

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC5482

Sampling Date: 04/20/23



Report to:

AECOM, Inc
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Denver, CO 80237
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ATTN: Katie Abbott

Total number of pages in report: 626



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.

Norm Farmer
Technical Director

Client Service contact: Elvin Kumar 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.



May 02, 2023

Katie Abbott
AECOM, Inc.
7595 Technology Way
Denver, CO 80237

RE: SGS North America Inc. - Orlando job FC5482 Reissue

Dear Katie,

The revised chain of custody with the correct collection time for sample AF-RHMW17-WGN01LF-2304W3 was included and the changes are incorporated in the revised report for sample delivery group FC5482

SGS North America Inc. - Orlando apologizes for any inconvenience this may have caused. Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

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Sample Summary

AECOM, INC.

Job No: FC5482

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC5482-1	04/20/23	09:45	MDS 04/21/23	AQ	Ground Water	AF-RHMW17S-WGN01LF-2304W3
FC5482-2	04/20/23	07:55	MDS 04/21/23	AQ	Equipment Blank	AF-RHMW17S-WQEB01-2304W3
FC5482-3	04/20/23	11:55	MDS 04/21/23	AQ	Ground Water	AF-RHMW17-WGN01LF-2304W3
FC5482-4	04/20/23	15:25	MDS 04/21/23	AQ	Ground Water	AF-RHMW17D-WGN01LF-2304W3
FC5482-5	04/20/23	13:15	MDS 04/21/23	AQ	Field Blank Water	AF-RHMW17D-WQFB01-2304W3

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC5482

Site: N6274223F0104 RH Fire Suppression System

Report Date: 4/27/2023 5:37:24 PM

On 04/21/2023, 4 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.7 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5482 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: OP96548

Sample(s) FC5482-3MS, FC5482-4DUP were used as the QC samples indicated.

Sample(s) FC5482-4 have surrogates outside control limits.

FC5482-1 for Perfluorodecanoic acid: Associated Low Level CCV outside of control limits.

FC5482-2 for Perfluorodecanoic acid: Associated Low Level CCV outside of control limits.

FC5482-3 for Perfluorodecanoic acid: Associated Low Level CCV outside of control limits.

FC5482-4 for Perfluorodecanoic acid: Associated Low Level CCV outside of control limits.

FC5482-4 for 13C4-PFBA: Outside control limits. Confirmed by batch QC.

FC5482-4 for d5-EtFOSAA: Outside control limits. Confirmed by batch QC.

FC5482-5 for Perfluorodecanoic acid: Associated Low Level CCV outside of control limits.

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: FC5482
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 04/20/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
---------------	------------------	-----------------	-----	-----	-------	--------

FC5482-1 AF-RHMW17S-WGN01LF-2304W3

Perfluorohexanoic acid	1.5 J	3.7	1.9	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	1.0 J	3.7	1.9	ng/l	EPA DRAFT 1633
Perfluorooctanoic acid	1.2 J	3.7	0.93	ng/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.63 J	3.7	1.9	ng/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.3 J	3.7	1.9	ng/l	EPA DRAFT 1633

FC5482-2 AF-RHMW17S-WQEB01-2304W3

No hits reported in this sample.

FC5482-3 AF-RHMW17-WGN01LF-2304W3

Perfluoropentanoic acid	2.0 J	7.3	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	1.0 J	3.6	1.8	ng/l	EPA DRAFT 1633

FC5482-4 AF-RHMW17D-WGN01LF-2304W3

No hits reported in this sample.

FC5482-5 AF-RHMW17D-WQFB01-2304W3

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW17S-WGN01LF-2304W3		
Lab Sample ID:	FC5482-1	Date Sampled:	04/20/23
Matrix:	AQ - Ground Water	Date Received:	04/21/23
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	4Q43707.D	1	04/26/23 18:42	MV	04/24/23 11:00	OP96548	S4Q631
Run #2							

Run #	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.7 U	15	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.4	1.9	0.87	ng/l	
307-24-4	Perfluorohexanoic acid	1.5	3.7	1.9	0.46	ng/l	J
375-85-9	Perfluoroheptanoic acid	1.0	3.7	1.9	0.46	ng/l	J
335-67-1	Perfluorooctanoic acid	1.2	3.7	0.93	0.46	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
335-76-2	Perfluorodecanoic acid ^a	1.9 U	3.7	1.9	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.7	1.9	0.78	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.63	3.7	1.9	0.46	ng/l	J
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.7	1.9	0.65	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.3	3.7	1.9	0.50	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.7	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.7	1.9	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.8	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	3.7	1.9	0.62	ng/l	
31506-32-8	MeFOSA	3.7 U	7.4	3.7	0.93	ng/l	
4151-50-2	EtFOSA	3.7 U	7.4	3.7	0.93	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-2304W3		
Lab Sample ID:	FC5482-1	Date Sampled:	04/20/23
Matrix:	AQ - Ground Water	Date Received:	04/21/23
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	3.7 U	4.6	3.7	0.93	ng/l	
2991-50-6	EtFOSAA	3.7 U	4.6	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	37	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	37	19	6.9	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.7	1.9	0.93	ng/l	
919005-14-4	ADONA	3.7 U	7.4	3.7	1.7	ng/l	
377-73-1	PFMPA	1.9 U	7.4	1.9	0.93	ng/l	
863090-89-5	PFMBA	3.7 U	7.4	3.7	1.1	ng/l	
151772-58-6	NFDHA	3.7 U	7.4	3.7	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.7 U	7.4	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	7.4	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.9 U	7.4	1.9	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.3 U	19	9.3	4.2	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	93	19	8.1	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	93	19	7.3	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	31%		20-150%
	13C5-PFPeA	90%		20-150%
	13C5-PFHxA	110%		20-150%
	13C4-PFHpA	106%		20-150%
	13C8-PFOA	104%		20-150%
	13C9-PFNA	100%		20-150%
	13C6-PFDA	104%		20-150%
	13C7-PFUnDA	97%		20-150%
	13C2-PFDoDA	82%		20-150%
	13C2-PFTeDA	56%		20-150%
	13C3-PFBS	115%		20-150%
	13C3-PFHxS	115%		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

4.1
4

Report of Analysis

Client Sample ID:	AF-RHMW17S-WGN01LF-2304W3		Date Sampled:	04/20/23
Lab Sample ID:	FC5482-1		Date Received:	04/21/23
Matrix:	AQ - Ground Water		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	94%		20-150%
	13C8-FOSA	99%		20-150%
	d3-MeFOSA	86%		20-150%
	d5-EtFOSA	78%		20-150%
	d3-MeFOSAA	117%		20-150%
	d5-EtFOSAA	104%		20-150%
	d7-MeFOSE	78%		20-150%
	d9-EtFOSE	80%		20-150%
	13C2-4:2FTS	161%		20-180%
	13C2-6:2FTS	108%		20-180%
	13C2-8:2FTS	106%		20-180%
	13C3-HFPO-DA	95%		20-150%

(a) Associated Low Level CCV outside of 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

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW17S-WQEB01-2304W3		
Lab Sample ID:	FC5482-2	Date Sampled:	04/20/23
Matrix:	AQ - Equipment Blank	Date Received:	04/21/23
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	4Q43708.D	1	04/26/23 18:57	MV	04/24/23 11:00	OP96548	S4Q631
Run #2							

Run #	Initial Volume	Final Volume
Run #1	510 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.9 U	16	3.9	1.9	ng/l	
2706-90-3	Perfluoropentanoic acid	2.0 U	7.8	2.0	0.92	ng/l	
307-24-4	Perfluorohexanoic acid	2.0 U	3.9	2.0	0.49	ng/l	
375-85-9	Perfluoroheptanoic acid	2.0 U	3.9	2.0	0.49	ng/l	
335-67-1	Perfluorooctanoic acid	0.98 U	3.9	0.98	0.49	ng/l	
375-95-1	Perfluorononanoic acid	2.0 U	3.9	2.0	0.60	ng/l	
335-76-2	Perfluorodecanoic acid ^a	2.0 U	3.9	2.0	0.49	ng/l	
2058-94-8	Perfluoroundecanoic acid	2.0 U	3.9	2.0	0.59	ng/l	
307-55-1	Perfluorododecanoic acid	2.0 U	3.9	2.0	0.59	ng/l	
72629-94-8	Perfluorotridecanoic acid	2.0 U	3.9	2.0	0.82	ng/l	
376-06-7	Perfluorotetradecanoic acid	2.0 U	3.9	2.0	0.49	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	2.0 U	3.9	2.0	0.49	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.9 U	4.9	3.9	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	2.0 U	3.9	2.0	0.69	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	2.0 U	3.9	2.0	0.49	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	2.0 U	3.9	2.0	0.53	ng/l	
68259-12-1	Perfluorononanesulfonic acid	2.0 U	3.9	2.0	0.56	ng/l	
335-77-3	Perfluorodecanesulfonic acid	2.0 U	3.9	2.0	0.63	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.9 U	4.9	3.9	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.8 U	20	7.8	3.2	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.8 U	20	7.8	3.4	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.8 U	20	7.8	4.0	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	2.0 U	3.9	2.0	0.66	ng/l	
31506-32-8	MeFOSA	3.9 U	7.8	3.9	0.98	ng/l	
4151-50-2	EtFOSA	3.9 U	7.8	3.9	0.98	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-WQEB01-2304W3		
Lab Sample ID:	FC5482-2	Date Sampled:	04/20/23
Matrix:	AQ - Equipment Blank	Date Received:	04/21/23
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	3.9 U	4.9	3.9	0.98	ng/l	
2991-50-6	EtFOSAA	3.9 U	4.9	3.9	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	20 U	39	20	4.3	ng/l	
1691-99-2	EtFOSE	20 U	39	20	7.3	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	2.0 U	3.9	2.0	0.98	ng/l	
919005-14-4	ADONA	3.9 U	7.8	3.9	1.8	ng/l	
377-73-1	PFMPA	2.0 U	7.8	2.0	0.98	ng/l	
863090-89-5	PFMBA	3.9 U	7.8	3.9	1.1	ng/l	
151772-58-6	NFDHA	3.9 U	7.8	3.9	1.2	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.9 U	7.8	3.9	1.4	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.9 U	7.8	3.9	1.7	ng/l	
113507-82-7	PFEESA	2.0 U	7.8	2.0	0.76	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.8 U	20	9.8	4.4	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	20 U	98	20	8.6	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	20 U	98	20	7.7	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	118%		20-150%
	13C5-PFPeA	115%		20-150%
	13C5-PFHxA	116%		20-150%
	13C4-PFHpA	116%		20-150%
	13C8-PFOA	110%		20-150%
	13C9-PFNA	109%		20-150%
	13C6-PFDA	97%		20-150%
	13C7-PFUnDA	92%		20-150%
	13C2-PFDoDA	79%		20-150%
	13C2-PFTeDA	81%		20-150%
	13C3-PFBS	114%		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

Report of Analysis

Client Sample ID:	AF-RHMW17S-WQEB01-2304W3		Date Sampled:	04/20/23
Lab Sample ID:	FC5482-2		Date Received:	04/21/23
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	94%		20-150%
	13C8-FOSA	73%		20-150%
	d3-MeFOSA	75%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	103%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	67%		20-150%
	d9-EtFOSE	74%		20-150%
	13C2-4:2FTS	139%		20-180%
	13C2-6:2FTS	123%		20-180%
	13C2-8:2FTS	130%		20-180%
	13C3-HFPO-DA	113%		20-150%

(a) Associated Low Level CCV outside of 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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17-WGN01LF-2304W3		
Lab Sample ID:	FC5482-3	Date Sampled:	04/20/23
Matrix:	AQ - Ground Water	Date Received:	04/21/23
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	4Q43709.D	1	04/26/23 19:11	MV	04/24/23 11:00	OP96548	S4Q631
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	2.0	7.3	1.8	0.85	ng/l	J
307-24-4	Perfluorohexanoic acid	1.0	3.6	1.8	0.45	ng/l	J
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 ^a	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-RHMW17-WGN01LF-2304W3		
Lab Sample ID:	FC5482-3	Date Sampled:	04/20/23
Matrix:	AQ - Ground Water	Date Received:	04/21/23
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
	13C4-PFBA	107%		20-150%
	13C5-PFPeA	115%		20-150%
	13C5-PFHxA	118%		20-150%
	13C4-PFHpA	117%		20-150%
	13C8-PFOA	115%		20-150%
	13C9-PFNA	105%		20-150%
	13C6-PFDA	109%		20-150%
	13C7-PFUnDA	111%		20-150%
	13C2-PFDoDA	98%		20-150%
	13C2-PFTeDA	91%		20-150%
	13C3-PFBS	110%		20-150%
	13C3-PFHxS	110%		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-RHMW17-WGN01LF-2304W3		Date Sampled:	04/20/23
Lab Sample ID:	FC5482-3		Date Received:	04/21/23
Matrix:	AQ - Ground Water		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	104%		20-150%
	13C8-FOSA	93%		20-150%
	d3-MeFOSA	84%		20-150%
	d5-EtFOSA	85%		20-150%
	d3-MeFOSAA	114%		20-150%
	d5-EtFOSAA	106%		20-150%
	d7-MeFOSE	76%		20-150%
	d9-EtFOSE	82%		20-150%
	13C2-4:2FTS	125%		20-180%
	13C2-6:2FTS	125%		20-180%
	13C2-8:2FTS	124%		20-180%
	13C3-HFPO-DA	109%		20-150%

(a) Associated Low Level CCV outside of 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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17D-WGN01LF-2304W3		
Lab Sample ID:	FC5482-4	Date Sampled:	04/20/23
Matrix:	AQ - Ground Water	Date Received:	04/21/23
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	4Q43712.D	1	04/26/23 19:53	MV	04/24/23 11:00	OP96548	S4Q631
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 ^a	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-2304W3		
Lab Sample ID:	FC5482-4	Date Sampled:	04/20/23
Matrix:	AQ - Ground Water	Date Received:	04/21/23
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	4% b		20-150%
	13C5-PFPeA	22%		20-150%
	13C5-PFHxA	90%		20-150%
	13C4-PFHpA	105%		20-150%
	13C8-PFOA	105%		20-150%
	13C9-PFNA	98%		20-150%
	13C6-PFDA	106%		20-150%
	13C7-PFUnDA	101%		20-150%
	13C2-PFDoDA	84%		20-150%
	13C2-PFTeDA	56%		20-150%
	13C3-PFBS	104%		20-150%
	13C3-PFHxS	112%		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-2304W3	
Lab Sample ID:	FC5482-4	Date Sampled: 04/20/23
Matrix:	AQ - Ground Water	Date Received: 04/21/23
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	111%		20-150%
	13C8-FOSA	100%		20-150%
	d3-MeFOSA	102%		20-150%
	d5-EtFOSA	100%		20-150%
	d3-MeFOSAA	147%		20-150%
	d5-EtFOSAA	152% ^b		20-150%
	d7-MeFOSE	71%		20-150%
	d9-EtFOSE	81%		20-150%
	13C2-4:2FTS	118%		20-180%
	13C2-6:2FTS	107%		20-180%
	13C2-8:2FTS	103%		20-180%
	13C3-HFPO-DA	79%		20-150%

(a) Associated Low Level CCV outside of control limits.

(b) Outside control limits. Confirmed by batch QC.

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

Page 1 of 3

Client Sample ID:	AF-RHMW17D-WQFB01-2304W3		
Lab Sample ID:	FC5482-5	Date Sampled:	04/20/23
Matrix:	AQ - Field Blank Water	Date Received:	04/21/23
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	4Q43713.D	1	04/26/23 20:07	MV	04/24/23 11:00	OP96548	S4Q631
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 ^a	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	1.8 U	3.5	1.8	0.47	ng/l	
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-RHMW17D-WQFB01-2304W3		
Lab Sample ID:	FC5482-5	Date Sampled:	04/20/23
Matrix:	AQ - Field Blank Water	Date Received:	04/21/23
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	116%		20-150%
	13C5-PFPeA	112%		20-150%
	13C5-PFHxA	115%		20-150%
	13C4-PFHpA	113%		20-150%
	13C8-PFOA	111%		20-150%
	13C9-PFNA	109%		20-150%
	13C6-PFDA	104%		20-150%
	13C7-PFUnDA	108%		20-150%
	13C2-PFDoDA	95%		20-150%
	13C2-PFTeDA	69%		20-150%
	13C3-PFBS	113%		20-150%
	13C3-PFHxS	109%		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

4.5
4

Report of Analysis

Client Sample ID:	AF-RHMW17D-WQFB01-2304W3		Date Sampled:	04/20/23
Lab Sample ID:	FC5482-5		Date Received:	04/21/23
Matrix:	AQ - Field Blank Water		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	88%		20-150%
	13C8-FOSA	78%		20-150%
	d3-MeFOSA	82%		20-150%
	d5-EtFOSA	84%		20-150%
	d3-MeFOSAA	112%		20-150%
	d5-EtFOSAA	104%		20-150%
	d7-MeFOSE	73%		20-150%
	d9-EtFOSE	86%		20-150%
	13C2-4:2FTS	139%		20-180%
	13C2-6:2FTS	141%		20-180%
	13C2-8:2FTS	130%		20-180%
	13C3-HFPO-DA	109%		20-150%

(a) Associated Low Level CCV outside of 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

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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FC5482

SGS - ORLANDO JOB # :

COC #: 2304W3AFSG12

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="border: 1px solid black; padding: 5px; width: fit-content;"> EM 04/29/23 </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 # 60697810															
Project Manager: Watson Tani Email: watson.tani@aecom.com		Fax #		PFAS EPA Draft 1633												LAB USE ONLY	
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order #															
Sampler(s) Name(s) (Printed)		Sampler 1: <i>Elie Macena</i> Sampler 2: <i>Zoe Diemire</i>															
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NOISE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAC	DI WATER	WATER	W/CHL	
1	AF-RHMW17S-WGN01LF-2304W3	04/20/23	0645	ZOE	GW	3			X								X
2	AF-RHMW17S-WQEB01-2304W3	04/20/23	0755	ZOE	GW	3			X								X
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> INITIAL ASSESSMENT </div>																	
Turnaround Time (Business days)				Data Deliverable Information								Comments / Remarks					
<input type="checkbox"/> 10 Day (Business) <input type="checkbox"/> 7 Day <input checked="" type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day RUSH Other _____		Approved By: / Date: _____		<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 United AWB - Dig. 45351564					
Rush T/A Data Available VIA Email or Lablink																	
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation				Date Time:		Received By/Affiliation			
1 Elie Macena/AECOM		04/20/23 1340		2 Elie Macena/AECOM				3 Elie Macena/AECOM				4/20/23 1345		4 Elie Macena/AECOM			
Relinquished by/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation				Date Time:		Received By/Affiliation			
5				6				7				8		8			
Lab Use Only : Cooler Temperature (s) Celsius (corrected): <i>4.875</i>																	

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FC5482: Chain of Custody

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FC5482

COC #: 2304W3AFSG10

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="border: 1px solid black; padding: 5px;"> <p>En 04/20/23</p> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - 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 Manager: Watson Tanji Email: watson.tanji@aecom.com Phone #: 303-796-4624 / 808-954-4512			Project # 60697810 Fax #																				
Sampler(s) Name(s) (Printed) Sampler 1: <i>En</i> Sampler 2: <i>zoe</i>			Client Purchase Order #										PFAS EPA Draft 1633										
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NOISE	HCl	NaOH	INOS	PEROx	NACH-ZINC	SILICATE	MECH	LAB USE ONLY							
5	AF-RHMMW17-WGN01LF-2304W3	4/20/23	1133	En	GW	3			X														
<div style="border: 1px solid black; padding: 10px;"> <p>En 04/20/23</p> </div>																							
Turnaround Time (Business days)				Data Deliverable Information										Comments / Remarks									
10 Day (Business) _____ Approved By: / Date: _____ 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 United AWB 016-48351564									
Rush T/A Data Available VIA Email or Lablink																							
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation		Date Time:		Received By/Affiliation											
1 Eli Natch/AECOM		04/20/23		2 [Signature] AECOM				3 [Signature] AECOM		4/20/23		4 [Signature] AECOM											
5				6				7				8											

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COC #: 2304W3AFSG10

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; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">PFAS EPA Draft 1633</div> <div style="flex-grow: 1; border: 1px solid black; border-radius: 50%; padding: 20px; margin: 0 auto;"> <p style="font-size: 2em; font-weight: bold; text-align: center;">R</p> <p style="font-size: 1.2em; margin-top: 10px;">EPA 04/20/23</p> </div> <div style="font-size: x-small; margin-left: 10px;"> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SI - Sludge LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe </div> </div>										Lab Use Only		
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 # 60697810														
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #														
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order #														
SGS Orlando Sample #	COLLECTION			CONTAINER INFORMATION										LAB USE ONLY		
	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	AC	NOH	PHOS	PCSO4	NOH/ZNAC		DI WATER	MEDH
3	AF-RHMW17-WGN01LF-2304W3	4/20/23	1155	BS2015	GW	3		X								
Turnaround Time (Business days)		Data Deliverable Information				Comments / Remarks										
10 Day (Business) Approved By: / Date: _____ 7 Day _____ <input checked="" type="checkbox"/> 5 Day _____ 3 Day RUSH _____ 2 Day RUSH _____ 1 Day RUSH _____ Other _____ Rush T/A Data Available VIA Email or Lablink		<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 United AWP 016-48351564										
Sample Custody must be documented below each time samples change possession, including courier delivery.																
Relinquished by Sampler/Affiliation		Received By/Affiliation			Relinquished By/Affiliation			Received By/Affiliation			Date Time		Received By/Affiliation			
1 Eli Martin / AECOM		2 [Signature] AECOM			3 [Signature] AECOM			4 [Signature]			4/12/23		5 [Signature]			
Relinquished By/Affiliation		Received By/Affiliation			Relinquished By/Affiliation			Received By/Affiliation			Date Time		Received By/Affiliation			
6		7			8			9			10		11			
Lab Use Only : Cooler Temperature (s) Celsius (corrected):				http://www.sgs.com/en/edms-a-f-c-o-jif/ta-is												

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FC5482: Chain of Custody

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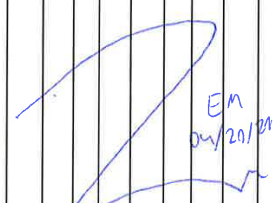

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FC5482
SGS - ORLANDO JOB # :

CDC #: 2304W3AFSG11

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 1633</div> <div style="text-align: center;">  </div> <div style="font-size: small;"> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe </div> </div>												Matrix Codes LAB USE ONLY		
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 Manager: Watson Tani Email: watson.tani@aecom.com		Project # 60697810																
Phone #: 303-796-4624 / 808-954-4512		Fax #																
Sampler(s) Name(s) (Printed) Sampler 1: <i>El. Martha</i> Sampler 2: <i>zoe Dielmu</i>		Client Purchase Order #																
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION												PFAS EPA Draft 1633	LAB USE ONLY
		DATE	TIME	SAMPLED BY:	WATRIX	TOTAL # OF BOTTLES	OTHER	ROSE	HCl	NaOH	INDS	PERDA	NACH-ZNAC	DI WATER	MESH			
4	AF-RHMW17D-WGN01F-2304W3	04/20/23	1525	20 EAB	GW	3		X									X	
5	AF-RHMW17D-WQFB01-2304W3	04/20/23	1315	20 EAB	GW	3		X									X	
																		
Turnaround Time (Business days)				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		Approved By: / Date:		<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 United AWB : 016-48351564										
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 1 <i>El. Martha/AECOM</i>	Date Time: 04/20/23 1617	Received By/Affiliation 2 <i>Alex Edwards AECOM</i>	Relinquished By/Affiliation 3 <i>Alex Edwards</i>	Date Time: 4/20/23 1634	Received By/Affiliation 4 <i>[Signature]</i>	Relinquished By/Affiliation 5	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8							
Lab Use Only : Cooler Temperature (s) Celsius (corrected):												http://www.sgs.com/en/terms-and-conditions						

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FC5482: Chain of Custody

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SGS Sample Receipt Summary

Job Number: FC5482

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 4/21/2023 4:00:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-48351564

Therm ID: IR 1;

Therm CF: -0.1;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.8);

Cooler Temps (Corrected) °C: Cooler 1: (4.7);

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 preserved properly
- 3. Sufficient volume/containers recvd for analysis:
- 4. Condition of sample Intact
- 5. Sample recvd 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 5035 Field Kits: _____

Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320

pH 10-12 25BDH07

Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS

Date: 4/21/2023 4:00:00 PM

Reviewer: CD

Date: 4/24/2023

FC5482: Chain of Custody

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Job Change Order: FC5482

Requested Date:	5/1/2023	Received Date:	4/21/2023
Account Name:	AECOM, INC.	Due Date:	4/28/2023
Project Description:	N6274223F0104 RH Fire Suppression System	Deliverable:	FULT2
CSR:	EK	TAT (Days):	7

=====
Sample #: FC5482-3 **Change:**
Dept: Revised COC received with correct sample collection time 11:55
 include revised COC and reissue report.
TAT: 7

AF-RHMW17-WGN01LF-2304W3
=====

FC5482: Chain of Custody
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Above Changes Per: Alexander Edmonds **Date/Time:** 5/1/2023 10:15:06 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5482
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 04/20/23

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 FC5482

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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: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q631-IBLK	4Q43689.D	1	04/26/23	MV	n/a	n/a	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

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	

Instrument Blank

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q631-IBLK	4Q43689.D	1	04/26/23	MV	n/a	n/a	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

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	103% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	101% 20-150%
	13C6-PFDA	99% 20-150%
	13C7-PFUnDA	97% 20-150%
	13C2-PFDoDA	96% 20-150%
	13C2-PFTeDA	94% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	97% 20-150%
	13C8-FOSA	101% 20-150%
	d3-MeFOSA	99% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	101% 20-150%
	d5-EtFOSAA	109% 20-150%
	d7-MeFOSE	100% 20-150%
	d9-EtFOSE	104% 20-150%
	13C2-4:2FTS	108% 20-180%
	13C2-6:2FTS	121% 20-180%
	13C2-8:2FTS	111% 20-180%
	13C3-HFPO-DA	97% 20-150%

6.1.1

6

Continuing Calibration Blank

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q631-ICCB	4Q43705.D	1	04/26/23	MV	n/a	n/a	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

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: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q631-ICCB	4Q43705.D	1	04/26/23	MV	n/a	n/a	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

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	104% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	95% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	97% 20-150%
	13C7-PFUnDA	95% 20-150%
	13C2-PFDoDA	93% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	85% 20-150%
	13C8-FOSA	93% 20-150%
	d3-MeFOSA	95% 20-150%
	d5-EtFOSA	89% 20-150%
	d3-MeFOSAA	100% 20-150%
	d5-EtFOSAA	105% 20-150%
	d7-MeFOSE	96% 20-150%
	d9-EtFOSE	95% 20-150%
	13C2-4:2FTS	125% 20-180%
	13C2-6:2FTS	127% 20-180%
	13C2-8:2FTS	109% 20-180%
	13C3-HFPO-DA	99% 20-150%

Method Blank Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-MB	4Q43698.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

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	0.00074	0.0040	0.00050	ug/l	J
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: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-MB	4Q43698.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

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	115% 20-150%
	13C5-PFPeA	114% 20-150%
	13C5-PFHxA	114% 20-150%
	13C4-PFHpA	114% 20-150%
	13C8-PFOA	109% 20-150%
	13C9-PFNA	114% 20-150%
	13C6-PFDA	112% 20-150%
	13C7-PFUnDA	118% 20-150%
	13C2-PFDoDA	108% 20-150%
	13C2-PFTeDA	108% 20-150%
	13C3-PFBS	116% 20-150%
	13C3-PFHxS	114% 20-150%
	13C8-PFOS	110% 20-150%
	13C8-FOSA	71% 20-150%
	d3-MeFOSA	76% 20-150%
	d5-EtFOSA	79% 20-150%
	d3-MeFOSAA	115% 20-150%
	d5-EtFOSAA	110% 20-150%
	d7-MeFOSE	70% 20-150%
	d9-EtFOSE	79% 20-150%
	13C2-4:2FTS	139% 20-180%
	13C2-6:2FTS	132% 20-180%
	13C2-8:2FTS	132% 20-180%
	13C3-HFPO-DA	111% 20-150%

Blank Spike Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-LLBS	4Q43697.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0258	86	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0132	88	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0068	91	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0063	84	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0056	75	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0060	80	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0071	95	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0065	87	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0069	92	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0069	92	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0062	83	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0060	90	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0062	88	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0062	90	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0071	99	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0060	86	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0066	91	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0064	88	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0059	81	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0263	94	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0242	85	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0305	106	40-150
754-91-6	PFOSA	0.0075	0.0066	88	40-150
31506-32-8	MeFOSA	0.015	0.0137	91	40-150
4151-50-2	EtFOSA	0.015	0.0129	86	40-150
2355-31-9	MeFOSAA	0.0075	0.0060	80	40-150
2991-50-6	EtFOSAA	0.0075	0.0067	89	40-150
24448-09-7	MeFOSE	0.0375	0.0344	92	40-150
1691-99-2	EtFOSE	0.0375	0.0285	76	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0131	87	40-150
919005-14-4	ADONA	0.0142	0.0122	86	40-150
377-73-1	PFMPA	0.015	0.0127	85	40-150
863090-89-5	PFMBA	0.015	0.0127	85	40-150
151772-58-6	NFDHA	0.015	0.0149	99	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0120	86	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0123	87	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-LLBS	4Q43697.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0115	86	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0214	57	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.124	66	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.133	71	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	115%	20-150%
	13C5-PFPeA	117%	20-150%
	13C5-PFHxA	115%	20-150%
	13C4-PFHpA	118%	20-150%
	13C8-PFOA	118%	20-150%
	13C9-PFNA	115%	20-150%
	13C6-PFDA	104%	20-150%
	13C7-PFUnDA	109%	20-150%
	13C2-PFDoDA	101%	20-150%
	13C2-PFTeDA	93%	20-150%
	13C3-PFBS	116%	20-150%
	13C3-PFHxS	114%	20-150%
	13C8-PFOS	107%	20-150%
	13C8-FOSA	70%	20-150%
	d3-MeFOSA	61%	20-150%
	d5-EtFOSA	66%	20-150%
	d3-MeFOSAA	121%	20-150%
	d5-EtFOSAA	118%	20-150%
	d7-MeFOSE	55%	20-150%
	d9-EtFOSE	65%	20-150%
	13C2-4:2FTS	130%	20-180%
	13C2-6:2FTS	154%	20-180%
	13C2-8:2FTS	121%	20-180%
	13C3-HFPO-DA	116%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-BS	4Q43696.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0912	91	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0475	95	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0226	90	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0231	92	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0223	89	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0225	90	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0233	93	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0221	88	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0234	94	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0244	98	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0232	93	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0202	91	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0211	90	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0206	90	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0225	94	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0223	96	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0245	102	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0227	94	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0222	92	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0900	96	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0857	90	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0916	95	40-150
754-91-6	PFOSA	0.025	0.0237	95	40-150
31506-32-8	MeFOSA	0.05	0.0484	97	40-150
4151-50-2	EtFOSA	0.05	0.0474	95	40-150
2355-31-9	MeFOSAA	0.025	0.0233	93	40-150
2991-50-6	EtFOSAA	0.025	0.0224	90	40-150
24448-09-7	MeFOSE	0.125	0.119	95	40-150
1691-99-2	EtFOSE	0.125	0.0987	79	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0481	96	40-150
919005-14-4	ADONA	0.0473	0.0467	99	40-150
377-73-1	PFMPA	0.05	0.0298	60	40-150
863090-89-5	PFMBA	0.05	0.0461	92	40-150
151772-58-6	NFDHA	0.05	0.0457	91	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0458	98	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0461	98	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-BS	4Q43696.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0397	89	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0568	45	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.463	74	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.479	77	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	40%	20-150%
	13C5-PFPeA	109%	20-150%
	13C5-PFHxA	112%	20-150%
	13C4-PFHpA	107%	20-150%
	13C8-PFOA	112%	20-150%
	13C9-PFNA	109%	20-150%
	13C6-PFDA	108%	20-150%
	13C7-PFUnDA	118%	20-150%
	13C2-PFDoDA	108%	20-150%
	13C2-PFTeDA	104%	20-150%
	13C3-PFBS	117%	20-150%
	13C3-PFHxS	120%	20-150%
	13C8-PFOS	102%	20-150%
	13C8-FOSA	78%	20-150%
	d3-MeFOSA	72%	20-150%
	d5-EtFOSA	74%	20-150%
	d3-MeFOSAA	119%	20-150%
	d5-EtFOSAA	116%	20-150%
	d7-MeFOSE	62%	20-150%
	d9-EtFOSE	70%	20-150%
	13C2-4:2FTS	130%	20-180%
	13C2-6:2FTS	135%	20-180%
	13C2-8:2FTS	131%	20-180%
	13C3-HFPO-DA	106%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-MS	4Q43710.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631
FC5482-3	4Q43709.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	FC5482-3 ug/l	Spike Q	MS ug/l	MS %	Limits	
375-22-4	Perfluorobutanoic acid	0.015 U		0.0909	0.0832	92	40-150
2706-90-3	Perfluoropentanoic acid	0.0020 J		0.0455	0.0460	97	40-150
307-24-4	Perfluorohexanoic acid	0.0010 J		0.0227	0.0223	94	40-150
375-85-9	Perfluoroheptanoic acid	0.0036 U		0.0227	0.0220	97	40-150
335-67-1	Perfluorooctanoic acid	0.0036 U		0.0227	0.0234	103	40-150
375-95-1	Perfluorononanoic acid	0.0036 U		0.0227	0.0223	98	40-150
335-76-2	Perfluorodecanoic acid	0.0036 U		0.0227	0.0217	95	40-150
2058-94-8	Perfluoroundecanoic acid	0.0036 U		0.0227	0.0220	97	40-150
307-55-1	Perfluorododecanoic acid	0.0036 U		0.0227	0.0223	98	40-150
72629-94-8	Perfluorotridecanoic acid	0.0036 U		0.0227	0.0236	104	40-150
376-06-7	Perfluorotetradecanoic acid	0.0036 U		0.0227	0.0228	100	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0036 U		0.0202	0.0187	93	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U		0.0214	0.0216	101	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0036 U		0.0208	0.0197	95	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0036 U		0.0217	0.0231	107	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0036 U		0.0211	0.0219	104	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0036 U		0.0219	0.0248	113	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0036 U		0.0219	0.0217	99	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U		0.022	0.0204	93	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.018 U		0.0852	0.0808	95	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U		0.0864	0.0831	96	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U		0.0873	0.0970	111	40-150
754-91-6	PFOSA	0.0036 U		0.0227	0.0238	105	40-150
31506-32-8	MeFOSA	0.0073 U		0.0455	0.0422	93	40-150
4151-50-2	EtFOSA	0.0073 U		0.0455	0.0446	98	40-150
2355-31-9	MeFOSAA	0.0045 U		0.0227	0.0211	93	40-150
2991-50-6	EtFOSAA	0.0045 U		0.0227	0.0193	85	40-150
24448-09-7	MeFOSE	0.036 U		0.114	0.110	97	40-150
1691-99-2	EtFOSE	0.036 U		0.114	0.106	93	40-150
13252-13-6	HFPO-DA (GenX)	0.0036 U		0.0455	0.0431	95	40-150
919005-14-4	ADONA	0.0073 U		0.043	0.0429	100	40-150
377-73-1	PFMPA	0.0073 U		0.0455	0.0417	92	40-150
863090-89-5	PFMBA	0.0073 U		0.0455	0.0428	94	40-150
151772-58-6	NFDHA	0.0073 U		0.0455	0.0414	91	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0073 U		0.0425	0.0360	85	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0073 U		0.043	0.0365	85	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-MS	4Q43710.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631
FC5482-3	4Q43709.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	FC5482-3 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0073 U	0.0405	0.0366	90	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	0.114	0.0713	63	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.091 U	0.568	0.430	76	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.091 U	0.568	0.435	77	40-150

CAS No.	ID Standard Recoveries	MS	FC5482-3	Limits
	13C4-PFBA	88%	107%	20-150%
	13C5-PFPeA	107%	115%	20-150%
	13C5-PFHxA	109%	118%	20-150%
	13C4-PFHpA	108%	117%	20-150%
	13C8-PFOA	97%	115%	20-150%
	13C9-PFNA	92%	105%	20-150%
	13C6-PFDA	82%	109%	20-150%
	13C7-PFUnDA	82%	111%	20-150%
	13C2-PFDoDA	75%	98%	20-150%
	13C2-PFTeDA	78%	91%	20-150%
	13C3-PFBS	106%	110%	20-150%
	13C3-PFHxS	97%	110%	20-150%
	13C8-PFOS	84%	104%	20-150%
	13C8-FOSA	79%	93%	20-150%
	d3-MeFOSA	81%	84%	20-150%
	d5-EtFOSA	80%	85%	20-150%
	d3-MeFOSAA	97%	114%	20-150%
	d5-EtFOSAA	97%	106%	20-150%
	d7-MeFOSE	73%	76%	20-150%
	d9-EtFOSE	83%	82%	20-150%
	13C2-4:2FTS	118%	125%	20-180%
	13C2-6:2FTS	118%	125%	20-180%
	13C2-8:2FTS	95%	124%	20-180%
	13C3-HFPO-DA	104%	109%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-DUP	4Q43711.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631
FC5482-4	4Q43712.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	FC5482-4 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	0.0071 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0036 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0036 U	ND		nc	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: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96548-DUP	4Q43711.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631
FC5482-4	4Q43712.D	1	04/26/23	MV	04/24/23	OP96548	S4Q631

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5482-1, FC5482-2, FC5482-3, FC5482-4, FC5482-5

CAS No.	Compound	FC5482-4 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7PFEESA		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	FC5482-4	Limits
	13C4-PFBA	4%* b	4%* a	20-150%
	13C5-PFPeA	24%	22%	20-150%
	13C5-PFHxA	90%	90%	20-150%
	13C4-PFHpA	110%	105%	20-150%
	13C8-PFOA	104%	105%	20-150%
	13C9-PFNA	100%	98%	20-150%
	13C6-PFDA	101%	106%	20-150%
	13C7-PFUnDA	104%	101%	20-150%
	13C2-PFDoDA	83%	84%	20-150%
	13C2-PFTeDA	65%	56%	20-150%
	13C3-PFBS	97%	104%	20-150%
	13C3-PFHxS	118%	112%	20-150%
	13C8-PFOS	108%	111%	20-150%
	13C8-FOSA	109%	100%	20-150%
	d3-MeFOSA	111%	102%	20-150%
	d5-EtFOSA	103%	100%	20-150%
	d3-MeFOSAA	165%* b	147%	20-150%
	d5-EtFOSAA	162%* b	152%* a	20-150%
	d7-MeFOSE	80%	71%	20-150%
	d9-EtFOSE	88%	81%	20-150%
	13C2-4:2FTS	142%	118%	20-180%
	13C2-6:2FTS	99%	107%	20-180%
	13C2-8:2FTS	109%	103%	20-180%
	13C3-HFPO-DA	81%	79%	20-150%

(a) Outside control limits. Confirmed by batch QC.

(b) Outside control limits.

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q631-CC631	Injection Date:	04/26/23
Lab File ID:	4Q43692.D	Injection Time:	15:12
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	50067	2.93	38889	5.55	37579	7.15	17740	7.70	14044	8.20
Check Std ^c	51940	2.93	38734	5.56	38469	7.16	18940	7.71	13837	8.22
Upper Limit ^d	100134	3.33	77778	5.96	75158	7.56	35480	8.11	28088	8.62
Lower Limit ^e	15020	2.53	11667	5.16	11274	6.76	5322	7.31	4213	7.82

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
ZZZZZZ	50960	2.90	41715	5.56	40870	7.16	20185	7.71	16125	8.22	5
OP96548-BS	49772	2.93	37180	5.56	35638	7.16	17247	7.71	13195	8.22	1
OP96548-LLBS	50278	2.93	36016	5.56	34816	7.16	17408	7.72	14222	8.22	1
OP96548-MB	49572	2.93	35341	5.56	35439	7.16	16603	7.72	12881	8.22	1
ZZZZZZ	36438	2.93	35029	5.57	34202	7.16	16656	7.72	13441	8.22	1
ZZZZZZ	49815	2.94	38424	5.57	37448	7.16	19054	7.72	14043	8.23	1
ZZZZZZ	33185	2.93	36909	5.56	34942	7.16	17477	7.72	13798	8.22	1
ZZZZZZ	44263	2.94	33449	5.56	32009	7.18	15981	7.72	11869	8.23	1
ZZZZZZ	35727	2.93	38676	5.57	37766	7.16	18694	7.72	15468	8.23	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: S4Q631-ICC631 4Q43684.D 04/26/23 13:19. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
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Injection Standard Area Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q631-CC631	Injection Date:	04/26/23
Lab File ID:	4Q43692.D	Injection Time:	15:12
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4098	7.24	7966	8.34
Check Std ^c	4410	7.25	8258	8.37
Upper Limit ^d	8196	7.65	15932	8.77
Lower Limit ^e	1229	6.85	2390	7.97

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
ZZZZZZ	5005	7.25	9490	8.37	5
OP96548-BS	3692	7.25	7898	8.37	1
OP96548-LLBS	3702	7.26	7645	8.37	1
OP96548-MB	3601	7.26	7618	8.37	1
ZZZZZZ	3599	7.26	6844	8.37	1
ZZZZZZ	3761	7.26	8312	8.38	1
ZZZZZZ	3917	7.26	7395	8.37	1
ZZZZZZ	3438	7.26	6963	8.38	1
ZZZZZZ	3842	7.26	7510	8.38	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q631-ICC631 4Q43684.D 04/26/23 13:19. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
6

Injection Standard Area Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q631-CC631	Injection Date:	04/26/23
Lab File ID:	4Q43704.D	Injection Time:	18:00
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	50067	2.93	38889	5.55	37579	7.15	17740	7.70	14044	8.20
Check Std ^c	55662	2.93	40888	5.57	38931	7.16	19456	7.72	14783	8.23
Upper Limit ^d	100134	3.33	77778	5.97	75158	7.56	35480	8.12	28088	8.63
Lower Limit ^e	15020	2.53	11667	5.17	11274	6.76	5322	7.32	4213	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
S4Q631-ICCB	55540	2.93	39601	5.56	39578	7.16	19302	7.72	15504	8.22	1
ZZZZZZ	53829	2.93	38999	5.57	38269	7.16	17836	7.72	13715	8.22	1
FC5482-1	38929	2.93	38984	5.56	37441	7.16	18033	7.72	14091	8.22	1
FC5482-2	52347	2.97	36486	5.57	36446	7.16	16734	7.72	14057	8.22	1
FC5482-3	50487	2.94	37224	5.57	35006	7.16	17996	7.71	13478	8.22	1
OP96548-MS	51301	2.94	37992	5.57	37852	7.16	18416	7.71	14857	8.22	1
OP96548-DUP	51572	2.93	37739	5.56	36493	7.16	18930	7.71	16059	8.22	1
FC5482-4	52763	2.94	39430	5.56	37774	7.16	19615	7.71	14720	8.22	1
FC5482-5	53430	2.93	38029	5.57	37366	7.16	17841	7.72	14168	8.22	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: S4Q631-ICC631 4Q43684.D 04/26/23 13:19. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

Injection Standard Area Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q631-CC631	Injection Date:	04/26/23
Lab File ID:	4Q43704.D	Injection Time:	18:00
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4098	7.24	7966	8.34
Check Std ^c	3909	7.26	8088	8.37
Upper Limit ^d	8196	7.66	15932	8.77
Lower Limit ^e	1229	6.86	2390	7.97

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q631-ICCB	4112	7.26	8726	8.37	1
ZZZZZZ	3965	7.25	7561	8.37	1
FC5482-1	3766	7.26	7399	8.37	1
FC5482-2	4000	7.26	7979	8.37	1
FC5482-3	4028	7.26	7906	8.37	1
OP96548-MS	4136	7.26	7851	8.37	1
OP96548-DUP	3774	7.26	6831	8.35	1
FC5482-4	3788	7.26	6868	8.35	1
FC5482-5	4014	7.26	8190	8.37	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q631-ICC631 4Q43684.D 04/26/23 13:19. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.2
6

TDCA Retention Time Check

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q631-RT	Injection Date:	04/26/23
Lab File ID:	4Q43678.D	Injection Time:	11:55
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.330	--	--
TDCA	6.860	1.470	1.000
TCDCA	6.710	1.620	1.000
TUDCA	5.867	2.463	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
S4Q631-IC631	4Q43680.D	04/26/23	12:23	00:28	Mass Calibration Verification
S4Q631-IC631	4Q43681.D	04/26/23	12:37	00:42	Initial cal 1
S4Q631-IC631	4Q43682.D	04/26/23	12:51	00:56	Initial cal 2
S4Q631-IC631	4Q43683.D	04/26/23	13:05	01:10	Initial cal 3
S4Q631-ICC631	4Q43684.D	04/26/23	13:19	01:24	Initial cal 4
S4Q631-IC631	4Q43685.D	04/26/23	13:33	01:38	Initial cal 5
S4Q631-IC631	4Q43686.D	04/26/23	13:47	01:52	Initial cal 6
S4Q631-IC631	4Q43687.D	04/26/23	14:01	02:06	Initial cal 7
S4Q631-IC631	4Q43688.D	04/26/23	14:15	02:20	Initial cal 8
S4Q631-IBLK	4Q43689.D	04/26/23	14:30	02:35	Instrument Blank
S4Q631-IBLK	4Q43689.D	04/26/23	14:30	02:35	Instrument Blank
S4Q631-ICV631	4Q43690.D	04/26/23	14:44	02:49	Initial cal verification 4
S4Q631-ICV631	4Q43691.D	04/26/23	14:58	03:03	Initial cal verification 20
S4Q631-CC631	4Q43692.D	04/26/23	15:12	03:17	Continuing cal 4
S4Q631-CC631	4Q43693.D	04/26/23	15:26	03:31	Continuing cal 1.0LL
ZZZZZZ	4Q43694.D	04/26/23	15:40	03:45	(unrelated sample)
OP96548-BS	4Q43696.D	04/26/23	16:08	04:13	Blank Spike
OP96548-LLBS	4Q43697.D	04/26/23	16:22	04:27	Blank Spike
OP96548-MB	4Q43698.D	04/26/23	16:36	04:41	Method Blank
ZZZZZZ	4Q43699.D	04/26/23	16:50	04:55	(unrelated sample)
ZZZZZZ	4Q43700.D	04/26/23	17:04	05:09	(unrelated sample)
ZZZZZZ	4Q43701.D	04/26/23	17:18	05:23	(unrelated sample)
ZZZZZZ	4Q43702.D	04/26/23	17:32	05:37	(unrelated sample)
ZZZZZZ	4Q43703.D	04/26/23	17:46	05:51	(unrelated sample)
S4Q631-CC631	4Q43704.D	04/26/23	18:00	06:05	Continuing cal 4
S4Q631-ICCB	4Q43705.D	04/26/23	18:14	06:19	Continuing Calibration Blank
ZZZZZZ	4Q43706.D	04/26/23	18:28	06:33	(unrelated sample)
FC5482-1	4Q43707.D	04/26/23	18:42	06:47	AF-RHMW17S-WGN01LF-2304W3
FC5482-2	4Q43708.D	04/26/23	18:57	07:02	AF-RHMW17S-WQEB01-2304W3
FC5482-3	4Q43709.D	04/26/23	19:11	07:16	AF-RHMW17-WGN01LF-2304W3
OP96548-MS	4Q43710.D	04/26/23	19:25	07:30	Matrix Spike
OP96548-DUP	4Q43711.D	04/26/23	19:39	07:44	Duplicate
FC5482-4	4Q43712.D	04/26/23	19:53	07:58	AF-RHMW17D-WGN01LF-2304W3
FC5482-5	4Q43713.D	04/26/23	20:07	08:12	AF-RHMW17D-WQFB01-2304W3

TDCA Retention Time Check

Job Number: FC5482
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-RT	Injection Date: 04/26/23
Lab File ID: 4Q43678.D	Injection Time: 11:55
Instrument ID: GCMS4Q	

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q631-CC631	4Q43714.D	04/26/23	20:21	08:26	Continuing cal 4
S4Q631-ICCB	4Q43715.D	04/26/23	20:35	08:40	Continuing Calibration Blank
OP96567-BS	4Q43716.D	04/26/23	20:49	08:54	Blank Spike
OP96567-LLBS	4Q43717.D	04/26/23	21:03	09:08	Blank Spike
OP96567-MB	4Q43718.D	04/26/23	21:17	09:22	Method Blank
ZZZZZ	4Q43719.D	04/26/23	21:31	09:36	(unrelated sample)
S4Q631-ECC631	4Q43720.D	04/26/23	21:45	09:50	Ending cal 4
S4Q631-ICCB	4Q43721.D	04/26/23	22:00	10:05	Continuing Calibration Blank

6.6.1

6

Ion Ratio Summary

Job Number: FC5482
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q631 Method: EPA DRAFT 1633

Lab Sample ID	Lab File ID	Ion Ratios					
		PFPeA	PFHxA	PFHpA	PFOA	PFBS	PFOS
S4Q631-ICC631	4Q43684.D	0	3	17.3	21.5	39.2	46
FC5482-1	4Q43707.D		3.3	16.7	15.1	45.1	38.4
FC5482-2	4Q43708.D						
FC5482-3	4Q43709.D	0	4.2				
FC5482-4	4Q43712.D						
FC5482-5	4Q43713.D						

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC5482
 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
FC5482-1	4Q43707.D	31	90	110	106	104	100	104	97
FC5482-2	4Q43708.D	118	115	116	116	110	109	97	92
FC5482-3	4Q43709.D	107	115	118	117	115	105	109	111
FC5482-4	4Q43712.D	4* a	22	90	105	105	98	106	101
FC5482-5	4Q43713.D	116	112	115	113	111	109	104	108
OP96548-BS	4Q43696.D	40	109	112	107	112	109	108	118
OP96548-DUP	4Q43711.D	4* b	24	90	110	104	100	101	104
OP96548-LLBS	4Q43697.D	115	117	115	118	118	115	104	109
OP96548-MB	4Q43698.D	115	114	114	114	109	114	112	118
OP96548-MS	4Q43710.D	88	107	109	108	97	92	82	82
S4Q631-IBLK	4Q43689.D	103	99	100	100	102	101	99	97
S4Q631-ICCB	4Q43705.D	104	100	101	102	95	96	97	95

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. Confirmed by batch QC.
- (b) Outside control limits.

Isotope Dilution Standard Recovery Summary

Job Number: FC5482
 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
FC5482-1	4Q43707.D	82	56	115	115	94	99	86	78
FC5482-2	4Q43708.D	79	81	114	111	94	73	75	72
FC5482-3	4Q43709.D	98	91	110	110	104	93	84	85
FC5482-4	4Q43712.D	84	56	104	112	111	100	102	100
FC5482-5	4Q43713.D	95	69	113	109	88	78	82	84
OP96548-BS	4Q43696.D	108	104	117	120	102	78	72	74
OP96548-DUP	4Q43711.D	83	65	97	118	108	109	111	103
OP96548-LLBS	4Q43697.D	101	93	116	114	107	70	61	66
OP96548-MB	4Q43698.D	108	108	116	114	110	71	76	79
OP96548-MS	4Q43710.D	75	78	106	97	84	79	81	80
S4Q631-IBLK	4Q43689.D	96	94	100	99	97	101	99	99
S4Q631-ICCB	4Q43705.D	93	98	101	102	85	93	95	89

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: FC5482
 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
FC5482-1	4Q43707.D	117	104	78	80	161	108	106	95
FC5482-2	4Q43708.D	103	93	67	74	139	123	130	113
FC5482-3	4Q43709.D	114	106	76	82	125	125	124	109
FC5482-4	4Q43712.D	147	152* a	71	81	118	107	103	79
FC5482-5	4Q43713.D	112	104	73	86	139	141	130	109
OP96548-BS	4Q43696.D	119	116	62	70	130	135	131	106
OP96548-DUP	4Q43711.D	165* b	162* b	80	88	142	99	109	81
OP96548-LLBS	4Q43697.D	121	118	55	65	130	154	121	116
OP96548-MB	4Q43698.D	115	110	70	79	139	132	132	111
OP96548-MS	4Q43710.D	97	97	73	83	118	118	95	104
S4Q631-IBLK	4Q43689.D	101	109	100	104	108	121	111	97
S4Q631-ICCB	4Q43705.D	100	105	96	95	125	127	109	99

Isotope Dilution Standards	Recovery Limits
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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. Confirmed by batch QC.
- (b) Outside control limits.

6.8.1
6

Initial Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICC631
 Lab FileID: 4Q43684.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_041923_S4Q631.quantmethod.xml	D:\MassHunter\Data\042623_1633_S4Q631	4/26/2023 3:36:02 PM	D:\MassHunter\Data\042623_1633_S4Q631\4Q43681.d	1	0.2885	0.2884	0.2773	0.2800	0.2872	0.3076	0.3098	0.3147	0.2942	4.882
D:\MassHunter\Data\042623_1633_S4Q631\4Q43682.d				D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d	2	0.5532	0.5704	0.5882	0.5670	0.5882	0.6241	0.6409	0.6507	0.5941	6.544
D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d				D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d	3	0.0423	0.0473	0.0475	0.0478	0.0489	0.0531	0.0555	0.0614	0.0505	11.761
D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d				D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d	4	1.0585	1.1535	1.1535	1.1396	1.2011	1.2760	1.2909	1.2819	1.1944	6.968
D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d				D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d	5	0.6213	0.6480	0.6585	0.6669	0.6928	0.7277	0.7426	0.7500	0.6885	6.893
D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d				D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d	6	0.0645	0.0651	0.0613	0.0600	0.0605	0.0629	0.0599	0.0536	0.0610	5.855
D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d				D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d	7	0.8387	0.9120	0.8942	0.9090	0.9013	1.0030	1.0180	1.0313	0.9384	7.423
D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d					8	0.7988	0.7859	0.7937	0.7867	0.8024	0.8645	0.8724	0.8708	0.8195	5.092
						0.1231	0.1302	0.1334	0.1332	0.1352	0.1434	0.1442	0.1432	0.1357	5.489
						0.0536	0.0573	0.0581	0.0579	0.0594	0.0633	0.0629	0.0627	0.0594	5.689
						1.4489	1.5288	1.5615	1.6706	1.4765	1.7032	1.7782	1.7979	1.6207	8.336
						1.3085	1.3761	1.3900	1.3934	1.4730	1.5226	1.5705	1.5526	1.4483	6.556
						0.7531	0.8525	0.8011	0.8052	0.8368	0.8803	0.8828	0.9318	0.8430	6.690
						1.0445	0.8933	0.8698	0.8259	0.8795	0.9936	0.9538	0.9949	0.9319	8.139
						0.8688	0.7983	0.8959	0.9031	0.9006	1.0098	0.9842	0.9587	0.9149	7.405

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Initial Calibration Summary

Job Number: FC5482
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICC631
 Lab FileID: 4Q43684.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.9633	0.9635	1.0160	0.9658	1.0406	1.1017	1.0888	1.0292	1.0211	5.397
T PFTfDA	Avg RF	1.1725	1.1702	1.2032	1.2160	1.2614	1.3033	1.2520	1.1563	1.2169	4.245
I M2-PFTeDA	Avg RF	1.1686	1.0954	1.2207	1.2496	1.2576	1.2986	1.3047	1.2353	1.2288	5.624
T PFTeDA	Avg RF	1.0497	1.0343	1.0576	0.9990	1.0903	1.1214	1.1928	1.1511	1.0870	5.949
I M8-FOSA	Avg RF	1.0931	1.1061	1.0301	1.1096	1.1365	1.2159	1.1996	1.2093	1.1375	5.797
T FOSA	Avg RF	0.8045	0.9823	1.0557	1.0666	1.0168	1.0540	1.1228	1.1319	1.0293	10.047
I M3-PFBS	Avg RF	1.2136	1.2293	1.2176	1.1513	1.1388	1.1946	1.3269	1.4080	1.2350	7.308
T PFBS	Avg RF	0.7874	0.7511	0.9511	0.8363	0.9233	0.9133	0.9276	0.9206	0.8763	8.512
I M3-PFHxS	Avg RF	1.1016	1.2711	1.2741	1.2098	1.2291	1.2283	1.2513	1.1715	1.2171	4.719
T PFHxS	Avg RF	0.3434	0.4240	0.4614	0.4676	0.4975	0.4980	0.5135	0.5308	0.4670	12.867
I M8-PFOS	Avg RF	0.7517	0.7923	0.7278	0.7211	0.7795	0.7614	0.7614	0.7313	0.7483	3.666
T PFOS	Avg RF	0.6672	0.5767	0.6539	0.6459	0.7055	0.6744	0.6662	0.6691	0.6574	5.622
I M2-4:2FTS	Avg RF	7.4435	8.2627	7.6974	8.3990	7.9981	8.2285	8.3837	7.6833	8.0120	4.545
T 4:2FTS	Avg RF	4.9861	4.6738	4.7092	4.5098	4.5406	5.2275	4.8269	5.0055	4.8099	5.184
I M2-8:2FTS	Avg RF	2.5649	2.6993	2.7758	2.9139	2.9046	3.0125	3.1035	2.6697	2.8055	8.282
T 8:2FTS	Avg RF	0.8427	0.8062	0.8759	0.8552	0.8822	0.9227	0.9390	0.9405	0.8830	5.475
I M3-MeFOSAA	Avg RF	0.8360	0.9920	0.9456	0.9475	0.9508	1.0862	1.0673	1.0498	0.9894	8.220
T MeFOSAA	Avg RF	9.7429	9.5510	9.7463	9.8311	10.54	11.12	10.83	10.47	10.23	5.724
I M3-HFO-DA	Avg RF	3.2525	3.3768	3.4462	3.5810	3.7080	4.1190	4.1292	3.9345	3.6934	9.140
T HFO-DA	Avg RF	3.0429	3.4108	3.5624	3.6166	3.6839	3.8862	3.7117	3.4467	3.5452	7.142
I M5-EFOSAA	Avg RF	0.6608	1.1641	0.8412	0.9366	0.9338	1.0061	1.0064	1.0828	0.9540	16.123
T EFOSAA	Avg RF	0.9353	0.9792	1.0456	0.9919	0.9182	1.1529	1.1139	1.1006	1.0297	8.441
I M9-EFOSE	Avg RF	0.9418	0.8100	0.8874	0.9178	0.8971	0.9700	0.9849	1.0002	0.9262	6.706
T EFOSE	Avg RF										

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Initial Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICC631
 Lab FileID: 4Q43684.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA											
T EFOSA	Avg RF	1.0032	0.9878	0.9886	1.0511	1.0149	1.1076	1.1973	1.1942	1.0681	8.245
I M3-MeFOSA											
T MeFOSA	Avg RF	0.9665	0.9620	0.8703	1.0069	0.9938	1.0550	1.0228	1.0108	0.9860	5.631
I 13C4-PFOS											
S d3-MeFOSAA	Linear	0.7941	0.7929	0.7803	0.7875	0.7916	0.8375	0.7648	0.7690	0.7897	2.814
S 13C8-PFOS	Linear	1.0264	1.0208	0.9865	0.9869	0.9919	1.1156	1.0286	1.0514	1.0260	4.196
S d5-EFOSAA	Linear	0.6605	0.6571	0.6434	0.6256	0.7001	0.6552	0.6542	0.6198	0.6520	3.772
S 13C8-FOSA	Linear	1.6265	1.7003	1.6041	1.6778	1.7135	1.8122	1.6311	1.7811	1.6933	4.398
S d7-MeFOSE	Linear	0.8307	0.8685	0.8002	0.8357	0.8588	0.8230	0.7401	0.7012	0.8073	7.225
S d3-MeFOSA	Linear	0.9505	0.9447	0.9655	0.9111	0.9738	0.9921	0.9834	1.0204	0.9677	3.426
S d9-EFOSE	Linear	1.0579	1.0854	1.0334	1.0424	1.0985	1.0446	0.9586	0.9224	1.0304	5.868
S d5-EFOSA	Linear	1.1439	1.1636	1.1151	1.0973	1.1994	1.2024	1.0551	1.0631	1.1300	5.047
I 13C3-PFBA											
S 13C4-PFBA	Linear	0.8549	0.8653	0.8673	0.8717	0.8712	0.8634	0.8665	0.8534	0.8642	0.791
I 1802-PFHxS											
S 13C2-4:2FTS	Linear	0.1299	0.1230	0.1437	0.1382	0.1418	0.1289	0.1269	0.1175	0.1312	7.035
S 13C3-PBBS	Linear	2.5737	2.4417	2.5797	2.6467	2.6923	2.4596	2.6190	2.3927	2.5507	4.202
S 13C2-6:2FTS	Linear	0.1961	0.1795	0.2031	0.2250	0.2265	0.1753	0.1846	0.1426	0.1916	14.427
S 13C3-PFHxS	Linear	1.3579	1.3500	1.3321	1.4022	1.4872	1.4129	1.4411	1.3522	1.3920	3.850
S 13C2-8:2FTS	Linear	0.3533	0.3491	0.3528	0.3558	0.3762	0.3321	0.3243	0.3049	0.3436	6.441
I 13C4-PFOA											
S 13C8-PFOA	Linear	0.8287	0.8198	0.8332	0.8176	0.8421	0.8470	0.8589	0.8688	0.8395	2.168
I 13C2-PFDA											
S 13C6-PFDA	Linear	1.1260	1.1031	1.0616	1.1623	1.1278	1.0622	1.1318	1.0608	1.1045	3.530
S 13C7-PFUnDA	Linear	1.1511	1.0705	1.1320	1.1315	1.1637	1.0994	1.1355	1.0563	1.1175	3.429
S 13C2-PFDODA	Linear	1.6115	1.5113	1.5357	1.5344	1.4943	1.5222	1.5353	1.5463	1.5364	2.248
S 13C2-PFTEdA	Linear	1.1841	1.0755	1.1224	1.1104	1.1328	1.1679	1.1790	1.1925	1.1456	3.638
I 13C5-PFNA											
S 13C9-PFNA	Linear	0.9308	0.9244	1.0093	0.9567	0.9431	0.9394	0.9823	0.8807	0.9458	4.084
I 13C2-PFHxA											
S 13C5-PPeA	Linear	0.7708	0.7651	0.7784	0.7686	0.7595	0.7550	0.7495	0.7064	0.7567	2.944
S 13C5-PFHxA	Linear	1.1887	1.1991	1.1900	1.2129	1.2074	1.1883	1.1921	1.1416	1.1900	1.814
S 13C3-HPOdA	Linear	0.1627	0.1649	0.1688	0.1667	0.1621	0.1605	0.1646	0.1644	0.1643	1.603
S 13C4-PFHpA	Linear	0.6212	0.6119	0.6294	0.6044	0.6278	0.6256	0.6015	0.5666	0.6110	3.412

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

Initial Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICC631
 Lab FileID: 4Q43684.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 = 0.864202 * x	
S 13C5-PFPeA	Linear	y = 0.756680 * x	
S 13C2-4:2FTS	Linear	y = 0.131235 * x	
S 13C3-PFBS	Linear	y = 2.550671 * x	
S 13C5-PFHxA	Linear	y = 1.190014 * x	
S 13C3-HFPO-DA	Linear	y = 0.164327 * x	
S 13C4-PFHpA	Linear	y = 0.611048 * x	
S 13C2-6:2FTS	Linear	y = 0.191588 * x	
S 13C8-PFOA	Linear	y = 0.839496 * x	
S 13C3-PFHxS	Linear	y = 1.391954 * x	
S 13C9-PFNA	Linear	y = 0.945835 * x	
S 13C2-8:2FTS	Linear	y = 0.343569 * x	
S 13C6-PEDA	Linear	y = 1.104473 * x	
S d3-MeFOSAA	Linear	y = 0.789703 * x	
S 13C8-PFOS	Linear	y = 1.026010 * x	
S d5-EFOSAA	Linear	y = 0.651992 * x	
S 13C7-PFUInDA	Linear	y = 1.117500 * x	
S 13C2-PFDODA	Linear	y = 1.536363 * x	
S 13C8-FOSA	Linear	y = 1.693331 * x	
S 13C2-PFTeDA	Linear	y = 1.145583 * x	
S d7-MeFOSE	Linear	y = 0.807268 * x	
S d3-MeFOSA	Linear	y = 0.967682 * x	
S d9-EFOSE	Linear	y = 1.030393 * x	
S d5-EFOSA	Linear	y = 1.130002 * x	

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

Initial Calibration Verification

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICV631
 Lab FileID: 4Q43690.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042623_1633_S4Q631\s4q631.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\042623_1633_S4Q631\4Q43681.d
 2:D:\MassHunter\Data\042623_1633_S4Q631\4Q43682.d
 3:D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d
 4:D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d
 5:D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d
 6:D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d
 7:D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d
 8:D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d

Data File: 4Q43690
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.782	15.6	115.6
13C2-6:2FTS	5.000	5.749	15.0	115.0
13C2-8:2FTS	5.000	5.809	16.2	116.2
13C2-PFDoDA	1.250	1.281	2.5	102.5
13C2-PFTeDA	1.250	1.270	1.6	101.6
13C3-PFBS	2.500	2.590	3.6	103.6
13C3-PFHxS	2.500	2.521	0.9	100.9
13C4-PFBA	10.000	10.215	2.1	102.1
13C4-PFHpA	2.500	2.500	0.0	100.0
13C5-PFHxA	2.500	2.448	-2.1	97.9
13C5-PFPeA	5.000	4.967	-0.7	99.3
13C6-PFDA	1.250	1.283	2.7	102.7
13C7-PFUnDA	1.250	1.354	8.3	108.3
13C8-FOSA	2.500	2.652	6.1	106.1
13C8-PFOA	2.500	2.380	-4.8	95.2
13C8-PFOS	2.500	2.392	-4.3	95.7
13C9-PFNA	1.250	1.190	-4.8	95.2
4:2FTS	9.375	9.164	-2.3	97.7
6:2FTS	9.500	9.090	-4.3	95.7
8:2FTS	9.600	9.431	-1.8	98.2
d3-MeFOSAA	5.000	5.497	9.9	109.9
EtFOSAA	2.500	2.640	5.6	105.6
FOSA	2.500	2.448	-2.1	97.9
MeFOSAA	2.500	2.176	-13.0	87.0
PFBA	10.000	9.560	-4.4	95.6
PFBS	2.218	2.236	0.8	100.8
PFDA	2.500	2.445	-2.2	97.8
PFDoDA	2.500	2.473	-1.1	98.9
PFDS	2.413	2.735	13.3	113.3
PFHpA	2.500	2.483	-0.7	99.3
PFHpS	2.383	2.743	15.1	115.1
PFHxA	2.500	2.495	-0.2	99.8
PFHxS	2.285	2.266	-0.8	99.2
PFNA	2.500	2.617	4.7	104.7
PFNS	2.405	2.814	17.0	117.0
PFOA	2.500	2.551	2.1	102.1
PFOS	2.320	2.551	10.0	110.0

Initial Calibration Verification

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICV631
 Lab FileID: 4Q43690.D

PFPeA	5.000	5.055	1.1	101.1
PFPeS	2.353	2.578	9.6	109.6
PFTeDA	2.500	2.535	1.4	101.4
PFTTrDA	2.500	2.595	3.8	103.8
PFUnDA	2.500	2.364	-5.4	94.6
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	4.956	4.9	104.9
13C3-HFPO-DA	10.000	10.151	1.5	101.5
9C1-PF3ONS	4.675	4.637	-0.8	99.2
ADONA	4.725	4.671	-1.2	98.8
HFPO-DA	5.000	4.716	-5.7	94.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.315	-1.3	98.7
5:3FTCA	62.400	64.086	2.7	102.7
7:3FTCA	62.400	64.191	2.9	102.9
d3-MeFOSA	2.500	2.465	-1.4	98.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.174	3.5	103.5
EtFOSE	12.500	12.484	-0.1	99.9
MeFOSA	5.000	5.301	6.0	106.0
MeFOSE	12.500	12.725	1.8	101.8
PFDoDS	2.425	2.732	12.7	112.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.336	6.7	106.7
d7-MeFOSE	25.000	25.886	3.5	103.5
d9-EtFOSE	25.000	26.480	5.9	105.9
d5-EtFOSA	2.500	2.603	4.1	104.1
NFDHA	5.000	5.211	4.2	104.2
PFMBA	5.000	5.045	0.9	100.9
PFMPA	5.000	5.028	0.6	100.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.464	0.3	100.3

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICV631
 Lab FileID: 4Q43691.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042623_1633_S4Q631\s4q631.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\042623_1633_S4Q631\4Q43681.d
 2:D:\MassHunter\Data\042623_1633_S4Q631\4Q43682.d
 3:D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d
 4:D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d
 5:D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d
 6:D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d
 7:D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d
 8:D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d

Data File: 4Q43691
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.875	17.5	117.5
13C2-6:2FTS	5.000	5.767	15.3	115.3
13C2-8:2FTS	5.000	5.784	15.7	115.7
13C2-PFDoDA	1.250	1.259	0.7	100.7
13C2-PFTeDA	1.250	1.203	-3.8	96.2
13C3-PFBS	2.500	2.590	3.6	103.6
13C3-PFHxS	2.500	2.528	1.1	101.1
13C4-PFBA	10.000	10.258	2.6	102.6
13C4-PFHpA	2.500	2.467	-1.3	98.7
13C5-PFHxA	2.500	2.493	-0.3	99.7
13C5-PFPeA	5.000	5.087	1.7	101.7
13C6-PFDA	1.250	1.306	4.5	104.5
13C7-PFUnDA	1.250	1.312	5.0	105.0
13C8-FOSA	2.500	2.513	0.5	100.5
13C8-PFOA	2.500	2.482	-0.7	99.3
13C8-PFOS	2.500	2.224	-11.1	88.9
13C9-PFNA	1.250	1.224	-2.1	97.9
4:2FTS	20.000	19.233	-3.8	96.2
6:2FTS	20.000	19.774	-1.1	98.9
8:2FTS	20.000	19.815	-0.9	99.1
d3-MeFOSAA	5.000	4.948	-1.0	99.0
EtFOSAA	20.000	21.873	9.4	109.4
FOSA	20.000	20.373	1.9	101.9
MeFOSAA	20.000	19.835	-0.8	99.2
PFBA	20.000	18.683	-6.6	93.4
PFBS	20.000	21.257	6.3	106.3
PFDA	20.000	19.447	-2.8	97.2
PFDoDA	20.000	18.280	-8.6	91.4
PFDS	20.000	21.579	7.9	107.9
PFHpA	20.000	20.505	2.5	102.5
PFHpS	20.000	23.302	16.5	116.5
PFHxA	20.000	21.577	7.9	107.9
PFHxS	20.000	21.651	8.3	108.3
PFNA	20.000	22.303	11.5	111.5
PFNS	20.000	23.629	18.1	118.1
PFOA	20.000	20.295	1.5	101.5
PFOS	20.000	18.632	-6.8	93.2

Initial Calibration Verification

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-ICV631
 Lab FileID: 4Q43691.D

PFPeA	20.000	21.654	8.3	108.3
PFPeS	20.000	21.642	8.2	108.2
PFTeDA	20.000	22.921	14.6	114.6
PFTTrDA	20.000	18.154	-9.2	90.8
PFUnDA	20.000	19.424	-2.9	97.1
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	20.000	21.112	5.6	105.6
13C3-HFPO-DA	10.000	10.001	0.0	100.0
9C1-PF3ONS	20.000	20.984	4.9	104.9
ADONA	20.000	20.575	2.9	102.9
HFPO-DA	20.000	18.907	-5.5	94.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	20.490	2.4	102.4
5:3FTCA	20.000	21.056	5.3	105.3
7:3FTCA	20.000	20.915	4.6	104.6
d3-MeFOSA	2.500	2.460	-1.6	98.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	20.259	1.3	101.3
EtFOSE	100.000	107.732	7.7	107.7
MeFOSA	20.000	20.631	3.2	103.2
MeFOSE	100.000	108.119	8.1	108.1
PFDoDS	20.000	21.454	7.3	107.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.649	-7.0	93.0
d7-MeFOSE	25.000	24.560	-1.8	98.2
d9-EtFOSE	25.000	24.105	-3.6	96.4
d5-EtFOSA	2.500	2.469	-1.2	98.8
NFDHA	20.000	20.667	3.3	103.3
PFMBA	20.000	21.014	5.1	105.1
PFMPA	20.000	21.005	5.0	105.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	20.000	18.453	-7.7	92.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43692.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042623_1633_S4Q631\s4q631.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\042623_1633_S4Q631\4Q43681.d
 2:D:\MassHunter\Data\042623_1633_S4Q631\4Q43682.d
 3:D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d
 4:D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d
 5:D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d
 6:D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d
 7:D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d
 8:D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d

Data File: 4Q43692
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.209	4.2	104.2
13C2-6:2FTS	5.000	5.216	4.3	104.3
13C2-8:2FTS	5.000	5.368	7.4	107.4
13C2-PFDoDA	1.250	1.251	0.1	100.1
13C2-PFTeDA	1.250	1.261	0.9	100.9
13C3-PFBS	2.500	2.289	-8.4	91.6
13C3-PFHxS	2.500	2.408	-3.7	96.3
13C4-PFBA	10.000	10.340	3.4	103.4
13C4-PFHpA	2.500	2.536	1.4	101.4
13C5-PFHxA	2.500	2.523	0.9	100.9
13C5-PFPeA	5.000	5.114	2.3	102.3
13C6-PFDA	1.250	1.309	4.7	104.7
13C7-PFUnDA	1.250	1.269	1.5	101.5
13C8-FOSA	2.500	2.403	-3.9	96.1
13C8-PFOA	2.500	2.428	-2.9	97.1
13C8-PFOS	2.500	2.372	-5.1	94.9
13C9-PFNA	1.250	1.140	-8.8	91.2
4:2FTS	9.375	8.999	-4.0	96.0
6:2FTS	9.500	9.890	4.1	104.1
8:2FTS	9.600	9.547	-0.5	99.5
d3-MeFOSAA	5.000	5.095	1.9	101.9
EtFOSAA	2.500	2.445	-2.2	97.8
FOSA	2.500	2.462	-1.5	98.5
MeFOSAA	2.500	2.385	-4.6	95.4
PFBA	10.000	9.504	-5.0	95.0
PFBS	2.218	2.216	-0.1	99.9
PFDA	2.500	2.196	-12.2	87.8
PFDoDA	2.500	2.453	-1.9	98.1
PFDS	2.413	2.402	-0.5	99.5
PFHpA	2.500	2.405	-3.8	96.2
PFHpS	2.383	2.413	1.3	101.3
PFHxA	2.500	2.464	-1.5	98.5
PFHxS	2.285	1.982	-13.3	86.7
PFNA	2.500	2.535	1.4	101.4
PFNS	2.405	2.653	10.3	110.3
PFOA	2.500	2.428	-2.9	97.1
PFOS	2.320	2.217	-4.5	95.5

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43692.D

PFPeA	5.000	4.874	-2.5	97.5
PFPeS	2.353	2.392	1.6	101.6
PFTeDA	2.500	2.520	0.8	100.8
PFTTrDA	2.500	2.596	3.8	103.8
PFUnDA	2.500	2.544	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	4.944	4.6	104.6
13C3-HFPO-DA	10.000	9.905	-0.9	99.1
9C1-PF3ONS	4.675	4.530	-3.1	96.9
ADONA	4.725	4.773	1.0	101.0
HFPO-DA	5.000	4.997	-0.1	99.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.949	-4.3	95.7
5:3FTCA	62.400	61.334	-1.7	98.3
7:3FTCA	62.400	61.987	-0.7	99.3
d3-MeFOSA	2.500	2.415	-3.4	96.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.801	-4.0	96.0
EtFOSE	12.500	11.768	-5.9	94.1
MeFOSA	5.000	4.852	-3.0	97.0
MeFOSE	12.500	11.890	-4.9	95.1
PFDoDS	2.425	2.417	-0.3	99.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.966	-0.7	99.3
d7-MeFOSE	25.000	25.652	2.6	102.6
d9-EtFOSE	25.000	25.264	1.1	101.1
d5-EtFOSA	2.500	2.419	-3.3	96.7
NFDHA	5.000	4.806	-3.9	96.1
PFMBA	5.000	4.851	-3.0	97.0
PFMPA	5.000	4.785	-4.3	95.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.309	-3.2	96.8

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43693.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042623_1633_S4Q631\s4q631.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\042623_1633_S4Q631\4Q43681.d
 2:D:\MassHunter\Data\042623_1633_S4Q631\4Q43682.d
 3:D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d
 4:D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d
 5:D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d
 6:D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d
 7:D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d
 8:D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d

Data File: 4Q43693
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.910	18.2	118.2
13C2-6:2FTS	5.000	6.031	20.6	120.6
13C2-8:2FTS	5.000	5.394	7.9	107.9
13C2-PFDoDA	1.250	1.247	-0.3	99.7
13C2-PFTeDA	1.250	1.228	-1.8	98.2
13C3-PFBS	2.500	2.520	0.8	100.8
13C3-PFHxS	2.500	2.703	8.1	108.1
13C4-PFBA	10.000	10.191	1.9	101.9
13C4-PFHpA	2.500	2.538	1.5	101.5
13C5-PFHxA	2.500	2.477	-0.9	99.1
13C5-PFPeA	5.000	5.051	1.0	101.0
13C6-PFDA	1.250	1.283	2.6	102.6
13C7-PFUnDA	1.250	1.280	2.4	102.4
13C8-FOSA	2.500	2.398	-4.1	95.9
13C8-PFOA	2.500	2.443	-2.3	97.7
13C8-PFOS	2.500	2.400	-4.0	96.0
13C9-PFNA	1.250	1.233	-1.4	98.6
4:2FTS	0.750	0.781	4.1	104.1
6:2FTS	0.760	0.746	-1.8	98.2
8:2FTS	0.768	0.882	14.8	114.8
d3-MeFOSAA	5.000	5.050	1.0	101.0
EtFOSAA	0.200	0.174	-12.8	87.2
FOSA	0.200	0.197	-1.6	98.4
MeFOSAA	0.200	0.192	-3.8	96.2
PFBA	0.800	0.747	-6.7	93.3
PFBS	0.177	0.195	10.2	110.2
PFDA	0.200	0.139	# -30.3	69.7
PFDoDA	0.200	0.192	-4.2	95.8
PFDS	0.193	0.194	0.3	100.3
PFHpA	0.200	0.184	-8.1	91.9
PFHpS	0.191	0.151	-21.2	78.8
PFHxA	0.200	0.187	-6.4	93.6
PFHxS	0.183	0.151	-17.2	82.8
PFNA	0.200	0.149	-25.4	74.6
PFNS	0.192	0.203	5.8	105.8
PFOA	0.200	0.212	6.0	106.0
PFOS	0.186	0.219	17.9	117.9

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43693.D

PFPeA	0.400	0.363	-9.1	90.9
PFPeS	0.188	0.165	-12.2	87.8
PFTeDA	0.200	0.199	-0.6	99.4
PFTTrDA	0.200	0.198	-1.1	98.9
PFUnDA	0.200	0.179	-10.5	89.5
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	0.362	-4.3	95.7
13C3-HFPO-DA	10.000	9.679	-3.2	96.8
9C1-PF3ONS	0.367	0.335	-8.9	91.1
ADONA	0.378	0.336	-11.2	88.8
HFPO-DA	0.400	0.374	-6.4	93.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.901	-9.8	90.2
5:3FTCA	4.992	4.389	-12.1	87.9
7:3FTCA	4.992	4.689	-6.1	93.9
d3-MeFOSA	2.500	2.540	1.6	101.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.364	-9.0	91.0
EtFOSE	1.000	0.856	-14.4	85.6
MeFOSA	0.400	0.375	-6.4	93.6
MeFOSE	1.000	0.945	-5.5	94.5
PFDoDS	0.194	0.179	-7.9	92.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.258	5.2	105.2
d7-MeFOSE	25.000	25.309	1.2	101.2
d9-EtFOSE	25.000	25.189	0.8	100.8
d5-EtFOSA	2.500	2.517	0.7	100.7
NFDHA	0.400	0.423	5.9	105.9
PFMBA	0.400	0.360	-9.9	90.1
PFMPA	0.400	0.362	-9.5	90.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.317	-11.0	89.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43704.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042623_1633_S4Q631\s4q631.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\042623_1633_S4Q631\4Q43681.d
 2:D:\MassHunter\Data\042623_1633_S4Q631\4Q43682.d
 3:D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d
 4:D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d
 5:D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d
 6:D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d
 7:D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d
 8:D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d

Data File: 4Q43704
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.322	26.4	126.4
13C2-6:2FTS	5.000	7.091	# 41.8	141.8
13C2-8:2FTS	5.000	6.376	27.5	127.5
13C2-PFDoDA	1.250	1.268	1.4	101.4
13C2-PFTeDA	1.250	1.265	1.2	101.2
13C3-PFBS	2.500	2.774	11.0	111.0
13C3-PFHxS	2.500	2.548	1.9	101.9
13C4-PFBA	10.000	10.500	5.0	105.0
13C4-PFHpA	2.500	2.439	-2.4	97.6
13C5-PFHxA	2.500	2.516	0.7	100.7
13C5-PFPeA	5.000	4.898	-2.0	98.0
13C6-PFDA	1.250	1.268	1.5	101.5
13C7-PFUnDA	1.250	1.327	6.2	106.2
13C8-FOSA	2.500	2.710	8.4	108.4
13C8-PFOA	2.500	2.459	-1.6	98.4
13C8-PFOS	2.500	2.257	-9.7	90.3
13C9-PFNA	1.250	1.217	-2.7	97.3
4:2FTS	9.375	8.822	-5.9	94.1
6:2FTS	9.500	8.369	-11.9	88.1
8:2FTS	9.600	8.956	-6.7	93.3
d3-MeFOSAA	5.000	5.556	11.1	111.1
EtFOSAA	2.500	2.527	1.1	101.1
FOSA	2.500	2.226	-11.0	89.0
MeFOSAA	2.500	2.422	-3.1	96.9
PFBA	10.000	9.194	-8.1	91.9
PFBS	2.218	2.114	-4.7	95.3
PFDA	2.500	2.225	-11.0	89.0
PFDoDA	2.500	2.377	-4.9	95.1
PFDS	2.413	2.708	12.2	112.2
PFHpA	2.500	2.483	-0.7	99.3
PFHpS	2.383	2.760	15.8	115.8
PFHxA	2.500	2.424	-3.0	97.0
PFHxS	2.285	2.177	-4.7	95.3
PFNA	2.500	2.395	-4.2	95.8
PFNS	2.405	2.882	19.8	119.8
PFOA	2.500	2.530	1.2	101.2
PFOS	2.320	2.590	11.6	111.6

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43704.D

PFPeA	5.000	4.965	-0.7	99.3
PFPeS	2.353	2.446	4.0	104.0
PFTeDA	2.500	2.510	0.4	100.4
PFTTrDA	2.500	2.517	0.7	100.7
PFUnDA	2.500	2.324	-7.0	93.0
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	4.725	5.070	7.3	107.3
13C3-HFPO-DA	10.000	9.496	-5.0	95.0
9C1-PF3ONS	4.675	4.788	2.4	102.4
ADONA	4.725	4.875	3.2	103.2
HFPO-DA	5.000	4.860	-2.8	97.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.306	-1.4	98.6
5:3FTCA	62.400	58.936	-5.6	94.4
7:3FTCA	62.400	61.432	-1.6	98.4
d3-MeFOSA	2.500	2.575	3.0	103.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.176	3.5	103.5
EtFOSE	12.500	12.119	-3.0	97.0
MeFOSA	5.000	4.340	-13.2	86.8
MeFOSE	12.500	11.000	-12.0	88.0
PFDODS	2.425	2.824	16.4	116.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.510	10.2	110.2
d7-MeFOSE	25.000	26.895	7.6	107.6
d9-EtFOSE	25.000	26.519	6.1	106.1
d5-EtFOSA	2.500	2.408	-3.7	96.3
NFDHA	5.000	4.479	-10.4	89.6
PFMBA	5.000	4.962	-0.8	99.2
PFMPA	5.000	4.999	0.0	100.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.141	-6.9	93.1

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43714.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042623_1633_S4Q631\s4q631.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\042623_1633_S4Q631\4Q43681.d
 2:D:\MassHunter\Data\042623_1633_S4Q631\4Q43682.d
 3:D:\MassHunter\Data\042623_1633_S4Q631\4Q43683.d
 4:D:\MassHunter\Data\042623_1633_S4Q631\4Q43684.d
 5:D:\MassHunter\Data\042623_1633_S4Q631\4Q43685.d
 6:D:\MassHunter\Data\042623_1633_S4Q631\4Q43686.d
 7:D:\MassHunter\Data\042623_1633_S4Q631\4Q43687.d
 8:D:\MassHunter\Data\042623_1633_S4Q631\4Q43688.d

Data File: 4Q43714
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.497	29.9	129.9
13C2-6:2FTS	5.000	6.574	# 31.5	131.5
13C2-8:2FTS	5.000	5.842	16.8	116.8
13C2-PFDoDA	1.250	1.219	-2.5	97.5
13C2-PFTeDA	1.250	1.266	1.3	101.3
13C3-PFBS	2.500	2.501	0.0	100.0
13C3-PFHxS	2.500	2.470	-1.2	98.8
13C4-PFBA	10.000	10.310	3.1	103.1
13C4-PFHpA	2.500	2.471	-1.2	98.8
13C5-PFHxA	2.500	2.546	1.8	101.8
13C5-PFPeA	5.000	4.946	-1.1	98.9
13C6-PFDA	1.250	1.296	3.7	103.7
13C7-PFUnDA	1.250	1.375	10.0	110.0
13C8-FOSA	2.500	2.497	-0.1	99.9
13C8-PFOA	2.500	2.458	-1.7	98.3
13C8-PFOS	2.500	2.483	-0.7	99.3
13C9-PFNA	1.250	1.194	-4.5	95.5
4:2FTS	9.375	8.592	-8.4	91.6
6:2FTS	9.500	8.795	-7.4	92.6
8:2FTS	9.600	10.082	5.0	105.0
d3-MeFOSAA	5.000	5.300	6.0	106.0
EtFOSAA	2.500	2.464	-1.4	98.6
FOSA	2.500	2.338	-6.5	93.5
MeFOSAA	2.500	2.467	-1.3	98.7
PFBA	10.000	9.270	-7.3	92.7
PFBS	2.218	2.118	-4.5	95.5
PFDA	2.500	2.358	-5.7	94.3
PFDoDA	2.500	2.493	-0.3	99.7
PFDS	2.413	2.365	-2.0	98.0
PFHpA	2.500	2.459	-1.7	98.3
PFHpS	2.383	2.345	-1.6	98.4
PFHxA	2.500	2.424	-3.0	97.0
PFHxS	2.285	2.218	-2.9	97.1
PFNA	2.500	2.544	1.8	101.8
PFNS	2.405	2.389	-0.7	99.3
PFOA	2.500	2.495	-0.2	99.8
PFOS	2.320	2.067	-10.9	89.1

Continuing Calibration Summary

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q631-CC631
 Lab FileID: 4Q43714.D

PFPeA	5.000	5.050	1.0	101.0
PFPeS	2.353	2.375	0.9	100.9
PFTeDA	2.500	2.504	0.2	100.2
PFTTrDA	2.500	2.707	8.3	108.3
PFUnDA	2.500	2.331	-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	4.725	5.253	11.2	111.2
13C3-HFPO-DA	10.000	9.473	-5.3	94.7
9C1-PF3ONS	4.675	5.044	7.9	107.9
ADONA	4.725	5.006	5.9	105.9
HFPO-DA	5.000	5.022	0.4	100.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.281	-1.6	98.4
5:3FTCA	62.400	60.320	-3.3	96.7
7:3FTCA	62.400	61.074	-2.1	97.9
d3-MeFOSA	2.500	2.524	1.0	101.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.916	-1.7	98.3
EtFOSE	12.500	12.231	-2.1	97.9
MeFOSA	5.000	4.603	-7.9	92.1
MeFOSE	12.500	11.272	-9.8	90.2
PFDoDS	2.425	2.289	-5.6	94.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.586	11.7	111.7
d7-MeFOSE	25.000	25.924	3.7	103.7
d9-EtFOSE	25.000	25.365	1.5	101.5
d5-EtFOSA	2.500	2.448	-2.1	97.9
NFDHA	5.000	4.973	-0.5	99.5
PFMBA	5.000	4.856	-2.9	97.1
PFMPA	5.000	4.926	-1.5	98.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.188	-5.9	94.1

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC5482
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q631	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q631-RT	4Q43678.D	04/26/23 11:55	n/a	Retention Time Marker
S4Q631-RT	4Q43679.D	04/26/23 12:09	n/a	Retention Time Marker
S4Q631-IC631	4Q43680.D	04/26/23 12:23	n/a	Mass Calibration Verification
S4Q631-IC631	4Q43681.D	04/26/23 12:37	n/a	Initial cal 1
S4Q631-IC631	4Q43682.D	04/26/23 12:51	n/a	Initial cal 2
S4Q631-IC631	4Q43683.D	04/26/23 13:05	n/a	Initial cal 3
S4Q631-ICC631	4Q43684.D	04/26/23 13:19	n/a	Initial cal 4
S4Q631-IC631	4Q43685.D	04/26/23 13:33	n/a	Initial cal 5
S4Q631-IC631	4Q43686.D	04/26/23 13:47	n/a	Initial cal 6
S4Q631-IC631	4Q43687.D	04/26/23 14:01	n/a	Initial cal 7
S4Q631-IC631	4Q43688.D	04/26/23 14:15	n/a	Initial cal 8
S4Q631-IBLK	4Q43689.D	04/26/23 14:30	n/a	Instrument Blank
S4Q631-IBLK	4Q43689.D	04/26/23 14:30	n/a	Instrument Blank
S4Q631-ICV631	4Q43690.D	04/26/23 14:44	n/a	Initial cal verification 4
S4Q631-ICV631	4Q43691.D	04/26/23 14:58	n/a	Initial cal verification 20
S4Q631-CC631	4Q43692.D	04/26/23 15:12	n/a	Continuing cal 4
S4Q631-CC631	4Q43693.D	04/26/23 15:26	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q43694.D	04/26/23 15:40	OP96476	(unrelated sample)
OP96548-BS	4Q43696.D	04/26/23 16:08	OP96548	Blank Spike
OP96548-LLBS	4Q43697.D	04/26/23 16:22	OP96548	Blank Spike
OP96548-MB	4Q43698.D	04/26/23 16:36	OP96548	Method Blank
ZZZZZZ	4Q43699.D	04/26/23 16:50	OP96548	(unrelated sample)
ZZZZZZ	4Q43700.D	04/26/23 17:04	OP96548	(unrelated sample)
ZZZZZZ	4Q43701.D	04/26/23 17:18	OP96548	(unrelated sample)
ZZZZZZ	4Q43702.D	04/26/23 17:32	OP96548	(unrelated sample)
ZZZZZZ	4Q43703.D	04/26/23 17:46	OP96548	(unrelated sample)
S4Q631-CC631	4Q43704.D	04/26/23 18:00	n/a	Continuing cal 4
S4Q631-ICCB	4Q43705.D	04/26/23 18:14	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43706.D	04/26/23 18:28	OP96548	(unrelated sample)
FC5482-1	4Q43707.D	04/26/23 18:42	OP96548	AF-RHMW17S-WGN01LF-2304W3
FC5482-2	4Q43708.D	04/26/23 18:57	OP96548	AF-RHMW17S-WQEB01-2304W3
FC5482-3	4Q43709.D	04/26/23 19:11	OP96548	AF-RHMW17-WGN01LF-2304W3
OP96548-MS	4Q43710.D	04/26/23 19:25	OP96548	Matrix Spike
OP96548-DUP	4Q43711.D	04/26/23 19:39	OP96548	Duplicate
FC5482-4	4Q43712.D	04/26/23 19:53	OP96548	AF-RHMW17D-WGN01LF-2304W3
FC5482-5	4Q43713.D	04/26/23 20:07	OP96548	AF-RHMW17D-WQFB01-2304W3
S4Q631-CC631	4Q43714.D	04/26/23 20:21	n/a	Continuing cal 4
S4Q631-ICCB	4Q43715.D	04/26/23 20:35	n/a	Continuing Calibration Blank
OP96567-BS	4Q43716.D	04/26/23 20:49	OP96567	Blank Spike
OP96567-LLBS	4Q43717.D	04/26/23 21:03	OP96567	Blank Spike
OP96567-MB	4Q43718.D	04/26/23 21:17	OP96567	Method Blank
ZZZZZZ	4Q43719.D	04/26/23 21:31	OP96567	(unrelated sample)
S4Q631-ECC631	4Q43720.D	04/26/23 21:45	n/a	Ending cal 4
S4Q631-ICCB	4Q43721.D	04/26/23 22:00	n/a	Continuing Calibration Blank

MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43707.d
Operator : marthav
Acq. Method : 1633full_4Q.m
Acq. Date-Time : 4/26/2023 6:42:52 PM
Sample Name : FC5482-1
Vial : P3-B3
DA Method File : 1633_041923_S4Q631.quantmethod.xml
Batch Name : s4q631.batch.bin
Sample Information : OP96548,S4q630,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	20827	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	53163	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	50835	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	25164	2.50 µg/L	0.025
M8-PFOA	7.175	421.1 -> 376.0	32637	2.50 µg/L	0.027
M9-PFNA	7.721	472.1 -> 427.0	17108	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	16201	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	15273	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	17703	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	9106	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	12455	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	11063	2.50 µg/L	0.012
M3-PFHxS	7.266	402.1 -> 79.9	6019	2.50 µg/L	0.025
M8-PFOS	8.366	507.1 -> 79.9	7165	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1589	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1561	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2731	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	13615	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	24387	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	10046	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	46495	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	61315	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	6481	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	6166	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7399	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	38929	5.00 µg/L	0.000
18O2-PFHxS	7.265	403.0 -> 83.9	3766	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	37441	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14091	1.25 µg/L	0.012
13C5-PFNA	7.721	468.0 -> 423.0	18033	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	38984	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1589	8.04 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 160.7%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1561	5.41 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2731	5.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-PFDoDA	9.143	615.1 -> 570.0	17703	1.02 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.8%		
13C2-PFTeDA	9.936	715.2 -> 670.0	9106	0.71 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 56.4%		
13C3-PFBS	5.464	302.1 -> 79.9	11063	2.88 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.2%		
13C3-PFHxS	7.266	402.1 -> 79.9	6019	2.87 µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.8%	
13C4-PFBA	2.936	216.8 -> 171.9	20827	3.10 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 31.0%	
13C4-PFHpA	6.504	367.1 -> 322.0	25164	2.64 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C5-PFHxA	5.559	318.0 -> 273.0	50835	2.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.6%	
13C5-PFPeA	4.387	268.3 -> 223.0	53163	4.51 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.1%	
13C6-PFDA	8.216	519.1 -> 474.1	16201	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C7-PFUnDA	8.697	570.0 -> 525.1	15273	1.21 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-FOSA	9.783	506.1 -> 77.8	12455	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C8-PFOA	7.175	421.1 -> 376.0	32637	2.60 µg/L	0.027
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOS	8.366	507.1 -> 79.9	7165	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C9-PFNA	7.721	472.1 -> 427.0	17108	1.25 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
d3-MeFOSAA	8.273	573.2 -> 419.0	13615	5.83 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.5%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	24387	9.52 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d3-MeFOSA	11.076	515.0 -> 219.0	6166	2.15 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.1%	
d5-EtFOSAA	8.483	589.2 -> 419.0	10046	5.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.1%	
d7-MeFOSE	10.959	623.2 -> 58.9	46495	19.46 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.8%	
d9-EtFOSE	11.269	639.2 -> 58.9	61315	20.11 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.4%	
d5-EtFOSA	11.360	531.1 -> 219.0	6481	1.94 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.5%	

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	2.996	212.8 -> 168.9	0	µg/L	1
PFBS	5.478	298.7 -> 79.9	342	0.07 µg/L	90
		298.7 -> 98.8	154		
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	6.505	599.0 -> 98.8				
		363.1 -> 319.0	1763	0.11	µg/L	99
PFHpS	-	363.1 -> 169.0	294			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.562	449.0 -> 98.9				
		313.0 -> 269.0	3174	0.17	µg/L	99
PFHxS	-	313.0 -> 118.9	104			
		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	7.164	548.8 -> 98.9				
		413.0 -> 369.0	2491	0.13	µg/L	86
PFOS	8.367	413.0 -> 169.0	376			
		498.9 -> 79.9	485	0.14	µg/L	78
PFPeA	4.414	498.9 -> 98.8	186			
		263.0 -> 219.0	0		µg/L	1
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	3.711	241.0 -> 177.0	0		µg/L	1
		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				

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

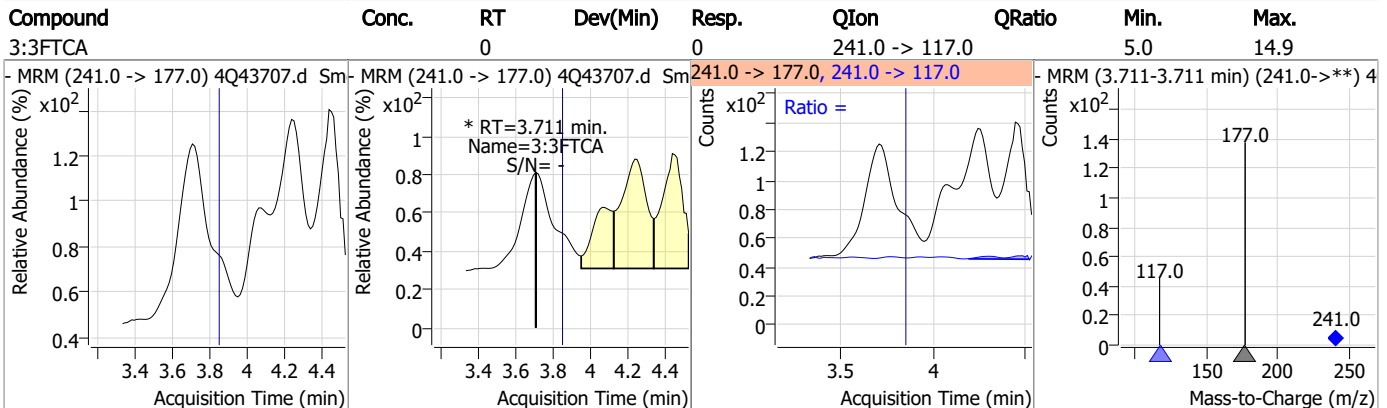
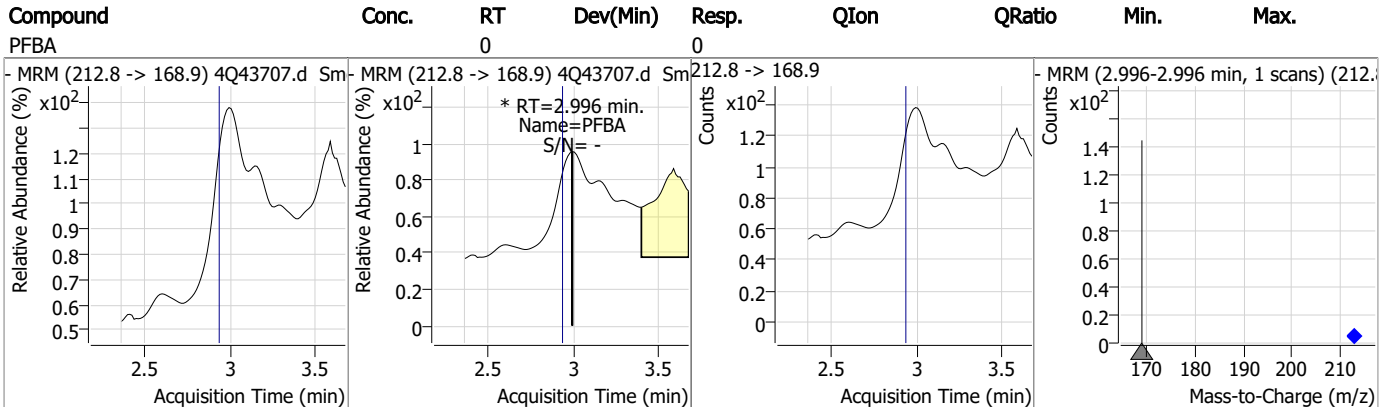
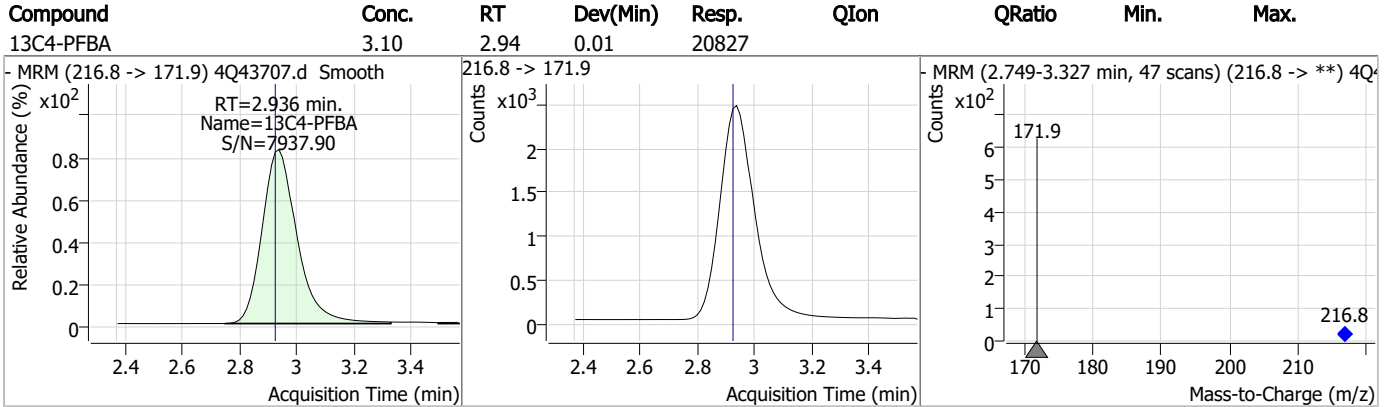
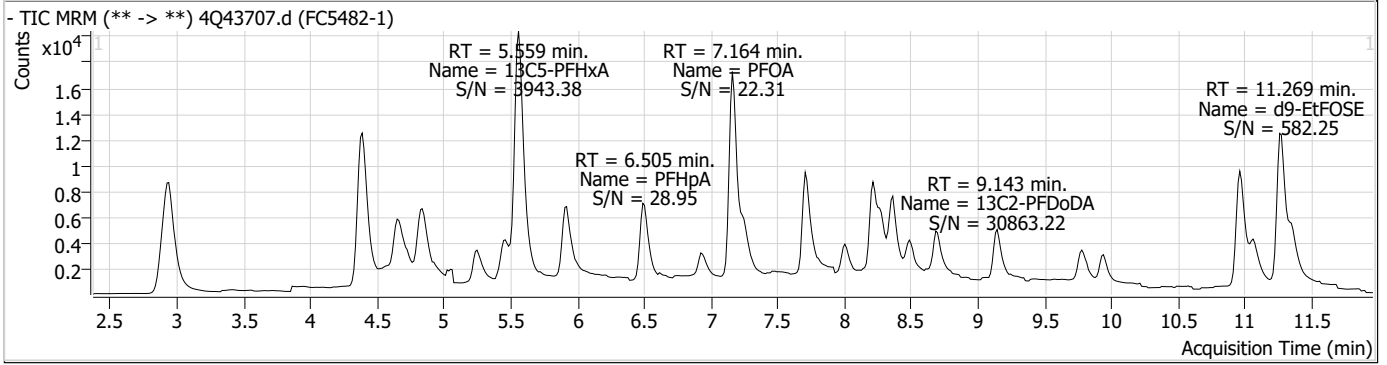
Perfluorinated Compounds by LC/MS/MS

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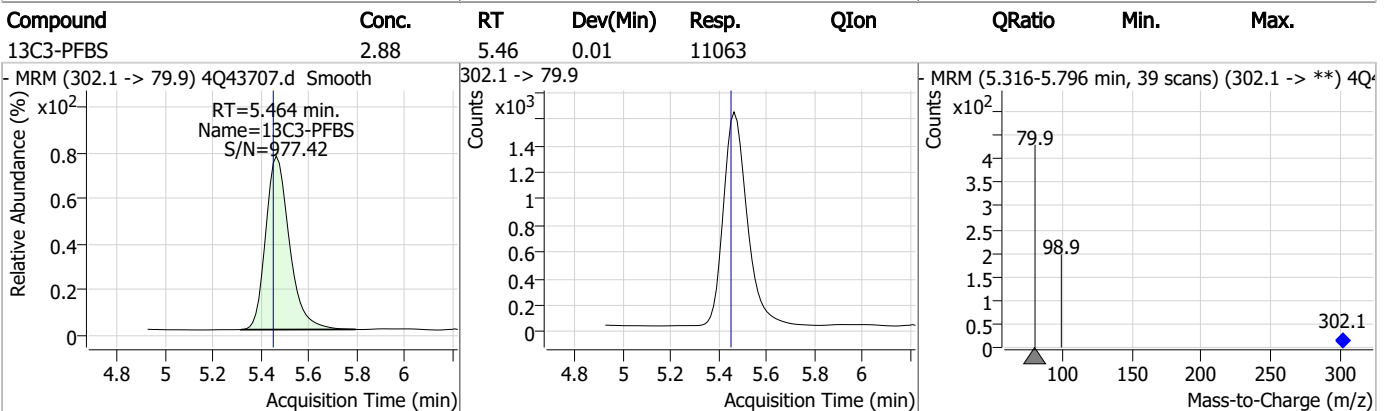
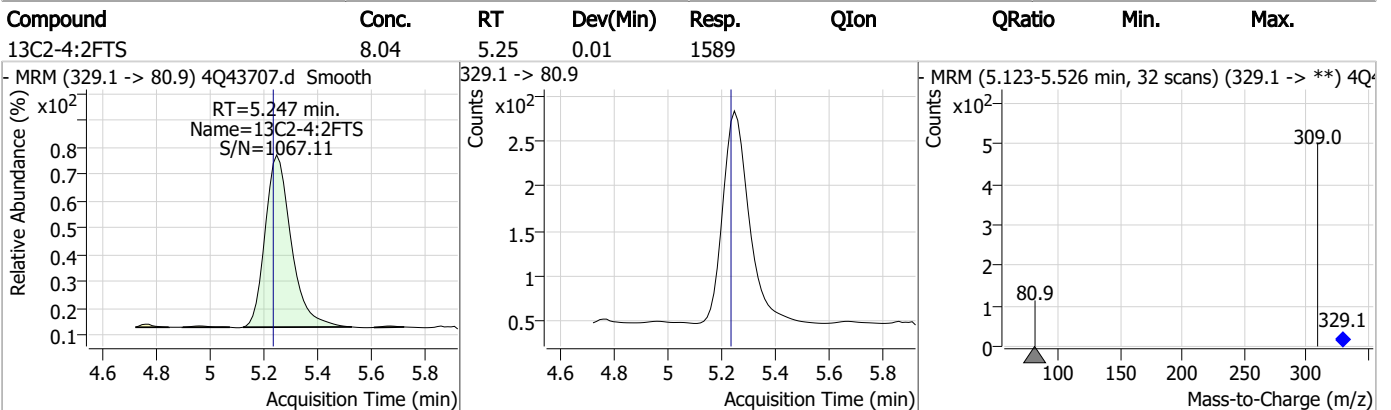
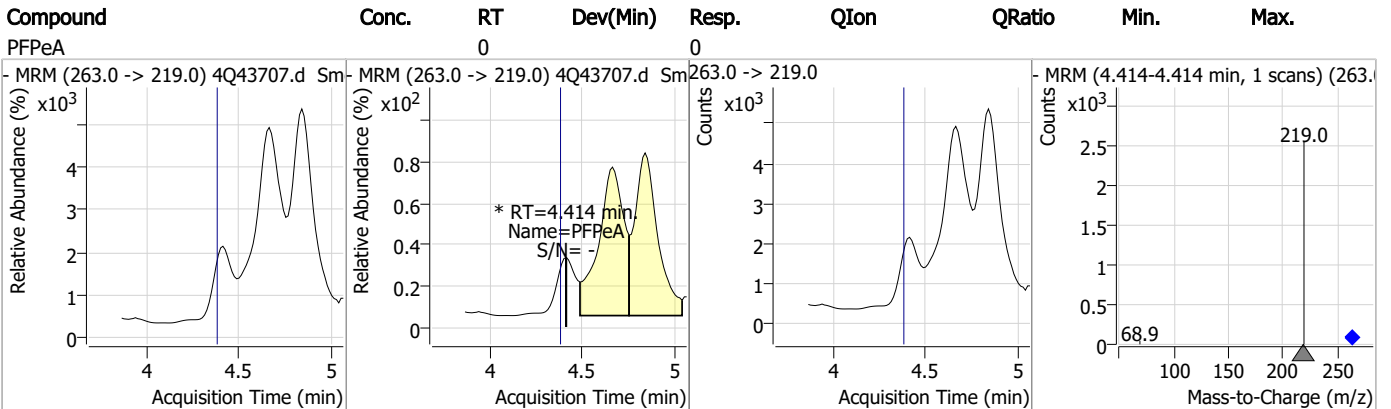
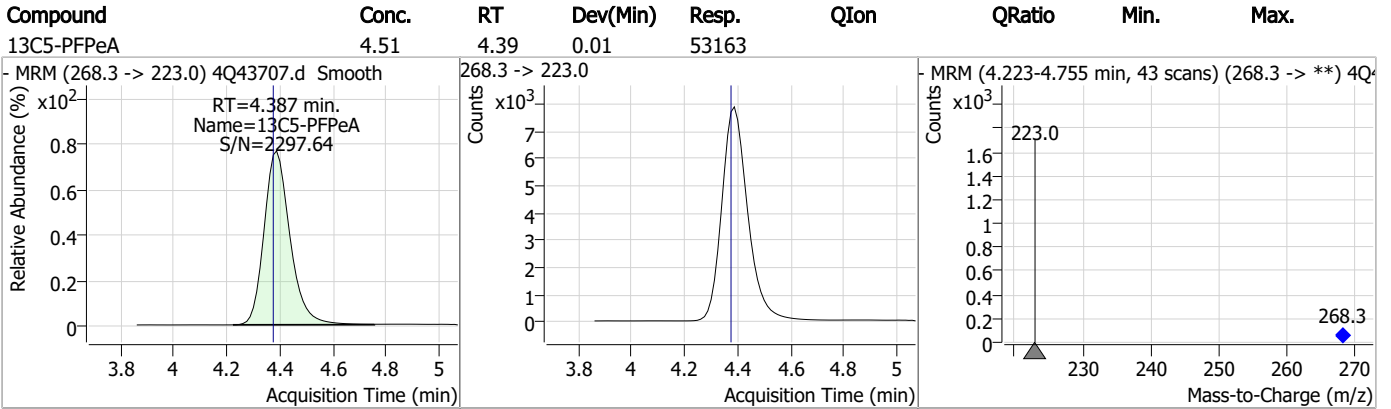
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7



Perfluorinated Compounds by LC/MS/MS

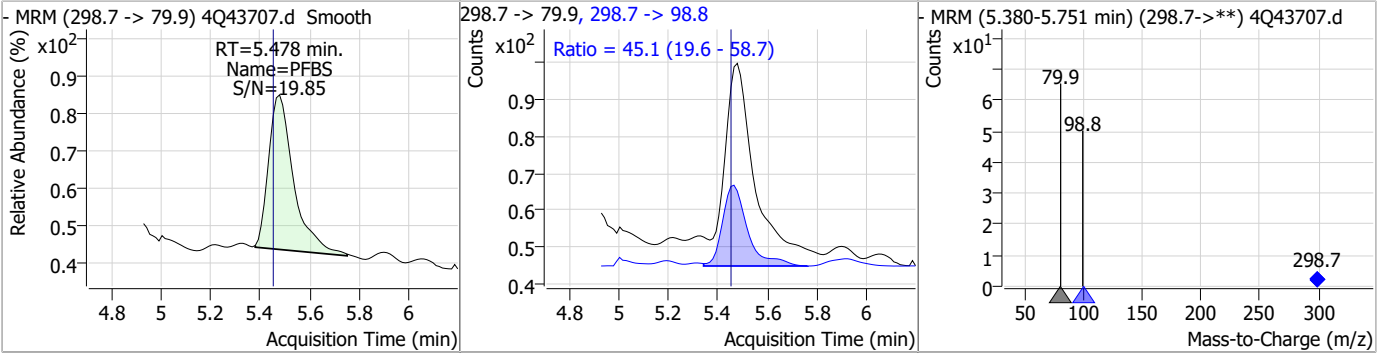


Perfluorinated Compounds by LC/MS/MS

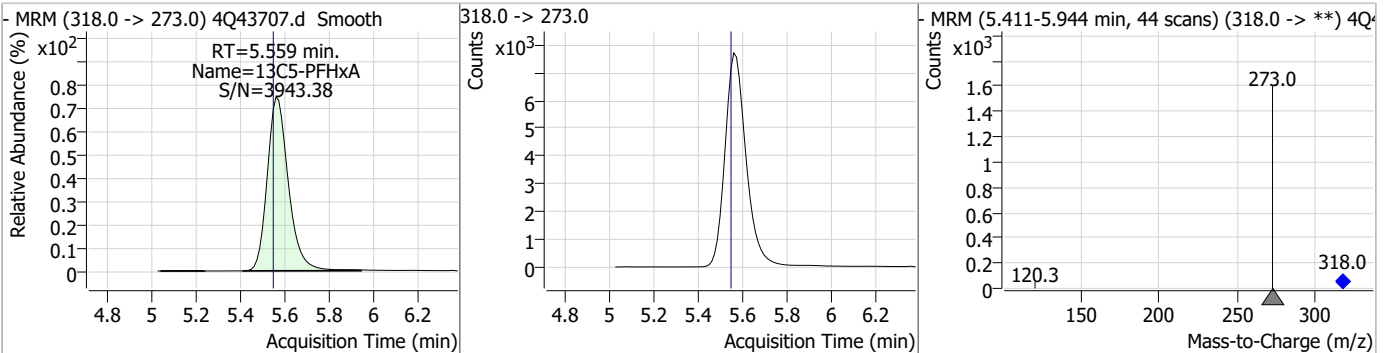


Perfluorinated Compounds by LC/MS/MS

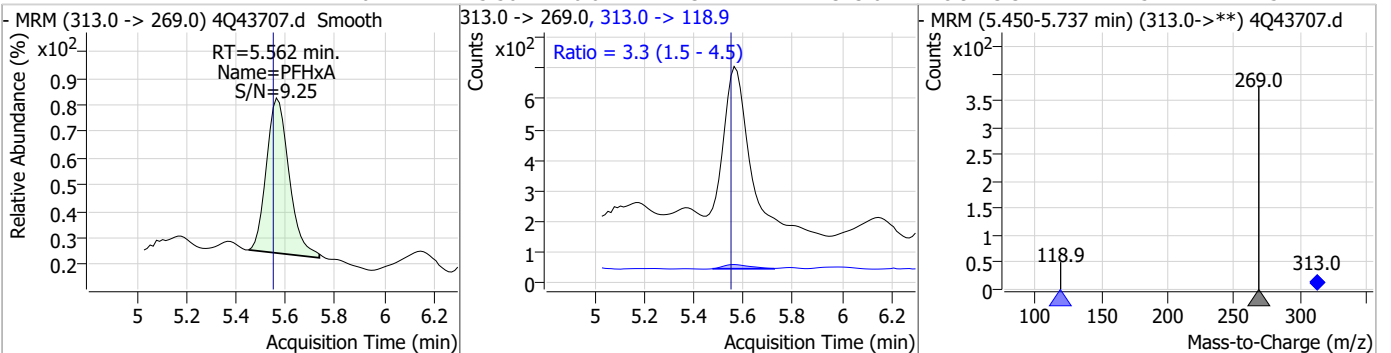
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.07	5.48	0.03	342	298.7 -> 98.8	45.1	19.6	58.7



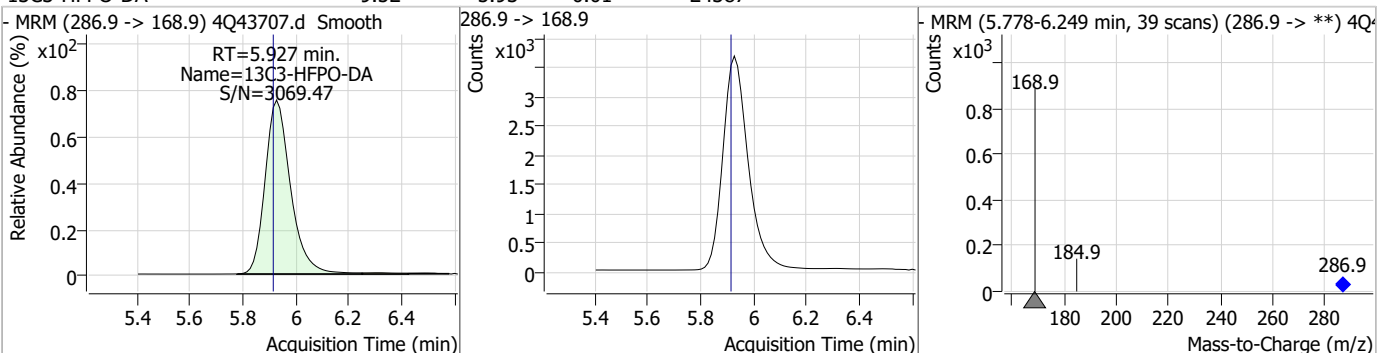
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.74	5.56	0.01	50835				



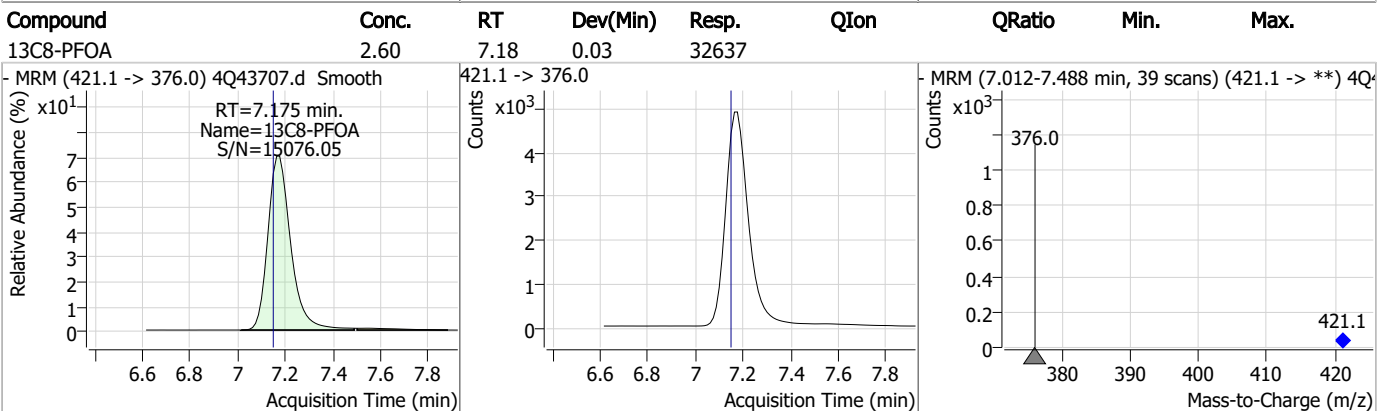
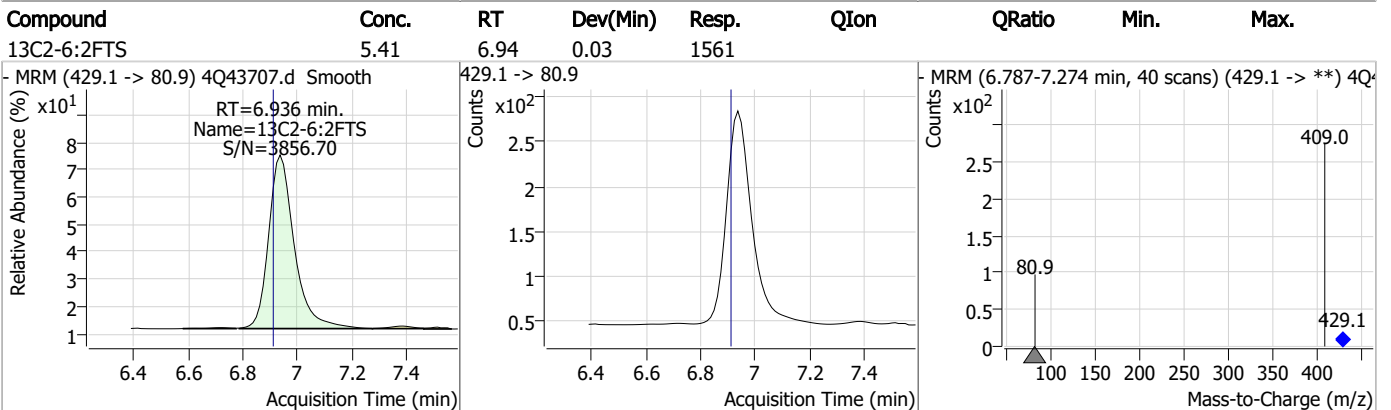
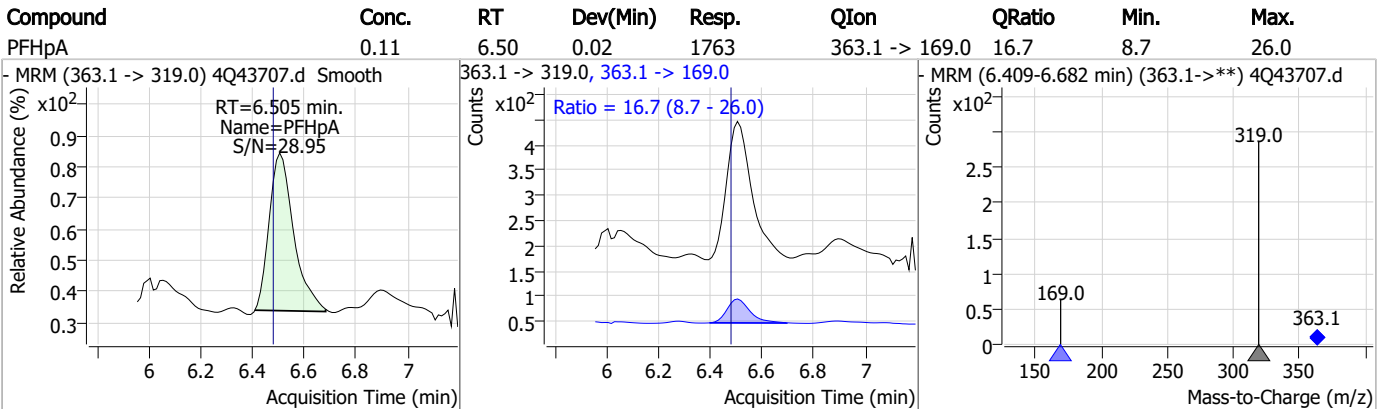
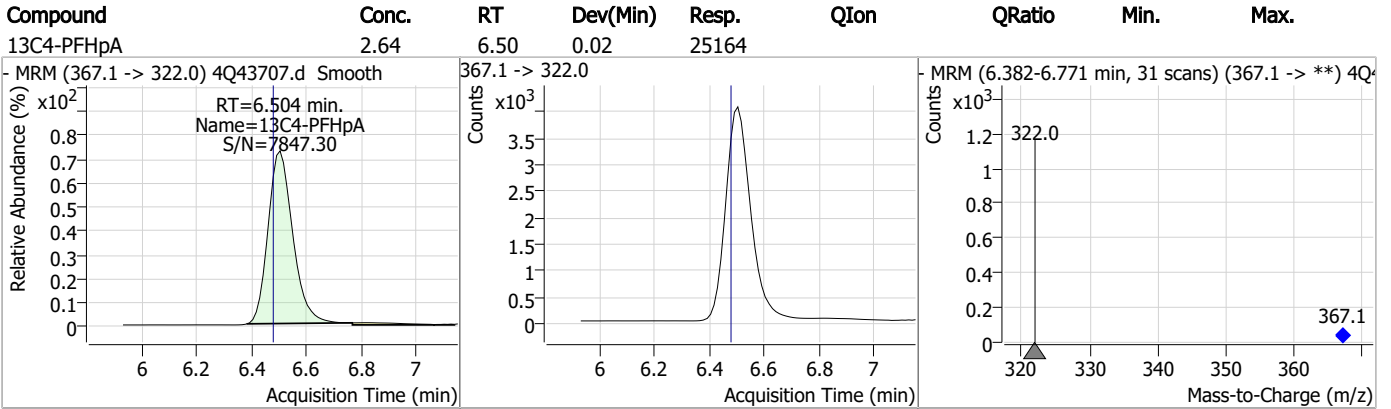
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.17	5.56	0.01	3174	313.0 -> 118.9	3.3	1.5	4.5



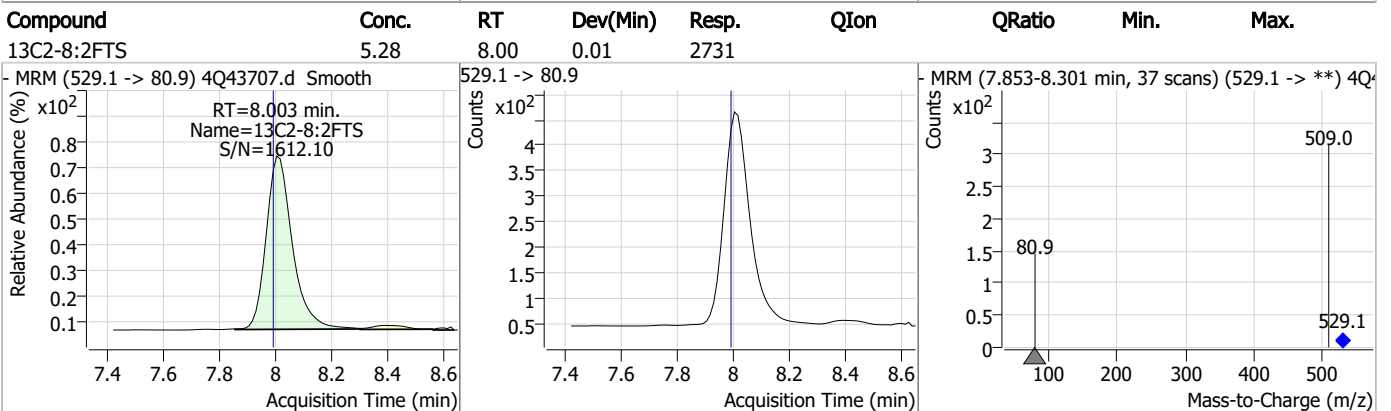
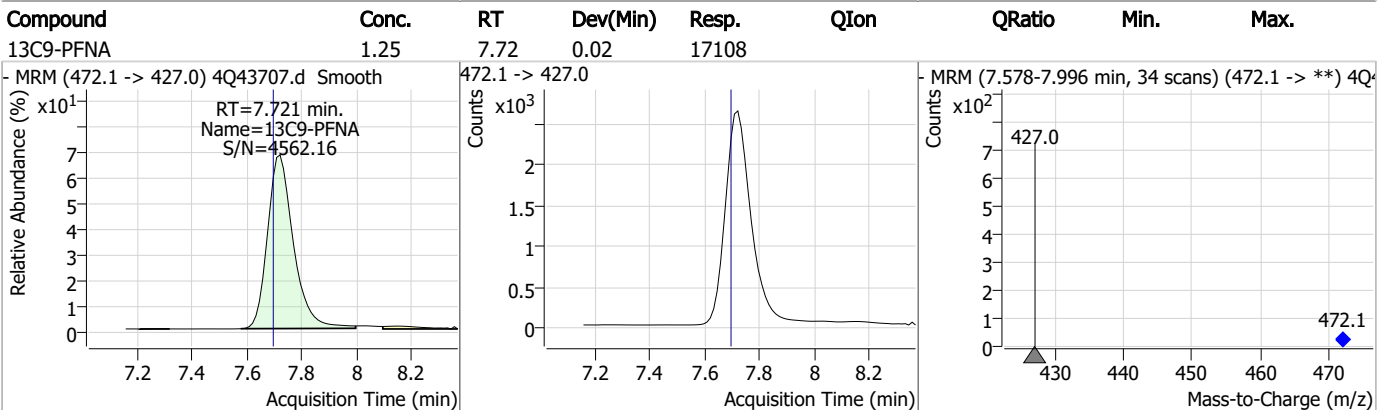
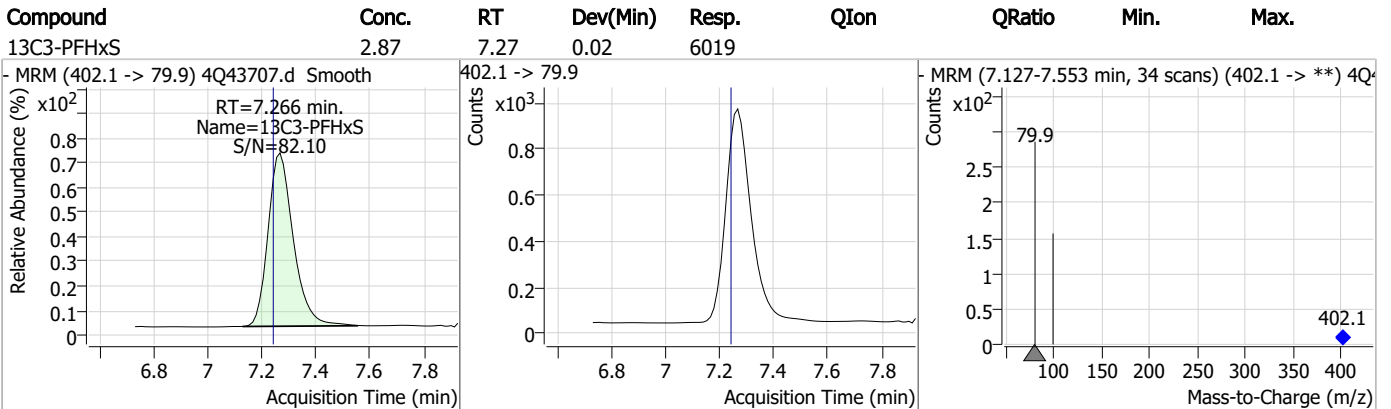
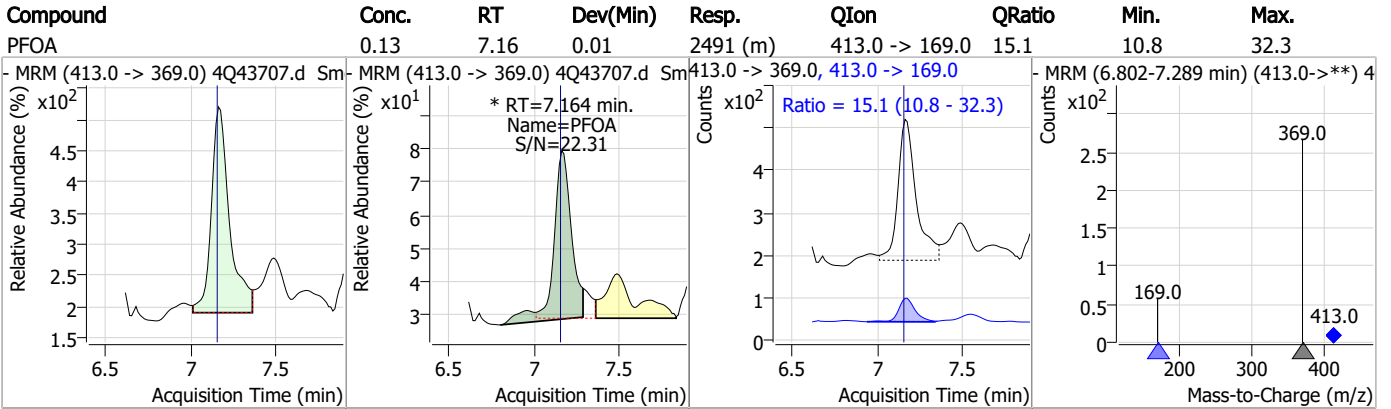
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.52	5.93	0.01	24387				



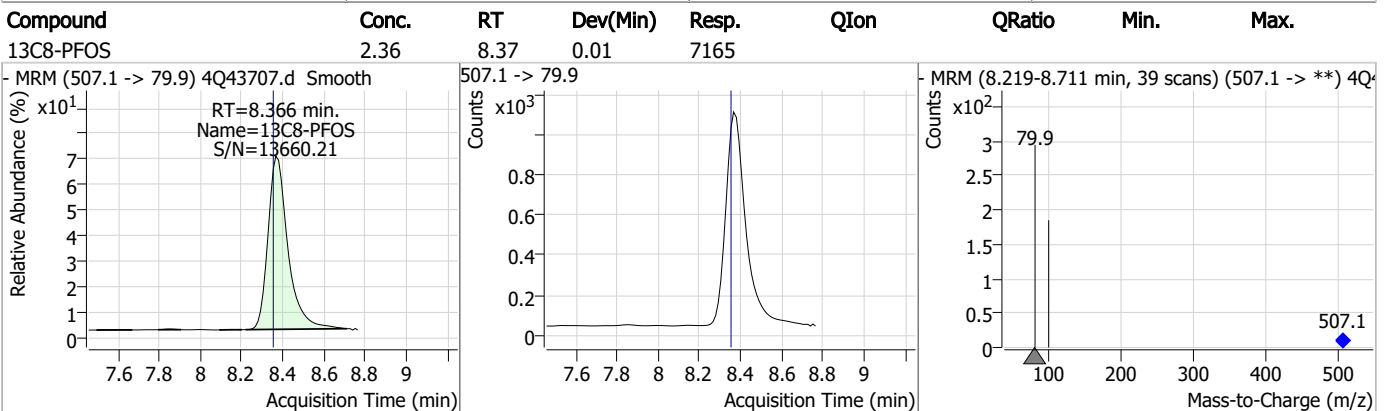
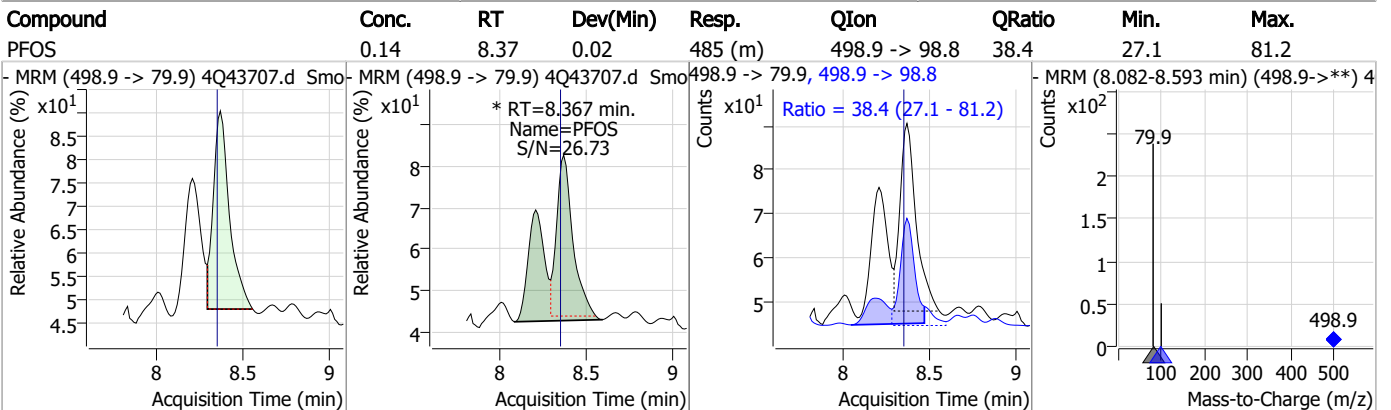
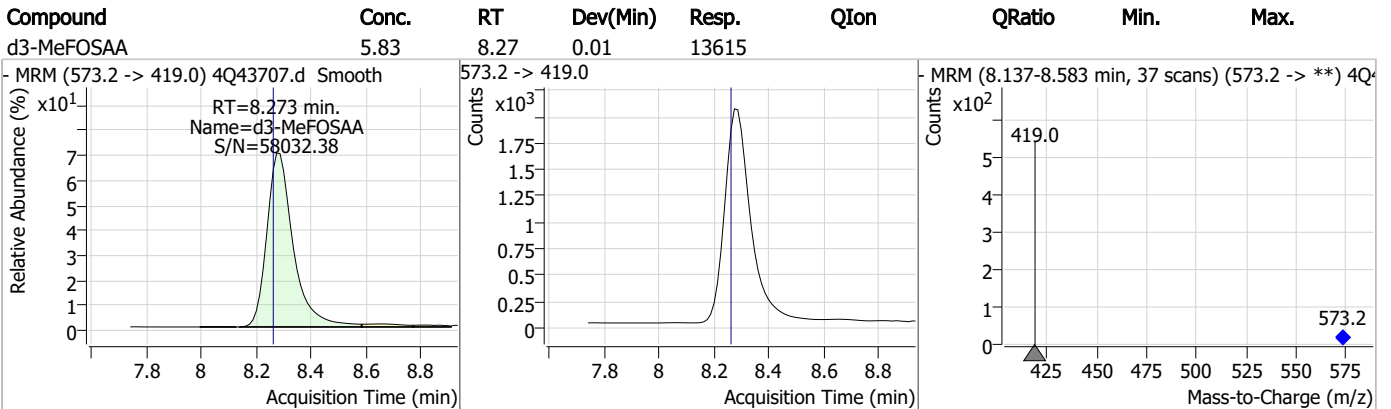
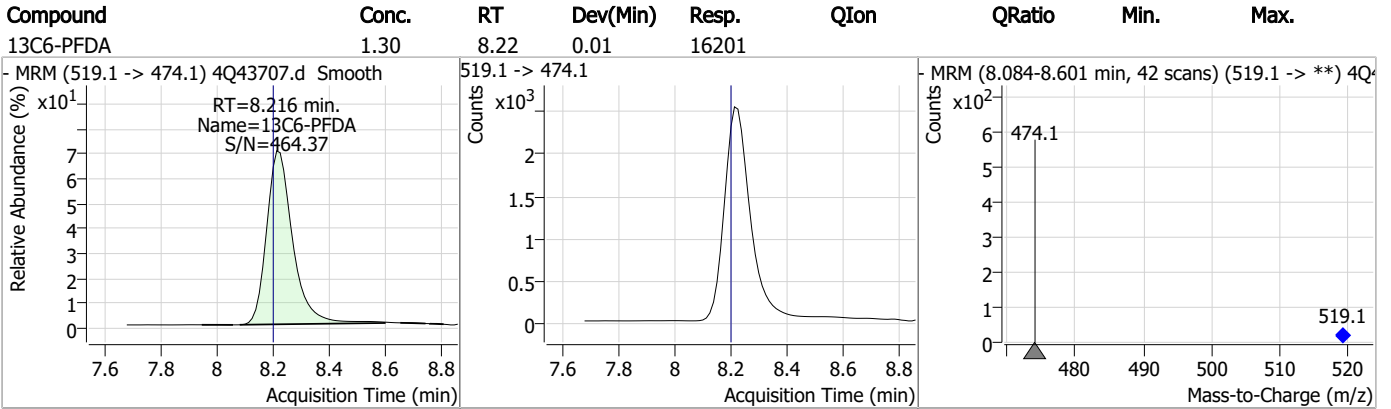
Perfluorinated Compounds by LC/MS/MS



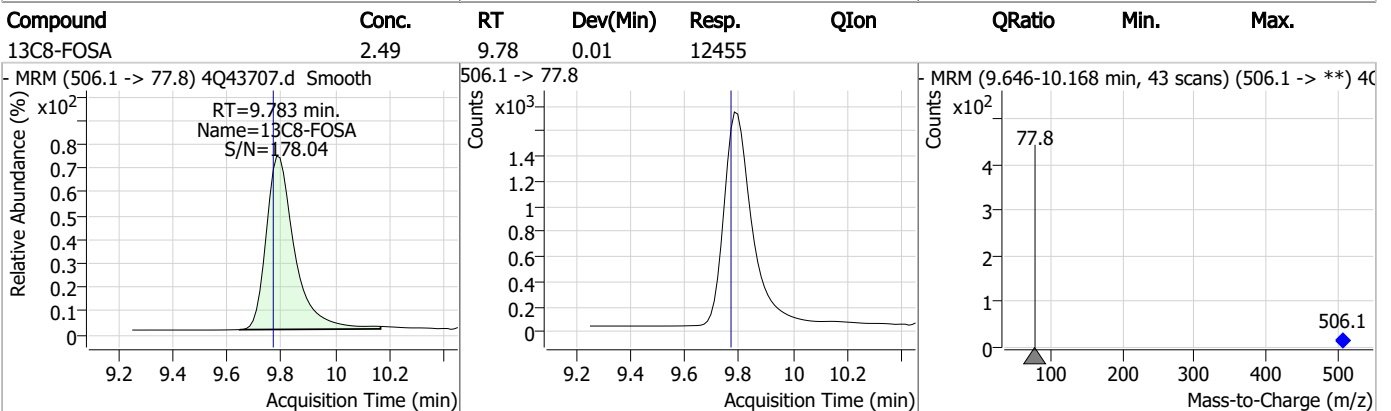
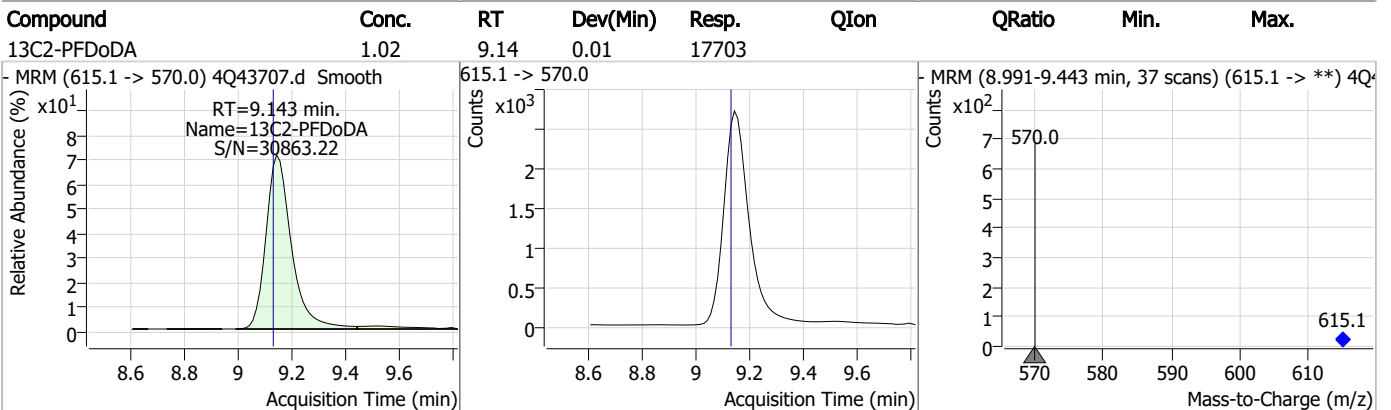
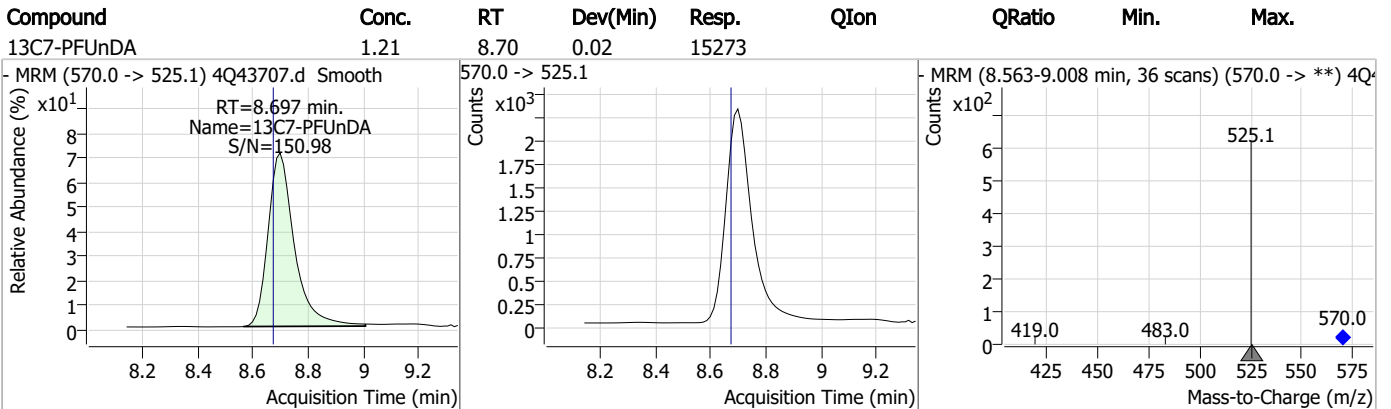
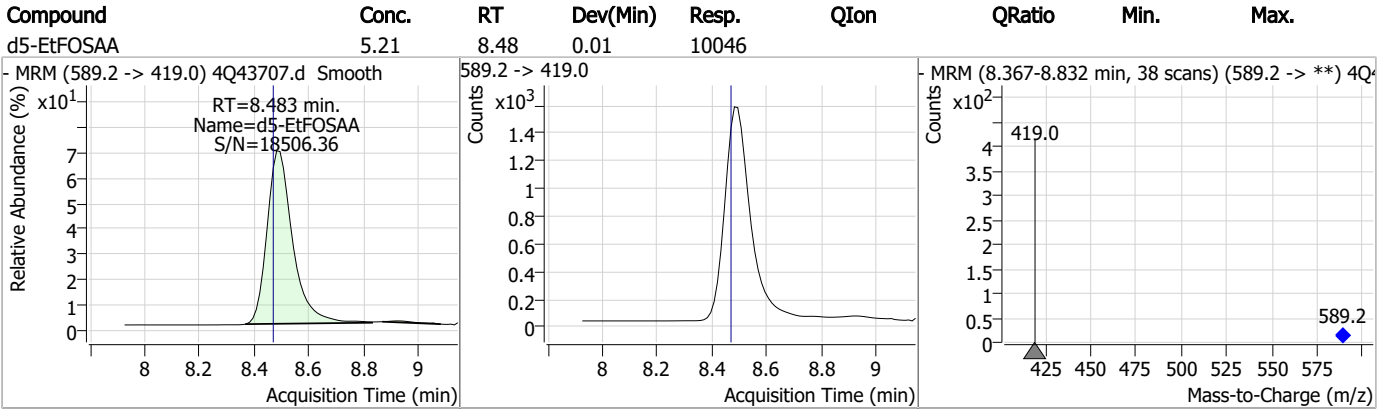
Perfluorinated Compounds by LC/MS/MS



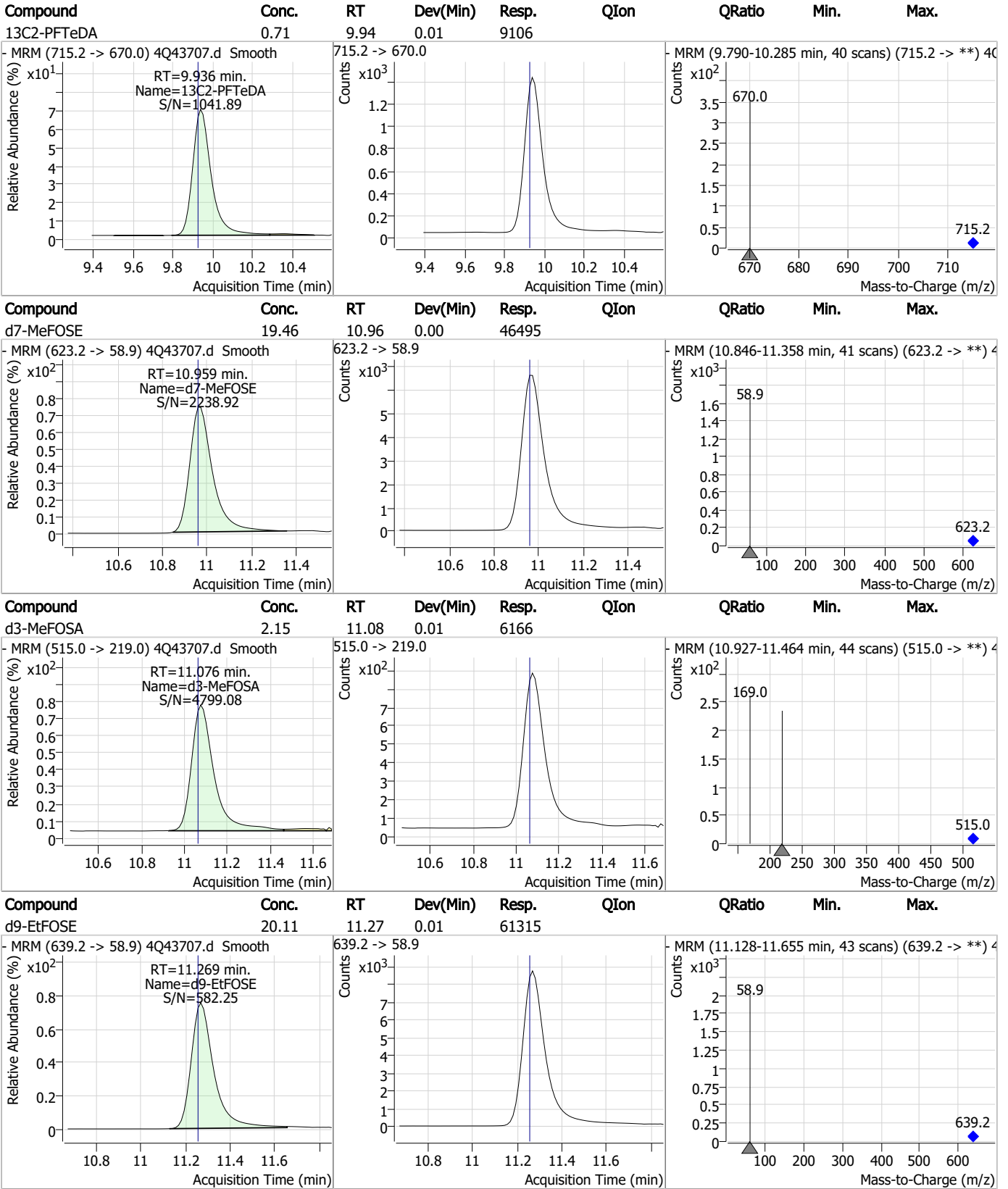
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

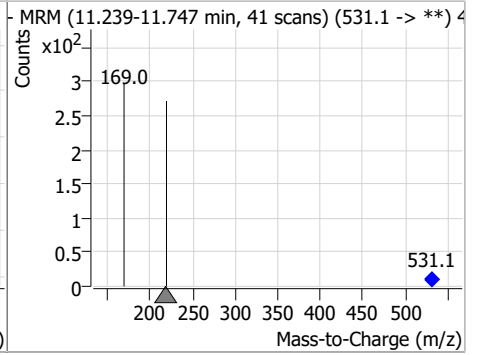
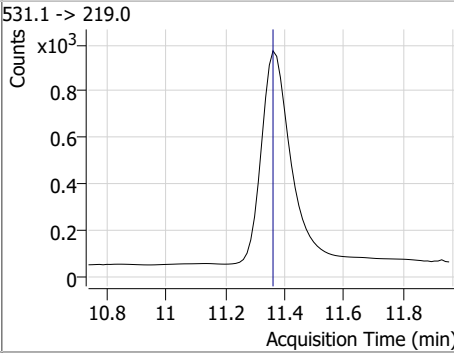
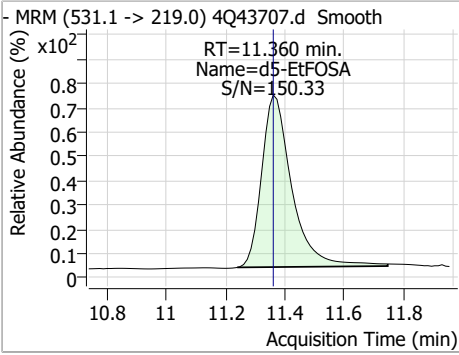


7.1.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.94	11.36	0.00	6481				



7.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43708.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 6:57:22 PM
 Sample Name : FC5482-2
 Vial : P3-B4
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q630,510,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.974	216.8 -> 171.9	106528	10.00 µg/L	0.050
M5-PFPeA	4.400	268.3 -> 223.0	63744	5.00 µg/L	0.025
M5-PFHxA	5.572	318.0 -> 273.0	50569	2.50 µg/L	0.025
M4-PFHpA	6.504	367.1 -> 322.0	25917	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	33595	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	17283	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	14994	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	14447	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	17090	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	13052	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	9829	2.50 µg/L	0.025
M3-PFBS	5.477	302.1 -> 79.9	11673	2.50 µg/L	0.026
M3-PFHxS	7.266	402.1 -> 79.9	6167	2.50 µg/L	0.025
M8-PFOS	8.366	507.1 -> 79.9	7704	2.50 µg/L	0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1460	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	1892	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3563	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	12946	5.00 µg/L	0.012
M3-HFPO-DA	5.939	286.9 -> 168.9	27058	10.00 µg/L	0.025
M5-EtFOSAA	8.483	589.2 -> 419.0	9689	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	43320	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	60890	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	6511	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	5820	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7979	2.50 µg/L	0.025
13C3-PFBA	2.966	216.0 -> 172.0	52347	5.00 µg/L	0.037
18O2-PFHxS	7.265	403.0 -> 83.9	4000	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	36446	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14057	1.25 µg/L	0.012
13C5-PFNA	7.721	468.0 -> 423.0	16734	1.25 µg/L	0.025
13C2-PFHxA	5.573	315.1 -> 270.0	36486	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1460	6.95 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.1%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1892	6.17 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.4%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3563	6.48 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.7%		
13C2-PFDoDA	9.143	615.1 -> 570.0	17090	0.99 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.1%		
13C2-PFTeDA	9.936	715.2 -> 670.0	13052	1.01 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.0%		
13C3-PFBS	5.477	302.1 -> 79.9	11673	2.86 µg/L	0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.4%		
13C3-PFHxS	7.266	402.1 -> 79.9	6167	2.77 µg/L	0.025

7.12
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 = 110.8%	
13C4-PFBA	2.974	216.8 -> 171.9	106528	11.77 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 117.7%	
13C4-PFHpA	6.504	367.1 -> 322.0	25917	2.91 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.2%	
13C5-PFHxA	5.572	318.0 -> 273.0	50569	2.91 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.5%	
13C5-PFPeA	4.400	268.3 -> 223.0	63744	5.77 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.4%	
13C6-PFDA	8.216	519.1 -> 474.1	14994	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C7-PFUnDA	8.697	570.0 -> 525.1	14447	1.15 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C8-FOSA	9.796	506.1 -> 77.8	9829	1.82 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.7%	
13C8-PFOA	7.163	421.1 -> 376.0	33595	2.75 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.8%	
13C8-PFOS	8.366	507.1 -> 79.9	7704	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C9-PFNA	7.721	472.1 -> 427.0	17283	1.36 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.2%	
d3-MeFOSAA	8.273	573.2 -> 419.0	12946	5.14 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C3-HFPO-DA	5.939	286.9 -> 168.9	27058	11.28 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.8%	
d3-MeFOSA	11.076	515.0 -> 219.0	5820	1.88 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 75.4%	
d5-EtFOSAA	8.483	589.2 -> 419.0	9689	4.66 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
d7-MeFOSE	10.972	623.2 -> 58.9	43320	16.81 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 67.3%	
d9-EtFOSE	11.269	639.2 -> 58.9	60890	18.52 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.1%	
d5-EtFOSA	11.360	531.1 -> 219.0	6511	1.81 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.2%	

7.12
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	7.688	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

7.1.2
7



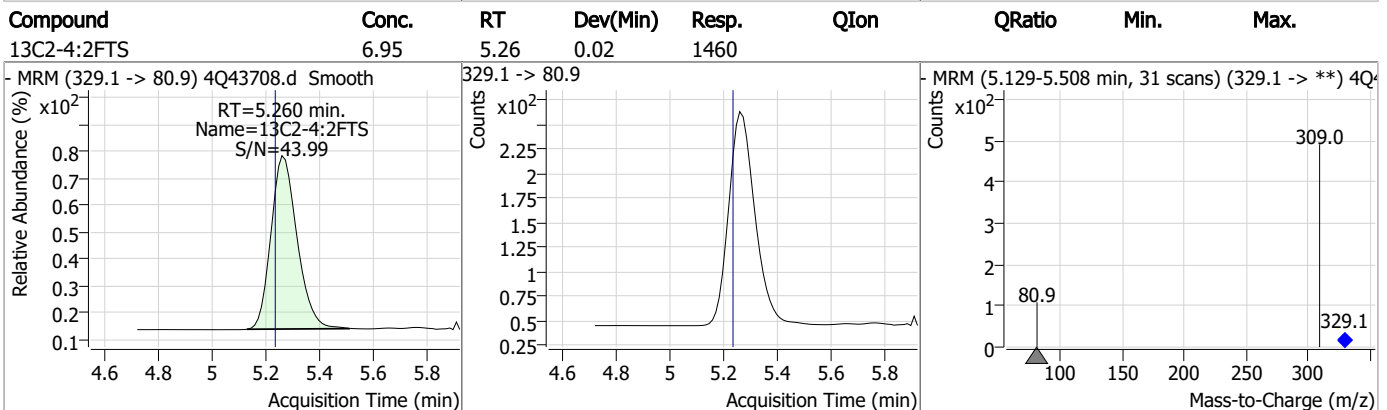
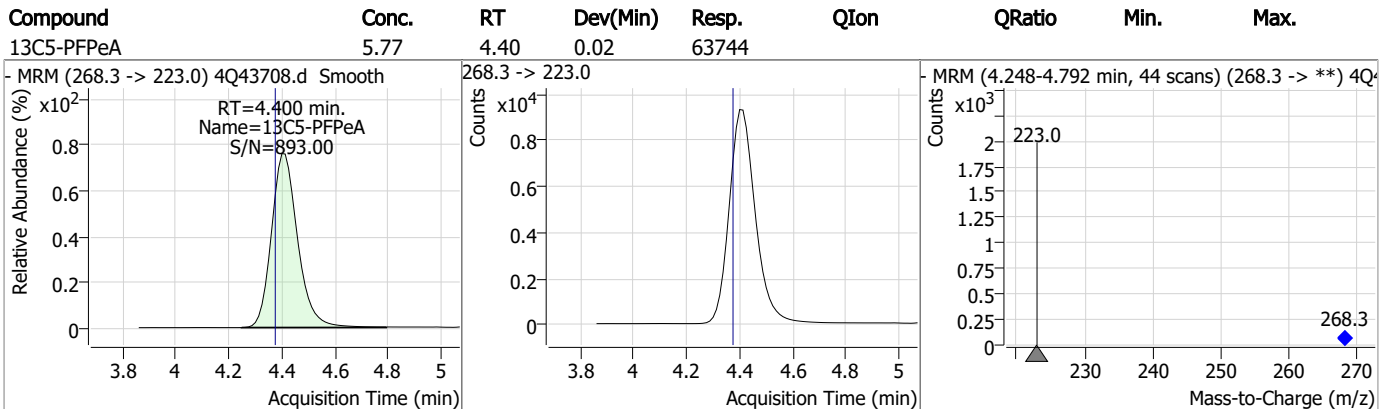
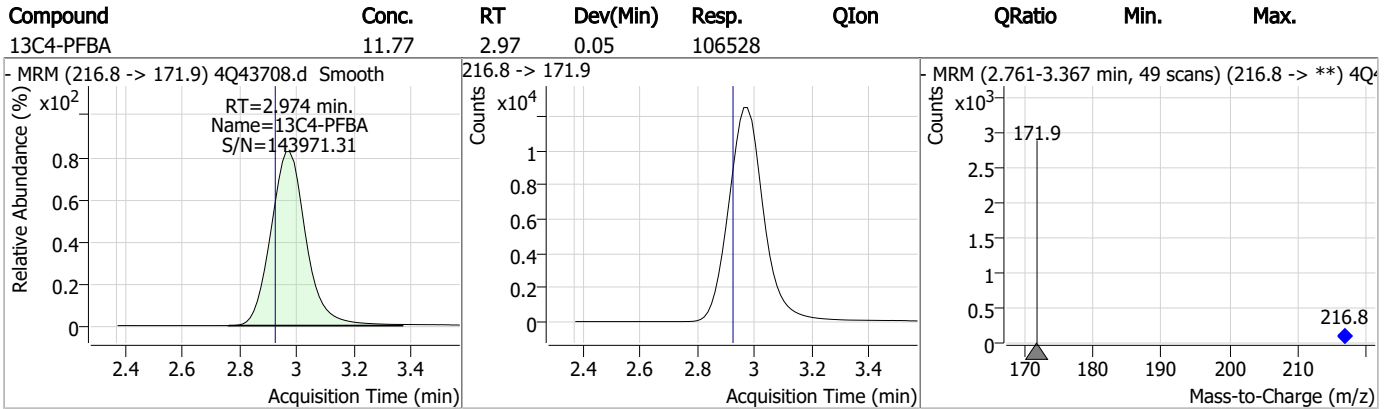
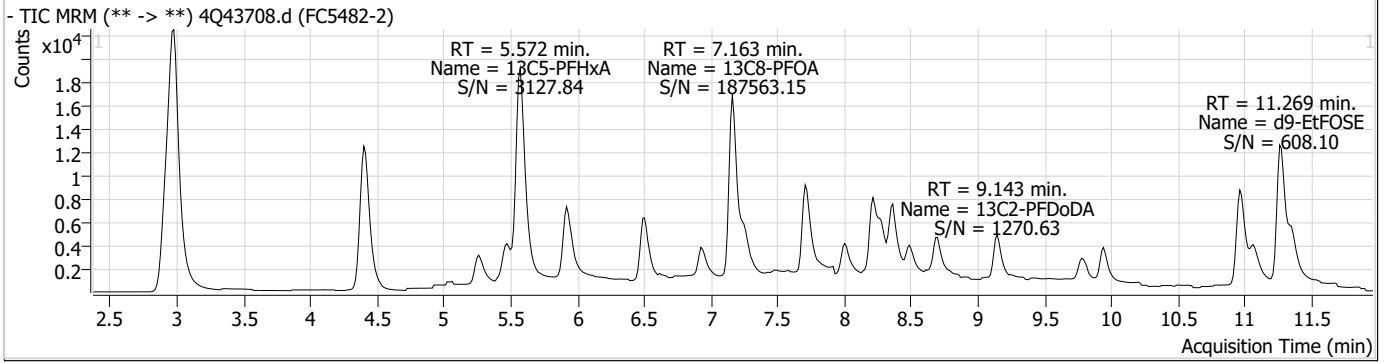
Perfluorinated Compounds by LC/MS/MS

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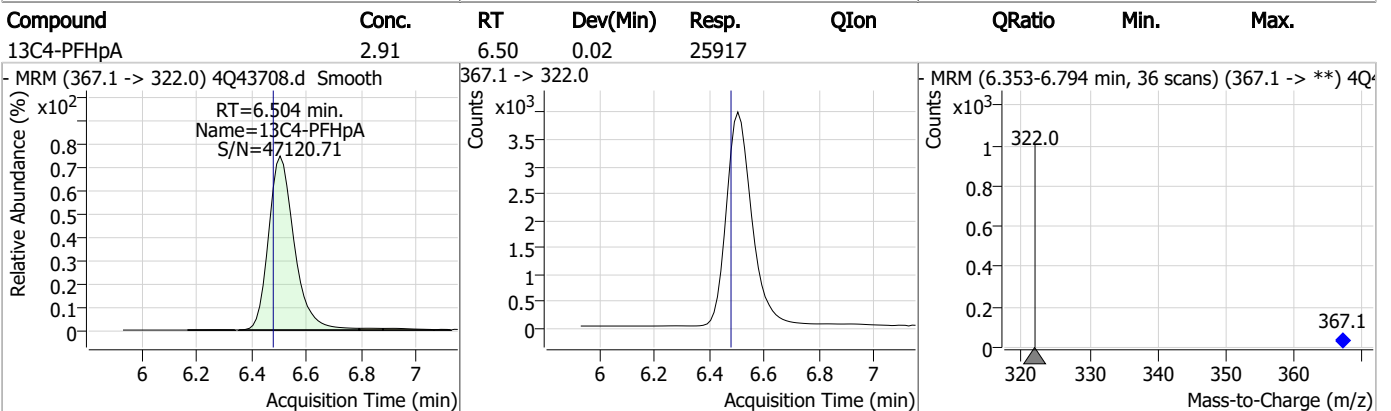
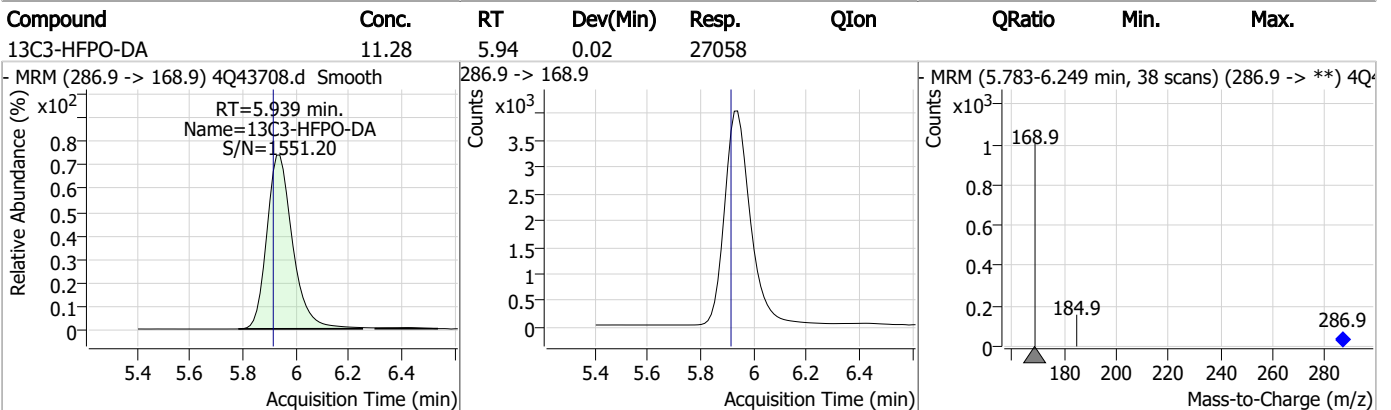
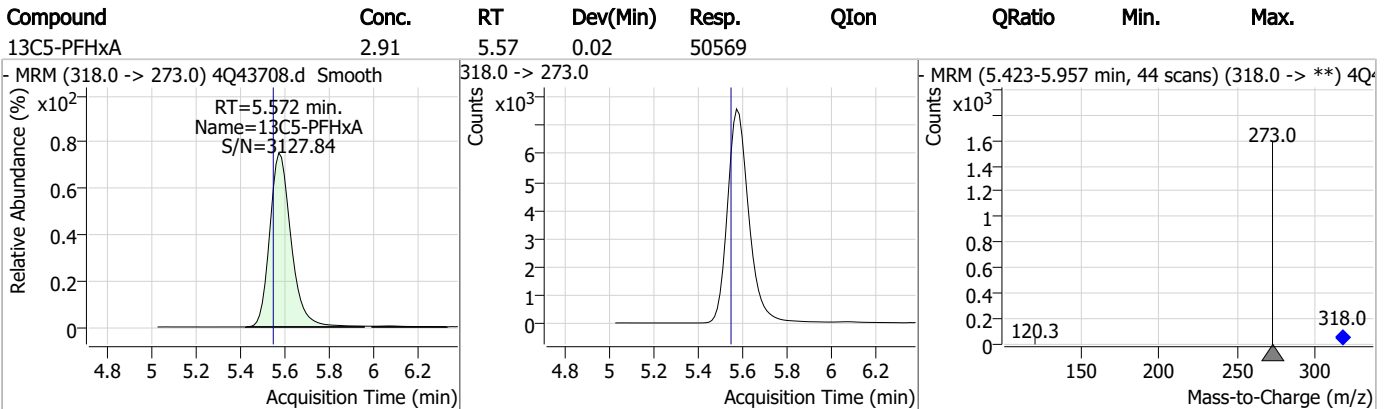
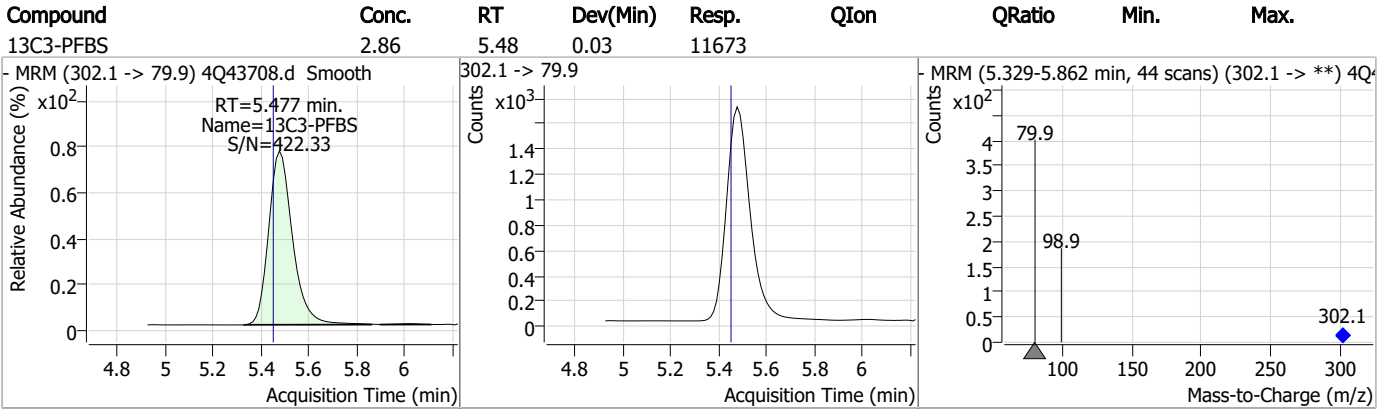
7.1.2
7



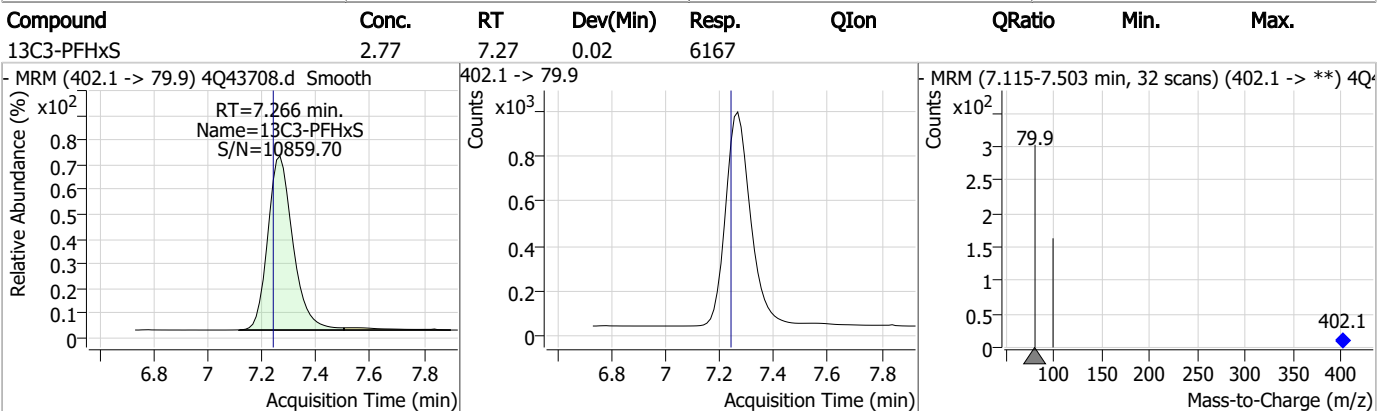
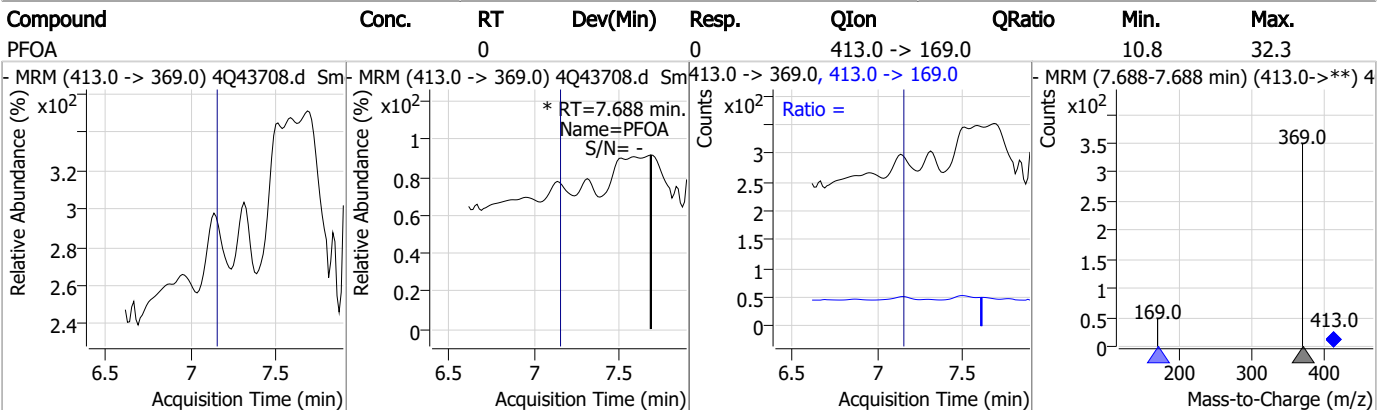
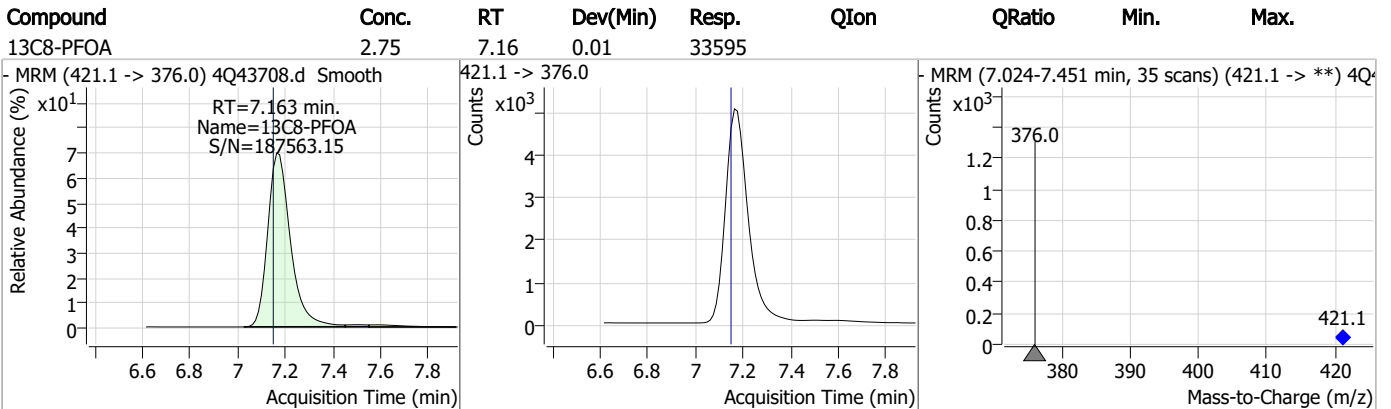
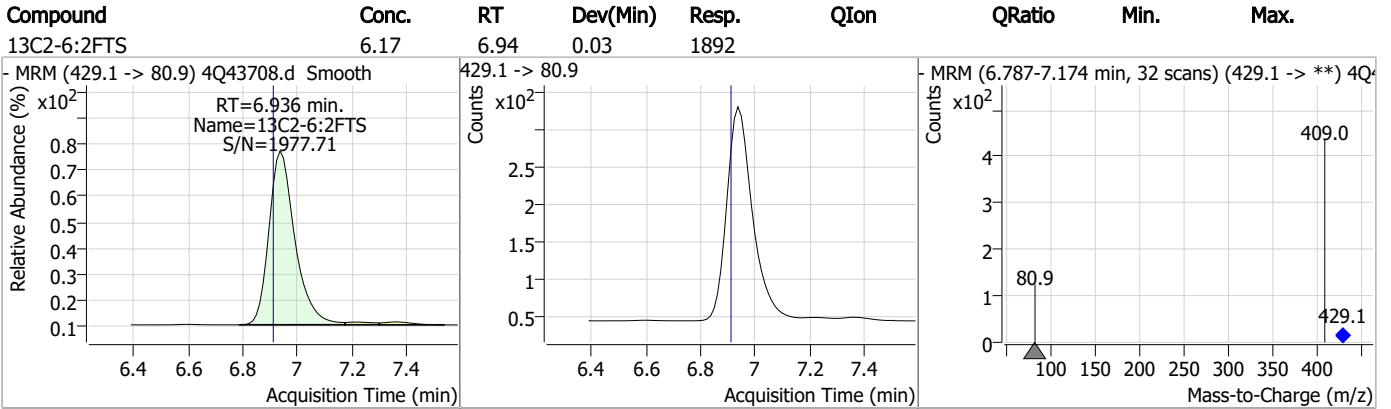
Perfluorinated Compounds by LC/MS/MS



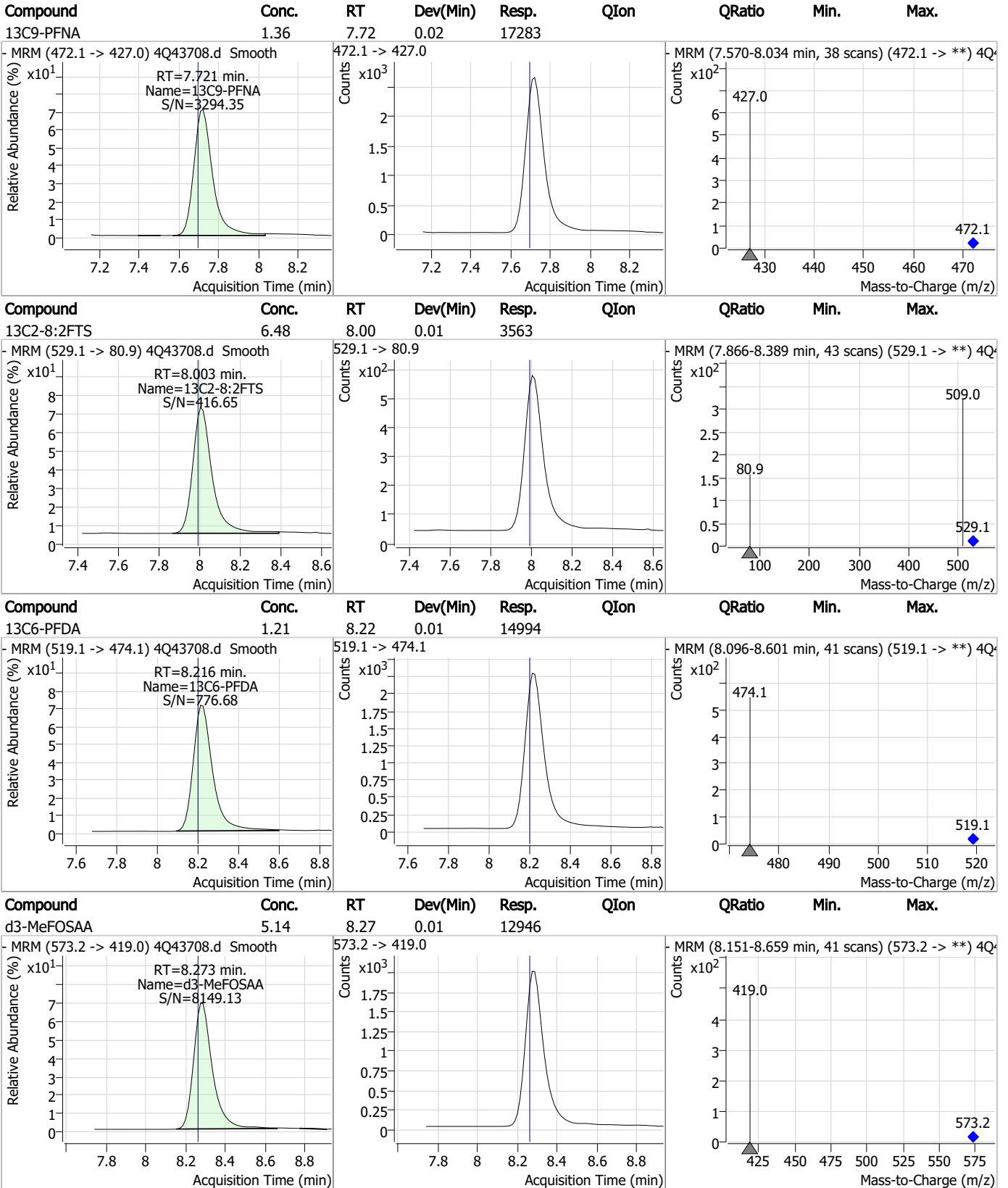
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

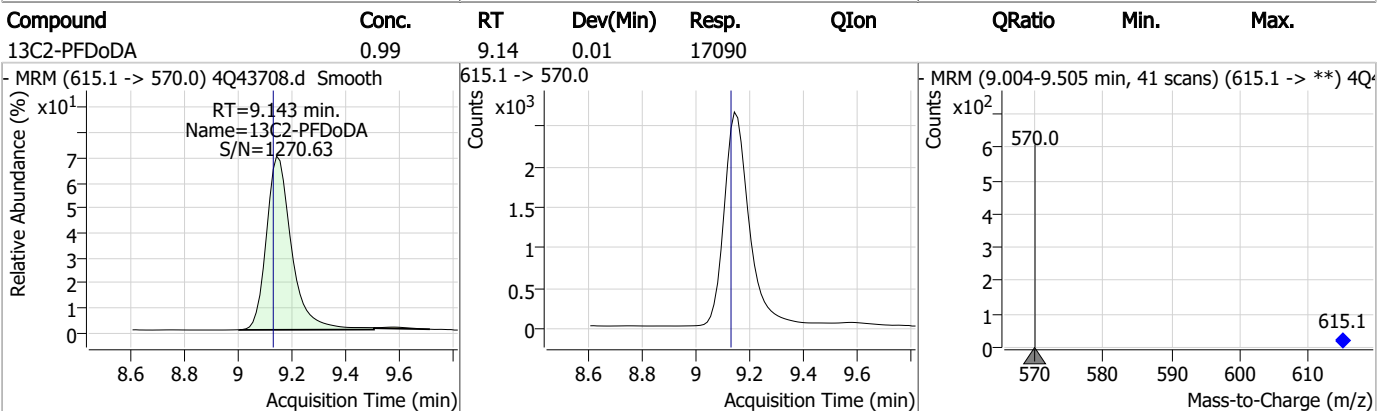
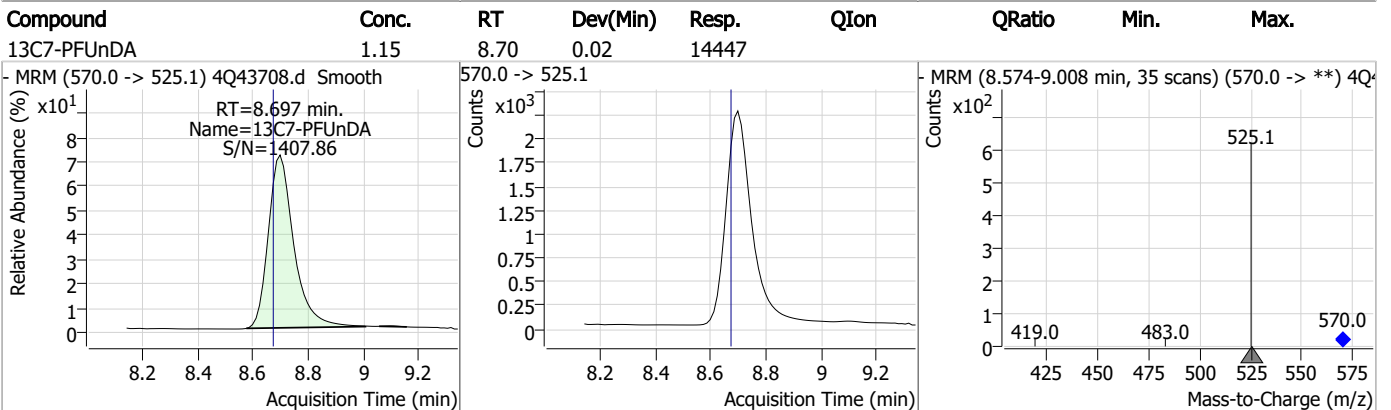
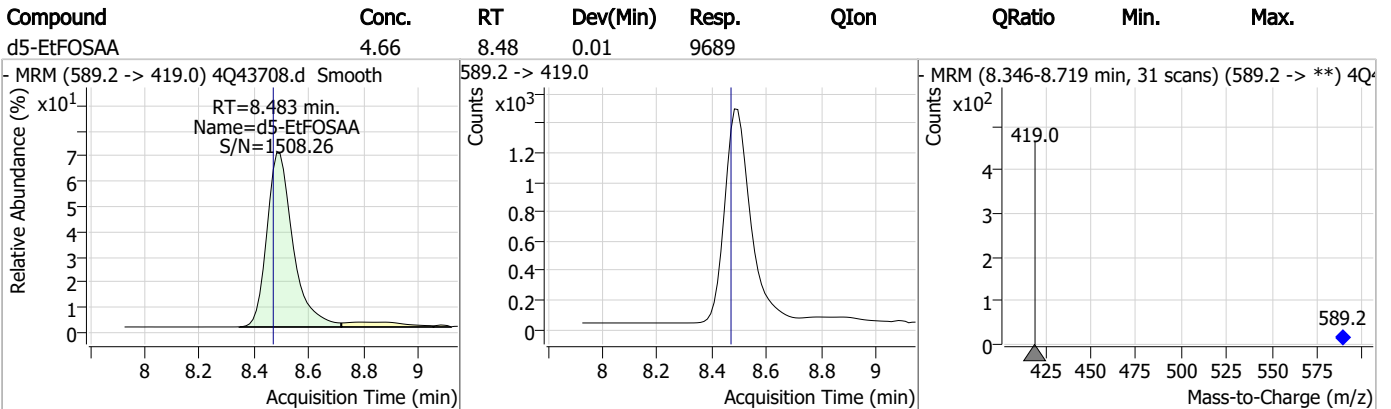
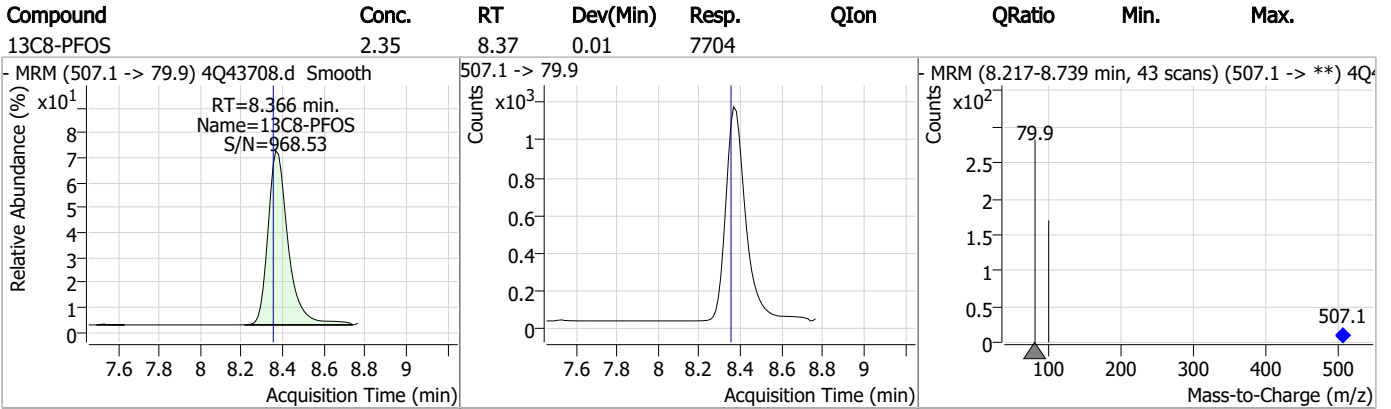


Perfluorinated Compounds by LC/MS/MS

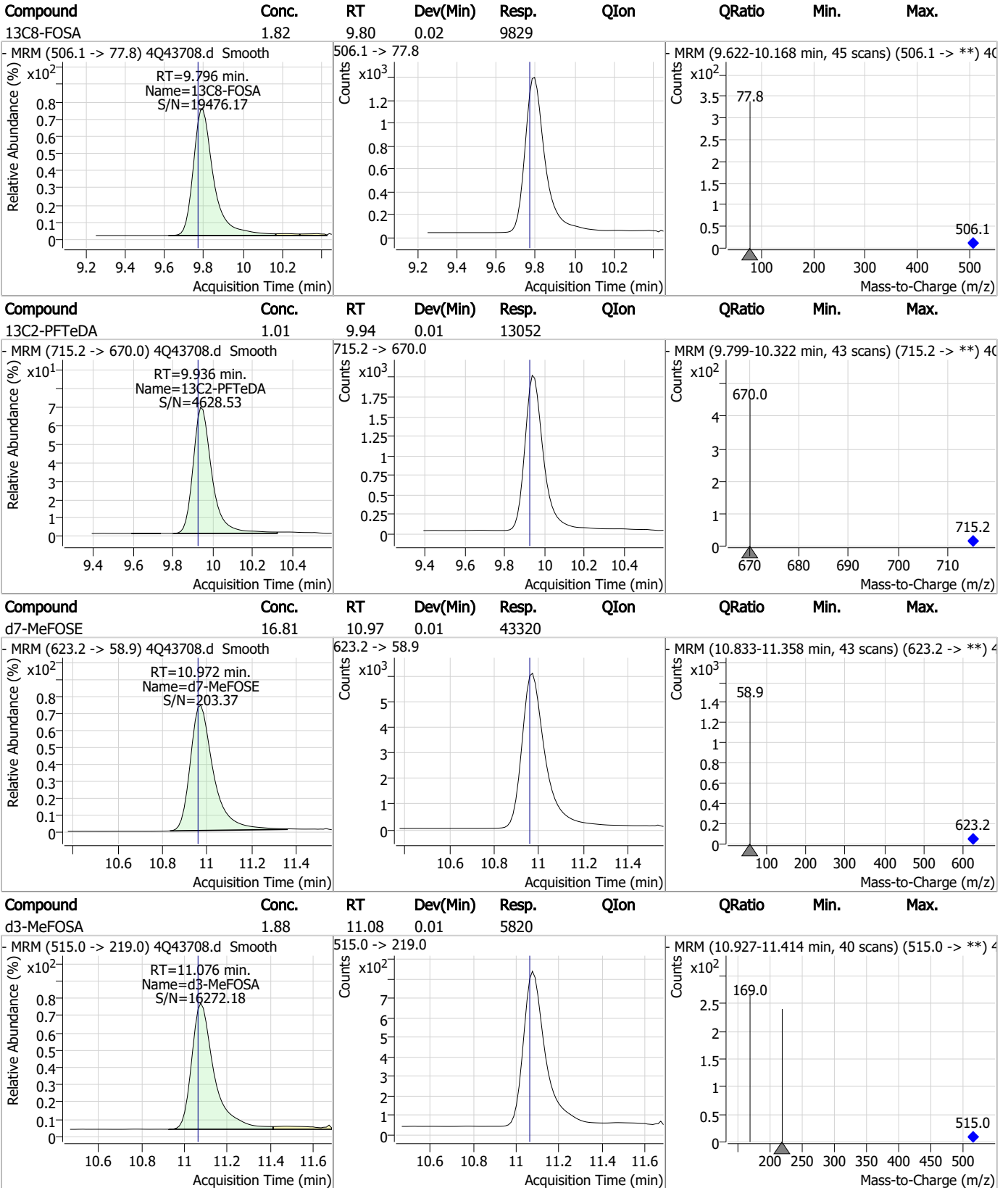


7.1.2
7

Perfluorinated Compounds by LC/MS/MS

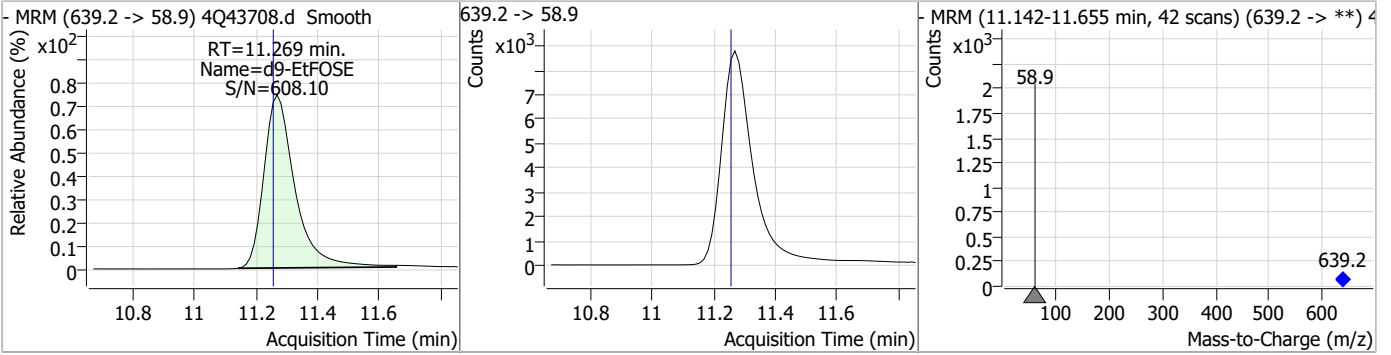


Perfluorinated Compounds by LC/MS/MS

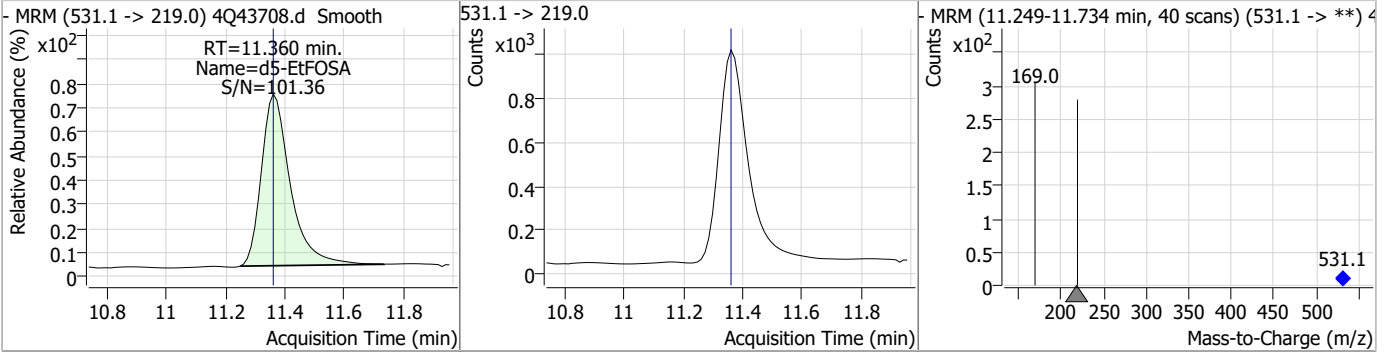


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	18.52	11.27	0.01	60890				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	1.81	11.36	0.00	6511				



7.1.2

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43709.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 7:11:25 PM
 Sample Name : FC5482-3
 Vial : P3-B5
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q630,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	93062	10.00 µg/L	0.013
M5-PFPeA	4.400	268.3 -> 223.0	64661	5.00 µg/L	0.025
M5-PFHxA	5.572	318.0 -> 273.0	52394	2.50 µg/L	0.025
M4-PFHpA	6.504	367.1 -> 322.0	26577	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	33742	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	17916	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	16238	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	16682	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	20384	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	14073	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	12478	2.50 µg/L	0.012
M3-PFBS	5.477	302.1 -> 79.9	11264	2.50 µg/L	0.026
M3-PFHxS	7.266	402.1 -> 79.9	6180	2.50 µg/L	0.025
M8-PFOS	8.366	507.1 -> 79.9	8426	2.50 µg/L	0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1320	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	1929	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3427	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14274	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	26629	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	10879	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	48745	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	66630	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7571	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	6433	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7906	2.50 µg/L	0.025
13C3-PFBA	2.941	216.0 -> 172.0	50487	5.00 µg/L	0.012
18O2-PFHxS	7.265	403.0 -> 83.9	4028	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	35006	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	13478	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	17996	1.25 µg/L	0.012
13C2-PFHxA	5.573	315.1 -> 270.0	37224	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1320	6.24 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.8%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1929	6.25 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.0%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3427	6.19 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.8%		
13C2-PFDoDA	9.143	615.1 -> 570.0	20384	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-PFTeDA	9.936	715.2 -> 670.0	14073	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.1%		
13C3-PFBS	5.477	302.1 -> 79.9	11264	2.74 µg/L	0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C3-PFHxS	7.266	402.1 -> 79.9	6180	2.76 µg/L	0.025

7.1.3
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 = 110.2%	
13C4-PFBA	2.936	216.8 -> 171.9	93062	10.66 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C4-PFHpA	6.504	367.1 -> 322.0	26577	2.92 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.8%	
13C5-PFHxA	5.572	318.0 -> 273.0	52394	2.96 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.3%	
13C5-PFPeA	4.400	268.3 -> 223.0	64661	5.74 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.8%	
13C6-PFDA	8.216	519.1 -> 474.1	16238	1.36 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.1%	
13C7-PFUnDA	8.697	570.0 -> 525.1	16682	1.38 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.8%	
13C8-FOSA	9.783	506.1 -> 77.8	12478	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
13C8-PFOA	7.163	421.1 -> 376.0	33742	2.87 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.8%	
13C8-PFOS	8.366	507.1 -> 79.9	8426	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C9-PFNA	7.709	472.1 -> 427.0	17916	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.3%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14274	5.72 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.3%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	26629	10.88 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
d3-MeFOSA	11.076	515.0 -> 219.0	6433	2.10 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.1%	
d5-EtFOSAA	8.483	589.2 -> 419.0	10879	5.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.5%	
d7-MeFOSE	10.972	623.2 -> 58.9	48745	19.09 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 76.4%	
d9-EtFOSE	11.269	639.2 -> 58.9	66630	20.45 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.8%	
d5-EtFOSA	11.360	531.1 -> 219.0	7571	2.12 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.7%	

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.	

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	5.575	449.0 -> 98.9	2174	0.11	µg/L	96
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	92	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	4.402	498.9 -> 98.8	3388	0.22	µg/L	100
		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	11.644	630.0 -> 58.9	0		µg/L m	1
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
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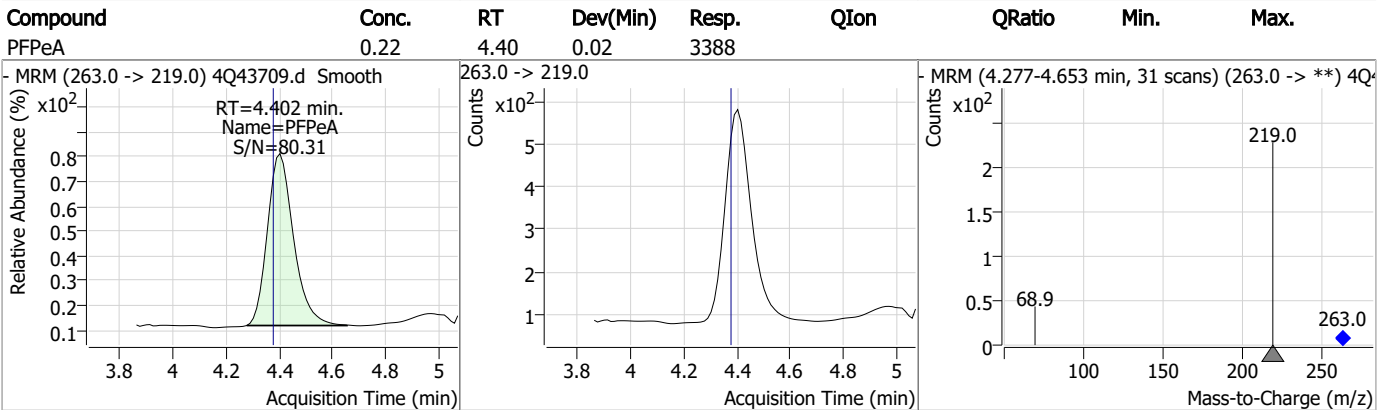
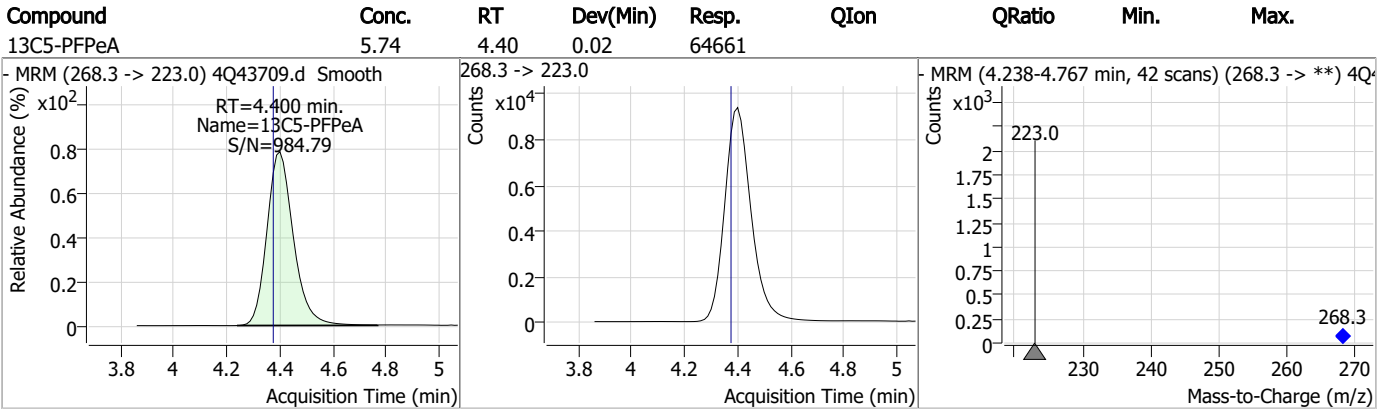
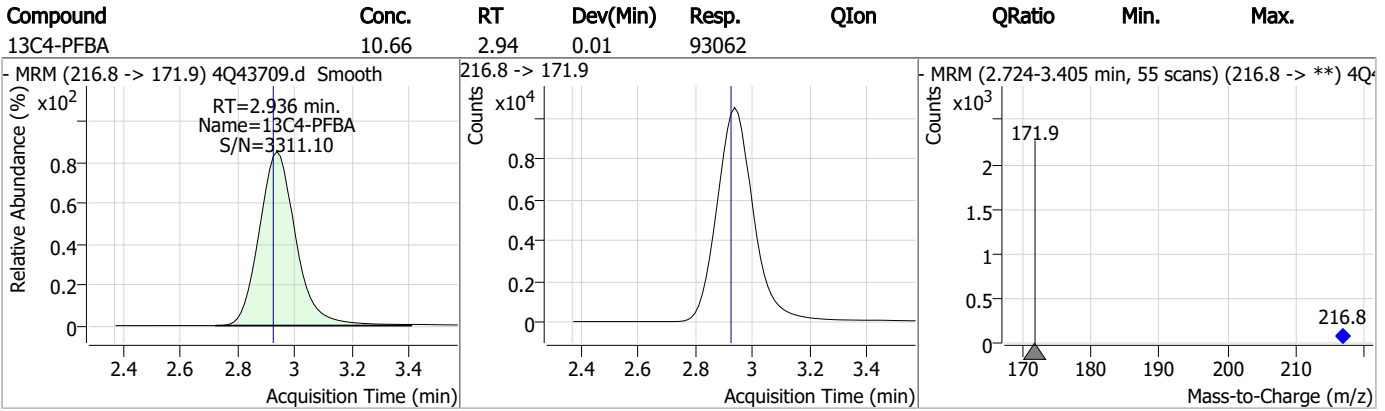
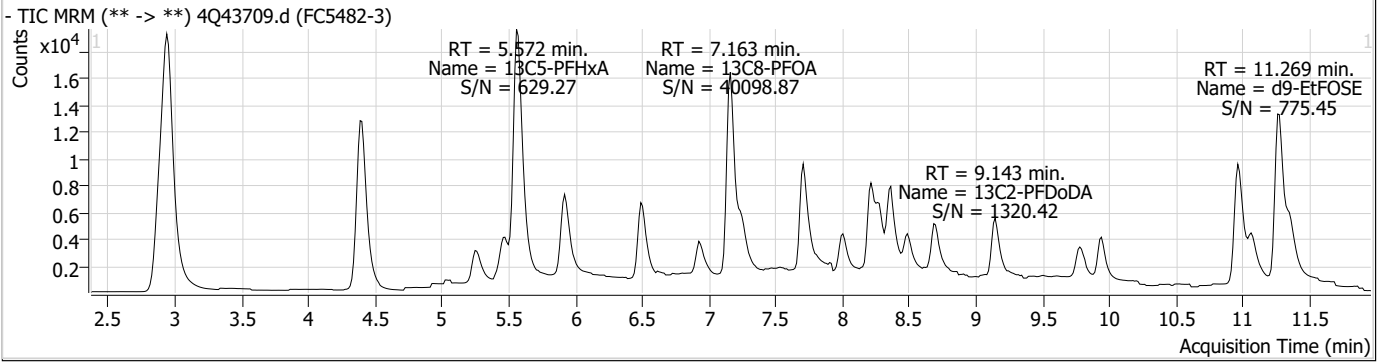
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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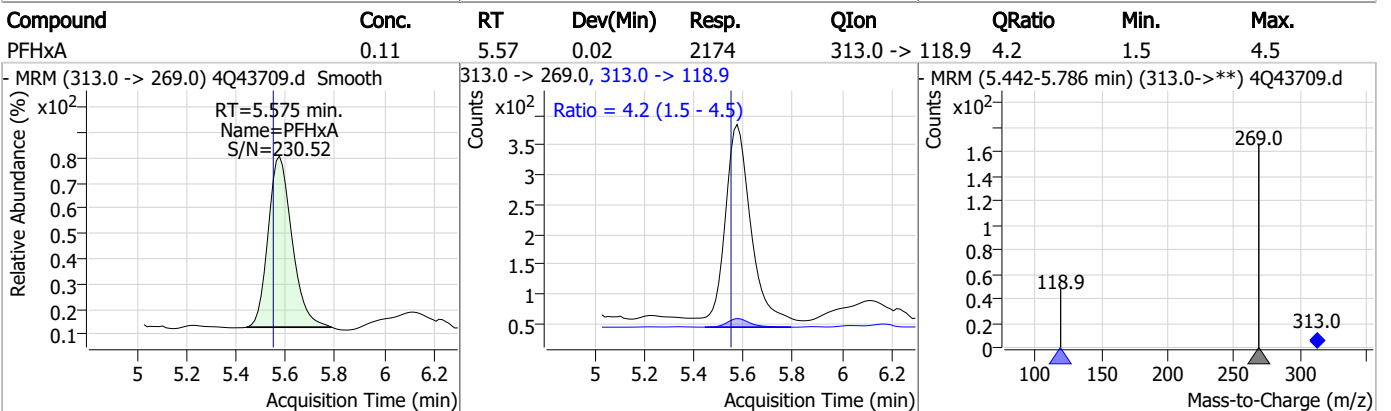
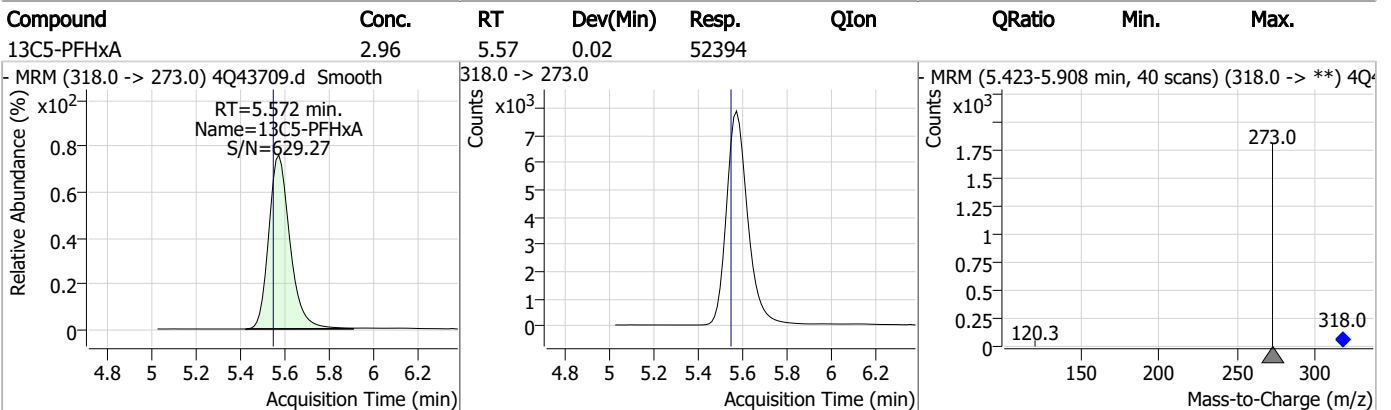
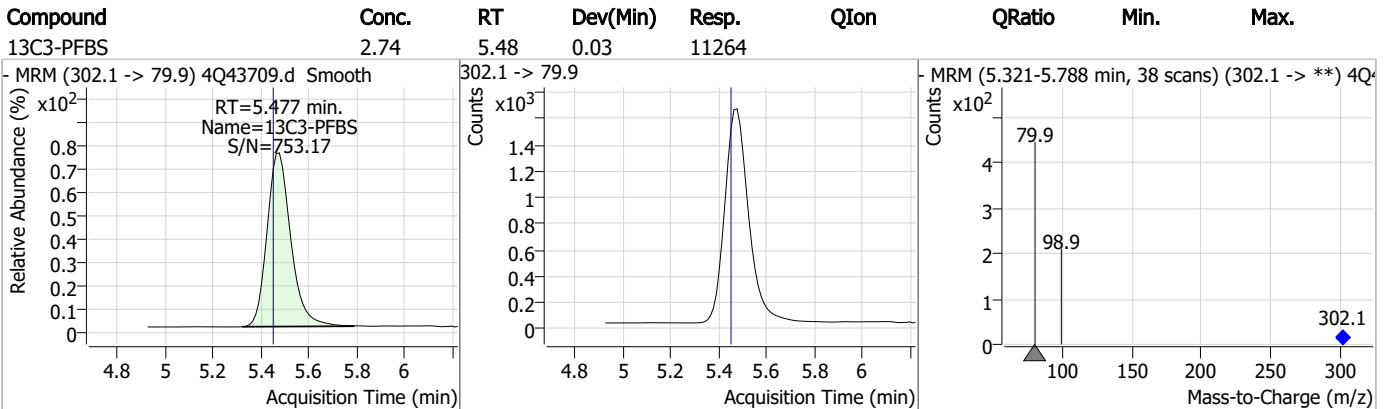
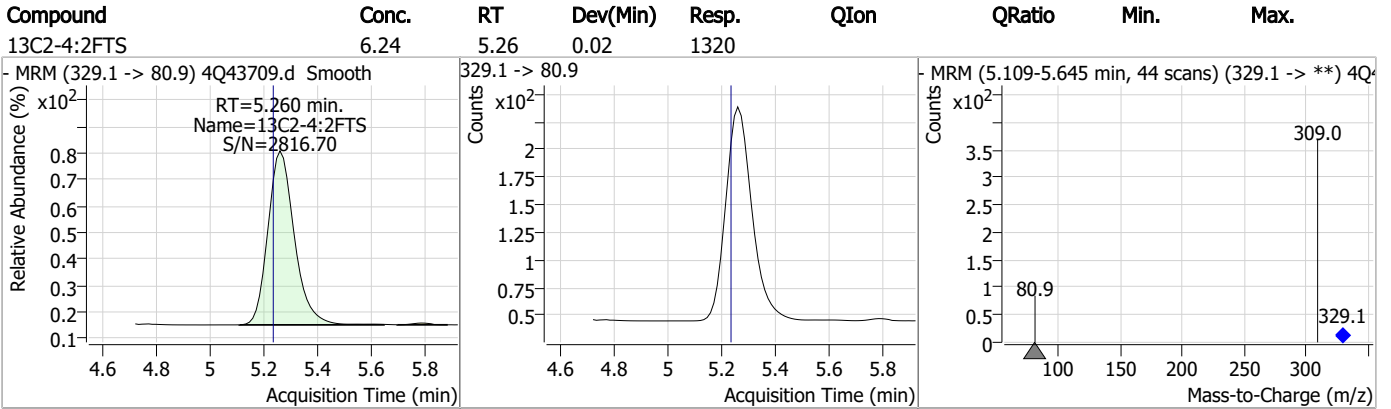
7.1.3

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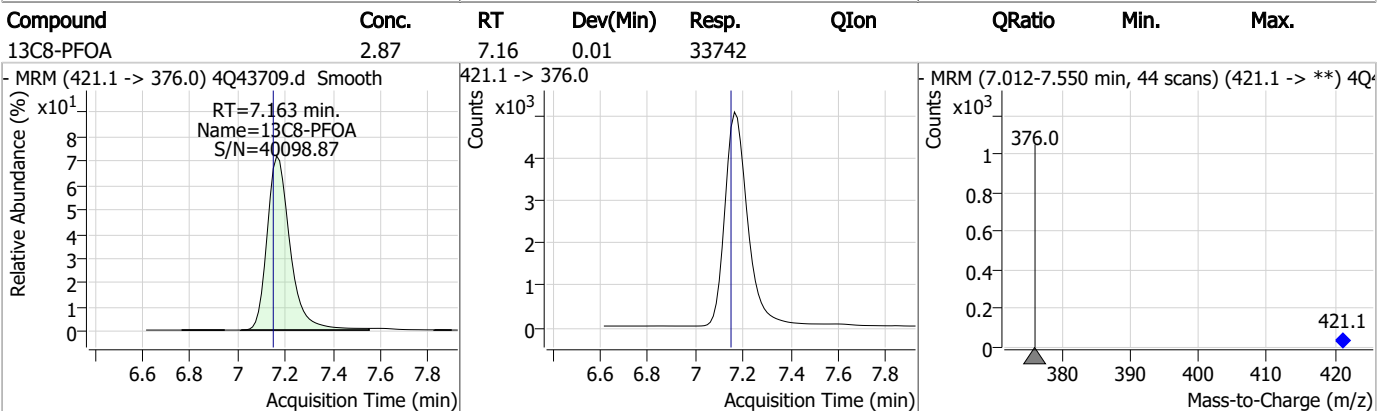
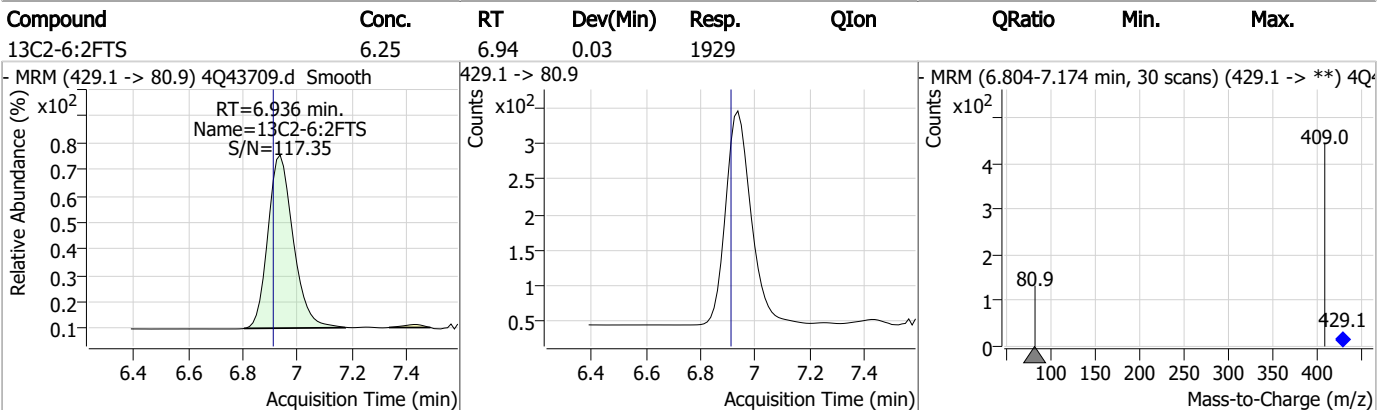
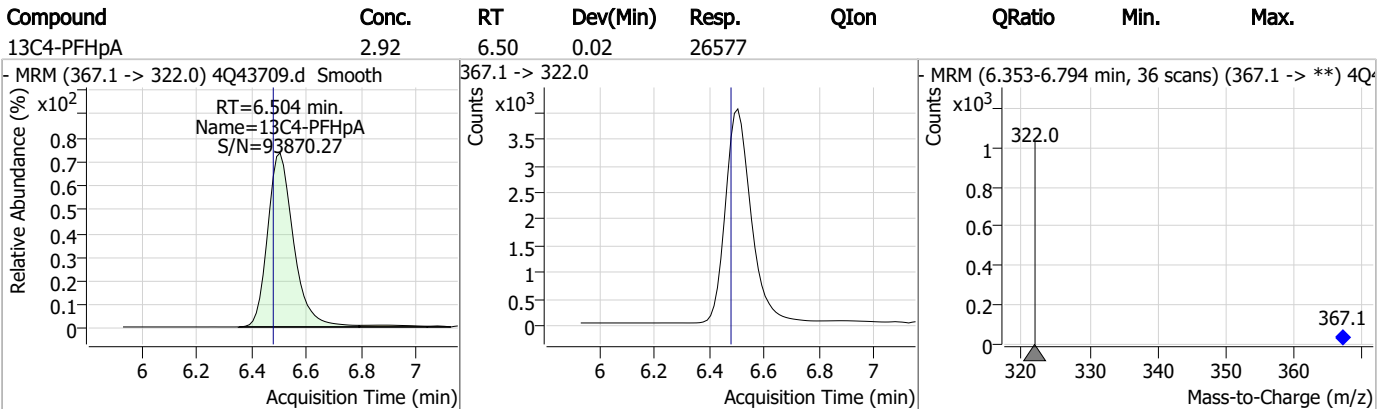
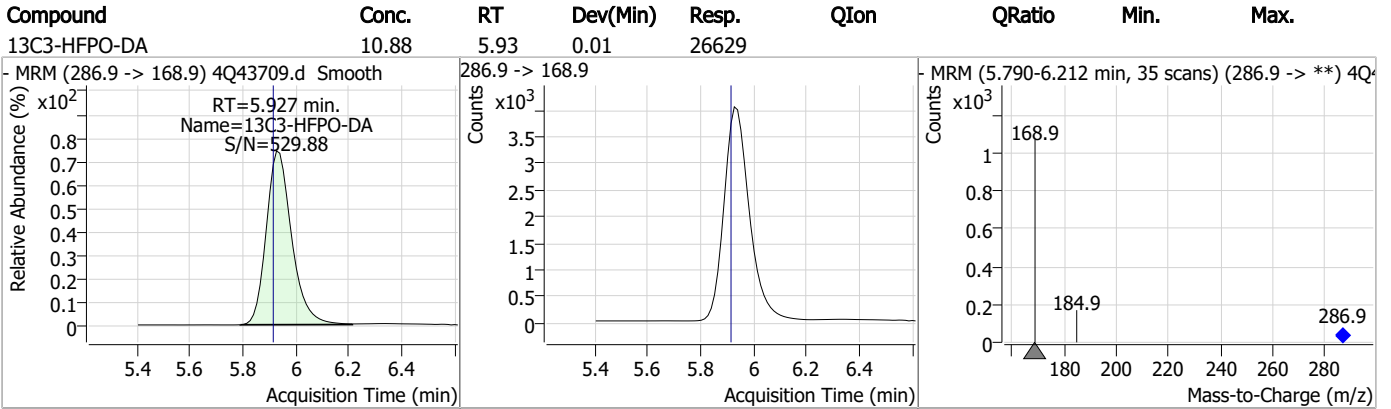
Perfluorinated Compounds by LC/MS/MS



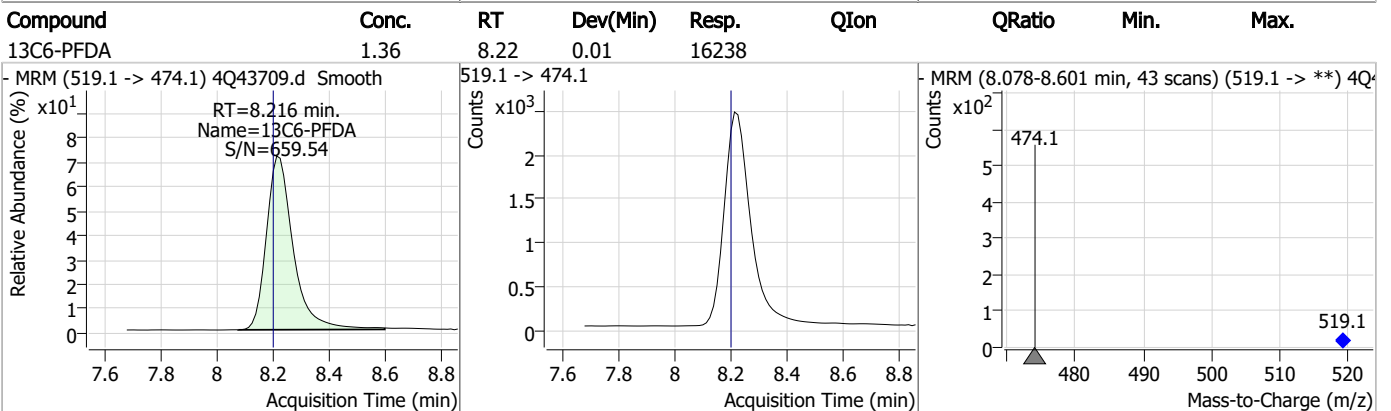
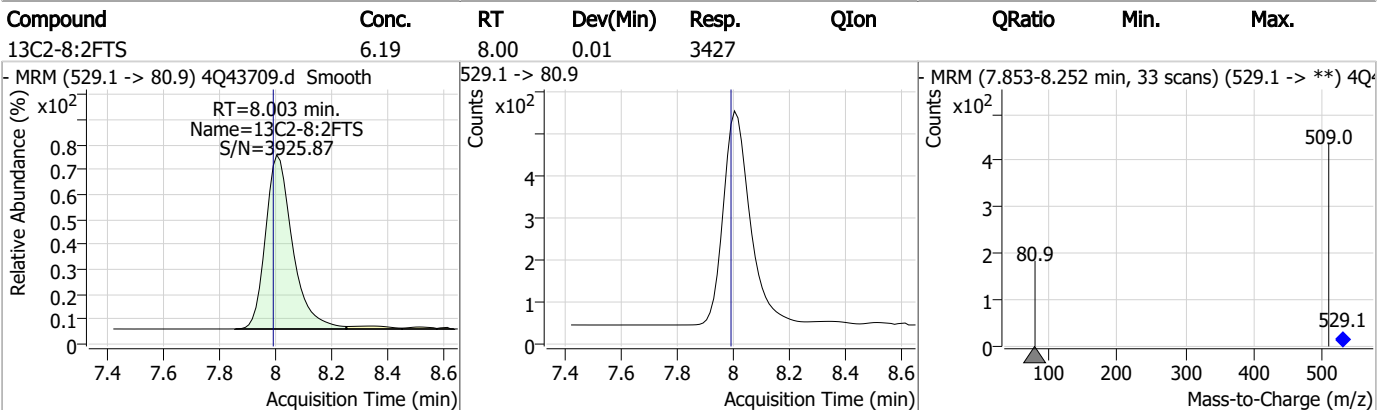
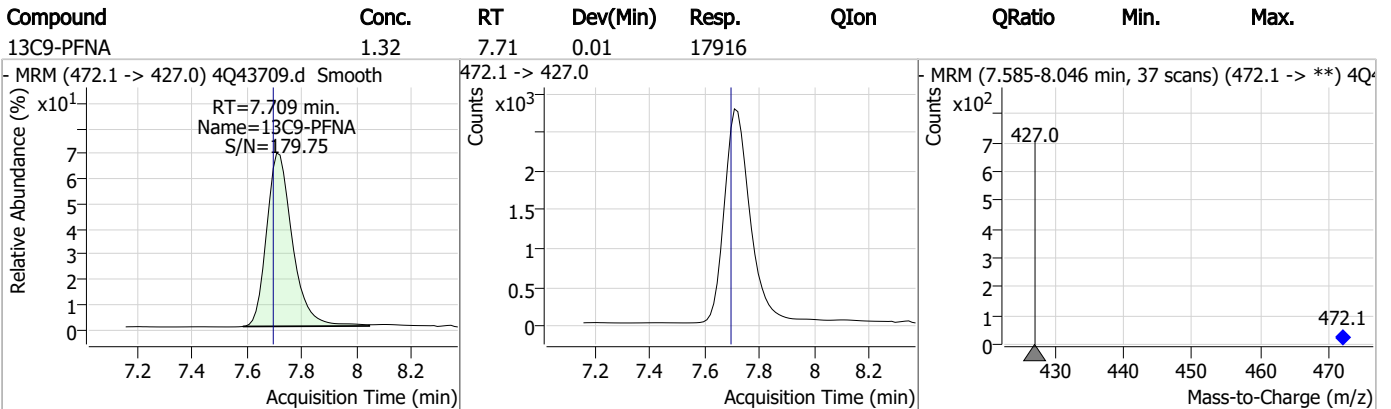
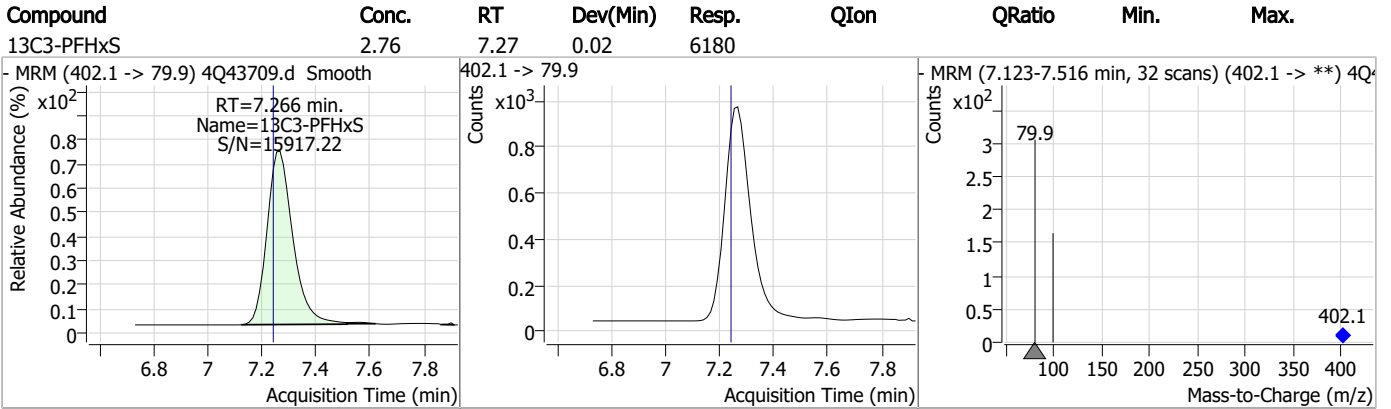
Perfluorinated Compounds by LC/MS/MS



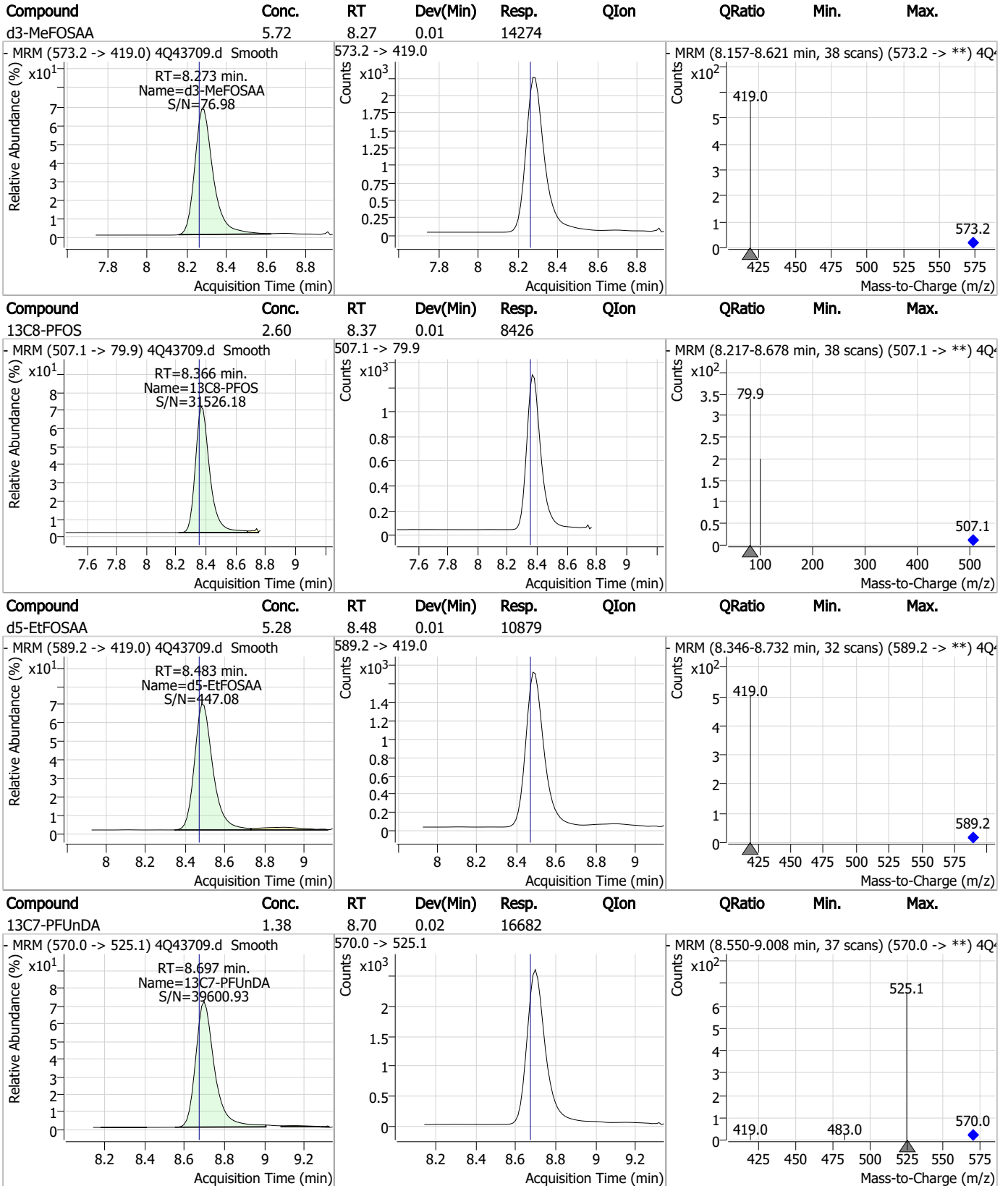
Perfluorinated Compounds by LC/MS/MS



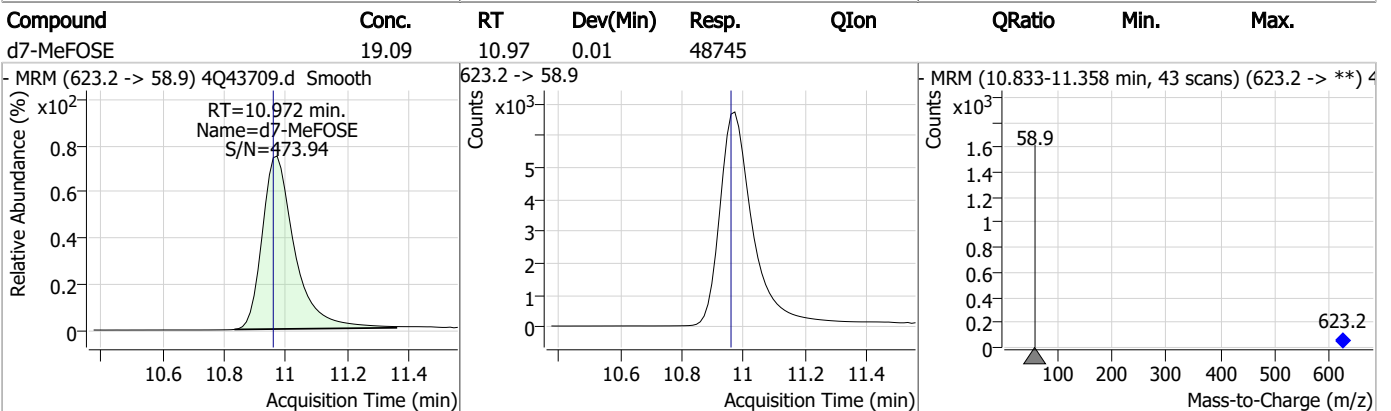
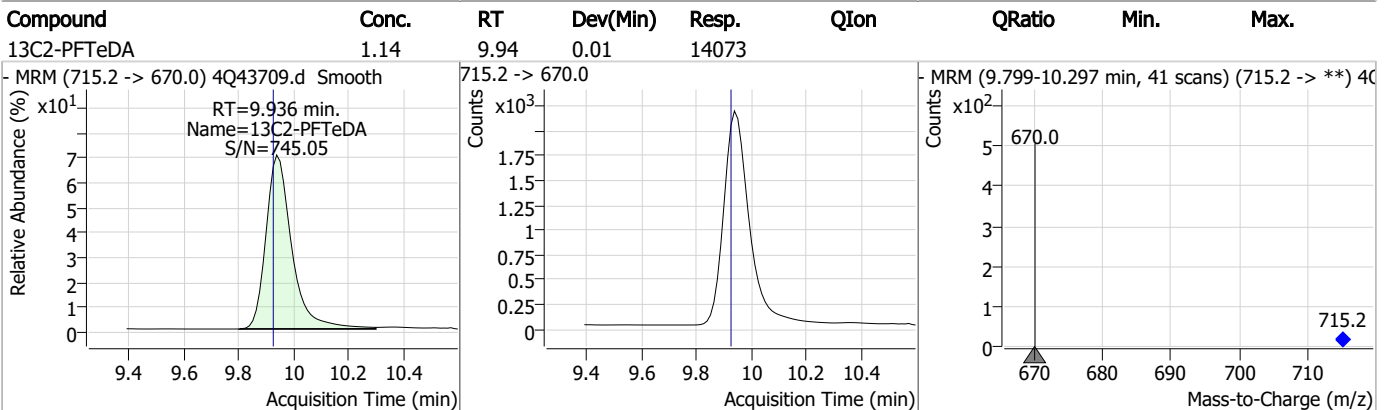
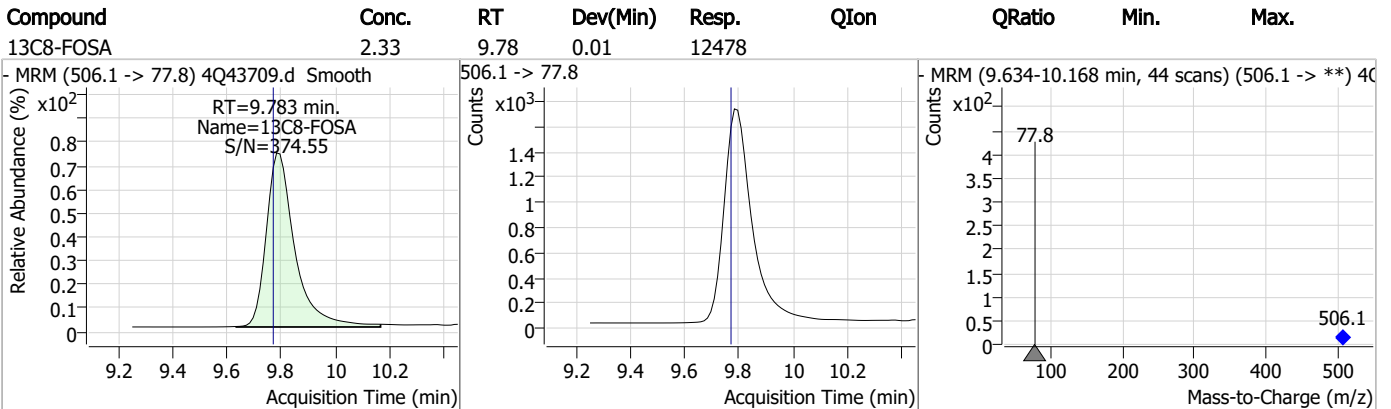
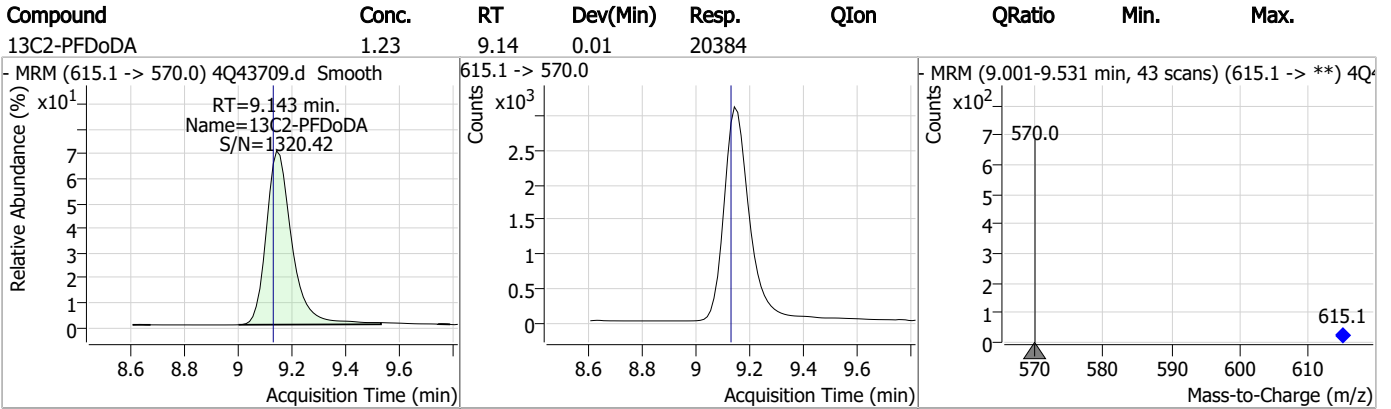
Perfluorinated Compounds by LC/MS/MS



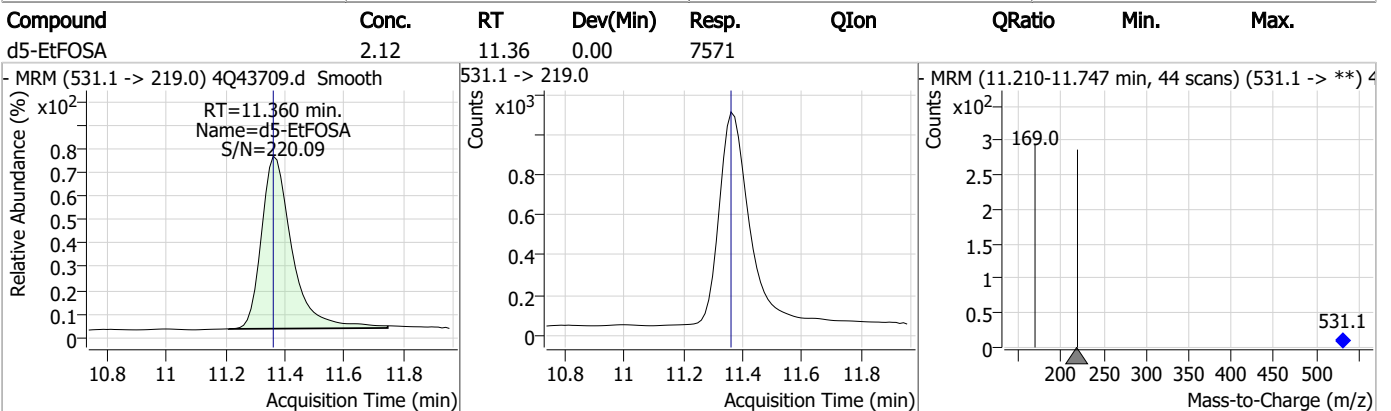
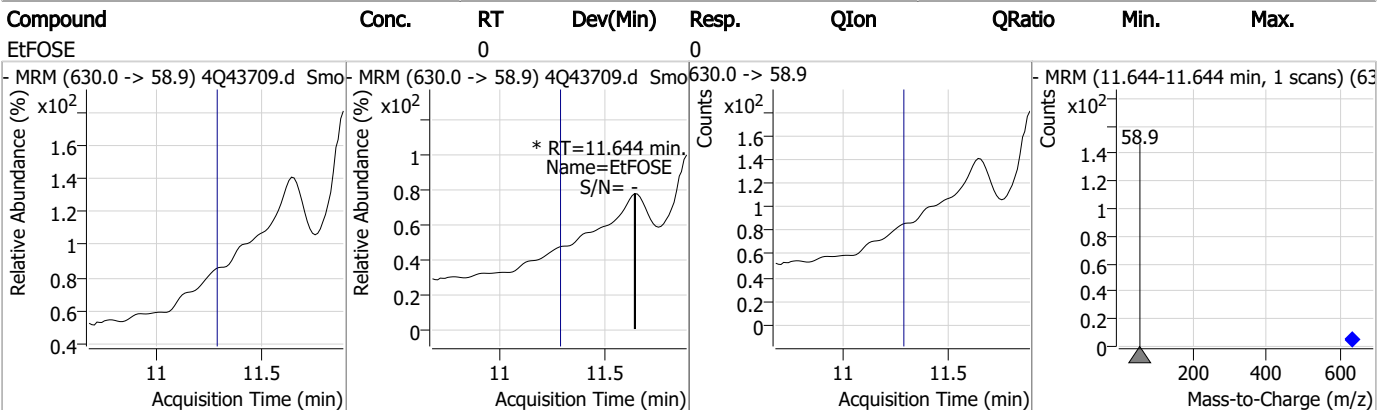
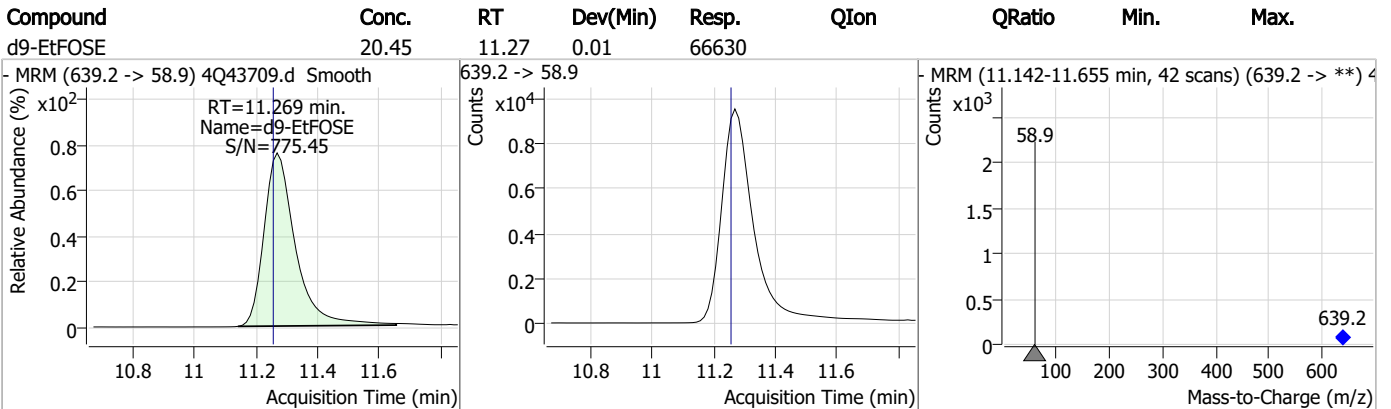
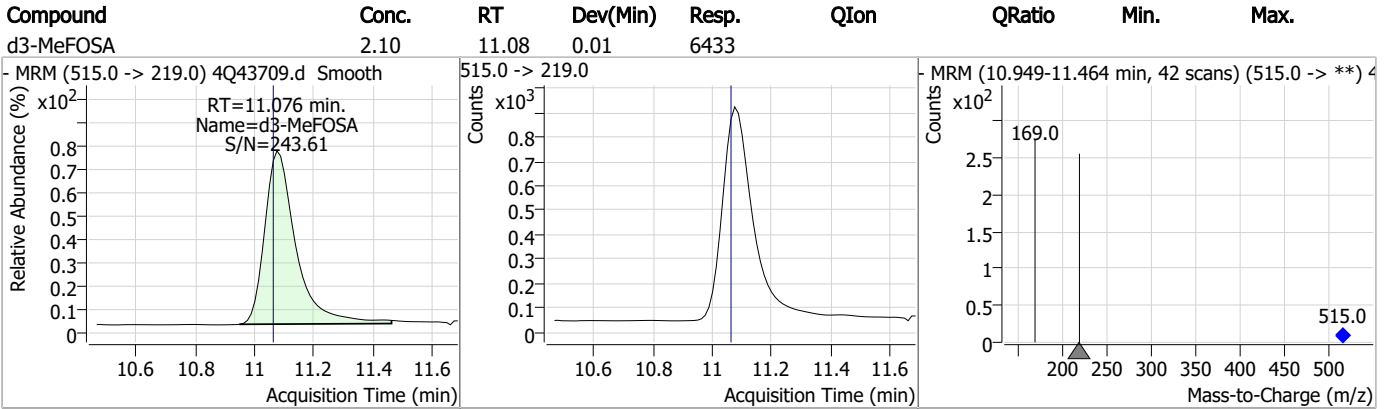
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

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 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 7:53:36 PM
 Sample Name : fc5482-4
 Vial : P3-B8
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	3378	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	13241	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	42012	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	25242	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	33448	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	18128	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	17250	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	16686	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	19021	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	9492	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	11583	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10085	2.50 µg/L	0.012
M3-PFHxS	7.266	402.1 -> 79.9	5914	2.50 µg/L	0.025
M8-PFOS	8.354	507.1 -> 79.9	7822	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1170	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	1559	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2688	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	15992	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	20358	10.00 µg/L	0.012
M5-EtFOSAA	8.470	589.2 -> 419.0	13576	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	39218	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	57245	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7763	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	6797	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	6868	2.50 µg/L	0.012
13C3-PFBA	2.941	216.0 -> 172.0	52763	5.00 µg/L	0.012
18O2-PFHxS	7.265	403.0 -> 83.9	3788	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	37774	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14720	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	19615	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	39430	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1170	5.89 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.7%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1559	5.37 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2688	5.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-PFDoDA	9.143	615.1 -> 570.0	19021	1.05 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 84.1%		
13C2-PFTeDA	9.936	715.2 -> 670.0	9492	0.70 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 56.3%		
13C3-PFBS	5.464	302.1 -> 79.9	10085	2.61 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFHxS	7.266	402.1 -> 79.9	5914	2.80 µg/L	0.025



7.14
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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 = 112.2%		
13C4-PFBA	2.936	216.8 -> 171.9	3378	0.37 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 3.7%		
13C4-PFHpA	6.504	367.1 -> 322.0	25242	2.62 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C5-PFHxA	5.559	318.0 -> 273.0	42012	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.5%		
13C5-PFPeA	4.387	268.3 -> 223.0	13241	1.11 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 22.2%		
13C6-PFDA	8.216	519.1 -> 474.1	17250	1.33 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.1%		
13C7-PFUnDA	8.697	570.0 -> 525.1	16686	1.27 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C8-FOSA	9.783	506.1 -> 77.8	11583	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C8-PFOA	7.163	421.1 -> 376.0	33448	2.64 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C8-PFOS	8.354	507.1 -> 79.9	7822	2.78 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C9-PFNA	7.709	472.1 -> 427.0	18128	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
d3-MeFOSAA	8.273	573.2 -> 419.0	15992	7.37 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 147.4%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	20358	7.85 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 78.5%		
d3-MeFOSA	11.076	515.0 -> 219.0	6797	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
d5-EtFOSAA	8.470	589.2 -> 419.0	13576	7.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 151.6%		
d7-MeFOSE	10.972	623.2 -> 58.9	39218	17.68 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 70.7%		
d9-EtFOSE	11.269	639.2 -> 58.9	57245	20.22 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 80.9%		
d5-EtFOSA	11.360	531.1 -> 219.0	7763	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		

Target Compounds

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	9.268	613.1 -> 569.0	0	µg/L m	1
		613.1 -> 319.0	0		
PFDS	9.257	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	8.321	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	7.653	398.7 -> 79.9	0	µg/L	m	1
		398.7 -> 98.9	0			
PFNA	7.896	463.0 -> 419.0	0	µg/L	m	1
		463.0 -> 219.0	0			
PFNS	8.899	548.8 -> 79.9	0	µg/L	m	1
		548.8 -> 98.9				
PFOA	7.164	413.0 -> 369.0	0	µg/L	m	1
		413.0 -> 169.0	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	8.909	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1	0			
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	11.669	630.0 -> 58.9	0	µg/L	m	1
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

7.14
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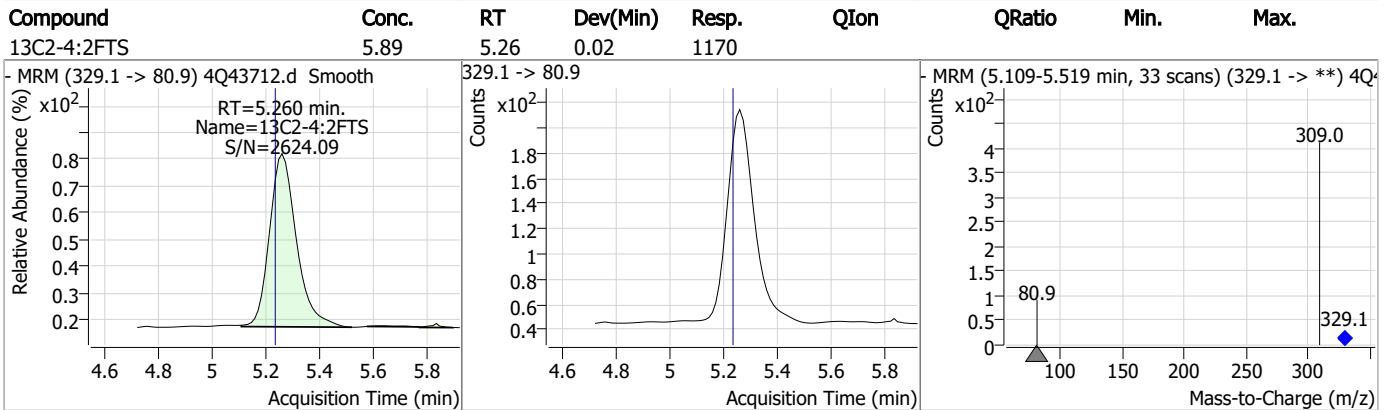
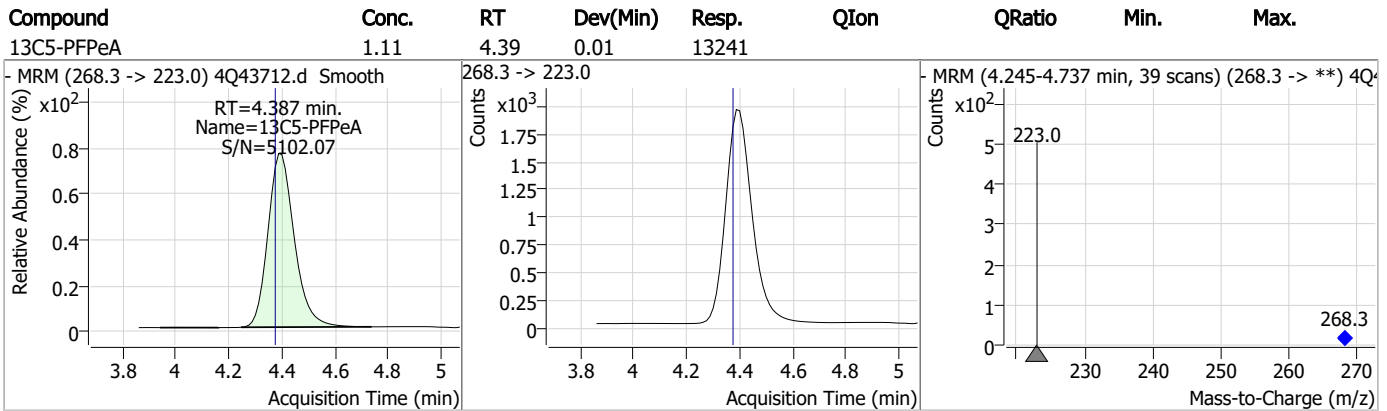
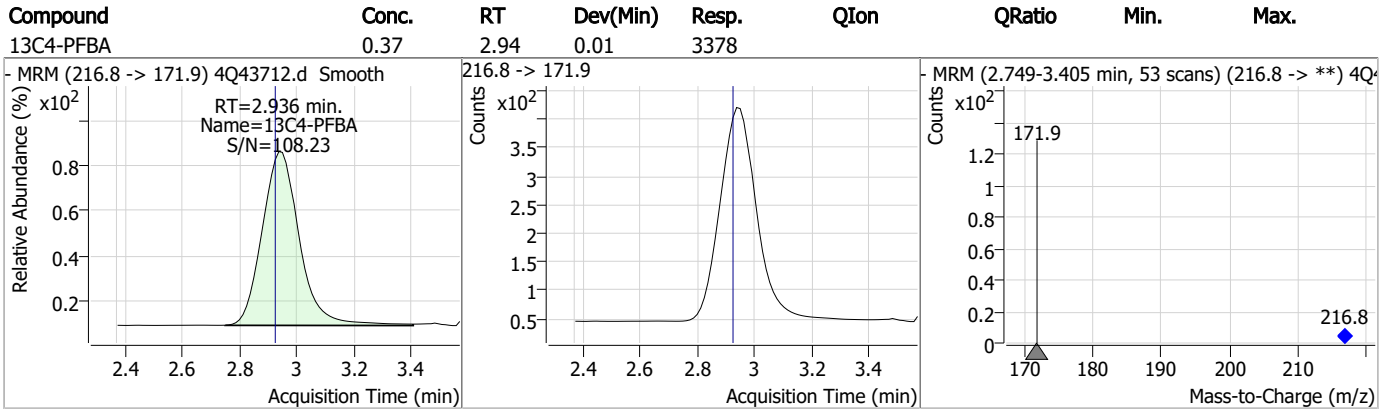
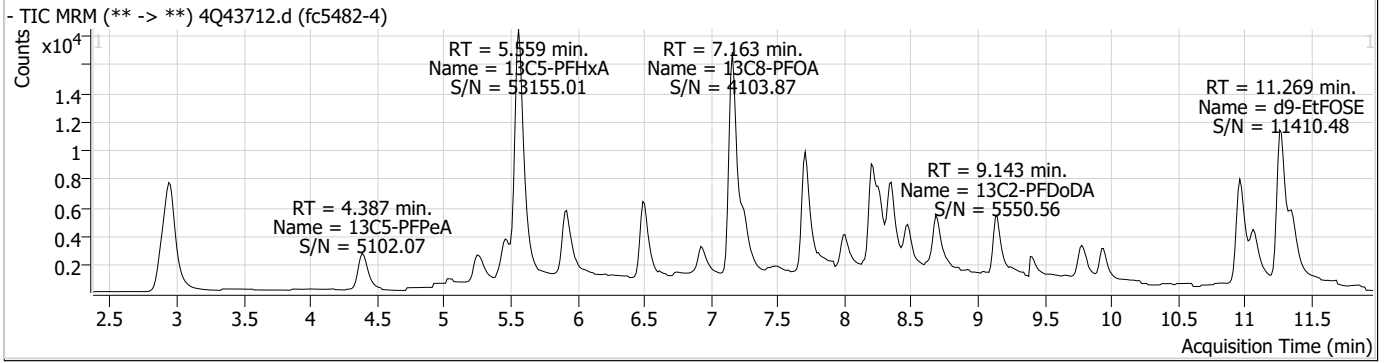
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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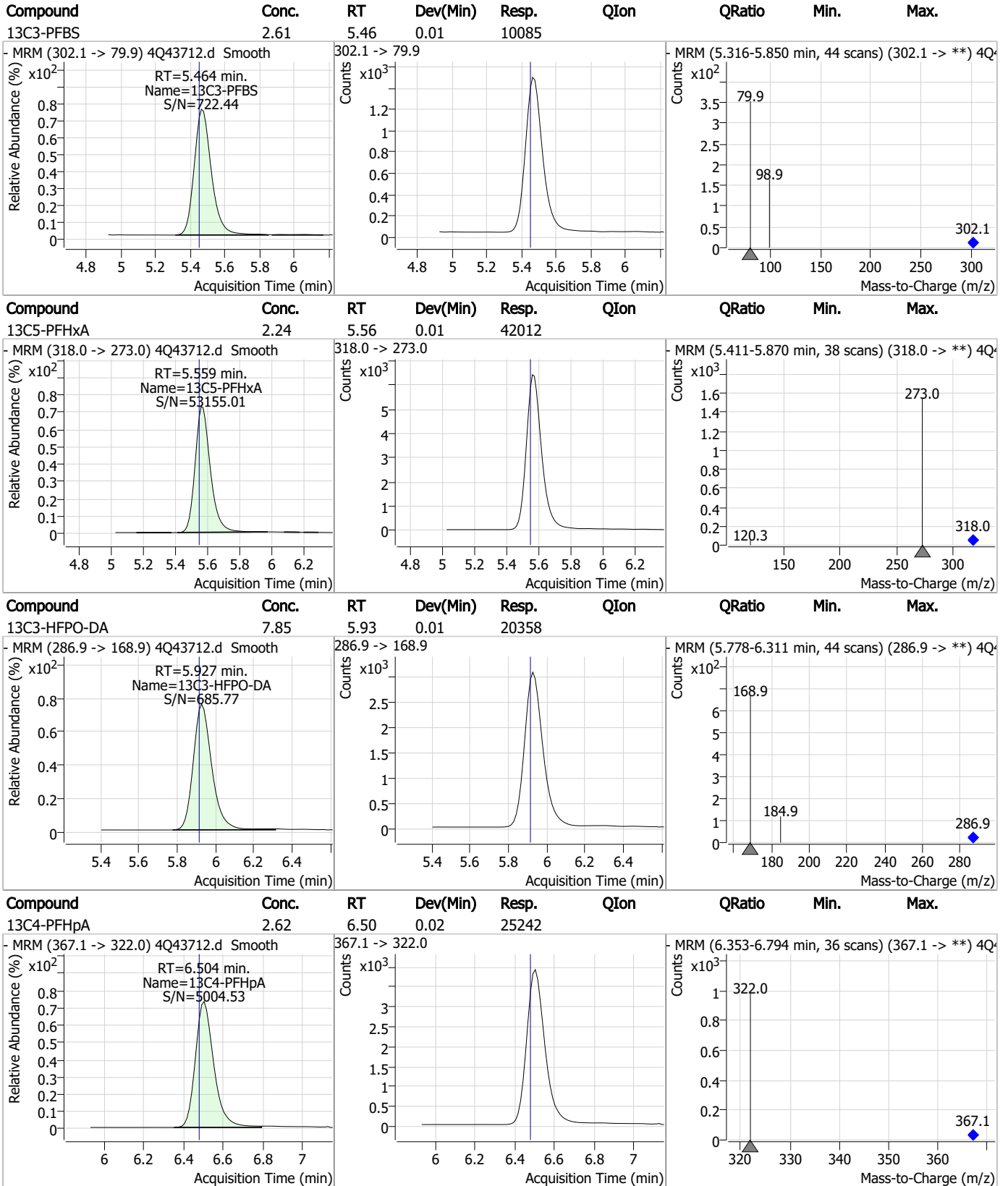
7.1.4

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Perfluorinated Compounds by LC/MS/MS



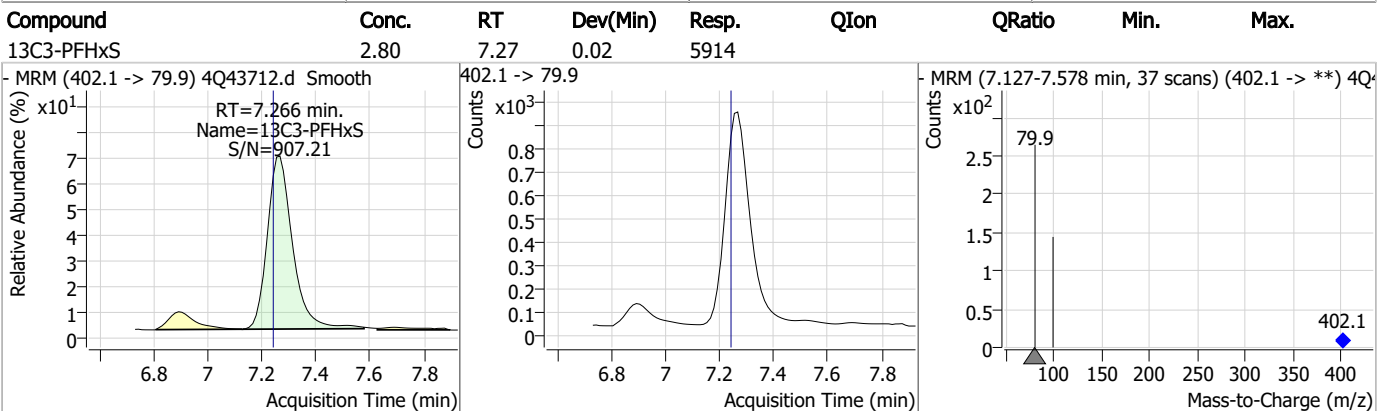
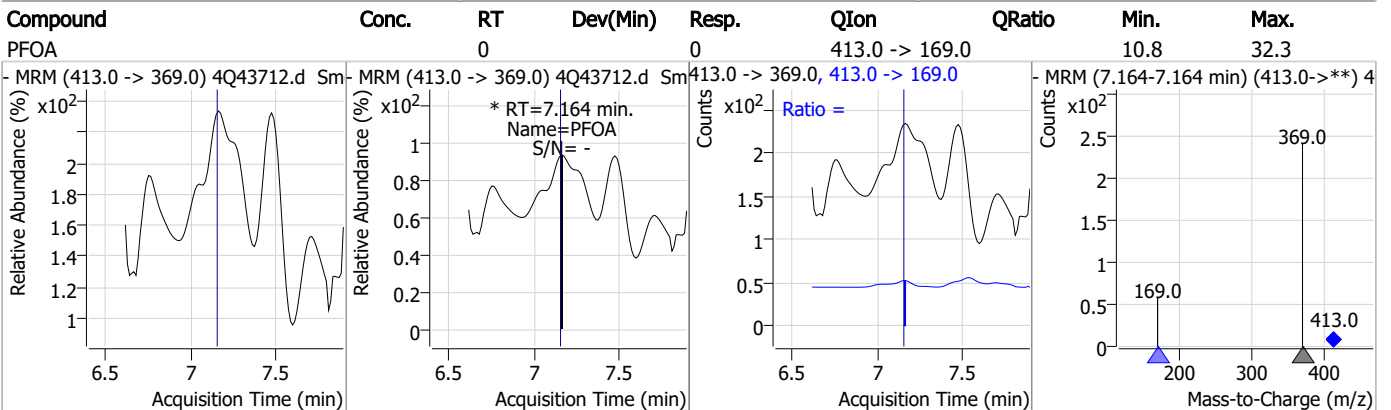
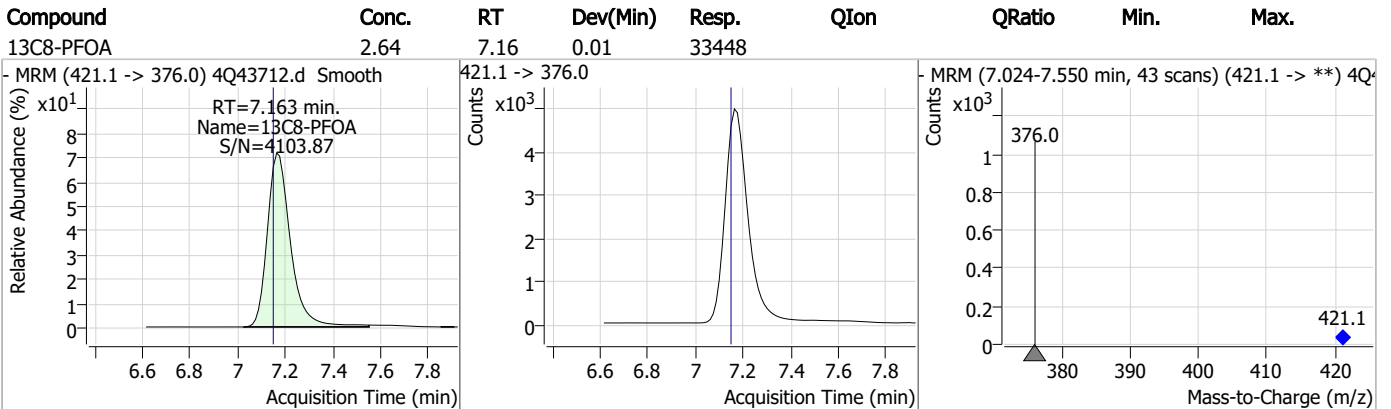
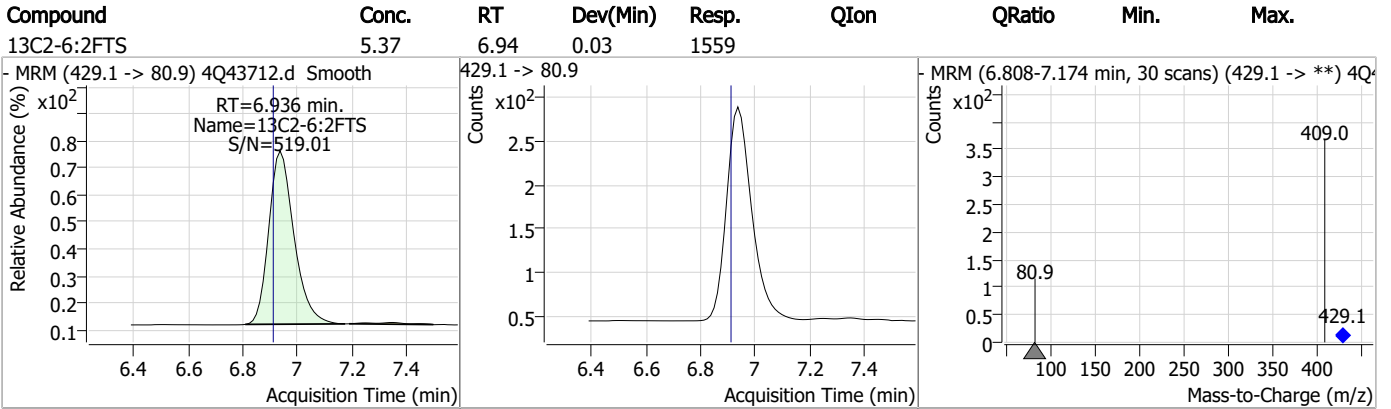
Perfluorinated Compounds by LC/MS/MS



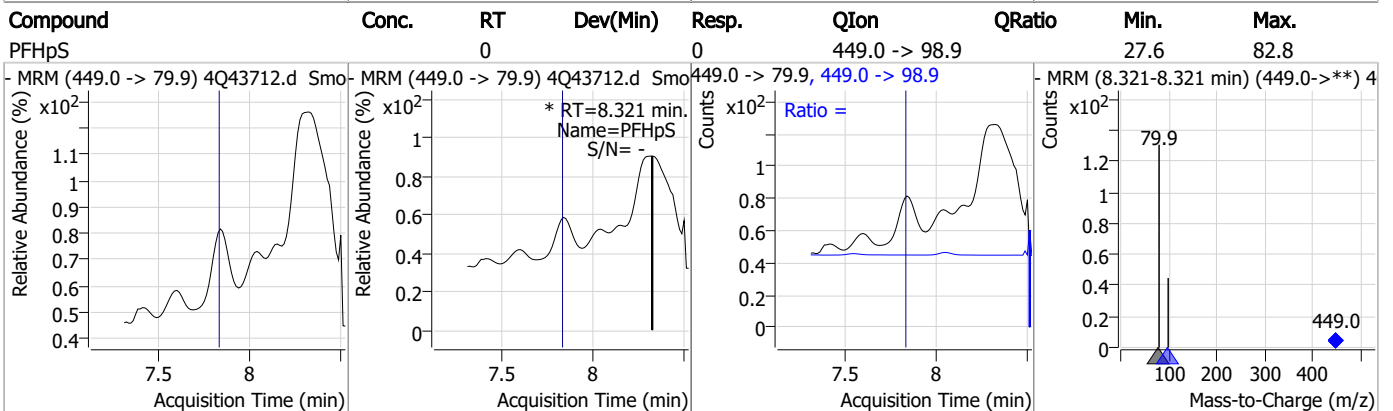
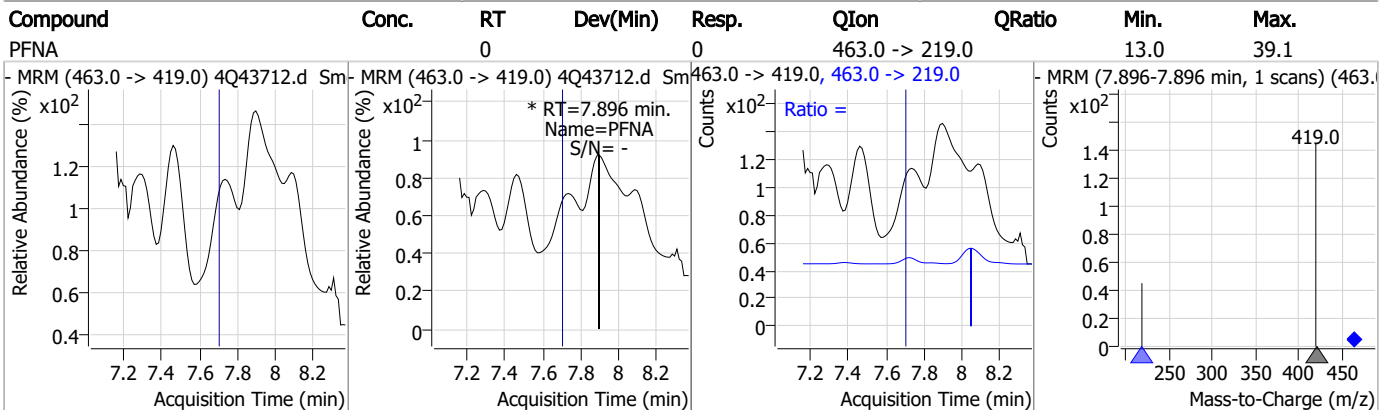
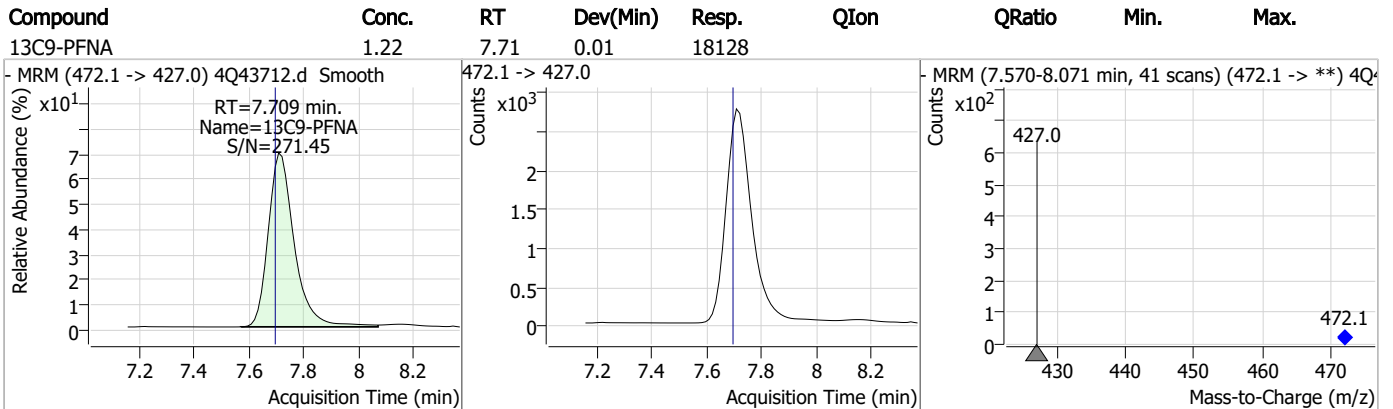
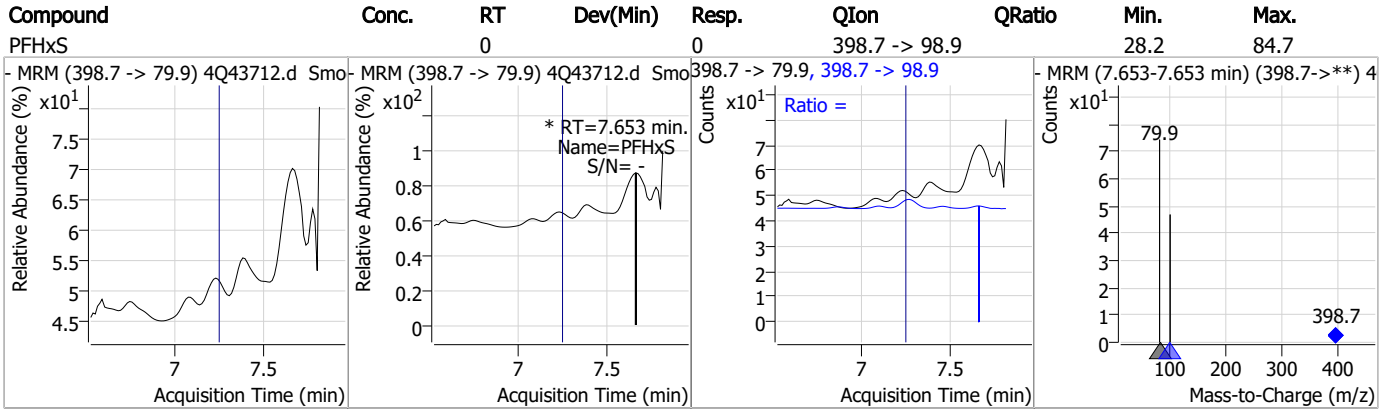
7.1.4

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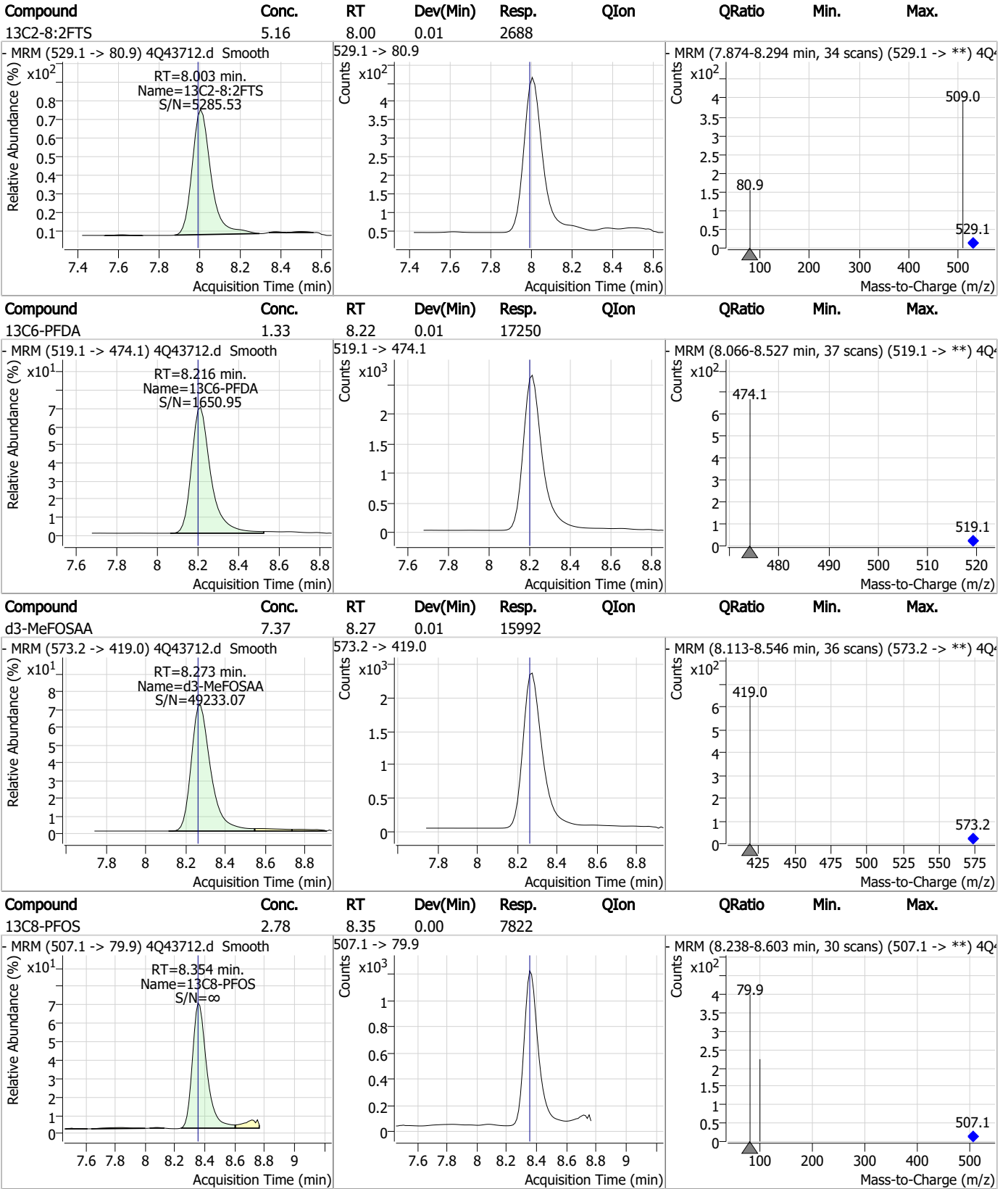
Perfluorinated Compounds by LC/MS/MS



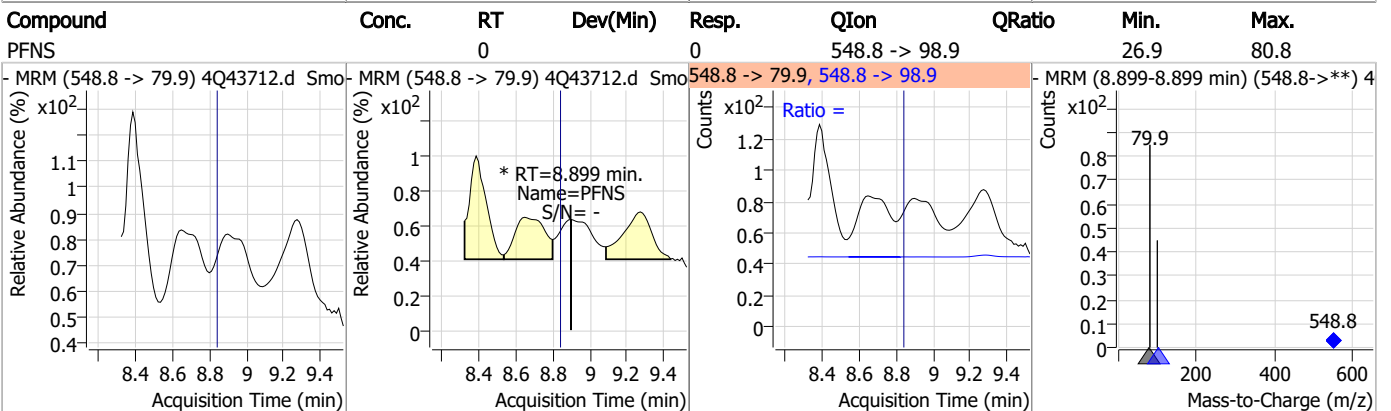
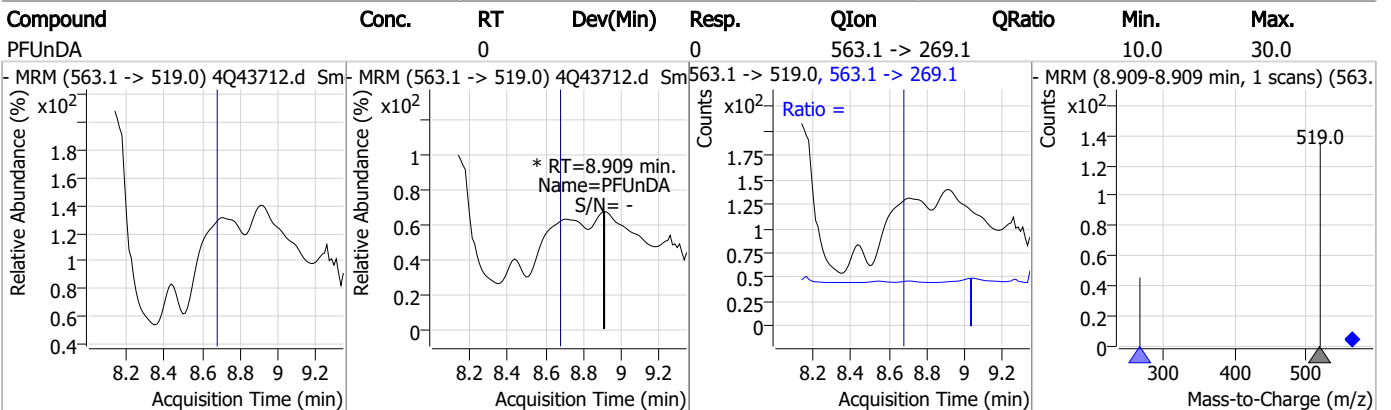
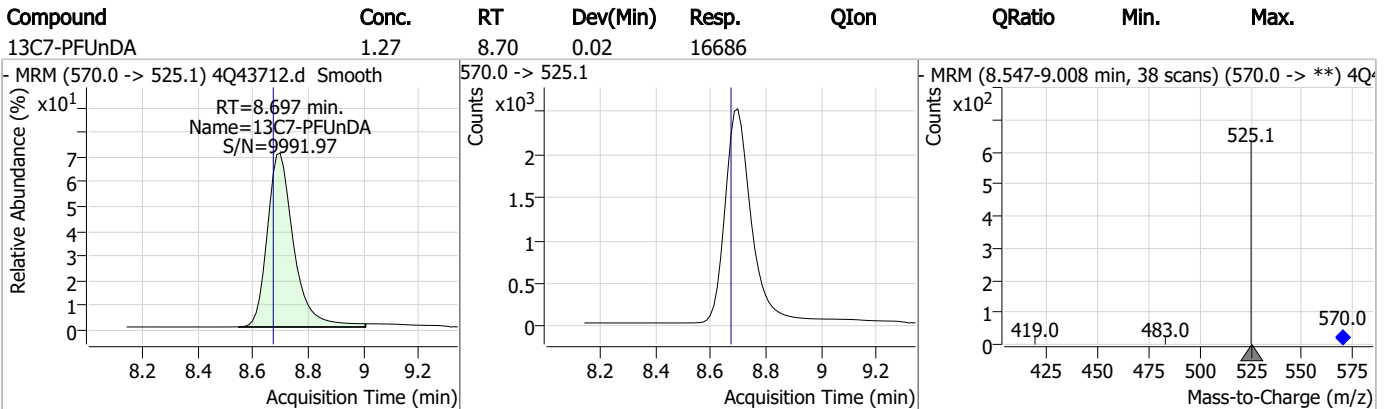
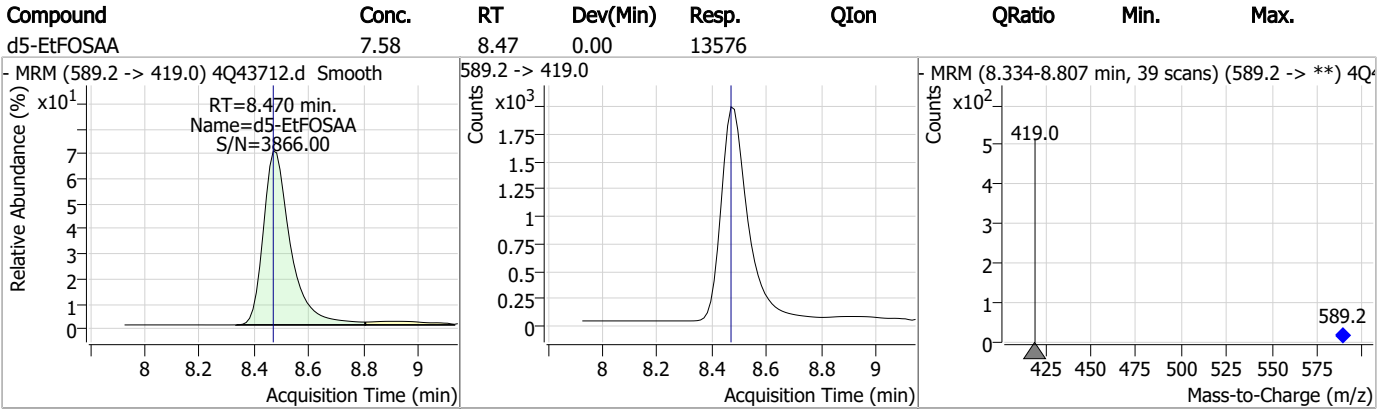
Perfluorinated Compounds by LC/MS/MS



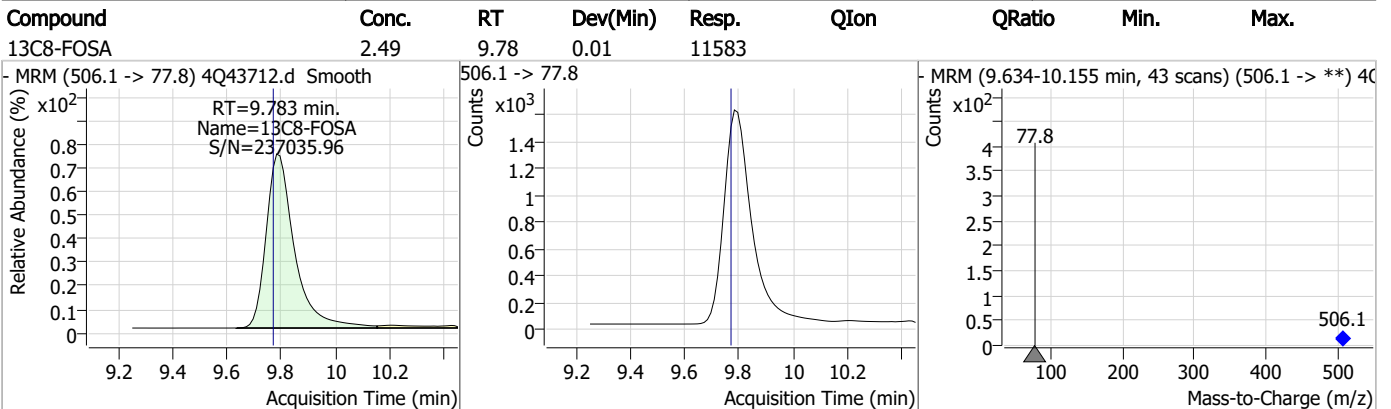
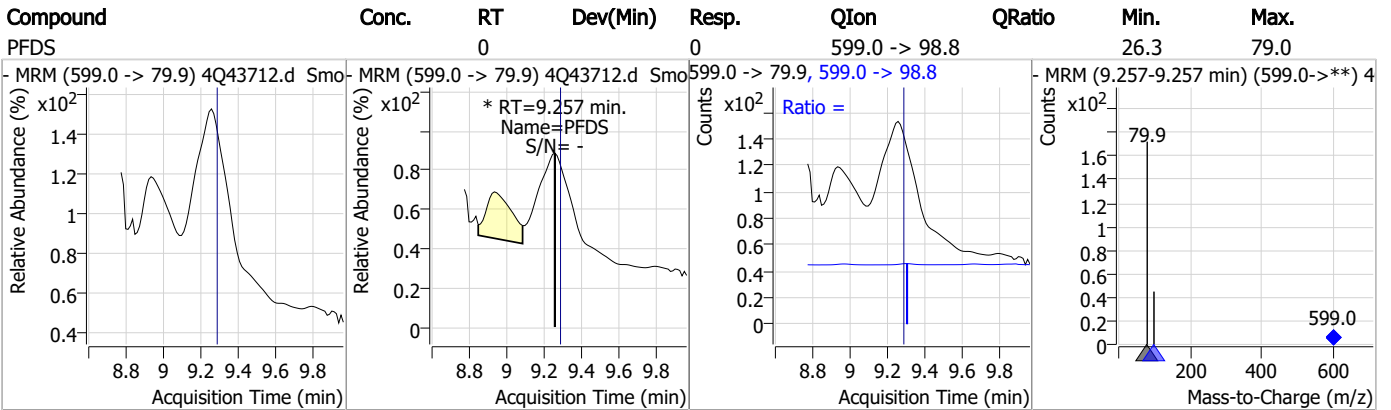
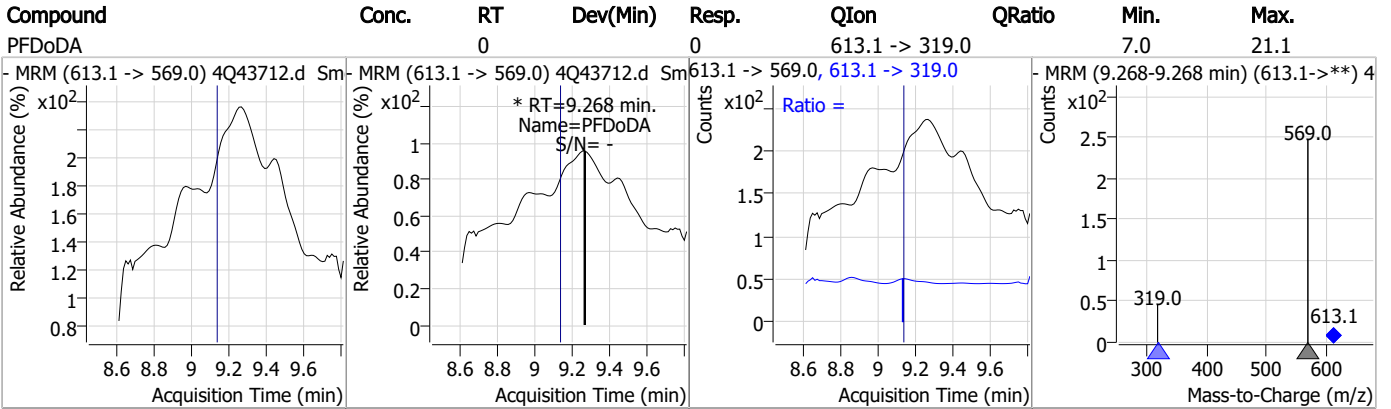
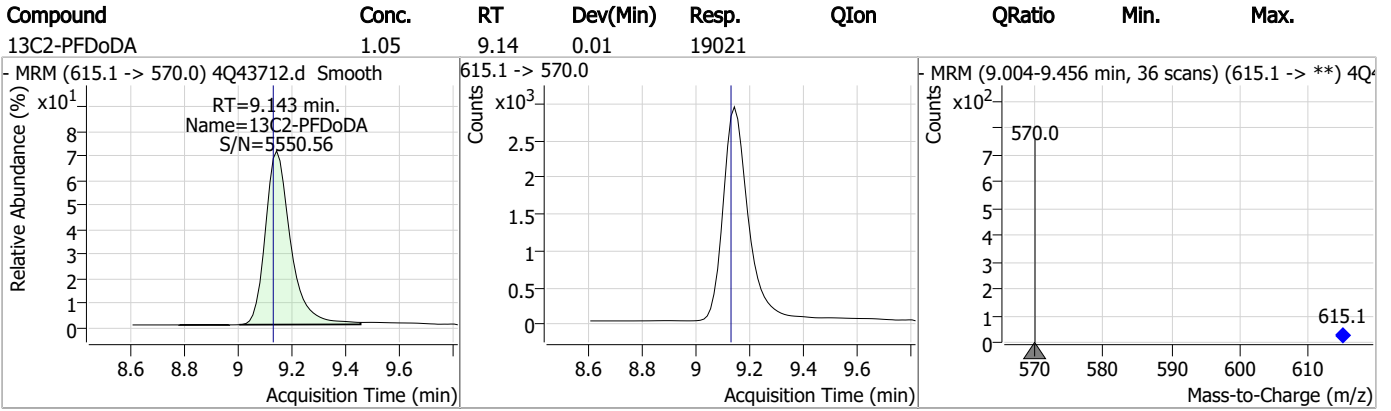
Perfluorinated Compounds by LC/MS/MS



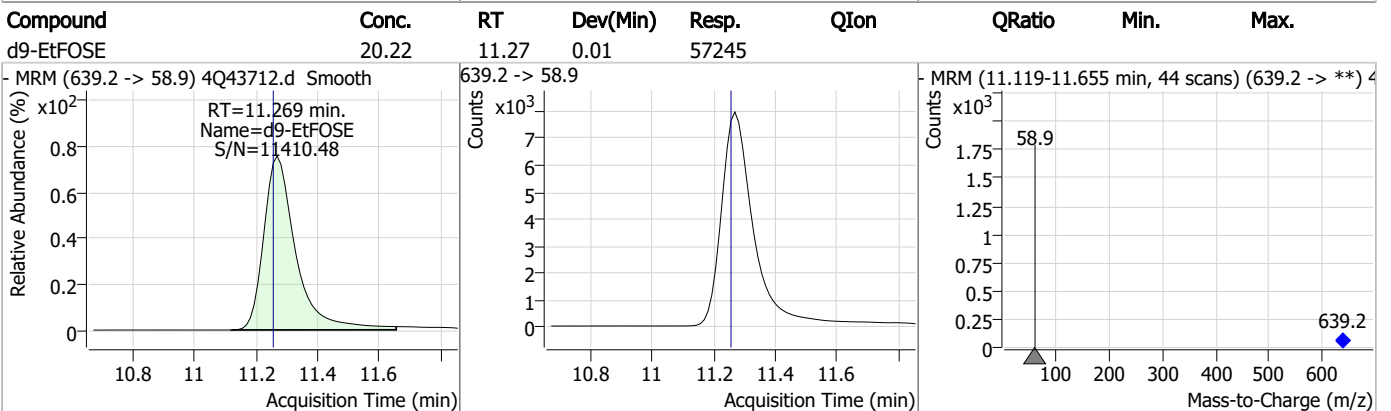
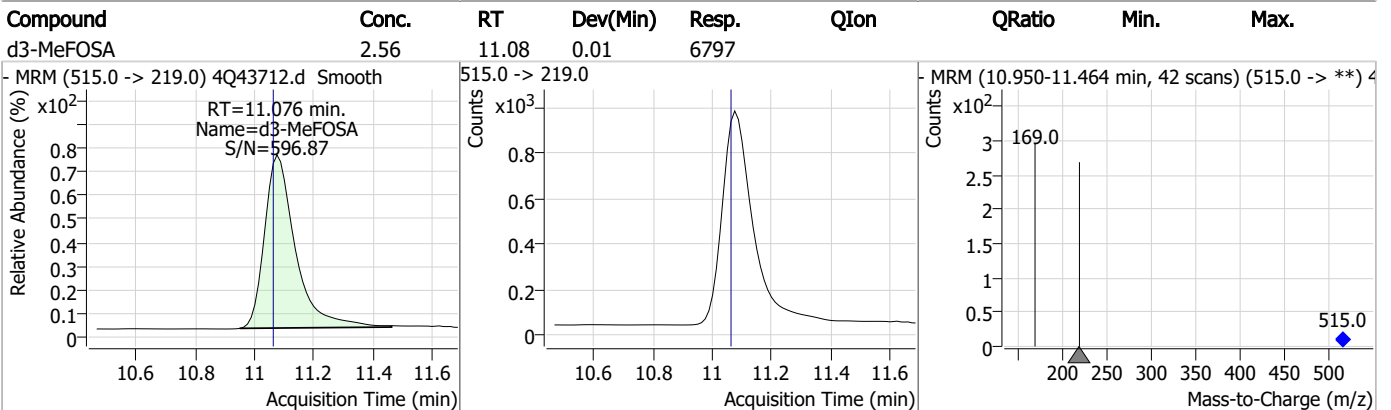
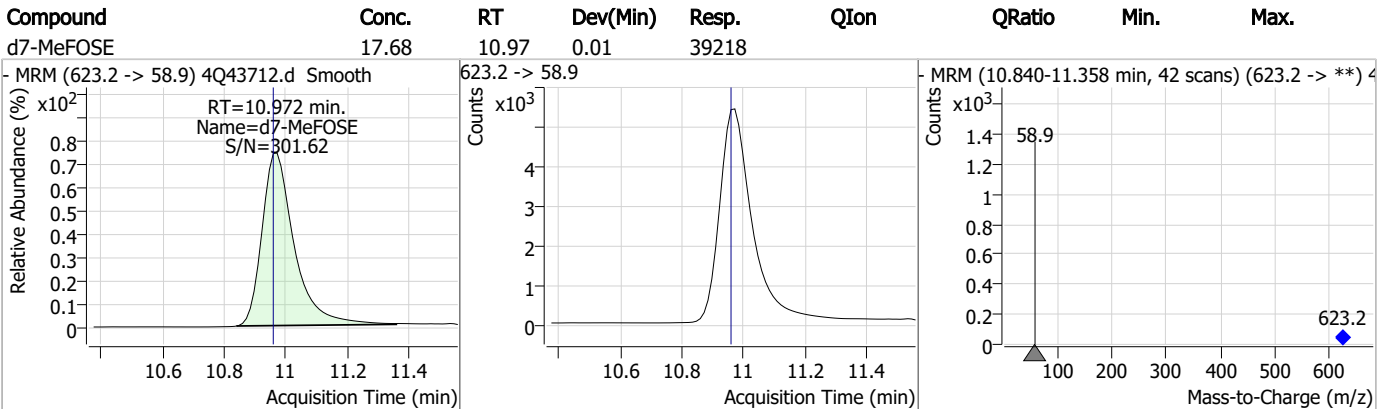
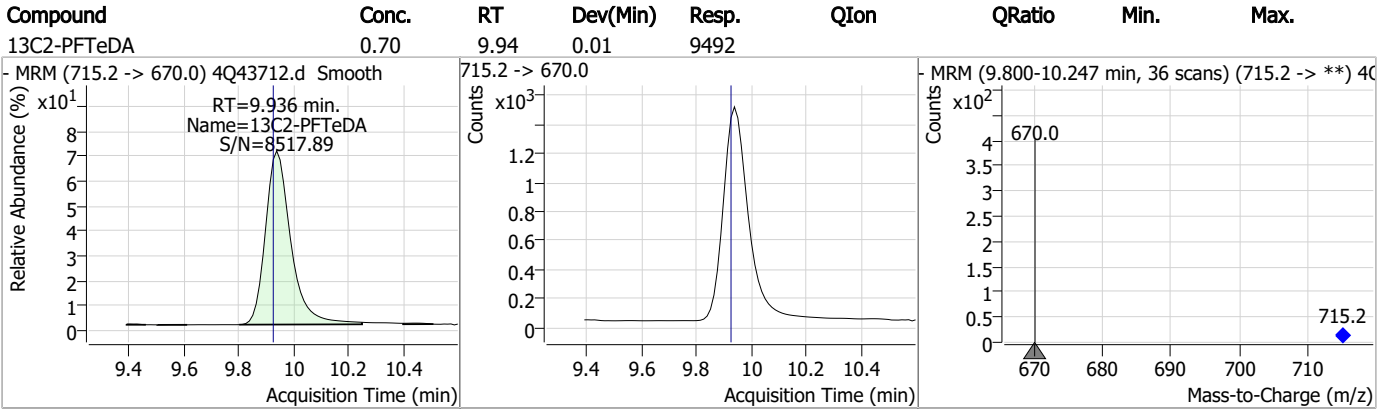
Perfluorinated Compounds by LC/MS/MS



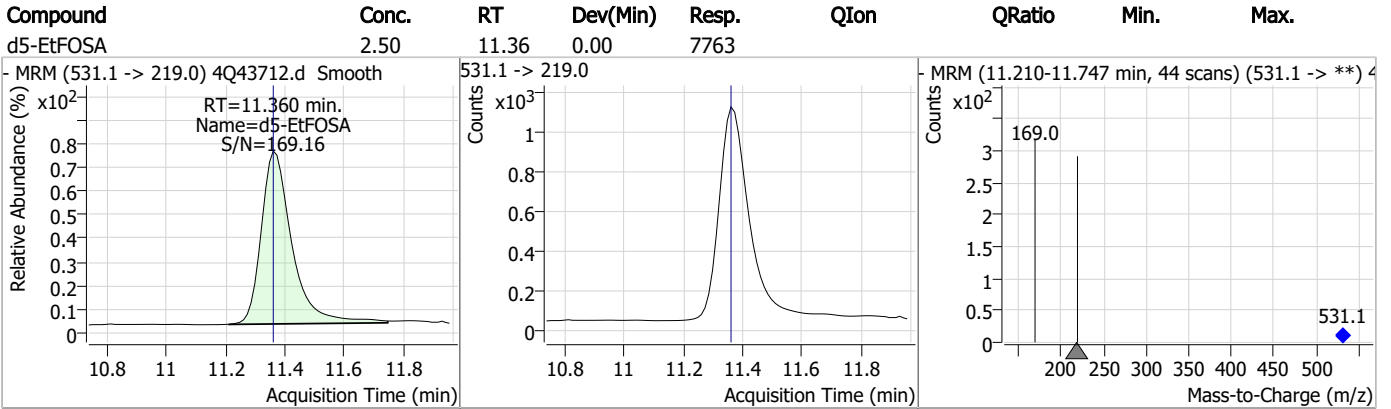
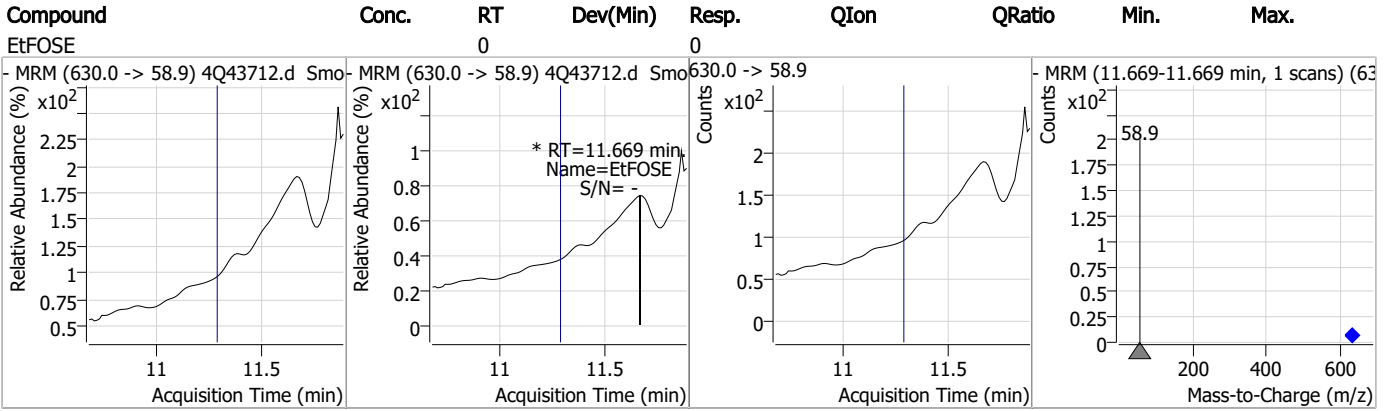
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43713.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 8:07:38 PM
 Sample Name : FC5482-5
 Vial : P3-B9
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q630,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	107345	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	64561	5.00 µg/L	0.012
M5-PFHxA	5.572	318.0 -> 273.0	51879	2.50 µg/L	0.025
M4-PFHpA	6.504	367.1 -> 322.0	26187	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	34934	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	18408	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	16253	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	17030	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	20582	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	11252	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	10825	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	11544	2.50 µg/L	0.012
M3-PFHxS	7.266	402.1 -> 79.9	6083	2.50 µg/L	0.025
M8-PFOS	8.366	507.1 -> 79.9	7361	2.50 µg/L	0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1466	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	2170	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3588	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14521	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	27200	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	11089	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	48518	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	72234	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7802	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	6473	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	8190	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	53430	5.00 µg/L	0.000
18O2-PFHxS	7.265	403.0 -> 83.9	4014	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	37366	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14168	1.25 µg/L	0.012
13C5-PFNA	7.721	468.0 -> 423.0	17841	1.25 µg/L	0.025
13C2-PFHxA	5.573	315.1 -> 270.0	38029	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1466	6.96 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.1%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2170	7.05 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 141.0%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3588	6.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.1%		
13C2-PFDoDA	9.143	615.1 -> 570.0	20582	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-PFTeDA	9.936	715.2 -> 670.0	11252	0.87 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.3%		
13C3-PFBS	5.464	302.1 -> 79.9	11544	2.82 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.7%		
13C3-PFHxS	7.266	402.1 -> 79.9	6083	2.72 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 = 108.9%	
13C4-PFBA	2.936	216.8 -> 171.9	107345	11.62 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 116.2%	
13C4-PFHpA	6.504	367.1 -> 322.0	26187	2.82 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C5-PFHxA	5.572	318.0 -> 273.0	51879	2.87 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.6%	
13C5-PFPeA	4.387	268.3 -> 223.0	64561	5.61 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.2%	
13C6-PFDA	8.216	519.1 -> 474.1	16253	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C7-PFUnDA	8.697	570.0 -> 525.1	17030	1.34 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C8-FOSA	9.783	506.1 -> 77.8	10825	1.95 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.0%	
13C8-PFOA	7.163	421.1 -> 376.0	34934	2.78 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C8-PFOS	8.366	507.1 -> 79.9	7361	2.19 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.6%	
13C9-PFNA	7.709	472.1 -> 427.0	18408	1.36 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.1%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14521	5.61 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	27200	10.88 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
d3-MeFOSA	11.076	515.0 -> 219.0	6473	2.04 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.7%	
d5-EtFOSAA	8.483	589.2 -> 419.0	11089	5.19 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
d7-MeFOSE	10.972	623.2 -> 58.9	48518	18.35 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 73.4%	
d9-EtFOSE	11.269	639.2 -> 58.9	72234	21.40 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 85.6%	
d5-EtFOSA	11.360	531.1 -> 219.0	7802	2.11 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.3%	

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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	7.164	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	11.644	630.0 -> 58.9	0	µg/L	m	1
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

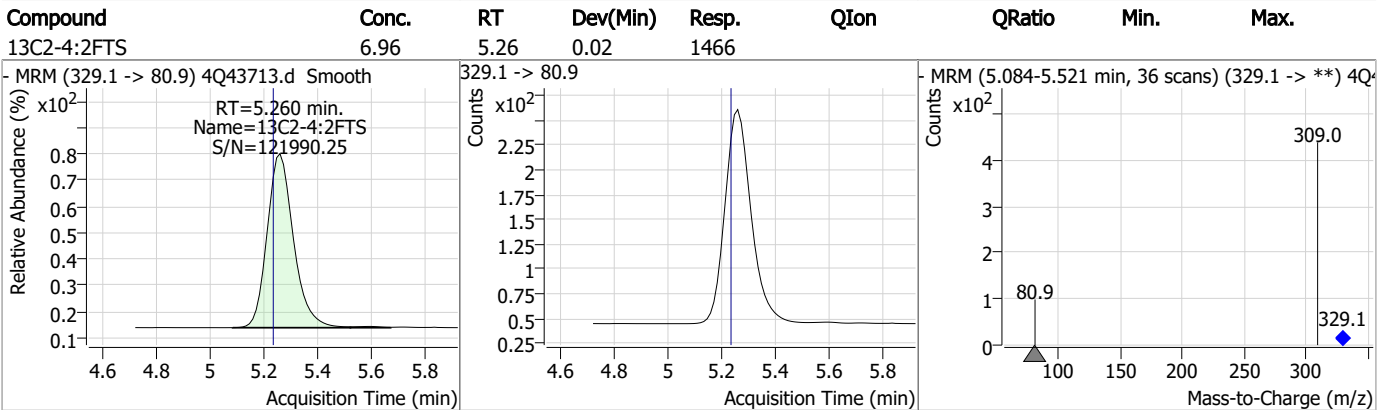
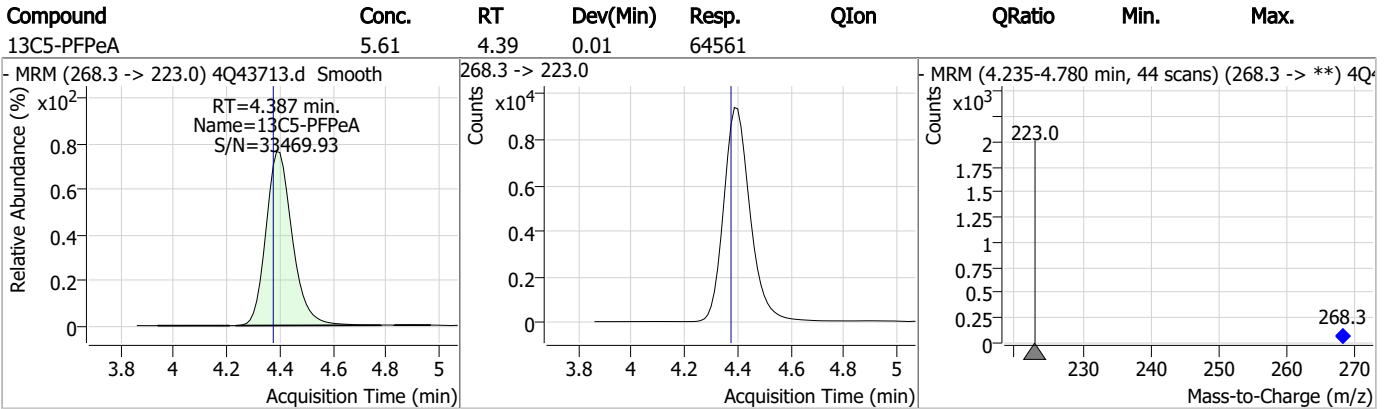
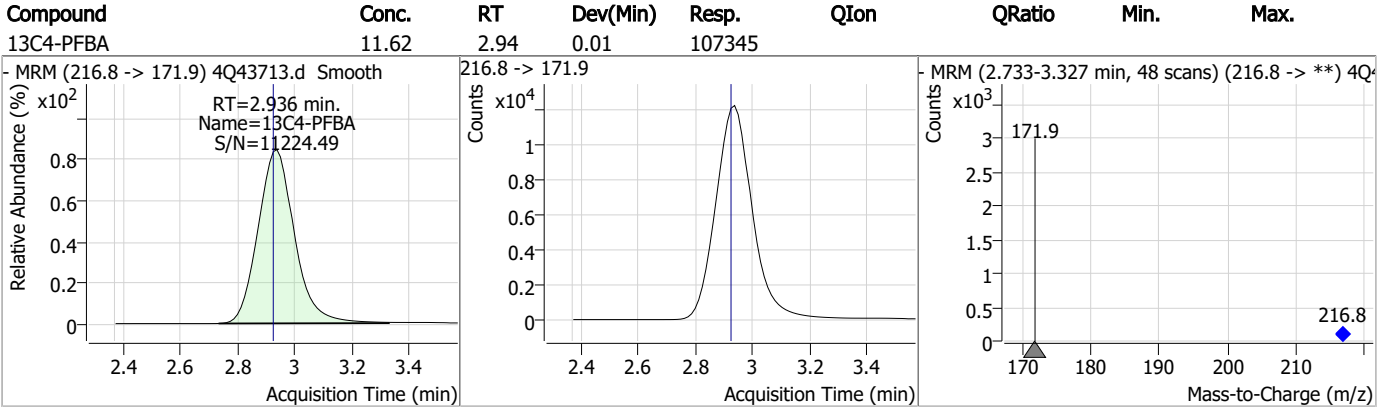
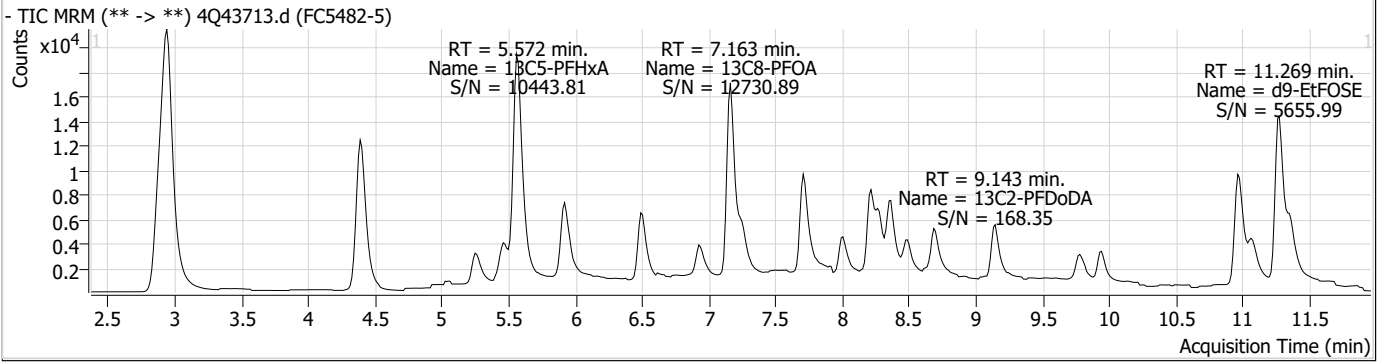
Perfluorinated Compounds by LC/MS/MS

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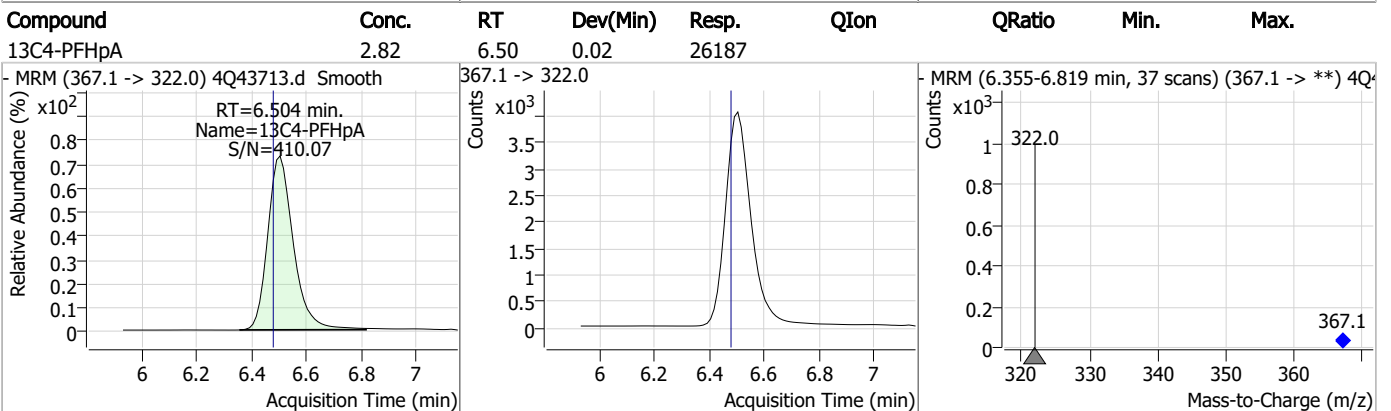
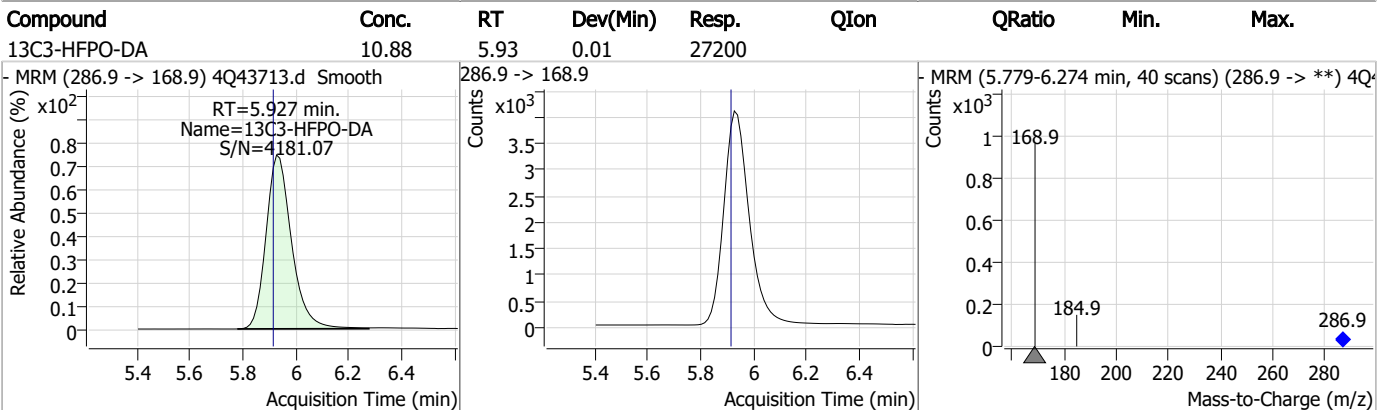
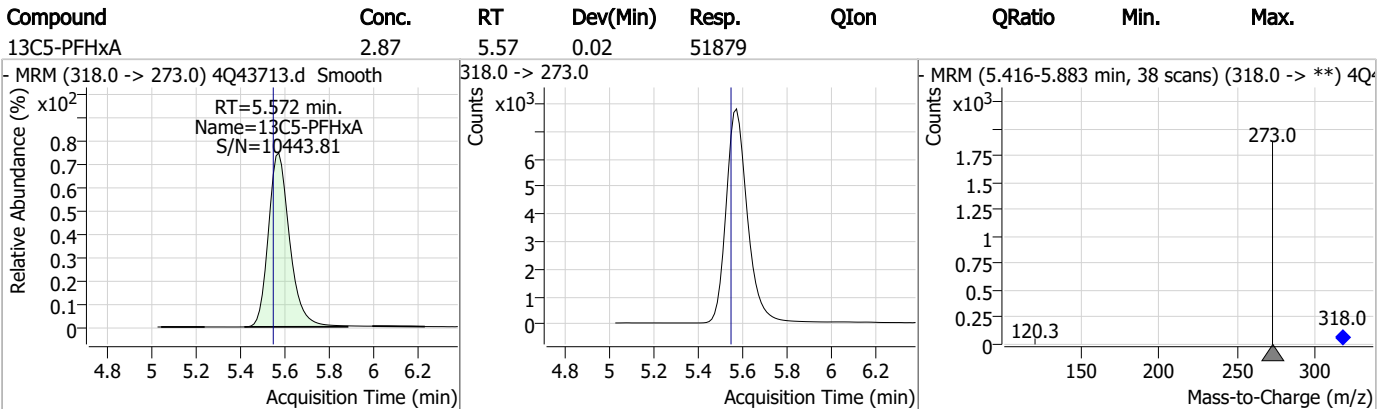
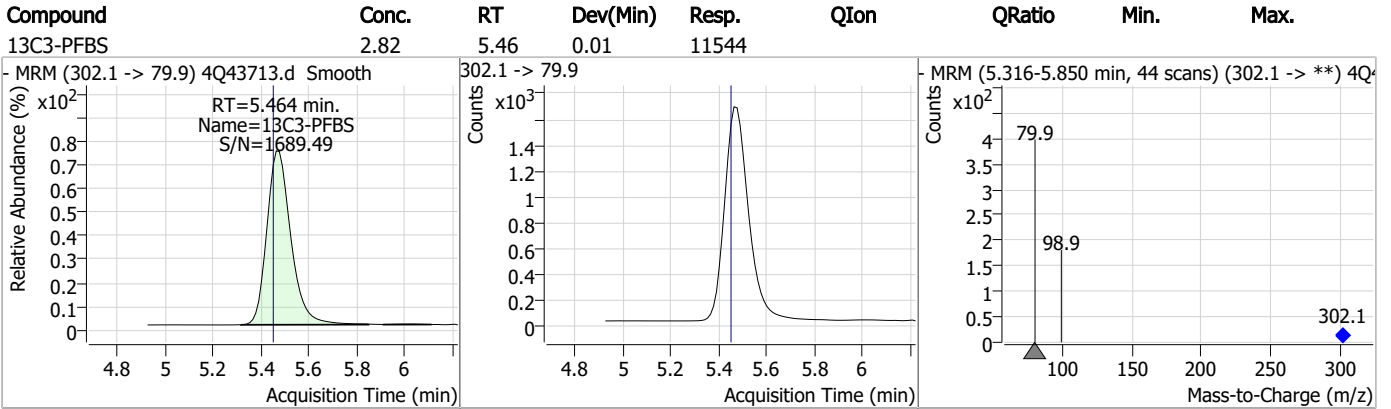
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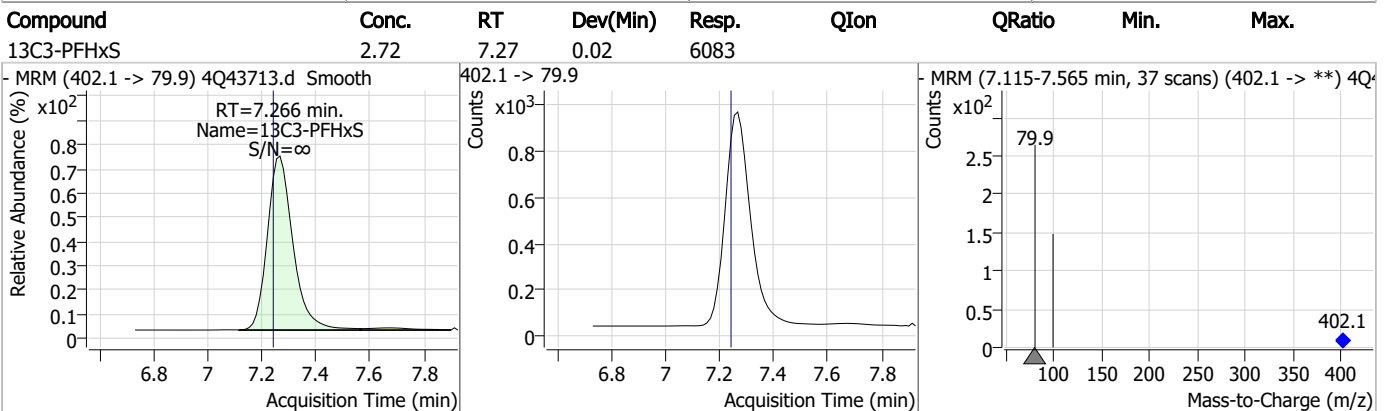
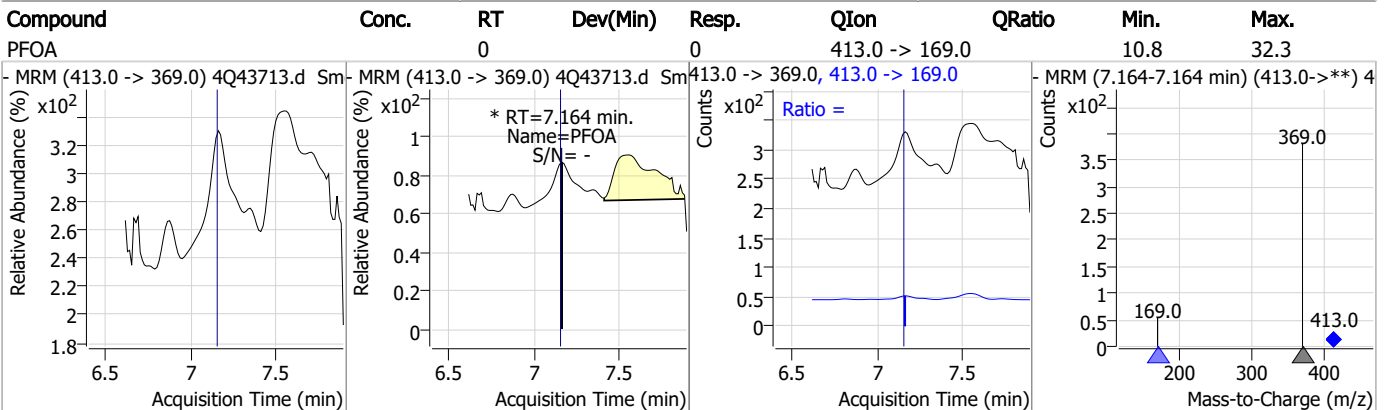
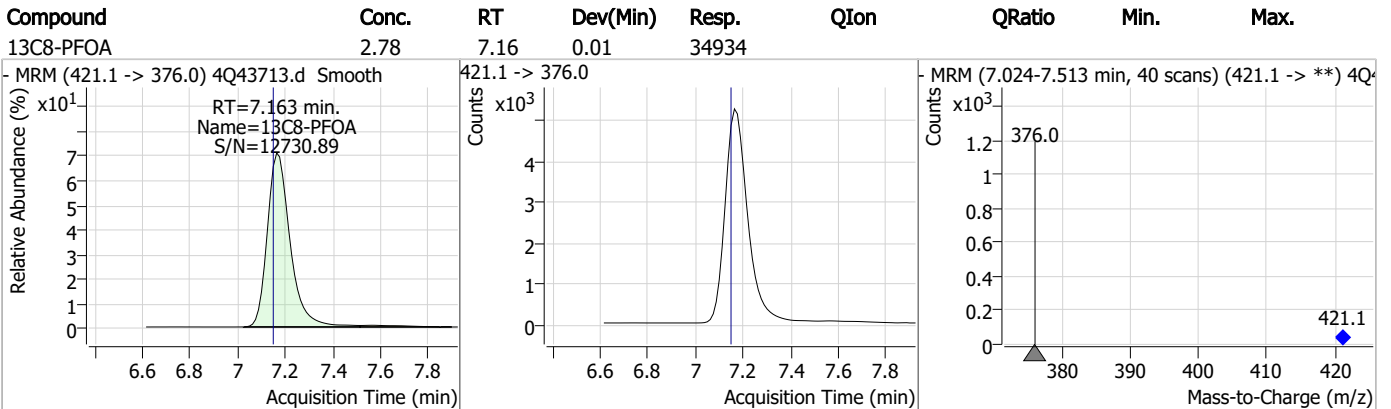
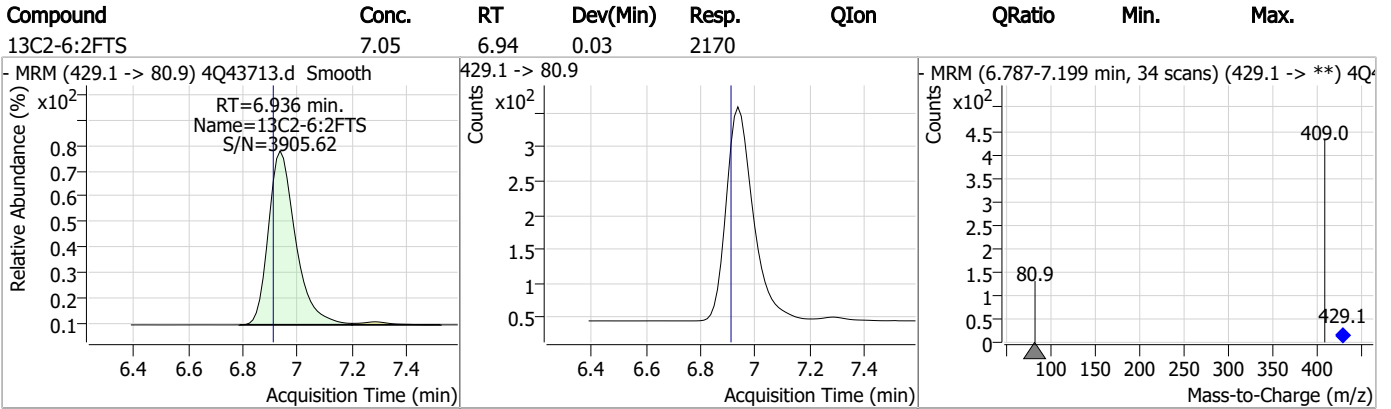
Perfluorinated Compounds by LC/MS/MS



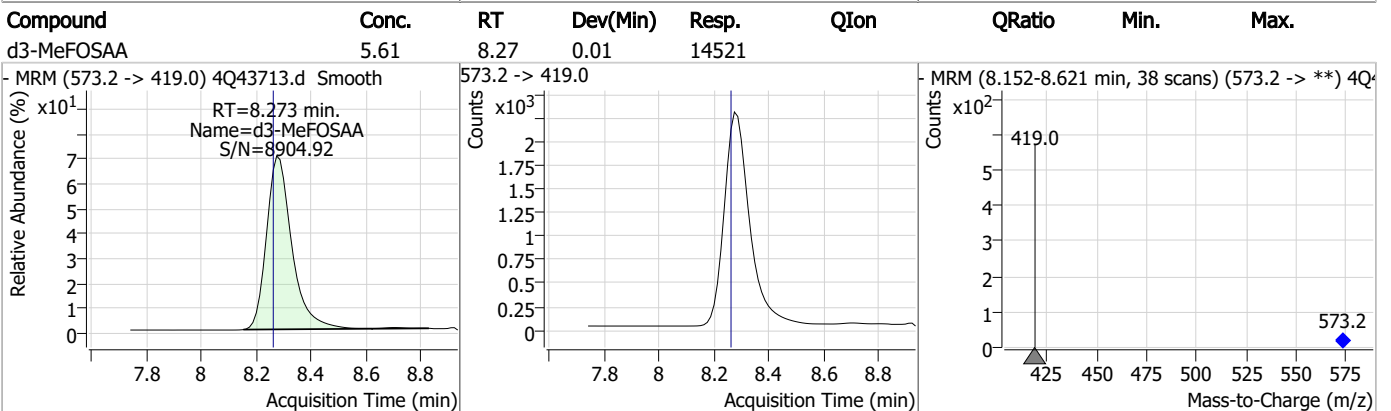
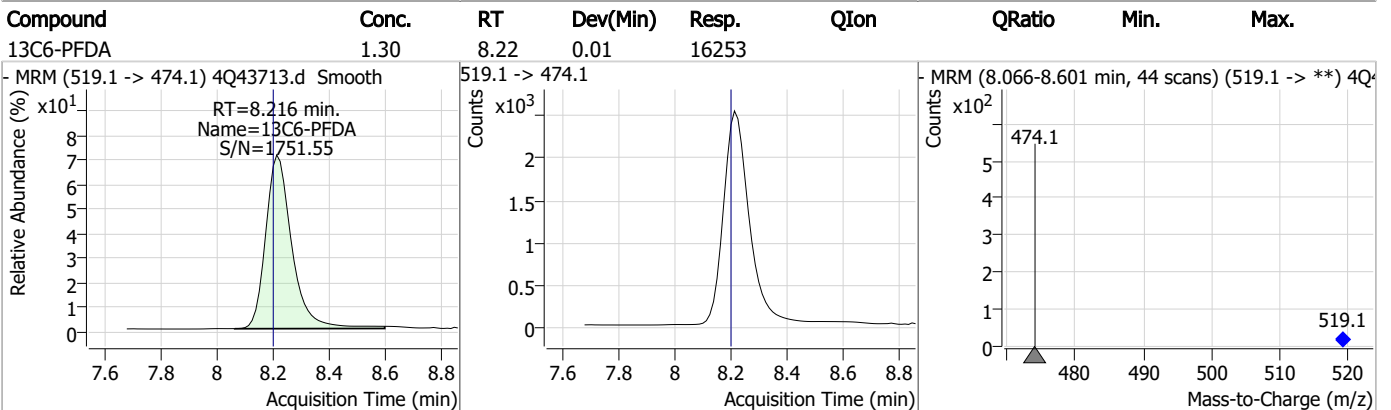
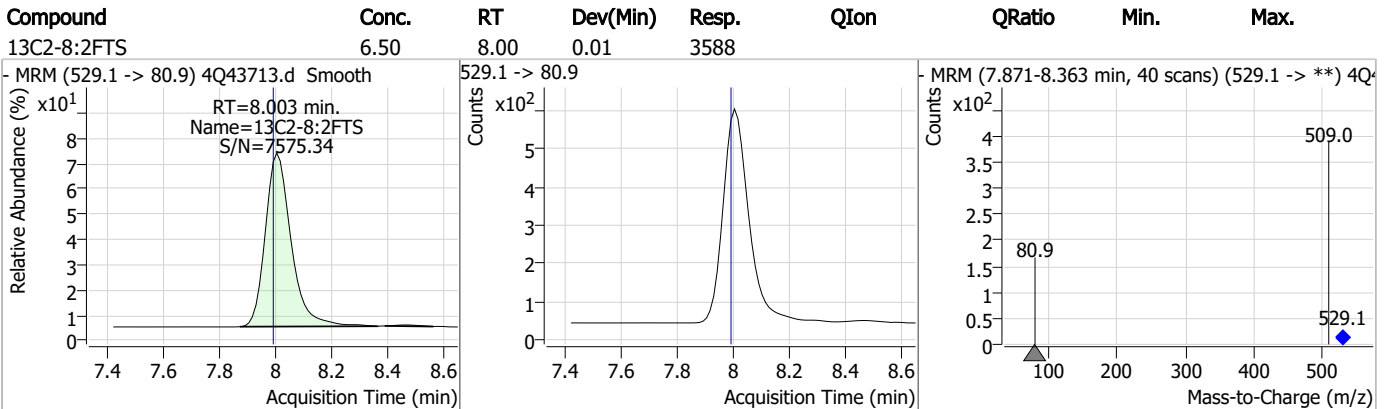
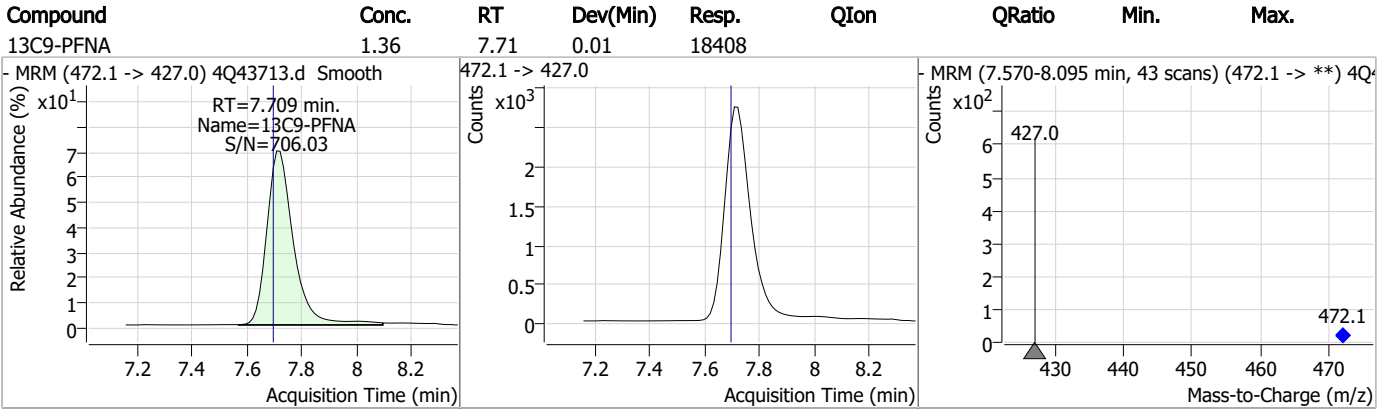
Perfluorinated Compounds by LC/MS/MS



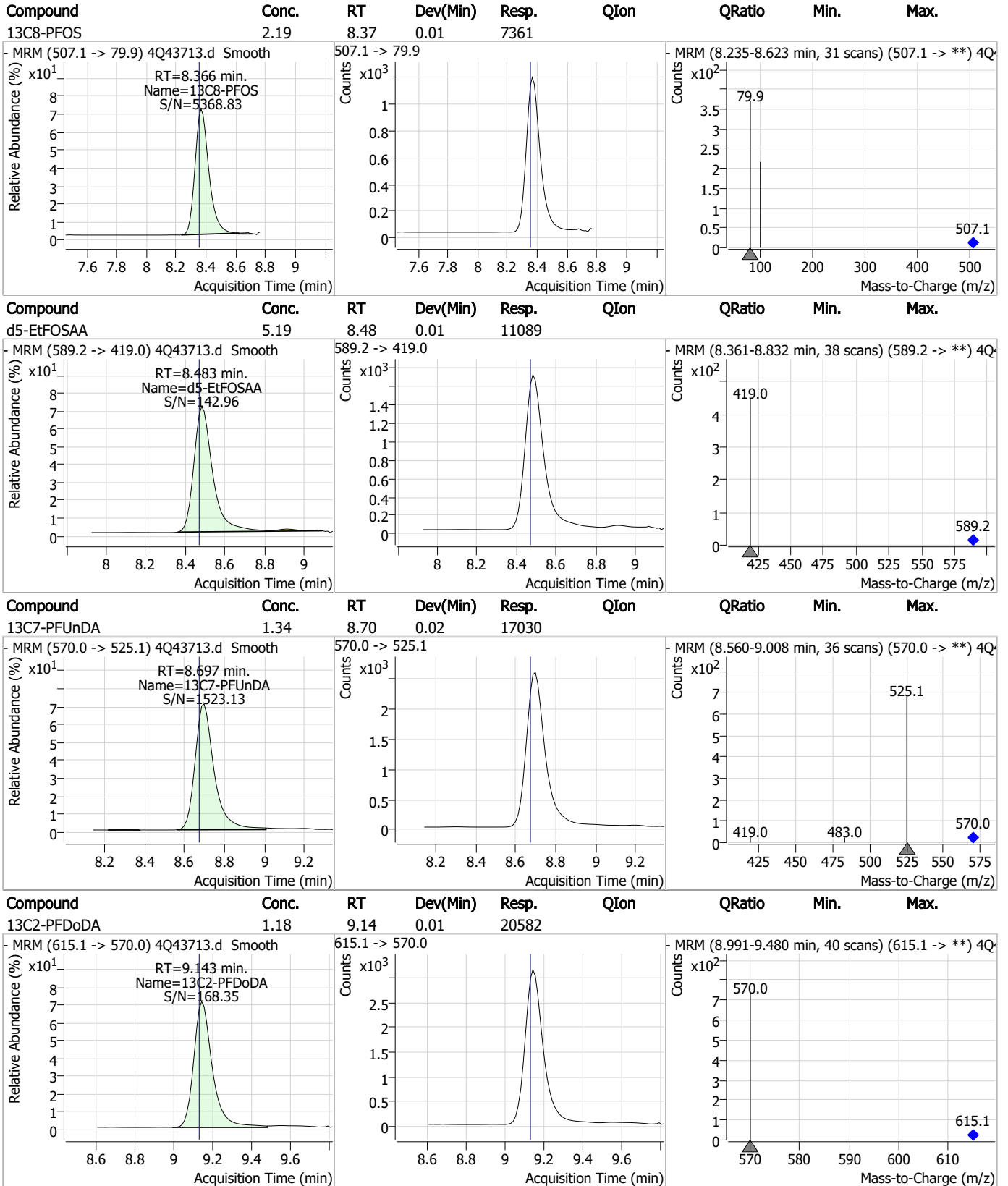
Perfluorinated Compounds by LC/MS/MS



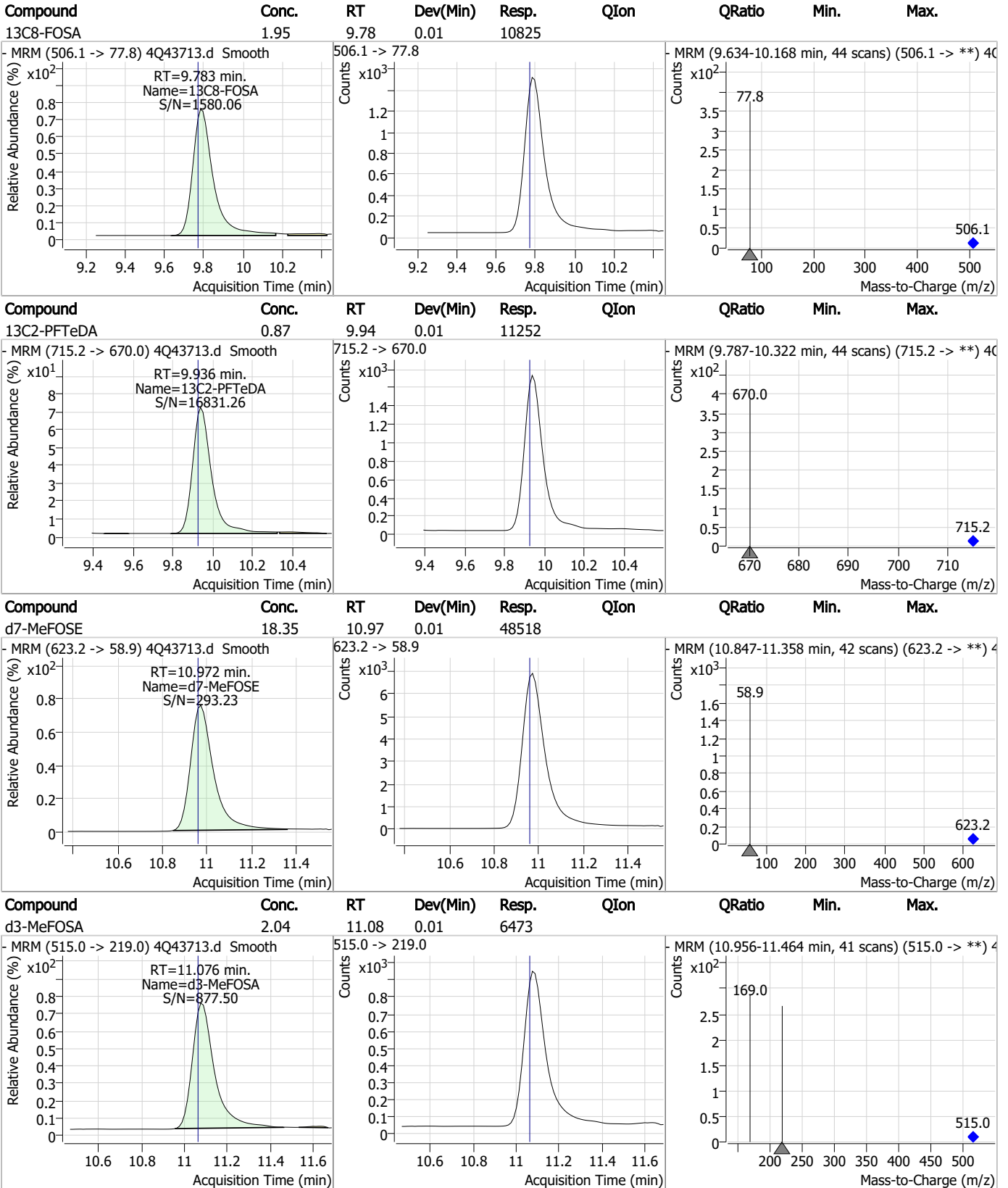
Perfluorinated Compounds by LC/MS/MS



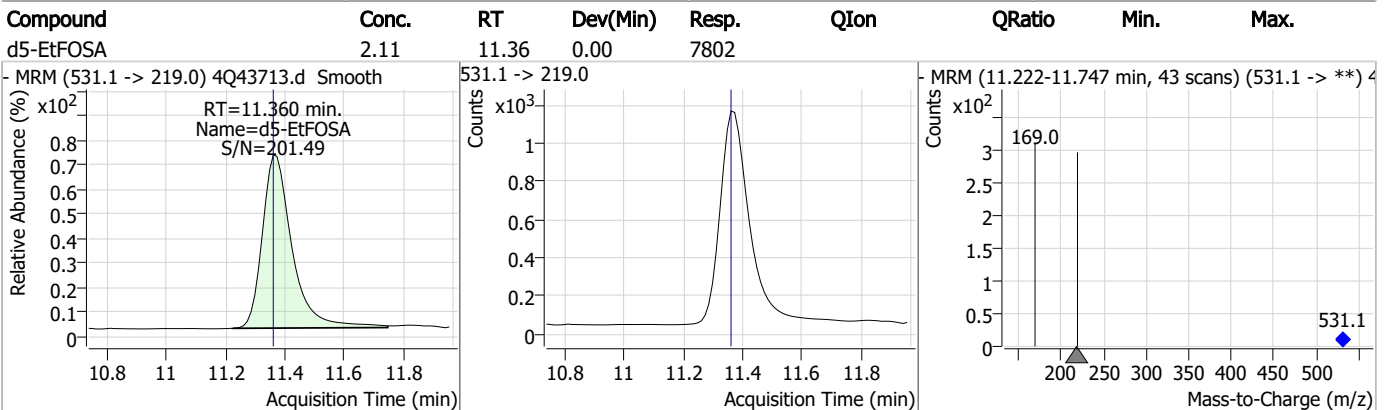
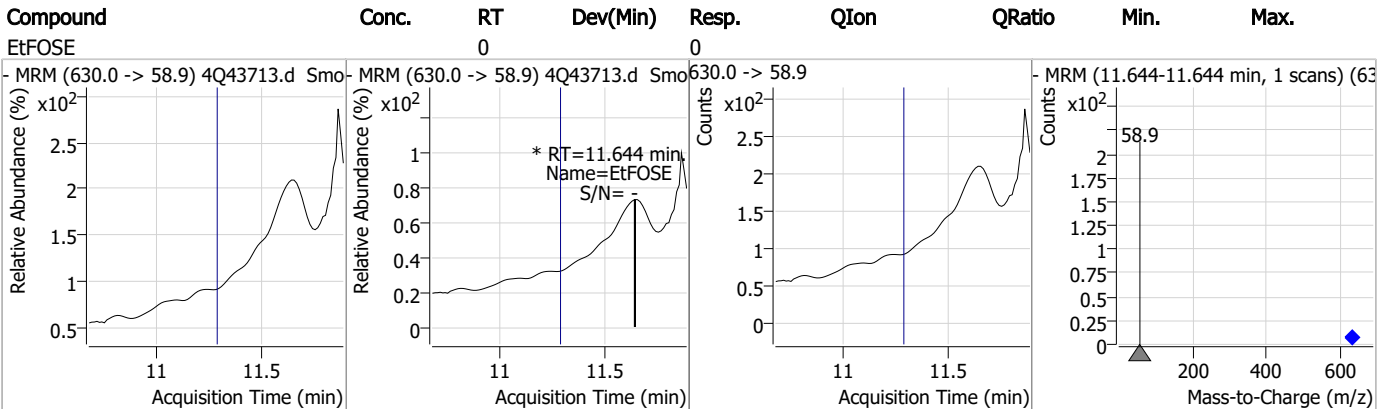
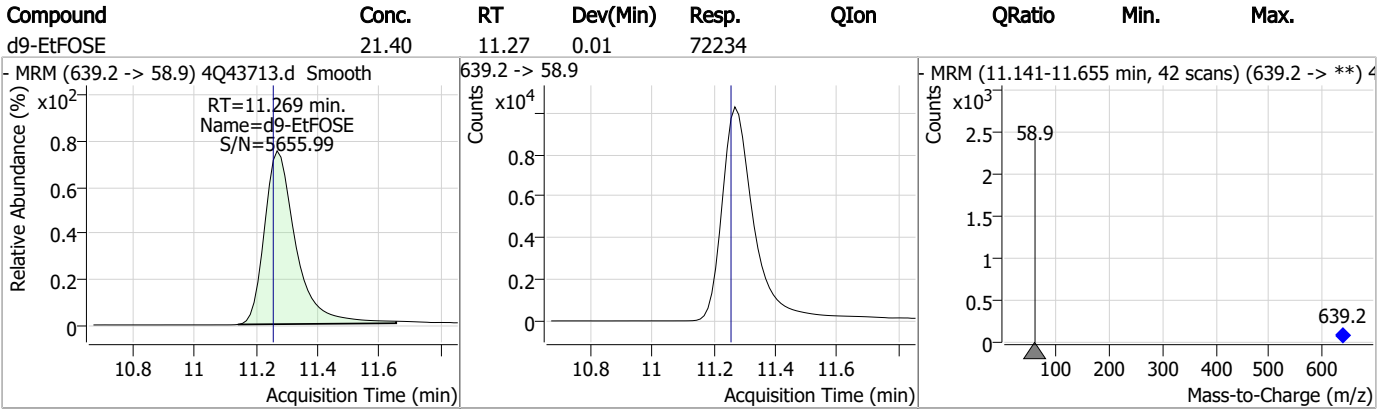
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

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 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 4:36:26 PM
 Sample Name : op96548-mb
 Vial : P3-A5
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q630,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	98149	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	61210	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	47753	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	24519	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	32505	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	17858	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	15972	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	16973	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	21351	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	15864	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	9189	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10693	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	5716	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8590	2.50 µg/L	0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1311	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	1821	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3271	5.00 µg/L	0.012
M3-MeFOSAA	8.286	573.2 -> 419.0	13780	5.00 µg/L	0.025
M3-HFPO-DA	5.927	286.9 -> 168.9	25696	10.00 µg/L	0.012
M5-EtFOSAA	8.495	589.2 -> 419.0	10950	5.00 µg/L	0.025
M7-MeFOSE	10.972	623.2 -> 58.9	42983	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	61762	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	6797	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	5581	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7618	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	49572	5.00 µg/L	0.000
18O2-PFHxS	7.265	403.0 -> 83.9	3601	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	35439	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	12881	1.25 µg/L	0.012
13C5-PFNA	7.721	468.0 -> 423.0	16603	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	35341	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1311	6.93 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.7%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1821	6.60 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.0%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3271	6.61 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.2%		
13C2-PFDoDA	9.143	615.1 -> 570.0	21351	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.9%		
13C2-PFTeDA	9.936	715.2 -> 670.0	15864	1.34 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C3-PFBS	5.464	302.1 -> 79.9	10693	2.91 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 116.4%		
13C3-PFHxS	7.254	402.1 -> 79.9	5716	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	2.936	216.8 -> 171.9	98149	11.46 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 114.6%		
13C4-PFHpA	6.504	367.1 -> 322.0	24519	2.84 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C5-PFHxA	5.559	318.0 -> 273.0	47753	2.84 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C5-PFPeA	4.387	268.3 -> 223.0	61210	5.72 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.4%		
13C6-PFDA	8.216	519.1 -> 474.1	15972	1.40 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 112.3%		
13C7-PFUnDA	8.697	570.0 -> 525.1	16973	1.47 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 117.9%		
13C8-FOSA	9.783	506.1 -> 77.8	9189	1.78 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 71.2%		
13C8-PFOA	7.163	421.1 -> 376.0	32505	2.73 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.3%		
13C8-PFOS	8.366	507.1 -> 79.9	8590	2.75 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.9%		
13C9-PFNA	7.721	472.1 -> 427.0	17858	1.42 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.7%		
d3-MeFOSAA	8.286	573.2 -> 419.0	13780	5.73 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.5%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	25696	11.06 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 110.6%		
d3-MeFOSA	11.076	515.0 -> 219.0	5581	1.89 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 75.7%		
d5-EtFOSAA	8.495	589.2 -> 419.0	10950	5.51 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.2%		
d7-MeFOSE	10.972	623.2 -> 58.9	42983	17.47 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 69.9%		
d9-EtFOSE	11.269	639.2 -> 58.9	61762	19.67 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 78.7%		
d5-EtFOSA	11.360	531.1 -> 219.0	6797	1.97 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 79.0%		

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	7.743	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.	



7.2.1
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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	5.562	449.0 -> 98.9	1327	0.07 µg/L	#	89
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	87	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	7.527	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	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
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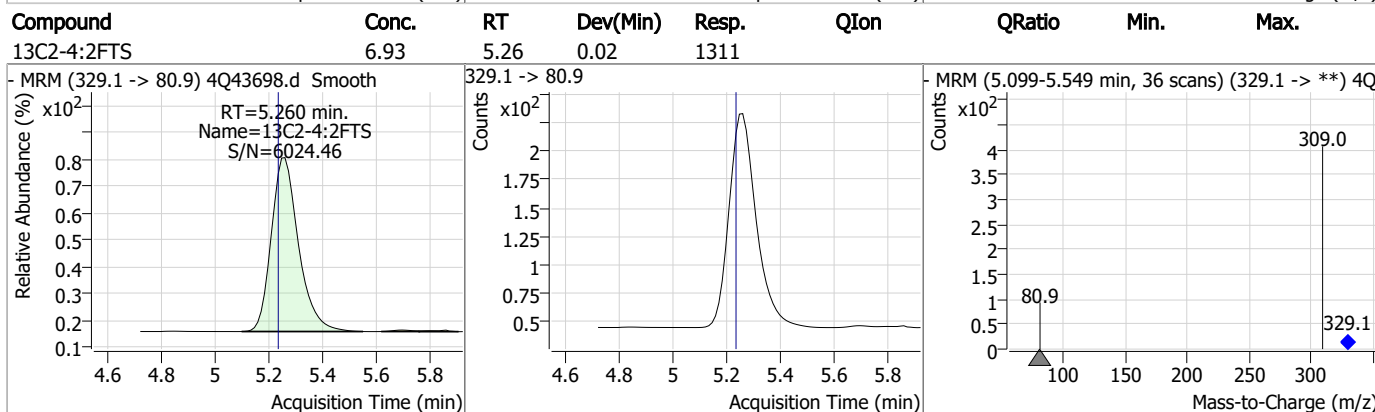
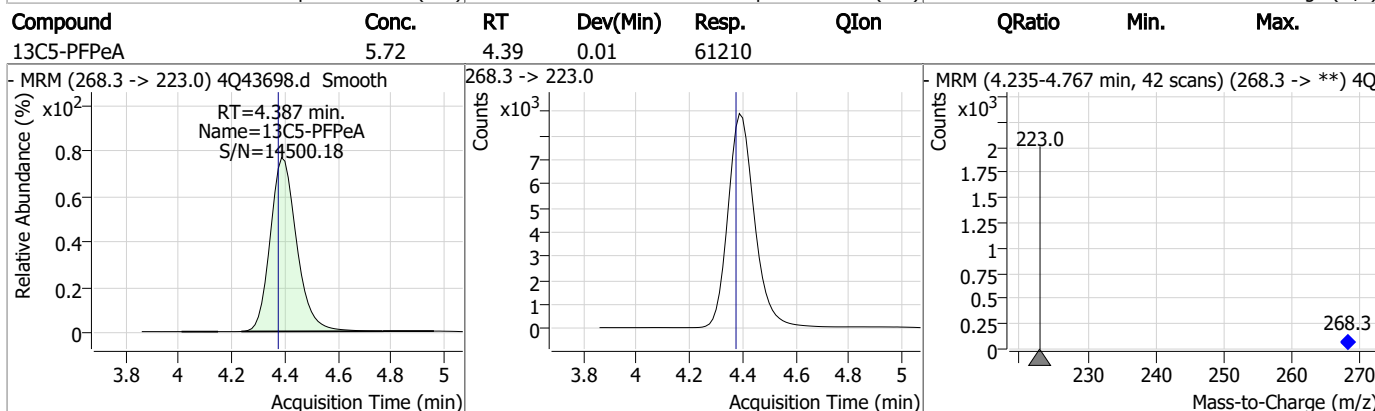
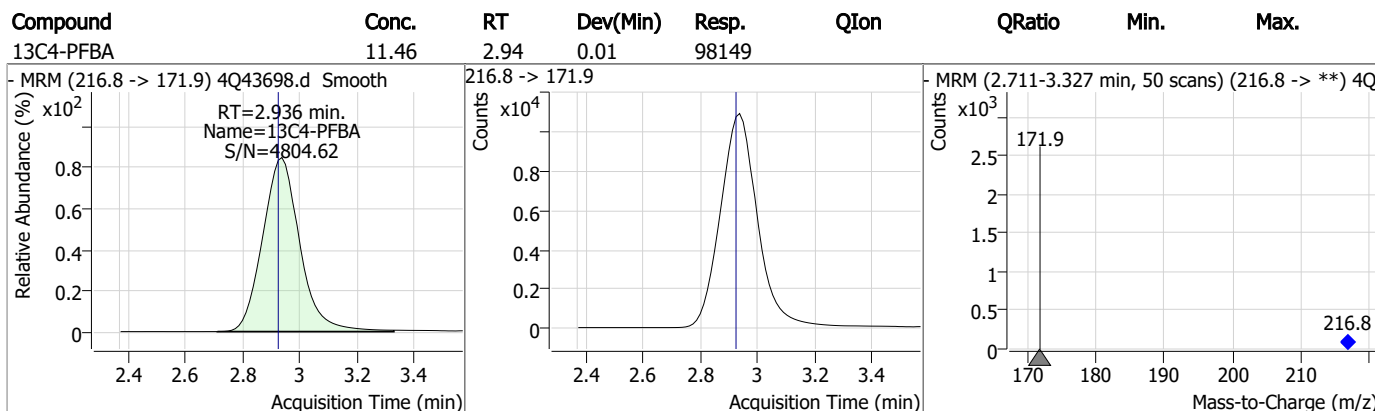
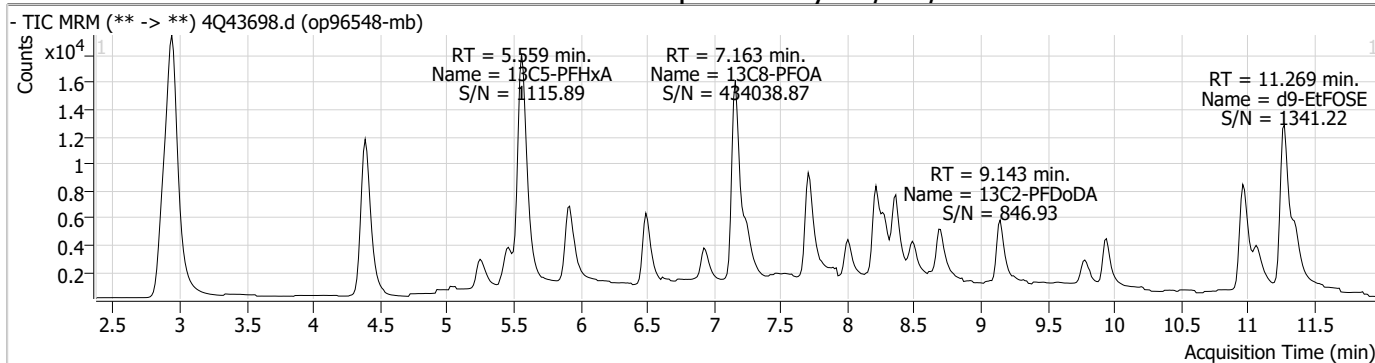
Perfluorinated Compounds by LC/MS/MS

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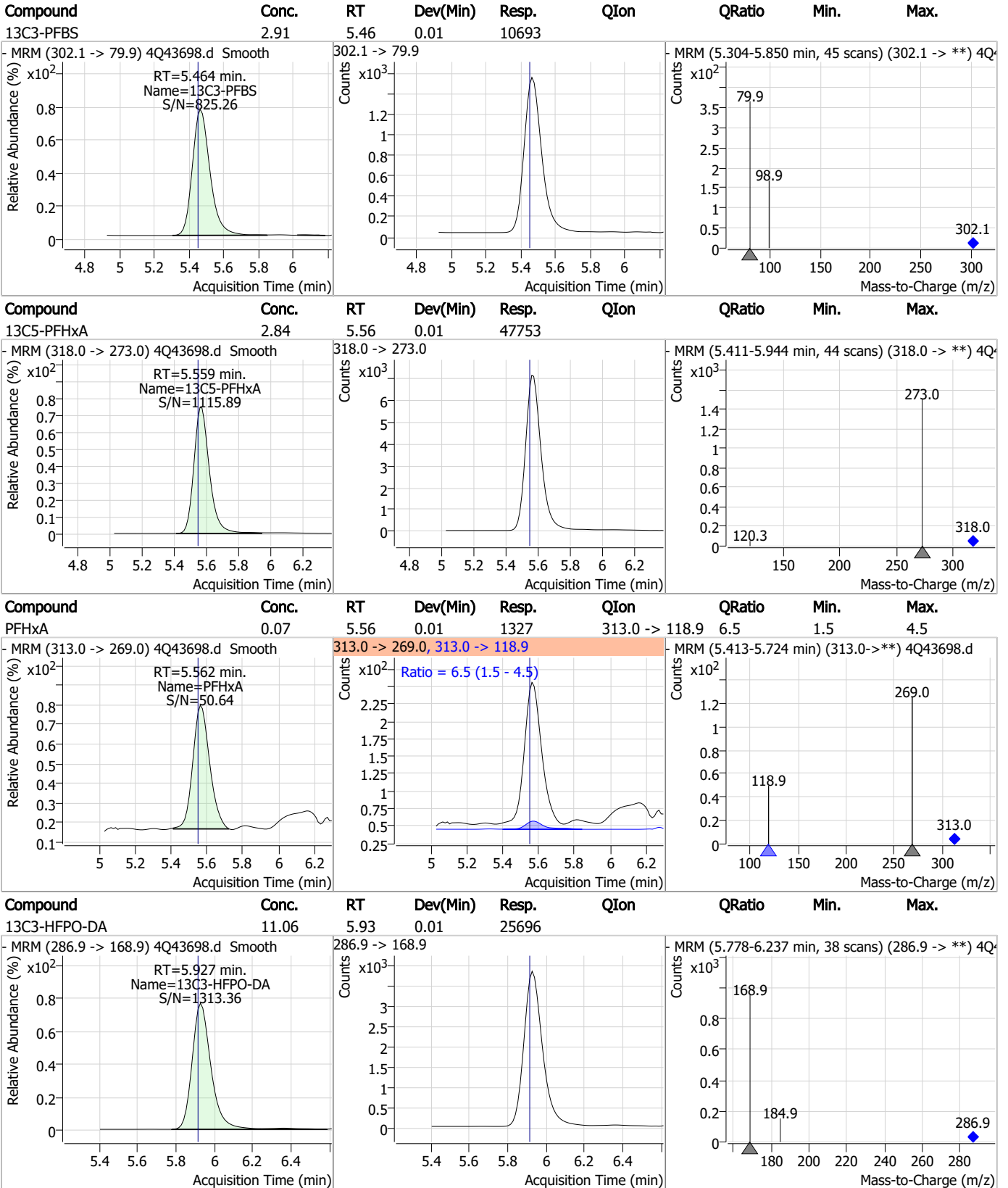
7.2.1

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

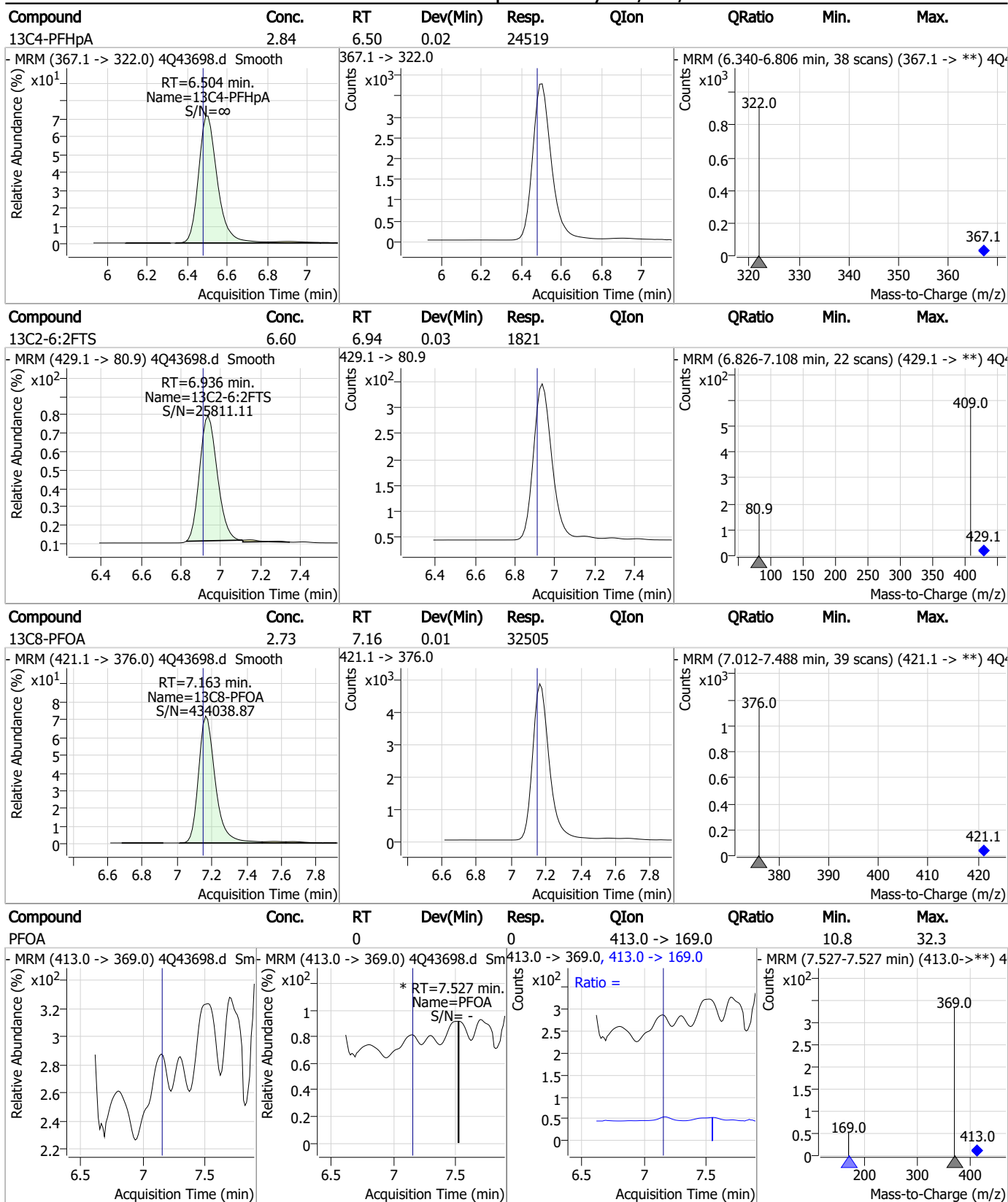


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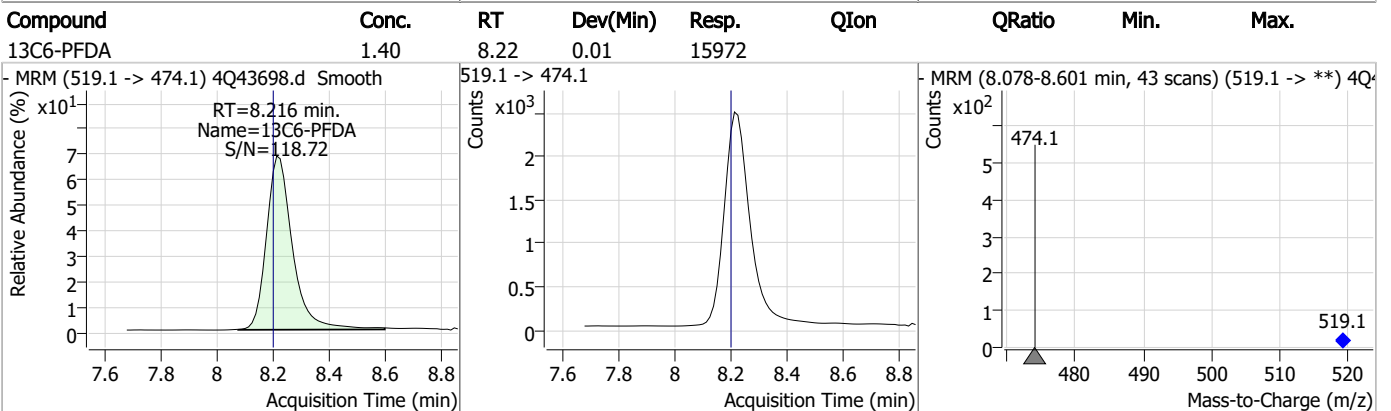
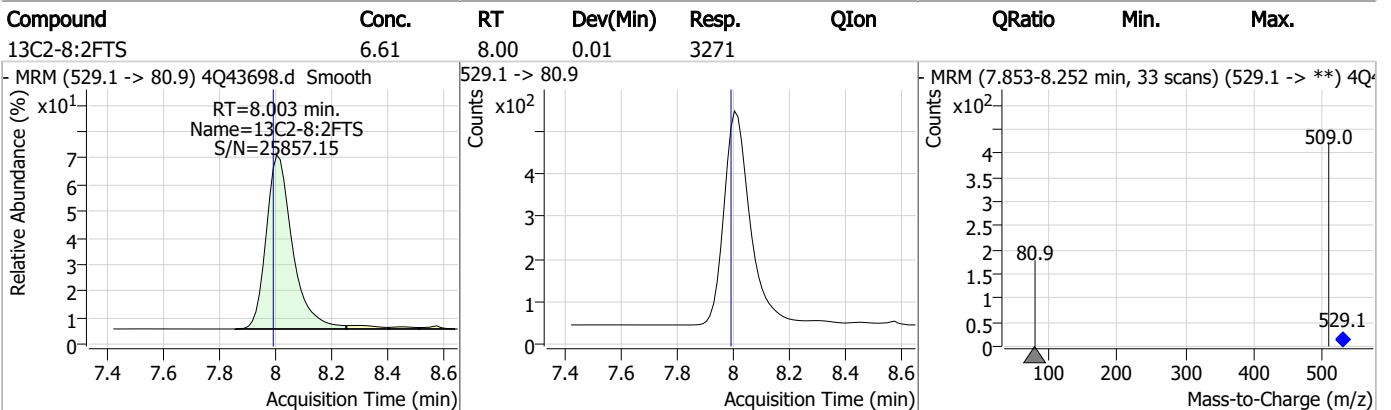
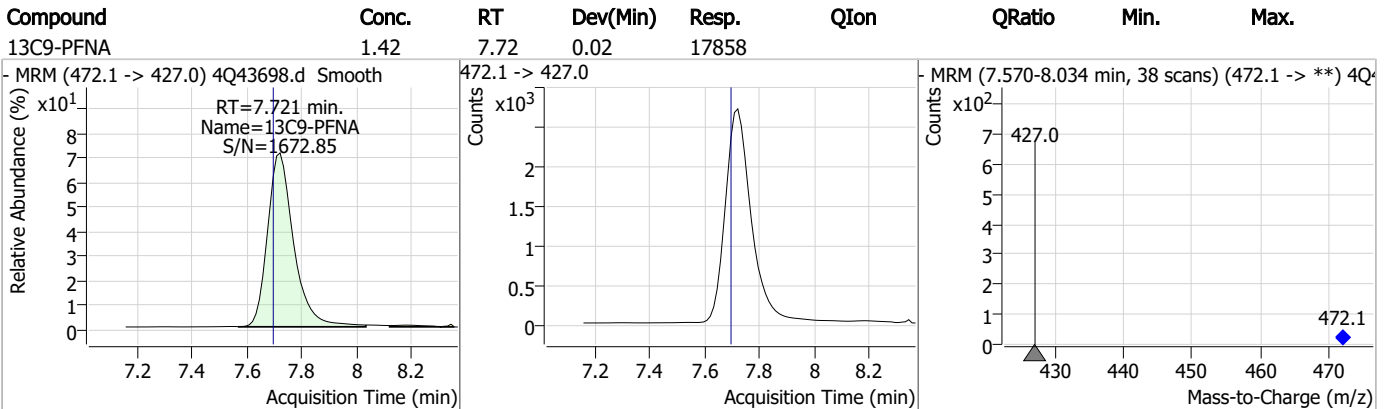
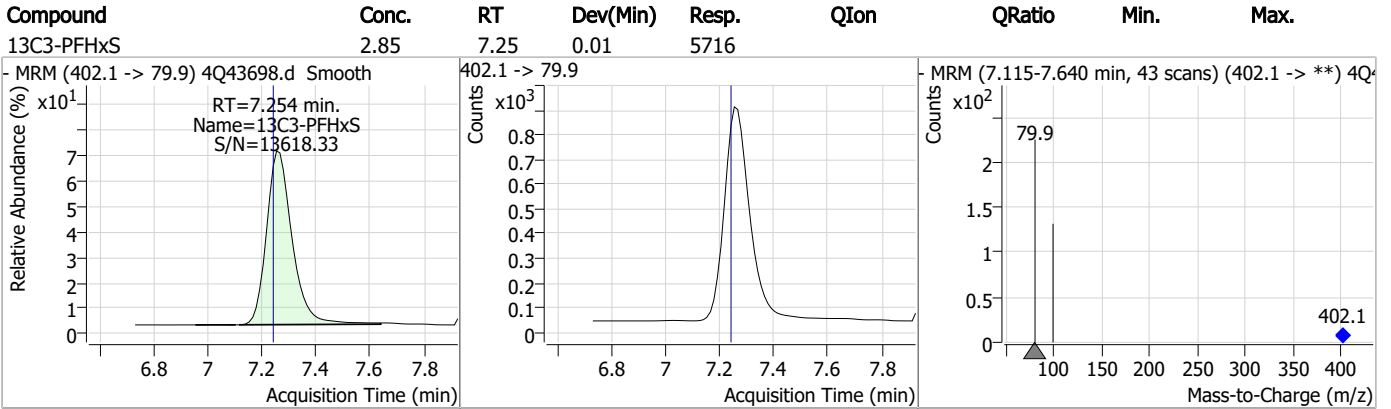
Perfluorinated Compounds by LC/MS/MS



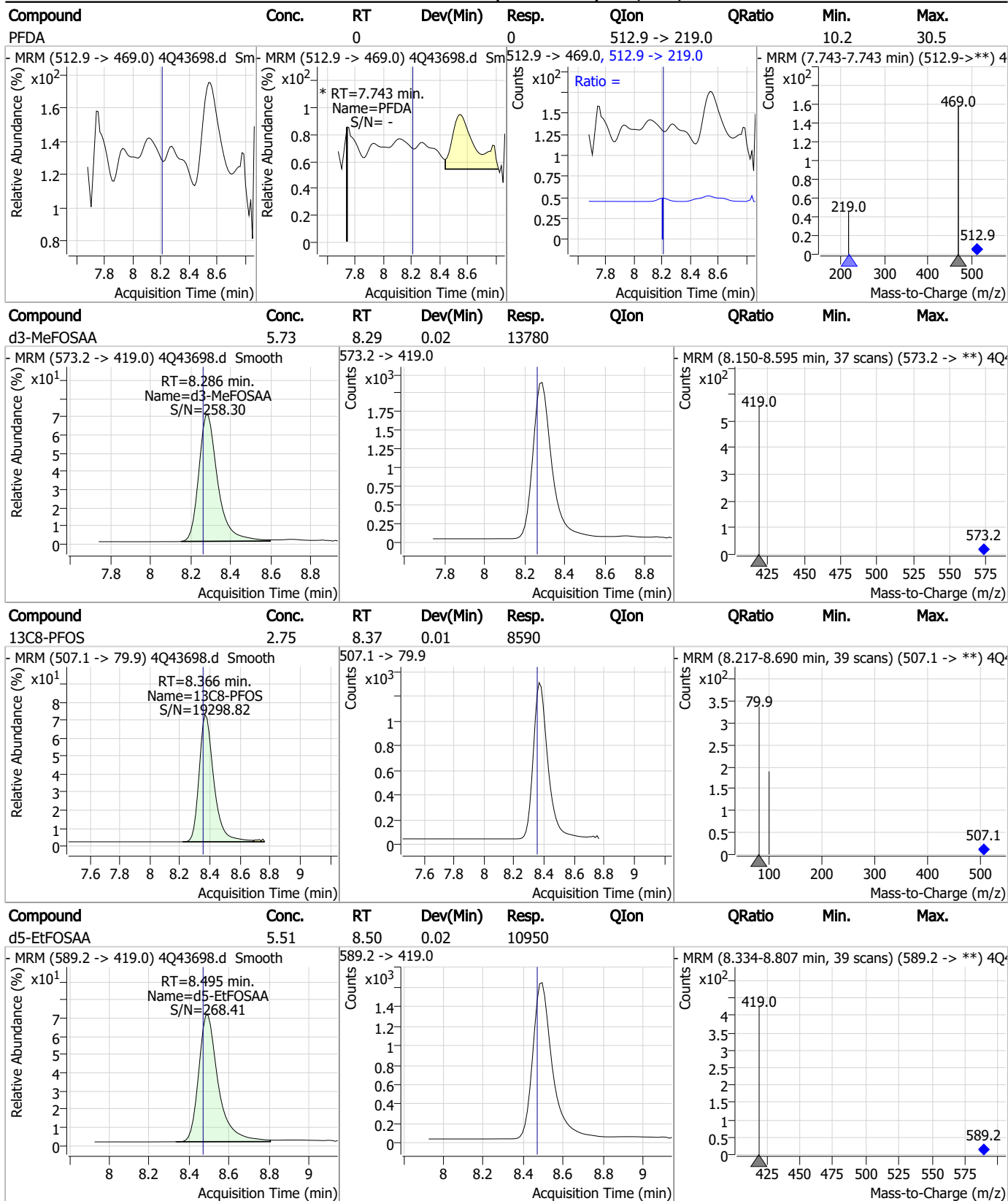
7.2.1
7



Perfluorinated Compounds by LC/MS/MS

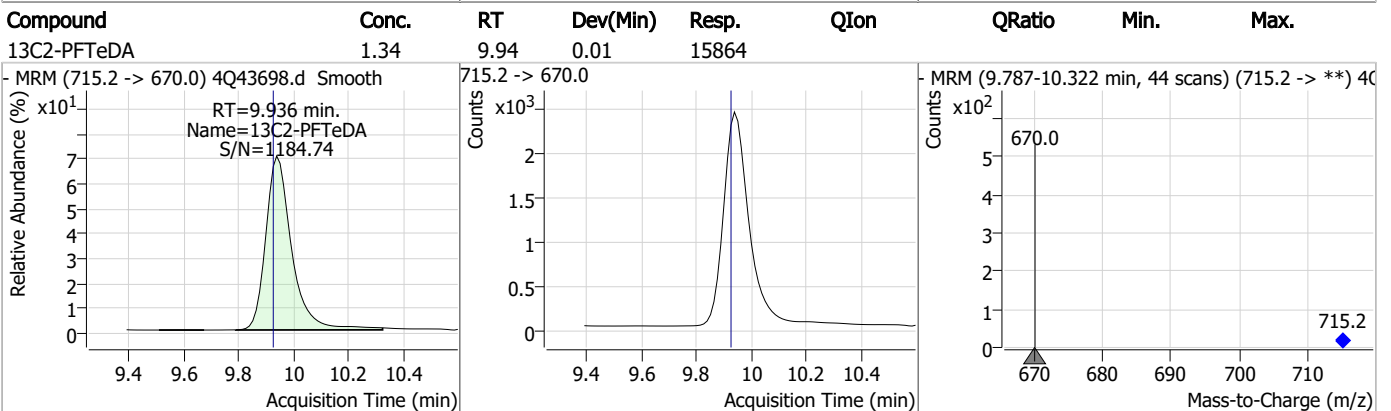
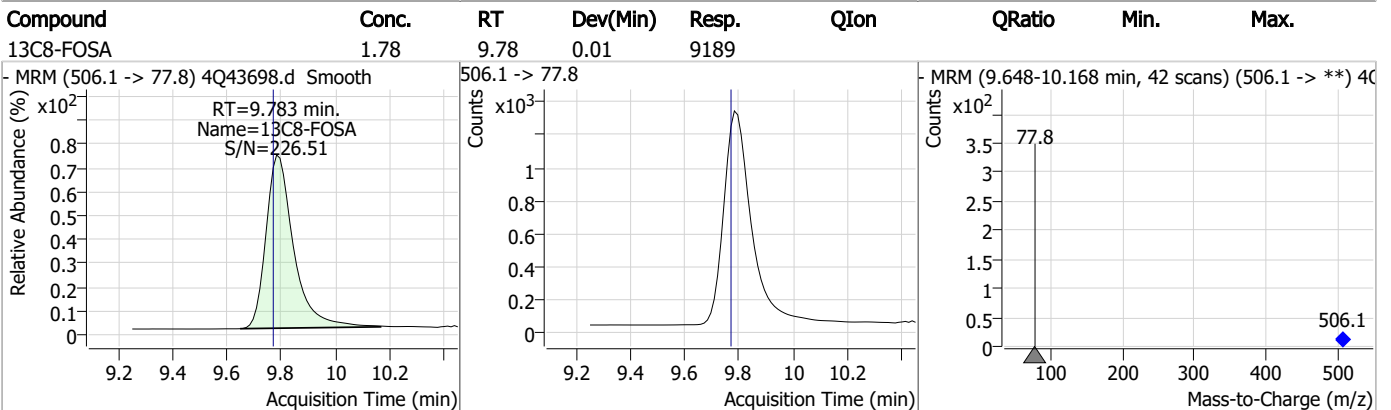
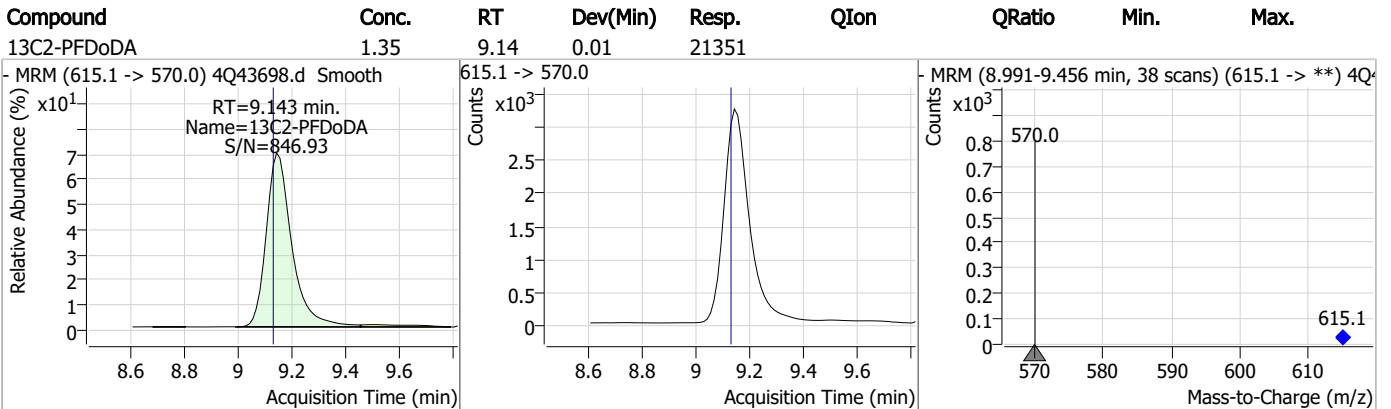
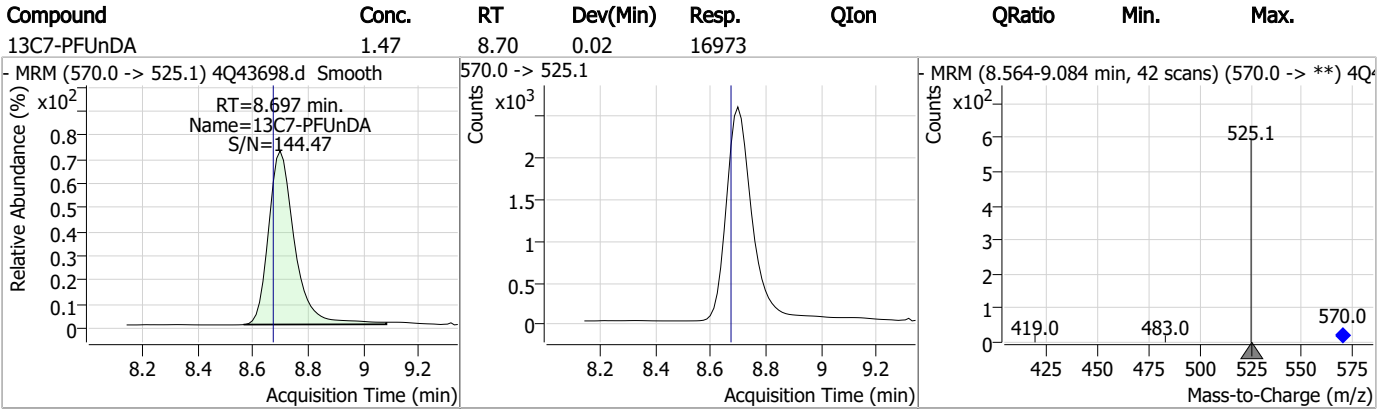


Perfluorinated Compounds by LC/MS/MS

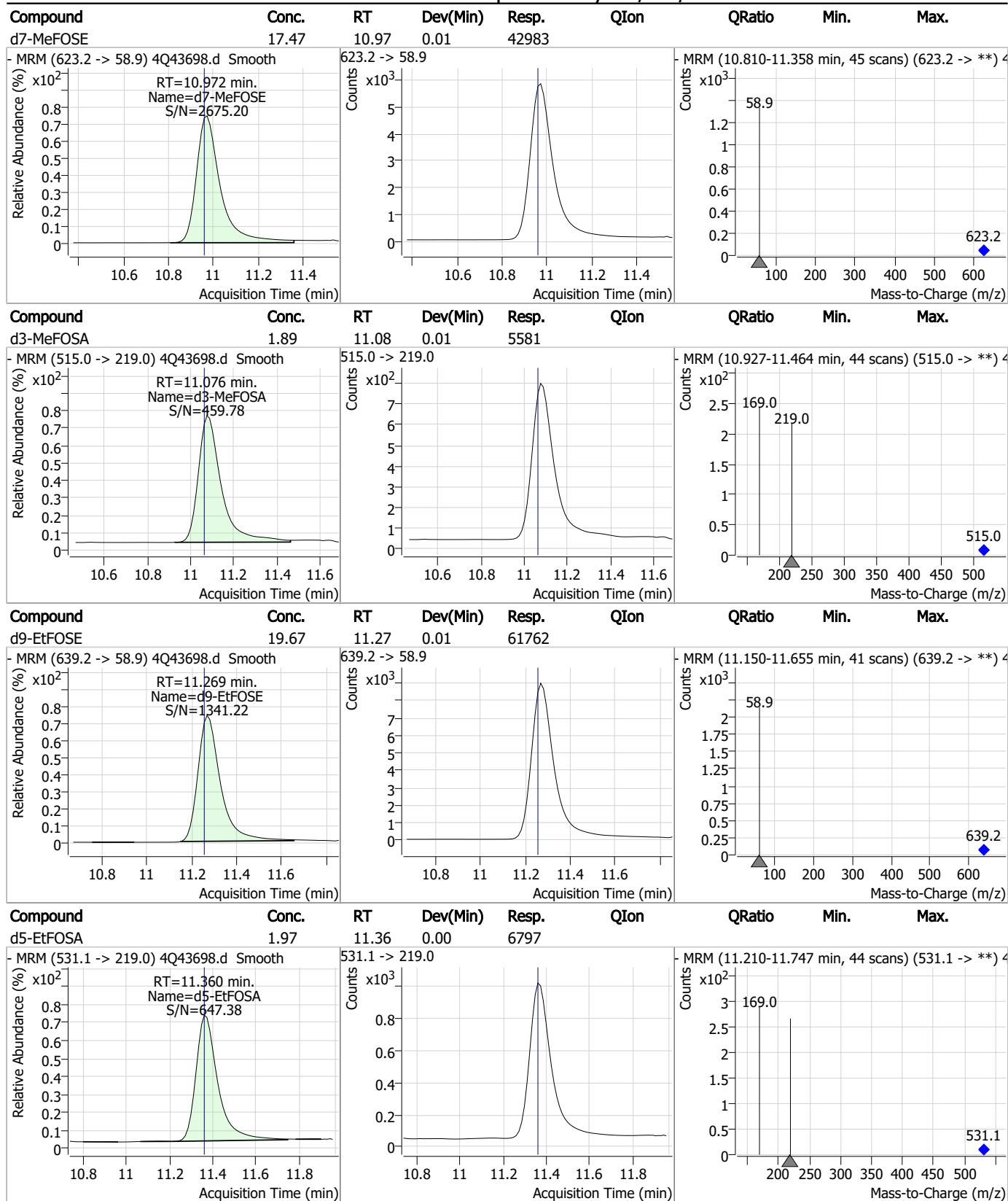


7.2.1
7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43689.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 2:30:01 PM
 Sample Name : IBLK
 Vial : P1-A1
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	95556	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	59488	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	46982	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	24041	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	31725	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	17608	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	15981	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	15861	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	21496	1.25 µg/L	0.000
M2-PFTeDA	9.924	715.2 -> 670.0	15720	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	13818	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	10476	2.50 µg/L	0.000
M3-PFHxS	7.254	402.1 -> 79.9	5663	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8050	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1166	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	1908	5.00 µg/L	0.012
M2-8:2FTS	7.990	529.1 -> 80.9	3148	5.00 µg/L	0.000
M3-MeFOSAA	8.273	573.2 -> 419.0	12920	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	25226	10.00 µg/L	0.000
M5-EtFOSAA	8.483	589.2 -> 419.0	11440	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	65145	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	85992	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	9045	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7707	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	8060	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	53808	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4117	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	36909	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14599	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	18411	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	39513	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1166	5.39 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.9%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1908	6.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.9%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3148	5.56 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.3%		
13C2-PFDoDA	9.130	615.1 -> 570.0	21496	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C2-PFTeDA	9.924	715.2 -> 670.0	15720	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C3-PFBS	5.452	302.1 -> 79.9	10476	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C3-PFHxS	7.254	402.1 -> 79.9	5663	2.47 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 = 98.8%	
13C4-PFBA	2.924	216.8 -> 171.9	95556	10.27 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C4-PFHpA	6.492	367.1 -> 322.0	24041	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.559	318.0 -> 273.0	46982	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.387	268.3 -> 223.0	59488	4.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C6-PFDA	8.216	519.1 -> 474.1	15981	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C7-PFUnDA	8.685	570.0 -> 525.1	15861	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C8-FOSA	9.783	506.1 -> 77.8	13818	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C8-PFOA	7.163	421.1 -> 376.0	31725	2.56 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-PFOS	8.366	507.1 -> 79.9	8050	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C9-PFNA	7.709	472.1 -> 427.0	17608	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
d3-MeFOSAA	8.273	573.2 -> 419.0	12920	5.07 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	25226	9.71 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d3-MeFOSA	11.076	515.0 -> 219.0	7707	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
d5-EtFOSAA	8.483	589.2 -> 419.0	11440	5.44 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
d7-MeFOSE	10.959	623.2 -> 58.9	65145	25.03 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d9-EtFOSE	11.256	639.2 -> 58.9	85992	25.89 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d5-EtFOSA	11.360	531.1 -> 219.0	9045	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	

7.22
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	-	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	9.046	563.1 -> 519.0	0		µg/L	m
		563.1 -> 269.1	0			
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

7.2.2
7

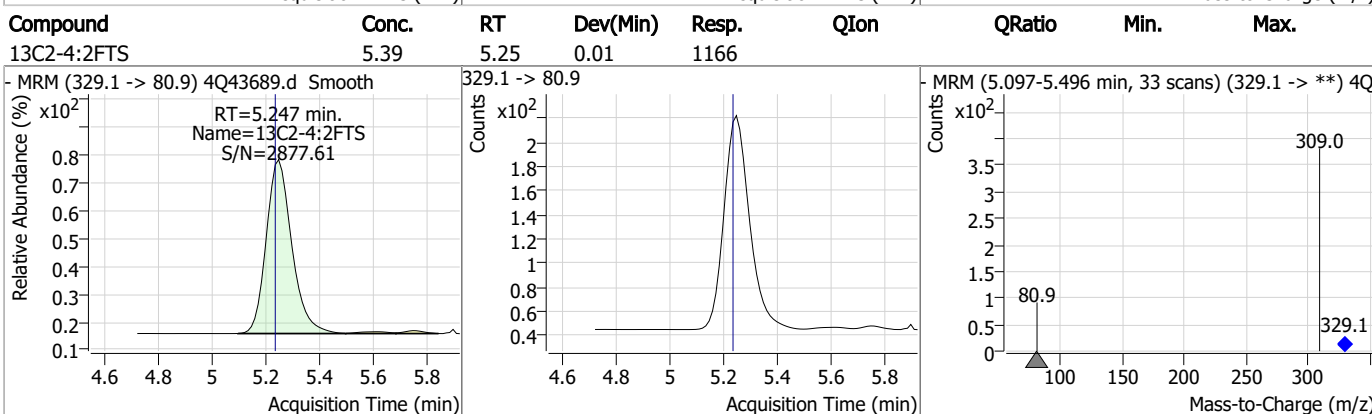
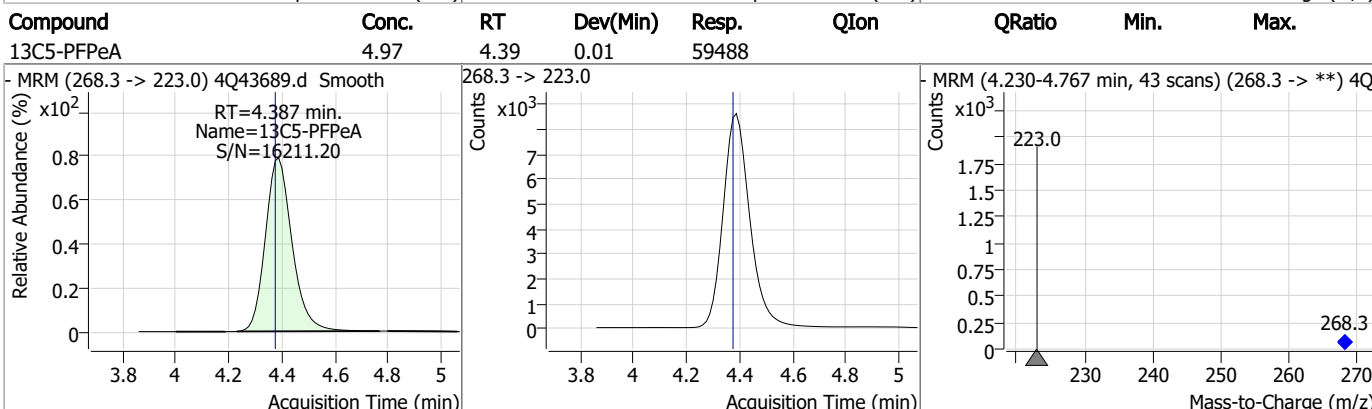
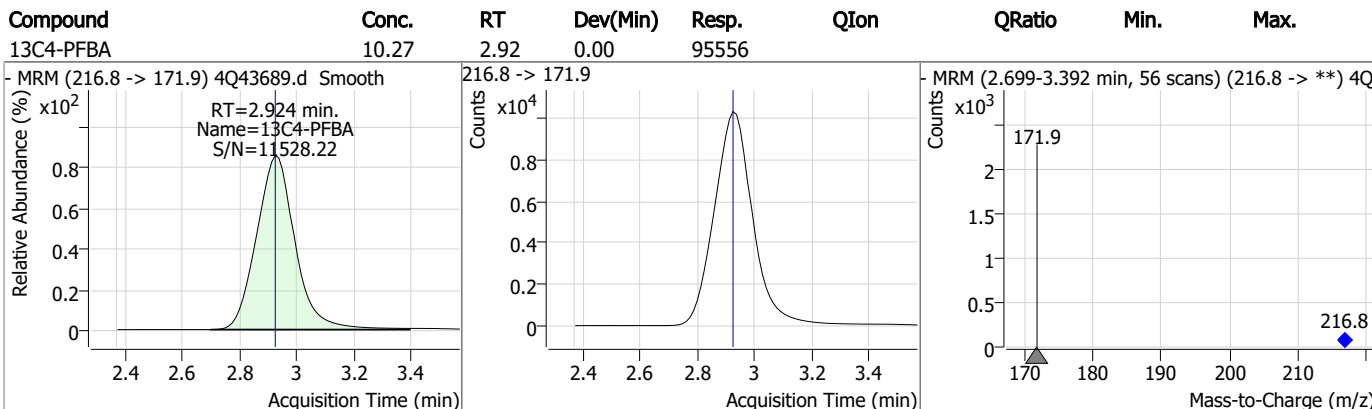
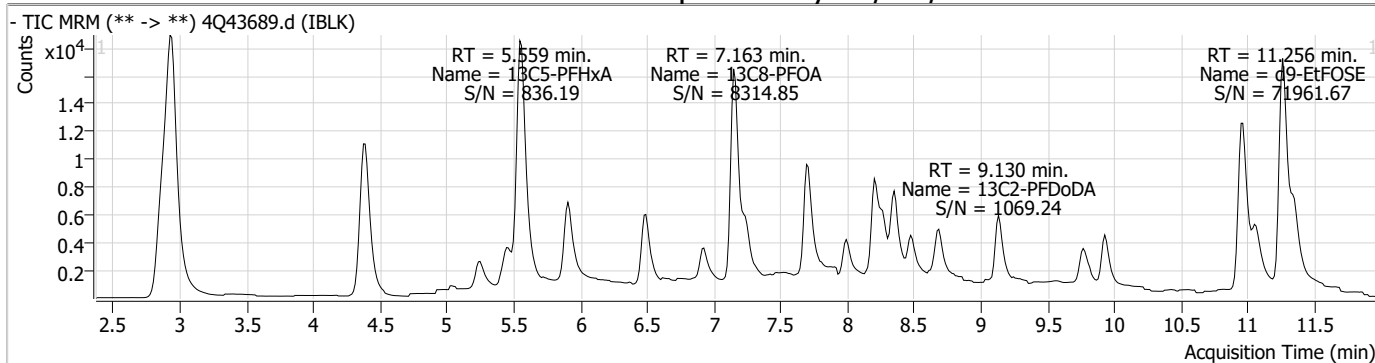
Perfluorinated Compounds by LC/MS/MS

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

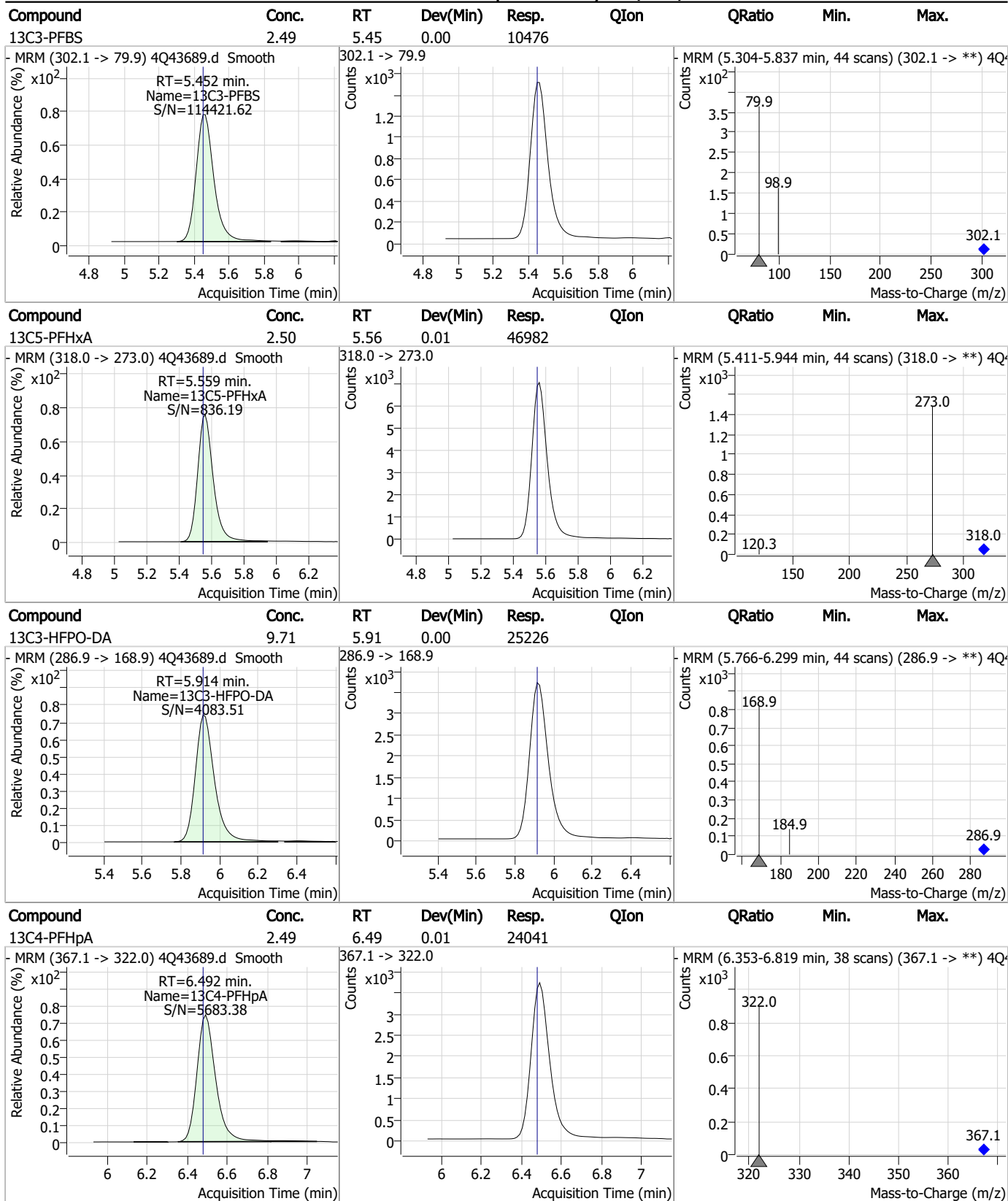
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Perfluorinated Compounds by LC/MS/MS



7.2.2
7

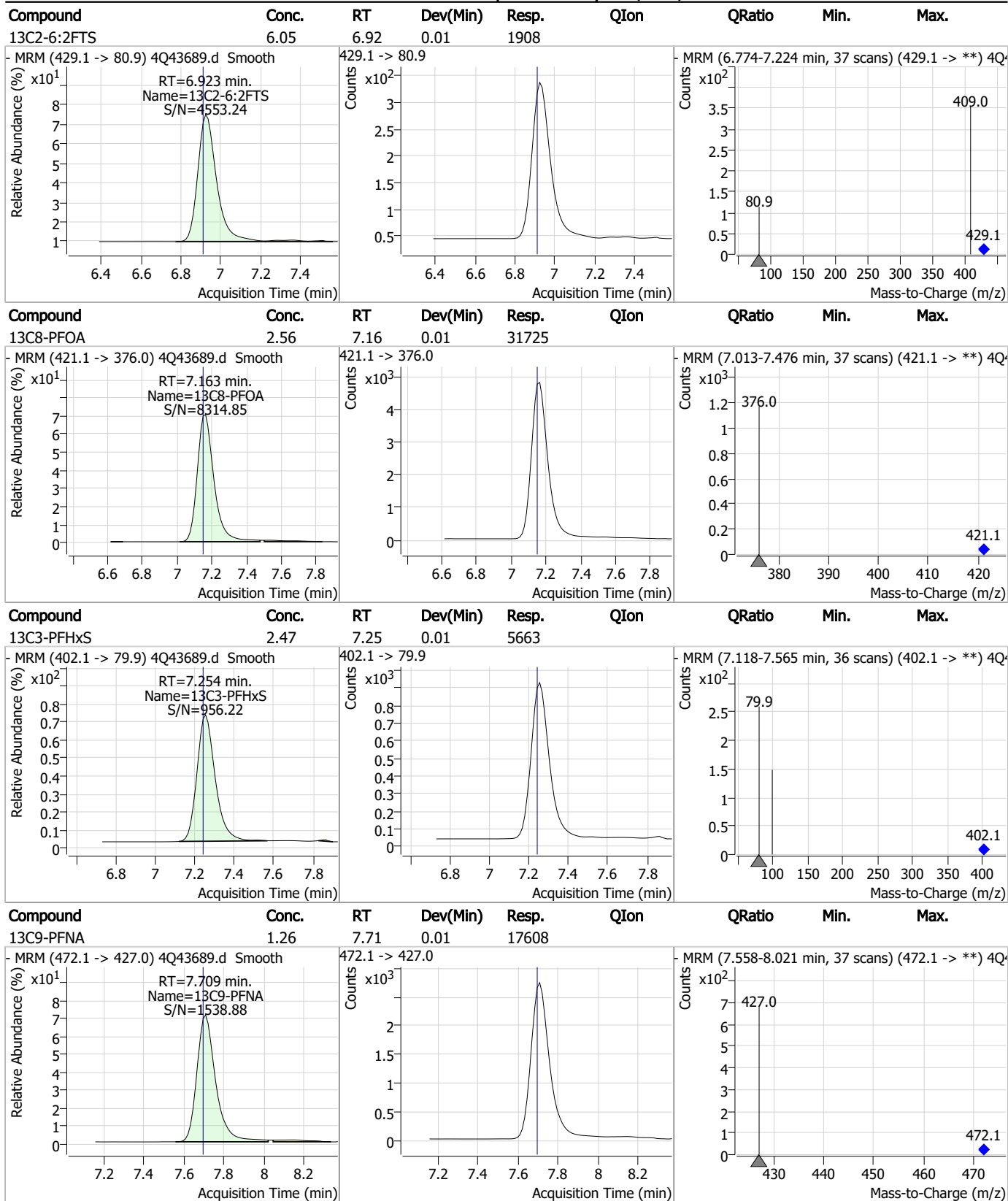
Perfluorinated Compounds by LC/MS/MS



7.2.2
7

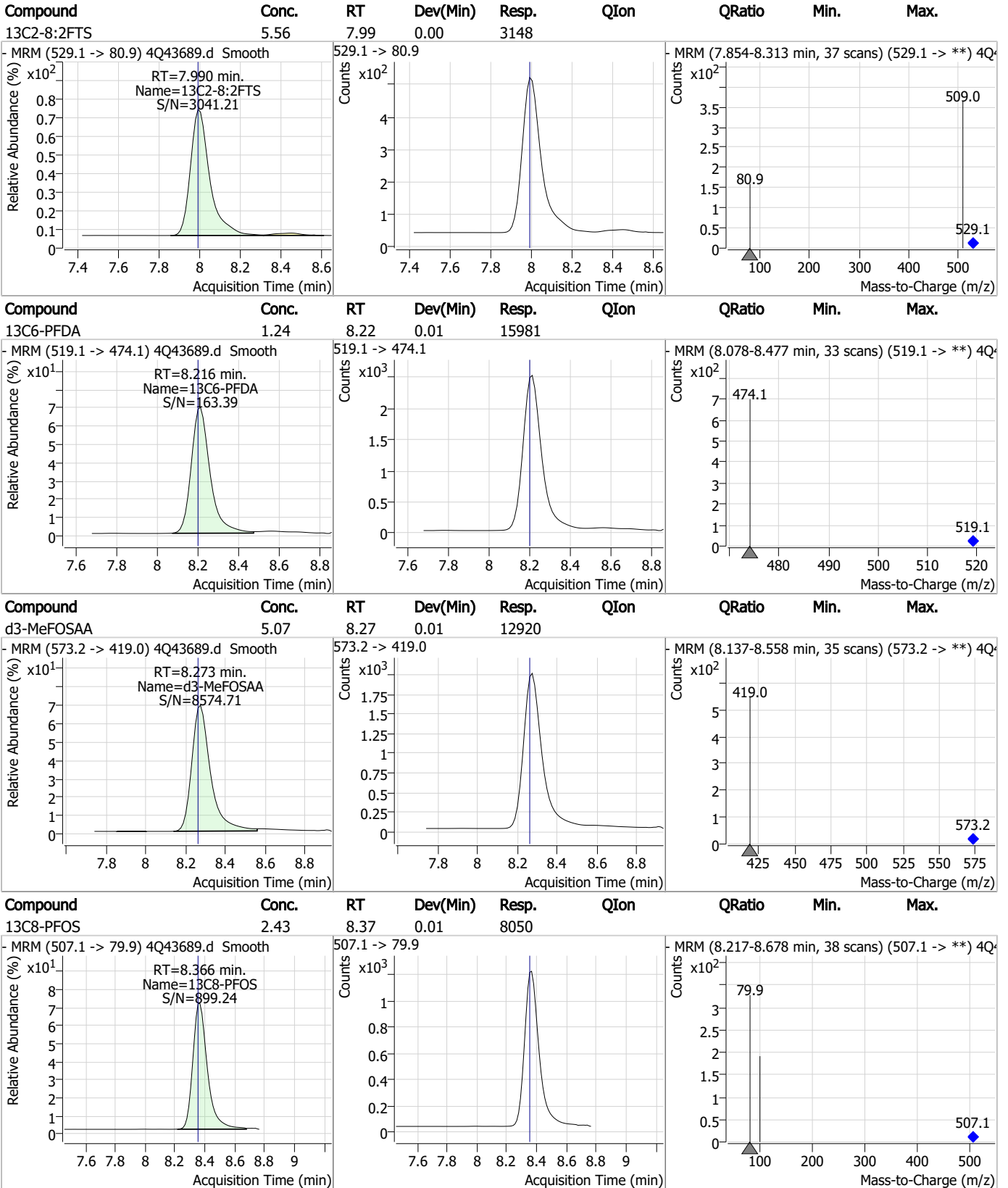


Perfluorinated Compounds by LC/MS/MS



7.2.2
7

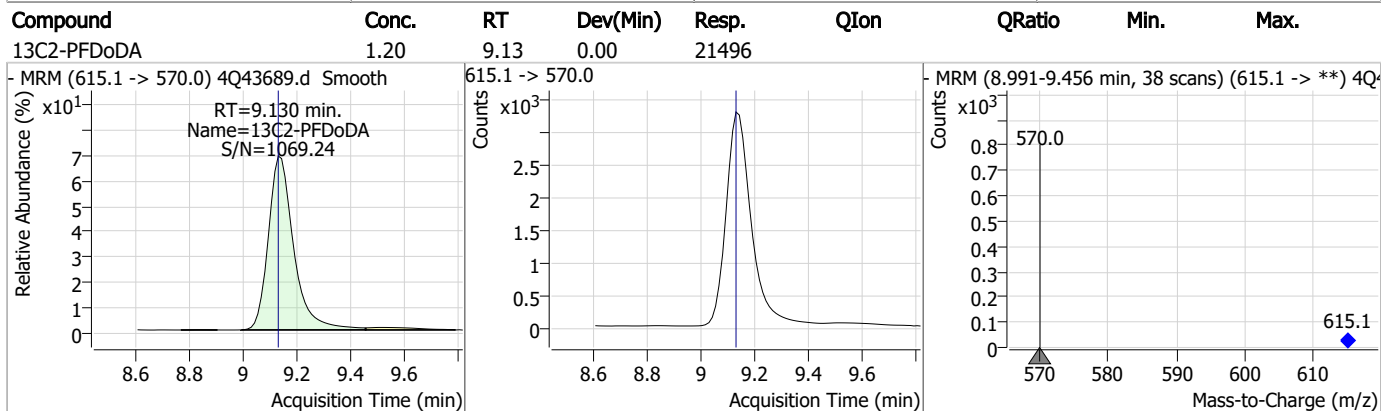
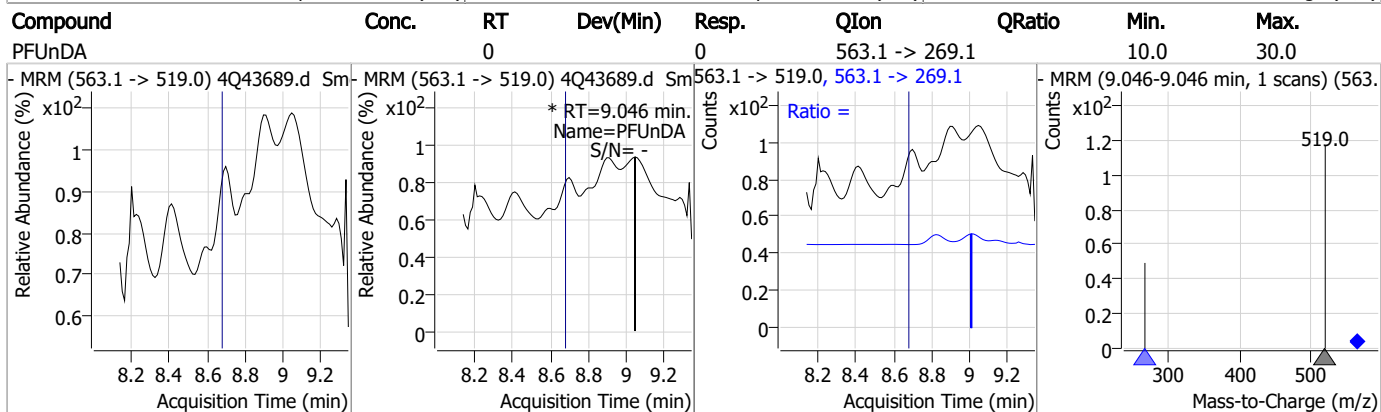
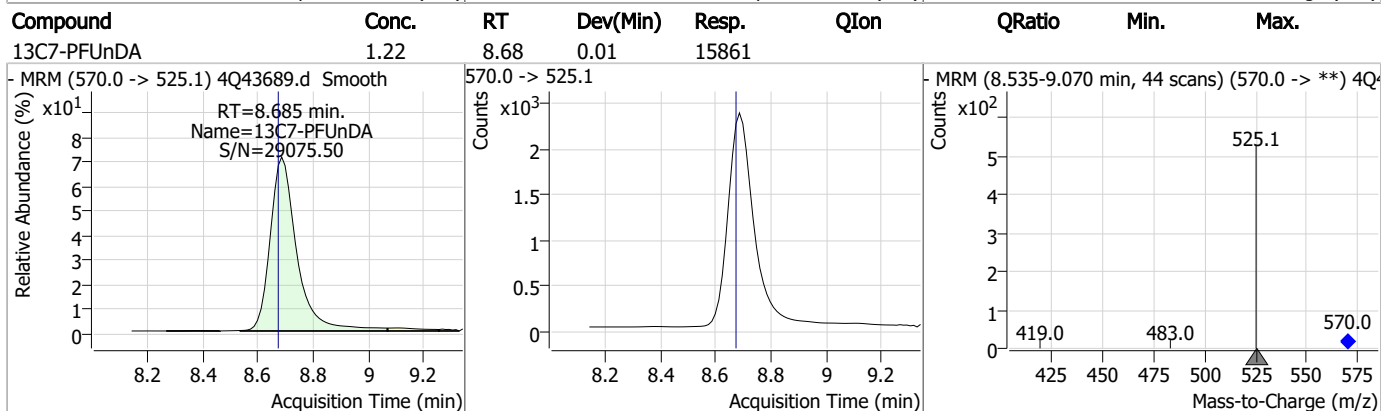
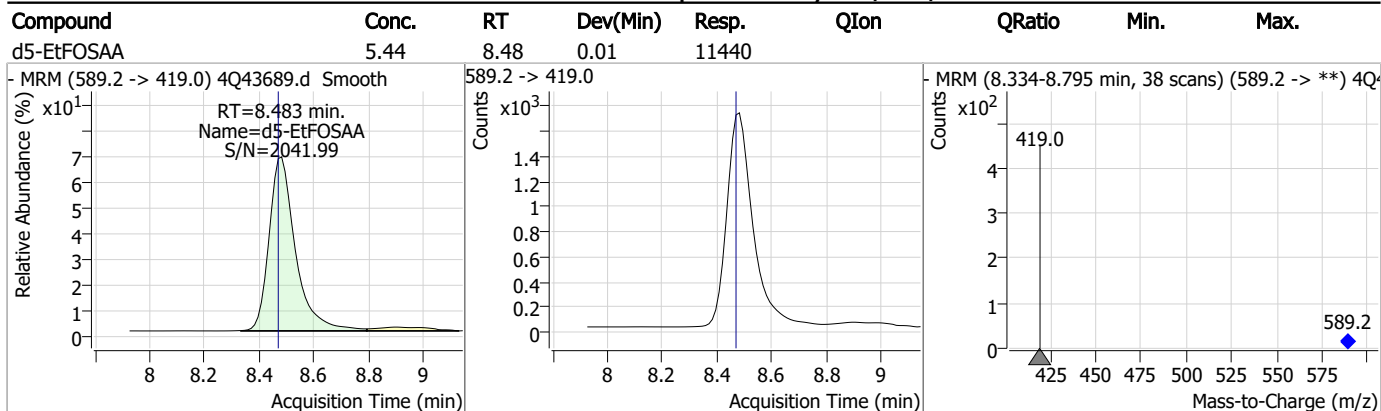
Perfluorinated Compounds by LC/MS/MS



7.2.2

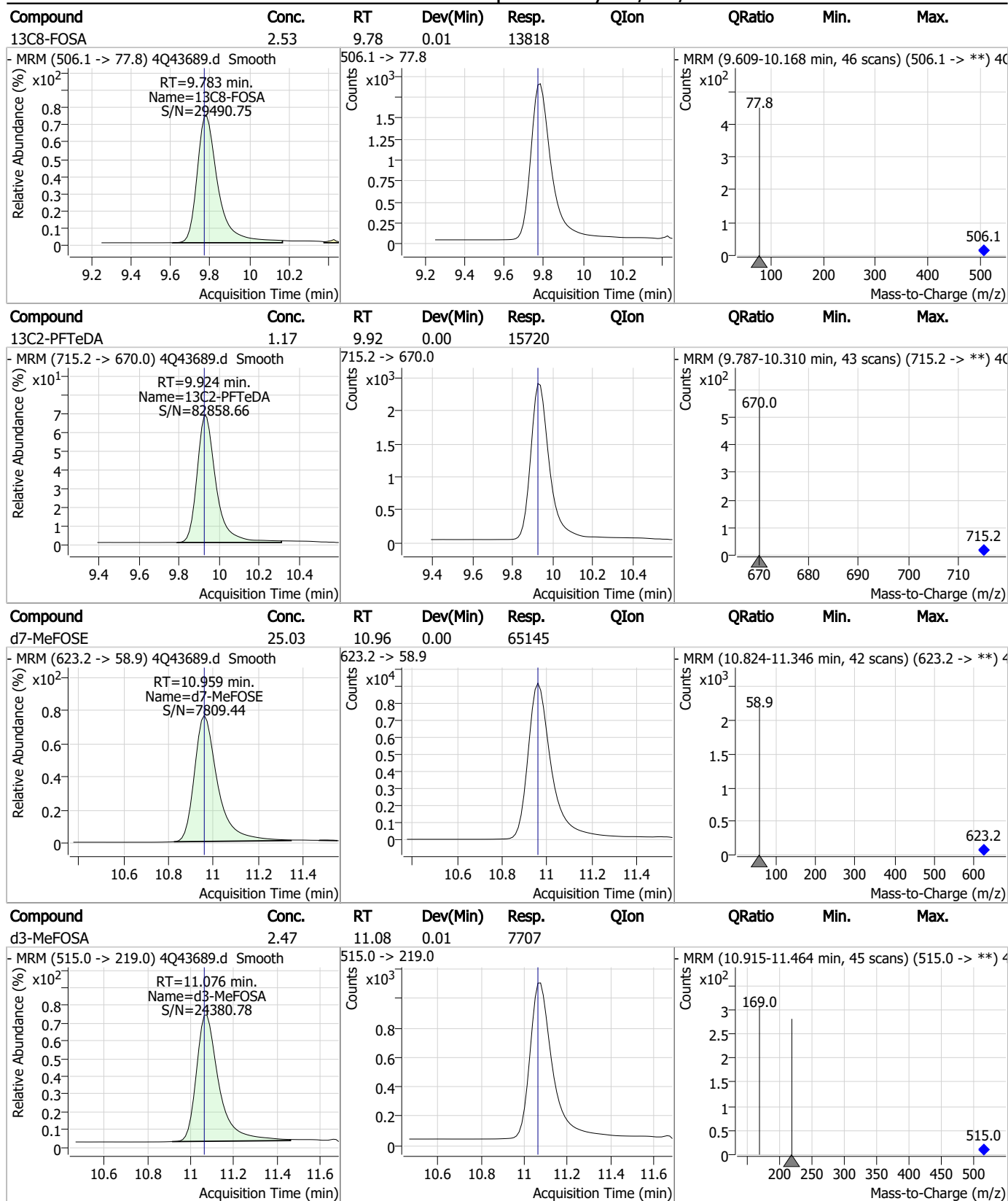
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Perfluorinated Compounds by LC/MS/MS



7.2.2
7

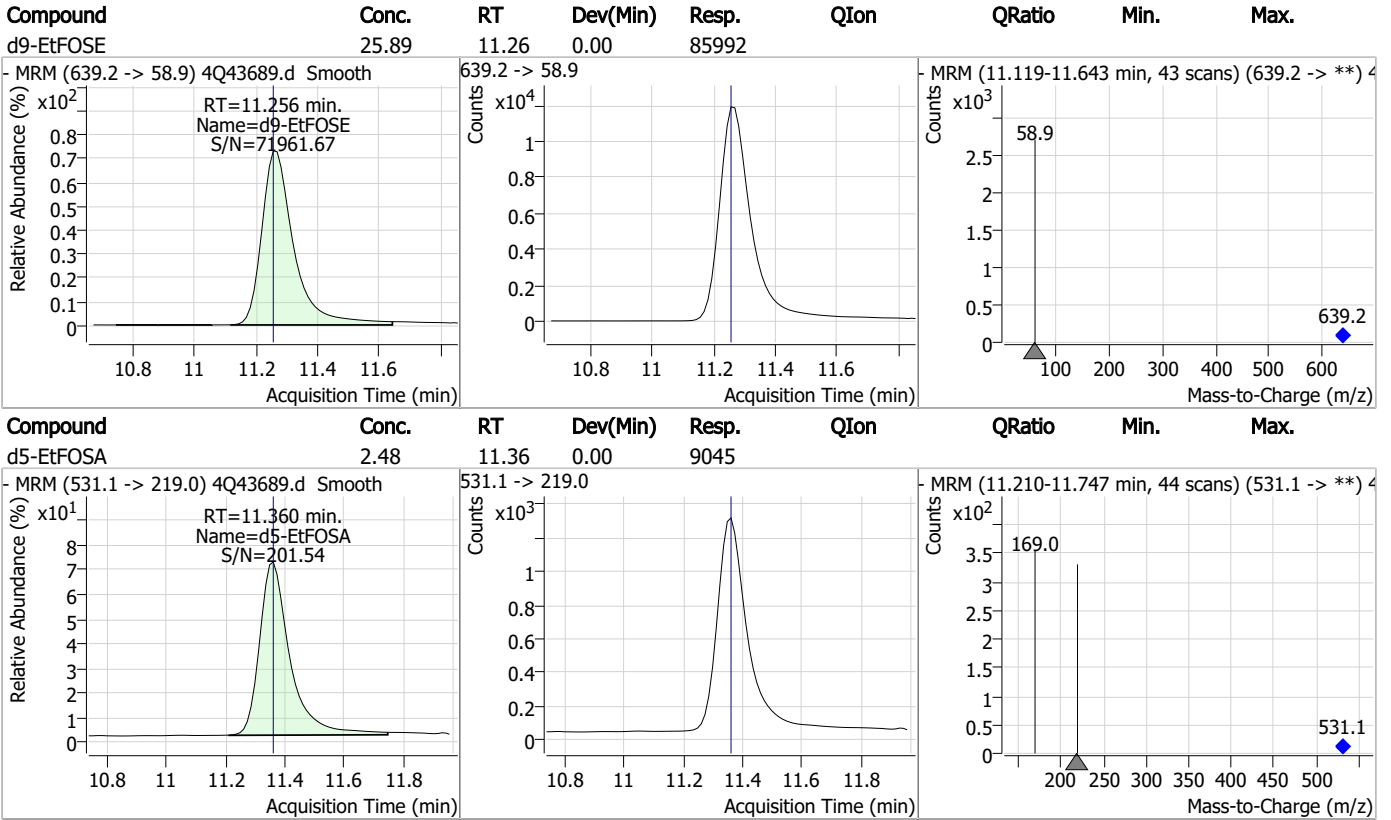
Perfluorinated Compounds by LC/MS/MS



7.2.2
7



Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43705.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 6:14:46 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	99462	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	60067	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	47765	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	24563	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	31694	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	17605	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	16540	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	16462	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	22174	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	17444	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	13688	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10612	2.50 µg/L	0.012
M3-PFHxS	7.266	402.1 -> 79.9	5819	2.50 µg/L	0.025
M8-PFOS	8.366	507.1 -> 79.9	7626	2.50 µg/L	0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1351	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	2001	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3084	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	13832	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	25672	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	11972	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	67770	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	85826	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	8823	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	8041	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	8726	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	55540	5.00 µg/L	0.000
18O2-PFHxS	7.265	403.0 -> 83.9	4112	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	39578	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	15504	1.25 µg/L	0.012
13C5-PFNA	7.721	468.0 -> 423.0	19302	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	39601	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1351	6.26 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.2%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2001	6.35 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.0%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3084	5.46 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.2%		
13C2-PFDoDA	9.143	615.1 -> 570.0	22174	1.16 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.1%		
13C2-PFTeDA	9.936	715.2 -> 670.0	17444	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-PFBS	5.464	302.1 -> 79.9	10612	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-PFHxS	7.266	402.1 -> 79.9	5819	2.54 µg/L	0.025

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 = 101.7%	
13C4-PFBA	2.924	216.8 -> 171.9	99462	10.36 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C4-PFHpA	6.504	367.1 -> 322.0	24563	2.54 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	47765	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFPeA	4.387	268.3 -> 223.0	60067	5.01 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C6-PFDA	8.216	519.1 -> 474.1	16540	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C7-PFUnDA	8.697	570.0 -> 525.1	16462	1.19 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C8-FOSA	9.783	506.1 -> 77.8	13688	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.6%	
13C8-PFOA	7.163	421.1 -> 376.0	31694	2.38 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C8-PFOS	8.366	507.1 -> 79.9	7626	2.13 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.2%	
13C9-PFNA	7.721	472.1 -> 427.0	17605	1.21 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.4%	
d3-MeFOSAA	8.273	573.2 -> 419.0	13832	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	25672	9.86 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSA	11.076	515.0 -> 219.0	8041	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
d5-EtFOSAA	8.483	589.2 -> 419.0	11972	5.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.2%	
d7-MeFOSE	10.972	623.2 -> 58.9	67770	24.05 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
d9-EtFOSE	11.269	639.2 -> 58.9	85826	23.86 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.5%	
d5-EtFOSA	11.360	531.1 -> 219.0	8823	2.24 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.5%	

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.	

7.2.3
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	-	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	9.478	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9	0			
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	11.631	630.0 -> 58.9	0	µg/L	m	1
		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

7.2.3

7



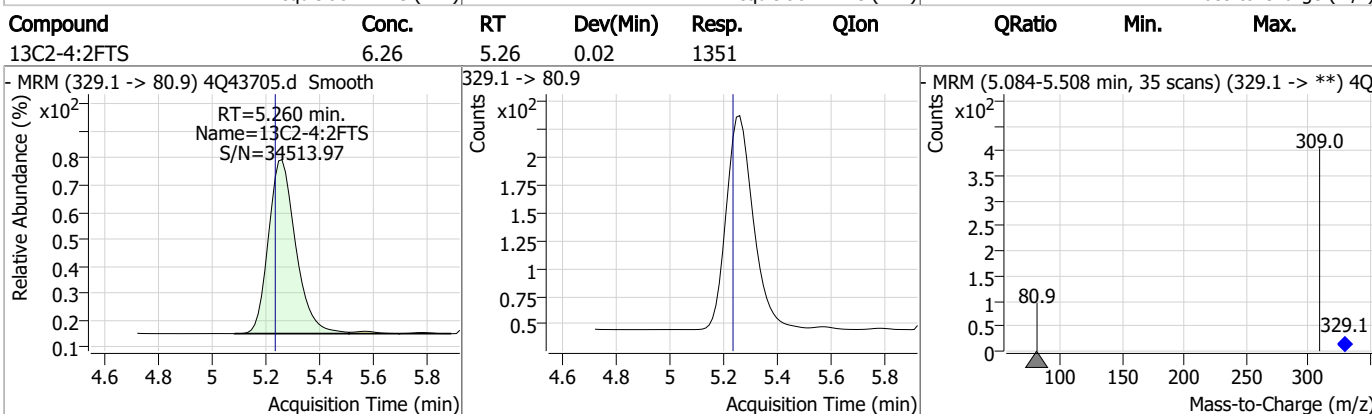
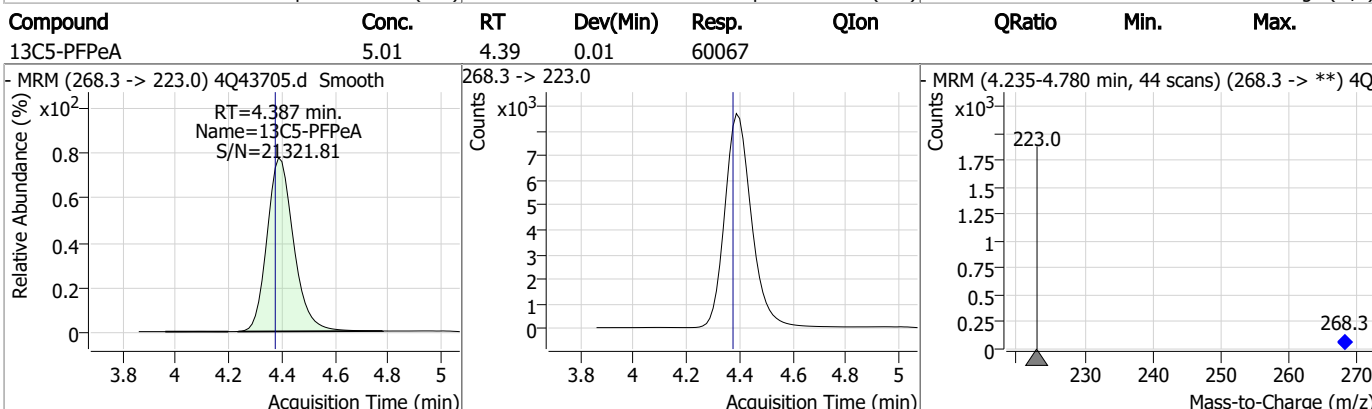
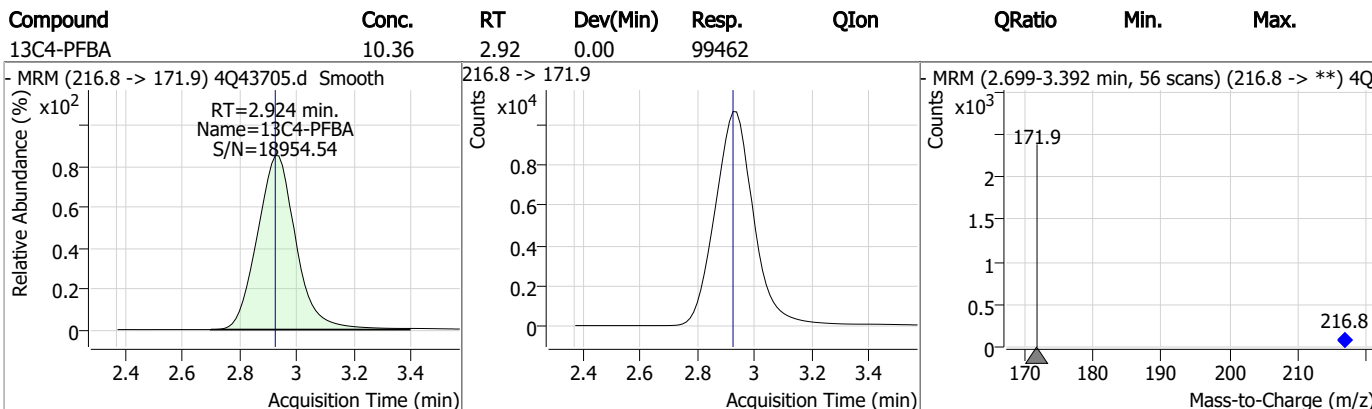
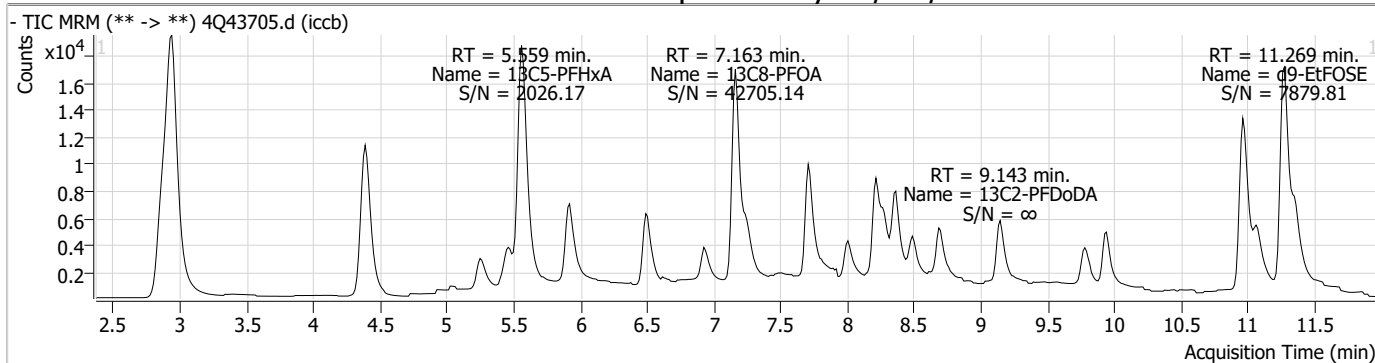
Perfluorinated Compounds by LC/MS/MS

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

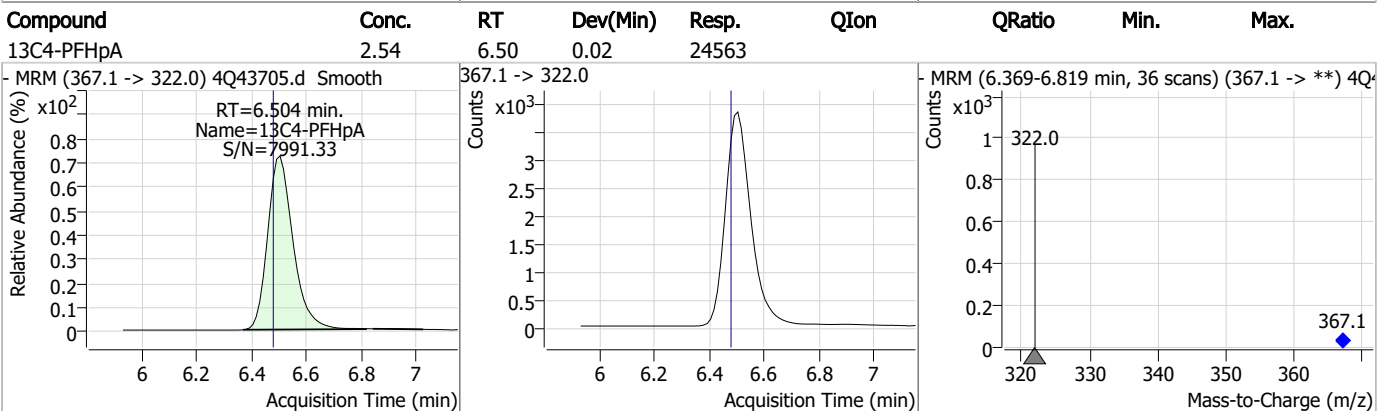
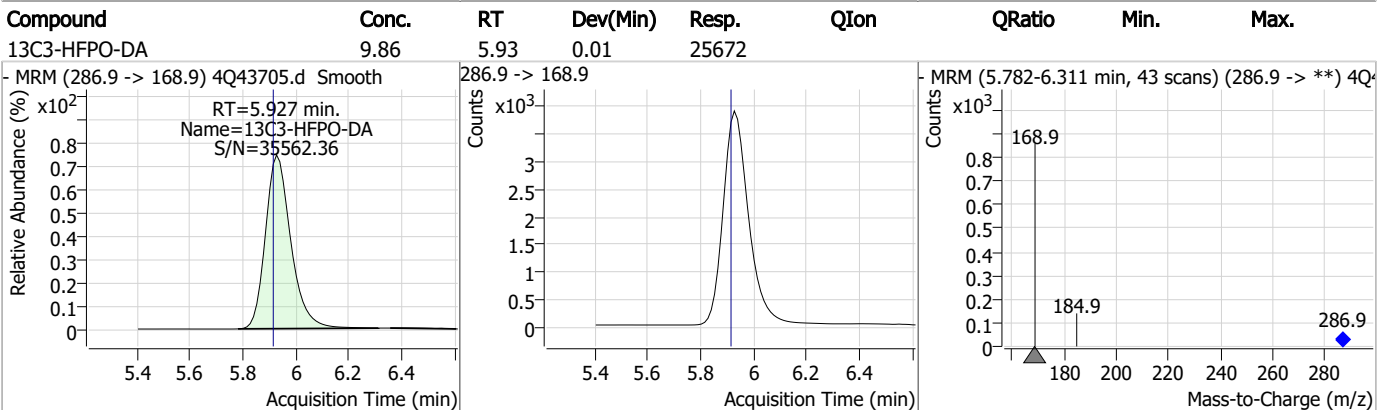
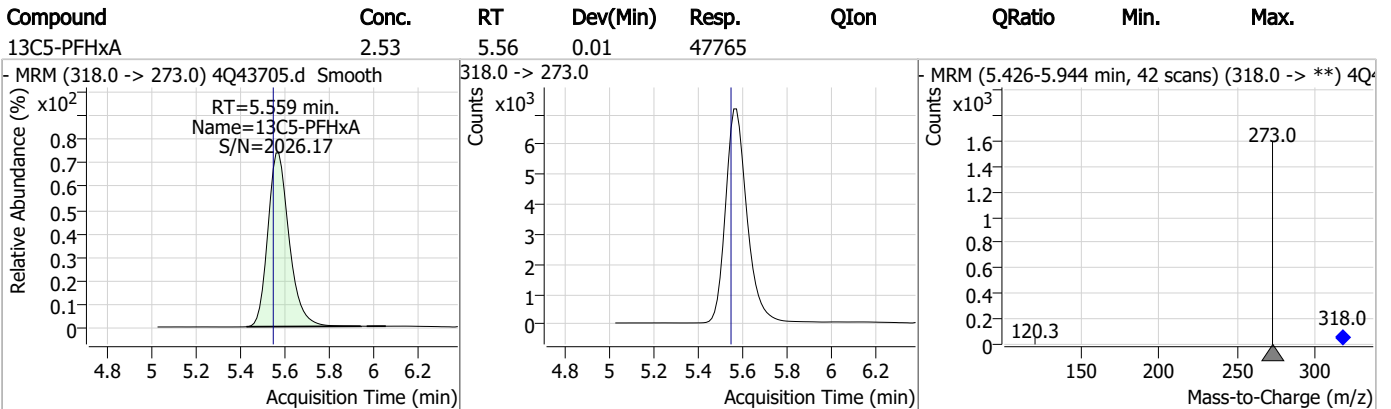
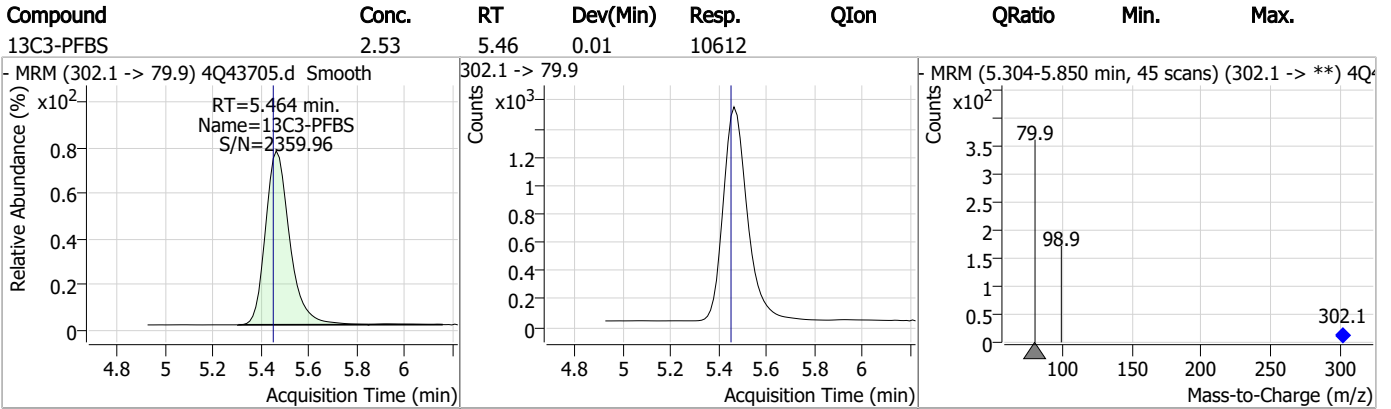
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Perfluorinated Compounds by LC/MS/MS

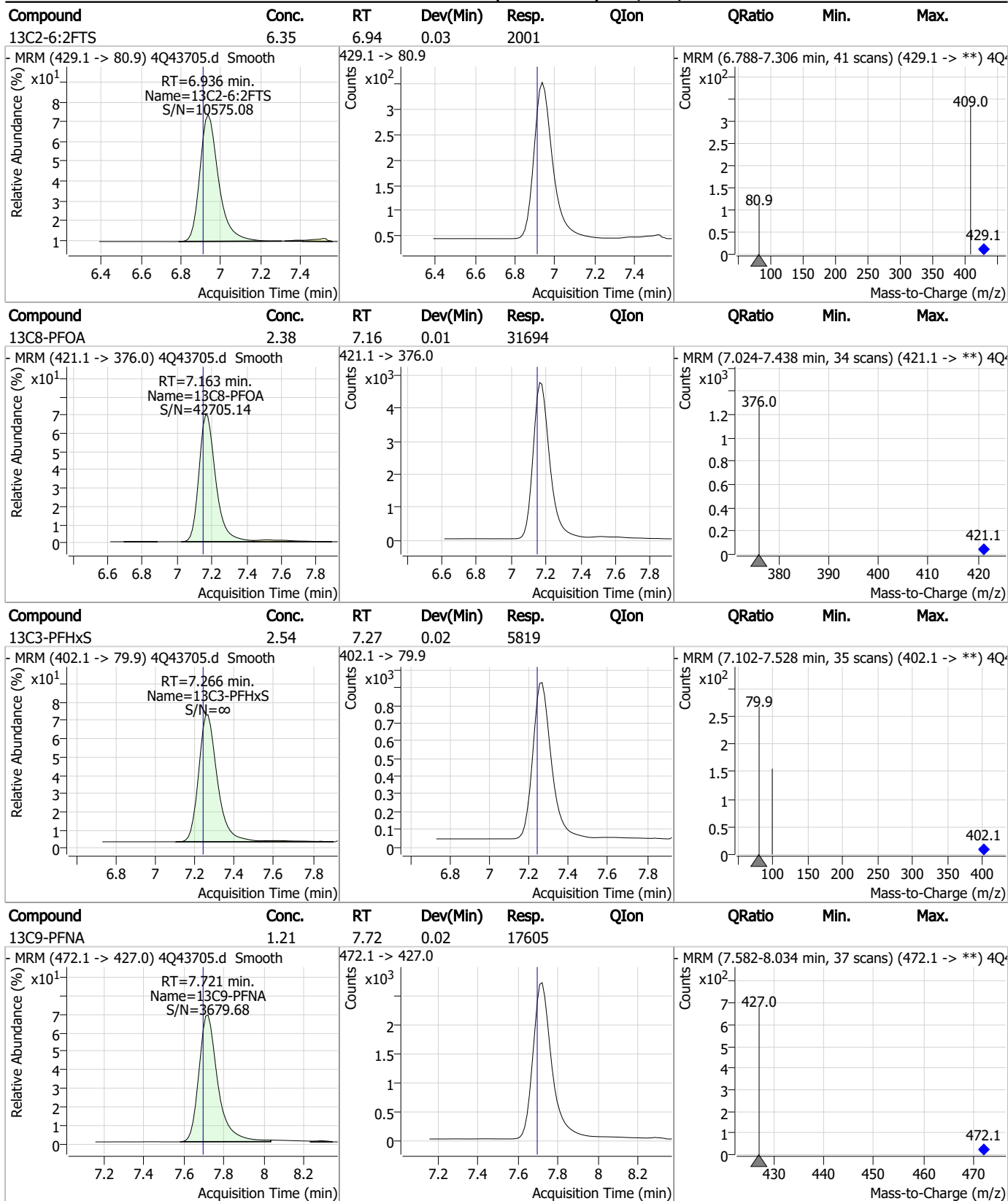


7.2.3
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Perfluorinated Compounds by LC/MS/MS

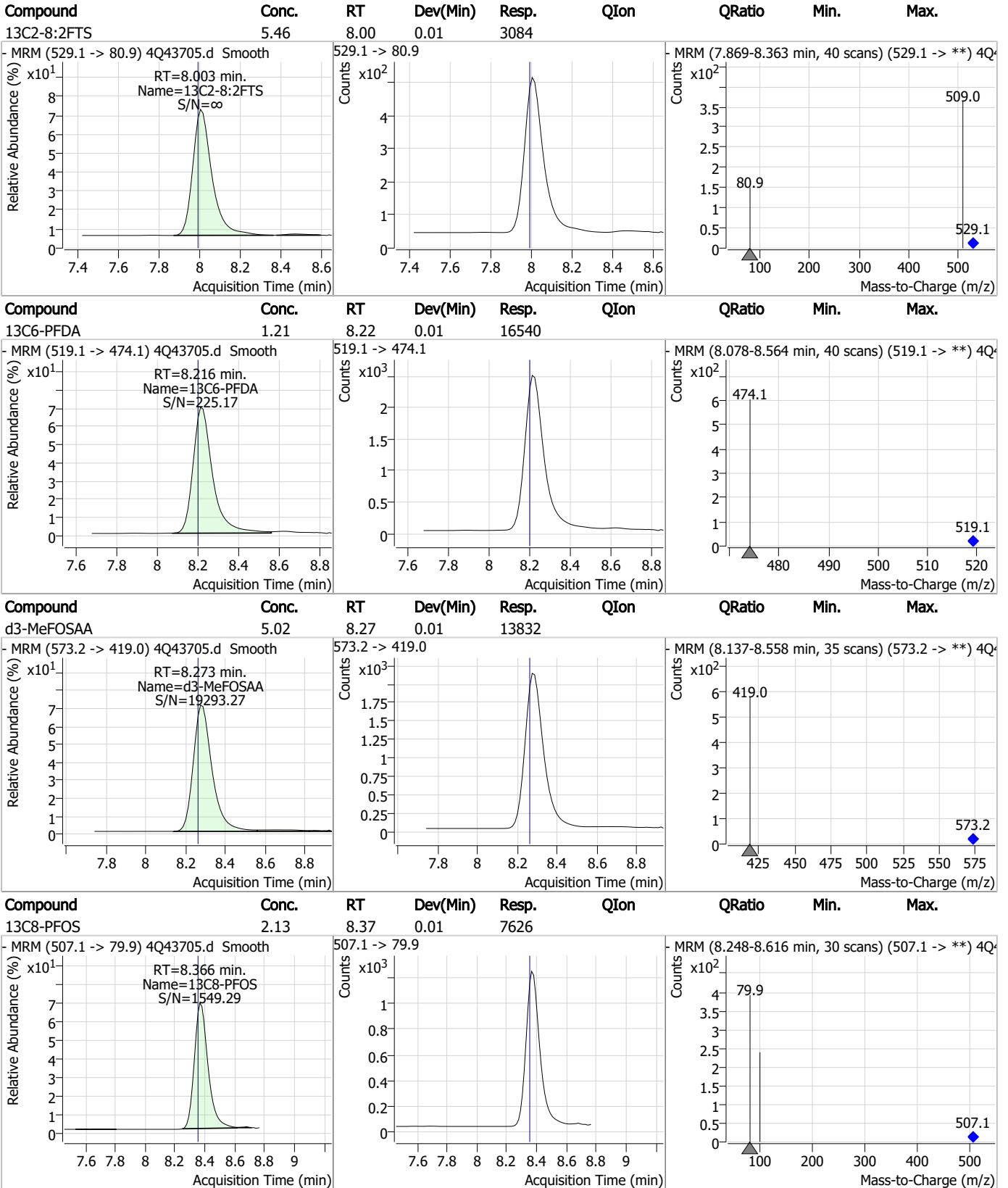


Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

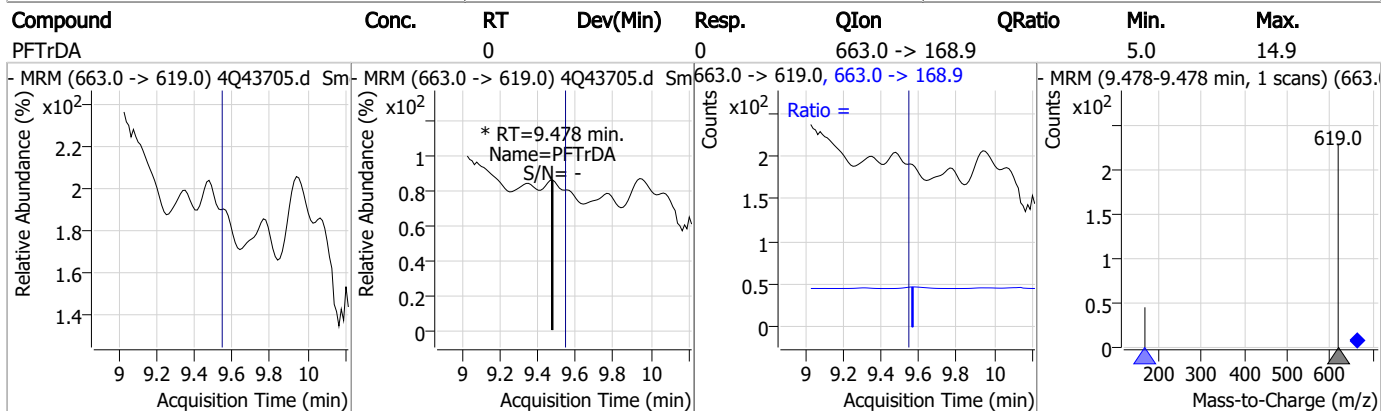
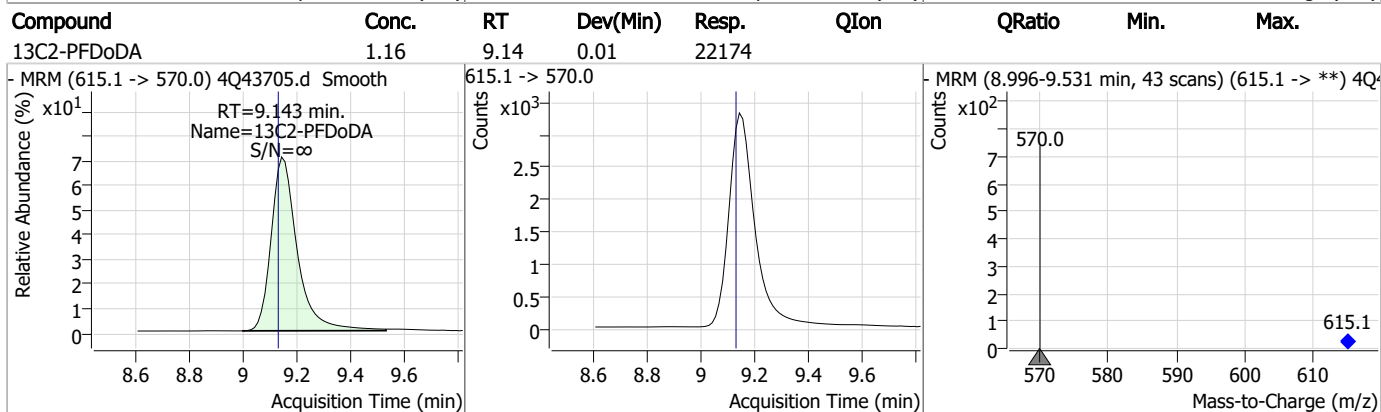
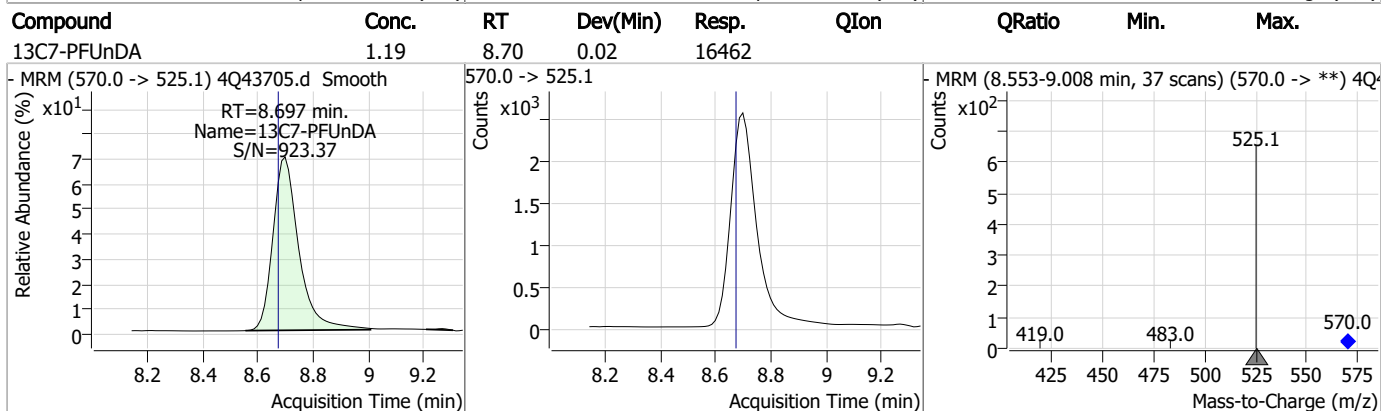
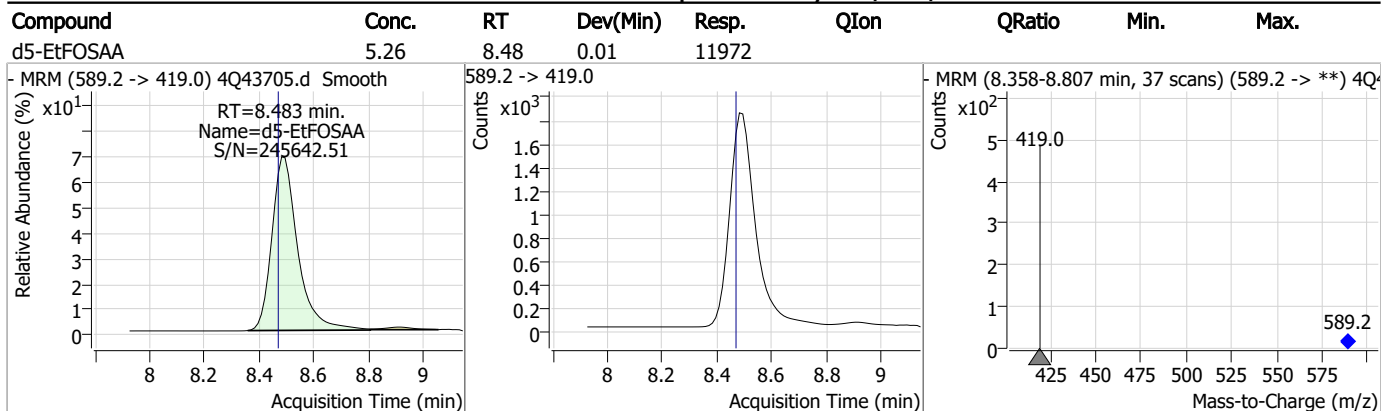


7.2.3

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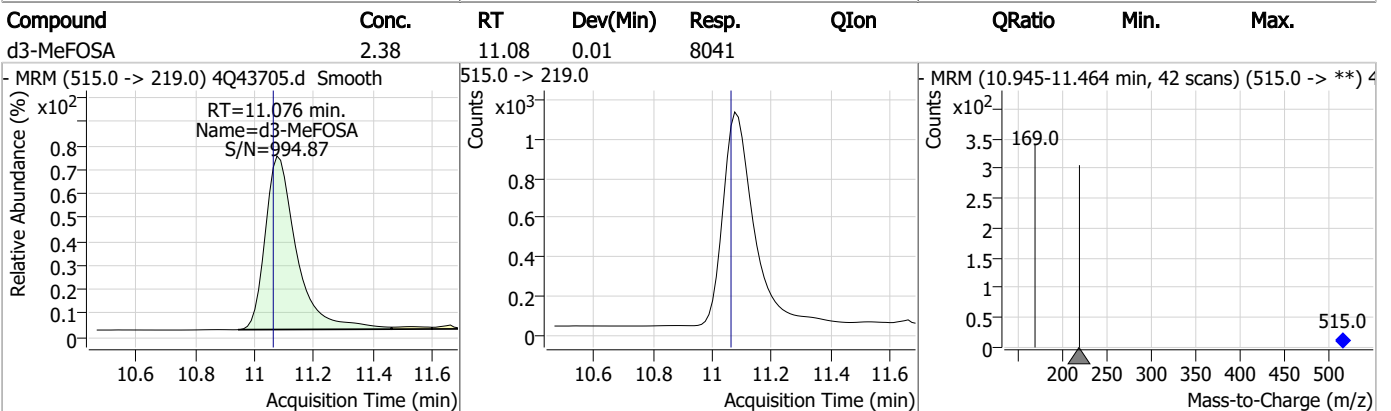
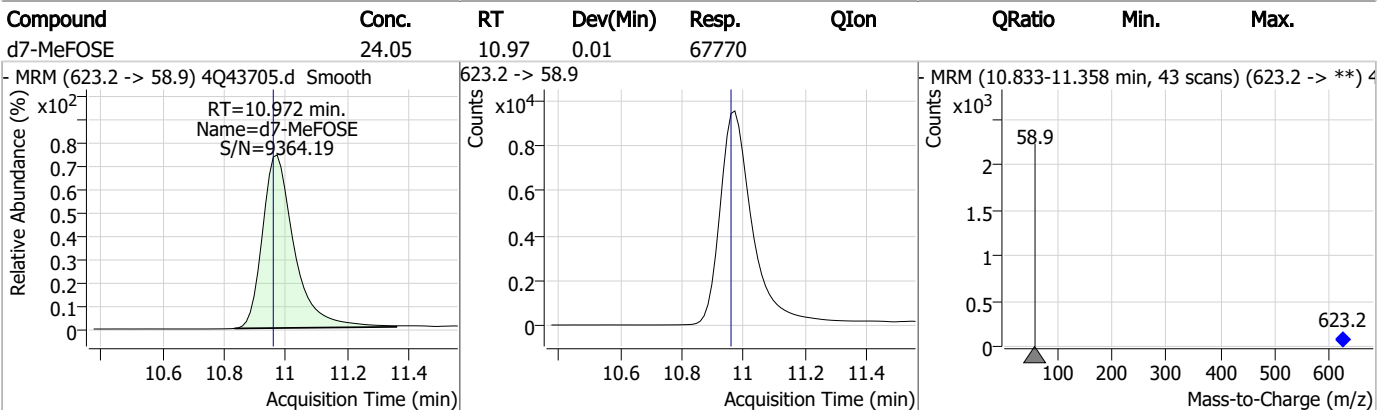
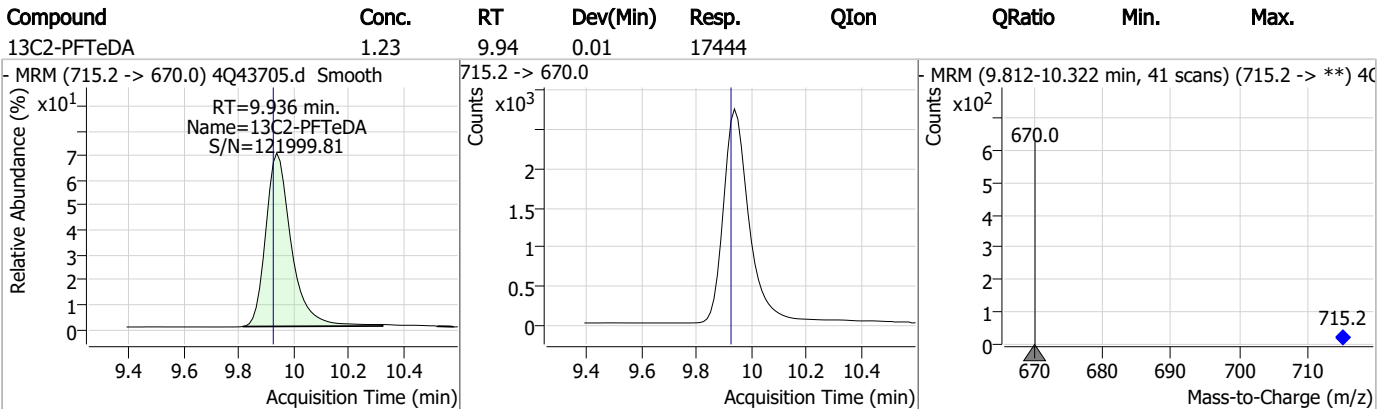
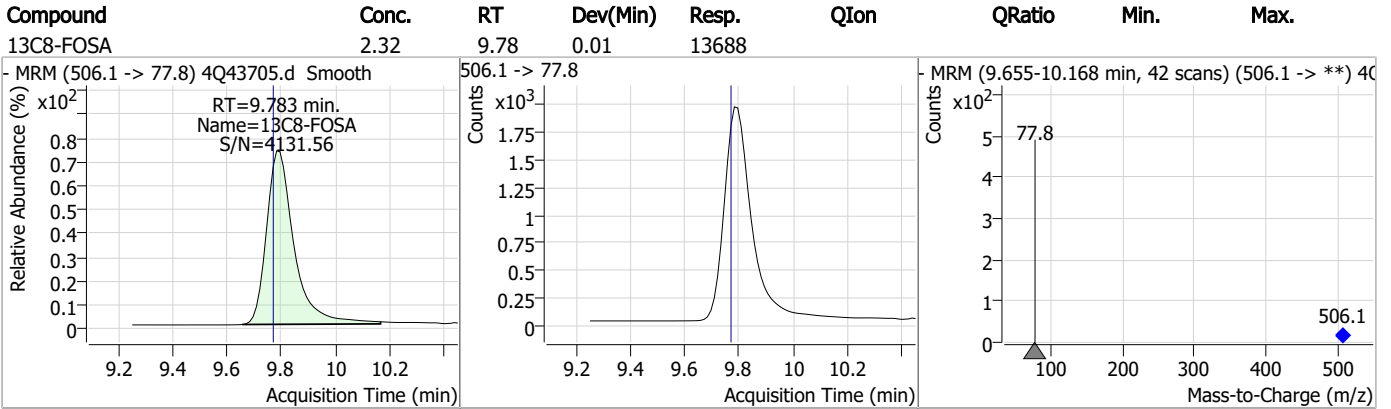


Perfluorinated Compounds by LC/MS/MS

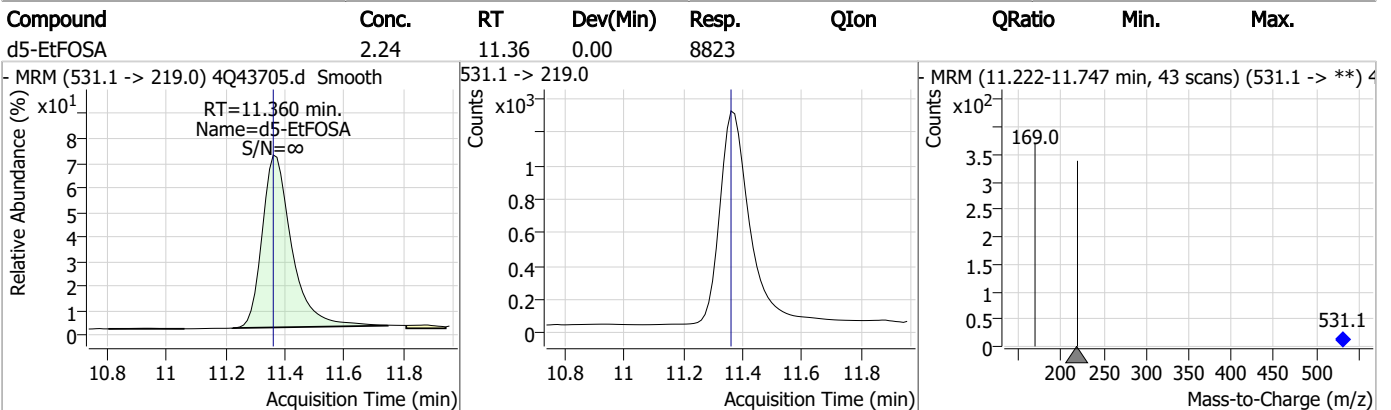
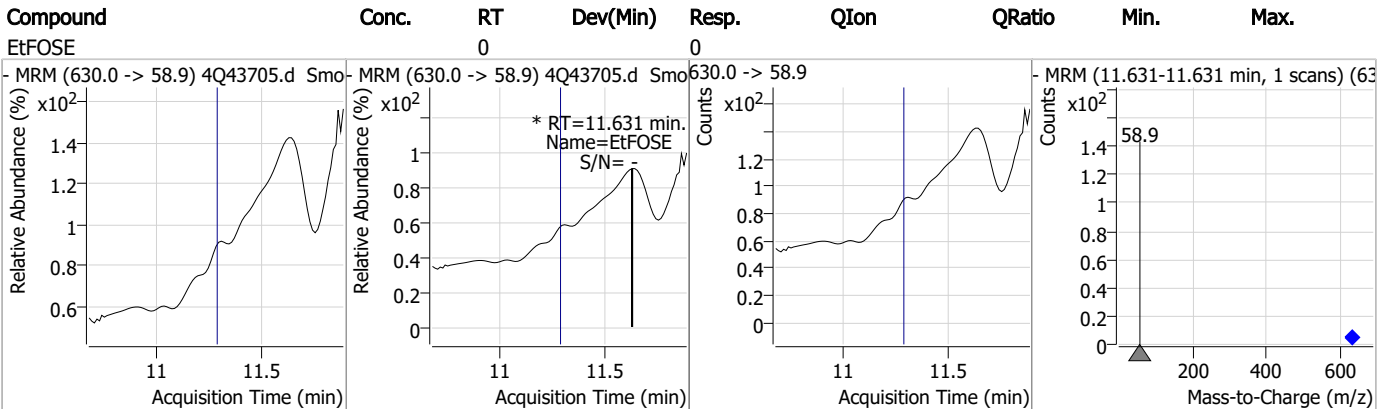
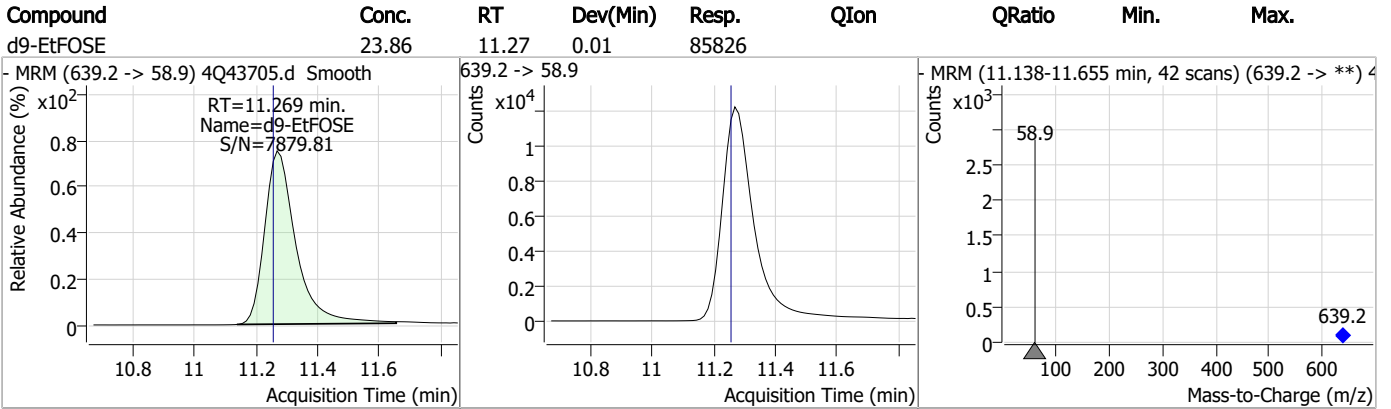


7.2.3
7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.3

7



Perfluorinated Compounds by LC/MS/MS

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 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 4:08:20 PM
 Sample Name : op96548-bs
 Vial : P3-A3
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q630,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	34799	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	61610	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	49447	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	24358	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	33540	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	17859	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	15711	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	17330	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	21946	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	15695	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	10454	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	11024	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6152	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8243	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1263	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1913	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3316	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14810	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	25837	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	11938	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	39260	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	57089	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	6611	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	5538	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7898	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	49772	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	3692	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	35638	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	13195	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	17247	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	37180	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1263	6.52 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.3%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1913	6.76 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 135.2%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3316	6.53 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.7%		
13C2-PFDoDA	9.143	615.1 -> 570.0	21946	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C2-PFTeDA	9.936	715.2 -> 670.0	15695	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C3-PFBS	5.464	302.1 -> 79.9	11024	2.93 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 117.1%		
13C3-PFHxS	7.254	402.1 -> 79.9	6152	2.99 µg/L	0.012

7.31
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 = 119.7%	
13C4-PFBA	2.936	216.8 -> 171.9	34799	4.05 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 40.5%	
13C4-PFHpA	6.492	367.1 -> 322.0	24358	2.68 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.2%	
13C5-PFHxA	5.559	318.0 -> 273.0	49447	2.79 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.8%	
13C5-PFPeA	4.387	268.3 -> 223.0	61610	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C6-PFDA	8.216	519.1 -> 474.1	15711	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.8%	
13C7-PFUnDA	8.697	570.0 -> 525.1	17330	1.47 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 117.5%	
13C8-FOSA	9.783	506.1 -> 77.8	10454	1.95 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.2%	
13C8-PFOA	7.163	421.1 -> 376.0	33540	2.80 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C8-PFOS	8.366	507.1 -> 79.9	8243	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C9-PFNA	7.709	472.1 -> 427.0	17859	1.37 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.5%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14810	5.94 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 118.7%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	25837	10.57 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.7%	
d3-MeFOSA	11.076	515.0 -> 219.0	5538	1.81 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.5%	
d5-EtFOSAA	8.483	589.2 -> 419.0	11938	5.80 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.9%	
d7-MeFOSE	10.972	623.2 -> 58.9	39260	15.39 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 61.6%	
d9-EtFOSE	11.269	639.2 -> 58.9	57089	17.54 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 70.2%	
d5-EtFOSA	11.360	531.1 -> 219.0	6611	1.85 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.1%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	18217	9.00 µg/L	97
		327.1 -> 80.9	7841		
6:2FTS	6.924	427.1 -> 407.0	15766	8.57 µg/L	99
		427.1 -> 80.9	6866		
8:2FTS	8.003	527.1 -> 507.0	17041	9.16 µg/L	100
		527.1 -> 80.8	7221		
EtFOSAA	8.496	584.2 -> 419.1	5091	2.23 µg/L	m 79
		584.2 -> 526.0	2257		
FOSA	9.786	498.1 -> 77.9	10760	2.37 µg/L	100
		498.1 -> 478.0	327		
MeFOSAA	8.286	570.1 -> 419.0	6091	2.33 µg/L	m 97
		570.1 -> 483.0	1086		
PFBA	2.932	212.8 -> 168.9	9339	9.12 µg/L	100
PFBS	5.465	298.7 -> 79.9	10108	2.02 µg/L	95
		298.7 -> 98.8	4254		
PFDA	8.216	512.9 -> 469.0	27339	2.33 µg/L	99
		512.9 -> 219.0	5443		
PFDODA	9.144	613.1 -> 569.0	41865	2.34 µg/L	100
		613.1 -> 319.0	5839		
PFDS	9.307	599.0 -> 79.9	5601	2.27 µg/L	96

7.3.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2794			
PFHpA	6.492	363.1 -> 319.0	36529	2.31	µg/L	96
		363.1 -> 169.0	6914			
PFHpS	7.848	449.0 -> 79.9	6487	2.25	µg/L	96
		449.0 -> 98.9	3787			
PFHxA	5.562	313.0 -> 269.0	41957	2.26	µg/L	99
		313.0 -> 118.9	1348			
PFHxS	7.255	398.7 -> 79.9	6263	2.06	µg/L	m 93
		398.7 -> 98.9	3206			
PFNA	7.709	463.0 -> 419.0	27059	2.25	µg/L	99
		463.0 -> 219.0	6913			
PFNS	8.848	548.8 -> 79.9	3767	2.45	µg/L	88
		548.8 -> 98.9	1702			
PFOA	7.164	413.0 -> 369.0	43265	2.23	µg/L	98
		413.0 -> 169.0	8969			
PFOS	8.367	498.9 -> 79.9	8935	2.23	µg/L	m 92
		498.9 -> 98.8	4346			
PFPeA	4.389	263.0 -> 219.0	69854	4.75	µg/L	100
PFPeS	6.531	349.1 -> 79.9	5349	2.11	µg/L	97
		349.1 -> 98.9	2409			
PFTeDA	9.937	713.1 -> 669.0	35840	2.32	µg/L	100
		713.1 -> 168.9	3147			
PFTrDA	9.554	663.0 -> 619.0	52203	2.44	µg/L	99
		663.0 -> 168.9	4886			
PFUnDA	8.698	563.1 -> 519.0	28042	2.21	µg/L	98
		563.1 -> 269.1	5382			
11Cl-PF3OUdS	9.605	630.9 -> 450.9	42261	4.61	µg/L	100
		632.9 -> 452.9	12704			
9Cl-PF3ONS	8.712	530.8 -> 351.0	43724	4.58	µg/L	94
		532.8 -> 353.0	13716			
ADONA	6.756	376.9 -> 250.9	123533	4.67	µg/L	97
		376.9 -> 84.8	31543			
HFPO-DA	5.928	284.9 -> 168.9	12296	4.81	µg/L	98
		284.9 -> 184.9	1613			
3:3FTCA	3.867	241.0 -> 177.0	3534	5.68	µg/L	99
		241.0 -> 117.0	342			
5:3FTCA	6.217	341.0 -> 237.1	124428	46.34	µg/L	99
		341.0 -> 217.0	88306			
7:3FTCA	7.673	441.0 -> 316.9	56234	47.86	µg/L	99
		441.0 -> 336.9	125315			
EtFOSA	11.375	526.0 -> 219.0	13390	4.74	µg/L	m 65
		526.0 -> 169.0	18991			
EtFOSE	11.295	630.0 -> 58.9	20875	9.87	µg/L	m 100
MeFOSA	11.078	511.9 -> 219.0	10574	4.84	µg/L	m 71
		511.9 -> 169.0	15810			
MeFOSE	10.985	616.1 -> 58.9	19188	11.87	µg/L	m 100
PFDoDS	10.076	699.1 -> 79.9	4818	2.22	µg/L	96
		699.1 -> 98.8	2553			
NFDHA	5.453	295.0 -> 201.0	5511	4.57	µg/L	96
		295.0 -> 84.9	1407			
PFMBA	4.791	279.0 -> 85.1	39084	4.61	µg/L	100
PFMPA	3.540	229.0 -> 84.9	21804	2.98	µg/L	100
PFEESA	5.997	314.8 -> 134.9	64374	3.97	µg/L	99
		314.8 -> 82.9	2108			

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

7.3.1
7

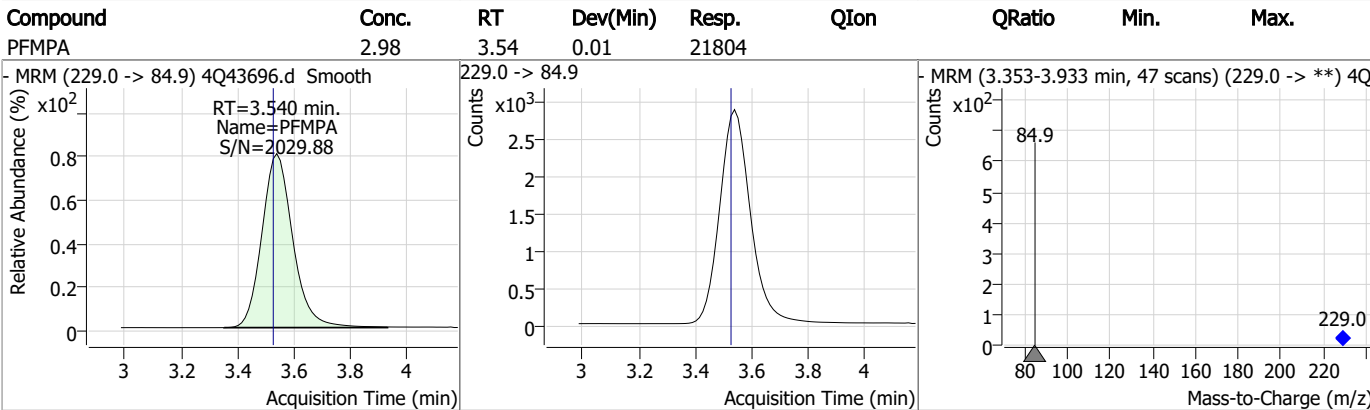
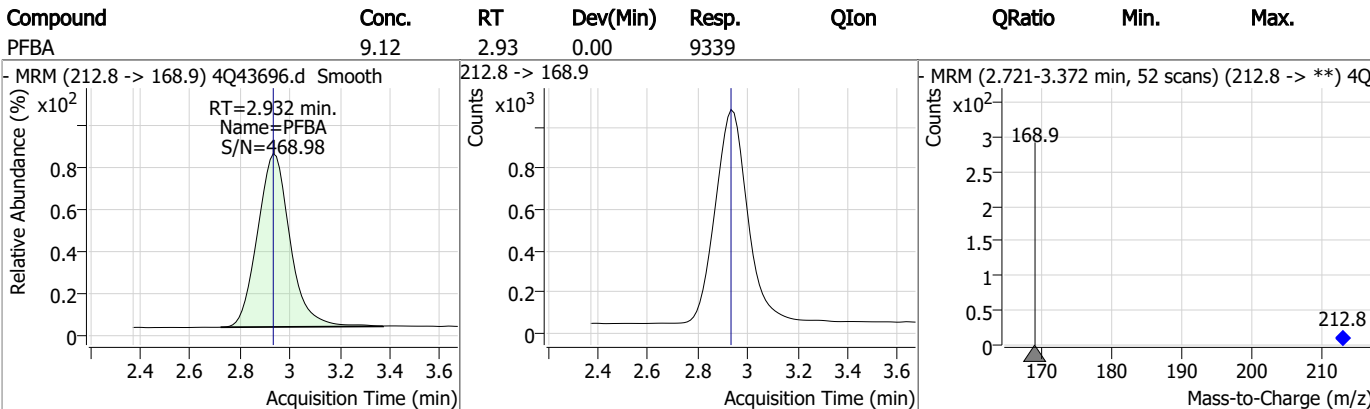
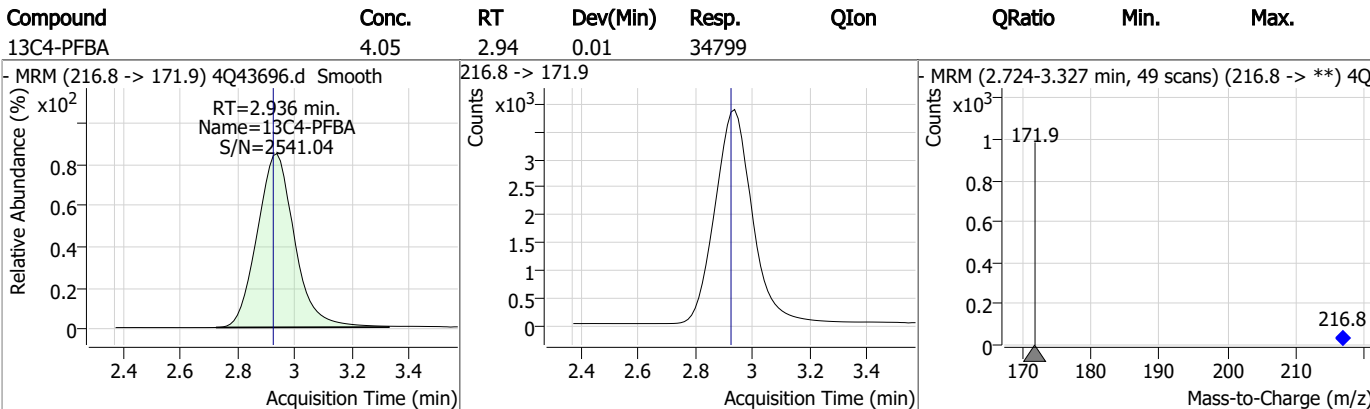
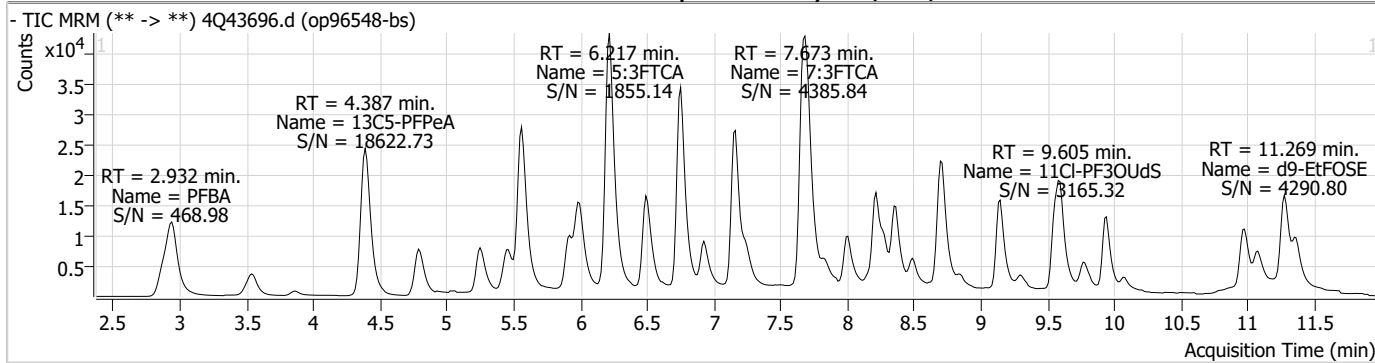
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.3.1

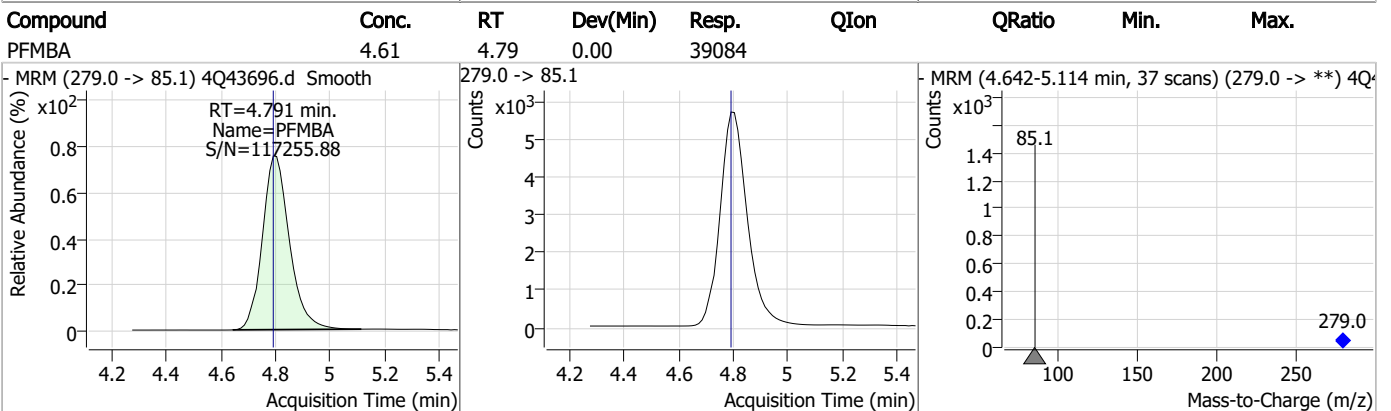
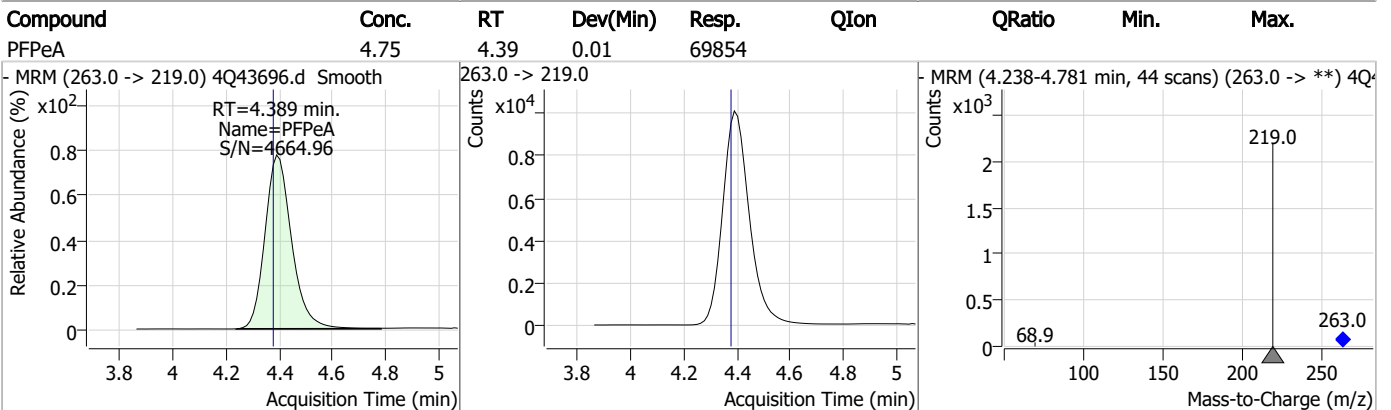
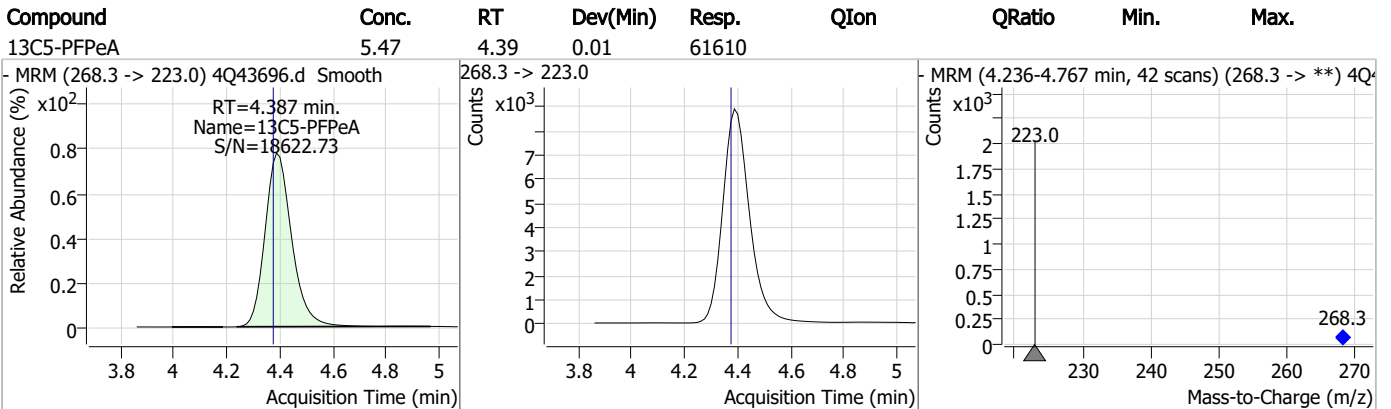
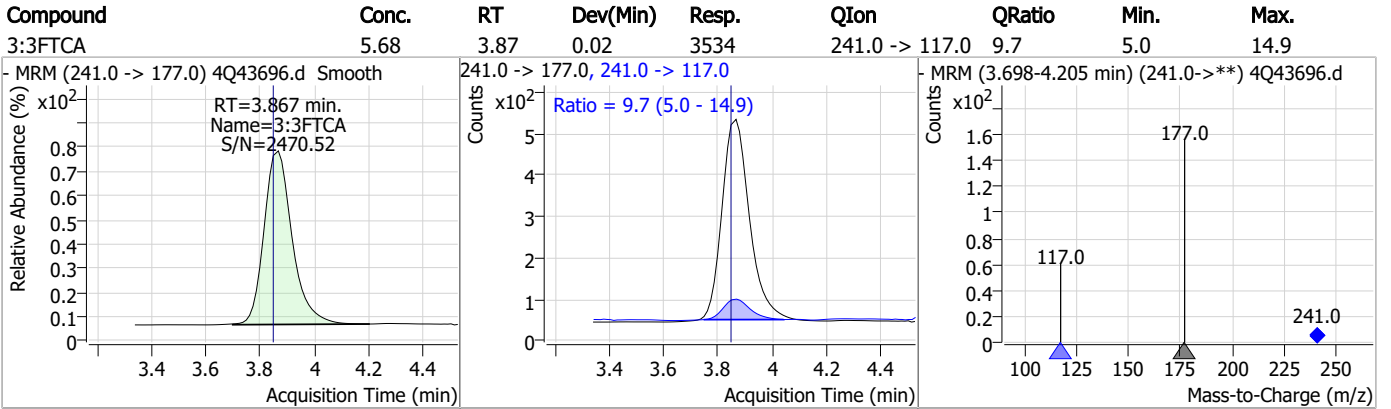
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Perfluorinated Compounds by LC/MS/MS



7.3.1
7

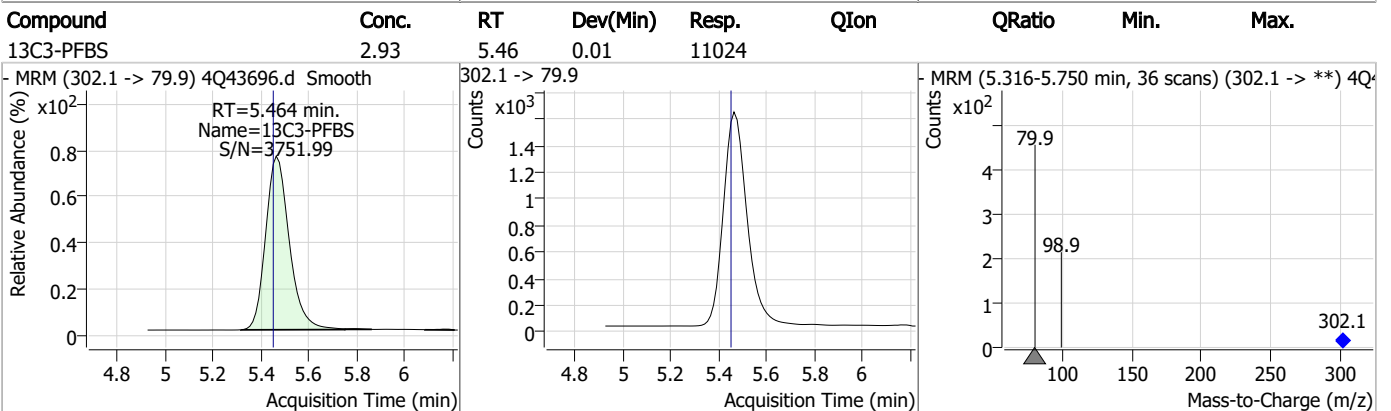
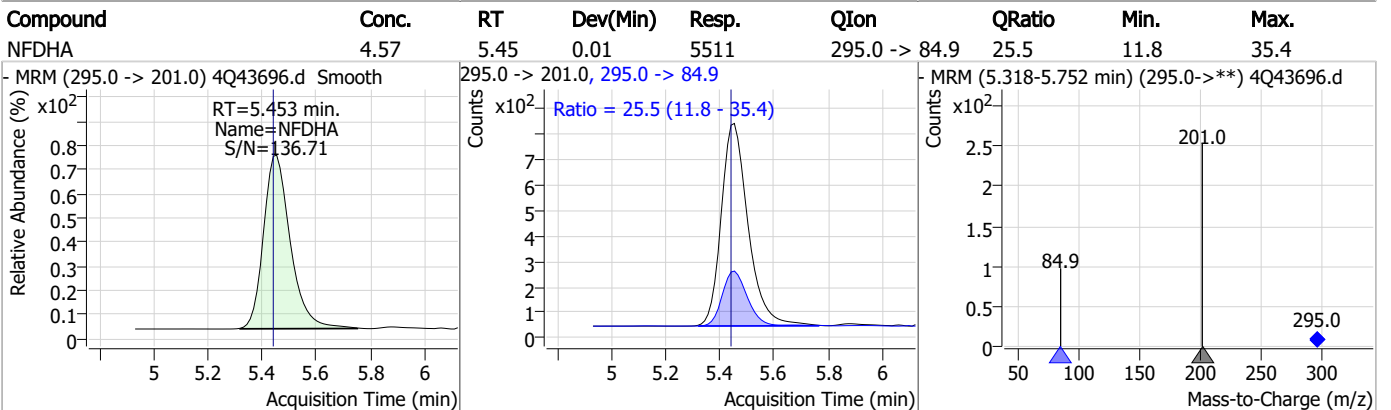
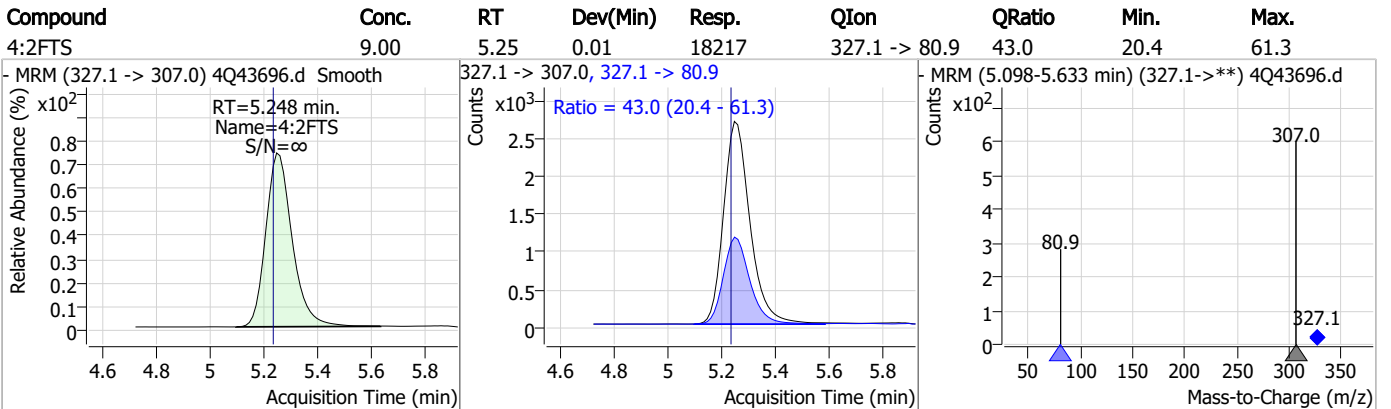
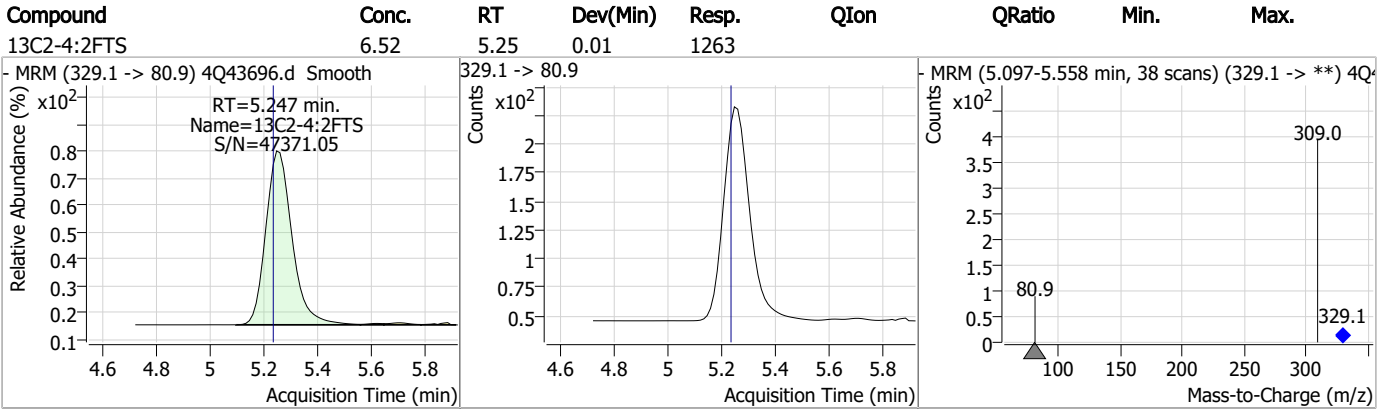
Perfluorinated Compounds by LC/MS/MS



7.3.1

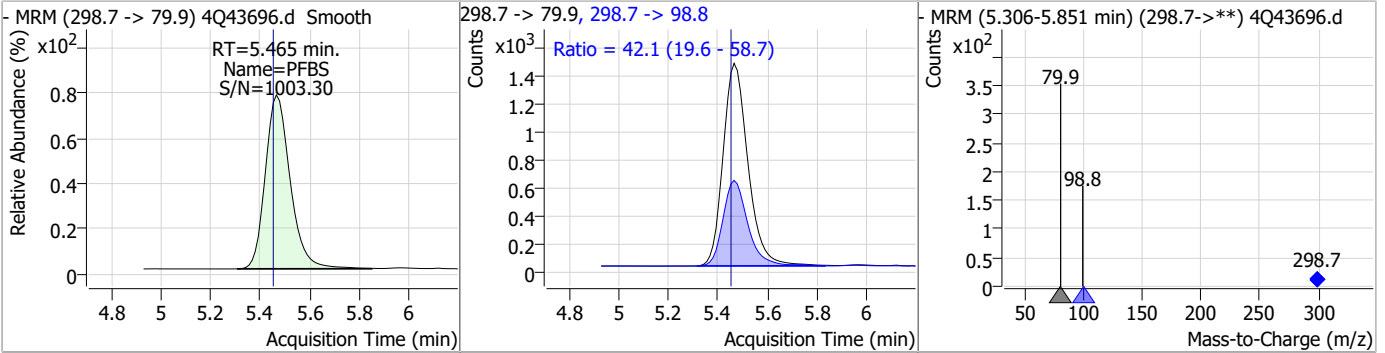
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Perfluorinated Compounds by LC/MS/MS

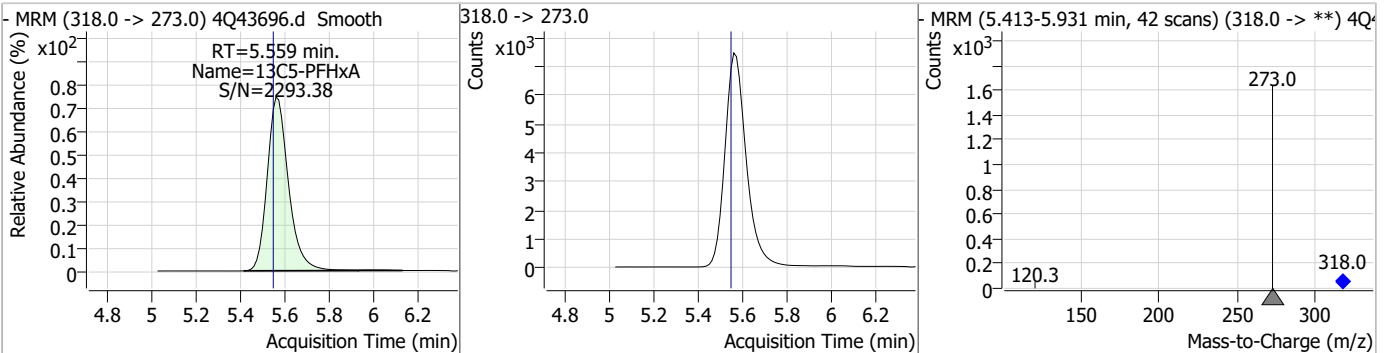


Perfluorinated Compounds by LC/MS/MS

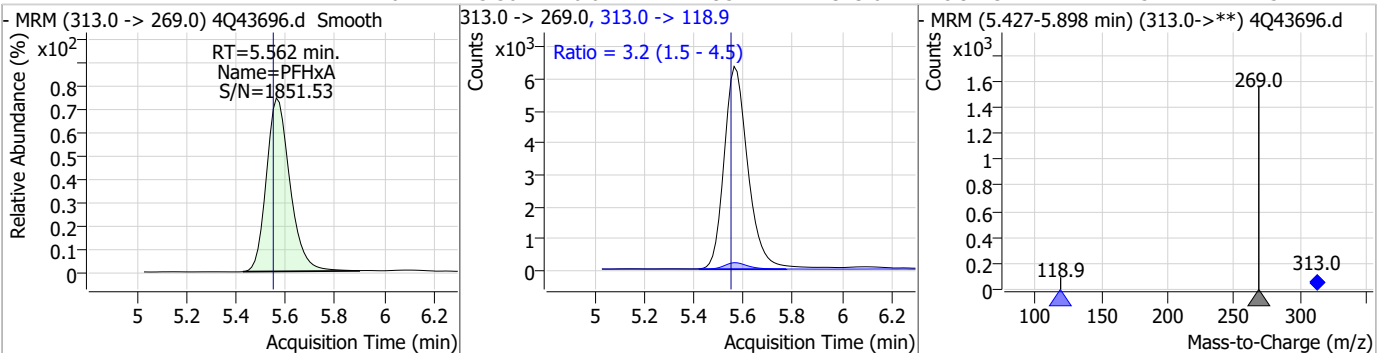
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.02	5.46	0.01	10108	298.7 -> 98.8	42.1	19.6	58.7



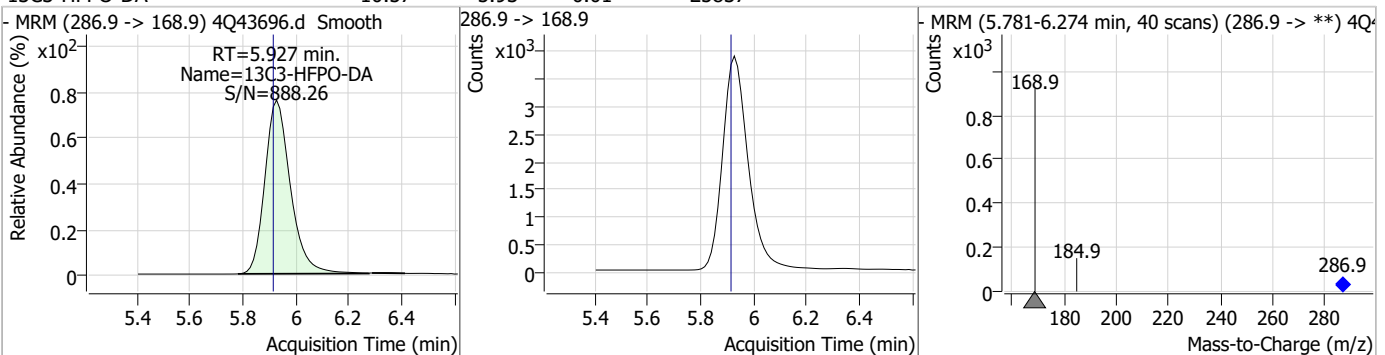
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.79	5.56	0.01	49447				



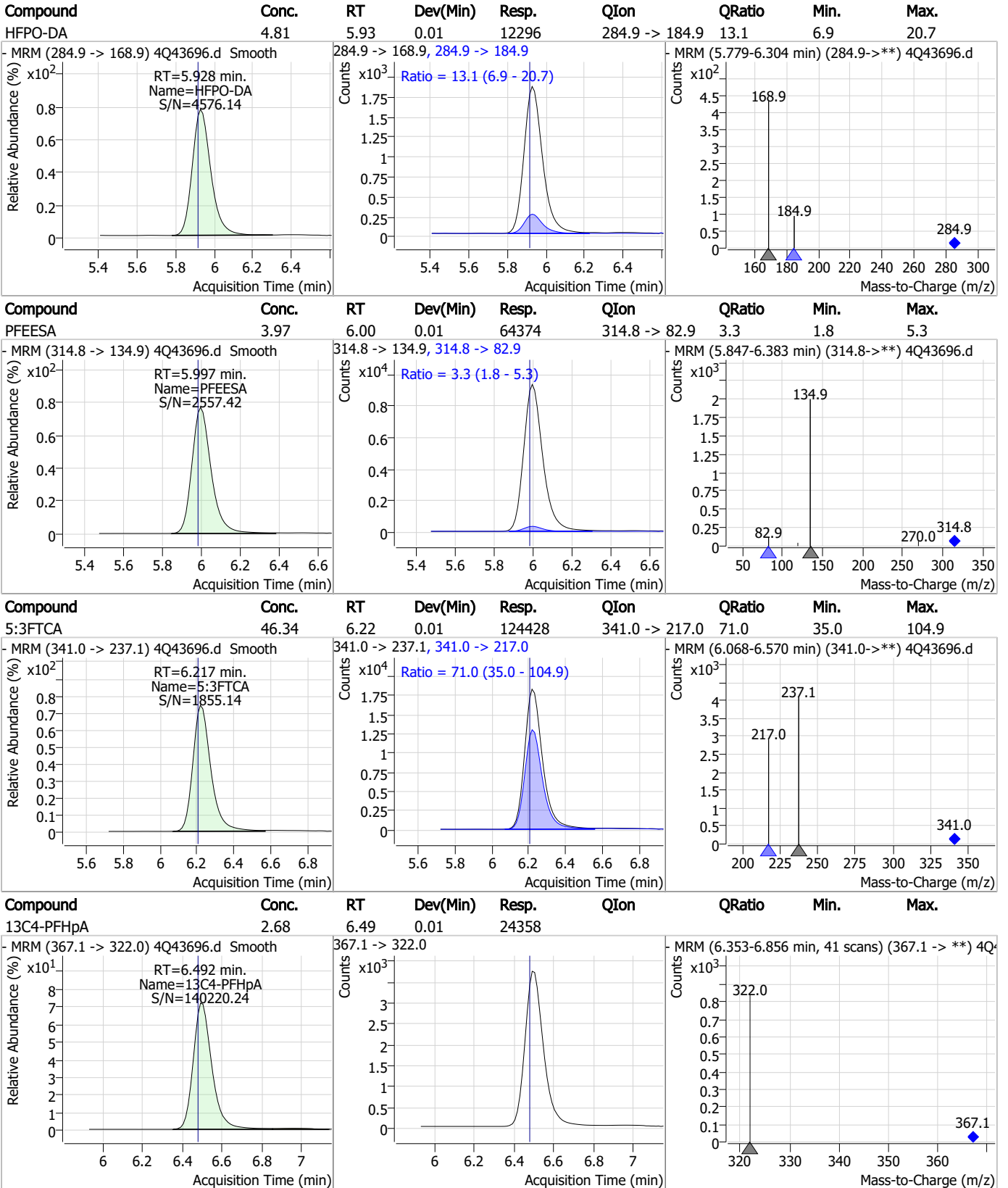
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.26	5.56	0.01	41957	313.0 -> 118.9	3.2	1.5	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.57	5.93	0.01	25837				



Perfluorinated Compounds by LC/MS/MS

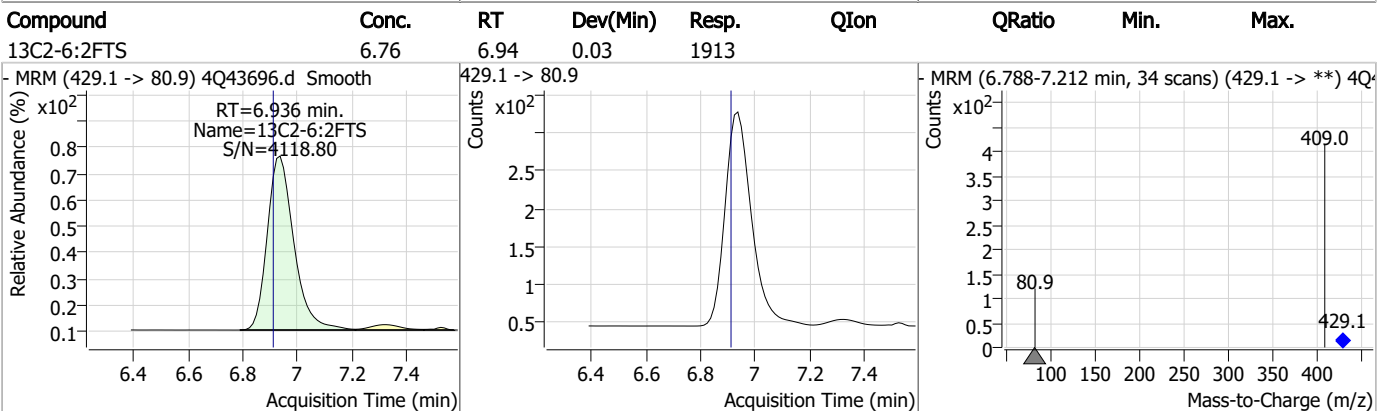
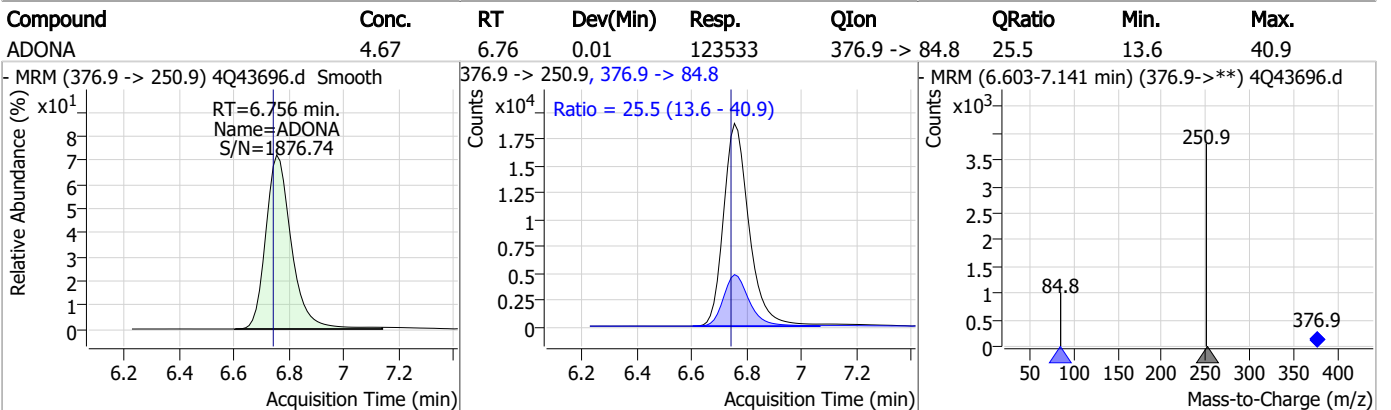
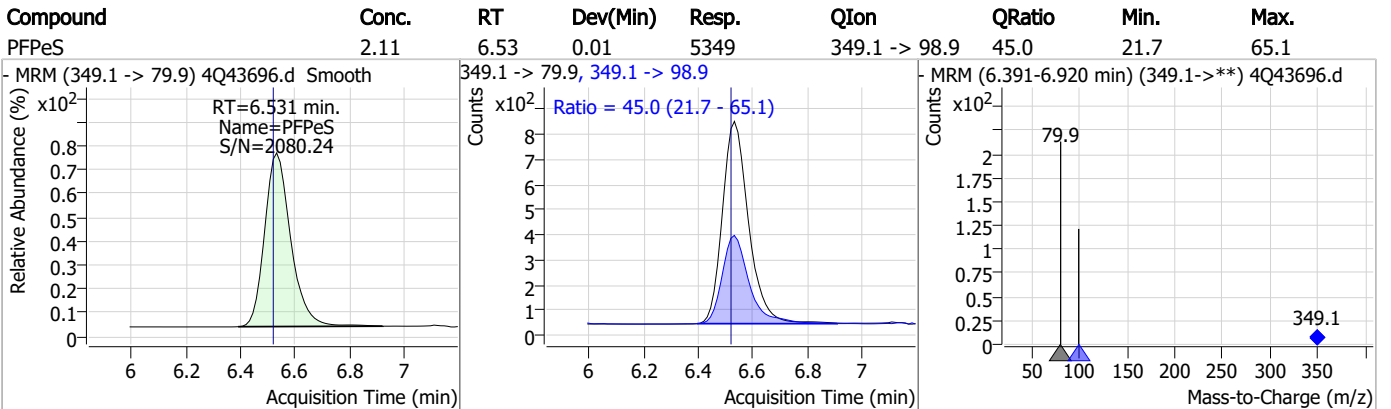
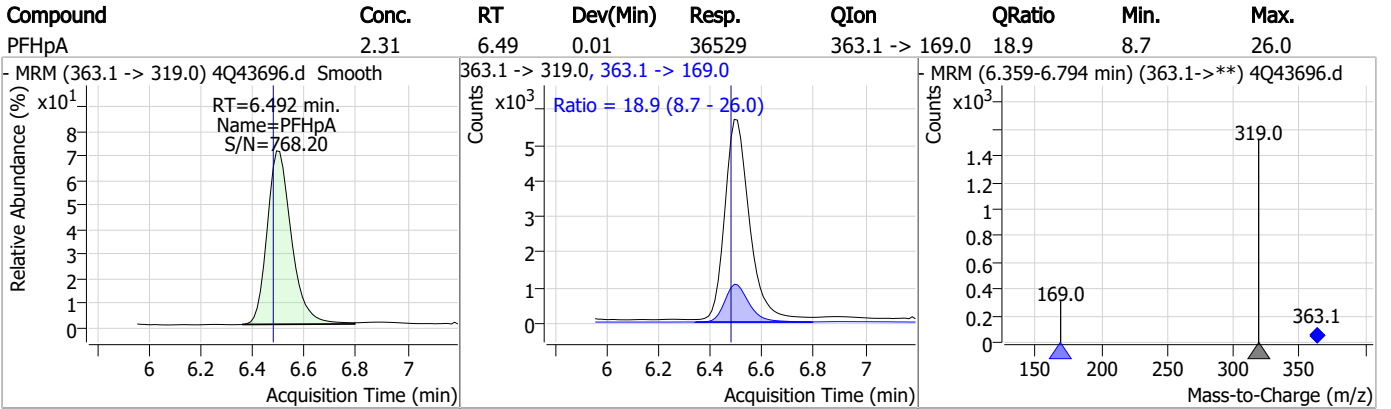


7.3.1

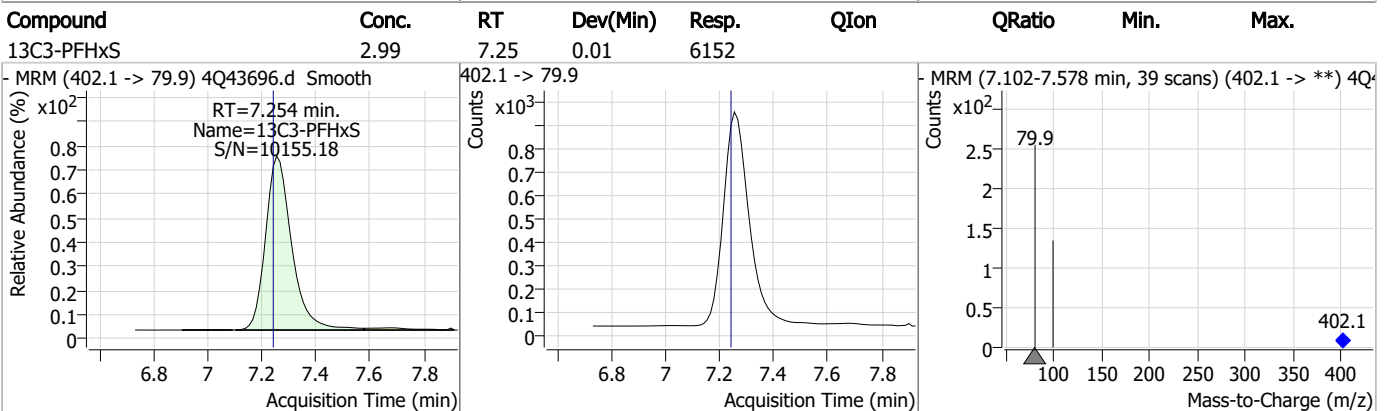
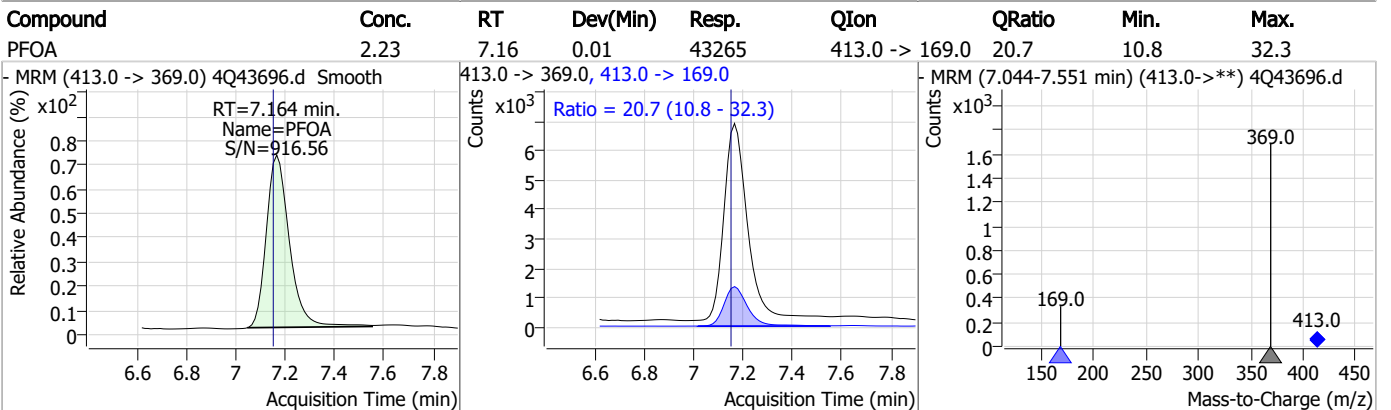
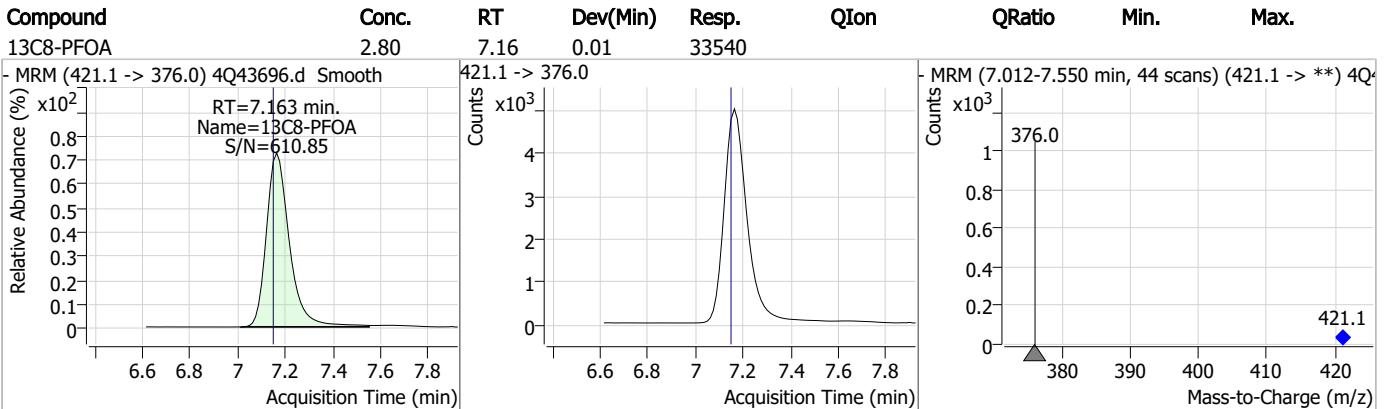
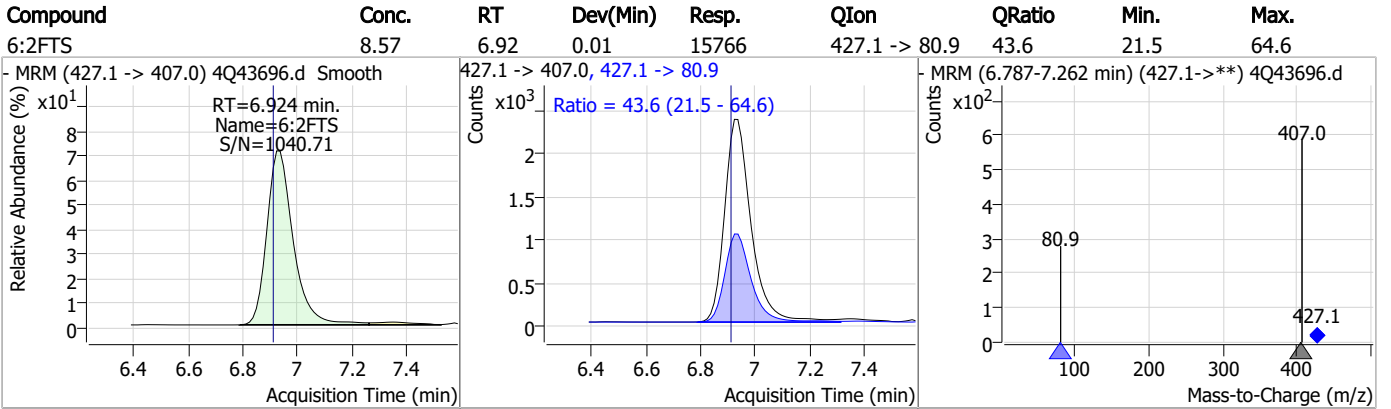
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Perfluorinated Compounds by LC/MS/MS



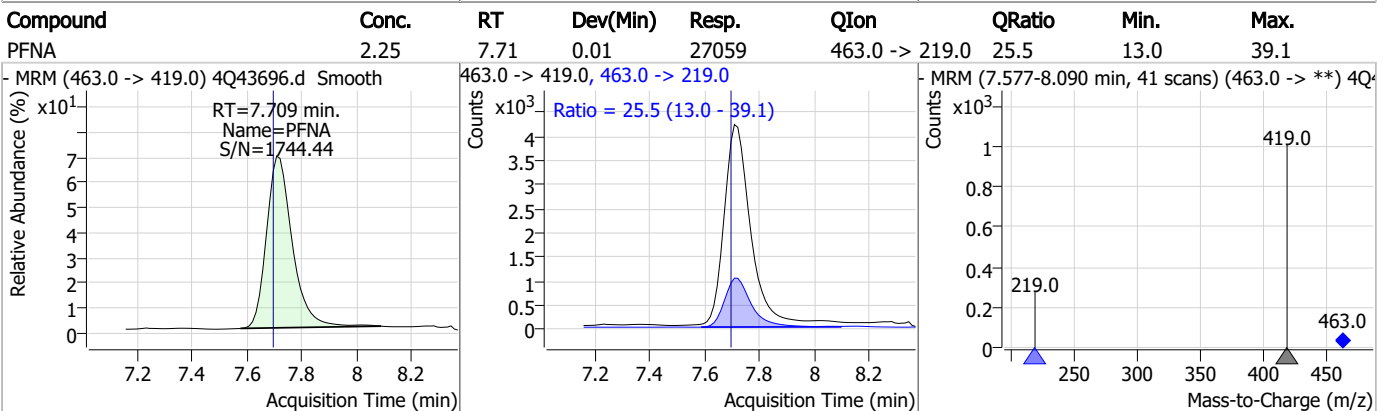
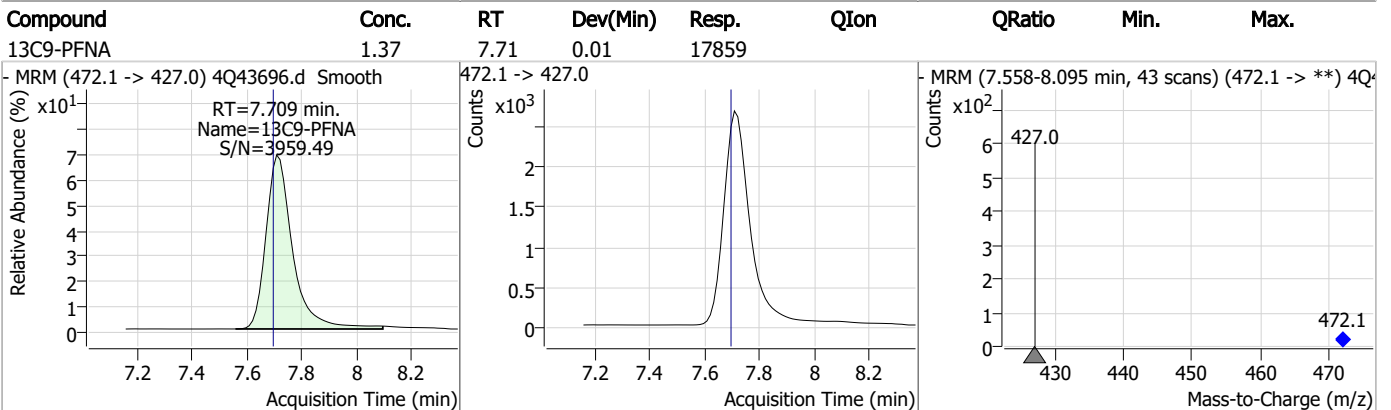
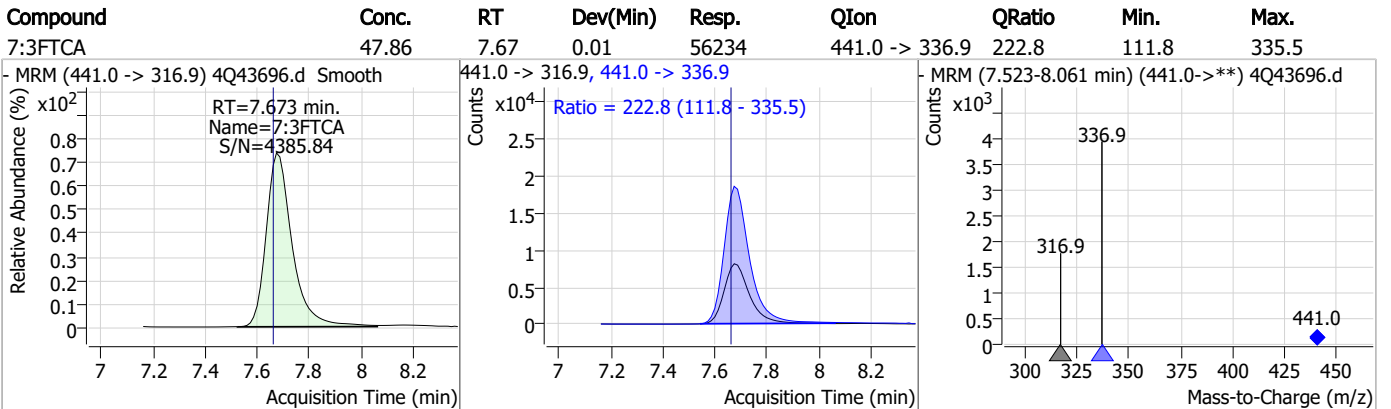
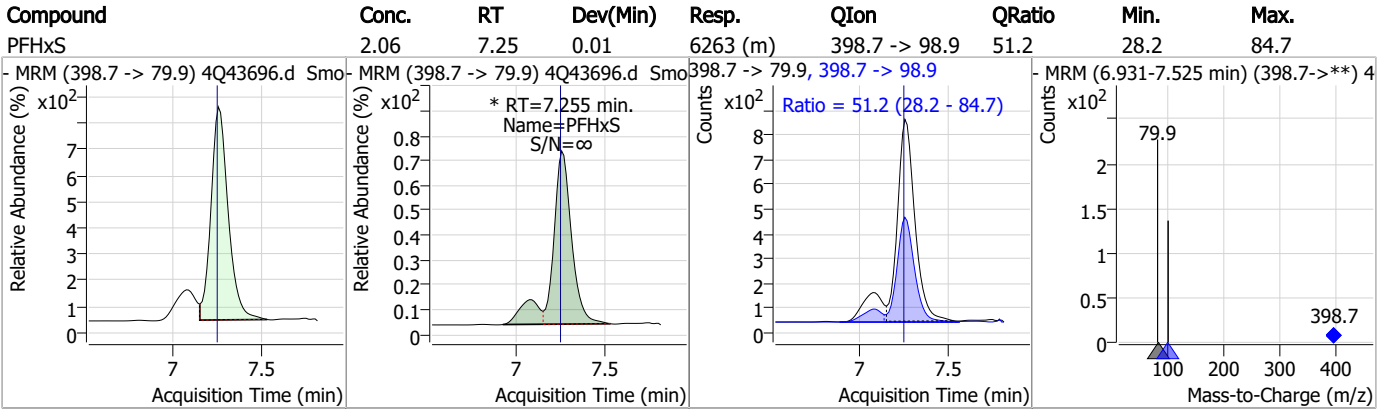
Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS

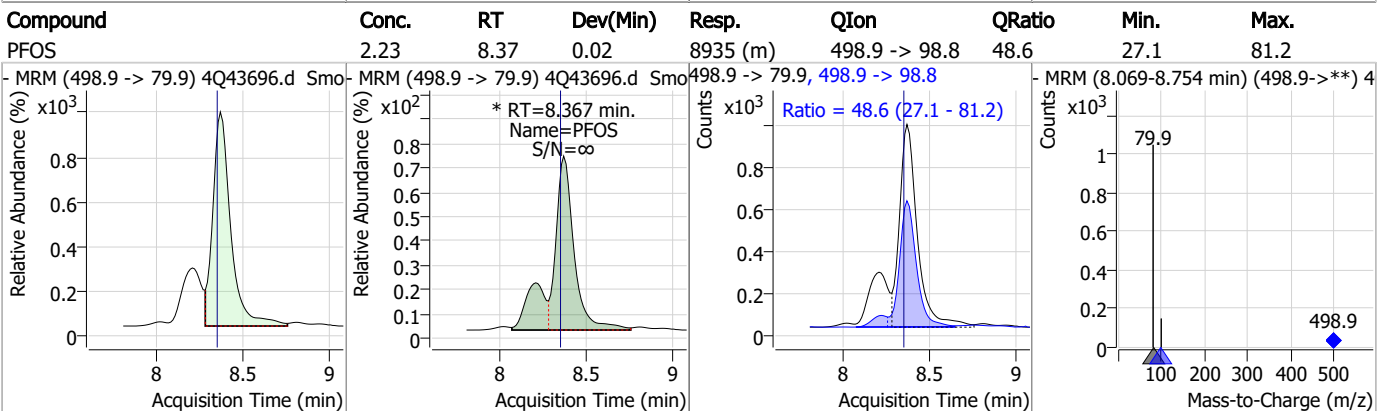
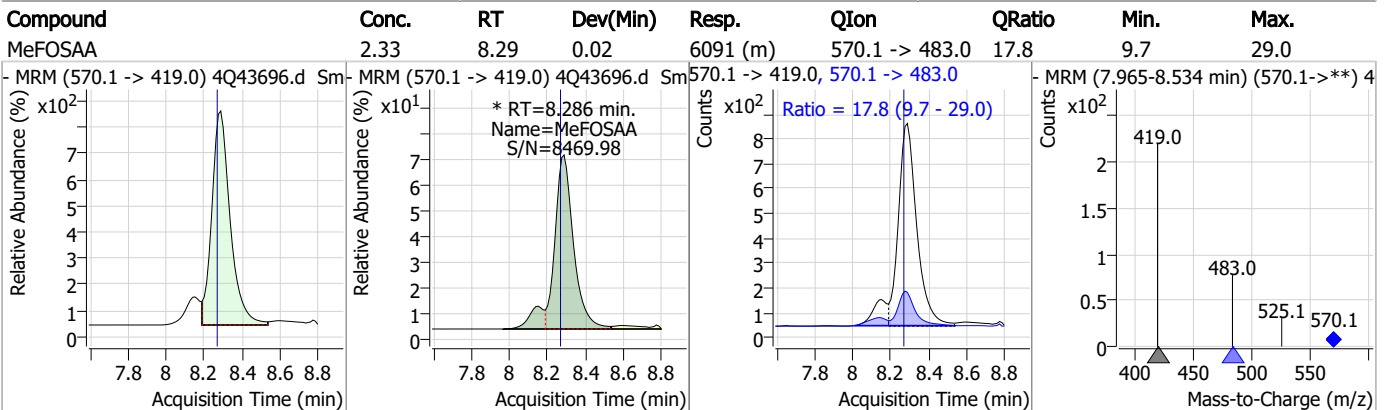
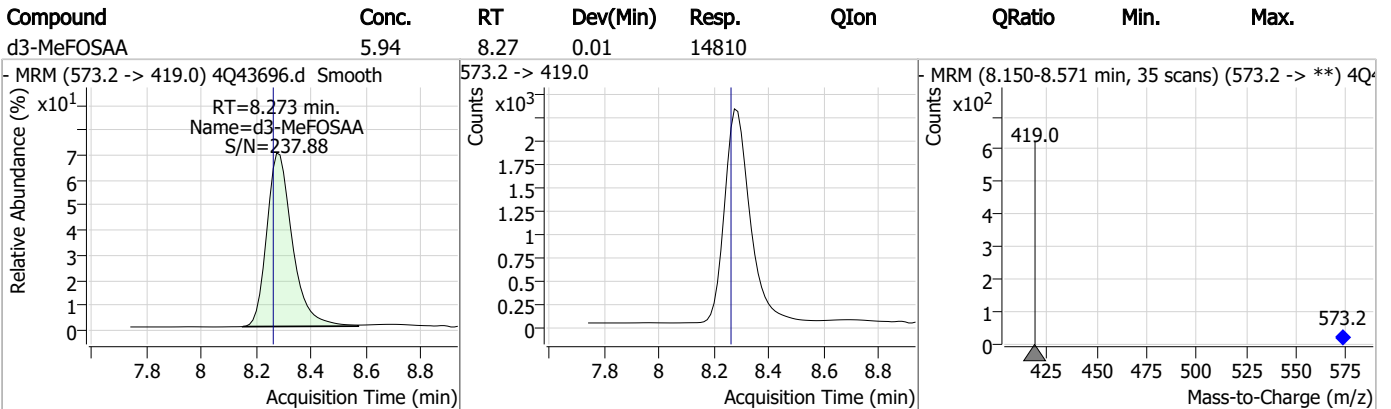
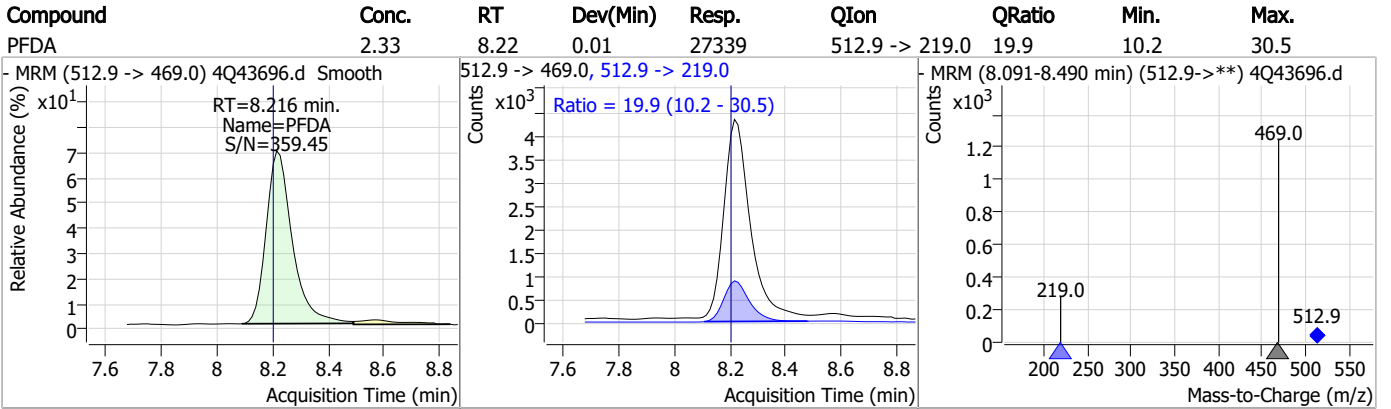


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	2.25	7.85	0.02	6487	449.0 -> 98.9	58.4	27.6	82.8
13C2-8:2FTS	6.53	8.00	0.01	3316	529.1 -> 80.9			
8:2FTS	9.16	8.00	0.01	17041	527.1 -> 80.8	42.4	21.2	63.6
13C6-PFDA	1.35	8.22	0.01	15711	519.1 -> 474.1			

7.3.1
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Perfluorinated Compounds by LC/MS/MS

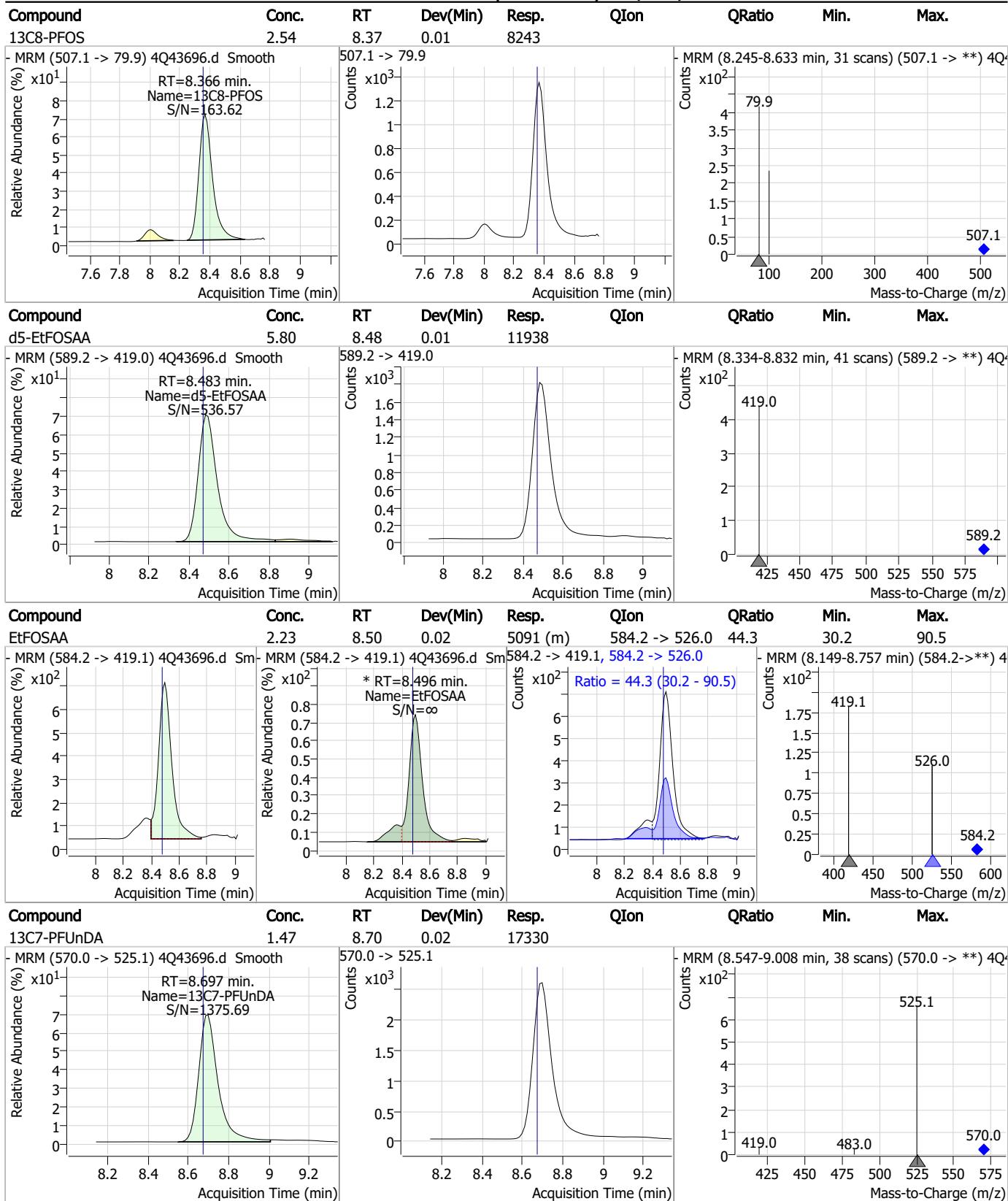


7.3.1

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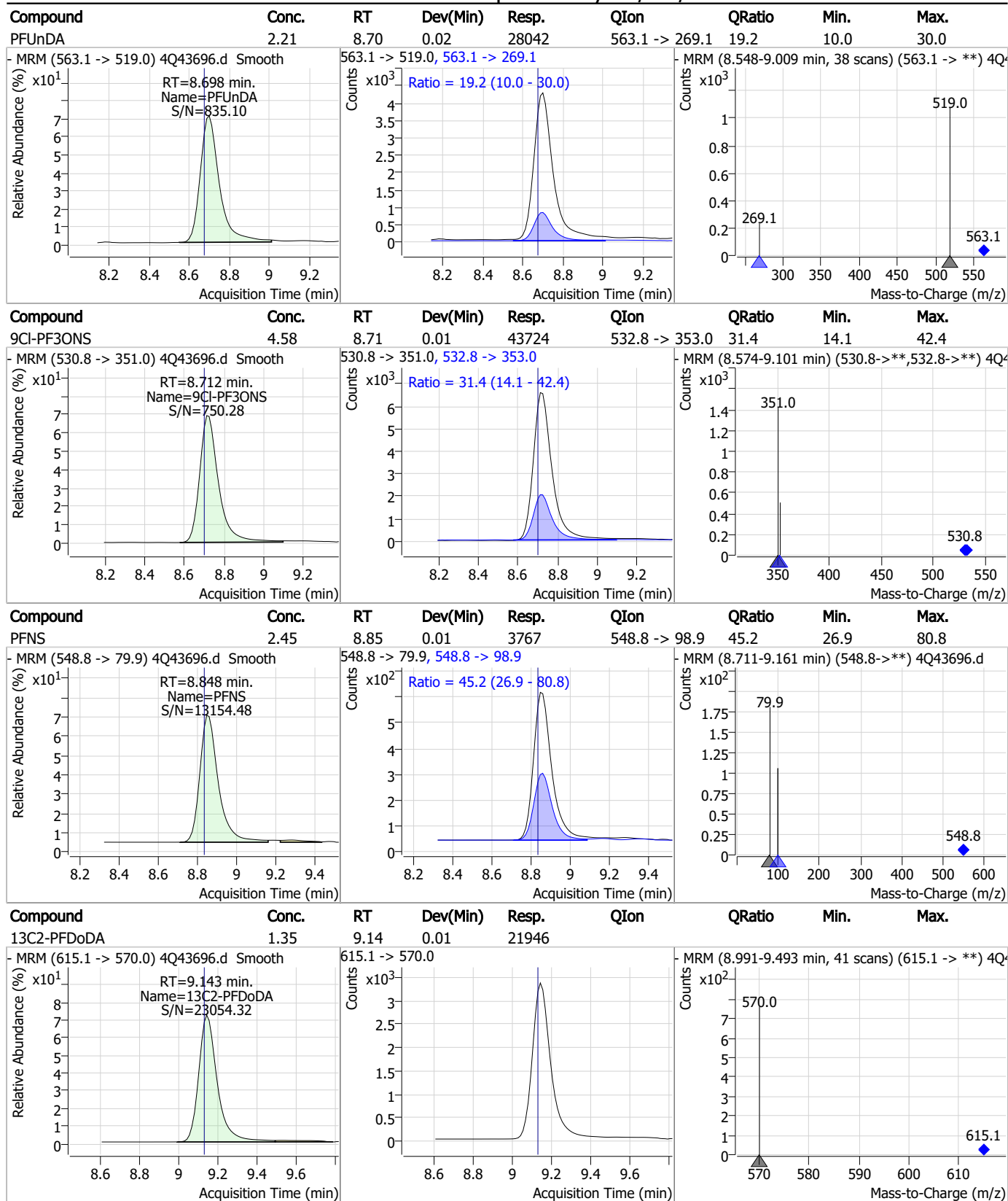


Perfluorinated Compounds by LC/MS/MS



7.3.1
7

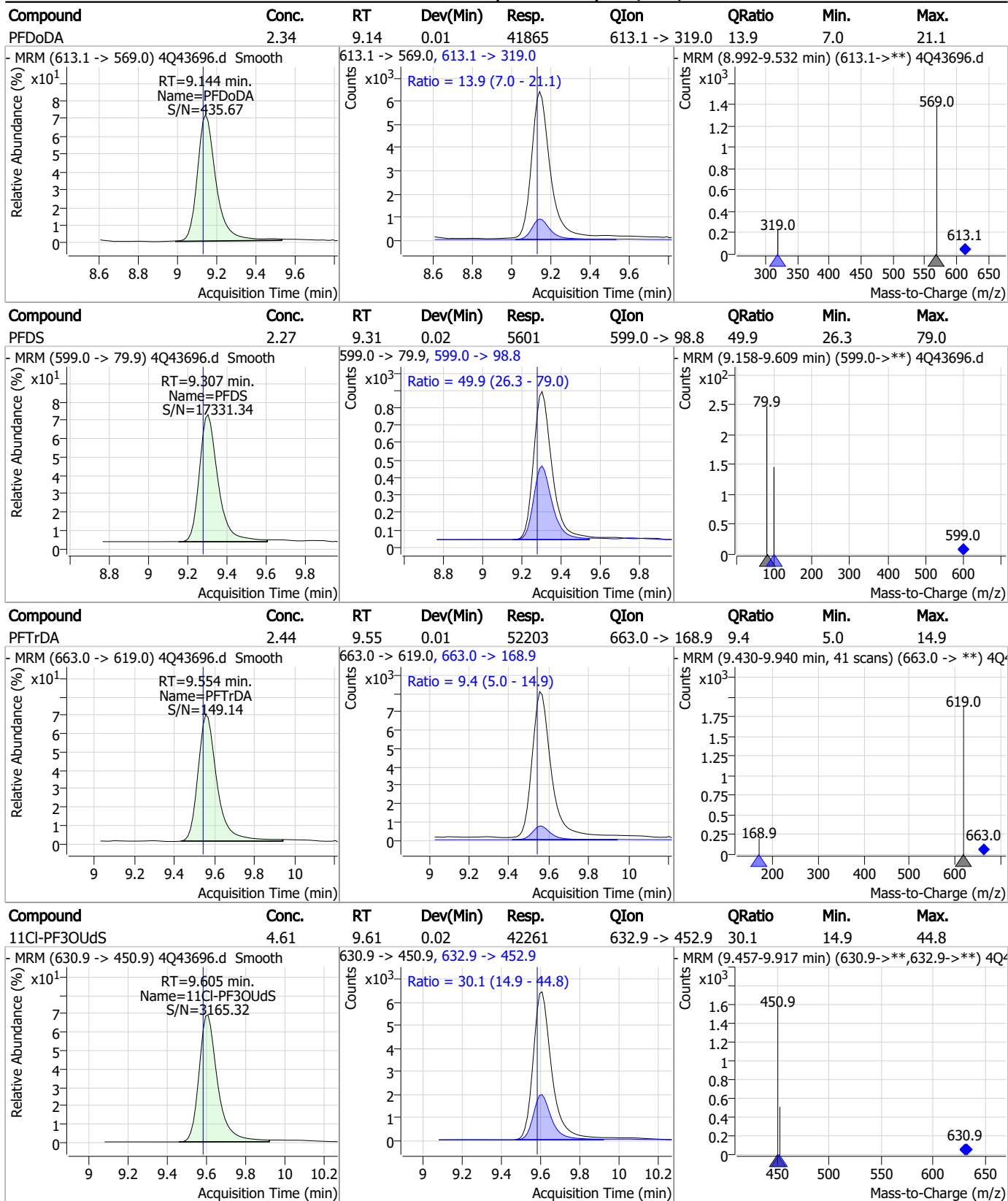
Perfluorinated Compounds by LC/MS/MS



7.3.1
7

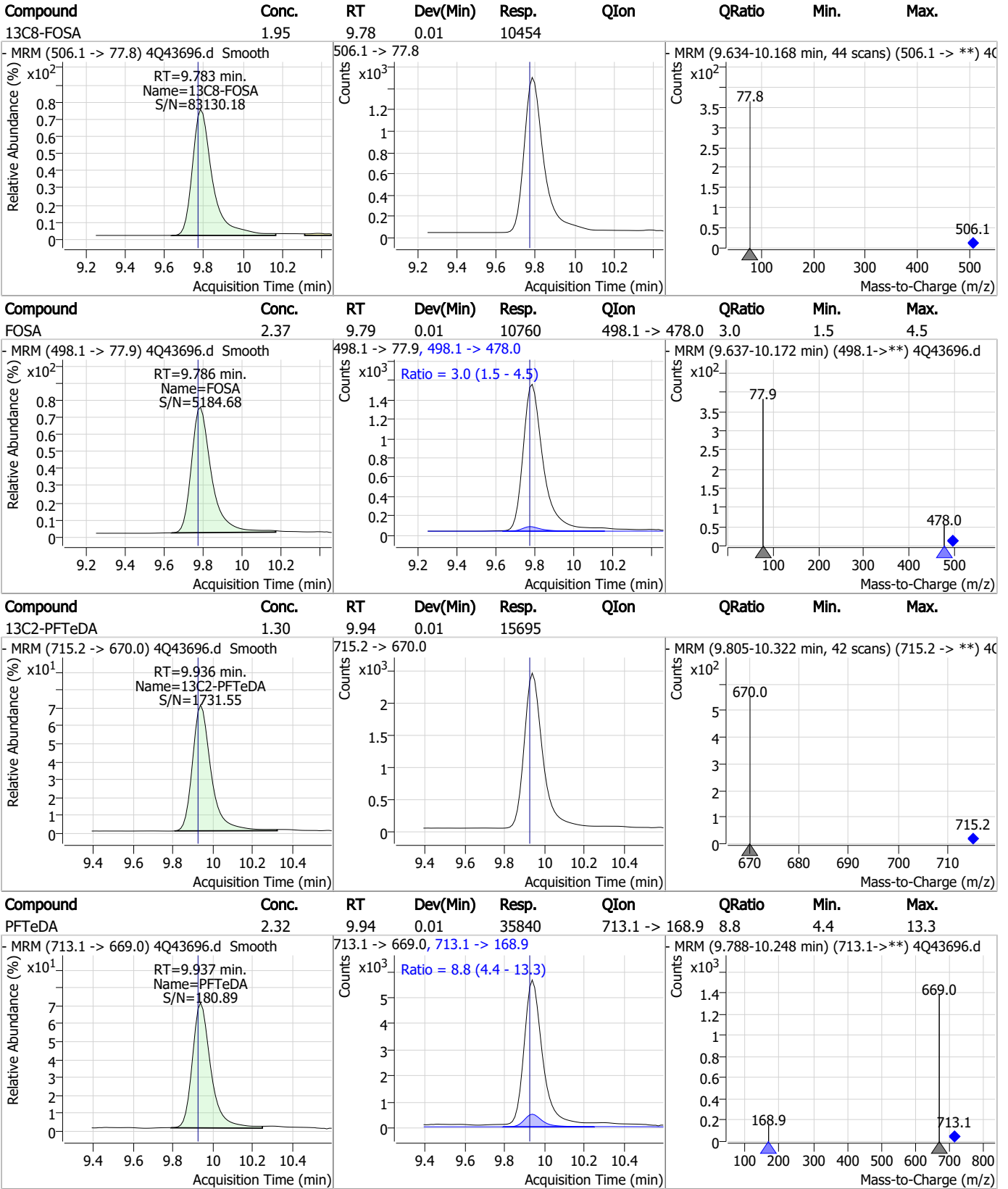


Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Perfluorinated Compounds by LC/MS/MS



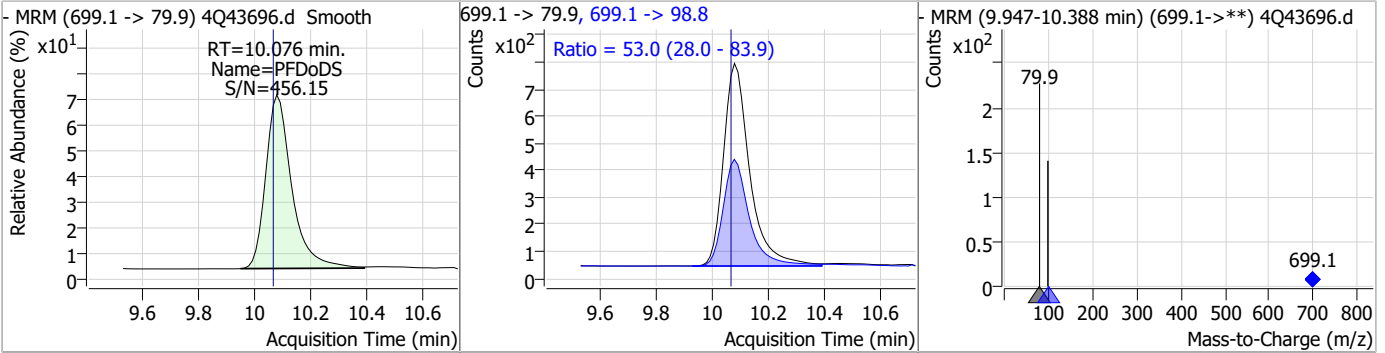
7.3.1

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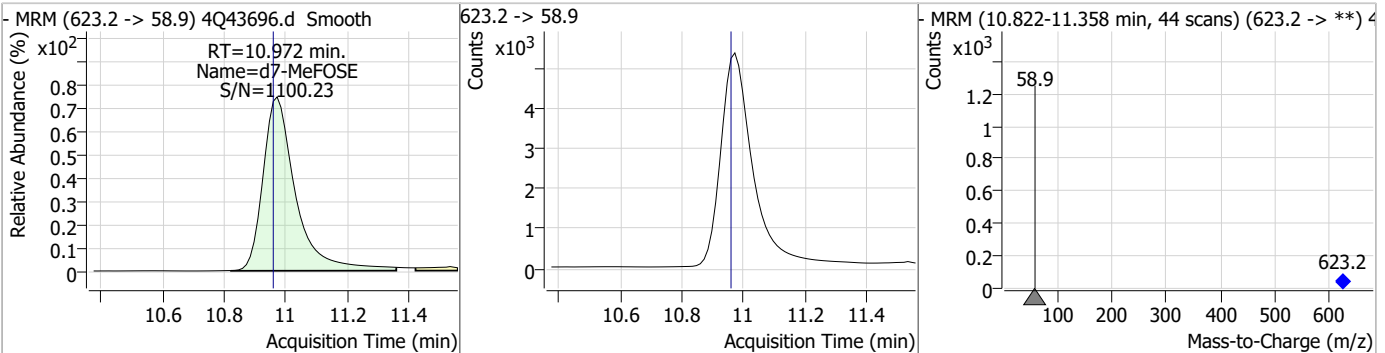


Perfluorinated Compounds by LC/MS/MS

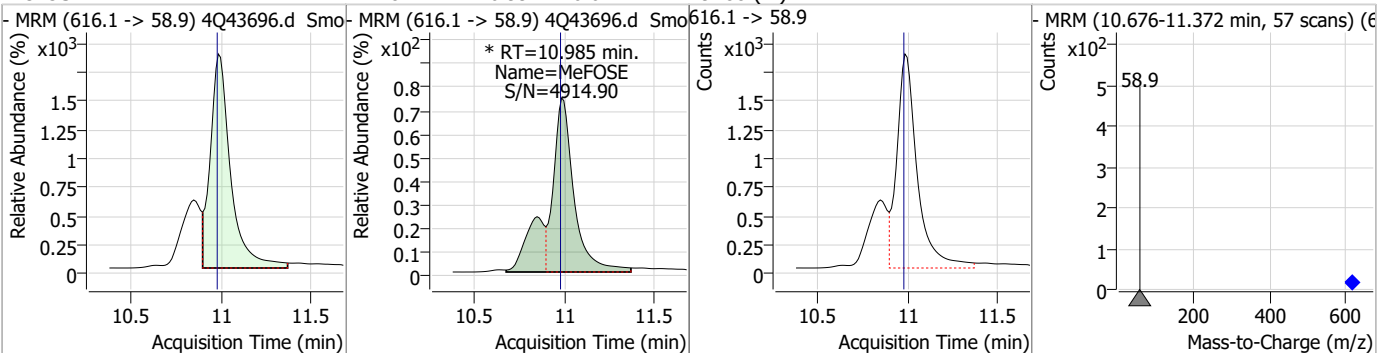
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.22	10.08	0.01	4818	699.1 -> 98.8	53.0	28.0	83.9



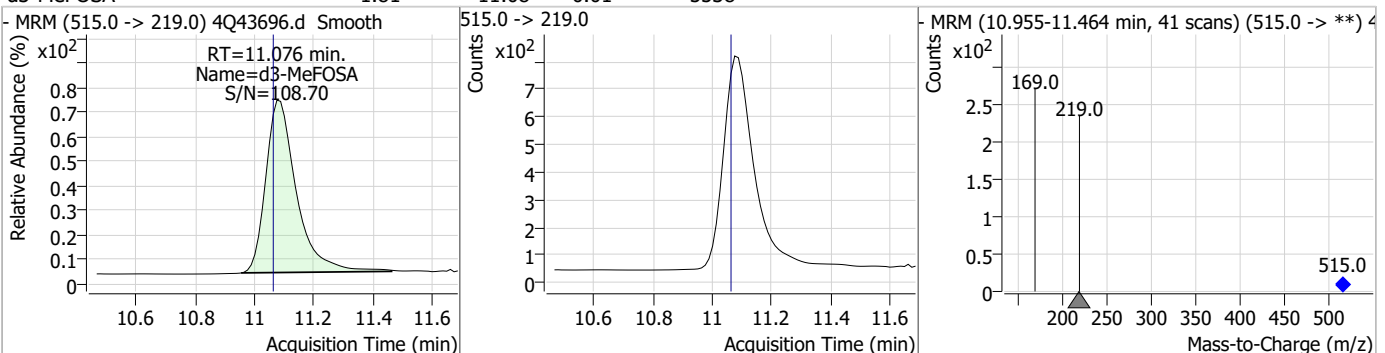
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	15.39	10.97	0.01	39260				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.87	10.99	0.01	19188 (m)				

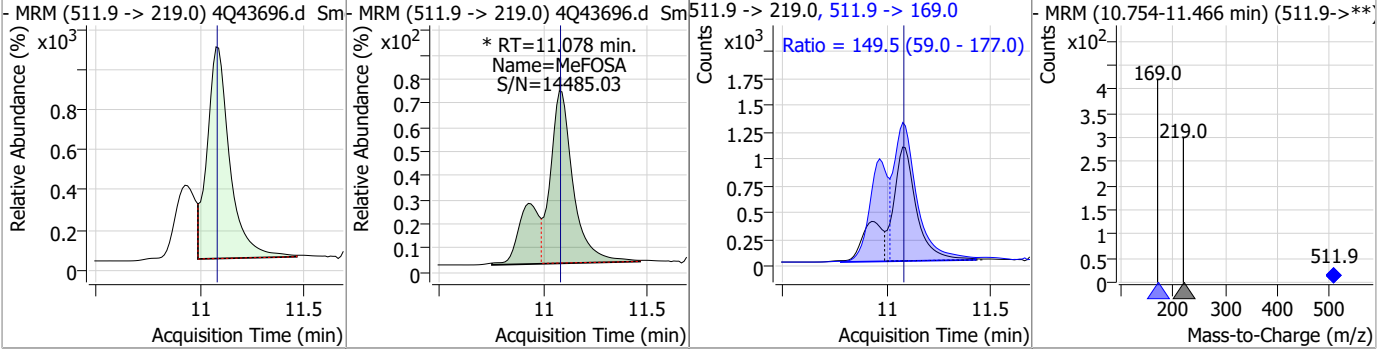


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.81	11.08	0.01	5538				

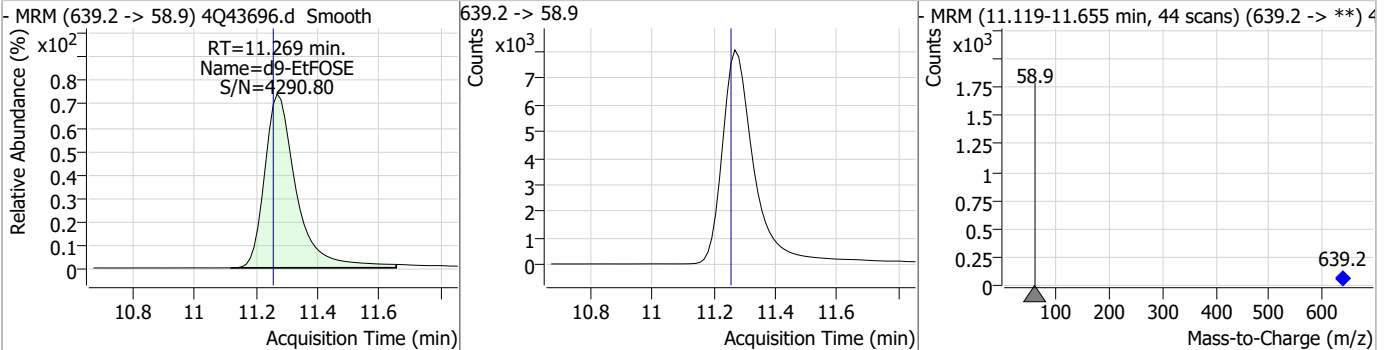


Perfluorinated Compounds by LC/MS/MS

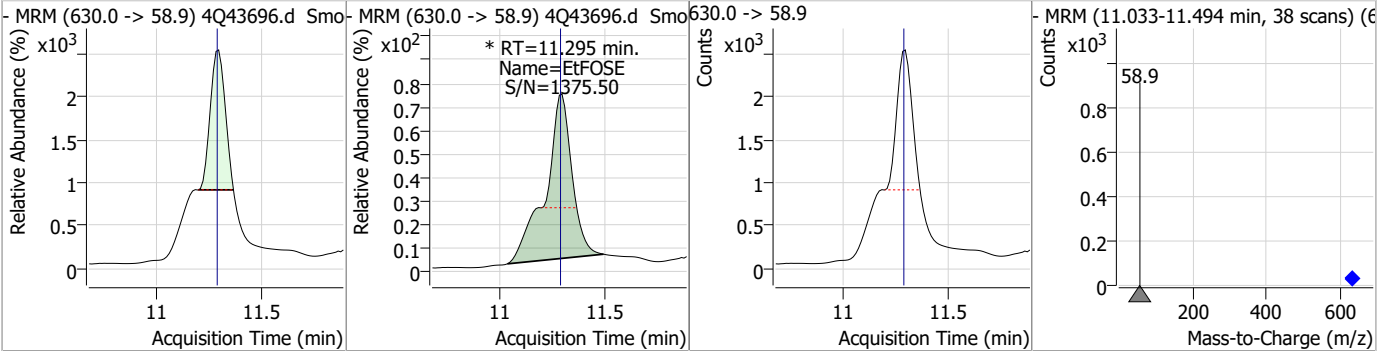
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.84	11.08	0.00	10574 (m)	511.9 -> 169.0	149.5	59.0	177.0



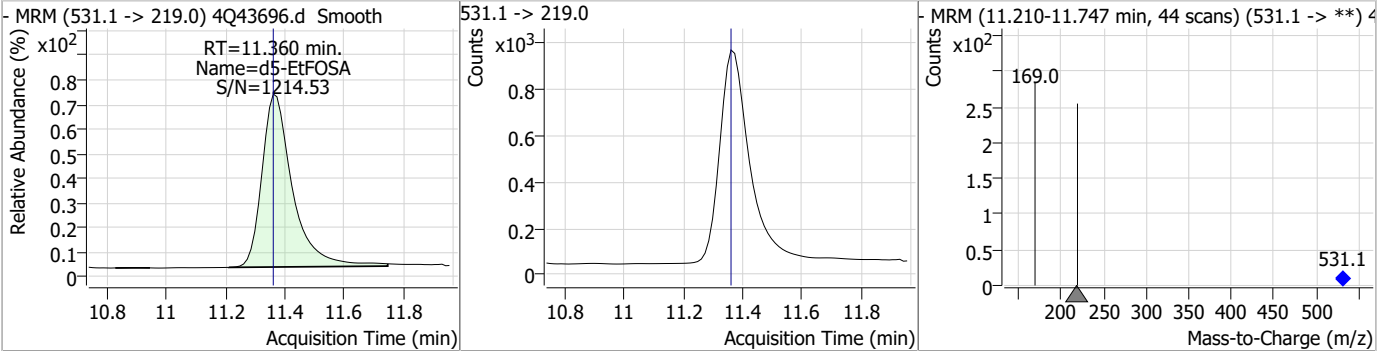
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	17.54	11.27	0.01	57089				



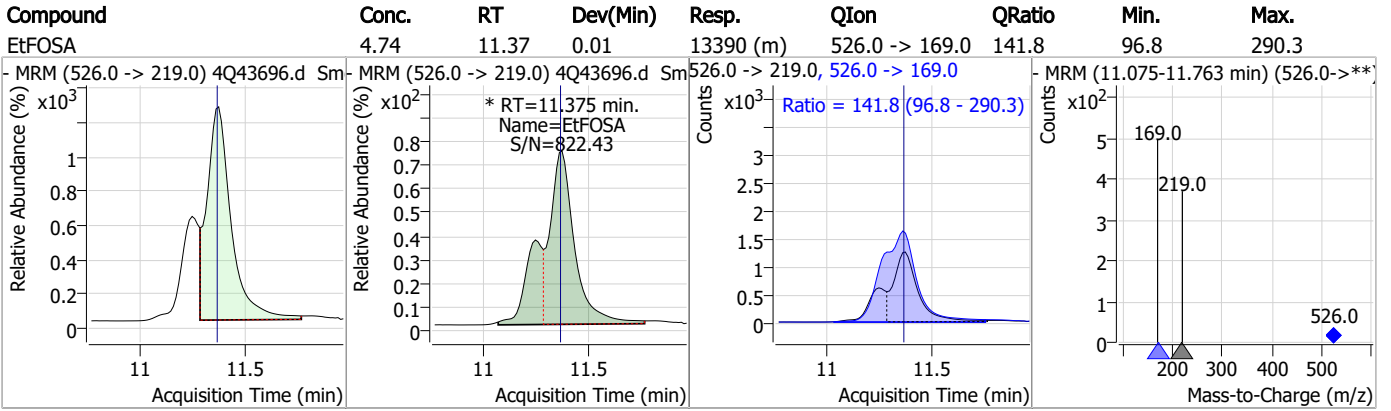
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	9.87	11.29	0.01	20875 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.85	11.36	0.00	6611				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: OP96548-BS Method: EPA DRAFT 1633
Lab FileID: 4Q43696.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 16:08 Supervisor approved: 04/27/23 16:58 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.50	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSE	1691-99-2		11.29	Split peak
EtFOSA	4151-50-2		11.38	Split peak

7.3.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43697.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 4:22:23 PM
 Sample Name : op96548-llbs:3
 Vial : P3-A4
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q630,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	100356	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	63668	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	49417	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	25979	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	34621	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	18989	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	16367	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	17303	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	22045	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	15179	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	9007	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10998	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	5872	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8402	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1260	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	2190	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3082	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14633	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	27507	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	11755	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	33947	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	51139	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	5668	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	4541	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7645	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	50278	5.00 µg/L	0.000
18O2-PFHxS	7.265	403.0 -> 83.9	3702	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	34816	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14222	1.25 µg/L	0.012
13C5-PFNA	7.721	468.0 -> 423.0	17408	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	36016	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1260	6.49 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.7%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2190	7.72 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 154.4%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3082	6.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.2%		
13C2-PFDoDA	9.143	615.1 -> 570.0	22045	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C2-PFTeDA	9.936	715.2 -> 670.0	15179	1.16 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C3-PFBS	5.464	302.1 -> 79.9	10998	2.91 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 116.5%		
13C3-PFHxS	7.254	402.1 -> 79.9	5872	2.85 µg/L	0.012

7.32
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 = 114.0%	
13C4-PFBA	2.936	216.8 -> 171.9	100356	11.55 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 115.5%	
13C4-PFHpA	6.492	367.1 -> 322.0	25979	2.95 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	49417	2.88 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.3%	
13C5-PFPeA	4.387	268.3 -> 223.0	63668	5.84 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.8%	
13C6-PFDA	8.216	519.1 -> 474.1	16367	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C7-PFUnDA	8.697	570.0 -> 525.1	17303	1.36 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.9%	
13C8-FOSA	9.783	506.1 -> 77.8	9007	1.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 69.6%	
13C8-PFOA	7.163	421.1 -> 376.0	34621	2.96 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.5%	
13C8-PFOS	8.366	507.1 -> 79.9	8402	2.68 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C9-PFNA	7.709	472.1 -> 427.0	18989	1.44 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.3%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14633	6.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 121.2%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	27507	11.62 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 116.2%	
d3-MeFOSA	11.076	515.0 -> 219.0	4541	1.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 61.4%	
d5-EtFOSAA	8.483	589.2 -> 419.0	11755	5.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.9%	
d7-MeFOSE	10.972	623.2 -> 58.9	33947	13.75 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.0%	
d9-EtFOSE	11.269	639.2 -> 58.9	51139	16.23 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 64.9%	
d5-EtFOSA	11.360	531.1 -> 219.0	5668	1.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 65.6%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	5313	2.63 µg/L	98
		327.1 -> 80.9	2244		
6:2FTS	6.936	427.1 -> 407.0	5096	2.42 µg/L	94
		427.1 -> 80.9	2004		
8:2FTS	8.003	527.1 -> 507.0	5278	3.05 µg/L	97
		527.1 -> 80.8	2133		
EtFOSAA	8.496	584.2 -> 419.1	1507	0.67 µg/L	m 85
		584.2 -> 526.0	744		
FOSA	9.786	498.1 -> 77.9	2589	0.66 µg/L	96
		498.1 -> 478.0	108		
MeFOSAA	8.286	570.1 -> 419.0	1549	0.60 µg/L	m 100
		570.1 -> 483.0	302		
PFBA	2.932	212.8 -> 168.9	7612	2.58 µg/L	100
PFBS	5.465	298.7 -> 79.9	2998	0.60 µg/L	95
		298.7 -> 98.8	1263		
PFDA	8.216	512.9 -> 469.0	8607	0.71 µg/L	94
		512.9 -> 219.0	1528		
PFDODA	9.144	613.1 -> 569.0	12344	0.69 µg/L	100
		613.1 -> 319.0	1725		
PFDS	9.307	599.0 -> 79.9	1606	0.64 µg/L	94

7.3.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	776			
PFHpA	6.492	363.1 -> 319.0	10574	0.63	µg/L	99
		363.1 -> 169.0	1874			
PFHpS	7.848	449.0 -> 79.9	2088	0.71	µg/L	90
		449.0 -> 98.9	1000			
PFHxA	5.562	313.0 -> 269.0	12601	0.68	µg/L	99
		313.0 -> 118.9	430			
PFHxS	7.267	398.7 -> 79.9	1806	0.62	µg/L	m 91
		398.7 -> 98.9	905			
PFNA	7.709	463.0 -> 419.0	7675	0.60	µg/L	98
		463.0 -> 219.0	2069			
PFNS	8.861	548.8 -> 79.9	1042	0.66	µg/L	84
		548.8 -> 98.9	442			
PFOA	7.164	413.0 -> 369.0	11193	0.56	µg/L	95
		413.0 -> 169.0	2662			
PFOS	8.367	498.9 -> 79.9	2462	0.60	µg/L	m 90
		498.9 -> 98.8	1162			
PFPeA	4.389	263.0 -> 219.0	20122	1.32	µg/L	100
PFPeS	6.531	349.1 -> 79.9	1495	0.62	µg/L	96
		349.1 -> 98.9	684			
PFTeDA	9.937	713.1 -> 669.0	9249	0.62	µg/L	98
		713.1 -> 168.9	898			
PFTrDA	9.554	663.0 -> 619.0	14711	0.69	µg/L	100
		663.0 -> 168.9	1472			
PFUnDA	8.698	563.1 -> 519.0	8258	0.65	µg/L	91
		563.1 -> 269.1	1309			
11CI-PF3OUdS	9.605	630.9 -> 450.9	11973	1.23	µg/L	100
		632.9 -> 452.9	3586			
9CI-PF3ONS	8.725	530.8 -> 351.0	12190	1.20	µg/L	99
		532.8 -> 353.0	3512			
ADONA	6.756	376.9 -> 250.9	34319	1.22	µg/L	100
		376.9 -> 84.8	9400			
HFPO-DA	5.928	284.9 -> 168.9	3569	1.31	µg/L	98
		284.9 -> 184.9	468			
3:3FTCA	3.867	241.0 -> 177.0	1376	2.14	µg/L	100
		241.0 -> 117.0	134			
5:3FTCA	6.217	341.0 -> 237.1	33223	12.38	µg/L	100
		341.0 -> 217.0	23113			
7:3FTCA	7.673	441.0 -> 316.9	15649	13.33	µg/L	96
		441.0 -> 336.9	33977			
EtFOSA	11.375	526.0 -> 219.0	3126	1.29	µg/L	m 60
		526.0 -> 169.0	4201			
EtFOSE	11.282	630.0 -> 58.9	5404	2.85	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	2447	1.37	µg/L	m 76
		511.9 -> 169.0	3540			
MeFOSE	10.985	616.1 -> 58.9	4804	3.44	µg/L	m 100
PFDoDS	10.076	699.1 -> 79.9	1305	0.59	µg/L	100
		699.1 -> 98.8	734			
NFDHA	5.453	295.0 -> 201.0	1798	1.49	µg/L	95
		295.0 -> 84.9	381			
PFMBA	4.803	279.0 -> 85.1	11146	1.27	µg/L	100
PFMPA	3.540	229.0 -> 84.9	9607	1.27	µg/L	100
PFEESA	5.997	314.8 -> 134.9	18587	1.15	µg/L	99
		314.8 -> 82.9	714			

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



7.3.2
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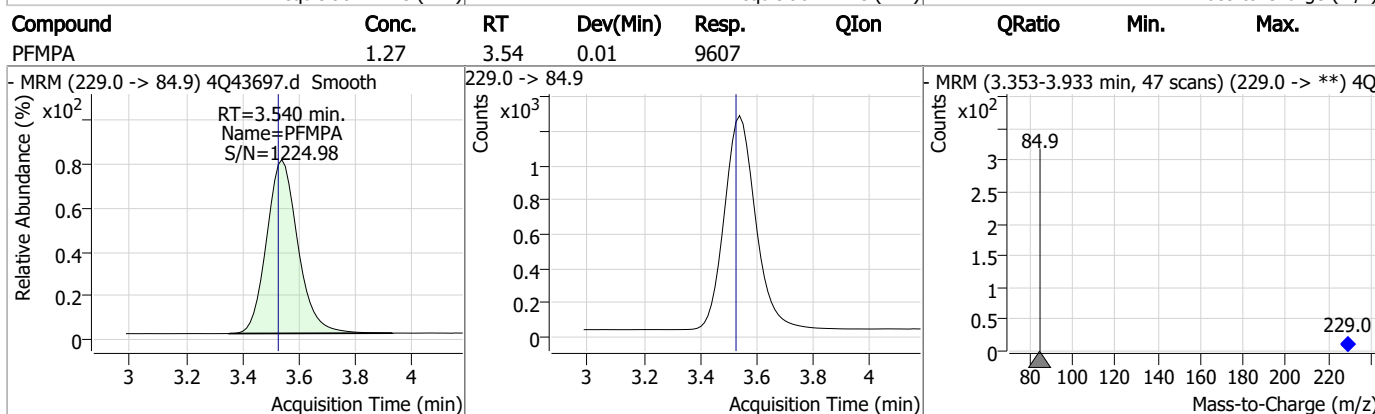
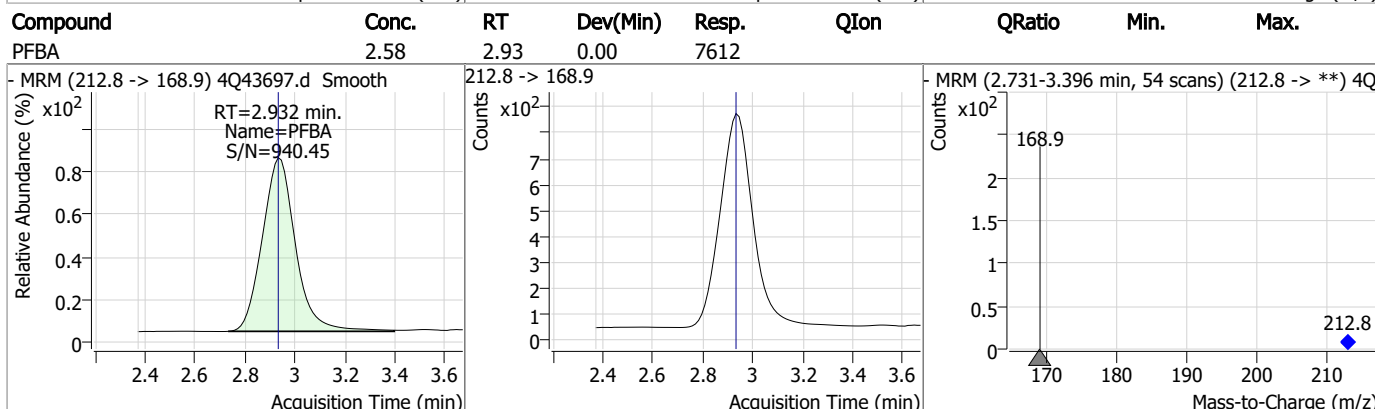
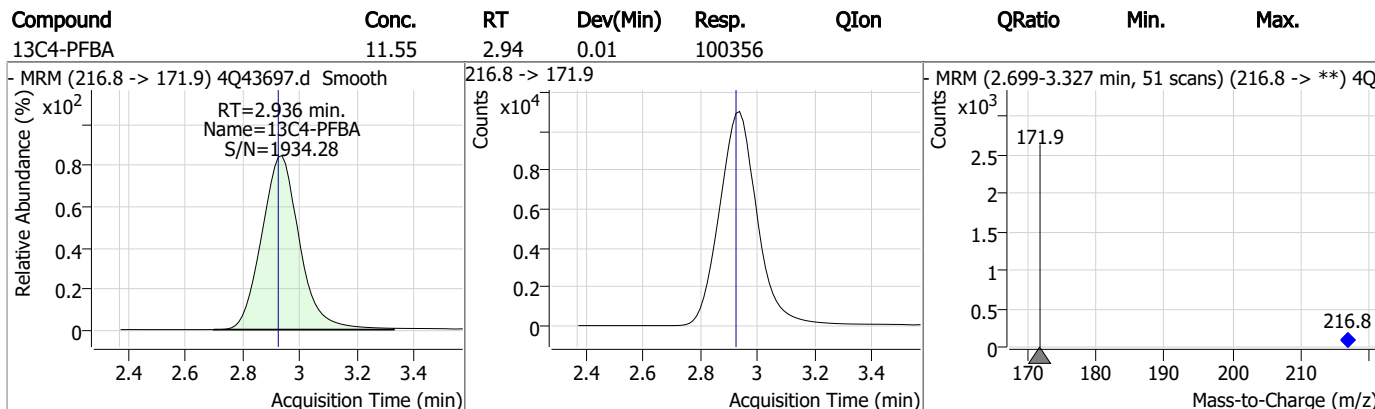
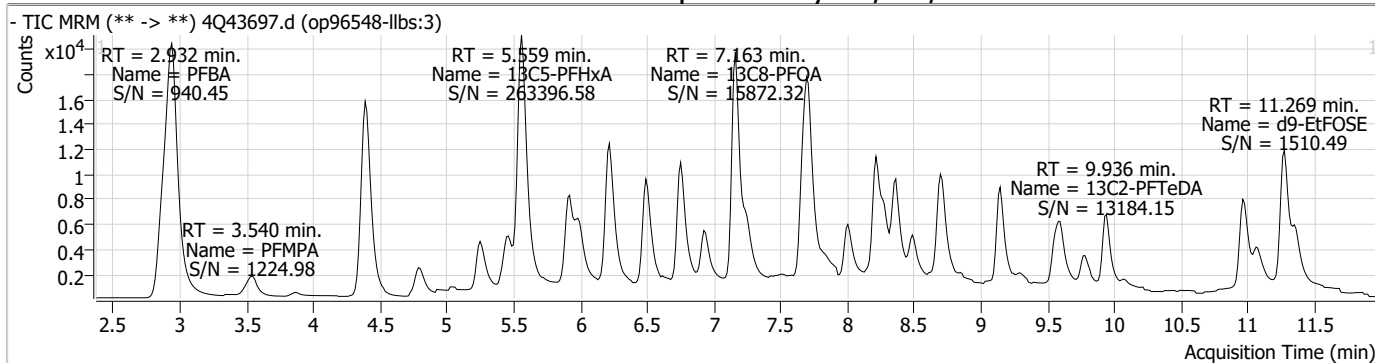
Perfluorinated Compounds by LC/MS/MS

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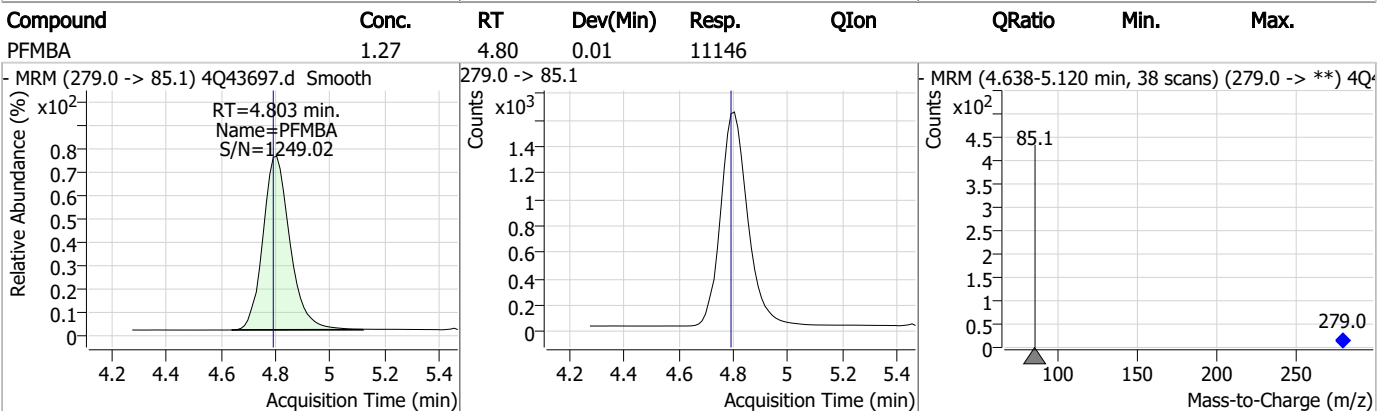
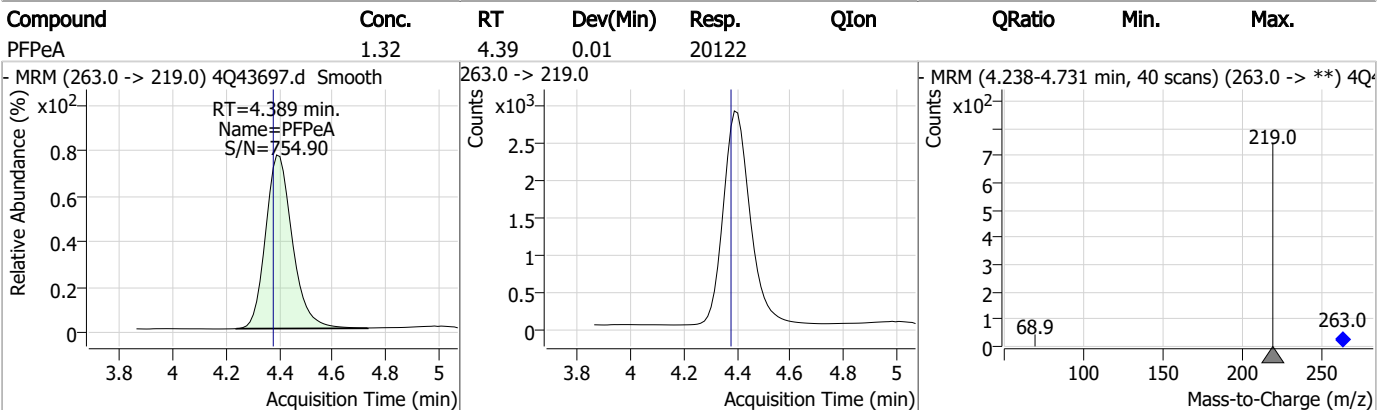
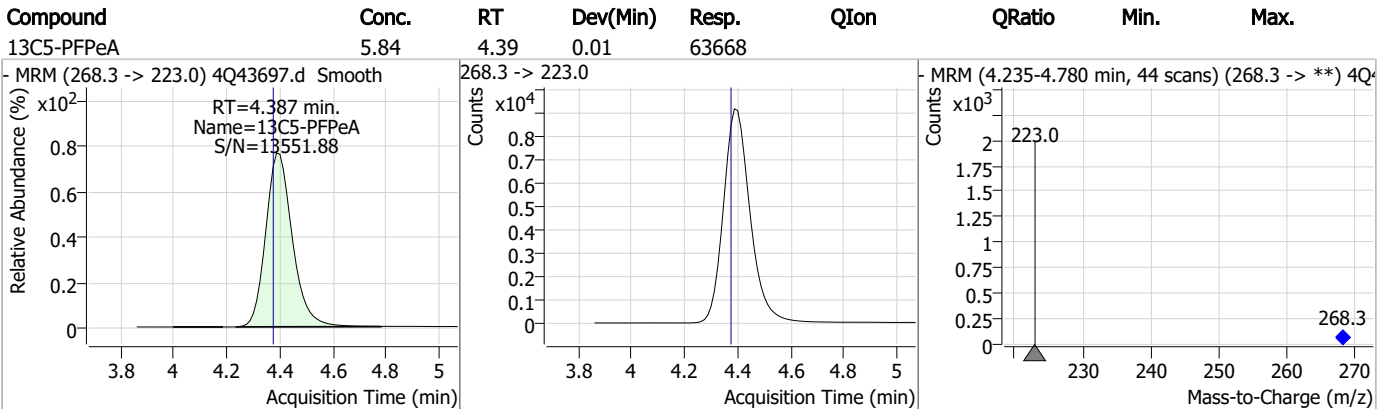
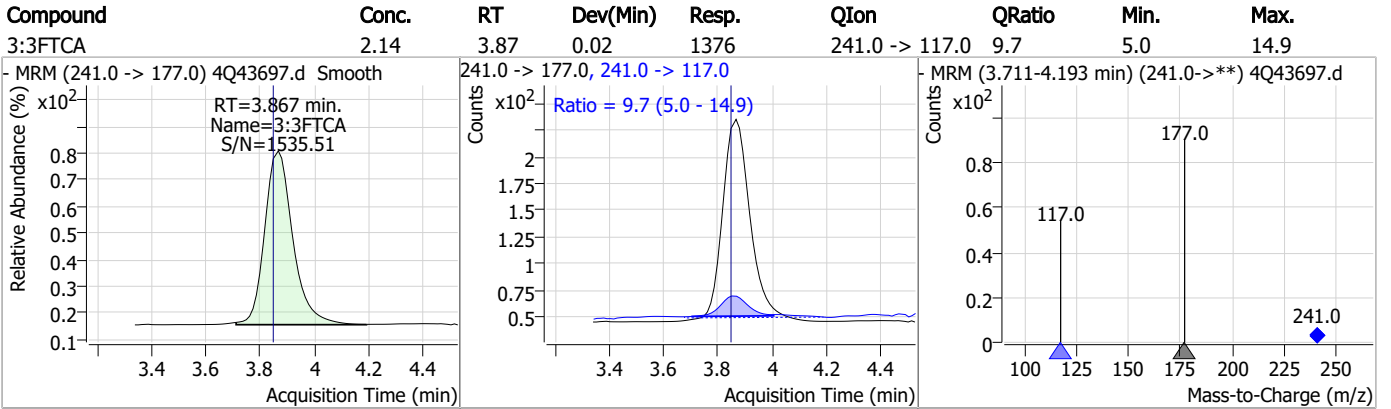
7.3.2

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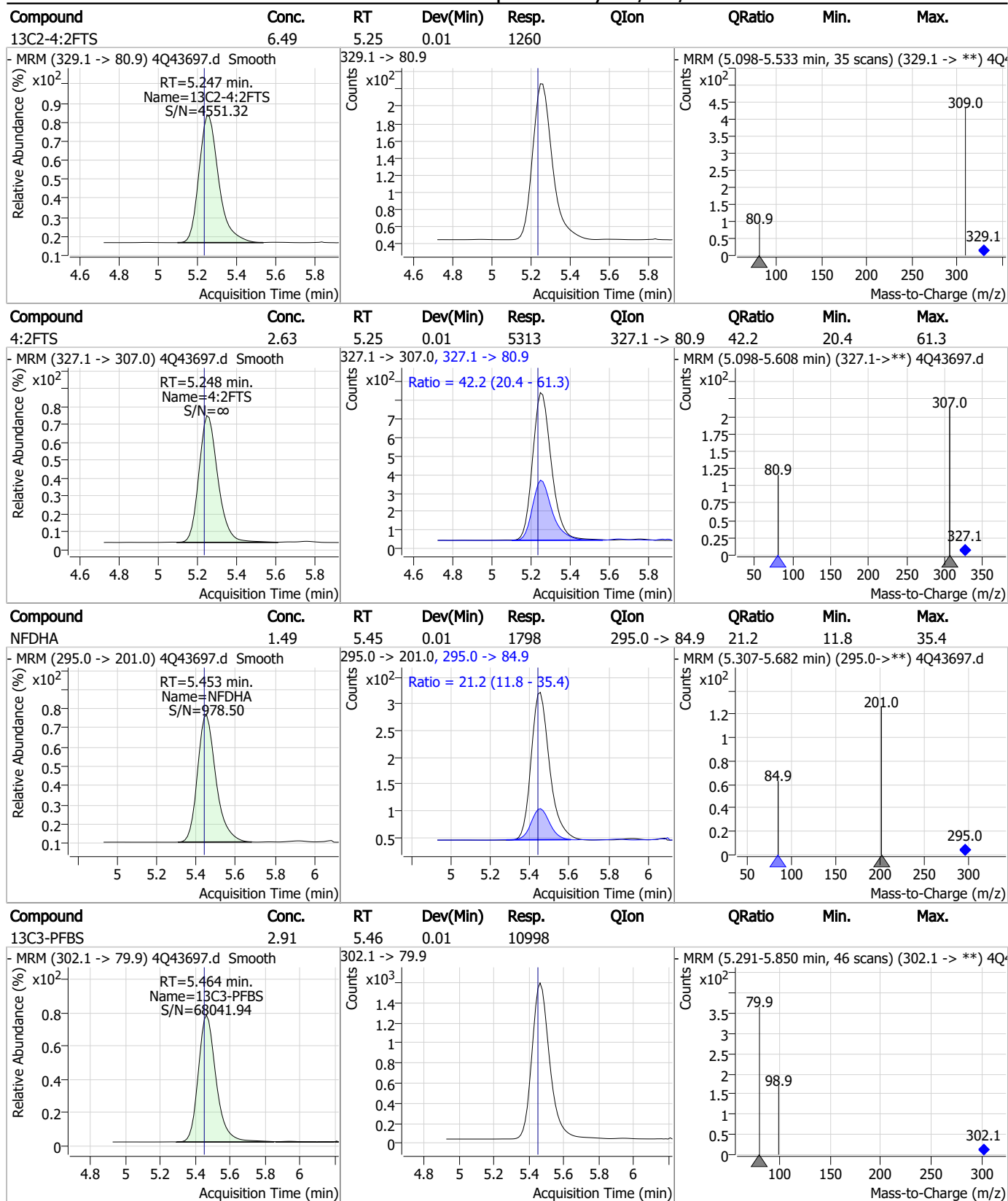
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



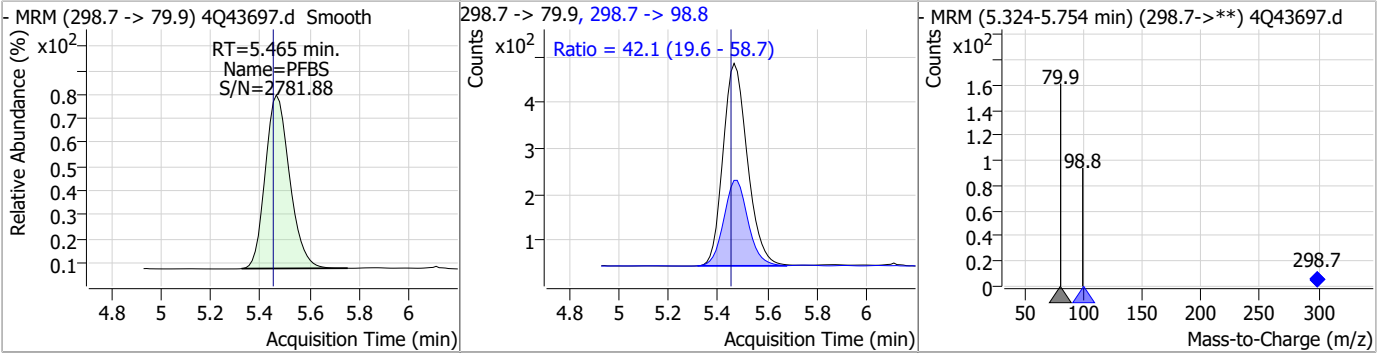
Perfluorinated Compounds by LC/MS/MS



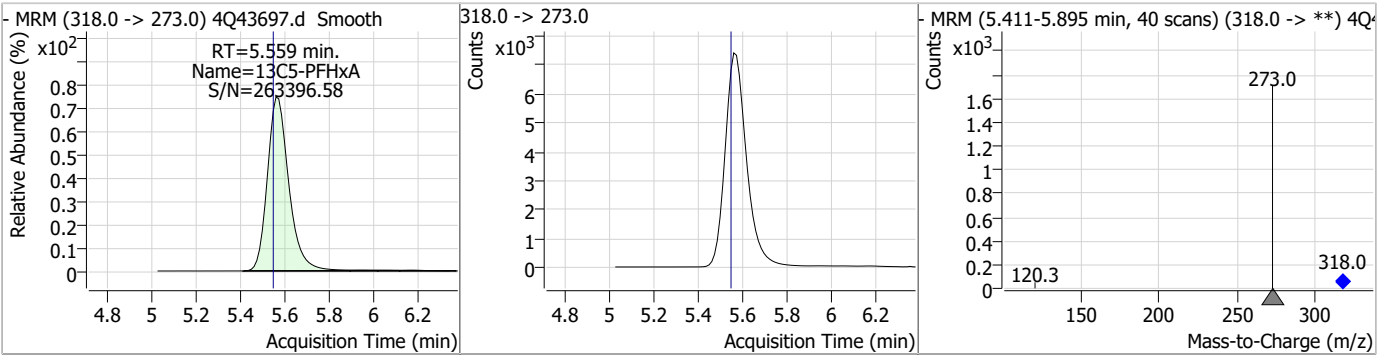
7.3.2
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Perfluorinated Compounds by LC/MS/MS

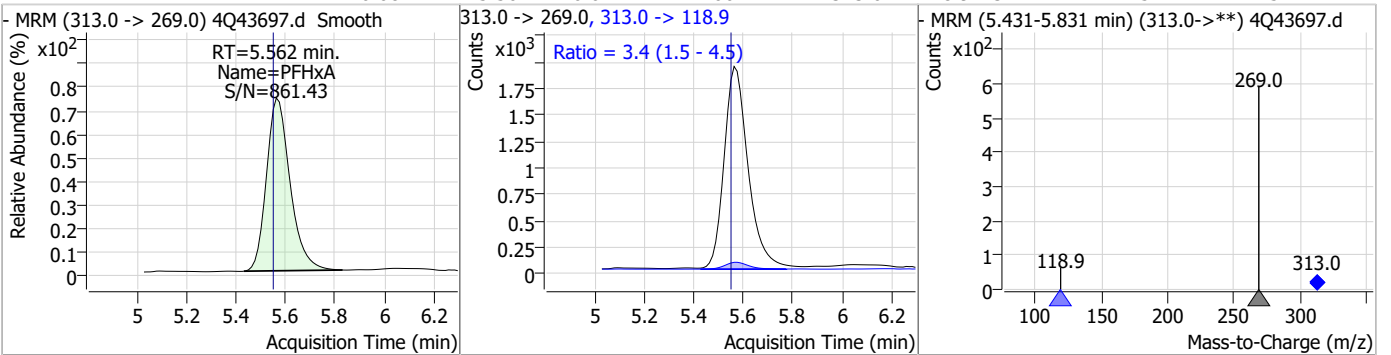
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.60	5.46	0.01	2998	298.7 -> 98.8	42.1	19.6	58.7



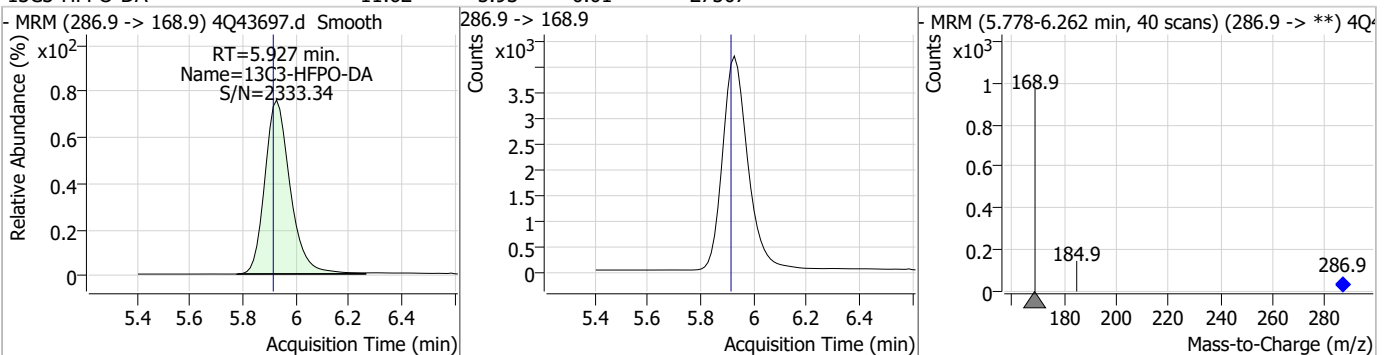
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.88	5.56	0.01	49417				



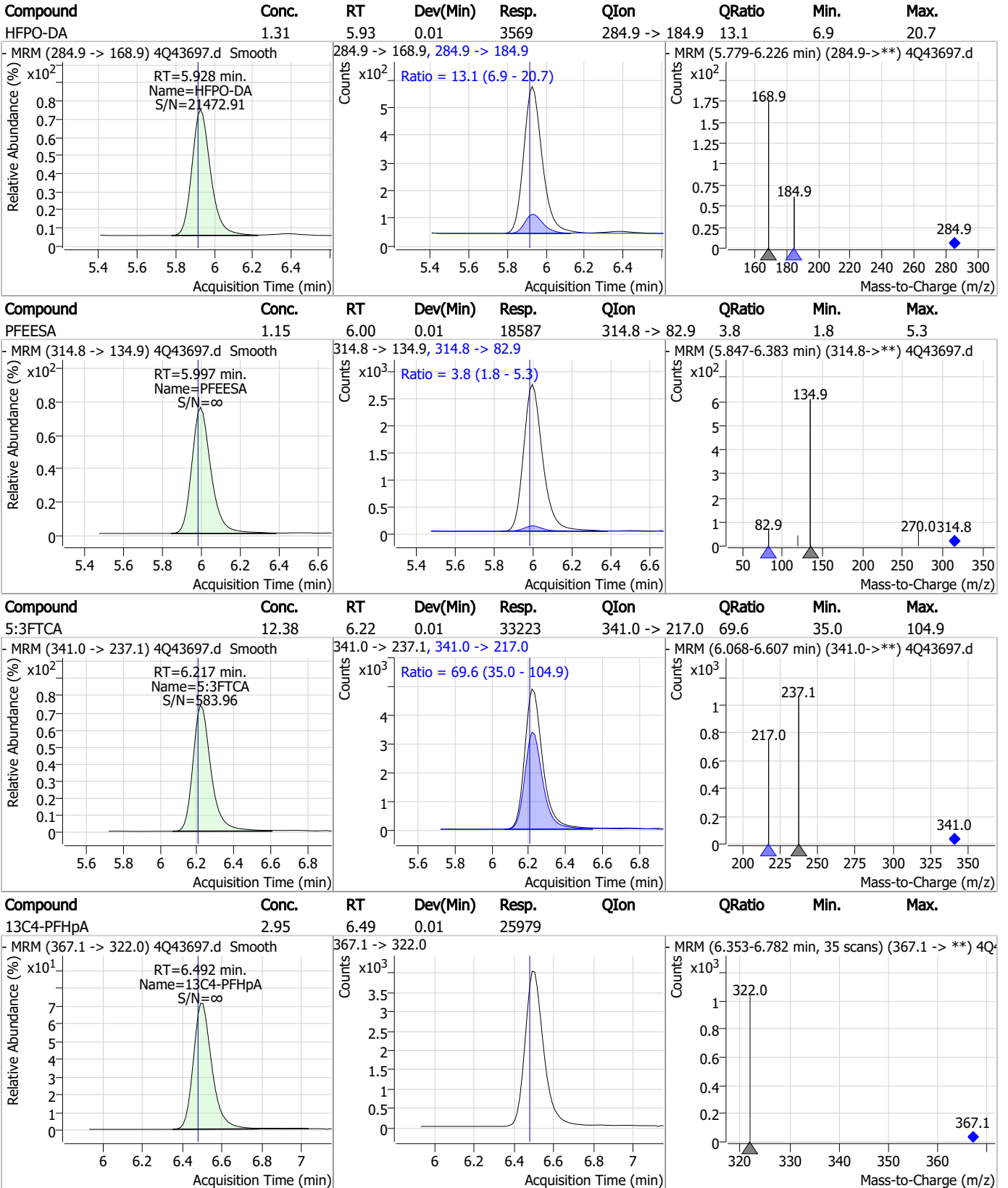
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.68	5.56	0.01	12601	313.0 -> 118.9	3.4	1.5	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	11.62	5.93	0.01	27507				



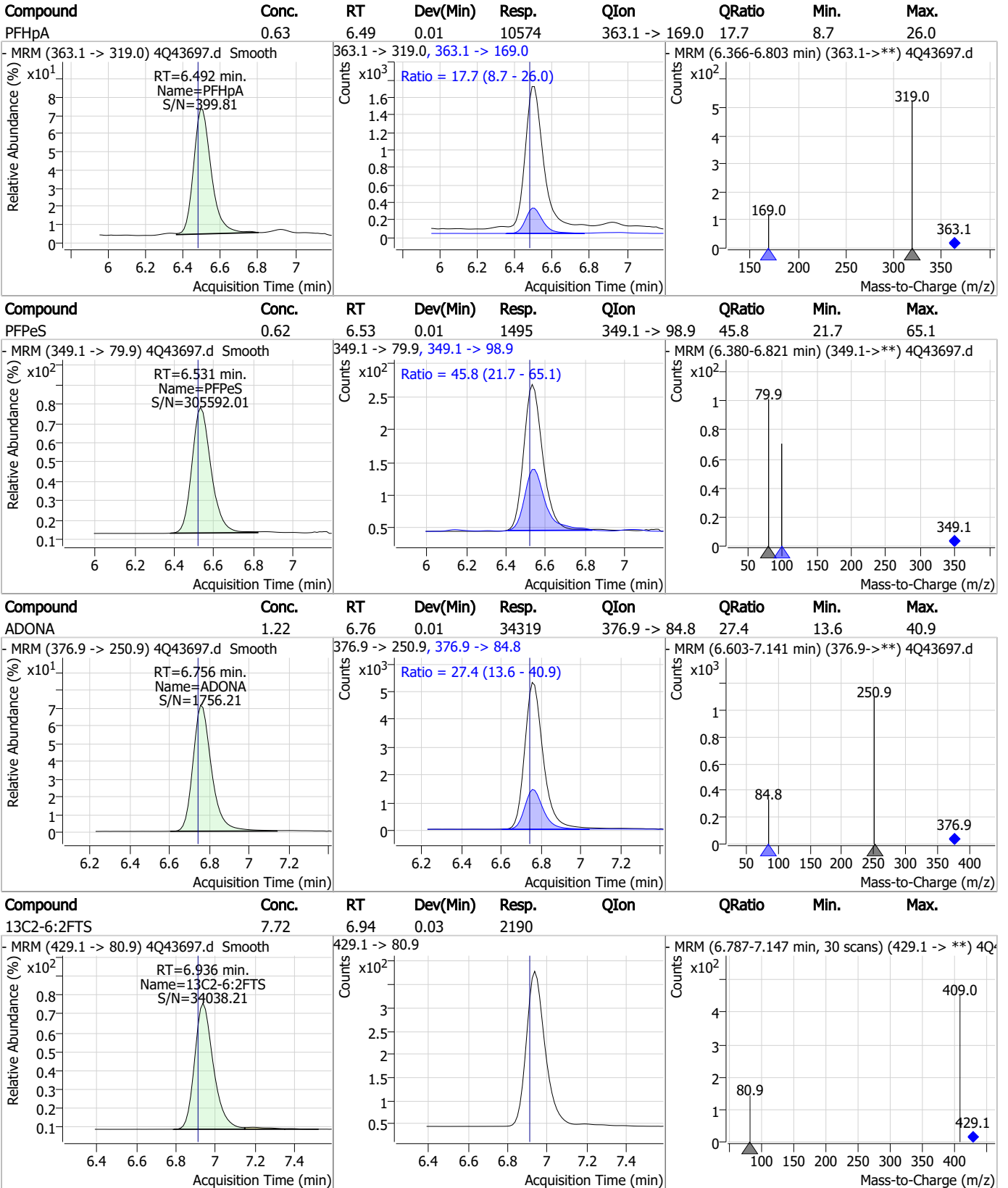
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

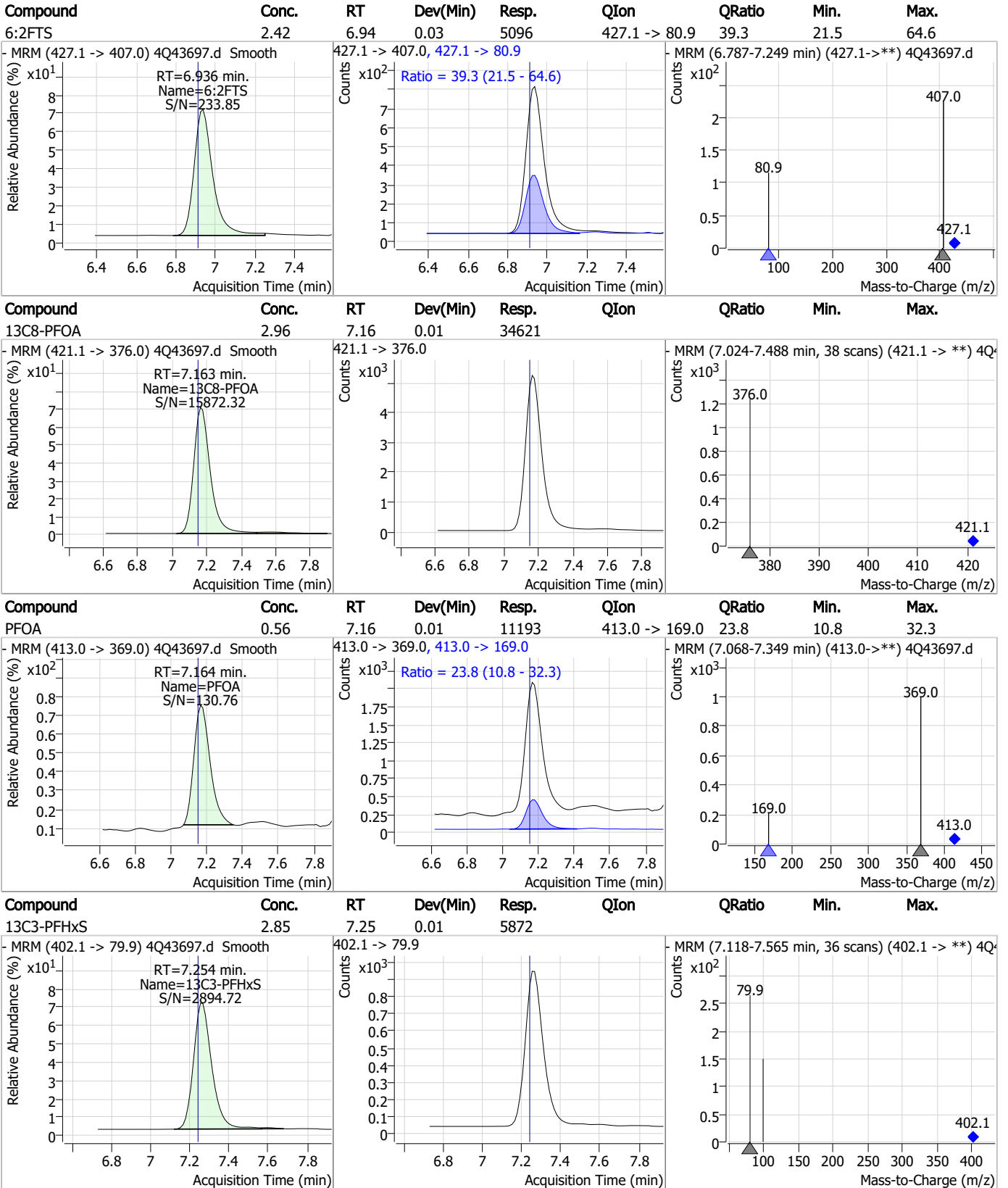


7.3.2

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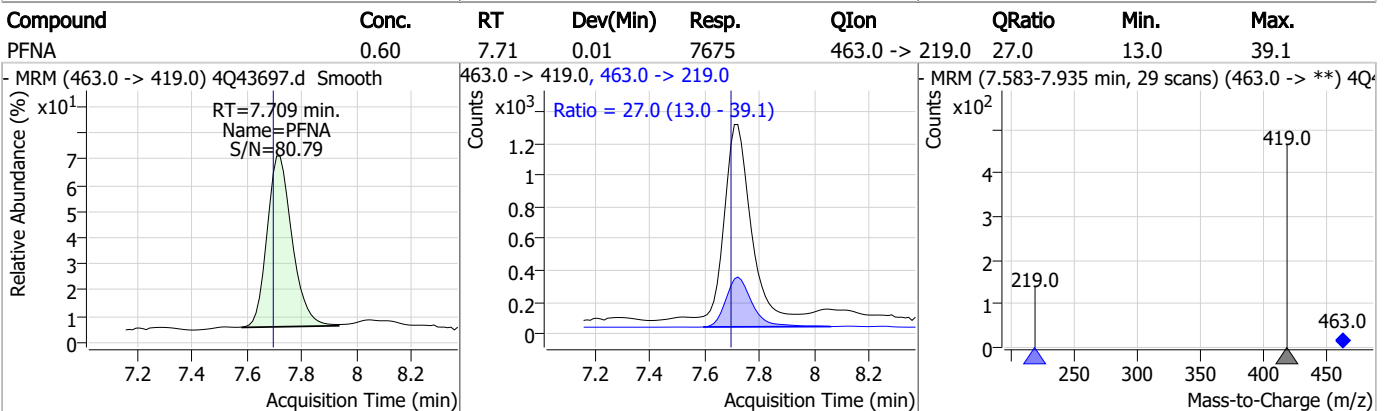
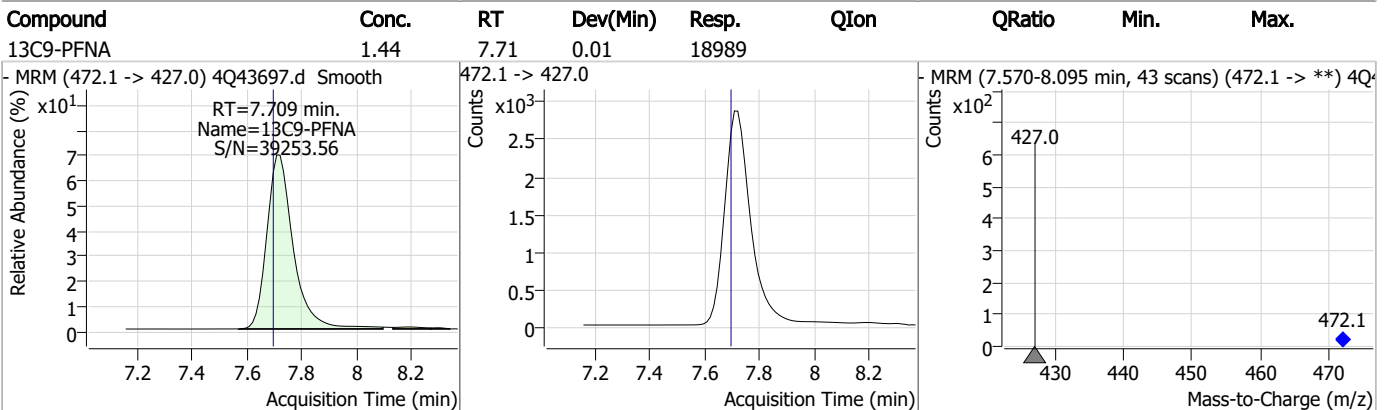
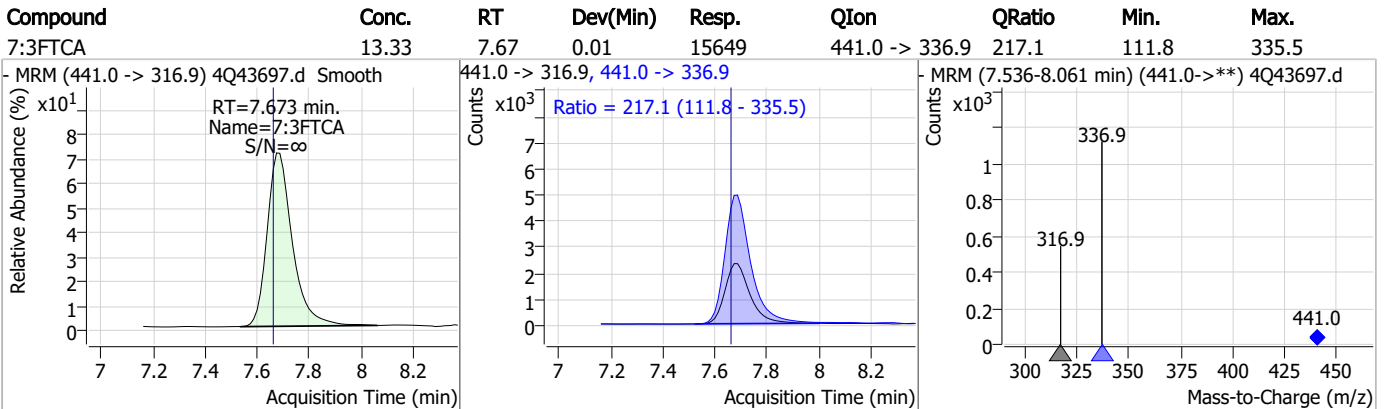
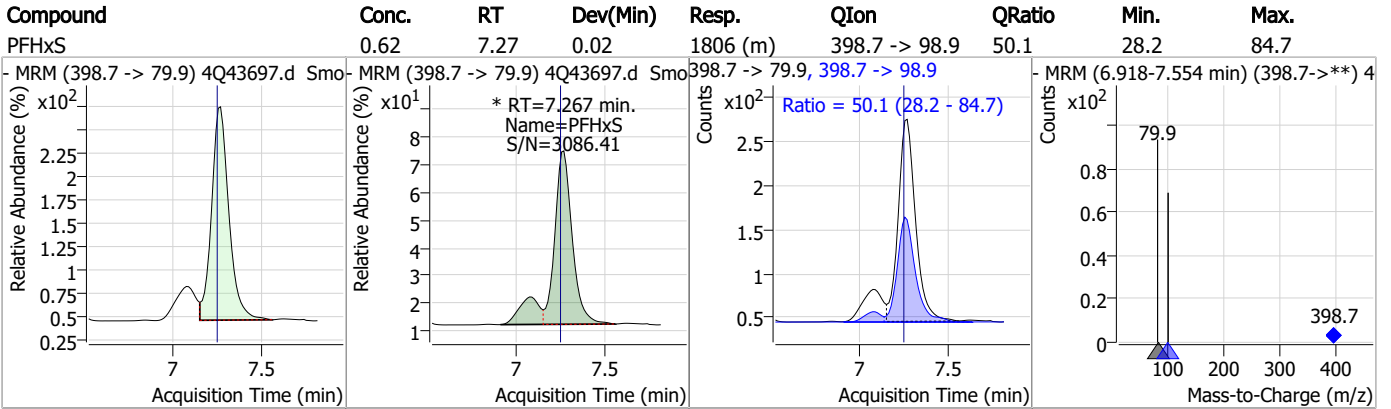


Perfluorinated Compounds by LC/MS/MS



7.3.2
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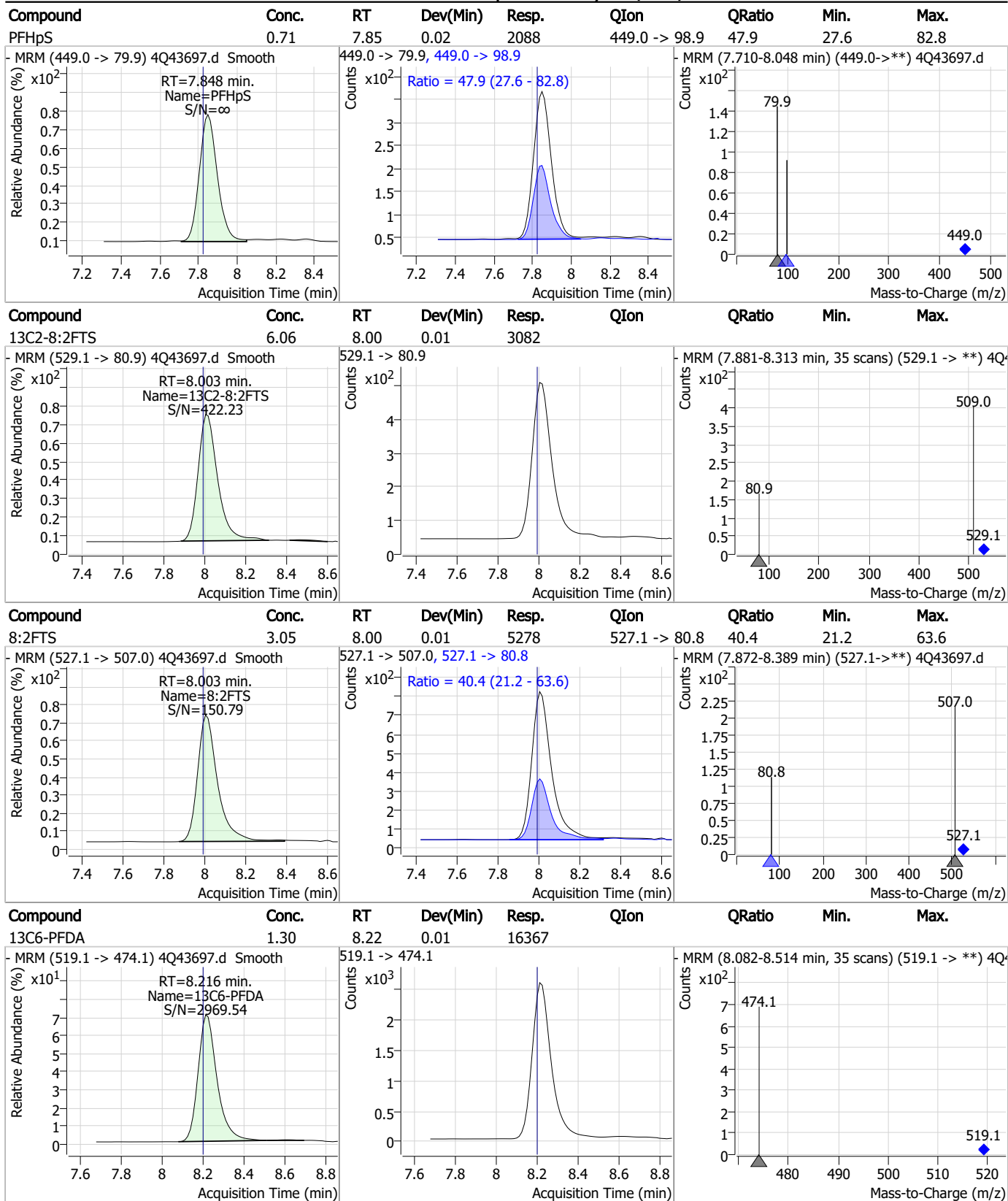
Perfluorinated Compounds by LC/MS/MS



7.3.2

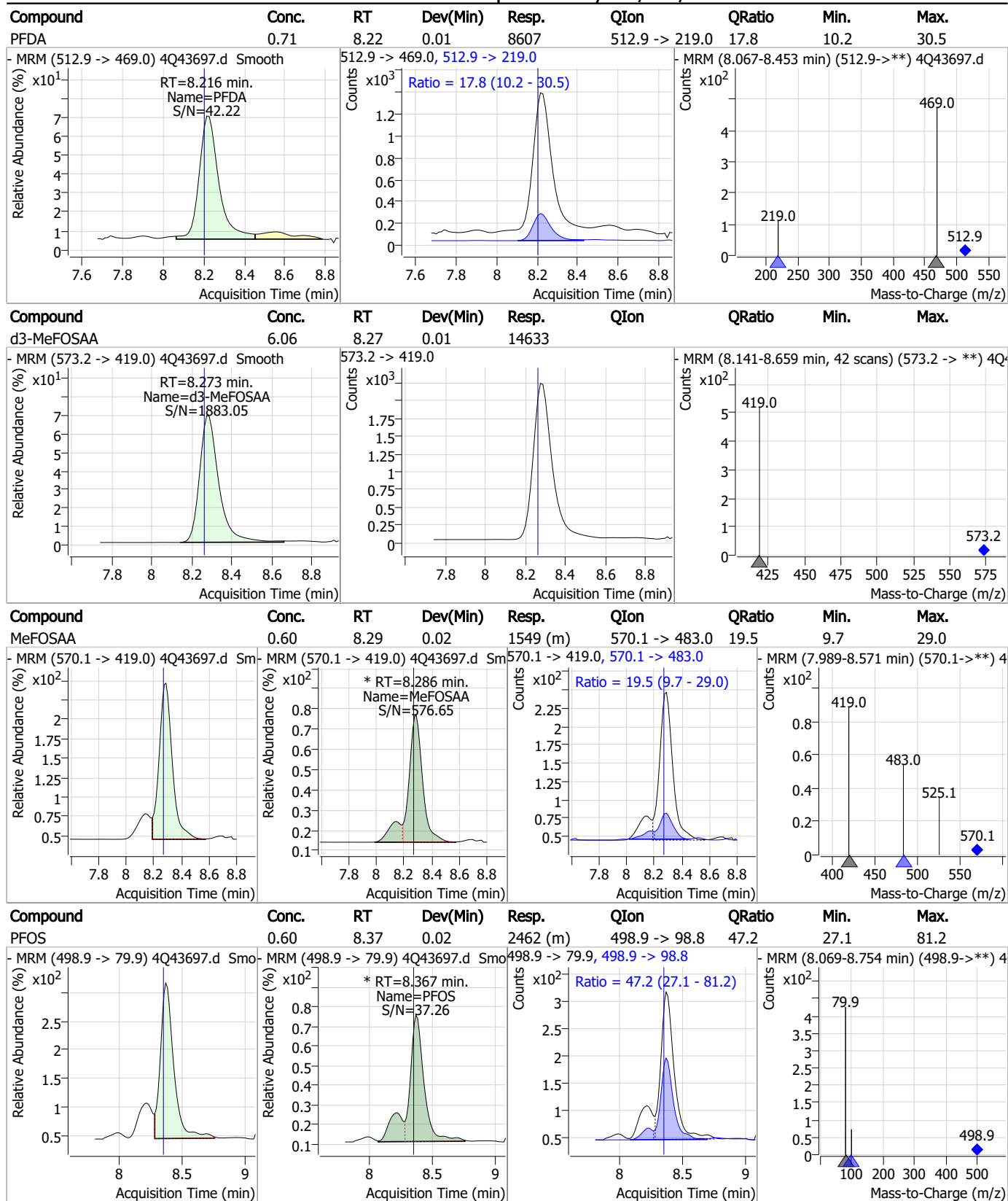
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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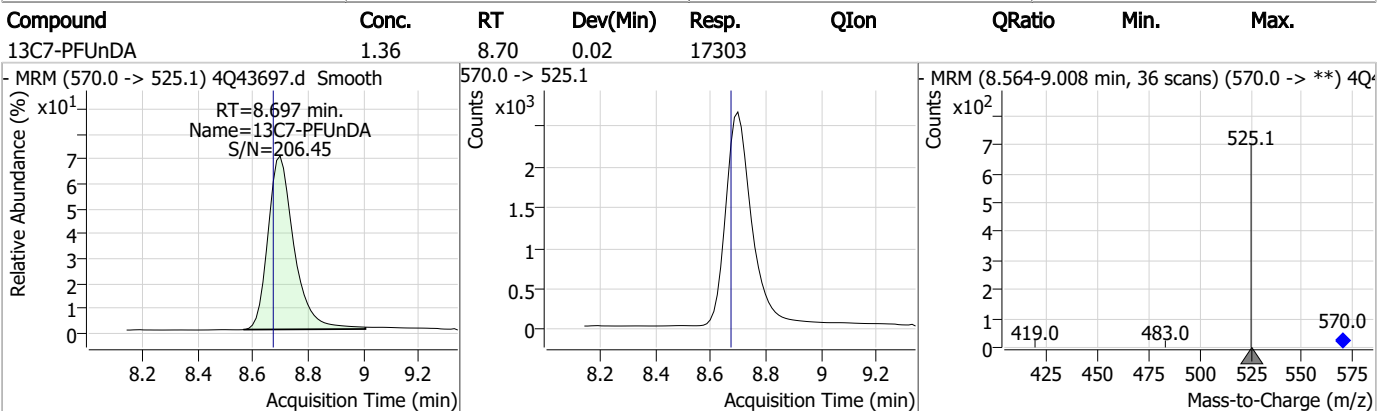
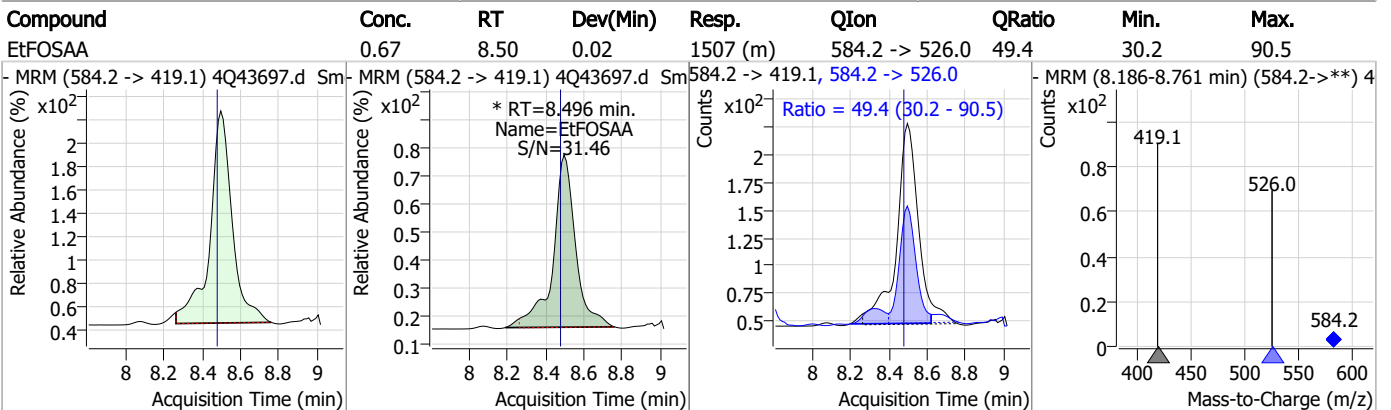
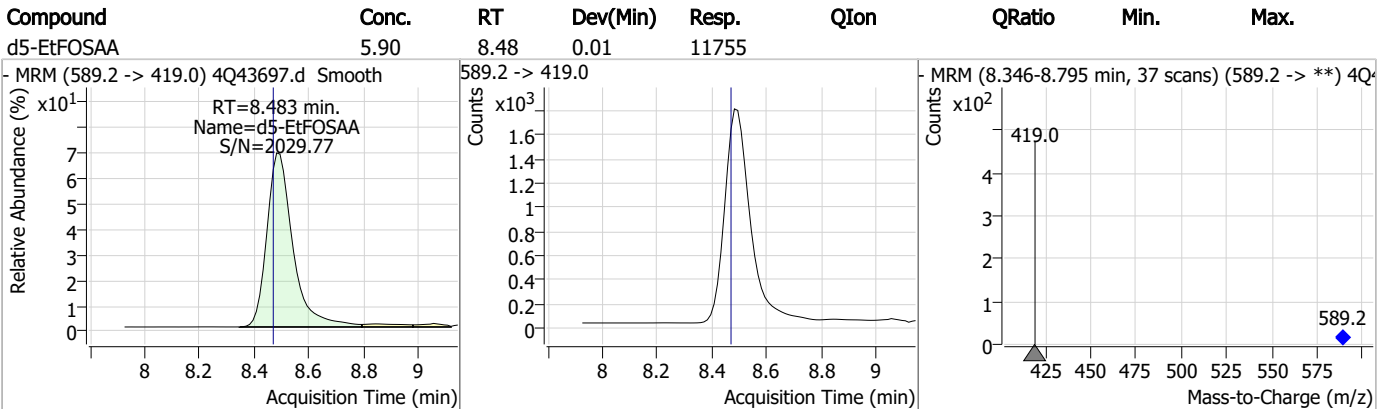
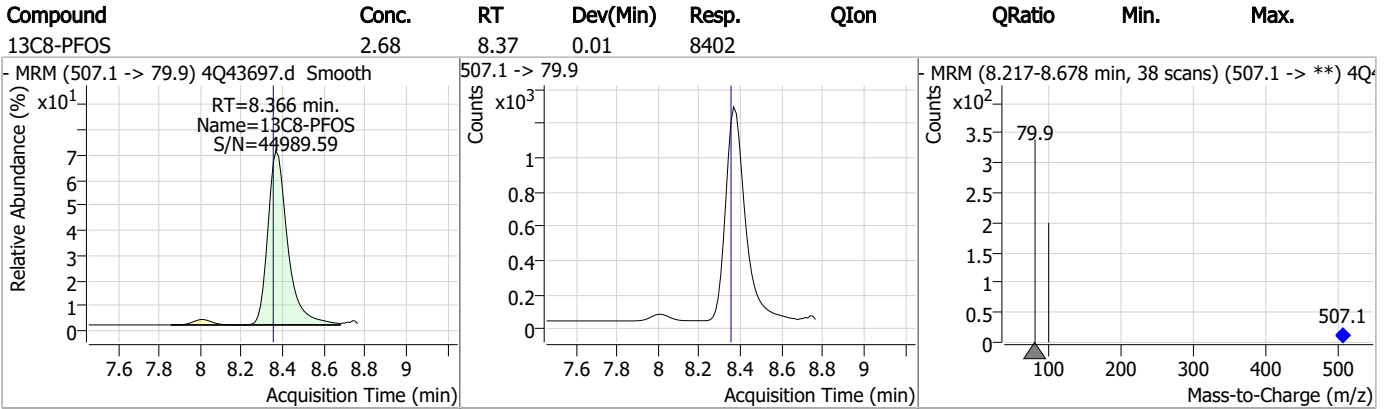
Perfluorinated Compounds by LC/MS/MS



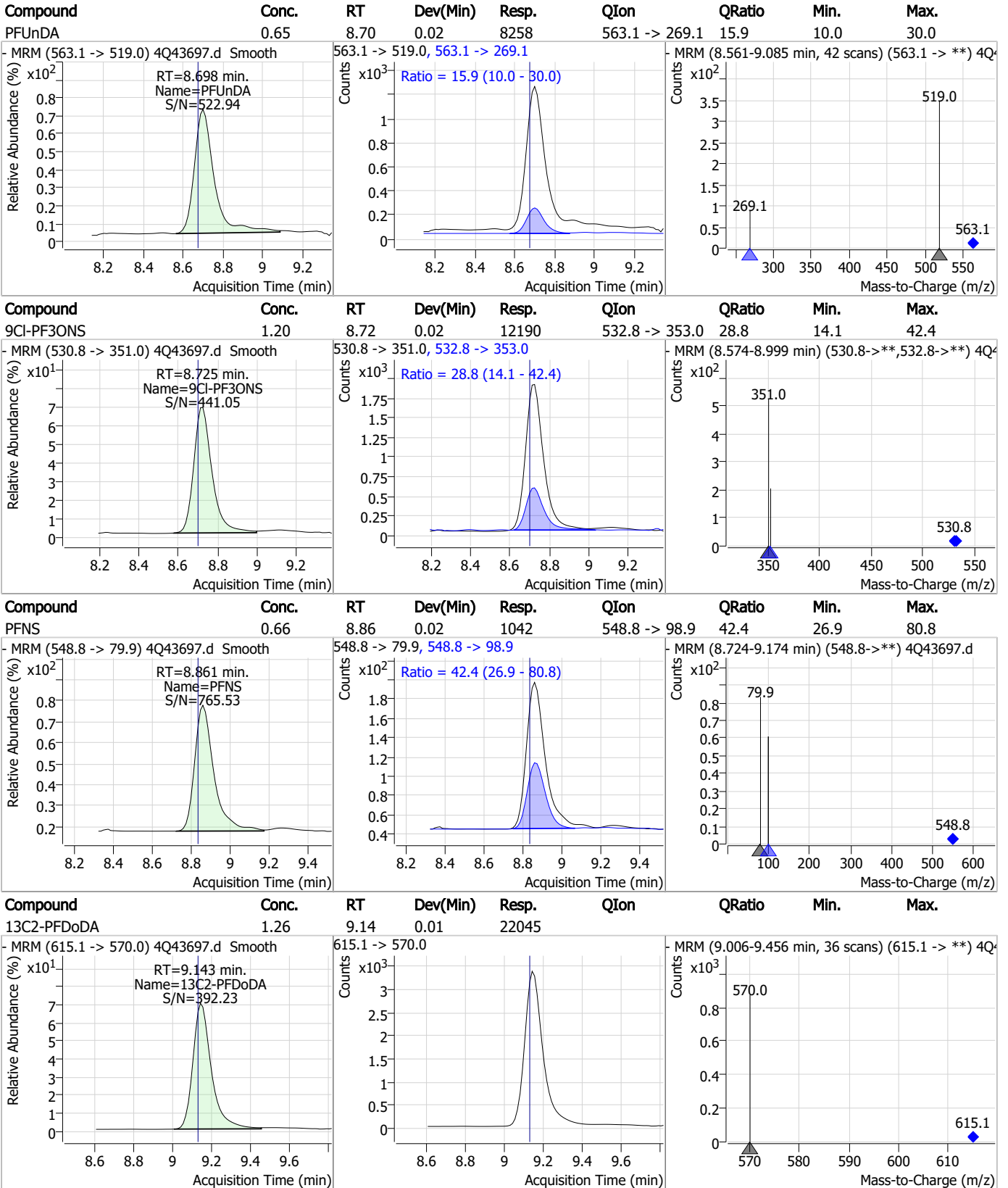
7.3.2
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

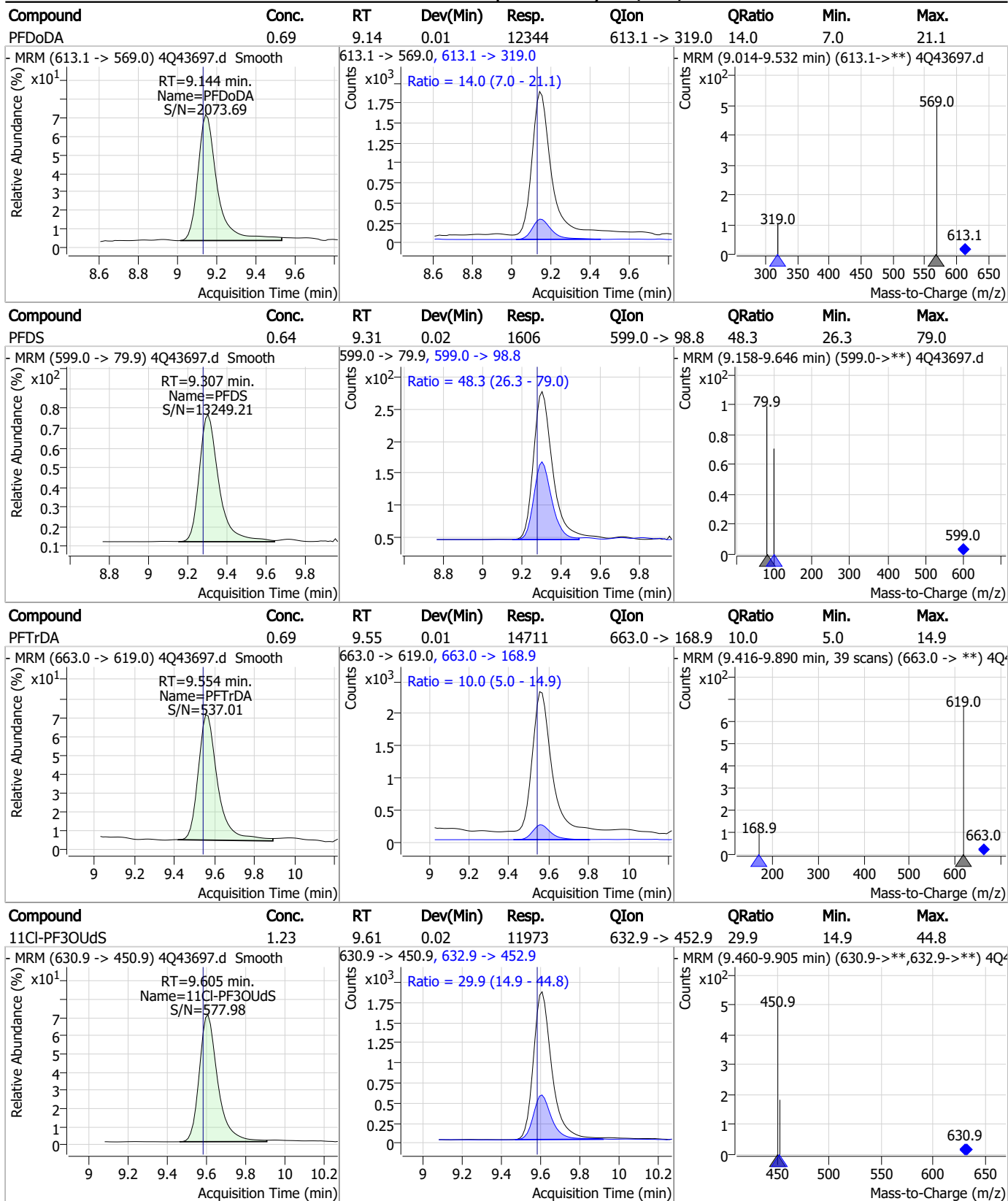


7.3.2

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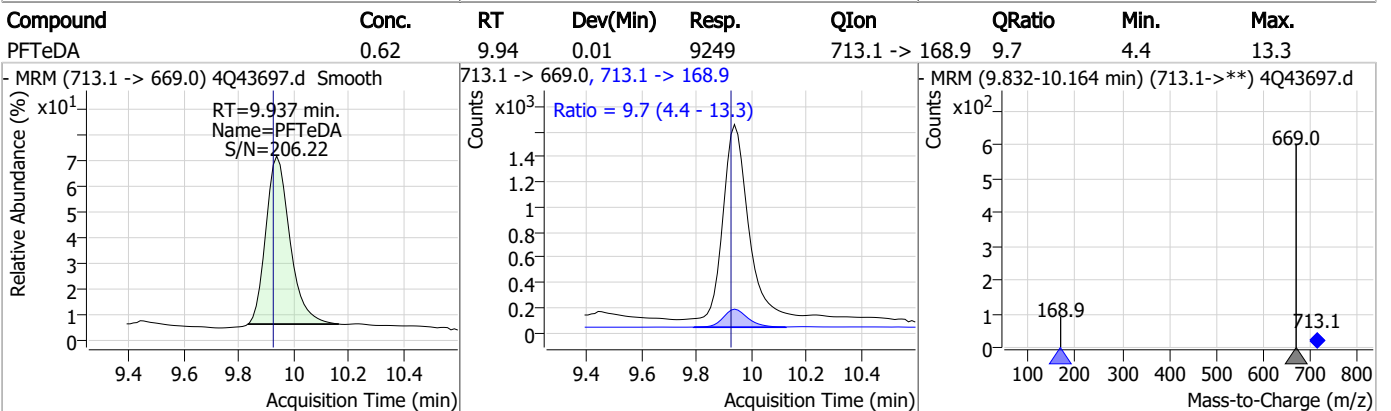
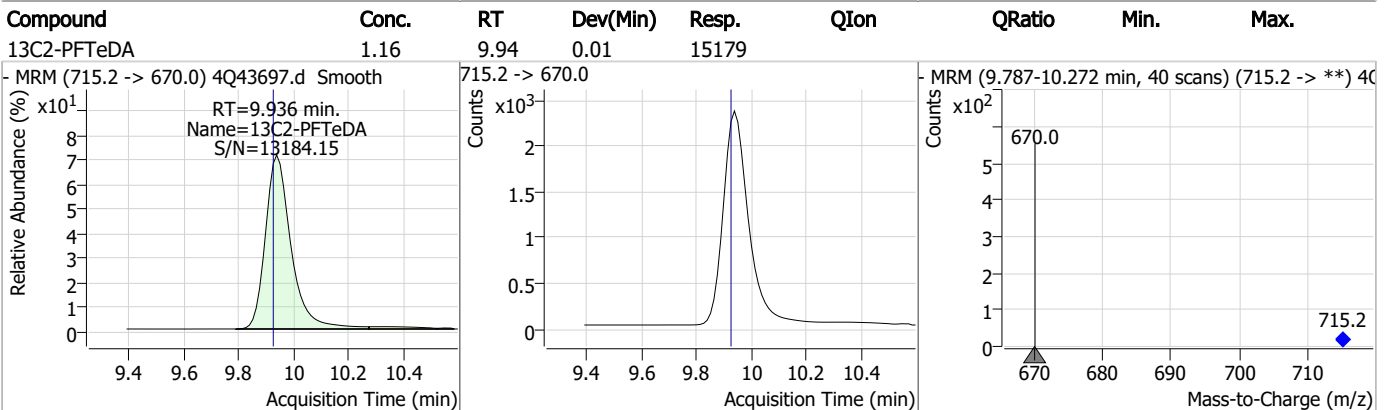
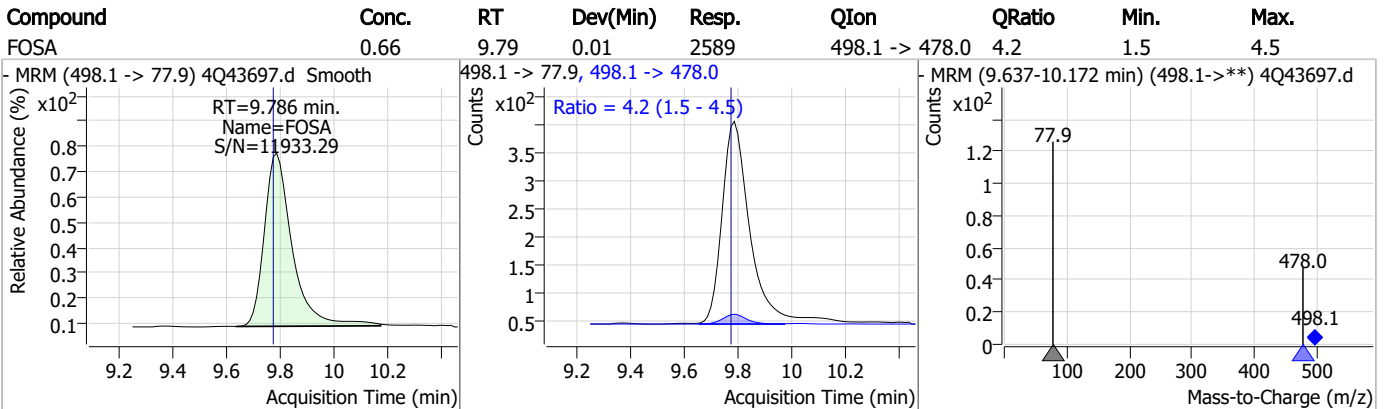
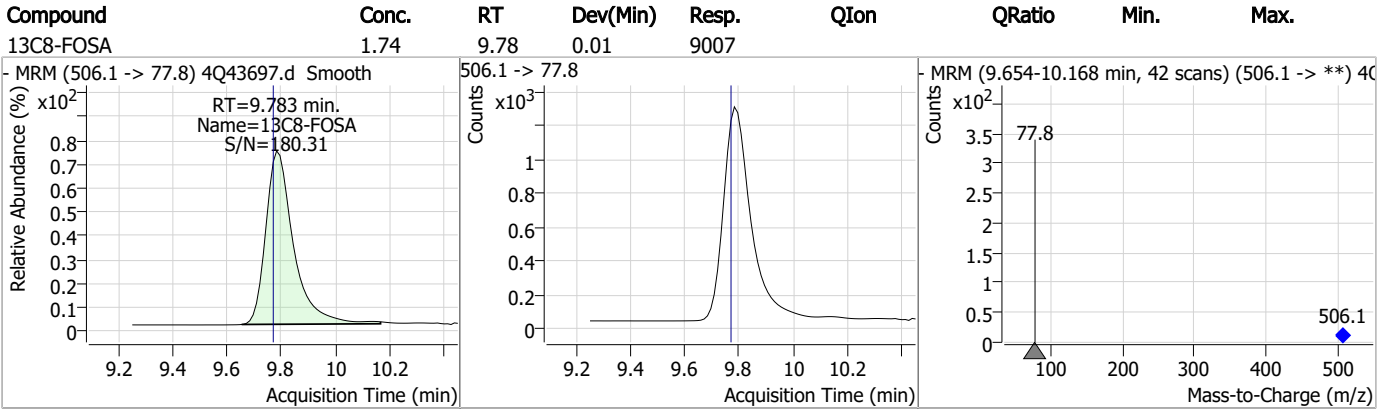


Perfluorinated Compounds by LC/MS/MS



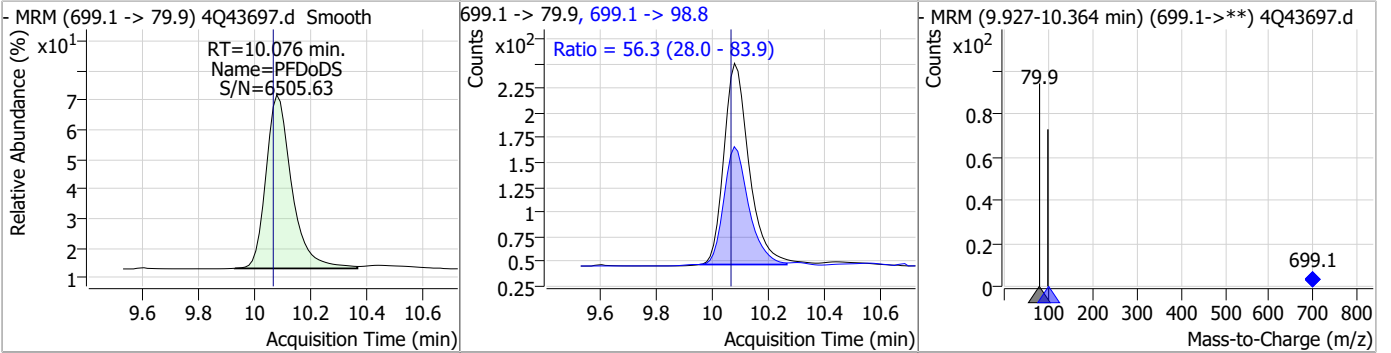
7.3.2
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Perfluorinated Compounds by LC/MS/MS

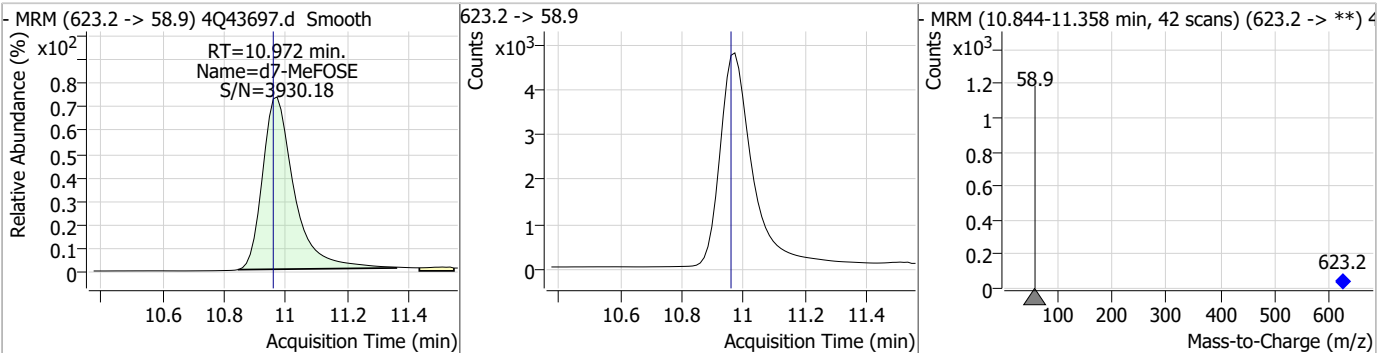


Perfluorinated Compounds by LC/MS/MS

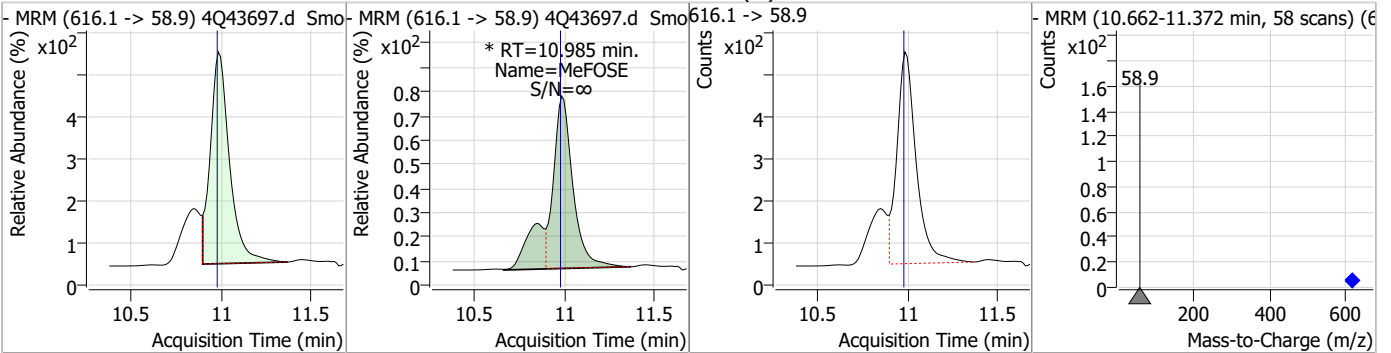
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.59	10.08	0.01	1305	699.1 -> 98.8	56.3	28.0	83.9



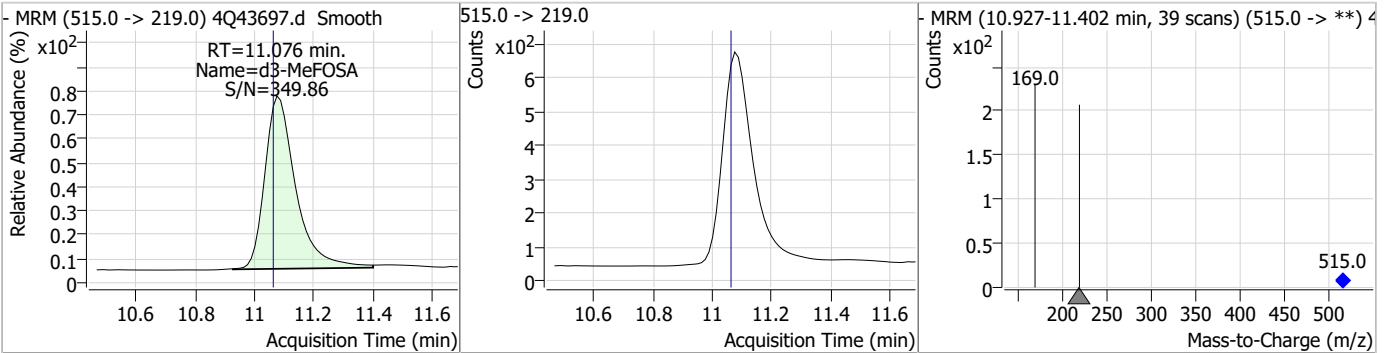
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	13.75	10.97	0.01	33947				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.44	10.99	0.01	4804 (m)				

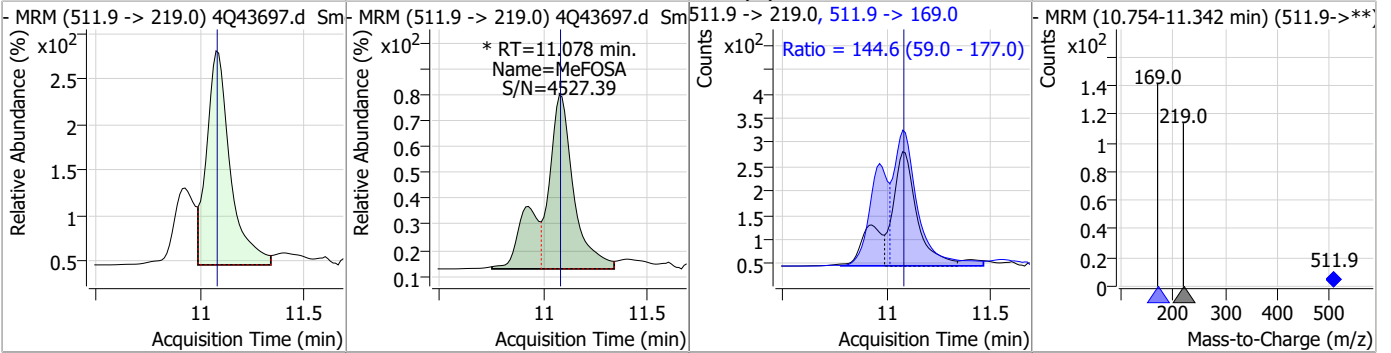


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.53	11.08	0.01	4541				

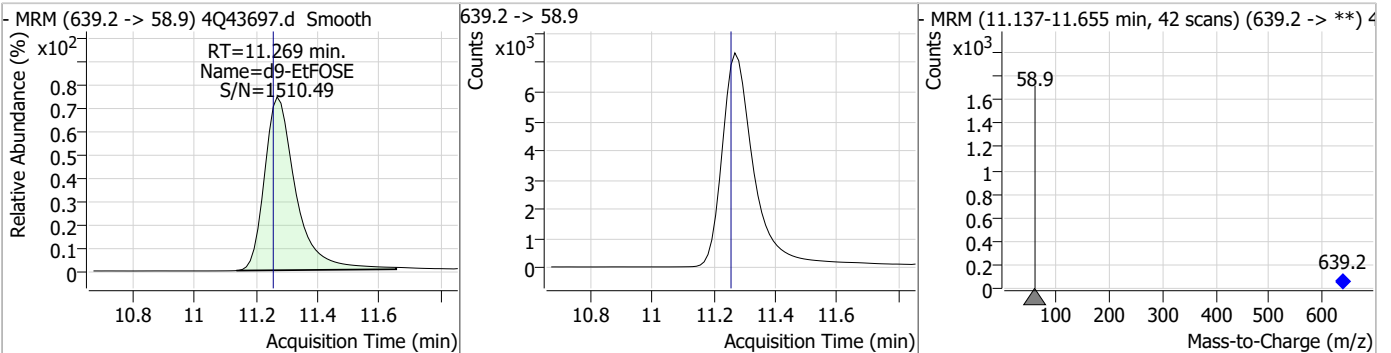


Perfluorinated Compounds by LC/MS/MS

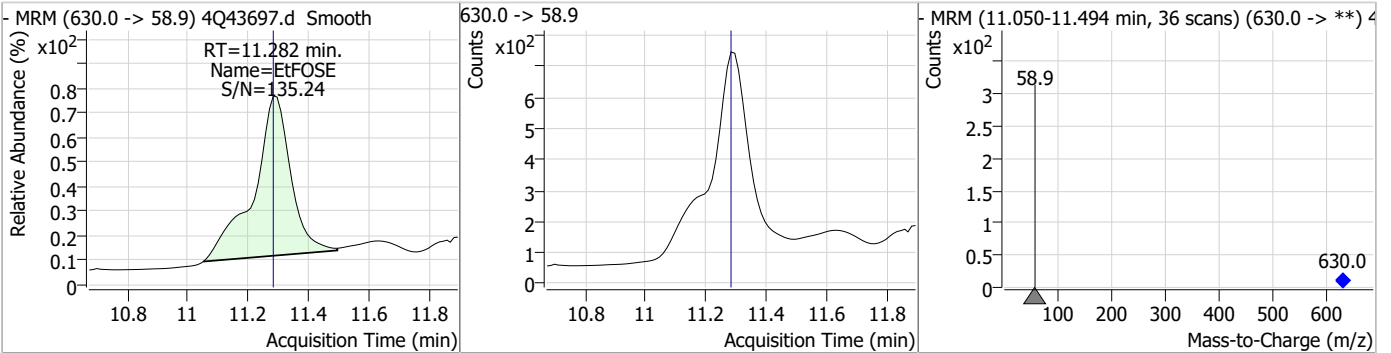
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.37	11.08	0.00	2447 (m)	511.9 -> 169.0	144.6	59.0	177.0



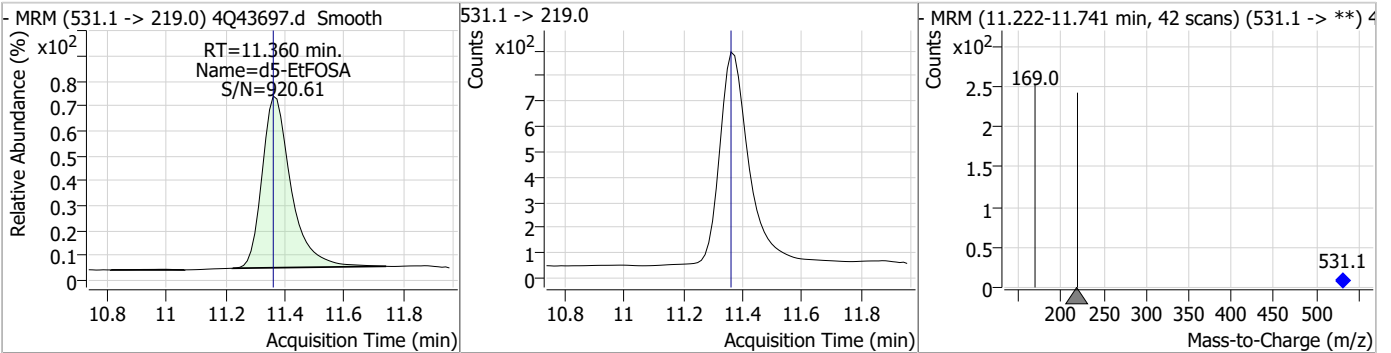
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	16.23	11.27	0.01	51139				



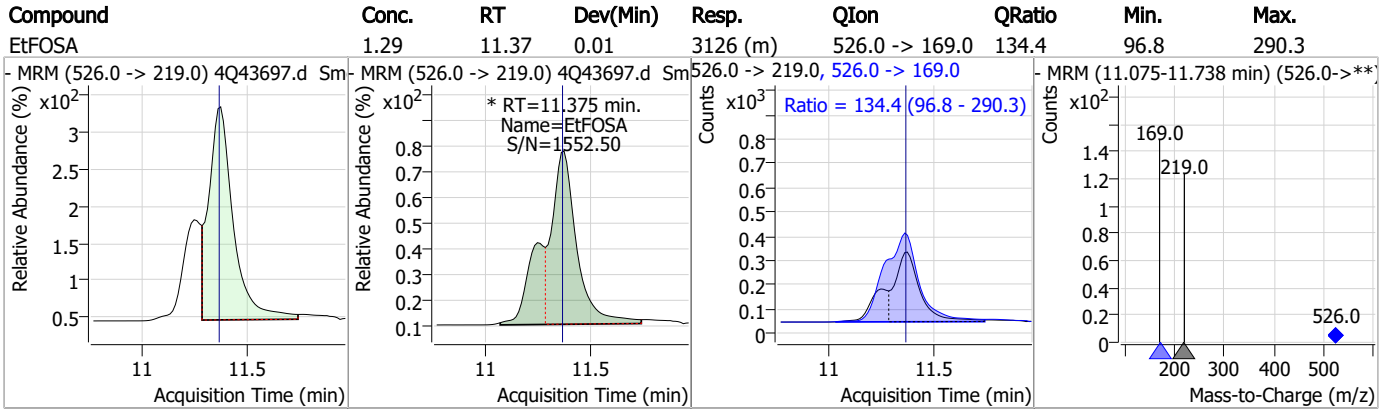
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	2.85	11.28	0.00	5404				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.64	11.36	0.00	5668				



Perfluorinated Compounds by LC/MS/MS



7.3.2

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Manual Integration Approval Summary

Sample Number: OP96548-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q43697.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 16:22 Supervisor approved: 04/27/23 16:58 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.27	Split peak
MeFOSAA	2355-31-9		8.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.50	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.38	Split peak

7.3.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43710.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 7:25:29 PM
 Sample Name : op96548-ms
 Vial : P3-B6
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q630,550,,,5,0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	77601	10.00 µg/L	0.013
M5-PFPeA	4.400	268.3 -> 223.0	61623	5.00 µg/L	0.025
M5-PFHxA	5.572	318.0 -> 273.0	49110	2.50 µg/L	0.025
M4-PFHpA	6.504	367.1 -> 322.0	25175	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	30802	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	16083	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	13511	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	13538	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	17191	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	13221	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	10446	2.50 µg/L	0.025
M3-PFBS	5.464	302.1 -> 79.9	11169	2.50 µg/L	0.012
M3-PFHxS	7.266	402.1 -> 79.9	5583	2.50 µg/L	0.025
M8-PFOS	8.366	507.1 -> 79.9	6768	2.50 µg/L	0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1278	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	1870	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2711	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	12089	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	26040	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	9935	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	46579	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	66913	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7117	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	6143	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7851	2.50 µg/L	0.025
13C3-PFBA	2.941	216.0 -> 172.0	51301	5.00 µg/L	0.012
18O2-PFHxS	7.265	403.0 -> 83.9	4136	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	37852	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14857	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	18416	1.25 µg/L	0.012
13C2-PFHxA	5.573	315.1 -> 270.0	37992	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1278	5.89 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.7%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1870	5.90 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.0%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2711	4.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C2-PFDoDA	9.143	615.1 -> 570.0	17191	0.94 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.3%		
13C2-PFTeDA	9.936	715.2 -> 670.0	13221	0.97 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 77.7%		
13C3-PFBS	5.464	302.1 -> 79.9	11169	2.65 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C3-PFHxS	7.266	402.1 -> 79.9	5583	2.42 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 = 97.0%		
13C4-PFBA	2.936	216.8 -> 171.9	77601	8.75 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 87.5%		
13C4-PFHpA	6.504	367.1 -> 322.0	25175	2.71 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C5-PFHxA	5.572	318.0 -> 273.0	49110	2.72 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.6%		
13C5-PFPeA	4.400	268.3 -> 223.0	61623	5.36 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C6-PFDA	8.216	519.1 -> 474.1	13511	1.03 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 82.3%		
13C7-PFUnDA	8.697	570.0 -> 525.1	13538	1.02 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C8-FOSA	9.796	506.1 -> 77.8	10446	1.96 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 78.6%		
13C8-PFOA	7.163	421.1 -> 376.0	30802	2.42 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C8-PFOS	8.366	507.1 -> 79.9	6768	2.10 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 84.0%		
13C9-PFNA	7.721	472.1 -> 427.0	16083	1.15 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.3%		
d3-MeFOSAA	8.273	573.2 -> 419.0	12089	4.87 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	26040	10.43 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
d3-MeFOSA	11.076	515.0 -> 219.0	6143	2.02 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.9%		
d5-EtFOSAA	8.483	589.2 -> 419.0	9935	4.85 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.0%		
d7-MeFOSE	10.972	623.2 -> 58.9	46579	18.37 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 73.5%		
d9-EtFOSE	11.269	639.2 -> 58.9	66913	20.68 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 82.7%		
d5-EtFOSA	11.360	531.1 -> 219.0	7117	2.01 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.2%		
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	18199	8.89 µg/L	93
		327.1 -> 80.9	8231		
6:2FTS	6.936	427.1 -> 407.0	16453	9.15 µg/L	100
		427.1 -> 80.9	7081		
8:2FTS	8.003	527.1 -> 507.0	16225	10.67 µg/L	97
		527.1 -> 80.8	6548		
EtFOSAA	8.496	584.2 -> 419.1	4025	2.12 µg/L	m 97
		584.2 -> 526.0	2347		
FOSA	9.786	498.1 -> 77.9	11878	2.62 µg/L	99
		498.1 -> 478.0	322		
MeFOSAA	8.286	570.1 -> 419.0	4960	2.32 µg/L	m 90
		570.1 -> 483.0	1198		
PFBA	2.945	212.8 -> 168.9	20887	9.15 µg/L	100
PFBS	5.465	298.7 -> 79.9	10458	2.06 µg/L	96
		298.7 -> 98.8	4357		
PFDA	8.216	512.9 -> 469.0	24047	2.39 µg/L	98
		512.9 -> 219.0	5105		
PFDODA	9.144	613.1 -> 569.0	34397	2.45 µg/L	99
		613.1 -> 319.0	4739		
PFDS	9.307	599.0 -> 79.9	4843	2.39 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2585			
PFHpA	6.505	363.1 -> 319.0	39576	2.42	µg/L	99
		363.1 -> 169.0	6953			
PFHpS	7.848	449.0 -> 79.9	6033	2.54	µg/L	99
		449.0 -> 98.9	3282			
PFHxA	5.575	313.0 -> 269.0	45321	2.46	µg/L	99
		313.0 -> 118.9	1561			
PFHxS	7.255	398.7 -> 79.9	5982	2.17	µg/L	m 91
		398.7 -> 98.9	2994			
PFNA	7.722	463.0 -> 419.0	26638	2.46	µg/L	99
		463.0 -> 219.0	7068			
PFNS	8.861	548.8 -> 79.9	3449	2.73	µg/L	94
		548.8 -> 98.9	1708			
PFOA	7.164	413.0 -> 369.0	46021	2.58	µg/L	95
		413.0 -> 169.0	8736			
PFOS	8.367	498.9 -> 79.9	7946	2.41	µg/L	m 93
		498.9 -> 98.8	3902			
PFPeA	4.402	263.0 -> 219.0	74461	5.06	µg/L	100
PFPeS	6.531	349.1 -> 79.9	5464	2.38	µg/L	95
		349.1 -> 98.9	2205			
PFTeDA	9.937	713.1 -> 669.0	32643	2.51	µg/L	100
		713.1 -> 168.9	2940			
PFTrDA	9.566	663.0 -> 619.0	43385	2.59	µg/L	99
		663.0 -> 168.9	4405			
PFUnDA	8.698	563.1 -> 519.0	24011	2.42	µg/L	99
		563.1 -> 269.1	4646			
11CI-PF3OUdS	9.605	630.9 -> 450.9	37044	4.01	µg/L	99
		632.9 -> 452.9	11305			
9CI-PF3ONS	8.725	530.8 -> 351.0	38104	3.96	µg/L	97
		532.8 -> 353.0	11466			
ADONA	6.756	376.9 -> 250.9	125625	4.72	µg/L	99
		376.9 -> 84.8	33615			
HFPO-DA	5.928	284.9 -> 168.9	12224	4.74	µg/L	97
		284.9 -> 184.9	1530			
3:3FTCA	3.867	241.0 -> 177.0	4876	7.84	µg/L	100
		241.0 -> 117.0	476			
5:3FTCA	6.217	341.0 -> 237.1	126167	47.31	µg/L	99
		341.0 -> 217.0	89282			
7:3FTCA	7.673	441.0 -> 316.9	55885	47.89	µg/L	99
		441.0 -> 336.9	126090			
EtFOSA	11.375	526.0 -> 219.0	14911	4.90	µg/L	57
		526.0 -> 169.0	19329			
EtFOSE	11.295	630.0 -> 58.9	28886	11.65	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	11258	4.65	µg/L	m 73
		511.9 -> 169.0	16675			
MeFOSE	10.985	616.1 -> 58.9	23163	12.07	µg/L	m 100
PFDoDS	10.076	699.1 -> 79.9	4000	2.25	µg/L	97
		699.1 -> 98.8	2156			
NFDHA	5.453	295.0 -> 201.0	5458	4.56	µg/L	98
		295.0 -> 84.9	1334			
PFMBA	4.803	279.0 -> 85.1	39956	4.71	µg/L	100
PFMPA	3.540	229.0 -> 84.9	33548	4.58	µg/L	100
PFEESA	5.997	314.8 -> 134.9	64755	4.02	µg/L	99
		314.8 -> 82.9	2211			

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



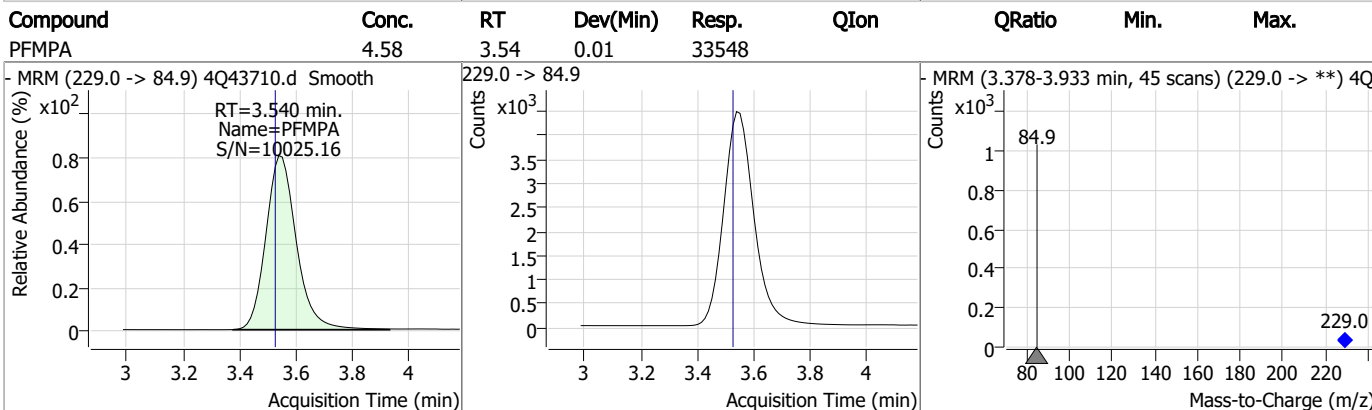
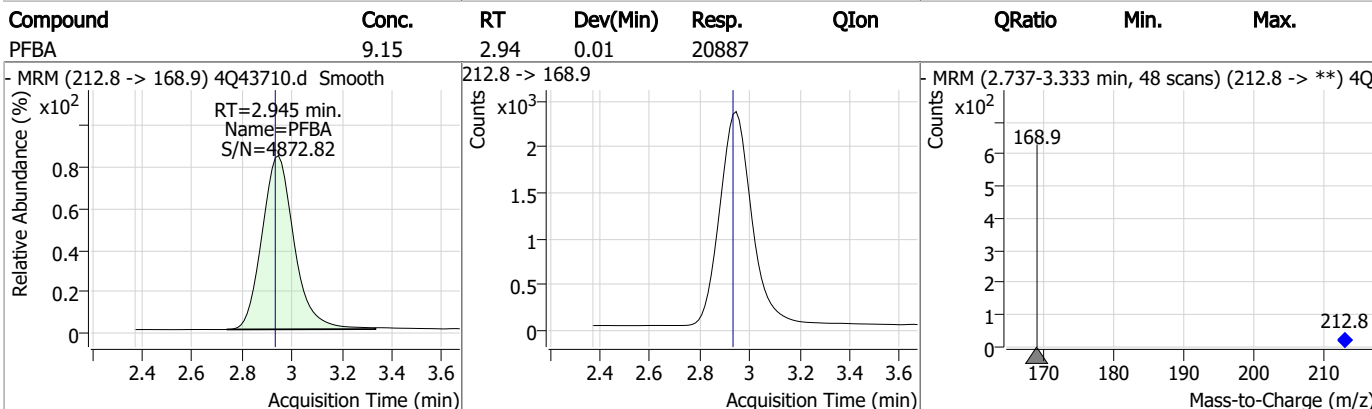
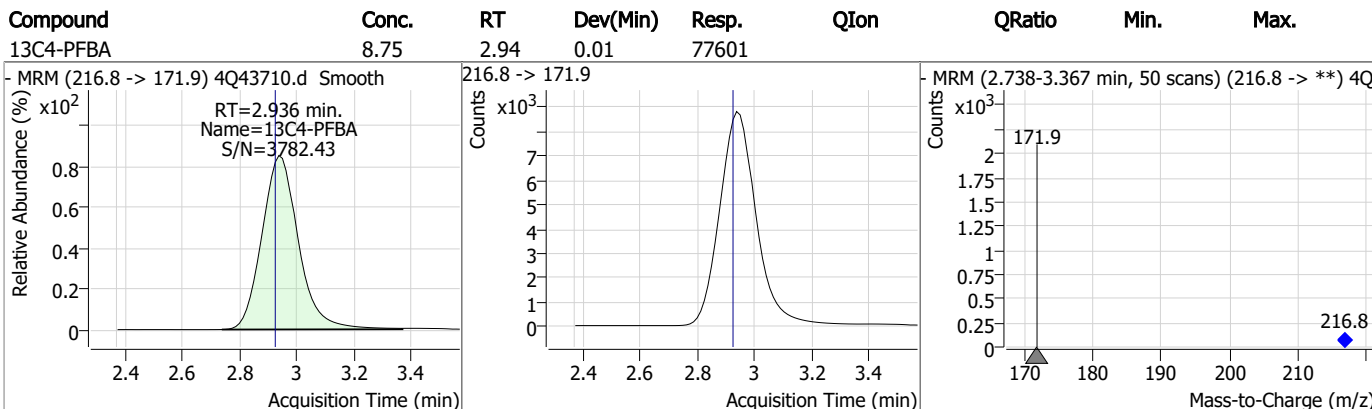
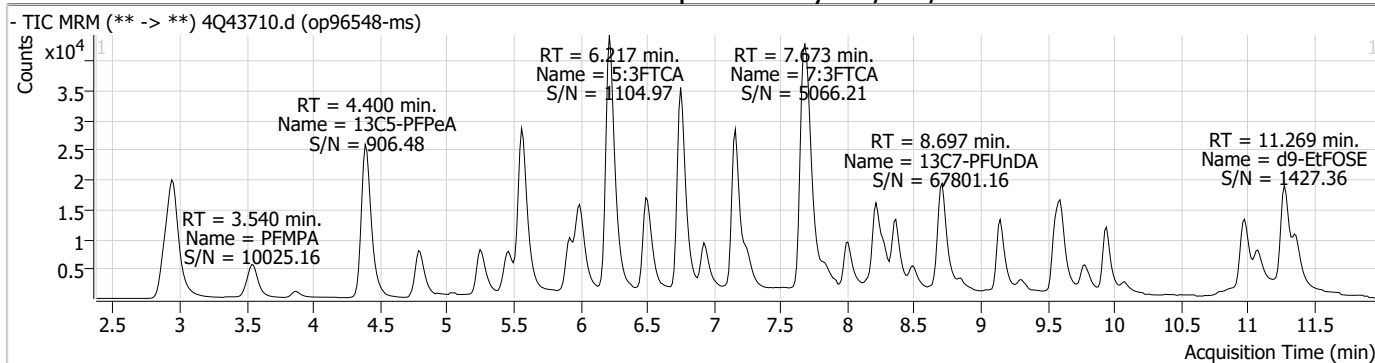
Perfluorinated Compounds by LC/MS/MS

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

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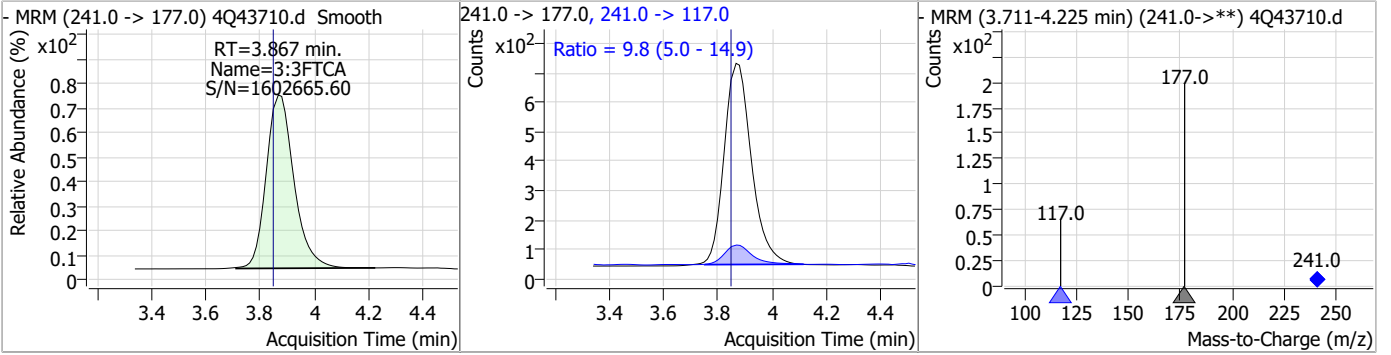
Perfluorinated Compounds by LC/MS/MS



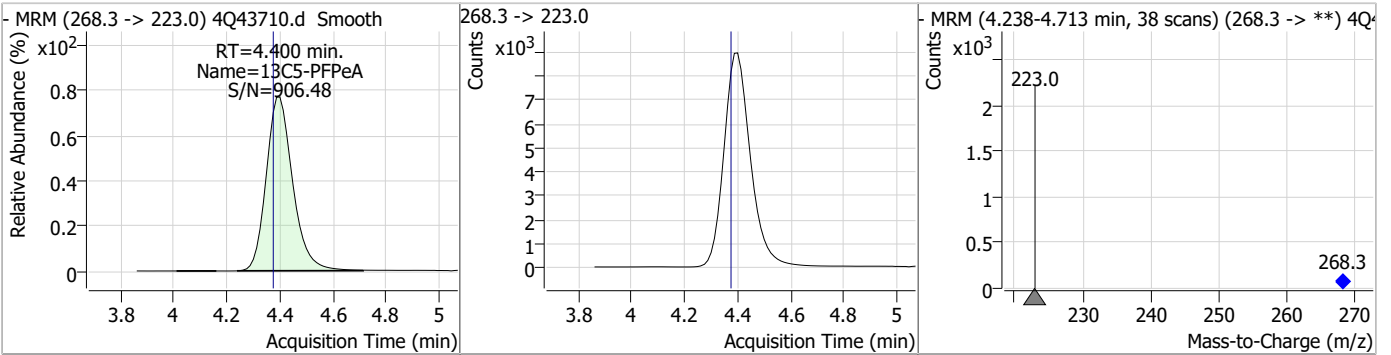
7.4.1
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Perfluorinated Compounds by LC/MS/MS

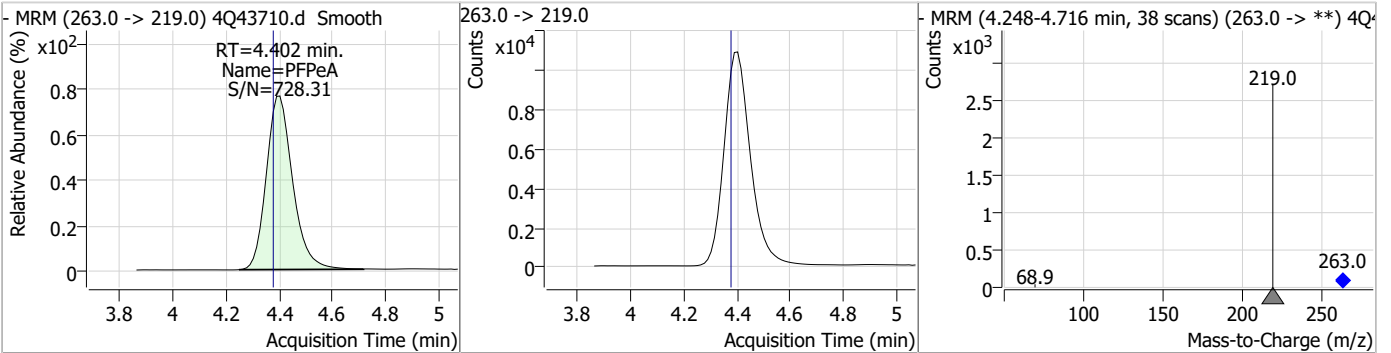
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	7.84	3.87	0.02	4876	241.0 -> 117.0	9.8	5.0	14.9



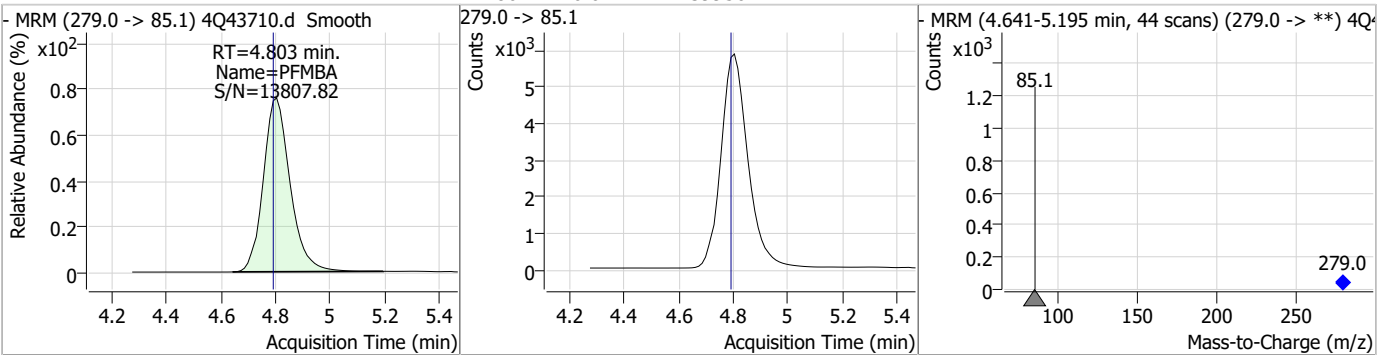
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.36	4.40	0.02	61623				



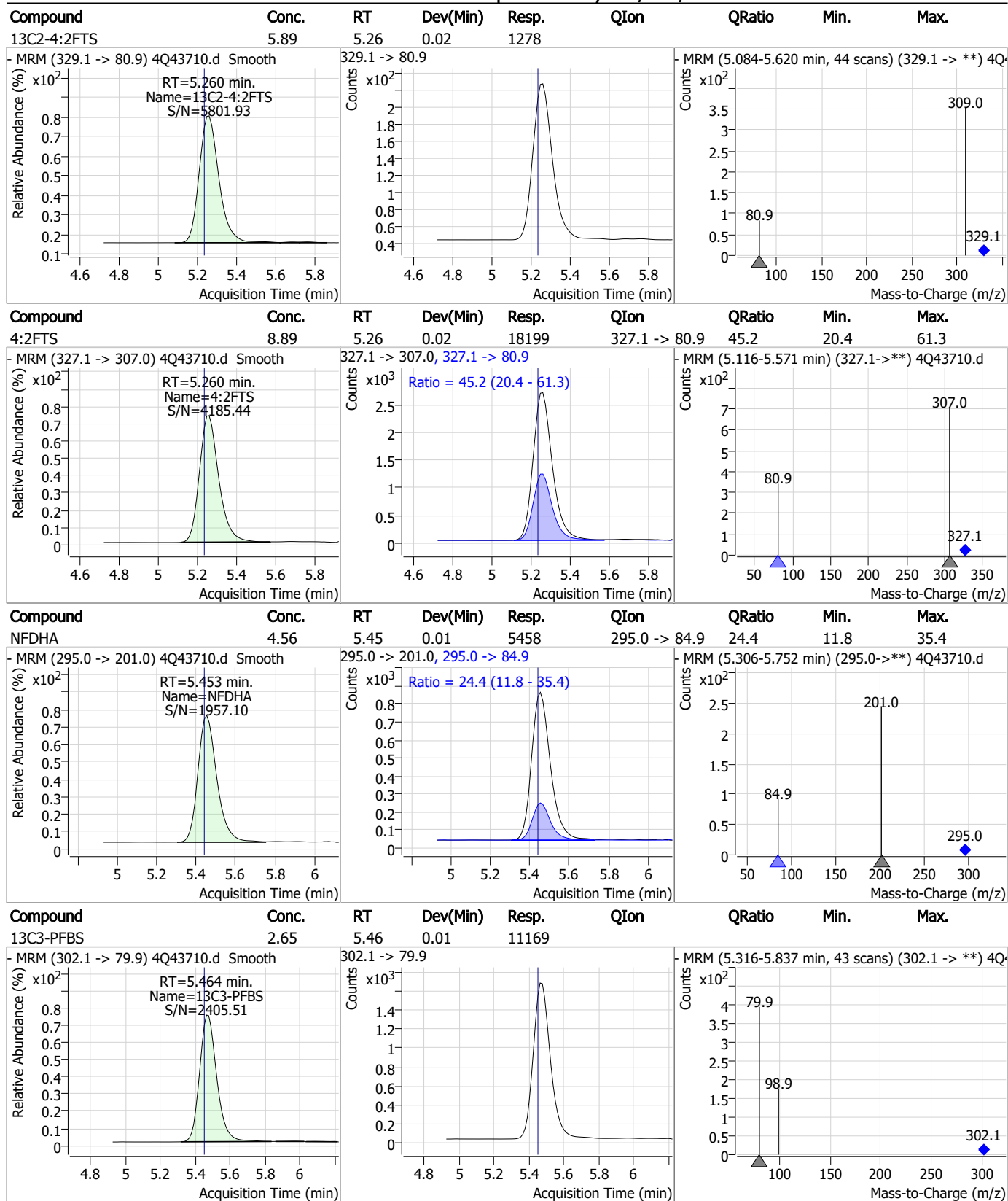
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	5.06	4.40	0.02	74461				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.71	4.80	0.01	39956				



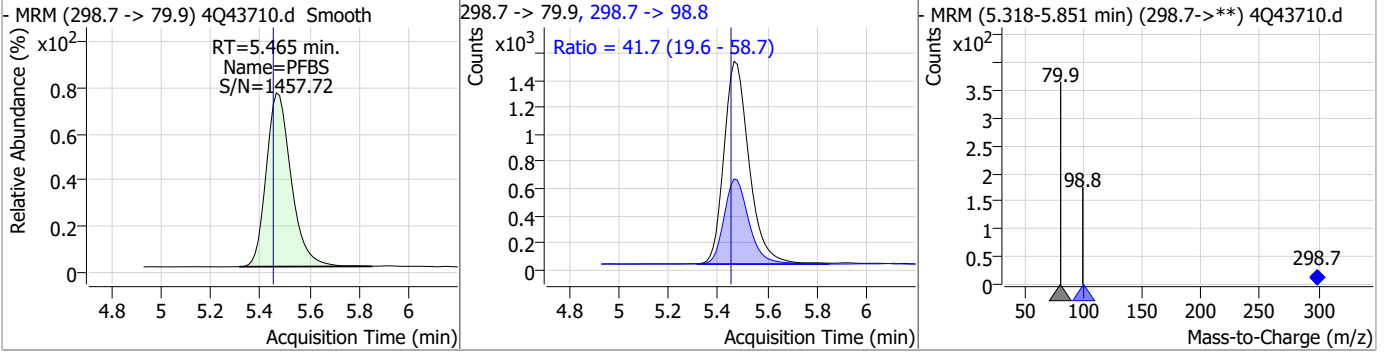
Perfluorinated Compounds by LC/MS/MS



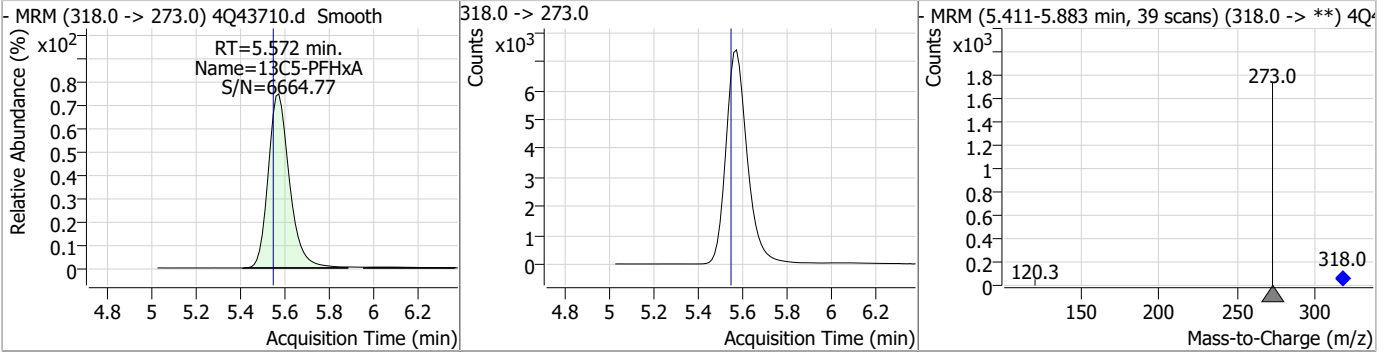
7.4.1
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Perfluorinated Compounds by LC/MS/MS

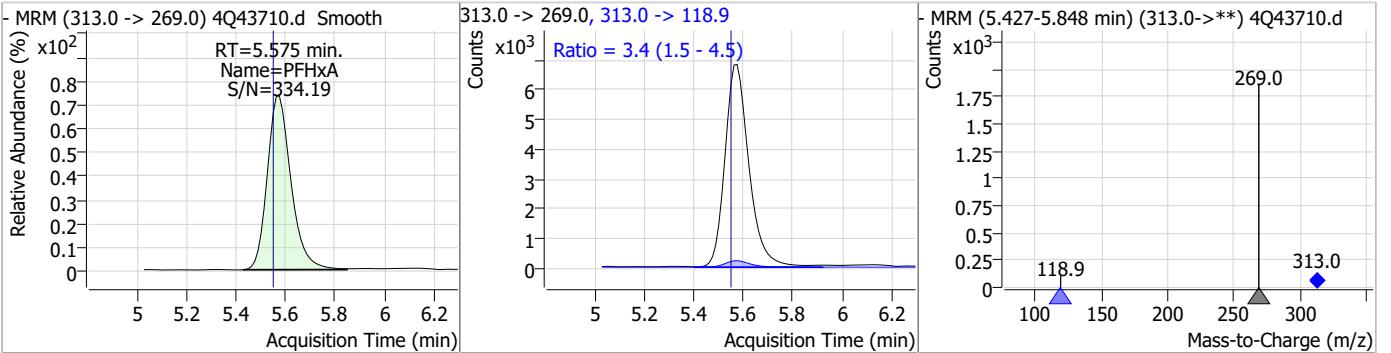
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.06	5.46	0.01	10458	298.7 -> 98.8	41.7	19.6	58.7



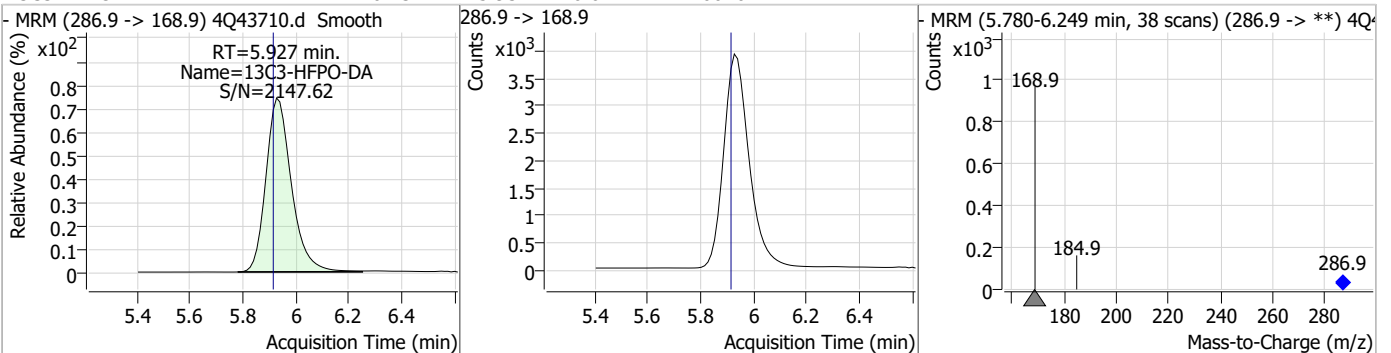
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.72	5.57	0.02	49110				



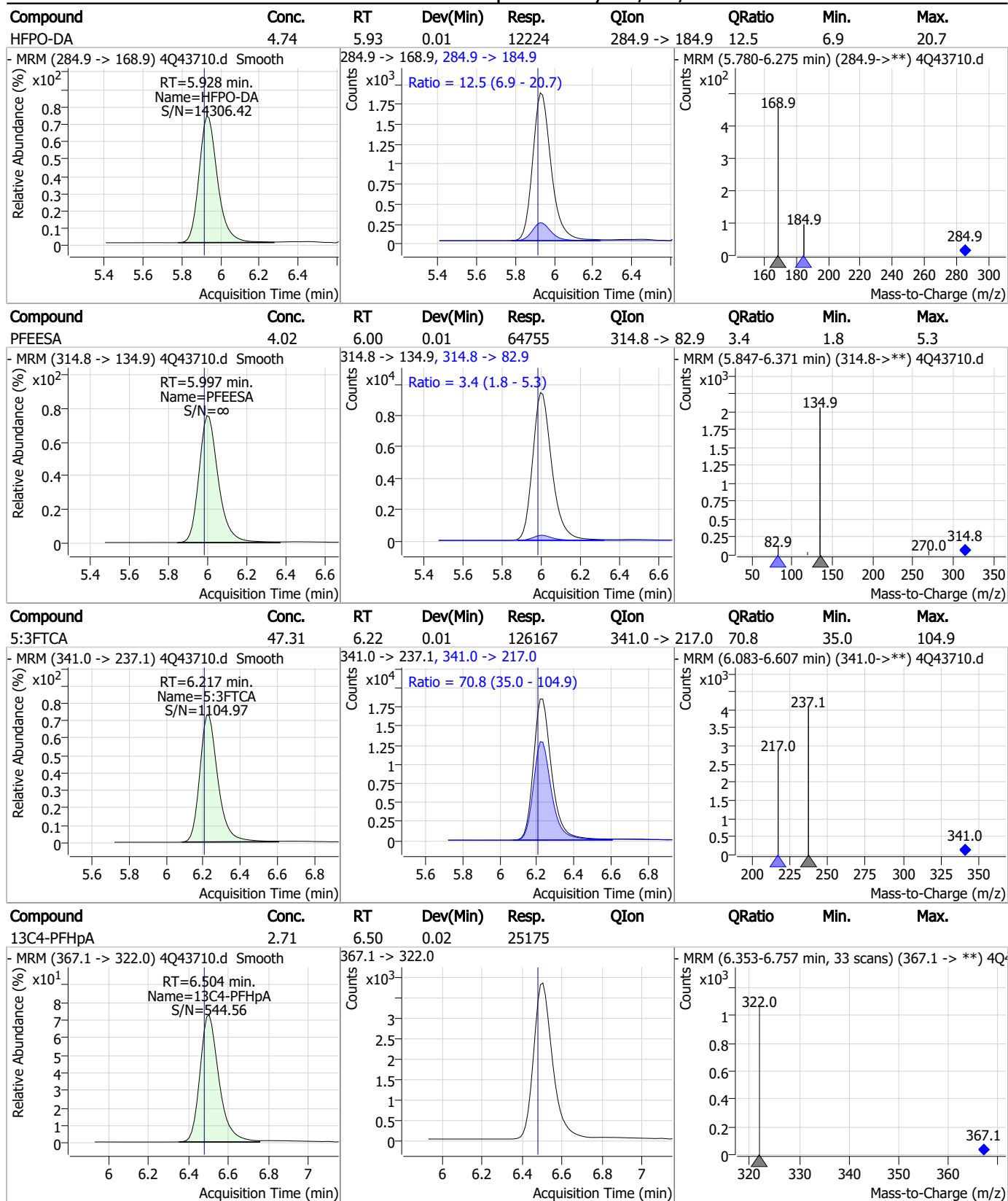
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.46	5.57	0.02	45321	313.0 -> 118.9	3.4	1.5	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.43	5.93	0.01	26040				

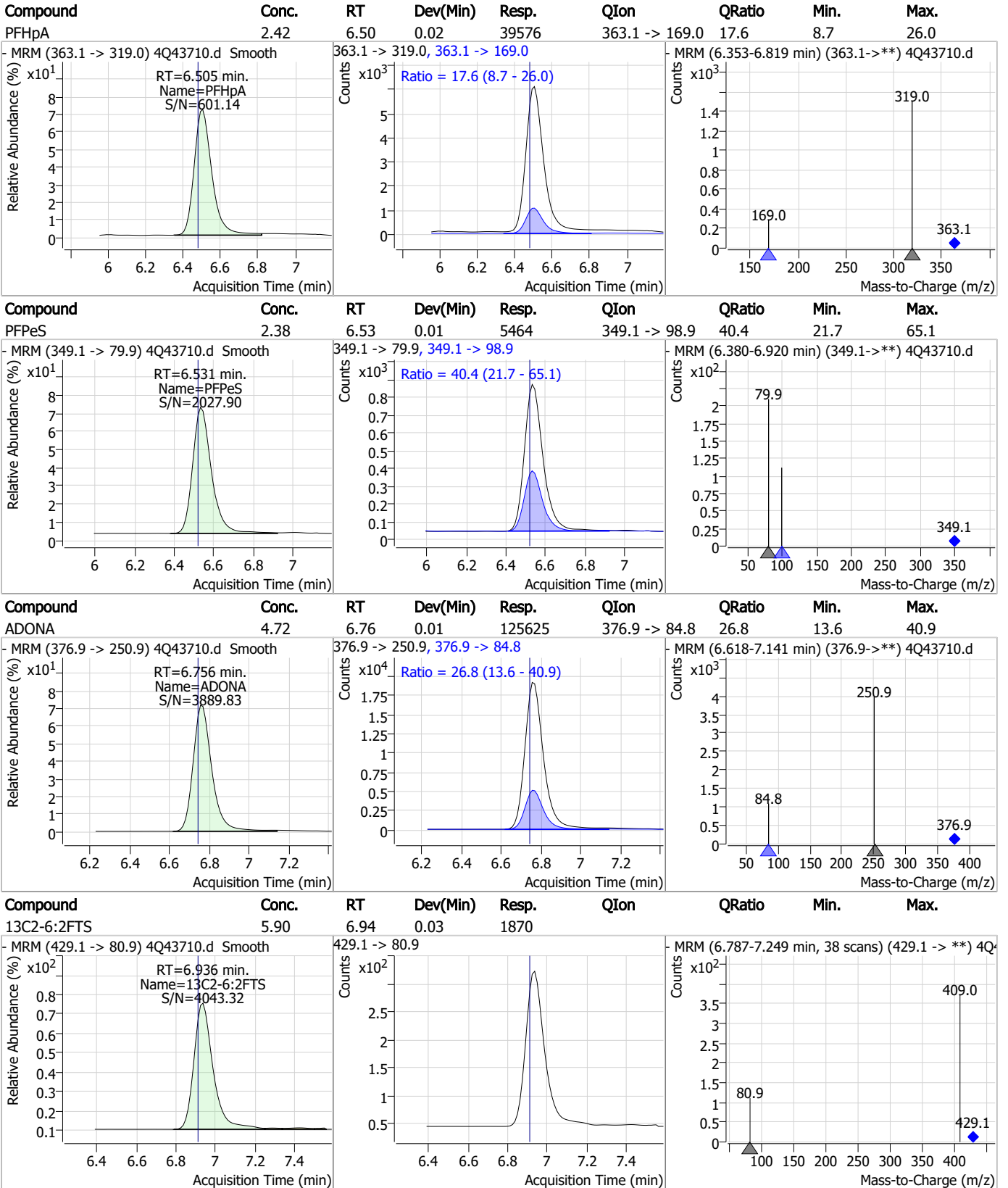


Perfluorinated Compounds by LC/MS/MS



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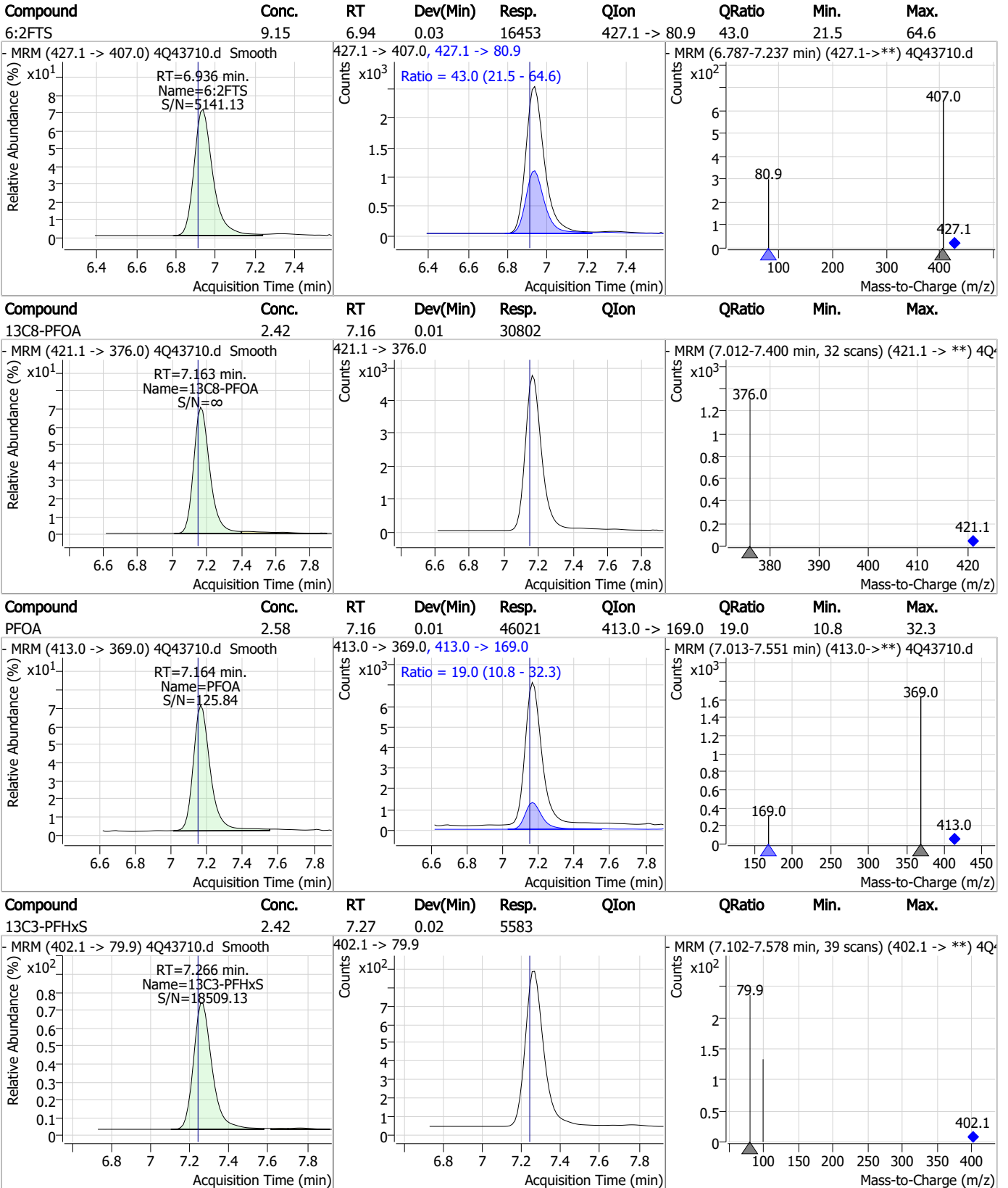
Perfluorinated Compounds by LC/MS/MS



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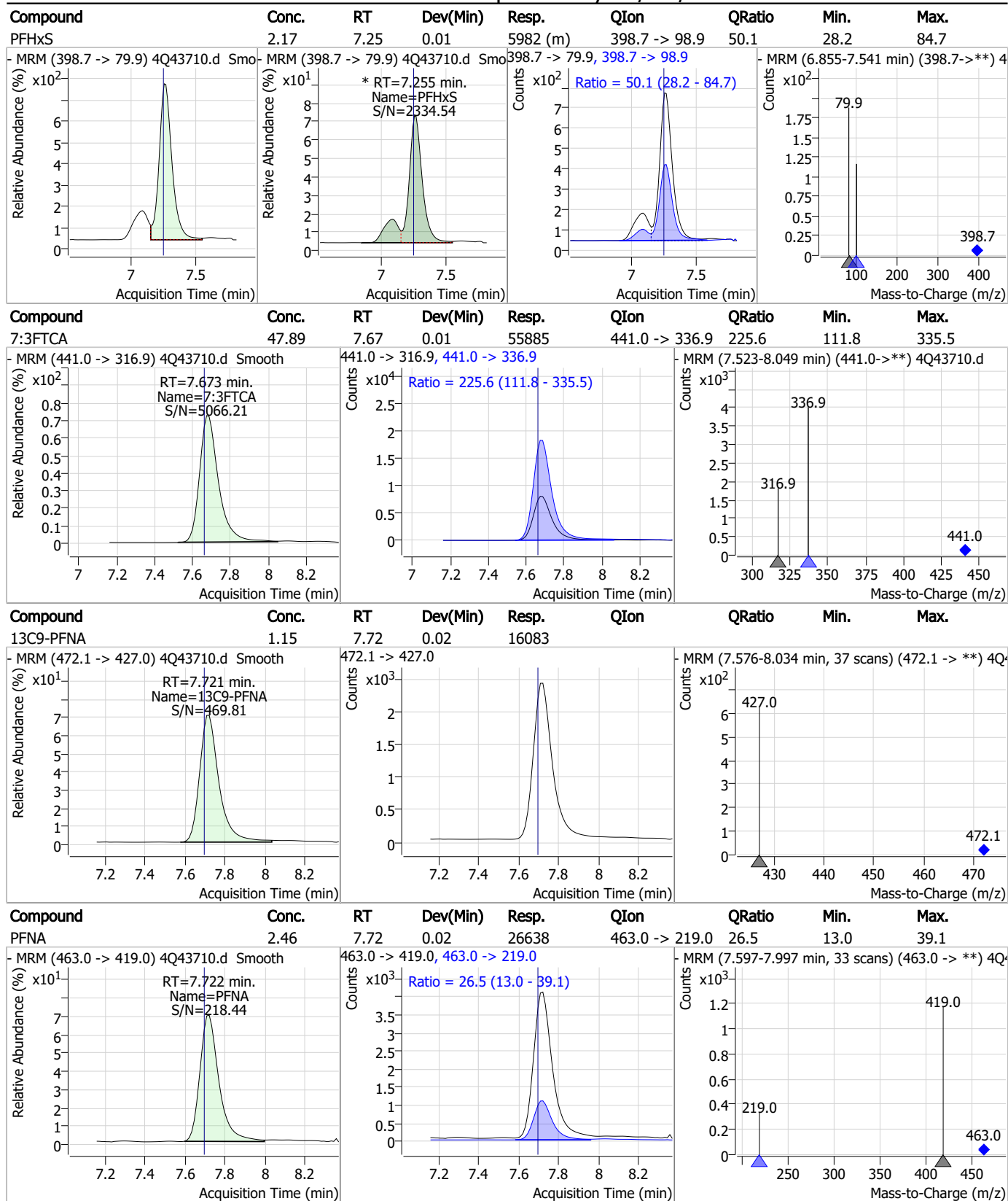
Perfluorinated Compounds by LC/MS/MS



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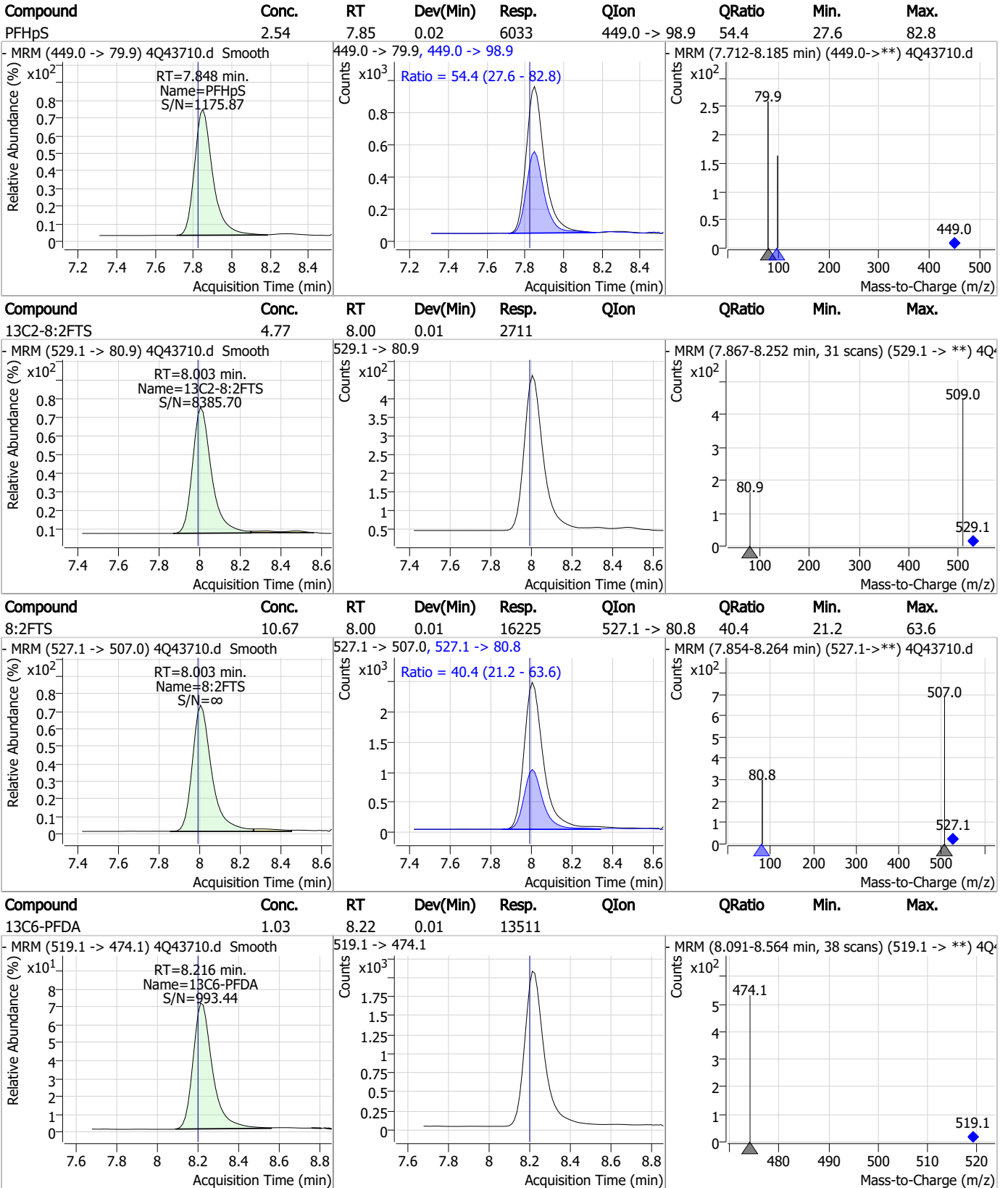
Perfluorinated Compounds by LC/MS/MS



7.4.1
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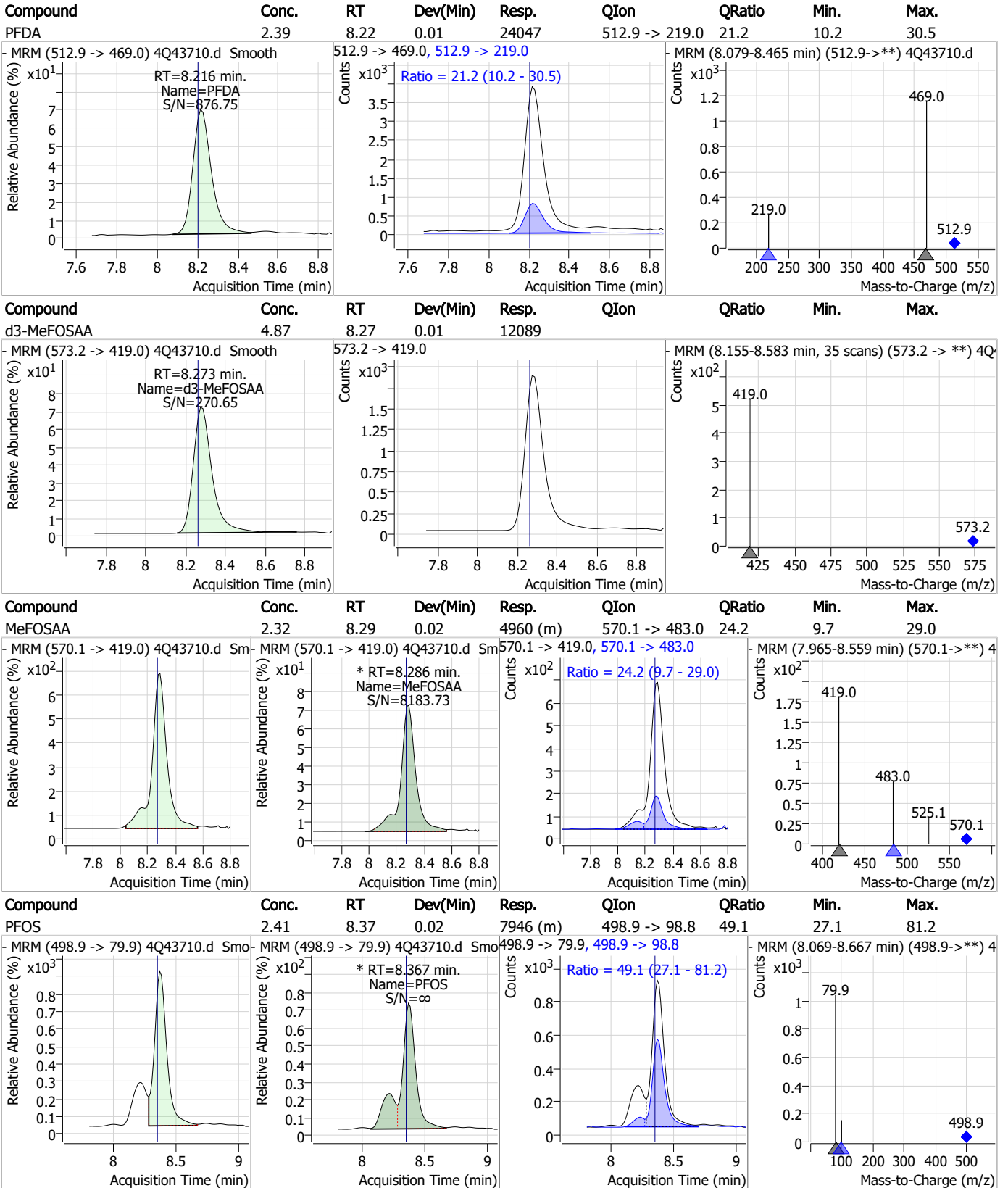
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

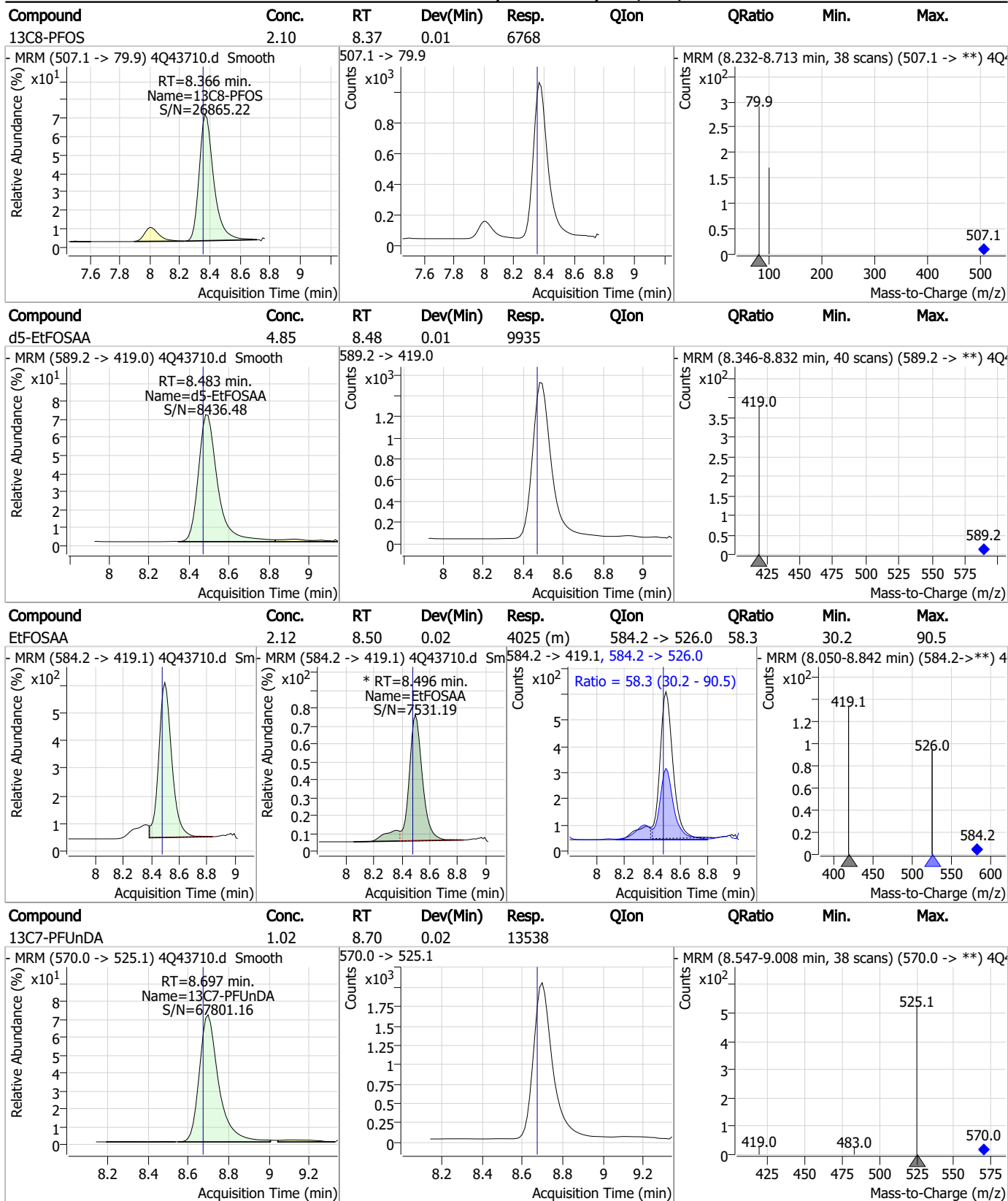


7.4.1

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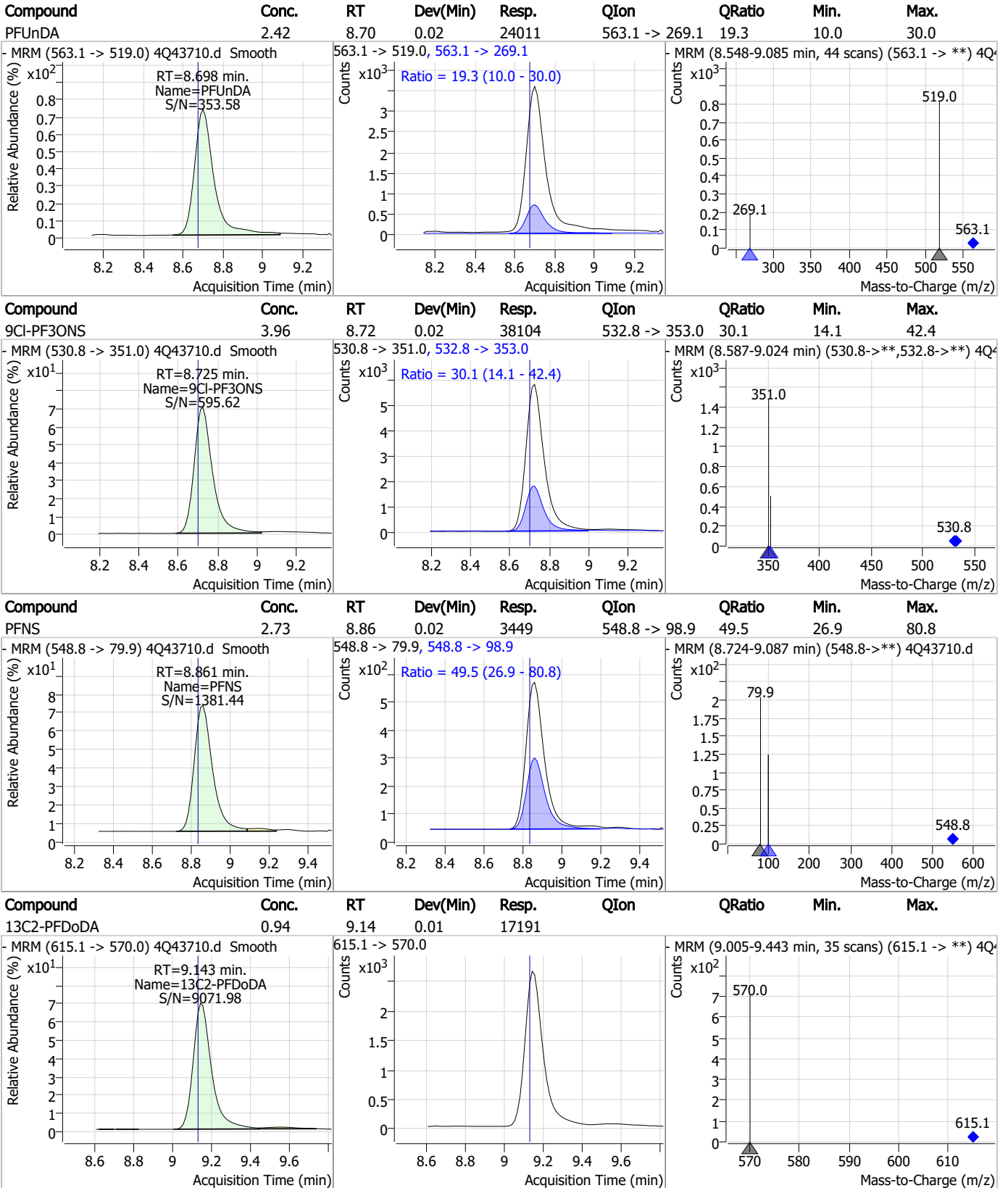


Perfluorinated Compounds by LC/MS/MS



7.4.1
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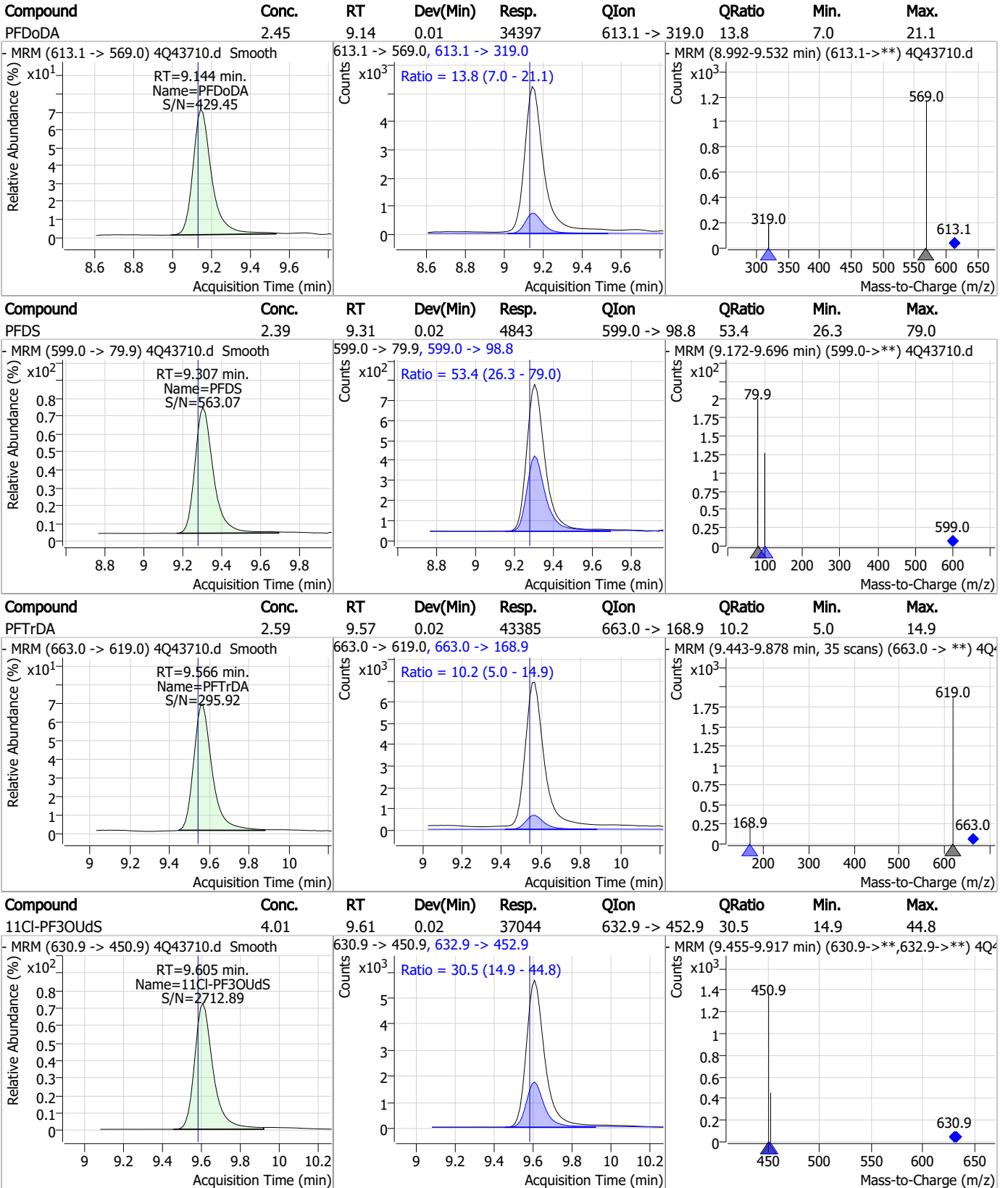
Perfluorinated Compounds by LC/MS/MS



7.4.1

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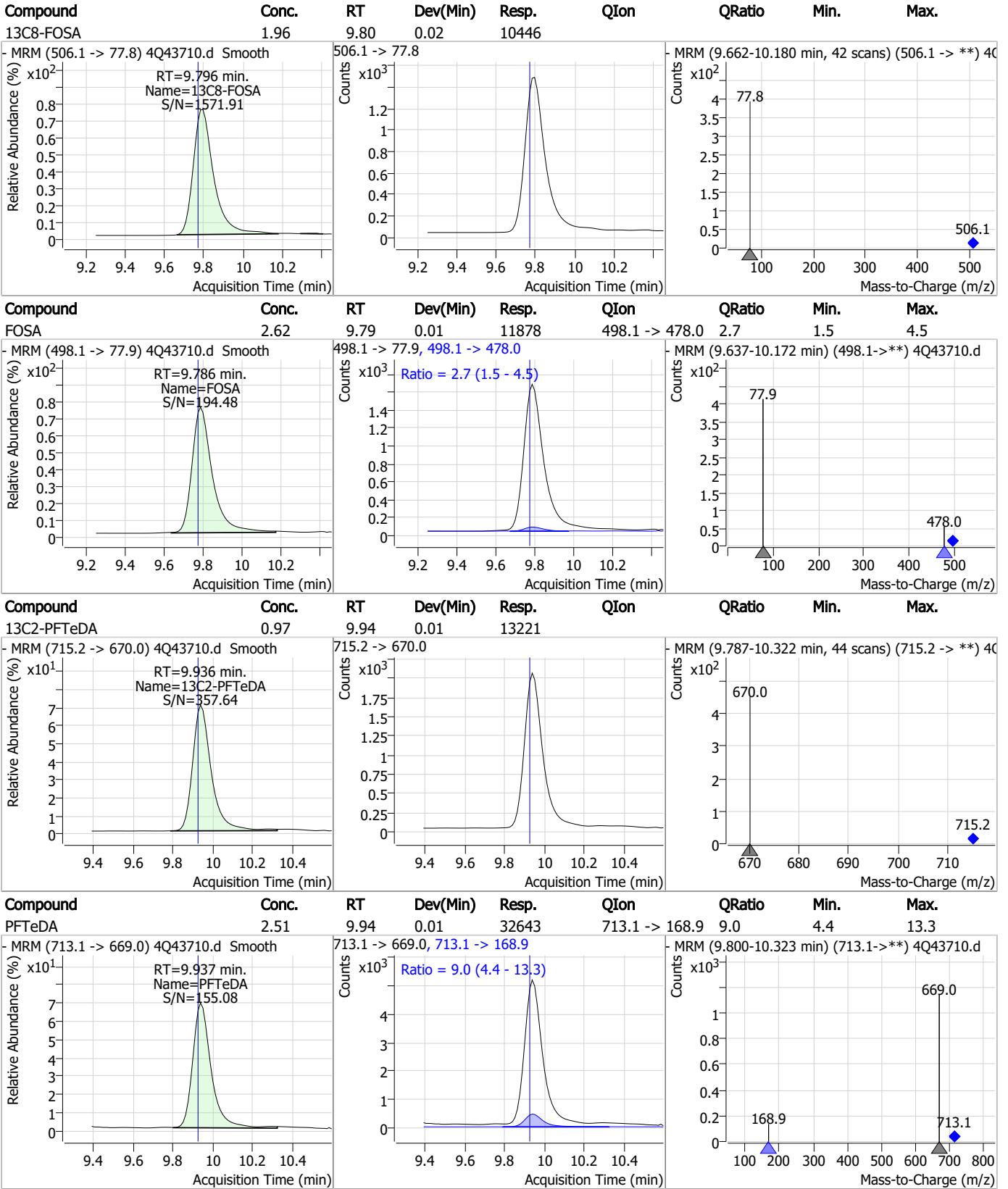
Perfluorinated Compounds by LC/MS/MS



7.4.1

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Perfluorinated Compounds by LC/MS/MS



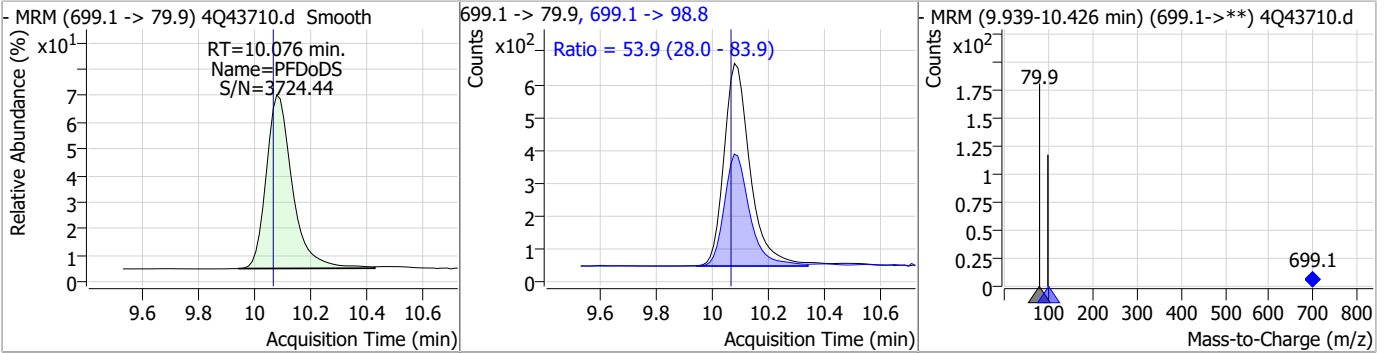
7.4.1

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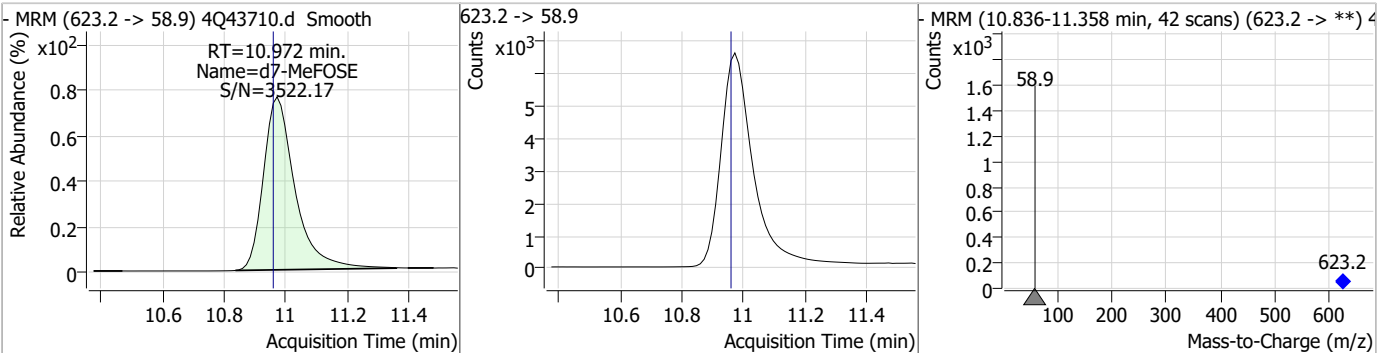


Perfluorinated Compounds by LC/MS/MS

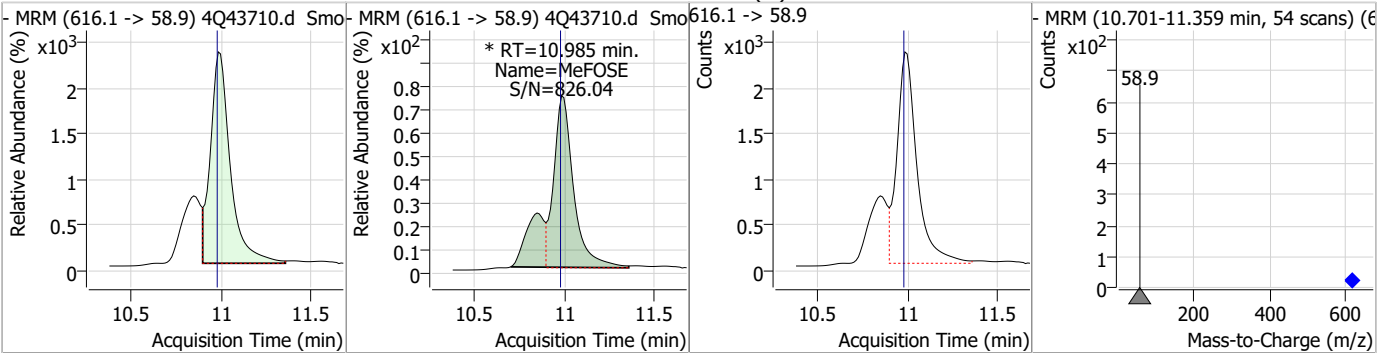
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.25	10.08	0.01	4000	699.1 -> 98.8	53.9	28.0	83.9



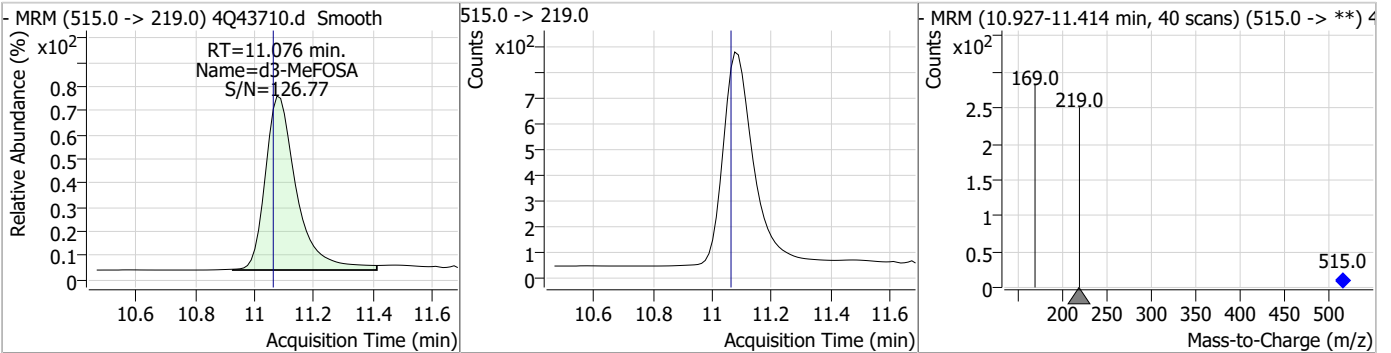
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	18.37	10.97	0.01	46579				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.07	10.99	0.01	23163 (m)				

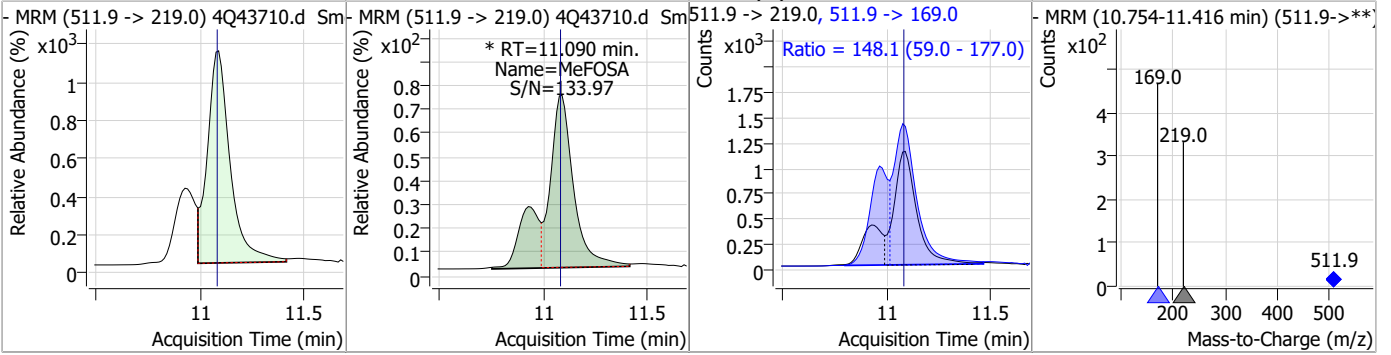


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.02	11.08	0.01	6143				

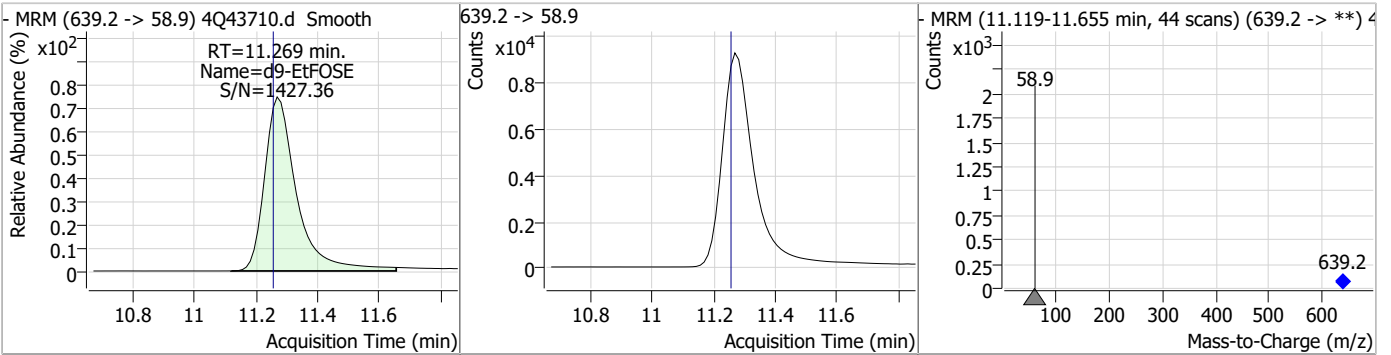


Perfluorinated Compounds by LC/MS/MS

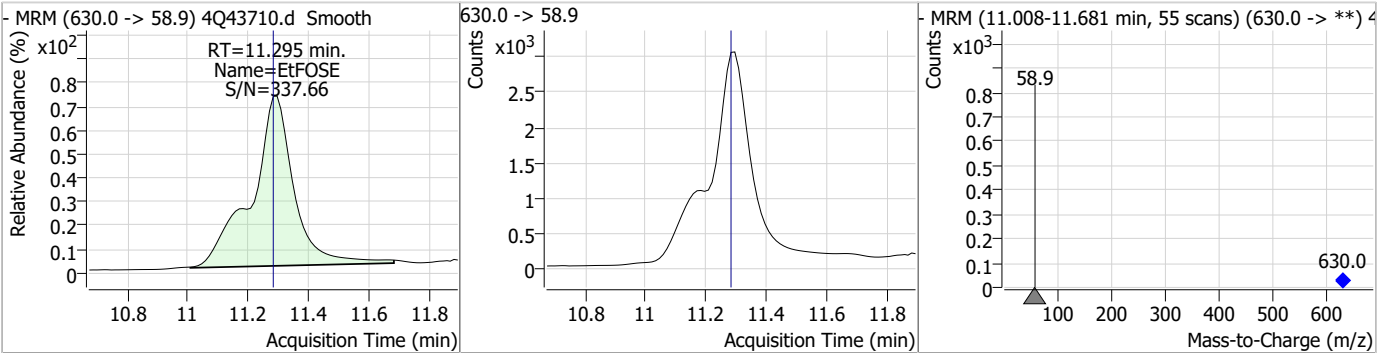
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.65	11.09	0.01	11258 (m)	511.9 -> 169.0	148.1	59.0	177.0



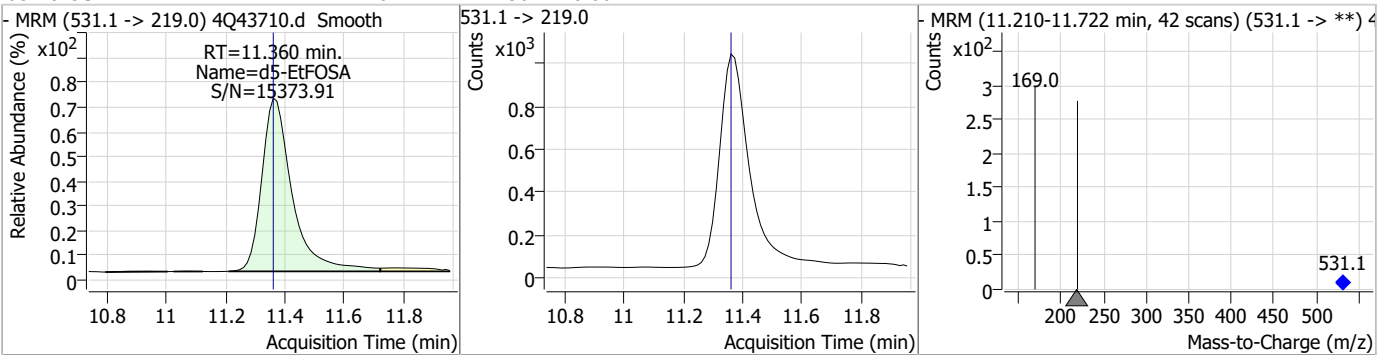
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.68	11.27	0.01	66913				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.65	11.29	0.01	28886				

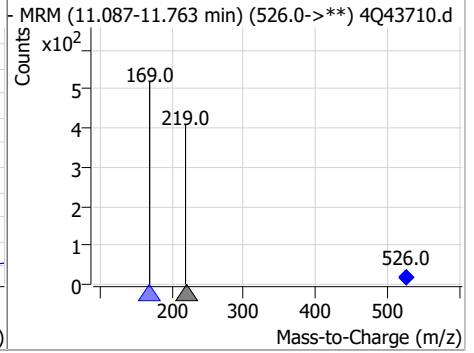
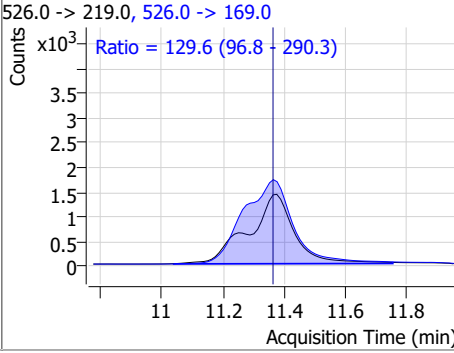
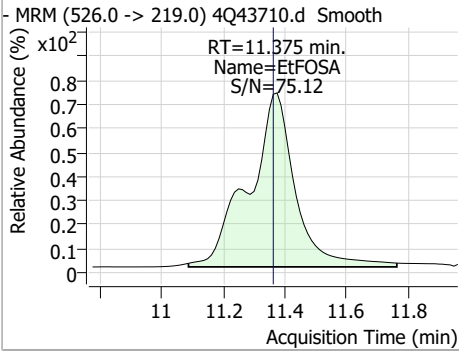


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.01	11.36	0.00	7117				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.90	11.37	0.01	14911	526.0 -> 169.0	129.6	96.8	290.3



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP96548-MS Method: EPA DRAFT 1633
Lab FileID: 4Q43710.D Analyst approved: 04/27/23 13:12 Natasha Gumtie
Injection Time: 04/26/23 19:25 Supervisor approved: 04/27/23 16:58 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.50	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.09	Split peak

7.4.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43711.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 7:39:31 PM
 Sample Name : op96548-dup
 Vial : P3-B7
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,540,,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	3359	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	13608	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	40215	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	25442	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	32008	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	17842	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	17878	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	18643	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	20472	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	11909	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	12661	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	9382	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6178	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	7581	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1410	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	1425	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2839	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	17846	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	19982	10.00 µg/L	0.012
M5-EtFOSAA	8.470	589.2 -> 419.0	14474	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	43913	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	61716	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7942	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7322	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	6831	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	51572	5.00 µg/L	0.000
18O2-PFHxS	7.265	403.0 -> 83.9	3774	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	36493	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16059	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	18930	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	37739	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1410	7.12 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 142.3%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1425	4.93 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2839	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C2-PFDoDA	9.143	615.1 -> 570.0	20472	1.04 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.0%		
13C2-PFTeDA	9.936	715.2 -> 670.0	11909	0.81 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 64.7%		
13C3-PFBS	5.464	302.1 -> 79.9	9382	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C3-PFHxS	7.254	402.1 -> 79.9	6178	2.94 µg/L	0.012

7.5.1
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 = 117.6%		
13C4-PFBA	2.924	216.8 -> 171.9	3359	0.38 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 3.8%		
13C4-PFHpA	6.492	367.1 -> 322.0	25442	2.76 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C5-PFHxA	5.559	318.0 -> 273.0	40215	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.5%		
13C5-PFPeA	4.387	268.3 -> 223.0	13608	1.19 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 23.8%		
13C6-PFDA	8.216	519.1 -> 474.1	17878	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C7-PFUnDA	8.697	570.0 -> 525.1	18643	1.30 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C8-FOSA	9.783	506.1 -> 77.8	12661	2.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C8-PFOA	7.163	421.1 -> 376.0	32008	2.61 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C8-PFOS	8.354	507.1 -> 79.9	7581	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C9-PFNA	7.709	472.1 -> 427.0	17842	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.7%		
d3-MeFOSAA	8.273	573.2 -> 419.0	17846	8.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 165.4%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	19982	8.06 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 80.6%		
d3-MeFOSA	11.076	515.0 -> 219.0	7322	2.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.8%		
d5-EtFOSAA	8.470	589.2 -> 419.0	14474	8.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 162.5%		
d7-MeFOSE	10.972	623.2 -> 58.9	43913	19.91 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 79.6%		
d9-EtFOSE	11.269	639.2 -> 58.9	61716	21.92 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 87.7%		
d5-EtFOSA	11.360	531.1 -> 219.0	7942	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.9%		

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	9.255	613.1 -> 569.0	0	µg/L m	1
		613.1 -> 319.0	0		
PFDS	9.257	599.0 -> 79.9	0	µg/L m	1

7.5.1
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	8.333	449.0 -> 79.9	0	µg/L	m	1
		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	7.859	463.0 -> 419.0	0	µg/L	m	1
		463.0 -> 219.0	0			
PFNS	8.749	548.8 -> 79.9	0	µg/L	m	1
		548.8 -> 98.9	0			
PFOA	7.164	413.0 -> 369.0	0	µg/L	m	1
		413.0 -> 169.0	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				
PFTrDA	9.828	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9	0			
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



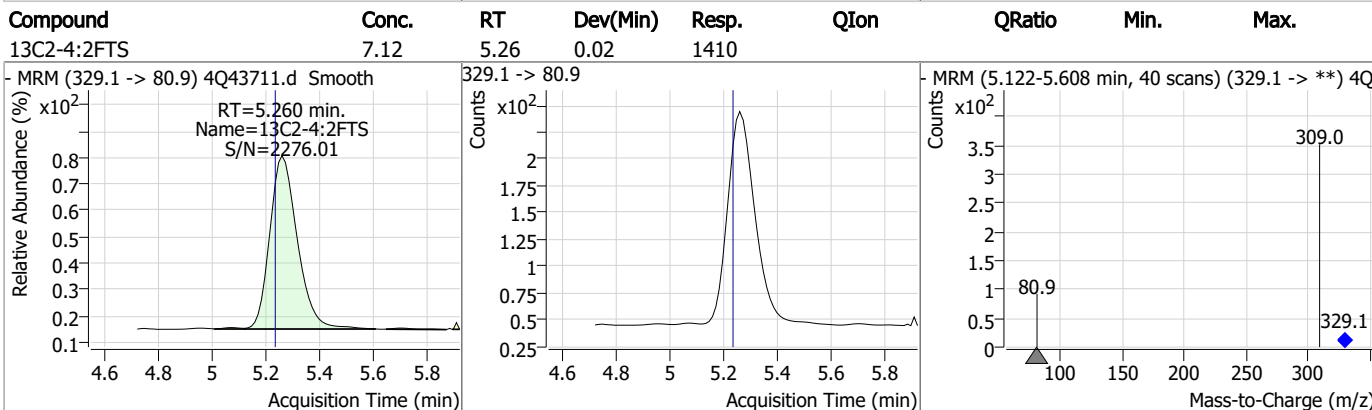
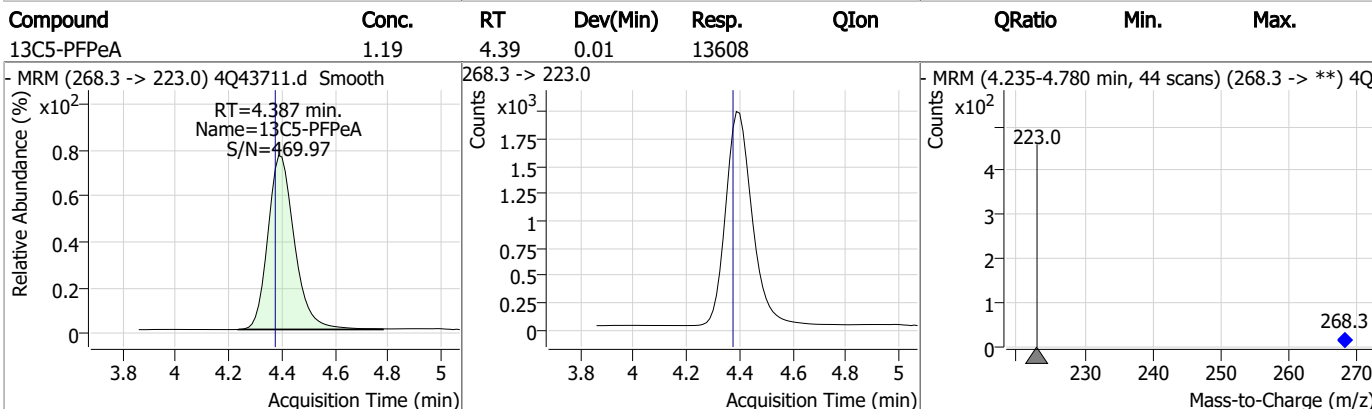
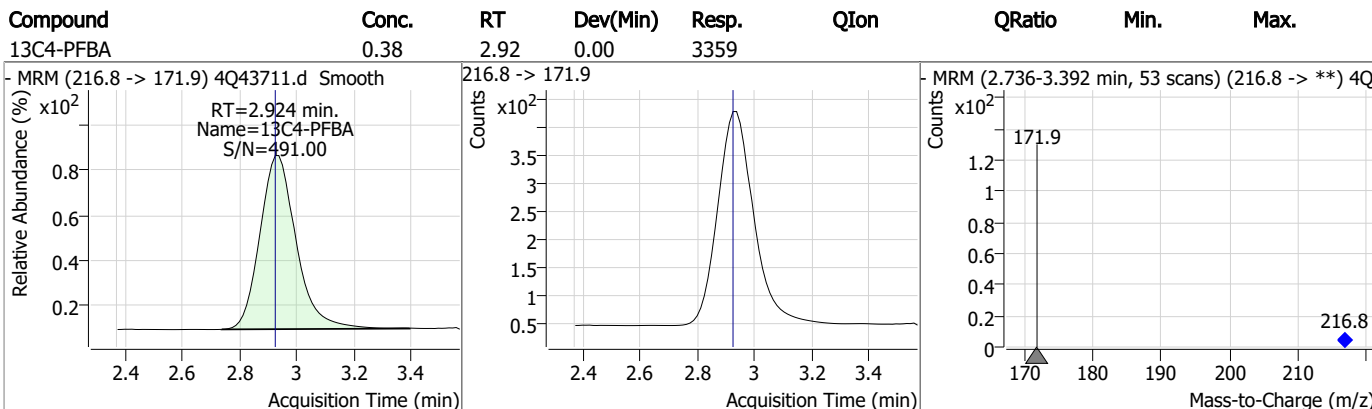
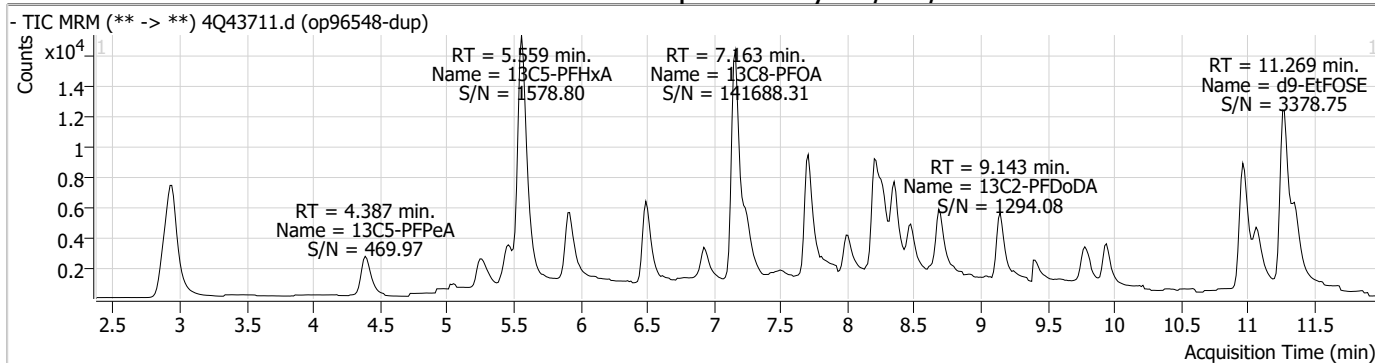
Perfluorinated Compounds by LC/MS/MS

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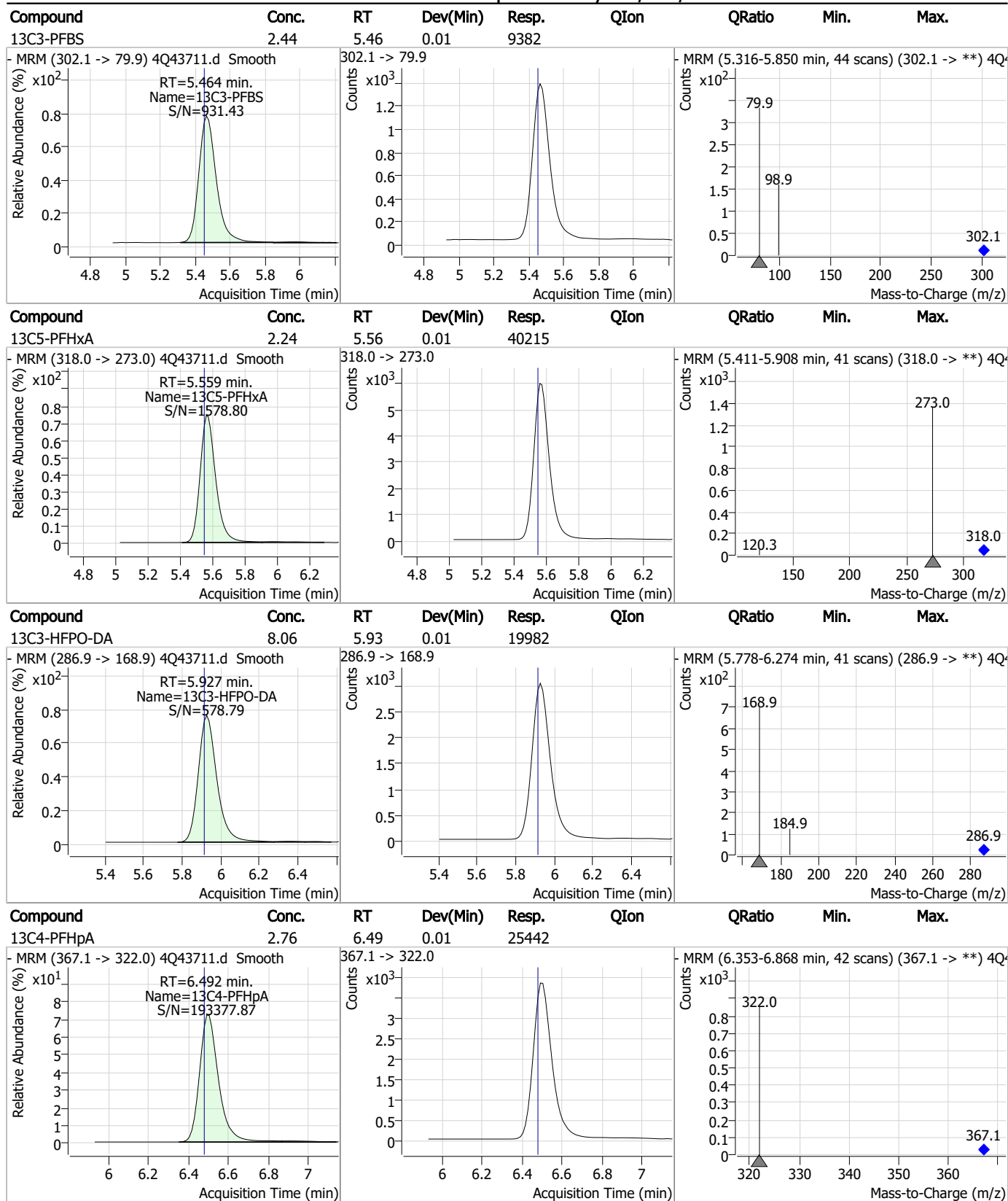
7.5.1

7

Perfluorinated Compounds by LC/MS/MS



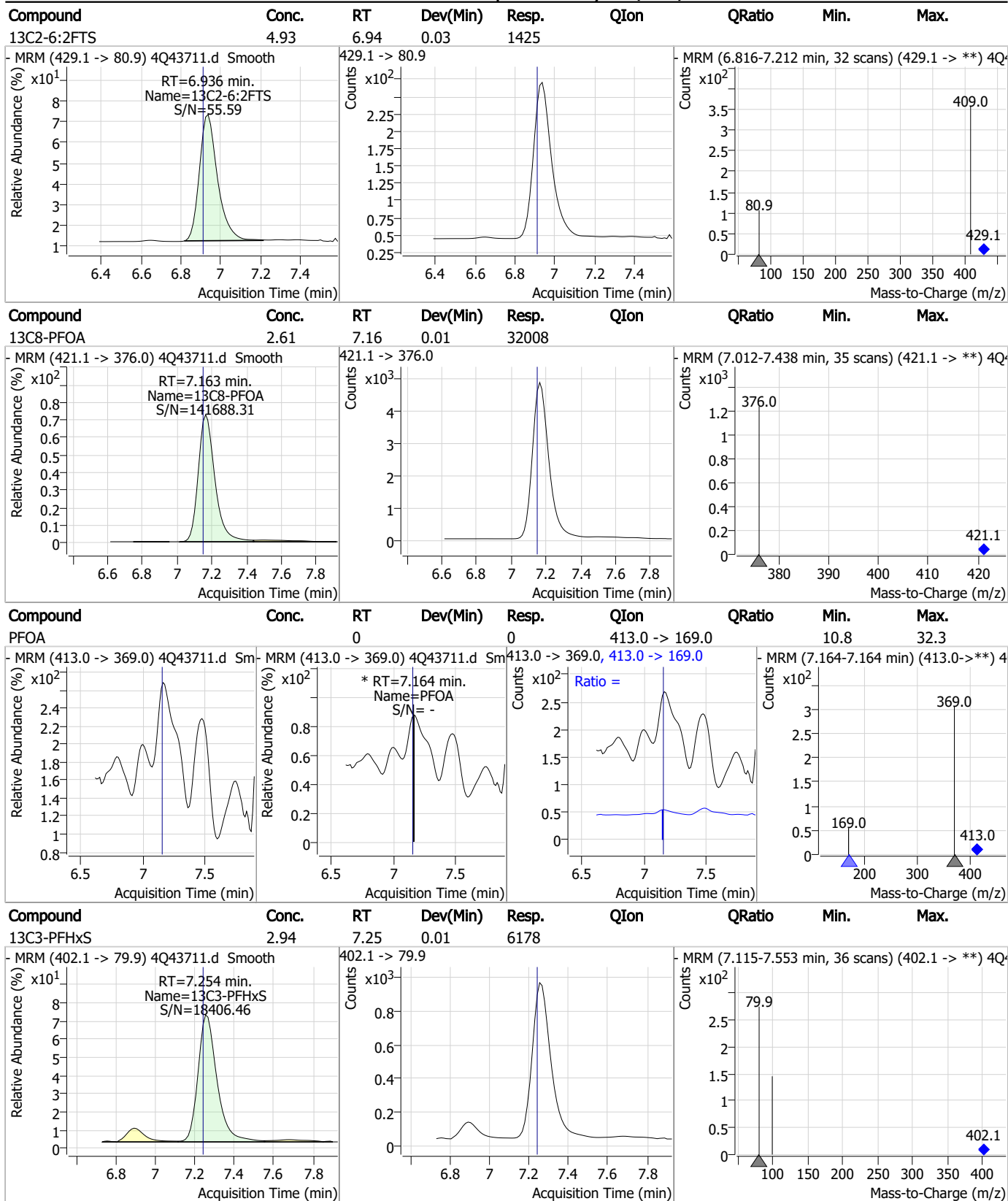
Perfluorinated Compounds by LC/MS/MS



7.5.1
7

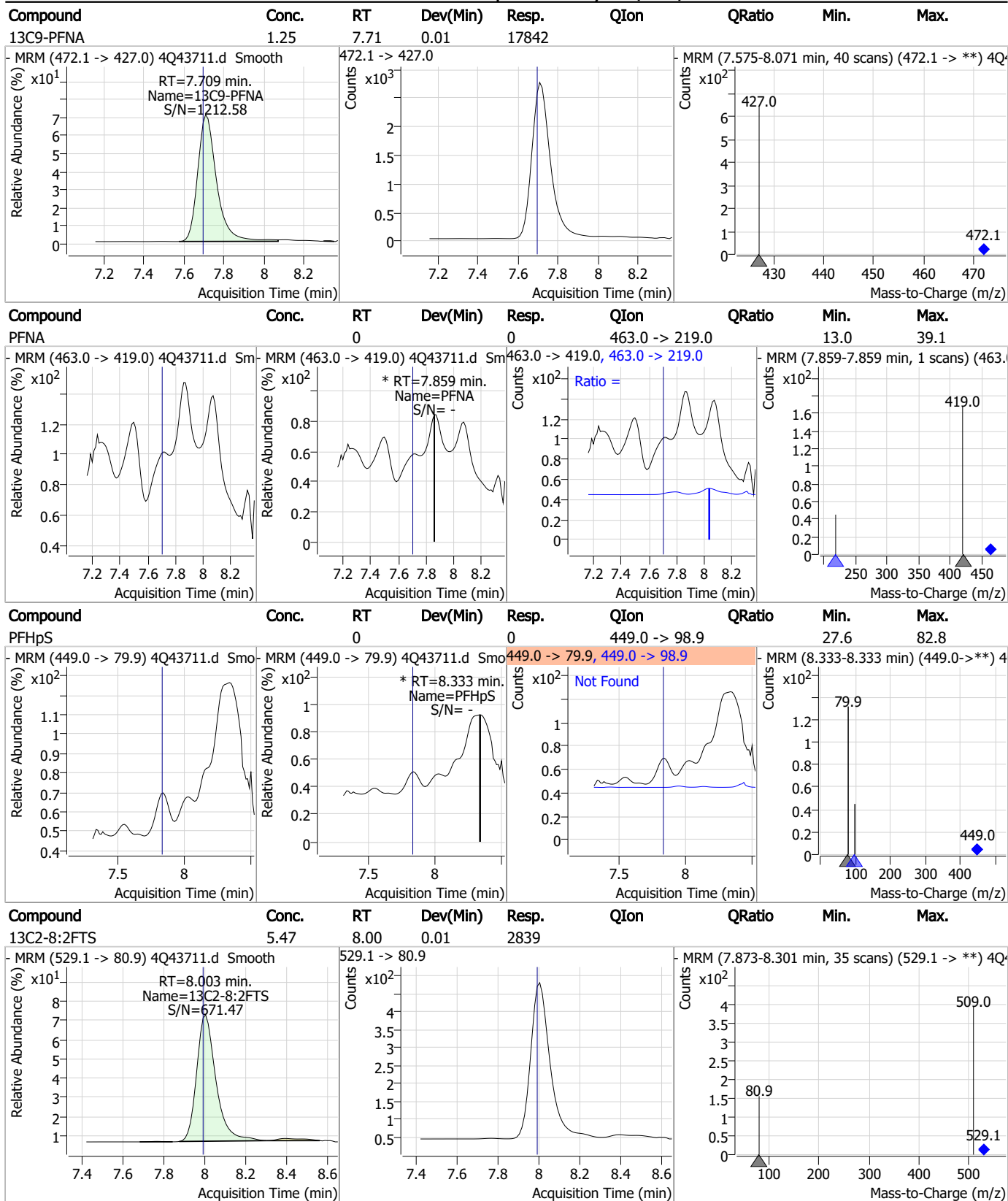


Perfluorinated Compounds by LC/MS/MS



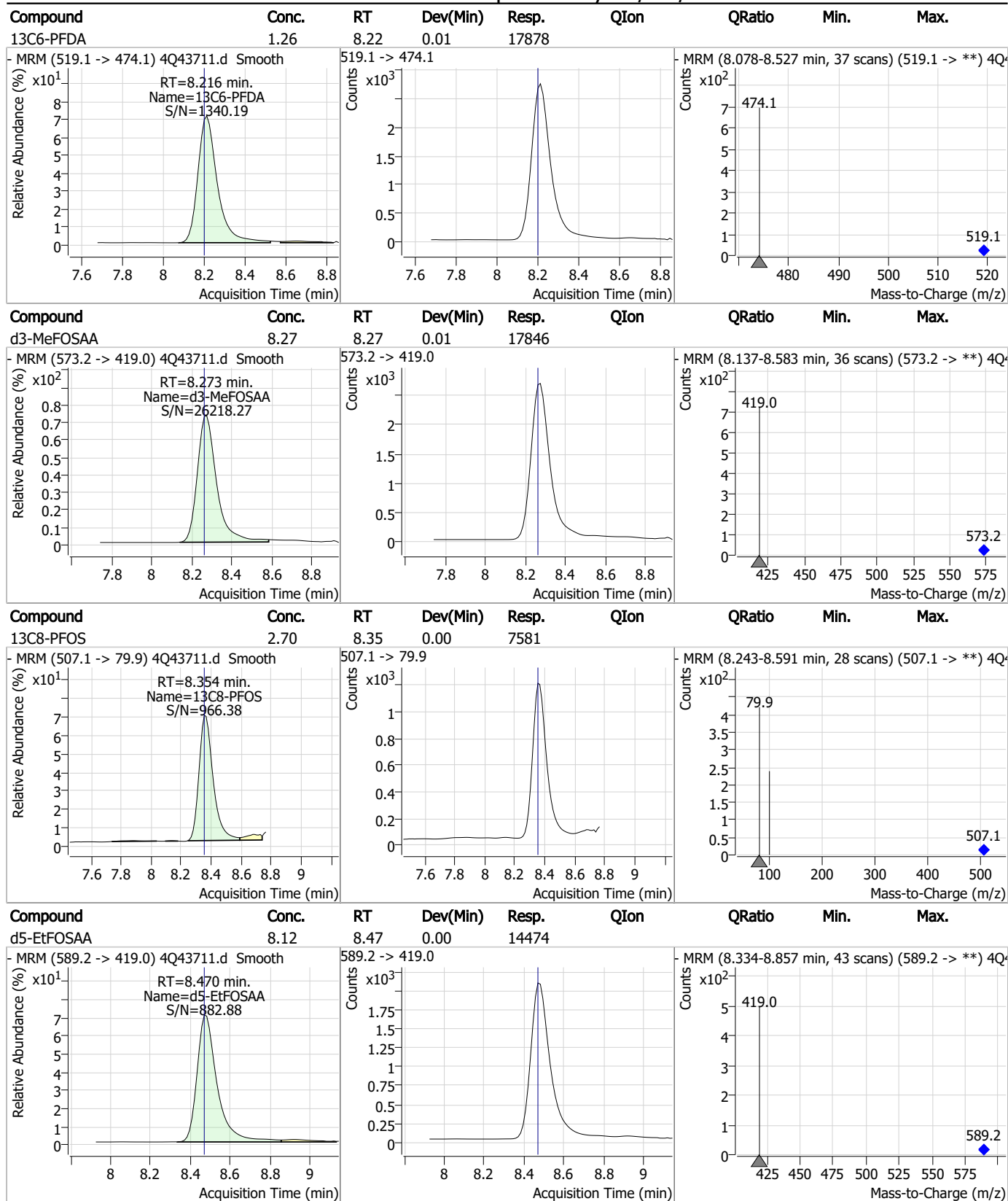
7.5.1
7

Perfluorinated Compounds by LC/MS/MS



7.5.1
7

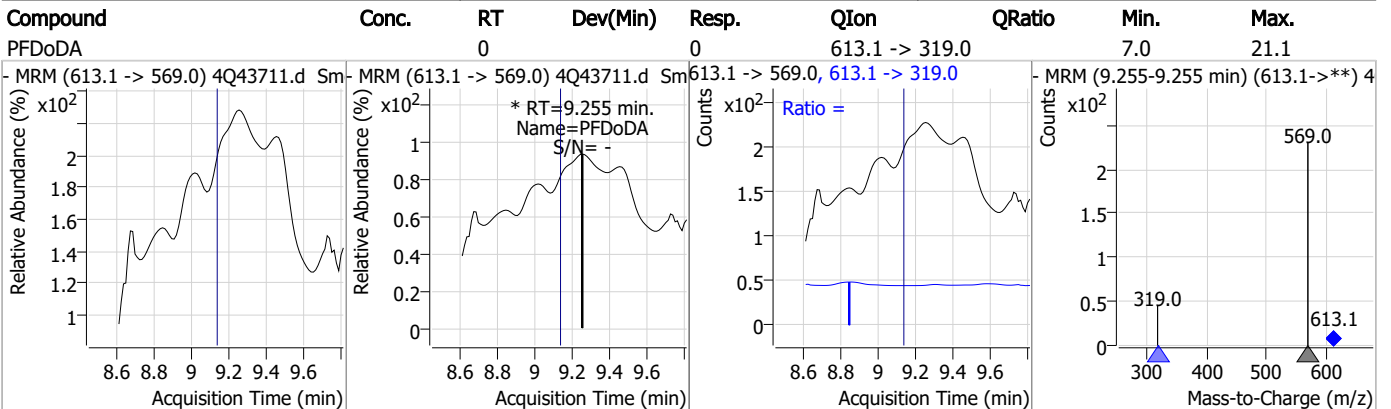
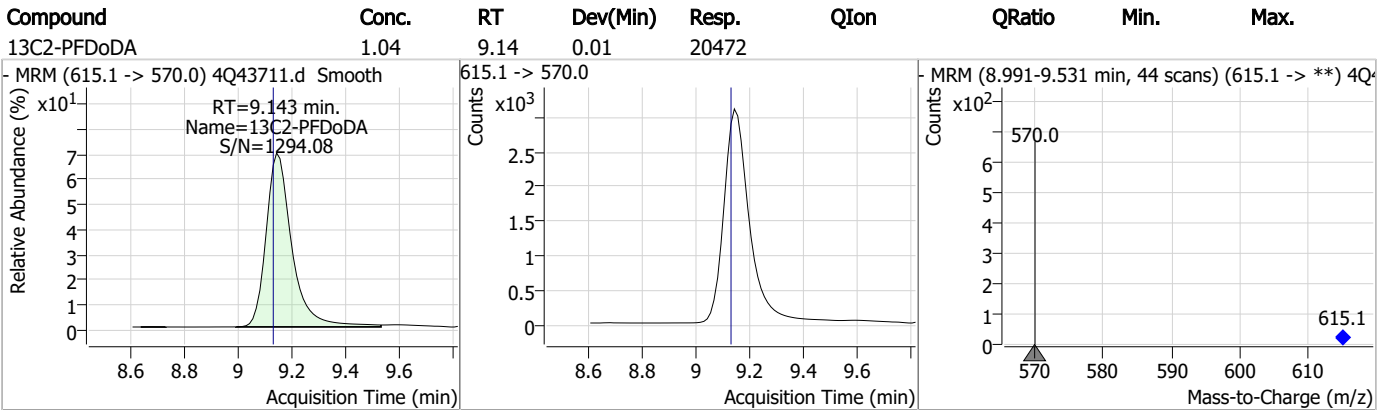
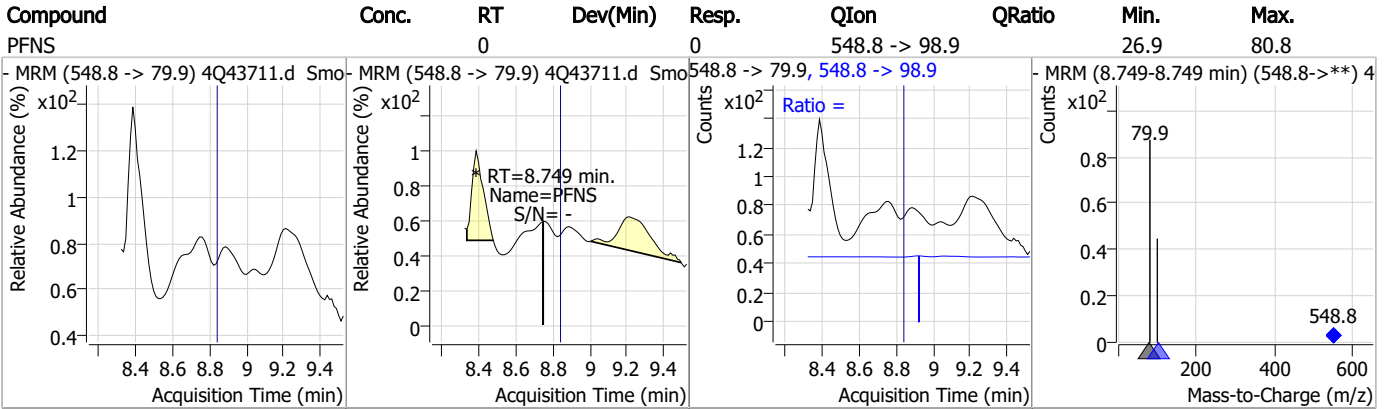
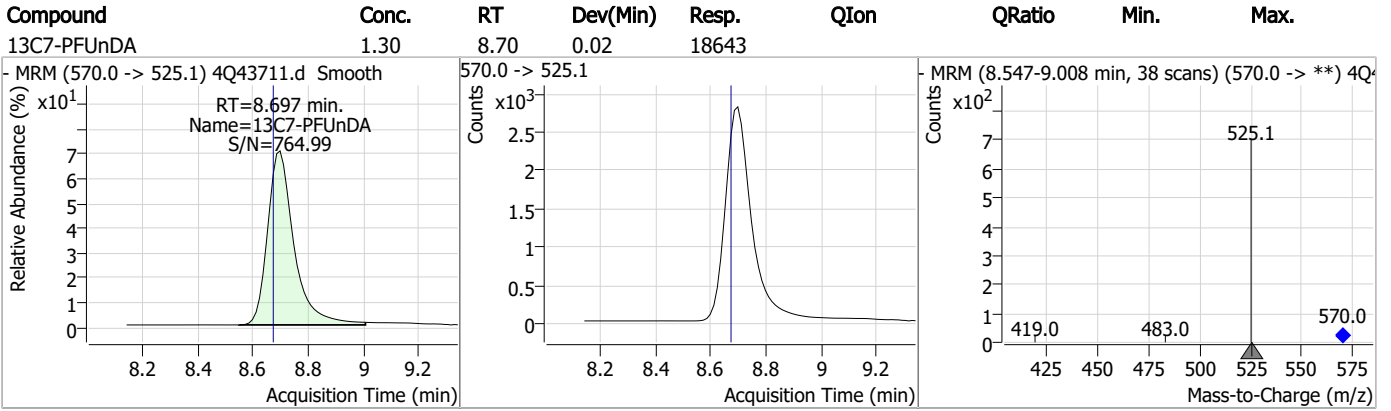
Perfluorinated Compounds by LC/MS/MS



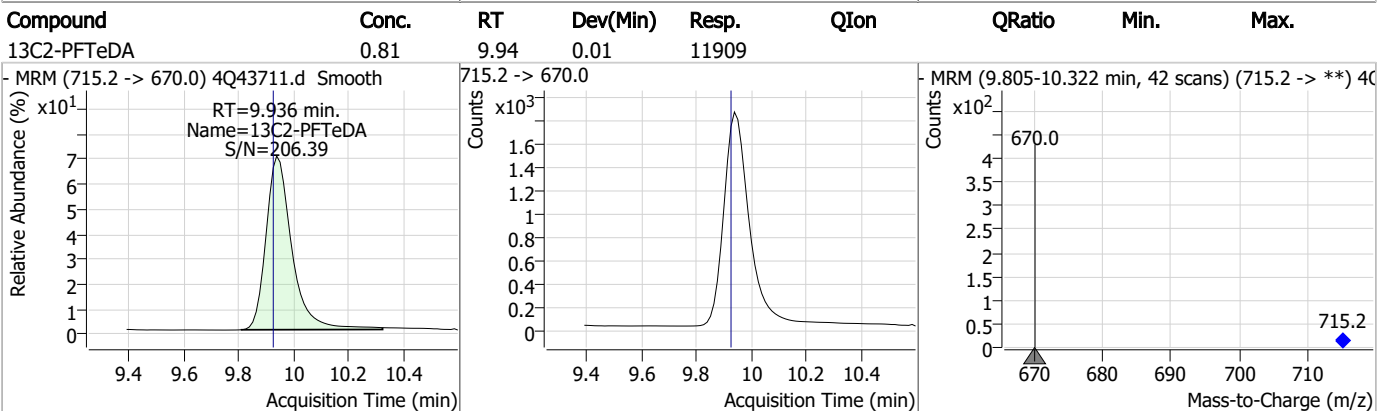
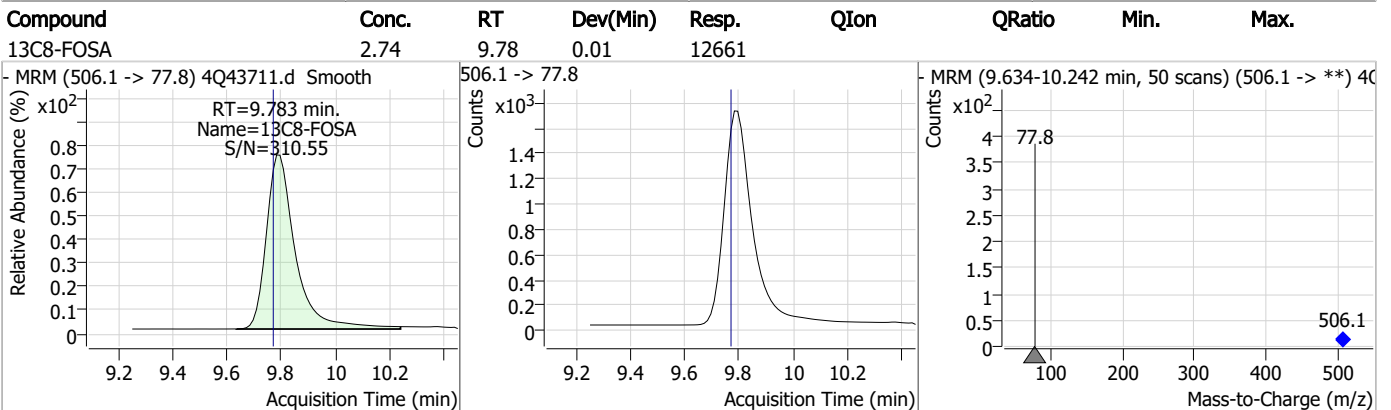
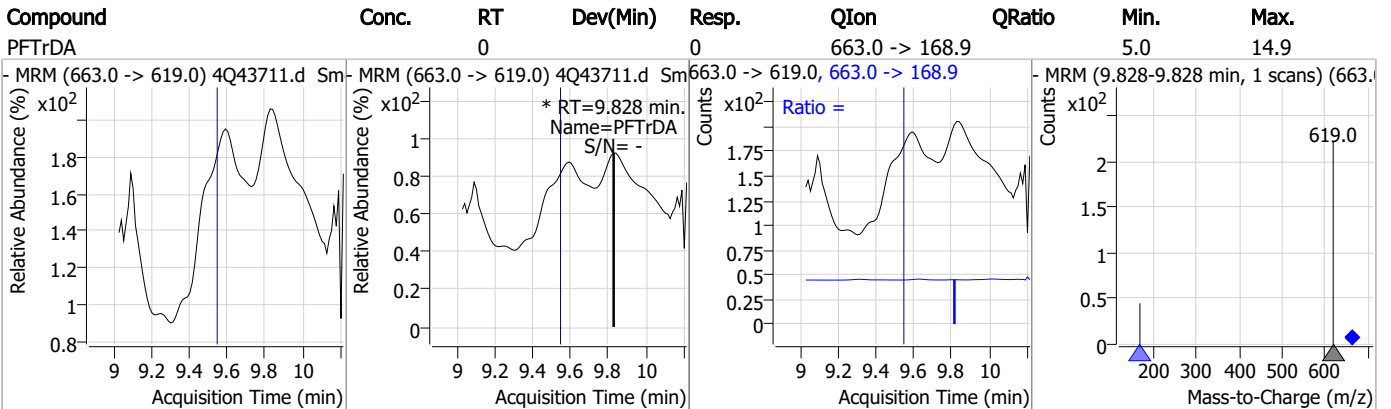
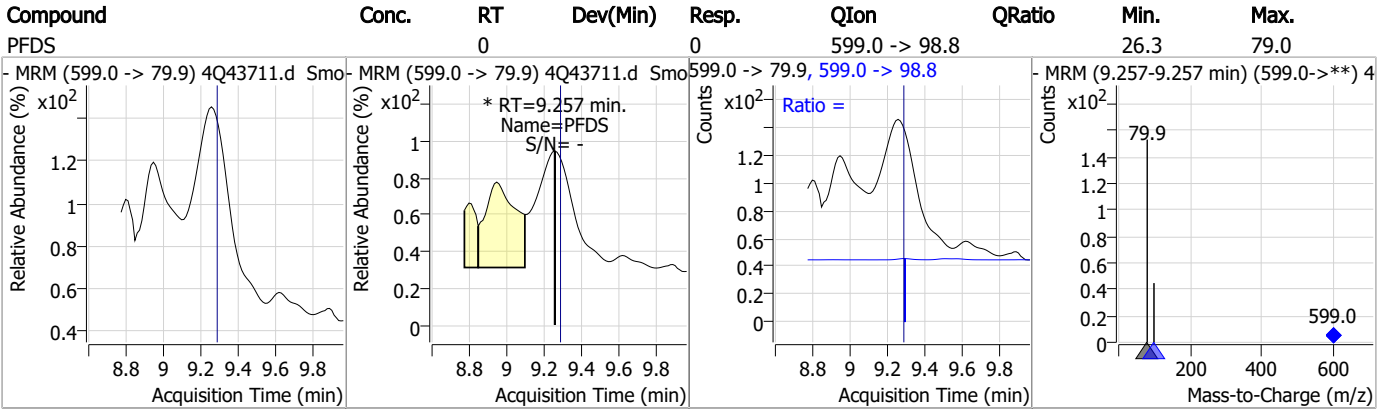
7.5.1
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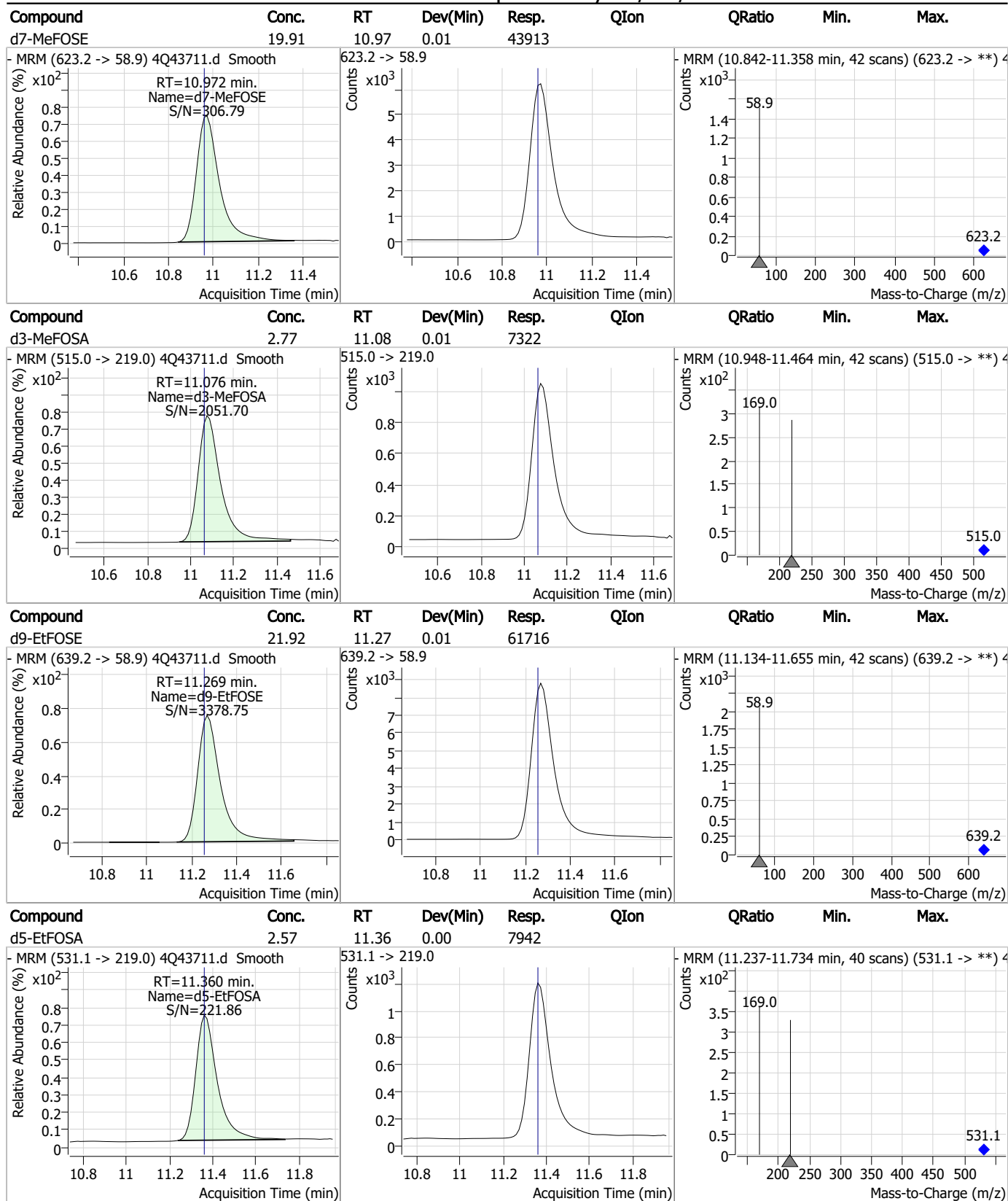
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.5.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Norman Farmer
 04/27/23 16:36

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43678.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 11:55:21 AM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q631_TDCA.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

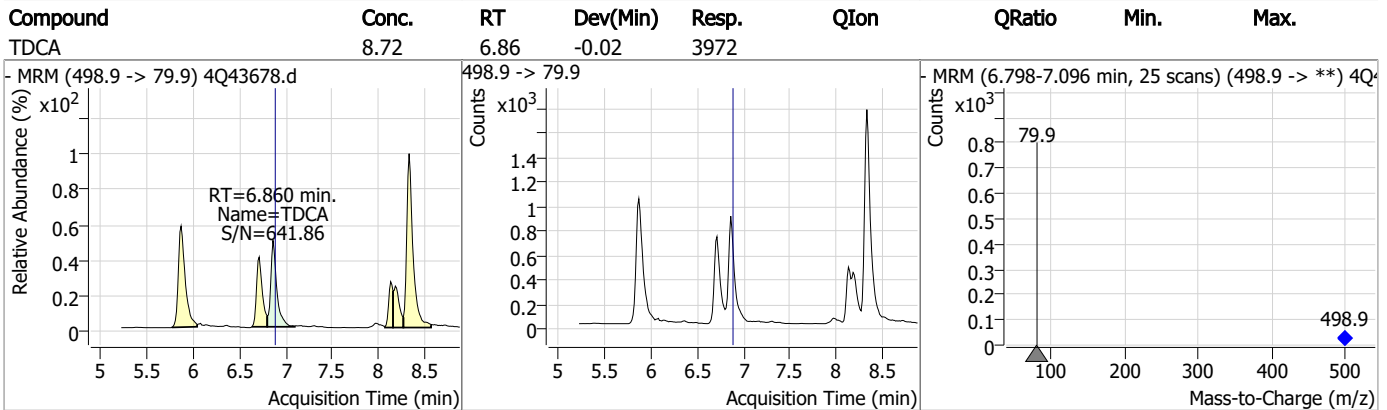
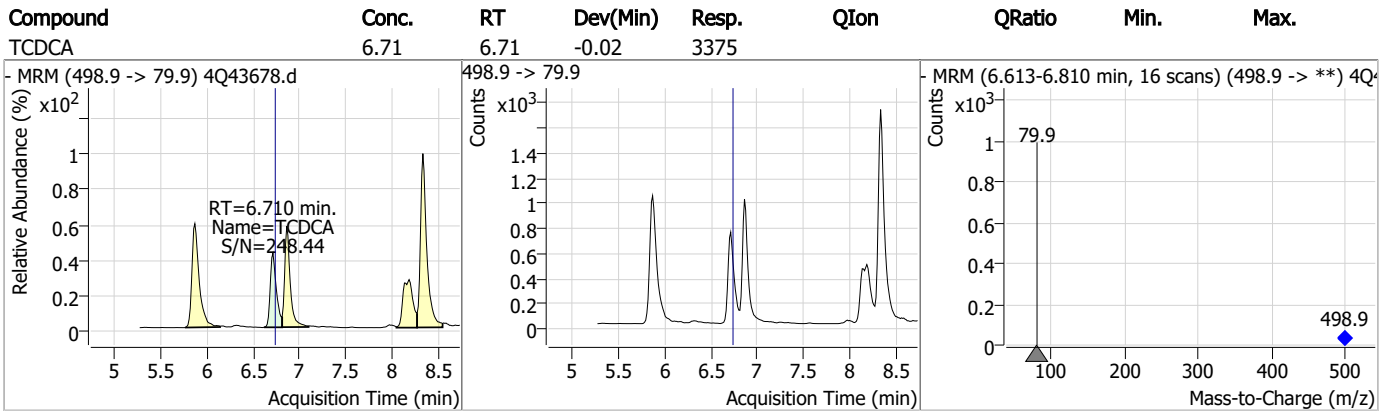
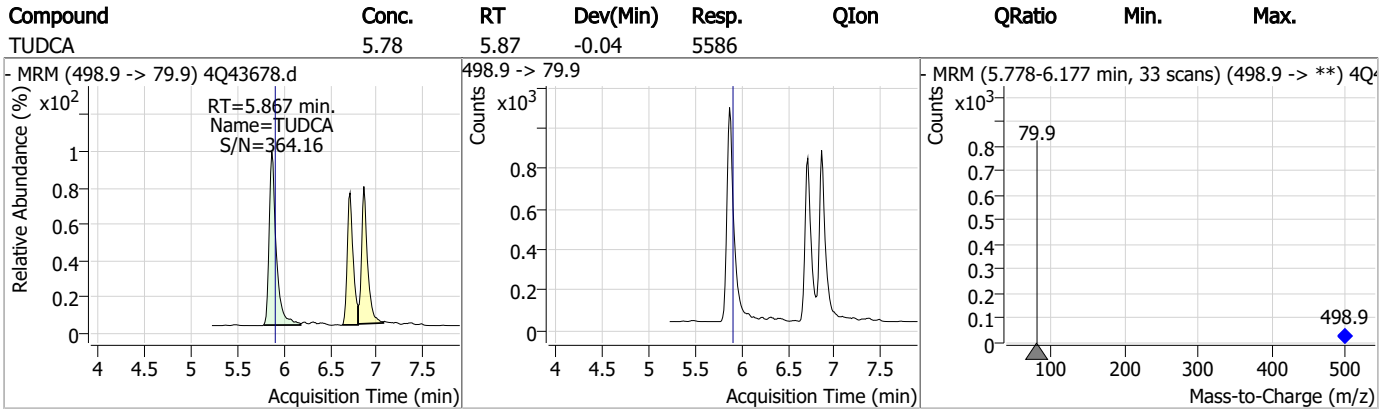
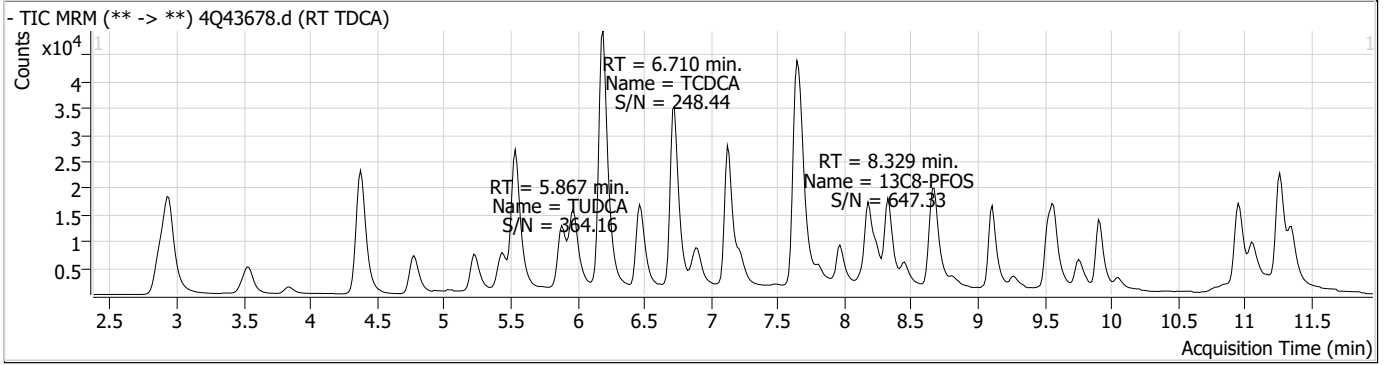
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.329	507.1 -> 79.9	10898	2.50	µg/L	-0.037	
13C4-PFOS	8.330	502.8 -> 79.9	10895	2.50	µg/L	-0.037	
System Monitoring Compounds							
13C8-PFOS	8.329	507.1 -> 79.9	10898	2.54	µg/L	-0.037	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.5%				
Target Compounds							
PFOS	8.330	498.9 -> 79.9	11743	3.15	µg/L	m	98
		498.9 -> 98.8	5490				
TCDCa	6.710	498.9 -> 79.9	3375	6.71	ng/ml		100
TDCA	6.860	498.9 -> 79.9	3972	8.72	ng/ml		100
TUDCA	5.867	498.9 -> 79.9	5586	5.78	ng/ml		100

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

7.6.1

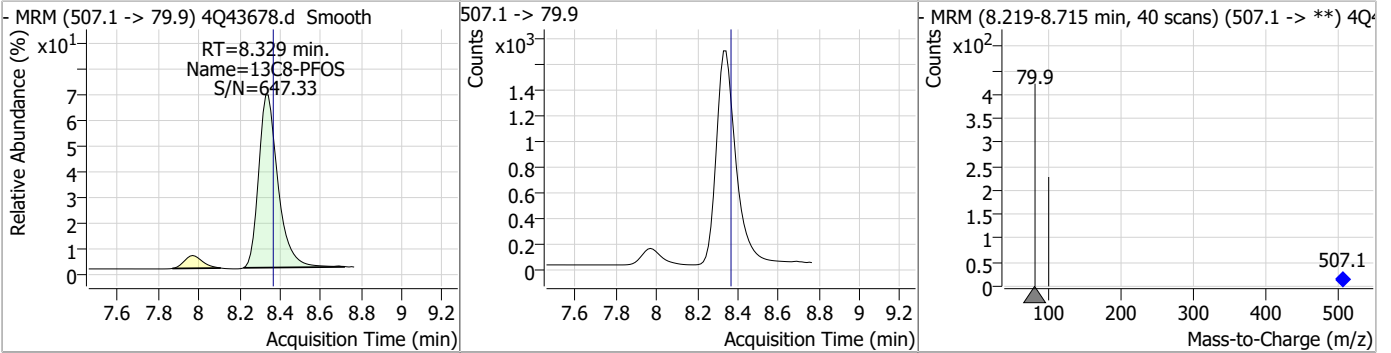
7

Perfluorinated Compounds by LC/MS/MS

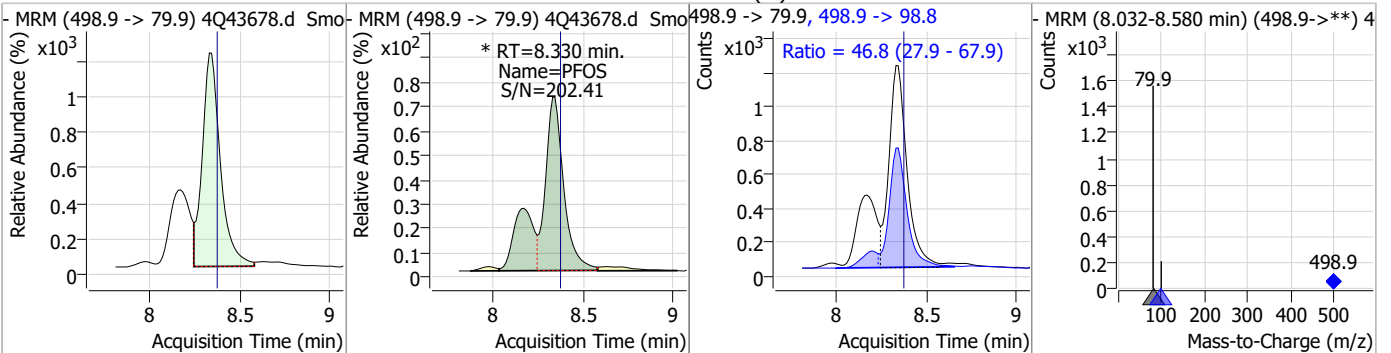


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.54	8.33	-0.04	10898				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.15	8.33	-0.04	11743 (m)	498.9 -> 98.8	46.8	27.9	67.9



7.6.1

7



Manual Integration Approval Summary

Sample Number: S4Q631-RT Method: EPA DRAFT 1633
Lab FileID: 4Q43678.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 11:55 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43679.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 12:09:26 PM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	75450	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	56085	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	42114	2.50 µg/L	-0.012
M4-PFHpA	6.467	367.1 -> 322.0	23325	2.50 µg/L	-0.012
M8-PFOA	7.136	421.1 -> 376.0	30066	2.50 µg/L	-0.012
M9-PFNA	7.684	472.1 -> 427.0	15378	1.25 µg/L	-0.012
M6-PFDA	8.191	519.1 -> 474.1	14961	1.25 µg/L	-0.012
M7-PFUnDA	8.660	570.0 -> 525.1	14340	1.25 µg/L	-0.012
M2-PFDoDA	9.106	615.1 -> 570.0	20498	1.25 µg/L	-0.025
M2-PFTeDA	9.911	715.2 -> 670.0	14931	1.25 µg/L	-0.012
M8-FOSA	9.758	506.1 -> 77.8	12498	2.50 µg/L	-0.012
M3-PFBS	5.439	302.1 -> 79.9	10153	2.50 µg/L	-0.012
M3-PFHxS	7.229	402.1 -> 79.9	5810	2.50 µg/L	-0.012
M8-PFOS	8.341	507.1 -> 79.9	7659	2.50 µg/L	-0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1026	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1454	5.00 µg/L	0.000
M2-8:2FTS	7.966	529.1 -> 80.9	2568	5.00 µg/L	-0.025
M3-MeFOSAA	8.249	573.2 -> 419.0	11115	5.00 µg/L	-0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	26068	10.00 µg/L	-0.012
M5-EtFOSAA	8.446	589.2 -> 419.0	8682	5.00 µg/L	-0.025
M7-MeFOSE	10.947	623.2 -> 58.9	57241	25.00 µg/L	-0.012
M9-EtFOSE	11.256	639.2 -> 58.9	76709	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	8437	2.50 µg/L	-0.012
M3-MeFOSA	11.064	515.0 -> 219.0	6975	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	7403	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	44436	5.00 µg/L	0.000
18O2-PFHxS	7.228	403.0 -> 83.9	3955	2.50 µg/L	-0.012
13C4-PFOA	7.136	417.1 -> 372.0	35419	2.50 µg/L	-0.012
13C2-PFDA	8.191	515.1 -> 470.1	13407	1.25 µg/L	-0.012
13C5-PFNA	7.684	468.0 -> 423.0	15789	1.25 µg/L	-0.012
13C2-PFHxA	5.536	315.1 -> 270.0	36267	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1026	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1454	4.80 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C2-8:2FTS	7.966	529.1 -> 80.9	2568	4.72 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C2-PFDoDA	9.106	615.1 -> 570.0	20498	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C2-PFTeDA	9.911	715.2 -> 670.0	14931	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFBS	5.439	302.1 -> 79.9	10153	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C3-PFHxS	7.229	402.1 -> 79.9	5810	2.64 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 = 105.5%	
13C4-PFBA	2.924	216.8 -> 171.9	75450	9.82 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C4-PFHpA	6.467	367.1 -> 322.0	23325	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C5-PFHxA	5.535	318.0 -> 273.0	42114	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C5-PFPeA	4.375	268.3 -> 223.0	56085	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C6-PFDA	8.191	519.1 -> 474.1	14961	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C7-PFUnDA	8.660	570.0 -> 525.1	14340	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.7%	
13C8-FOSA	9.758	506.1 -> 77.8	12498	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-PFOA	7.136	421.1 -> 376.0	30066	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOS	8.341	507.1 -> 79.9	7659	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C9-PFNA	7.684	472.1 -> 427.0	15378	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
d3-MeFOSAA	8.249	573.2 -> 419.0	11115	4.75 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	26068	10.94 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.4%	
d3-MeFOSA	11.064	515.0 -> 219.0	6975	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
d5-EtFOSAA	8.446	589.2 -> 419.0	8682	4.50 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d7-MeFOSE	10.947	623.2 -> 58.9	57241	23.95 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
d9-EtFOSE	11.256	639.2 -> 58.9	76709	25.14 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
d5-EtFOSA	11.348	531.1 -> 219.0	8437	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	77068	46.86 µg/L	98
		327.1 -> 80.9	32480		
6:2FTS	6.899	427.1 -> 407.0	66601	47.63 µg/L	97
		427.1 -> 80.9	27442		
8:2FTS	7.966	527.1 -> 507.0	70132	48.67 µg/L	98
		527.1 -> 80.8	28666		
EtFOSAA	8.459	584.2 -> 419.1	20874	12.60 µg/L	78
		584.2 -> 526.0	9103		
FOSA	9.761	498.1 -> 77.9	148713	27.37 µg/L	100
		498.1 -> 478.0	4504		
MeFOSAA	8.249	570.1 -> 419.0	26451	13.47 µg/L	96
		570.1 -> 483.0	4599		
PFBA	2.920	212.8 -> 168.9	115795	52.17 µg/L	100
PFBS	5.440	298.7 -> 79.9	49554	10.73 µg/L	100
		298.7 -> 98.8	19483		
PFDA	8.192	512.9 -> 469.0	136955	12.28 µg/L	98
		512.9 -> 219.0	26828		
PFDoDA	9.106	613.1 -> 569.0	218886	13.07 µg/L	99
		613.1 -> 319.0	31319		
PFDS	9.269	599.0 -> 79.9	28140	12.27 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
PFHpA	6.468	599.0 -> 98.8	13892	13.19 µg/L	99
		363.1 -> 319.0	199470		
PFHpS	7.811	363.1 -> 169.0	35779	12.92 µg/L	94
		449.0 -> 79.9	34689		
PFHxA	5.538	449.0 -> 98.9	17541	13.74 µg/L	100
		313.0 -> 269.0	217206		
PFHxS	7.230	313.0 -> 118.9	6674	9.01 µg/L	97
		398.7 -> 79.9	25848		
PFNA	7.685	398.7 -> 98.9	13947	15.14 µg/L	98
		463.0 -> 419.0	156997		
PFNS	8.823	463.0 -> 219.0	39032	12.96 µg/L	99
		548.8 -> 79.9	18542		
PFOA	7.137	548.8 -> 98.9	9811	26.05 µg/L	98
		413.0 -> 369.0	453745		
PFOS	8.343	413.0 -> 169.0	94028	9.35 µg/L	91
		498.9 -> 79.9	34874		
PFPeA	4.377	498.9 -> 98.8	21064	25.46 µg/L	100
		263.0 -> 219.0	341091		
PFPeS	6.507	349.1 -> 79.9	27676	11.57 µg/L	99
		349.1 -> 98.9	12141		
PFTeDA	9.912	713.1 -> 669.0	205134	13.98 µg/L	99
		713.1 -> 168.9	17322		
PFTrDA	9.529	663.0 -> 619.0	243987	12.23 µg/L	99
		663.0 -> 168.9	24629		
PFUnDA	8.660	563.1 -> 519.0	141029	13.44 µg/L	100
		563.1 -> 269.1	27914		
11Cl-PF3OUdS	9.568	630.9 -> 450.9	213851	23.14 µg/L	100
		632.9 -> 452.9	63815		
9Cl-PF3ONS	8.687	530.8 -> 351.0	220273	22.88 µg/L	97
		532.8 -> 353.0	65545		
ADONA	6.731	376.9 -> 250.9	616549	23.12 µg/L	98
		376.9 -> 84.8	161866		
HFPO-DA	5.903	284.9 -> 168.9	66457	25.77 µg/L	95
		284.9 -> 184.9	7797		
3:3FTCA	3.836	241.0 -> 177.0	35279	62.31 µg/L	100
		241.0 -> 117.0	3431		
5:3FTCA	6.193	341.0 -> 237.1	772984	338.04 µg/L	99
		341.0 -> 217.0	545728		
7:3FTCA	7.649	441.0 -> 316.9	331049	330.82 µg/L	97
		441.0 -> 336.9	726042		
EtFOSA	11.350	526.0 -> 219.0	117349	32.56 µg/L	96
		526.0 -> 169.0	220088		
EtFOSE	11.270	630.0 -> 58.9	226387	79.66 µg/L	100
		511.9 -> 219.0	92061		
MeFOSA	11.065	511.9 -> 169.0	124149	33.47 µg/L	85
		616.1 -> 58.9	152483		
MeFOSE	10.960	699.1 -> 79.9	26072	64.68 µg/L	100
		699.1 -> 98.8	14481		
PFDoDS	10.052	295.0 -> 201.0	28831	12.95 µg/L	100
		295.0 -> 84.9	7007		
NFDHA	5.428	279.0 -> 85.1	199369	28.07 µg/L	99
		229.0 -> 84.9	165104		
PFMBA	4.778	314.8 -> 134.9	332202	25.82 µg/L	100
		314.8 -> 82.9	11309		
PFMPA	3.528			24.78 µg/L	100
PFEESA	5.971			24.06 µg/L	99

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

7.6.2
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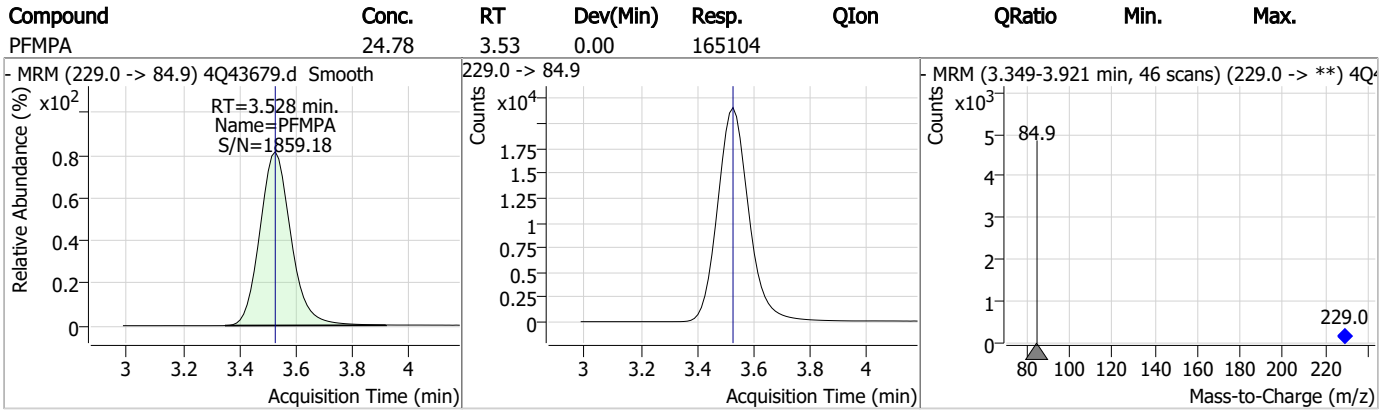
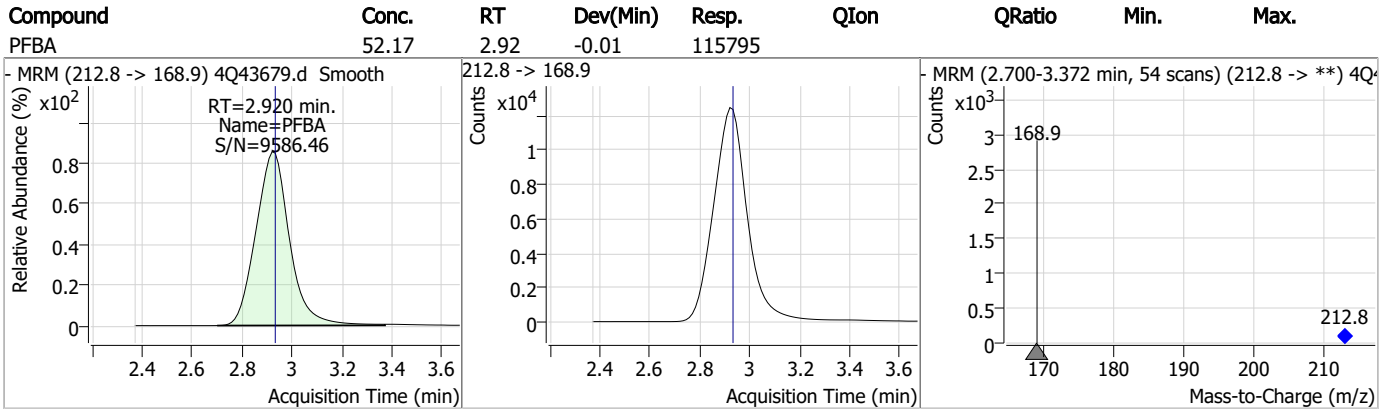
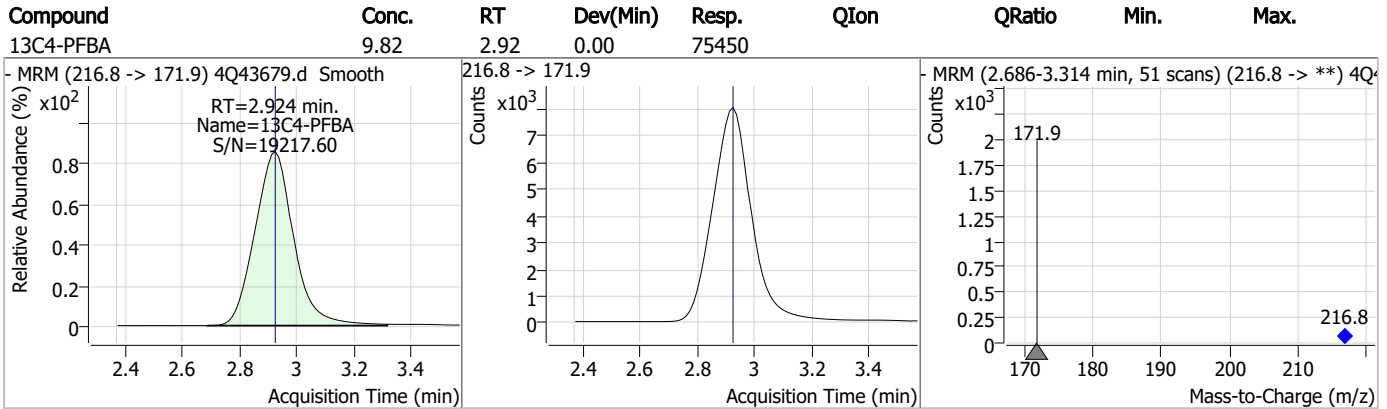
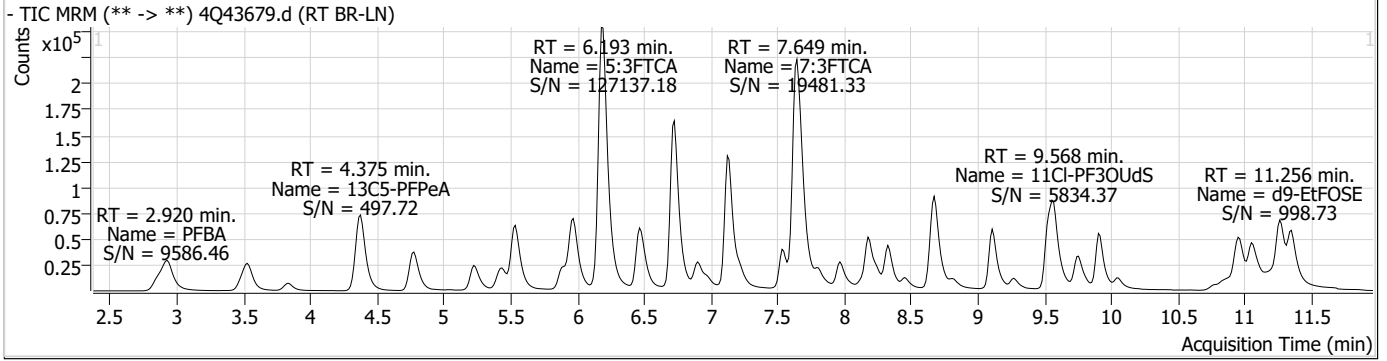
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.2

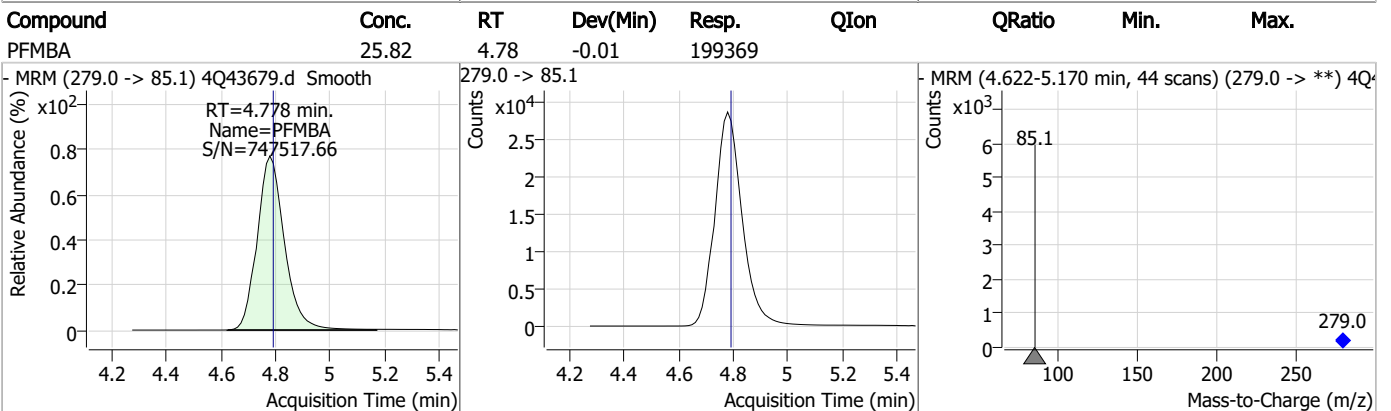
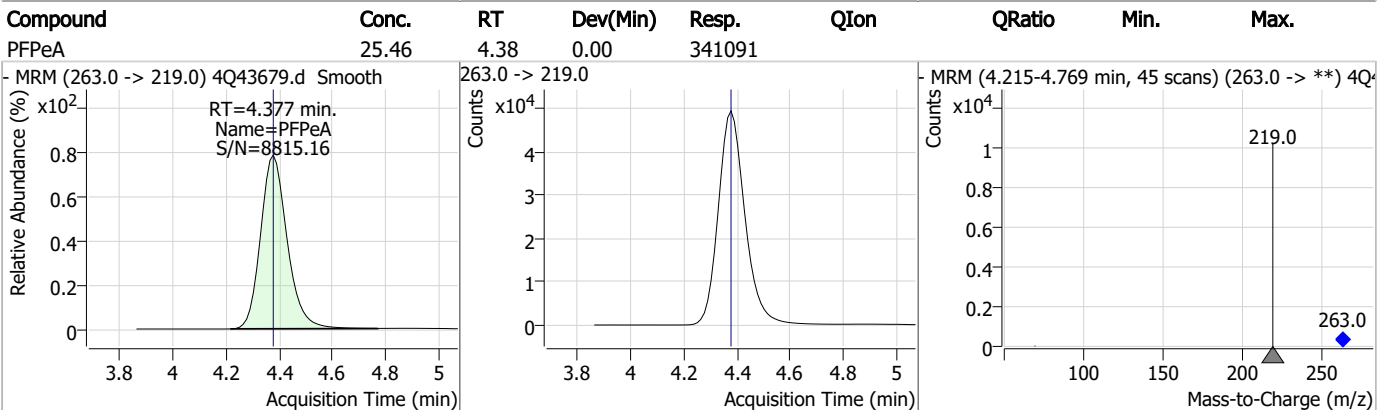
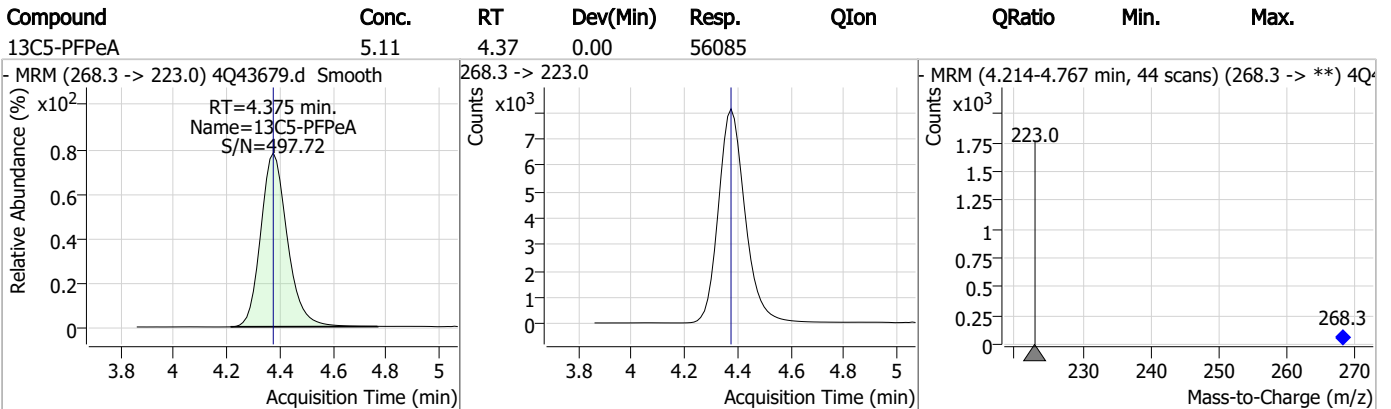
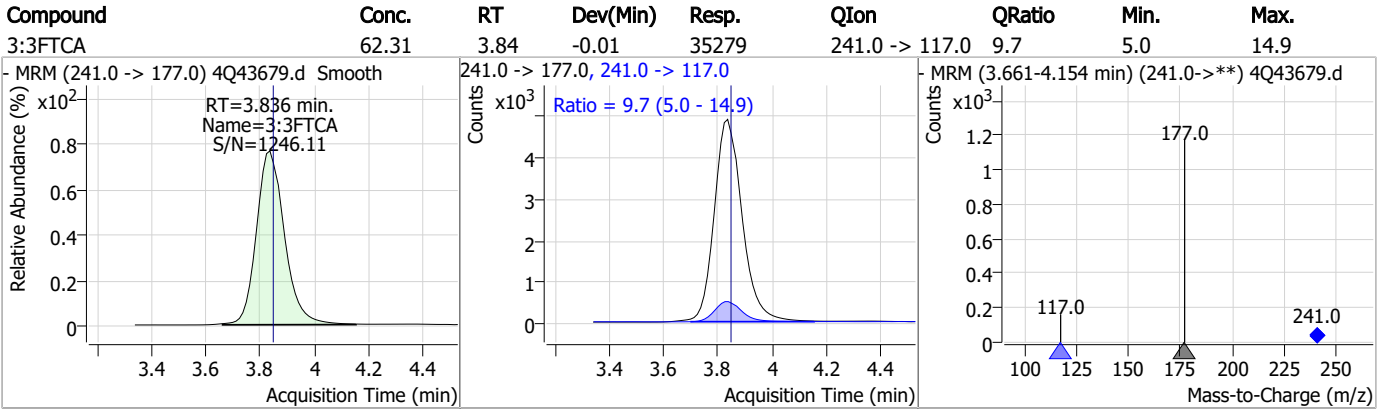
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Perfluorinated Compounds by LC/MS/MS

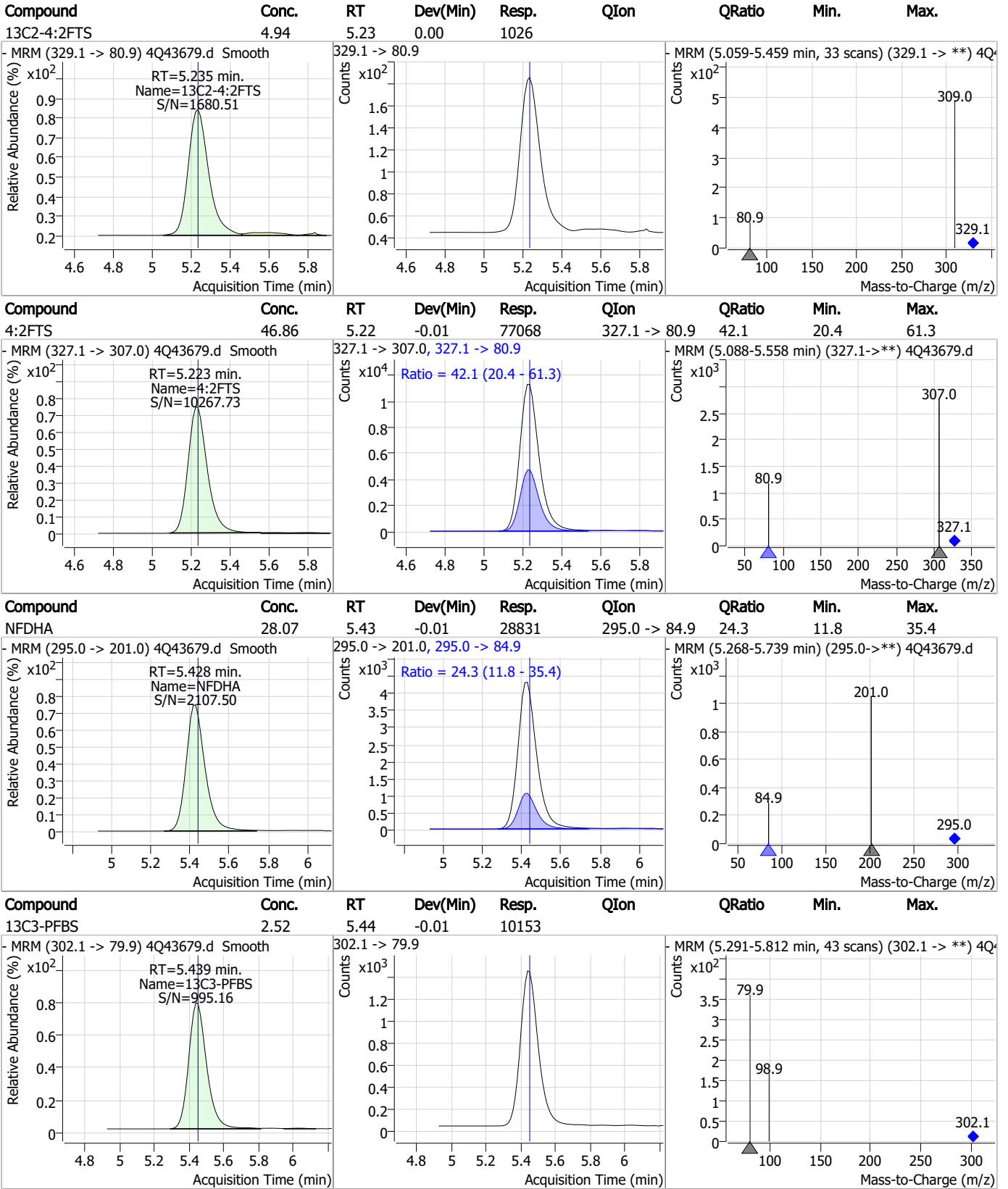


7.6.2
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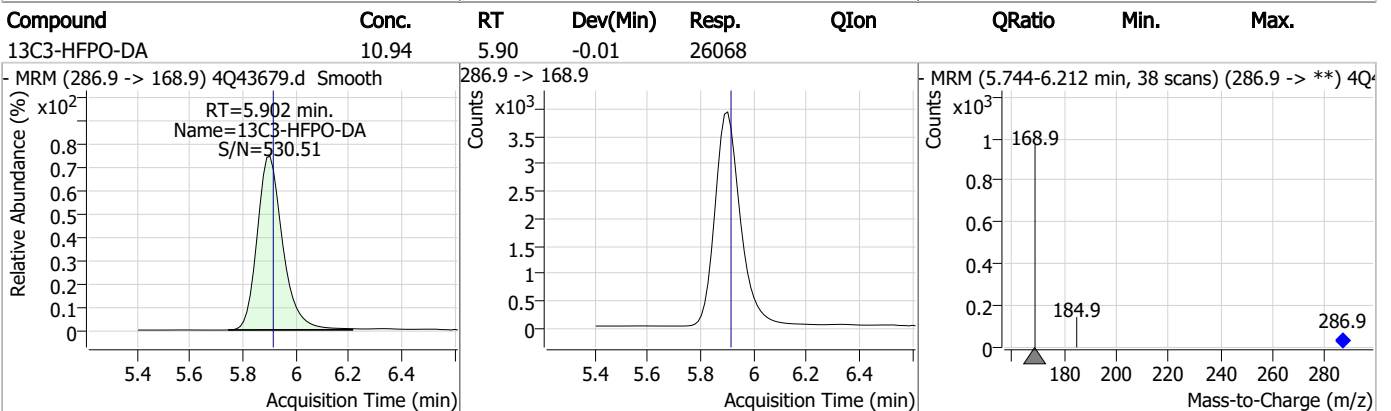
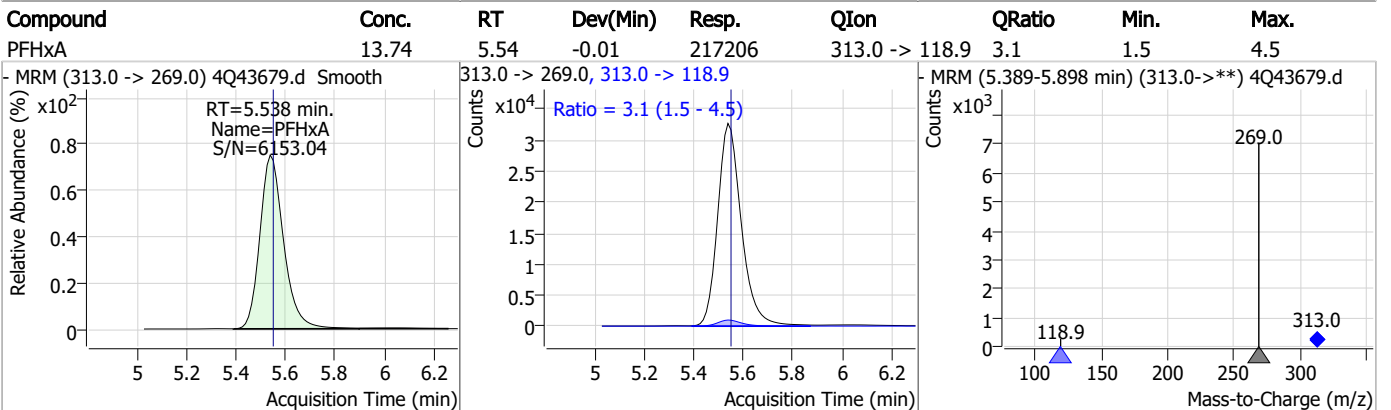
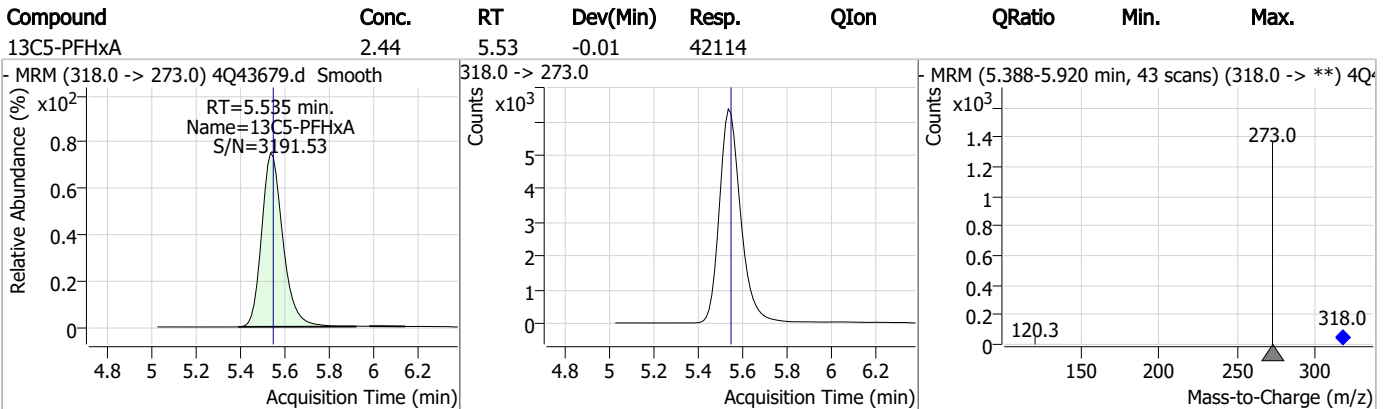
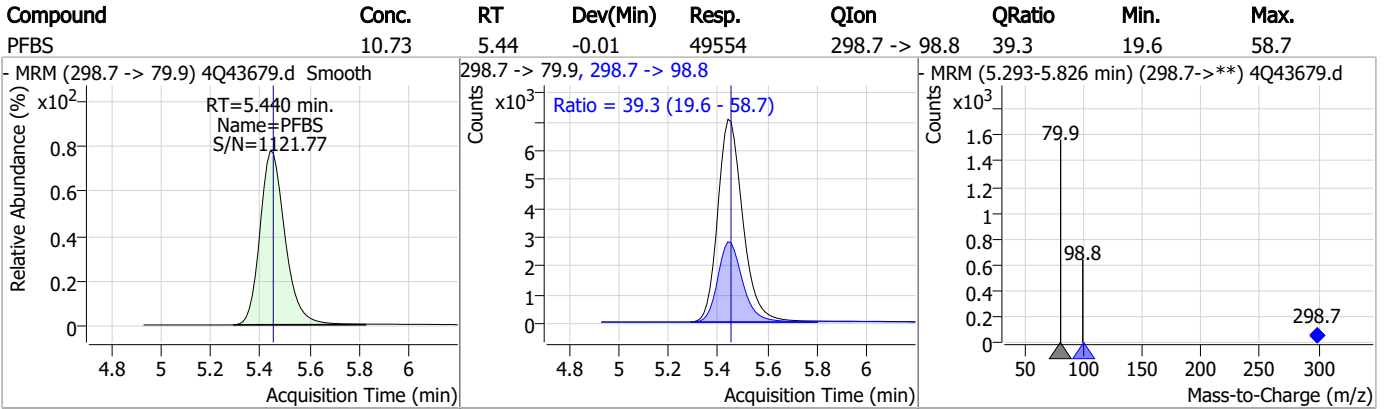
Perfluorinated Compounds by LC/MS/MS



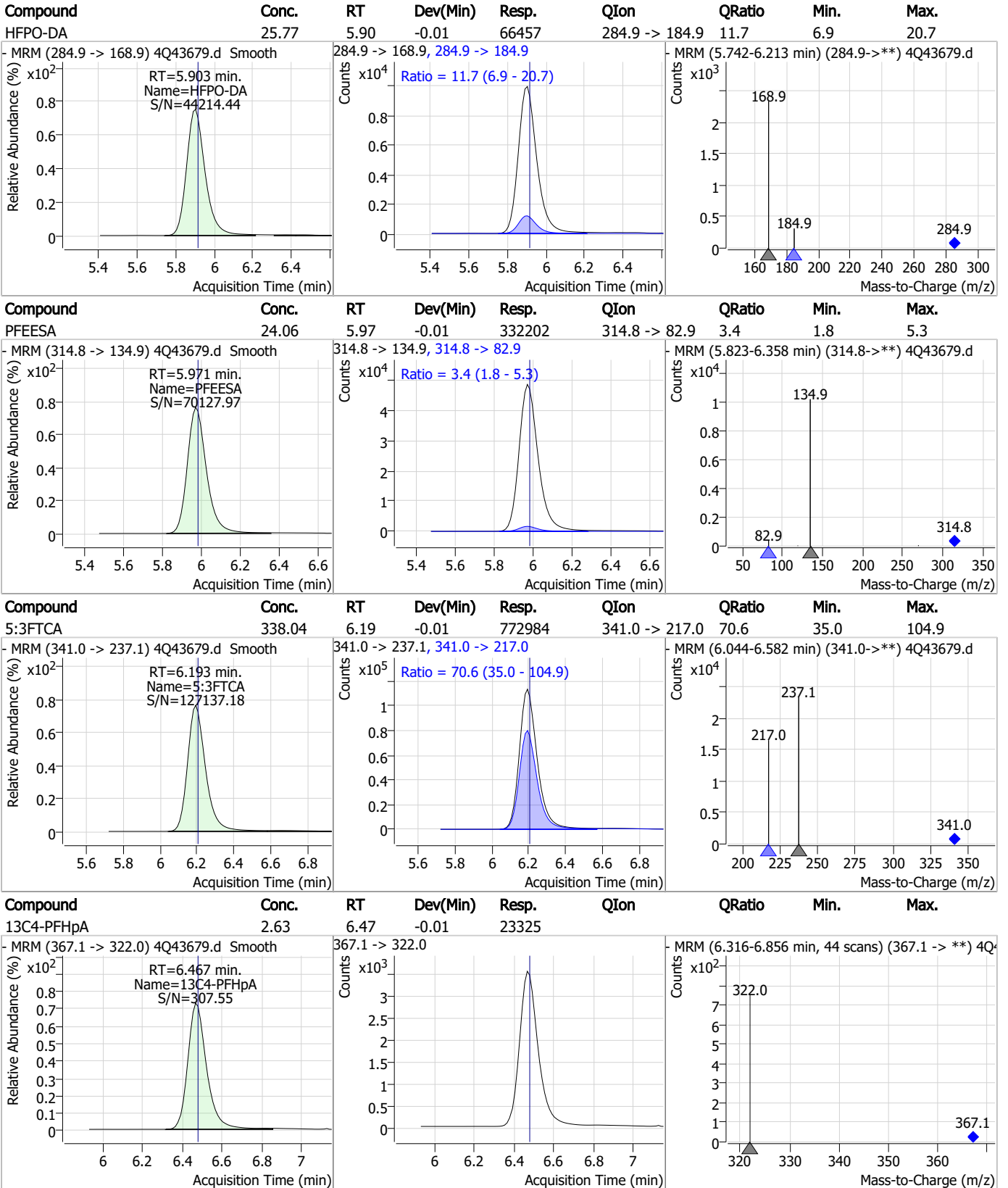
Perfluorinated Compounds by LC/MS/MS



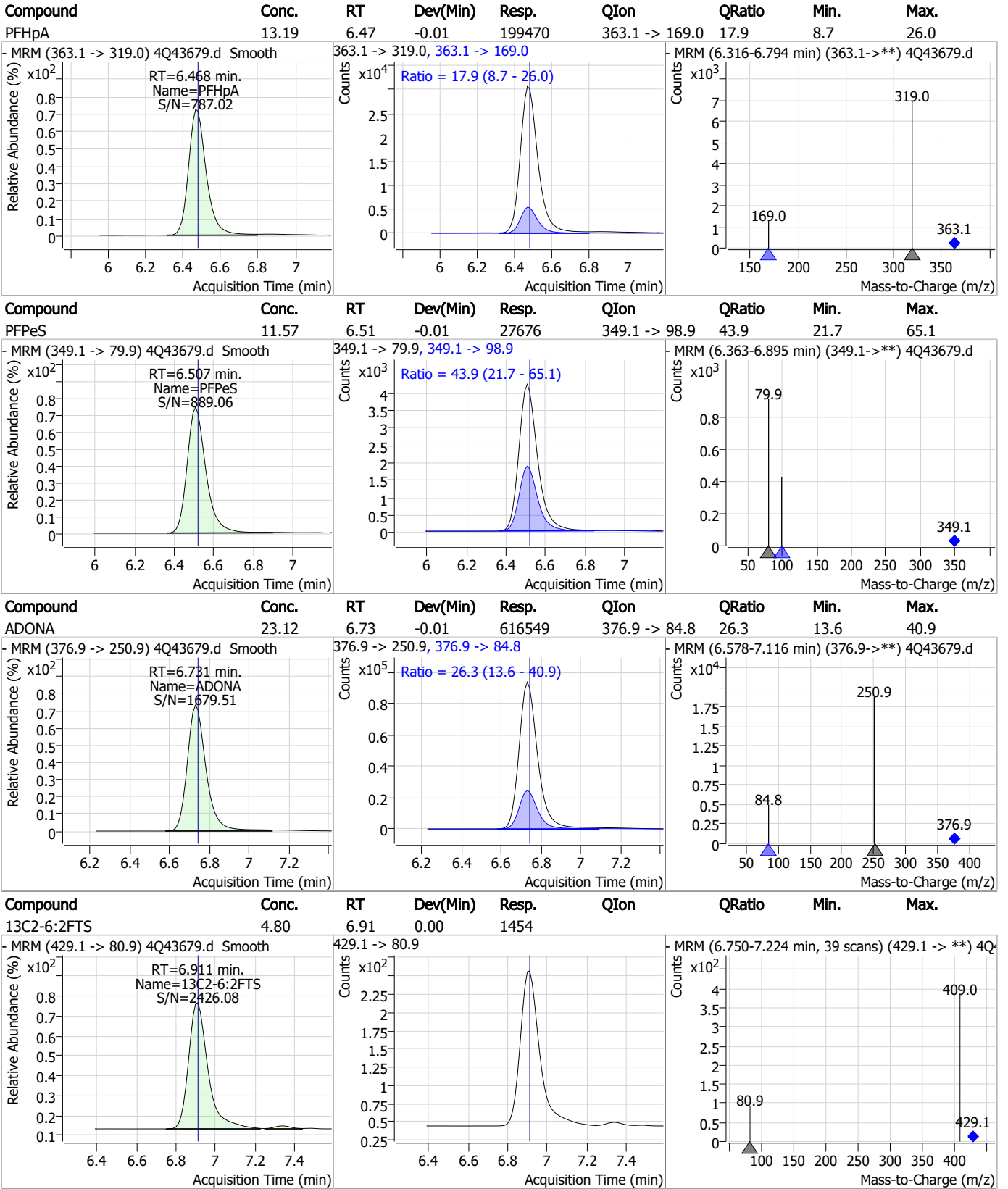
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



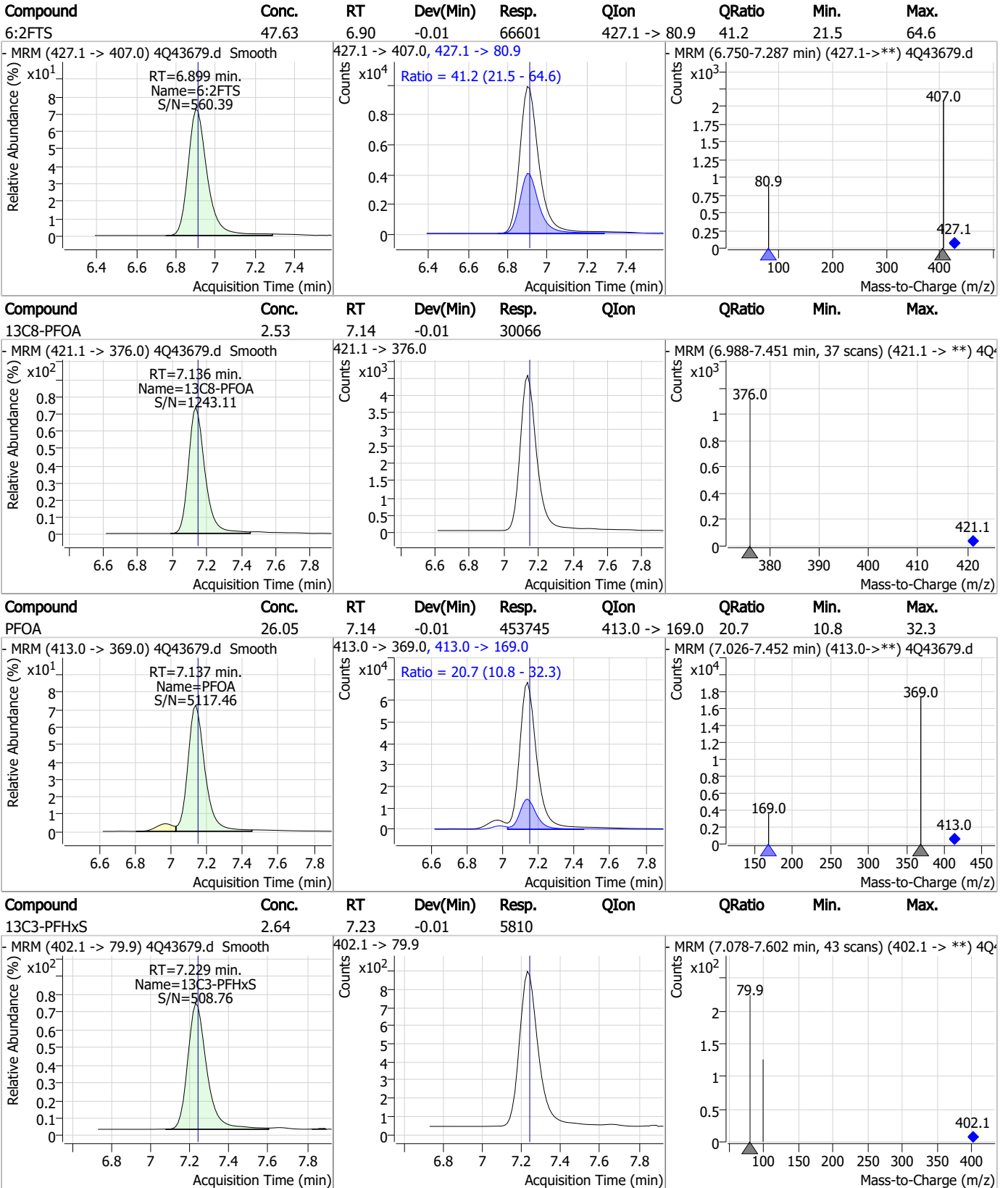
Perfluorinated Compounds by LC/MS/MS



7.6.2

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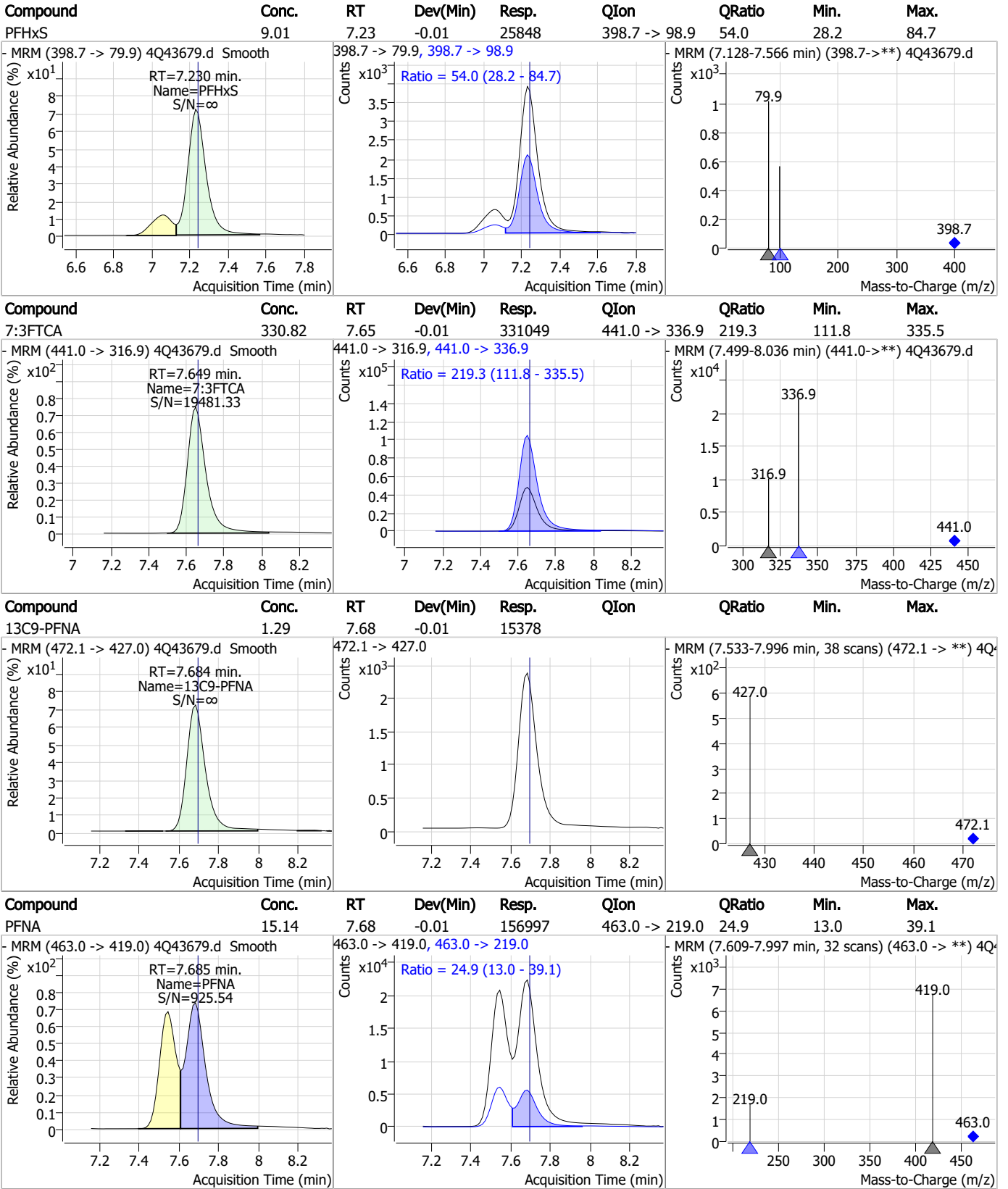
Perfluorinated Compounds by LC/MS/MS



7.6.2

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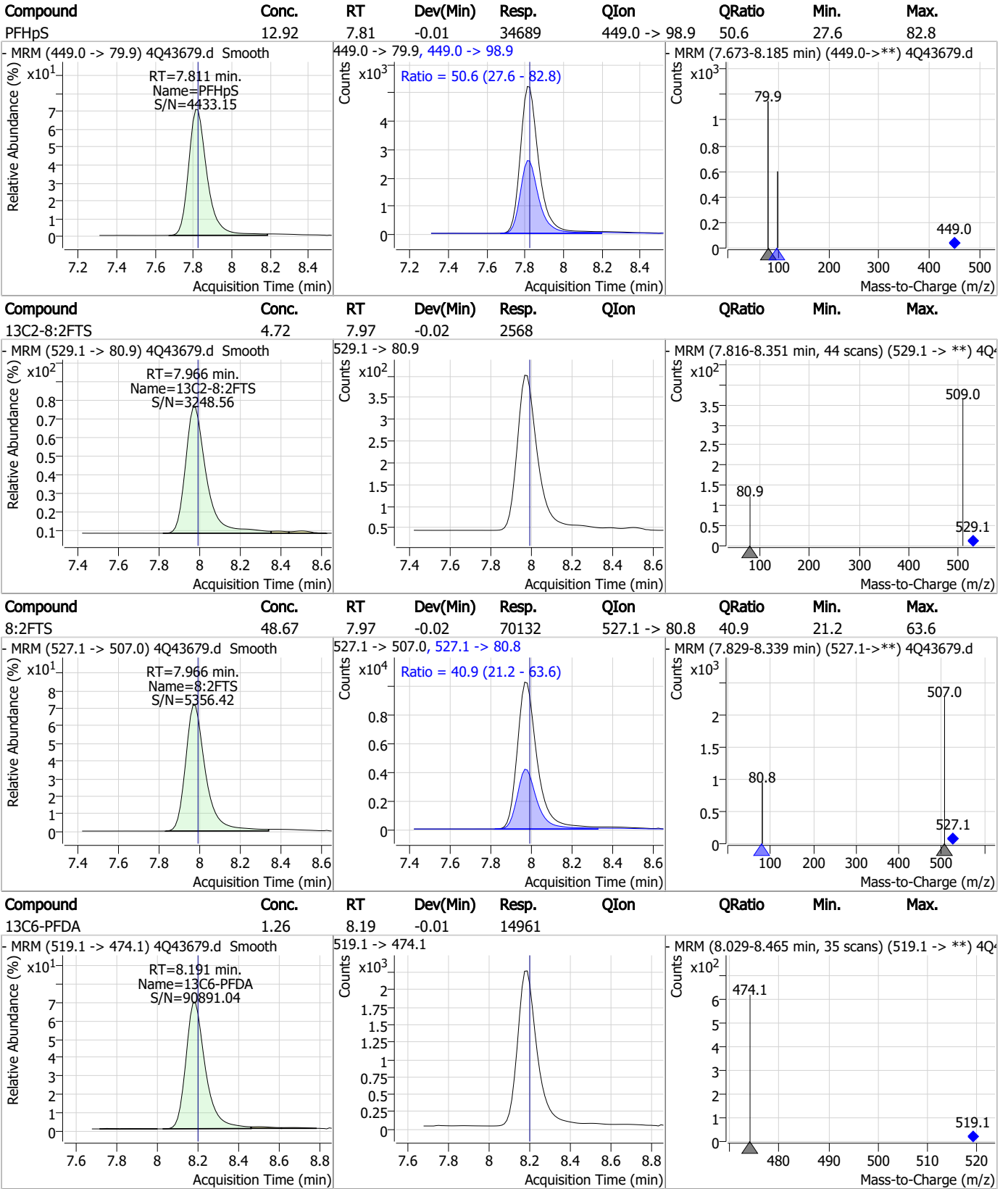
Perfluorinated Compounds by LC/MS/MS



7.6.2

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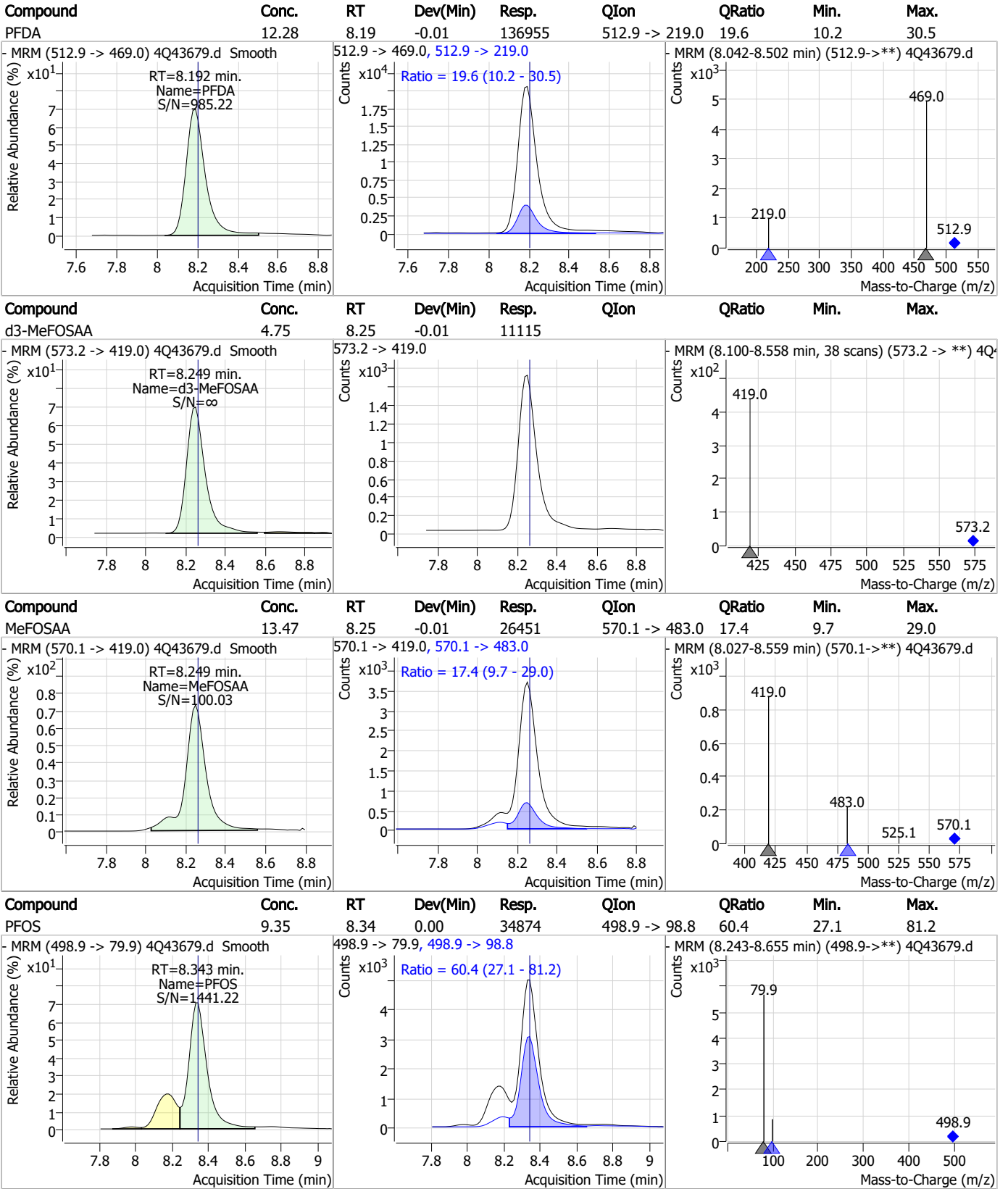
Perfluorinated Compounds by LC/MS/MS



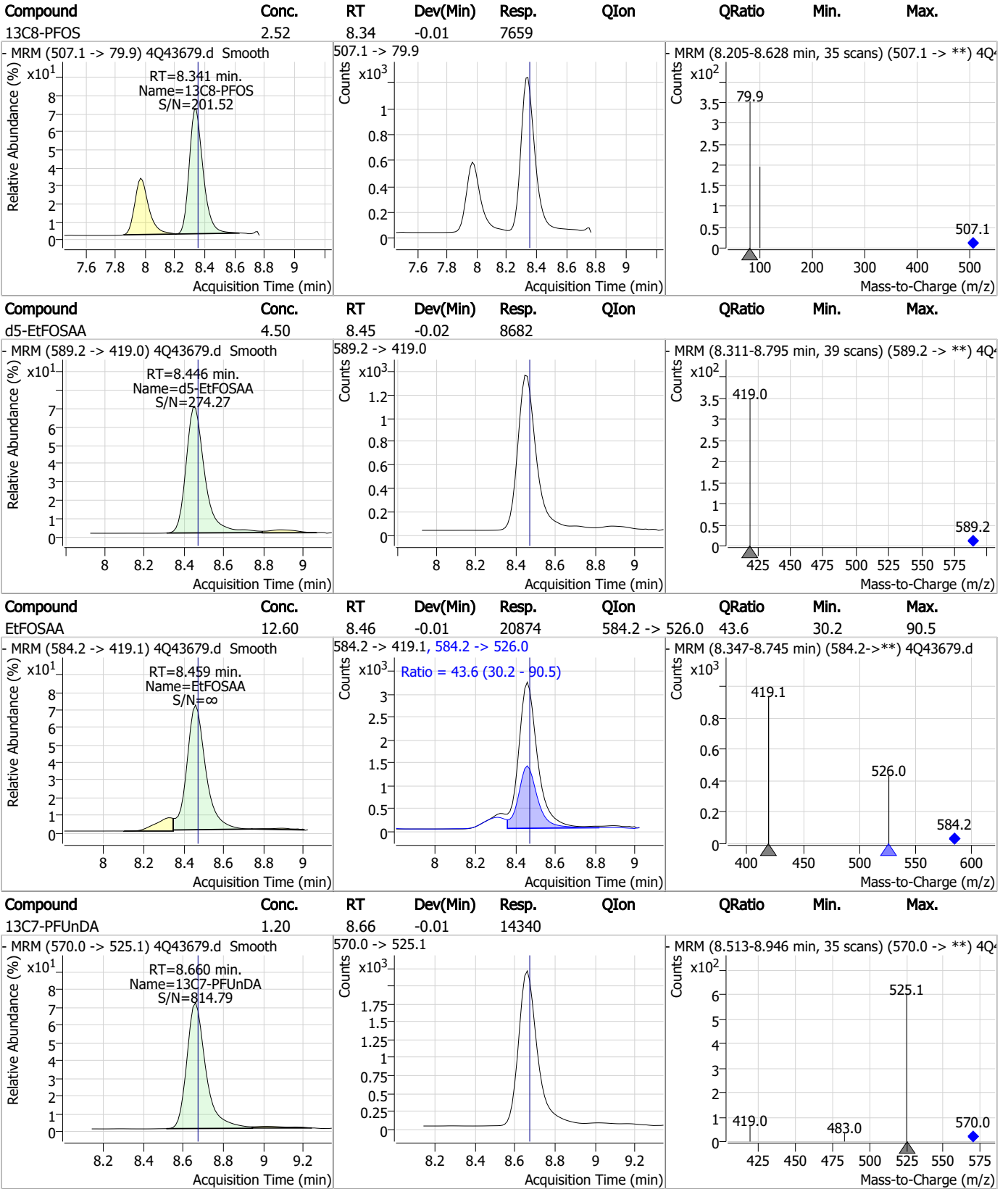
7.6.2

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Perfluorinated Compounds by LC/MS/MS



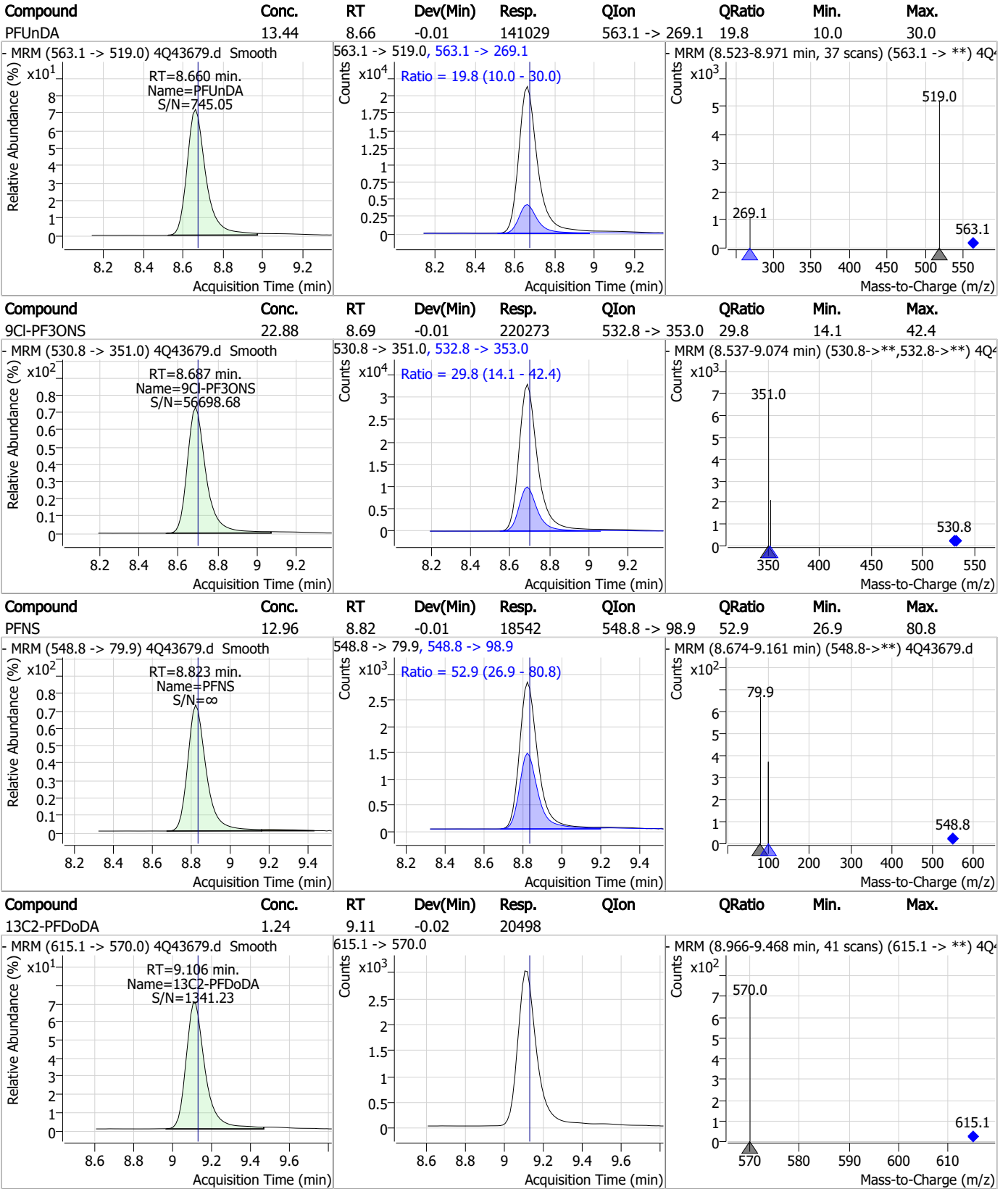
Perfluorinated Compounds by LC/MS/MS



7.6.2

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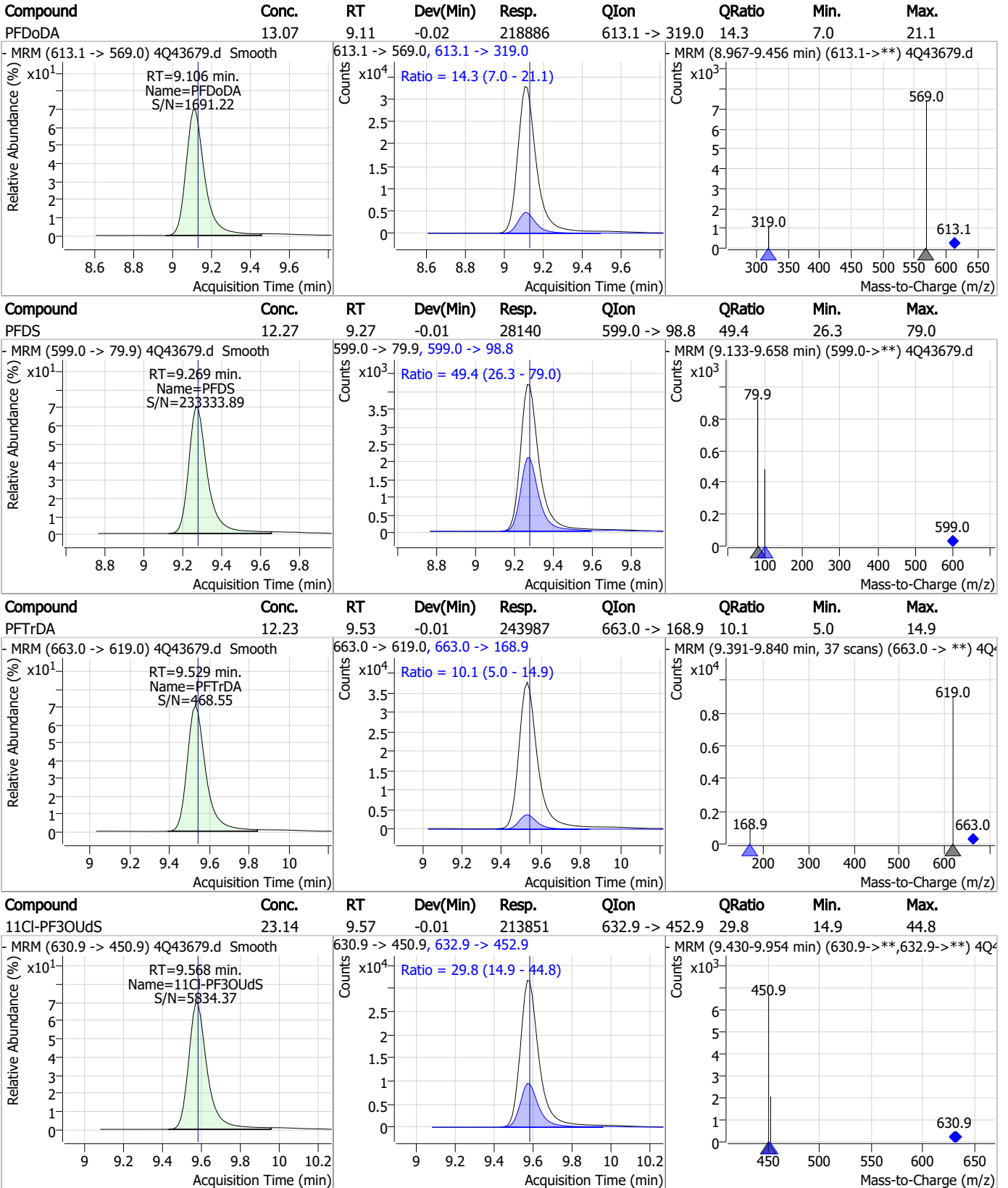
Perfluorinated Compounds by LC/MS/MS



7.6.2

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Perfluorinated Compounds by LC/MS/MS

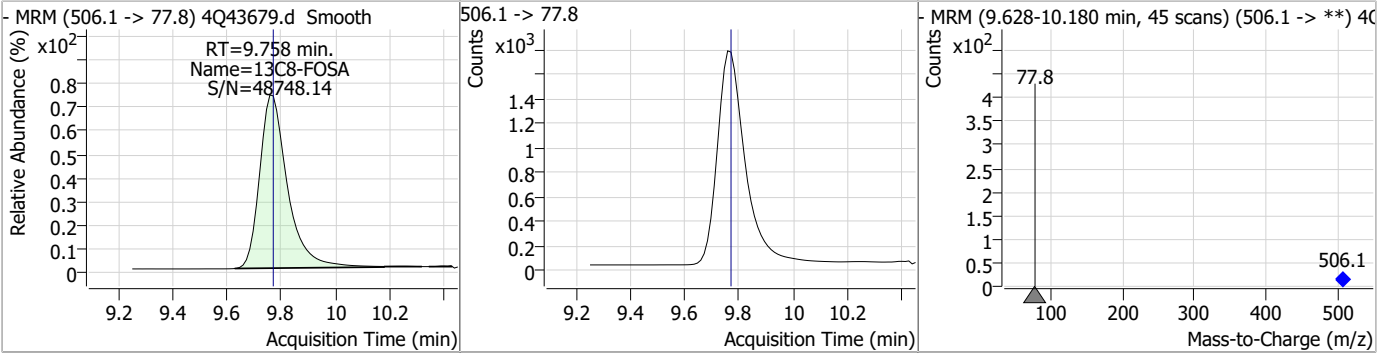


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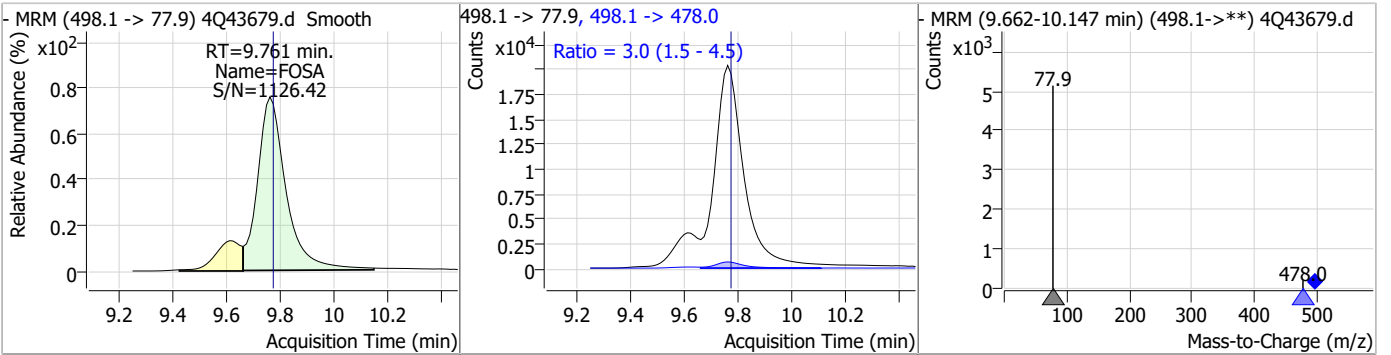
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Perfluorinated Compounds by LC/MS/MS

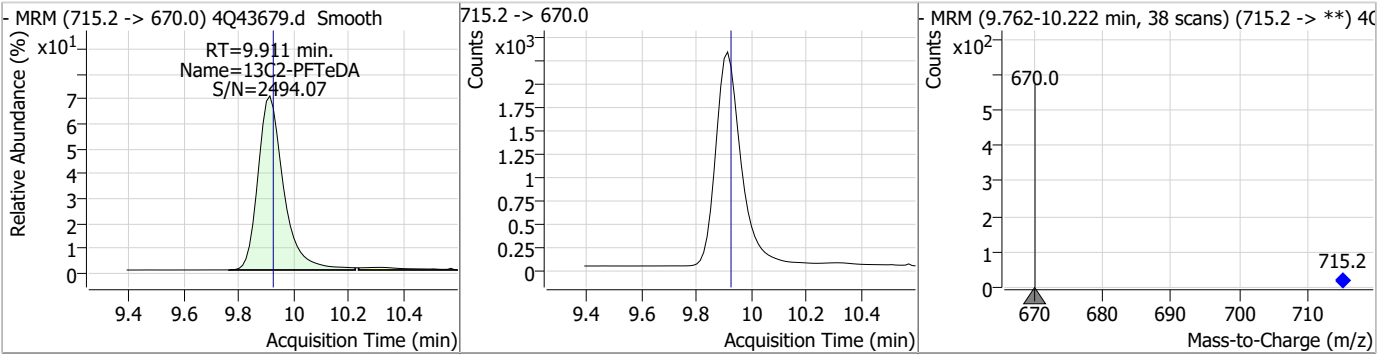
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.49	9.76	-0.01	12498				



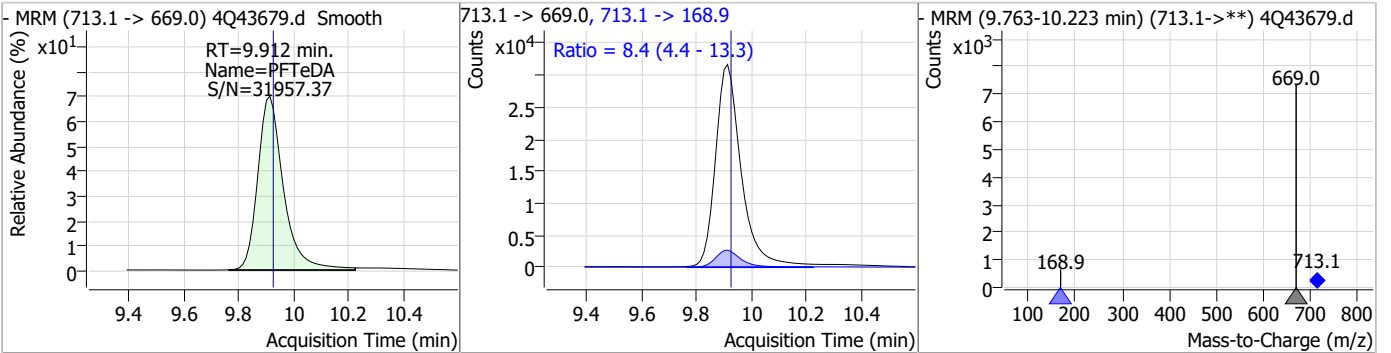
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	27.37	9.76	-0.01	148713	498.1 -> 478.0	3.0	1.5	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.22	9.91	-0.01	14931				

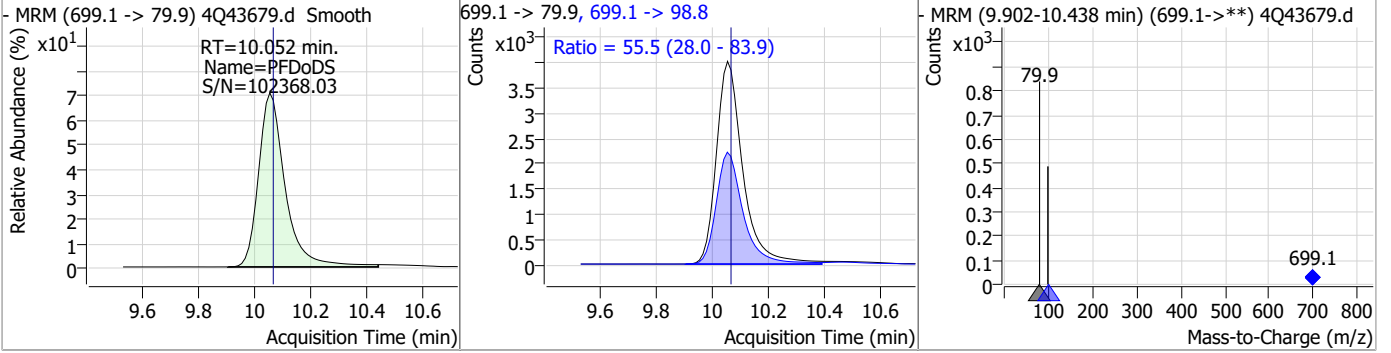


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	13.98	9.91	-0.01	205134	713.1 -> 168.9	8.4	4.4	13.3

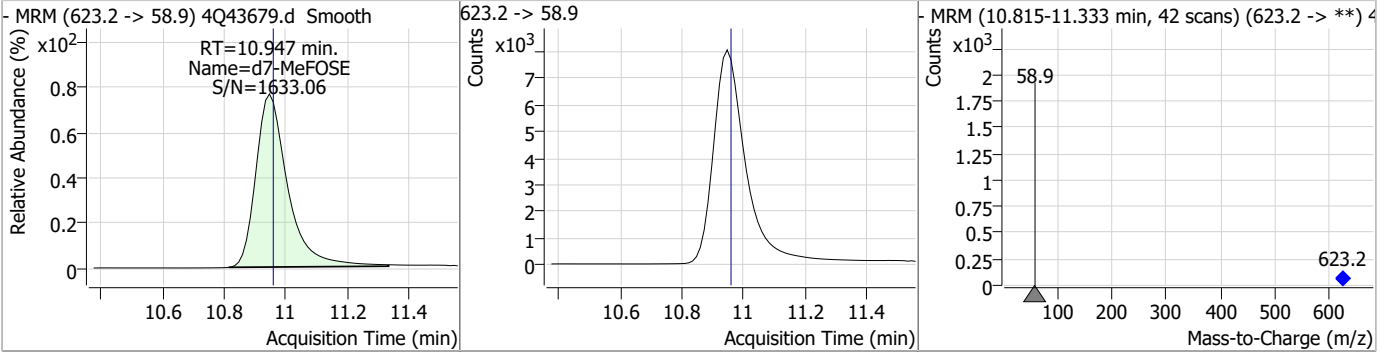


Perfluorinated Compounds by LC/MS/MS

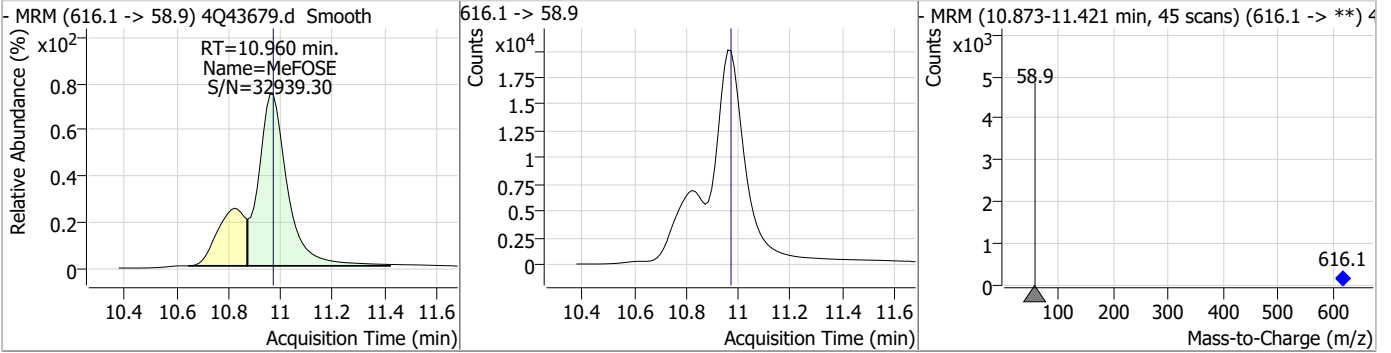
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	12.95	10.05	-0.01	26072	699.1 -> 98.8	55.5	28.0	83.9



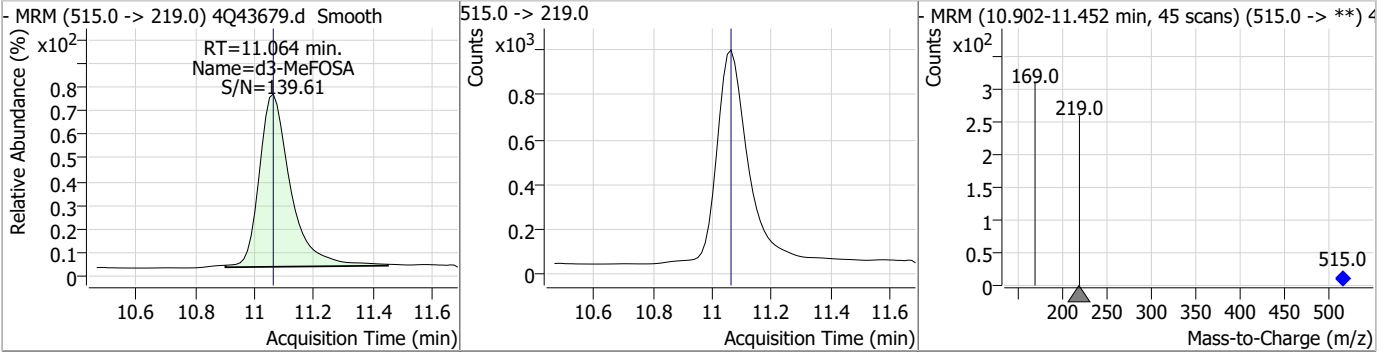
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.95	10.95	-0.01	57241				



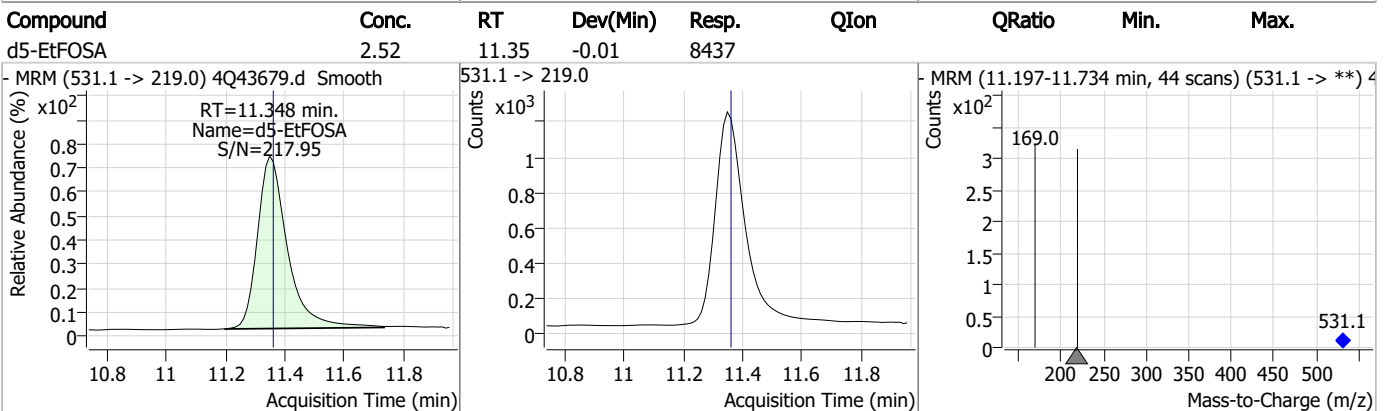
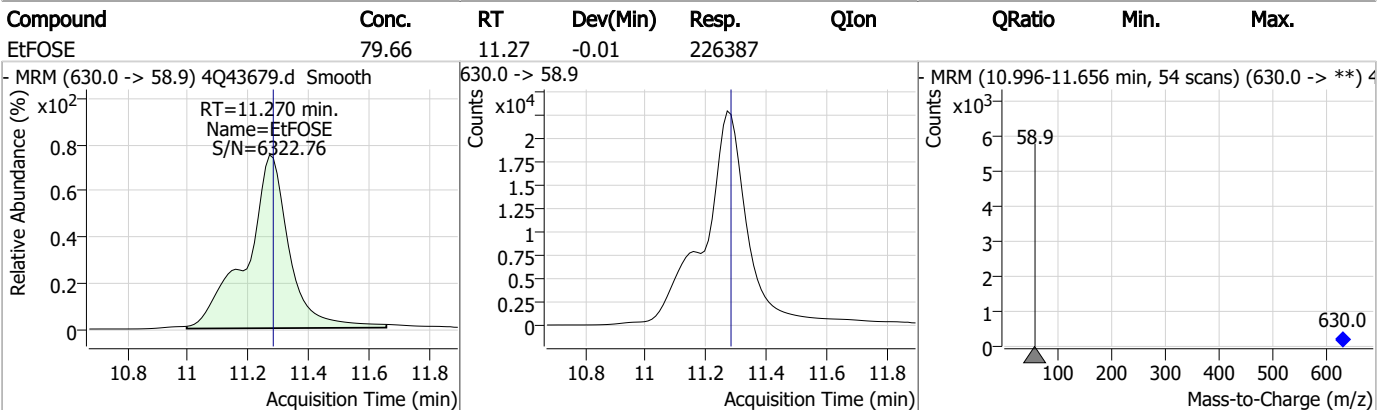
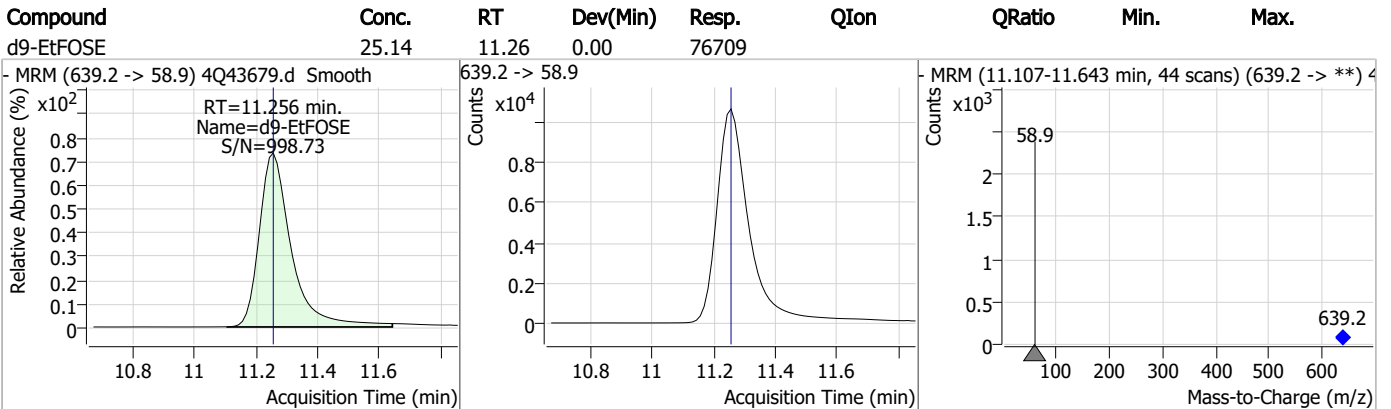
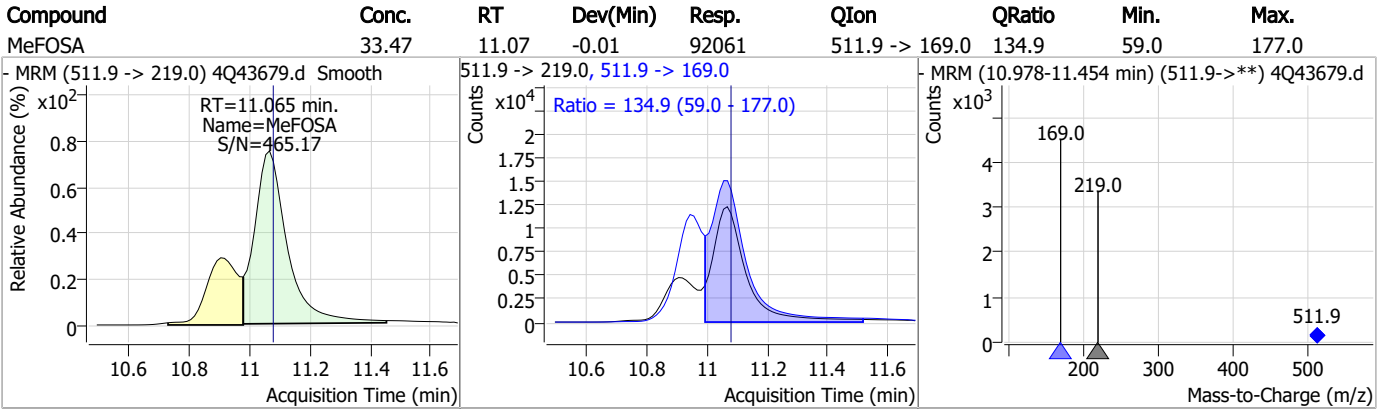
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	64.68	10.96	-0.01	152483				



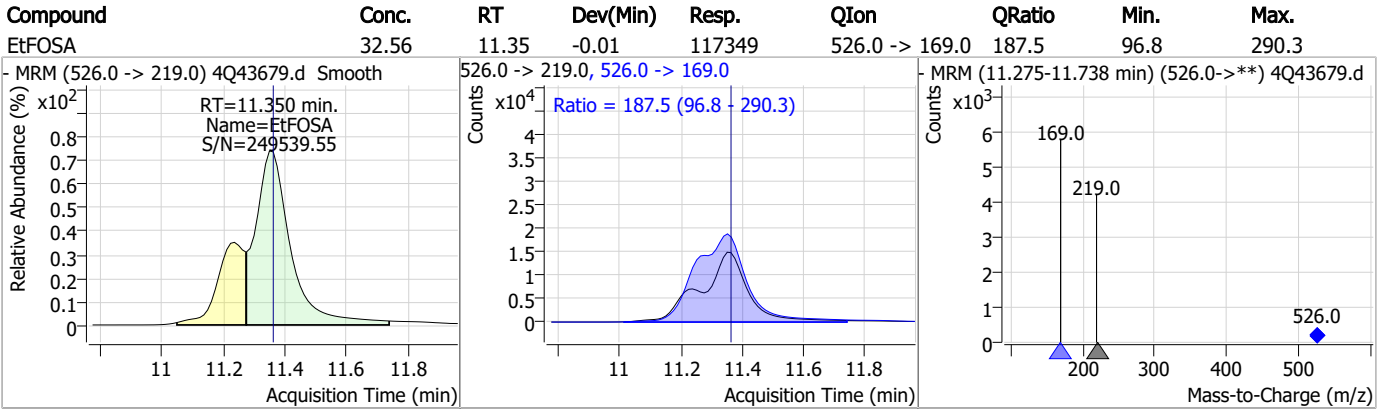
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.43	11.06	0.00	6975				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

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 24 April 2023 14:35:22
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.61E+0 [R] (Torr); 3.44E-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	113.05	0.06	Pass	0.70	0.76	0.06	Pass	59296
302.00	302.08	0.08	Pass	0.70	0.69	-0.01	Pass	100486
601.98	602.10	0.12	Pass	0.70	0.64	-0.06	Pass	228927
1033.99	1034.06	0.07	Pass	0.70	0.68	-0.02	Pass	547382
1633.95	1633.99	0.04	Pass	0.70	0.68	-0.02	Pass	1061005
2233.91	2233.92	0.01	Pass	0.70	0.73	0.03	Pass	730021

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.10	0.10	Pass	0.70	0.61	-0.09	Pass	30328
112.99	112.98	-0.01	Pass	0.70	0.72	0.02	Pass	107079
302.00	301.99	-0.01	Pass	0.70	0.67	-0.03	Pass	122452
601.98	601.93	-0.05	Pass	0.70	0.70	0.00	Pass	211452
1033.99	1033.89	-0.10	Pass	0.70	0.72	0.02	Pass	130824
1633.95	1633.75	-0.20	Pass	0.70	0.74	0.04	Pass	197614
2233.91	2233.61	-0.30	Pass	0.70	0.69	-0.01	Pass	116848

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.14	0.15	Pass	1.20	1.12	-0.08	Pass	116346
302.00	302.07	0.07	Pass	1.20	1.33	0.13	Pass	162459
601.98	602.11	0.13	Pass	1.20	1.24	0.04	Pass	499901
1033.99	1034.11	0.12	Pass	1.20	1.32	0.12	Pass	900211
1633.95	1634.00	0.05	Pass	1.20	1.32	0.12	Pass	2045462
2233.91	2233.89	-0.02	Pass	1.20	1.20	0.00	Pass	1293233

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	1.20	1.10	-0.10	Pass	41472
112.99	112.96	-0.03	Pass	1.20	1.21	0.01	Pass	152825
302.00	302.00	0.00	Pass	1.20	1.46	0.26	Pass	182429
601.98	601.96	-0.02	Pass	1.20	1.54	0.34	Pass	396701
1033.99	1033.86	-0.13	Pass	1.20	1.58	0.38	Pass	270286
1633.95	1633.66	-0.29	Pass	1.20	1.54	0.34	Pass	528754
2233.91	2233.65	-0.26	Pass	1.20	1.40	0.20	Pass	368507

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.93	-0.06	Pass	2.50	2.52	0.02	Pass	238329
302.00	302.00	0.00	Pass	2.50	2.74	0.24	Pass	269390
601.98	602.05	0.07	Pass	2.50	2.75	0.25	Pass	851744
1033.99	1034.02	0.03	Pass	2.50	2.76	0.26	Pass	1943928
1633.95	1633.96	0.01	Pass	2.50	2.59	0.09	Pass	5997453
2233.91	2233.81	-0.10	Pass	2.50	2.42	-0.08	Pass	4823757

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.04	0.04	Pass	2.50	2.35	-0.15	Pass	50149
112.99	112.97	-0.02	Pass	2.50	2.50	0.00	Pass	194950
302.00	301.99	-0.01	Pass	2.50	2.66	0.16	Pass	235398
601.98	601.96	-0.02	Pass	2.50	2.79	0.29	Pass	520611
1033.99	1033.87	-0.12	Pass	2.50	2.81	0.31	Pass	403840
1633.95	1633.72	-0.23	Pass	2.50	2.73	0.23	Pass	919261
2233.91	2233.58	-0.33	Pass	2.50	2.55	0.05	Pass	826121

7.7.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43681.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 12:37:34 PM
 Sample Name : ic631-1
 Vial : P1-A2
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	89419	10.00 µg/L	0.013
M5-PFPeA	4.375	268.3 -> 223.0	62149	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	47923	2.50 µg/L	-0.012
M4-PFHpA	6.480	367.1 -> 322.0	25043	2.50 µg/L	0.000
M8-PFOA	7.136	421.1 -> 376.0	33696	2.50 µg/L	-0.012
M9-PFNA	7.684	472.1 -> 427.0	17376	1.25 µg/L	-0.012
M6-PFDA	8.191	519.1 -> 474.1	15562	1.25 µg/L	-0.012
M7-PFUnDA	8.660	570.0 -> 525.1	15908	1.25 µg/L	-0.012
M2-PFDoDA	9.118	615.1 -> 570.0	22270	1.25 µg/L	-0.012
M2-PFTeDA	9.911	715.2 -> 670.0	16364	1.25 µg/L	-0.012
M8-FOSA	9.771	506.1 -> 77.8	13509	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	10968	2.50 µg/L	-0.012
M3-PFHxS	7.242	402.1 -> 79.9	5787	2.50 µg/L	0.000
M8-PFOS	8.341	507.1 -> 79.9	8525	2.50 µg/L	-0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1107	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1672	5.00 µg/L	0.000
M2-8:2FTS	7.978	529.1 -> 80.9	3011	5.00 µg/L	-0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	13190	5.00 µg/L	-0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	26229	10.00 µg/L	-0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10972	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	68993	25.00 µg/L	-0.012
M9-EtFOSE	11.256	639.2 -> 58.9	87861	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	9501	2.50 µg/L	-0.012
M3-MeFOSA	11.064	515.0 -> 219.0	7895	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	8306	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	52299	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4262	2.50 µg/L	0.000
13C4-PFOA	7.136	417.1 -> 372.0	40661	2.50 µg/L	-0.012
13C2-PFDA	8.191	515.1 -> 470.1	13820	1.25 µg/L	-0.012
13C5-PFNA	7.697	468.0 -> 423.0	18668	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	40313	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1107	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1672	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3011	5.14 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C2-PFDoDA	9.118	615.1 -> 570.0	22270	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C2-PFTeDA	9.911	715.2 -> 670.0	16364	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C3-PFBS	5.439	302.1 -> 79.9	10968	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFHxS	7.242	402.1 -> 79.9	5787	2.44 µg/L	0.000

7.7.2
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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 = 97.6%		
13C4-PFBA	2.936	216.8 -> 171.9	89419	9.89 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C4-PFHpA	6.480	367.1 -> 322.0	25043	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C5-PFHxA	5.535	318.0 -> 273.0	47923	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C5-PFPeA	4.375	268.3 -> 223.0	62149	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C6-PFDA	8.191	519.1 -> 474.1	15562	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C7-PFUnDA	8.660	570.0 -> 525.1	15908	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C8-FOSA	9.771	506.1 -> 77.8	13509	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C8-PFOA	7.136	421.1 -> 376.0	33696	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C8-PFOS	8.341	507.1 -> 79.9	8525	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C9-PFNA	7.684	472.1 -> 427.0	17376	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
d3-MeFOSAA	8.249	573.2 -> 419.0	13190	5.03 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C3-HFPO-DA	5.902	286.9 -> 168.9	26229	9.90 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
d3-MeFOSA	11.064	515.0 -> 219.0	7895	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
d5-EtFOSAA	8.458	589.2 -> 419.0	10972	5.07 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
d7-MeFOSE	10.947	623.2 -> 58.9	68993	25.73 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
d9-EtFOSE	11.256	639.2 -> 58.9	87861	25.67 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
d5-EtFOSA	11.348	531.1 -> 219.0	9501	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	1236	0.70 µg/L	85
		327.1 -> 80.9	619		
6:2FTS	6.911	427.1 -> 407.0	1267	0.79 µg/L	99
		427.1 -> 80.9	537		
8:2FTS	7.978	527.1 -> 507.0	1094	0.65 µg/L	93
		527.1 -> 80.8	512		
EtFOSAA	8.459	584.2 -> 419.1	290	0.14 µg/L	#m 53
		584.2 -> 526.0	279		
FOSA	9.761	498.1 -> 77.9	1134	0.19 µg/L	m 99
		498.1 -> 478.0	31		
MeFOSAA	8.249	570.1 -> 419.0	445	0.19 µg/L	#m 73
		570.1 -> 483.0	141		
PFBA	2.932	212.8 -> 168.9	2064	0.78 µg/L	100
PFBS	5.440	298.7 -> 79.9	849	0.17 µg/L	96
		298.7 -> 98.8	312		
PFDA	8.192	512.9 -> 469.0	2601	0.22 µg/L	m 90
		512.9 -> 219.0	416		
PFDODA	9.119	613.1 -> 569.0	3433	0.19 µg/L	92
		613.1 -> 319.0	599		
PFDS	9.282	599.0 -> 79.9	495	0.19 µg/L	93

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	237			
PFHpA	6.480	363.1 -> 319.0	2903	0.18	µg/L	m
		363.1 -> 169.0	556			
PFHpS	7.823	449.0 -> 79.9	513	0.17	µg/L	86
		449.0 -> 98.9	336			
PFHxA	5.538	313.0 -> 269.0	3216	0.18	µg/L	#
		313.0 -> 118.9	207			
PFHxS	7.243	398.7 -> 79.9	514	0.18	µg/L	m
		398.7 -> 98.9	239			
PFNA	7.697	463.0 -> 419.0	2094	0.18	µg/L	89
		463.0 -> 219.0	430			
PFNS	8.823	548.8 -> 79.9	225	0.14	µg/L	89
		548.8 -> 98.9	138			
PFOA	7.137	413.0 -> 369.0	3527	0.18	µg/L	99
		413.0 -> 169.0	768			
PFOS	8.343	498.9 -> 79.9	699	0.17	µg/L	m
		498.9 -> 98.8	409			
PFPeA	4.377	263.0 -> 219.0	5263	0.35	µg/L	100
PFPeS	6.507	349.1 -> 79.9	350	0.15	µg/L	94
		349.1 -> 98.9	165			
PFTeDA	9.912	713.1 -> 669.0	3060	0.19	µg/L	100
		713.1 -> 168.9	271			
PFTrDA	9.541	663.0 -> 619.0	4178	0.19	µg/L	m
		663.0 -> 168.9	336			
PFUnDA	8.660	563.1 -> 519.0	2211	0.19	µg/L	98
		563.1 -> 269.1	459			
11Cl-PF3OUdS	9.581	630.9 -> 450.9	3017	0.32	µg/L	85
		632.9 -> 452.9	1139			
9Cl-PF3ONS	8.687	530.8 -> 351.0	3134	0.32	µg/L	88
		532.8 -> 353.0	1087			
ADONA	6.731	376.9 -> 250.9	9660	0.36	µg/L	96
		376.9 -> 84.8	2424			
HFPO-DA	5.903	284.9 -> 168.9	877	0.34	µg/L	100
		284.9 -> 184.9	122			
3:3FTCA	3.848	241.0 -> 177.0	525	0.84	µg/L	94
		241.0 -> 117.0	64			
5:3FTCA	6.193	341.0 -> 237.1	11784	4.53	µg/L	99
		341.0 -> 217.0	8373			
7:3FTCA	7.661	441.0 -> 316.9	5127	4.50	µg/L	95
		441.0 -> 336.9	11015			
EtFOSA	11.362	526.0 -> 219.0	1525	0.38	µg/L	m
		526.0 -> 169.0	2063			
EtFOSE	11.270	630.0 -> 58.9	3310	1.02	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	1221	0.39	µg/L	m
		511.9 -> 169.0	1567			
MeFOSE	10.960	616.1 -> 58.9	2581	0.91	µg/L	m
PFDoDS	10.064	699.1 -> 79.9	441	0.20	µg/L	92
		699.1 -> 98.8	273			
NFDHA	5.428	295.0 -> 201.0	494	0.42	µg/L	81
		295.0 -> 84.9	162			
PFMBA	4.778	279.0 -> 85.1	3089	0.36	µg/L	100
PFMPA	3.528	229.0 -> 84.9	2750	0.37	µg/L	100
PFEESA	5.971	314.8 -> 134.9	5322	0.34	µg/L	98
		314.8 -> 82.9	151			

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

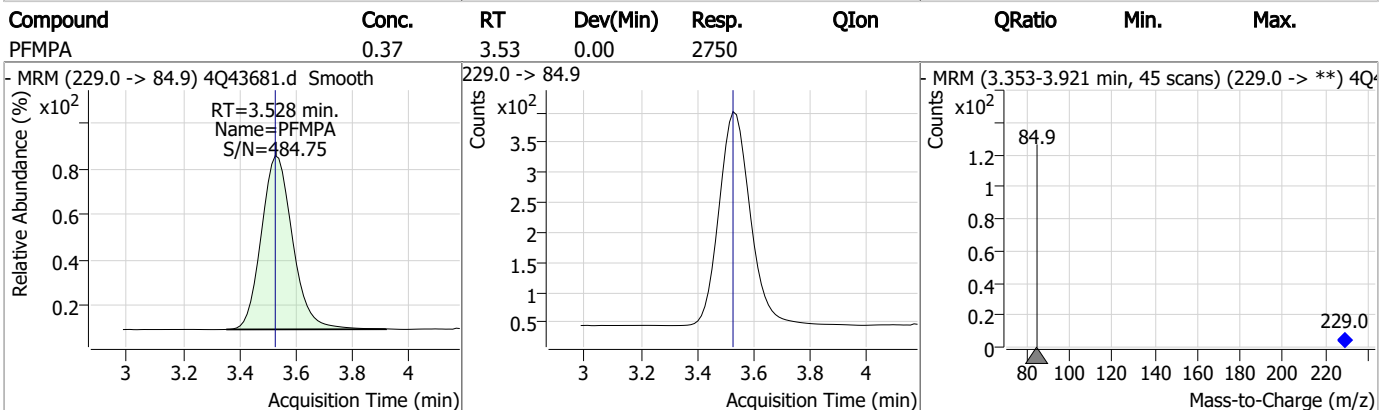
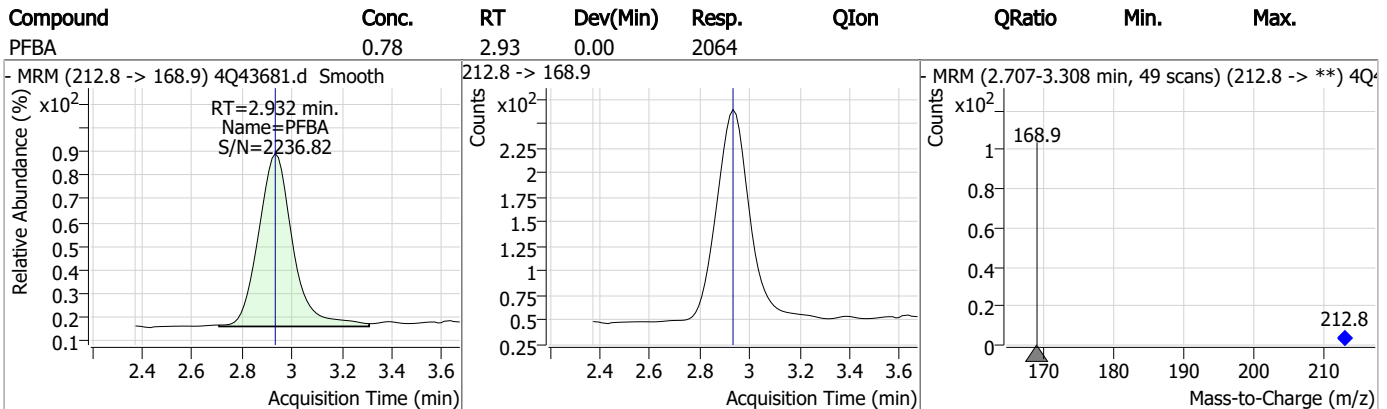
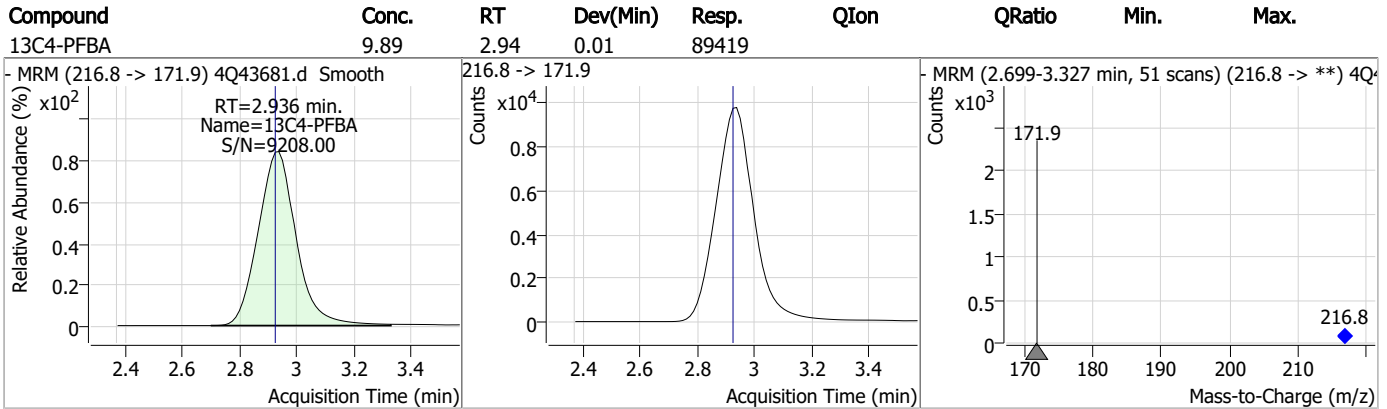
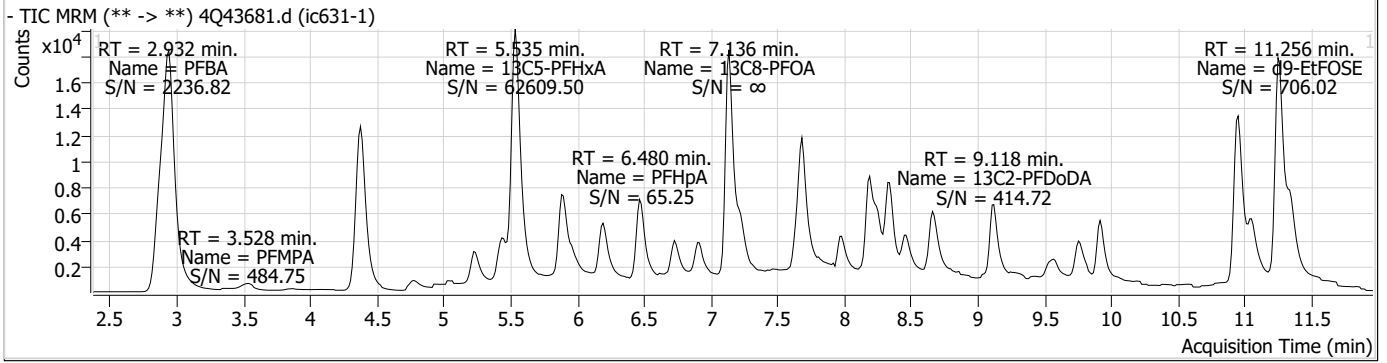
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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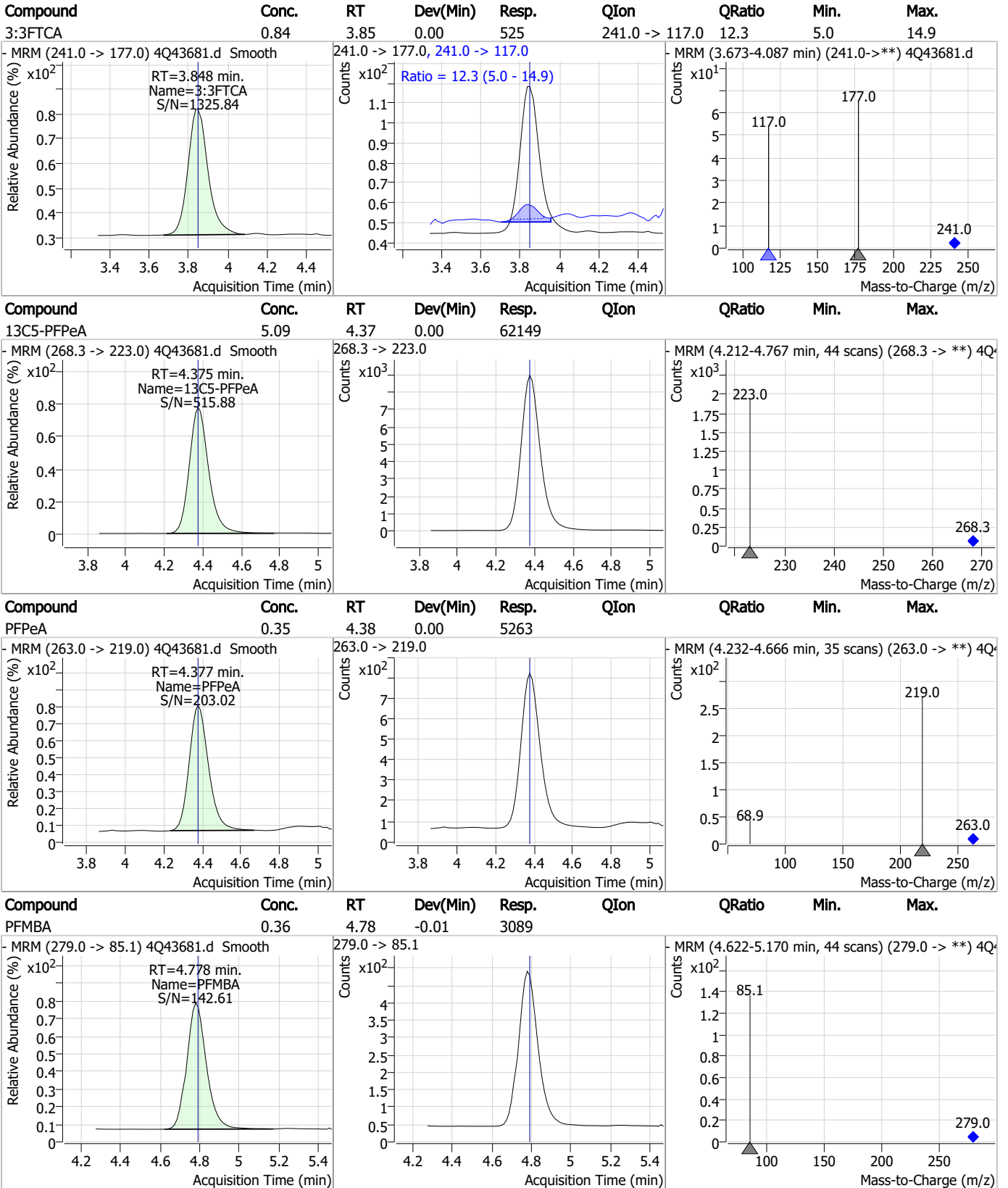
7.7.2
7



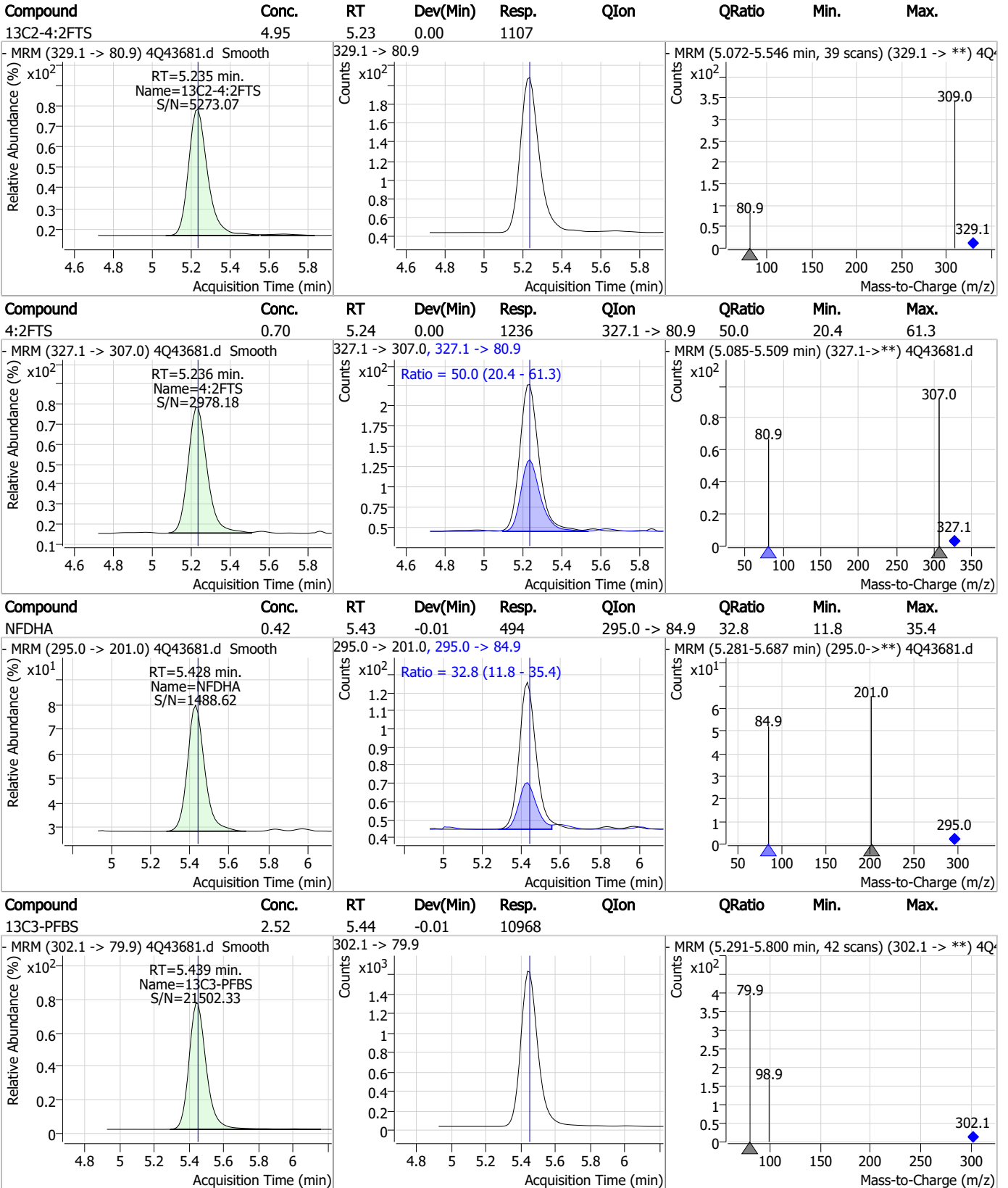
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



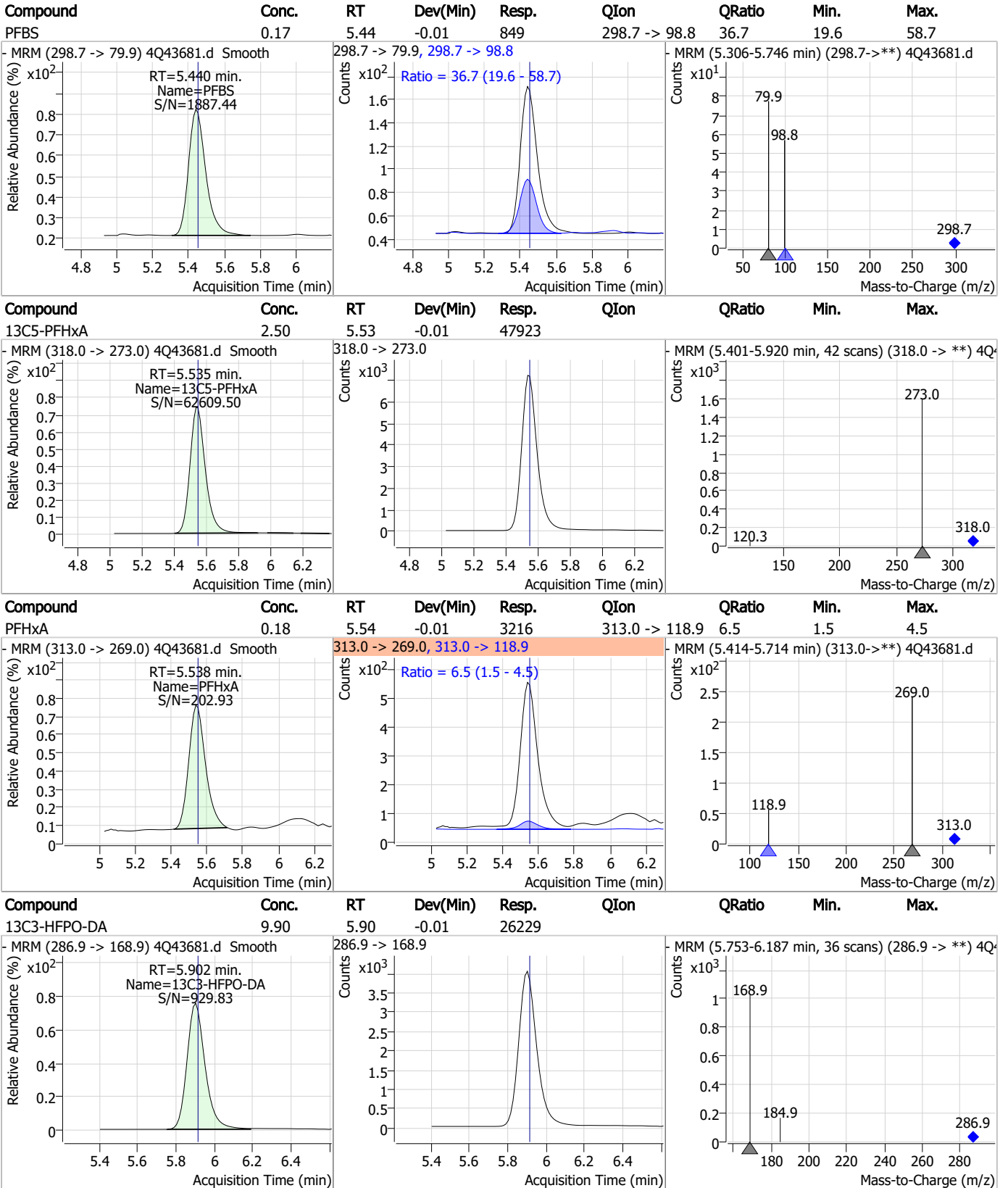
Perfluorinated Compounds by LC/MS/MS



7.7.2

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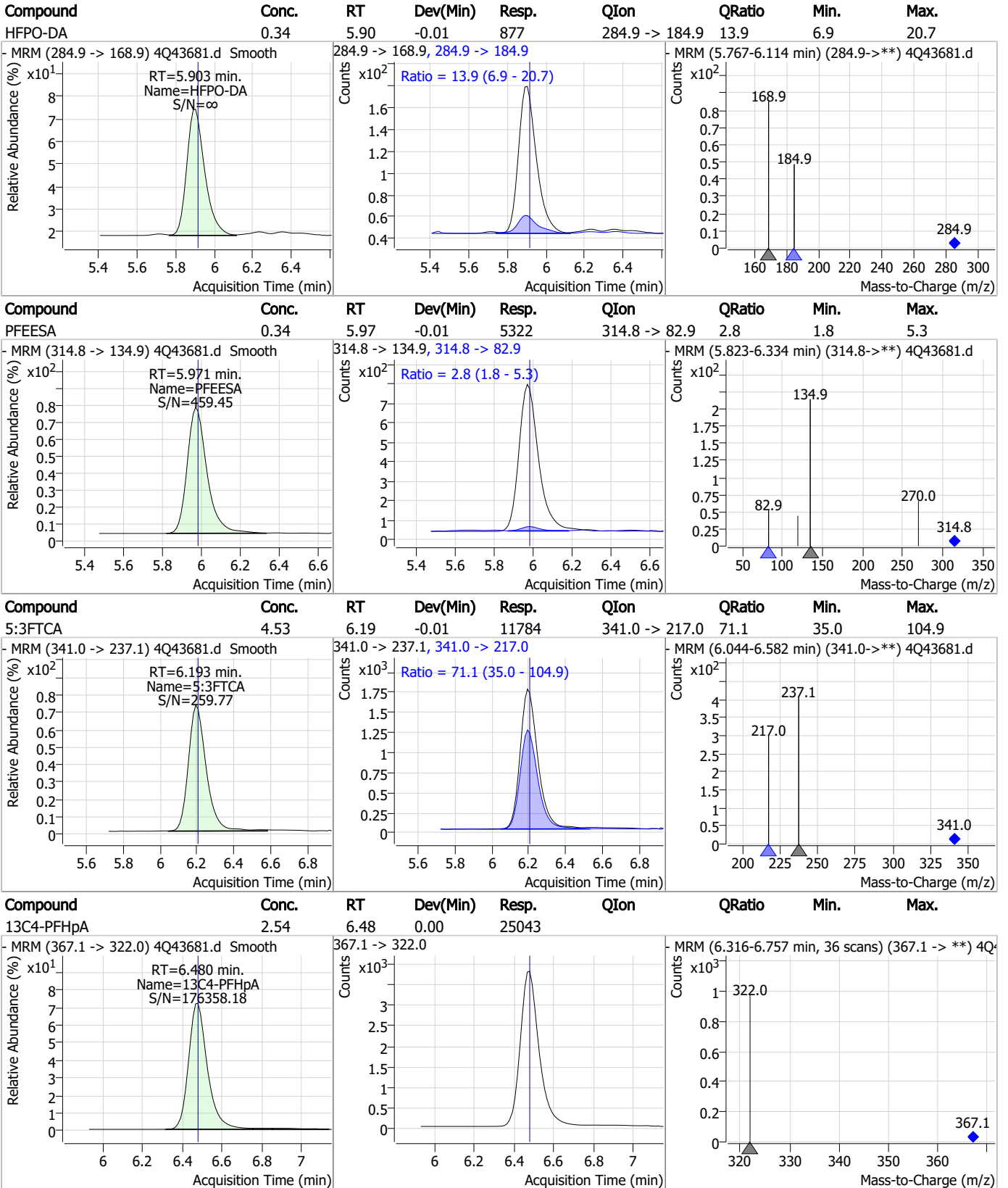
Perfluorinated Compounds by LC/MS/MS



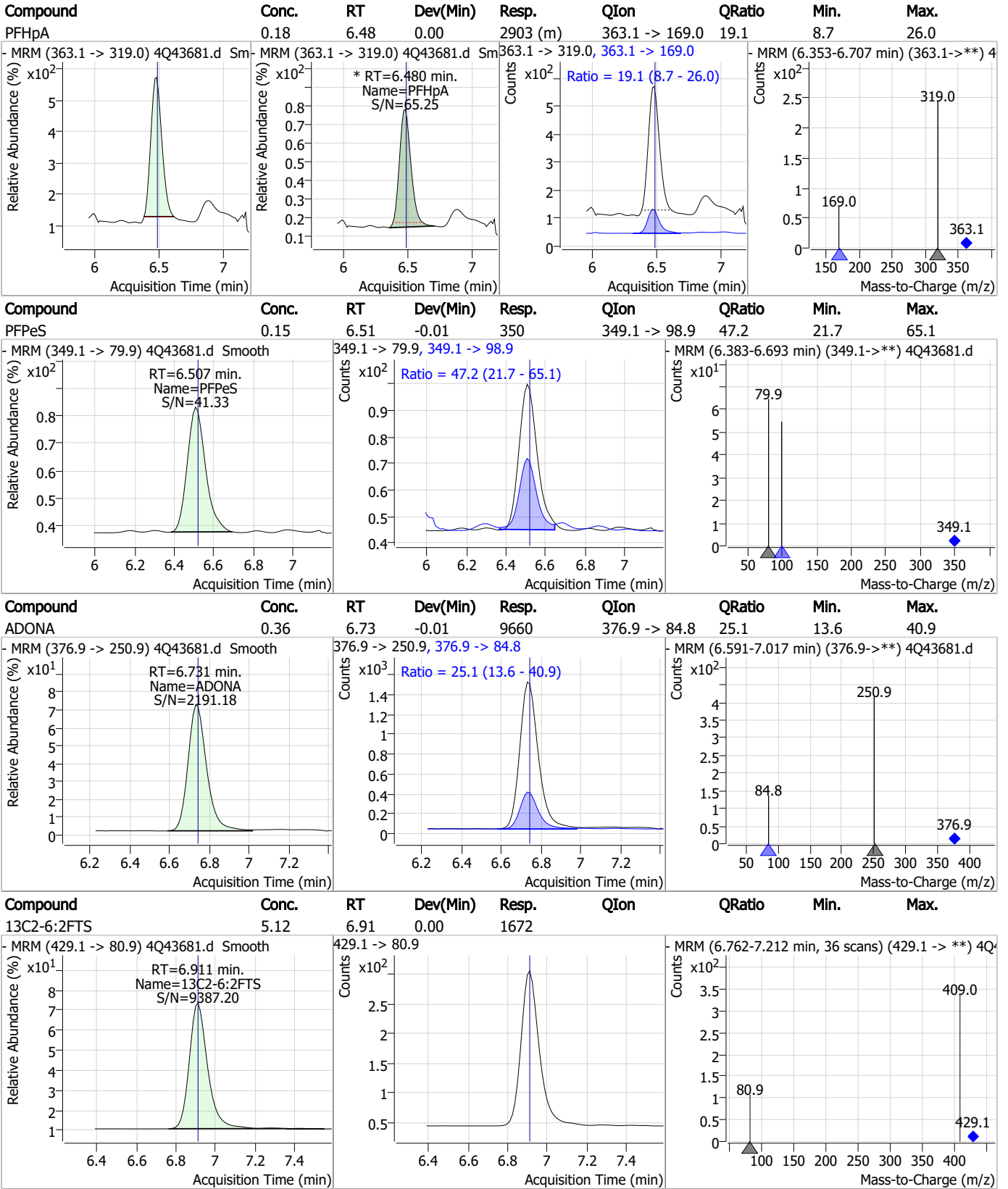
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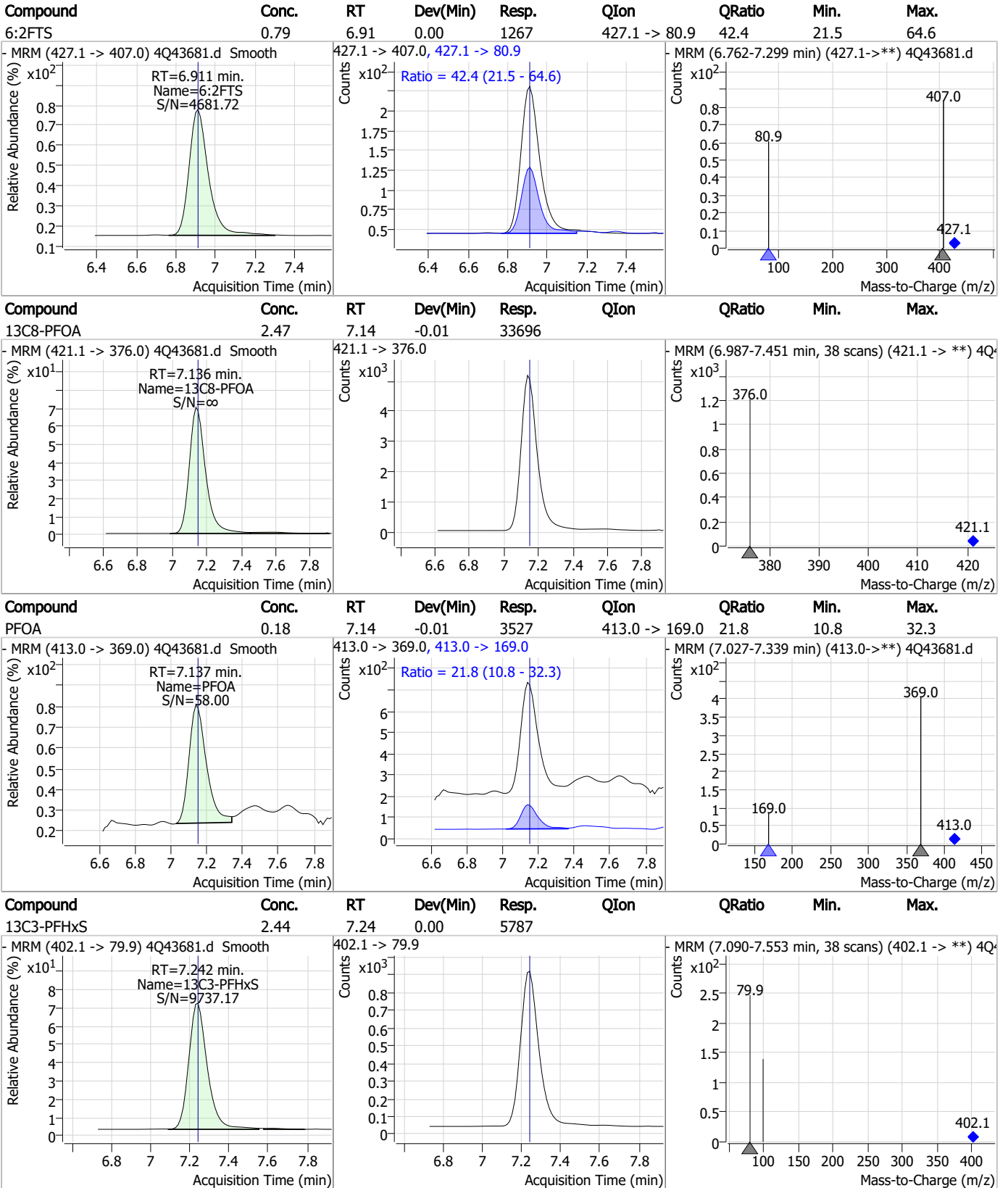
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



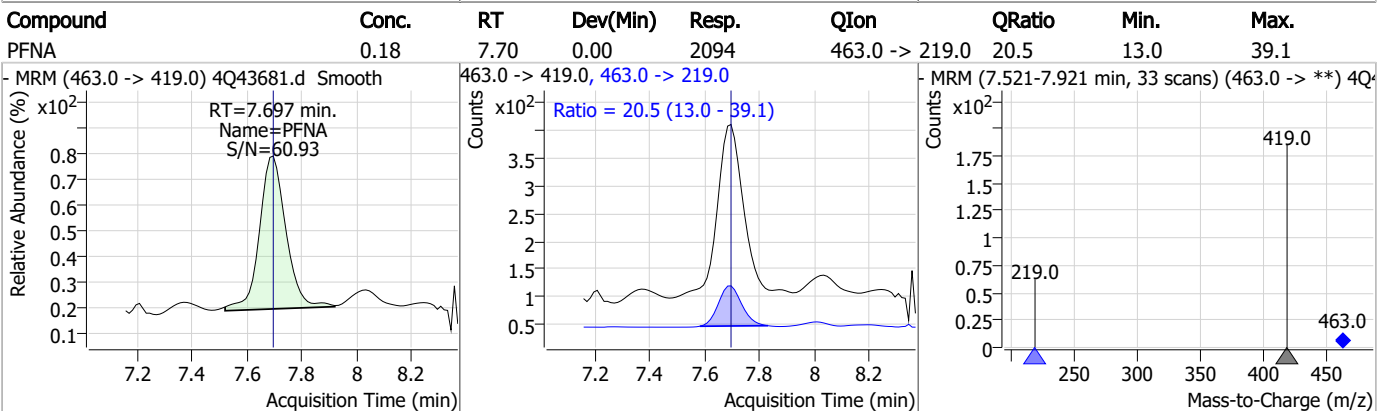
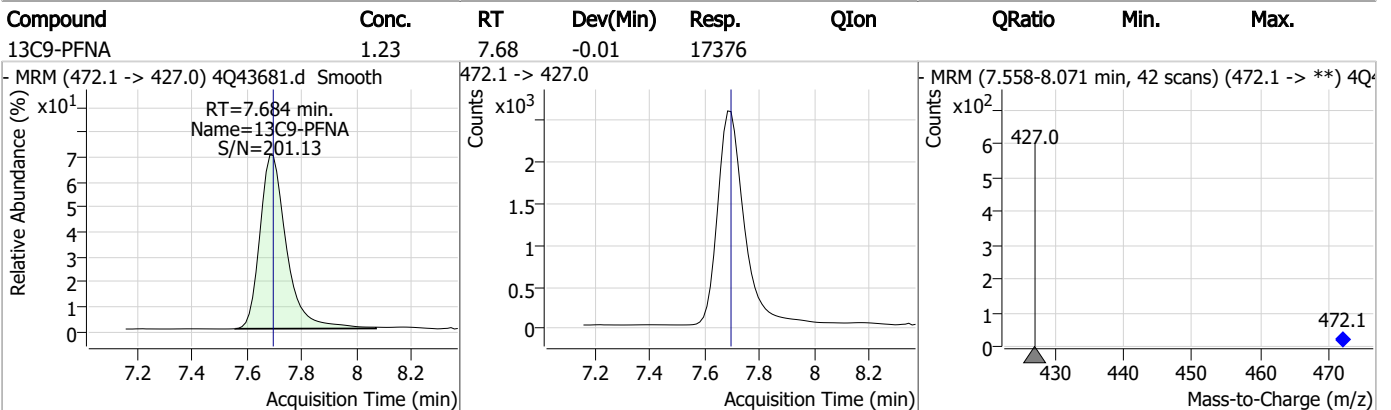
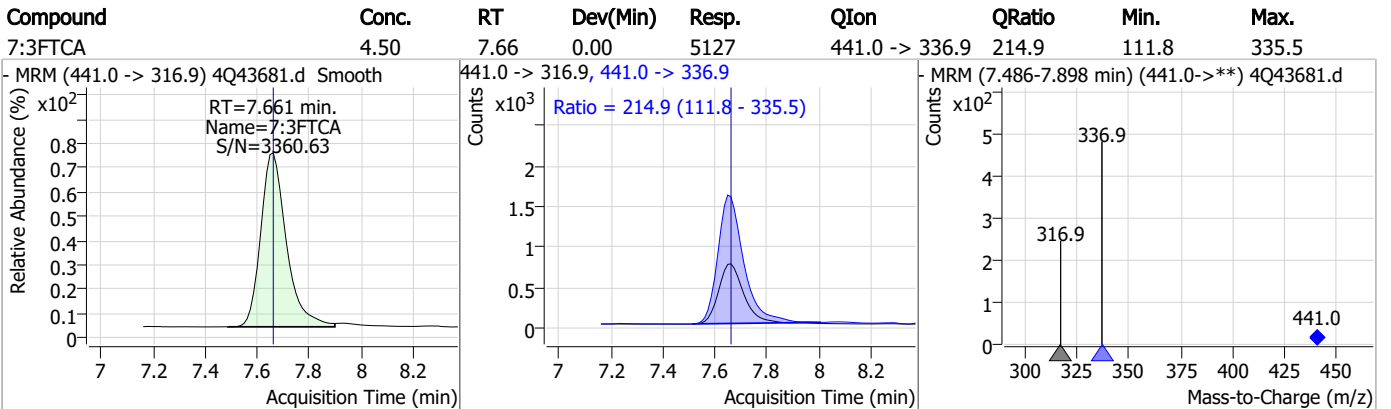
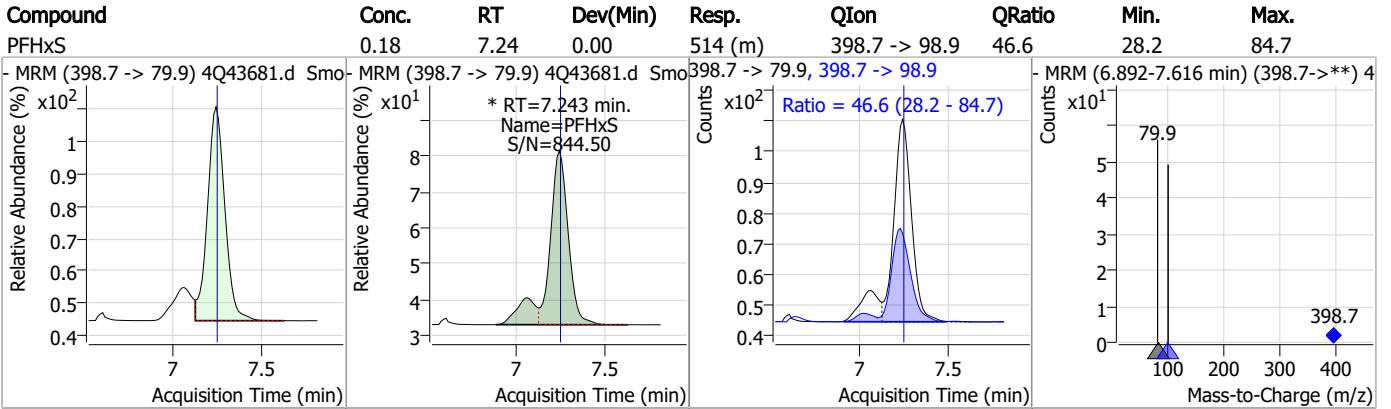
Perfluorinated Compounds by LC/MS/MS



7.7.2
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Perfluorinated Compounds by LC/MS/MS

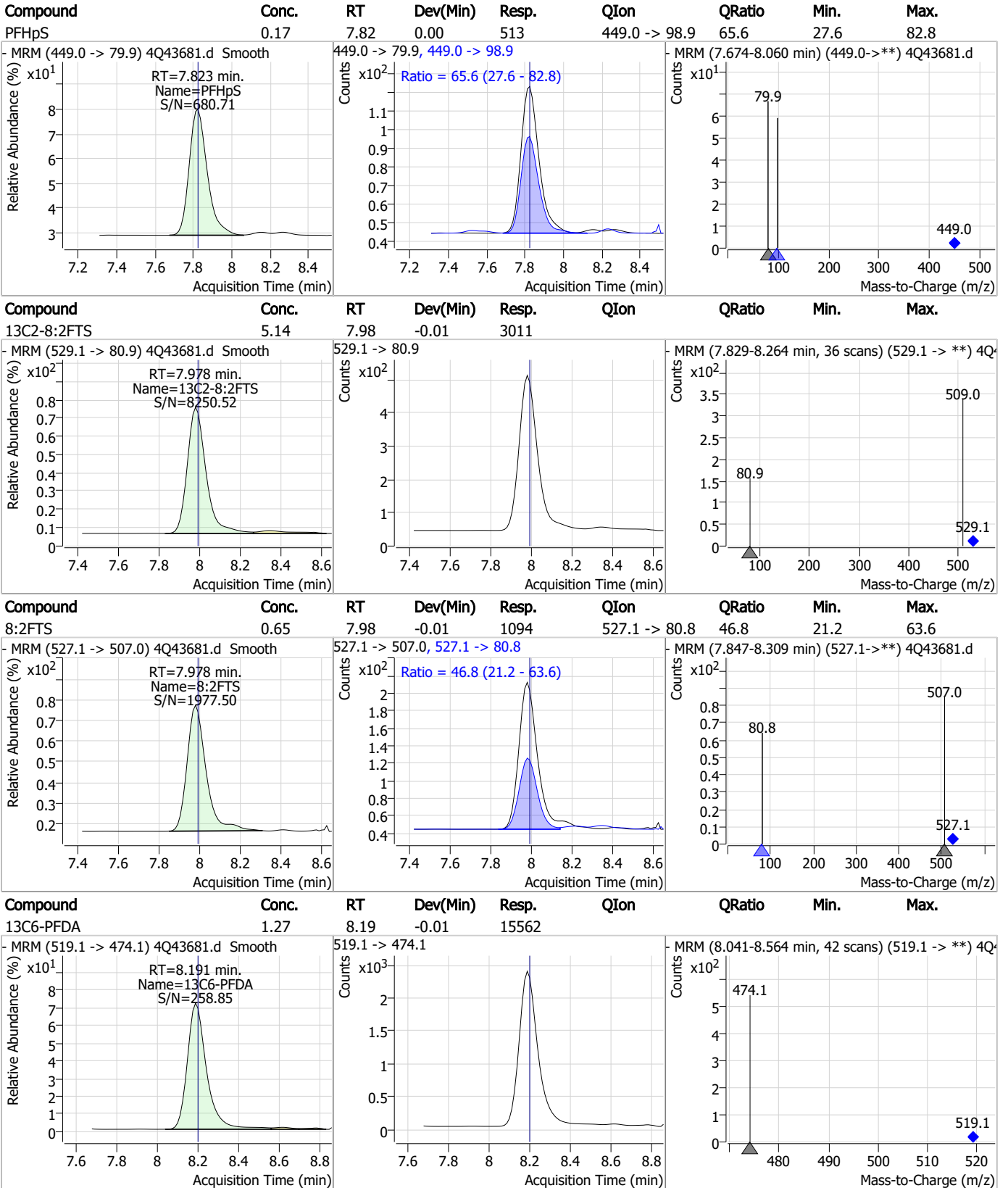


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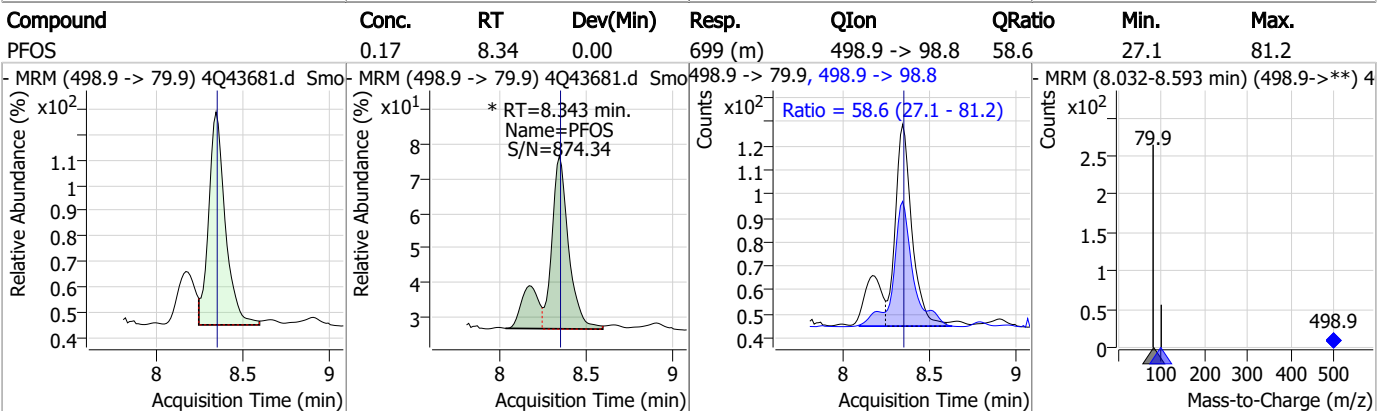
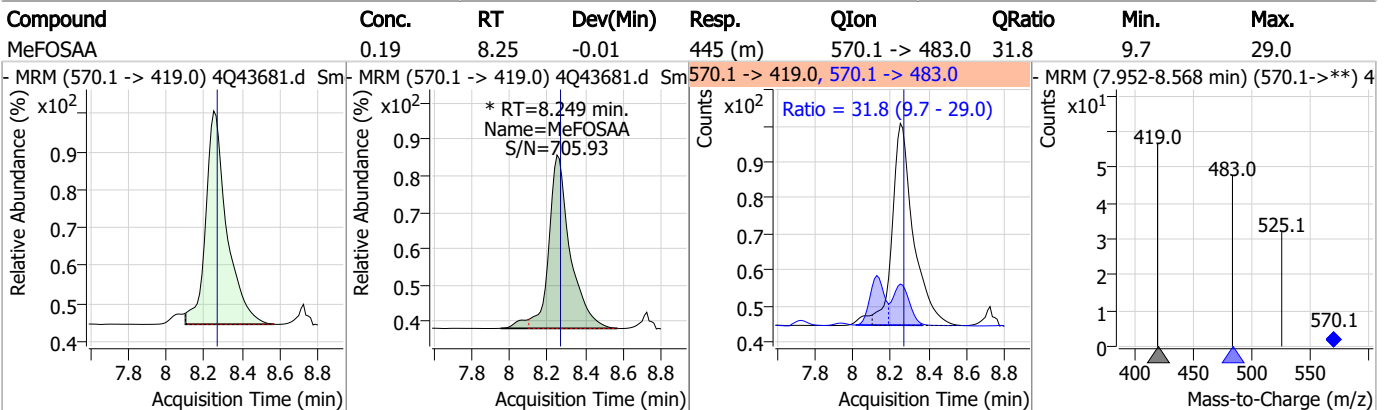
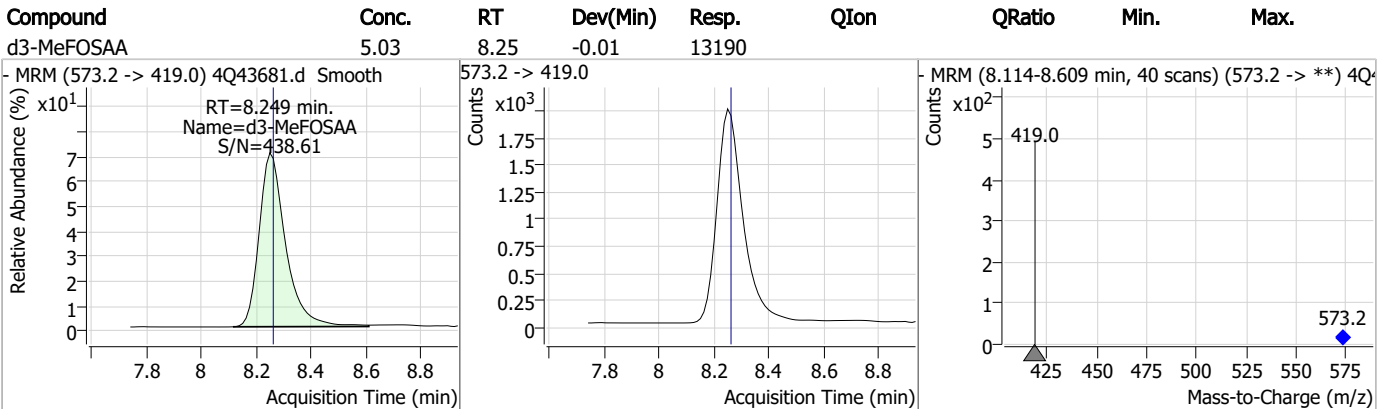
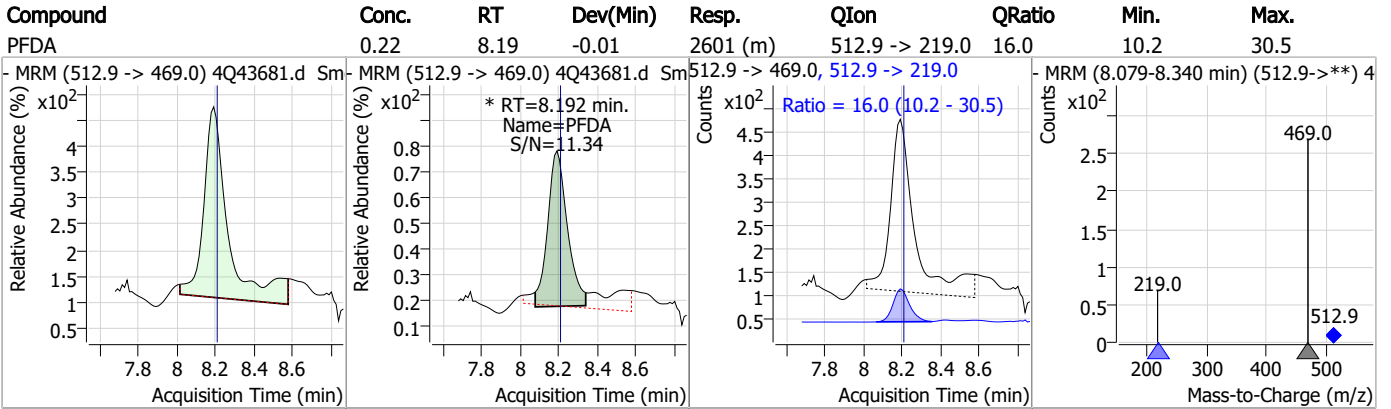


Perfluorinated Compounds by LC/MS/MS



7.7.2
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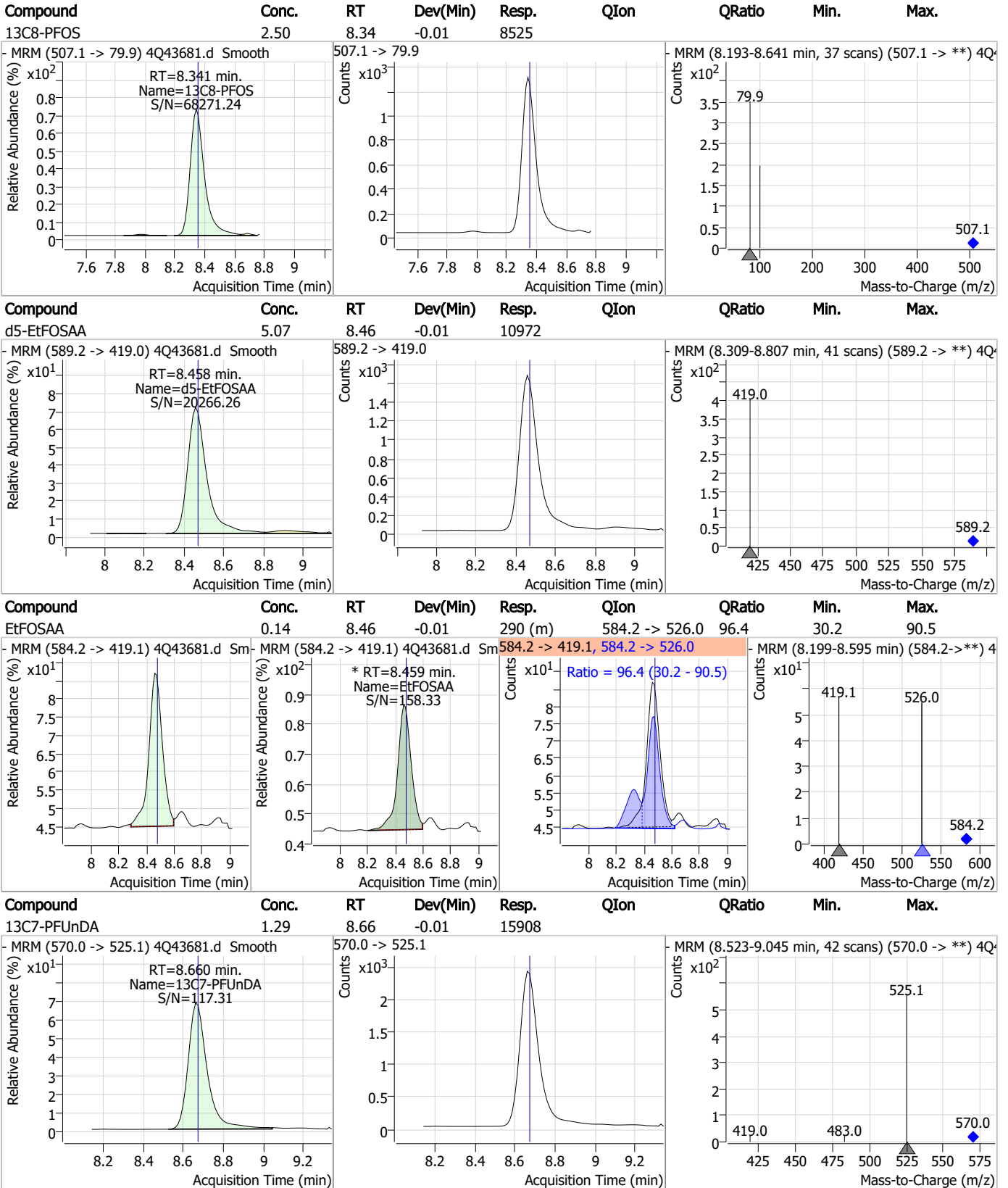
Perfluorinated Compounds by LC/MS/MS



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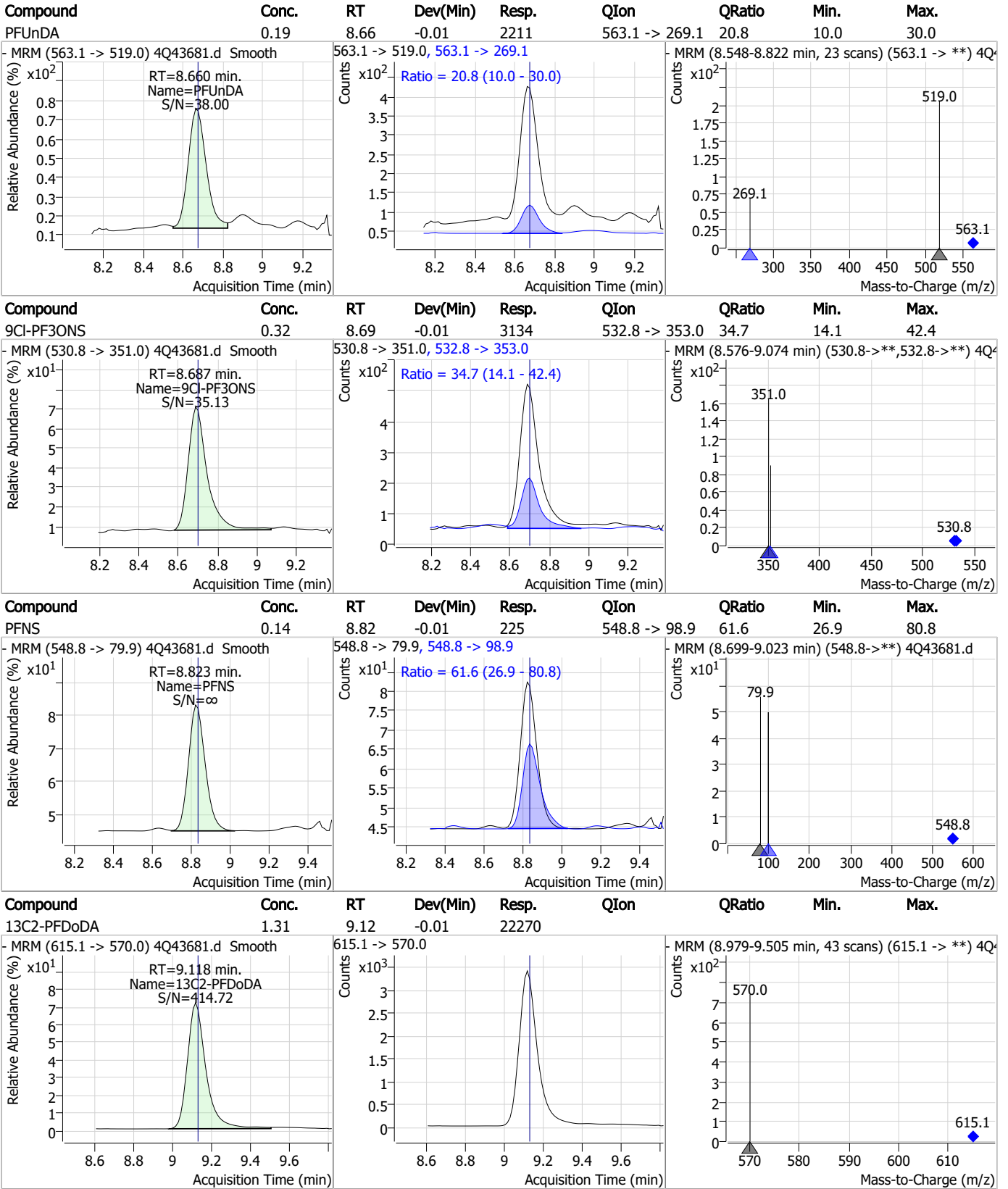
Perfluorinated Compounds by LC/MS/MS



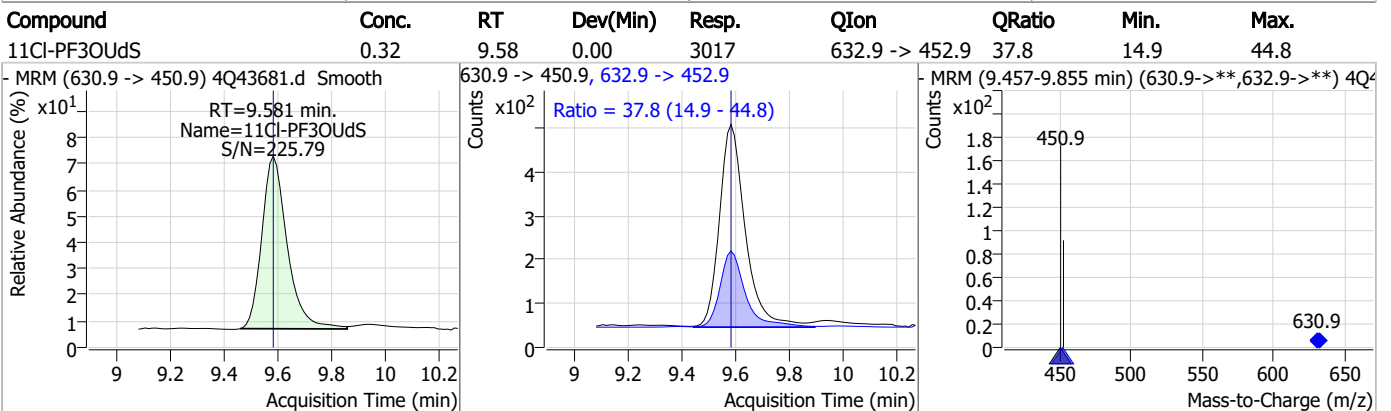
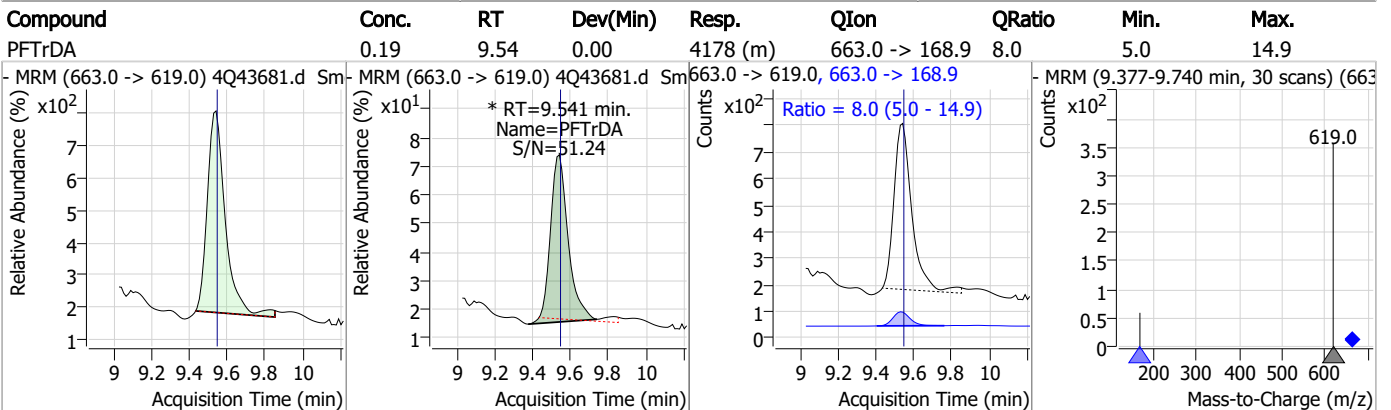
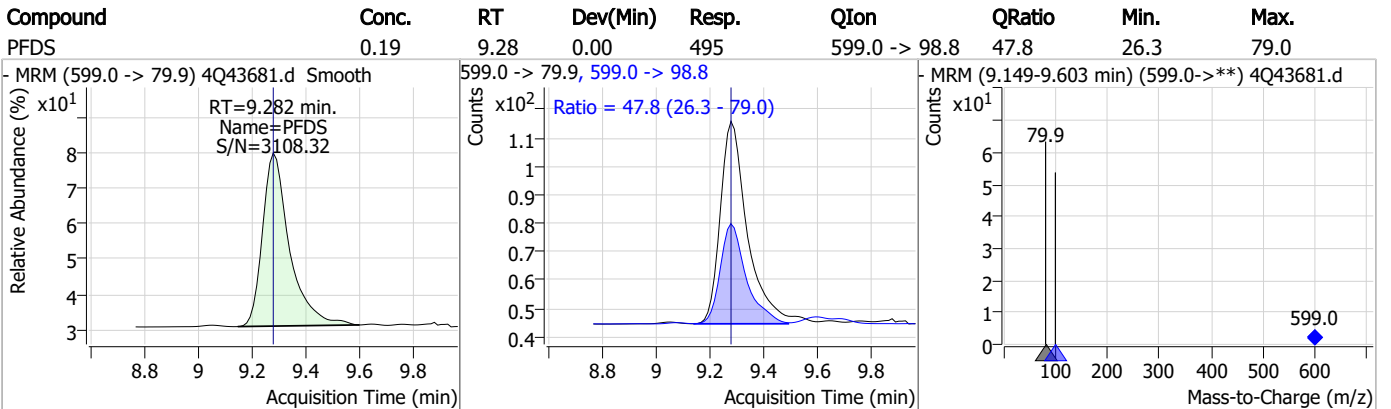
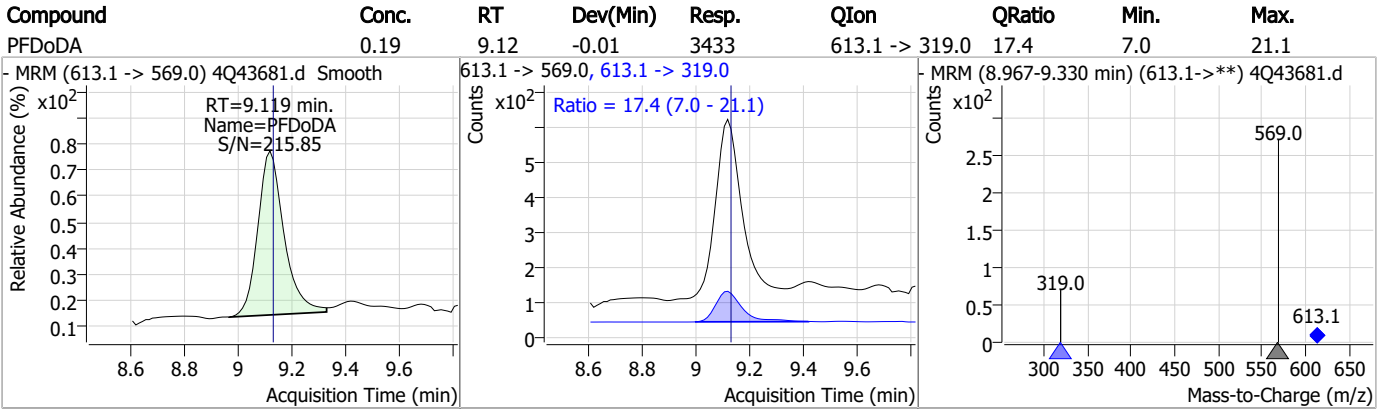
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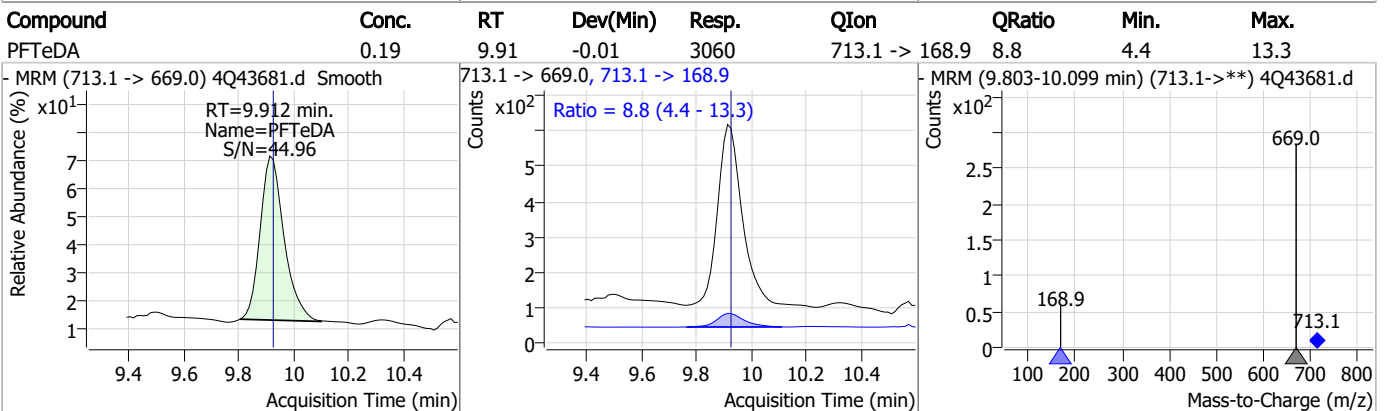
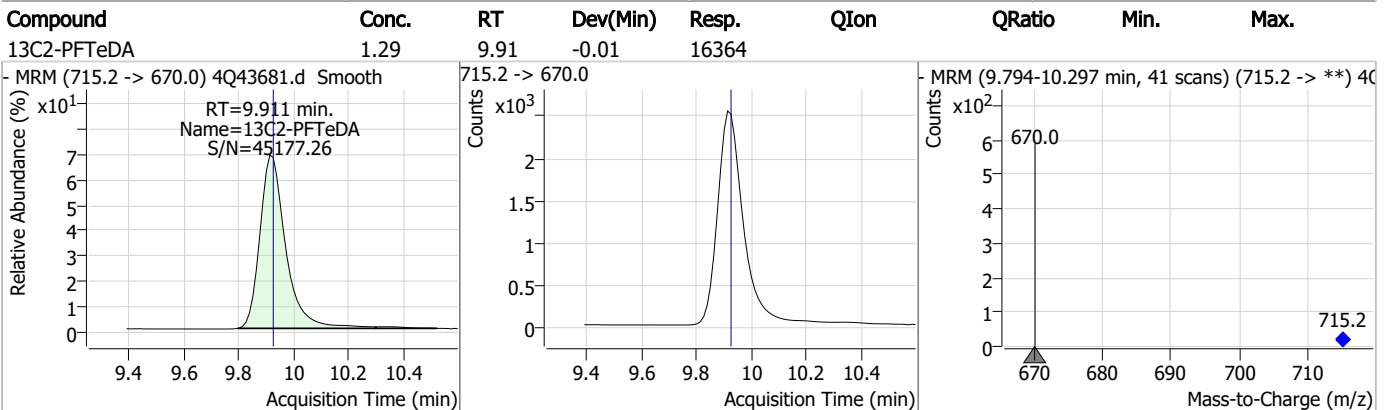
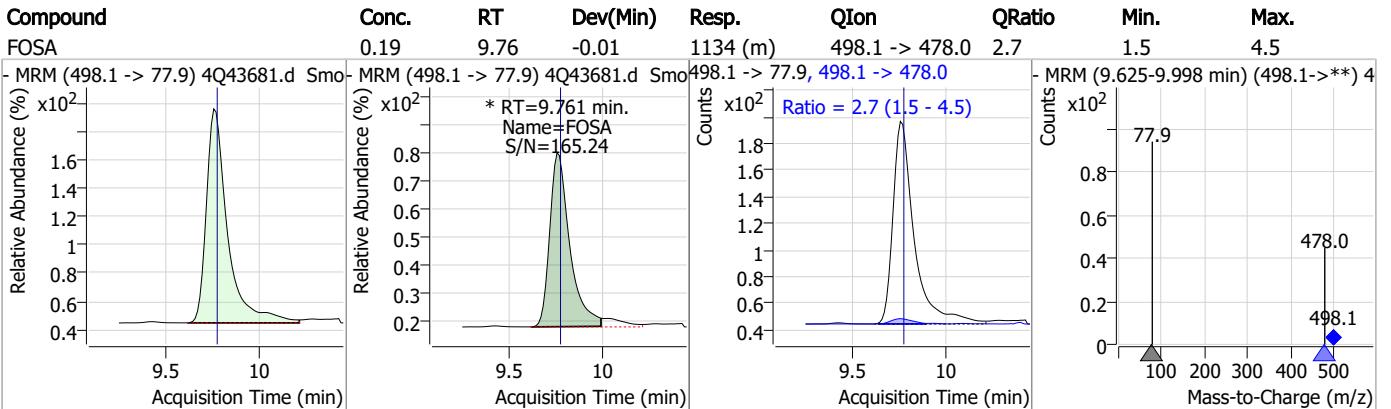
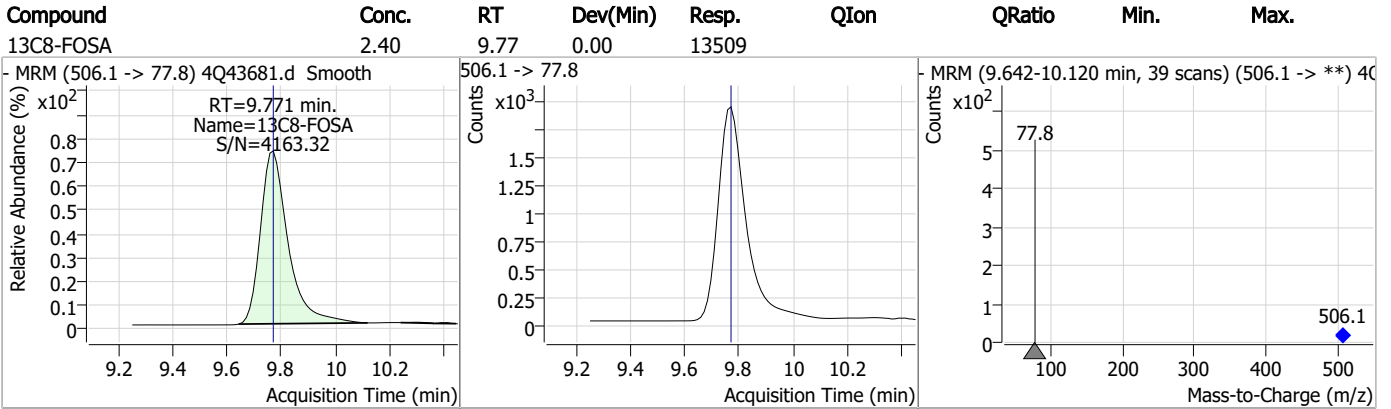
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

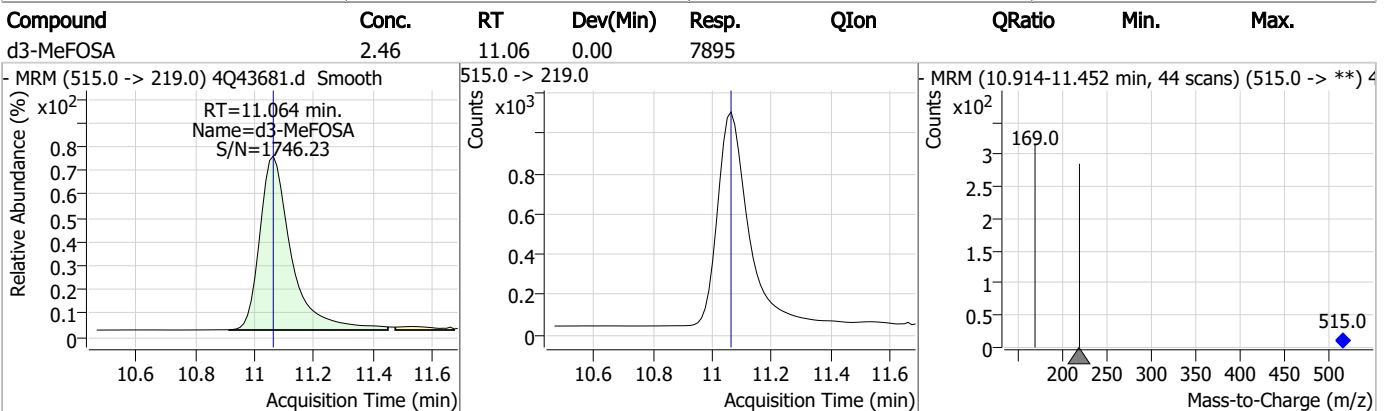
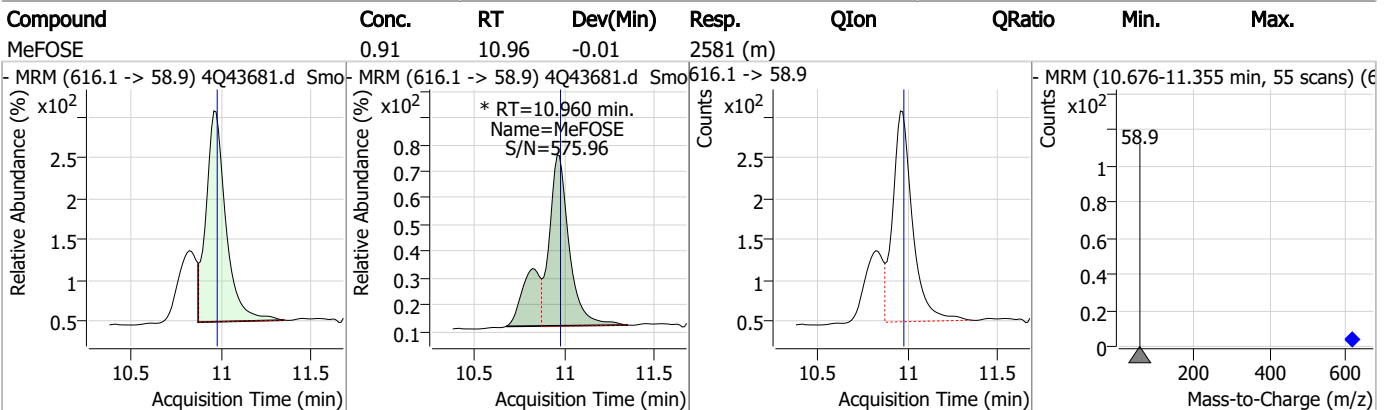
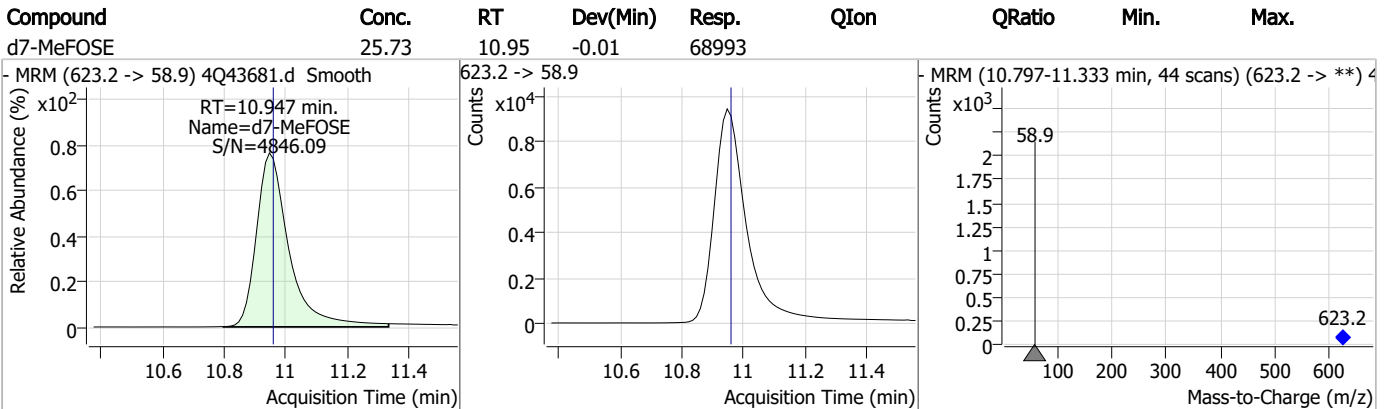
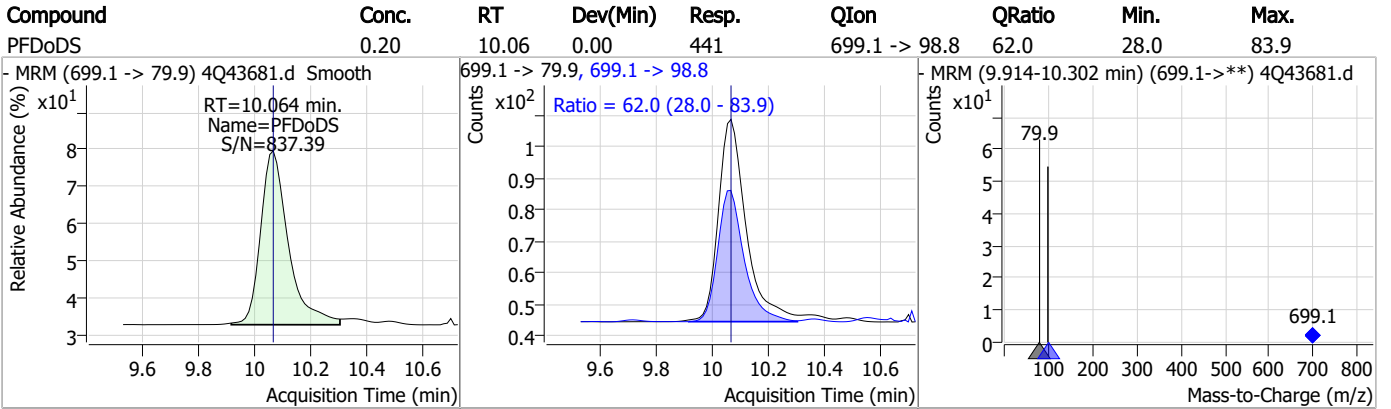


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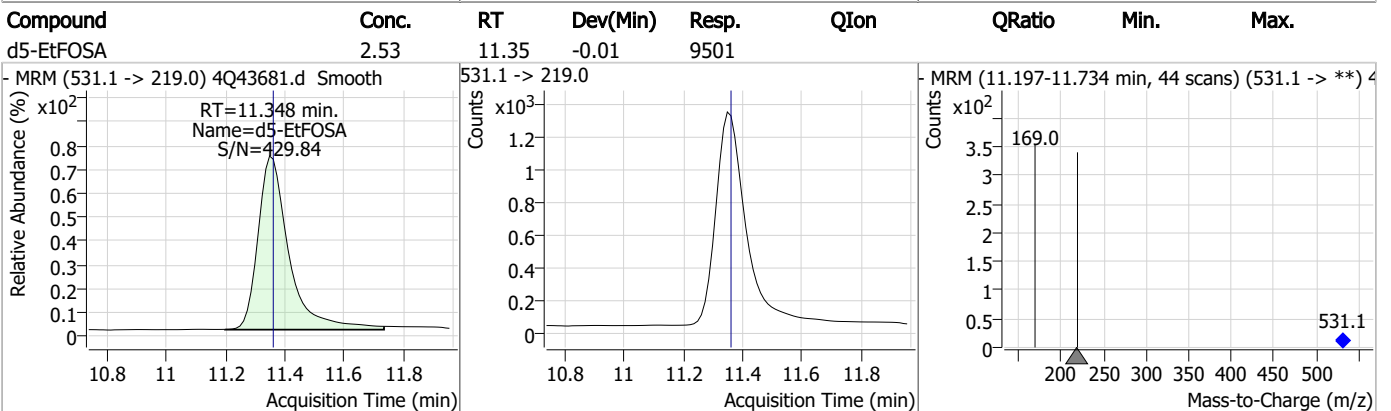
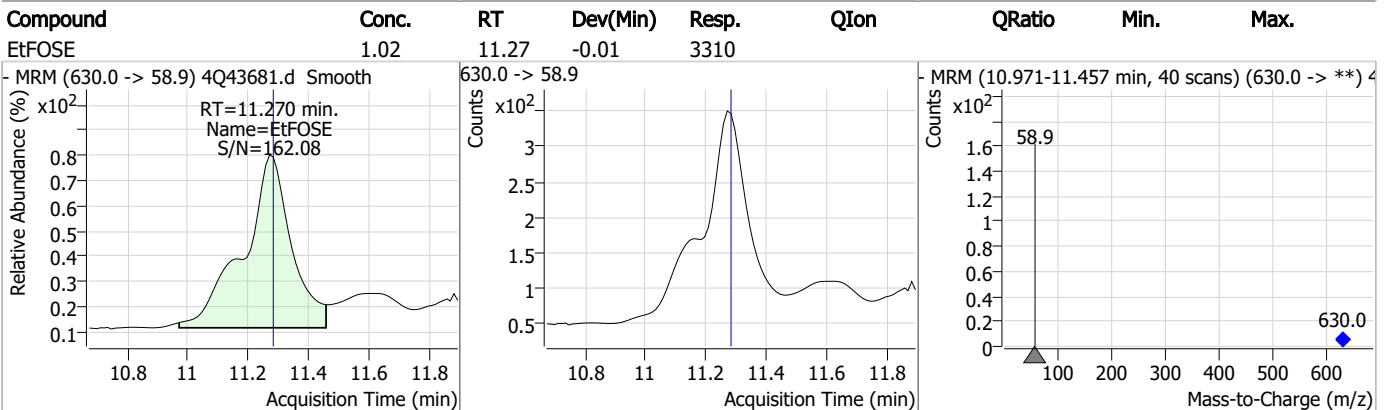
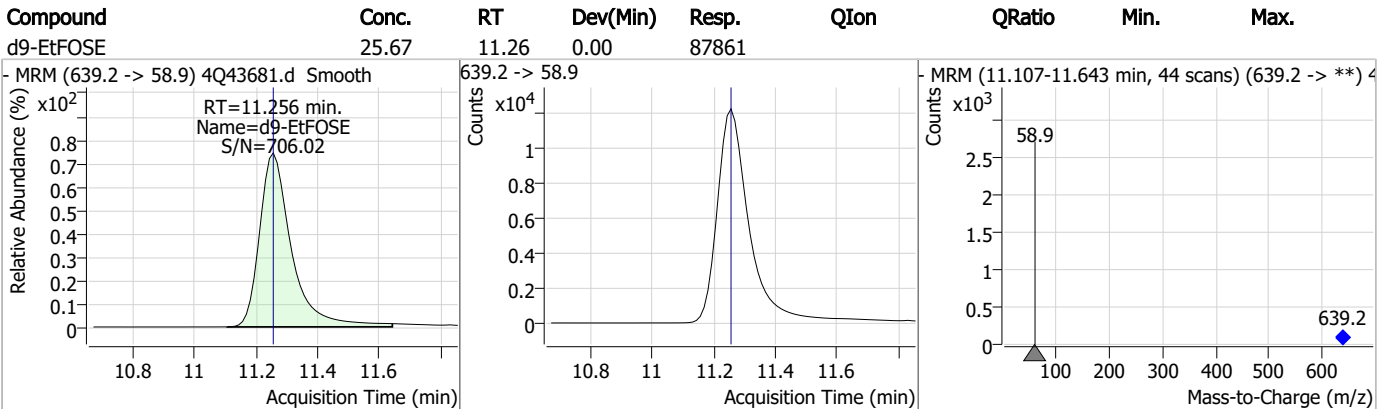
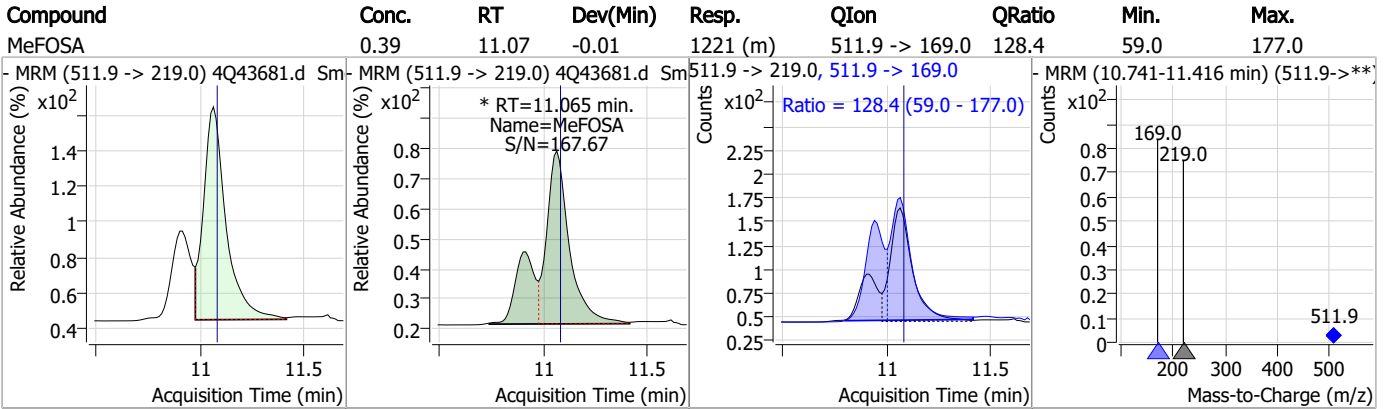
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Perfluorinated Compounds by LC/MS/MS



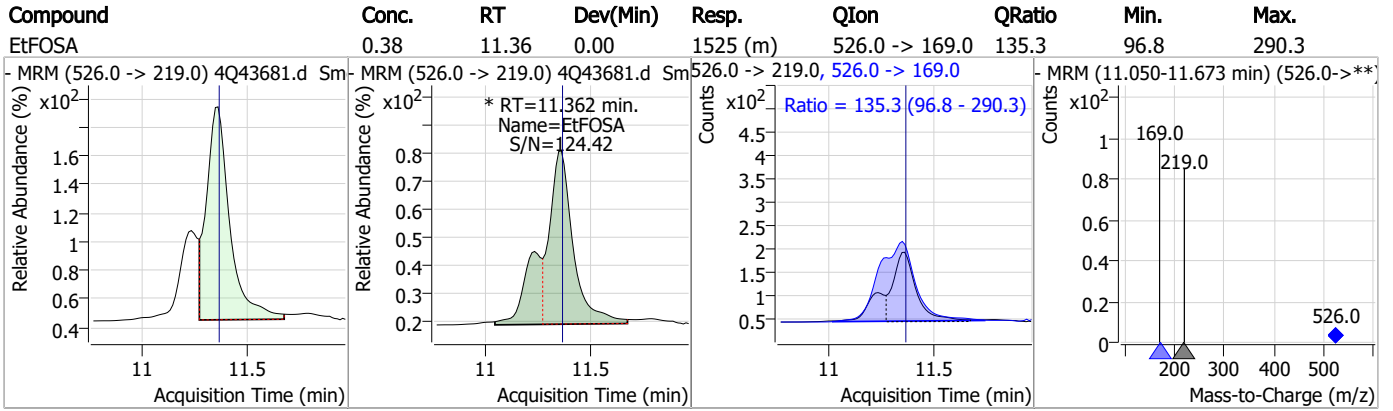
Perfluorinated Compounds by LC/MS/MS



7.7.2

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Perfluorinated Compounds by LC/MS/MS



7.7.2

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Manual Integration Approval Summary

Sample Number: S4Q631-IC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43681.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 12:37 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.48	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
Perfluorodecanoic acid	335-76-2		8.19	Poor instrument integration
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
Perfluorotridecanoic acid	72629-94-8		9.54	Poor instrument integration
PFOSA	754-91-6		9.76	Split peak
MeFOSE	24448-09-7		10.96	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43682.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 12:51:39 PM
 Sample Name : ic631-2
 Vial : P1-A3
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	91147	10.00 µg/L	0.013
M5-PFPeA	4.375	268.3 -> 223.0	60898	5.00 µg/L	0.000
M5-PFHxA	5.547	318.0 -> 273.0	47718	2.50 µg/L	0.000
M4-PFHpA	6.480	367.1 -> 322.0	24351	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	32845	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	16908	1.25 µg/L	0.000
M6-PFDA	8.191	519.1 -> 474.1	16779	1.25 µg/L	-0.012
M7-PFUnDA	8.672	570.0 -> 525.1	16282	1.25 µg/L	0.000
M2-PFDoDA	9.118	615.1 -> 570.0	22987	1.25 µg/L	-0.012
M2-PFTeDA	9.911	715.2 -> 670.0	16358	1.25 µg/L	-0.012
M8-FOSA	9.771	506.1 -> 77.8	14120	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	10963	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	6061	2.50 µg/L	0.000
M8-PFOS	8.341	507.1 -> 79.9	8477	2.50 µg/L	-0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1104	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1612	5.00 µg/L	0.000
M2-8:2FTS	7.978	529.1 -> 80.9	3135	5.00 µg/L	-0.012
M3-MeFOSAA	8.261	573.2 -> 419.0	13169	5.00 µg/L	0.000
M3-HFPO-DA	5.902	286.9 -> 168.9	26242	10.00 µg/L	-0.012
M5-EtFOSAA	8.470	589.2 -> 419.0	10914	5.00 µg/L	0.000
M7-MeFOSE	10.947	623.2 -> 58.9	72118	25.00 µg/L	-0.012
M9-EtFOSE	11.256	639.2 -> 58.9	90130	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	9662	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	7845	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	8304	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	52669	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4490	2.50 µg/L	0.000
13C4-PFOA	7.149	417.1 -> 372.0	40067	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	15210	1.25 µg/L	0.000
13C5-PFNA	7.697	468.0 -> 423.0	18290	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	39795	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1104	4.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.7%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1612	4.68 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.7%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3135	5.08 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFDoDA	9.118	615.1 -> 570.0	22987	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-PFTeDA	9.911	715.2 -> 670.0	16358	1.17 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C3-PFBS	5.452	302.1 -> 79.9	10963	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C3-PFHxS	7.242	402.1 -> 79.9	6061	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 = 97.0%		
13C4-PFBA	2.936	216.8 -> 171.9	91147	10.01 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C4-PFHpA	6.480	367.1 -> 322.0	24351	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C5-PFHxA	5.547	318.0 -> 273.0	47718	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C5-PFPeA	4.375	268.3 -> 223.0	60898	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C6-PFDA	8.191	519.1 -> 474.1	16779	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C7-PFUnDA	8.672	570.0 -> 525.1	16282	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C8-FOSA	9.771	506.1 -> 77.8	14120	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C8-PFOA	7.148	421.1 -> 376.0	32845	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C8-PFOS	8.341	507.1 -> 79.9	8477	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C9-PFNA	7.696	472.1 -> 427.0	16908	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
d3-MeFOSAA	8.261	573.2 -> 419.0	13169	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C3-HFPO-DA	5.902	286.9 -> 168.9	26242	10.03 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
d3-MeFOSA	11.064	515.0 -> 219.0	7845	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
d5-EtFOSAA	8.470	589.2 -> 419.0	10914	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
d7-MeFOSE	10.947	623.2 -> 58.9	72118	26.90 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
d9-EtFOSE	11.256	639.2 -> 58.9	90130	26.33 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 105.3%		
d5-EtFOSA	11.360	531.1 -> 219.0	9662	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	2738	1.55 µg/L	91
		327.1 -> 80.9	1271		
6:2FTS	6.911	427.1 -> 407.0	2290	1.48 µg/L	95
		427.1 -> 80.9	1051		
8:2FTS	7.978	527.1 -> 507.0	2600	1.48 µg/L	90
		527.1 -> 80.8	1268		
EtFOSAA	8.471	584.2 -> 419.1	1016	0.49 µg/L	m 80
		584.2 -> 526.0	457		
FOSA	9.761	498.1 -> 77.9	2337	0.38 µg/L	97
		498.1 -> 478.0	44		
MeFOSAA	8.262	570.1 -> 419.0	849	0.37 µg/L	m 88
		570.1 -> 483.0	118		
PFBA	2.932	212.8 -> 168.9	4205	1.57 µg/L	100
PFBS	5.453	298.7 -> 79.9	1722	0.35 µg/L	99
		298.7 -> 98.8	684		
PFDA	8.192	512.9 -> 469.0	4796	0.38 µg/L	89
		512.9 -> 219.0	735		
PFDODA	9.119	613.1 -> 569.0	7087	0.38 µg/L	99
		613.1 -> 319.0	1014		
PFDS	9.282	599.0 -> 79.9	1037	0.41 µg/L	90

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	473			
PFHpA	6.480	363.1 -> 319.0	5956	0.38	µg/L	96
		363.1 -> 169.0	1127			
PFHpS	7.823	449.0 -> 79.9	970	0.33	µg/L	92
		449.0 -> 98.9	589			
PFHxA	5.550	313.0 -> 269.0	6963	0.39	µg/L	98
		313.0 -> 118.9	259			
PFHxS	7.243	398.7 -> 79.9	1091	0.36	µg/L	m 100
		398.7 -> 98.9	613			
PFNA	7.697	463.0 -> 419.0	4613	0.40	µg/L	96
		463.0 -> 219.0	1288			
PFNS	8.836	548.8 -> 79.9	554	0.35	µg/L	79
		548.8 -> 98.9	383			
PFOA	7.150	413.0 -> 369.0	7231	0.38	µg/L	98
		413.0 -> 169.0	1485			
PFOS	8.343	498.9 -> 79.9	1599	0.39	µg/L	m 87
		498.9 -> 98.8	721			
PFPeA	4.377	263.0 -> 219.0	11239	0.77	µg/L	100
PFPeS	6.519	349.1 -> 79.9	895	0.36	µg/L	99
		349.1 -> 98.9	395			
PFTeDA	9.912	713.1 -> 669.0	5734	0.36	µg/L	96
		713.1 -> 168.9	596			
PFTrDA	9.541	663.0 -> 619.0	8608	0.38	µg/L	99
		663.0 -> 168.9	889			
PFUnDA	8.673	563.1 -> 519.0	4160	0.35	µg/L	87
		563.1 -> 269.1	1087			
11Cl-PF3OUdS	9.581	630.9 -> 450.9	6767	0.73	µg/L	90
		632.9 -> 452.9	2372			
9Cl-PF3ONS	8.700	530.8 -> 351.0	6628	0.68	µg/L	93
		532.8 -> 353.0	2111			
ADONA	6.743	376.9 -> 250.9	18948	0.71	µg/L	99
		376.9 -> 84.8	5294			
HFPO-DA	5.915	284.9 -> 168.9	2083	0.80	µg/L	93
		284.9 -> 184.9	226			
3:3FTCA	3.848	241.0 -> 177.0	1151	1.87	µg/L	97
		241.0 -> 117.0	126			
5:3FTCA	6.205	341.0 -> 237.1	24653	9.51	µg/L	99
		341.0 -> 217.0	17091			
7:3FTCA	7.661	441.0 -> 316.9	10854	9.57	µg/L	98
		441.0 -> 336.9	24663			
EtFOSA	11.362	526.0 -> 219.0	3054	0.74	µg/L	m 64
		526.0 -> 169.0	4261			
EtFOSE	11.282	630.0 -> 58.9	5841	1.75	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	2415	0.78	µg/L	m 73
		511.9 -> 169.0	3573			
MeFOSE	10.973	616.1 -> 58.9	5649	1.90	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	759	0.34	µg/L	93
		699.1 -> 98.8	462			
NFDHA	5.428	295.0 -> 201.0	994	0.85	µg/L	96
		295.0 -> 84.9	217			
PFMBA	4.791	279.0 -> 85.1	6314	0.75	µg/L	100
PFMPA	3.528	229.0 -> 84.9	5558	0.77	µg/L	100
PFEESA	5.984	314.8 -> 134.9	10681	0.68	µg/L	99
		314.8 -> 82.9	358			

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

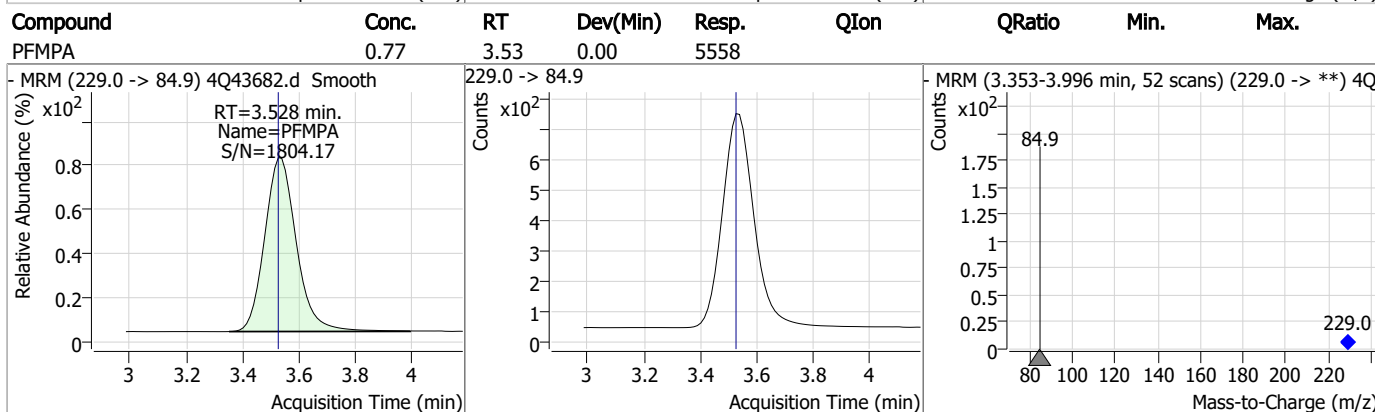
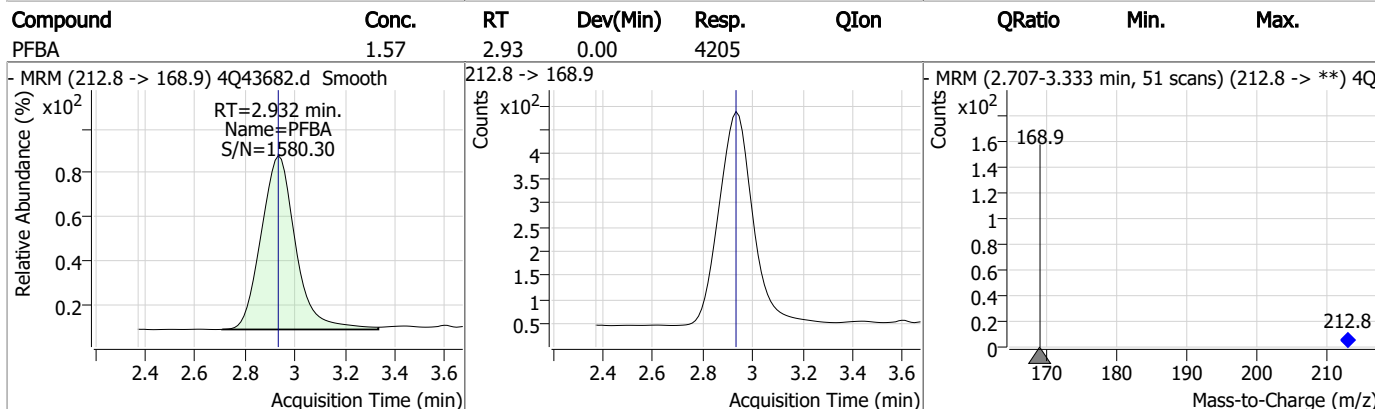
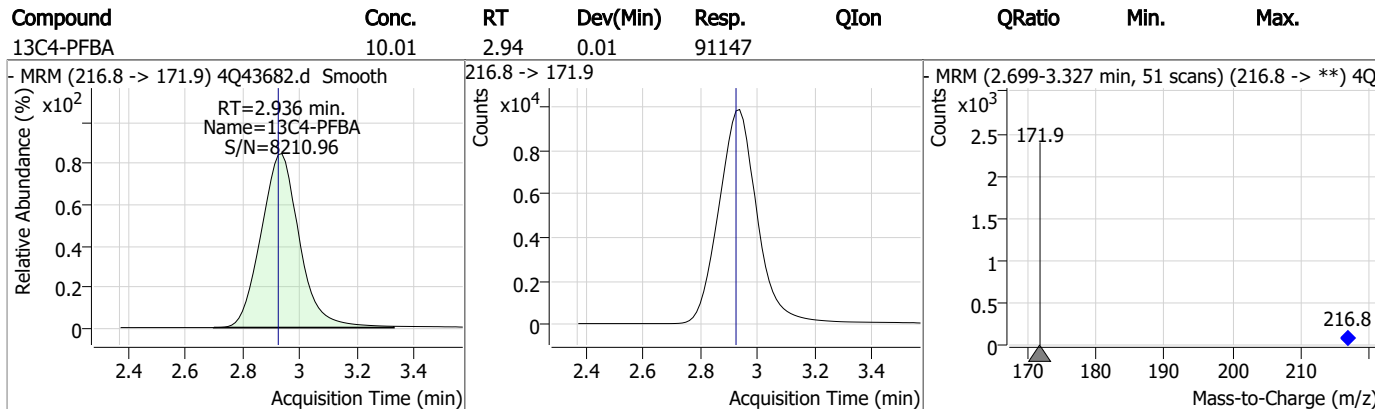
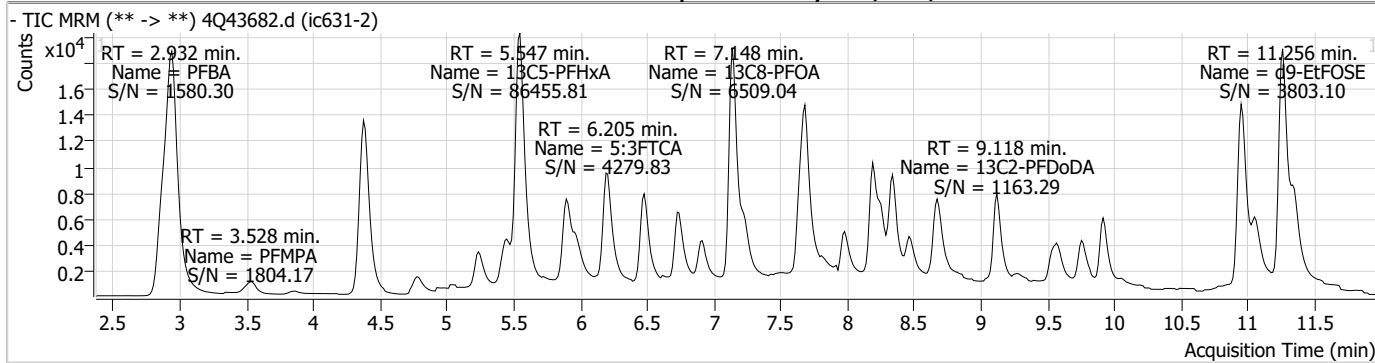
Perfluorinated Compounds by LC/MS/MS

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

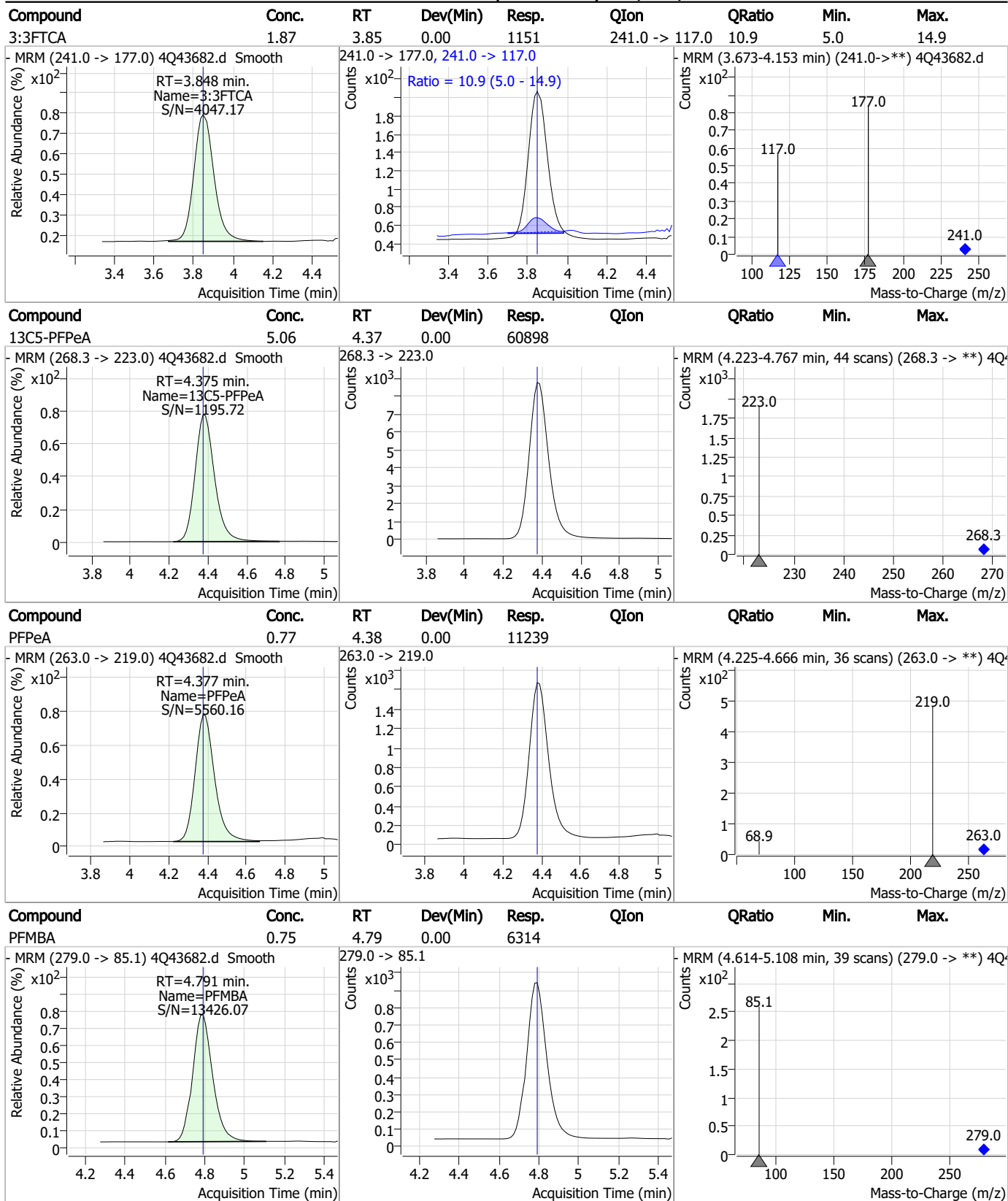
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Perfluorinated Compounds by LC/MS/MS

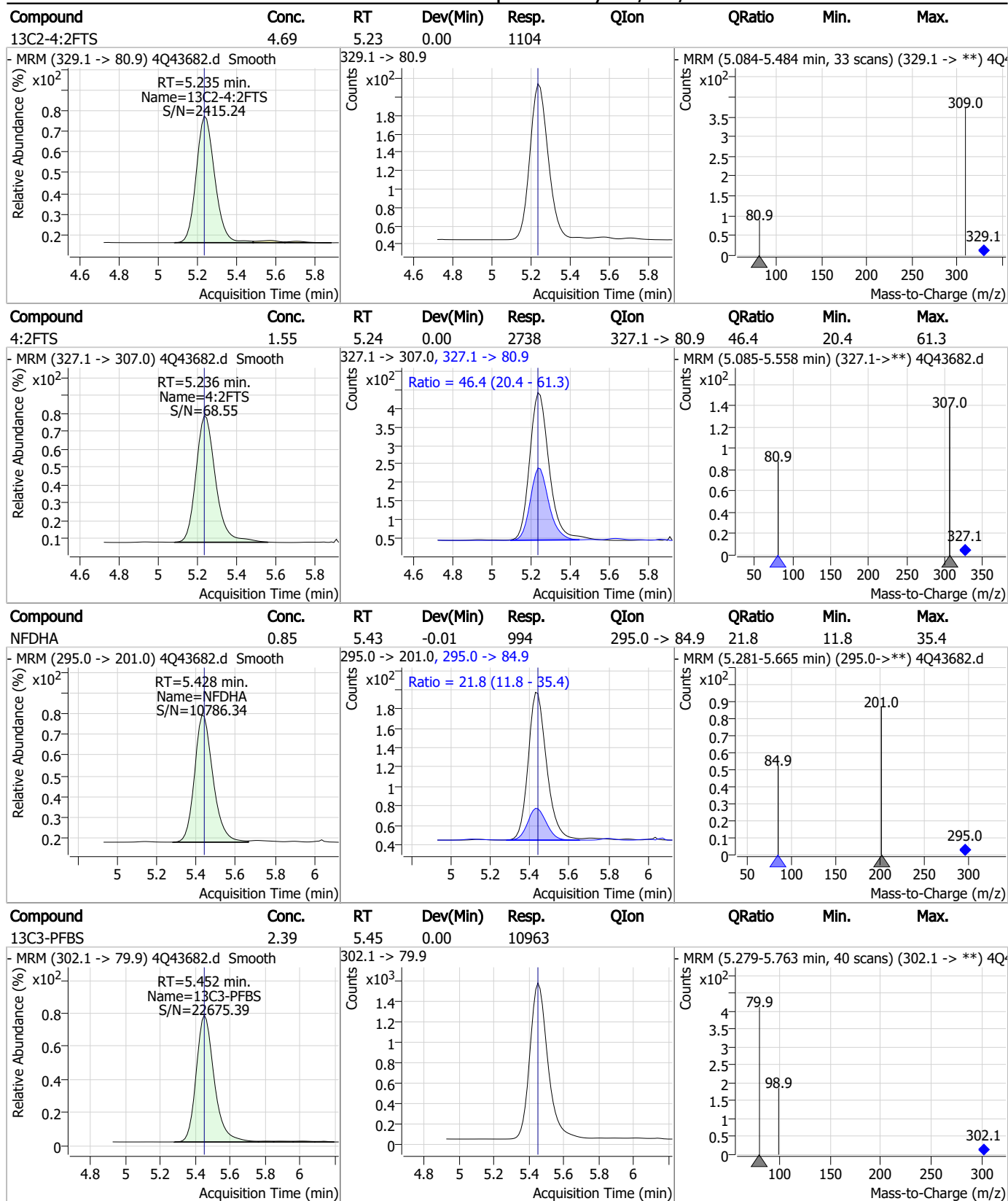


7.7.3
7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

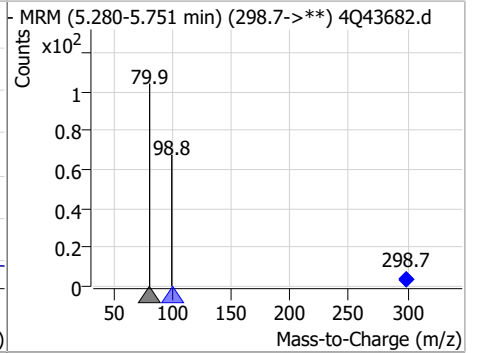
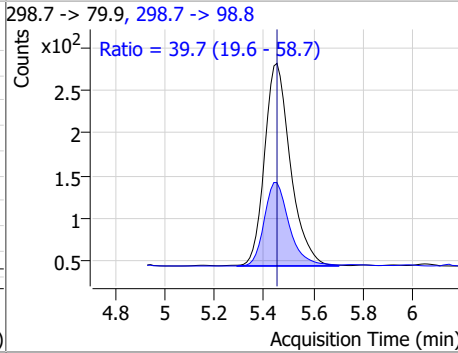
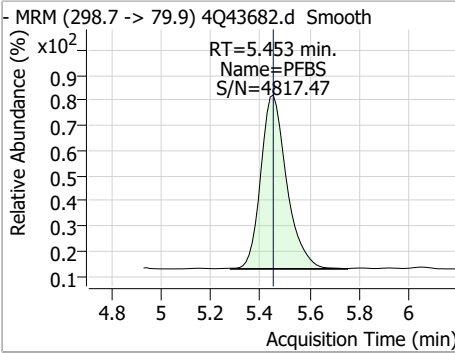


7.7.3

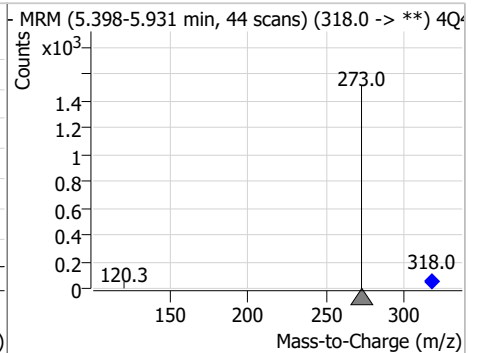
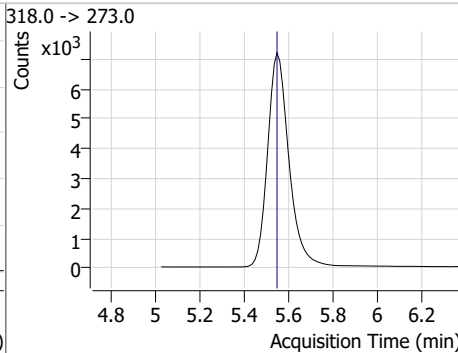
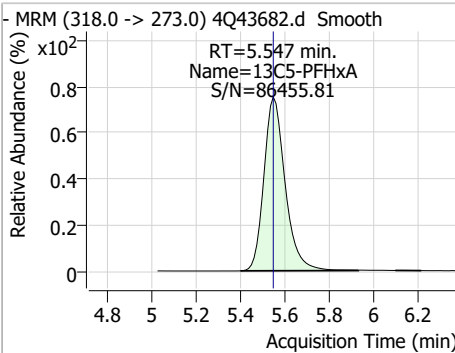
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Perfluorinated Compounds by LC/MS/MS

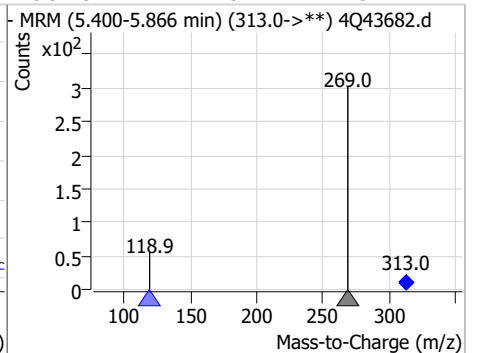
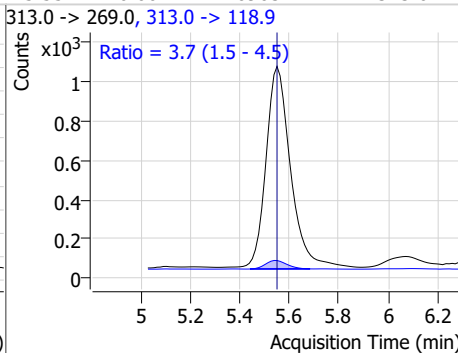
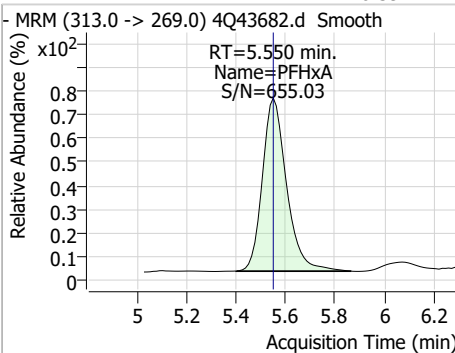
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.35	5.45	0.00	1722	298.7 -> 98.8	39.7	19.6	58.7



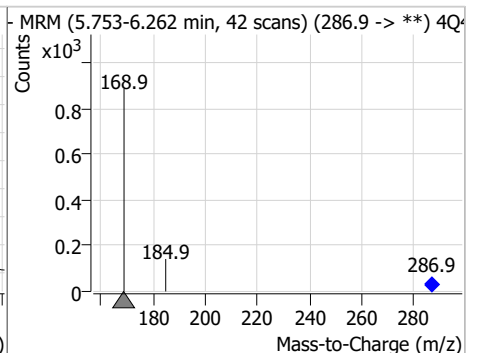
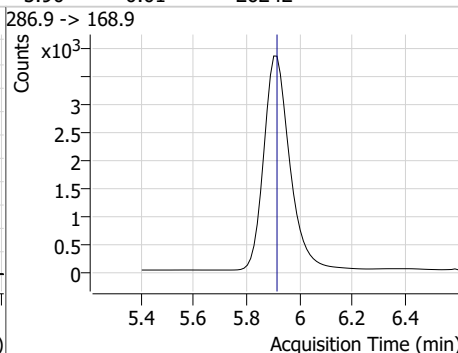
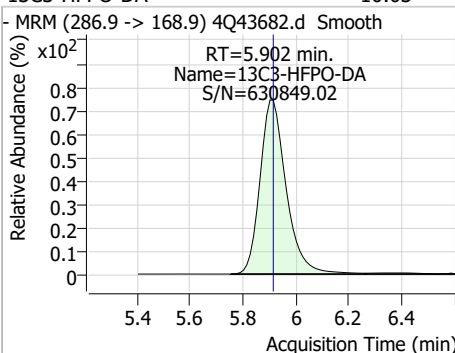
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.52	5.55	0.00	47718	318.0 -> 273.0			



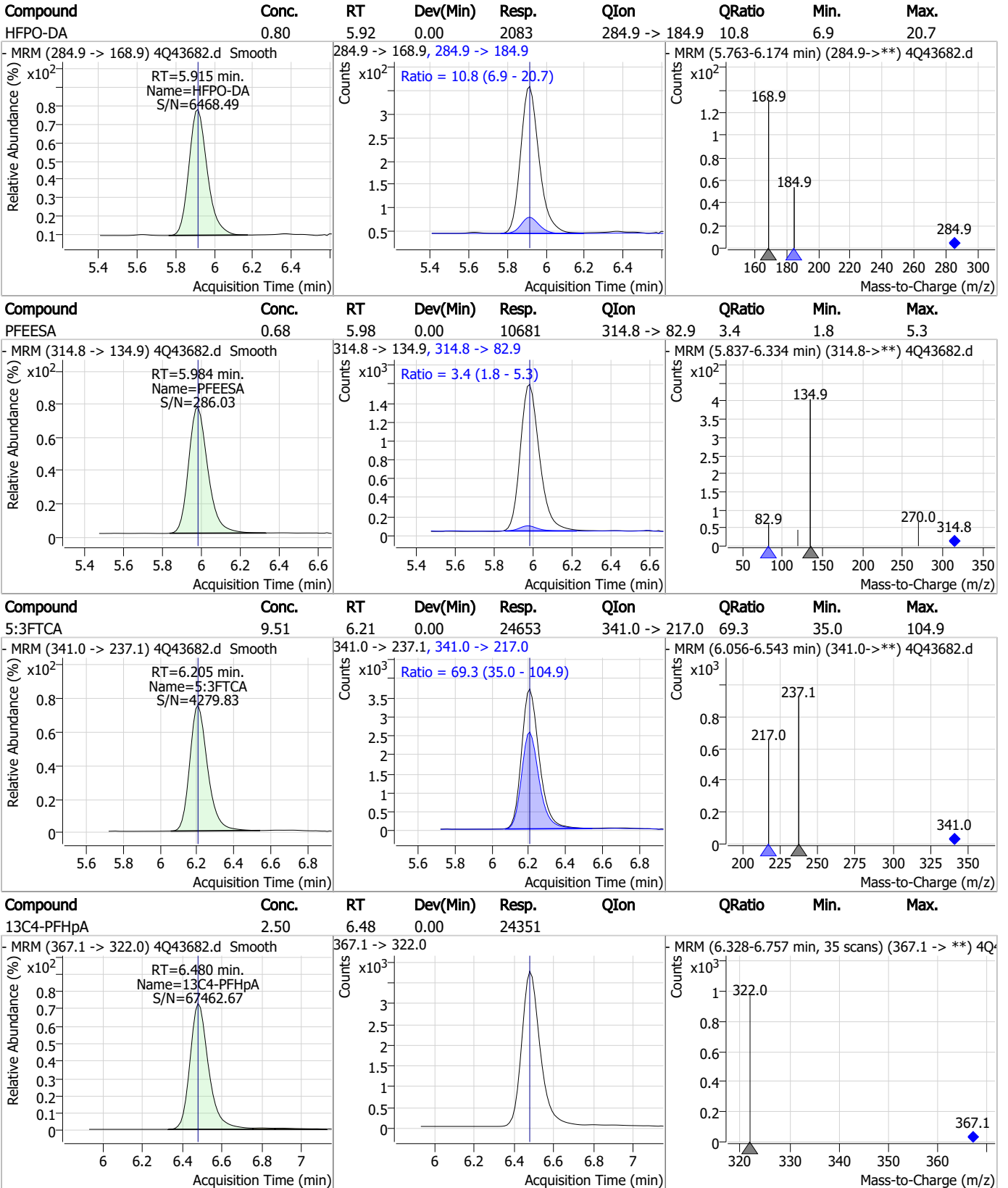
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.39	5.55	0.00	6963	313.0 -> 118.9	3.7	1.5	4.5



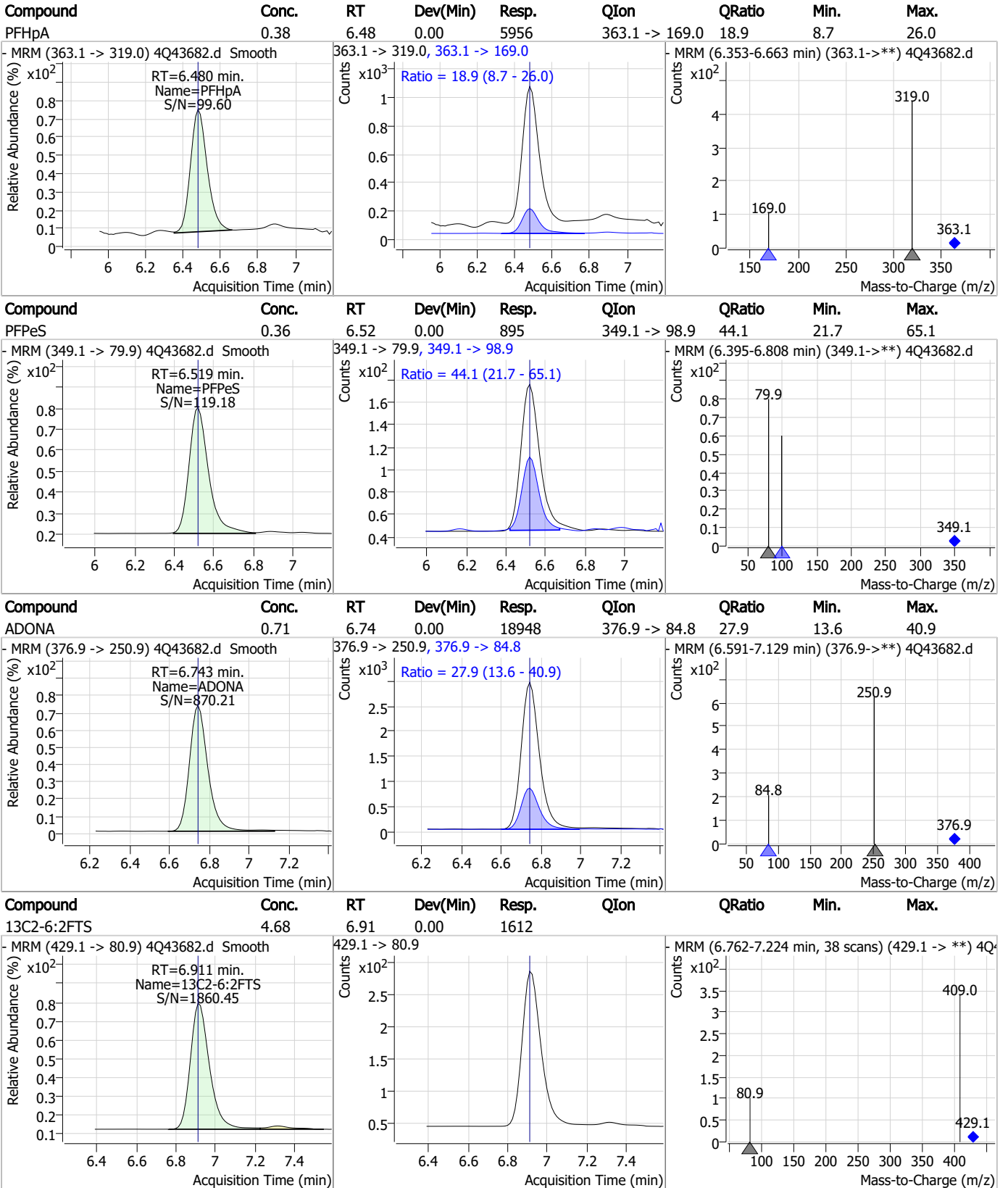
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.03	5.90	-0.01	26242	286.9 -> 168.9			



Perfluorinated Compounds by LC/MS/MS



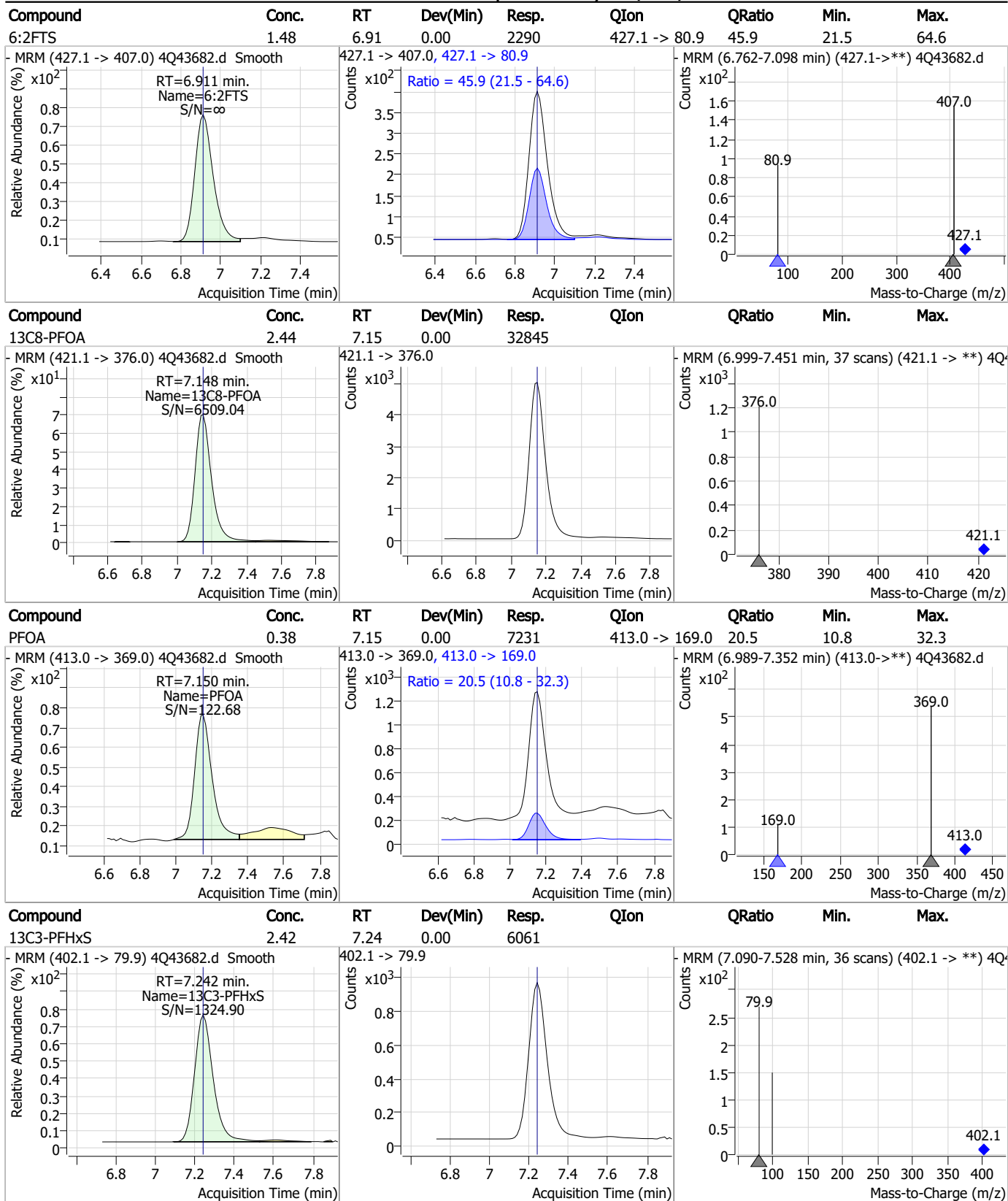
Perfluorinated Compounds by LC/MS/MS



7.7.3

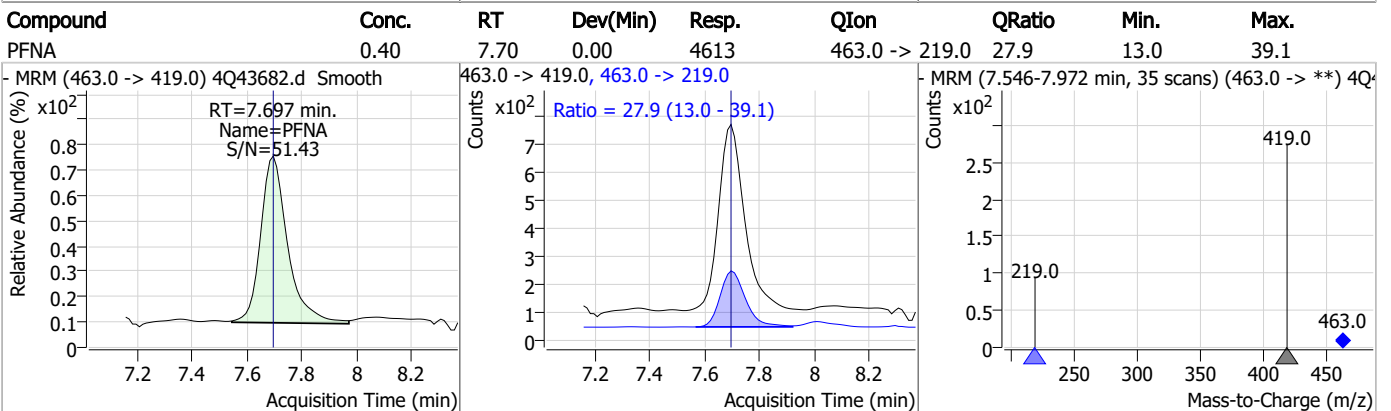
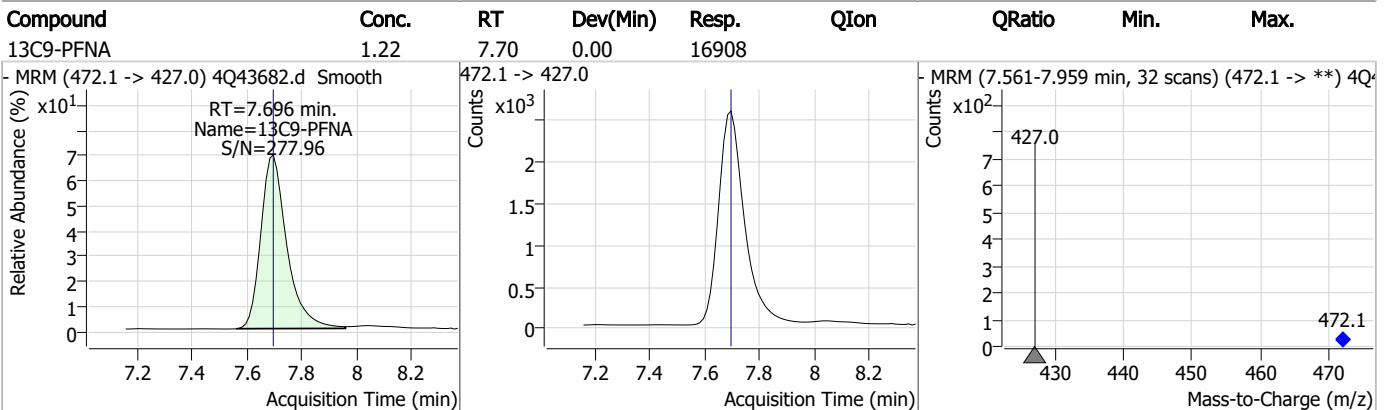
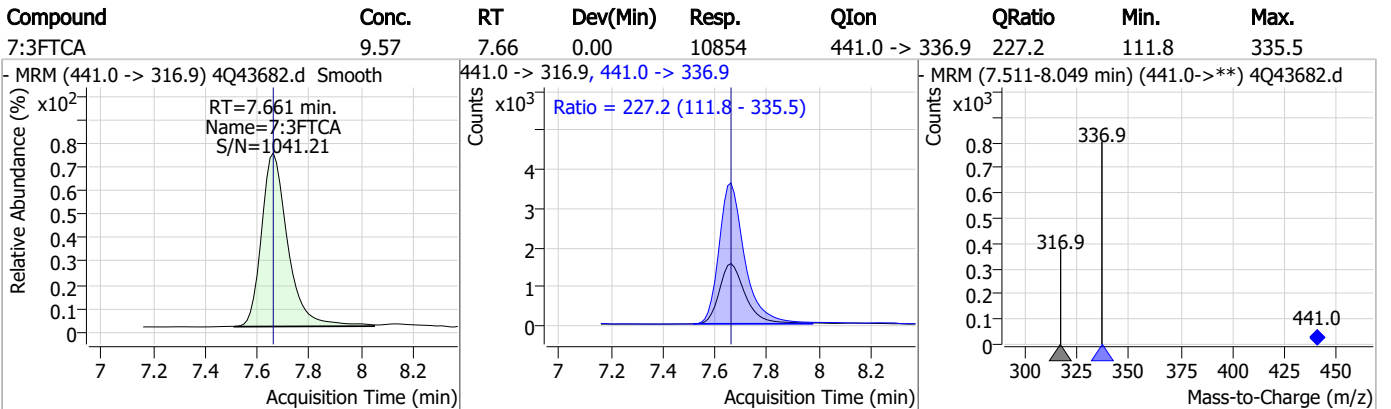
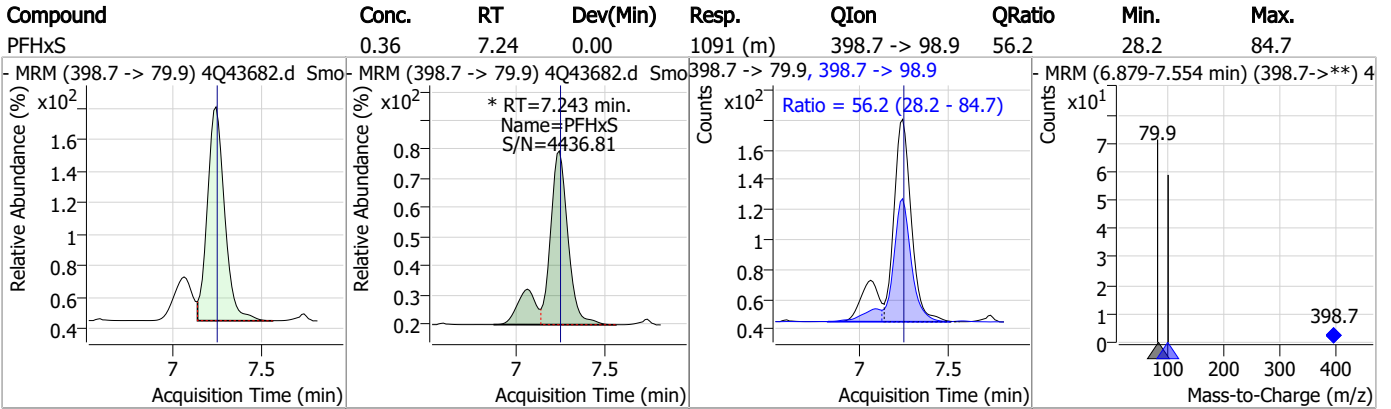
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Perfluorinated Compounds by LC/MS/MS

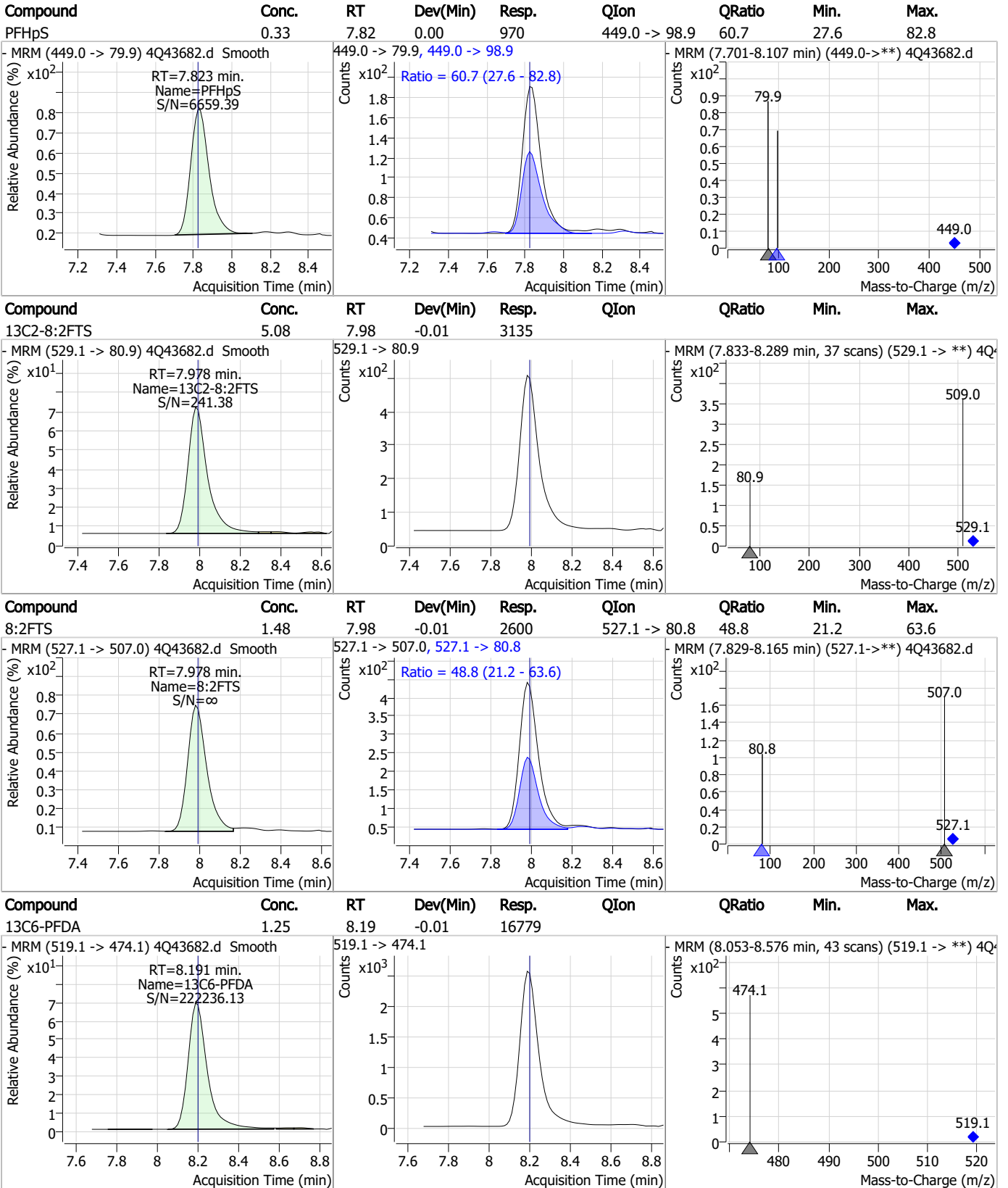


7.7.3
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



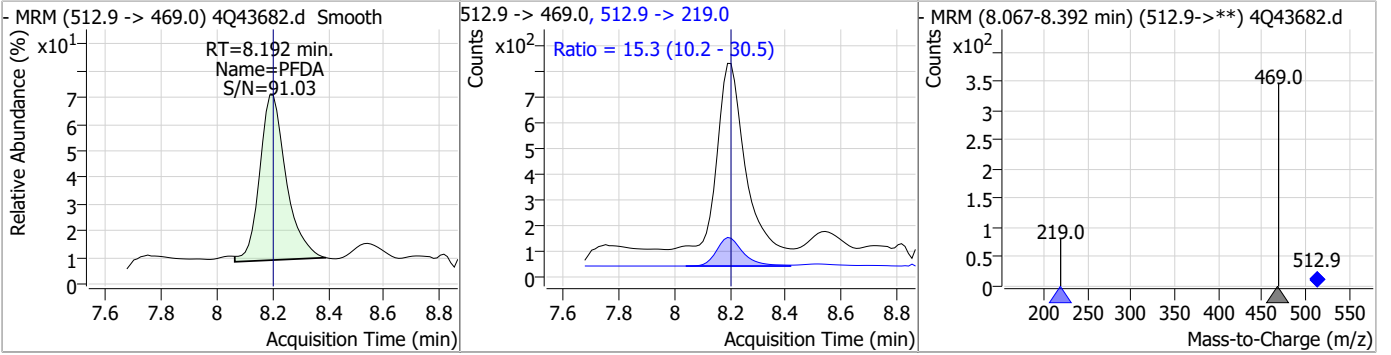
7.7.3

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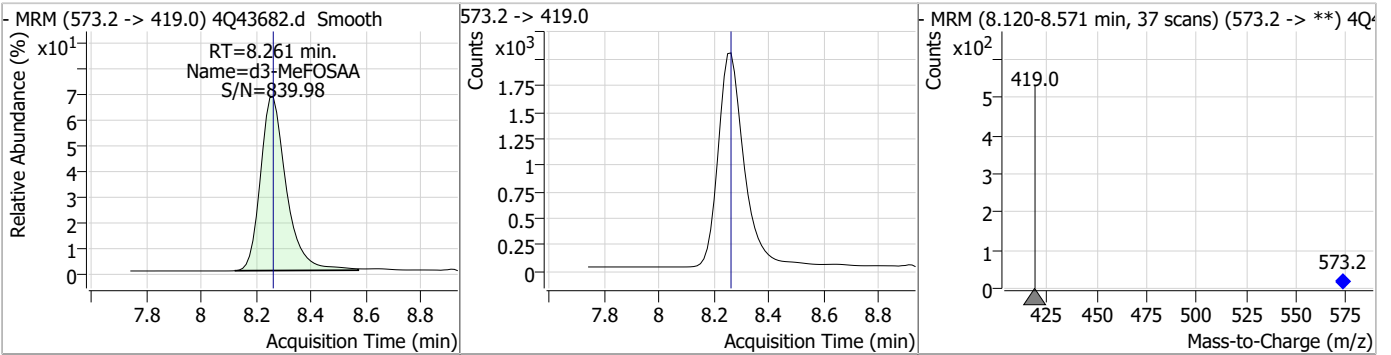


Perfluorinated Compounds by LC/MS/MS

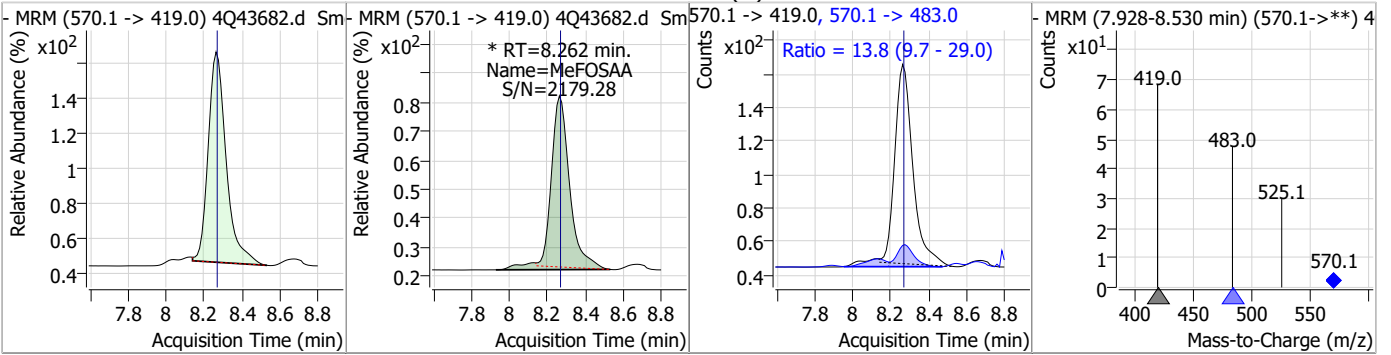
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.38	8.19	-0.01	4796	512.9 -> 219.0	15.3	10.2	30.5



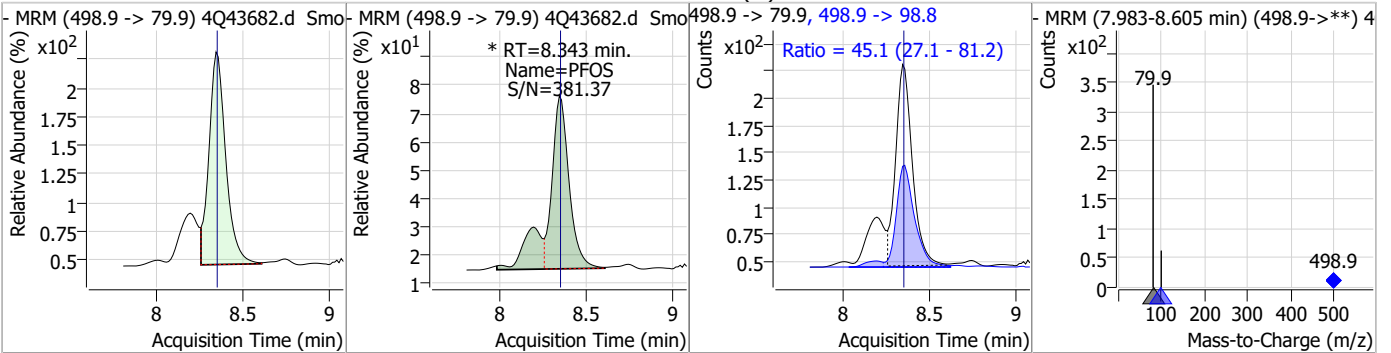
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.02	8.26	0.00	13169				



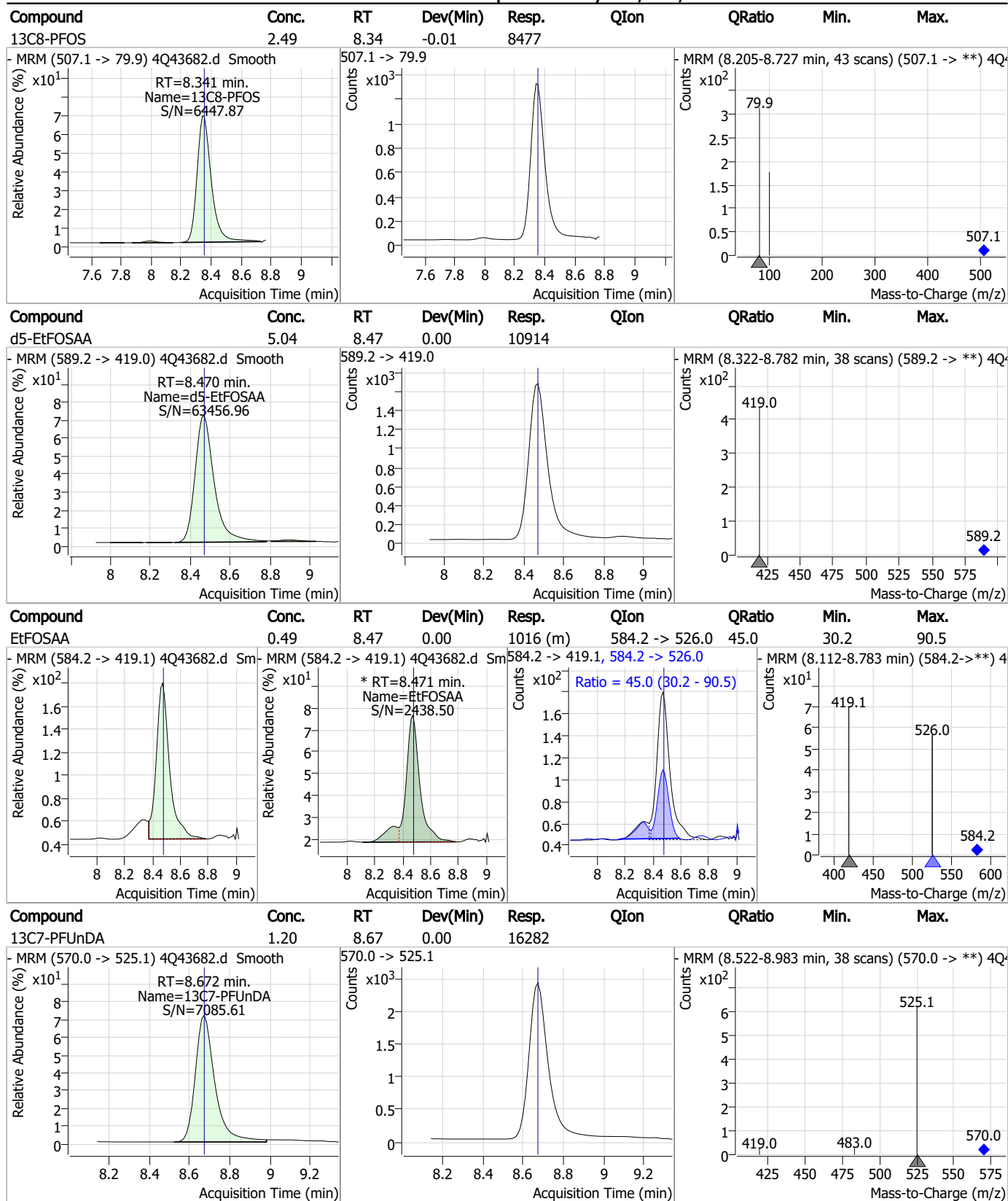
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.37	8.26	0.00	849 (m)	570.1 -> 483.0	13.8	9.7	29.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.39	8.34	0.00	1599 (m)	498.9 -> 98.8	45.1	27.1	81.2



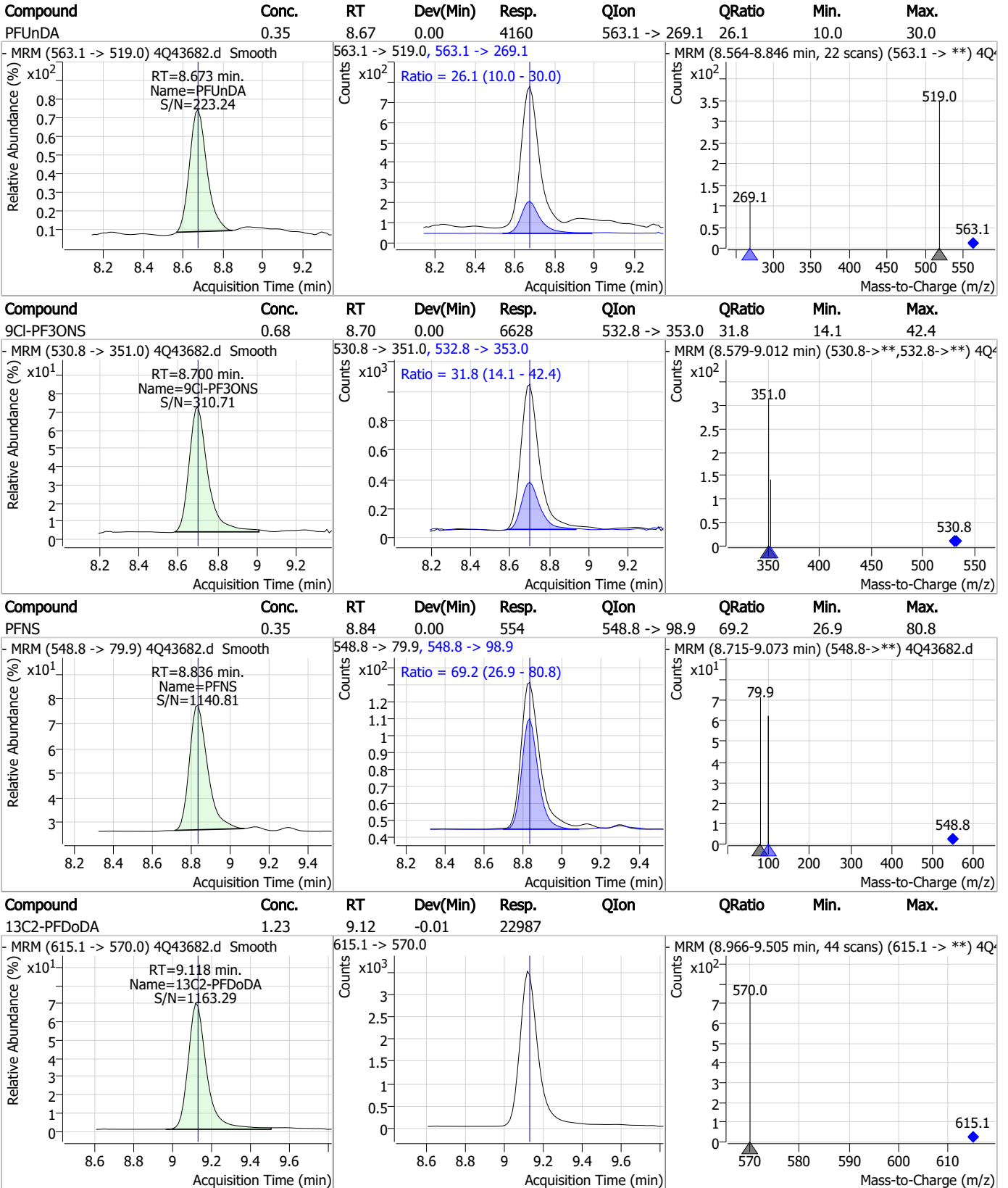
Perfluorinated Compounds by LC/MS/MS



7.7.3
7



Perfluorinated Compounds by LC/MS/MS

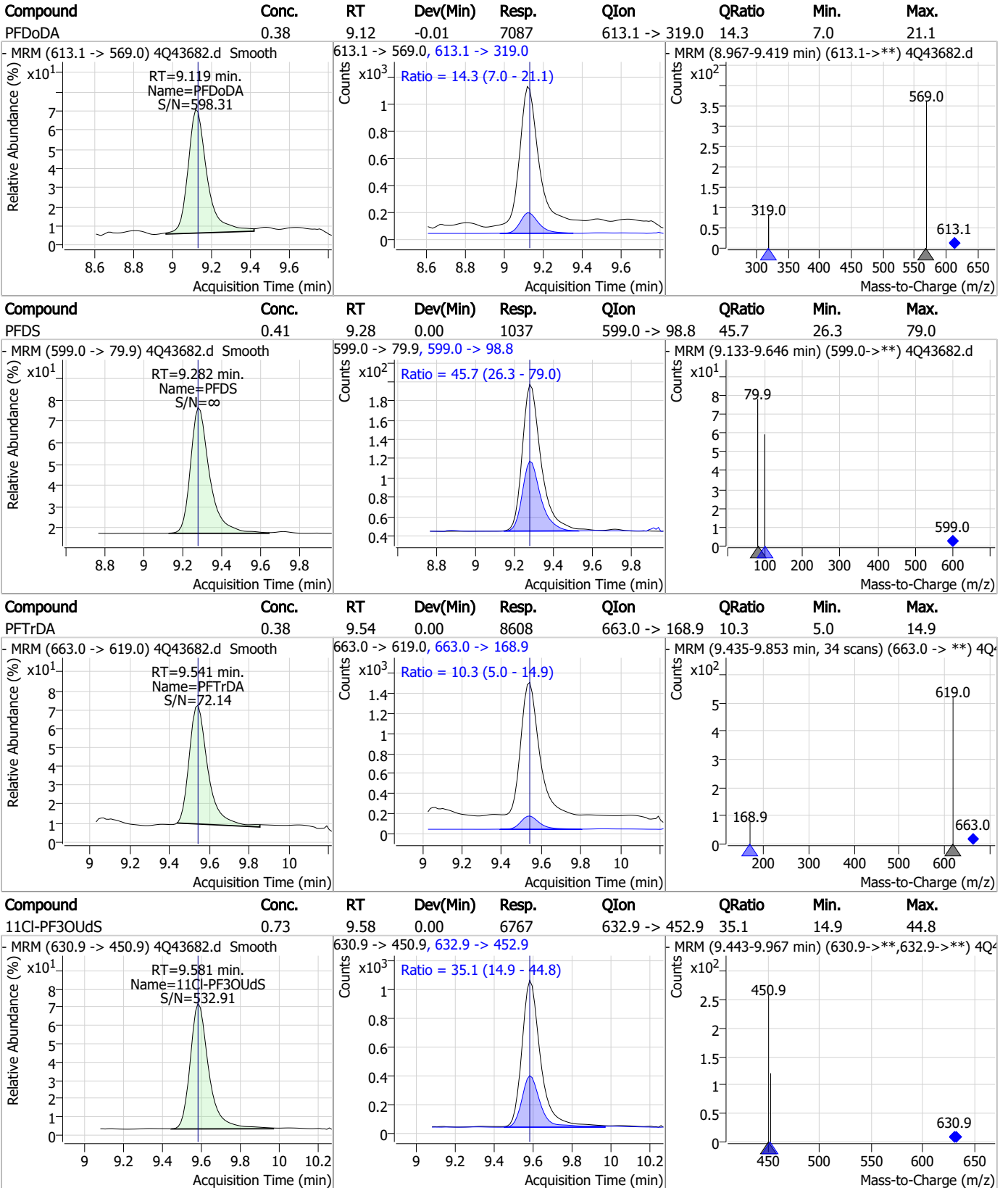


7.7.3

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Perfluorinated Compounds by LC/MS/MS

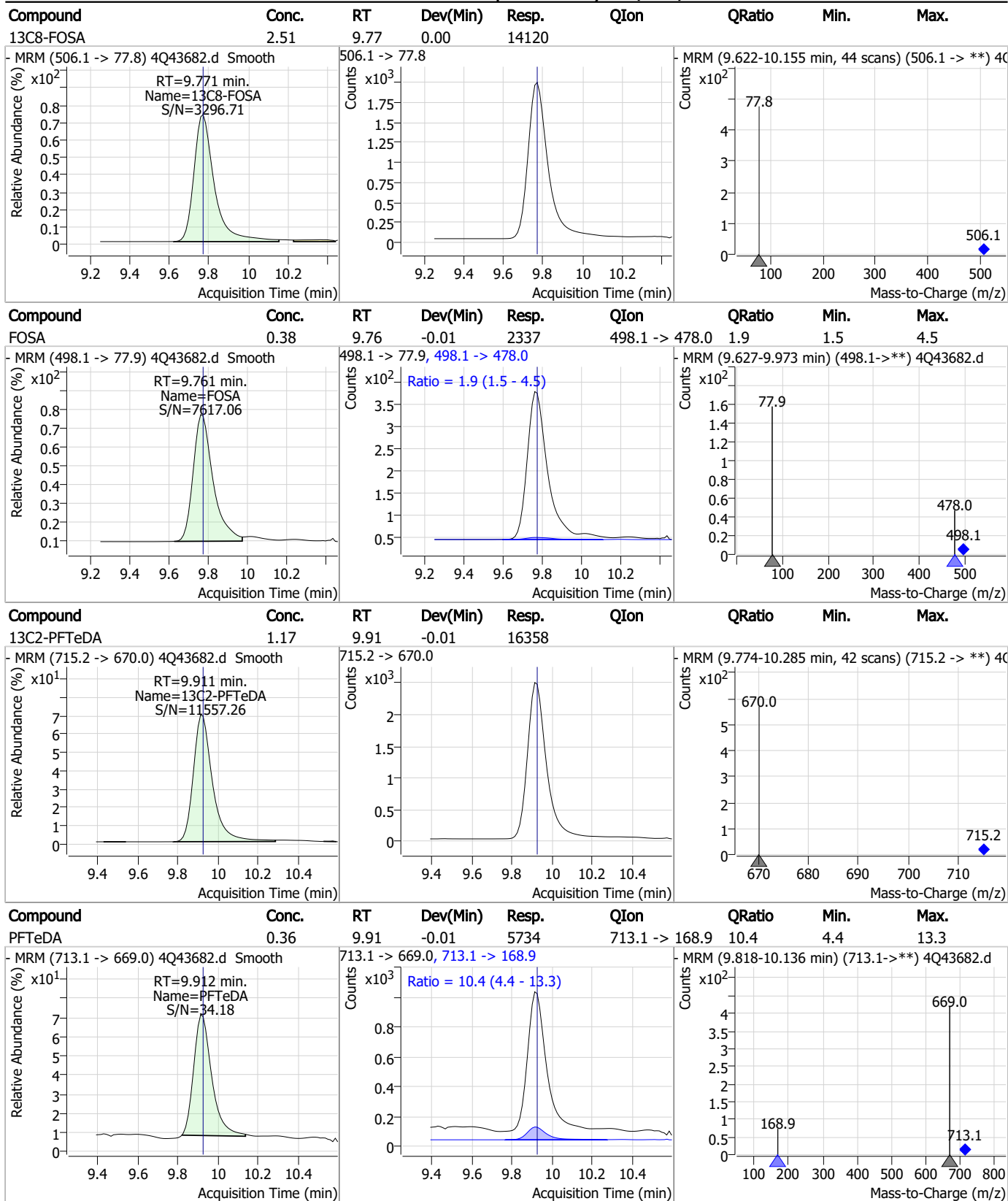


7.7.3

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Perfluorinated Compounds by LC/MS/MS

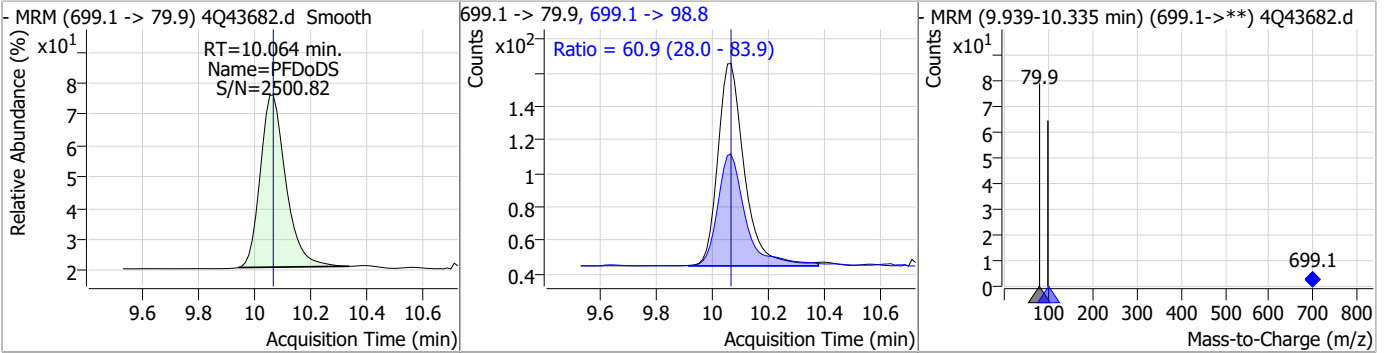


7.7.3

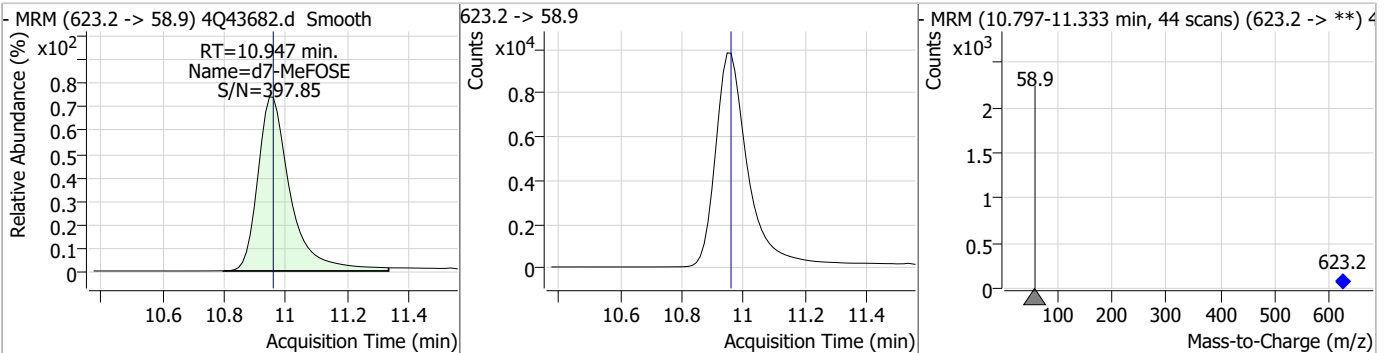
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Perfluorinated Compounds by LC/MS/MS

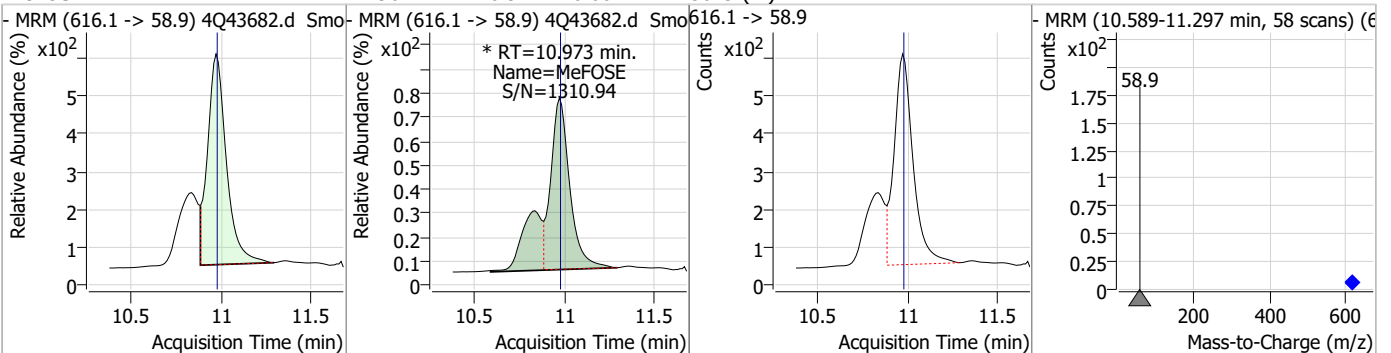
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.34	10.06	0.00	759	699.1 -> 98.8	60.9	28.0	83.9



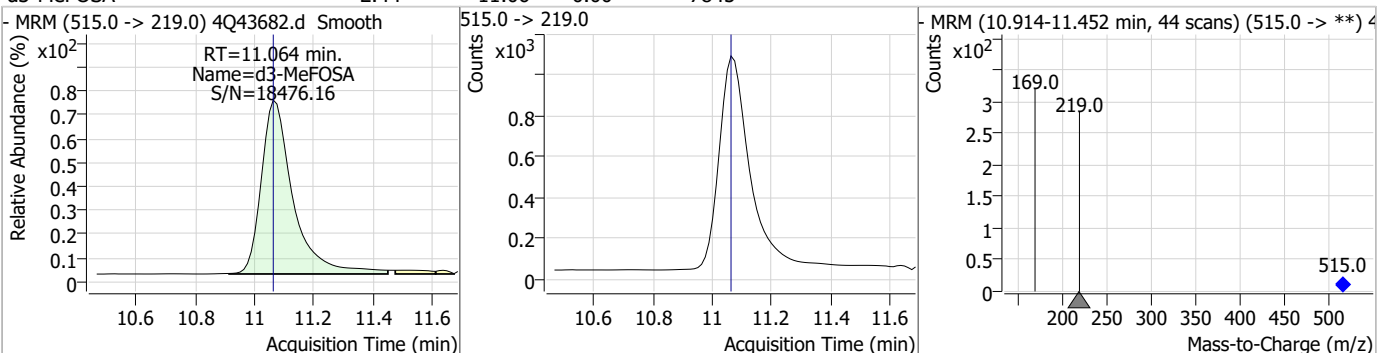
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.90	10.95	-0.01	72118				



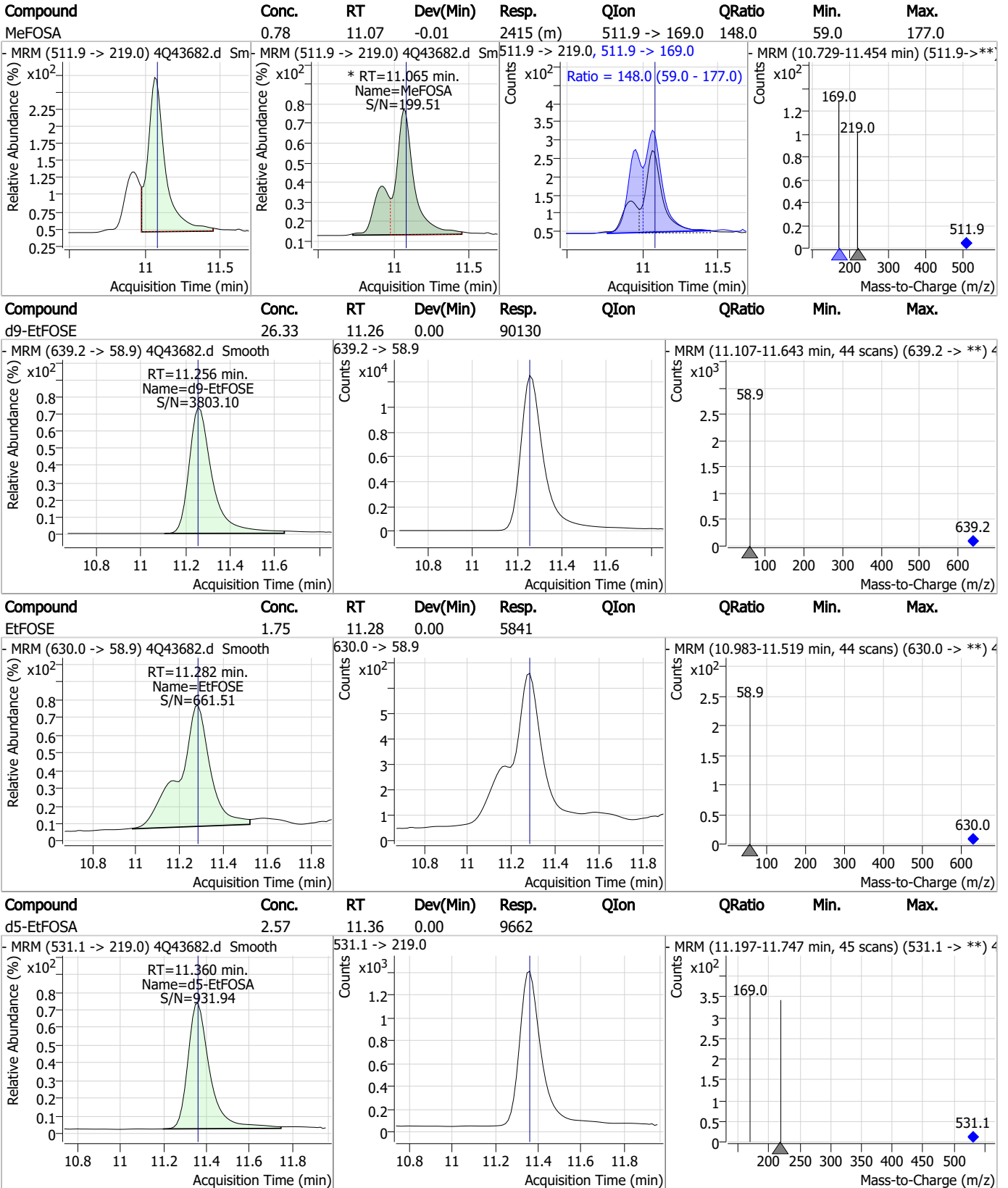
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.90	10.97	0.00	5649 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.44	11.06	0.00	7845				



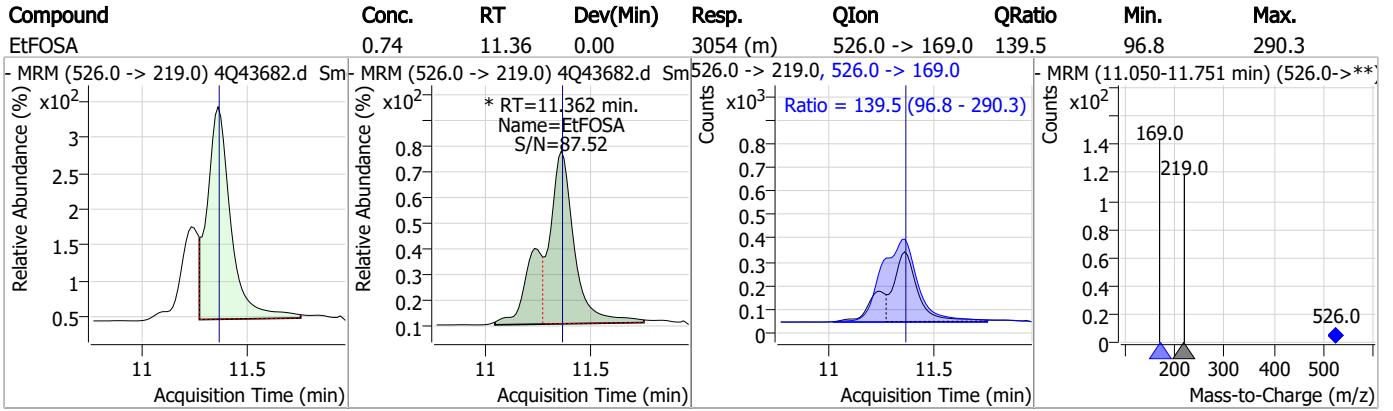
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS



7.7.3

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Manual Integration Approval Summary

Sample Number: S4Q631-IC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43682.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 12:51 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43683.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 1:05:40 PM
 Sample Name : ic631-3
 Vial : P1-A4
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	90475	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	61604	5.00 µg/L	0.000
M5-PFHxA	5.547	318.0 -> 273.0	47088	2.50 µg/L	0.000
M4-PFHpA	6.480	367.1 -> 322.0	24906	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	32926	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	17811	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	15198	1.25 µg/L	0.000
M7-PFUnDA	8.672	570.0 -> 525.1	16206	1.25 µg/L	0.000
M2-PFDoDA	9.118	615.1 -> 570.0	21986	1.25 µg/L	-0.012
M2-PFTeDA	9.924	715.2 -> 670.0	16069	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	13620	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	11014	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	5688	2.50 µg/L	0.000
M8-PFOS	8.341	507.1 -> 79.9	8376	2.50 µg/L	-0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1227	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1735	5.00 µg/L	0.000
M2-8:2FTS	7.990	529.1 -> 80.9	3013	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	13250	5.00 µg/L	0.000
M3-HFPO-DA	5.902	286.9 -> 168.9	26720	10.00 µg/L	-0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10926	5.00 µg/L	-0.012
M7-MeFOSE	10.959	623.2 -> 58.9	67942	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	87743	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	9468	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	8198	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	8490	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	52158	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4270	2.50 µg/L	0.000
13C4-PFOA	7.149	417.1 -> 372.0	39518	2.50 µg/L	0.000
13C2-PFDA	8.191	515.1 -> 470.1	14316	1.25 µg/L	-0.012
13C5-PFNA	7.697	468.0 -> 423.0	17647	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	39571	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.235	329.1 -> 80.9	1227	5.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1735	5.30 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3013	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C2-PFDoDA	9.118	615.1 -> 570.0	21986	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-PFTeDA	9.924	715.2 -> 670.0	16069	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFBS	5.452	302.1 -> 79.9	11014	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	7.242	402.1 -> 79.9	5688	2.39 µg/L	0.000

7.7.4
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 = 95.7%		
13C4-PFBA	2.924	216.8 -> 171.9	90475	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C4-PFHpA	6.480	367.1 -> 322.0	24906	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C5-PFHxA	5.547	318.0 -> 273.0	47088	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C5-PFPeA	4.375	268.3 -> 223.0	61604	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C6-PFDA	8.203	519.1 -> 474.1	15198	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C7-PFUnDA	8.672	570.0 -> 525.1	16206	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C8-FOSA	9.771	506.1 -> 77.8	13620	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C8-PFOA	7.148	421.1 -> 376.0	32926	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C8-PFOS	8.341	507.1 -> 79.9	8376	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C9-PFNA	7.696	472.1 -> 427.0	17811	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.7%		
d3-MeFOSAA	8.261	573.2 -> 419.0	13250	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C3-HFPO-DA	5.902	286.9 -> 168.9	26720	10.27 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
d3-MeFOSA	11.064	515.0 -> 219.0	8198	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
d5-EtFOSAA	8.458	589.2 -> 419.0	10926	4.93 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
d7-MeFOSE	10.959	623.2 -> 58.9	67942	24.78 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
d9-EtFOSE	11.256	639.2 -> 58.9	87743	25.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
d5-EtFOSA	11.360	531.1 -> 219.0	9468	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	8857	4.50 µg/L	94
		327.1 -> 80.9	3954		
6:2FTS	6.911	427.1 -> 407.0	7760	4.65 µg/L	95
		427.1 -> 80.9	3585		
8:2FTS	7.978	527.1 -> 507.0	8028	4.75 µg/L	99
		527.1 -> 80.8	3452		
EtFOSAA	8.471	584.2 -> 419.1	2298	1.10 µg/L	m 94
		584.2 -> 526.0	1280		
FOSA	9.774	498.1 -> 77.9	7202	1.22 µg/L	99
		498.1 -> 478.0	186		
MeFOSAA	8.262	570.1 -> 419.0	2902	1.24 µg/L	m 90
		570.1 -> 483.0	697		
PFBA	2.932	212.8 -> 168.9	12547	4.71 µg/L	100
PFBS	5.453	298.7 -> 79.9	5033	1.00 µg/L	97
		298.7 -> 98.8	2065		
PFDA	8.204	512.9 -> 469.0	13220	1.17 µg/L	95
		512.9 -> 219.0	2993		
PFDODA	9.119	613.1 -> 569.0	22338	1.24 µg/L	98
		613.1 -> 319.0	2947		
PFDS	9.282	599.0 -> 79.9	2941	1.17 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1450			
PFHpA	6.480	363.1 -> 319.0	19446	1.20	µg/L	97
		363.1 -> 169.0	3625			
PFHpS	7.823	449.0 -> 79.9	3795	1.29	µg/L	90
		449.0 -> 98.9	1811			
PFHxA	5.550	313.0 -> 269.0	21054	1.19	µg/L	99
		313.0 -> 118.9	732			
PFHxS	7.243	398.7 -> 79.9	3166	1.13	µg/L	m 93
		398.7 -> 98.9	1619			
PFNA	7.697	463.0 -> 419.0	14268	1.19	µg/L	95
		463.0 -> 219.0	3360			
PFNS	8.836	548.8 -> 79.9	1860	1.19	µg/L	95
		548.8 -> 98.9	933			
PFOA	7.150	413.0 -> 369.0	22884	1.20	µg/L	96
		413.0 -> 169.0	4457			
PFOS	8.343	498.9 -> 79.9	4952	1.21	µg/L	m 96
		498.9 -> 98.8	2522			
PFPeA	4.377	263.0 -> 219.0	35529	2.41	µg/L	100
PFPeS	6.519	349.1 -> 79.9	2825	1.21	µg/L	100
		349.1 -> 98.9	1231			
PFTeDA	9.924	713.1 -> 669.0	19616	1.24	µg/L	100
		713.1 -> 168.9	1756			
PFTrDA	9.541	663.0 -> 619.0	26453	1.24	µg/L	99
		663.0 -> 168.9	2559			
PFUnDA	8.673	563.1 -> 519.0	14519	1.22	µg/L	96
		563.1 -> 269.1	2613			
11CI-PF3OUdS	9.581	630.9 -> 450.9	22488	2.37	µg/L	99
		632.9 -> 452.9	6791			
9CI-PF3ONS	8.700	530.8 -> 351.0	21524	2.18	µg/L	98
		532.8 -> 353.0	6357			
ADONA	6.743	376.9 -> 250.9	61524	2.25	µg/L	99
		376.9 -> 84.8	16385			
HFPO-DA	5.903	284.9 -> 168.9	6317	2.39	µg/L	99
		284.9 -> 184.9	855			
3:3FTCA	3.836	241.0 -> 177.0	3653	5.87	µg/L	97
		241.0 -> 117.0	401			
5:3FTCA	6.205	341.0 -> 237.1	78368	30.65	µg/L	99
		341.0 -> 217.0	54421			
7:3FTCA	7.661	441.0 -> 316.9	34155	30.53	µg/L	100
		441.0 -> 336.9	76394			
EtFOSA	11.362	526.0 -> 219.0	9360	2.31	µg/L	m 65
		526.0 -> 169.0	13248			
EtFOSE	11.282	630.0 -> 58.9	19466	5.99	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	7134	2.21	µg/L	m 64
		511.9 -> 169.0	11271			
MeFOSE	10.973	616.1 -> 58.9	17760	6.35	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	2657	1.21	µg/L	99
		699.1 -> 98.8	1471			
NFDHA	5.428	295.0 -> 201.0	2887	2.51	µg/L	95
		295.0 -> 84.9	747			
PFMBA	4.778	279.0 -> 85.1	20284	2.39	µg/L	100
PFMPA	3.528	229.0 -> 84.9	17195	2.35	µg/L	100
PFEESA	5.984	314.8 -> 134.9	33261	2.15	µg/L	100
		314.8 -> 82.9	1187			

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

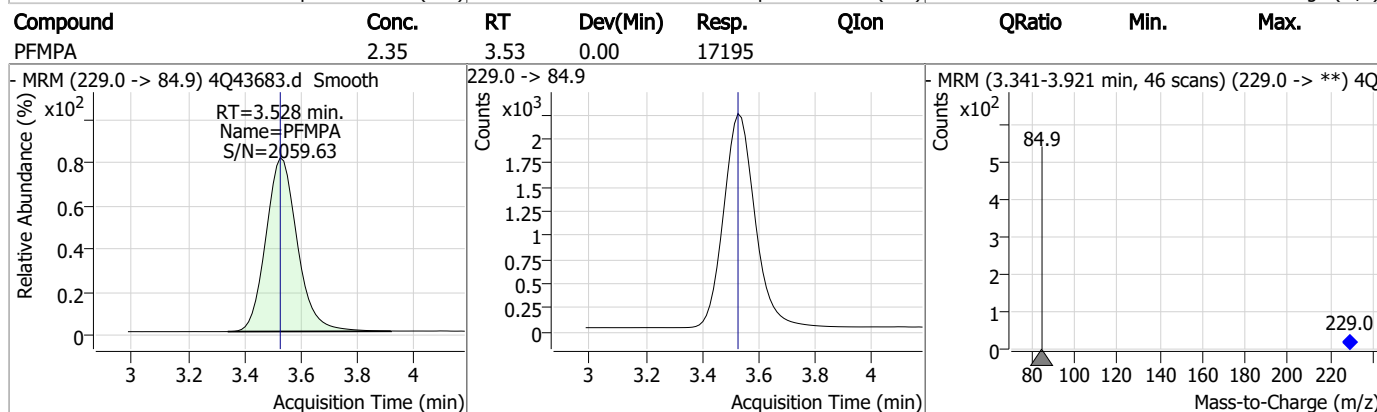
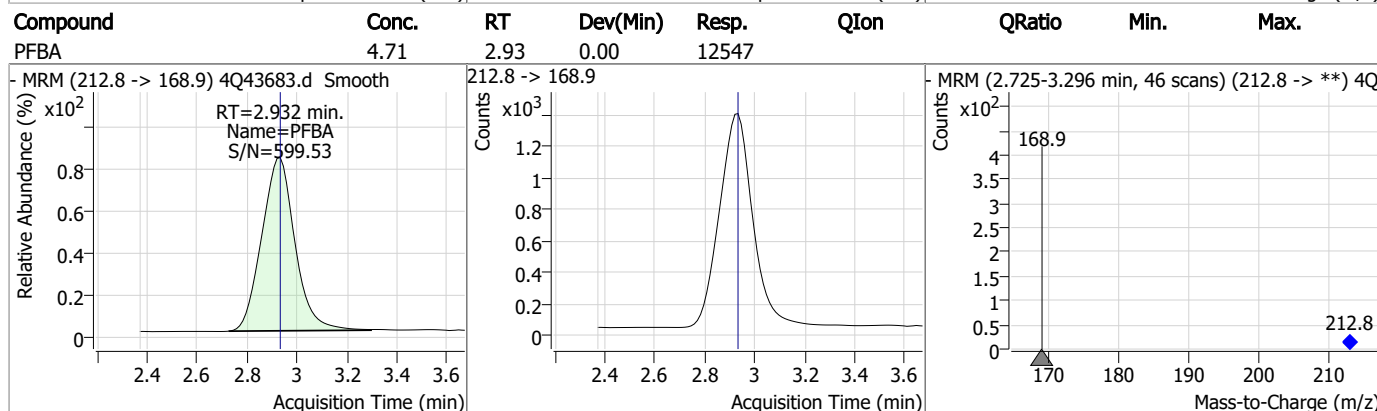
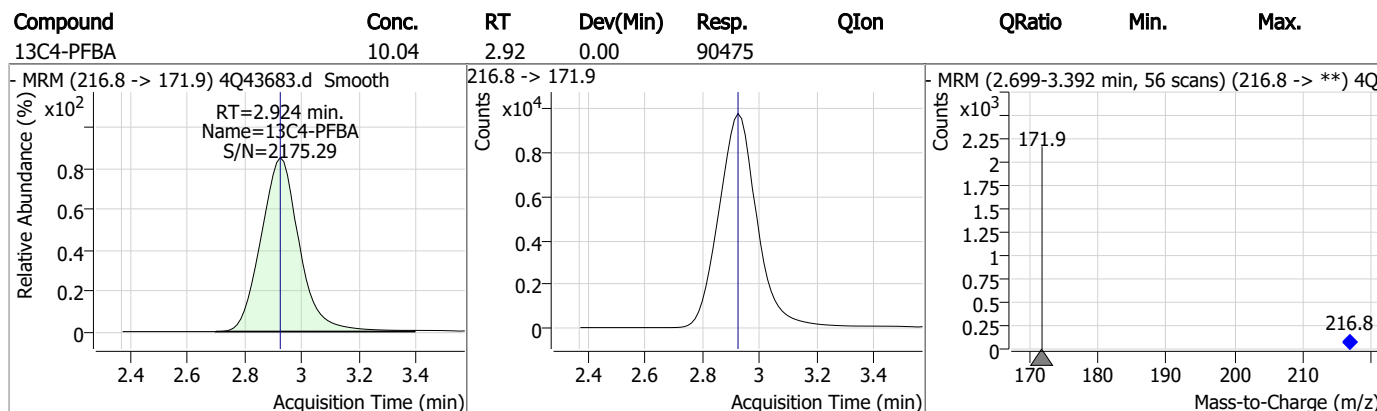
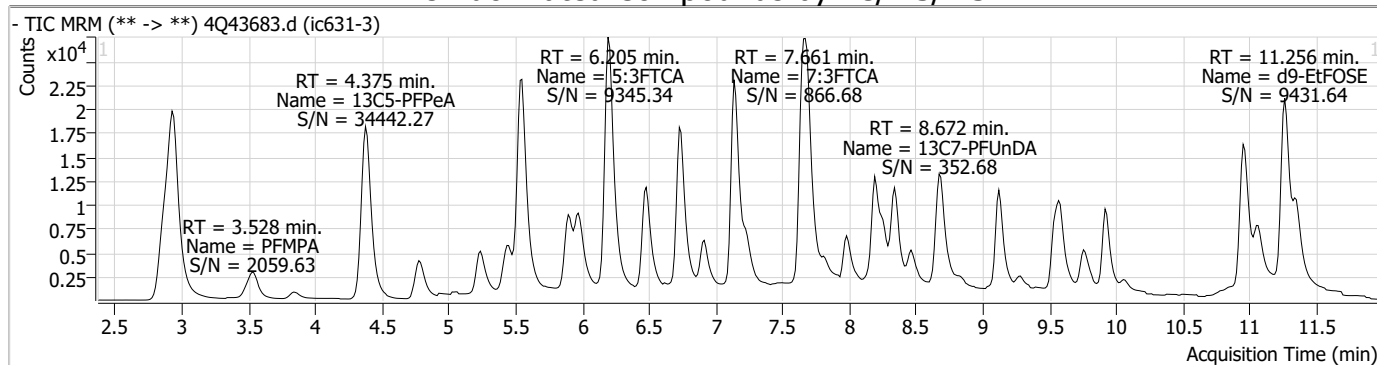
Perfluorinated Compounds by LC/MS/MS

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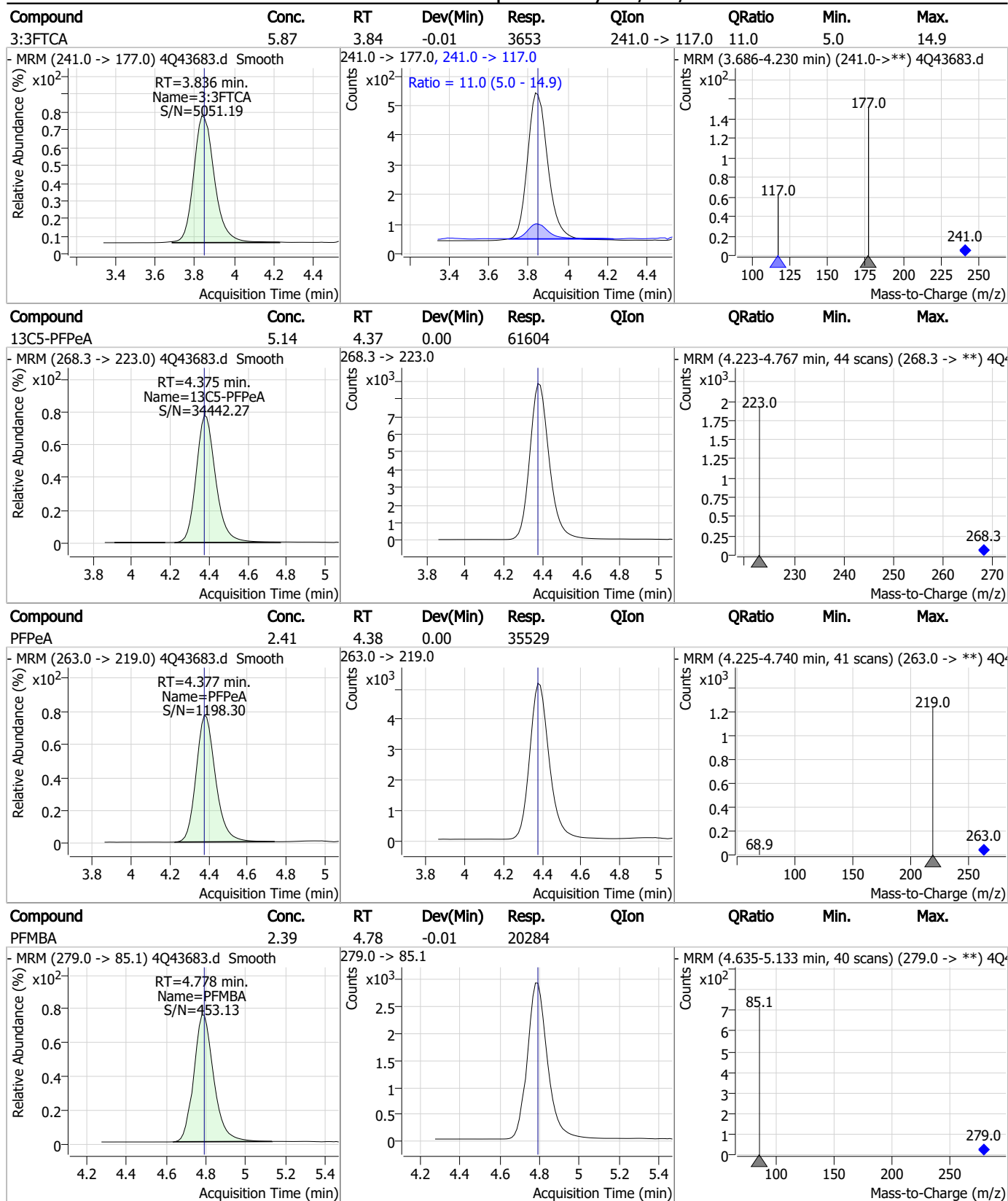
7.7.4

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Perfluorinated Compounds by LC/MS/MS



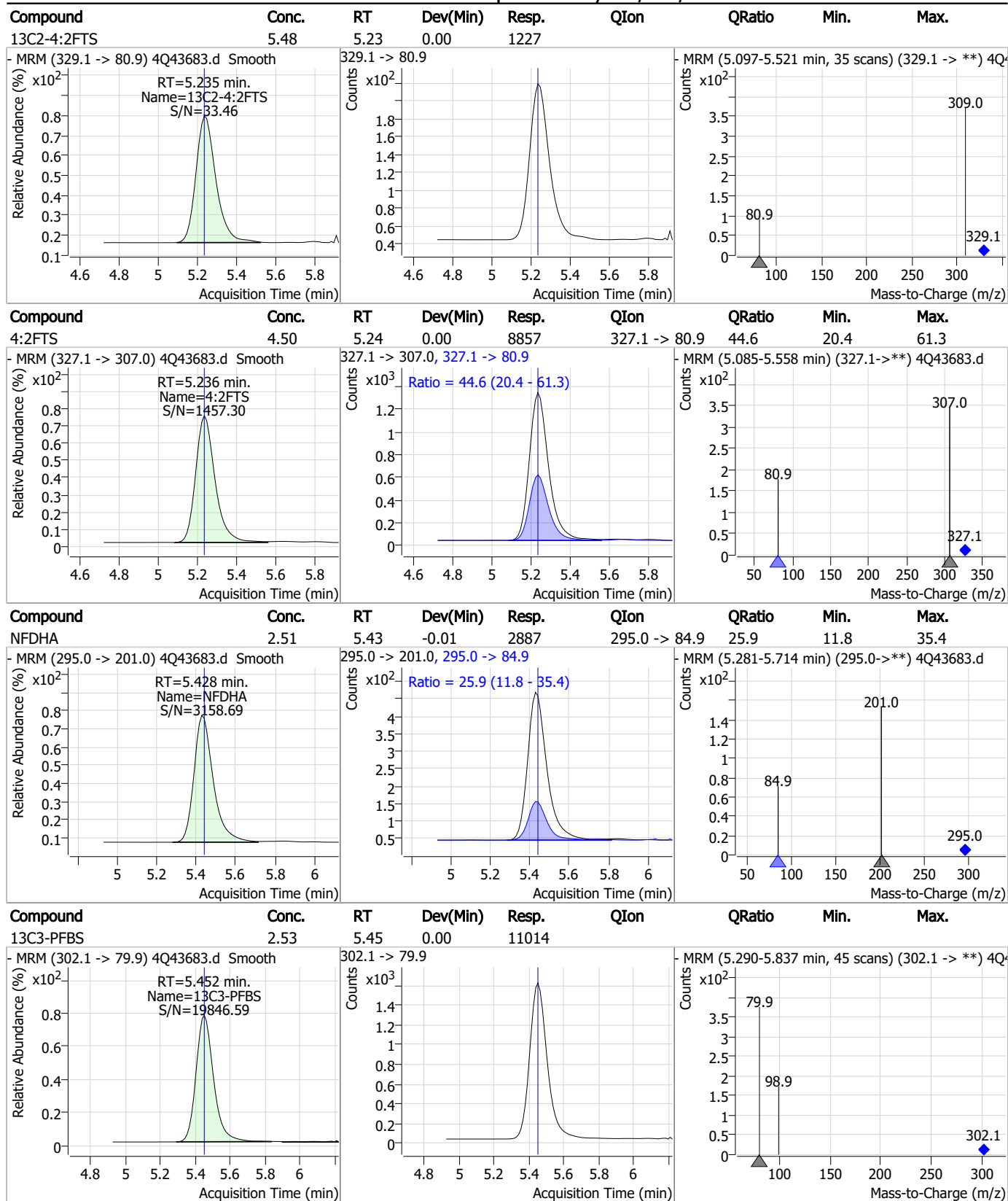
Perfluorinated Compounds by LC/MS/MS



7.7.4
7



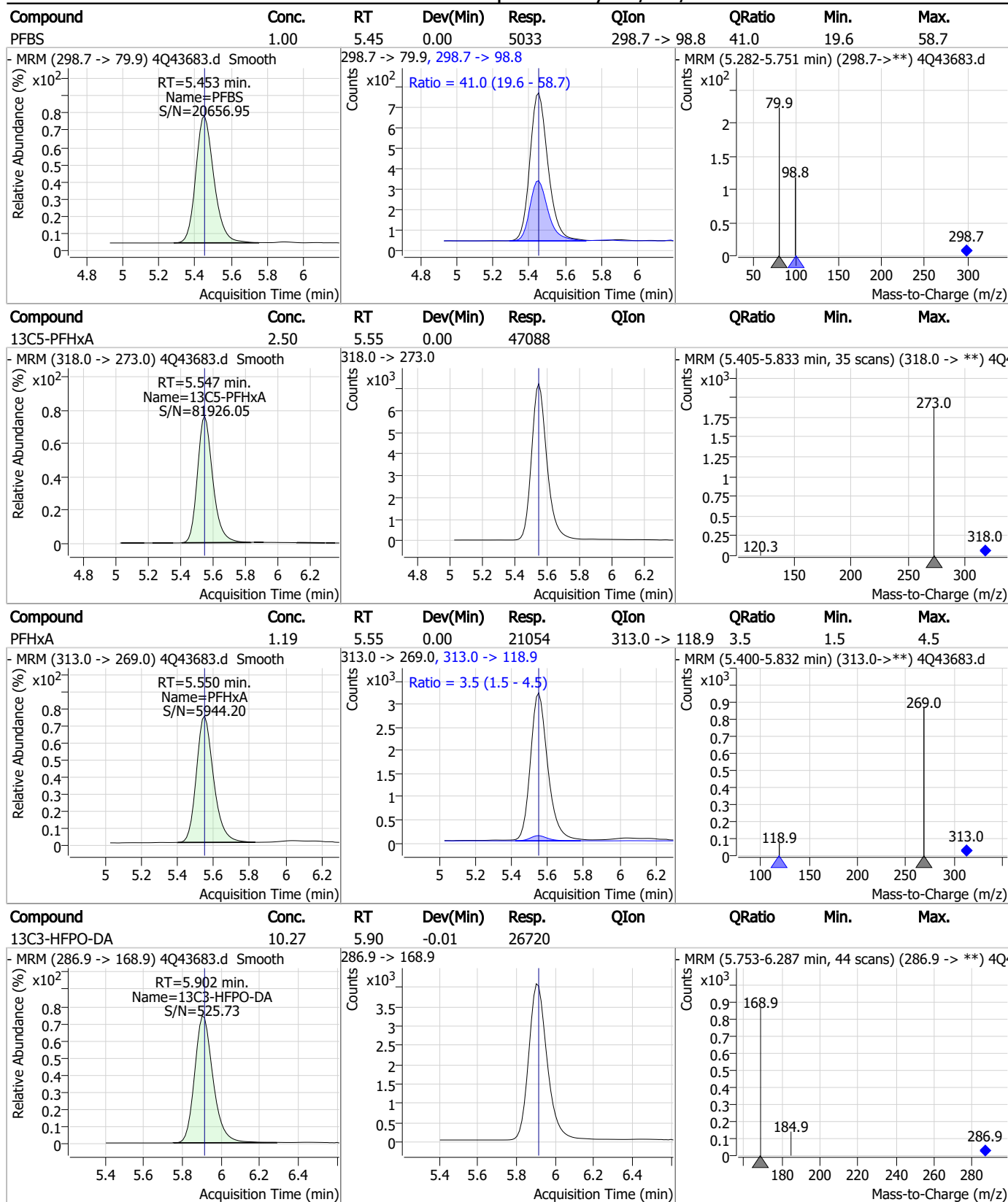
Perfluorinated Compounds by LC/MS/MS



7.7.4

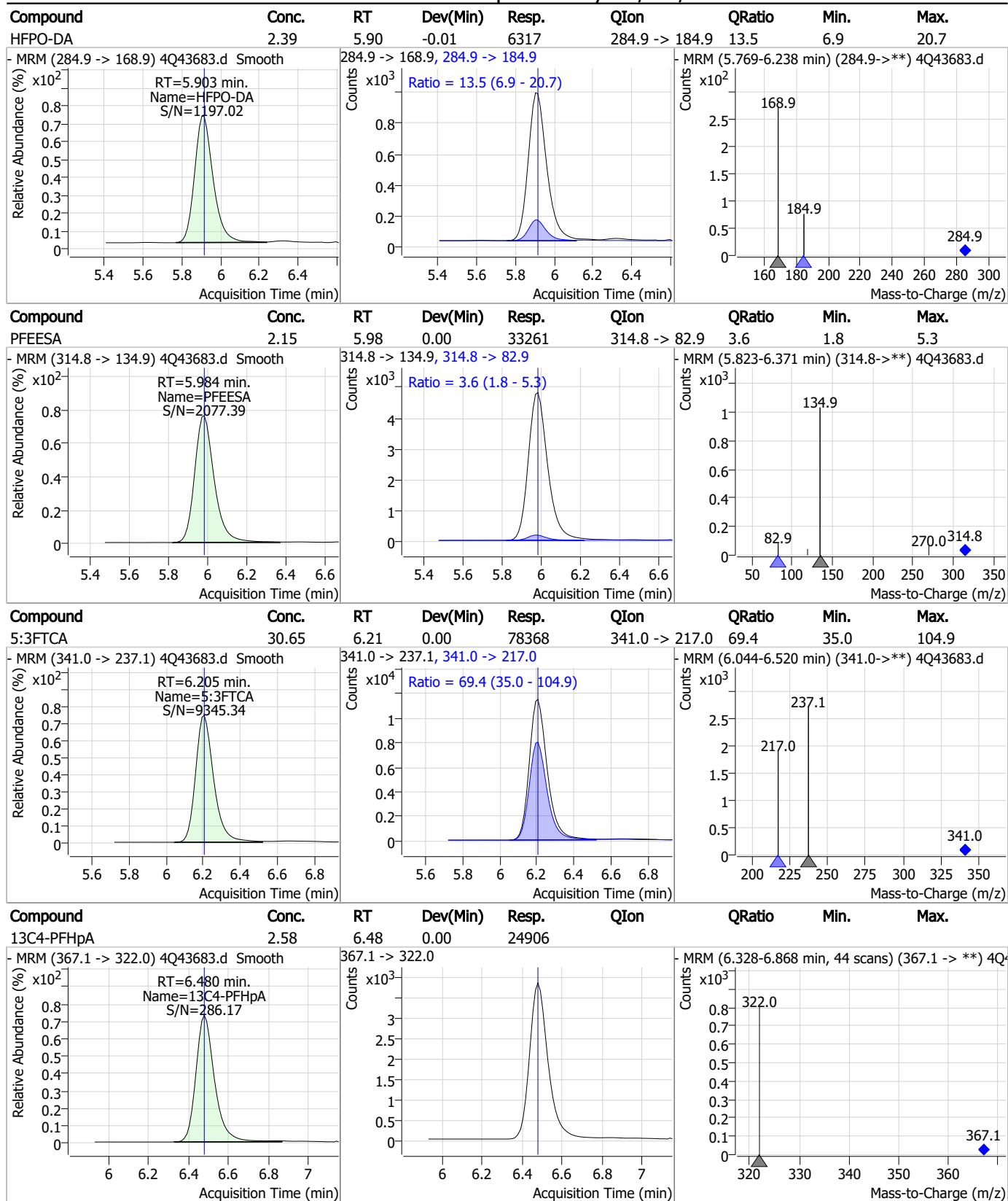
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Perfluorinated Compounds by LC/MS/MS



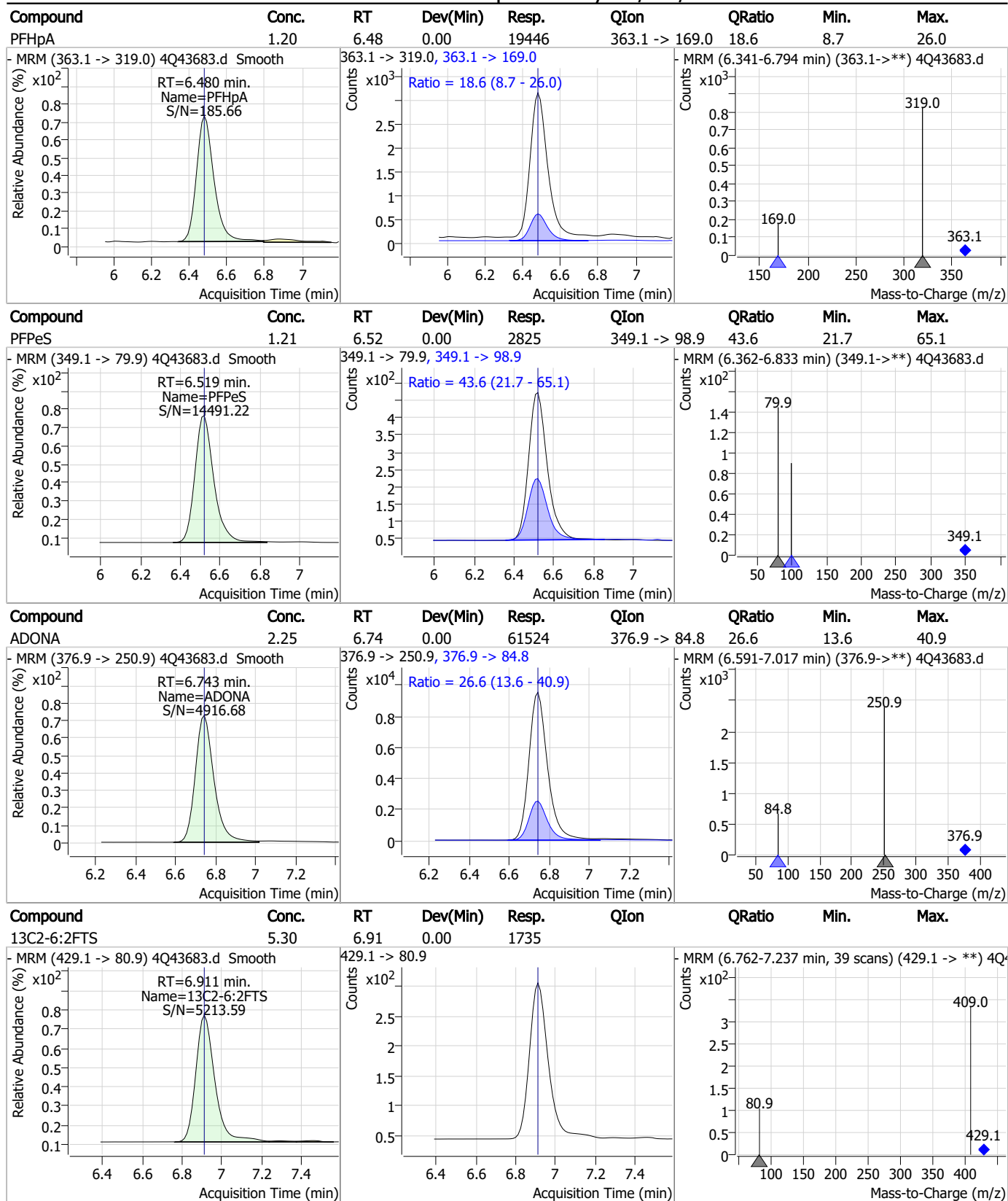
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Perfluorinated Compounds by LC/MS/MS



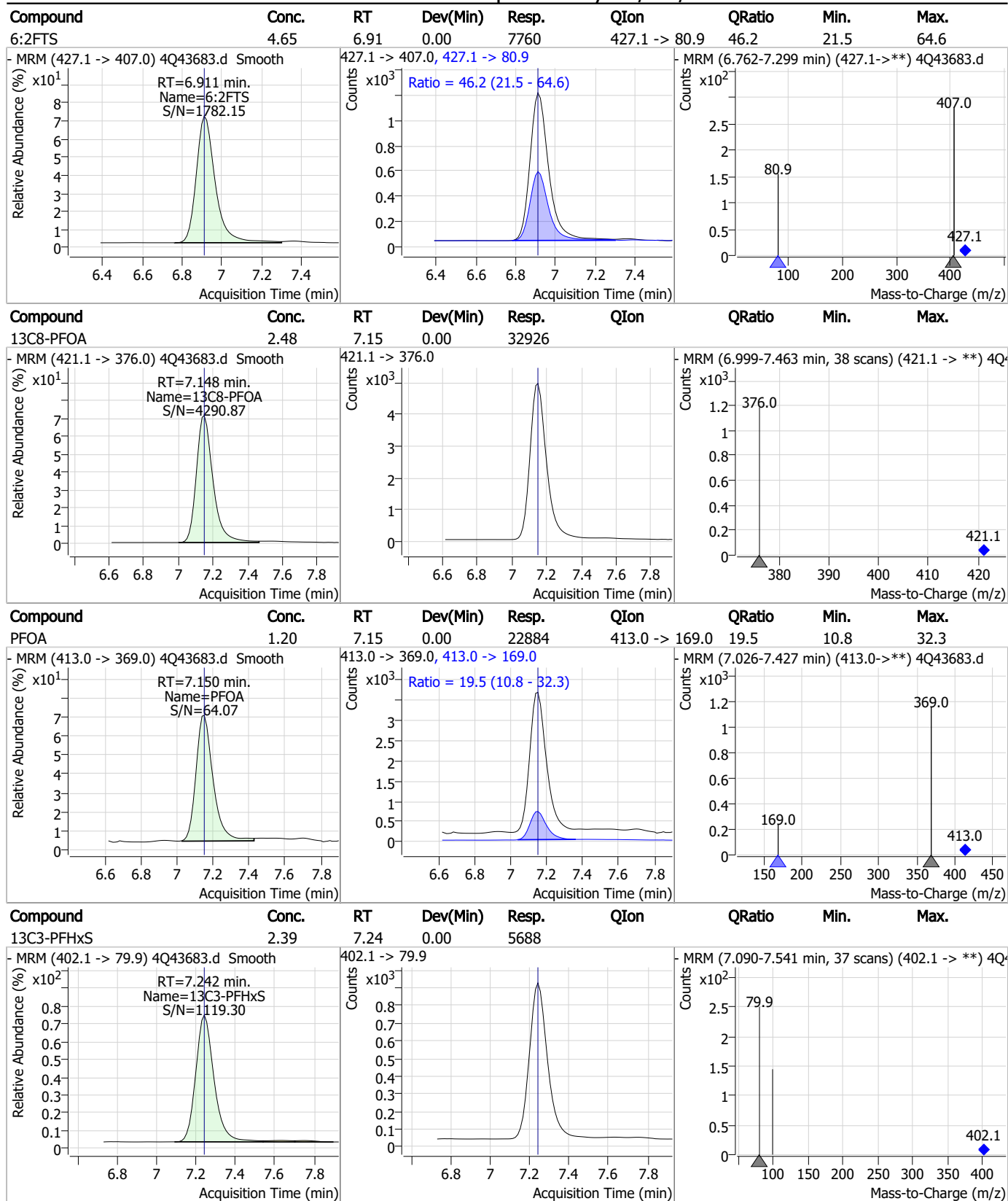
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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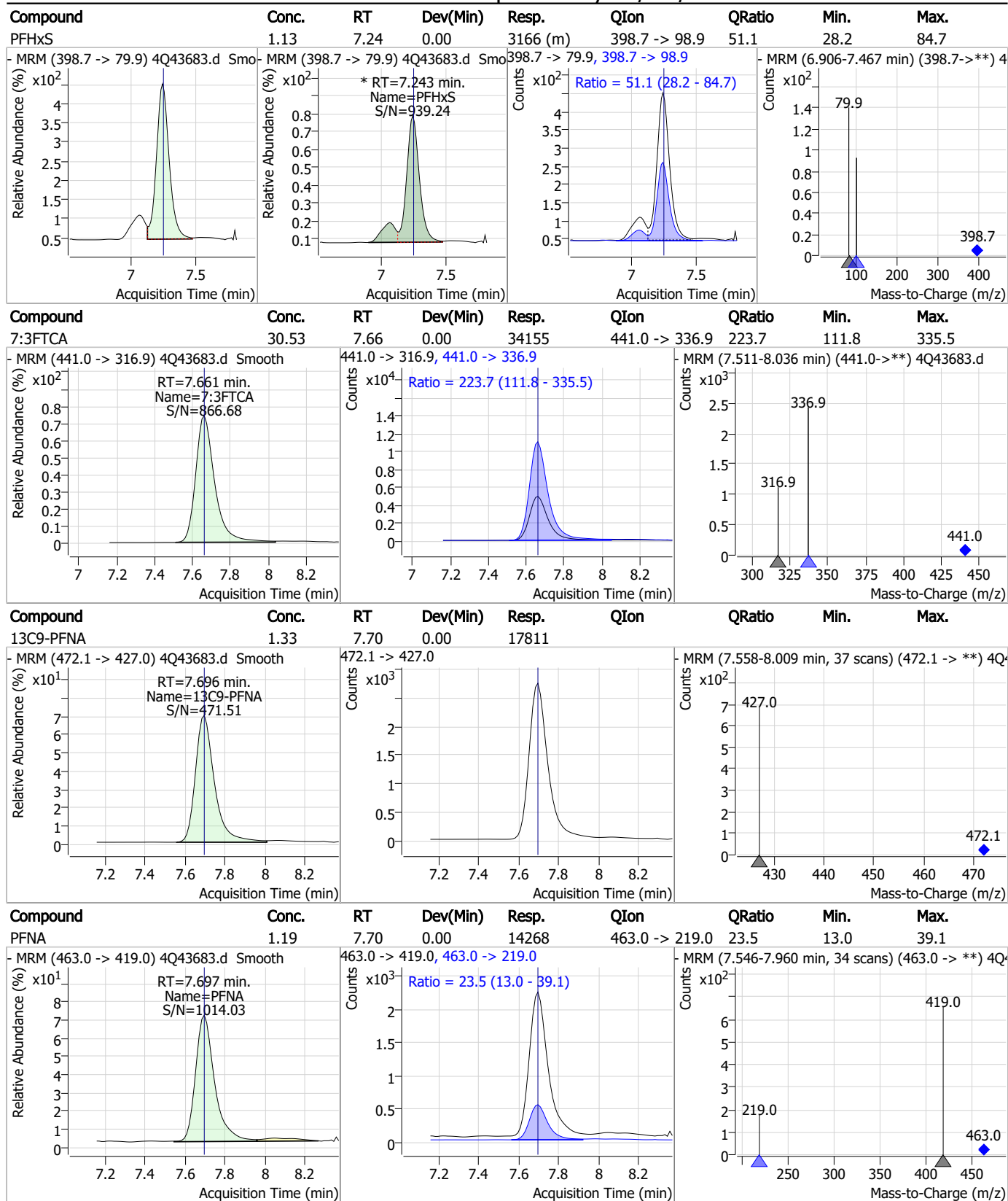
Perfluorinated Compounds by LC/MS/MS



7.7.4

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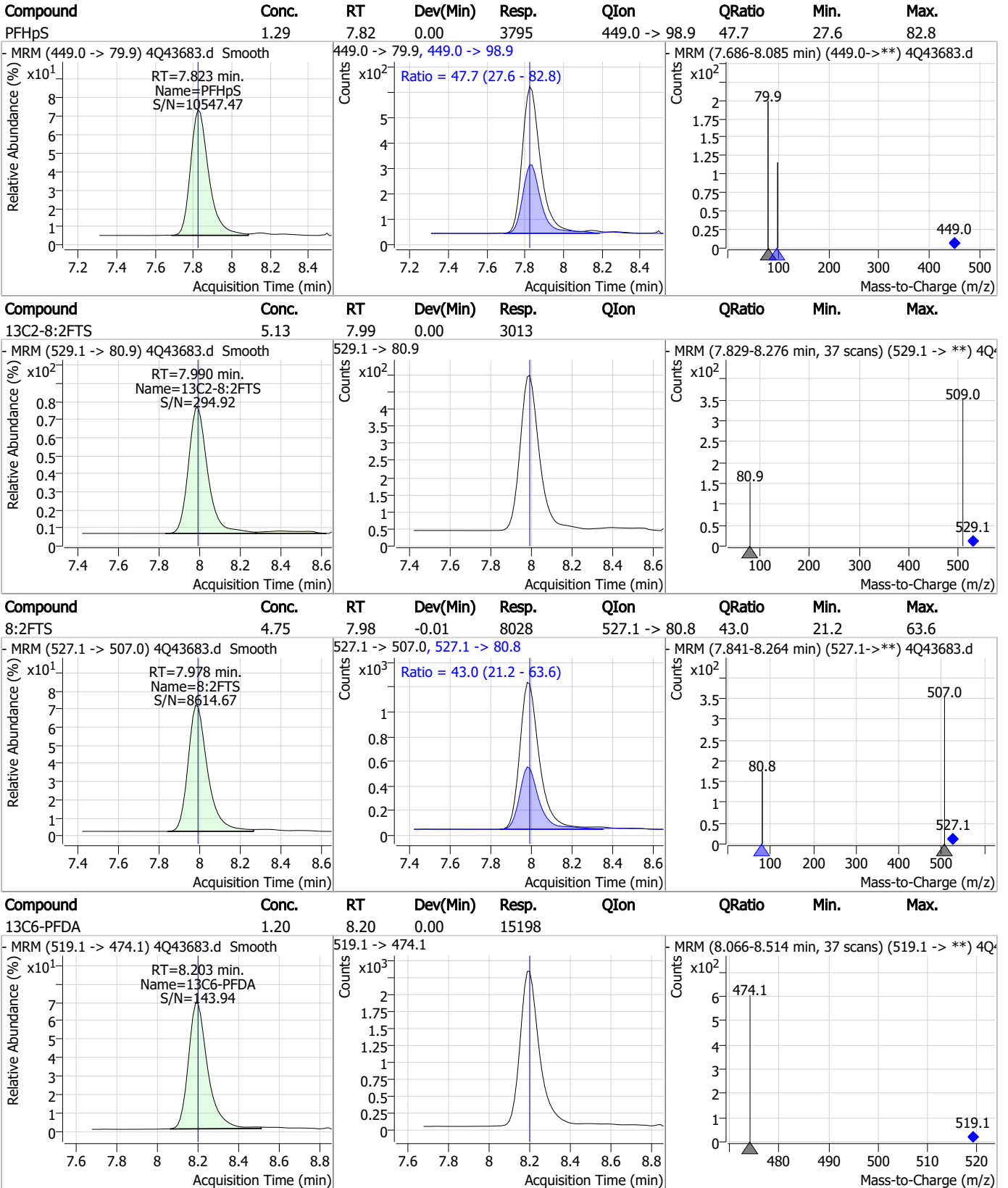
Perfluorinated Compounds by LC/MS/MS



7.7.4

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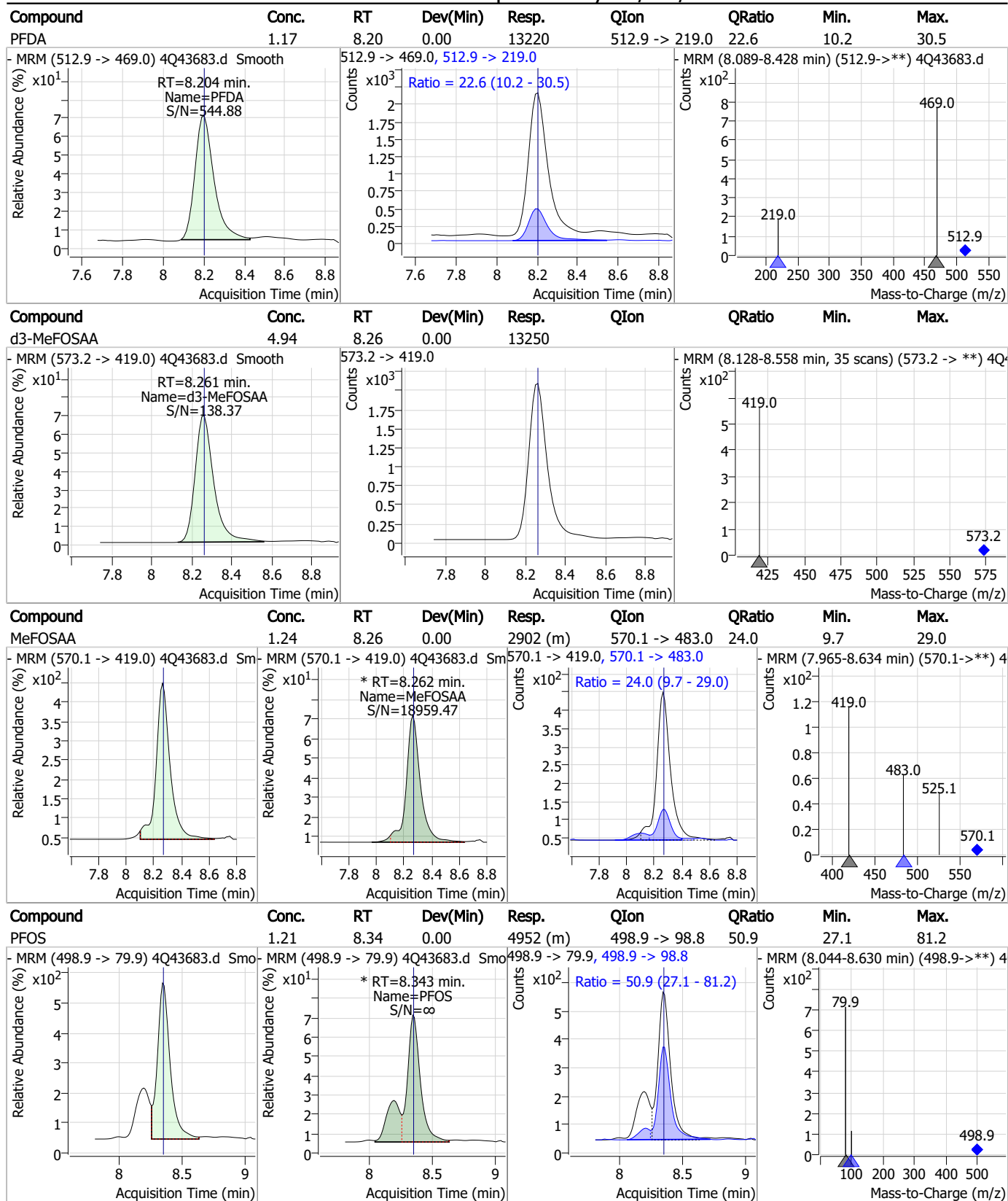
Perfluorinated Compounds by LC/MS/MS



7.7.4

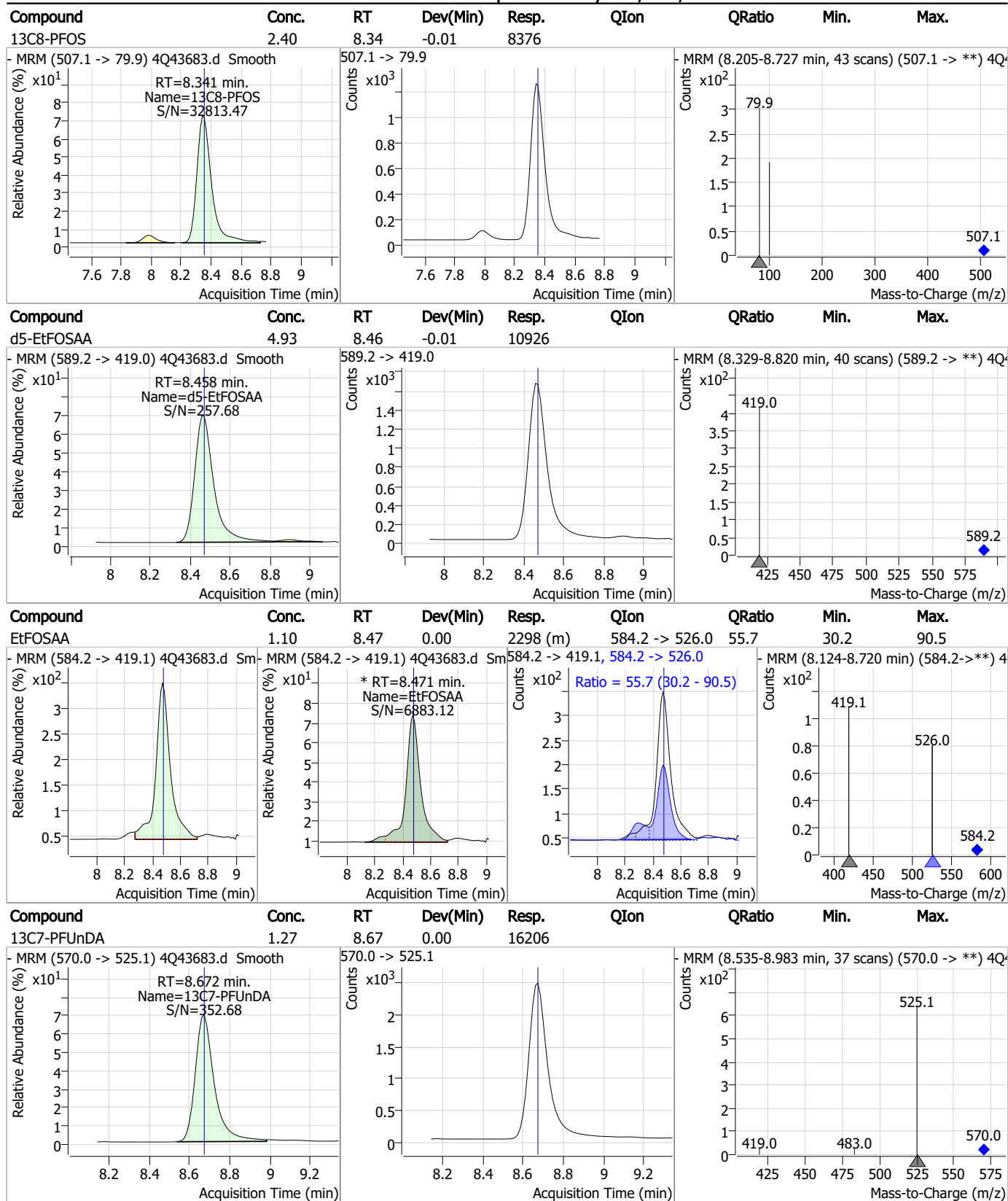
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

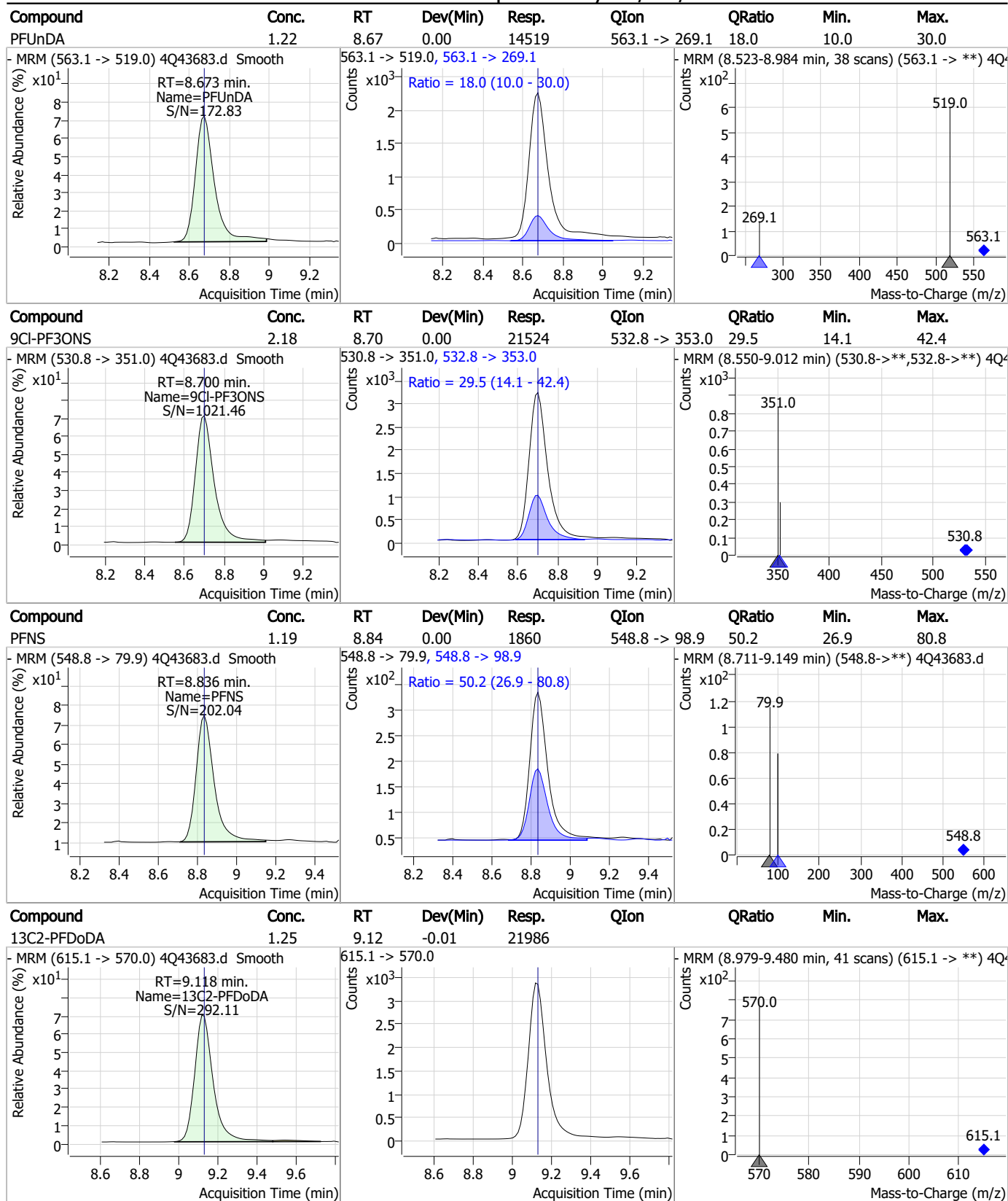
Perfluorinated Compounds by LC/MS/MS



7.7.4

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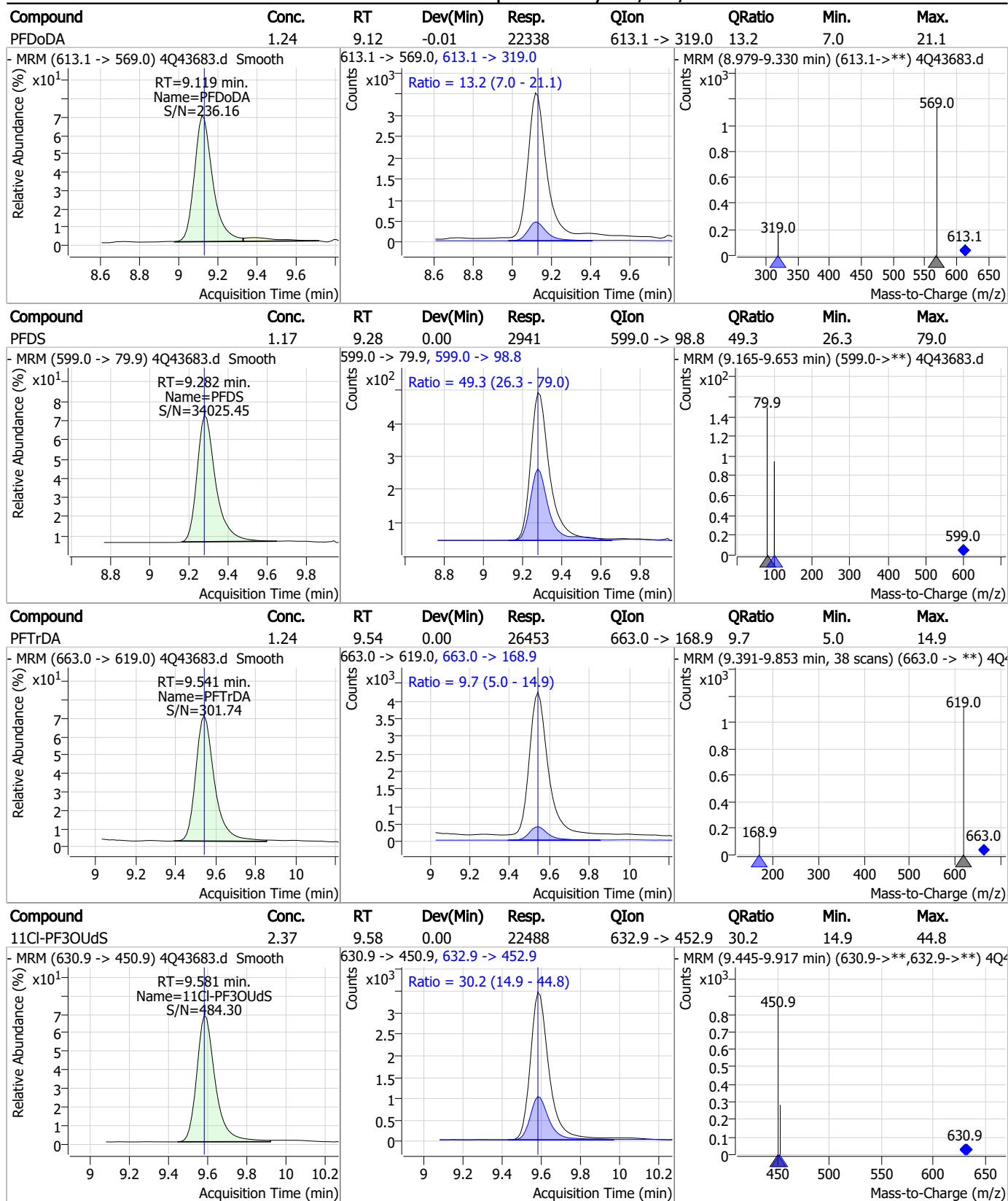
Perfluorinated Compounds by LC/MS/MS



7.7.4

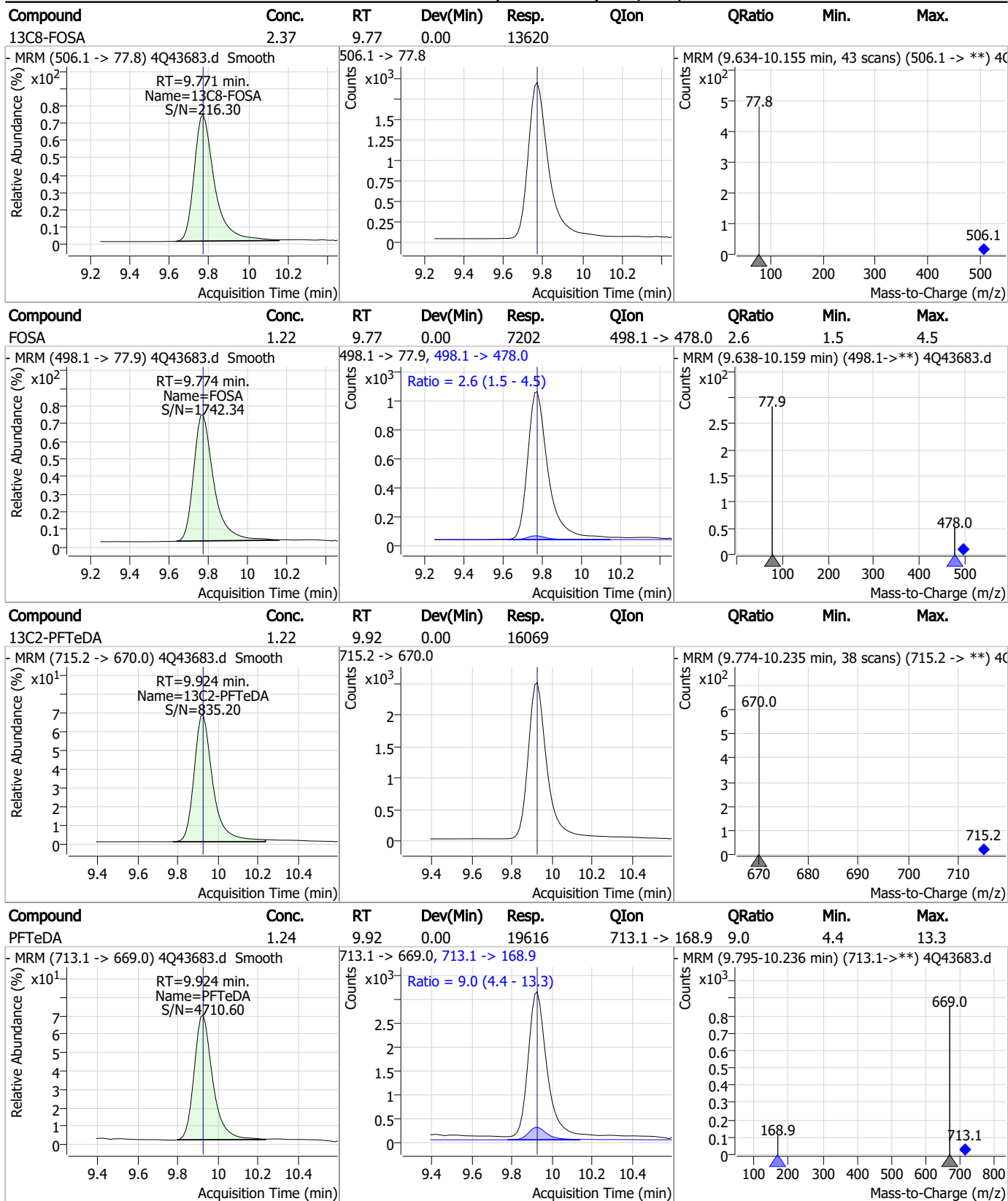
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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Perfluorinated Compounds by LC/MS/MS

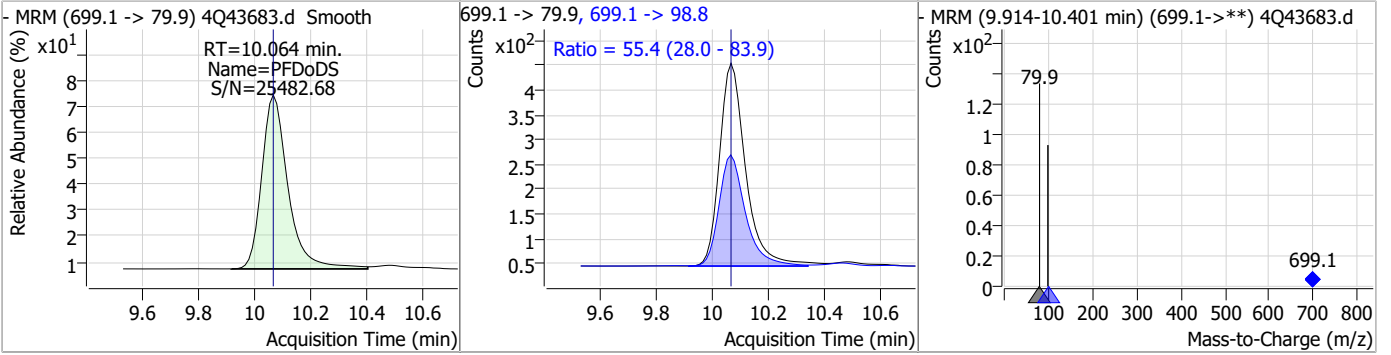


7.7.4

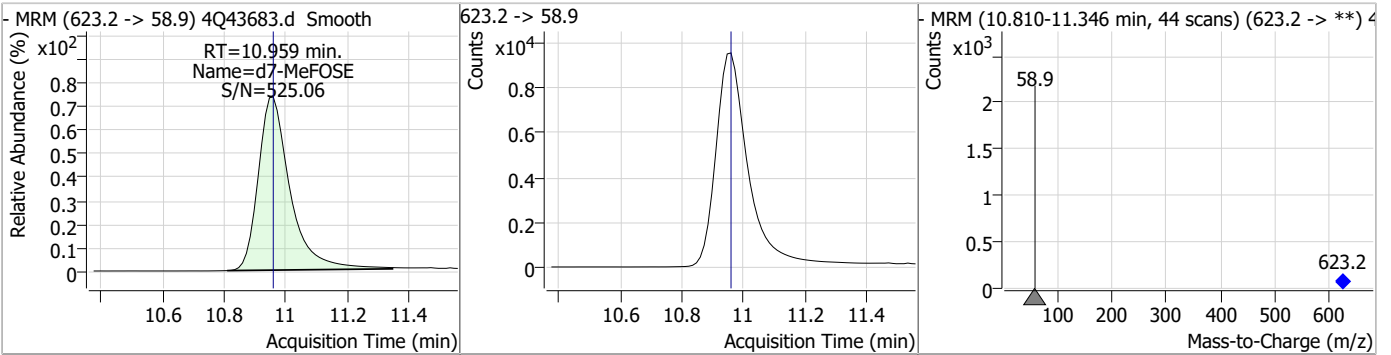
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Perfluorinated Compounds by LC/MS/MS

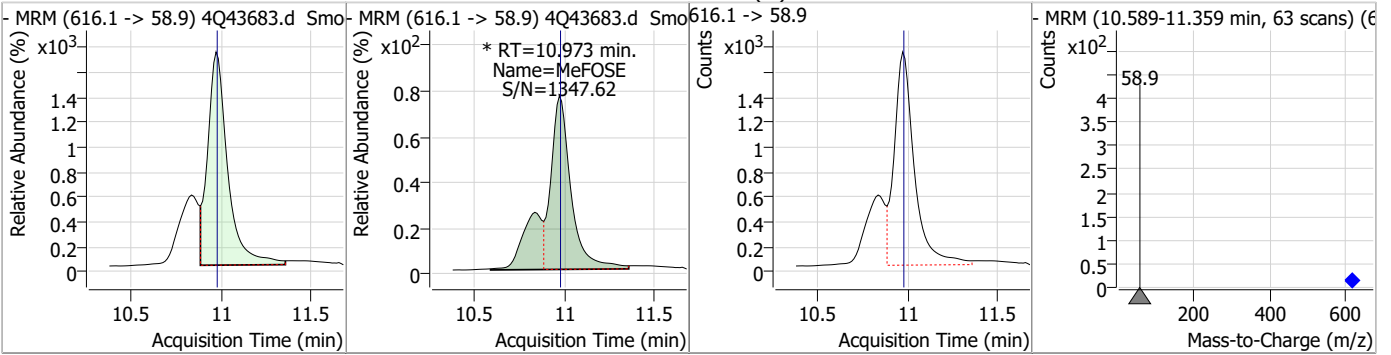
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.21	10.06	0.00	2657	699.1 -> 98.8	55.4	28.0	83.9



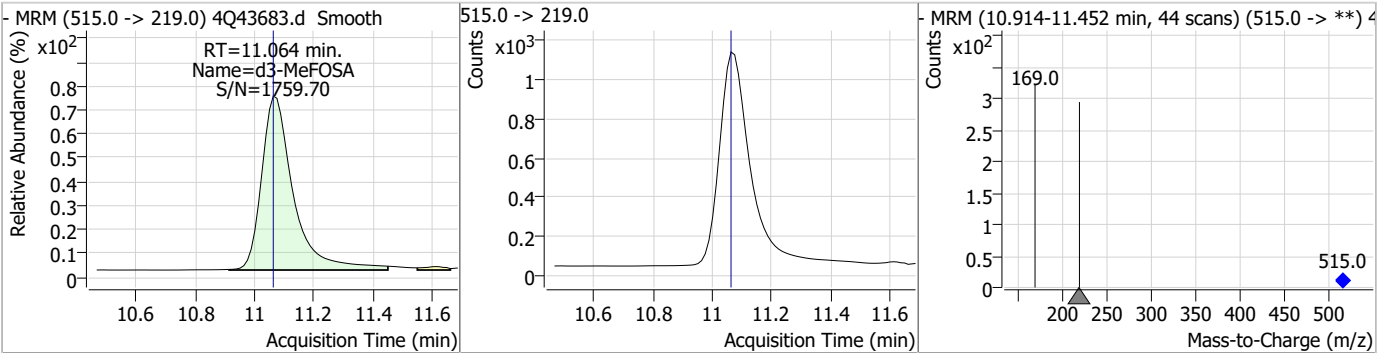
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.78	10.96	0.00	67942				



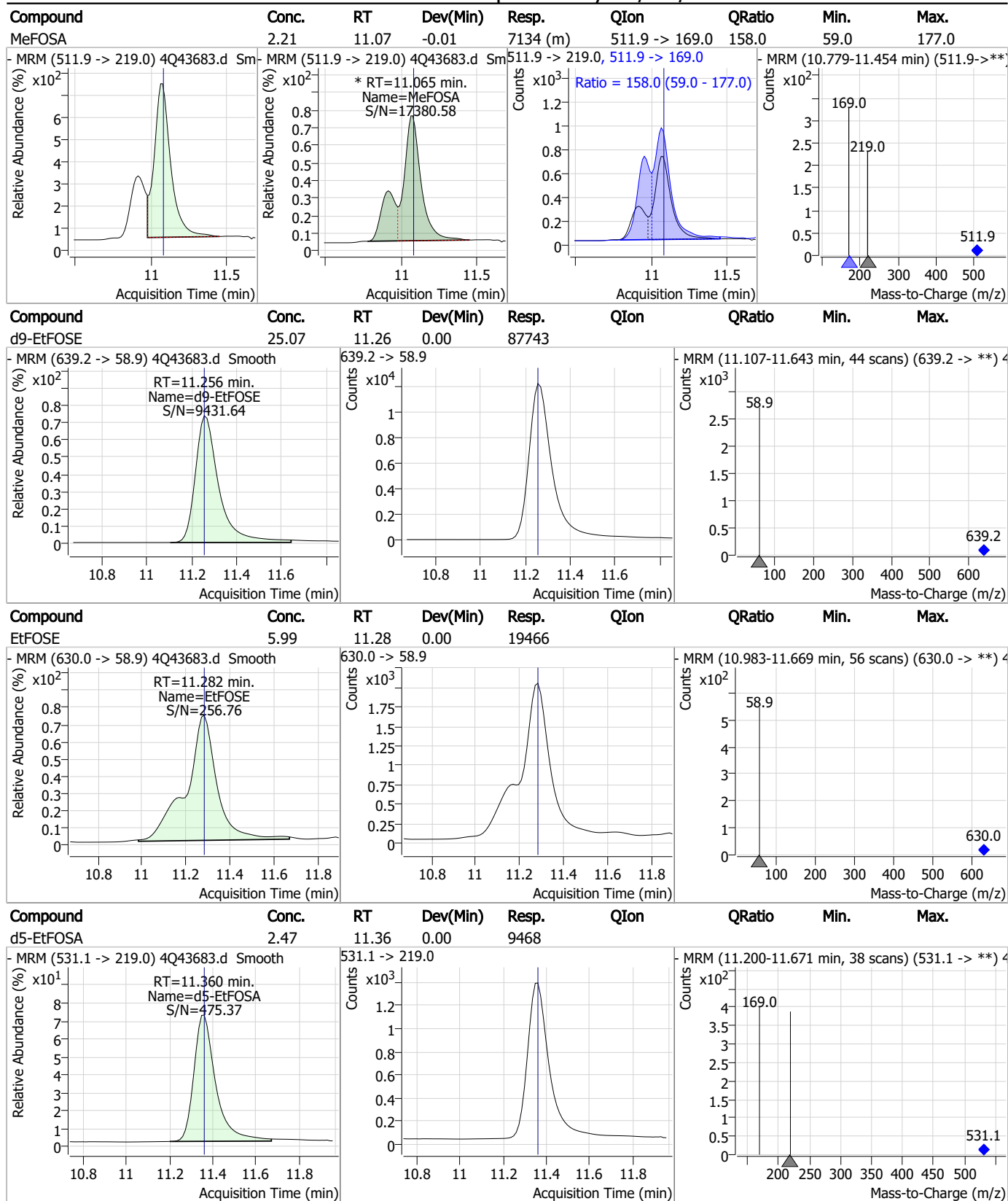
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	6.35	10.97	0.00	17760 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.49	11.06	0.00	8198				

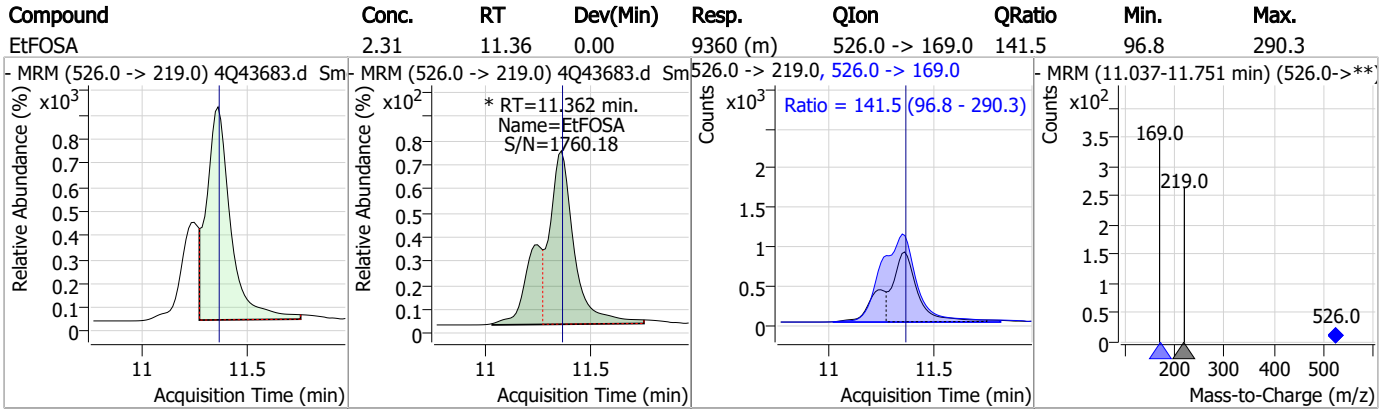


Perfluorinated Compounds by LC/MS/MS



7.7.4

Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Manual Integration Approval Summary

Sample Number: S4Q631-IC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43683.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 13:05 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43684.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 1:19:44 PM
 Sample Name : icc631-4
 Vial : P1-A5
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	91191	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	60644	5.00 µg/L	0.000
M5-PFHxA	5.547	318.0 -> 273.0	47847	2.50 µg/L	0.000
M4-PFHpA	6.480	367.1 -> 322.0	23844	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	31812	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	17161	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	16558	1.25 µg/L	0.000
M7-PFUnDA	8.672	570.0 -> 525.1	16119	1.25 µg/L	0.000
M2-PFDoDA	9.130	615.1 -> 570.0	21858	1.25 µg/L	0.000
M2-PFTeDA	9.924	715.2 -> 670.0	15818	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	13876	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	10824	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	5735	2.50 µg/L	0.000
M8-PFOS	8.354	507.1 -> 79.9	8162	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1130	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1840	5.00 µg/L	0.000
M2-8:2FTS	7.990	529.1 -> 80.9	2910	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	13026	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	26300	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	10347	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	69113	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	86206	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	9075	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	7535	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	8270	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	52306	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4090	2.50 µg/L	0.000
13C4-PFOA	7.149	417.1 -> 372.0	38909	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	14246	1.25 µg/L	0.000
13C5-PFNA	7.697	468.0 -> 423.0	17938	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	39450	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1130	5.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1840	5.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.4%		
13C2-8:2FTS	7.990	529.1 -> 80.9	2910	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C2-PFDoDA	9.130	615.1 -> 570.0	21858	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C2-PFTeDA	9.924	715.2 -> 670.0	15818	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C3-PFBS	5.452	302.1 -> 79.9	10824	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C3-PFHxS	7.242	402.1 -> 79.9	5735	2.52 µg/L	0.000

7.7.5
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 = 100.7%	
13C4-PFBA	2.924	216.8 -> 171.9	91191	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.480	367.1 -> 322.0	23844	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C5-PFHxA	5.547	318.0 -> 273.0	47847	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFPeA	4.375	268.3 -> 223.0	60644	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C6-PFDA	8.203	519.1 -> 474.1	16558	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C7-PFUnDA	8.672	570.0 -> 525.1	16119	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-FOSA	9.771	506.1 -> 77.8	13876	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C8-PFOA	7.148	421.1 -> 376.0	31812	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C8-PFOS	8.354	507.1 -> 79.9	8162	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C9-PFNA	7.696	472.1 -> 427.0	17161	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
d3-MeFOSAA	8.261	573.2 -> 419.0	13026	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	26300	10.14 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
d3-MeFOSA	11.064	515.0 -> 219.0	7535	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
d5-EtFOSAA	8.470	589.2 -> 419.0	10347	4.80 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
d7-MeFOSE	10.959	623.2 -> 58.9	69113	25.88 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d9-EtFOSE	11.256	639.2 -> 58.9	86206	25.29 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d5-EtFOSA	11.360	531.1 -> 219.0	9075	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	17796	9.83 µg/L	100
		327.1 -> 80.9	7274		
6:2FTS	6.911	427.1 -> 407.0	15768	8.91 µg/L	100
		427.1 -> 80.9	6786		
8:2FTS	7.991	527.1 -> 507.0	16282	9.97 µg/L	100
		527.1 -> 80.8	6906		
EtFOSAA	8.471	584.2 -> 419.1	4846	2.45 µg/L	m 90
		584.2 -> 526.0	2551		
FOSA	9.774	498.1 -> 77.9	13862	2.30 µg/L	100
		498.1 -> 478.0	418		
MeFOSAA	8.262	570.1 -> 419.0	5570	2.42 µg/L	m 95
		570.1 -> 483.0	1212		
PFBA	2.932	212.8 -> 168.9	25536	9.52 µg/L	100
PFBS	5.453	298.7 -> 79.9	10655	2.16 µg/L	100
		298.7 -> 98.8	4172		
PFDA	8.204	512.9 -> 469.0	27351	2.22 µg/L	100
		512.9 -> 219.0	5568		
PFDoDA	9.131	613.1 -> 569.0	42223	2.36 µg/L	100
		613.1 -> 319.0	5948		
PFDS	9.282	599.0 -> 79.9	5680	2.33 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2990			
PFHpA	6.480	363.1 -> 319.0	39834	2.58	µg/L	100
		363.1 -> 169.0	6903			
PFHpS	7.823	449.0 -> 79.9	6506	2.27	µg/L	100
		449.0 -> 98.9	3593			
PFHxA	5.550	313.0 -> 269.0	43492	2.42	µg/L	100
		313.0 -> 118.9	1295			
PFHxS	7.243	398.7 -> 79.9	6035	2.13	µg/L	m 97
		398.7 -> 98.9	3254			
PFNA	7.697	463.0 -> 419.0	27636	2.39	µg/L	100
		463.0 -> 219.0	7197			
PFNS	8.836	548.8 -> 79.9	3671	2.41	µg/L	100
		548.8 -> 98.9	1977			
PFOA	7.150	413.0 -> 369.0	44328	2.41	µg/L	100
		413.0 -> 169.0	9537			
PFOS	8.343	498.9 -> 79.9	9163	2.31	µg/L	m 89
		498.9 -> 98.8	4219			
PFPeA	4.377	263.0 -> 219.0	69108	4.77	µg/L	100
PFPeS	6.519	349.1 -> 79.9	5757	2.44	µg/L	100
		349.1 -> 98.9	2499			
PFTeDA	9.924	713.1 -> 669.0	39533	2.54	µg/L	100
		713.1 -> 168.9	3512			
PFTrDA	9.541	663.0 -> 619.0	53160	2.50	µg/L	100
		663.0 -> 168.9	5281			
PFUnDA	8.673	563.1 -> 519.0	29116	2.47	µg/L	100
		563.1 -> 269.1	5822			
11Cl-PF3OUdS	9.581	630.9 -> 450.9	44943	4.82	µg/L	100
		632.9 -> 452.9	13411			
9Cl-PF3ONS	8.700	530.8 -> 351.0	44029	4.53	µg/L	100
		532.8 -> 353.0	12456			
ADONA	6.743	376.9 -> 250.9	122170	4.54	µg/L	100
		376.9 -> 84.8	33290			
HFPO-DA	5.915	284.9 -> 168.9	12460	4.79	µg/L	100
		284.9 -> 184.9	1722			
3:3FTCA	3.848	241.0 -> 177.0	7235	11.82	µg/L	100
		241.0 -> 117.0	717			
5:3FTCA	6.205	341.0 -> 237.1	159055	61.22	µg/L	100
		341.0 -> 217.0	111226			
7:3FTCA	7.661	441.0 -> 316.9	69179	60.85	µg/L	100
		441.0 -> 336.9	154745			
EtFOSA	11.362	526.0 -> 219.0	19078	4.92	µg/L	m 64
		526.0 -> 169.0	26641			
EtFOSE	11.282	630.0 -> 58.9	39560	12.39	µg/L	m 100
MeFOSA	11.078	511.9 -> 219.0	15173	5.11	µg/L	m 80
		511.9 -> 169.0	21201			
MeFOSE	10.973	616.1 -> 58.9	34276	12.04	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	5114	2.38	µg/L	100
		699.1 -> 98.8	2859			
NFDHA	5.441	295.0 -> 201.0	5742	4.92	µg/L	100
		295.0 -> 84.9	1357			
PFMBA	4.791	279.0 -> 85.1	40446	4.84	µg/L	100
PFMPA	3.528	229.0 -> 84.9	34384	4.77	µg/L	100
PFEESA	5.984	314.8 -> 134.9	67005	4.27	µg/L	100
		314.8 -> 82.9	2379			

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

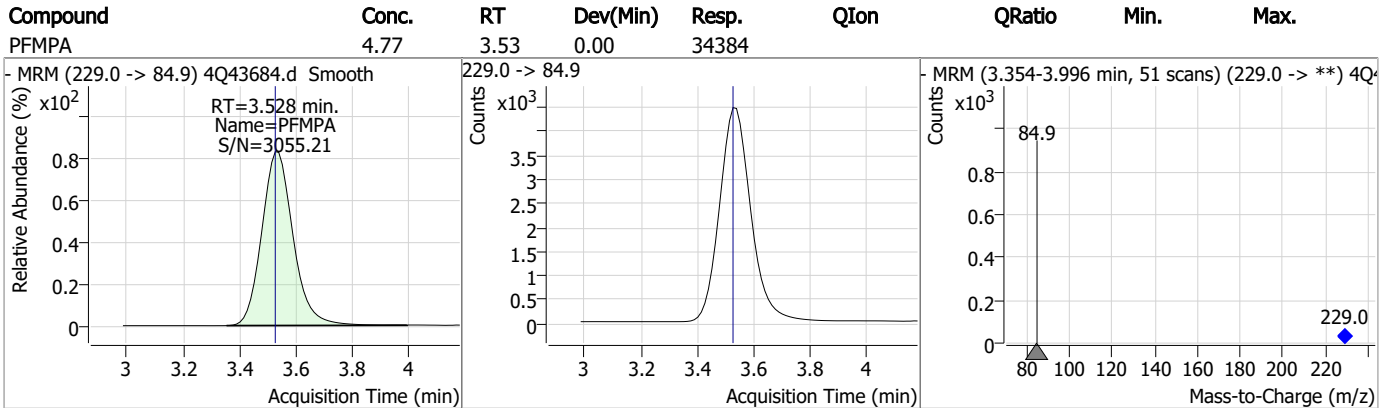
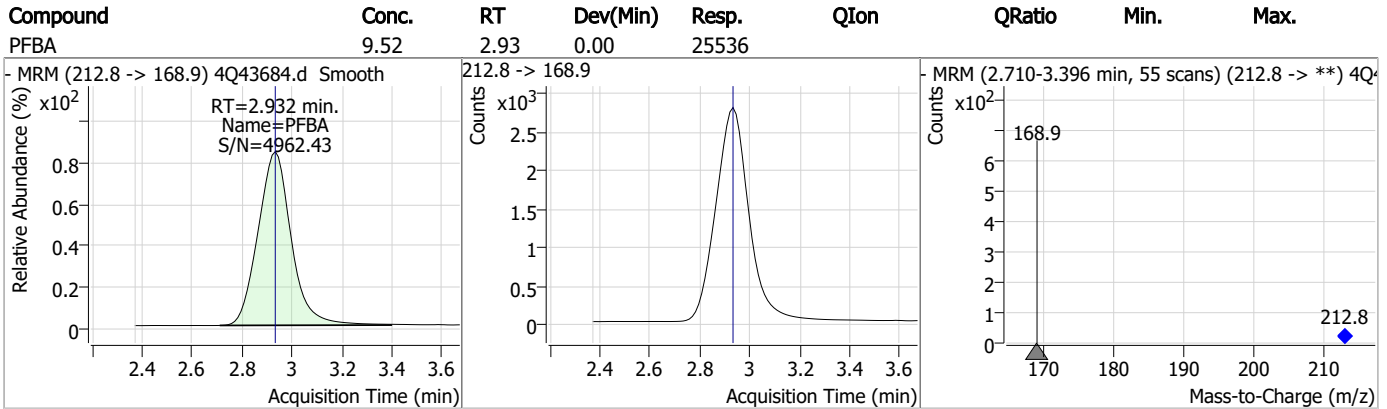
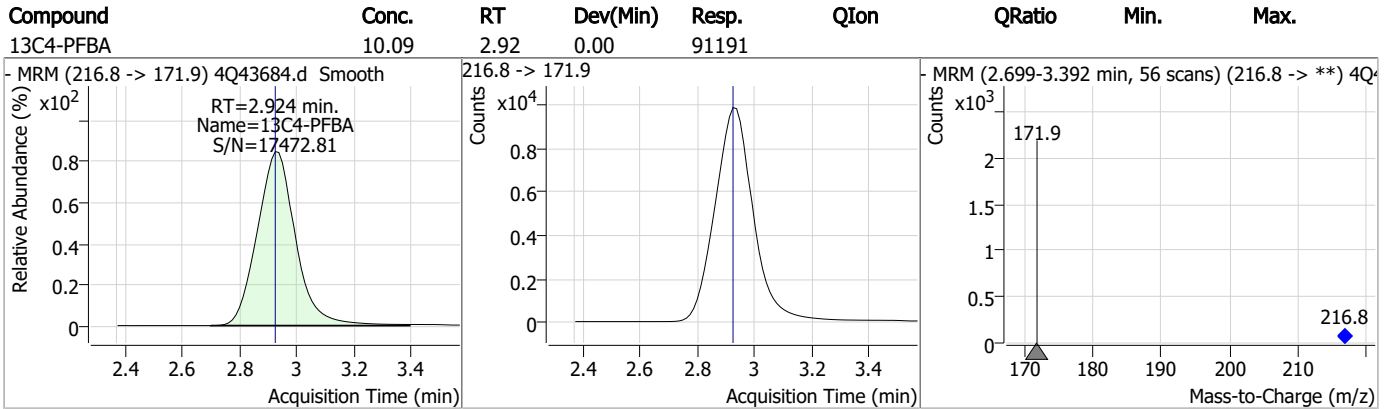
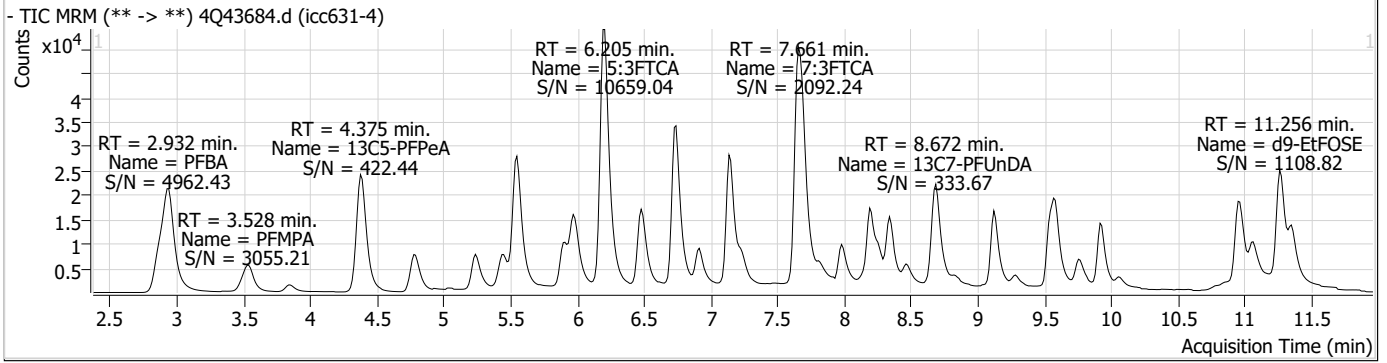
Perfluorinated Compounds by LC/MS/MS

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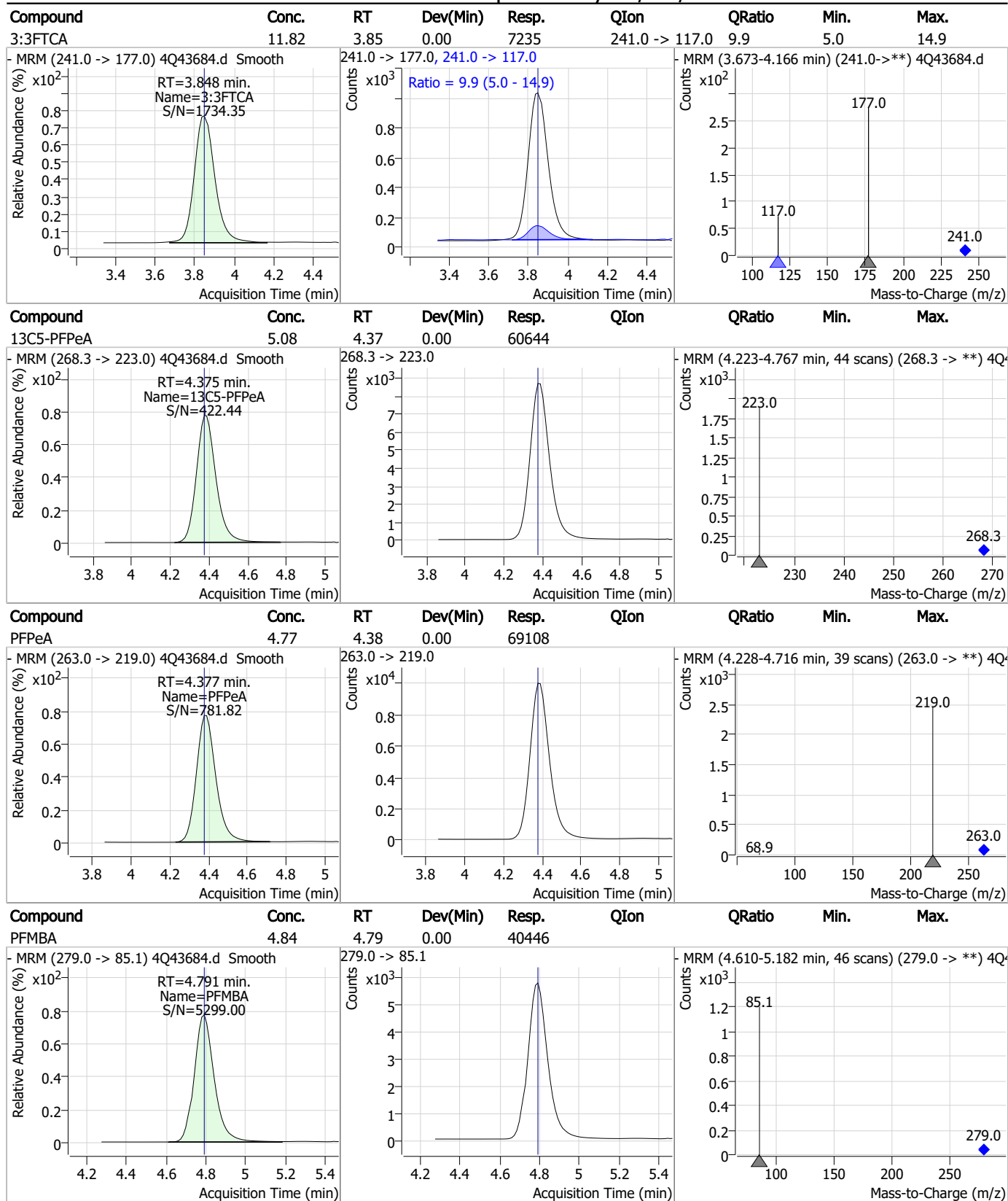
7.7.5

7

Perfluorinated Compounds by LC/MS/MS

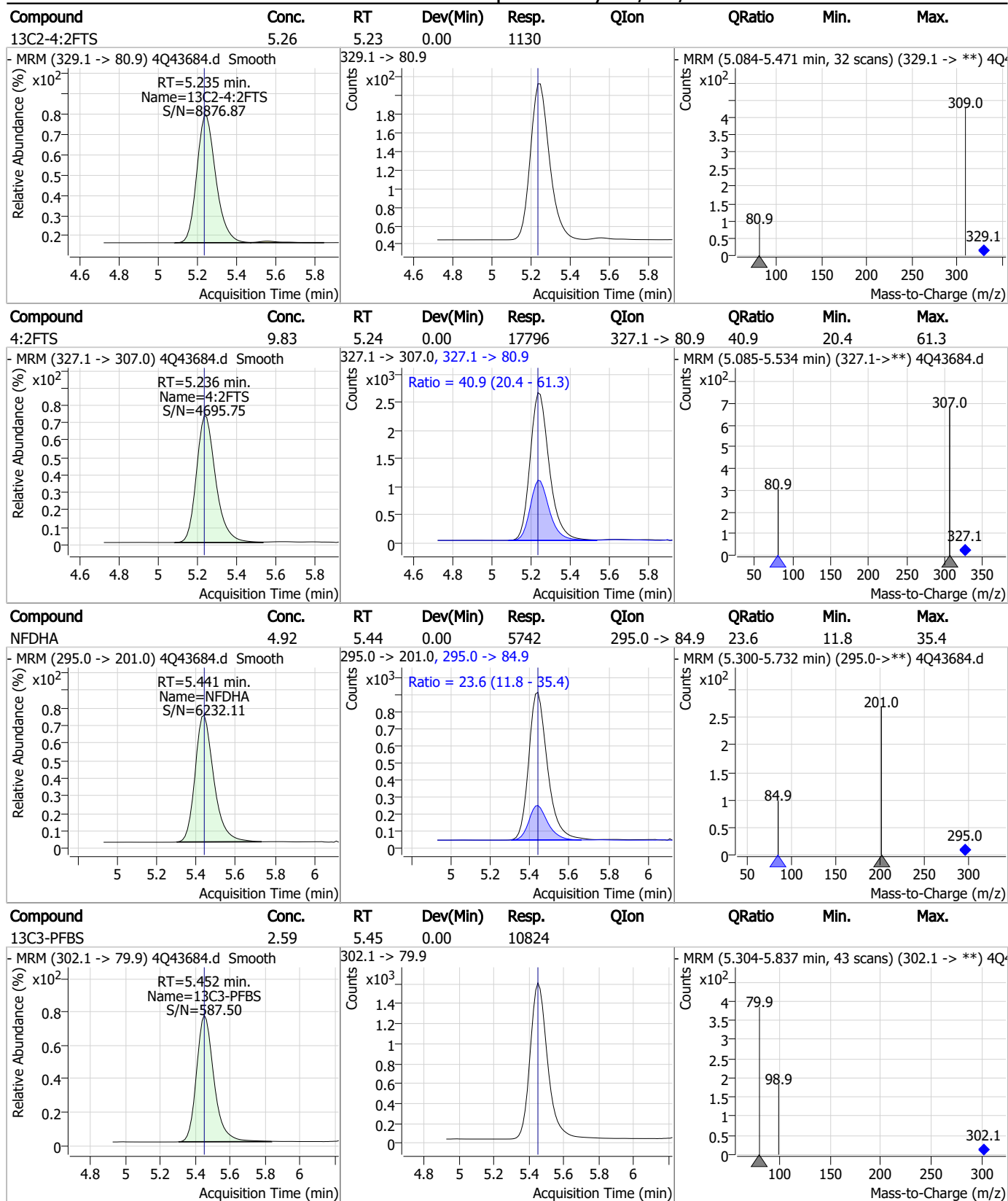


Perfluorinated Compounds by LC/MS/MS



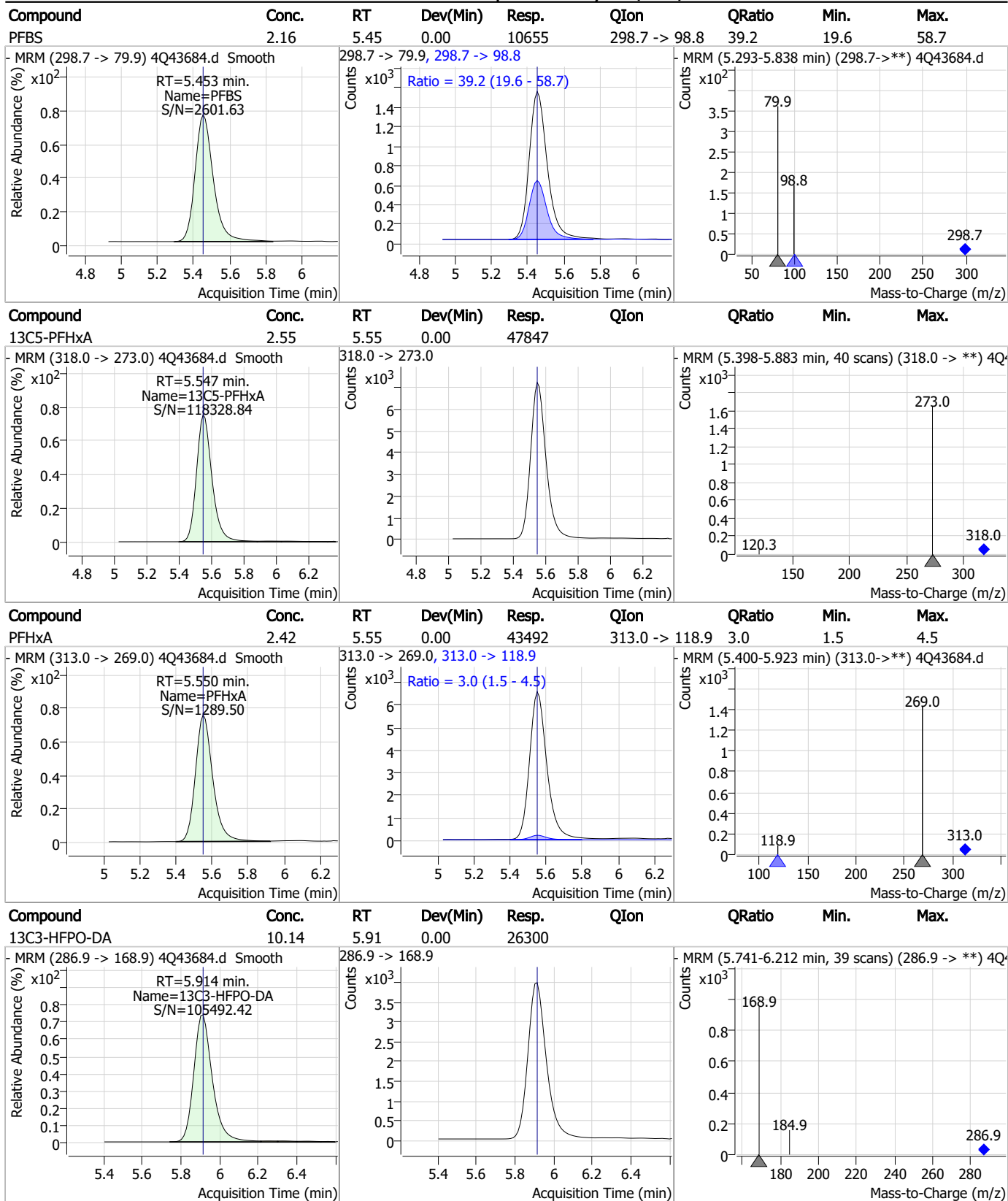
7.7.5
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Perfluorinated Compounds by LC/MS/MS



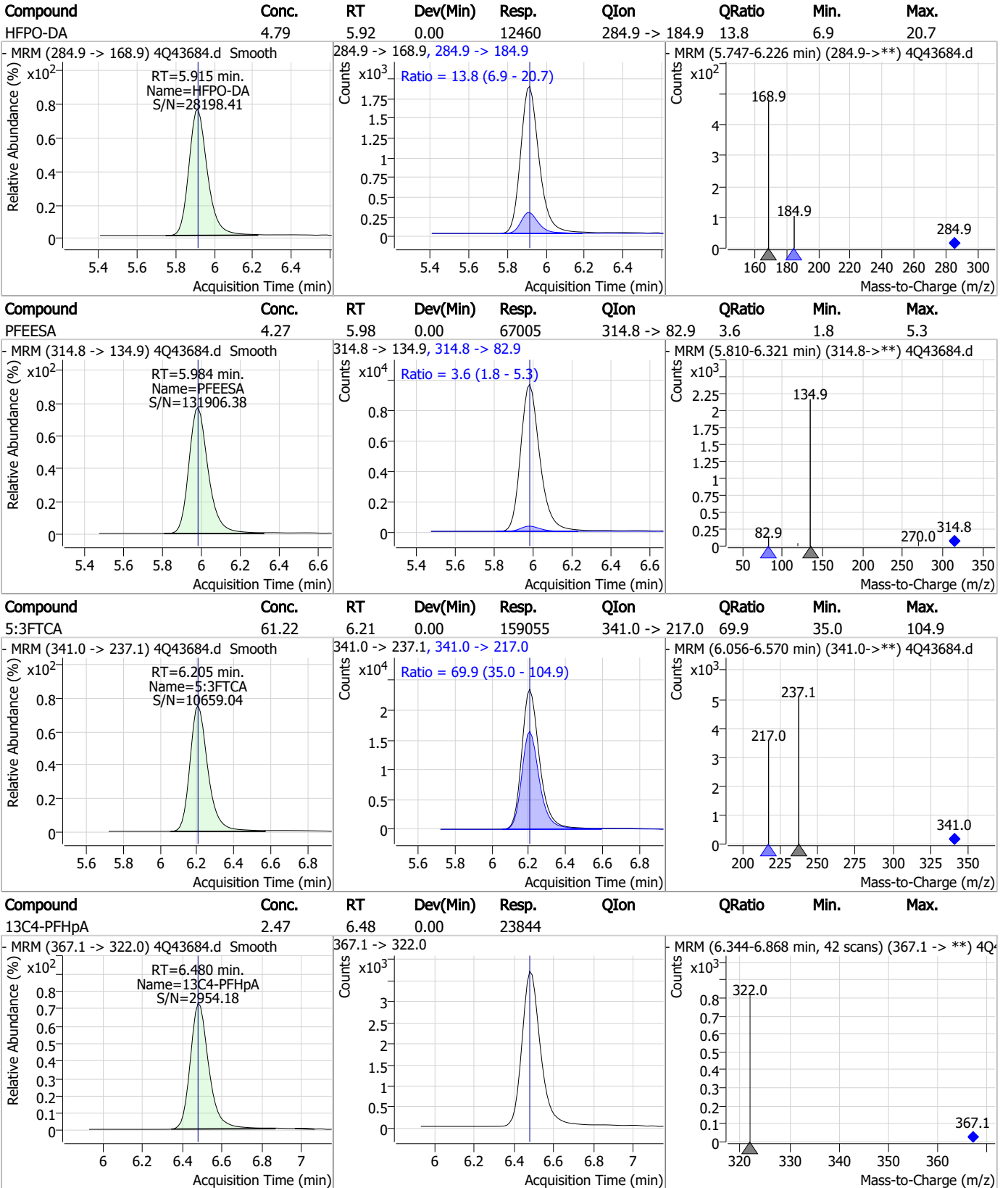
7.7.5
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Perfluorinated Compounds by LC/MS/MS

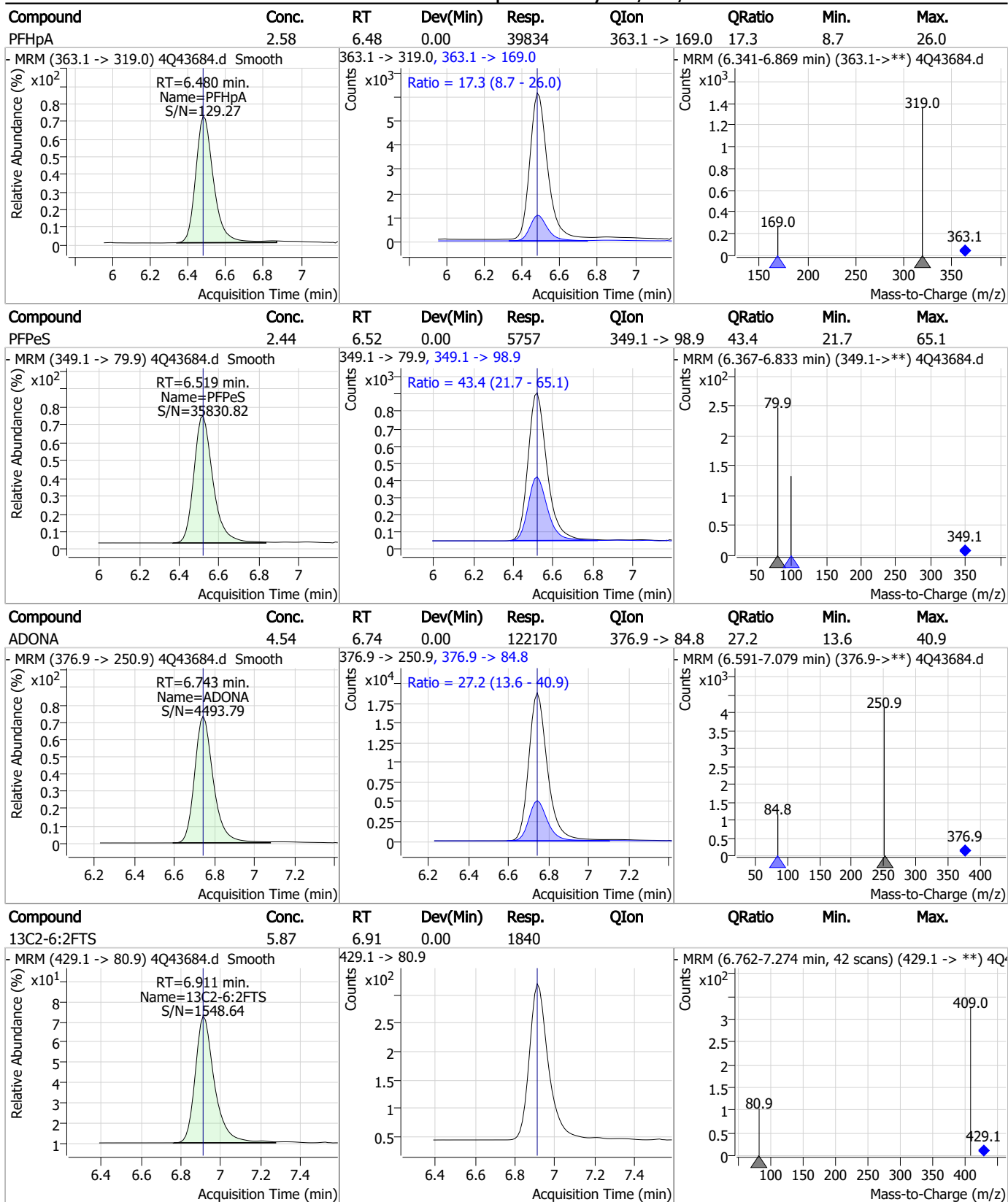


7.7.5
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Perfluorinated Compounds by LC/MS/MS

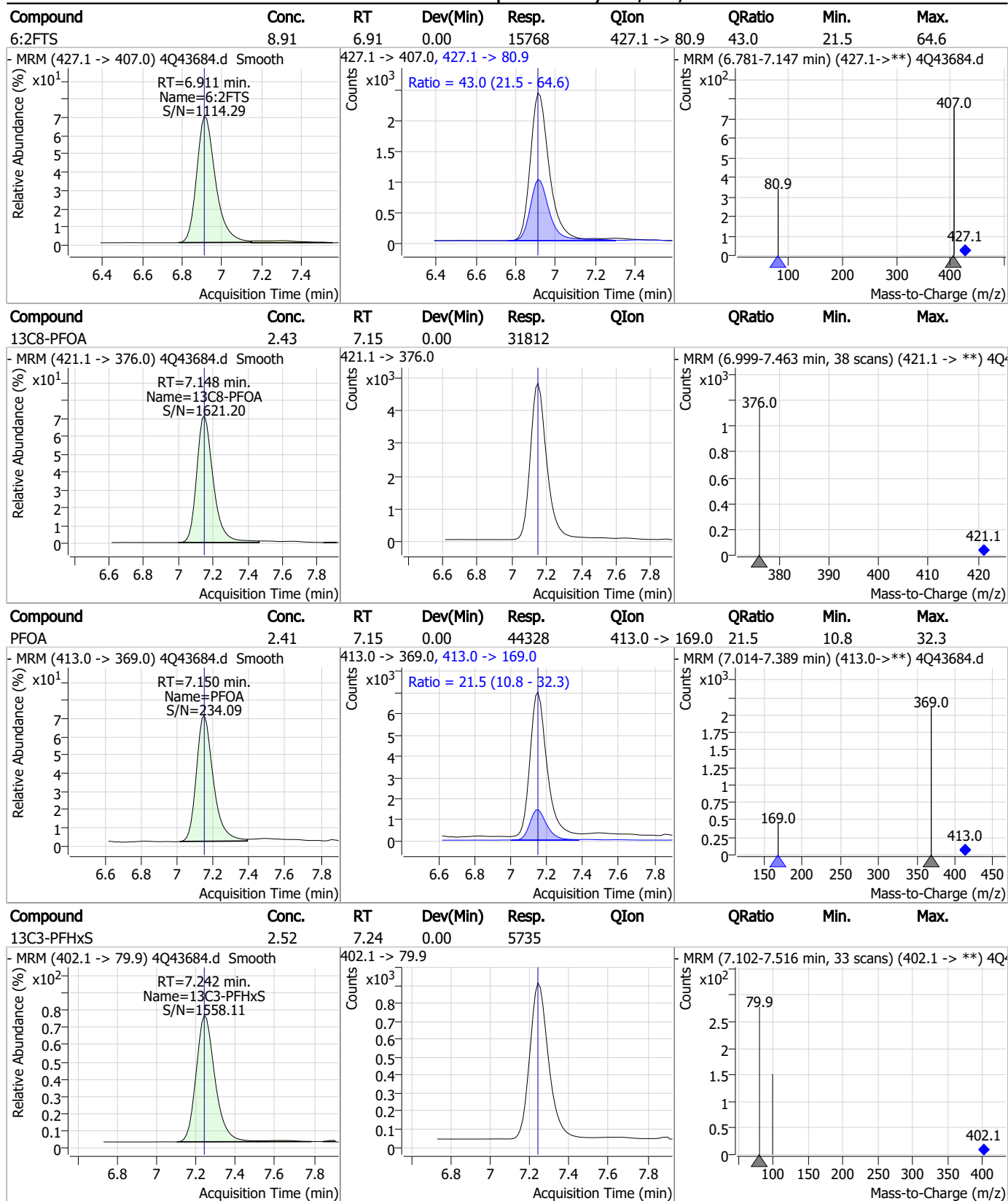


Perfluorinated Compounds by LC/MS/MS



7.7.5
7

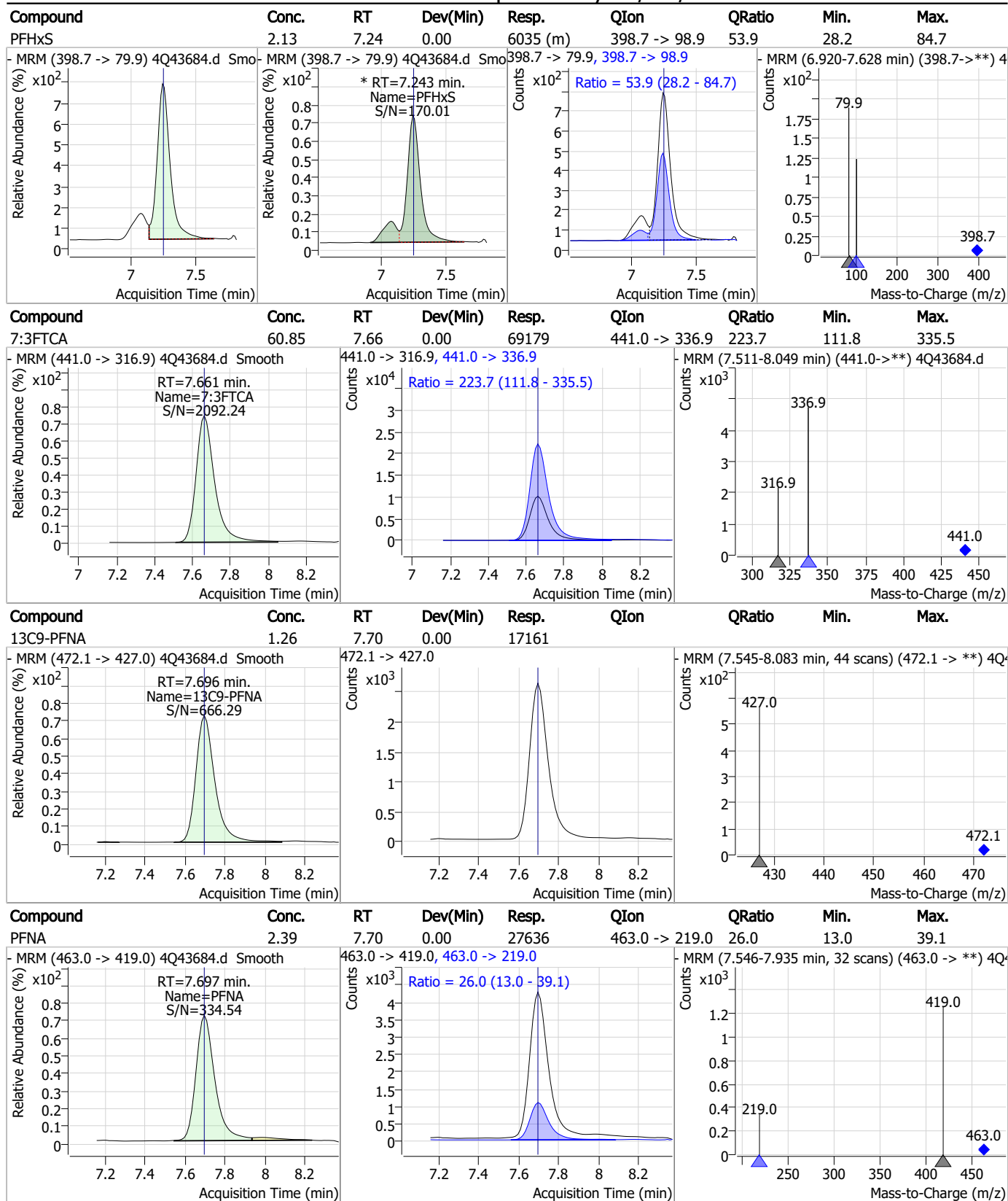
Perfluorinated Compounds by LC/MS/MS



7.7.5

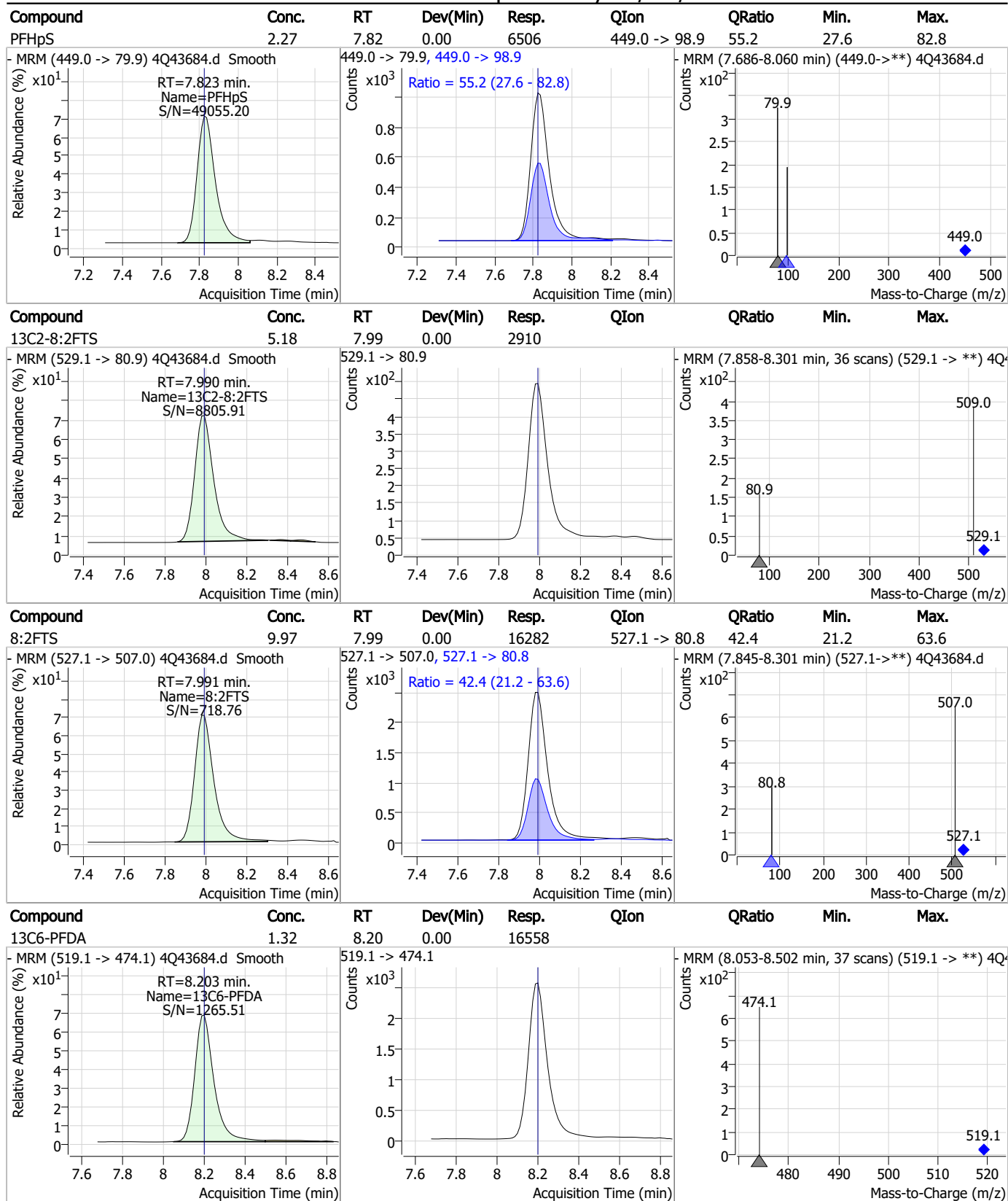
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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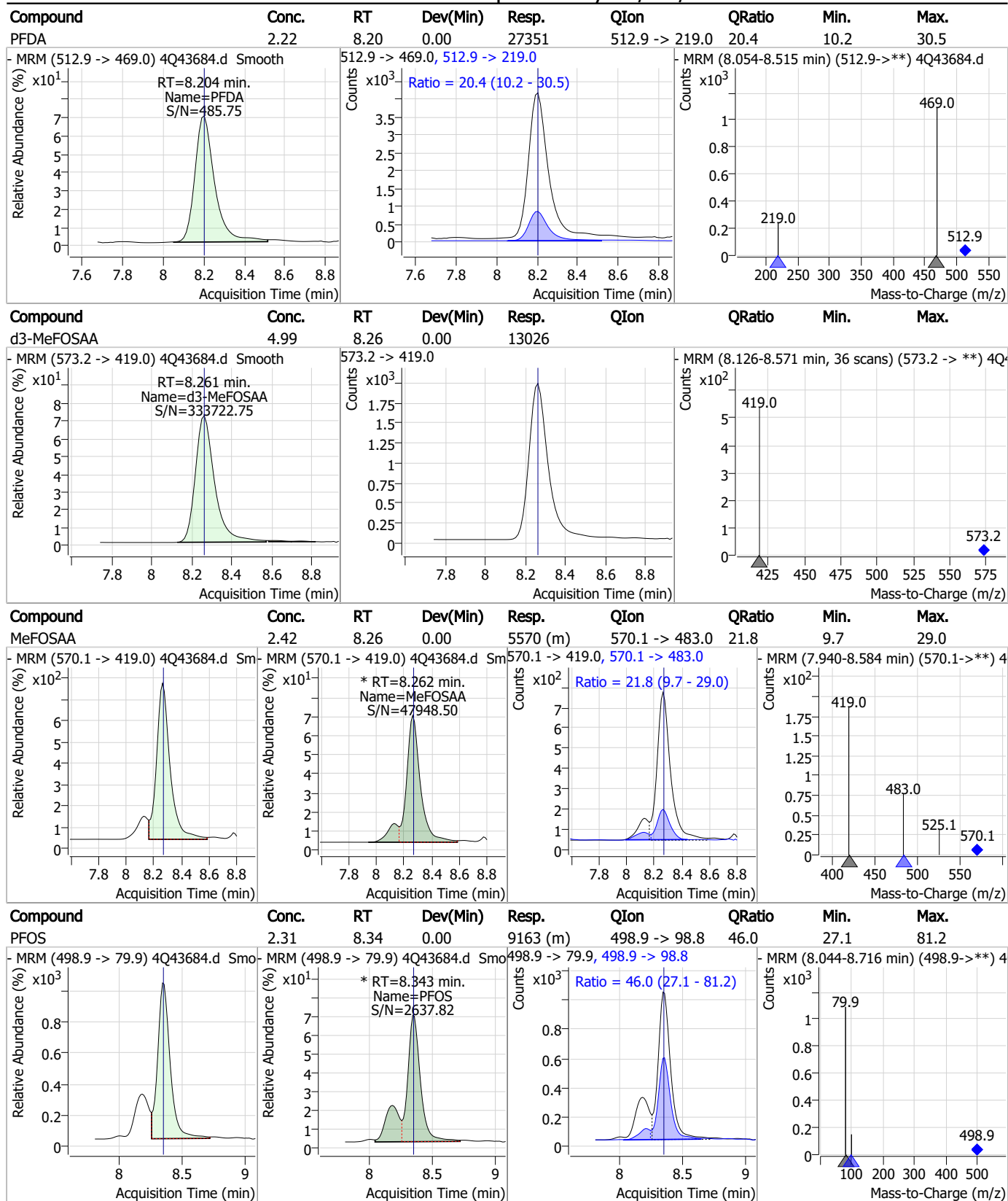
Perfluorinated Compounds by LC/MS/MS



7.7.5

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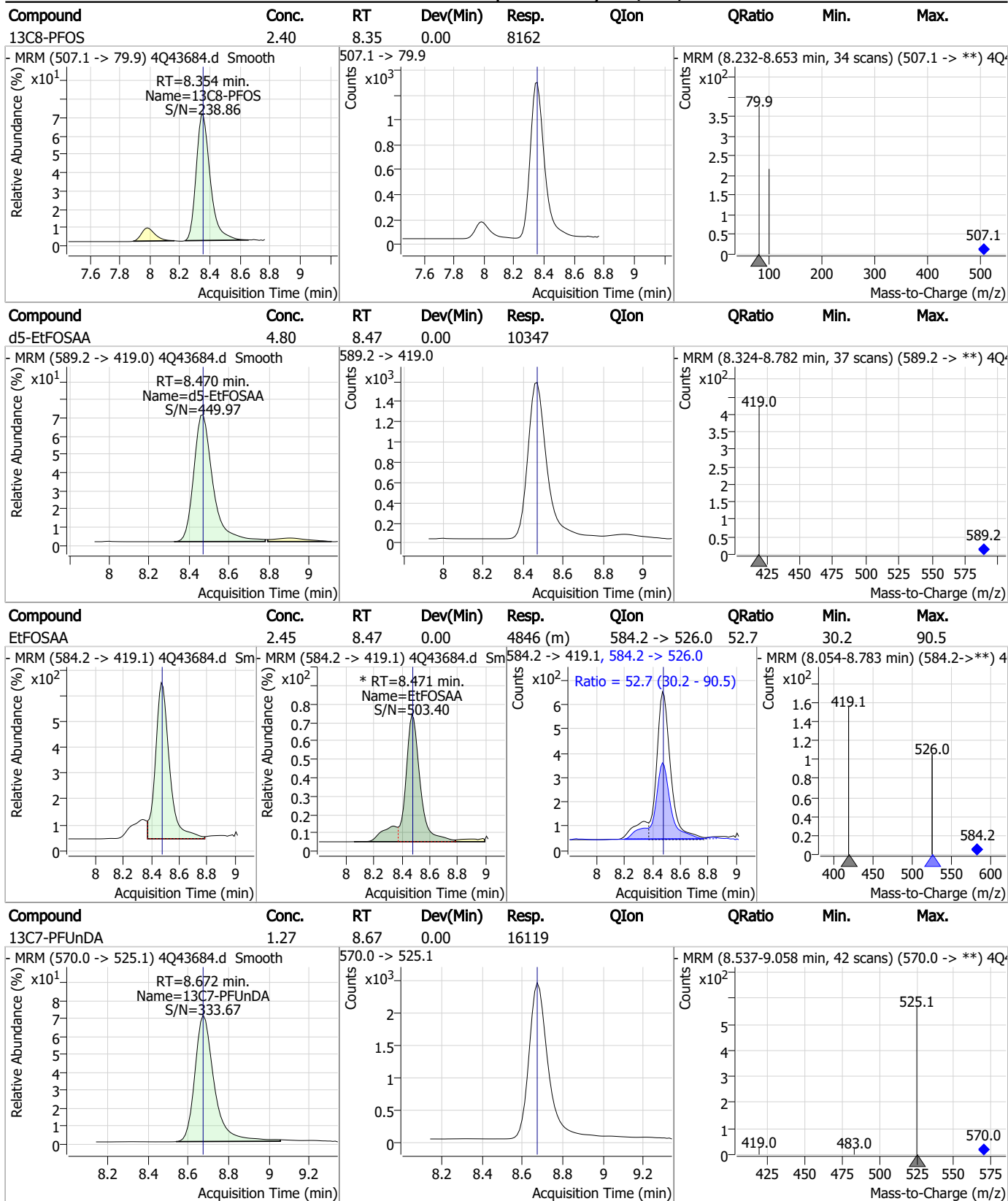
Perfluorinated Compounds by LC/MS/MS



7.7.5
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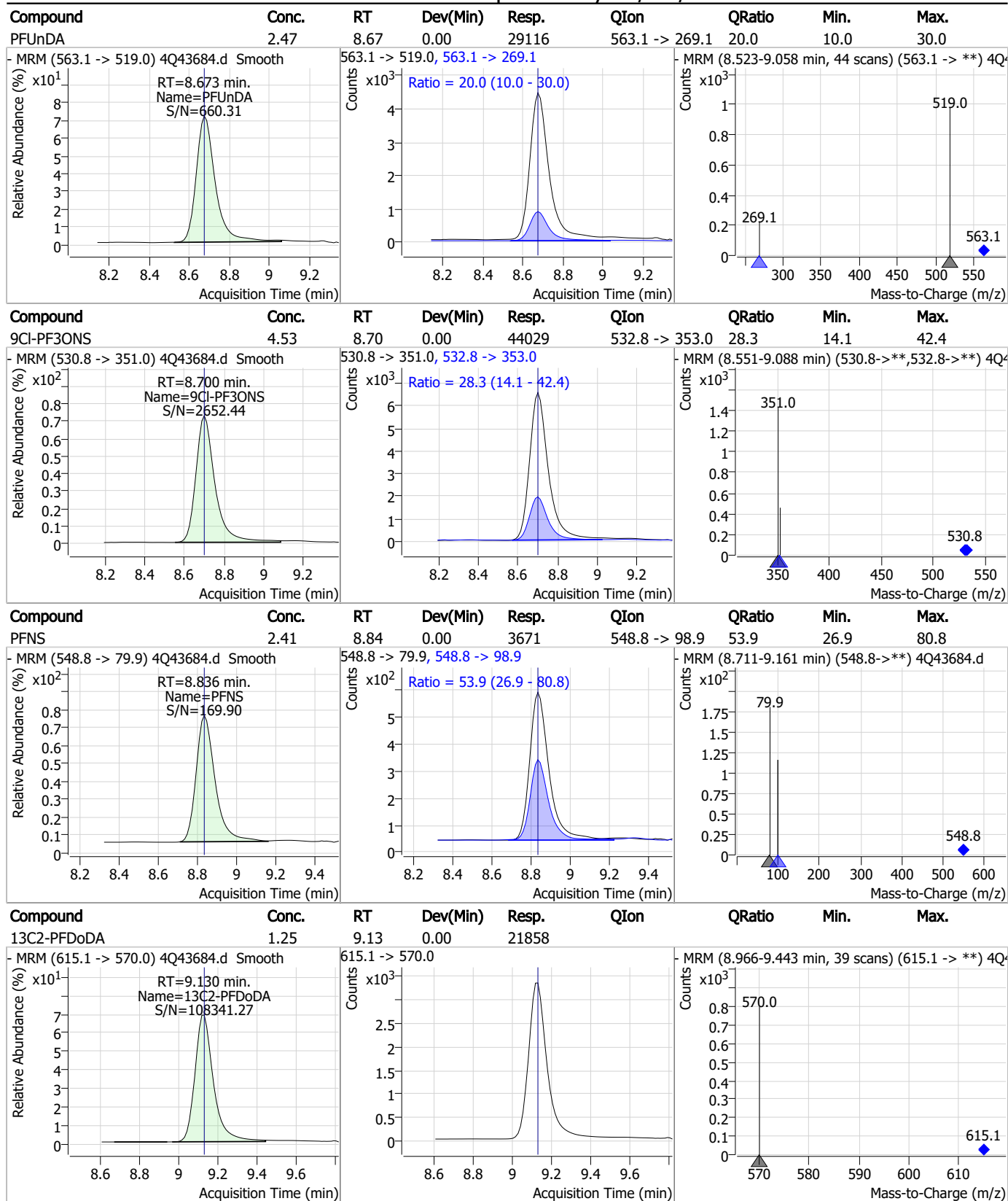


Perfluorinated Compounds by LC/MS/MS



7.7.5
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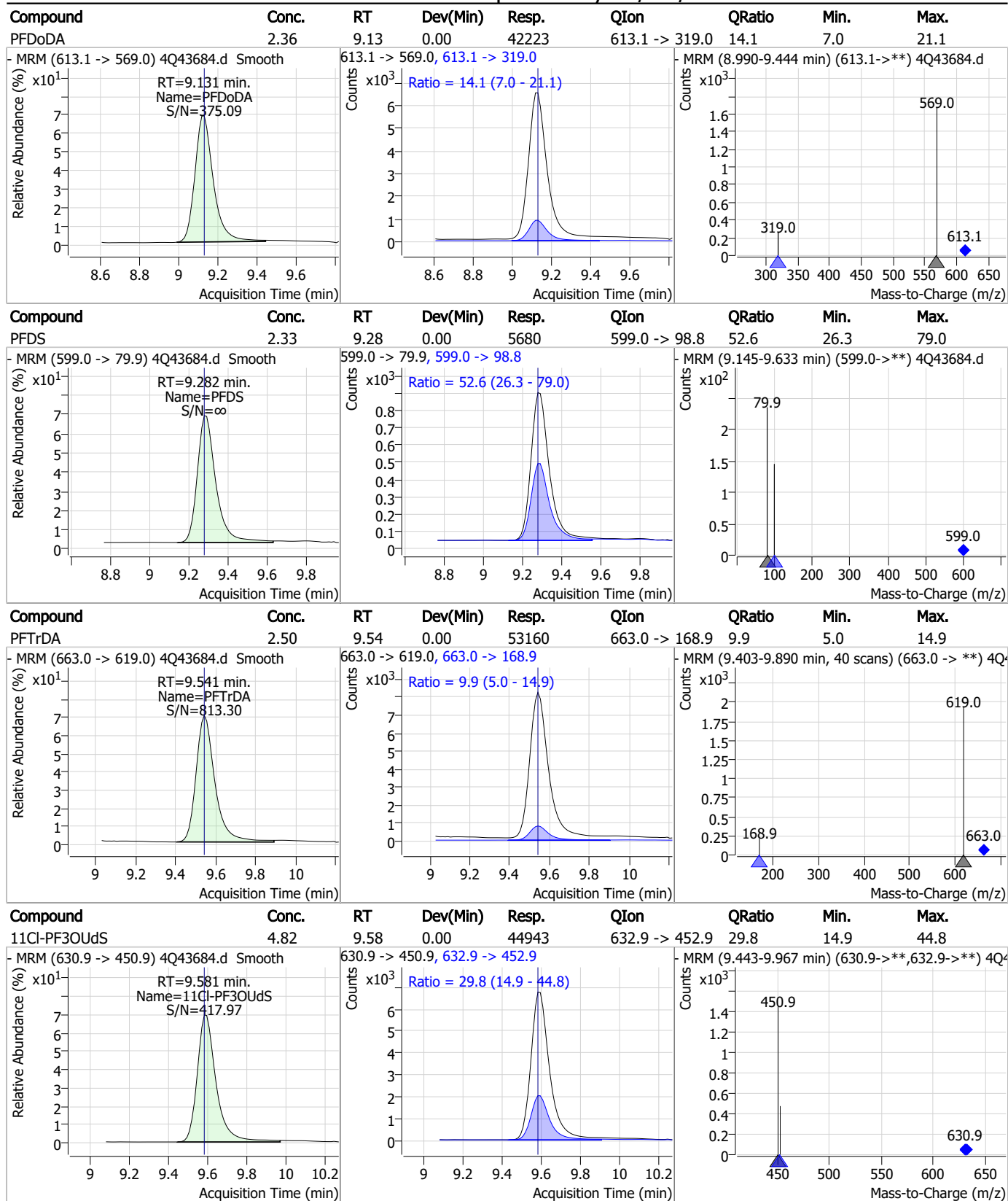
Perfluorinated Compounds by LC/MS/MS



7.7.5

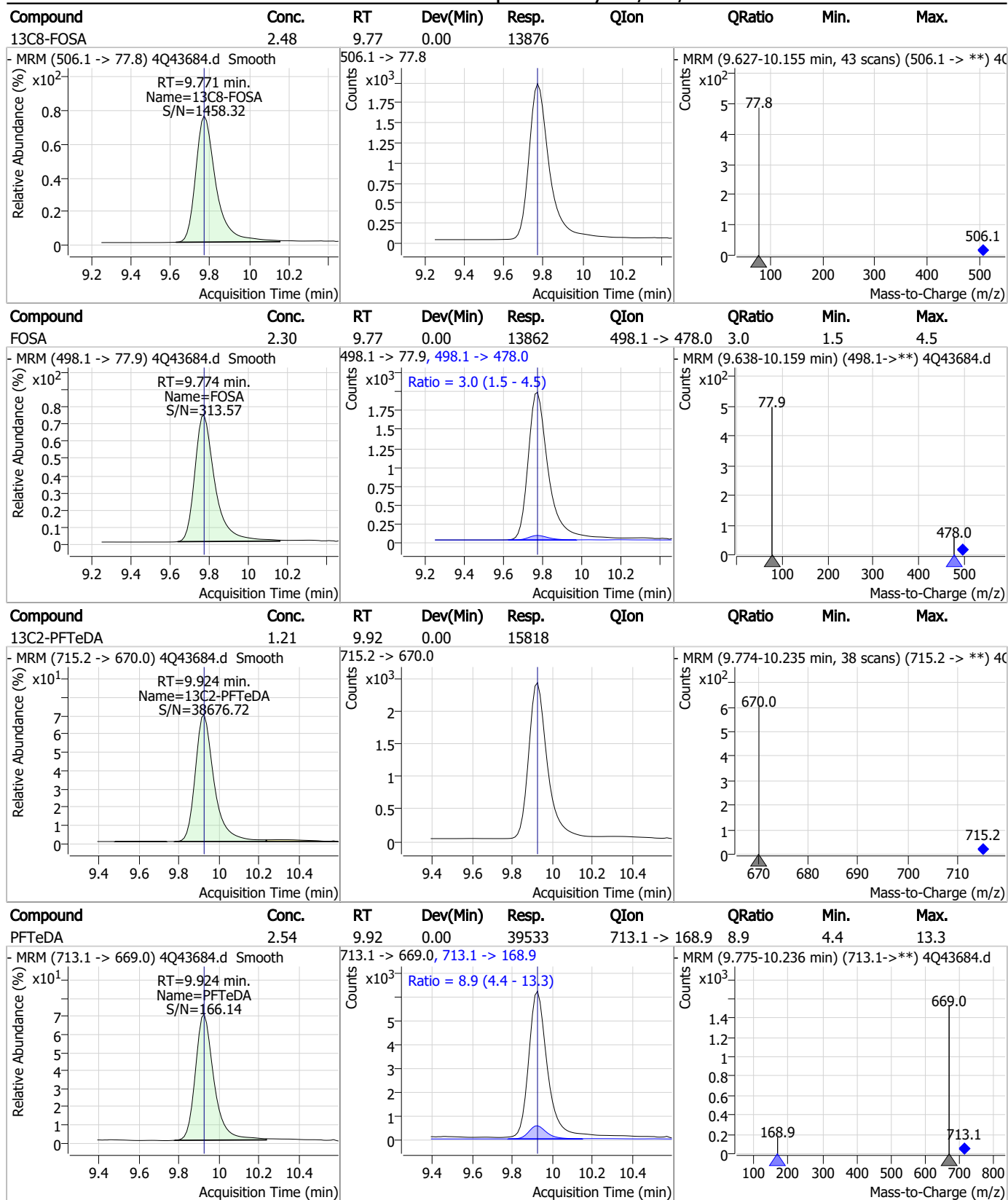
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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Perfluorinated Compounds by LC/MS/MS

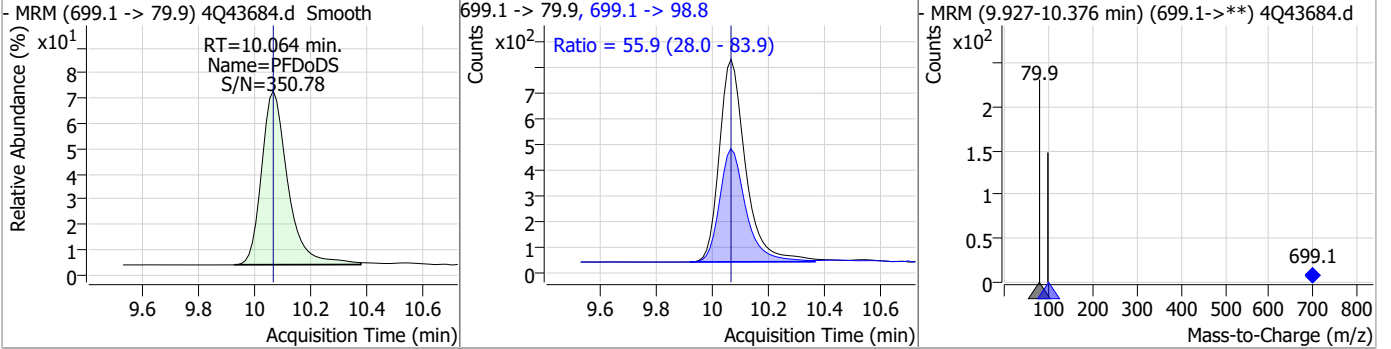


7.7.5

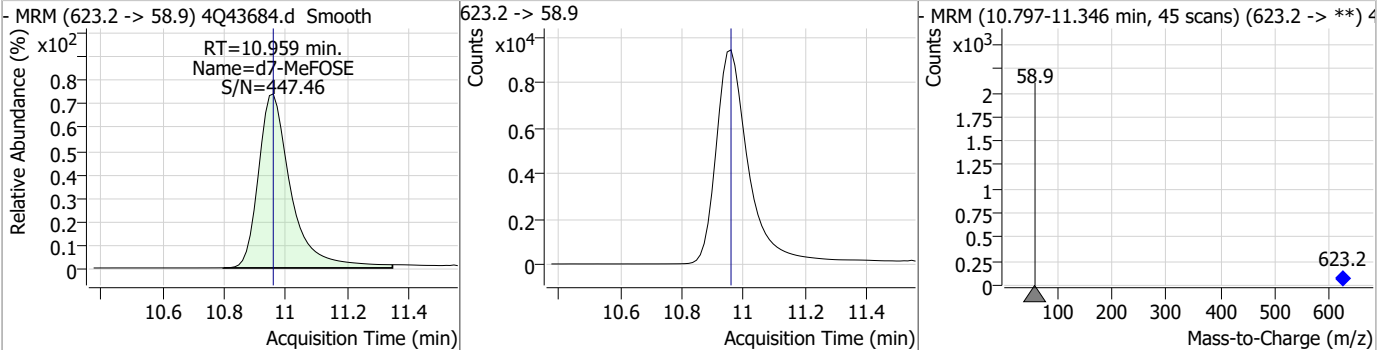
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Perfluorinated Compounds by LC/MS/MS

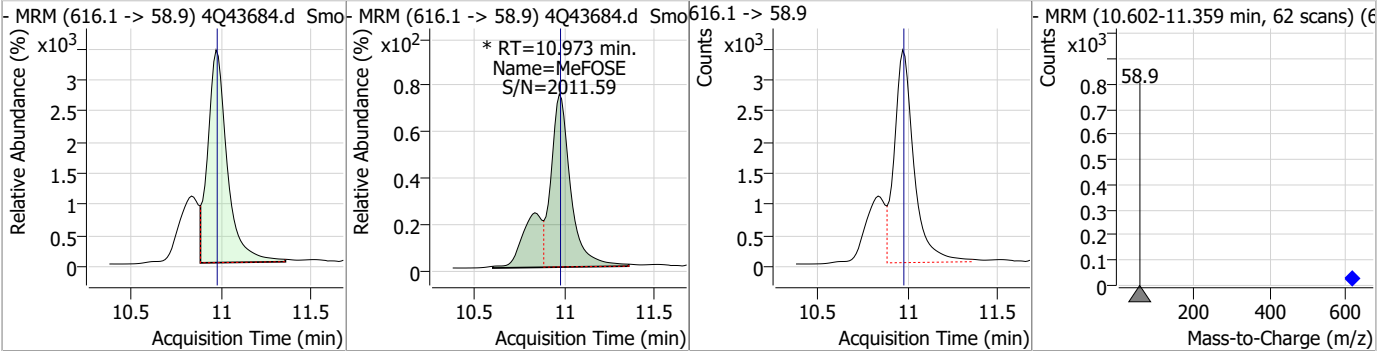
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.38	10.06	0.00	5114	699.1 -> 98.8	55.9	28.0	83.9



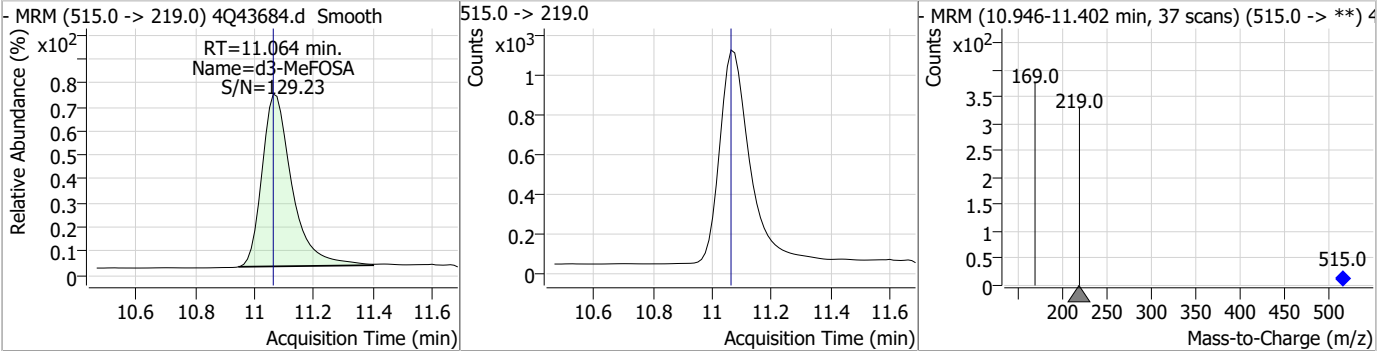
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.88	10.96	0.00	69113				



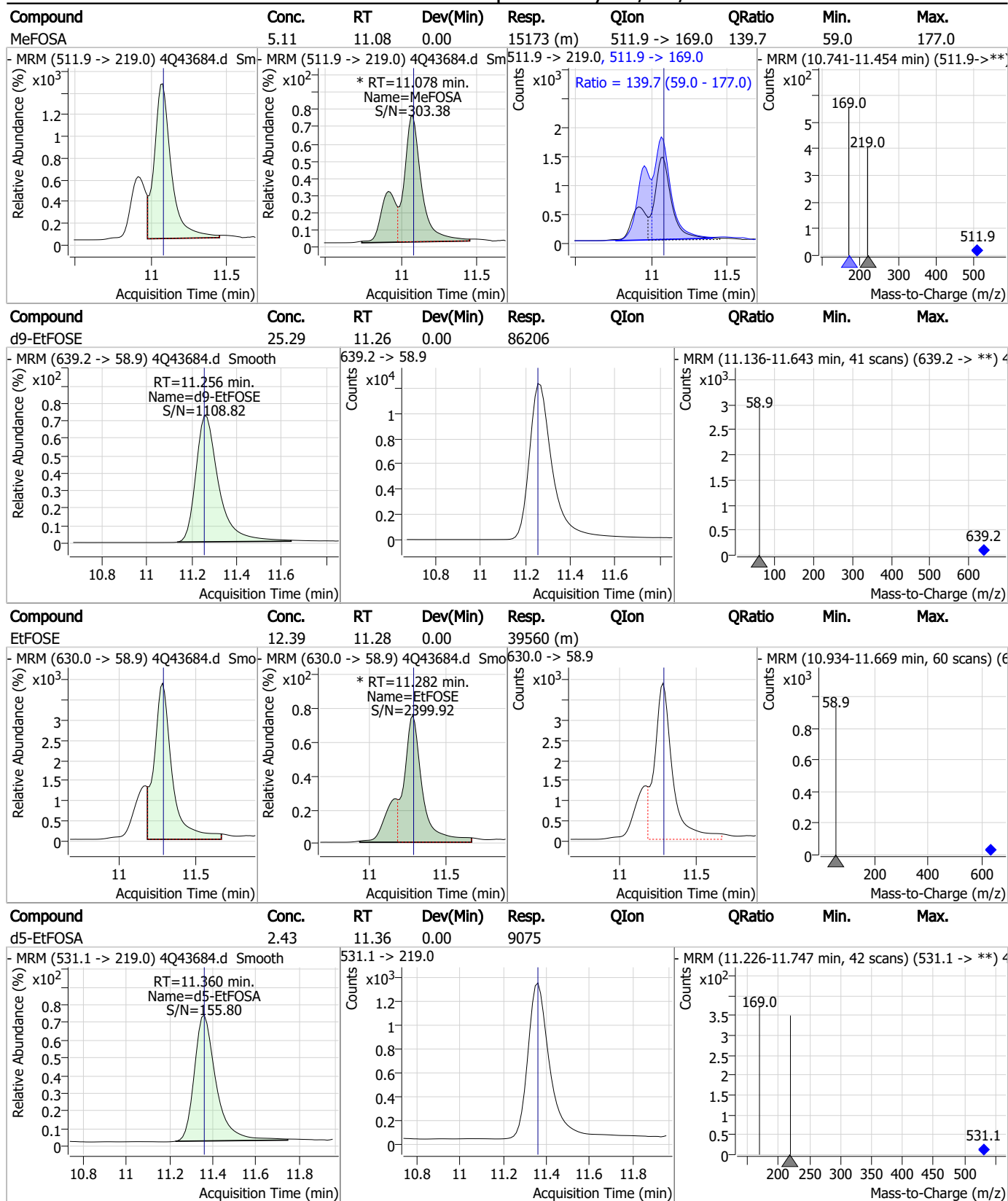
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.04	10.97	0.00	34276 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	11.06	0.00	7535				

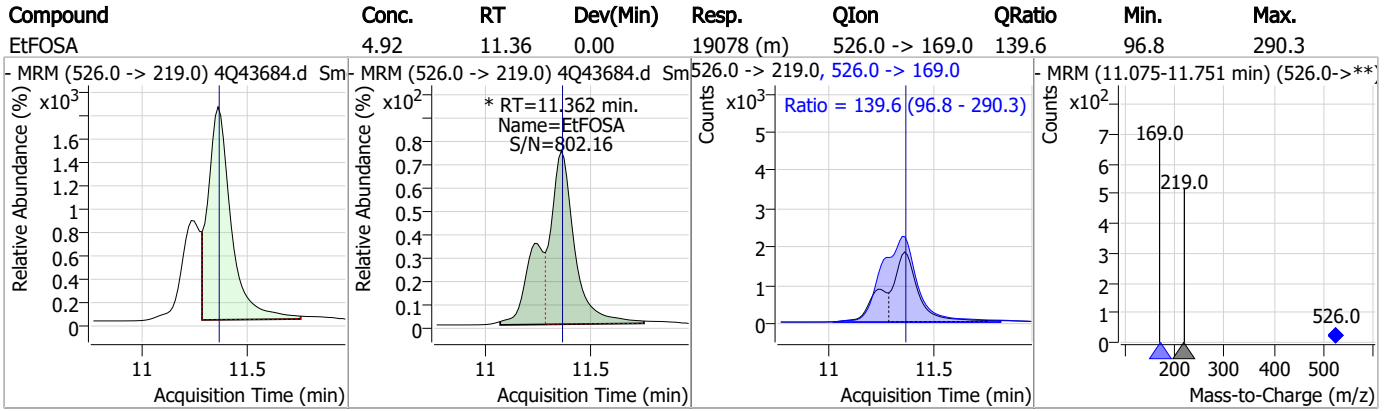


Perfluorinated Compounds by LC/MS/MS



7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5

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Manual Integration Approval Summary

Sample Number: S4Q631-ICC631 **Method:** EPA DRAFT 1633
Lab FileID: 4Q43684.D **Analyst approved:** 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 13:19 **Supervisor approved:** 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSE	1691-99-2		11.28	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.5.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
04/27/23 16:36

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43685.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 1:33:48 PM
 Sample Name : ic631-5
 Vial : P1-A6
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	90174	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	60222	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	47868	2.50 µg/L	0.000
M4-PFHpA	6.480	367.1 -> 322.0	24887	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	31846	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	17271	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	16389	1.25 µg/L	0.000
M7-PFUnDA	8.672	570.0 -> 525.1	16910	1.25 µg/L	0.000
M2-PFDoDA	9.130	615.1 -> 570.0	21714	1.25 µg/L	0.000
M2-PFTeDA	9.924	715.2 -> 670.0	16461	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	13639	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	10635	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	5874	2.50 µg/L	0.000
M8-PFOS	8.354	507.1 -> 79.9	7895	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1120	5.00 µg/L	0.000
M2-6:2FTS	6.923	429.1 -> 80.9	1789	5.00 µg/L	0.012
M2-8:2FTS	7.990	529.1 -> 80.9	2972	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	12602	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	25709	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	11145	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	68360	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	87439	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	9547	2.50 µg/L	-0.012
M3-MeFOSA	11.064	515.0 -> 219.0	7751	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	7960	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	51750	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	3950	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	37819	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	14531	1.25 µg/L	0.000
13C5-PFNA	7.697	468.0 -> 423.0	18312	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	39645	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1120	5.40 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1789	5.91 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.2%		
13C2-8:2FTS	7.990	529.1 -> 80.9	2972	5.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C2-PFDoDA	9.130	615.1 -> 570.0	21714	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C2-PFTeDA	9.924	715.2 -> 670.0	16461	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-PFBS	5.452	302.1 -> 79.9	10635	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C3-PFHxS	7.242	402.1 -> 79.9	5874	2.67 µg/L	0.000

7.7.6
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 = 106.8%	
13C4-PFBA	2.924	216.8 -> 171.9	90174	10.08 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C4-PFHpA	6.480	367.1 -> 322.0	24887	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C5-PFHxA	5.547	318.0 -> 273.0	47868	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFPeA	4.387	268.3 -> 223.0	60222	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C6-PFDA	8.203	519.1 -> 474.1	16389	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C7-PFUnDA	8.672	570.0 -> 525.1	16910	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C8-FOSA	9.771	506.1 -> 77.8	13639	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C8-PFOA	7.148	421.1 -> 376.0	31846	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-PFOS	8.354	507.1 -> 79.9	7895	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C9-PFNA	7.696	472.1 -> 427.0	17271	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSAA	8.261	573.2 -> 419.0	12602	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	25709	9.87 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSA	11.064	515.0 -> 219.0	7751	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
d5-EtFOSAA	8.470	589.2 -> 419.0	11145	5.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.4%	
d7-MeFOSE	10.959	623.2 -> 58.9	68360	26.60 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.4%	
d9-EtFOSE	11.256	639.2 -> 58.9	87439	26.65 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
d5-EtFOSA	11.348	531.1 -> 219.0	9547	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	33594	18.72 µg/L	97
		327.1 -> 80.9	14443		
6:2FTS	6.924	427.1 -> 407.0	30876	17.94 µg/L	97
		427.1 -> 80.9	12708		
8:2FTS	7.991	527.1 -> 507.0	33151	19.88 µg/L	97
		527.1 -> 80.8	13351		
EtFOSAA	8.471	584.2 -> 419.1	10407	4.89 µg/L	m 83
		584.2 -> 526.0	4918		
FOSA	9.774	498.1 -> 77.9	29742	5.02 µg/L	100
		498.1 -> 478.0	890		
MeFOSAA	8.262	570.1 -> 419.0	11117	4.99 µg/L	m 95
		570.1 -> 483.0	2434		
PFBA	2.932	212.8 -> 168.9	51799	19.53 µg/L	100
PFBS	5.453	298.7 -> 79.9	21440	4.43 µg/L	98
		298.7 -> 98.8	8631		
PFDA	8.204	512.9 -> 469.0	57655	4.72 µg/L	99
		512.9 -> 219.0	11436		
PFDODA	9.131	613.1 -> 569.0	90381	5.10 µg/L	99
		613.1 -> 319.0	12514		
PFDS	9.294	599.0 -> 79.9	11878	5.03 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	6162			
PFHpA	6.480	363.1 -> 319.0	73490	4.55	µg/L	95
		363.1 -> 169.0	14223			
PFHpS	7.836	449.0 -> 79.9	13893	5.02	µg/L	94
		449.0 -> 98.9	7052			
PFHxA	5.550	313.0 -> 269.0	86283	4.80	µg/L	99
		313.0 -> 118.9	2786			
PFHxS	7.243	398.7 -> 79.9	12229	4.21	µg/L	m 95
		398.7 -> 98.9	6425			
PFNA	7.697	463.0 -> 419.0	57810	4.96	µg/L	97
		463.0 -> 219.0	14196			
PFNS	8.836	548.8 -> 79.9	7558	5.12	µg/L	96
		548.8 -> 98.9	4279			
PFOA	7.150	413.0 -> 369.0	93819	5.09	µg/L	98
		413.0 -> 169.0	19232			
PFOS	8.355	498.9 -> 79.9	18010	4.69	µg/L	m 97
		498.9 -> 98.8	9331			
PFPeA	4.389	263.0 -> 219.0	144666	10.06	µg/L	100
PFPeS	6.519	349.1 -> 79.9	11241	4.65	µg/L	96
		349.1 -> 98.9	5164			
PFTeDA	9.924	713.1 -> 669.0	82803	5.12	µg/L	99
		713.1 -> 168.9	6951			
PFTrDA	9.541	663.0 -> 619.0	109559	5.18	µg/L	100
		663.0 -> 168.9	10751			
PFUnDA	8.673	563.1 -> 519.0	60917	4.92	µg/L	97
		563.1 -> 269.1	11422			
11CI-PF3OUdS	9.593	630.9 -> 450.9	89499	9.82	µg/L	100
		632.9 -> 452.9	26854			
9CI-PF3ONS	8.700	530.8 -> 351.0	89131	9.39	µg/L	95
		532.8 -> 353.0	27775			
ADONA	6.743	376.9 -> 250.9	256116	9.74	µg/L	99
		376.9 -> 84.8	68241			
HFPO-DA	5.915	284.9 -> 168.9	25472	10.01	µg/L	98
		284.9 -> 184.9	3342			
3:3FTCA	3.848	241.0 -> 177.0	14702	24.18	µg/L	100
		241.0 -> 117.0	1441			
5:3FTCA	6.205	341.0 -> 237.1	323127	124.32	µg/L	99
		341.0 -> 217.0	229179			
7:3FTCA	7.661	441.0 -> 316.9	142050	124.89	µg/L	97
		441.0 -> 336.9	311630			
EtFOSA	11.362	526.0 -> 219.0	38757	9.50	µg/L	64
		526.0 -> 169.0	54116			
EtFOSE	11.282	630.0 -> 58.9	78442	24.22	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	30813	10.08	µg/L	m 72
		511.9 -> 169.0	45845			
MeFOSE	10.973	616.1 -> 58.9	62767	22.29	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	10805	5.20	µg/L	98
		699.1 -> 98.8	6232			
NFDHA	5.441	295.0 -> 201.0	11591	9.93	µg/L	97
		295.0 -> 84.9	2878			
PFMBA	4.791	279.0 -> 85.1	83447	10.06	µg/L	100
PFMPA	3.540	229.0 -> 84.9	70840	9.90	µg/L	100
PFEESA	5.984	314.8 -> 134.9	136734	8.71	µg/L	99
		314.8 -> 82.9	4585			

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

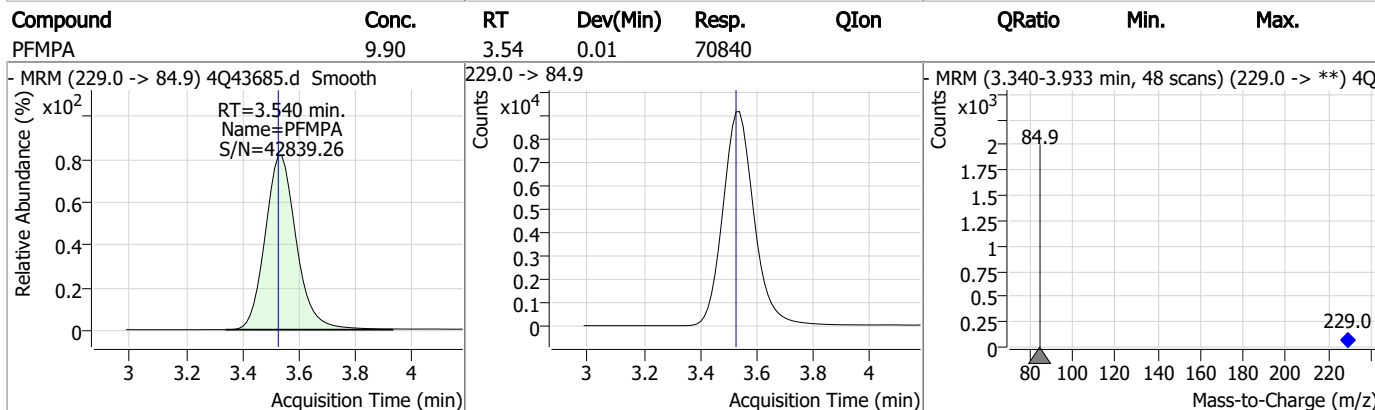
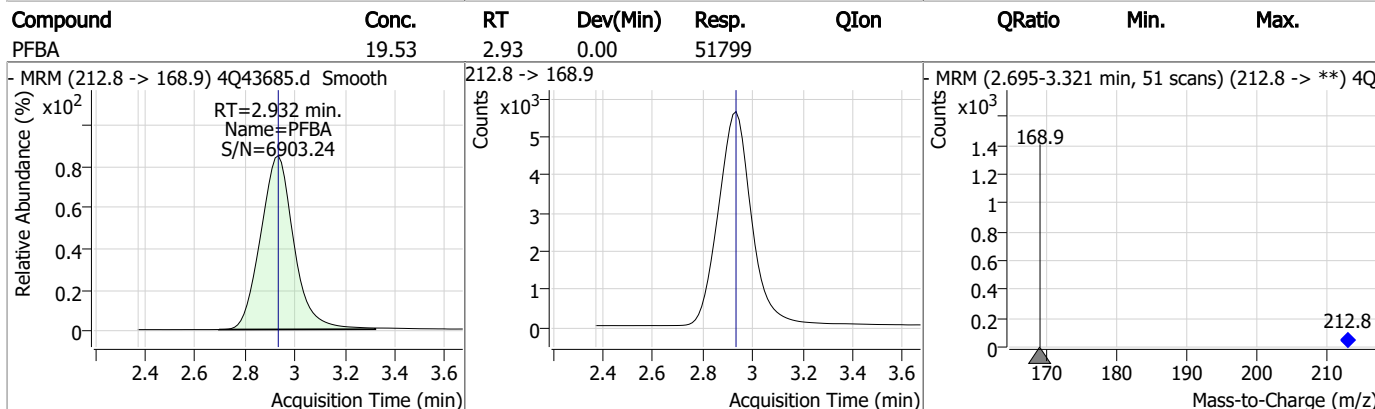
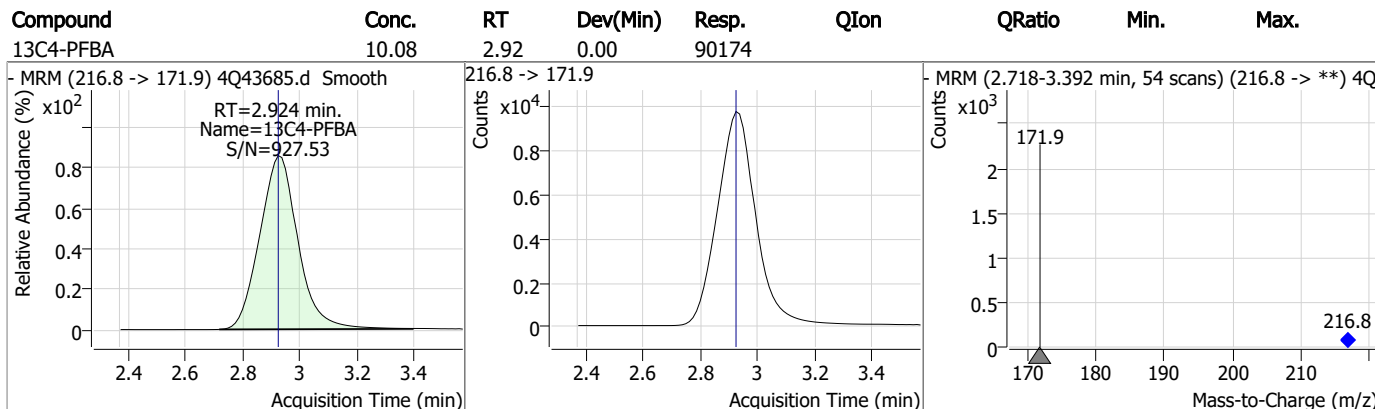
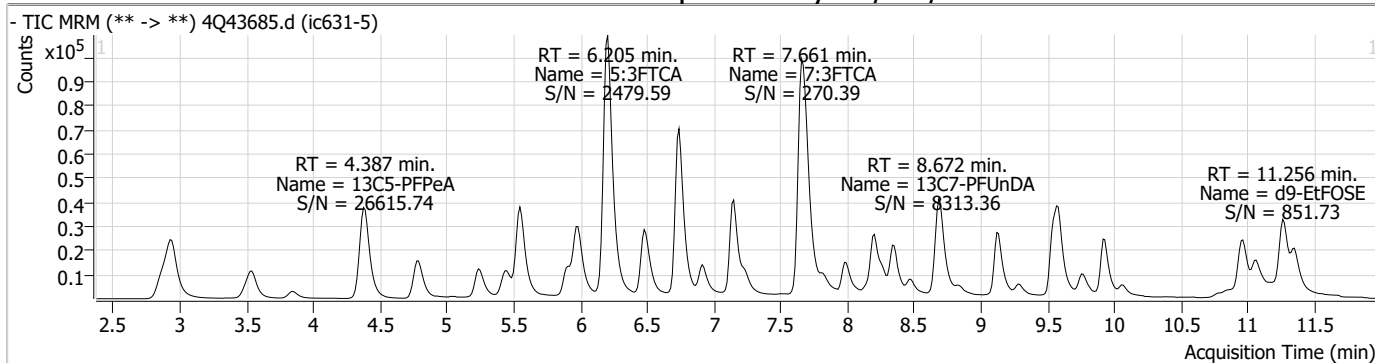
Perfluorinated Compounds by LC/MS/MS

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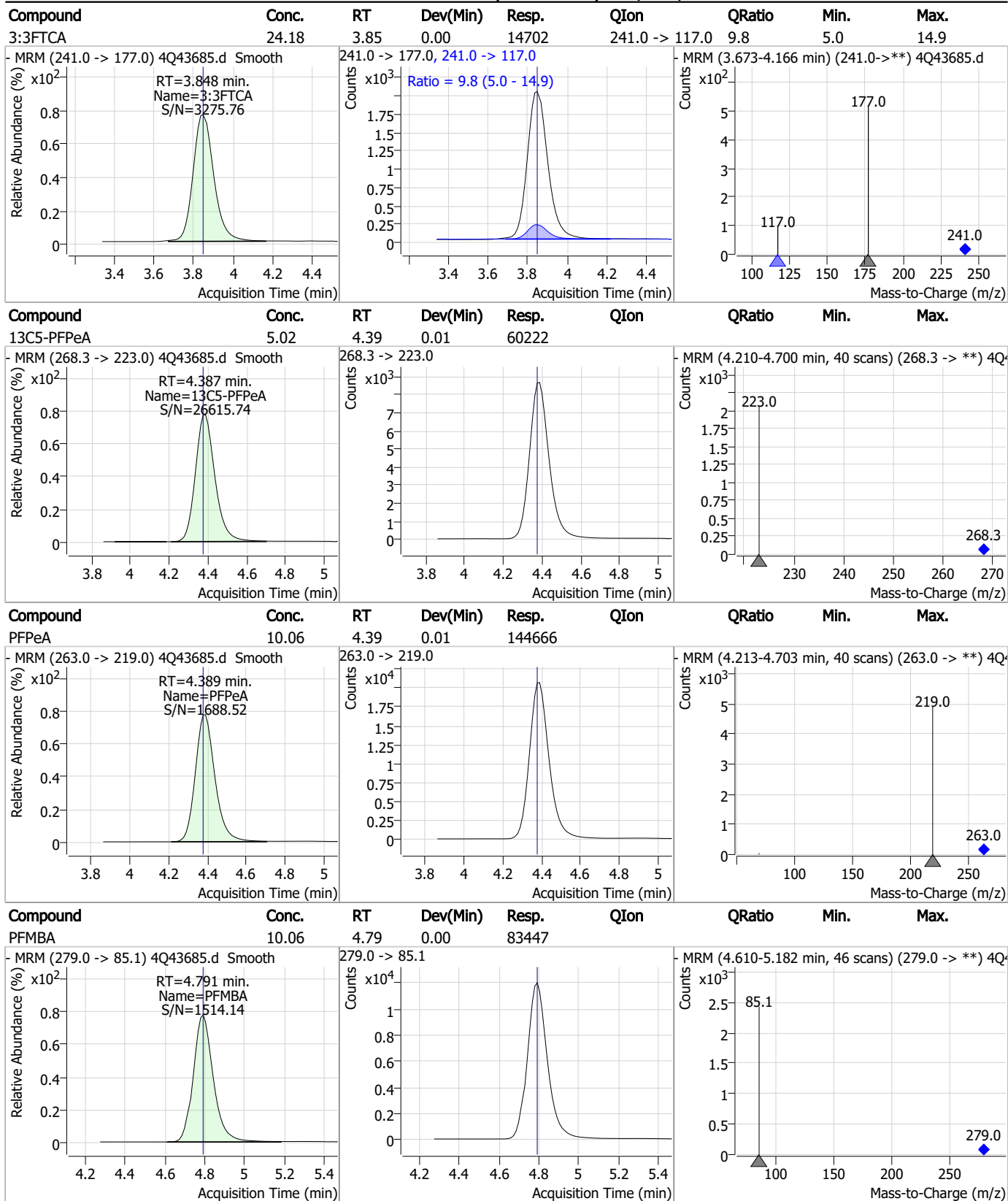


Perfluorinated Compounds by LC/MS/MS



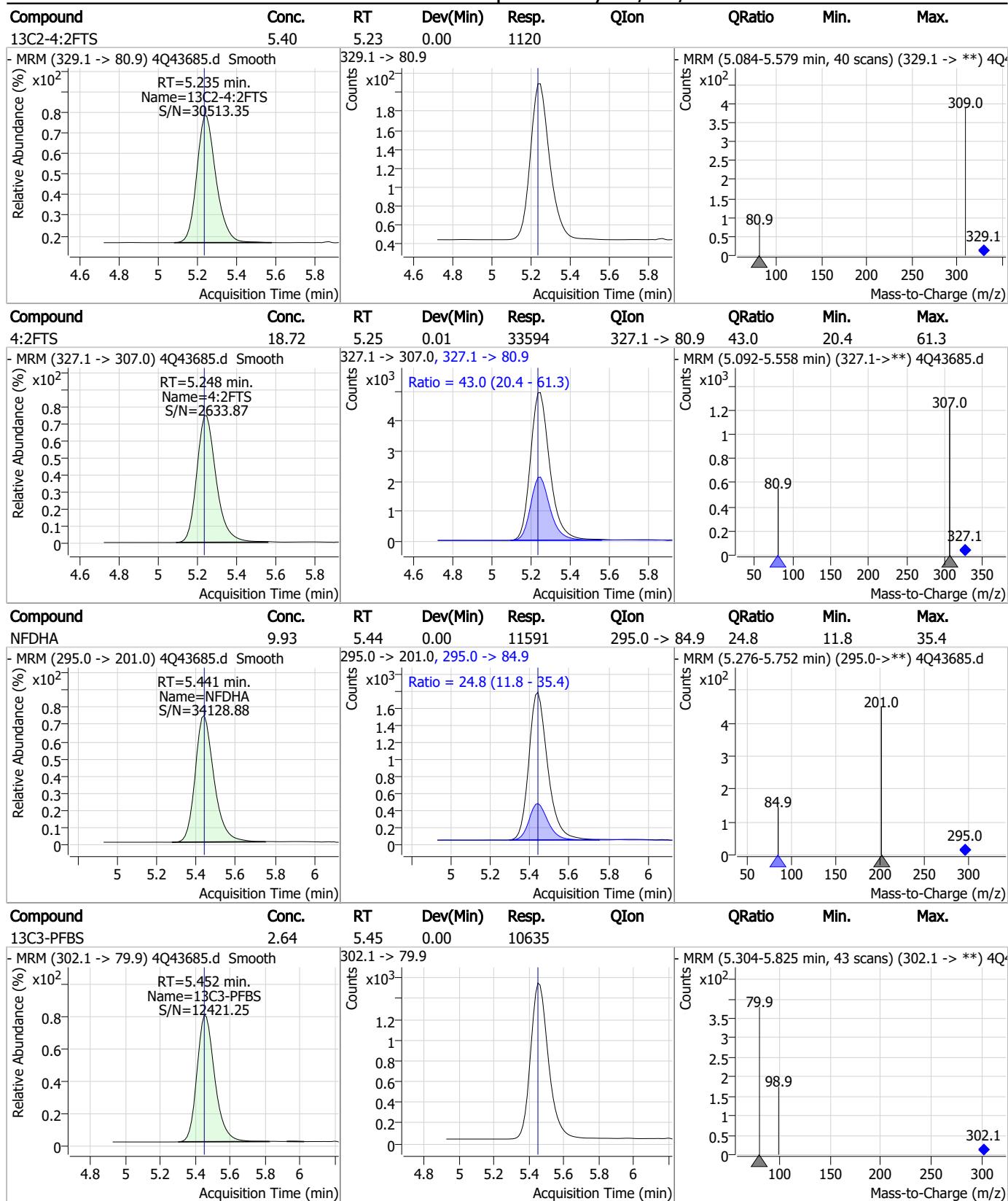
7.7.6
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Perfluorinated Compounds by LC/MS/MS



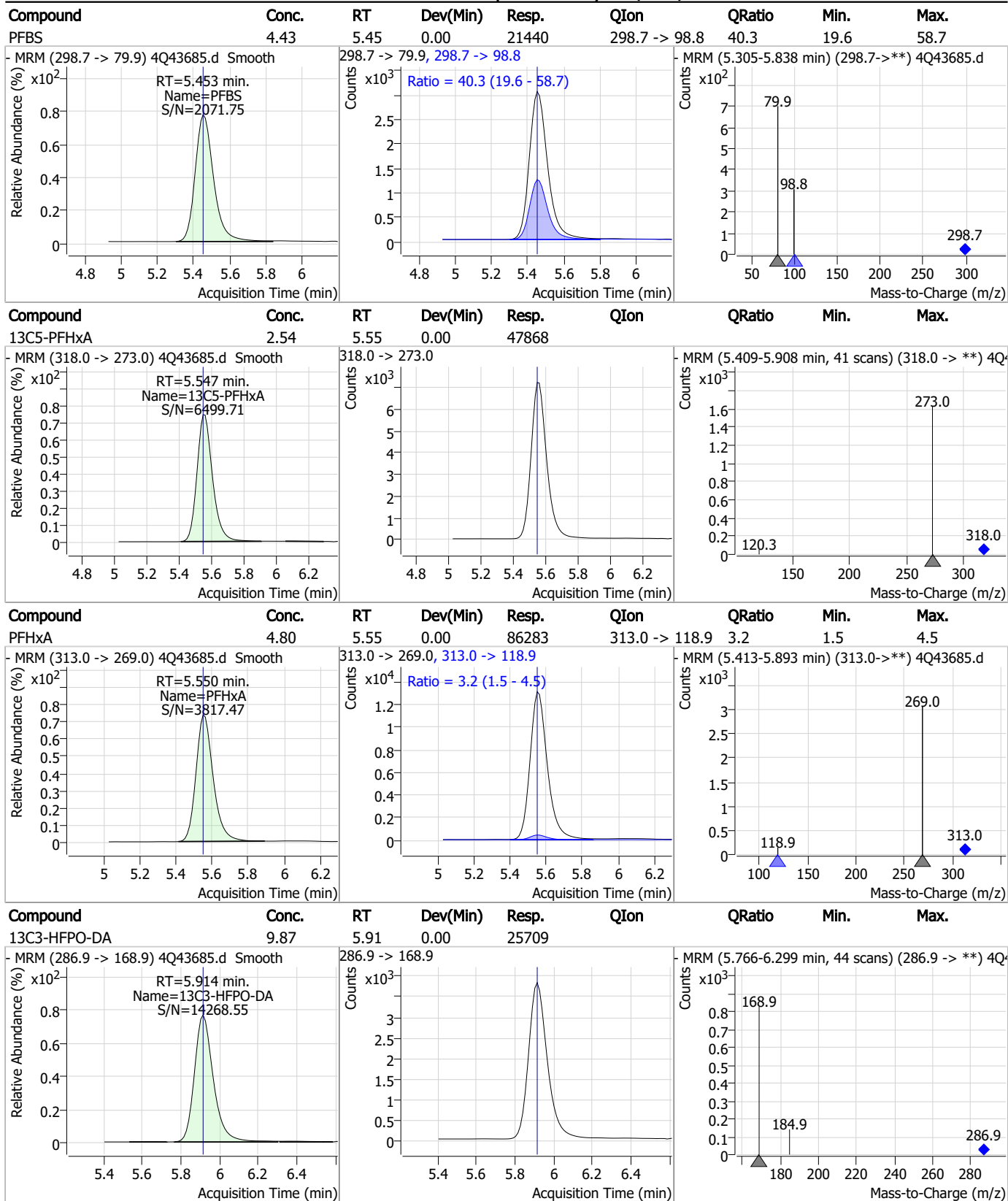
7.7.6
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Perfluorinated Compounds by LC/MS/MS



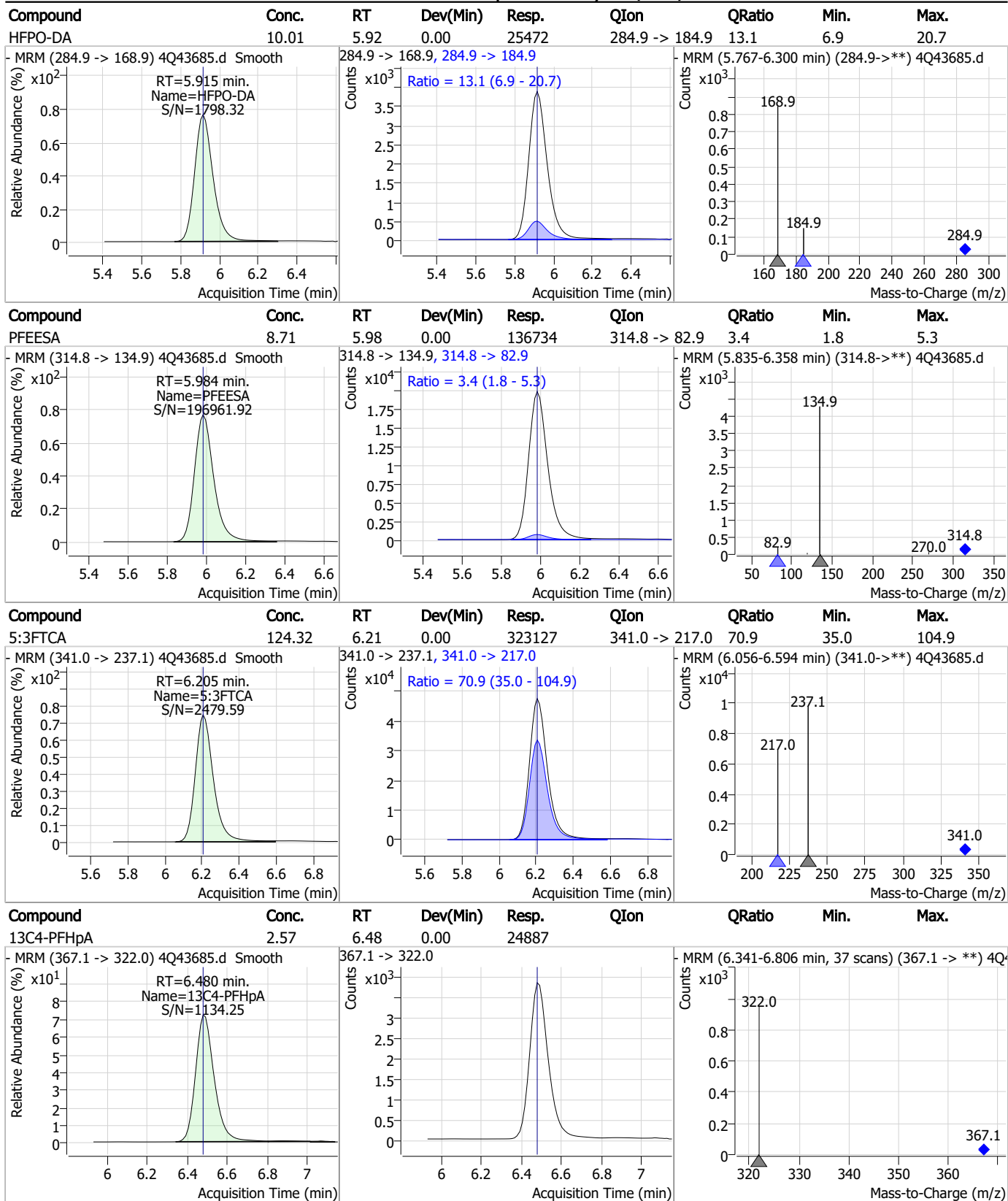
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Perfluorinated Compounds by LC/MS/MS



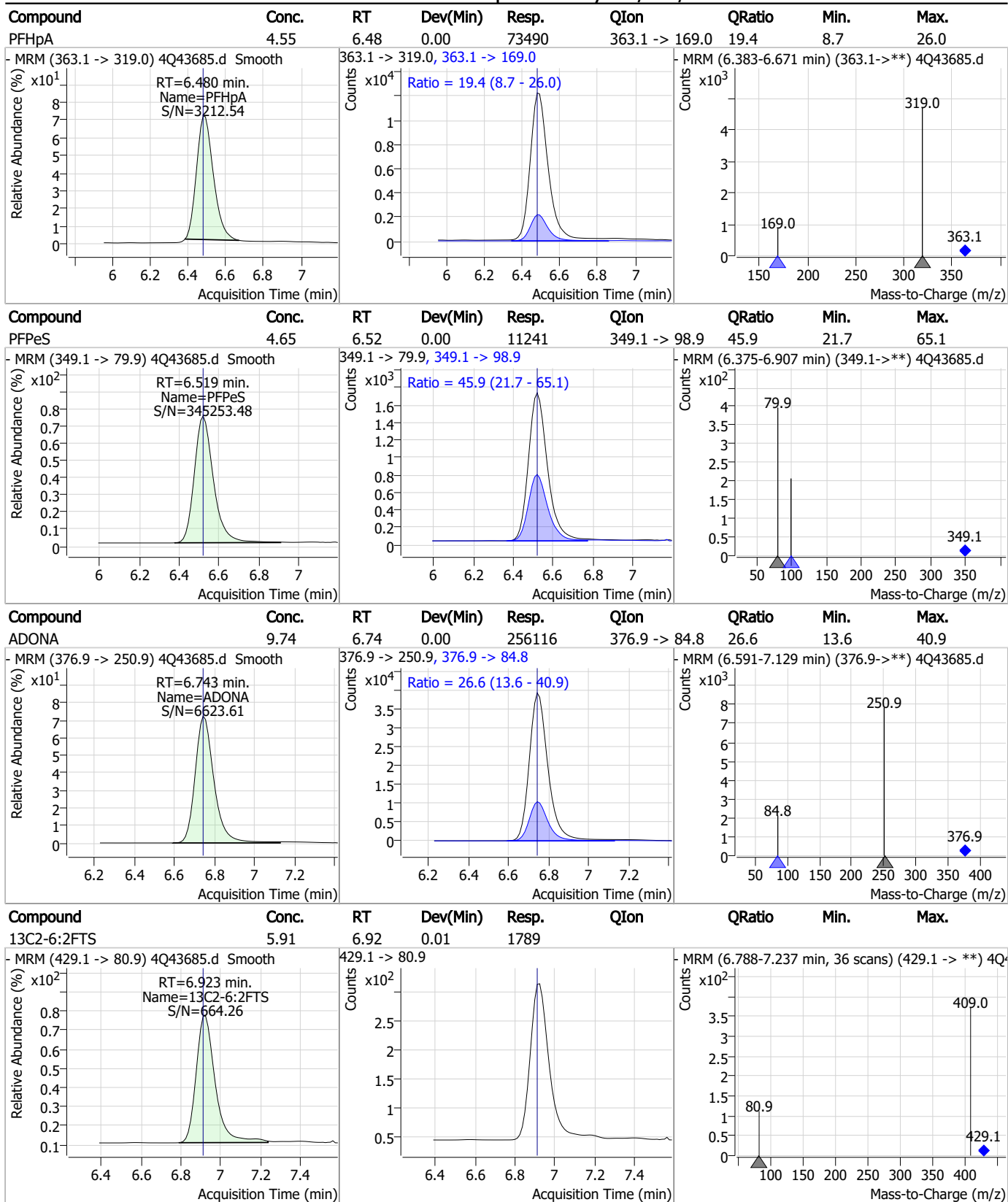
7.7.6
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Perfluorinated Compounds by LC/MS/MS



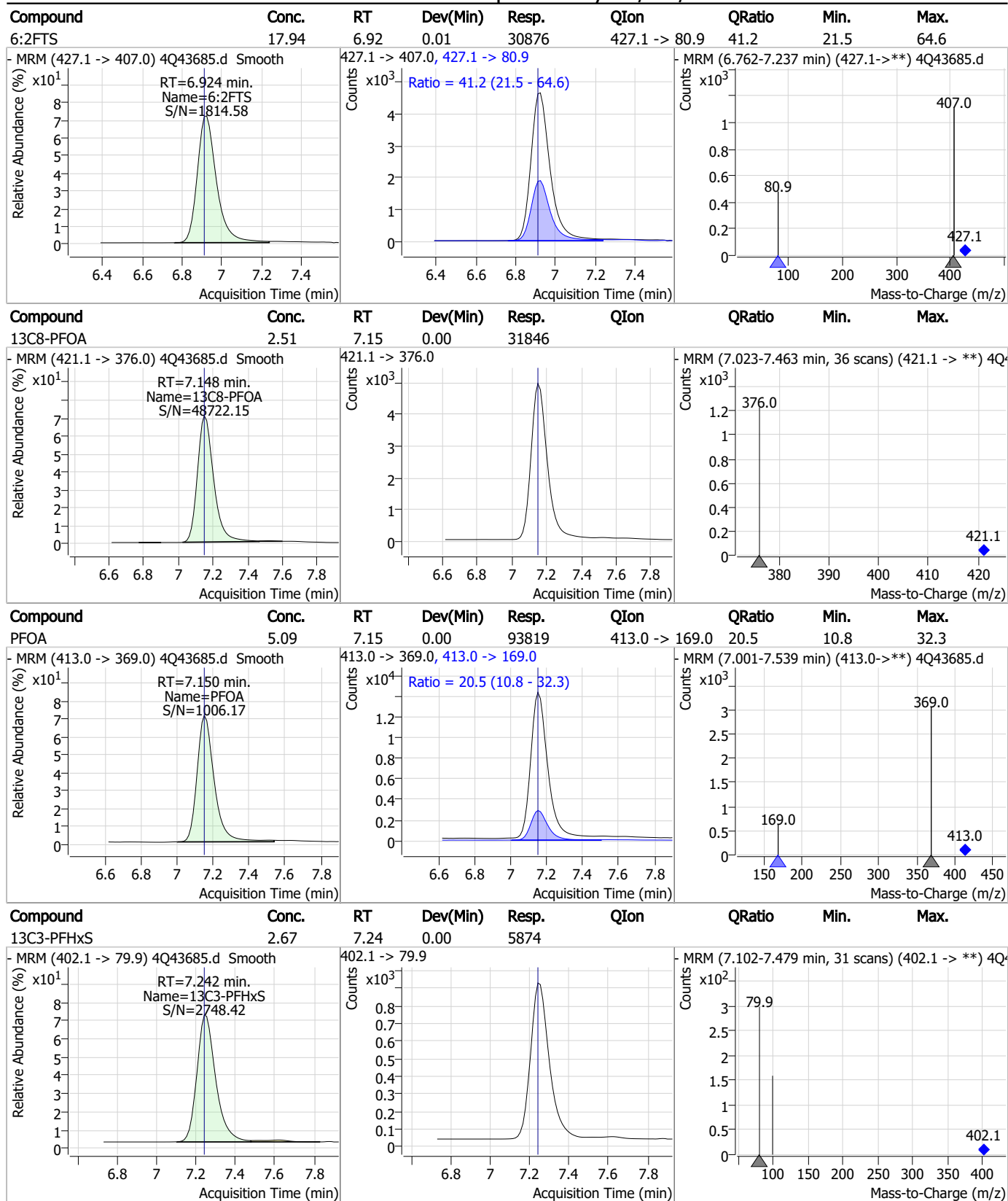
7.7.6
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Perfluorinated Compounds by LC/MS/MS



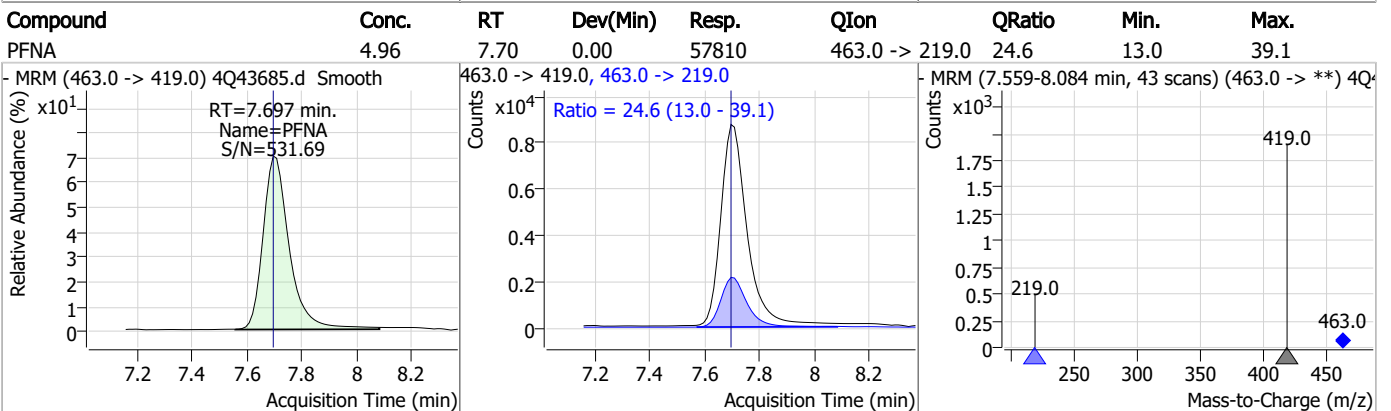
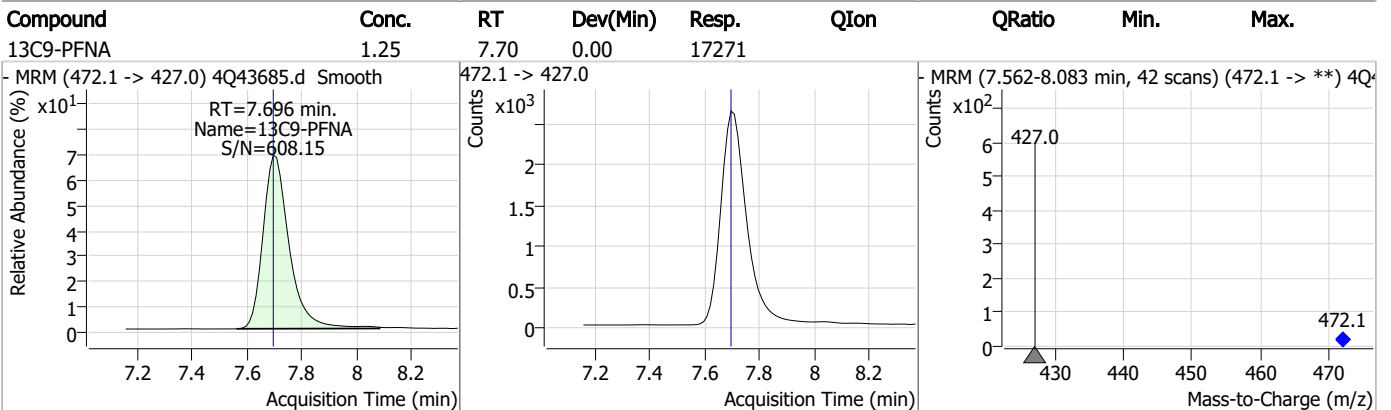
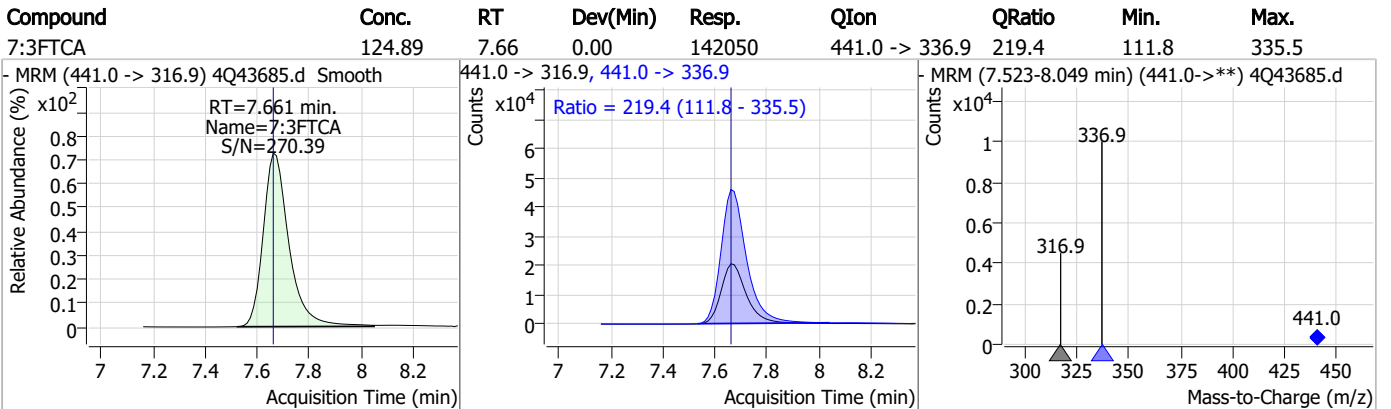
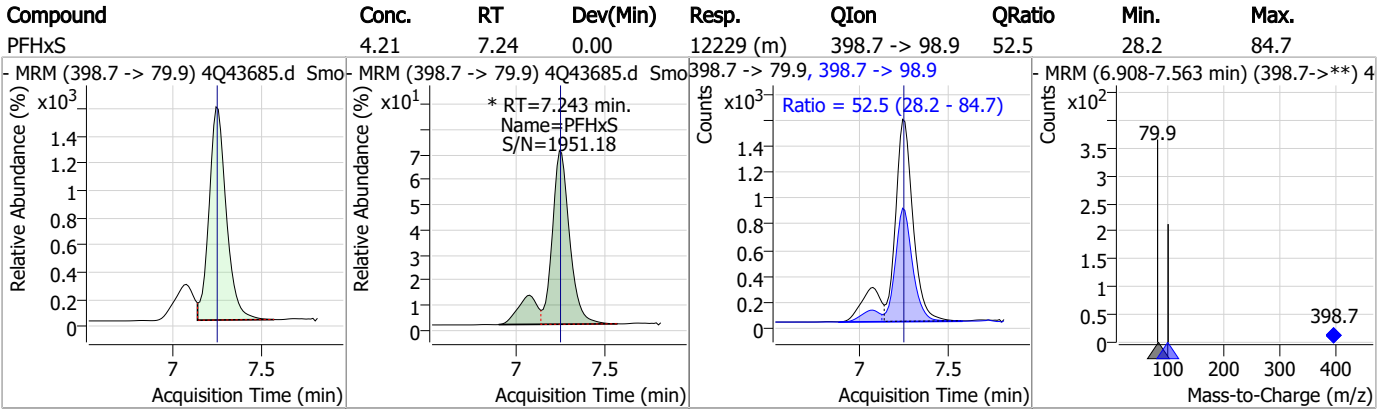
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
7

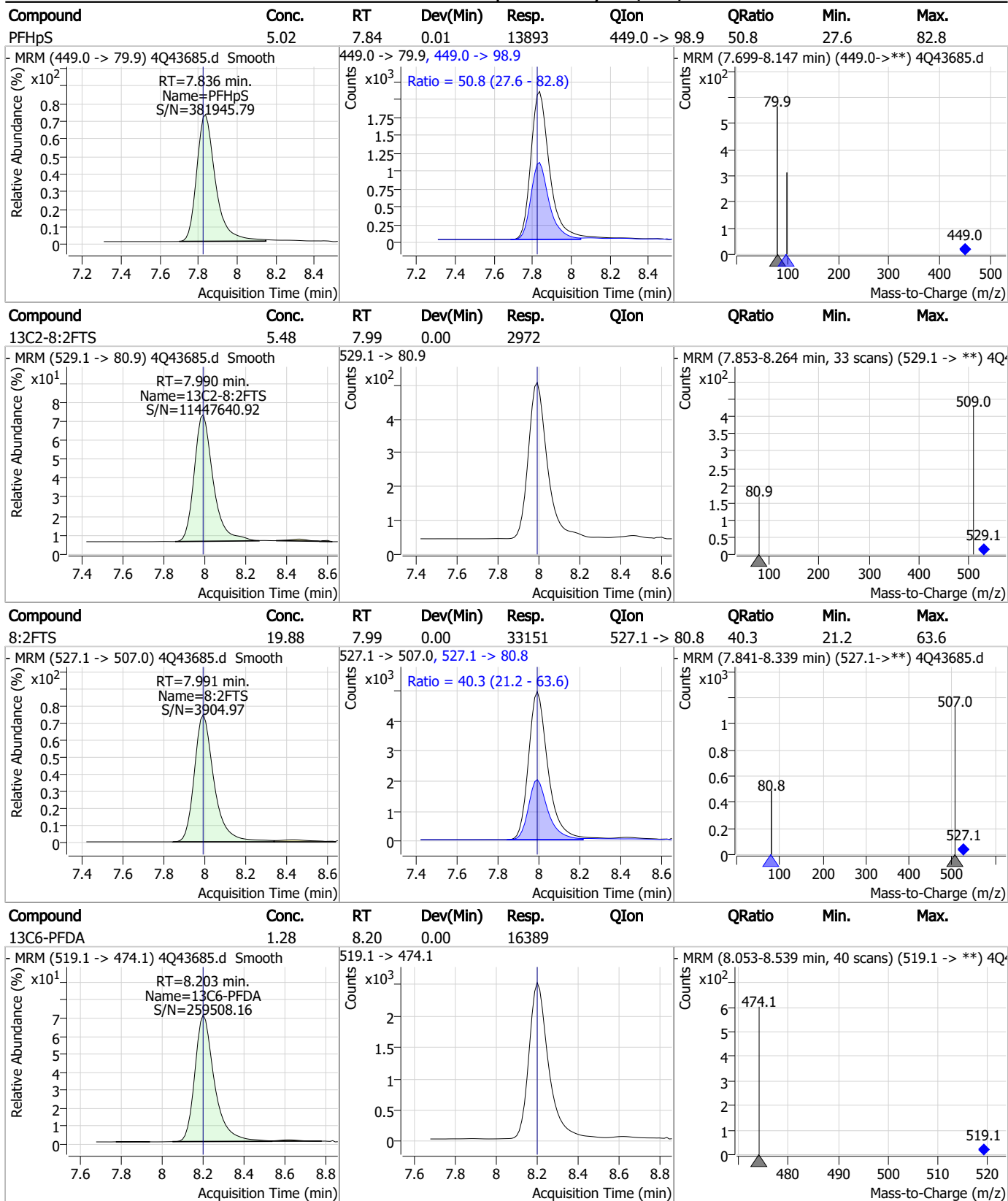
Perfluorinated Compounds by LC/MS/MS



7.7.6

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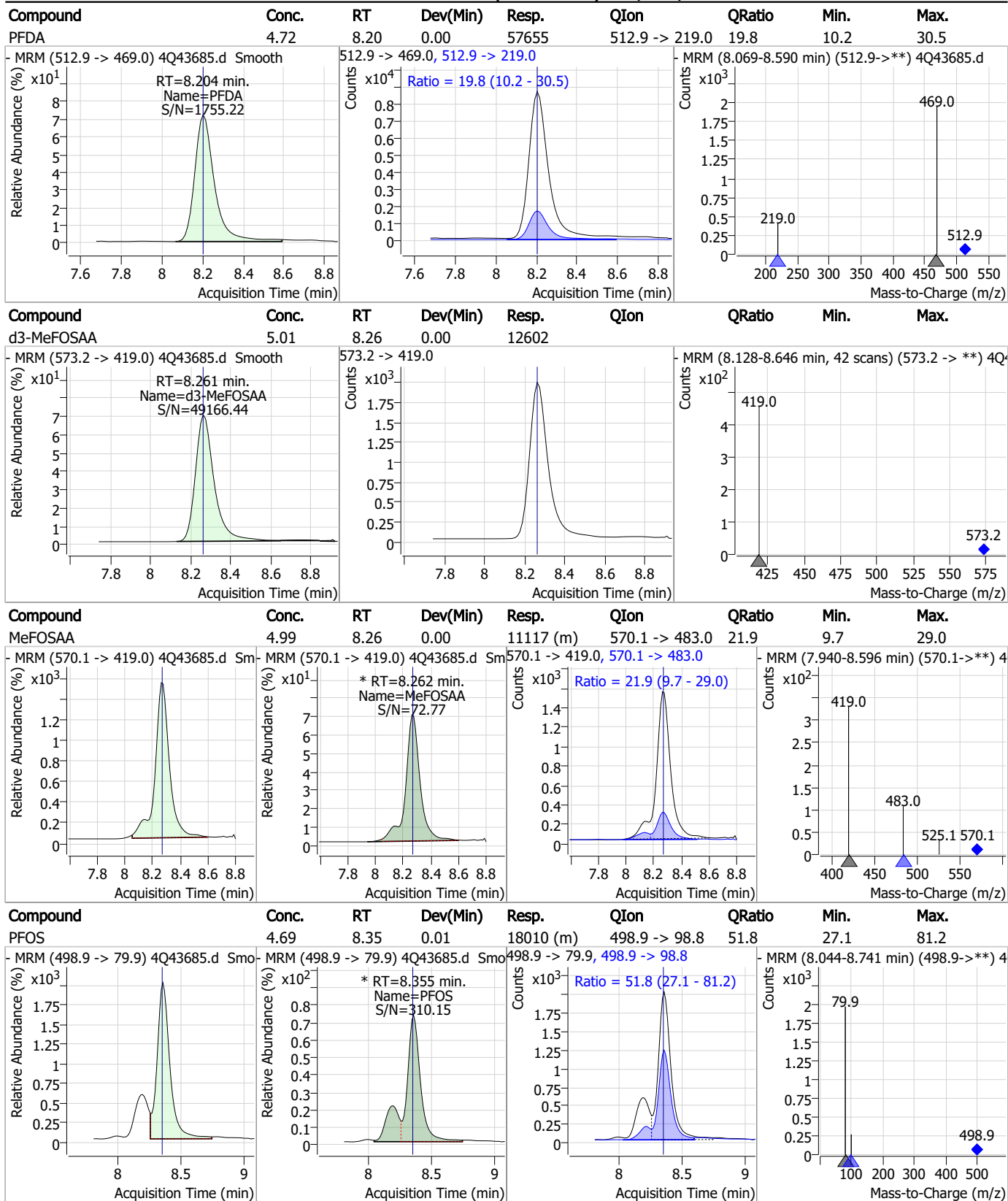
Perfluorinated Compounds by LC/MS/MS



7.7.6

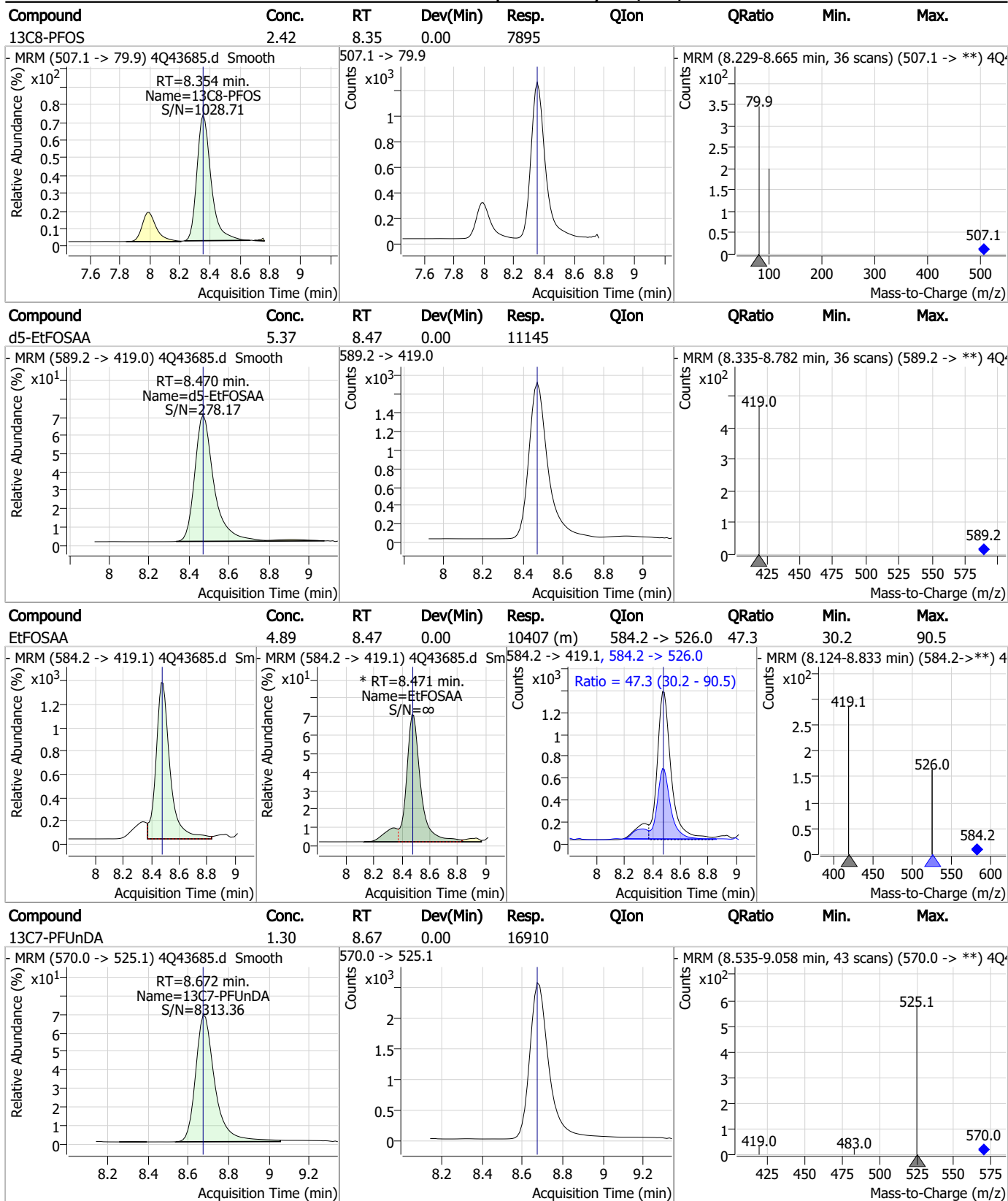
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Perfluorinated Compounds by LC/MS/MS



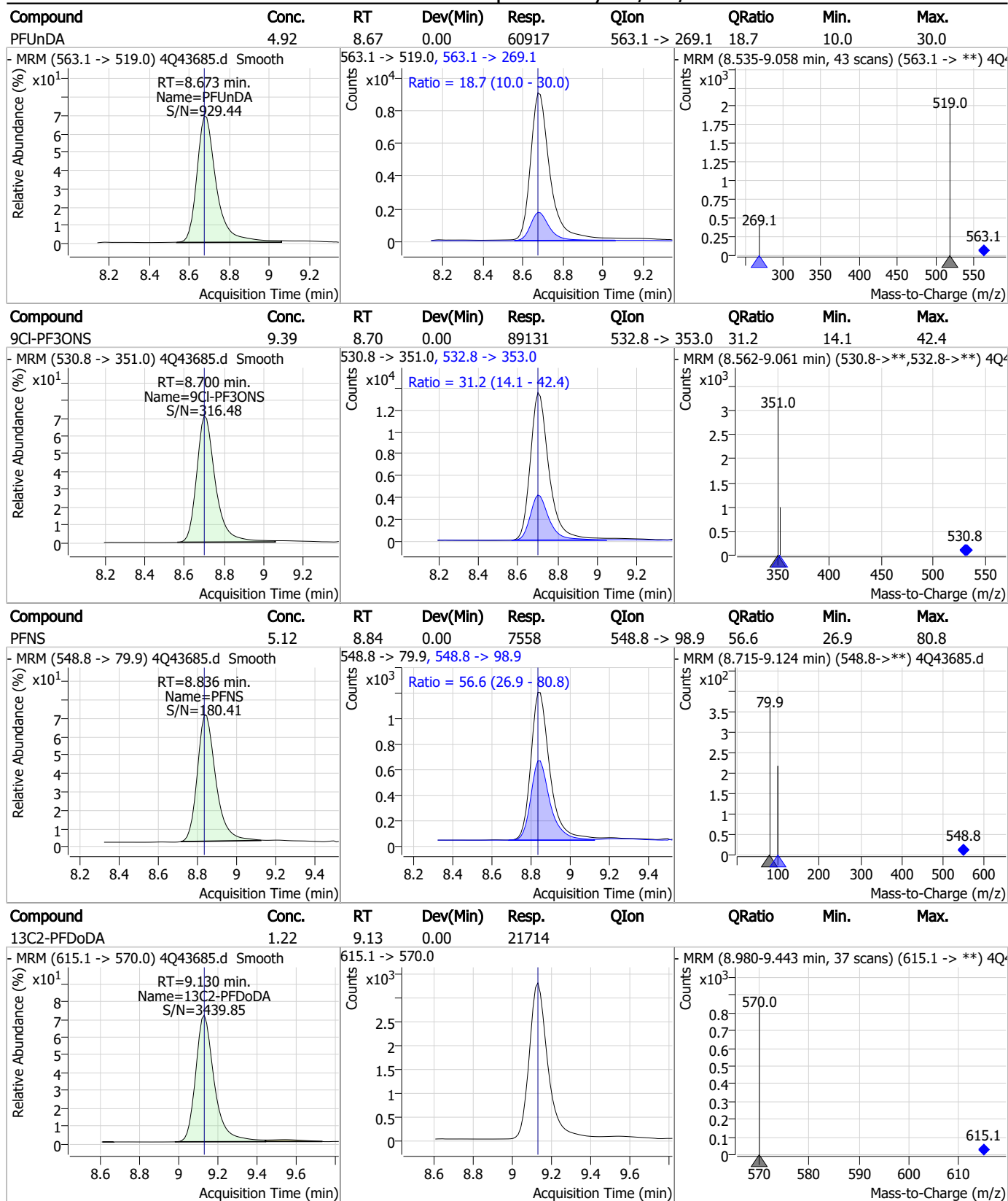
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Perfluorinated Compounds by LC/MS/MS



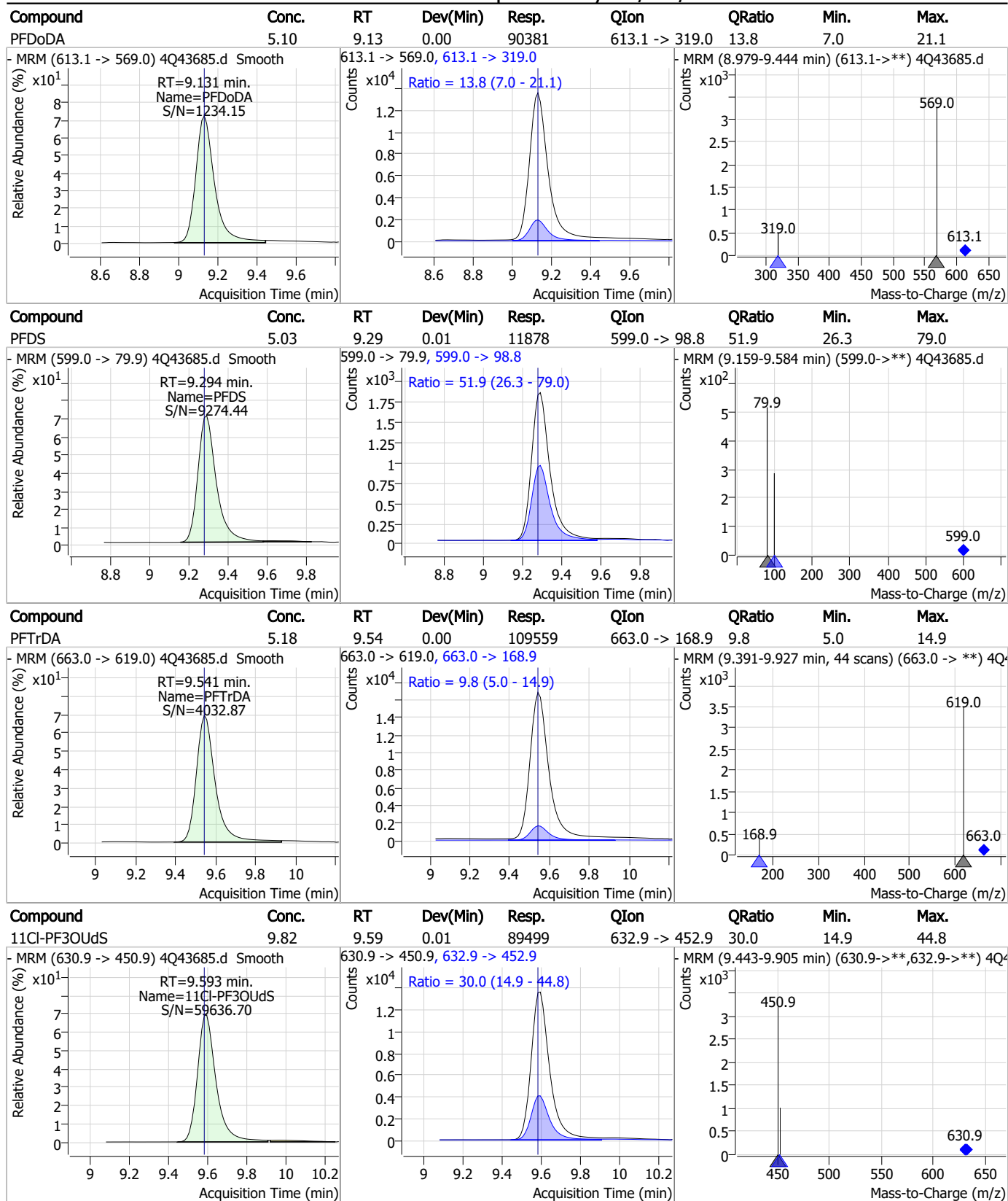
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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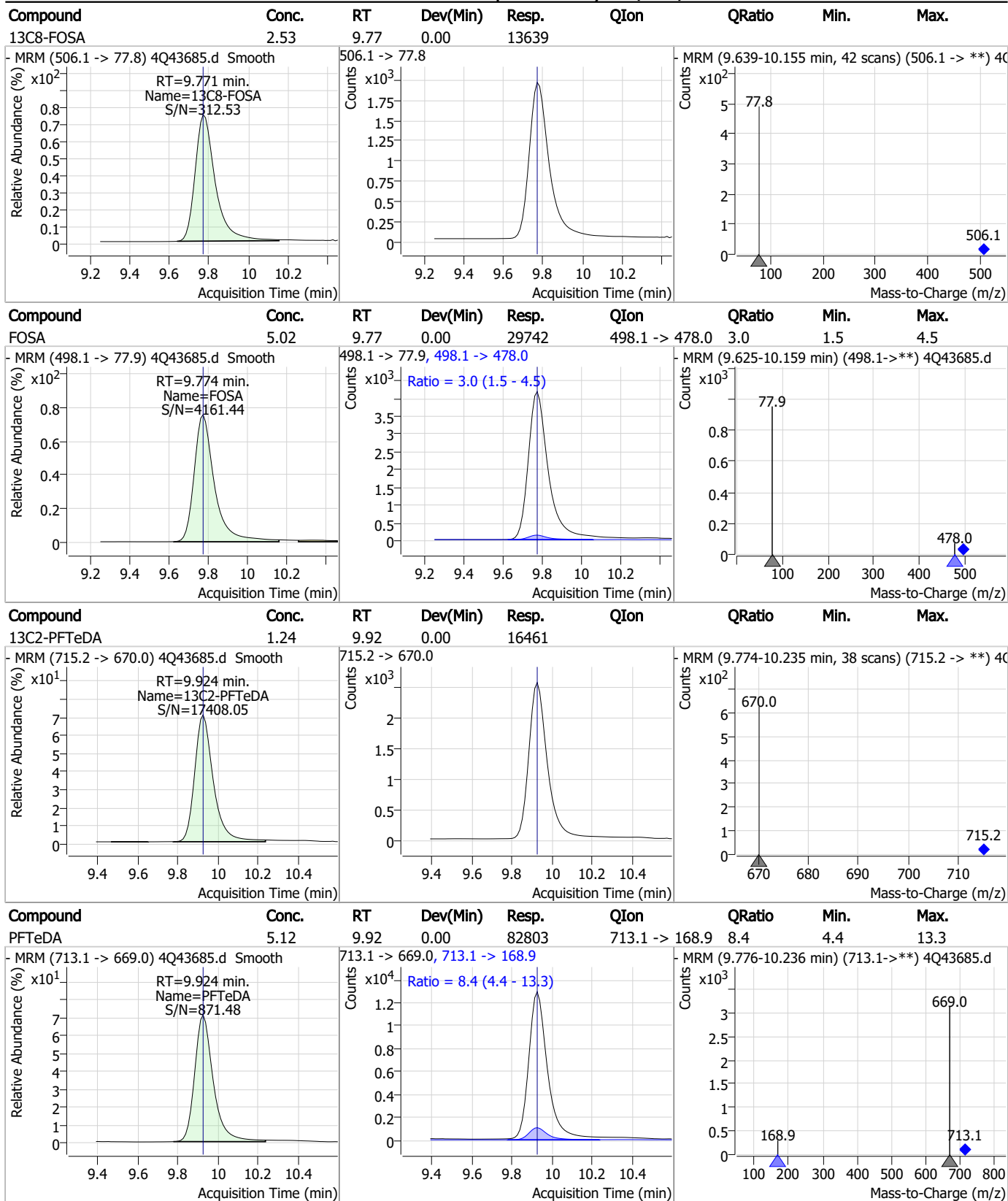
Perfluorinated Compounds by LC/MS/MS



7.7.6
7



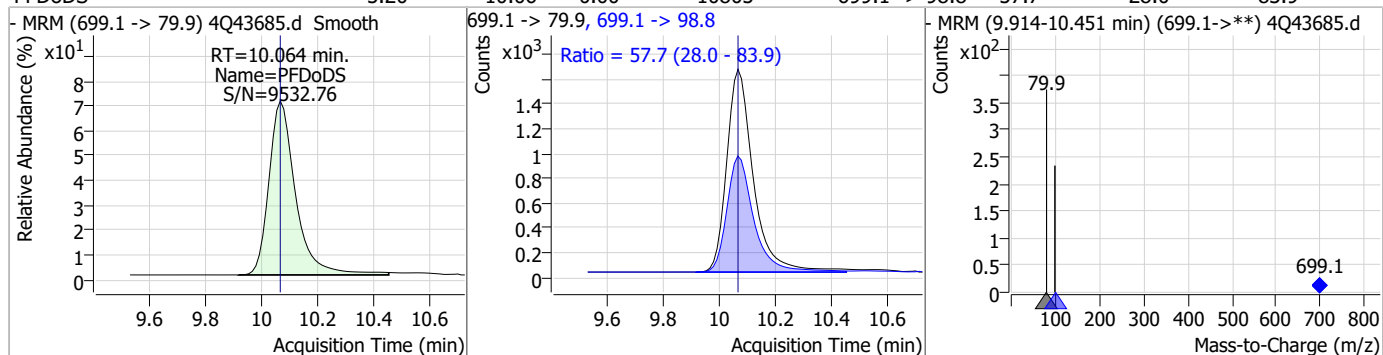
Perfluorinated Compounds by LC/MS/MS



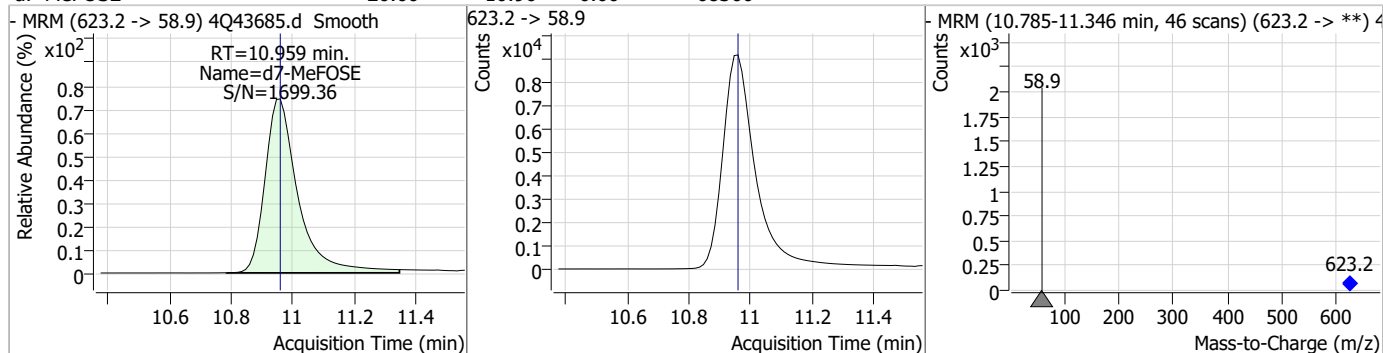
7.7.6
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Perfluorinated Compounds by LC/MS/MS

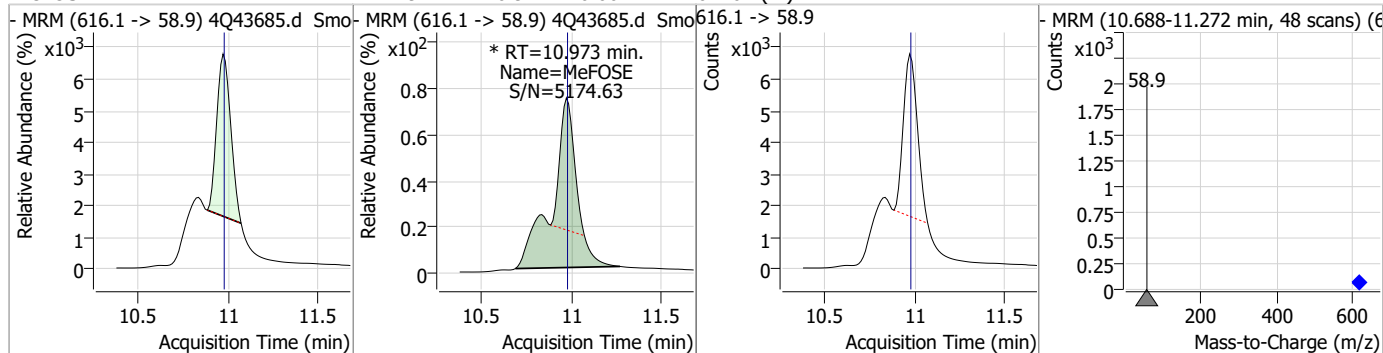
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	5.20	10.06	0.00	10805	699.1 -> 98.8	57.7	28.0	83.9



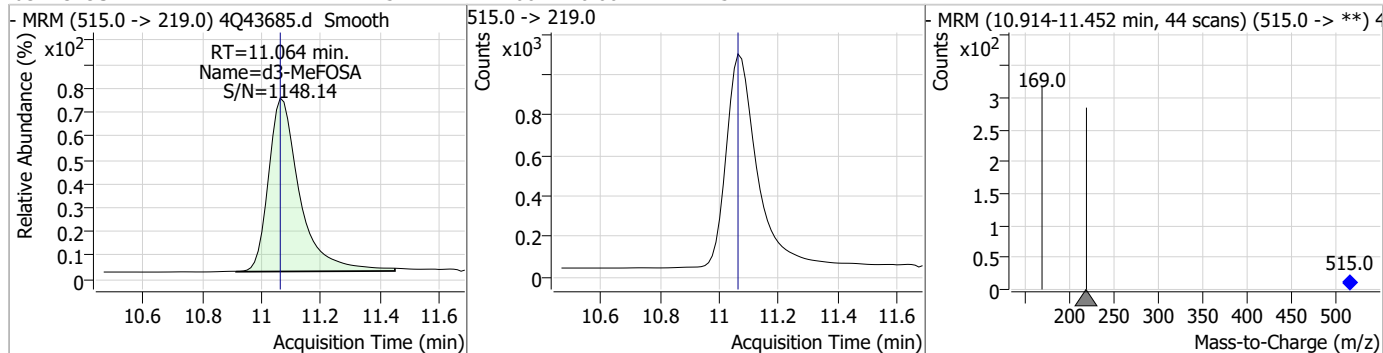
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.60	10.96	0.00	68360				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	22.29	10.97	0.00	62767 (m)				



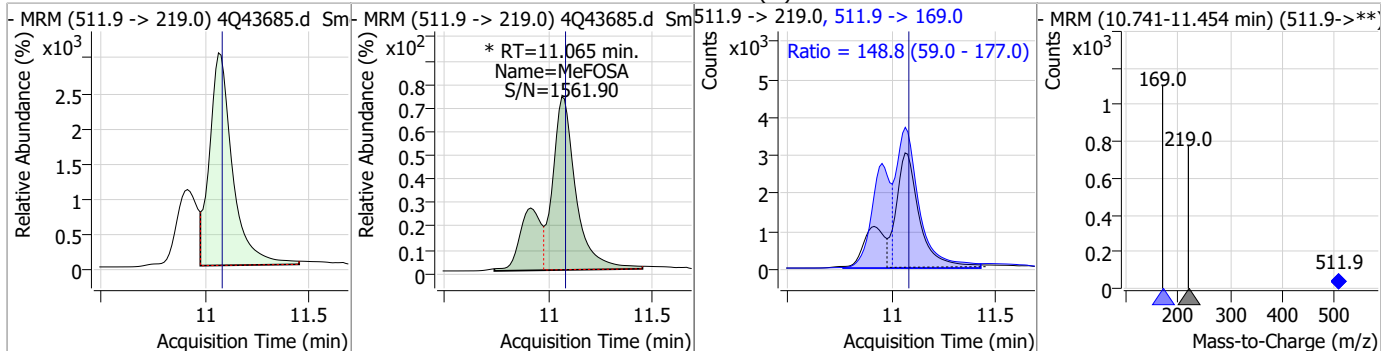
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.52	11.06	0.00	7751				



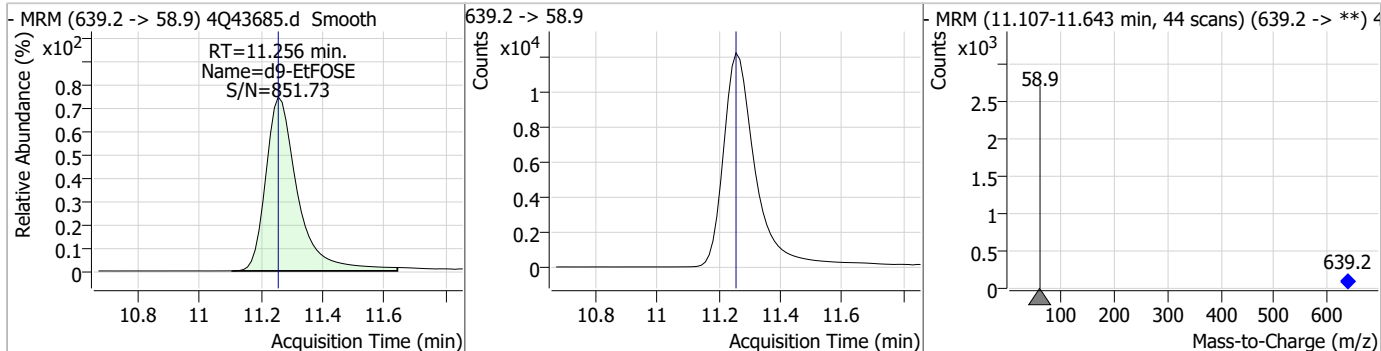
7.7.6
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Perfluorinated Compounds by LC/MS/MS

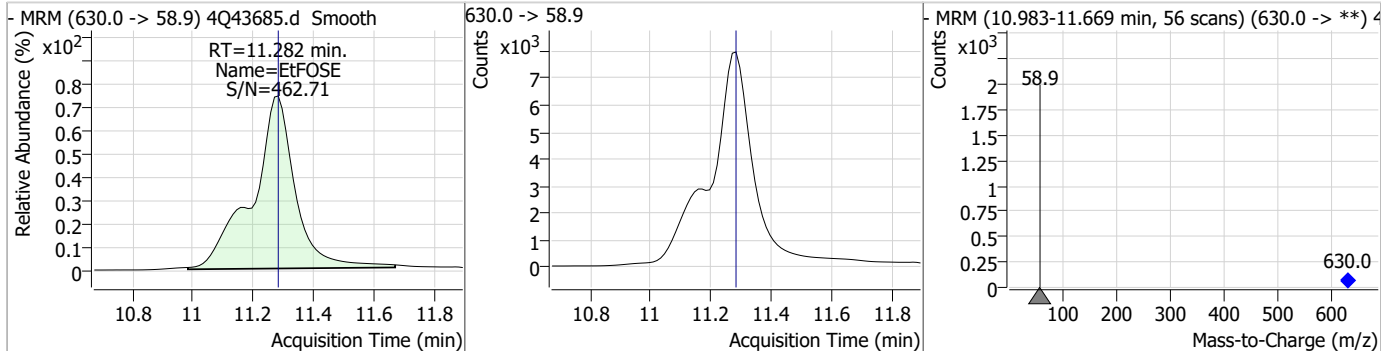
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	10.08	11.07	-0.01	30813 (m)	511.9 -> 169.0	148.8	59.0	177.0



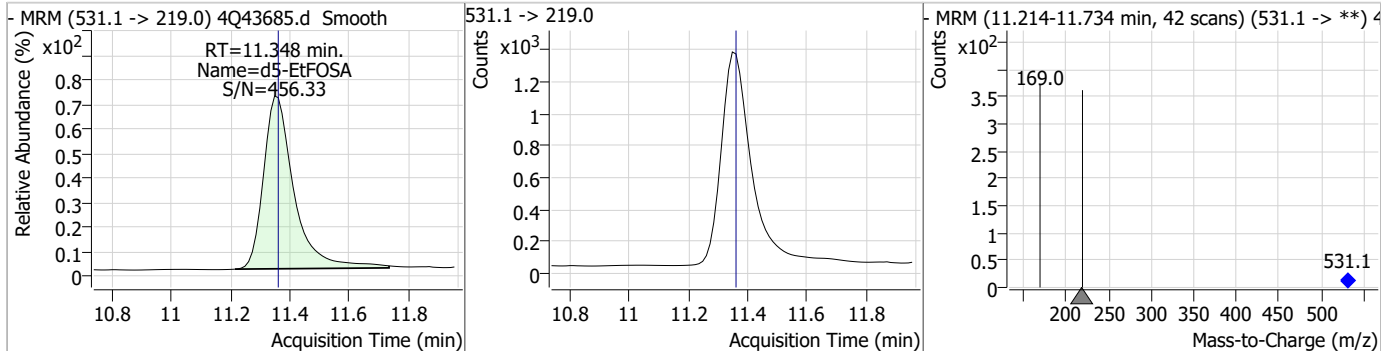
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.65	11.26	0.00	87439				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	24.22	11.28	0.00	78442				



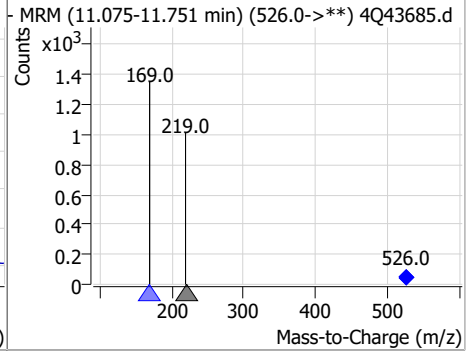
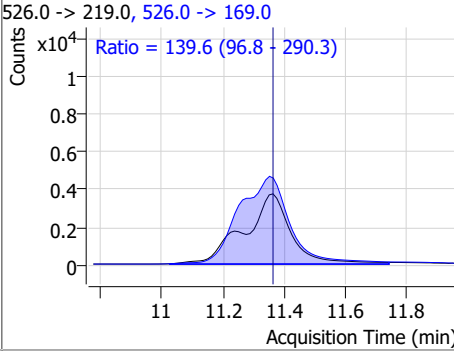
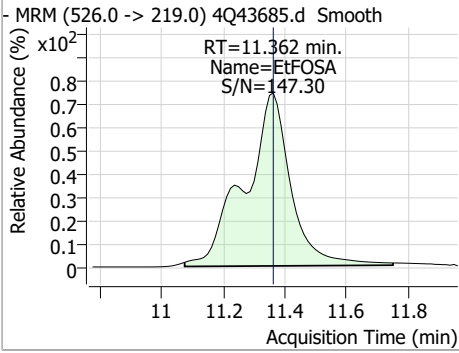
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.65	11.35	-0.01	9547				



7.7.6
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSEA	9.50	11.36	0.00	38757	526.0 -> 169.0	139.6	96.8	290.3



7.7.6

7

Manual Integration Approval Summary

Sample Number: S4Q631-IC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43685.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 13:33 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak

7.7.6.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 04/27/23 16:36

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43686.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 1:47:51 PM
 Sample Name : ic631-6
 Vial : P1-A7
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	84795	10.00 µg/L	-0.012
M5-PFPeA	4.375	268.3 -> 223.0	57472	5.00 µg/L	0.000
M5-PFHxA	5.547	318.0 -> 273.0	45230	2.50 µg/L	0.000
M4-PFHpA	6.480	367.1 -> 322.0	23811	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	30537	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	16433	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	14505	1.25 µg/L	0.000
M7-PFUnDA	8.685	570.0 -> 525.1	15013	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20786	1.25 µg/L	0.000
M2-PFTeDA	9.924	715.2 -> 670.0	15949	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	13397	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	10075	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	5787	2.50 µg/L	0.000
M8-PFOS	8.354	507.1 -> 79.9	8248	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1056	5.00 µg/L	0.000
M2-6:2FTS	6.923	429.1 -> 80.9	1436	5.00 µg/L	0.012
M2-8:2FTS	7.990	529.1 -> 80.9	2720	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	12382	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	24429	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	9688	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	60839	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	77224	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	8889	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7334	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	7393	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	49107	5.00 µg/L	-0.013
18O2-PFHxS	7.253	403.0 -> 83.9	4096	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	36054	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	13656	1.25 µg/L	0.000
13C5-PFNA	7.697	468.0 -> 423.0	17492	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	38061	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1056	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1436	4.57 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.5%		
13C2-8:2FTS	7.990	529.1 -> 80.9	2720	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20786	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFTeDA	9.924	715.2 -> 670.0	15949	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C3-PFBS	5.452	302.1 -> 79.9	10075	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C3-PFHxS	7.242	402.1 -> 79.9	5787	2.54 µg/L	0.000

7.7.7
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 = 101.5%		
13C4-PFBA	2.911	216.8 -> 171.9	84795	9.99 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C4-PFHpA	6.480	367.1 -> 322.0	23811	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C5-PFHxA	5.547	318.0 -> 273.0	45230	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C5-PFPeA	4.375	268.3 -> 223.0	57472	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C6-PFDA	8.203	519.1 -> 474.1	14505	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C7-PFUnDA	8.685	570.0 -> 525.1	15013	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C8-FOSA	9.771	506.1 -> 77.8	13397	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C8-PFOA	7.148	421.1 -> 376.0	30537	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C8-PFOS	8.354	507.1 -> 79.9	8248	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C9-PFNA	7.696	472.1 -> 427.0	16433	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.3%		
d3-MeFOSAA	8.261	573.2 -> 419.0	12382	5.30 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C3-HFPO-DA	5.914	286.9 -> 168.9	24429	9.76 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.6%		
d3-MeFOSA	11.076	515.0 -> 219.0	7334	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.5%		
d5-EtFOSAA	8.470	589.2 -> 419.0	9688	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d7-MeFOSE	10.959	623.2 -> 58.9	60839	25.49 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
d9-EtFOSE	11.269	639.2 -> 58.9	77224	25.34 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
d5-EtFOSA	11.360	531.1 -> 219.0	8889	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.4%		
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	81460	48.14 µg/L	99
		327.1 -> 80.9	34056		
6:2FTS	6.924	427.1 -> 407.0	71309	51.62 µg/L	95
		427.1 -> 80.9	28544		
8:2FTS	7.991	527.1 -> 507.0	78670	51.54 µg/L	98
		527.1 -> 80.8	32425		
EtFOSAA	8.483	584.2 -> 419.1	24367	13.18 µg/L	m 86
		584.2 -> 526.0	12051		
FOSA	9.774	498.1 -> 77.9	75119	12.90 µg/L	99
		498.1 -> 478.0	2085		
MeFOSAA	8.274	570.1 -> 419.0	28562	13.06 µg/L	m 98
		570.1 -> 483.0	5738		
PFBA	2.920	212.8 -> 168.9	130423	52.28 µg/L	100
PFBS	5.453	298.7 -> 79.9	54332	11.85 µg/L	100
		298.7 -> 98.8	21192		
PFDA	8.204	512.9 -> 469.0	144119	13.33 µg/L	100
		512.9 -> 219.0	29179		
PFDoDA	9.131	613.1 -> 569.0	228999	13.49 µg/L	100
		613.1 -> 319.0	32153		
PFDS	9.294	599.0 -> 79.9	28710	11.63 µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	14376			
PFHpA	6.480	363.1 -> 319.0	202778	13.14	µg/L	100
		363.1 -> 169.0	35489			
PFHpS	7.836	449.0 -> 79.9	35893	12.42	µg/L	96
		449.0 -> 98.9	18705			
PFHxA	5.550	313.0 -> 269.0	226831	13.36	µg/L	100
		313.0 -> 118.9	6729			
PFHxS	7.243	398.7 -> 79.9	31595	11.05	µg/L	m 92
		398.7 -> 98.9	15915			
PFNA	7.697	463.0 -> 419.0	144657	13.05	µg/L	97
		463.0 -> 219.0	35427			
PFNS	8.848	548.8 -> 79.9	19755	12.82	µg/L	91
		548.8 -> 98.9	9412			
PFOA	7.150	413.0 -> 369.0	232482	13.14	µg/L	98
		413.0 -> 169.0	47297			
PFOS	8.355	498.9 -> 79.9	47006	11.71	µg/L	m 95
		498.9 -> 98.8	23729			
PFPeA	4.377	263.0 -> 219.0	366669	26.71	µg/L	100
PFPeS	6.519	349.1 -> 79.9	28700	12.04	µg/L	99
		349.1 -> 98.9	12678			
PFTeDA	9.924	713.1 -> 669.0	207117	13.21	µg/L	98
		713.1 -> 168.9	16957			
PFTrDA	9.541	663.0 -> 619.0	270909	13.39	µg/L	100
		663.0 -> 168.9	26328			
PFUnDA	8.685	563.1 -> 519.0	151602	13.80	µg/L	97
		563.1 -> 269.1	28379			
11Cl-PF3OUdS	9.593	630.9 -> 450.9	224289	25.90	µg/L	99
		632.9 -> 452.9	68229			
9Cl-PF3ONS	8.700	530.8 -> 351.0	235206	26.07	µg/L	95
		532.8 -> 353.0	72225			
ADONA	6.743	376.9 -> 250.9	641557	25.67	µg/L	98
		376.9 -> 84.8	169295			
HFPO-DA	5.915	284.9 -> 168.9	66339	27.45	µg/L	96
		284.9 -> 184.9	8074			
3:3FTCA	3.836	241.0 -> 177.0	38072	65.62	µg/L	100
		241.0 -> 117.0	3726			
5:3FTCA	6.205	341.0 -> 237.1	809662	329.69	µg/L	99
		341.0 -> 217.0	575420			
7:3FTCA	7.661	441.0 -> 316.9	357137	332.30	µg/L	99
		441.0 -> 336.9	791372			
EtFOSA	11.362	526.0 -> 219.0	98462	25.93	µg/L	m 63
		526.0 -> 169.0	135901			
EtFOSE	11.282	630.0 -> 58.9	187265	65.46	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	77375	26.75	µg/L	m 74
		511.9 -> 169.0	113849			
MeFOSE	10.973	616.1 -> 58.9	175350	69.98	µg/L	m 100
PFDoS	10.064	699.1 -> 79.9	26978	12.44	µg/L	98
		699.1 -> 98.8	14657			
NFDHA	5.441	295.0 -> 201.0	28439	25.78	µg/L	98
		295.0 -> 84.9	7024			
PFMBA	4.791	279.0 -> 85.1	209098	26.42	µg/L	100
PFMPA	3.528	229.0 -> 84.9	179334	26.26	µg/L	100
PFEESA	5.984	314.8 -> 134.9	348004	23.47	µg/L	99
		314.8 -> 82.9	11796			

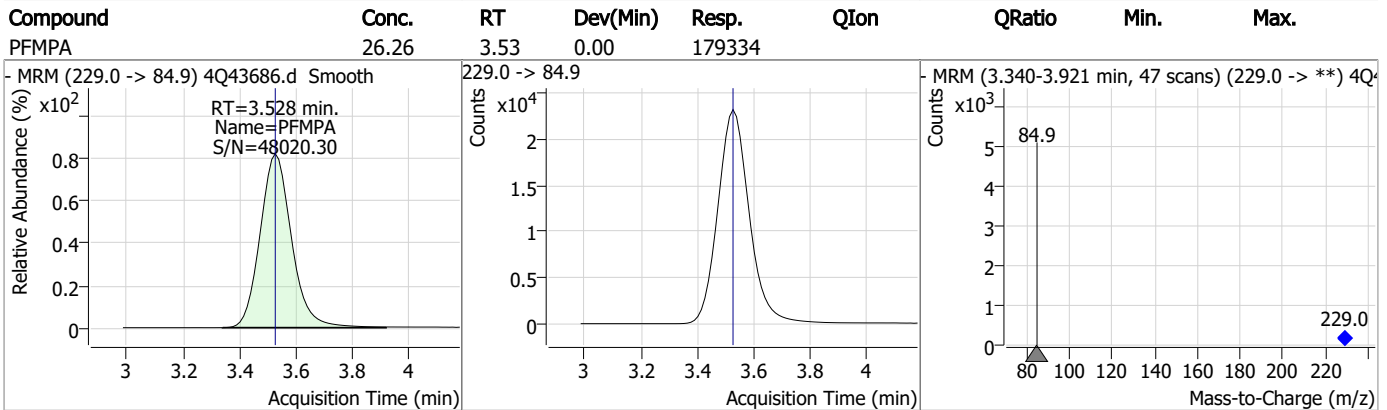
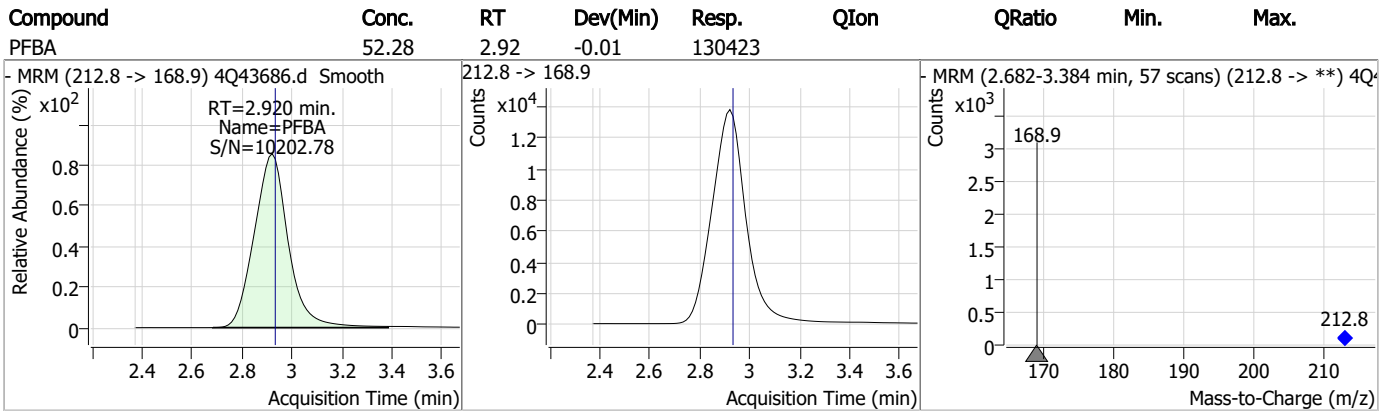
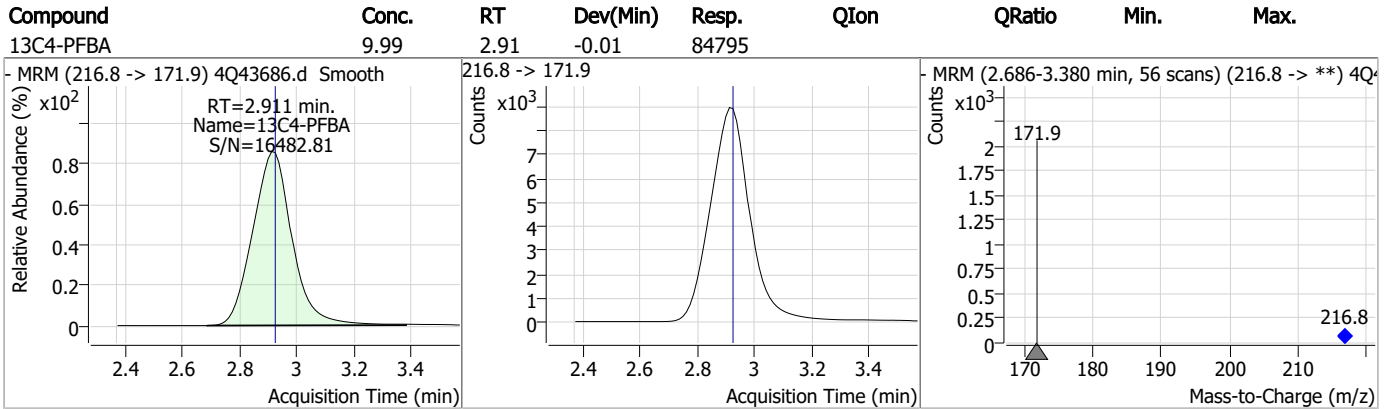
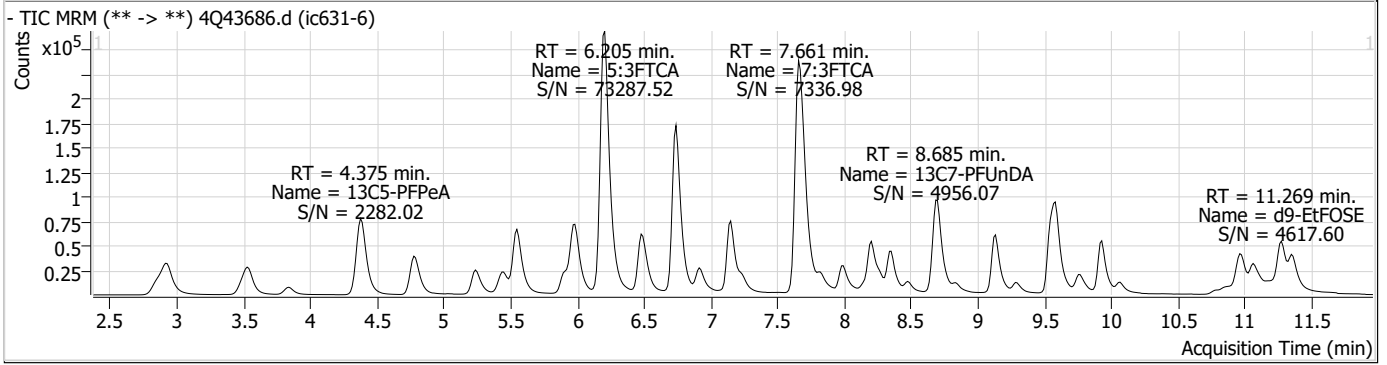
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

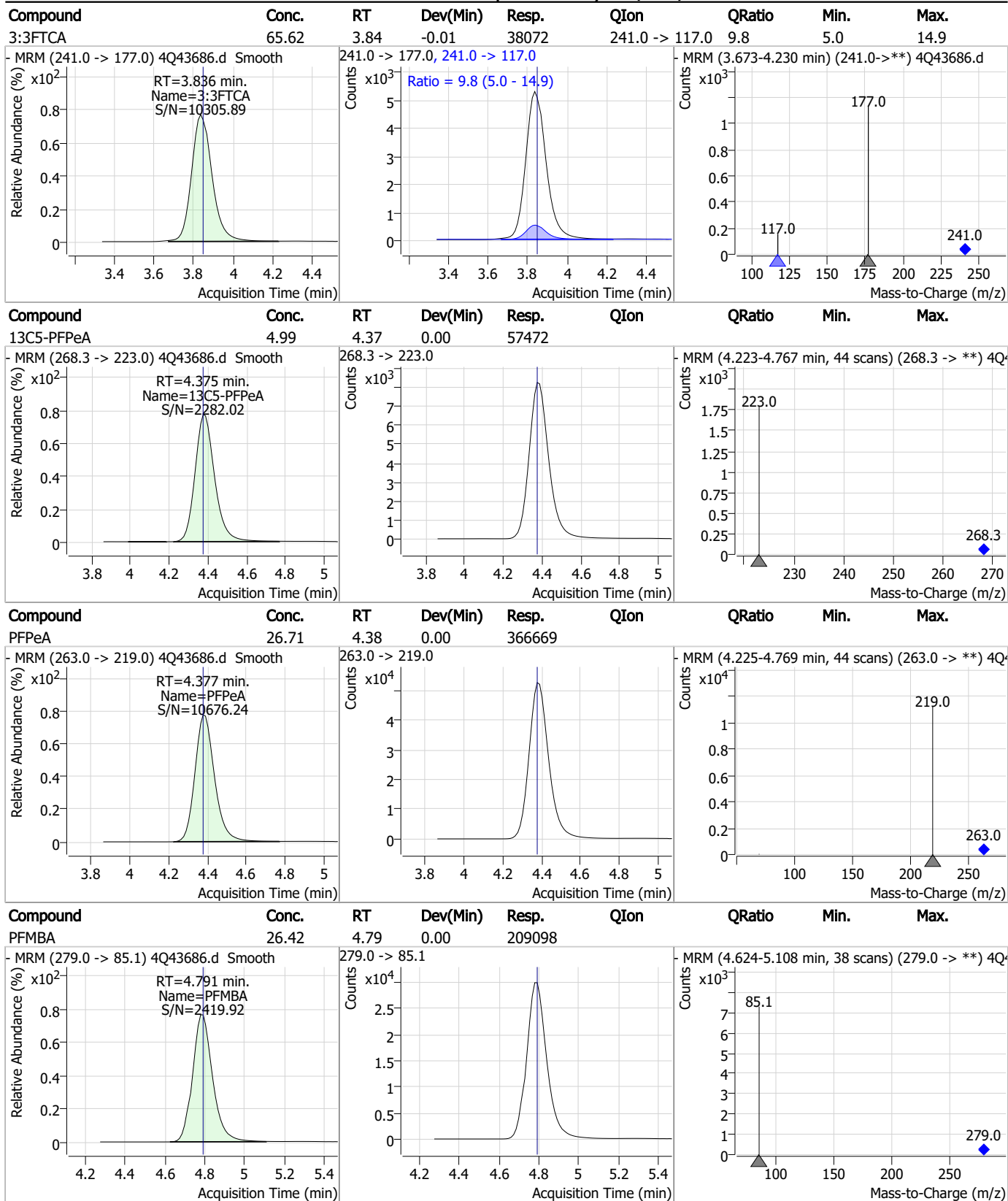
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.7
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Perfluorinated Compounds by LC/MS/MS

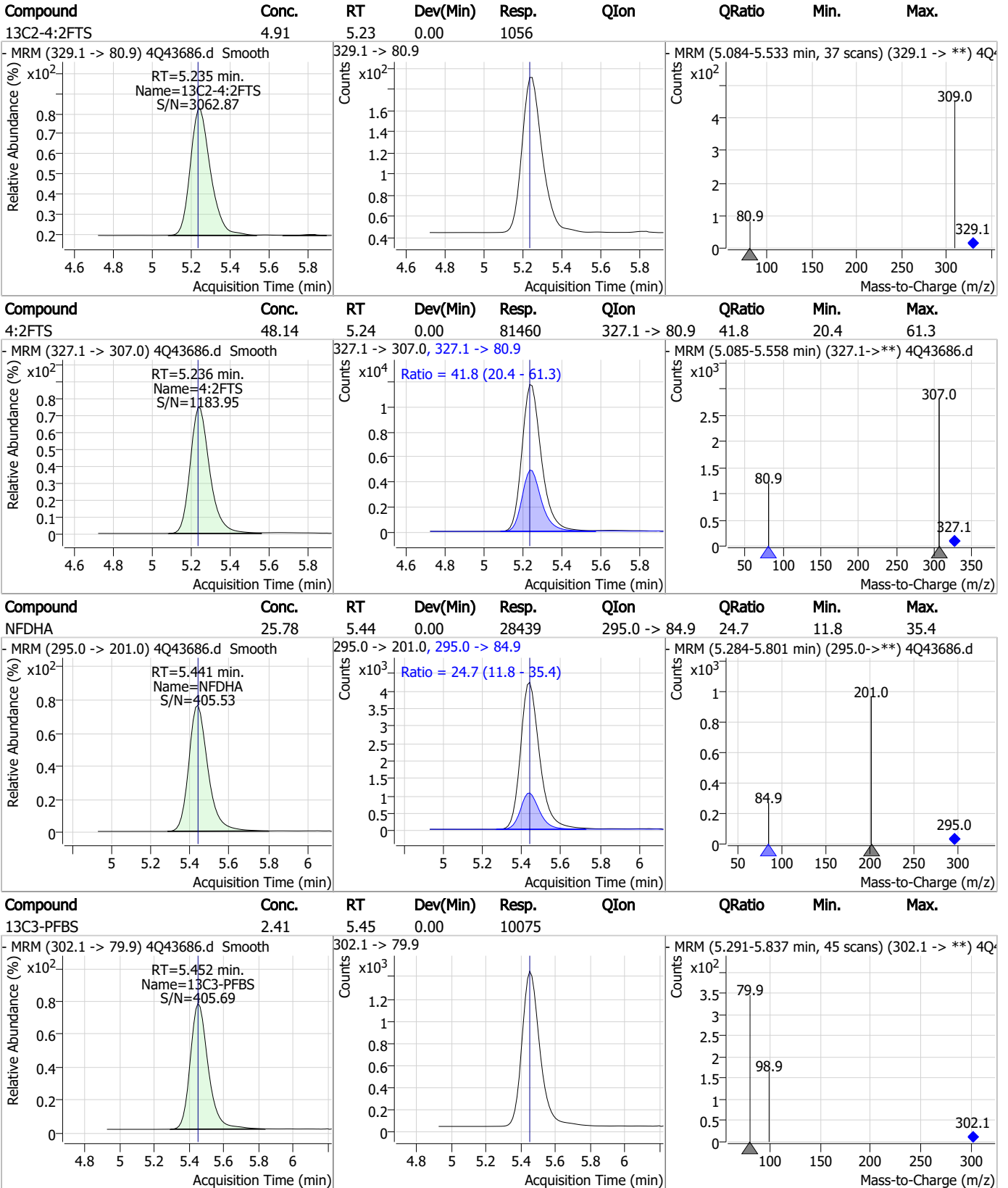


Perfluorinated Compounds by LC/MS/MS



7.7.7
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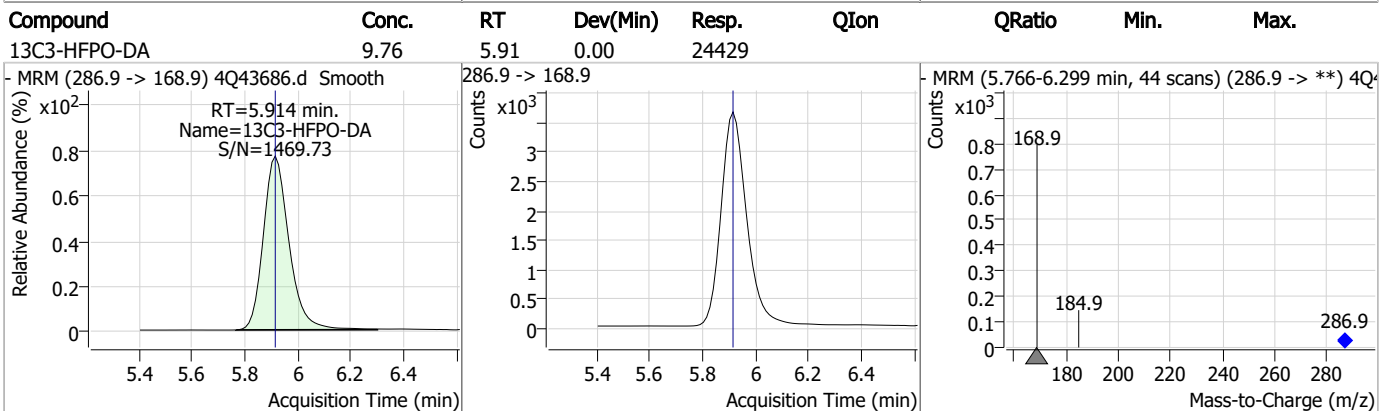
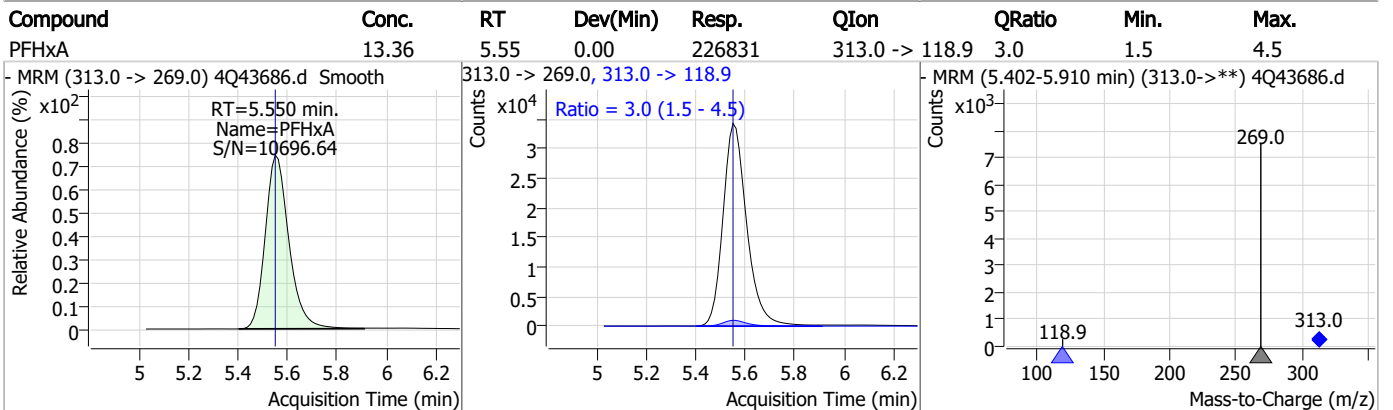
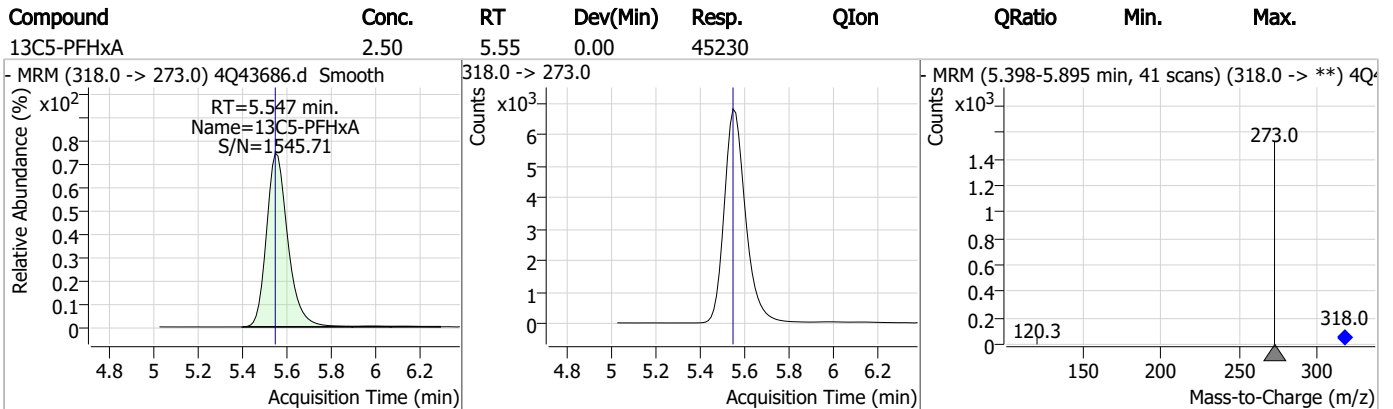
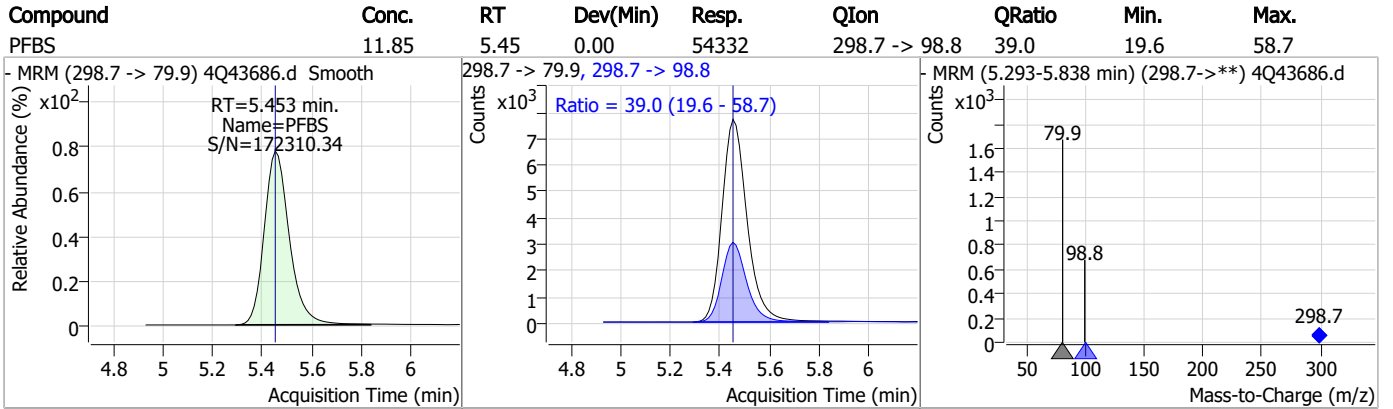
Perfluorinated Compounds by LC/MS/MS



7.7.7

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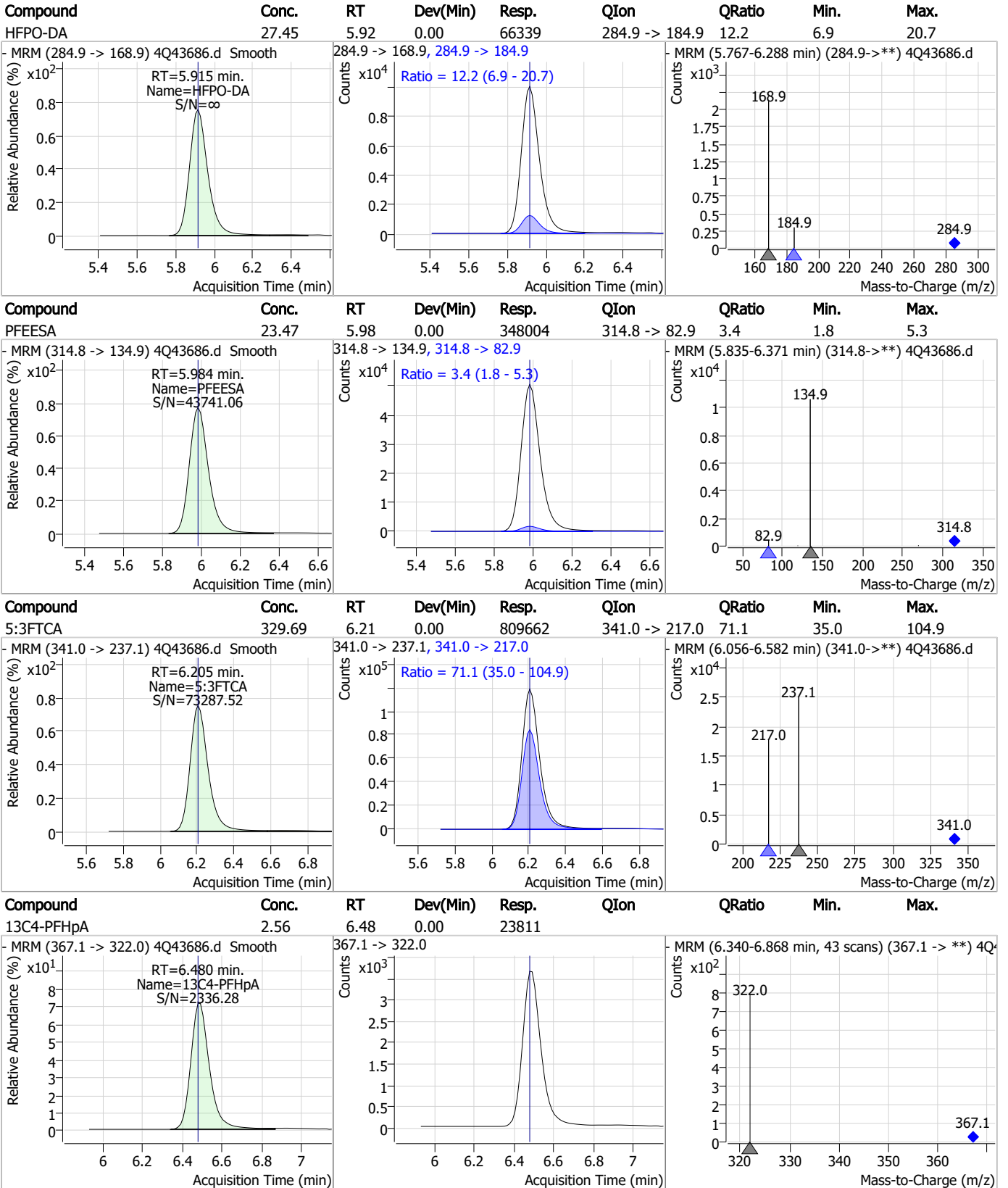
Perfluorinated Compounds by LC/MS/MS



7.7.7

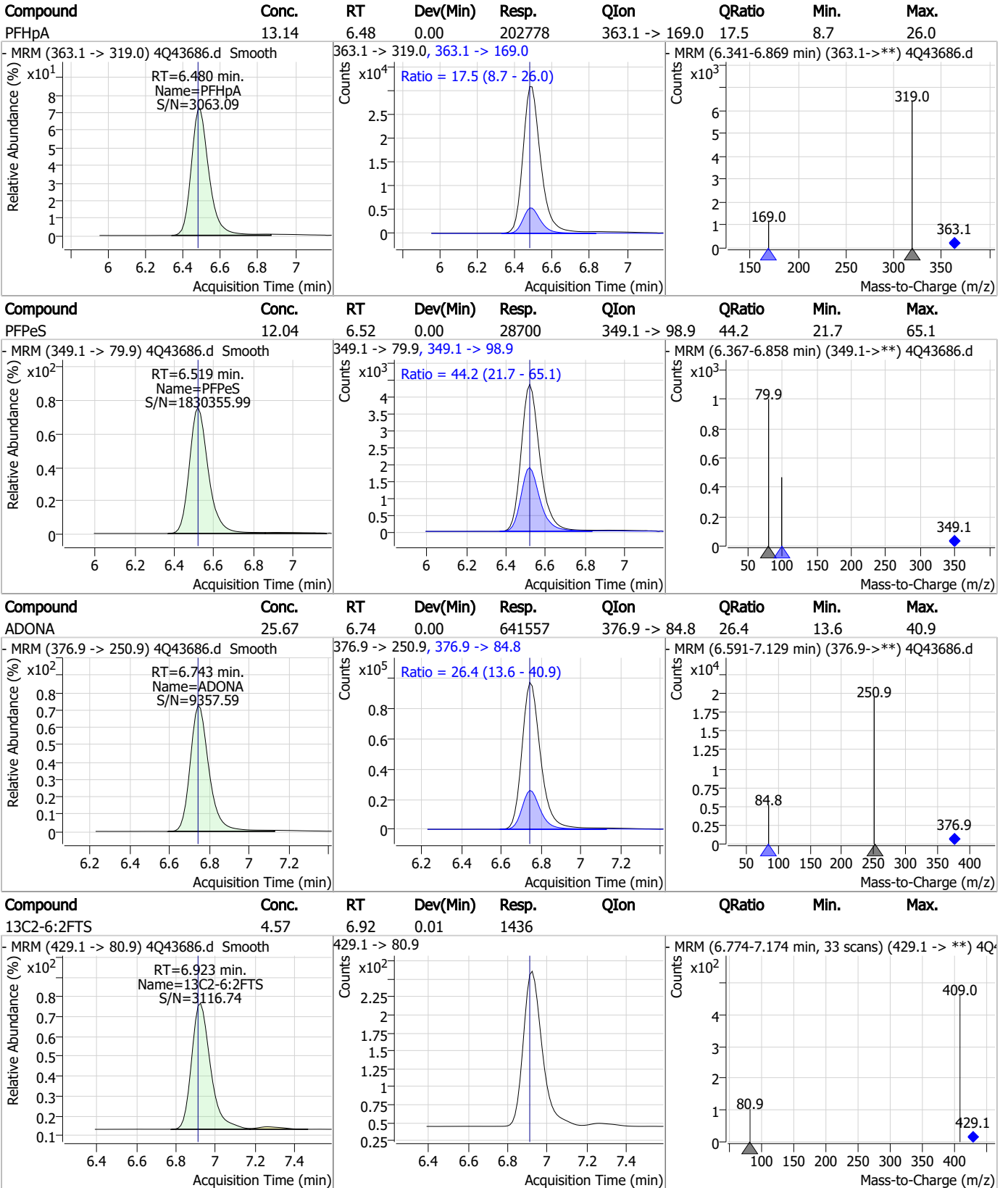
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Perfluorinated Compounds by LC/MS/MS



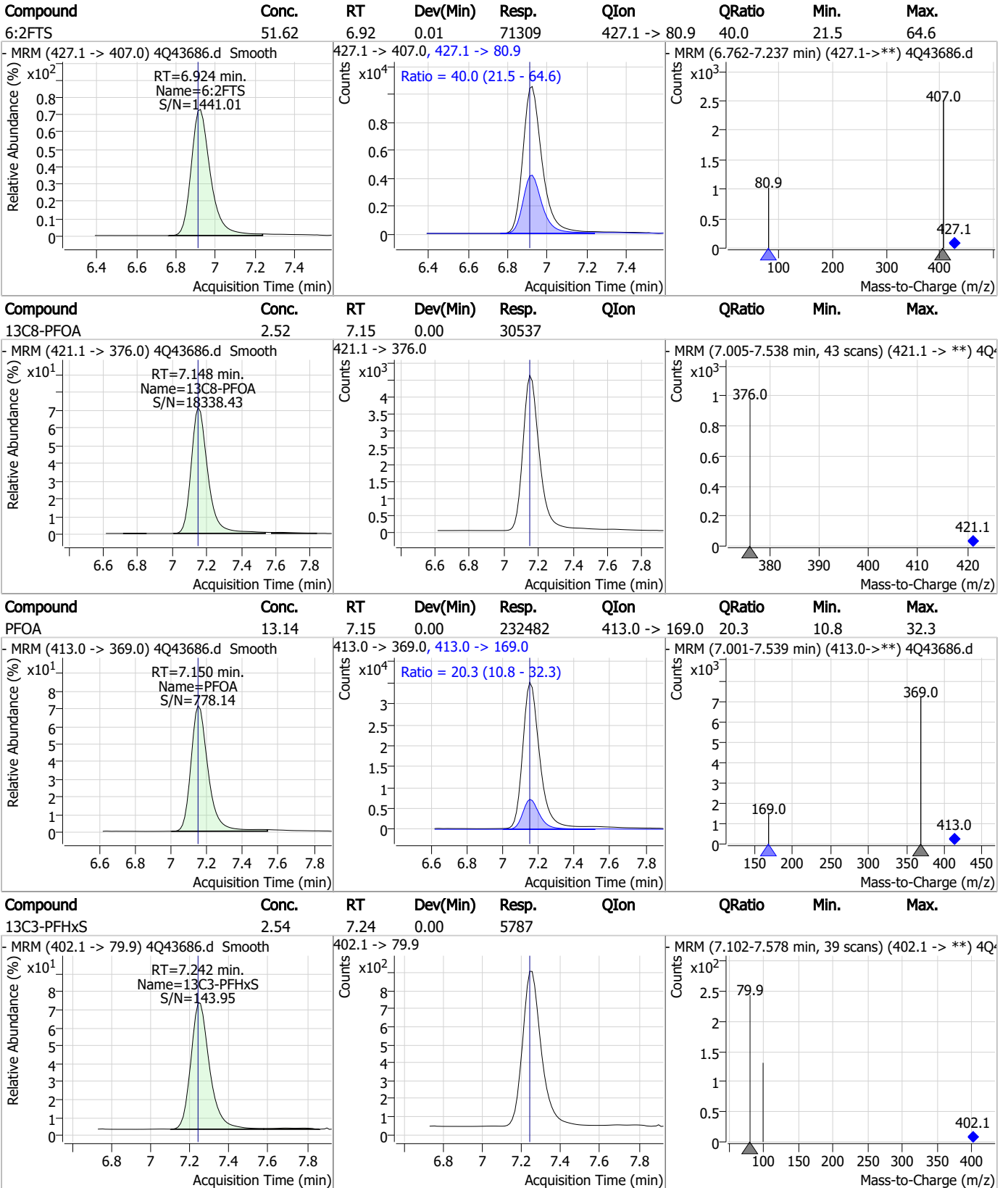
7.7.7
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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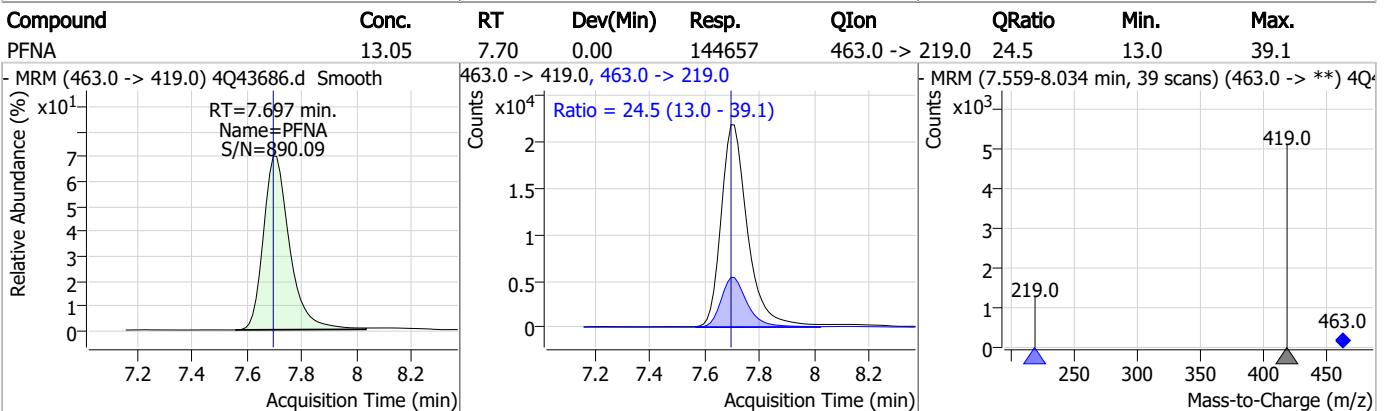
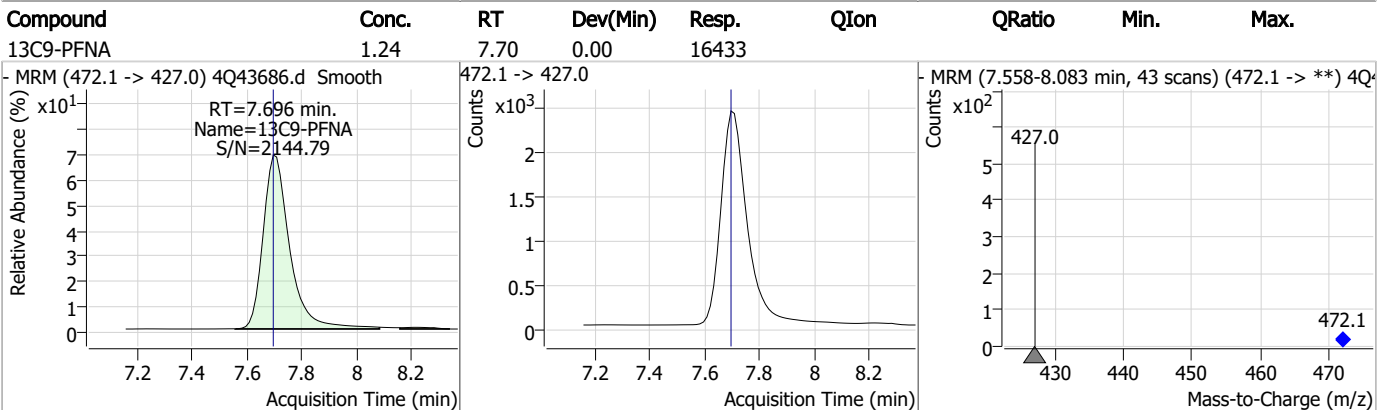
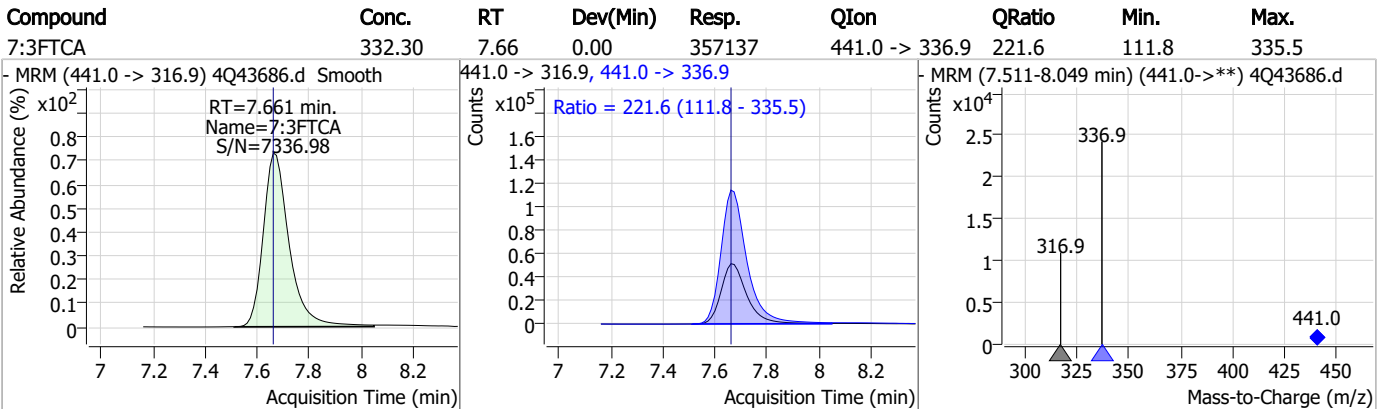
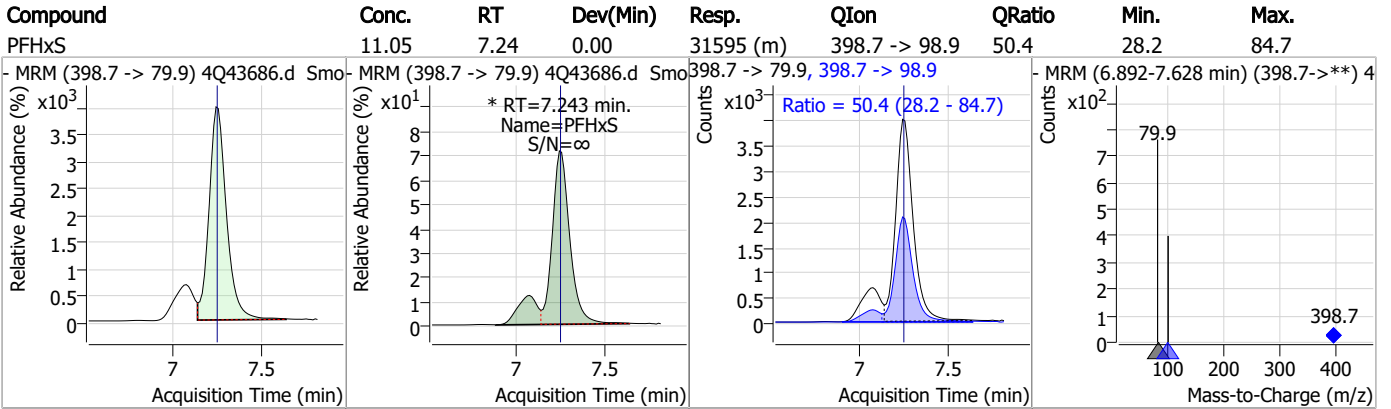
Perfluorinated Compounds by LC/MS/MS



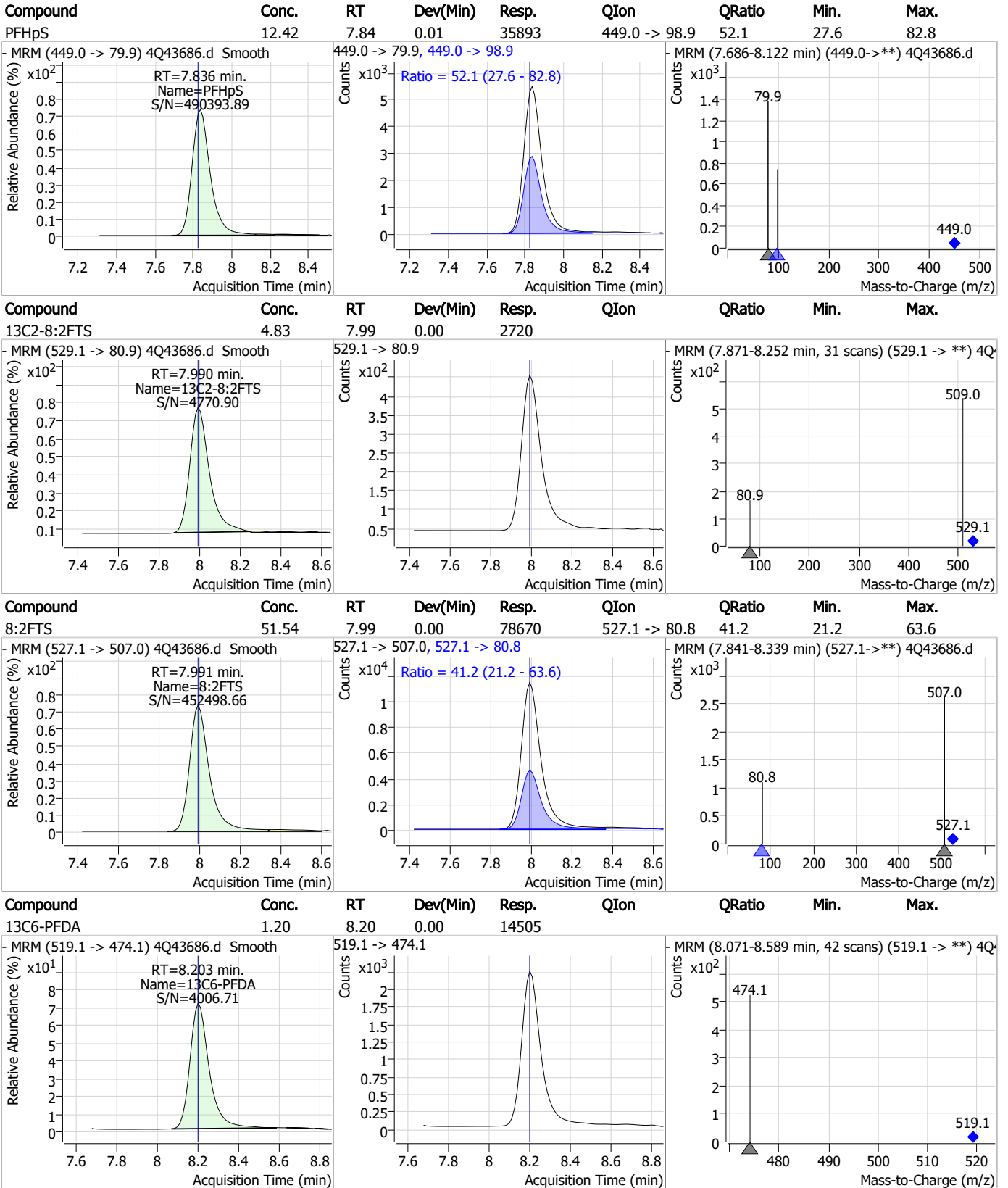
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Perfluorinated Compounds by LC/MS/MS



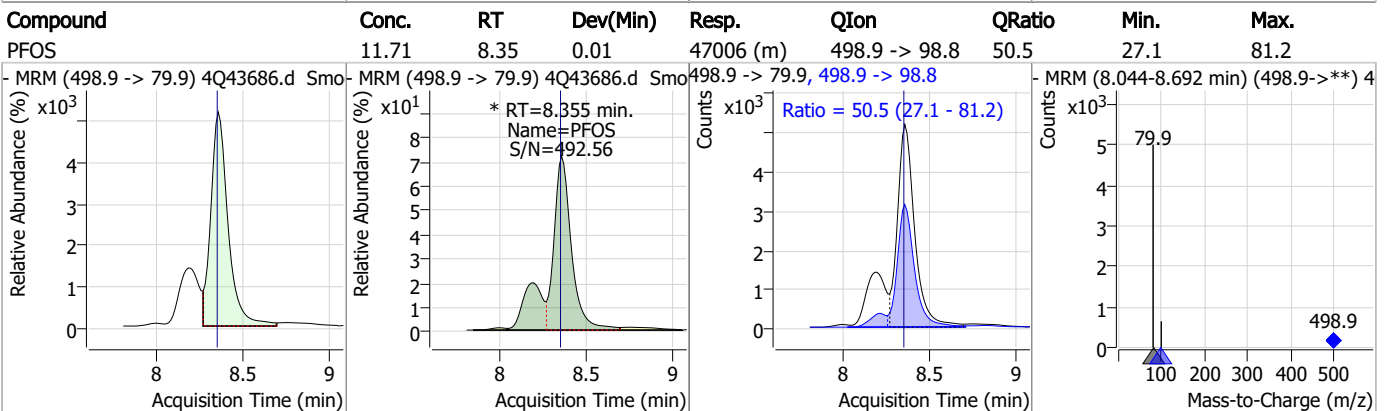
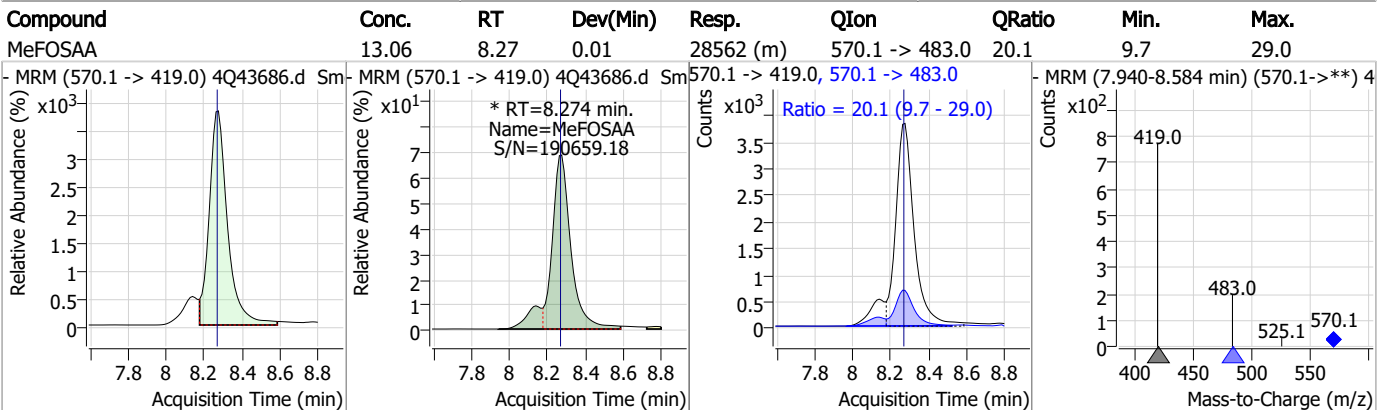
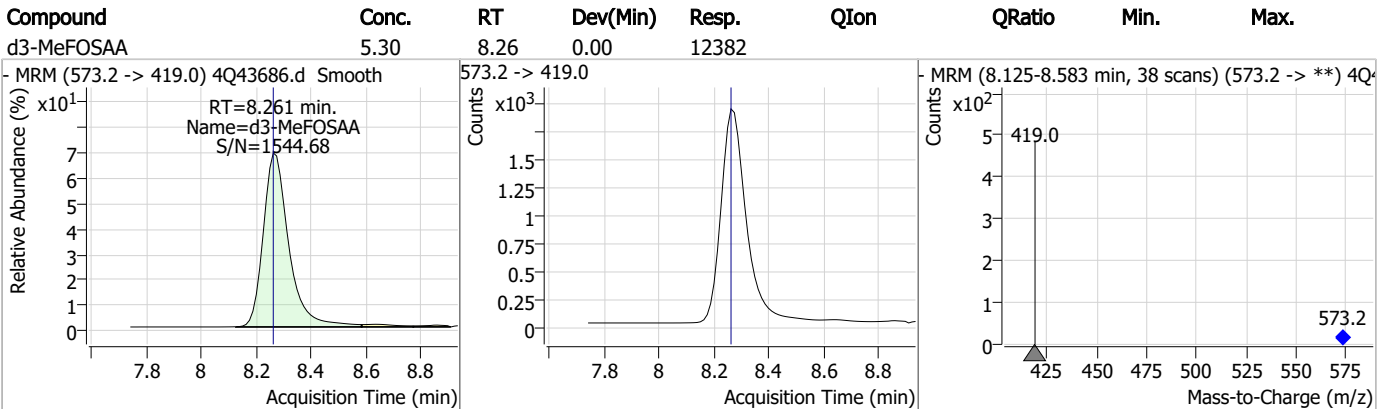
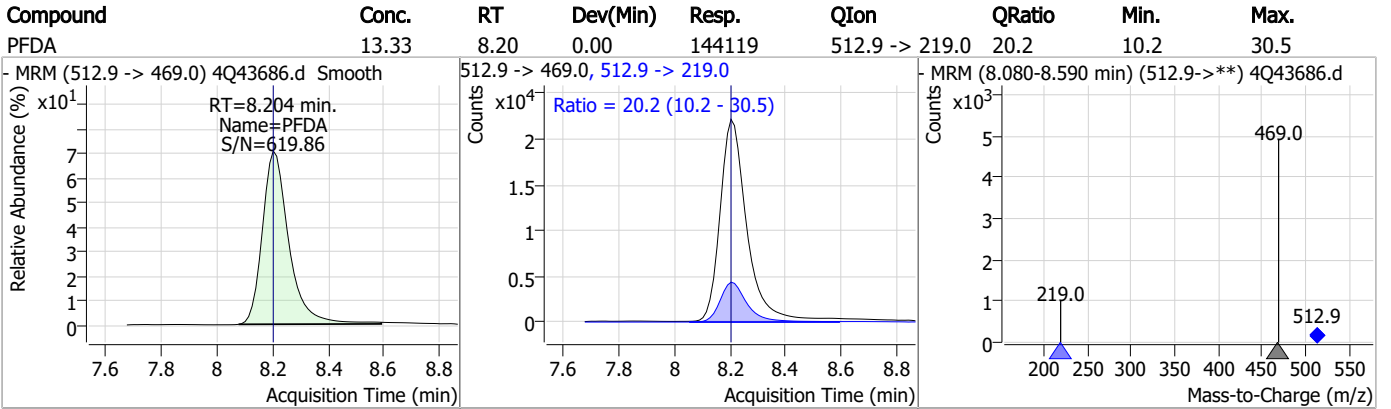
Perfluorinated Compounds by LC/MS/MS



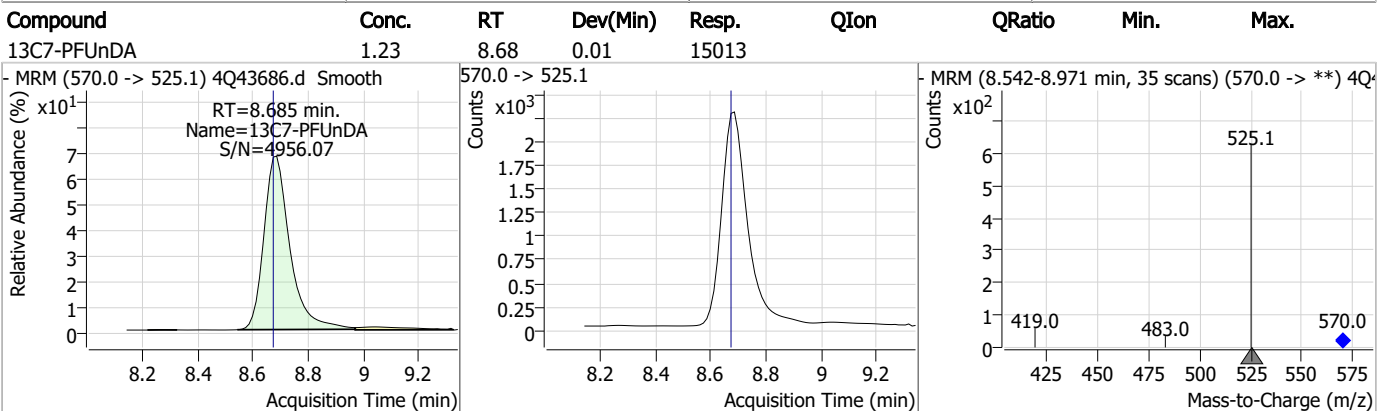
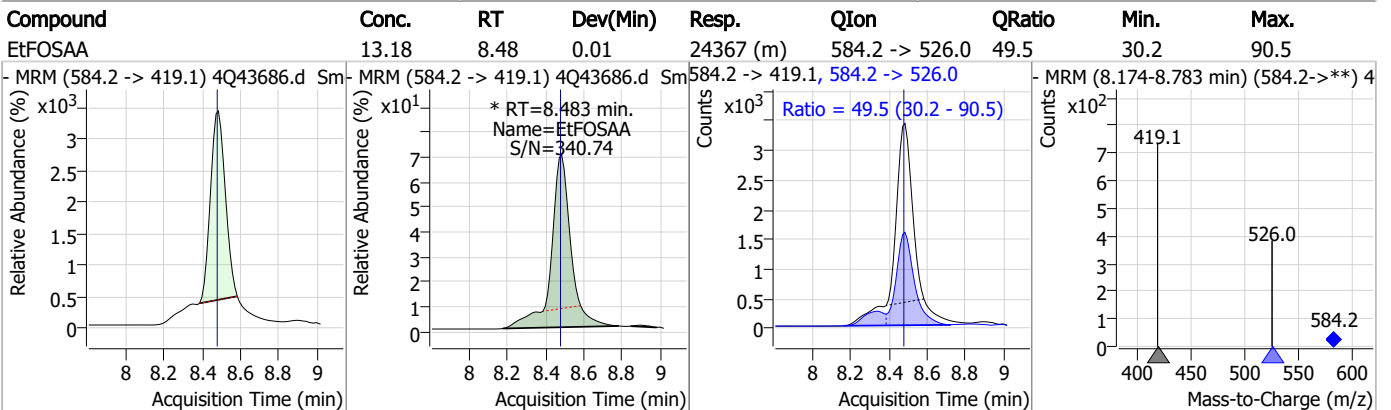
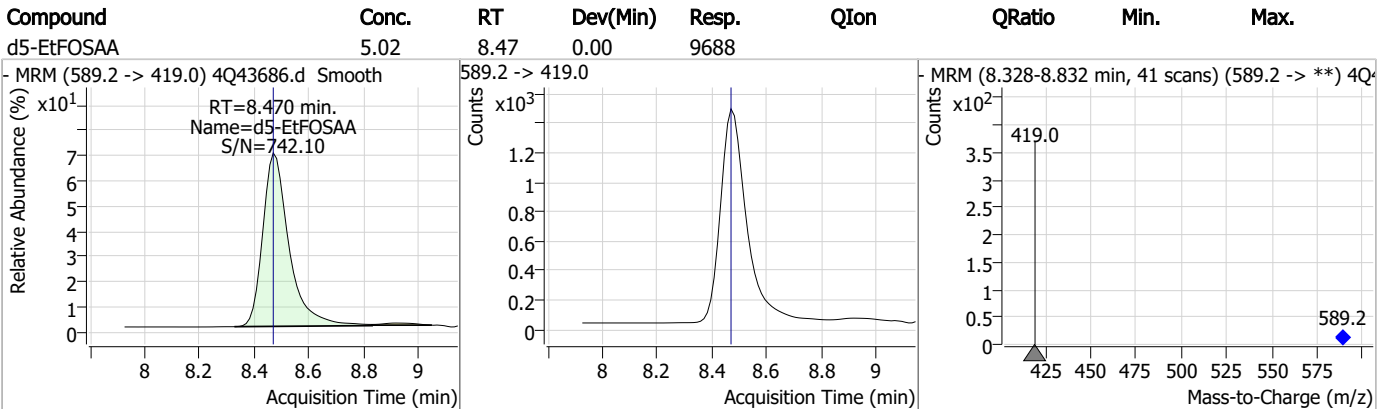
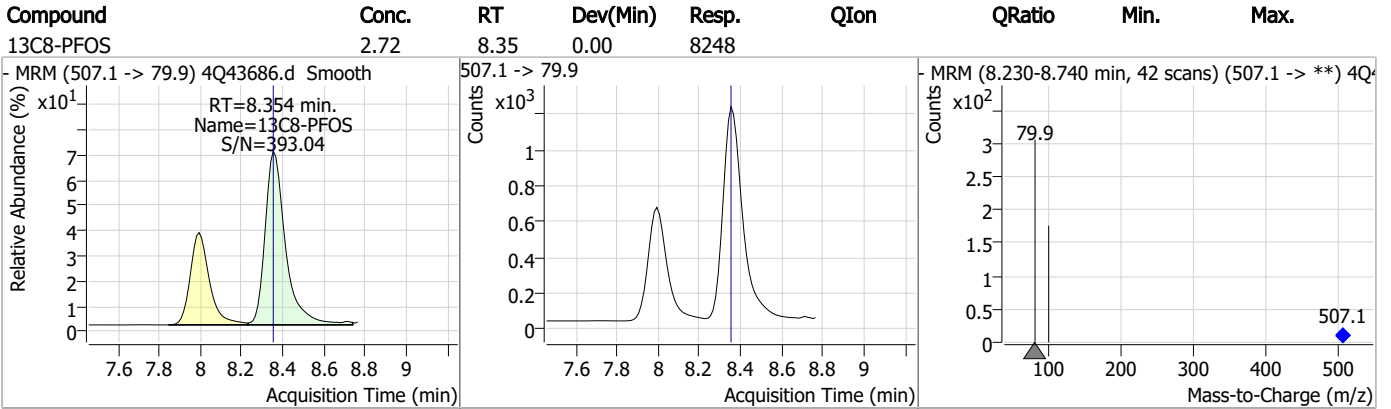
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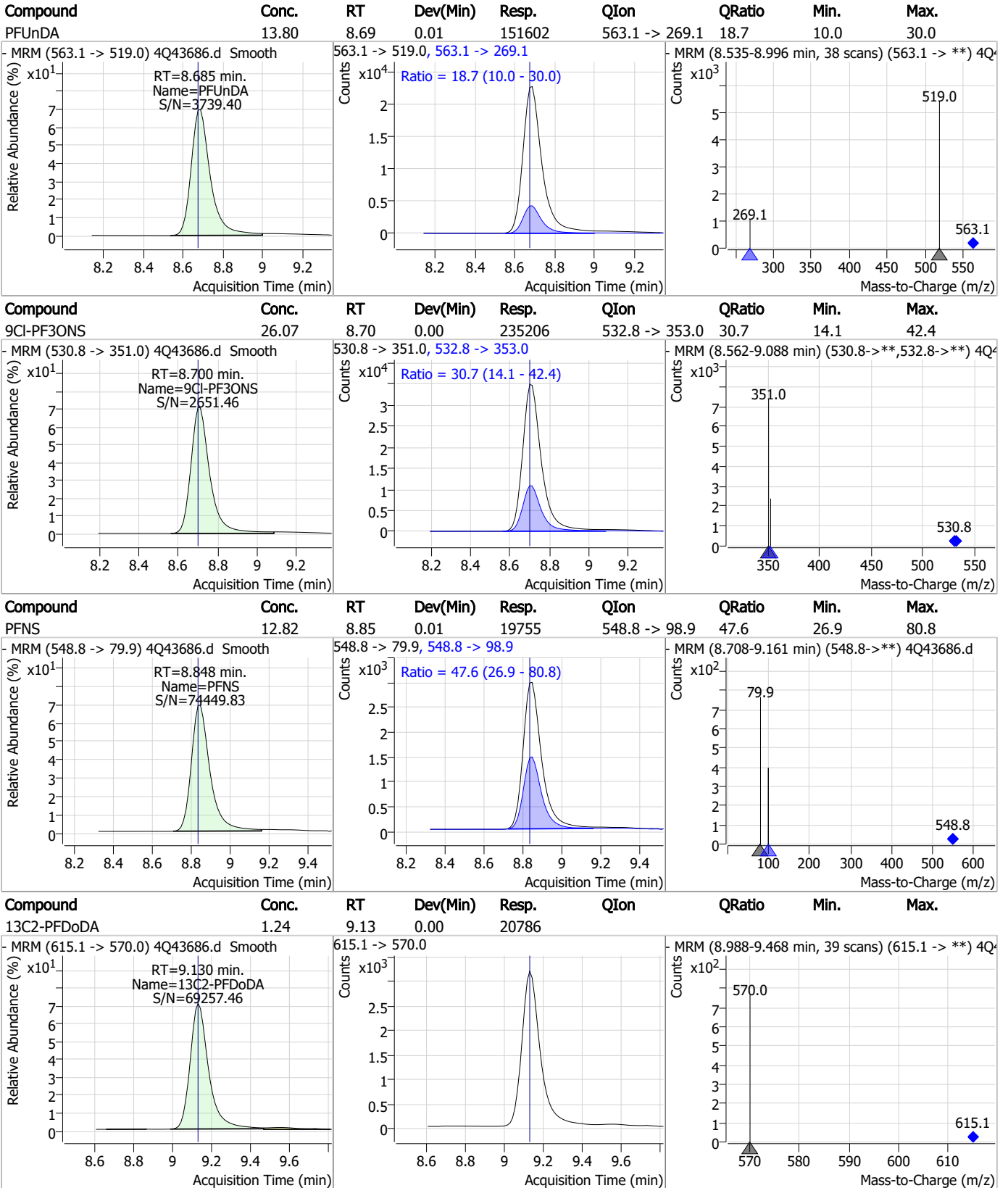
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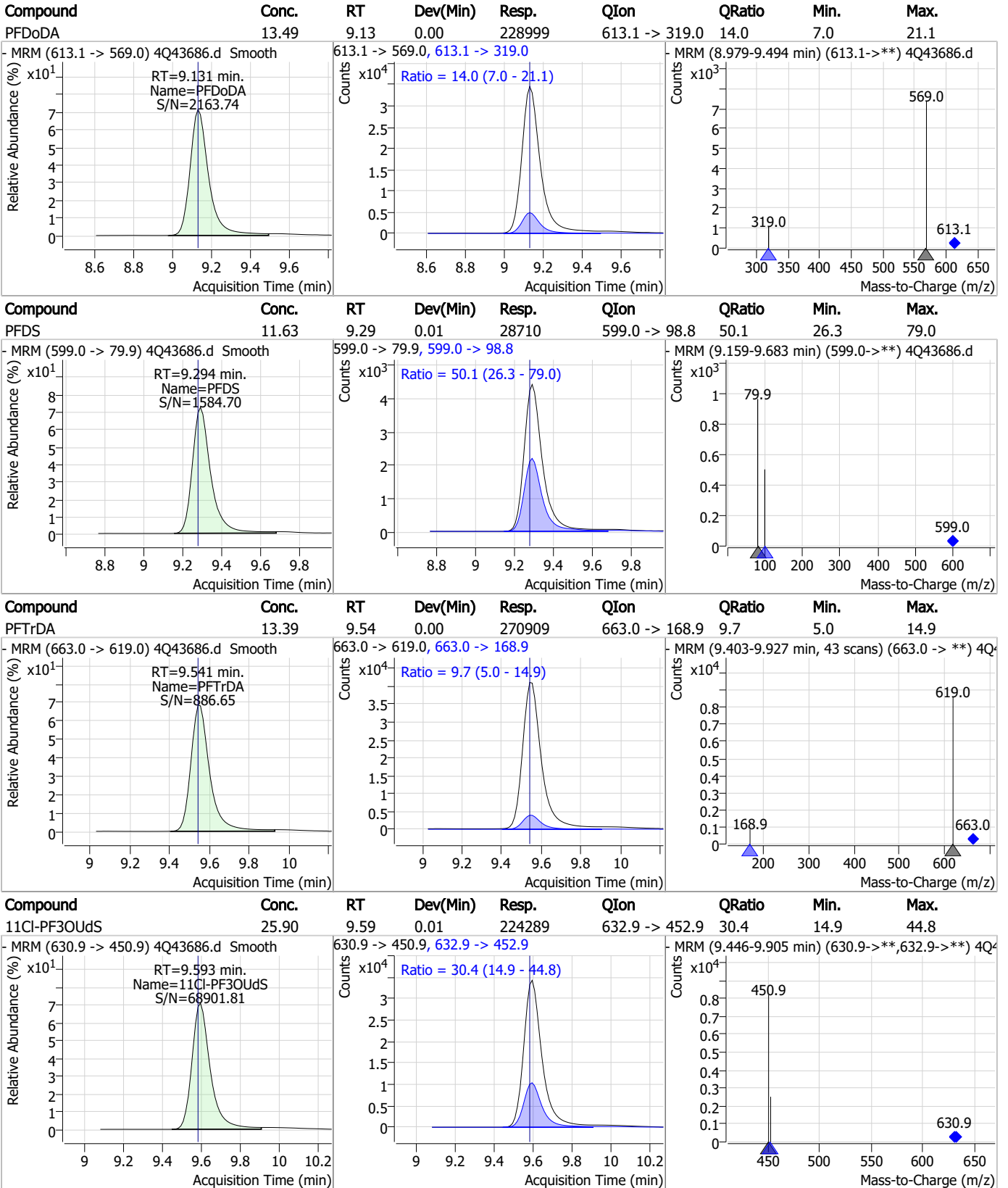
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



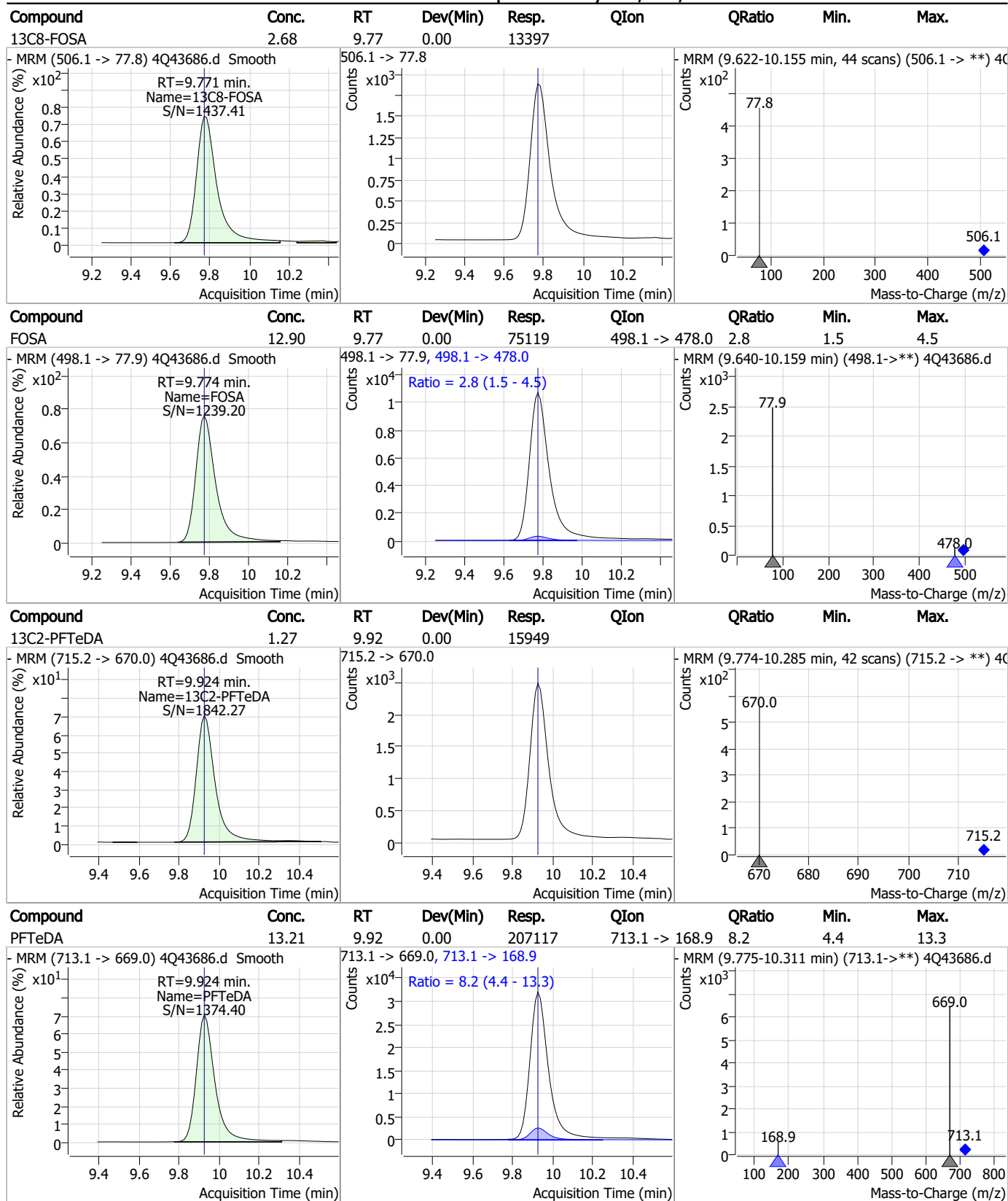
Perfluorinated Compounds by LC/MS/MS



7.7.7
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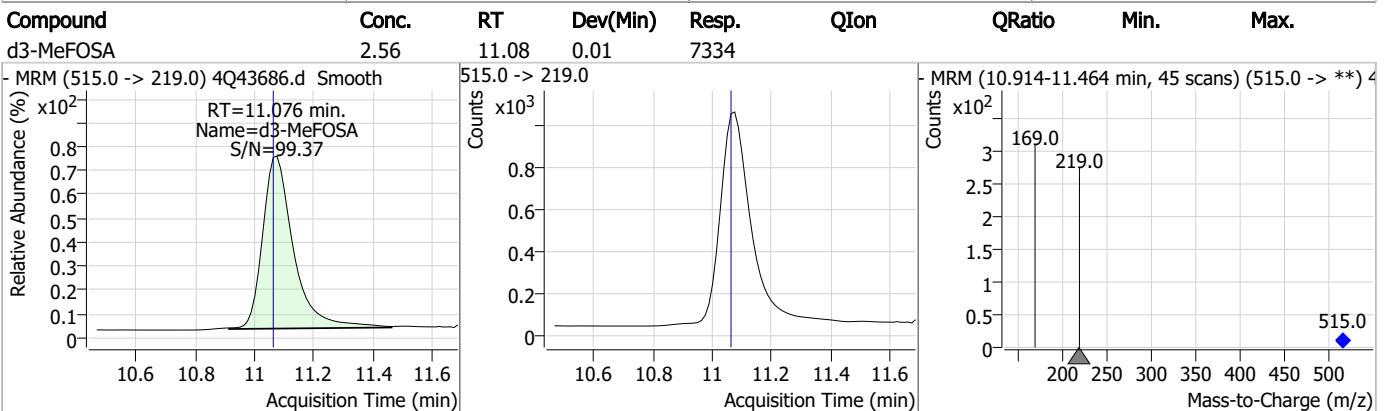
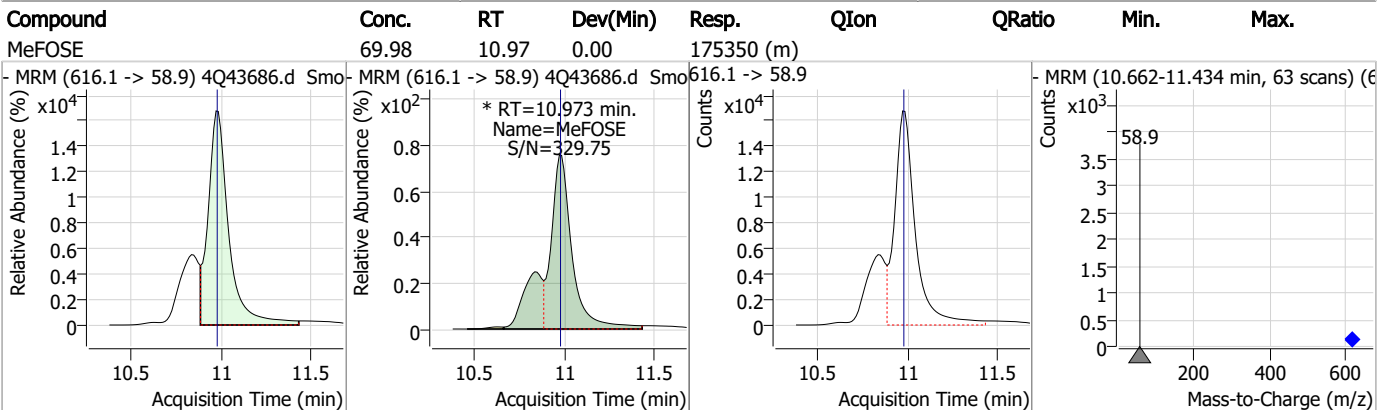
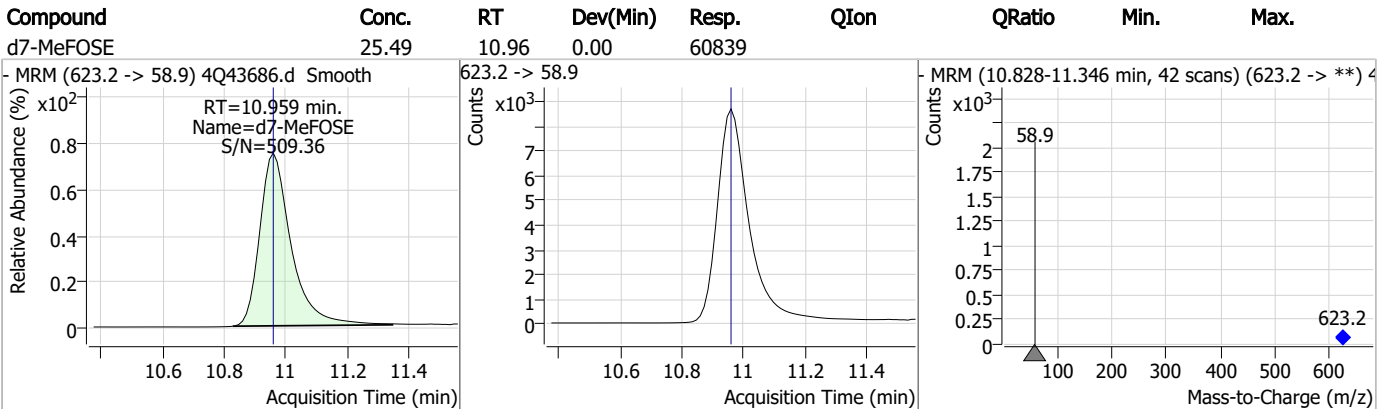
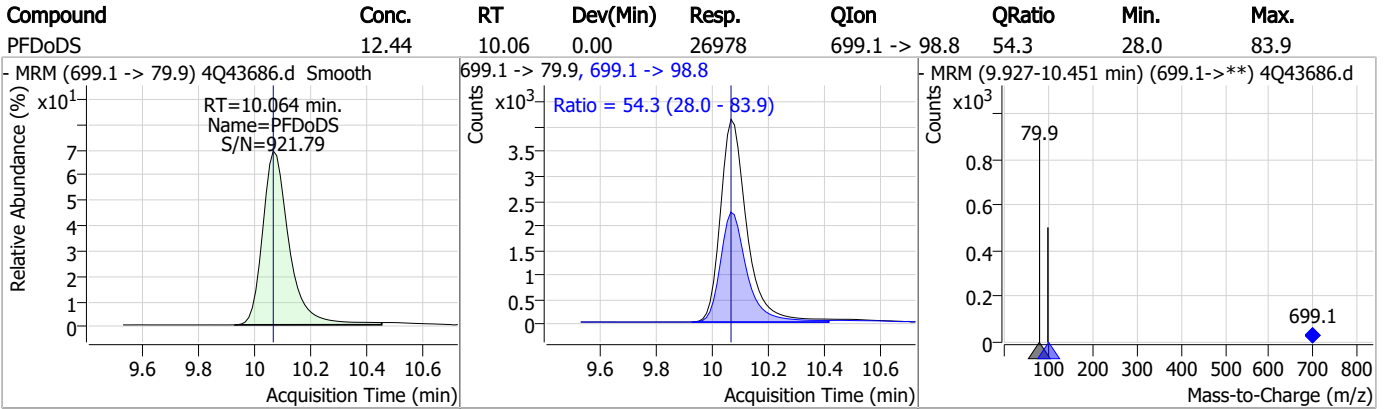


Perfluorinated Compounds by LC/MS/MS

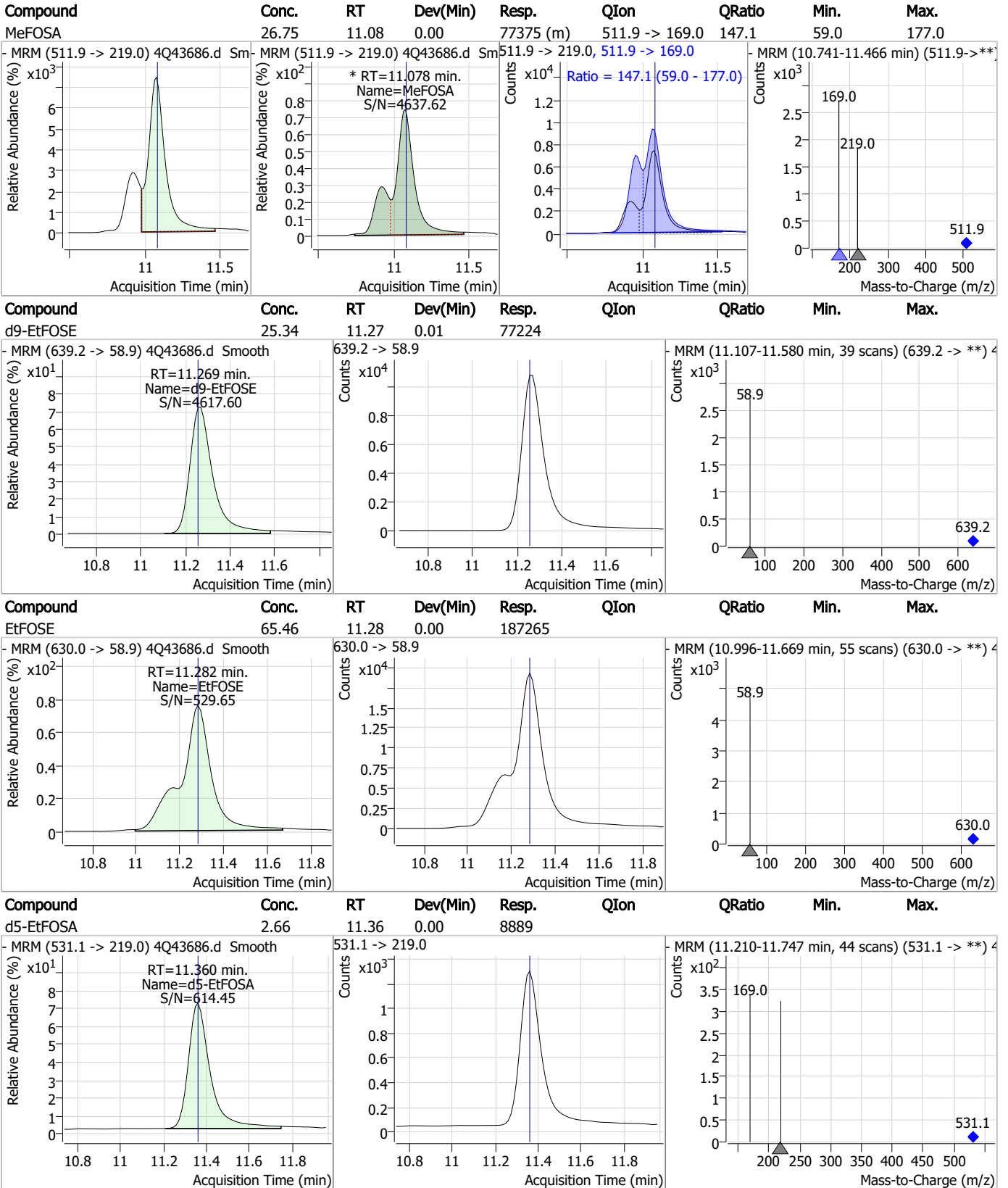


7.7.7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

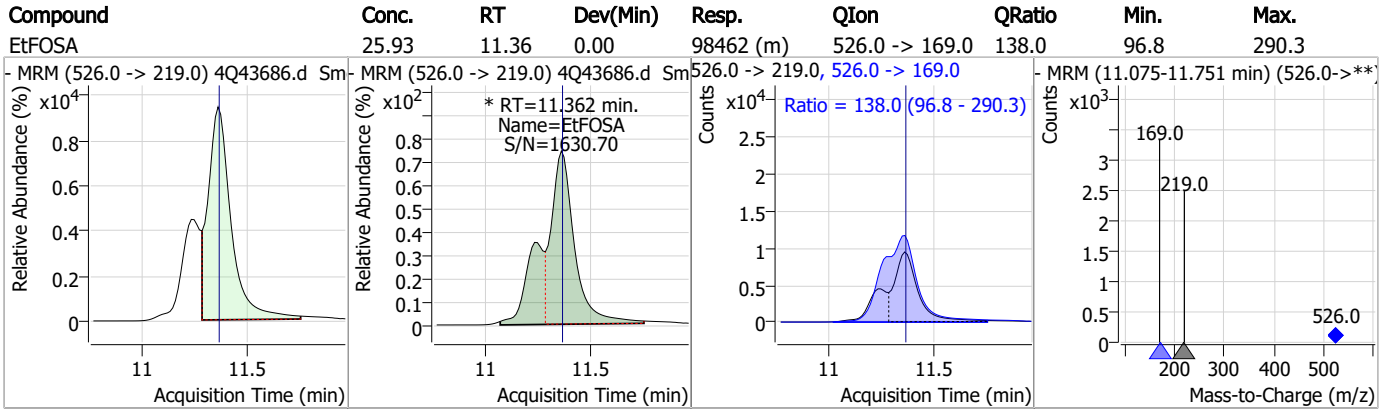


7.7.7

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Perfluorinated Compounds by LC/MS/MS



7.7.7

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Manual Integration Approval Summary

Sample Number: S4Q631-IC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43686.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 13:47 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.48	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.7.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
04/27/23 16:36

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43687.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 2:01:56 PM
 Sample Name : ic631-7
 Vial : P1-A8
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	82408	10.00 µg/L	-0.012
M5-PFPeA	4.387	268.3 -> 223.0	56471	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	44911	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	22661	2.50 µg/L	0.012
M8-PFOA	7.148	421.1 -> 376.0	29858	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	16453	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	15302	1.25 µg/L	0.000
M7-PFUnDA	8.672	570.0 -> 525.1	15352	1.25 µg/L	0.000
M2-PFDoDA	9.130	615.1 -> 570.0	20757	1.25 µg/L	0.000
M2-PFTeDA	9.924	715.2 -> 670.0	15940	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	12708	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	9954	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	5477	2.50 µg/L	0.000
M8-PFOS	8.354	507.1 -> 79.9	8014	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	965	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	1403	5.00 µg/L	0.012
M2-8:2FTS	7.990	529.1 -> 80.9	2465	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	11917	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	24805	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	10194	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	57660	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	74682	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	8220	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7661	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	7791	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	47554	5.00 µg/L	-0.013
18O2-PFHxS	7.253	403.0 -> 83.9	3801	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	34765	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	13520	1.25 µg/L	0.000
13C5-PFNA	7.697	468.0 -> 423.0	16750	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	37673	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	965	4.84 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1403	4.82 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-8:2FTS	7.990	529.1 -> 80.9	2465	4.72 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.4%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20757	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C2-PFTeDA	9.924	715.2 -> 670.0	15940	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.452	302.1 -> 79.9	9954	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C3-PFHxS	7.242	402.1 -> 79.9	5477	2.59 µg/L	0.000

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	2.911	216.8 -> 171.9	82408	10.03 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C4-PFHpA	6.492	367.1 -> 322.0	22661	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C5-PFHxA	5.547	318.0 -> 273.0	44911	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C5-PFPeA	4.387	268.3 -> 223.0	56471	4.95 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C6-PFDA	8.203	519.1 -> 474.1	15302	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C7-PFUnDA	8.672	570.0 -> 525.1	15352	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C8-FOSA	9.771	506.1 -> 77.8	12708	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C8-PFOA	7.148	421.1 -> 376.0	29858	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C8-PFOS	8.354	507.1 -> 79.9	8014	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C9-PFNA	7.696	472.1 -> 427.0	16453	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.9%		
d3-MeFOSAA	8.261	573.2 -> 419.0	11917	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-HFPO-DA	5.914	286.9 -> 168.9	24805	10.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
d3-MeFOSA	11.076	515.0 -> 219.0	7661	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.6%		
d5-EtFOSAA	8.470	589.2 -> 419.0	10194	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
d7-MeFOSE	10.959	623.2 -> 58.9	57660	22.92 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 91.7%		
d9-EtFOSE	11.269	639.2 -> 58.9	74682	23.26 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 93.0%		
d5-EtFOSA	11.360	531.1 -> 219.0	8220	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.4%		
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	151639	98.10 µg/L	100
		327.1 -> 80.9	62135		
6:2FTS	6.924	427.1 -> 407.0	128670	95.33 µg/L	97
		427.1 -> 80.9	52465		
8:2FTS	7.991	527.1 -> 507.0	146899	106.20 µg/L	93
		527.1 -> 80.8	55636		
EtFOSAA	8.471	584.2 -> 419.1	51299	26.38 µg/L	m 82
		584.2 -> 526.0	24120		
FOSA	9.774	498.1 -> 77.9	151576	27.43 µg/L	99
		498.1 -> 478.0	4179		
MeFOSAA	8.262	570.1 -> 419.0	55947	26.58 µg/L	m 98
		570.1 -> 483.0	11405		
PFBA	2.920	212.8 -> 168.9	255278	105.30 µg/L	100
PFBS	5.453	298.7 -> 79.9	105914	23.39 µg/L	100
		298.7 -> 98.8	41591		
PFDA	8.204	512.9 -> 469.0	291893	25.59 µg/L	99
		512.9 -> 219.0	57578		
PFDoDA	9.131	613.1 -> 569.0	452012	26.66 µg/L	99
		613.1 -> 319.0	62153		
PFDS	9.294	599.0 -> 79.9	58882	24.55 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	28710			
PFHpA	6.492	363.1 -> 319.0	402952	27.43	µg/L	99
		363.1 -> 169.0	71426			
PFHpS	7.836	449.0 -> 79.9	70840	25.22	µg/L	95
		449.0 -> 98.9	36691			
PFHxA	5.550	313.0 -> 269.0	457195	27.12	µg/L	100
		313.0 -> 118.9	14031			
PFHxS	7.243	398.7 -> 79.9	66424	24.55	µg/L	m 91
		398.7 -> 98.9	33216			
PFNA	7.709	463.0 -> 419.0	290498	26.18	µg/L	97
		463.0 -> 219.0	71525			
PFNS	8.836	548.8 -> 79.9	39586	26.44	µg/L	97
		548.8 -> 98.9	20347			
PFOA	7.150	413.0 -> 369.0	468910	27.11	µg/L	97
		413.0 -> 169.0	93585			
PFOS	8.355	498.9 -> 79.9	93057	23.85	µg/L	m 94
		498.9 -> 98.8	46288			
PFPeA	4.377	263.0 -> 219.0	729006	54.04	µg/L	100
PFPeS	6.519	349.1 -> 79.9	57871	25.66	µg/L	99
		349.1 -> 98.9	25431			
PFTeDA	9.924	713.1 -> 669.0	415934	26.54	µg/L	98
		713.1 -> 168.9	34094			
PFTrDA	9.554	663.0 -> 619.0	519766	25.72	µg/L	100
		663.0 -> 168.9	50789			
PFUnDA	8.673	563.1 -> 519.0	302181	26.89	µg/L	99
		563.1 -> 269.1	58381			
11Cl-PF3OUdS	9.593	630.9 -> 450.9	435033	49.47	µg/L	99
		632.9 -> 452.9	132890			
9Cl-PF3ONS	8.700	530.8 -> 351.0	478835	52.27	µg/L	98
		532.8 -> 353.0	140833			
ADONA	6.743	376.9 -> 250.9	1269900	50.04	µg/L	99
		376.9 -> 84.8	335543			
HFPO-DA	5.915	284.9 -> 168.9	132371	53.94	µg/L	96
		284.9 -> 184.9	16341			
3:3FTCA	3.836	241.0 -> 177.0	78271	137.30	µg/L	99
		241.0 -> 117.0	7447			
5:3FTCA	6.205	341.0 -> 237.1	1616825	663.03	µg/L	98
		341.0 -> 217.0	1153295			
7:3FTCA	7.661	441.0 -> 316.9	705112	660.74	µg/L	99
		441.0 -> 336.9	1561248			
EtFOSA	11.362	526.0 -> 219.0	196845	56.05	µg/L	m 62
		526.0 -> 169.0	270620			
EtFOSE	11.282	630.0 -> 58.9	367766	132.93	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	156718	51.87	µg/L	m 81
		511.9 -> 169.0	218484			
MeFOSE	10.985	616.1 -> 58.9	321135	135.22	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	51784	24.58	µg/L	99
		699.1 -> 98.8	29505			
NFDHA	5.441	295.0 -> 201.0	53807	49.12	µg/L	97
		295.0 -> 84.9	13557			
PFMBA	4.791	279.0 -> 85.1	419345	53.93	µg/L	100
PFMPA	3.528	229.0 -> 84.9	361916	53.94	µg/L	100
PFEESA	5.984	314.8 -> 134.9	697396	47.37	µg/L	99
		314.8 -> 82.9	23277			

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

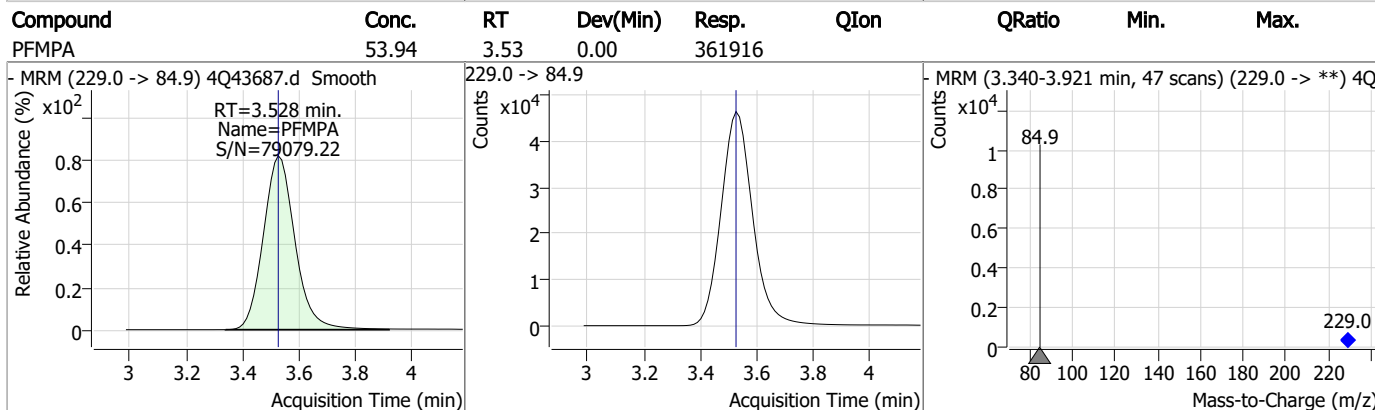
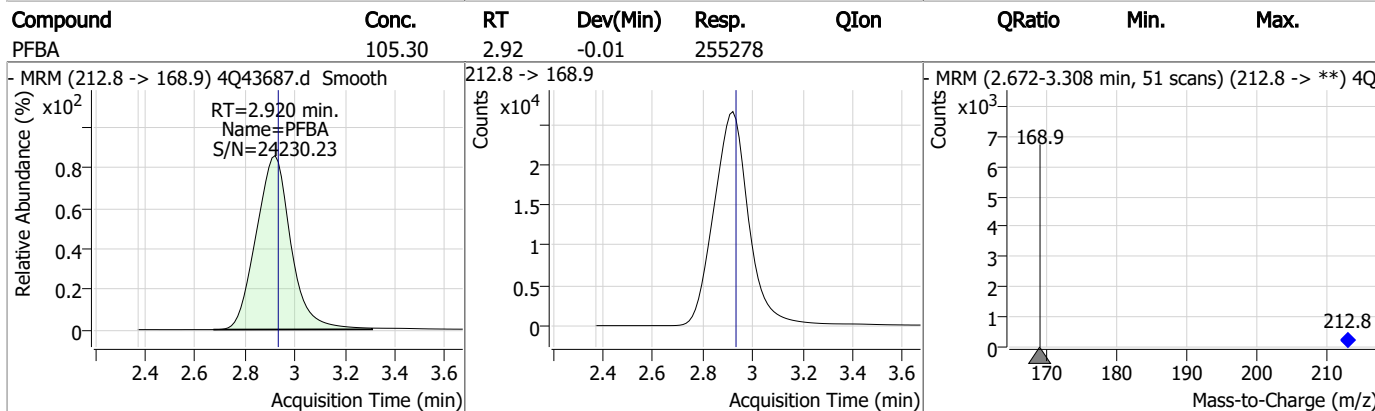
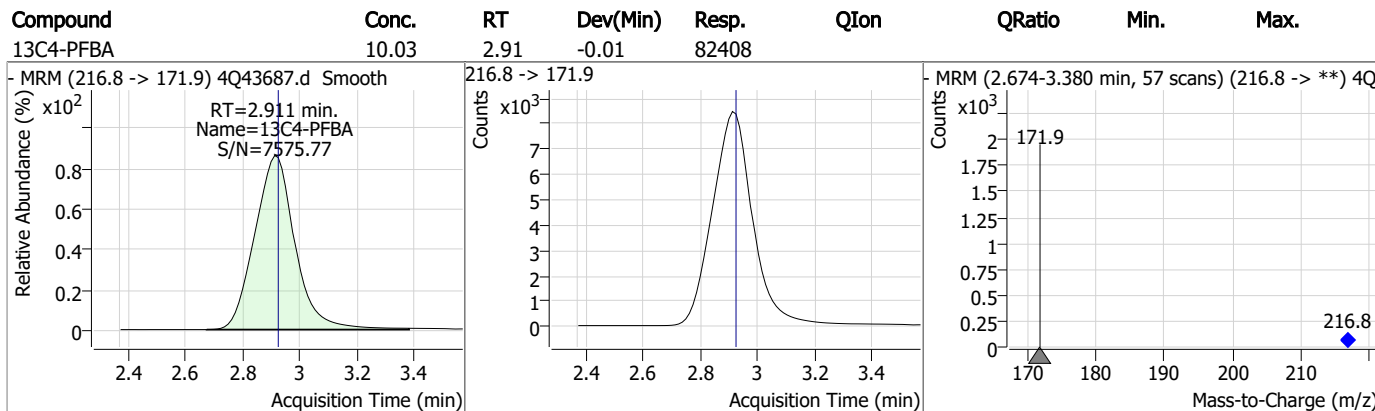
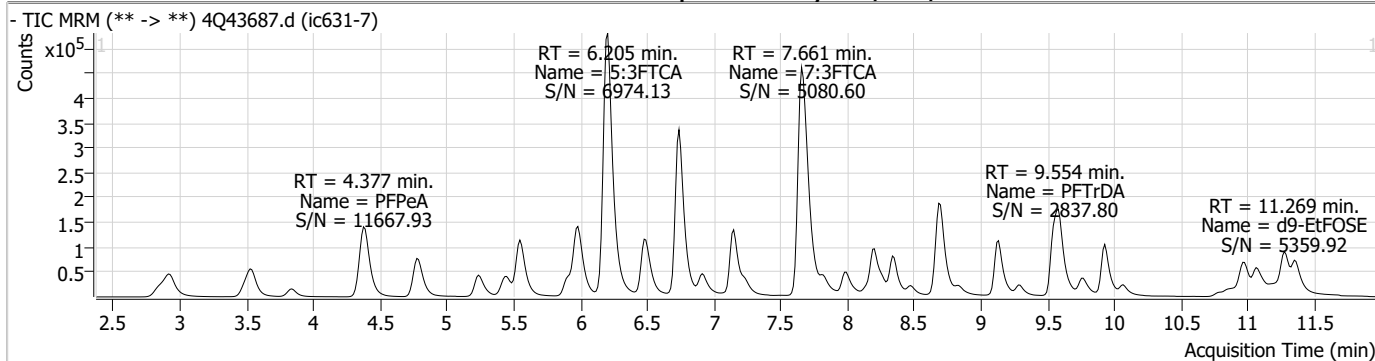
Perfluorinated Compounds by LC/MS/MS

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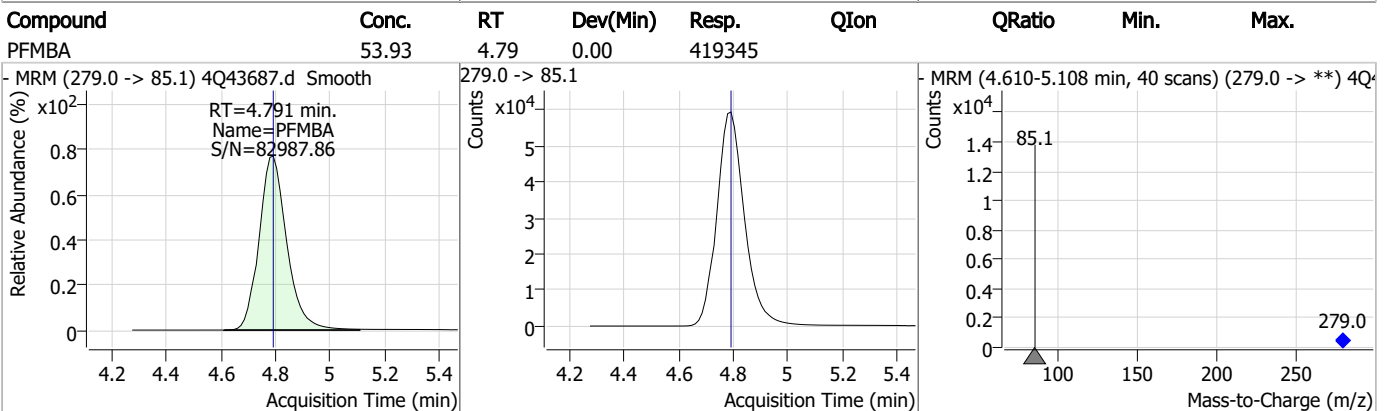
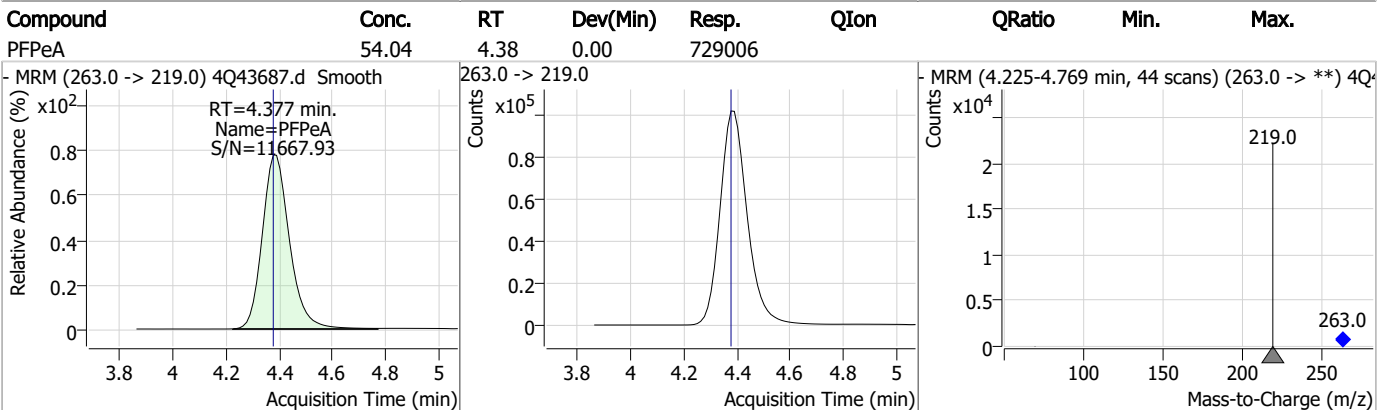
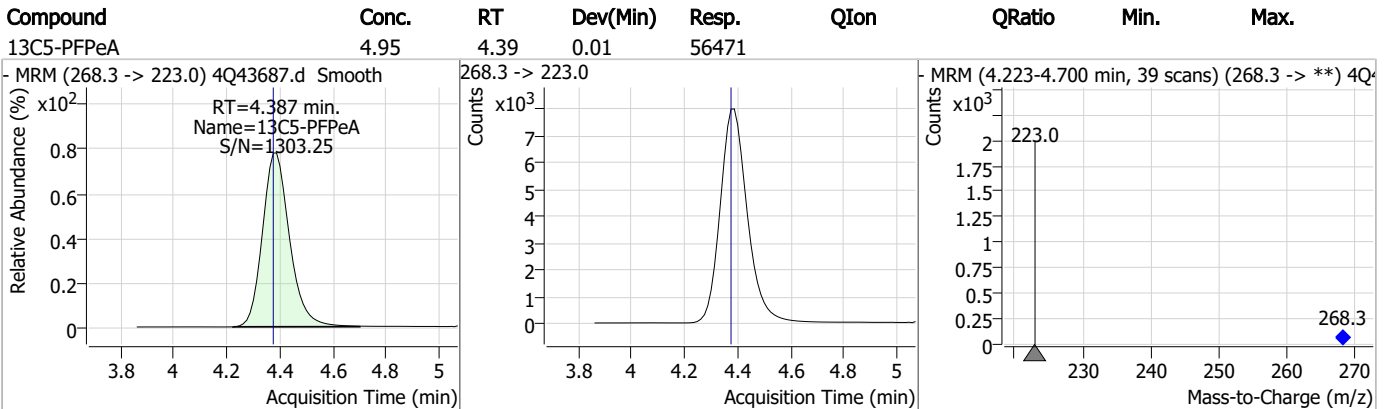
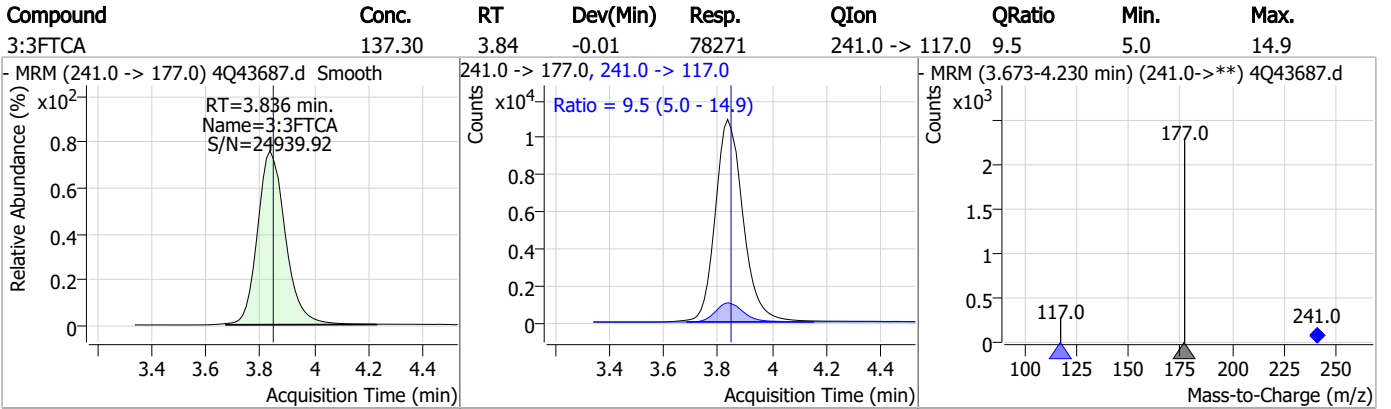
7.7.8
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Perfluorinated Compounds by LC/MS/MS



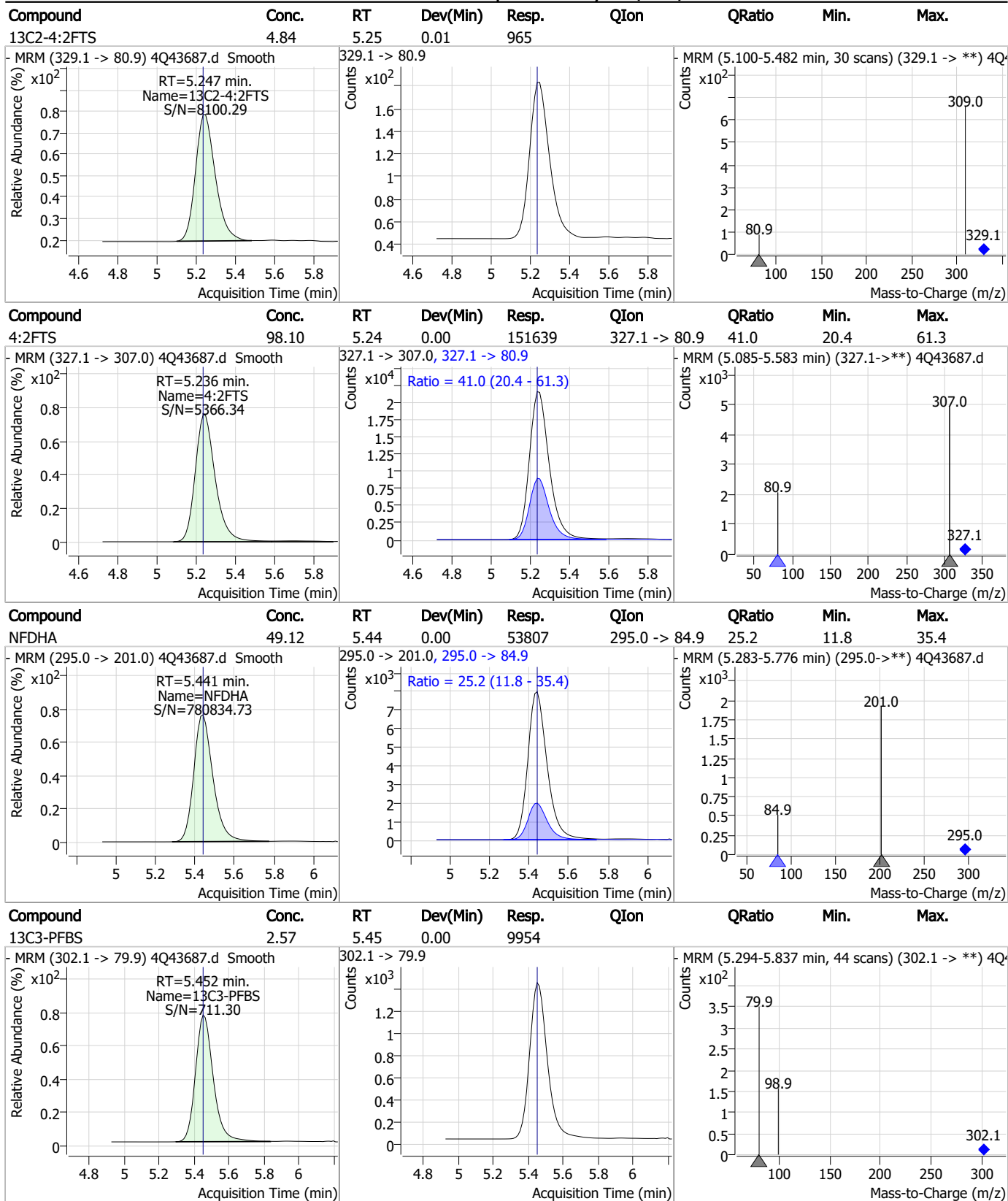
Perfluorinated Compounds by LC/MS/MS



7.7.8

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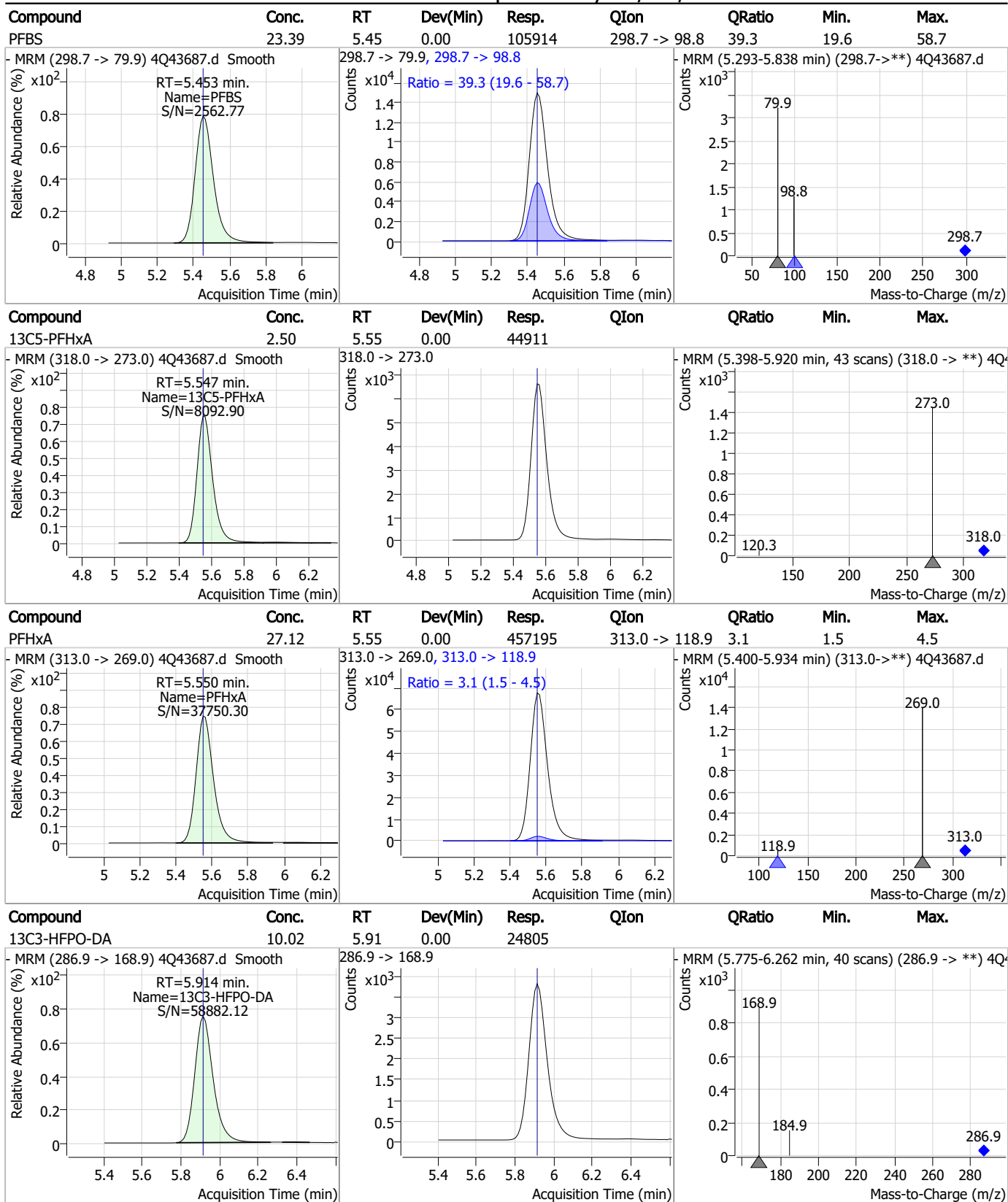
Perfluorinated Compounds by LC/MS/MS



7.7.8
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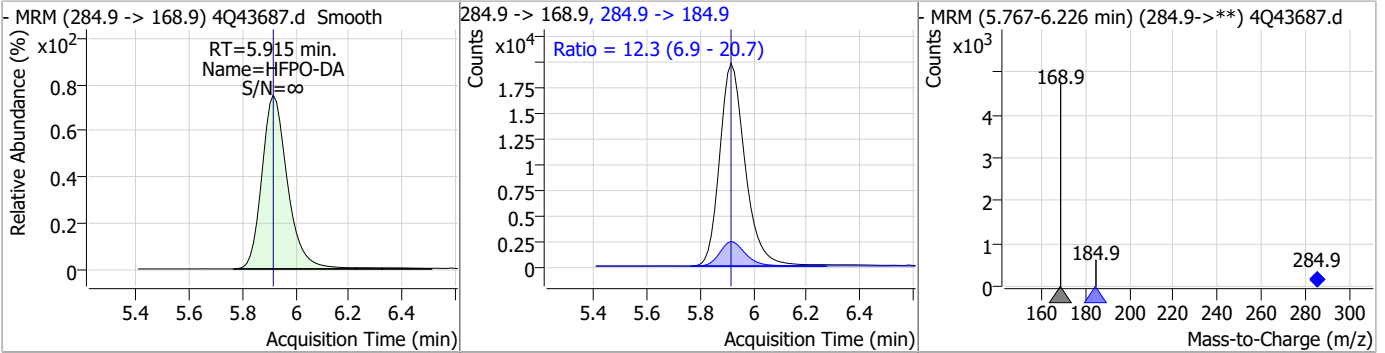
Perfluorinated Compounds by LC/MS/MS



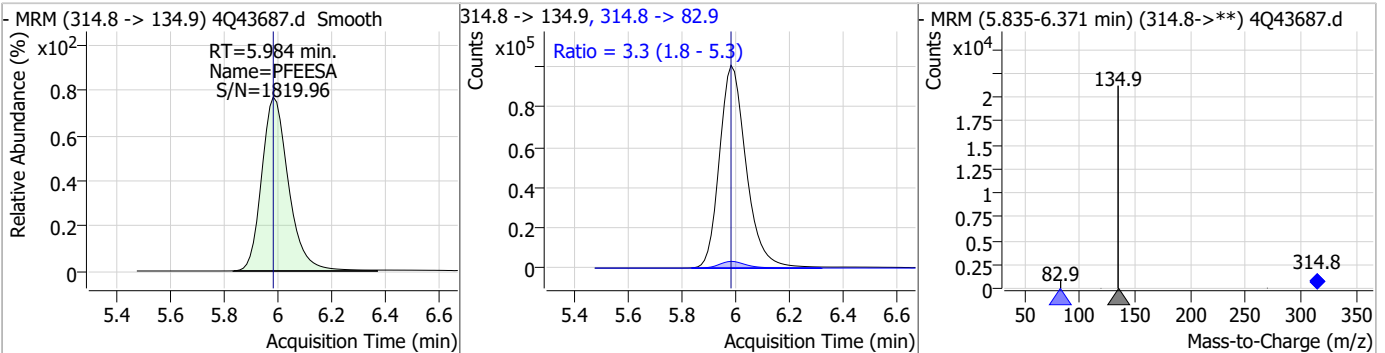
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Perfluorinated Compounds by LC/MS/MS

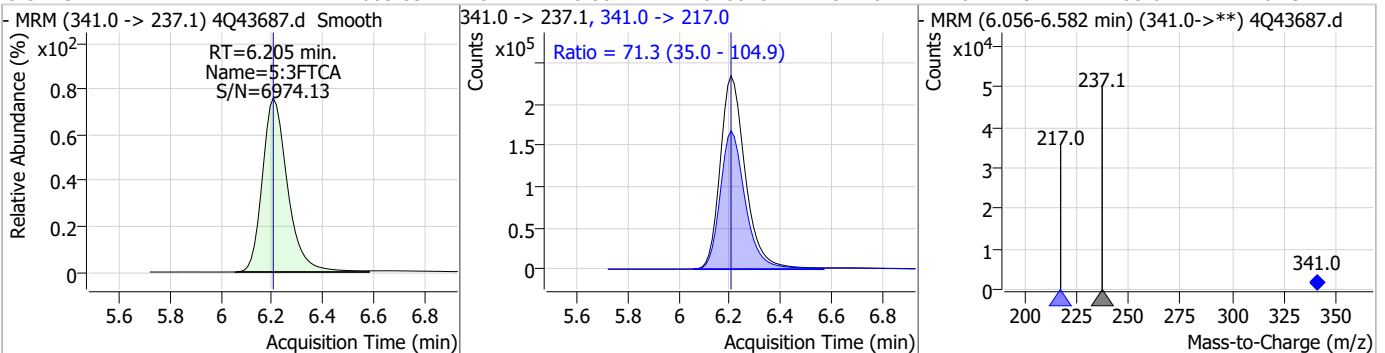
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	53.94	5.92	0.00	132371	284.9 -> 184.9	12.3	6.9	20.7



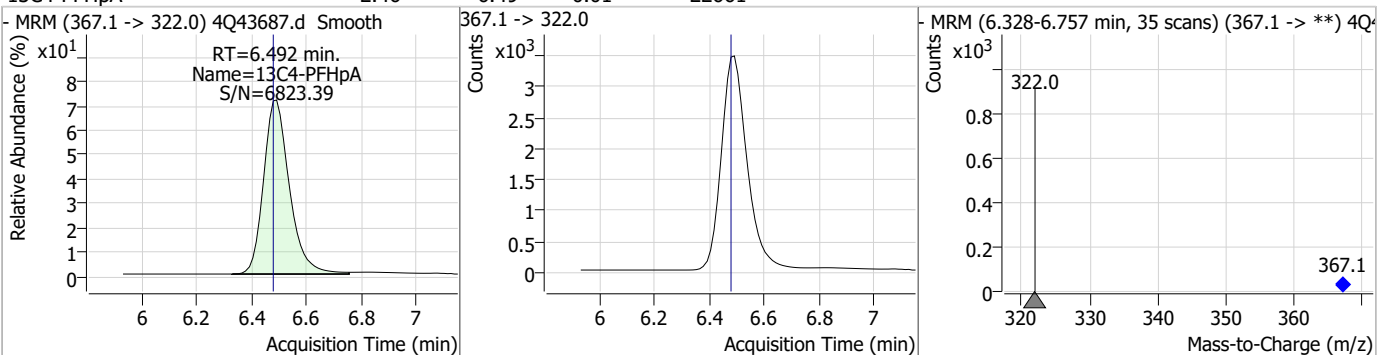
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	47.37	5.98	0.00	697396	314.8 -> 82.9	3.3	1.8	5.3



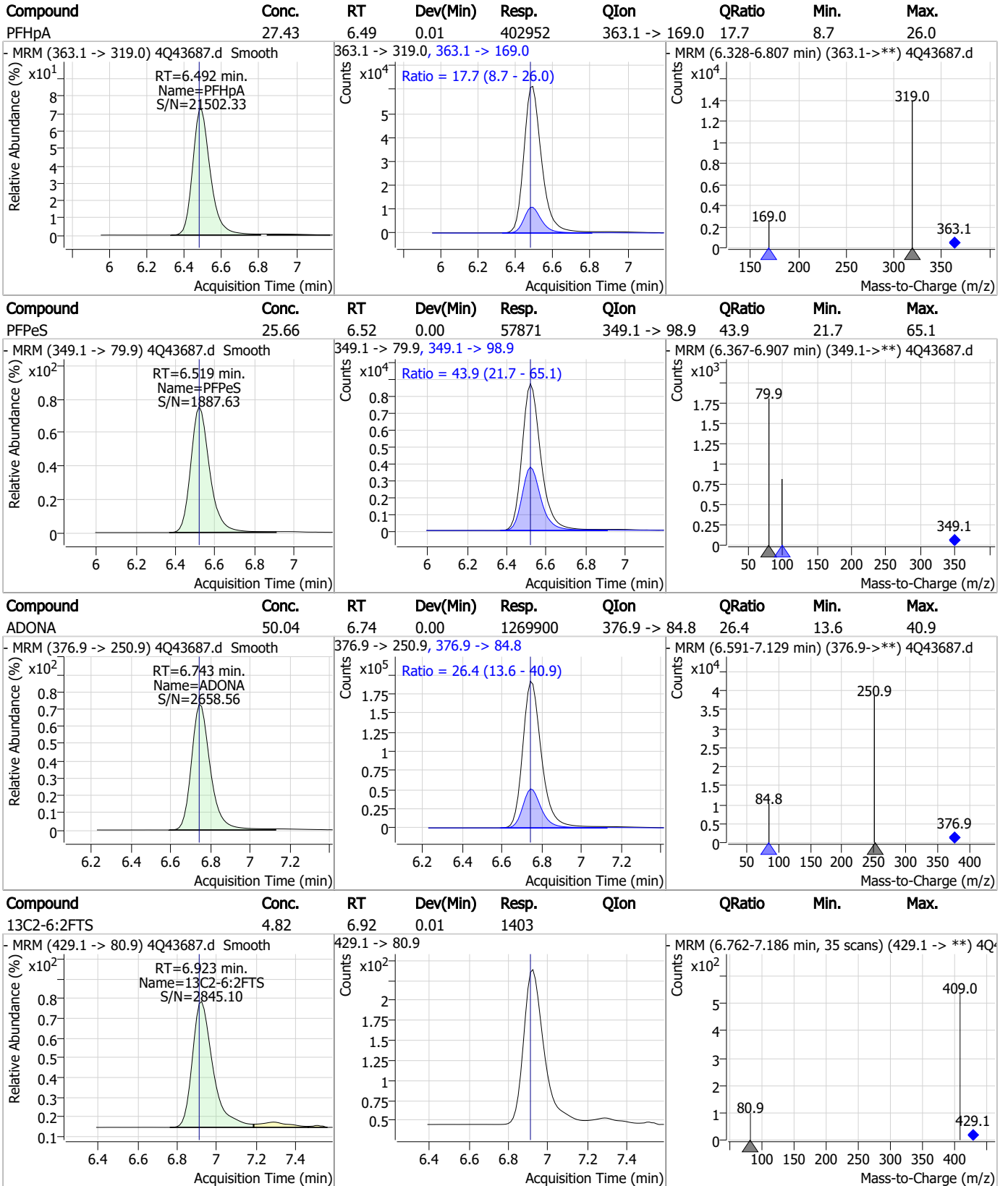
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	663.03	6.21	0.00	1616825	341.0 -> 217.0	71.3	35.0	104.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.46	6.49	0.01	22661				



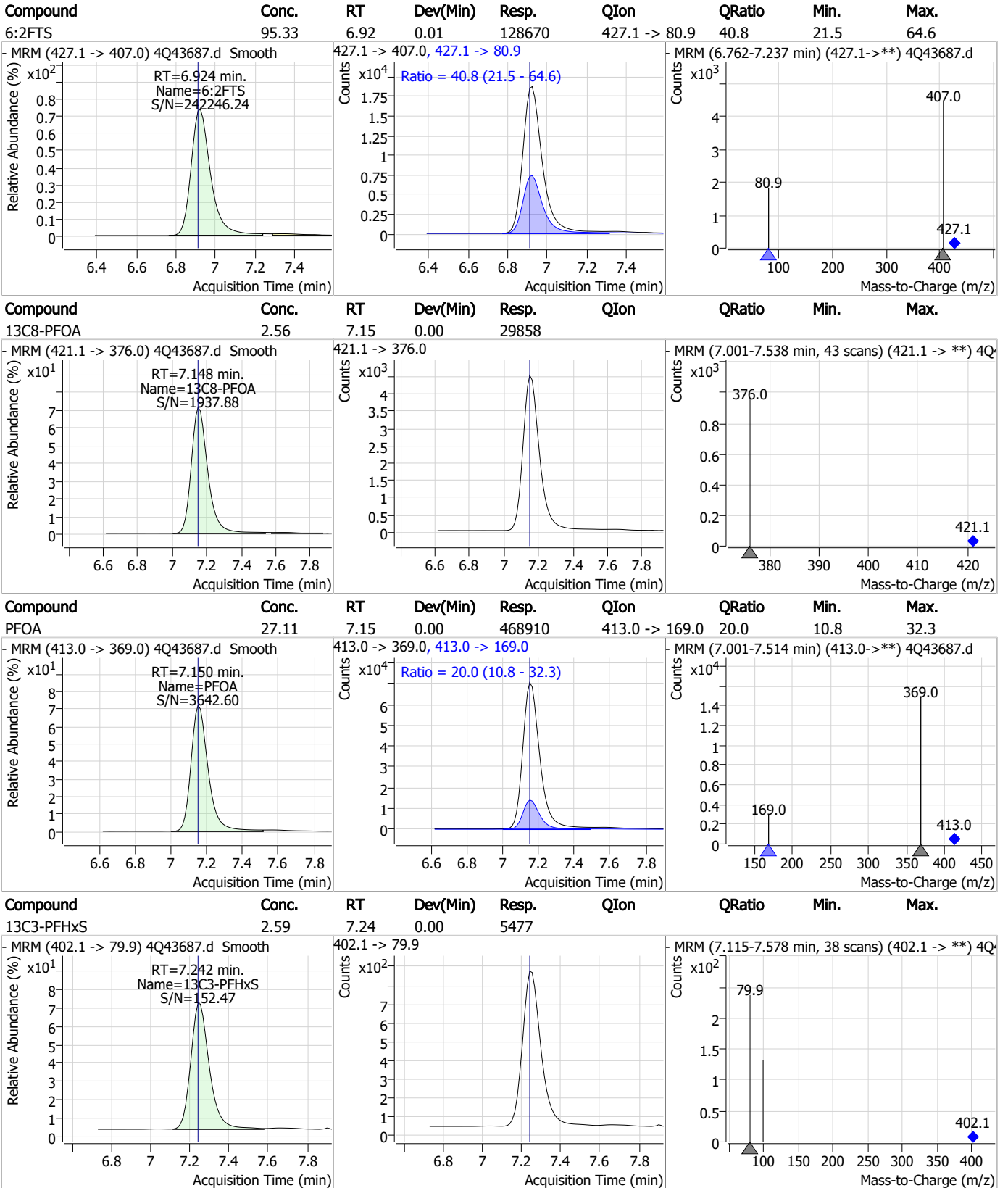
Perfluorinated Compounds by LC/MS/MS



7.7.8

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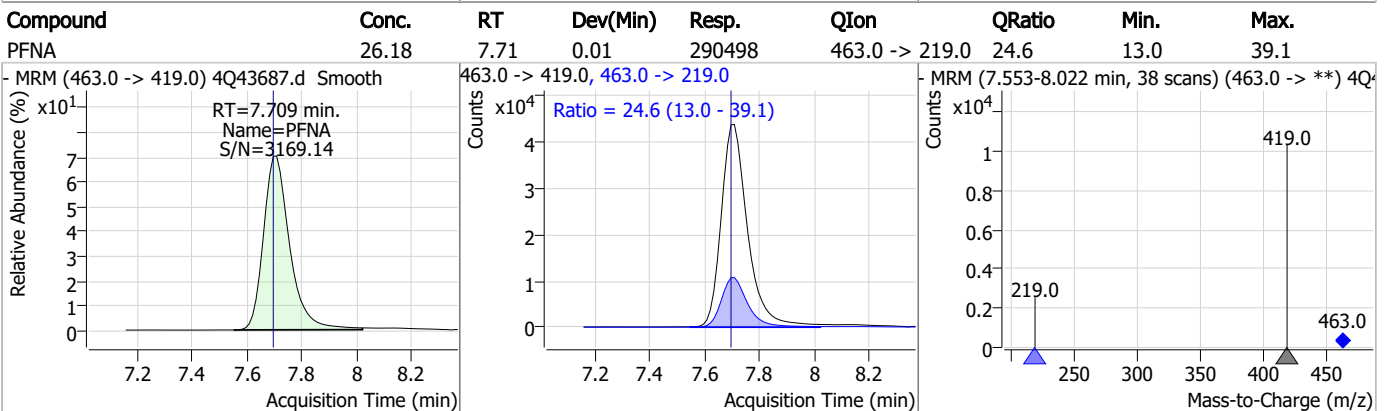
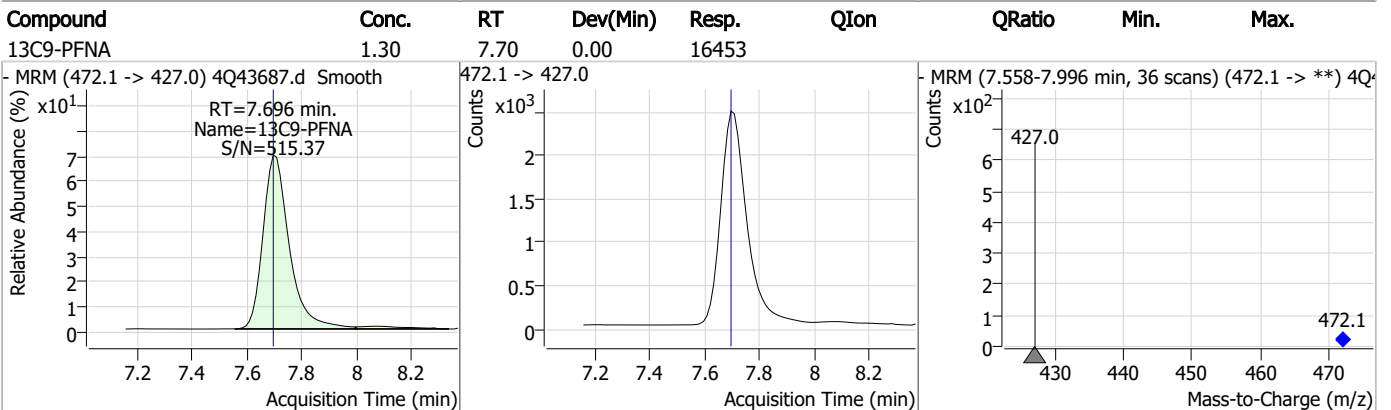
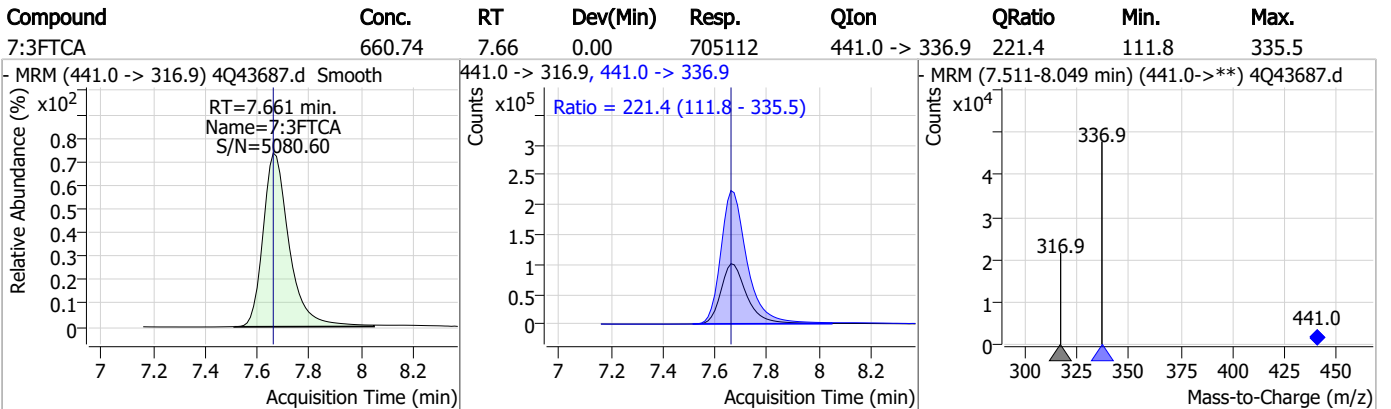
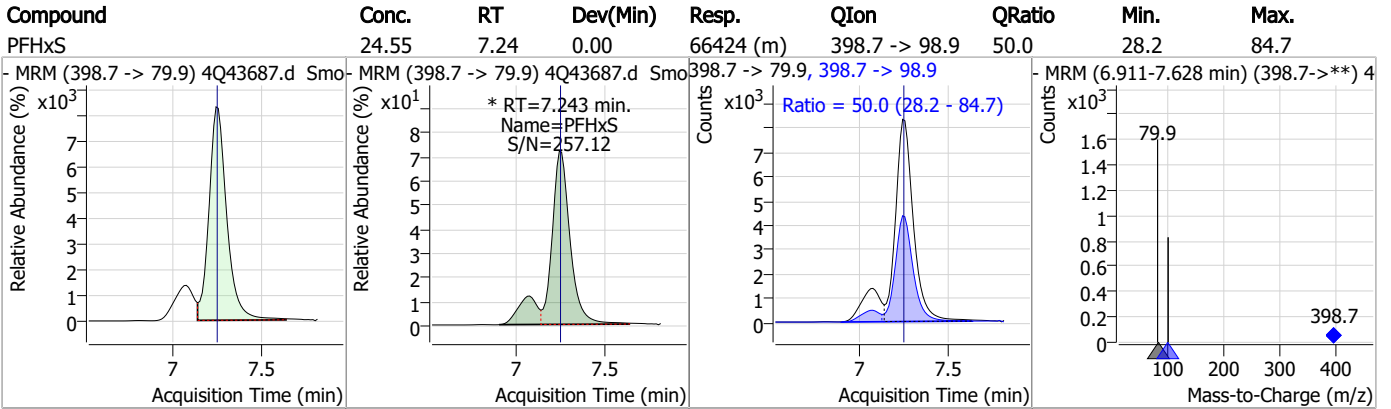
Perfluorinated Compounds by LC/MS/MS



7.7.8

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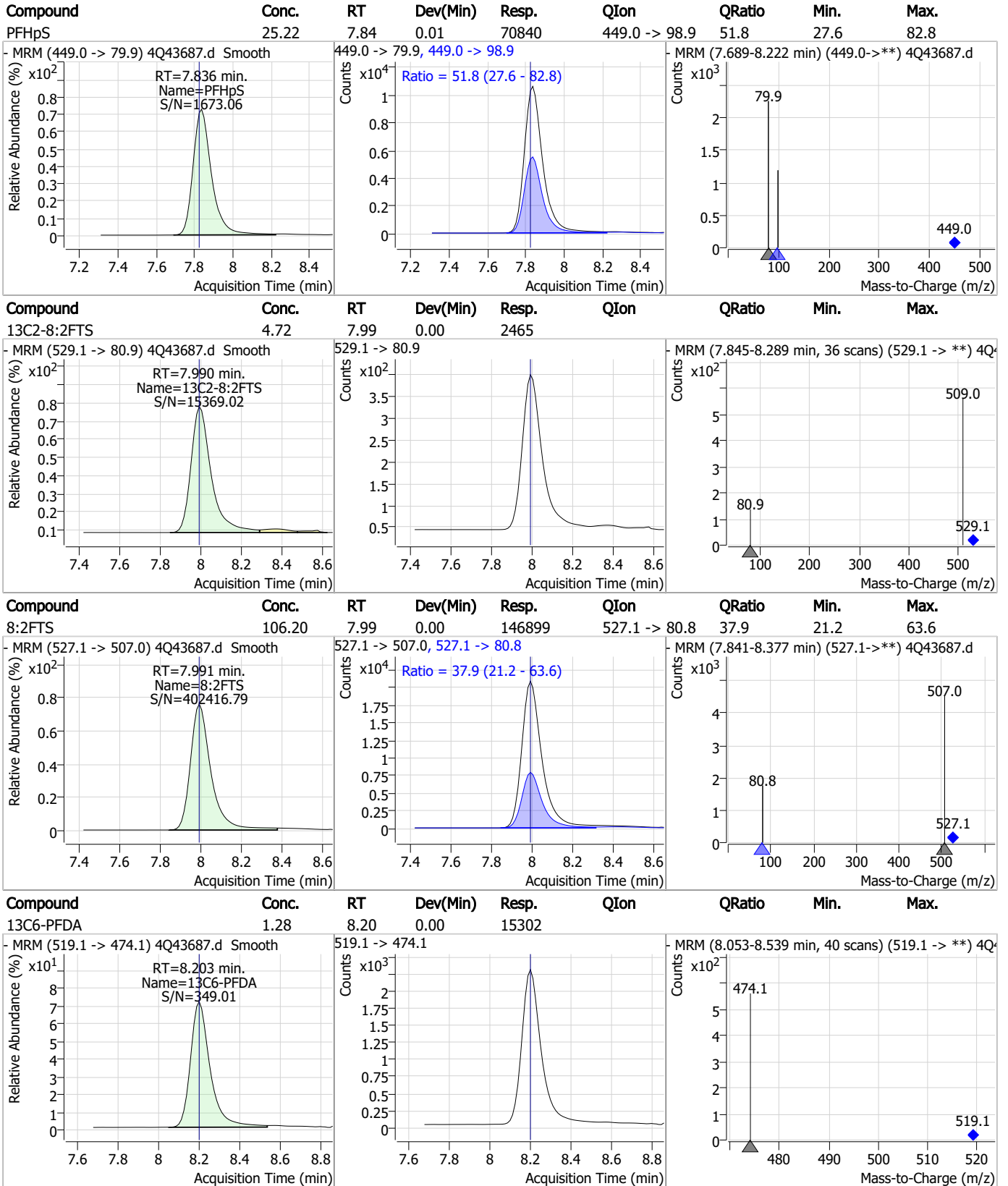
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS



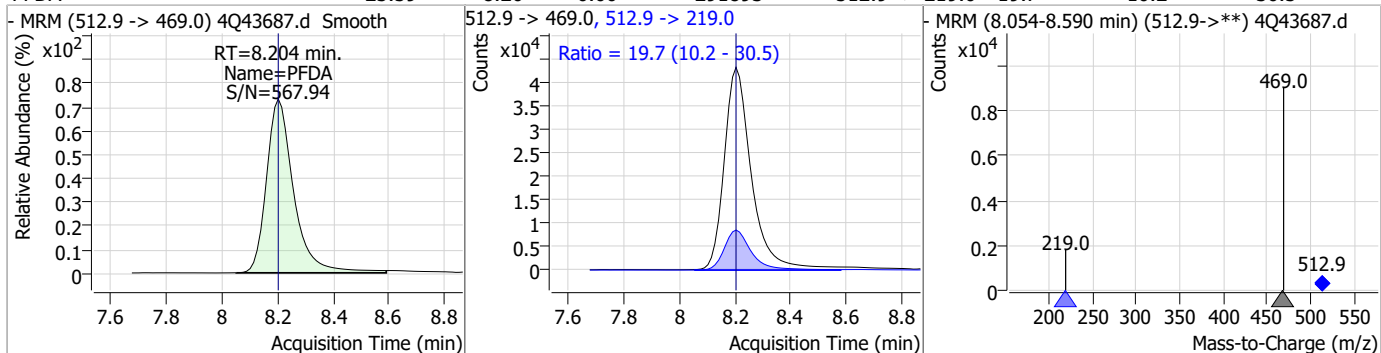
7.7.8

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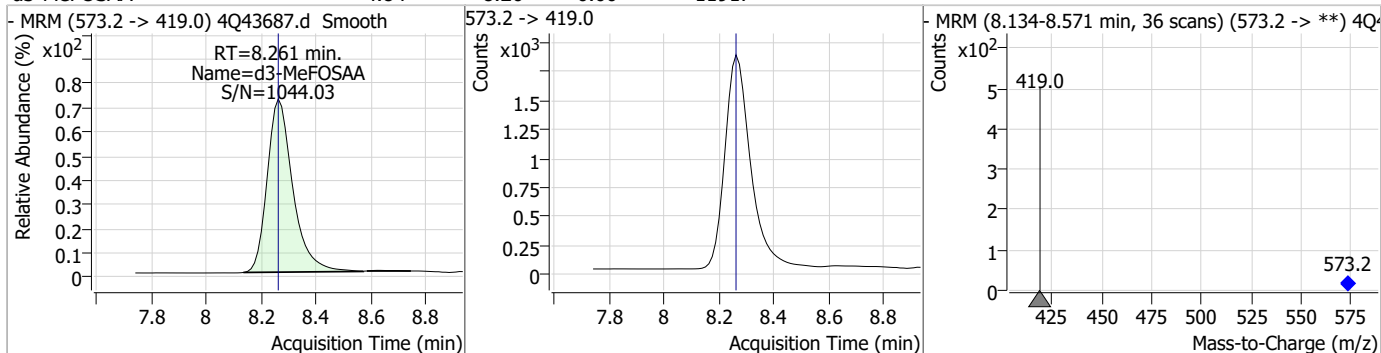


Perfluorinated Compounds by LC/MS/MS

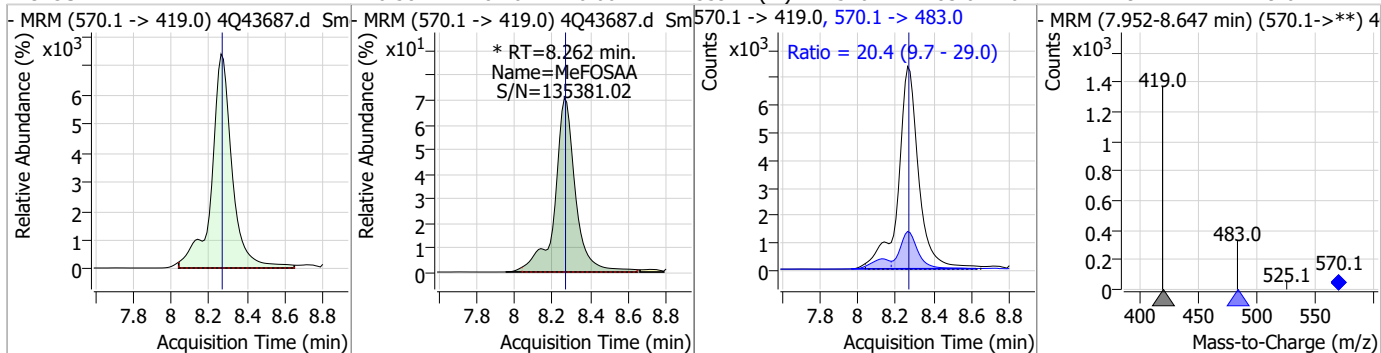
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	25.59	8.20	0.00	291893	512.9 -> 219.0	19.7	10.2	30.5



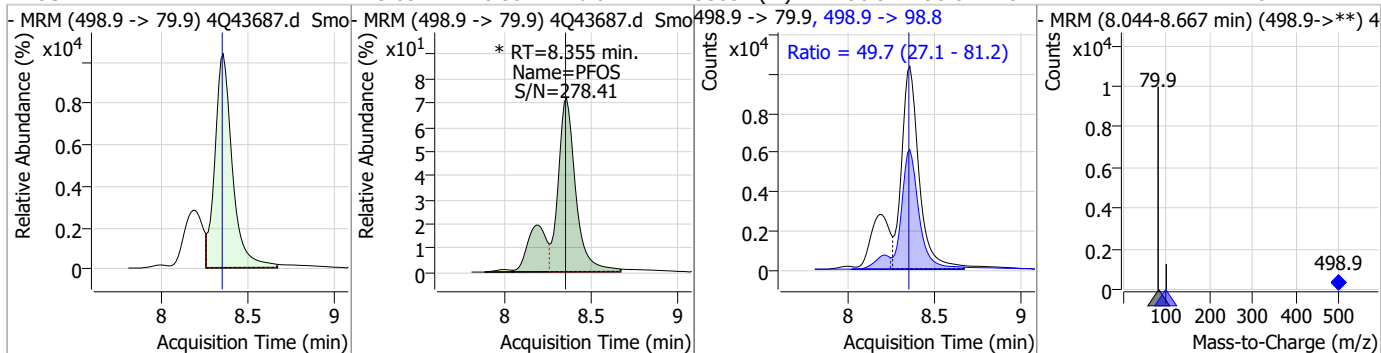
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.84	8.26	0.00	11917				



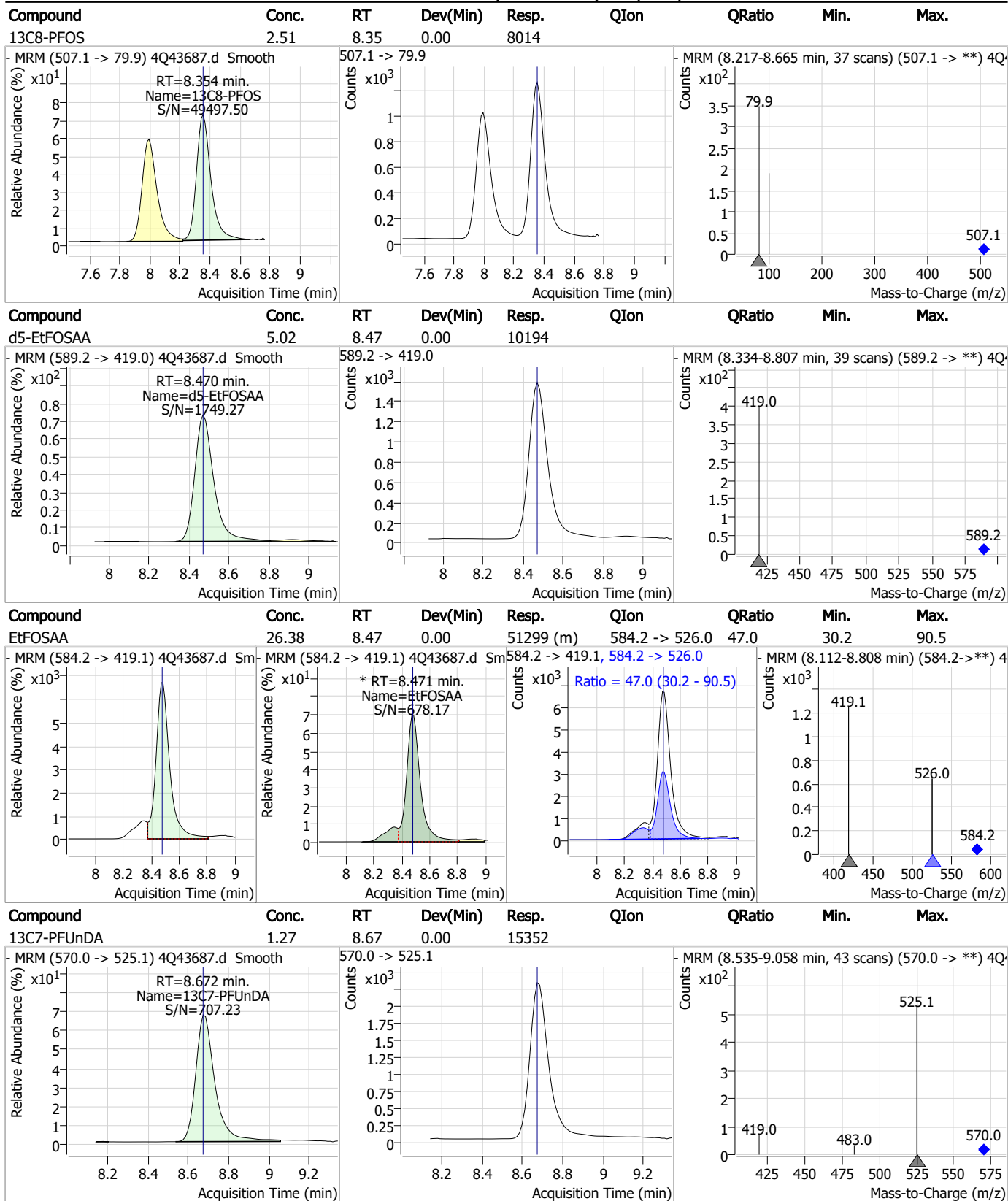
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	26.58	8.26	0.00	55947 (m)	570.1 -> 483.0	20.4	9.7	29.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	23.85	8.35	0.01	93057 (m)	498.9 -> 98.8	49.7	27.1	81.2



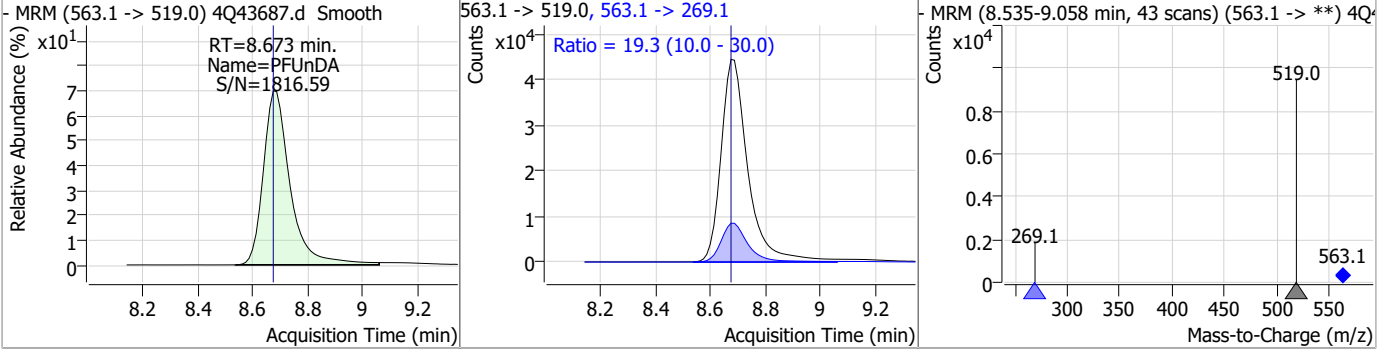
Perfluorinated Compounds by LC/MS/MS



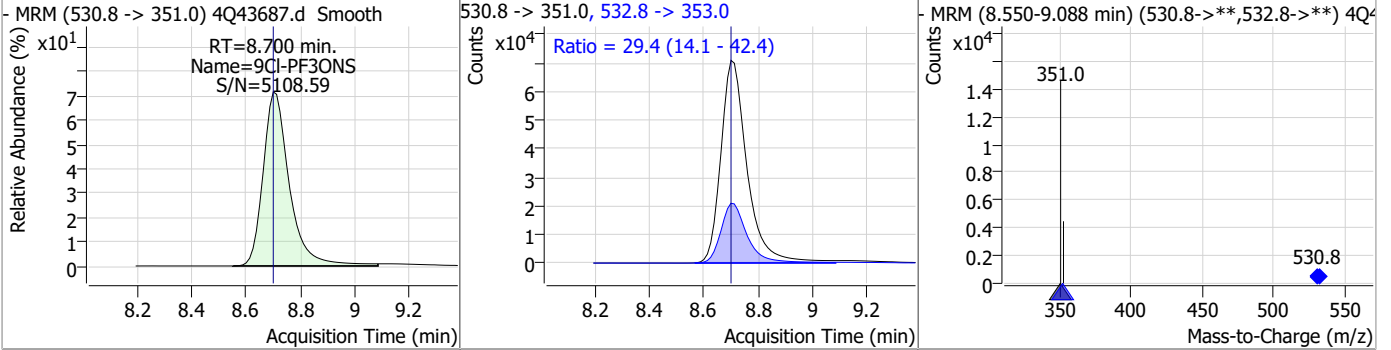
7.7.8
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Perfluorinated Compounds by LC/MS/MS

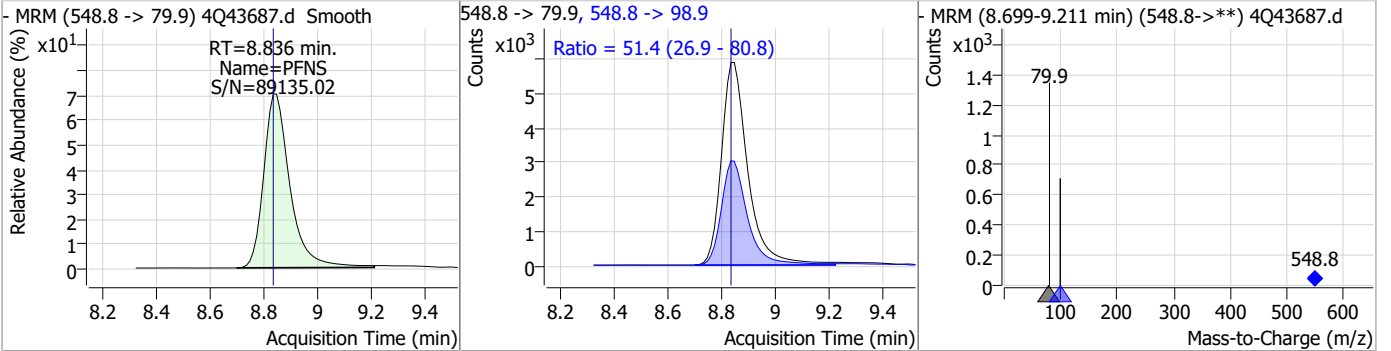
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	26.89	8.67	0.00	302181	563.1 -> 269.1	19.3	10.0	30.0



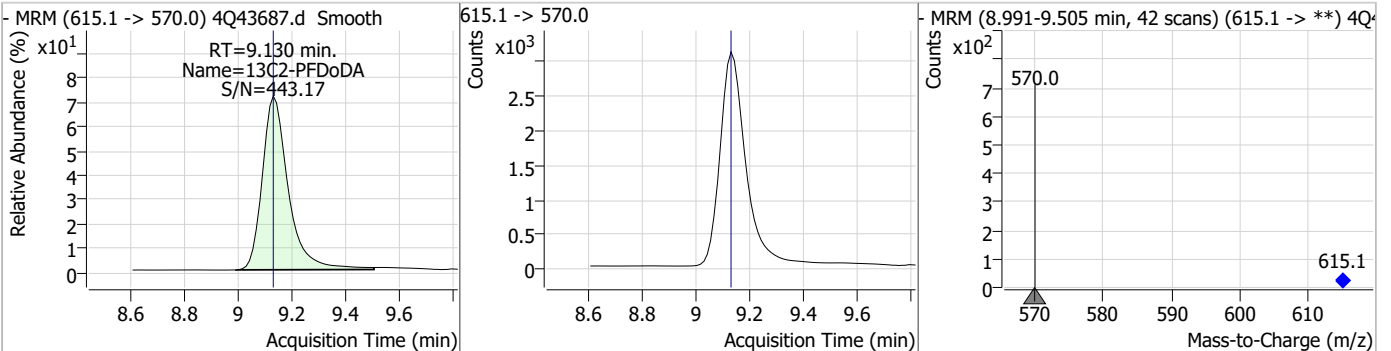
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	52.27	8.70	0.00	478835	532.8 -> 353.0	29.4	14.1	42.4



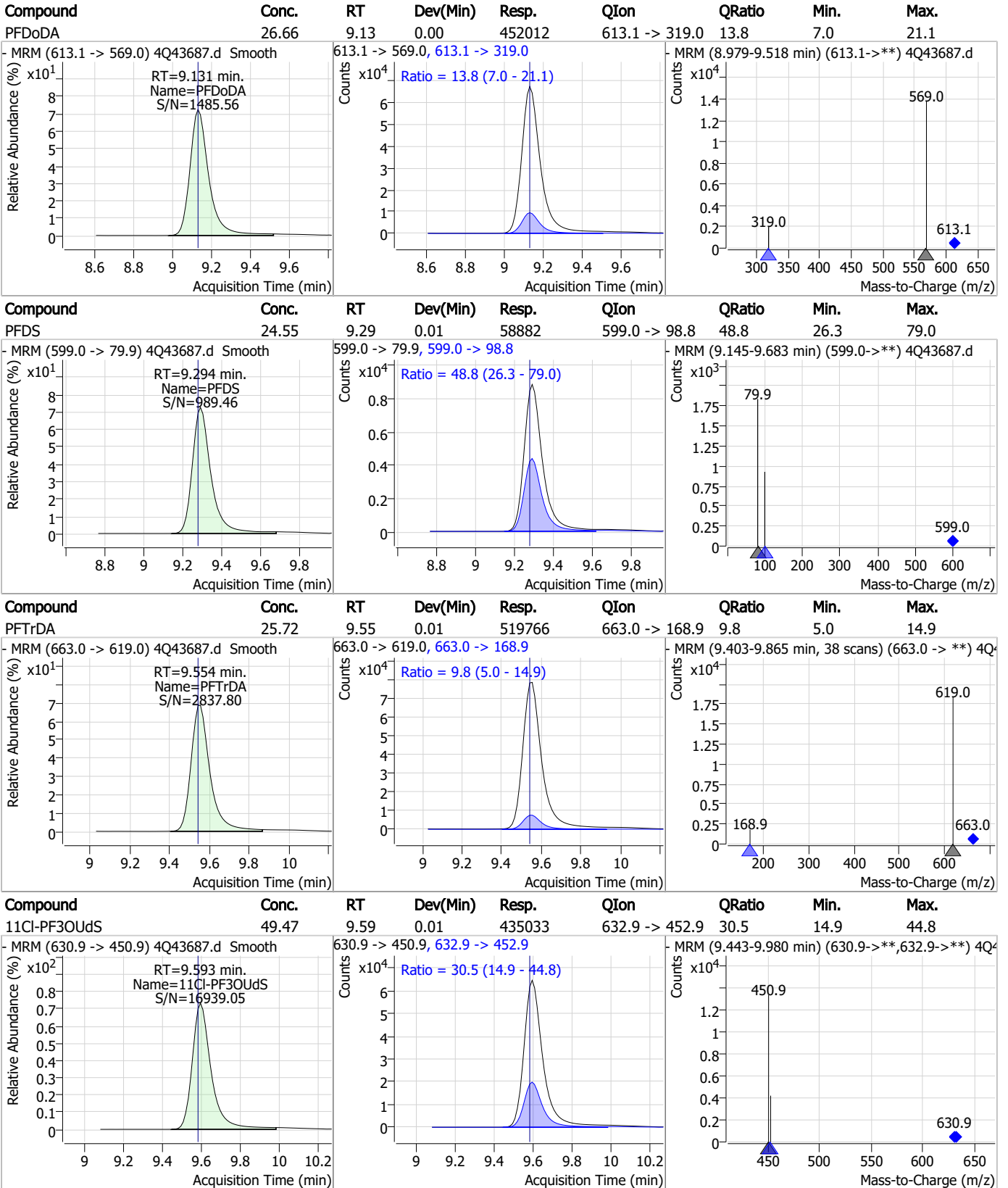
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	26.44	8.84	0.00	39586	548.8 -> 98.9	51.4	26.9	80.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.25	9.13	0.00	20757	615.1 -> 570.0			



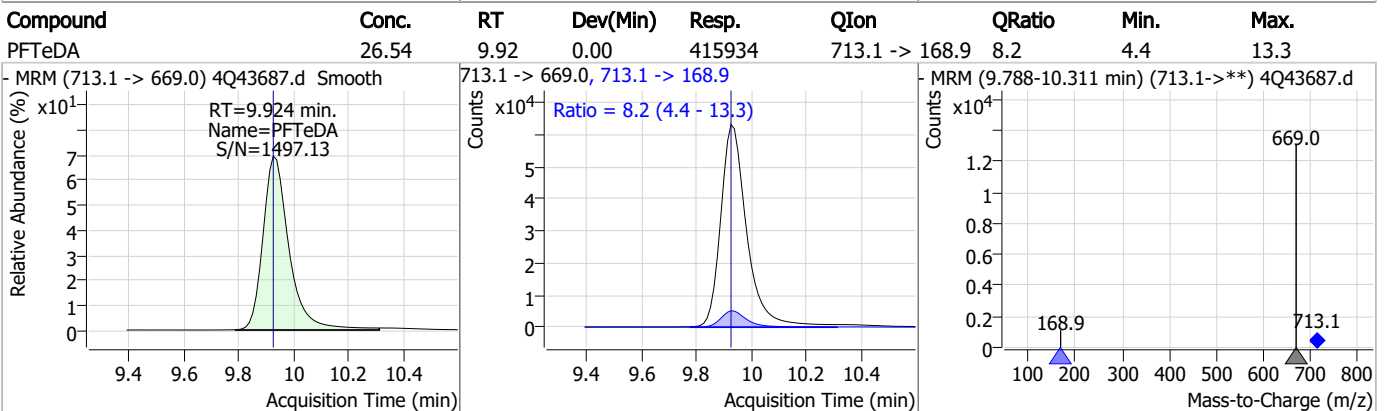
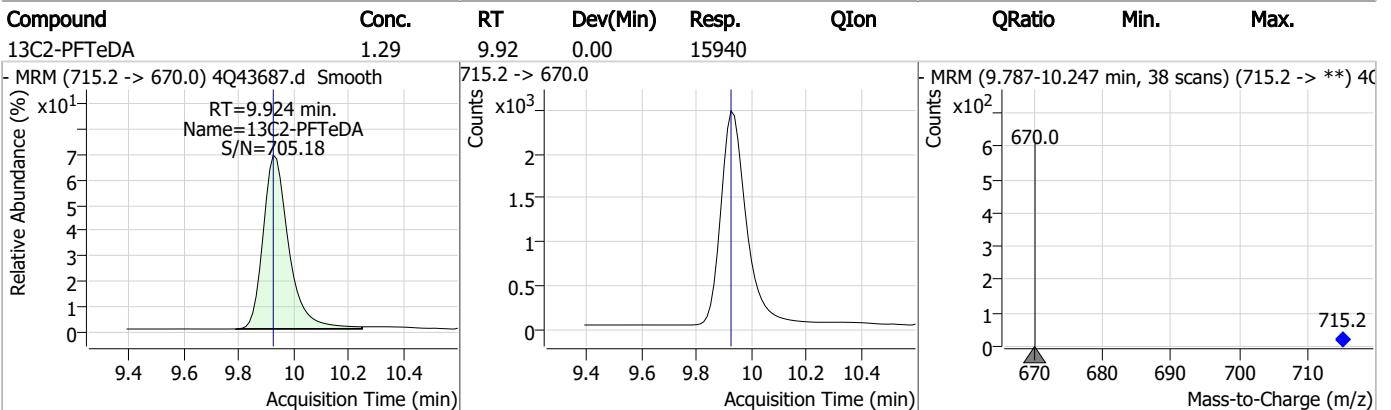
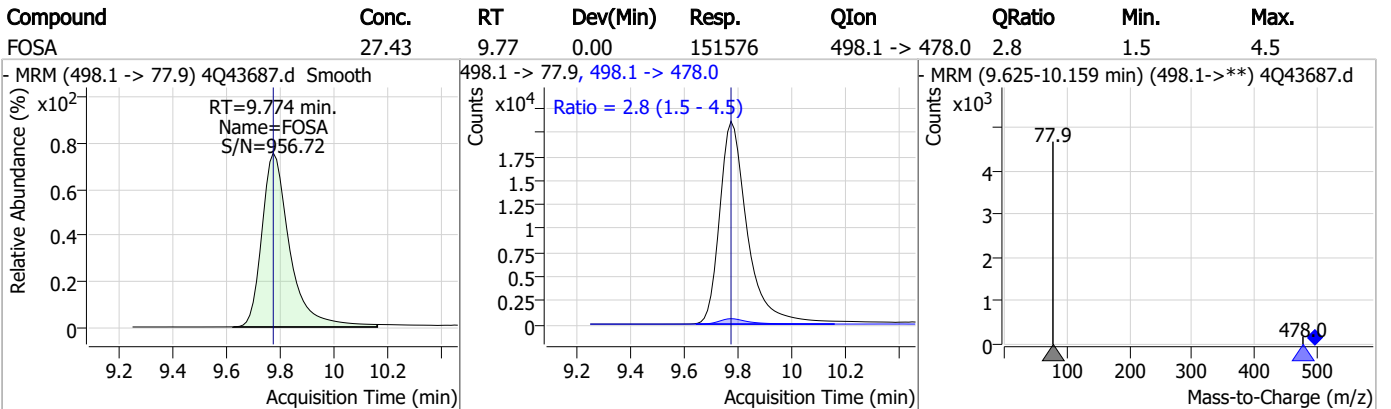
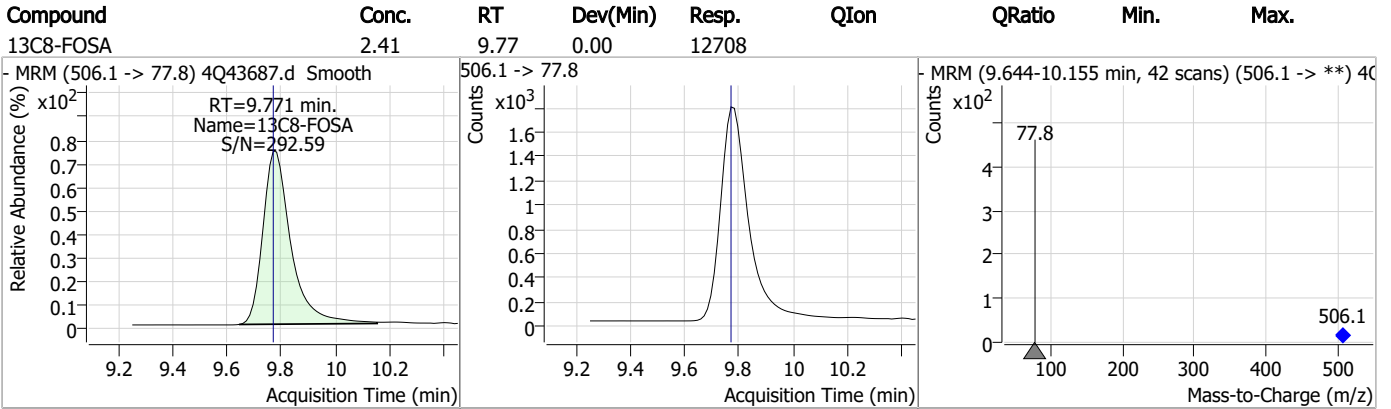
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS

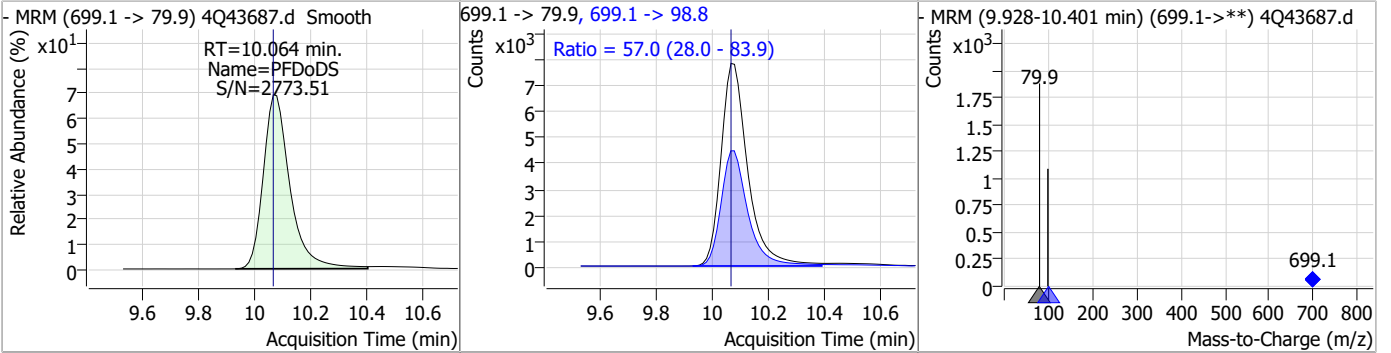


7.7.8

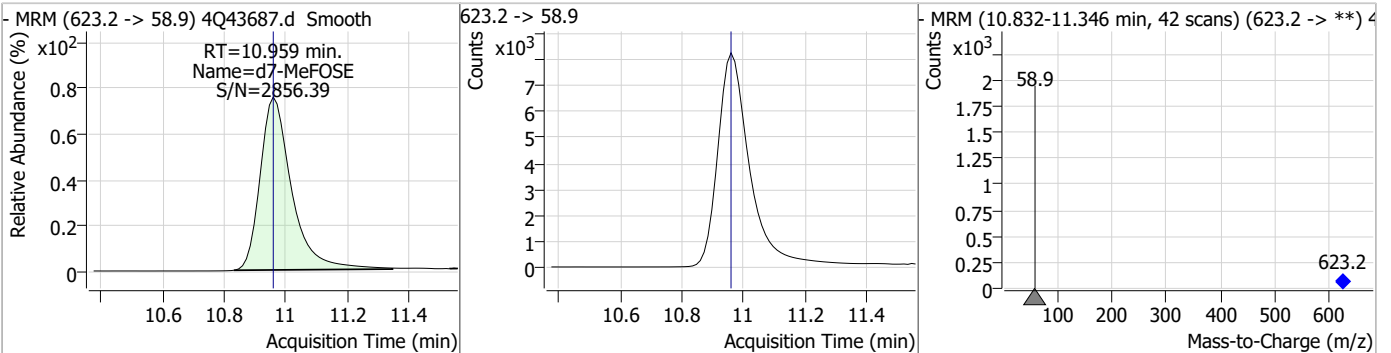
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Perfluorinated Compounds by LC/MS/MS

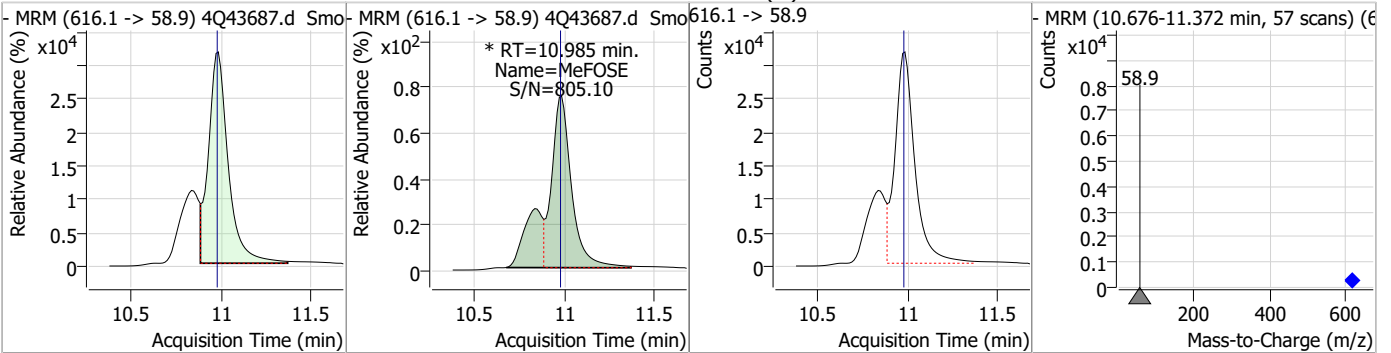
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	24.58	10.06	0.00	51784	699.1 -> 98.8	57.0	28.0	83.9



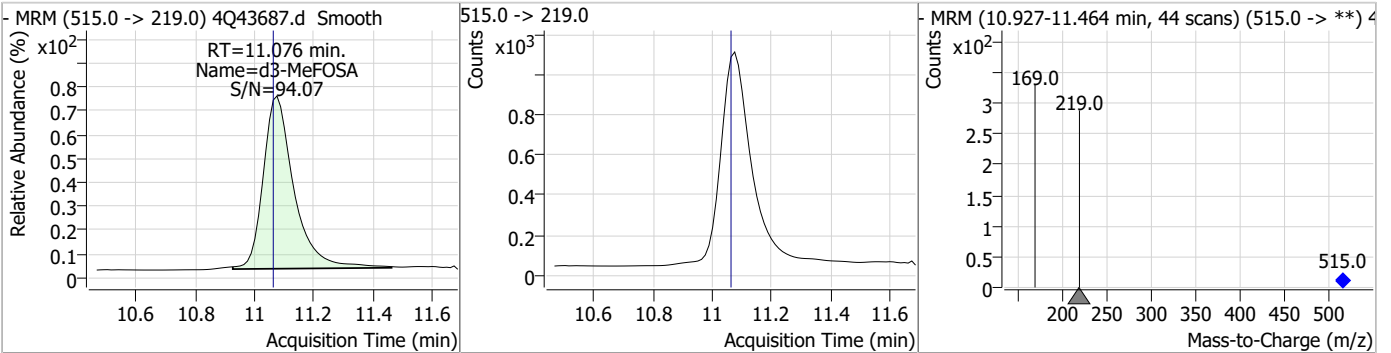
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.92	10.96	0.00	57660				



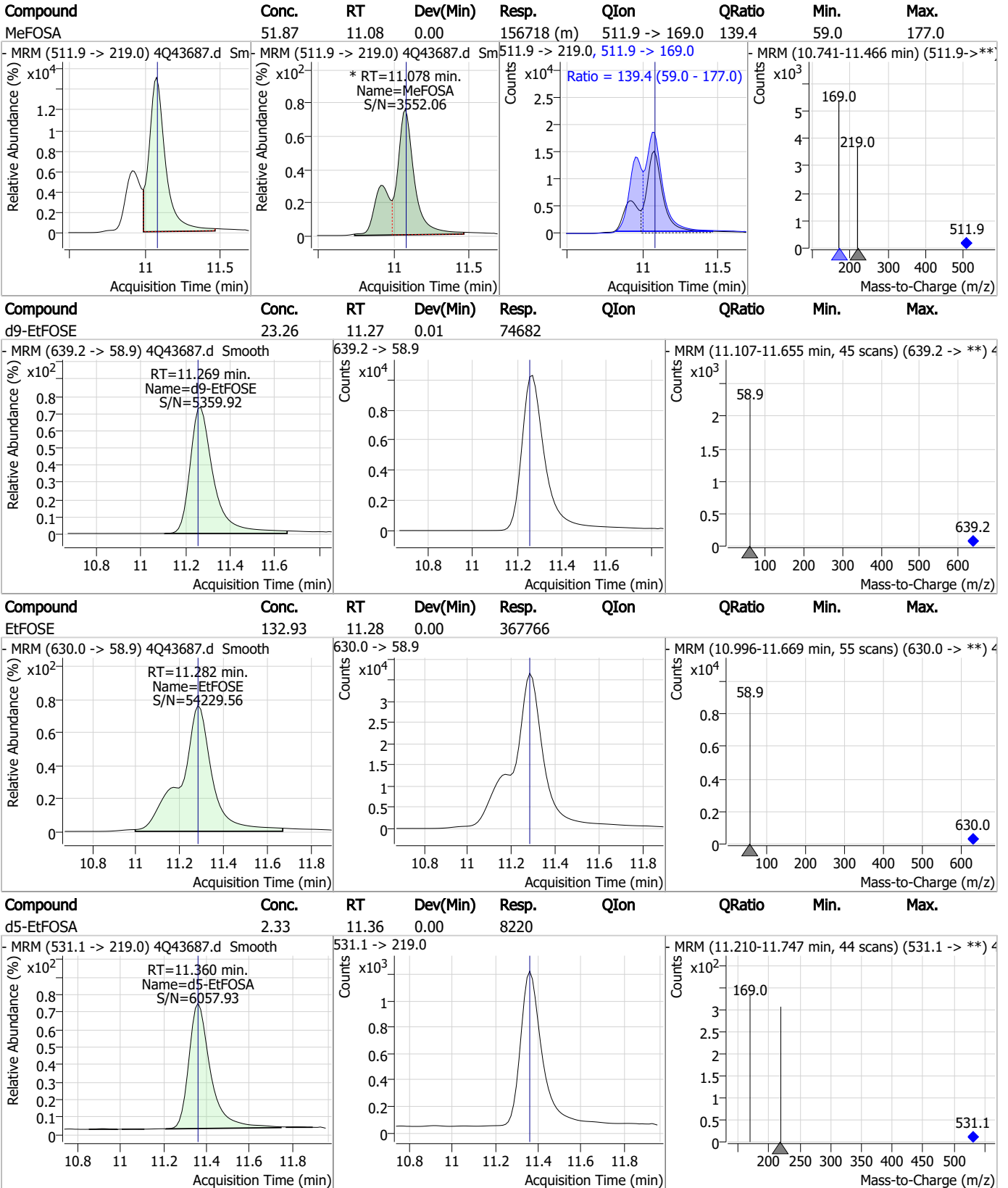
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	135.22	10.99	0.01	321135 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.54	11.08	0.01	7661				



Perfluorinated Compounds by LC/MS/MS

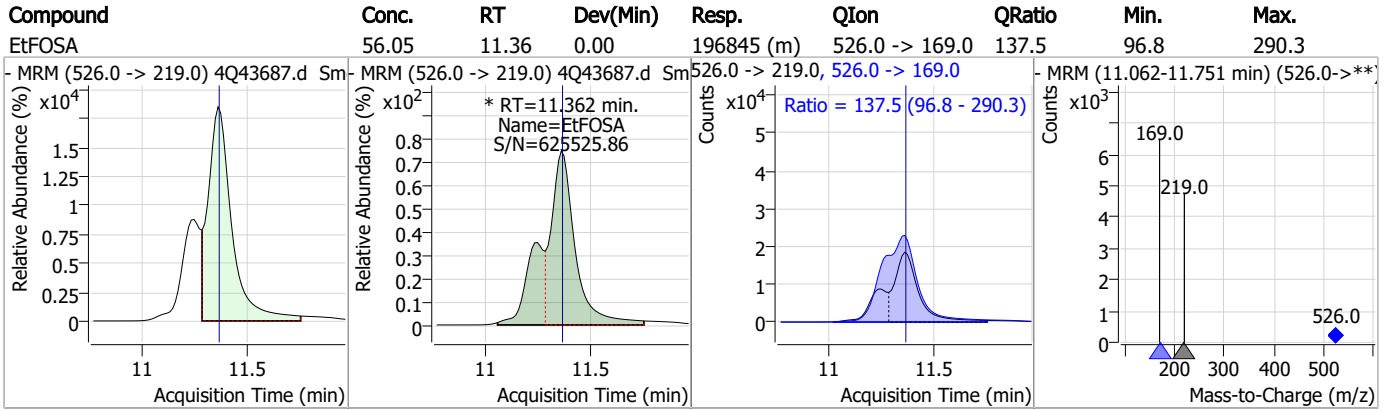


7.7.8

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Perfluorinated Compounds by LC/MS/MS



7.7.8

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Manual Integration Approval Summary

Sample Number: S4Q631-IC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43687.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 14:01 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.8.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43688.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 2:15:59 PM
 Sample Name : ic631-8
 Vial : P1-A9
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	72865	10.00 µg/L	-0.025
M5-PFPeA	4.375	268.3 -> 223.0	51716	5.00 µg/L	0.000
M5-PFHxA	5.547	318.0 -> 273.0	41785	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	20739	2.50 µg/L	0.012
M8-PFOA	7.148	421.1 -> 376.0	28531	2.50 µg/L	0.000
M9-PFNA	7.709	472.1 -> 427.0	14812	1.25 µg/L	0.012
M6-PFDA	8.203	519.1 -> 474.1	13844	1.25 µg/L	0.000
M7-PFUnDA	8.685	570.0 -> 525.1	13786	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20180	1.25 µg/L	0.000
M2-PFTeDA	9.924	715.2 -> 670.0	15564	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	12854	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	9158	2.50 µg/L	0.000
M3-PFHxS	7.254	402.1 -> 79.9	5176	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	7588	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	900	5.00 µg/L	0.000
M2-6:2FTS	6.923	429.1 -> 80.9	1092	5.00 µg/L	0.012
M2-8:2FTS	7.990	529.1 -> 80.9	2334	5.00 µg/L	0.000
M3-MeFOSAA	8.273	573.2 -> 419.0	11099	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	24075	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	8945	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	50603	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	66566	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7672	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7364	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	7217	2.50 µg/L	0.012
13C3-PFBA	2.891	216.0 -> 172.0	42692	5.00 µg/L	-0.037
18O2-PFHxS	7.253	403.0 -> 83.9	3828	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	32842	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	13051	1.25 µg/L	0.000
13C5-PFNA	7.709	468.0 -> 423.0	16819	1.25 µg/L	0.012
13C2-PFHxA	5.548	315.1 -> 270.0	36603	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	900	4.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.6%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1092	3.72 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 74.4%		
13C2-8:2FTS	7.990	529.1 -> 80.9	2334	4.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.7%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20180	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C2-PFTeDA	9.924	715.2 -> 670.0	15564	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C3-PFBS	5.452	302.1 -> 79.9	9158	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C3-PFHxS	7.254	402.1 -> 79.9	5176	2.43 µg/L	0.012

7.7.9
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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	2.899	216.8 -> 171.9	72865	9.87 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFHpA	6.492	367.1 -> 322.0	20739	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.7%	
13C5-PFHxA	5.547	318.0 -> 273.0	41785	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C5-PFPeA	4.375	268.3 -> 223.0	51716	4.67 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.4%	
13C6-PFDA	8.203	519.1 -> 474.1	13844	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C7-PFUnDA	8.685	570.0 -> 525.1	13786	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C8-FOSA	9.771	506.1 -> 77.8	12854	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C8-PFOA	7.148	421.1 -> 376.0	28531	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C8-PFOS	8.354	507.1 -> 79.9	7588	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C9-PFNA	7.709	472.1 -> 427.0	14812	1.16 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.1%	
d3-MeFOSAA	8.273	573.2 -> 419.0	11099	4.87 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	24075	10.01 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d3-MeFOSA	11.076	515.0 -> 219.0	7364	2.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
d5-EtFOSAA	8.470	589.2 -> 419.0	8945	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.1%	
d7-MeFOSE	10.959	623.2 -> 58.9	50603	21.72 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.9%	
d9-EtFOSE	11.269	639.2 -> 58.9	66566	22.38 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.5%	
d5-EtFOSA	11.360	531.1 -> 219.0	7672	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	324033	224.76 µg/L	100
		327.1 -> 80.9	132495		
6:2FTS	6.924	427.1 -> 407.0	259573	247.16 µg/L	96
		427.1 -> 80.9	105646		
8:2FTS	7.991	527.1 -> 507.0	299068	228.38 µg/L	93
		527.1 -> 80.8	113025		
EtFOSAA	8.483	584.2 -> 419.1	121072	70.94 µg/L	m 79
		584.2 -> 526.0	53554		
FOSA	9.774	498.1 -> 77.9	369885	66.18 µg/L	100
		498.1 -> 478.0	10681		
MeFOSAA	8.274	570.1 -> 419.0	130484	66.57 µg/L	m 98
		570.1 -> 483.0	26248		
PFBA	2.895	212.8 -> 168.9	573308	267.45 µg/L	100
PFBS	5.453	298.7 -> 79.9	245592	58.94 µg/L	99
		298.7 -> 98.8	94564		
PFDA	8.204	512.9 -> 469.0	688698	66.73 µg/L	98
		512.9 -> 219.0	133259		
PFDoDA	9.131	613.1 -> 569.0	1038445	62.99 µg/L	100
		613.1 -> 319.0	147941		
PFDS	9.294	599.0 -> 79.9	133861	58.94 µg/L	96

7.7.9
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.492	599.0 -> 98.8	66264	69.33	µg/L	99
		363.1 -> 319.0	932164			
PFHpS	7.836	363.1 -> 169.0	166161	62.57	µg/L	96
		449.0 -> 79.9	166420			
PFHxA	5.550	449.0 -> 98.9	87077	68.69	µg/L	100
		313.0 -> 269.0	1077337			
PFHxS	7.255	313.0 -> 118.9	32422	65.12	µg/L	91
		398.7 -> 79.9	166508			
PFNA	7.709	398.7 -> 98.9	82696	69.09	µg/L	97
		463.0 -> 419.0	690062			
PFNS	8.848	463.0 -> 219.0	169743	68.33	µg/L	96
		548.8 -> 79.9	96858			
PFOA	7.150	548.8 -> 98.9	49453	67.00	µg/L	98
		413.0 -> 369.0	1107453			
PFOS	8.355	413.0 -> 169.0	228598	55.83	µg/L	96
		498.9 -> 79.9	206230			
PFPeA	4.377	498.9 -> 98.8	105029	134.16	µg/L	100
		263.0 -> 219.0	1657324			
PFPeS	6.519	349.1 -> 79.9	137816	64.67	µg/L	99
		349.1 -> 98.9	58547			
PFTeDA	9.924	713.1 -> 669.0	961336	62.83	µg/L	98
		713.1 -> 168.9	78288			
PFTrDA	9.541	663.0 -> 619.0	1166769	59.39	µg/L	100
		663.0 -> 168.9	115724			
PFUnDA	8.685	563.1 -> 519.0	660838	65.49	µg/L	100
		563.1 -> 269.1	131109			
11CI-PF3OUdS	9.593	630.9 -> 450.9	980215	114.85	µg/L	98
		632.9 -> 452.9	303729			
9CI-PF3ONS	8.712	530.8 -> 351.0	1107097	124.51	µg/L	96
		532.8 -> 353.0	335610			
ADONA	6.743	376.9 -> 250.9	2978788	120.95	µg/L	98
		376.9 -> 84.8	783823			
HFPO-DA	5.915	284.9 -> 168.9	315935	132.63	µg/L	95
		284.9 -> 184.9	37480			
3:3FTCA	3.823	241.0 -> 177.0	198371	379.98	µg/L	98
		241.0 -> 117.0	18397			
5:3FTCA	6.205	341.0 -> 237.1	3733031	1645.36	µg/L	97
		341.0 -> 217.0	2702734			
7:3FTCA	7.661	441.0 -> 316.9	1633938	1645.66	µg/L	98
		441.0 -> 336.9	3613165			
EtFOSA	11.362	526.0 -> 219.0	458088	139.76	µg/L	63
		526.0 -> 169.0	633594			
EtFOSE	11.282	630.0 -> 58.9	832252	337.49	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	372181	128.15	µg/L	73
		511.9 -> 169.0	550046			
MeFOSE	10.985	616.1 -> 58.9	696179	334.03	µg/L	100
PFDoDS	10.064	699.1 -> 79.9	123111	61.70	µg/L	100
		699.1 -> 98.8	68734			
NFDHA	5.441	295.0 -> 201.0	112055	109.94	µg/L	97
		295.0 -> 84.9	28012			
PFMBA	4.778	279.0 -> 85.1	969613	136.16	µg/L	100
PFMPA	3.515	229.0 -> 84.9	841272	136.91	µg/L	100
PFEESA	5.984	314.8 -> 134.9	1619228	118.21	µg/L	99
		314.8 -> 82.9	54322			

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

7.7.9

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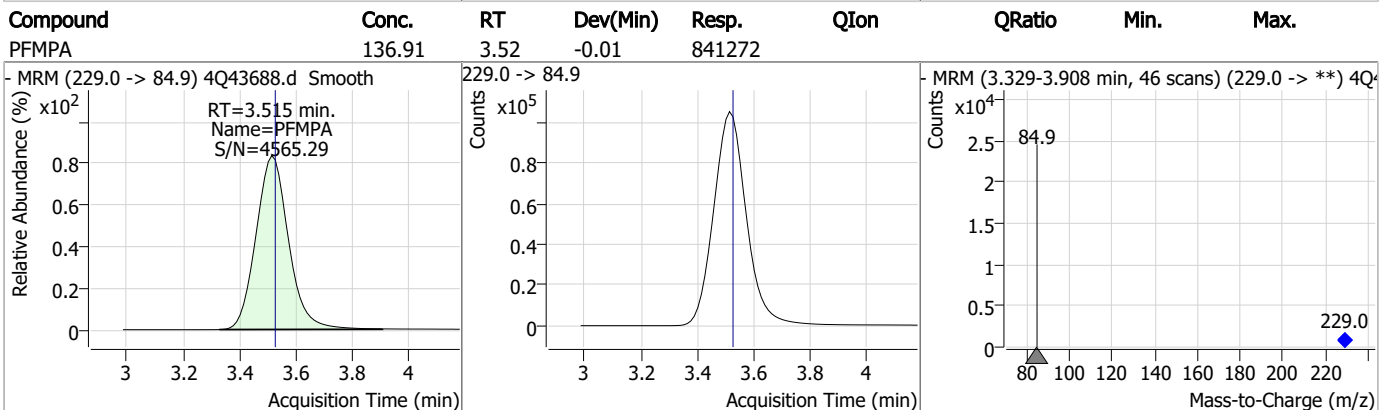
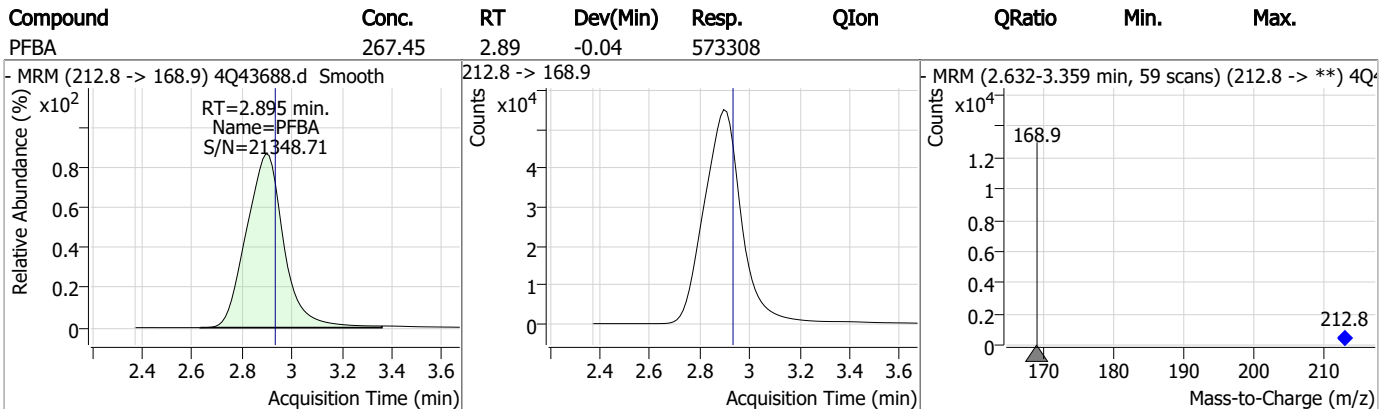
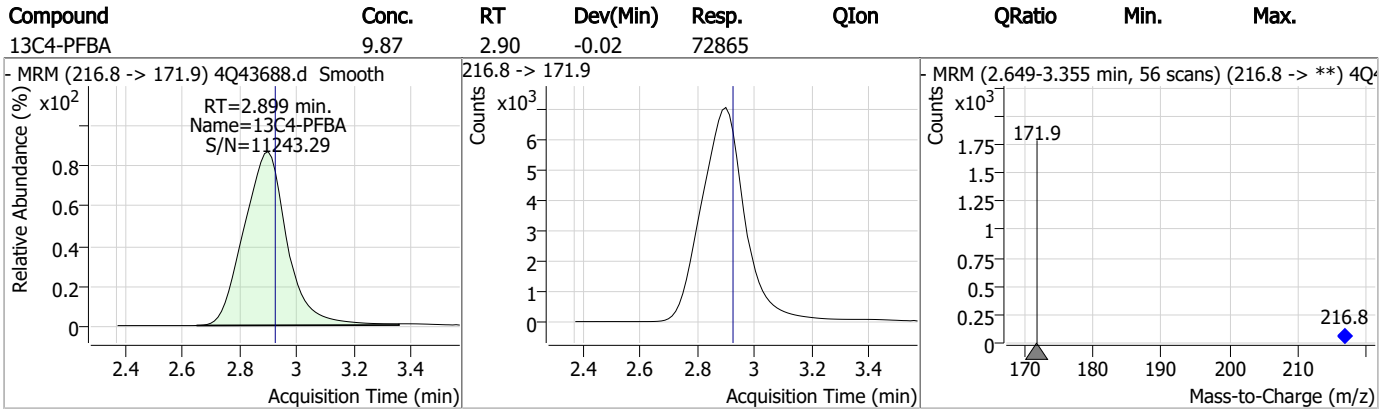
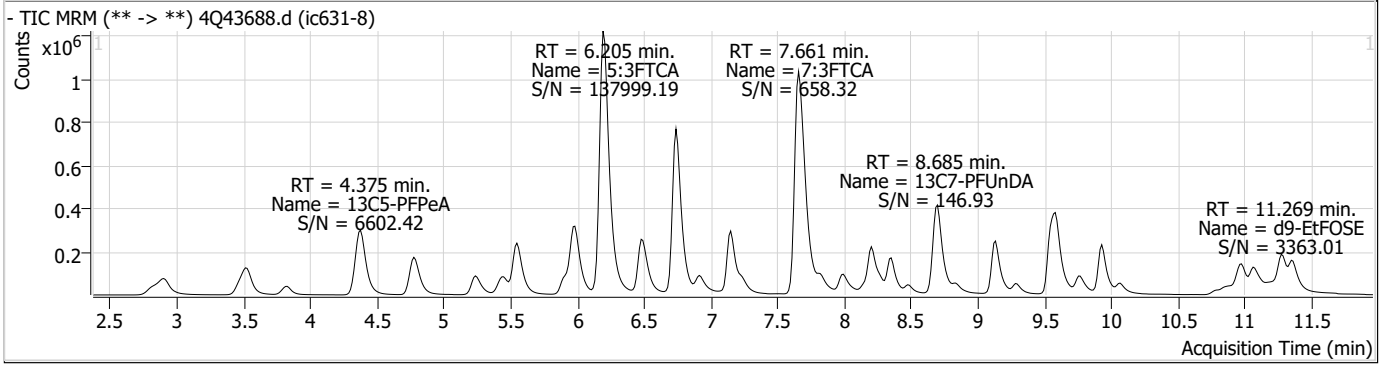
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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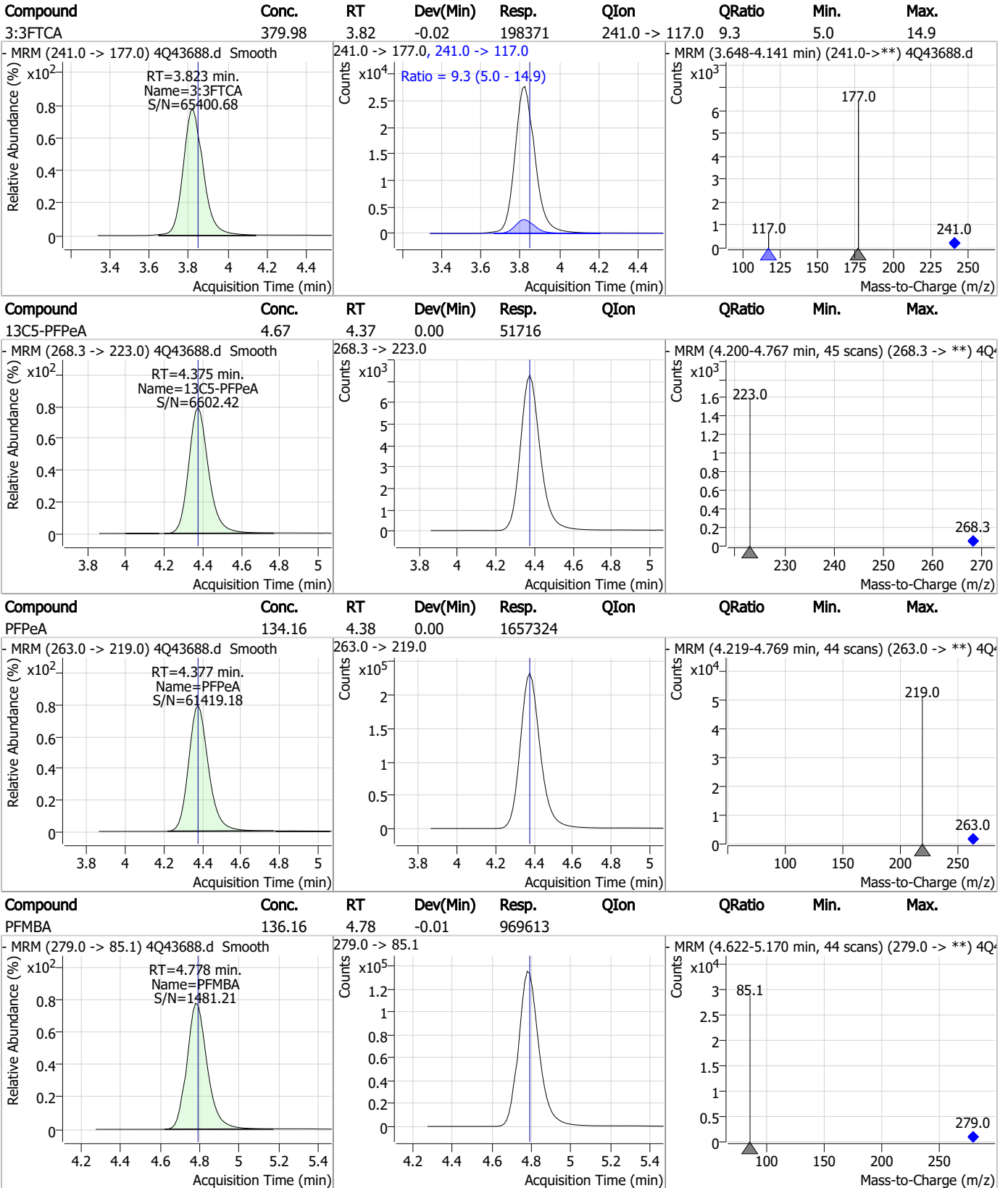
7.7.9

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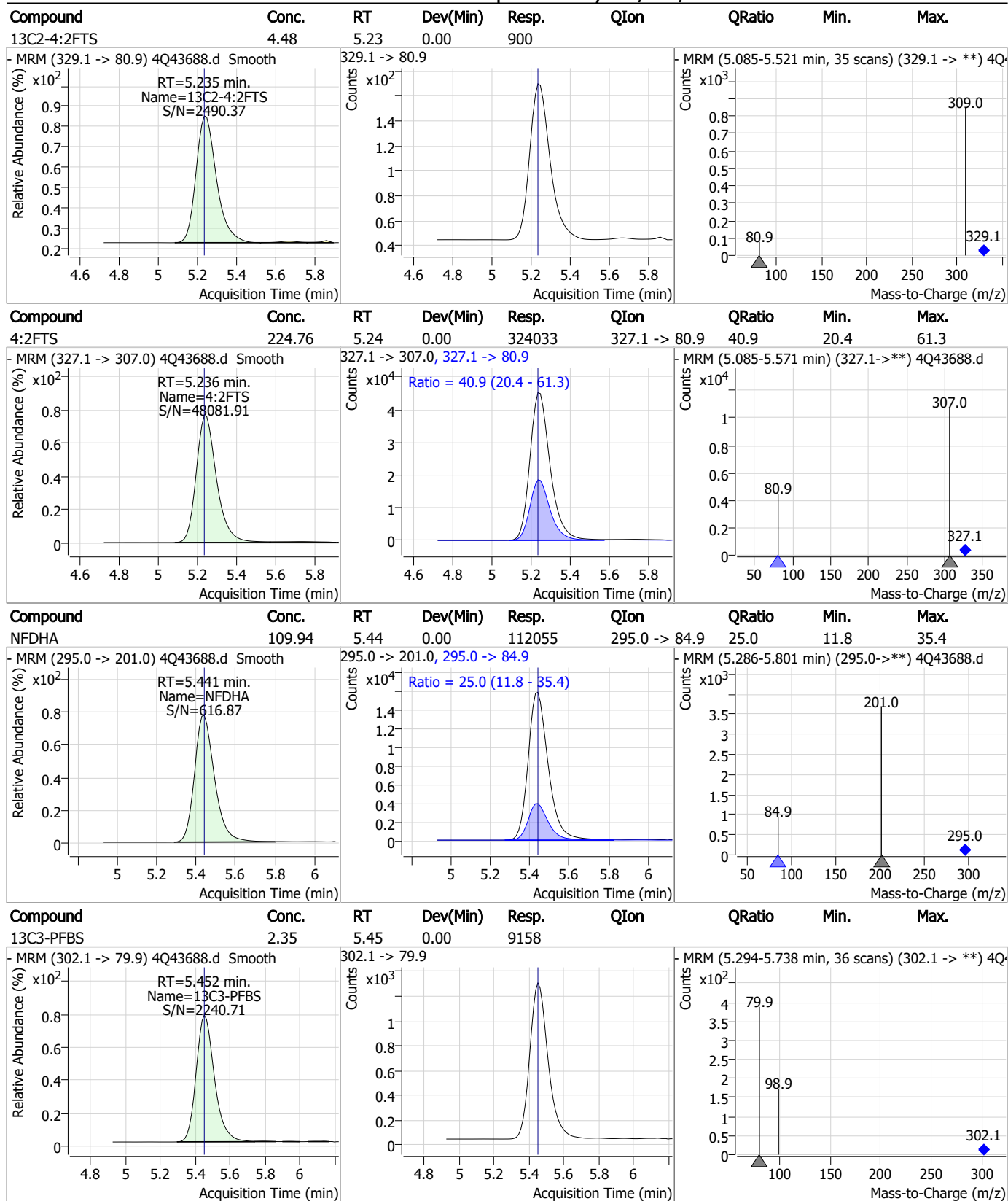
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

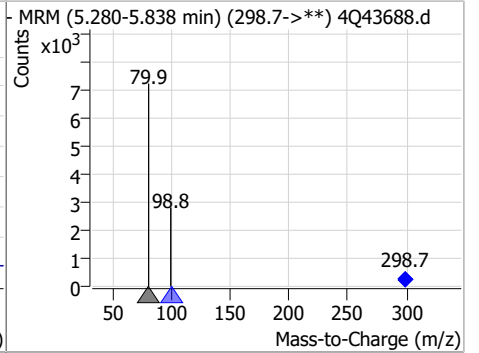
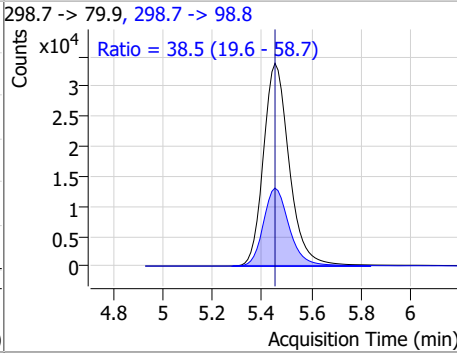
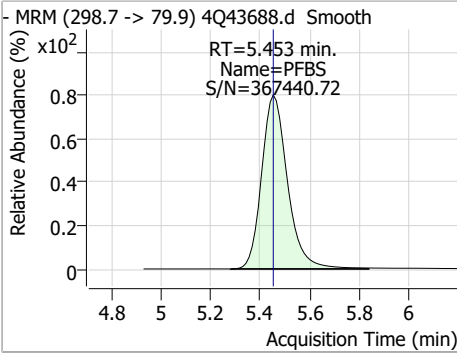


7.7.9
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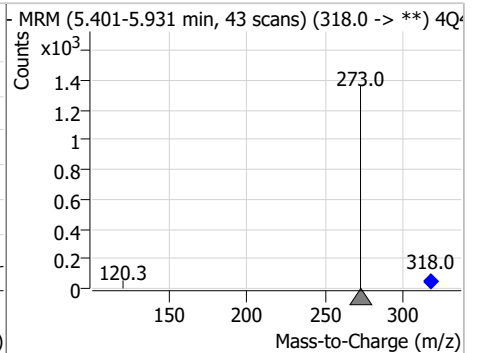
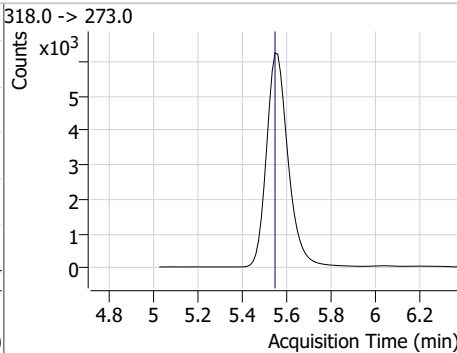
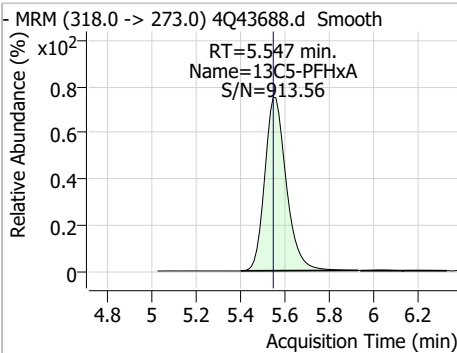


Perfluorinated Compounds by LC/MS/MS

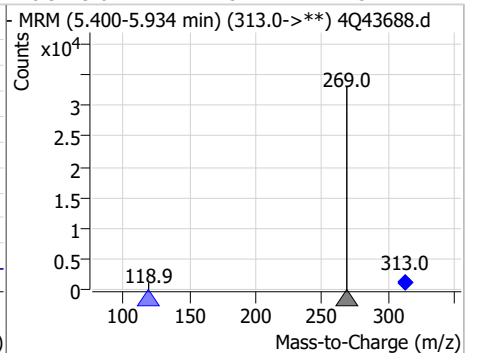
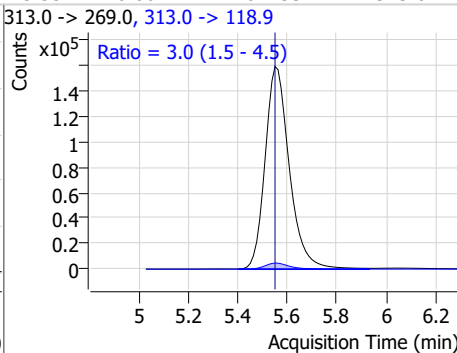
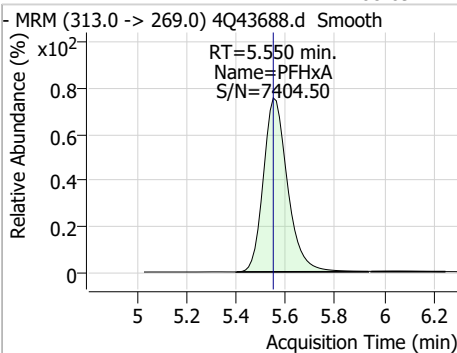
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	58.94	5.45	0.00	245592	298.7 -> 98.8	38.5	19.6	58.7



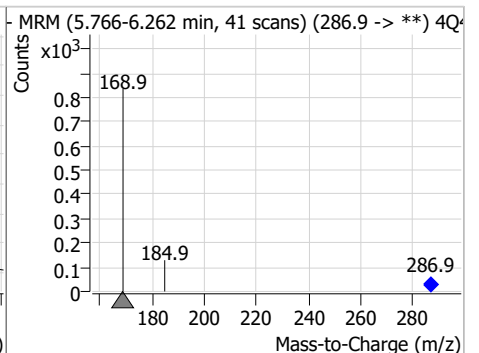
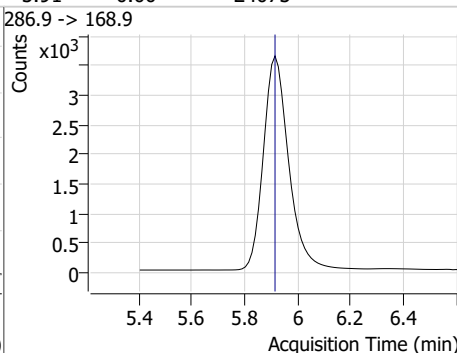
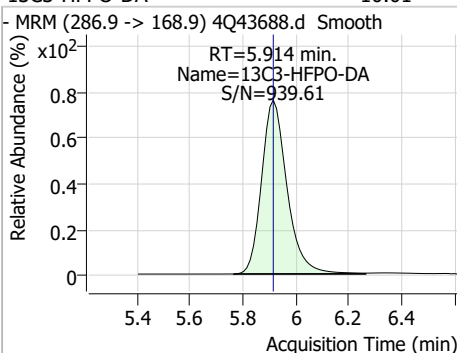
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.40	5.55	0.00	41785				



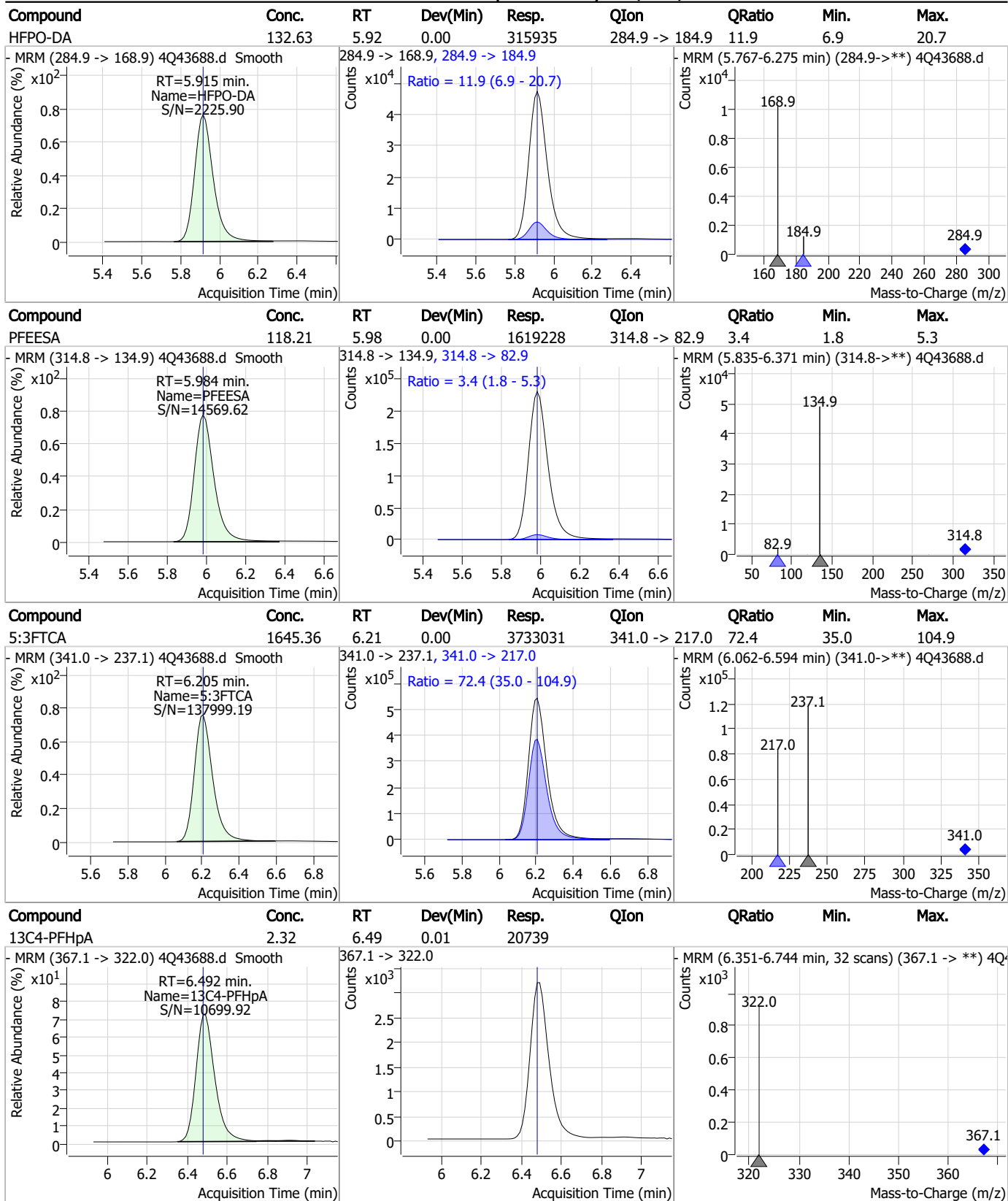
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	68.69	5.55	0.00	1077337	313.0 -> 118.9	3.0	1.5	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.01	5.91	0.00	24075				



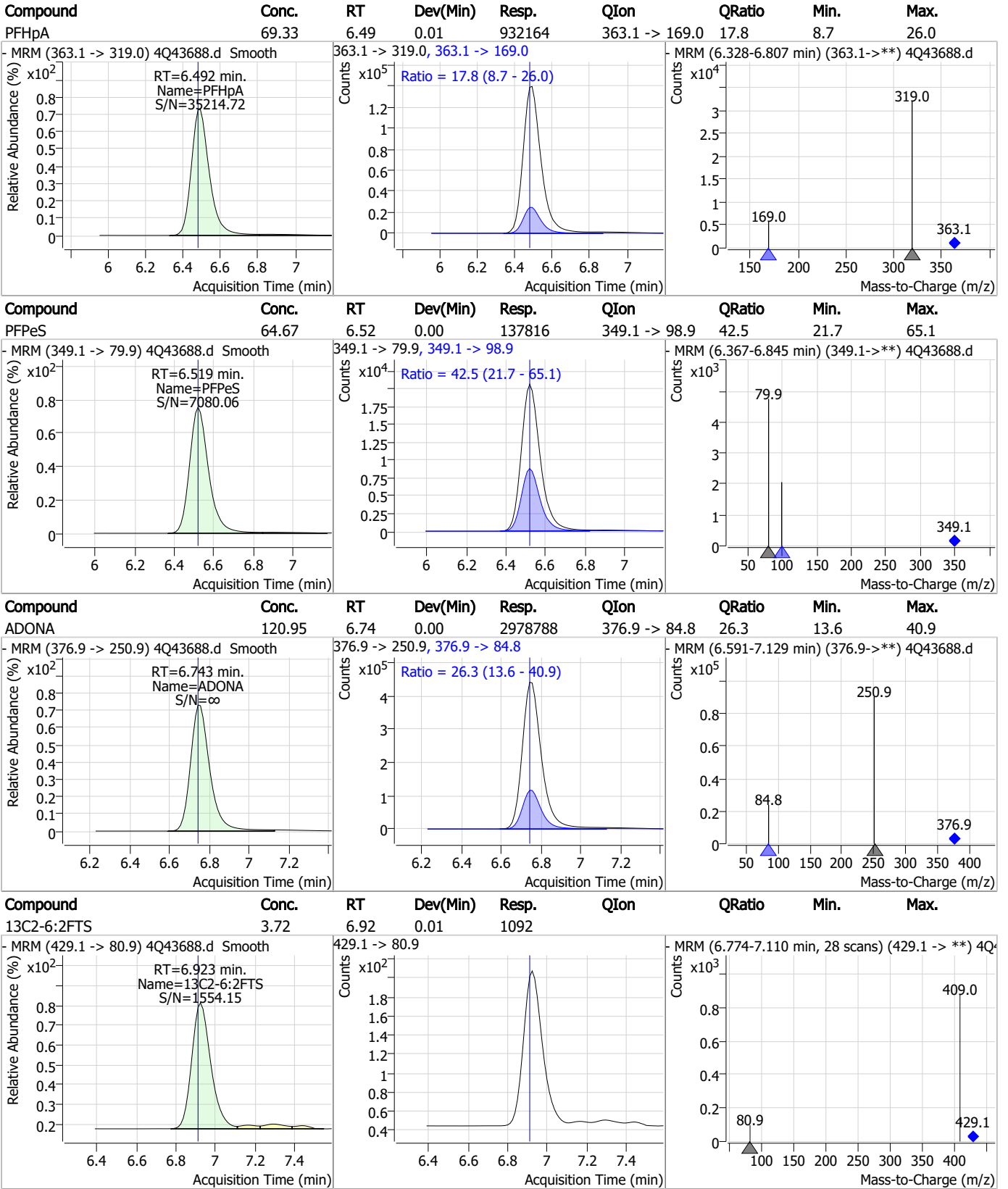
Perfluorinated Compounds by LC/MS/MS



7.7.9
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Perfluorinated Compounds by LC/MS/MS

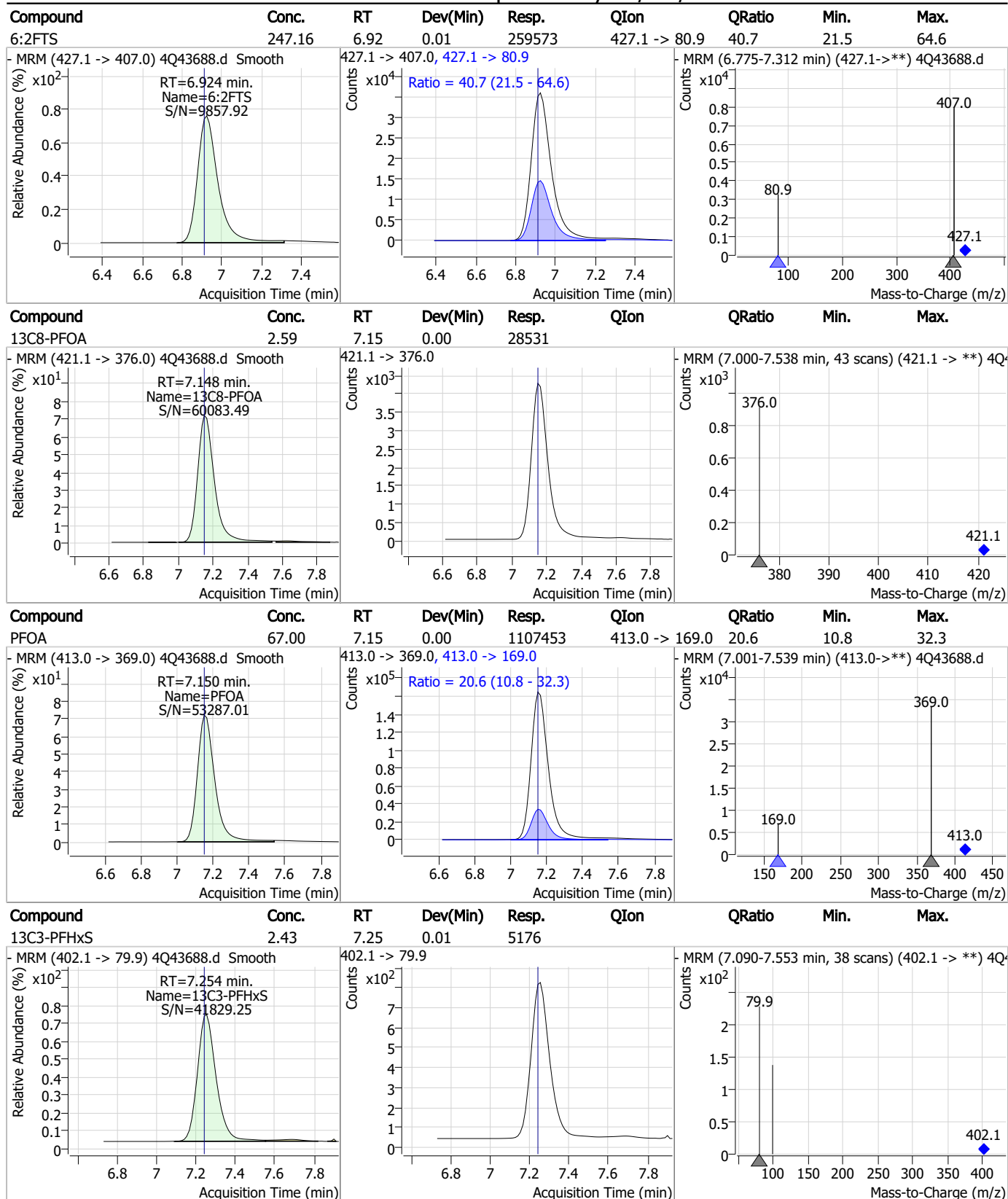


7.7.9

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Perfluorinated Compounds by LC/MS/MS

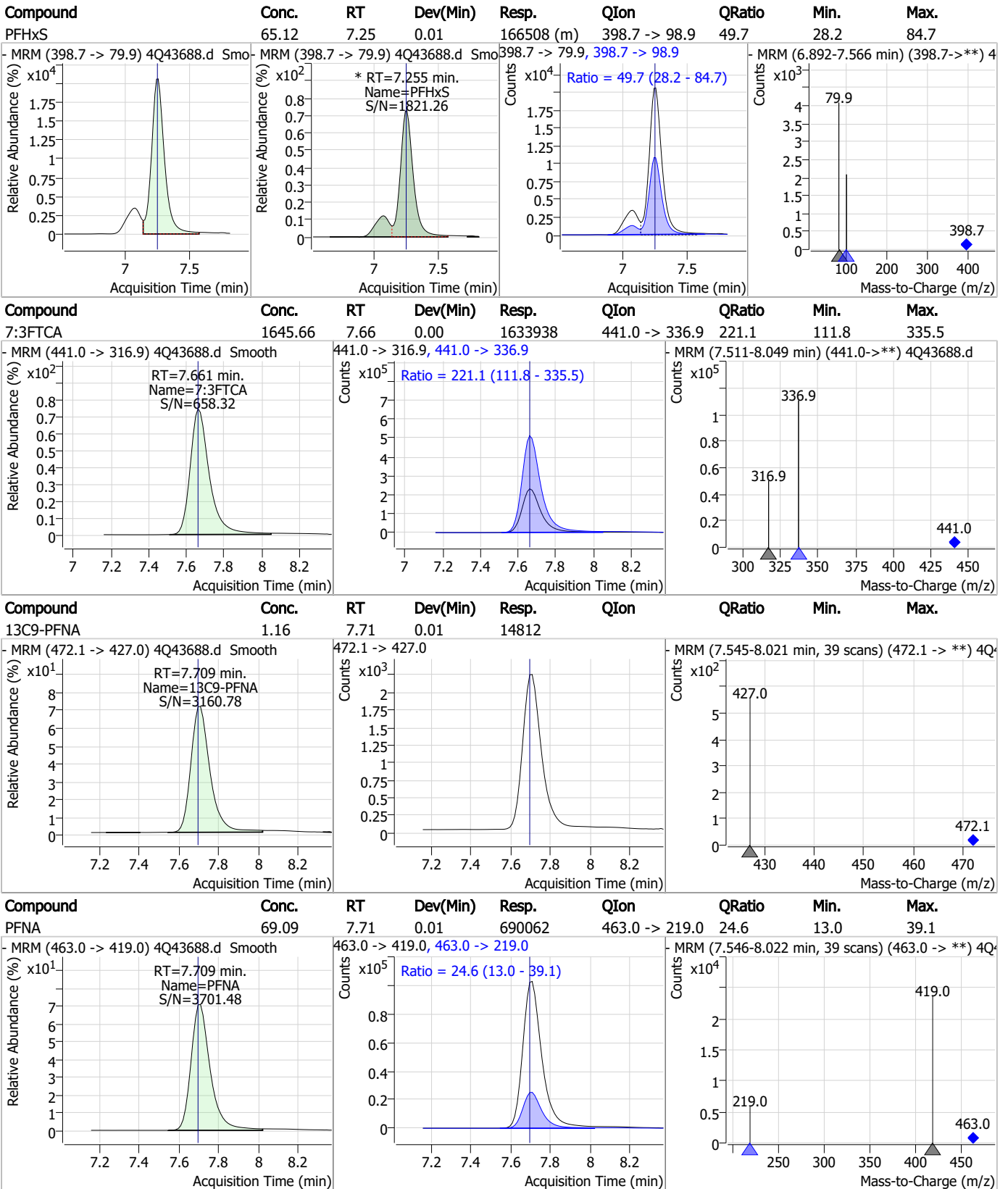


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Perfluorinated Compounds by LC/MS/MS

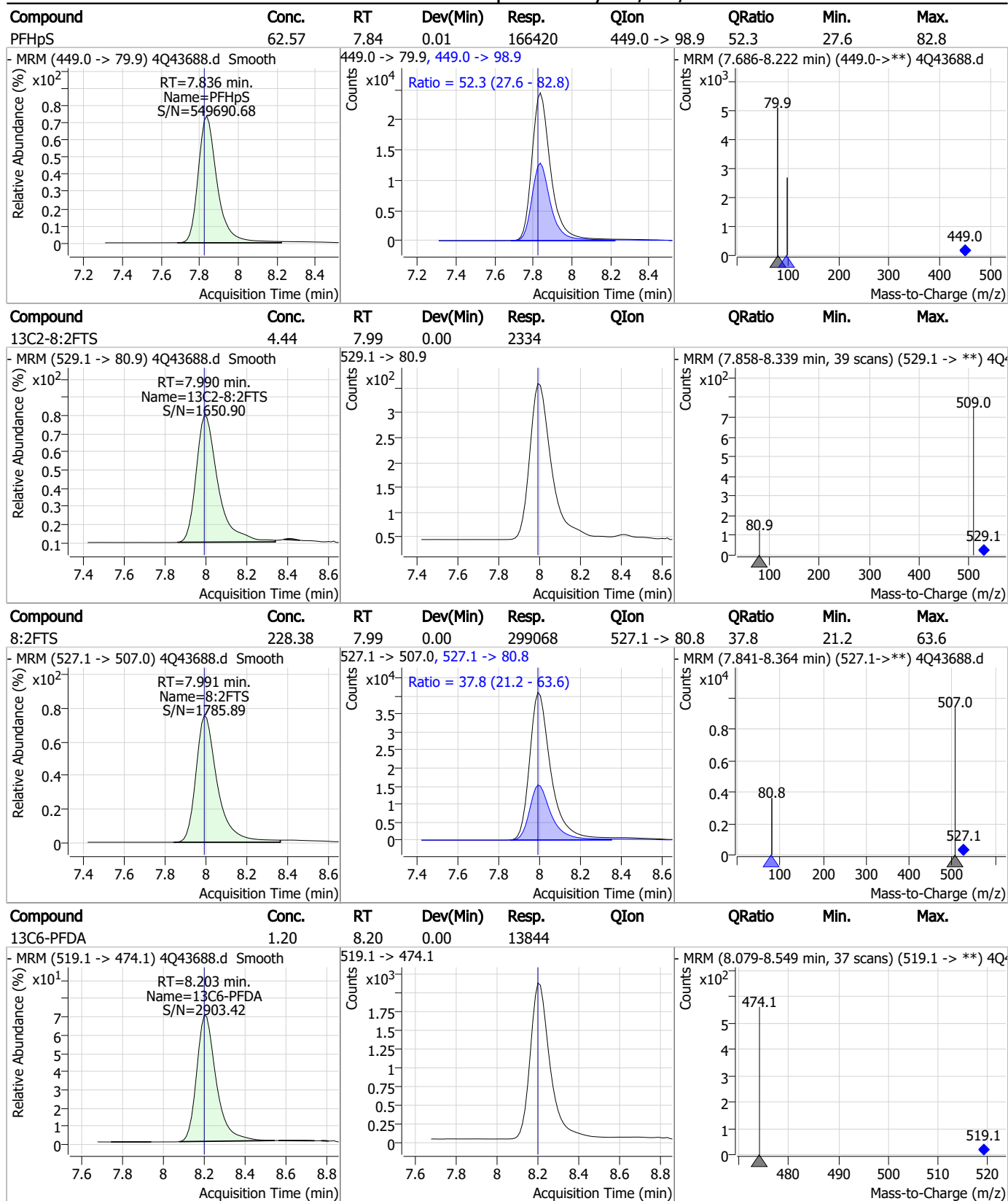


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Perfluorinated Compounds by LC/MS/MS

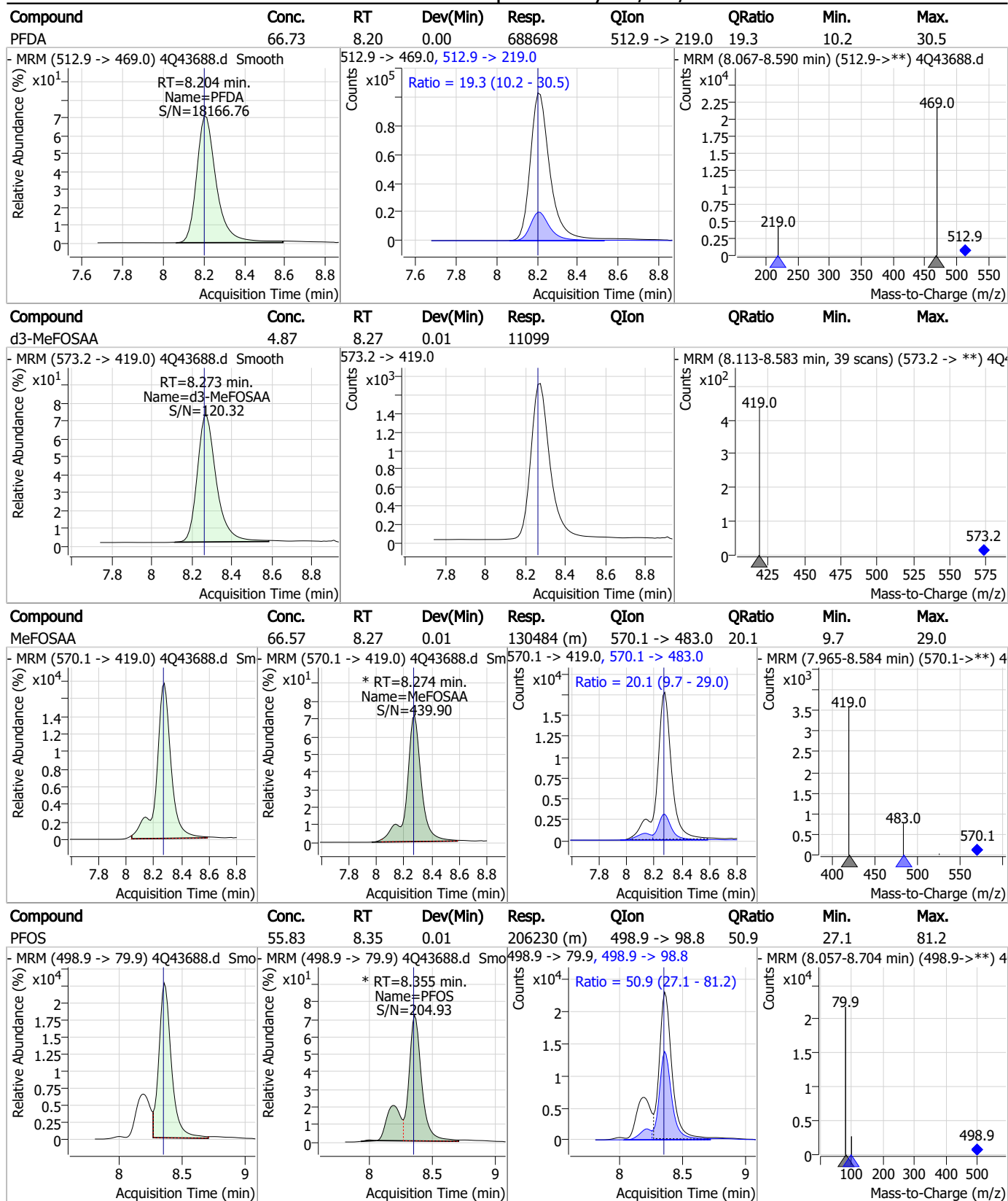


7.7.9

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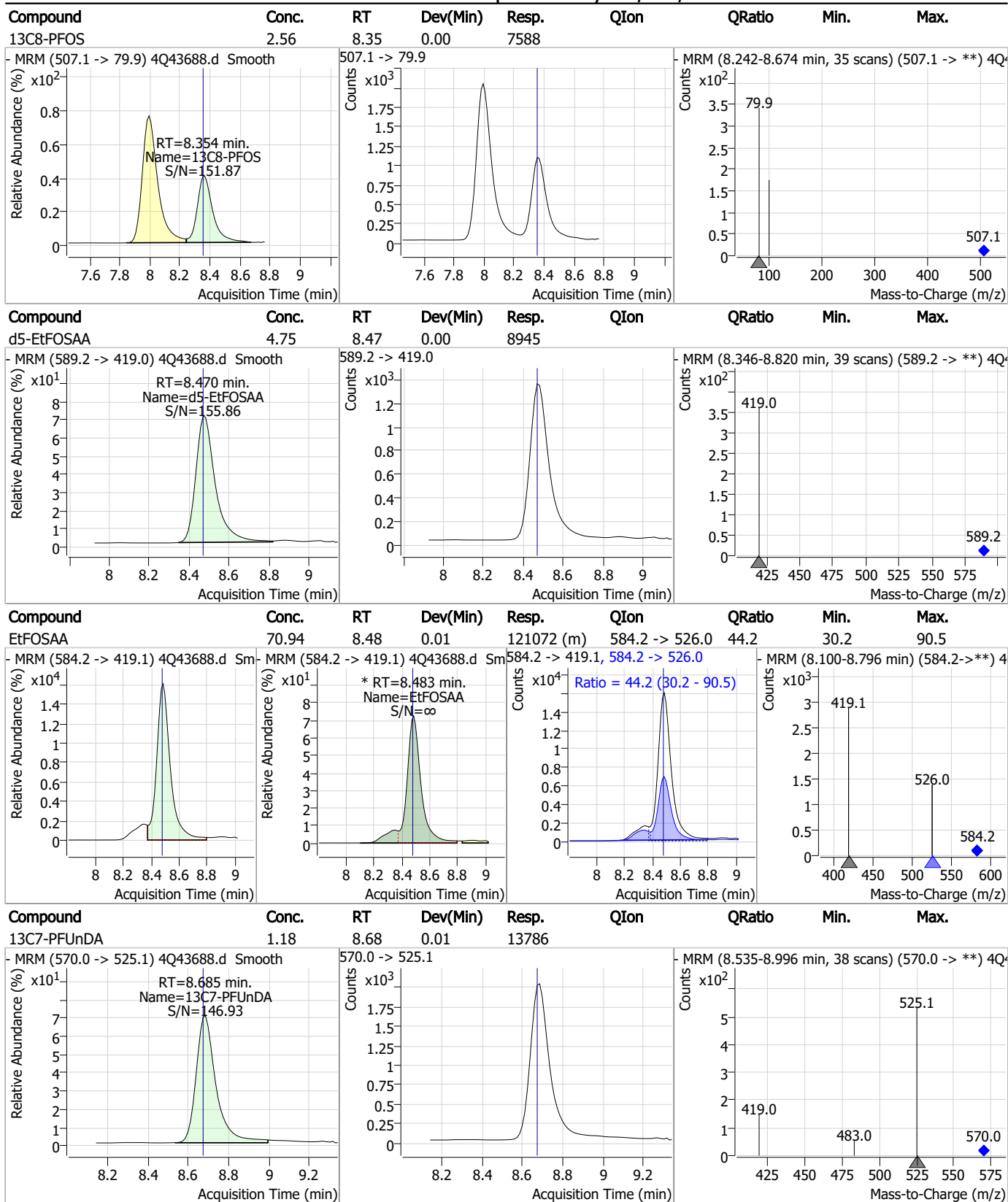


Perfluorinated Compounds by LC/MS/MS



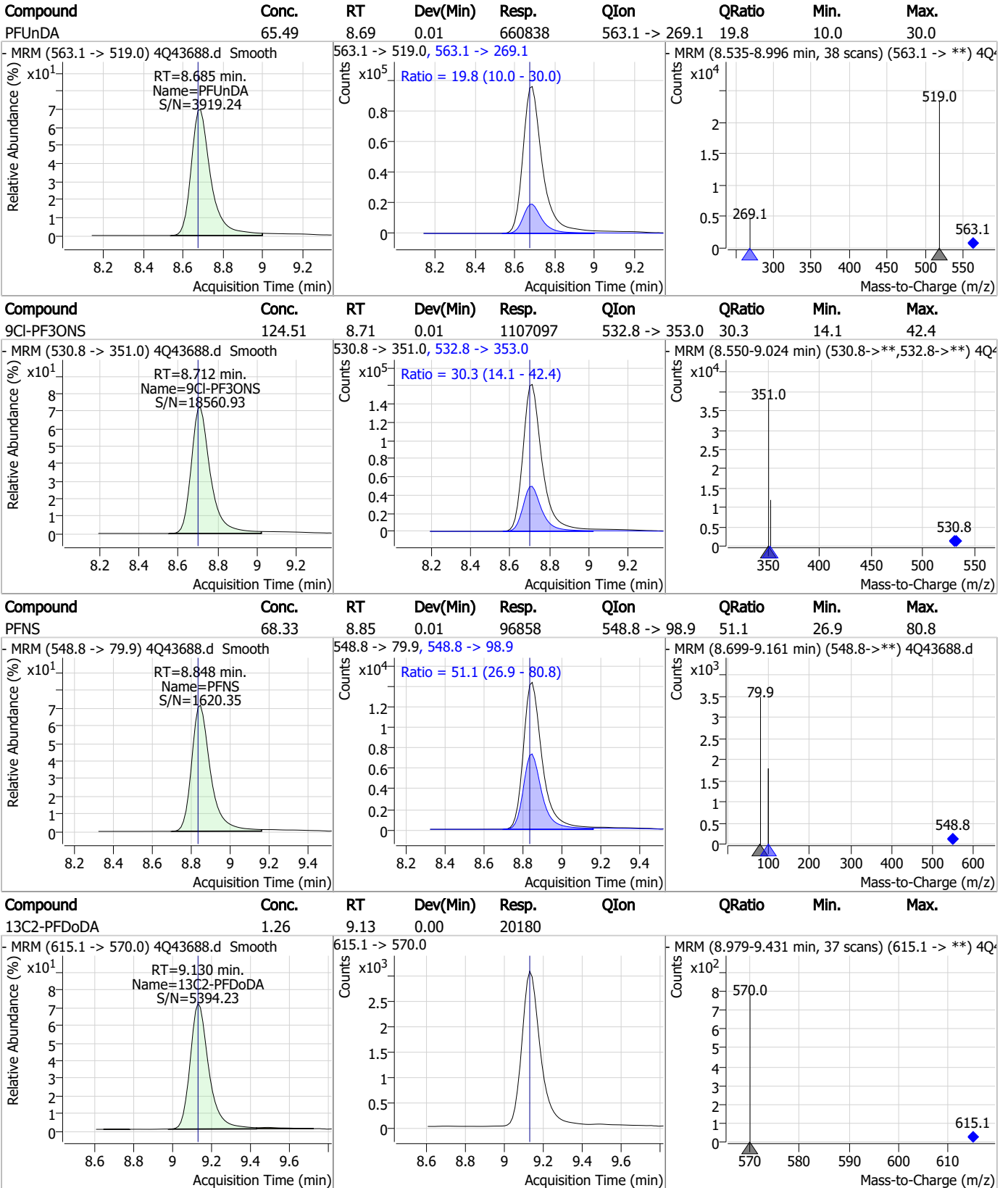
7.7.9
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Perfluorinated Compounds by LC/MS/MS

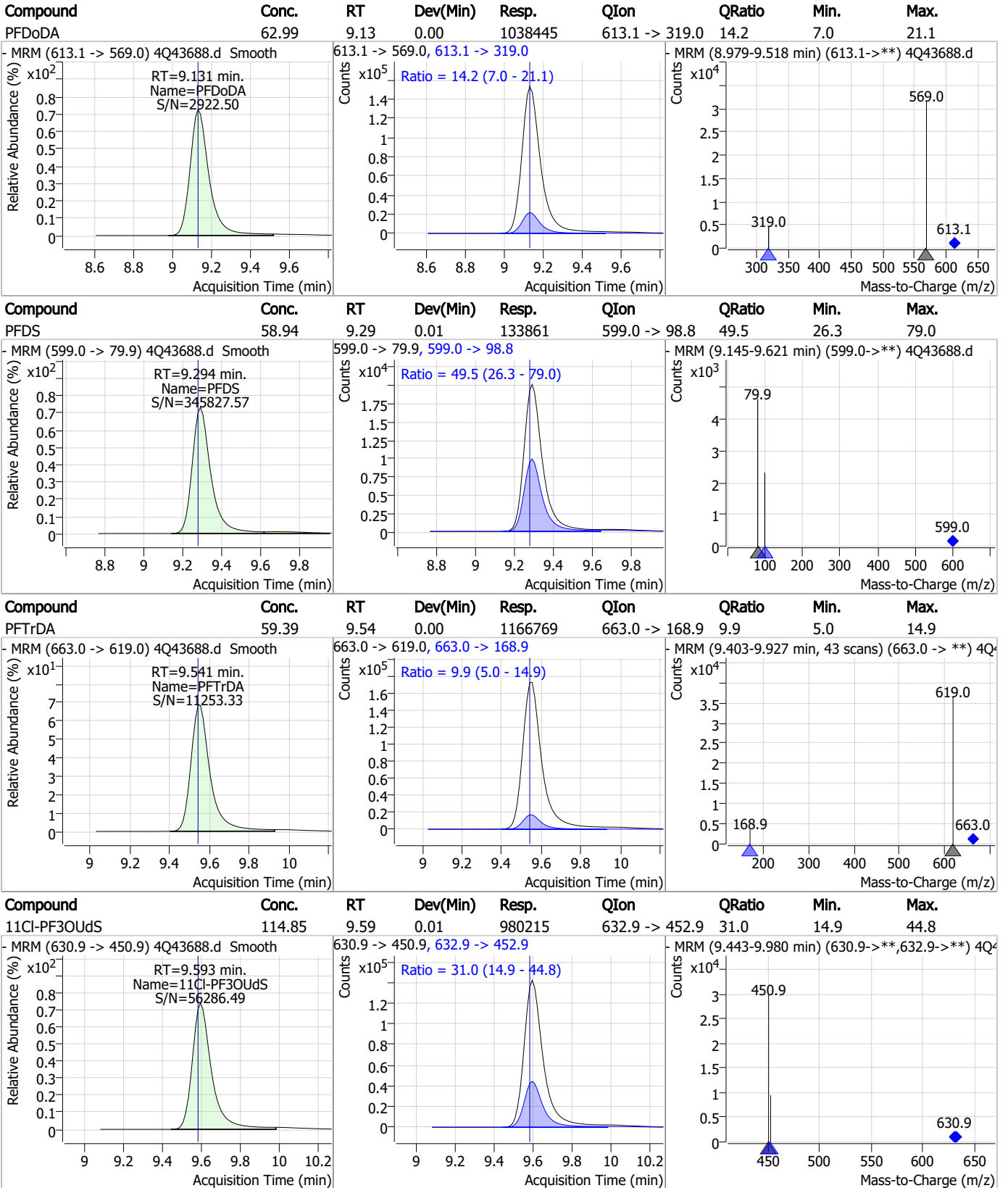


7.7.9
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

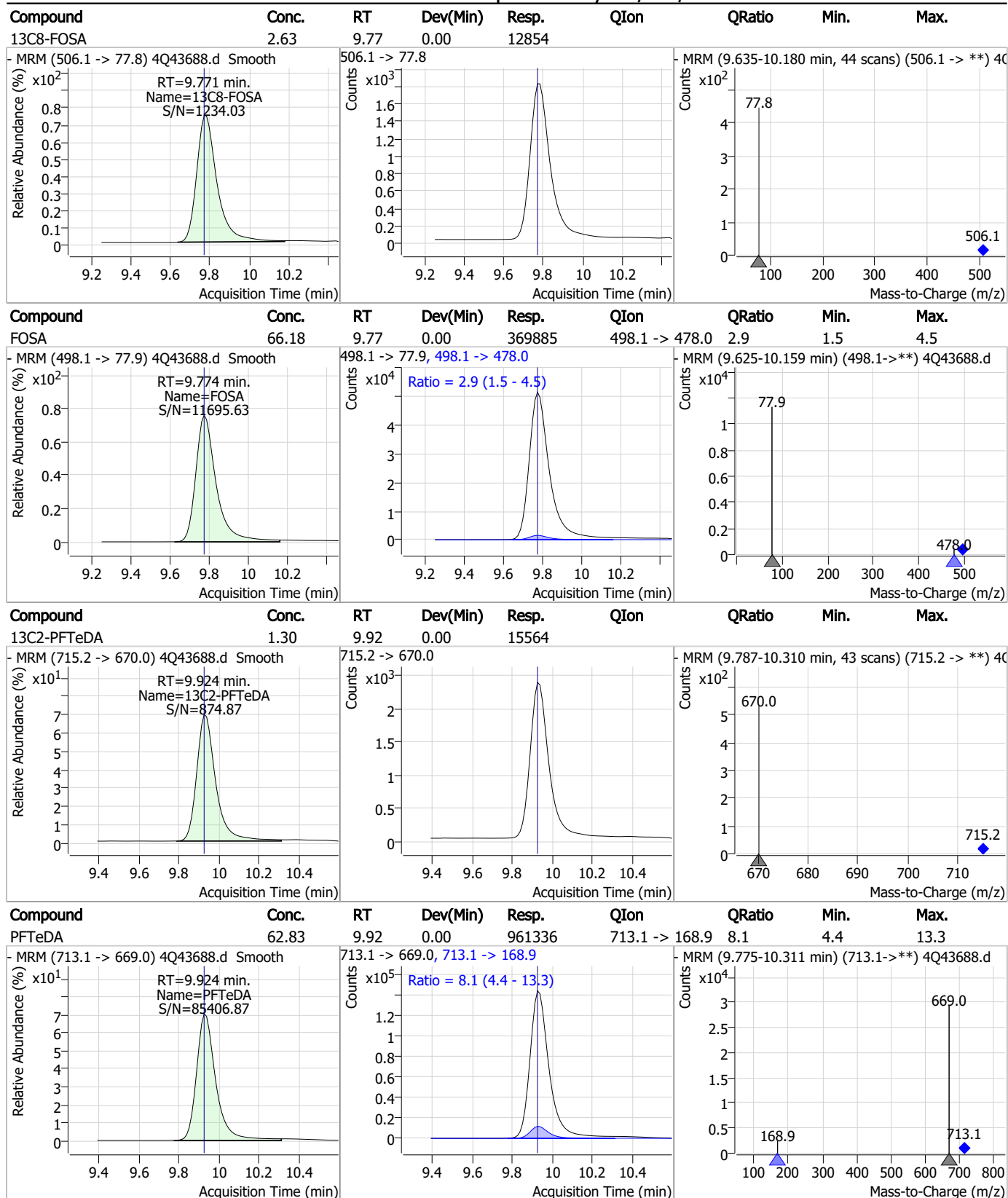


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Perfluorinated Compounds by LC/MS/MS

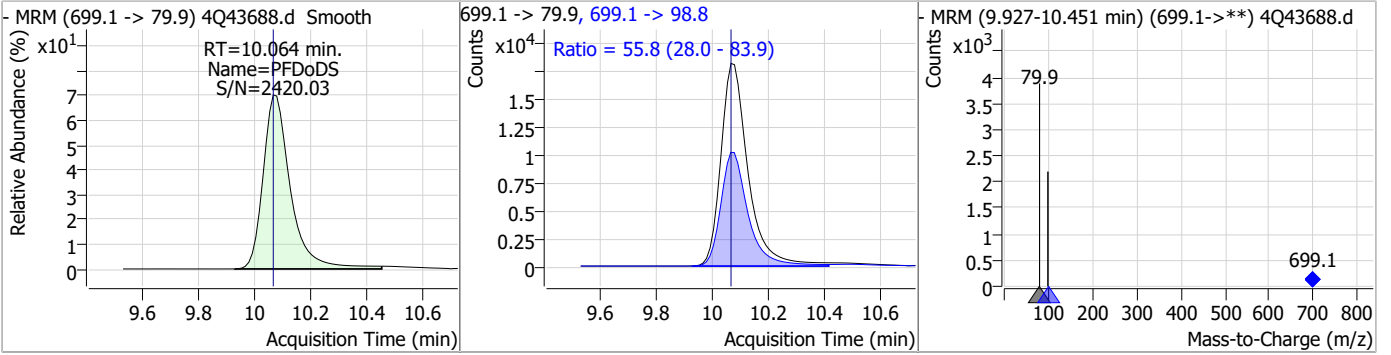


7.7.9
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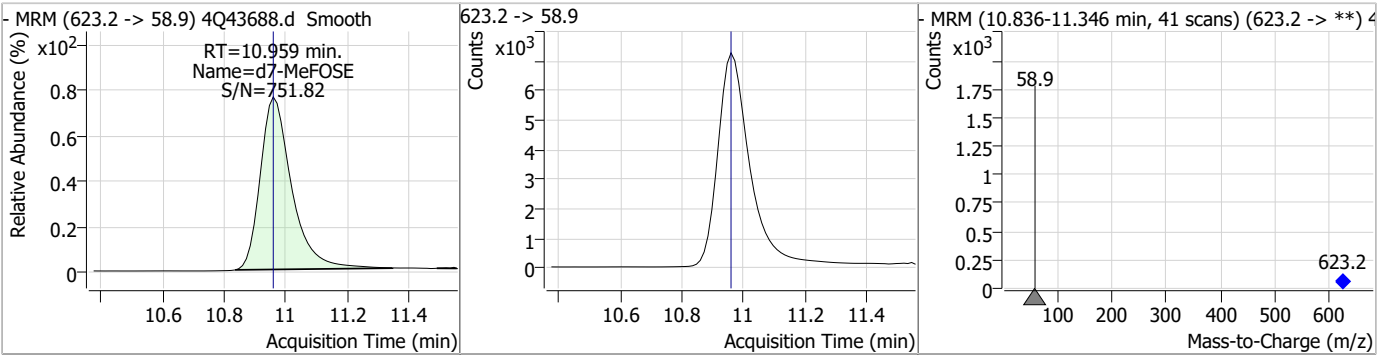


Perfluorinated Compounds by LC/MS/MS

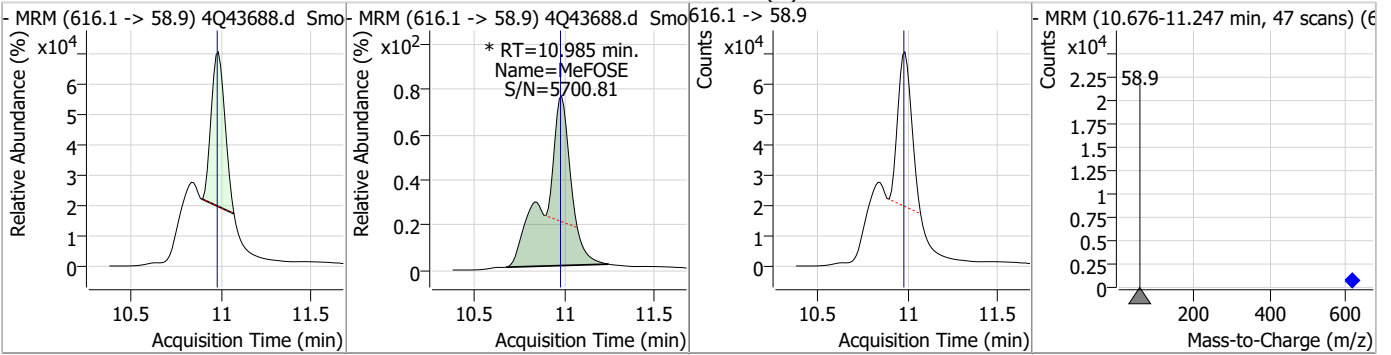
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	61.70	10.06	0.00	123111	699.1 -> 98.8	55.8	28.0	83.9



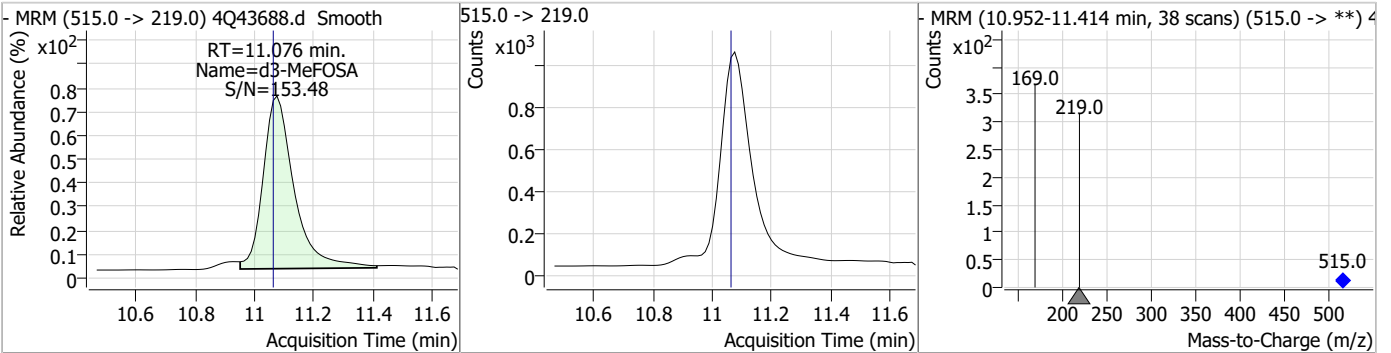
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	21.72	10.96	0.00	50603				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	334.03	10.99	0.01	696179 (m)				

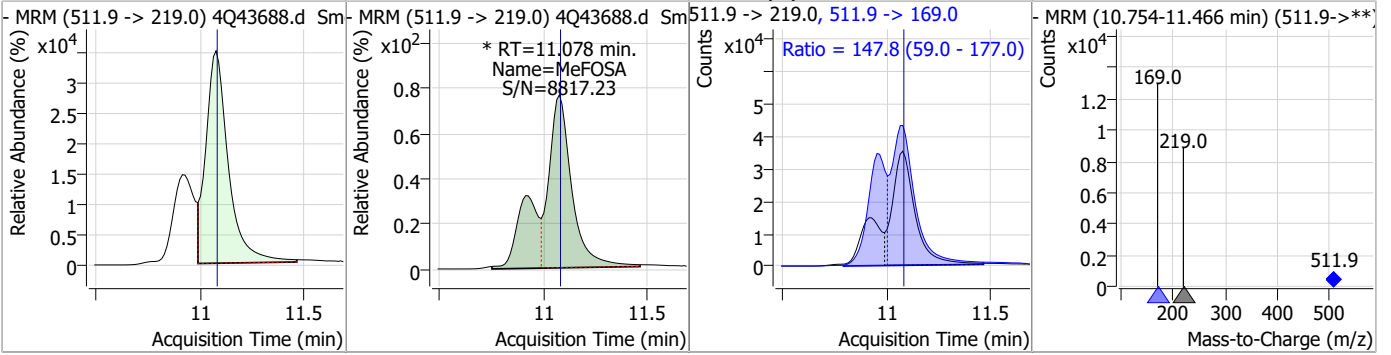


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.64	11.08	0.01	7364				

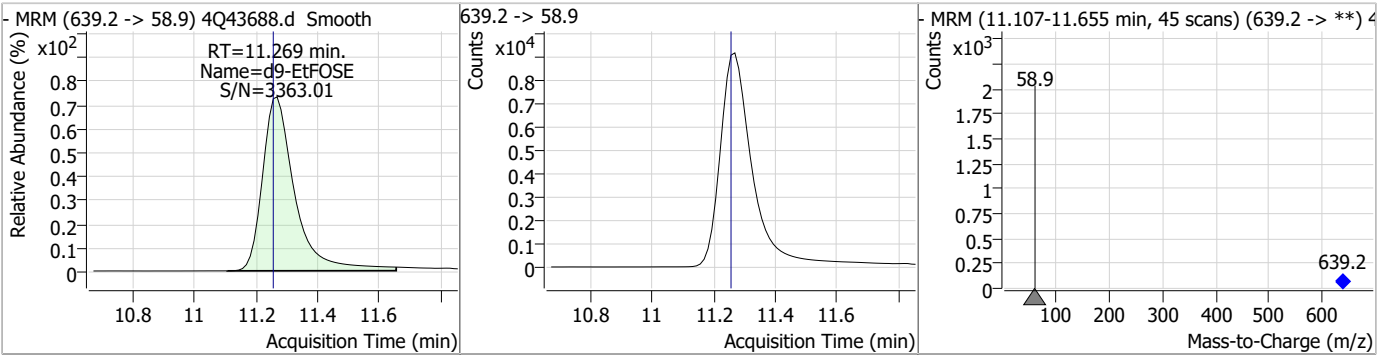


Perfluorinated Compounds by LC/MS/MS

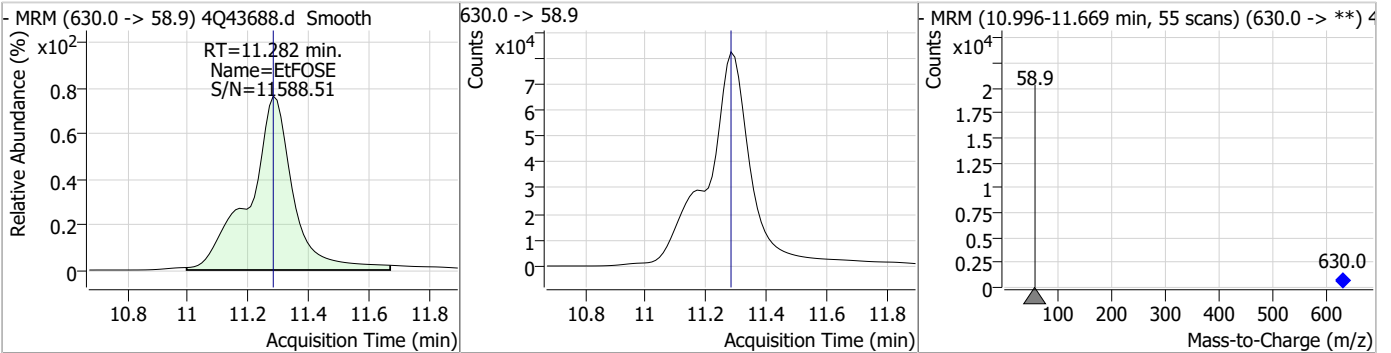
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	128.15	11.08	0.00	372181 (m)	511.9 -> 169.0	147.8	59.0	177.0



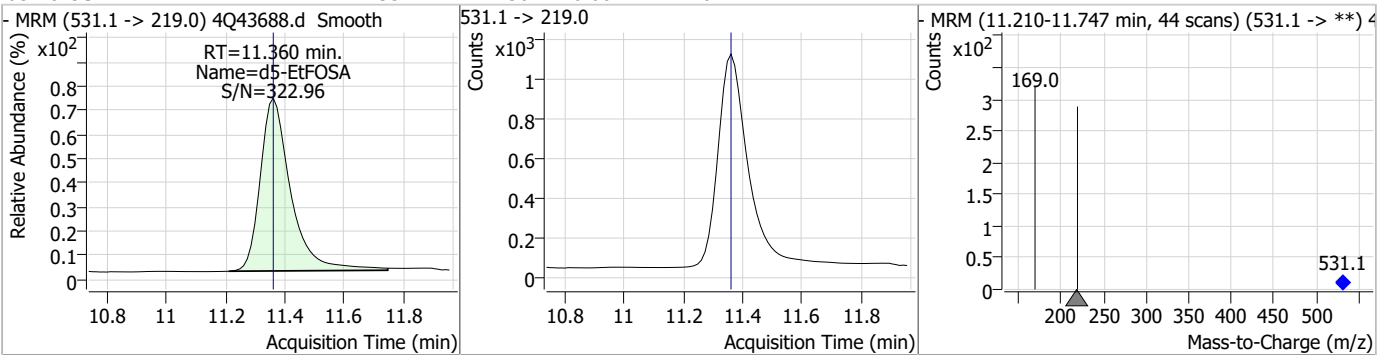
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.38	11.27	0.01	66566				



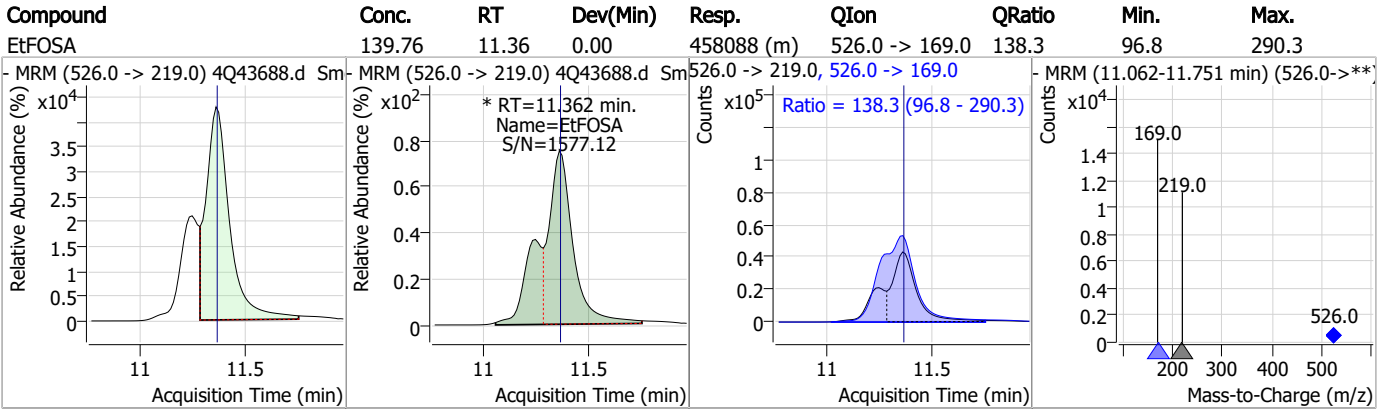
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	337.49	11.28	0.00	832252				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.35	11.36	0.00	7672				



Perfluorinated Compounds by LC/MS/MS



7.7.9

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Manual Integration Approval Summary

Sample Number: S4Q631-IC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43688.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 14:15 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.48	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.9.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43690.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 2:44:05 PM
 Sample Name : icv631-4
 Vial : P1-B1
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	95130	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	59506	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	46114	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	24181	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	31208	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	16884	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	15676	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	16734	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	21774	1.25 µg/L	0.000
M2-PFTeDA	9.936	715.2 -> 670.0	16090	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	13993	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10603	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	5632	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	7646	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1218	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	1768	5.00 µg/L	0.012
M2-8:2FTS	7.990	529.1 -> 80.9	3203	5.00 µg/L	0.000
M3-MeFOSAA	8.273	573.2 -> 419.0	13525	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	26408	10.00 µg/L	0.000
M5-EtFOSAA	8.483	589.2 -> 419.0	10839	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	65104	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	85006	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	9162	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7433	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	7789	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	53883	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4012	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	39056	2.50 µg/L	0.000
13C2-PFDA	8.216	515.1 -> 470.1	13825	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	18759	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	39580	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1218	5.78 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.6%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1768	5.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.0%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3203	5.81 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.2%		
13C2-PFDoDA	9.130	615.1 -> 570.0	21774	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C2-PFTeDA	9.936	715.2 -> 670.0	16090	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C3-PFBS	5.464	302.1 -> 79.9	10603	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C3-PFHxS	7.254	402.1 -> 79.9	5632	2.52 µg/L	0.012

7.7.10
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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 = 100.9%	
13C4-PFBA	2.936	216.8 -> 171.9	95130	10.21 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C4-PFHpA	6.492	367.1 -> 322.0	24181	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	46114	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C5-PFPeA	4.387	268.3 -> 223.0	59506	4.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C6-PFDA	8.216	519.1 -> 474.1	15676	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.685	570.0 -> 525.1	16734	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C8-FOSA	9.783	506.1 -> 77.8	13993	2.65 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C8-PFOA	7.163	421.1 -> 376.0	31208	2.38 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C8-PFOS	8.354	507.1 -> 79.9	7646	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.7%	
13C9-PFNA	7.709	472.1 -> 427.0	16884	1.19 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%	
d3-MeFOSAA	8.273	573.2 -> 419.0	13525	5.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.9%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	26408	10.15 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
d3-MeFOSA	11.076	515.0 -> 219.0	7433	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
d5-EtFOSAA	8.483	589.2 -> 419.0	10839	5.34 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
d7-MeFOSE	10.959	623.2 -> 58.9	65104	25.89 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d9-EtFOSE	11.269	639.2 -> 58.9	85006	26.48 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.9%	
d5-EtFOSA	11.360	531.1 -> 219.0	9162	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	17879	9.16 µg/L	96
		327.1 -> 80.9	7751		
6:2FTS	6.924	427.1 -> 407.0	15457	9.09 µg/L	96
		427.1 -> 80.9	7025		
8:2FTS	7.991	527.1 -> 507.0	16949	9.43 µg/L	97
		527.1 -> 80.8	6885		
EtFOSAA	8.483	584.2 -> 419.1	5460	2.64 µg/L	m 90
		584.2 -> 526.0	2867		
FOSA	9.774	498.1 -> 77.9	14897	2.45 µg/L	99
		498.1 -> 478.0	496		
MeFOSAA	8.274	570.1 -> 419.0	5197	2.18 µg/L	m 84
		570.1 -> 483.0	1377		
PFBA	2.932	212.8 -> 168.9	26755	9.56 µg/L	100
PFBS	5.453	298.7 -> 79.9	10789	2.24 µg/L	98
		298.7 -> 98.8	4387		
PFDA	8.216	512.9 -> 469.0	28572	2.44 µg/L	99
		512.9 -> 219.0	5900		
PFDODA	9.131	613.1 -> 569.0	43981	2.47 µg/L	97
		613.1 -> 319.0	6684		
PFDS	9.294	599.0 -> 79.9	6260	2.74 µg/L	93

7.7.10
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2967			
PFHpA	6.492	363.1 -> 319.0	38917	2.48	µg/L	98
		363.1 -> 169.0	7113			
PFHpS	7.836	449.0 -> 79.9	7352	2.74	µg/L	93
		449.0 -> 98.9	3665			
PFHxA	5.562	313.0 -> 269.0	43192	2.50	µg/L	100
		313.0 -> 118.9	1326			
PFHxS	7.255	398.7 -> 79.9	6304	2.27	µg/L	m 86
		398.7 -> 98.9	2907			
PFNA	7.709	463.0 -> 419.0	29797	2.62	µg/L	97
		463.0 -> 219.0	7243			
PFNS	8.848	548.8 -> 79.9	4020	2.81	µg/L	95
		548.8 -> 98.9	2029			
PFOA	7.164	413.0 -> 369.0	46126	2.55	µg/L	99
		413.0 -> 169.0	9684			
PFOS	8.355	498.9 -> 79.9	9496	2.55	µg/L	m 93
		498.9 -> 98.8	4628			
PFPeA	4.389	263.0 -> 219.0	71860	5.06	µg/L	100
PFPeS	6.519	349.1 -> 79.9	5978	2.58	µg/L	97
		349.1 -> 98.9	2460			
PFTeDA	9.937	713.1 -> 669.0	40094	2.53	µg/L	99
		713.1 -> 168.9	3675			
PFTrDA	9.554	663.0 -> 619.0	55012	2.60	µg/L	100
		663.0 -> 168.9	5526			
PFUnDA	8.685	563.1 -> 519.0	28959	2.36	µg/L	100
		563.1 -> 269.1	5839			
11CI-PF3OUdS	9.593	630.9 -> 450.9	46400	4.96	µg/L	99
		632.9 -> 452.9	14161			
9CI-PF3ONS	8.712	530.8 -> 351.0	45225	4.64	µg/L	99
		532.8 -> 353.0	13102			
ADONA	6.756	376.9 -> 250.9	126176	4.67	µg/L	98
		376.9 -> 84.8	32781			
HFPO-DA	5.915	284.9 -> 168.9	12321	4.72	µg/L	97
		284.9 -> 184.9	1566			
3:3FTCA	3.848	241.0 -> 177.0	7397	12.31	µg/L	99
		241.0 -> 117.0	701			
5:3FTCA	6.205	341.0 -> 237.1	160463	64.09	µg/L	98
		341.0 -> 217.0	114149			
7:3FTCA	7.673	441.0 -> 316.9	70336	64.19	µg/L	99
		441.0 -> 336.9	158534			
EtFOSA	11.362	526.0 -> 219.0	20254	5.17	µg/L	60
		526.0 -> 169.0	27065			
EtFOSE	11.282	630.0 -> 58.9	39313	12.48	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	15539	5.30	µg/L	m 74
		511.9 -> 169.0	22720			
MeFOSE	10.985	616.1 -> 58.9	34121	12.72	µg/L	m 100
PFDoDS	10.076	699.1 -> 79.9	5493	2.73	µg/L	99
		699.1 -> 98.8	3017			
NFDHA	5.441	295.0 -> 201.0	5862	5.21	µg/L	99
		295.0 -> 84.9	1409			
PFMBA	4.791	279.0 -> 85.1	41336	5.04	µg/L	100
PFMPA	3.540	229.0 -> 84.9	35552	5.03	µg/L	100
PFEESA	5.984	314.8 -> 134.9	67480	4.46	µg/L	99
		314.8 -> 82.9	2205			

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

7.7.10
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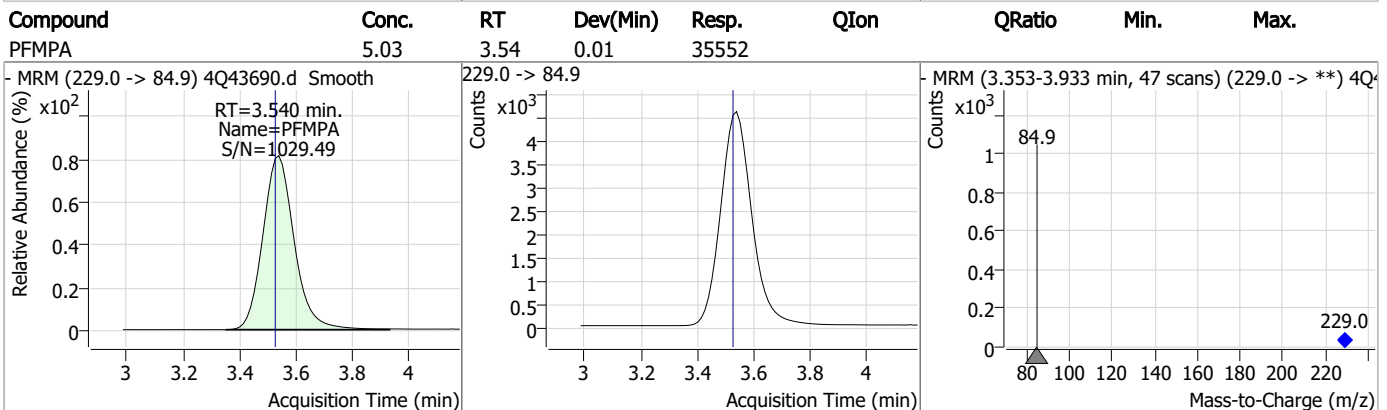
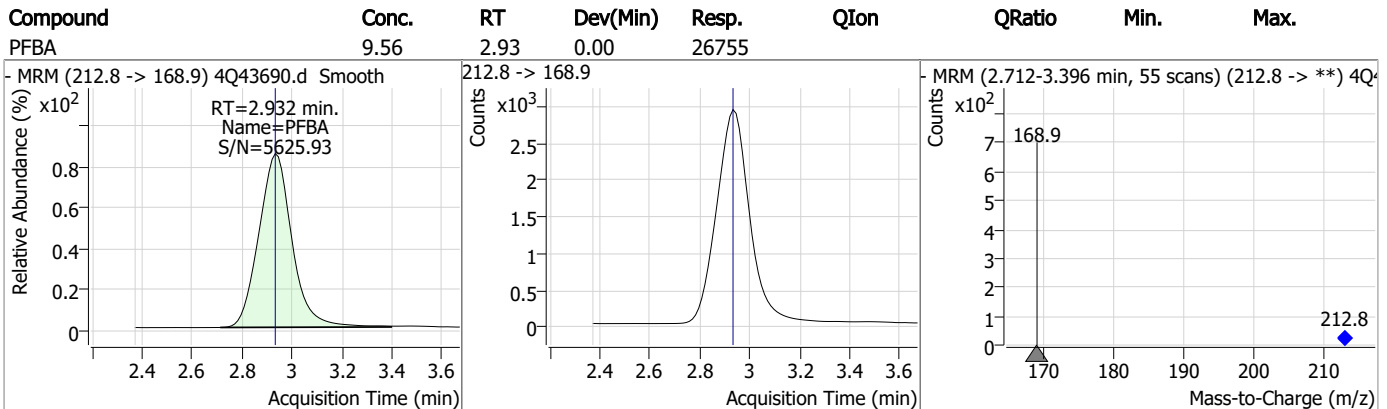
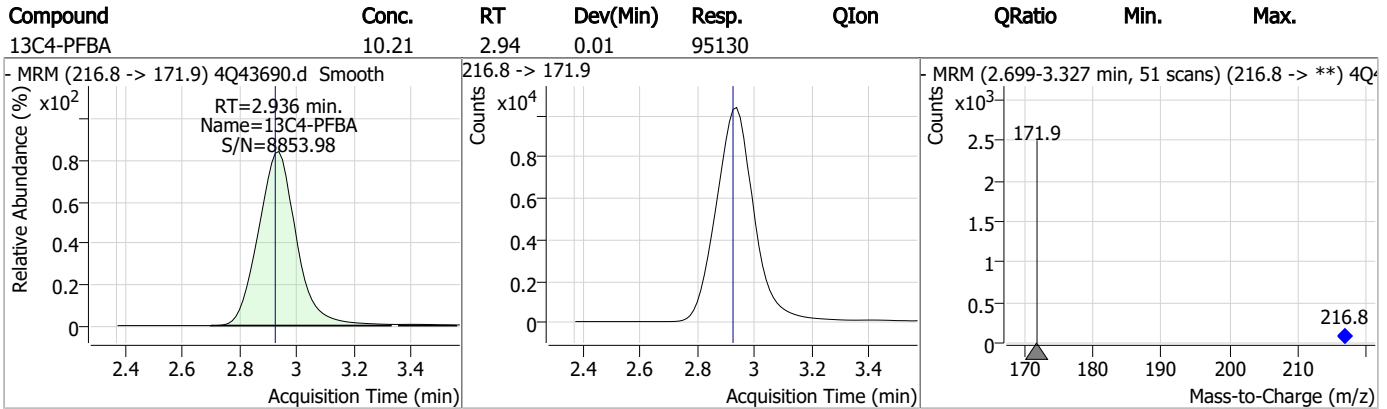
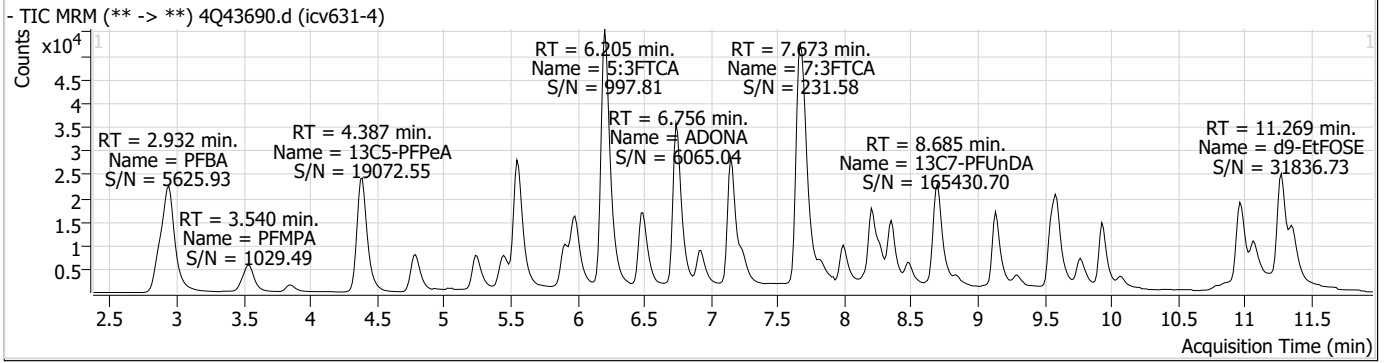
Perfluorinated Compounds by LC/MS/MS

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

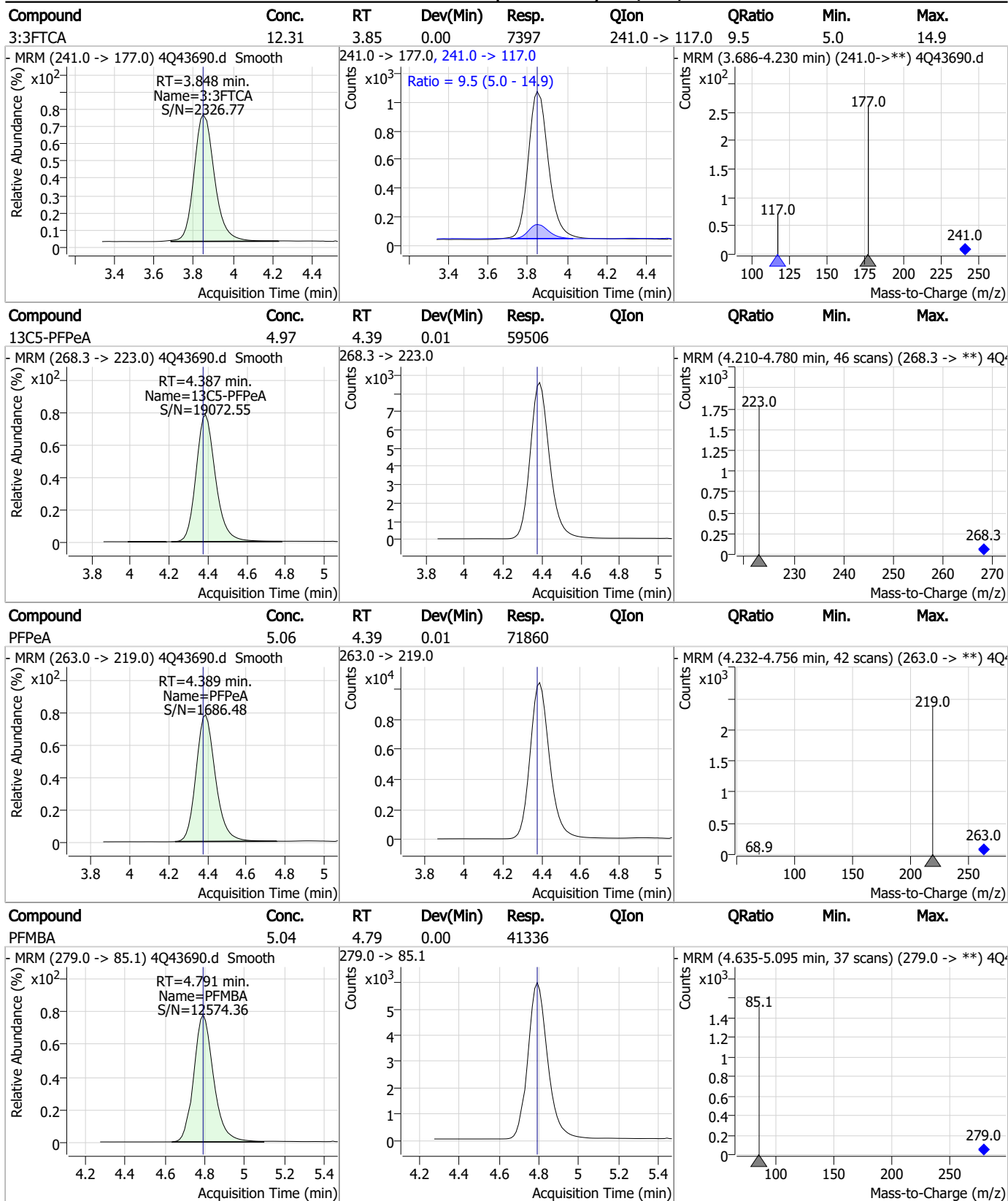
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Perfluorinated Compounds by LC/MS/MS



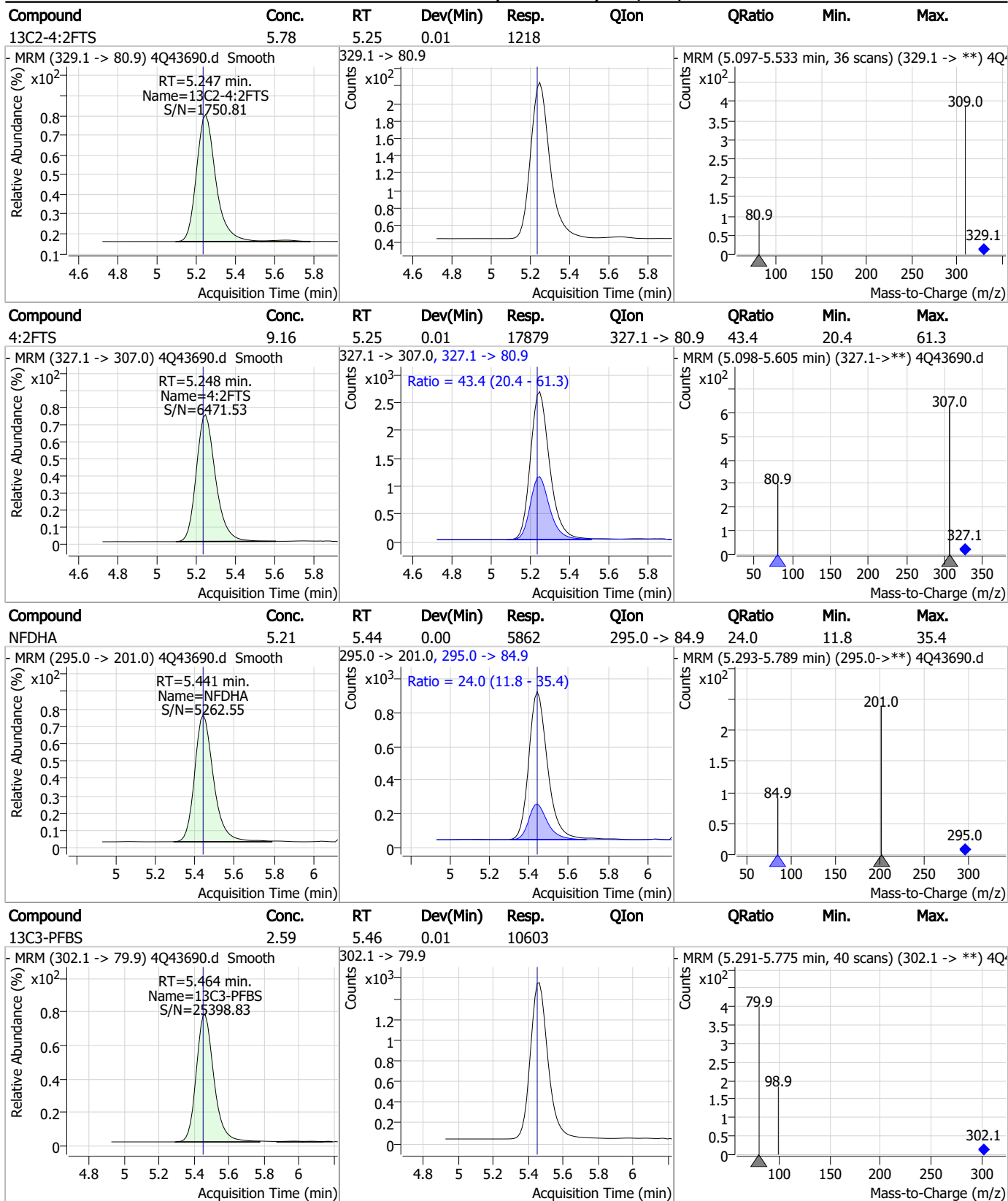
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Perfluorinated Compounds by LC/MS/MS



7.7.10
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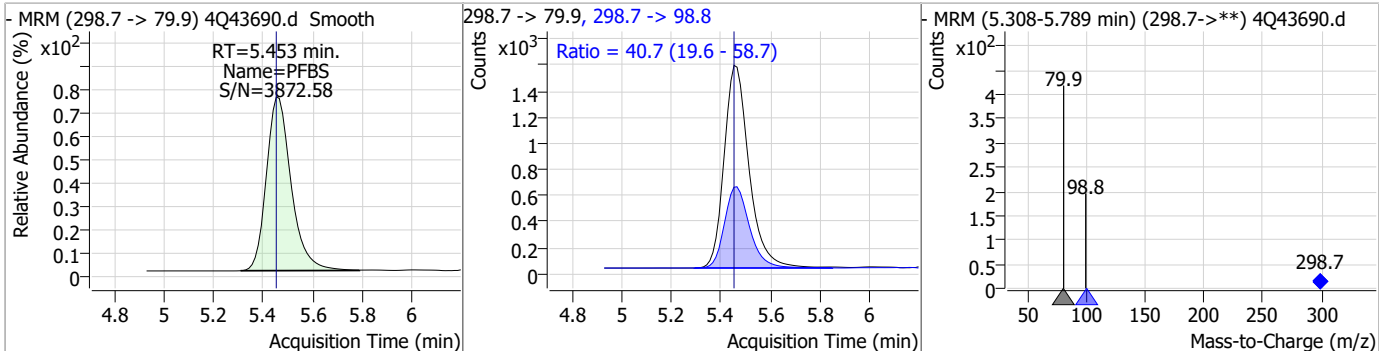
Perfluorinated Compounds by LC/MS/MS



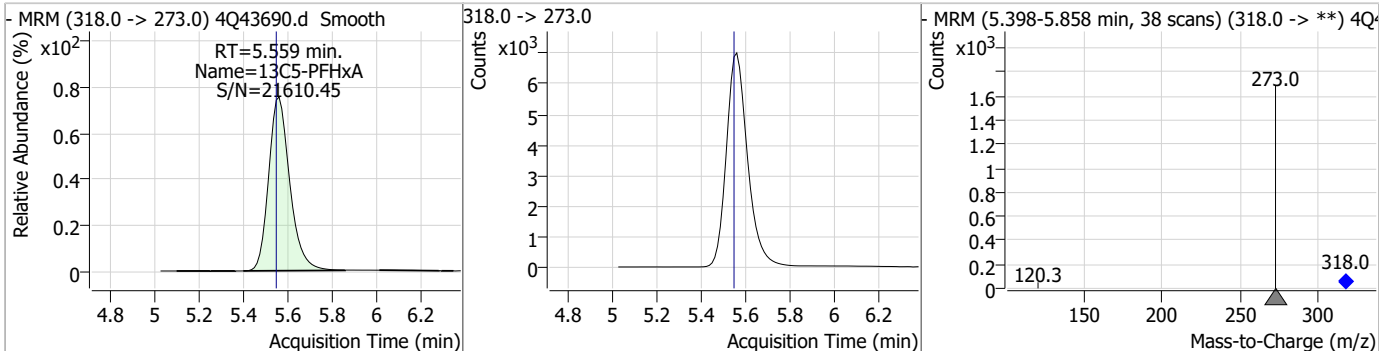
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

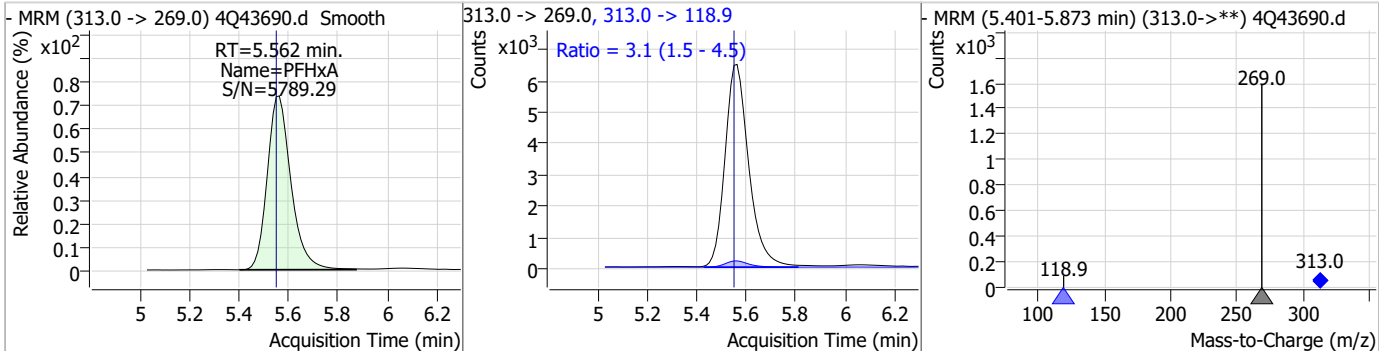
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.24	5.45	0.00	10789	298.7 -> 98.8	40.7	19.6	58.7



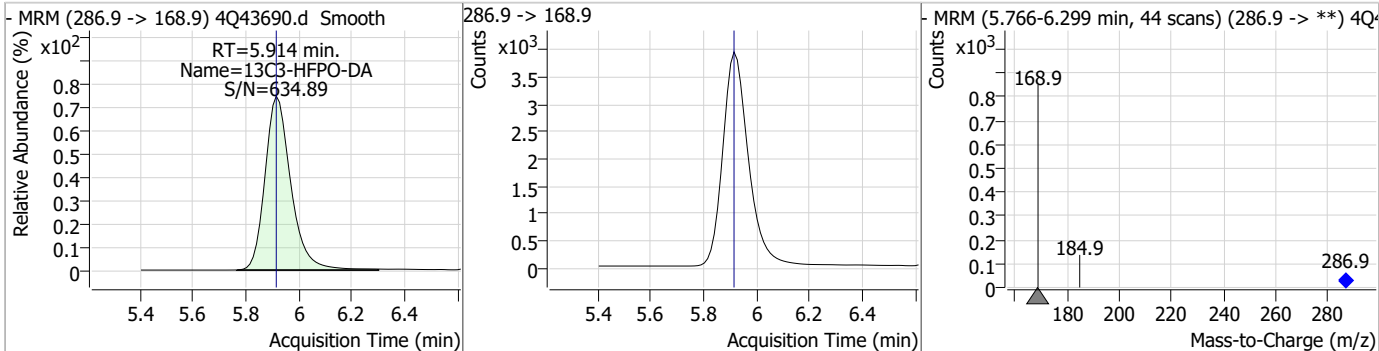
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.45	5.56	0.01	46114				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.50	5.56	0.01	43192	313.0 -> 118.9	3.1	1.5	4.5

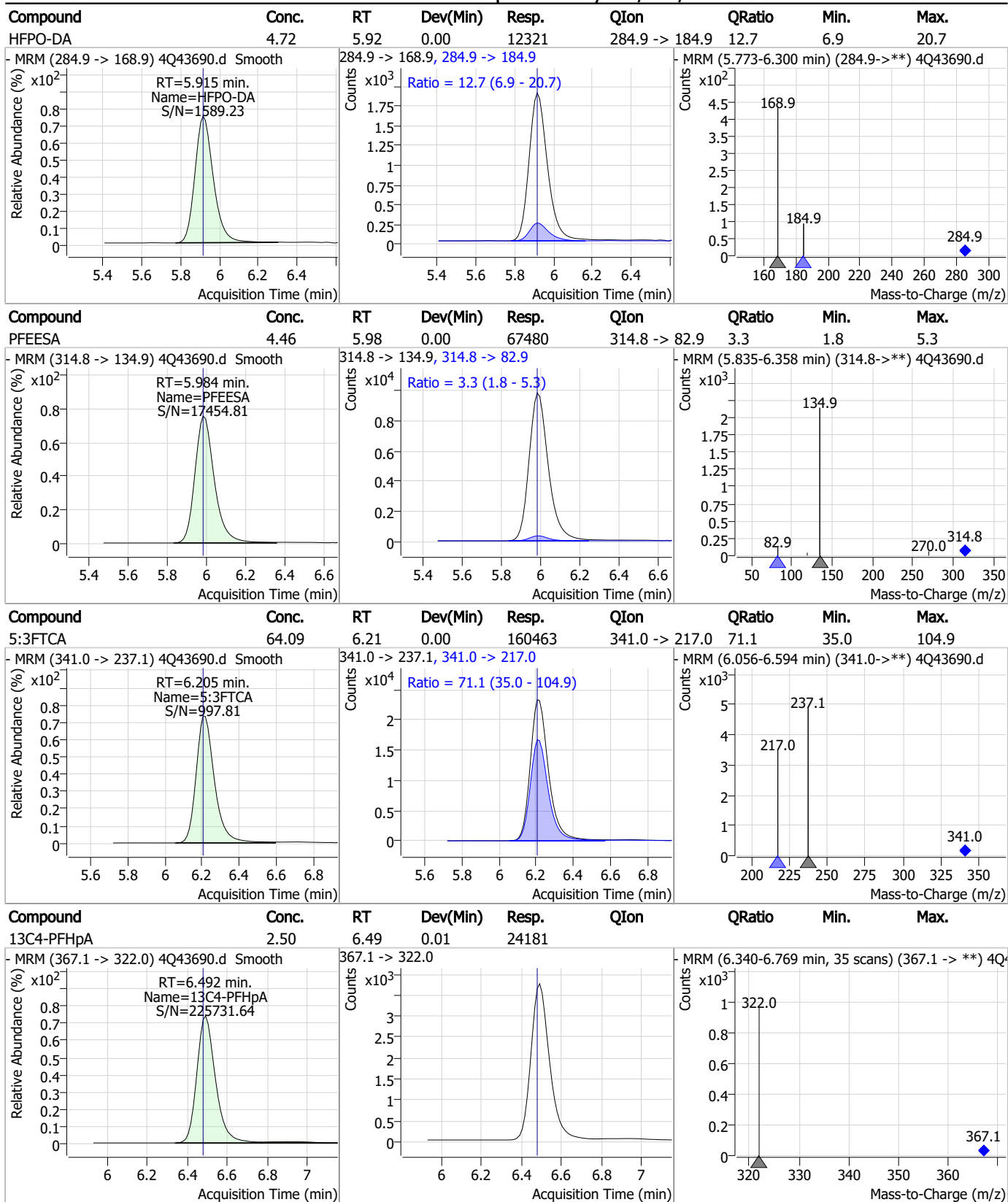


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.15	5.91	0.00	26408				



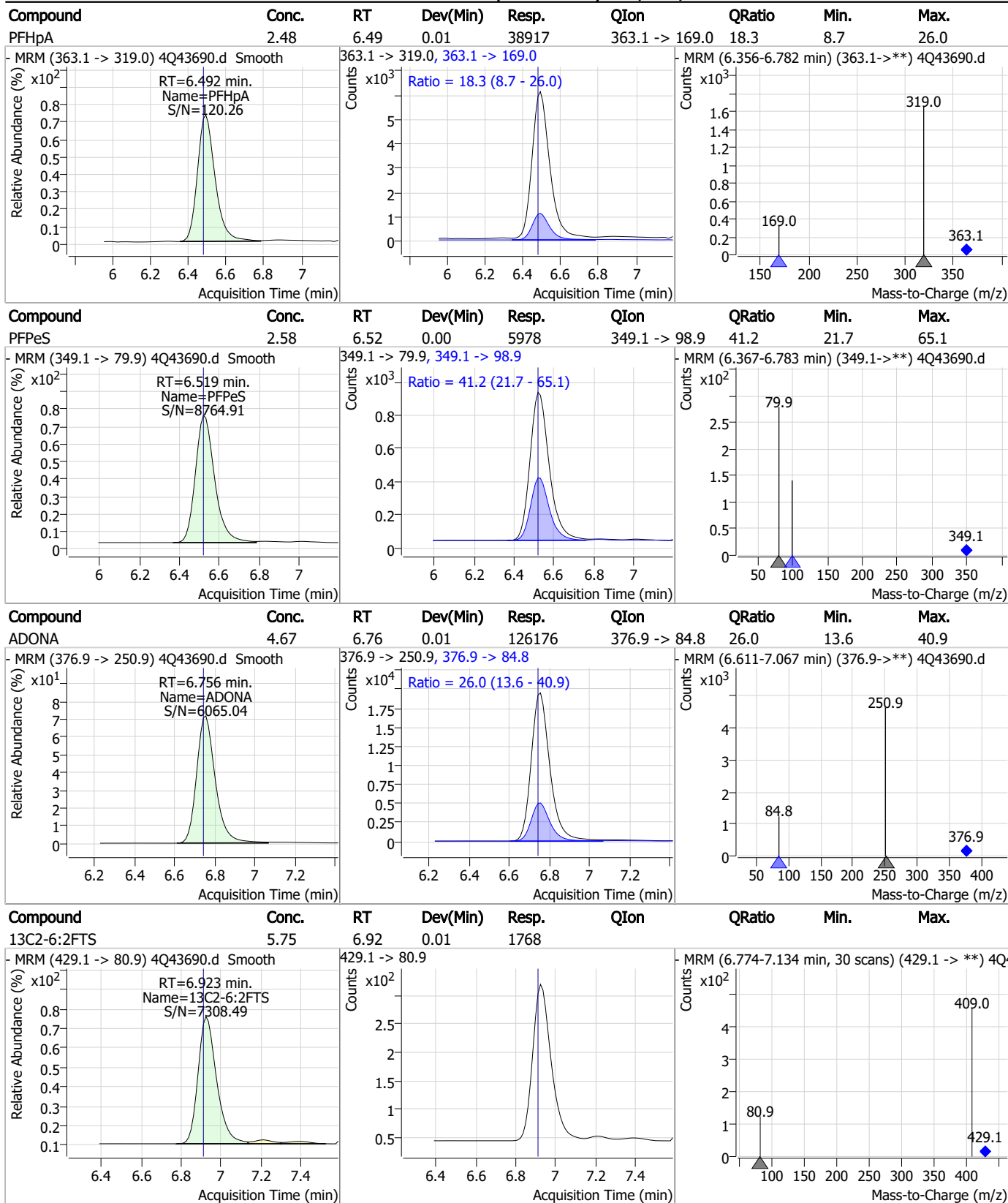
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Perfluorinated Compounds by LC/MS/MS



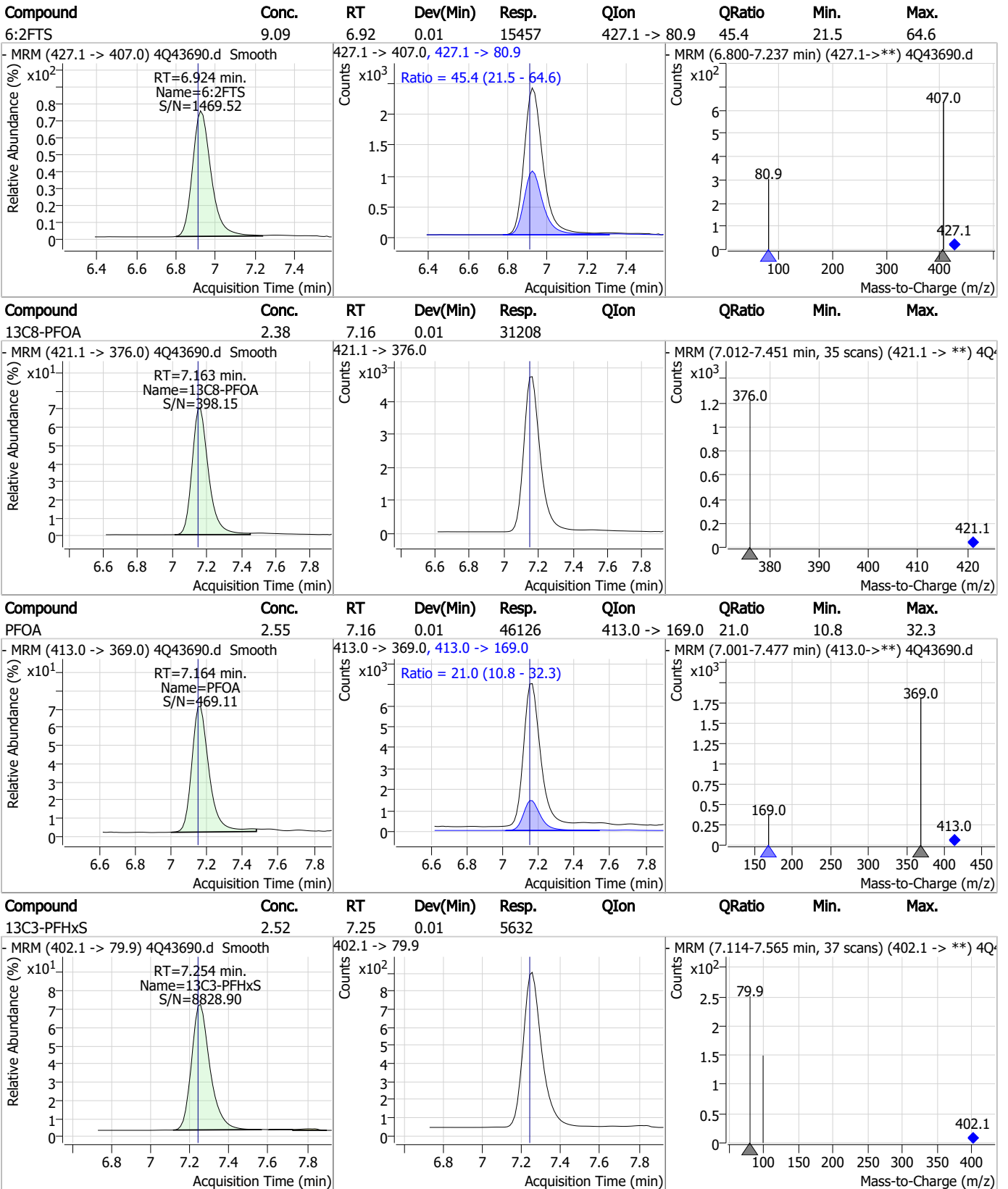
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Perfluorinated Compounds by LC/MS/MS



7.7.10
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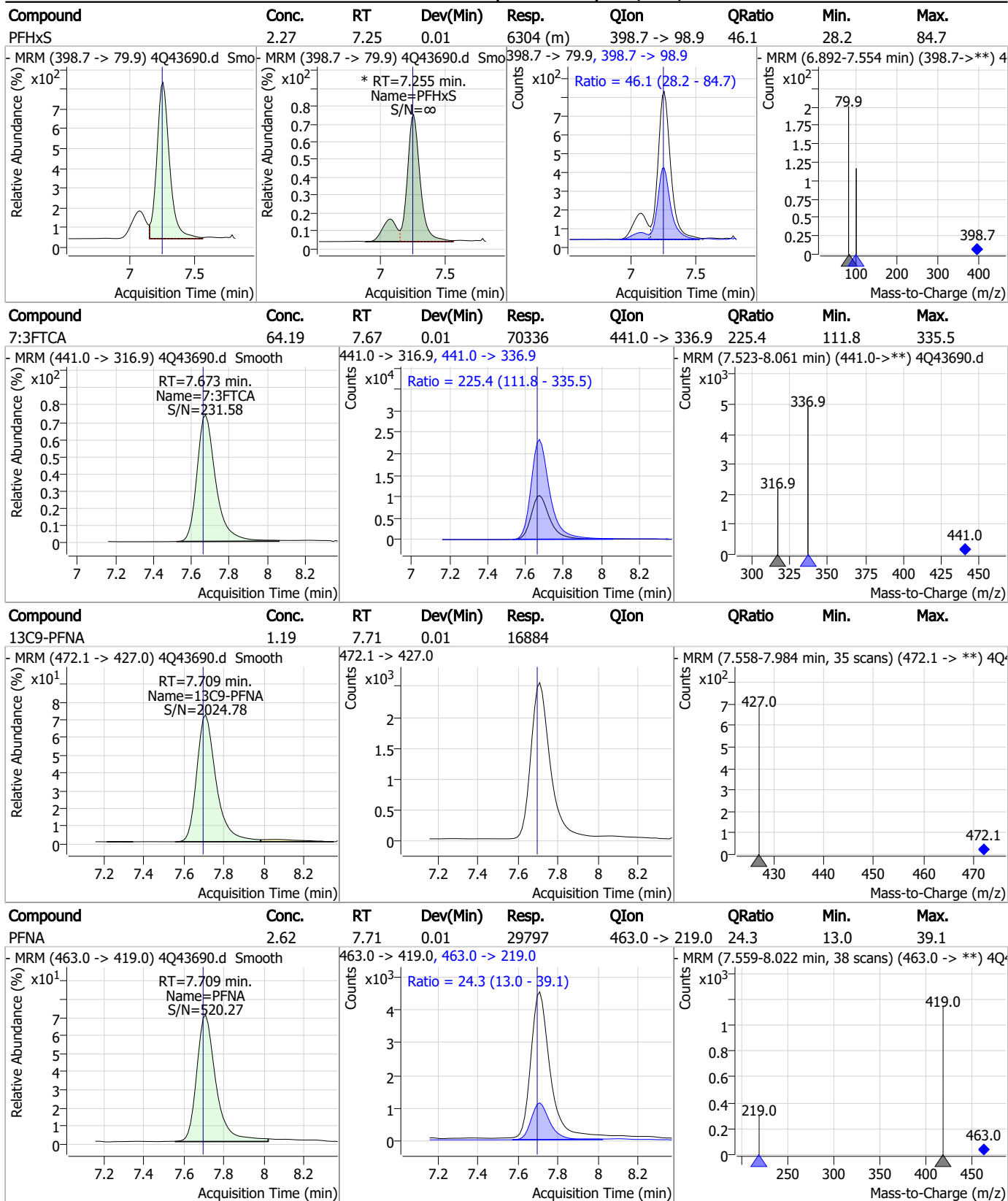
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

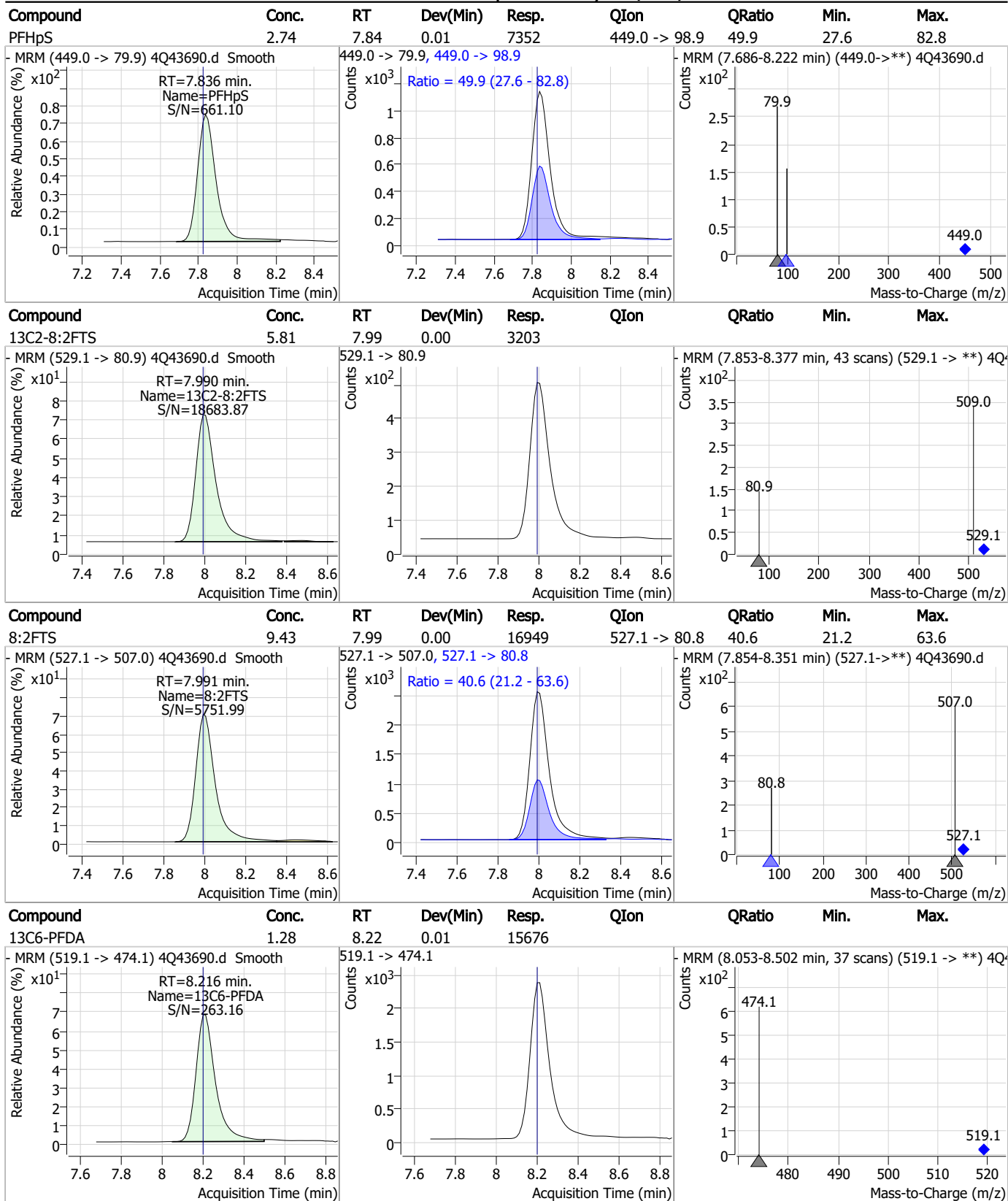


Perfluorinated Compounds by LC/MS/MS



7.7.10
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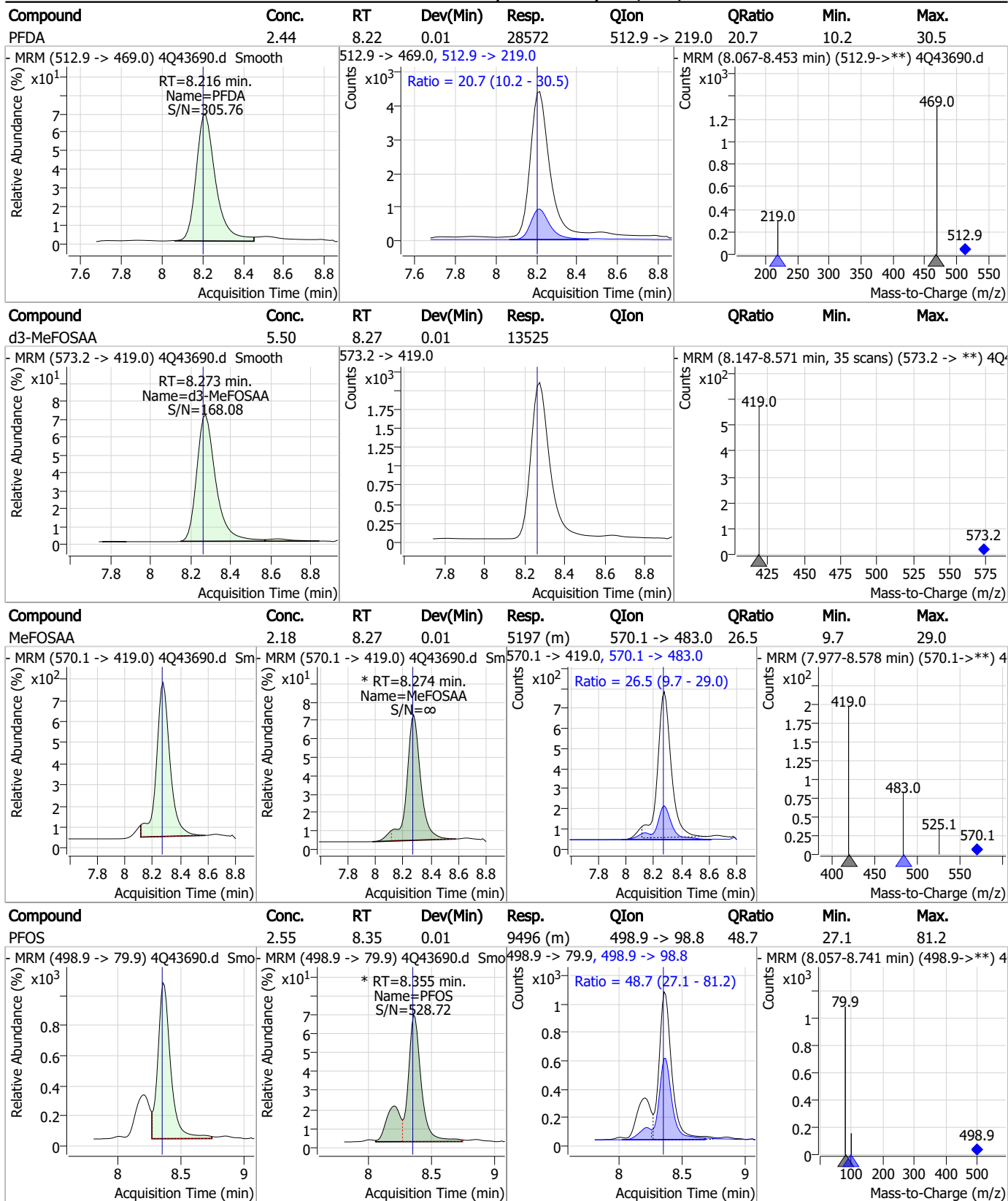
Perfluorinated Compounds by LC/MS/MS



7.7.10
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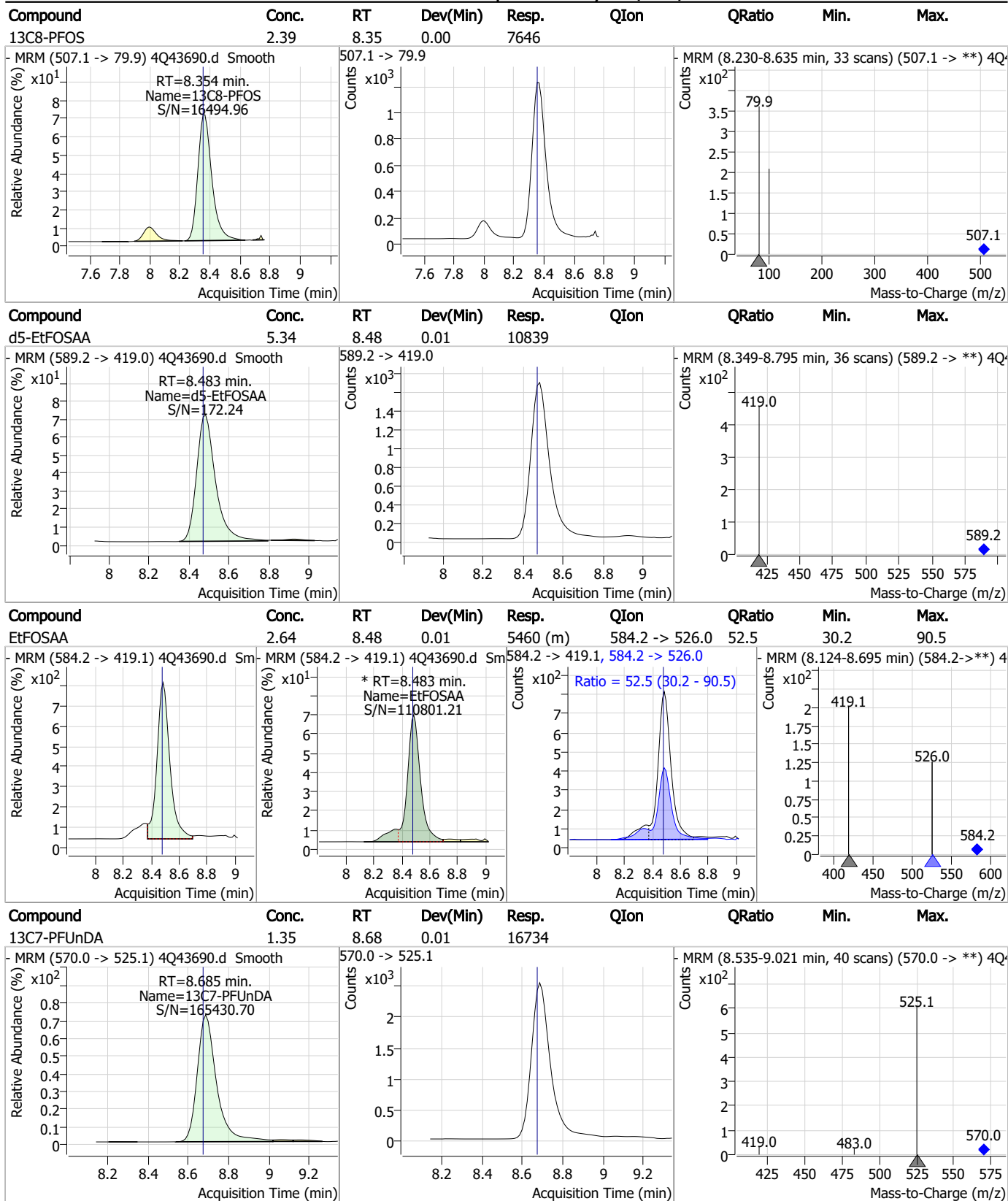


Perfluorinated Compounds by LC/MS/MS



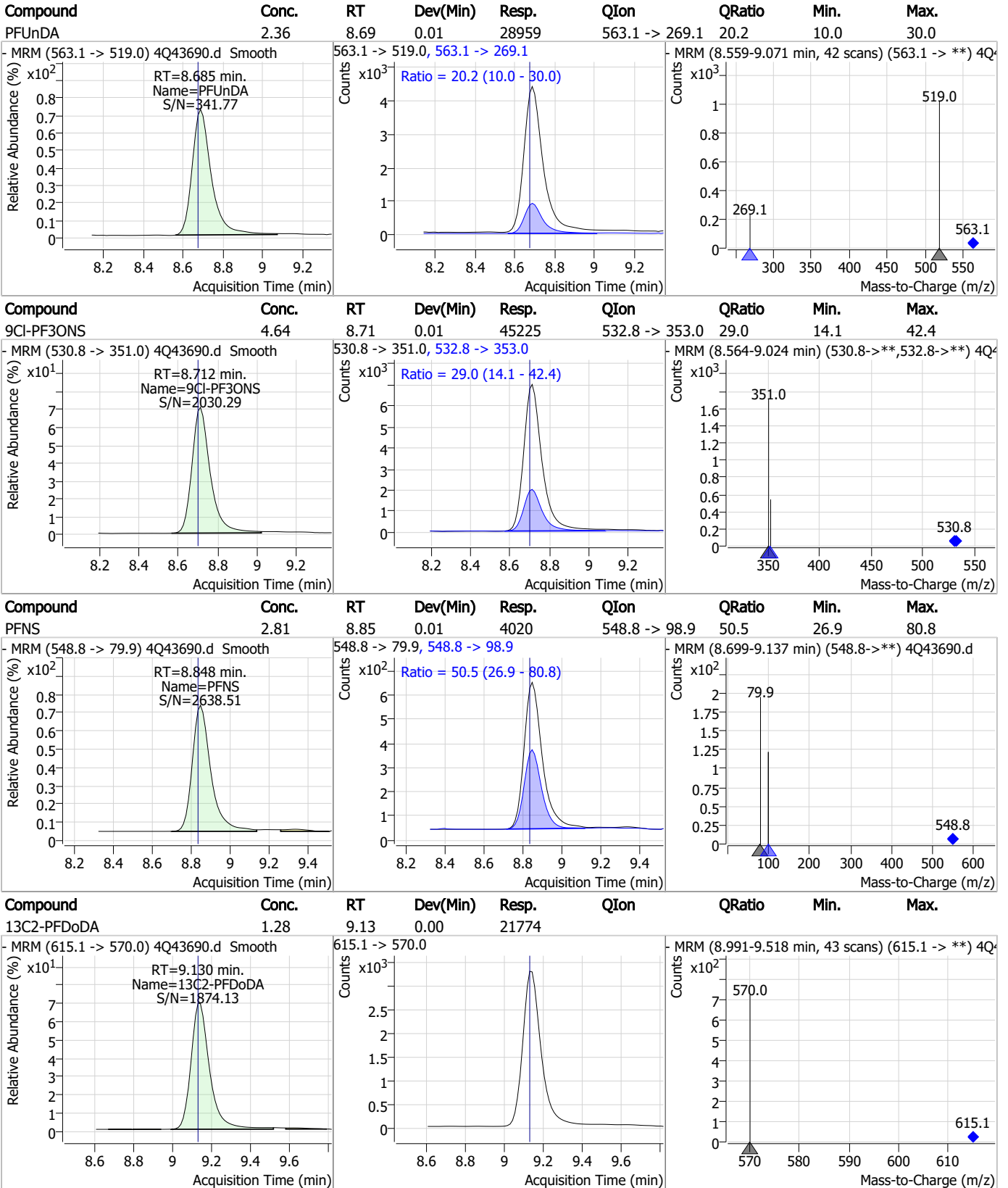
7.7.10
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Perfluorinated Compounds by LC/MS/MS



7.7.10
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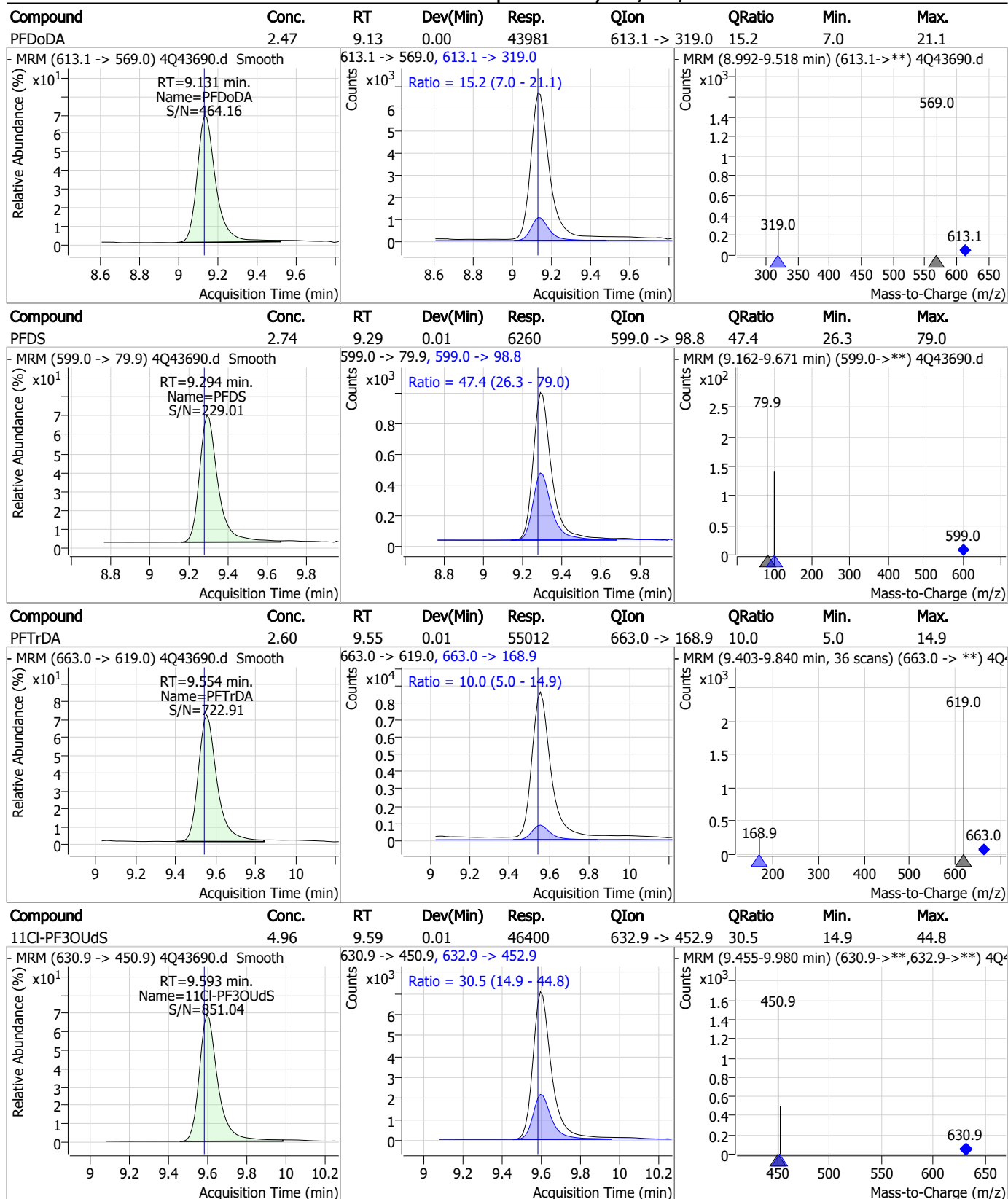
Perfluorinated Compounds by LC/MS/MS



7.7.10
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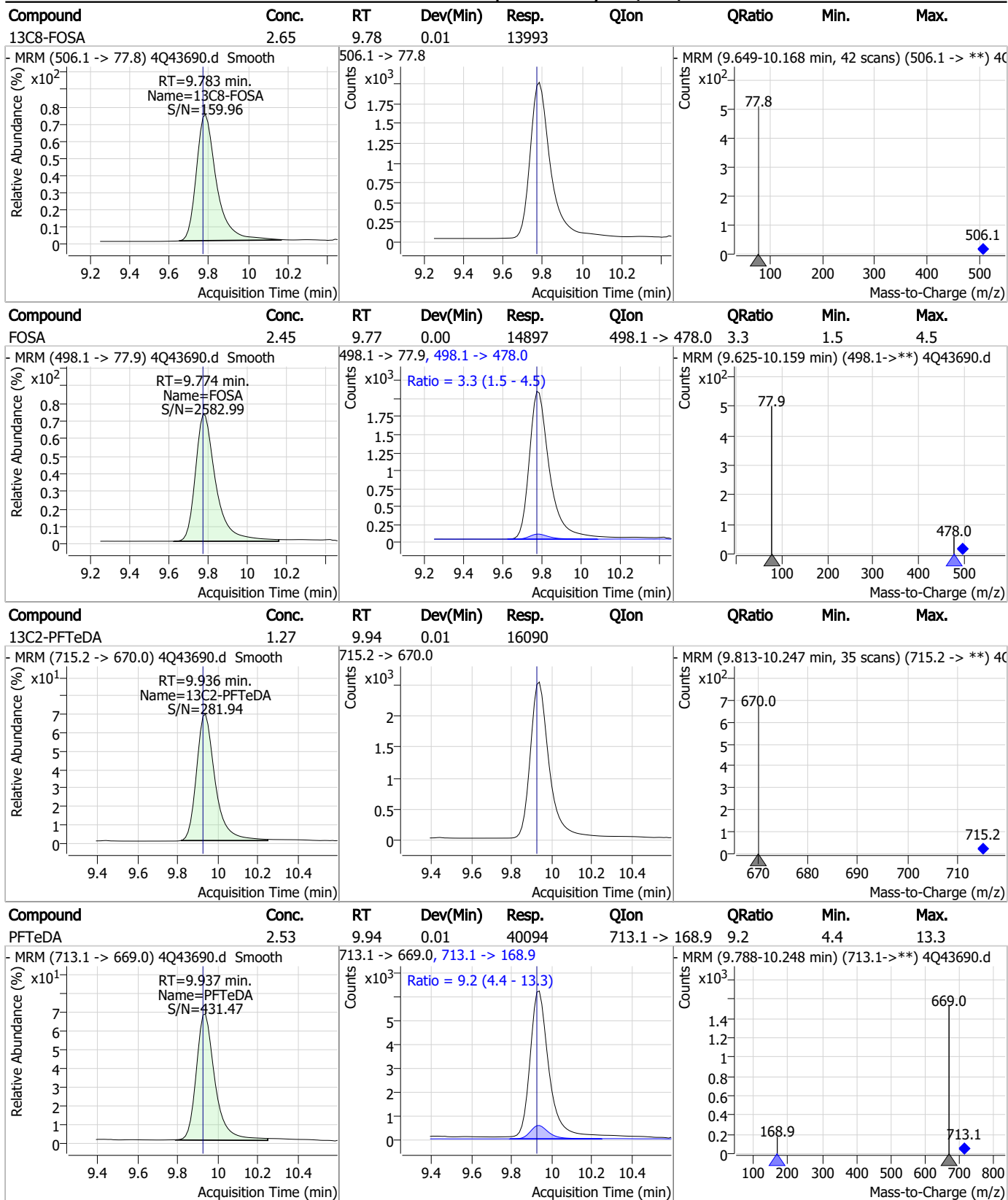
Perfluorinated Compounds by LC/MS/MS



7.7.10
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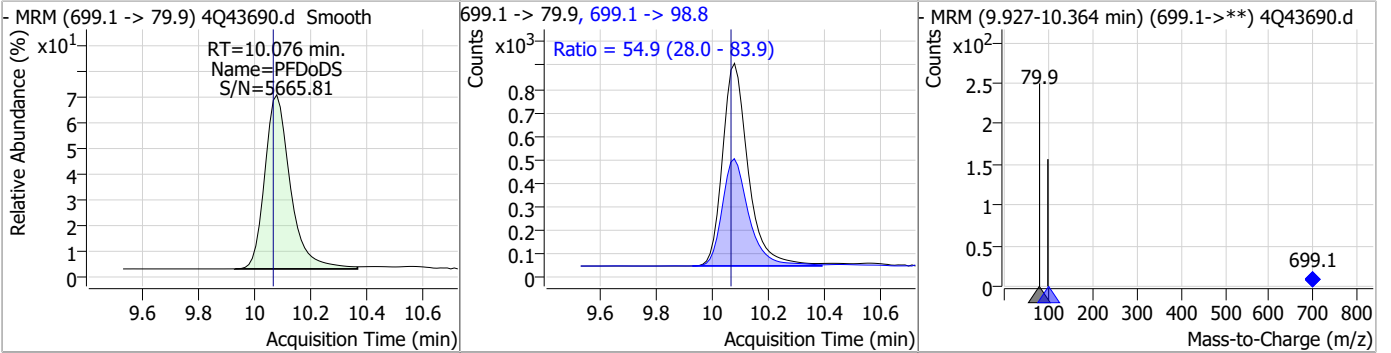
Perfluorinated Compounds by LC/MS/MS



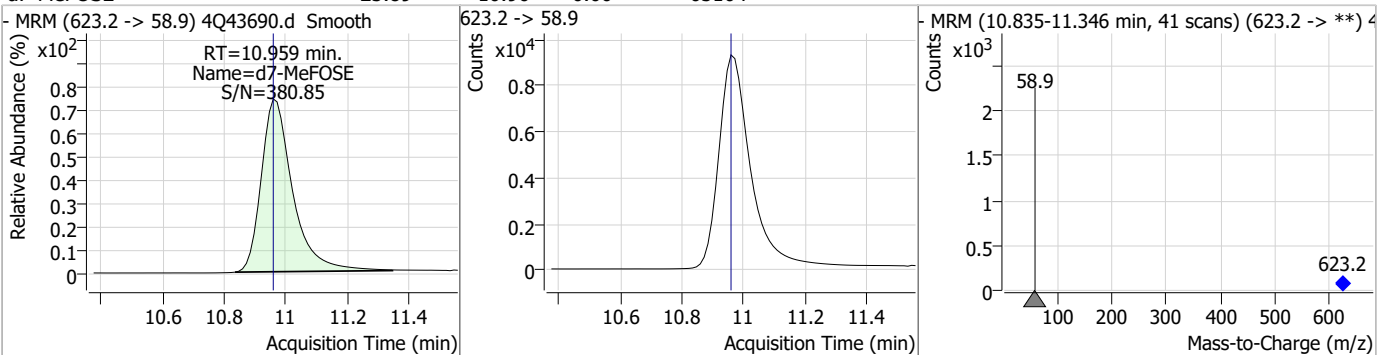
7.7.10
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Perfluorinated Compounds by LC/MS/MS

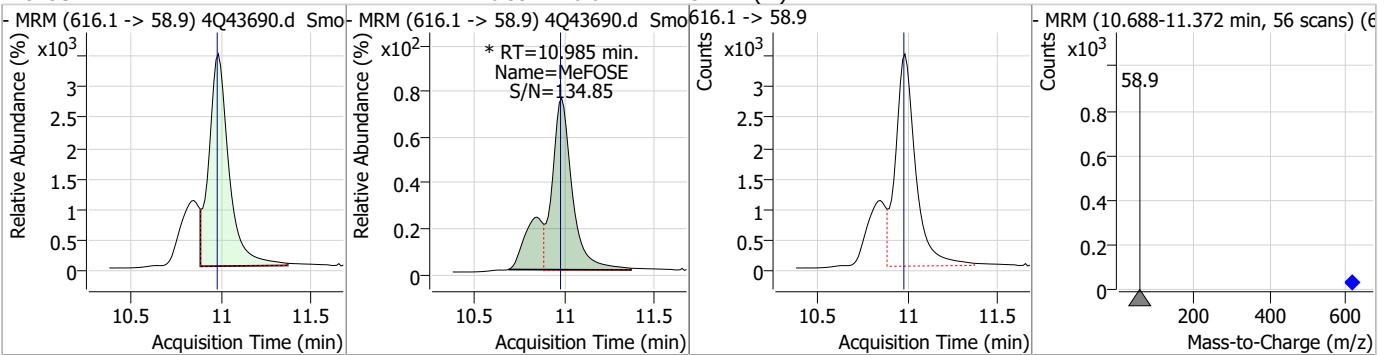
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.73	10.08	0.01	5493	699.1 -> 98.8	54.9	28.0	83.9



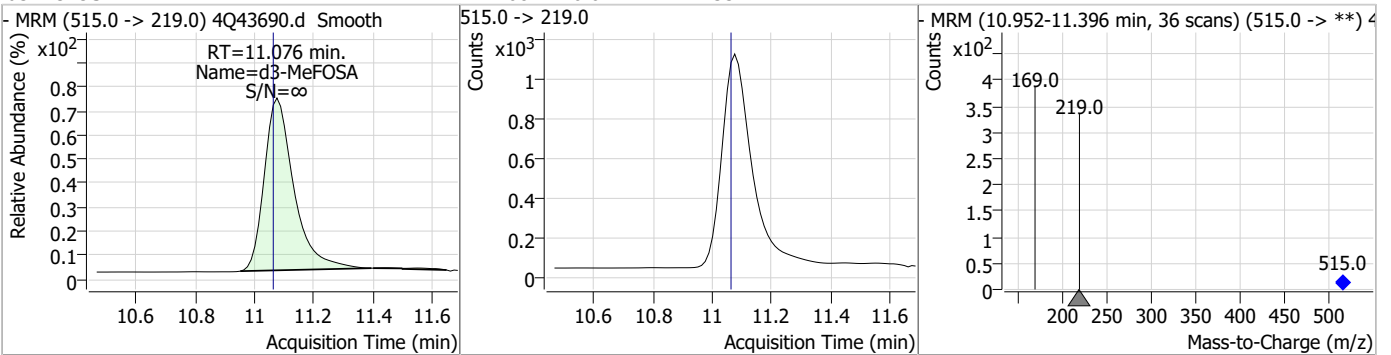
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.89	10.96	0.00	65104				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.72	10.99	0.01	34121 (m)				

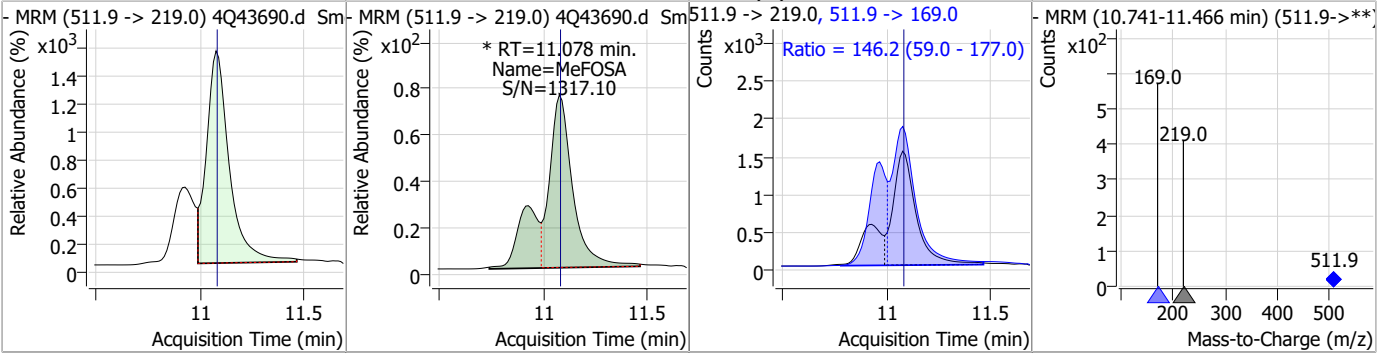


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.47	11.08	0.01	7433				

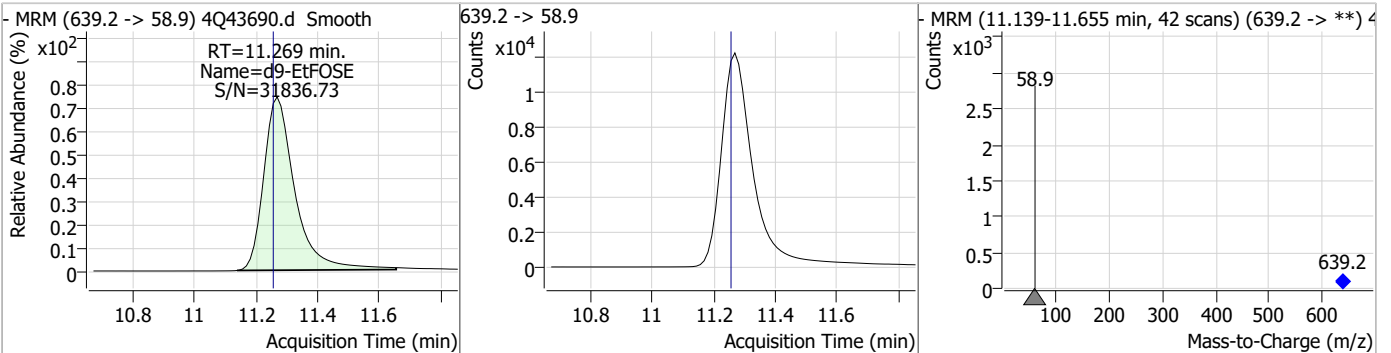


Perfluorinated Compounds by LC/MS/MS

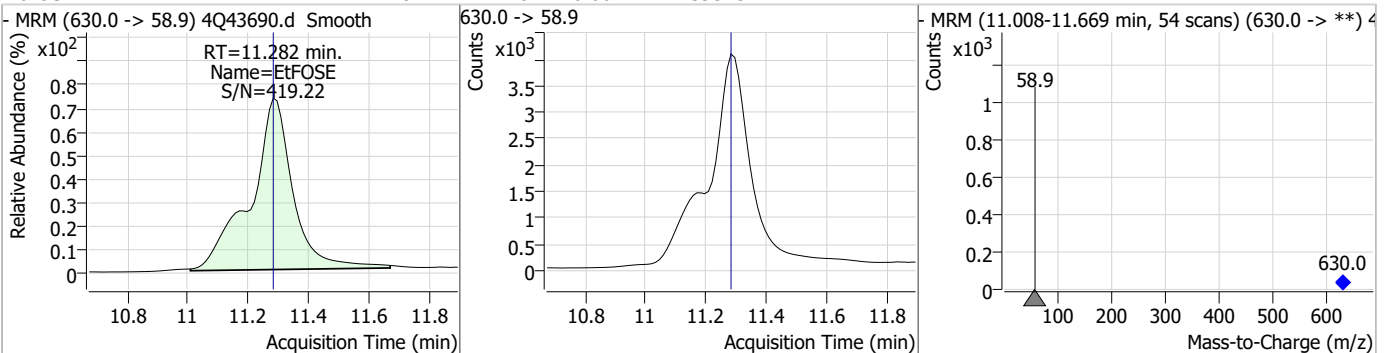
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.30	11.08	0.00	15539 (m)	511.9 -> 169.0	146.2	59.0	177.0



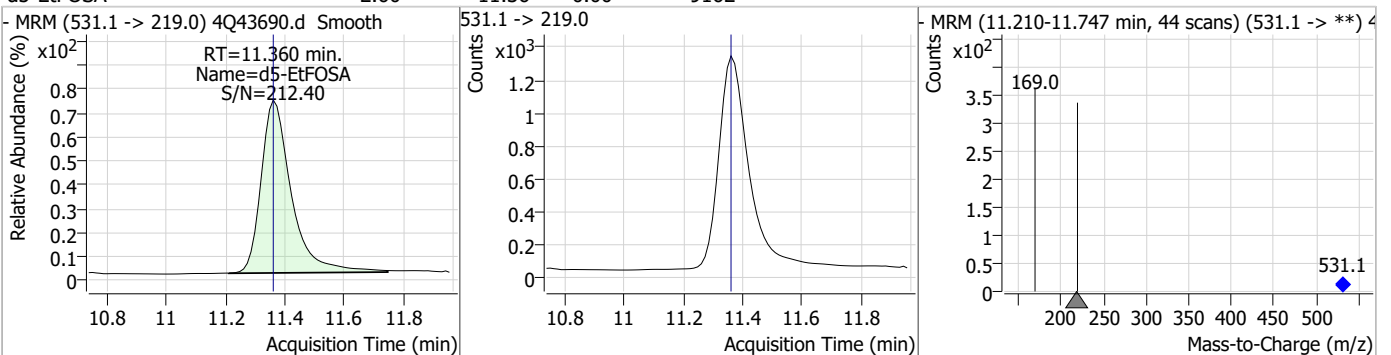
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.48	11.27	0.01	85006				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.48	11.28	0.00	39313				

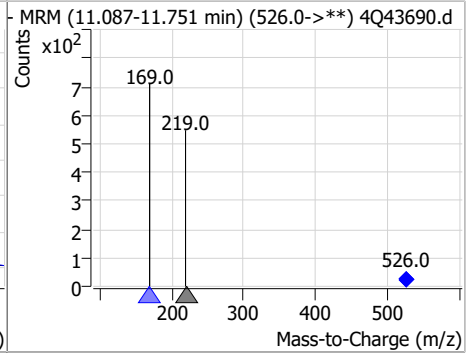
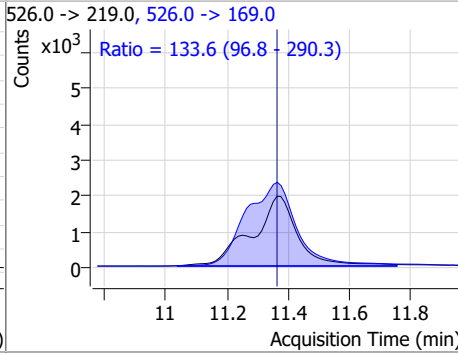
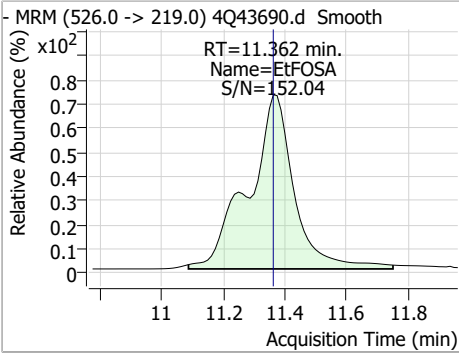


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.60	11.36	0.00	9162				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	5.17	11.36	0.00	20254	526.0 -> 169.0	133.6	96.8	290.3



7.7.10
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Manual Integration Approval Summary

Sample Number: S4Q631-ICV631 Method: EPA DRAFT 1633
Lab FileID: 4Q43690.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 14:44 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.48	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43691.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 2:58:06 PM
 Sample Name : icv631-20
 Vial : P1-B2
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	91955	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	58691	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	45234	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	22983	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	30410	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	16339	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	15702	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	15962	1.25 µg/L	0.012
M2-PFDoDA	9.143	615.1 -> 570.0	21057	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	14998	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	13561	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10353	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	5514	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	7270	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1208	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	1731	5.00 µg/L	0.012
M2-8:2FTS	8.003	529.1 -> 80.9	3114	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	12452	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	25058	10.00 µg/L	0.000
M5-EtFOSAA	8.483	589.2 -> 419.0	9658	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	63179	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	79146	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	8890	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7587	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	7966	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	51864	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	3917	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	36494	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	13607	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	17640	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	38118	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1208	5.87 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.5%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1731	5.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.3%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3114	5.78 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.7%		
13C2-PFDoDA	9.143	615.1 -> 570.0	21057	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C2-PFTeDA	9.936	715.2 -> 670.0	14998	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C3-PFBS	5.464	302.1 -> 79.9	10353	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C3-PFHxS	7.254	402.1 -> 79.9	5514	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 = 101.1%		
13C4-PFBA	2.924	216.8 -> 171.9	91955	10.26 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C4-PFHpA	6.492	367.1 -> 322.0	22983	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C5-PFHxA	5.559	318.0 -> 273.0	45234	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C5-PFPeA	4.387	268.3 -> 223.0	58691	5.09 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C6-PFDA	8.216	519.1 -> 474.1	15702	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C7-PFUnDA	8.685	570.0 -> 525.1	15962	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C8-FOSA	9.783	506.1 -> 77.8	13561	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C8-PFOA	7.163	421.1 -> 376.0	30410	2.48 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C8-PFOS	8.366	507.1 -> 79.9	7270	2.22 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 88.9%		
13C9-PFNA	7.709	472.1 -> 427.0	16339	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
d3-MeFOSAA	8.273	573.2 -> 419.0	12452	4.95 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-HFPO-DA	5.914	286.9 -> 168.9	25058	10.00 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
d3-MeFOSA	11.076	515.0 -> 219.0	7587	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
d5-EtFOSAA	8.483	589.2 -> 419.0	9658	4.65 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.0%		
d7-MeFOSE	10.959	623.2 -> 58.9	63179	24.56 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
d9-EtFOSE	11.269	639.2 -> 58.9	79146	24.11 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.4%		
d5-EtFOSA	11.360	531.1 -> 219.0	8890	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	37232	19.23 µg/L	96
		327.1 -> 80.9	16223		
6:2FTS	6.924	427.1 -> 407.0	32933	19.77 µg/L	98
		427.1 -> 80.9	13805		
8:2FTS	8.003	527.1 -> 507.0	34616	19.81 µg/L	97
		527.1 -> 80.8	14087		
EtFOSAA	8.483	584.2 -> 419.1	40304	21.87 µg/L	m 83
		584.2 -> 526.0	19291		
FOSA	9.774	498.1 -> 77.9	120130	20.37 µg/L	99
		498.1 -> 478.0	3293		
MeFOSAA	8.274	570.1 -> 419.0	43619	19.83 µg/L	m 95
		570.1 -> 483.0	9449		
PFBA	2.932	212.8 -> 168.9	50542	18.68 µg/L	100
PFBS	5.465	298.7 -> 79.9	100132	21.26 µg/L	98
		298.7 -> 98.8	38309		
PFDA	8.216	512.9 -> 469.0	227654	19.45 µg/L	99
		512.9 -> 219.0	45700		
PFDoDA	9.144	613.1 -> 569.0	314429	18.28 µg/L	99
		613.1 -> 319.0	42535		
PFDS	9.294	599.0 -> 79.9	46957	21.58 µg/L	96

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(%)
PFHpA	6.492	599.0 -> 98.8	23427	20.51	µg/L	99
		363.1 -> 319.0	305521			
PFHpS	7.836	363.1 -> 169.0	54568	23.30	µg/L	94
		449.0 -> 79.9	59378			
PFHxA	5.562	449.0 -> 98.9	30112	21.58	µg/L	100
		313.0 -> 269.0	366377			
PFHxS	7.255	313.0 -> 118.9	10730	21.65	µg/L	90
		398.7 -> 79.9	58973			
PFNA	7.709	398.7 -> 98.9	28911	22.30	µg/L	99
		463.0 -> 419.0	245745			
PFNS	8.848	463.0 -> 219.0	62110	23.63	µg/L	96
		548.8 -> 79.9	32088			
PFOA	7.164	548.8 -> 98.9	16287	20.29	µg/L	98
		413.0 -> 369.0	357547			
PFOS	8.367	413.0 -> 169.0	73711	18.63	µg/L	89
		498.9 -> 79.9	65944			
PFPeA	4.389	498.9 -> 98.8	30541	21.65	µg/L	100
		263.0 -> 219.0	303577			
PFPeS	6.519	349.1 -> 79.9	49131	21.64	µg/L	99
		349.1 -> 98.9	21551			
PFTeDA	9.937	713.1 -> 669.0	337944	22.92	µg/L	98
		713.1 -> 168.9	28116			
PFTrDA	9.554	663.0 -> 619.0	372129	18.15	µg/L	99
		663.0 -> 168.9	36054			
PFUnDA	8.685	563.1 -> 519.0	226932	19.42	µg/L	98
		563.1 -> 269.1	43137			
11CI-PF3OUdS	9.593	630.9 -> 450.9	187548	21.11	µg/L	98
		632.9 -> 452.9	58275			
9CI-PF3ONS	8.712	530.8 -> 351.0	194210	20.98	µg/L	97
		532.8 -> 353.0	57932			
ADONA	6.756	376.9 -> 250.9	527426	20.58	µg/L	99
		376.9 -> 84.8	139369			
HFPO-DA	5.915	284.9 -> 168.9	46876	18.91	µg/L	95
		284.9 -> 184.9	5583			
3:3FTCA	3.848	241.0 -> 177.0	12139	20.49	µg/L	100
		241.0 -> 117.0	1200			
5:3FTCA	6.217	341.0 -> 237.1	51714	21.06	µg/L	97
		341.0 -> 217.0	37376			
7:3FTCA	7.673	441.0 -> 316.9	22480	20.91	µg/L	96
		441.0 -> 336.9	48900			
EtFOSA	11.375	526.0 -> 219.0	76945	20.26	µg/L	44
		526.0 -> 169.0	84654			
EtFOSE	11.282	630.0 -> 58.9	315875	107.73	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	61733	20.63	µg/L	98
		511.9 -> 169.0	71514			
MeFOSE	10.985	616.1 -> 58.9	281343	108.12	µg/L	100
PFDoDS	10.076	699.1 -> 79.9	41011	21.45	µg/L	100
		699.1 -> 98.8	23052			
NFDHA	5.441	295.0 -> 201.0	22803	20.67	µg/L	98
		295.0 -> 84.9	5589			
PFMBA	4.791	279.0 -> 85.1	169825	21.01	µg/L	100
PFMPA	3.528	229.0 -> 84.9	146474	21.00	µg/L	100
PFEESA	5.984	314.8 -> 134.9	273627	18.45	µg/L	99
		314.8 -> 82.9	9364			

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



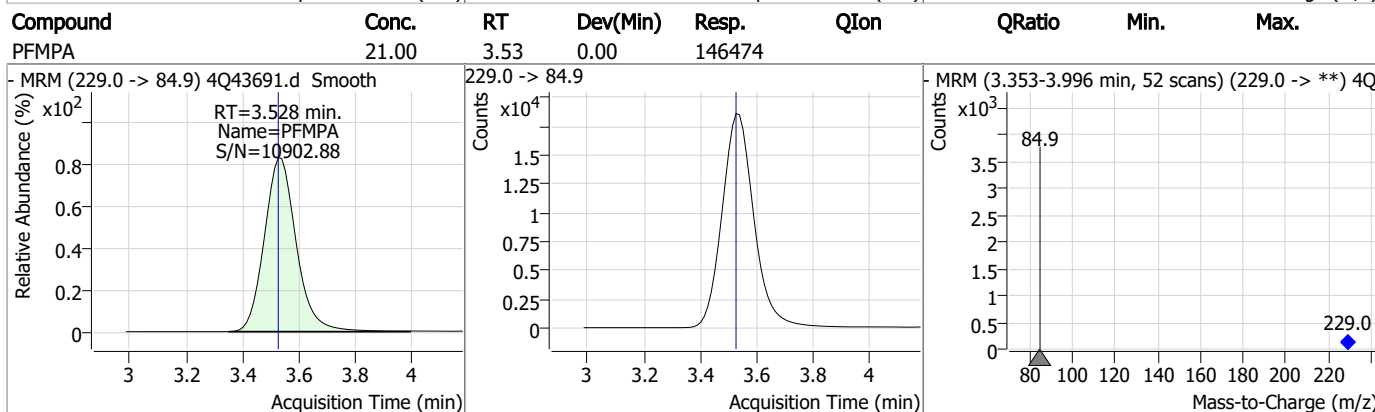
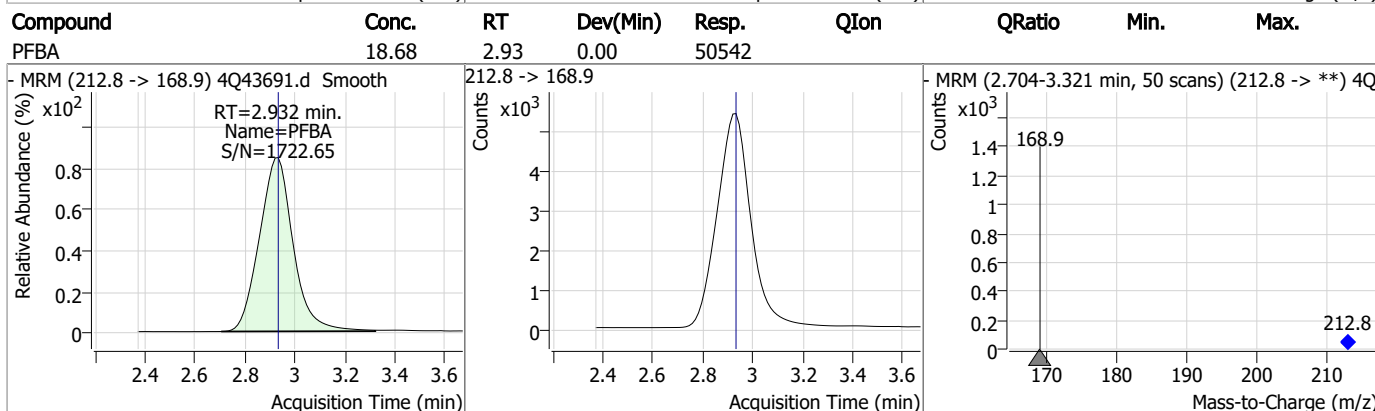
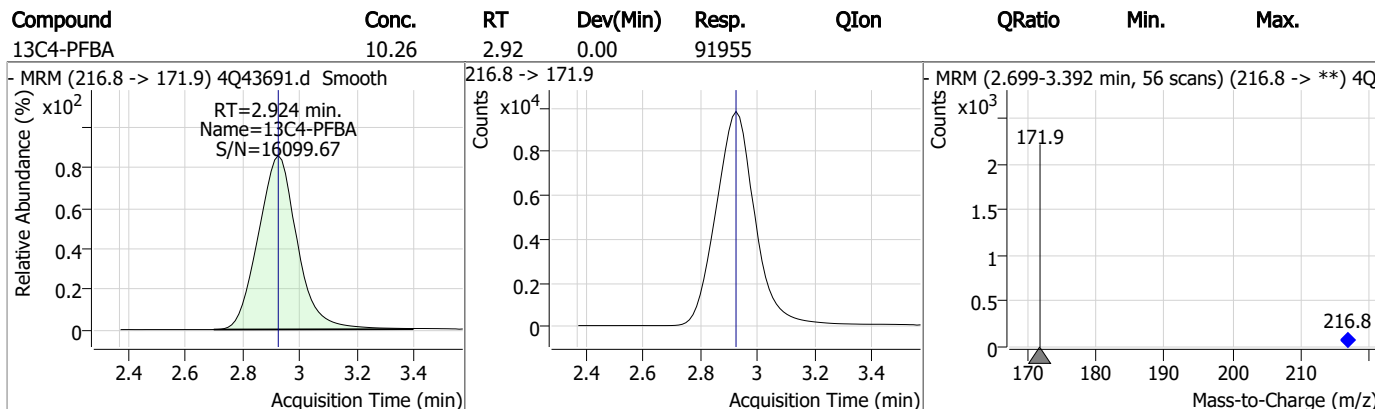
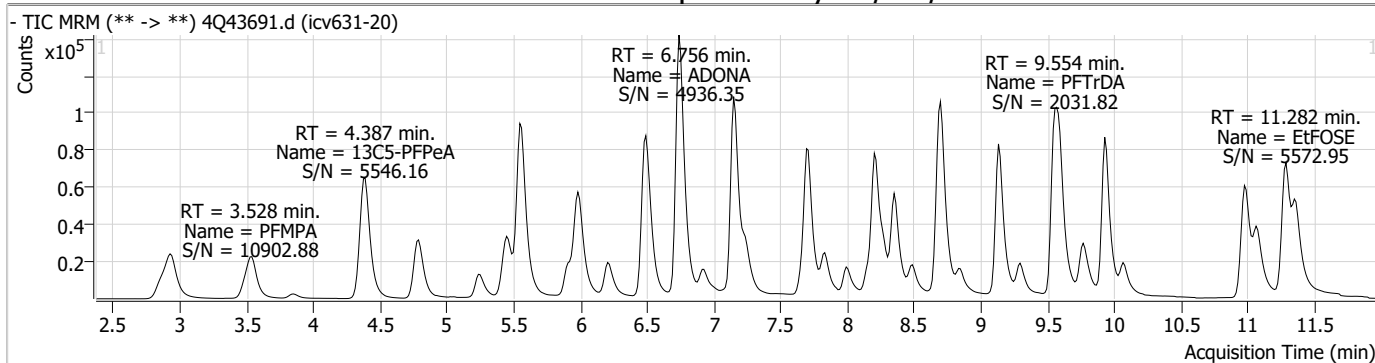
Perfluorinated Compounds by LC/MS/MS

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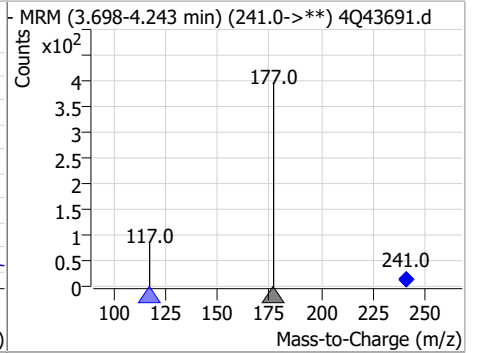
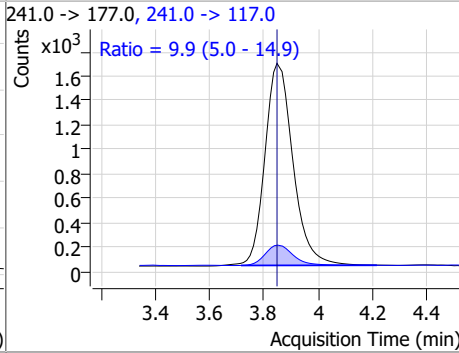
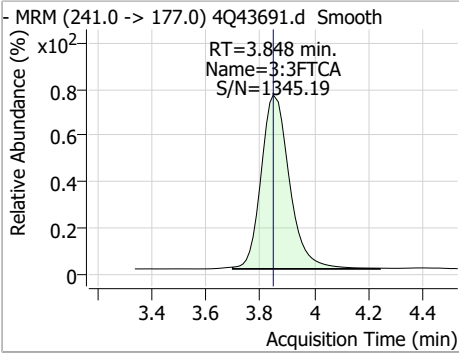
Perfluorinated Compounds by LC/MS/MS



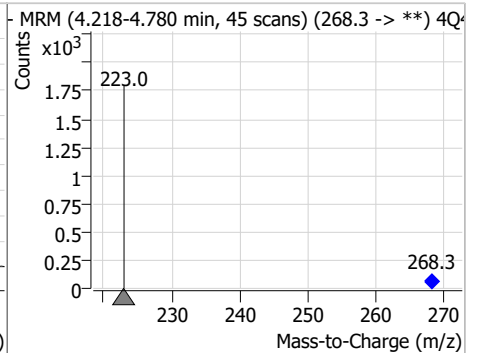
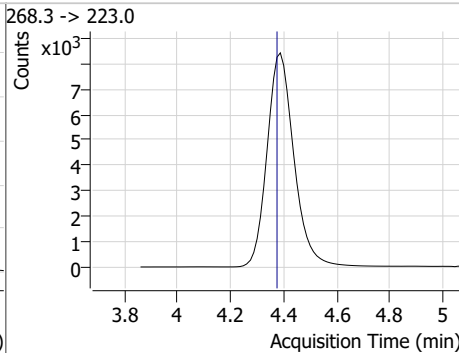
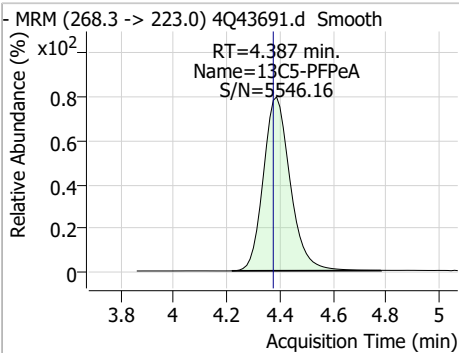
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Perfluorinated Compounds by LC/MS/MS

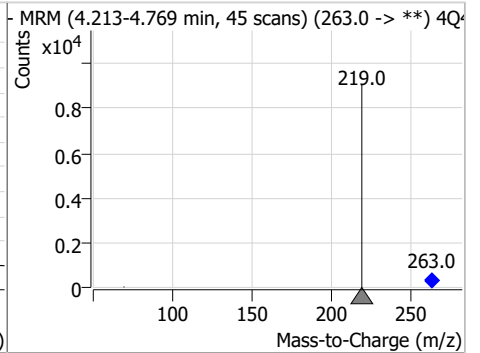
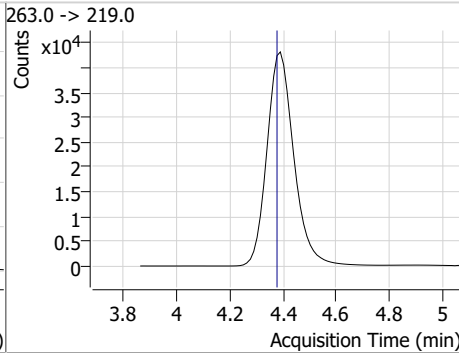
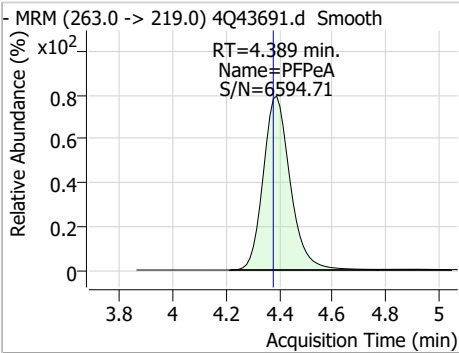
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	20.49	3.85	0.00	12139	241.0 -> 117.0	9.9	5.0	14.9



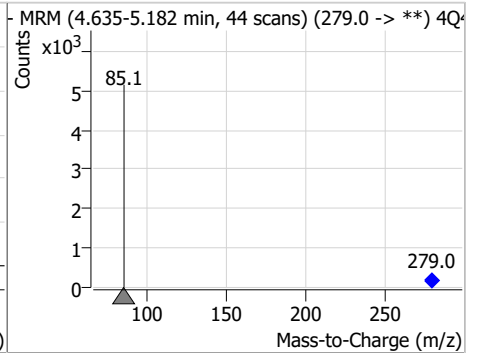
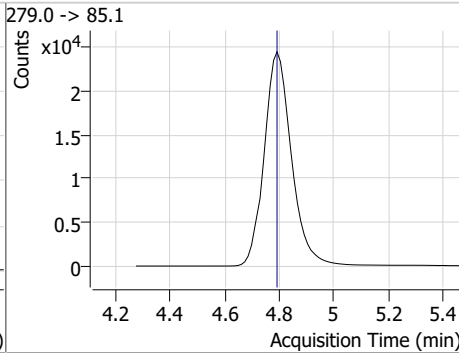
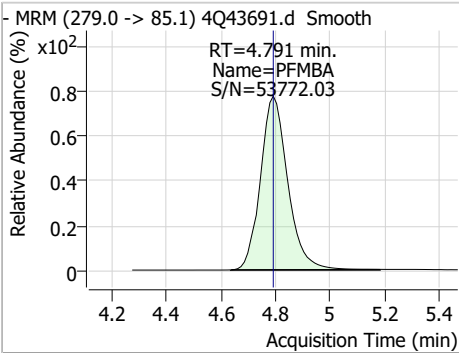
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.09	4.39	0.01	58691				



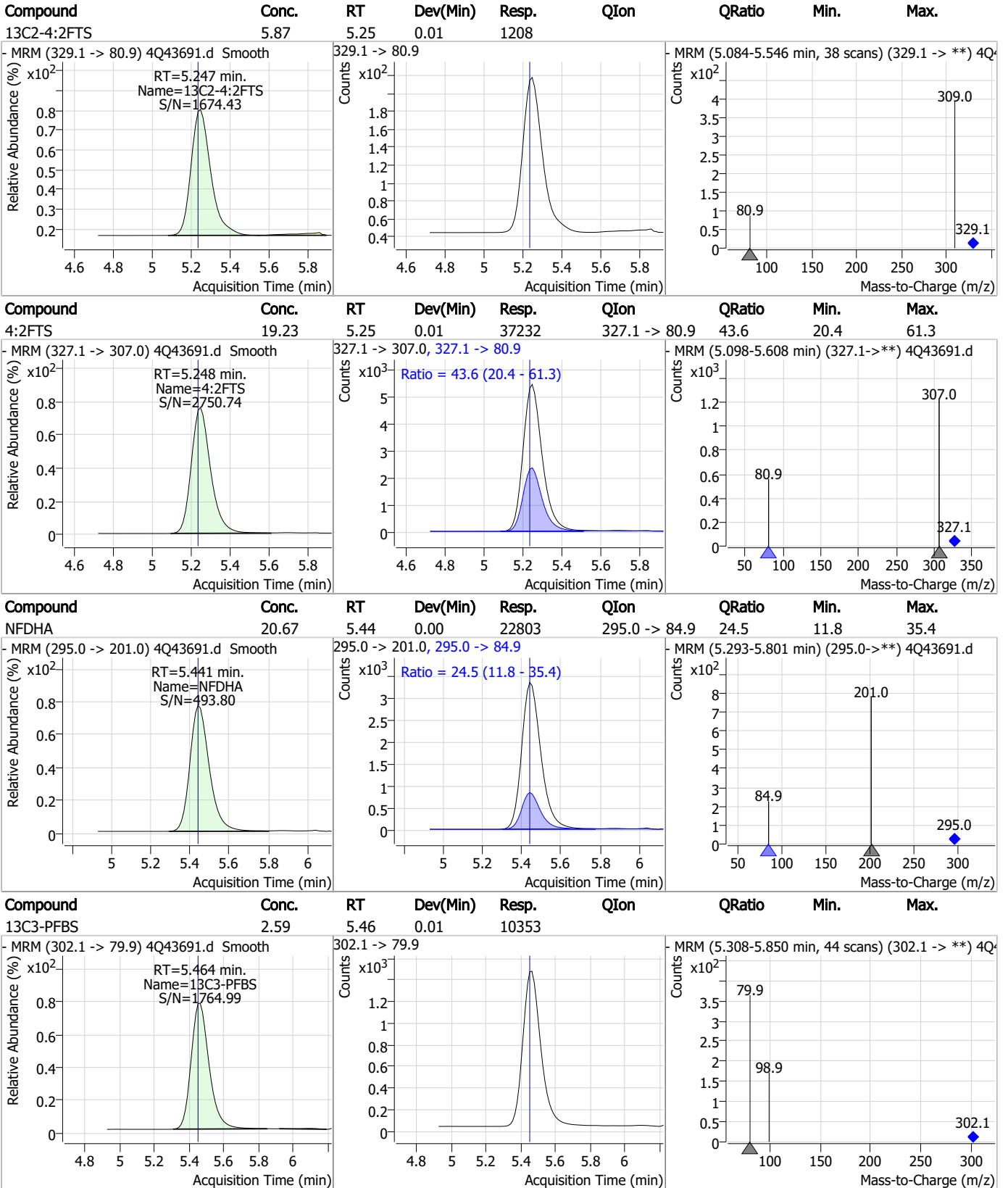
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	21.65	4.39	0.01	303577				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	21.01	4.79	0.00	169825				



Perfluorinated Compounds by LC/MS/MS

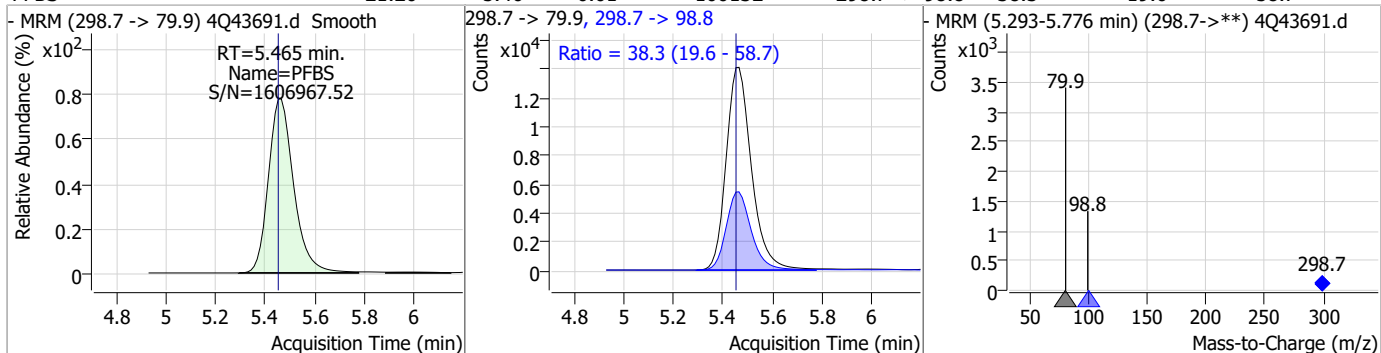


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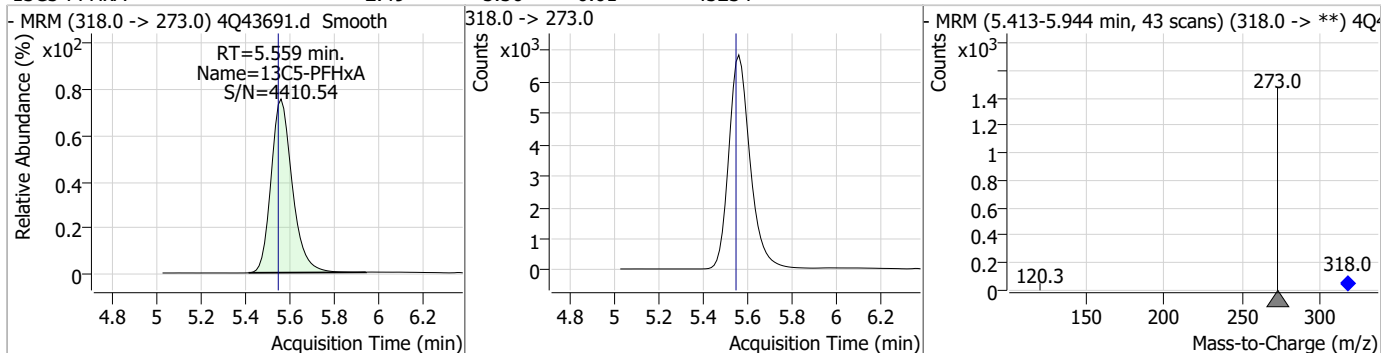
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Perfluorinated Compounds by LC/MS/MS

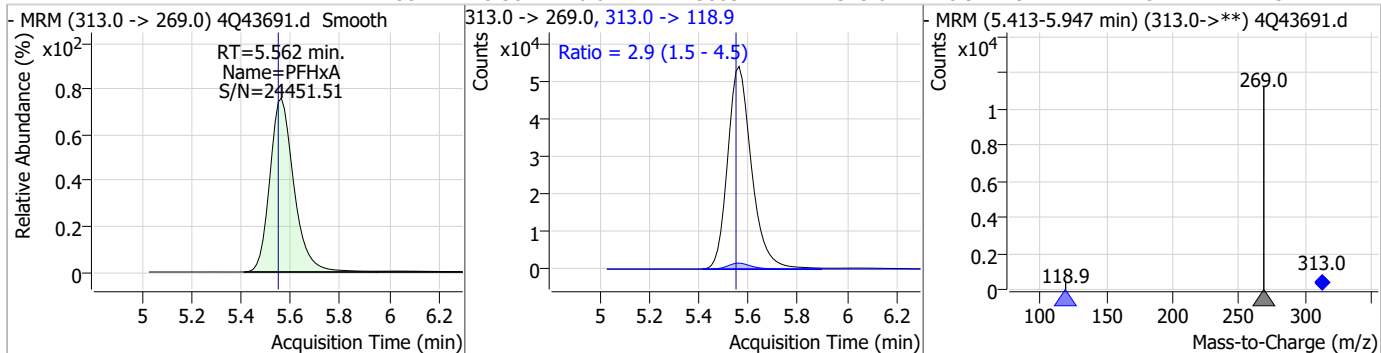
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	21.26	5.46	0.01	100132	298.7 -> 98.8	38.3	19.6	58.7



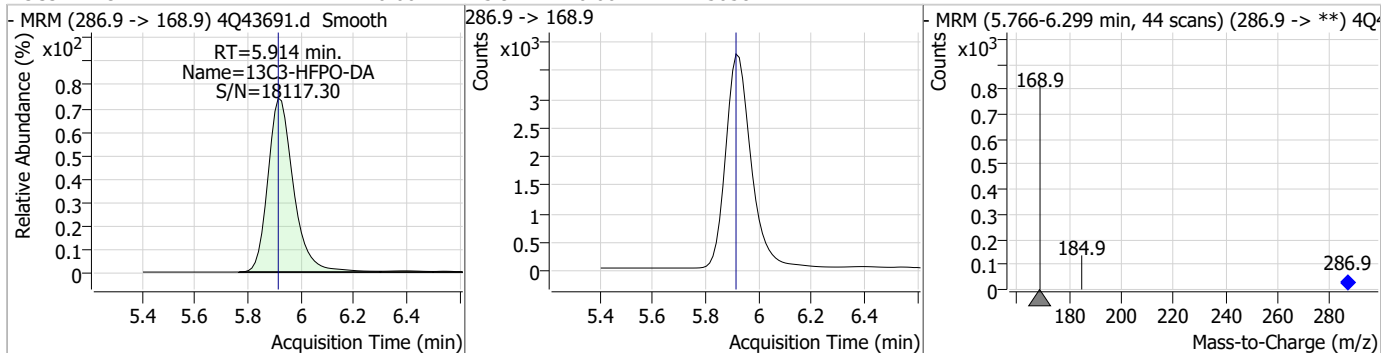
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.56	0.01	45234				



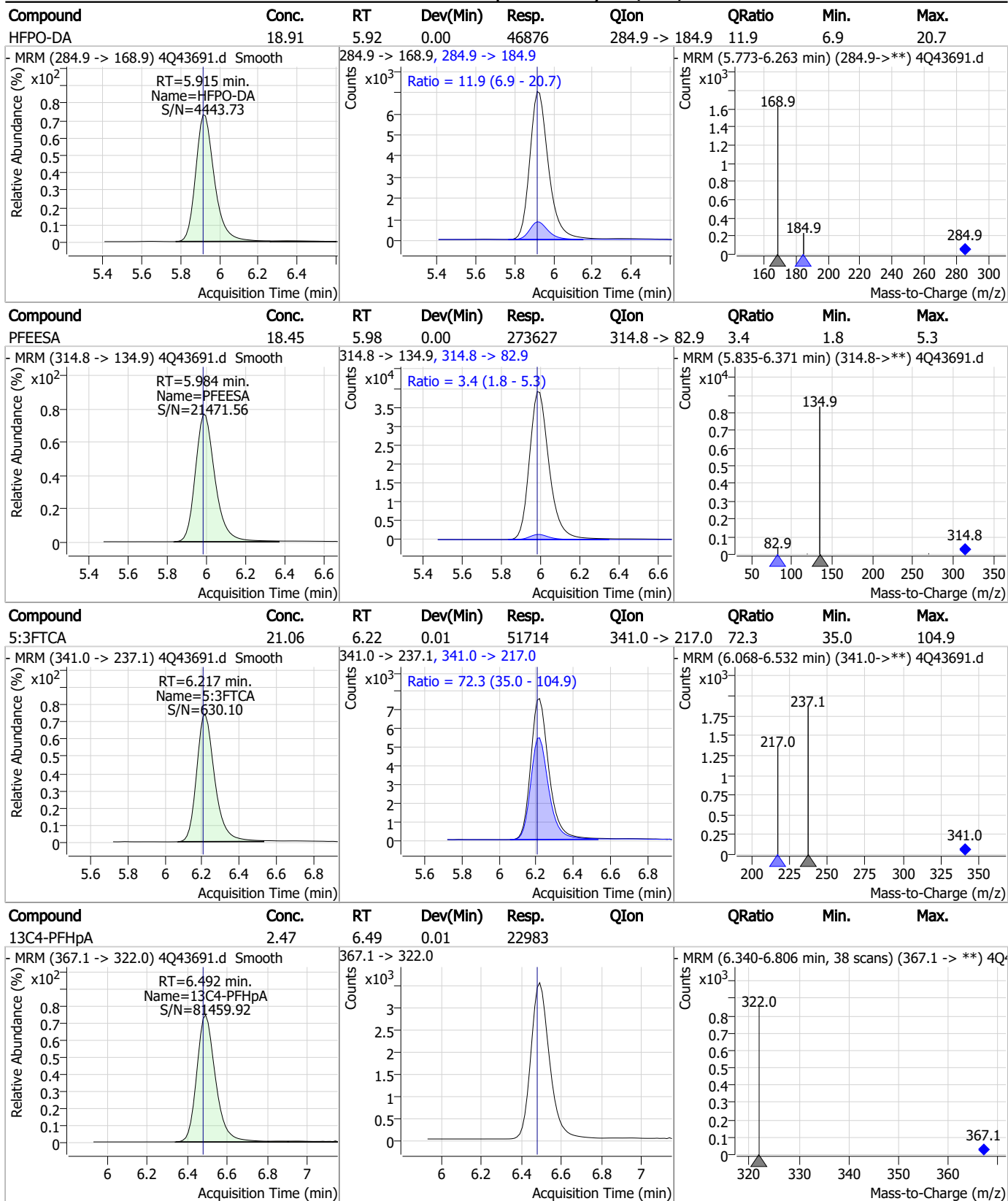
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	21.58	5.56	0.01	366377	313.0 -> 118.9	2.9	1.5	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.00	5.91	0.00	25058				



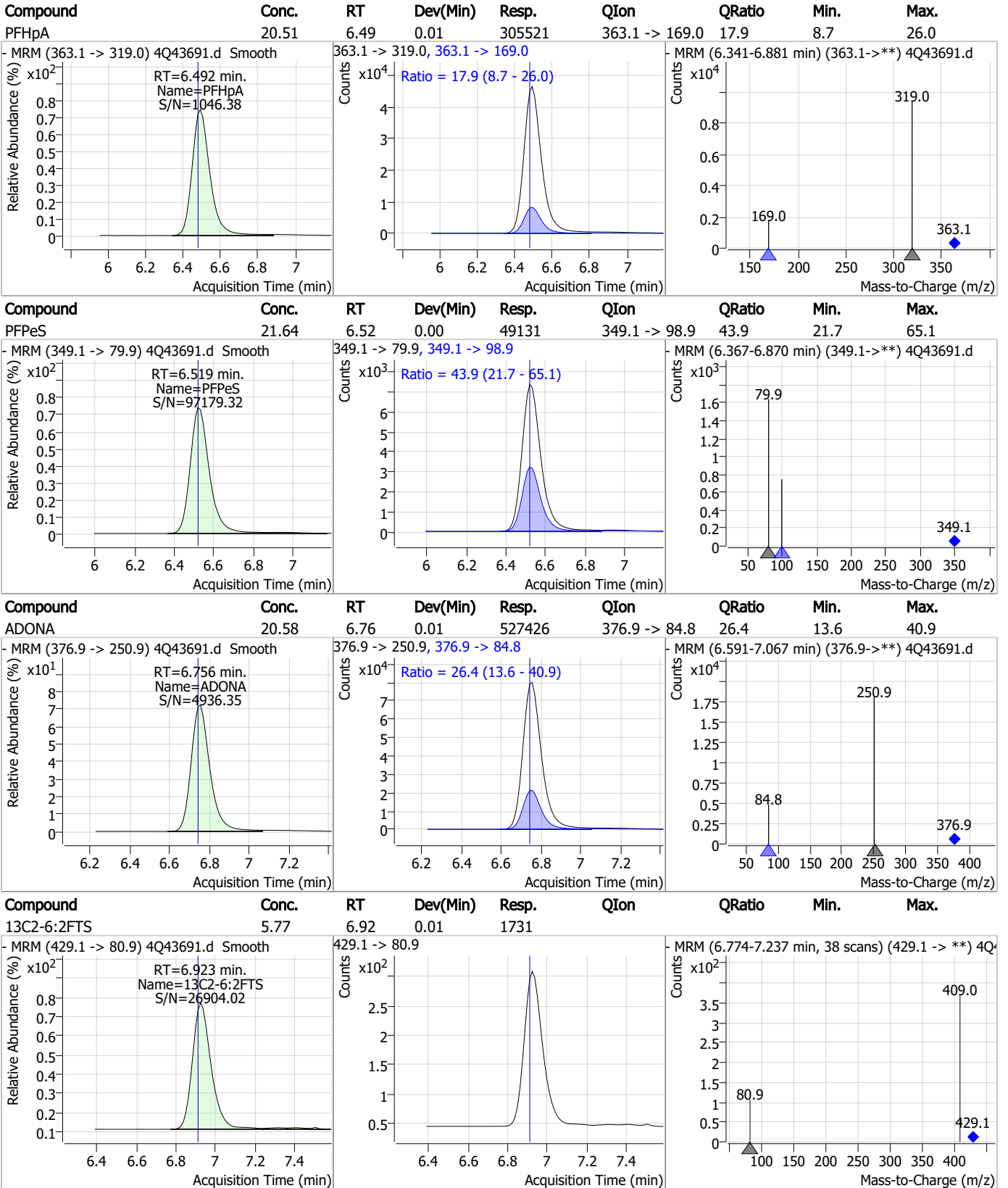
Perfluorinated Compounds by LC/MS/MS



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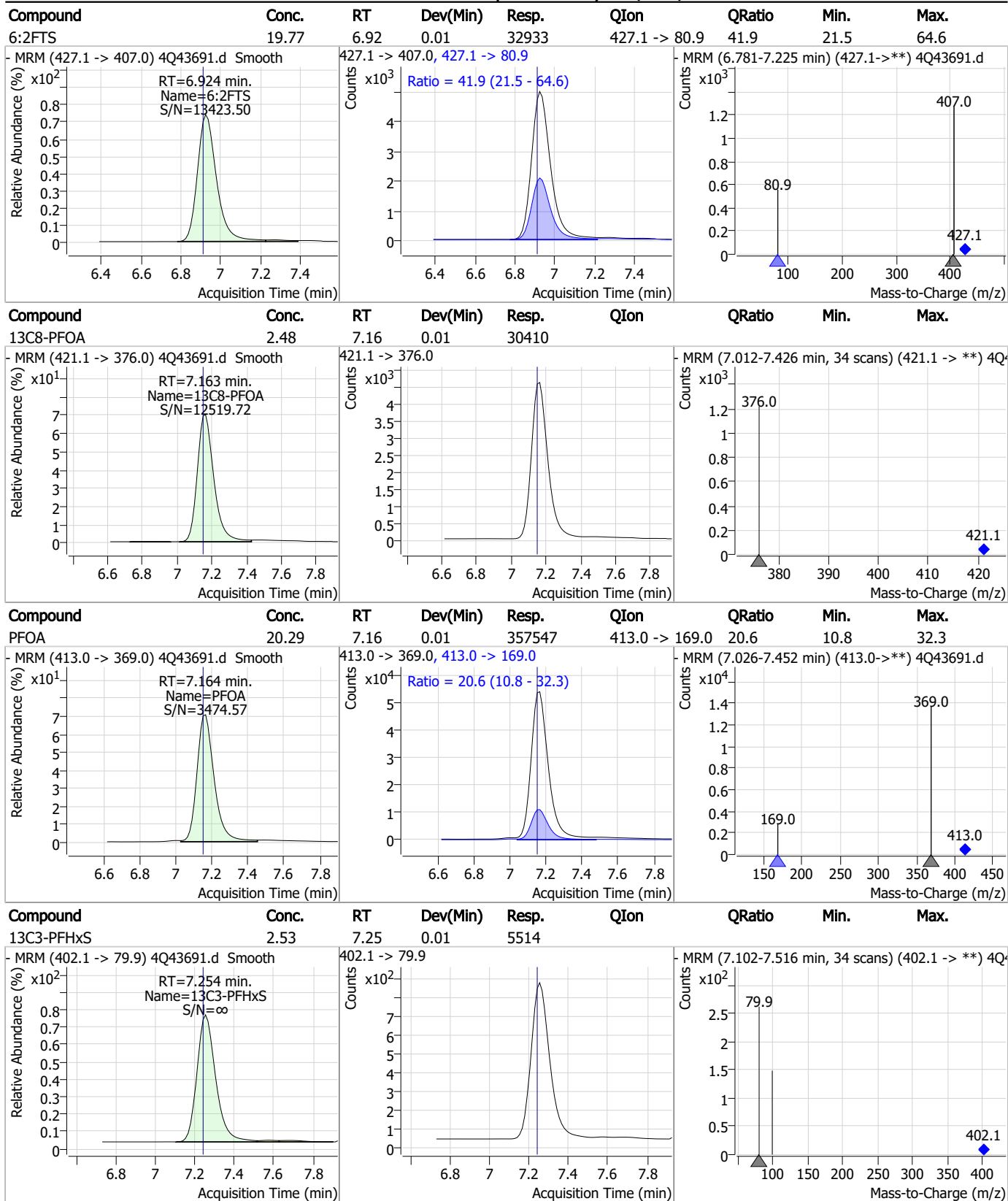
Perfluorinated Compounds by LC/MS/MS



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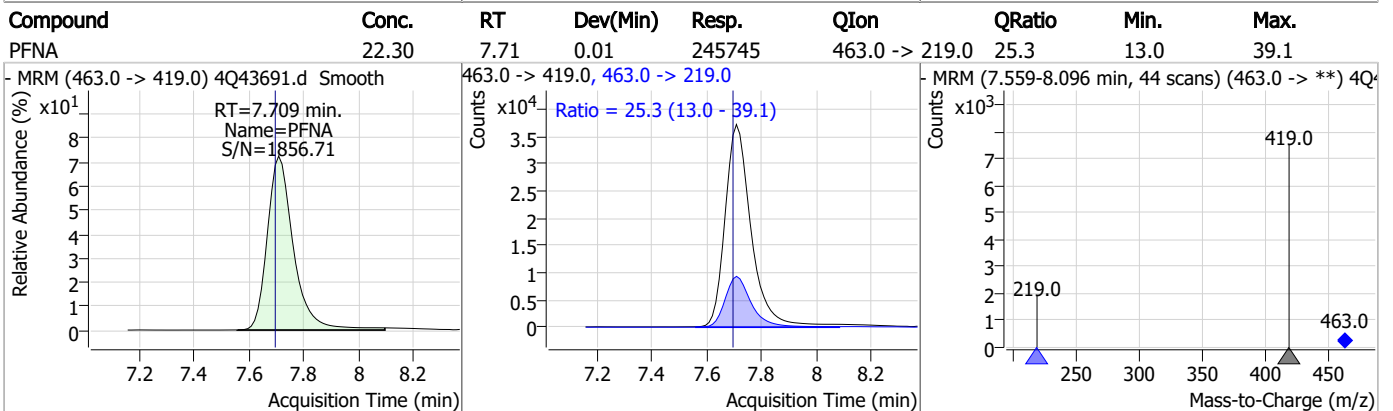
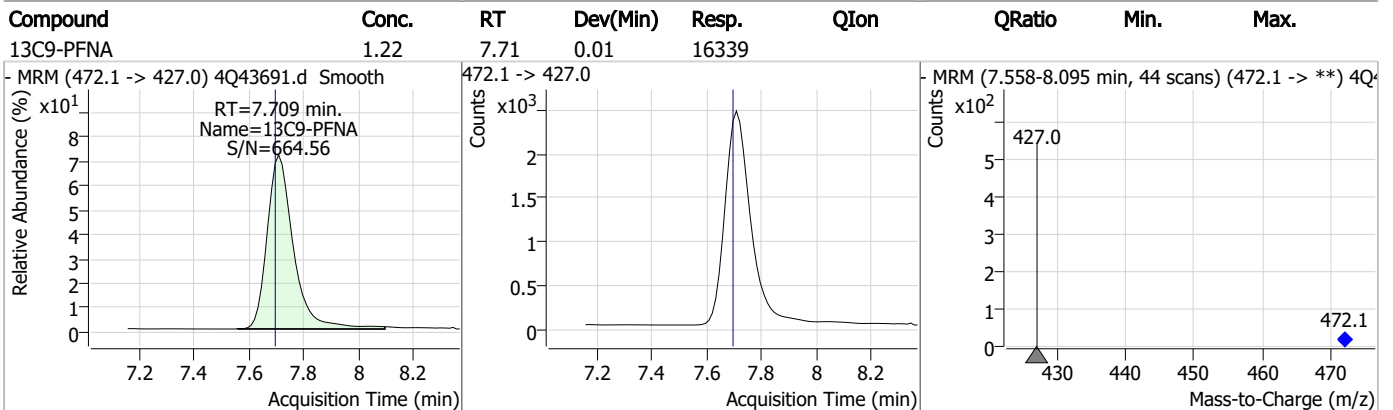
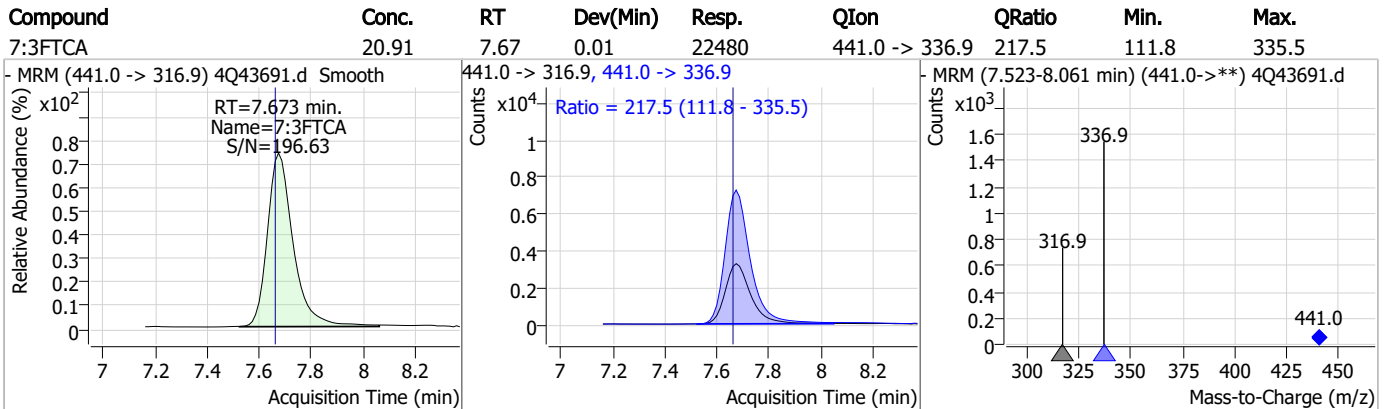
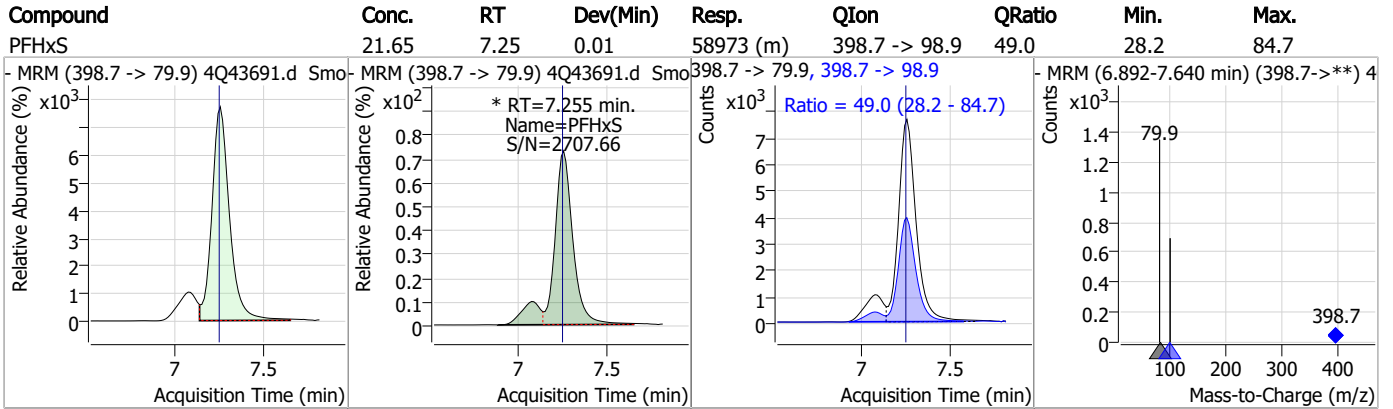
Perfluorinated Compounds by LC/MS/MS



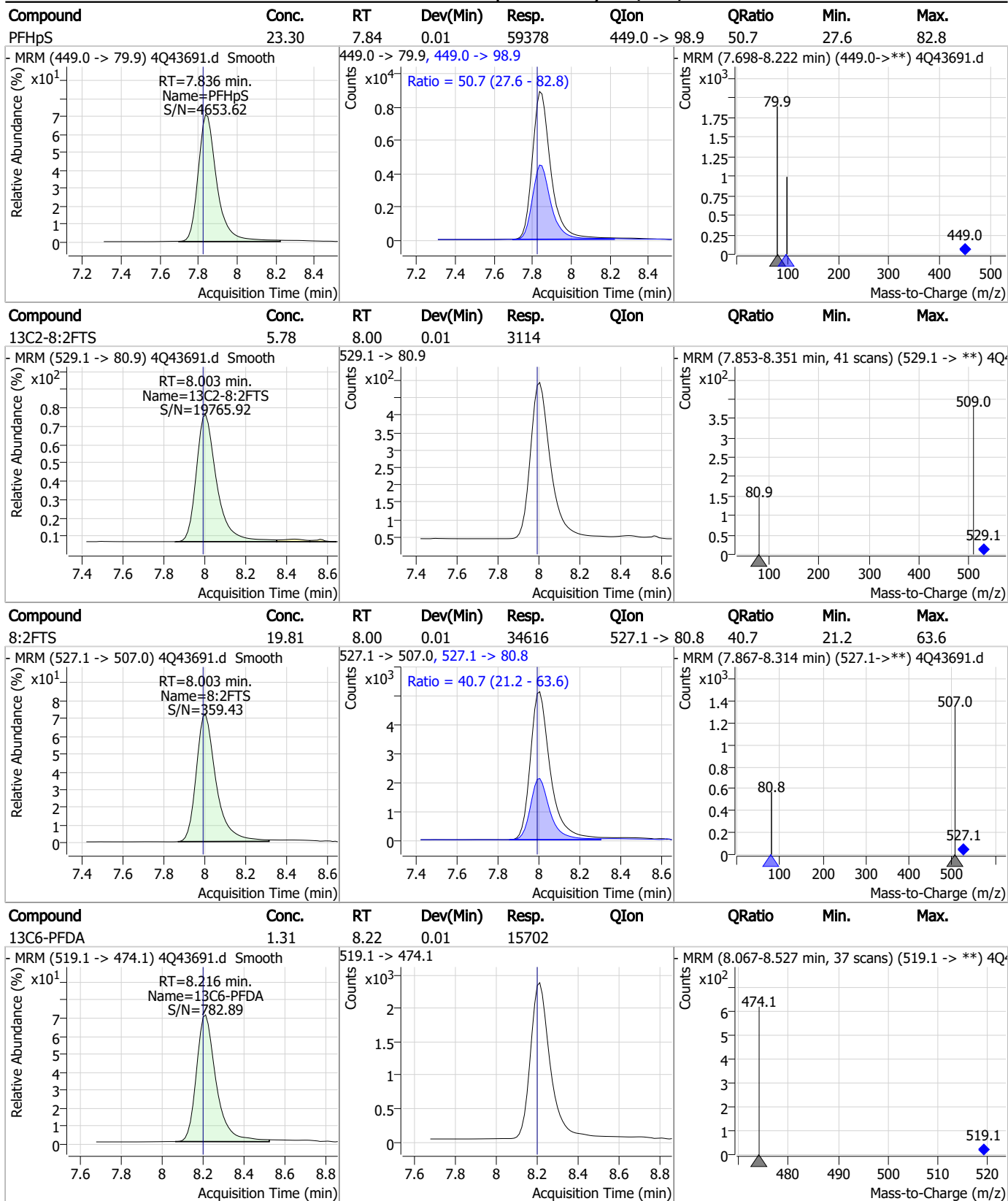
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

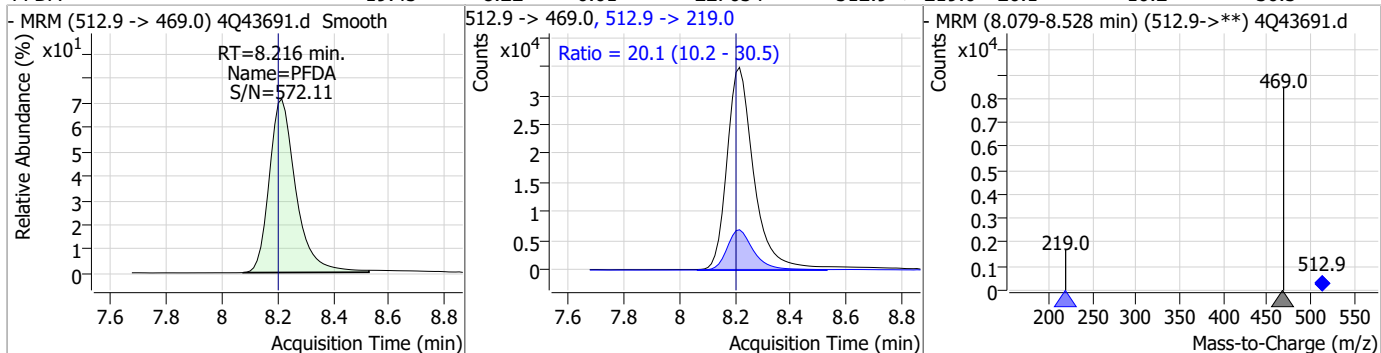


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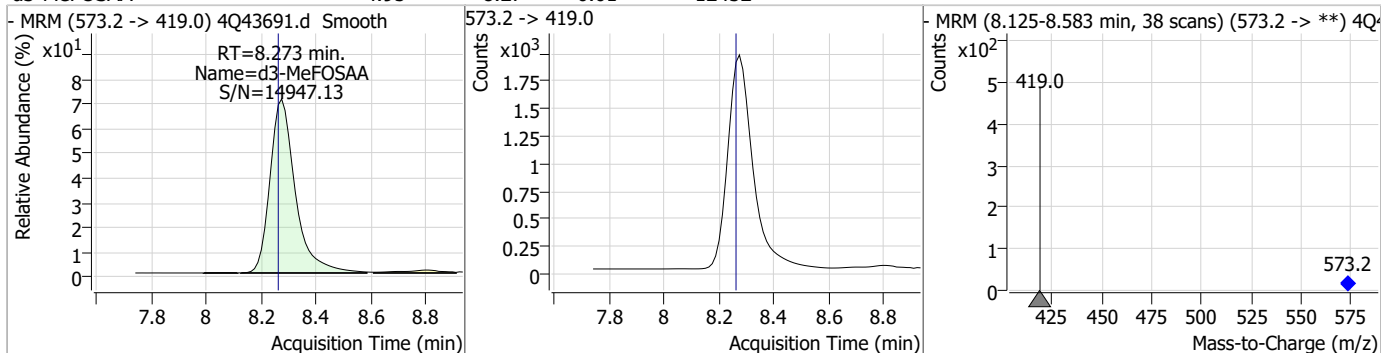


Perfluorinated Compounds by LC/MS/MS

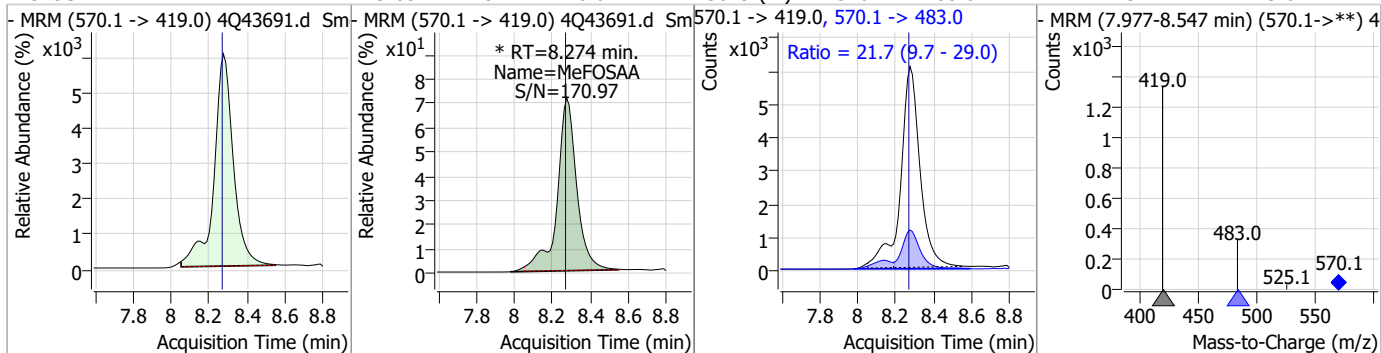
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.45	8.22	0.01	227654	512.9 -> 219.0	20.1	10.2	30.5



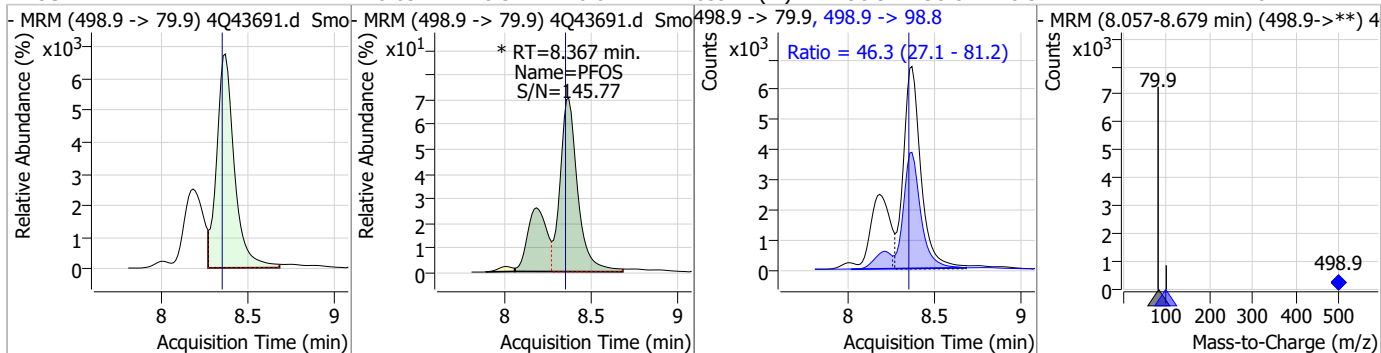
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.95	8.27	0.01	12452				



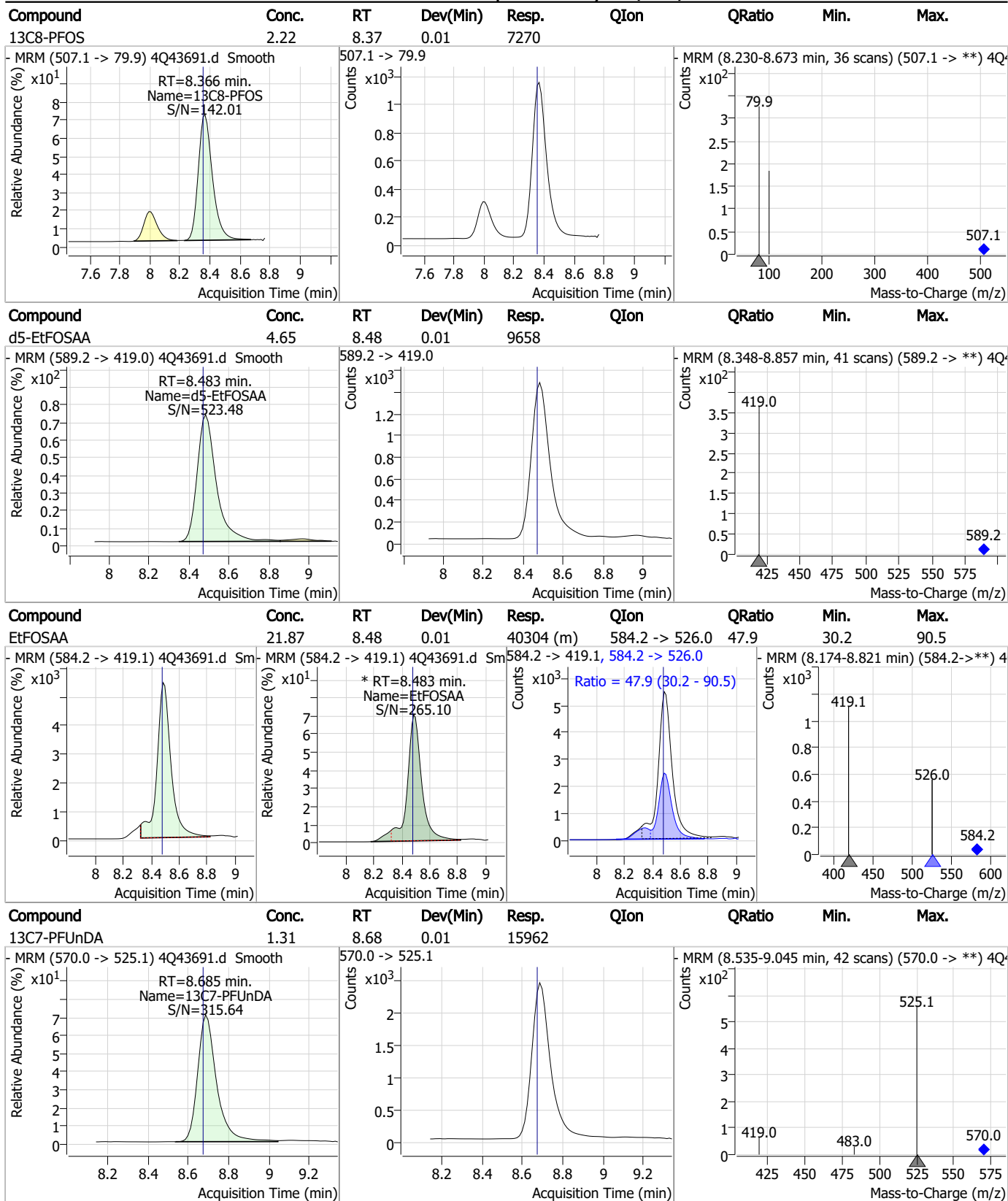
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.83	8.27	0.01	43619 (m)	570.1 -> 483.0	21.7	9.7	29.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.63	8.37	0.02	65944 (m)	498.9 -> 98.8	46.3	27.1	81.2

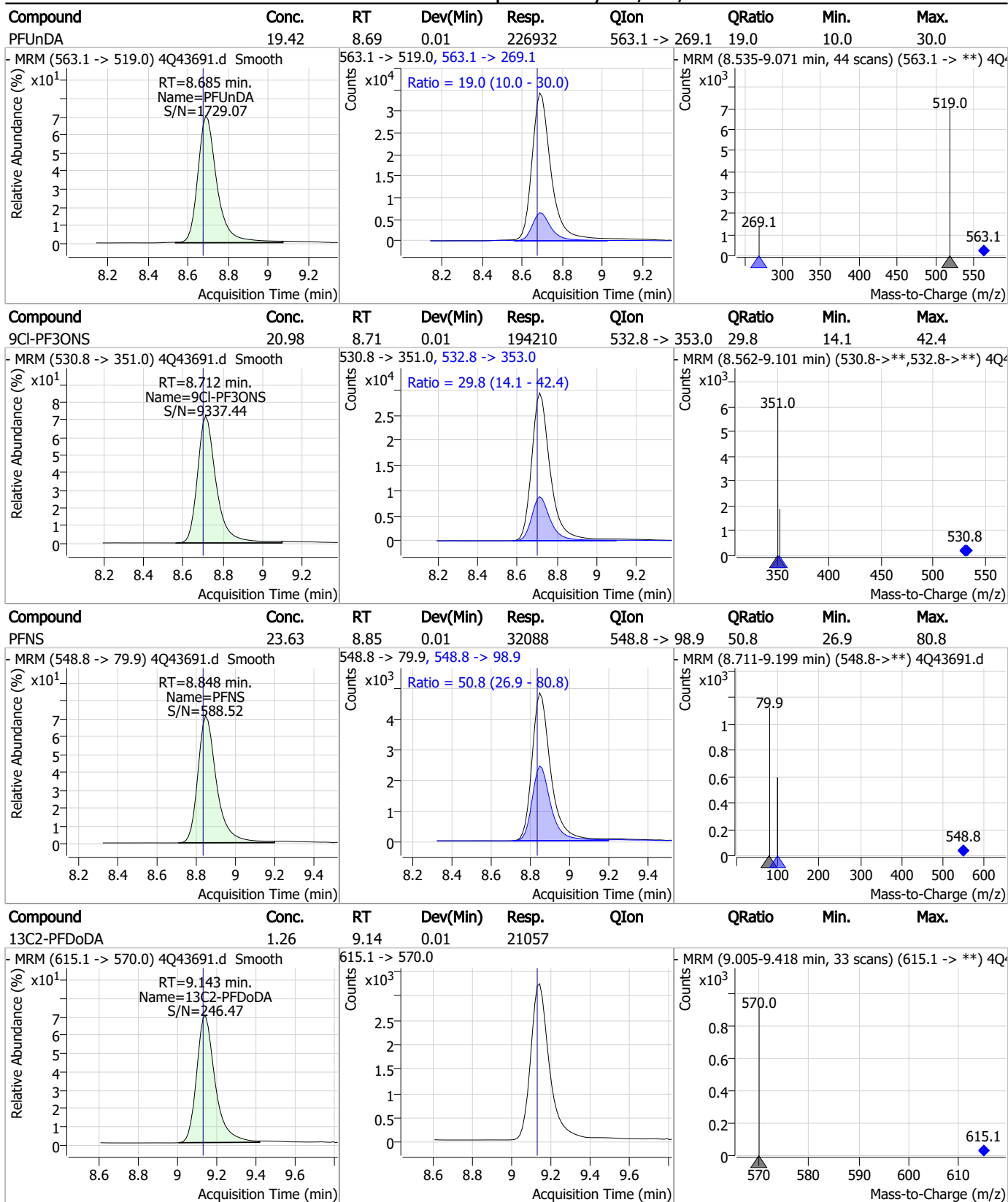


Perfluorinated Compounds by LC/MS/MS



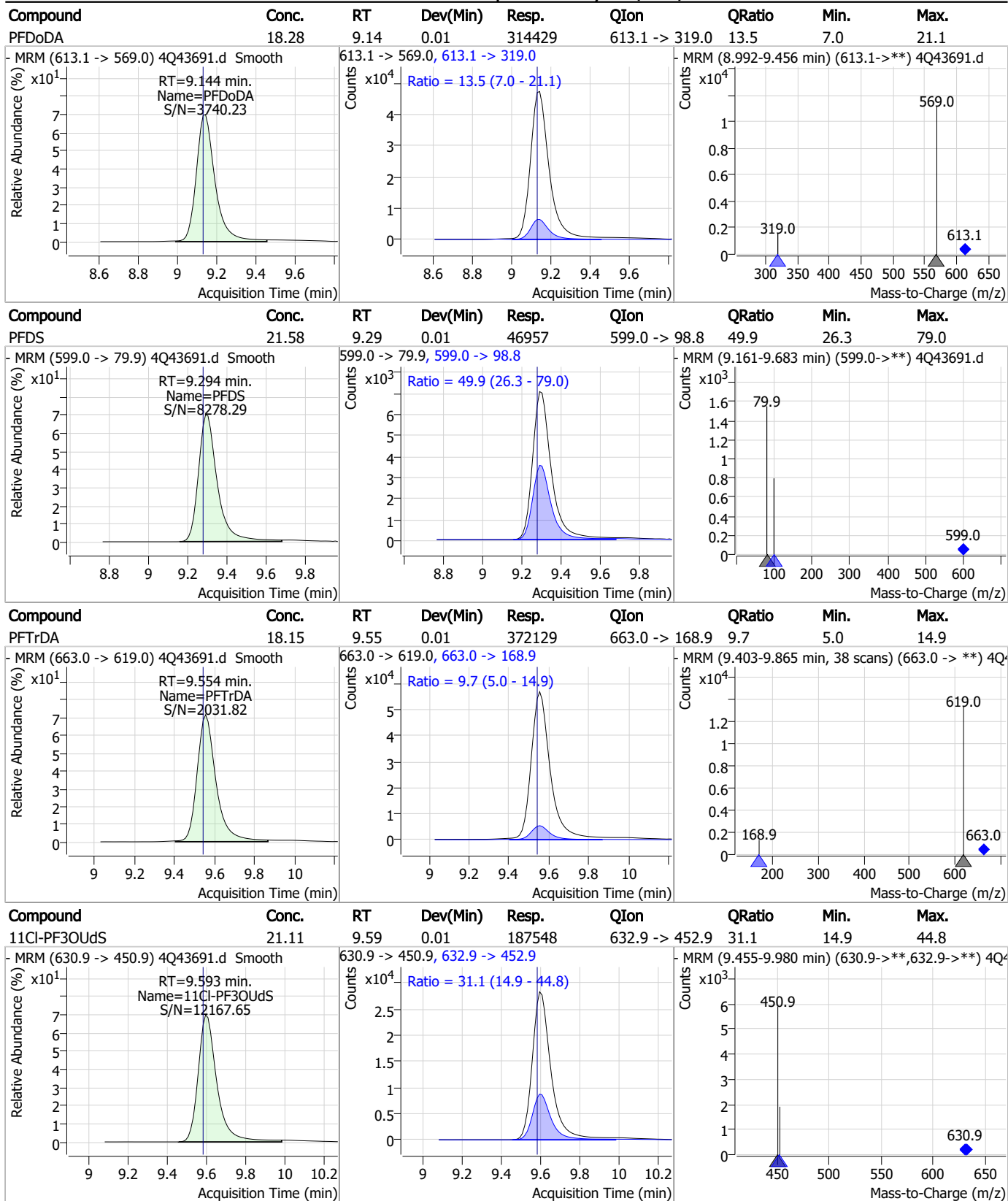
7.7.11

Perfluorinated Compounds by LC/MS/MS



7.7.11
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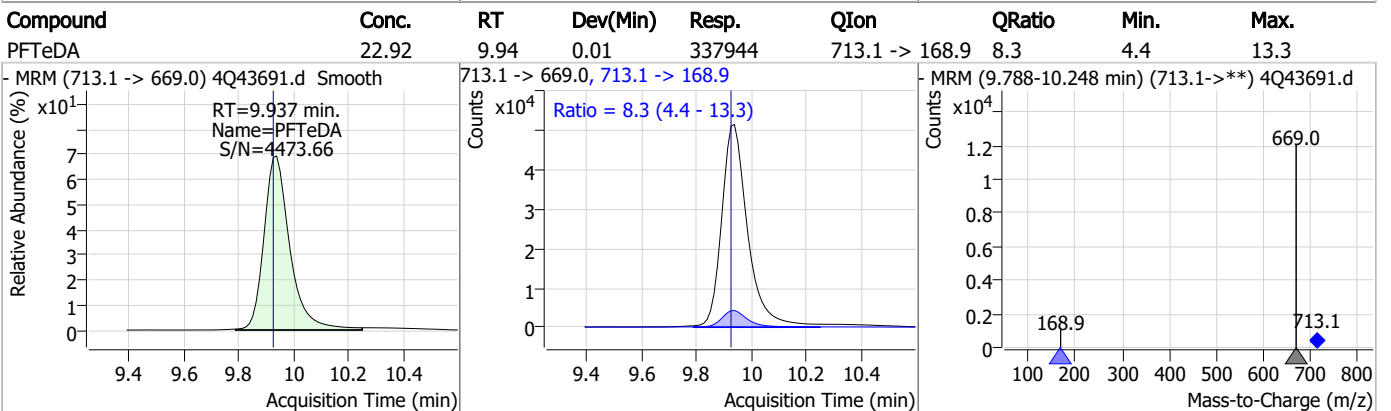
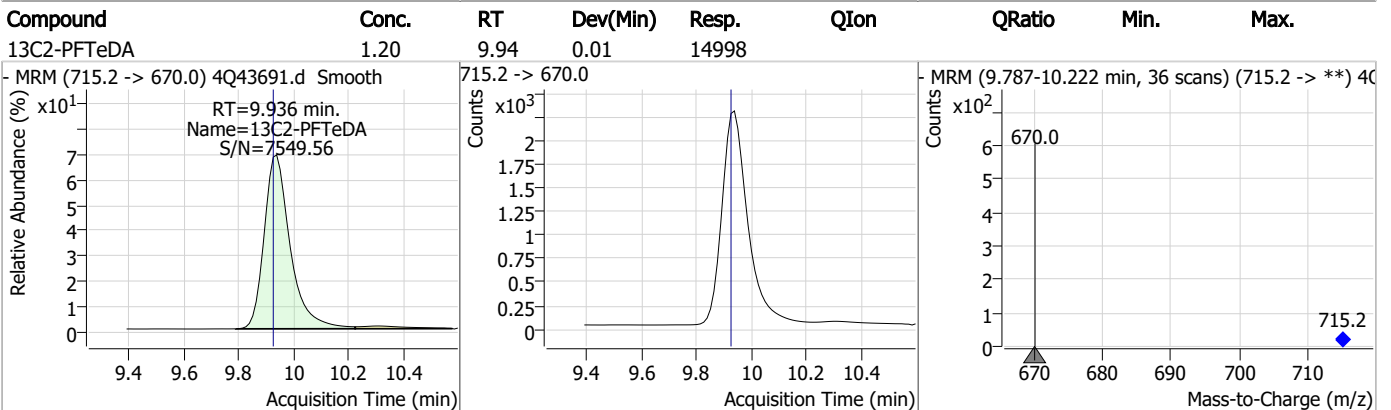
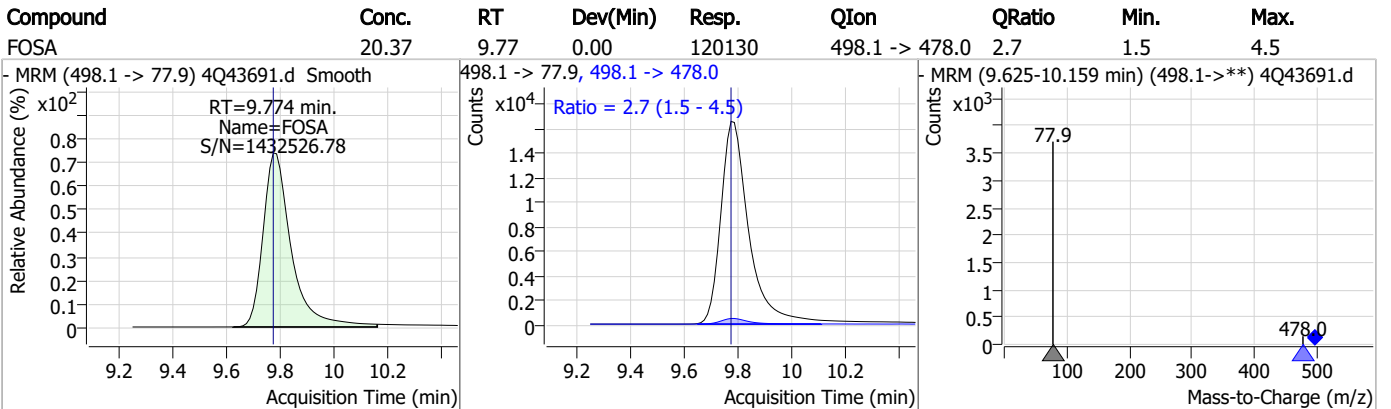
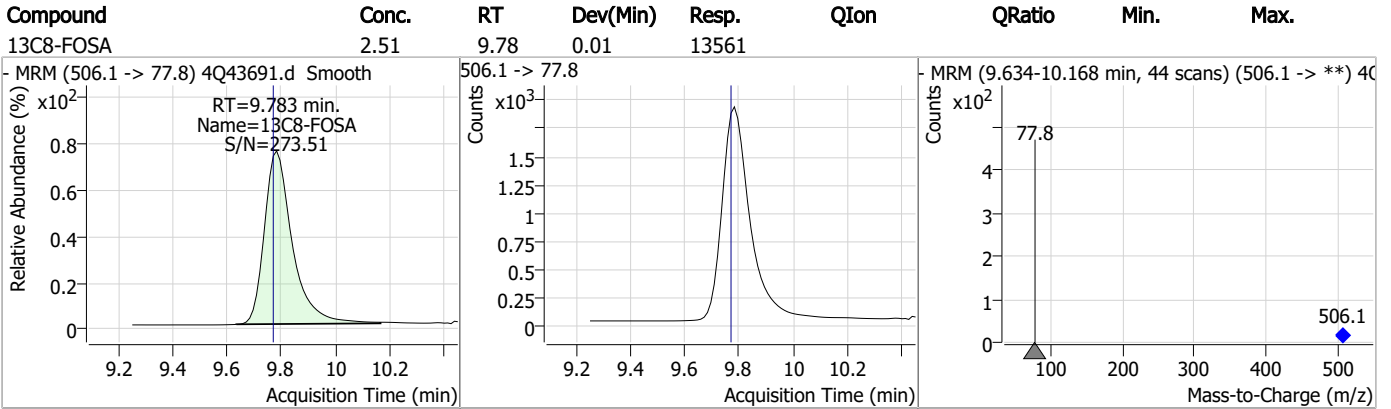
Perfluorinated Compounds by LC/MS/MS



7.7.11
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Perfluorinated Compounds by LC/MS/MS

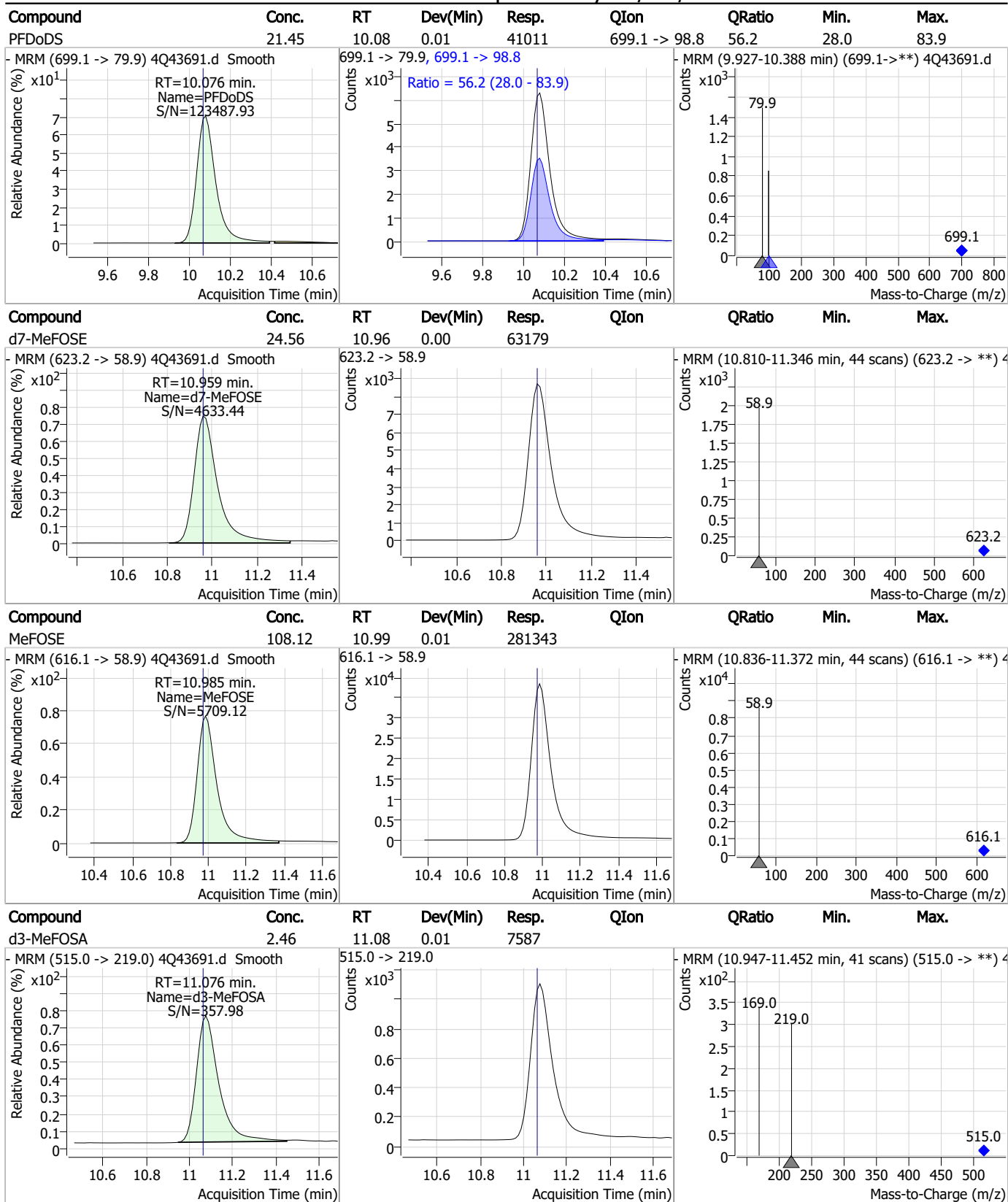


7.7.11

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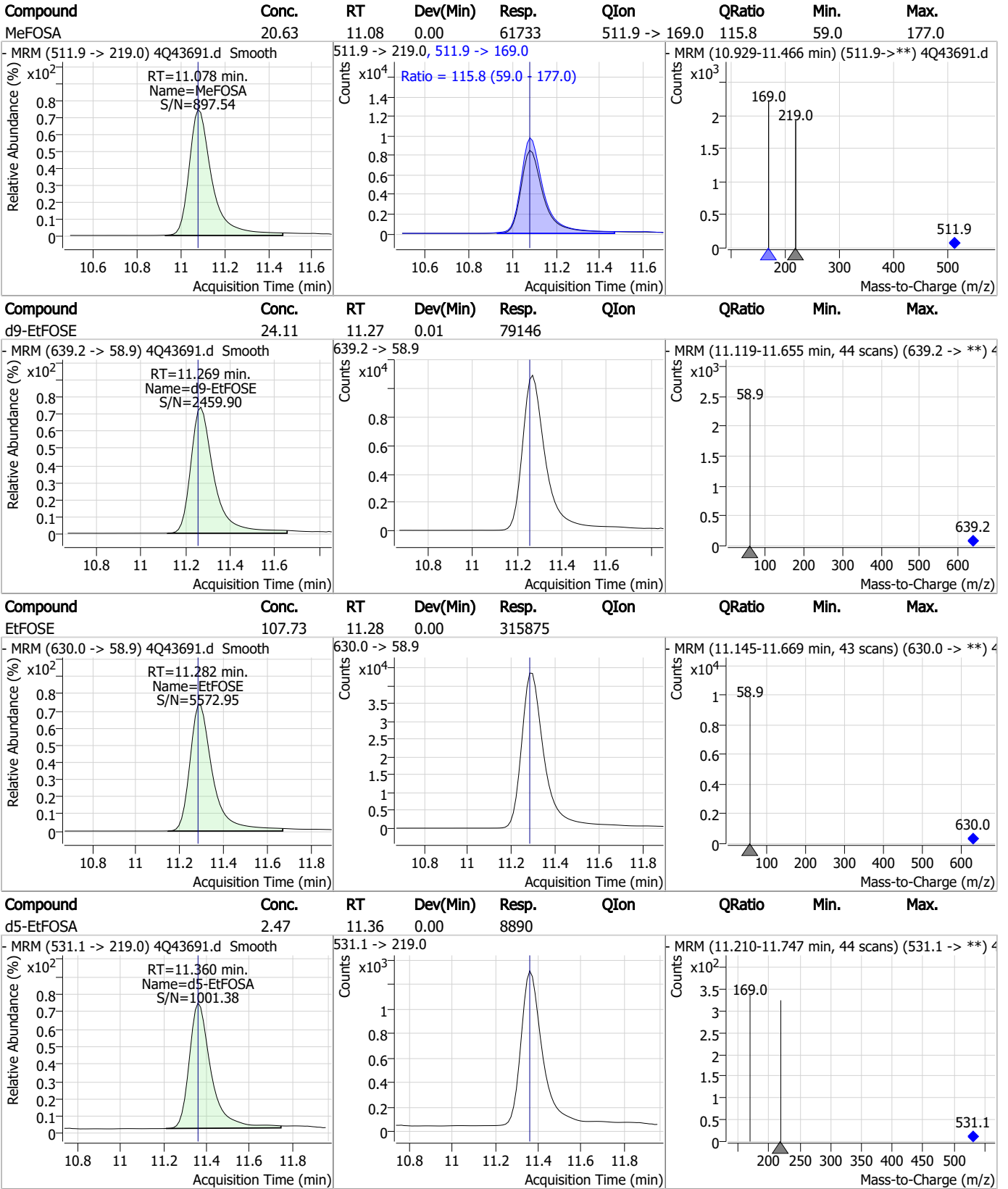
Perfluorinated Compounds by LC/MS/MS



7.7.11

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Perfluorinated Compounds by LC/MS/MS

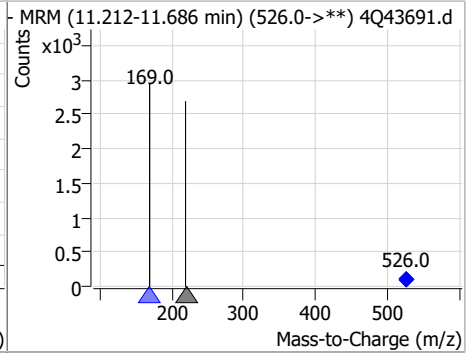
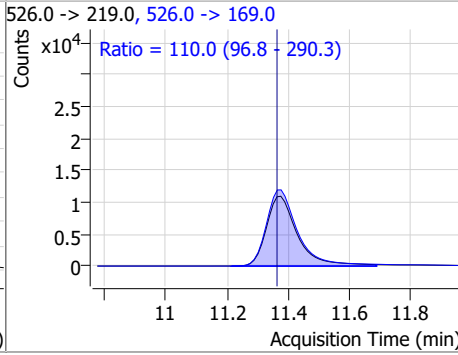
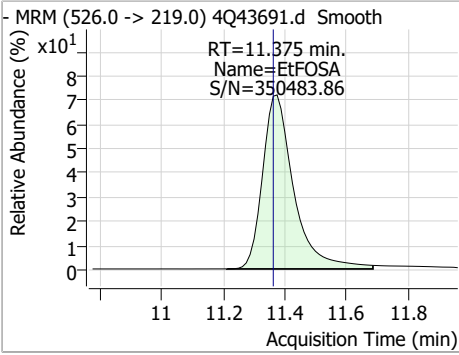


7.7.11



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	20.26	11.37	0.01	76945	526.0 -> 169.0	110.0	96.8	290.3



7.7.11

7



Manual Integration Approval Summary

Sample Number: S4Q631-ICV631 Method: EPA DRAFT 1633
Lab FileID: 4Q43691.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 14:58 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.48	Split peak

7.7.11.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43692.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 3:12:08 PM
 Sample Name : cc631-4
 Vial : P1-A5
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	92822	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	59960	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	46511	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	24009	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	31359	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	16333	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	16006	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	15693	1.25 µg/L	0.012
M2-PFDoDA	9.143	615.1 -> 570.0	21276	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	15996	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	13438	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10300	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	5913	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8039	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1206	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	1763	5.00 µg/L	0.012
M2-8:2FTS	7.990	529.1 -> 80.9	3253	5.00 µg/L	0.000
M3-MeFOSAA	8.273	573.2 -> 419.0	13289	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	25220	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	10694	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	68401	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	85985	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	9028	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	7719	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	8258	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	51940	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4410	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	38469	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	13837	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	18940	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	38734	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1206	5.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1763	5.22 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3253	5.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-PFDoDA	9.143	615.1 -> 570.0	21276	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C2-PFTeDA	9.936	715.2 -> 670.0	15996	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFBS	5.464	302.1 -> 79.9	10300	2.29 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.6%		
13C3-PFHxS	7.254	402.1 -> 79.9	5913	2.41 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 = 96.3%		
13C4-PFBA	2.924	216.8 -> 171.9	92822	10.34 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C4-PFHpA	6.492	367.1 -> 322.0	24009	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C5-PFHxA	5.559	318.0 -> 273.0	46511	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C5-PFPeA	4.387	268.3 -> 223.0	59960	5.11 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C6-PFDA	8.216	519.1 -> 474.1	16006	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
13C7-PFUnDA	8.685	570.0 -> 525.1	15693	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C8-FOSA	9.783	506.1 -> 77.8	13438	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C8-PFOA	7.163	421.1 -> 376.0	31359	2.43 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C8-PFOS	8.366	507.1 -> 79.9	8039	2.37 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C9-PFNA	7.709	472.1 -> 427.0	16333	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.2%		
d3-MeFOSAA	8.273	573.2 -> 419.0	13289	5.09 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	25220	9.91 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
d3-MeFOSA	11.076	515.0 -> 219.0	7719	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.6%		
d5-EtFOSAA	8.483	589.2 -> 419.0	10694	4.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
d7-MeFOSE	10.959	623.2 -> 58.9	68401	25.65 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
d9-EtFOSE	11.269	639.2 -> 58.9	85985	25.26 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
d5-EtFOSA	11.360	531.1 -> 219.0	9028	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%		
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	17390	9.00 µg/L	95
		327.1 -> 80.9	7650		
6:2FTS	6.924	427.1 -> 407.0	16770	9.89 µg/L	92
		427.1 -> 80.9	6348		
8:2FTS	7.991	527.1 -> 507.0	17429	9.55 µg/L	95
		527.1 -> 80.8	6797		
EtFOSAA	8.483	584.2 -> 419.1	4989	2.45 µg/L	m 84
		584.2 -> 526.0	2407		
FOSA	9.786	498.1 -> 77.9	14386	2.46 µg/L	100
		498.1 -> 478.0	441		
MeFOSAA	8.274	570.1 -> 419.0	5598	2.39 µg/L	m 100
		570.1 -> 483.0	1074		
PFBA	2.932	212.8 -> 168.9	25953	9.50 µg/L	100
PFBS	5.453	298.7 -> 79.9	10386	2.22 µg/L	98
		298.7 -> 98.8	3946		
PFDA	8.216	512.9 -> 469.0	26206	2.20 µg/L	99
		512.9 -> 219.0	5502		
PFDODA	9.144	613.1 -> 569.0	42632	2.45 µg/L	99
		613.1 -> 319.0	6232		
PFDS	9.294	599.0 -> 79.9	5780	2.40 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.492	599.0 -> 98.8	3023	2.41	µg/L	99
		363.1 -> 319.0	37438			
PFHpS	7.836	363.1 -> 169.0	6687	2.41	µg/L	99
		449.0 -> 79.9	6801			
PFHxA	5.562	449.0 -> 98.9	3721	2.46	µg/L	100
		313.0 -> 269.0	43011			
PFHxS	7.255	313.0 -> 118.9	1247	1.98	µg/L	m
		398.7 -> 79.9	5790			
PFNA	7.709	398.7 -> 98.9	2887	2.53	µg/L	97
		463.0 -> 419.0	27917			
PFNS	8.848	463.0 -> 219.0	6881	2.65	µg/L	86
		548.8 -> 79.9	3984			
PFOA	7.164	548.8 -> 98.9	1757	2.43	µg/L	99
		413.0 -> 369.0	44104			
PFOS	8.355	413.0 -> 169.0	9229	2.22	µg/L	m
		498.9 -> 79.9	8676			
PFPeA	4.389	498.9 -> 98.8	4681	4.87	µg/L	100
		263.0 -> 219.0	69809			
PFPeS	6.531	349.1 -> 79.9	5823	2.39	µg/L	97
		349.1 -> 98.9	2403			
PFTeDA	9.937	713.1 -> 669.0	39623	2.52	µg/L	99
		713.1 -> 168.9	3417			
PFTrDA	9.554	663.0 -> 619.0	53764	2.60	µg/L	100
		663.0 -> 168.9	5364			
PFUnDA	8.685	563.1 -> 519.0	29216	2.54	µg/L	100
		563.1 -> 269.1	5791			
11CI-PF3OUdS	9.593	630.9 -> 450.9	44203	4.94	µg/L	98
		632.9 -> 452.9	12713			
9CI-PF3ONS	8.712	530.8 -> 351.0	42196	4.53	µg/L	97
		532.8 -> 353.0	12526			
ADONA	6.756	376.9 -> 250.9	123131	4.77	µg/L	99
		376.9 -> 84.8	32704			
HFPO-DA	5.928	284.9 -> 168.9	12469	5.00	µg/L	97
		284.9 -> 184.9	1589			
3:3FTCA	3.848	241.0 -> 177.0	7232	11.95	µg/L	99
		241.0 -> 117.0	731			
5:3FTCA	6.217	341.0 -> 237.1	154895	61.33	µg/L	98
		341.0 -> 217.0	110400			
7:3FTCA	7.673	441.0 -> 316.9	68506	61.99	µg/L	100
		441.0 -> 336.9	152722			
EtFOSA	11.362	526.0 -> 219.0	18517	4.80	µg/L	65
		526.0 -> 169.0	26285			
EtFOSE	11.282	630.0 -> 58.9	37486	11.77	µg/L	100
		511.9 -> 219.0	14772			
MeFOSA	11.078	511.9 -> 169.0	21245	4.85	µg/L	m
		616.1 -> 58.9	33497			
MeFOSE	10.985	699.1 -> 79.9	5109	11.89	µg/L	m
		699.1 -> 98.8	2944			
PFDoDS	10.076	295.0 -> 201.0	5452	2.42	µg/L	98
		295.0 -> 84.9	1459			
NFDHA	5.441	279.0 -> 85.1	40049	4.81	µg/L	94
		229.0 -> 84.9	34093			
PFMBA	4.791	314.8 -> 134.9	65691	4.79	µg/L	100
		314.8 -> 82.9	2320			
PFMPA	3.528			4.31	µg/L	100
PFEESA	5.997			4.31	µg/L	100

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



7.7.12
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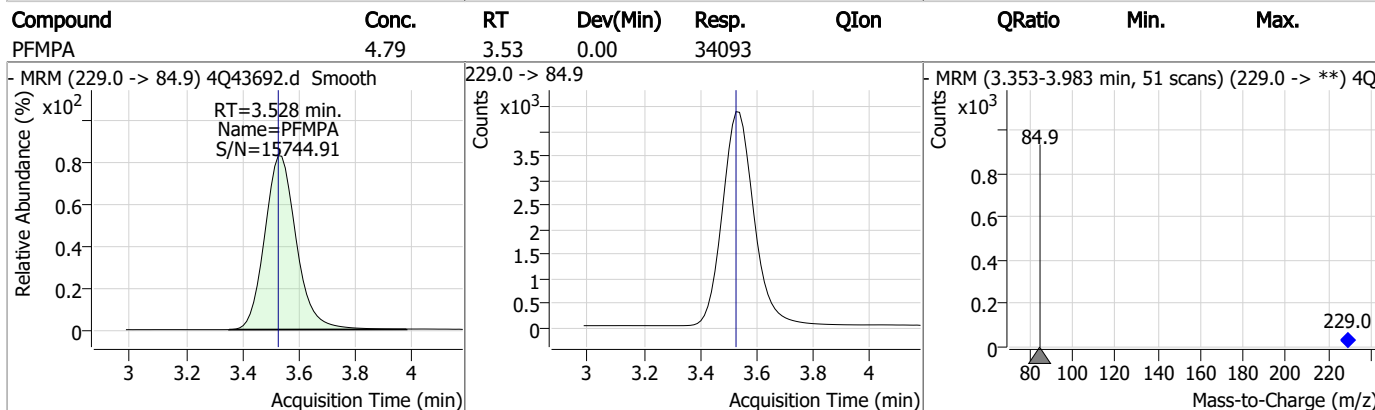
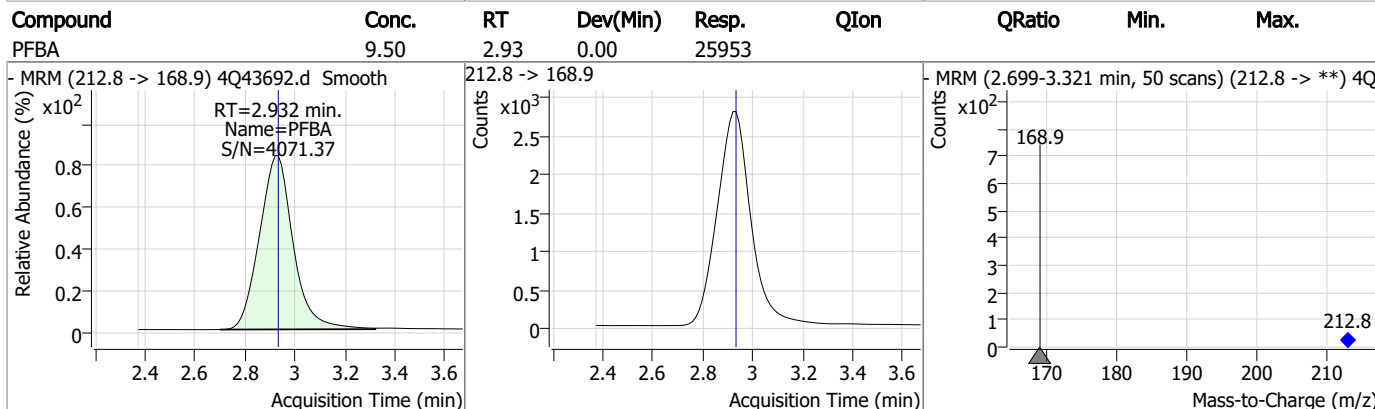
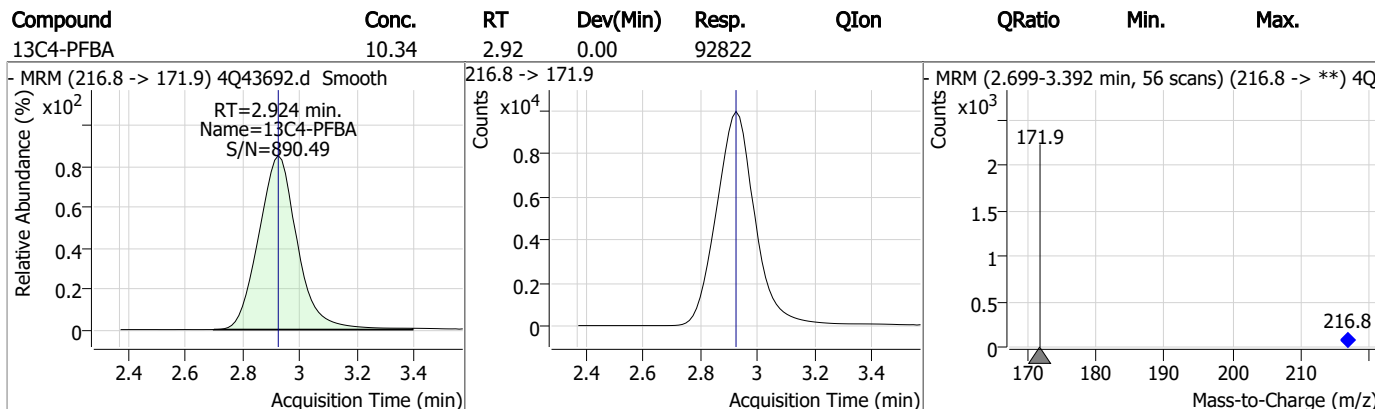
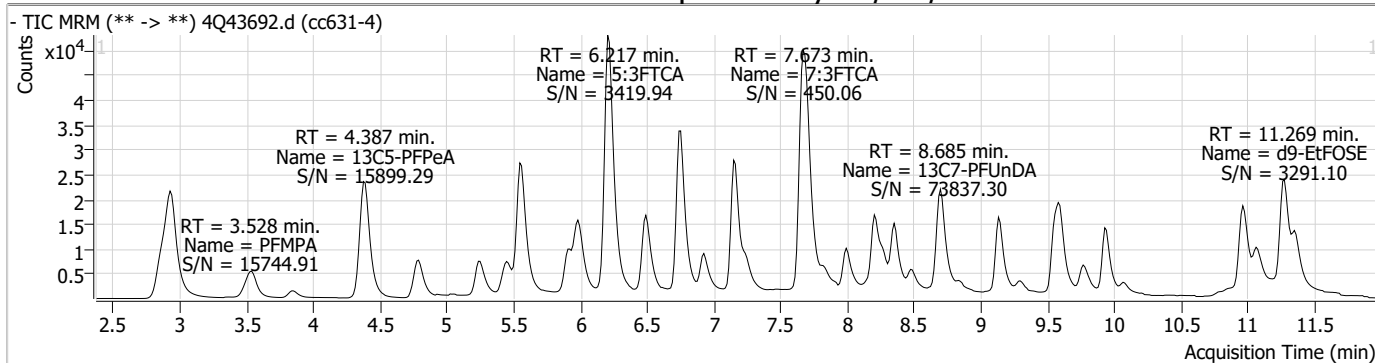
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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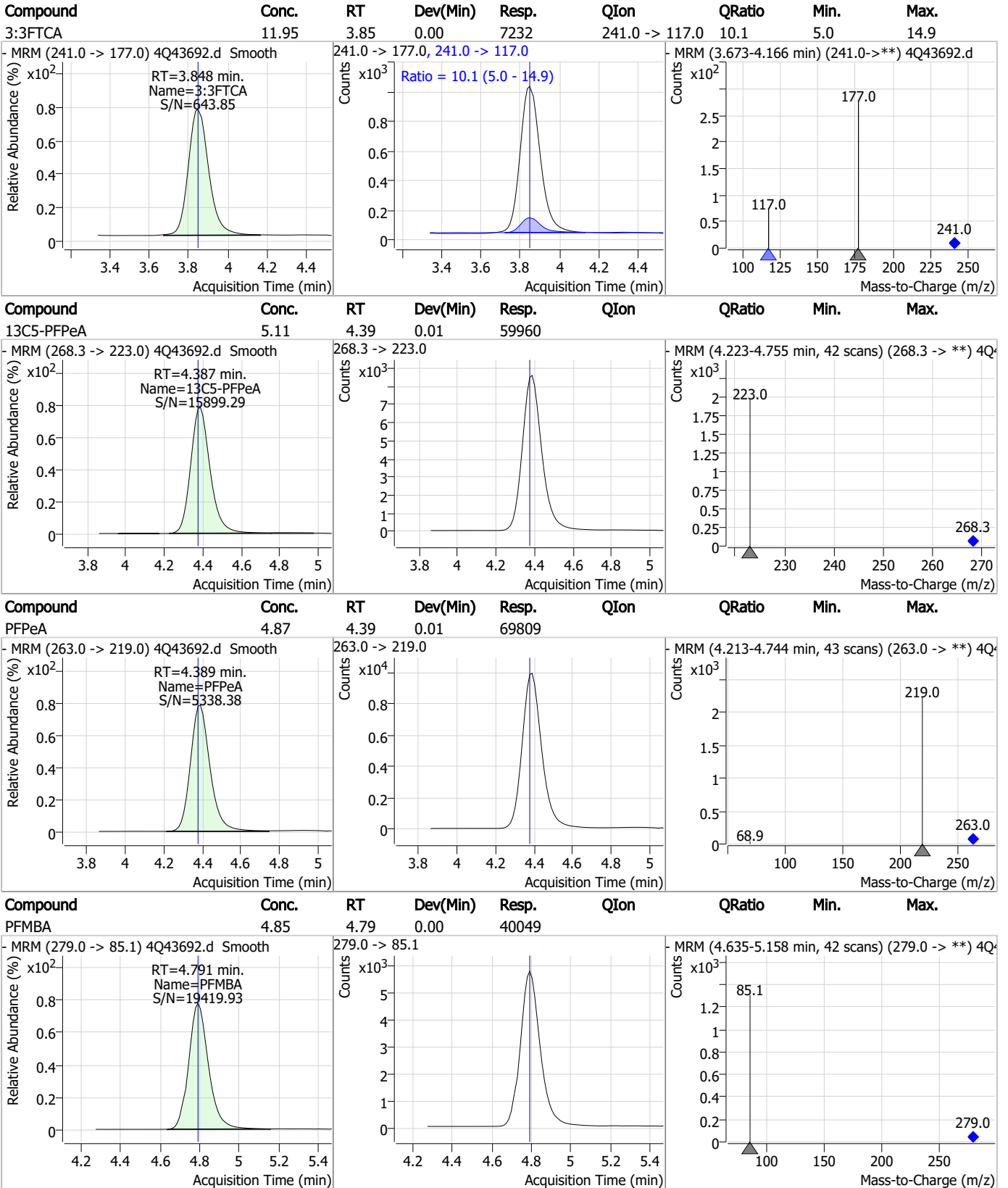
7.7.12

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Perfluorinated Compounds by LC/MS/MS



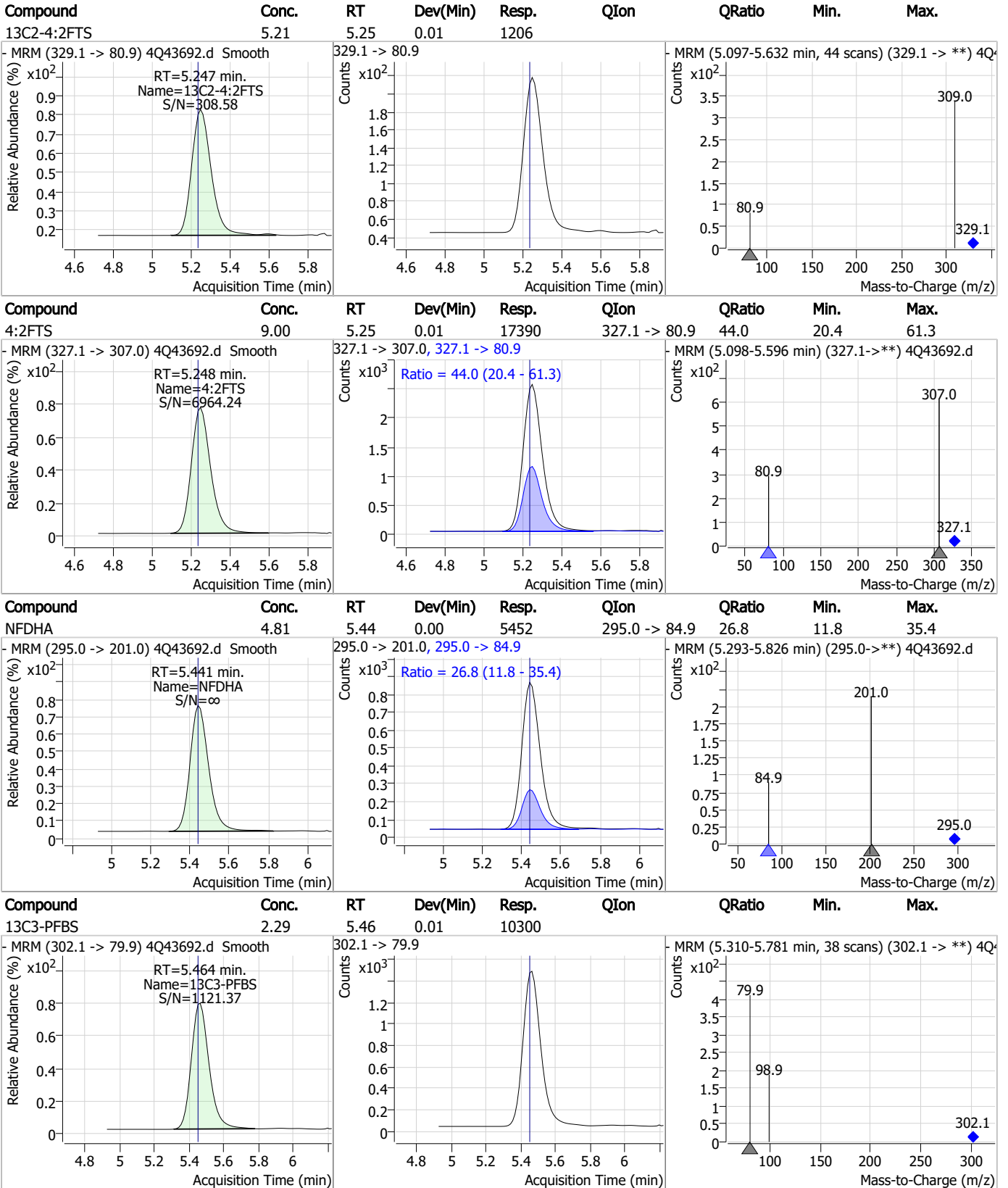
Perfluorinated Compounds by LC/MS/MS



7.7.12

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Perfluorinated Compounds by LC/MS/MS

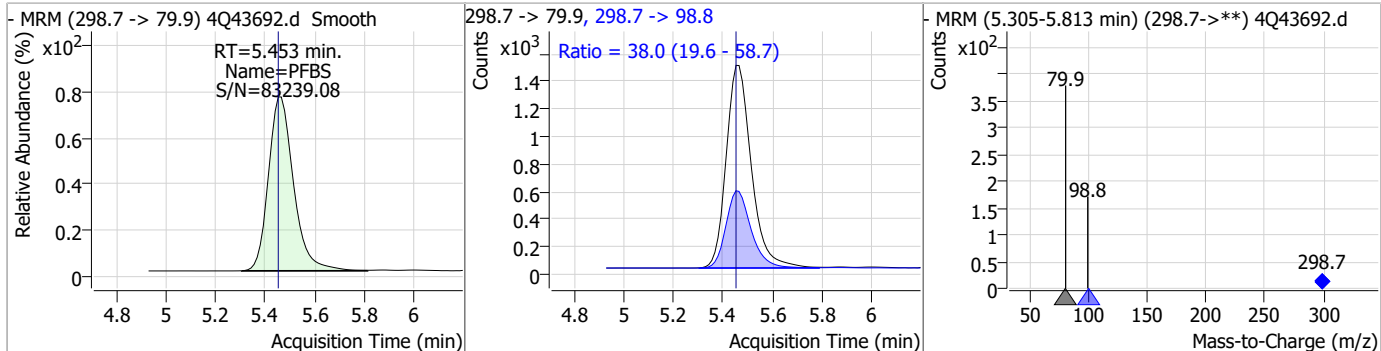


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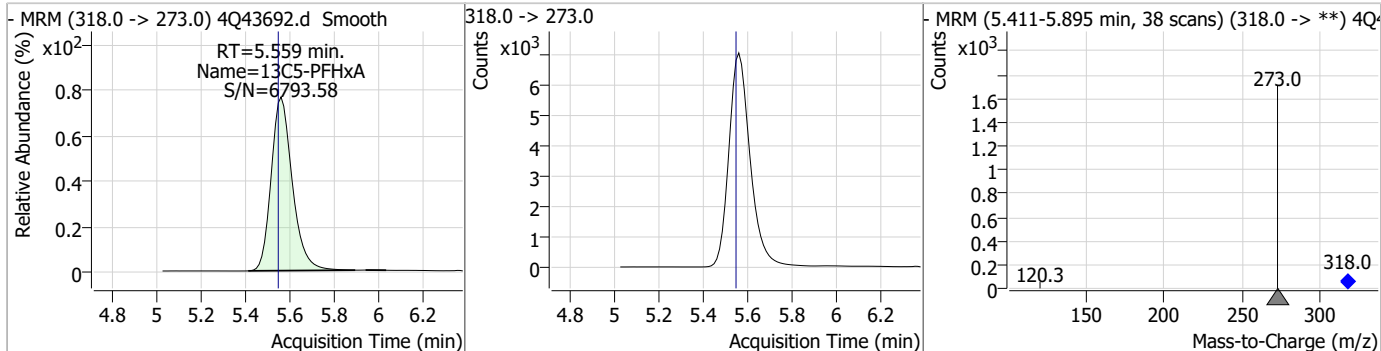


Perfluorinated Compounds by LC/MS/MS

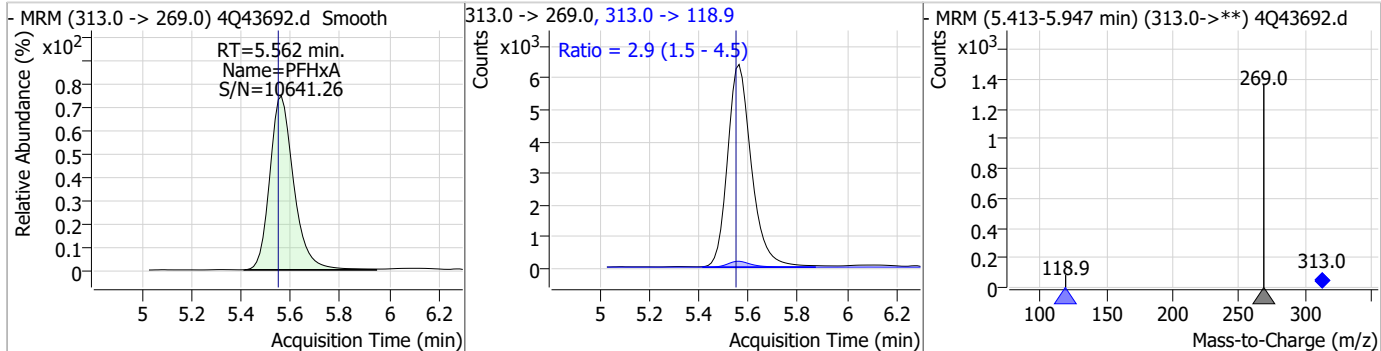
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.22	5.45	0.00	10386	298.7 -> 98.8	38.0	19.6	58.7



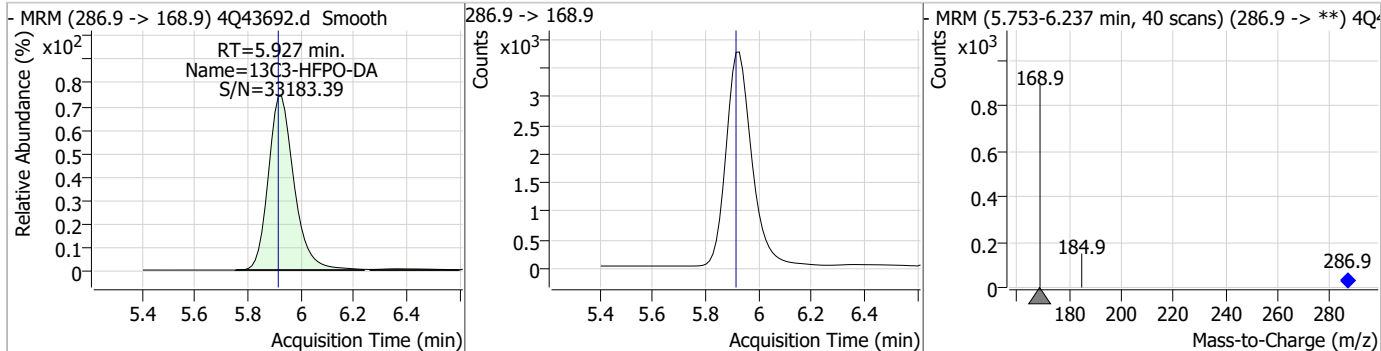
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.52	5.56	0.01	46511				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.46	5.56	0.01	43011	313.0 -> 118.9	2.9	1.5	4.5



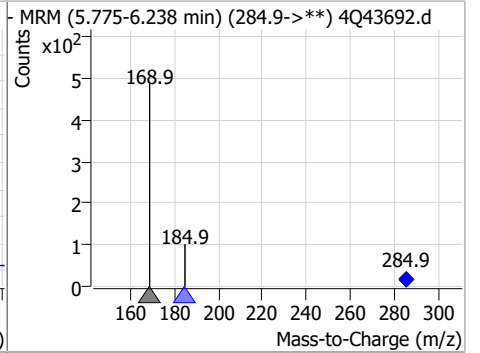
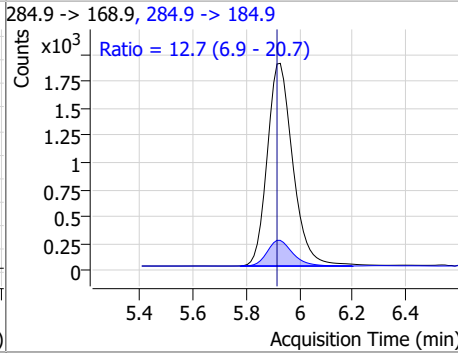
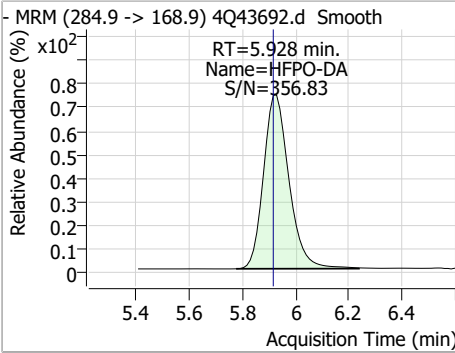
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.91	5.93	0.01	25220				



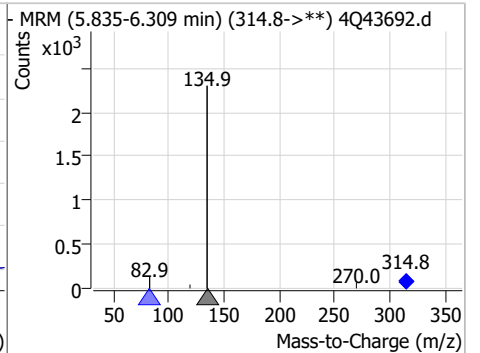
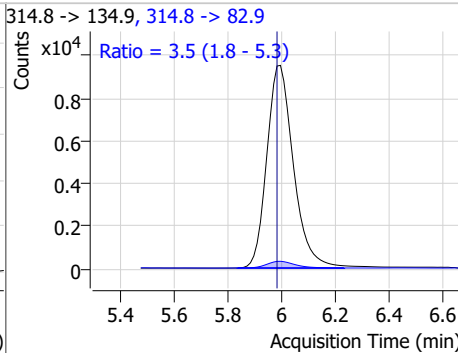
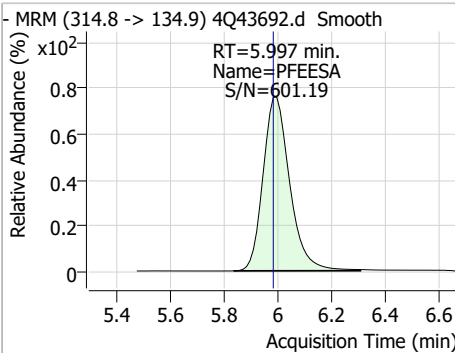
7.7.12
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Perfluorinated Compounds by LC/MS/MS

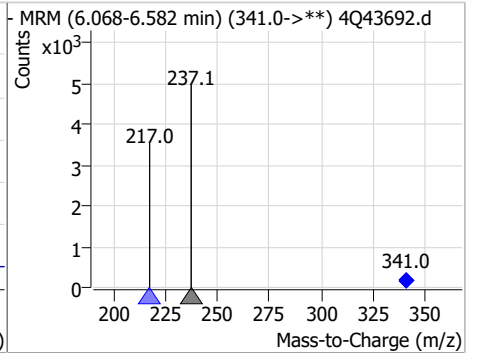
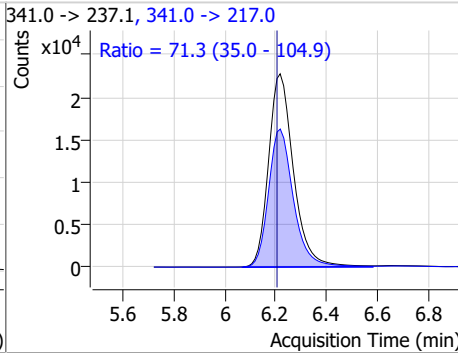
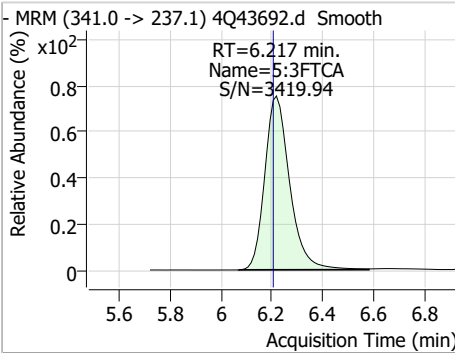
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.00	5.93	0.01	12469	284.9 -> 184.9	12.7	6.9	20.7



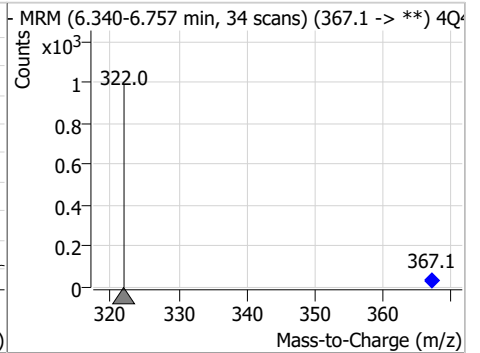
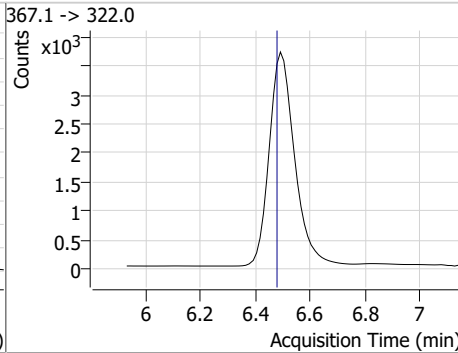
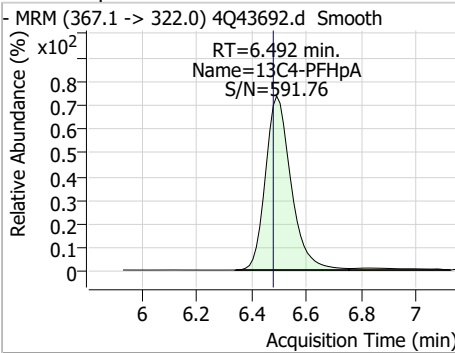
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.31	6.00	0.01	65691	314.8 -> 82.9	3.5	1.8	5.3



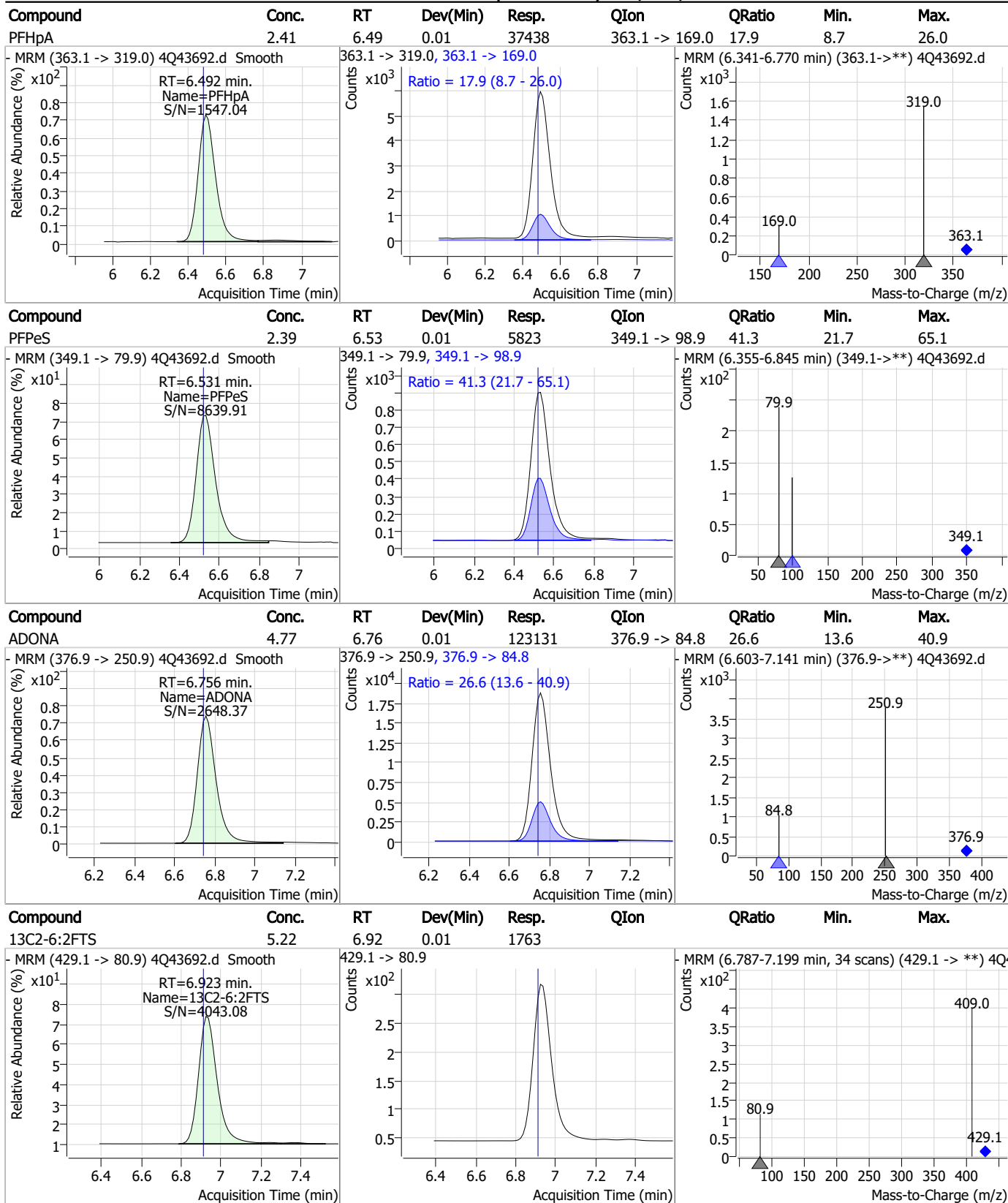
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	61.33	6.22	0.01	154895	341.0 -> 217.0	71.3	35.0	104.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.54	6.49	0.01	24009	367.1 -> 322.0			



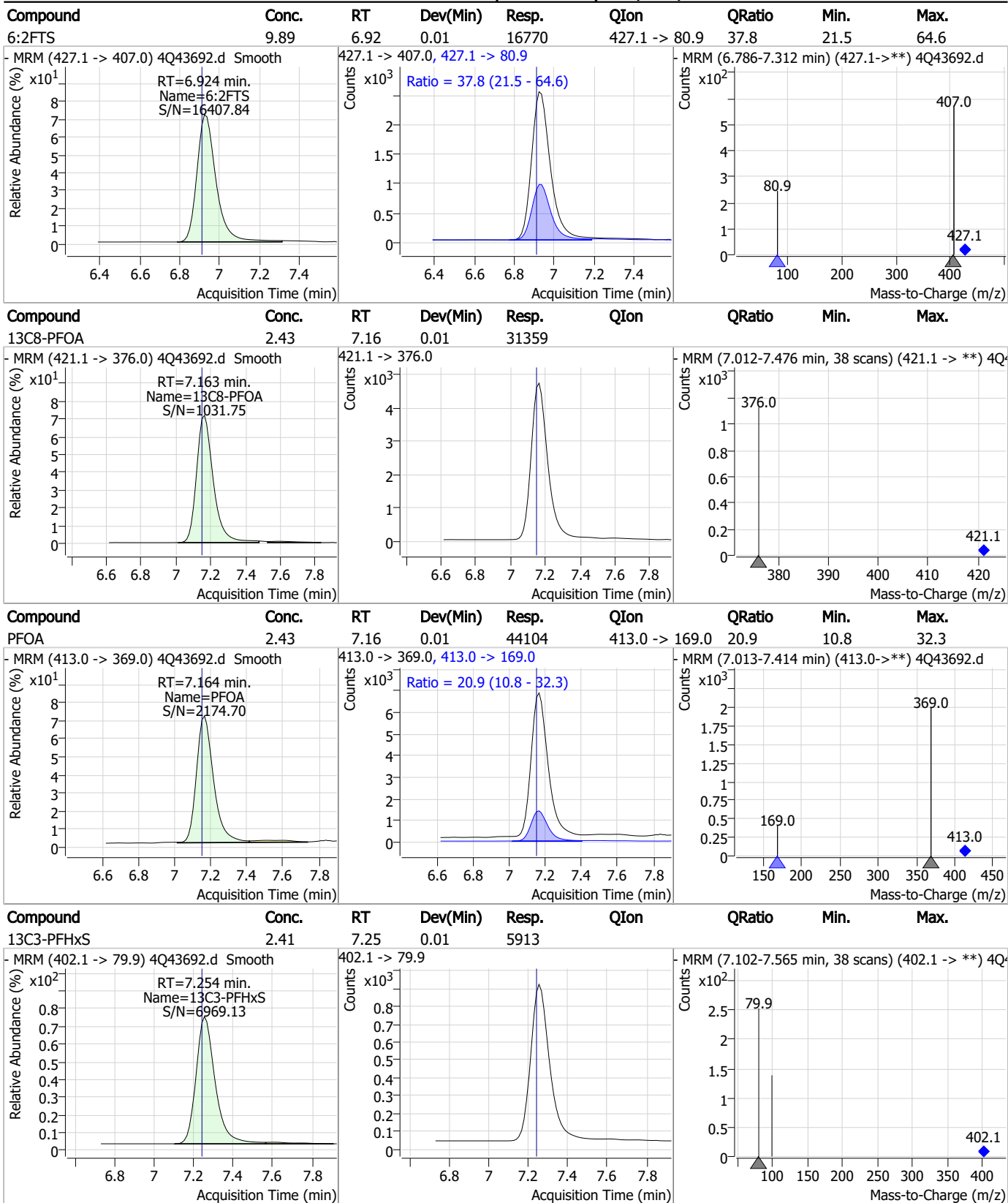
Perfluorinated Compounds by LC/MS/MS



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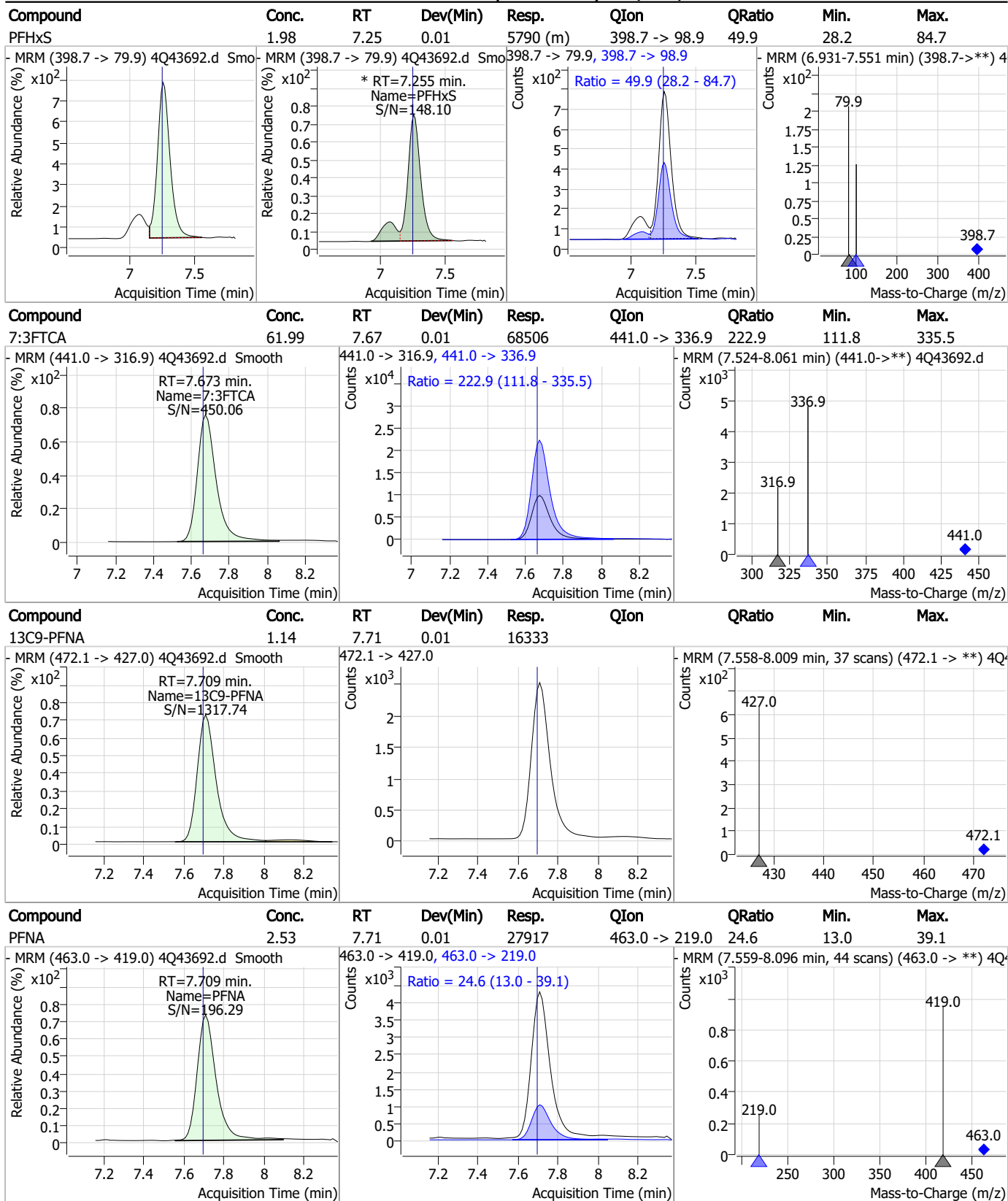


Perfluorinated Compounds by LC/MS/MS



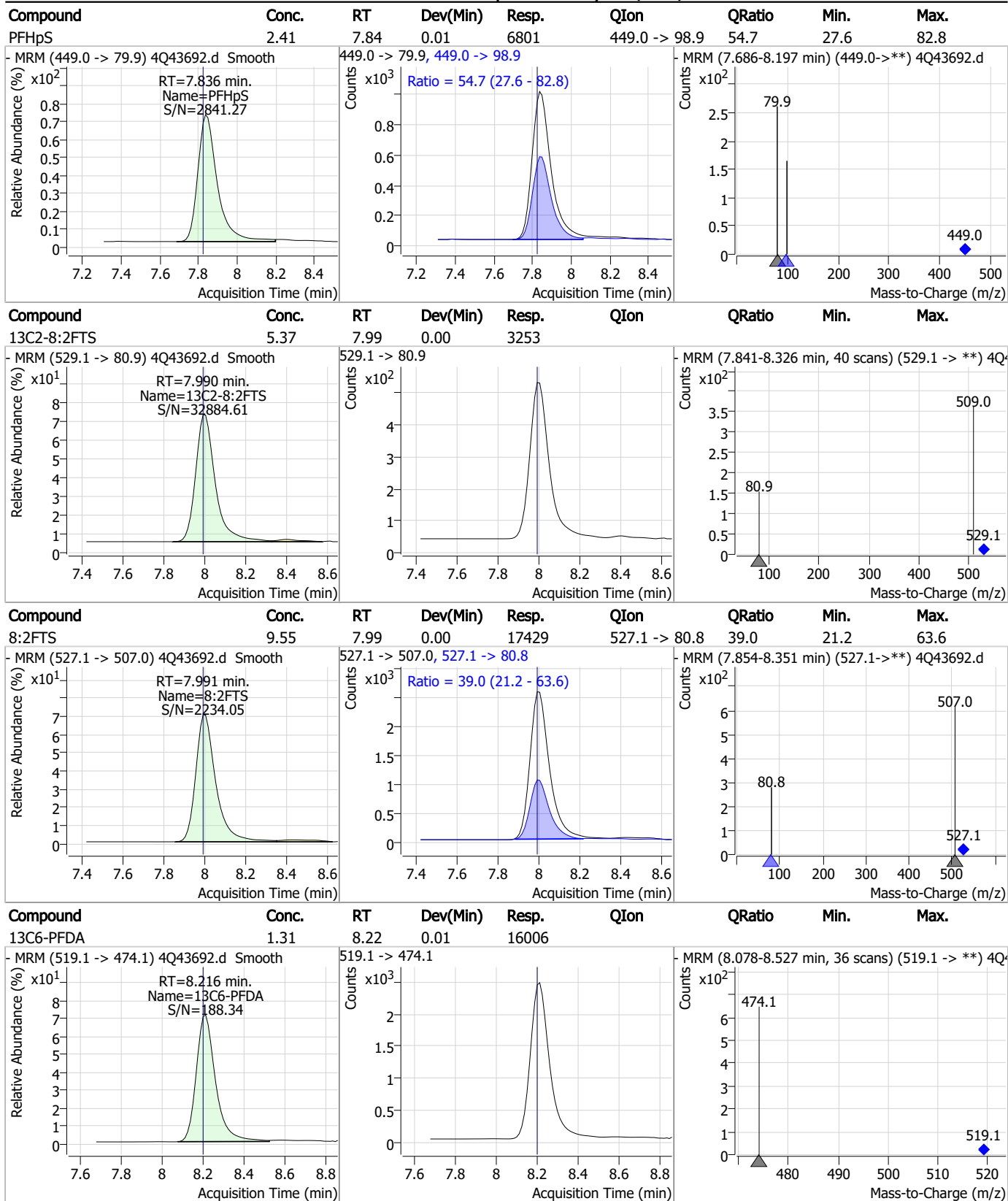
7.7.12
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Perfluorinated Compounds by LC/MS/MS



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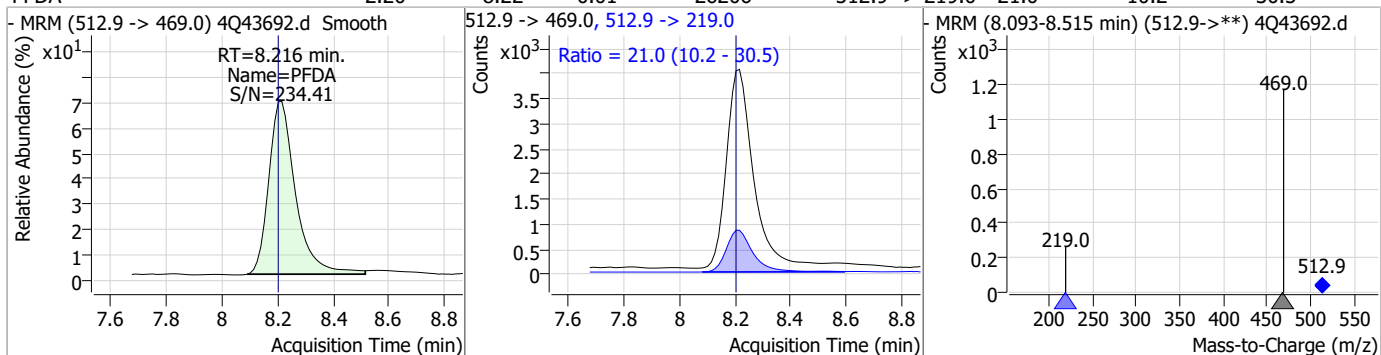
Perfluorinated Compounds by LC/MS/MS



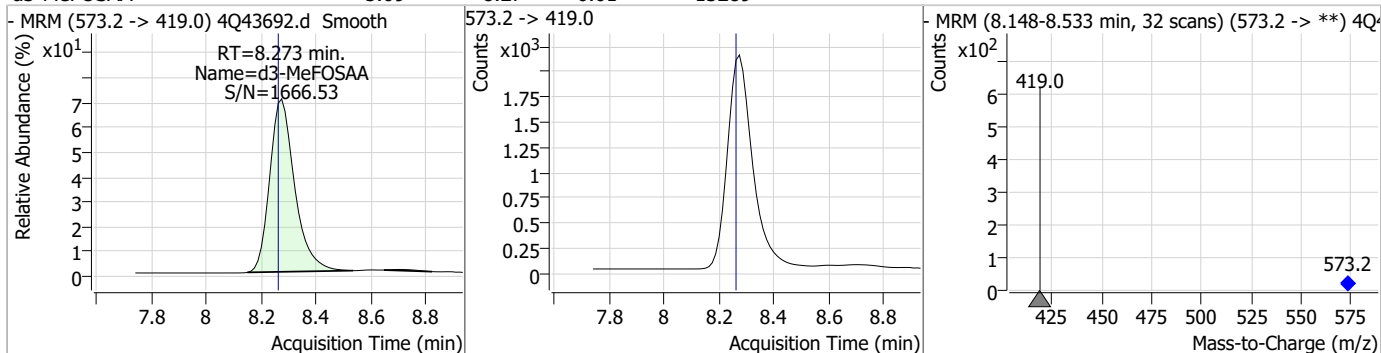
7.7.12
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Perfluorinated Compounds by LC/MS/MS

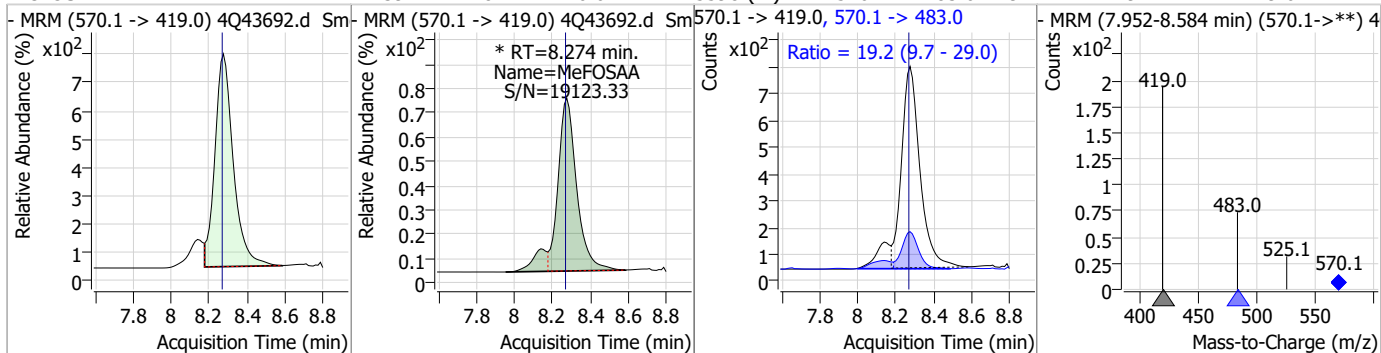
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.20	8.22	0.01	26206	512.9 -> 219.0	21.0	10.2	30.5



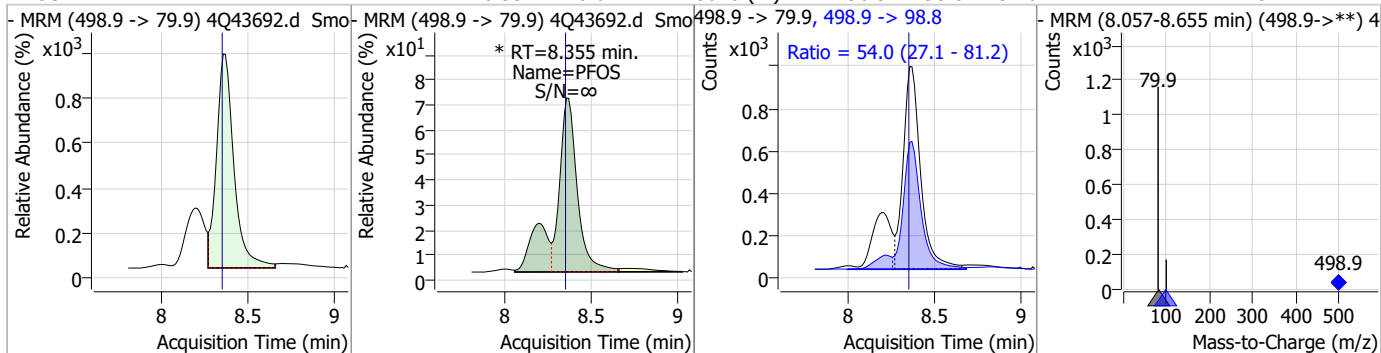
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.09	8.27	0.01	13289				



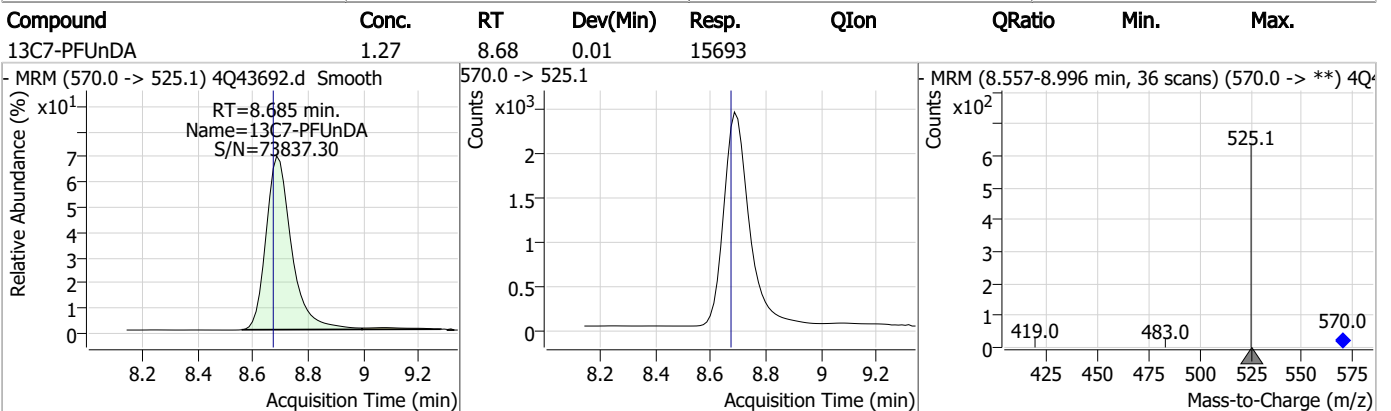
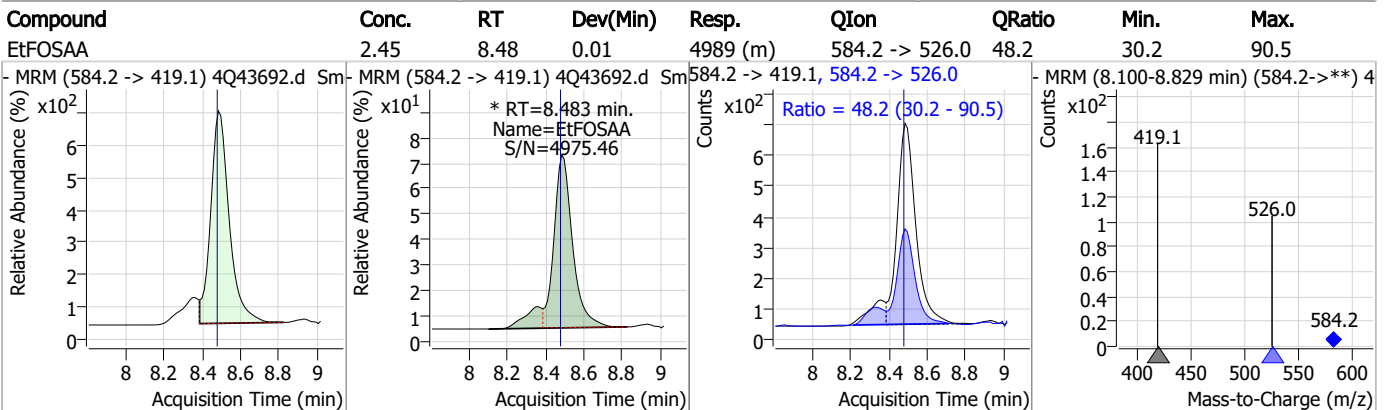
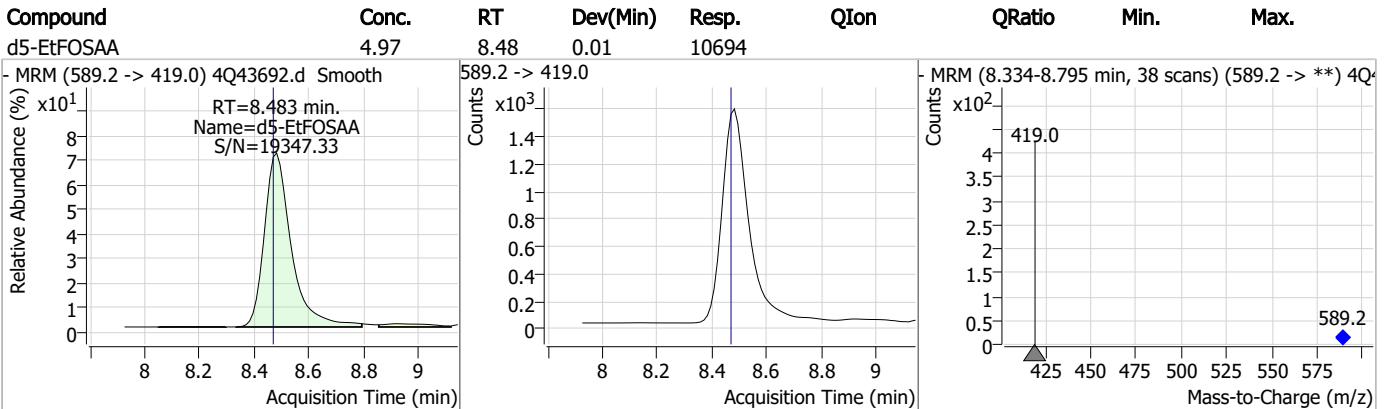
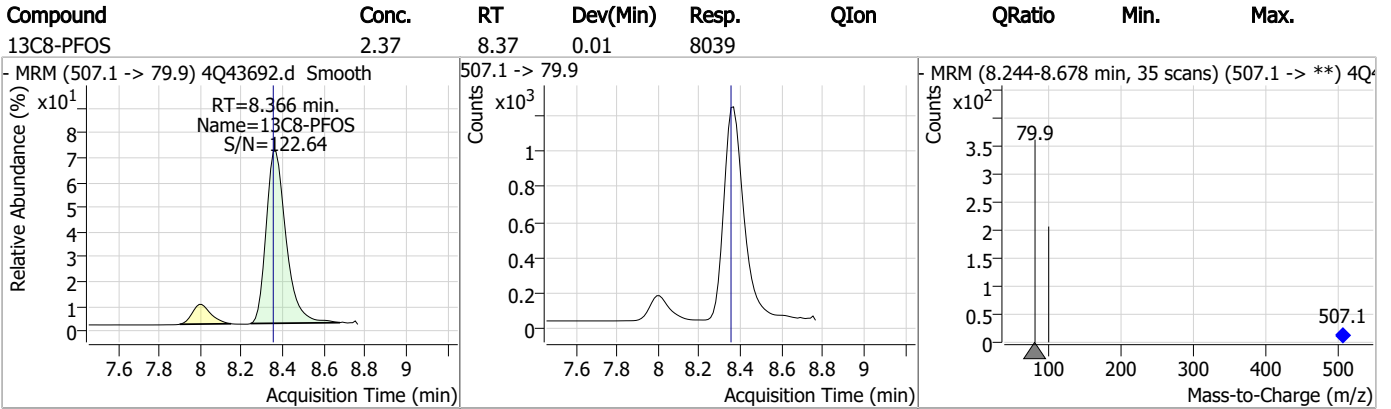
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.39	8.27	0.01	5598 (m)	570.1 -> 483.0	19.2	9.7	29.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.22	8.35	0.01	8676 (m)	498.9 -> 98.8	54.0	27.1	81.2

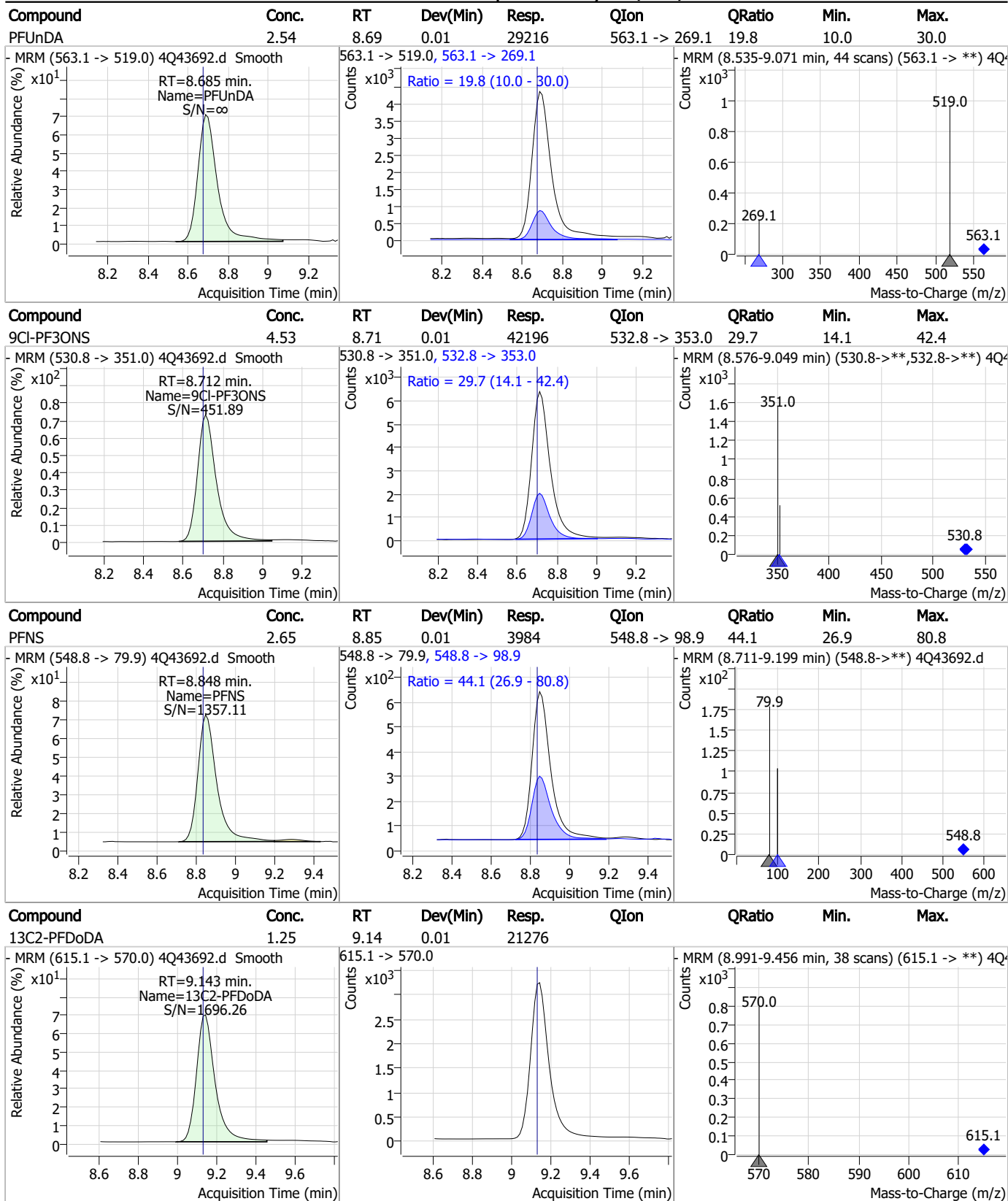


Perfluorinated Compounds by LC/MS/MS



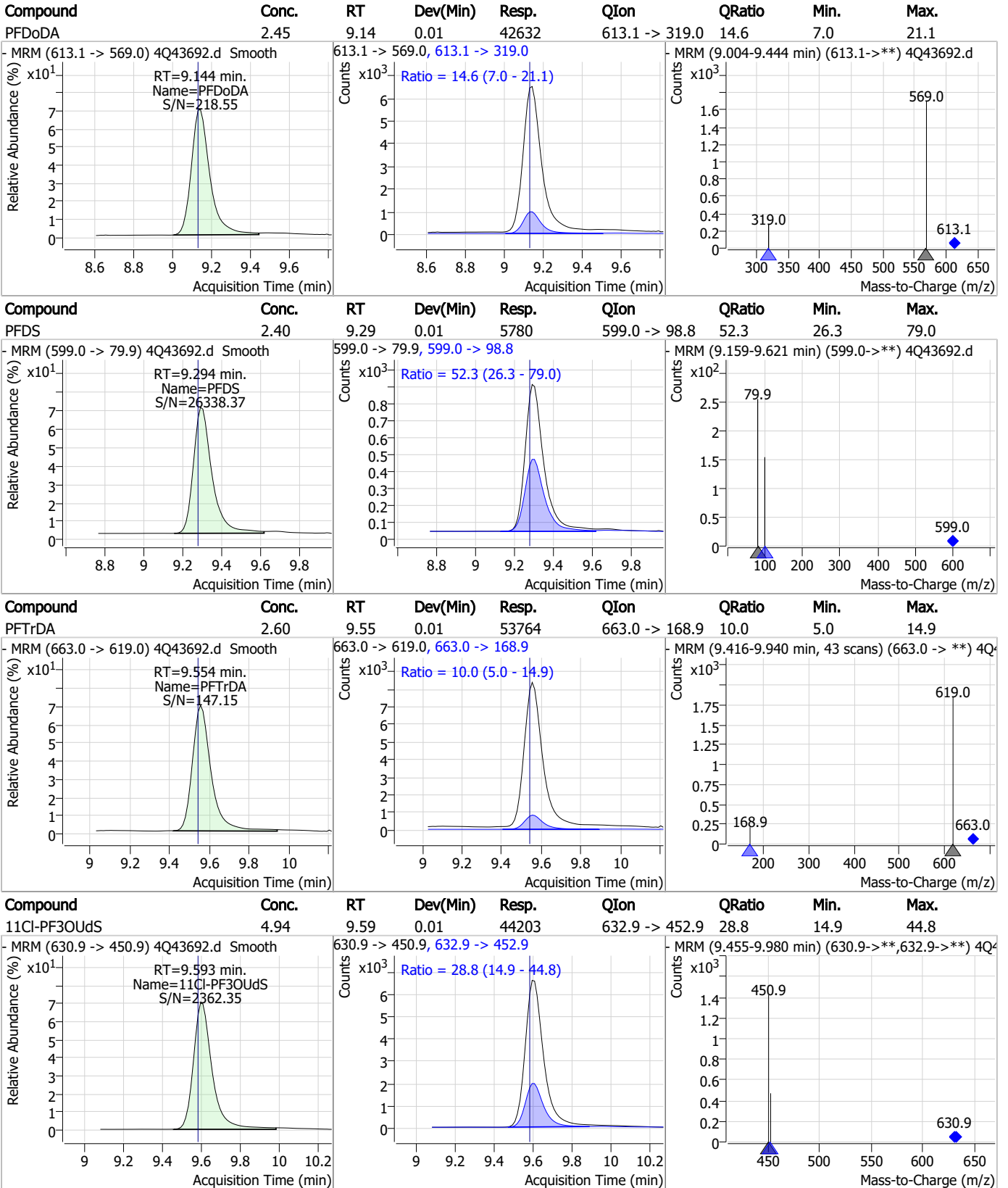
7.7.12 7

Perfluorinated Compounds by LC/MS/MS



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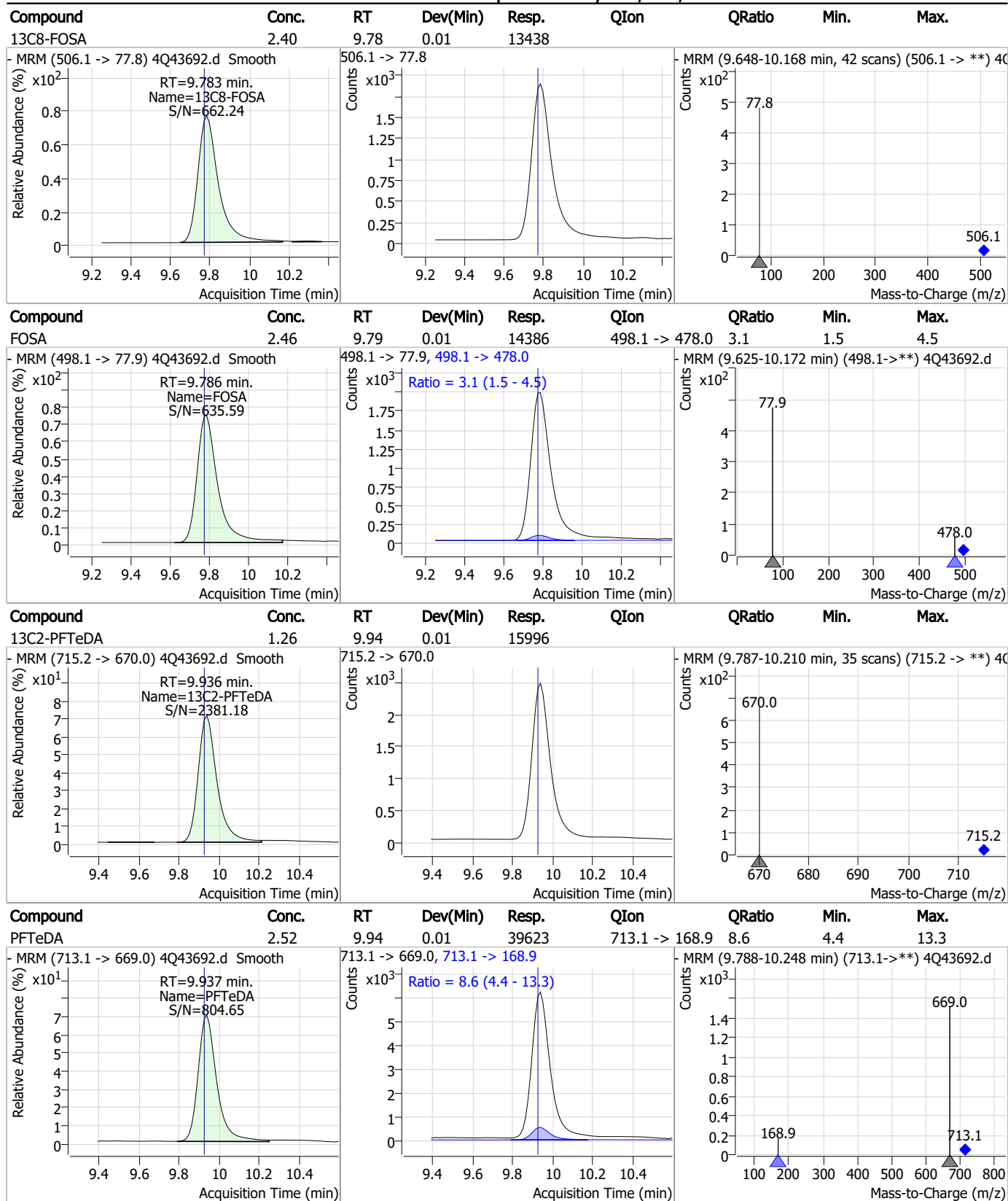
Perfluorinated Compounds by LC/MS/MS



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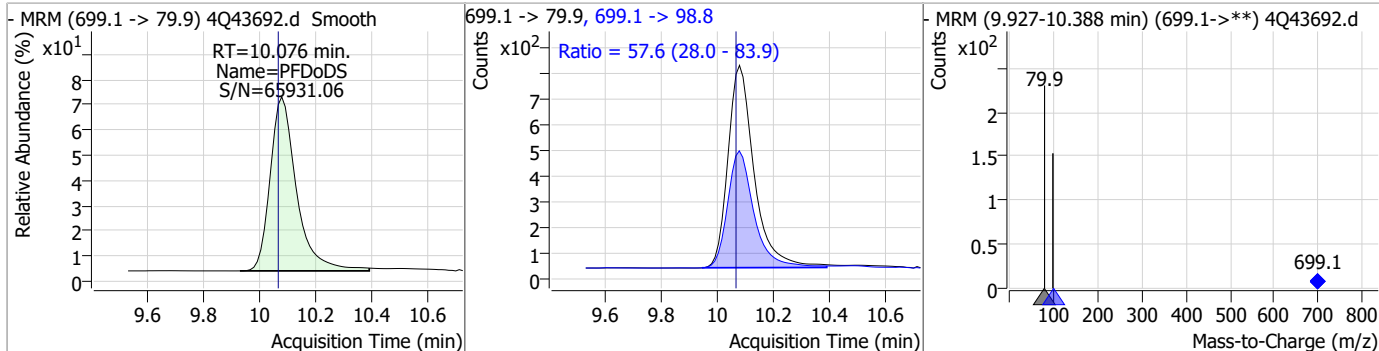
Perfluorinated Compounds by LC/MS/MS



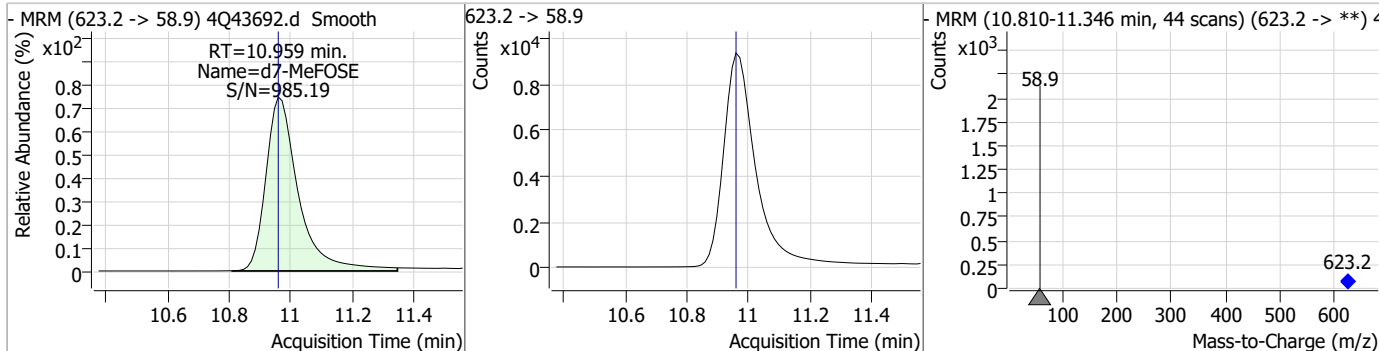
7.7.12
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Perfluorinated Compounds by LC/MS/MS

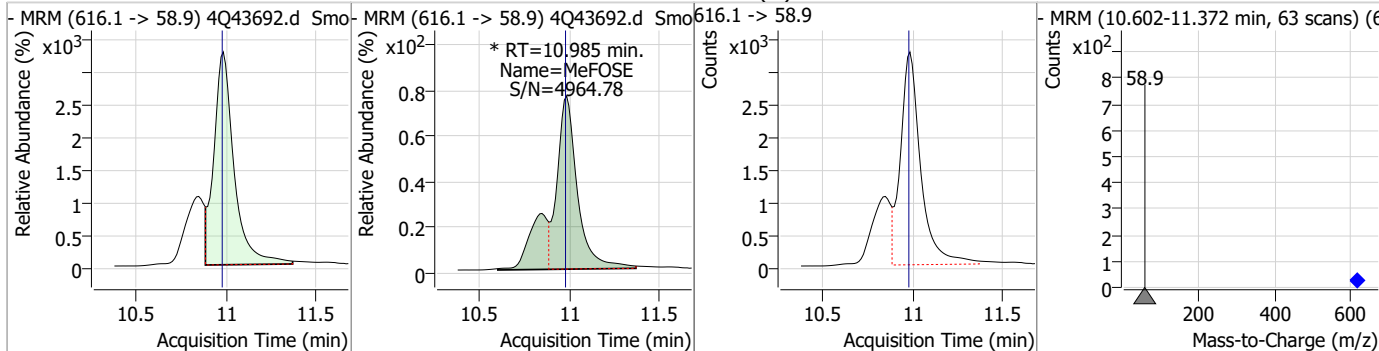
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.42	10.08	0.01	5109	699.1 -> 98.8	57.6	28.0	83.9



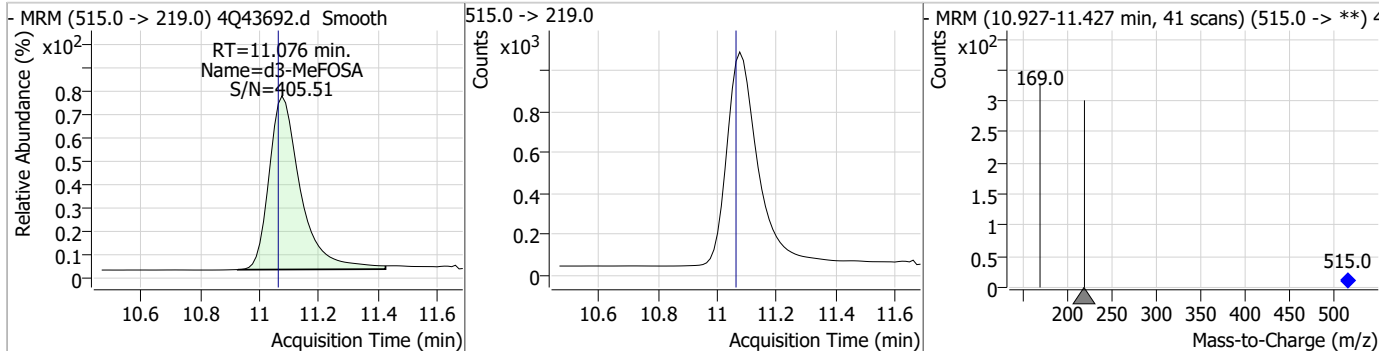
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.65	10.96	0.00	68401				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.89	10.99	0.01	33497 (m)				

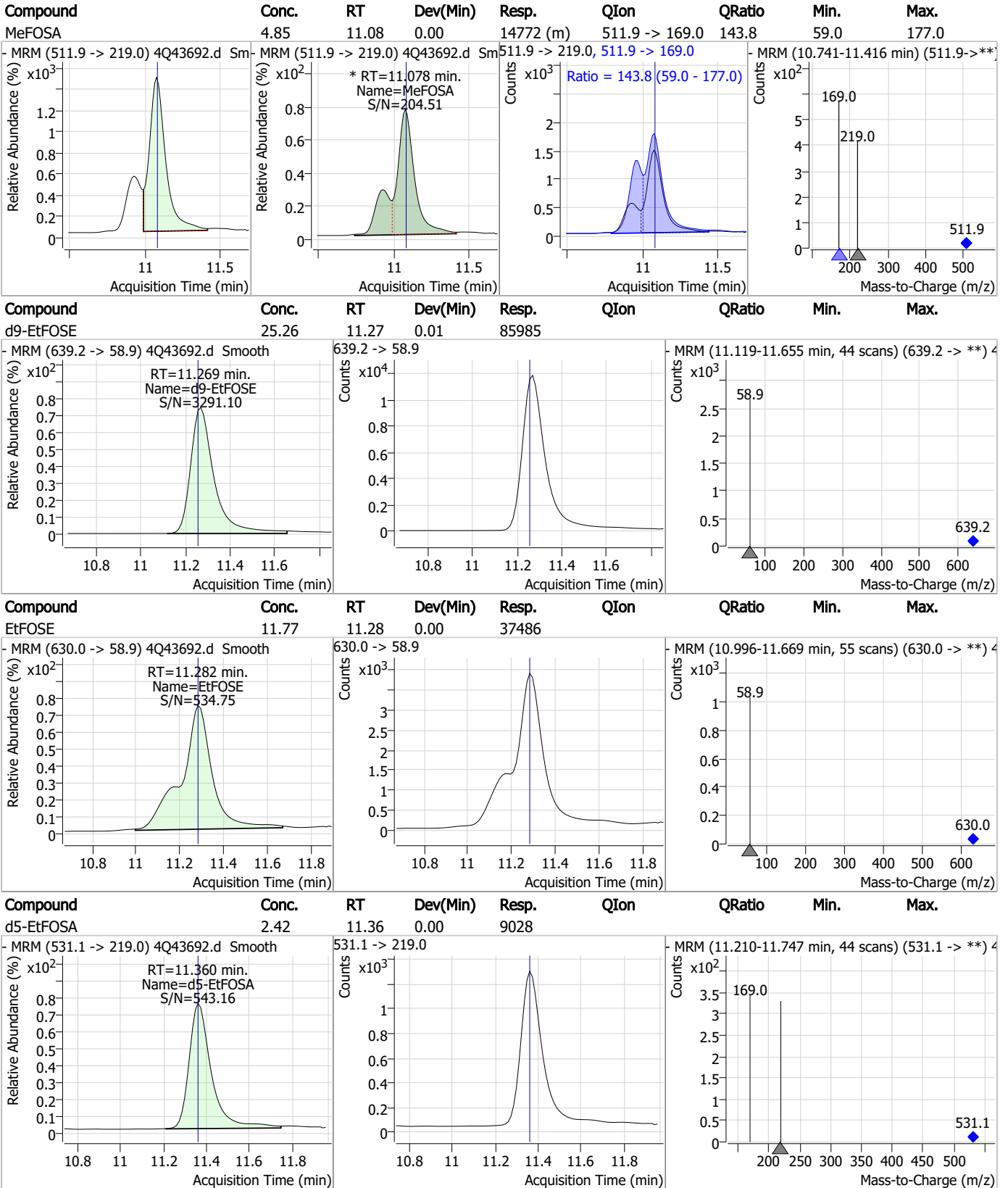


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.41	11.08	0.01	7719				



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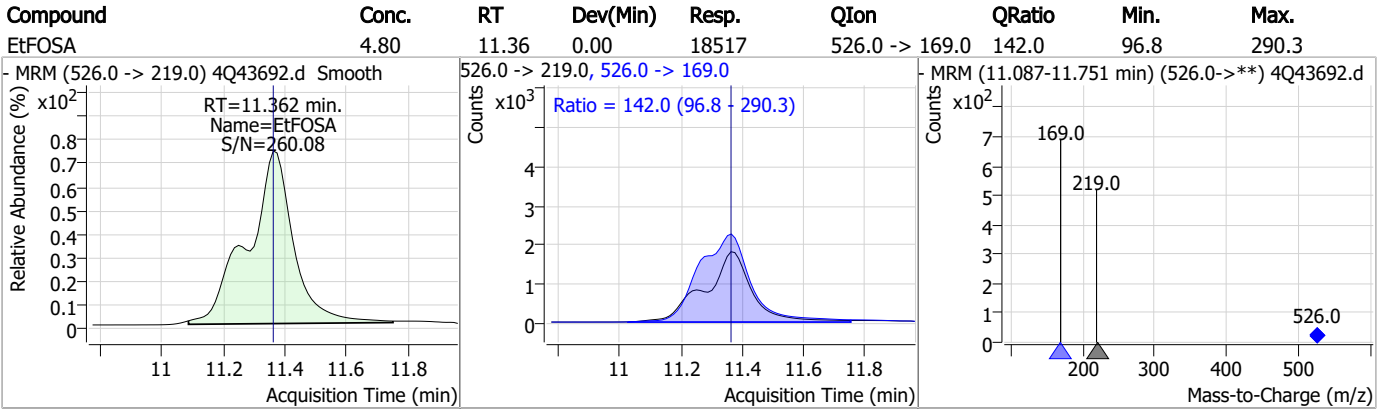
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q631-CC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43692.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 15:12 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.48	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43693.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 3:26:10 PM
 Sample Name : cc631-1.0LL
 Vial : P1-A2
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	94465	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	61931	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	47755	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	25132	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	32119	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	17442	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	16483	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	16645	1.25 µg/L	0.012
M2-PFDoDA	9.143	615.1 -> 570.0	22289	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	16367	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	13501	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10624	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6220	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8189	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1282	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1910	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3064	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	13261	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	25773	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	11400	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	67943	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	86310	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	9459	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	8174	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	8313	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	53628	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4133	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	39160	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14544	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	18698	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	40508	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1282	5.91 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.2%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1910	6.03 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.6%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3064	5.39 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.9%		
13C2-PFDoDA	9.143	615.1 -> 570.0	22289	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C2-PFTeDA	9.936	715.2 -> 670.0	16367	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-PFBS	5.464	302.1 -> 79.9	10624	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C3-PFHxS	7.254	402.1 -> 79.9	6220	2.70 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 = 108.1%	
13C4-PFBA	2.924	216.8 -> 171.9	94465	10.19 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C4-PFHpA	6.492	367.1 -> 322.0	25132	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	47755	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFPeA	4.387	268.3 -> 223.0	61931	5.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C6-PFDA	8.216	519.1 -> 474.1	16483	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C7-PFUnDA	8.685	570.0 -> 525.1	16645	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-FOSA	9.783	506.1 -> 77.8	13501	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C8-PFOA	7.163	421.1 -> 376.0	32119	2.44 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C8-PFOS	8.366	507.1 -> 79.9	8189	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C9-PFNA	7.709	472.1 -> 427.0	17442	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSAA	8.273	573.2 -> 419.0	13261	5.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	25773	9.68 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d3-MeFOSA	11.076	515.0 -> 219.0	8174	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
d5-EtFOSAA	8.483	589.2 -> 419.0	11400	5.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.2%	
d7-MeFOSE	10.959	623.2 -> 58.9	67943	25.31 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d9-EtFOSE	11.256	639.2 -> 58.9	86310	25.19 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d5-EtFOSA	11.360	531.1 -> 219.0	9459	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	1604	0.78 µg/L	99
		327.1 -> 80.9	662		
6:2FTS	6.924	427.1 -> 407.0	1371	0.75 µg/L	98
		427.1 -> 80.9	575		
8:2FTS	7.991	527.1 -> 507.0	1516	0.88 µg/L	99
		527.1 -> 80.8	637		
EtFOSAA	8.496	584.2 -> 419.1	379	0.17 µg/L	m 95
		584.2 -> 526.0	215		
FOSA	9.774	498.1 -> 77.9	1155	0.20 µg/L	100
		498.1 -> 478.0	35		
MeFOSAA	8.274	570.1 -> 419.0	451	0.19 µg/L	m 82
		570.1 -> 483.0	51		
PFBA	2.932	212.8 -> 168.9	2075	0.75 µg/L	100
PFBS	5.465	298.7 -> 79.9	943	0.20 µg/L	96
		298.7 -> 98.8	347		
PFDA	8.216	512.9 -> 469.0	1713	0.14 µg/L	86
		512.9 -> 219.0	458		
PFDODA	9.144	613.1 -> 569.0	3487	0.19 µg/L	95
		613.1 -> 319.0	416		
PFDS	9.294	599.0 -> 79.9	474	0.19 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.492	599.0 -> 98.8	261	0.18	µg/L	94
		363.1 -> 319.0	2996			
PFHpS	7.836	363.1 -> 169.0	601	0.15	µg/L	89
		449.0 -> 79.9	432			
PFHxA	5.562	449.0 -> 98.9	273	0.19	µg/L	98
		313.0 -> 269.0	3357			
PFHxS	7.255	313.0 -> 118.9	118	0.15	µg/L	m
		398.7 -> 79.9	465			
PFNA	7.709	398.7 -> 98.9	294	0.15	µg/L	89
		463.0 -> 419.0	1754			
PFNS	8.848	463.0 -> 219.0	551	0.20	µg/L	96
		548.8 -> 79.9	311			
PFOA	7.164	548.8 -> 98.9	157	0.21	µg/L	98
		413.0 -> 369.0	3943			
PFOS	8.367	413.0 -> 169.0	806	0.22	µg/L	m
		498.9 -> 79.9	874			
PFPeA	4.389	498.9 -> 98.8	347	0.36	µg/L	100
		263.0 -> 219.0	5377			
PFPeS	6.531	349.1 -> 79.9	423	0.17	µg/L	95
		349.1 -> 98.9	196			
PFTeDA	9.937	713.1 -> 669.0	3200	0.20	µg/L	97
		713.1 -> 168.9	323			
PFTrDA	9.554	663.0 -> 619.0	4293	0.20	µg/L	98
		663.0 -> 168.9	454			
PFUnDA	8.685	563.1 -> 519.0	2181	0.18	µg/L	98
		563.1 -> 269.1	421			
11Cl-PF3OUdS	9.605	630.9 -> 450.9	3303	0.36	µg/L	93
		632.9 -> 452.9	1103			
9Cl-PF3ONS	8.712	530.8 -> 351.0	3188	0.33	µg/L	97
		532.8 -> 353.0	849			
ADONA	6.756	376.9 -> 250.9	8851	0.34	µg/L	99
		376.9 -> 84.8	2466			
HFPO-DA	5.928	284.9 -> 168.9	955	0.37	µg/L	97
		284.9 -> 184.9	118			
3:3FTCA	3.848	241.0 -> 177.0	563	0.90	µg/L	88
		241.0 -> 117.0	30			
5:3FTCA	6.217	341.0 -> 237.1	11381	4.39	µg/L	97
		341.0 -> 217.0	8278			
7:3FTCA	7.673	441.0 -> 316.9	5321	4.69	µg/L	99
		441.0 -> 336.9	11985			
EtFOSA	11.362	526.0 -> 219.0	1471	0.36	µg/L	m
		526.0 -> 169.0	2107			
EtFOSE	11.282	630.0 -> 58.9	2737	0.86	µg/L	m
		511.9 -> 219.0	1208			
MeFOSA	11.078	511.9 -> 169.0	1678	0.37	µg/L	m
		616.1 -> 58.9	2646			
MeFOSE	10.985	699.1 -> 79.9	385	0.95	µg/L	m
		699.1 -> 98.8	250			
PFDoDS	10.076	295.0 -> 201.0	493	0.18	µg/L	87
		295.0 -> 84.9	107			
NFDHA	5.441	279.0 -> 85.1	3073	0.42	µg/L	96
		229.0 -> 84.9	2664			
PFMBA	4.791	314.8 -> 134.9	4963	0.36	µg/L	100
		314.8 -> 82.9	203			
PFMPA	3.528			0.36	µg/L	100
PFEESA	5.997			0.32	µg/L	99

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

7.7.13
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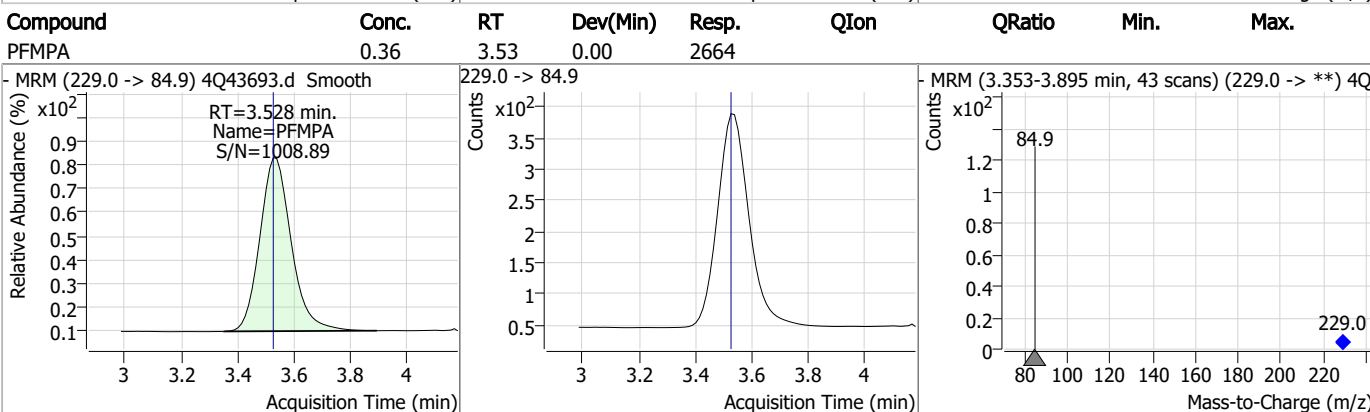
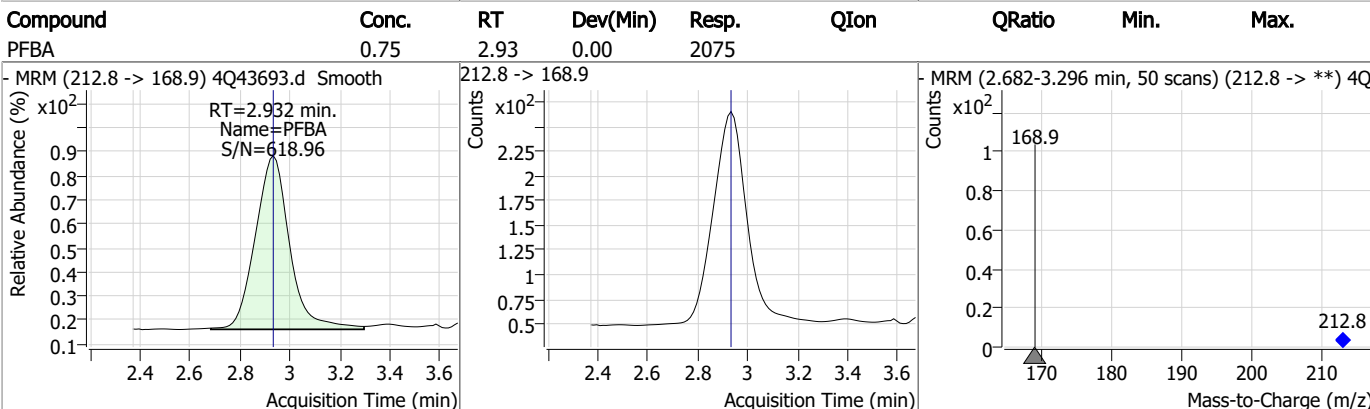
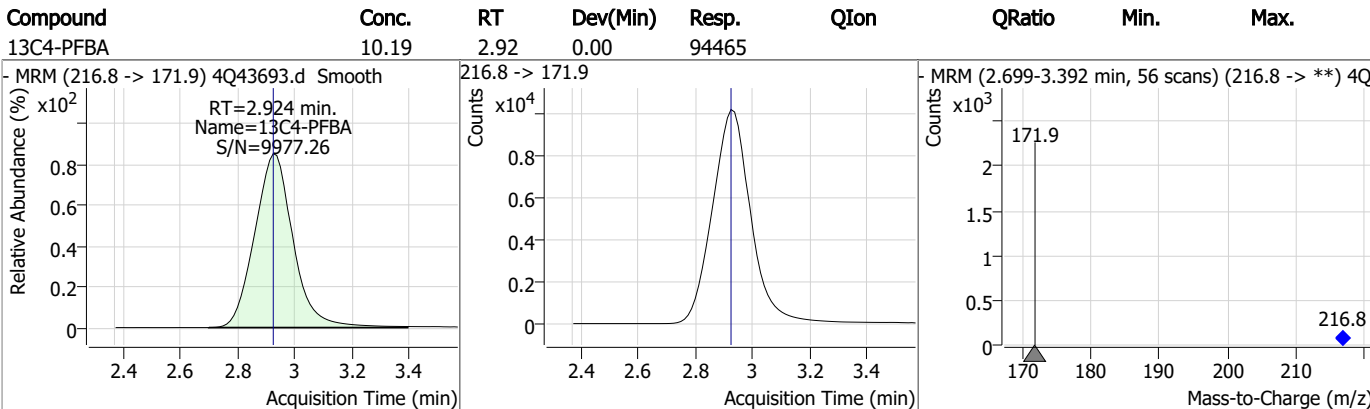
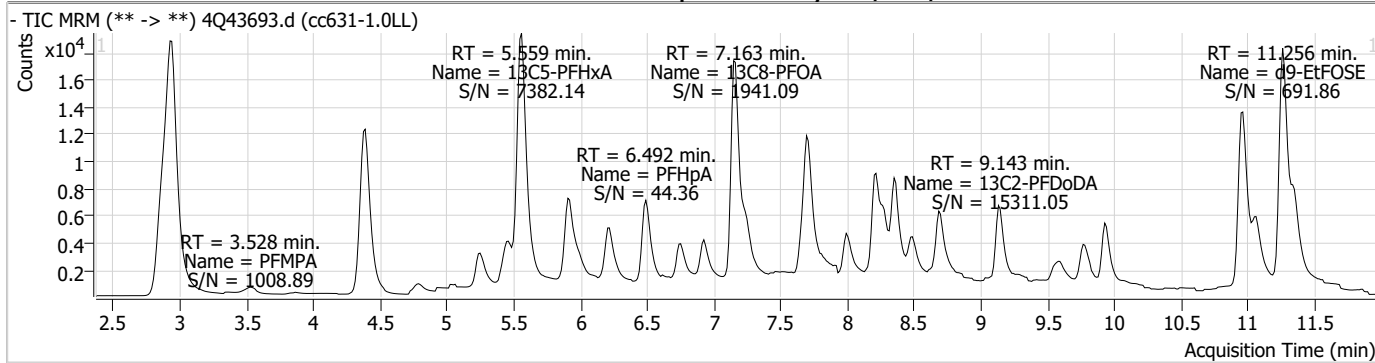
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.13

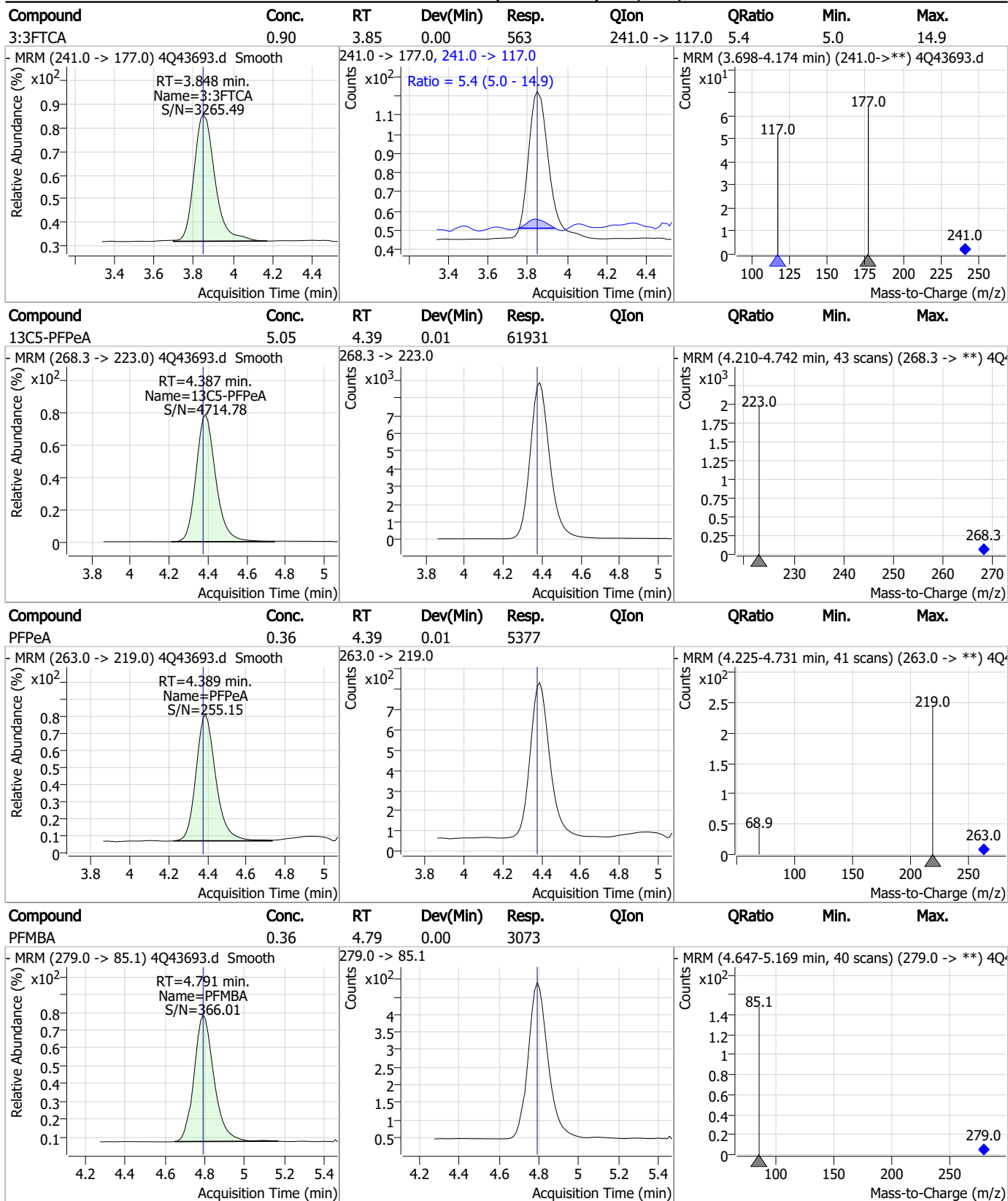
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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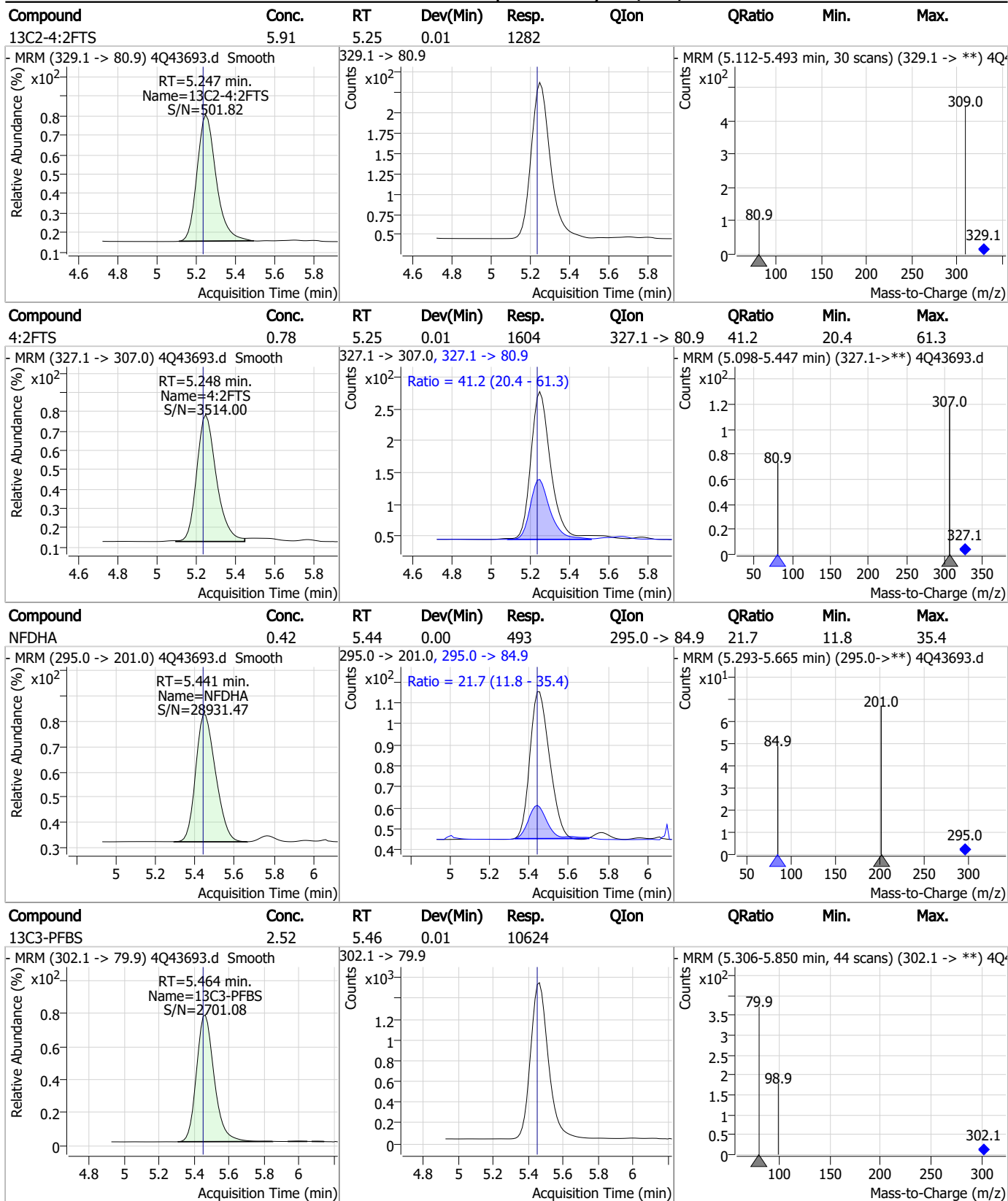
Perfluorinated Compounds by LC/MS/MS



7.7.13

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Perfluorinated Compounds by LC/MS/MS

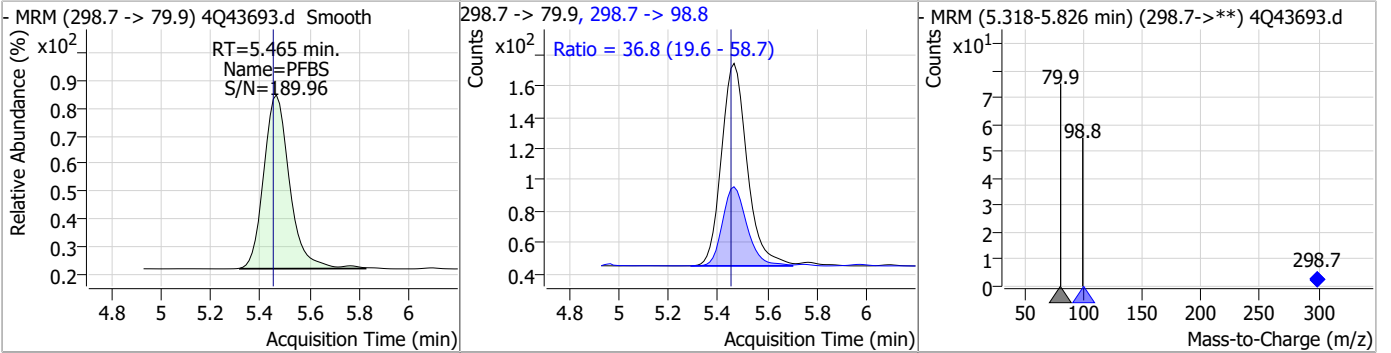


7.7.13
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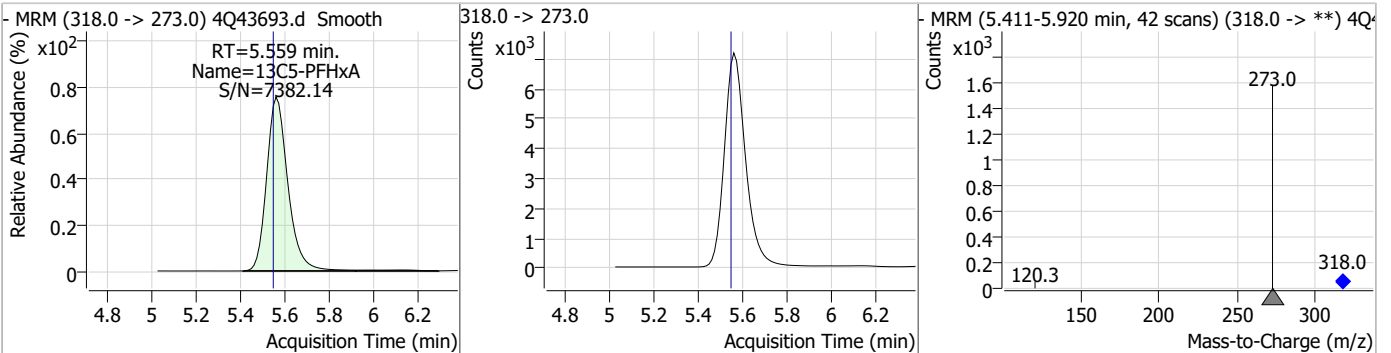


Perfluorinated Compounds by LC/MS/MS

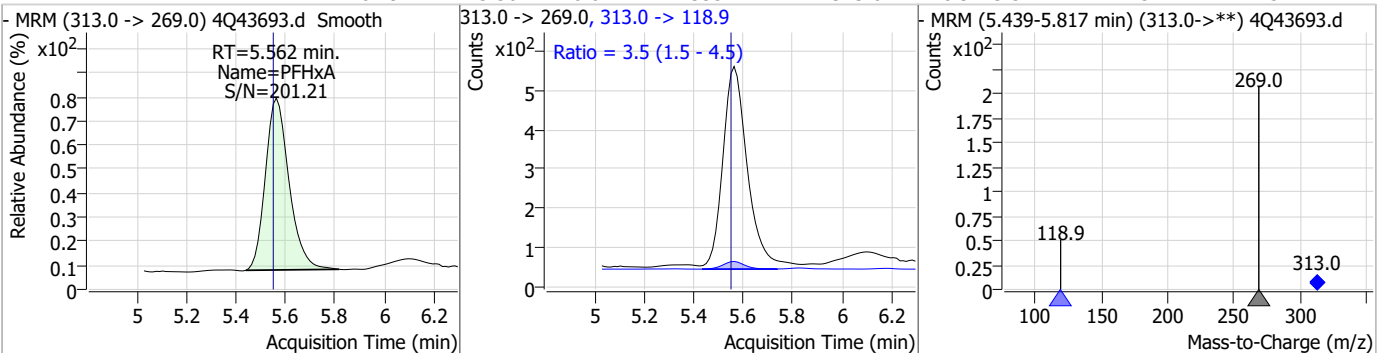
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.20	5.46	0.01	943	298.7 -> 98.8	36.8	19.6	58.7



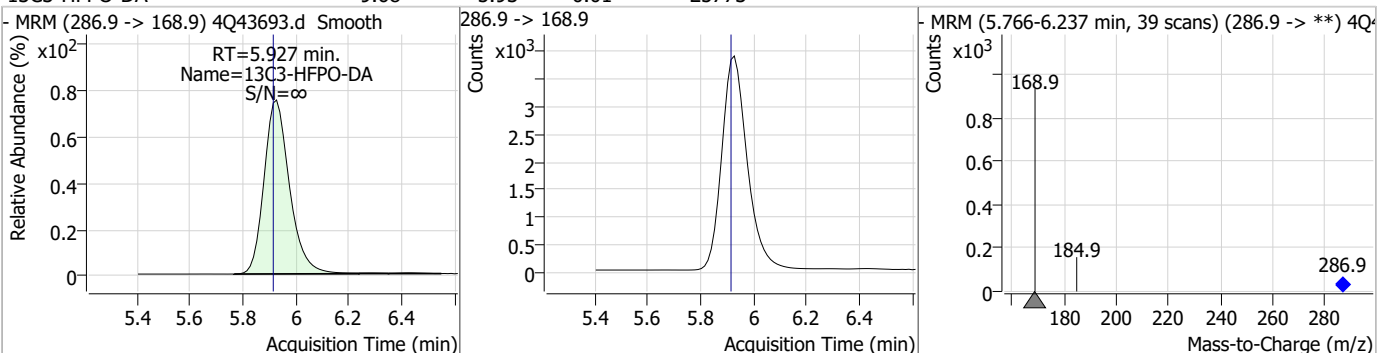
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.48	5.56	0.01	47755				



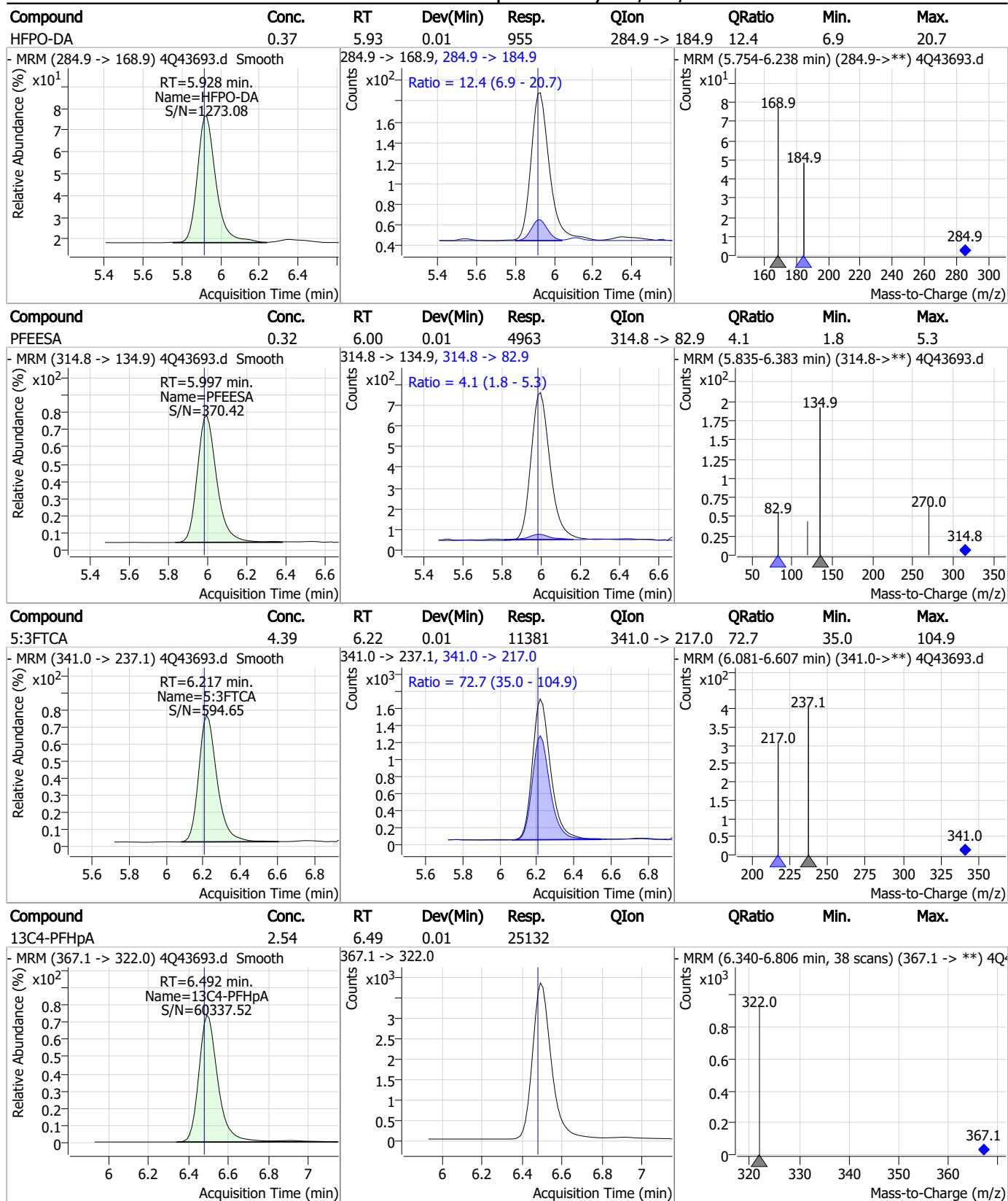
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.19	5.56	0.01	3357	313.0 -> 118.9	3.5	1.5	4.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.68	5.93	0.01	25773				

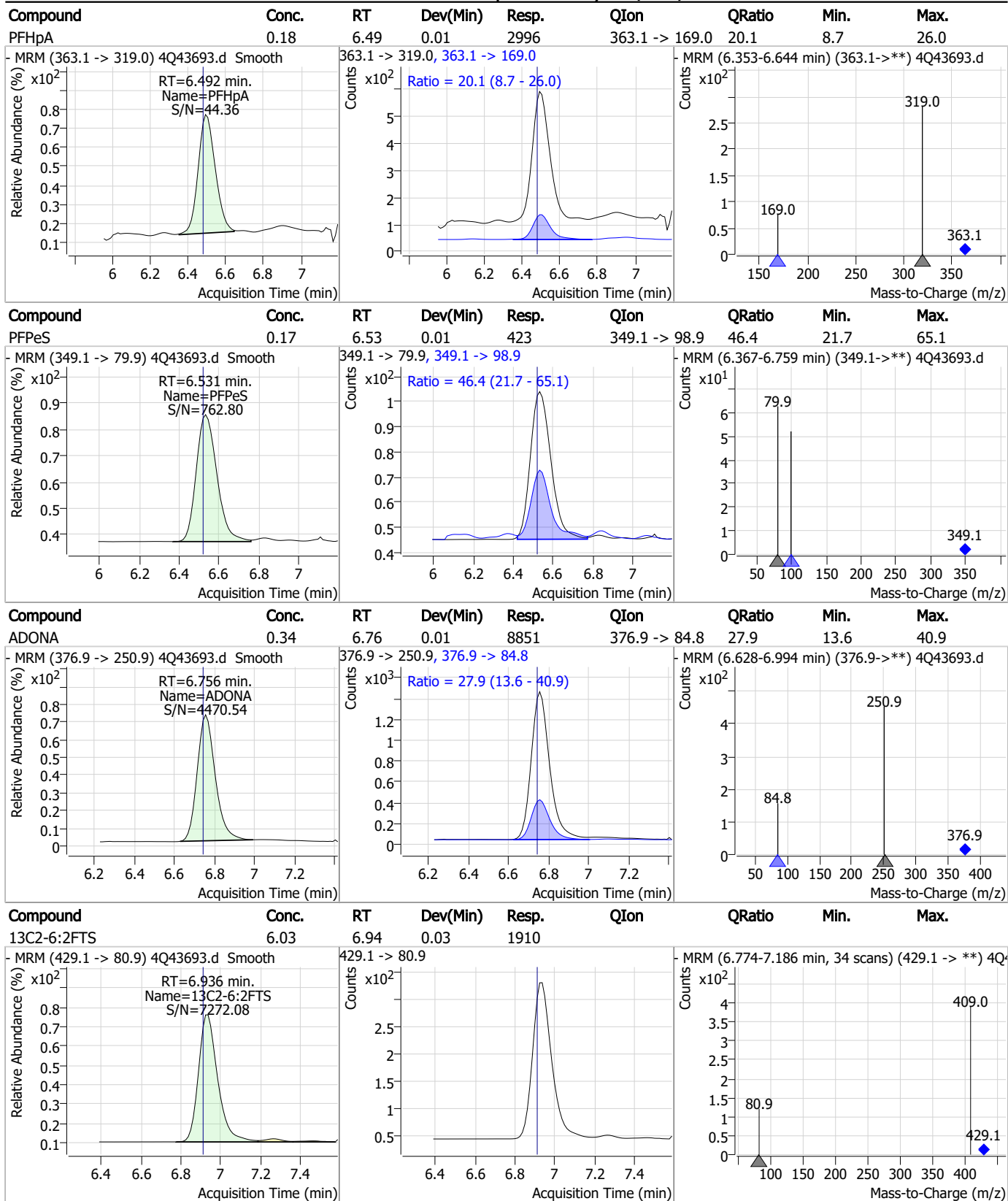


Perfluorinated Compounds by LC/MS/MS



7.7.13
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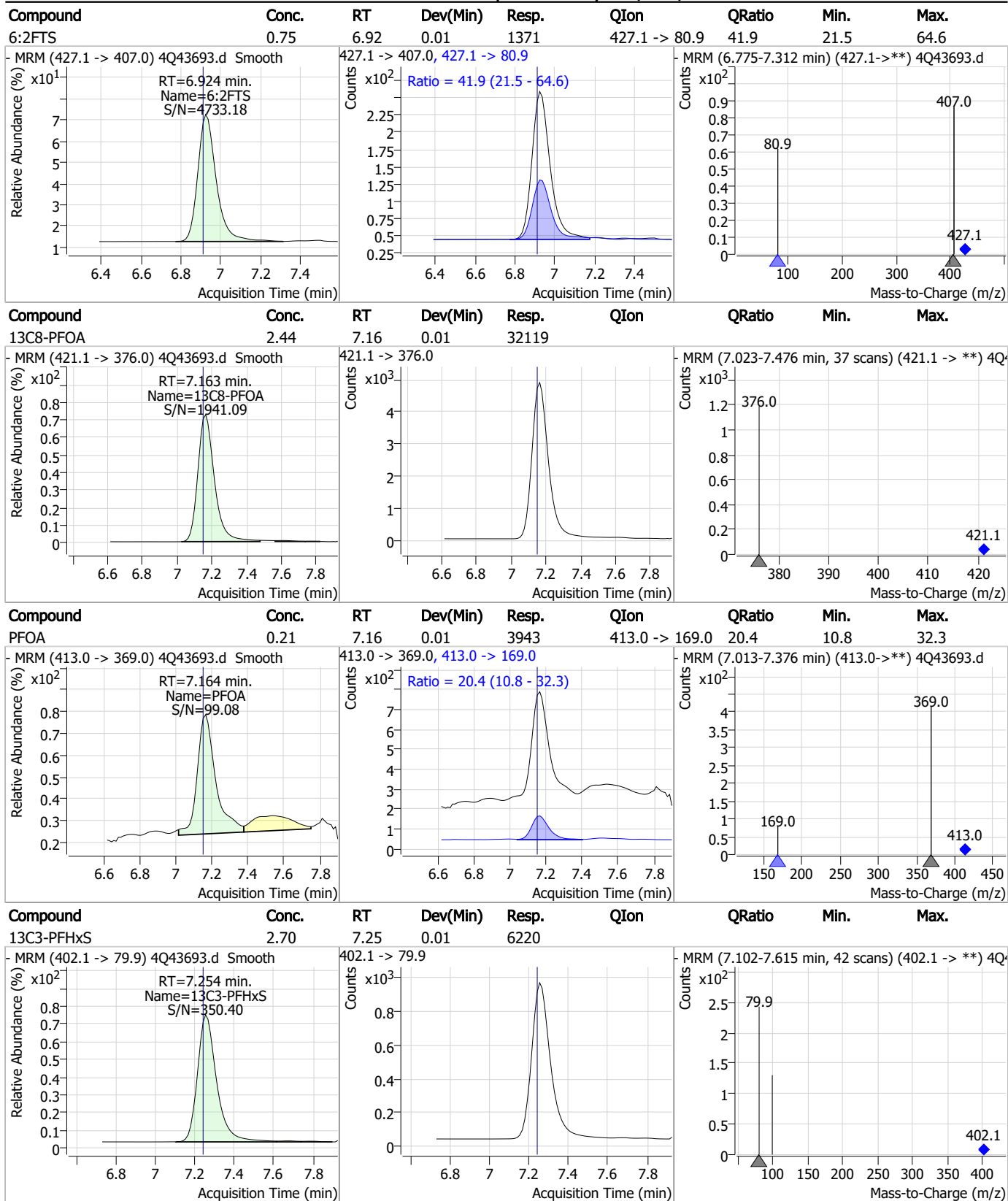
Perfluorinated Compounds by LC/MS/MS



7.7.13
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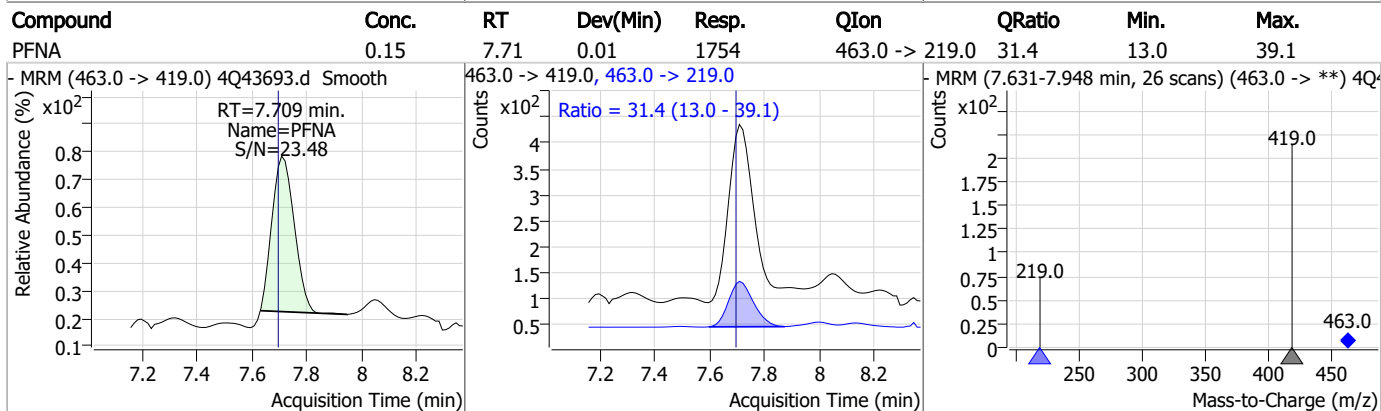
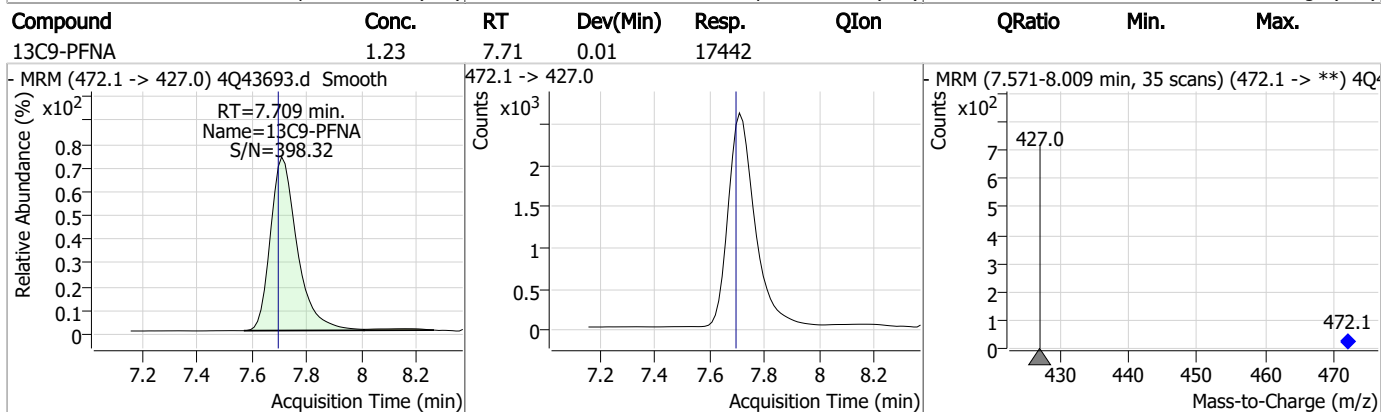
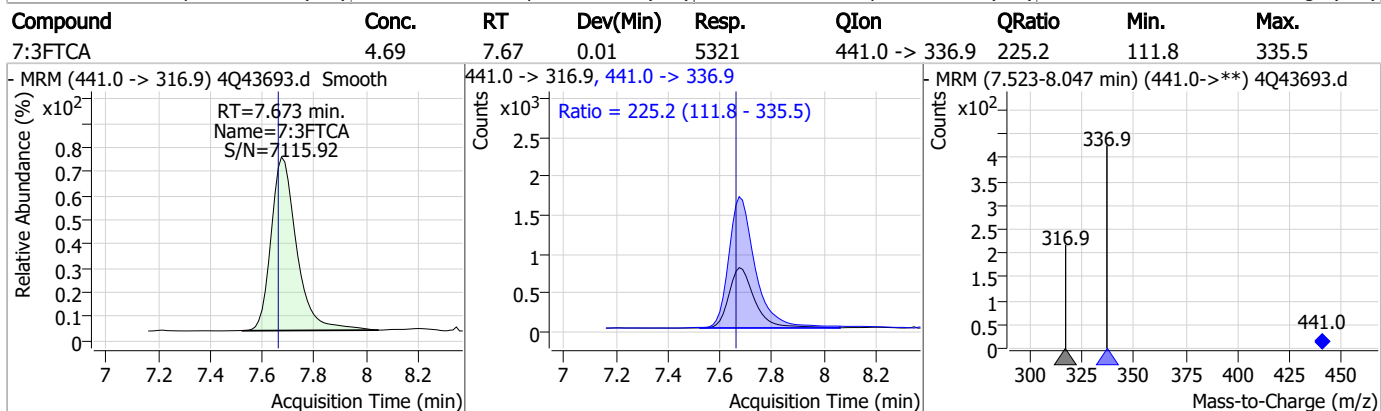
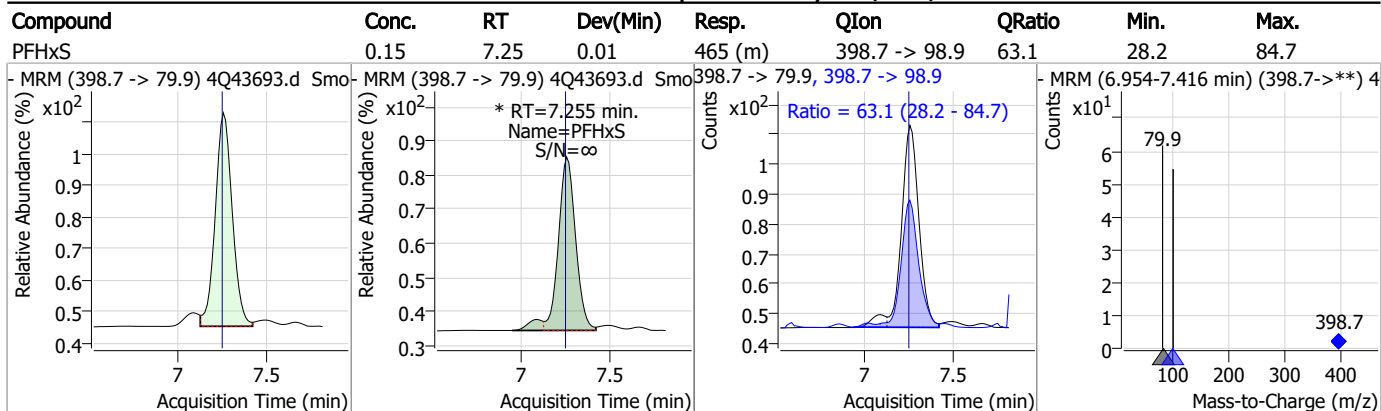
Perfluorinated Compounds by LC/MS/MS



7.7.13

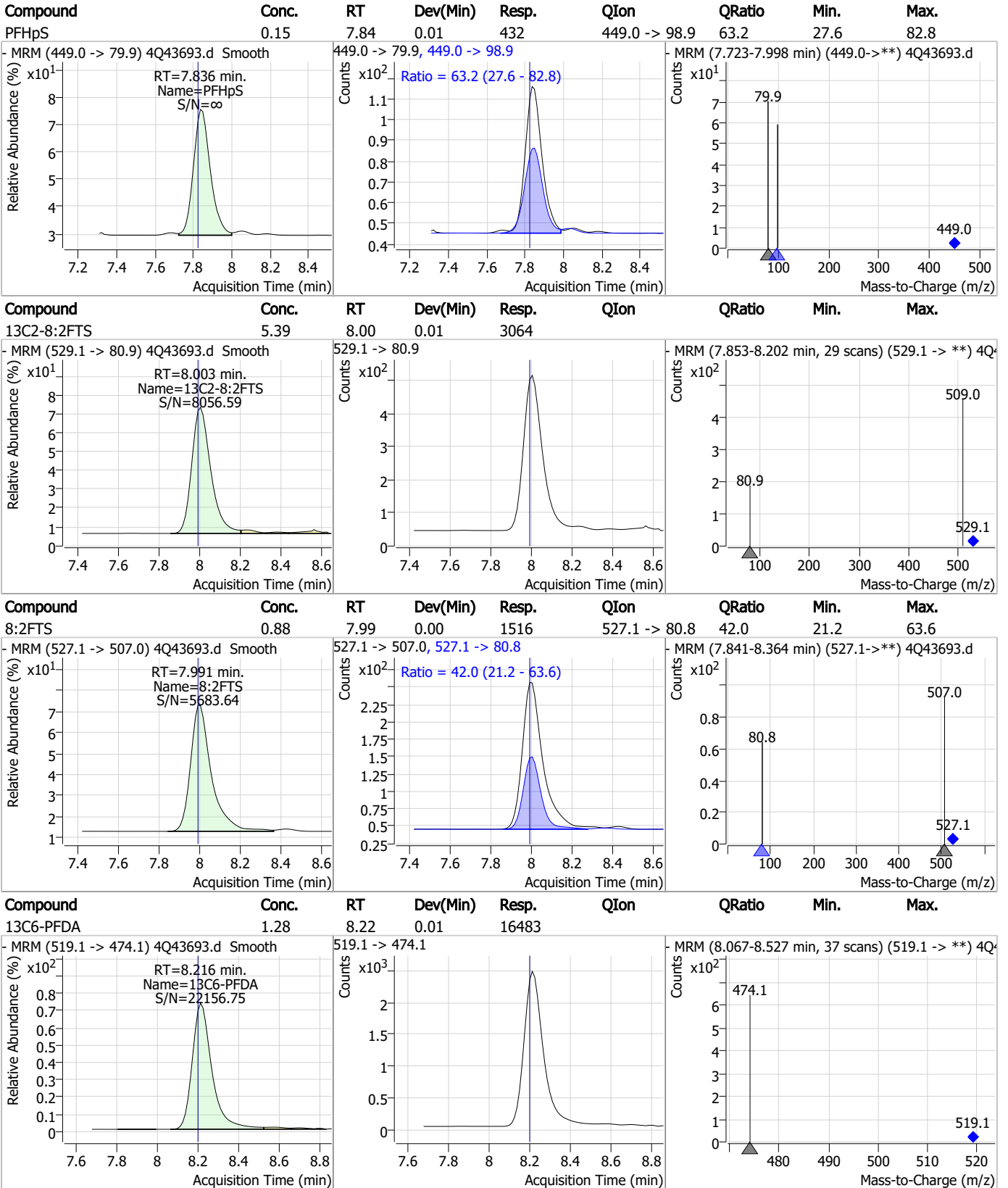
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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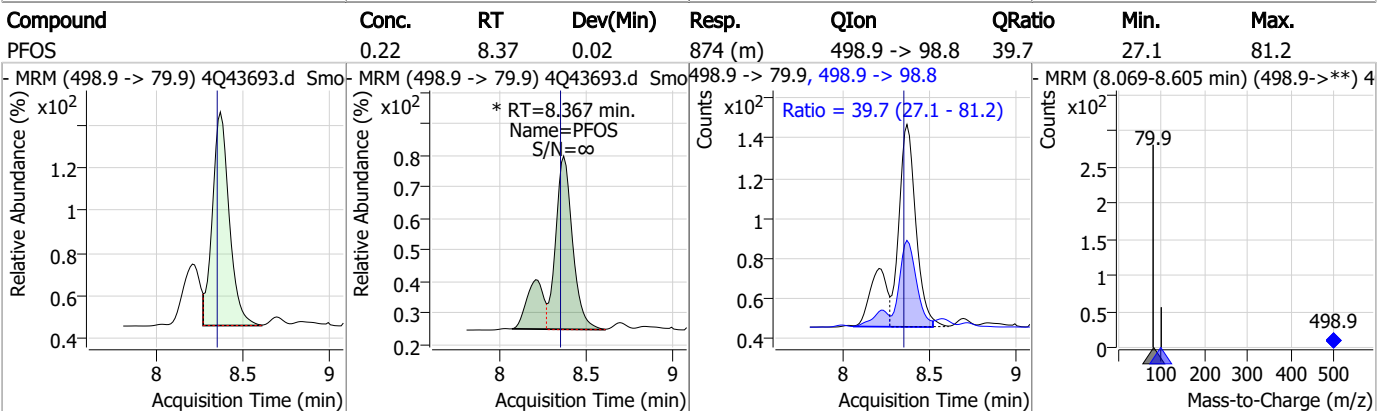
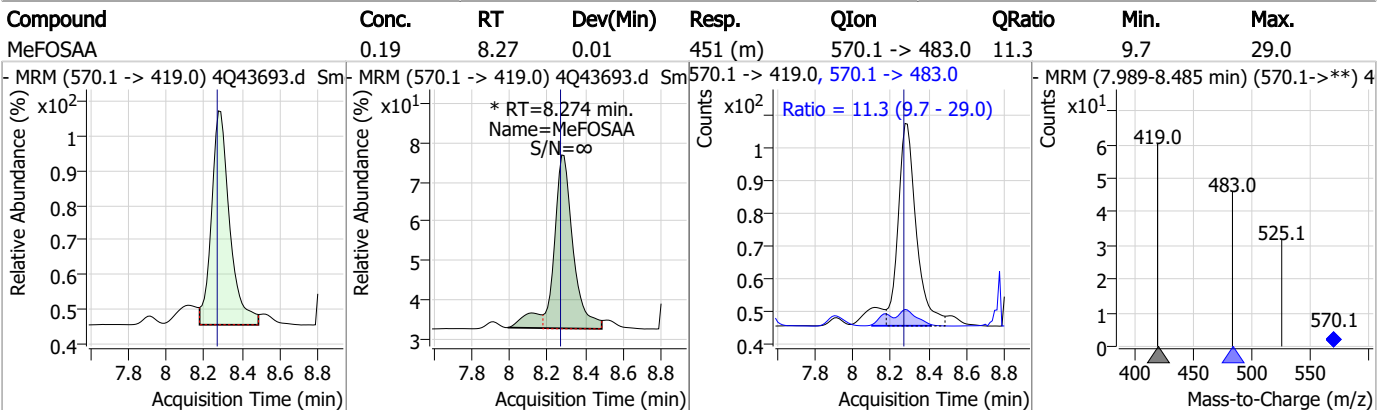
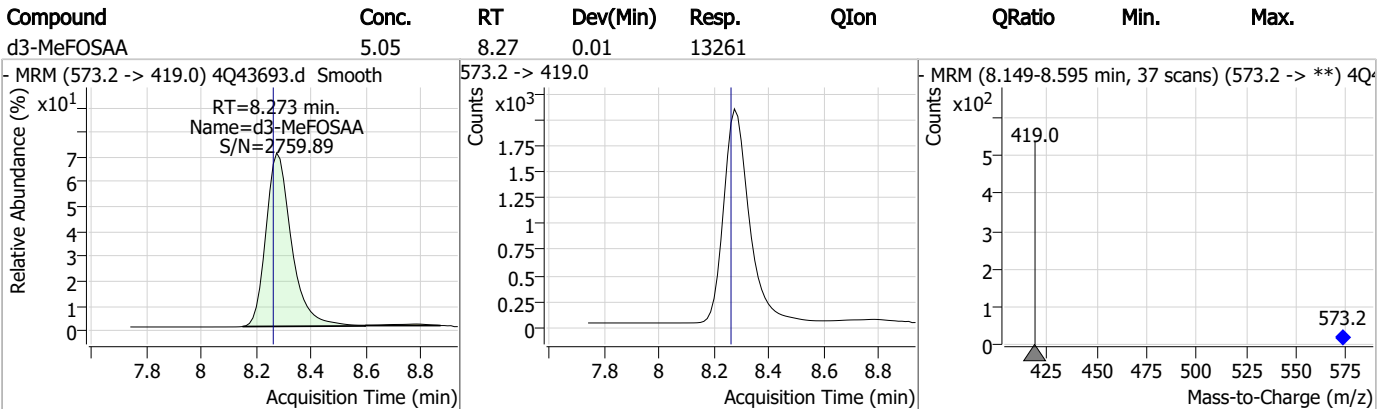
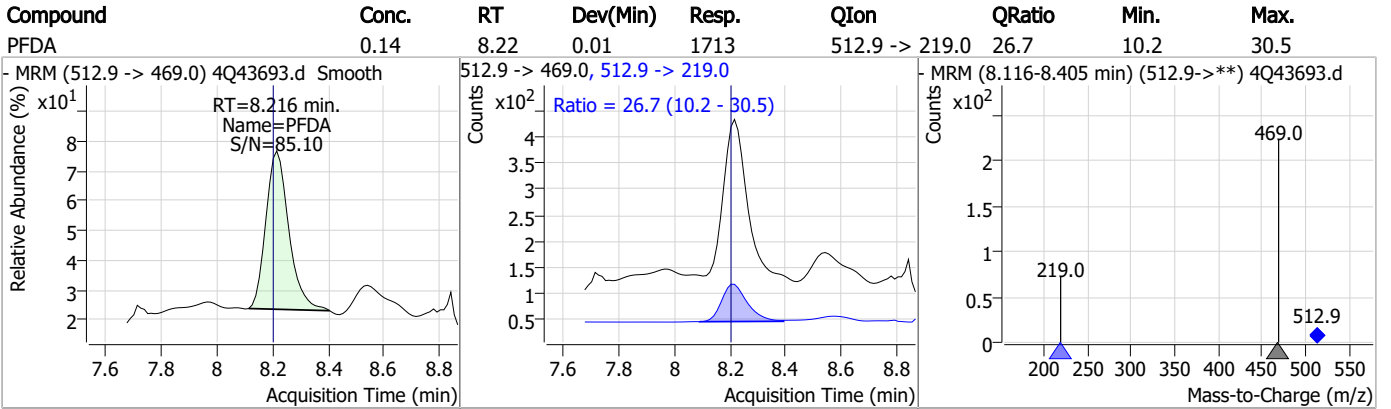
Perfluorinated Compounds by LC/MS/MS



7.7.13
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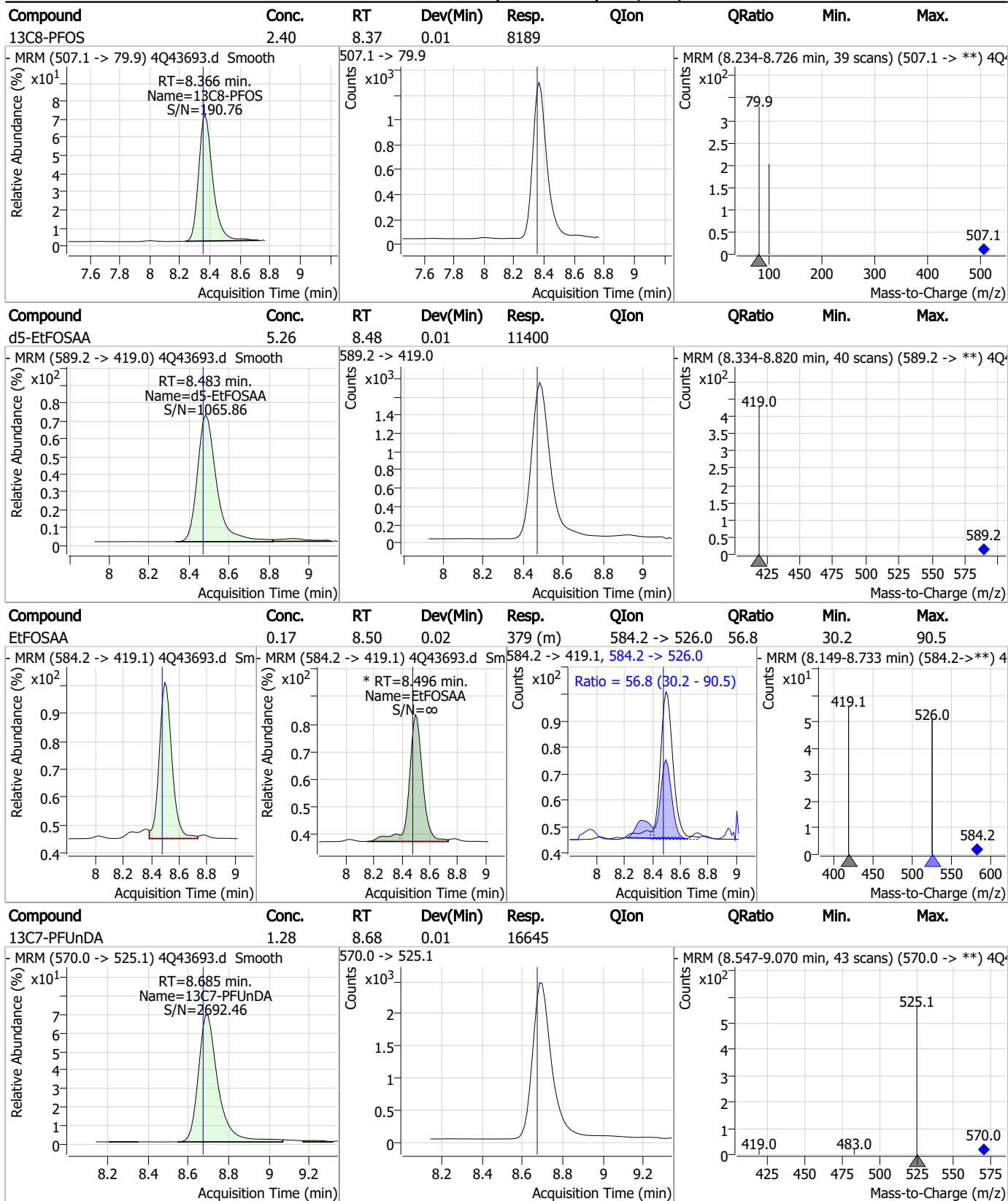


Perfluorinated Compounds by LC/MS/MS



7.7.13
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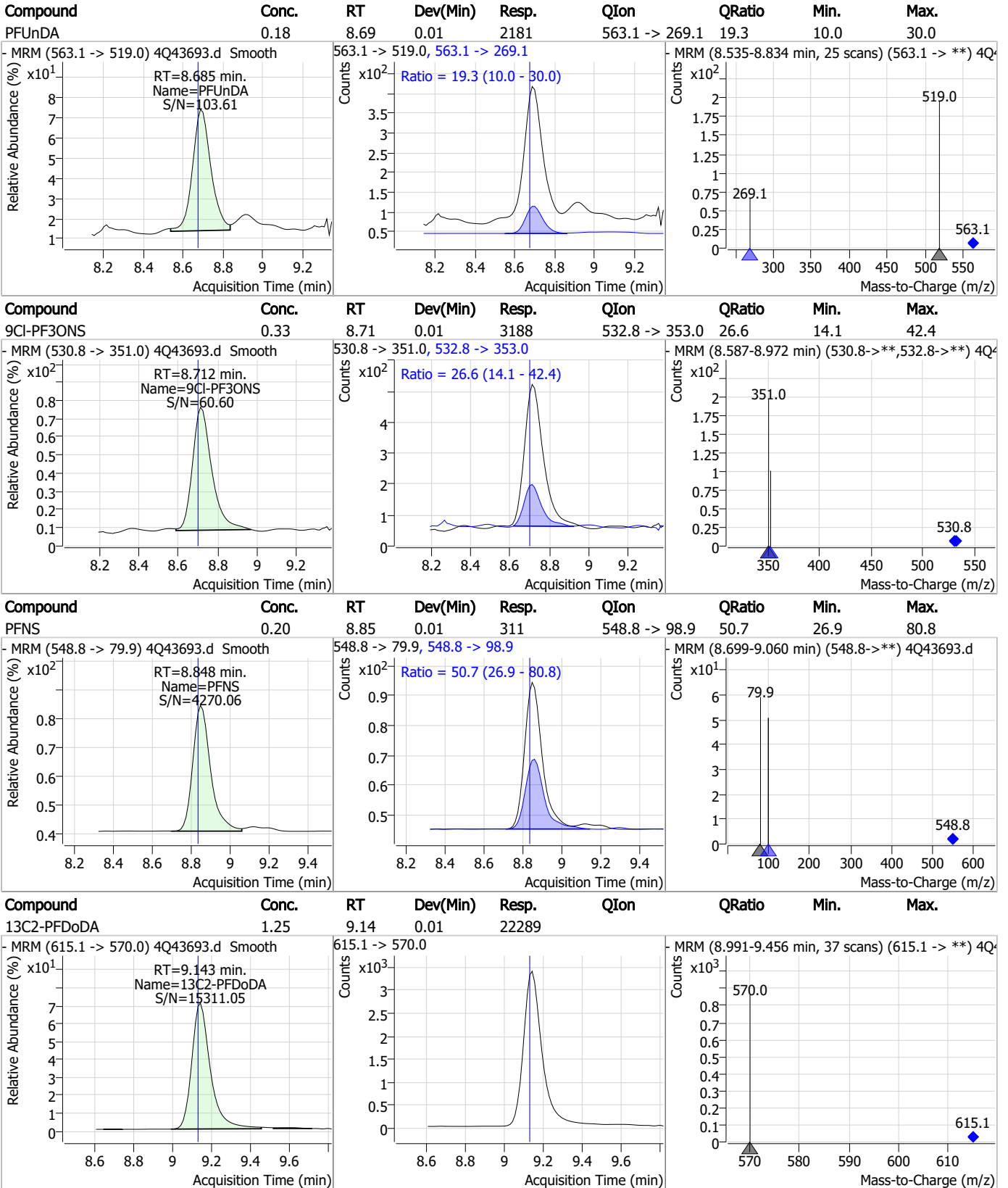
Perfluorinated Compounds by LC/MS/MS



7.7.13
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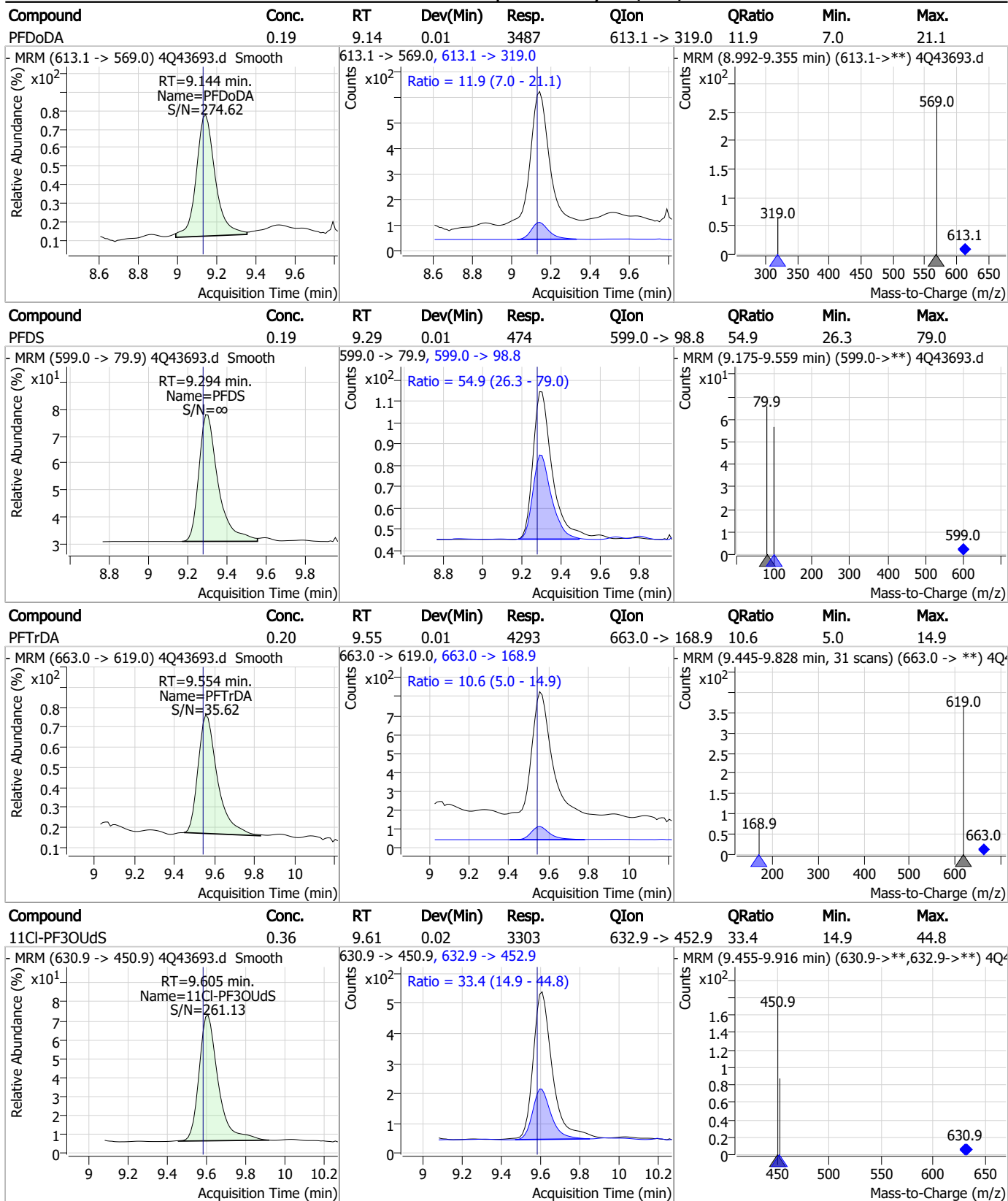
Perfluorinated Compounds by LC/MS/MS



7.7.13 7



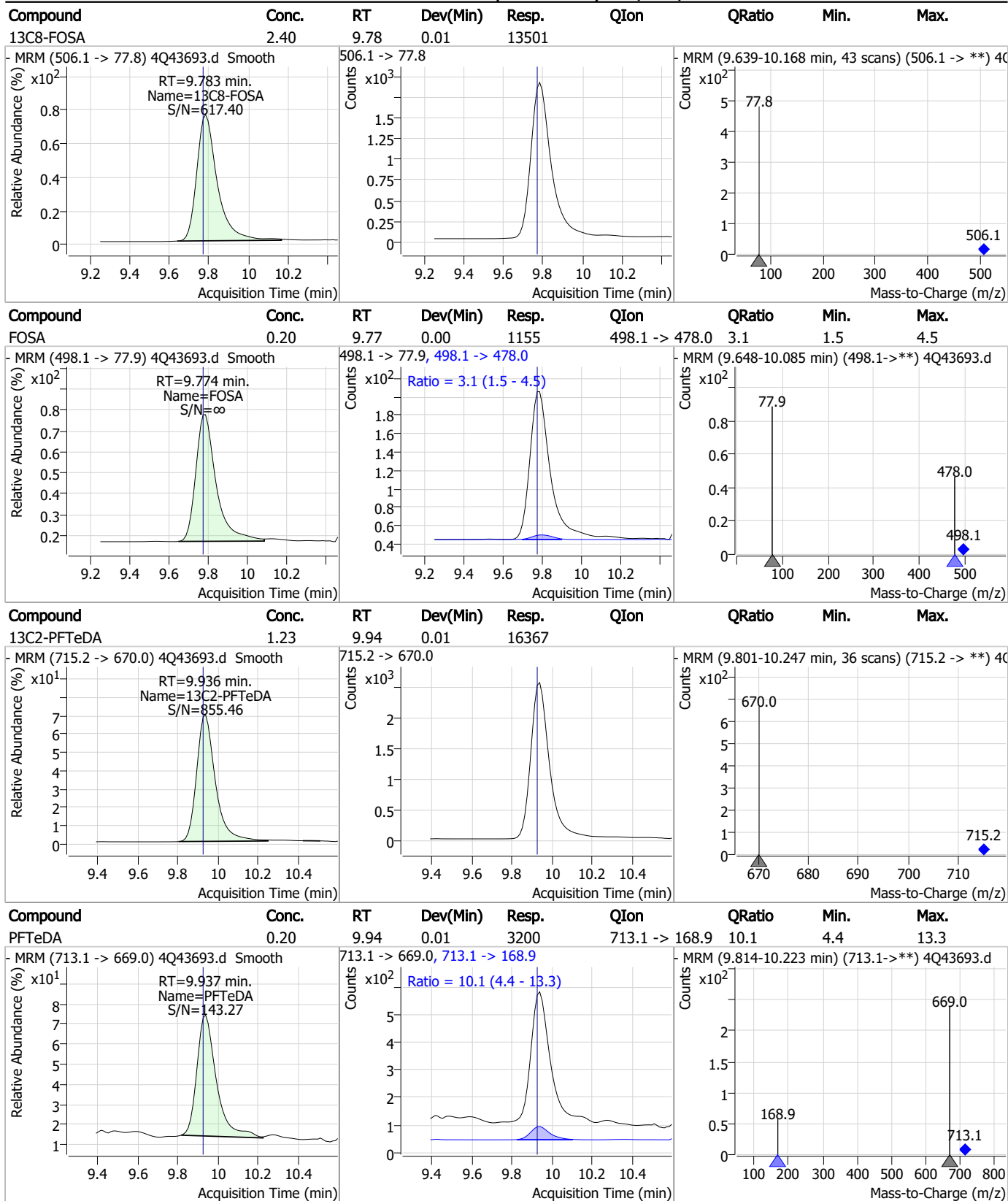
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

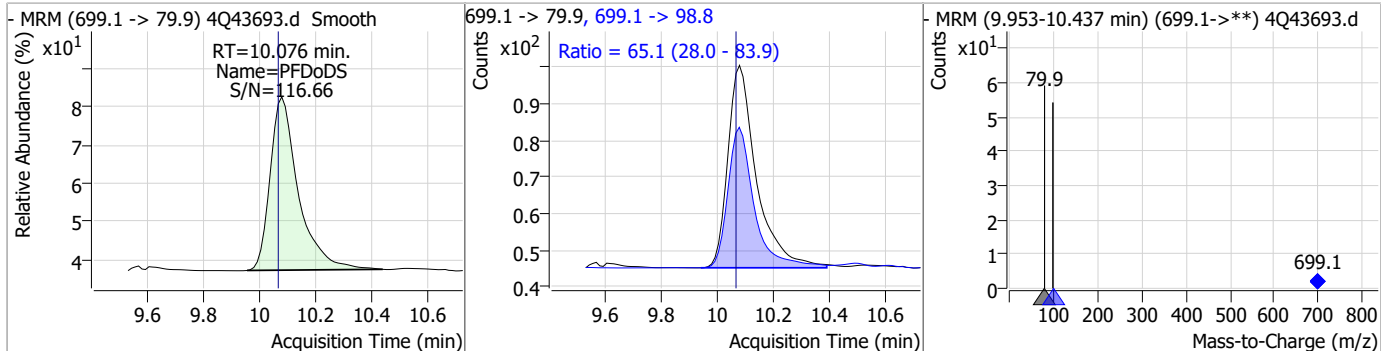


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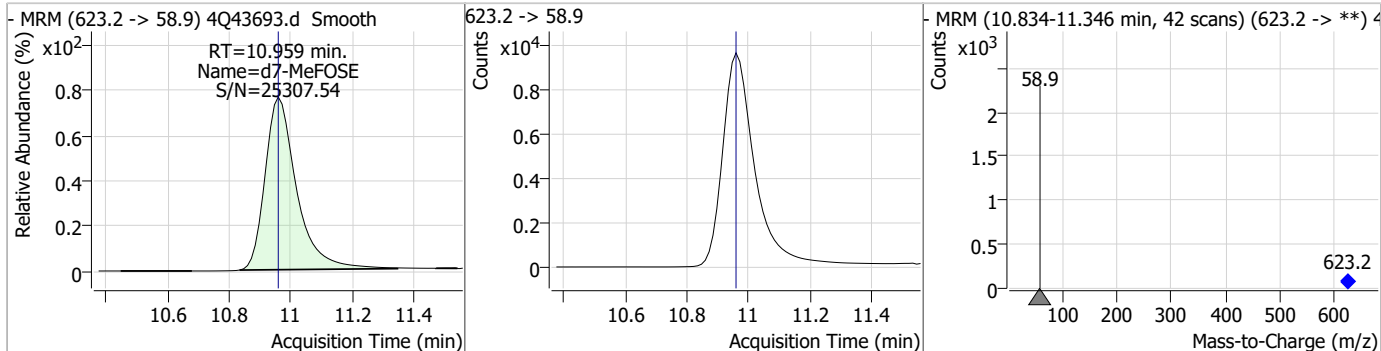
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Perfluorinated Compounds by LC/MS/MS

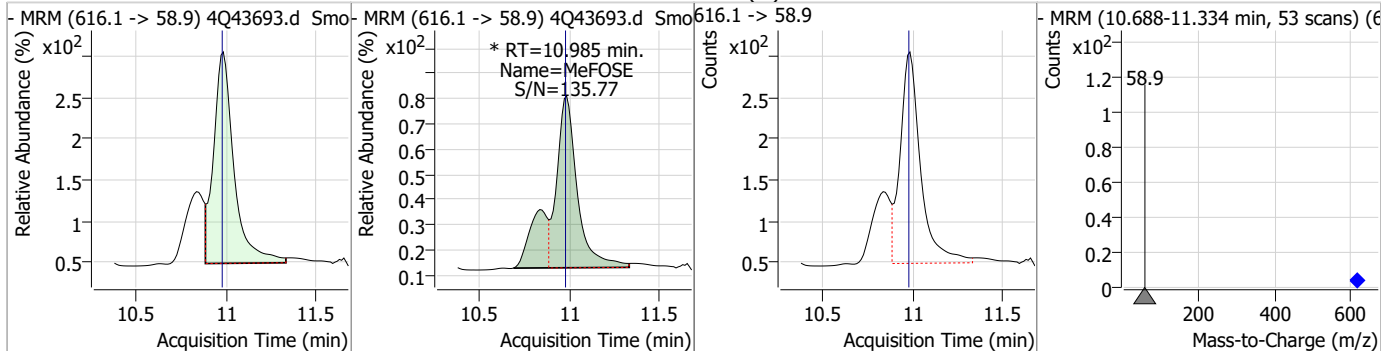
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.18	10.08	0.01	385	699.1 -> 98.8	65.1	28.0	83.9



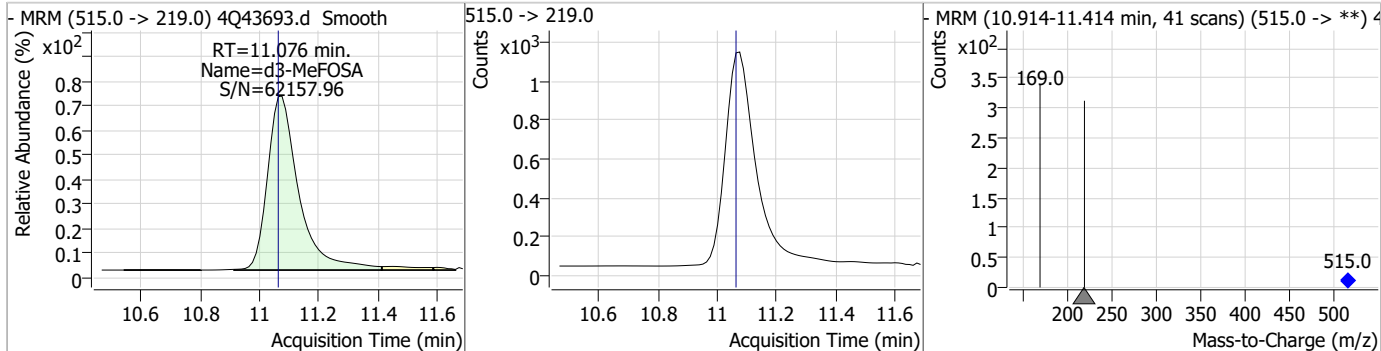
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.31	10.96	0.00	67943				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.95	10.99	0.01	2646 (m)				



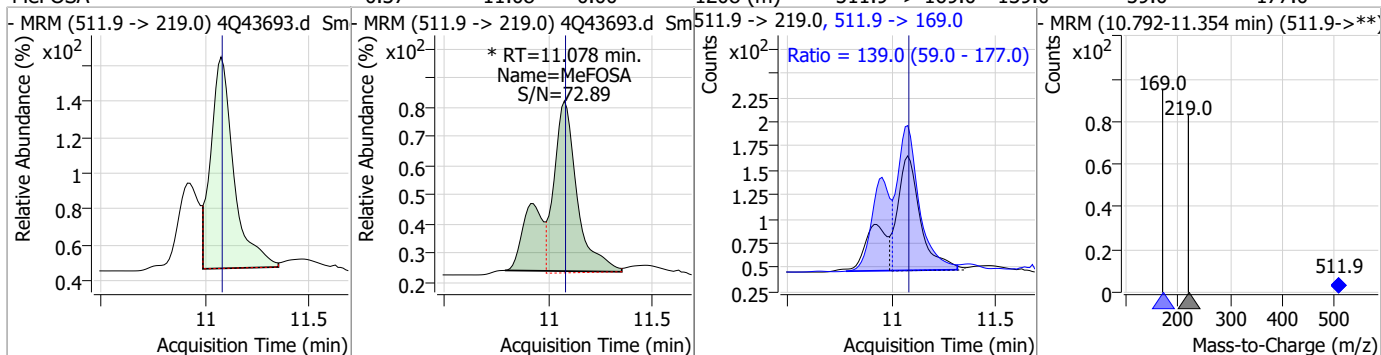
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.54	11.08	0.01	8174				



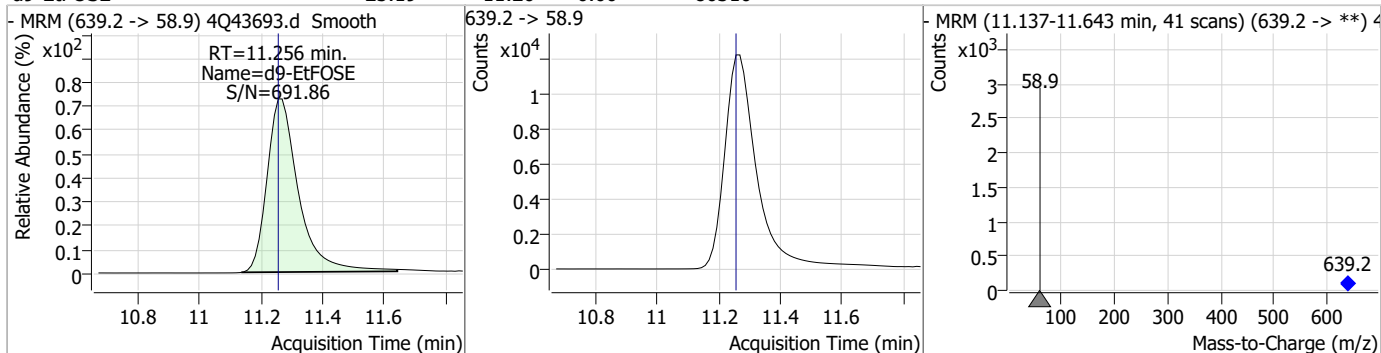
7.7.13
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Perfluorinated Compounds by LC/MS/MS

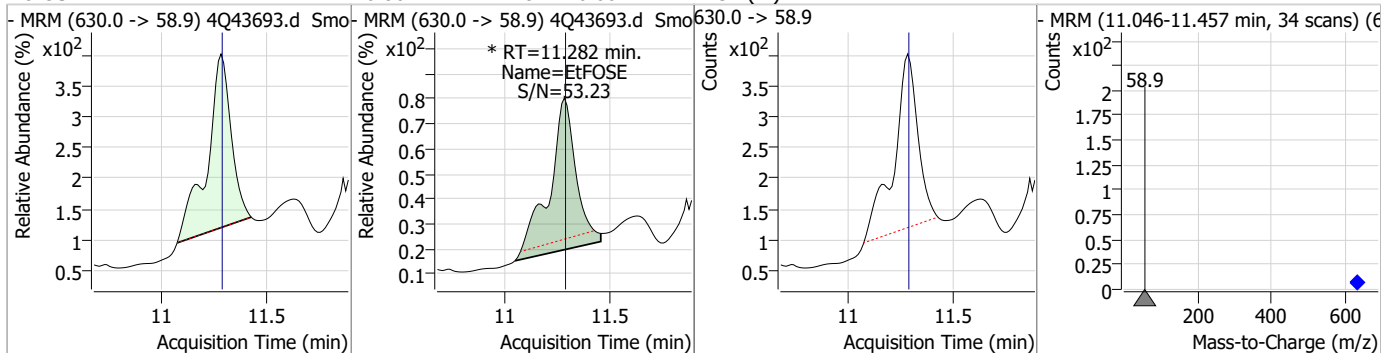
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.37	11.08	0.00	1208 (m)	511.9 -> 169.0	139.0	59.0	177.0



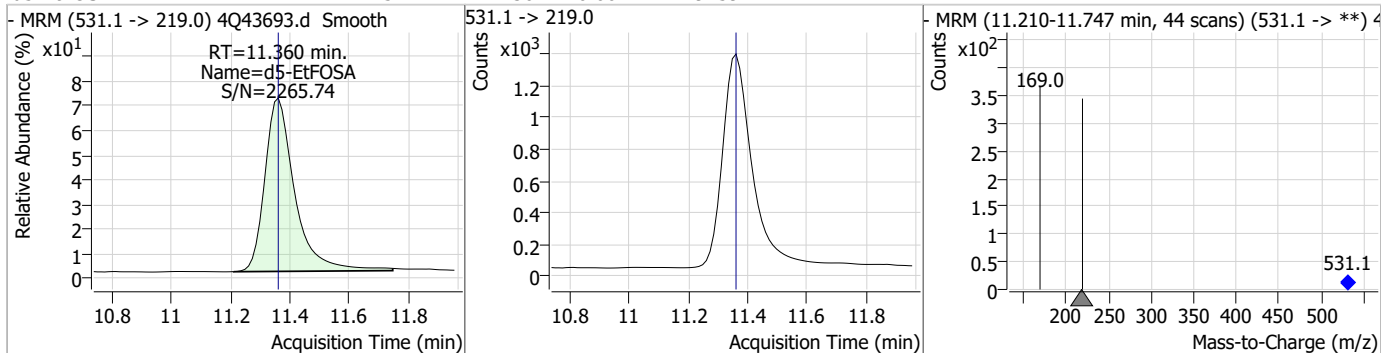
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.19	11.26	0.00	86310				



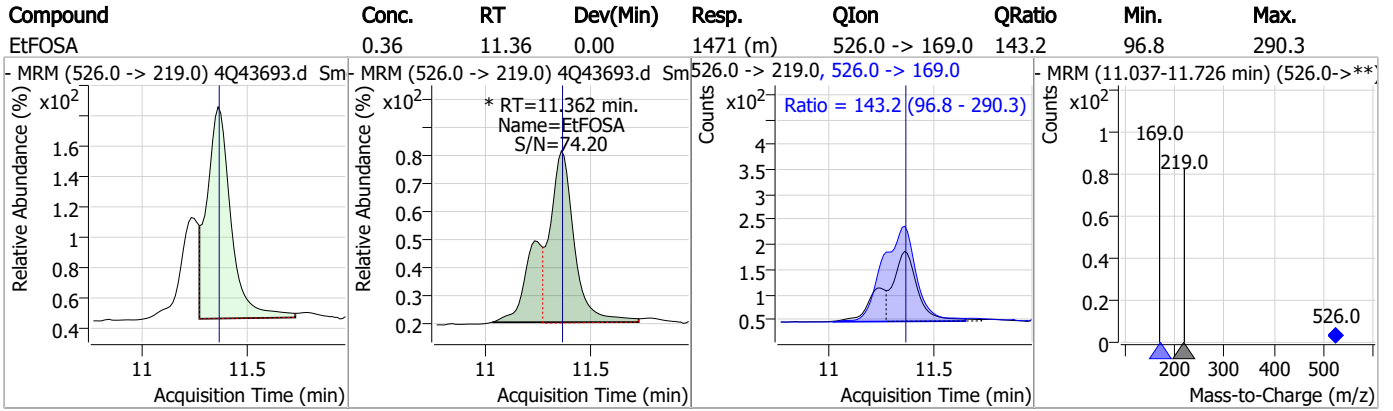
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	0.86	11.28	0.00	2737 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.52	11.36	0.00	9459				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q631-CC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43693.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 15:26 Supervisor approved: 04/27/23 16:36 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.50	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSE	1691-99-2		11.28	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43704.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 6:00:45 PM
 Sample Name : cc631-4
 Vial : P1-A5
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	101015	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	60615	5.00 µg/L	0.012
M5-PFHxA	5.572	318.0 -> 273.0	48974	2.50 µg/L	0.025
M4-PFHpA	6.504	367.1 -> 322.0	24374	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	32151	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	17912	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	16565	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	17537	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	23038	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	17145	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	14847	2.50 µg/L	0.025
M3-PFBS	5.464	302.1 -> 79.9	11064	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	5545	2.50 µg/L	0.012
M8-PFOS	8.380	507.1 -> 79.9	7492	2.50 µg/L	0.026
M2-4:2FTS	5.260	329.1 -> 80.9	1297	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	2124	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3425	5.00 µg/L	0.012
M3-MeFOSAA	8.286	573.2 -> 419.0	14193	5.00 µg/L	0.025
M3-HFPO-DA	5.927	286.9 -> 168.9	25522	10.00 µg/L	0.012
M5-EtFOSAA	8.495	589.2 -> 419.0	11621	5.00 µg/L	0.025
M7-MeFOSE	10.972	623.2 -> 58.9	70239	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	88398	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	8802	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	8060	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	8088	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	55662	5.00 µg/L	0.000
18O2-PFHxS	7.265	403.0 -> 83.9	3909	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	38931	2.50 µg/L	0.014
13C2-PFDA	8.228	515.1 -> 470.1	14783	1.25 µg/L	0.025
13C5-PFNA	7.721	468.0 -> 423.0	19456	1.25 µg/L	0.025
13C2-PFHxA	5.573	315.1 -> 270.0	40888	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1297	6.32 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.4%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2124	7.09 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 141.8%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3425	6.38 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.5%		
13C2-PFDoDA	9.143	615.1 -> 570.0	23038	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-PFTeDA	9.936	715.2 -> 670.0	17145	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-PFBS	5.464	302.1 -> 79.9	11064	2.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C3-PFHxS	7.254	402.1 -> 79.9	5545	2.55 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 = 101.9%		
13C4-PFBA	2.936	216.8 -> 171.9	101015	10.50 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C4-PFHpA	6.504	367.1 -> 322.0	24374	2.44 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C5-PFHxA	5.572	318.0 -> 273.0	48974	2.52 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C5-PFPeA	4.387	268.3 -> 223.0	60615	4.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C6-PFDA	8.216	519.1 -> 474.1	16565	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C7-PFUnDA	8.697	570.0 -> 525.1	17537	1.33 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C8-FOSA	9.796	506.1 -> 77.8	14847	2.71 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C8-PFOA	7.163	421.1 -> 376.0	32151	2.46 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C8-PFOS	8.380	507.1 -> 79.9	7492	2.26 µg/L	0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.3%		
13C9-PFNA	7.721	472.1 -> 427.0	17912	1.22 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
d3-MeFOSAA	8.286	573.2 -> 419.0	14193	5.56 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.1%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	25522	9.50 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
d3-MeFOSA	11.076	515.0 -> 219.0	8060	2.57 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
d5-EtFOSAA	8.495	589.2 -> 419.0	11621	5.51 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.2%		
d7-MeFOSE	10.972	623.2 -> 58.9	70239	26.90 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
d9-EtFOSE	11.269	639.2 -> 58.9	88398	26.52 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 106.1%		
d5-EtFOSA	11.360	531.1 -> 219.0	8802	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	18337	8.82 µg/L	98
		327.1 -> 80.9	7739		
6:2FTS	6.936	427.1 -> 407.0	17103	8.37 µg/L	96
		427.1 -> 80.9	6925		
8:2FTS	8.003	527.1 -> 507.0	17210	8.96 µg/L	96
		527.1 -> 80.8	7682		
EtFOSAA	8.496	584.2 -> 419.1	5604	2.53 µg/L	m 85
		584.2 -> 526.0	2730		
FOSA	9.786	498.1 -> 77.9	14369	2.23 µg/L	99
		498.1 -> 478.0	373		
MeFOSAA	8.286	570.1 -> 419.0	6071	2.42 µg/L	m 95
		570.1 -> 483.0	1032		
PFBA	2.932	212.8 -> 168.9	27324	9.19 µg/L	100
PFBS	5.465	298.7 -> 79.9	10644	2.11 µg/L	96
		298.7 -> 98.8	4445		
PFDA	8.216	512.9 -> 469.0	27481	2.23 µg/L	98
		512.9 -> 219.0	5889		
PFDODA	9.144	613.1 -> 569.0	44730	2.38 µg/L	99
		613.1 -> 319.0	6182		
PFDS	9.307	599.0 -> 79.9	6073	2.71 µg/L	94

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	2956			
PFHpA	6.505	363.1 -> 319.0	39243	2.48	µg/L	98
		363.1 -> 169.0	7129			
PFHpS	7.848	449.0 -> 79.9	7248	2.76	µg/L	95
		449.0 -> 98.9	3730			
PFHxA	5.575	313.0 -> 269.0	44569	2.42	µg/L	100
		313.0 -> 118.9	1371			
PFHxS	7.267	398.7 -> 79.9	5964	2.18	µg/L	m 97
		398.7 -> 98.9	3253			
PFNA	7.722	463.0 -> 419.0	28930	2.40	µg/L	98
		463.0 -> 219.0	7163			
PFNS	8.861	548.8 -> 79.9	4033	2.88	µg/L	94
		548.8 -> 98.9	1999			
PFOA	7.164	413.0 -> 369.0	47125	2.53	µg/L	97
		413.0 -> 169.0	9390			
PFOS	8.367	498.9 -> 79.9	9446	2.59	µg/L	m 92
		498.9 -> 98.8	4591			
PFPeA	4.389	263.0 -> 219.0	71884	4.96	µg/L	100
PFPeS	6.531	349.1 -> 79.9	5585	2.45	µg/L	97
		349.1 -> 98.9	2527			
PFTeDA	9.937	713.1 -> 669.0	42303	2.51	µg/L	98
		713.1 -> 168.9	3415			
PFTrDA	9.566	663.0 -> 619.0	56449	2.52	µg/L	99
		663.0 -> 168.9	5704			
PFUnDA	8.698	563.1 -> 519.0	29829	2.32	µg/L	99
		563.1 -> 269.1	5776			
11CI-PF3OUdS	9.605	630.9 -> 450.9	45868	5.07	µg/L	98
		632.9 -> 452.9	14087			
9CI-PF3ONS	8.725	530.8 -> 351.0	45130	4.79	µg/L	91
		532.8 -> 353.0	14933			
ADONA	6.756	376.9 -> 250.9	127285	4.88	µg/L	98
		376.9 -> 84.8	33314			
HFPO-DA	5.928	284.9 -> 168.9	12272	4.86	µg/L	92
		284.9 -> 184.9	1309			
3:3FTCA	3.867	241.0 -> 177.0	7530	12.31	µg/L	99
		241.0 -> 117.0	768			
5:3FTCA	6.217	341.0 -> 237.1	156721	58.94	µg/L	98
		341.0 -> 217.0	112373			
7:3FTCA	7.686	441.0 -> 316.9	71488	61.43	µg/L	96
		441.0 -> 336.9	164173			
EtFOSA	11.375	526.0 -> 219.0	19464	5.18	µg/L	63
		526.0 -> 169.0	27119			
EtFOSE	11.282	630.0 -> 58.9	39687	12.12	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	13797	4.34	µg/L	m 55
		511.9 -> 169.0	23185			
MeFOSE	10.985	616.1 -> 58.9	31823	11.00	µg/L	m 100
PFDoDS	10.076	699.1 -> 79.9	5562	2.82	µg/L	98
		699.1 -> 98.8	3019			
NFDHA	5.453	295.0 -> 201.0	5350	4.48	µg/L	92
		295.0 -> 84.9	1460			
PFMBA	4.803	279.0 -> 85.1	41411	4.96	µg/L	100
PFMPA	3.540	229.0 -> 84.9	36001	5.00	µg/L	100
PFEESA	5.997	314.8 -> 134.9	66481	4.14	µg/L	99
		314.8 -> 82.9	2246			

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

7.7.14
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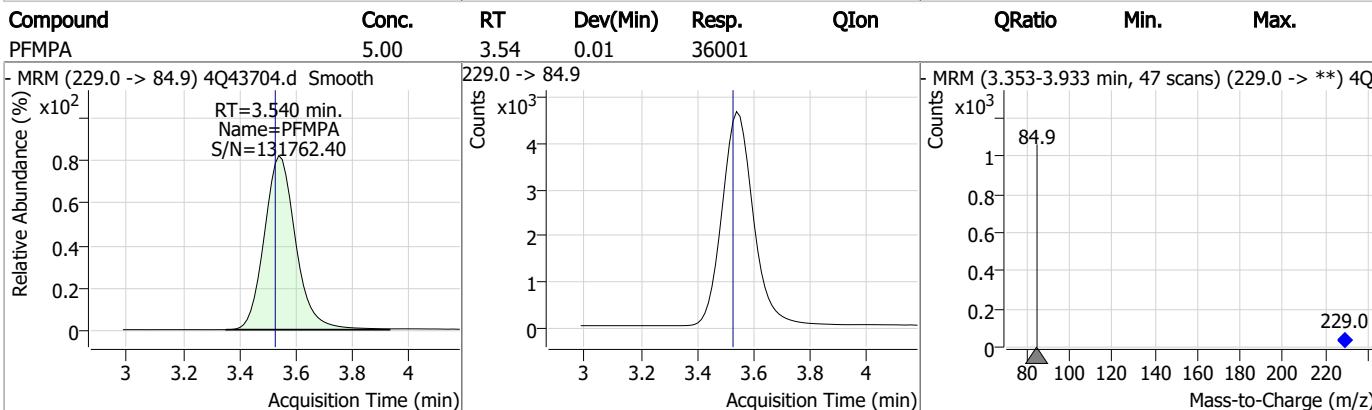
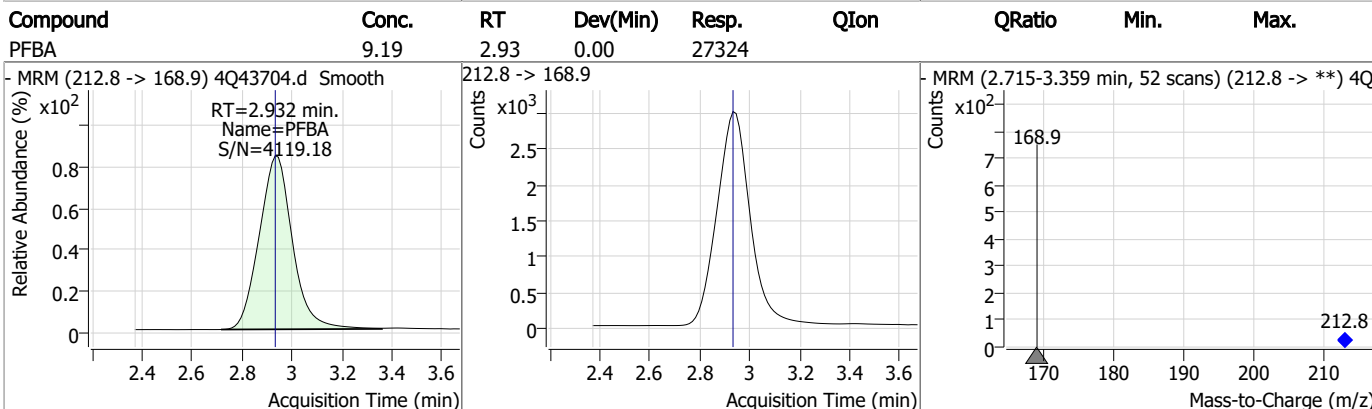
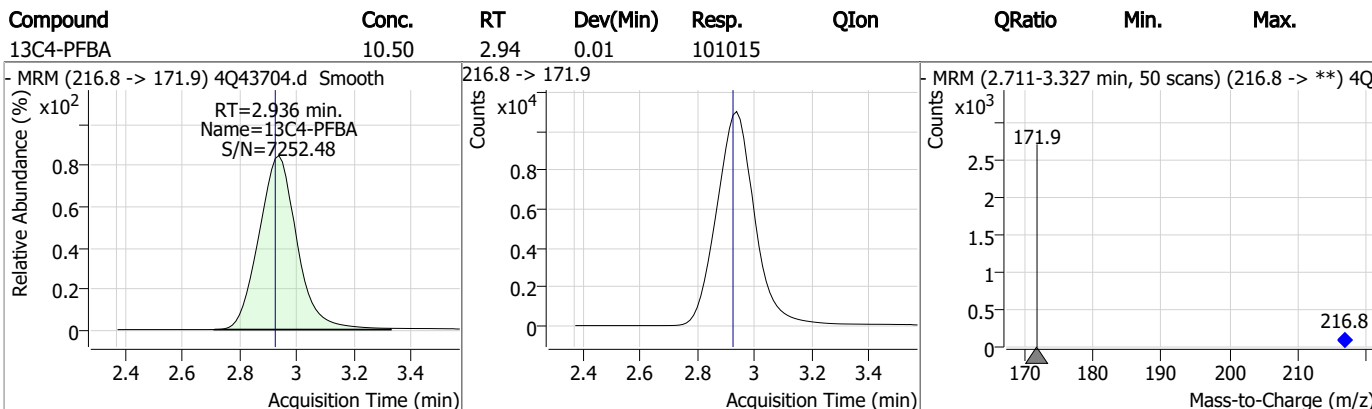
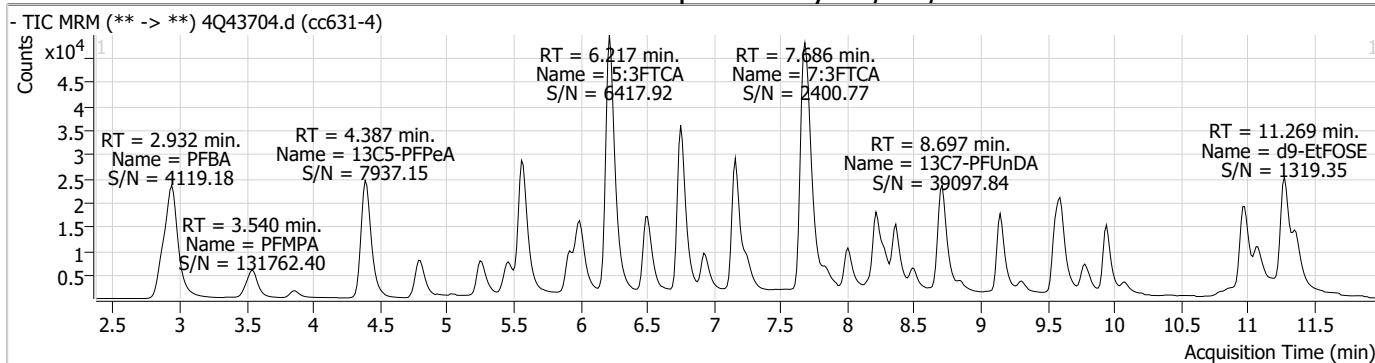
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.14

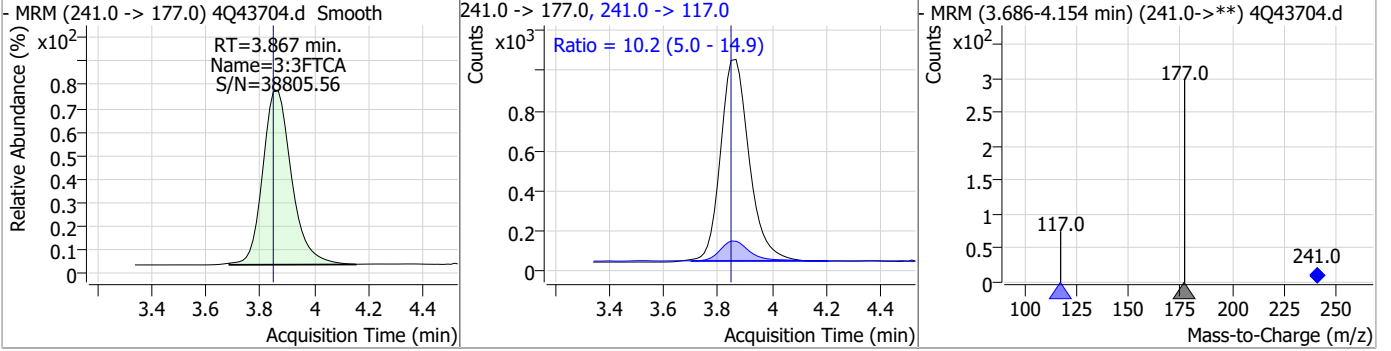
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Perfluorinated Compounds by LC/MS/MS

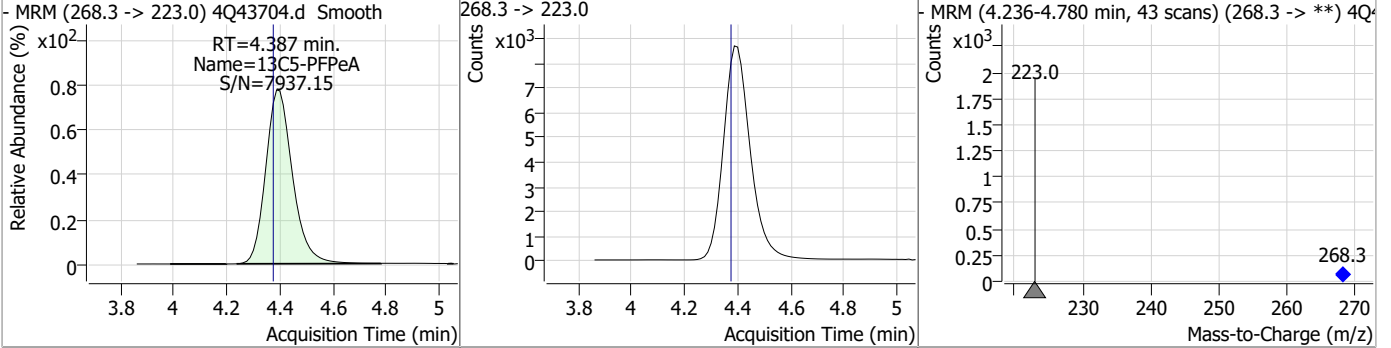


Perfluorinated Compounds by LC/MS/MS

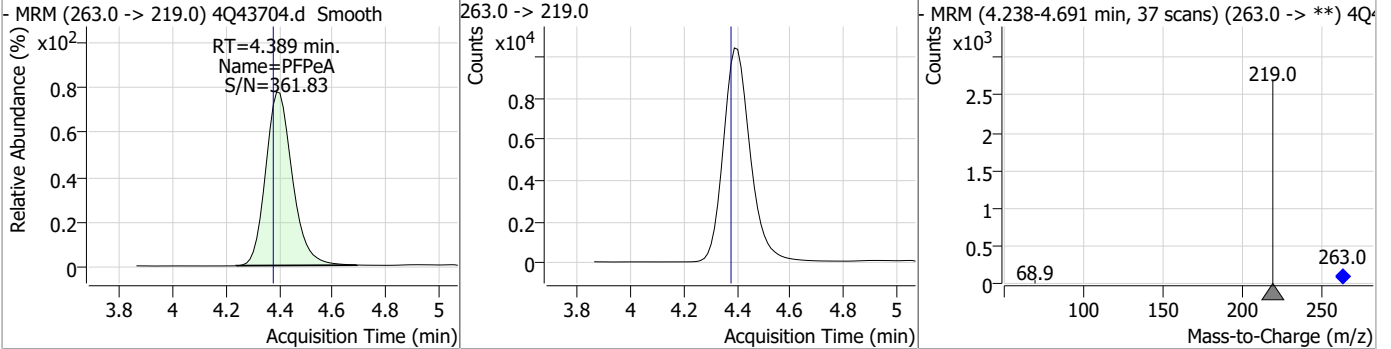
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	12.31	3.87	0.02	7530	241.0 -> 117.0	10.2	5.0	14.9



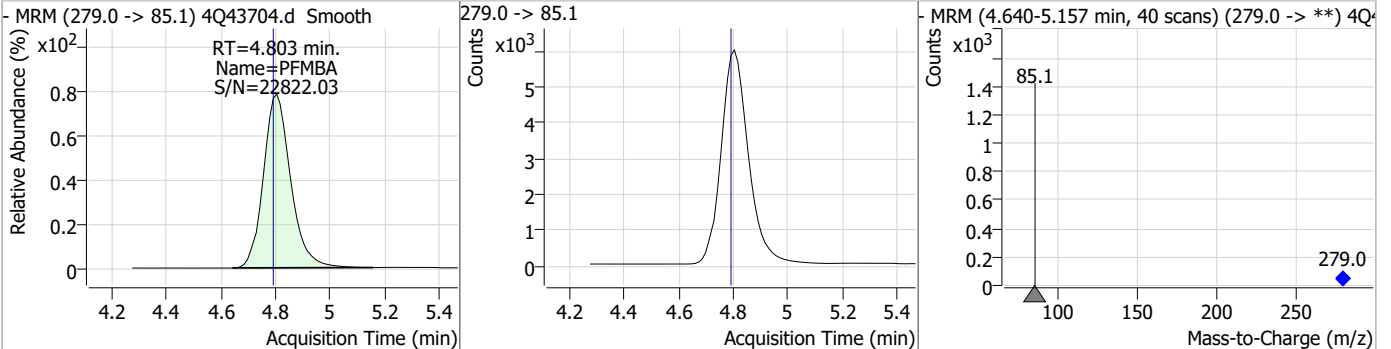
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.90	4.39	0.01	60615				



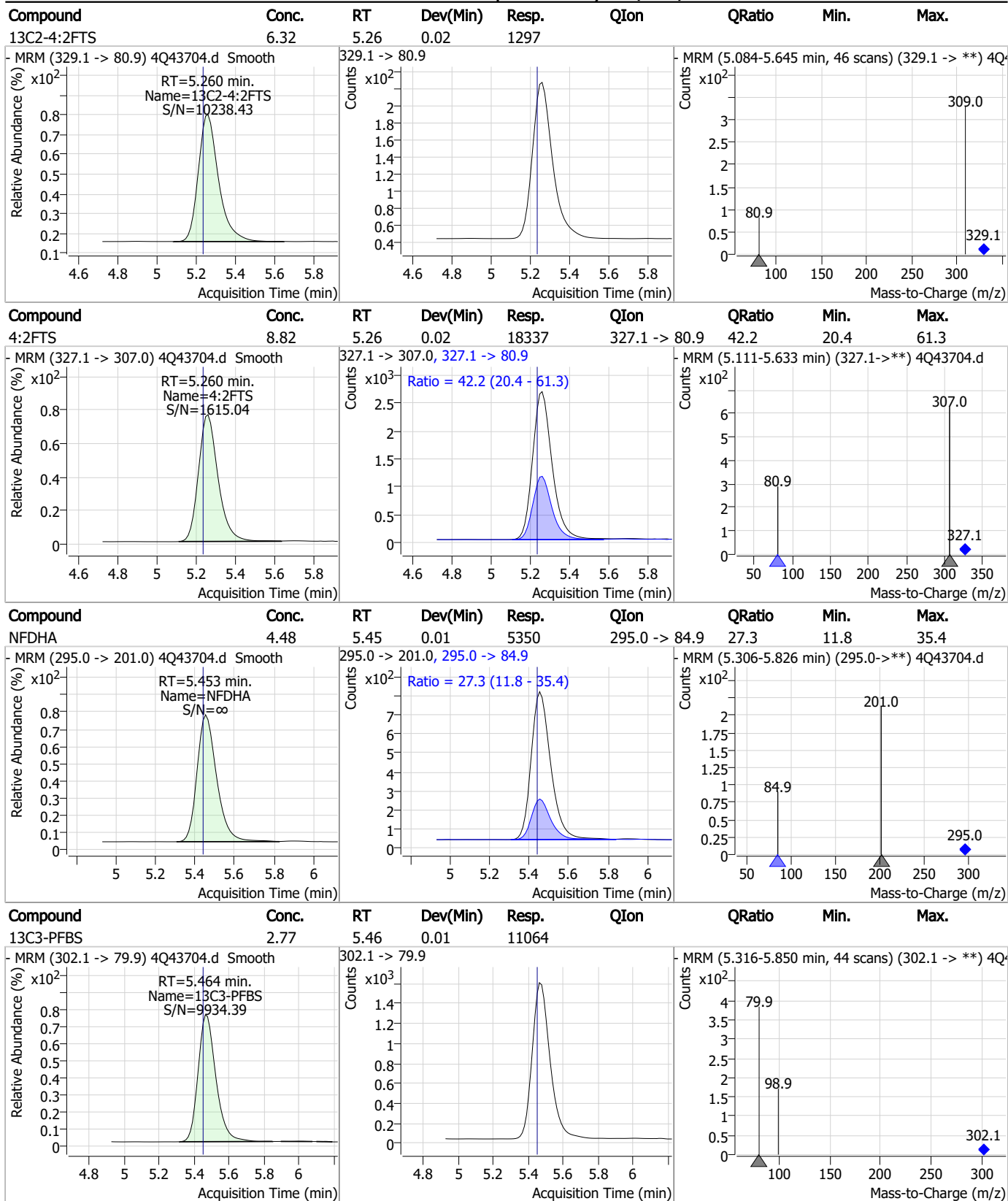
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.96	4.39	0.01	71884				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.96	4.80	0.01	41411				

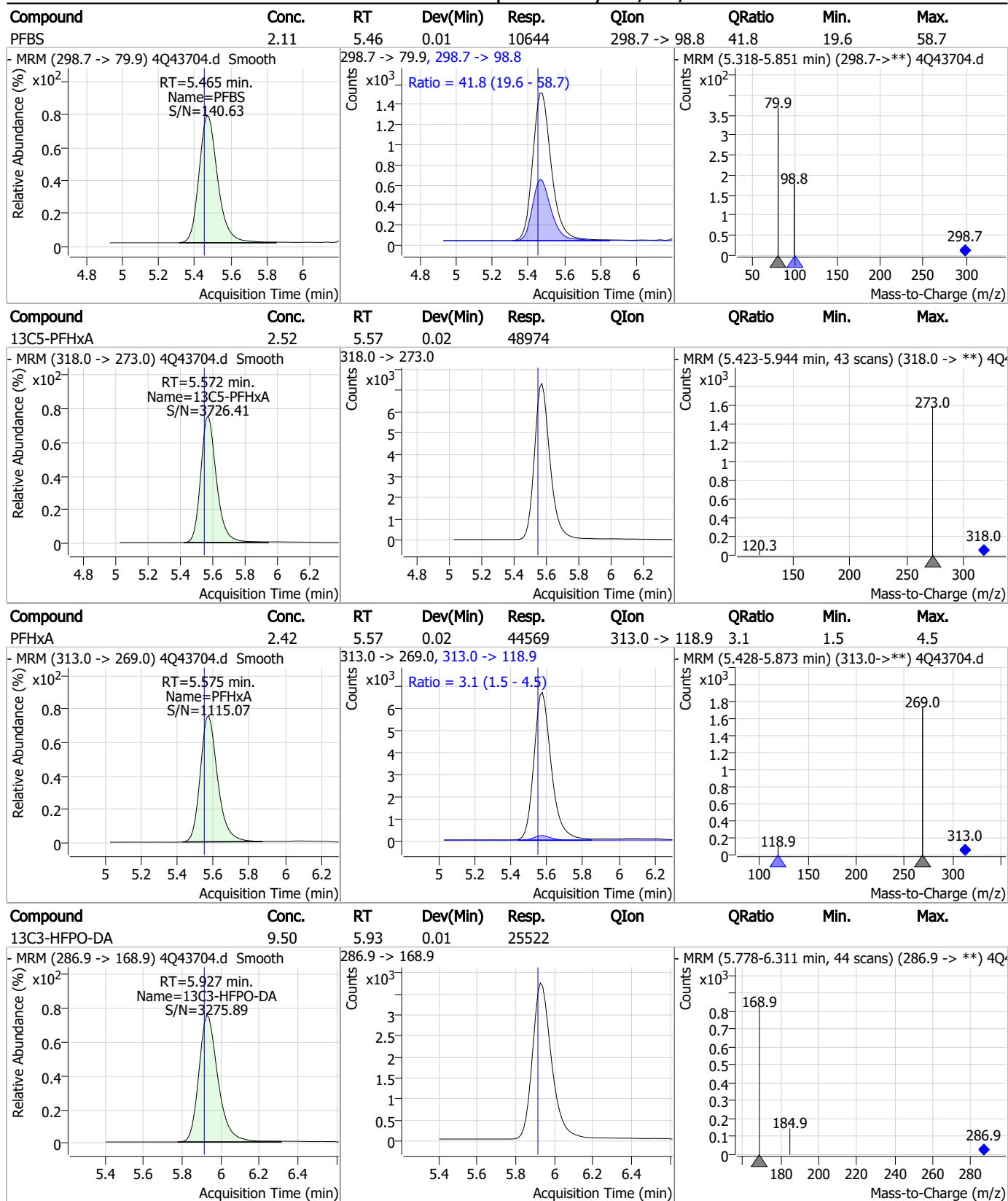


Perfluorinated Compounds by LC/MS/MS



7.7.14

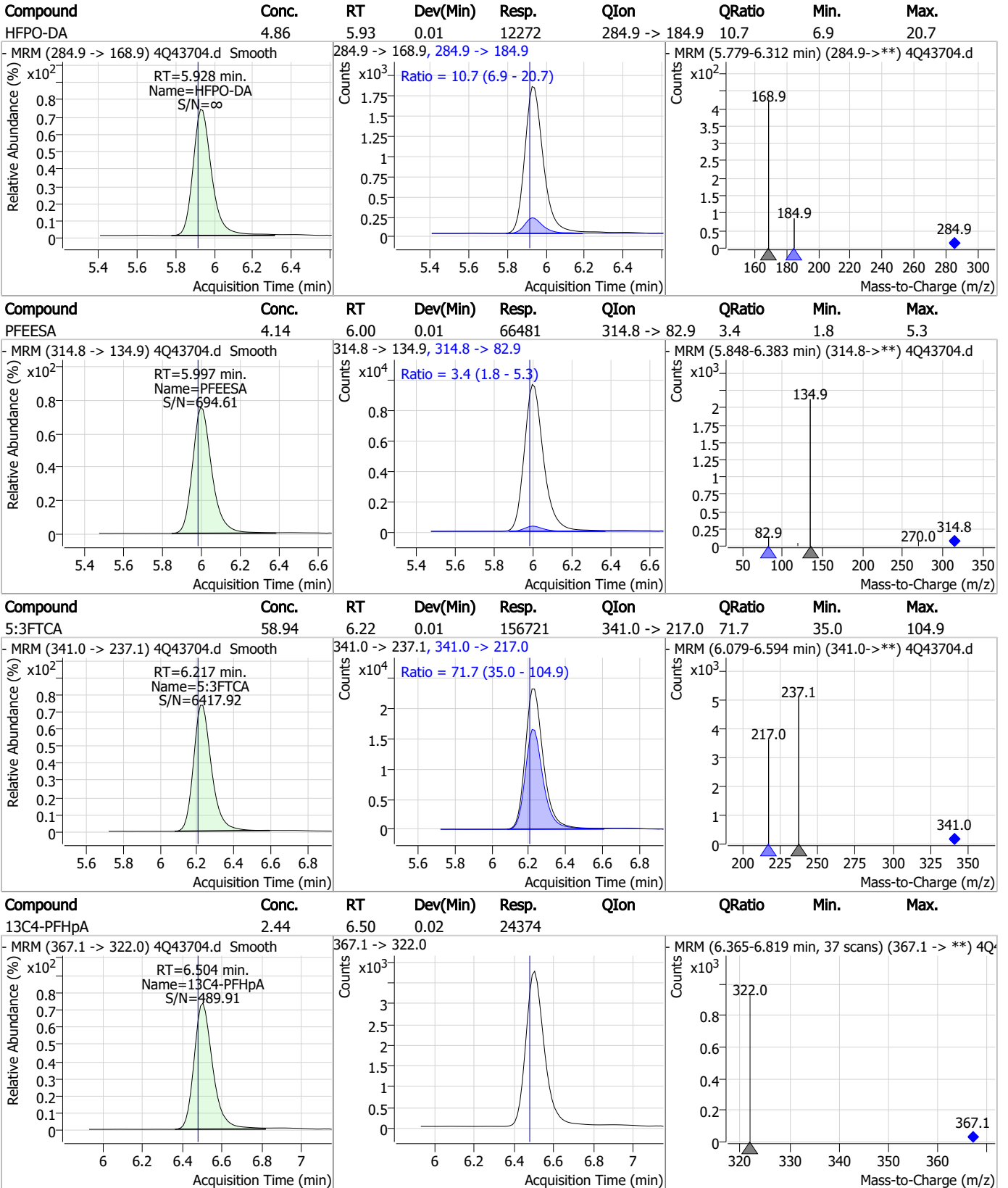
Perfluorinated Compounds by LC/MS/MS



7.7.14

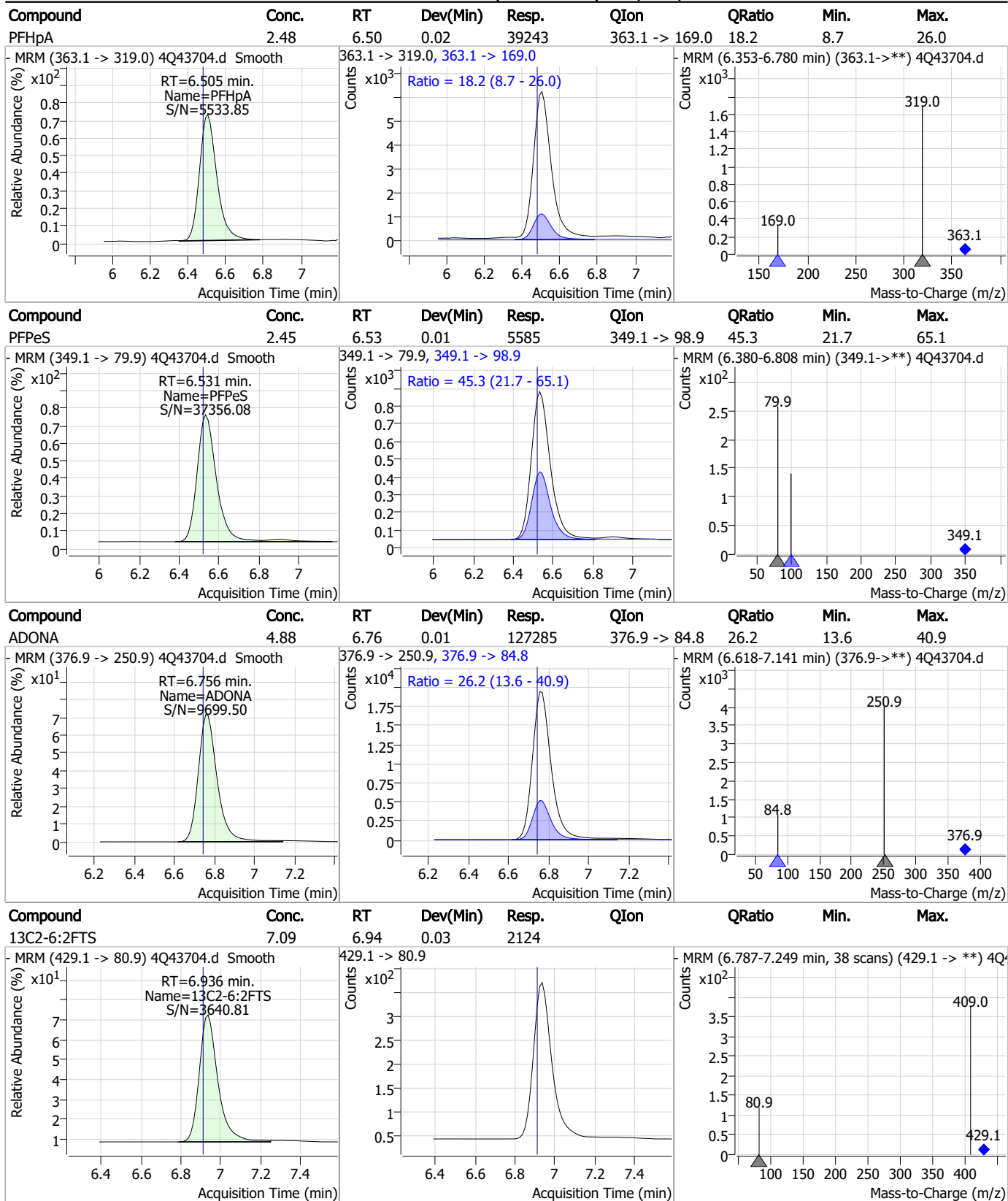
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Perfluorinated Compounds by LC/MS/MS



7.7.14
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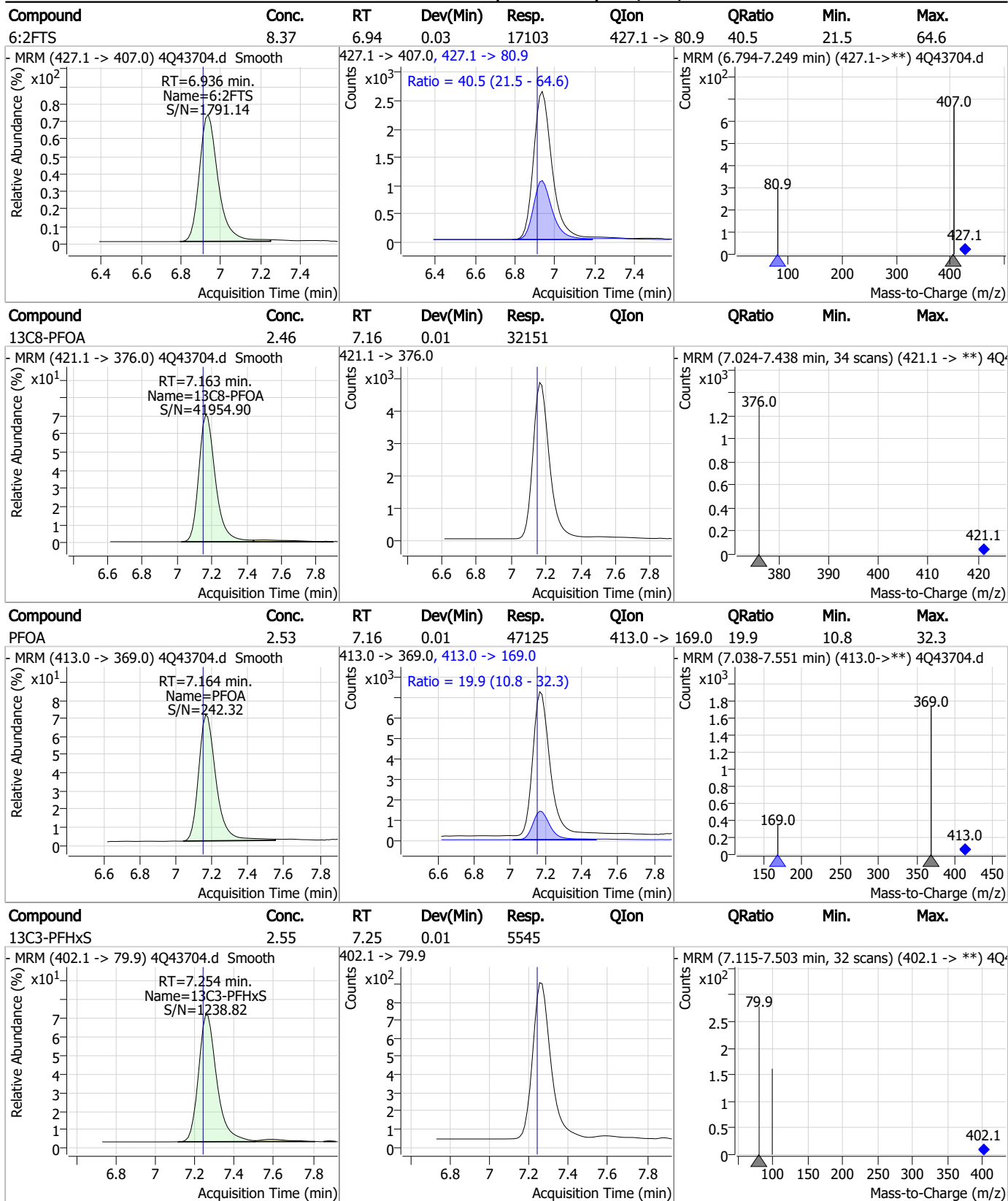
Perfluorinated Compounds by LC/MS/MS



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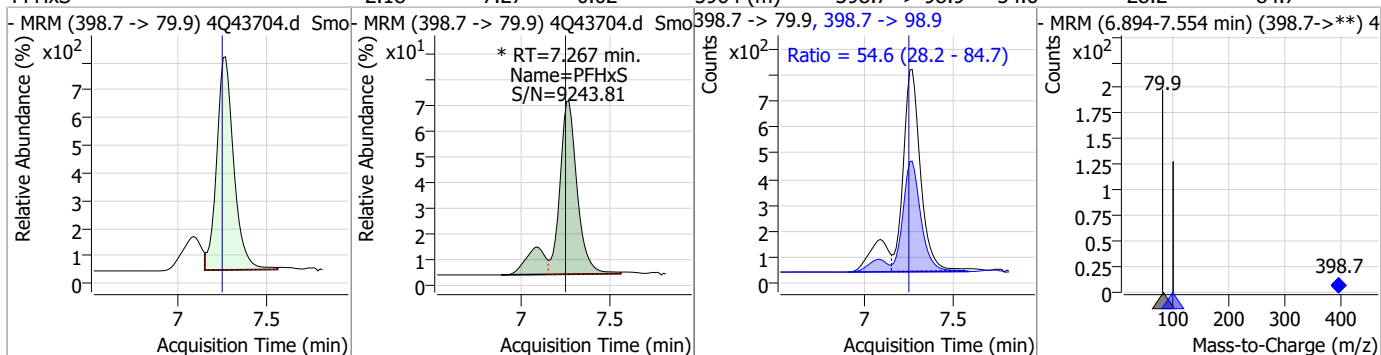
Perfluorinated Compounds by LC/MS/MS



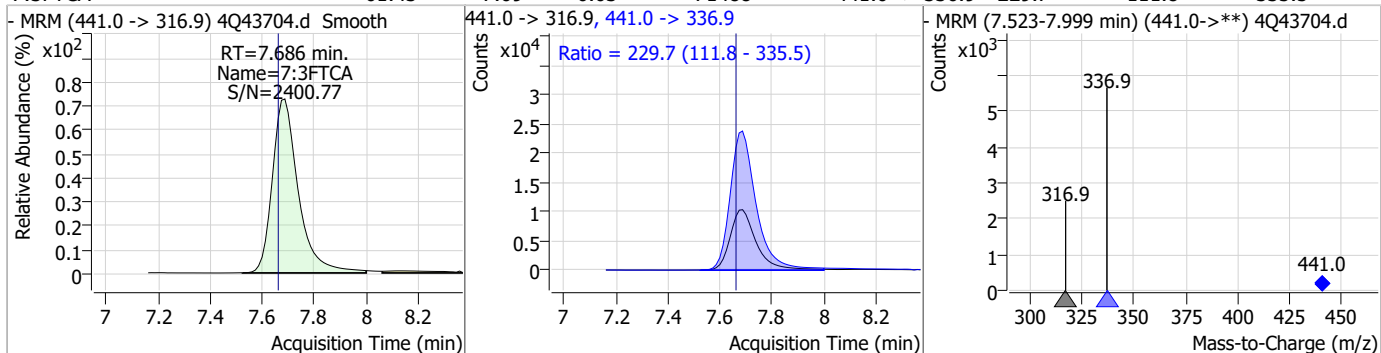
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Perfluorinated Compounds by LC/MS/MS

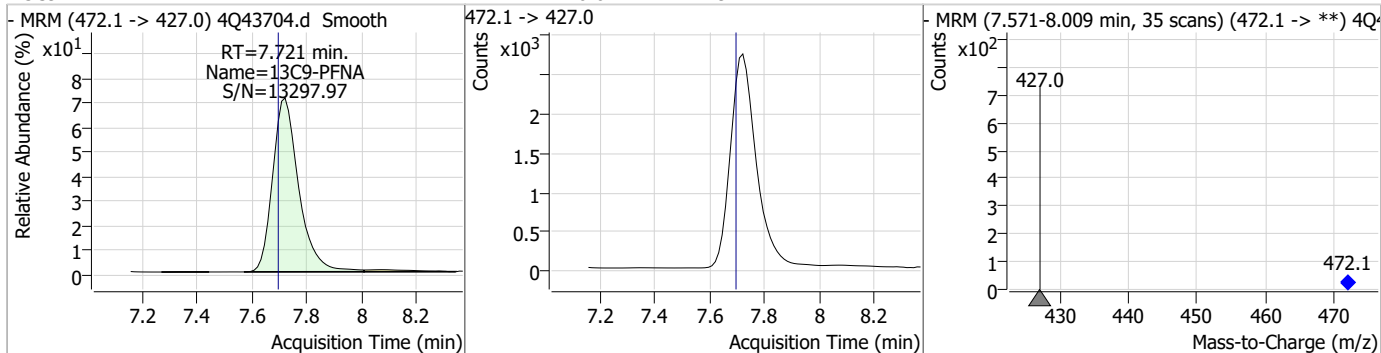
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.18	7.27	0.02	5964 (m)	398.7 -> 98.9	54.6	28.2	84.7



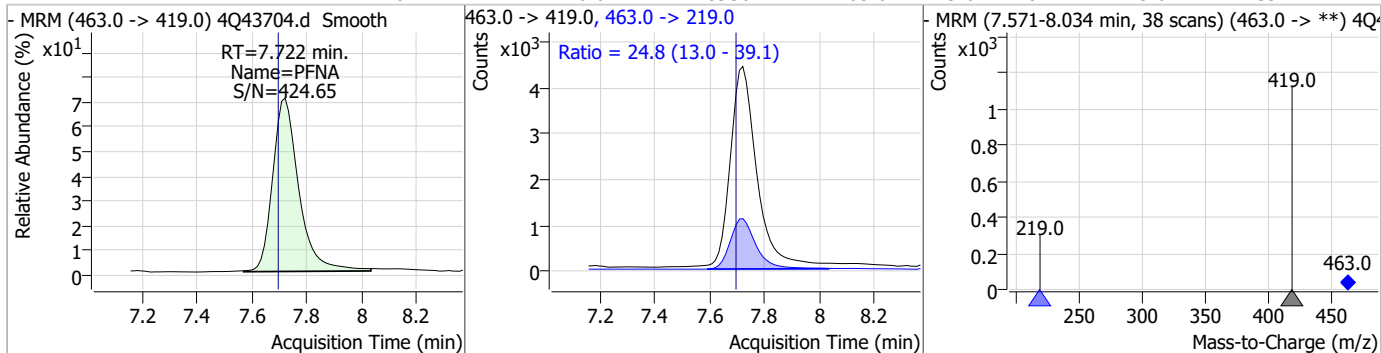
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	61.43	7.69	0.03	71488	441.0 -> 336.9	229.7	111.8	335.5



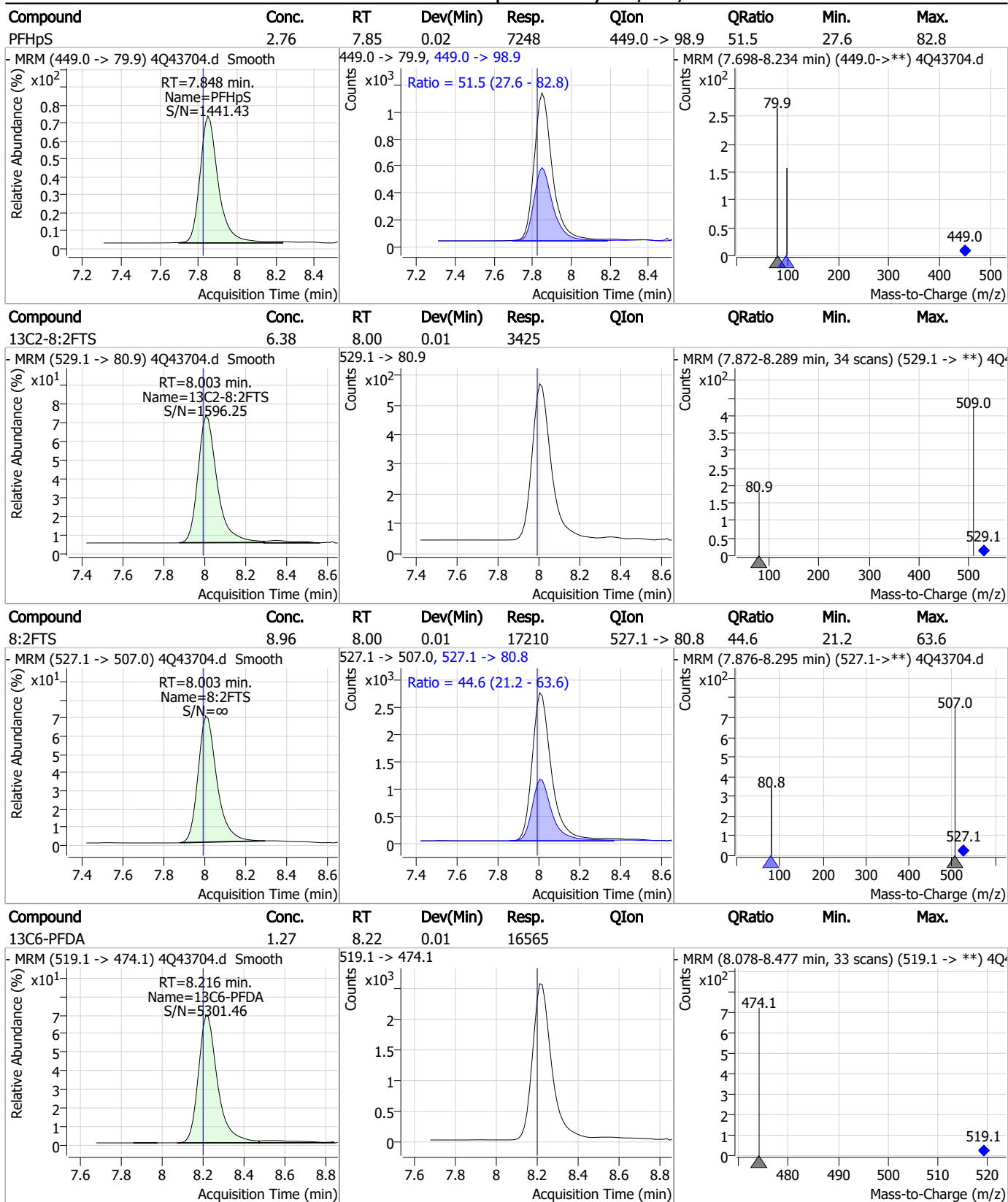
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.22	7.72	0.02	17912	472.1 -> 427.0	35	427.1	472.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.40	7.72	0.02	28930	463.0 -> 219.0	24.8	13.0	39.1



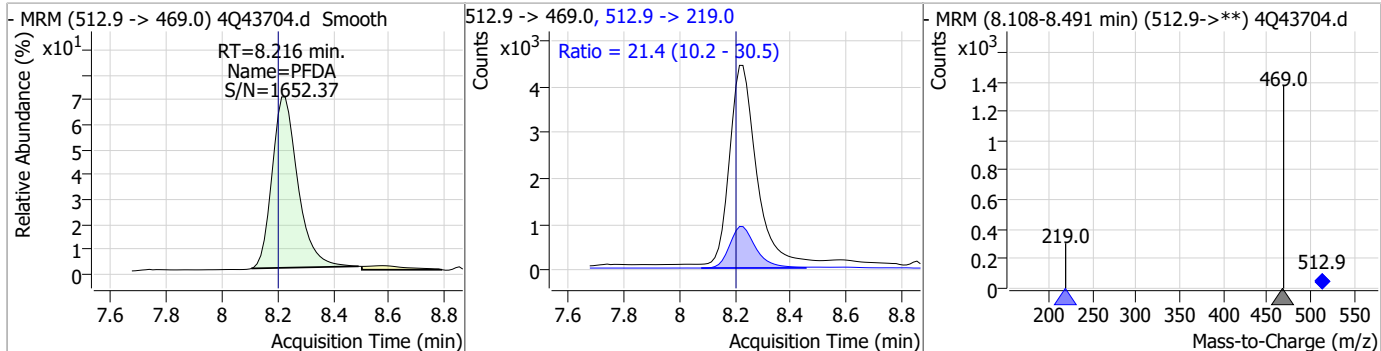
Perfluorinated Compounds by LC/MS/MS



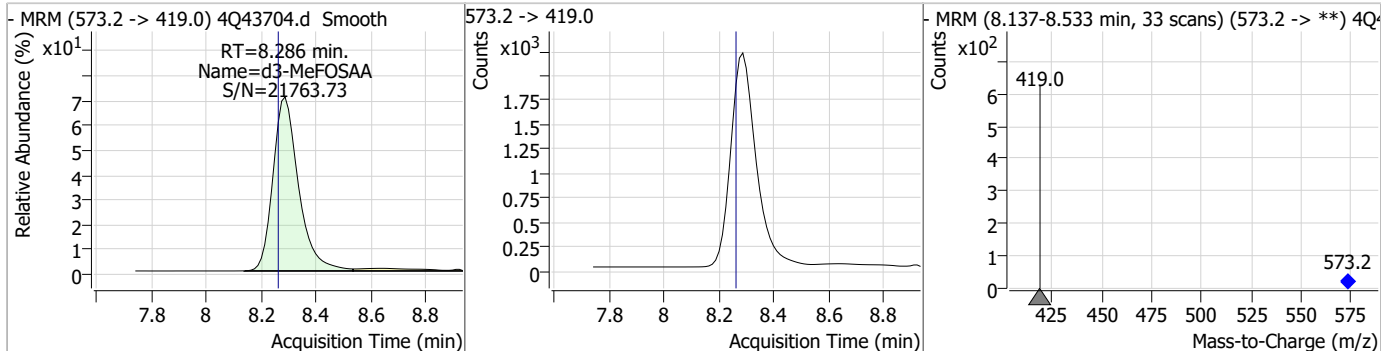
7.7.14

Perfluorinated Compounds by LC/MS/MS

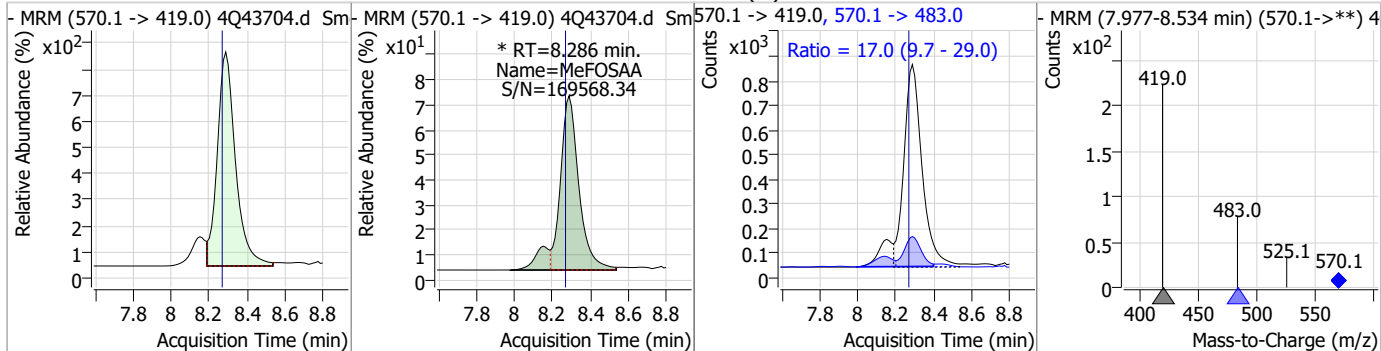
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.23	8.22	0.01	27481	512.9 -> 219.0	21.4	10.2	30.5



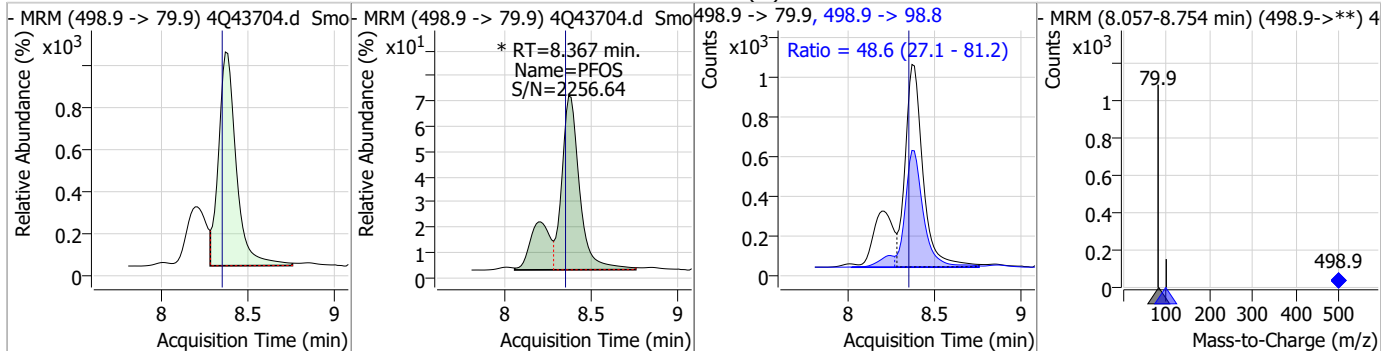
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.56	8.29	0.02	14193				



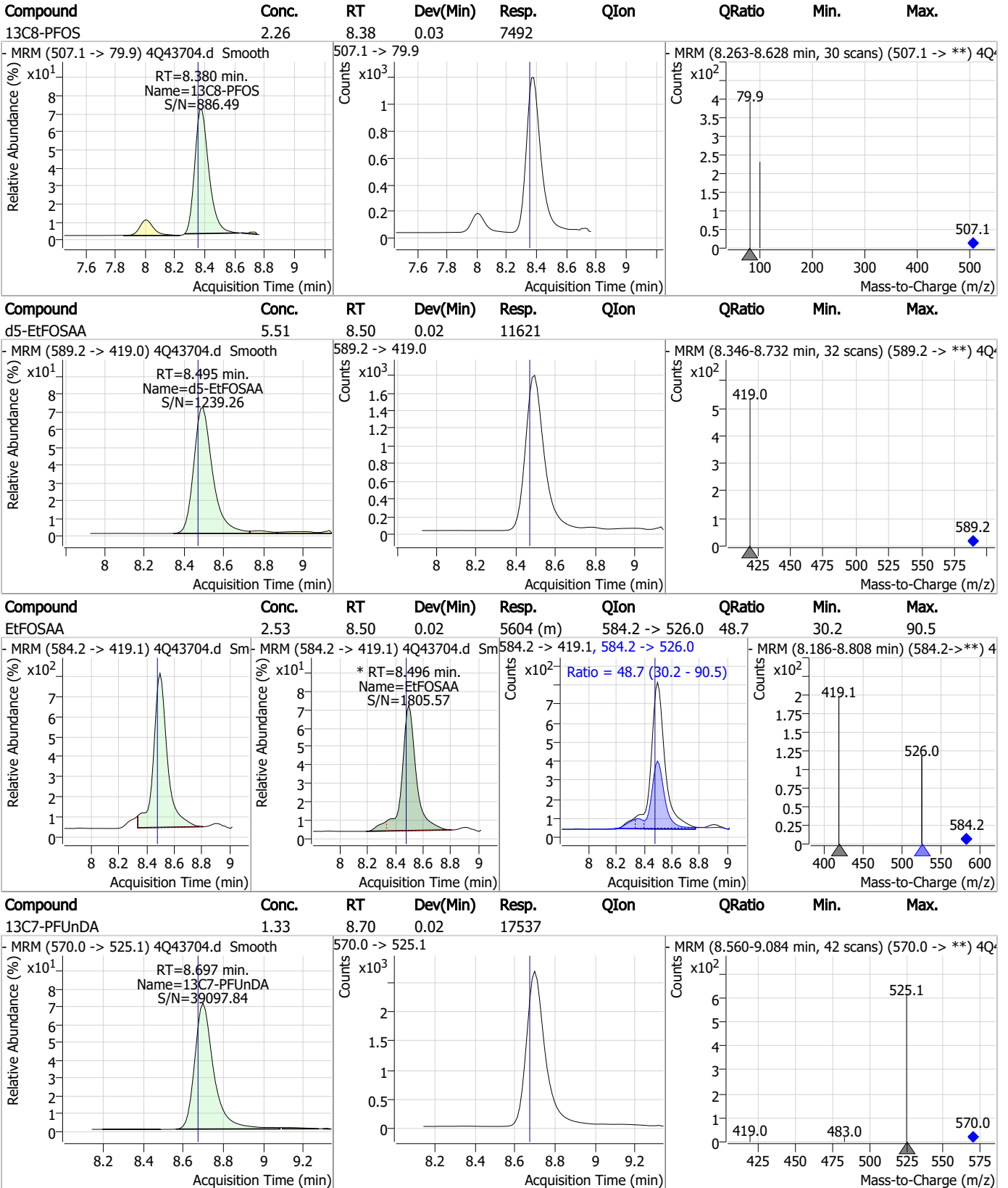
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.42	8.29	0.02	6071 (m)	570.1 -> 483.0	17.0	9.7	29.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.59	8.37	0.02	9446 (m)	498.9 -> 98.8	48.6	27.1	81.2



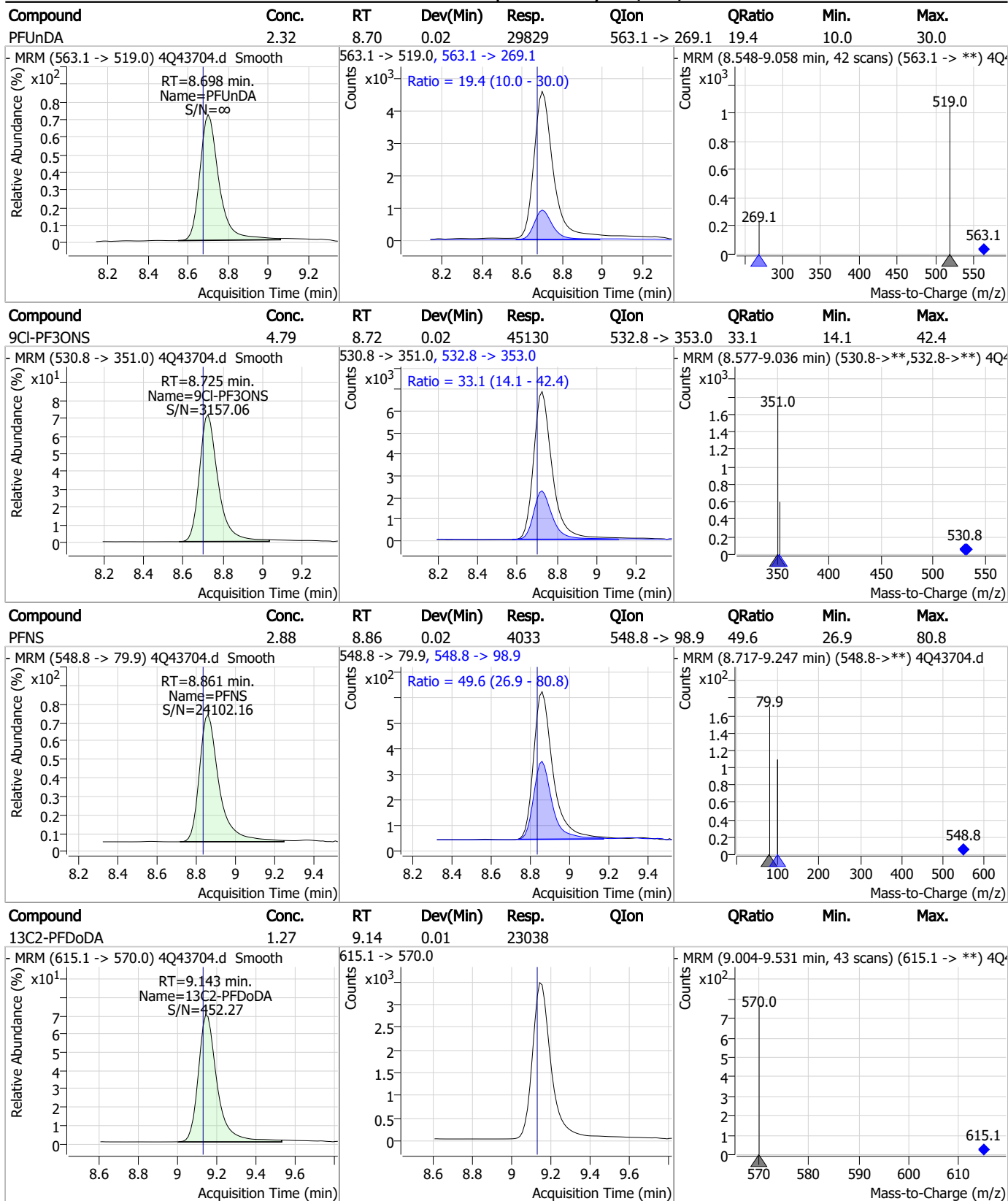
Perfluorinated Compounds by LC/MS/MS



7.7.14

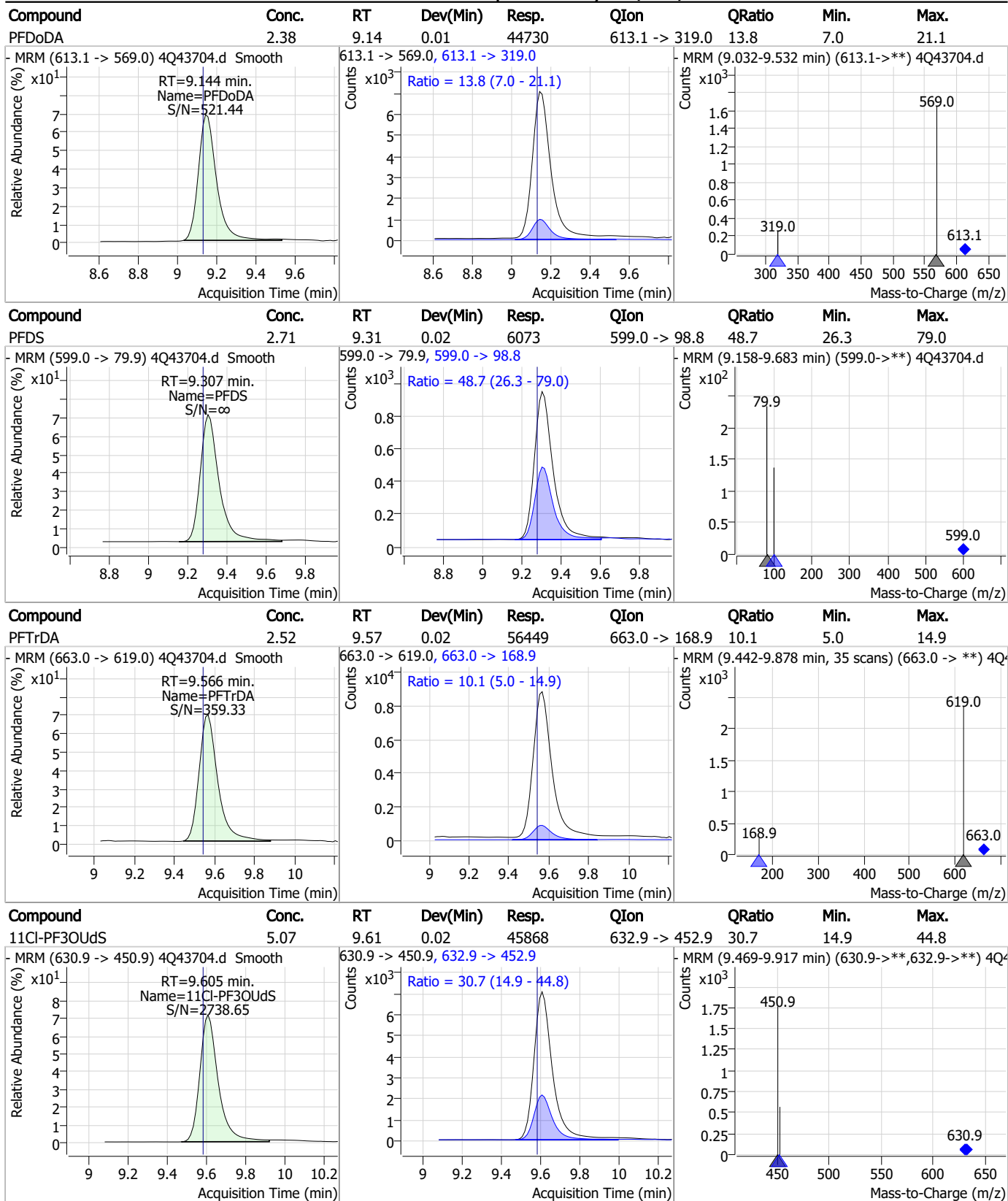


Perfluorinated Compounds by LC/MS/MS



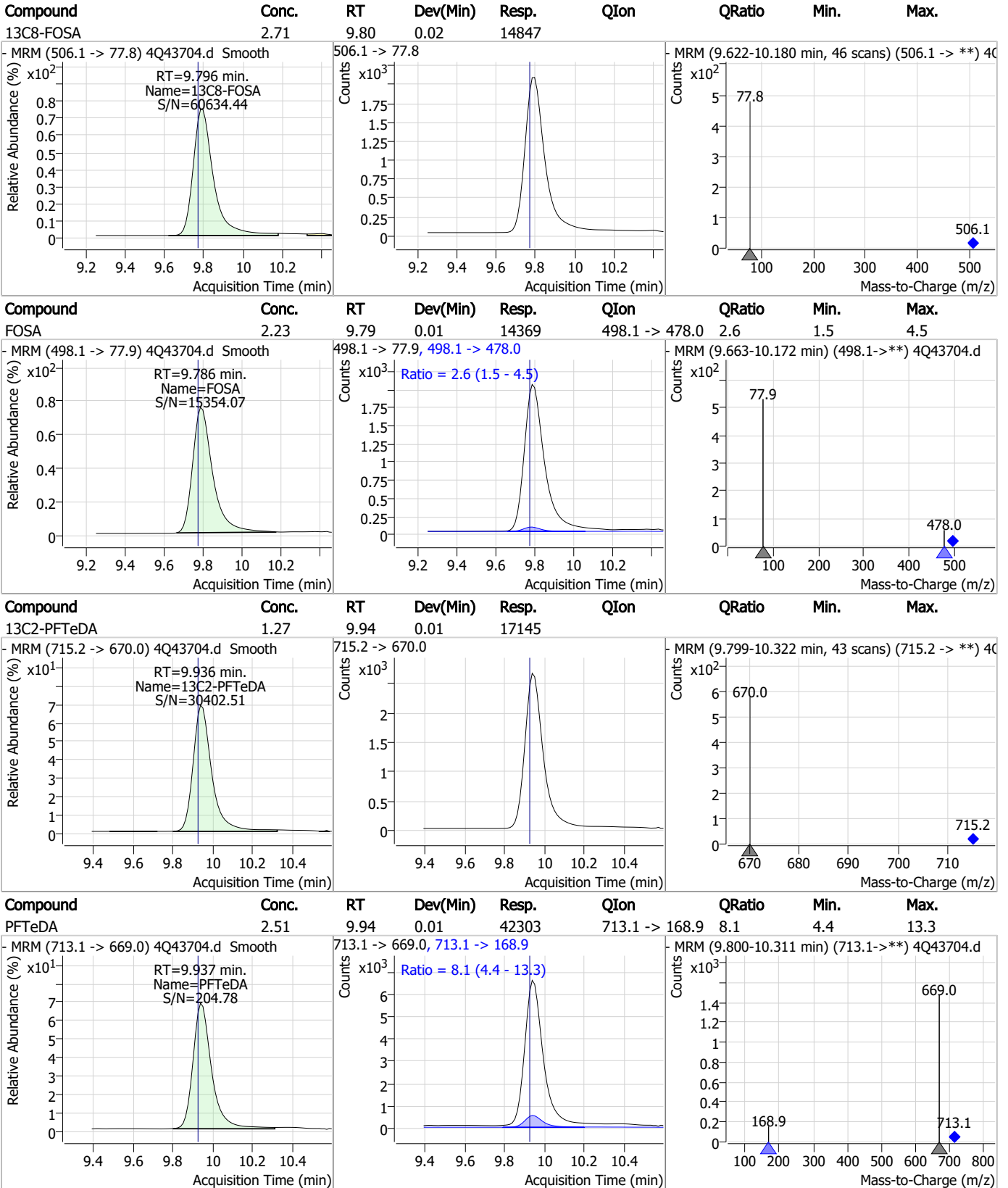
7.7.14
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Perfluorinated Compounds by LC/MS/MS



7.7.14

Perfluorinated Compounds by LC/MS/MS



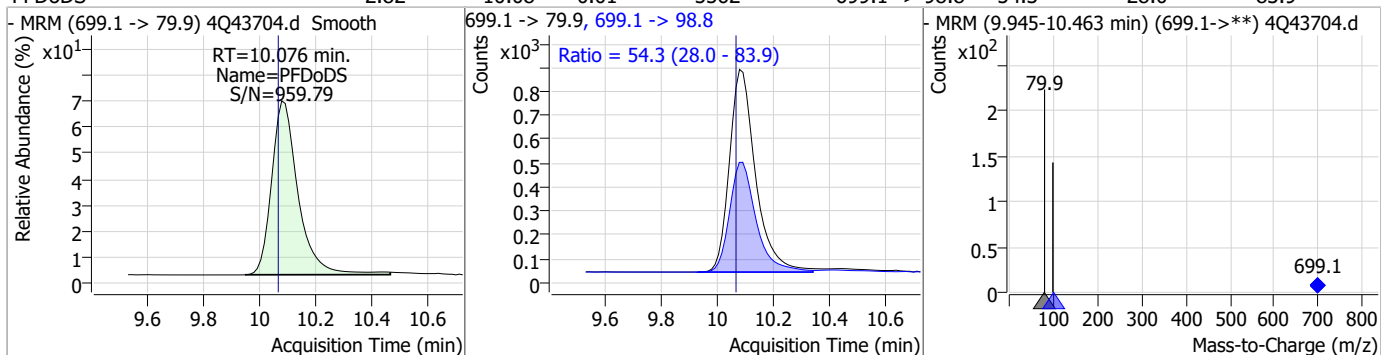
7.7.14

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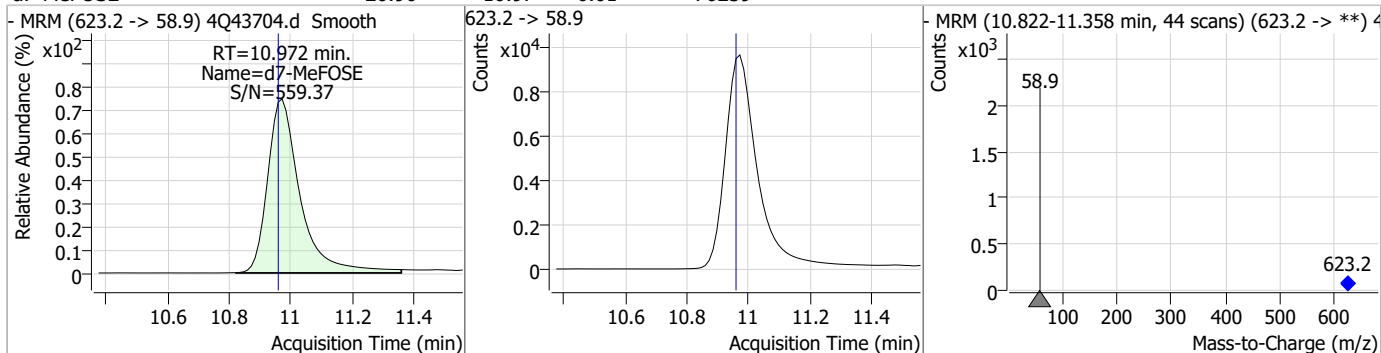


Perfluorinated Compounds by LC/MS/MS

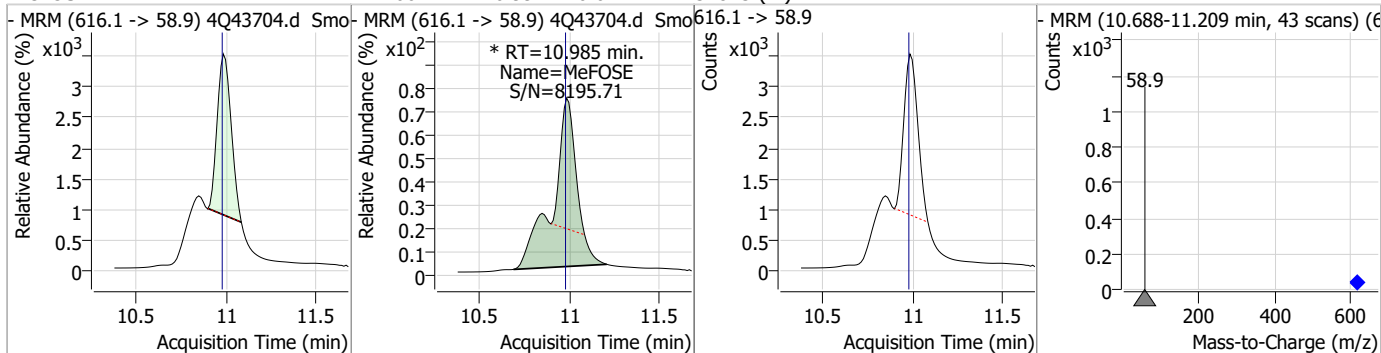
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.82	10.08	0.01	5562	699.1 -> 98.8	54.3	28.0	83.9



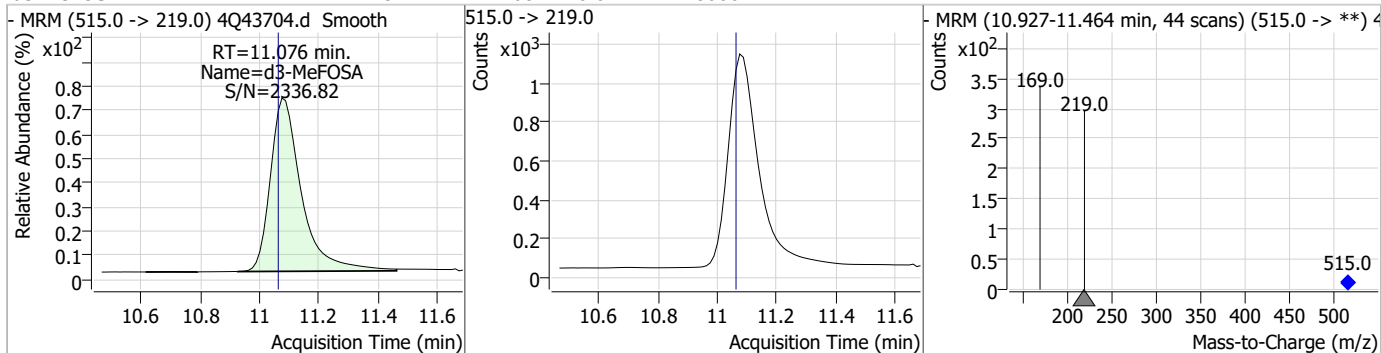
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.90	10.97	0.01	70239				



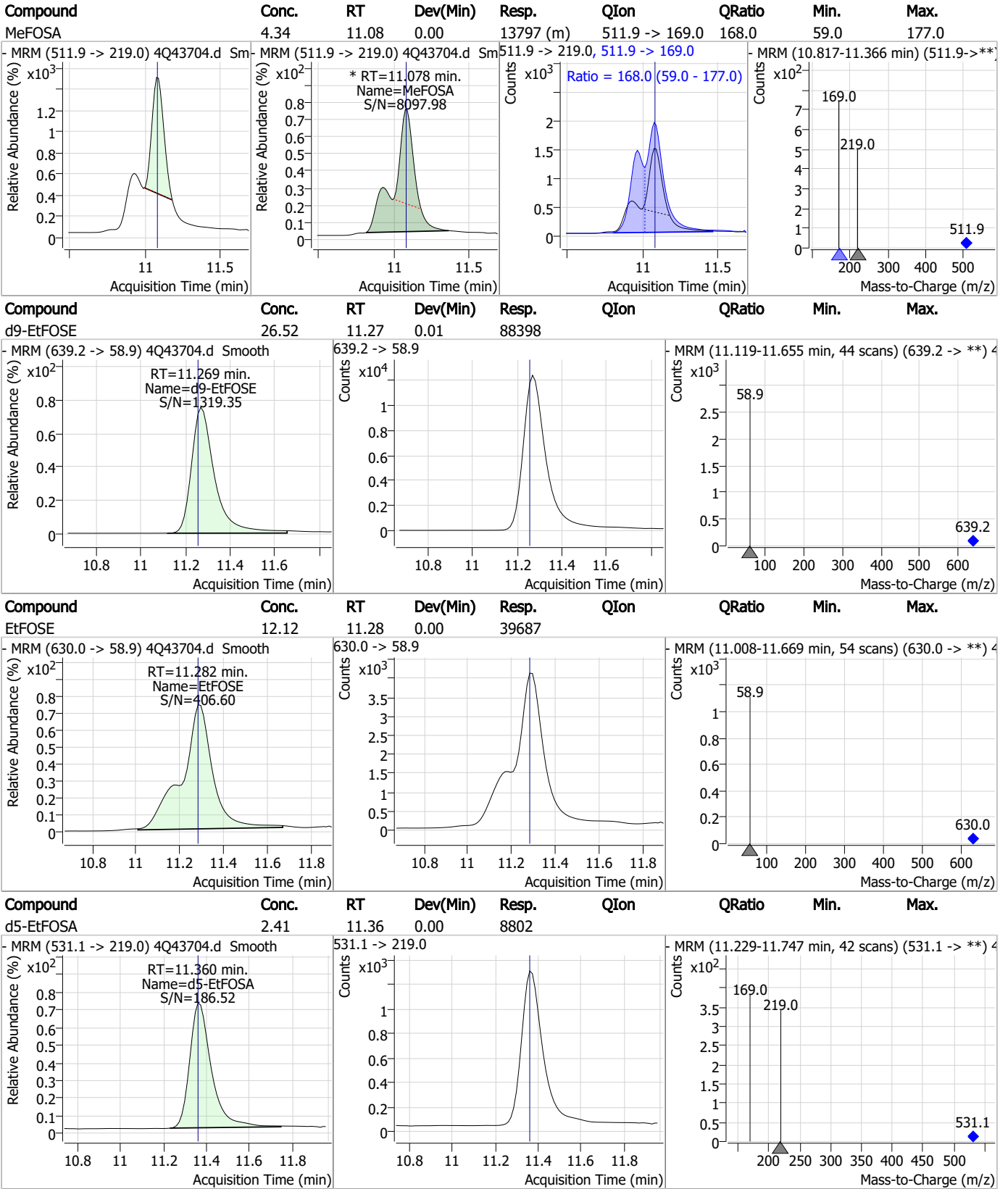
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.00	10.99	0.01	31823 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.57	11.08	0.01	8060				



Perfluorinated Compounds by LC/MS/MS

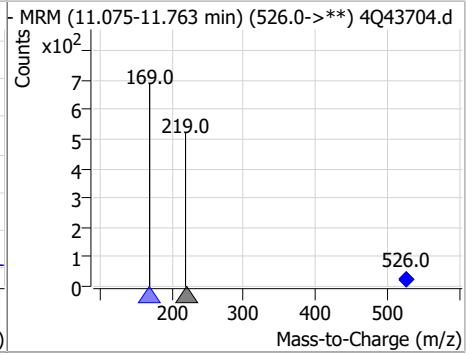
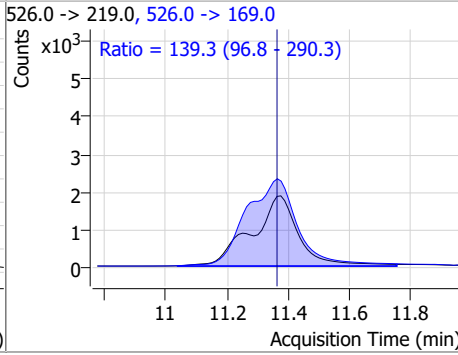
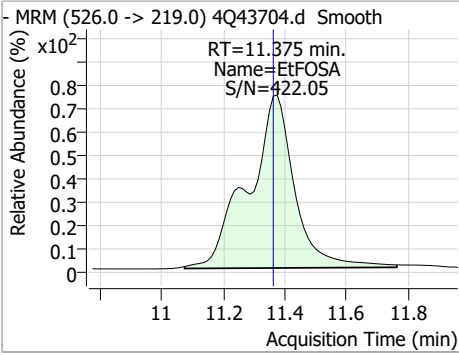


7.7.14



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	5.18	11.37	0.01	19464	526.0 -> 169.0	139.3	96.8	290.3



7.7.14
7



Manual Integration Approval Summary

Sample Number: S4Q631-CC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43704.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 18:00 Supervisor approved: 04/27/23 16:58 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.27	Split peak
MeFOSAA	2355-31-9		8.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.50	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43714.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/26/2023 8:21:42 PM
 Sample Name : cc631-4
 Vial : P1-A5
 DA Method File : 1633_041923_S4Q631.quantmethod.xml
 Batch Name : s4q631.batch.bin
 Sample Information : OP96548,S4q631,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	99656	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	60519	5.00 µg/L	0.012
M5-PFHxA	5.572	318.0 -> 273.0	48988	2.50 µg/L	0.025
M4-PFHpA	6.504	367.1 -> 322.0	24415	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	32921	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	17433	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	16897	1.25 µg/L	0.012
M7-PFUnDA	8.697	570.0 -> 525.1	18137	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	22101	1.25 µg/L	0.012
M2-PFTeDA	9.936	715.2 -> 670.0	17121	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	14421	2.50 µg/L	0.025
M3-PFBS	5.464	302.1 -> 79.9	10801	2.50 µg/L	0.012
M3-PFHxS	7.266	402.1 -> 79.9	5821	2.50 µg/L	0.025
M8-PFOS	8.366	507.1 -> 79.9	8688	2.50 µg/L	0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1444	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	2133	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3398	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14277	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	25171	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	12423	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	71383	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	89148	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	9436	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	8332	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	8527	2.50 µg/L	0.025
13C3-PFBA	2.941	216.0 -> 172.0	55925	5.00 µg/L	0.012
18O2-PFHxS	7.265	403.0 -> 83.9	4233	2.50 µg/L	0.025
13C4-PFOA	7.163	417.1 -> 372.0	39879	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14756	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	19300	1.25 µg/L	0.012
13C2-PFHxA	5.573	315.1 -> 270.0	40423	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1444	6.50 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.9%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2133	6.57 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 131.5%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3398	5.84 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.8%		
13C2-PFDoDA	9.143	615.1 -> 570.0	22101	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C2-PFTeDA	9.936	715.2 -> 670.0	17121	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C3-PFBS	5.464	302.1 -> 79.9	10801	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C3-PFHxS	7.266	402.1 -> 79.9	5821	2.47 µg/L	0.025

7.7.15
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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 = 98.8%	
13C4-PFBA	2.936	216.8 -> 171.9	99656	10.31 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C4-PFHpA	6.504	367.1 -> 322.0	24415	2.47 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C5-PFHxA	5.572	318.0 -> 273.0	48988	2.55 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C5-PFPeA	4.387	268.3 -> 223.0	60519	4.95 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C6-PFDA	8.216	519.1 -> 474.1	16897	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C7-PFUnDA	8.697	570.0 -> 525.1	18137	1.37 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C8-FOSA	9.796	506.1 -> 77.8	14421	2.50 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-PFOA	7.163	421.1 -> 376.0	32921	2.46 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C8-PFOS	8.366	507.1 -> 79.9	8688	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C9-PFNA	7.709	472.1 -> 427.0	17433	1.19 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.5%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14277	5.30 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	25171	9.47 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
d3-MeFOSA	11.076	515.0 -> 219.0	8332	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
d5-EtFOSAA	8.483	589.2 -> 419.0	12423	5.59 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.7%	
d7-MeFOSE	10.972	623.2 -> 58.9	71383	25.92 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
d9-EtFOSE	11.269	639.2 -> 58.9	89148	25.36 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
d5-EtFOSA	11.360	531.1 -> 219.0	9436	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	19878	8.59 µg/L	96
		327.1 -> 80.9	8569		
6:2FTS	6.936	427.1 -> 407.0	18044	8.80 µg/L	97
		427.1 -> 80.9	7464		
8:2FTS	8.003	527.1 -> 507.0	19226	10.08 µg/L	100
		527.1 -> 80.8	8176		
EtFOSAA	8.483	584.2 -> 419.1	5841	2.46 µg/L	m 92
		584.2 -> 526.0	3152		
FOSA	9.786	498.1 -> 77.9	14661	2.34 µg/L	100
		498.1 -> 478.0	444		
MeFOSAA	8.274	570.1 -> 419.0	6221	2.47 µg/L	m 90
		570.1 -> 483.0	1484		
PFBA	2.932	212.8 -> 168.9	27178	9.27 µg/L	100
PFBS	5.465	298.7 -> 79.9	10410	2.12 µg/L	97
		298.7 -> 98.8	4240		
PFDA	8.216	512.9 -> 469.0	29708	2.36 µg/L	100
		512.9 -> 219.0	6032		
PFDODA	9.144	613.1 -> 569.0	45011	2.49 µg/L	99
		613.1 -> 319.0	6451		
PFDS	9.307	599.0 -> 79.9	6149	2.36 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.505	599.0 -> 98.8	3005	2.46	µg/L	95
		363.1 -> 319.0	38915			
PFHpS	7.848	363.1 -> 169.0	7542	2.35	µg/L	95
		449.0 -> 79.9	7142			
PFHxA	5.575	449.0 -> 98.9	3709	2.42	µg/L	100
		313.0 -> 269.0	44574			
PFHxS	7.267	313.0 -> 118.9	1287	2.22	µg/L	97
		398.7 -> 79.9	6378			
PFNA	7.722	398.7 -> 98.9	3458	2.54	µg/L	96
		463.0 -> 419.0	29906			
PFNS	8.861	463.0 -> 219.0	7157	2.39	µg/L	100
		548.8 -> 79.9	3878			
PFOA	7.164	548.8 -> 98.9	2101	2.49	µg/L	97
		413.0 -> 369.0	47582			
PFOS	8.367	413.0 -> 169.0	9558	2.07	µg/L	100
		498.9 -> 79.9	8741			
PFPeA	4.389	498.9 -> 98.8	4719	5.05	µg/L	100
		263.0 -> 219.0	73004			
PFPeS	6.531	349.1 -> 79.9	5691	2.37	µg/L	97
		349.1 -> 98.9	2582			
PFTeDA	9.937	713.1 -> 669.0	42146	2.50	µg/L	97
		713.1 -> 168.9	3332			
PFTrDA	9.566	663.0 -> 619.0	58232	2.71	µg/L	100
		663.0 -> 168.9	5841			
PFUnDA	8.698	563.1 -> 519.0	30938	2.33	µg/L	96
		563.1 -> 269.1	5625			
11CI-PF3OUdS	9.605	630.9 -> 450.9	46876	5.25	µg/L	97
		632.9 -> 452.9	14646			
9CI-PF3ONS	8.725	530.8 -> 351.0	46895	5.04	µg/L	97
		532.8 -> 353.0	14135			
ADONA	6.768	376.9 -> 250.9	128895	5.01	µg/L	98
		376.9 -> 84.8	33555			
HFPO-DA	5.928	284.9 -> 168.9	12506	5.02	µg/L	99
		284.9 -> 184.9	1672			
3:3FTCA	3.848	241.0 -> 177.0	7503	12.28	µg/L	100
		241.0 -> 117.0	734			
5:3FTCA	6.217	341.0 -> 237.1	160446	60.32	µg/L	99
		341.0 -> 217.0	113446			
7:3FTCA	7.673	441.0 -> 316.9	71091	61.07	µg/L	98
		441.0 -> 336.9	161687			
EtFOSA	11.362	526.0 -> 219.0	19818	4.92	µg/L	60
		526.0 -> 169.0	26581			
EtFOSE	11.282	630.0 -> 58.9	40395	12.23	µg/L	100
		511.9 -> 219.0	15124			
MeFOSA	11.078	511.9 -> 169.0	22808	4.60	µg/L	70
		616.1 -> 58.9	33140			
MeFOSE	10.985	699.1 -> 79.9	5230	11.27	µg/L	100
		699.1 -> 98.8	2982			
PFDoDS	10.076	295.0 -> 201.0	5942	2.29	µg/L	98
		295.0 -> 84.9	1347			
NFDHA	5.453	279.0 -> 85.1	40465	4.86	µg/L	100
		229.0 -> 84.9	35423			
PFMBA	3.540	314.8 -> 134.9	67256	4.93	µg/L	100
		314.8 -> 82.9	2107			
PFEESA	5.997			4.19	µg/L	99

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

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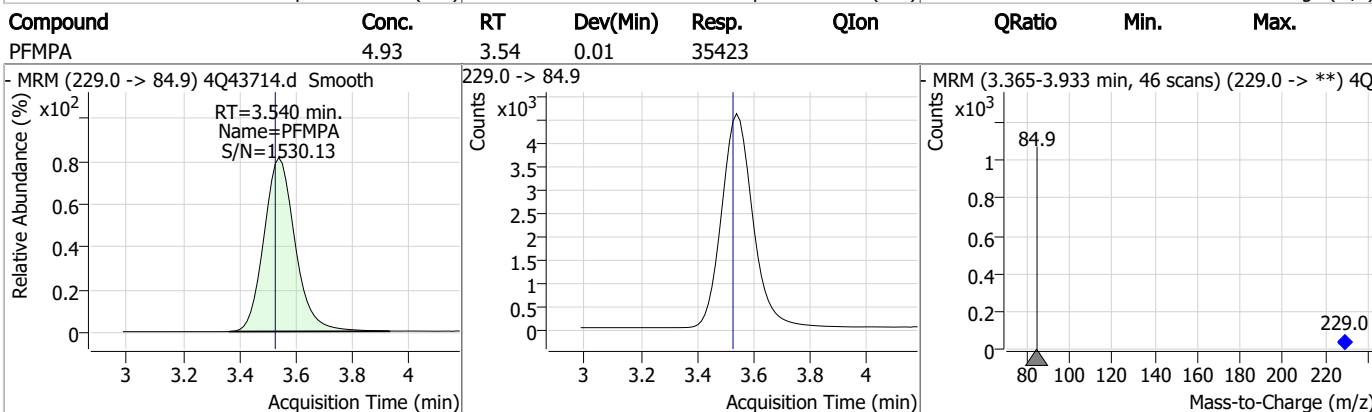
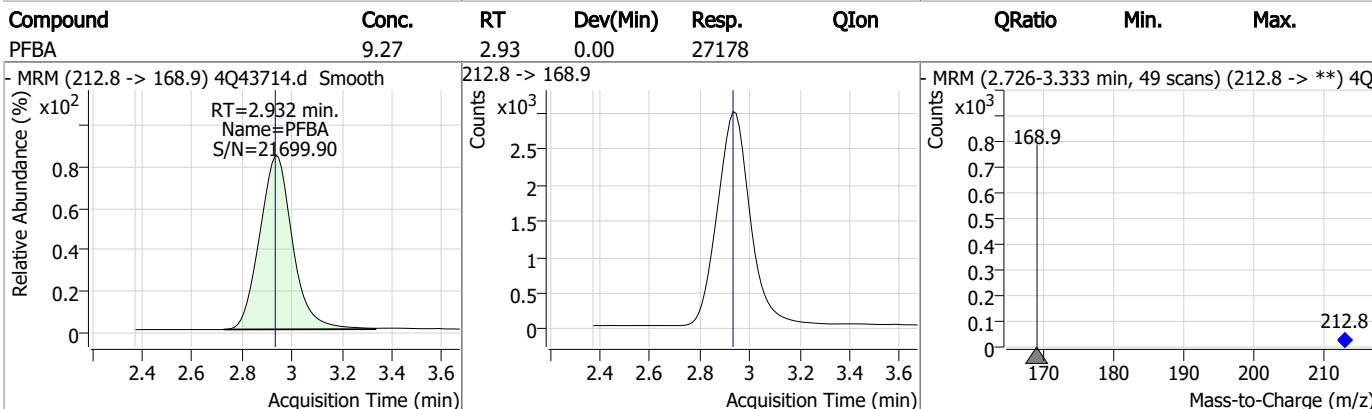
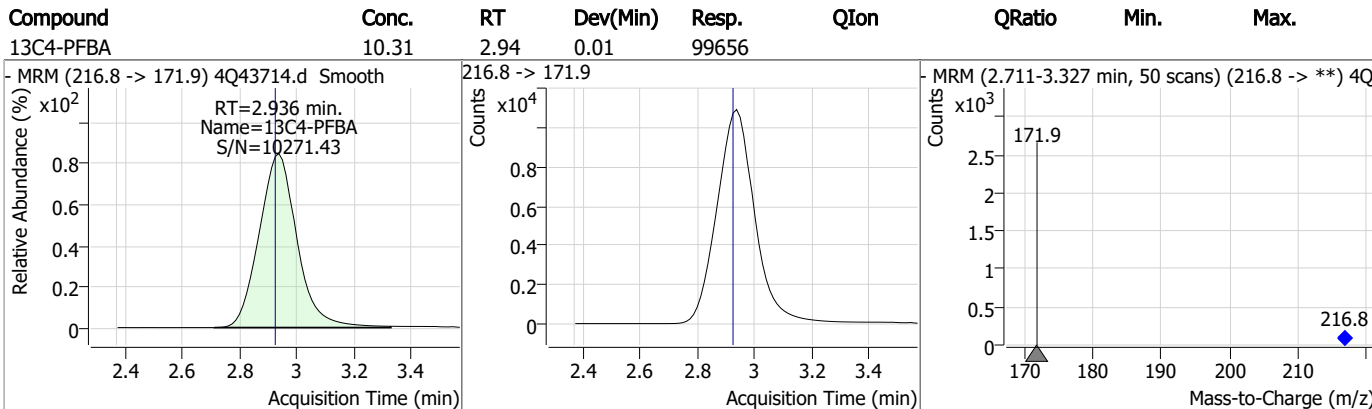
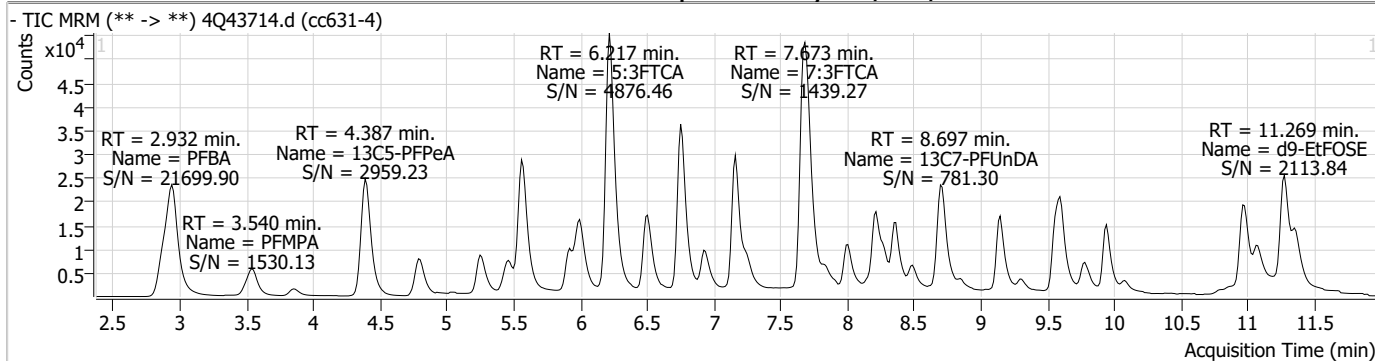
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.15

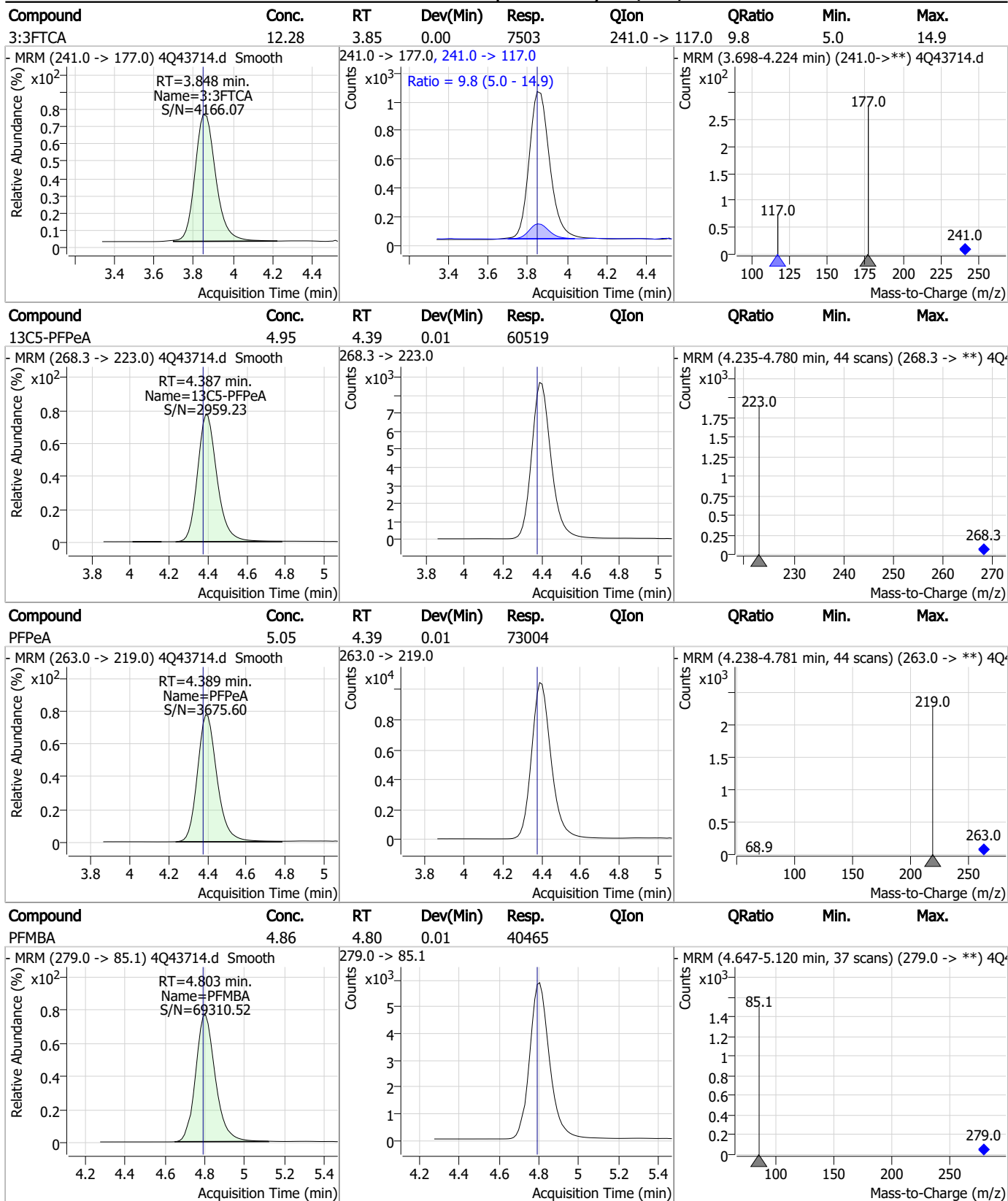
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Perfluorinated Compounds by LC/MS/MS



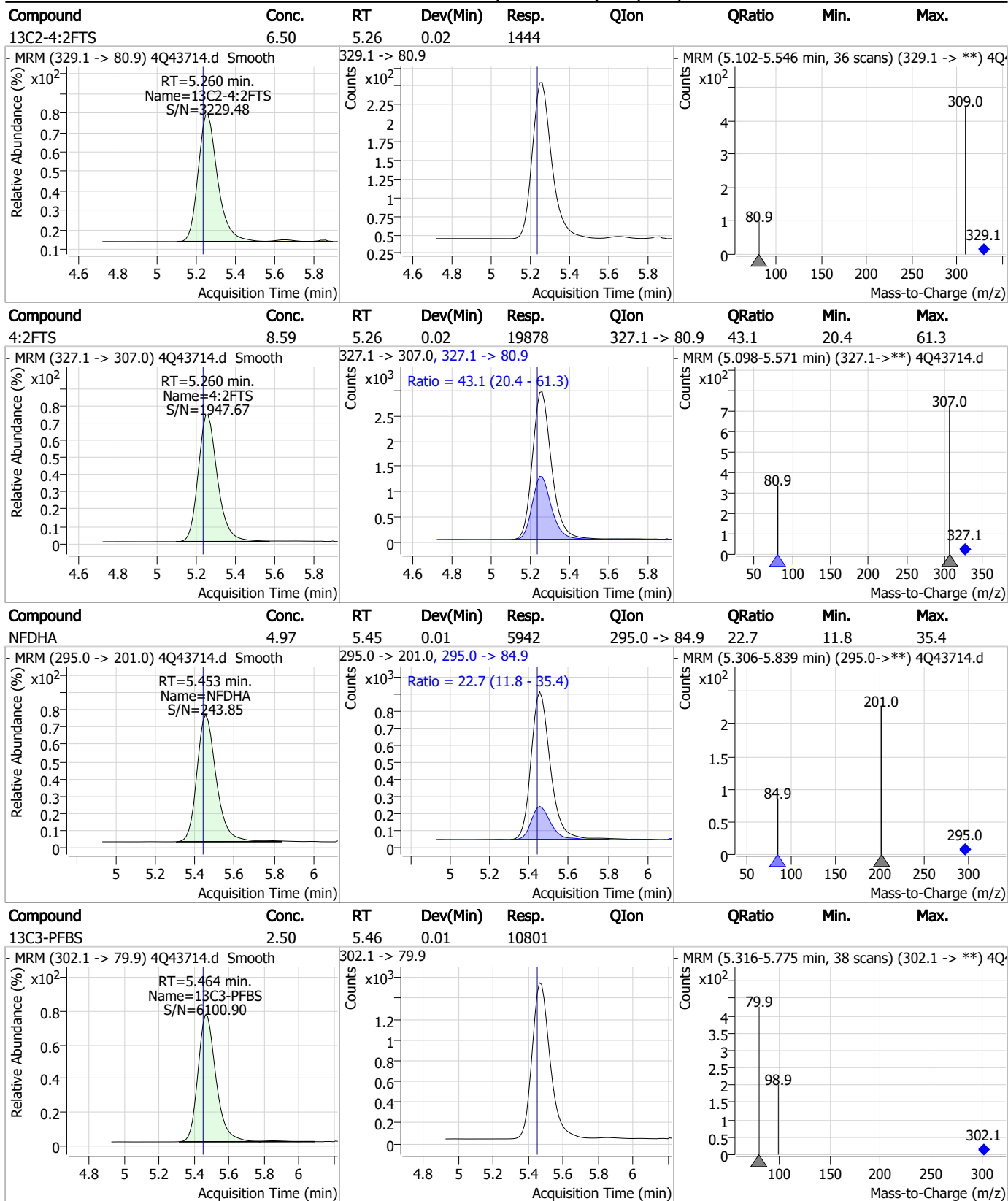
7.7.15
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

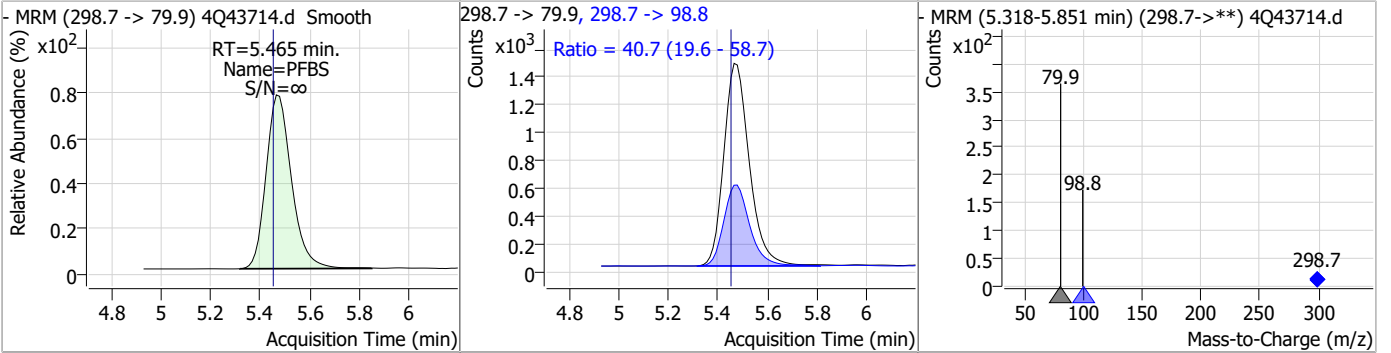


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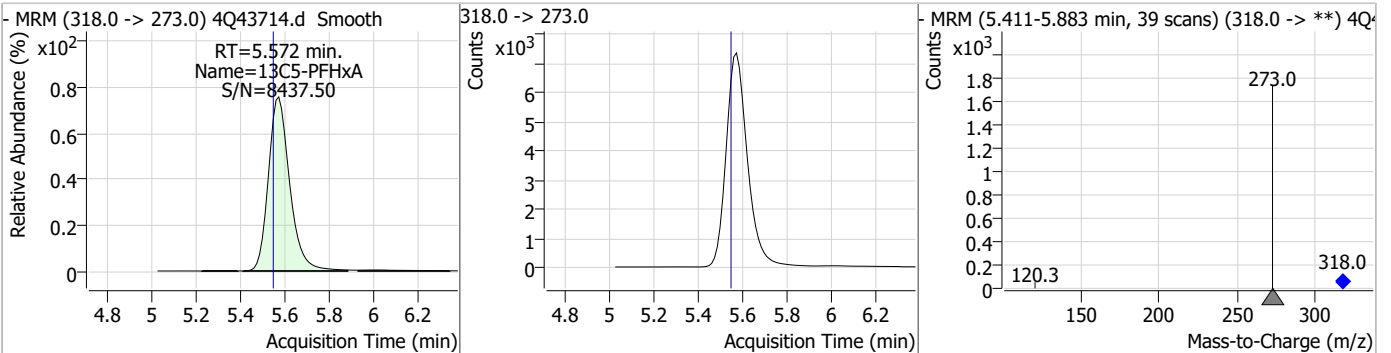


Perfluorinated Compounds by LC/MS/MS

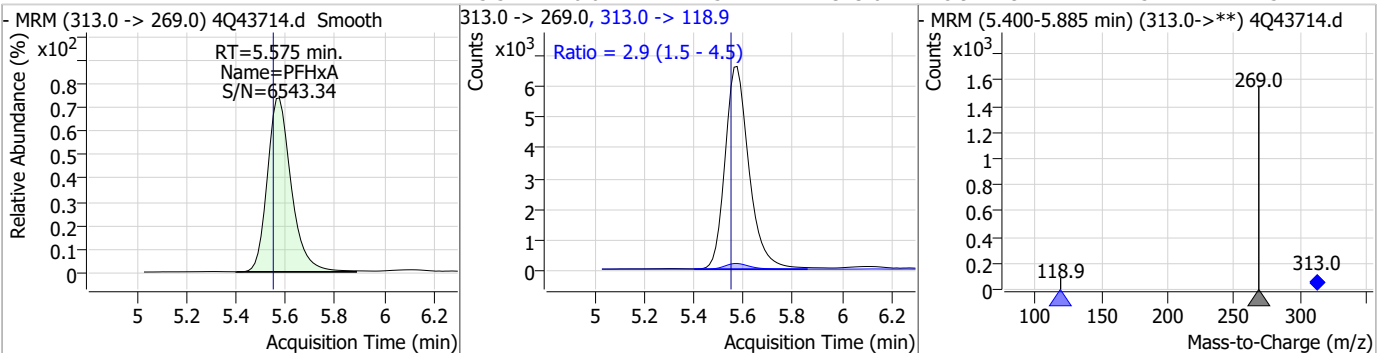
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.12	5.46	0.01	10410	298.7 -> 98.8	40.7	19.6	58.7



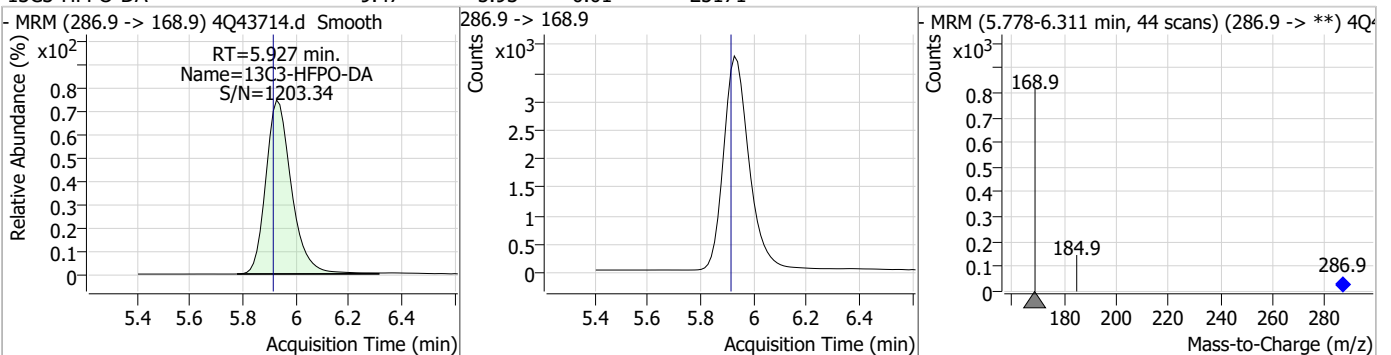
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.57	0.02	48988	318.0 -> 273.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.42	5.57	0.02	44574	313.0 -> 118.9	2.9	1.5	4.5

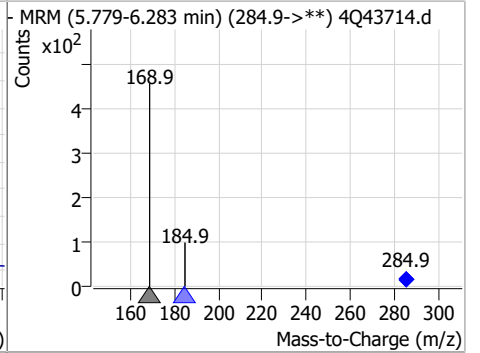
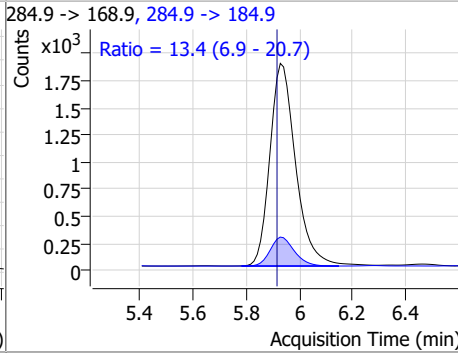
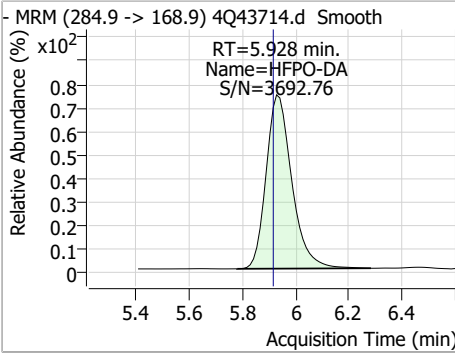


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.47	5.93	0.01	25171	286.9 -> 168.9			

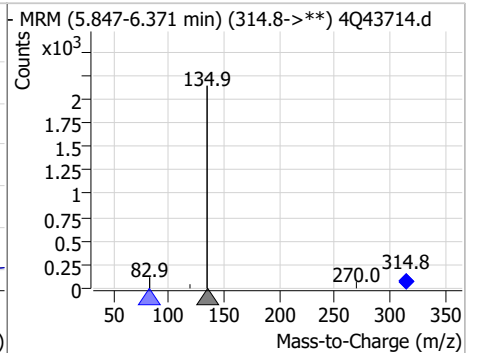
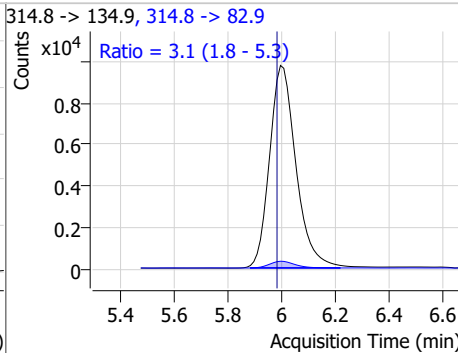
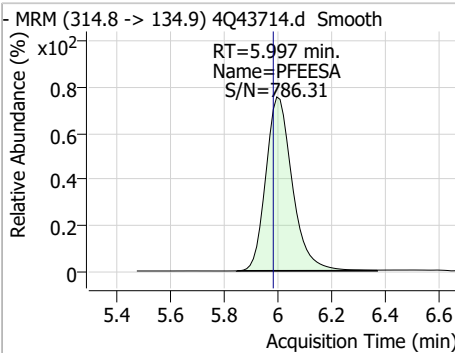


Perfluorinated Compounds by LC/MS/MS

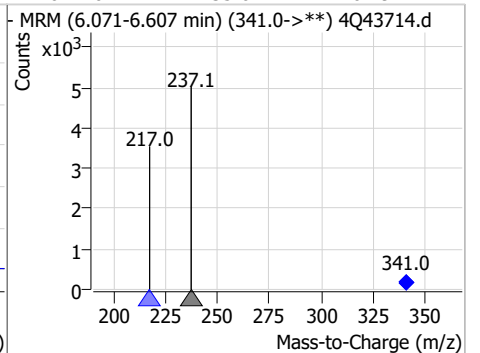
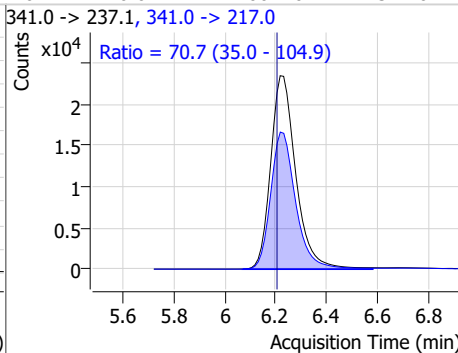
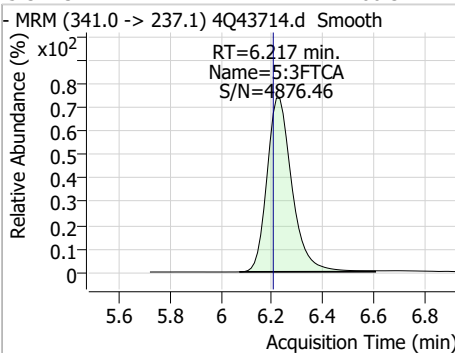
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.02	5.93	0.01	12506	284.9 -> 184.9	13.4	6.9	20.7



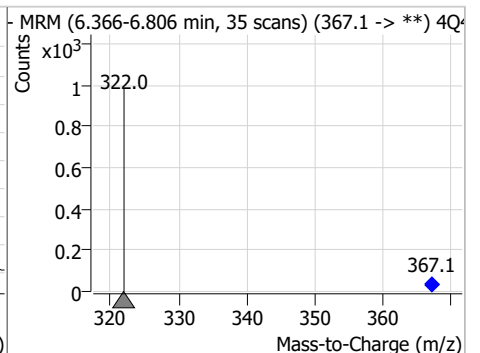
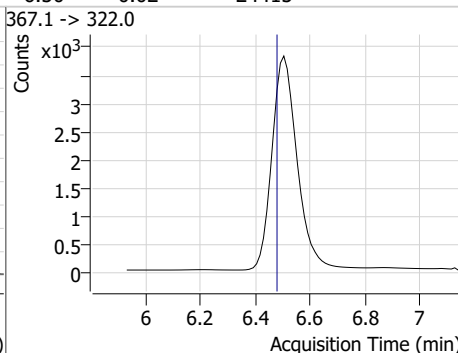
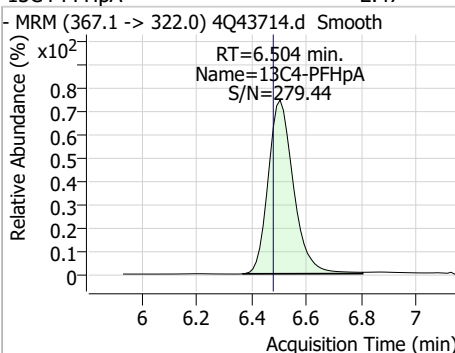
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.19	6.00	0.01	67256	314.8 -> 82.9	3.1	1.8	5.3



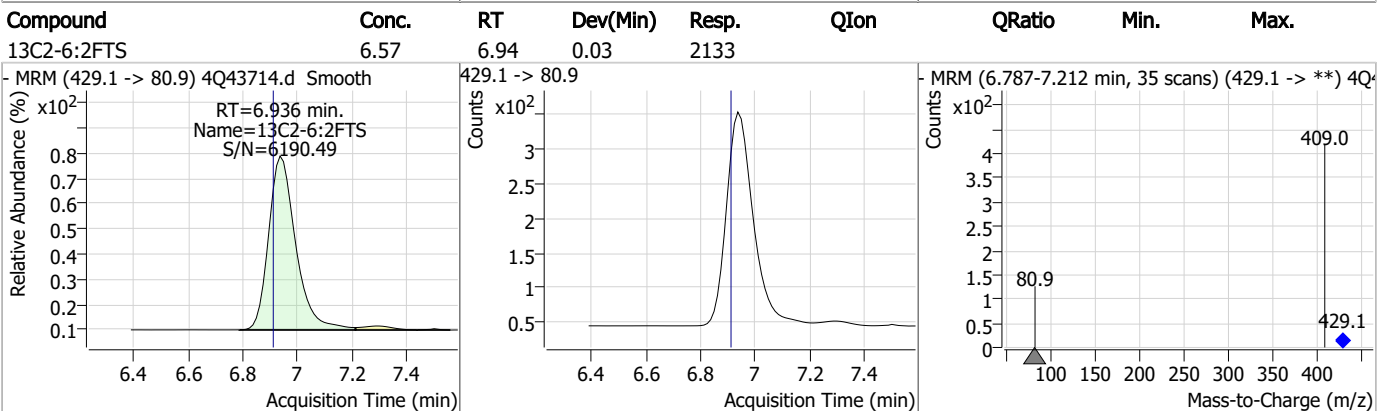
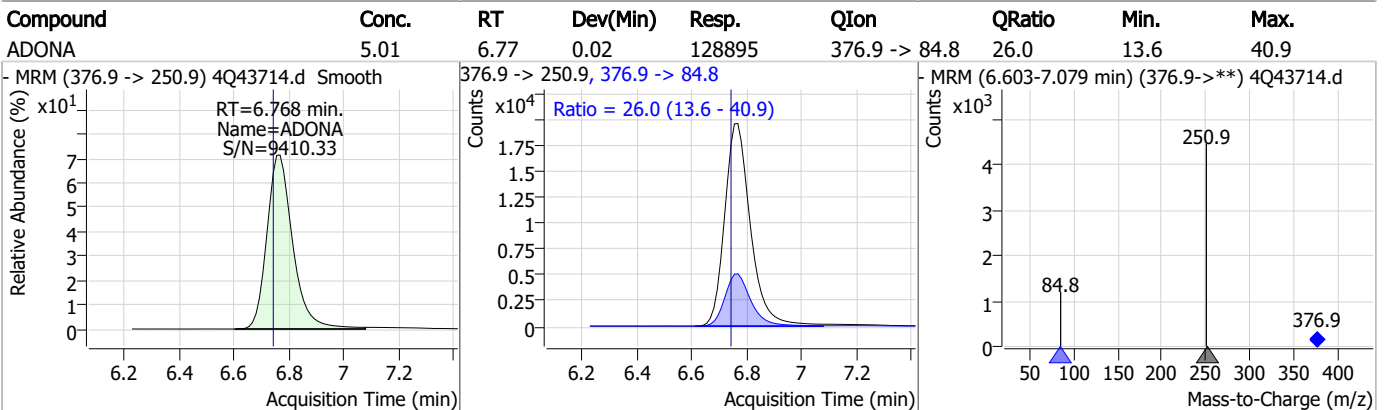
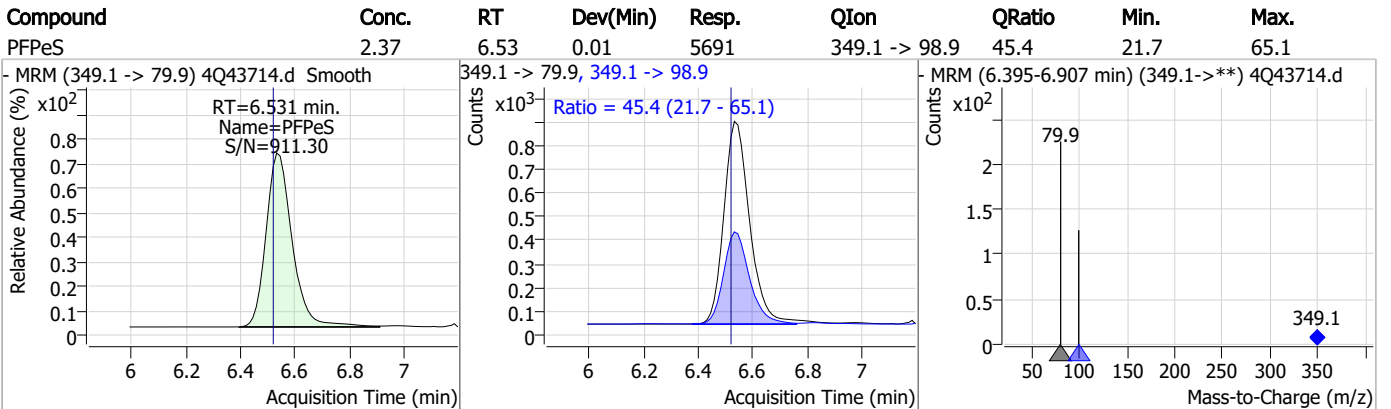
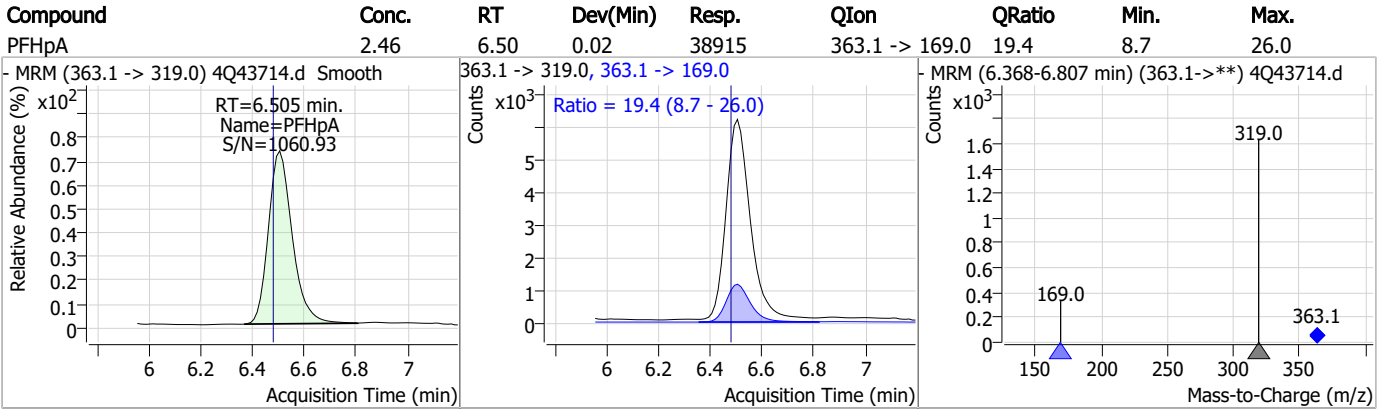
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	60.32	6.22	0.01	160446	341.0 -> 217.0	70.7	35.0	104.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.47	6.50	0.02	24415	367.1 -> 322.0			



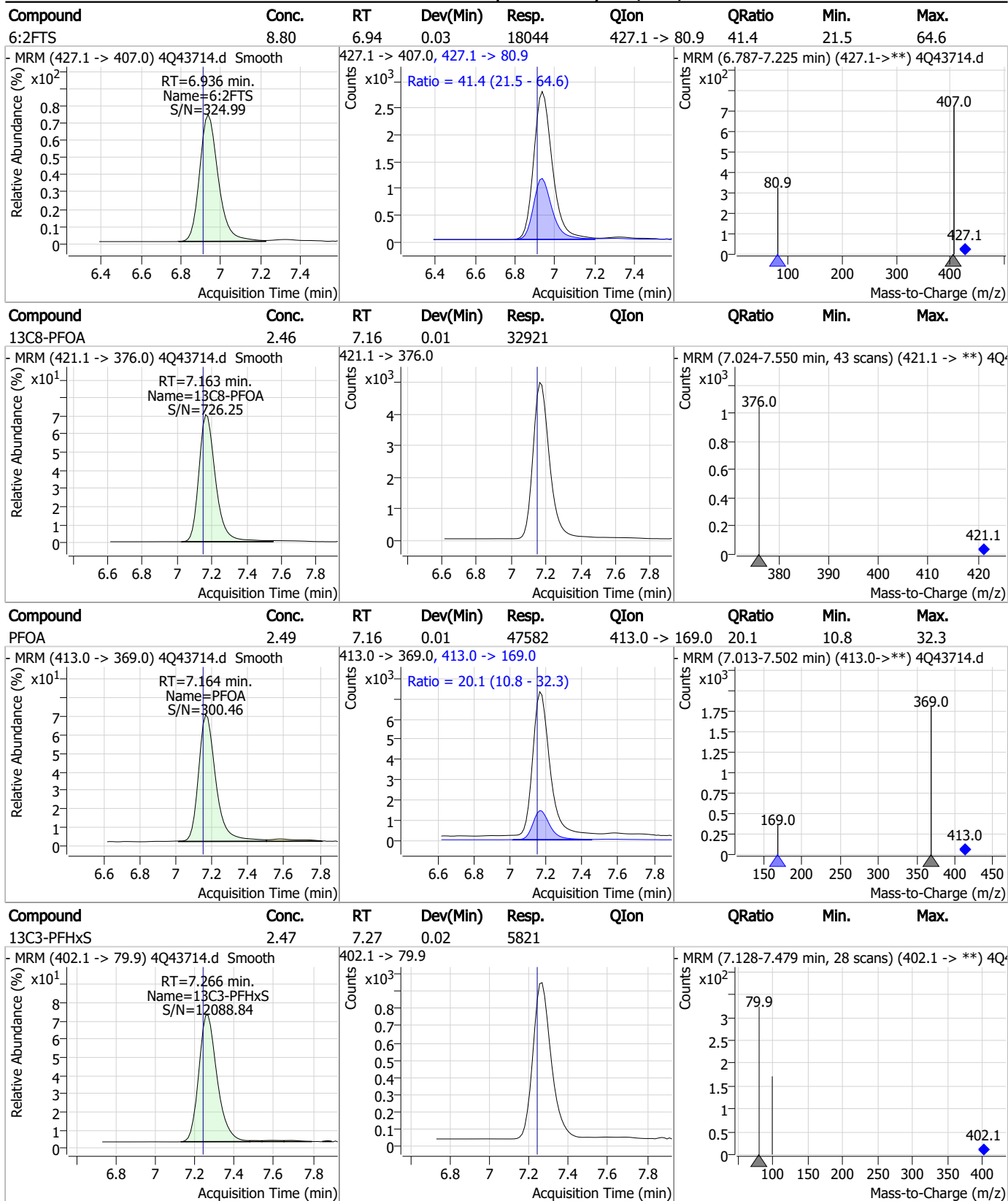
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



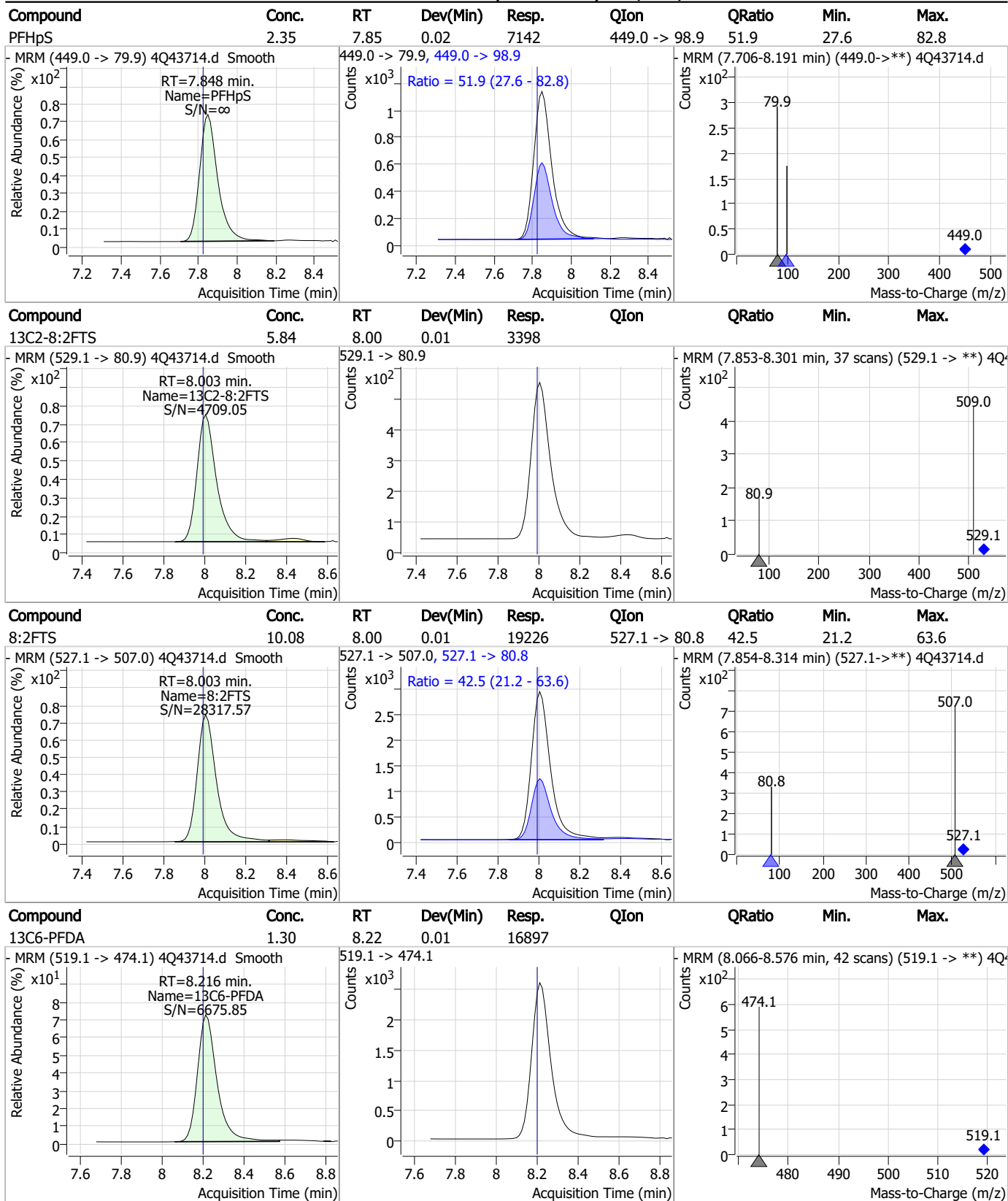
7.7.15

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.	
PFHxS	2.22	7.27	0.02	6378 (m)	398.7 -> 98.9	54.2	28.2	84.7	
7:3FTCA	61.07	7.67	0.01	71091	441.0 -> 336.9	227.4	111.8	335.5	
13C9-PFNA	1.19	7.71	0.01	17433	472.1 -> 427.0				
PFNA	2.54	7.72	0.02	29906	463.0 -> 219.0	23.9	13.0	39.1	

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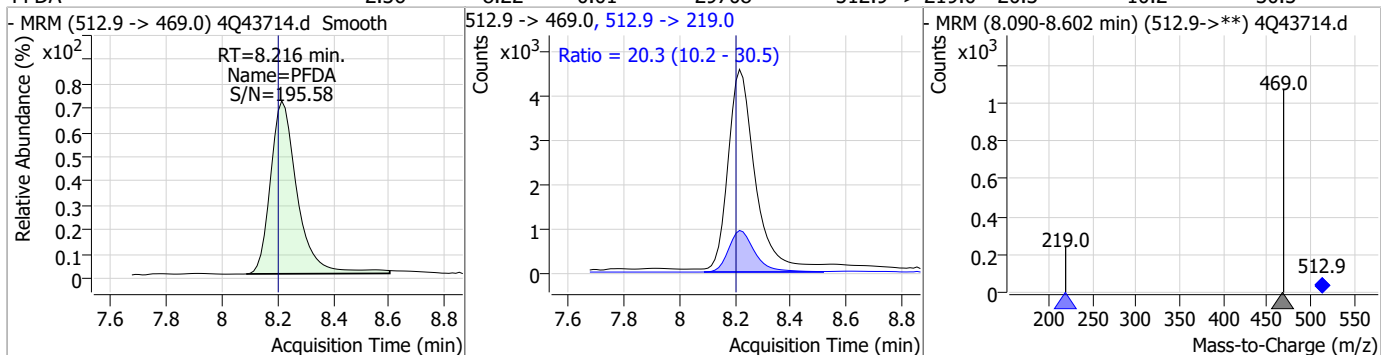
Perfluorinated Compounds by LC/MS/MS



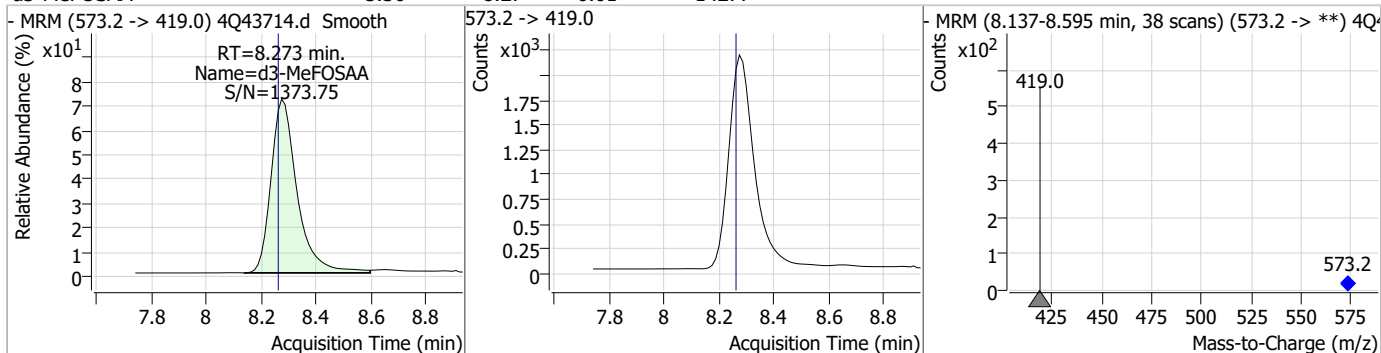
7.7.15

Perfluorinated Compounds by LC/MS/MS

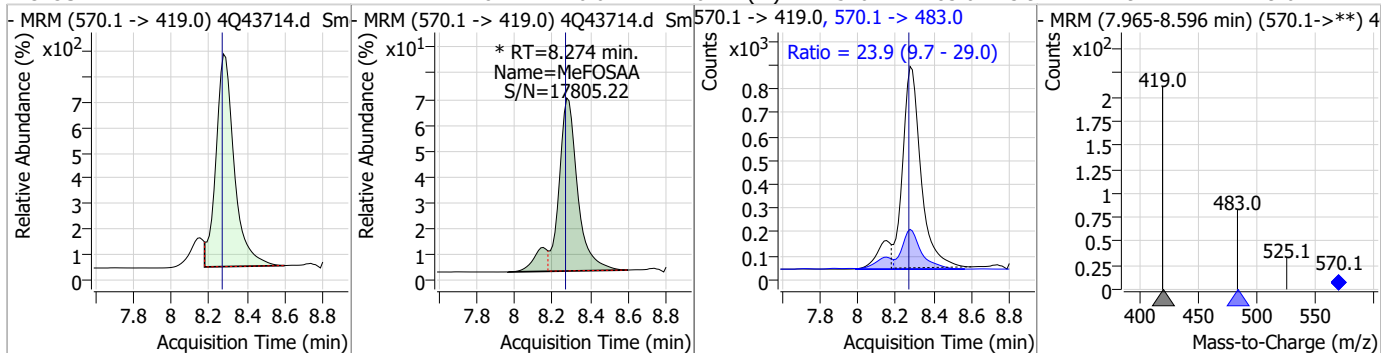
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.36	8.22	0.01	29708	512.9 -> 219.0	20.3	10.2	30.5



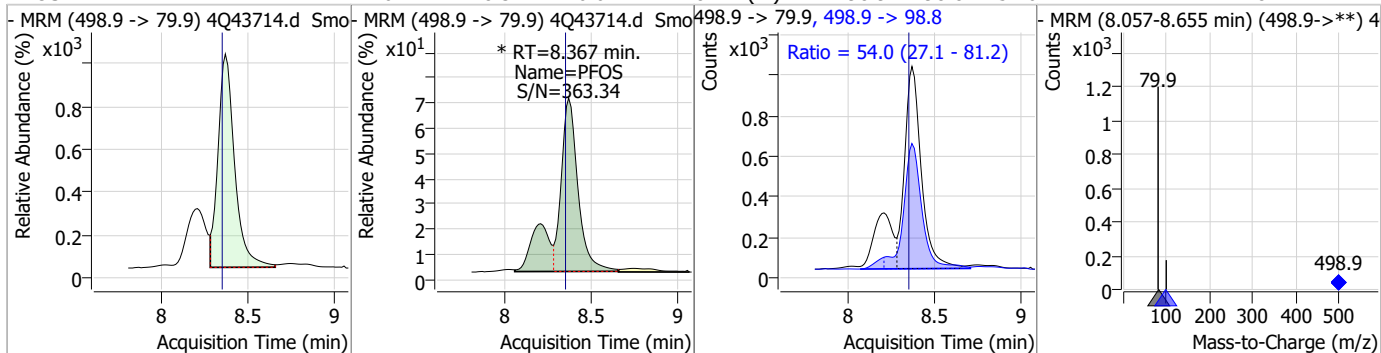
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.30	8.27	0.01	14277				



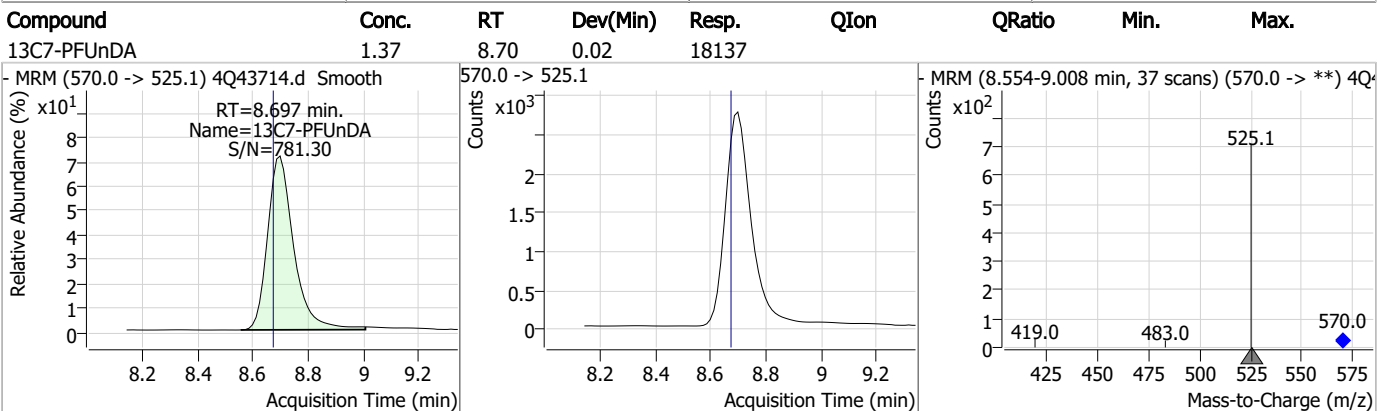
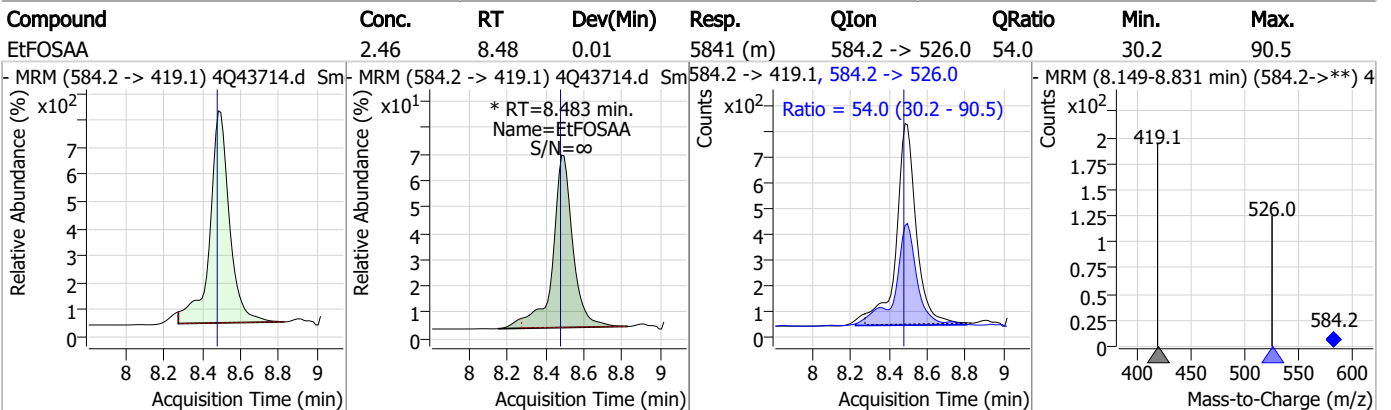
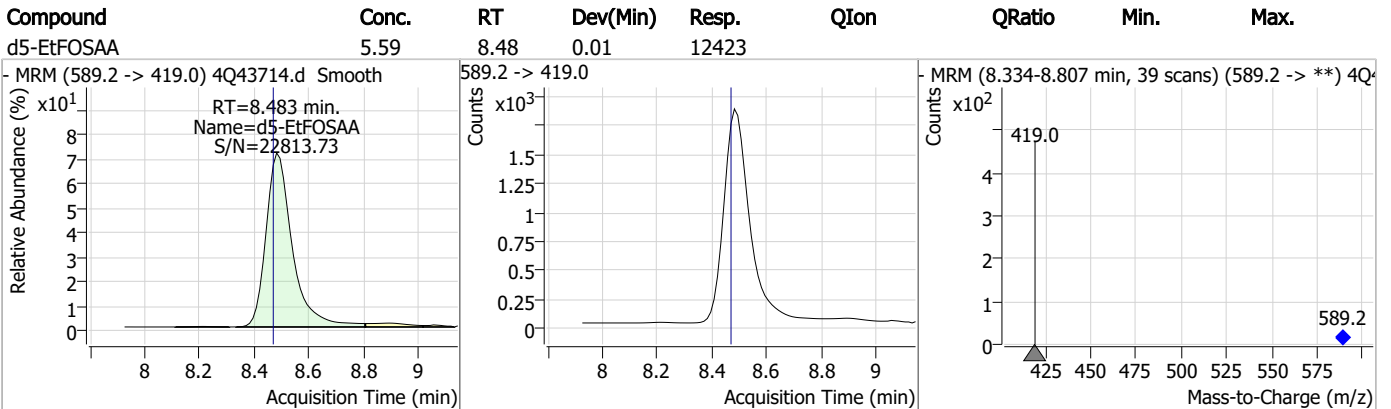
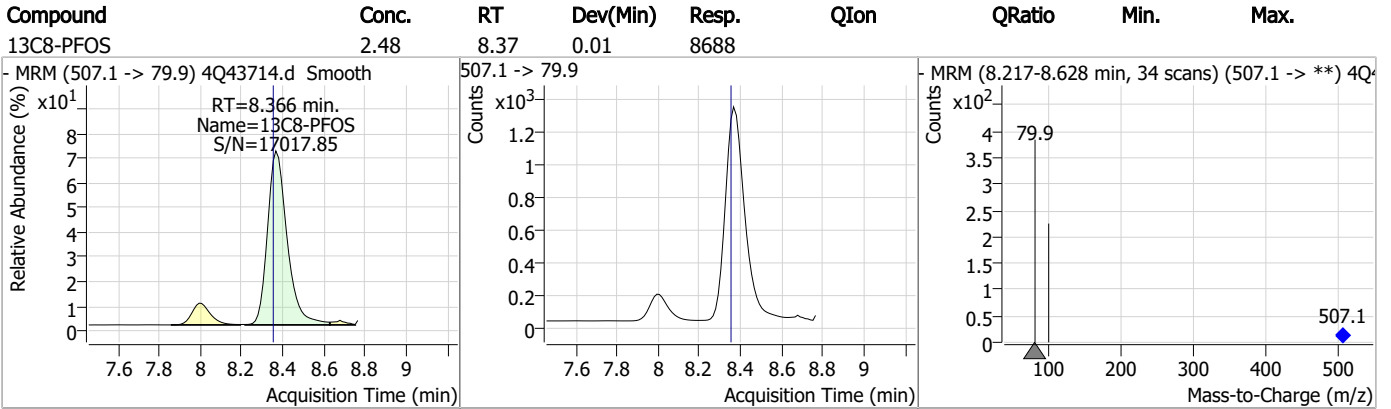
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.47	8.27	0.01	6221 (m)	570.1 -> 483.0	23.9	9.7	29.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.07	8.37	0.02	8741 (m)	498.9 -> 98.8	54.0	27.1	81.2

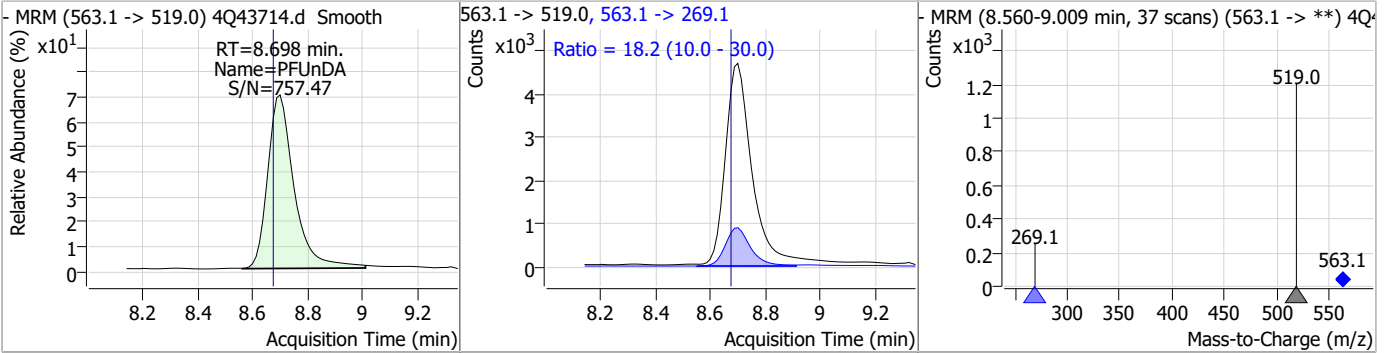


Perfluorinated Compounds by LC/MS/MS

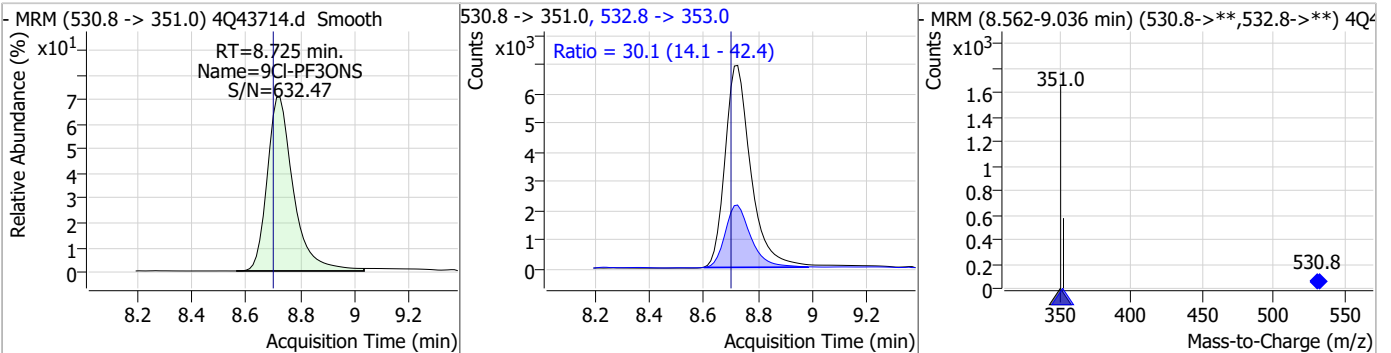


Perfluorinated Compounds by LC/MS/MS

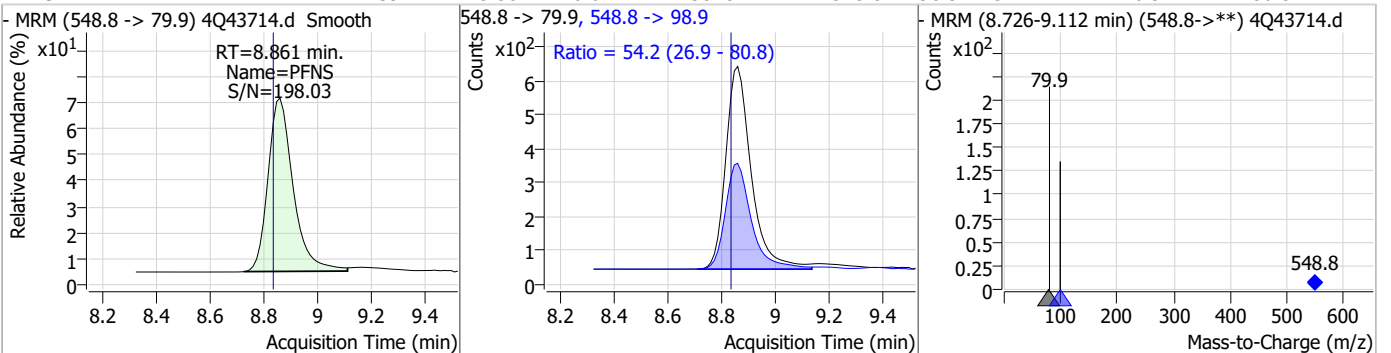
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	2.33	8.70	0.02	30938	563.1 -> 269.1	18.2	10.0	30.0



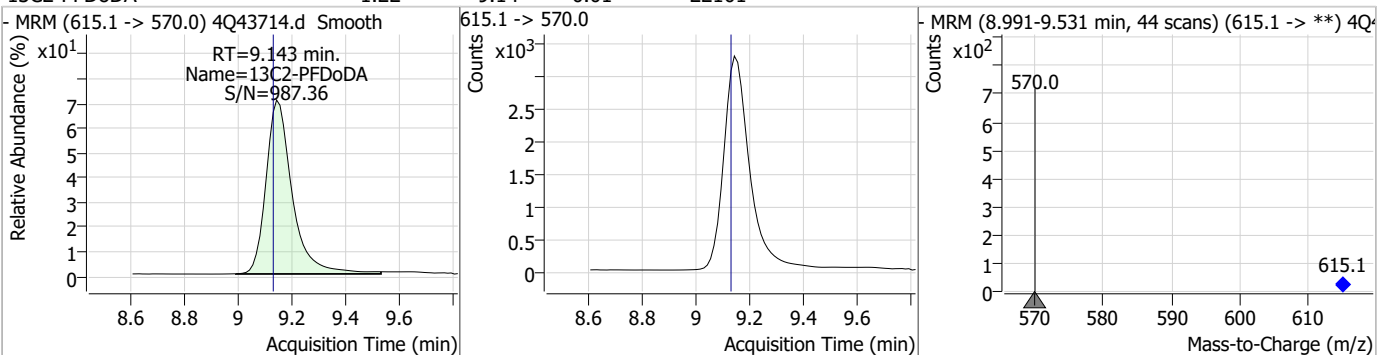
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	5.04	8.72	0.02	46895	532.8 -> 353.0	30.1	14.1	42.4



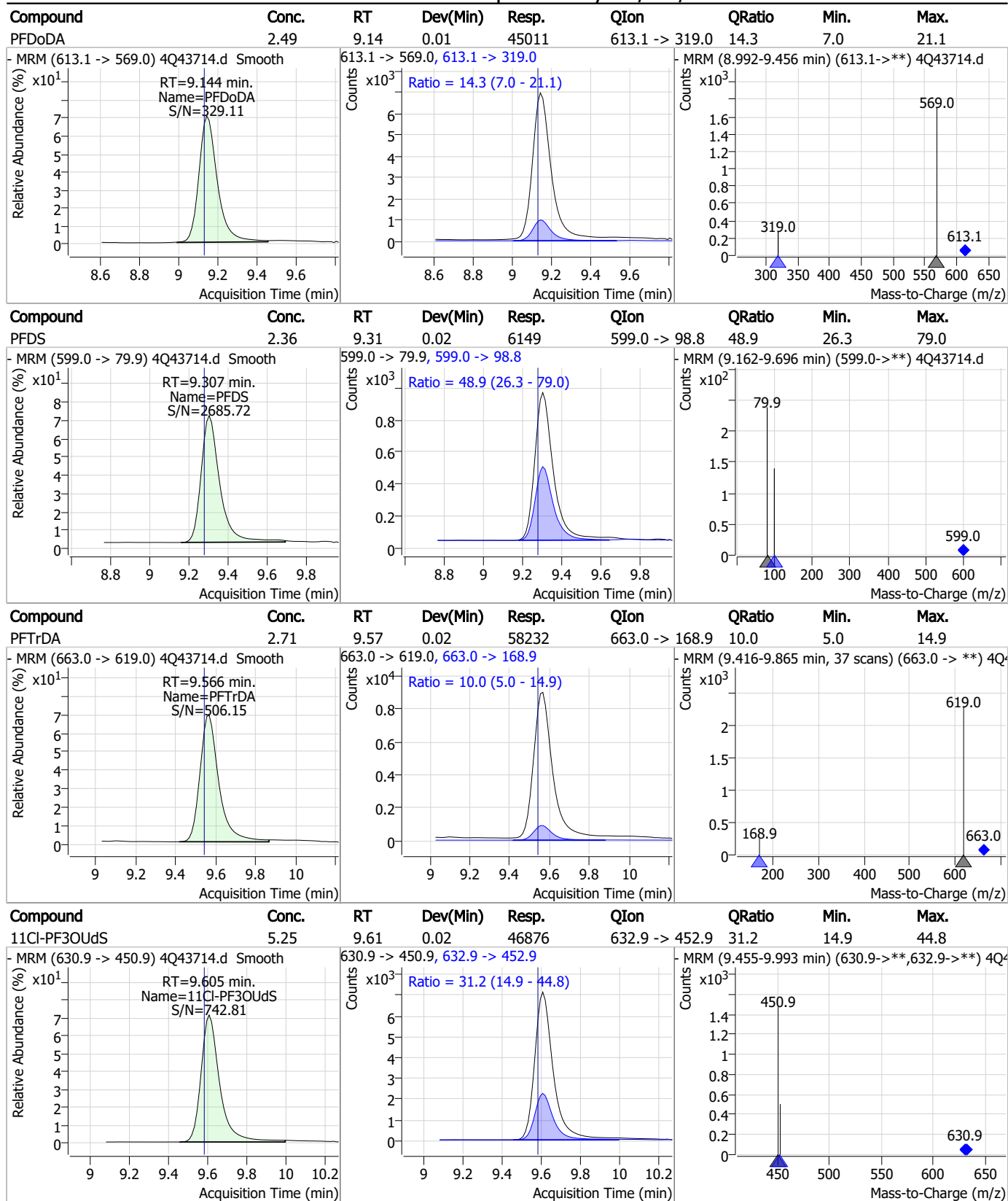
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.39	8.86	0.02	3878	548.8 -> 98.9	54.2	26.9	80.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.22	9.14	0.01	22101	615.1 -> 570.0	-	-	-



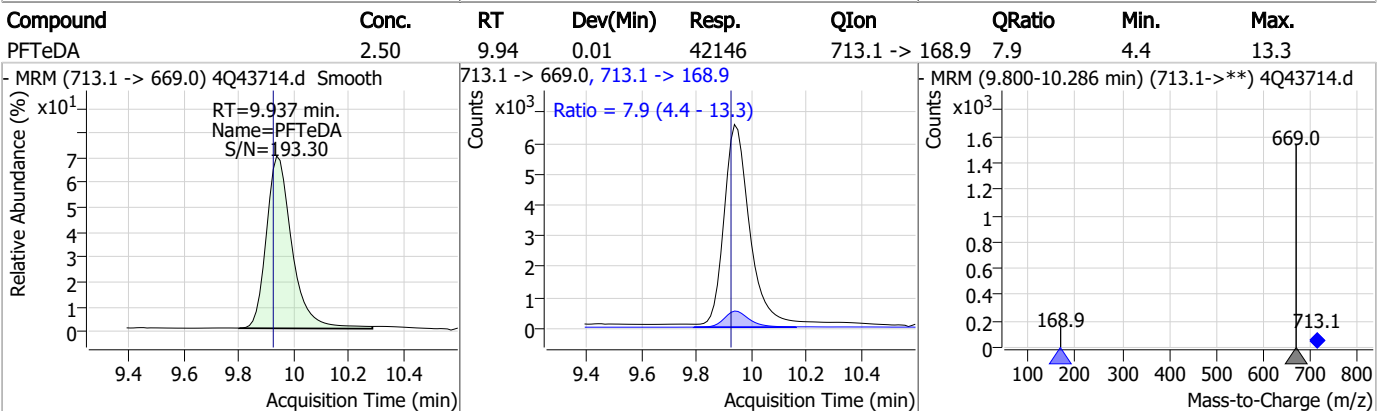
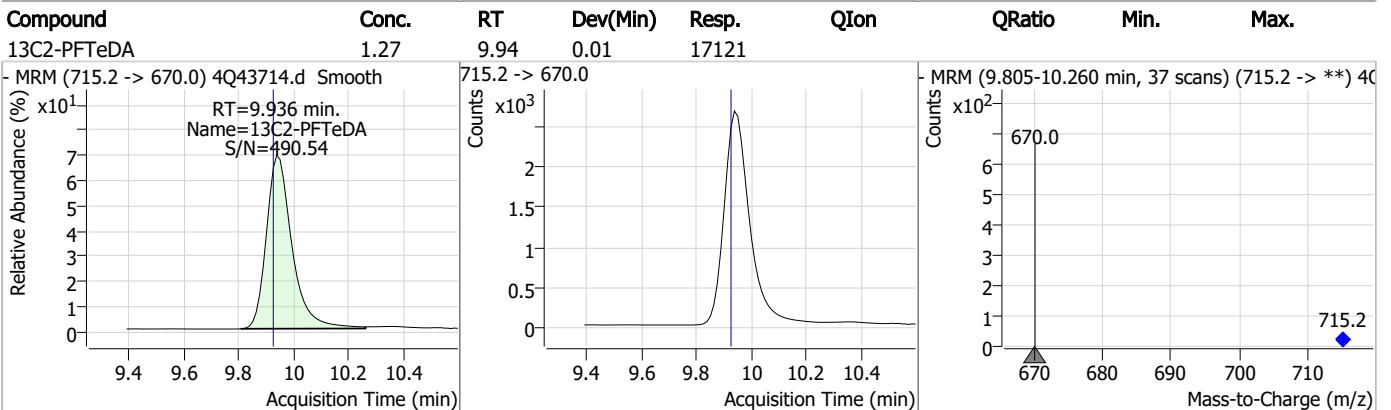
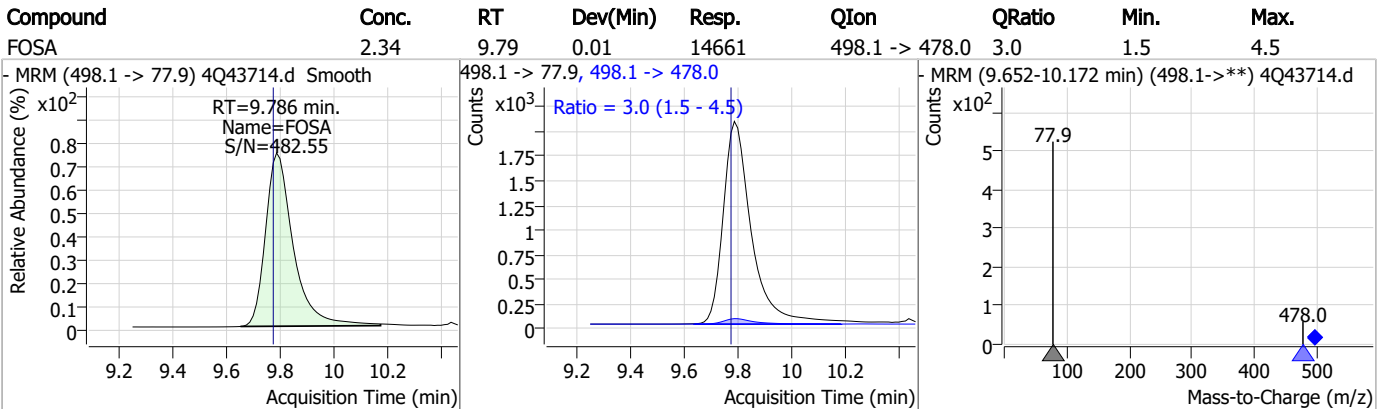
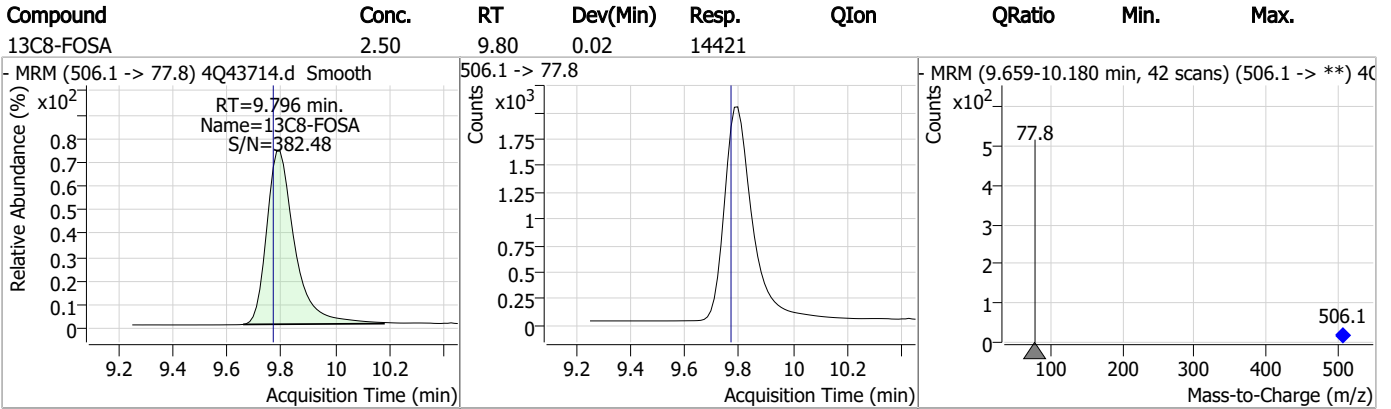
Perfluorinated Compounds by LC/MS/MS



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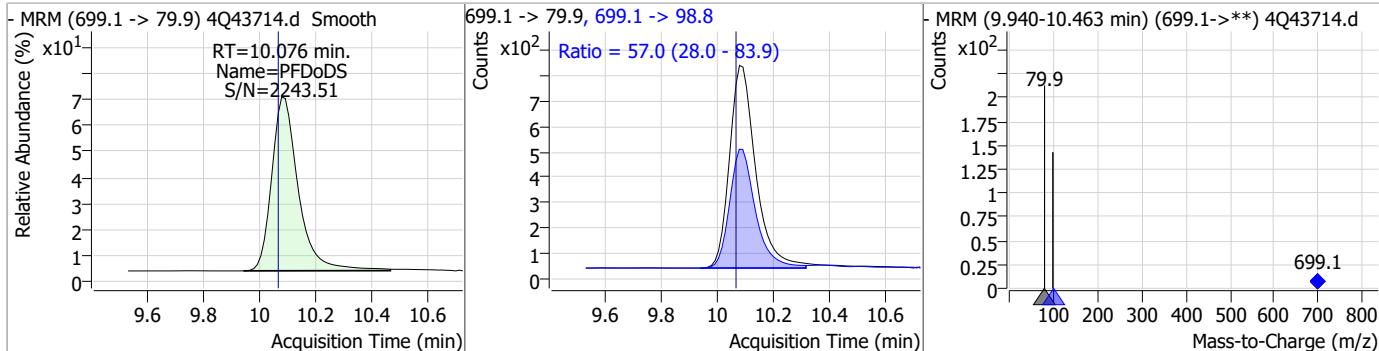
Perfluorinated Compounds by LC/MS/MS



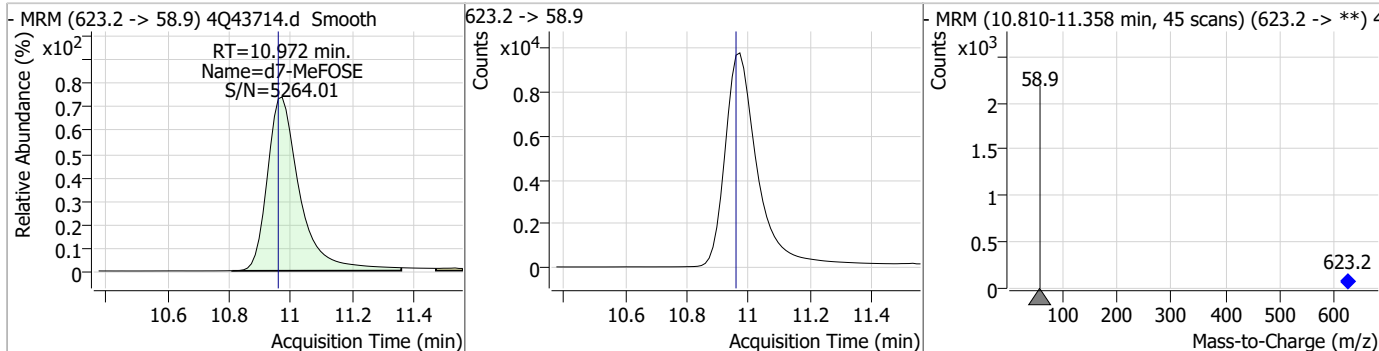
7.7.15
7

Perfluorinated Compounds by LC/MS/MS

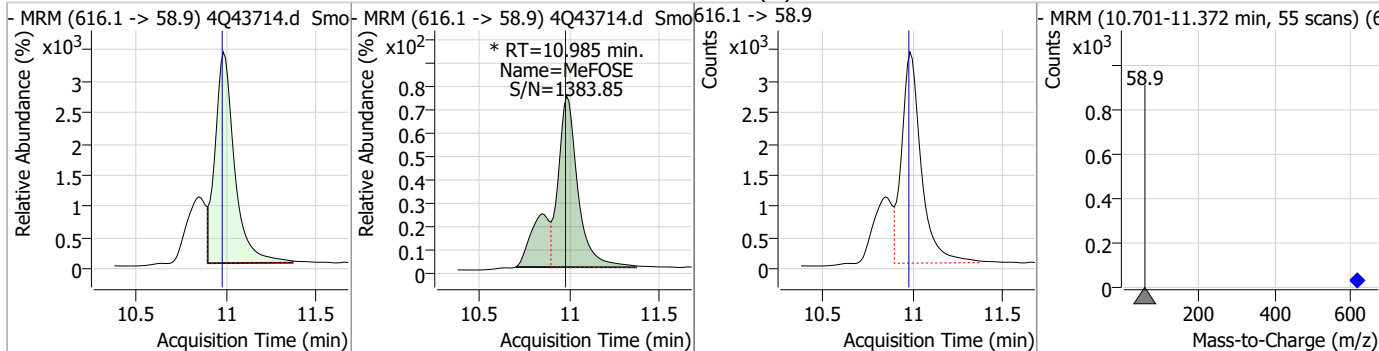
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.29	10.08	0.01	5230	699.1 -> 98.8	57.0	28.0	83.9



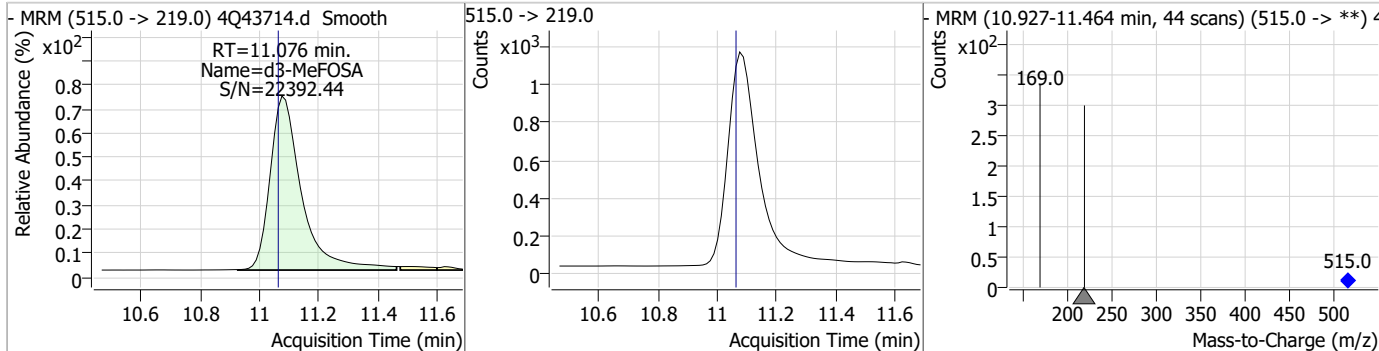
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.92	10.97	0.01	71383				



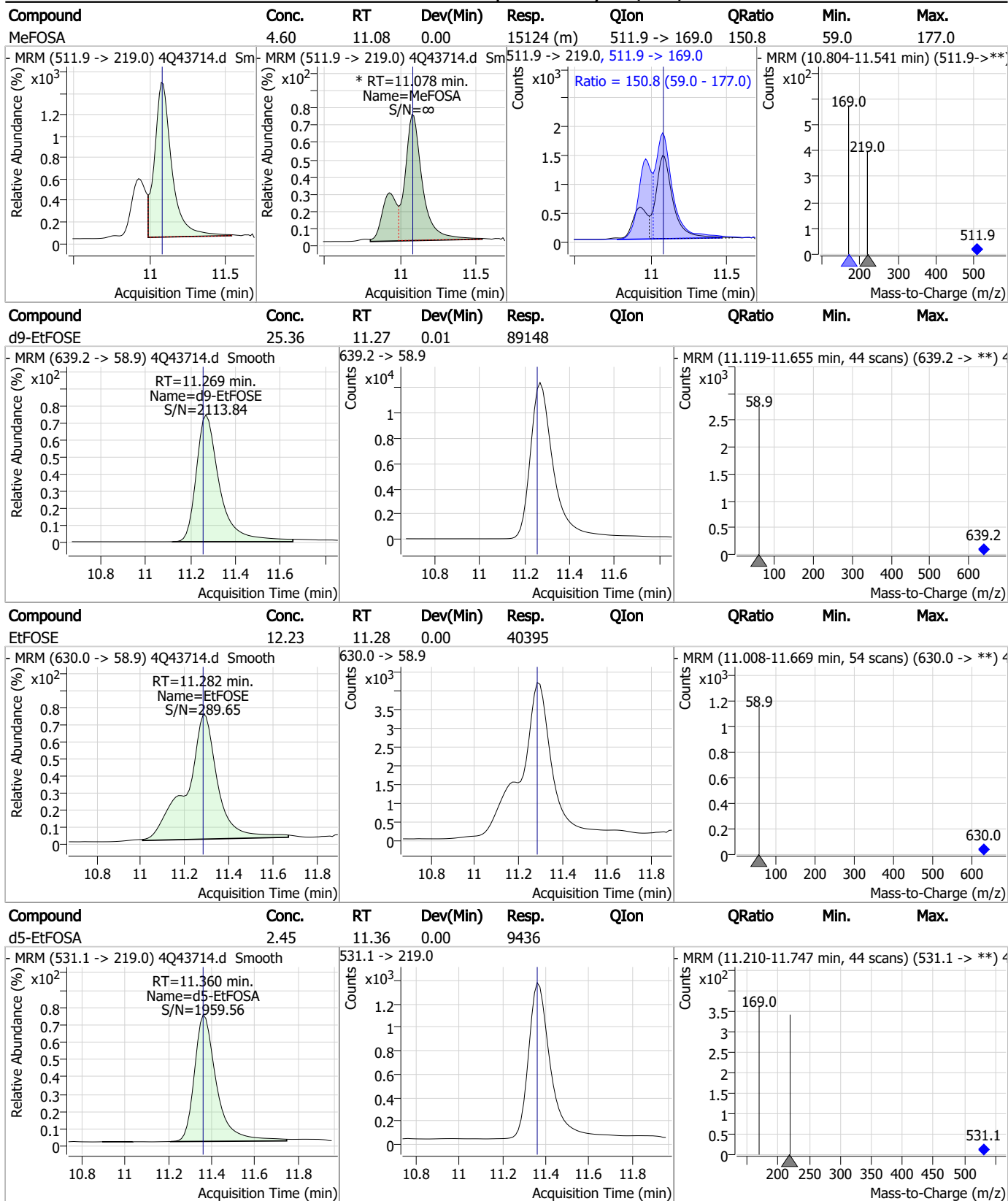
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.27	10.99	0.01	33140 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.52	11.08	0.01	8332				

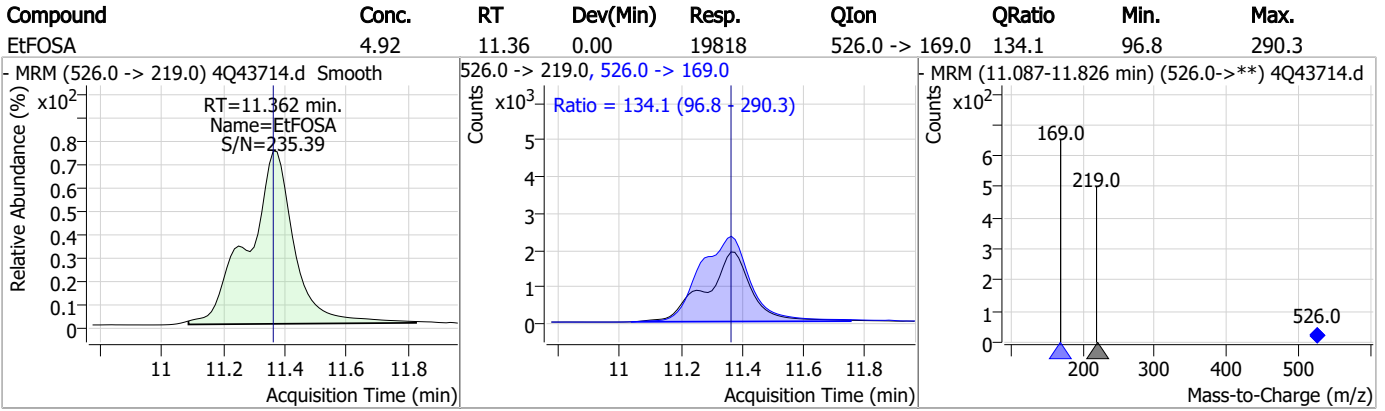


Perfluorinated Compounds by LC/MS/MS



7.7.15
7

Perfluorinated Compounds by LC/MS/MS



7.7.15
7

Manual Integration Approval Summary

Sample Number: S4Q631-CC631 Method: EPA DRAFT 1633
Lab FileID: 4Q43714.D Analyst approved: 04/27/23 12:49 Natasha Gumtie
Injection Time: 04/26/23 20:21 Supervisor approved: 04/27/23 16:58 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.27	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.48	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak

7.7.15.1
7

SGS ORLANDO

DATE:	04/26/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633 041923_S4Q631
CAL DATE:	04/26/23
ANALYST:	M. Valls NG
RUN BATCH:	S4Q631

ELUENT A LOT #:	224863 W5%ACN 214785 2mMAMAC.11387
ELUENT B LOT #:	ACN 214785
IC/CC STD LOT #:	LCMS 2098
ICV STD LOT #:	LCMS 2098B/2100B
ISTD/ID STD LOT #:	11615/11636

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q43676.d	P1-B9	CCB	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	ND
2	4Q43677.d	P1-B9	CCB	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	ND
3	4Q43678.d	P1-B3	RT TDCA	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	✓
4	4Q43679.d	P1-B4	RT BR-LN	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	✓
5	4Q43680.d	P1-A1	ic631-0	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	Check Tune File
6	4Q43681.d	P1-A2	ic631-1	1633full_4Q.m	Calibration	1.6/500	OP96548,S4q631,500,,5.0.1,water	PASS
7	4Q43682.d	P1-A3	ic631-2	1633full_4Q.m	Calibration	3.2/500	OP96548,S4q631,500,,5.0.1,water	PASS
8	4Q43683.d	P1-A4	ic631-3	1633full_4Q.m	Calibration	10/500	OP96548,S4q631,500,,5.0.1,water	PASS
9	4Q43684.d	P1-A5	ic631-4	1633full_4Q.m	Calibration	20/500	OP96548,S4q631,500,,5.0.1,water	PASS
10	4Q43685.d	P1-A6	ic631-5	1633full_4Q.m	Calibration	40/500	OP96548,S4q631,500,,5.0.1,water	PASS
11	4Q43686.d	P1-A7	ic631-6	1633full_4Q.m	Calibration	100/500	OP96548,S4q631,500,,5.0.1,water	PASS
12	4Q43687.d	P1-A8	ic631-7	1633full_4Q.m	Calibration	200/500	OP96548,S4q631,500,,5.0.1,water	PASS
13	4Q43688.d	P1-A9	ic631-8	1633full_4Q.m	Calibration	1x	OP96548,S4q631,500,,5.0.1,water	PASS
14	4Q43689.d	P1-A1	IBLK	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	ND
15	4Q43690.d	P1-B1	icv631-4	1633full_4Q.m	QC	20/500	OP96548,S4q631,500,,5.0.1,water	PASS, prepped by NG
16	4Q43691.d	P1-B2	icv631-20	1633full_4Q.m	QC	100/500	OP96548,S4q631,500,,5.0.1,water	PASS
17	4Q43692.d	P1-A5	cc631-4	1633full_4Q.m	QC	20/500	OP96548,S4q631,500,,5.0.1,water	PASS
18	4Q43693.d	P1-A2	cc631-1,1,0LL	1633full_4Q.m	QC	1.6/500	OP96548,S4q631,500,,5.0.1,water	PASS
19	4Q43694.d	P3-A1	FC5046-1	1633full_4Q.m	Sample	100/500	OP96475,S4q631,560,,5.0.5,water	redo full volume low EIS
20	4Q43695.d	P3-A2	FC3888-1	1633full_4Q.m	Sample	50/500	OP96546,S4q631,10,,5.0.10,water	✓
21	4Q43696.d	P3-A3	op96548-bs	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	✓
22	4Q43697.d	P3-A4	op96548-llbs:3	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	✓
23	4Q43698.d	P3-A5	op96548-mb	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	✓
24	4Q43699.d	P3-A6	FC5328-1	1633full_4Q.m	Sample		OP96548,S4q631,495,,5.0.1,water	✓
25	4Q43700.d	P3-A7	FC5328-2	1633full_4Q.m	Sample		OP96548,S4q631,60,,5.0.1,water	✓
26	4Q43701.d	P3-A8	FC5328-3	1633full_4Q.m	Sample		OP96548,S4q631,525,,5.0.1,water	✓
27	4Q43702.d	P3-A9	FC5328-4	1633full_4Q.m	Sample		OP96548,S4q631,60,,5.0.1,water	✓
28	4Q43703.d	P3-B1	FC5328-5	1633full_4Q.m	Sample		OP96548,S4q631,525,,5.0.1,water	✓
29	4Q43704.d	P1-A5	cc631-4	1633full_4Q.m	QC	20/500	OP96548,S4q631,500,,5.0.1,water	✓
30	4Q43705.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4q631,500,,5.0.1,water	✓
31	4Q43706.d	P3-B2	FC5328-6	1633full_4Q.m	Sample		OP96548,S4q631,495,,5.0.1,water	✓
32	4Q43707.d	P3-B3	FC5482-1	1633full_4Q.m	Sample		OP96548,S4q631,540,,5.0.1,water	✓
33	4Q43708.d	P3-B4	FC5482-2	1633full_4Q.m	Sample		OP96548,S4q631,510,,5.0.1,water	✓
34	4Q43709.d	P3-B5	FC5482-3	1633full_4Q.m	Sample		OP96548,S4q631,550,,5.0.1,water	✓
35	4Q43710.d	P3-B6	op96548-ms	1633full_4Q.m	Sample		OP96548,S4q631,550,,5.0.1,water	✓

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SGS ORLANDO LCMS4-4Q ANALYSIS LOG

36	4Q43711.d	P3-B7	op96548-dup	1633full_4Q.m	Sample	OP96548,S4q631,540,,5.0.1,water	✓
37	4Q43712.d	P3-B8	fc5482-4	1633full_4Q.m	Sample	OP96548,S4q631,560,,5.0.1,water	✓
38	4Q43713.d	P3-B9	FC5482-5	1633full_4Q.m	Sample	OP96548,S4q631,570,,5.0.1,water	✓
39	4Q43714.d	P1-A5	cc631-4	1633full_4Q.m	QC	20/500	✓
40	4Q43715.d	P1-A1	iccb	1633full_4Q.m	Sample	OP96548,S4q631,500,,5.0.1,water	✓
41	4Q43716.d	P3-C1	op96567-bs	1633full_4Q.m	Sample	OP96567,S4q631,500,,5.0.1,water	✓
42	4Q43717.d	P3-C2	op96567-llbs:3	1633full_4Q.m	Sample	OP96567,S4q631,500,,5.0.1,water	✓
43	4Q43718.d	P3-C3	op96567-mb	1633full_4Q.m	Sample	OP96567,S4q631,500,,5.0.1,water	✓
44	4Q43719.d	P3-C4	FC5015-6	1633full_4Q.m	Sample	OP96567,S4q631,565,,5.0.1,water	✓
45	4Q43720.d	P1-A5	ecc631-4	1633full_4Q.m	QC	20/500	✓
46	4Q43721.d	P1-A1	iccb	1633full_4Q.m	Sample	OP96548,S4q631,500,,5.0.1,water	✓

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 2098A	1033 SPIKE Cal std.	11672A	PFAC	Wellington	8/18/27	3/23/24	1-4 ppm	2.50uL	4mL	0.25 ppm	1033 MIX	4/6/23	10/6/23	MW
		11672B	MXH			4/16/24				250ppb				
		LCMS 2097	Br-In Et, Me	Sgs	9/1	10/28/23	3ppm	250uL		312.5ppb				
		11674B	PFAC MXF	Wellington	1/11/25	3/30/24	2ppm	250uL		350ppb				
		11675	PFAC MXG		12/1/27	3/30/24	2ppm	250uL		125ppb				
		11672B	PFAC MXJ		9/14/26	3/23/24	4-20 ppm	312uL		312/1000 ppb				
LCMS 2099	537.1 Du std. (INTERNAL)	11070	MSF-PEA	Wellington Labs	07/06/25	04/06/24	50ppm	80uL	4mL	1.0ppm	2011MSA 41, H2O	04/13/23	06/15/23	NG
		10438A	Mw:2 FTS		11/05/25	04/06/24		80uL		1.0ppm				NG
		10512B	d3-N-NECOAA		10/22/25	05/15/23		160uL		2.0ppm				NG
		10498A	M:PFOS		11/02/25	03/22/24		80uL		1.0ppm				NG
		11069	M:PFDA		12/09/26	03/22/24		80uL		1.0ppm				NG
LCMS 2100	Full List (90)	11626	PFOR 28 Comp.	Absolute	11/19/27	4/11/24	1.0ppm	400uL	4.0mL	160ppb	75% MeOH 5% H2O	4/11/23	7/24/23	MW
91B	List 40 spike (500)	LCMS 2067	40 List ADD ON #1	Sgs wld.		8/23/23	1.0ppm	400uL			(2.40031)			
		LCMS 2070	40 List ADD ON #2			5/12/23	1.0ppm	400uL						
		LCMS 2054	Fose std.			7/24/23	5.0ppm	400uL		50ppb				
LCMS 2101	Fose std.	11336	N-et Fose	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% MeOH 5% H2O	9/11/23	9/19/23	MW
		11338	N-me fose		5/13/27	9/19/23	50ppm	200uL						

* B/C checked are normal

* tested & passed on 10/11/23

LCMS 2100 91B * 100% 100% 100%

* based on date opened as specified in each SGS - Orlando SOP.

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(1,000)



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 2095A-J	(10ppb) PFC ID SURF	A-J 11669	PFAC-2YES	Wellington Labs	01/15/23	03/28/24	1.0ppm	2.4mL	~50mL	0.5ppm	05/10/23	03/28/23	09/26/23	NS
↓	↓	11585	M2HFO-DA	↓	11/08/23	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
↓	↓	11431	d-N-METOSAN	↓	05/06/27	03/13/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
LCMS 2096A-B	1033 spike Cal cert.	11672	PFAC-MxH	Wellington Labs	8/15/27	3/23/24	1-4 ppm	250uL	4mL	0.25 1.25 2.50ppb	1033 MIX	3/30/23	9/30/23	MUJ
↓	↓	11686	PFAC-MxI	↓	2/27/28	3/30/24	170 ppm	250uL	↓	0.25 0.25ppb	↓	↓	↓	↓
↓	↓	11674A	PFAC-MxG	↓	11/1/25	3/23/29	2ppm	500uL	↓	250ppb	↓	↓	↓	↓
↓	↓	11674B	PFAC-MxH	↓	12/1/27	3/30/24	2ppm	250uL	↓	125ppb	↓	↓	↓	↓
↓	↓	11675	PFAC-MxG	↓	9/14/26	3/30/24	4-20 ppm	312uL	↓	312/100 ppb	↓	↓	↓	↓
↓	↓	11642B	PFAC-MxJ	↓	10/28/23	10/28/23	50ppm	200uL	5mL	2ppm	1033 MIX	4/16/23	10/28/23	MUJ
LCMS 2097A-B	BR-LN metet for 1033	11497	br-N metosa	Wellington Labs	08/23/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11498	br-N Effosa	↓	10/07/27	10/28/23	50ppm	200uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11495	br-N metosa	↓	10/28/23	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11494	br-N Effosa	↓	10/17/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓					4/6/24								

* tested & used on 3/29/24 10/27

** 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 2067	40 List Std. ADD-ON #1	10726A	FTS	Wellington	3/3/26	3/21/23	50 ppm	80 uL	4.0 mL	1 ppm	95% meth	2/8/23	3/21/23	MV
		10840	L ⁻ PFDOS		7/9/26	10/18/23							8/23/23	
		10829	N ⁻ McFOSA		8/3/26	8/23/23								
		10837	N ⁻ EtFOSA		8/3/26	8/23/23								
		10842	PFHxDA		9/3/26	10/18/23								
		10841	PFODA		5/7/26	10/18/23								
		11116 B	3:3 FTCA PFAPA		2/3/27	2/8/24								
		10685A	5:3 FTCA PFAPA		11/11/25	8/23/23								
		11116 A	7:3 FTCA FHAPA		11/12/25	2/8/24								
		11332	PFECHS		3/2/27	10/18/23								
		10762B	PFEESA		5/13/25	10/18/23								
		10763B	PFMBA PF50HxA		3/31/25	10/18/23								
		10764	PFMPA PF406A		3/31/25	2/8/24								
		10765B	NFHDA 3.6-08APA		3/31/25	10/18/23								
					NS	02/10/23								

* 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
* 2074 A-B LCMS 2074 A-B	PFC SPIKE	11613	PROA-SDP C8800015	Absolute	11/09/27	02/23/24	1.0ppm	2mL	5mL	400ppb	95% MeOH 5% H2O	02/23/23	03/23/23	UG
↓	↓	10829	N-Me- FSA-M	Wellington Labs	08/23/26	09/23/23	50ppm	40uL	↓	↓	↓	↓	↓	NG
↓	↓	11250	FBSA-1	↓	11/10/26	11/08/23	↓	↓	↓	↓	↓	↓	↓	NG
↓	↓	11249	FHSA-1	↓	12/29/26	11/03/23	↓	↓	↓	↓	↓	↓	↓	NG
↓	↓	11332	FTECHS	↓	03/28/27	10/18/23	↓	↓	↓	↓	↓	↓	↓	NG
* 2075 A-F LCMS 2075 A-F	(10 PPB) PFC ID SURF	11639	MPAC- 24ES	Wellington Labs	03/24/27	02/23/24	1.0ppm	2.4mL	~50 mL	0.5ppm	95% MeOH 5% H2O	02/23/23	02/23/23	NG
↓	↓	11585	N2HFO- DA	Wellington Labs	11/08/23	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
↓	↓	11385	A-N- NFCOSAM	Wellington Labs	05/10/27	01/01/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
LCMS 2076	40 List std. ADDON #2	11250	FBSA-1	Wellington Labs	11/10/26	11/8/23	50ppm	80uL	4.0mL	1ppm	95% MeOH 5% H2O	2/17/23	5/19/26	MV
↓	↓	11249	FHSA-1	↓	2/29/26	11/3/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
↓	↓	11140	L-PFAS	↓	7/12/26	5/26/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
LCMS 2077A-B	1633 Solvent B	11387	Ammonium Acetate	Sigmall drich	---	1/25/24	99.9%	0.62g	4L	2mM	MA	2/28/23	4/28/23	MV
↓	↓	Lot# 224870	HPLC water	Fisher	---	2/28/23	↓	3.800ml	↓	95%	↓	↓	↓	↓
↓	↓	Lot# 220225	Acetonil trile	↓	---	2/20/24	↓	200mL	↓	5%	↓	↓	↓	↓
↓	↓	---	---	---	---	n/a	n/a	n/a	2/28/23	---	---	---	---	---
↓	↓	---	---	---	---	Continue next page #1	---	---	---	---	---	---	---	---

* 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 2052	1633 prep mix	Lot: 221044	MeOH	Fisher	—	1/4/24	99.9%	92 mL	100 mL	92%	N/A	1/19/23	2/19/23	MV
↓	↓	Lot: 219481	NH4OH	↓	—	9/19/23	100%	3.3 mL	↓	1%	↓	↓	↓	↓
↓	↓	Lot: 224863	H2O	↓	—	1/17/24	100%	1.7 mL	↓	4%	↓	↓	↓	↓
↓	↓	Lot: 224297	Acetic ACID	↓	—	6/24	99.7%	0.625 mL	↓	.625%	↓	↓	↓	↓
LCMS 2053	(spike) Full list std	11568	PF6A 200 28	SGS standards	11/9/27	1/10/24	1.0 ppm	400 NL	4.0 mL	100 ppb	95% MeOH 5% H2O	12/4/23	3/21/23	MV
↓	↓	LCMS 1987	40 list add-on #1	↓	—	3/21/23	1.0 ppm	400 NL	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 1986	40 list add-on #2	↓	—	4/8/23	1.0 ppm	400 NL	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2054	FOSC std.	↓	—	7/24/23	5.0 ppm	400 NL	↓	500 ppb	↓	↓	↓	↓
LCMS 2054	FOSC std.	11336	N-Et-FOSE	Wellington	5/13/27	9/19/23	50 ppm	200 NL	2.0 mL	5 ppm	95% MeOH 5% H2O	12/4/23	7/24/23	MV
↓	↓	11338	N-ME FOSE	↓	5/13/27	9/19/23	50 ppm	200 NL	↓	↓	↓	↓	↓	↓
LCMS 2055	1633 Cal std.	10855	PFAC-MxH	Wellington	9/14/26	1/17/24	1-4 ppm	250 NL	4 mL	62.5 125 250 ppb	1633 MIX	1/24/23	7/24/23	MV
↓	↓	10853I	PFAC-MxI	↓	9/14/26	1/11/24	1-10 ppm	250 NL	↓	62.5 125 250 ppb	↓	↓	↓	↓
↓	↓	11579B	PFAC-MxF	↓	11/1/25	1/11/24	2 ppm	500 NL	↓	250 ppb	↓	↓	↓	↓
↓	↓	11607A	PFAC-MxG	↓	3/4/25	1/24/24	2 ppm	250 NL	↓	125 ppb	↓	↓	↓	↓
↓	↓	10854I	PFAC-MxJ	↓	9/14/26	1/11/24	4-20 ppm	312 NL	↓	312/100 ppb	↓	↓	↓	↓
↓	↓	11492	PFAC-MxJ	↓	9/14/26	1/24/24	4-20 ppm	312 NL	↓	312/100 ppb	↓	↓	↓	↓
↓	↓	11603	PFAC-MxJ	↓	9/14/26	1/24/24	4-20 ppm	312 NL	↓	312/100 ppb	↓	↓	↓	↓

* based on date opened as specified in each SGS - Orlando SOP.

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**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

br-NMeFOSE

**2-(N-Methylperfluorooctanesulfonamido)ethanol
Isomeric Mix**

<u>PRODUCT CODE:</u>	br-NMeFOSE
<u>LOT NUMBER:</u>	brNMeFOSE0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/02/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/07/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
<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% 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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Revision#:9, Revised 2020-12-23

brNMeFOSE0922 (1 of 7)
rev1

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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

**2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix**

<u>PRODUCT CODE:</u>	br-NEtFOSE
<u>LOT NUMBER:</u>	brNEtFOSE1022
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/12/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
<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% 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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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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brNMeFOSA0822 (1 of 6)
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WELLINGTON LABORATORIES

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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Revision#:9, Revised 2020-12-23

brNEtFOSA0922 (1 of 6)
rev1

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11642 A-B
rec'd: 02/06/23



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>	PFACMXJ0921
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/08/2021
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/14/2021
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	09/14/2026
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

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

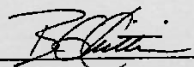
PFACMXJ:0921 (1 of 5)
rev1

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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: 10/02/2021
(m/mcd/yyyy)

11672
rec'd: 02/23/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

**Native PFAS
Solution/Mixture**

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0822
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 08/05/2022
LAST TESTED: (mm/dd/yyyy) 08/08/2022
EXPIRY DATE: (mm/dd/yyyy) 08/08/2027
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 (FOSA). 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

PFACMXH0822 1 of 11
rev0

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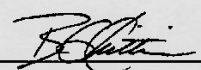
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Table A: PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

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		24
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		23
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 ^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: 08/09/2022
(mm/dd/yyyy)

11674 A-B
rec'd: 02/23/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE:	PFAC-MXF
LOT NUMBER:	PFACMXF0122
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2022
LAST TESTED: (mm/dd/yyyy)	01/11/2022
EXPIRY DATE: (mm/dd/yyyy)	01/11/2025
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 (9CI-PF3ONS and 11CI-PF3OUDS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

The individual native 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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Table A:

PFAC-MXF; 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	
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-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: 01/12/2022
(mm/dd/yyyy)

11675
rec'd: 02/23/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic Acids and Sulfonate Solution/Mixture

PRODUCT CODE: PFAC-MXG
LOT NUMBER: PFACMXG1122
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/30/2022
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
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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Revision# 9, Revised 2020-12-23

PFACMXG1122 (1 of 5)
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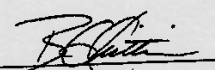
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PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Table A

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:  Date: 12/09/2022
(mm/dd/yyyy)
 B.G. Chittim, General Manager

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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

FPePA1120

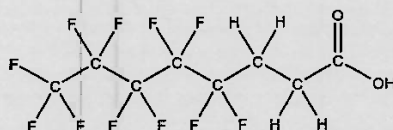
COMPOUND:

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)

11/11/2020

EXPIRY DATE: (mm/dd/yyyy)

11/11/2025

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.
- Contains <1% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

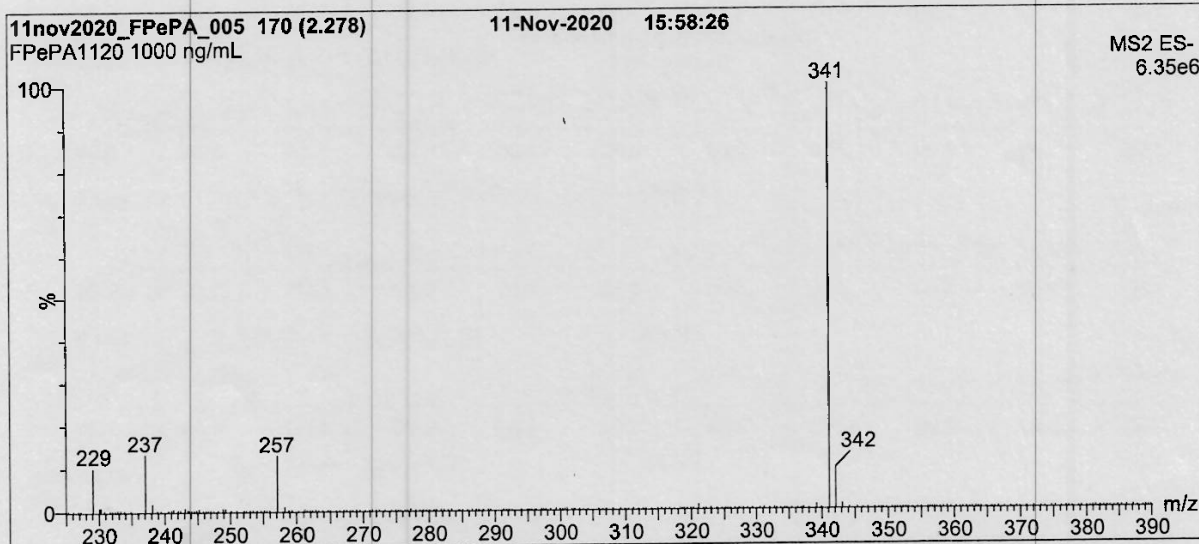
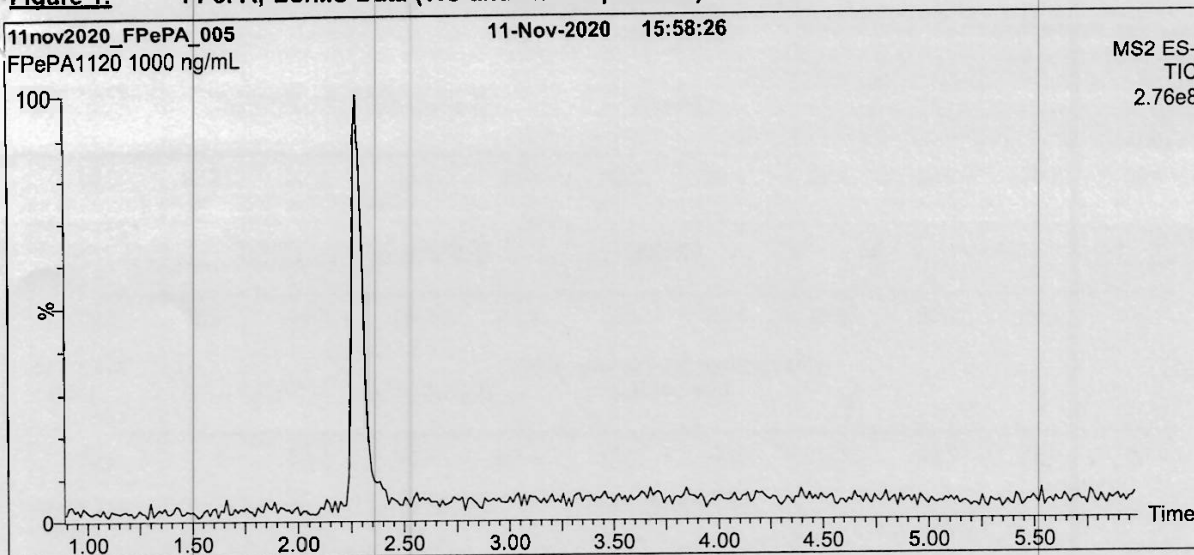
(mm/dd/yyyy)

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Form#:27, Issued 2004-11-10
 Revision#:8, Revised 2020-09-10

FPePA1120 (1 of 4)
 rev0

Figure 1: FPePA; 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 RP_{1a}
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) = 18.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

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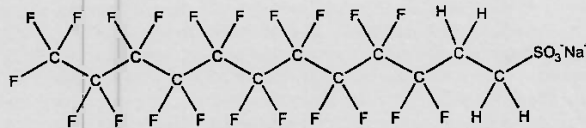


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS0221
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) 03/03/2021
EXPIRY DATE: (mm/dd/yyyy) 03/03/2026
RECOMMENDED STORAGE: Refrigerate ampoule

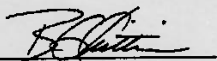
DOCUMENTATION/ DATA ATTACHED:

- 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:  **Date:** 03/05/2021
B.G. Chittim, General Manager (mm/dd/yyyy)

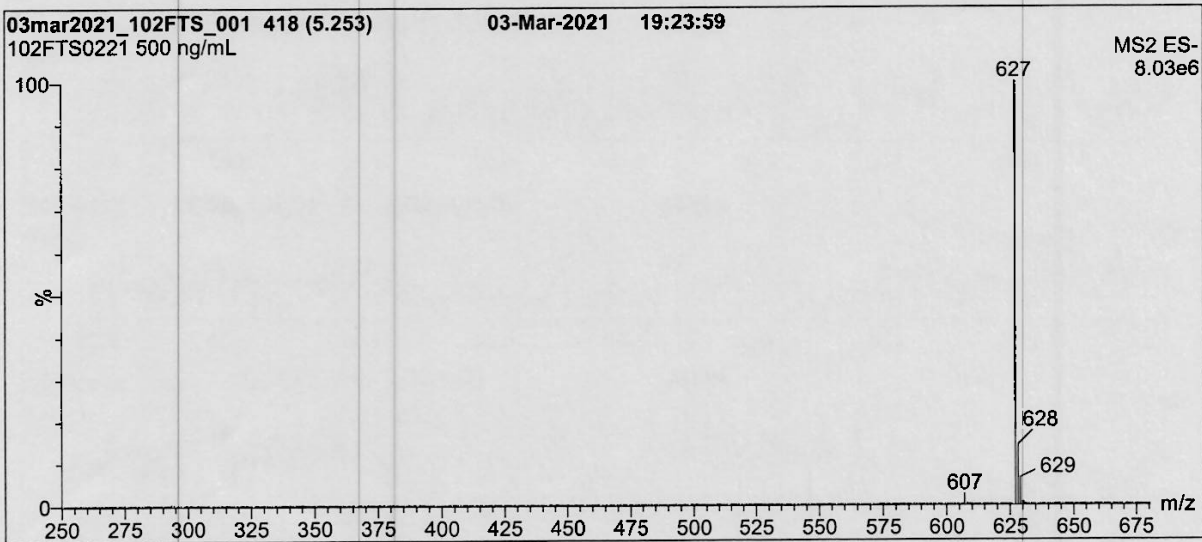
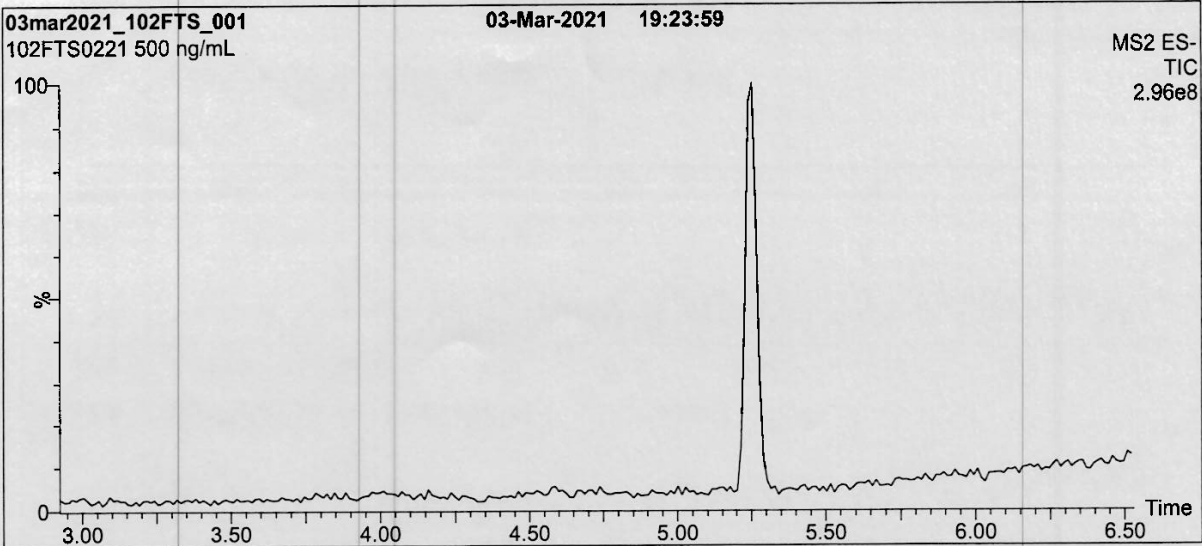
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Revision#: 9, Revised 2020-12-23

7.9.1

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Figure 1: 10:2FTS; LC/MS Data (Full Scan 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: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (250 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

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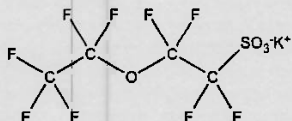
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFEESA *rec'd
8/20/21
WPH* **LOT NUMBER:** PFEESA0520

COMPOUND: Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE: **CAS #:** 117205-07-9



MOLECULAR FORMULA: C₄F₉SO₄K **MOLECULAR WEIGHT:** 354.19

CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol

44.6 ± 2.2 µg/ml (PFEESA acid)

44.5 ± 2.2 µg/ml (PFEESA anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 05/13/2020

EXPIRY DATE: (mm/dd/yyyy) 05/13/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

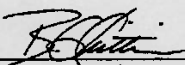
Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 05/29/2020
(mm/dd/yyyy)

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Revision#:7, Revised 2020-01-09

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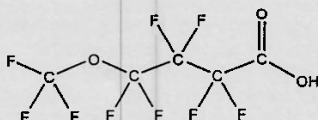
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF5OHxA *res'd with 8/20/21* **LOT NUMBER:** PF5OHxA0320

COMPOUND: Perfluoro-5-oxahexanoic acid

SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)

STRUCTURE: **CAS #:** 863090-89-5



MOLECULAR FORMULA: C₅HF₉O₃ **MOLECULAR WEIGHT:** 280.05

CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 03/31/2020

EXPIRY DATE: (mm/dd/yyyy) 03/31/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

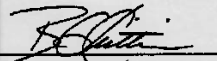
DOCUMENTATION/ DATA ATTACHED:

- 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.
- 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: 12/21/2020
(mm/dd/yyyy)

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PF5OHxA0320 (1 of 4)
rev1

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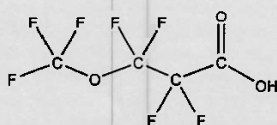
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF4OPeA *rec'd
WPH
8/20/21* **LOT NUMBER:** PF4OPeA0320

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) 03/31/2020

EXPIRY DATE: (mm/dd/yyyy) 03/31/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

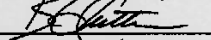
DOCUMENTATION/ DATA ATTACHED:

- 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.
- 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: 12/21/2020
(mm/dd/yyyy)

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PF4OPeA0320 (1 of 4)
rev1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

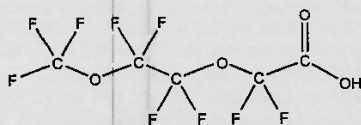
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

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.
- 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: 05/27/2020
(mm/dd/yyyy)

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10829



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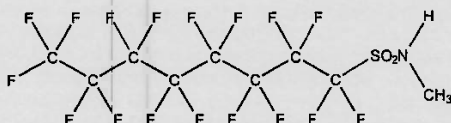
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPA
10/5/21

MOLECULAR FORMULA: C₉H₄F₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/03/2021
EXPIRY DATE: (mm/dd/yyyy) 08/03/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

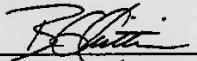
DOCUMENTATION/ DATA ATTACHED:

- 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: 08/04/2021
(mm/dd/yyyy)

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Revision#:9, Revised 2020-12-23

NMeFOSA0721M (1 of 4)
rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

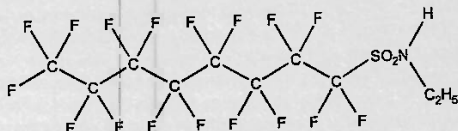
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

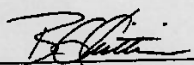
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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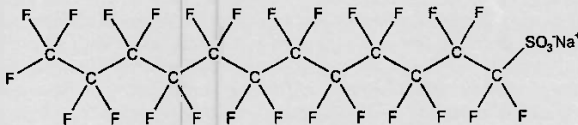
10840

PRODUCT CODE: L-PFDoS
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na
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)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/09/2021
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
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 ~0.2% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 07/16/2021
(mm/dd/yyyy)

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10847 NS 01/18/23

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0821

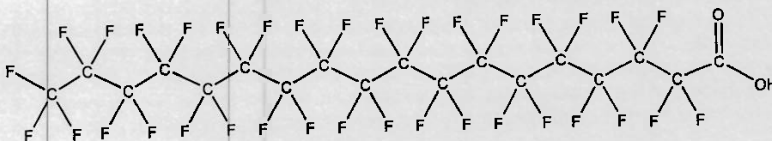
COMPOUND:

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)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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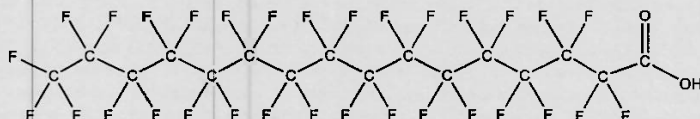
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0421

COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆HF₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/07/2021
EXPIRY DATE: (mm/dd/yyyy) 05/07/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

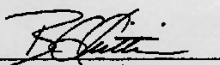
DOCUMENTATION/ DATA ATTACHED:

- 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 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:  **Date:** 05/25/2021
 B.G. Chittim, General Manager (mm/dd/yyyy)

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 Revision#:9, Revised 2020-12-23

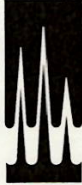
PFHxDA0421 (1 of 4)
 rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

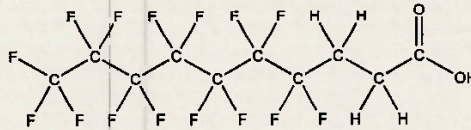
COMPOUND:

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

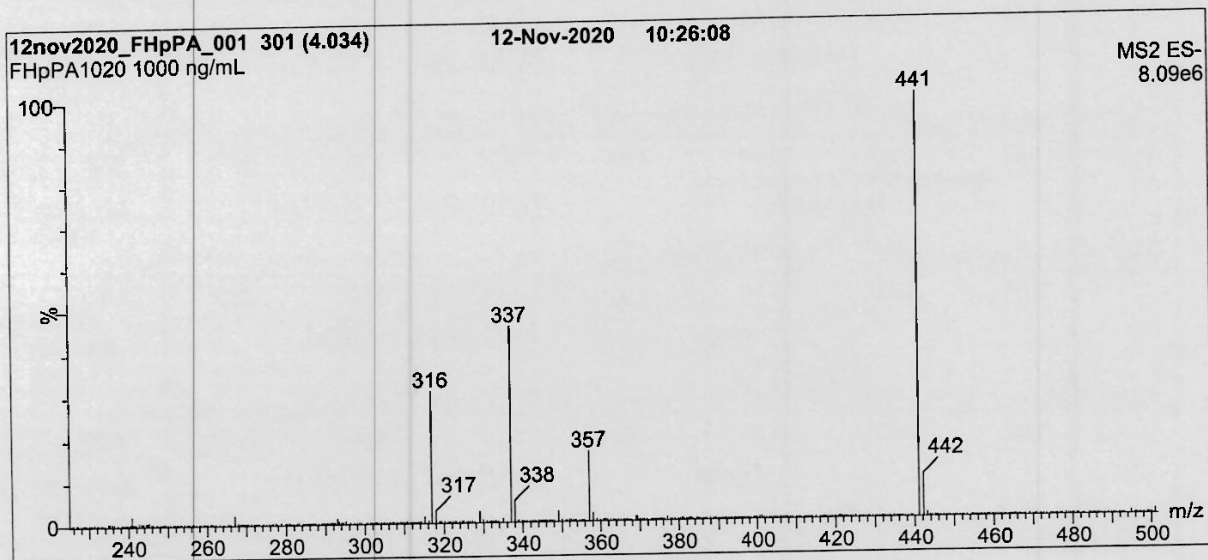
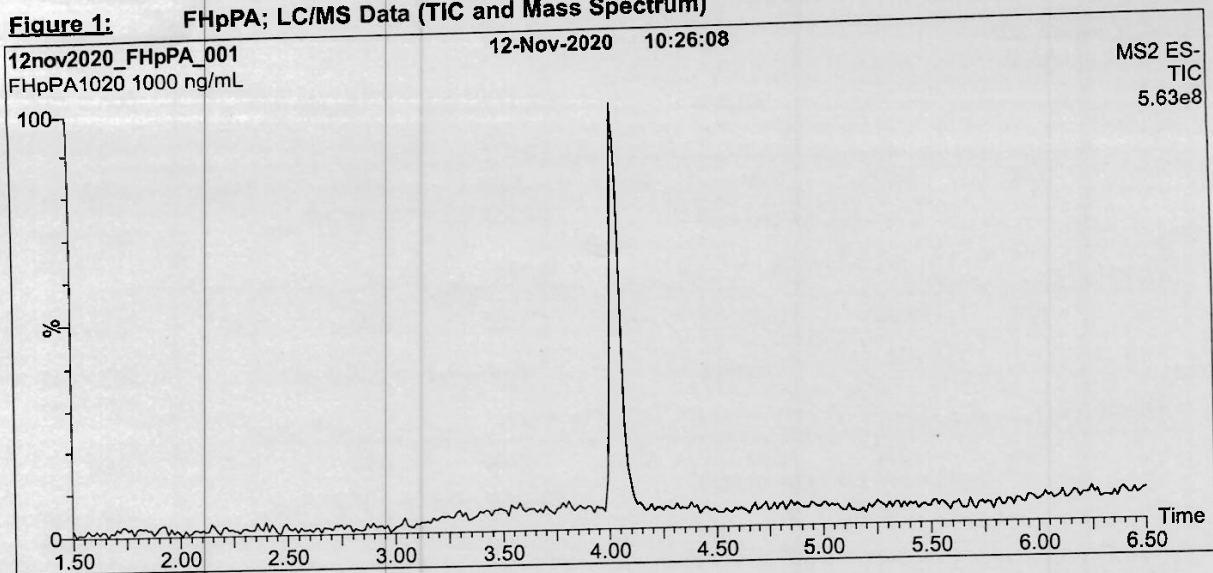
(mm/dd/yyyy)

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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

FP_rPA(3:3FTCA) 1116 B



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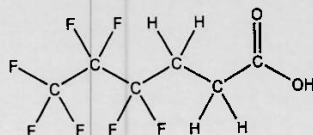
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPrPA0122

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

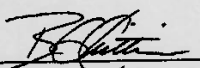
DOCUMENTATION/ DATA ATTACHED:

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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11140



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

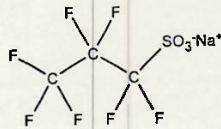
COMPOUND:

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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7/1/22 KA



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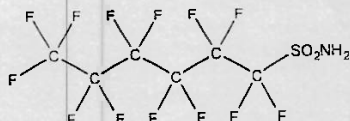
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FHxSA-I
COMPOUND: Perfluoro-1-hexanesulfonamide

LOT NUMBER: FHxSA12211

STRUCTURE:

CAS #: 41997-13-1



MOLECULAR FORMULA: C₆H₂F₁₃NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/29/2021
EXPIRY DATE: (mm/dd/yyyy) 12/29/2026
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 399.13
SOLVENT(S): isopropanol

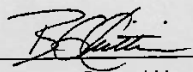
DOCUMENTATION/ DATA ATTACHED:

- 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: 01/10/2022
(mm/dd/yyyy)

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Form# 27, Issued 2004-11-10
Revision# 9, Revised 2020-12-23

FHxSA12211 (1 of 4)
rev0

7.9.1

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11250 Lx 7/1122



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FBSA-I

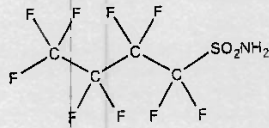
LOT NUMBER: FBSA11211

COMPOUND:

Perfluoro-1-butananesulfonamide

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA:

C₄H₂F₁₀NO₂S

MOLECULAR WEIGHT: 299.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/10/2021

EXPIRY DATE: (mm/dd/yyyy)

11/10/2026

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: 11/10/2021

(mm/dd/yyyy)

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11332



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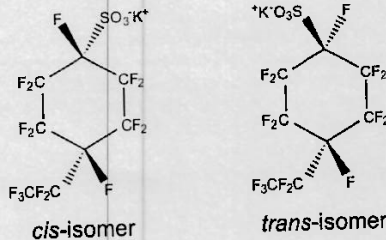
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:
COMPOUND:

PFECHS
Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

LOT NUMBER: PFECHS0222

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:
CONCENTRATION:

$C_8F_{15}SO_3K$
50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)
>98%

MOLECULAR WEIGHT: 500.22
SOLVENT(S): Methanol

CHEMICAL PURITY:

LAST TESTED: (mm/dd/yyyy)

03/28/2022

EXPIRY DATE: (mm/dd/yyyy)

03/28/2027

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 a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*).

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Certified By:

B.G. Chittim, General Manager

Date: 03/30/2022
(mm/dd/yyyy)

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11338



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

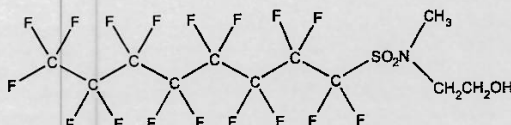
NMeFOSE0522M

COMPOUND:

2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE:**CAS #:**

24448-09-7

**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, General Manager
Date: 06/14/2022
(mm/dd/yyyy)

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11615 A-5
rec'd 01/19/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled PFAS Injection
Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS1122
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/28/2022
LAST TESTED: (mm/dd/yyyy) 11/29/2022
EXPIRY DATE: (mm/dd/yyyy) 11/29/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (^{13}C) perfluoroalkylcarboxylic acids (C_4 , C_6 , C_8 - C_{10}) and two mass-labelled (^{18}O and ^{13}C) perfluoroalkanesulfonates (C_6 and C_8). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and mass-labelled perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of $\geq 99\%$ per ^{13}C or >94% per ^{18}O .

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

MPFACHIFIS1122 (1 of 5)
rev0

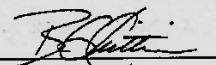
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Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

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: 12/05/2022
(mm/dd/yyyy)



11626
rec'd 01/26/23

CERTIFIED WEIGHT REPORT

Part Number: 64029A
Lot Number: 110922
Description: PFOA - DOD
28 components
Expiration Date: 110927
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 1.0
NIST Test ID#: 6UTB

Solvent(s): Methanol (1 mM KOH)
2-Propanol
Lot#: 102722 (99%)
32500 (2%)

Formulated By: <i>P. S. Chauhan</i>	110922
Prepared By: <i>Prashant Chauhan</i>	DATE
Reviewed By: <i>Pedro L. Rentas</i>	110922
	DATE

Volume(s) shown below were combined and diluted to (mL):
Note: All assigned values are anion concentrations.

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.)		
									Free Acid CAS#	OSHA PEL (TWA)	LD50
1. Perfluoro-n-butanoic acid (PFBA)	99542	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A
2. Perfluoro-n-pentanoic acid (PFPeA)	99543	050222	0.02	2.00	0.017	50.3	1.01	0.02	2706-90-3	N/A	N/A
3. Perfluorohexanoic acid (PFHxA)	99199	071122	0.02	2.00	0.017	50.2	1.00	0.02	307-24-4	N/A	N/A
4. Perfluoroheptanoic acid (PFHpA)	99197	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-85-9	N/A	N/A
5. Perfluorooctanoic acid (br-PFOA)*	99202	080522	0.02	2.00	0.017	50.2	1.00	0.02	335-67-1 (L)	N/A	ip-rat 189mg/kg
6. Perfluorononanoic acid (PFNA)	99200	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-95-1	N/A	N/A
7. Perfluorodecanoic acid (PFDA)	99195	110922	0.02	2.00	0.017	50.0	1.00	0.02	335-76-2	N/A	rat 57mg/kg
8. Perfluoroundecanoic acid (PFUnA)	99205	071522	0.02	2.00	0.017	50.2	1.00	0.02	2058-94-8	N/A	N/A
9. Perfluorododecanoic acid (PFDoA)	99196	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A
10. Perfluorotridecanoic acid (PTTDA)	99204	110922	0.02	2.00	0.017	50.1	1.00	0.02	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid (PTeDA)	99203	033022	0.02	2.00	0.017	50.1	1.00	0.02	376-06-7	N/A	N/A
12. Perfluoro-1-octanesulfonamide (FOSA)	3677	FOSA03221	0.02	2.00	0.017	50.0	1.00	0.05	2355-31-9 (L)	N/A	N/A
13. N-Methylperfluoro-1-octanesulfonamidoacetic acid (br-NMeFOSAA)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
14. N-Ethylperfluoro-1-octanesulfonamidoacetic acid (br-NEFOSAA)*	4163	brNEFOSAA1121	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	99194	080522	0.02	2.00	0.017	50.2	1.00	0.02	375-73-5	N/A	N/A
16. Perfluoro-1-pentanesulfonic acid (PFPeS)	99544	032422	0.02	2.00	0.017	50.1	1.00	0.02	2706-91-4	N/A	N/A
17. Perfluorohexanesulfonic acid (br-PFHxS)*	99198	071522	0.02	2.00	0.017	50.2	1.00	0.02	355-46-4 (L)	N/A	N/A
18. Perfluoro-1-heptanesulfonic acid (PFHpS)	3672	LPFHpS0822	0.021	2.10	0.017	47.6	1.00	0.05	375-92-8	N/A	N/A
19. Heptadecafluorooctanesulfonic acid (br-PFOS)*	99201	033022	0.02	2.00	0.017	50.1	1.00	0.01	1763-23-1 (L)	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid (PFNS)	3957	LPFNS1021	0.021	2.10	0.017	48.0	1.01	0.05	68259-12-1	N/A	N/A
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPFDS0222	0.021	2.10	0.017	48.2	1.01	0.05	335-77-3	N/A	N/A
22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	65271	080522	0.02	2.00	0.017	50.2	1.00	0.05	757124-72-4	N/A	N/A
23. 1H,1H,2H,2H-Perfluoroheptane sulfonic acid (6:2FTS)	65272	071522	0.02	2.00	0.017	50.2	1.00	0.05	29108-34-4	N/A	N/A
24. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (8:2FTS)	3662	82FTS0822	0.021	2.10	0.017	47.9	1.01	0.05	39108-34-4	N/A	N/A
25. 2-(Heptafluoropropoxy)-2,3,3,3-tetrafluoropropanoic acid (HFPO-DA)	99666	080522	0.02	2.00	0.017	50.1	1.00	0.02	13252-13-6	N/A	N/A
26. 11-Chlorooctadecafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUds)	4165	11ClPF3OUds0522	0.021	2.12	0.017	47.1	1.00	0.05	763051-92-9	N/A	N/A
27. 9-Chlorooctadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	4164	9ClPF3ONS0522	0.021	2.14	0.017	46.8	1.00	0.05	756426-58-1	N/A	N/A
28. Dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA)	4103	NaDONA0922	0.021	2.12	0.017	47.1	1.00	0.05	919005-14-4	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	080522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	ip-rat 189mg/kg
Perfluorooctanoic acid (branched isomer)*	99202	080522	0.02	2.00	0.004	0.6	0.01	0.001	335-67-1 (L)	N/A	ip-rat 189mg/kg
Perfluorohexanesulfonic acid (linear)*	99198	071522	0.02	2.00	0.017	44.2	0.88	0.02	355-46-4 (L)	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	99198	071522	0.02	2.00	0.017	6.0	0.12	0.0021	355-46-4 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (linear)*	99201	033022	0.02	2.00	0.017	38.1	0.76	0.02	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	7.5	0.15	0.003	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	4.0	0.08	0.002	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	0.5	0.010	0.0002	1763-23-1 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	36.0	0.72	0.04	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	6.5	0.13	0.011	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	5.0	0.10	0.005	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	2.5	0.05	0.0009	2355-31-9 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSAA1121	0.02	2.00	0.017	36.6	0.73	0.04	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	7.7	0.15	0.009	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	6.3	0.11	0.005	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	0.4	0.007	0.0006	2991-50-6 (L)	N/A	N/A

*Concentrations for branched and linear isomers are based on LCMS chromatographic analysis only.

A qualitative standard (Sect. 3.19) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This qualitative PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers, but the linear only PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.

The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
Uncertainty Reference: Taylor, B.N. and Kaye, C.E. "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

7.9.1
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11636 A-J
rec'd 02/06/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES1022
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 10/28/2022
LAST TESTED: (mm/dd/yyyy) 11/23/2022
EXPIRY DATE: (mm/dd/yyyy) 11/23/2025
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 (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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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Form#: 13, Issued 2004-11-10
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MPFACHIFES1022 (1 of 7)
rev0

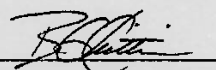
7.9.1

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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 ₁₀)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₁₁)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		22
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		17
N-methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		24
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		16
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 ₅ -ol	d9-N-EtFOSE	5000		23
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: 11/24/2022
(mm/dd/yyyy)

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 04/24/23 11:00
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (QSM)

Date/Time: 04/26/23 10:00
Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP96548 Ext. By: GH

Conc. By: _____ Viald 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 96548 MB		500	7	N/A	25		5	E	
OP 96548 BS		500	7			200			
OP 96548 LLBS		500	7			60			
FC5328-1	2	445	6						
	2	60	7						
	3	525							dirty brown
	4	60							
	5	525							dirty, dark brown
	6	445							
FC5482-1	2	540							
	2	510							E
	3	550							F
	4	560							
	5	570	7	N/A	25		5		F
OP FC5482-3MS	3	550	7	N/A	25	200	5	E	
OP MSD									
OP FC5482-4 DUP	3	540	7	N/A	25		5	E	

Comments:

EIS (SURR) ID: 11765A-C Conc: 250-500 ng/ml Exp. Date: 04/20/24 Inj. By: GH Ver. By: AG
 SPIKE.1 ID: LMS2107B Conc: VARIED Exp. Date: 10/19/23 Inj. By: GH Ver. By: AG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11764D-F Conc: 250-1000 ng/ml Exp. Date: 04/24/24 Inj. By: NG Ver. By: MW

TurboVap Temp (Therm ID): _____ N-Evap Temp (Therm ID): _____
 Observed Temp °C: _____ Corr. Temp °C: _____ Observed Temp °C: _____ Corr. Temp °C: _____

Methanol Lot # 224231 1% NH4OH MeOH PF370 SPE Lot # 6723930-02
 Water Lot# OP96255 0.3M Formic Acid PF368 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF362 5% Formic Acid _____ Carbon Lot# 160898

Relinquished By: Habibeh Fadros
 Accepted By: MW

Date: 04/24/23
 Date: 04/26/23

1633 AQ extraction 042222.xls NF

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