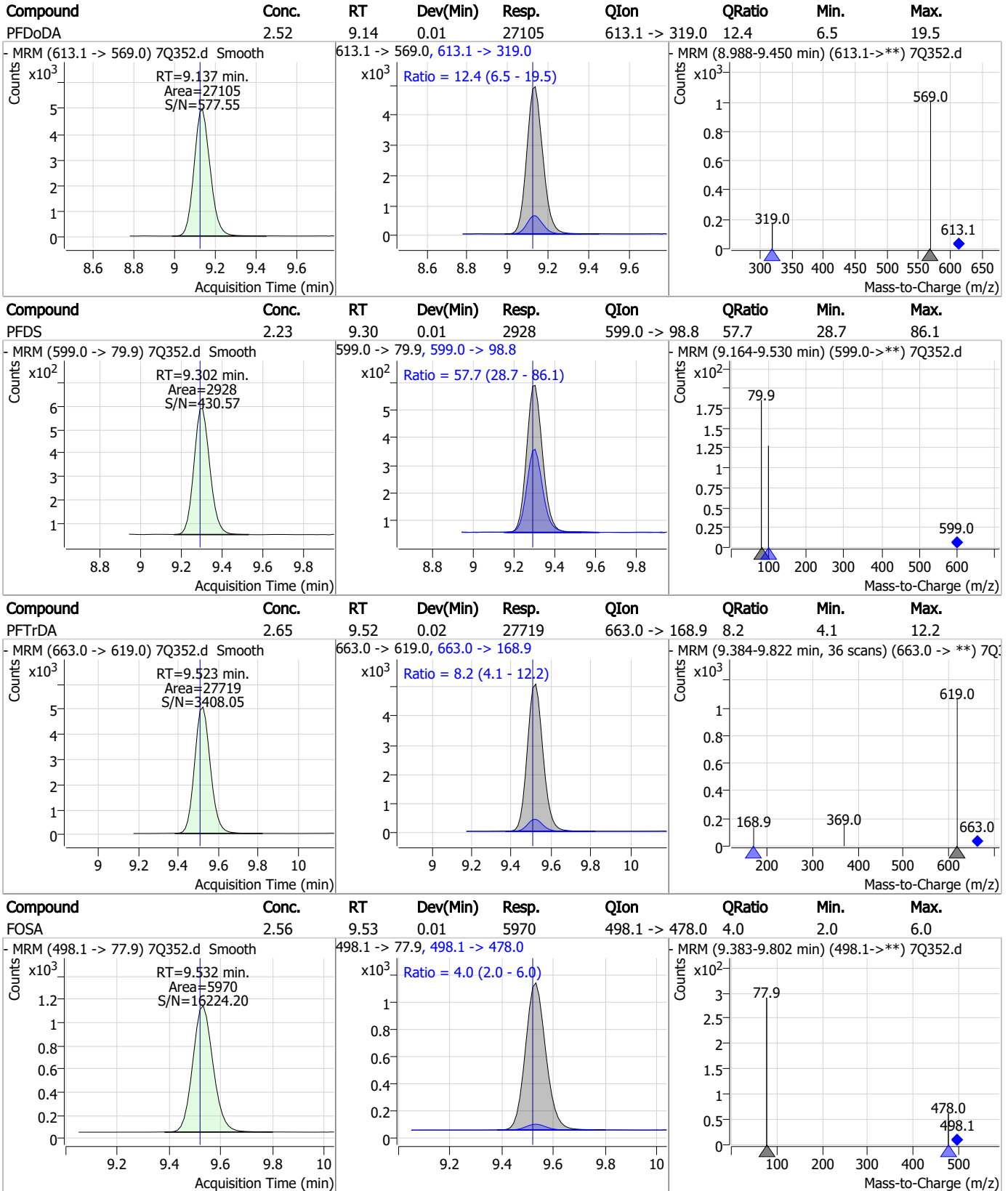
Perfluorinated Compounds by LC/MS/MS



7.7.27 7



Perfluorinated Compounds by LC/MS/MS

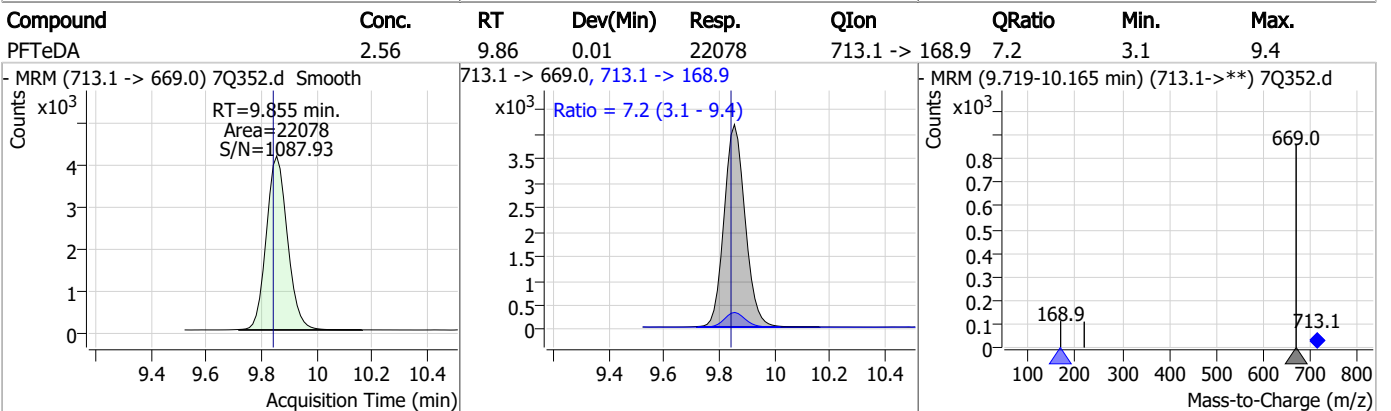
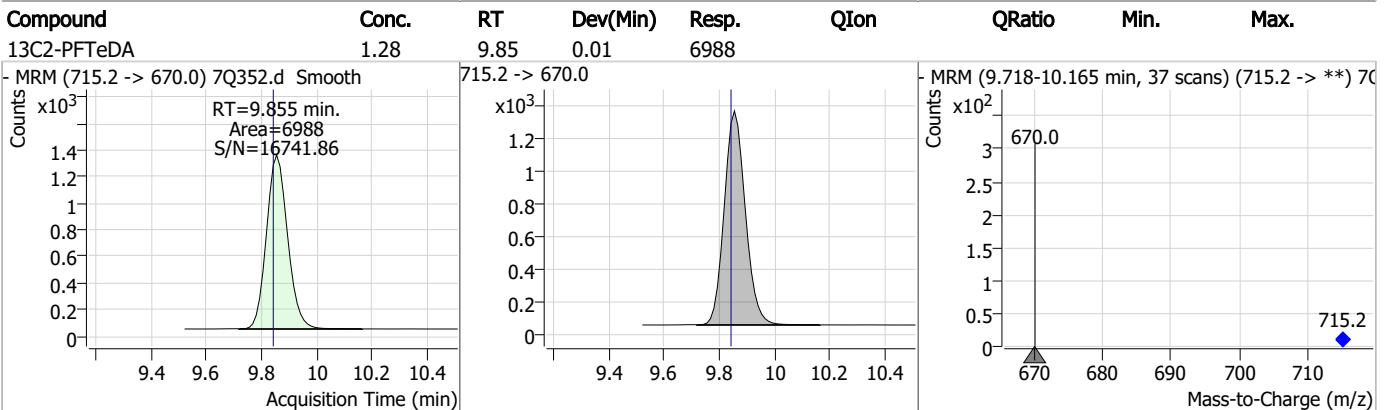
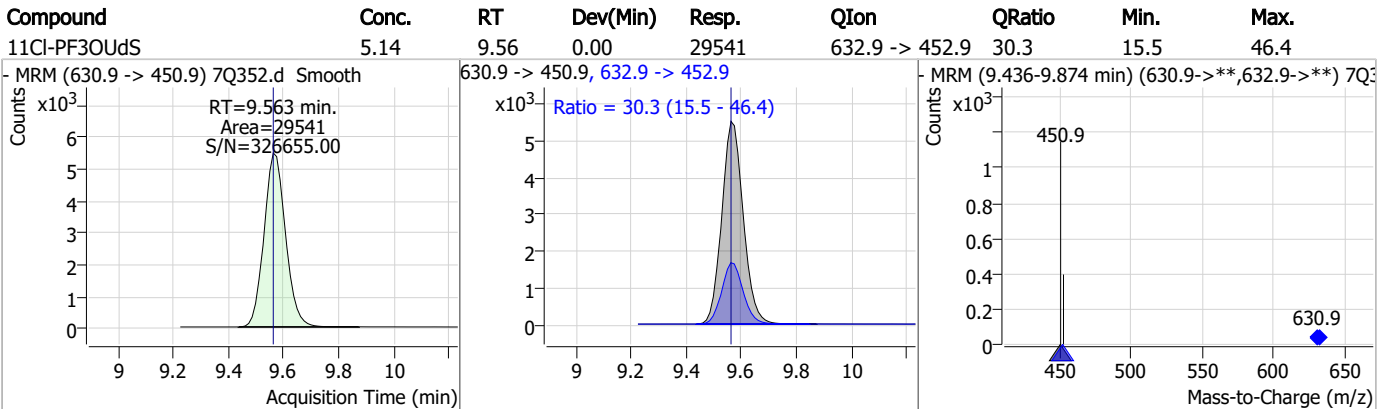
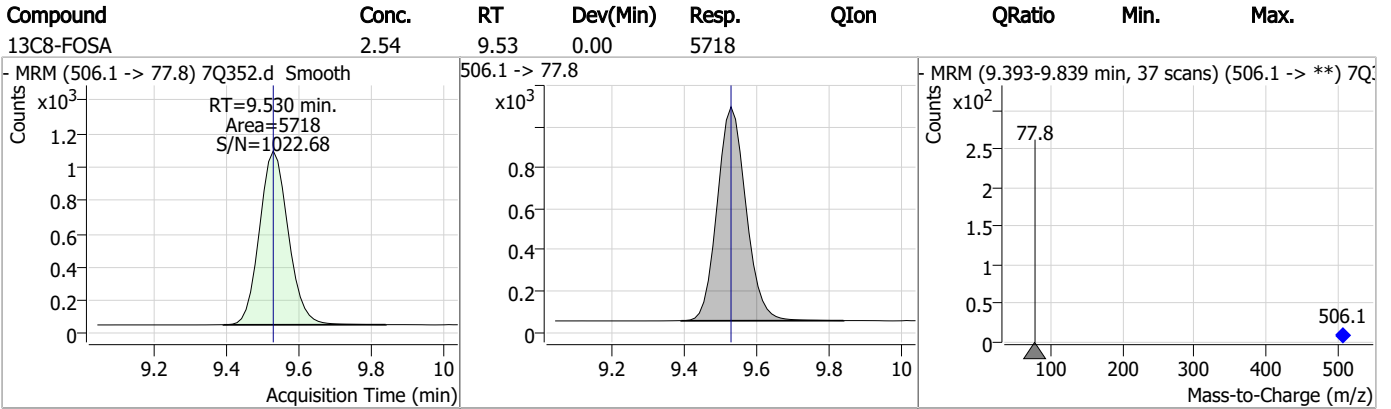


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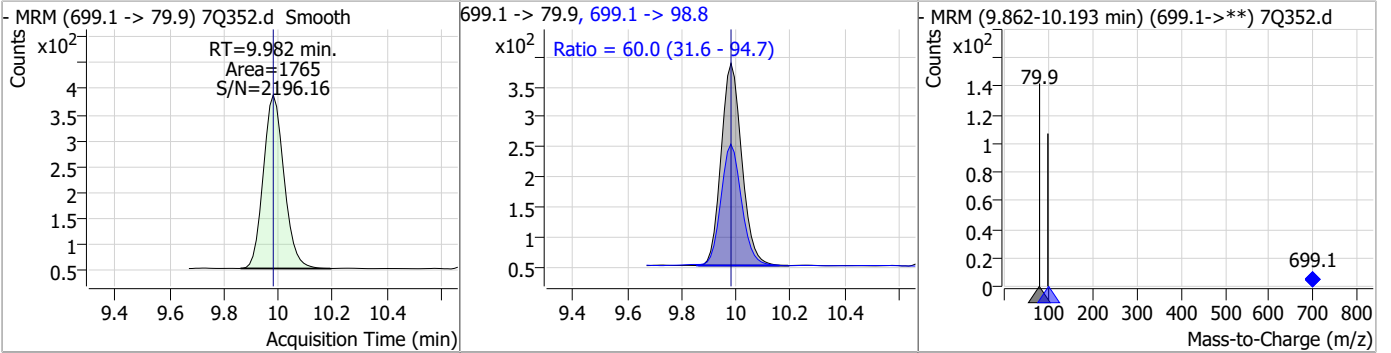
Perfluorinated Compounds by LC/MS/MS



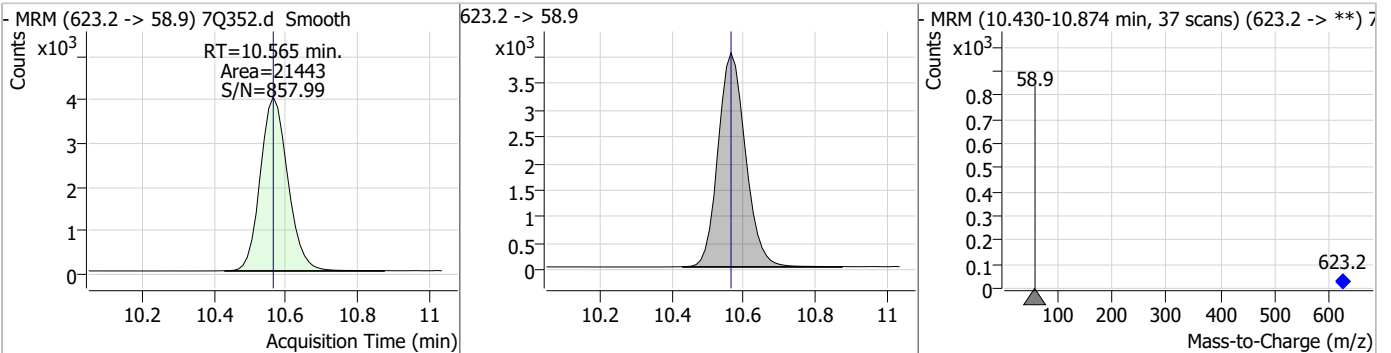
7.7.27 7

Perfluorinated Compounds by LC/MS/MS

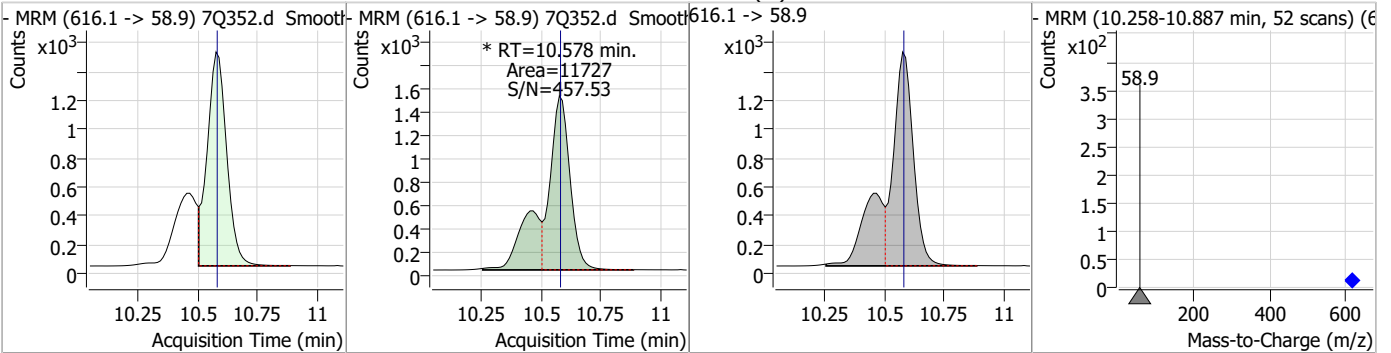
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.26	9.98	0.00	1765	699.1 -> 98.8	60.0	31.6	94.7



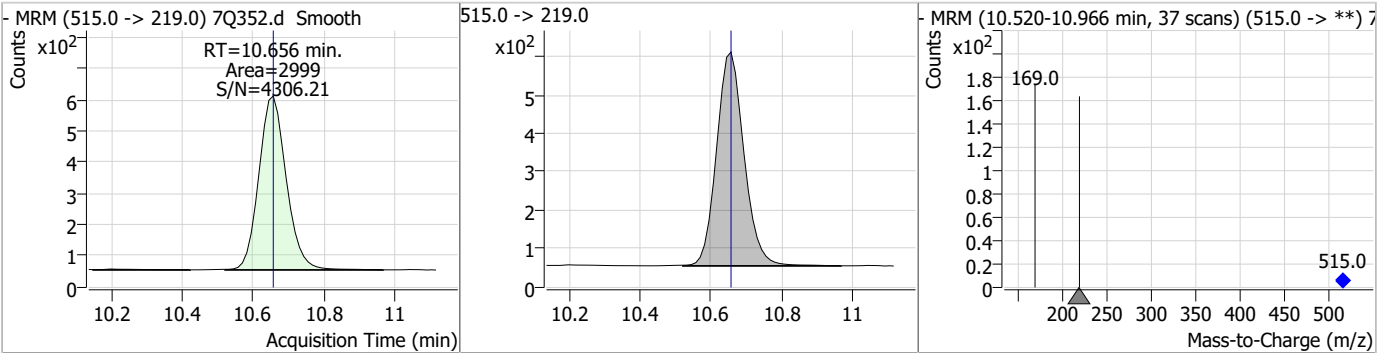
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.79	10.56	0.00	21443				



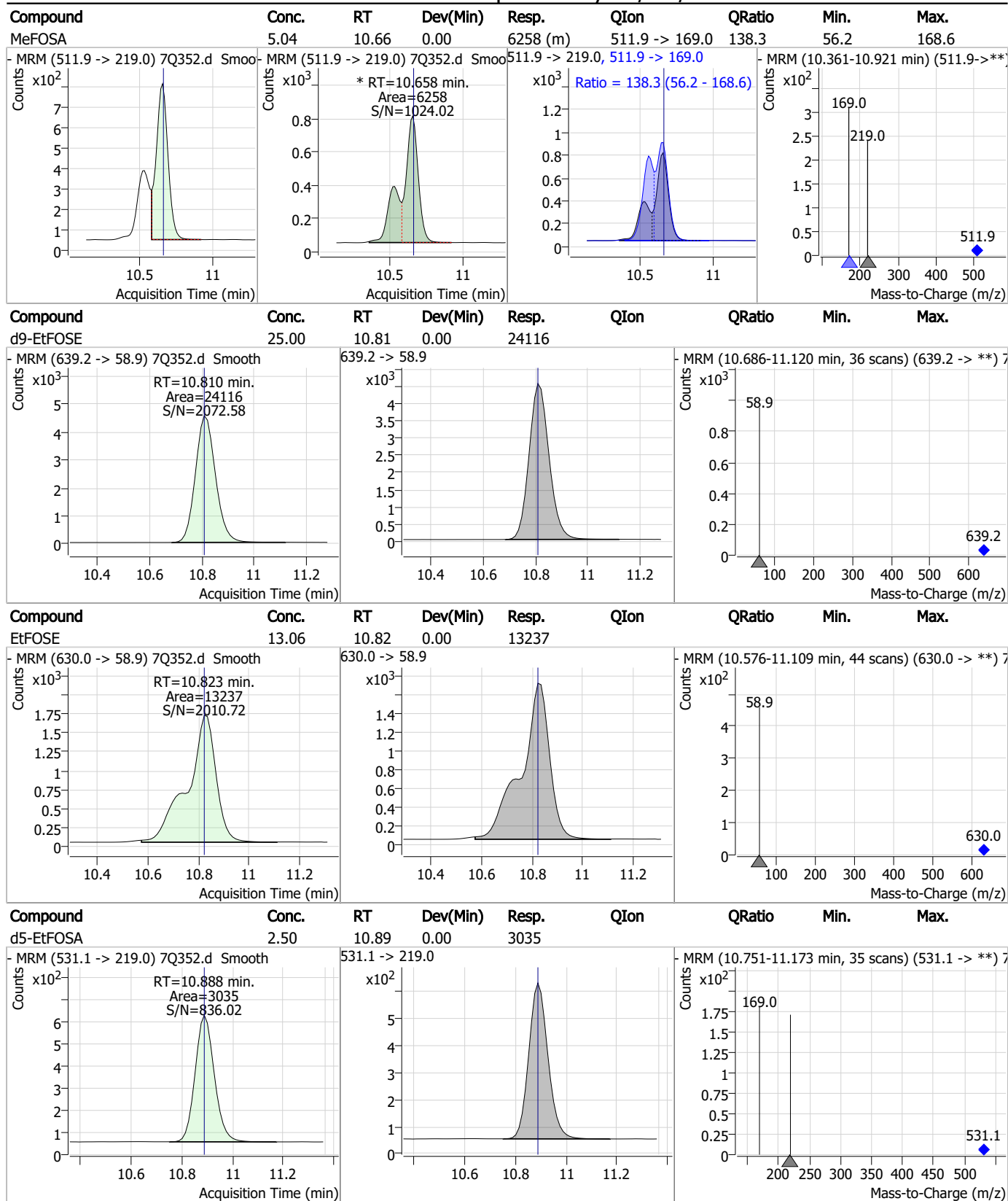
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.77	10.58	0.00	11727 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.55	10.66	0.00	2999				

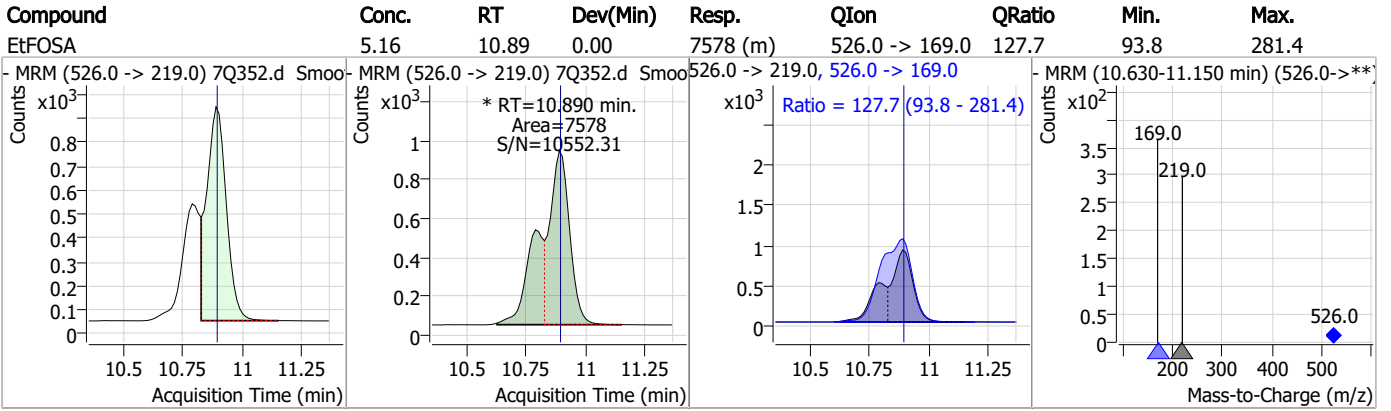


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-CC11 Method: EPA DRAFT 1633
Lab FileID: 7Q352.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 17:58 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

7.7.27.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q353.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 6:12:04 PM
 Sample Name : cc11-1.0LL
 Vial : P1-A2
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.897	216.8 -> 171.9	97852	10.00 µg/L	0.000
M5-PFPeA	4.312	268.3 -> 223.0	32993	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	30025	2.50 µg/L	0.000
M4-PFHpA	6.521	367.1 -> 322.0	25685	2.50 µg/L	0.012
M8-PFOA	7.165	421.1 -> 376.0	34523	2.50 µg/L	0.000
M9-PFNA	7.720	472.1 -> 427.0	12519	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	12876	1.25 µg/L	0.000
M7-PFUnDA	8.682	570.0 -> 525.1	16113	1.25 µg/L	0.000
M2-PFDoDA	9.124	615.1 -> 570.0	15071	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7541	1.25 µg/L	0.012
M8-FOSA	9.530	506.1 -> 77.8	5806	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6586	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5214	2.50 µg/L	0.000
M8-PFOS	8.379	507.1 -> 79.9	4055	2.50 µg/L	0.000
M2-4:2FTS	5.217	329.1 -> 80.9	980	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	2154	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	2808	5.00 µg/L	0.000
M3-MeFOSAA	8.248	573.2 -> 419.0	8692	5.00 µg/L	0.000
M3-HFPO-DA	5.944	286.9 -> 168.9	53089	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7242	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	22526	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	25765	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3147	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3042	2.50 µg/L	0.000
13C4-PFOS	8.379	502.8 -> 79.9	4563	2.50 µg/L	0.000
13C3-PFBA	2.889	216.0 -> 172.0	46303	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3590	2.50 µg/L	0.000
13C4-PFOA	7.166	417.1 -> 372.0	36608	2.50 µg/L	0.000
13C2-PFDA	8.215	515.1 -> 470.1	11765	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	14826	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	23994	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	980	6.42 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.4%		
13C2-6:2FTS	6.939	429.1 -> 80.9	2154	5.92 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.3%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2808	5.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.6%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15071	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7541	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C3-PFBS	5.484	302.1 -> 79.9	6586	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C3-PFHxS	7.293	402.1 -> 79.9	5214	2.50 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C4-PFBA	2.897	216.8 -> 171.9	97852	10.00 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C4-PFHpA	6.521	367.1 -> 322.0	25685	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C5-PFHxA	5.554	318.0 -> 273.0	30025	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C5-PFPeA	4.312	268.3 -> 223.0	32993	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C6-PFDA	8.215	519.1 -> 474.1	12876	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C7-PFUnDA	8.682	570.0 -> 525.1	16113	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C8-FOSA	9.530	506.1 -> 77.8	5806	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C8-PFOA	7.165	421.1 -> 376.0	34523	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C8-PFOS	8.379	507.1 -> 79.9	4055	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C9-PFNA	7.720	472.1 -> 427.0	12519	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
d3-MeFOSAA	8.248	573.2 -> 419.0	8692	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-HFPO-DA	5.944	286.9 -> 168.9	53089	9.83 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
d3-MeFOSA	10.656	515.0 -> 219.0	3042	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
d5-EtFOSAA	8.456	589.2 -> 419.0	7242	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.6%		
d7-MeFOSE	10.565	623.2 -> 58.9	22526	25.48 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
d9-EtFOSE	10.810	639.2 -> 58.9	25765	25.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d5-EtFOSA	10.888	531.1 -> 219.0	3147	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	983	0.64 µg/L	98
		327.1 -> 80.9	335		
6:2FTS	6.927	427.1 -> 407.0	1622	0.71 µg/L	96
		427.1 -> 80.9	544		
8:2FTS	7.992	527.1 -> 507.0	1822	0.68 µg/L	98
		527.1 -> 80.8	513		
EtFOSAA	8.458	584.2 -> 419.1	287	0.25 µg/L	m 81
		584.2 -> 526.0	225		
FOSA	9.520	498.1 -> 77.9	489	0.21 µg/L	95
		498.1 -> 478.0	27		
MeFOSAA	8.250	570.1 -> 419.0	326	0.21 µg/L	m 97
		570.1 -> 483.0	62		
PFBA	2.893	212.8 -> 168.9	2632	0.74 µg/L	100
PFBS	5.485	298.7 -> 79.9	438	0.18 µg/L	84
		298.7 -> 98.8	136		
PFDA	8.215	512.9 -> 469.0	2362	0.20 µg/L	96
		512.9 -> 219.0	368		
PFDODA	9.125	613.1 -> 569.0	2382	0.20 µg/L	98
		613.1 -> 319.0	294		
PFDS	9.290	599.0 -> 79.9	256	0.19 µg/L	94

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.522	599.0 -> 98.8	136	0.20	µg/L	98
		363.1 -> 319.0	2542			
PFHpS	7.873	363.1 -> 169.0	423	0.18	µg/L	94
		449.0 -> 79.9	362			
PFHxA	5.556	449.0 -> 98.9	215	0.19	µg/L	97
		313.0 -> 269.0	2111			
PFHxS	7.294	313.0 -> 118.9	131	0.19	µg/L	m 84
		398.7 -> 79.9	458			
PFNA	7.721	398.7 -> 98.9	212	0.19	µg/L	99
		463.0 -> 419.0	1869			
PFNS	8.870	463.0 -> 219.0	459	0.18	µg/L	92
		548.8 -> 79.9	322			
PFOA	7.167	548.8 -> 98.9	198	0.19	µg/L	99
		413.0 -> 369.0	3296			
PFOS	8.380	413.0 -> 169.0	615	0.20	µg/L	m 87
		498.9 -> 79.9	402			
PFPeA	4.314	498.9 -> 98.8	236	0.37	µg/L	100
		263.0 -> 219.0	3074			
PFPeS	6.573	349.1 -> 79.9	449	0.18	µg/L	96
		349.1 -> 98.9	210			
PFTeDA	9.855	713.1 -> 669.0	1673	0.18	µg/L	100
		713.1 -> 168.9	107			
PFTrDA	9.508	663.0 -> 619.0	2102	0.18	µg/L	98
		663.0 -> 168.9	155			
PFUnDA	8.695	563.1 -> 519.0	1785	0.17	µg/L	97
		563.1 -> 269.1	289			
11Cl-PF3OUdS	9.563	630.9 -> 450.9	2044	0.32	µg/L	97
		632.9 -> 452.9	661			
9Cl-PF3ONS	8.733	530.8 -> 351.0	2936	0.33	µg/L	95
		532.8 -> 353.0	857			
ADONA	6.771	376.9 -> 250.9	6398	0.34	µg/L	96
		376.9 -> 84.8	1993			
HFPO-DA	5.944	284.9 -> 168.9	2101	0.42	µg/L	100
		284.9 -> 184.9	328			
3:3FTCA	3.736	241.0 -> 177.0	351	0.83	µg/L	98
		241.0 -> 117.0	45			
5:3FTCA	6.187	341.0 -> 237.1	6110	4.25	µg/L	99
		341.0 -> 217.0	4504			
7:3FTCA	7.624	441.0 -> 316.9	2806	4.28	µg/L	98
		441.0 -> 336.9	6420			
EtFOSA	10.890	526.0 -> 219.0	555	0.36	µg/L	m 66
		526.0 -> 169.0	764			
EtFOSE	10.823	630.0 -> 58.9	1040	0.96	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	464	0.37	µg/L	m 79
		511.9 -> 169.0	625			
MeFOSE	10.578	616.1 -> 58.9	925	0.96	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	161	0.20	µg/L	89
		699.1 -> 98.8	88			
NFDHA	5.437	295.0 -> 201.0	878	0.35	µg/L	92
		295.0 -> 84.9	198			
PFMBA	4.750	279.0 -> 85.1	1931	0.37	µg/L	100
PFMPA	3.443	229.0 -> 84.9	1972	0.36	µg/L	100
PFEESA	6.051	314.8 -> 134.9	2789	0.32	µg/L	96
		314.8 -> 82.9	136			

= Qualifier out of range, m = manually integrated, + = Area summed

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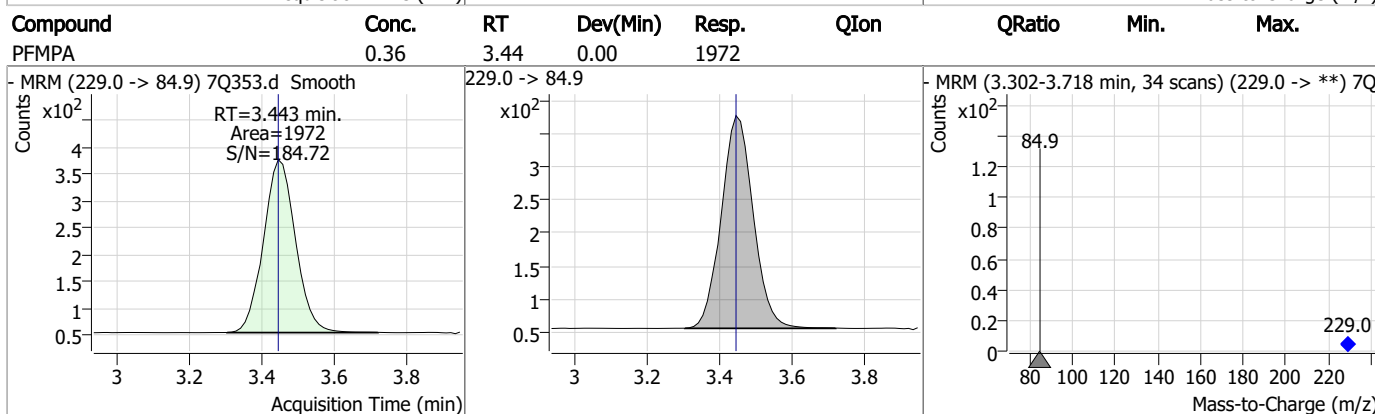
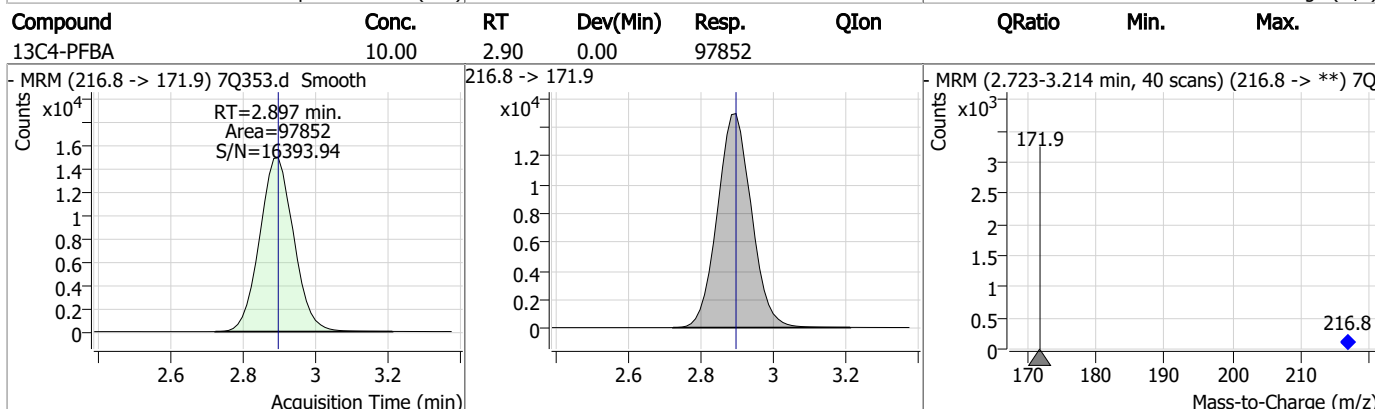
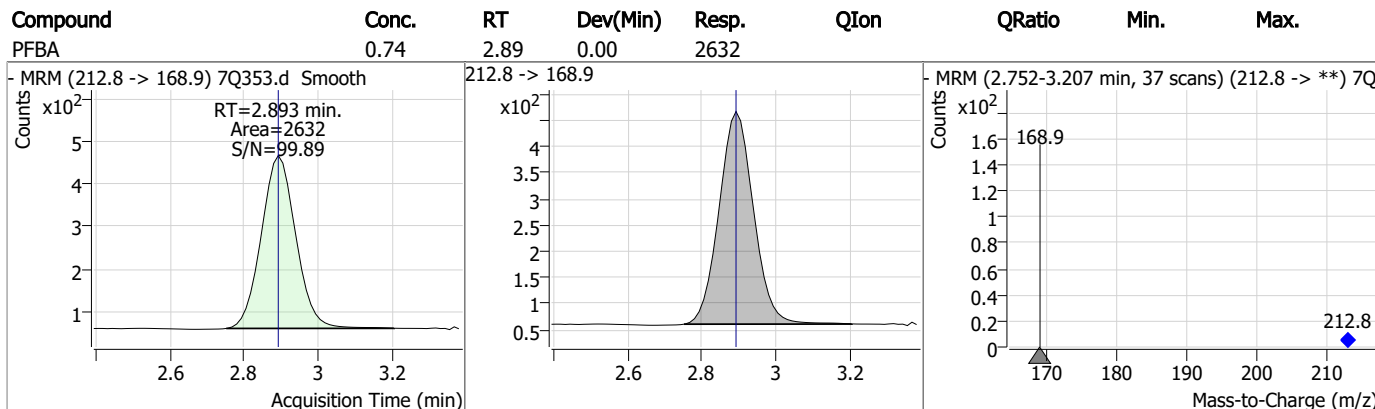
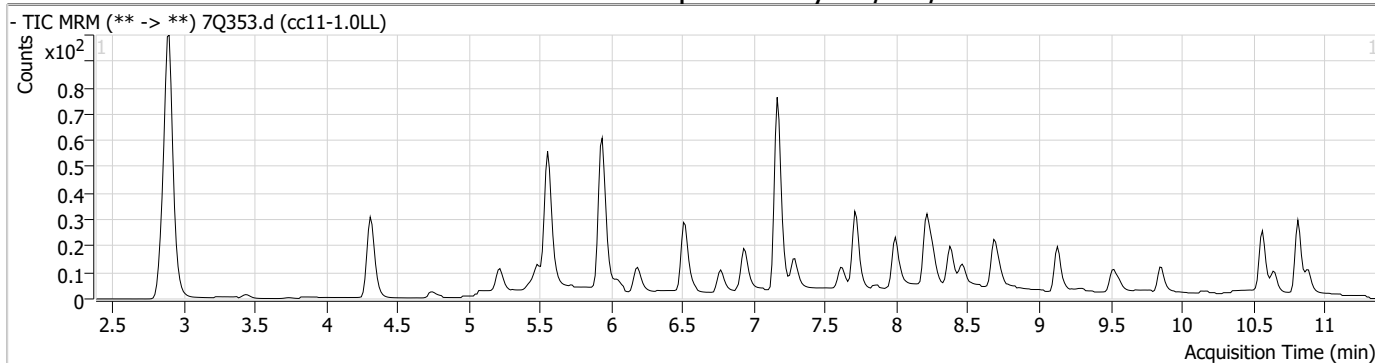
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.28

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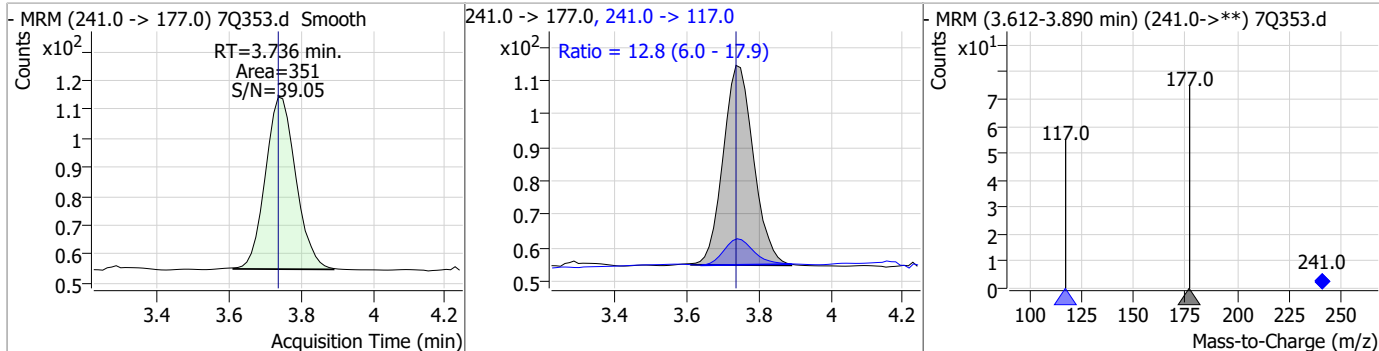
Perfluorinated Compounds by LC/MS/MS



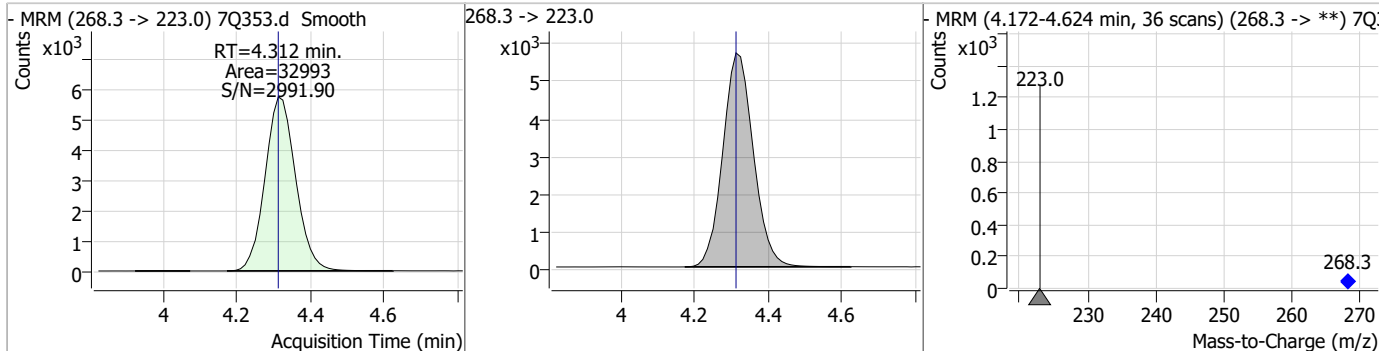
7.7.28
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Perfluorinated Compounds by LC/MS/MS

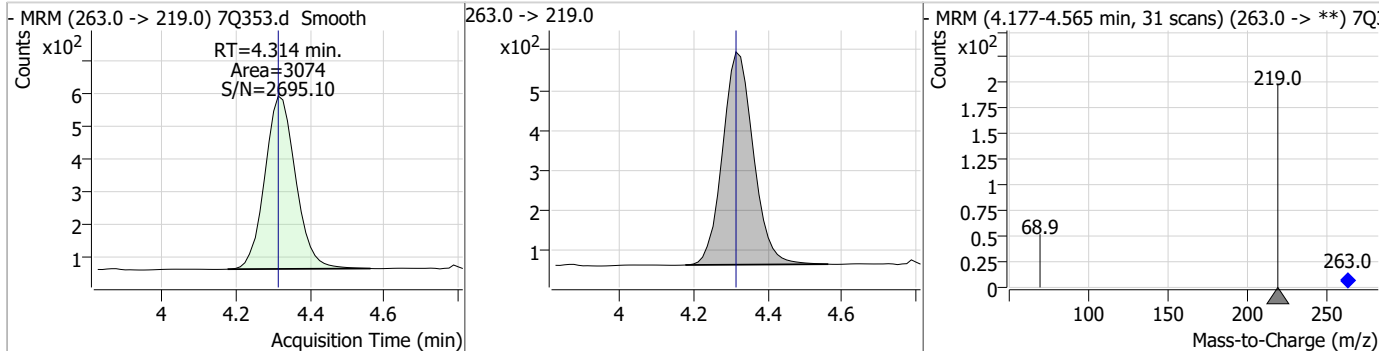
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	0.83	3.74	0.00	351	241.0 -> 117.0	12.8	6.0	17.9



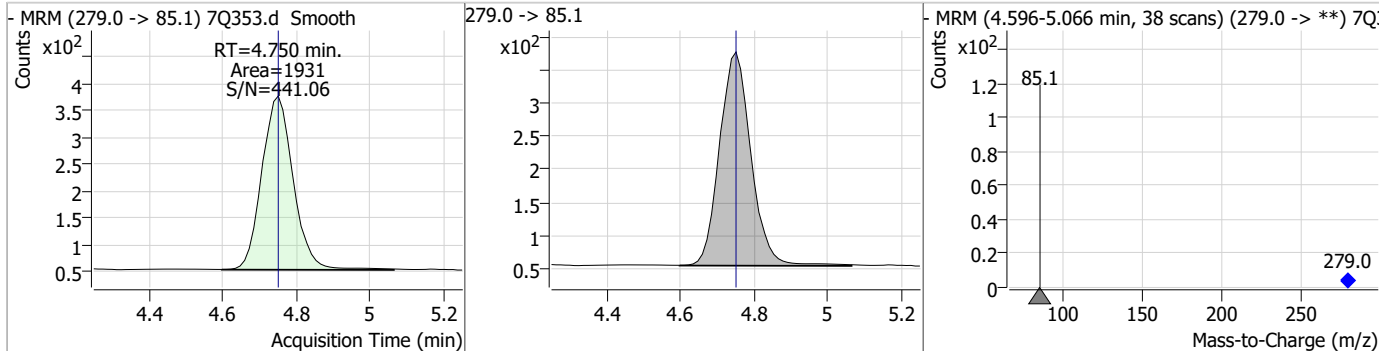
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.09	4.31	0.00	32993				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.37	4.31	0.00	3074				

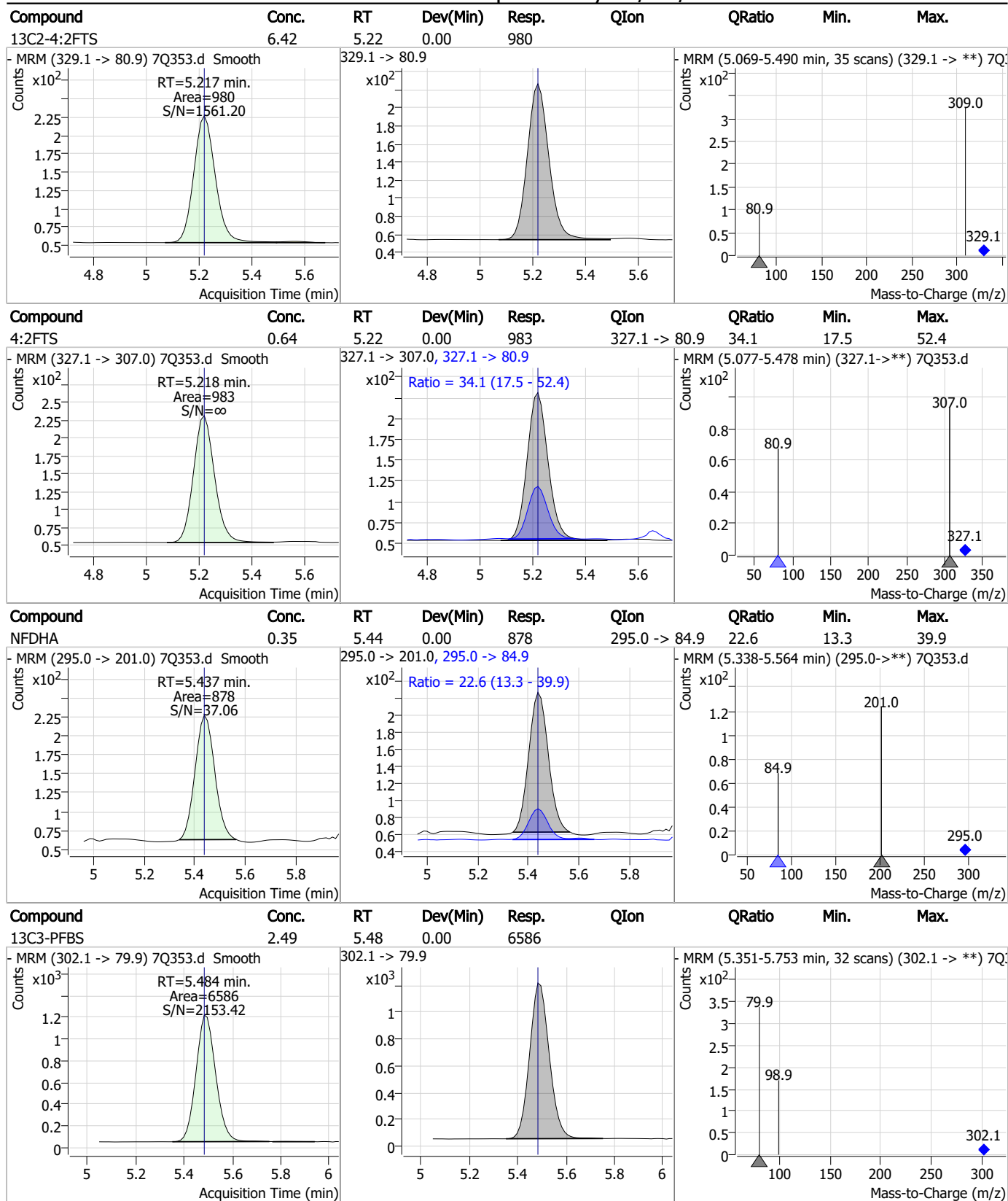


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	0.37	4.75	0.00	1931				



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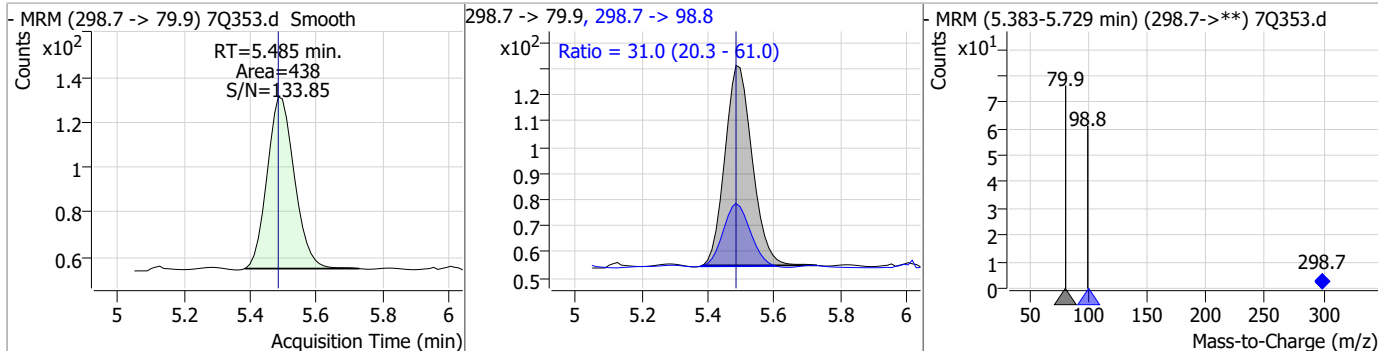
Perfluorinated Compounds by LC/MS/MS



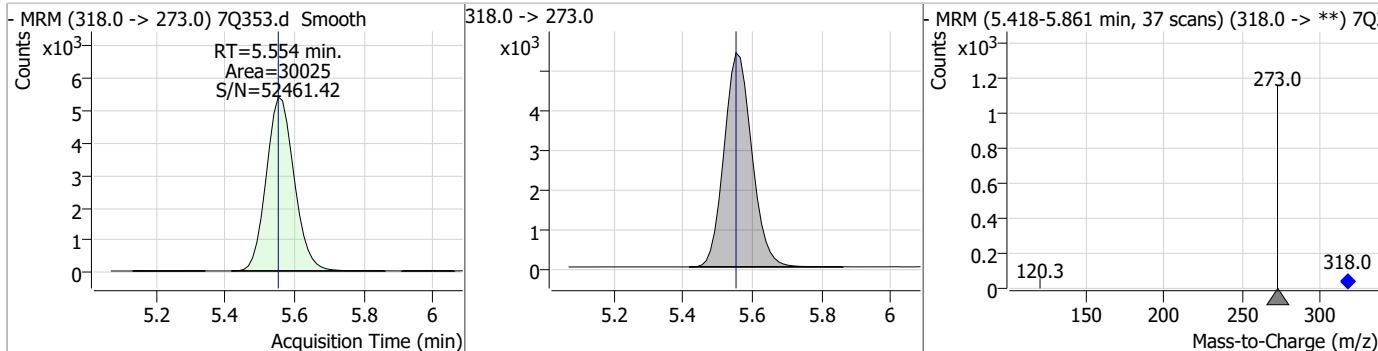
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Perfluorinated Compounds by LC/MS/MS

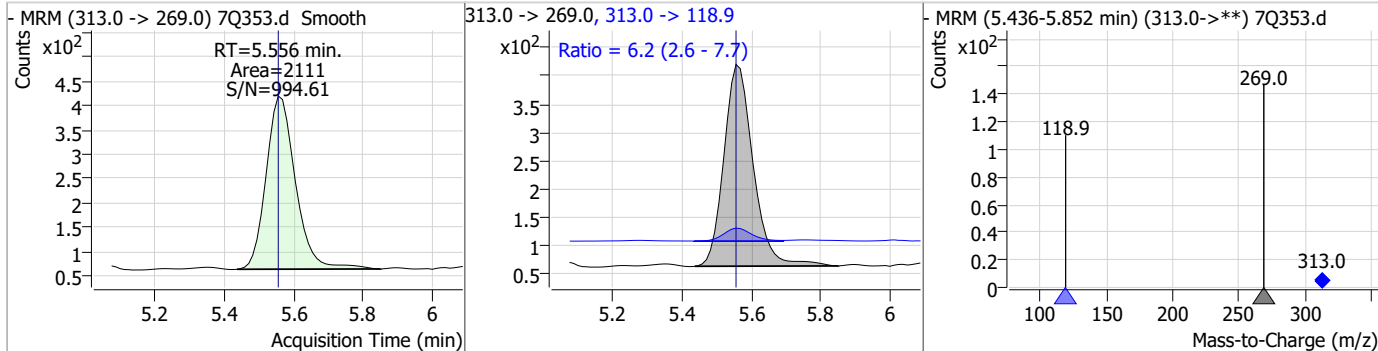
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.18	5.48	0.00	438	298.7 -> 98.8	31.0	20.3	61.0



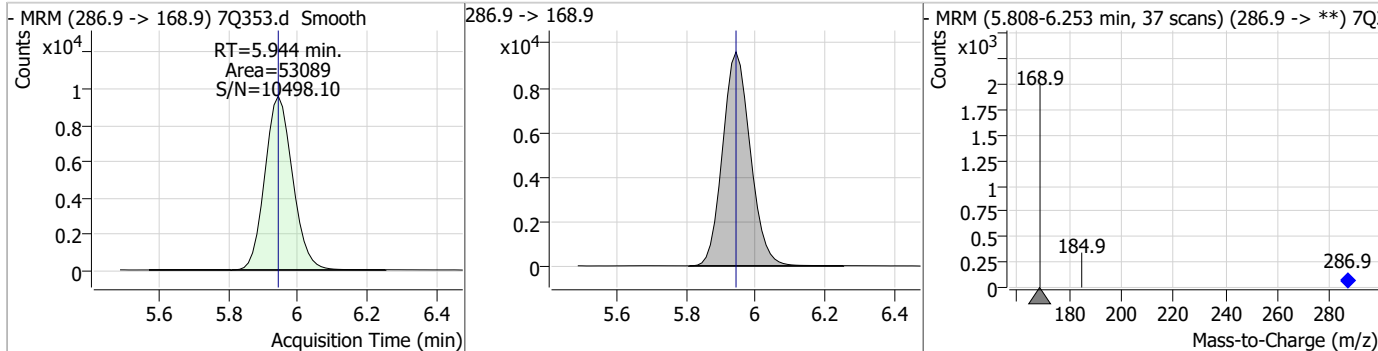
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.58	5.55	0.00	30025				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.19	5.56	0.00	2111	313.0 -> 118.9	6.2	2.6	7.7



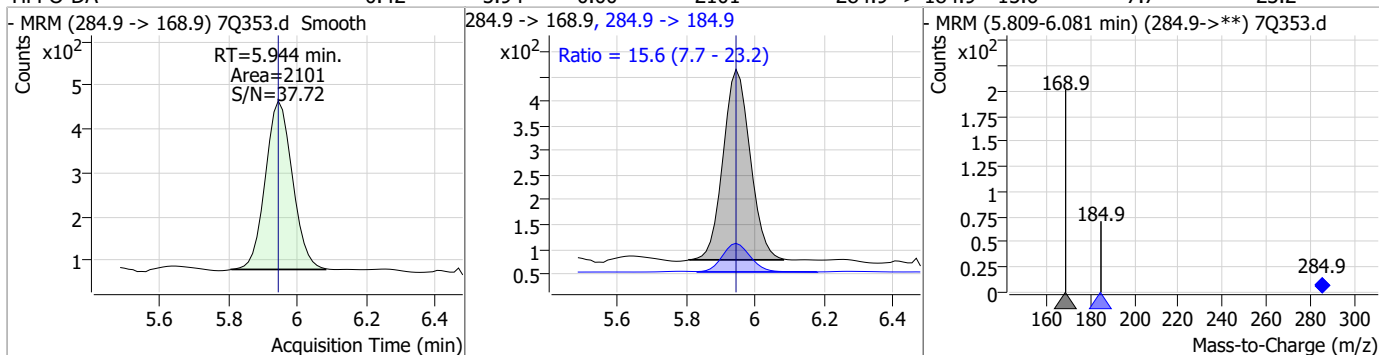
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.83	5.94	0.00	53089				



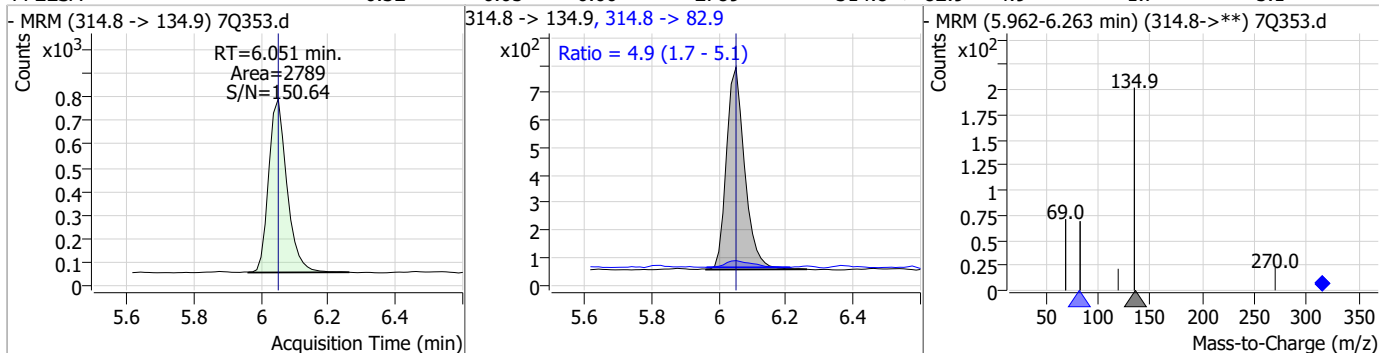
7.7.28
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Perfluorinated Compounds by LC/MS/MS

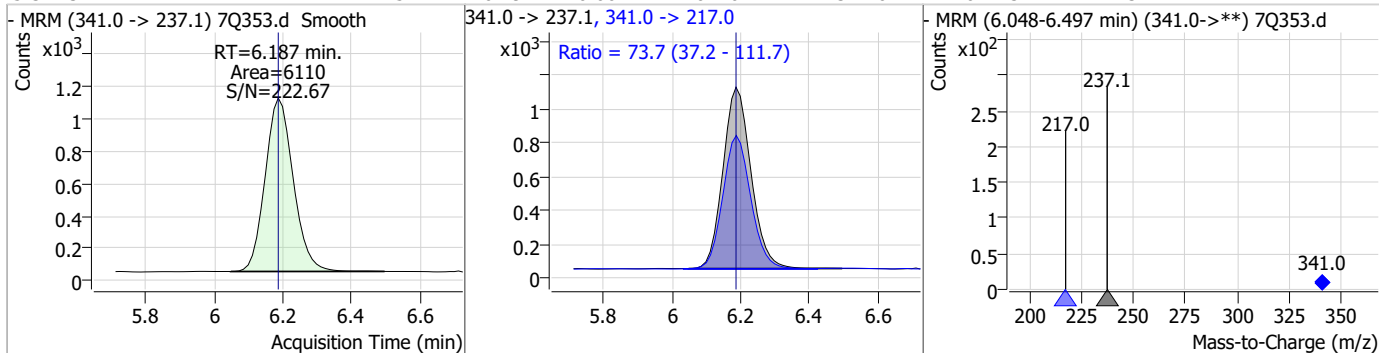
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.42	5.94	0.00	2101	284.9 -> 184.9	15.6	7.7	23.2



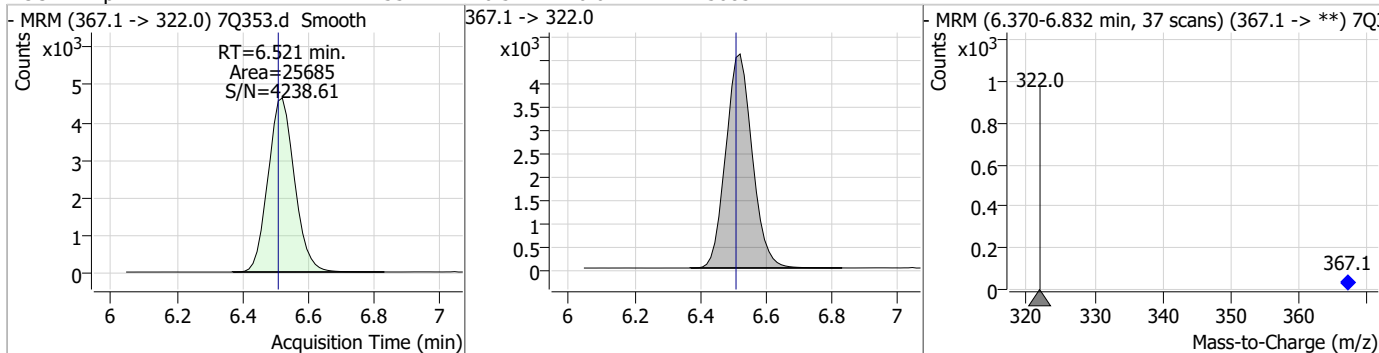
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.32	6.05	0.00	2789	314.8 -> 82.9	4.9	1.7	5.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.25	6.19	0.00	6110	341.0 -> 217.0	73.7	37.2	111.7

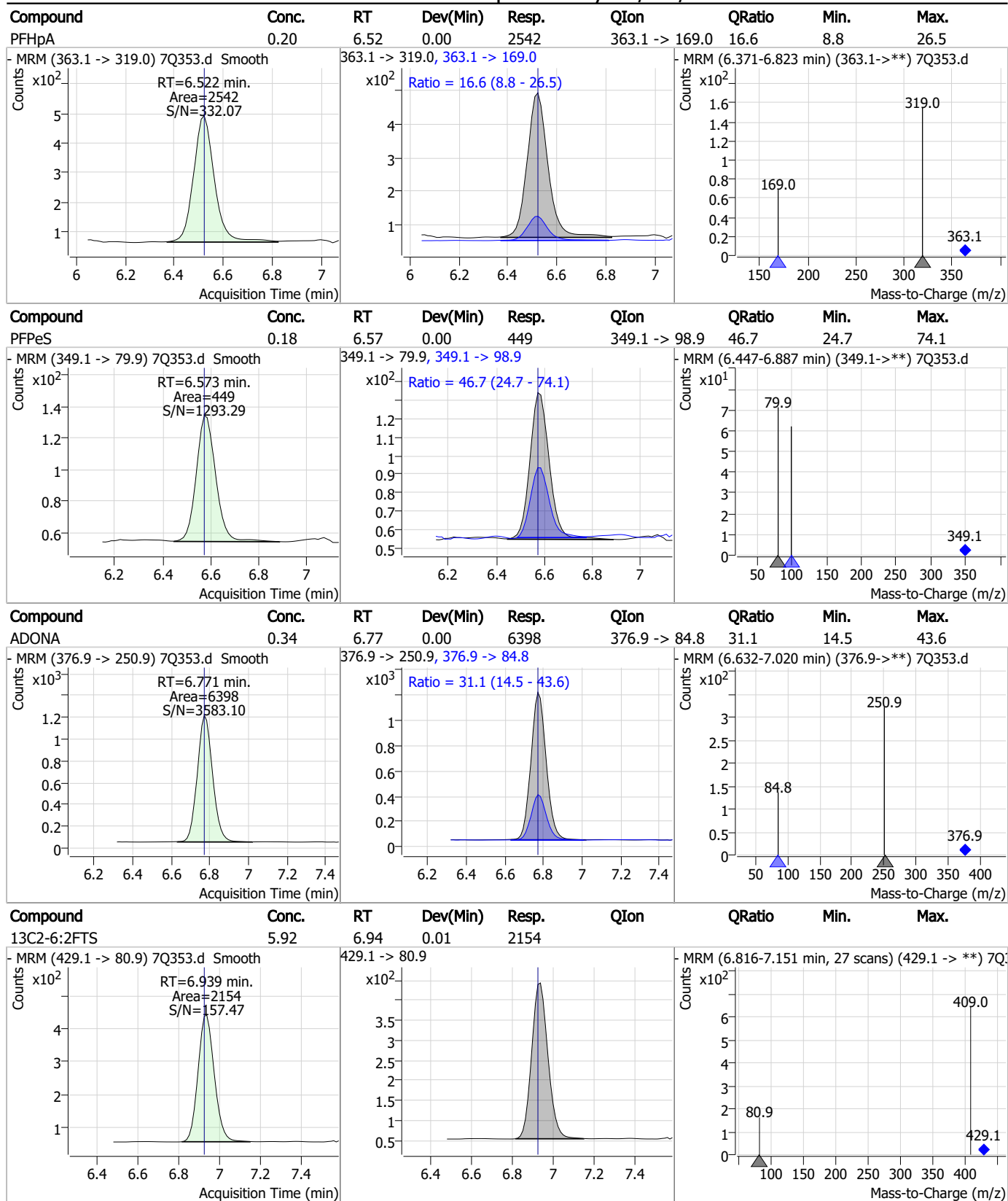


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.55	6.52	0.01	25685	367.1 -> 322.0			



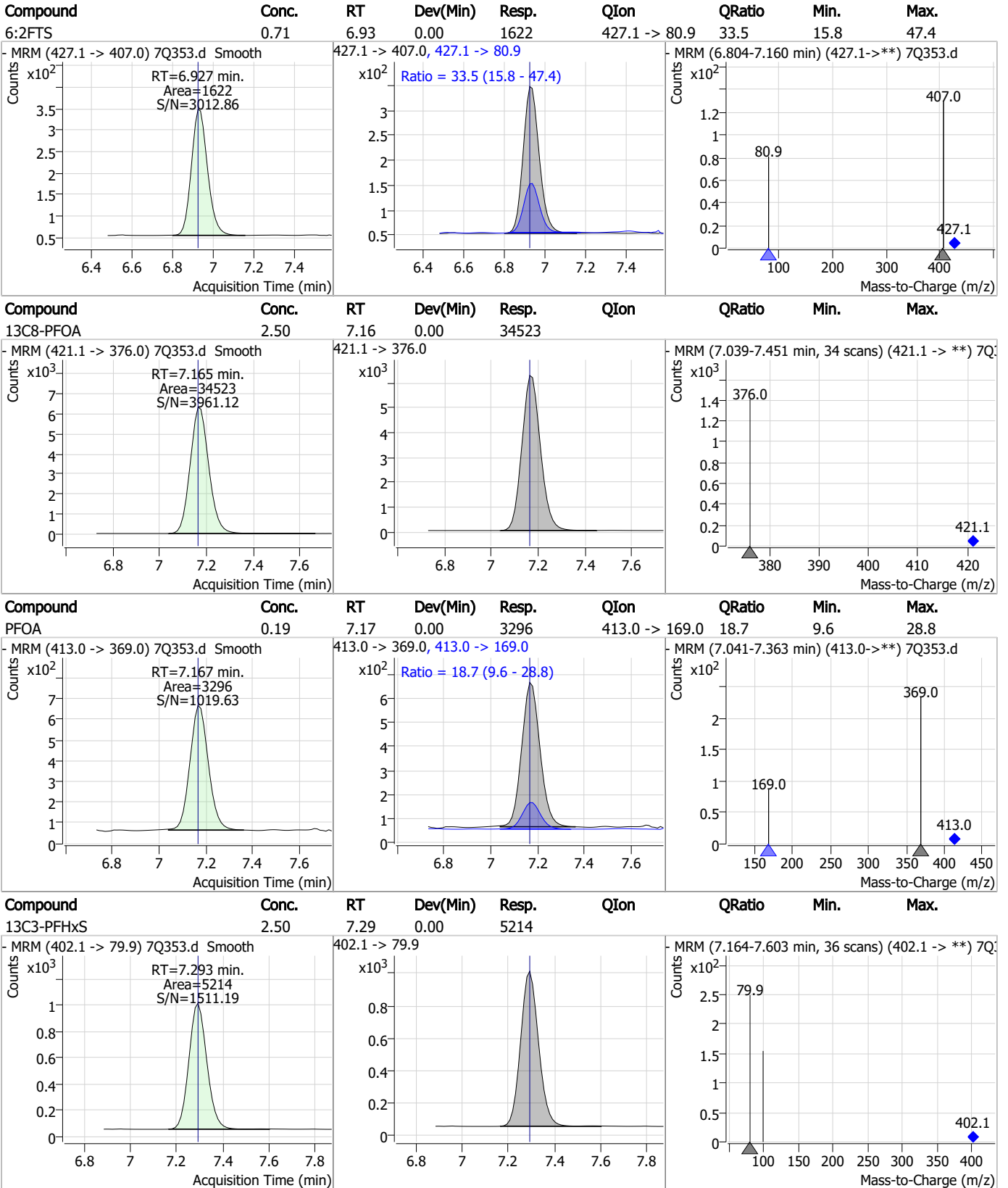
7.7.28 7

Perfluorinated Compounds by LC/MS/MS



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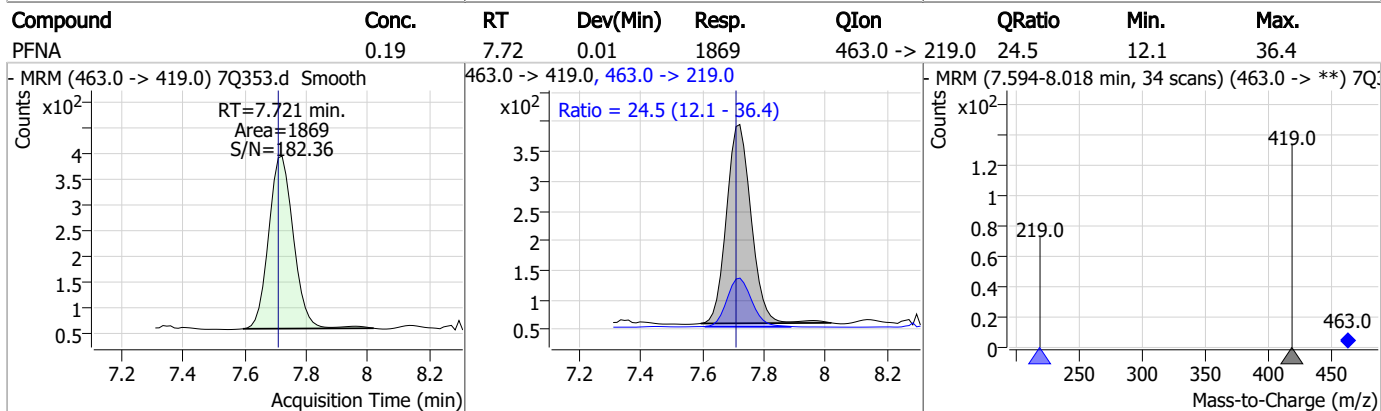
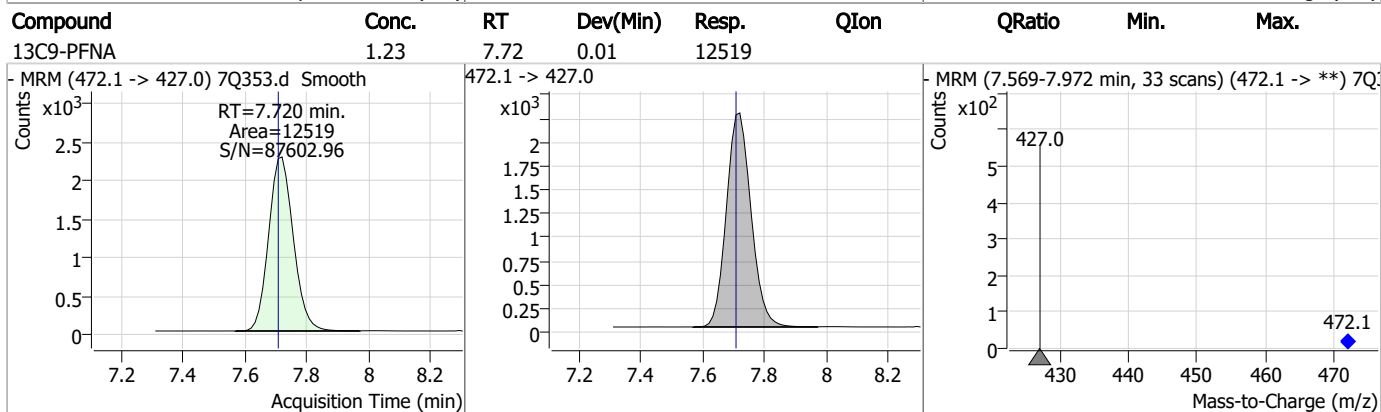
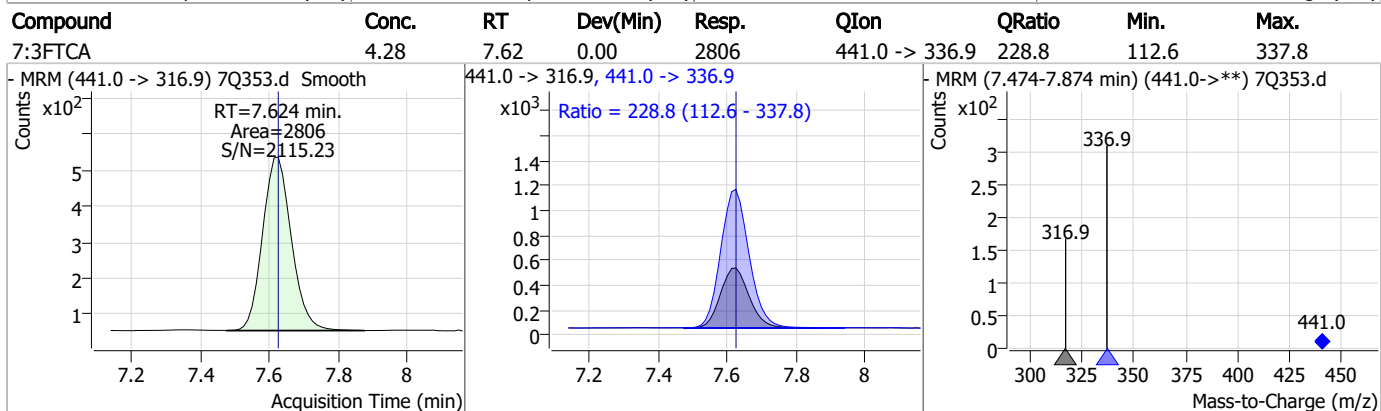
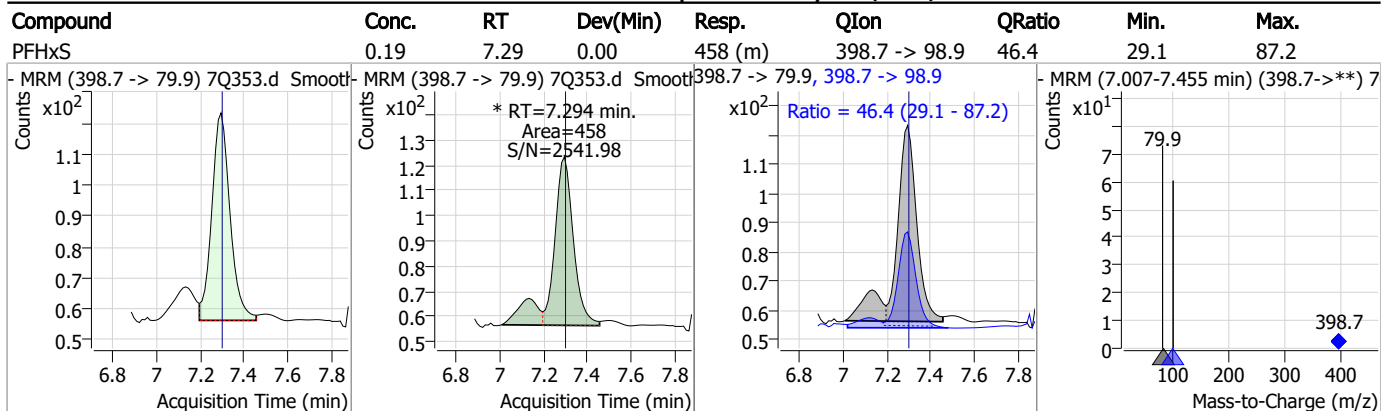
Perfluorinated Compounds by LC/MS/MS



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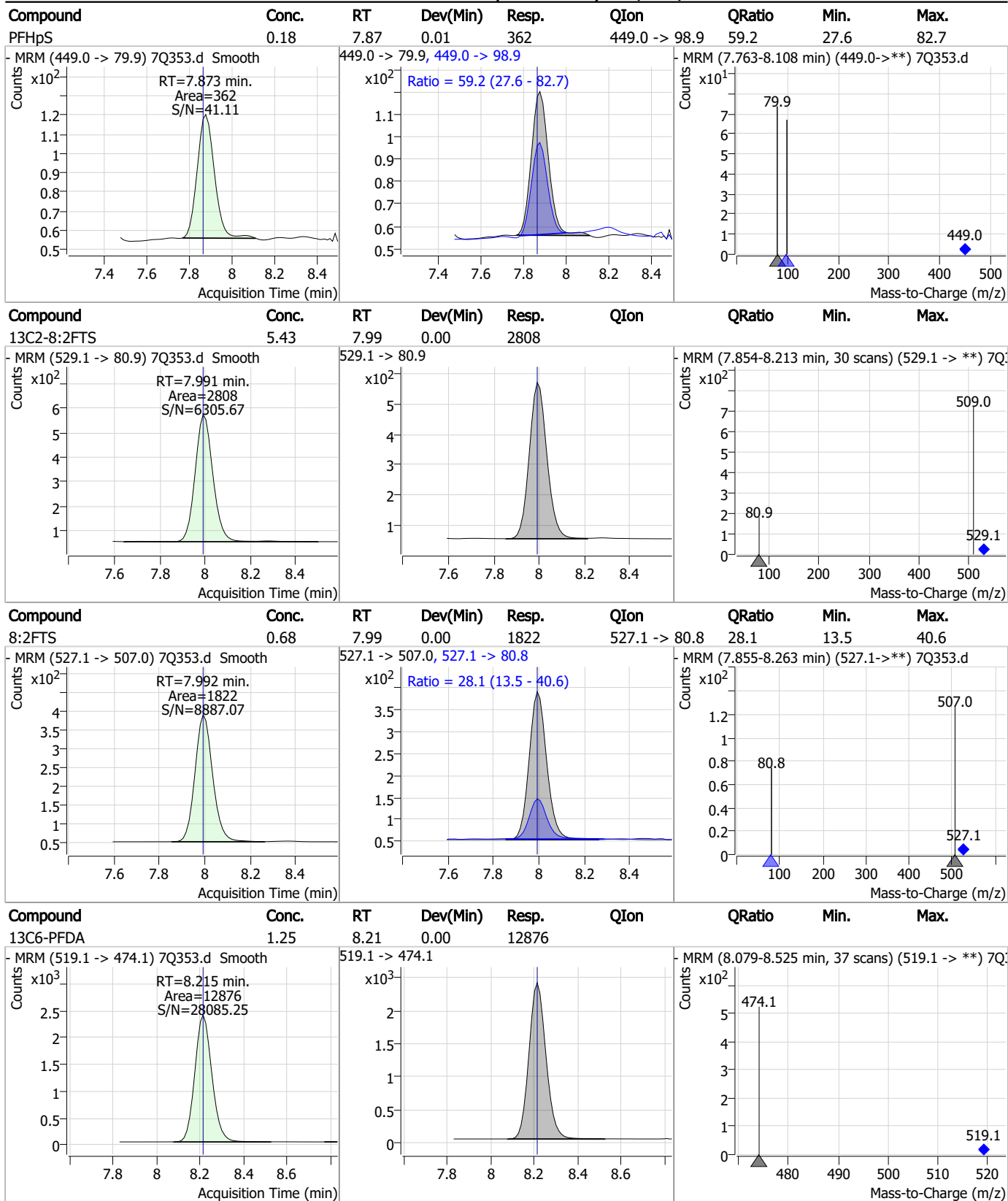
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

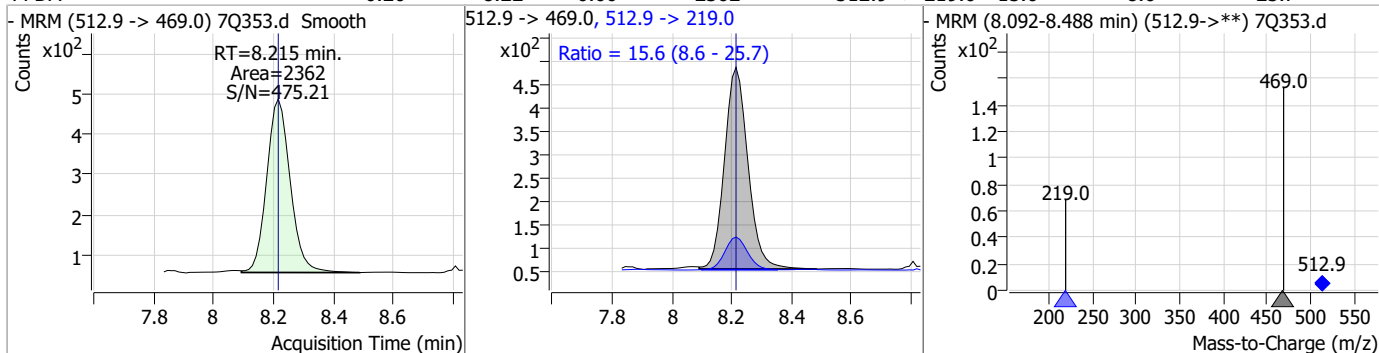


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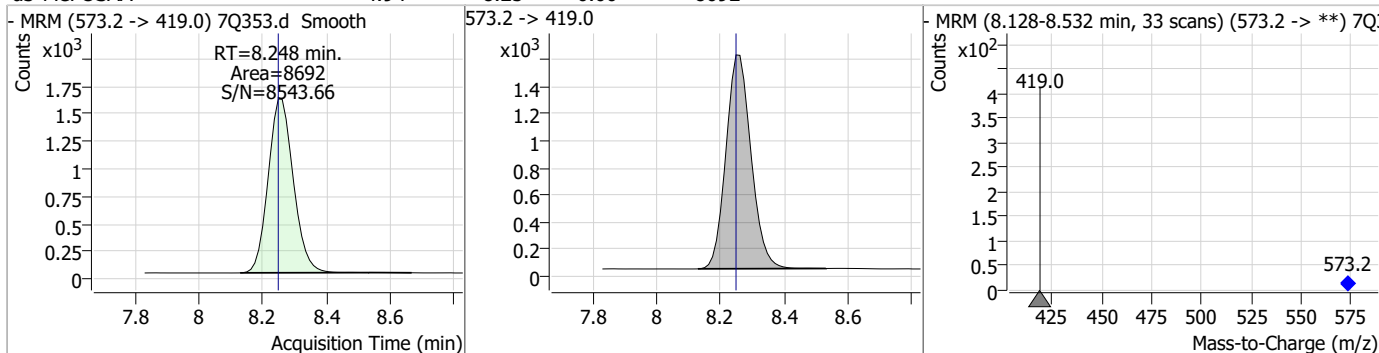


Perfluorinated Compounds by LC/MS/MS

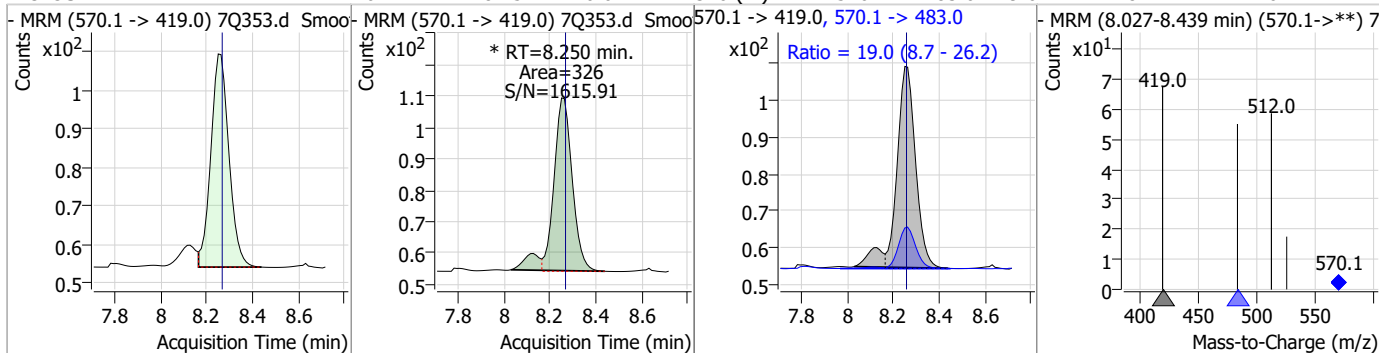
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.20	8.22	0.00	2362	512.9 -> 219.0	15.6	8.6	25.7



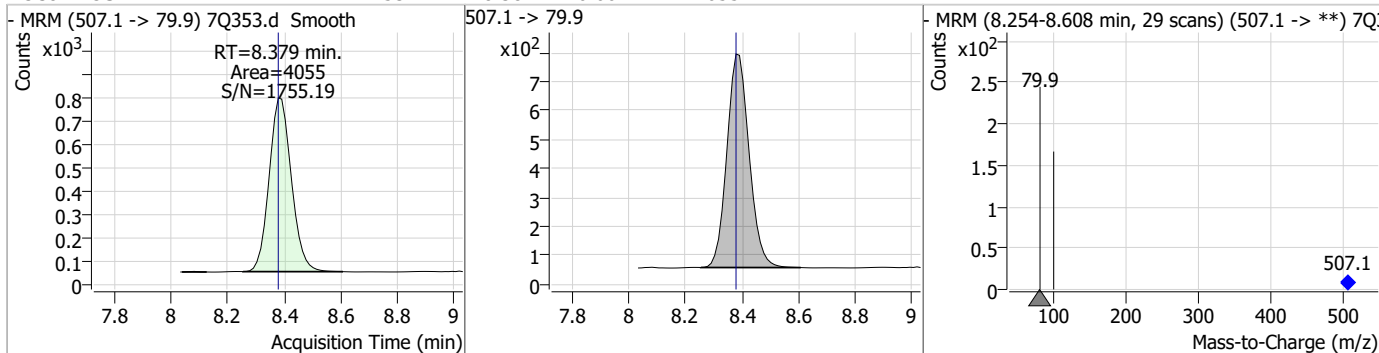
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.94	8.25	0.00	8692				



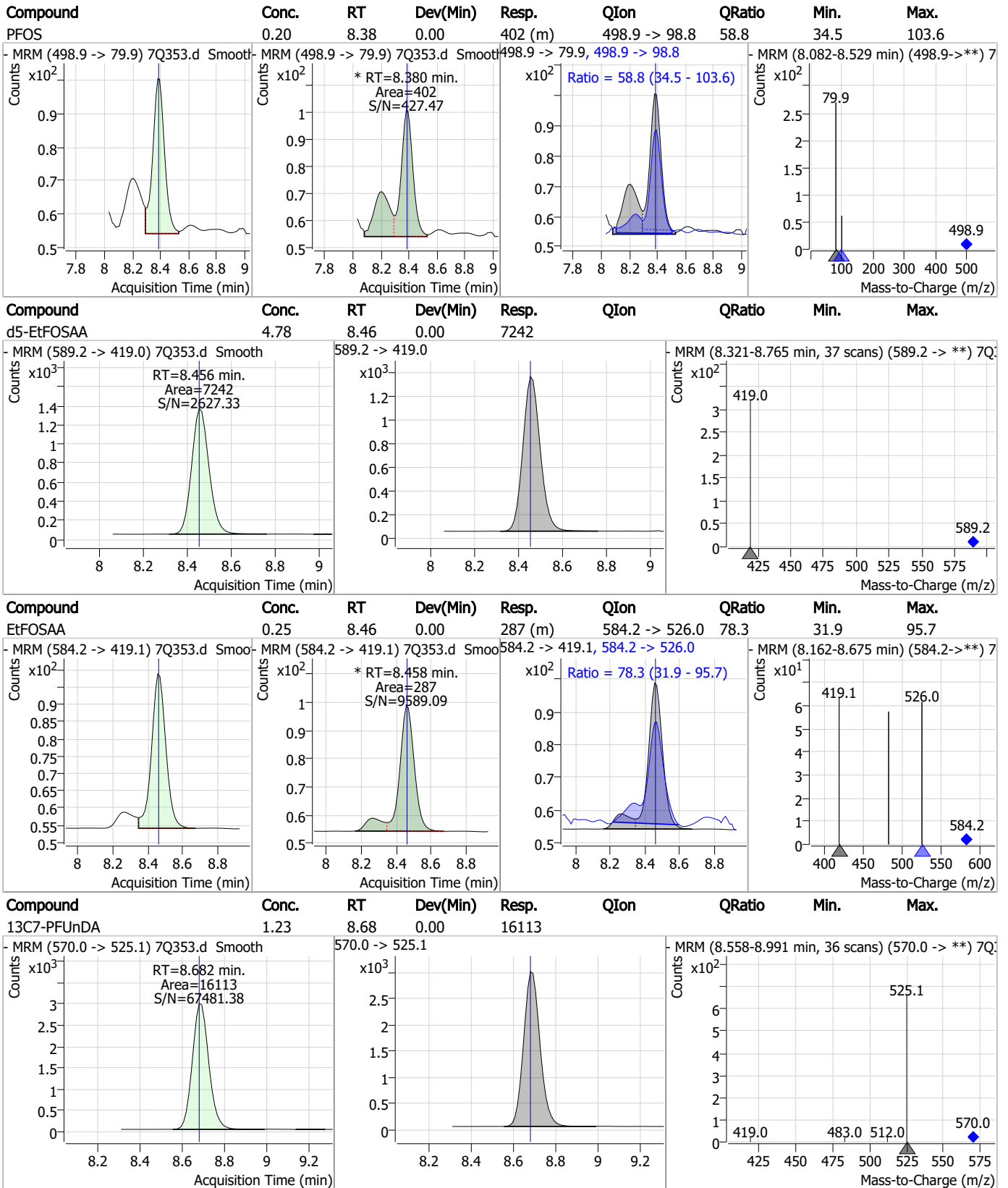
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.21	8.25	-0.01	326 (m)	570.1 -> 483.0	19.0	8.7	26.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.53	8.38	0.00	4055				

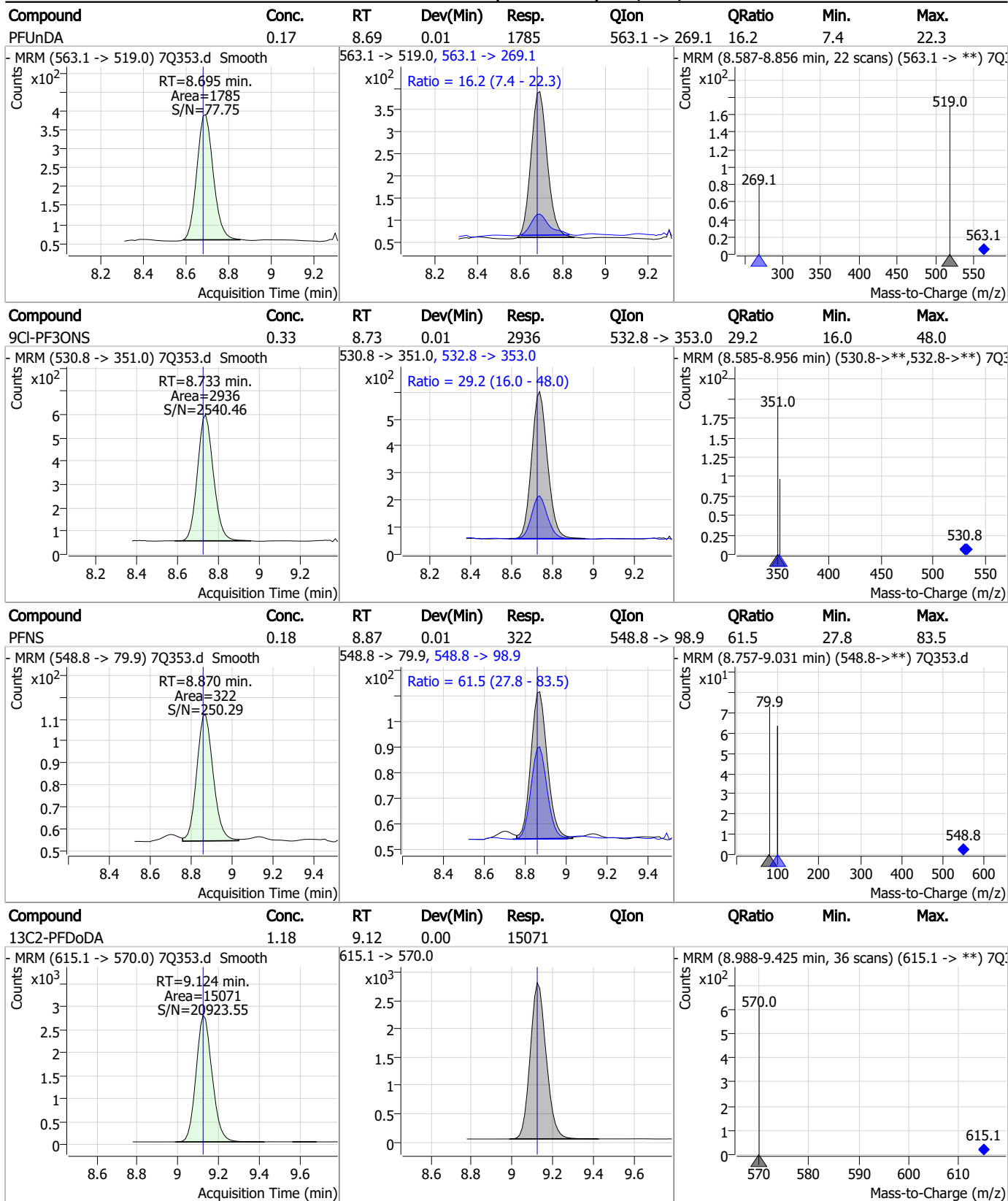


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

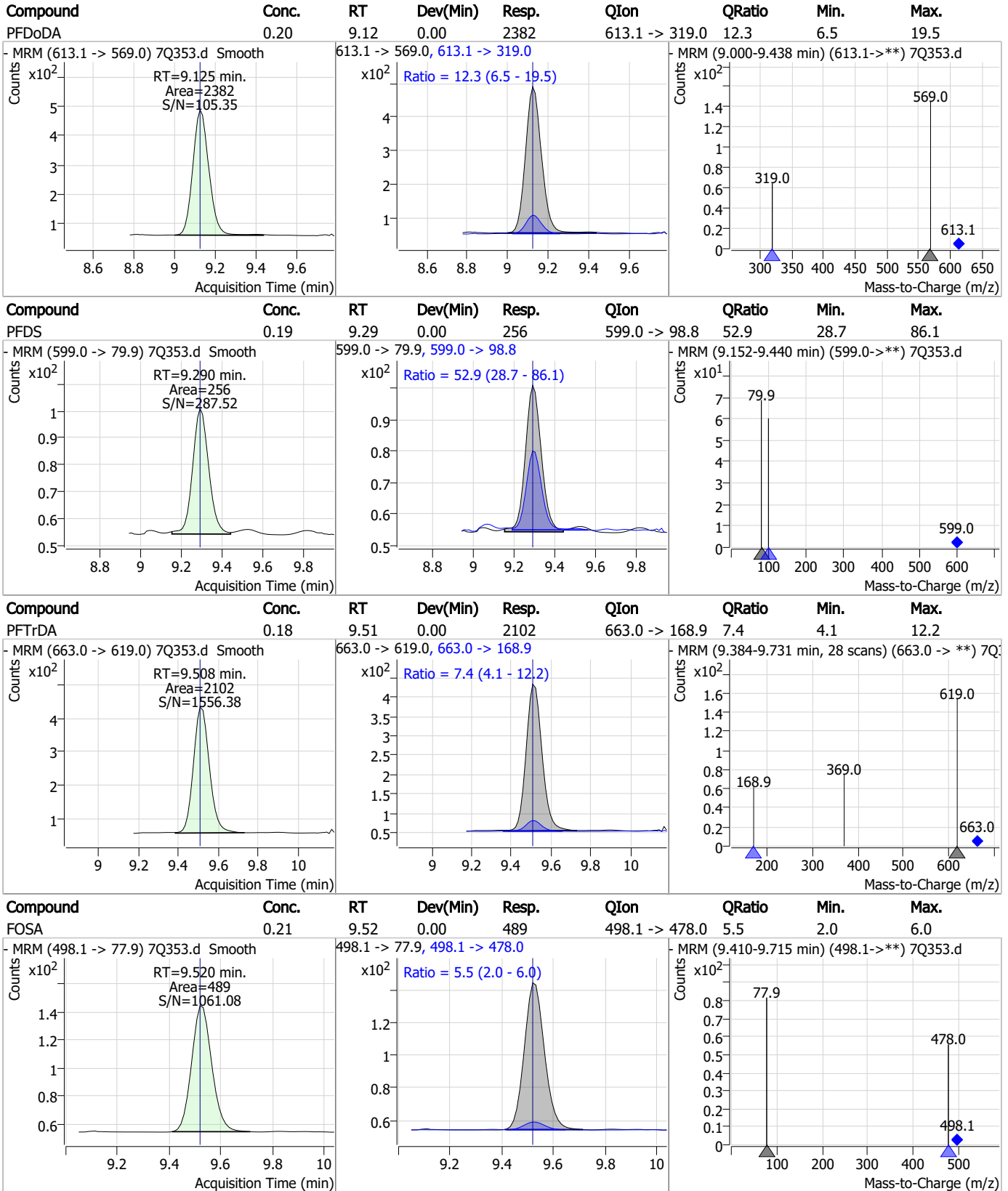


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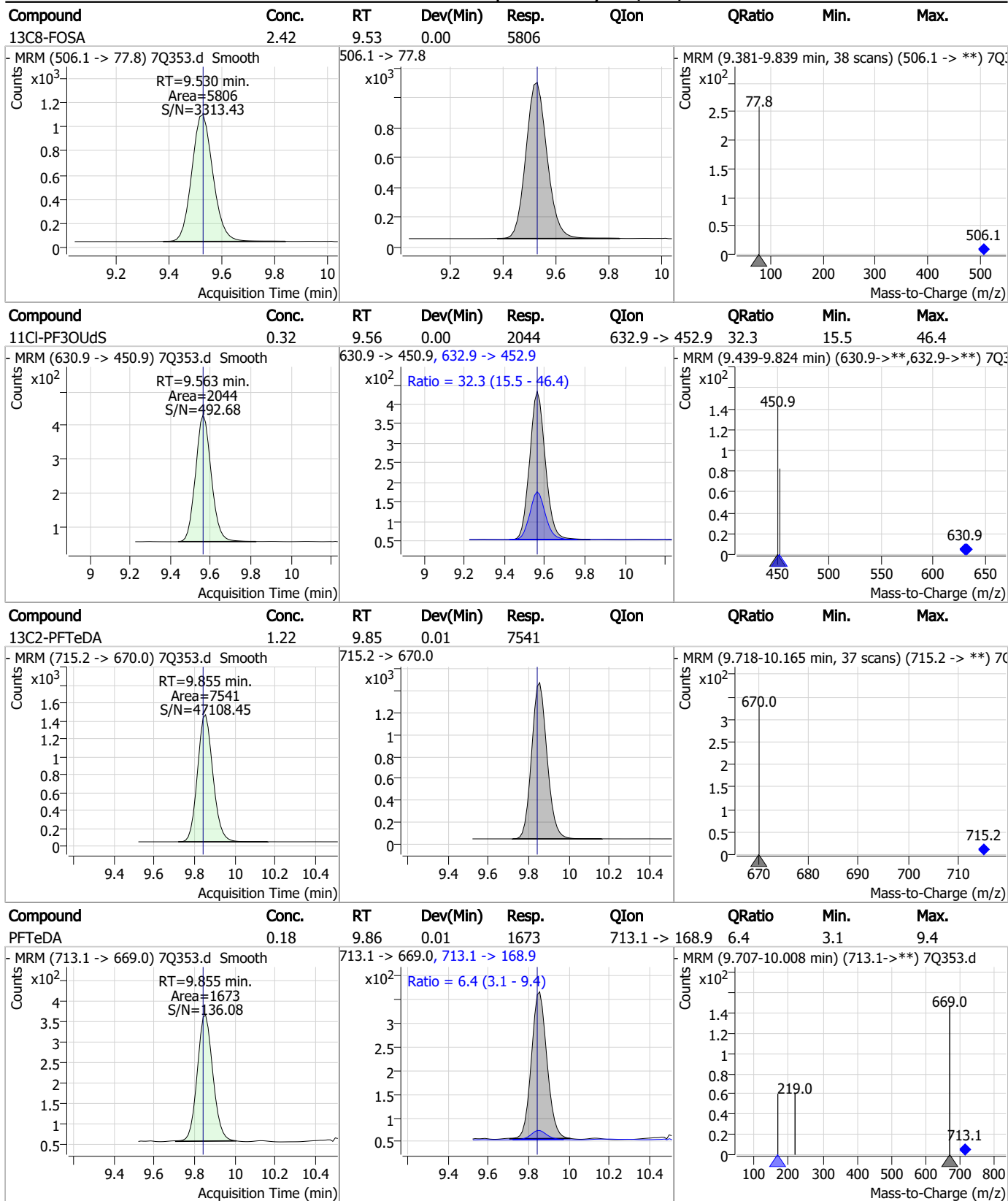
Perfluorinated Compounds by LC/MS/MS



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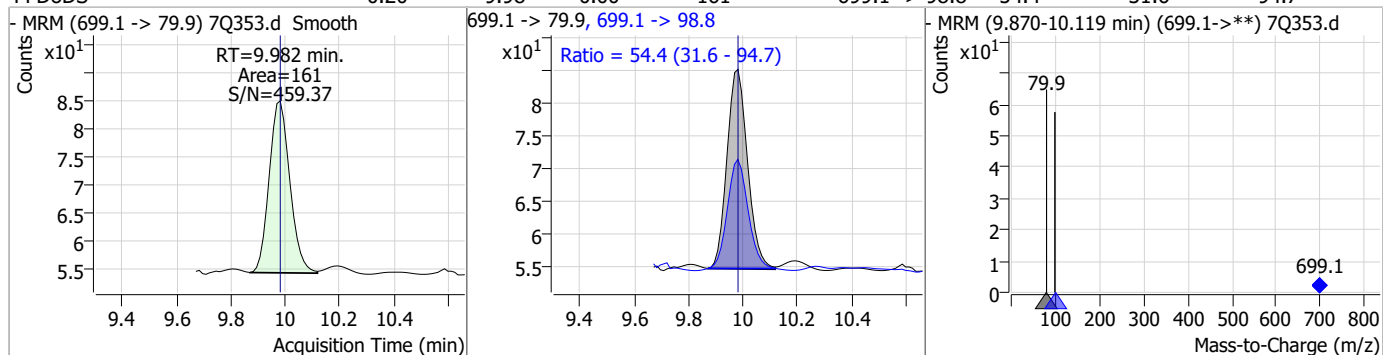
Perfluorinated Compounds by LC/MS/MS



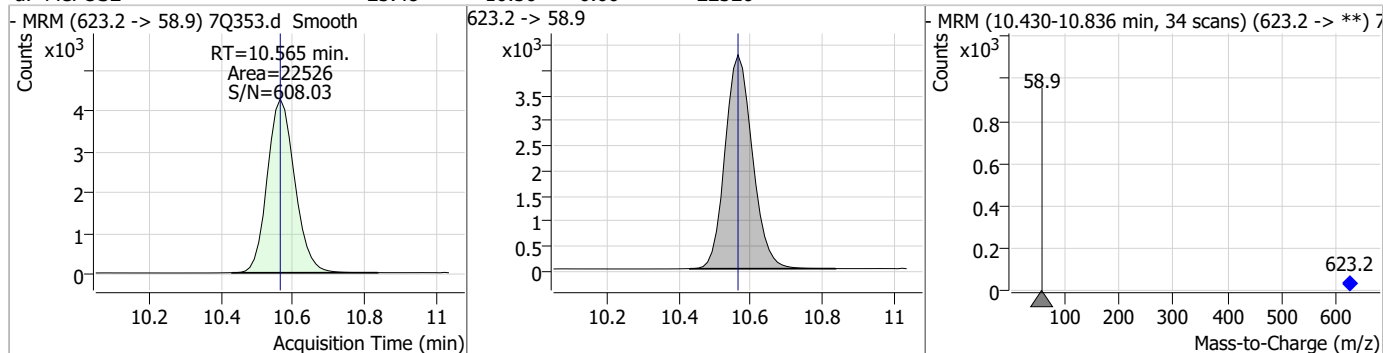
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Perfluorinated Compounds by LC/MS/MS

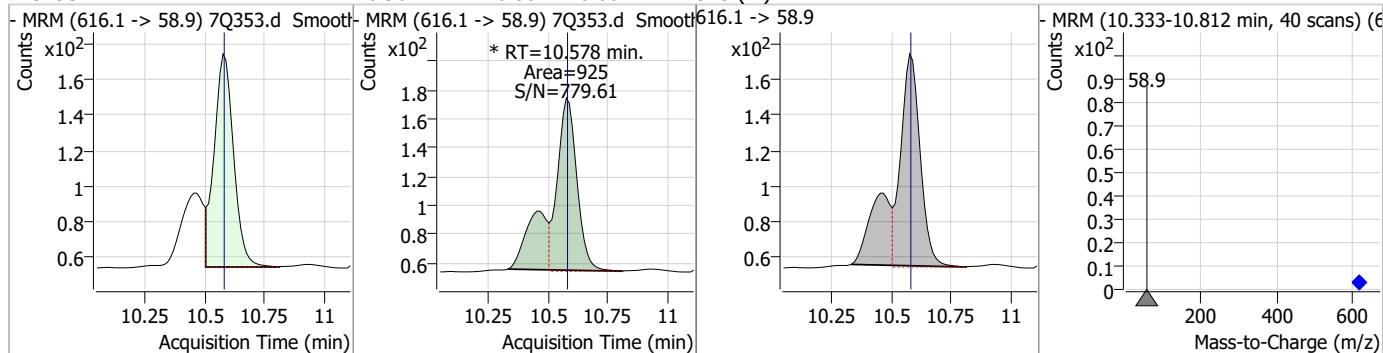
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.20	9.98	0.00	161	699.1 -> 98.8	54.4	31.6	94.7



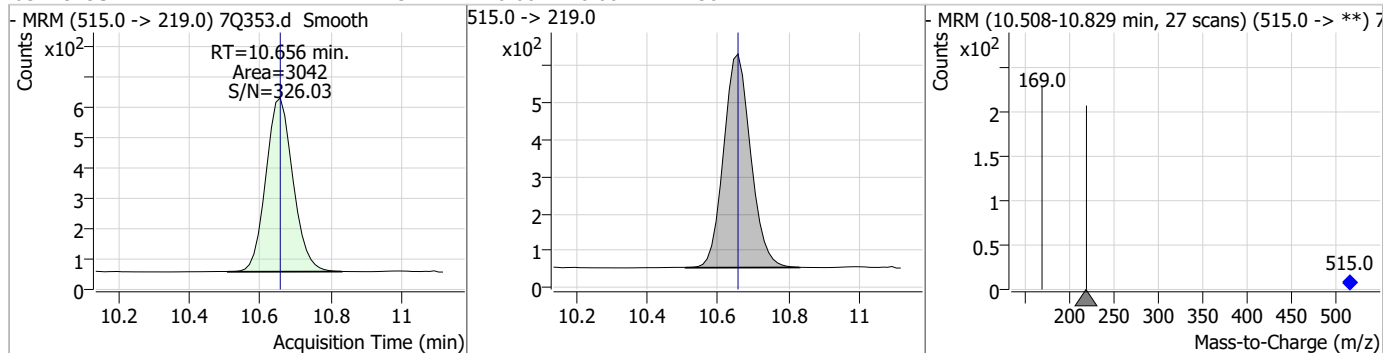
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.48	10.56	0.00	22526				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.96	10.58	0.00	925 (m)				



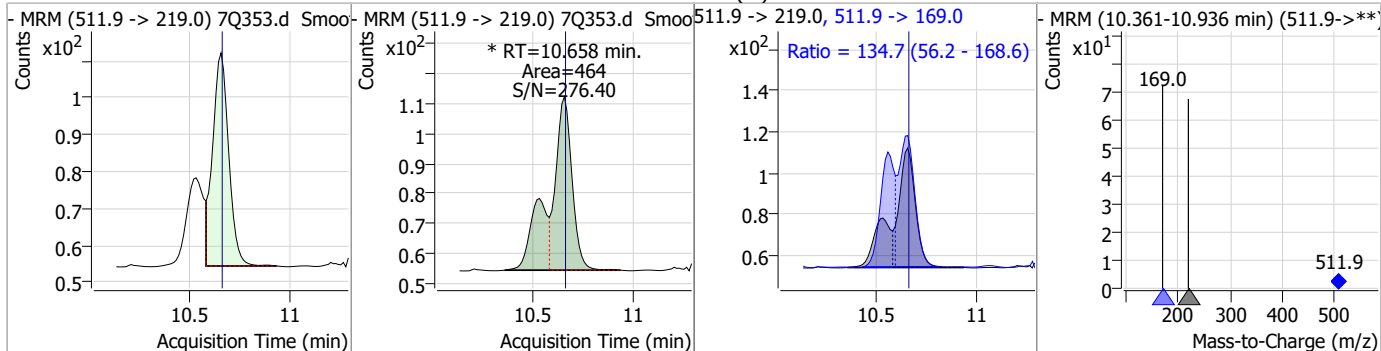
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.43	10.66	0.00	3042				



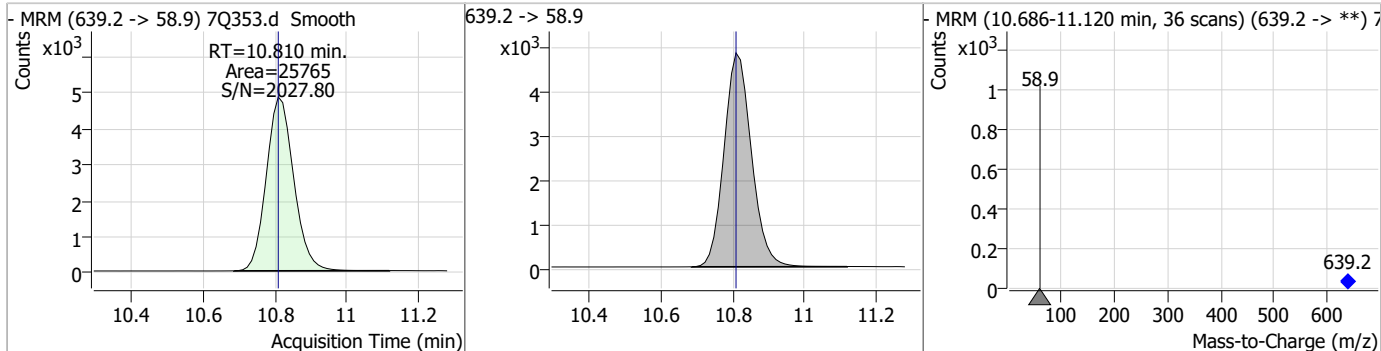
7.7.28
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Perfluorinated Compounds by LC/MS/MS

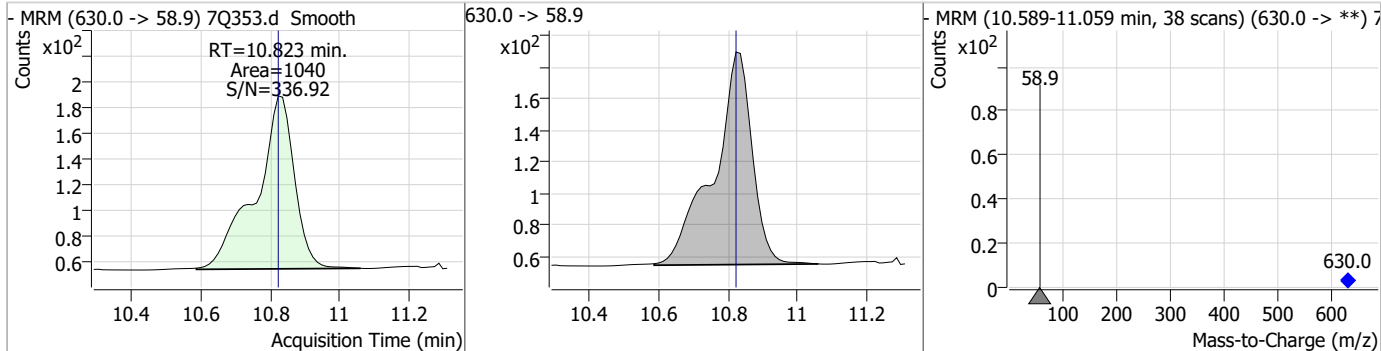
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.37	10.66	0.00	464 (m)	511.9 -> 169.0	134.7	56.2	168.6



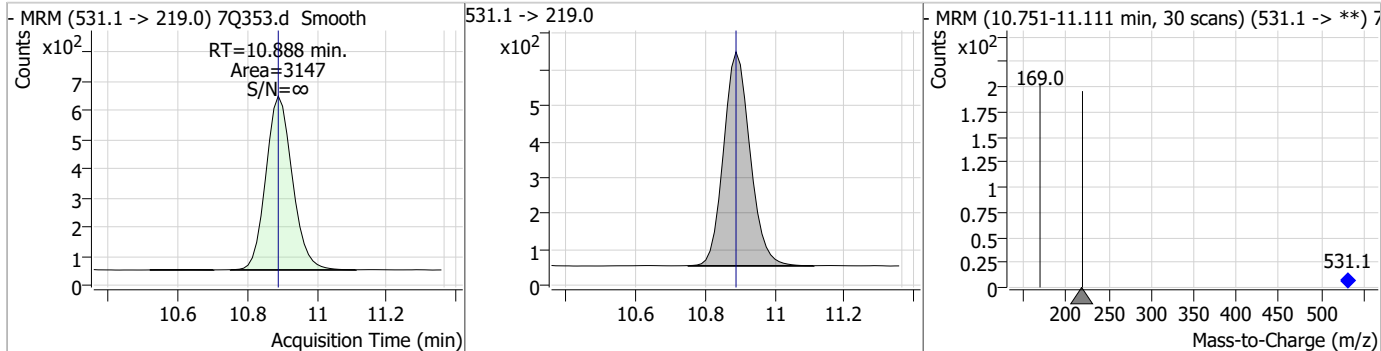
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.12	10.81	0.00	25765				



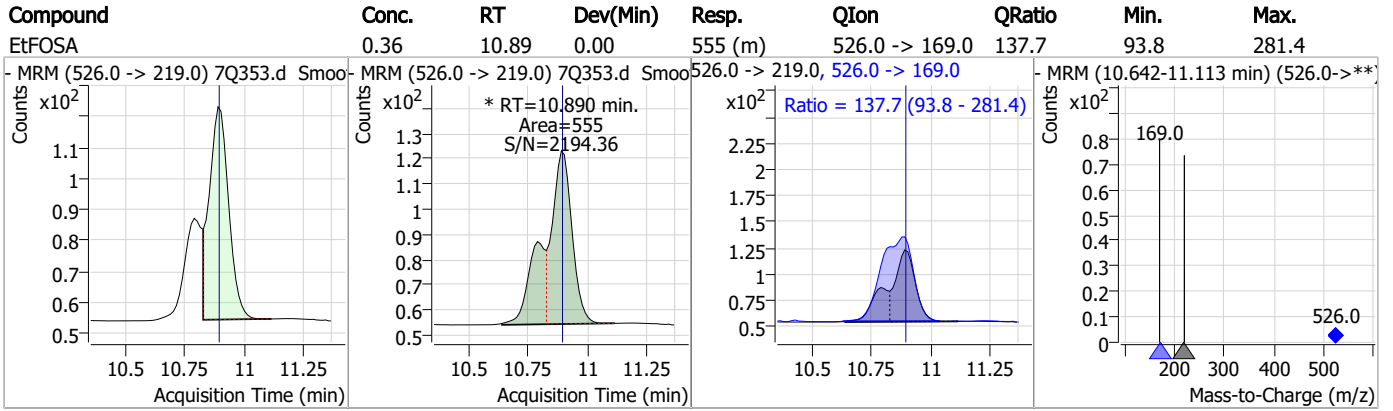
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	0.96	10.82	0.00	1040				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.44	10.89	0.00	3147				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-CC11 Method: EPA DRAFT 1633
Lab FileID: 7Q353.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 18:12 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 7Q364.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 12/13/2023 8:43:42 PM
 Sample Name : cc11-4
 Vial : P1-A5
 DA Method File : 1633_121323_S7Q11A.quantmethod.xml
 Batch Name : S7Q11.batch.bin
 Sample Information : op447,S7Q11,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.897	216.8 -> 171.9	96696	10.00 µg/L	0.000
M5-PFPeA	4.312	268.3 -> 223.0	32379	5.00 µg/L	0.000
M5-PFHxA	5.554	318.0 -> 273.0	29020	2.50 µg/L	0.000
M4-PFHpA	6.521	367.1 -> 322.0	24788	2.50 µg/L	0.012
M8-PFOA	7.177	421.1 -> 376.0	33867	2.50 µg/L	0.012
M9-PFNA	7.720	472.1 -> 427.0	12098	1.25 µg/L	0.012
M6-PFDA	8.215	519.1 -> 474.1	12296	1.25 µg/L	0.000
M7-PFUnDA	8.694	570.0 -> 525.1	15749	1.25 µg/L	0.012
M2-PFDoDA	9.124	615.1 -> 570.0	15508	1.25 µg/L	0.000
M2-PFTeDA	9.855	715.2 -> 670.0	7228	1.25 µg/L	0.012
M8-FOSA	9.529	506.1 -> 77.8	6158	2.50 µg/L	0.000
M3-PFBS	5.484	302.1 -> 79.9	6546	2.50 µg/L	0.000
M3-PFHxS	7.293	402.1 -> 79.9	5104	2.50 µg/L	0.000
M8-PFOS	8.391	507.1 -> 79.9	4088	2.50 µg/L	0.012
M2-4:2FTS	5.217	329.1 -> 80.9	790	5.00 µg/L	0.000
M2-6:2FTS	6.939	429.1 -> 80.9	1776	5.00 µg/L	0.012
M2-8:2FTS	7.991	529.1 -> 80.9	2712	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	8642	5.00 µg/L	0.012
M3-HFPO-DA	5.944	286.9 -> 168.9	49747	10.00 µg/L	0.000
M5-EtFOSAA	8.456	589.2 -> 419.0	7683	5.00 µg/L	0.000
M7-MeFOSE	10.565	623.2 -> 58.9	21947	25.00 µg/L	0.000
M9-EtFOSE	10.810	639.2 -> 58.9	25407	25.00 µg/L	0.000
M5-EtFOSA	10.888	531.1 -> 219.0	3096	2.50 µg/L	0.000
M3-MeFOSA	10.656	515.0 -> 219.0	3043	2.50 µg/L	0.000
13C4-PFOS	8.392	502.8 -> 79.9	4772	2.50 µg/L	0.012
13C3-PFBA	2.889	216.0 -> 172.0	46061	5.00 µg/L	0.000
18O2-PFHxS	7.292	403.0 -> 83.9	3639	2.50 µg/L	0.000
13C4-PFOA	7.178	417.1 -> 372.0	35690	2.50 µg/L	0.012
13C2-PFDA	8.215	515.1 -> 470.1	11167	1.25 µg/L	0.000
13C5-PFNA	7.721	468.0 -> 423.0	14620	1.25 µg/L	0.012
13C2-PFHxA	5.555	315.1 -> 270.0	24018	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.217	329.1 -> 80.9	790	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C2-6:2FTS	6.939	429.1 -> 80.9	1776	4.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C2-8:2FTS	7.991	529.1 -> 80.9	2712	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C2-PFDoDA	9.124	615.1 -> 570.0	15508	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-PFTeDA	9.855	715.2 -> 670.0	7228	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C3-PFBS	5.484	302.1 -> 79.9	6546	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C3-PFHxS	7.293	402.1 -> 79.9	5104	2.41 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C4-PFBA	2.897	216.8 -> 171.9	96696	9.93 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C4-PFHpA	6.521	367.1 -> 322.0	24788	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C5-PFHxA	5.554	318.0 -> 273.0	29020	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C5-PFPeA	4.312	268.3 -> 223.0	32379	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C6-PFDA	8.215	519.1 -> 474.1	12296	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C7-PFUnDA	8.694	570.0 -> 525.1	15749	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C8-FOSA	9.529	506.1 -> 77.8	6158	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C8-PFOA	7.177	421.1 -> 376.0	33867	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C8-PFOS	8.391	507.1 -> 79.9	4088	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C9-PFNA	7.720	472.1 -> 427.0	12098	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
d3-MeFOSAA	8.261	573.2 -> 419.0	8642	4.70 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C3-HFPO-DA	5.944	286.9 -> 168.9	49747	9.20 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 92.0%		
d3-MeFOSA	10.656	515.0 -> 219.0	3043	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.0%		
d5-EtFOSAA	8.456	589.2 -> 419.0	7683	4.85 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.0%		
d7-MeFOSE	10.565	623.2 -> 58.9	21947	23.74 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
d9-EtFOSE	10.810	639.2 -> 58.9	25407	23.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
d5-EtFOSA	10.888	531.1 -> 219.0	3096	2.30 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.8%		
Target Compounds					QValue
4:2FTS	5.218	327.1 -> 307.0	11595	9.35 µg/L	100
		327.1 -> 80.9	4054		
6:2FTS	6.939	427.1 -> 407.0	18491	9.85 µg/L	100
		427.1 -> 80.9	5840		
8:2FTS	7.992	527.1 -> 507.0	23194	8.95 µg/L	98
		527.1 -> 80.8	6032		
EtFOSAA	8.470	584.2 -> 419.1	3201	2.58 µg/L	m 95
		584.2 -> 526.0	1927		
FOSA	9.532	498.1 -> 77.9	6062	2.42 µg/L	100
		498.1 -> 478.0	245		
MeFOSAA	8.262	570.1 -> 419.0	4463	2.93 µg/L	m 96
		570.1 -> 483.0	851		
PFBA	2.893	212.8 -> 168.9	35157	10.04 µg/L	100
PFBS	5.485	298.7 -> 79.9	5558	2.25 µg/L	99
		298.7 -> 98.8	2236		
PFDA	8.215	512.9 -> 469.0	27795	2.46 µg/L	100
		512.9 -> 219.0	4791		
PFDoDA	9.125	613.1 -> 569.0	30312	2.52 µg/L	98
		613.1 -> 319.0	3756		
PFDS	9.290	599.0 -> 79.9	3119	2.32 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1732			
PFHpA	6.522	363.1 -> 319.0	31466	2.57	µg/L	100
		363.1 -> 169.0	5515			
PFHpS	7.873	449.0 -> 79.9	4720	2.28	µg/L	98
		449.0 -> 98.9	2680			
PFHxA	5.556	313.0 -> 269.0	26654	2.50	µg/L	100
		313.0 -> 118.9	1374			
PFHxS	7.294	398.7 -> 79.9	5518	2.38	µg/L	m 91
		398.7 -> 98.9	2829			
PFNA	7.721	463.0 -> 419.0	24867	2.57	µg/L	98
		463.0 -> 219.0	5710			
PFNS	8.870	548.8 -> 79.9	4131	2.27	µg/L	91
		548.8 -> 98.9	2562			
PFOA	7.179	413.0 -> 369.0	42465	2.48	µg/L	99
		413.0 -> 169.0	7982			
PFOS	8.393	498.9 -> 79.9	4540	2.28	µg/L	m 82
		498.9 -> 98.8	2459			
PFPeA	4.314	263.0 -> 219.0	40708	5.04	µg/L	100
PFPeS	6.573	349.1 -> 79.9	5917	2.38	µg/L	98
		349.1 -> 98.9	2838			
PFTeDA	9.855	713.1 -> 669.0	23146	2.59	µg/L	97
		713.1 -> 168.9	1708			
PFTrDA	9.508	663.0 -> 619.0	29087	2.48	µg/L	100
		663.0 -> 168.9	2353			
PFUnDA	8.695	563.1 -> 519.0	25494	2.54	µg/L	99
		563.1 -> 269.1	3677			
11CI-PF3OUdS	9.563	630.9 -> 450.9	30826	5.20	µg/L	99
		632.9 -> 452.9	9734			
9CI-PF3ONS	8.733	530.8 -> 351.0	43924	5.28	µg/L	97
		532.8 -> 353.0	13204			
ADONA	6.771	376.9 -> 250.9	93614	5.27	µg/L	99
		376.9 -> 84.8	26936			
HFPO-DA	5.944	284.9 -> 168.9	27440	5.79	µg/L	99
		284.9 -> 184.9	4195			
3:3FTCA	3.749	241.0 -> 177.0	5100	12.27	µg/L	99
		241.0 -> 117.0	627			
5:3FTCA	6.187	341.0 -> 237.1	87794	63.25	µg/L	99
		341.0 -> 217.0	65842			
7:3FTCA	7.624	441.0 -> 316.9	39071	61.63	µg/L	98
		441.0 -> 336.9	89502			
EtFOSA	10.890	526.0 -> 219.0	7827	5.22	µg/L	m 60
		526.0 -> 169.0	10084			
EtFOSE	10.823	630.0 -> 58.9	13681	12.81	µg/L	100
MeFOSA	10.658	511.9 -> 219.0	6452	5.12	µg/L	m 79
		511.9 -> 169.0	8724			
MeFOSE	10.578	616.1 -> 58.9	12038	12.81	µg/L	m 100
PFDoDS	9.982	699.1 -> 79.9	1885	2.35	µg/L	97
		699.1 -> 98.8	1144			
NFDHA	5.437	295.0 -> 201.0	12231	5.04	µg/L	98
		295.0 -> 84.9	3399			
PFMBA	4.750	279.0 -> 85.1	26584	5.14	µg/L	100
PFMPA	3.443	229.0 -> 84.9	27213	5.03	µg/L	100
PFEESA	6.051	314.8 -> 134.9	39235	4.59	µg/L	100
		314.8 -> 82.9	1330			

= Qualifier out of range, m = manually integrated, + = Area summed

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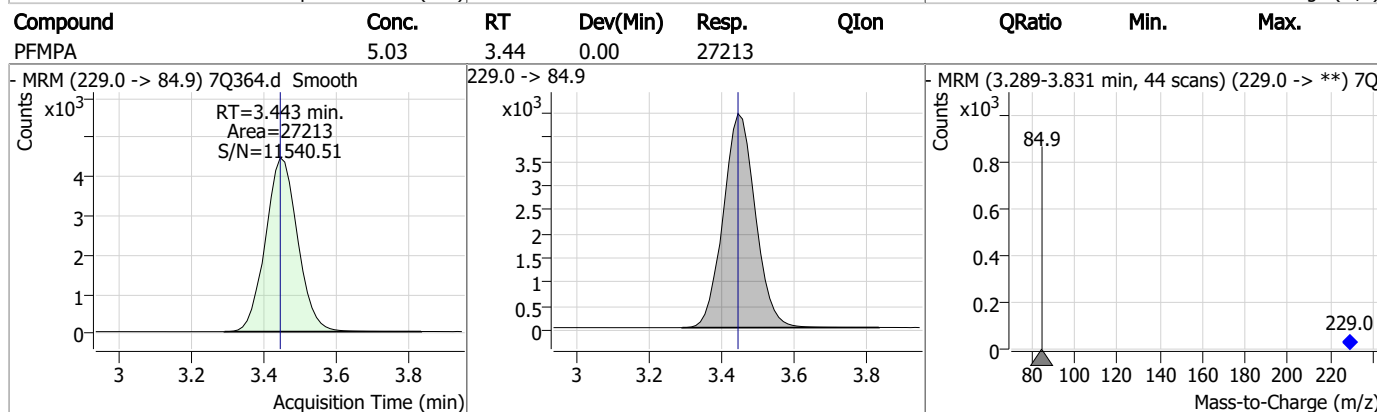
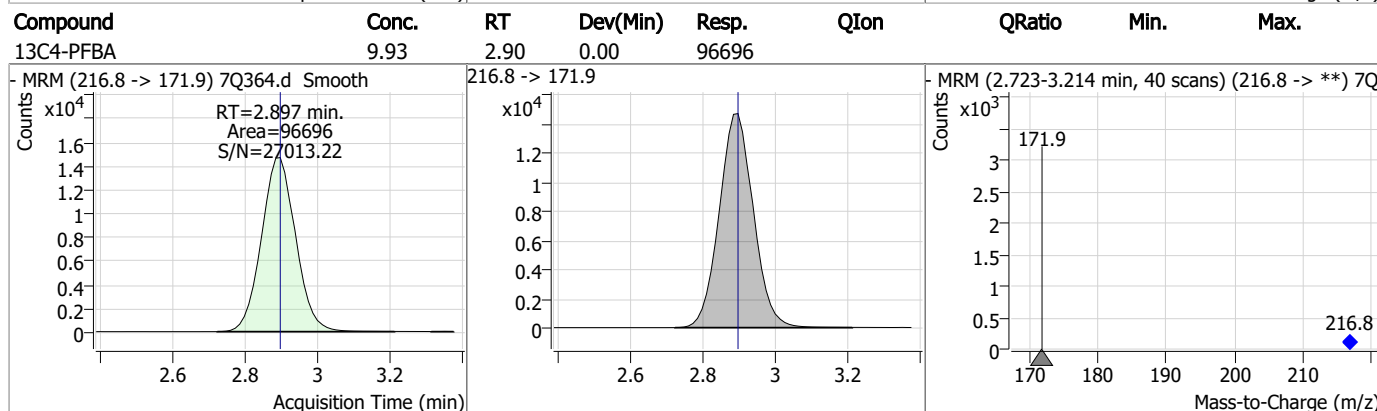
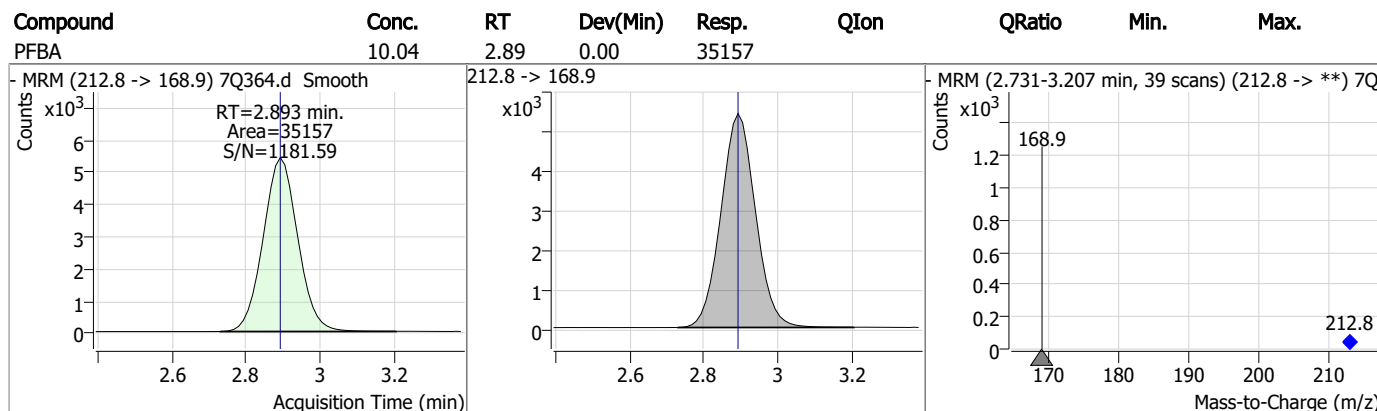
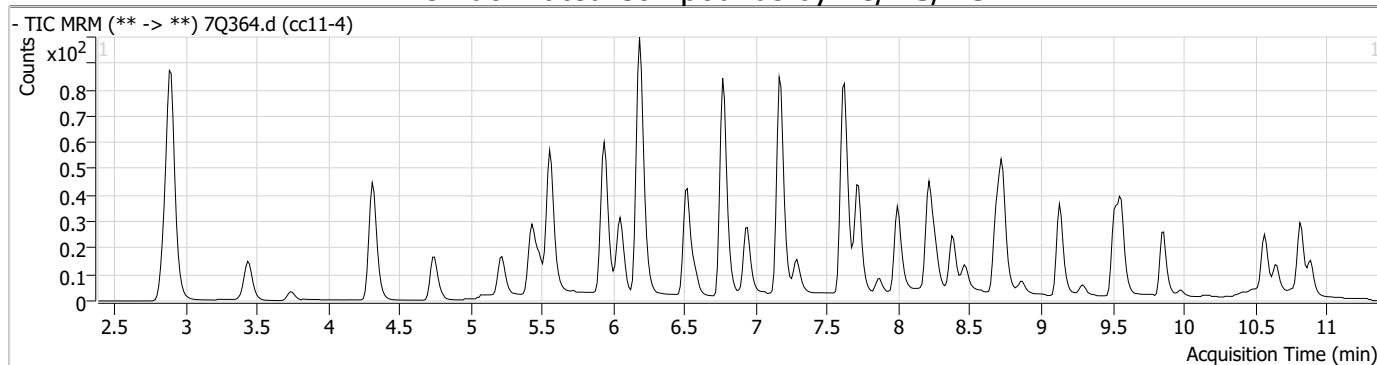
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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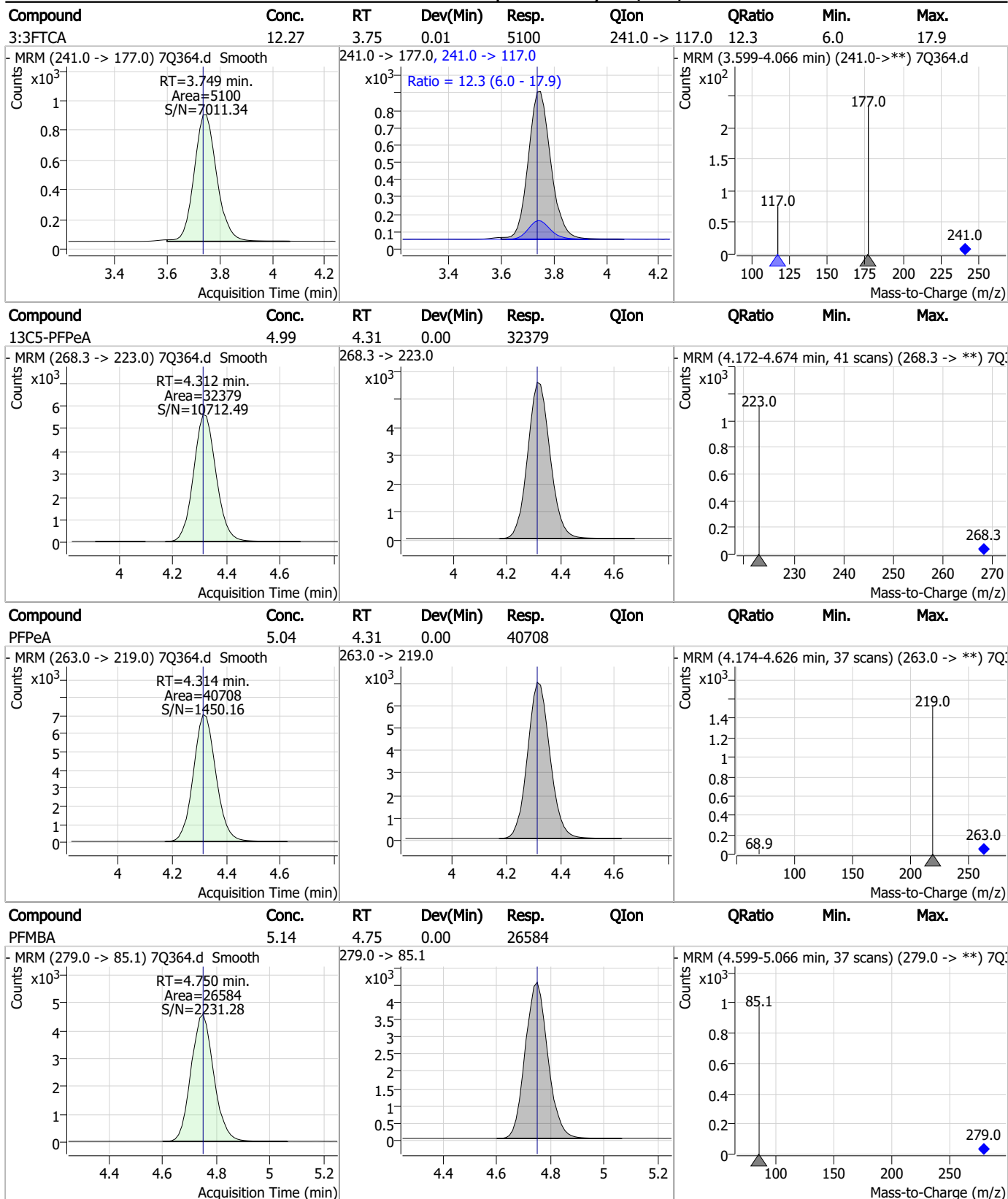
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Perfluorinated Compounds by LC/MS/MS



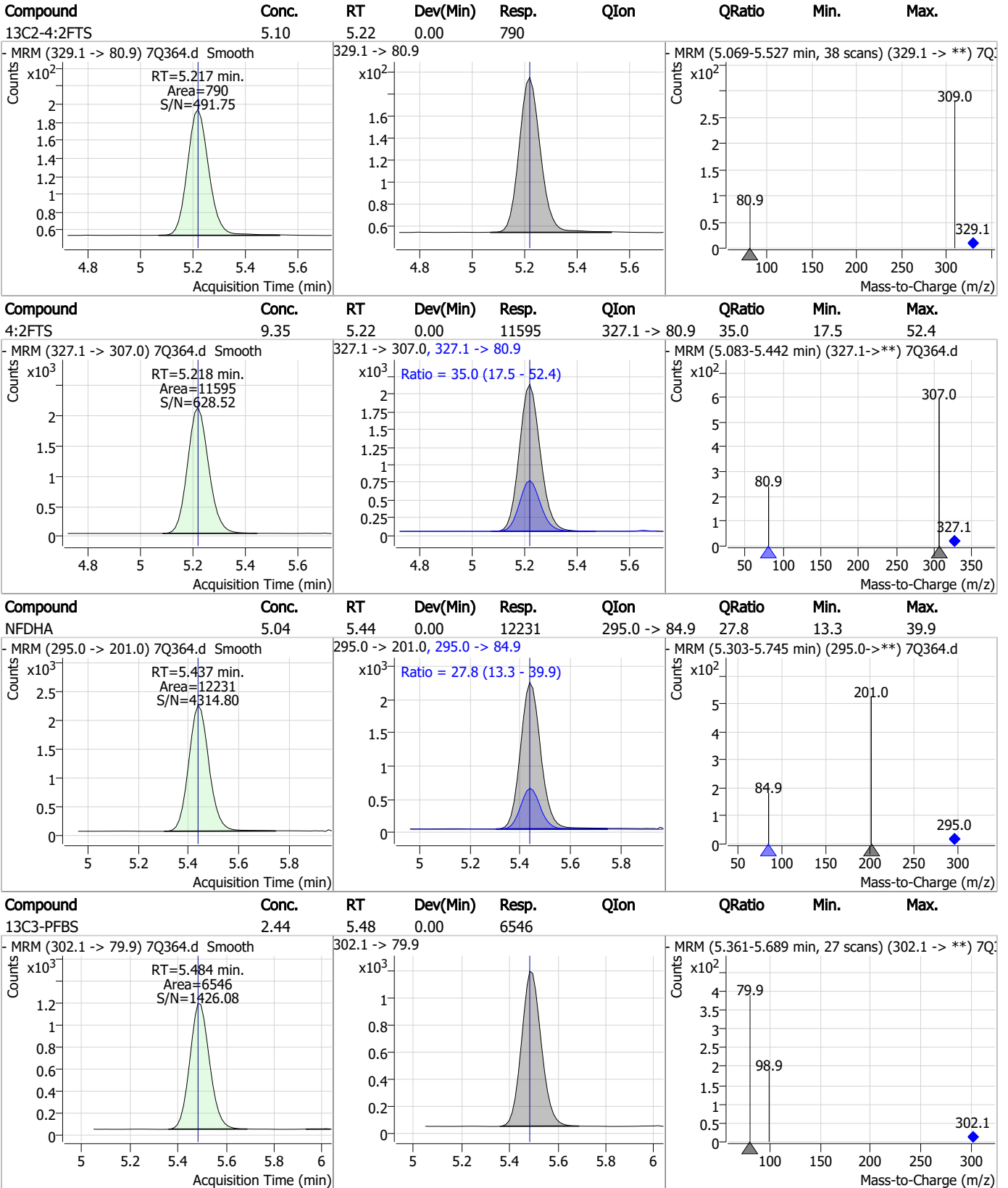
Perfluorinated Compounds by LC/MS/MS



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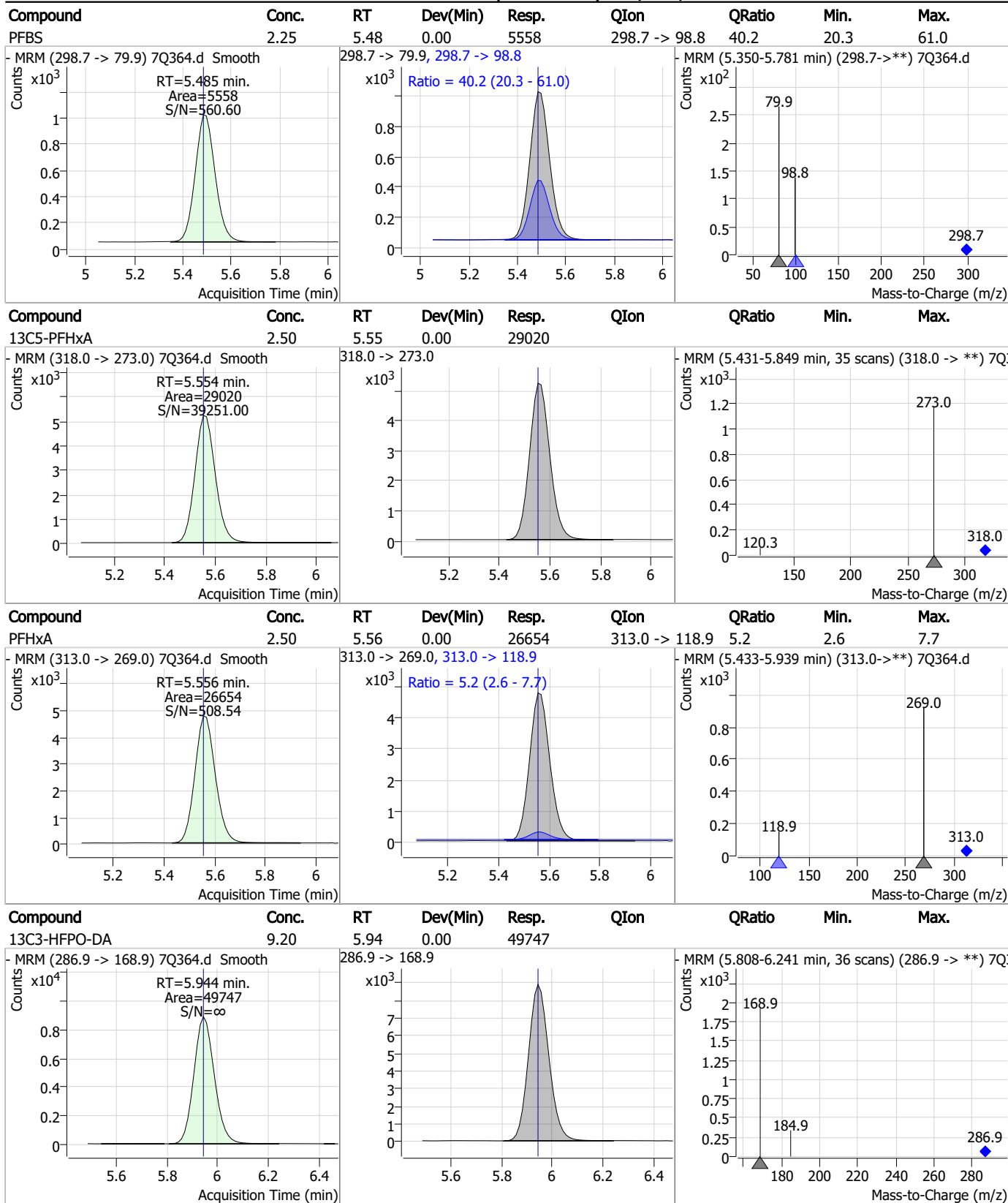
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Perfluorinated Compounds by LC/MS/MS



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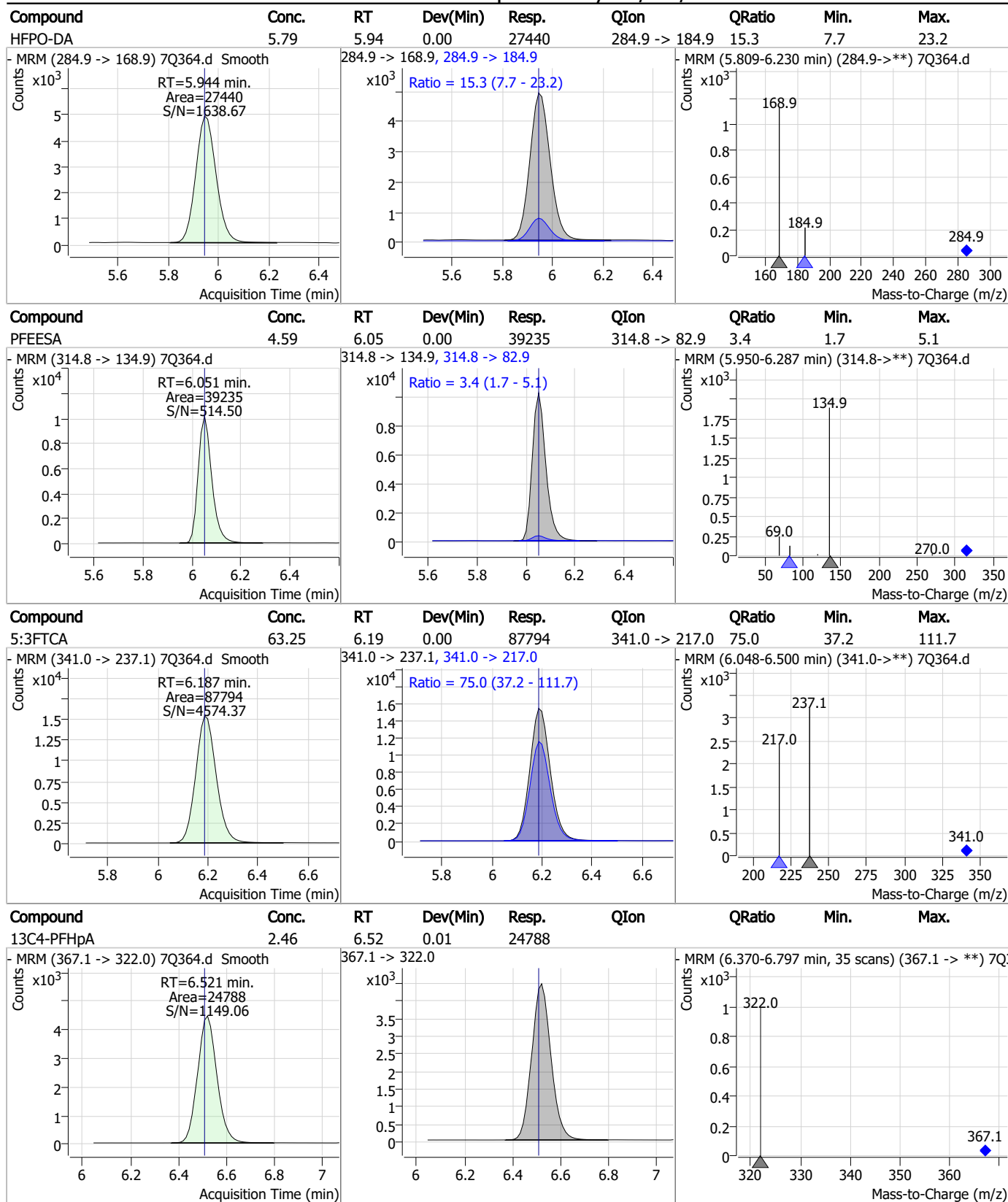
Perfluorinated Compounds by LC/MS/MS



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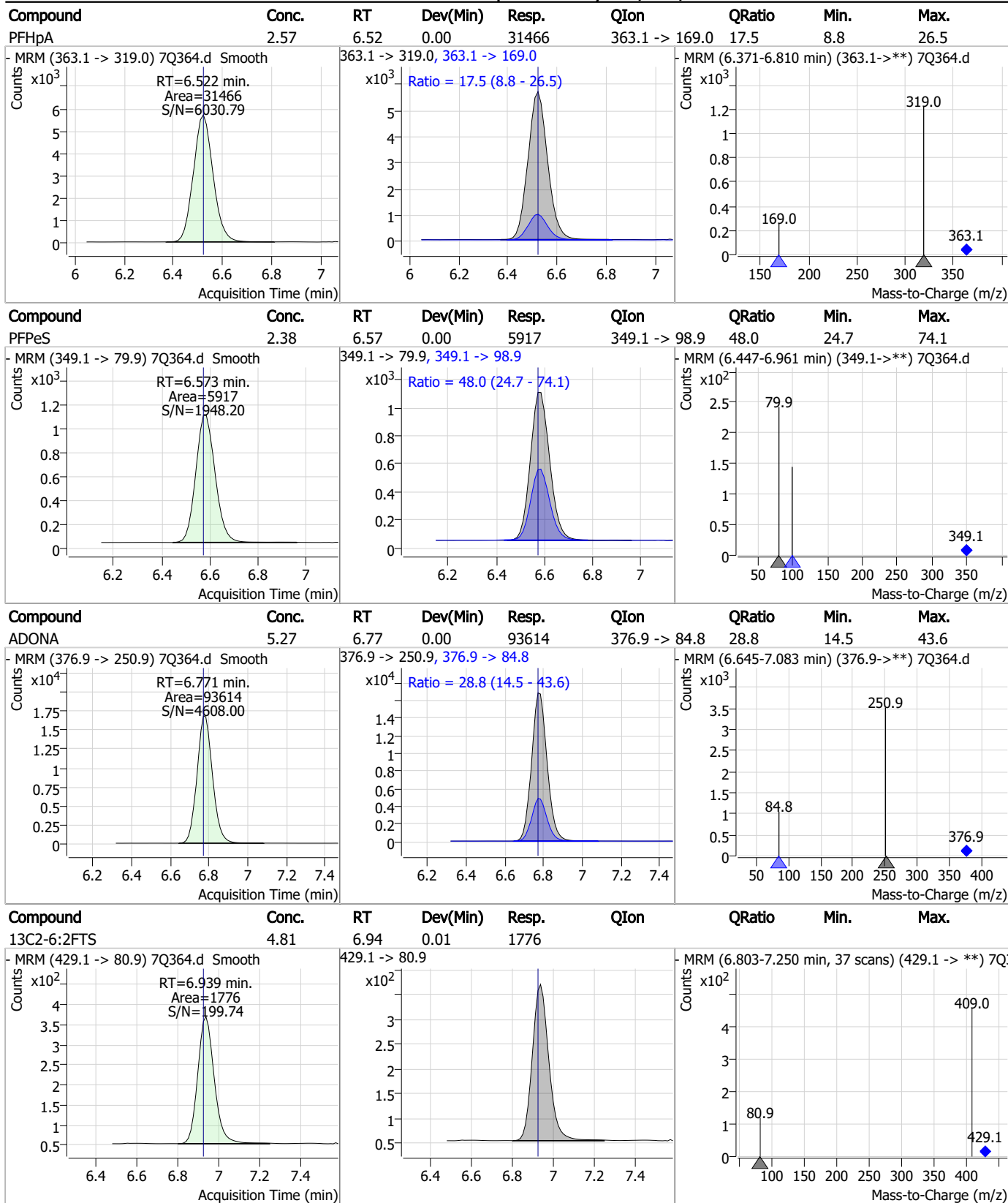
Perfluorinated Compounds by LC/MS/MS



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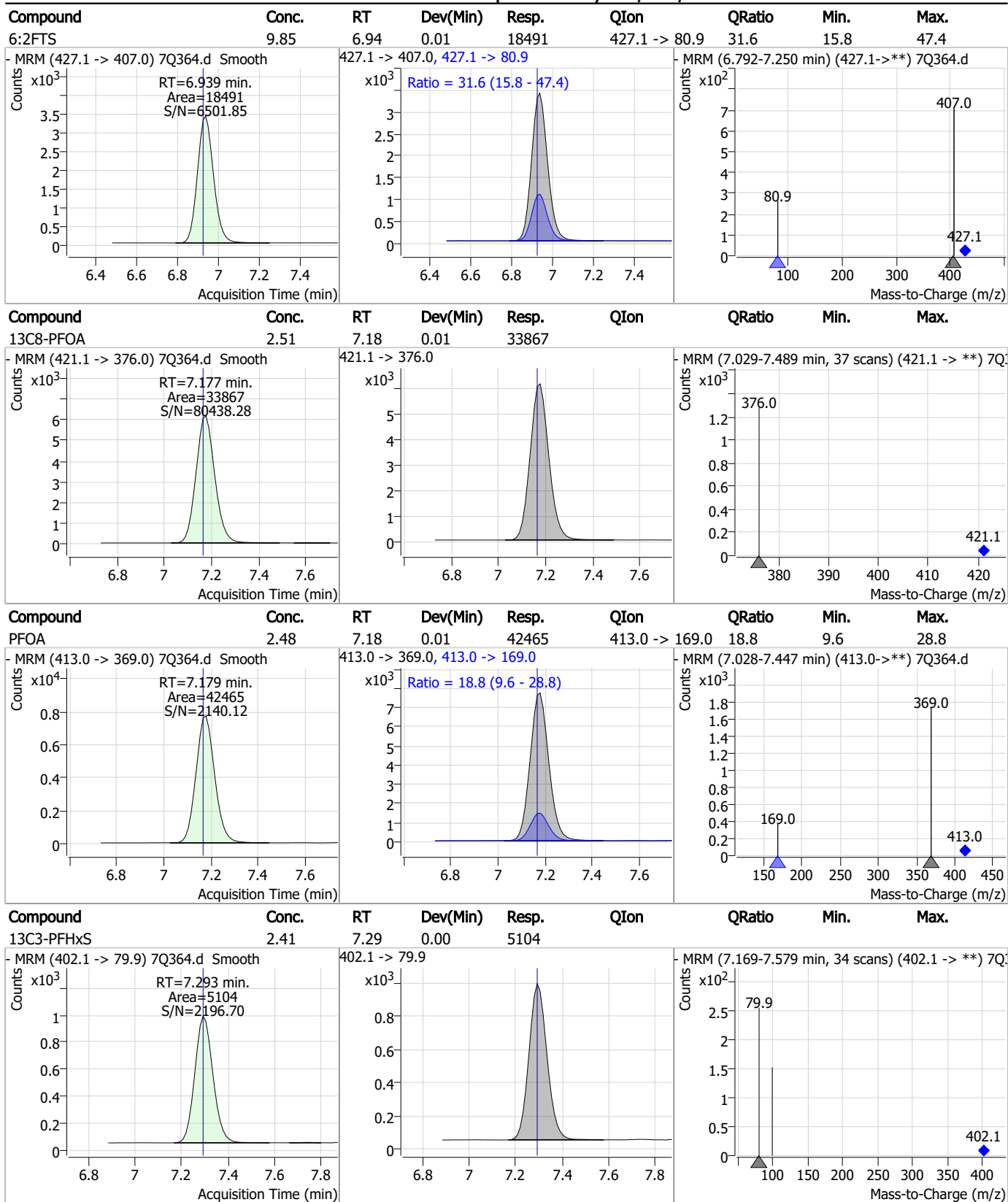


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

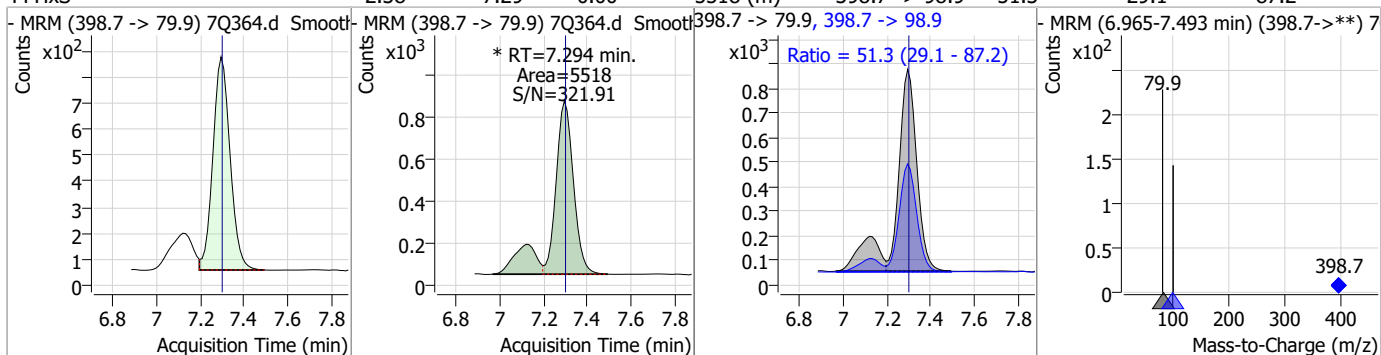


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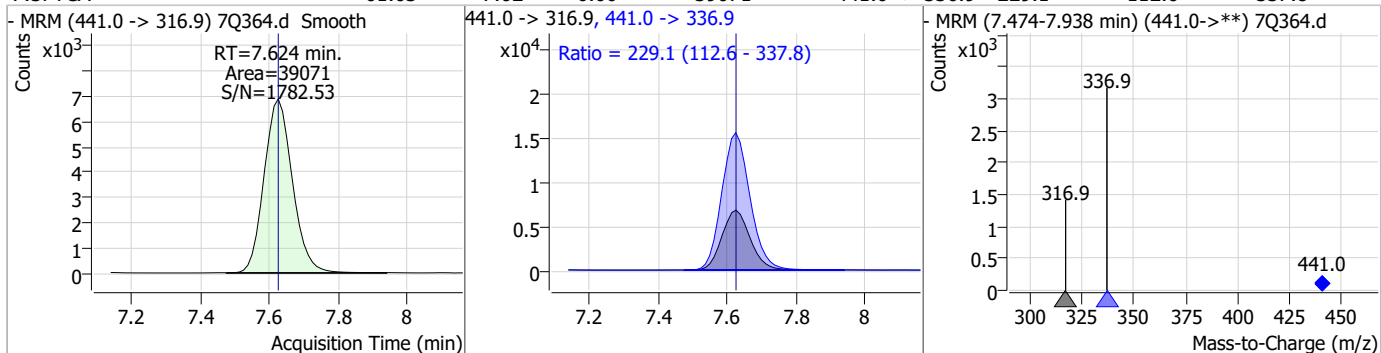
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Perfluorinated Compounds by LC/MS/MS

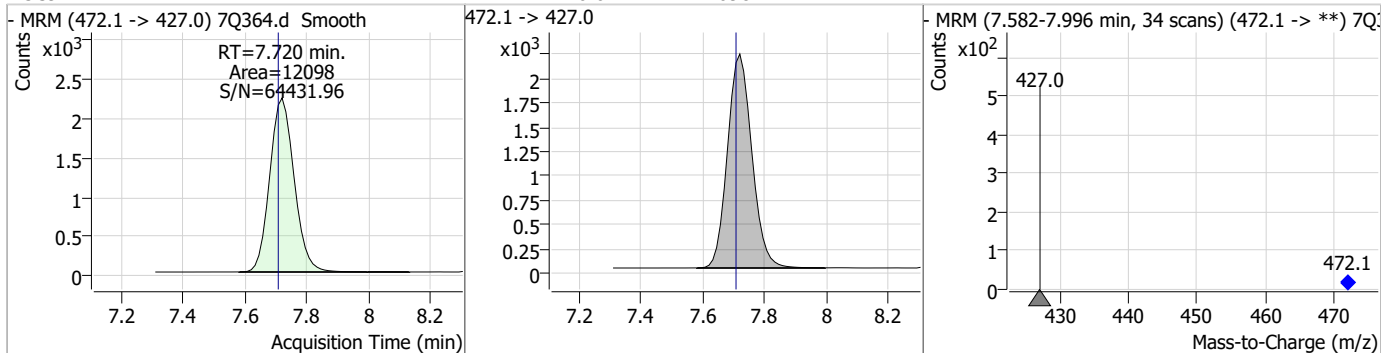
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.38	7.29	0.00	5518 (m)	398.7 -> 98.9	51.3	29.1	87.2



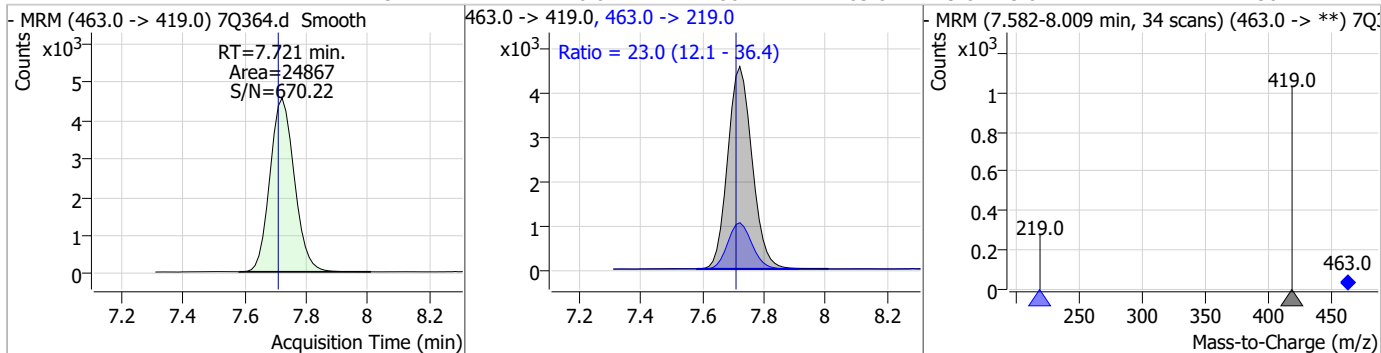
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	61.63	7.62	0.00	39071	441.0 -> 336.9	229.1	112.6	337.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.21	7.72	0.01	12098	472.1 -> 427.0			

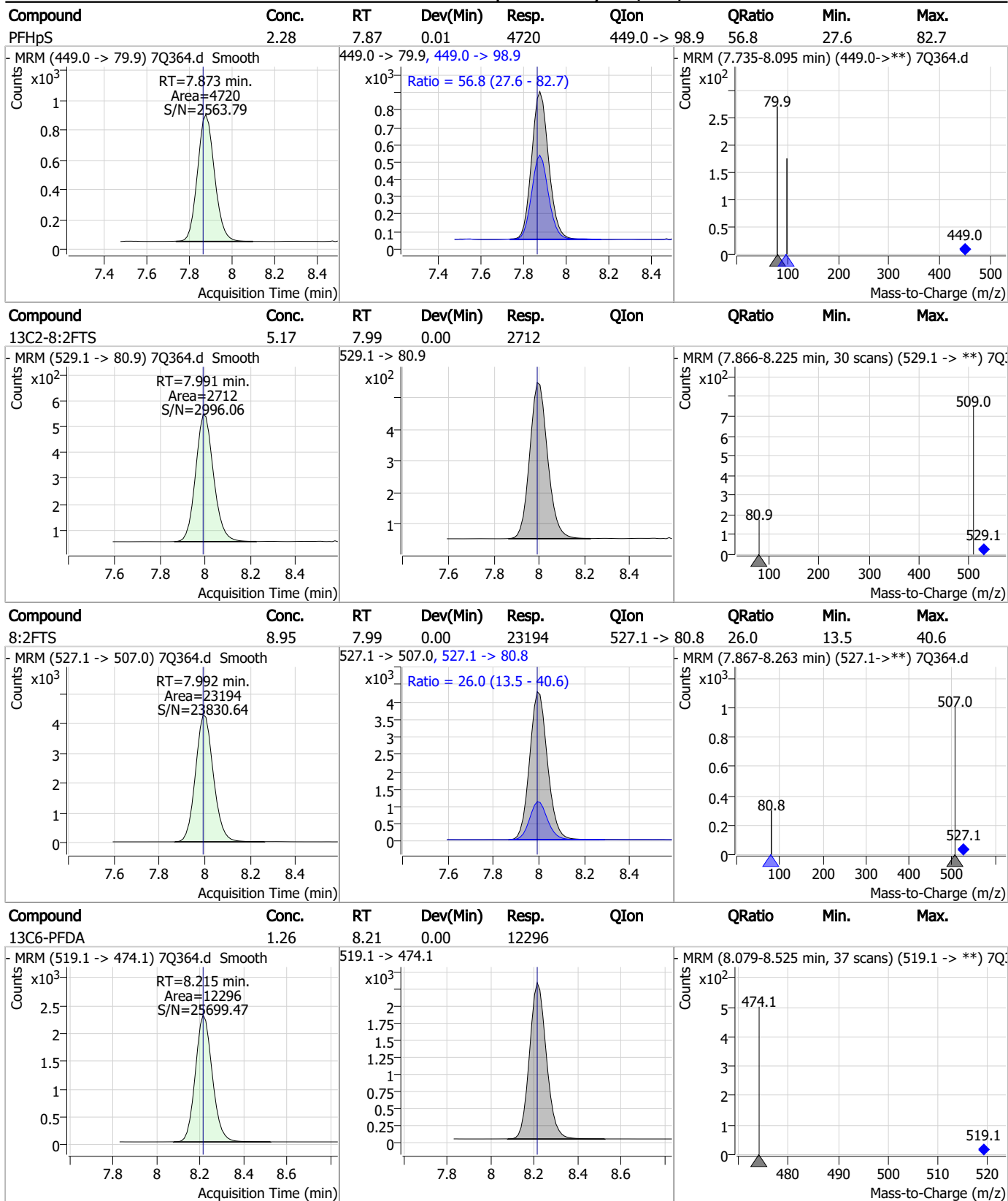


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.57	7.72	0.01	24867	463.0 -> 219.0	23.0	12.1	36.4



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Perfluorinated Compounds by LC/MS/MS

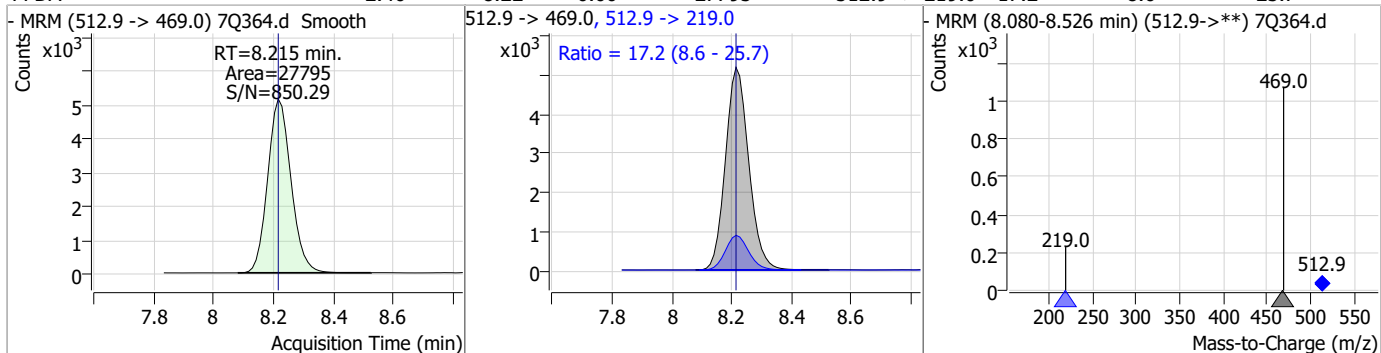


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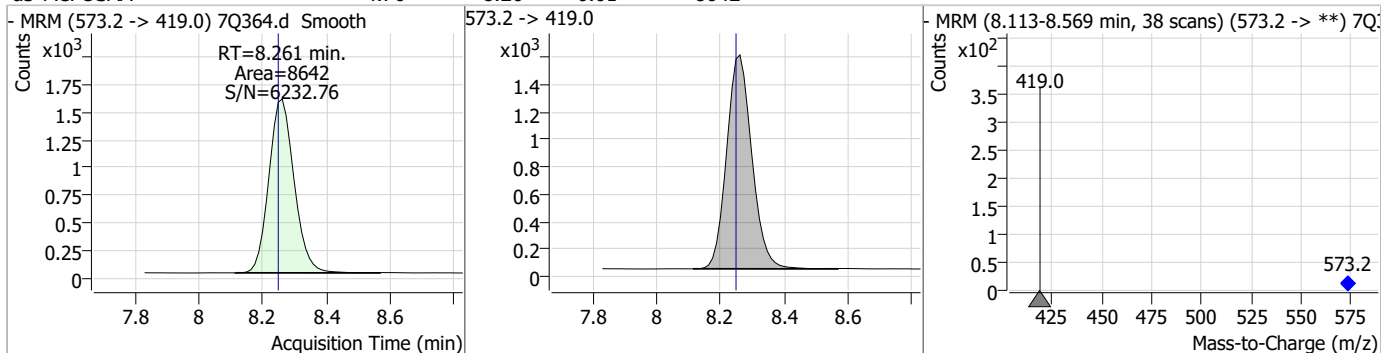
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Perfluorinated Compounds by LC/MS/MS

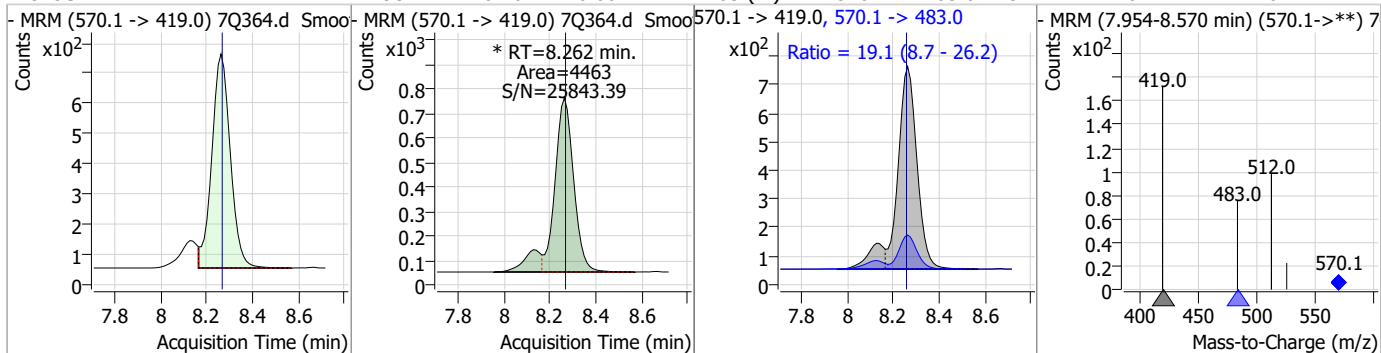
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.46	8.22	0.00	27795	512.9 -> 219.0	17.2	8.6	25.7



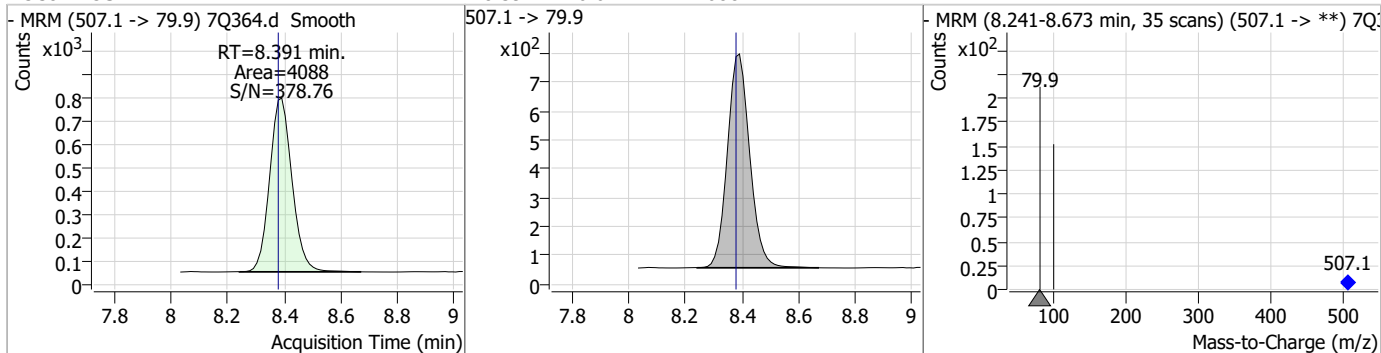
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.70	8.26	0.01	8642				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.93	8.26	0.00	4463 (m)	570.1 -> 483.0	19.1	8.7	26.2



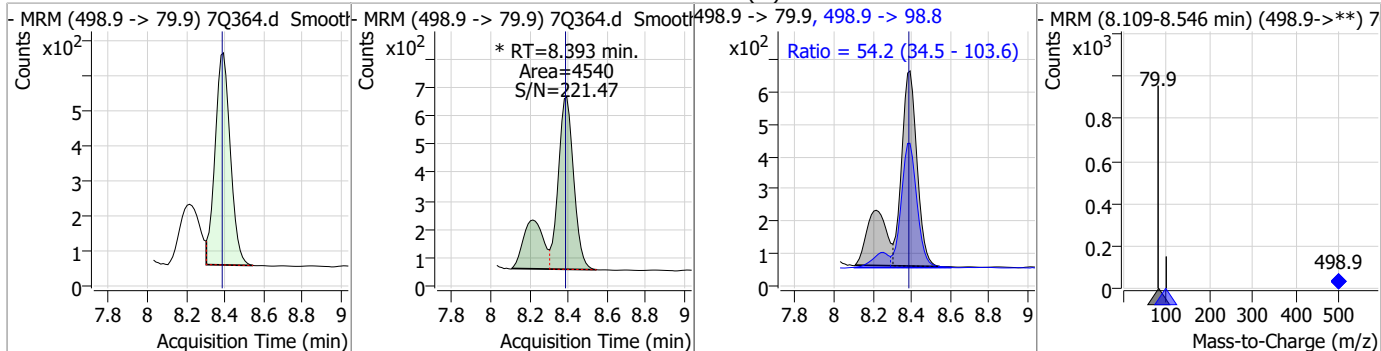
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.44	8.39	0.01	4088				



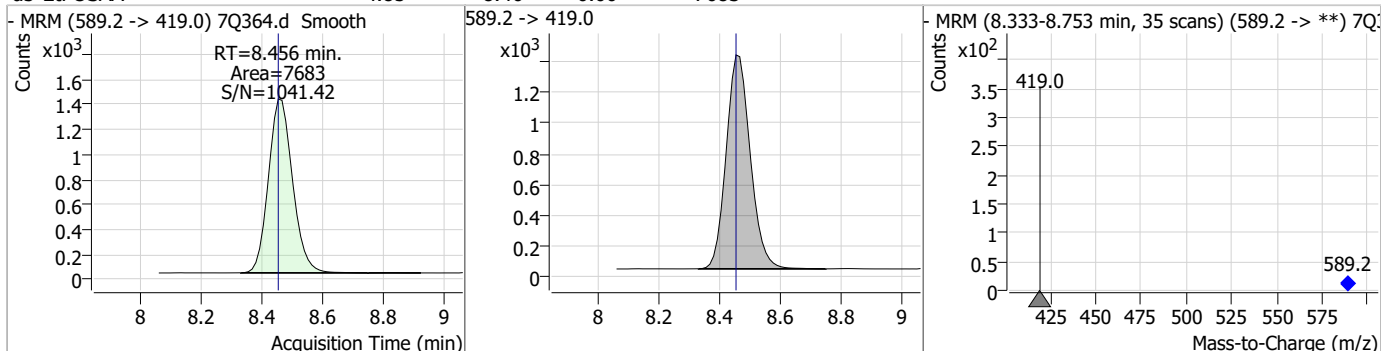
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Perfluorinated Compounds by LC/MS/MS

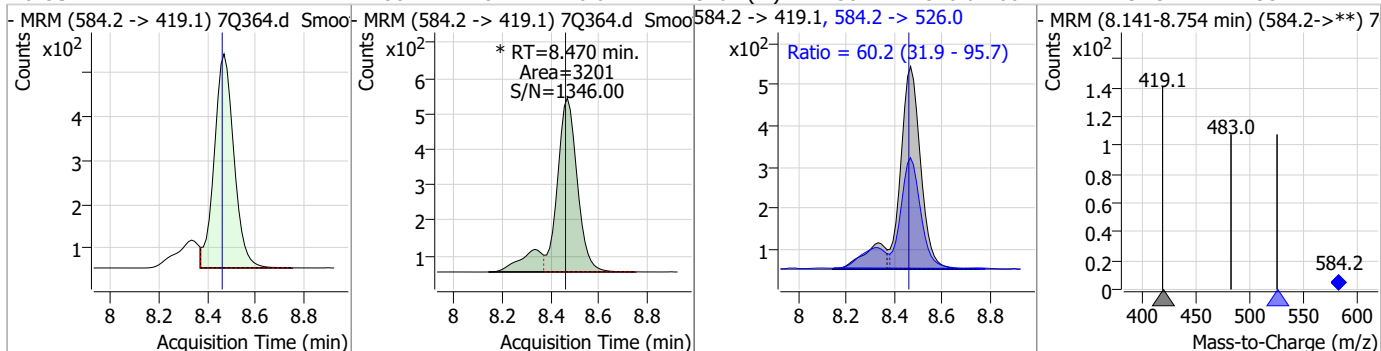
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.28	8.39	0.01	4540 (m)	498.9 -> 98.8	54.2	34.5	103.6



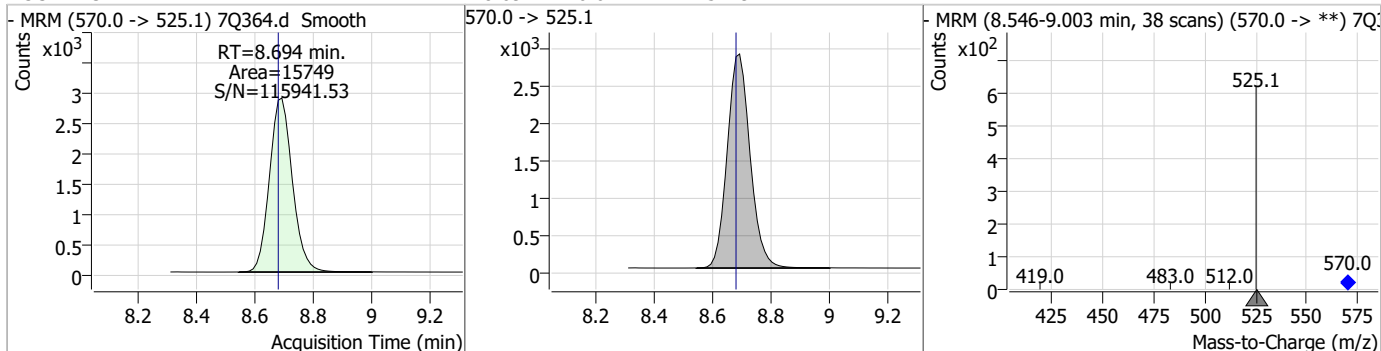
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.85	8.46	0.00	7683				



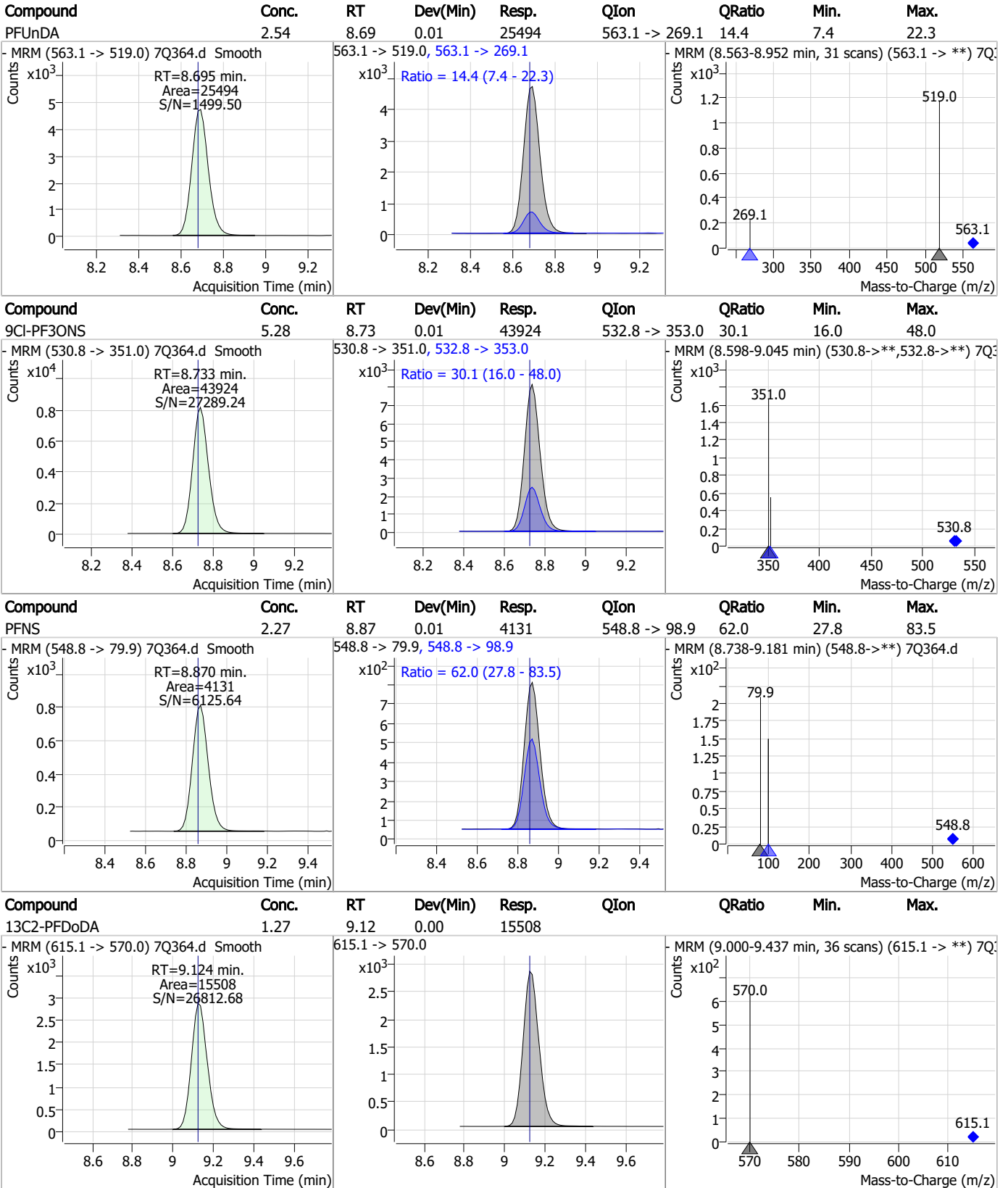
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.58	8.47	0.01	3201 (m)	584.2 -> 526.0	60.2	31.9	95.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.27	8.69	0.01	15749				

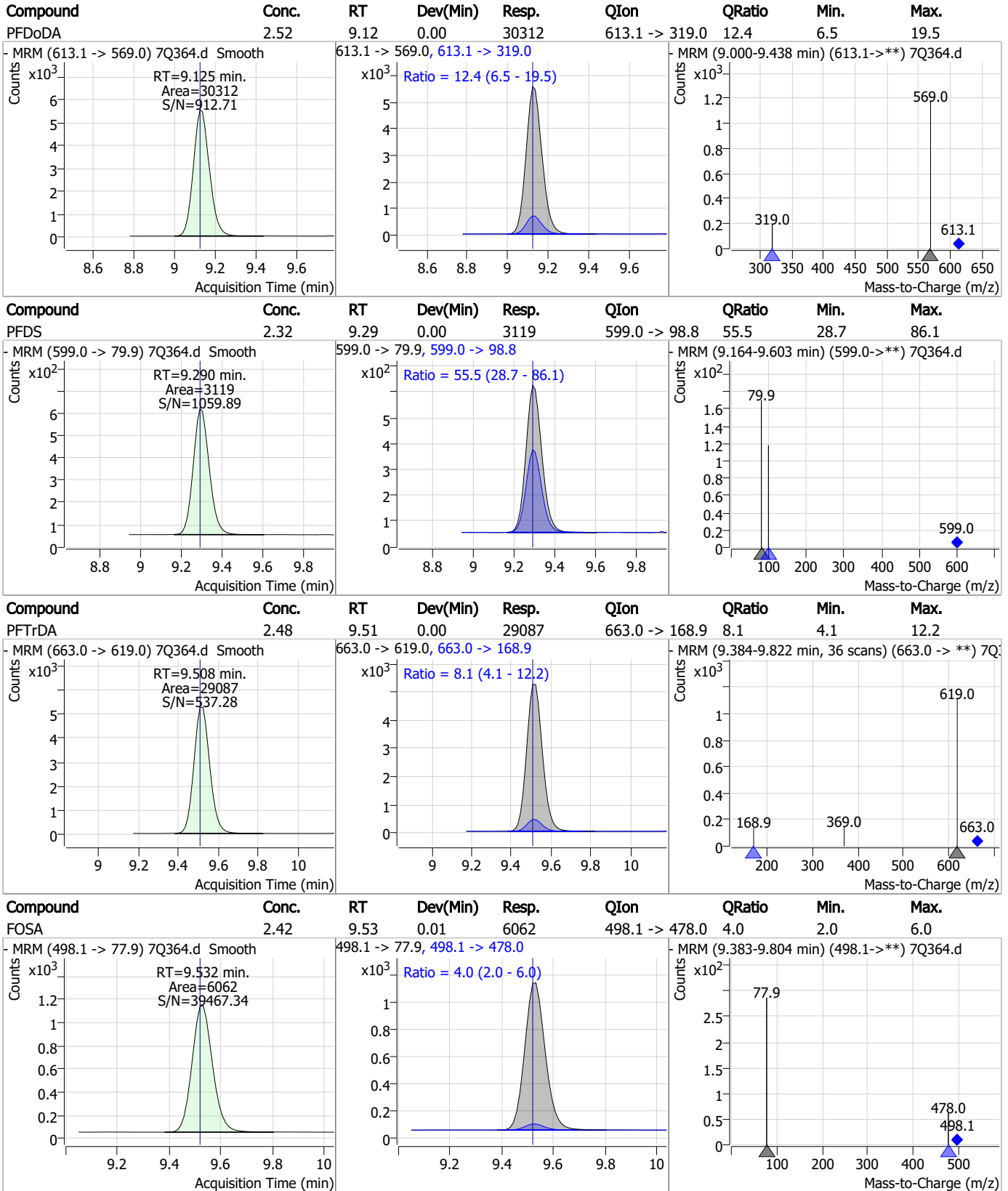


Perfluorinated Compounds by LC/MS/MS



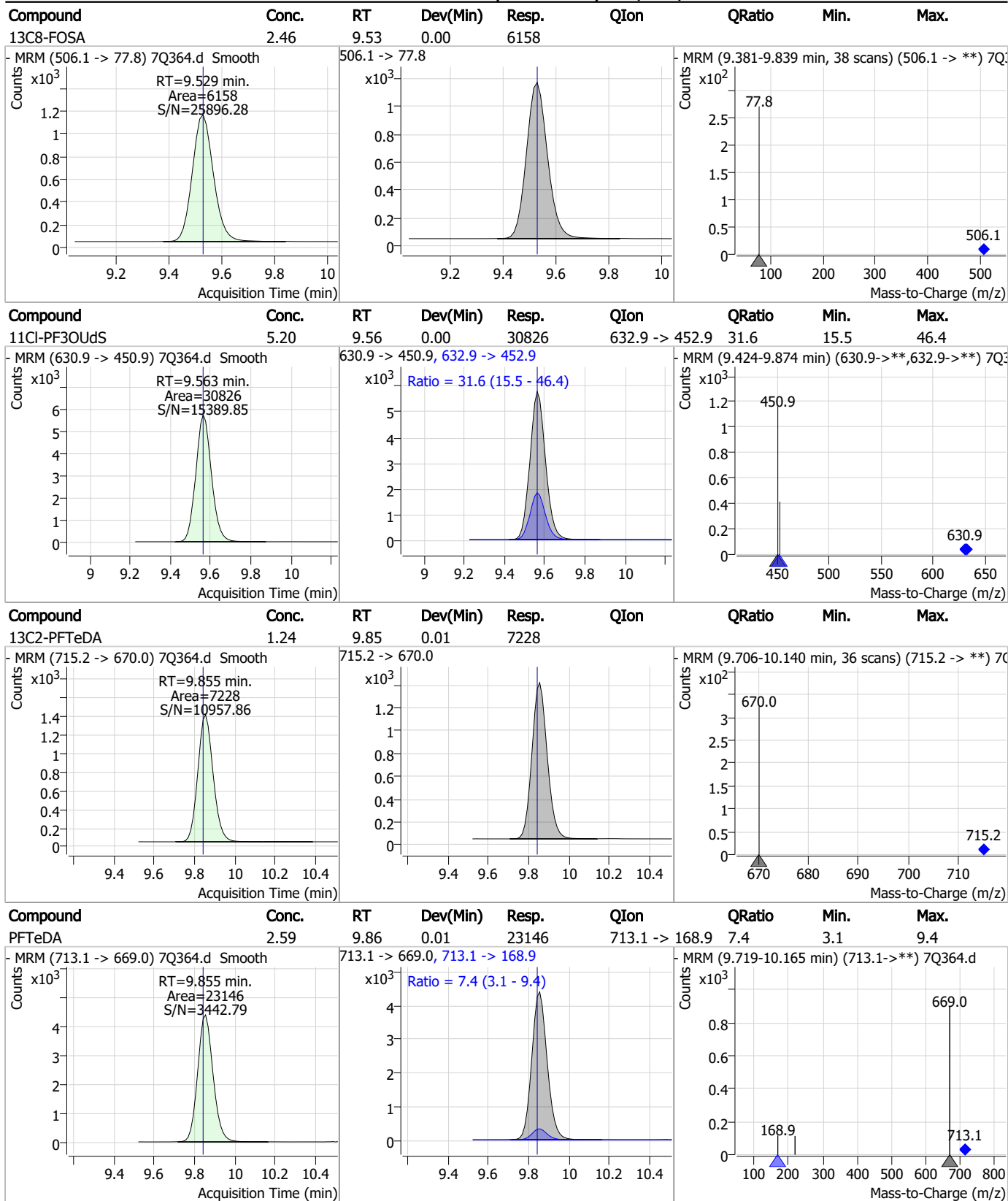
7.7.29 7

Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

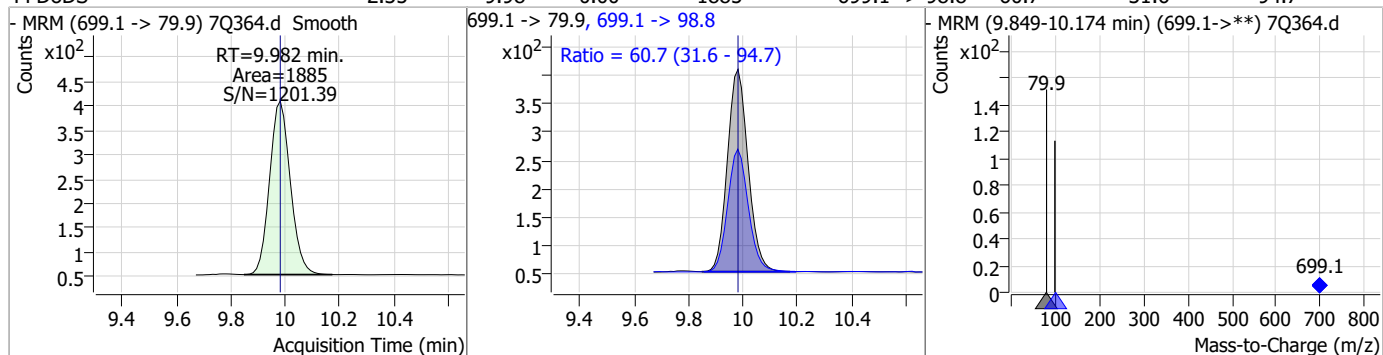


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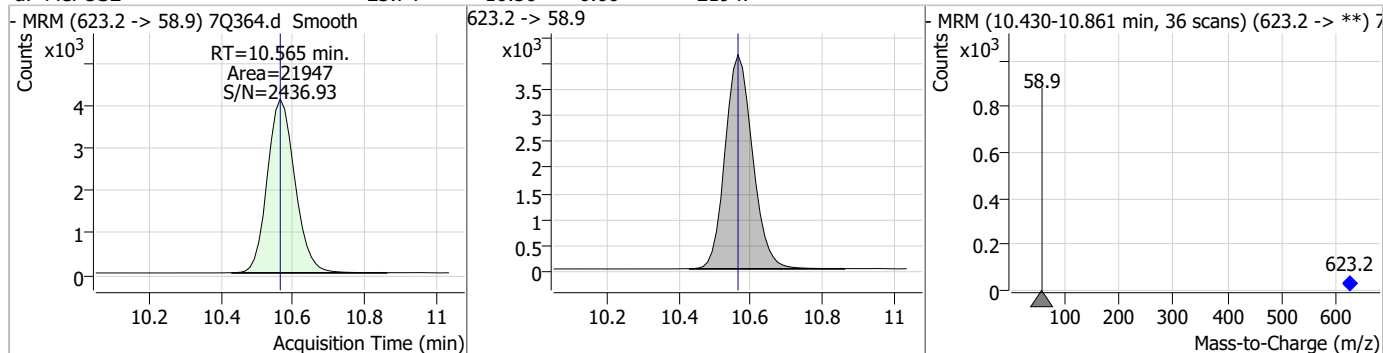
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Perfluorinated Compounds by LC/MS/MS

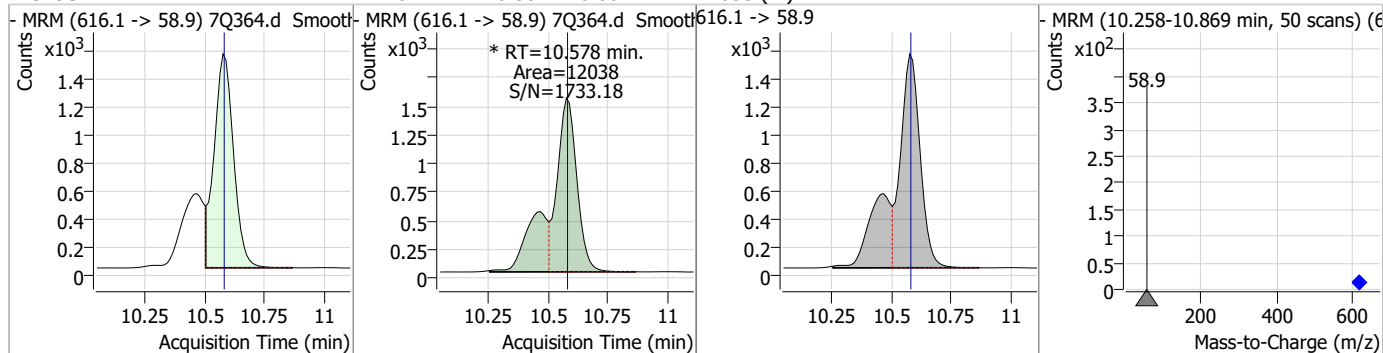
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.35	9.98	0.00	1885	699.1 -> 98.8	60.7	31.6	94.7



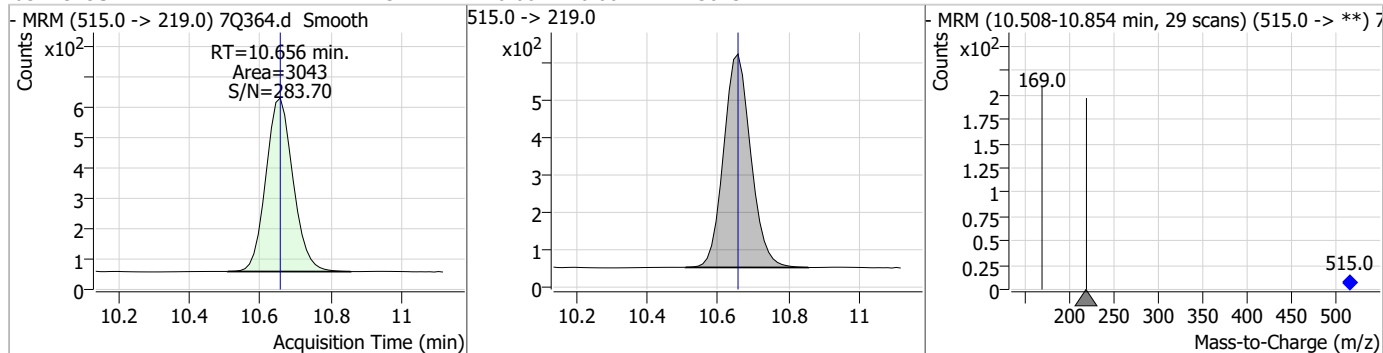
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.74	10.56	0.00	21947	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.81	10.58	0.00	12038	616.1 -> 58.9			



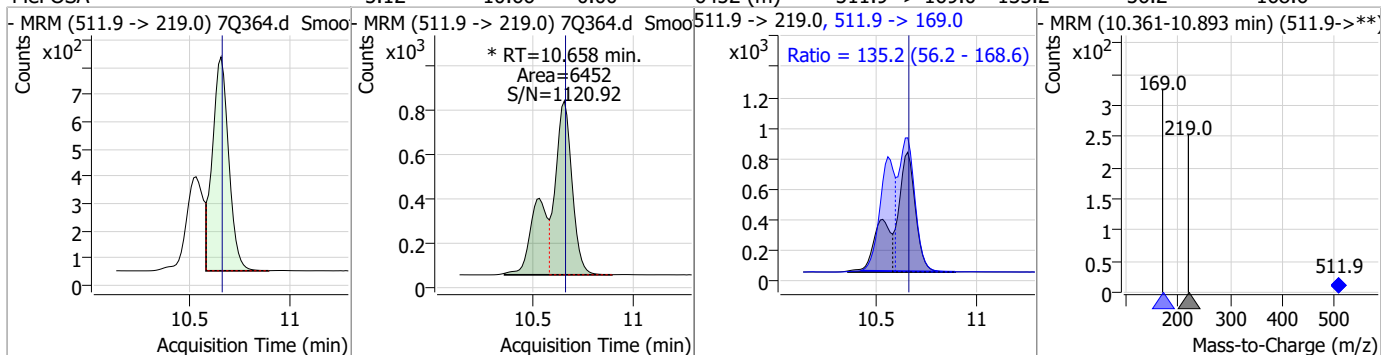
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.32	10.66	0.00	3043	515.0 -> 219.0			



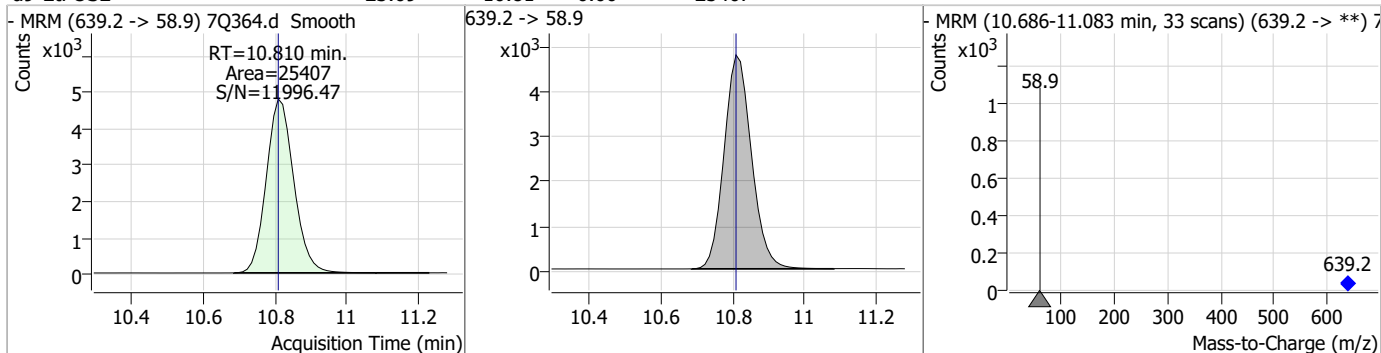
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Perfluorinated Compounds by LC/MS/MS

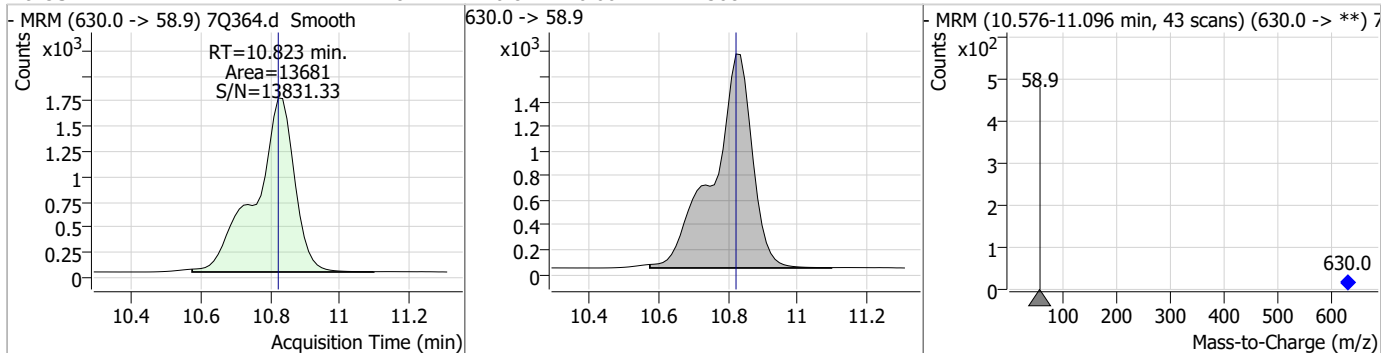
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.12	10.66	0.00	6452 (m)	511.9 -> 169.0	135.2	56.2	168.6



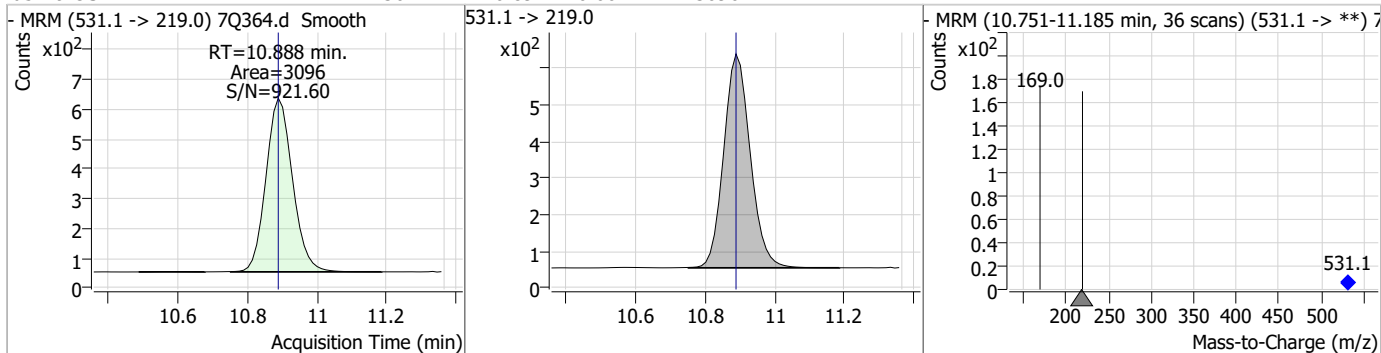
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.69	10.81	0.00	25407				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.81	10.82	0.00	13681				

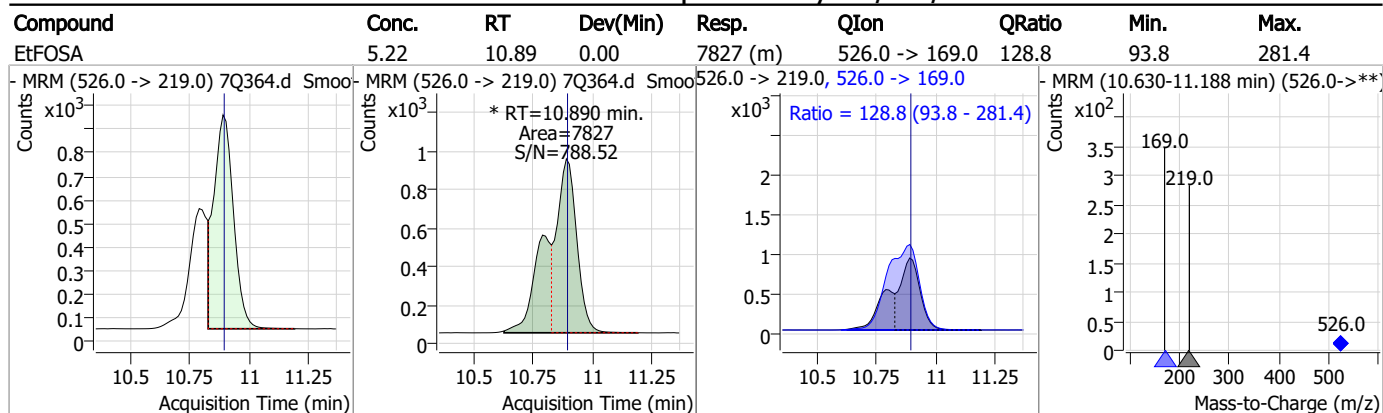


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.30	10.89	0.00	3096				



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S7Q11-CC11 Method: EPA DRAFT 1633
Lab FileID: 7Q364.D Analyst approved: 12/14/23 09:12 Natasha Gumtie
Injection Time: 12/13/23 20:43 Supervisor approved: 12/14/23 11:35 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.58	Split peak
MeFOSA	31506-32-8		10.66	Split peak
EtFOSA	4151-50-2		10.89	Split peak

7.7.29.1

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DATE:	12/08/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_120823_S4Q804
CAL DATE:	12/08/23
ANALYST:	AL
RUN BATCH:	S4Q804

ELUENT A LOT #:	233675 W5%ACN 226166 2mMAMAC. 11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2212G
ICV STD LOT #:	LCMS 2211
ISTD/D STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q54847.d	P1-B9	ccb	1633full_4Q.m	Sample		OP99999,S4Q804.500,,,5.0,1,water	nd
2	4Q54848.d	P1-B9	ccb	1633full_4Q.m	Sample		OP99999,S4Q804.500,,,5.0,1,water	nd
3	4Q54849.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP99999,S4Q804.500,,,5.0,1,water	pass
4	4Q54850.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP99999,S4Q804.500,,,5.0,1,water	pass
5	4Q54851.d	P1-A1	ic804-0	1633full_4Q.m	Sample		OP99999,S4Q804.500,,,5.0,1,water	check tune file
6	4Q54852.d	P1-A2	ic804-1	1633full_4Q.m	Calibration	1.6/500	OP99999,S4Q804.500,,,5.0,1,water	pass
7	4Q54853.d	P1-A3	ic804-2	1633full_4Q.m	Calibration	3.2/500	OP99999,S4Q804.500,,,5.0,1,water	pass
8	4Q54854.d	P1-A4	ic804-3	1633full_4Q.m	Calibration	10/500	OP99999,S4Q804.500,,,5.0,1,water	pass
9	4Q54855.d	P1-A5	icc804-4	1633full_4Q.m	Calibration	20/500	OP99999,S4Q804.500,,,5.0,1,water	pass
10	4Q54856.d	P1-A6	ic804-5	1633full_4Q.m	Calibration	40/500	OP99999,S4Q804.500,,,5.0,1,water	pass
11	4Q54857.d	P1-A7	ic804-6	1633full_4Q.m	Calibration	100/500	OP99999,S4Q804.500,,,5.0,1,water	pass
12	4Q54858.d	P1-A8	ic804-7	1633full_4Q.m	Calibration	200/500	OP99999,S4Q804.500,,,5.0,1,water	pass
13	4Q54859.d	P1-A9	ic804-8	1633full_4Q.m	Calibration	1x	OP99999,S4Q804.500,,,5.0,1,water	pass
14	4Q54860.d	P1-A1	iblk	1633full_4Q.m	Sample		OP99999,S4Q804.500,,,5.0,1,water	nd
15	4Q54861.d	P1-B3	icv804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q804.500,,,5.0,1,water	pass
16	4Q54862.d	P1-B4	icv804-20	1633full_4Q.m	QC	100/500	OP99999,S4Q804.500,,,5.0,1,water	pass
17	4Q54863.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q804.500,,,5.0,1,water	pass
18	4Q54864.d	P1-A2	cc804-1.0LL	1633full_4Q.m	QC	1.6/500	OP99999,S4Q804.500,,,5.0,1,water	pass
19	4Q54865.d	P2-A9	op471-bs	1633full_4Q.m	Sample		OP471,S4Q804.500,,,5.0,1,soil	✓
20	4Q54866.d	P2-B1	op471-llbs:3	1633full_4Q.m	Sample		OP471,S4Q804.500,,,5.0,1,soil	✓
21	4Q54867.d	P2-B2	op471-mb	1633full_4Q.m	Sample		OP471,S4Q804.500,,,5.0,1,soil	✓
22	4Q54868.d	P2-B3	fc11193-41	1633full_4Q.m	Sample		OP471,S4Q804.4.99,,,5.0,1,soil	✓
23	4Q54869.d	P2-B4	fc11193-42	1633full_4Q.m	Sample		OP471,S4Q804.5.00,,,5.0,1,soil	✓
24	4Q54870.d	P2-B5	fc11193-43	1633full_4Q.m	Sample		OP471,S4Q804.4.99,,,5.0,1,soil	✓
25	4Q54871.d	P2-B6	fc11193-44	1633full_4Q.m	Sample		OP471,S4Q804.5.02,,,5.0,1,soil	✓
26	4Q54872.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q804.500,,,5.0,1,water	pass
27	4Q54873.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99999,S4Q804.500,,,5.0,1,water	nd
28	4Q54874.d	P2-B7	op471-m-bs	1633full_4Q.m	Sample		OP471,S4Q804.5.00,,,5.0,1,soil	✓
29	4Q54875.d	P2-B8	op471-m-llbs:3	1633full_4Q.m	Sample		OP471,S4Q804.5.00,,,5.0,1,soil	✓
30	4Q54876.d	P2-B9	op471-m-mb	1633full_4Q.m	Sample		OP471,S4Q804.5.00,,,5.0,1,soil	✓
31	4Q54877.d	P2-C1	fc11193-41m	1633full_4Q.m	Sample		OP471,S4Q804.4.99,,,5.0,1,soil	✓
32	4Q54878.d	P2-C2	fc11193-42m	1633full_4Q.m	Sample		OP471,S4Q804.5.01,,,5.0,1,soil	✓
33	4Q54879.d	P2-C3	fc11193-43m	1633full_4Q.m	Sample		OP471,S4Q804.5.02,,,5.0,1,soil	✓
34	4Q54880.d	P2-C4	fc11193-44m	1633full_4Q.m	Sample		OP471,S4Q804.5.01,,,5.0,1,soil	✓
35	4Q54881.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q804.500,,,5.0,1,water	pass

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LCMS4-4Q ANALYSIS LOG

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36	4Q54882.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q804,500,,,5.0,1,water	nd
37	4Q54883.d	P2-C5	op495-bs	1633full_4Q.m	Sample	OP495,S4Q804,500,,,5.0,1,water	✓
38	4Q54884.d	P2-C6	op495-lbs:3	1633full_4Q.m	Sample	OP495,S4Q804,500,,,5.0,1,water	✓
39	4Q54885.d	P2-C7	op495-mb	1633full_4Q.m	Sample	OP495,S4Q804,500,,,5.0,1,water	✓
40	4Q54886.d	P2-C8	fc11689-1	1633full_4Q.m	Sample	OP495,S4Q804,550,,,5.0,1,water	✓
41	4Q54887.d	P2-C9	fc11715-1	1633full_4Q.m	Sample	OP495,S4Q804,550,,,5.0,1,water	✓
42	4Q54888.d	P2-D1	fc11715-2	1633full_4Q.m	Sample	OP495,S4Q804,520,,,5.0,1,water	✓
43	4Q54889.d	P2-D2	op495-ms	1633full_4Q.m	Sample	OP495,S4Q804,550,,,5.0,1,water	✓
44	4Q54890.d	P2-D3	fc11715-3	1633full_4Q.m	Sample	OP495,S4Q804,510,,,5.0,1,water	✓
45	4Q54891.d	P2-D4	op495-dup	1633full_4Q.m	Sample	OP495,S4Q804,530,,,5.0,1,water	✓
46	4Q54892.d	P2-D5	fc11715-4	1633full_4Q.m	Sample	OP495,S4Q804,560,,,5.0,1,water	✓
47	4Q54893.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	pass
48	4Q54894.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q804,500,,,5.0,1,water	nd
49	4Q54895.d	P2-D6	op496-bs	1633full_4Q.m	Sample	OP496,S4Q804,500,,,5.0,1,water	✓
50	4Q54896.d	P2-D7	op496-lbs:2	1633full_4Q.m	Sample	OP496,S4Q804,500,,,5.0,1,water	✓
51	4Q54897.d	P2-D8	op496-mb	1633full_4Q.m	Sample	OP496,S4Q804,500,,,5.0,1,water	✓
52	4Q54898.d	P2-D9	fc11610-1	1633full_4Q.m	Sample	OP496,S4Q804,540,,,5.0,1,water	✓
53	4Q54899.d	P2-E1	fc11610-2	1633full_4Q.m	Sample	OP496,S4Q804,540,,,5.0,1,water	✓
54	4Q54900.d	P2-E2	fc11610-3	1633full_4Q.m	Sample	OP496,S4Q804,520,,,5.0,1,water	rr 5x low eis
55	4Q54901.d	P2-E3	fc11610-4	1633full_4Q.m	Sample	OP496,S4Q804,520,,,5.0,1,water	rr 5x low eis
56	4Q54902.d	P2-E4	fc11707-11	1633full_4Q.m	Sample	OP496,S4Q804,60,,,5.0,1,water	✓
57	4Q54903.d	P2-E5	fc11673-1	1633full_4Q.m	Sample	OP496,S4Q804,500,,,5.0,1,water	✓
58	4Q54904.d	P2-E6	op496-ms	1633full_4Q.m	Sample	OP496,S4Q804,490,,,5.0,1,water	✓
59	4Q54905.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	pass
60	4Q54906.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q804,500,,,5.0,1,water	nd
61	4Q54907.d	P2-E7	fc11673-2	1633full_4Q.m	Sample	OP496,S4Q804,500,,,5.0,1,water	✓
62	4Q54908.d	P2-E8	op496-dup	1633full_4Q.m	Sample	OP496,S4Q804,480,,,5.0,1,water	✓
63	4Q54909.d	P2-E9	fc11673-3	1633full_4Q.m	Sample	OP496,S4Q804,520,,,5.0,1,water	✓
64	4Q54910.d	P2-F1	fc11673-4	1633full_4Q.m	Sample	OP496,S4Q804,500,,,5.0,1,water	✓
65	4Q54911.d	P2-F2	fc11673-5	1633full_4Q.m	Sample	OP496,S4Q804,500,,,5.0,1,water	✓
66	4Q54912.d	P2-F3	op519-bs	1633full_4Q.m	Sample	OP519,S4Q804,500,,,5.0,1,water	✓
67	4Q54913.d	P2-F4	op519-lbs:3	1633full_4Q.m	Sample	OP519,S4Q804,500,,,5.0,1,water	✓
68	4Q54914.d	P2-F5	op519-mb	1633full_4Q.m	Sample	OP519,S4Q804,500,,,5.0,1,water	✓
69	4Q54915.d	P2-F6	fc11645-1	1633full_4Q.m	Sample	OP519,S4Q804,495,,,5.0,1,water	✓
70	4Q54916.d	P2-F7	fc11645-2	1633full_4Q.m	Sample	OP519,S4Q804,495,,,5.0,1,water	✓
71	4Q54917.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	pass
72	4Q54918.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q804,500,,,5.0,1,water	nd
73	4Q54919.d	P2-F8	fc11645-3	1633full_4Q.m	Sample	OP519,S4Q804,495,,,5.0,1,water	✓
74	4Q54920.d	P2-F9	fc11645-4	1633full_4Q.m	Sample	OP519,S4Q804,495,,,5.0,1,water	✓
75	4Q54921.d	P3-A1	fc11645-5	1633full_4Q.m	Sample	OP519,S4Q804,520,,,5.0,1,water	✓
76	4Q54922.d	P3-A2	fc11645-6	1633full_4Q.m	Sample	OP519,S4Q804,510,,,5.0,1,water	✓
77	4Q54923.d	P3-A3	fc11645-7	1633full_4Q.m	Sample	OP519,S4Q804,500,,,5.0,1,water	✓
78	4Q54924.d	P3-A4	fc11645-8	1633full_4Q.m	Sample	OP519,S4Q804,500,,,5.0,1,water	✓

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79	4Q54925.d	P3-A5	fc11645-9	1633full_4Q.m	Sample	OP519,S4Q804,500,,,5.0,1,water	✓
80	4Q54926.d	P3-A6	fc11645-10	1633full_4Q.m	Sample	OP519,S4Q804,495,,,5.0,1,water	✓
81	4Q54927.d	P3-A7	fc11645-11	1633full_4Q.m	Sample	OP519,S4Q804,505,,,5.0,1,water	✓
82	4Q54928.d	P3-A8	fc11645-12	1633full_4Q.m	Sample	OP519,S4Q804,505,,,5.0,1,water	✓
83	4Q54929.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	pass
84	4Q54930.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q804,500,,,5.0,1,water	nd
85	4Q54931.d	P3-A9	op519-ms	1633full_4Q.m	Sample	OP519,S4Q804,490,,,5.0,1,water	✓
86	4Q54932.d	P3-B1	fc11645-13	1633full_4Q.m	Sample	OP519,S4Q804,505,,,5.0,1,water	✓
87	4Q54933.d	P3-B2	fc11645-14	1633full_4Q.m	Sample	OP519,S4Q804,510,,,5.0,1,water	✓
88	4Q54934.d	P3-B3	op519-dup	1633full_4Q.m	Sample	OP519,S4Q804,500,,,5.0,1,water	✓
89	4Q54935.d	P3-B4	fc11645-15	1633full_4Q.m	Sample	OP519,S4Q804,510,,,5.0,1,water	✓
90	4Q54936.d	P3-B5	fc11645-16	1633full_4Q.m	Sample	OP519,S4Q804,510,,,5.0,1,water	✓
91	4Q54937.d	P3-B6	fc11645-17	1633full_4Q.m	Sample	OP519,S4Q804,510,,,5.0,1,water	✓
92	4Q54938.d	P3-B7	fc11645-18	1633full_4Q.m	Sample	OP519,S4Q804,520,,,5.0,1,water	rr 2x e flag
93	4Q54939.d	P3-B8	fc11645-19	1633full_4Q.m	Sample	OP519,S4Q804,515,,,5.0,1,water	rr 1x co
94	4Q54940.d	P1-A5	ecc804-4	1633full_4Q.m	QC	20/500	pass
95	4Q54941.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q804,500,,,5.0,1,water	nd

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DATE:	12/10/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_120823_S4Q804
CAL DATE:	12/08/23
ANALYST:	AL
RUN BATCH:	S4Q805

ELUENT A LOT #:	233675 W53ACN 226166 2mMAMAC. 11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2212G
ICV STD LOT #:	LCMS 2211
ISTD/ID STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q54942.d	P1-B9	ccb	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	nd
2	4Q54943.d	P1-B9	ccb	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	nd
3	4Q54944.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	pass
4	4Q54945.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	pass
5	4Q54946.d	P1-A9	high std	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	pass
6	4Q54947.d	P1-A1	iblk	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	nd
7	4Q54948.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q805,500,,,5.0,1,water	pass
8	4Q54949.d	P1-A2	cc804-1.0LL	1633full_4Q.m	QC	1.6/500	OP99999,S4Q805,500,,,5.0,1,water	pass
9	4Q54950.d	P3-B9	fc11645-19	1633full_4Q.m	Sample		OP519,S4Q805,515,,,5.0,1,water	✓
10	4Q54951.d	P3-C1	fc11610-3	1633full_4Q.m	Sample	100/500	OP496,S4Q805,520,,,5.0,5,water	redo
11	4Q54952.d	P3-C2	fc11610-4	1633full_4Q.m	Sample	100/500	OP496,S4Q805,520,,,5.0,5,water	redo
12	4Q54953.d	P3-C3	fc11645-18	1633full_4Q.m	Sample	250/500	OP519,S4Q805,520,,,5.0,2,water	✓
13	4Q54954.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q805,500,,,5.0,1,water	pass
14	4Q54955.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	nd
15	4Q54956.d	P3-C4	op518-bs	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
16	4Q54957.d	P3-C5	op518-lbs.2	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
17	4Q54958.d	P3-C6	op518-mb	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
18	4Q54959.d	P3-C7	fc11482-2	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
19	4Q54960.d	P3-C8	fc11482-3	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
20	4Q54961.d	P3-C9	fc11482-8	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
21	4Q54962.d	P3-D1	fc11482-9	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
22	4Q54963.d	P3-D2	fc11482-10	1633full_4Q.m	Sample		OP518,S4Q805,60,,,5.0,1,water	✓
23	4Q54964.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q805,500,,,5.0,1,water	pass
24	4Q54965.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99999,S4Q805,500,,,5.0,1,water	nd
25	4Q54966.d	P3-D3	op523-bs	1633full_4Q.m	Sample		OP523,S4Q805,500,,,5.0,1,water	✓
26	4Q54967.d	P3-D4	op523-lbs:3	1633full_4Q.m	Sample		OP523,S4Q805,500,,,5.0,1,water	✓
27	4Q54968.d	P3-D5	op523-mb	1633full_4Q.m	Sample		OP523,S4Q805,500,,,5.0,1,water	✓
28	4Q54969.d	P3-D6	fc11645-20	1633full_4Q.m	Sample		OP523,S4Q805,550,,,5.0,1,water	✓
29	4Q54970.d	P3-D7	fc11645-21	1633full_4Q.m	Sample		OP523,S4Q805,530,,,5.0,1,water	✓
30	4Q54971.d	P3-D8	op523-ms	1633full_4Q.m	Sample		OP523,S4Q805,530,,,5.0,1,water	✓
31	4Q54972.d	P3-D9	fc11645-22	1633full_4Q.m	Sample		OP523,S4Q805,530,,,5.0,1,water	rr 5x e flag
32	4Q54973.d	P3-E1	op523-dup	1633full_4Q.m	Sample		OP523,S4Q805,550,,,5.0,1,water	rr 5x e flag
33	4Q54974.d	P3-E2	fc11645-23	1633full_4Q.m	Sample		OP523,S4Q805,550,,,5.0,1,water	rr 5x e flag
34	4Q54975.d	P3-E3	fc11645-24	1633full_4Q.m	Sample		OP523,S4Q805,550,,,5.0,1,water	rr 1x co
35	4Q54976.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	OP99999,S4Q805,500,,,5.0,1,water	pass

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36	4Q54977.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q805,500,,,5.0,1,water	nd
37	4Q54978.d	P3-E4	fc11645-25	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
38	4Q54979.d	P3-E5	fc11645-26	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
39	4Q54980.d	P3-E6	fc11645-27	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
40	4Q54981.d	P3-E7	fc11645-28	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
41	4Q54982.d	P3-E8	fc11645-29	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
42	4Q54983.d	P3-E9	fc11645-30	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
43	4Q54984.d	P3-F1	fc11645-31	1633full_4Q.m	Sample	OP523,S4Q805,530,,,5.0,1,water	✓
44	4Q54985.d	P3-F2	fc11645-32	1633full_4Q.m	Sample	OP523,S4Q805,540,,,5.0,1,water	✓
45	4Q54986.d	P3-F3	fc11645-33	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
46	4Q54987.d	P3-F4	fc11645-34	1633full_4Q.m	Sample	OP523,S4Q805,550,,,5.0,1,water	✓
47	4Q54988.d	P1-A5	cc804-4	1633full_4Q.m	QC	20/500	pass
48	4Q54989.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q805,500,,,5.0,1,water	nd
49	4Q54990.d	P3-F5	op524-bs	1633full_4Q.m	Sample	OP524,S4Q805,500,,,5.0,1,water	✓
50	4Q54991.d	P3-F6	op524-lbs:3	1633full_4Q.m	Sample	OP524,S4Q805,500,,,5.0,1,water	✓
51	4Q54992.d	P3-F7	op524-mb	1633full_4Q.m	Sample	OP524,S4Q805,500,,,5.0,1,water	✓
52	4Q54993.d	P3-F8	fc11753-1	1633full_4Q.m	Sample	OP524,S4Q805,570,,,5.0,1,water	✓
53	4Q54994.d	P3-F9	fc11753-2	1633full_4Q.m	Sample	OP524,S4Q805,560,,,5.0,1,water	✓
54	4Q54995.d	P4-A1	fc11753-3	1633full_4Q.m	Sample	OP524,S4Q805,560,,,5.0,1,water	rr 5x low eis
55	4Q54996.d	P4-A2	op524-ms	1633full_4Q.m	Sample	OP524,S4Q805,550,,,5.0,1,water	rr 5x low eis
56	4Q54997.d	P4-A3	fc11753-4	1633full_4Q.m	Sample	OP524,S4Q805,550,,,5.0,1,water	✓
57	4Q54998.d	P4-A4	fc11753-5	1633full_4Q.m	Sample	OP524,S4Q805,560,,,5.0,1,water	✓
58	4Q54999.d	P4-A5	op524-dup	1633full_4Q.m	Sample	OP524,S4Q805,530,,,5.0,1,water	✓
59	4Q55000.d	P1-A5	ecc804-4	1633full_4Q.m	QC	20/500	pass
60	4Q55001.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99999,S4Q805,500,,,5.0,1,water	nd

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SGS ORLANDO

DATE:	12/13/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	2.5 ul
INSTRUMENT:	LCMS7-7Q

LCMS7-7Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_121323_S7Q11A
CAL DATE:	12/13/23
ANALYST:	M. Valls NG
RUN BATCH:	S7Q11

ELUENT A LOT #:	ACN 234064
ELUENT B LOT #:	HPLC WATER: 23208, W5% Acetonitrile: 23464, 2ml AMAC: 1187
IC/CC STD LOT #:	LCMS 2223E
ICV STD LOT #:	LCMS 2223E/LCMS 2229A
ISTD/ID STD LOT #:	12180A/12150D

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	7Q335.d	P1-B9	ccb	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	ND
2	7Q336.d	P1-B9	ccb	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	ND
3	7Q337.d	P1-A1	ccb	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	ND
4	7Q338.d	P1-B3	RT TDCA	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	✓
5	7Q339.d	P1-B4	RT BR-LN	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	✓
6	7Q340.d	P1-A1	ict1-0	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	Tune File
7	7Q341.d	P1-A2	ict1-1	1633full.m	Calibration	1.6/500	op447,S7Q11,500,,,5.0,1,water	PASS
8	7Q342.d	P1-A3	ict1-2	1633full.m	Calibration	3.2/500	op447,S7Q11,500,,,5.0,1,water	PASS
9	7Q343.d	P1-A4	ict1-3	1633full.m	Calibration	10/500	op447,S7Q11,500,,,5.0,1,water	PASS
10	7Q344.d	P1-A5	icc11-4	1633full.m	Calibration	20/500	op447,S7Q11,500,,,5.0,1,water	PASS
11	7Q345.d	P1-A6	ict1-5	1633full.m	Calibration	40/500	op447,S7Q11,500,,,5.0,1,water	PASS
12	7Q346.d	P1-A7	ict1-6	1633full.m	Calibration	100/500	op447,S7Q11,500,,,5.0,1,water	PASS
13	7Q347.d	P1-A8	ict1-7	1633full.m	Calibration	200/500	op447,S7Q11,500,,,5.0,1,water	PASS
14	7Q348.d	P1-A9	ict1-8	1633full.m	Calibration	1x	op447,S7Q11,500,,,5.0,1,water	PASS
15	7Q349.d	P1-A1	IBLK	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	ND
16	7Q350.d	P1-B1	icv11-4	1633full.m	QC	20/500	op447,S7Q11,500,,,5.0,1,water	PASS
17	7Q351.d	P1-B2	icv11-20	1633full.m	QC	100/500	op447,S7Q11,500,,,5.0,1,water	PASS
18	7Q352.d	P1-A5	cc11-4	1633full.m	QC	20/500	op447,S7Q11,500,,,5.0,1,water	Pes high, this bracket of samples were flagged high and ND
19	7Q353.d	P1-A2	cc11-1,0LL	1633full.m	QC	1.6/500	op447,S7Q11,500,,,5.0,1,water	PASS
20	7Q354.d	P3-A1	OP576-BS	1633full.m	Sample		op576,S7Q11,60,,,5.0,1,water	✓
21	7Q355.d	P3-A2	OP576-LLBS:3	1633full.m	Sample		op576,S7Q11,60,,,5.0,1,water	✓
22	7Q356.d	P3-A3	OP576-MB	1633full.m	Sample		op576,S7Q11,60,,,5.0,1,water	✓
23	7Q357.d	P3-A4	FC11753-3	1633full.m	Sample		op576,S7Q11,60,,,5.0,1,water	✓
24	7Q358.d	P3-A5	OP611-BS	1633full.m	Sample		op611,S7Q11,500,,,5.0,1,water	In LIMS, did not analyst approve
25	7Q359.d	P3-A6	OP611-LLBS:3	1633full.m	Sample		op611,S7Q11,500,,,5.0,1,water	In LIMS, did not analyst approve
26	7Q360.d	P3-A7	OP611-MB	1633full.m	Sample		op611,S7Q11,500,,,5.0,1,water	In LIMS, did not analyst approve
27	7Q361.d	P3-A8	FC11742-1	1633full.m	Sample		op611,S7Q11,505,,,5.0,1,water	In LIMS, did not analyst approve
28	7Q362.d	P3-A9	FC11742-2	1633full.m	Sample		op611,S7Q11,515,,,5.0,1,water	In LIMS, did not analyst approve
29	7Q363.d	P3-B1	FC11742-3	1633full.m	Sample		op611,S7Q11,500,,,5.0,1,water	In LIMS, did not analyst approve
30	7Q364.d	P1-A5	cc11-4	1633full.m	QC	20/500	op447,S7Q11,500,,,5.0,1,water	In LIMS, did not analyst approve
31	7Q365.d	P1-A1	iccb	1633full.m	Sample		op447,S7Q11,500,,,5.0,1,water	PASS
								ND

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2211	Full List 40 Spike (Coal mix)	12006 / 12047A	PFOA-DOD (28 Comp)	Absolute	06/26/28	09/19/24	1.0 ppm	400 µL	4.0 mL	100 ppb	95% MeOH 5% H ₂ O	10/18/23	02/07/24	JR
LCMS 2210	↓	LCMS 2210	40 List Add-mob	-	-	02/08/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2156	↓	LCMS 2156	40 List Add-mob	-	-	02/07/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2193	↓	LCMS 2193	P056 Std.	-	-	03/25/24	5.0 ppm	↓	↓	500 ppb	↓	↓	↓	↓
LCMS 2198	1633 Cal old Spike	LCMS 2198	Br-LN Et-me	SGS LABO	4/1/24	4/4/24	2 ppm	250 µL	4 mL	125 312.5 ppb	1033 mix (2088 µL)	10/22/23	4/4/24	MJ
LCMS 12032	↓	12032	PFAC MXH	Wellington	4/19/28	10/15/24 10/22/24	1-H ppm	↓	↓	62.5 125 250 ppb	↓	↓	↓	↓
LCMS 12005	↓	12005	PFAC MXF	↓	3/24/26	10/15/24 10/22/24	2 ppm	↓	↓	125 ppb	↓	↓	↓	↓
LCMS 12034	↓	12034	PFAC MXG	↓	7/27/28	10/15/24 10/22/24	2 ppm	↓	↓	125 250 416 ppb	↓	↓	↓	↓
LCMS 12091	↓	12091	PFAC MXJ	↓	3/28/28	10/15/24 10/22/24	4-20 ppm	312 µL	↓	312 1160 ppb	↓	↓	↓	↓
LCMS 2208	PFAC MDL Spike	LCMS 2208	PFAC Spike	-	-	03/13/24	400 ppb	100 µL	1.0 mL	400 ppb	95% MeOH 5% H ₂ O	10/18/23	03/13/24	NG
LCMS 2214	6850 STD	11755	pachlorate	Absolute	07/16/24	07/16/24	100 ppm	50 µL	50 mL	100 ppb	HPCL H ₂ O 233 G75	10/24/23	04/24/24	AL
LCMS 2215	1633 Br-LN Me/EtFSA:metEtFSE	11777	br-N Me:FOSA	Wellington	8/23/27	10/14/24	50 ppm	200 µL	5 mL	2 ppm	1633 mix (3.600 µL)	10/25/23	4/4/24	MJ
LCMS 11798	↓	11798	br-N ETFOSA	↓	10/4/27	10/4/24	↓	↓	↓	2 ppm	↓	↓	↓	↓
LCMS 12070A	↓	12070A	br-N MeFOSE	↓	10/7/27	10/4/24	↓	500 µL	↓	5 ppm	↓	↓	↓	↓
LCMS 12071A	↓	12071A	br-N ETFOSE	↓	10/7/27	10/4/24	↓	↓	↓	5 ppm	↓	↓	↓	↓
						JR 10/30/23								

LCMS 2211
LCMS 2210
LCMS 2156
LCMS 2193
LCMS 2198

*JR
01/18/24

* based on date opened as specified in each SGS - Orlando SOP.

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2196	PFC 1D Std	12006	PFOA-DOB (250amp)	Absolute	04/26/28	09/19/24	1.0 ppm	400 mL	4.0 mL	100 ppb	95/AN07 5:14-0	09/28/23	12/13/24	JR
↓	↓	11432	N-Me FOSA-M	Wellington Labs	02/28/27	03/13/24	50 ppm	8 µL	↓	↓	↓	↓	↓	↓
↓	↓	11793	PBSA-1	↓	02/01/28	08/08/24	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	11792	PHSA-1	↓	12/01/27	08/08/24	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	11332	PECHS	↓	03/28/27	04/18/24	↓	↓	↓	↓	↓	↓	↓	↓
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LCMS 2197AD	1033 CAL std. (DPIKE)	LCMS 2191	Br-LN Et-ME	SGS LABO	NA	12/28/23	2ppm	250NL	4mL	125 312.5ppb	1033 MIX (2500NL)	10/1/23	12/28/23	MV
↓	↓	11908	PFAC	Wellington	4-19-28	9-24-24	1-4 ppm	250NL	↓	102.5 250ppb	↓	↓	↓	↓
↓	↓	11989	MXH	↓	3-24-26	10-01-24	2ppm	250NL	↓	125ppb	↓	↓	↓	↓
↓	↓	11990	PFAC MXF	↓	12/1/27	9/24/24	2ppm	250NL	↓	125ppb	↓	↓	↓	↓
↓	↓	11948B	PFAC	↓	12/1/27	10/1/24	2ppm	250NL	↓	125ppb	↓	↓	↓	↓
↓	↓	11970	MXG	↓	3/28/28	9/24/24	420 ppm	312NL	↓	312 1160ppb	↓	↓	↓	↓
↓	↓	12014A	PFAC	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	12016B	MXJ	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2198	1033BR-LN Me/Et/Isop/Me/Et/Isop	11797	Br-N MeFOA	Wellington	8/23/27	10/14/24	50ppm	200NL	5mL	2ppm	1033 mix (5000 ml)	10/14/23	4/4/24	NW
↓	↓	11798	Br-N EtFOA	↓	10/7/27	10/14/24	↓	200NL	↓	2ppm	↓	↓	↓	↓
↓	↓	12070A	Br-N MeFOE	↓	10/7/27	10/14/24	↓	500NL	↓	5ppm	↓	↓	↓	↓
↓	↓	12071A	Br-N EtFOE	↓	10/7/27	10/14/24	↓	500NL	↓	5ppm	↓	↓	↓	↓

* based on date opened as specified in each SGS - Orlando SOP.

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2210	40 List Std Add-on #1	11049	PFS	Wellington Labs	12/01/27	08/07/24	50 ppm	80 mL	4.0 mL	1.0 ppm	95% MeOH 5% H ₂ O	10/18/23	02/08/24	JR
		11461	L- PFDS		02/08/27 04/02/27	10/18/24								
		11710	N-Me FOSR-M		11/11/27	08/07/24								
		12122	N-Et FOSR-M		09/19/28	10/18/24								
		11481	PFHxDA		02/23/27	10/18/24								
		11462	PFODA		07/05/27	10/18/24								
		11116B	5:3FTCA FP-PA		02/05/27	02/08/24								
		11994	5:3FTCA MSPPPA		08/02/27	09/05/24								
		11116A	3:3FTCA FHP-PA		11/12/25	02/08/24								
		11794	PFECHS		03/14/28	08/07/24								
		11464	PFEESA		11/22/27	10/18/24								
		11465	PFMDA		08/02/27	08/07/24								
		11648	PFHPA		08/02/27	09/07/24								
		11467	PFHDA 5:3 OFHMA		04/08/27	10/18/24								
						JR								
						10/18/23								

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*JR 10/18/23 * based on date opened as specified in each SGS - Orlando SOP.

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2156	List 40 ADD ON #2	11513	FBSA-1	Wellington	11/10/26	4/18/24	50 ppm	800ul	4.0ml	1ppm	95% meth 5% H2O	8/7/23	2/7/24	MW
		11514	FHXSA1		12/29/26	4/18/24					(3760)			
		11140B	1-PFAS		7/12/26	5/19/24								
LCMS 2157	1033 RT BR-LN	11496	br-Fosa	Wellington	10/7/27	12/28/23	50 ppm	10NL 5µl	5ml	100ppb	1033 mix	8/7/23	12/28/23	MW
		11497	br-N meFosa		8/23/27			10NL			(4930)			
		11498	br-N ETFOA		10/7/27									
		11494	br-N meFose		10/7/27									
		11495	br-N ETFOSe		10/7/27									
		11502	T-PFOA		01/27/27									
		11527	IP PFNA		01/10/27									
LCMS 2158 AE	1033 Cul std. Spike	11930	Br-LN ET-me PFAC MXH	SGS LABO	N/A	12/28/23	2ppm 5ppm	250ul	4ml	125 312.5ppb	1033 mix 2088ul	8/7/23	12/28/23	MW
		11930	PFAC MXH	Wellington	4/19/28	7/31/24 8/7/24	1-4 ppm			62.5 125 250ppb				
		11921A	PFAC MX F		3/24/26	7-31-24 8-7-24	2ppm			125ppb				
		11907	PFAC MX G		12/11/27	7-31-24 8-7-24	2ppm			125ppb				
		11933A	PFAC MX J		3-28-28	7-31-24 8-7-24	4-20 ppm	312NL		312 1160ppb				

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Organic Standards Preparation Log

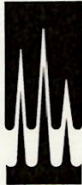
SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A-1	1033 Cal std. (spike)	LCMS 2191	PFAC ^{ant} BE-IN PFAC	Sgs Labs	n/a	12/28/23	2ppm 5ppm	250uL	4mL	125 312.5ppb	1633 1633 1633	9/24/23	12/28/23 12/28/23 12/28/23	MW
		11940	PFAC	Washington	4-19-28	9/24/23	1-4 ppm	250uL		62.5 125 250ppb				
		11947B	PFAC		3-24-26	9/15/24	2ppm	250uL		125ppb				
		11964	MXF		12-1-27	9/24/24	2ppm	250uL		125ppb				
		11948A	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312 1100 ppb				
		11948B	MXG		05/19/27	09/25/24	50ppm	200 uL	2.0 mL	5ppb	95/Meth 5/H ₂ O	09/25/23	03/25/24	JR
LCMS 2193	FOSE Std	11409	N-ET-FOSE	Wollington Labs	05/19/27	09/25/24	↓	↓	↓	↓				↓
		11410	N-Me-FOSE		05/19/27	09/25/24	↓	↓	↓	↓				↓
LCMS 2194	Full List 40 Spike (cal std)	11904/ 12006	PFAC- DOP (25comp)	Absolute	03/19/28	09/11/24	1.0 ppm	400 uL	4.0 mL	100ppb	95/Meth 5/H ₂ O	09/25/23	10/18/23	JR
		LCMS 2179	40 List Add-m#1	Sgs Std	-	10/18/23	↓	↓	↓	↓				↓
		LCMS 2156	40 List Add-m#2		-	02/07/24	↓	↓	↓	↓				↓
		LCMS 2195	FOSE Std.		-	03/25/24	5.0 ppm	↓	↓	500ppb				↓
LCMS 2195	PFC Spike	12006	PFAC- DOP (25comp)	Absolute	06/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400ppb	95/Meth 5/H ₂ O	07/28/23	03/19/24	JR
		11432	N-Me FOSA-M	Wollington Labs	02/28/27	03/19/24	50ppm	40 uL						
		11793	FOSA-1		04/01/28	08/08/24	↓	↓	↓	↓				↓
		11712	FH-SA-1		12/01/27	08/08/24	↓	↓	↓	↓				↓
		11332	PFCMS		03/28/27	04/18/24	↓	↓	↓	↓				↓

* based on date opened as specified in each SGS - Orlando SOP.

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1116 A/B NW

1116B on the back NW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

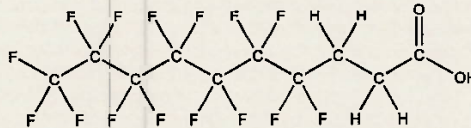
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

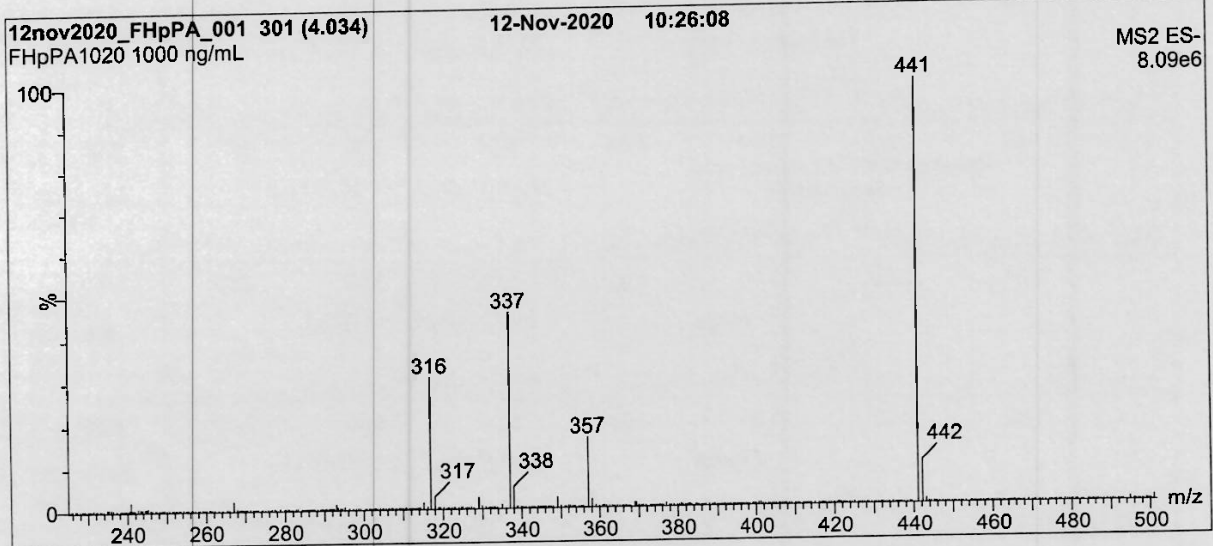
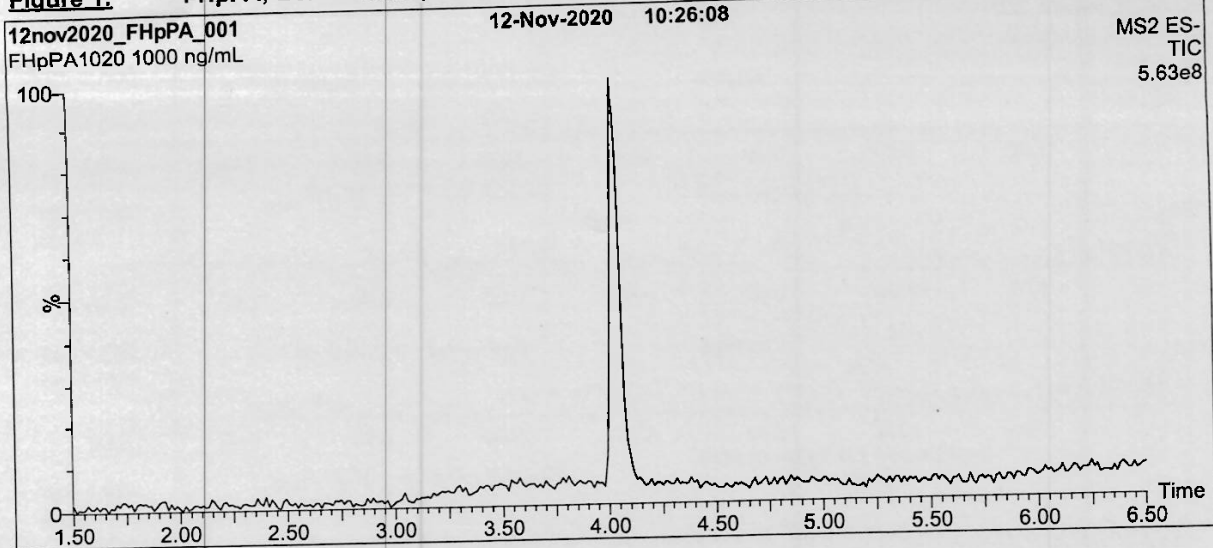
Date: 11/27/2020

(mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

FHpPA1020 (1 of 4)
rev0

Figure 1: FHpPA; LC/MS Data (TIC and Mass Spectrum)**Conditions for Figure 1:**

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 28.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

FPPrPA(3:3FTCA) 1116 B



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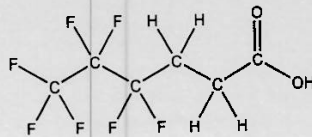
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPPrPA0122

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: C₆H₅F₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/03/2022
EXPIRY DATE: (mm/dd/yyyy) 02/03/2027
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

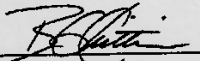
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid (C₆H₃F₇O₂) as an impurity determined by ¹⁹F NMR.

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Certified By: 
B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

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PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

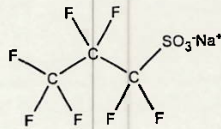
COMPOUND:

Sodium perfluoro-1-propanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₃F₇SO₃Na

MOLECULAR WEIGHT:

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)

46.0 ± 2.3 µg/mL (PFPrS acid)

45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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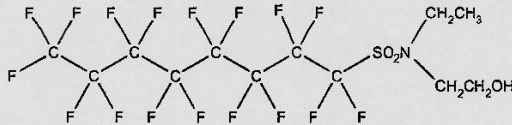
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CERTIFICATE OF ANALYSIS DOCUMENTATION

n, 09/27/2

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0622M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 1691-99-2



11409

MOLECULAR FORMULA: C₁₂H₁₆F₁₇NO₃S **MOLECULAR WEIGHT:** 571.25
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By:  **Date:** 07/13/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

NEtFOSE0622M (1 of 5)
rev0

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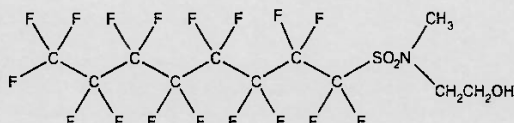
CERTIFICATE OF ANALYSIS DOCUMENTATION

12 = 9/2/22

7.9.1
7

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0522M
COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 24448-09-7



11410

MOLECULAR FORMULA: C₁₁H₈F₁₇NO₃S **MOLECULAR WEIGHT:** 557.22
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
 05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: *B.G. Chittim* **Date:** 06/14/2022
 B.G. Chittim, General Manager (mm/dd/yyyy)

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NMeFOSE0522M (1 of 5)
 rev0

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7

PRODUCT CODE:

L-PFDoS

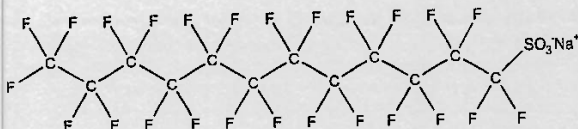
LOT NUMBER: LPFDoS0422

COMPOUND:

Sodium perfluoro-1-dodecanesulfonate

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA:

C₁₂F₂₅SO₃Na

MOLECULAR WEIGHT: 722.14

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

04/20/2022

EXPIRY DATE: (mm/dd/yyyy)

04/20/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 05/16/2022

(mm/dd/yyyy)

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PRODUCT CODE:

PFODA

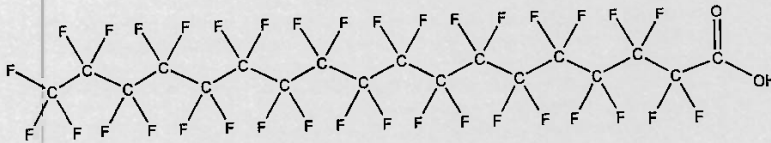
LOT NUMBER: PFODA0622

COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #: 16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT: 914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/05/2022

EXPIRY DATE: (mm/dd/yyyy)

07/05/2027

RECOMMENDED STORAGE:

Store ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

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Certified By:

B.G. Chittim, General Manager

Date: 07/05/2022
(mm/dd/yyyy)

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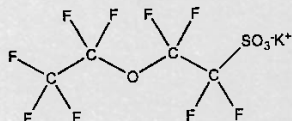
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFEESA

LOT NUMBER: PFEESA1121**COMPOUND:**

Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE:**CAS #:** 117205-07-9**MOLECULAR FORMULA:** $C_4F_9SO_4K$ **MOLECULAR WEIGHT:** 354.19**CONCENTRATION:**

50.0 ± 2.5 µg/mL (K salt)
44.6 ± 2.2 µg/mL (PFEESA acid)
44.5 ± 2.2 µg/mL (PFEESA anion)

SOLVENT(S): Methanol**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

11/22/2021

EXPIRY DATE: (mm/dd/yyyy)

11/22/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-octanoic acid (PFOA).

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Certified By:

B.G. Chittim, General Manager

Date: 11/29/2021
(mm/dd/yyyy)

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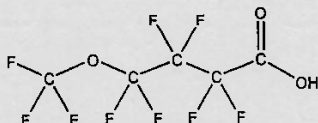
11465



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PRODUCT CODE: PF5OHxA **LOT NUMBER:** PF5OHxA0722
COMPOUND: Perfluoro-5-oxahexanoic acid
SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)
STRUCTURE: **CAS #:** 863090-89-5



MOLECULAR FORMULA: $C_6H_9F_9O_3$ **MOLECULAR WEIGHT:** 280.05
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

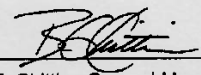
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: 
 B.G. Chittim, General Manager

Date: 08/26/2022
 (mm/dd/yyyy)

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11467



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

LOT NUMBER:

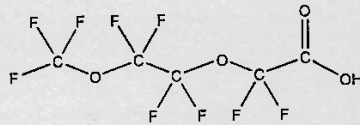
36OPFHpA0522

COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:**CAS #:**

151772-58-6

**MOLECULAR FORMULA:** $C_7HF_8O_4$ **MOLECULAR WEIGHT:**

296.04

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

06/08/2022

EXPIRY DATE: (mm/dd/yyyy)

06/08/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim, General Manager

Date: 06/27/2022

(mm/dd/yyyy)

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11481 rec'd 10/21/22

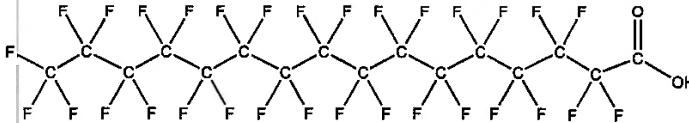


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0222
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆H₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/23/2022
EXPIRY DATE: (mm/dd/yyyy) 02/23/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:  **Date:** 03/08/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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Form#:27, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFHxDA0222 (1 of 4)
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1513 rec'd 11/14/22



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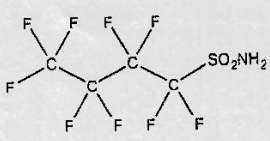
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FBSA-I
COMPOUND: Perfluoro-1-butanefulfonamide

LOT NUMBER: FBSA11211

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA: C₄H₂F₉NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/10/2021
EXPIRY DATE: (mm/dd/yyyy) 11/10/2026
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 299.11
SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 11/10/2021
(mm/dd/yyyy)

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Revision# 9, Revised 2020-12-23

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11514 rec'd 11/14/22

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-1

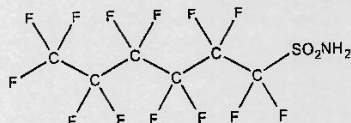
LOT NUMBER: FHxSA1221I

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022
(mm/dd/yyyy)

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FHxSA1221I (1 of 4)

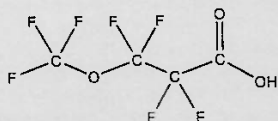
11648 Rec. 02/13/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF4OPeA **LOT NUMBER:** PF4OPeA0722
COMPOUND: Perfluoro-4-oxapentanoic acid
SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)
STRUCTURE: **CAS #:** 377-73-1



MOLECULAR FORMULA: C₄HF₇O₃ **MOLECULAR WEIGHT:** 230.04
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

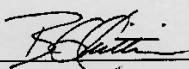
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager Date: 08/15/2022
(mm/dd/yyyy)

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11649 Rec. 02/13/23

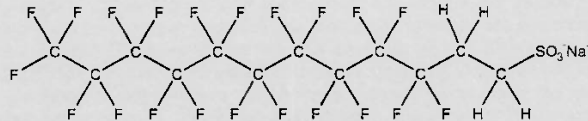


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
48.3 ± 2.4 µg/mL (10:2FTS acid)
48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Refrigerate ampoule

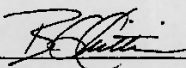
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:  Date: 12/09/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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Form# 27, Issued 2004-11-10
Revision# 9, Revised 2020-12-23

102FTS1122 (1 of 4)
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rec'd: 03/17/23



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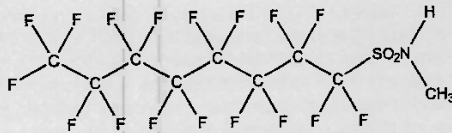
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-Methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA1122M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA: C₉H₄F₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/11/2022
EXPIRY DATE: (mm/dd/yyyy) 11/11/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager
Date: 11/25/2022
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

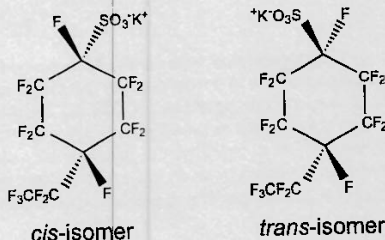
PFECHS

LOT NUMBER: PFECHS0223

COMPOUND:

Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:

C₉F₁₅SO₃K

MOLECULAR WEIGHT: 500.22

CONCENTRATION:

50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/14/2023

EXPIRY DATE: (mm/dd/yyyy)

03/14/2028

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*, by ¹⁹F NMR).

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Certified By:

B.G. Chittim, General Manager

Date: 03/16/2023
(mm/dd/yyyy)

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11797
rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

PRODUCT CODE: br-NMeFOSA
LOT NUMBER: brNMeFOSA0822
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 08/18/2022
LAST TESTED: (mm/dd/yyyy) 08/23/2022
EXPIRY DATE: (mm/dd/yyyy) 08/23/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

brNMeFOSA0822 (1 of 6)
rev1

117a8
rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

**N-Ethylperfluorooctanesulfonamide
Isomeric Mix**

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (SIR)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

brNEtFOSA0922 (1 of 6)
rev1

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11994
rec'd: 08/13/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA (5:3)

LOT NUMBER:

FPePA0722

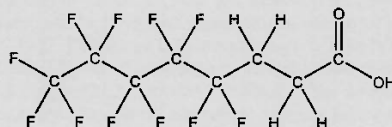
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

$C_8H_5F_{11}O_2$

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2022

EXPIRY DATE: (mm/dd/yyyy)

08/02/2027

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <0.5% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by ¹H NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 08/10/2022

(mm/dd/yyyy)

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Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number: 64029
Lot Number: 040729
Description: PFOA-DOD 26 components
Expiration Date: 9/30/24
Recommended Storage: (D)
Nominal Concentration (g/mL): 100.0
NIST Test Date: 04/07/23

Substrate(s): Methanol (1 mL KOH) 2-Propanol
Lot: 040729 (95%) 35500 (5%)
Formulated By: Prakash Chavhan
Reviewed By: Adela Garcia
Date: 06/26/23
Date: 06/26/23

Volume(s) shown below were combined and diluted to (mL):
Note: All assigned values are mean concentrations.

Component	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (1σ)	Final Conc. (g/mL)	Initial Conc. (g/mL)	Final Uncertainty (1σ)	Solvent Safety Info. On Attached Ppt	OSHA PEL (TWA)	LOD
1. Perfluoro-n-butanoic acid (PFBA)	95542	110452	0.02	2.00	0.017	50.1	1.00	0.02	375-92-4	N/A	N/A
2. Perfluoro-pentanoic acid (PFPA)	95543	011723	0.02	2.00	0.017	50.3	1.00	0.02	3782-95-3	N/A	N/A
3. Perfluoro-hexanoic acid (PFHxA)	91199	071023	0.02	2.00	0.017	50.2	1.00	0.02	3073-44-4	N/A	N/A
4. Perfluoro-heptanoic acid (PFHpA)	91197	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745-64-3	N/A	N/A
5. Perfluoro-octanoic acid (PFODA)	95532	095522	0.02	2.00	0.017	50.2	1.00	0.02	382-87-1 (L)	N/A	Insect Repellent
6. Perfluoro-nonanoic acid (PFNA)	95530	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745-92-1	N/A	N/A
7. Perfluoro-decanoic acid (PFDA)	91195	110622	0.02	2.00	0.017	50.0	1.00	0.02	3069-64-9	N/A	N/A
8. Perfluoro-undecanoic acid (PFUDA)	95525	092423	0.02	2.00	0.017	50.2	1.00	0.02	3752-94-8	N/A	N/A
9. Perfluoro-dodecanoic acid (PFDDA)	91198	053423	0.02	2.00	0.017	50.1	1.00	0.02	3752-94-8	N/A	N/A
10. Perfluoro-tridecanoic acid (PFTrDA)	95504	110622	0.02	2.00	0.017	50.1	1.00	0.02	3754-91-8	N/A	N/A
11. Perfluoro-tetradecanoic acid (PFTrDA)	95503	030023	0.02	2.00	0.017	50.0	1.00	0.02	3754-91-8	N/A	N/A
12. Perfluoro-1-iodoheptadecanoic acid (PF17IDA)	3677	PF0A11221	0.02	2.00	0.017	50.0	1.00	0.02	2553-31-9 (L)	N/A	N/A
13. Methylperfluorooctadecanoic acid (PF18MFOA)*	4162	PF18MFOA0429	0.02	2.00	0.017	50.0	1.00	0.02	2911-54-4 (L)	N/A	N/A
14. Methylperfluorooctadecanoic acid (PF18MFOA)*	4163	PF18MFOA1022	0.02	2.00	0.017	50.0	1.00	0.02	2911-54-4 (L)	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	91194	060522	0.02	2.00	0.017	50.2	1.00	0.02	3739-33-4	N/A	N/A
16. Perfluoropentanesulfonic acid (PFPS)	95544	091522	0.02	2.00	0.017	50.1	1.00	0.02	3752-94-8	N/A	N/A
17. Perfluorohexanesulfonic acid (PFHxS)	91196	060923	0.02	2.00	0.017	50.0	1.00	0.02	3554-64-1 (L)	N/A	N/A
18. Perfluoroheptanesulfonic acid (PFHpS)	3672	LFPH0622	0.02	2.00	0.017	49.8	1.00	0.02	3752-94-8	N/A	N/A
19. Heptafluorooctanesulfonic acid (PFOS)*	95501	050923	0.02	2.00	0.017	50.1	1.00	0.02	1762-26-1 (L)	N/A	N/A
20. Perfluoro-nonanesulfonic acid (PFNS)	3957	LFPS1122	0.02	2.00	0.017	48.0	1.00	0.02	4888-32-1	N/A	N/A
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPDS1122	0.02	2.00	0.017	48.2	1.00	0.02	3554-64-1 (L)	N/A	N/A
22. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (4:2 FTB)	6571	060522	0.02	2.00	0.017	50.2	1.00	0.02	3771-71-2	N/A	N/A
23. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (6:2 FTB)	6572	051023	0.02	2.00	0.017	50.2	1.00	0.02	3019-34-2	N/A	N/A
24. 1H,1H,1H,2H-Perfluorodecane sulfonic acid (PF10SDA)	3682	PF10SD23	0.02	2.00	0.017	50.2	1.00	0.02	3554-64-1 (L)	N/A	N/A
25. 2-Hydroxyperfluorooctyl-2,2,3,3-tetrafluoropropyl sulfonic acid (PF10SDA)	3685	050523	0.02	2.00	0.017	50.2	1.00	0.02	1303-13-8	N/A	N/A
26. 1-Chloro-2-hydroxy-3-(2,2,2-trifluoroethyl)perfluorooctyl sulfonic acid (1Cl-HP10SD)	4165	1ClHP10SD1029	0.02	2.00	0.017	47.1	1.00	0.02	3752-94-8	N/A	N/A
27. 3-Chloro-2-hydroxy-3-(2,2,2-trifluoroethyl)perfluorooctyl sulfonic acid (3Cl-HP10SD)	4164	3ClHP10SD1029	0.02	2.00	0.017	48.8	1.00	0.02	3752-94-8	N/A	N/A
28. Dodecafluoro-3H,4,β-dioxanone sulfonic acid (ADONA)	4163	NBC10A10129	0.02	2.00	0.017	47.1	1.00	0.02	918005-14-4	N/A	N/A
Perfluorooctanoic acid (linear)*	95202	060522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	Local Irritation
Perfluorooctanoic acid (branched isomer)*	95202	060522	0.02	2.00	0.004	0.5	0.01	0.001	335-67-1 (L)	N/A	Local Irritation
Perfluorohexanesulfonic acid (linear)*	91196	030923	0.02	2.00	0.017	44.0	0.98	0.02	355-64-4 (L)	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	91196	030923	0.02	2.00	0.017	0.0	0.12	0.0020	355-64-4 (L)	N/A	N/A
Heptafluorooctanesulfonic acid (linear)*	95201	030923	0.02	2.00	0.017	38.1	0.76	0.02	1762-26-1 (L)	N/A	N/A
Heptafluorooctanesulfonic acid (branched isomer)*	95201	030923	0.02	2.00	0.017	7.5	0.15	0.003	1762-26-1 (L)	N/A	N/A
Heptafluorodecane sulfonic acid (linear)*	95201	030923	0.02	2.00	0.017	4.0	0.08	0.002	1762-26-1 (L)	N/A	N/A
Heptafluorodecane sulfonic acid (branched isomer)*	95201	030923	0.02	2.00	0.017	0.5	0.010	0.0002	1762-26-1 (L)	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (linear)*	4162	PF18MFOA0429	0.02	2.00	0.017	38.0	0.72	0.04	2553-31-9 (L)	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4162	PF18MFOA0429	0.02	2.00	0.017	0.5	0.10	0.011	2553-31-9 (L)	N/A	N/A
Methylperfluoro-1-tetradecanesulfonic acid (linear)*	4162	PF14MFOA0429	0.02	2.00	0.017	5.0	0.10	0.005	2553-31-9 (L)	N/A	N/A
Methylperfluoro-1-tetradecanesulfonic acid (branched)*	4162	PF14MFOA0429	0.02	2.00	0.017	2.5	0.05	0.0009	2553-31-9 (L)	N/A	N/A
N-Ethylperfluoro-1-octadecanesulfonic acid (linear)*	4163	PF18MFOA1022	0.02	2.00	0.017	38.5	0.73	0.04	2561-56-5 (L)	N/A	N/A
N-Ethylperfluoro-1-octadecanesulfonic acid (branched)*	4163	PF18MFOA1022	0.02	2.00	0.017	7.7	0.15	0.009	2561-56-5 (L)	N/A	N/A
M-Ethylperfluoro-1-octadecanesulfonic acid (linear)*	4163	PF18MFOA1022	0.02	2.00	0.017	5.3	0.11	0.005	2561-56-5 (L)	N/A	N/A
M-Ethylperfluoro-1-octadecanesulfonic acid (branched)*	4163	PF18MFOA1022	0.02	2.00	0.017	0.4	0.007	0.0006	2561-56-5 (L)	N/A	N/A

*Qualitative standard (Sect. 3.1.9) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers. The PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.1

1 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise noted.
2 All standards are certified for 0.5% of the stated value, unless otherwise noted.
3 All standards, after opening vials, should be stored with caps tight and under nitrogen or argon atmosphere.
4 Certificates for this product are available at www.absolutestandards.com or by contacting Absolute Standards, Inc. at 800-368-1131.
5 Certificates for this product are available at www.absolutestandards.com or by contacting Absolute Standards, Inc. at 800-368-1131.
6 NIST Reference Material 1977, U.S. Government Printing Office, Washington, DC, 1994.

12006
Rec'd: 09/07/23

12013 A-B
rec'd: 09/11/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXH
<u>LOT NUMBER:</u>	PFACMXH0423
<u>SOLVENT(S):</u>	Methanol/Isopropanol (2%)/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	04/06/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	04/19/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	04/19/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
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3 A:

PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid *	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid †	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanefulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ‡	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate §	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

* See Table B for percent composition of linear and branched N-MeFOSAA isomers.

† See Table C for percent composition of linear and branched N-EtFOSAA isomers.

‡ See Table D for percent composition of linear and branched PFHxSK isomers.

§ See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

7.9.1
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12015A-B
rec'd: 09/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

PRODUCT CODE: PFAC-MXG
LOT NUMBER: PFACMXG0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/27/2023
LAST TESTED: (mm/dd/yyyy) 07/27/2023
EXPIRY DATE: (mm/dd/yyyy) 07/27/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXG0723 (1 of 5)
rev0

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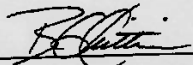
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Peak A:

PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

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Date: 08/11/2023
(mm/dd/yyyy)

7.9.1

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12032
rec'd: 09/18/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Revision#: 9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev1

7.9.1
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Table A: PFAC-MXH; Components and Concentrations (ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

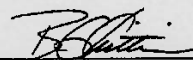
^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

12033
rec'd: 09/18/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXF
<u>LOT NUMBER:</u>	PFACMXF0323
<u>SOLVENT(S):</u>	Methanol / Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	03/23/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	03/24/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	03/24/2026
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUDs), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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PFACMXF0323 (1 of 5)
rev0

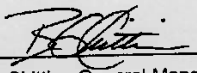
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Table A: PFAC-MXF; Components and Concentrations (ng/mL; \pm 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxanonanoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroicosafuoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By:


B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)

12065 rec'd: 09/28/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Form#:13, Issued 2004-11-10
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PFACMXF0323 (1 of 5)
rev0

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Tab. 1A: PFAC-MXF; Components and Concentrations (ng/mL; \pm 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
Sodium dodecafluoro-3H-4,8-dioxanonanoate	NaDONA	2000	1890	
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroicosafuoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 

B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)

12070 A-B
rec'd: 10/02/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

**2-(N-Methylperfluorooctanesulfonamido)ethanol
Isomeric Mix**

PRODUCT CODE:	br-NMeFOSE
LOT NUMBER:	brNMeFOSE0922
CONCENTRATION:	50.0 ± 2.5 µg/mL
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/02/2022
LAST TESTED: (mm/dd/yyyy)	09/07/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy)	10/07/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-methylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS Data (SIR)
- Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 24448-09-7 (for linear isomer).

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brNMeFOSE0922 (1 of 7)
rev 1

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12071 A-B
rec'd 10/02/22



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE:	br-NEtFOSE
LOT NUMBER:	brNEtFOSE1022
CONCENTRATION:	50.0 ± 2.5 µg/mL
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/12/2022
LAST TESTED: (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy)	10/07/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-ethylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
Figure 3: LC/MS Data (SIR)
Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 1691-99-2 (for linear isomer).

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brNEtFOSE1022 (1 of 7)
rev1

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12091
rec'd: 10/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXJ
<u>LOT NUMBER:</u>	PFACMXJ0323
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	03/27/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	03/28/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	03/28/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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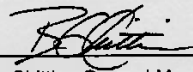
Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXJ0323 (1 of 5)
rev0

7.9.1
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Table 1: PFAC-MXJ; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)



PFAC-MXJ

**Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture**

12/20
rec'd: 10/18/23

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:


- See page 2 for further details.

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Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g}/\text{mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g}/\text{mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

12122
rec'd: 10/18/23

PRODUCT CODE:

N-EtFOSA-M

LOT NUMBER:

NEIFOSA0923M

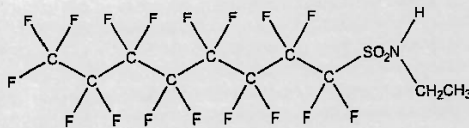
COMPOUND:

N-Ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

4151-50-2



MOLECULAR FORMULA:

C₁₀H₆F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/19/2023

EXPIRY DATE: (mm/dd/yyyy)

09/19/2028

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 10/04/2023

(mm/dd/yyyy)

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7.9.1
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12030 A-5
rec'd: 09/18/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled PFAS Injection
Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/05/2023
LAST TESTED: (mm/dd/yyyy) 07/05/2023
EXPIRY DATE: (mm/dd/yyyy) 07/05/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₈ and C₉). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ¹³C or >94% per ¹⁸O.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFIS0723 (1 of 5)
rev0

7.9.1
7

Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 

B.G. Chittim, General Manager

Date: 07/07/2023

(mimiddyyyyy)

12087A-J
rec'd: 10/11/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES0623
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 06/19/2023
LAST TESTED: (mm/dd/yyyy) 06/20/2023
EXPIRY DATE: (mm/dd/yyyy) 06/20/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) perfluorooctanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (¹³C₅-GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ¹³C-labelled components all have chemical purities >98% and isotopic purities of ≥99%. The individual ²H-labelled components all have chemical purities >98% and isotopic purities of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
 Revision#: 9, Revised 2020-12-23

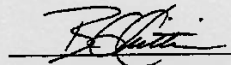
MPFACHIFES0623 (1 of 7)
 rev0

7.9.1
7

Tab. : MPFAC-HIF-ES; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₆)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₄)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-(¹³ C ₈)octanoic acid	M8PFOA	500		10
Perfluoro-n-(¹³ C ₉)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- ¹³ C ₆)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₇)undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- ¹³ C ₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₂)tetradecanoic acid	M2PFTeDA	250		24
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		16
N-Methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		23
N-Methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		17
2-(N-Methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d7-N-MeFOSE	5000		20
2-(N-Ethyl-d ₅ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 06/22/2023
(mm/dd/yyyy)

12034
rec'd: 09/18/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

**Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture**

PRODUCT CODE: PFAC-MXG
LOT NUMBER: PFACMXG0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/27/2023
LAST TESTED: (mm/dd/yyyy) 07/27/2023
EXPIRY DATE: (mm/dd/yyyy) 07/27/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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7.9.1
7

Table A: PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 08/11/2023
(mm/dd/yyyy)

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2220	533 std.	11681	533	Absolute	01/20/28	03/22/24	2ppm	200uL	4mL	100ppb	96% MeOH 4% H2O	11/01/23	03/22/24	NS
LCMS 2221	T-PFOA STD (RT)	11515	T-PFOA	Nellington Labs	11/07/27	11/01/24	50 ppm	8uL	4mL	100ppb	95% MeOH 5% H2O	11/01/23	05/01/24	AL
LCMS 2222 A-E	1633 Cal std. SPIKE	LCMS 2198 LCMS 2215	Br-LN Et-ME	SGS Labs	NA	4/4/24	2ppm 5ppm	250uL	4mL	125 312.5ppb	1633 mix (2688uL)	11/5/23	4/4/24	MO
		12064	PFAC MXH	Wellington	4/11/28	11/5/24	1-4 ppm			62.5 125 250ppb				
		12088	PFAC MYF		3/24/26	11/5/24	2ppm			125ppb				
		12094	PFAC		7/17/28	10/22/24	2ppm			125ppb				
		12066	MXG		11/5/24	11/5/24	2ppm							
		12137 A,B	PFAC MXJ		3/28/28	11/5/24	4-20 ppm	312uL	4mL	312 1160ppb				
LCMS 2223 A-E	1433 cal std. SPIKE	LCMS 2215	Br-LN Et-ME	SGS LABO	NA	4/4/24	2ppm 5ppm	250uL	4mL	125 312.5ppb	1633 mix (2688uL)	11/12/23	4/4/24	MO
		12064	PFAC MXH	Wellington	4/11/28	11/5/24	1-4 ppm			62.5 125 250ppb				
		12088	PFAC MYF		3/24/26	11/5/24	2ppm			125ppb				
		12118	PFAC		7/27/28	11/12/24	2ppm							
		12006	MXG		11/5/24	11/5/24	2ppm			125ppb				
		12090	MXG		3/28/28	11/12/24	4-20 ppm	312uL	4mL	312 1160ppb				
		12098 12137 B	PFAC MXJ		3/28/28	11/5/24	4-20 ppm	312uL	4mL	312 1160ppb				
LCMS 2224 A-J	PFC ID SURY	12085 A-J	MPFAC-24ES	Wellington Labs	06/28/28	05/16/24	1.0 ppm	1.2 mL	2.5 mL	0.5 ppm	95% MeOH 5% H2O	11/16/23	05/16/24	DR
		11974	M3HP0-DA		05/15/26	06/30/24	50 ppm	24 uL						
		11973	d-N-ME FOSA-M		04/26/28	10/30/24								
						11/16/23								

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2211	Full List + 40 Spike (cedal mix)	12006 / 12047A (25 Comp)	PFOA-DOP (25 Comp)	Absolute	06/26/28	09/19/24	1.0 ppm	400 µL	4.0 mL	100 ppb	57.160H 57.1420	10/15/23	02/07/24	JR
LCMS 2210		LCMS 2156	40 List Add-mix2	-	-	02/08/24								
LCMS 2193		LCMS 2193	FOSE Std.	-	-	03/25/24	5.0 ppm			* 500 500 ppb				
LCMS 2212 A-G	1633 Cal. old. Spike	LCMS 2198	Br-LN Et-Me	SGS LABD	1/1	4/4/24	2 ppm 5 ppm	250 µL	4 mL	125 312.5 ppb	1633 mix	10/22/23	4/4/24	rwj
		12013B	PFAC MXH	Wellington	4/19/28	10/15/24 10/22/24	1-4 ppm			62.5 250 ppb	(2688 mL)			
		12033	PFAC MXF		3/24/26	10/15/24 10/22/24	2 ppm			125 ppb				
		12015A	PFAC MXG		7/27/28	10/15/24 10/22/24	2 ppm			125 250 ppb				
		12034	PFAC MXJ		3/28/28	10/15/24 10/22/24	4-20 ppm	312 µL		312				
LCMS 2213	PFAC MDL Spike	LCMS 2208	PFAC Spike	-	-	04/13/24	400 ppb	100 µL	1.0 mL	40 ppb	95160H SI. H2O	10/15/23	03/15/24	NS
LCMS 2214	6850 STD	11755	perchlorate	Absolute	07/10/24	07/10/24	100 ppm	50 µL	50 mL	100 ppb	1192C H2O 233G75	10/24/23	04/24/24	AL
LCMS 2215	1633 Br-LN Me/EtFosa: Me/EtFose	11797	Br-N MeFOFA	Wellington	8/23/27	10/14/24	50 ppm	200 µL	5 mL	2 ppm	1633 mix (3.600 mL)	10/25/23	4/4/24	rwj
		11798	Br-N ETFOSA		10/14/27	10/14/24				2 ppm				
		12070A	Br-N MeFOSE		10/7/27	10/14/24		500 µL		5 ppm				
		12071A	Br-N ETFOSE		10/7/27	10/14/24				5 ppm				
						JR 10/30/23								

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-icms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2228A-E	1033 Cal cont. Spike	LCMS 2215	8c-LN 5E-Me	SGS LABO	NA	4/4/24	2 ppm	250 uL	4 mL	125 312.5 ppb	1033 MIX (2508 uL)	11/29/23	4/4/24	MAJ
		12088	PFAC	Wellington	4/19/28	11/12/24	1-4 ppm			02.5 125 250 ppb				
		12117	MXH		10/3/26	11/29/24	2 ppm			125 ppb				
		12118	PFAC		7/27/28	11/12/24	2 ppm			125 ppb				
		12135A	NYF		3/28/28	11/29/24	4-20 ppm	312 uL		312				
		12090	PFAC											
		12119	MXG											
		12137	PFAC											
		12155A	MXJ											
LCMS 2229	Full List 40 Spike (cal mix)	12047B	PFOA-DOD (28 comp)	Absolute	06/26/28	11/16/24	1.0 ppm	400 uL	4.0 mL	100 ppb	95% MeOH 5% H2O	11/30/23	02/07/24	LR
		LCMS 2210	HOLIST Acid-0#1	-		02/08/24								
		LCMS 2154	HOLIST Acid-0#2	-		02/07/24								
		LCMS 2193	FOSE STD	-		03/25/24	* 5.0 ppm			* 500 ppb				* LR 11/30/23
LCMS 2230A-B	PFC Spike	12047B	PFOA-DOD (28 comp)	Absolute	04/26/28	11/16/24	1.0 ppm	2.0 mL	5.0 mL	400 ppb	95% MeOH 5% H2O	11/30/23	04/18/24	LR
		11972	N-Me FOSE-M	Wellington Labs	11/11/24	10/30/24	50 ppm	40 uL						
		11793	FBSA-1		02/01/28	08/08/24								
		11792	FHXSA-1		12/01/27	08/08/24								
		11332	PFECES		05/28/27	04/18/24								
LCMS 2231	537.1 DW STD	12047B	PFOA DOD (28 comp)	Absolute	06/26/28	11/16/24	1.0 ppm	400 uL	4 mL	100 ppb	90% MeOH 4% H2O	12/01/23	06/01/24	AL
		LCMS 2181	537.1 DW Surr	-		05/06/24	1.0/2.0 ppm	400 uL		100/200 ppb				AL

* based on date opened as specified in each SGS - Orlando SOP.

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
CCMS 2210	40 List Std Addition #1	11649	10:2 PFS	Wellington Labs	12/01/27	08/07/24	50 ppm	80 mL	4.0 mL	1.0 ppm	95% MeOH 5% H2O	10/18/23	02/08/24	JR
		11461	L- PFDOs		07/09/27 04/20/27	10/18/24								
		11710	N-Me FOSA-M		11/11/27	08/07/24								
		12122	N-Et FOSA-M		09/19/28	10/18/24								
		11481	PFHxDA		02/23/27	10/18/24								
		11462	PFODA		07/05/27	10/18/24								
		11116B	3:3 FTCA FP-PA		02/03/27	02/08/24								
		11994	5:5 FTCA MS PFPA		08/02/27	09/05/24								
		11116A	3:3 FTCA FHp PA		11/12/25	02/08/24								
		11794	PFECNS		03/14/28	08/07/24								
		11464	PFEEA		11/22/27	10/18/24								
		11465	PFHDA PF50 HPA		06/02/27	08/07/24								
		11648	PFHPA PF40 PPA		08/02/27	09/07/24								
		11467	NF HDA 3,5-OFHMA		06/09/27	10/18/24								
						JR								
						10/18/23								

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*JR 10/18/25 * based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-icms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2156	L157 40 ADD ON #2	11513	FBSA-1	Wellington	11/10/26	4/18/24	50 ppm	800 uL	4.0 mL	1 ppm	95% methanol 5% H2O	8/7/23	2/7/24	MW
		11514	FHXSA1		12/29/26	4/18/24					(3760)			
		11140B	I-PFAS		7/12/26	5/9/24								
LCMS 2157	1633 RT BR-LN	11496	br-Fosa	Wellington	10/7/27	12/28/23	50 ppm	10NL 5 mL	5 mL	100 ppb	1633 mix	8/7/23	12/28/23	MW
		11497	br-N metose		8/23/27			10NL			(4930)			
		11498	br-N E+FOA		10/7/27									
		11494	br-N metose		10/7/27									
		11495	br-N E+FOE		10/7/27									
		11502	T-PTOA		01/27/27									
		11527	IP-PTNA		01/10/27									
LCMS 2158 A-E	1633 Cul std. Spike	LCMS 11930	Br-LN E+me	SGS LABO	N/A	12/28/23	2 ppm 5 ppm	250 uL	4 mL	125 312.5 ppb	1633 mix 2088 NL	8/7/23	12/28/23	MW
		11930	PFAC MxH	Wellington	4/19/28	7/31/24 8/7/24	1-4 ppm			62.5 125 250 ppb				
		11931A	PFAC Mx F		3/24/26	7-31-24 8-7-24	2 ppm			125 ppb				
		11907	PFAC Mx G		12/1/27	7-31-24 8-7-24	2 ppm			125 ppb				
		11933A	PFAC Mx J		3-28-28	7-31-24 8-7-24	4-20 ppm	312 uL		312 1160 ppb				
							NA Continue next page 8/7/23							

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-icms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A	1033 Cal std. (SPIKE)	PFAC	SGS Labs	N/A	12/28/23	2 ppm	250 uL	4 mL	125	1633 MxH (2688 uL)	9/24/23	12/28/23	NW
		PFAC	Washington	4/19/28	9/24/23	1-4 ppm	250 uL		62.5 125 250 ppb				
		PFAC		3-24/26	9/15/24	2 ppm	250 uL		125 ppb				
		PFAC		12-1-27	9/15/24	2 ppm	250 uL		125 ppb				
		PFAC		3-28/28	9/24/24	4-20 ppm	312 uL		312 1100 ppb				
LCMS 2193	FOSE Std	N-Et-FOSE	Washington Labs	05/13/27	09/25/24	50 ppm	200 uL	2.0 mL	5 ppb	95% MeOH 5% H2O	09/25/23	09/25/24	JR
		N-Me-FOSE		05/13/27	09/25/24								
LCMS 2194	Full List 40 Spike (cal std)	FOA-Dep (28 comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400 uL	4.0 mL	100 ppb	95% MeOH 5% H2O	09/25/23	10/18/23	JR
		40 List Add-mk1	SGS Std	-	10/18/23								
		40 List Add-mk2		-	02/07/24								
		FOSE Std.		-	03/25/24	5.0 ppm			500 ppb				
LCMS 2195	PFC Spike	FOA-Dep (28 comp)	Absolute	04/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400 ppb	95% MeOH 5% H2O	09/28/23	03/13/24	JR
		N-Me-FOSA-M	Washington Labs	02/28/27	03/13/24	50 ppm	40 uL						
		FBSA-1		04/01/28	08/08/24								
		FHSA-1		12/01/27	08/08/24								
		PFECHS		03/28/27	04/18/24								

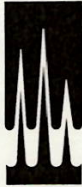
tested 9/25

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-icms std prep log.xls 030819

1116 A/B NW

1116B on the back NW



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

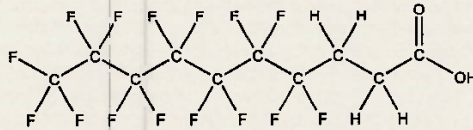
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

(mm/dd/yyyy)

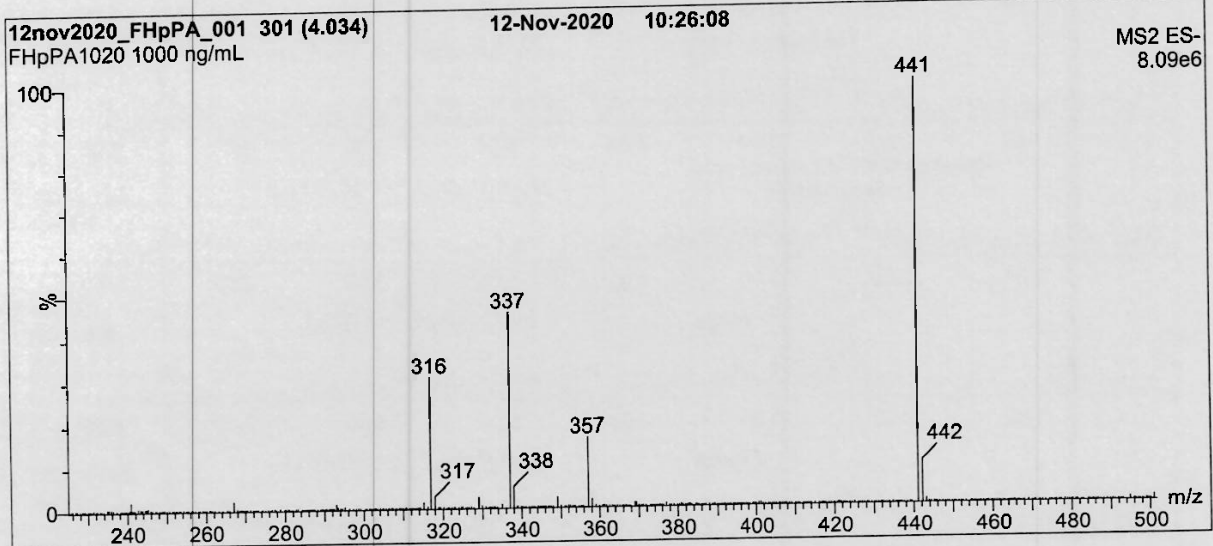
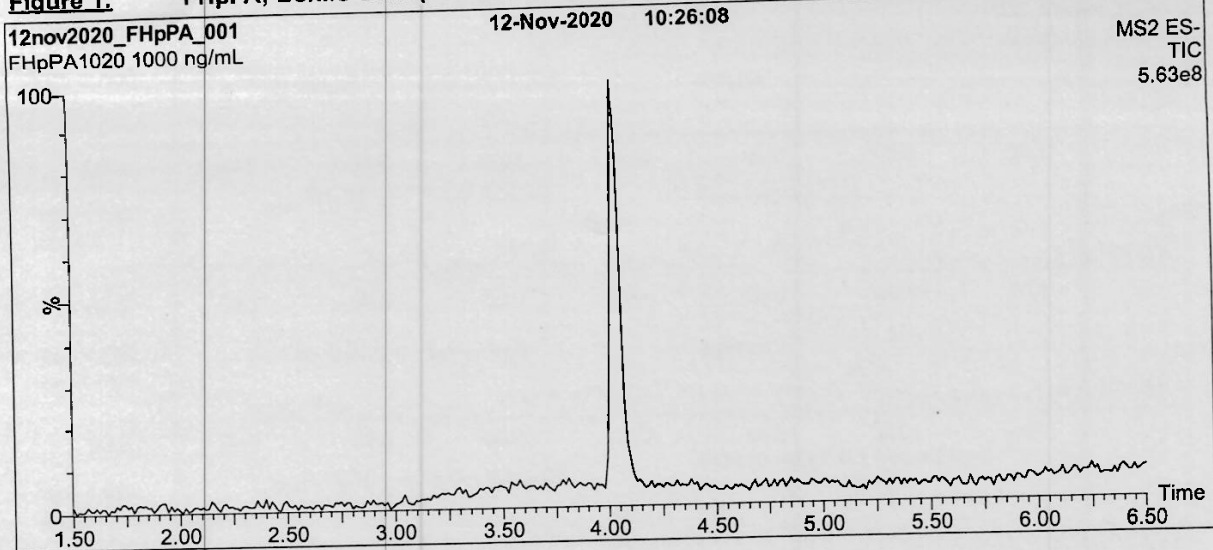
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FHpPA1020 (1 of 4)
rev0

7.9.2

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Figure 1: FHpPA; LC/MS Data (TIC and Mass Spectrum)**Conditions for Figure 1:**

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 28.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

FPPrPA(3:3FTCA) 1116 B



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

FPPrPA

LOT NUMBER:

FPPrPA0122

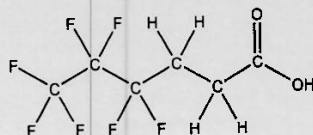
COMPOUND:

3-Perfluoropropyl propanoic acid

STRUCTURE:

CAS #:

356-02-5



MOLECULAR FORMULA:

$C_6H_5F_7O_2$

MOLECULAR WEIGHT:

242.09

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/03/2022

EXPIRY DATE: (mm/dd/yyyy)

02/03/2027

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid ($C_6H_3F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

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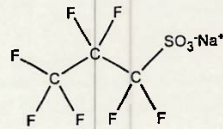
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPrS
COMPOUND: Sodium perfluoro-1-propanesulfonate

LOT NUMBER: LPFPrS0721

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₃F₇SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
46.0 ± 2.3 µg/mL (PFPrS acid)
45.8 ± 2.3 µg/mL (PFPrS anion)

MOLECULAR WEIGHT: 272.07
SOLVENT(S): Methanol

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/12/2021
EXPIRY DATE: (mm/dd/yyyy) 07/12/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

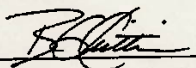
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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B.G. Chittim, General Manager

Date: 08/04/2021
(mm/dd/yyyy)

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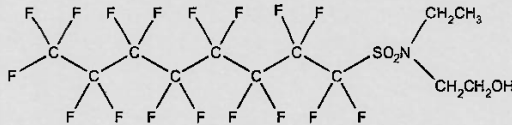
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CERTIFICATE OF ANALYSIS DOCUMENTATION

n, 09/27/2

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0622M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 1691-99-2



11409

MOLECULAR FORMULA: C₁₂H₁₆F₁₇NO₃S **MOLECULAR WEIGHT:** 571.25
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By: 
B.G. Chittim, General Manager **Date:** 07/13/2022
(mm/dd/yyyy)

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NEtFOSE0622M (1 of 5)
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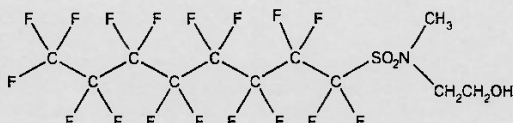
CERTIFICATE OF ANALYSIS DOCUMENTATION

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PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0522M
COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 24448-09-7



11410

MOLECULAR FORMULA: C₁₁H₈F₁₇NO₃S **MOLECULAR WEIGHT:** 557.22
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By: B.G. Chittim **Date:** 06/14/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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PRODUCT CODE:

L-PFDoS

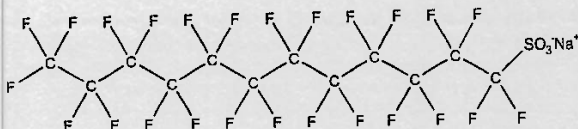
LOT NUMBER: LPFDoS0422

COMPOUND:

Sodium perfluoro-1-dodecanesulfonate

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA:

$C_{12}F_{25}SO_3Na$

MOLECULAR WEIGHT: 722.14

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

04/20/2022

EXPIRY DATE: (mm/dd/yyyy)

04/20/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 05/16/2022

(mm/dd/yyyy)

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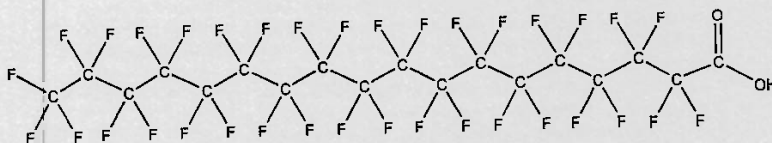

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CERTIFICATE OF ANALYSIS
 DOCUMENTATION
PRODUCT CODE:

PFODA

LOT NUMBER: PFODA0622**COMPOUND:**

Perfluoro-n-octadecanoic acid

STRUCTURE:**CAS #:** 16517-11-6**MOLECULAR FORMULA:** $C_{18}HF_{35}O_2$ **MOLECULAR WEIGHT:**

914.14

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/05/2022

EXPIRY DATE: (mm/dd/yyyy)

07/05/2027

RECOMMENDED STORAGE:

Store ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

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Certified By:

 B.G. Chittim, General Manager
Date: 07/05/2022
(mm/dd/yyyy)
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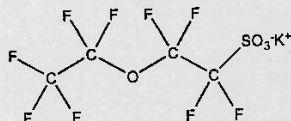

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 DOCUMENTATION
PRODUCT CODE:

PFEESA

LOT NUMBER: PFEESA1121**COMPOUND:**

Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE:**CAS #:** 117205-07-9**MOLECULAR FORMULA:**C₄F₉SO₃K**MOLECULAR WEIGHT:** 354.19**CONCENTRATION:**
 50.0 ± 2.5 µg/mL (K salt)
 44.6 ± 2.2 µg/mL (PFEESA acid)
 44.5 ± 2.2 µg/mL (PFEESA anion)
SOLVENT(S): Methanol**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

11/22/2021

EXPIRY DATE: (mm/dd/yyyy)

11/22/2026

RECOMMENDED STORAGE: Store ampoule in a cool, dark place**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-octanoic acid (PFOA).

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 B.G. Chittim, General Manager
Date: 11/29/2021
(mm/dd/yyyy)
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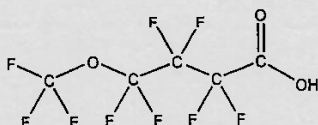
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF5OHxA **LOT NUMBER:** PF5OHxA0722
COMPOUND: Perfluoro-5-oxahexanoic acid
SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)
STRUCTURE: **CAS #:** 863090-89-5



MOLECULAR FORMULA: C₆H₉F₉O₃ **MOLECULAR WEIGHT:** 280.05
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

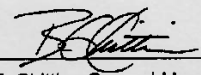
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: 
 B.G. Chittim, General Manager

Date: 08/26/2022
 (mm/dd/yyyy)

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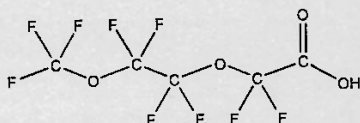
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

LOT NUMBER: 36OPFHpA0522**COMPOUND:**

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:**CAS #:** 151772-58-6**MOLECULAR FORMULA:** $C_7HF_8O_4$ **MOLECULAR WEIGHT:** 296.04**CONCENTRATION:**

50.0 ± 2.5 µg/mL

SOLVENT(S): Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/08/2022

EXPIRY DATE: (mm/dd/yyyy)

06/08/2027

RECOMMENDED STORAGE: Store ampoule in a cool, dark place**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 06/27/2022
(mm/dd/yyyy)

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11481 rec'd 10/21/22

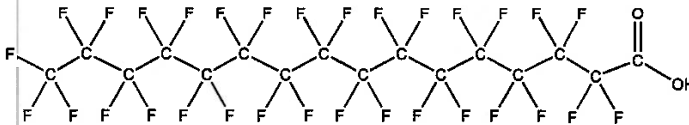


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0222
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆H₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/23/2022
EXPIRY DATE: (mm/dd/yyyy) 02/23/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:  **Date:** 03/08/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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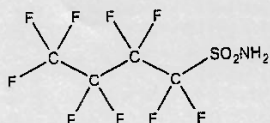
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PRODUCT CODE: FBSA-I
COMPOUND: Perfluoro-1-butanefulfonamide

LOT NUMBER: FBSA11211

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA: C₄H₂F₉NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/10/2021
EXPIRY DATE: (mm/dd/yyyy) 11/10/2026
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 299.11
SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 11/10/2021
(mm/dd/yyyy)

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11514 rec'd 11/14/22

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

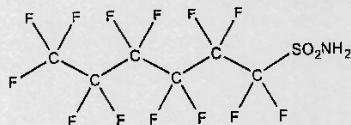
LOT NUMBER: FHxSA1221I

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022
(mm/dd/yyyy)

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FHxSA1221I (1 of 4)

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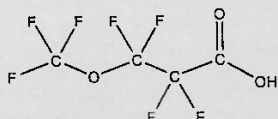
11648 Rec. 02/13/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF4OPeA **LOT NUMBER:** PF4OPeA0722
COMPOUND: Perfluoro-4-oxapentanoic acid
SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA) **CAS #:** 377-73-1
STRUCTURE:



MOLECULAR FORMULA: C₄HF₇O₃ **MOLECULAR WEIGHT:** 230.04
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

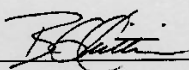
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager Date: 08/15/2022
(mm/dd/yyyy)

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11649 Rec. 02/13/23

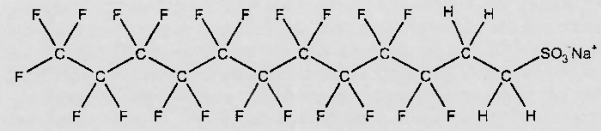


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
48.3 ± 2.4 µg/mL (10:2FTS acid)
48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Refrigerate ampoule

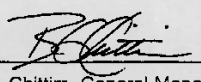
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/09/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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Form# 27, Issued 2004-11-10
Revision# 9, Revised 2020-12-23

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11710
rec'd: 03/17/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSA-M

LOT NUMBER:

NMeFOSA1122M

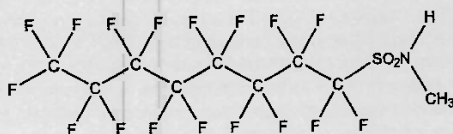
COMPOUND:

N-Methylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

31506-32-8



MOLECULAR FORMULA:

C₉H₄F₁₇NO₂S

MOLECULAR WEIGHT:

513.17

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/11/2022

EXPIRY DATE: (mm/dd/yyyy)

11/11/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 11/25/2022

(mm/dd/yyyy)

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11794
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

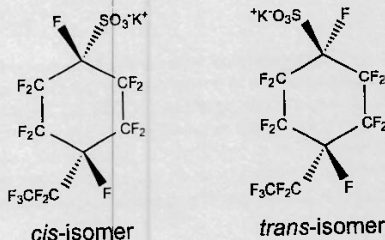
PFECHS

LOT NUMBER: PFECHS0223

COMPOUND:

Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:

C₉F₁₅SO₃K

MOLECULAR WEIGHT: 500.22

CONCENTRATION:

50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/14/2023

EXPIRY DATE: (mm/dd/yyyy)

03/14/2028

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*, by ¹⁹F NMR).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 03/16/2023

(mm/dd/yyyy)

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11797
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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

PRODUCT CODE: br-NMeFOSA
LOT NUMBER: brNMeFOSA0822
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 08/18/2022
LAST TESTED: (mm/dd/yyyy) 08/23/2022
EXPIRY DATE: (mm/dd/yyyy) 08/23/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (SIR)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

brNMeFOSA0822 (1 of 6)
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117a8
rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

**N-Ethylperfluorooctanesulfonamide
Isomeric Mix**

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (SIR)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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brNEtFOSA0922 (1 of 6)
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11994
rec'd: 08/13/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA (5:3)

LOT NUMBER:

FPePA0722

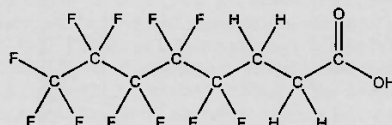
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

$C_8H_5F_{11}O_2$

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2022

EXPIRY DATE: (mm/dd/yyyy)

08/02/2027

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <0.5% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by $^1\text{H NMR}$.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

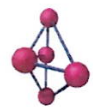
Certified By:

B.G. Chittim, General Manager

Date: 08/10/2022

(mm/dd/yyyy)

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Certified Reference Material CRM

CERTIFIED WEIGHT REPORT

Part Number: 64026
Lot Number: 06323
Description: PFDA-DOD 28 components
Expiration Date: 06/28/29
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 1.0
NEST Test ID#: 6UT6

Solvent(s): Methane (1 mM KOH) 2-Propanol
Lot# 040723 (99%) 32500 (9%)
Formulation By: Prashant Chaudhari
Reviewed By: Pedro L. Ramos

Table with 4 columns: Formulation By, Reviewed By, DATE, and another DATE.

Volumes shown below were combined and diluted to (mL):
Flask: All assigned values are ambient concentrations.

Main table with columns: Part Number, Lot Number, Compound, Division Factor, Initial Vol. (mL), Final Conc. (µg/mL), Initial Conc. (µg/mL), Final Conc. (µg/mL), Final Uncertainty, Initial Uncertainty, Solvent, and SIDS Information.

A qualitative standard (Sect. 3.19) is available for PFDA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-9204) as well as the linear PFDA standard used to identify the retention times of the branched PFDA isomers, but the linear only PFDA standard must be used for quantitation (Sect. 12.2) until a quantitative PFDA standard containing the branched and linear isomers becomes commercially available.

*The certified values for concentrations...
†Standards are certified gravimetrically...
‡Standard uncertainty is stated as relative standard uncertainty...
§Uncertainty Budget...
||NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1998).

12047A-B
rec'd: 09/21/23

12064 rec'd: 09/28/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

**Native PFAS
Solution/Mixture**

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₆, C₇, C₈, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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7.9.2
7

A: PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butyric acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^a	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^b	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^c	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

12066 rec'd 09/28/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

**Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXG
<u>LOT NUMBER:</u>	PFACMXG0723
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	07/27/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	07/27/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	07/27/2028
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXG0723 (1 of 5)
rev0

7.9.2

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PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 08/11/2023
(mm/dd/yyyy)

12070 A-B
rec'd: 10/02/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

**2-(N-Methylperfluorooctanesulfonamido)ethanol
Isomeric Mix**

PRODUCT CODE:	br-NMeFOSE
LOT NUMBER:	brNMeFOSE0922
CONCENTRATION:	50.0 ± 2.5 µg/mL
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/02/2022
LAST TESTED: (mm/dd/yyyy)	09/07/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy)	10/07/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-methylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS Data (SIR)
- Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 24448-09-7 (for linear isomer).

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

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12071 A-B
rec'd 10/02/22



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE:	br-NEtFOSE
LOT NUMBER:	brNEtFOSE1022
CONCENTRATION:	50.0 ± 2.5 µg/mL
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/12/2022
LAST TESTED: (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy)	10/07/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-ethylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
Figure 3: LC/MS Data (SIR)
Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 1691-99-2 (for linear isomer).

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Revision#: 9, Revised 2020-12-23

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12088
rec'd: 10/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXH
<u>LOT NUMBER:</u>	PFACMXH0423
<u>SOLVENT(S):</u>	Methanol/Isopropanol (2%)/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	04/06/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	04/19/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	04/19/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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7.9.2
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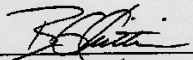
Table 1:

PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUDA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.
^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.
^c See Table D for percent composition of linear and branched PFHxSK isomers.
^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

7.9.2
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12090
rec'd: 10/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

PRODUCT CODE:	PFAC-MXG
LOT NUMBER:	PFACMXG0723
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	07/27/2023
LAST TESTED: (mm/dd/yyyy)	07/27/2023
EXPIRY DATE: (mm/dd/yyyy)	07/27/2028
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXG0723 (1 of 5)
rev0


7.9.2

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PFAC-MXG: Components and Concentrations (ng/mL; $\pm 5\%$ in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 

B.G. Chittim, General Manager

Date: 08/11/2023

(mm/dd/yyyy)



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

12118
rec'd: 10/18/23

<u>PRODUCT CODE:</u>	PFAC-MXF
<u>LOT NUMBER:</u>	PFACMXF0923
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/25/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/03/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/03/2026
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Figure 1: LC/MS Data (SIR)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Revision#: 9, Revised 2020-12-23

PFACMXF0923 (1 of 5)
rev0

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Table A: PFAC-MXF; Components and Concentrations (ng/mL; $\pm 5\%$ in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 

B.G. Chittim, General Manager

Date: 10/04/2023
(mm/dd/yyyy)



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

12122
rec'd: 10/18/23
NEIFOSA0923M

PRODUCT CODE:

N-EtFOSA-M

LOT NUMBER:

NEIFOSA0923M

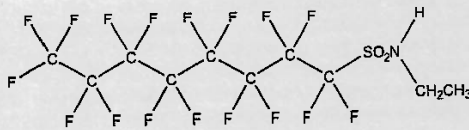
COMPOUND:

N-Ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

4151-50-2



MOLECULAR FORMULA:

C₁₀H₆F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/19/2023

EXPIRY DATE: (mm/dd/yyyy)

09/19/2028

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 10/04/2023

(mm/dd/yyyy)

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12137A-C
REC 10/31/23
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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0323 (1 of 5)
rev0

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Table A: PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
 B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

NG 11/09/23

12150 A-O rec'd: 11/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES1023
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 10/31/2023
LAST TESTED: (mm/dd/yyyy) 11/02/2023
EXPIRY DATE: (mm/dd/yyyy) 11/02/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₈, and C₉), mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), mass-labelled (²H) perfluoro-1-octanesulfonamidoacetic acids, mass-labelled (²H) perfluoro-1-octanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (¹³C₃-GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ¹³C-labelled components all have chemical purities >98% and isotopic purities of ≥99%. The individual ²H-labelled components all have chemical purities >98% and isotopic purities of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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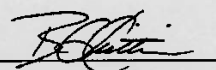
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Table A:

**MPFAC-HIF-ES; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))**

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₆)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₆)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-(¹³ C ₈)octanoic acid	M8PFOA	500		10
Perfluoro-n-(¹³ C ₉)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- ¹³ C ₉)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₉)undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- ¹³ C ₁₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₁₄)tetradecanoic acid	M2PFTeDA	250		24
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		16
N-Methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		23
N-Methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		17
2-(N-Methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₃ -ol	d7-N-MeFOSE	5000		20
2-(N-Ethyl-d ₅ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 11/03/2023
(m/m/dd/yyyy)

12180 A-0
rec'd: 11/21/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

**Mass-Labelled PFAS Injection
Standard Solution/Mixture**

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/05/2023
LAST TESTED: (mm/dd/yyyy) 07/05/2023
EXPIRY DATE: (mm/dd/yyyy) 07/05/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₆ and C₈). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ¹³C or >94% per ¹⁸O.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFIS0723 (1 of 5)
rev0

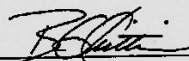
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Table A:

MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 07/07/2023
(mm/dd/yyyy)

SGS - ORLANDO

Date/Time: 12/08/23 08:50
 Started (mm/dd/yy 24:00)

Date/Time: 12/10/23 1400
 Finished (mm/dd/yy 24:00)

Batch#: OP 524

Ext. By: _____

Conc. By: _____

Vialed By: _____

SPE LIQUID SAMPLE PREP REPORT

Method: EPA 1633 Draft (QSM) 1.5+4.0

Balance ID: _____

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount (ul)	Spike Amount (ul)	Final Volume (ml)	Manifold ID	Comments
OP 524 MB	/	600	6	N/A	25		5	E	
OP 524 BS	/	600	6			200			
OP 524 LLBS	/	600	6			60			
FC11753-1	2	570	6						
	2	560	6						
	3	560	7						
	4	550	6						
	5	560	6	N/A	25		5	E	
GH 12/08/23									
OP FC11753-3MS	3	550	7	N/A	25	200	5	E	
OP MSD									
OP FC11753-5 DUP	3	530	6	N/A	25		5	E	

Comments:

EIS (SURR) ID: 12179A-C Conc: 250-5000ng/ml Exp. Date: 11/30/24 Inj. By: GH Ver. By: AG
 SPIKE.1 ID: LCMS2228A Conc: VARIED Exp. Date: 04/04/24 Inj. By: GH Ver. By: AG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 12174 C-E Conc: 250-1000ng/ml Exp. Date: 12/04/24 Inj. By: AL Ver. By: NG

TurboVap Temp (Therm ID): _____ N-Evap Temp (Therm ID): _____
 Observed Temp °C: _____ Corr. Temp °C: _____ Observed Temp °C: _____ Corr. Temp °C: _____

Methanol Lot # 232043 1% NH4OH MeOH PF752 SPE Lot # 604-0-07
 Water Lot# OP 1 0.3M Formic Acid PF149 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 205423
 0.1M Formic PF745 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: Staciella Palus
 Accepted By: Car

Date: 12/08/23
 Date: 12/10/23

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SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 12/12/23 09:45
Started (mm/dd/yyyy 24:00)

Method: EPA 1633 Draft QSM redo

Date/Time: 12/13/23 9:00
Finished (mm/dd/yyyy 24:00)

Balance ID: _____

Batch#: OP576

Ext. By: AG

Conc. By: _____

Vialed By: _____



Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount (ul)	Spike Amount (ul)	Final Volume (ml)	Manifold ID	Comments
OP 576 MB		60	7	N/A	25		5.0	A3	
OP 576 BS		60							
OP 576 LLBS		60	↓	↓	↓	200	↓	↓	
FC11753-3RE	1	60	7	N/A	25	60	5.0	A3	
AG 12/12/23									
OP	MS								
OP	MSD								
OP	DUP								

Comments:

EIS (SURR) ID: 12174A-C Conc: 250-5000 ng/ml Exp. Date: 11/30/24 Inj. By: AG Ver. By: KG
 SPIKE.1 ID: LCMS 2223-D Conc: Varied Exp. Date: 04/04/24 Inj. By: AG Ver. By: KG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 12180A-C Conc: 250-1000 ng/ml Exp. Date: 11/29/24 Inj. By: MW Ver. By: AL

TurboVap Temp (Therm ID): _____ N-Evap Temp (Therm ID): _____
 Observed Temp °C: _____ Corr. Temp °C: _____ Observed Temp °C: _____ Corr. Temp °C: _____

Methanol Lot # 232043 1% NH4OH MeOH PF756 SPE Lot # 604-0-07
 Water Lot# DF H2O 0.3M Formic Acid PF696 Syringe filter Lot #
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 205423
 0.1M Formic PF745 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: 
 Accepted By: 

Date: 12/12/23
 Date: 12/13/23

1633 AQ extraction 042222 xls NF