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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC3534

Sampling Date: 03/16/23



Report to:

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Total number of pages in report: 653



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

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)
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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC3534

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC3534-1	03/16/23	10:40 AY	03/17/23	AQ	Ground Water	AF-RHMW02-WGN01LF-2303W2
FC3534-2	03/16/23	11:40 EM	03/17/23	AQ	Ground Water	AF-RHMW225401-WGN01B-2303W2
FC3534-3	03/16/23	12:05 AY	03/17/23	AQ	Ground Water	AF-RHMW03-WGN01LF-2303W2

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC3534

Site: N6274223F0104 RH Fire Suppression System

Report Date: 3/22/2023 2:05:41 PM

On 03/17/2023, 3 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 0.7 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3534 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: OP95968

Sample(s) FC3558-2MS, FC3558-3DUP were used as the QC samples indicated.

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: FC3534
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 03/16/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC3534-1	AF-RHMW02-WGN01LF-2303W2					
		7.0 J	9.4	1.9	ng/l	EPA DRAFT 1633
		0.52 J	4.7	0.94	ng/l	EPA DRAFT 1633
		0.60 J	4.7	0.94	ng/l	EPA DRAFT 1633
		18.2 J	19	7.5	ng/l	EPA DRAFT 1633
FC3534-2	AF-RHMW225401-WGN01B-2303W2					
		1.4 J	9.3	1.9	ng/l	EPA DRAFT 1633
		0.92 J	4.6	0.93	ng/l	EPA DRAFT 1633
		0.79 J	4.6	0.93	ng/l	EPA DRAFT 1633
		1.6 J	4.6	0.93	ng/l	EPA DRAFT 1633
		0.69 J	4.6	0.93	ng/l	EPA DRAFT 1633
		1.3 J	4.6	1.9	ng/l	EPA DRAFT 1633
		1.1 J	4.6	1.9	ng/l	EPA DRAFT 1633
FC3534-3	AF-RHMW03-WGN01LF-2303W2					
		2.4 J	9.1	1.8	ng/l	EPA DRAFT 1633
		1.4 J	4.5	0.91	ng/l	EPA DRAFT 1633
		0.95 J	4.5	0.91	ng/l	EPA DRAFT 1633
		6.5 J	18	7.3	ng/l	EPA DRAFT 1633

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW02-WGN01LF-2303W2		
Lab Sample ID:	FC3534-1	Date Sampled:	03/16/23
Matrix:	AQ - Ground Water	Date Received:	03/17/23
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	6Q15109.D	1	03/21/23 16:37	MV	03/20/23 09:00	OP95968	S6Q229
Run #2							

Run #	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.8 U	19	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	7.0	9.4	1.9	0.89	ng/l	J
307-24-4	Perfluorohexanoic acid	0.52	4.7	0.94	0.47	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.60	4.7	0.94	0.47	ng/l	J
335-67-1	Perfluorooctanoic acid	0.94 U	4.7	0.94	0.47	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	4.7	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	0.94 U	4.7	0.94	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	4.7	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	4.7	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	4.7	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.94 U	4.7	0.94	0.47	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.94 U	4.7	0.94	0.47	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.7	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	4.7	1.9	0.66	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.94 U	4.7	0.94	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	4.7	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	4.7	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	4.7	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.7	3.8	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	18.2	19	7.5	3.3	ng/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.9	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	4.7	1.9	0.63	ng/l	
31506-32-8	MeFOSA	1.9 U	4.7	1.9	0.94	ng/l	
4151-50-2	EtFOSA	1.9 U	4.7	1.9	0.94	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-RHMW02-WGN01LF-2303W2		
Lab Sample ID:	FC3534-1	Date Sampled:	03/16/23
Matrix:	AQ - Ground Water	Date Received:	03/17/23
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	3.8 U	4.7	3.8	0.94	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.7	3.8	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	9.4 U	47	9.4	4.1	ng/l	
1691-99-2	EtFOSE	19 U	47	19	7.0	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.8 U	19	3.8	0.94	ng/l	
919005-14-4	ADONA	3.8 U	19	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	9.4	1.9	0.94	ng/l	
863090-89-5	PFMBA	3.8 U	9.4	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	9.4	3.8	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	19	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	19	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	9.4	1.9	0.74	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.4 U	24	9.4	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	120	19	8.2	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	120	19	7.4	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	82%		20-150%
	13C5-PFPeA	88%		20-150%
	13C5-PFHxA	94%		20-150%
	13C4-PFHpA	95%		20-150%
	13C8-PFOA	103%		20-150%
	13C9-PFNA	111%		20-150%
	13C6-PFDA	86%		20-150%
	13C7-PFUnDA	82%		20-150%
	13C2-PFDoDA	70%		20-150%
	13C2-PFTeDA	67%		20-150%
	13C3-PFBS	92%		20-150%
	13C3-PFHxS	96%		20-150%

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

Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2303W2	
Lab Sample ID:	FC3534-1	Date Sampled: 03/16/23
Matrix:	AQ - Ground Water	Date Received: 03/17/23
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	97%		20-150%
	13C8-FOSA	95%		20-150%
	d3-MeFOSA	67%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	91%		20-150%
	d5-EtFOSAA	90%		20-150%
	d7-MeFOSE	79%		20-150%
	d9-EtFOSE	78%		20-150%
	13C2-4:2FTS	99%		20-150%
	13C2-6:2FTS	94%		20-150%
	13C2-8:2FTS	94%		20-150%
	13C3-HFPO-DA	91%		20-150%

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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW225401-WGN01B-2303W2		
Lab Sample ID:	FC3534-2	Date Sampled:	03/16/23
Matrix:	AQ - Ground Water	Date Received:	03/17/23
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	6Q15110.D	1	03/21/23 16:51	MV	03/20/23 09:00	OP95968	S6Q229
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	19	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.4	9.3	1.9	0.87	ng/l	J
307-24-4	Perfluorohexanoic acid	0.92	4.6	0.93	0.46	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.79	4.6	0.93	0.46	ng/l	J
335-67-1	Perfluorooctanoic acid	1.6	4.6	0.93	0.46	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	4.6	1.9	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	0.93 U	4.6	0.93	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	4.6	1.9	0.56	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	4.6	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	4.6	1.9	0.78	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.93 U	4.6	0.93	0.46	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.69	4.6	0.93	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	1.3	4.6	1.9	0.65	ng/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.93 U	4.6	0.93	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.1	4.6	1.9	0.50	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	1.9 U	4.6	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	4.6	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	4.6	1.9	0.62	ng/l	
31506-32-8	MeFOSA	1.9 U	4.6	1.9	0.93	ng/l	
4151-50-2	EtFOSA	1.9 U	4.6	1.9	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-RHMW225401-WGN01B-2303W2		
Lab Sample ID:	FC3534-2	Date Sampled:	03/16/23
Matrix:	AQ - Ground Water	Date Received:	03/17/23
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	9.3 U	46	9.3	4.1	ng/l	
1691-99-2	EtFOSE	19 U	46	19	6.9	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.7 U	19	3.7	0.93	ng/l	
919005-14-4	ADONA	3.7 U	19	3.7	1.7	ng/l	
377-73-1	PFMPA	1.9 U	9.3	1.9	0.93	ng/l	
863090-89-5	PFMBA	3.7 U	9.3	3.7	1.1	ng/l	
151772-58-6	NFDHA	3.7 U	9.3	3.7	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.7 U	19	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	19	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.9 U	9.3	1.9	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.3 U	23	9.3	4.2	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	120	19	8.1	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	120	19	7.3	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	100%		20-150%
	13C5-PFPeA	98%		20-150%
	13C5-PFHxA	98%		20-150%
	13C4-PFHpA	96%		20-150%
	13C8-PFOA	101%		20-150%
	13C9-PFNA	102%		20-150%
	13C6-PFDA	99%		20-150%
	13C7-PFUnDA	92%		20-150%
	13C2-PFDoDA	75%		20-150%
	13C2-PFTeDA	69%		20-150%
	13C3-PFBS	97%		20-150%
	13C3-PFHxS	99%		20-150%

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

Report of Analysis

Client Sample ID:	AF-RHMW225401-WGN01B-2303W2	
Lab Sample ID:	FC3534-2	Date Sampled: 03/16/23
Matrix:	AQ - Ground Water	Date Received: 03/17/23
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	91%		20-150%
	13C8-FOSA	100%		20-150%
	d3-MeFOSA	77%		20-150%
	d5-EtFOSA	74%		20-150%
	d3-MeFOSAA	92%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	89%		20-150%
	d9-EtFOSE	81%		20-150%
	13C2-4:2FTS	112%		20-150%
	13C2-6:2FTS	119%		20-150%
	13C2-8:2FTS	107%		20-150%
	13C3-HFPO-DA	93%		20-150%

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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW03-WGN01LF-2303W2		
Lab Sample ID:	FC3534-3	Date Sampled:	03/16/23
Matrix:	AQ - Ground Water	Date Received:	03/17/23
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	6Q15111.D	1	03/21/23 17:05	MV	03/20/23 09:00	OP95968	S6Q229
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	18	3.6	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	2.4	9.1	1.8	0.85	ng/l	J
307-24-4	Perfluorohexanoic acid	1.4	4.5	0.91	0.45	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.95	4.5	0.91	0.45	ng/l	J
335-67-1	Perfluorooctanoic acid	0.91 U	4.5	0.91	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	4.5	1.8	0.55	ng/l	
335-76-2	Perfluorodecanoic acid	0.91 U	4.5	0.91	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	4.5	1.8	0.55	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	4.5	1.8	0.55	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	4.5	1.8	0.76	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.91 U	4.5	0.91	0.45	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.91 U	4.5	0.91	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	4.5	1.8	0.64	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.91 U	4.5	0.91	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	4.5	1.8	0.49	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	4.5	1.8	0.52	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	4.5	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	6.5	18	7.3	3.2	ng/l	J
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	4.5	1.8	0.61	ng/l	
31506-32-8	MeFOSA	1.8 U	4.5	1.8	0.91	ng/l	
4151-50-2	EtFOSA	1.8 U	4.5	1.8	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-RHMW03-WGN01LF-2303W2		Date Sampled:	03/16/23
Lab Sample ID:	FC3534-3		Date Received:	03/17/23
Matrix:	AQ - Ground Water		Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
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	9.1 U	45	9.1	4.0	ng/l	
1691-99-2	EtFOSE	18 U	45	18	6.7	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.6 U	18	3.6	0.91	ng/l	
919005-14-4	ADONA	3.6 U	18	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	9.1	1.8	0.91	ng/l	
863090-89-5	PFMBA	3.6 U	9.1	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	9.1	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	18	3.6	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	18	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	9.1	1.8	0.71	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.1 U	23	9.1	4.1	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	110	18	7.9	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	110	18	7.1	ng/l	

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

	13C4-PFBA	105%		20-150%
	13C5-PFPeA	108%		20-150%
	13C5-PFHxA	114%		20-150%
	13C4-PFHpA	108%		20-150%
	13C8-PFOA	113%		20-150%
	13C9-PFNA	101%		20-150%
	13C6-PFDA	107%		20-150%
	13C7-PFUnDA	101%		20-150%
	13C2-PFDoDA	84%		20-150%
	13C2-PFTeDA	80%		20-150%
	13C3-PFBS	106%		20-150%
	13C3-PFHxS	102%		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-RHMW03-WGN01LF-2303W2		Date Sampled:	03/16/23
Lab Sample ID:	FC3534-3		Date Received:	03/17/23
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	88%		20-150%
	13C8-FOSA	95%		20-150%
	d3-MeFOSA	72%		20-150%
	d5-EtFOSA	76%		20-150%
	d3-MeFOSAA	105%		20-150%
	d5-EtFOSAA	95%		20-150%
	d7-MeFOSE	83%		20-150%
	d9-EtFOSE	82%		20-150%
	13C2-4:2FTS	94%		20-150%
	13C2-6:2FTS	108%		20-150%
	13C2-8:2FTS	97%		20-150%
	13C3-HFPO-DA	107%		20-150%

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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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



Chain of Custody

4405 Vineyard Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB #:

PAGE 1 OF 1

Client / Reporting Information		Project Information				SGS - ORLANDO Quote #		SKIFF #										
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System																
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 #																
Sampler(s) Name(s) (Printed) Sampler 1: Eli Martin Sampler 2: Chris Womack																		
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION								PFAS EPA Draft 1633	Analytical Information	Matrix Codes			
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NHCl	HNO3	H2SO4				HAOH-ZNAC	DI WATER	MESH
2	AF-RHMW225401-WGN01B-2303W2	03/16/23	1140	Lw AC EP	GW	3			X									
		EM 03/16/23																
				INITIAL ASSESSMENT														
				LABE VERIFICATION														
Turnaround Time (Business days)				Data Deliverable Information				Comments / Remarks										
10 Day (Business)		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 Unltd AWB 0.6 -77148061										
7 Day																		
5 Day																		
3 Day RUSH																		
2 Day RUSH																		
1 Day RUSH																		
Other																		
Rush T/A Data Available VIA Email or Lablink				Sample Custody must be documented below each time samples change possession, including courier delivery.														
Relinquished by Sampler/Affiliation		Date Time:	Received By/Affiliation		Relinquished By/Affiliation		Date Time:	Received By/Affiliation		1600								
1 Eli Martin / AECOM		03/16/23 1345	2 Miranda Degarmo / AECOM		3 Miranda Degarmo		3/16/23 1410	4 [Signature]		3/17/23								
Relinquished by/Affiliation		Date Time:	Received By/Affiliation		Relinquished By/Affiliation		Date Time:	Received By/Affiliation		8								
5			6		7			8										
Lab Use Only: Cooler Temperature (s) Celsius (corrected): 0.8 URT1												http://www.sgs.com/en/terms-and-conditions						

PFAS_COCs_ALL.xls Rev 031318



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SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-423-0707
www.sgs.com

FC3534

COC #: 2303W2AFSG02

SGS - ORLANDO JOB #:

PAGE 1 OF 1

Client / Reporting Information		Project Information		SGS - ORLANDO Quote #		SKIFF #												
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System																
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 / 806-954-4512		Client Purchase Order #																
Sampler(s) Name(s) (Printed) Sampler 1: <i>Andy Young</i> , Sampler 2: <i>Matt Yim</i>																		
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION										PFAS EPA Draft 1633	LAB USE ONLY		
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH-ZnAc	DI WATER			MEDI	
3	AF-RHMW03-WGN01LF-2303W2	3/16/23	1205	<i>MY</i>	GW	3			X									
<p><i>AS</i> 3/16/23</p> <p>INITIAL ASSESSMENT <i>[Signature]</i></p> <p>LABEL VERIFICATION</p>																		
Turnaround Time (Business days)				Data Deliverable Information				Comments / Remarks										
10 Day (Business)		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 AWS 016-77498661										
7 Day																		
3 Day RUSH																		
2 Day RUSH																		
1 Day RUSH																		
Other																		
Rush T/A Data Available VIA Email or Lablink																		
Sample Custody must be documented below each time samples change possession, including courier delivery.																		
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation		Date Time:		Relinquished By/Affiliation		Date Time:		Received By/Affiliation						
1 <i>Andy Young / AECOM</i>		3/16/23 1345		2 <i>Miranda DeGarmo / AECOM</i>		3/16/23		3 <i>Miranda DeGarmo / AECOM</i>		3/16/23 1410		4 <i>[Signature]</i> 3/17/23 1600						
5				6				7				8						
Lab Use Only : Cooler Temperature (s) Celsius (corrected): <i>08 IRH</i> http://www.sgs.com/en/terms-and-conditions																		

PFAS_COCS_ALL.xls Rev 031318

FC3534: Chain of Custody

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5.1
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SGS Sample Receipt Summary

Job Number: FC3534

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 3/17/2023 4:00:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-77148061

Therm ID: IR 1;

Therm CF: -0.1;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (0.8);

Cooler Temps (Corrected) °C: Cooler 1: (0.7);

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 _____
 Test Strip Lot #s: pH 0-3 230315
 Residual Chlorine Test Strip Lot #: _____

Number of 5035 Field Kits: _____
 pH 10-12 219813A

Number of Lab Filtered Metals: _____
 Other: (Specify) _____

Comments

SM001
Rev. Date 05/24/17

Technician: ZANEB

Date: 3/17/2023 4:00:00 PM

Reviewer: CD

Date: 3/20/2023

FC3534: Chain of Custody

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QC Evaluation: DOD QSM5.x Limits

Job Number: FC3534
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 03/16/23

QC Sample ID	CAS#	Analyte	Sample Result Type	Result Type	Units	Limits
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No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC3534

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5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Instrument Blank

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q229-IBLK	6Q15103.D	1	03/21/23	MV	n/a	n/a	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0050	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	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	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	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	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Instrument Blank

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q229-IBLK	6Q15103.D	1	03/21/23	MV	n/a	n/a	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.010	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.025	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.13	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.13	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	95% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	94% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	96% 20-150%
	13C7-PFUnDA	101% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	105% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	108% 20-150%
	d3-MeFOSA	102% 20-150%
	d5-EtFOSA	104% 20-150%
	d3-MeFOSAA	102% 20-150%
	d5-EtFOSAA	100% 20-150%
	d7-MeFOSE	108% 20-150%
	d9-EtFOSE	103% 20-150%
	13C2-4:2FTS	124% 20-150%
	13C2-6:2FTS	117% 20-150%
	13C2-8:2FTS	111% 20-150%
	13C3-HFPO-DA	94% 20-150%

6.1.1
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Method Blank Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-MB	6Q15108.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0050	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	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	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	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	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Method Blank Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-MB	6Q15108.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.010	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.025	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.13	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.13	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	98% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	97% 20-150%
	13C7-PFUnDA	90% 20-150%
	13C2-PFDoDA	75% 20-150%
	13C2-PFTeDA	74% 20-150%
	13C3-PFBS	98% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	92% 20-150%
	13C8-FOSA	94% 20-150%
	d3-MeFOSA	78% 20-150%
	d5-EtFOSA	81% 20-150%
	d3-MeFOSAA	85% 20-150%
	d5-EtFOSAA	75% 20-150%
	d7-MeFOSE	91% 20-150%
	d9-EtFOSE	88% 20-150%
	13C2-4:2FTS	120% 20-150%
	13C2-6:2FTS	131% 20-150%
	13C2-8:2FTS	103% 20-150%
	13C3-HFPO-DA	95% 20-150%

6.1.2
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Continuing Calibration Blank

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q229-ICCB	6Q15117.D	1	03/21/23	MV	n/a	n/a	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95968-DUP

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0050	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	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	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	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	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q229-ICCB	6Q15117.D	1	03/21/23	MV	n/a	n/a	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95968-DUP

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.010	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.025	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.13	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.13	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits	
	13C4-PFBA	101%	20-150%
	13C5-PFPeA	96%	20-150%
	13C5-PFHxA	99%	20-150%
	13C4-PFHpA	98%	20-150%
	13C8-PFOA	101%	20-150%
	13C9-PFNA	104%	20-150%
	13C6-PFDA	95%	20-150%
	13C7-PFUnDA	100%	20-150%
	13C2-PFDoDA	102%	20-150%
	13C2-PFTeDA	109%	20-150%
	13C3-PFBS	98%	20-150%
	13C3-PFHxS	103%	20-150%
	13C8-PFOS	100%	20-150%
	13C8-FOSA	97%	20-150%
	d3-MeFOSA	96%	20-150%
	d5-EtFOSA	97%	20-150%
	d3-MeFOSAA	100%	20-150%
	d5-EtFOSAA	103%	20-150%
	d7-MeFOSE	104%	20-150%
	d9-EtFOSE	108%	20-150%
	13C2-4:2FTS	116%	20-150%
	13C2-6:2FTS	114%	20-150%
	13C2-8:2FTS	108%	20-150%
	13C3-HFPO-DA	93%	20-150%

6.1.3

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Blank Spike Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-LLBS	6Q15107.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.04	0.0360	90	40-150
2706-90-3	Perfluoropentanoic acid	0.02	0.0184	92	40-150
307-24-4	Perfluorohexanoic acid	0.01	0.0091	91	40-150
375-85-9	Perfluoroheptanoic acid	0.01	0.0093	93	40-150
335-67-1	Perfluorooctanoic acid	0.01	0.0099	99	40-150
375-95-1	Perfluorononanoic acid	0.01	0.0090	90	40-150
335-76-2	Perfluorodecanoic acid	0.01	0.0094	94	40-150
2058-94-8	Perfluoroundecanoic acid	0.01	0.0093	93	40-150
307-55-1	Perfluorododecanoic acid	0.01	0.0092	92	40-150
72629-94-8	Perfluorotridecanoic acid	0.01	0.0088	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.01	0.0097	97	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00887	0.0085	96	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00941	0.0085	90	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00914	0.0085	93	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00953	0.0086	90	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00928	0.0087	94	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00962	0.0093	97	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00965	0.0094	97	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0097	0.0089	92	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0375	0.0359	96	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.038	0.0362	95	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0384	0.0461	120	40-150
754-91-6	PFOSA	0.01	0.0104	104	40-150
31506-32-8	MeFOSA	0.01	0.0097	97	40-150
4151-50-2	EtFOSA	0.01	0.0095	95	40-150
2355-31-9	MeFOSAA	0.01	0.0099	99	40-150
2991-50-6	EtFOSAA	0.01	0.0082	82	40-150
24448-09-7	MeFOSE	0.1	0.0927	93	40-150
1691-99-2	EtFOSE	0.1	0.0939	94	40-150
13252-13-6	HFPO-DA (GenX)	0.04	0.0371	93	40-150
919005-14-4	ADONA	0.0378	0.0370	98	40-150
377-73-1	PFMPA	0.02	0.0186	93	40-150
863090-89-5	PFMBA	0.02	0.0186	93	40-150
151772-58-6	NFDHA	0.02	0.0191	96	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0374	0.0360	96	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0378	0.0342	90	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-LLBS	6Q15107.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0178	0.0163	92	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.05	0.0472	94	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.25	0.242	97	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.25	0.250	100	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	105%	20-150%
	13C5-PFPeA	99%	20-150%
	13C5-PFHxA	99%	20-150%
	13C4-PFHpA	99%	20-150%
	13C8-PFOA	107%	20-150%
	13C9-PFNA	108%	20-150%
	13C6-PFDA	108%	20-150%
	13C7-PFUnDA	108%	20-150%
	13C2-PFDoDA	105%	20-150%
	13C2-PFTeDA	99%	20-150%
	13C3-PFBS	101%	20-150%
	13C3-PFHxS	103%	20-150%
	13C8-PFOS	97%	20-150%
	13C8-FOSA	105%	20-150%
	d3-MeFOSA	86%	20-150%
	d5-EtFOSA	85%	20-150%
	d3-MeFOSAA	104%	20-150%
	d5-EtFOSAA	98%	20-150%
	d7-MeFOSE	101%	20-150%
	d9-EtFOSE	96%	20-150%
	13C2-4:2FTS	118%	20-150%
	13C2-6:2FTS	119%	20-150%
	13C2-8:2FTS	107%	20-150%
	13C3-HFPO-DA	95%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-BS	6Q15106.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0936	94	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0483	97	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0240	96	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0256	102	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0244	98	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0234	94	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0216	86	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0229	92	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0229	92	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0240	96	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0235	94	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0201	91	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0218	93	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0209	91	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0233	98	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0234	101	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0231	96	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0238	99	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0237	98	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0881	94	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.103	108	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.116	121	40-150
754-91-6	PFOSA	0.025	0.0268	107	40-150
31506-32-8	MeFOSA	0.025	0.0264	106	40-150
4151-50-2	EtFOSA	0.025	0.0233	93	40-150
2355-31-9	MeFOSAA	0.025	0.0235	94	40-150
2991-50-6	EtFOSAA	0.025	0.0211	84	40-150
24448-09-7	MeFOSE	0.25	0.226	90	40-150
1691-99-2	EtFOSE	0.25	0.250	100	40-150
13252-13-6	HFPO-DA (GenX)	0.1	0.0922	92	40-150
919005-14-4	ADONA	0.0945	0.0916	97	40-150
377-73-1	PFMPA	0.05	0.0473	95	40-150
863090-89-5	PFMBA	0.05	0.0482	96	40-150
151772-58-6	NFDHA	0.05	0.0497	99	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0935	0.0871	93	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0945	0.0885	94	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-BS	6Q15106.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0439	99	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.116	93	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.651	104	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.652	104	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	64%	20-150%
	13C5-PFPeA	102%	20-150%
	13C5-PFHxA	103%	20-150%
	13C4-PFHpA	100%	20-150%
	13C8-PFOA	106%	20-150%
	13C9-PFNA	98%	20-150%
	13C6-PFDA	114%	20-150%
	13C7-PFUnDA	109%	20-150%
	13C2-PFDoDA	107%	20-150%
	13C2-PFTeDA	101%	20-150%
	13C3-PFBS	109%	20-150%
	13C3-PFHxS	110%	20-150%
	13C8-PFOS	99%	20-150%
	13C8-FOSA	106%	20-150%
	d3-MeFOSA	94%	20-150%
	d5-EtFOSA	95%	20-150%
	d3-MeFOSAA	107%	20-150%
	d5-EtFOSAA	114%	20-150%
	d7-MeFOSE	107%	20-150%
	d9-EtFOSE	101%	20-150%
	13C2-4:2FTS	123%	20-150%
	13C2-6:2FTS	117%	20-150%
	13C2-8:2FTS	110%	20-150%
	13C3-HFPO-DA	102%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-MS	6Q15114.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229
FC3558-2	6Q15113.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	FC3558-2 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.018 U	0.0877	0.0835	95	40-150
2706-90-3	Perfluoropentanoic acid	0.0089 U	0.0439	0.0427	97	40-150
307-24-4	Perfluorohexanoic acid	0.0045 U	0.0219	0.0217	99	40-150
375-85-9	Perfluoroheptanoic acid	0.0045 U	0.0219	0.0214	98	40-150
335-67-1	Perfluorooctanoic acid	0.0045 U	0.0219	0.0225	103	40-150
375-95-1	Perfluorononanoic acid	0.0045 U	0.0219	0.0216	98	40-150
335-76-2	Perfluorodecanoic acid	0.0045 U	0.0219	0.0196	89	40-150
2058-94-8	Perfluoroundecanoic acid	0.0045 U	0.0219	0.0201	92	40-150
307-55-1	Perfluorododecanoic acid	0.0045 U	0.0219	0.0201	92	40-150
72629-94-8	Perfluorotridecanoic acid	0.0045 U	0.0219	0.0189	86	40-150
376-06-7	Perfluorotetradecanoic acid	0.0045 U	0.0219	0.0218	99	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0045 U	0.0195	0.0185	95	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0206	0.0214	104	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0045 U	0.02	0.0203	101	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U	0.0209	0.0229	110	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0045 U	0.0204	0.0197	97	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0045 U	0.0211	0.0231	109	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0045 U	0.0212	0.0239	113	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U	0.0213	0.0213	100	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	0.0822	0.0743	90	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U	0.0833	0.0869	104	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	0.0842	0.0987	117	40-150
754-91-6	PFOSA	0.0045 U	0.0219	0.0207	94	40-150
31506-32-8	MeFOSA	0.0045 U	0.0219	0.0226	103	40-150
4151-50-2	EtFOSA	0.0045 U	0.0219	0.0221	101	40-150
2355-31-9	MeFOSAA	0.0045 U	0.0219	0.0220	100	40-150
2991-50-6	EtFOSAA	0.0045 U	0.0219	0.0187	85	40-150
24448-09-7	MeFOSE	0.045 U	0.219	0.208	95	40-150
1691-99-2	EtFOSE	0.045 U	0.219	0.222	101	40-150
13252-13-6	HFPO-DA (GenX)	0.018 U	0.0877	0.0778	89	40-150
919005-14-4	ADONA	0.018 U	0.0829	0.0804	97	40-150
377-73-1	PFMPA	0.0089 U	0.0439	0.0422	96	40-150
863090-89-5	PFMBA	0.0089 U	0.0439	0.0418	95	40-150
151772-58-6	NFDHA	0.0089 U	0.0439	0.0393	90	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.018 U	0.082	0.0813	99	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.018 U	0.0829	0.0740	89	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-MS	6Q15114.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229
FC3558-2	6Q15113.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	FC3558-2 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0089 U	0.039	0.0352	90	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.022 U	0.11	0.124	113	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.11 U	0.548	0.563	103	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.11 U	0.548	0.557	102	40-150

CAS No.	ID Standard Recoveries	MS	FC3558-2	Limits
	13C4-PFBA	101%	97%	20-150%
	13C5-PFPeA	98%	95%	20-150%
	13C5-PFHxA	100%	94%	20-150%
	13C4-PFHpA	98%	100%	20-150%
	13C8-PFOA	104%	98%	20-150%
	13C9-PFNA	101%	91%	20-150%
	13C6-PFDA	97%	99%	20-150%
	13C7-PFUnDA	97%	97%	20-150%
	13C2-PFDoDA	90%	91%	20-150%
	13C2-PFTeDA	77%	81%	20-150%
	13C3-PFBS	104%	99%	20-150%
	13C3-PFHxS	94%	95%	20-150%
	13C8-PFOS	87%	87%	20-150%
	13C8-FOSA	100%	101%	20-150%
	d3-MeFOSA	85%	91%	20-150%
	d5-EtFOSA	84%	88%	20-150%
	d3-MeFOSAA	115%	121%	20-150%
	d5-EtFOSAA	124%	120%	20-150%
	d7-MeFOSE	98%	106%	20-150%
	d9-EtFOSE	92%	99%	20-150%
	13C2-4:2FTS	115%	115%	20-150%
	13C2-6:2FTS	97%	100%	20-150%
	13C2-8:2FTS	94%	97%	20-150%
	13C3-HFPO-DA	97%	88%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-DUP	6Q15118.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229
FC3558-3	6Q15115.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	FC3558-3 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.019 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0094 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0047 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0047 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0047 U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0047 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0047 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0047 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0047 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0047 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0047 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0047 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0047 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0047 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0047 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0047 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0047 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0047 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0047 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	ND		nc	30
754-91-6	PFOSA	0.0047 U	ND		nc	30
31506-32-8	MeFOSA	0.0047 U	ND		nc	30
4151-50-2	EtFOSA	0.0047 U	ND		nc	30
2355-31-9	MeFOSAA	0.0047 U	ND		nc	30
2991-50-6	EtFOSAA	0.0047 U	ND		nc	30
24448-09-7	MeFOSE	0.047 U	ND		nc	30
1691-99-2	EtFOSE	0.047 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.019 U	ND		nc	30
919005-14-4	ADONA	0.019 U	ND		nc	30
377-73-1	PFMPA	0.0094 U	ND		nc	30
863090-89-5	PFMBA	0.0094 U	ND		nc	30
151772-58-6	NFDHA	0.0094 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.019 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.019 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95968-DUP	6Q15118.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229
FC3558-3	6Q15115.D	1	03/21/23	MV	03/20/23	OP95968	S6Q229

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3534-1, FC3534-2, FC3534-3

CAS No.	Compound	FC3558-3 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0094	U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.024	U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.12	U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.12	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC3558-3	Limits
	13C4-PFBA	102%	107%	20-150%
	13C5-PFPeA	99%	107%	20-150%
	13C5-PFHxA	98%	112%	20-150%
	13C4-PFHpA	103%	112%	20-150%
	13C8-PFOA	88%	101%	20-150%
	13C9-PFNA	94%	100%	20-150%
	13C6-PFDA	88%	105%	20-150%
	13C7-PFUnDA	86%	107%	20-150%
	13C2-PFDoDA	83%	100%	20-150%
	13C2-PFTeDA	56%	96%	20-150%
	13C3-PFBS	99%	102%	20-150%
	13C3-PFHxS	106%	102%	20-150%
	13C8-PFOS	83%	93%	20-150%
	13C8-FOSA	86%	100%	20-150%
	d3-MeFOSA	81%	88%	20-150%
	d5-EtFOSA	80%	94%	20-150%
	d3-MeFOSAA	89%	101%	20-150%
	d5-EtFOSAA	92%	103%	20-150%
	d7-MeFOSE	89%	99%	20-150%
	d9-EtFOSE	89%	100%	20-150%
	13C2-4:2FTS	114%	121%	20-150%
	13C2-6:2FTS	113%	117%	20-150%
	13C2-8:2FTS	96%	103%	20-150%
	13C3-HFPO-DA	101%	107%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q229-CC225	Injection Date:	03/21/23
Lab File ID:	6Q15104.D	Injection Time:	15:27
Instrument ID:	GCMS6Q	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	31481	2.95	30704	5.61	63632	7.19	17102	7.72	18901	8.20
Check Std ^c	34732	2.95	34155	5.58	74610	7.16	19153	7.69	21246	8.17
Upper Limit ^d	62962	3.35	61408	5.98	127264	7.56	34204	8.09	37802	8.57
Lower Limit ^e	9444	2.55	9211	5.18	19090	6.76	5131	7.29	5670	7.77

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
OP95968-BS	30501	2.98	29233	5.58	59245	7.18	17502	7.69	17703	8.17	1
OP95968-LLBS	30599	2.98	30244	5.59	59174	7.18	16789	7.69	17479	8.17	1
OP95968-MB	30852	2.98	29805	5.58	61516	7.18	17127	7.71	18087	8.17	1
FC3534-1	20168	2.98	29830	5.58	60199	7.18	15488	7.71	19554	8.17	1
FC3534-2	29159	2.98	29181	5.58	58934	7.16	16273	7.69	17716	8.17	1
FC3534-3	26559	2.98	26419	5.58	54985	7.16	15626	7.69	17062	8.17	1
ZZZZZZ	29775	2.98	30543	5.58	59389	7.18	16816	7.69	18367	8.17	1
FC3558-2	30855	2.98	31585	5.58	63826	7.18	17769	7.69	19078	8.17	1
OP95968-MS	28822	2.99	29319	5.58	57796	7.18	15867	7.71	19268	8.17	1
FC3558-3	30920	2.98	29059	5.58	63223	7.18	17433	7.71	17833	8.19	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: S6Q225-ICC225 6Q14853.D 03/15/23 22:28. 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: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q229-CC225	Injection Date:	03/21/23
Lab File ID:	6Q15104.D	Injection Time:	15:27
Instrument ID:	GCMS6Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5672	7.31	8840	8.36
Check Std ^c	6317	7.29	10081	8.34
Upper Limit ^d	11344	7.69	17680	8.74
Lower Limit ^e	1702	6.89	2652	7.94

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
OP95968-BS	5140	7.29	7967	8.34	1
OP95968-LLBS	5288	7.29	8295	8.34	1
OP95968-MB	5287	7.29	8599	8.35	1
FC3534-1	5263	7.29	7899	8.35	1
FC3534-2	5221	7.29	7854	8.34	1
FC3534-3	5227	7.29	8014	8.34	1
ZZZZZZ	5193	7.29	7921	8.34	1
FC3558-2	5420	7.29	7479	8.34	1
OP95968-MS	5103	7.29	7769	8.34	1
FC3558-3	5430	7.30	8709	8.35	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S6Q225-ICC225 6Q14853.D 03/15/23 22:28. 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: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q229-CC225	Injection Date:	03/21/23
Lab File ID:	6Q15116.D	Injection Time:	18:15
Instrument ID:	GCMS6Q	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	31481	2.95	30704	5.61	63632	7.19	17102	7.72	18901	8.20
Check Std ^c	34805	2.94	34516	5.58	71381	7.16	19201	7.69	20601	8.17
Upper Limit ^d	62962	3.34	61408	5.98	127264	7.56	34204	8.09	37802	8.57
Lower Limit ^e	9444	2.54	9211	5.18	19090	6.76	5131	7.29	5670	7.77

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
S6Q229-ICCB	33095	2.96	32462	5.58	67291	7.18	18839	7.71	20140	8.19	1
OP95968-DUP	31512	2.98	30096	5.59	65690	7.18	17656	7.71	18926	8.19	1
OP95971-BS	32417	2.96	31981	5.58	62147	7.18	18847	7.69	19853	8.17	1
OP95971-LLBS	32652	2.96	31409	5.58	62160	7.18	17137	7.69	19612	8.17	1
OP95971-MB	31734	2.96	31502	5.58	62138	7.16	18603	7.69	18739	8.17	1
ZZZZZZ	33175	2.98	33077	5.58	66888	7.16	18182	7.69	20636	8.17	1
ZZZZZZ	30567	2.96	30601	5.58	54973	7.16	8508	7.71	18761	8.17	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: S6Q225-ICC225 6Q14853.D 03/15/23 22:28. 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

Injection Standard Area Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q229-CC225	Injection Date:	03/21/23
Lab File ID:	6Q15116.D	Injection Time:	18:15
Instrument ID:	GCMS6Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5672	7.31	8840	8.36
Check Std ^c	6210	7.29	9092	8.34
Upper Limit ^d	11344	7.69	17680	8.74
Lower Limit ^e	1702	6.89	2652	7.94

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S6Q229-ICCB	5674	7.29	9022	8.34	1
OP95968-DUP	5371	7.29	8823	8.35	1
OP95971-BS	5578	7.29	9066	8.35	1
OP95971-LLBS	5458	7.29	8585	8.35	1
OP95971-MB	5353	7.29	8576	8.34	1
ZZZZZZ	6032	7.29	9599	8.34	1
ZZZZZZ	5136	7.29	8267	8.34	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S6Q225-ICC225 6Q14853.D 03/15/23 22:28. 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.

TDCA Retention Time Check

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S6Q225-RT	Injection Date:	03/15/23
Lab File ID:	6Q14847.D	Injection Time:	21:04
Instrument ID:	GCMS6Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.374	--	--
TDCA	6.899	1.475	1.000
TCDCA	6.738	1.636	1.000
TUDCA	5.887	2.487	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
S6Q225-IC225	6Q14849.D	03/15/23	21:32	00:28	Mass Calibration Verification
S6Q225-IC225	6Q14850.D	03/15/23	21:46	00:42	Initial cal 1
S6Q225-IC225	6Q14851.D	03/15/23	22:00	00:56	Initial cal 2
S6Q225-IC225	6Q14852.D	03/15/23	22:14	01:10	Initial cal 3
S6Q225-ICC225	6Q14853.D	03/15/23	22:28	01:24	Initial cal 4
S6Q225-IC225	6Q14854.D	03/15/23	22:42	01:38	Initial cal 5
S6Q225-IC225	6Q14855.D	03/15/23	22:56	01:52	Initial cal 6
S6Q225-IC225	6Q14856.D	03/15/23	23:10	02:06	Initial cal 7
S6Q225-IC225	6Q14857.D	03/15/23	23:24	02:20	Initial cal 8
S6Q225-IBLK	6Q14858.D	03/15/23	23:38	02:34	Instrument Blank
S6Q225-ICV225	6Q14859.D	03/15/23	23:52	02:48	Initial cal verification 4
S6Q225-ICV225	6Q14860.D	03/16/23	00:06	03:02	Initial cal verification 20
S6Q225-CC225	6Q14861.D	03/16/23	00:20	03:16	Continuing cal 4
S6Q225-ECC225	6Q14862.D	03/16/23	00:33	03:29	Ending cal 1.0

TDCA Retention Time Check

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S6Q229-RT	Injection Date:	03/21/23
Lab File ID:	6Q15100.D	Injection Time:	13:18
Instrument ID:	GCMS6Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.336	--	--
TDCA	6.862	1.474	1.000
TCDCA	6.713	1.623	1.000
TUDCA	5.862	2.474	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
S6Q229-IBLK	6Q15103.D	03/21/23	15:12	01:54	Instrument Blank
S6Q229-IBLK	6Q15103.D	03/21/23	15:12	01:54	Instrument Blank
S6Q229-CC225	6Q15104.D	03/21/23	15:27	02:09	Continuing cal 4
S6Q229-CC225	6Q15105.D	03/21/23	15:41	02:23	Continuing cal 1.0LL
OP95968-BS	6Q15106.D	03/21/23	15:55	02:37	Blank Spike
OP95968-LLBS	6Q15107.D	03/21/23	16:09	02:51	Blank Spike
OP95968-MB	6Q15108.D	03/21/23	16:23	03:05	Method Blank
FC3534-1	6Q15109.D	03/21/23	16:37	03:19	AF-RHMW02-WGN01LF-2303W2
FC3534-2	6Q15110.D	03/21/23	16:51	03:33	AF-RHMW225401-WGN01B-2303W2
FC3534-3	6Q15111.D	03/21/23	17:05	03:47	AF-RHMW03-WGN01LF-2303W2
ZZZZZZ	6Q15112.D	03/21/23	17:19	04:01	(unrelated sample)
FC3558-2	6Q15113.D	03/21/23	17:33	04:15	(used for QC only; not part of job FC3534)
OP95968-MS	6Q15114.D	03/21/23	17:48	04:30	Matrix Spike
FC3558-3	6Q15115.D	03/21/23	18:02	04:44	(used for QC only; not part of job FC3534)
S6Q229-CC225	6Q15116.D	03/21/23	18:15	04:57	Continuing cal 4
S6Q229-ICCB	6Q15117.D	03/21/23	18:29	05:11	Continuing Calibration Blank
OP95968-DUP	6Q15118.D	03/21/23	18:43	05:25	Duplicate
OP95971-BS	6Q15119.D	03/21/23	18:57	05:39	Blank Spike
OP95971-LLBS	6Q15120.D	03/21/23	19:11	05:53	Blank Spike
OP95971-MB	6Q15121.D	03/21/23	19:25	06:07	Method Blank
ZZZZZZ	6Q15122.D	03/21/23	19:39	06:21	(unrelated sample)
ZZZZZZ	6Q15123.D	03/21/23	19:53	06:35	(unrelated sample)
S6Q229-CC225	6Q15124.D	03/21/23	20:07	06:49	Continuing cal 4
S6Q229-ICCB	6Q15125.D	03/21/23	20:21	07:03	Continuing Calibration Blank
S6Q229-ICCB	6Q15125.D	03/21/23	20:21	07:03	Continuing Calibration Blank
OP95917-BS	6Q15126.D	03/21/23	20:35	07:17	Blank Spike
OP95917-LLBS	6Q15127.D	03/21/23	20:49	07:31	Blank Spike
OP95917-MB	6Q15128.D	03/21/23	21:03	07:45	Method Blank
JD61307-2A	6Q15129.D	03/21/23	21:17	07:59	(used for QC only; not part of job FC3534)
OP95917-MS	6Q15130.D	03/21/23	21:31	08:13	Matrix Spike
OP95917-MSD	6Q15131.D	03/21/23	21:45	08:27	Matrix Spike Duplicate
S6Q229-CC225	6Q15132.D	03/21/23	21:59	08:41	Continuing cal 4
S6Q229-ICCB	6Q15133.D	03/21/23	22:13	08:55	Continuing Calibration Blank
S6Q229-ICCB	6Q15133.D	03/21/23	22:13	08:55	Continuing Calibration Blank

TDCA Retention Time Check

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S6Q229-RT	Injection Date:	03/21/23
Lab File ID:	6Q15100.D	Injection Time:	13:18
Instrument ID:	GCMS6Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP95900-BS	6Q15134.D	03/21/23	22:27	09:09	Blank Spike
OP95900-LLBS	6Q15135.D	03/21/23	22:41	09:23	Blank Spike
OP95900-MB	6Q15136.D	03/21/23	22:55	09:37	Method Blank
JD61785-3B	6Q15137.D	03/21/23	23:09	09:51	(used for QC only; not part of job FC3534)
OP95900-MS	6Q15138.D	03/21/23	23:23	10:05	Matrix Spike
OP95900-MSD	6Q15139.D	03/21/23	23:37	10:19	Matrix Spike Duplicate
ZZZZZ	6Q15140.D	03/21/23	23:51	10:33	(unrelated sample)
ZZZZZ	6Q15141.D	03/22/23	00:05	10:47	(unrelated sample)
S6Q229-CC225	6Q15142.D	03/22/23	00:19	11:01	Continuing cal 4
S6Q229-CC225	6Q15143.D	03/22/23	00:33	11:15	Continuing cal 1.0LL
S6Q229-ICCB	6Q15144.D	03/22/23	00:47	11:29	Continuing Calibration Blank
S6Q229-ICCB	6Q15144.D	03/22/23	00:47	11:29	Continuing Calibration Blank
OP95924-BS	6Q15145.D	03/22/23	01:01	11:43	Blank Spike
OP95924-LLBS	6Q15146.D	03/22/23	01:15	11:57	Blank Spike
OP95924-MB	6Q15147.D	03/22/23	01:29	12:11	Method Blank
ZZZZZ	6Q15148.D	03/22/23	01:43	12:25	(unrelated sample)
ZZZZZ	6Q15149.D	03/22/23	01:57	12:39	(unrelated sample)
ZZZZZ	6Q15150.D	03/22/23	02:11	12:53	(unrelated sample)
ZZZZZ	6Q15151.D	03/22/23	02:25	13:07	(unrelated sample)
ZZZZZ	6Q15152.D	03/22/23	02:39	13:21	(unrelated sample)
ZZZZZ	6Q15153.D	03/22/23	02:53	13:35	(unrelated sample)
ZZZZZ	6Q15154.D	03/22/23	03:07	13:49	(unrelated sample)
S6Q229-CC225	6Q15155.D	03/22/23	03:21	14:03	Continuing cal 4
S6Q229-ICCB	6Q15156.D	03/22/23	03:35	14:17	Continuing Calibration Blank
ZZZZZ	6Q15157.D	03/22/23	03:49	14:31	(unrelated sample)
ZZZZZ	6Q15158.D	03/22/23	04:03	14:45	(unrelated sample)
ZZZZZ	6Q15159.D	03/22/23	04:17	14:59	(unrelated sample)
ZZZZZ	6Q15160.D	03/22/23	04:31	15:13	(unrelated sample)
FC3371-8	6Q15161.D	03/22/23	04:45	15:27	(used for QC only; not part of job FC3534)
OP95924-MS	6Q15162.D	03/22/23	04:59	15:41	Matrix Spike
FC3371-9	6Q15163.D	03/22/23	05:13	15:55	(used for QC only; not part of job FC3534)
OP95924-DUP	6Q15164.D	03/22/23	05:27	16:09	Duplicate
ZZZZZ	6Q15165.D	03/22/23	05:41	16:23	(unrelated sample)
S6Q229-ECC225	6Q15166.D	03/22/23	05:55	16:37	Ending cal 4
S6Q229-ICCB	6Q15167.D	03/22/23	06:09	16:51	Continuing Calibration Blank

6.6.2

6

Ion Ratio Summary

Job Number: FC3534
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q229 Method: EPA DRAFT 1633

Lab Sample ID	Lab File ID	Ion Ratios (Set 1)		PFHpA	PFOA	PFBS	PFHxS	PFOS
		PFPeA	PFHxA					
S6Q225-ICC225	6Q14853.D	0	4	13.7	12.9	45.3	57.6	63.5
FC3534-1	6Q15109.D	0	10.3	13.3				
FC3534-2	6Q15110.D	0	4.8	14.5	8.9	47.3	42.4	44.2
FC3534-3	6Q15111.D	0	2.3	13.5				

6.7.1

6

Ion Ratio Summary

Job Number: FC3534
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q229	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios (Set 2) 6:2FTS
S6Q225-ICC225	6Q14853.D	21.6
FC3534-1	6Q15109.D	20.6
FC3534-2	6Q15110.D	
FC3534-3	6Q15111.D	19.9

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC3534
 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
FC3534-1	6Q15109.D	82	88	94	95	103	111	86	82
FC3534-2	6Q15110.D	100	98	98	96	101	102	99	92
FC3534-3	6Q15111.D	105	108	114	108	113	101	107	101
OP95968-BS	6Q15106.D	64	102	103	100	106	98	114	109
OP95968-DUP	6Q15118.D	102	99	98	103	88	94	88	86
OP95968-LLBS	6Q15107.D	105	99	99	99	107	108	108	108
OP95968-MB	6Q15108.D	100	97	97	98	102	103	97	90
OP95968-MS	6Q15114.D	101	98	100	98	104	101	97	97
S6Q229-IBLK	6Q15103.D	100	95	97	94	104	96	96	101
S6Q229-ICCB	6Q15117.D	101	96	99	98	101	104	95	100

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%

6.8.1
6

Isotope Dilution Standard Recovery Summary

Job Number: FC3534
 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
FC3534-1	6Q15109.D	70	67	92	96	97	95	67	72
FC3534-2	6Q15110.D	75	69	97	99	91	100	77	74
FC3534-3	6Q15111.D	84	80	106	102	88	95	72	76
OP95968-BS	6Q15106.D	107	101	109	110	99	106	94	95
OP95968-DUP	6Q15118.D	83	56	99	106	83	86	81	80
OP95968-LLBS	6Q15107.D	105	99	101	103	97	105	86	85
OP95968-MB	6Q15108.D	75	74	98	98	92	94	78	81
OP95968-MS	6Q15114.D	90	77	104	94	87	100	85	84
S6Q229-IBLK	6Q15103.D	101	105	103	102	100	108	102	104
S6Q229-ICCB	6Q15117.D	102	109	98	103	100	97	96	97

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: FC3534
 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
FC3534-1	6Q15109.D	91	90	79	78	99	94	94	91
FC3534-2	6Q15110.D	92	93	89	81	112	119	107	93
FC3534-3	6Q15111.D	105	95	83	82	94	108	97	107
OP95968-BS	6Q15106.D	107	114	107	101	123	117	110	102
OP95968-DUP	6Q15118.D	89	92	89	89	114	113	96	101
OP95968-LLBS	6Q15107.D	104	98	101	96	118	119	107	95
OP95968-MB	6Q15108.D	85	75	91	88	120	131	103	95
OP95968-MS	6Q15114.D	115	124	98	92	115	97	94	97
S6Q229-IBLK	6Q15103.D	102	100	108	103	124	117	111	94
S6Q229-ICCB	6Q15117.D	100	103	104	108	116	114	108	93

Isotope Dilution Standards

Recovery Limits

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

Initial Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICC225
 Lab FileID: 6Q14853.D

Initial Calibration Report

Method Path	D:\MassHunter\Methods											
Method File	1633_031523_S6Q225.quantmethod.xml											
Batch Name	D:\MassHunter\Data\031523_1633_S6Q225\QuantResults\s6q225.batch.bin											
Last Calib Update	3/16/2023 9:45:41 AM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
1	D:\MassHunter\Data\031523_1633_S6Q225\6Q14850.d	Avg RF	0.2621	0.2501	0.2622	0.2470	0.2687	0.3020	0.2956	0.2956	0.2729	7.973
2	D:\MassHunter\Data\031523_1633_S6Q225\6Q14851.d	Avg RF	0.3331	0.3080	0.3267	0.3127	0.3340	0.3780	0.3665	0.3696	0.3411	7.864
3	D:\MassHunter\Data\031523_1633_S6Q225\6Q14852.d	Avg RF	0.0595	0.0538	0.0578	0.0537	0.0589	0.0647	0.0631	0.0648	0.0595	7.473
4	D:\MassHunter\Data\031523_1633_S6Q225\6Q14853.d	Avg RF	1.2132	1.1201	1.1535	1.0882	1.1861	1.3073	1.2578	1.1969	1.1904	5.985
5	D:\MassHunter\Data\031523_1633_S6Q225\6Q14854.d	Avg RF	0.3672	0.3540	0.3683	0.3566	0.3748	0.4230	0.4166	0.4421	0.3878	8.779
6	D:\MassHunter\Data\031523_1633_S6Q225\6Q14855.d	Avg RF	0.0776	0.0664	0.0637	0.0611	0.0648	0.0726	0.0667	0.0698	0.0678	7.840
7	D:\MassHunter\Data\031523_1633_S6Q225\6Q14856.d	Avg RF	1.0679	1.0038	0.9930	0.9407	1.0653	1.1282	1.0617	1.1674	1.0535	6.977
8	D:\MassHunter\Data\031523_1633_S6Q225\6Q14857.d	Avg RF	1.4813	1.4607	1.4332	1.3484	1.4551	1.5983	1.5619	1.5823	1.4902	5.720
		Avg RF	0.2096	0.2089	0.1987	0.1988	0.2085	0.2349	0.2190	0.2224	0.2126	5.777
		Avg RF	0.1113	0.0982	0.0963	0.0994	0.1064	0.1186	0.1196	0.1050	0.1069	8.436
		Avg RF	1.5698	1.4446	1.6498	1.4614	1.6658	1.6816	1.6488	1.7743	1.6120	7.009
		Avg RF	0.9846	1.0188	1.1750	1.1406	1.2009	1.3883	1.2635	1.2952	1.1834	11.503
		Avg RF	0.7317	0.8779	0.7962	0.9045	0.8489	1.0016	1.0151	0.9141	0.8863	10.829
		Avg RF	1.4014	1.4580	1.3991	1.4948	1.5768	1.7509	1.6712	1.6629	1.5519	8.605
		Avg RF	1.1533	0.9763	1.2819	1.1268	1.2212	1.2466	1.2628	1.1982	1.1834	8.367
		Avg RF										

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Initial Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICC225
 Lab FileID: 6Q14853.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	1.1817	1.0759	1.0342	0.9240	1.0621	1.1869	1.0968	1.0533	1.0769	7.805
T PFTfDA	Avg RF	0.9998	0.9376	0.8854	0.8260	0.9731	1.0367	0.9333	1.0429	0.9544	7.821
I M2-PFTeDA	Avg RF	1.6209	1.5154	1.5915	1.4121	1.6900	1.6127	1.6067	1.5120	1.5702	5.484
T PFTeDA	Avg RF	0.9707	0.9698	1.0075	0.9213	0.9989	1.0734	1.0548	0.9962	0.9991	4.849
I M8-FOSA	Avg RF	1.0801	1.0094	1.0459	1.0928	1.1429	1.1990	1.1654	1.0734	1.1011	5.765
T FOSA	Avg RF	1.5798	1.4709	1.4814	1.2921	1.4230	1.7072	1.5639	1.5471	1.5082	8.137
I M3-PFBS	Avg RF	1.3718	1.0875	1.1873	1.0702	1.2108	1.4283	1.2957	1.3345	1.2482	10.490
T PFBS	Avg RF	1.1987	1.0915	1.1532	0.9605	1.1272	1.1754	1.1422	1.0656	1.1143	6.771
I M3-PFHxS	Avg RF	1.3991	1.1992	0.9992	0.9950	1.1402	1.2669	1.1529	1.2164	1.1711	11.450
T PFHxS	Avg RF	1.2253	1.2902	1.1161	1.0203	1.1008	1.3164	1.1959	1.1912	1.1820	8.400
I M8-PFOS	Avg RF	0.8502	0.8325	0.8221	0.7628	0.7508	0.8962	0.8515	0.7781	0.8180	6.139
T PFOS	Avg RF	0.4053	0.4972	0.4626	0.4379	0.4277	0.5275	0.4928	0.4884	0.4674	8.822
I M2-4:2FTS	Avg RF	11.80	11.05	12.79	10.07	11.59	12.16	12.05	11.02	11.57	7.258
T 4:2FTS	Avg RF	7.3656	8.1468	7.8248	7.4565	7.5475	7.6055	7.5931	5.8956	7.4294	8.957
I M2-6:2FTS	Avg RF	3.8925	3.1602	3.7441	3.6593	4.4424	4.2831	3.4977	2.7306	3.6762	15.248
T 6:2FTS	Avg RF	0.8794	0.9208	1.0390	1.0266	1.0442	1.1243	1.1816	1.1567	1.0466	10.255
I M2-8:2FTS	Avg RF	1.0886	0.9982	0.9967	0.9713	1.0302	1.1361	1.1509	1.0462	1.0523	6.342
T 8:2FTS	Avg RF	21.07	21.51	21.97	20.44	22.57	22.68	23.19	18.36	21.48	7.207
I M3-MeFOSAA	Avg RF	10.81	10.85	10.96	10.86	11.80	11.84	11.96	10.62	11.21	4.917
T MeFOSAA	Avg RF	5.8519	5.7765	6.0525	5.7001	6.3228	6.3841	6.7800	6.6270	6.1868	6.518
I M3-HFO-DA	Avg RF	1.0056	0.8662	0.8365	0.8396	0.8191	1.0299	0.9434	0.9260	0.9083	8.866
T HFO-DA	Avg RF	1.0378	0.9548	1.0062	0.9937	1.0415	1.1942	1.1538	1.0619	1.0555	7.668
I M7-MeFOSE	Avg RF	0.9821	0.9800	1.0049	0.8831	1.0289	1.0699	1.1140	1.0838	1.0183	7.185
T MeFOSE	Avg RF	0.9821	0.9800	1.0049	0.8831	1.0289	1.0699	1.1140	1.0838	1.0183	7.185

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Initial Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICC225
 Lab FileID: 6Q14853.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA		1.1367	1.1683	1.2411	1.1328	1.1180	1.3144	1.2379	1.2619	1.2014	5.993
T EFOSA	Avg RF					ISTD					
I M3-MeFOSA		1.2463	1.1460	1.2488	1.1746	1.2160	1.2627	1.1795	1.1444	1.2023	3.945
T MeFOSA	Avg RF					ISTD					
I 13C4-PFOS		1.3075	1.2432	1.2616	1.1836	1.1657	1.2510	1.2104	0.9826	1.2007	8.247
S d3-MeFOSAA	Linear					ISTD					
S 13C8-PFOS	Linear	0.8352	0.8124	0.8662	0.8785	0.8146	0.8452	0.8657	0.8483	0.8483	3.013
S d5-EFOSAA	Linear	1.1654	1.0474	1.1658	1.0037	1.0045	1.0193	1.1094	0.9309	1.0558	7.951
S 13C8-FOSA	Linear	1.7791	1.7042	1.7747	1.7621	1.5374	1.7893	1.7327	1.7956	1.7344	4.915
S d7-MeFOSE	Linear	0.2508	0.2495	0.2533	0.2352	0.2213	0.2361	0.2356	0.2424	0.2405	4.428
S d3-MeFOSA	Linear	0.6298	0.6313	0.6328	0.5820	0.5717	0.6629	0.6530	0.7130	0.6346	7.061
S d9-EFOSE	Linear	0.1750	0.1692	0.1774	0.1795	0.1541	0.1749	0.1666	0.1614	0.1698	5.134
S d5-EFOSA	Linear	0.7352	0.6889	0.6949	0.6867	0.6800	0.7205	0.7105	0.6934	0.7013	2.710
I 13C3-PFBA		1.1531	1.1494	1.1580	1.1634	1.1509	1.1542	1.1580	1.0927	1.1475	1.968
S 13C4-PFBA	Linear					ISTD					
I 1802-PFHxS		0.1550	0.1391	0.1357	0.1604	0.1510	0.1498	0.1374	0.1192	0.1434	9.216
S 13C2-4:2FTS	Linear	2.1085	1.9538	2.1400	2.0621	2.1692	2.2347	2.1638	2.2980	2.1413	4.901
S 13C3-PFBS	Linear	0.2007	0.1713	0.1909	0.1825	0.1933	0.1907	0.1807	0.1758	0.1857	5.292
S 13C2-6:2FTS	Linear	1.3863	1.3481	1.3777	1.4864	1.4869	1.3355	1.4229	1.4480	1.4115	4.176
S 13C3-PFHxS	Linear	0.2003	0.2039	0.2036	0.2020	0.1881	0.1756	0.2065	0.2046	0.1981	5.410
S 13C2-8:2FTS	Linear					ISTD					
I 13C4-PFOA		0.8693	0.8388	0.8361	0.8647	0.8644	0.7938	0.8228	0.7869	0.8346	3.814
S 13C8-PFOA	Linear					ISTD					
I 13C2-PFDA		0.7839	0.7616	0.7723	0.7515	0.7586	0.7949	0.7568	0.6274	0.7509	6.930
S 13C6-PFDA	Linear	0.8280	0.8363	0.8196	0.8739	0.8151	0.8361	0.7801	0.6732	0.8078	7.466
S 13C7-PFUnDA	Linear	0.9434	0.9042	1.0167	1.0442	0.9967	1.0294	0.9947	0.8956	0.9781	5.807
S 13C2-PFDODA	Linear	0.5373	0.5335	0.5785	0.5677	0.4443	0.6148	0.5629	0.6240	0.5579	10.066
S 13C2-PFTeDA	Linear					ISTD					
I 13C5-PFNA		1.0581	0.9704	0.9647	0.9128	1.0250	0.9789	0.8708	0.9320	0.9641	6.220
S 13C9-PFNA	Linear					ISTD					
I 13C2-PFHxA		0.5788	0.5628	0.5684	0.5822	0.5710	0.5966	0.5737	0.5882	0.5777	1.917
S 13C5-PPeA	Linear	1.0110	0.9738	1.0372	1.0588	1.0038	1.0634	1.0274	0.9742	1.0187	3.381
S 13C5-PFHxA	Linear	0.1158	0.1056	0.1122	0.1148	0.1079	0.1213	0.1089	0.1170	0.1129	4.665
S 13C3-HPPO-DA	Linear	1.0367	1.0096	0.9900	1.0496	0.9770	1.0825	1.0652	0.9706	1.0226	4.107
S 13C4-PFHpA	Linear					ISTD					

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

Initial Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICC225
 Lab FileID: 6Q14853.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PBBA	Linear	y = 1.147469 * x	
S 13C5-PFPeA	Linear	y = 0.577710 * x	
S 13C2-4:2FTS	Linear	y = 0.143438 * x	
S 13C3-PFBS	Linear	y = 2.141266 * x	
S 13C5-PFHxA	Linear	y = 1.018727 * x	
S 13C3-HFPO-DA	Linear	y = 0.112945 * x	
S 13C4-PFHpA	Linear	y = 1.022650 * x	
S 13C2-6:2FTS	Linear	y = 0.185742 * x	
S 13C8-PFOA	Linear	y = 0.834600 * x	
S 13C3-PFHxS	Linear	y = 1.411496 * x	
S 13C9-PFNA	Linear	y = 0.964097 * x	
S 13C2-8:2FTS	Linear	y = 0.198059 * x	
S 13C6-PEDA	Linear	y = 0.750865 * x	
S d3-MeFOSAA	Linear	y = 1.200698 * x	
S 13C8-PFOS	Linear	y = 0.848342 * x	
S d5-EFOSAA	Linear	y = 1.055798 * x	
S 13C7-PFUridA	Linear	y = 0.807792 * x	
S 13C2-PFDODA	Linear	y = 0.978105 * x	
S 13C8-FOSA	Linear	y = 1.734378 * x	
S 13C2-PFTeDA	Linear	y = 0.557865 * x	
S d7-MeFOSE	Linear	y = 0.240504 * x	
S d3-MeFOSA	Linear	y = 0.634558 * x	
S d9-EFOSE	Linear	y = 0.169765 * x	
S d5-EFOSA	Linear	y = 0.701268 * x	

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

Initial Calibration Verification

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICV225
 Lab FileID: 6Q14859.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\031523_1633_S6Q225\s6q225.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\031523_1633_S6Q225\6Q14850.d
 2:D:\MassHunter\Data\031523_1633_S6Q225\6Q14851.d
 3:D:\MassHunter\Data\031523_1633_S6Q225\6Q14852.d
 4:D:\MassHunter\Data\031523_1633_S6Q225\6Q14853.d
 5:D:\MassHunter\Data\031523_1633_S6Q225\6Q14854.d
 6:D:\MassHunter\Data\031523_1633_S6Q225\6Q14855.d
 7:D:\MassHunter\Data\031523_1633_S6Q225\6Q14856.d
 8:D:\MassHunter\Data\031523_1633_S6Q225\6Q14857.d

Data File: 6Q14859
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.270	5.4	105.4
13C2-6:2FTS	5.000	5.234	4.7	104.7
13C2-8:2FTS	5.000	4.526	-9.5	90.5
13C2-PFDoDA	1.250	1.232	-1.4	98.6
13C2-PFTeDA	1.250	1.239	-0.9	99.1
13C3-PFBS	2.500	2.476	-1.0	99.0
13C3-PFHxS	2.500	2.438	-2.5	97.5
13C4-PFBA	10.000	10.121	1.2	101.2
13C4-PFHpA	2.500	2.482	-0.7	99.3
13C5-PFHxA	2.500	2.446	-2.2	97.8
13C5-PFPeA	5.000	4.802	-4.0	96.0
13C6-PFDA	1.250	1.249	-0.1	99.9
13C7-PFUnDA	1.250	1.220	-2.4	97.6
13C8-FOSA	2.500	2.591	3.6	103.6
13C8-PFOA	2.500	2.403	-3.9	96.1
13C8-PFOS	2.500	2.675	7.0	107.0
13C9-PFNA	1.250	1.187	-5.0	95.0
4:2FTS	9.375	9.340	-0.4	99.6
6:2FTS	9.500	9.286	-2.2	97.8
8:2FTS	9.600	11.843	23.4	123.4
d3-MeFOSAA	5.000	5.364	7.3	107.3
EtFOSAA	2.500	2.219	-11.2	88.8
FOSA	2.500	2.528	1.1	101.1
MeFOSAA	2.500	2.452	-1.9	98.1
PFBA	10.000	9.643	-3.6	96.4
PFBS	2.218	2.303	3.8	103.8
PFDA	2.500	2.355	-5.8	94.2
PFDoDA	2.500	2.410	-3.6	96.4
PFDS	2.413	2.368	-1.9	98.1
PFHpA	2.500	2.441	-2.4	97.6
PFHpS	2.383	2.272	-4.7	95.3
PFHxA	2.500	2.517	0.7	100.7
PFHxS	2.285	2.261	-1.0	99.0
PFNA	2.500	2.311	-7.5	92.5
PFNS	2.405	2.394	-0.4	99.6
PFOA	2.500	2.497	-0.1	99.9
PFOS	2.320	2.209	-4.8	95.2

Initial Calibration Verification

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICV225
 Lab FileID: 6Q14859.D

PFPeA	5.000	4.991	-0.2	99.8
PFPeS	2.353	2.394	1.8	101.8
PFTeDA	2.500	2.378	-4.9	95.1
PFTTrDA	2.500	2.677	7.1	107.1
PFUnDA	2.500	2.472	-1.1	98.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	9.450	9.082	-3.9	96.1
13C3-HFPO-DA	10.000	9.961	-0.4	99.6
9C1-PF3ONS	9.350	9.007	-3.7	96.3
ADONA	9.450	9.284	-1.8	98.2
HFPO-DA	10.000	9.754	-2.5	97.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.173	-2.5	97.5
5:3FTCA	62.400	60.728	-2.7	97.3
7:3FTCA	62.400	60.347	-3.3	96.7
d3-MeFOSA	2.500	2.554	2.2	102.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.500	0.0	100.0
EtFOSE	25.000	24.388	-2.4	97.6
MeFOSA	2.500	2.596	3.8	103.8
MeFOSE	25.000	25.127	0.5	100.5
PFDoDS	2.425	2.482	2.4	102.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.754	15.1	115.1
d7-MeFOSE	25.000	26.522	6.1	106.1
d9-EtFOSE	25.000	27.481	9.9	109.9
d5-EtFOSA	2.500	2.624	5.0	105.0
NFDHA	5.000	4.983	-0.3	99.7
PFMBA	5.000	4.863	-2.7	97.3
PFMPA	5.000	4.985	-0.3	99.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.445	-0.1	99.9

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICV225
 Lab FileID: 6Q14860.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\031523_1633_S6Q225\s6q225.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\031523_1633_S6Q225\6Q14850.d
 2:D:\MassHunter\Data\031523_1633_S6Q225\6Q14851.d
 3:D:\MassHunter\Data\031523_1633_S6Q225\6Q14852.d
 4:D:\MassHunter\Data\031523_1633_S6Q225\6Q14853.d
 5:D:\MassHunter\Data\031523_1633_S6Q225\6Q14854.d
 6:D:\MassHunter\Data\031523_1633_S6Q225\6Q14855.d
 7:D:\MassHunter\Data\031523_1633_S6Q225\6Q14856.d
 8:D:\MassHunter\Data\031523_1633_S6Q225\6Q14857.d

Data File: 6Q14860
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.109	2.2	102.2
13C2-6:2FTS	5.000	5.114	2.3	102.3
13C2-8:2FTS	5.000	4.827	-3.5	96.5
13C2-PFDoDA	1.250	1.108	-11.4	88.6
13C2-PFTeDA	1.250	1.188	-5.0	95.0
13C3-PFBS	2.500	2.521	0.8	100.8
13C3-PFHxS	2.500	2.353	-5.9	94.1
13C4-PFBA	10.000	10.043	0.4	100.4
13C4-PFHpA	2.500	2.616	4.6	104.6
13C5-PFHxA	2.500	2.515	0.6	100.6
13C5-PFPeA	5.000	4.999	0.0	100.0
13C6-PFDA	1.250	1.199	-4.1	95.9
13C7-PFUnDA	1.250	1.137	-9.0	91.0
13C8-FOSA	2.500	2.503	0.1	100.1
13C8-PFOA	2.500	2.459	-1.7	98.3
13C8-PFOS	2.500	2.462	-1.5	98.5
13C9-PFNA	1.250	1.165	-6.8	93.2
4:2FTS	20.000	19.826	-0.9	99.1
6:2FTS	20.000	20.199	1.0	101.0
8:2FTS	20.000	20.953	4.8	104.8
d3-MeFOSAA	5.000	5.001	0.0	100.0
EtFOSAA	20.000	20.419	2.1	102.1
FOSA	20.000	21.232	6.2	106.2
MeFOSAA	20.000	20.106	0.5	100.5
PFBA	20.000	19.588	-2.1	97.9
PFBS	20.000	20.848	4.2	104.2
PFDA	20.000	21.263	6.3	106.3
PFDoDA	20.000	19.553	-2.2	97.8
PFDS	20.000	20.226	1.1	101.1
PFHpA	20.000	19.013	-4.9	95.1
PFHpS	20.000	20.821	4.1	104.1
PFHxA	20.000	21.448	7.2	107.2
PFHxS	20.000	21.326	6.6	106.6
PFNA	20.000	22.414	12.1	112.1
PFNS	20.000	20.754	3.8	103.8
PFOA	20.000	21.001	5.0	105.0
PFOS	20.000	17.696	-11.5	88.5

Initial Calibration Verification

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q225-ICV225
 Lab FileID: 6Q14860.D

PFPeA	20.000	22.080	10.4	110.4
PFPeS	20.000	21.355	6.8	106.8
PFTeDA	20.000	21.947	9.7	109.7
PFTTrDA	20.000	19.330	-3.3	96.7
PFUnDA	20.000	19.986	-0.1	99.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	20.443	2.2	102.2
13C3-HFPO-DA	10.000	10.952	9.5	109.5
9C1-PF3ONS	20.000	20.404	2.0	102.0
ADONA	20.000	20.494	2.5	102.5
HFPO-DA	20.000	18.202	-9.0	91.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	20.355	1.8	101.8
5:3FTCA	20.000	21.884	9.4	109.4
7:3FTCA	20.000	20.402	2.0	102.0
d3-MeFOSA	2.500	2.407	-3.7	96.3
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	19.889	-0.6	99.4
EtFOSE	100.000	97.827	-2.2	97.8
MeFOSA	20.000	20.143	0.7	100.7
MeFOSE	100.000	96.509	-3.5	96.5
PFDoDS	20.000	19.901	-0.5	99.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.765	-4.7	95.3
d7-MeFOSE	25.000	24.161	-3.4	96.6
d9-EtFOSE	25.000	24.681	-1.3	98.7
d5-EtFOSA	2.500	2.462	-1.5	98.5
NFDHA	20.000	20.298	1.5	101.5
PFMBA	20.000	20.939	4.7	104.7
PFMPA	20.000	20.814	4.1	104.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	18.255	-8.7	91.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15104.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\032123_1633_S6Q229\s6q229.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\031523_1633_S6Q225\6Q14850.d
 2:D:\MassHunter\Data\031523_1633_S6Q225\6Q14851.d
 3:D:\MassHunter\Data\031523_1633_S6Q225\6Q14852.d
 4:D:\MassHunter\Data\031523_1633_S6Q225\6Q14853.d
 5:D:\MassHunter\Data\031523_1633_S6Q225\6Q14854.d
 6:D:\MassHunter\Data\031523_1633_S6Q225\6Q14855.d
 7:D:\MassHunter\Data\031523_1633_S6Q225\6Q14856.d
 8:D:\MassHunter\Data\031523_1633_S6Q225\6Q14857.d

Data File: 6Q15104
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.638	12.8	112.8
13C2-6:2FTS	5.000	5.512	10.2	110.2
13C2-8:2FTS	5.000	5.327	6.5	106.5
13C2-PFDoDA	1.250	1.300	4.0	104.0
13C2-PFTeDA	1.250	1.305	4.4	104.4
13C3-PFBS	2.500	2.544	1.8	101.8
13C3-PFHxS	2.500	2.379	-4.8	95.2
13C4-PFBA	10.000	10.069	0.7	100.7
13C4-PFHpA	2.500	2.522	0.9	100.9
13C5-PFHxA	2.500	2.434	-2.7	97.3
13C5-PFPeA	5.000	4.914	-1.7	98.3
13C6-PFDA	1.250	1.190	-4.8	95.2
13C7-PFUnDA	1.250	1.229	-1.7	98.3
13C8-FOSA	2.500	2.426	-3.0	97.0
13C8-PFOA	2.500	2.360	-5.6	94.4
13C8-PFOS	2.500	2.265	-9.4	90.6
13C9-PFNA	1.250	1.297	3.8	103.8
4:2FTS	9.375	9.396	0.2	100.2
6:2FTS	9.500	9.751	2.6	102.6
8:2FTS	9.600	10.584	10.2	110.2
d3-MeFOSAA	5.000	4.645	-7.1	92.9
EtFOSAA	2.500	2.509	0.4	100.4
FOSA	2.500	2.552	2.1	102.1
MeFOSAA	2.500	2.421	-3.1	96.9
PFBA	10.000	9.615	-3.9	96.1
PFBS	2.218	2.066	-6.8	93.2
PFDA	2.500	2.808	12.3	112.3
PFDoDA	2.500	2.374	-5.0	95.0
PFDS	2.413	2.469	2.3	102.3
PFHpA	2.500	2.476	-0.9	99.1
PFHpS	2.383	2.441	2.4	102.4
PFHxA	2.500	2.517	0.7	100.7
PFHxS	2.285	2.381	4.2	104.2
PFNA	2.500	2.476	-1.0	99.0
PFNS	2.405	2.388	-0.7	99.3
PFOA	2.500	2.533	1.3	101.3
PFOS	2.320	2.478	6.8	106.8

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15104.D

PFPeA	5.000	4.960	-0.8	99.2
PFPeS	2.353	2.347	-0.3	99.7
PFTeDA	2.500	2.518	0.7	100.7
PFTTrDA	2.500	2.415	-3.4	96.6
PFUnDA	2.500	2.736	9.4	109.4
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	9.450	9.402	-0.5	99.5
13C3-HFPO-DA	10.000	9.621	-3.8	96.2
9C1-PF3ONS	9.350	9.515	1.8	101.8
ADONA	9.450	10.105	6.9	106.9
HFPO-DA	10.000	10.107	1.1	101.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	13.289	6.5	106.5
5:3FTCA	62.400	67.159	7.6	107.6
7:3FTCA	62.400	70.320	12.7	112.7
d3-MeFOSA	2.500	2.353	-5.9	94.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.586	3.4	103.4
EtFOSE	25.000	25.589	2.4	102.4
MeFOSA	2.500	2.493	-0.3	99.7
MeFOSE	25.000	25.560	2.2	102.2
PFDoDS	2.425	2.682	10.6	110.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.724	-5.5	94.5
d7-MeFOSE	25.000	24.617	-1.5	98.5
d9-EtFOSE	25.000	24.495	-2.0	98.0
d5-EtFOSA	2.500	2.317	-7.3	92.7
NFDHA	5.000	4.810	-3.8	96.2
PFMBA	5.000	4.913	-1.7	98.3
PFMPA	5.000	4.990	-0.2	99.8
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.325	-2.8	97.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15105.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\032123_1633_S6Q229\s6q229.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\031523_1633_S6Q225\6Q14850.d
 2:D:\MassHunter\Data\031523_1633_S6Q225\6Q14851.d
 3:D:\MassHunter\Data\031523_1633_S6Q225\6Q14852.d
 4:D:\MassHunter\Data\031523_1633_S6Q225\6Q14853.d
 5:D:\MassHunter\Data\031523_1633_S6Q225\6Q14854.d
 6:D:\MassHunter\Data\031523_1633_S6Q225\6Q14855.d
 7:D:\MassHunter\Data\031523_1633_S6Q225\6Q14856.d
 8:D:\MassHunter\Data\031523_1633_S6Q225\6Q14857.d

Data File: 6Q15105
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.659	13.2	113.2
13C2-6:2FTS	5.000	6.143	22.9	122.9
13C2-8:2FTS	5.000	5.986	19.7	119.7
13C2-PFDoDA	1.250	1.212	-3.1	96.9
13C2-PFTeDA	1.250	1.227	-1.8	98.2
13C3-PFBS	2.500	2.388	-4.5	95.5
13C3-PFHxS	2.500	2.410	-3.6	96.4
13C4-PFBA	10.000	10.070	0.7	100.7
13C4-PFHpA	2.500	2.517	0.7	100.7
13C5-PFHxA	2.500	2.454	-1.8	98.2
13C5-PFPeA	5.000	4.933	-1.3	98.7
13C6-PFDA	1.250	1.194	-4.5	95.5
13C7-PFUnDA	1.250	1.247	-0.2	99.8
13C8-FOSA	2.500	2.631	5.2	105.2
13C8-PFOA	2.500	2.418	-3.3	96.7
13C8-PFOS	2.500	2.471	-1.1	98.9
13C9-PFNA	1.250	1.344	7.5	107.5
4:2FTS	0.750	0.727	-3.1	96.9
6:2FTS	0.760	0.720	-5.3	94.7
8:2FTS	0.768	0.793	3.3	103.3
d3-MeFOSAA	5.000	5.014	0.3	100.3
EtFOSAA	0.200	0.209	4.3	104.3
FOSA	0.200	0.215	7.3	107.3
MeFOSAA	0.200	0.202	1.1	101.1
PFBA	0.800	0.764	-4.5	95.5
PFBS	0.177	0.159	-10.2	89.8
PFDA	0.200	0.192	-4.2	95.8
PFDoDA	0.200	0.213	6.4	106.4
PFDS	0.193	0.190	-1.7	98.3
PFHpA	0.200	0.203	1.6	101.6
PFHpS	0.191	0.204	6.7	106.7
PFHxA	0.200	0.194	-3.1	96.9
PFHxS	0.183	0.215	17.6	117.6
PFNA	0.200	0.196	-2.2	97.8
PFNS	0.192	0.219	14.3	114.3
PFOA	0.200	0.187	-6.3	93.7
PFOS	0.186	0.192	3.4	103.4

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15105.D

PFPeA	0.400	0.394	-1.5	98.5
PFPeS	0.188	0.190	0.8	100.8
PFTeDA	0.200	0.223	11.5	111.5
PFTTrDA	0.200	0.208	4.2	104.2
PFUnDA	0.200	0.183	-8.4	91.6
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	0.756	0.726	-4.0	96.0
13C3-HFPO-DA	10.000	9.785	-2.2	97.8
9C1-PF3ONS	0.748	0.732	-2.1	97.9
ADONA	0.756	0.769	1.7	101.7
HFPO-DA	0.800	0.875	9.3	109.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	1.020	2.2	102.2
5:3FTCA	4.992	5.458	9.3	109.3
7:3FTCA	4.992	5.418	8.5	108.5
d3-MeFOSA	2.500	2.484	-0.6	99.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.192	-4.0	96.0
EtFOSE	2.000	1.980	-1.0	99.0
MeFOSA	0.200	0.209	4.6	104.6
MeFOSE	2.000	1.973	-1.4	98.6
PFDoDS	0.194	0.250	29.1	129.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.141	2.8	102.8
d7-MeFOSE	25.000	26.658	6.6	106.6
d9-EtFOSE	25.000	26.743	7.0	107.0
d5-EtFOSA	2.500	2.566	2.6	102.6
NFDHA	0.400	0.392	-1.9	98.1
PFMBA	0.400	0.390	-2.5	97.5
PFMPA	0.400	0.399	-0.3	99.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.349	-1.8	98.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15116.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\032123_1633_S6Q229\s6q229.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\031523_1633_S6Q225\6Q14850.d
 2:D:\MassHunter\Data\031523_1633_S6Q225\6Q14851.d
 3:D:\MassHunter\Data\031523_1633_S6Q225\6Q14852.d
 4:D:\MassHunter\Data\031523_1633_S6Q225\6Q14853.d
 5:D:\MassHunter\Data\031523_1633_S6Q225\6Q14854.d
 6:D:\MassHunter\Data\031523_1633_S6Q225\6Q14855.d
 7:D:\MassHunter\Data\031523_1633_S6Q225\6Q14856.d
 8:D:\MassHunter\Data\031523_1633_S6Q225\6Q14857.d

Data File: 6Q15116
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.352	7.0	107.0
13C2-6:2FTS	5.000	6.138	22.8	122.8
13C2-8:2FTS	5.000	5.544	10.9	110.9
13C2-PFDoDA	1.250	1.345	7.6	107.6
13C2-PFTeDA	1.250	1.309	4.7	104.7
13C3-PFBS	2.500	2.489	-0.4	99.6
13C3-PFHxS	2.500	2.566	2.7	102.7
13C4-PFBA	10.000	10.147	1.5	101.5
13C4-PFHpA	2.500	2.433	-2.7	97.3
13C5-PFHxA	2.500	2.553	2.1	102.1
13C5-PFPeA	5.000	4.849	-3.0	97.0
13C6-PFDA	1.250	1.320	5.6	105.6
13C7-PFUnDA	1.250	1.351	8.0	108.0
13C8-FOSA	2.500	2.789	11.6	111.6
13C8-PFOA	2.500	2.538	1.5	101.5
13C8-PFOS	2.500	2.582	3.3	103.3
13C9-PFNA	1.250	1.289	3.1	103.1
4:2FTS	9.375	9.960	6.2	106.2
6:2FTS	9.500	8.697	-8.5	91.5
8:2FTS	9.600	10.087	5.1	105.1
d3-MeFOSAA	5.000	5.840	16.8	116.8
EtFOSAA	2.500	2.314	-7.5	92.5
FOSA	2.500	2.470	-1.2	98.8
MeFOSAA	2.500	2.369	-5.2	94.8
PFBA	10.000	9.679	-3.2	96.8
PFBS	2.218	2.109	-4.9	95.1
PFDA	2.500	2.522	0.9	100.9
PFDoDA	2.500	2.352	-5.9	94.1
PFDS	2.413	2.373	-1.7	98.3
PFHpA	2.500	2.547	1.9	101.9
PFHpS	2.383	2.391	0.4	100.4
PFHxA	2.500	2.455	-1.8	98.2
PFHxS	2.285	2.144	-6.2	93.8
PFNA	2.500	2.332	-6.7	93.3
PFNS	2.405	2.468	2.6	102.6
PFOA	2.500	2.515	0.6	100.6
PFOS	2.320	2.278	-1.8	98.2

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15116.D

PFPeA	5.000	5.031	0.6	100.6
PFPeS	2.353	2.251	-4.4	95.6
PFTeDA	2.500	2.650	6.0	106.0
PFTTrDA	2.500	2.533	1.3	101.3
PFUnDA	2.500	2.461	-1.6	98.4
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	9.450	10.046	6.3	106.3
13C3-HFPO-DA	10.000	9.489	-5.1	94.9
9C1-PF3ONS	9.350	9.572	2.4	102.4
ADONA	9.450	9.998	5.8	105.8
HFPO-DA	10.000	9.872	-1.3	98.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	13.080	4.8	104.8
5:3FTCA	62.400	64.409	3.2	103.2
7:3FTCA	62.400	66.373	6.4	106.4
d3-MeFOSA	2.500	2.627	5.1	105.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.500	0.0	100.0
EtFOSE	25.000	24.203	-3.2	96.8
MeFOSA	2.500	2.503	0.1	100.1
MeFOSE	25.000	25.837	3.3	103.3
PFDoDS	2.425	2.556	5.4	105.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.649	13.0	113.0
d7-MeFOSE	25.000	26.646	6.6	106.6
d9-EtFOSE	25.000	28.112	12.4	112.4
d5-EtFOSA	2.500	2.648	5.9	105.9
NFDHA	5.000	4.758	-4.8	95.2
PFMBA	5.000	4.943	-1.1	98.9
PFMPA	5.000	5.067	1.3	101.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.118	-7.5	92.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15124.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\032123_1633_S6Q229\s6q229.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\031523_1633_S6Q225\6Q14850.d
 2:D:\MassHunter\Data\031523_1633_S6Q225\6Q14851.d
 3:D:\MassHunter\Data\031523_1633_S6Q225\6Q14852.d
 4:D:\MassHunter\Data\031523_1633_S6Q225\6Q14853.d
 5:D:\MassHunter\Data\031523_1633_S6Q225\6Q14854.d
 6:D:\MassHunter\Data\031523_1633_S6Q225\6Q14855.d
 7:D:\MassHunter\Data\031523_1633_S6Q225\6Q14856.d
 8:D:\MassHunter\Data\031523_1633_S6Q225\6Q14857.d

Data File: 6Q15124
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.655	13.1	113.1
13C2-6:2FTS	5.000	5.981	19.6	119.6
13C2-8:2FTS	5.000	5.845	16.9	116.9
13C2-PFDoDA	1.250	1.343	7.5	107.5
13C2-PFTeDA	1.250	1.329	6.3	106.3
13C3-PFBS	2.500	2.498	-0.1	99.9
13C3-PFHxS	2.500	2.445	-2.2	97.8
13C4-PFBA	10.000	10.259	2.6	102.6
13C4-PFHpA	2.500	2.429	-2.8	97.2
13C5-PFHxA	2.500	2.403	-3.9	96.1
13C5-PFPeA	5.000	4.738	-5.2	94.8
13C6-PFDA	1.250	1.239	-0.9	99.1
13C7-PFUnDA	1.250	1.339	7.1	107.1
13C8-FOSA	2.500	2.607	4.3	104.3
13C8-PFOA	2.500	2.513	0.5	100.5
13C8-PFOS	2.500	2.600	4.0	104.0
13C9-PFNA	1.250	1.271	1.7	101.7
4:2FTS	9.375	9.445	0.7	100.7
6:2FTS	9.500	9.784	3.0	103.0
8:2FTS	9.600	10.438	8.7	108.7
d3-MeFOSAA	5.000	5.322	6.4	106.4
EtFOSAA	2.500	2.487	-0.5	99.5
FOSA	2.500	2.511	0.4	100.4
MeFOSAA	2.500	2.440	-2.4	97.6
PFBA	10.000	9.609	-3.9	96.1
PFBS	2.218	2.204	-0.6	99.4
PFDA	2.500	2.561	2.4	102.4
PFDoDA	2.500	2.383	-4.7	95.3
PFDS	2.413	2.234	-7.4	92.6
PFHpA	2.500	2.407	-3.7	96.3
PFHpS	2.383	2.202	-7.6	92.4
PFHxA	2.500	2.482	-0.7	99.3
PFHxS	2.285	2.264	-0.9	99.1
PFNA	2.500	2.546	1.8	101.8
PFNS	2.405	2.357	-2.0	98.0
PFOA	2.500	2.449	-2.0	98.0
PFOS	2.320	2.266	-2.3	97.7

Continuing Calibration Summary

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q229-CC225
 Lab FileID: 6Q15124.D

PFPeA	5.000	4.991	-0.2	99.8
PFPeS	2.353	2.235	-5.0	95.0
PFTeDA	2.500	2.505	0.2	100.2
PFTTrDA	2.500	2.585	3.4	103.4
PFUnDA	2.500	2.484	-0.6	99.4
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	9.450	9.930	5.1	105.1
13C3-HFPO-DA	10.000	9.375	-6.3	93.7
9C1-PF3ONS	9.350	9.629	3.0	103.0
ADONA	9.450	9.806	3.8	103.8
HFPO-DA	10.000	9.644	-3.6	96.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	13.316	6.7	106.7
5:3FTCA	62.400	66.656	6.8	106.8
7:3FTCA	62.400	65.005	4.2	104.2
d3-MeFOSA	2.500	2.335	-6.6	93.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.392	-4.3	95.7
EtFOSE	25.000	24.996	0.0	100.0
MeFOSA	2.500	2.601	4.0	104.0
MeFOSE	25.000	23.905	-4.4	95.6
PFDODS	2.425	2.383	-1.7	98.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.078	1.6	101.6
d7-MeFOSE	25.000	26.613	6.5	106.5
d9-EtFOSE	25.000	25.618	2.5	102.5
d5-EtFOSA	2.500	2.513	0.5	100.5
NFDHA	5.000	4.978	-0.4	99.6
PFMBA	5.000	4.991	-0.2	99.8
PFMPA	5.000	5.078	1.6	101.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.387	-1.4	98.6

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q225	Method: EPA DRAFT 1633	Instrument ID: GCMS6Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S6Q225-RT	6Q14847.D	03/15/23 21:04	n/a	Retention Time Marker
S6Q225-RT	6Q14848.D	03/15/23 21:18	n/a	Retention Time Marker
S6Q225-IC225	6Q14849.D	03/15/23 21:32	n/a	Mass Calibration Verification
S6Q225-IC225	6Q14850.D	03/15/23 21:46	n/a	Initial cal 1
S6Q225-IC225	6Q14851.D	03/15/23 22:00	n/a	Initial cal 2
S6Q225-IC225	6Q14852.D	03/15/23 22:14	n/a	Initial cal 3
S6Q225-ICC225	6Q14853.D	03/15/23 22:28	n/a	Initial cal 4
S6Q225-IC225	6Q14854.D	03/15/23 22:42	n/a	Initial cal 5
S6Q225-IC225	6Q14855.D	03/15/23 22:56	n/a	Initial cal 6
S6Q225-IC225	6Q14856.D	03/15/23 23:10	n/a	Initial cal 7
S6Q225-IC225	6Q14857.D	03/15/23 23:24	n/a	Initial cal 8
S6Q225-IBLK	6Q14858.D	03/15/23 23:38	n/a	Instrument Blank
S6Q225-ICV225	6Q14859.D	03/15/23 23:52	n/a	Initial cal verification 4
S6Q225-ICV225	6Q14860.D	03/16/23 00:06	n/a	Initial cal verification 20
S6Q225-CC225	6Q14861.D	03/16/23 00:20	n/a	Continuing cal 4
S6Q225-ECC225	6Q14862.D	03/16/23 00:33	n/a	Ending cal 1.0

Run Sequence Report

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q229	Method: EPA DRAFT 1633	Instrument ID: GCMS6Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S6Q229-RT	6Q15100.D	03/21/23 13:18	n/a	Retention Time Marker
S6Q229-RT	6Q15101.D	03/21/23 13:32	n/a	Retention Time Marker
S6Q229-IBLK	6Q15103.D	03/21/23 15:12	n/a	Instrument Blank
S6Q229-IBLK	6Q15103.D	03/21/23 15:12	n/a	Instrument Blank
S6Q229-CC225	6Q15104.D	03/21/23 15:27	n/a	Continuing cal 4
S6Q229-CC225	6Q15105.D	03/21/23 15:41	n/a	Continuing cal 1.0LL
OP95968-BS	6Q15106.D	03/21/23 15:55	OP95968	Blank Spike
OP95968-LLBS	6Q15107.D	03/21/23 16:09	OP95968	Blank Spike
OP95968-MB	6Q15108.D	03/21/23 16:23	OP95968	Method Blank
FC3534-1	6Q15109.D	03/21/23 16:37	OP95968	AF-RHMW02-WGN01LF-2303W2
FC3534-2	6Q15110.D	03/21/23 16:51	OP95968	AF-RHMW225401-WGN01B-2303W2
FC3534-3	6Q15111.D	03/21/23 17:05	OP95968	AF-RHMW03-WGN01LF-2303W2
ZZZZZZ	6Q15112.D	03/21/23 17:19	OP95968	(unrelated sample)
FC3558-2	6Q15113.D	03/21/23 17:33	OP95968	(used for QC only; not part of job FC3534)
OP95968-MS	6Q15114.D	03/21/23 17:48	OP95968	Matrix Spike
FC3558-3	6Q15115.D	03/21/23 18:02	OP95968	(used for QC only; not part of job FC3534)
S6Q229-CC225	6Q15116.D	03/21/23 18:15	n/a	Continuing cal 4
S6Q229-ICCB	6Q15117.D	03/21/23 18:29	n/a	Continuing Calibration Blank
OP95968-DUP	6Q15118.D	03/21/23 18:43	OP95968	Duplicate
OP95971-BS	6Q15119.D	03/21/23 18:57	OP95971	Blank Spike
OP95971-LLBS	6Q15120.D	03/21/23 19:11	OP95971	Blank Spike
OP95971-MB	6Q15121.D	03/21/23 19:25	OP95971	Method Blank
ZZZZZZ	6Q15122.D	03/21/23 19:39	OP95971	(unrelated sample)
ZZZZZZ	6Q15123.D	03/21/23 19:53	OP95971	(unrelated sample)
S6Q229-CC225	6Q15124.D	03/21/23 20:07	n/a	Continuing cal 4
S6Q229-ICCB	6Q15125.D	03/21/23 20:21	n/a	Continuing Calibration Blank
S6Q229-ICCB	6Q15125.D	03/21/23 20:21	n/a	Continuing Calibration Blank
OP95917-BS	6Q15126.D	03/21/23 20:35	OP95917	Blank Spike
OP95917-LLBS	6Q15127.D	03/21/23 20:49	OP95917	Blank Spike
OP95917-MB	6Q15128.D	03/21/23 21:03	OP95917	Method Blank
JD61307-2A	6Q15129.D	03/21/23 21:17	OP95917	(used for QC only; not part of job FC3534)
OP95917-MS	6Q15130.D	03/21/23 21:31	OP95917	Matrix Spike
OP95917-MSD	6Q15131.D	03/21/23 21:45	OP95917	Matrix Spike Duplicate
S6Q229-CC225	6Q15132.D	03/21/23 21:59	n/a	Continuing cal 4
S6Q229-ICCB	6Q15133.D	03/21/23 22:13	n/a	Continuing Calibration Blank
S6Q229-ICCB	6Q15133.D	03/21/23 22:13	n/a	Continuing Calibration Blank
OP95900-BS	6Q15134.D	03/21/23 22:27	OP95900	Blank Spike
OP95900-LLBS	6Q15135.D	03/21/23 22:41	OP95900	Blank Spike
OP95900-MB	6Q15136.D	03/21/23 22:55	OP95900	Method Blank
JD61785-3B	6Q15137.D	03/21/23 23:09	OP95900	(used for QC only; not part of job FC3534)
OP95900-MS	6Q15138.D	03/21/23 23:23	OP95900	Matrix Spike
OP95900-MSD	6Q15139.D	03/21/23 23:37	OP95900	Matrix Spike Duplicate
ZZZZZZ	6Q15140.D	03/21/23 23:51	OP95900	(unrelated sample)
ZZZZZZ	6Q15141.D	03/22/23 00:05	OP95900	(unrelated sample)
S6Q229-CC225	6Q15142.D	03/22/23 00:19	n/a	Continuing cal 4
S6Q229-CC225	6Q15143.D	03/22/23 00:33	n/a	Continuing cal 1.0LL

Run Sequence Report

Job Number: FC3534
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q229	Method: EPA DRAFT 1633	Instrument ID: GCMS6Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S6Q229-ICCB	6Q15144.D	03/22/23 00:47	n/a	Continuing Calibration Blank
S6Q229-ICCB	6Q15144.D	03/22/23 00:47	n/a	Continuing Calibration Blank
OP95924-BS	6Q15145.D	03/22/23 01:01	OP95924	Blank Spike
OP95924-LLBS	6Q15146.D	03/22/23 01:15	OP95924	Blank Spike
OP95924-MB	6Q15147.D	03/22/23 01:29	OP95924	Method Blank
ZZZZZZ	6Q15148.D	03/22/23 01:43	OP95924	(unrelated sample)
ZZZZZZ	6Q15149.D	03/22/23 01:57	OP95924	(unrelated sample)
ZZZZZZ	6Q15150.D	03/22/23 02:11	OP95924	(unrelated sample)
ZZZZZZ	6Q15151.D	03/22/23 02:25	OP95924	(unrelated sample)
ZZZZZZ	6Q15152.D	03/22/23 02:39	OP95924	(unrelated sample)
ZZZZZZ	6Q15153.D	03/22/23 02:53	OP95924	(unrelated sample)
ZZZZZZ	6Q15154.D	03/22/23 03:07	OP95924	(unrelated sample)
S6Q229-CC225	6Q15155.D	03/22/23 03:21	n/a	Continuing cal 4
S6Q229-ICCB	6Q15156.D	03/22/23 03:35	n/a	Continuing Calibration Blank
ZZZZZZ	6Q15157.D	03/22/23 03:49	OP95924	(unrelated sample)
ZZZZZZ	6Q15158.D	03/22/23 04:03	OP95924	(unrelated sample)
ZZZZZZ	6Q15159.D	03/22/23 04:17	OP95924	(unrelated sample)
ZZZZZZ	6Q15160.D	03/22/23 04:31	OP95924	(unrelated sample)
FC3371-8	6Q15161.D	03/22/23 04:45	OP95924	(used for QC only; not part of job FC3534)
OP95924-MS	6Q15162.D	03/22/23 04:59	OP95924	Matrix Spike
FC3371-9	6Q15163.D	03/22/23 05:13	OP95924	(used for QC only; not part of job FC3534)
OP95924-DUP	6Q15164.D	03/22/23 05:27	OP95924	Duplicate
ZZZZZZ	6Q15165.D	03/22/23 05:41	OP95924	(unrelated sample)
S6Q229-ECC225	6Q15166.D	03/22/23 05:55	n/a	Ending cal 4
S6Q229-ICCB	6Q15167.D	03/22/23 06:09	n/a	Continuing Calibration Blank

6.10.2
6

MS Semi-volatiles

Raw Data

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Natasha Gumtie
 03/22/23 12:54

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15109.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 4:37:28 PM
 Sample Name : FC3534-1
 Vial : P3-A4
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95968,S6Q229,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	38025	10.00 µg/L	0.025
M5-PFPeA	4.370	268.3 -> 223.0	30300	5.00 µg/L	-0.025
M5-PFHxA	5.580	318.0 -> 273.0	28461	2.50 µg/L	-0.025
M4-PFHpA	6.532	367.1 -> 322.0	29015	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	51566	2.50 µg/L	-0.012
M9-PFNA	7.693	472.1 -> 427.0	16612	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	12670	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	12979	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	13315	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	7331	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	12994	2.50 µg/L	-0.025
M3-PFBS	5.524	302.1 -> 79.9	10332	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	7150	2.50 µg/L	-0.013
M8-PFOS	8.335	507.1 -> 79.9	6499	2.50 µg/L	-0.025
M2-4:2FTS	5.243	329.1 -> 80.9	1498	5.00 µg/L	-0.037
M2-6:2FTS	6.937	429.1 -> 80.9	1831	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	1964	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	17305	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	12253	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	14948	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	15075	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	10448	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	3969	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	3363	2.50 µg/L	-0.012
13C4-PFOS	8.348	502.8 -> 79.9	7899	2.50 µg/L	-0.013
13C3-PFBA	2.976	216.0 -> 172.0	20168	5.00 µg/L	0.025
18O2-PFHxS	7.288	403.0 -> 83.9	5263	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	60199	2.50 µg/L	-0.012
13C2-PFDA	8.173	515.1 -> 470.1	19554	1.25 µg/L	-0.025
13C5-PFNA	7.706	468.0 -> 423.0	15488	1.25 µg/L	-0.012
13C2-PFHxA	5.581	315.1 -> 270.0	29830	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.243	329.1 -> 80.9	1498	4.96 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C2-6:2FTS	6.937	429.1 -> 80.9	1831	4.68 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C2-8:2FTS	7.961	529.1 -> 80.9	1964	4.71 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C2-PFDoDA	9.057	615.1 -> 570.0	13315	0.87 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.6%		
13C2-PFTeDA	9.772	715.2 -> 670.0	7331	0.84 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 67.2%		
13C3-PFBS	5.524	302.1 -> 79.9	10332	2.29 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.7%		
13C3-PFHxS	7.289	402.1 -> 79.9	7150	2.41 µg/L	-0.013

7.1.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C4-PFBA	2.972	216.8 -> 171.9	38025	8.22 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 82.2%		
13C4-PFHpA	6.532	367.1 -> 322.0	29015	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C5-PFHxA	5.580	318.0 -> 273.0	28461	2.34 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.7%		
13C5-PFPeA	4.370	268.3 -> 223.0	30300	4.40 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.9%		
13C6-PFDA	8.173	519.1 -> 474.1	12670	1.08 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.3%		
13C7-PFUnDA	8.627	570.0 -> 525.1	12979	1.03 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 82.2%		
13C8-FOSA	9.645	506.1 -> 77.8	12994	2.37 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C8-PFOA	7.175	421.1 -> 376.0	51566	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C8-PFOS	8.335	507.1 -> 79.9	6499	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C9-PFNA	7.693	472.1 -> 427.0	16612	1.39 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.3%		
d3-MeFOSAA	8.231	573.2 -> 419.0	17305	4.56 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.2%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	12253	9.09 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 90.9%		
d3-MeFOSA	10.746	515.0 -> 219.0	3363	1.68 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 67.1%		
d5-EtFOSAA	8.426	589.2 -> 419.0	14948	4.48 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.6%		
d7-MeFOSE	10.668	623.2 -> 58.9	15075	19.84 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 79.4%		
d9-EtFOSE	10.901	639.2 -> 58.9	10448	19.48 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 77.9%		
d5-EtFOSA	10.979	531.1 -> 219.0	3969	1.79 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 71.7%		

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	6.937	427.1 -> 407.0	5262	1.93 µg/L	98
		427.1 -> 80.9	1083		
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	3.206	212.8 -> 168.9	0	µg/L m	1
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8				
		363.1 -> 319.0	1194	0.06 µg/L	m	99
PFHpS	-	363.1 -> 169.0	159			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.582	449.0 -> 98.9				
		313.0 -> 269.0	655	0.05 µg/L	#m	81
PFHxS	-	313.0 -> 118.9	68			
		398.7 -> 79.9	-	N.D.		
PFNA	8.325	398.7 -> 98.9				
		463.0 -> 419.0	0	µg/L	m	1
PFNS	-	463.0 -> 219.0	0			
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.385	498.9 -> 98.8				
		263.0 -> 219.0	5330	0.74 µg/L	m	100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.380	563.1 -> 519.0	0	µg/L	m	1
		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	3.764	241.0 -> 177.0	0	µg/L	m	1
		241.0 -> 117.0	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

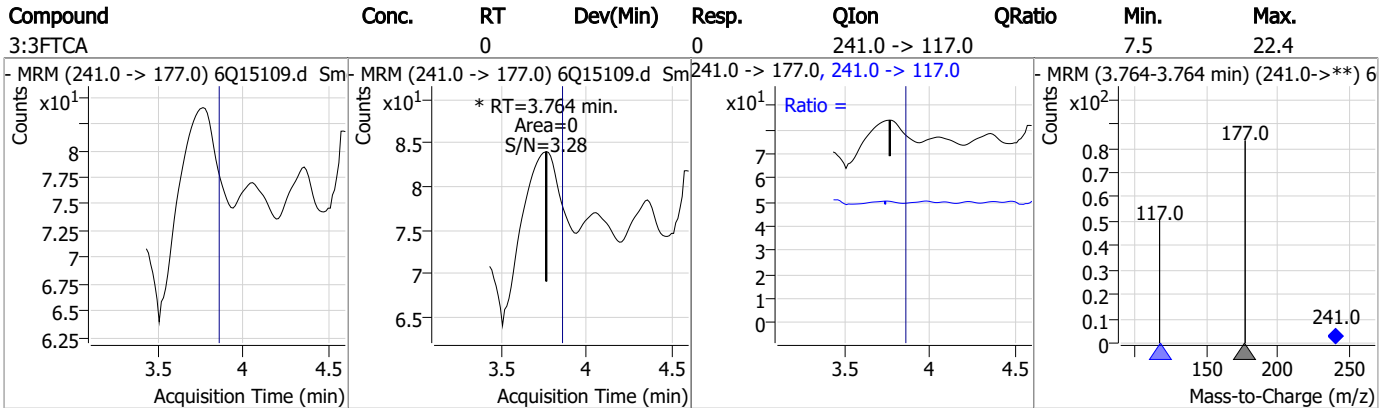
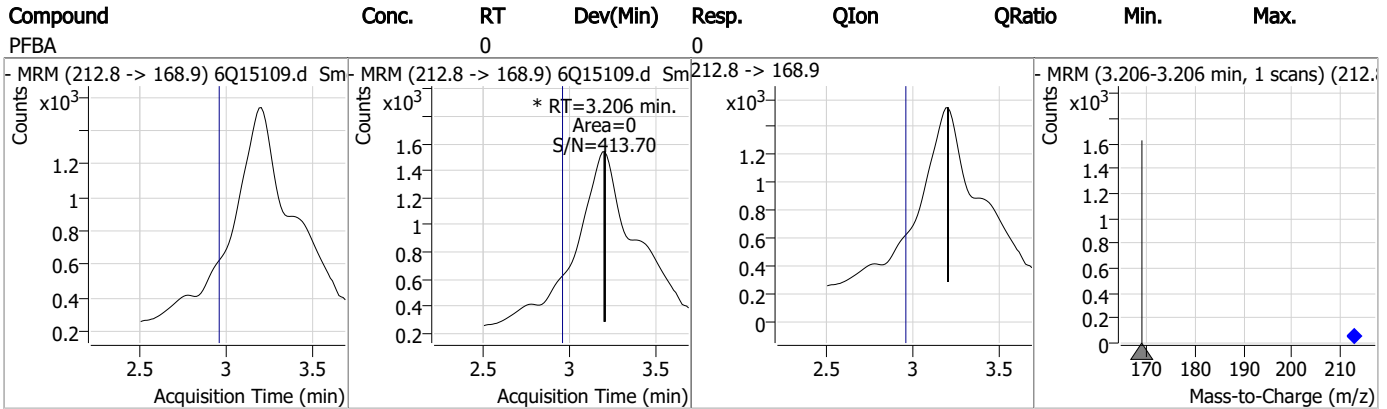
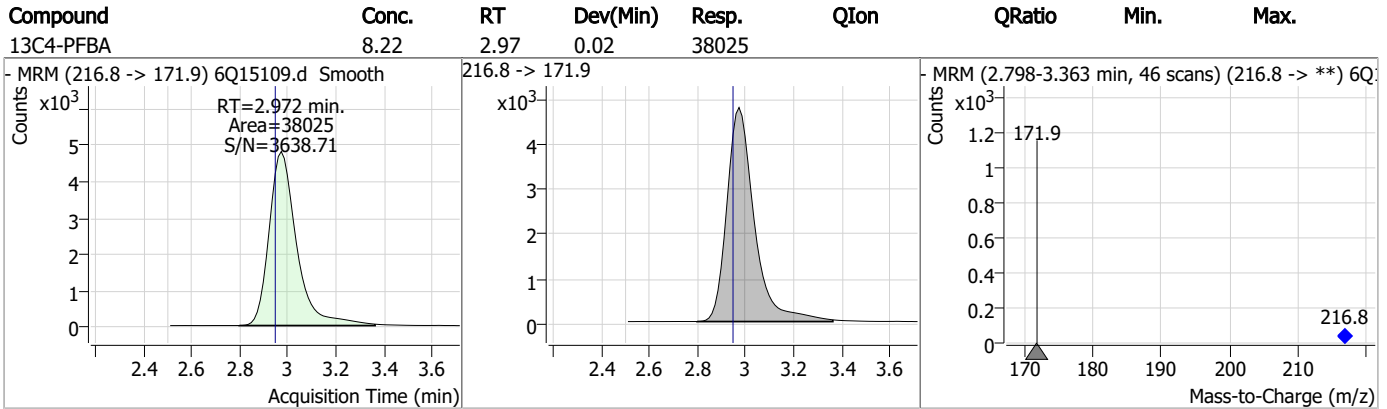
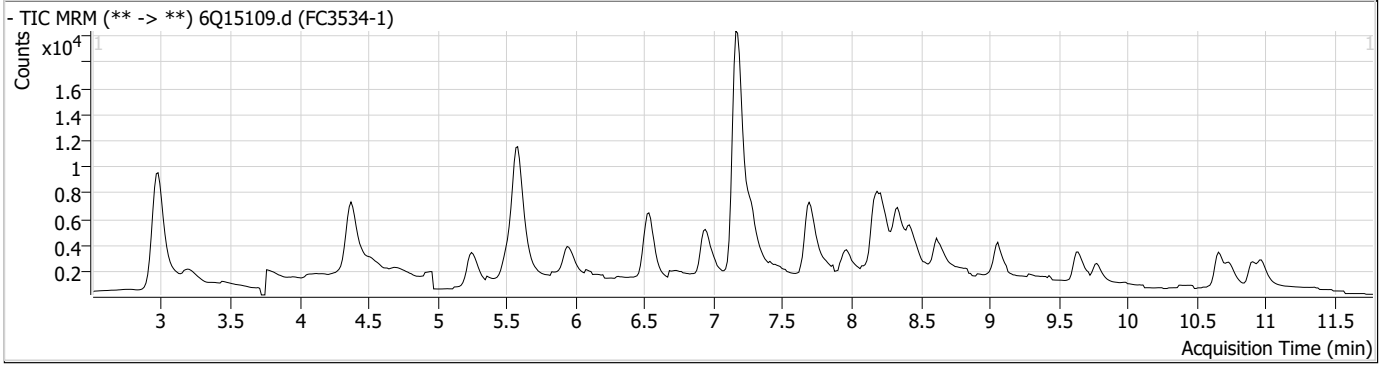
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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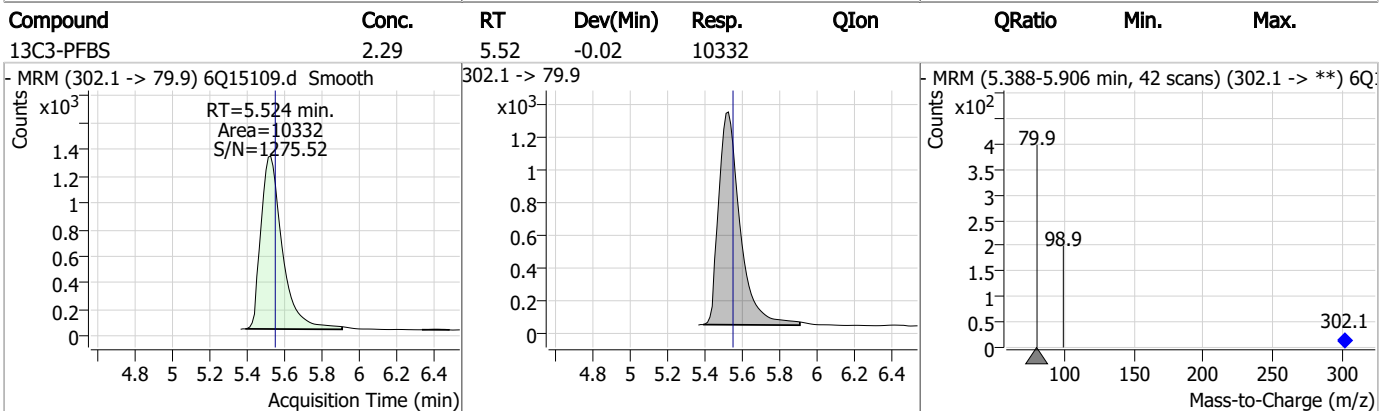
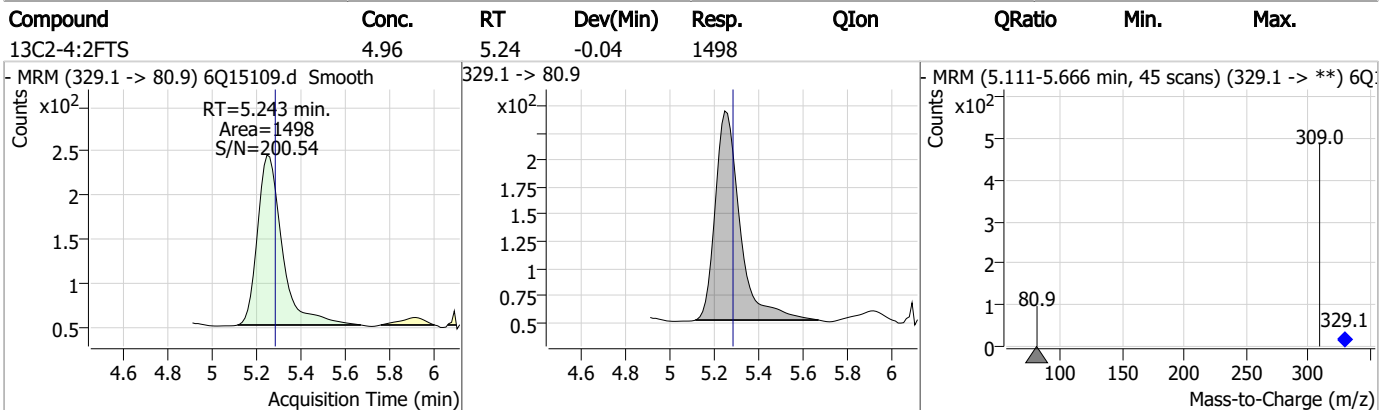
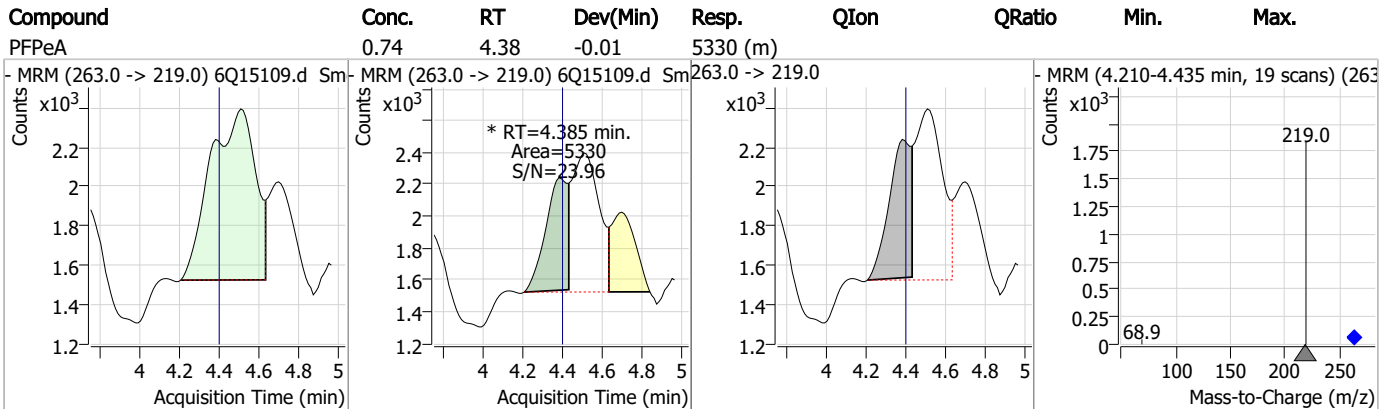
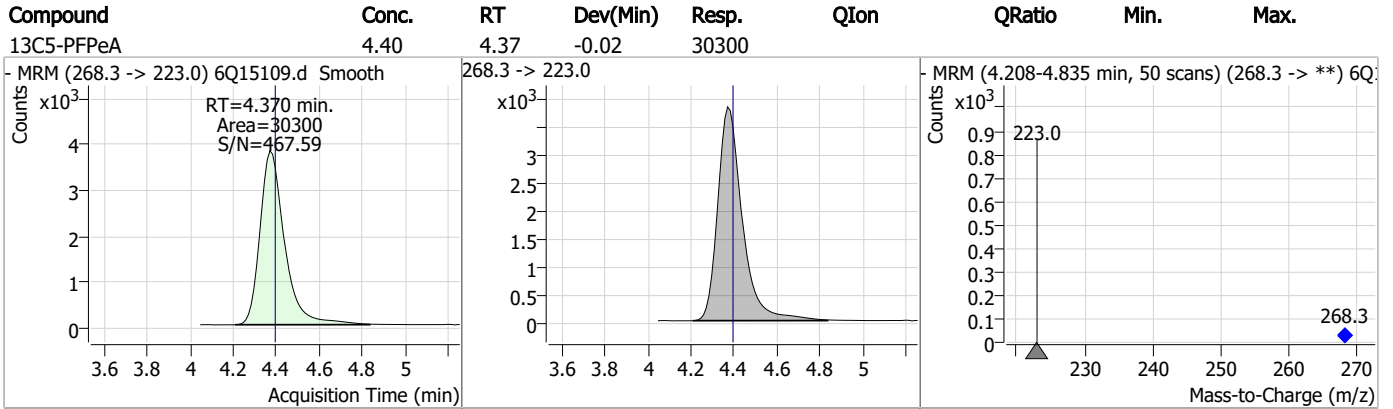
7.1.1
7



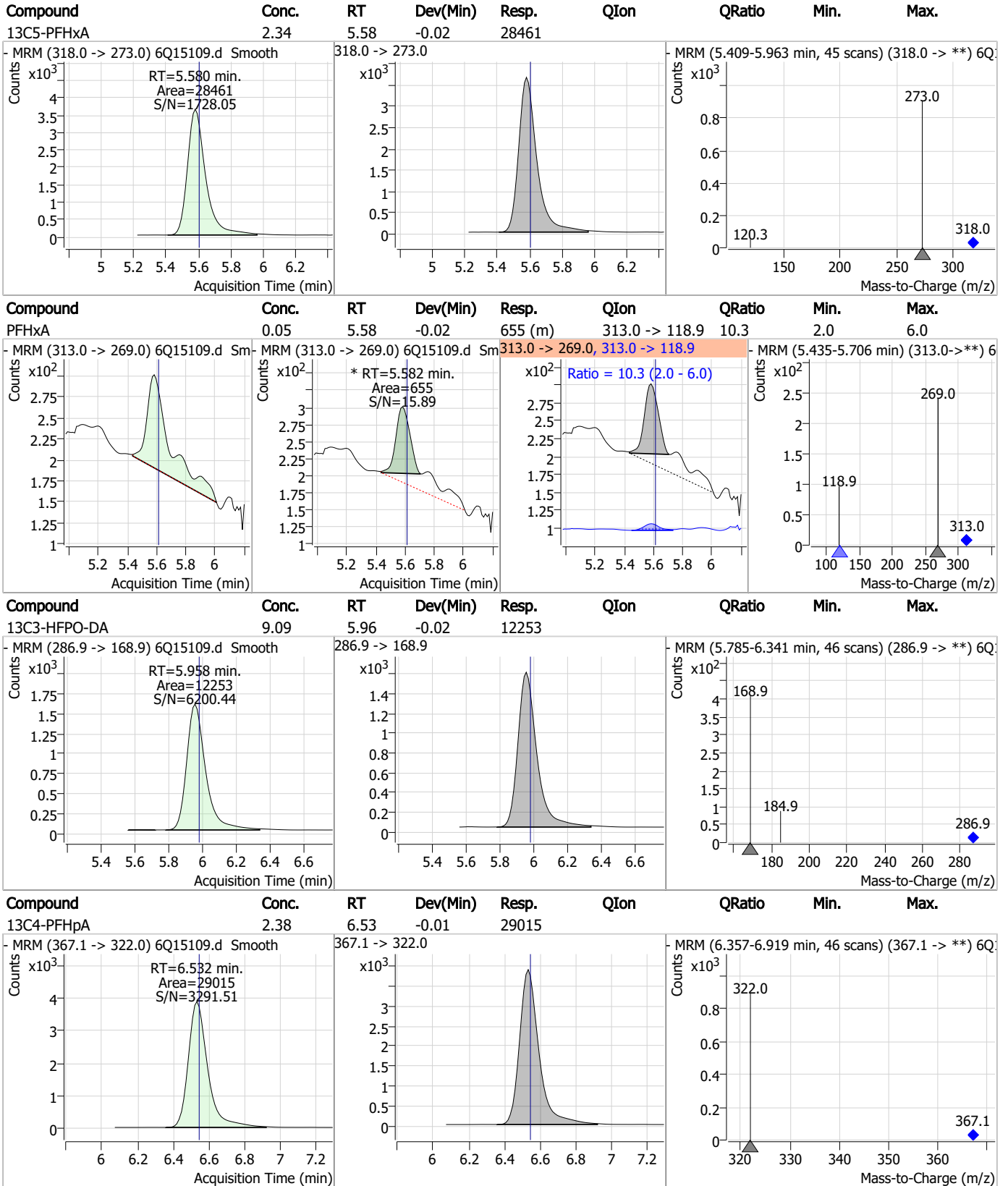
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



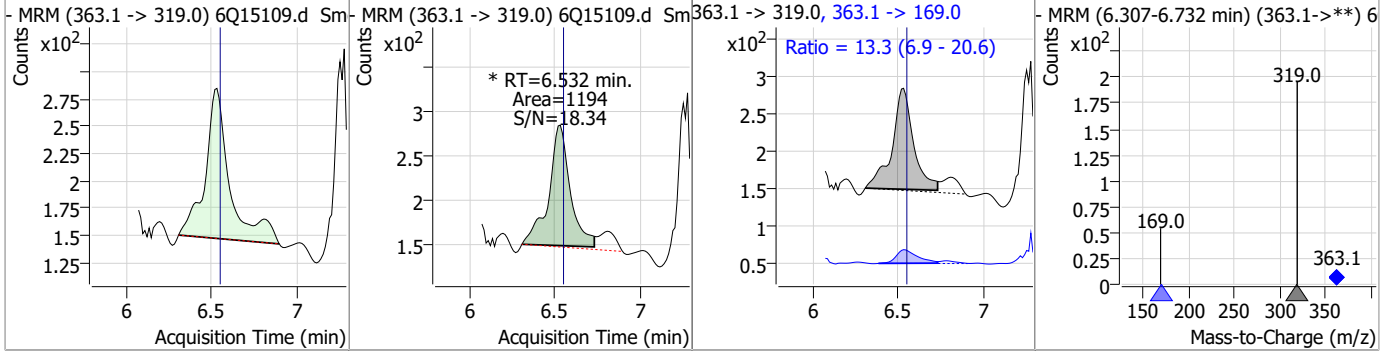
Perfluorinated Compounds by LC/MS/MS



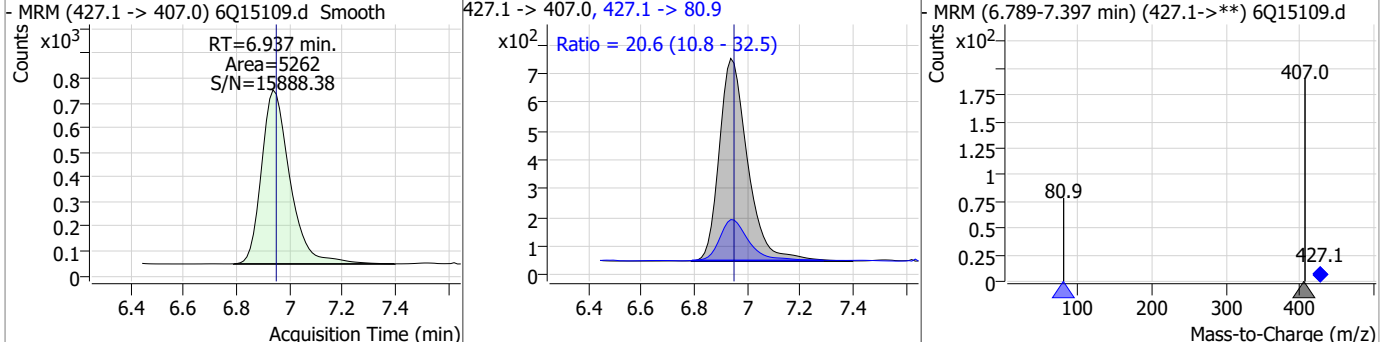
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Perfluorinated Compounds by LC/MS/MS

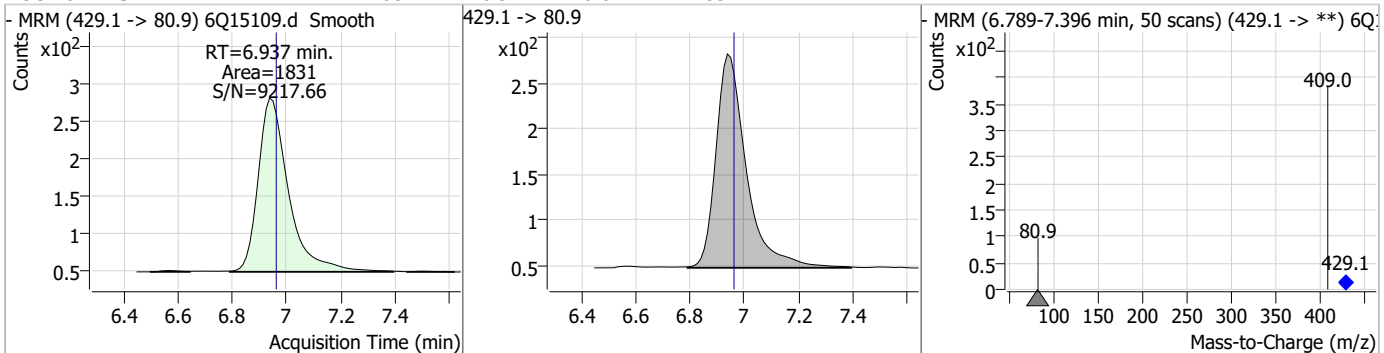
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.06	6.53	-0.01	1194 (m)	363.1 -> 169.0	13.3	6.9	20.6



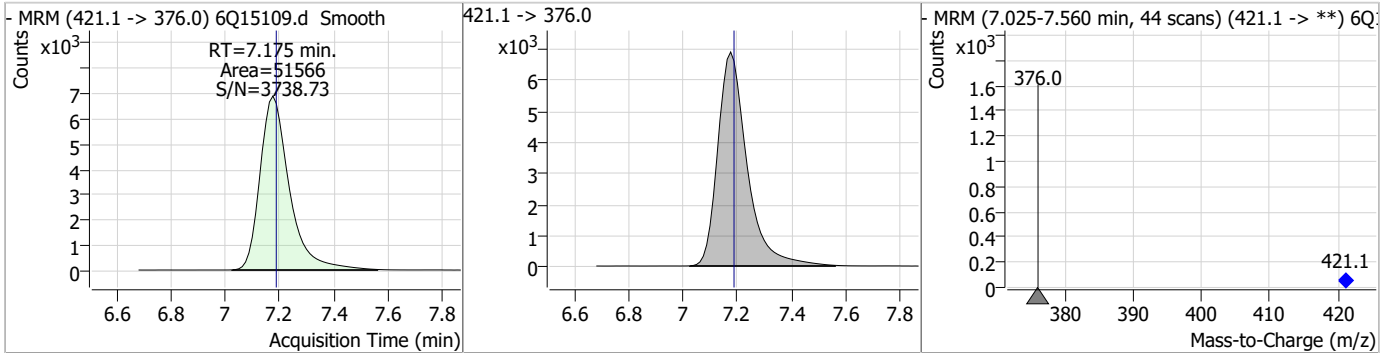
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.93	6.94	-0.01	5262	427.1 -> 80.9	20.6	10.8	32.5



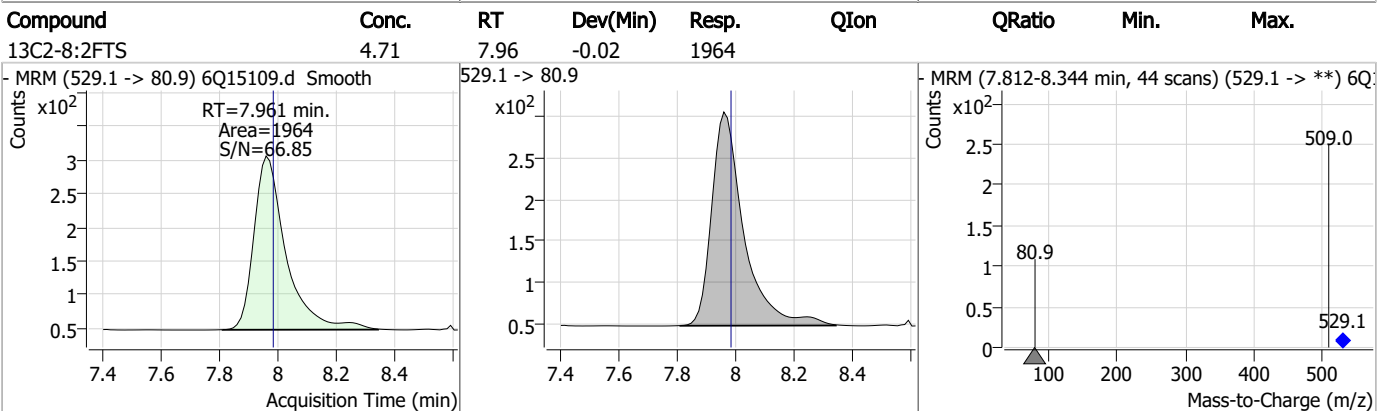
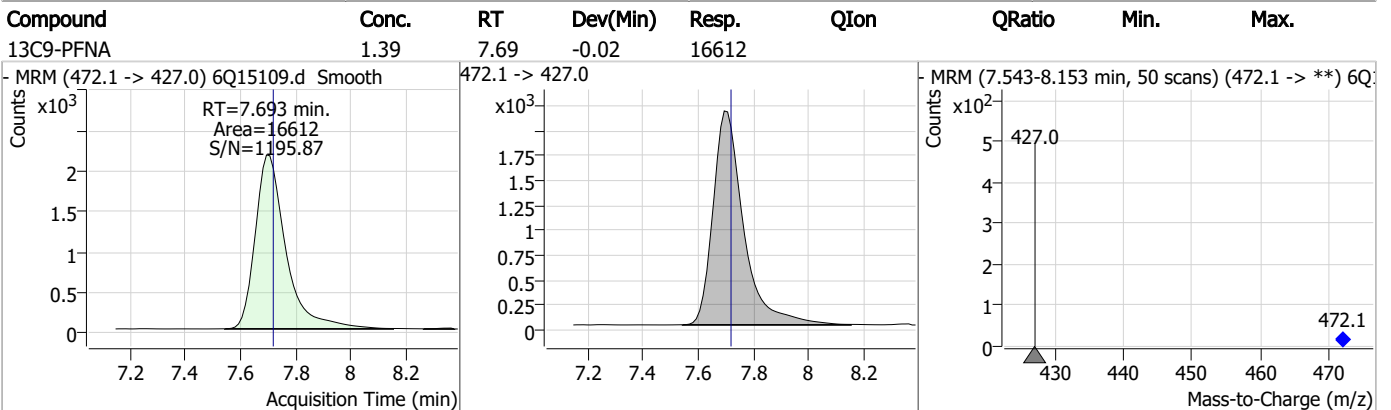
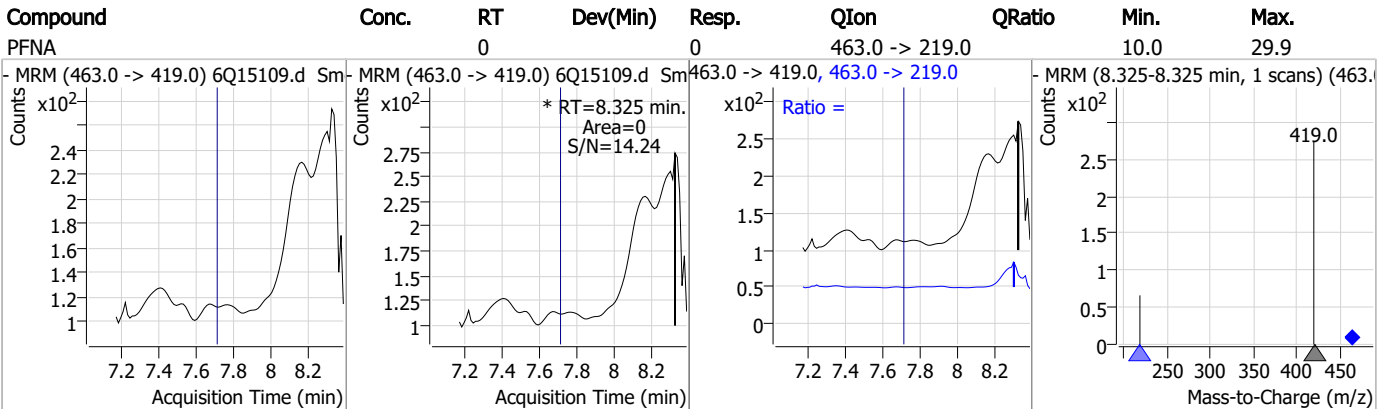
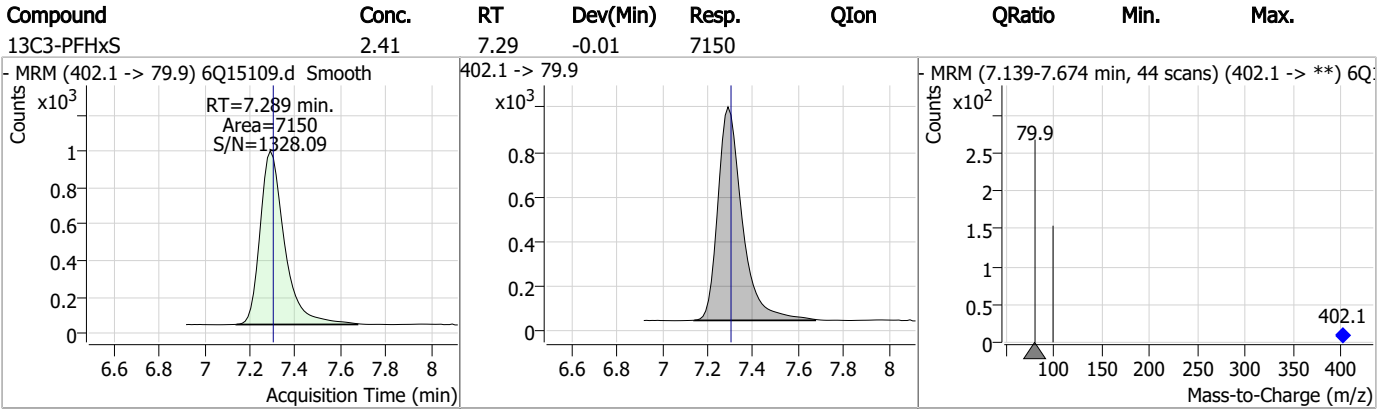
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	4.68	6.94	-0.02	1831	429.1 -> 80.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.57	7.18	-0.01	51566	421.1 -> 376.0			



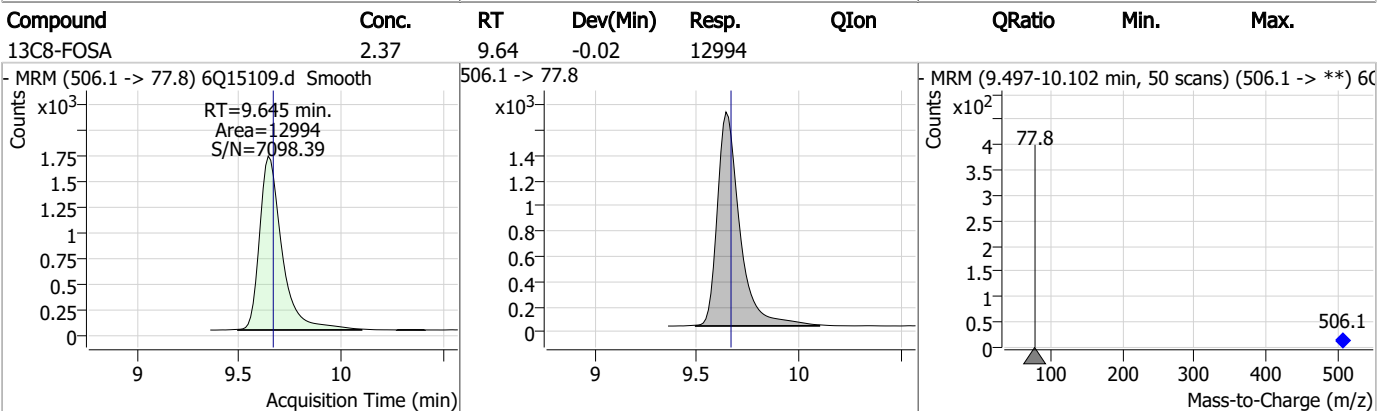
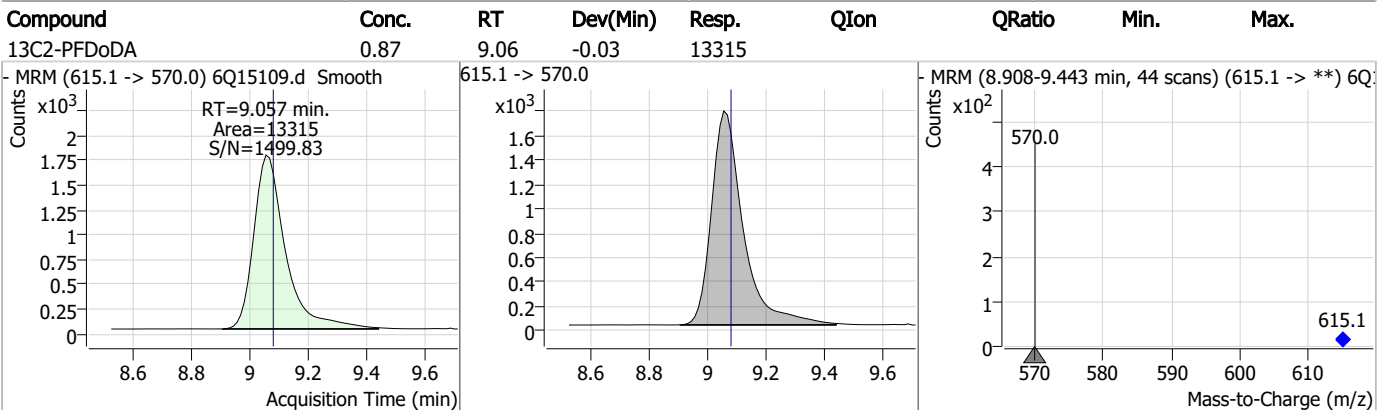
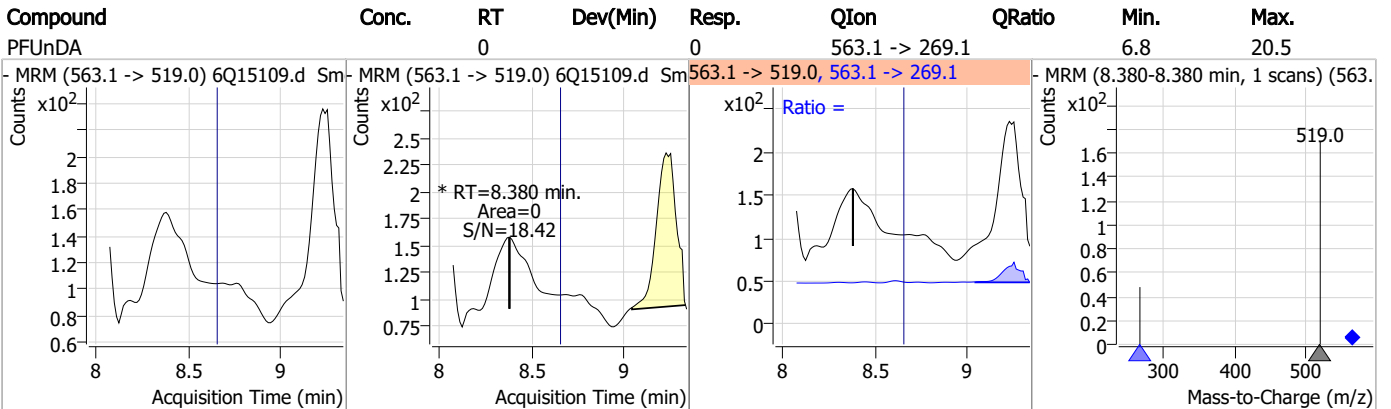
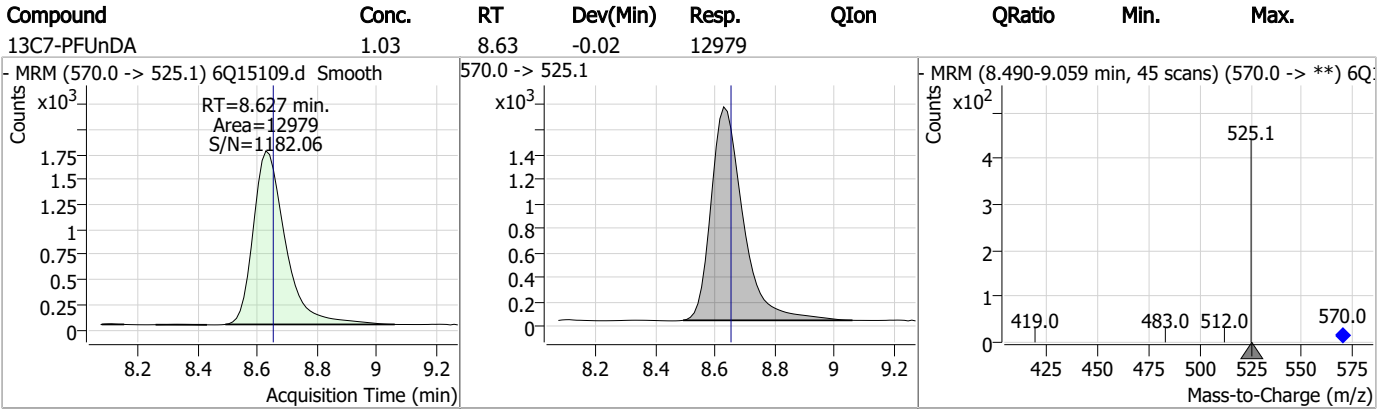
Perfluorinated Compounds by LC/MS/MS



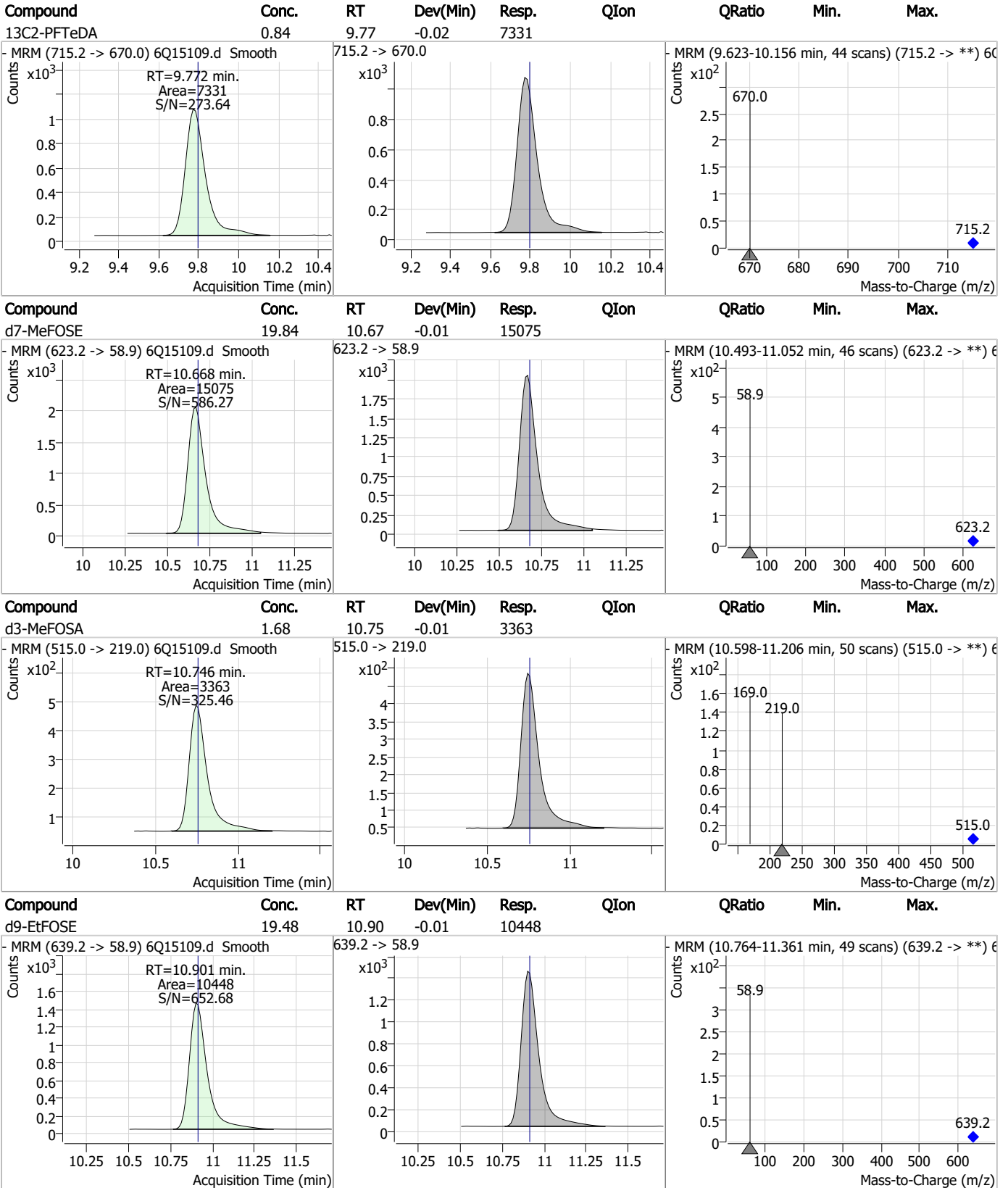
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	1.08	8.17	-0.02	12670				
d3-MeFOSAA	4.56	8.23	-0.01	17305				
13C8-PFOS	2.42	8.33	-0.03	6499				
d5-EtFOSAA	4.48	8.43	-0.02	14948				

Perfluorinated Compounds by LC/MS/MS



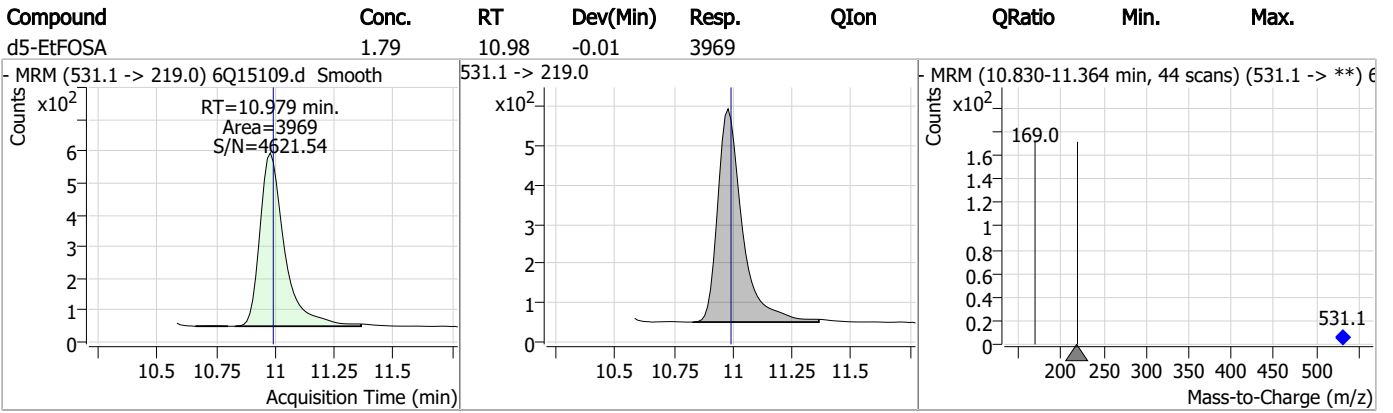
Perfluorinated Compounds by LC/MS/MS



7.1.1

7

Perfluorinated Compounds by LC/MS/MS



7.1.1
7

Manual Integration Approval Summary

Sample Number: FC3534-1 Method: EPA DRAFT 1633
Lab FileID: 6Q15109.D Analyst approved: 03/22/23 11:00 Martha Valls
Injection Time: 03/21/23 16:37 Supervisor approved: 03/22/23 12:54 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanoic acid	2706-90-3		4.38	Poorly defined baseline
Perfluorohexanoic acid	307-24-4		5.58	Poorly defined baseline
Perfluoroheptanoic acid	375-85-9		6.53	Split peak

7.1.1.1
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Manual Integrations
APPROVED
 (compounds with "m" flag)
 Natasha Gumtie
 03/22/23 12:54

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15110.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 4:51:26 PM
 Sample Name : FC3534-2
 Vial : P3-A5
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95968,S6Q229,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	67077	10.00 µg/L	0.025
M5-PFPeA	4.382	268.3 -> 223.0	32940	5.00 µg/L	-0.012
M5-PFHxA	5.580	318.0 -> 273.0	29093	2.50 µg/L	-0.025
M4-PFHpA	6.519	367.1 -> 322.0	28632	2.50 µg/L	-0.025
M8-PFOA	7.175	421.1 -> 376.0	49697	2.50 µg/L	-0.012
M9-PFNA	7.693	472.1 -> 427.0	15932	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	13200	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	13162	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	12920	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	6868	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	13611	2.50 µg/L	-0.025
M3-PFBS	5.524	302.1 -> 79.9	10831	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	7328	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	6060	2.50 µg/L	-0.013
M2-4:2FTS	5.256	329.1 -> 80.9	1683	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2305	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2207	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	17437	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	12285	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	15344	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	16721	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	10765	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	4101	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	3854	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	7854	2.50 µg/L	-0.025
13C3-PFBA	2.976	216.0 -> 172.0	29159	5.00 µg/L	0.025
18O2-PFHxS	7.288	403.0 -> 83.9	5221	2.50 µg/L	-0.026
13C4-PFOA	7.163	417.1 -> 372.0	58934	2.50 µg/L	-0.025
13C2-PFDA	8.173	515.1 -> 470.1	17716	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	16273	1.25 µg/L	-0.025
13C2-PFHxA	5.581	315.1 -> 270.0	29181	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1683	5.62 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2305	5.94 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.9%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2207	5.34 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C2-PFDoDA	9.057	615.1 -> 570.0	12920	0.93 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.6%		
13C2-PFTeDA	9.772	715.2 -> 670.0	6868	0.87 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.5%		
13C3-PFBS	5.524	302.1 -> 79.9	10831	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C3-PFHxS	7.289	402.1 -> 79.9	7328	2.49 µg/L	-0.013

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C4-PFBA	2.972	216.8 -> 171.9	67077	10.02 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C4-PFHpA	6.519	367.1 -> 322.0	28632	2.40 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C5-PFHxA	5.580	318.0 -> 273.0	29093	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C5-PFPeA	4.382	268.3 -> 223.0	32940	4.88 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C6-PFDA	8.173	519.1 -> 474.1	13200	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C7-PFUnDA	8.627	570.0 -> 525.1	13162	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C8-FOSA	9.645	506.1 -> 77.8	13611	2.50 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C8-PFOA	7.175	421.1 -> 376.0	49697	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C8-PFOS	8.347	507.1 -> 79.9	6060	2.27 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.9%		
13C9-PFNA	7.693	472.1 -> 427.0	15932	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
d3-MeFOSAA	8.231	573.2 -> 419.0	17437	4.62 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	12285	9.32 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 93.2%		
d3-MeFOSA	10.746	515.0 -> 219.0	3854	1.93 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 77.3%		
d5-EtFOSAA	8.426	589.2 -> 419.0	15344	4.63 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.5%		
d7-MeFOSE	10.668	623.2 -> 58.9	16721	22.13 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 88.5%		
d9-EtFOSE	10.901	639.2 -> 58.9	10765	20.18 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 80.7%		
d5-EtFOSA	10.979	531.1 -> 219.0	4101	1.86 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 74.4%		

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	5.525	298.7 -> 79.9	355	0.07 µg/L	97
		298.7 -> 98.8	168		
PFDA	8.779	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	9.019	613.1 -> 569.0	0	µg/L m	1
		613.1 -> 319.0	0		
PFDS	-	599.0 -> 79.9	-	N.D.	



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8				
		363.1 -> 319.0	1574	0.09	µg/L	98
PFHpS	-	363.1 -> 169.0	229			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.595	449.0 -> 98.9				
		313.0 -> 269.0	1212	0.10	µg/L	98
PFHxS	7.290	313.0 -> 118.9	58			
		398.7 -> 79.9	521	0.14	µg/L	m 79
PFNA	8.325	398.7 -> 98.9	221			
		463.0 -> 419.0	0		µg/L	m 1
PFNS	-	463.0 -> 219.0	0			
		548.8 -> 79.9	-	N.D.		
PFOA	7.176	548.8 -> 98.9				
		413.0 -> 369.0	3950	0.17	µg/L	90
PFOS	8.151	413.0 -> 169.0	351			
		498.9 -> 79.9	348	0.12	µg/L	m 75
PFPeA	4.385	498.9 -> 98.8	154			
		263.0 -> 219.0	1209	0.15	µg/L	100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.259	563.1 -> 519.0	0		µg/L	m 1
		563.1 -> 269.1	0			
11CI-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9CI-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.12

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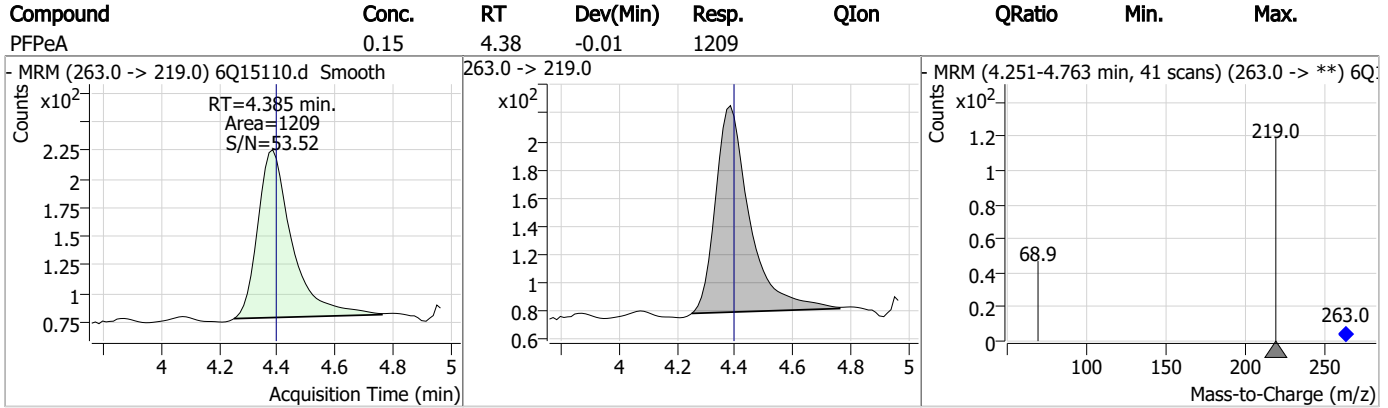
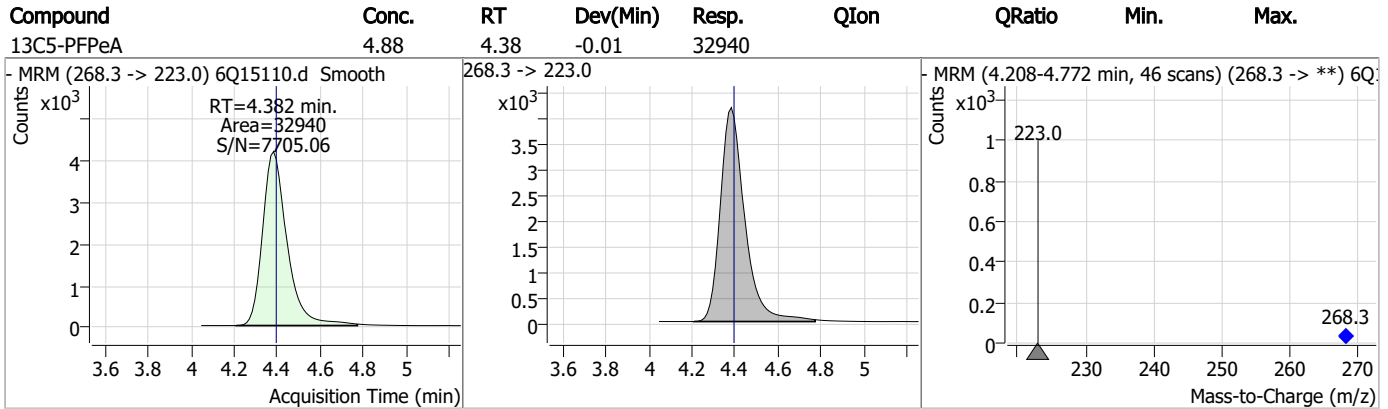
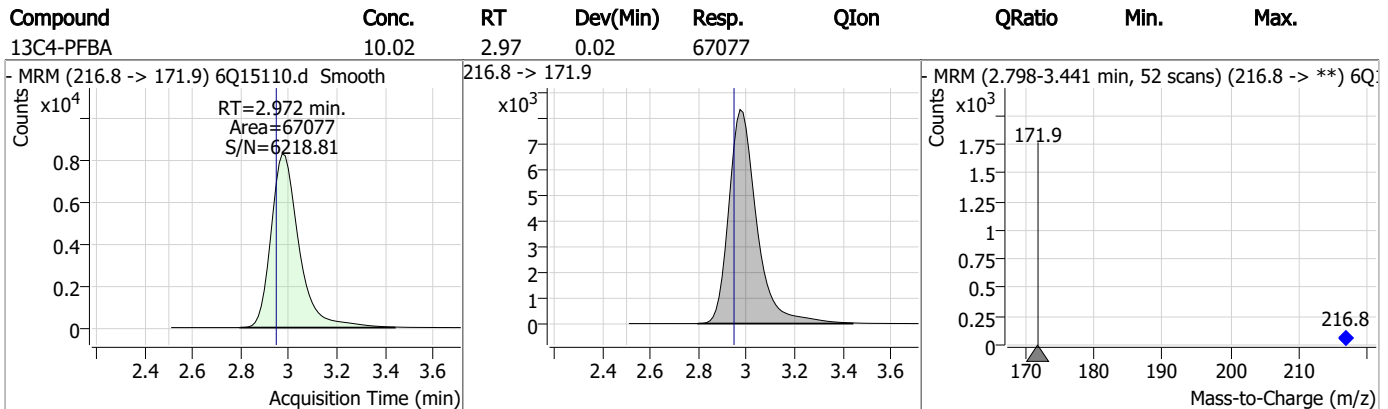
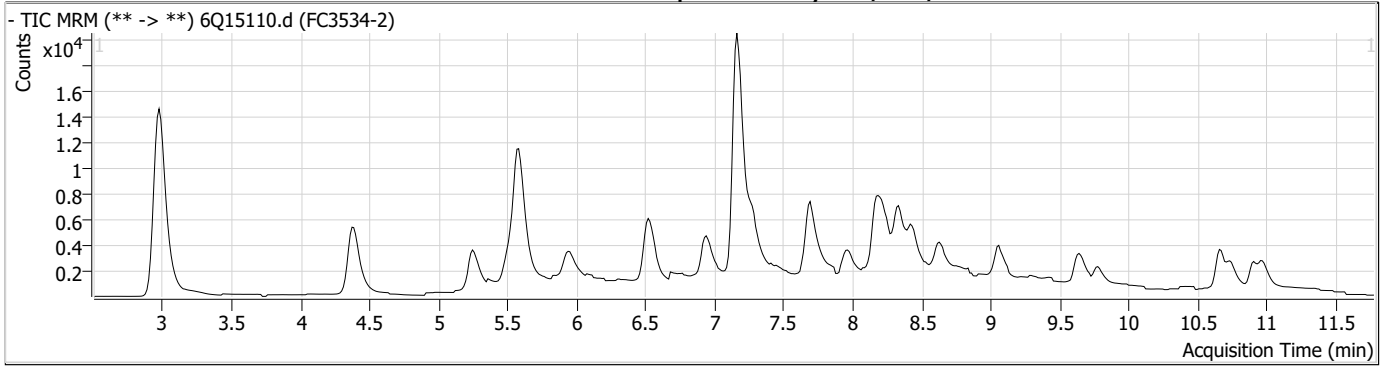
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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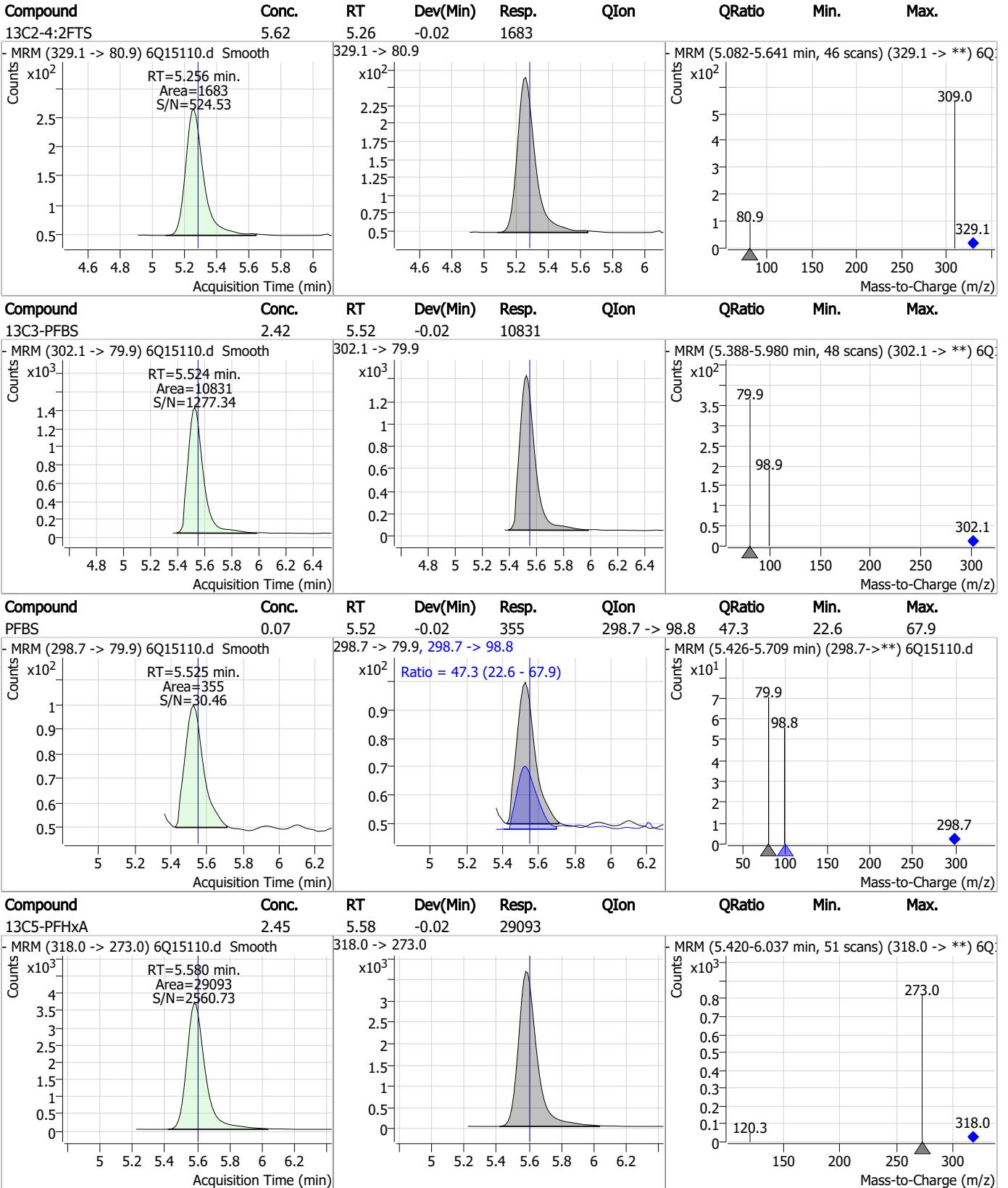
7.1.2
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

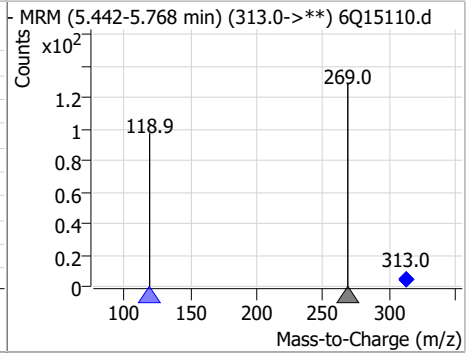
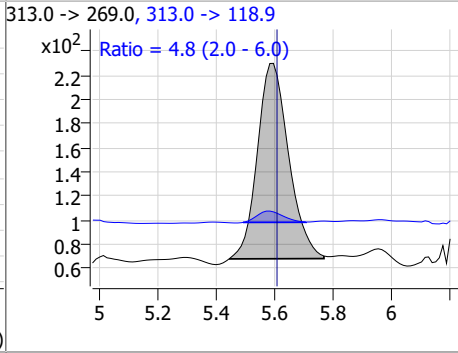
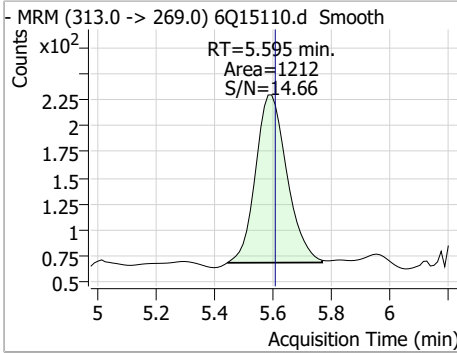


7.1.2

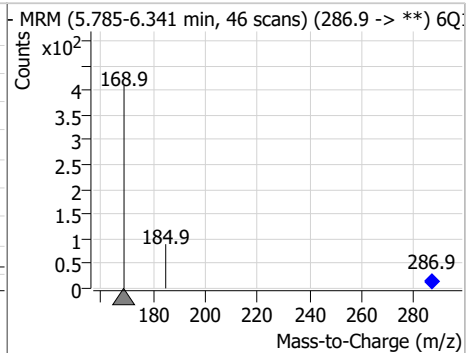
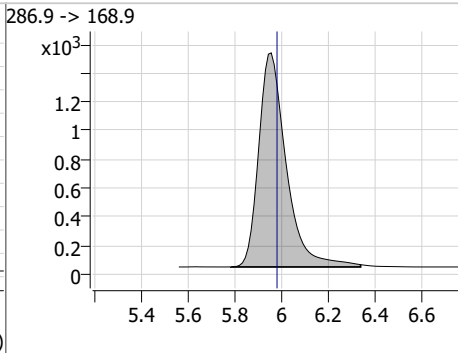
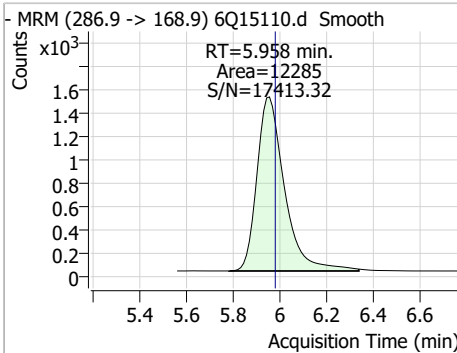
7

Perfluorinated Compounds by LC/MS/MS

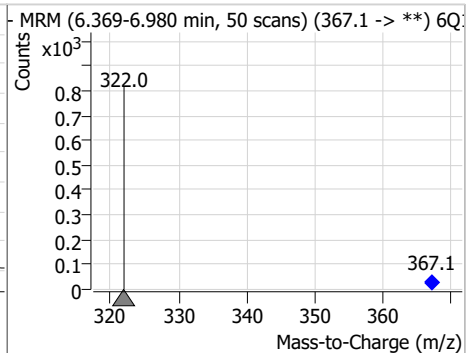
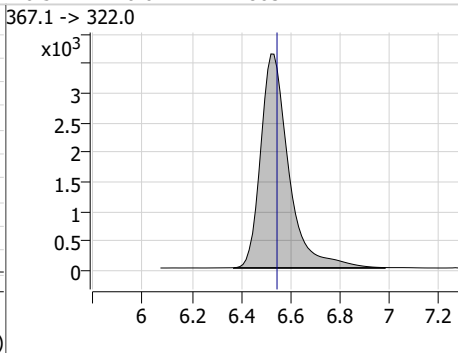
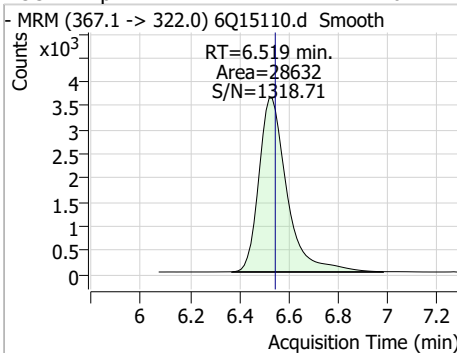
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.10	5.59	-0.01	1212	313.0 ->	118.9 4.8	2.0	6.0



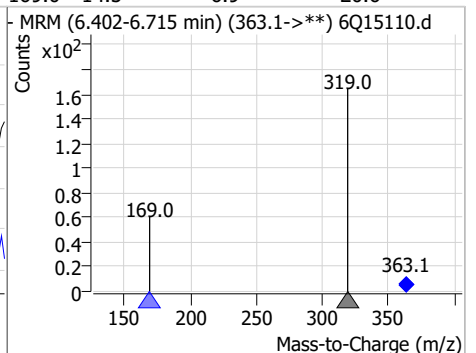
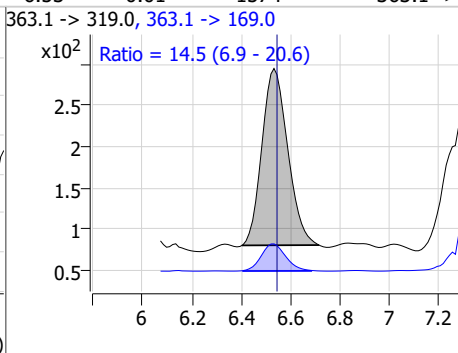
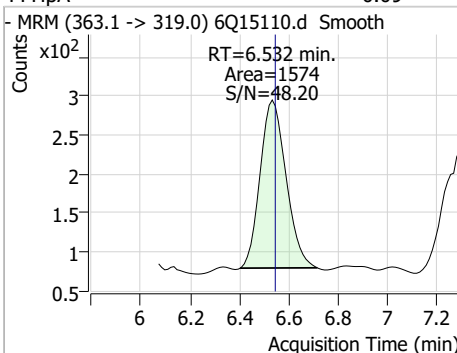
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.32	5.96	-0.02	12285				



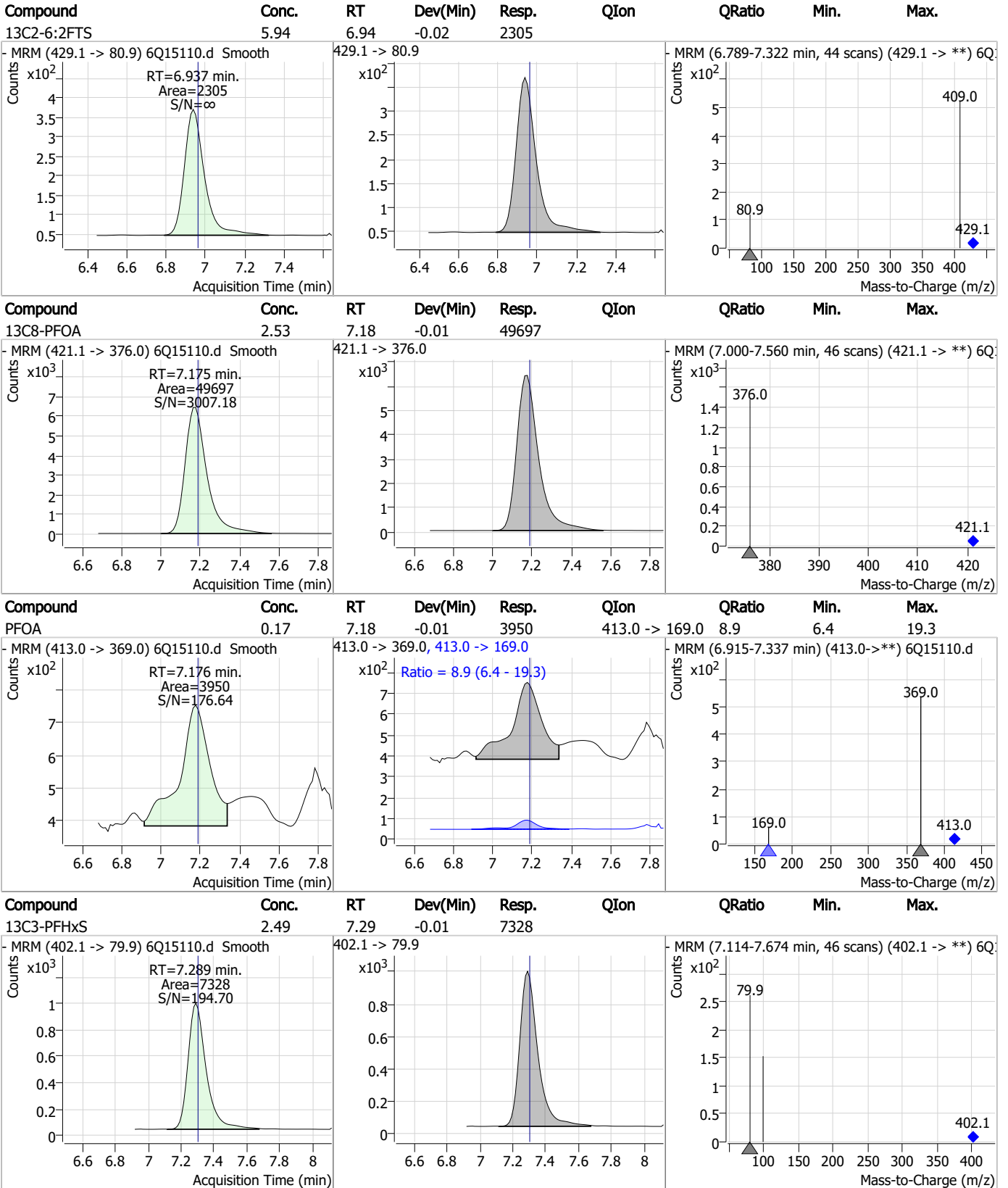
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.40	6.52	-0.02	28632				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.09	6.53	-0.01	1574	363.1 ->	169.0 14.5	6.9	20.6



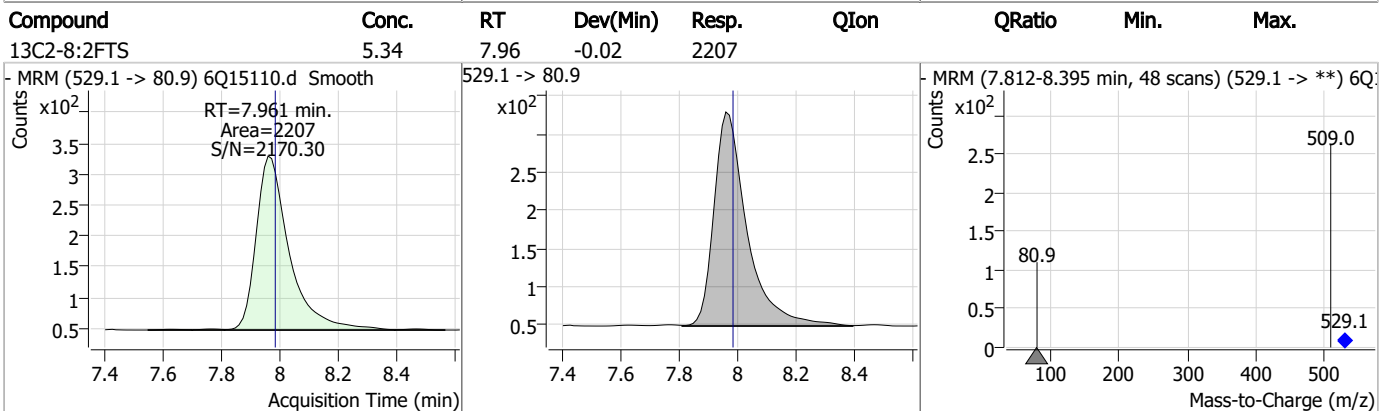
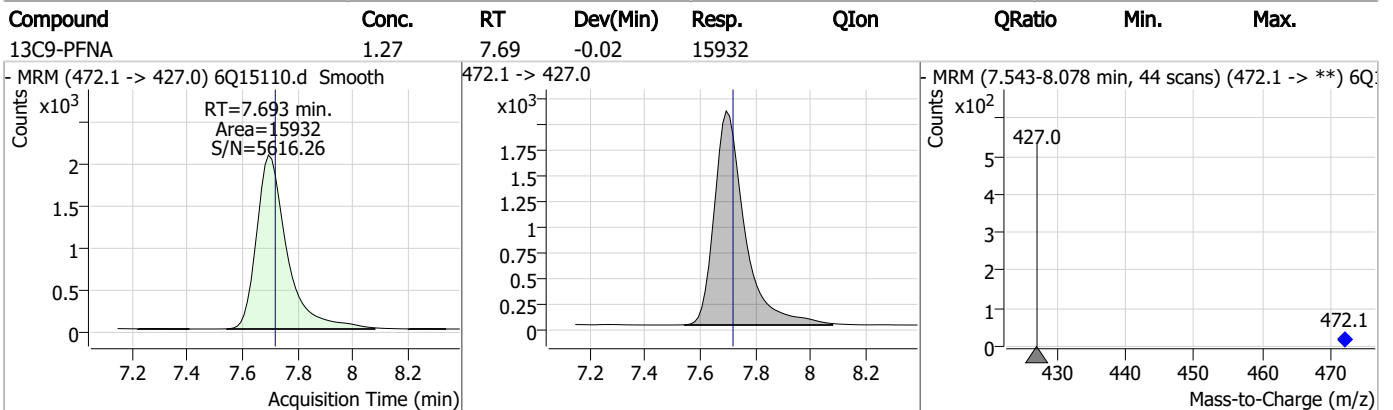
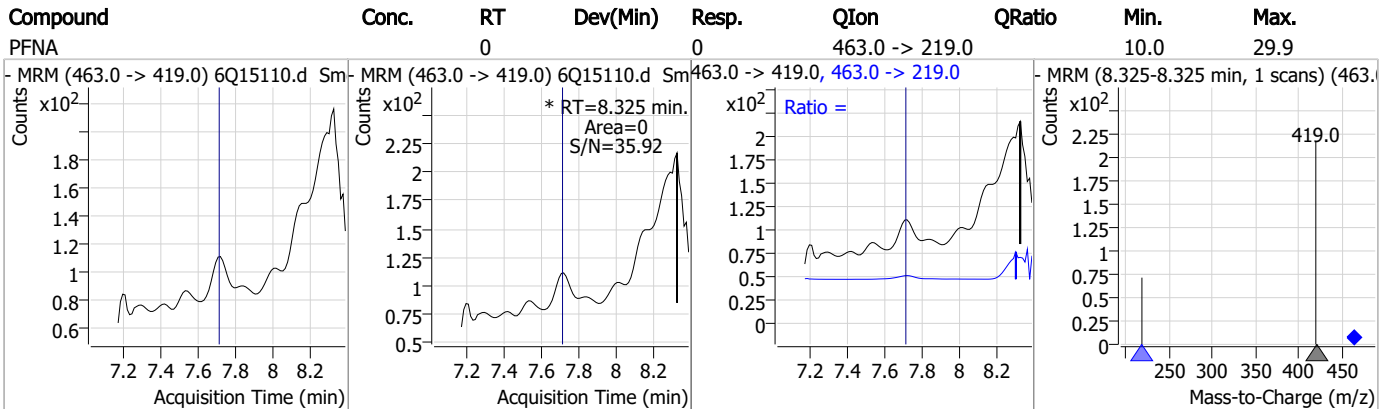
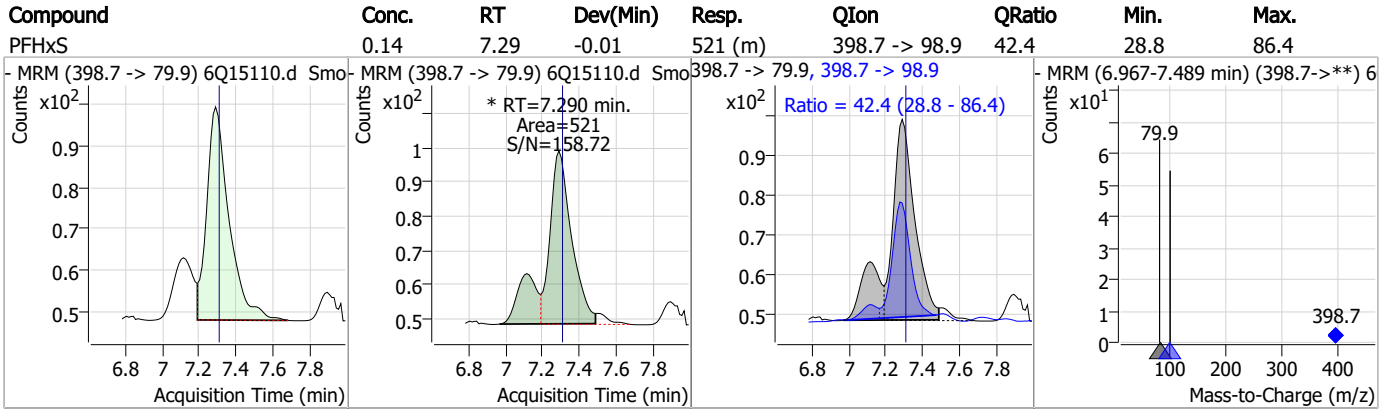
Perfluorinated Compounds by LC/MS/MS



7.1.2

7

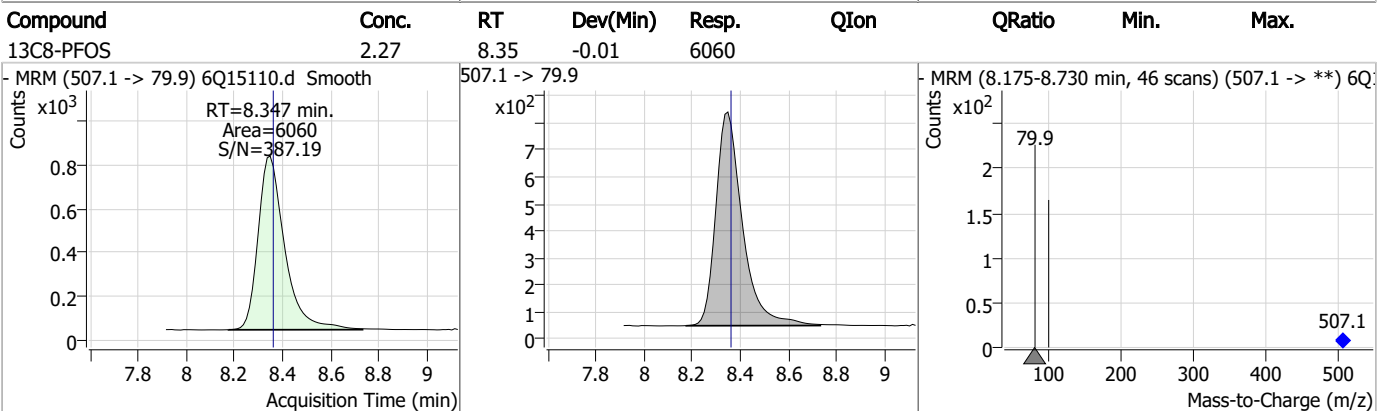
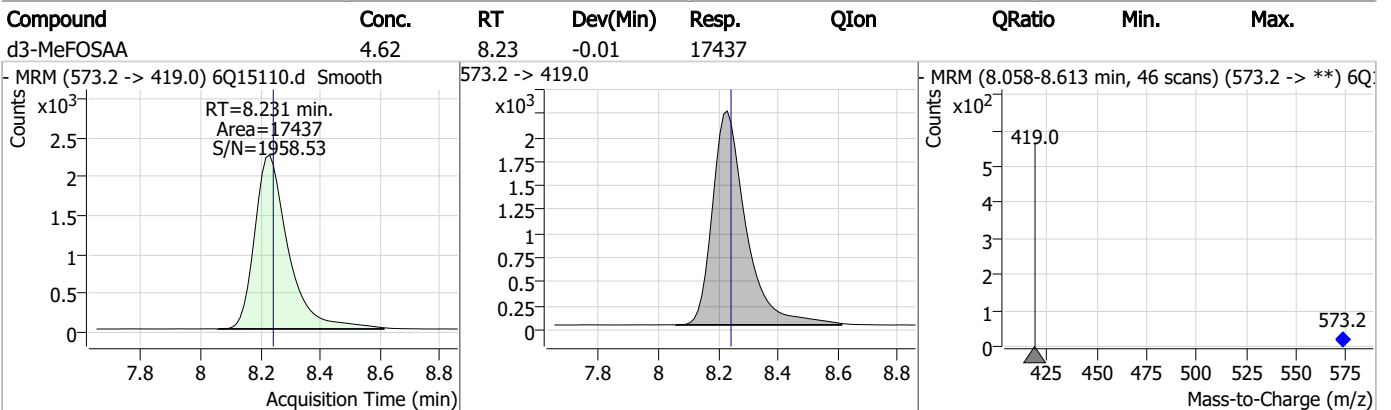
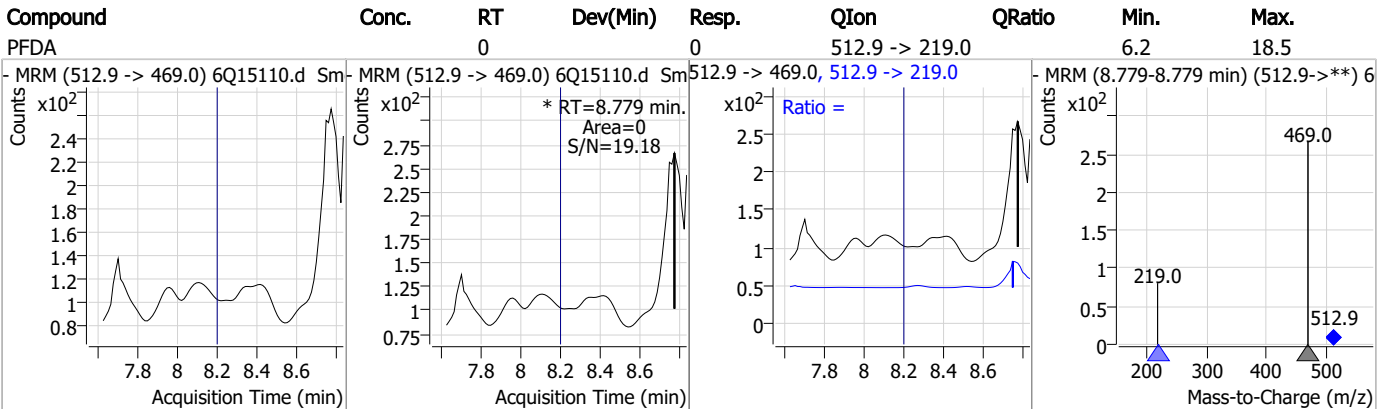
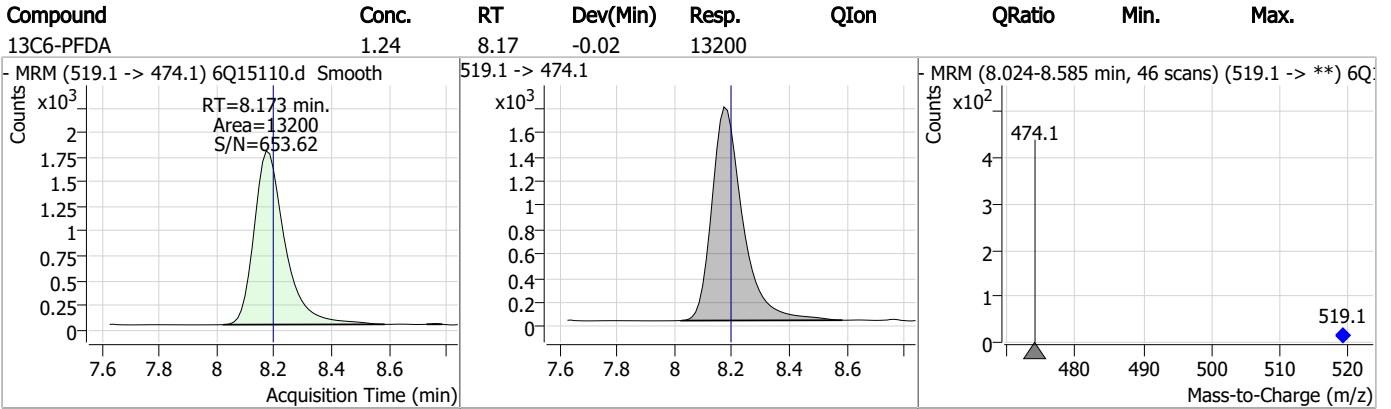
Perfluorinated Compounds by LC/MS/MS



7.1.2

7

Perfluorinated Compounds by LC/MS/MS

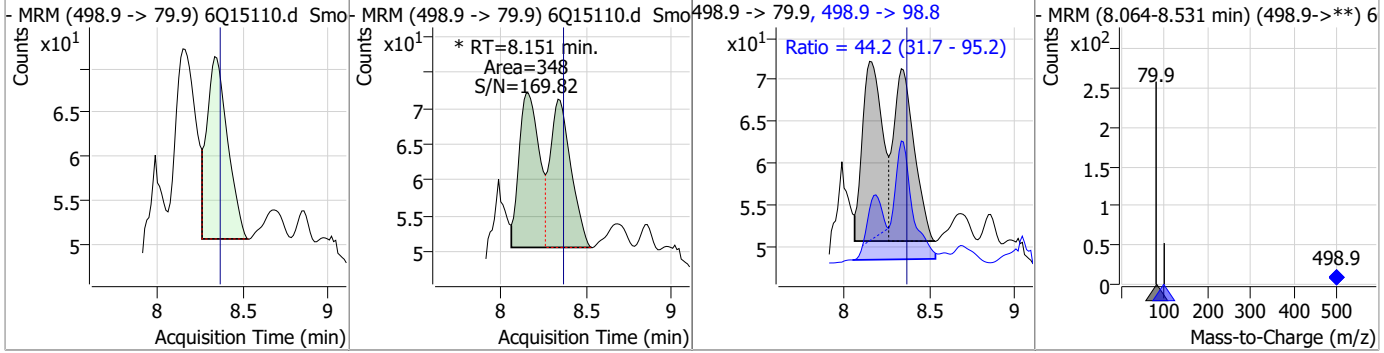


7.1.2

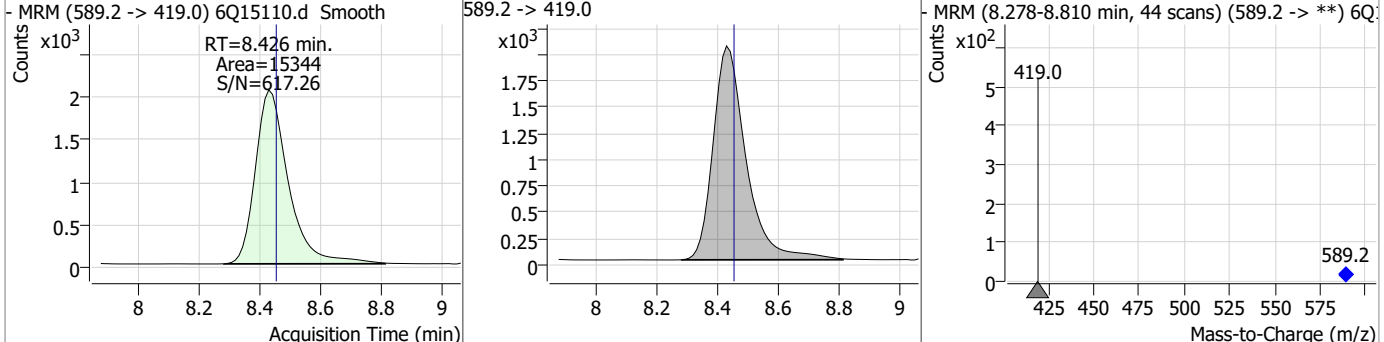
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Perfluorinated Compounds by LC/MS/MS

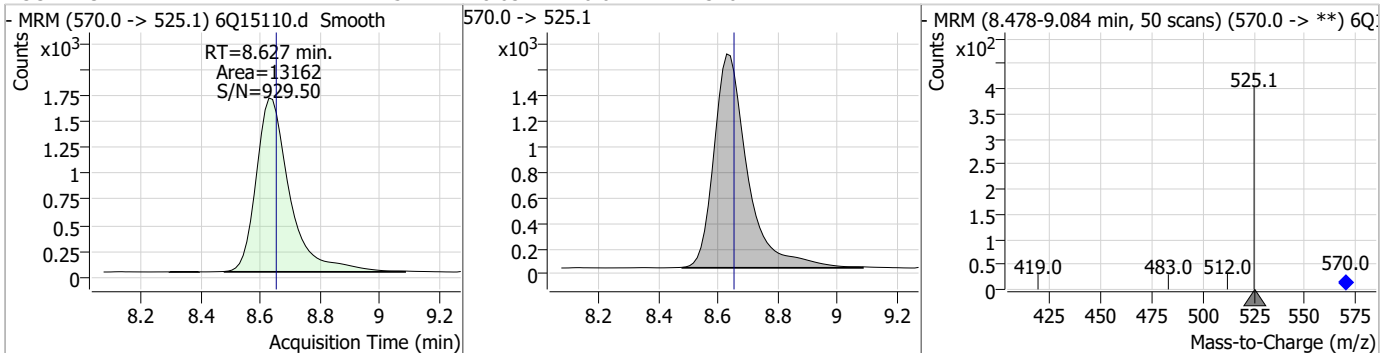
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.12	8.15	-0.21	348 (m)	498.9 -> 98.8	44.2	31.7	95.2



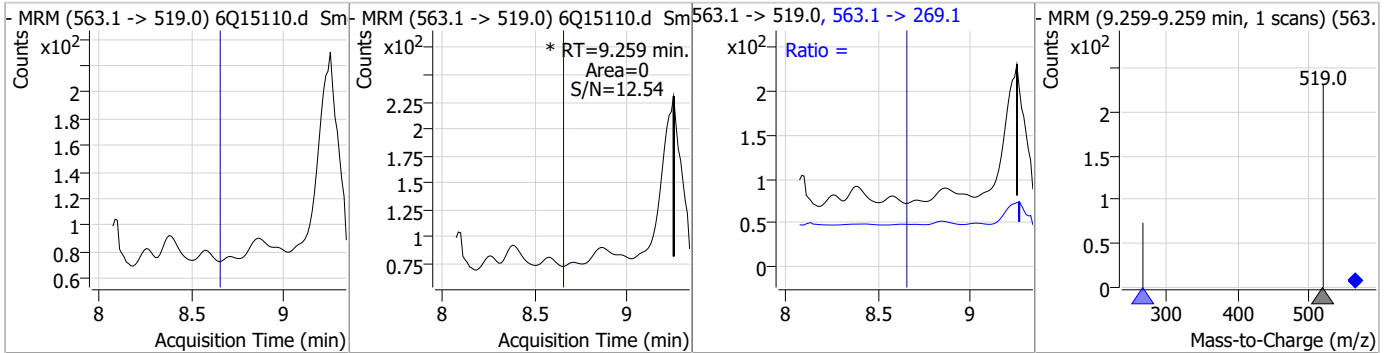
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.63	8.43	-0.02	15344				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.15	8.63	-0.02	13162				

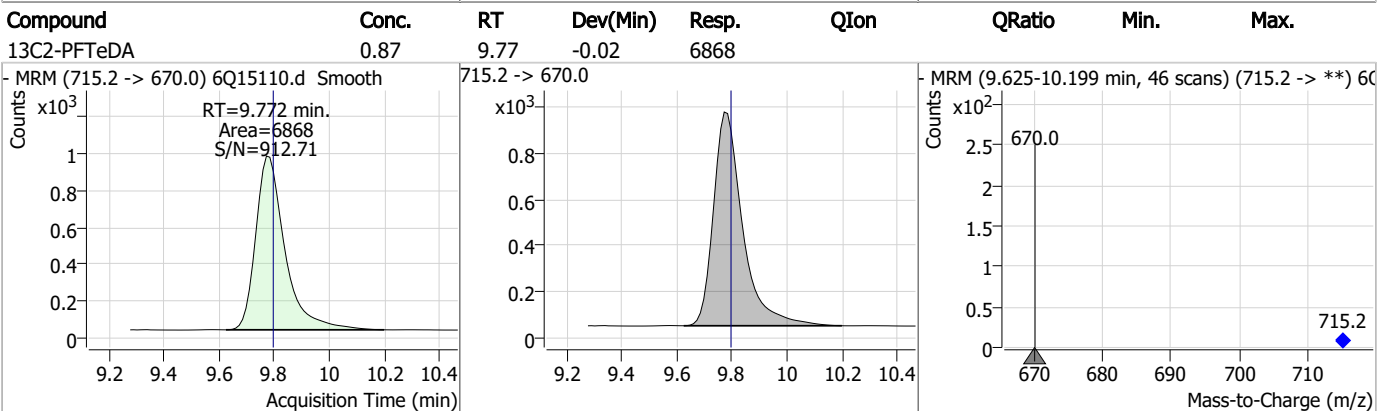
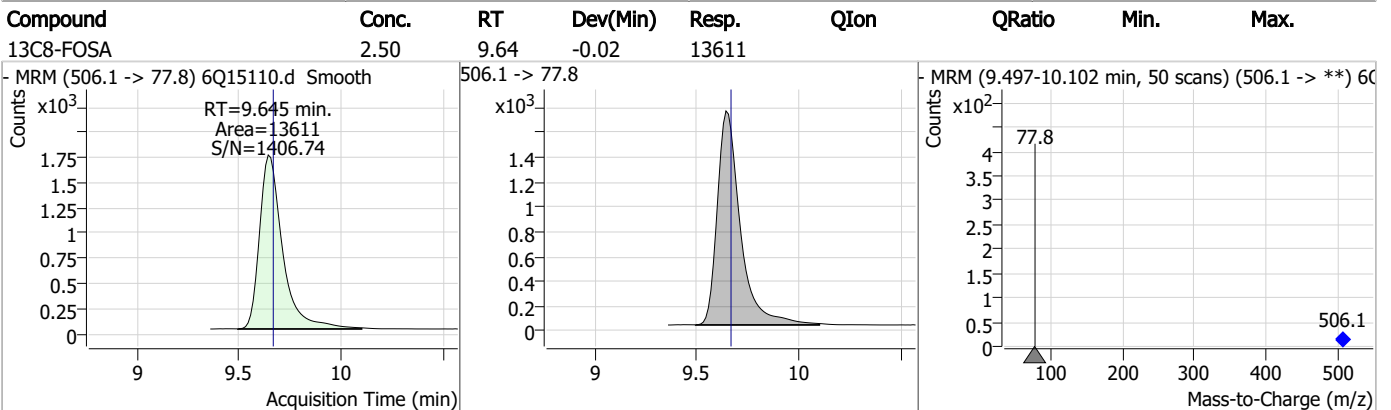
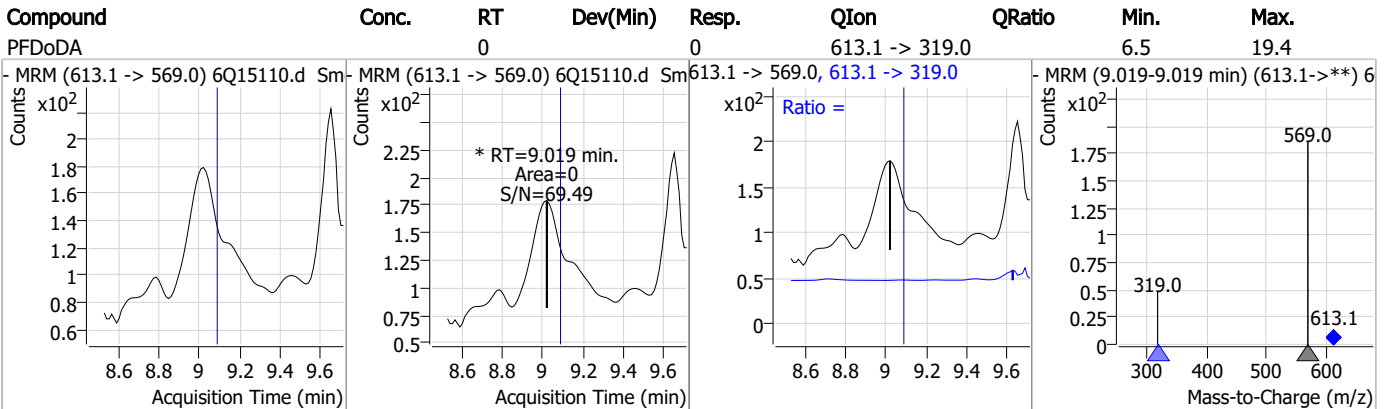
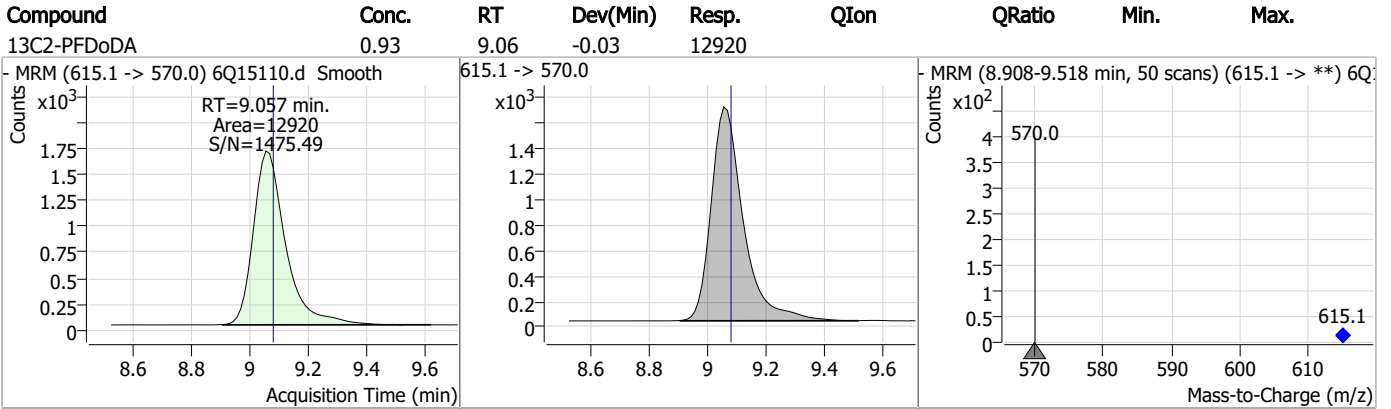


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0	0	0	0	563.1 -> 269.1		6.8	20.5



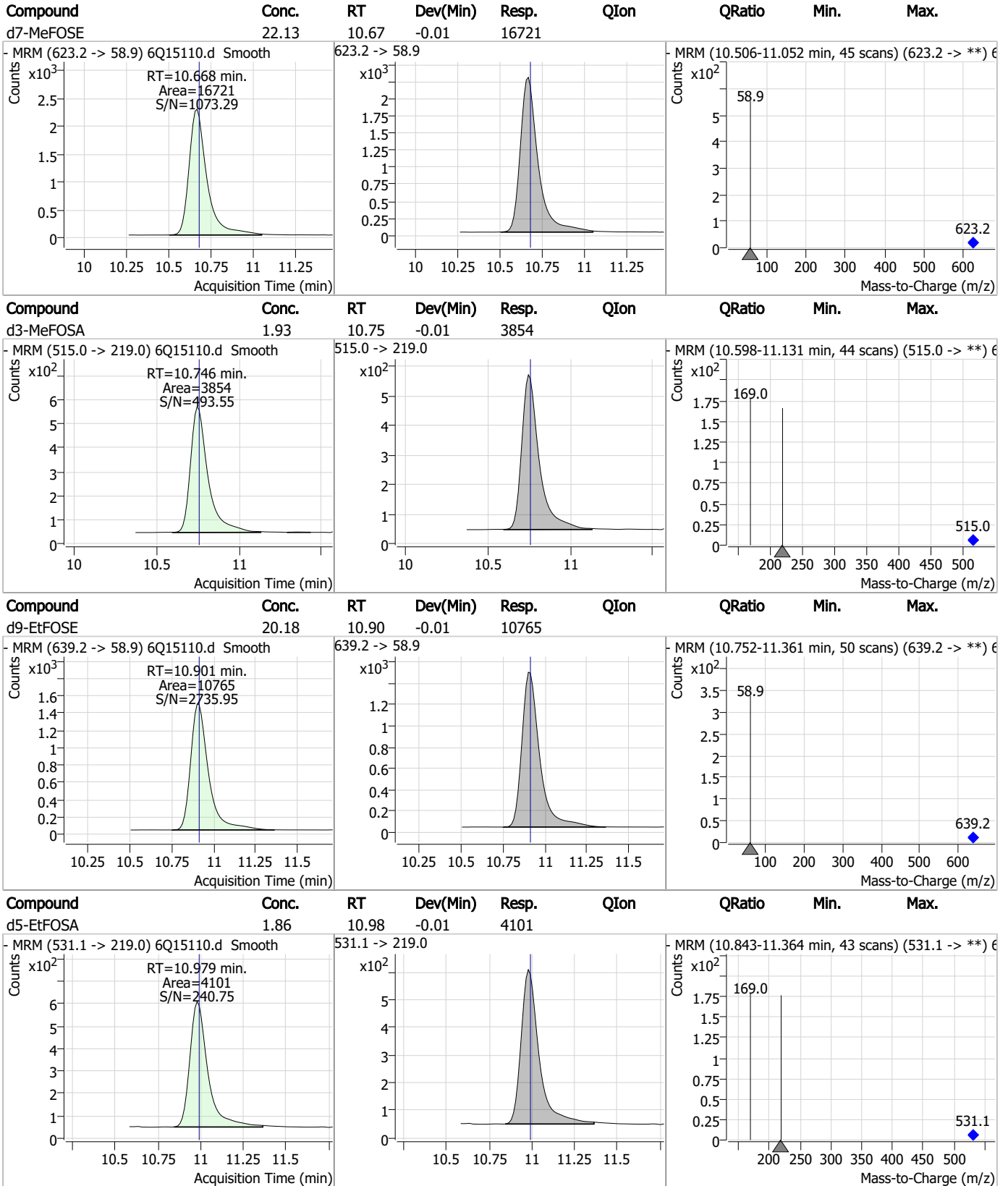
7.1.2
7

Perfluorinated Compounds by LC/MS/MS



7.1.2
7

Perfluorinated Compounds by LC/MS/MS



7.1.2

7

Manual Integration Approval Summary

Sample Number: FC3534-2 Method: EPA DRAFT 1633
Lab FileID: 6Q15110.D Analyst approved: 03/22/23 11:00 Martha Valls
Injection Time: 03/21/23 16:51 Supervisor approved: 03/22/23 12:54 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.15	Split peak

7.1.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15111.d
Operator : marthav
Acq. Method : 1633full.m
Acq. Date-Time : 3/21/2023 5:05:25 PM
Sample Name : FC3534-3
Vial : P3-A6
DA Method File : 1633_031523_S6Q225.quantmethod.xml
Batch Name : s6q229.batch.bin
Sample Information : OP95968,S6Q229,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	64295	10.00 µg/L	0.025
M5-PFPeA	4.382	268.3 -> 223.0	32884	5.00 µg/L	-0.012
M5-PFHxA	5.580	318.0 -> 273.0	30625	2.50 µg/L	-0.025
M4-PFHpA	6.519	367.1 -> 322.0	29283	2.50 µg/L	-0.025
M8-PFOA	7.162	421.1 -> 376.0	51695	2.50 µg/L	-0.025
M9-PFNA	7.693	472.1 -> 427.0	15224	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	13675	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	13980	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	13940	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	7567	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	13247	2.50 µg/L	-0.025
M3-PFBS	5.523	302.1 -> 79.9	11841	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	7517	2.50 µg/L	-0.013
M8-PFOS	8.335	507.1 -> 79.9	5956	2.50 µg/L	-0.025
M2-4:2FTS	5.256	329.1 -> 80.9	1406	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2096	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2018	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	20122	5.00 µg/L	-0.012
M3-HFPO-DA	5.946	286.9 -> 168.9	12720	10.00 µg/L	-0.037
M5-EtFOSAA	8.426	589.2 -> 419.0	16043	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	16068	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	11148	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	4255	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	3640	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	8014	2.50 µg/L	-0.025
13C3-PFBA	2.976	216.0 -> 172.0	26559	5.00 µg/L	0.025
18O2-PFHxS	7.288	403.0 -> 83.9	5227	2.50 µg/L	-0.026
13C4-PFOA	7.163	417.1 -> 372.0	54985	2.50 µg/L	-0.025
13C2-PFDA	8.173	515.1 -> 470.1	17062	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	15626	1.25 µg/L	-0.025
13C2-PFHxA	5.581	315.1 -> 270.0	26419	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1406	4.69 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2096	5.40 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2018	4.87 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C2-PFDoDA	9.057	615.1 -> 570.0	13940	1.04 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.5%		
13C2-PFTeDA	9.772	715.2 -> 670.0	7567	0.99 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.5%		
13C3-PFBS	5.523	302.1 -> 79.9	11841	2.64 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C3-PFHxS	7.289	402.1 -> 79.9	7517	2.55 µg/L	-0.013

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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	2.972	216.8 -> 171.9	64295	10.55 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C4-PFHpA	6.519	367.1 -> 322.0	29283	2.71 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C5-PFHxA	5.580	318.0 -> 273.0	30625	2.84 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.8%		
13C5-PFPeA	4.382	268.3 -> 223.0	32884	5.39 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C6-PFDA	8.173	519.1 -> 474.1	13675	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C7-PFUnDA	8.627	570.0 -> 525.1	13980	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C8-FOSA	9.645	506.1 -> 77.8	13247	2.38 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.3%		
13C8-PFOA	7.162	421.1 -> 376.0	51695	2.82 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.6%		
13C8-PFOS	8.335	507.1 -> 79.9	5956	2.19 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.6%		
13C9-PFNA	7.693	472.1 -> 427.0	15224	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
d3-MeFOSAA	8.231	573.2 -> 419.0	20122	5.23 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.6%		
13C3-HFPO-DA	5.946	286.9 -> 168.9	12720	10.66 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 106.6%		
d3-MeFOSA	10.746	515.0 -> 219.0	3640	1.79 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 71.6%		
d5-EtFOSAA	8.426	589.2 -> 419.0	16043	4.74 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
d7-MeFOSE	10.668	623.2 -> 58.9	16068	20.84 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 83.4%		
d9-EtFOSE	10.901	639.2 -> 58.9	11148	20.48 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 81.9%		
d5-EtFOSA	10.979	531.1 -> 219.0	4255	1.89 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 75.7%		

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	6.937	427.1 -> 407.0	2216	0.71 µg/L	96
		427.1 -> 80.9	441		
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	5.413	298.7 -> 79.9	0	µg/L m	1
		298.7 -> 98.8	0		
PFDA	8.766	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	9.019	613.1 -> 569.0	0	µg/L m	1
		613.1 -> 319.0	0		
PFDS	-	599.0 -> 79.9	-	N.D.	

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7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8				
		363.1 -> 319.0	1973	0.10	µg/L	100
PFHpS	-	363.1 -> 169.0	267			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.582	449.0 -> 98.9				
		313.0 -> 269.0	1925	0.15	µg/L	m 95
PFHxS	-	313.0 -> 118.9	44			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.385	498.9 -> 98.8				
		263.0 -> 219.0	2096	0.27	µg/L	m 100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.235	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	-	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

7.1.3
7

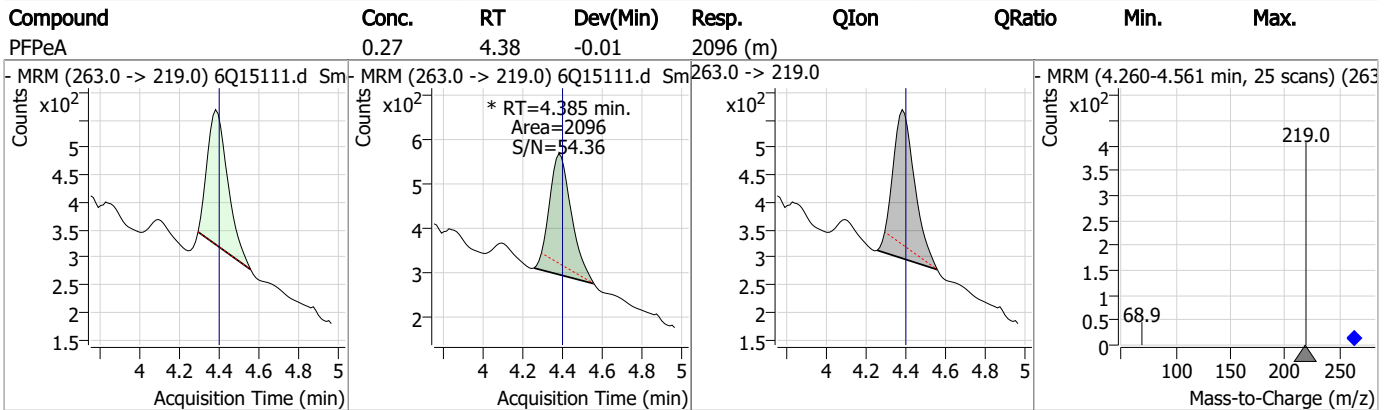
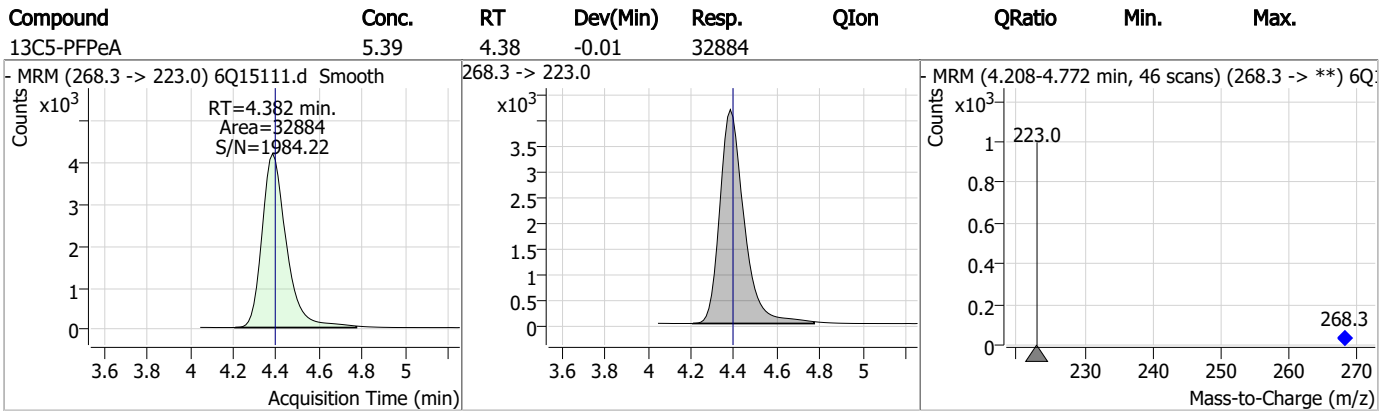
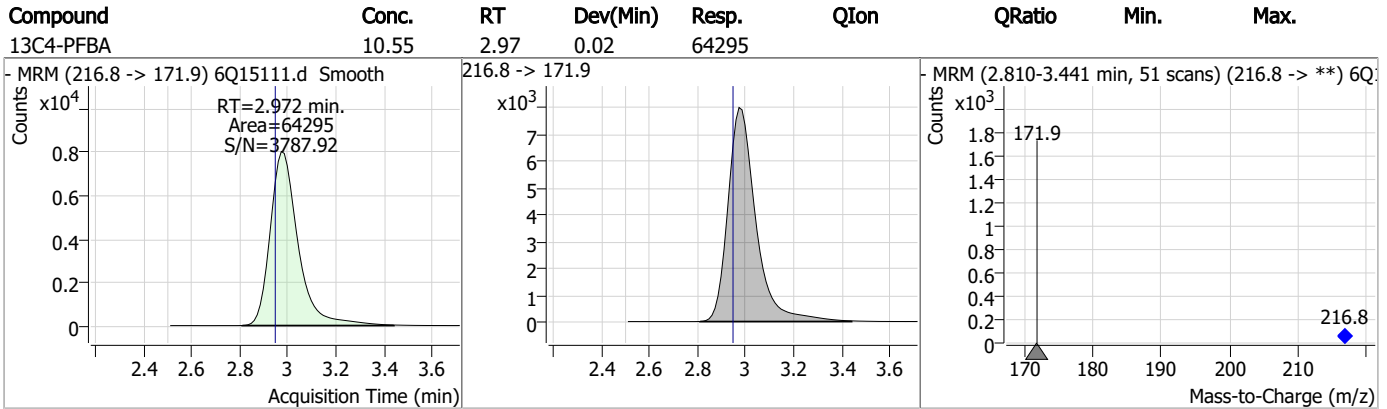
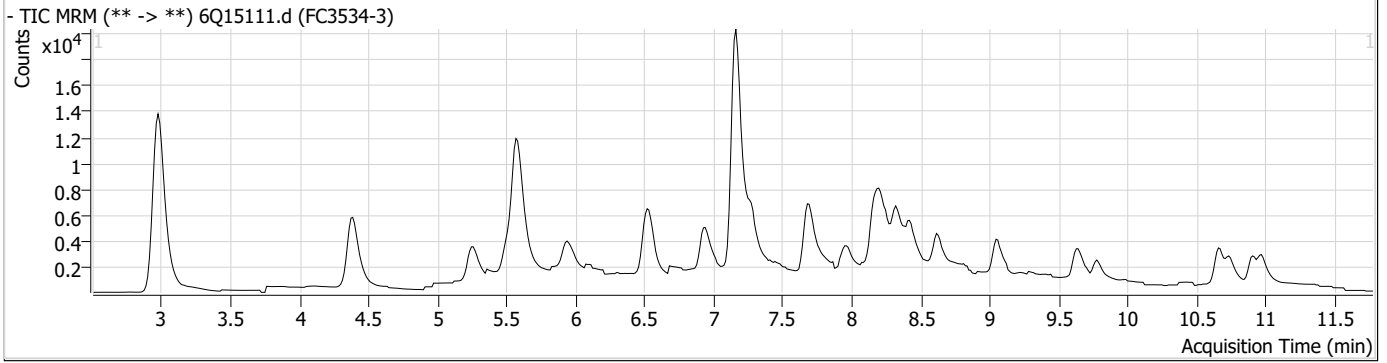
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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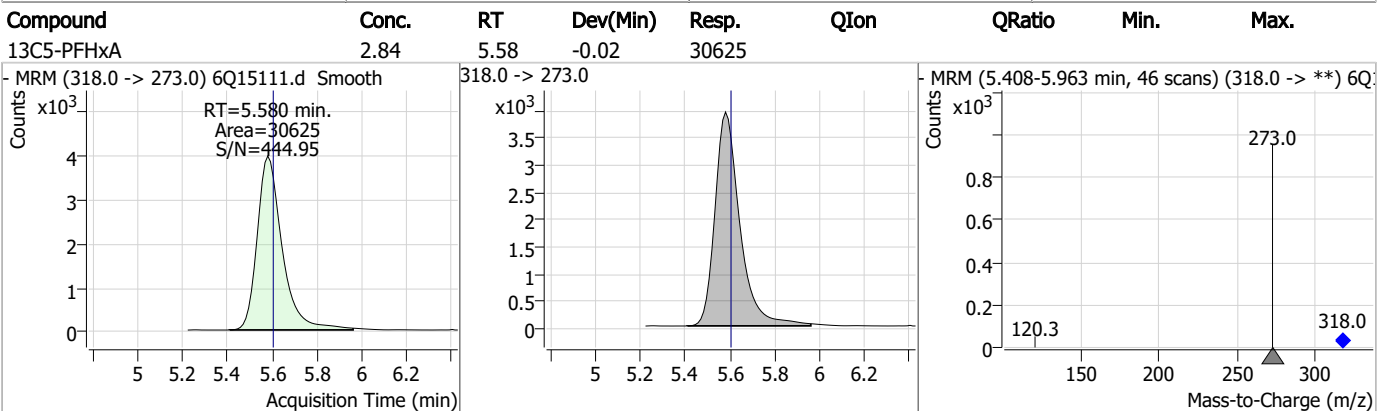
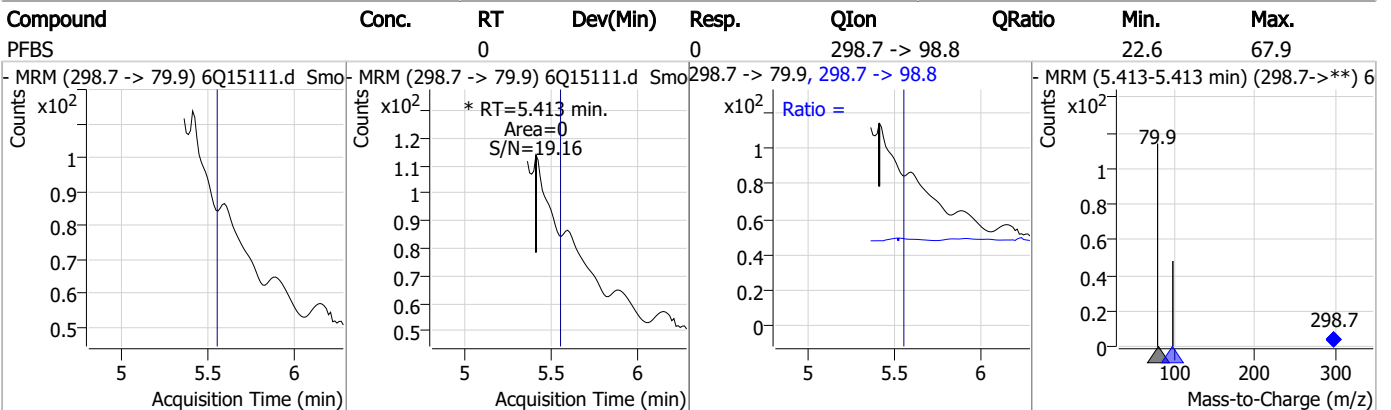
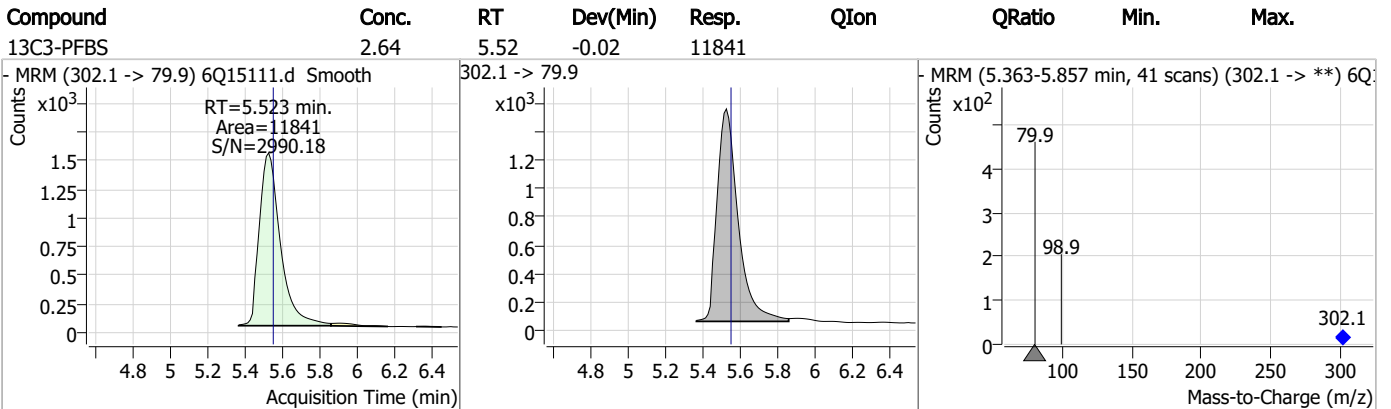
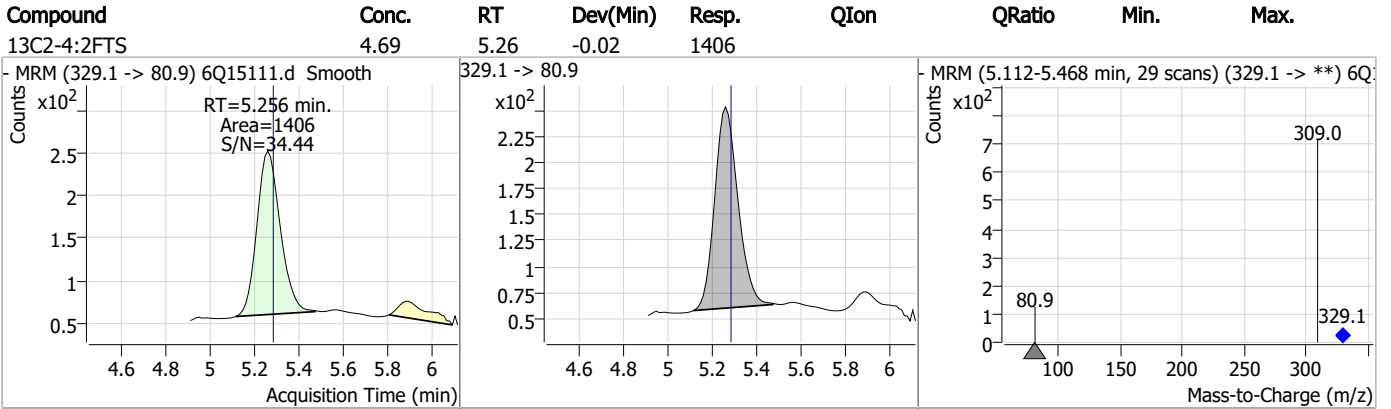
7.1.3
7



Perfluorinated Compounds by LC/MS/MS



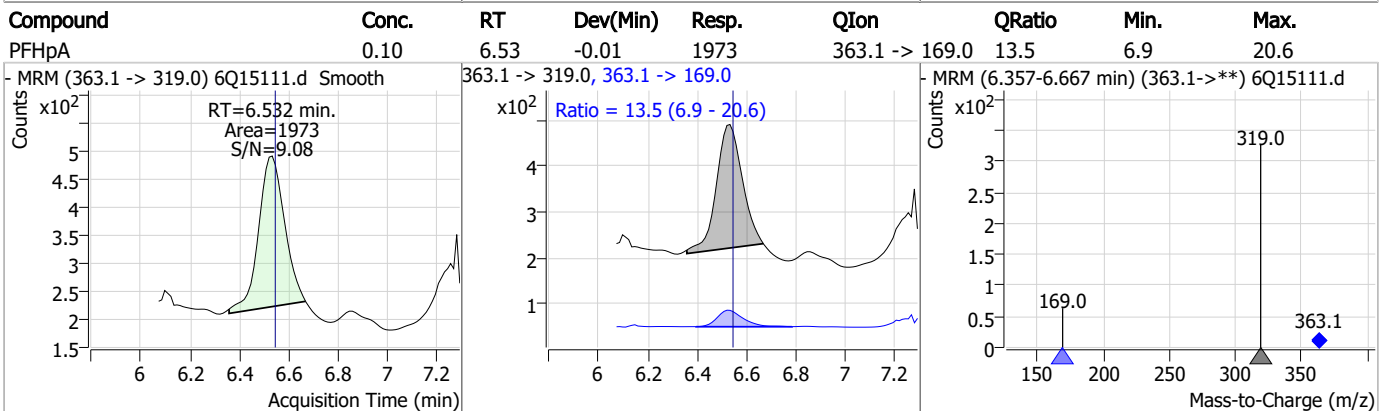
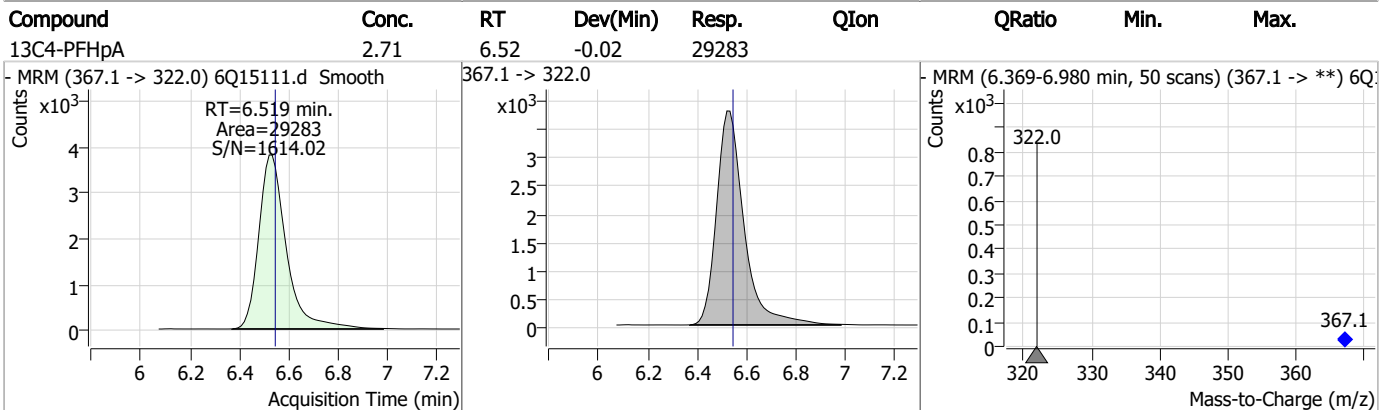
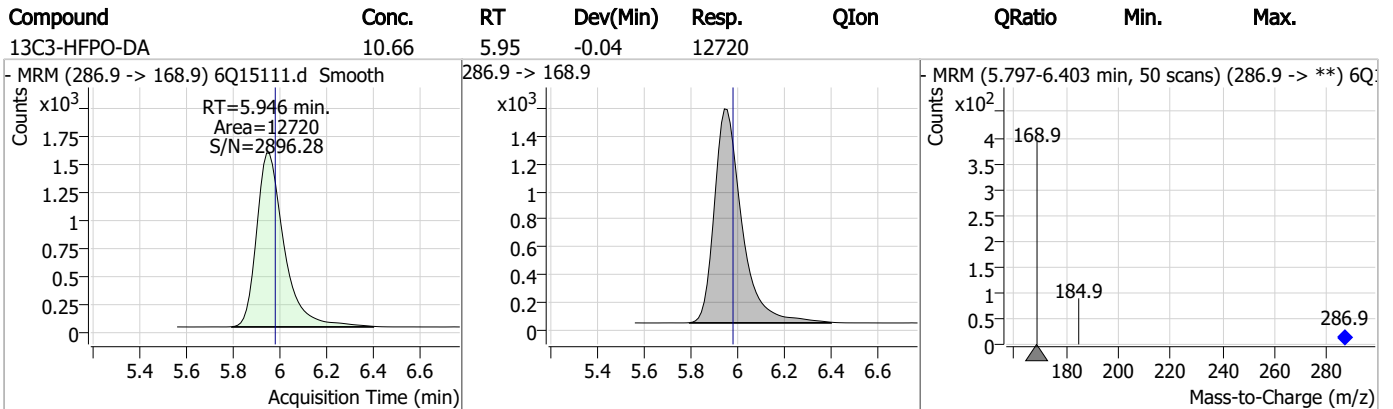
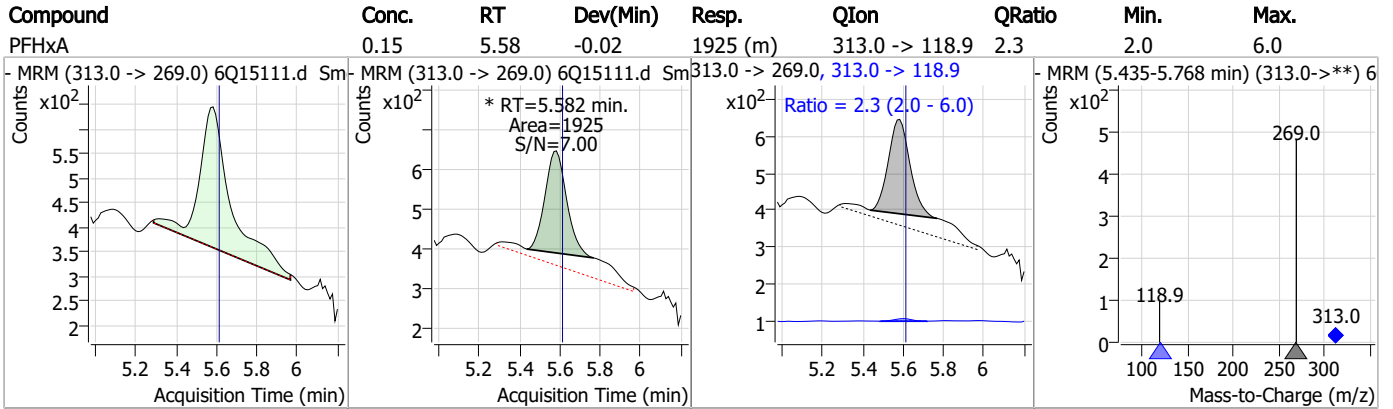
Perfluorinated Compounds by LC/MS/MS



7.1.3

7

Perfluorinated Compounds by LC/MS/MS

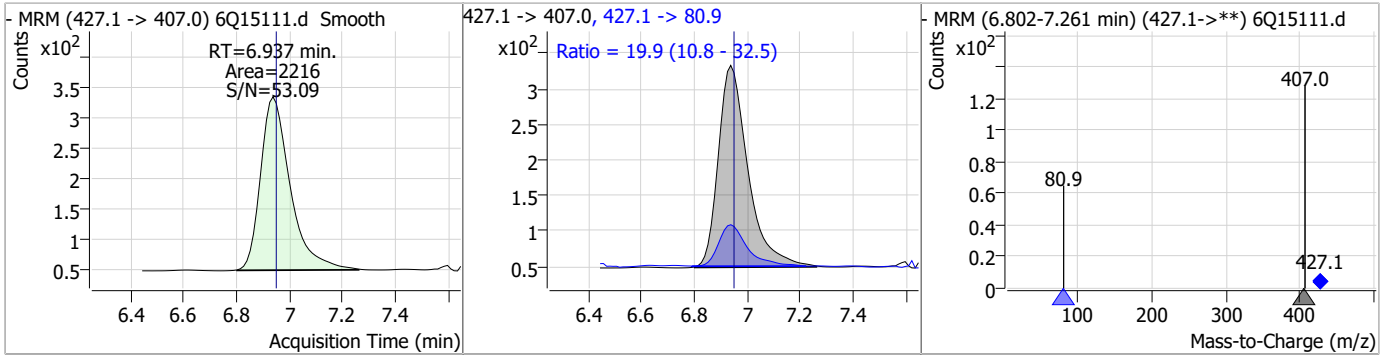


7.1.3

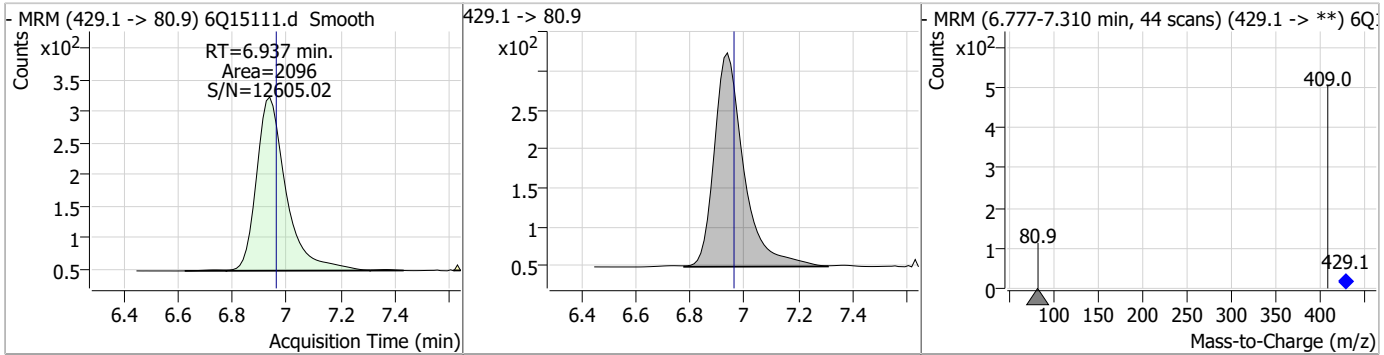
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Perfluorinated Compounds by LC/MS/MS

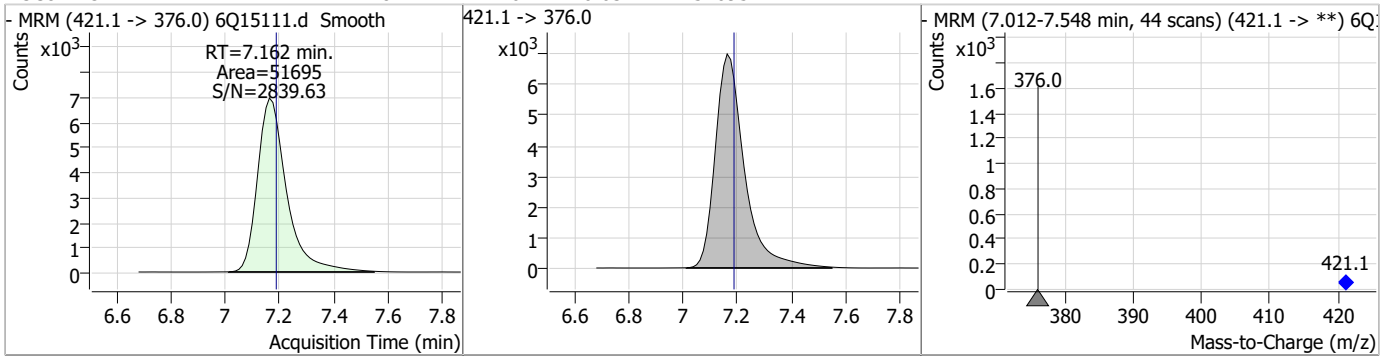
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.71	6.94	-0.01	2216	427.1 -> 80.9	19.9	10.8	32.5



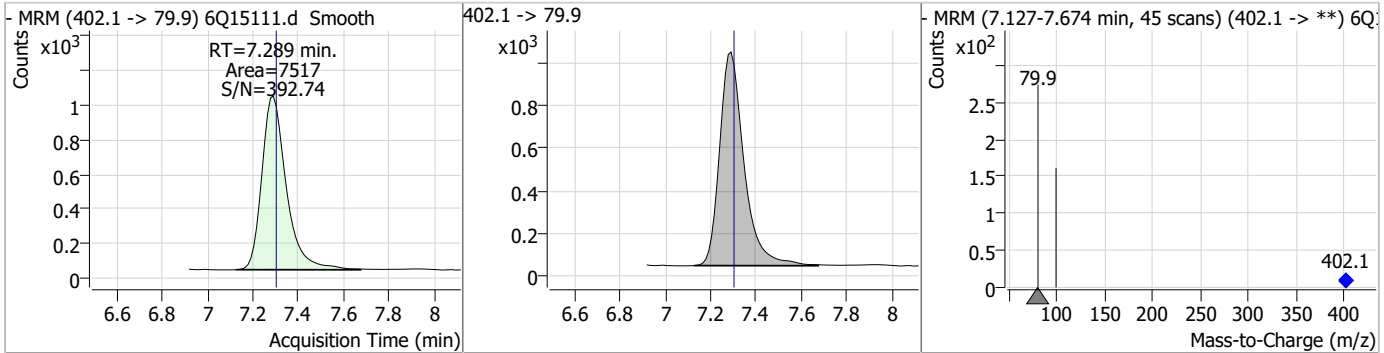
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.40	6.94	-0.02	2096	429.1 -> 80.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.82	7.16	-0.03	51695	421.1 -> 376.0			



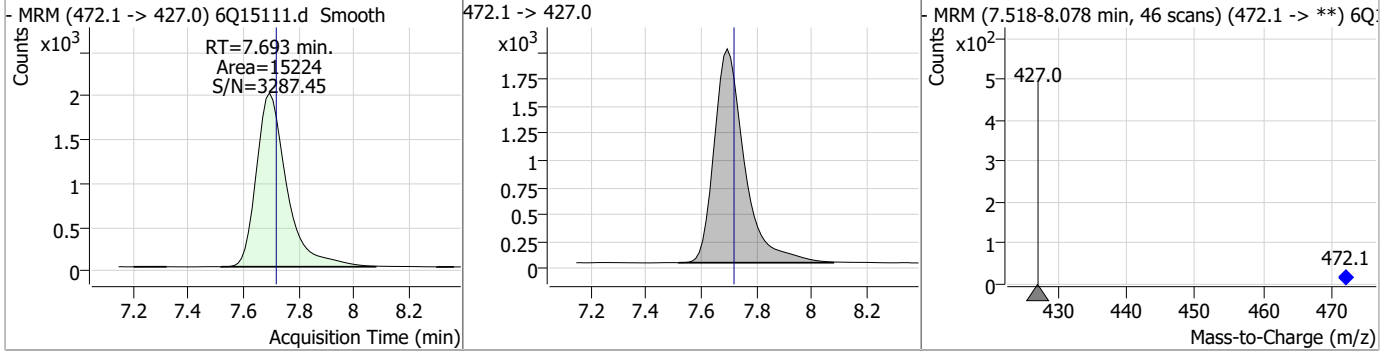
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.55	7.29	-0.01	7517	402.1 -> 79.9			



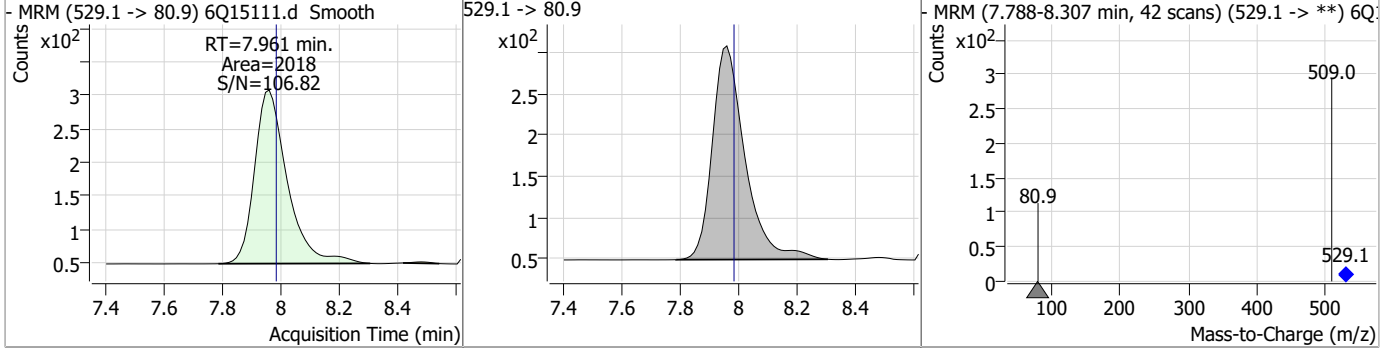
7.1.3
7

Perfluorinated Compounds by LC/MS/MS

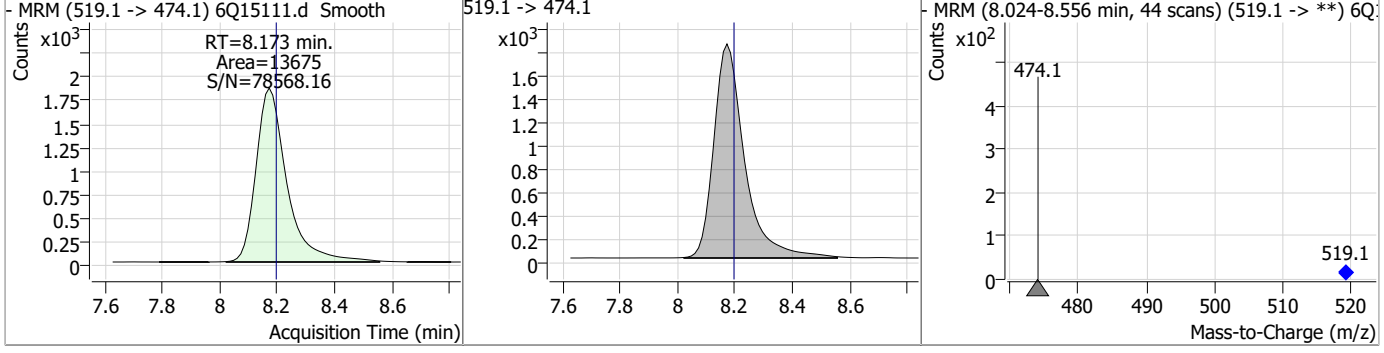
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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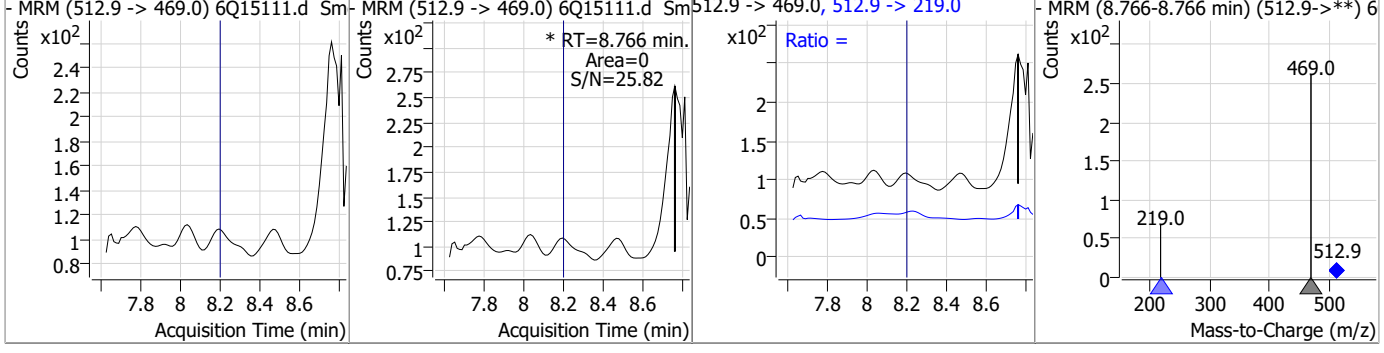
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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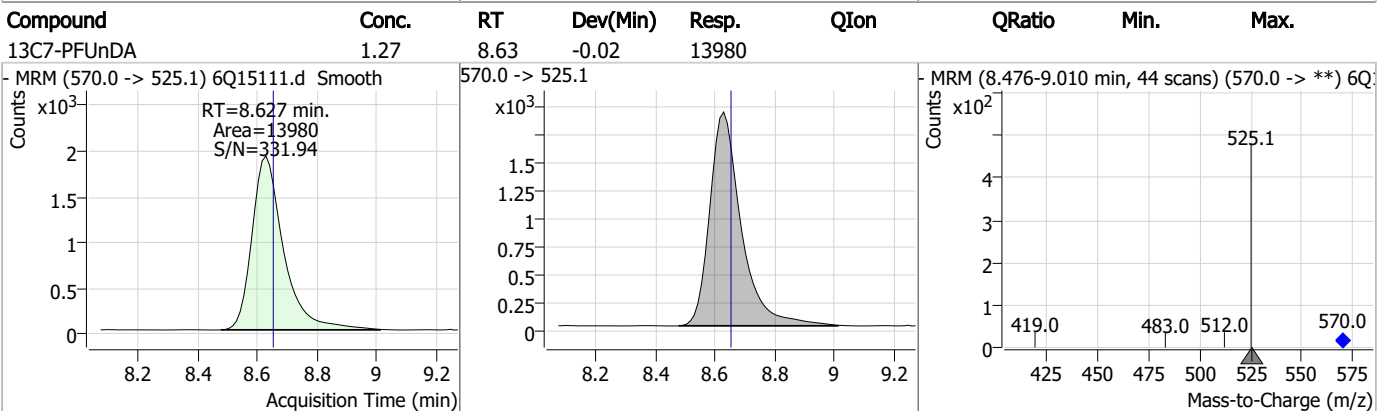
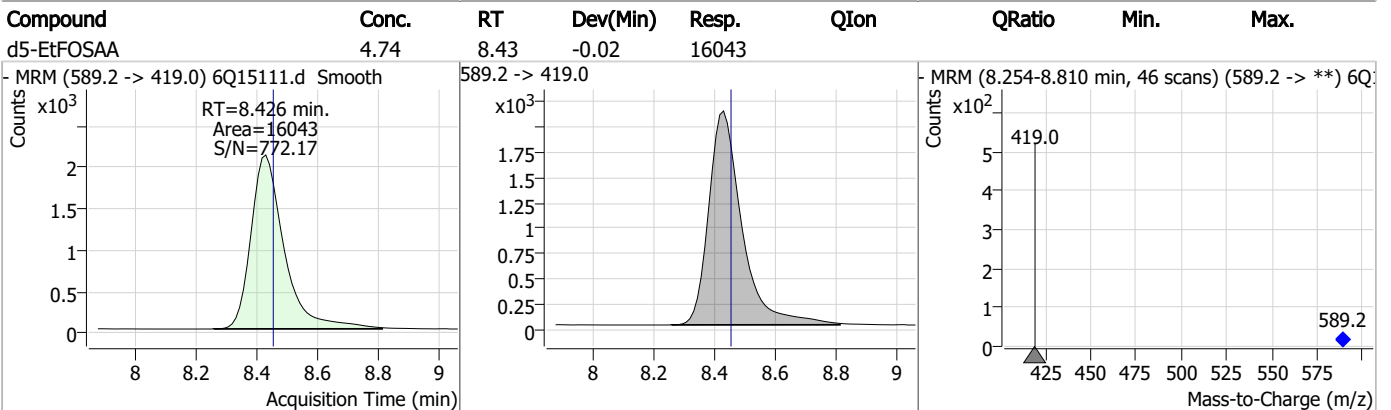
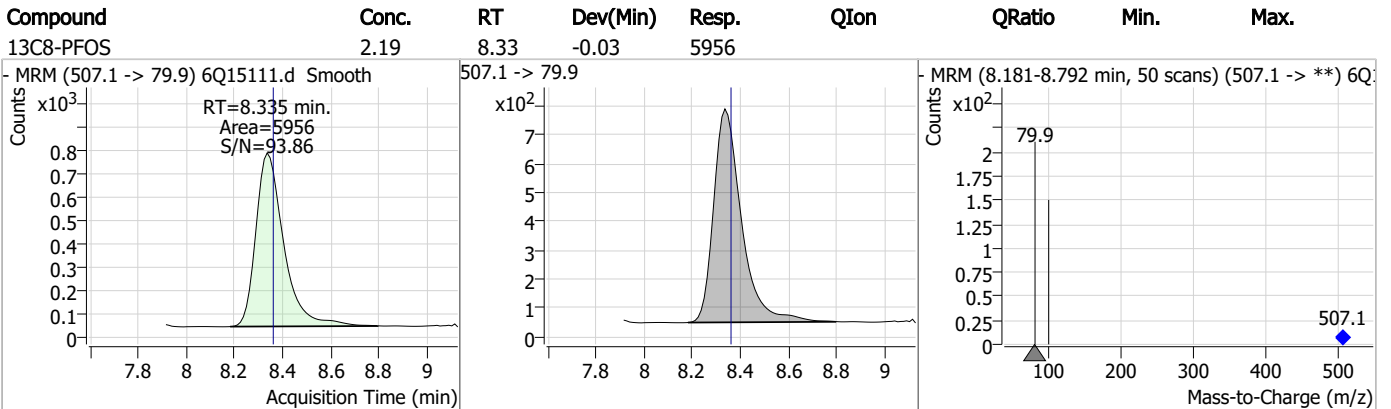
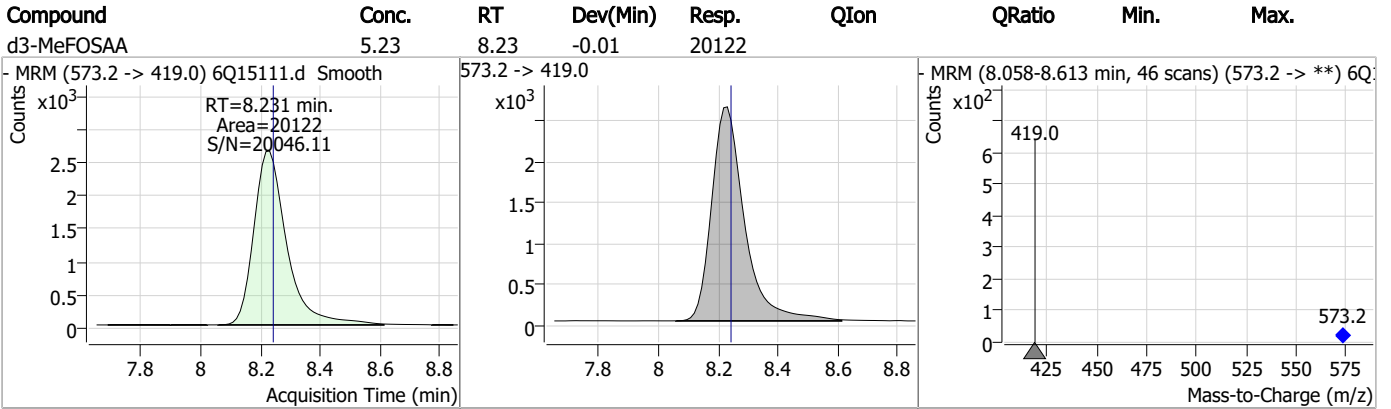


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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7.1.3
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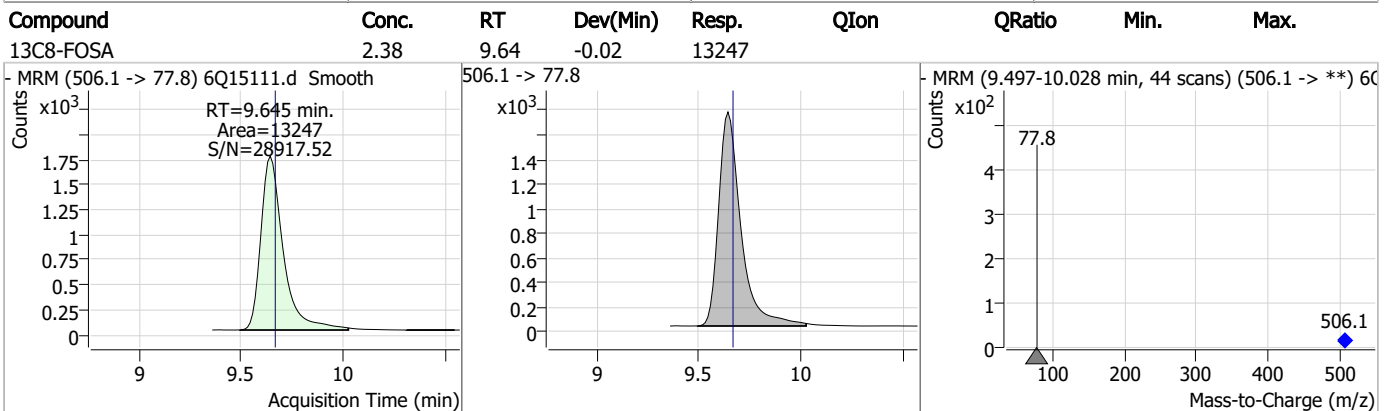
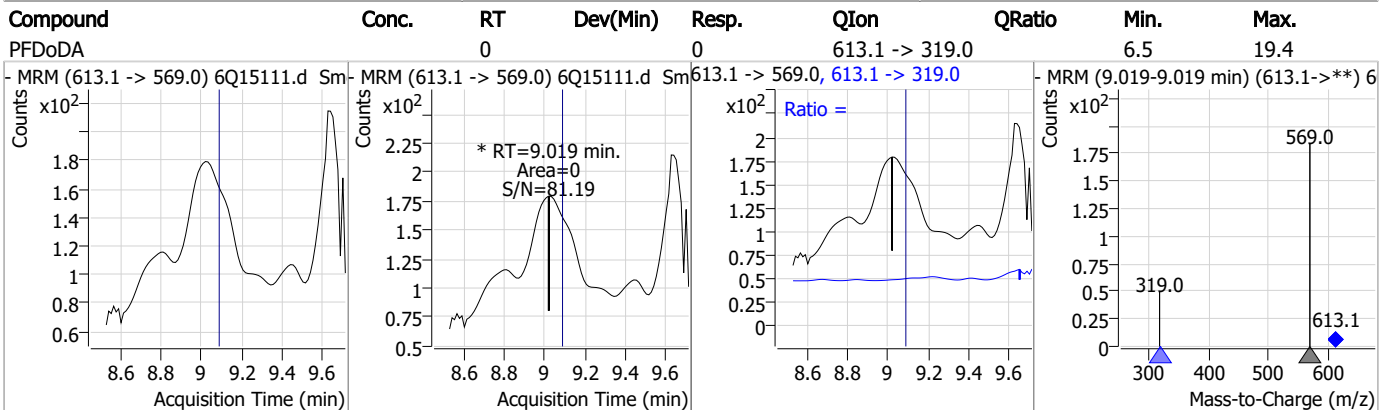
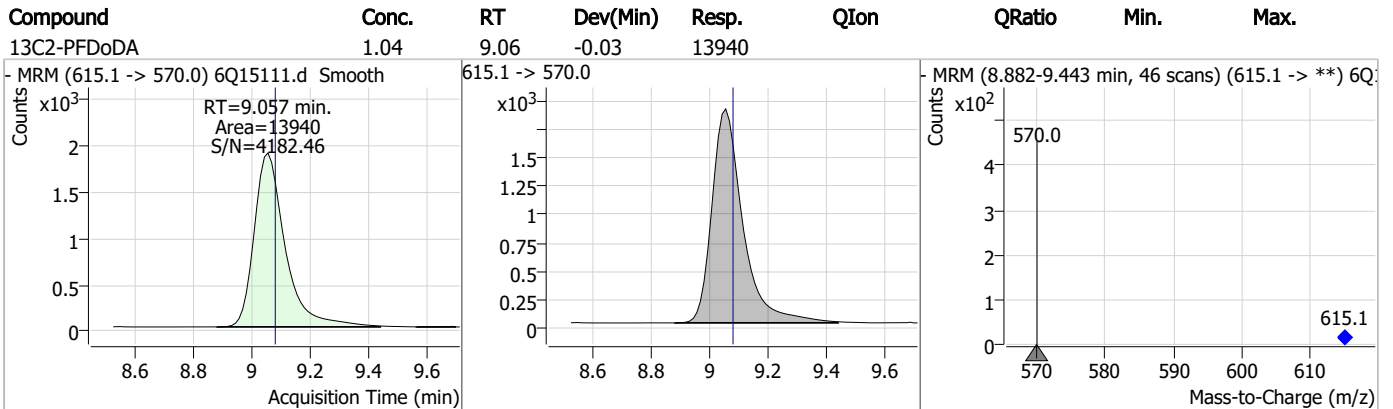
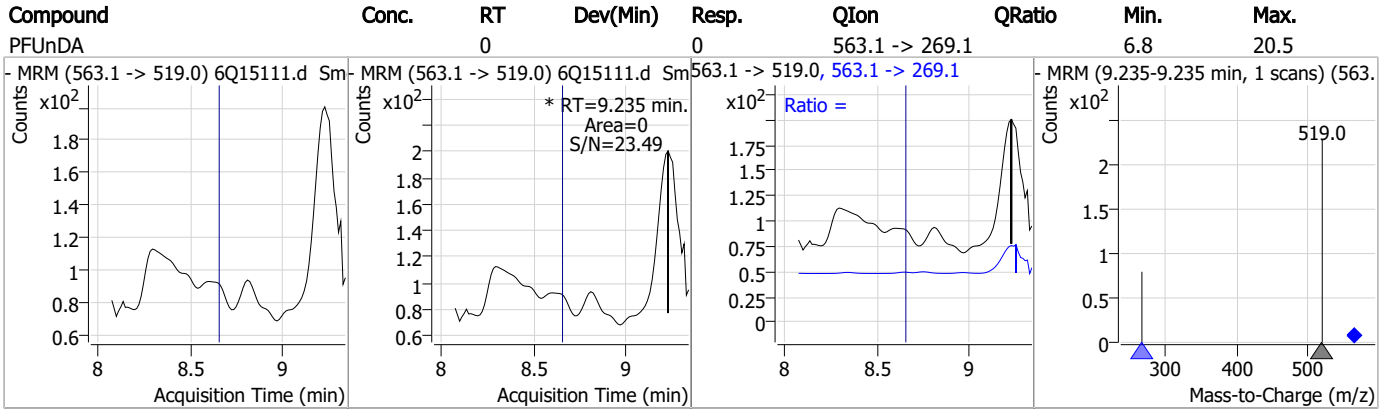
Perfluorinated Compounds by LC/MS/MS



7.1.3

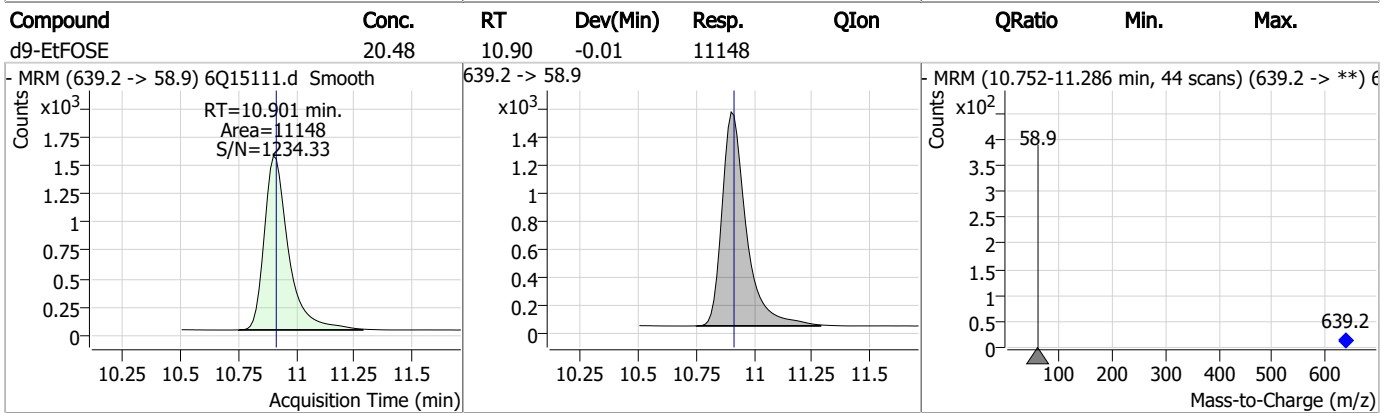
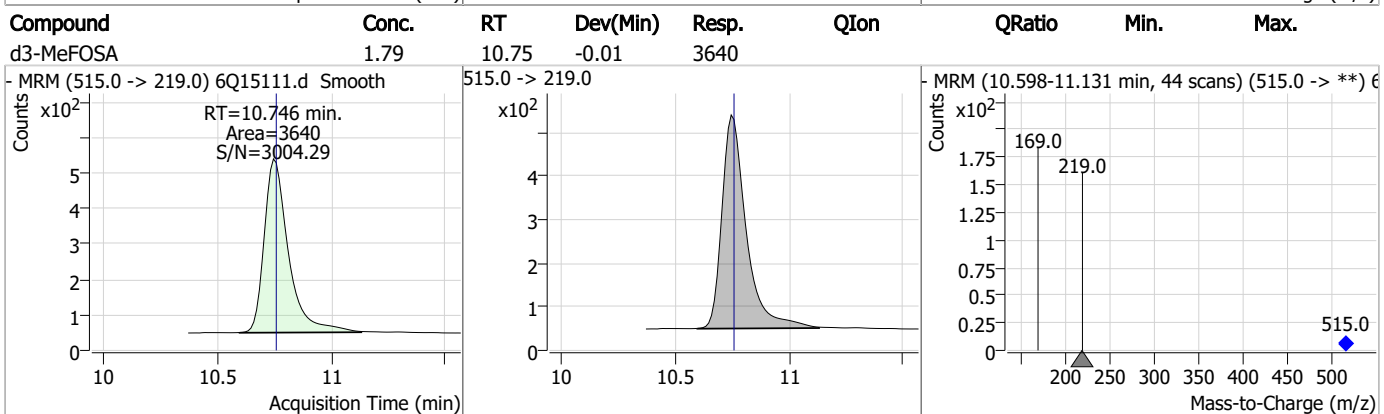
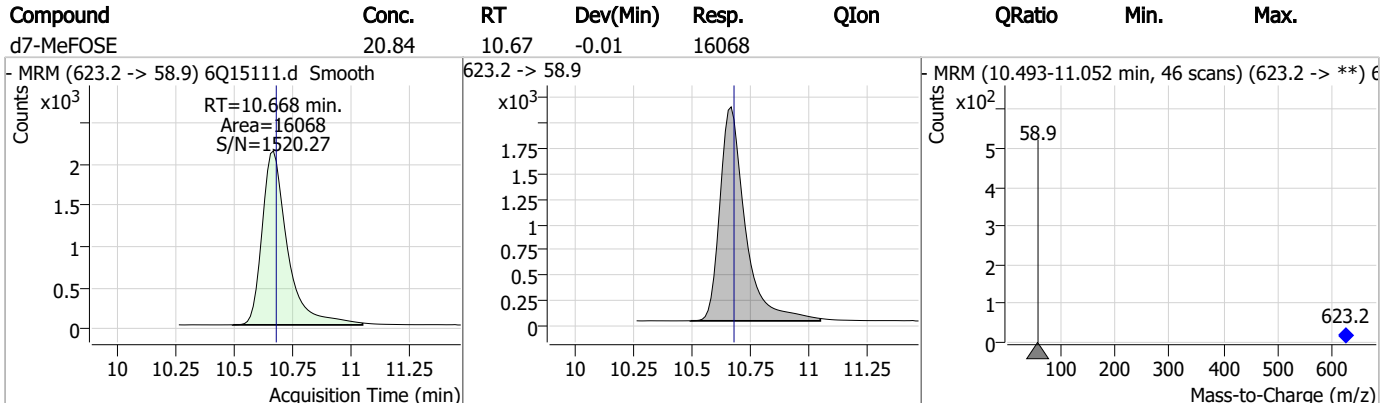
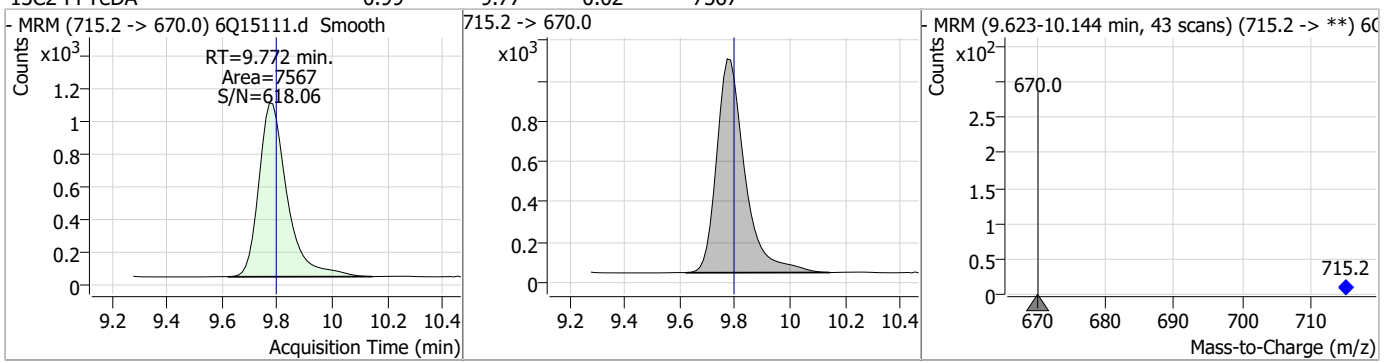
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

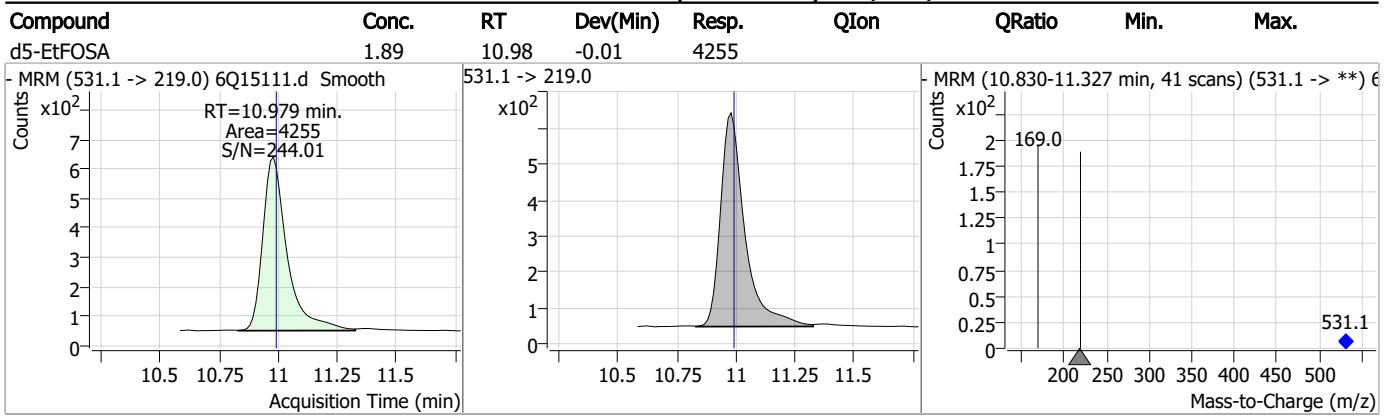
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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7.1.3
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Perfluorinated Compounds by LC/MS/MS



7.1.3
7



Manual Integration Approval Summary

Sample Number: FC3534-3 Method: EPA DRAFT 1633
Lab FileID: 6Q15111.D Analyst approved: 03/22/23 11:00 Martha Valls
Injection Time: 03/21/23 17:05 Supervisor approved: 03/22/23 12:54 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanoic acid	2706-90-3		4.38	Poorly defined baseline
Perfluorohexanoic acid	307-24-4		5.58	Poorly defined baseline

7.1.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15108.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 4:23:29 PM
 Sample Name : op95968-mb
 Vial : P3-A3
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95968,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	70559	10.00 µg/L	0.025
M5-PFPeA	4.382	268.3 -> 223.0	33268	5.00 µg/L	-0.012
M5-PFHxA	5.580	318.0 -> 273.0	29453	2.50 µg/L	-0.025
M4-PFHpA	6.532	367.1 -> 322.0	29803	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	52452	2.50 µg/L	-0.012
M9-PFNA	7.693	472.1 -> 427.0	16982	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	13221	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	13123	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	13307	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	7463	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	14077	2.50 µg/L	-0.025
M3-PFBS	5.524	302.1 -> 79.9	11128	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	7292	2.50 µg/L	-0.013
M8-PFOS	8.335	507.1 -> 79.9	6718	2.50 µg/L	-0.025
M2-4:2FTS	5.256	329.1 -> 80.9	1823	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2570	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2156	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	17642	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	12826	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	13670	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	18723	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	12840	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	4872	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	4236	2.50 µg/L	-0.012
13C4-PFOS	8.348	502.8 -> 79.9	8599	2.50 µg/L	-0.013
13C3-PFBA	2.976	216.0 -> 172.0	30852	5.00 µg/L	0.025
18O2-PFHxS	7.288	403.0 -> 83.9	5287	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	61516	2.50 µg/L	-0.012
13C2-PFDA	8.173	515.1 -> 470.1	18087	1.25 µg/L	-0.025
13C5-PFNA	7.706	468.0 -> 423.0	17127	1.25 µg/L	-0.012
13C2-PFHxA	5.581	315.1 -> 270.0	29805	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1823	6.01 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.2%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2570	6.54 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.8%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2156	5.15 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-PFDoDA	9.057	615.1 -> 570.0	13307	0.94 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.2%		
13C2-PFTeDA	9.772	715.2 -> 670.0	7463	0.92 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.0%		
13C3-PFBS	5.524	302.1 -> 79.9	11128	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFHxS	7.289	402.1 -> 79.9	7292	2.44 µg/L	-0.013

7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C4-PFBA	2.972	216.8 -> 171.9	70559	9.97 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C4-PFHpA	6.532	367.1 -> 322.0	29803	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C5-PFHxA	5.580	318.0 -> 273.0	29453	2.43 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFPeA	4.382	268.3 -> 223.0	33268	4.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C6-PFDA	8.173	519.1 -> 474.1	13221	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C7-PFUnDA	8.627	570.0 -> 525.1	13123	1.12 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.8%	
13C8-FOSA	9.645	506.1 -> 77.8	14077	2.36 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C8-PFOA	7.175	421.1 -> 376.0	52452	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-PFOS	8.335	507.1 -> 79.9	6718	2.30 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C9-PFNA	7.693	472.1 -> 427.0	16982	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
d3-MeFOSAA	8.231	573.2 -> 419.0	17642	4.27 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 85.4%	
13C3-HFPO-DA	5.958	286.9 -> 168.9	12826	9.53 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
d3-MeFOSA	10.746	515.0 -> 219.0	4236	1.94 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.6%	
d5-EtFOSAA	8.426	589.2 -> 419.0	13670	3.76 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 75.3%	
d7-MeFOSE	10.668	623.2 -> 58.9	18723	22.63 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.5%	
d9-EtFOSE	10.901	639.2 -> 58.9	12840	21.99 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.0%	
d5-EtFOSA	10.979	531.1 -> 219.0	4872	2.02 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.8%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	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	8.779	512.9 -> 469.0 512.9 -> 219.0	0 0	µg/L m	1
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	8.301	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.235	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.1
7

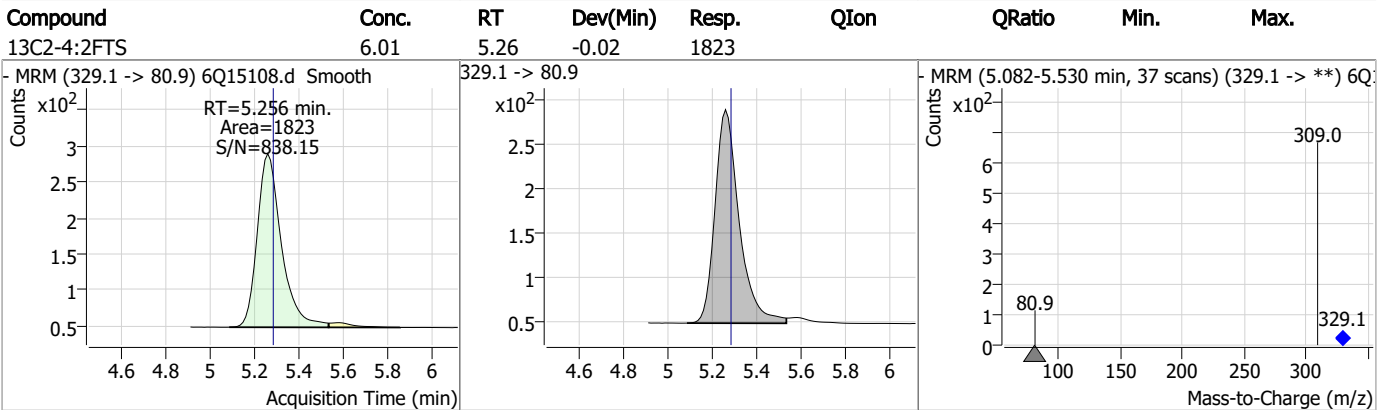
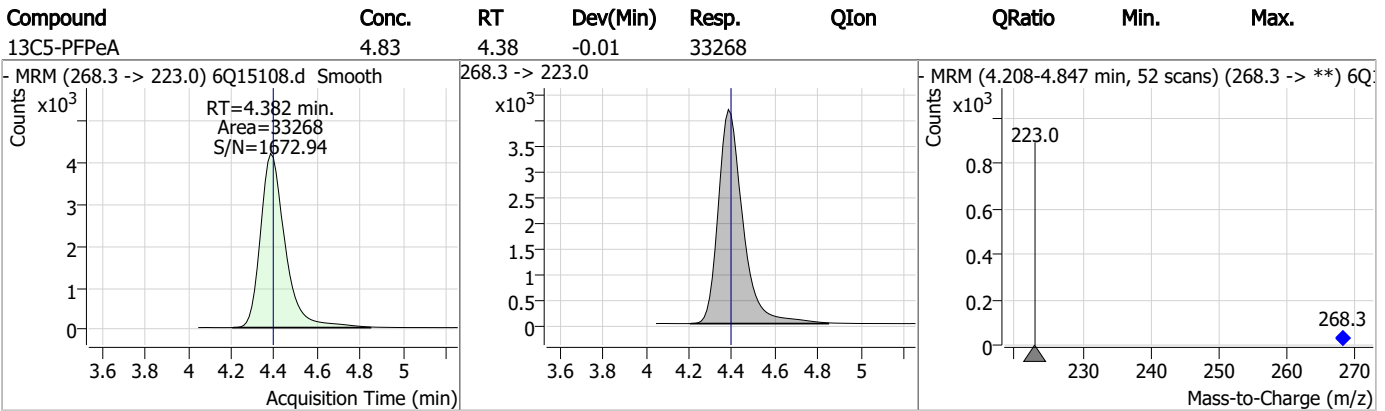
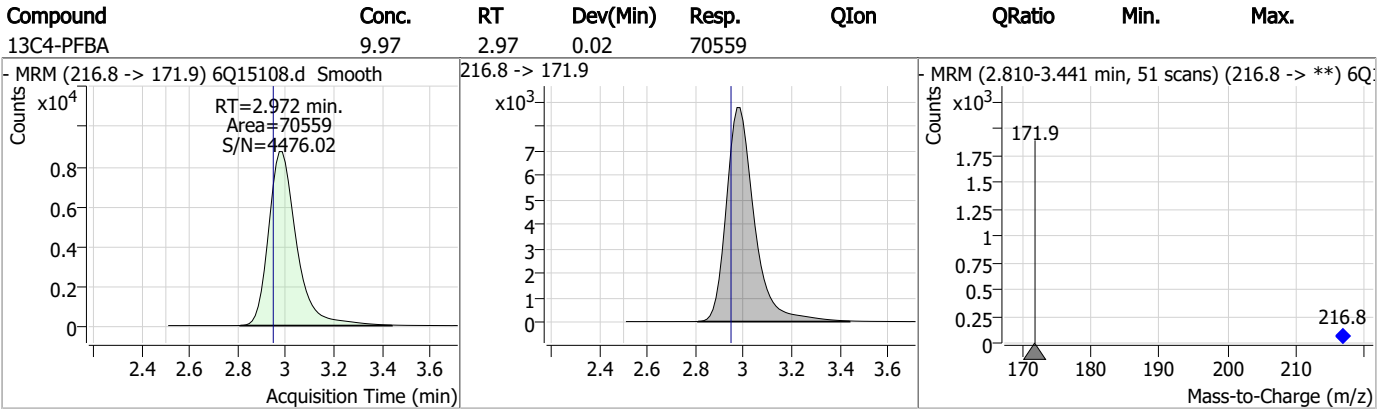
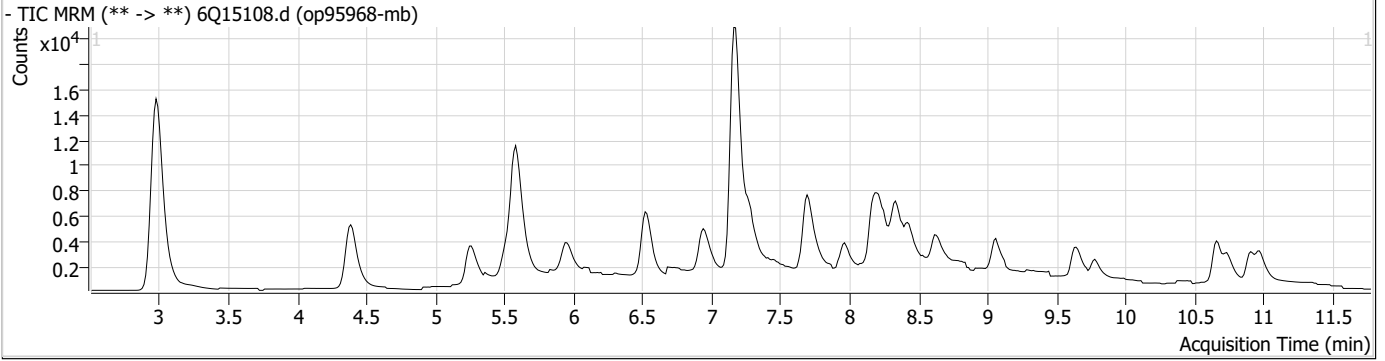
Perfluorinated Compounds by LC/MS/MS

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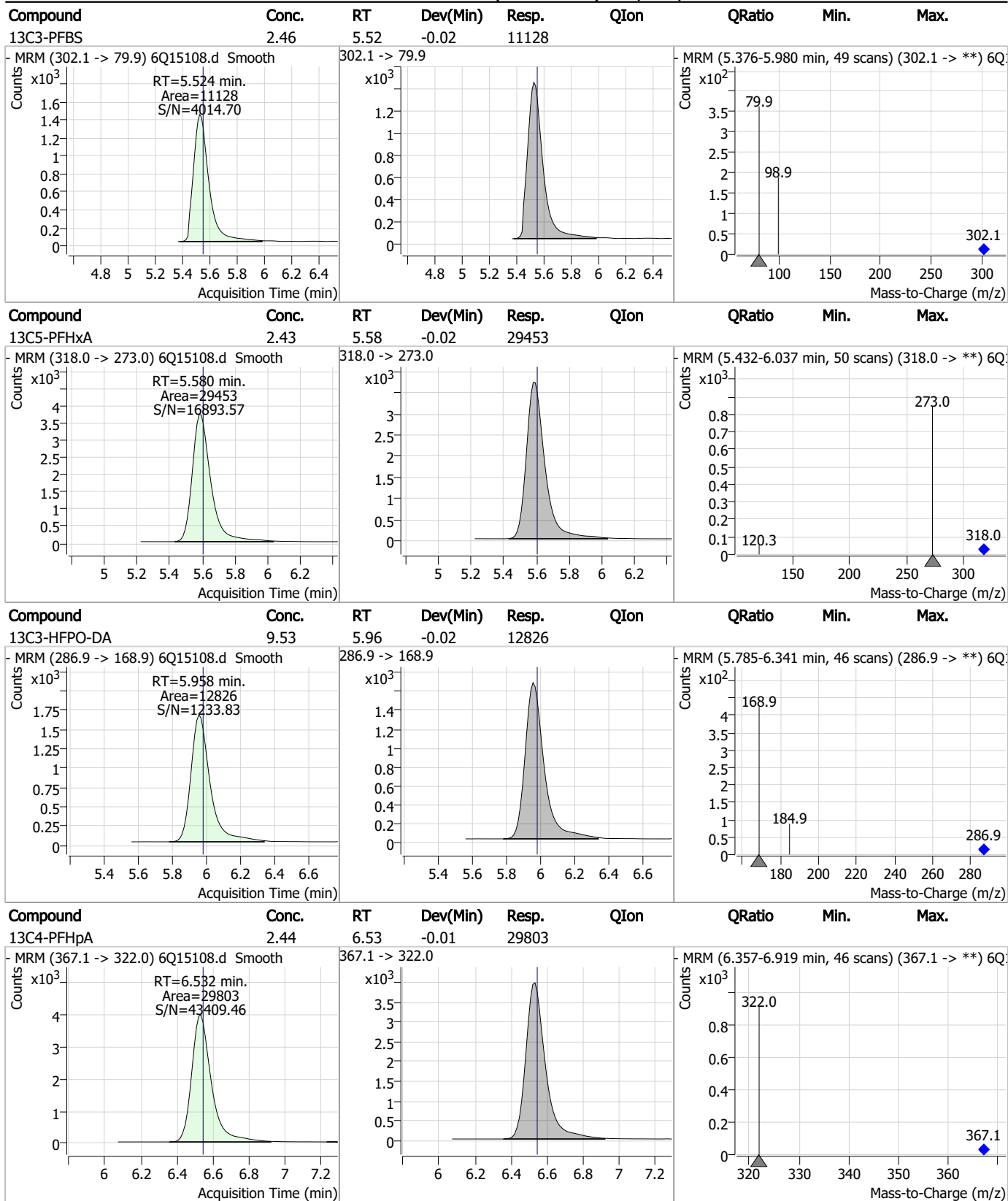
7.2.1

7

Perfluorinated Compounds by LC/MS/MS

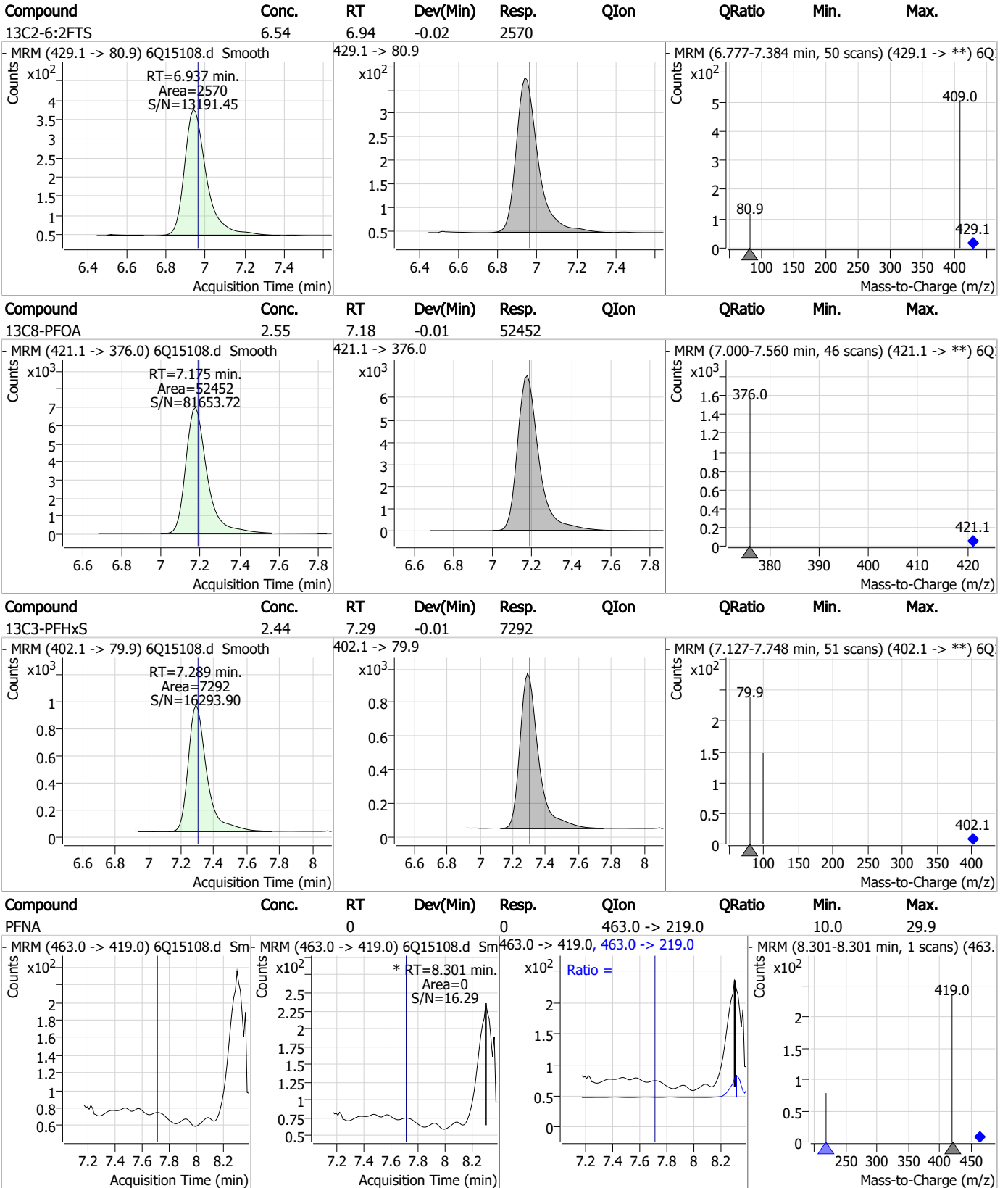


Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS

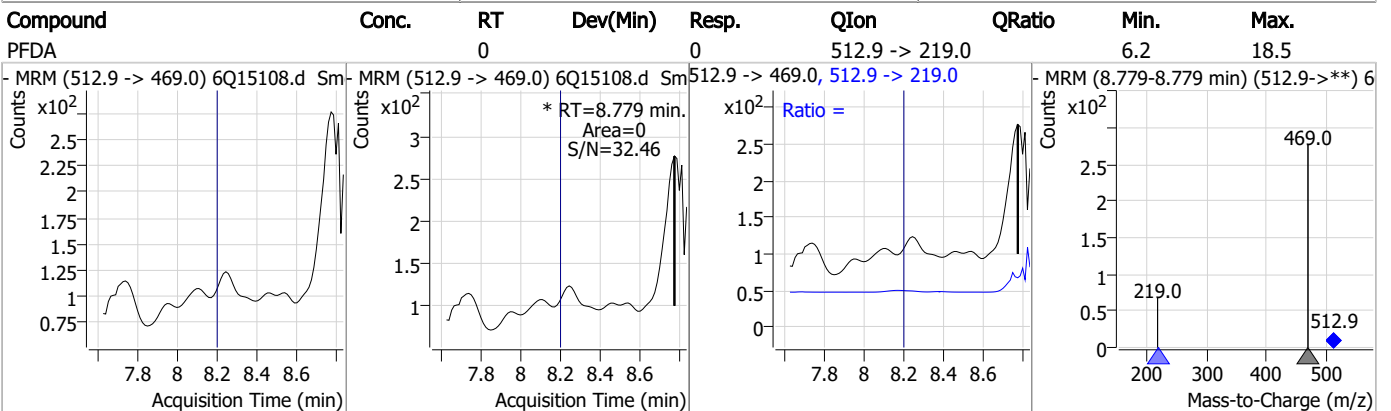
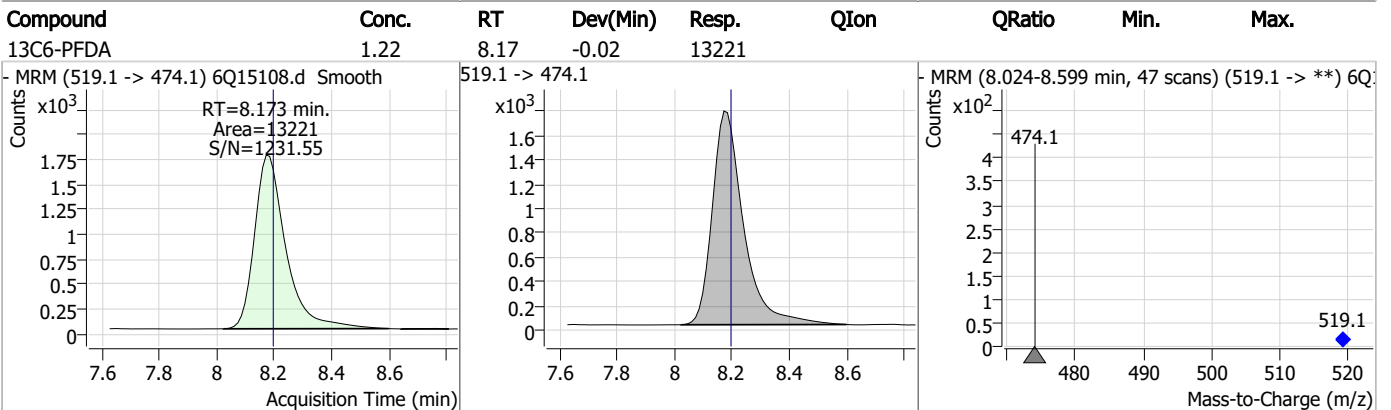
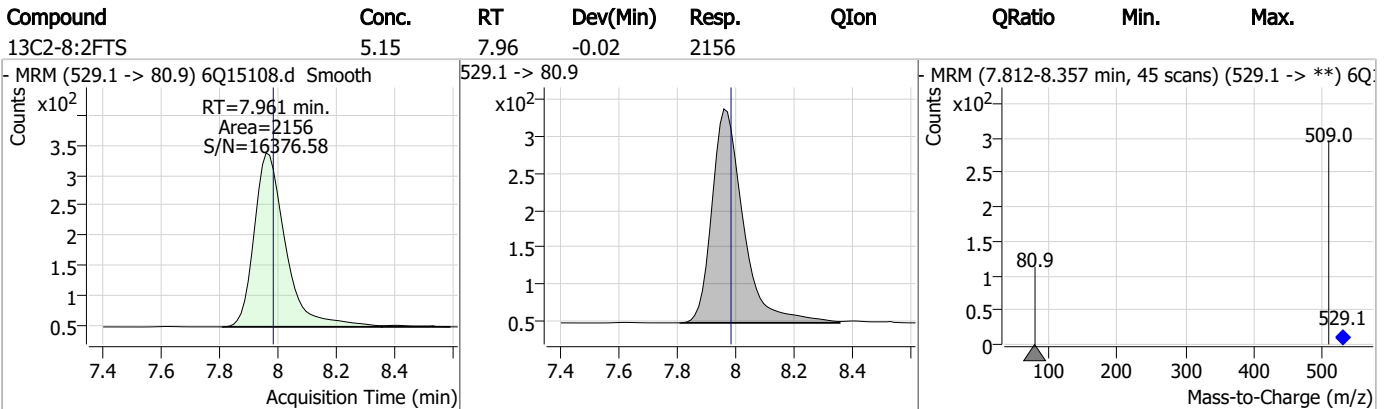
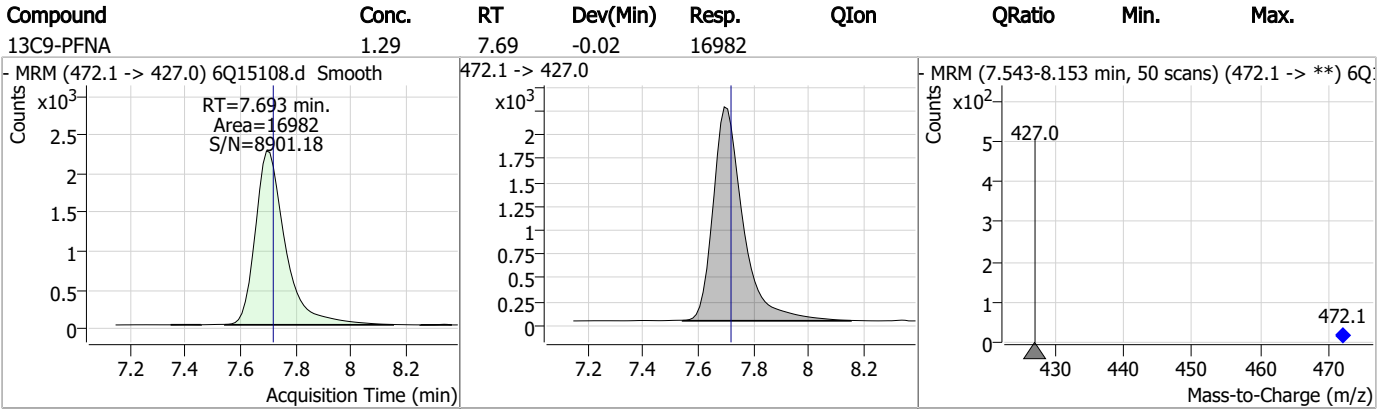


7.2.1

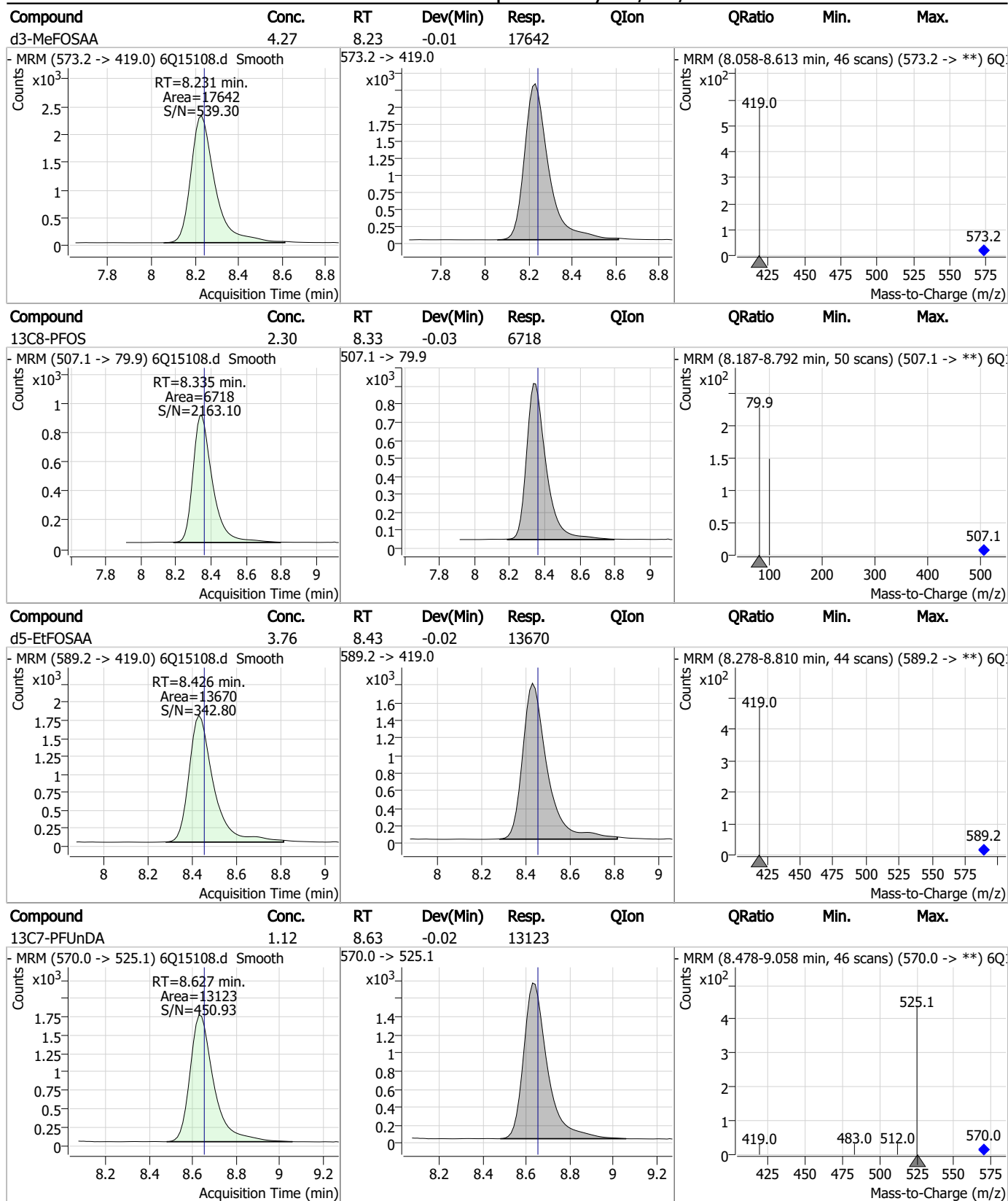
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

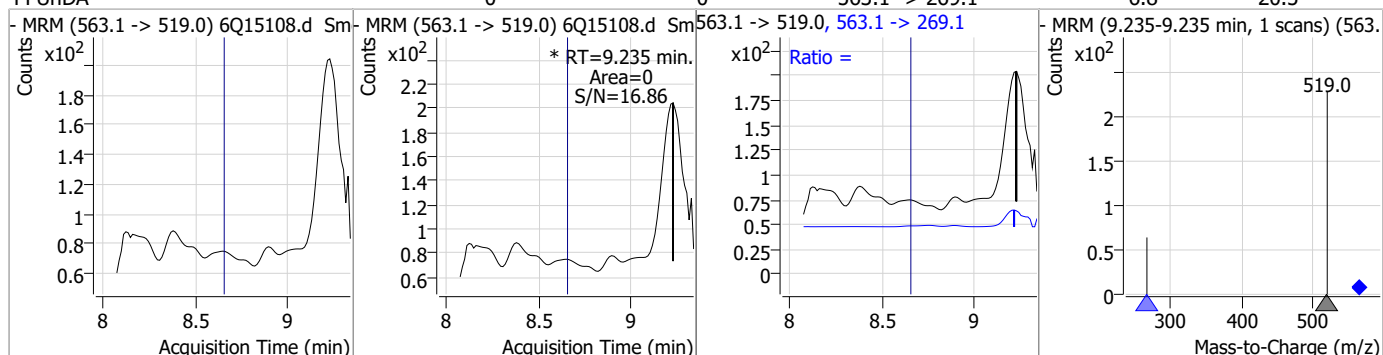


7.2.1
7

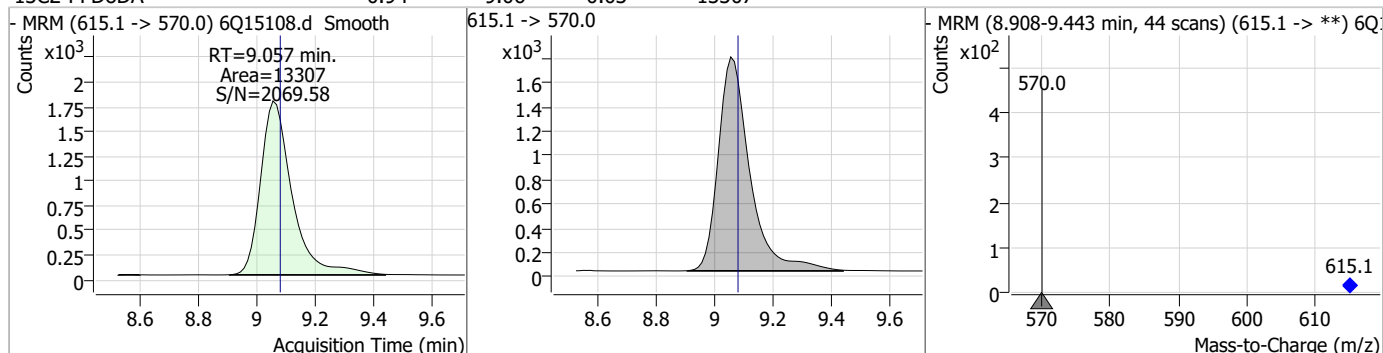


Perfluorinated Compounds by LC/MS/MS

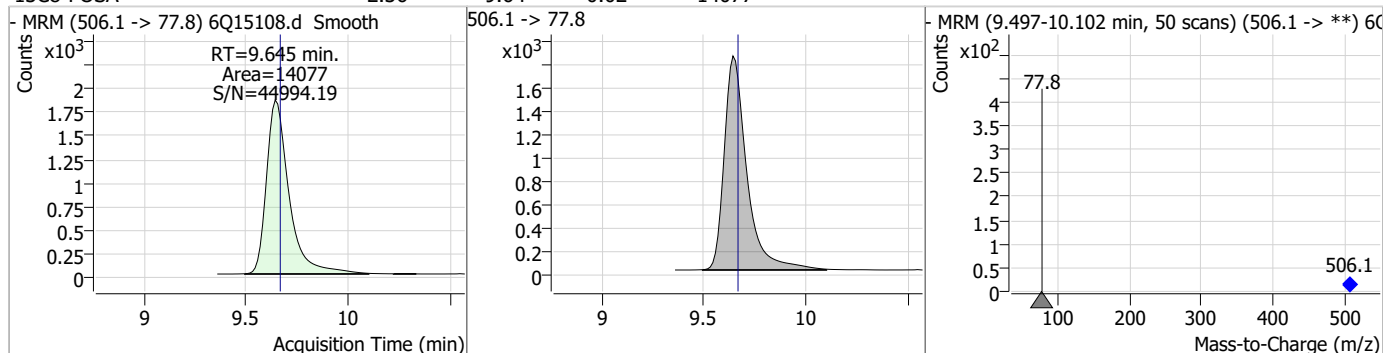
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0	0		0	563.1 -> 269.1		6.8	20.5



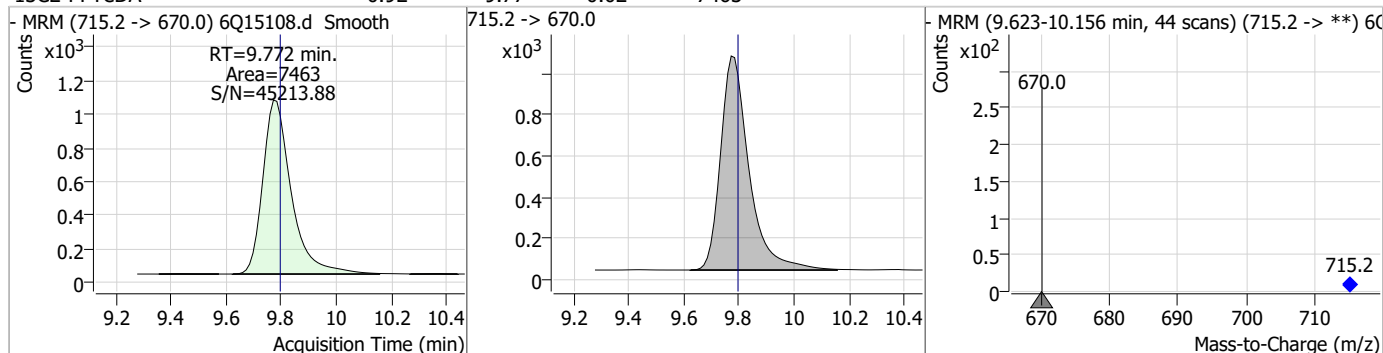
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	0.94	9.06	-0.03	13307				



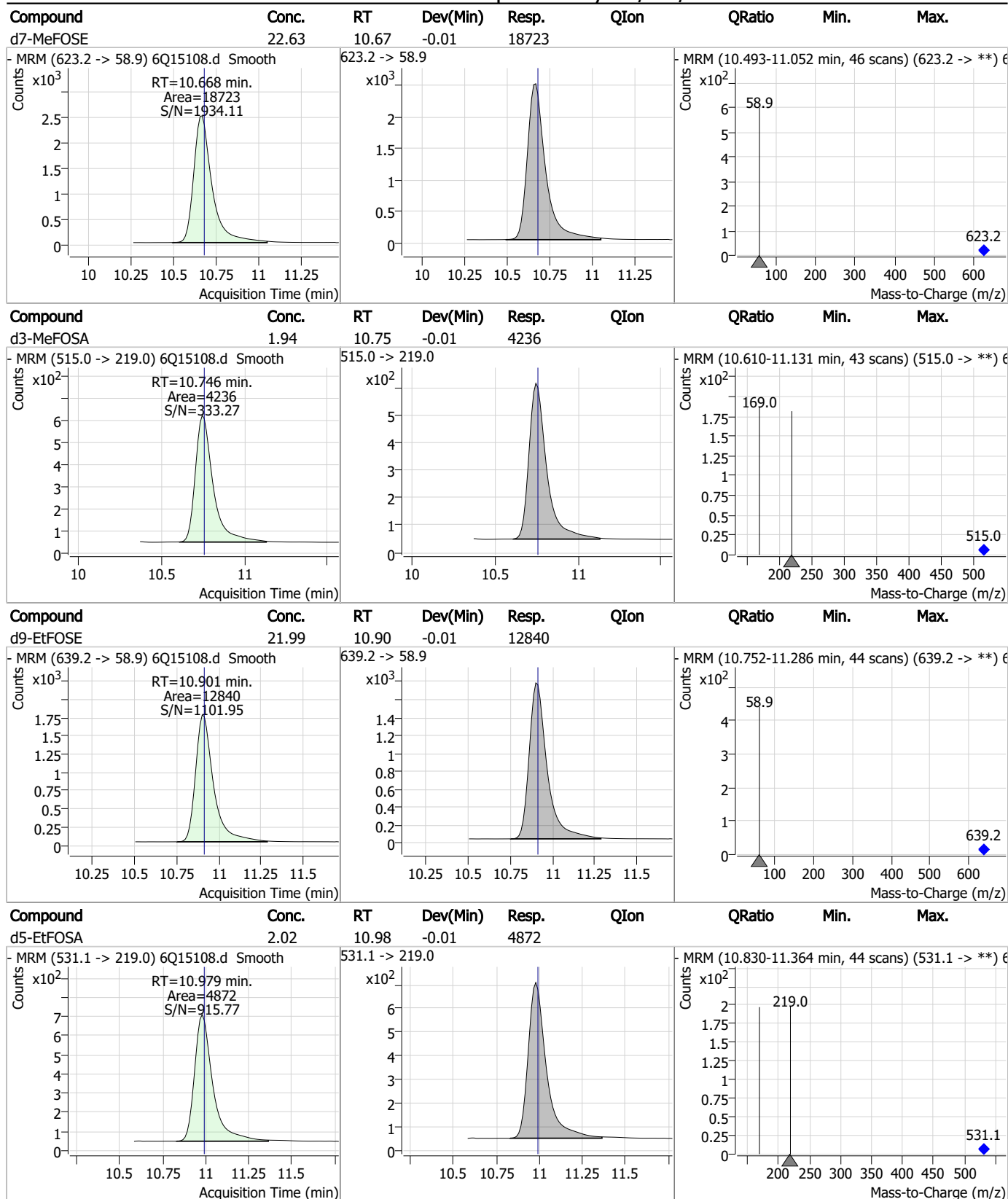
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.36	9.64	-0.02	14077				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	0.92	9.77	-0.02	7463				



Perfluorinated Compounds by LC/MS/MS



7.2.1
7



Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15103.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 3:12:11 PM
 Sample Name : IBLK
 Vial : P1-A1
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.997	216.8 -> 171.9	74112	10.00 µg/L	0.050
M5-PFPeA	4.395	268.3 -> 223.0	36005	5.00 µg/L	0.000
M5-PFHxA	5.593	318.0 -> 273.0	32476	2.50 µg/L	-0.012
M4-PFHpA	6.532	367.1 -> 322.0	31586	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	55052	2.50 µg/L	-0.012
M9-PFNA	7.706	472.1 -> 427.0	16165	1.25 µg/L	-0.012
M6-PFDA	8.173	519.1 -> 474.1	14562	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	16554	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	19933	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	11811	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	16376	2.50 µg/L	-0.025
M3-PFBS	5.524	302.1 -> 79.9	12317	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	8019	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	7387	2.50 µg/L	-0.013
M2-4:2FTS	5.256	329.1 -> 80.9	1990	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2437	5.00 µg/L	-0.025
M2-8:2FTS	7.973	529.1 -> 80.9	2466	5.00 µg/L	-0.012
M3-MeFOSAA	8.231	573.2 -> 419.0	21424	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	13950	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	18404	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	22741	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	15279	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	6384	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	5663	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	8722	2.50 µg/L	-0.025
13C3-PFBA	3.001	216.0 -> 172.0	32305	5.00 µg/L	0.050
18O2-PFHxS	7.288	403.0 -> 83.9	5590	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	63682	2.50 µg/L	-0.012
13C2-PFDA	8.185	515.1 -> 470.1	20229	1.25 µg/L	-0.012
13C5-PFNA	7.706	468.0 -> 423.0	17445	1.25 µg/L	-0.012
13C2-PFHxA	5.594	315.1 -> 270.0	32861	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1990	6.20 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.1%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2437	5.87 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.3%		
13C2-8:2FTS	7.973	529.1 -> 80.9	2466	5.57 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.4%		
13C2-PFDoDA	9.057	615.1 -> 570.0	19933	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C2-PFTeDA	9.772	715.2 -> 670.0	11811	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
13C3-PFBS	5.524	302.1 -> 79.9	12317	2.57 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFHxS	7.289	402.1 -> 79.9	8019	2.54 µg/L	-0.013

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C4-PFBA	2.997	216.8 -> 171.9	74112	10.00 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFHpA	6.532	367.1 -> 322.0	31586	2.35 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C5-PFHxA	5.593	318.0 -> 273.0	32476	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFPeA	4.395	268.3 -> 223.0	36005	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C6-PFDA	8.173	519.1 -> 474.1	14562	1.20 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C7-PFUnDA	8.627	570.0 -> 525.1	16554	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-FOSA	9.645	506.1 -> 77.8	16376	2.71 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C8-PFOA	7.175	421.1 -> 376.0	55052	2.59 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C8-PFOS	8.347	507.1 -> 79.9	7387	2.50 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C9-PFNA	7.706	472.1 -> 427.0	16165	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.1%	
d3-MeFOSAA	8.231	573.2 -> 419.0	21424	5.11 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C3-HFPO-DA	5.958	286.9 -> 168.9	13950	9.40 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.0%	
d3-MeFOSA	10.746	515.0 -> 219.0	5663	2.56 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
d5-EtFOSAA	8.426	589.2 -> 419.0	18404	5.00 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d7-MeFOSE	10.668	623.2 -> 58.9	22741	27.10 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 108.4%	
d9-EtFOSE	10.901	639.2 -> 58.9	15279	25.80 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
d5-EtFOSA	10.979	531.1 -> 219.0	6384	2.61 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	

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	8.791	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	9.630	613.1 -> 569.0	0	µg/L m	1
		613.1 -> 319.0	0		
PFDS	-	599.0 -> 79.9	-	N.D.	

7.22
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	8.301	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.833	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	9.235	563.1 -> 519.0	0	µg/L	m	1
		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

7.2.2
7

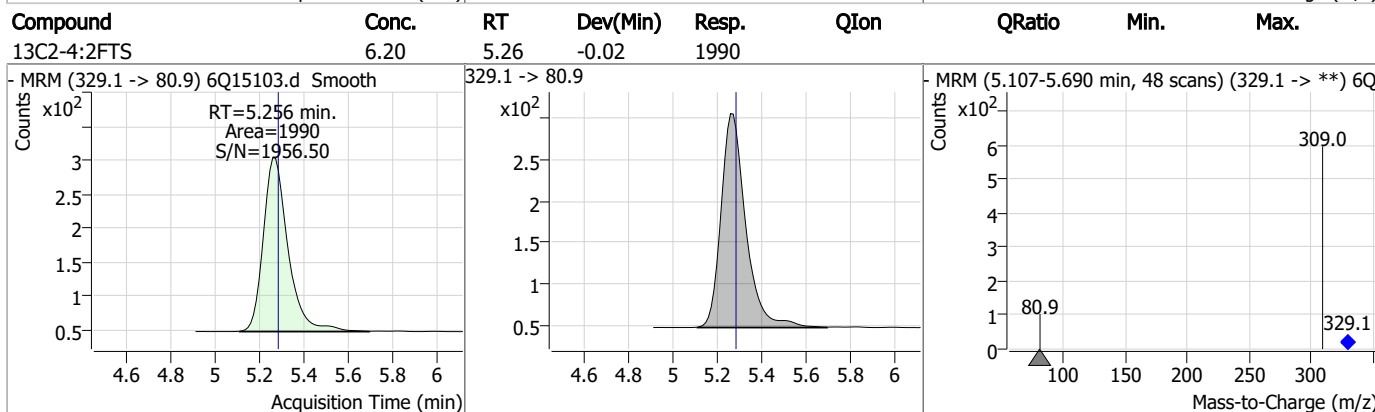
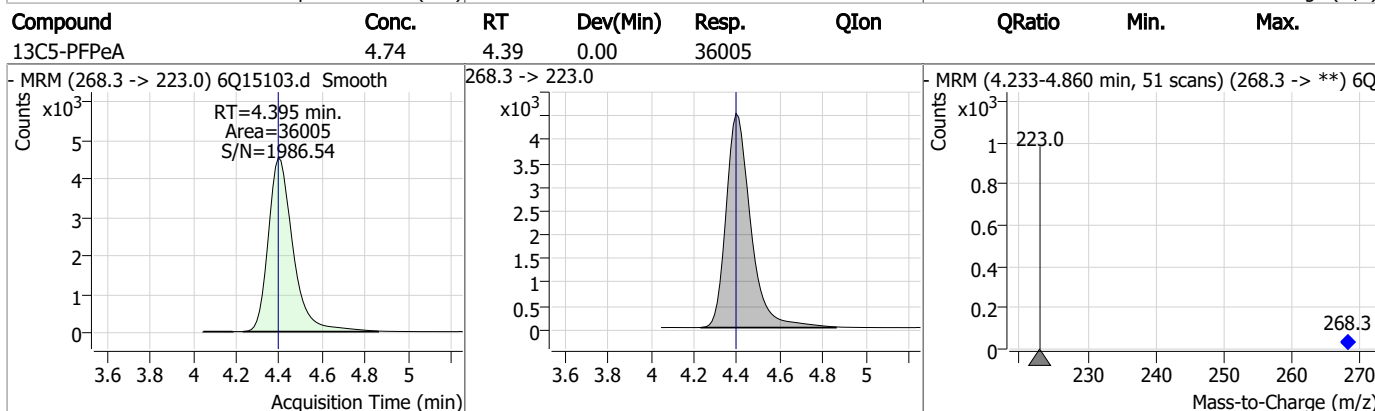
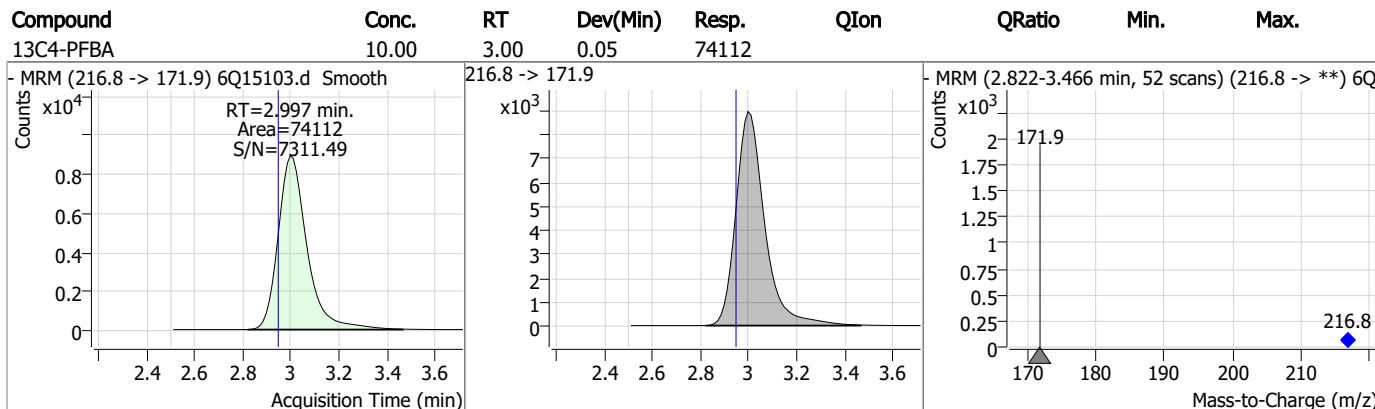
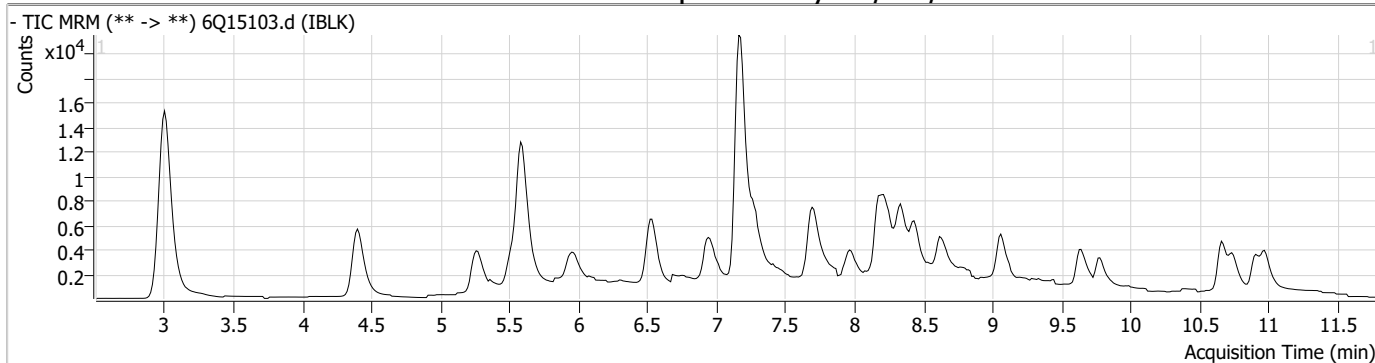
Perfluorinated Compounds by LC/MS/MS

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

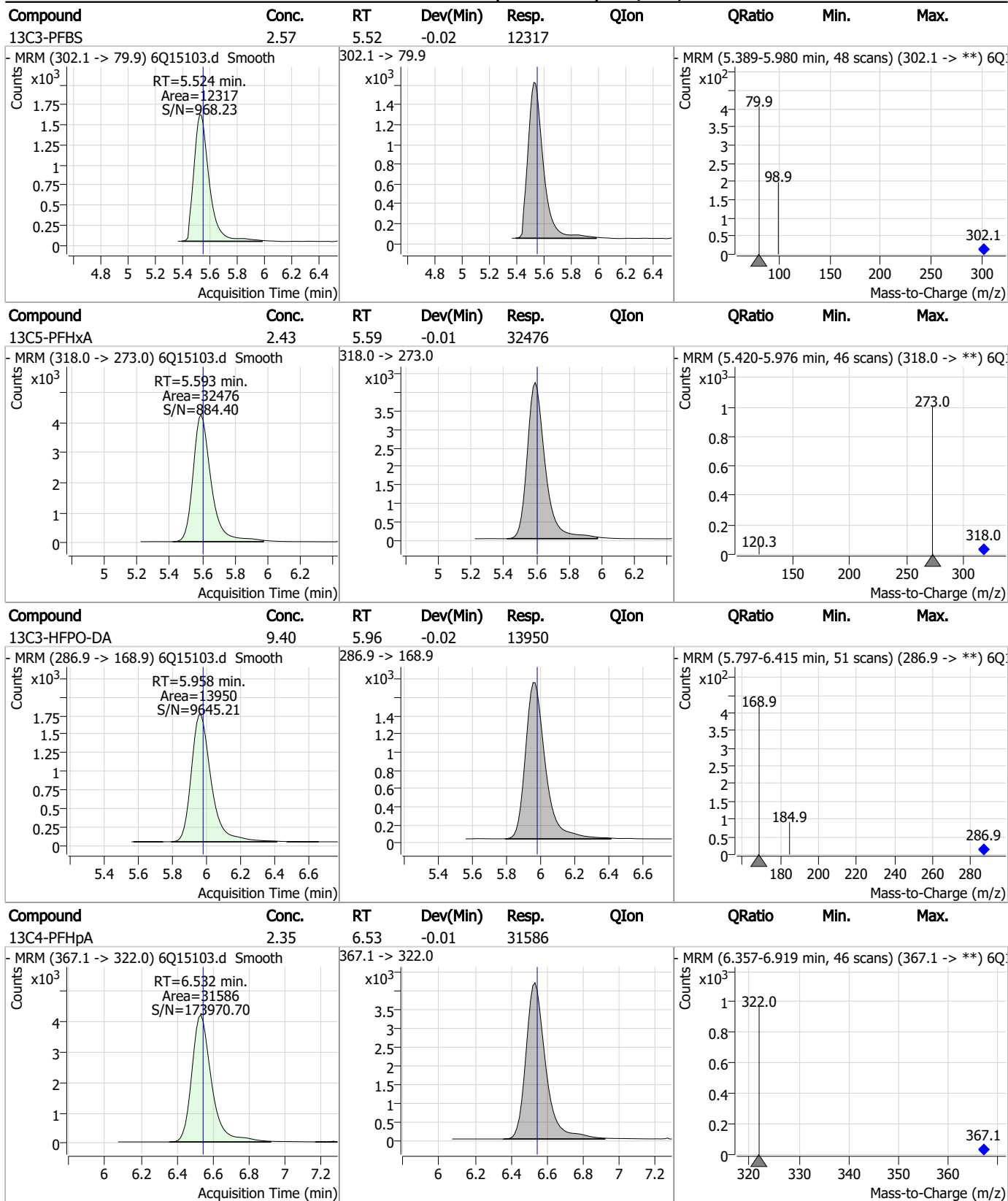
7

Perfluorinated Compounds by LC/MS/MS



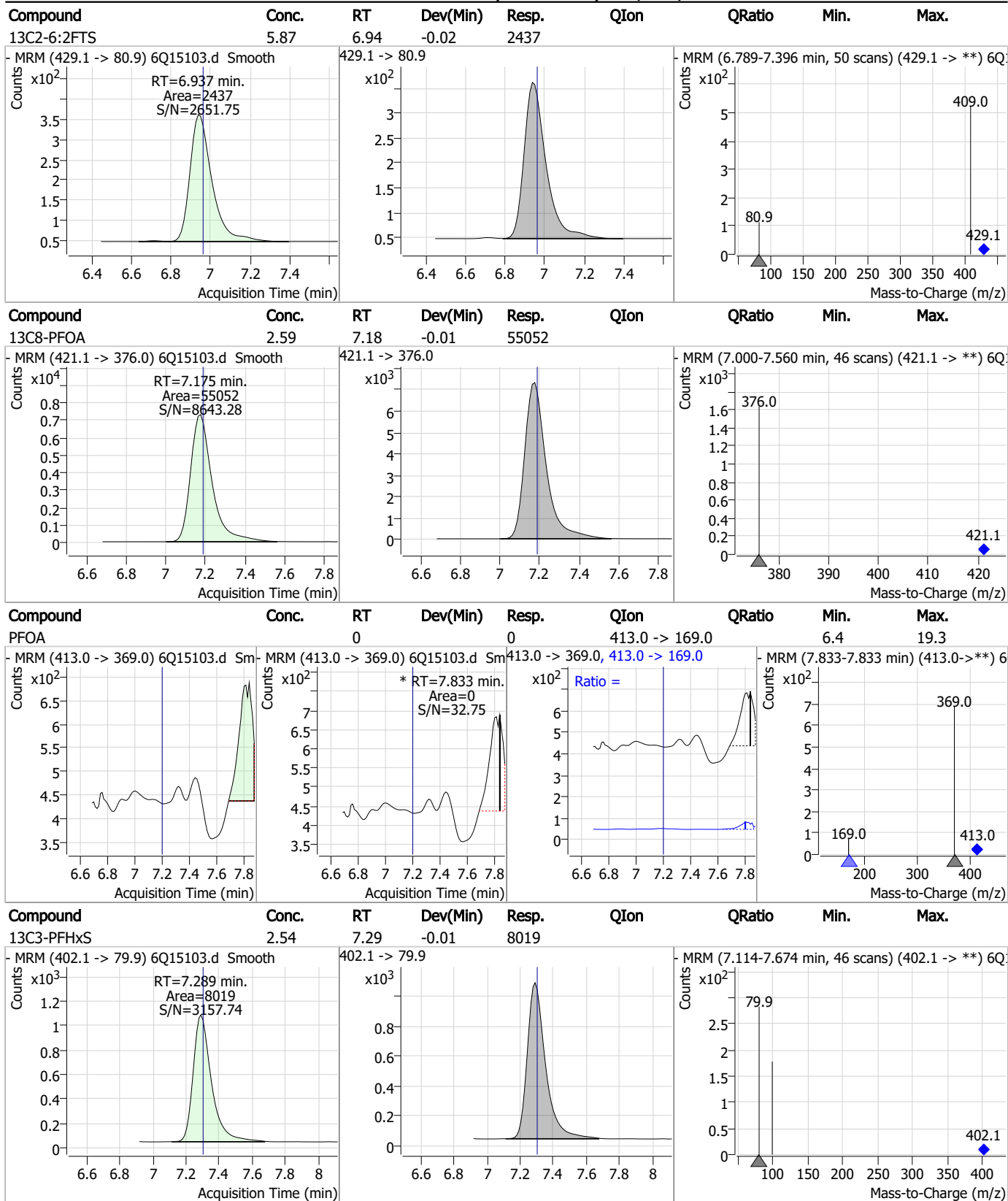
7.2.2
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Perfluorinated Compounds by LC/MS/MS



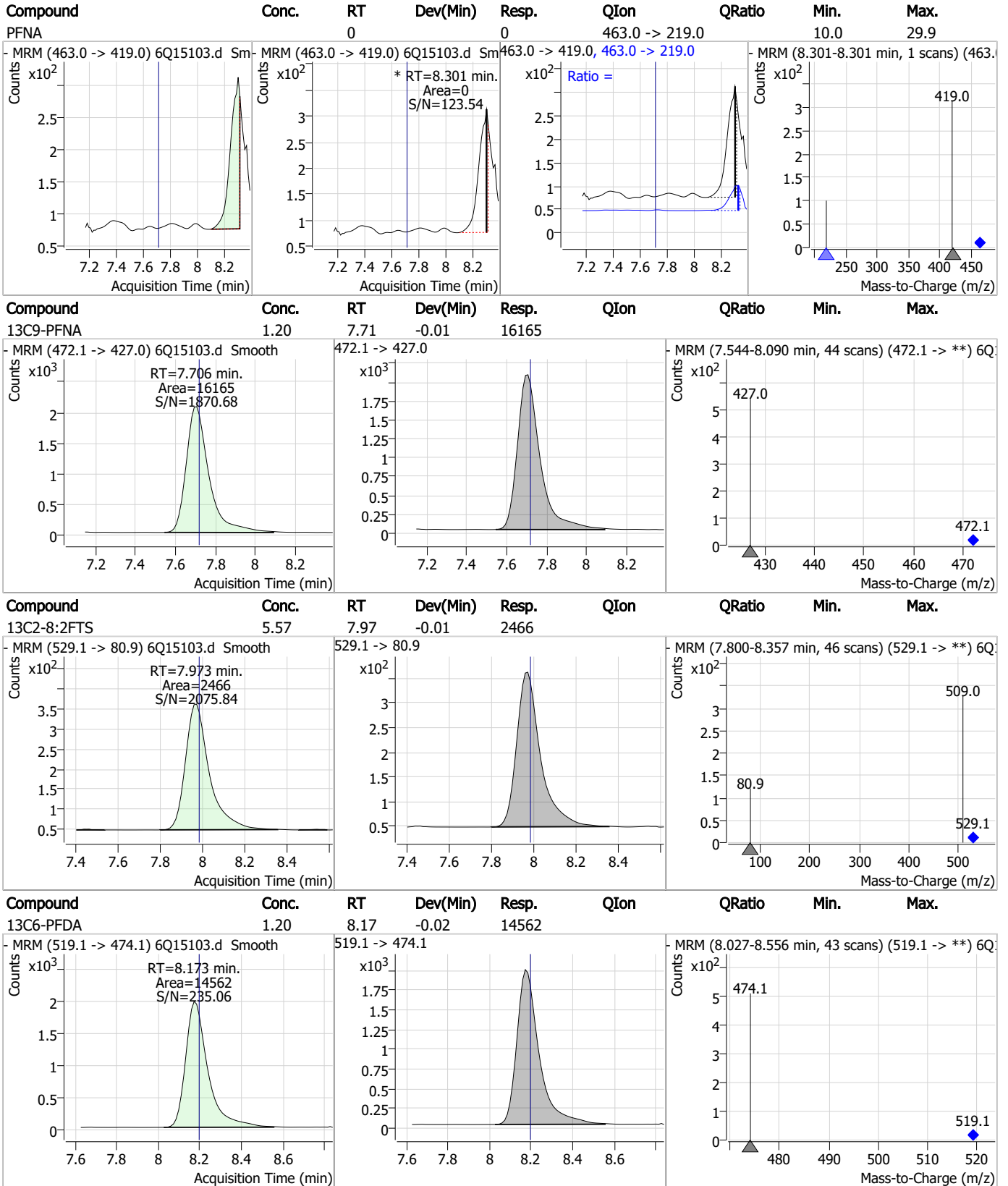
7.2.2
7

Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS

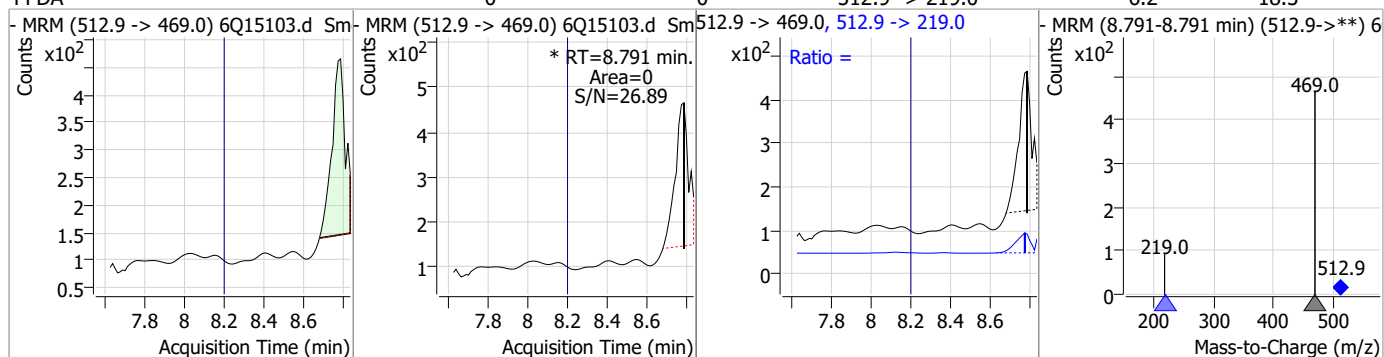


7.2.2

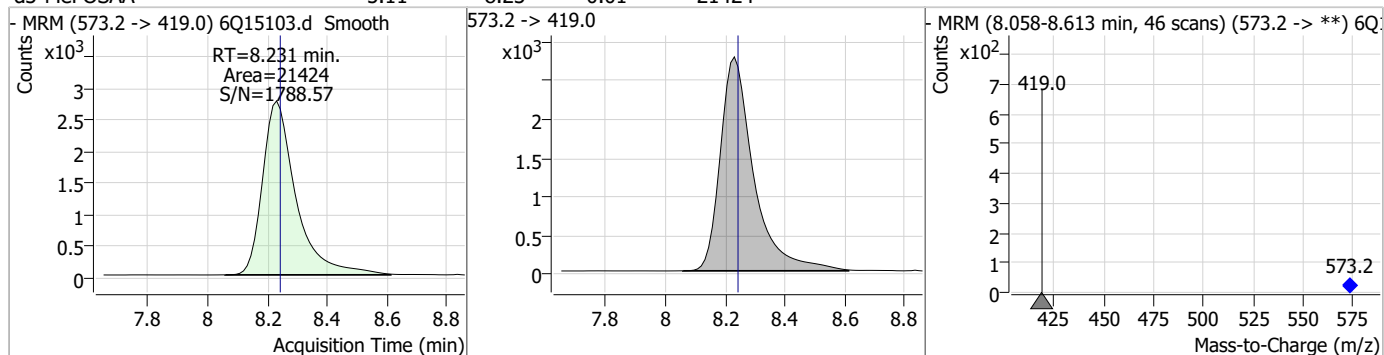
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Perfluorinated Compounds by LC/MS/MS

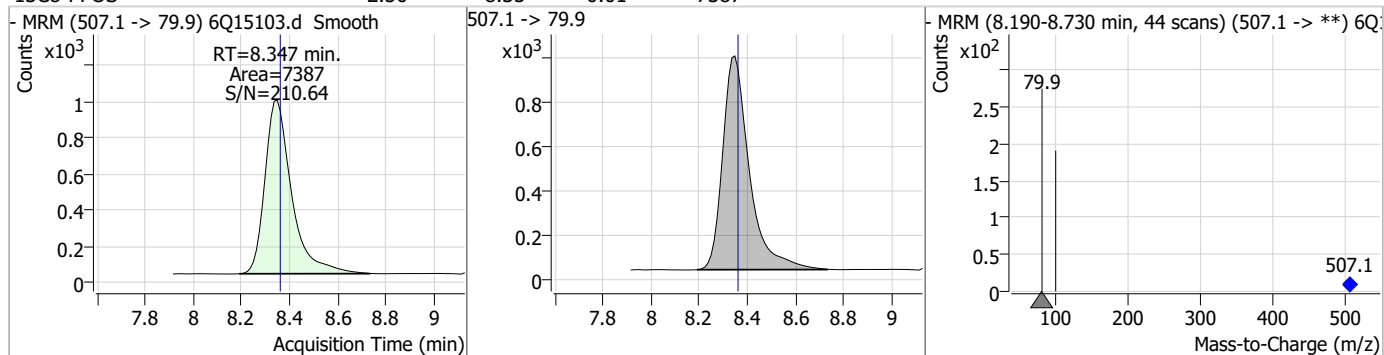
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0			0	512.9 -> 219.0		6.2	18.5



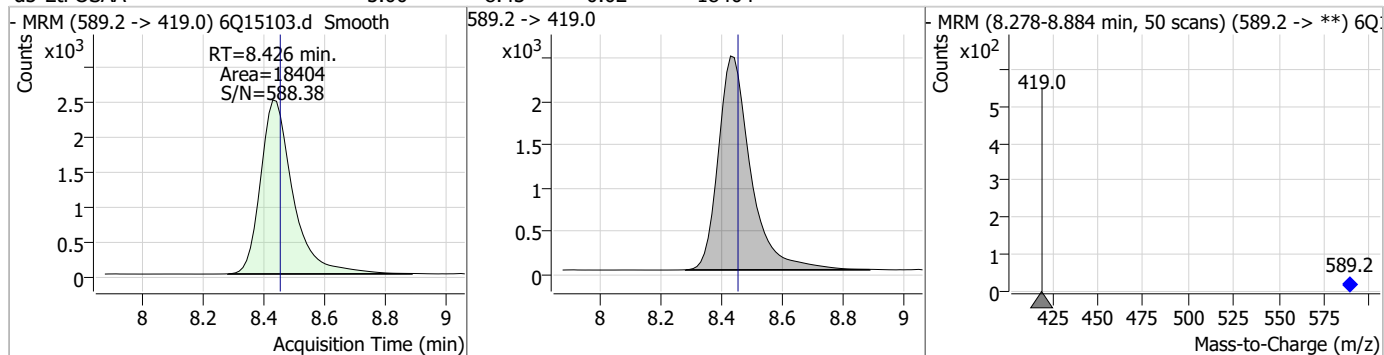
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.11	8.23	-0.01	21424				



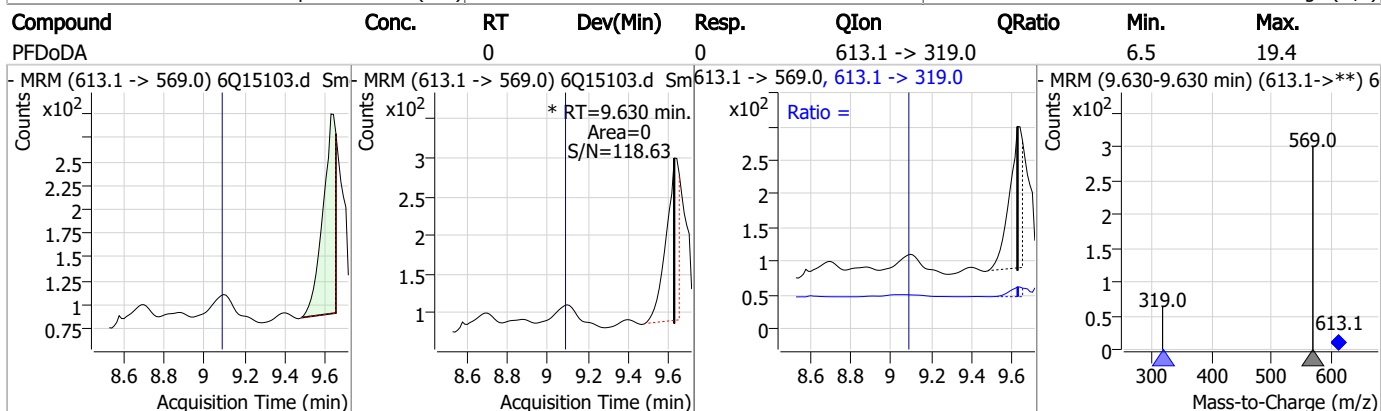
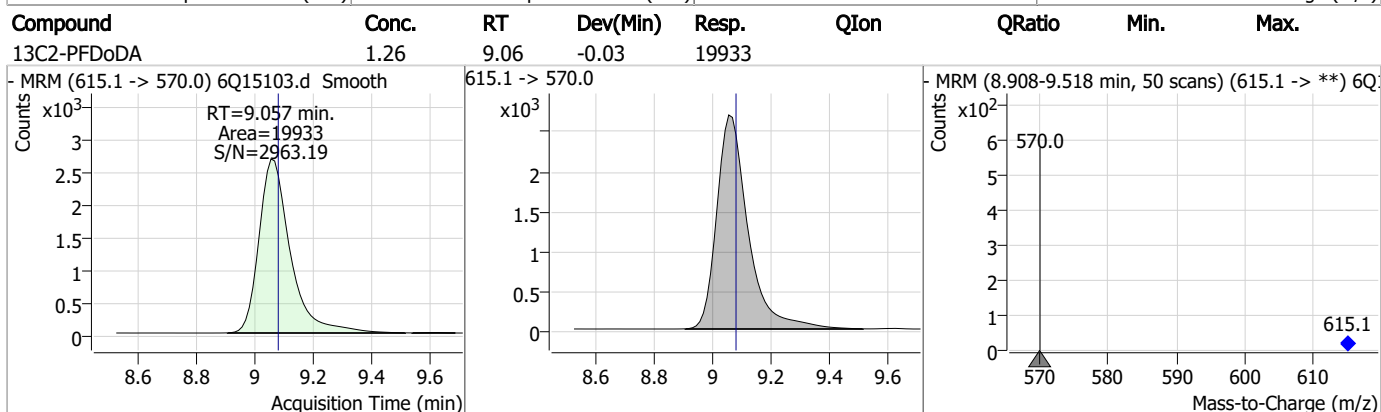
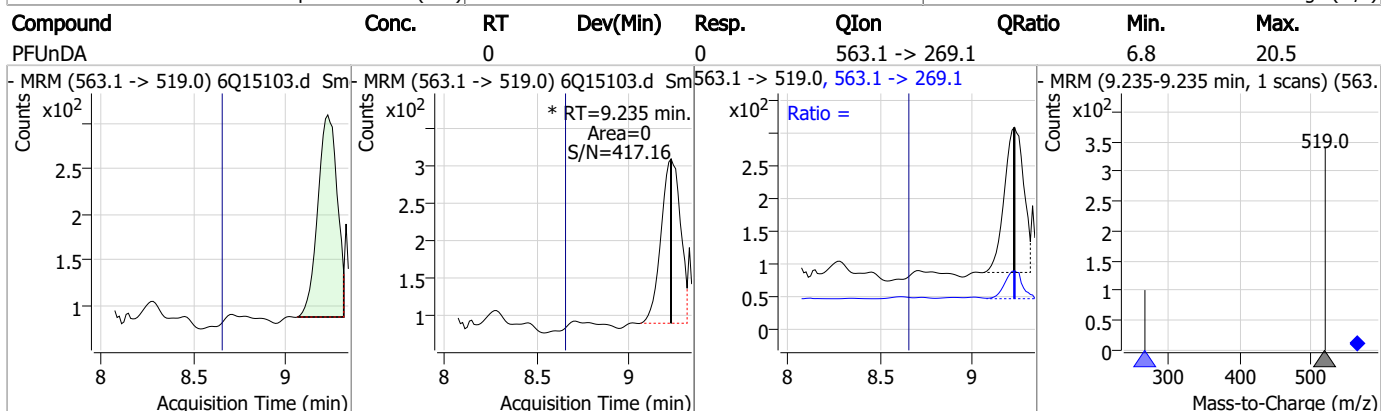
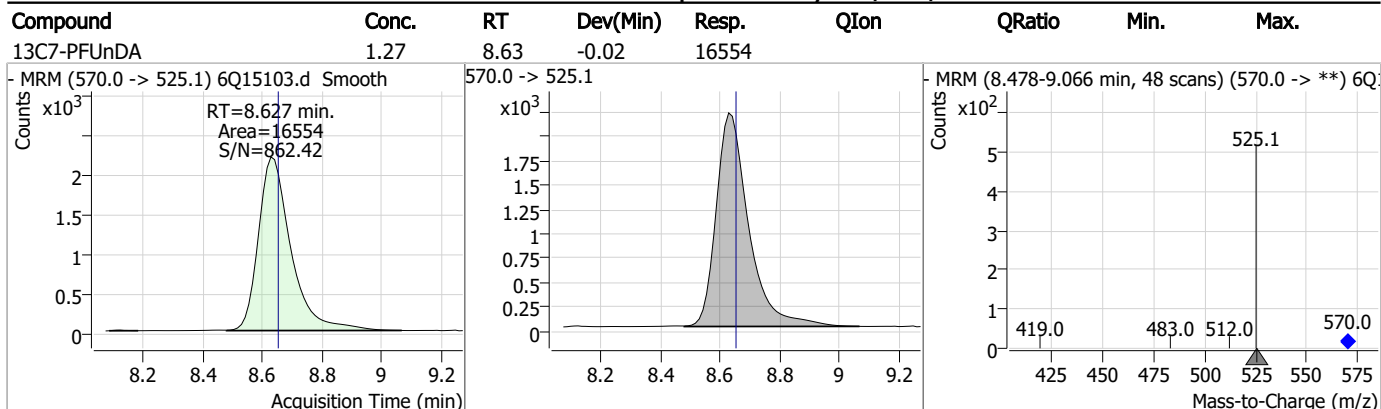
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.50	8.35	-0.01	7387				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.00	8.43	-0.02	18404				

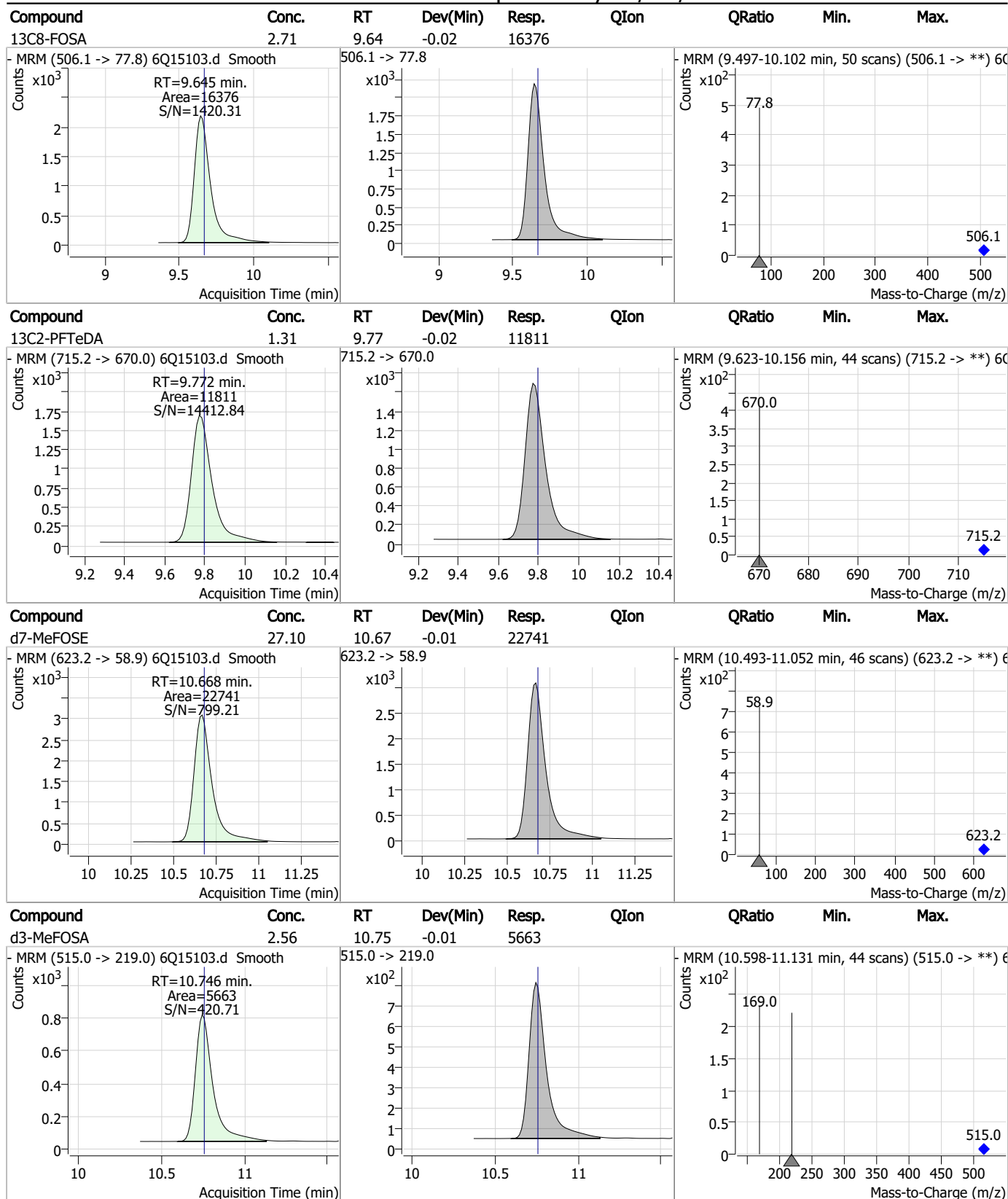


Perfluorinated Compounds by LC/MS/MS



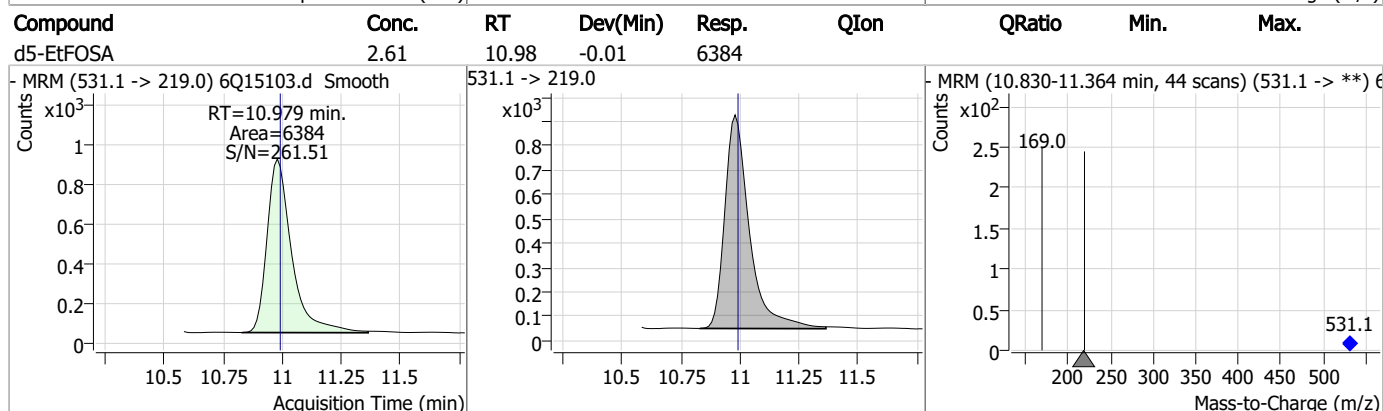
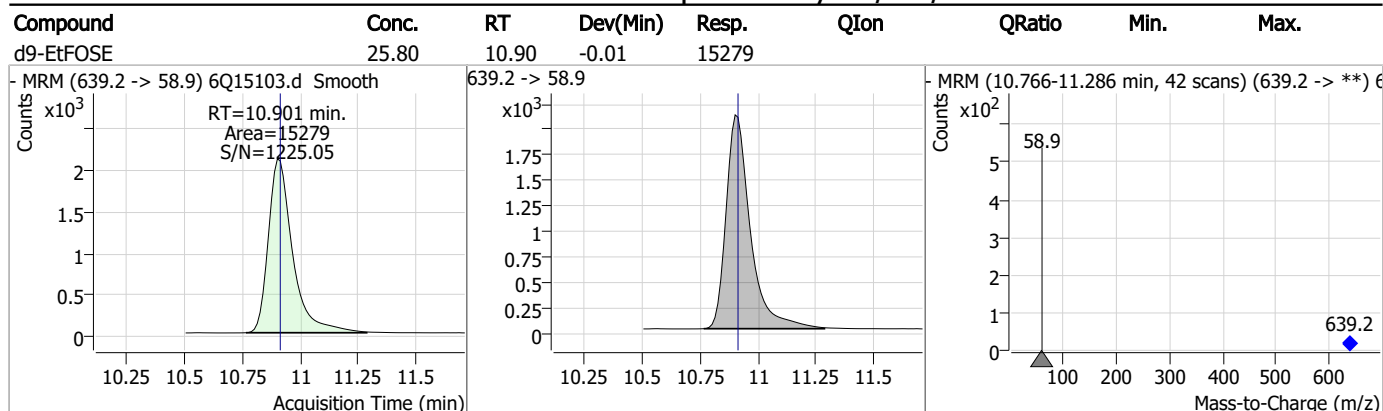
7.22
7

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 : 6Q15117.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 6:29:58 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	76892	10.00 µg/L	0.025
M5-PFPeA	4.382	268.3 -> 223.0	36059	5.00 µg/L	-0.012
M5-PFHxA	5.580	318.0 -> 273.0	32611	2.50 µg/L	-0.025
M4-PFHpA	6.532	367.1 -> 322.0	32368	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	56953	2.50 µg/L	-0.012
M9-PFNA	7.706	472.1 -> 427.0	18936	1.25 µg/L	-0.012
M6-PFDA	8.185	519.1 -> 474.1	14425	1.25 µg/L	-0.012
M7-PFUnDA	8.639	570.0 -> 525.1	16250	1.25 µg/L	-0.012
M2-PFDoDA	9.057	615.1 -> 570.0	20186	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	12260	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	15255	2.50 µg/L	-0.025
M3-PFBS	5.523	302.1 -> 79.9	11961	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	8243	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	7654	2.50 µg/L	-0.013
M2-4:2FTS	5.256	329.1 -> 80.9	1888	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2400	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2421	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	21630	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	13635	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	19569	5.00 µg/L	-0.025
M7-MeFOSE	10.656	623.2 -> 58.9	22542	25.00 µg/L	-0.025
M9-EtFOSE	10.901	639.2 -> 58.9	16539	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	6124	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	5520	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	9022	2.50 µg/L	-0.025
13C3-PFBA	2.964	216.0 -> 172.0	33095	5.00 µg/L	0.012
18O2-PFHxS	7.288	403.0 -> 83.9	5674	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	67291	2.50 µg/L	-0.012
13C2-PFDA	8.185	515.1 -> 470.1	20140	1.25 µg/L	-0.012
13C5-PFNA	7.706	468.0 -> 423.0	18839	1.25 µg/L	-0.012
13C2-PFHxA	5.581	315.1 -> 270.0	32462	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1888	5.80 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.0%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2400	5.69 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.8%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2421	5.39 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C2-PFDoDA	9.057	615.1 -> 570.0	20186	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C2-PFTeDA	9.772	715.2 -> 670.0	12260	1.36 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.1%		
13C3-PFBS	5.523	302.1 -> 79.9	11961	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C3-PFHxS	7.289	402.1 -> 79.9	8243	2.57 µg/L	-0.013

7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C4-PFBA	2.972	216.8 -> 171.9	76892	10.12 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C4-PFHpA	6.532	367.1 -> 322.0	32368	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C5-PFHxA	5.580	318.0 -> 273.0	32611	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C5-PFPeA	4.382	268.3 -> 223.0	36059	4.81 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C6-PFDA	8.185	519.1 -> 474.1	14425	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C7-PFUnDA	8.639	570.0 -> 525.1	16250	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-FOSA	9.645	506.1 -> 77.8	15255	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C8-PFOA	7.175	421.1 -> 376.0	56953	2.54 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOS	8.347	507.1 -> 79.9	7654	2.50 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C9-PFNA	7.706	472.1 -> 427.0	18936	1.30 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.3%	
d3-MeFOSAA	8.231	573.2 -> 419.0	21630	4.99 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C3-HFPO-DA	5.958	286.9 -> 168.9	13635	9.30 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.0%	
d3-MeFOSA	10.746	515.0 -> 219.0	5520	2.41 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
d5-EtFOSAA	8.426	589.2 -> 419.0	19569	5.14 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.7%	
d7-MeFOSE	10.656	623.2 -> 58.9	22542	25.97 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d9-EtFOSE	10.901	639.2 -> 58.9	16539	27.00 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 108.0%	
d5-EtFOSA	10.979	531.1 -> 219.0	6124	2.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	

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
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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	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	8.313	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.222	563.1 -> 519.0	0	µg/L	m	1
		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

7.2.3
7

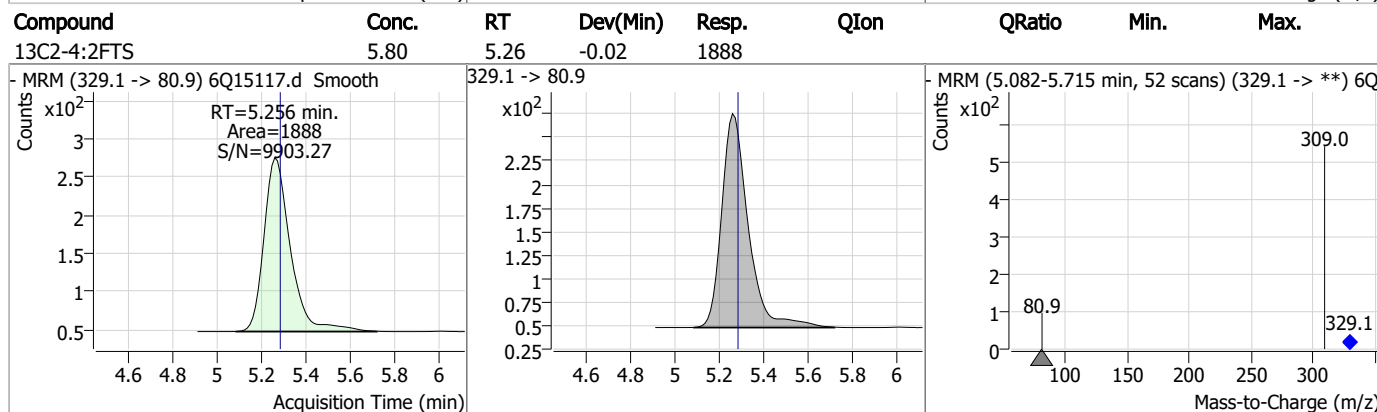
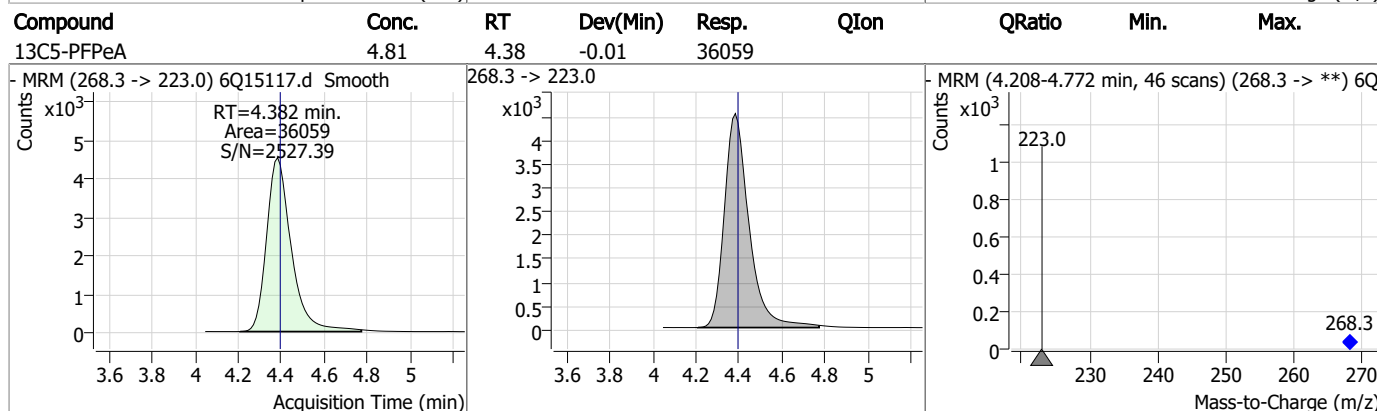
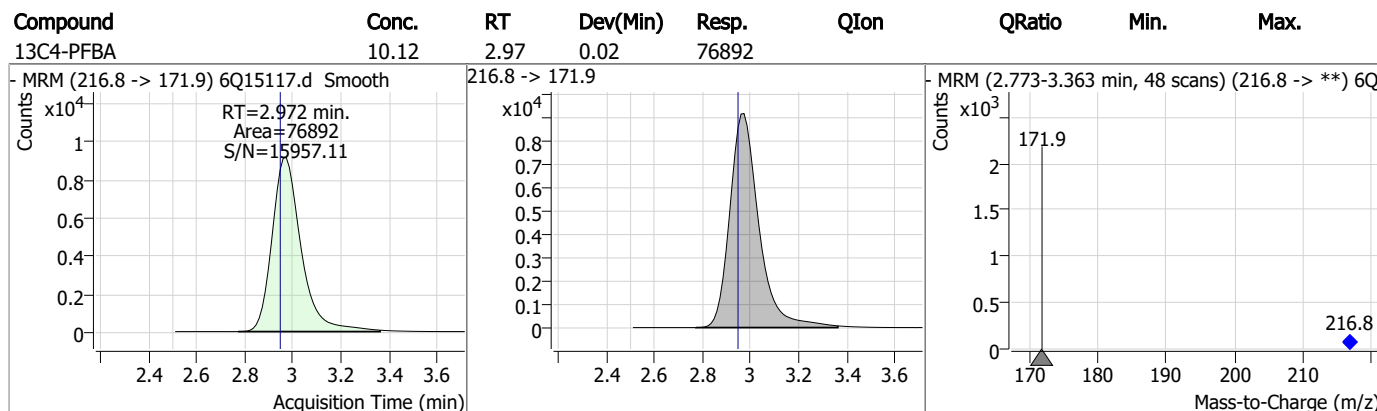
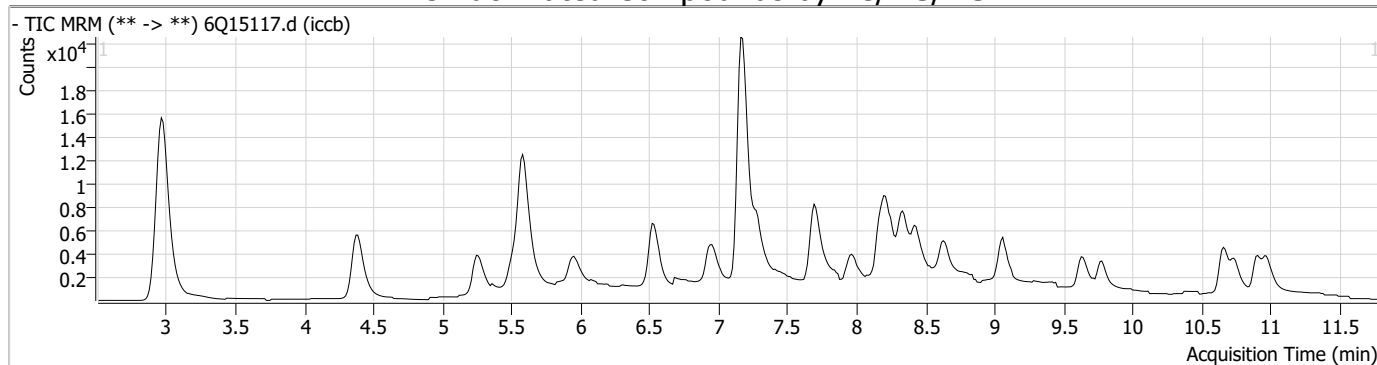
Perfluorinated Compounds by LC/MS/MS

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

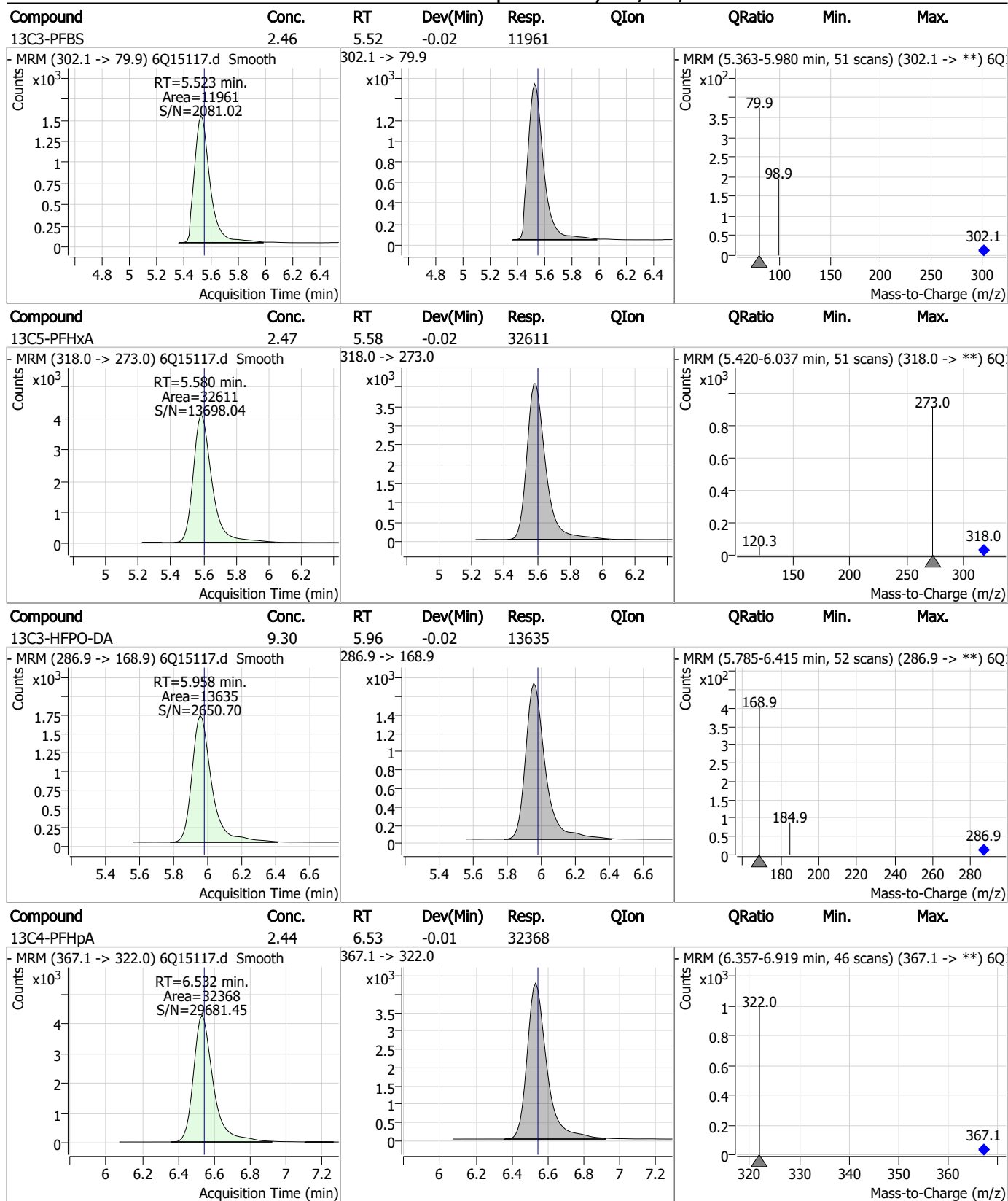
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Perfluorinated Compounds by LC/MS/MS



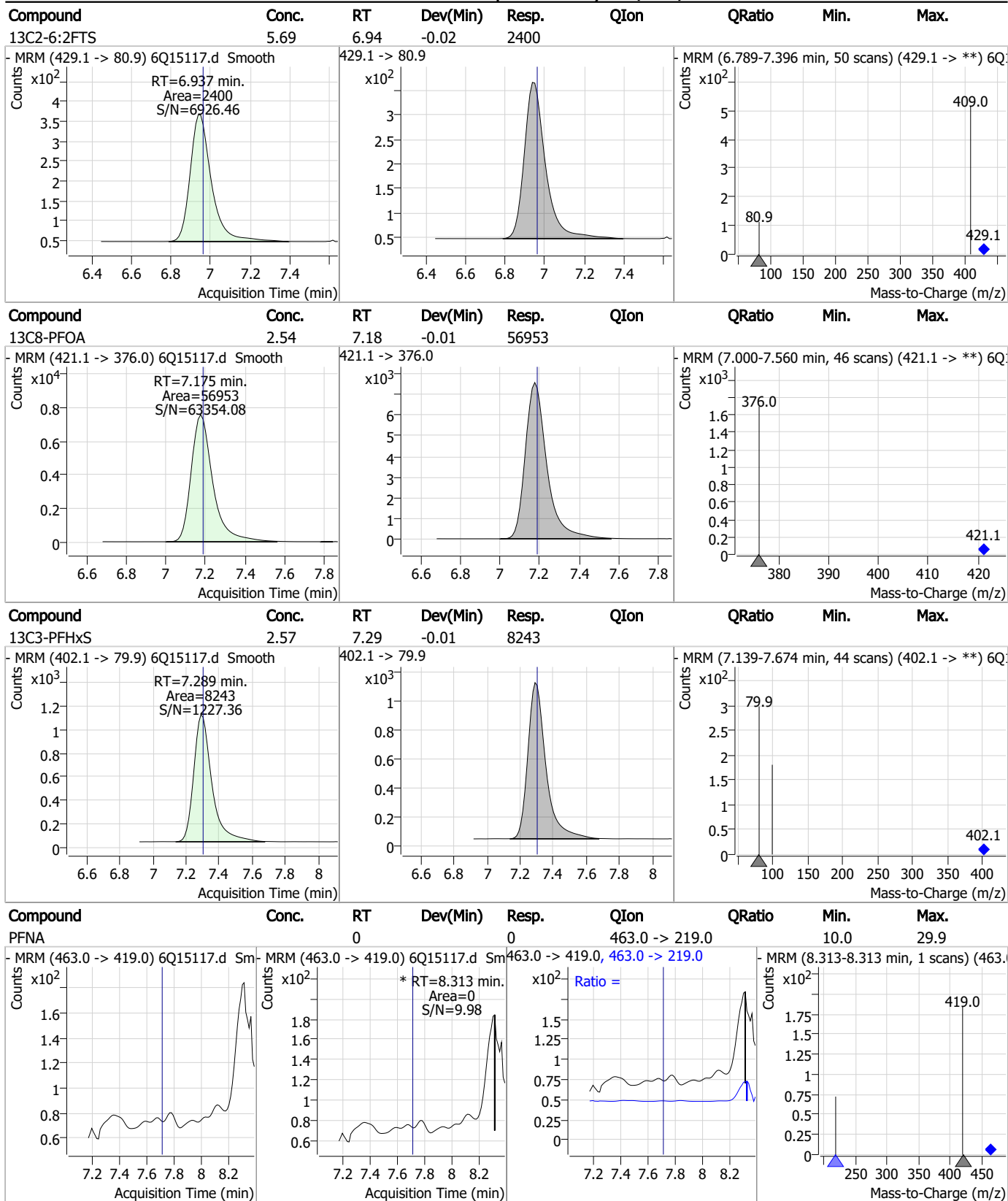
7.2.3
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Perfluorinated Compounds by LC/MS/MS



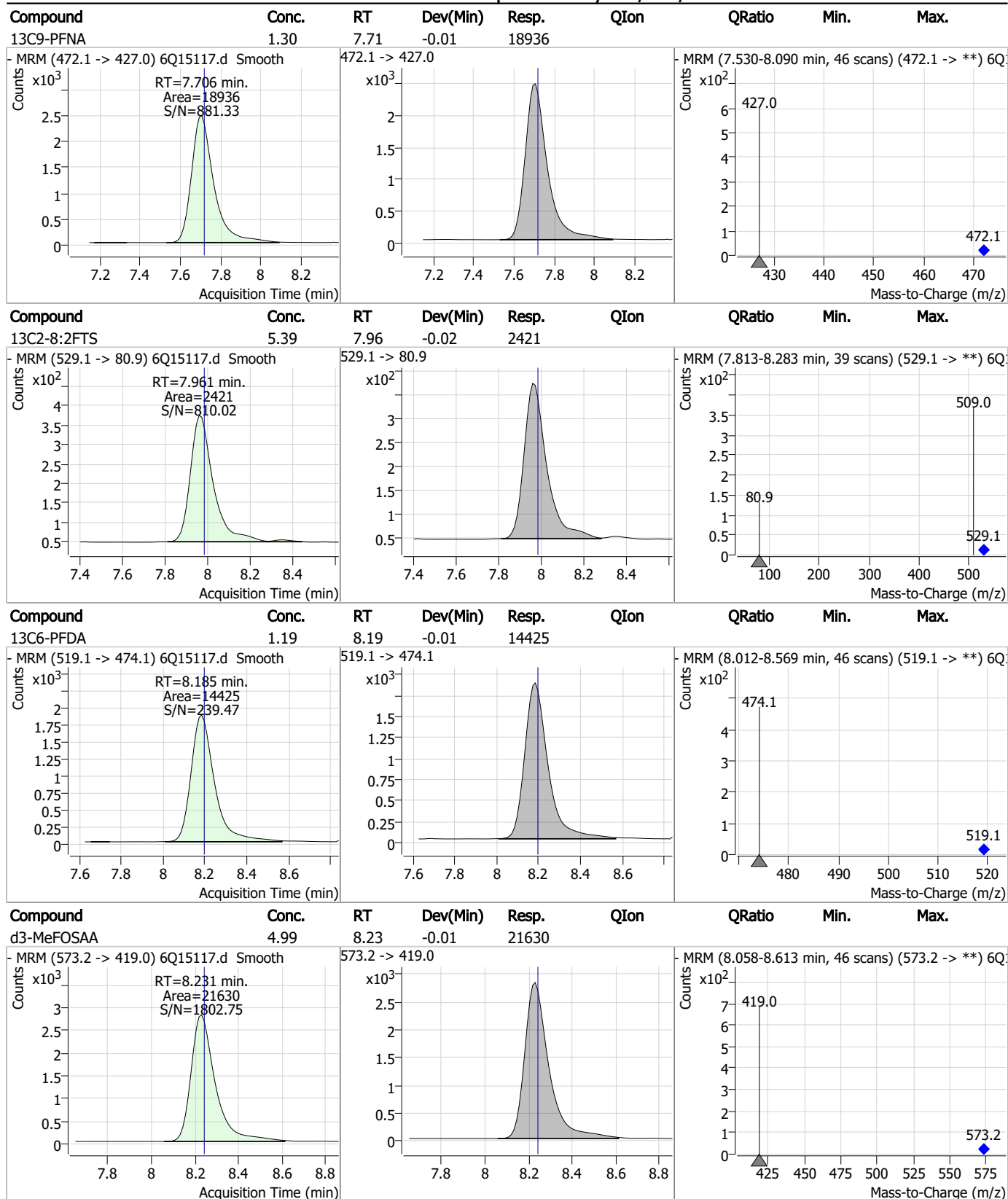
7.2.3
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Perfluorinated Compounds by LC/MS/MS



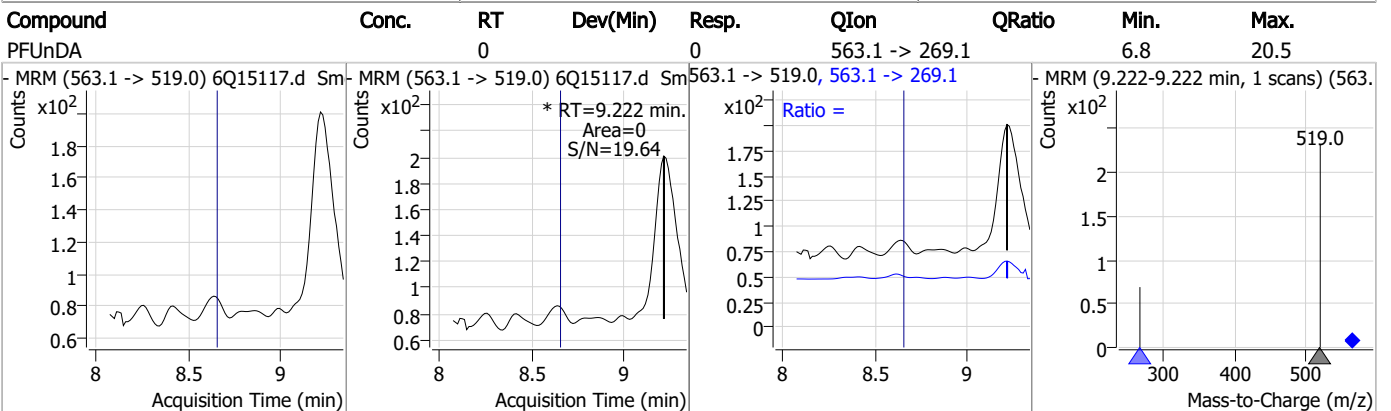
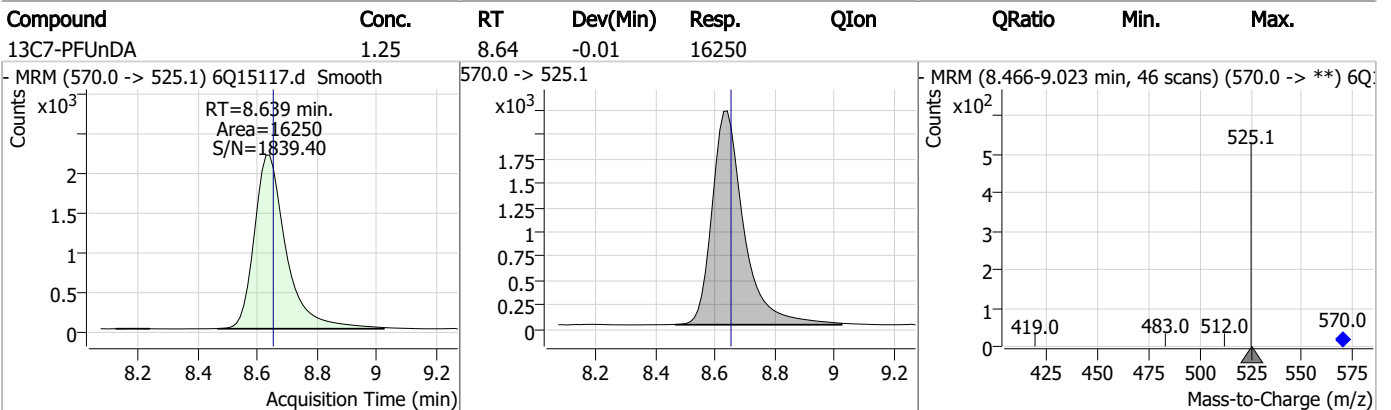
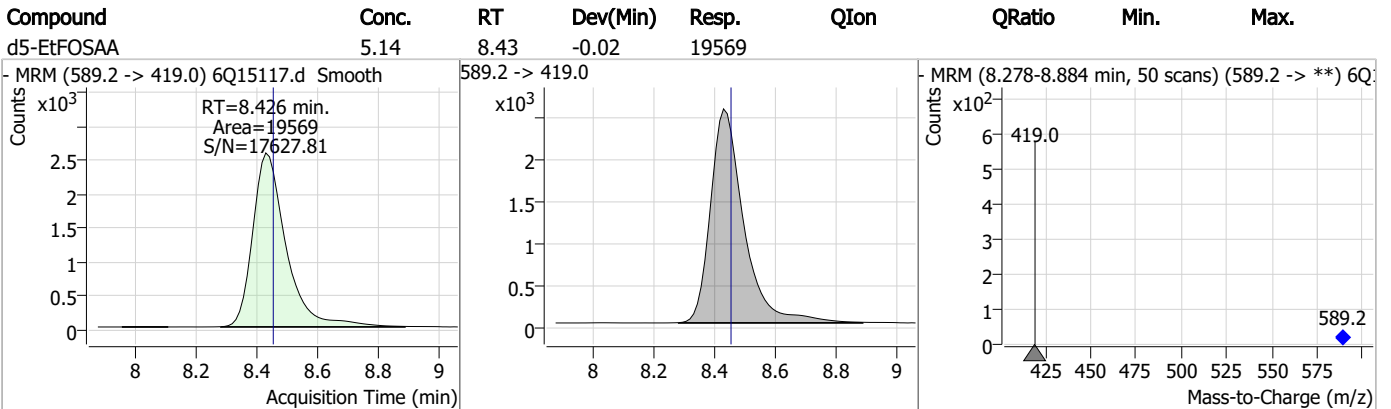
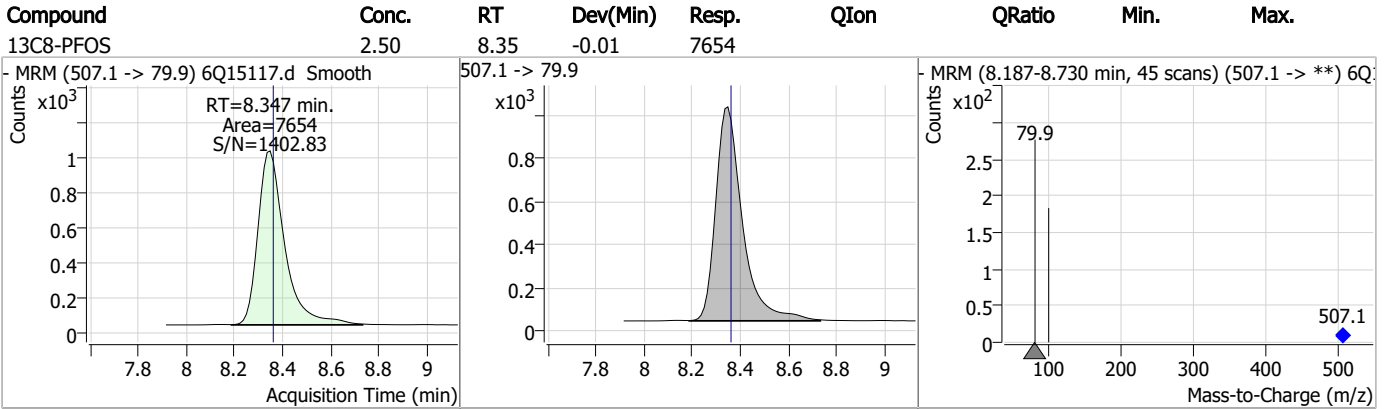
7.2.3
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Perfluorinated Compounds by LC/MS/MS



7.2.3
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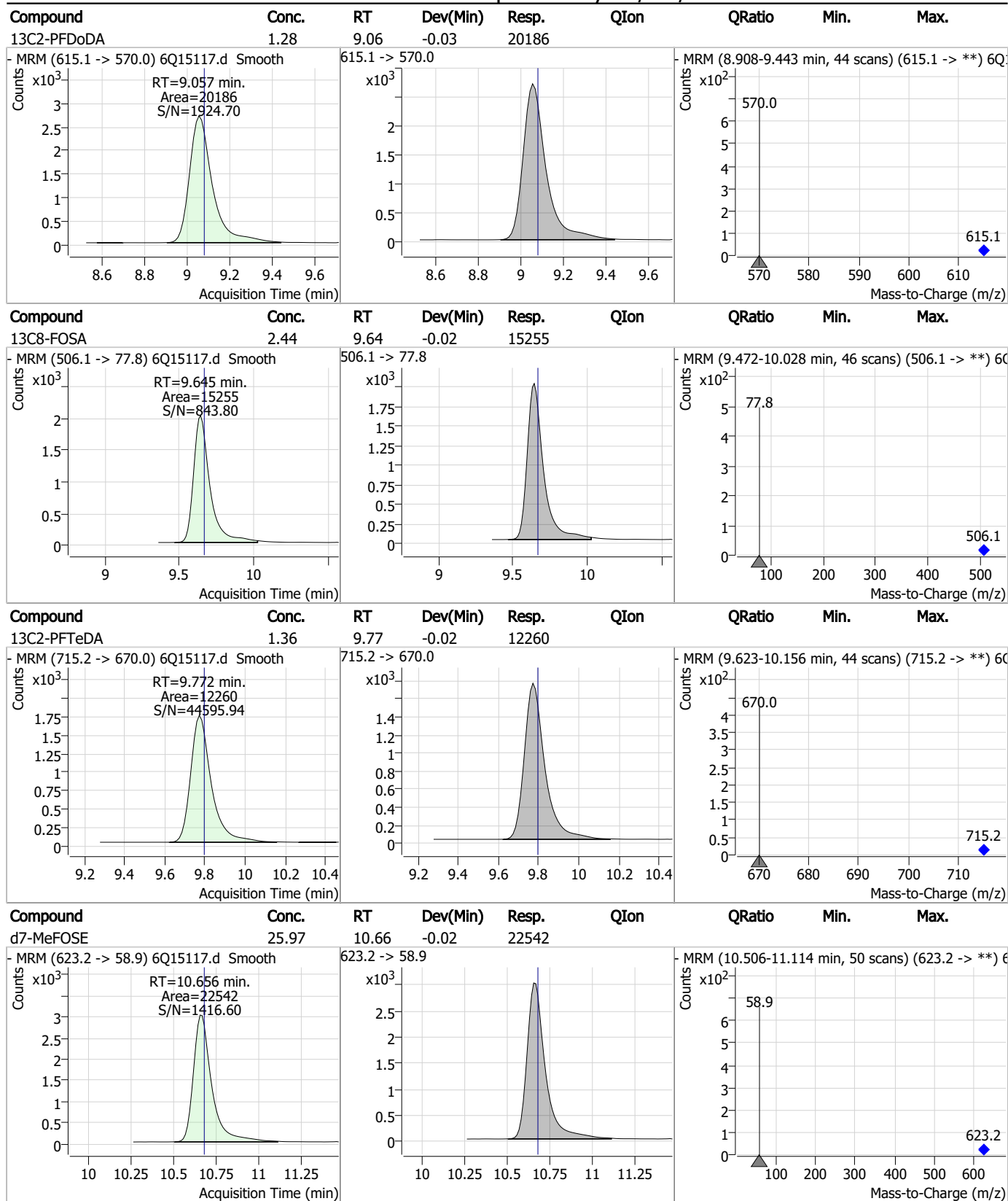
Perfluorinated Compounds by LC/MS/MS



7.2.3

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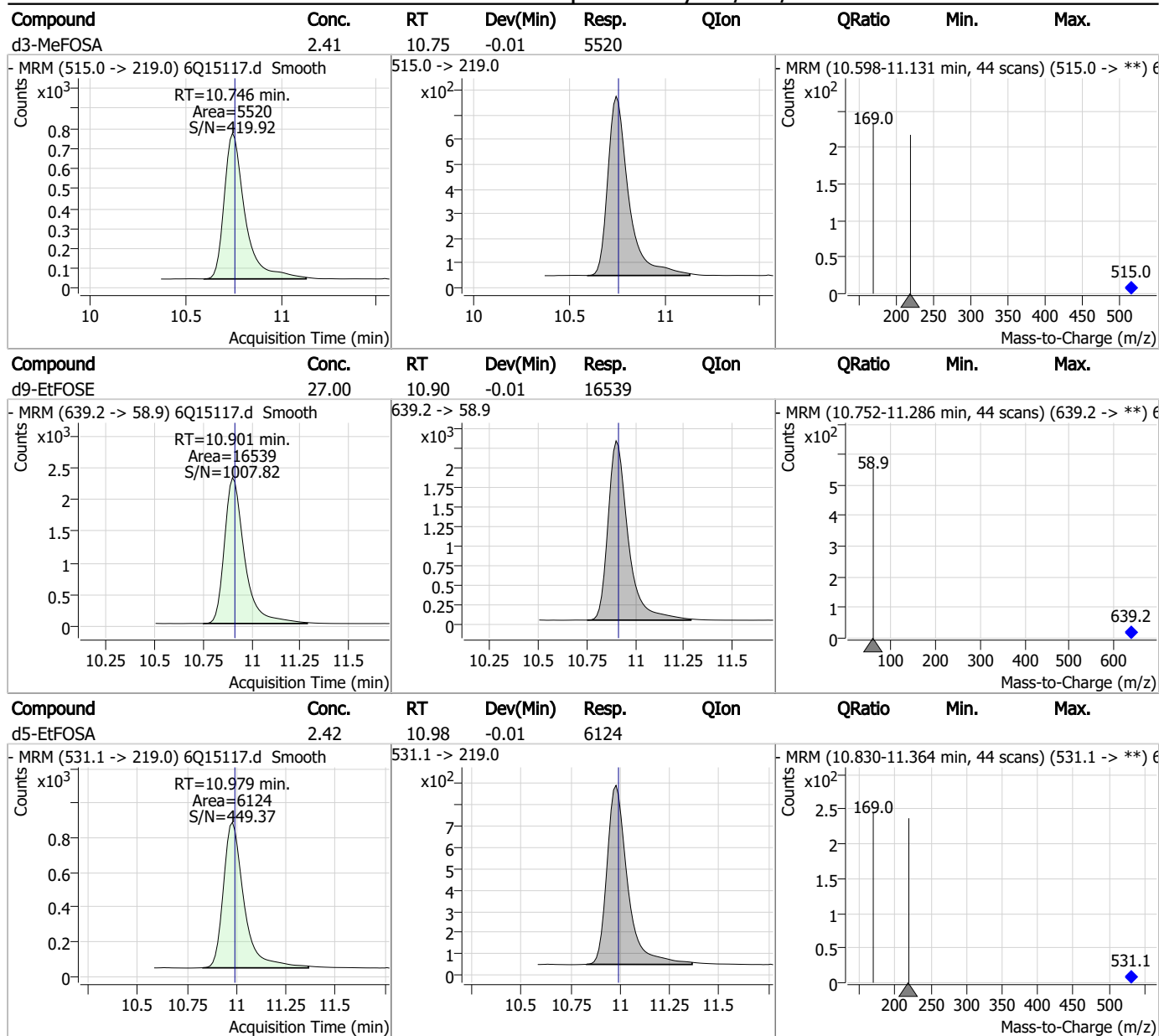
Perfluorinated Compounds by LC/MS/MS



7.2.3
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

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 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 3:55:32 PM
 Sample Name : op95968-bs
 Vial : P3-A1
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95968,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	44923	10.00 µg/L	0.025
M5-PFPeA	4.382	268.3 -> 223.0	34318	5.00 µg/L	-0.012
M5-PFHxA	5.580	318.0 -> 273.0	30571	2.50 µg/L	-0.025
M4-PFHpA	6.519	367.1 -> 322.0	29794	2.50 µg/L	-0.025
M8-PFOA	7.162	421.1 -> 376.0	52305	2.50 µg/L	-0.025
M9-PFNA	7.693	472.1 -> 427.0	16542	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	15107	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	15533	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	18529	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	9978	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	14630	2.50 µg/L	-0.025
M3-PFBS	5.523	302.1 -> 79.9	11960	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	7956	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	6713	2.50 µg/L	-0.013
M2-4:2FTS	5.256	329.1 -> 80.9	1809	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2243	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2231	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	20556	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	13522	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	19124	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	20475	25.00 µg/L	-0.012
M9-EtFOSE	10.914	639.2 -> 58.9	13628	25.00 µg/L	0.000
M5-EtFOSA	10.979	531.1 -> 219.0	5301	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	4733	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	7967	2.50 µg/L	-0.025
13C3-PFBA	2.976	216.0 -> 172.0	30501	5.00 µg/L	0.025
18O2-PFHxS	7.288	403.0 -> 83.9	5140	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	59245	2.50 µg/L	-0.012
13C2-PFDA	8.173	515.1 -> 470.1	17703	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	17502	1.25 µg/L	-0.025
13C2-PFHxA	5.581	315.1 -> 270.0	29233	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1809	6.14 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.7%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2243	5.87 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.5%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2231	5.48 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C2-PFDoDA	9.057	615.1 -> 570.0	18529	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-PFTeDA	9.772	715.2 -> 670.0	9978	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C3-PFBS	5.523	302.1 -> 79.9	11960	2.72 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C3-PFHxS	7.289	402.1 -> 79.9	7956	2.74 µg/L	-0.013

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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 = 109.7%		
13C4-PFBA	2.972	216.8 -> 171.9	44923	6.42 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 64.2%		
13C4-PFHpA	6.519	367.1 -> 322.0	29794	2.49 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C5-PFHxA	5.580	318.0 -> 273.0	30571	2.57 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C5-PFPeA	4.382	268.3 -> 223.0	34318	5.08 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C6-PFDA	8.173	519.1 -> 474.1	15107	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.6%		
13C7-PFUnDA	8.627	570.0 -> 525.1	15533	1.36 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.6%		
13C8-FOSA	9.645	506.1 -> 77.8	14630	2.65 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C8-PFOA	7.162	421.1 -> 376.0	52305	2.64 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C8-PFOS	8.347	507.1 -> 79.9	6713	2.48 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C9-PFNA	7.693	472.1 -> 427.0	16542	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
d3-MeFOSAA	8.231	573.2 -> 419.0	20556	5.37 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	13522	10.24 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
d3-MeFOSA	10.746	515.0 -> 219.0	4733	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.6%		
d5-EtFOSAA	8.426	589.2 -> 419.0	19124	5.68 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.7%		
d7-MeFOSE	10.668	623.2 -> 58.9	20475	26.72 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 106.9%		
d9-EtFOSE	10.914	639.2 -> 58.9	13628	25.19 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
d5-EtFOSA	10.979	531.1 -> 219.0	5301	2.37 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
Target Compounds					QValue
4:2FTS	5.256	327.1 -> 307.0	36857	8.81 µg/L	100
		327.1 -> 80.9	9263		
6:2FTS	6.937	427.1 -> 407.0	34394	10.32 µg/L	96
		427.1 -> 80.9	6843		
8:2FTS	7.962	527.1 -> 507.0	18986	11.58 µg/L	94
		527.1 -> 80.8	4501		
EtFOSAA	8.427	584.2 -> 419.1	7338	2.11 µg/L	97
		584.2 -> 526.0	3877		
FOSA	9.647	498.1 -> 77.9	15692	2.68 µg/L	99
		498.1 -> 478.0	644		
MeFOSAA	8.232	570.1 -> 419.0	10105	2.35 µg/L	97
		570.1 -> 483.0	1897		
PFBA	2.981	212.8 -> 168.9	11476	9.36 µg/L	100
PFBS	5.525	298.7 -> 79.9	10593	2.01 µg/L	99
		298.7 -> 98.8	4836		
PFDA	8.174	512.9 -> 469.0	40461	2.16 µg/L	94
		512.9 -> 219.0	5990		
PFDoDA	9.057	613.1 -> 569.0	36620	2.29 µg/L	99
		613.1 -> 319.0	4884		
PFDS	9.221	599.0 -> 79.9	5234	2.38 µg/L	91

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8	2918	2.56	µg/L	100
		363.1 -> 319.0	49225			
PFHpS	7.843	363.1 -> 169.0	6839	2.33	µg/L	97
		449.0 -> 79.9	6961			
PFHxA	5.582	449.0 -> 98.9	3978	2.40	µg/L	100
		313.0 -> 269.0	30904			
PFHxS	7.290	313.0 -> 118.9	1229	2.09	µg/L	99
		398.7 -> 79.9	8321			
PFNA	7.694	398.7 -> 98.9	4832	2.34	µg/L	99
		463.0 -> 419.0	27427			
PFNS	8.802	463.0 -> 219.0	5585	2.31	µg/L	100
		548.8 -> 79.9	7345			
PFOA	7.163	548.8 -> 98.9	4277	2.44	µg/L	97
		413.0 -> 369.0	60446			
PFOS	8.336	413.0 -> 169.0	8567	2.34	µg/L	97
		498.9 -> 79.9	7369			
PFPeA	4.385	498.9 -> 98.8	4534	4.83	µg/L	100
		263.0 -> 219.0	39459			
PFPeS	6.584	349.1 -> 79.9	10468	2.18	µg/L	94
		349.1 -> 98.9	5097			
PFTeDA	9.772	713.1 -> 669.0	29411	2.35	µg/L	100
		713.1 -> 168.9	2071			
PFTrDA	9.440	663.0 -> 619.0	33881	2.40	µg/L	98
		663.0 -> 168.9	2952			
PFUnDA	8.627	563.1 -> 519.0	33693	2.29	µg/L	97
		563.1 -> 269.1	4972			
11CI-PF3OUdS	9.493	630.9 -> 450.9	74008	8.85	µg/L	100
		632.9 -> 452.9	23570			
9CI-PF3ONS	8.678	530.8 -> 351.0	132081	8.71	µg/L	92
		532.8 -> 353.0	46613			
ADONA	6.781	376.9 -> 250.9	265967	9.16	µg/L	98
		376.9 -> 84.8	62171			
HFPO-DA	5.959	284.9 -> 168.9	13118	9.22	µg/L	99
		284.9 -> 184.9	1605			
3:3FTCA	3.863	241.0 -> 177.0	4748	11.62	µg/L	98
		241.0 -> 117.0	678			
5:3FTCA	6.246	341.0 -> 237.1	169201	65.08	µg/L	99
		341.0 -> 217.0	142885			
7:3FTCA	7.659	441.0 -> 316.9	85151	65.16	µg/L	100
		441.0 -> 336.9	156342			
EtFOSA	10.993	526.0 -> 219.0	5945	2.33	µg/L	95
		526.0 -> 169.0	5974			
EtFOSE	10.927	630.0 -> 58.9	13898	25.04	µg/L	100
		511.9 -> 219.0	6001			
MeFOSA	10.760	511.9 -> 169.0	5899	2.64	µg/L	91
		616.1 -> 58.9	19573			
MeFOSE	10.681	699.1 -> 79.9	2971	22.64	µg/L	100
		699.1 -> 98.8	1821			
PFDoDS	9.911	295.0 -> 201.0	4121	2.37	µg/L	97
		295.0 -> 84.9	1777			
NFDHA	5.463	279.0 -> 85.1	12836	4.97	µg/L	98
		229.0 -> 84.9	11073			
PFMBA	4.794			4.82	µg/L	100
PFMPA	3.526			4.73	µg/L	100
PFEESA	6.064	314.8 -> 134.9	80054	4.39	µg/L	100
		314.8 -> 82.9	1887			

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

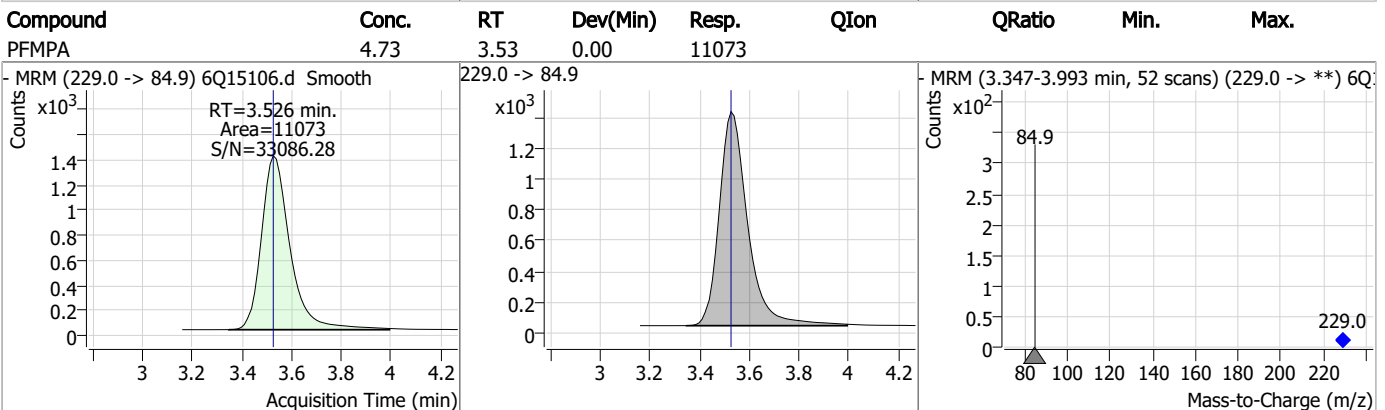
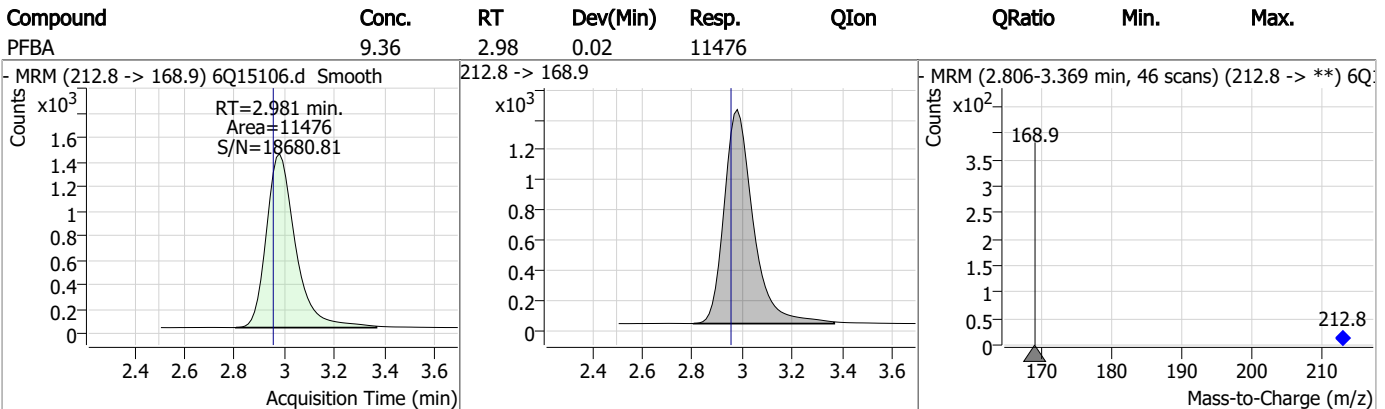
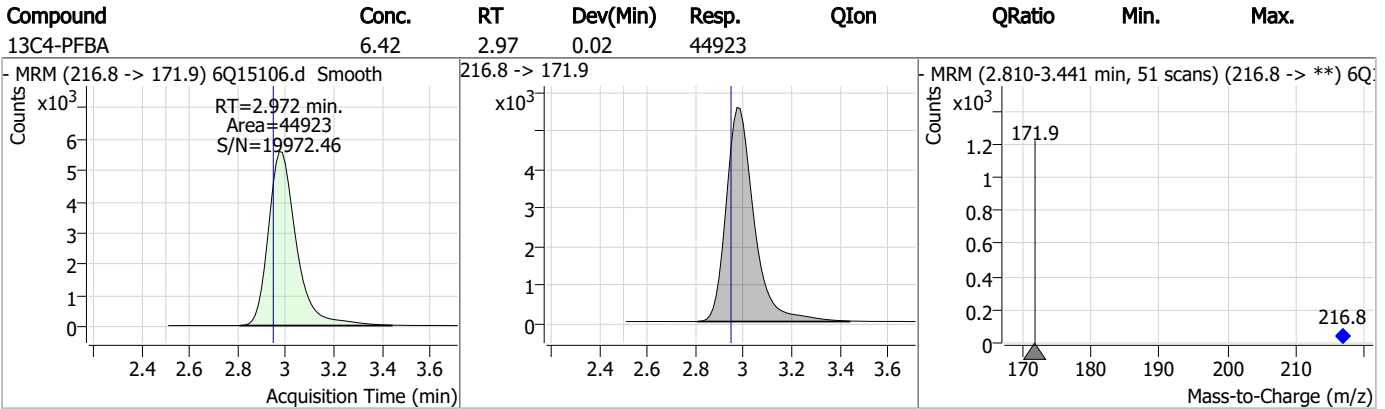
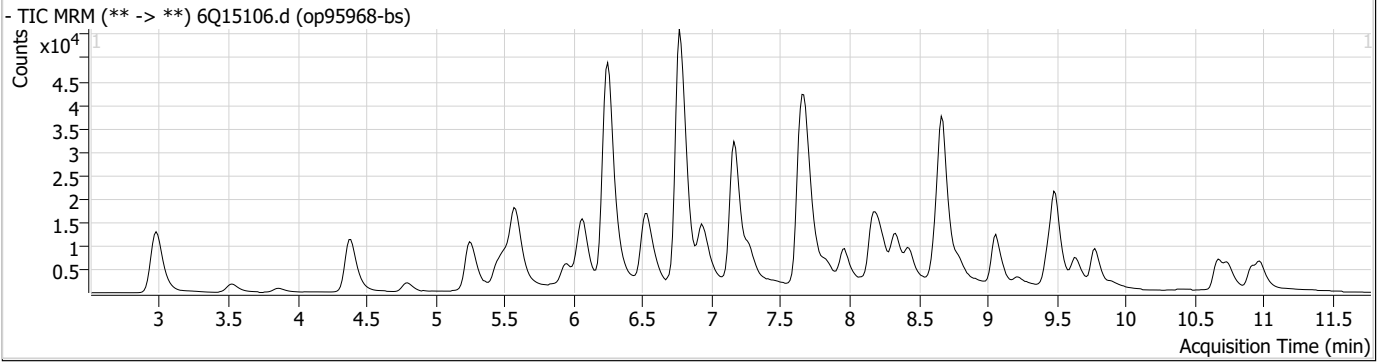
Perfluorinated Compounds by LC/MS/MS

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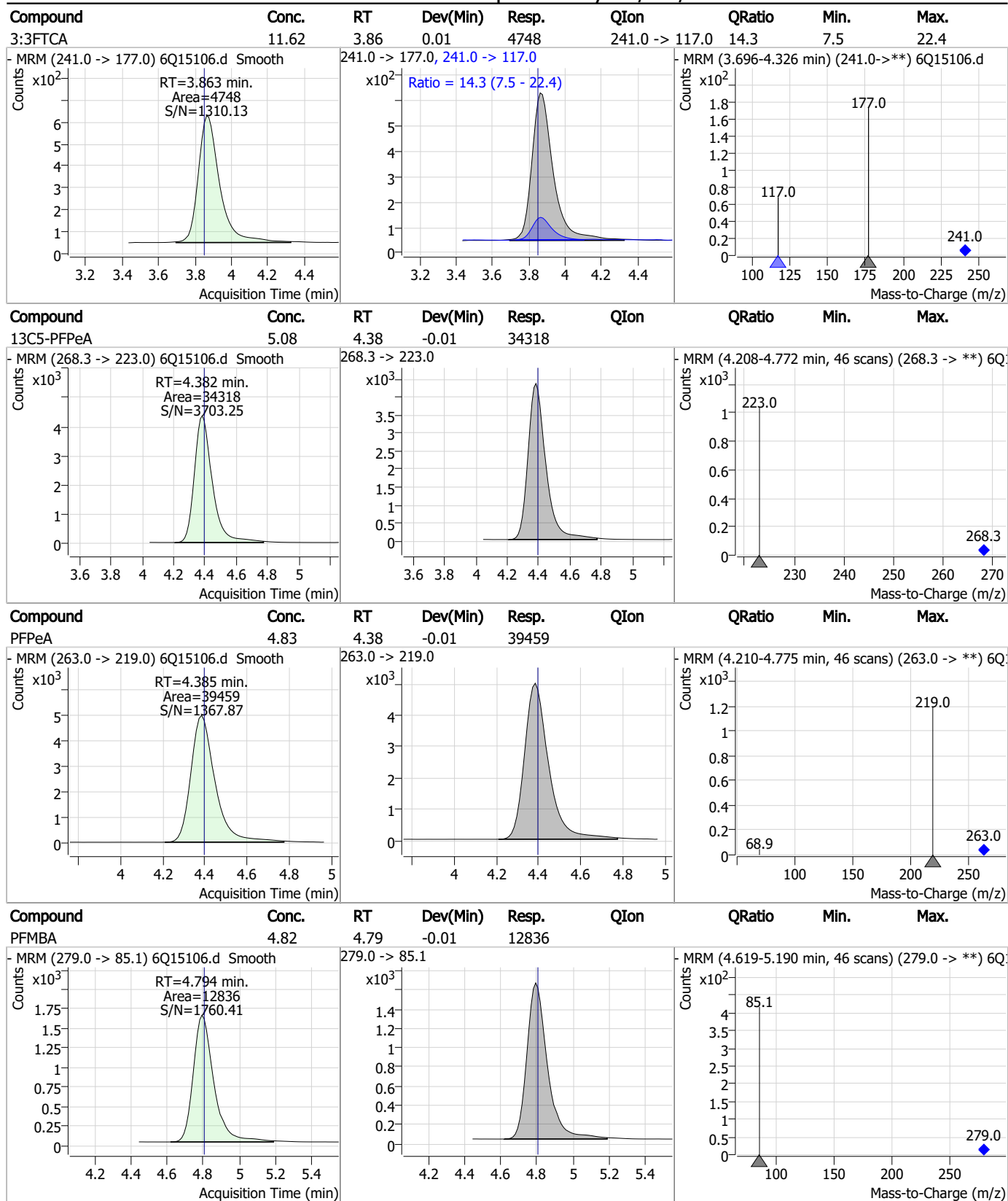
7.3.1

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Perfluorinated Compounds by LC/MS/MS

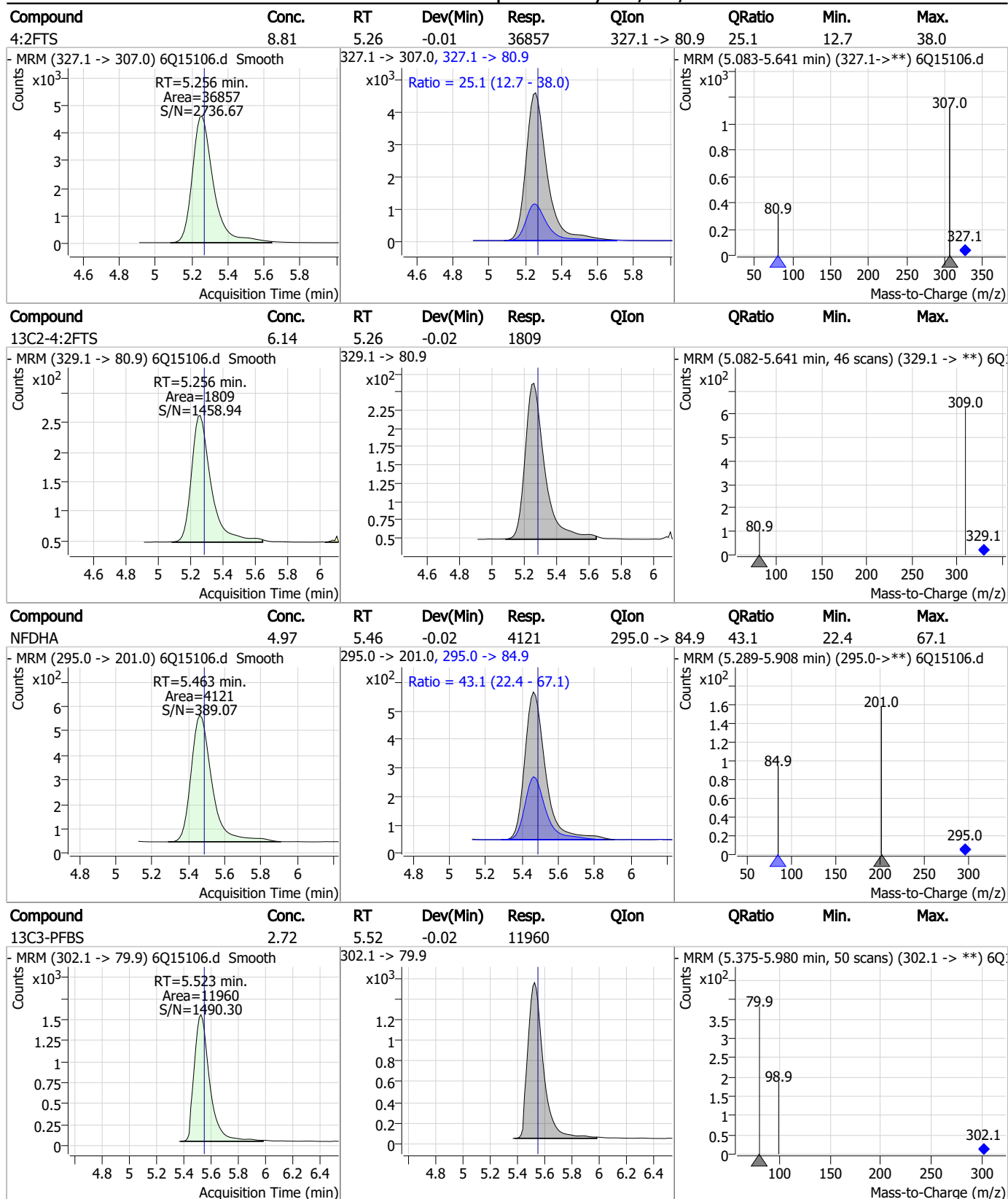


Perfluorinated Compounds by LC/MS/MS



7.3.1
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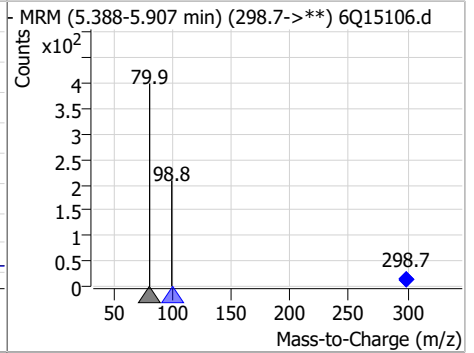
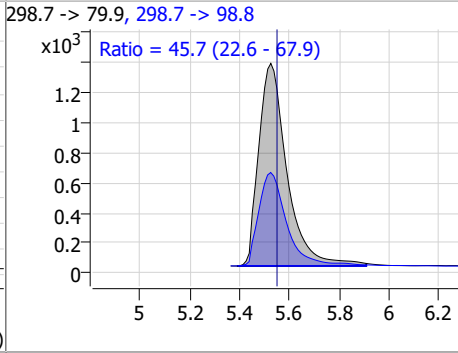
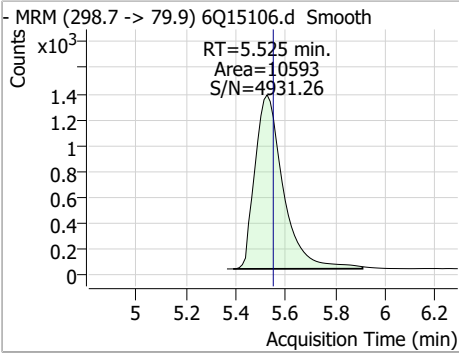
Perfluorinated Compounds by LC/MS/MS



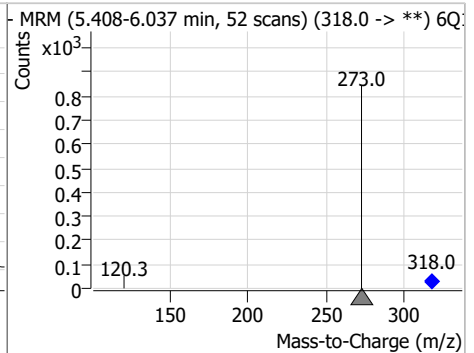
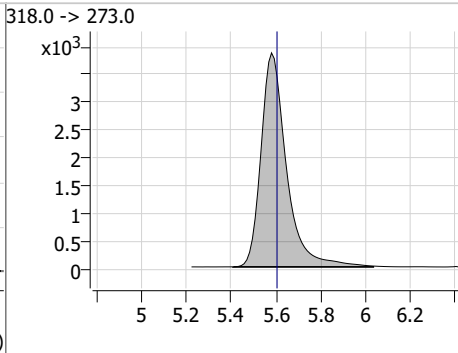
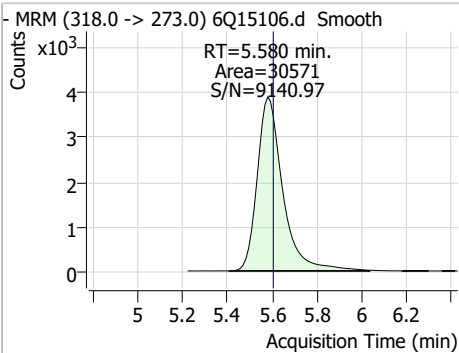
7.3.1
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Perfluorinated Compounds by LC/MS/MS

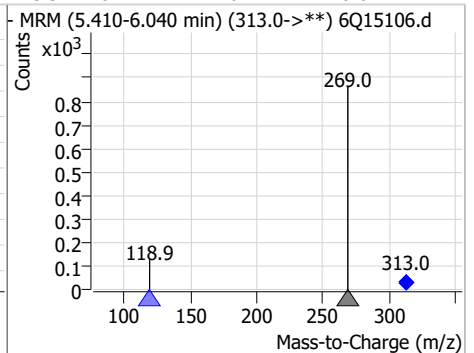
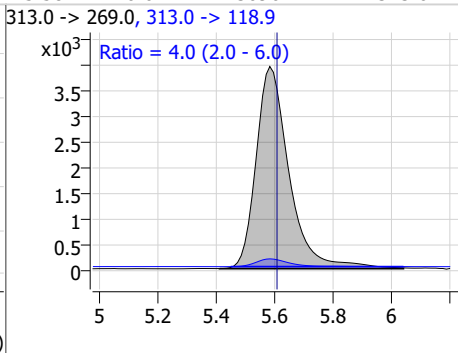
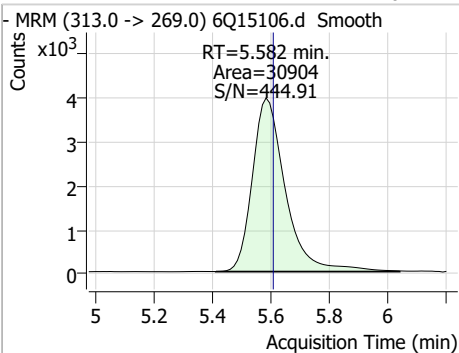
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.01	5.52	-0.02	10593	298.7 -> 98.8	45.7	22.6	67.9



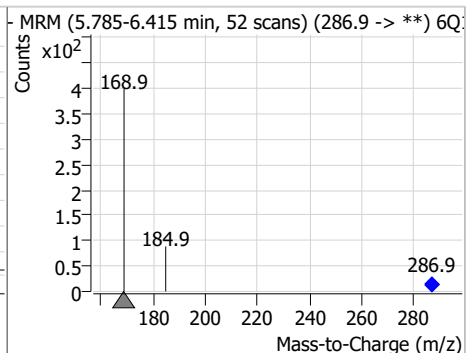
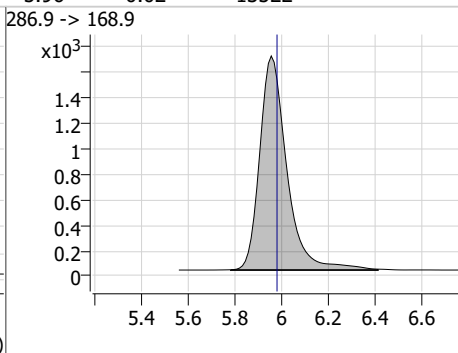
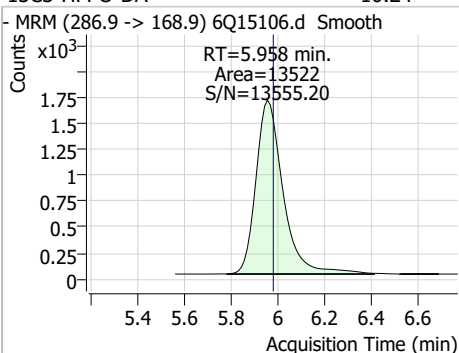
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.57	5.58	-0.02	30571				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.40	5.58	-0.02	30904	313.0 -> 118.9	4.0	2.0	6.0

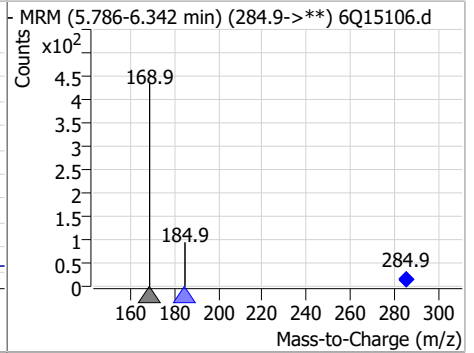
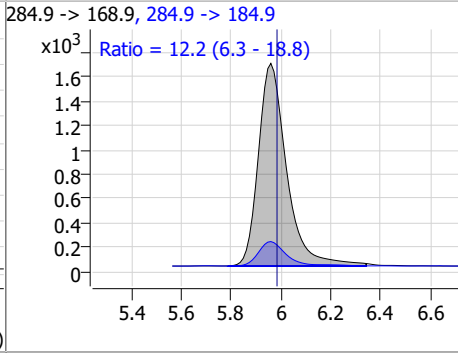
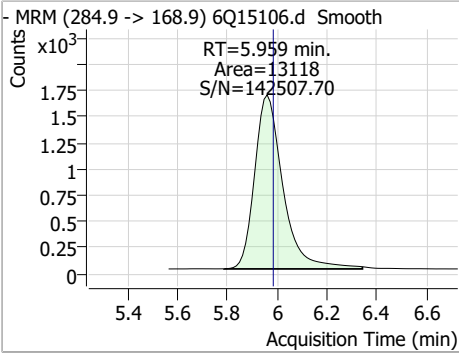


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.24	5.96	-0.02	13522				

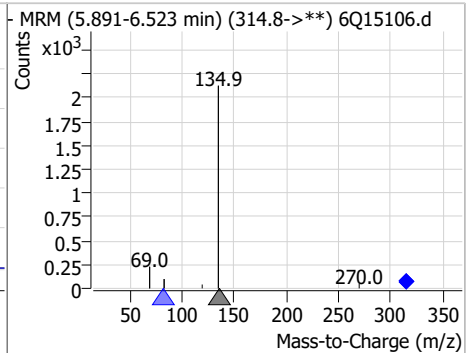
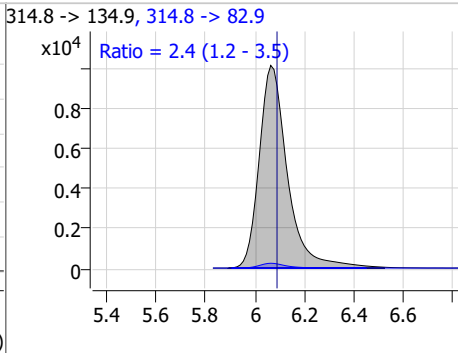
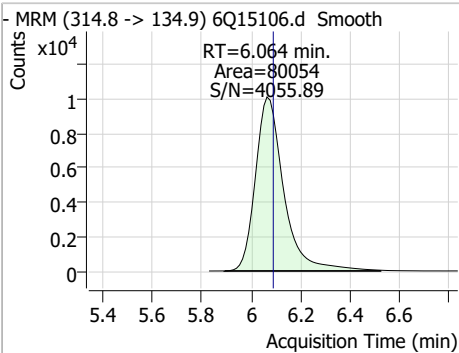


Perfluorinated Compounds by LC/MS/MS

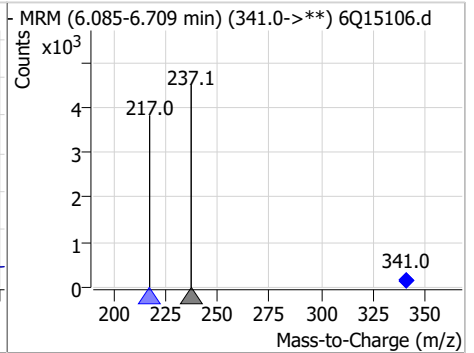
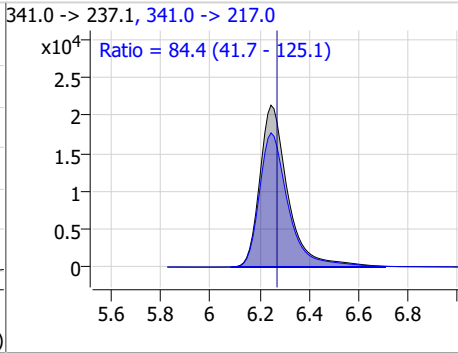
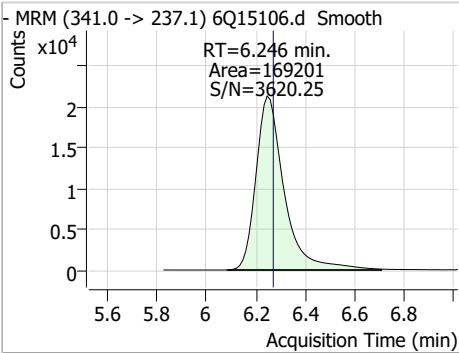
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.22	5.96	-0.02	13118	284.9 -> 184.9	12.2	6.3	18.8



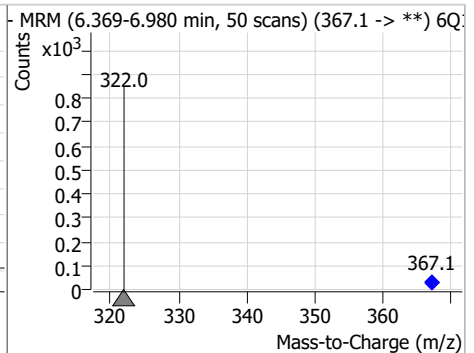
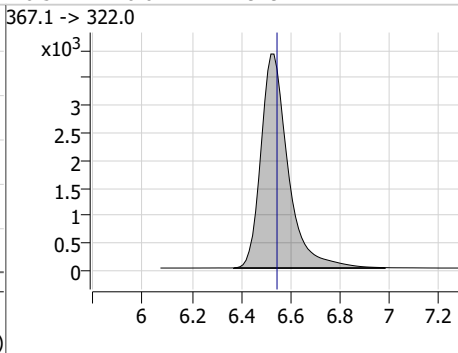
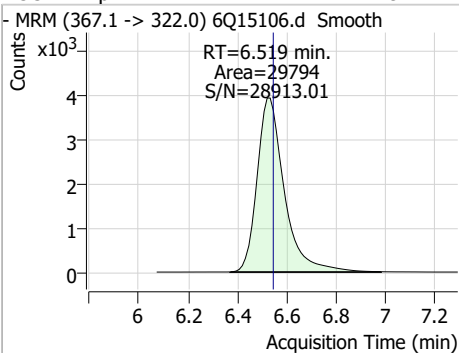
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.39	6.06	-0.03	80054	314.8 -> 82.9	2.4	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	65.08	6.25	-0.02	169201	341.0 -> 217.0	84.4	41.7	125.1

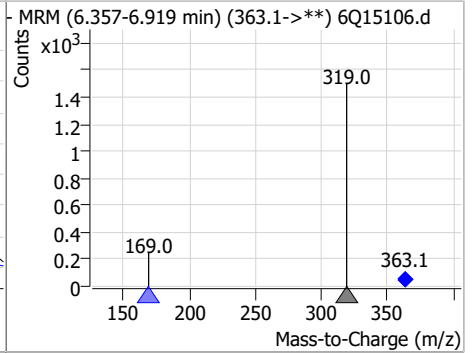
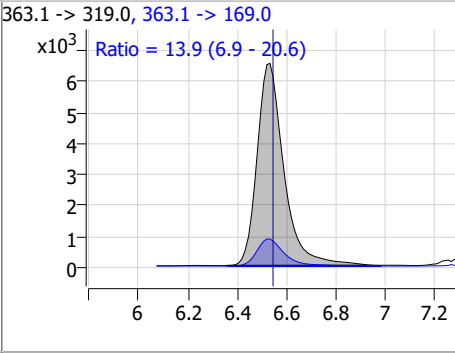
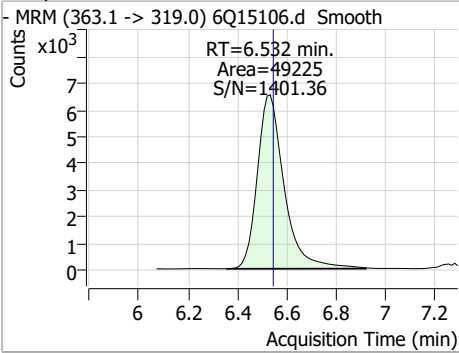


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.49	6.52	-0.02	29794	367.1 -> 322.0			

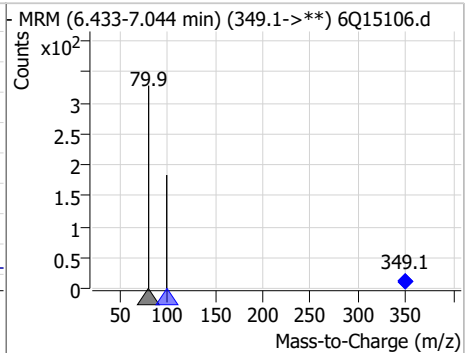
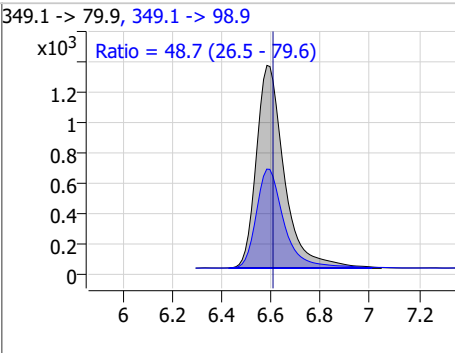
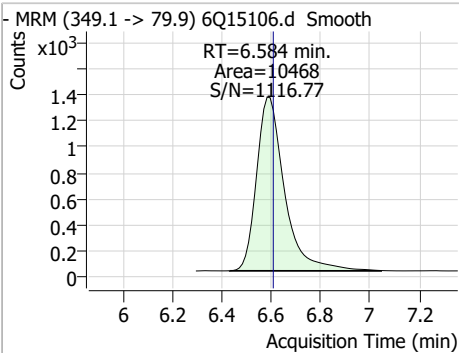


Perfluorinated Compounds by LC/MS/MS

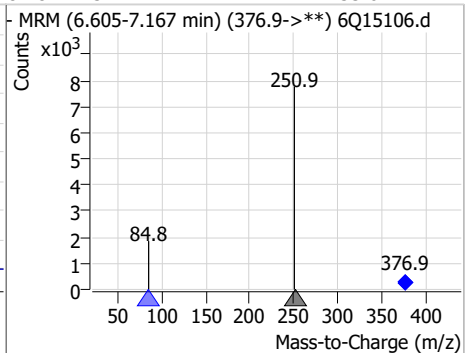
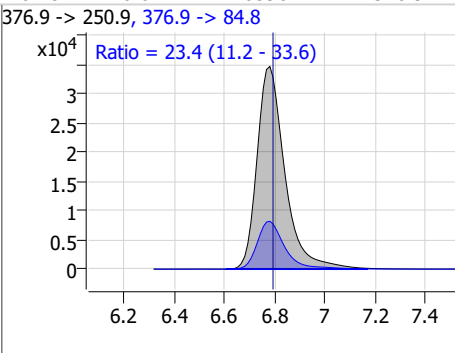
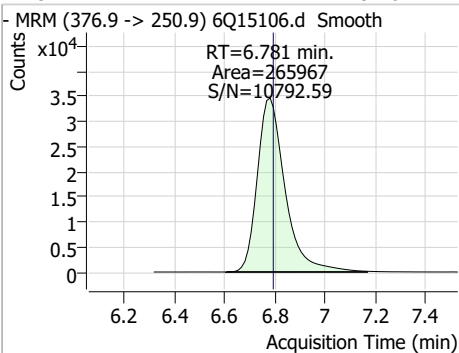
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.56	6.53	-0.01	49225	363.1 -> 169.0	13.9	6.9	20.6



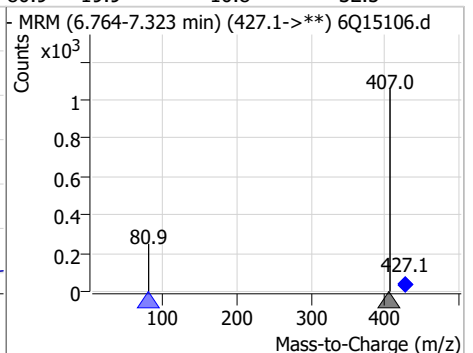
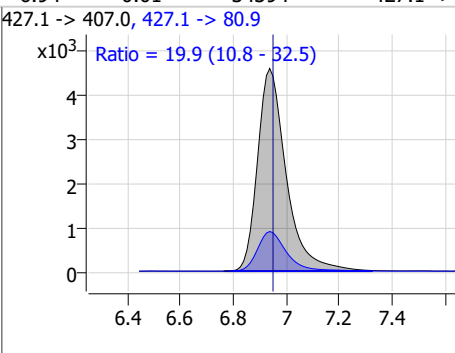
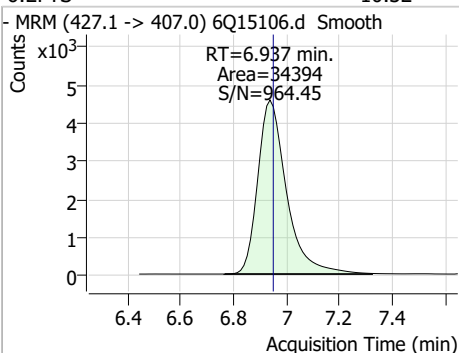
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.18	6.58	-0.02	10468	349.1 -> 98.9	48.7	26.5	79.6



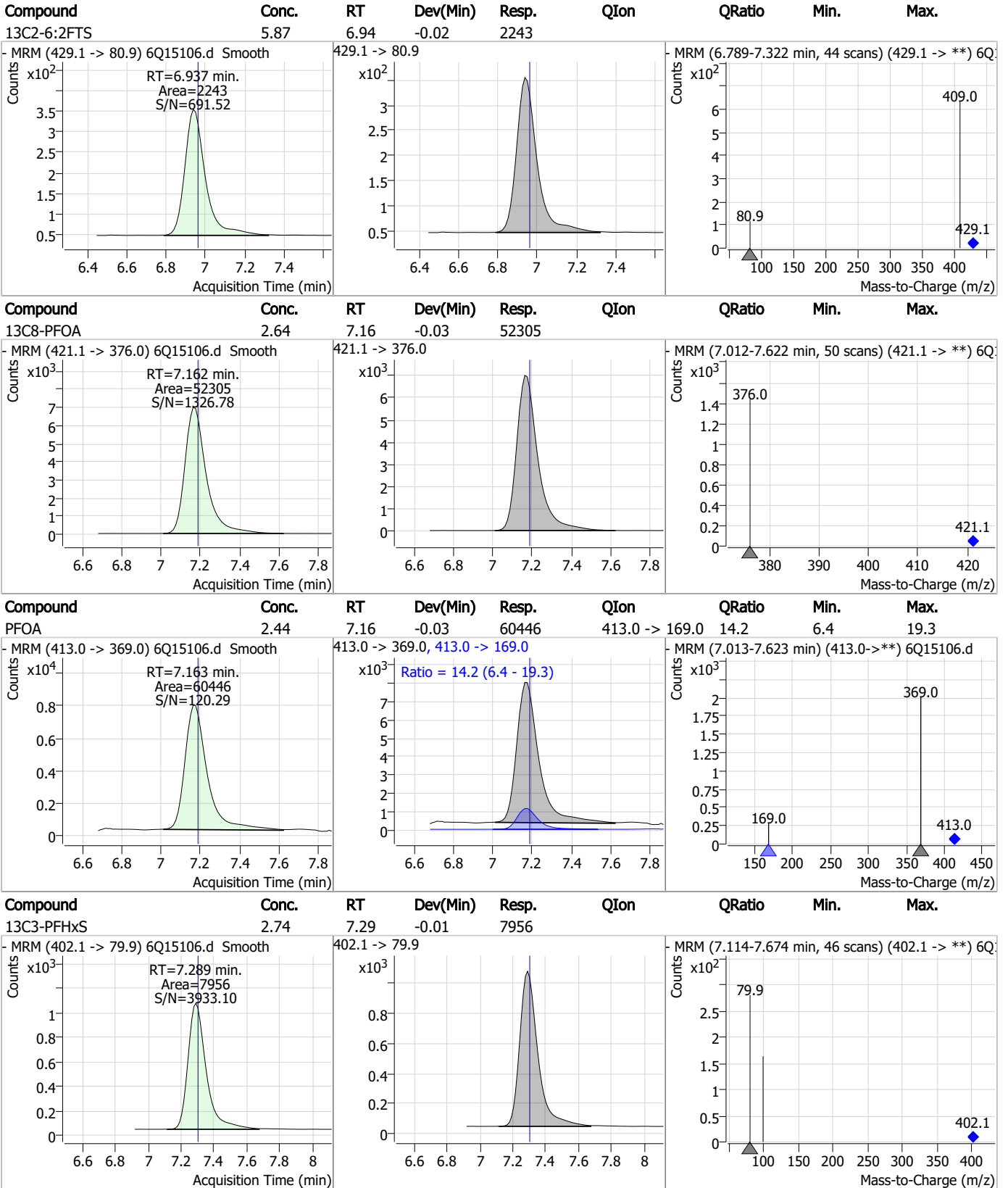
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	9.16	6.78	-0.01	265967	376.9 -> 84.8	23.4	11.2	33.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	10.32	6.94	-0.01	34394	427.1 -> 80.9	19.9	10.8	32.5



Perfluorinated Compounds by LC/MS/MS

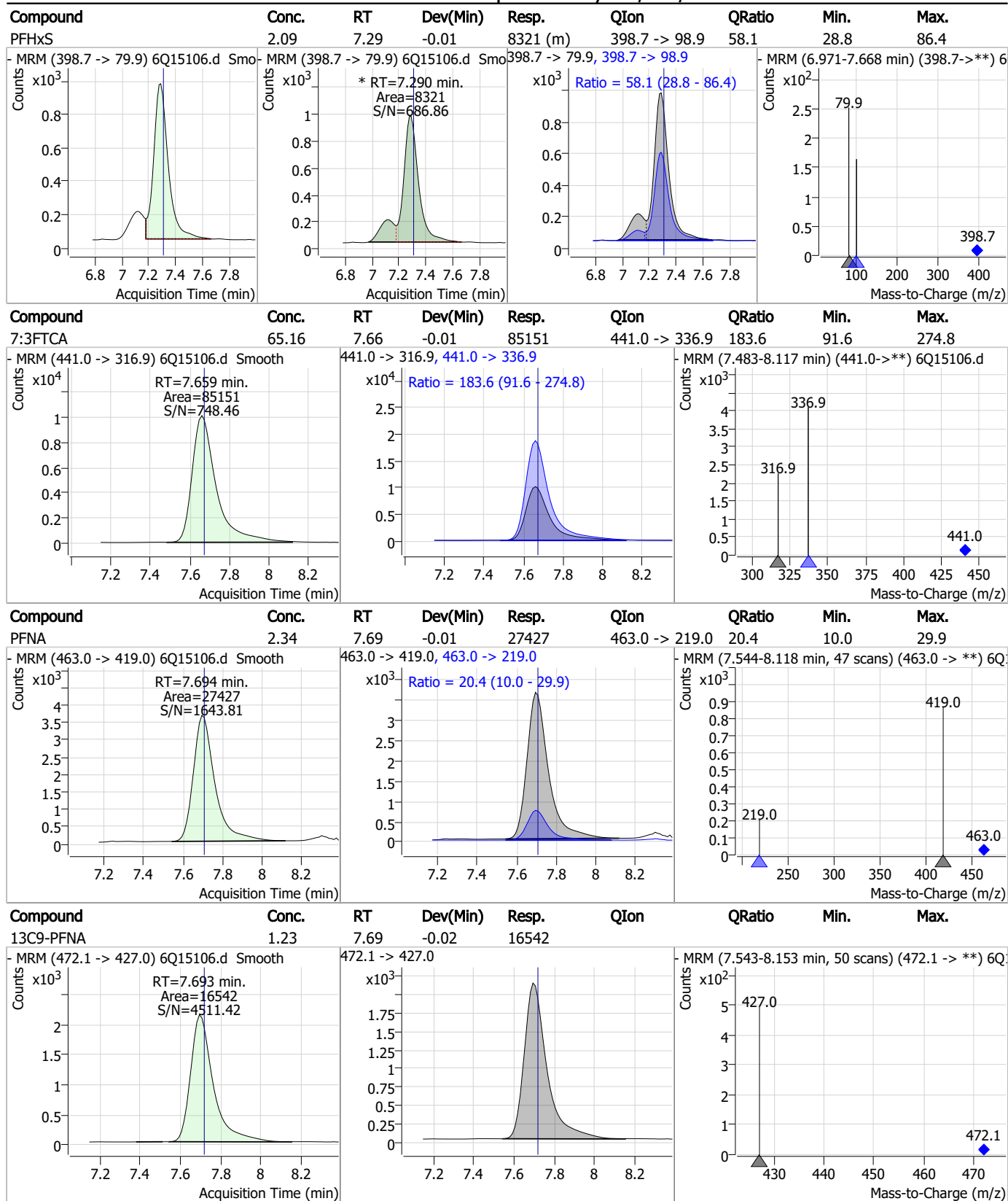


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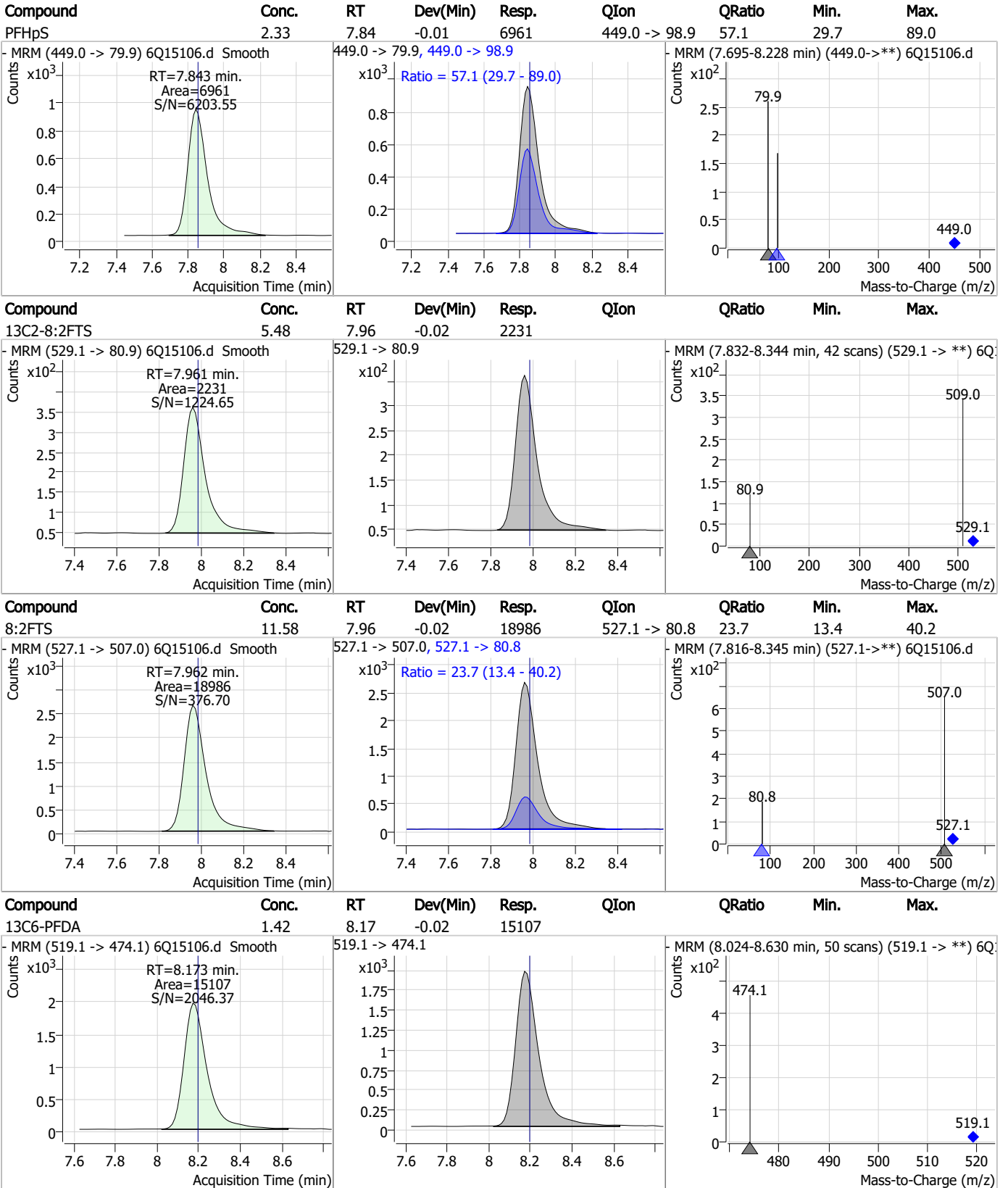


Perfluorinated Compounds by LC/MS/MS



7.3.1
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Perfluorinated Compounds by LC/MS/MS

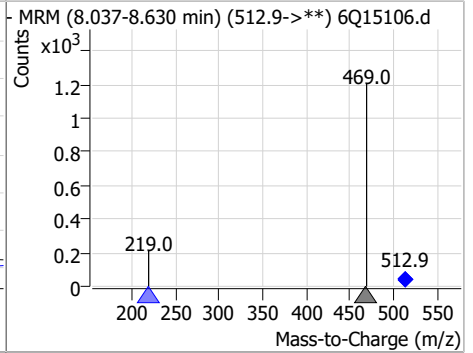
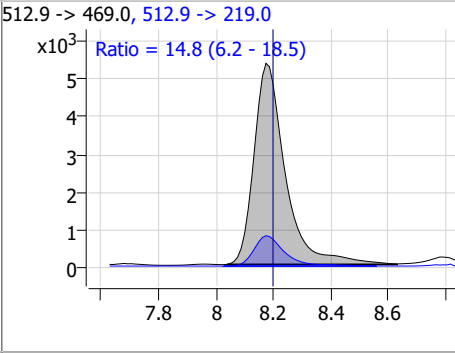
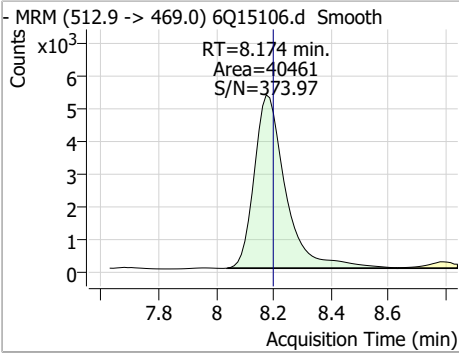


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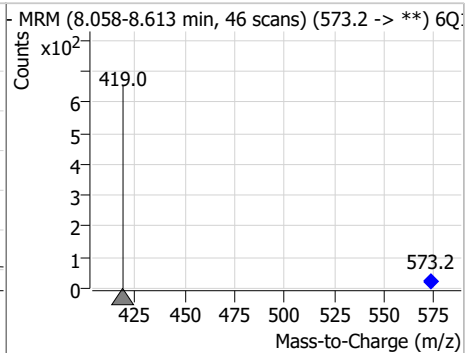
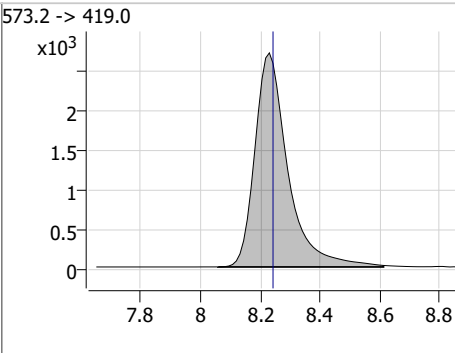
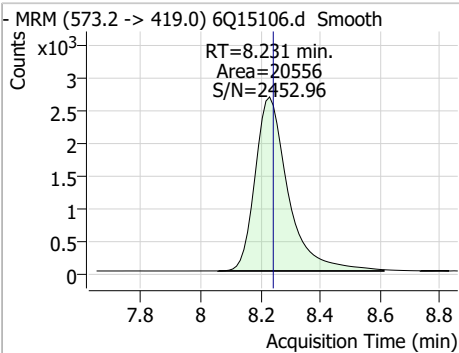
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Perfluorinated Compounds by LC/MS/MS

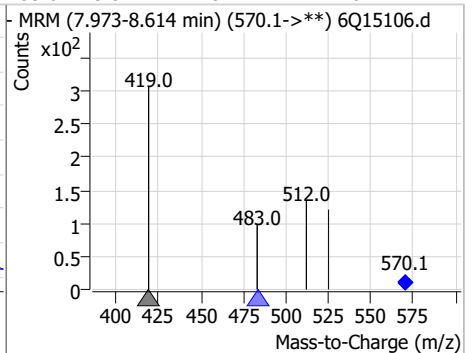
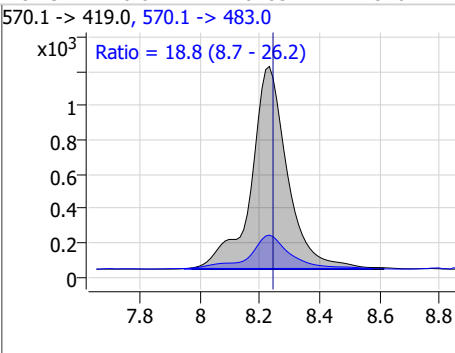
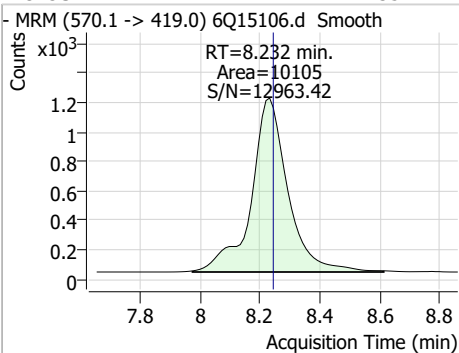
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.16	8.17	-0.02	40461	512.9 -> 219.0	14.8	6.2	18.5



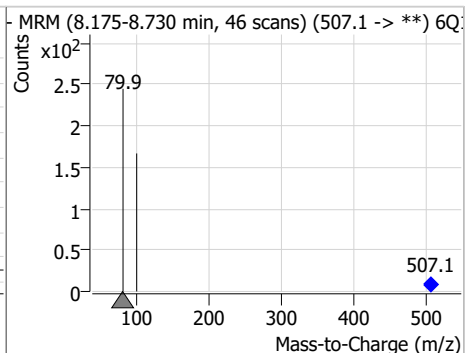
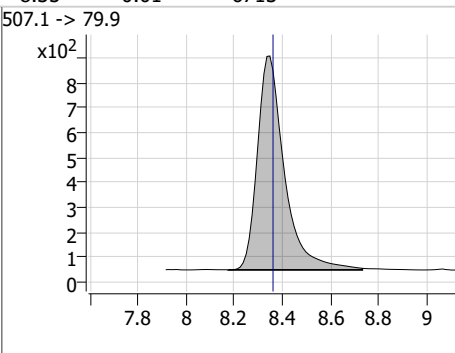
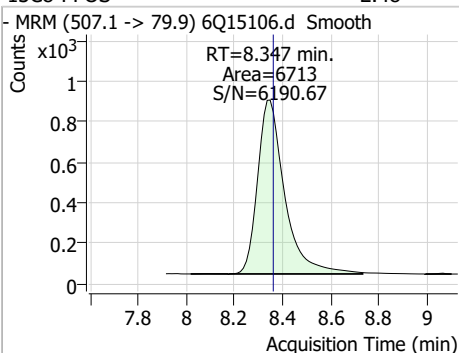
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.37	8.23	-0.01	20556	573.2 -> 419.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.35	8.23	-0.01	10105	570.1 -> 483.0	18.8	8.7	26.2

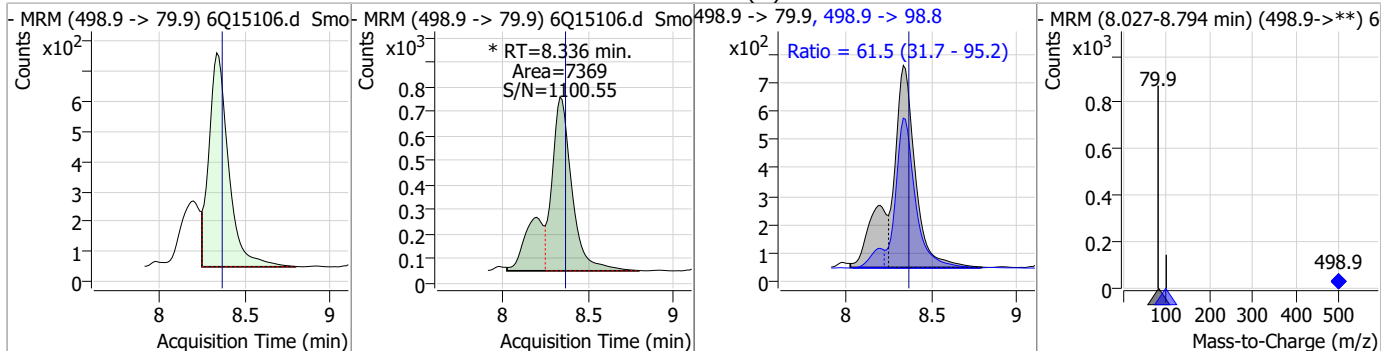


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.48	8.35	-0.01	6713	507.1 -> 79.9			

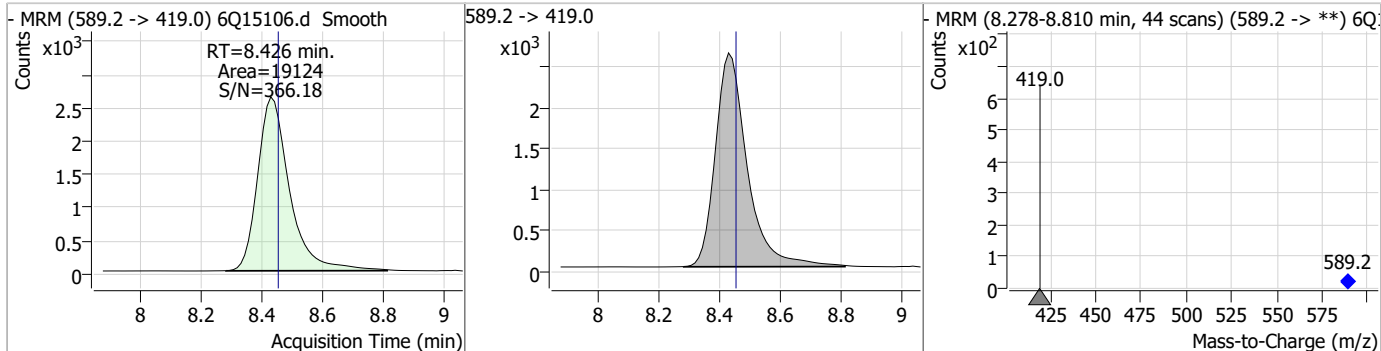


Perfluorinated Compounds by LC/MS/MS

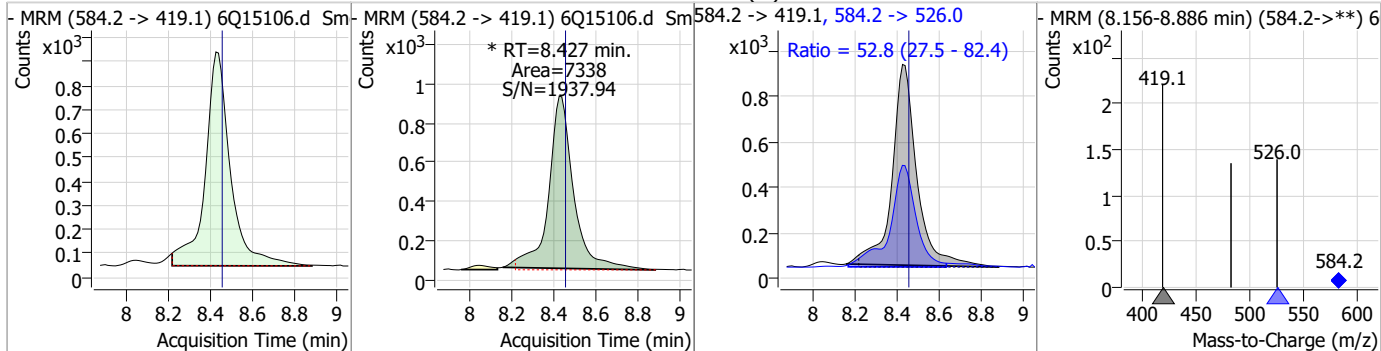
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.34	8.34	-0.03	7369 (m)	498.9 -> 98.8	61.5	31.7	95.2



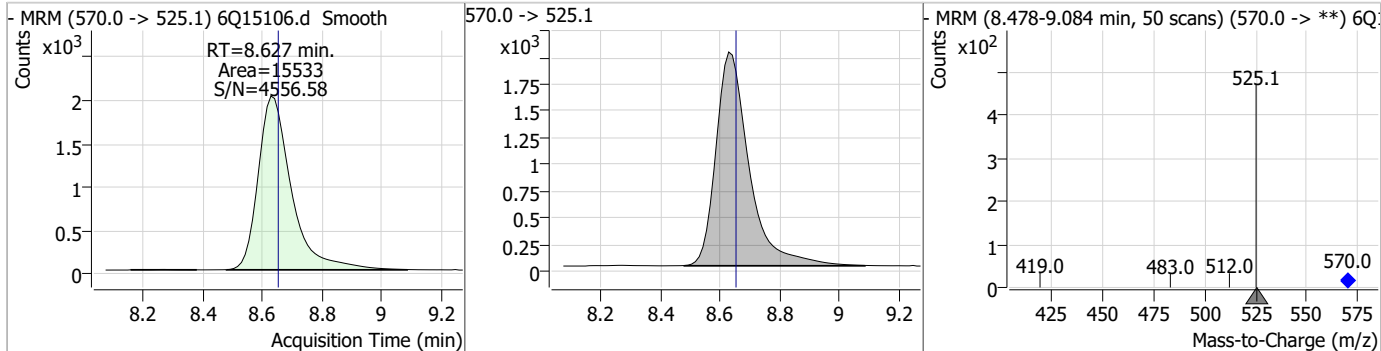
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.68	8.43	-0.02	19124				



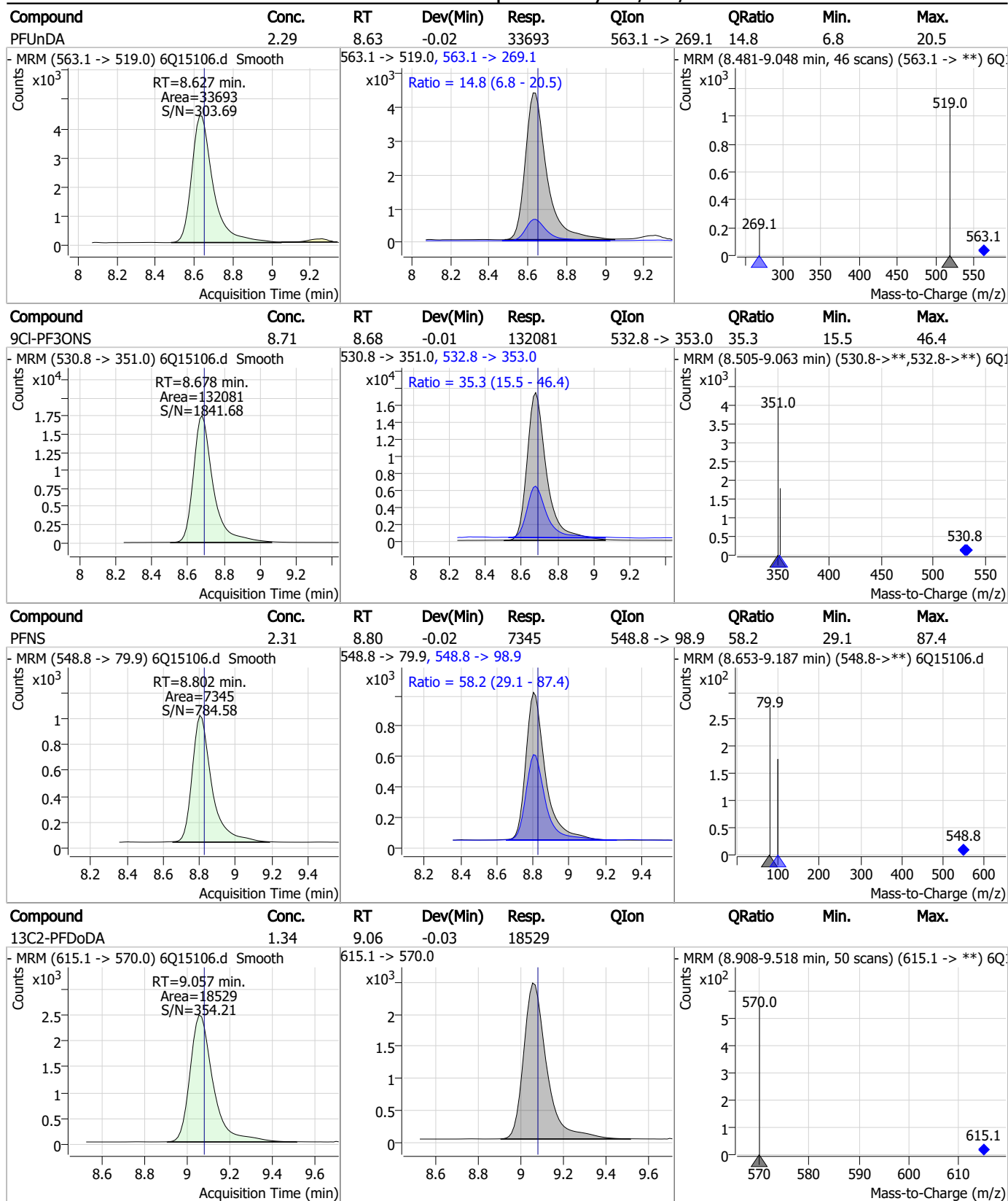
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.11	8.43	-0.02	7338 (m)	584.2 -> 526.0	52.8	27.5	82.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.36	8.63	-0.02	15533				

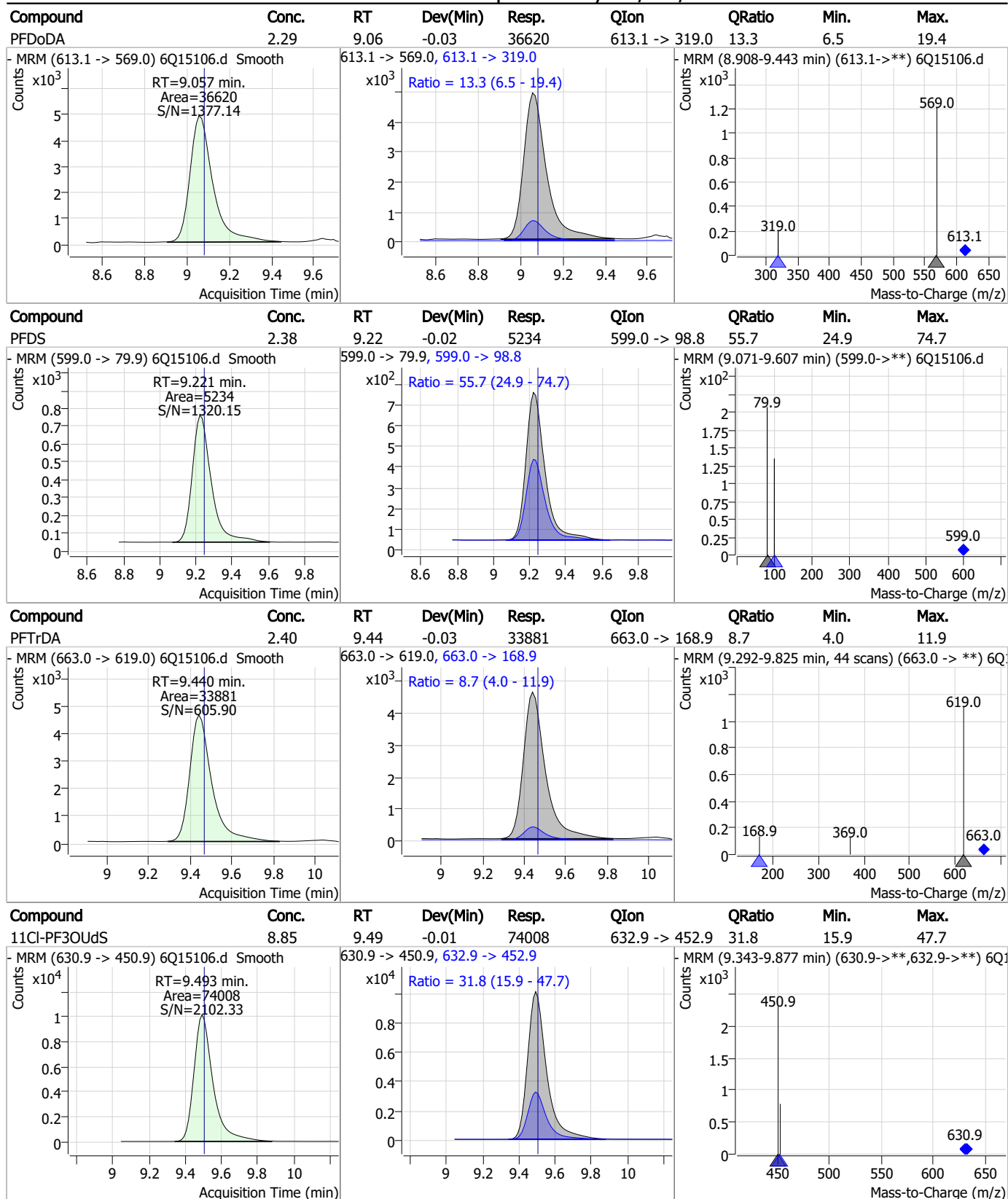


Perfluorinated Compounds by LC/MS/MS



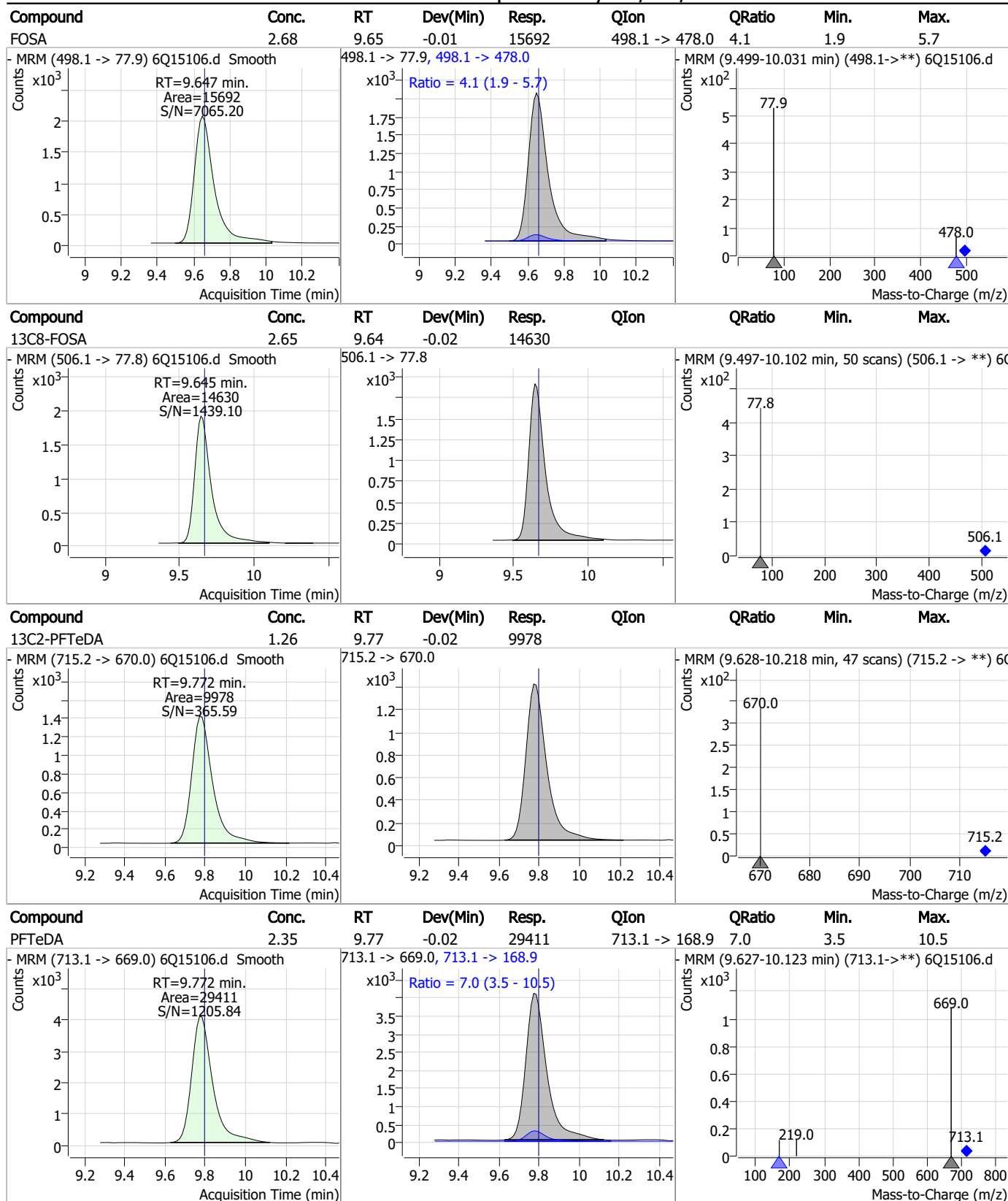
7.3.1
7

Perfluorinated Compounds by LC/MS/MS



7.3.1
7

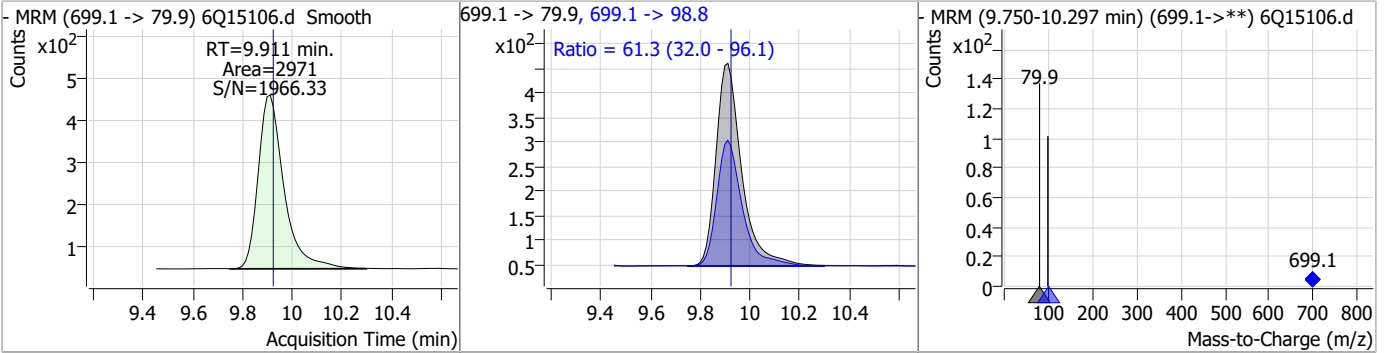
Perfluorinated Compounds by LC/MS/MS



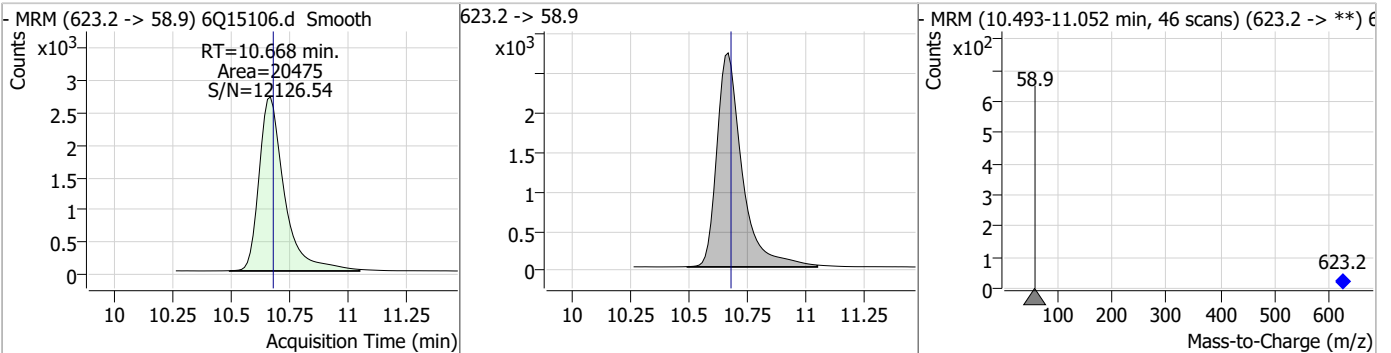
7.3.1
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Perfluorinated Compounds by LC/MS/MS

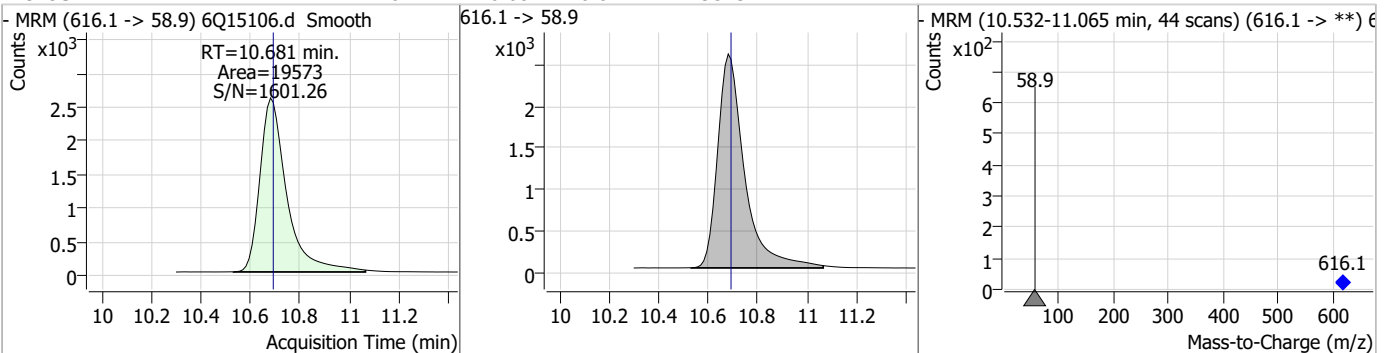
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.37	9.91	-0.01	2971	699.1 -> 98.8	61.3	32.0	96.1



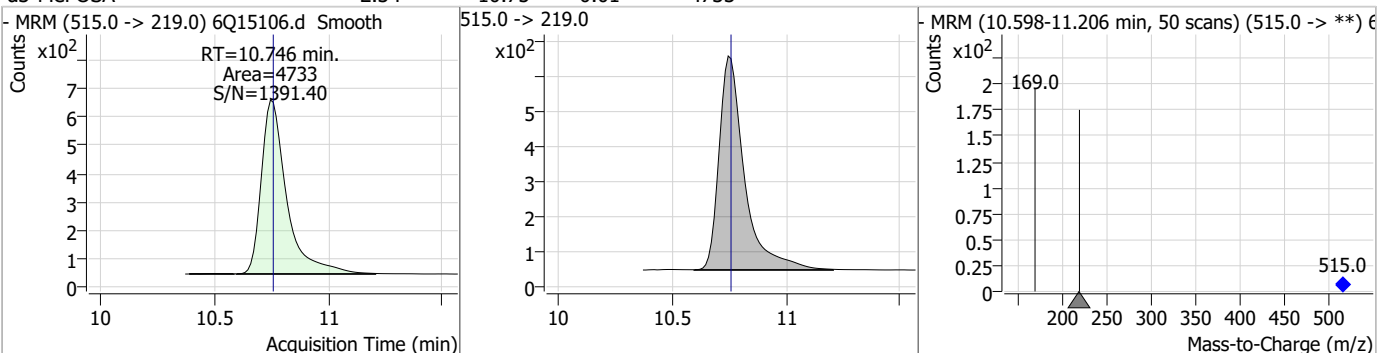
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.72	10.67	-0.01	20475				



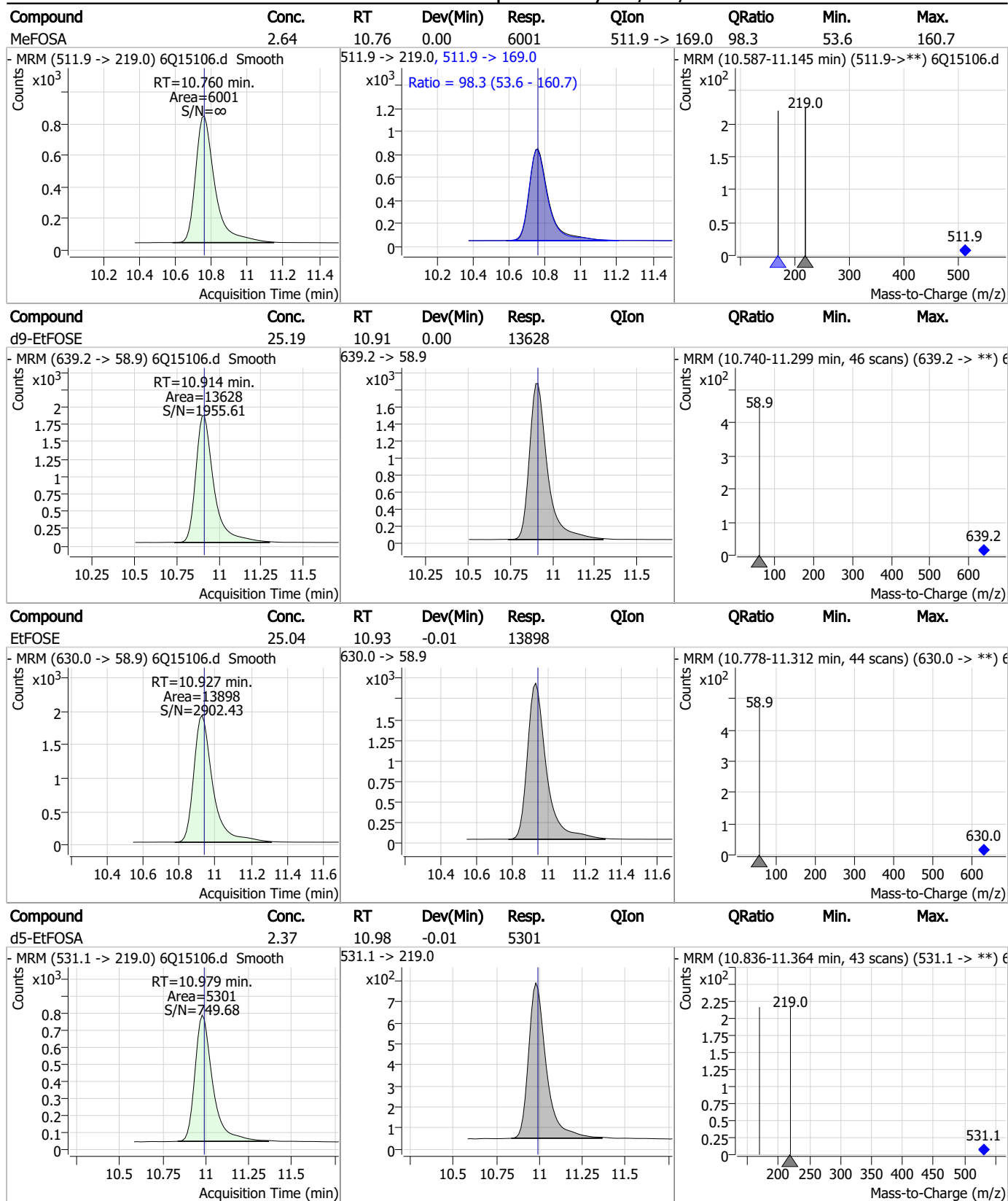
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	22.64	10.68	-0.01	19573				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.34	10.75	-0.01	4733				

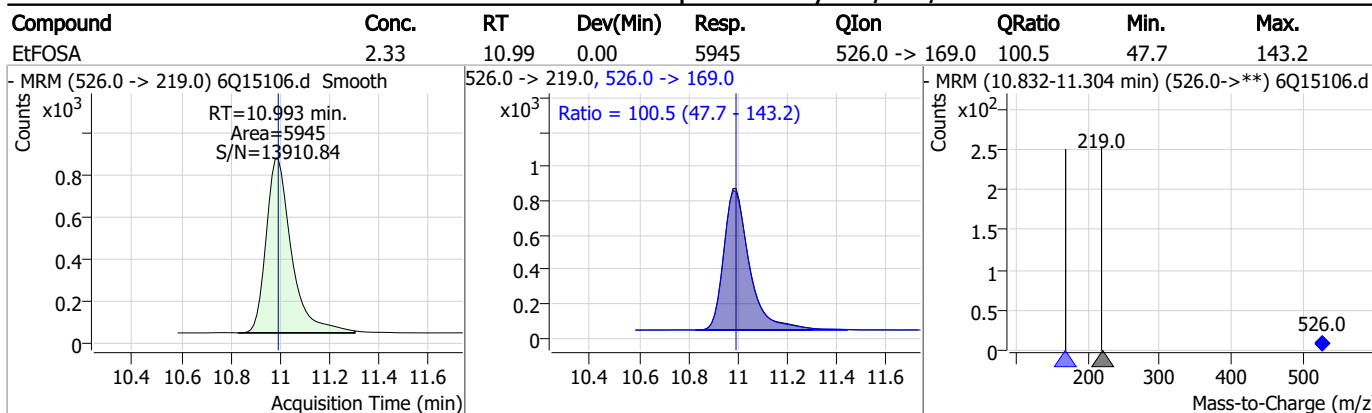


Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Manual Integration Approval Summary

Sample Number: OP95968-BS Method: EPA DRAFT 1633
Lab FileID: 6Q15106.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 15:55 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.43	Split peak

7.3.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15107.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 4:09:31 PM
 Sample Name : op95968-llbs:3
 Vial : P3-A2
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95968,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	73390	10.00 µg/L	0.025
M5-PFPeA	4.382	268.3 -> 223.0	34676	5.00 µg/L	-0.012
M5-PFHxA	5.580	318.0 -> 273.0	30620	2.50 µg/L	-0.025
M4-PFHpA	6.532	367.1 -> 322.0	30505	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	53074	2.50 µg/L	-0.012
M9-PFNA	7.693	472.1 -> 427.0	17465	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	14190	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	15268	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	17957	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	9661	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	15111	2.50 µg/L	-0.025
M3-PFBS	5.523	302.1 -> 79.9	11389	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	7684	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	6859	2.50 µg/L	-0.013
M2-4:2FTS	5.256	329.1 -> 80.9	1788	5.00 µg/L	-0.025
M2-6:2FTS	6.949	429.1 -> 80.9	2335	5.00 µg/L	-0.012
M2-8:2FTS	7.973	529.1 -> 80.9	2242	5.00 µg/L	-0.012
M3-MeFOSAA	8.231	573.2 -> 419.0	20676	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	13039	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	17136	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	20169	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	13548	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	4942	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	4509	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	8295	2.50 µg/L	-0.025
13C3-PFBA	2.976	216.0 -> 172.0	30599	5.00 µg/L	0.025
18O2-PFHxS	7.288	403.0 -> 83.9	5288	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	59174	2.50 µg/L	-0.012
13C2-PFDA	8.173	515.1 -> 470.1	17479	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	16789	1.25 µg/L	-0.025
13C2-PFHxA	5.594	315.1 -> 270.0	30244	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1788	5.89 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.9%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2335	5.94 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.9%		
13C2-8:2FTS	7.973	529.1 -> 80.9	2242	5.35 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-PFDoDA	9.057	615.1 -> 570.0	17957	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C2-PFTeDA	9.772	715.2 -> 670.0	9661	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFBS	5.523	302.1 -> 79.9	11389	2.51 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C3-PFHxS	7.289	402.1 -> 79.9	7684	2.57 µg/L	-0.013

7.32
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C4-PFBA	2.972	216.8 -> 171.9	73390	10.45 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C4-PFHpA	6.532	367.1 -> 322.0	30505	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C5-PFHxA	5.580	318.0 -> 273.0	30620	2.48 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C5-PFPeA	4.382	268.3 -> 223.0	34676	4.96 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C6-PFDA	8.173	519.1 -> 474.1	14190	1.35 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C7-PFUnDA	8.627	570.0 -> 525.1	15268	1.35 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C8-FOSA	9.645	506.1 -> 77.8	15111	2.63 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C8-PFOA	7.175	421.1 -> 376.0	53074	2.69 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C8-PFOS	8.347	507.1 -> 79.9	6859	2.44 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C9-PFNA	7.693	472.1 -> 427.0	17465	1.35 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.9%		
d3-MeFOSAA	8.231	573.2 -> 419.0	20676	5.19 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	13039	9.54 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
d3-MeFOSA	10.746	515.0 -> 219.0	4509	2.14 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.7%		
d5-EtFOSAA	8.426	589.2 -> 419.0	17136	4.89 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
d7-MeFOSE	10.668	623.2 -> 58.9	20169	25.27 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
d9-EtFOSE	10.901	639.2 -> 58.9	13548	24.05 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
d5-EtFOSA	10.979	531.1 -> 219.0	4942	2.12 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.0%		
Target Compounds					QValue
4:2FTS	5.256	327.1 -> 307.0	14873	3.59 µg/L	99
		327.1 -> 80.9	3710		
6:2FTS	6.937	427.1 -> 407.0	12559	3.62 µg/L	97
		427.1 -> 80.9	2866		
8:2FTS	7.962	527.1 -> 507.0	7598	4.61 µg/L	95
		527.1 -> 80.8	1822		
EtFOSAA	8.427	584.2 -> 419.1	2562	0.82 µg/L	m 99
		584.2 -> 526.0	1432		
FOSA	9.647	498.1 -> 77.9	6268	1.04 µg/L	99
		498.1 -> 478.0	261		
MeFOSAA	8.232	570.1 -> 419.0	4295	0.99 µg/L	98
		570.1 -> 483.0	715		
PFBA	2.981	212.8 -> 168.9	7203	3.60 µg/L	100
PFBS	5.525	298.7 -> 79.9	4277	0.85 µg/L	96
		298.7 -> 98.8	1834		
PFDA	8.174	512.9 -> 469.0	16587	0.94 µg/L	95
		512.9 -> 219.0	2386		
PFDODA	9.057	613.1 -> 569.0	14274	0.92 µg/L	97
		613.1 -> 319.0	1643		
PFDS	9.221	599.0 -> 79.9	2107	0.94 µg/L	98

7.3.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8	1085	0.93	µg/L	97
		363.1 -> 319.0	18378			
PFHpS	7.843	363.1 -> 169.0	2708	0.86	µg/L	99
		449.0 -> 79.9	2642			
PFHxA	5.582	449.0 -> 98.9	1546	0.91	µg/L	99
		313.0 -> 269.0	11677			
PFHxS	7.290	313.0 -> 118.9	495	0.85	µg/L	94
		398.7 -> 79.9	3267			
PFNA	7.694	398.7 -> 98.9	1741	0.90	µg/L	98
		463.0 -> 419.0	11120			
PFNS	8.802	463.0 -> 219.0	2097	0.93	µg/L	96
		548.8 -> 79.9	3025			
PFOA	7.176	548.8 -> 98.9	1678	0.99	µg/L	98
		413.0 -> 369.0	24945			
PFOS	8.336	413.0 -> 169.0	3370	0.87	µg/L	90
		498.9 -> 79.9	2793			
PFPeA	4.385	498.9 -> 98.8	1989	1.84	µg/L	100
		263.0 -> 219.0	15165			
PFPeS	6.596	349.1 -> 79.9	3930	0.85	µg/L	97
		349.1 -> 98.9	2181			
PFTeDA	9.772	713.1 -> 669.0	11754	0.97	µg/L	100
		713.1 -> 168.9	832			
PFTrDA	9.440	663.0 -> 619.0	12037	0.88	µg/L	99
		663.0 -> 168.9	987			
PFUnDA	8.627	563.1 -> 519.0	13380	0.93	µg/L	94
		563.1 -> 269.1	2147			
11CI-PF3OUdS	9.493	630.9 -> 450.9	27603	3.42	µg/L	98
		632.9 -> 452.9	8404			
9CI-PF3ONS	8.678	530.8 -> 351.0	52581	3.60	µg/L	95
		532.8 -> 353.0	17597			
ADONA	6.781	376.9 -> 250.9	103592	3.70	µg/L	98
		376.9 -> 84.8	24103			
HFPO-DA	5.959	284.9 -> 168.9	5087	3.71	µg/L	95
		284.9 -> 184.9	535			
3:3FTCA	3.863	241.0 -> 177.0	1949	4.72	µg/L	97
		241.0 -> 117.0	268			
5:3FTCA	6.259	341.0 -> 237.1	62907	24.16	µg/L	90
		341.0 -> 217.0	58056			
7:3FTCA	7.659	441.0 -> 316.9	32673	24.96	µg/L	97
		441.0 -> 336.9	61257			
EtFOSA	10.981	526.0 -> 219.0	2247	0.95	µg/L	98
		526.0 -> 169.0	2184			
EtFOSE	10.927	630.0 -> 58.9	5181	9.39	µg/L	100
		511.9 -> 219.0	2110			
MeFOSA	10.748	511.9 -> 169.0	2174	0.97	µg/L	96
		616.1 -> 58.9	7890			
MeFOSE	10.681	699.1 -> 79.9	1139	9.27	µg/L	100
		699.1 -> 98.8	686			
PFDoDS	9.911	295.0 -> 201.0	1583	0.89	µg/L	95
		295.0 -> 84.9	603			
NFDHA	5.476	279.0 -> 85.1	5011	1.91	µg/L	90
		229.0 -> 84.9	4410			
PFMBA	4.794	314.8 -> 134.9	29715	1.86	µg/L	100
PFMPA	3.526	314.8 -> 82.9	689	1.86	µg/L	100
PFEESA	6.064			1.63	µg/L	100

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

7.3.2
7

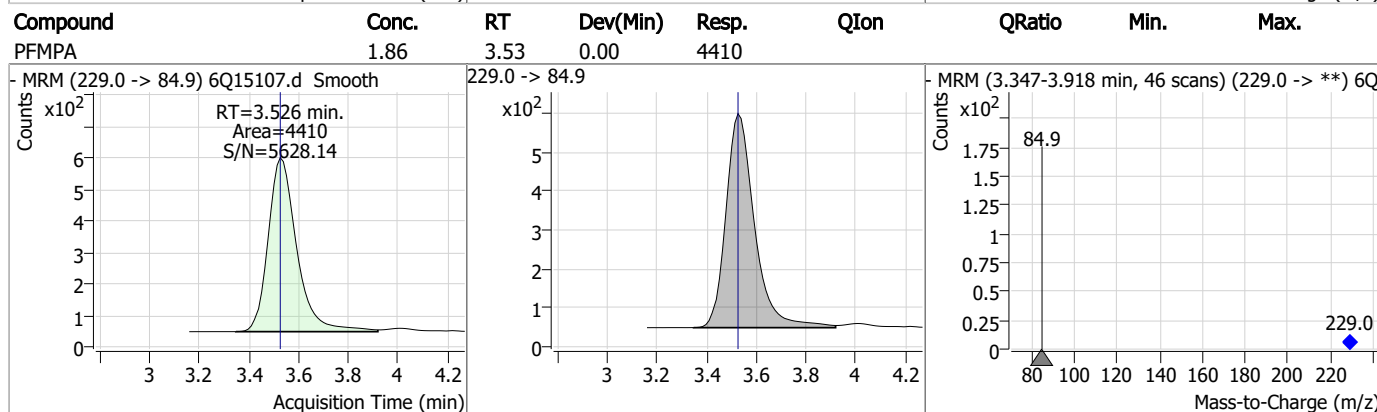
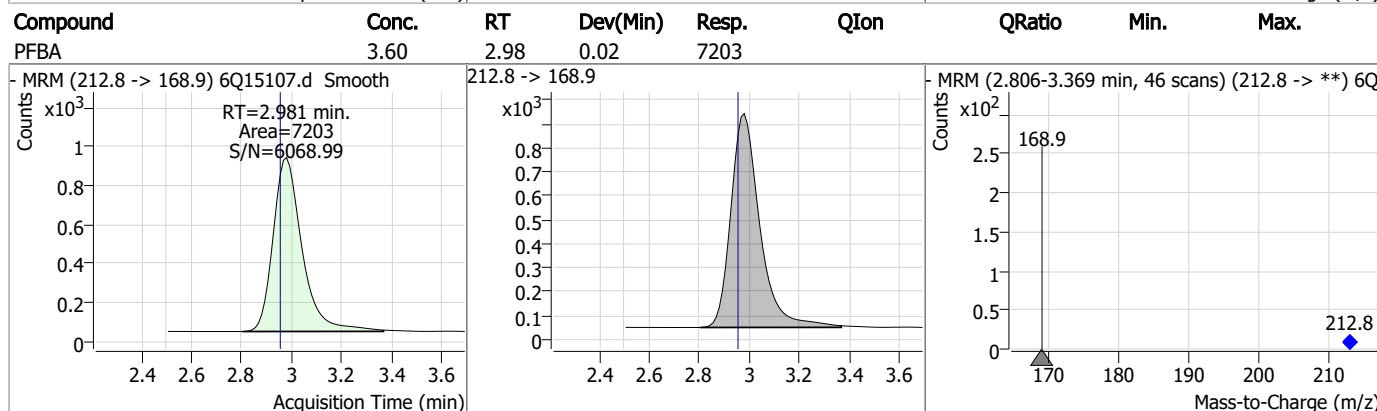
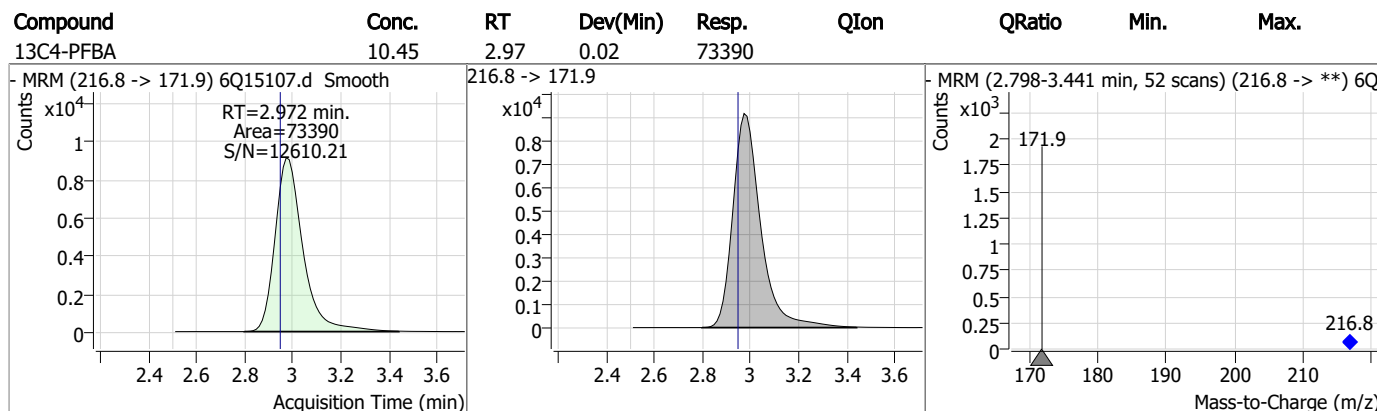
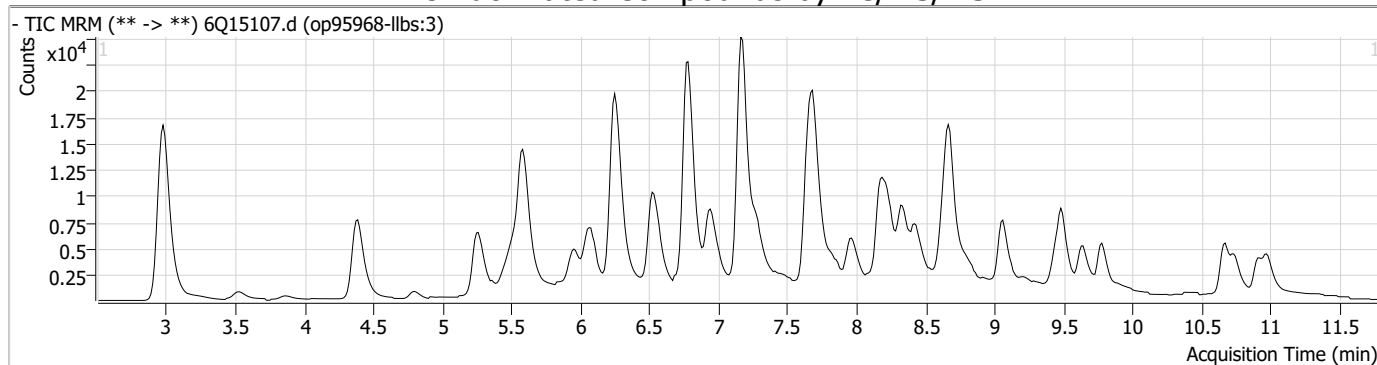
Perfluorinated Compounds by LC/MS/MS

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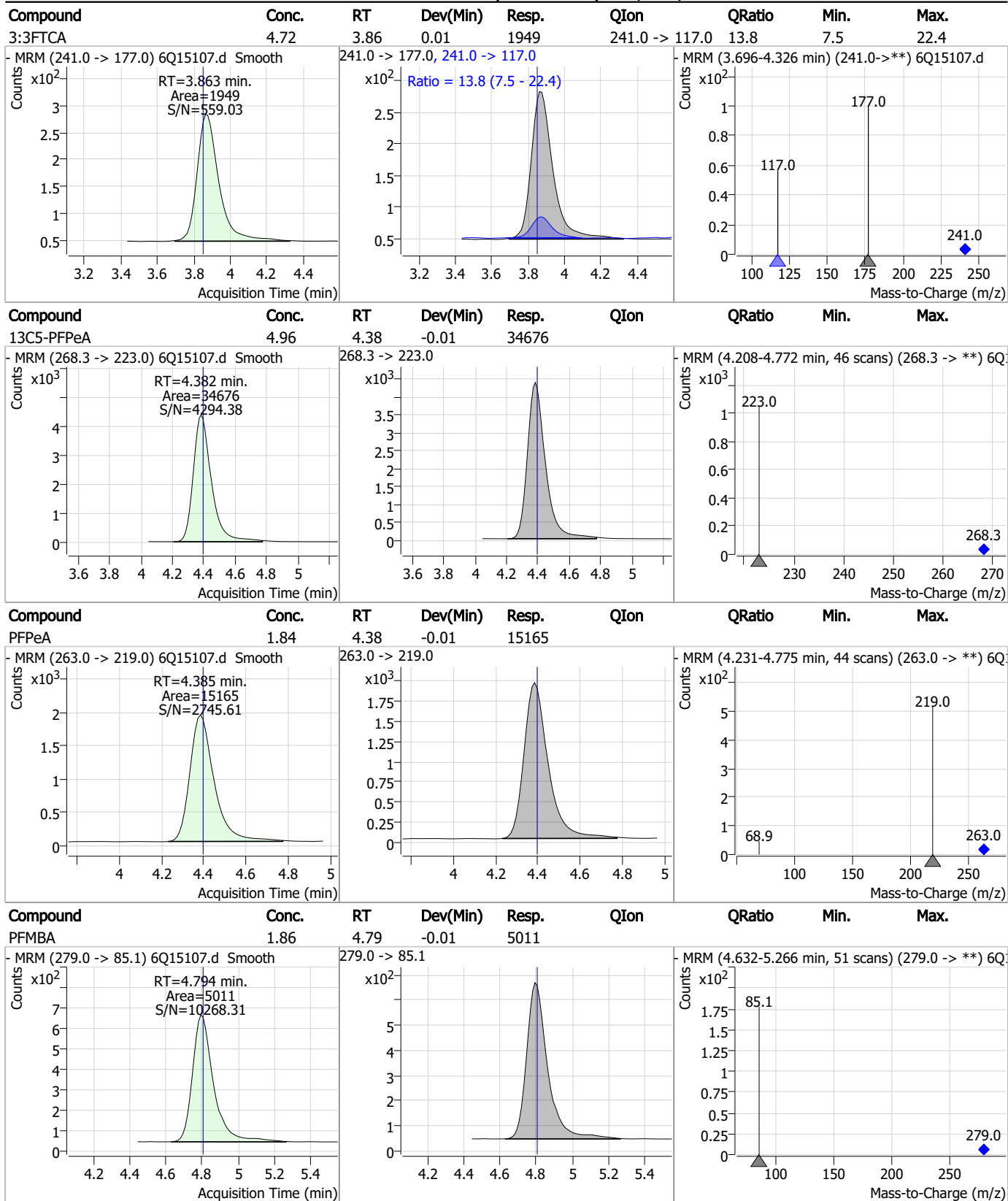
7.3.2

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Perfluorinated Compounds by LC/MS/MS

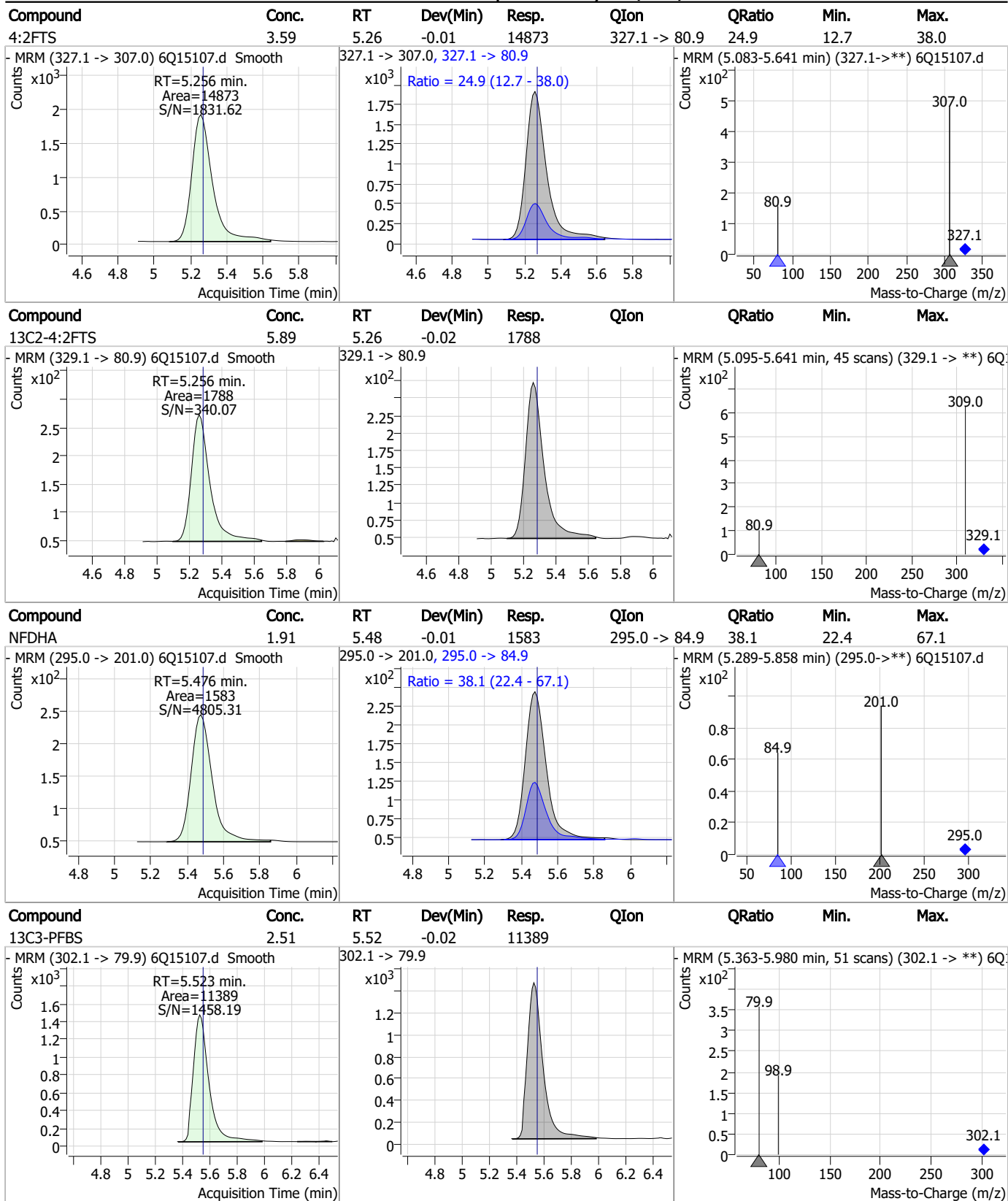


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

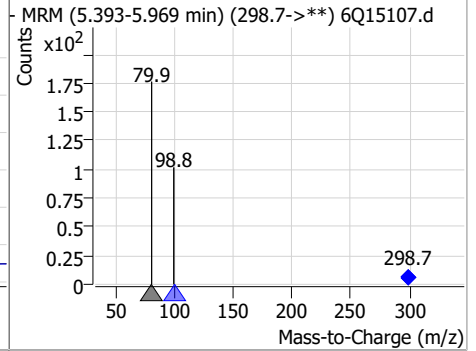
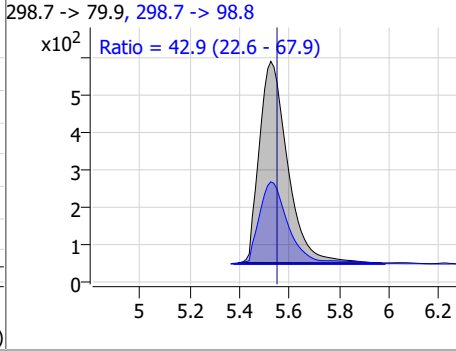
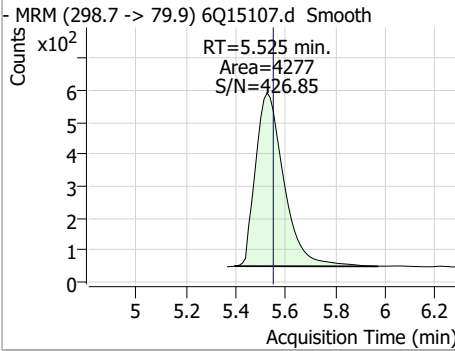
Perfluorinated Compounds by LC/MS/MS



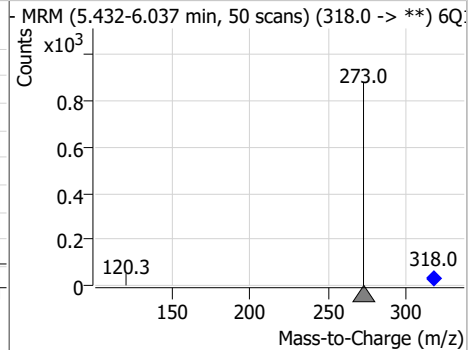
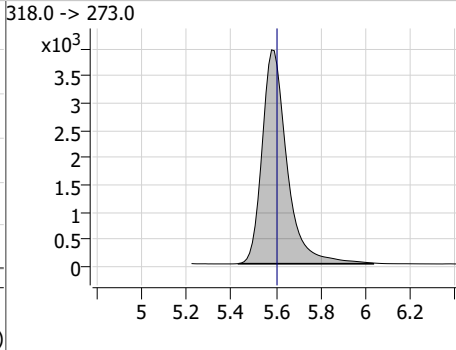
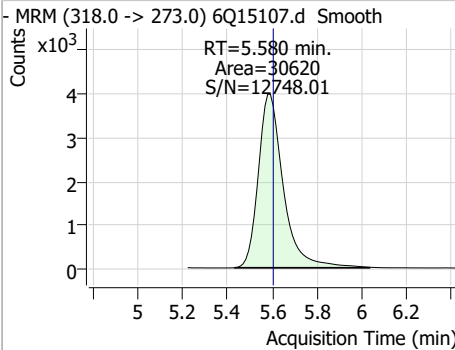
7.3.2
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Perfluorinated Compounds by LC/MS/MS

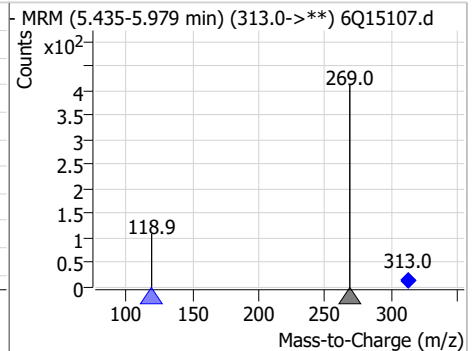
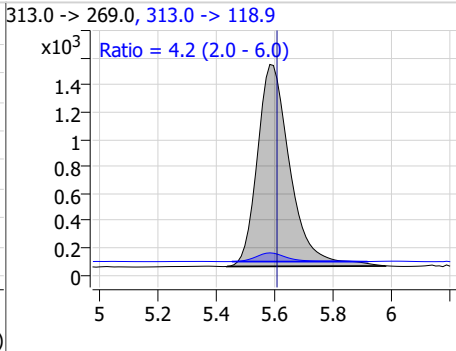
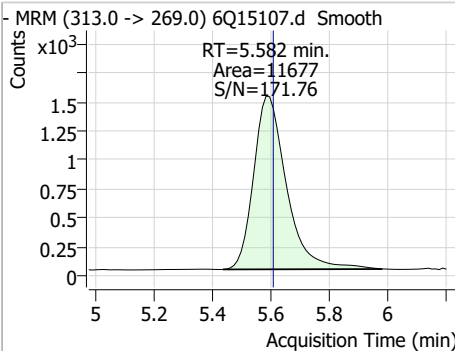
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.85	5.52	-0.02	4277	298.7 -> 98.8	42.9	22.6	67.9



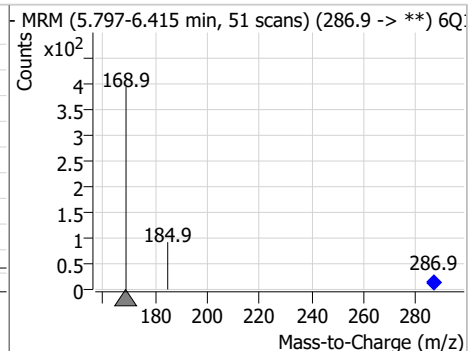
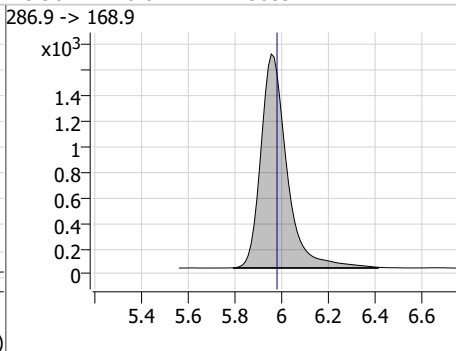
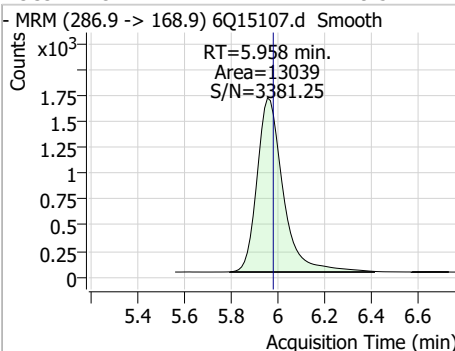
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.48	5.58	-0.02	30620				



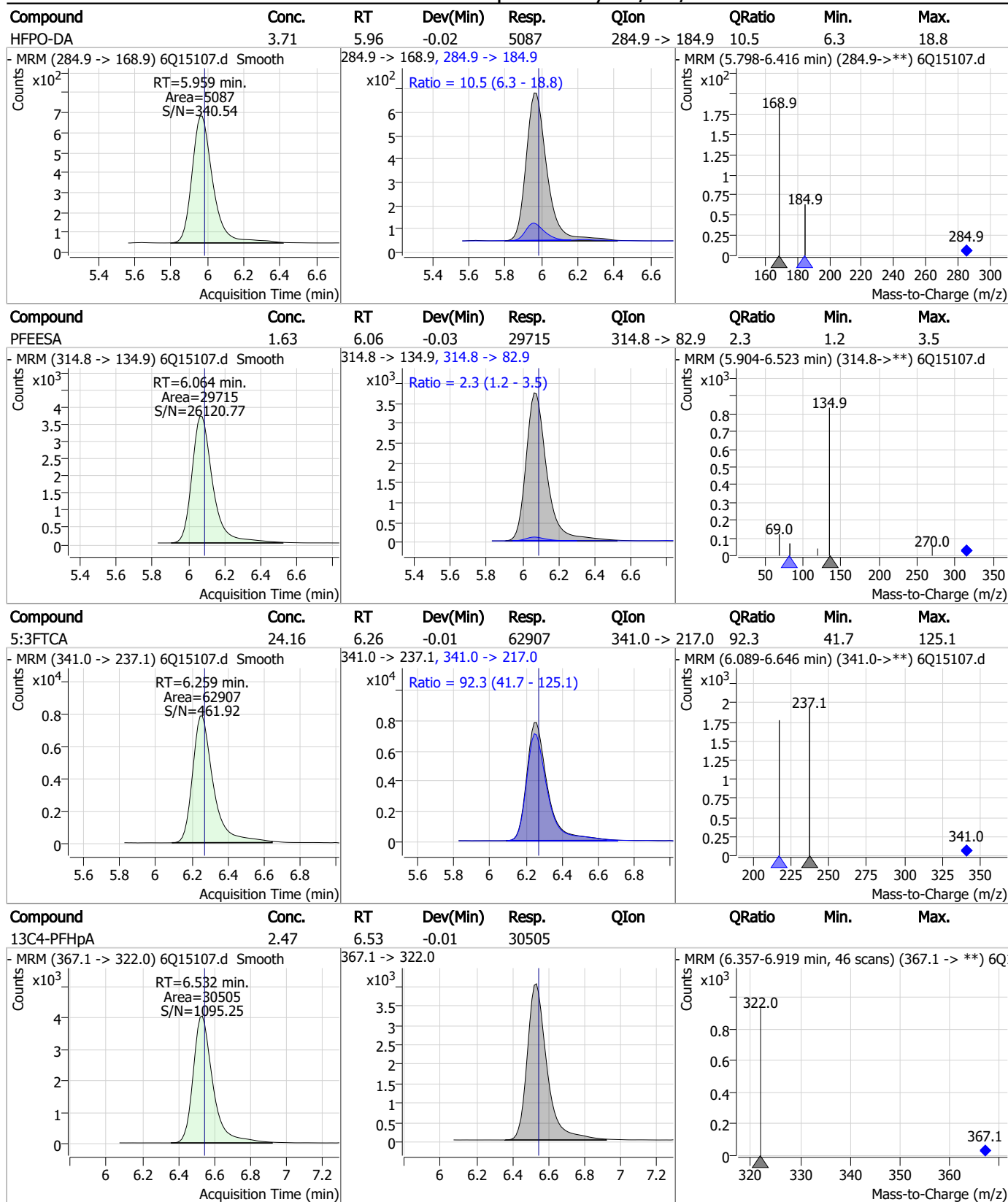
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.91	5.58	-0.02	11677	313.0 -> 118.9	4.2	2.0	6.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.54	5.96	-0.02	13039				

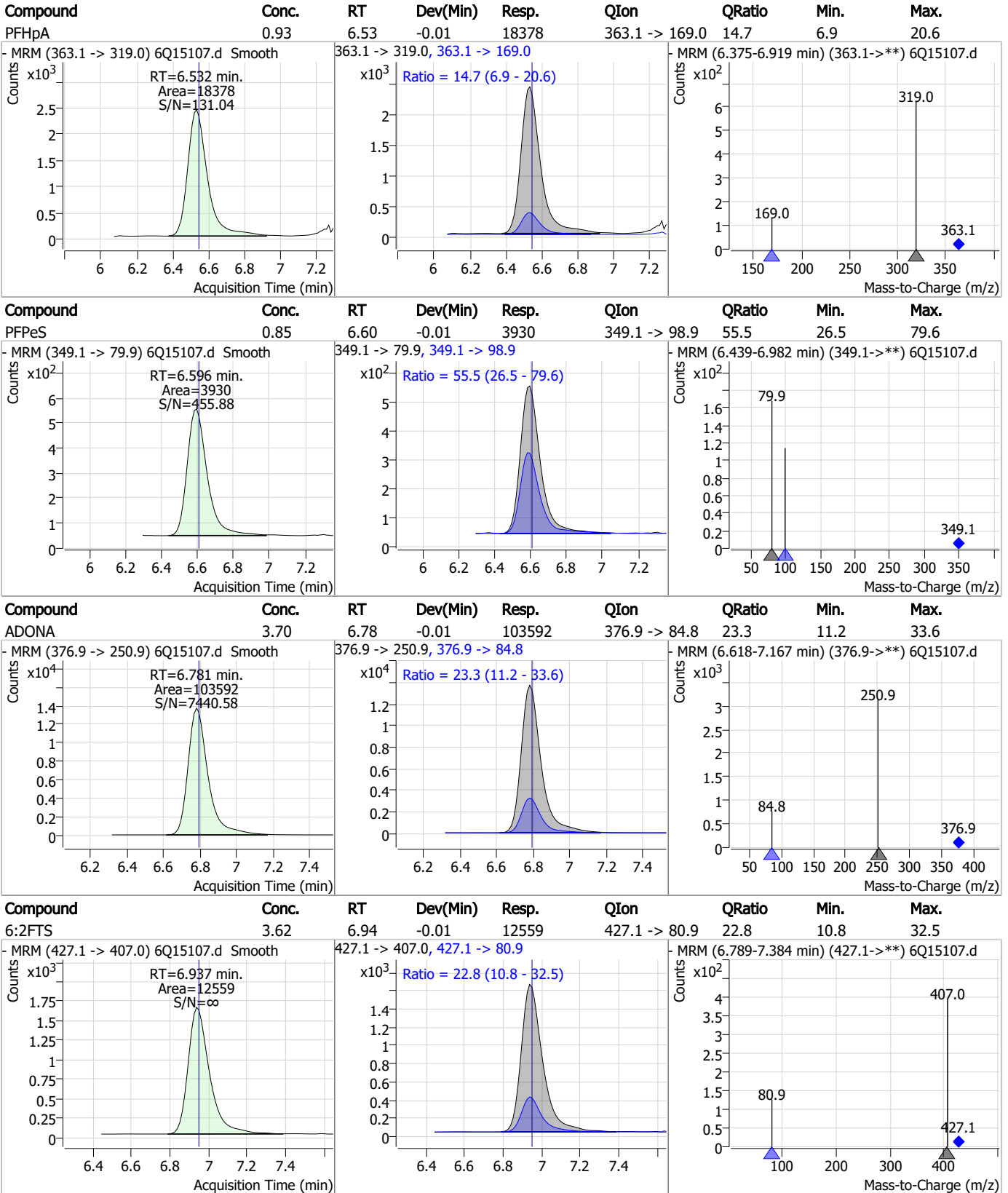


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

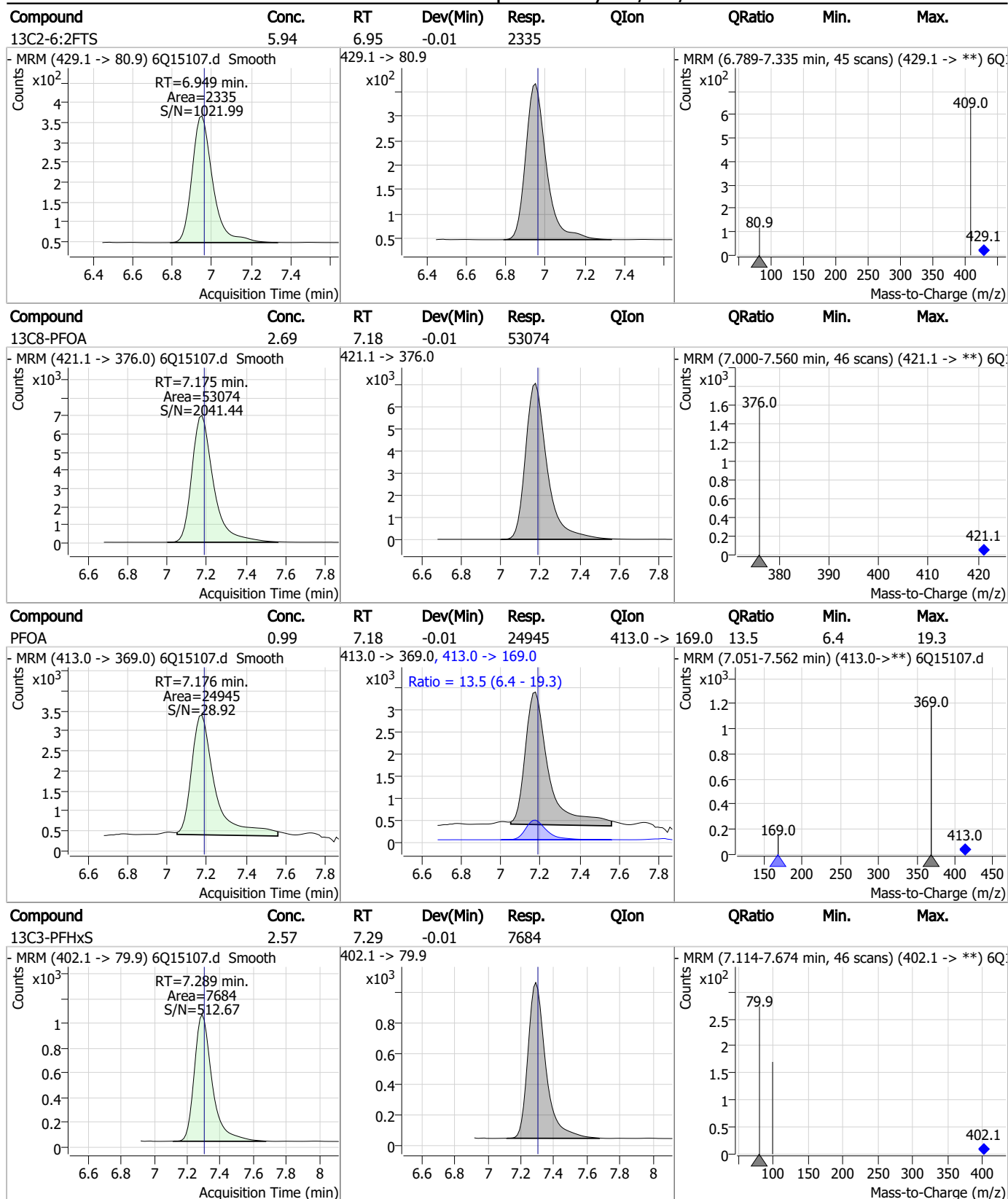
Perfluorinated Compounds by LC/MS/MS



7.3.2

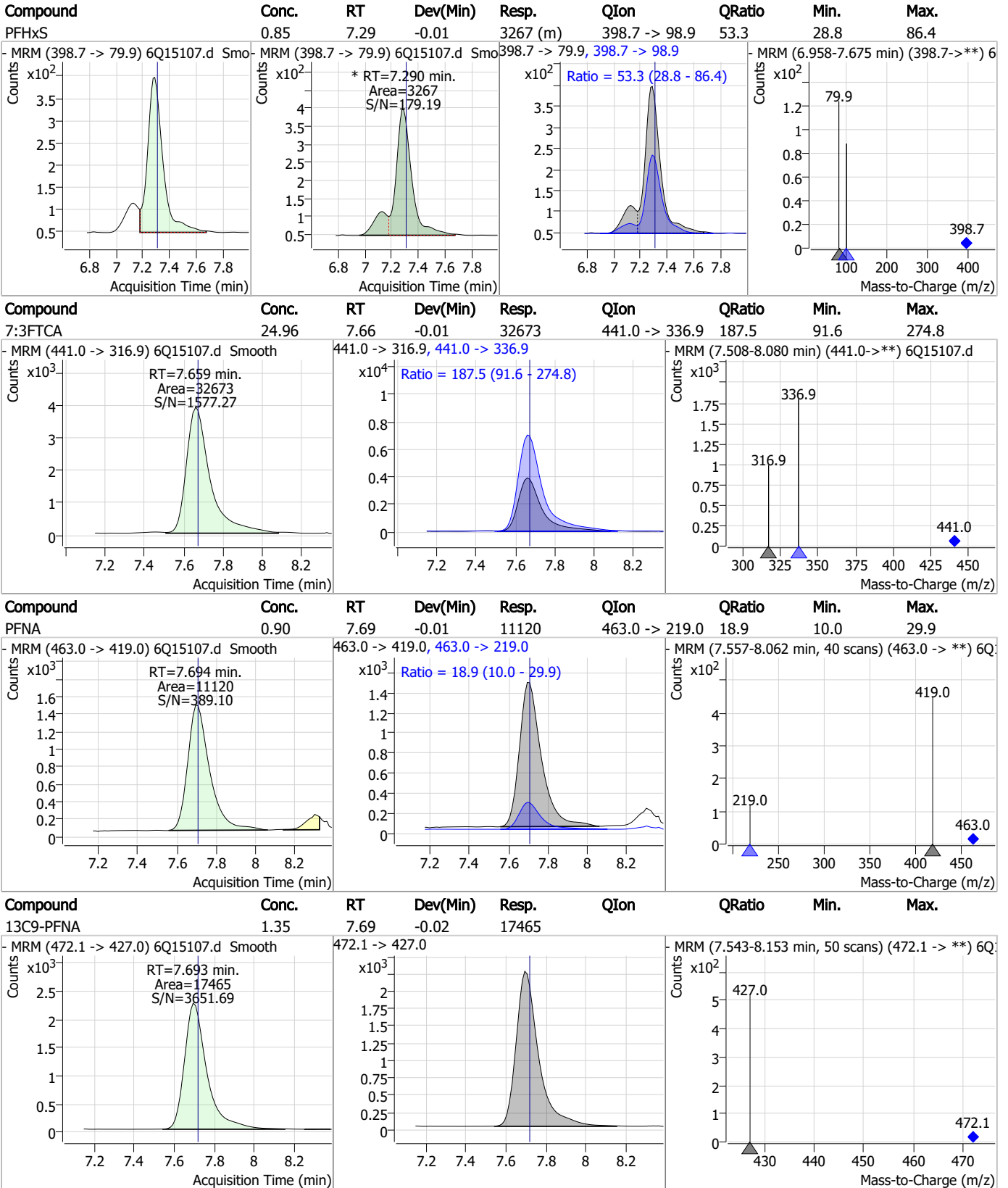
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS

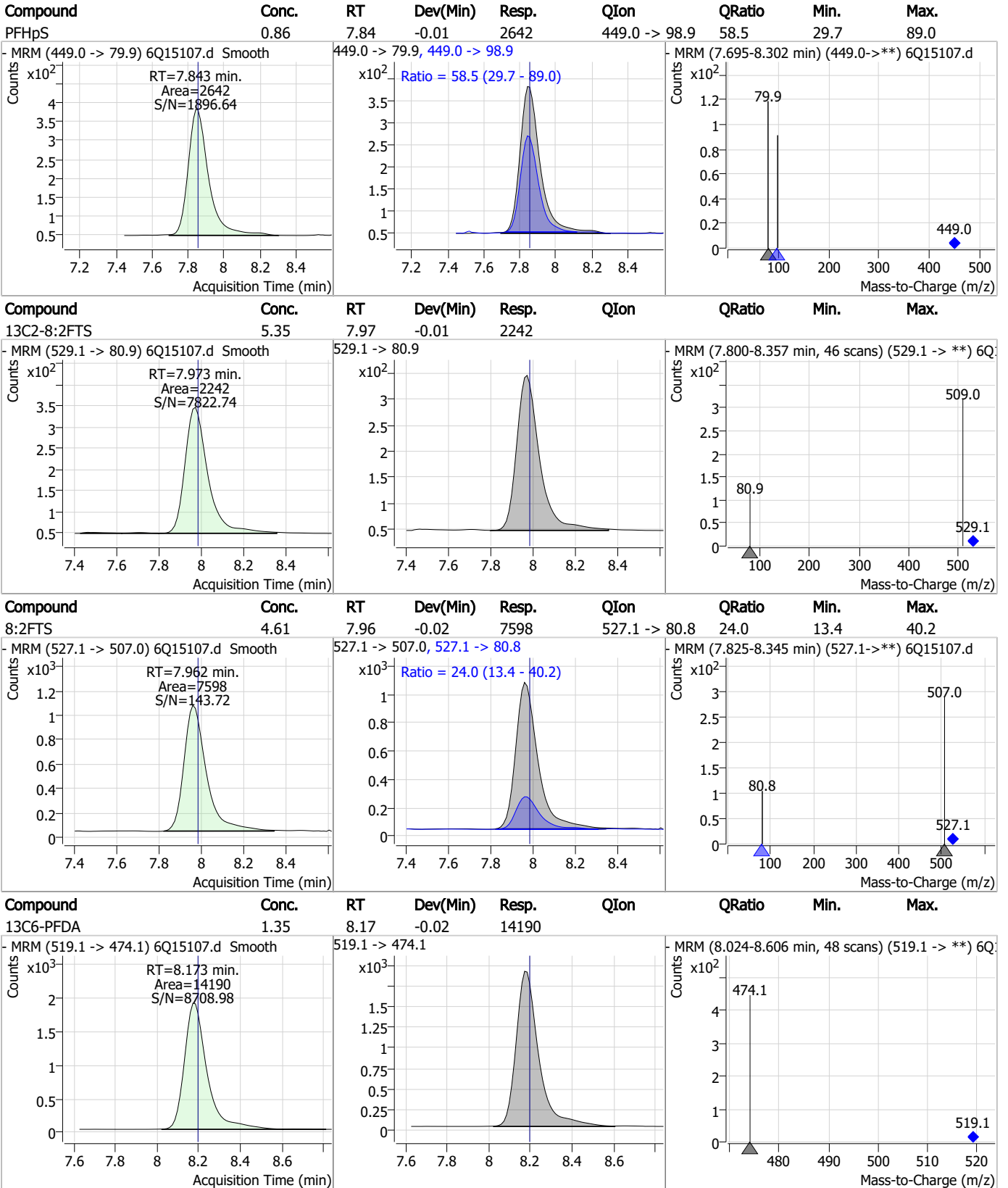


7.3.2

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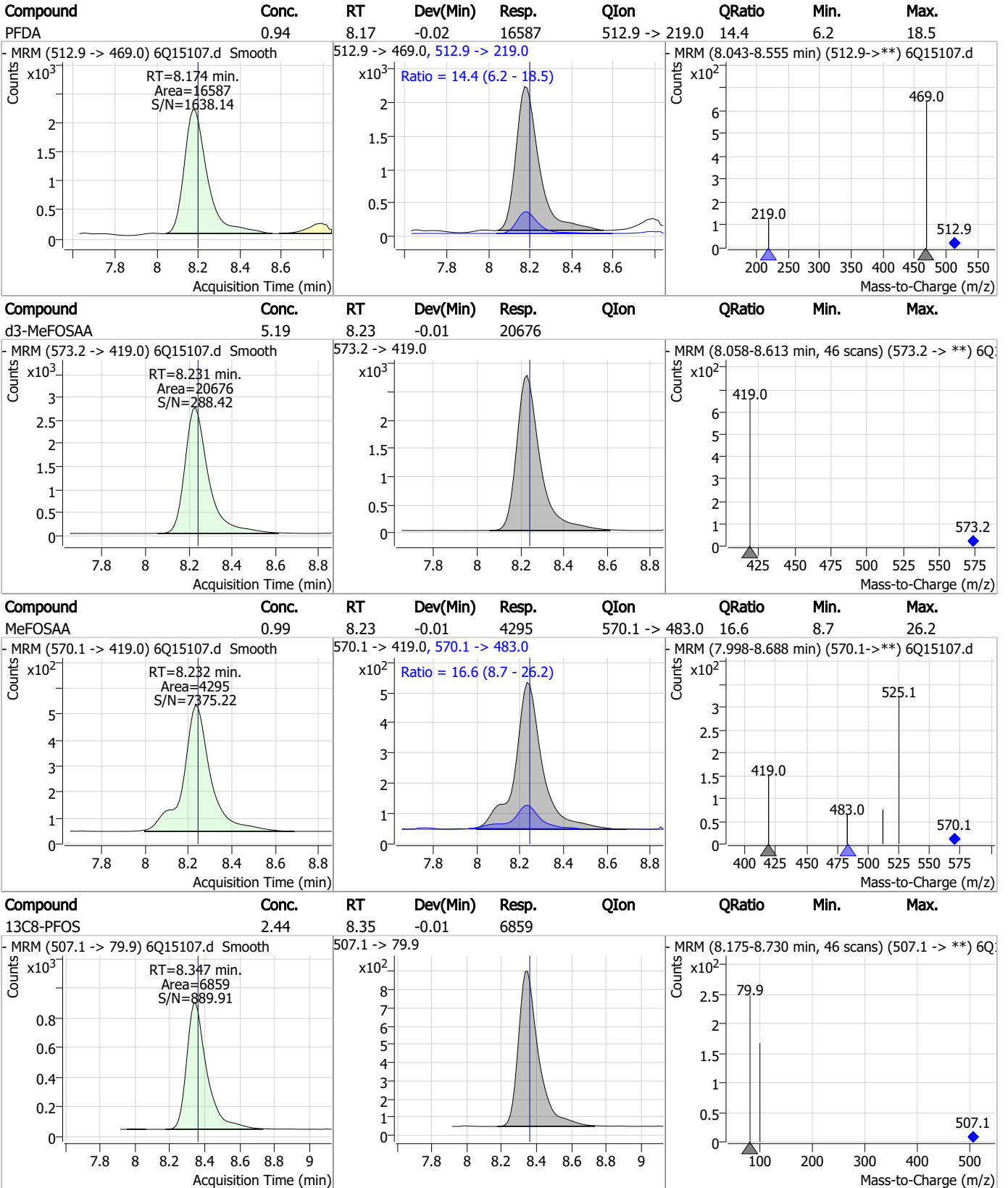


Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

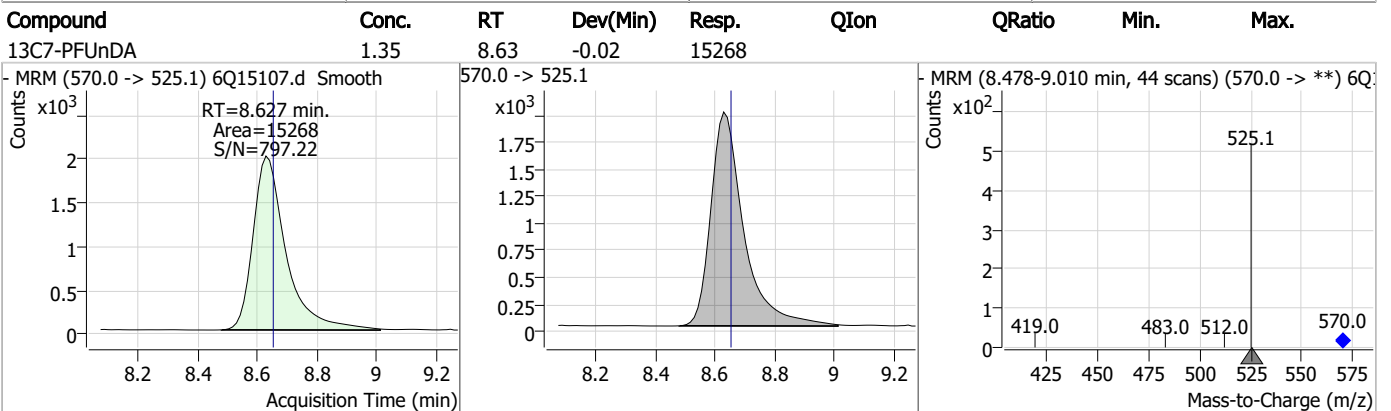
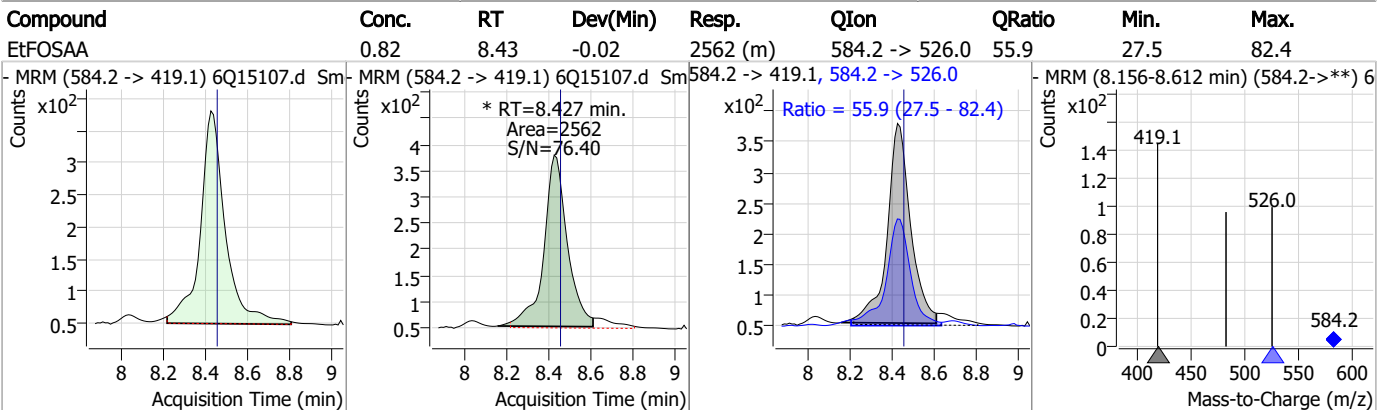
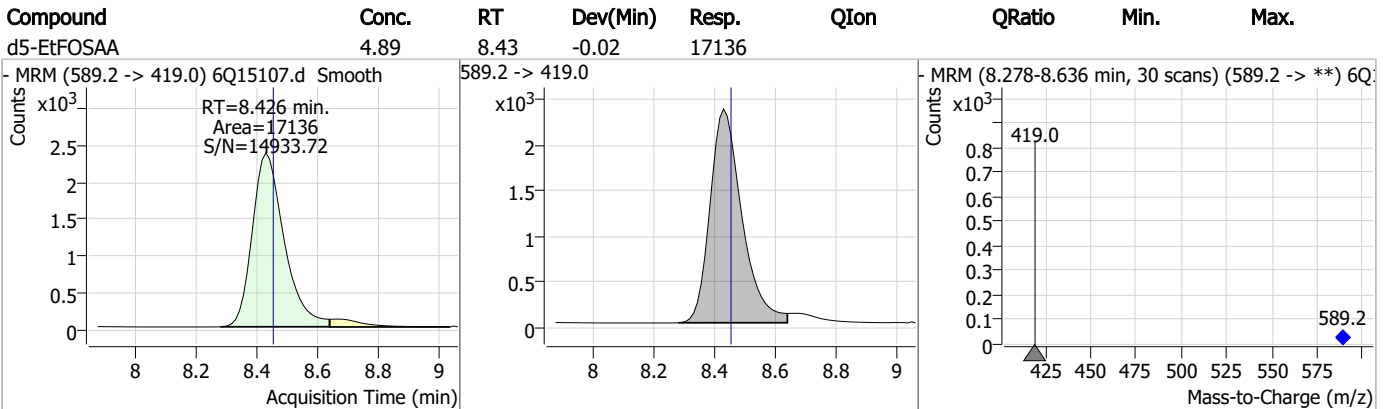
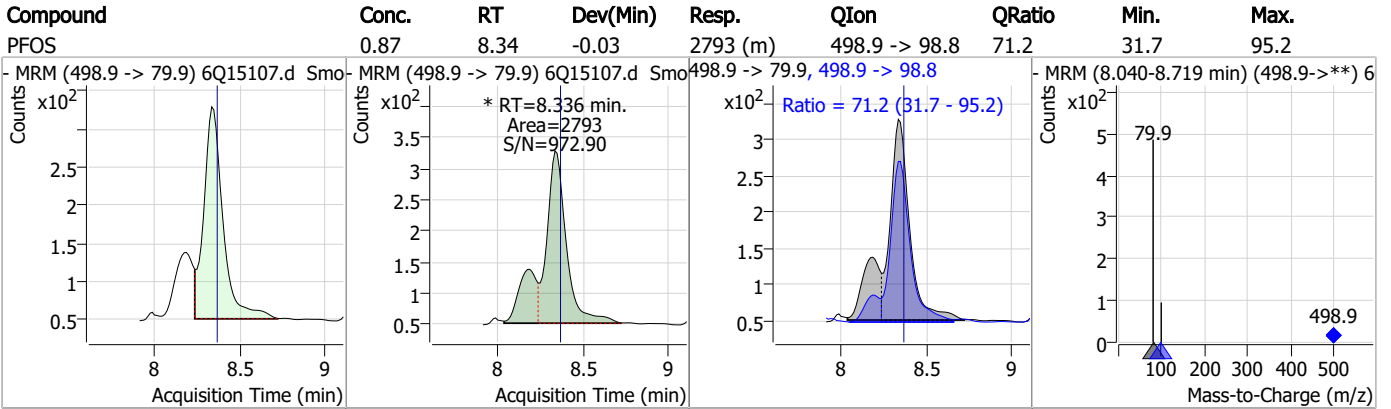


7.3.2

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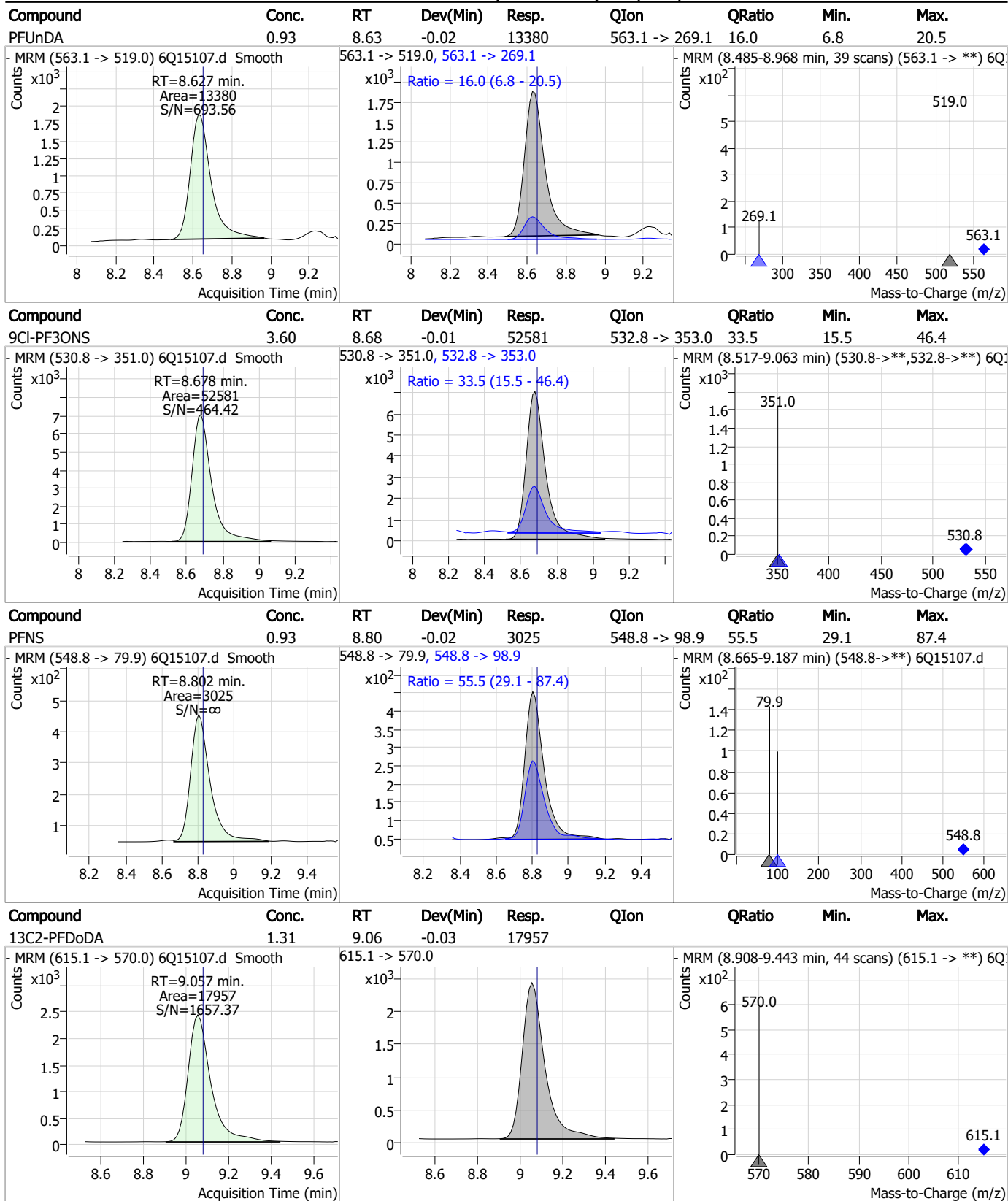
Perfluorinated Compounds by LC/MS/MS



7.3.2

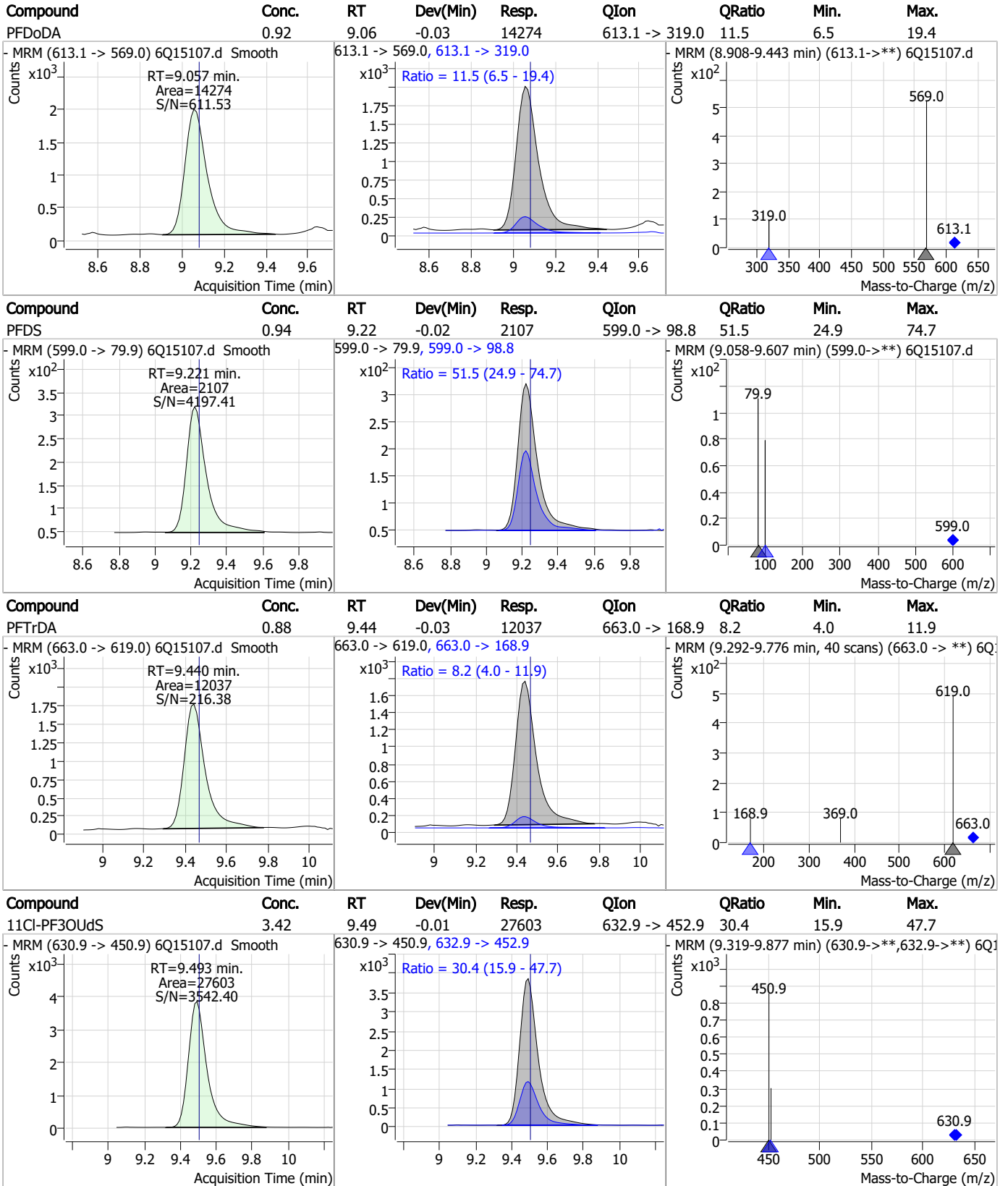
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

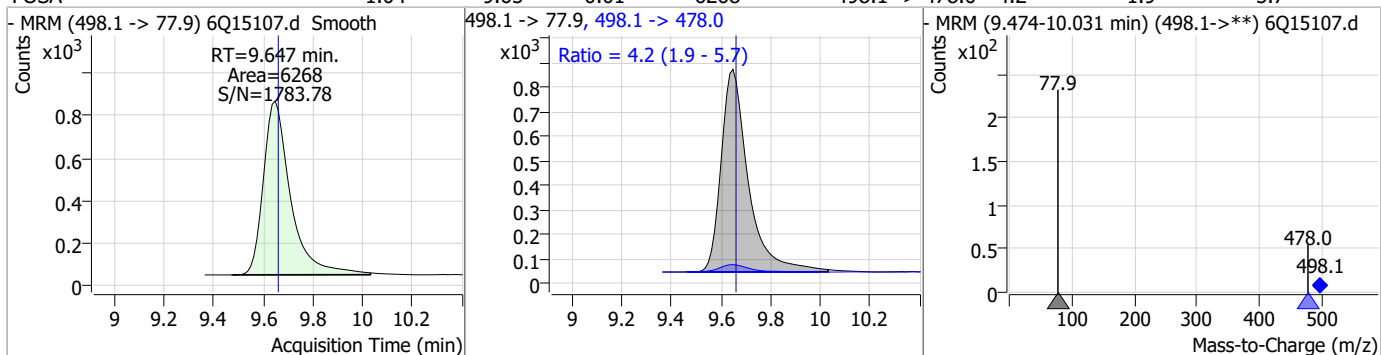
Perfluorinated Compounds by LC/MS/MS



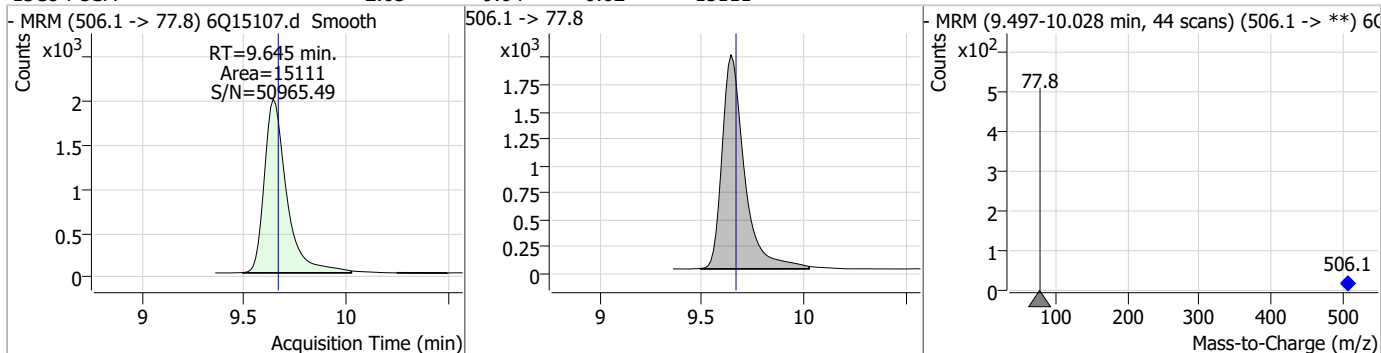
7.3.2
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Perfluorinated Compounds by LC/MS/MS

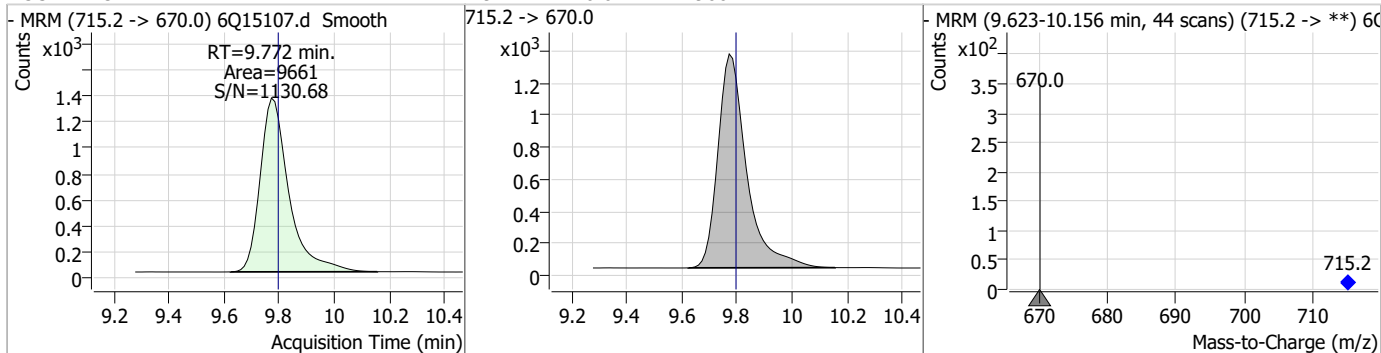
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.04	9.65	-0.01	6268	498.1 -> 478.0	4.2	1.9	5.7



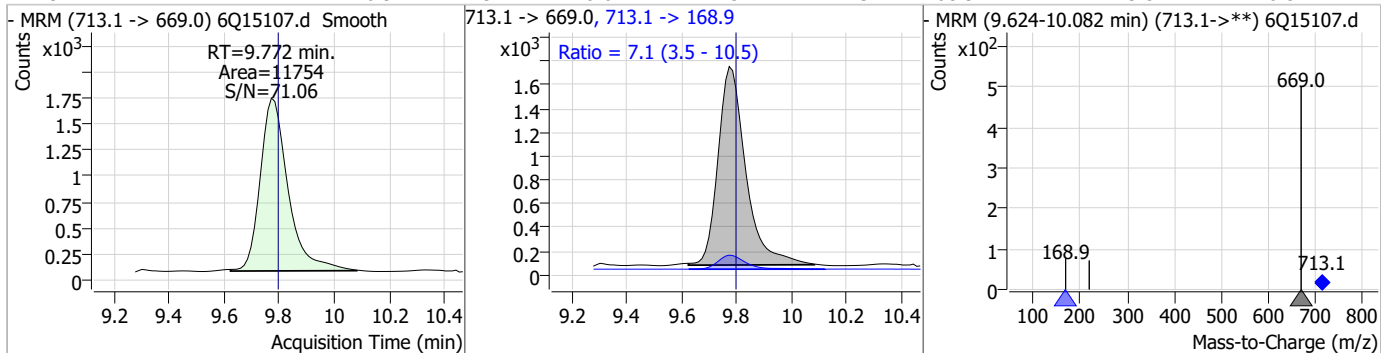
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.63	9.64	-0.02	15111				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.24	9.77	-0.02	9661				

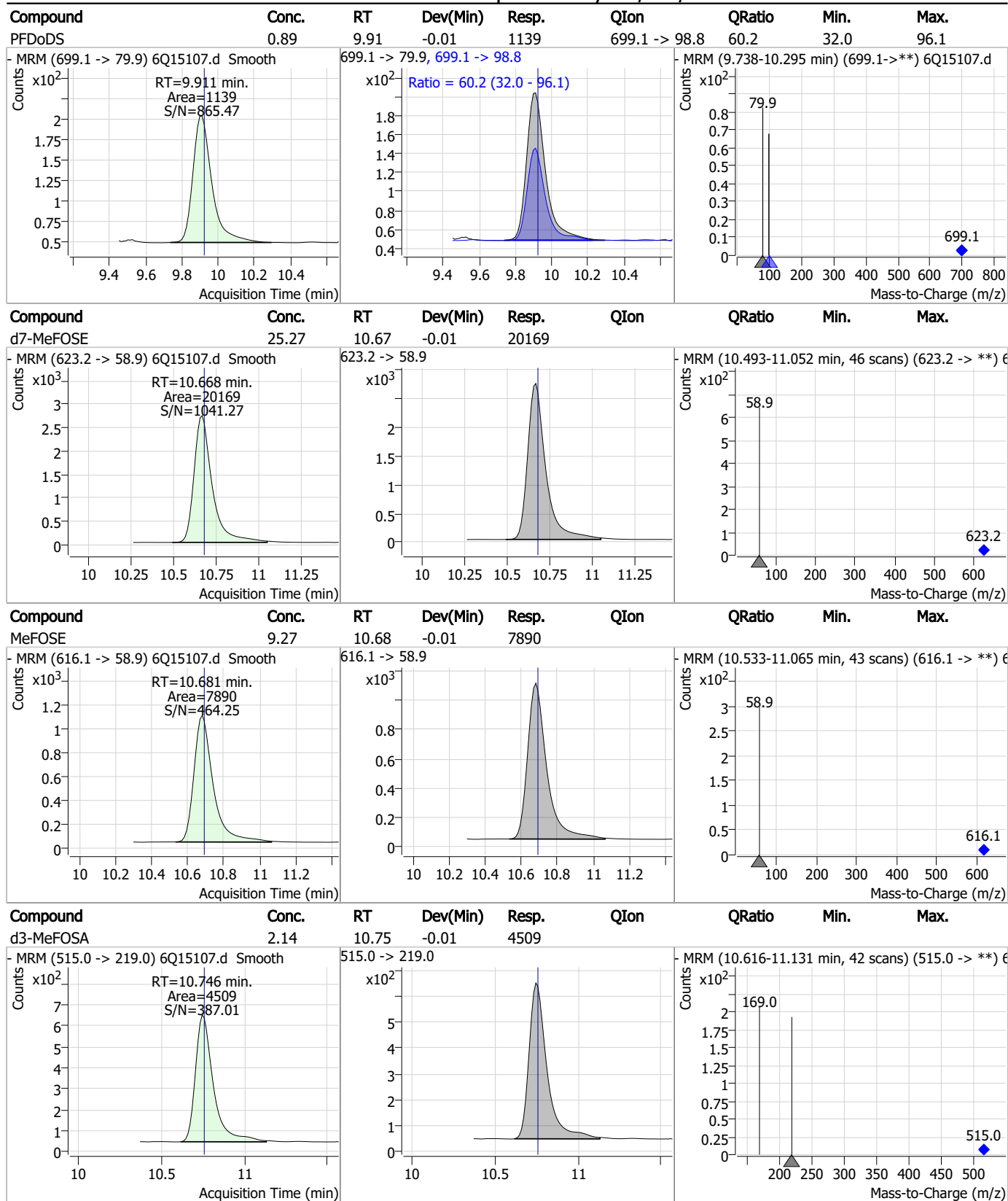


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.97	9.77	-0.02	11754	713.1 -> 168.9	7.1	3.5	10.5



7.3.2
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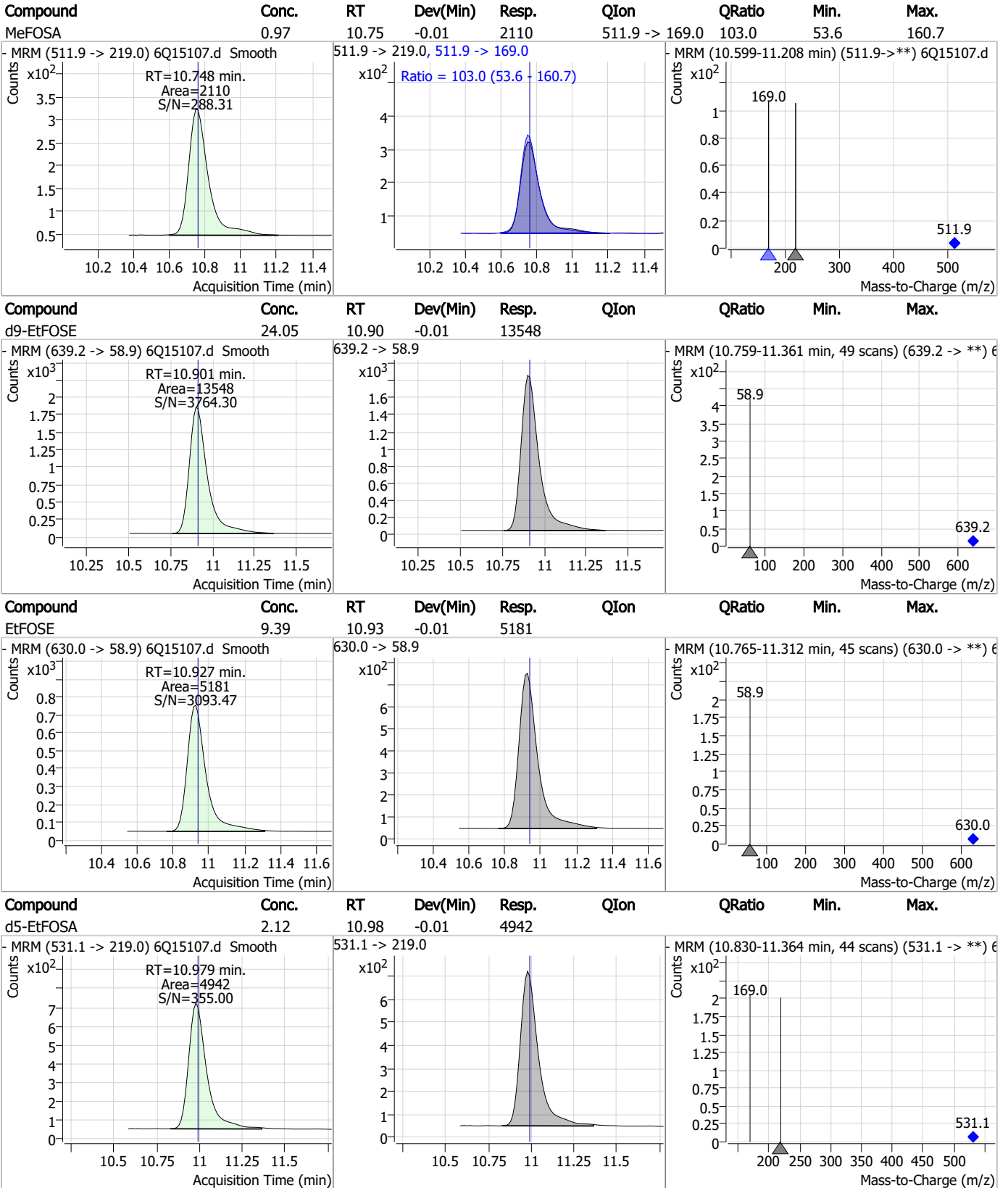
Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

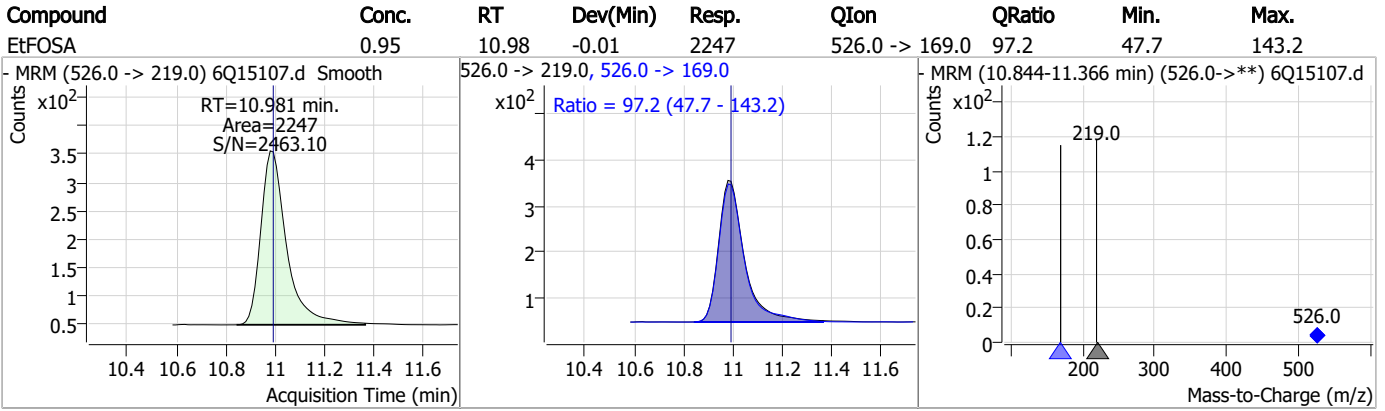


7.3.2

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Perfluorinated Compounds by LC/MS/MS



7.3.2

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Manual Integration Approval Summary

Sample Number: OP95968-LLBS Method: EPA DRAFT 1633
Lab FileID: 6Q15107.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 16:09 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.43	Split peak

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15114.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 5:48:02 PM
 Sample Name : op95968-ms
 Vial : P3-A9
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95968,S6Q229,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.997	216.8 -> 171.9	66775	10.00 µg/L	0.050
M5-PFPeA	4.395	268.3 -> 223.0	33183	5.00 µg/L	0.000
M5-PFHxA	5.580	318.0 -> 273.0	29892	2.50 µg/L	-0.025
M4-PFHpA	6.532	367.1 -> 322.0	29453	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	50252	2.50 µg/L	-0.012
M9-PFNA	7.706	472.1 -> 427.0	15470	1.25 µg/L	-0.012
M6-PFDA	8.173	519.1 -> 474.1	13964	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	15160	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	17049	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	8224	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	13446	2.50 µg/L	-0.025
M3-PFBS	5.523	302.1 -> 79.9	11383	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	6772	2.50 µg/L	-0.013
M8-PFOS	8.335	507.1 -> 79.9	5703	2.50 µg/L	-0.025
M2-4:2FTS	5.256	329.1 -> 80.9	1690	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	1842	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	1898	5.00 µg/L	-0.025
M3-MeFOSAA	8.218	573.2 -> 419.0	21467	5.00 µg/L	-0.025
M3-HFPO-DA	5.958	286.9 -> 168.9	12898	10.00 µg/L	-0.025
M5-EtFOSAA	8.414	589.2 -> 419.0	20342	5.00 µg/L	-0.037
M7-MeFOSE	10.656	623.2 -> 58.9	18256	25.00 µg/L	-0.025
M9-EtFOSE	10.901	639.2 -> 58.9	12087	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	4582	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	4171	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	7769	2.50 µg/L	-0.025
13C3-PFBA	2.989	216.0 -> 172.0	28822	5.00 µg/L	0.037
18O2-PFHxS	7.288	403.0 -> 83.9	5103	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	57796	2.50 µg/L	-0.012
13C2-PFDA	8.173	515.1 -> 470.1	19268	1.25 µg/L	-0.025
13C5-PFNA	7.706	468.0 -> 423.0	15867	1.25 µg/L	-0.012
13C2-PFHxA	5.581	315.1 -> 270.0	29319	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1690	5.77 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.5%		
13C2-6:2FTS	6.937	429.1 -> 80.9	1842	4.86 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-8:2FTS	7.961	529.1 -> 80.9	1898	4.69 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C2-PFDoDA	9.057	615.1 -> 570.0	17049	1.13 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C2-PFTeDA	9.772	715.2 -> 670.0	8224	0.96 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.5%		
13C3-PFBS	5.523	302.1 -> 79.9	11383	2.60 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C3-PFHxS	7.289	402.1 -> 79.9	6772	2.35 µg/L	-0.013

7.4.1
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 = 94.0%		
13C4-PFBA	2.997	216.8 -> 171.9	66775	10.10 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C4-PFHpA	6.532	367.1 -> 322.0	29453	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C5-PFHxA	5.580	318.0 -> 273.0	29892	2.50 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C5-PFPeA	4.395	268.3 -> 223.0	33183	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C6-PFDA	8.173	519.1 -> 474.1	13964	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C7-PFUnDA	8.627	570.0 -> 525.1	15160	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C8-FOSA	9.645	506.1 -> 77.8	13446	2.49 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C8-PFOA	7.175	421.1 -> 376.0	50252	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C8-PFOS	8.335	507.1 -> 79.9	5703	2.16 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.5%		
13C9-PFNA	7.706	472.1 -> 427.0	15470	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
d3-MeFOSAA	8.218	573.2 -> 419.0	21467	5.75 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.1%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	12898	9.74 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
d3-MeFOSA	10.746	515.0 -> 219.0	4171	2.12 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 84.6%		
d5-EtFOSAA	8.414	589.2 -> 419.0	20342	6.20 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.0%		
d7-MeFOSE	10.656	623.2 -> 58.9	18256	24.43 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.7%		
d9-EtFOSE	10.901	639.2 -> 58.9	12087	22.91 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 91.7%		
d5-EtFOSA	10.979	531.1 -> 219.0	4582	2.10 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 84.1%		
Target Compounds					QValue
4:2FTS	5.256	327.1 -> 307.0	33106	8.47 µg/L	99
		327.1 -> 80.9	8206		
6:2FTS	6.937	427.1 -> 407.0	27106	9.90 µg/L	96
		427.1 -> 80.9	5383		
8:2FTS	7.974	527.1 -> 507.0	15700	11.25 µg/L	95
		527.1 -> 80.8	3793		
EtFOSAA	8.427	584.2 -> 419.1	7889	2.14 µg/L	99
		584.2 -> 526.0	4369		
FOSA	9.647	498.1 -> 77.9	12675	2.36 µg/L	99
		498.1 -> 478.0	456		
MeFOSAA	8.219	570.1 -> 419.0	11289	2.51 µg/L	99
		570.1 -> 483.0	1920		
PFBA	2.993	212.8 -> 168.9	17340	9.52 µg/L	100
PFBS	5.525	298.7 -> 79.9	10583	2.11 µg/L	94
		298.7 -> 98.8	4409		
PFDA	8.174	512.9 -> 469.0	38751	2.24 µg/L	92
		512.9 -> 219.0	6012		
PFDoDA	9.057	613.1 -> 569.0	33733	2.30 µg/L	98
		613.1 -> 319.0	4151		
PFDS	9.221	599.0 -> 79.9	5077	2.72 µg/L	100

7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8	2541	2.43	µg/L	97
		363.1 -> 319.0	46232			
PFHpS	7.843	363.1 -> 169.0	6830	2.61	µg/L	93
		449.0 -> 79.9	6627			
PFHxA	5.582	449.0 -> 98.9	3586	2.48	µg/L	99
		313.0 -> 269.0	31180			
PFHxS	7.290	313.0 -> 118.9	1142	2.32	µg/L	m
		398.7 -> 79.9	7842			
PFNA	7.707	398.7 -> 98.9	4520	2.47	µg/L	100
		463.0 -> 419.0	27042			
PFNS	8.802	463.0 -> 219.0	5404	2.63	µg/L	95
		548.8 -> 79.9	7105			
PFOA	7.176	548.8 -> 98.9	3888	2.57	µg/L	100
		413.0 -> 369.0	61022			
PFOS	8.336	413.0 -> 169.0	7932	2.25	µg/L	m
		498.9 -> 79.9	5999			
PFPeA	4.397	498.9 -> 98.8	4401	4.87	µg/L	100
		263.0 -> 219.0	38500			
PFPeS	6.596	349.1 -> 79.9	9984	2.44	µg/L	98
		349.1 -> 98.9	5194			
PFTeDA	9.772	713.1 -> 669.0	25697	2.49	µg/L	98
		713.1 -> 168.9	1590			
PFTrDA	9.440	663.0 -> 619.0	28036	2.15	µg/L	97
		663.0 -> 168.9	2498			
PFUnDA	8.640	563.1 -> 519.0	32911	2.29	µg/L	95
		563.1 -> 269.1	5145			
11CI-PF3OUdS	9.493	630.9 -> 450.9	67326	8.44	µg/L	95
		632.9 -> 452.9	19588			
9CI-PF3ONS	8.678	530.8 -> 351.0	134034	9.27	µg/L	97
		532.8 -> 353.0	43325			
ADONA	6.781	376.9 -> 250.9	253828	9.16	µg/L	100
		376.9 -> 84.8	57334			
HFPO-DA	5.959	284.9 -> 168.9	12036	8.87	µg/L	98
		284.9 -> 184.9	1429			
3:3FTCA	3.888	241.0 -> 177.0	5588	14.14	µg/L	98
		241.0 -> 117.0	784			
5:3FTCA	6.246	341.0 -> 237.1	163023	64.13	µg/L	100
		341.0 -> 217.0	136325			
7:3FTCA	7.659	441.0 -> 316.9	81156	63.51	µg/L	99
		441.0 -> 336.9	149264			
EtFOSA	10.981	526.0 -> 219.0	5551	2.52	µg/L	94
		526.0 -> 169.0	5630			
EtFOSE	10.914	630.0 -> 58.9	12471	25.33	µg/L	100
		511.9 -> 219.0	5174			
MeFOSA	10.748	511.9 -> 169.0	5256	2.58	µg/L	95
		616.1 -> 58.9	18266			
MeFOSE	10.681	699.1 -> 79.9	2584	23.70	µg/L	100
		699.1 -> 98.8	1581			
PFDoDS	9.911	295.0 -> 201.0	3633	2.42	µg/L	96
		295.0 -> 84.9	1604			
NFDHA	5.463	279.0 -> 85.1	12261	4.48	µg/L	99
		229.0 -> 84.9	10895			
PFMBA	4.806	314.8 -> 134.9	71454	4.81	µg/L	100
		314.8 -> 82.9	1874			
PFMPA	3.538			4.01	µg/L	99
PFEESA	6.064					

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

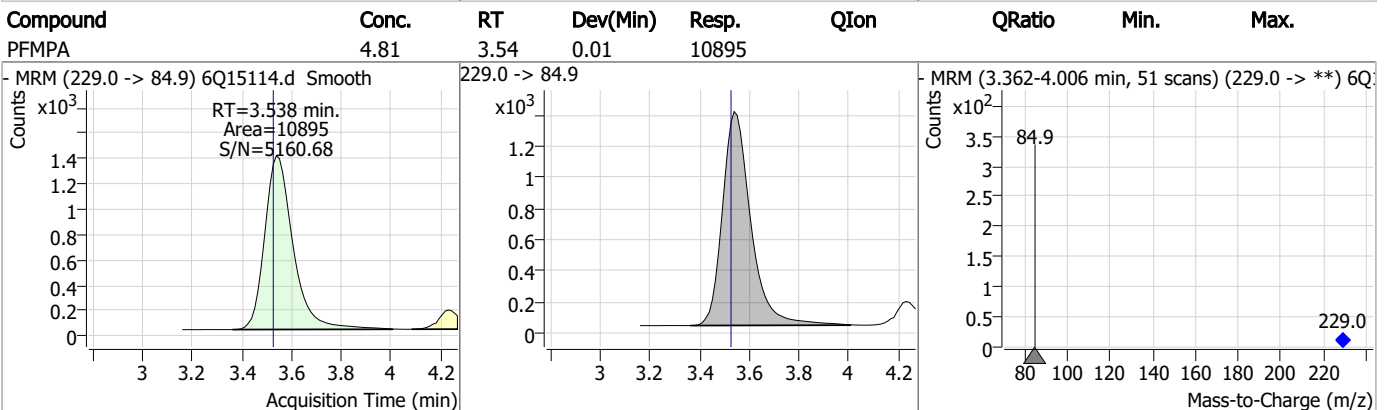
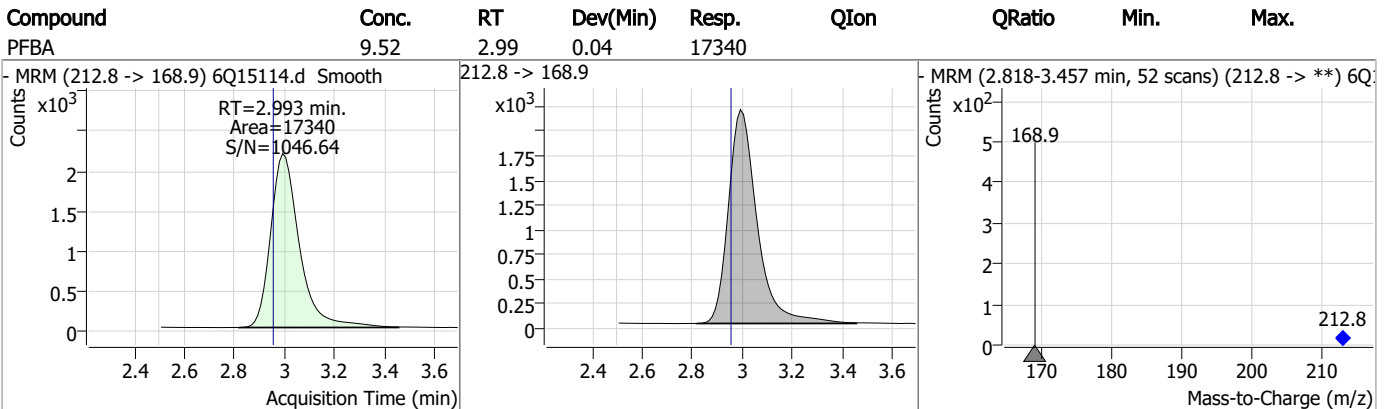
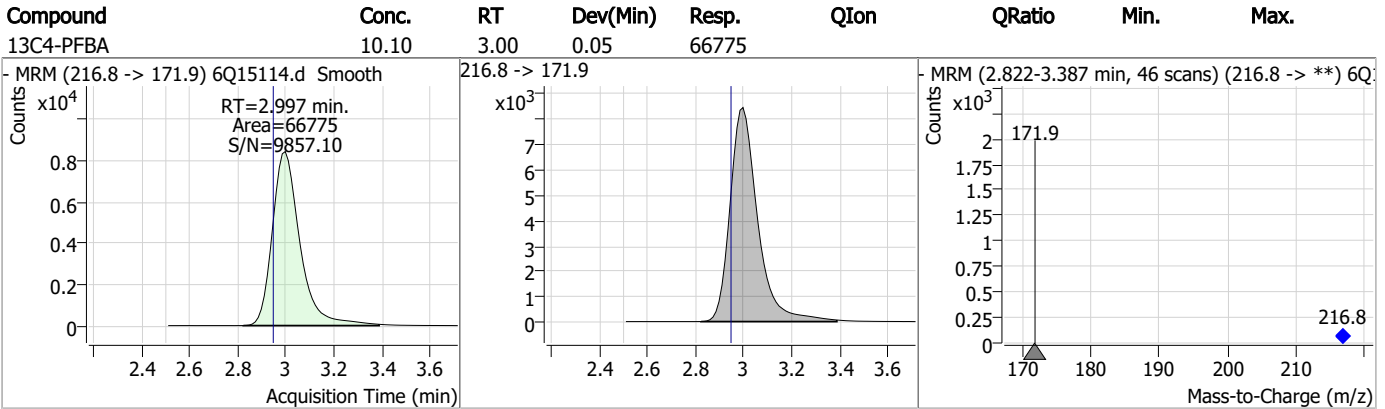
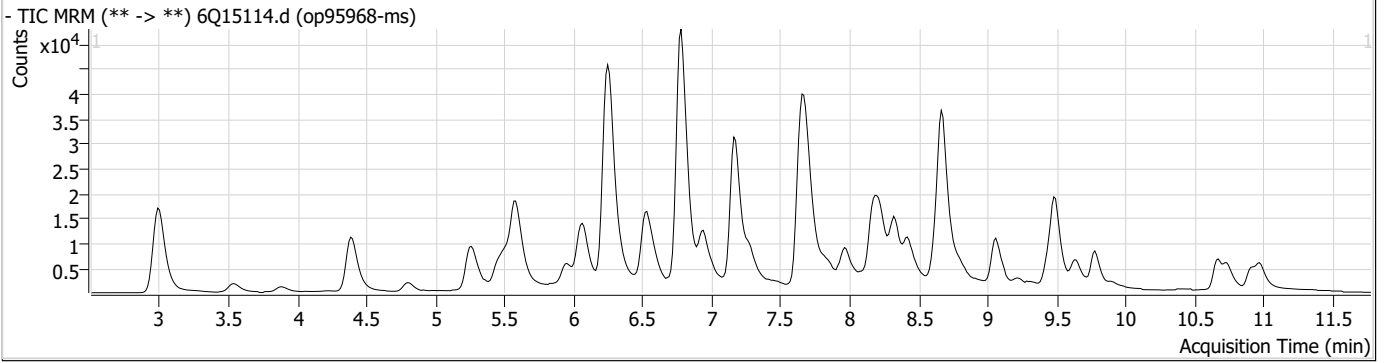
Perfluorinated Compounds by LC/MS/MS

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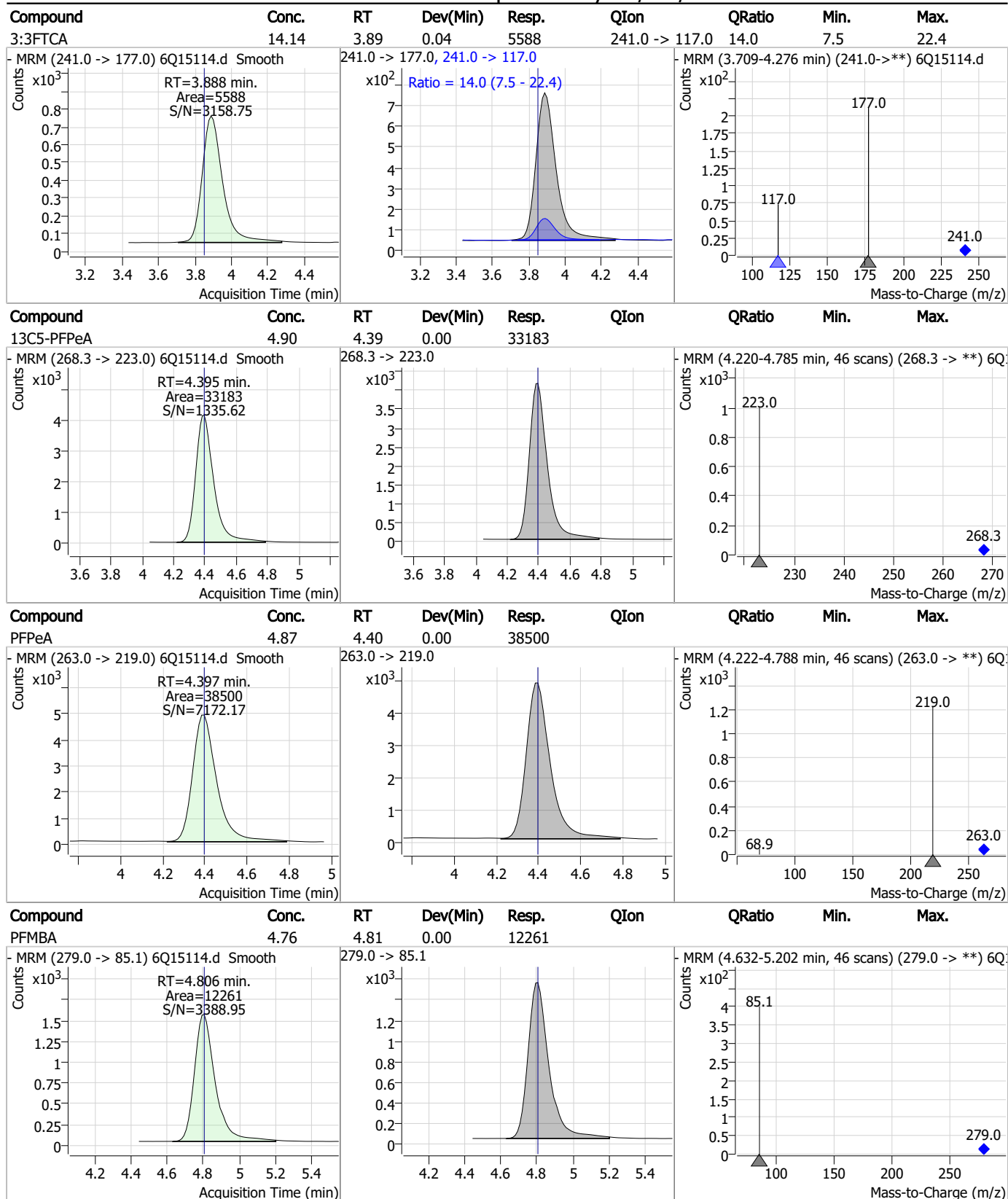
7.4.1

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Perfluorinated Compounds by LC/MS/MS

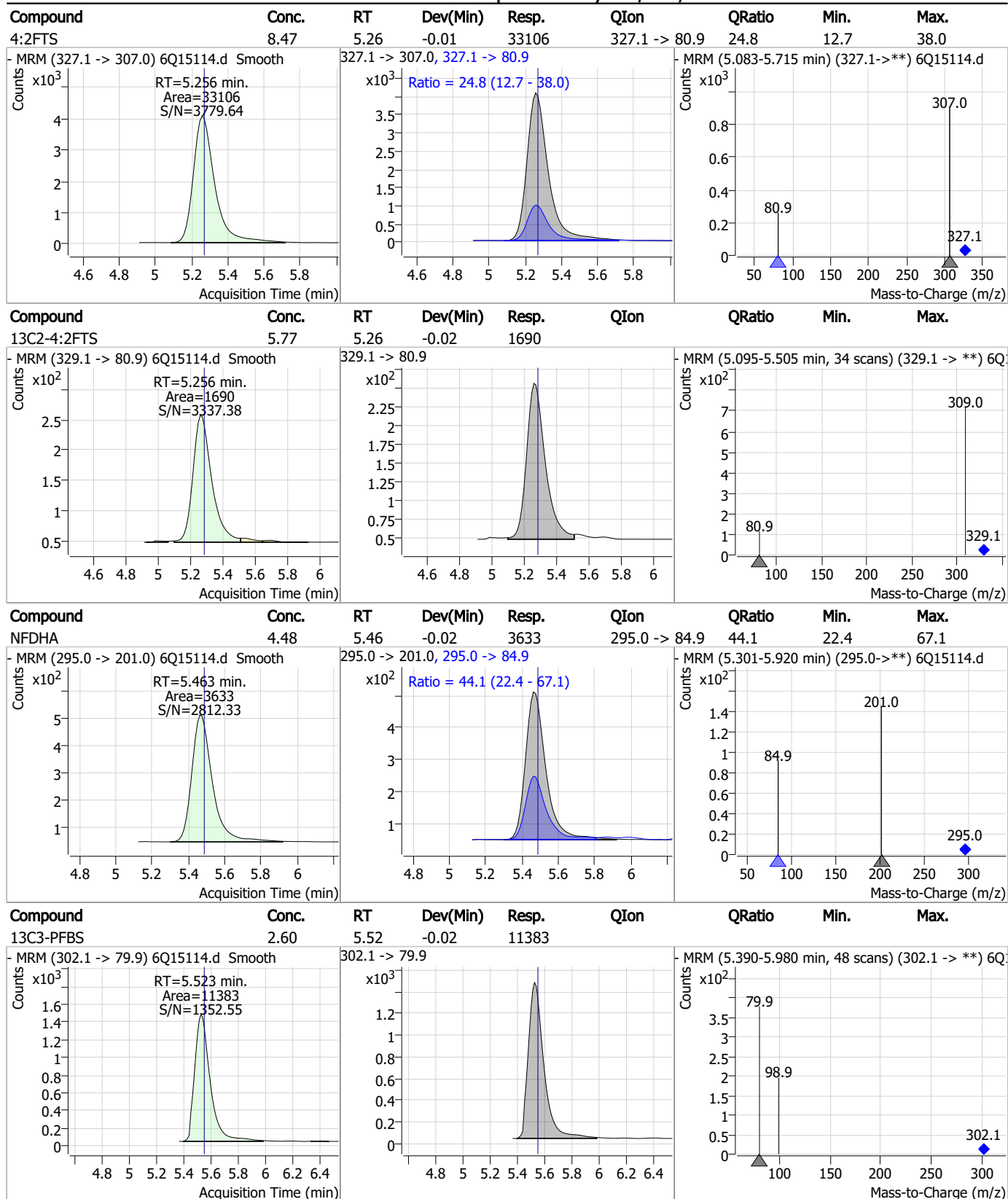


Perfluorinated Compounds by LC/MS/MS



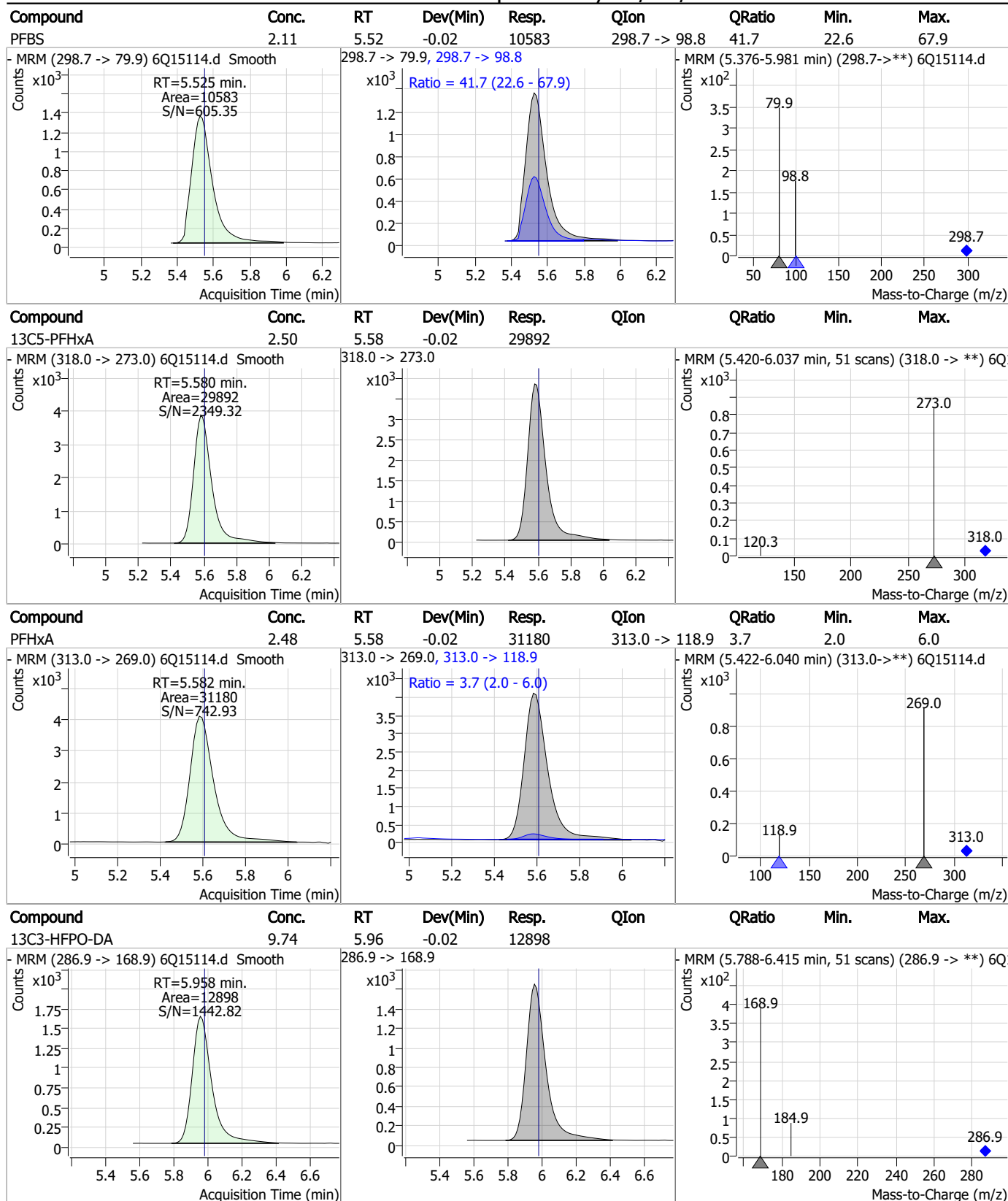
7.4.1
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Perfluorinated Compounds by LC/MS/MS



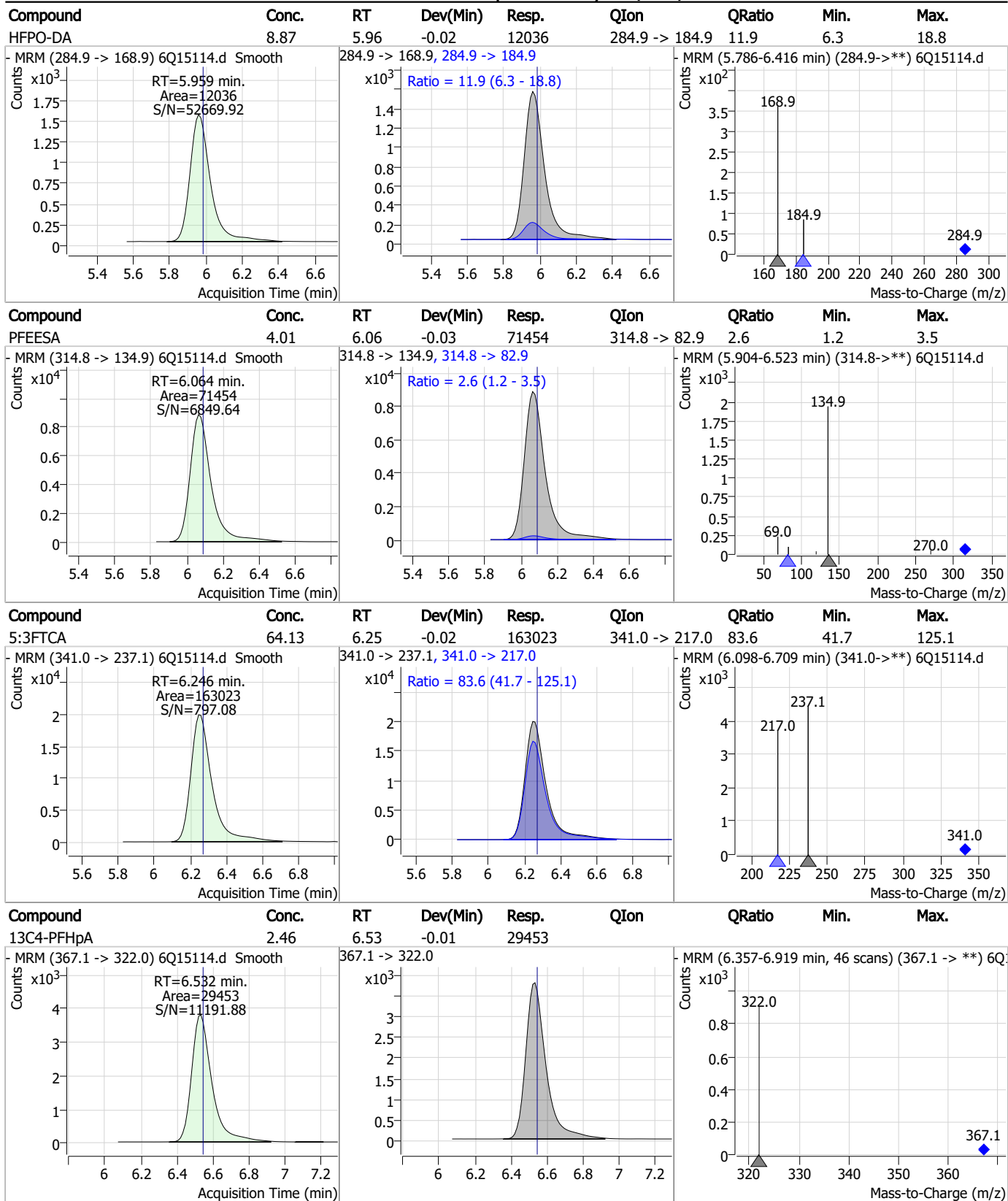
7.4.1
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Perfluorinated Compounds by LC/MS/MS



7.4.1
7

Perfluorinated Compounds by LC/MS/MS

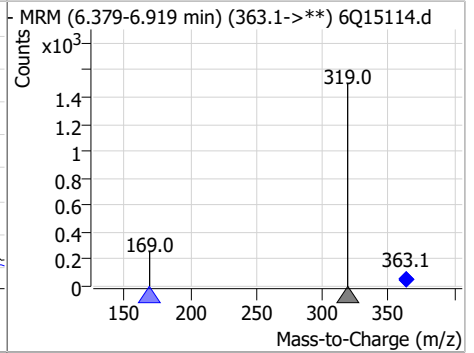
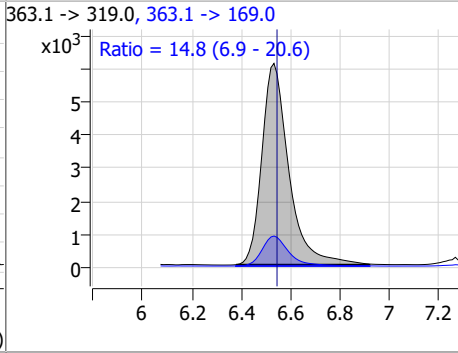
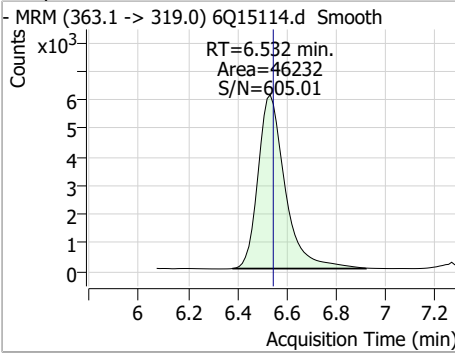


7.4.1

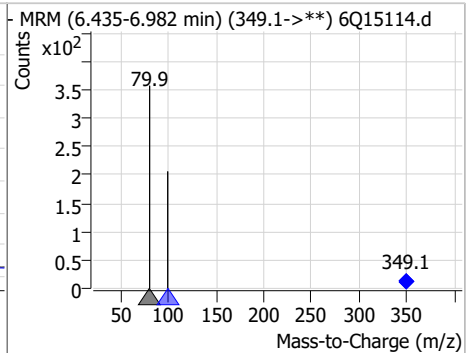
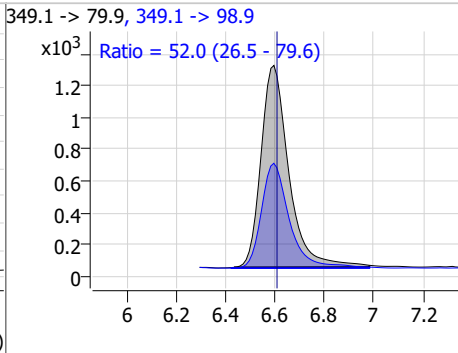
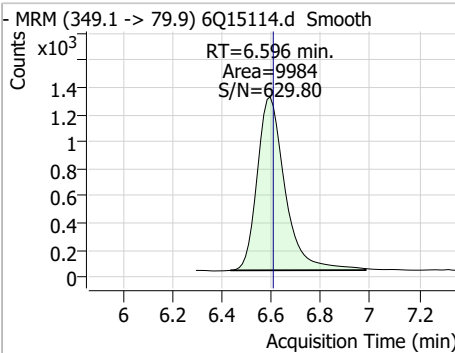
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Perfluorinated Compounds by LC/MS/MS

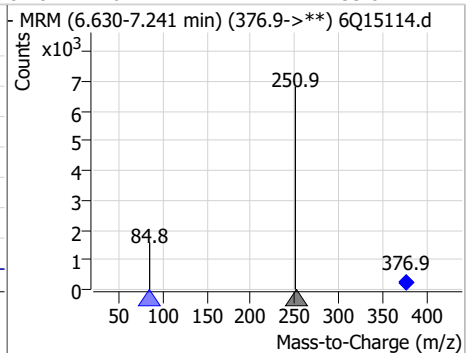
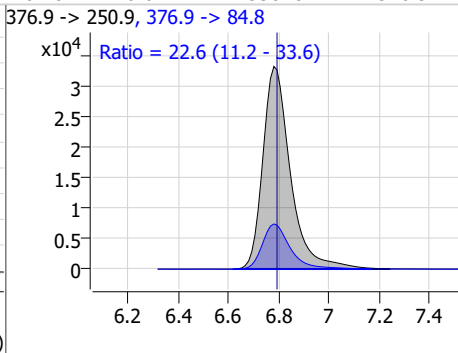
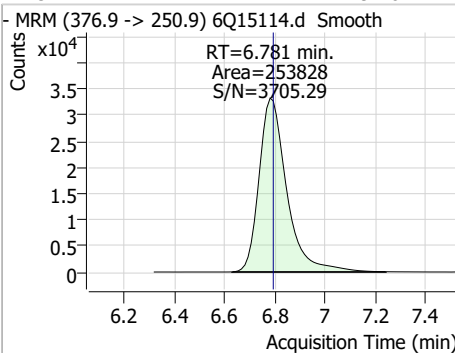
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.43	6.53	-0.01	46232	363.1 -> 169.0	14.8	6.9	20.6



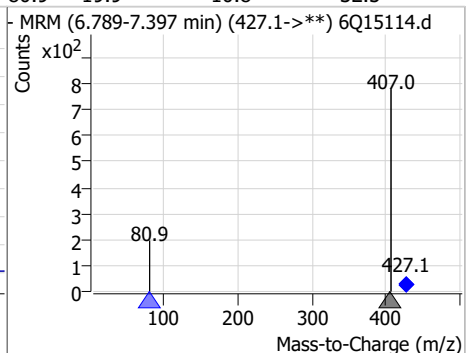
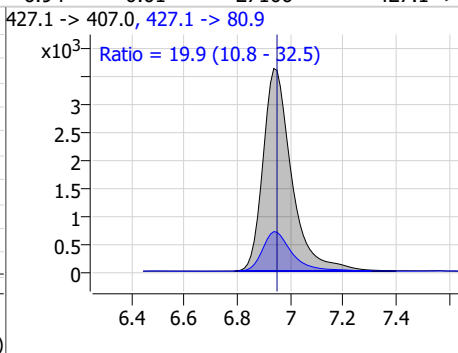
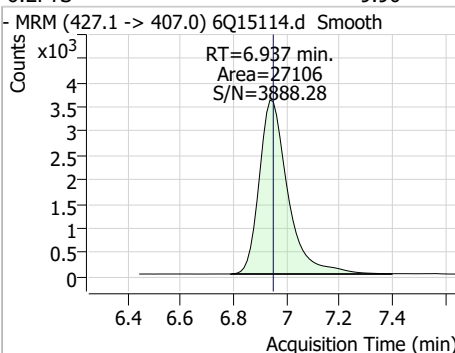
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.44	6.60	-0.01	9984	349.1 -> 98.9	52.0	26.5	79.6



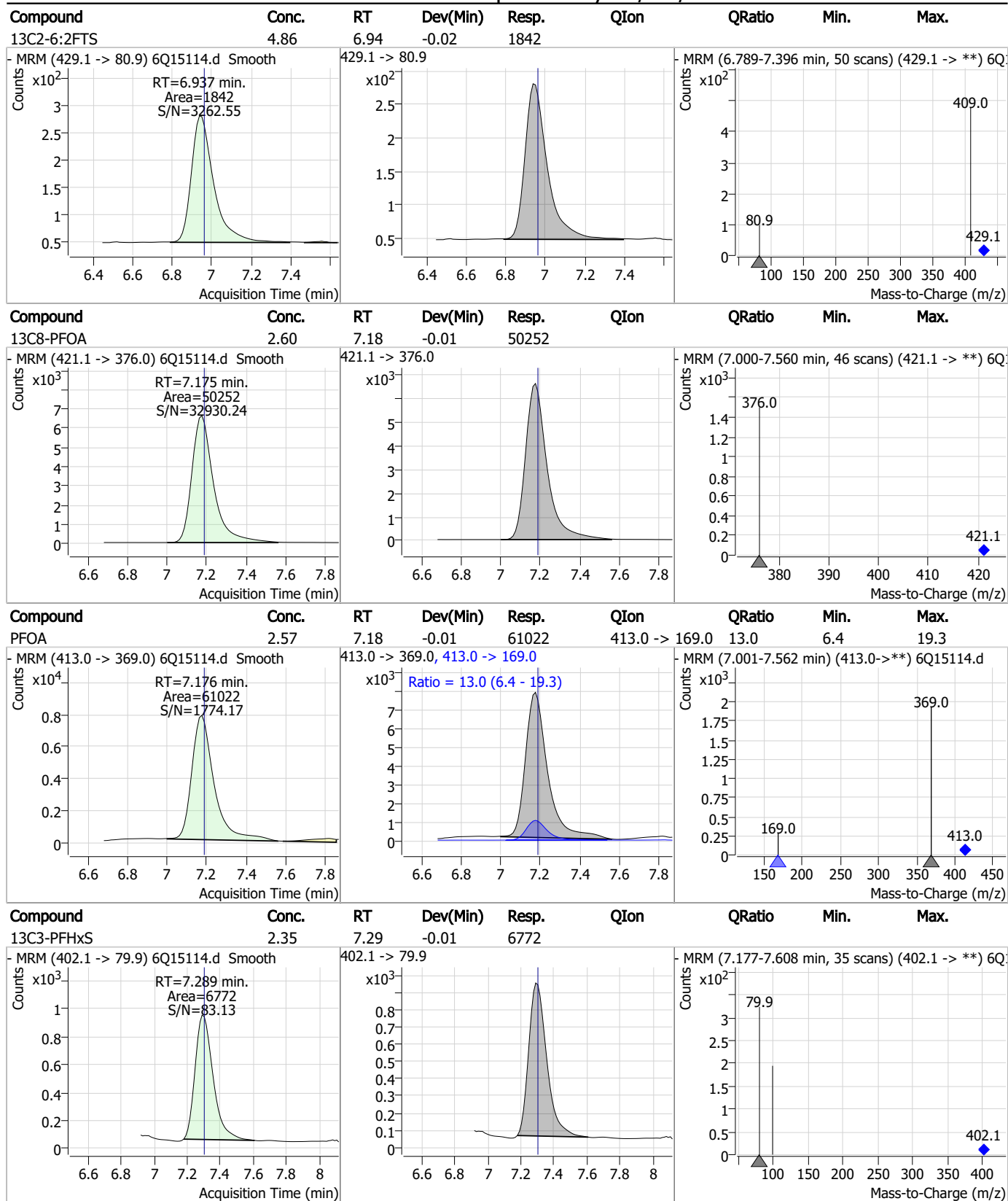
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	9.16	6.78	-0.01	253828	376.9 -> 84.8	22.6	11.2	33.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2F7S	9.90	6.94	-0.01	27106	427.1 -> 80.9	19.9	10.8	32.5



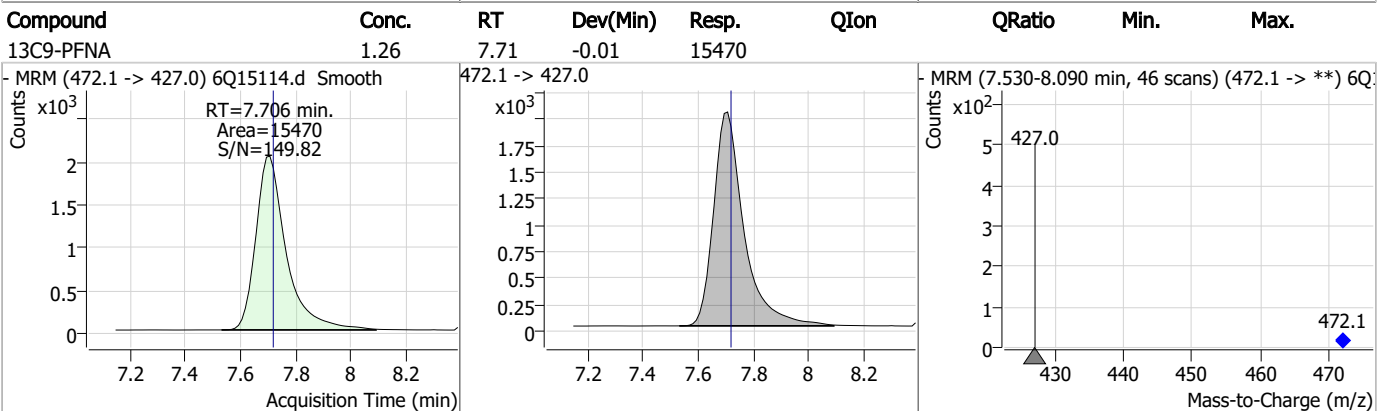
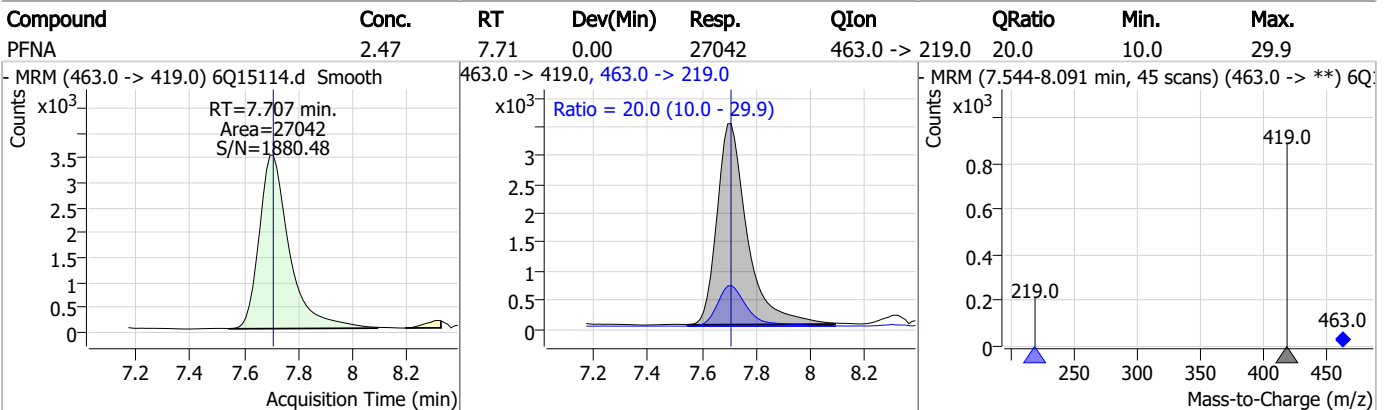
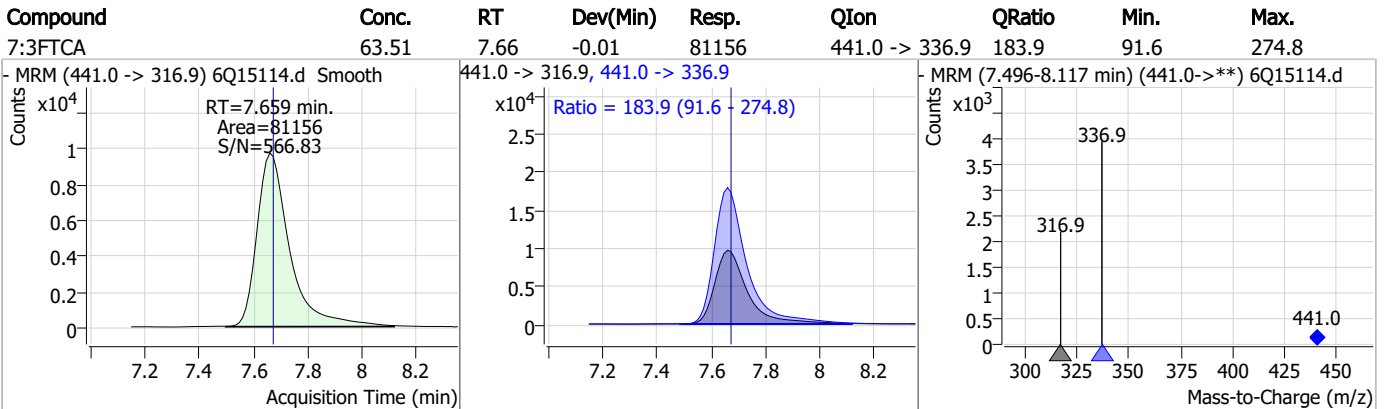
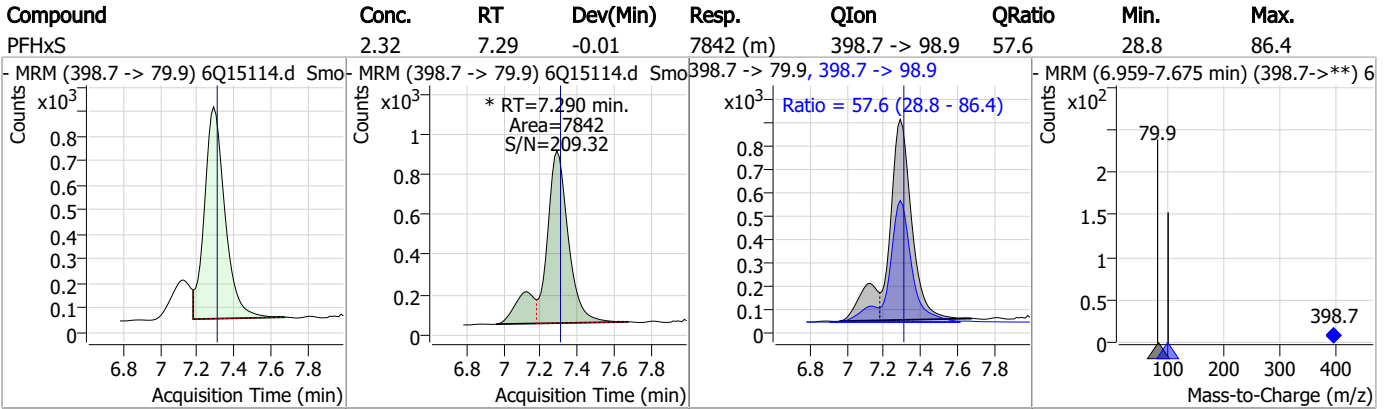
Perfluorinated Compounds by LC/MS/MS



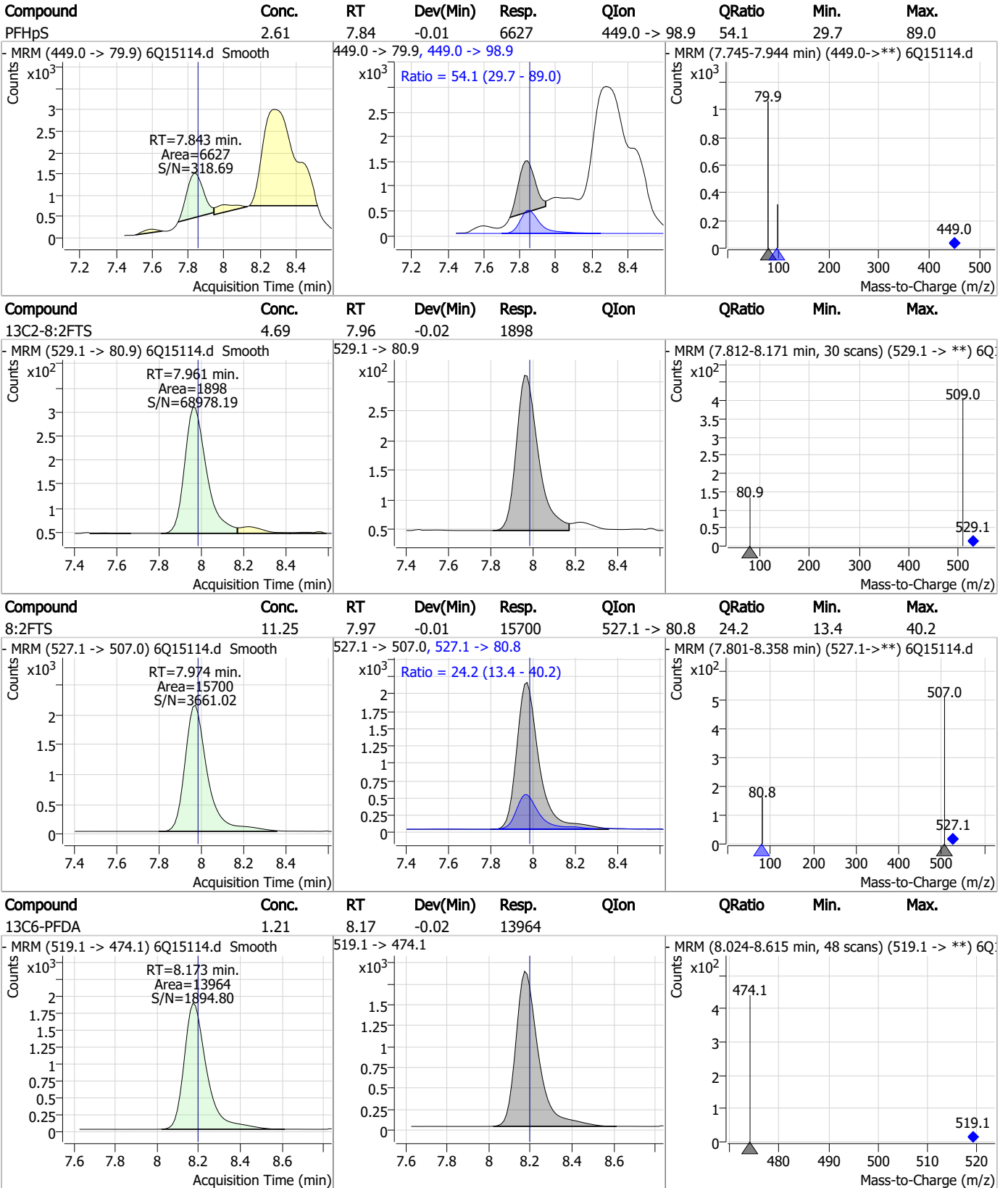
7.4.1
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Perfluorinated Compounds by LC/MS/MS



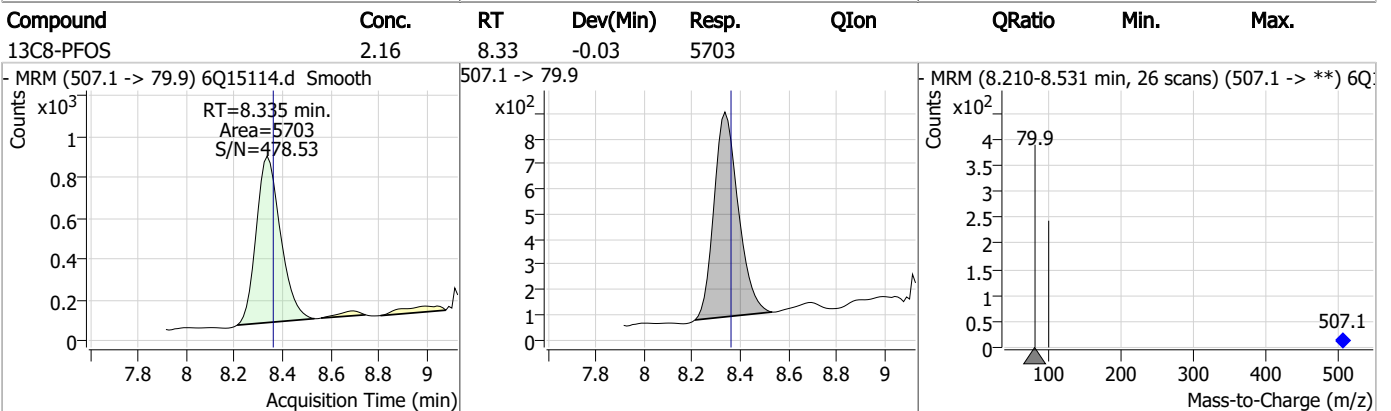
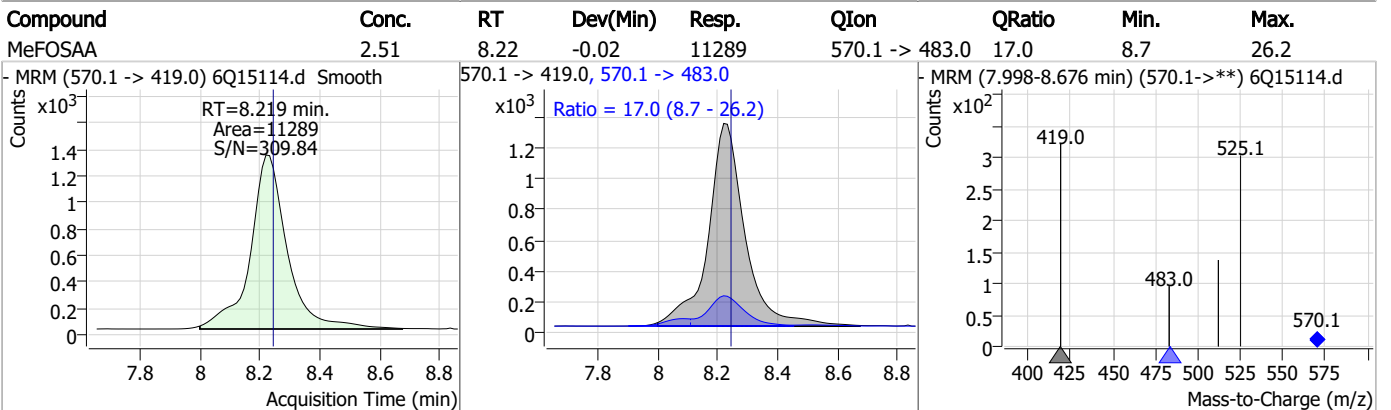
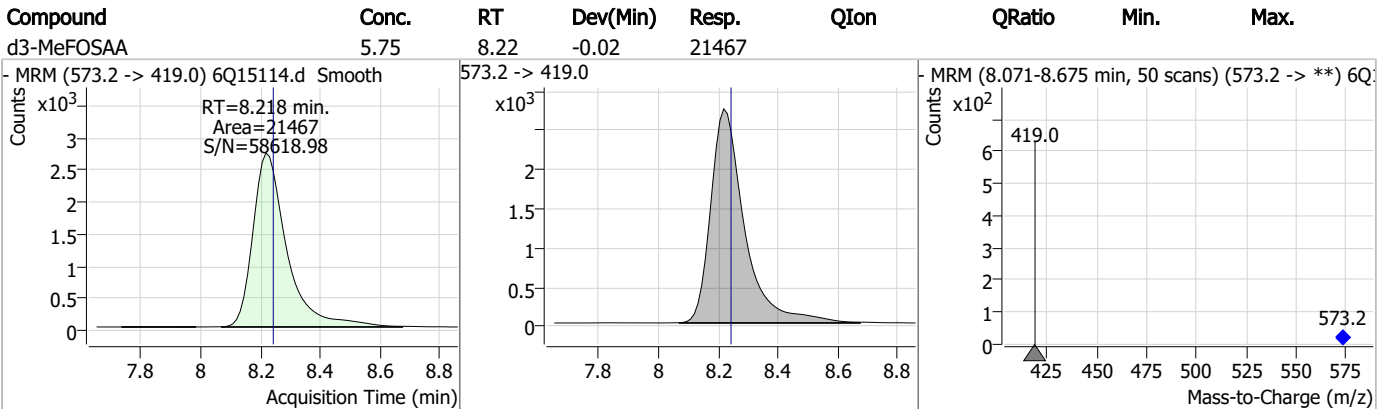
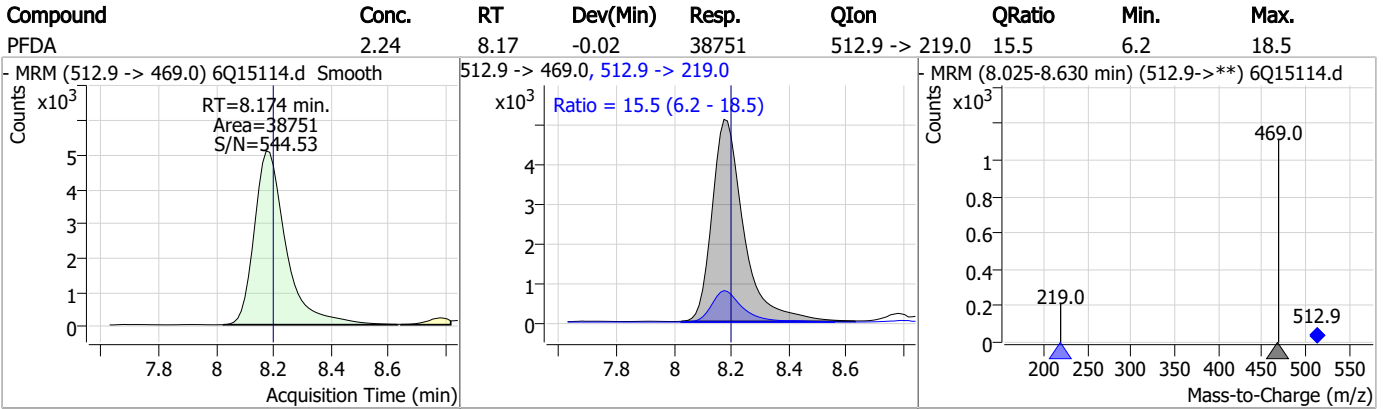
Perfluorinated Compounds by LC/MS/MS



7.4.1

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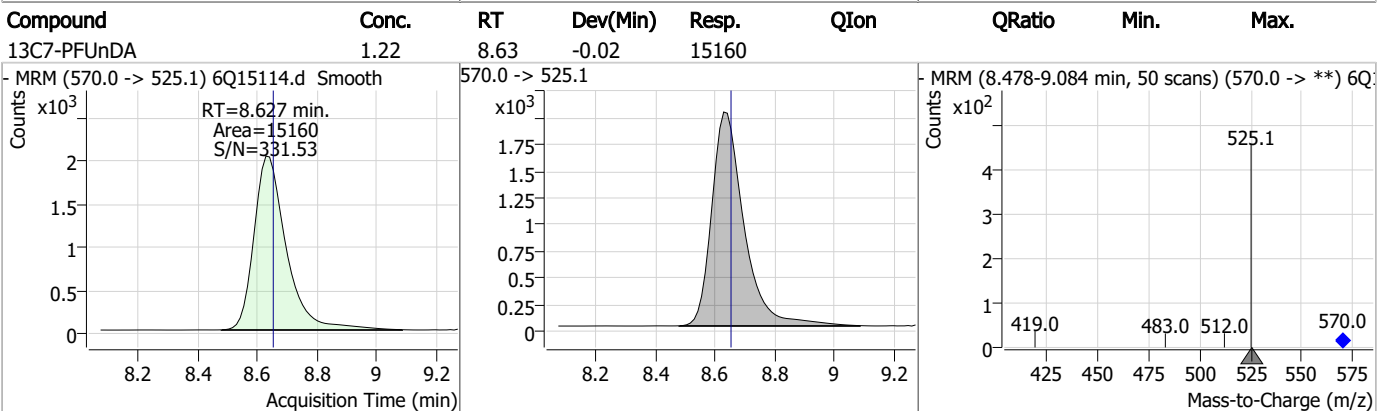
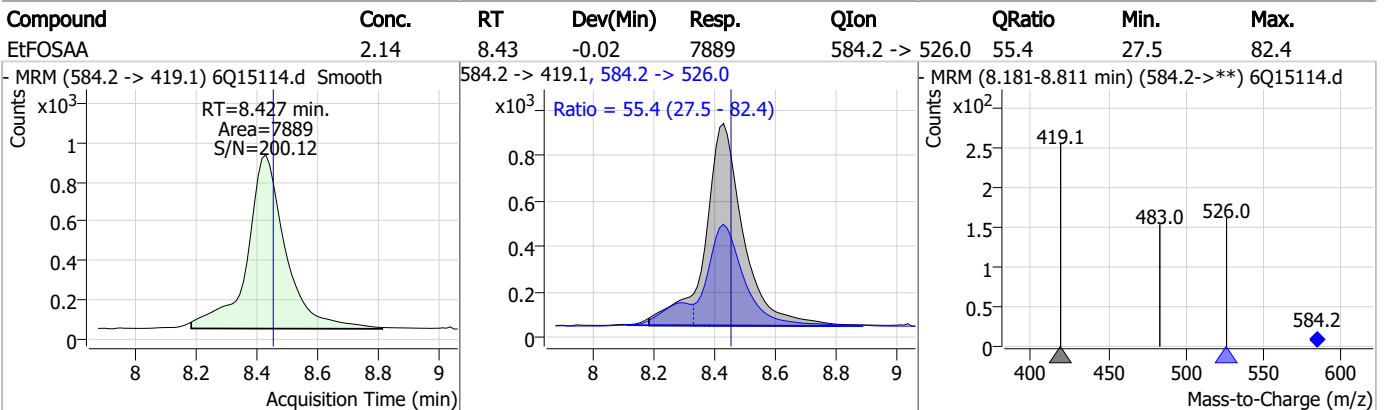
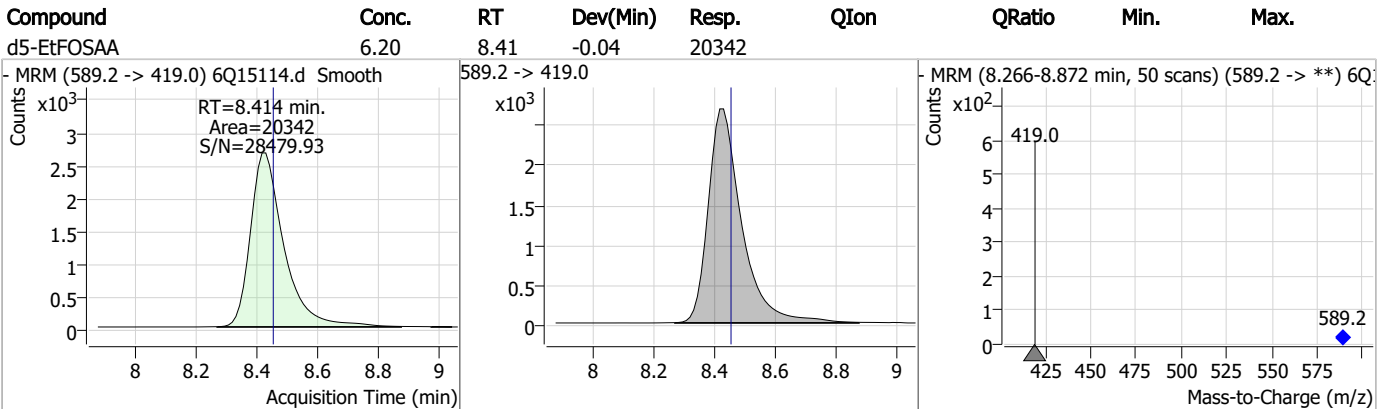
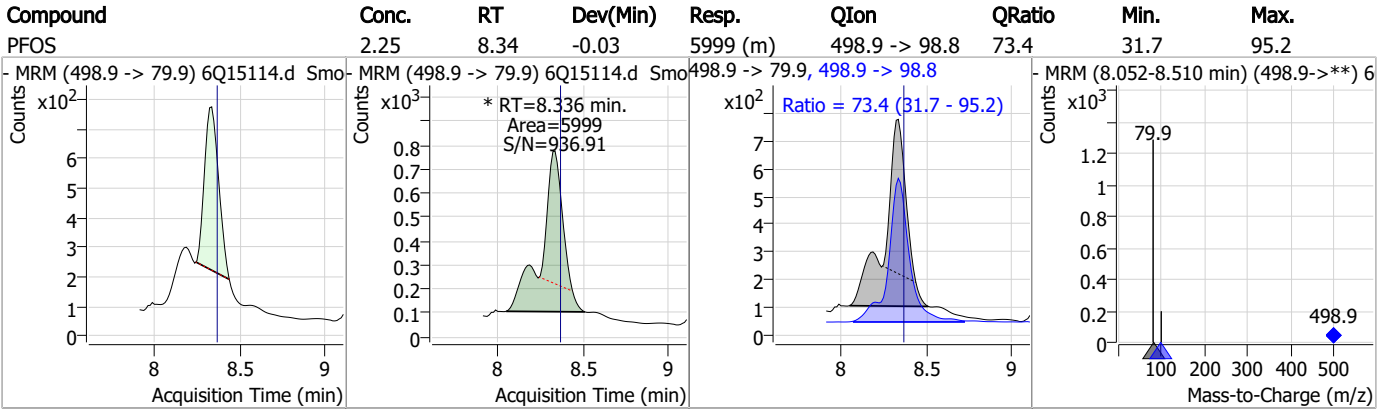
Perfluorinated Compounds by LC/MS/MS



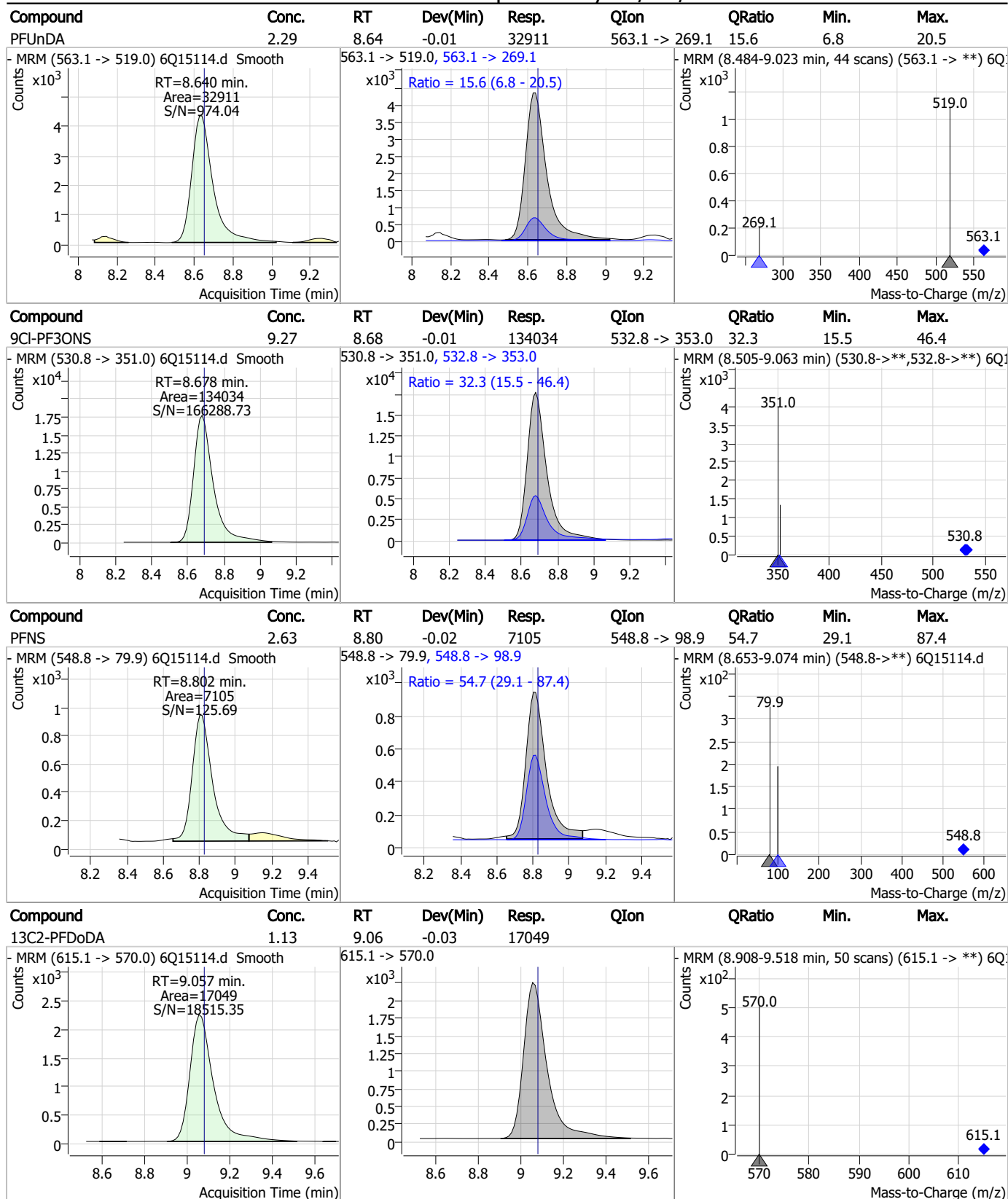
7.4.1

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Perfluorinated Compounds by LC/MS/MS

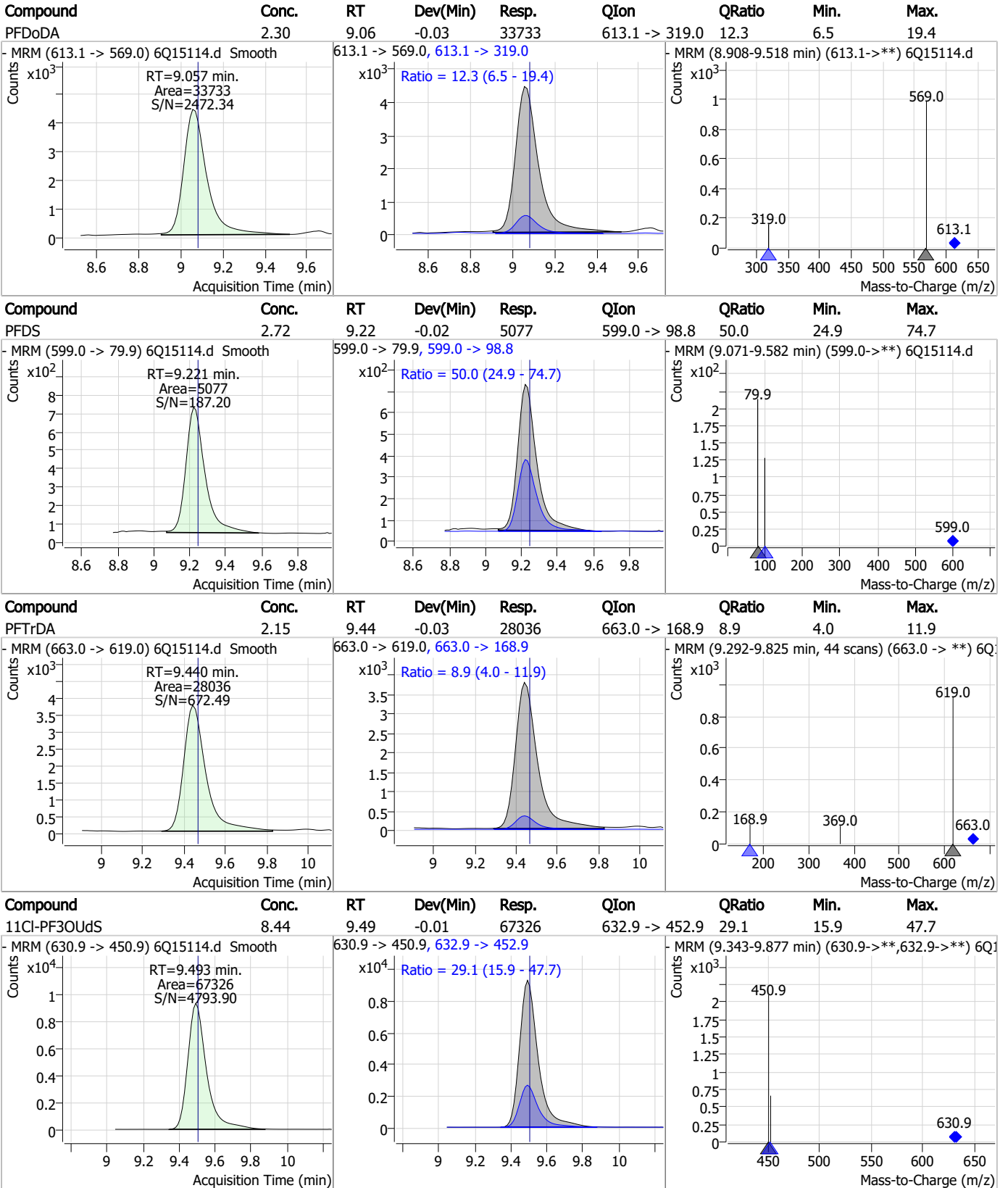


Perfluorinated Compounds by LC/MS/MS



7.4.1
7

Perfluorinated Compounds by LC/MS/MS

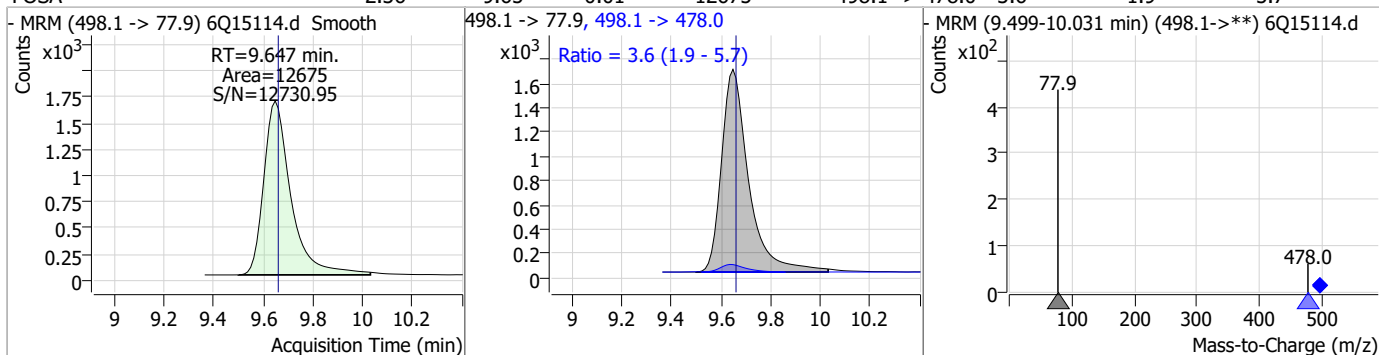


7.4.1

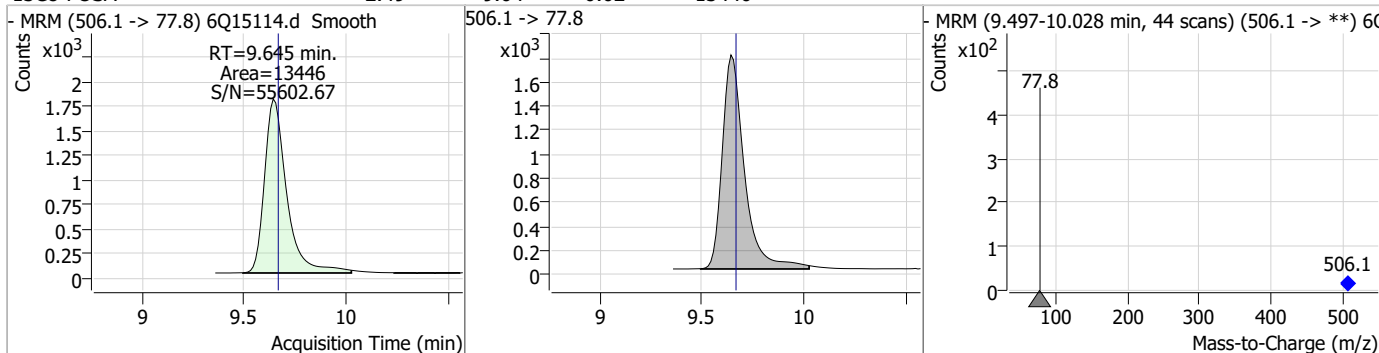
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Perfluorinated Compounds by LC/MS/MS

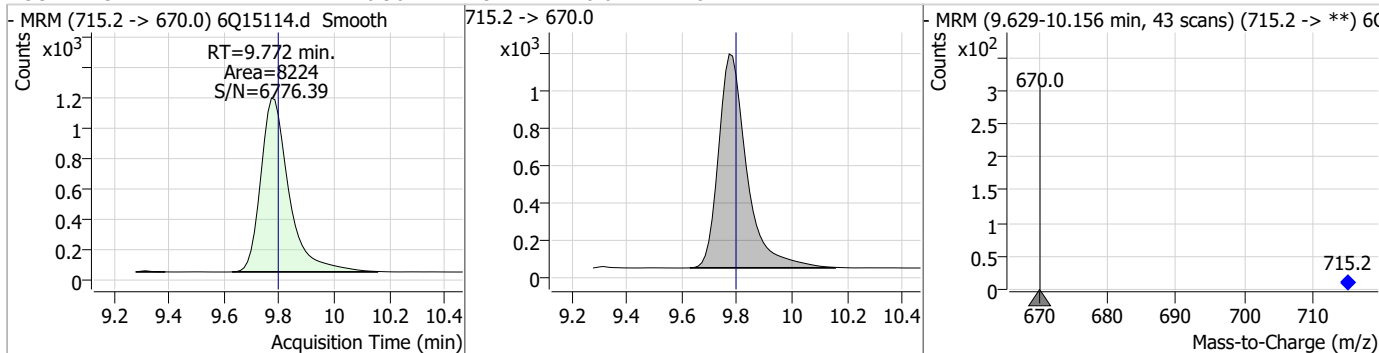
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.36	9.65	-0.01	12675	498.1 -> 478.0	3.6	1.9	5.7



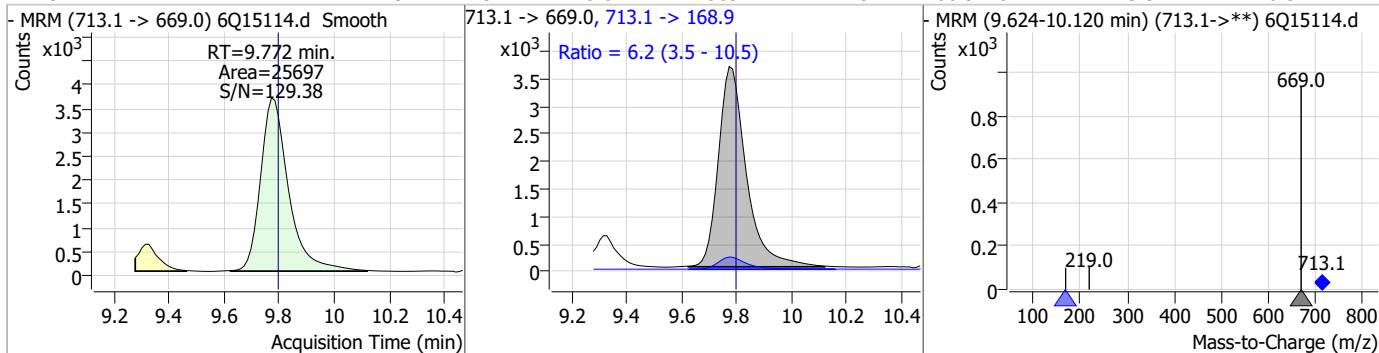
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.49	9.64	-0.02	13446				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	0.96	9.77	-0.02	8224				



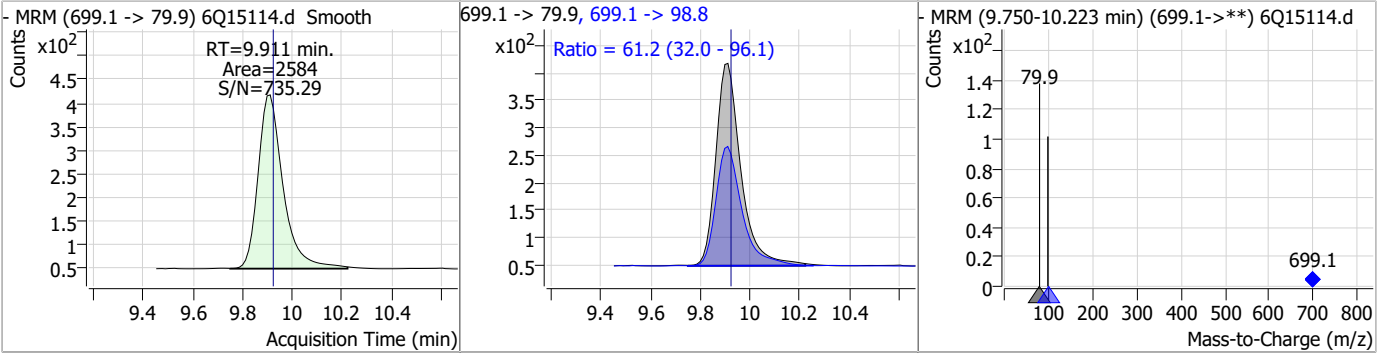
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.49	9.77	-0.02	25697	713.1 -> 168.9	6.2	3.5	10.5



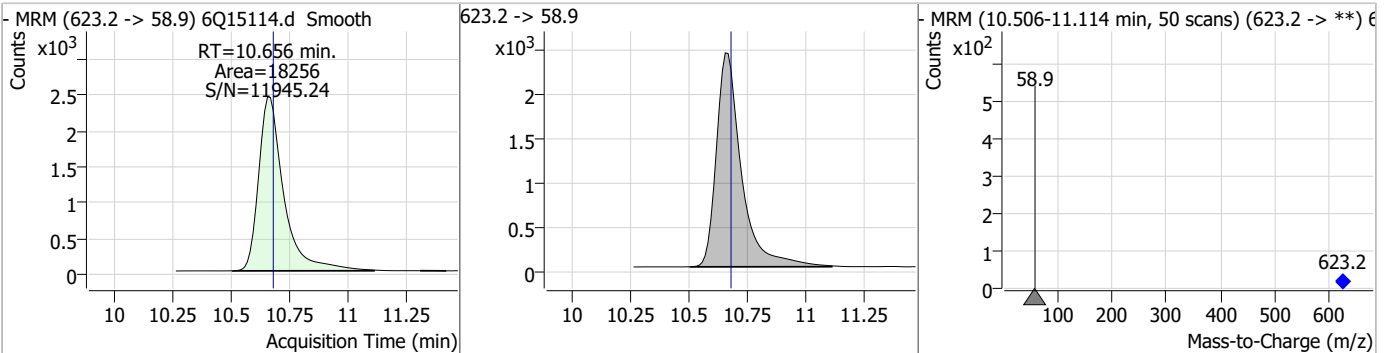
7.4.1
7

Perfluorinated Compounds by LC/MS/MS

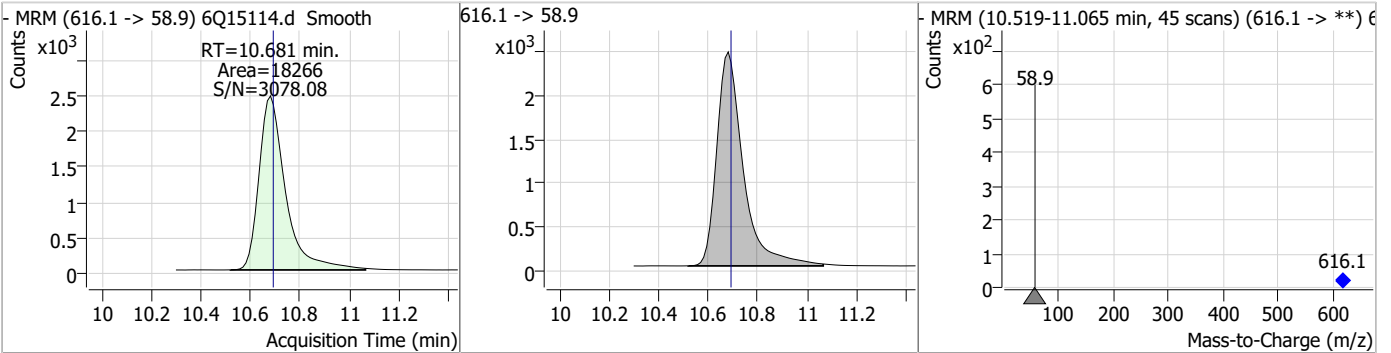
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.42	9.91	-0.01	2584	699.1 -> 98.8	61.2	32.0	96.1



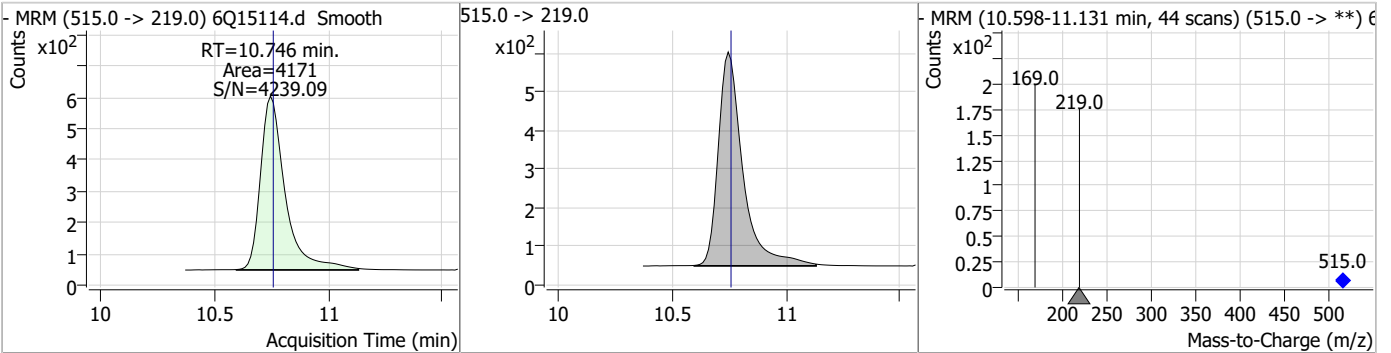
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.43	10.66	-0.02	18256				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.70	10.68	-0.01	18266				

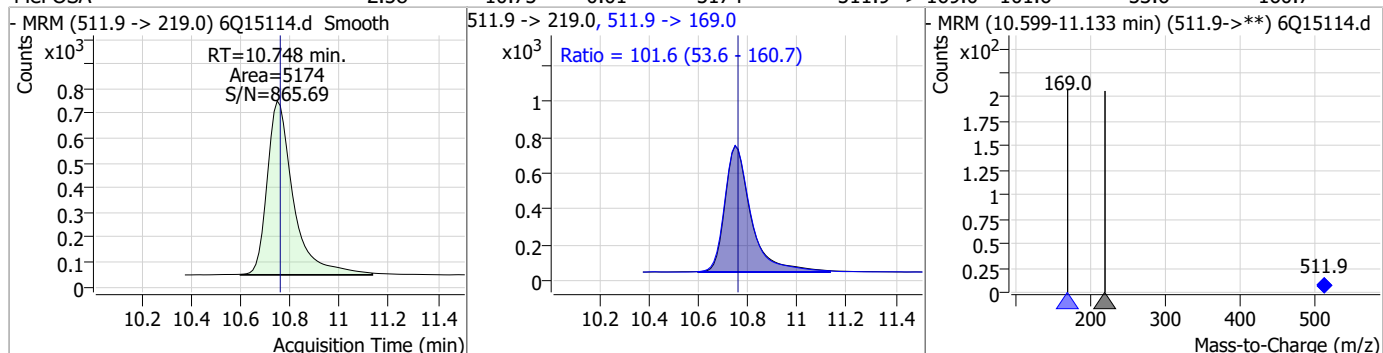


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.12	10.75	-0.01	4171				

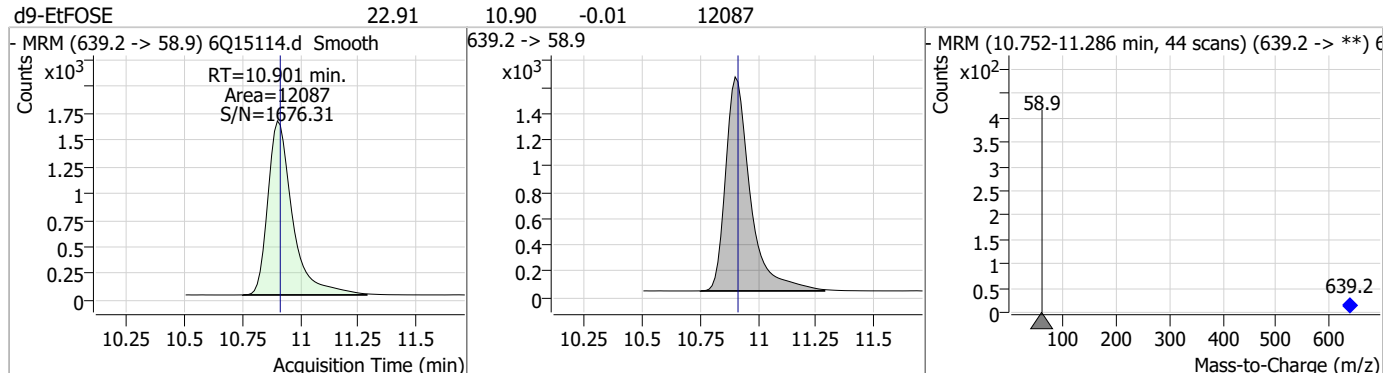


Perfluorinated Compounds by LC/MS/MS

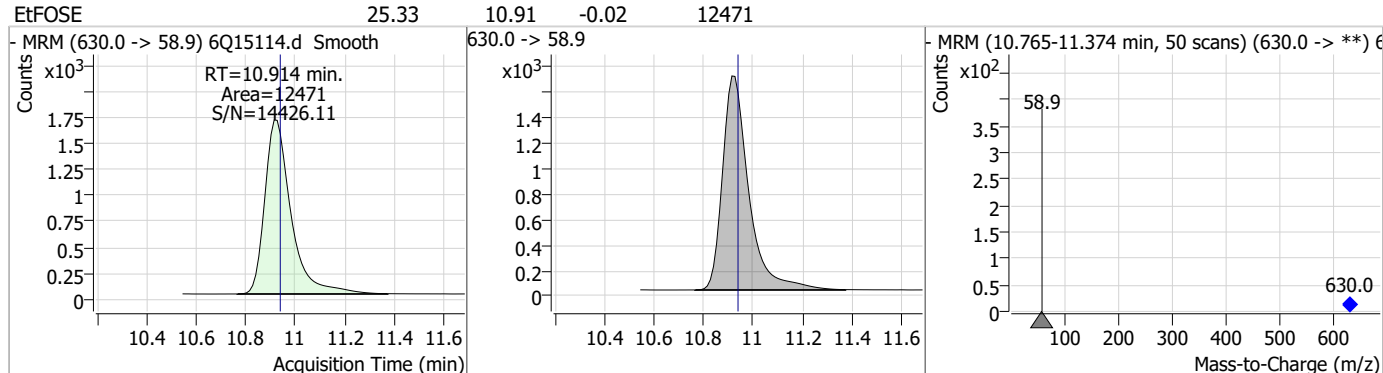
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	2.58	10.75	-0.01	5174	511.9 -> 169.0	101.6	53.6	160.7



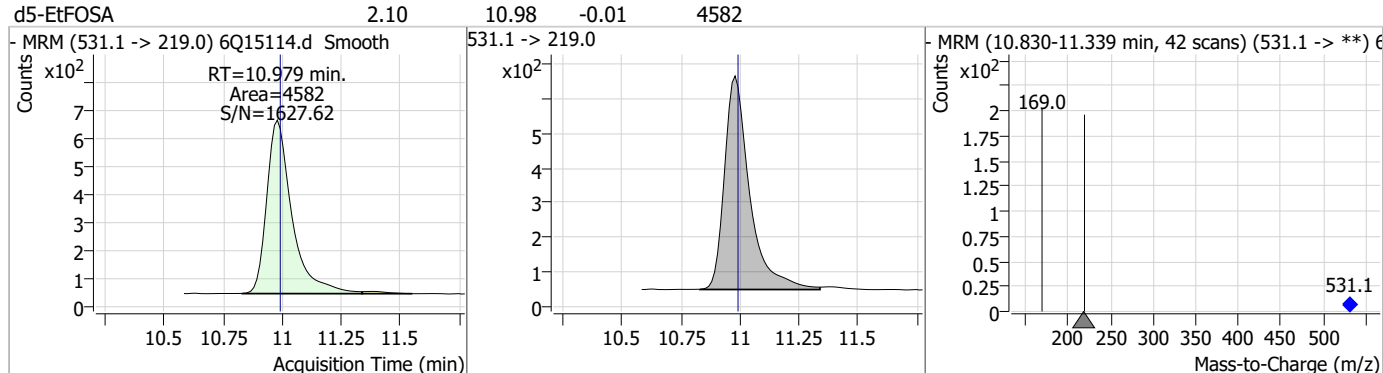
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.91	10.90	-0.01	12087				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	25.33	10.91	-0.02	12471				

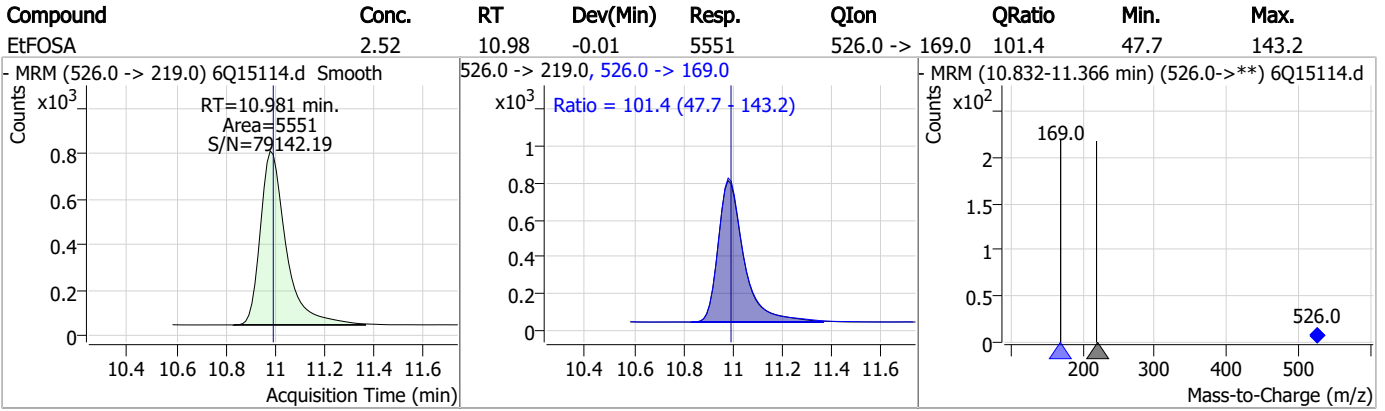


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.10	10.98	-0.01	4582				



7.4.1
7

Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP95968-MS Method: EPA DRAFT 1633
Lab FileID: 6Q15114.D Analyst approved: 03/22/23 11:00 Martha Valls
Injection Time: 03/21/23 17:48 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak

7.4.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15118.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 6:43:56 PM
 Sample Name : op95968-dup
 Vial : P3-B2
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95968,S6Q229,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.972	216.8 -> 171.9	73821	10.00 µg/L	0.025
M5-PFPeA	4.382	268.3 -> 223.0	34439	5.00 µg/L	-0.012
M5-PFHxA	5.593	318.0 -> 273.0	30062	2.50 µg/L	-0.012
M4-PFHpA	6.532	367.1 -> 322.0	31663	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	48168	2.50 µg/L	-0.012
M9-PFNA	7.706	472.1 -> 427.0	16070	1.25 µg/L	-0.012
M6-PFDA	8.185	519.1 -> 474.1	12550	1.25 µg/L	-0.012
M7-PFUnDA	8.639	570.0 -> 525.1	13133	1.25 µg/L	-0.012
M2-PFDoDA	9.069	615.1 -> 570.0	15283	1.25 µg/L	-0.012
M2-PFTeDA	9.772	715.2 -> 670.0	5892	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	13116	2.50 µg/L	-0.025
M3-PFBS	5.524	302.1 -> 79.9	11370	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	8056	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	6246	2.50 µg/L	-0.013
M2-4:2FTS	5.256	329.1 -> 80.9	1754	5.00 µg/L	-0.025
M2-6:2FTS	6.949	429.1 -> 80.9	2246	5.00 µg/L	-0.012
M2-8:2FTS	7.973	529.1 -> 80.9	2052	5.00 µg/L	-0.012
M3-MeFOSAA	8.231	573.2 -> 419.0	18896	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	13724	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	17065	5.00 µg/L	-0.025
M7-MeFOSE	10.656	623.2 -> 58.9	18952	25.00 µg/L	-0.025
M9-EtFOSE	10.901	639.2 -> 58.9	13292	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	4972	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	4527	2.50 µg/L	-0.012
13C4-PFOS	8.348	502.8 -> 79.9	8823	2.50 µg/L	-0.013
13C3-PFBA	2.976	216.0 -> 172.0	31512	5.00 µg/L	0.025
18O2-PFHxS	7.288	403.0 -> 83.9	5371	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	65690	2.50 µg/L	-0.012
13C2-PFDA	8.185	515.1 -> 470.1	18926	1.25 µg/L	-0.012
13C5-PFNA	7.706	468.0 -> 423.0	17656	1.25 µg/L	-0.012
13C2-PFHxA	5.594	315.1 -> 270.0	30096	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1754	5.69 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.8%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2246	5.63 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.6%		
13C2-8:2FTS	7.973	529.1 -> 80.9	2052	4.82 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C2-PFDoDA	9.069	615.1 -> 570.0	15283	1.03 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 82.6%		
13C2-PFTeDA	9.772	715.2 -> 670.0	5892	0.70 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 55.8%		
13C3-PFBS	5.524	302.1 -> 79.9	11370	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-PFHxS	7.289	402.1 -> 79.9	8056	2.66 µg/L	-0.013

7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.3%		
13C4-PFBA	2.972	216.8 -> 171.9	73821	10.21	µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
13C4-PFHpA	6.532	367.1 -> 322.0	31663	2.57	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%		
13C5-PFHxA	5.593	318.0 -> 273.0	30062	2.45	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C5-PFPeA	4.382	268.3 -> 223.0	34439	4.95	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.0%		
13C6-PFDA	8.185	519.1 -> 474.1	12550	1.10	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 88.3%		
13C7-PFUnDA	8.639	570.0 -> 525.1	13133	1.07	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 85.9%		
13C8-FOSA	9.645	506.1 -> 77.8	13116	2.14	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.7%		
13C8-PFOA	7.175	421.1 -> 376.0	48168	2.20	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.9%		
13C8-PFOS	8.347	507.1 -> 79.9	6246	2.09	µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.4%		
13C9-PFNA	7.706	472.1 -> 427.0	16070	1.18	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.4%		
d3-MeFOSAA	8.231	573.2 -> 419.0	18896	4.46	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.2%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	13724	10.09	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%		
d3-MeFOSA	10.746	515.0 -> 219.0	4527	2.02	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.9%		
d5-EtFOSAA	8.426	589.2 -> 419.0	17065	4.58	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.6%		
d7-MeFOSE	10.656	623.2 -> 58.9	18952	22.33	µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.3%		
d9-EtFOSE	10.901	639.2 -> 58.9	13292	22.19	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
d5-EtFOSA	10.979	531.1 -> 219.0	4972	2.01	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.4%		

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	8.816	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.		

7.5.1
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	8.313	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.222	563.1 -> 519.0	0	µg/L	m	1
		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

7.5.1
7

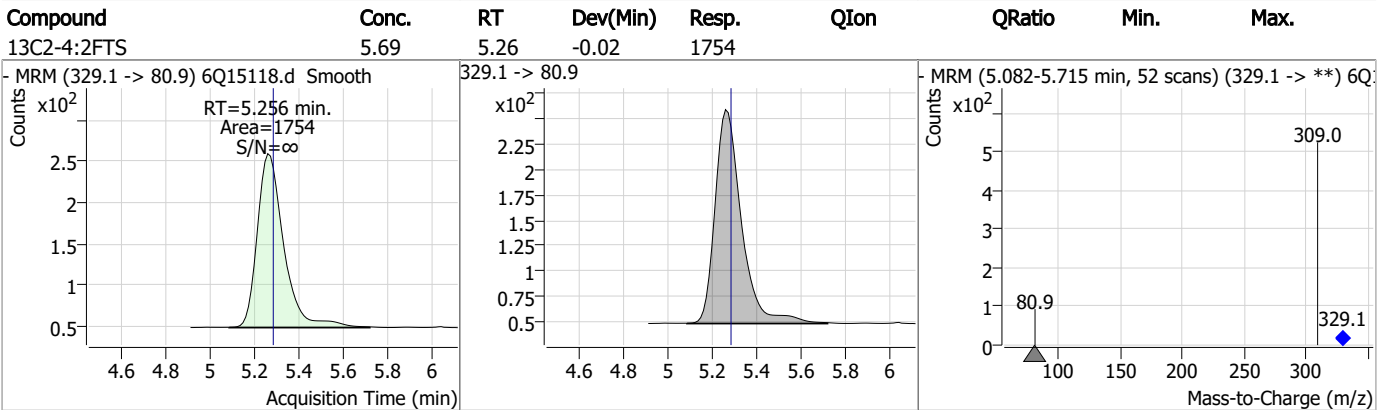
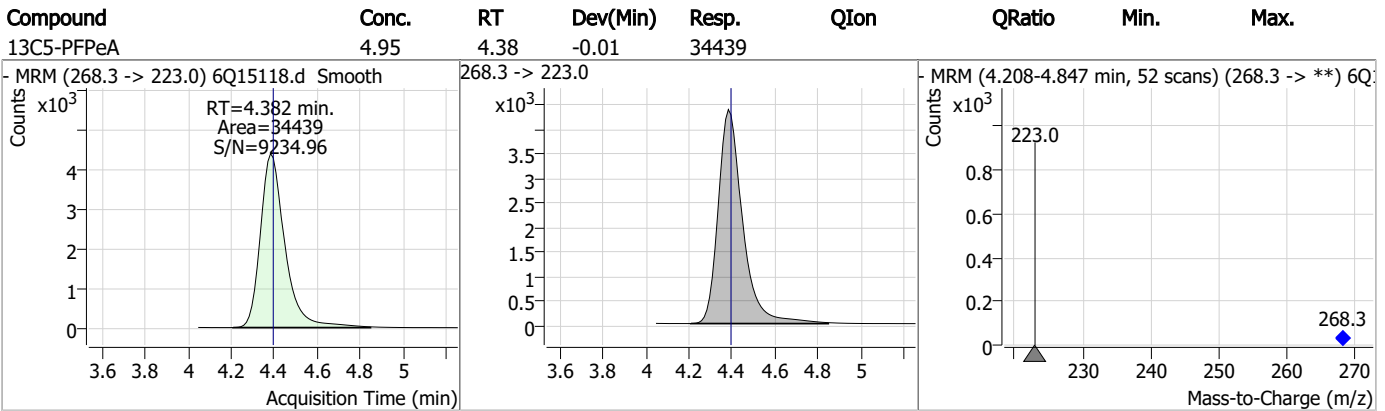
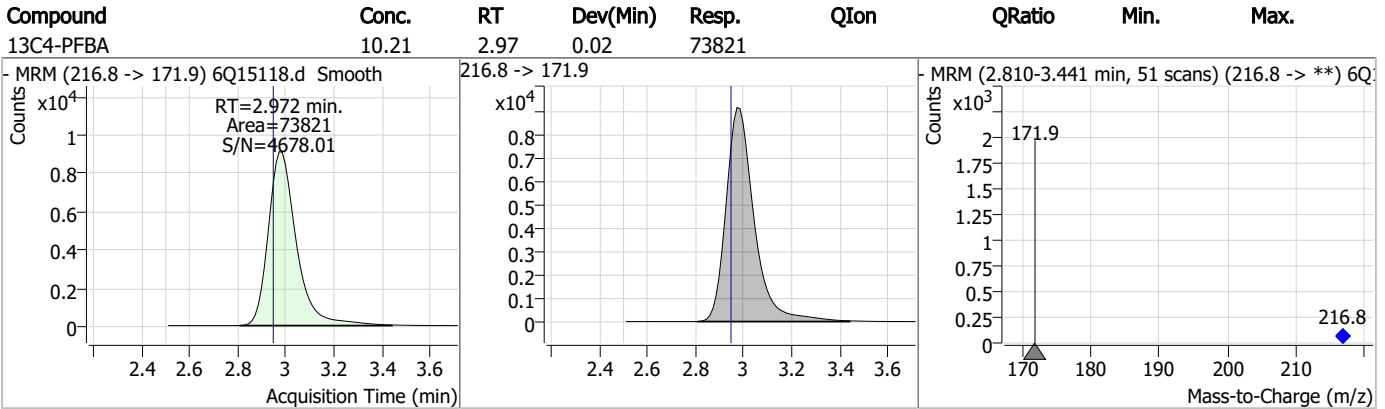
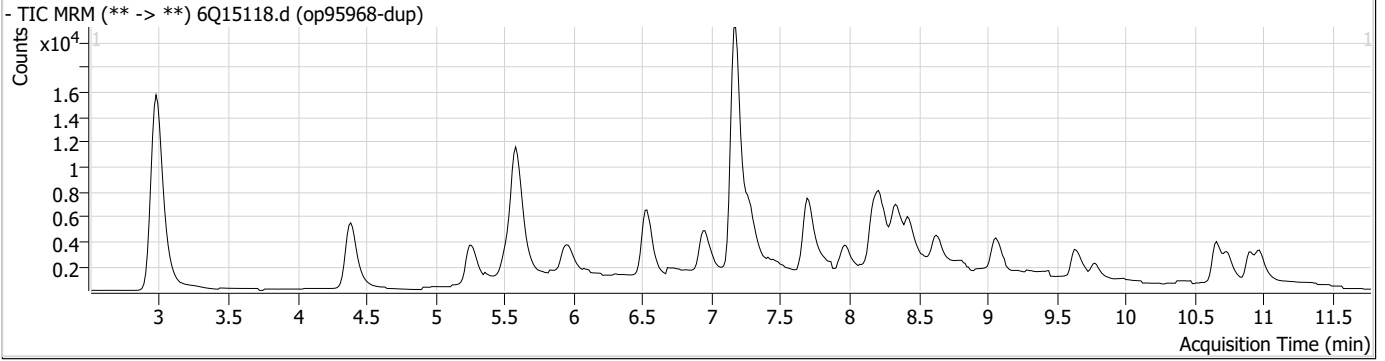
Perfluorinated Compounds by LC/MS/MS

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

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Perfluorinated Compounds by LC/MS/MS

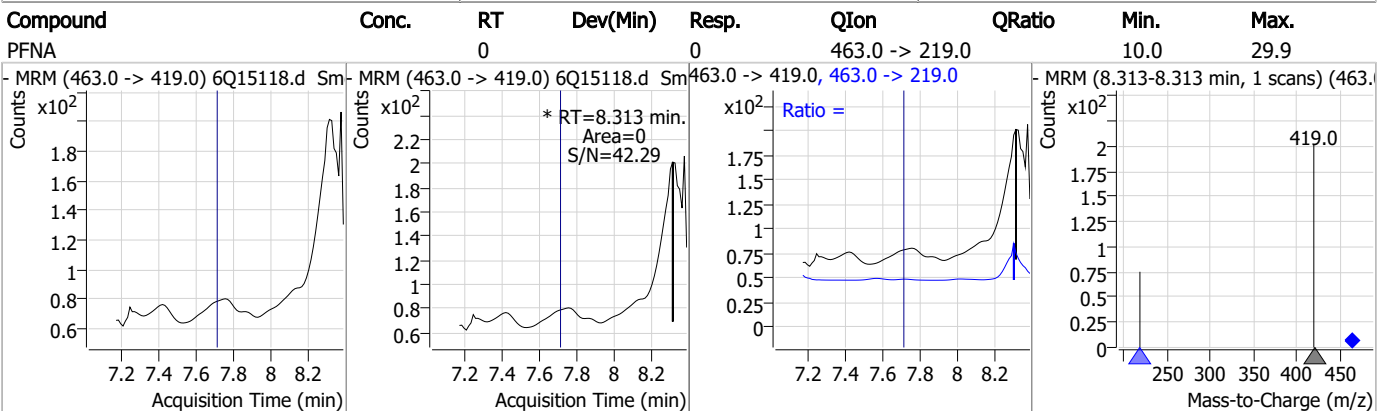
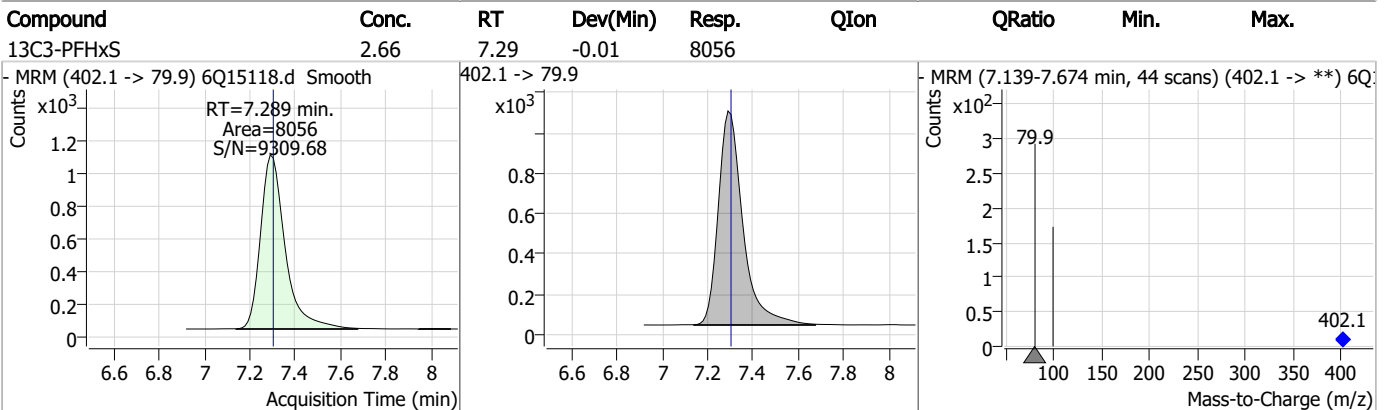
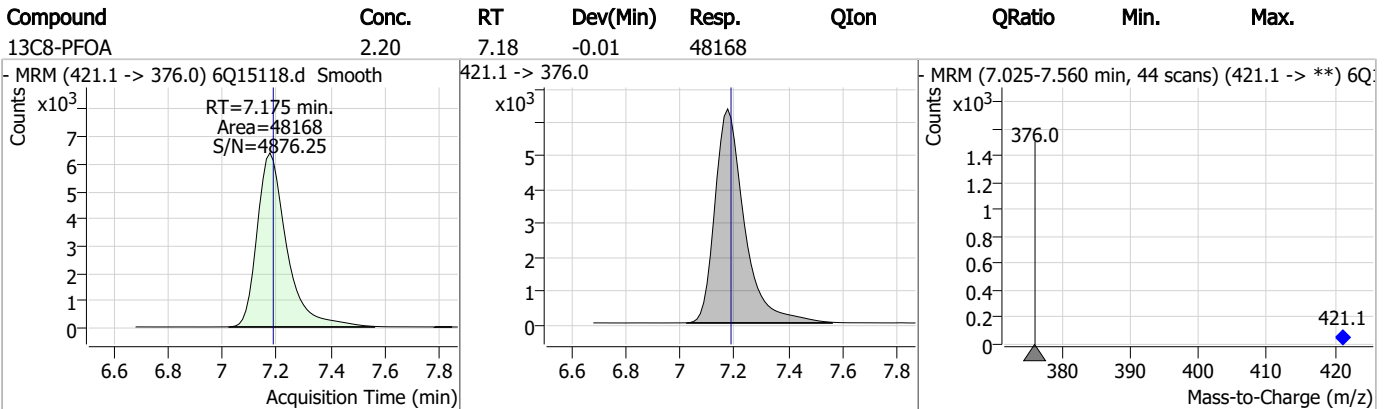
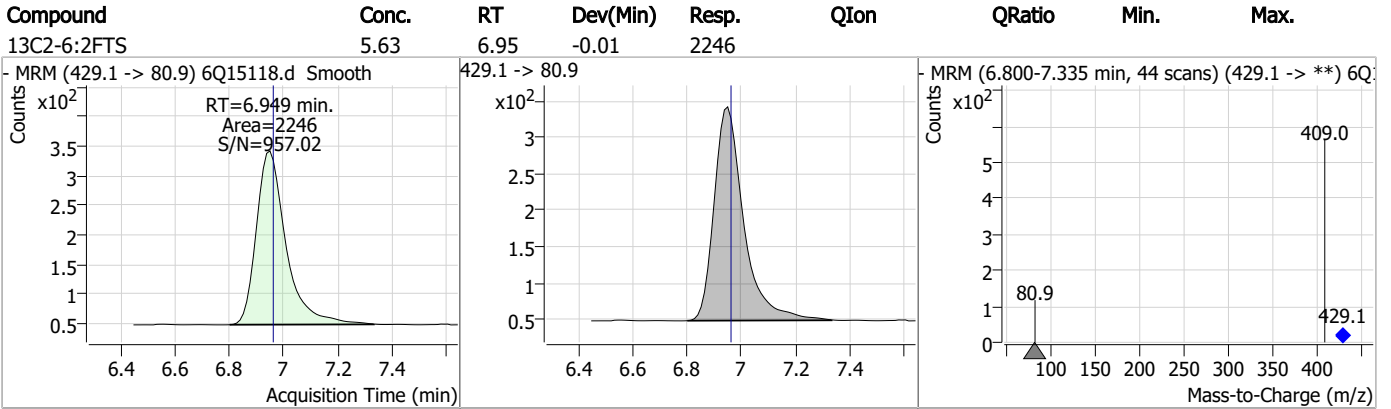


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.47	5.52	-0.02	11370				
13C5-PFHxA	2.45	5.59	-0.01	30062				
13C3-HFPO-DA	10.09	5.96	-0.02	13724				
13C4-PFHpA	2.57	6.53	-0.01	31663				

7.5.1
7

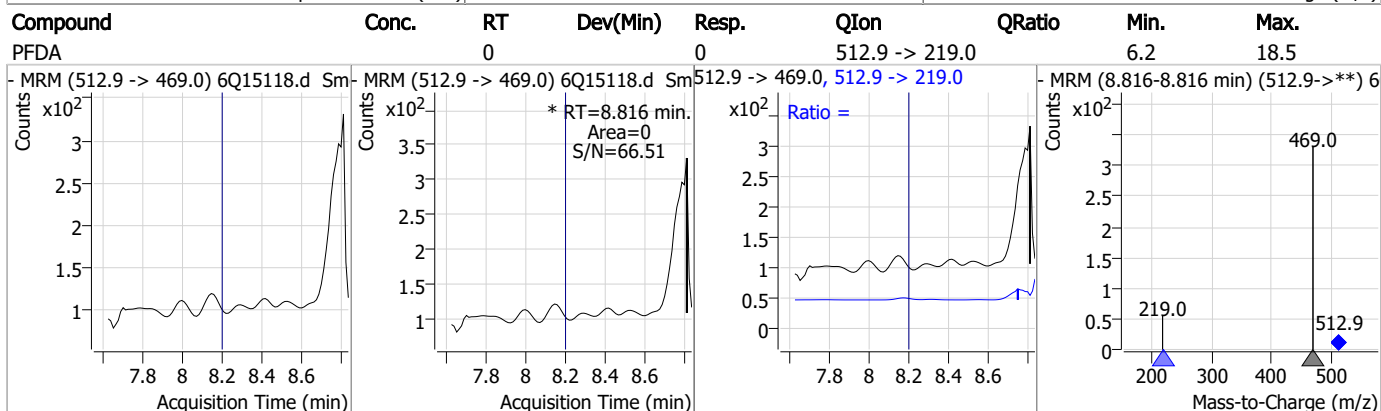
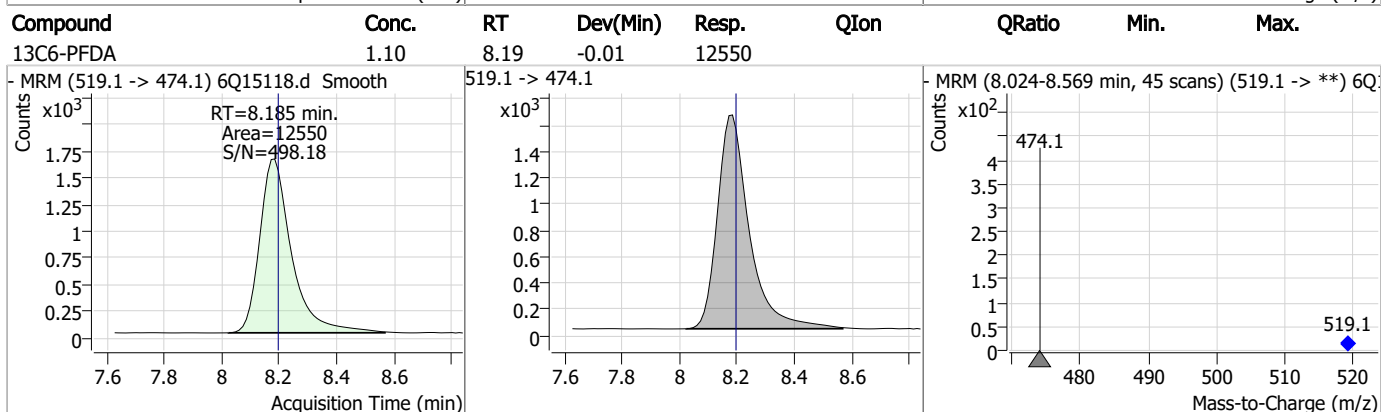
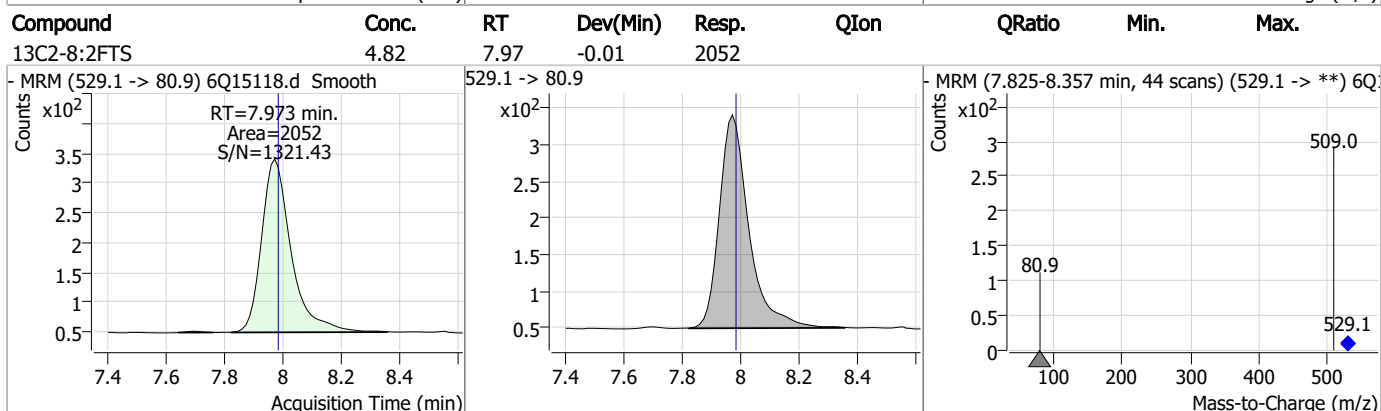
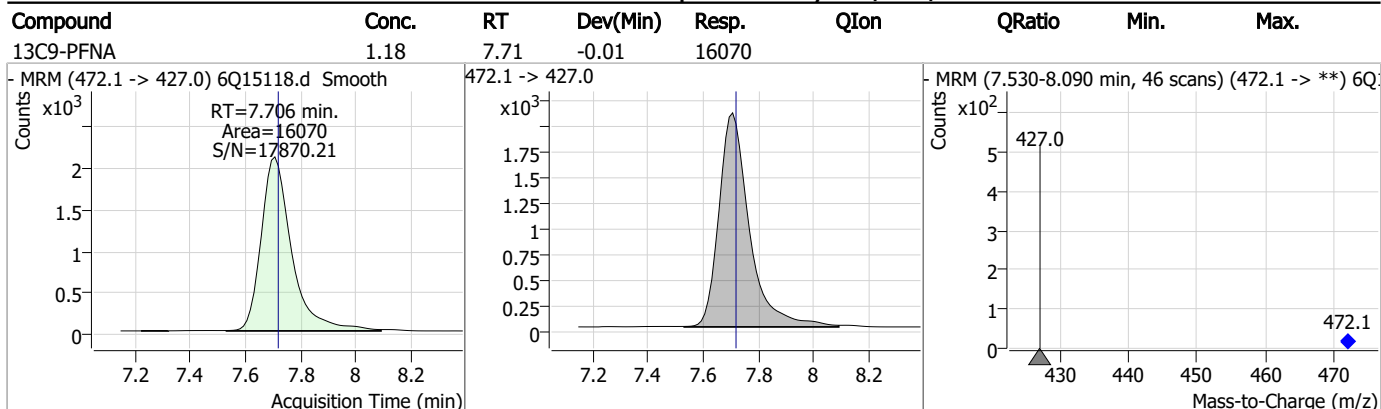
Perfluorinated Compounds by LC/MS/MS



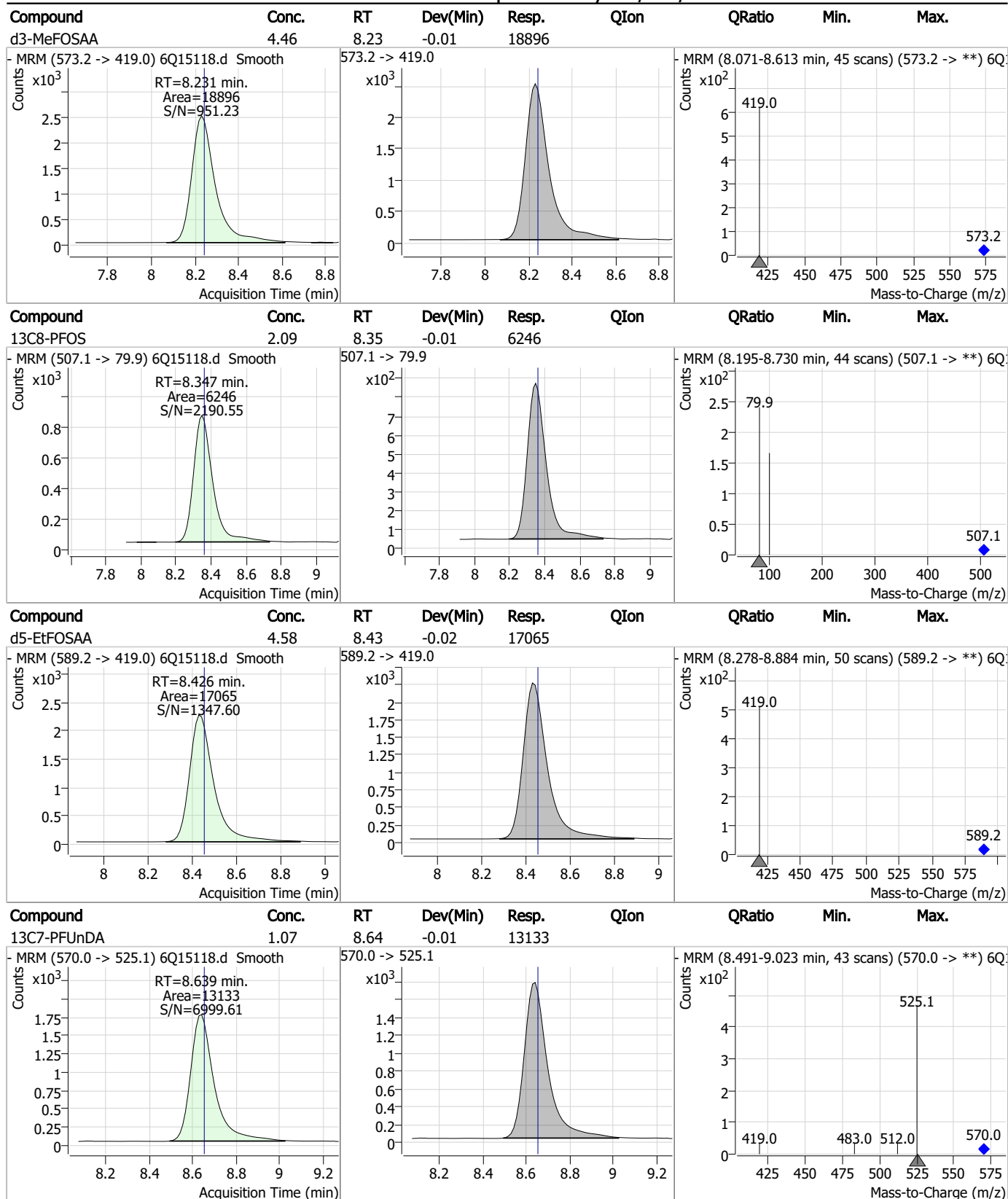
7.5.1

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Perfluorinated Compounds by LC/MS/MS

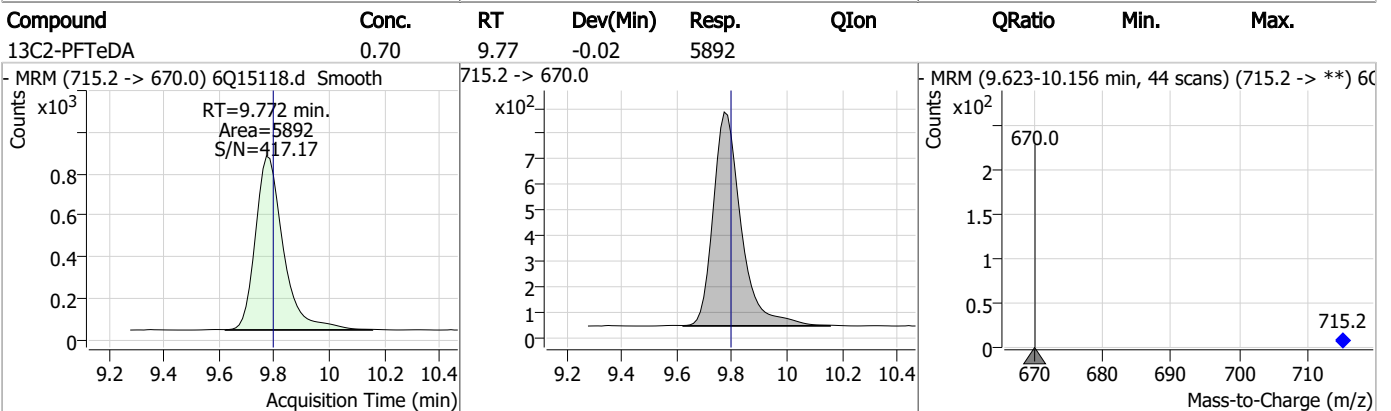
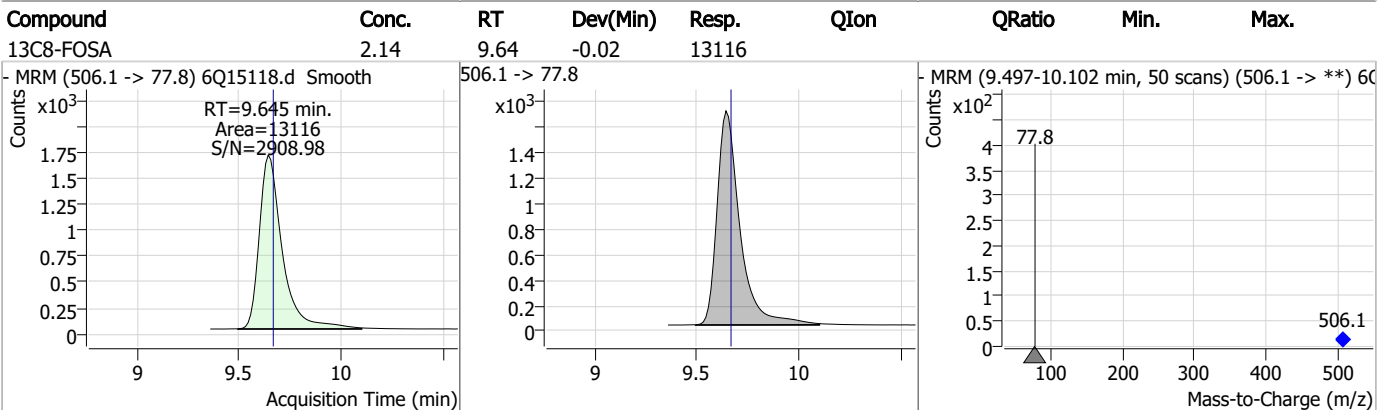
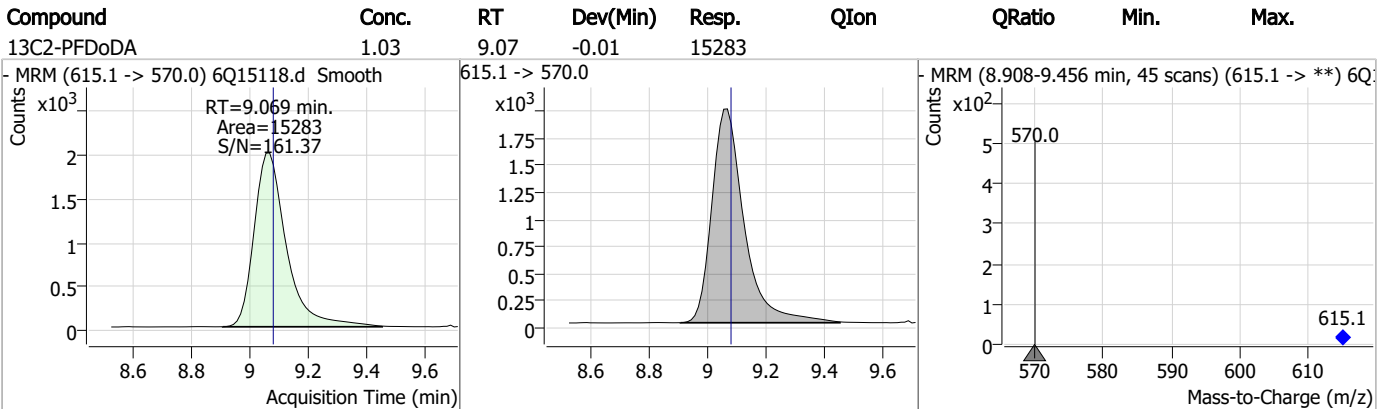
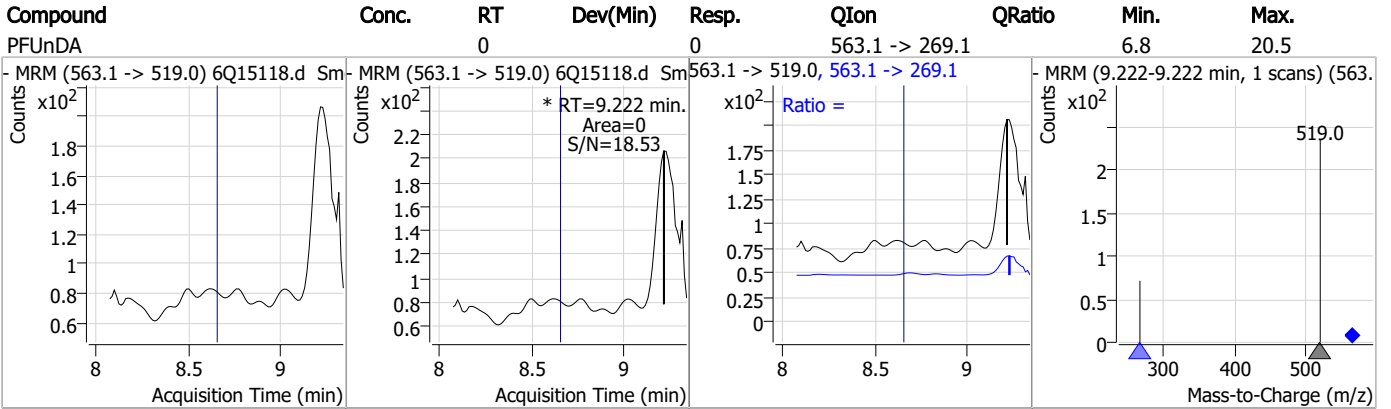


Perfluorinated Compounds by LC/MS/MS

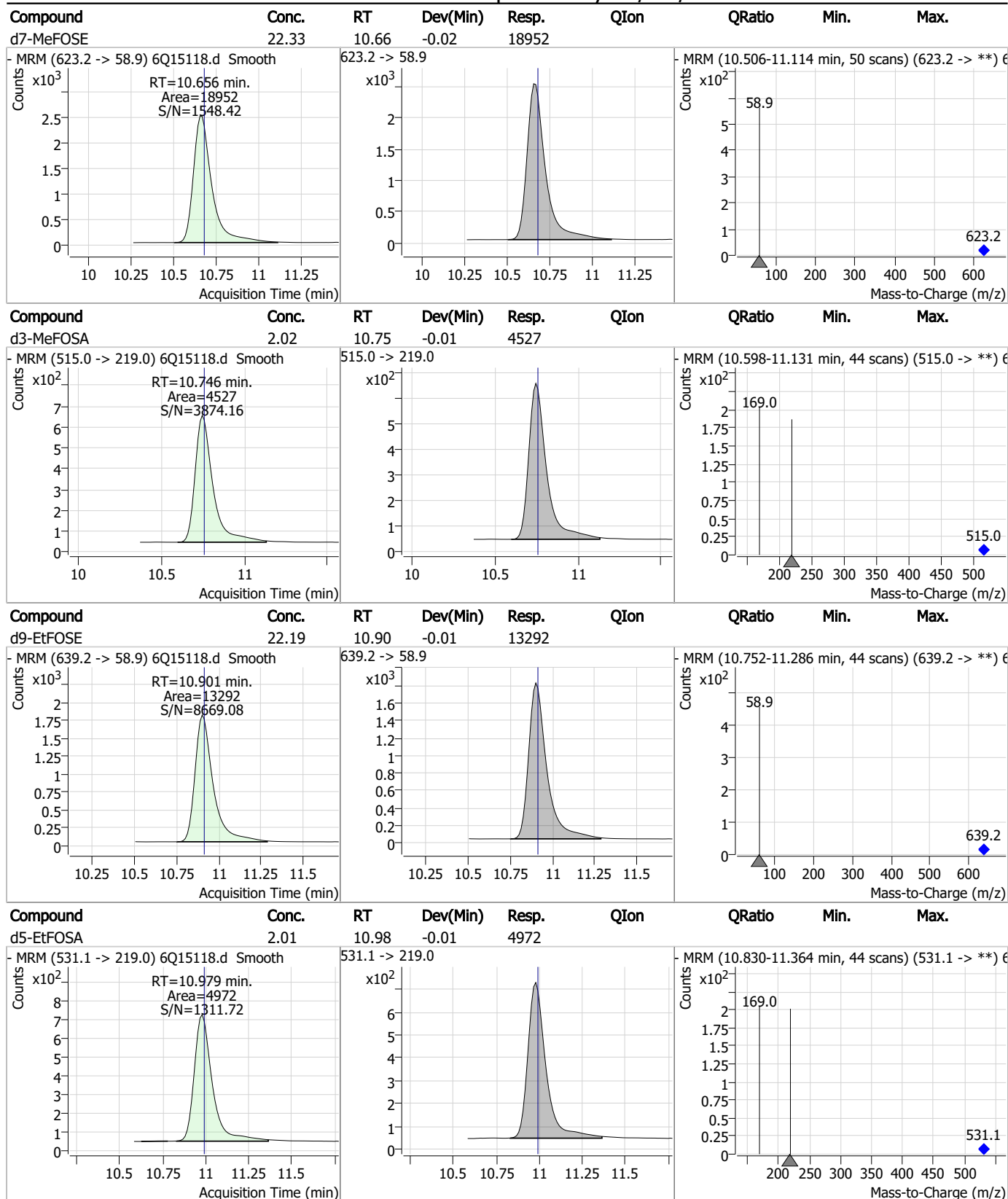


7.5.1
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.5.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Norman Farmer
 03/16/23 16:23

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14847.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 9:04:15 PM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s6q225 TDCA.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

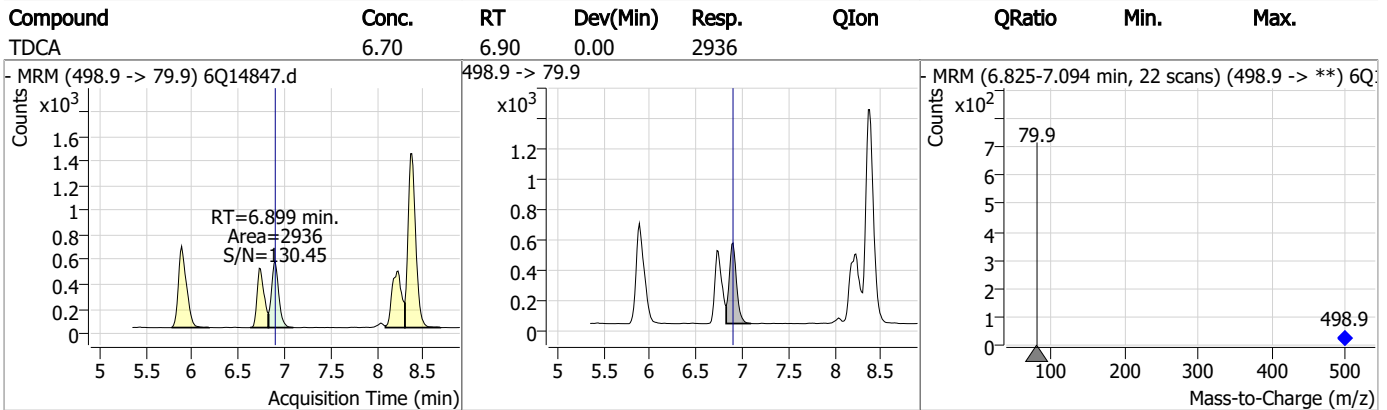
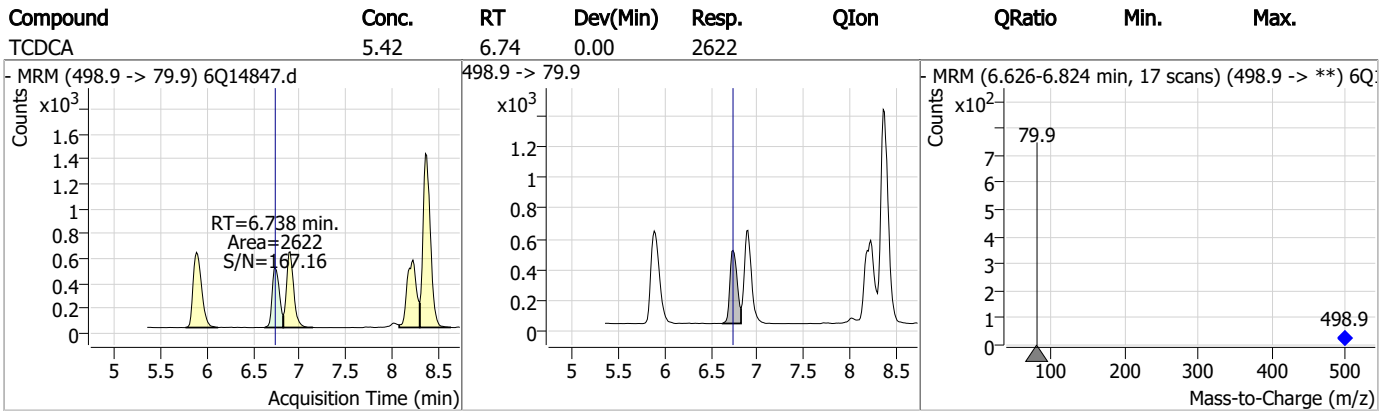
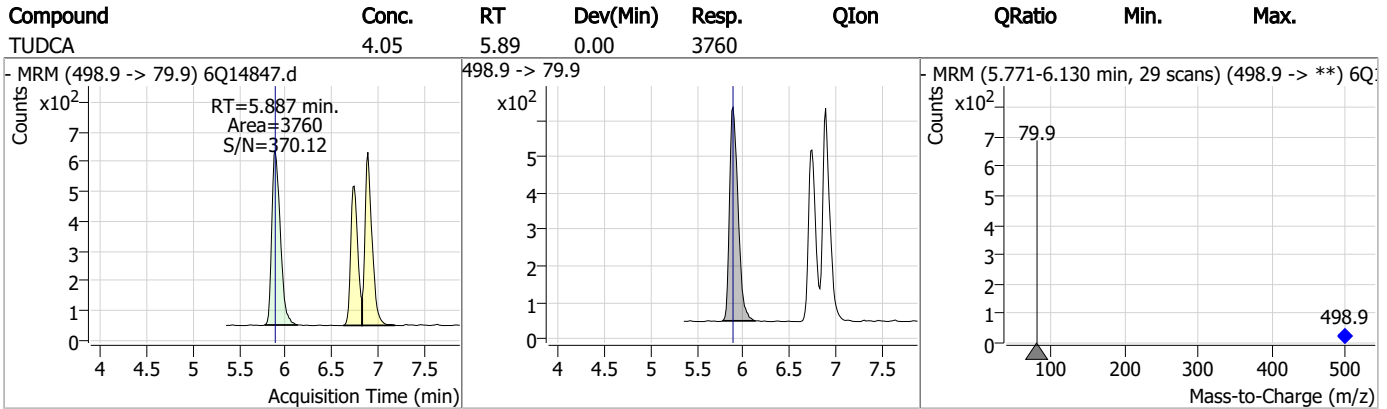
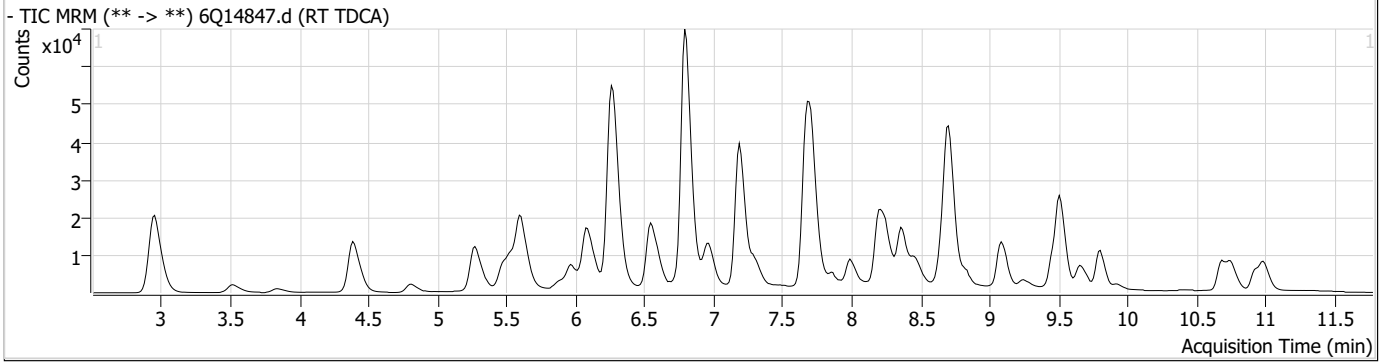
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.372	507.1 -> 79.9	10480	2.50	µg/L	0.000	
13C4-PFOS	8.373	502.8 -> 79.9	12932	2.50	µg/L	0.000	
System Monitoring Compounds							
13C8-PFOS	8.372	507.1 -> 79.9	10480	2.06	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 82.2%				
Target Compounds							
PFOS	8.374	498.9 -> 79.9 498.9 -> 98.8	10963 6517	3.06	µg/L	m	80
TCDCa	6.738	498.9 -> 79.9	2622	5.42	ng/ml		100
TDCA	6.899	498.9 -> 79.9	2936	6.70	ng/ml		100
TUDCA	5.887	498.9 -> 79.9	3760	4.05	ng/ml		100

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

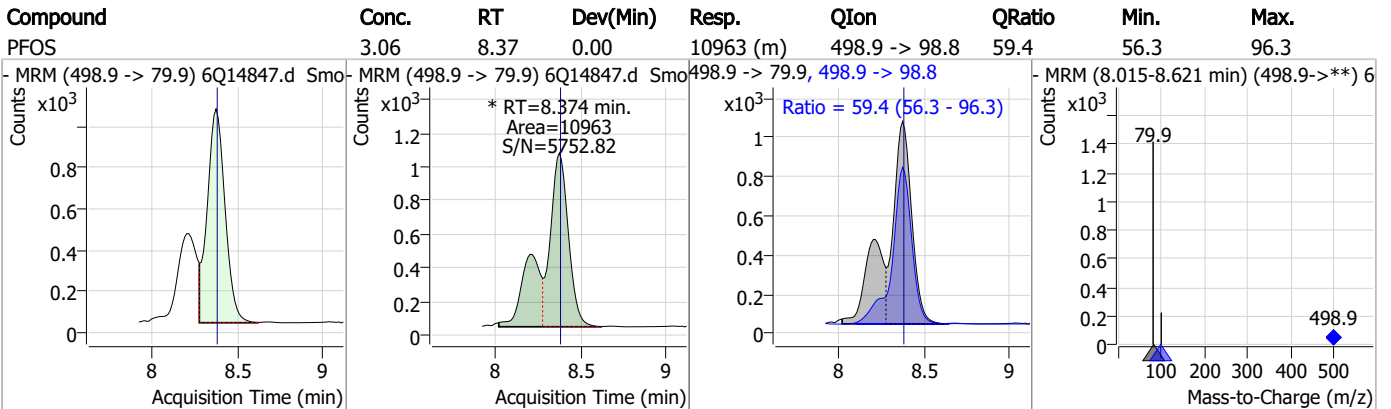
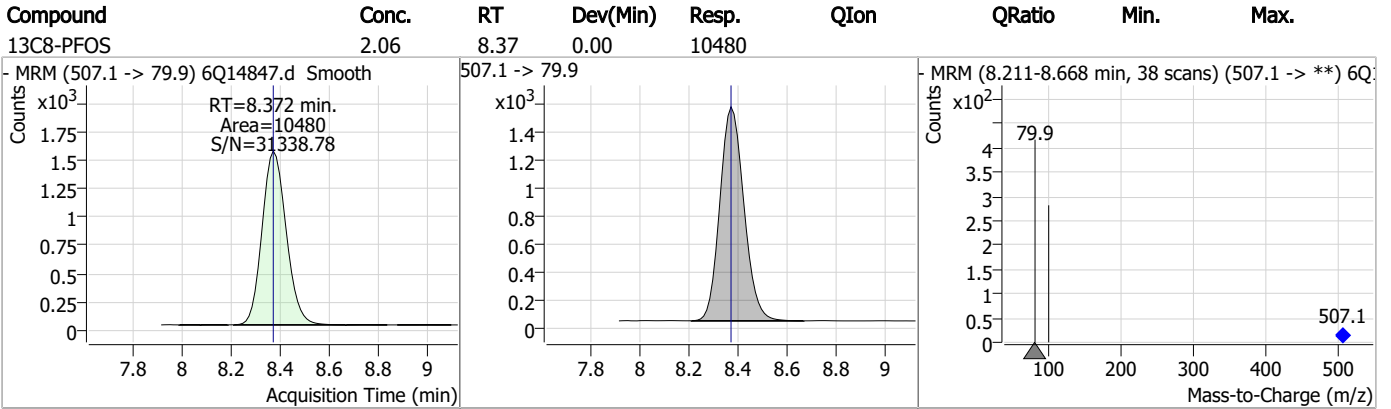
7.6.1
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1
7



Manual Integration Approval Summary

Sample Number: S6Q225-RT Method: EPA DRAFT 1633
Lab FileID: 6Q14847.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 21:04 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14848.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 9:18:14 PM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	71646	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	34791	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	30400	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	31894	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	53403	2.50 µg/L	0.000
M9-PFNA	7.718	472.1 -> 427.0	15870	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	14541	1.25 µg/L	0.000
M7-PFUnDA	8.664	570.0 -> 525.1	14598	1.25 µg/L	0.012
M2-PFDoDA	9.094	615.1 -> 570.0	18195	1.25 µg/L	0.012
M2-PFTeDA	9.797	715.2 -> 670.0	10643	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	15498	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	12131	2.50 µg/L	-0.012
M3-PFHxS	7.302	402.1 -> 79.9	7735	2.50 µg/L	0.000
M8-PFOS	8.372	507.1 -> 79.9	7211	2.50 µg/L	0.012
M2-4:2FTS	5.268	329.1 -> 80.9	1542	5.00 µg/L	-0.012
M2-6:2FTS	6.949	429.1 -> 80.9	1993	5.00 µg/L	-0.012
M2-8:2FTS	7.986	529.1 -> 80.9	1990	5.00 µg/L	0.000
M3-MeFOSAA	8.255	573.2 -> 419.0	19531	5.00 µg/L	0.012
M3-HFPO-DA	5.971	286.9 -> 168.9	13271	10.00 µg/L	-0.012
M5-EtFOSAA	8.451	589.2 -> 419.0	19271	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	20731	25.00 µg/L	0.000
M9-EtFOSE	10.926	639.2 -> 58.9	15016	25.00 µg/L	0.012
M5-EtFOSA	10.991	531.1 -> 219.0	6128	2.50 µg/L	0.000
M3-MeFOSA	10.771	515.0 -> 219.0	5706	2.50 µg/L	0.012
13C4-PFOS	8.373	502.8 -> 79.9	7632	2.50 µg/L	0.012
13C3-PFBA	2.952	216.0 -> 172.0	30908	5.00 µg/L	0.000
18O2-PFHxS	7.301	403.0 -> 83.9	5830	2.50 µg/L	-0.012
13C4-PFOA	7.188	417.1 -> 372.0	58957	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	18429	1.25 µg/L	0.000
13C5-PFNA	7.718	468.0 -> 423.0	16819	1.25 µg/L	0.000
13C2-PFHxA	5.606	315.1 -> 270.0	30086	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1542	4.61 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C2-6:2FTS	6.949	429.1 -> 80.9	1993	4.60 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C2-8:2FTS	7.986	529.1 -> 80.9	1990	4.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.2%		
13C2-PFDoDA	9.094	615.1 -> 570.0	18195	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C2-PFTeDA	9.797	715.2 -> 670.0	10643	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C3-PFBS	5.536	302.1 -> 79.9	12131	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.302	402.1 -> 79.9	7735	2.35 µg/L	0.000

7.6.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C4-PFBA	2.947	216.8 -> 171.9	71646	10.10 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.544	367.1 -> 322.0	31894	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C5-PFHxA	5.605	318.0 -> 273.0	30400	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFPeA	4.395	268.3 -> 223.0	34791	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C6-PFDA	8.197	519.1 -> 474.1	14541	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C7-PFUnDA	8.664	570.0 -> 525.1	14598	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C8-FOSA	9.669	506.1 -> 77.8	15498	2.93 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 117.1%	
13C8-PFOA	7.187	421.1 -> 376.0	53403	2.71 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.5%	
13C8-PFOS	8.372	507.1 -> 79.9	7211	2.78 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C9-PFNA	7.718	472.1 -> 427.0	15870	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
d3-MeFOSAA	8.255	573.2 -> 419.0	19531	5.33 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C3-HFPO-DA	5.971	286.9 -> 168.9	13271	9.76 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSA	10.771	515.0 -> 219.0	5706	2.95 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 117.8%	
d5-EtFOSAA	8.451	589.2 -> 419.0	19271	5.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 119.6%	
d7-MeFOSE	10.680	623.2 -> 58.9	20731	28.24 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 112.9%	
d9-EtFOSE	10.926	639.2 -> 58.9	15016	28.97 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 115.9%	
d5-EtFOSA	10.991	531.1 -> 219.0	6128	2.86 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.5%	
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	171173	48.00 µg/L	95
		327.1 -> 80.9	38783		
6:2FTS	6.950	427.1 -> 407.0	143524	48.48 µg/L	100
		427.1 -> 80.9	30724		
8:2FTS	7.986	527.1 -> 507.0	75718	51.75 µg/L	99
		527.1 -> 80.8	19829		
EtFOSAA	8.464	584.2 -> 419.1	39601	11.31 µg/L	m 99
		584.2 -> 526.0	21483		
FOSA	9.672	498.1 -> 77.9	174538	28.18 µg/L	100
		498.1 -> 478.0	6807		
MeFOSAA	8.256	570.1 -> 419.0	57189	13.99 µg/L	100
		570.1 -> 483.0	10055		
PFBA	2.956	212.8 -> 168.9	100887	51.60 µg/L	100
PFBS	5.537	298.7 -> 79.9	59094	11.06 µg/L	99
		298.7 -> 98.8	26330		
PFDA	8.198	512.9 -> 469.0	209009	11.58 µg/L	93
		512.9 -> 219.0	31558		
PFDoDA	9.094	613.1 -> 569.0	206944	13.20 µg/L	98
		613.1 -> 319.0	25245		
PFDS	9.258	599.0 -> 79.9	27532	11.67 µg/L	93

7.6.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.544	599.0 -> 98.8	14965	12.05	µg/L	98
		363.1 -> 319.0	247796			
PFHpS	7.868	363.1 -> 169.0	35818	11.68	µg/L	95
		449.0 -> 79.9	37538			
PFHxA	5.607	449.0 -> 98.9	20988	12.94	µg/L	100
		313.0 -> 269.0	165826			
PFHxS	7.303	313.0 -> 118.9	6746	11.19	µg/L	98
		398.7 -> 79.9	43232			
PFNA	7.581	398.7 -> 98.9	24131	26.35	µg/L	99
		463.0 -> 419.0	296432			
PFNS	8.839	463.0 -> 219.0	60915	11.90	µg/L	97
		548.8 -> 79.9	40576			
PFOA	7.189	548.8 -> 98.9	22846	26.79	µg/L	97
		413.0 -> 369.0	677266			
PFOS	8.361	413.0 -> 169.0	94126	11.88	µg/L	96
		498.9 -> 79.9	40137			
PFPeA	4.397	498.9 -> 98.8	24111	25.52	µg/L	100
		263.0 -> 219.0	211368			
PFPeS	6.609	349.1 -> 79.9	54401	11.66	µg/L	98
		349.1 -> 98.9	28176			
PFTeDA	9.797	713.1 -> 669.0	176077	13.17	µg/L	99
		713.1 -> 168.9	11599			
PFTrDA	9.466	663.0 -> 619.0	179159	12.90	µg/L	100
		663.0 -> 168.9	13897			
PFUnDA	8.652	563.1 -> 519.0	182917	13.24	µg/L	96
		563.1 -> 269.1	28340			
11CI-PF3OUdS	9.517	630.9 -> 450.9	407030	49.57	µg/L	97
		632.9 -> 452.9	122622			
9CI-PF3ONS	8.703	530.8 -> 351.0	716827	48.17	µg/L	100
		532.8 -> 353.0	220759			
ADONA	6.794	376.9 -> 250.9	1355289	47.55	µg/L	98
		376.9 -> 84.8	314537			
HFPO-DA	5.971	284.9 -> 168.9	72887	52.19	µg/L	98
		284.9 -> 184.9	8453			
3:3FTCA	3.851	241.0 -> 177.0	26417	63.77	µg/L	99
		241.0 -> 117.0	3838			
5:3FTCA	6.259	341.0 -> 237.1	836251	323.47	µg/L	98
		341.0 -> 217.0	715848			
7:3FTCA	7.684	441.0 -> 316.9	442277	340.34	µg/L	96
		441.0 -> 336.9	786732			
EtFOSA	10.993	526.0 -> 219.0	88552	30.07	µg/L	77
		526.0 -> 169.0	103988			
EtFOSE	10.939	630.0 -> 58.9	83402	136.36	µg/L	100
		511.9 -> 219.0	80006			
MeFOSA	10.773	511.9 -> 169.0	96308	29.15	µg/L	87
		616.1 -> 58.9	128007			
MeFOSE	10.692	699.1 -> 79.9	16794	146.25	µg/L	100
		699.1 -> 98.8	10079			
PFDoDS	9.936	295.0 -> 201.0	20981	12.46	µg/L	95
		295.0 -> 84.9	9371			
NFDHA	5.476	279.0 -> 85.1	67593	25.44	µg/L	100
		229.0 -> 84.9	60300			
PFMBA	4.806	314.8 -> 134.9	415397	25.05	µg/L	100
		314.8 -> 82.9	10044			
PFMPA	3.526			25.41	µg/L	100
PFEESA	6.089			22.92	µg/L	100

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

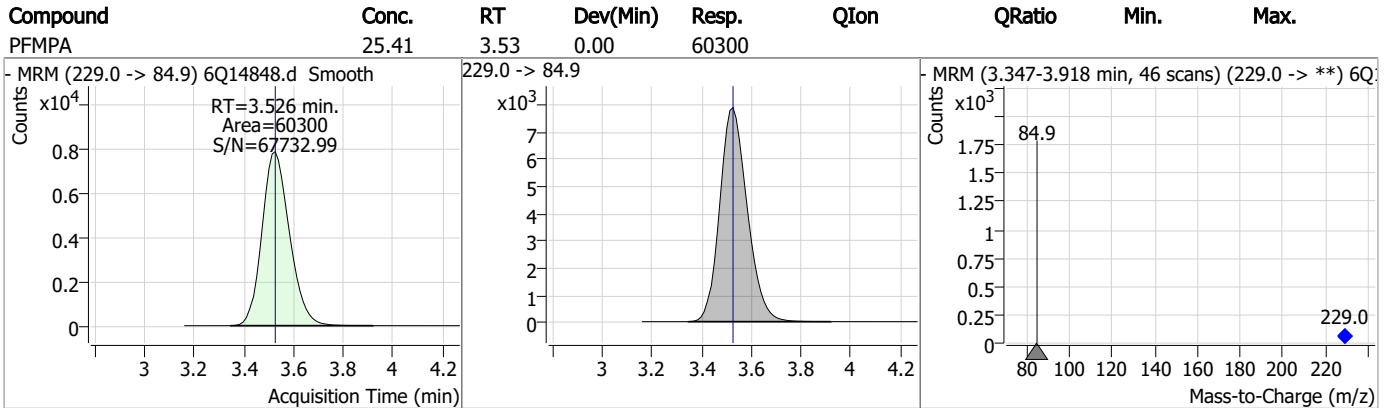
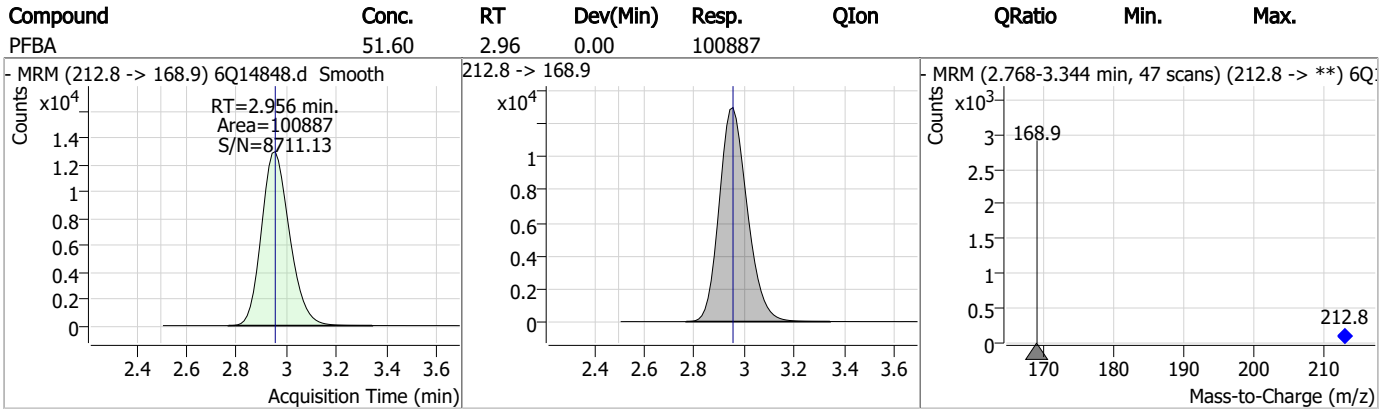
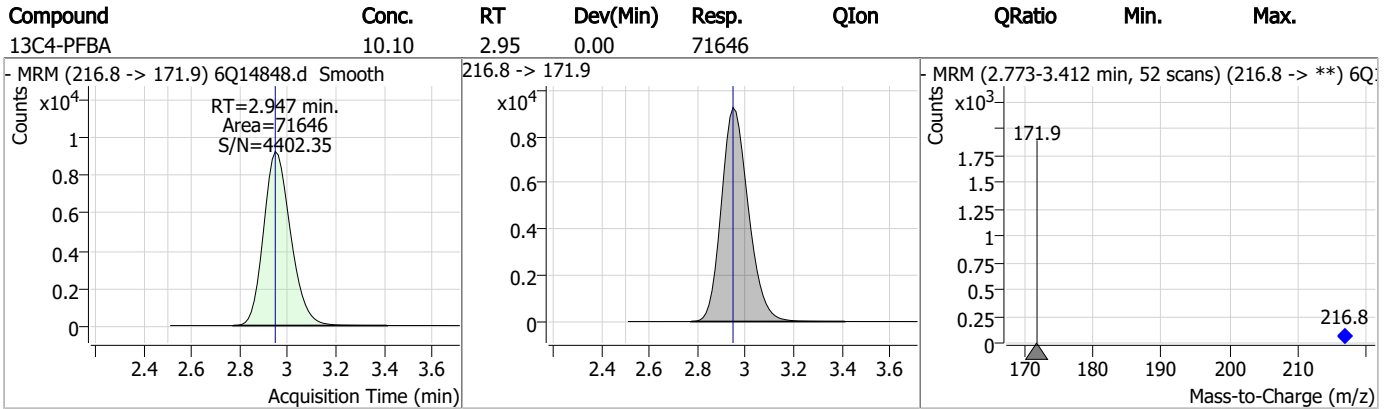
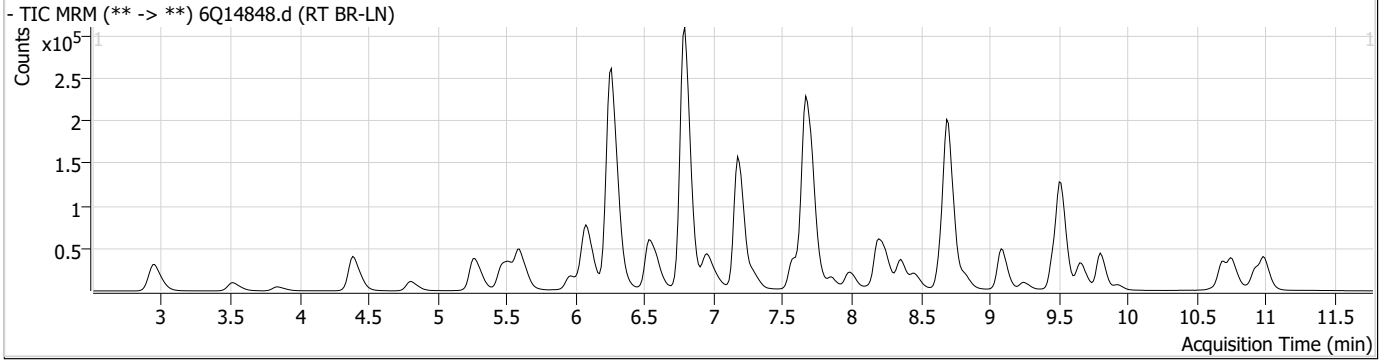
Perfluorinated Compounds by LC/MS/MS

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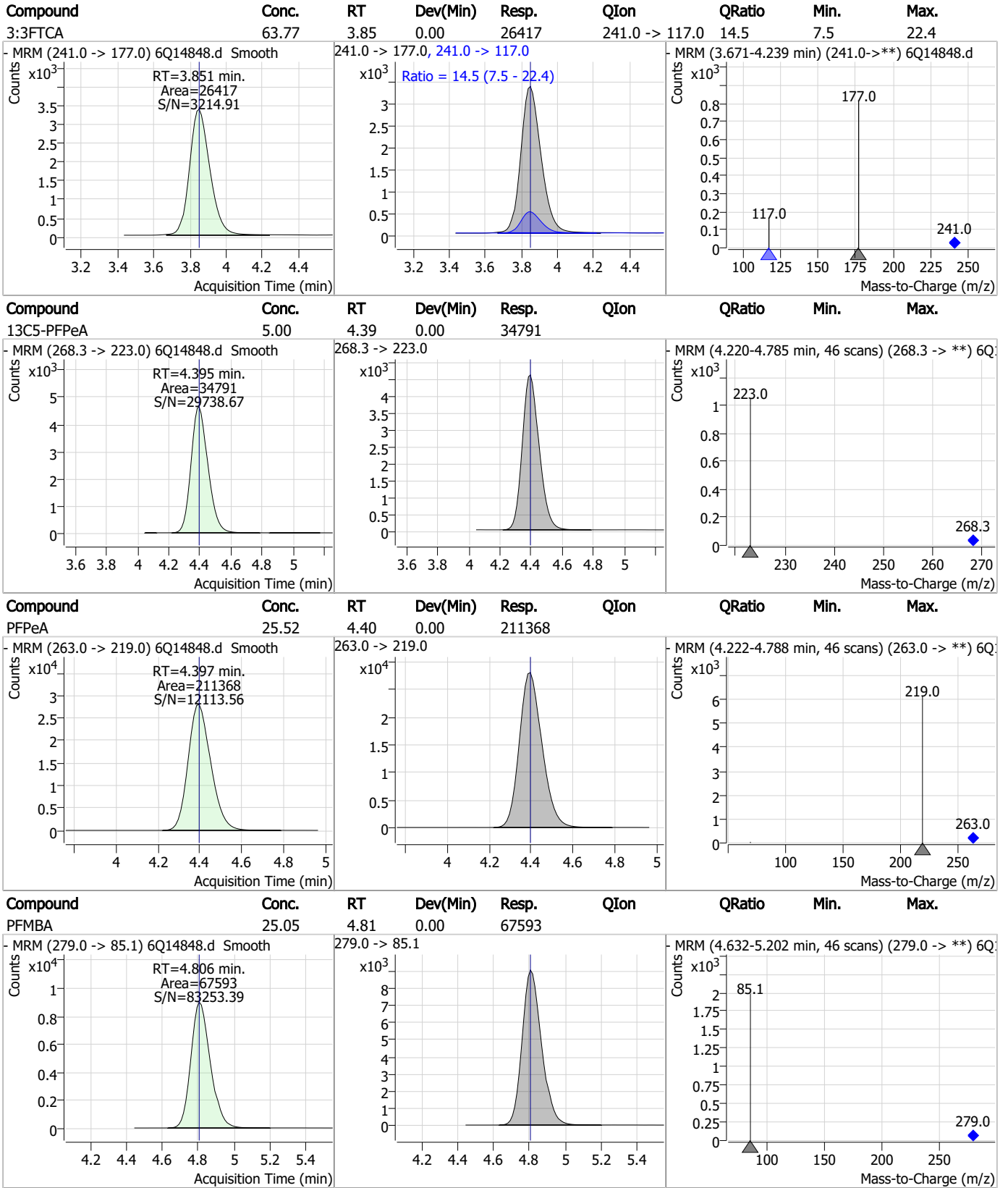
7.6.2

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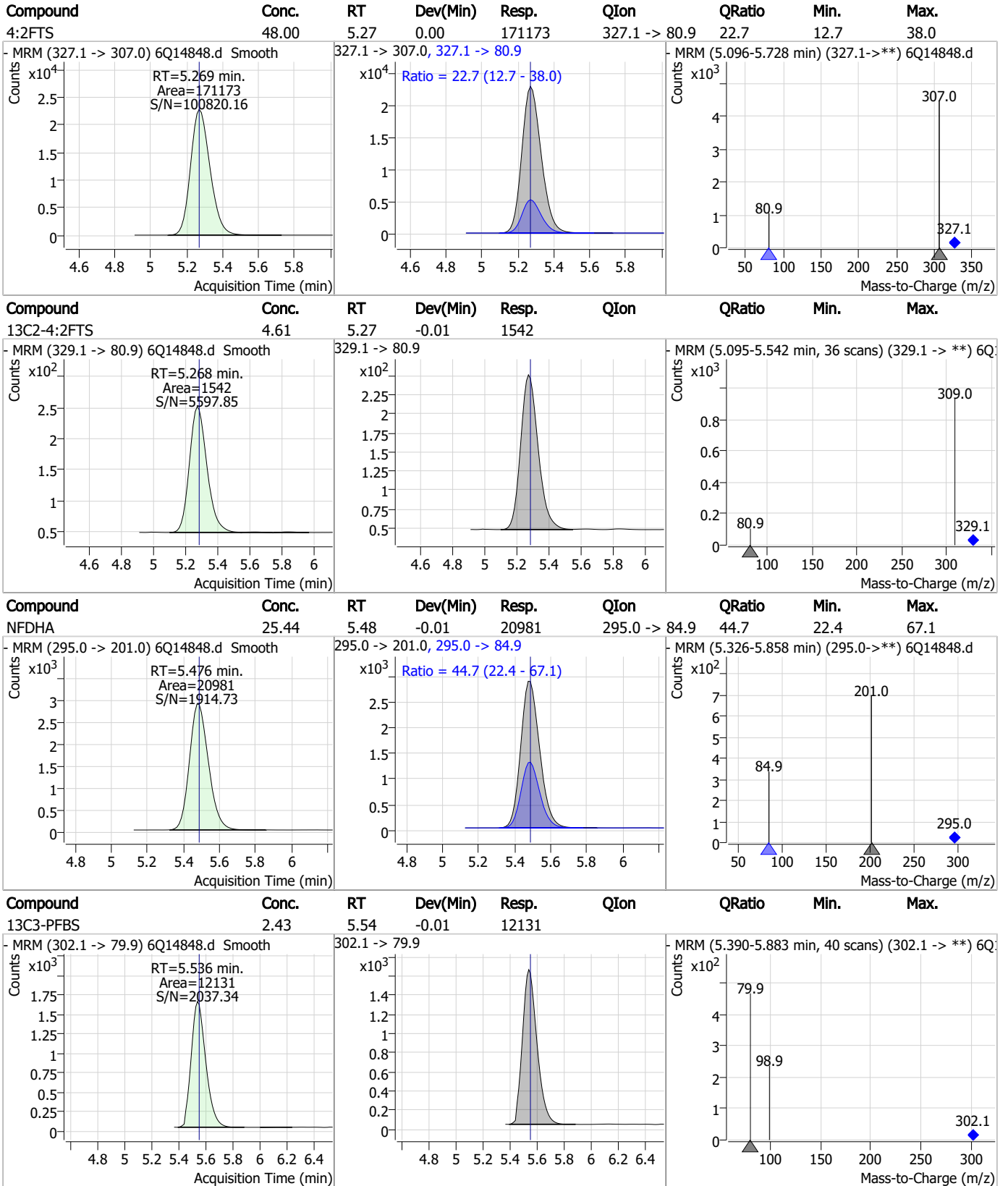
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

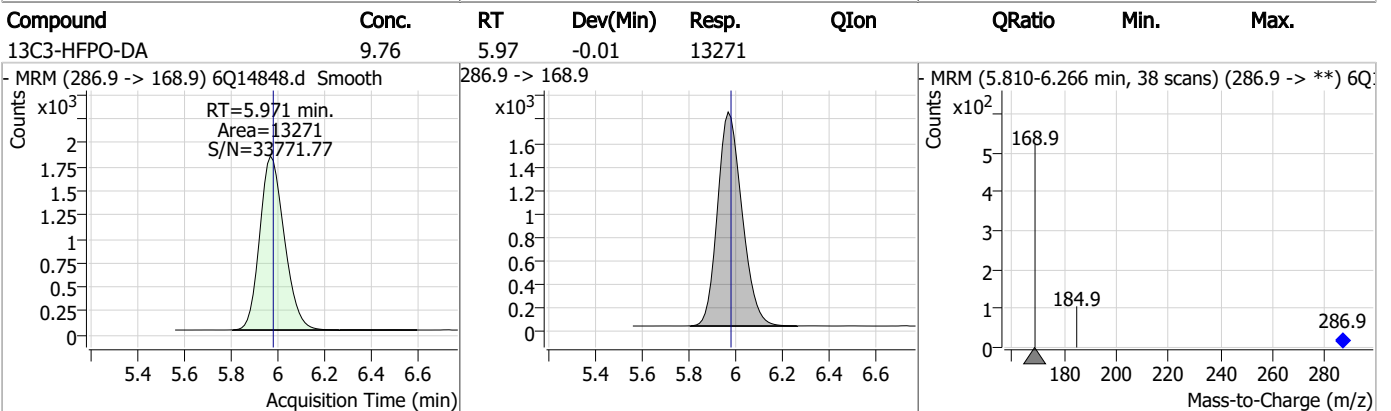
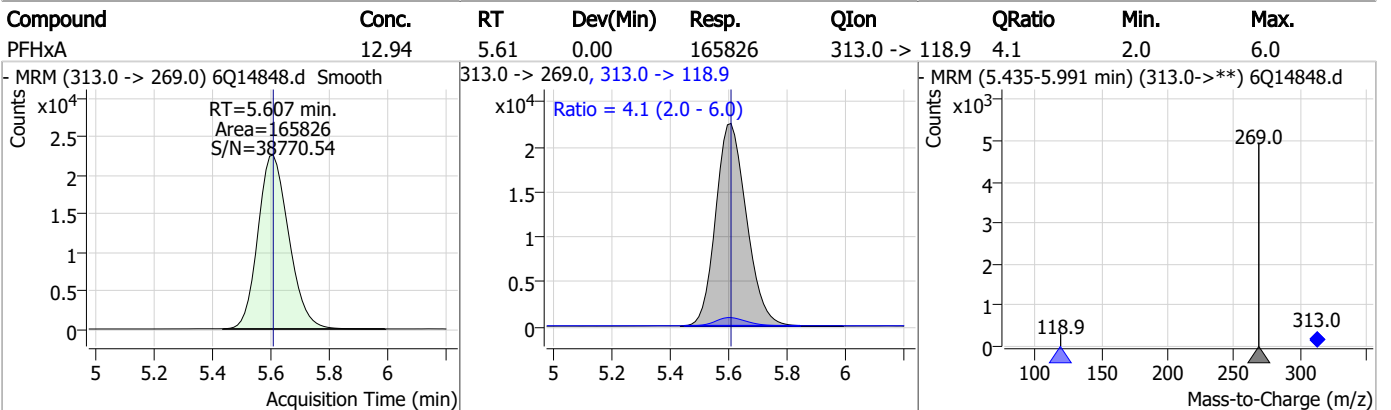
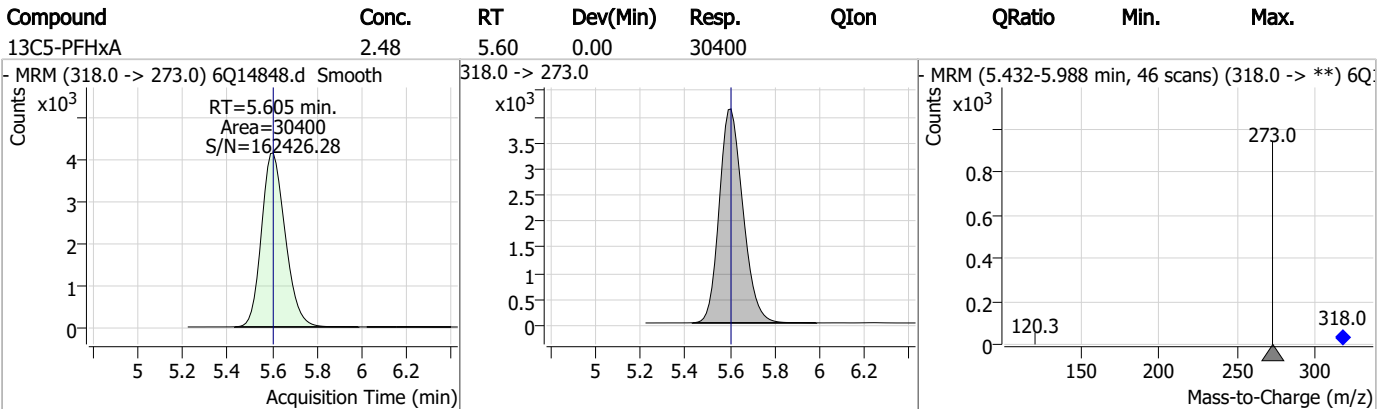
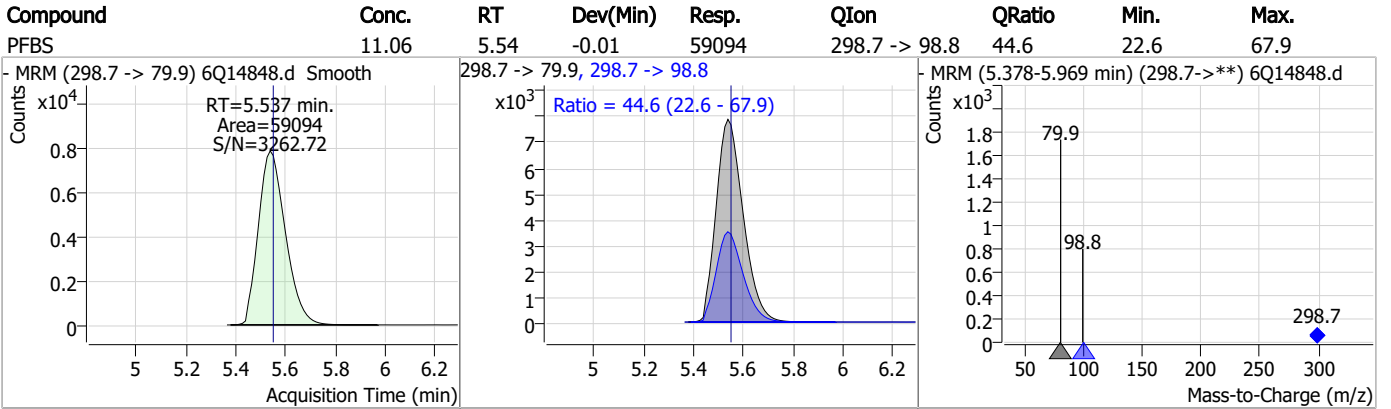


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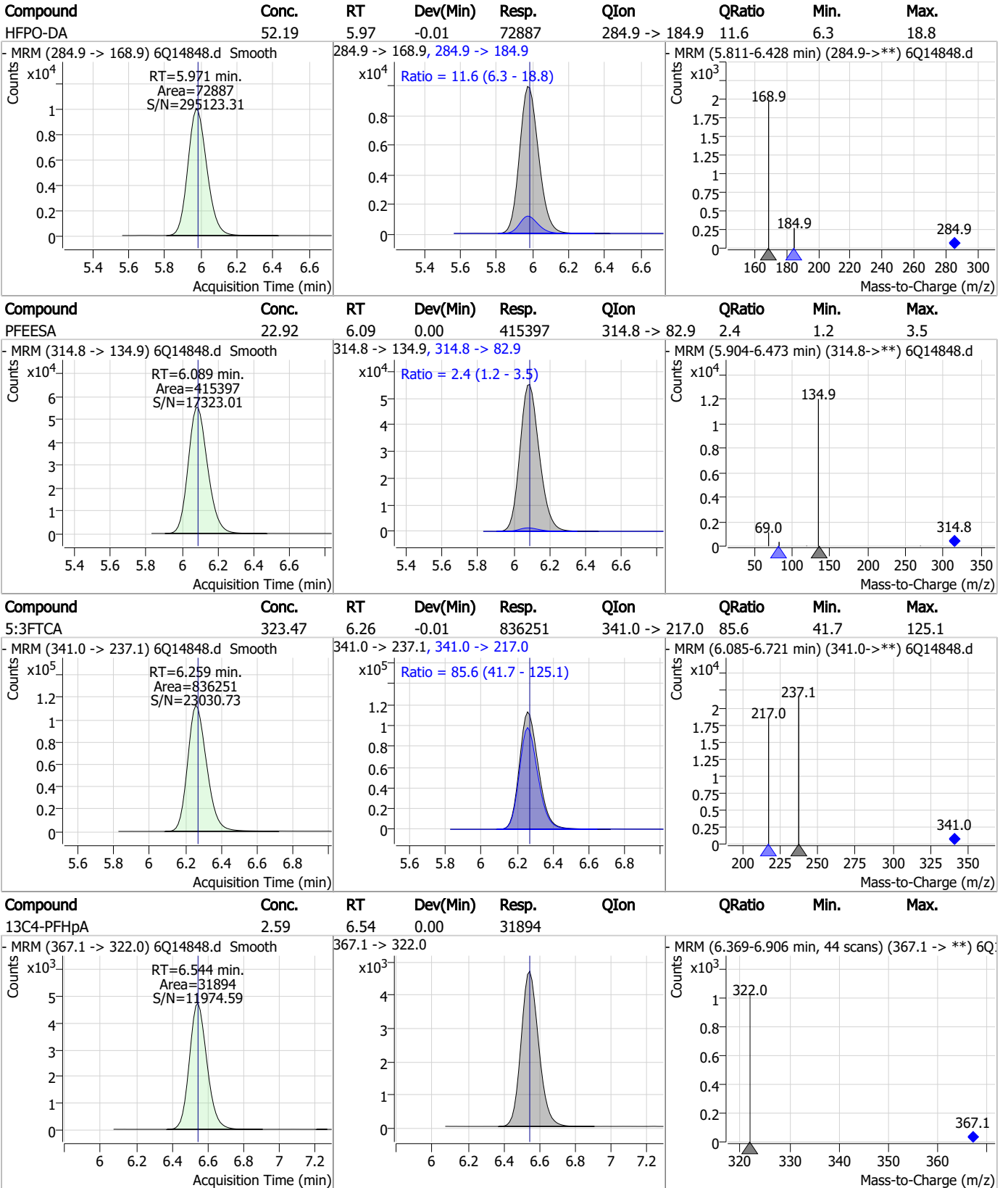
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Perfluorinated Compounds by LC/MS/MS



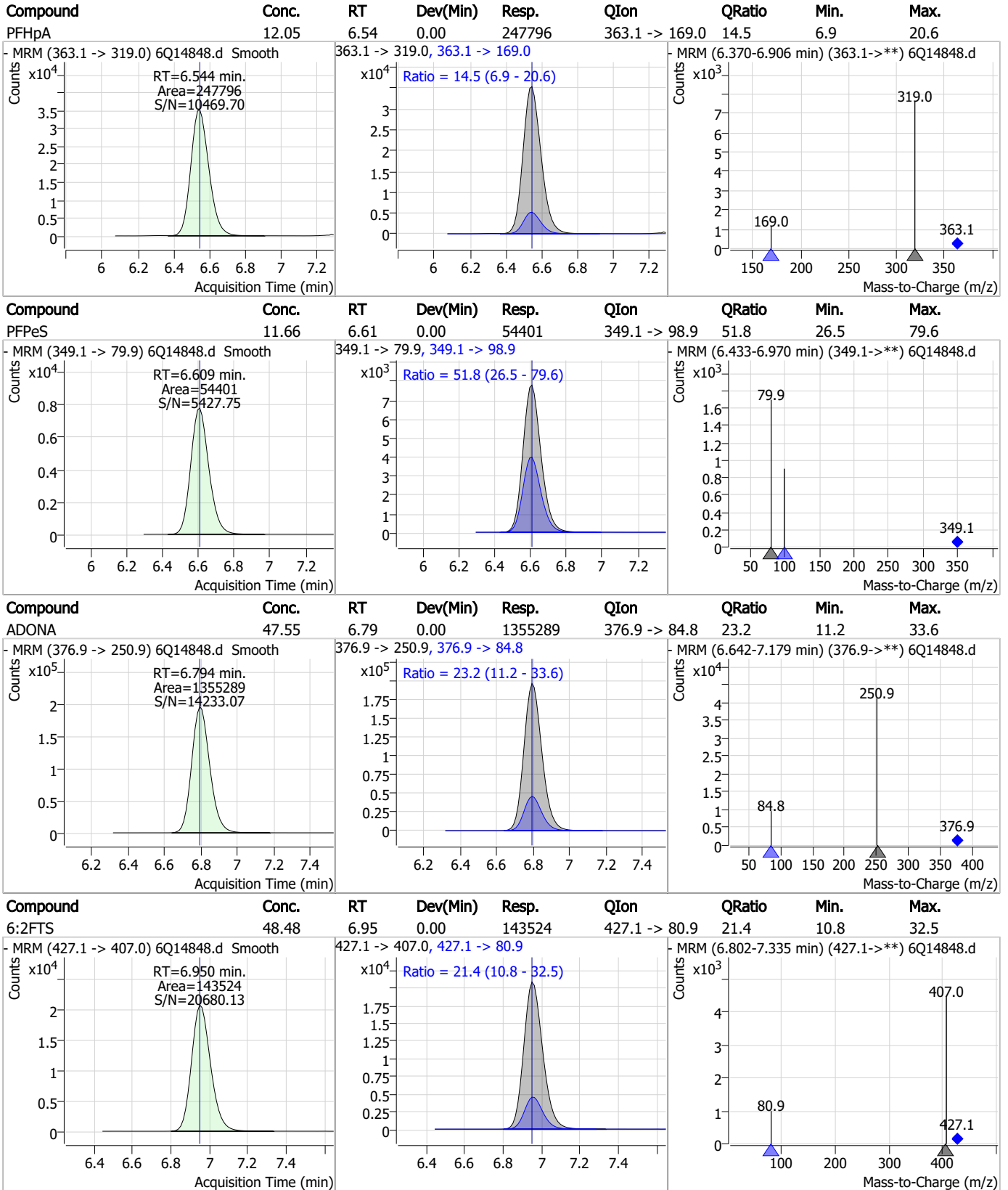
Perfluorinated Compounds by LC/MS/MS



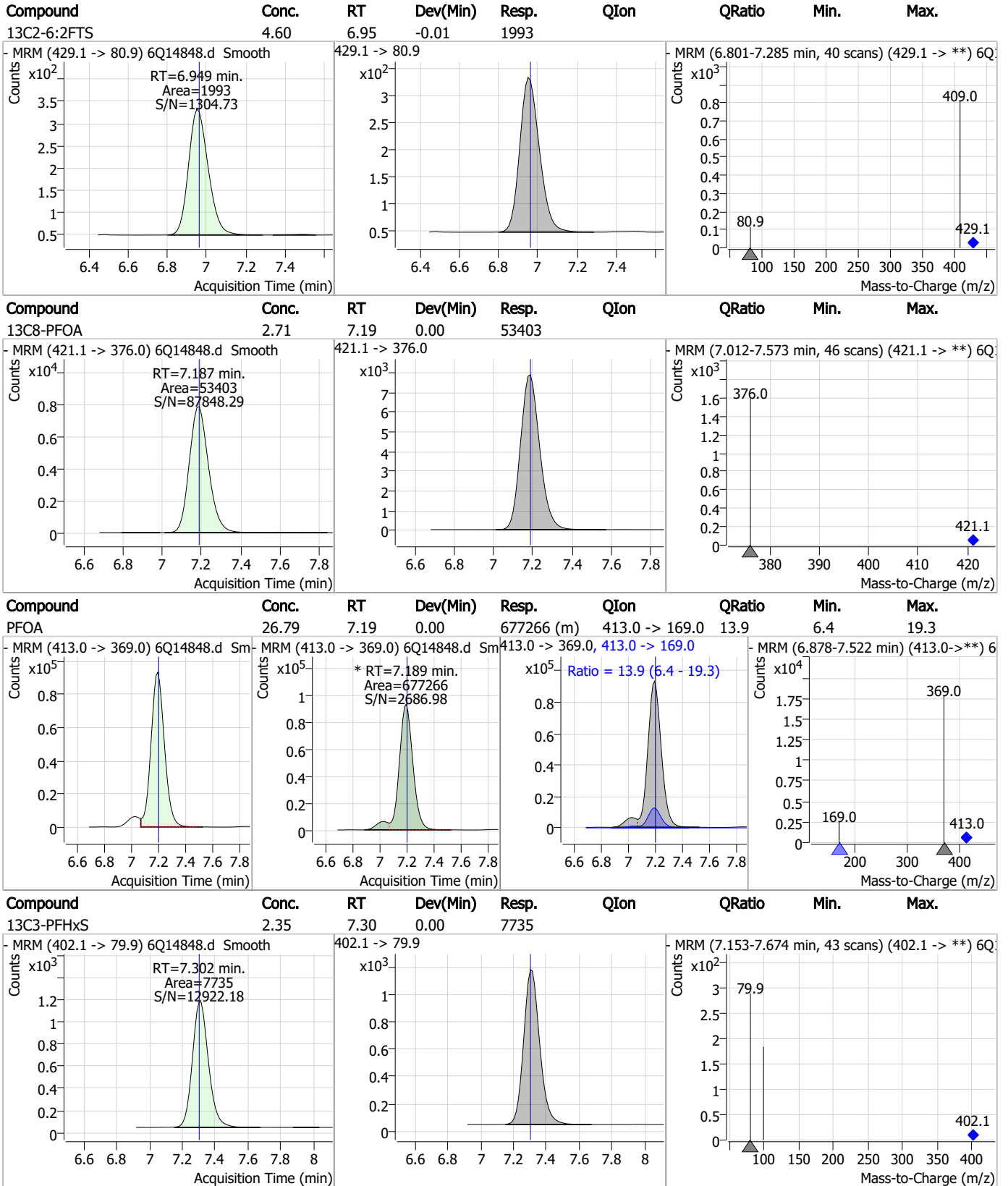
7.6.2

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Perfluorinated Compounds by LC/MS/MS



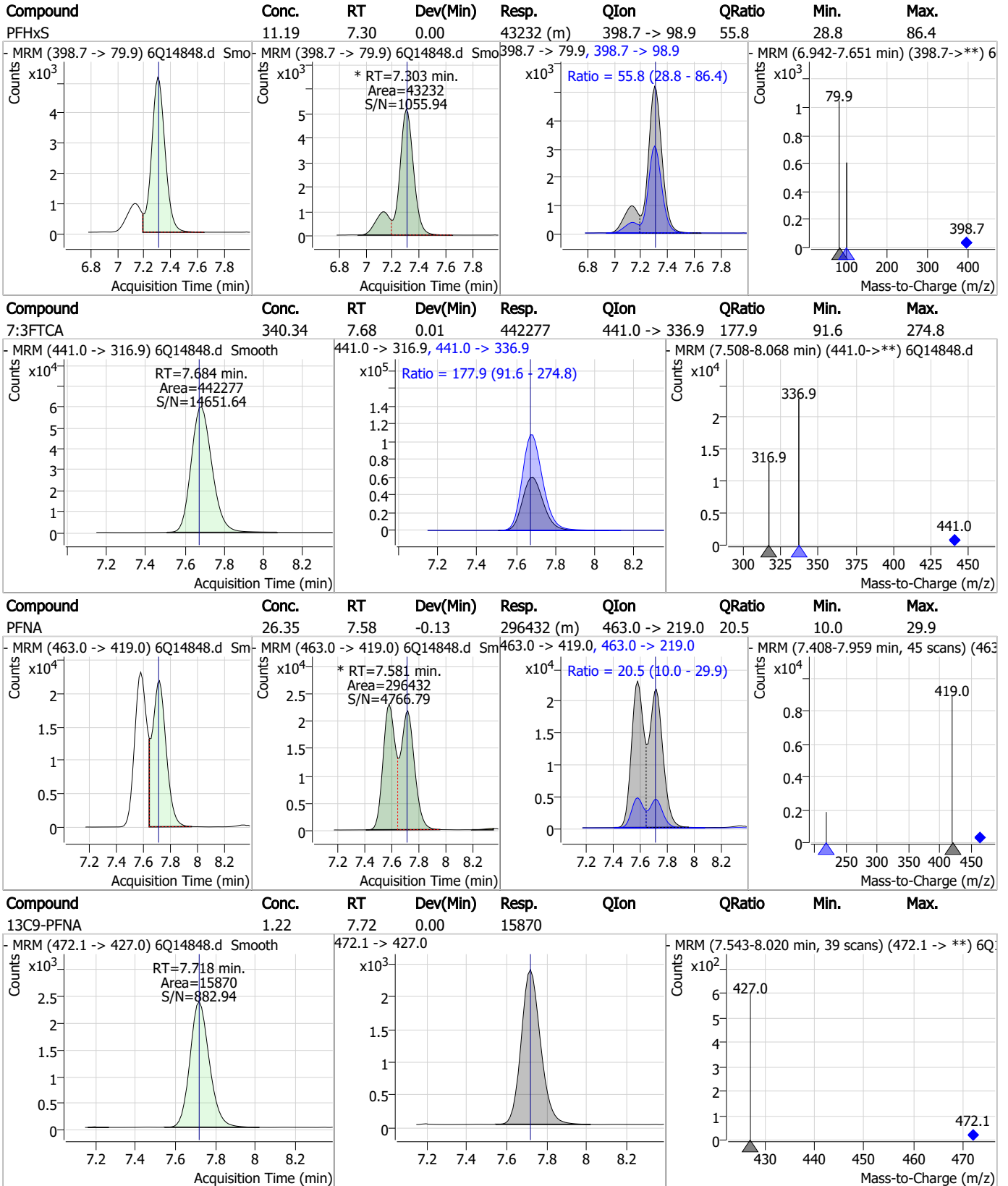
Perfluorinated Compounds by LC/MS/MS



7.6.2

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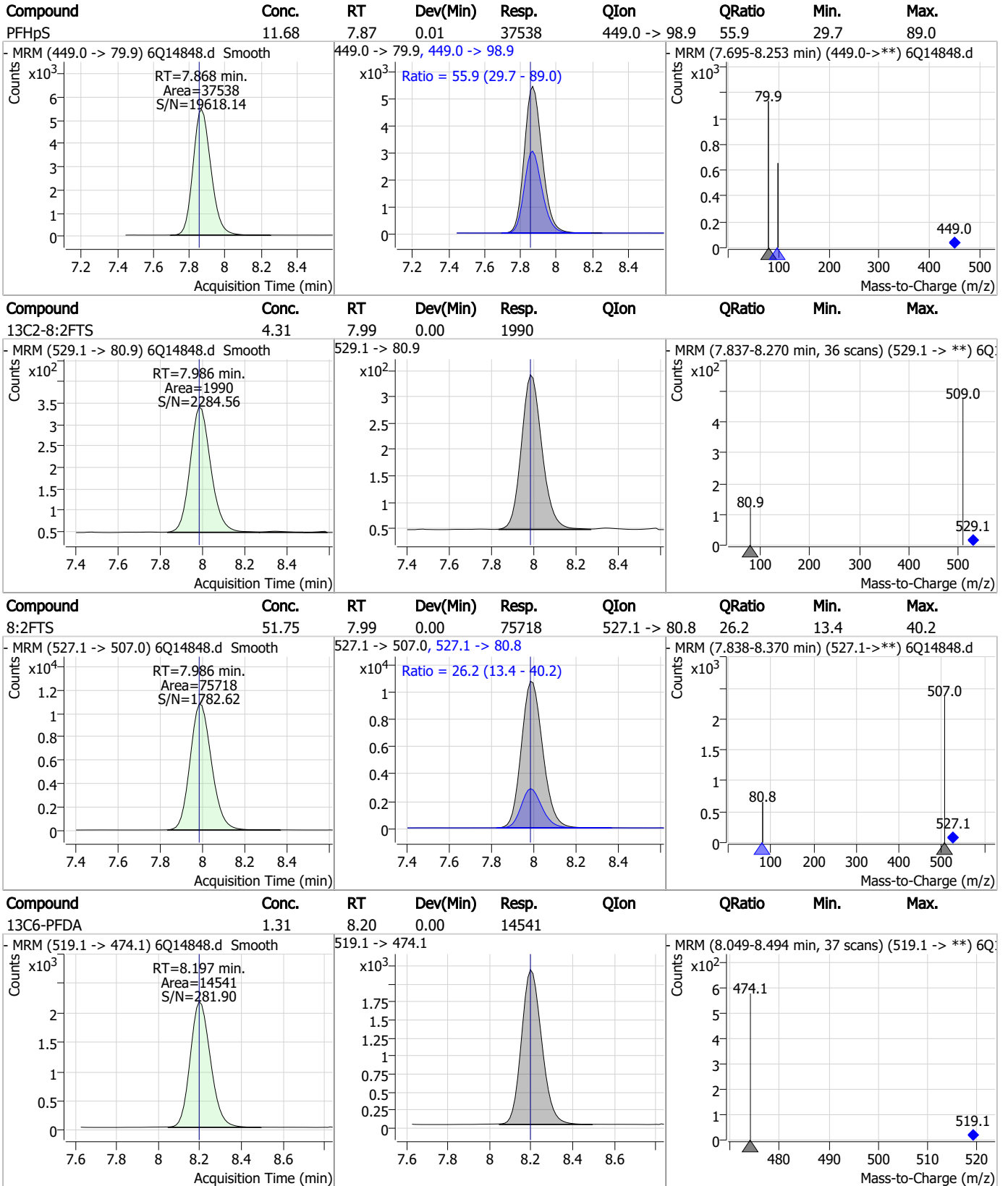
Perfluorinated Compounds by LC/MS/MS



7.6.2

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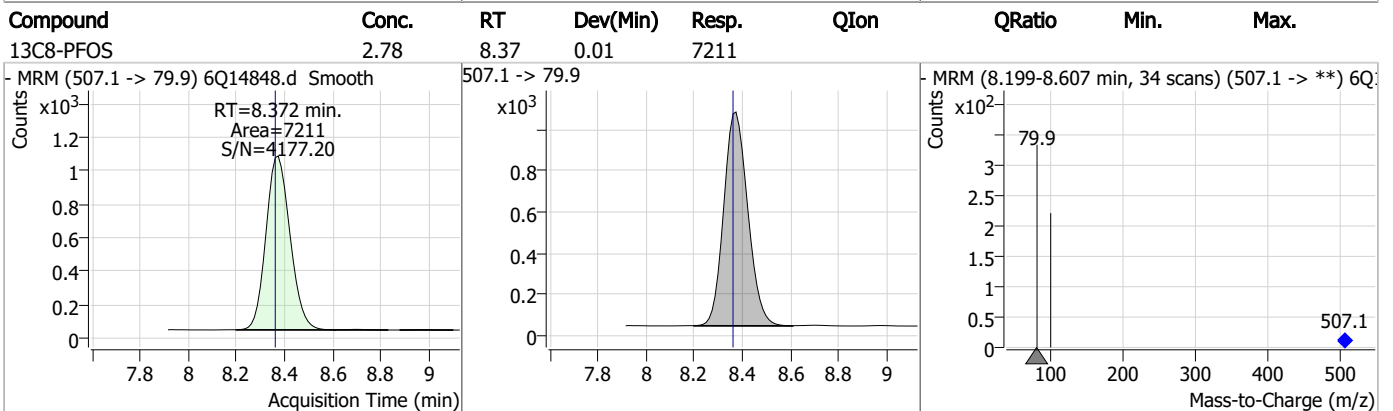
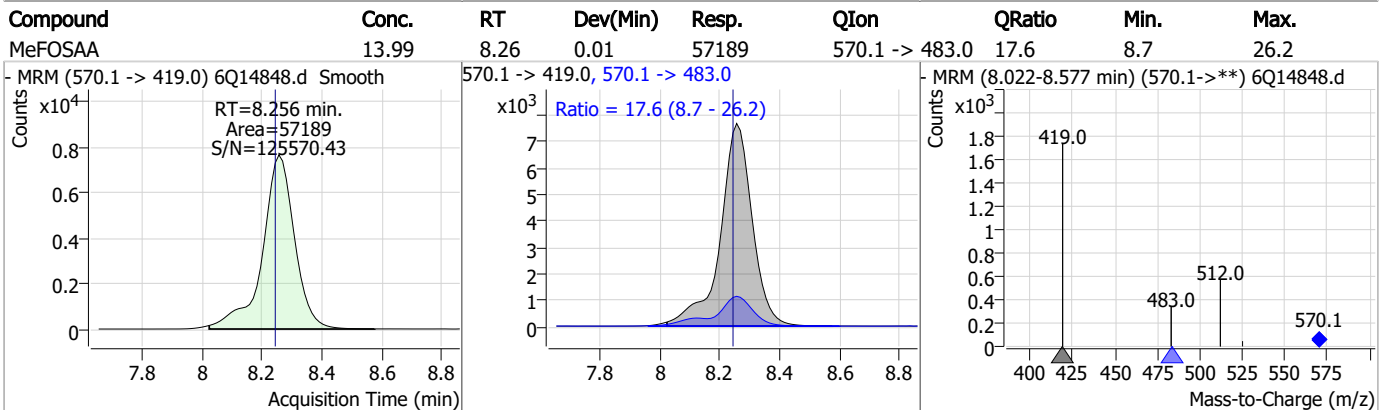
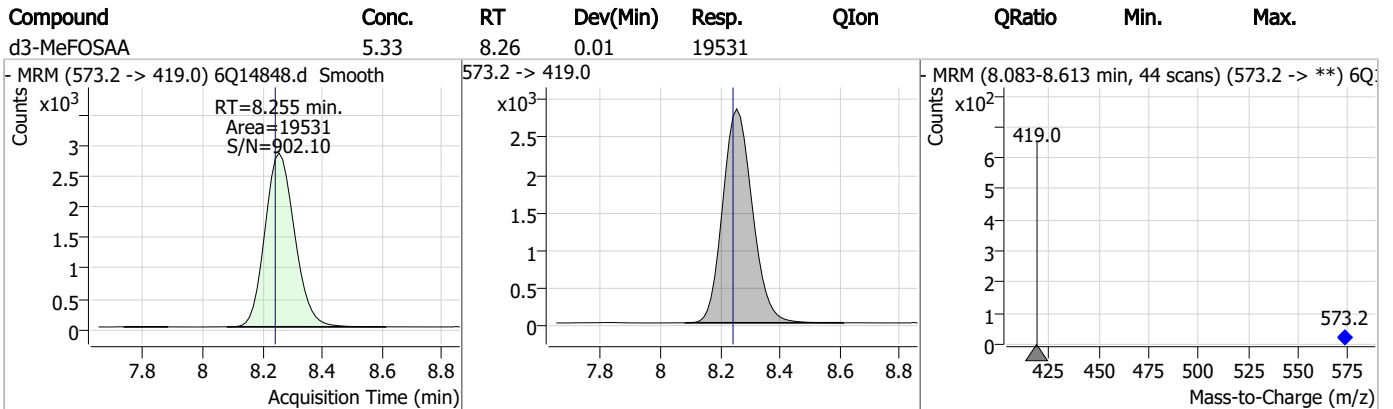
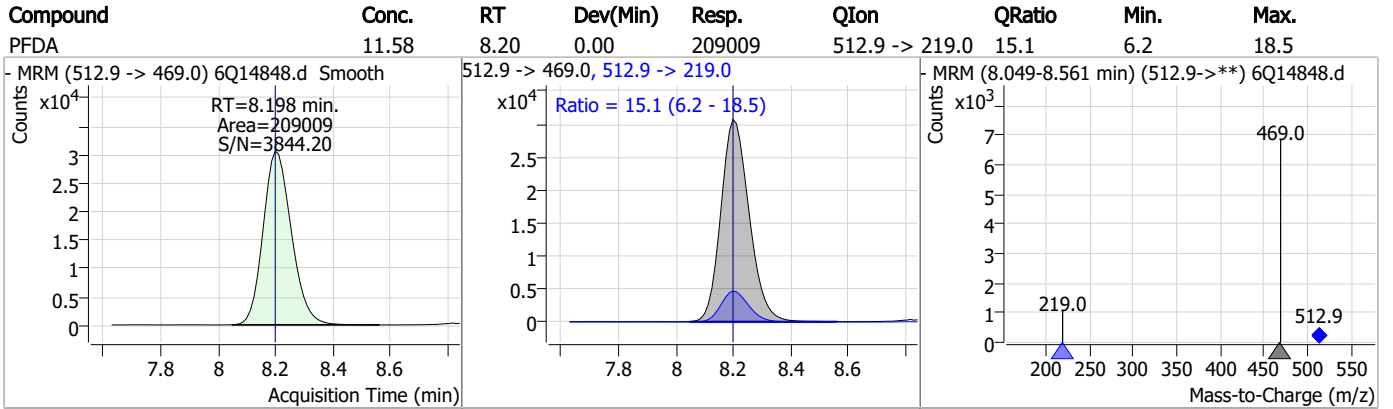
Perfluorinated Compounds by LC/MS/MS



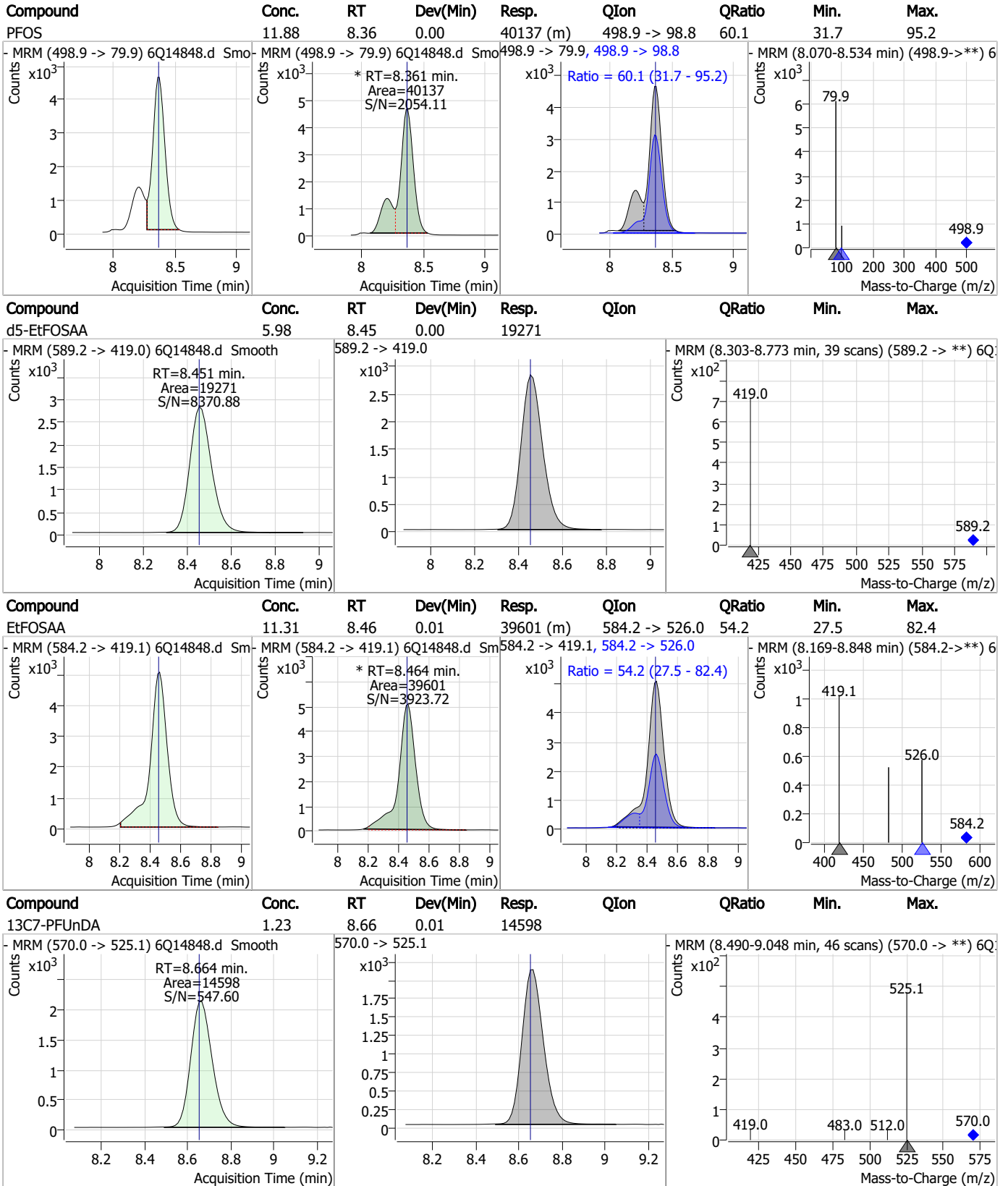
7.6.2

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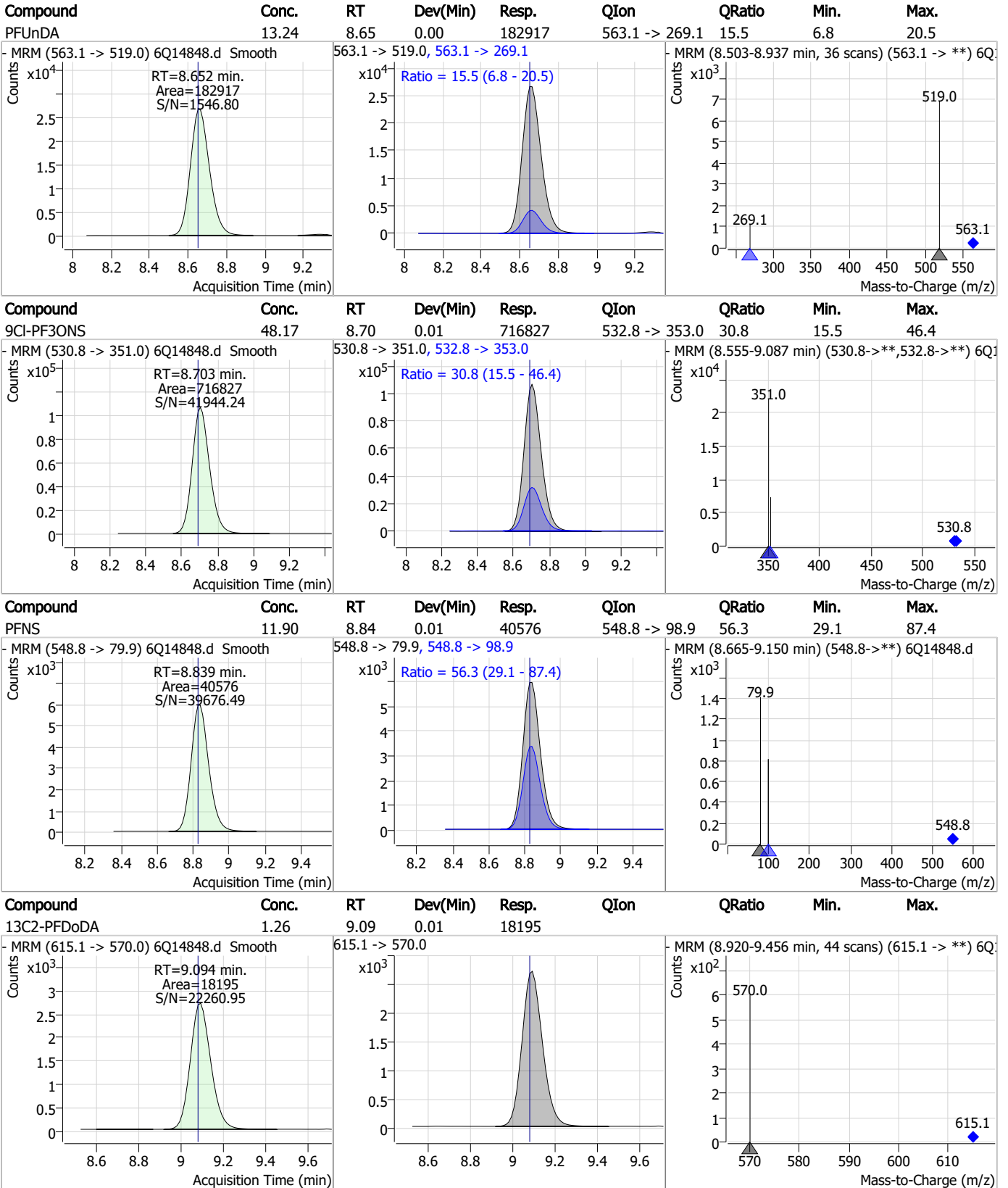
Perfluorinated Compounds by LC/MS/MS



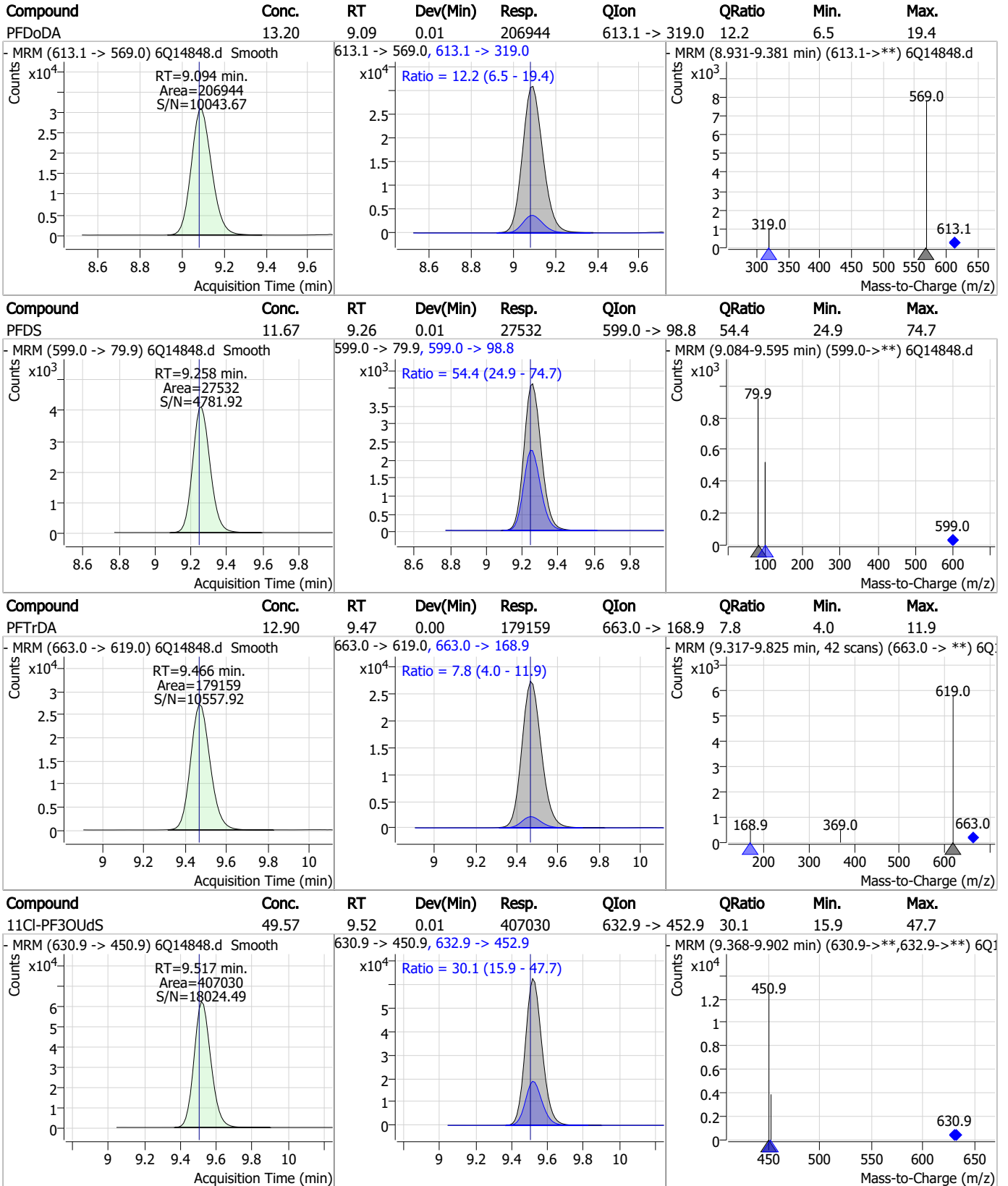
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

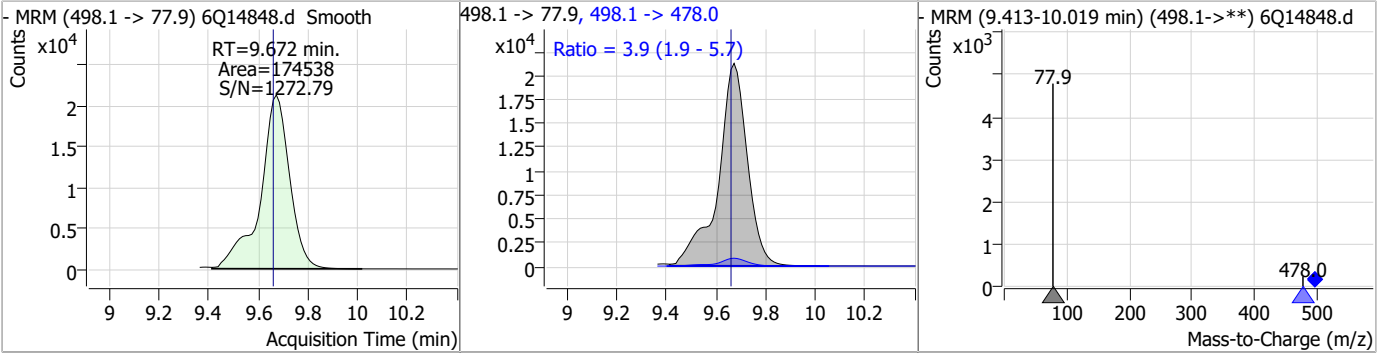


7.6.2

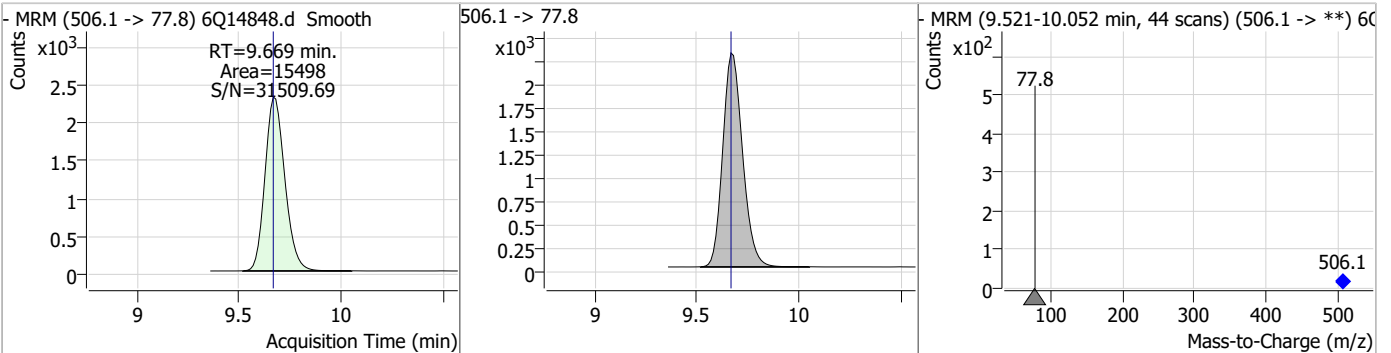
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Perfluorinated Compounds by LC/MS/MS

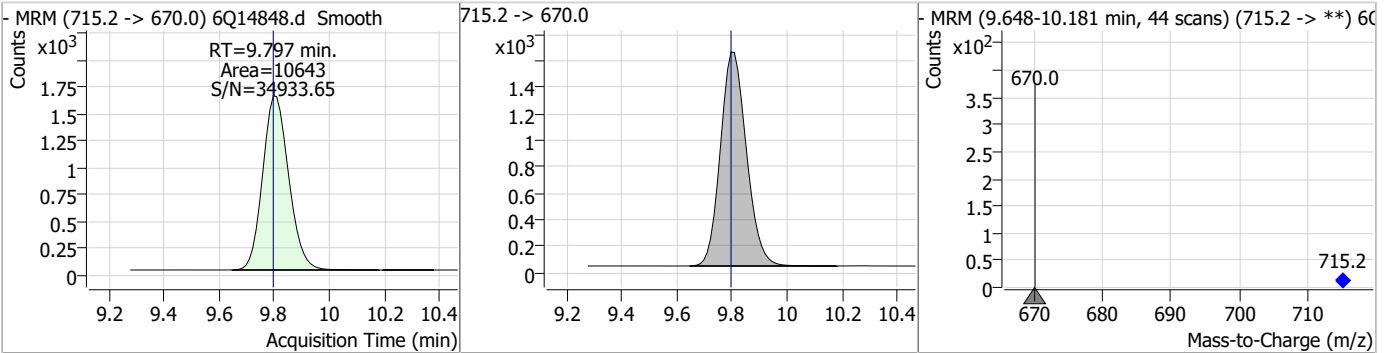
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.18	9.67	0.01	174538	498.1 -> 478.0	3.9	1.9	5.7



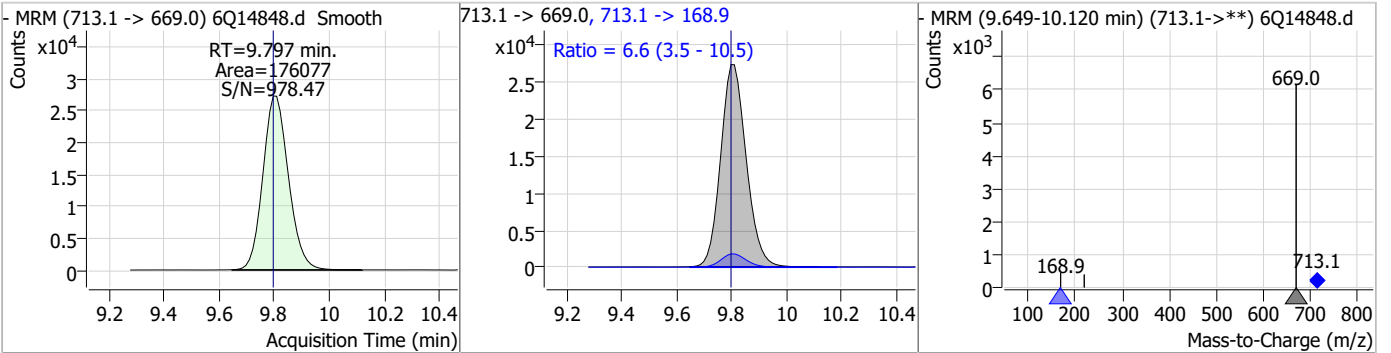
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.93	9.67	0.00	15498				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.29	9.80	0.00	10643				

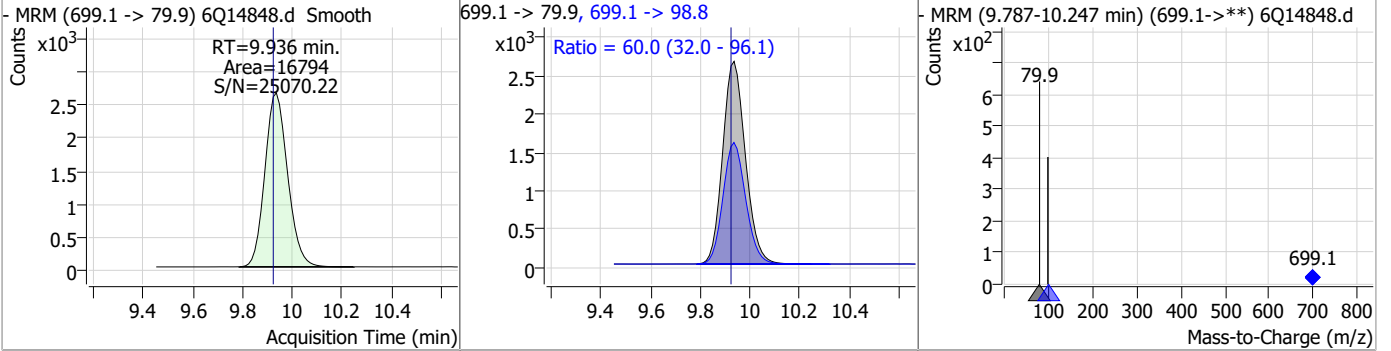


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	13.17	9.80	0.00	176077	713.1 -> 168.9	6.6	3.5	10.5

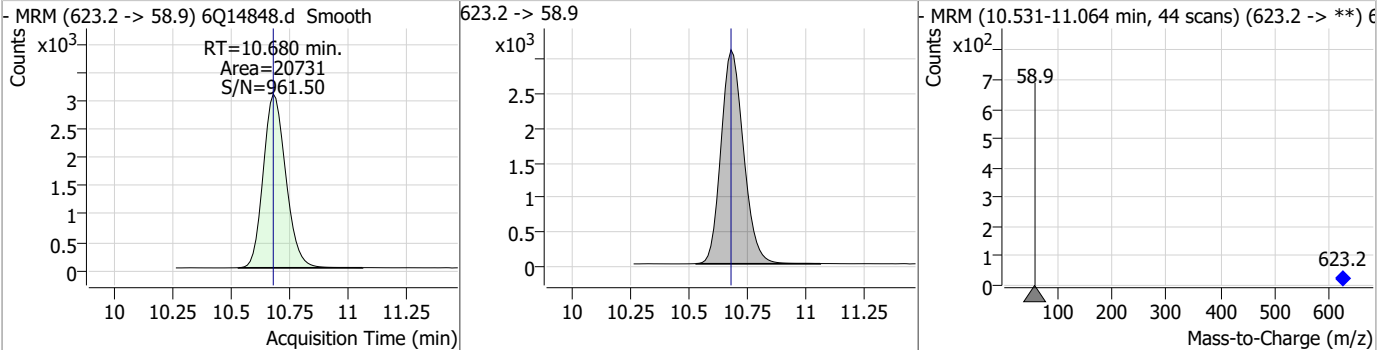


Perfluorinated Compounds by LC/MS/MS

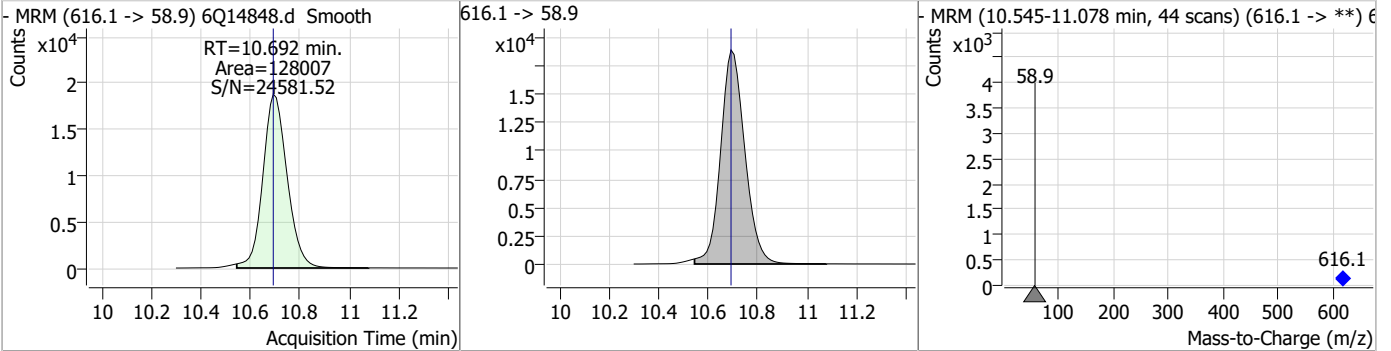
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	12.46	9.94	0.01	16794	699.1 -> 98.8	60.0	32.0	96.1



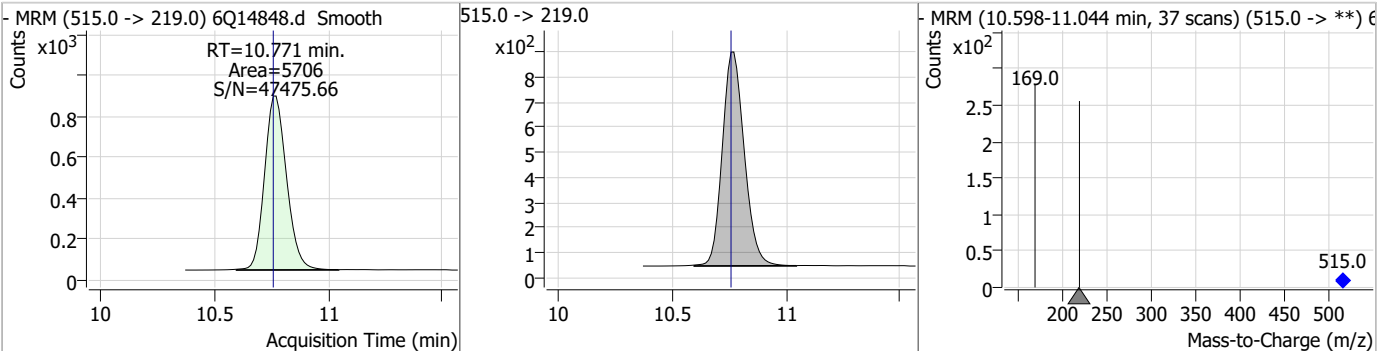
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	28.24	10.68	0.00	20731				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	146.25	10.69	0.00	128007				

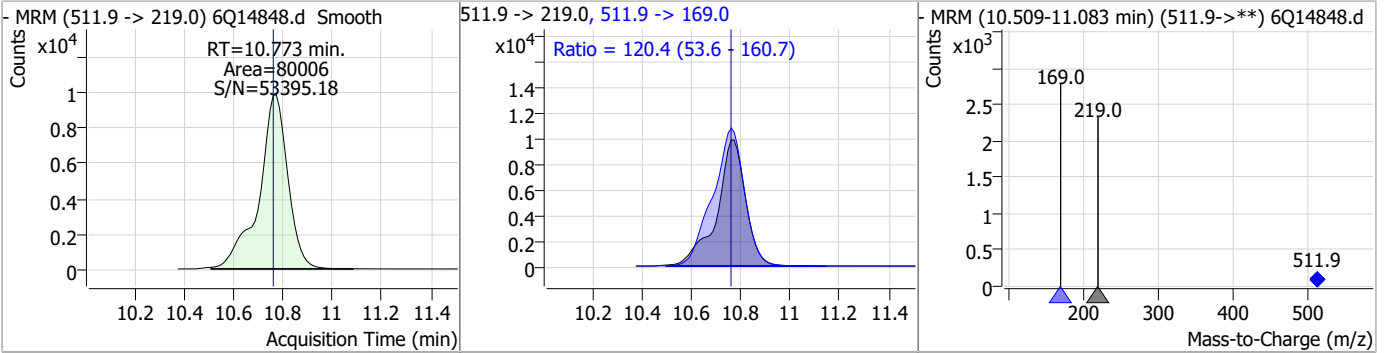


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.95	10.77	0.01	5706				

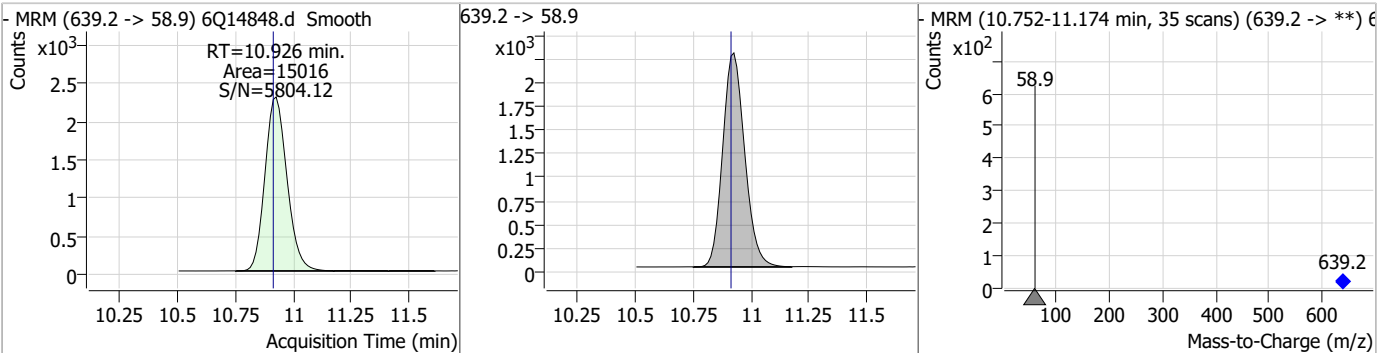


Perfluorinated Compounds by LC/MS/MS

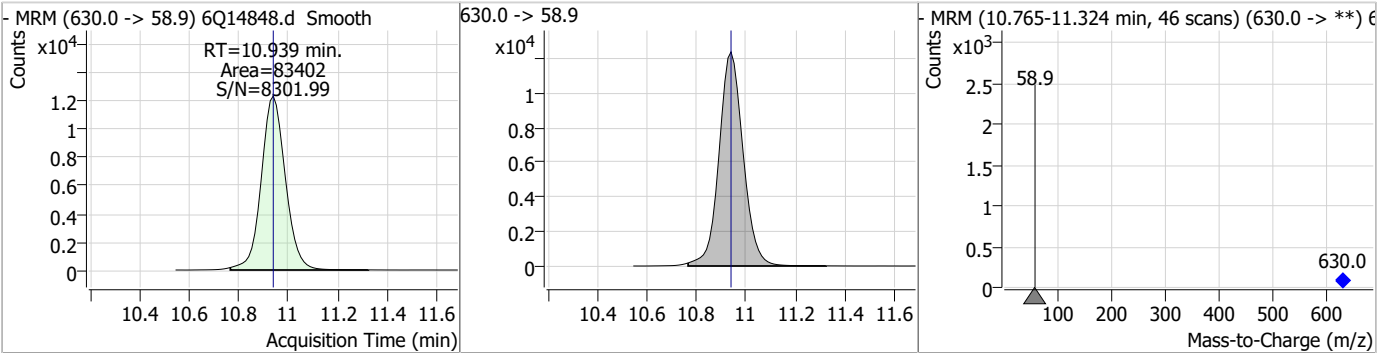
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	29.15	10.77	0.01	80006	511.9 -> 169.0	120.4	53.6	160.7



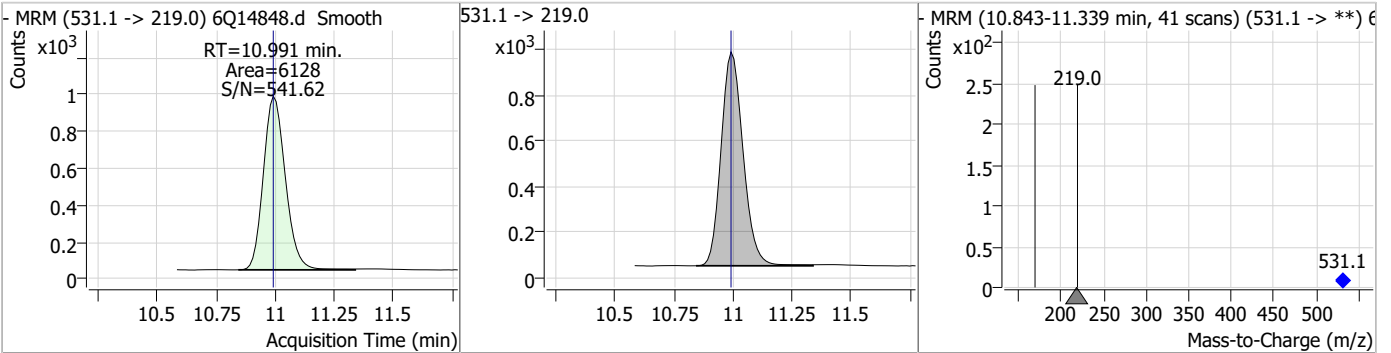
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	28.97	10.93	0.01	15016				



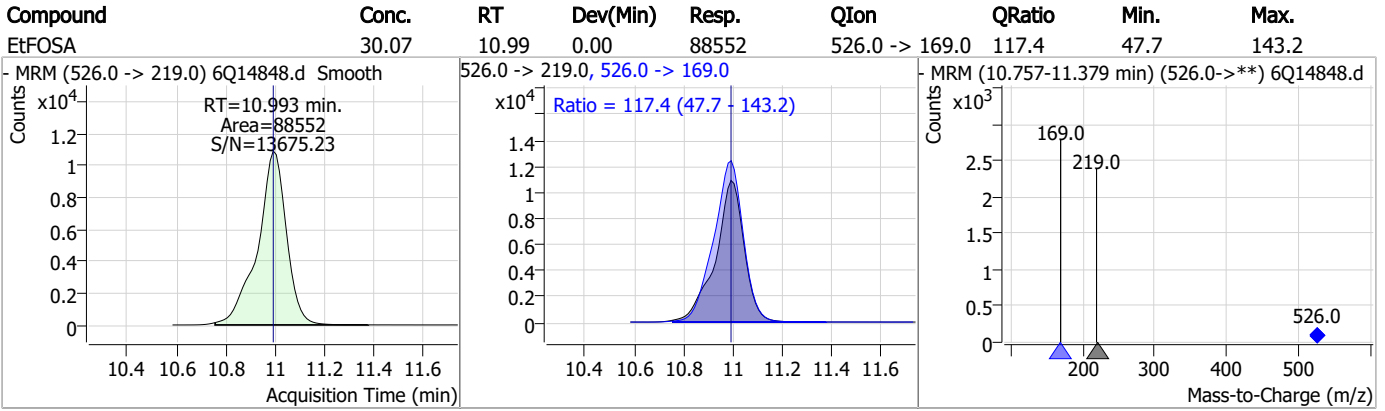
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	136.36	10.94	0.00	83402				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.86	10.99	0.00	6128				



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S6Q225-RT Method: EPA DRAFT 1633
Lab FileID: 6Q14848.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 21:18 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.19	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorononanoic acid	375-95-1		7.58	Poor instrument integration
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.46	Split peak

7.6.2.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Norman Farmer
 03/22/23 11:41

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15100.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 1:18:10 PM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s6q229 TDCA.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

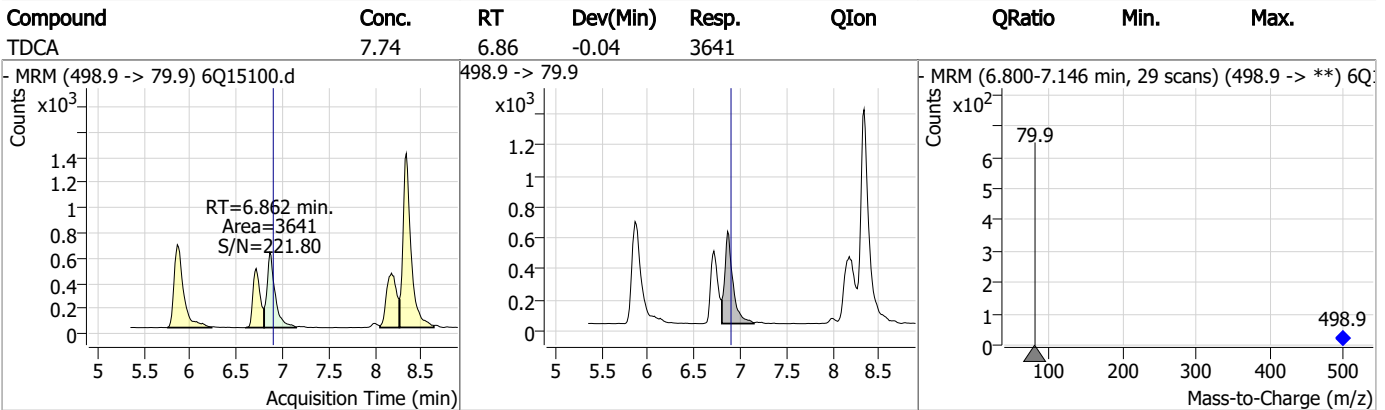
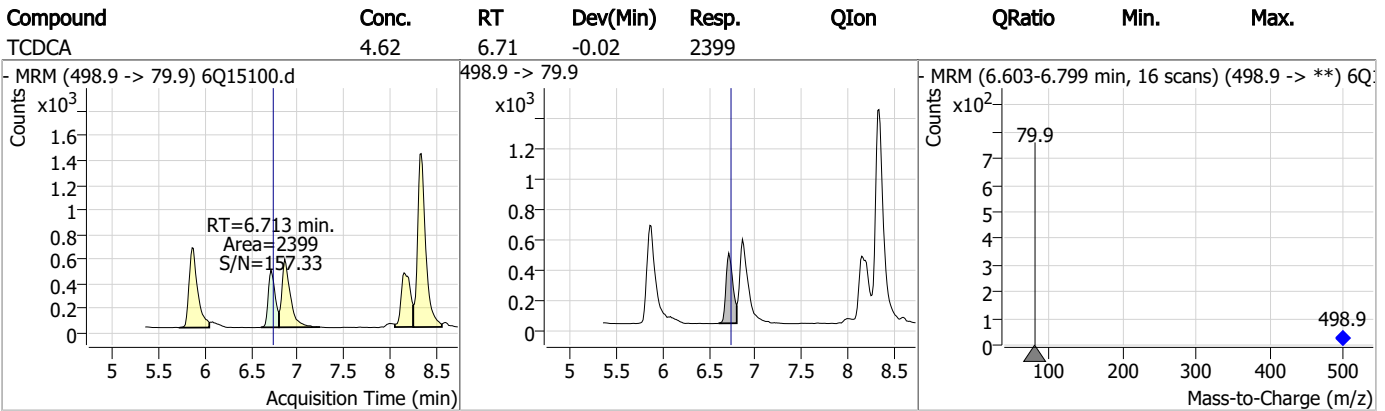
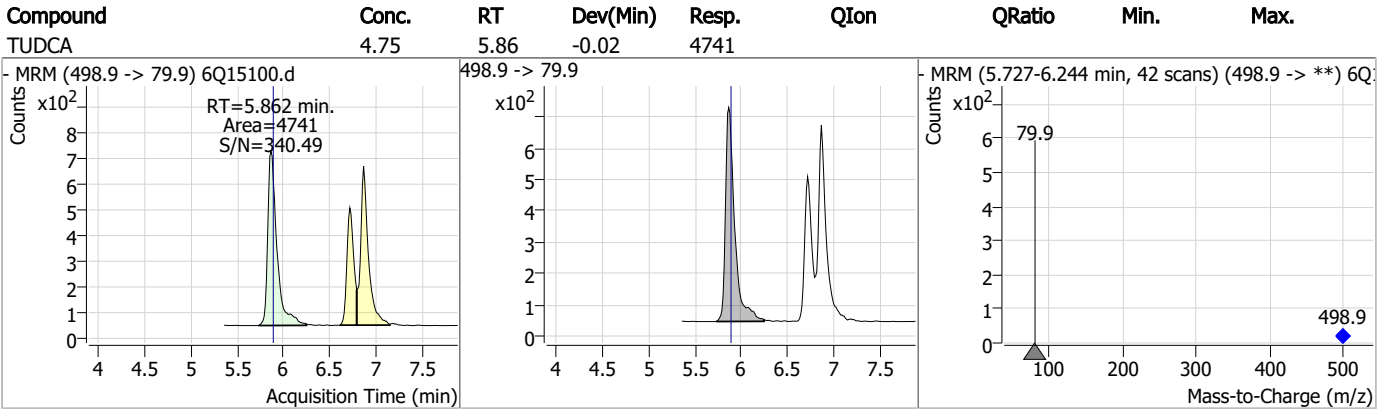
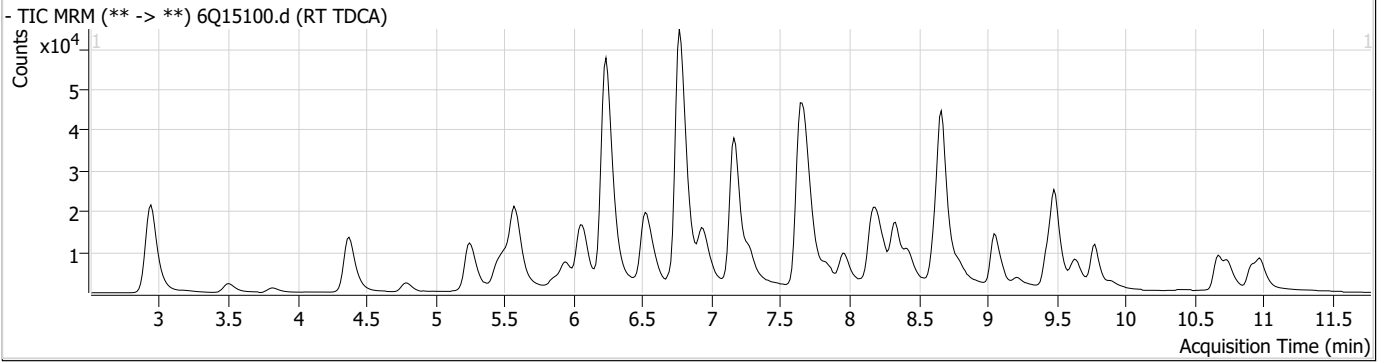
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.335	507.1 -> 79.9	11253	2.50	µg/L	-0.038	
13C4-PFOS	8.335	502.8 -> 79.9	13146	2.50	µg/L	-0.038	
System Monitoring Compounds							
13C8-PFOS	8.335	507.1 -> 79.9	11253	2.17	µg/L	-0.038	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.8%				
Target Compounds							
PFOS	8.336	498.9 -> 79.9	11047	2.87	µg/L	m	89
		498.9 -> 98.8	7428				
TCDCa	6.713	498.9 -> 79.9	2399	4.62	ng/ml		100
TDCA	6.862	498.9 -> 79.9	3641	7.74	ng/ml		100
TUDCA	5.862	498.9 -> 79.9	4741	4.75	ng/ml		100

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

7.6.3

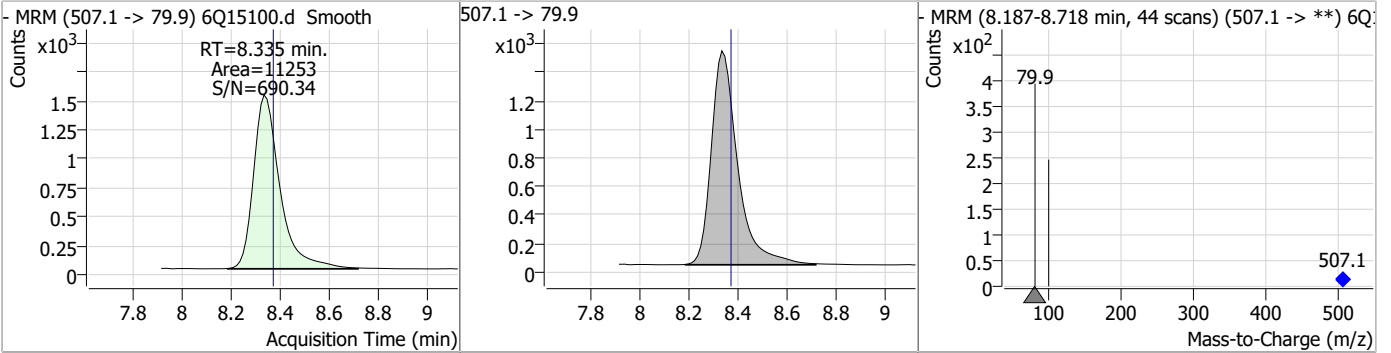
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Perfluorinated Compounds by LC/MS/MS

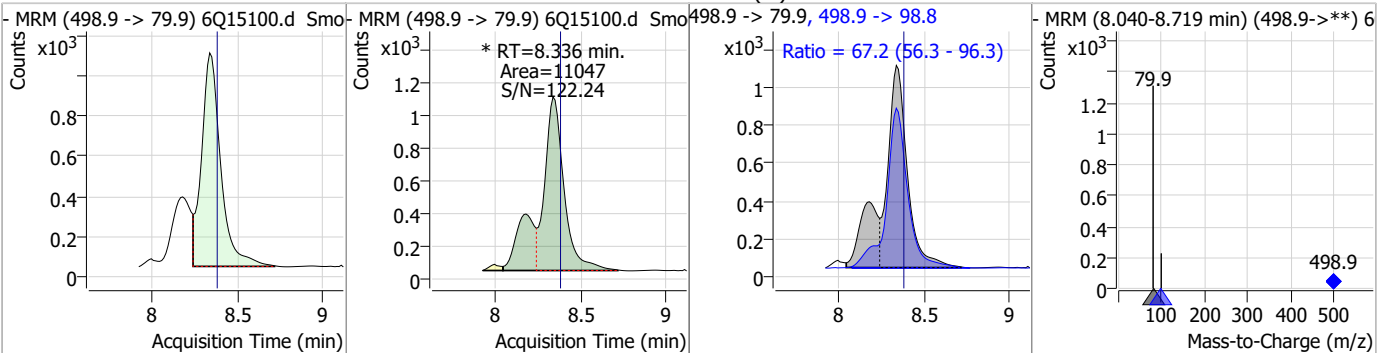


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.17	8.33	-0.04	11253				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.87	8.34	-0.04	11047 (m)	498.9 -> 98.8	67.2	56.3	96.3



7.6.3
7



Manual Integration Approval Summary

Sample Number: S6Q229-RT Method: EPA DRAFT 1633
Lab FileID: 6Q15100.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 13:18 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15101.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 1:32:09 PM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.935	216.8 -> 171.9	77669	10.00 µg/L	-0.012
M5-PFPeA	4.370	268.3 -> 223.0	37700	5.00 µg/L	-0.025
M5-PFHxA	5.580	318.0 -> 273.0	33027	2.50 µg/L	-0.025
M4-PFHpA	6.519	367.1 -> 322.0	32966	2.50 µg/L	-0.025
M8-PFOA	7.162	421.1 -> 376.0	55837	2.50 µg/L	-0.025
M9-PFNA	7.693	472.1 -> 427.0	19140	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	15017	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	16900	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	20893	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	12565	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	16814	2.50 µg/L	-0.025
M3-PFBS	5.511	302.1 -> 79.9	12963	2.50 µg/L	-0.037
M3-PFHxS	7.289	402.1 -> 79.9	8127	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	7431	2.50 µg/L	-0.013
M2-4:2FTS	5.243	329.1 -> 80.9	1744	5.00 µg/L	-0.037
M2-6:2FTS	6.937	429.1 -> 80.9	2187	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2334	5.00 µg/L	-0.025
M3-MeFOSAA	8.218	573.2 -> 419.0	21562	5.00 µg/L	-0.025
M3-HFPO-DA	5.946	286.9 -> 168.9	14896	10.00 µg/L	-0.037
M5-EtFOSAA	8.426	589.2 -> 419.0	19302	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	23177	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	15685	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	6416	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	6053	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	9132	2.50 µg/L	-0.025
13C3-PFBA	2.939	216.0 -> 172.0	33569	5.00 µg/L	-0.013
18O2-PFHxS	7.288	403.0 -> 83.9	5701	2.50 µg/L	-0.026
13C4-PFOA	7.163	417.1 -> 372.0	67793	2.50 µg/L	-0.025
13C2-PFDA	8.173	515.1 -> 470.1	21381	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	17262	1.25 µg/L	-0.025
13C2-PFHxA	5.581	315.1 -> 270.0	33543	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.243	329.1 -> 80.9	1744	5.33 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2187	5.16 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2334	5.17 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C2-PFDoDA	9.057	615.1 -> 570.0	20893	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C2-PFTeDA	9.772	715.2 -> 670.0	12565	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C3-PFBS	5.511	302.1 -> 79.9	12963	2.65 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C3-PFHxS	7.289	402.1 -> 79.9	8127	2.52 µg/L	-0.013

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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 = 101.0%	
13C4-PFBA	2.935	216.8 -> 171.9	77669	10.08 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C4-PFHpA	6.519	367.1 -> 322.0	32966	2.40 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C5-PFHxA	5.580	318.0 -> 273.0	33027	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C5-PFPeA	4.370	268.3 -> 223.0	37700	4.86 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C6-PFDA	8.173	519.1 -> 474.1	15017	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.5%	
13C7-PFUnDA	8.627	570.0 -> 525.1	16900	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-FOSA	9.645	506.1 -> 77.8	16814	2.65 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C8-PFOA	7.162	421.1 -> 376.0	55837	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C8-PFOS	8.347	507.1 -> 79.9	7431	2.40 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C9-PFNA	7.693	472.1 -> 427.0	19140	1.44 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.0%	
d3-MeFOSAA	8.218	573.2 -> 419.0	21562	4.92 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C3-HFPO-DA	5.946	286.9 -> 168.9	14896	9.83 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
d3-MeFOSA	10.746	515.0 -> 219.0	6053	2.61 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
d5-EtFOSAA	8.426	589.2 -> 419.0	19302	5.00 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d7-MeFOSE	10.668	623.2 -> 58.9	23177	26.38 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.5%	
d9-EtFOSE	10.901	639.2 -> 58.9	15685	25.29 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d5-EtFOSA	10.979	531.1 -> 219.0	6416	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
Target Compounds					QValue
4:2FTS	5.244	327.1 -> 307.0	187356	46.43 µg/L	98
		327.1 -> 80.9	45917		
6:2FTS	6.937	427.1 -> 407.0	175317	53.94 µg/L	96
		427.1 -> 80.9	34756		
8:2FTS	7.962	527.1 -> 507.0	95419	55.60 µg/L	97
		527.1 -> 80.8	24048		
EtFOSAA	8.427	584.2 -> 419.1	42937	12.25 µg/L	m 98
		584.2 -> 526.0	22916		
FOSA	9.647	498.1 -> 77.9	198957	29.61 µg/L	99
		498.1 -> 478.0	7201		
MeFOSAA	8.232	570.1 -> 419.0	61368	13.60 µg/L	100
		570.1 -> 483.0	10780		
PFBA	2.943	212.8 -> 168.9	108298	51.09 µg/L	100
PFBS	5.512	298.7 -> 79.9	62080	10.87 µg/L	97
		298.7 -> 98.8	26888		
PFDA	8.174	512.9 -> 469.0	248707	13.34 µg/L	98
		512.9 -> 219.0	32606		
PFDoDA	9.057	613.1 -> 569.0	224183	12.46 µg/L	99
		613.1 -> 319.0	27812		
PFDS	9.221	599.0 -> 79.9	31305	12.88 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.520	599.0 -> 98.8	15650	13.13	µg/L	100
		363.1 -> 319.0	279185			
PFHpS	7.843	363.1 -> 169.0	38540	12.30	µg/L	98
		449.0 -> 79.9	40730			
PFHxA	5.582	449.0 -> 98.9	23483	13.32	µg/L	100
		313.0 -> 269.0	185365			
PFHxS	7.290	313.0 -> 118.9	7170	11.10	µg/L	m
		398.7 -> 79.9	45053			
PFNA	7.556	398.7 -> 98.9	25678	24.64	µg/L	m
		463.0 -> 419.0	334376			
PFNS	8.802	463.0 -> 219.0	70636	12.81	µg/L	91
		548.8 -> 79.9	44997			
PFOA	7.163	548.8 -> 98.9	23369	27.72	µg/L	m
		413.0 -> 369.0	732570			
PFOS	8.336	413.0 -> 169.0	100147	12.69	µg/L	m
		498.9 -> 79.9	44172			
PFPeA	4.372	498.9 -> 98.8	25743	25.48	µg/L	100
		263.0 -> 219.0	228728			
PFPeS	6.584	349.1 -> 79.9	59032	12.04	µg/L	95
		349.1 -> 98.9	29098			
PFTeDA	9.772	713.1 -> 669.0	190687	12.08	µg/L	100
		713.1 -> 168.9	13261			
PFTrDA	9.440	663.0 -> 619.0	206085	12.92	µg/L	98
		663.0 -> 168.9	15106			
PFUnDA	8.627	563.1 -> 519.0	203146	12.70	µg/L	99
		563.1 -> 269.1	28994			
11CI-PF3OUdS	9.493	630.9 -> 450.9	425371	46.15	µg/L	99
		632.9 -> 452.9	133769			
9CI-PF3ONS	8.678	530.8 -> 351.0	758446	45.41	µg/L	95
		532.8 -> 353.0	256194			
ADONA	6.781	376.9 -> 250.9	1529728	47.82	µg/L	99
		376.9 -> 84.8	336238			
HFPO-DA	5.947	284.9 -> 168.9	78184	49.88	µg/L	98
		284.9 -> 184.9	9188			
3:3FTCA	3.826	241.0 -> 177.0	30148	67.17	µg/L	99
		241.0 -> 117.0	4314			
5:3FTCA	6.234	341.0 -> 237.1	949518	338.06	µg/L	98
		341.0 -> 217.0	807518			
7:3FTCA	7.659	441.0 -> 316.9	490889	347.69	µg/L	92
		441.0 -> 336.9	843022			
EtFOSA	10.981	526.0 -> 219.0	95245	30.89	µg/L	81
		526.0 -> 169.0	108279			
EtFOSE	10.927	630.0 -> 58.9	93106	145.73	µg/L	100
		511.9 -> 219.0	87365			
MeFOSA	10.748	511.9 -> 169.0	103551	30.01	µg/L	89
		616.1 -> 58.9	139292			
MeFOSE	10.681	699.1 -> 79.9	17851	142.35	µg/L	100
		699.1 -> 98.8	10551			
PFDoDS	9.911	295.0 -> 201.0	23254	12.85	µg/L	94
		295.0 -> 84.9	10542			
NFDHA	5.463	279.0 -> 85.1	74836	25.59	µg/L	100
		229.0 -> 84.9	66831			
PFMBA	3.501	314.8 -> 134.9	430054	21.85	µg/L	100
		314.8 -> 82.9	10899			

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

7.6.4
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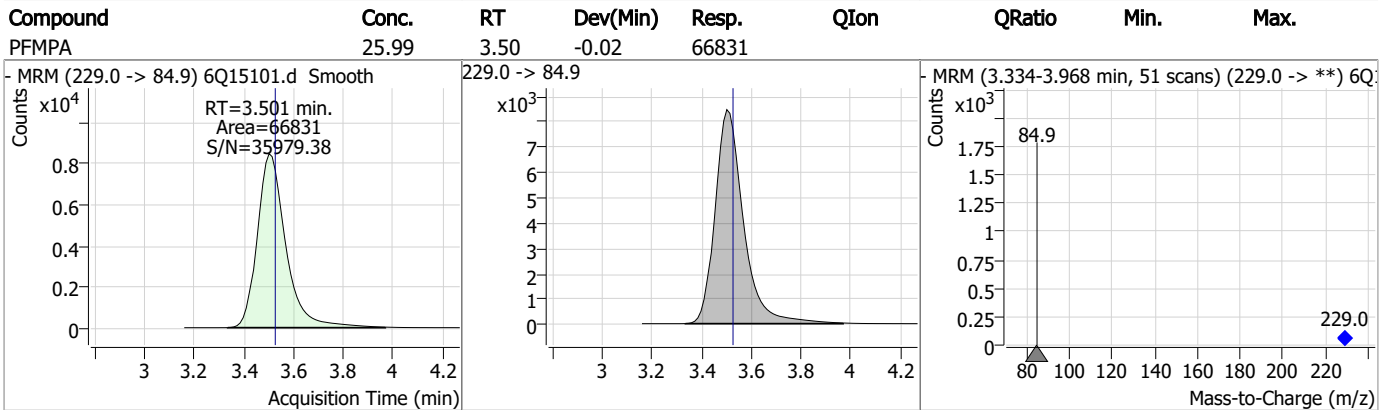
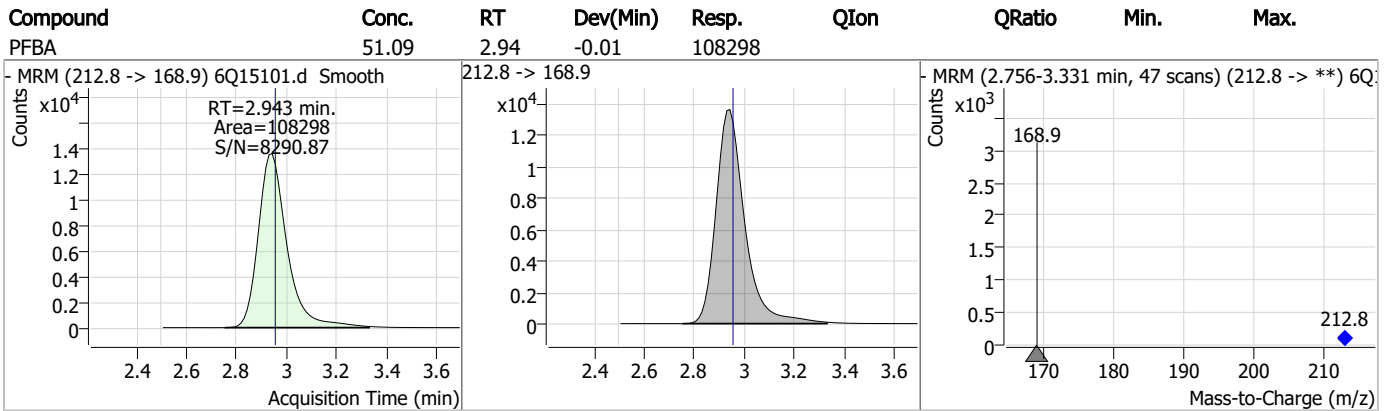
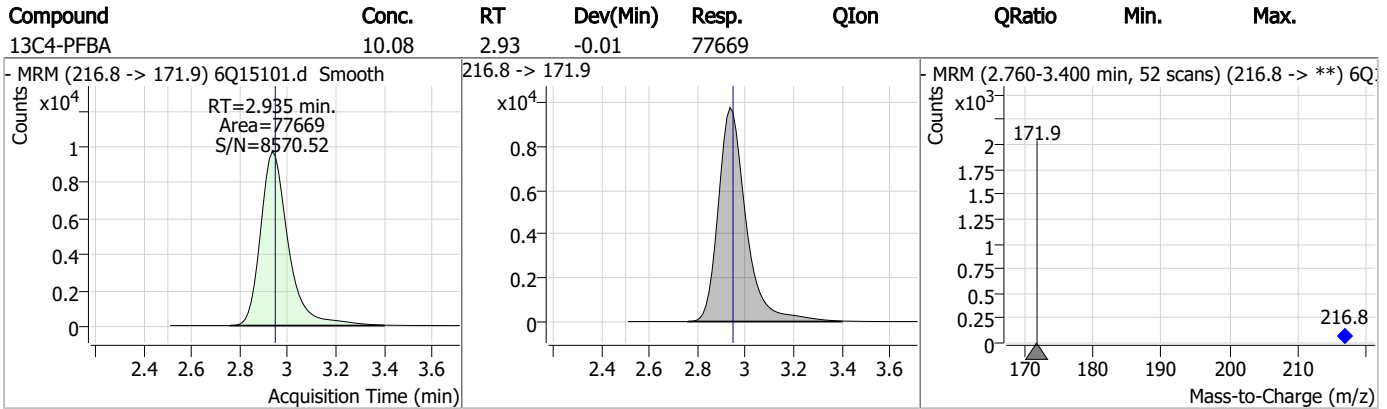
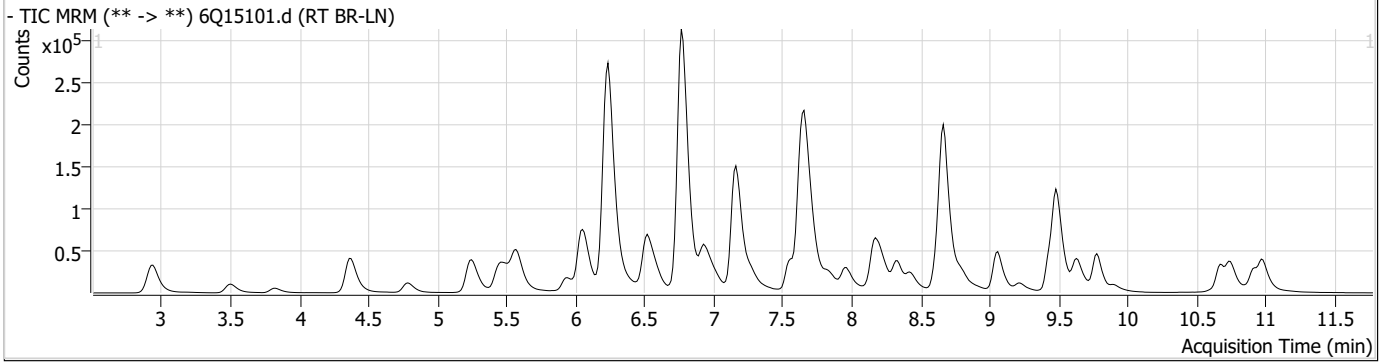
Perfluorinated Compounds by LC/MS/MS

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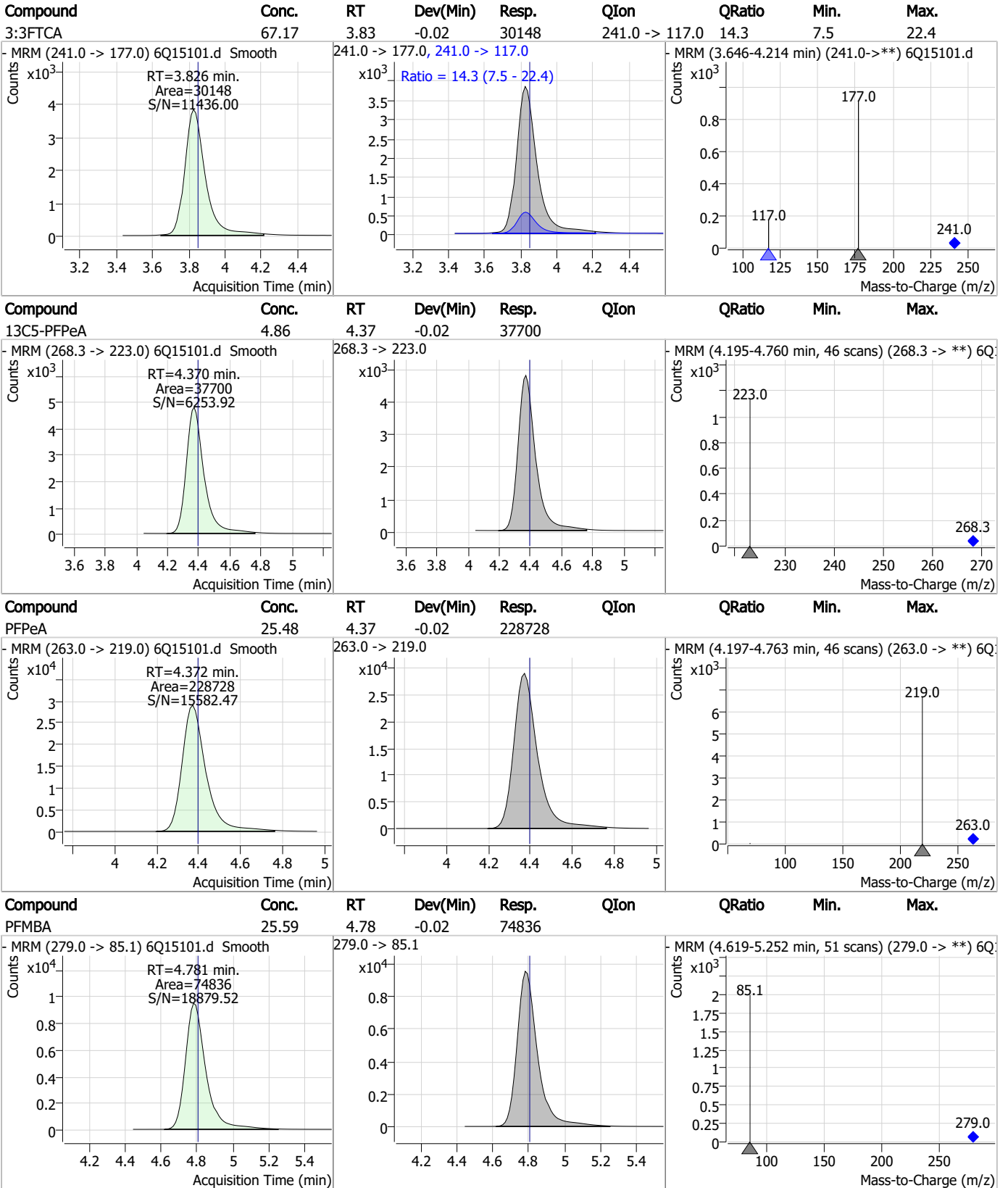
7.6.4

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Perfluorinated Compounds by LC/MS/MS



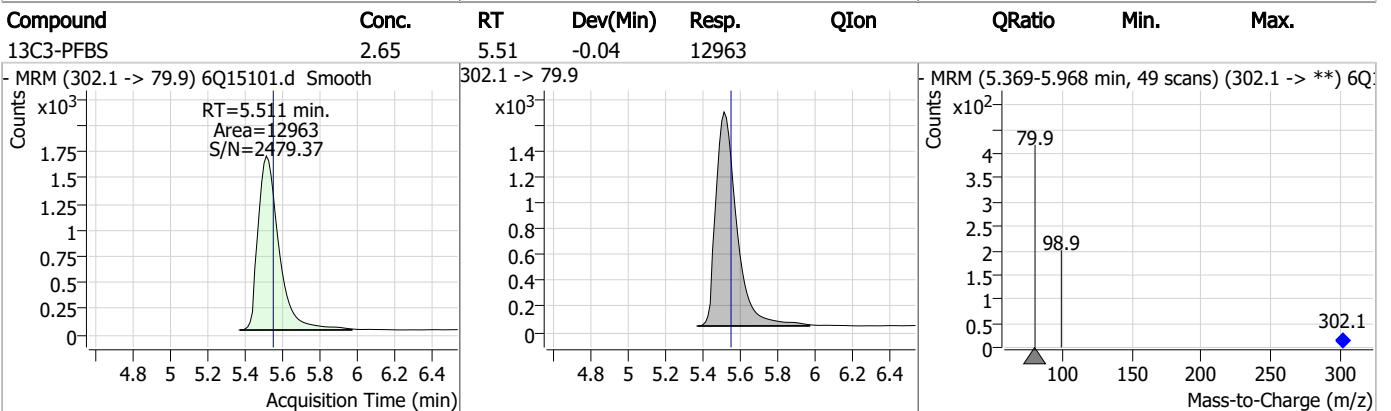
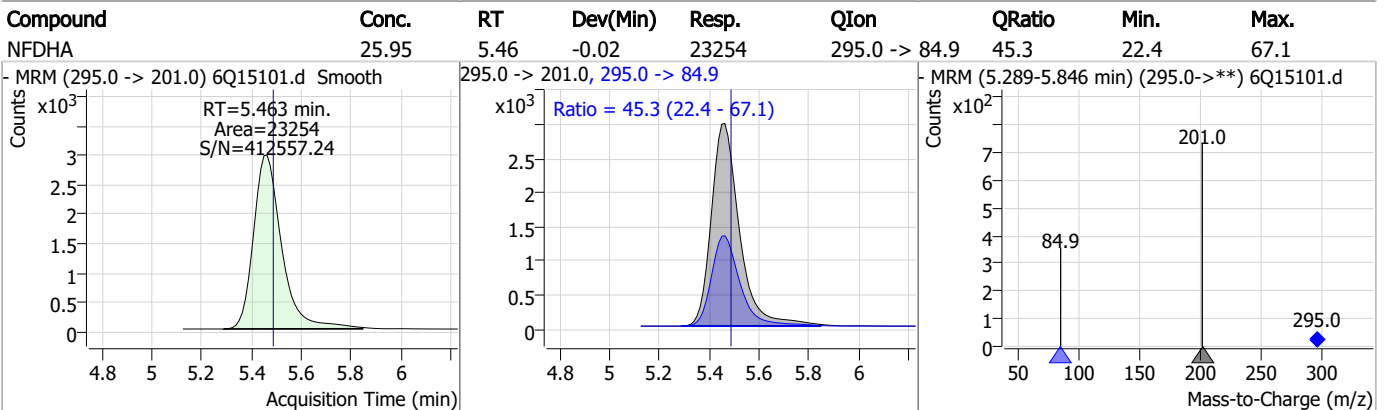
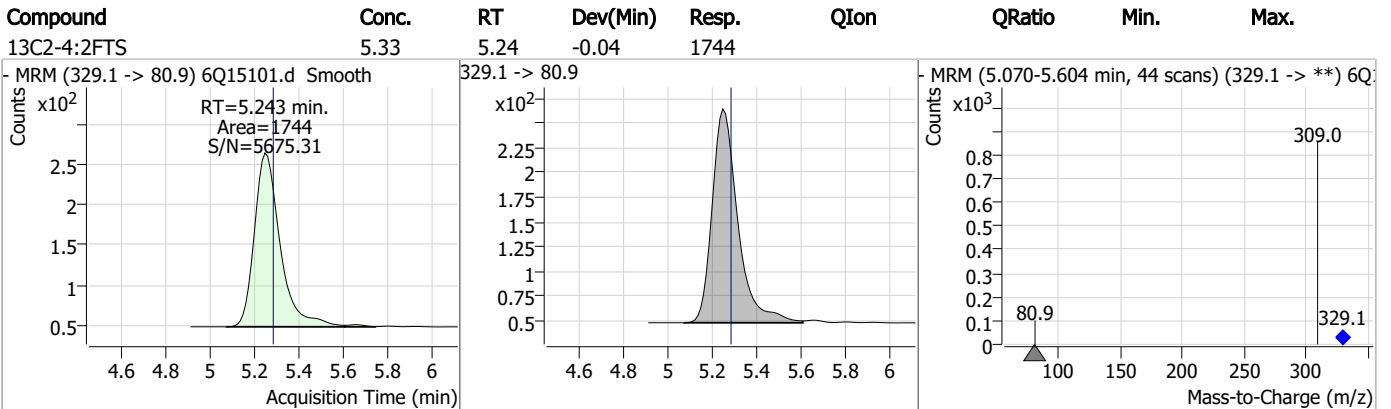
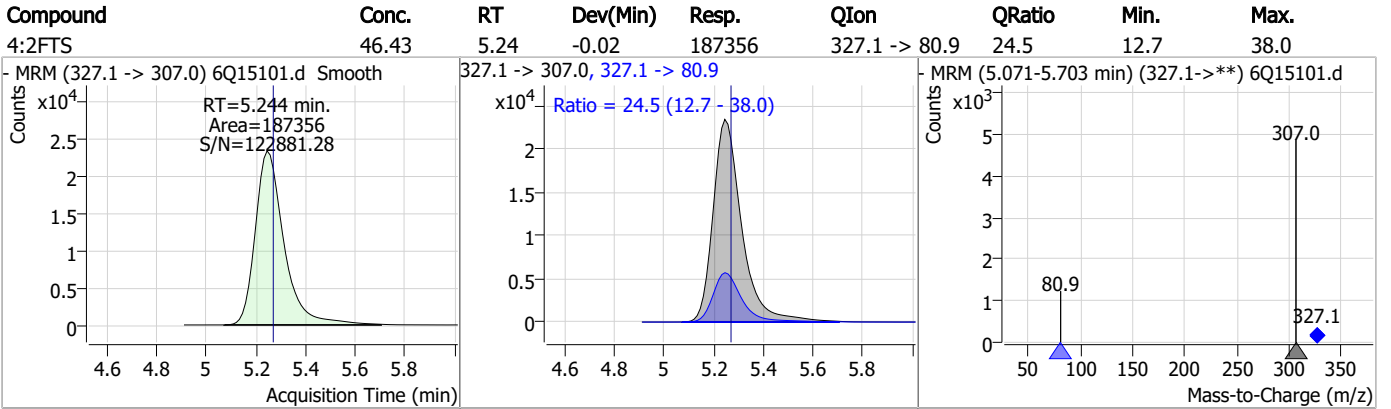
Perfluorinated Compounds by LC/MS/MS



7.6.4

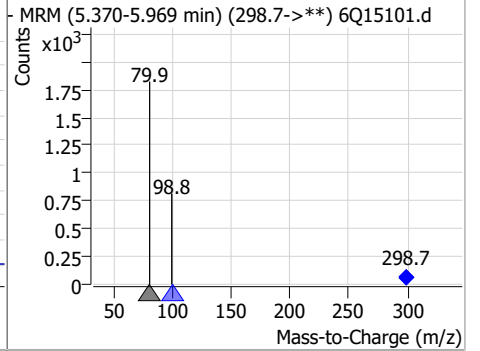
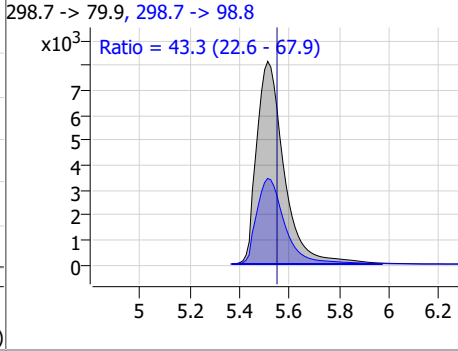
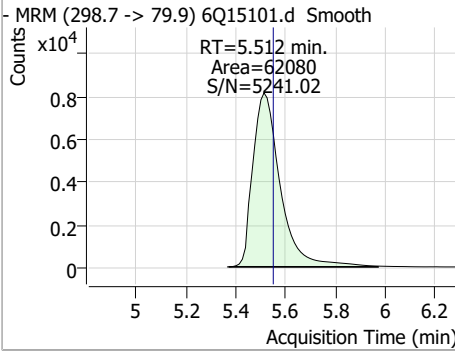
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Perfluorinated Compounds by LC/MS/MS

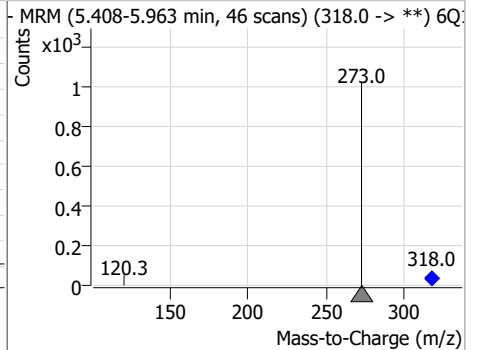
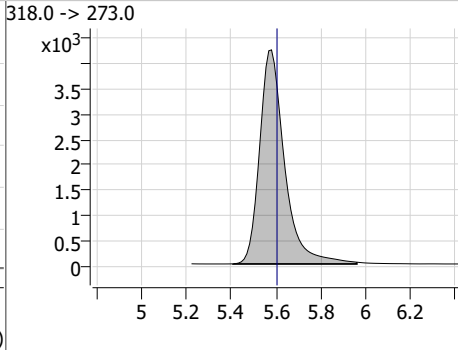
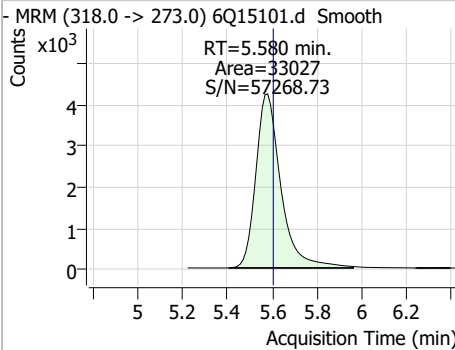


Perfluorinated Compounds by LC/MS/MS

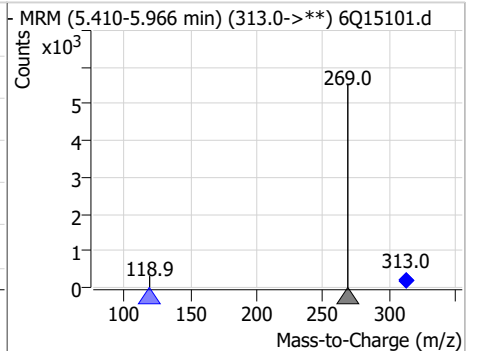
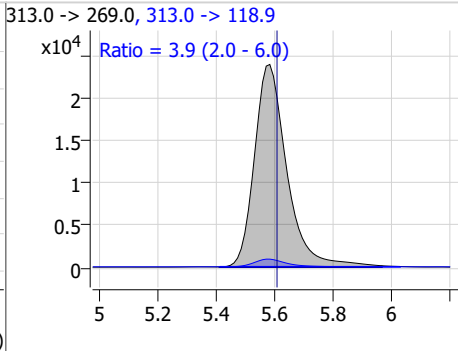
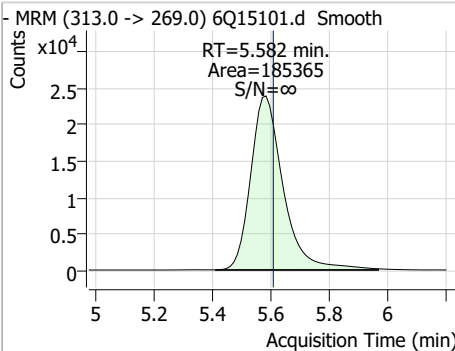
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	10.87	5.51	-0.04	62080	298.7 -> 98.8	43.3	22.6	67.9



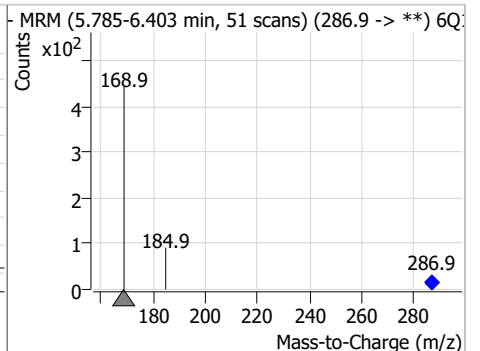
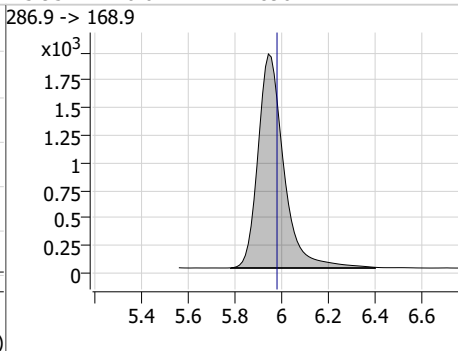
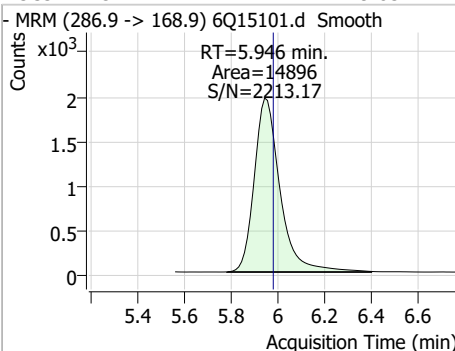
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.42	5.58	-0.02	33027				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	13.32	5.58	-0.02	185365	313.0 -> 118.9	3.9	2.0	6.0

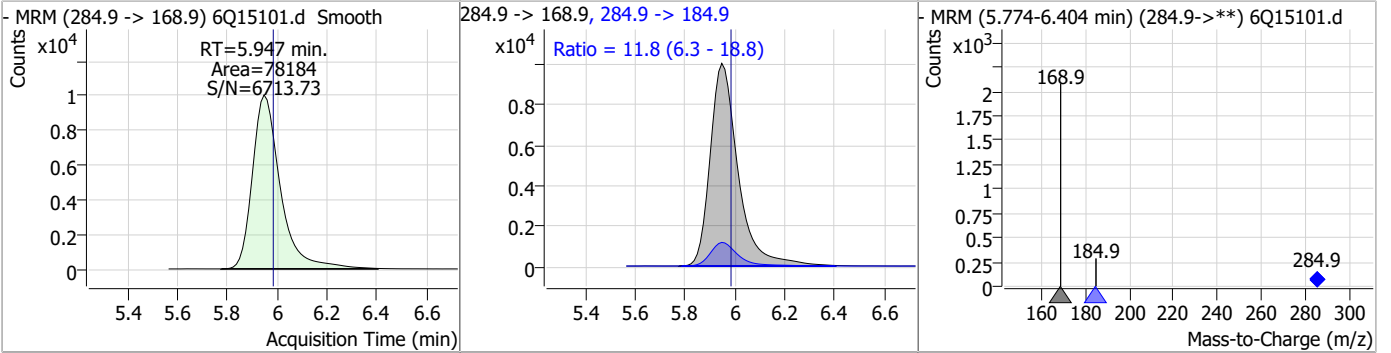


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.83	5.95	-0.04	14896				

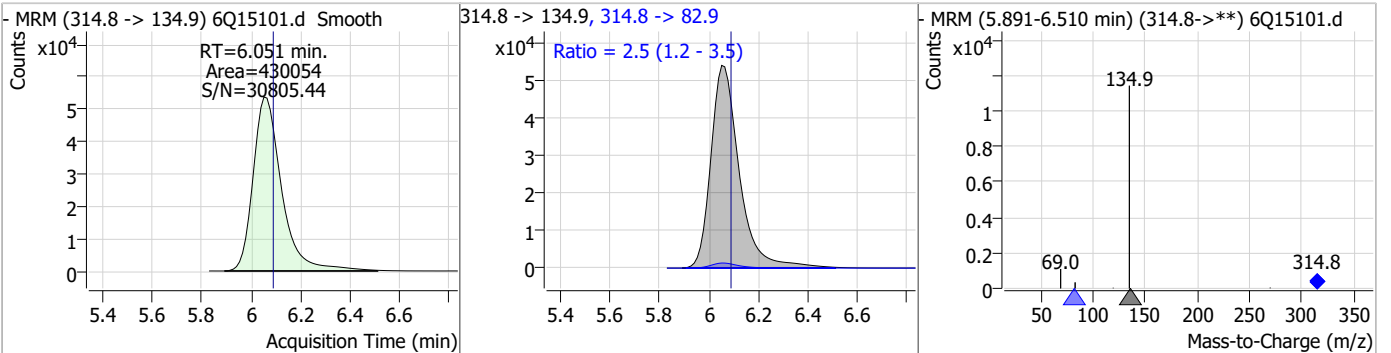


Perfluorinated Compounds by LC/MS/MS

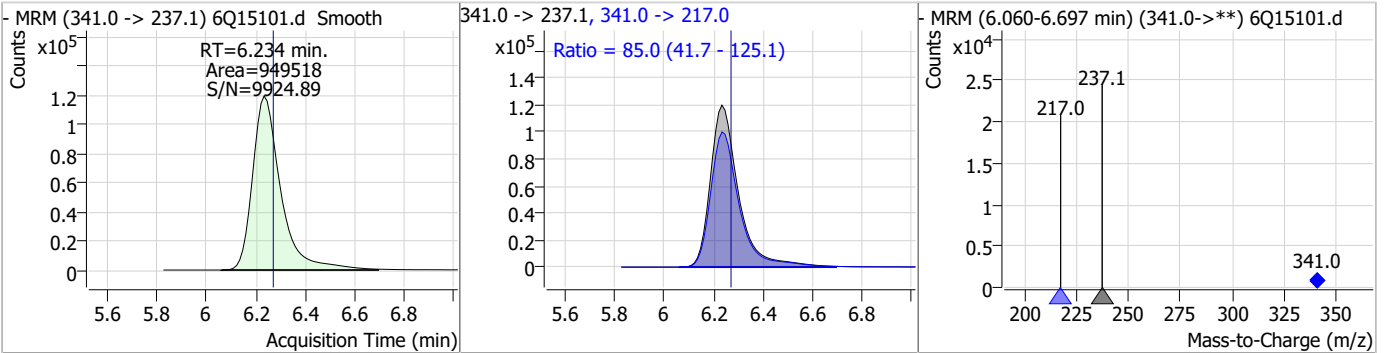
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	49.88	5.95	-0.04	78184	284.9 -> 184.9	11.8	6.3	18.8



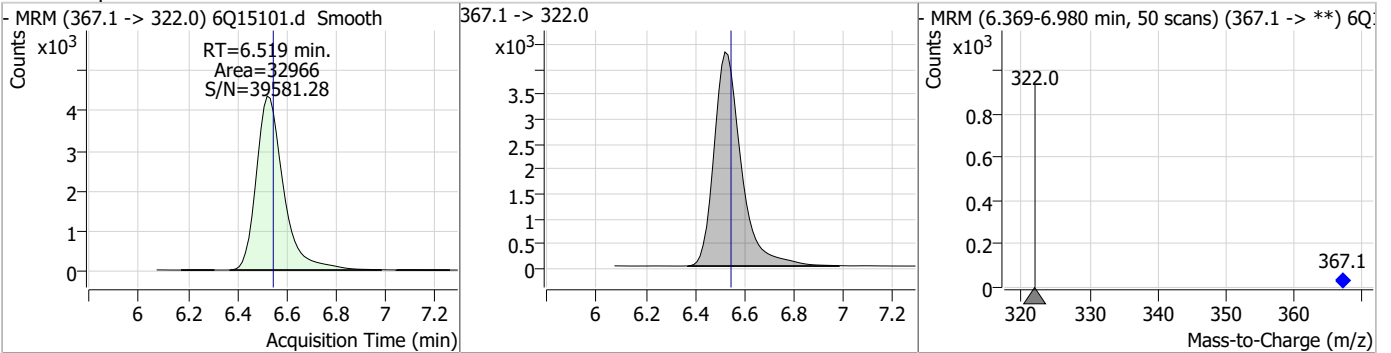
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	21.85	6.05	-0.04	430054	314.8 -> 82.9	2.5	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	338.06	6.23	-0.04	949518	341.0 -> 217.0	85.0	41.7	125.1

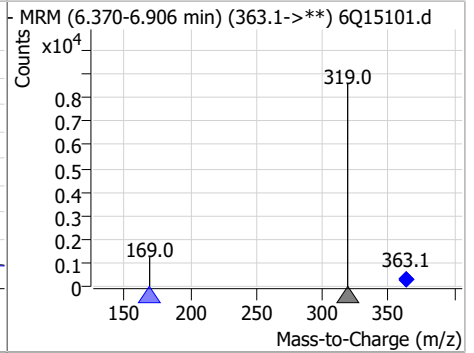
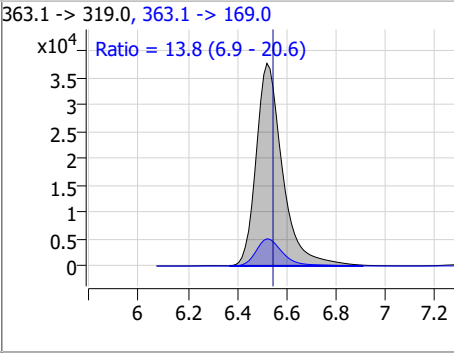
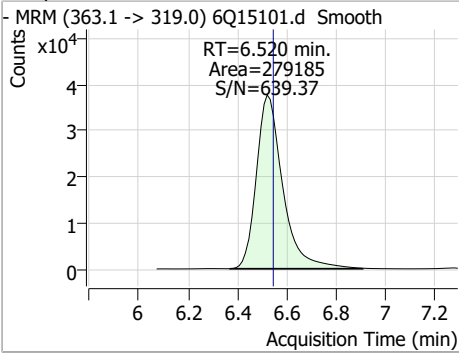


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.40	6.52	-0.02	32966	367.1 -> 322.0	-	-	-

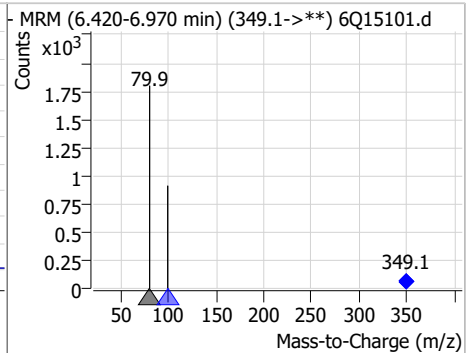
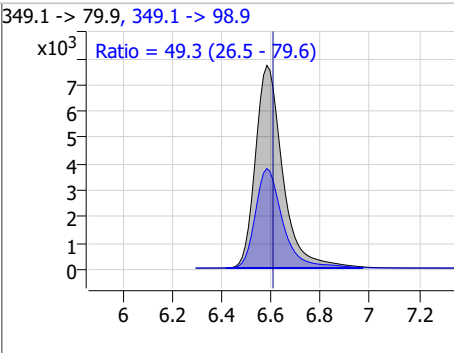
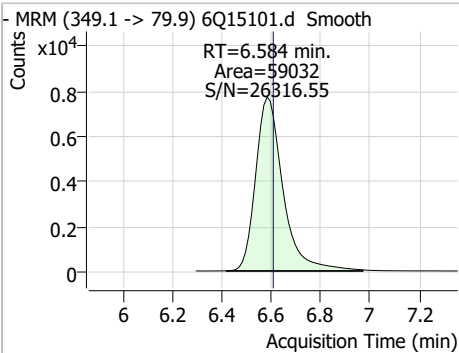


Perfluorinated Compounds by LC/MS/MS

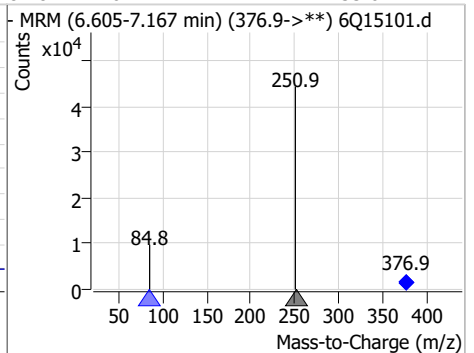
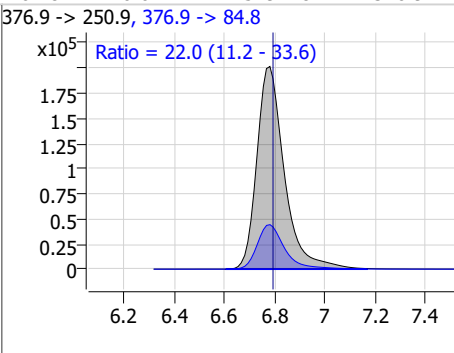
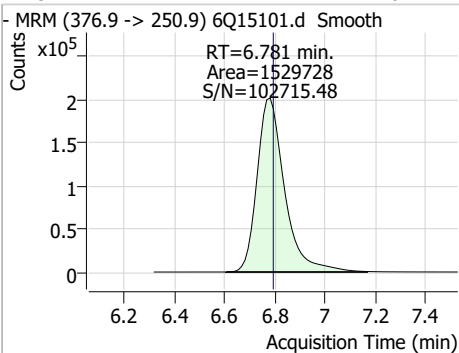
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	13.13	6.52	-0.02	279185	363.1 -> 169.0	13.8	6.9	20.6



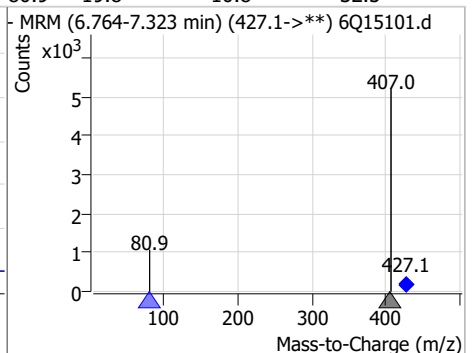
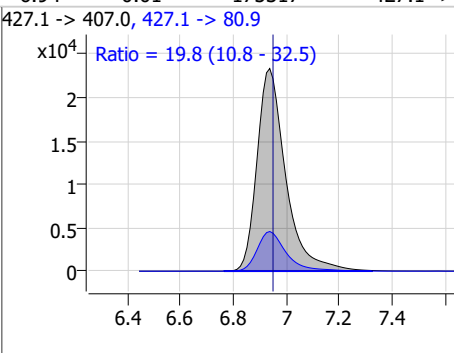
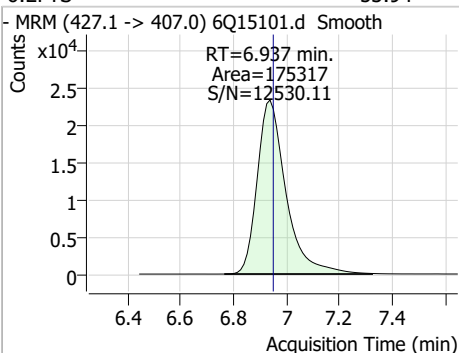
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	12.04	6.58	-0.02	59032	349.1 -> 98.9	49.3	26.5	79.6



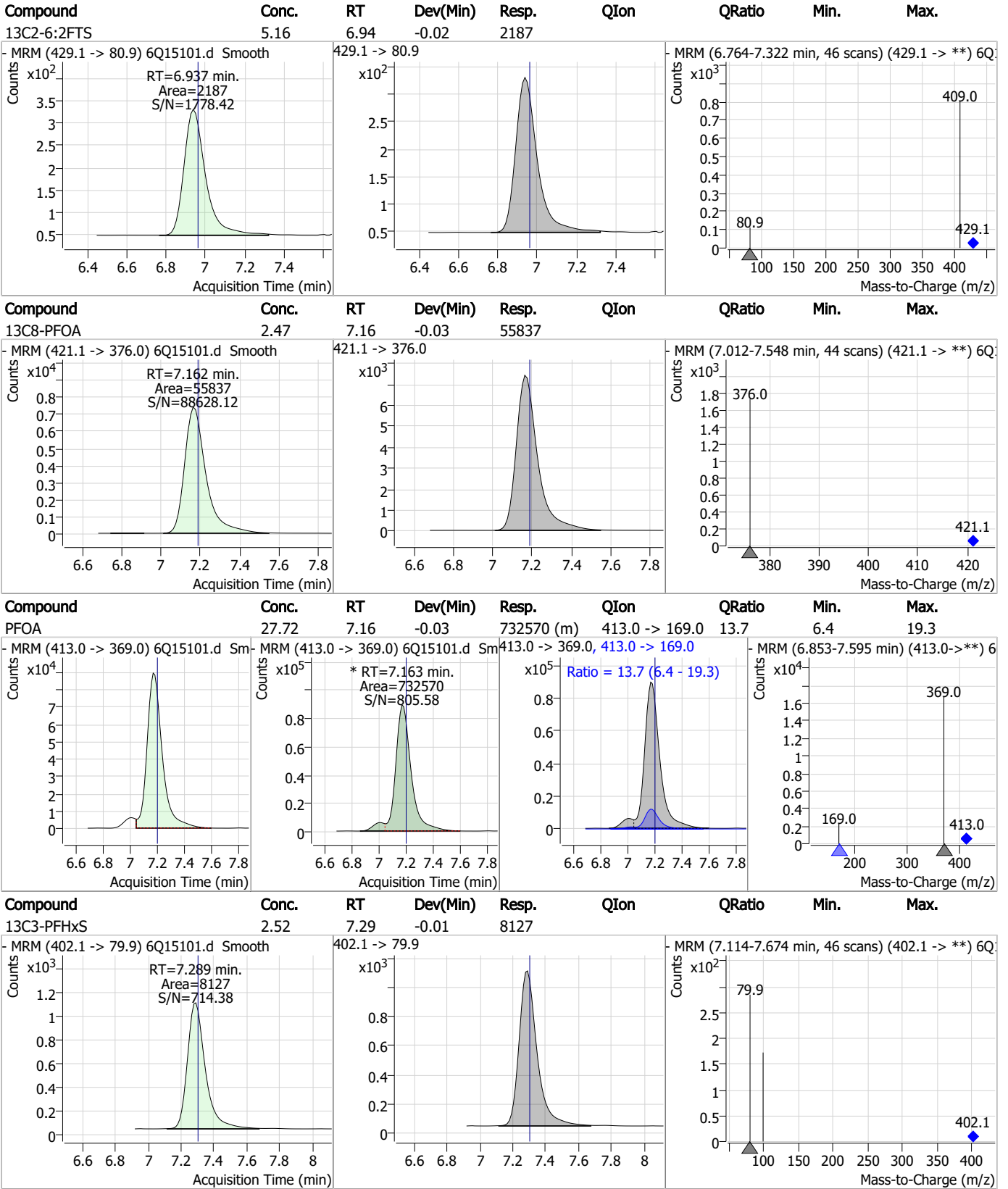
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	47.82	6.78	-0.01	1529728	376.9 -> 84.8	22.0	11.2	33.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	53.94	6.94	-0.01	175317	427.1 -> 80.9	19.8	10.8	32.5



Perfluorinated Compounds by LC/MS/MS

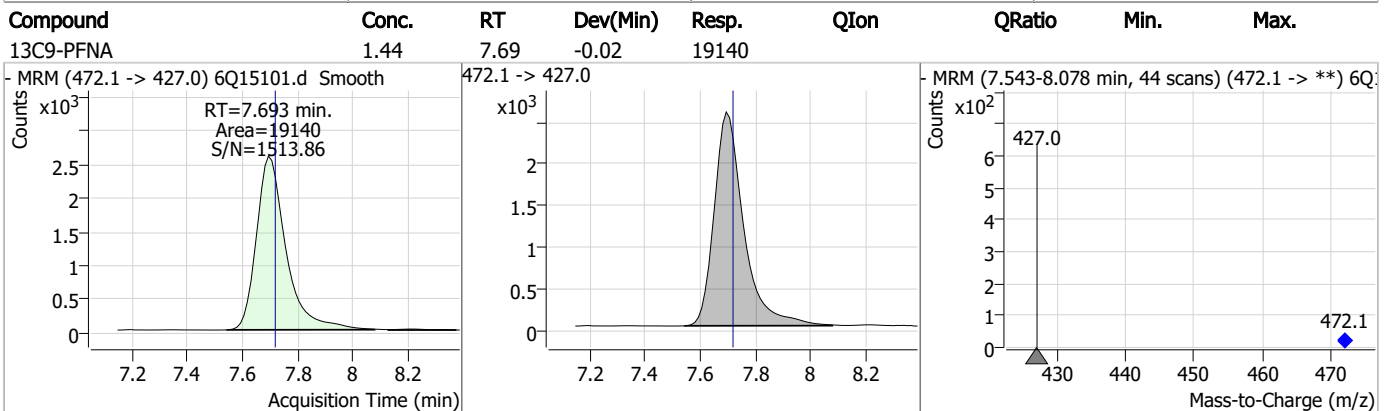
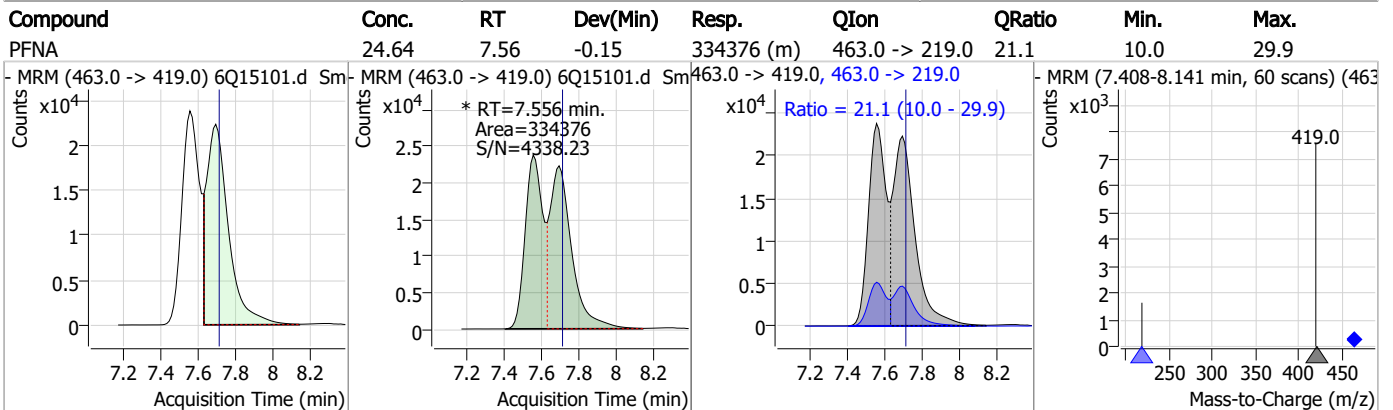
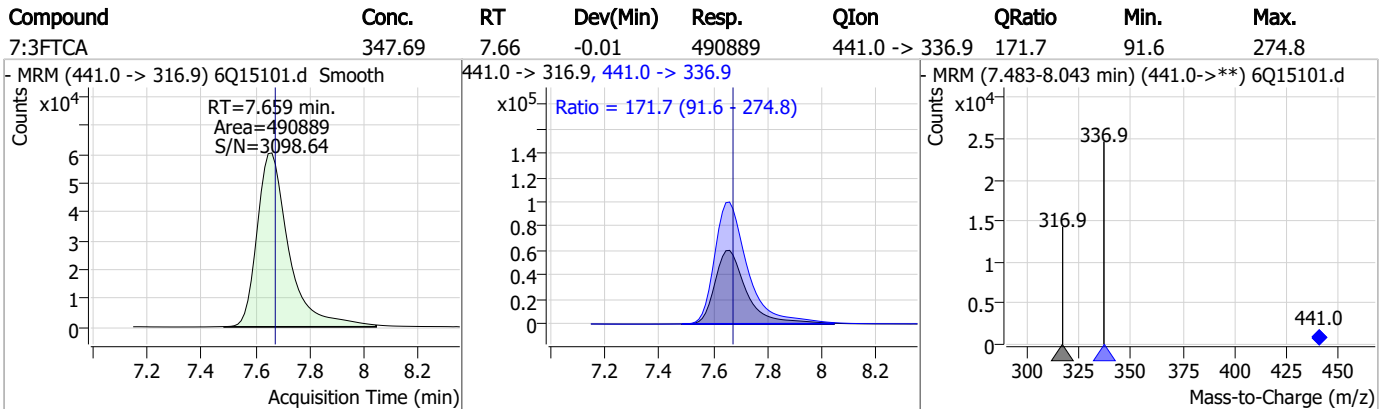
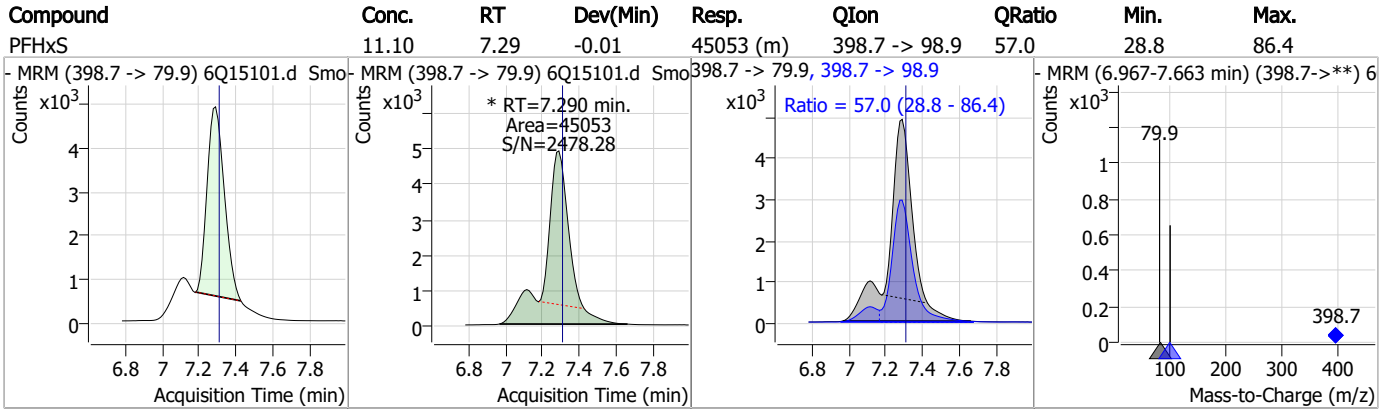


7.6.4

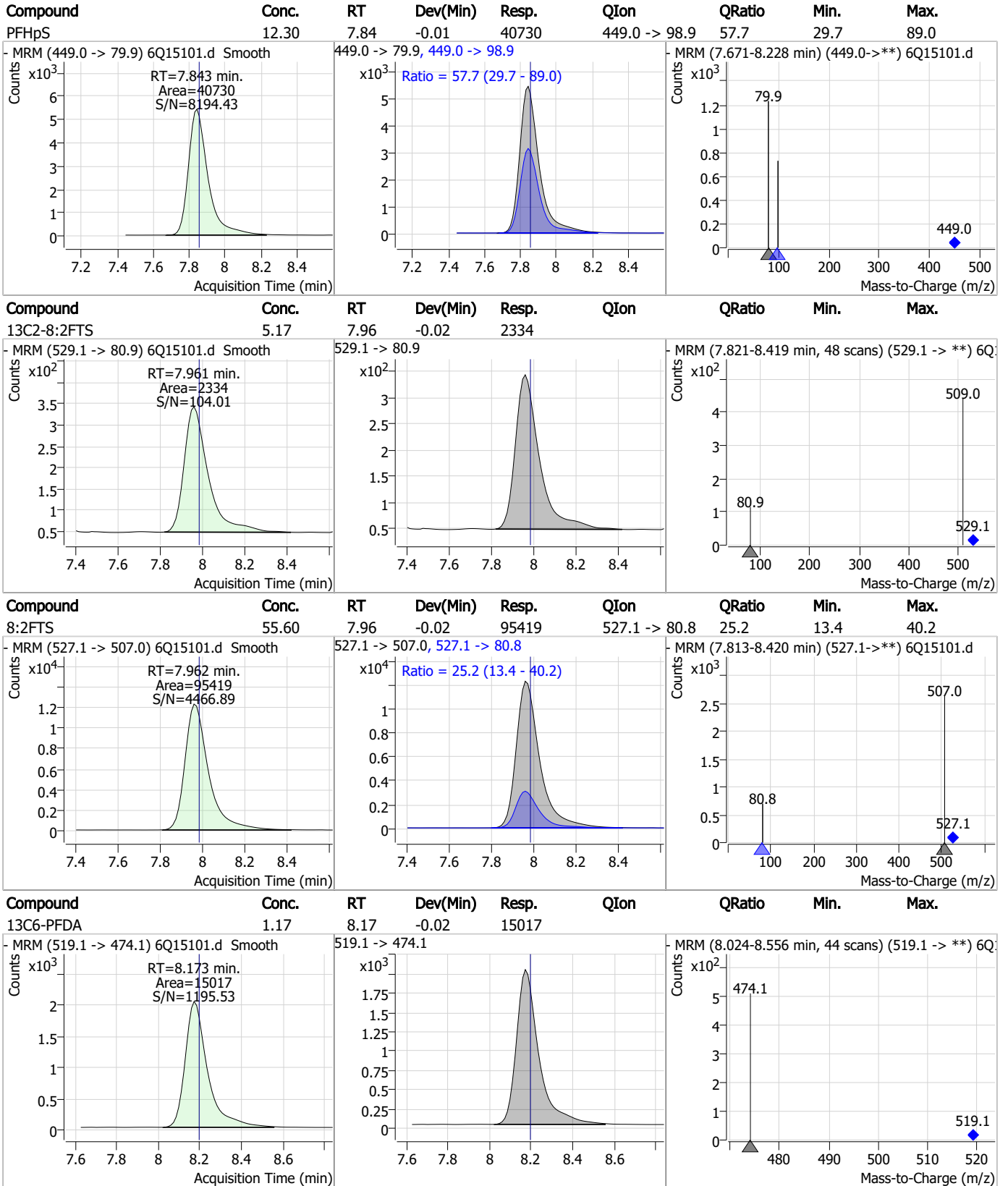
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Perfluorinated Compounds by LC/MS/MS



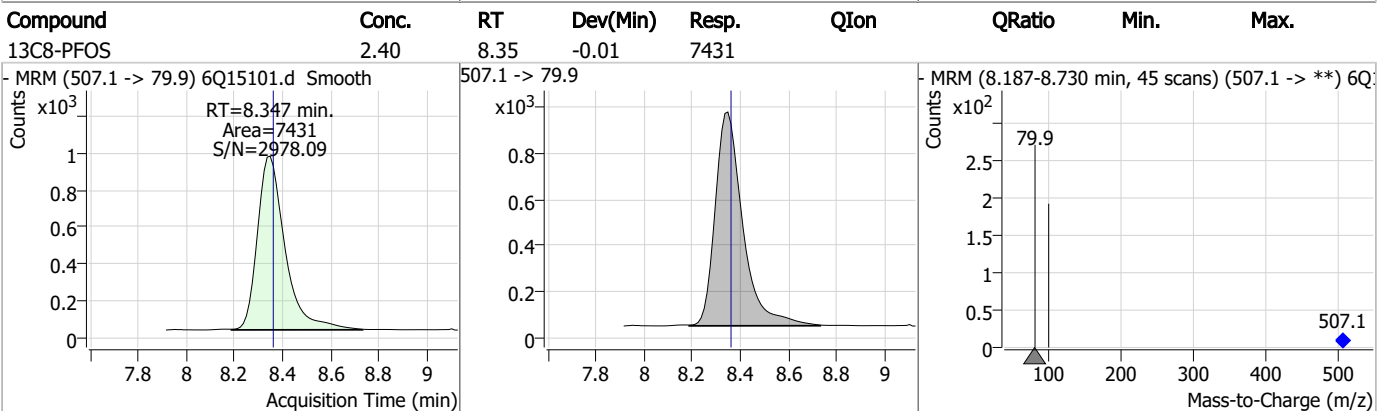
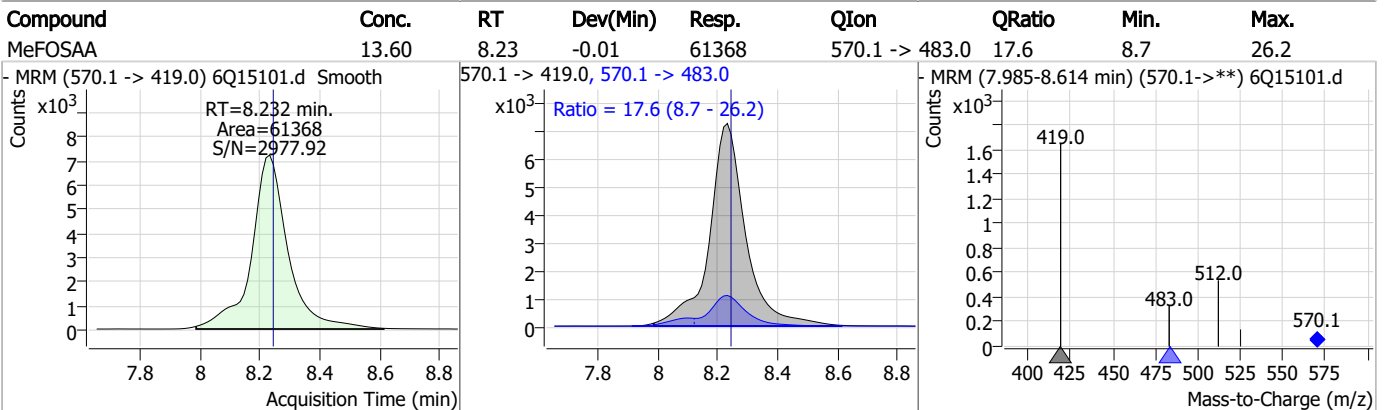
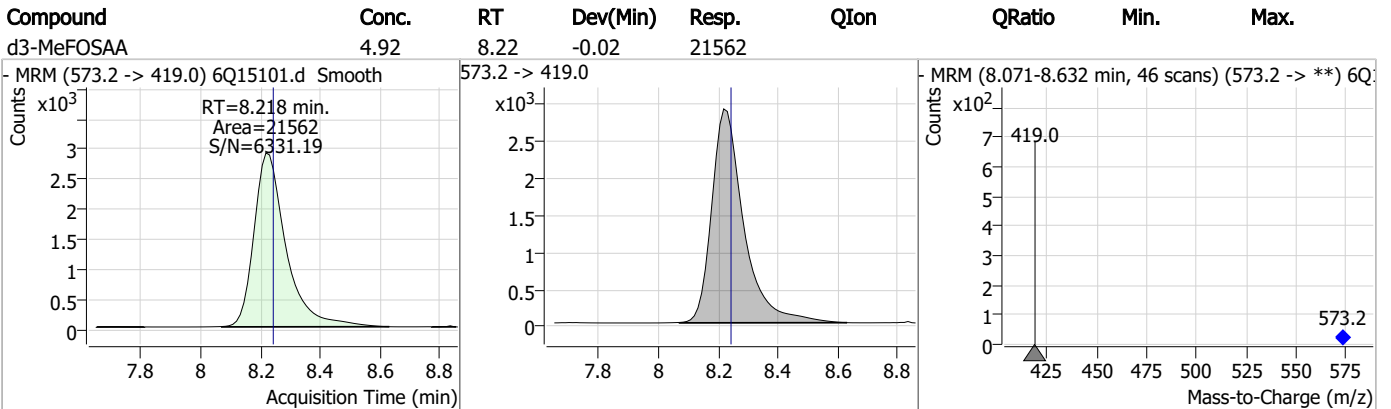
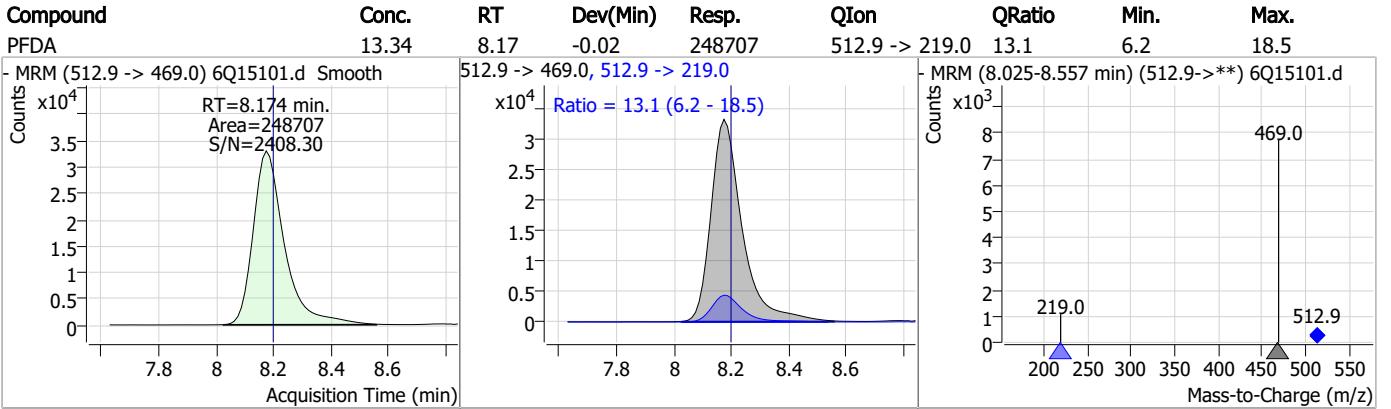
Perfluorinated Compounds by LC/MS/MS



7.6.4

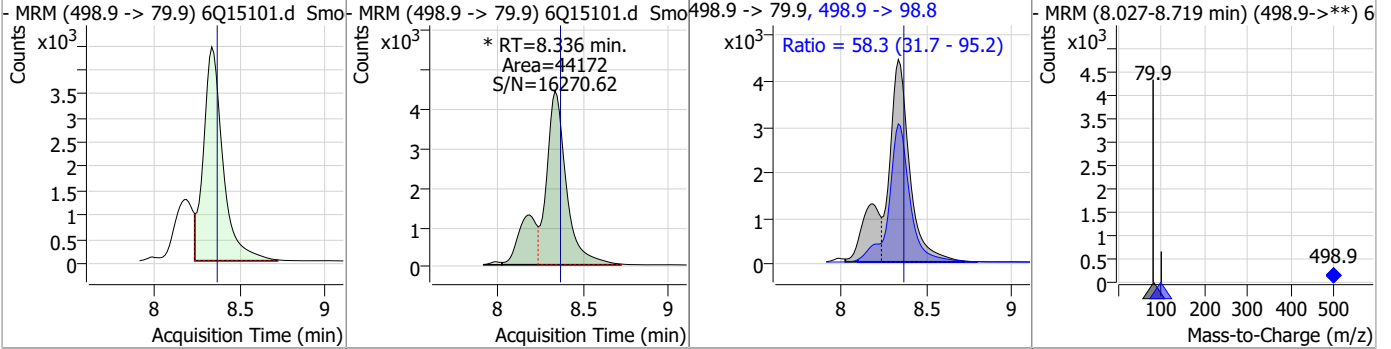
7

Perfluorinated Compounds by LC/MS/MS

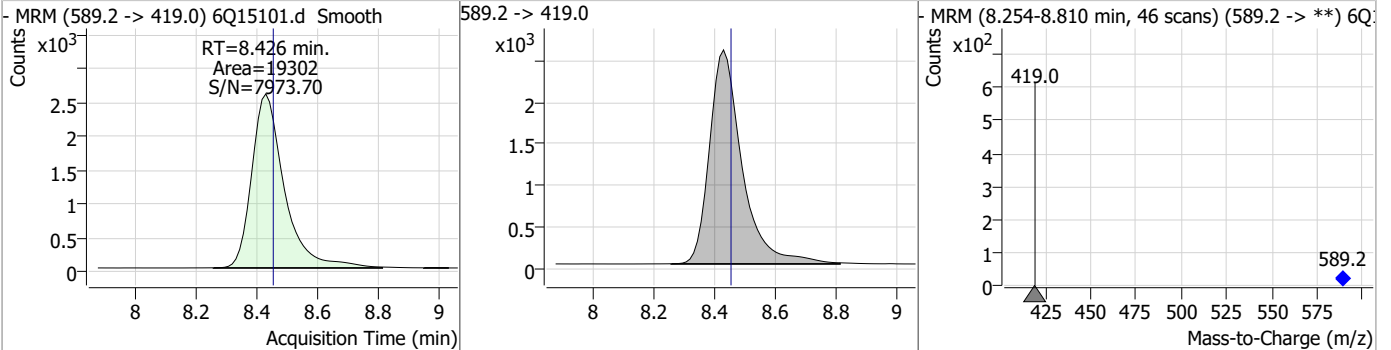


Perfluorinated Compounds by LC/MS/MS

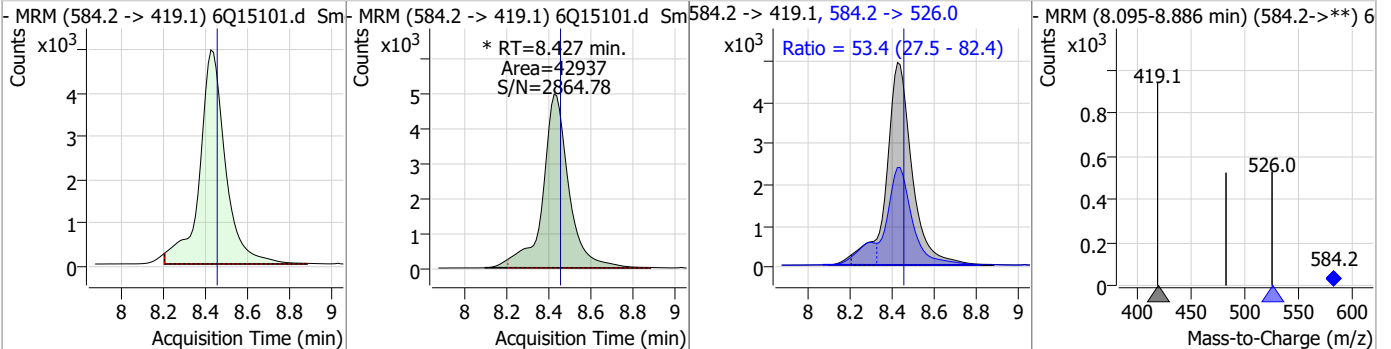
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	12.69	8.34	-0.03	44172 (m)	498.9 -> 98.8	58.3	31.7	95.2



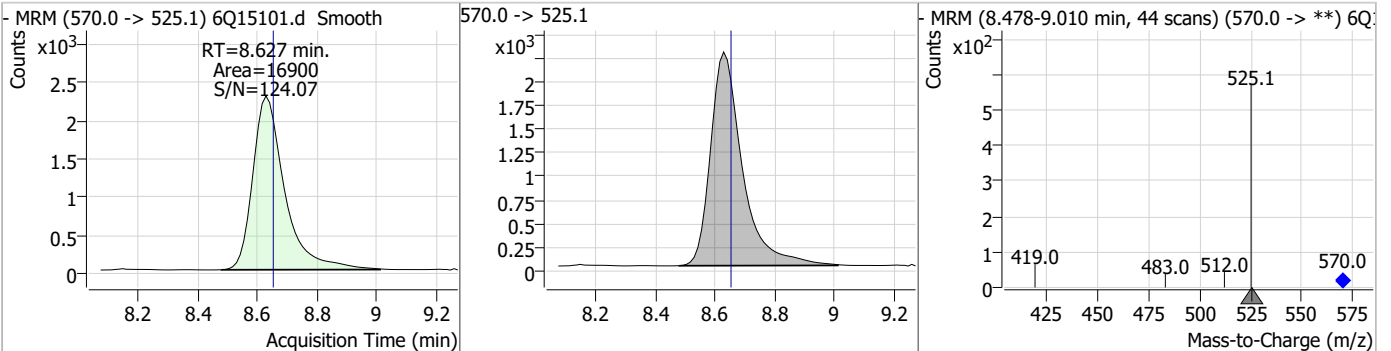
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.00	8.43	-0.02	19302				



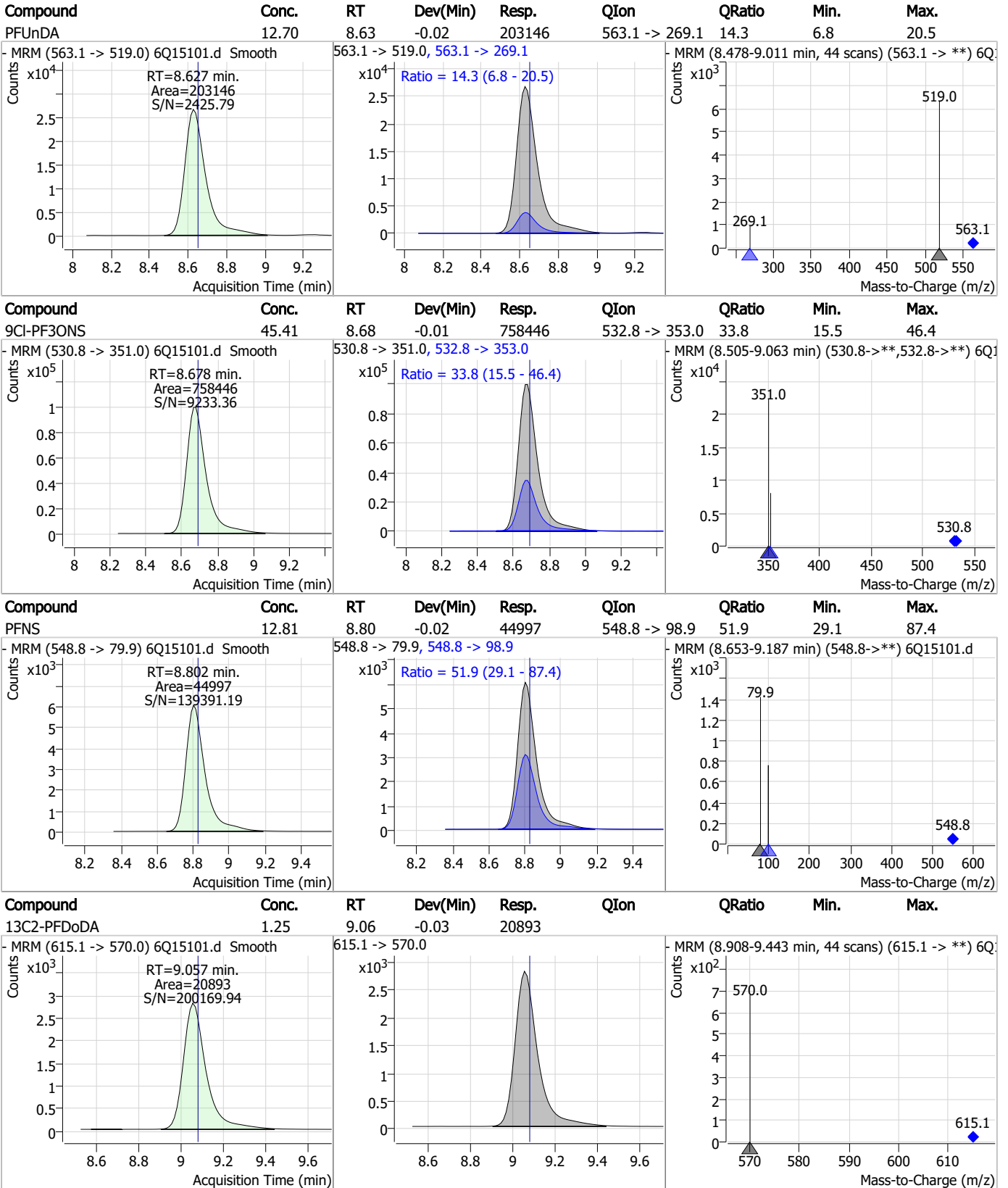
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	12.25	8.43	-0.02	42937 (m)	584.2 -> 526.0	53.4	27.5	82.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.22	8.63	-0.02	16900				



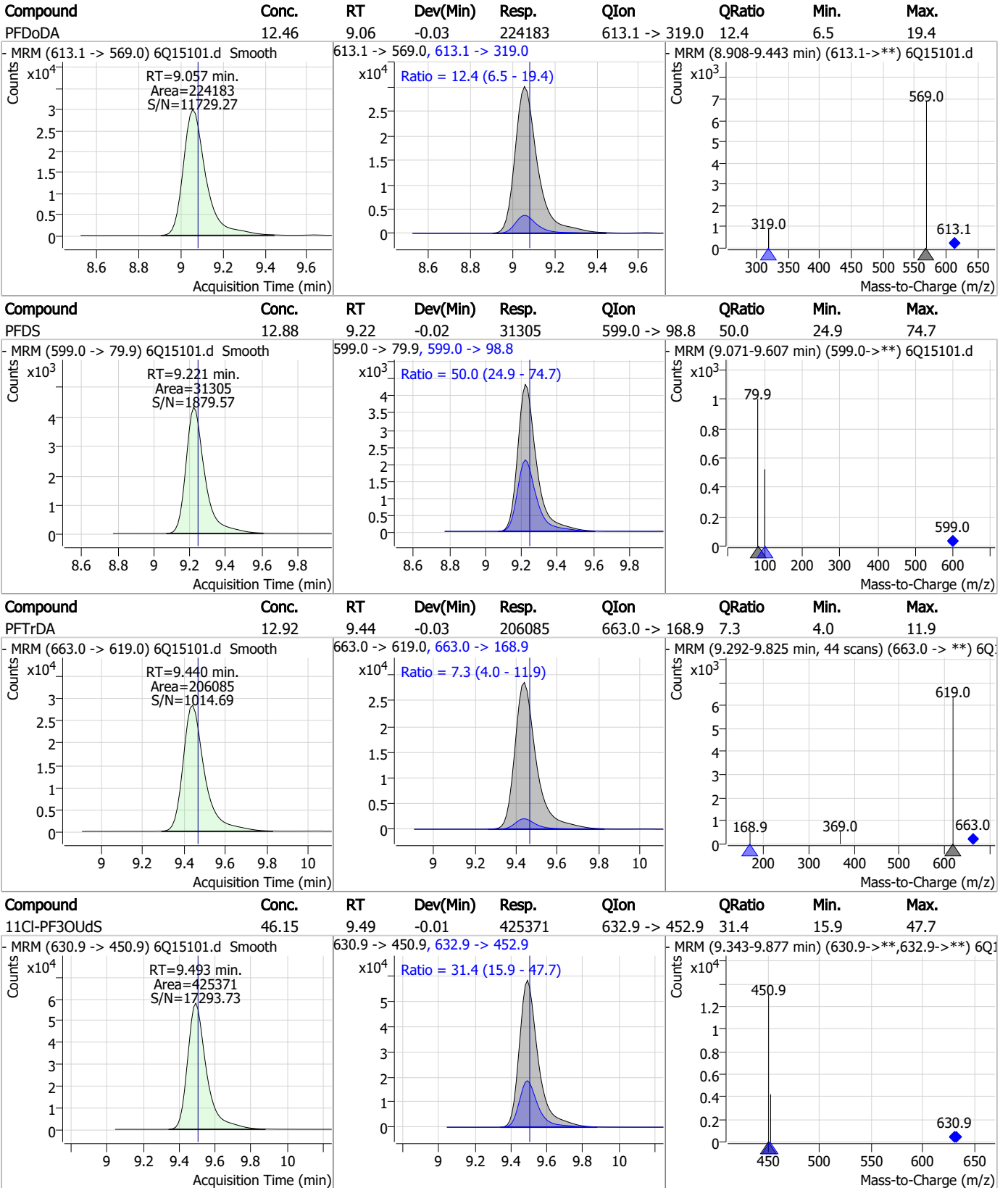
Perfluorinated Compounds by LC/MS/MS



7.6.4

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Perfluorinated Compounds by LC/MS/MS



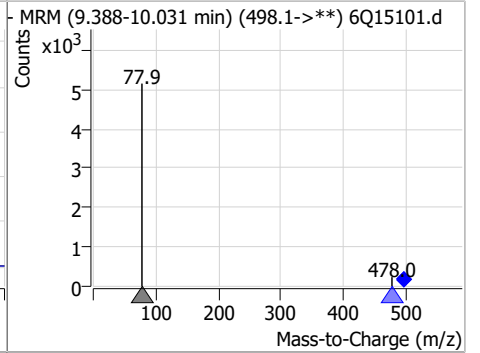
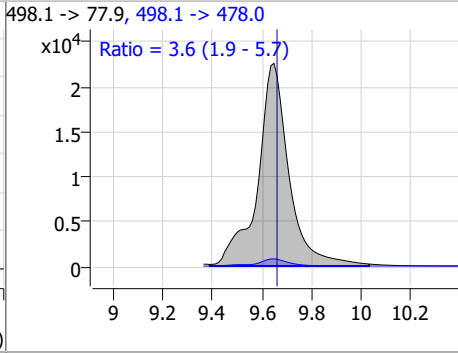
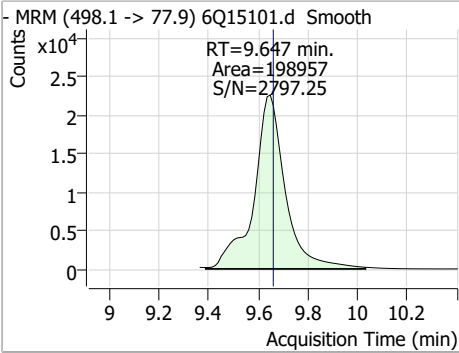
7.6.4

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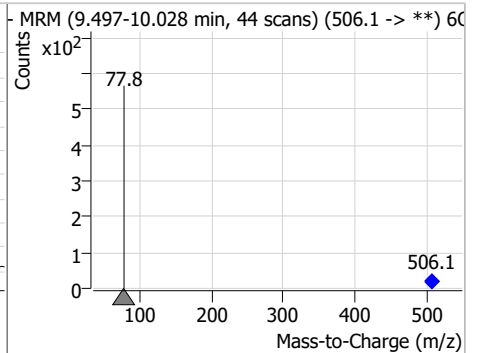
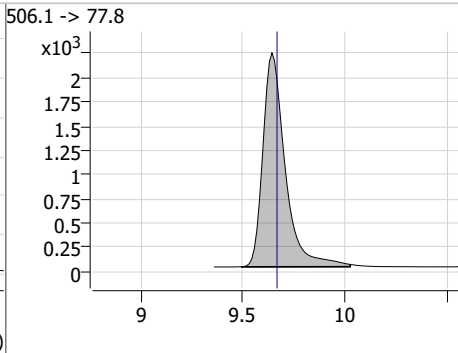
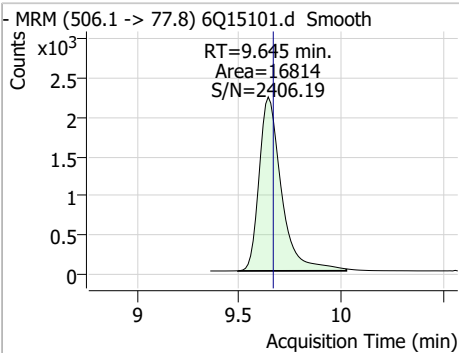


Perfluorinated Compounds by LC/MS/MS

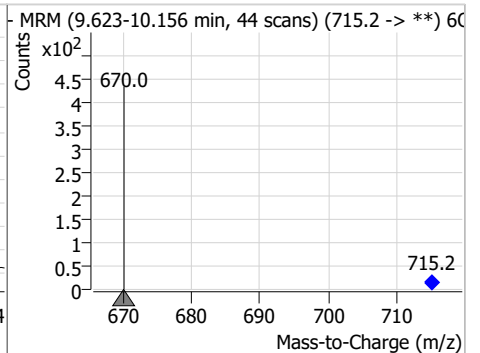
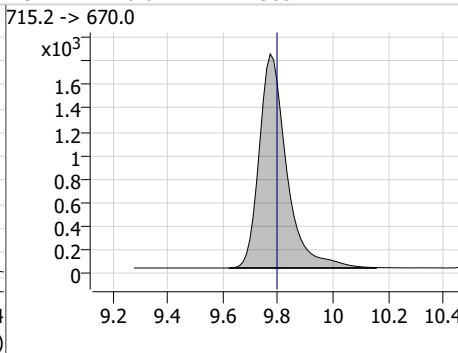
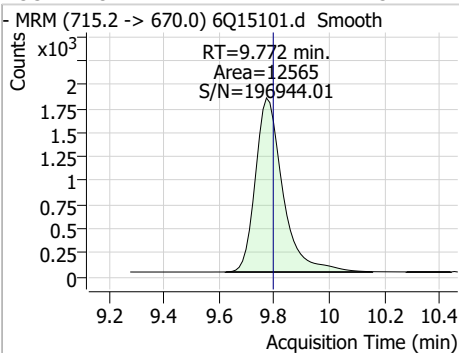
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	29.61	9.65	-0.01	198957	498.1 -> 478.0	3.6	1.9	5.7



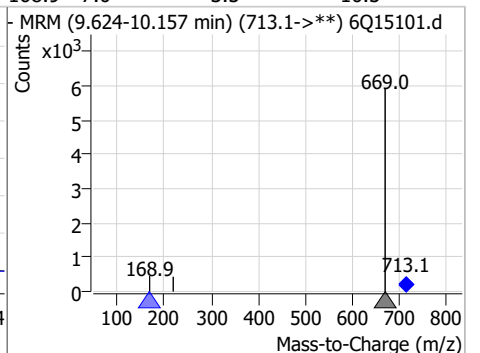
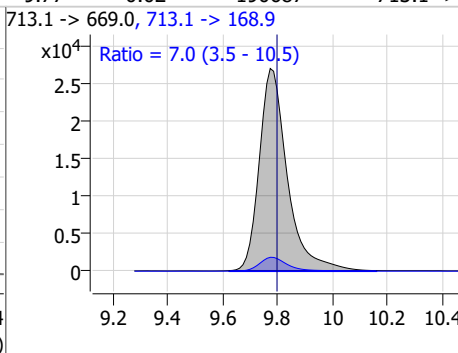
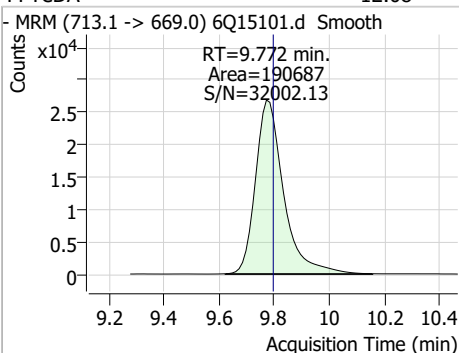
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.65	9.64	-0.02	16814				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.32	9.77	-0.02	12565				

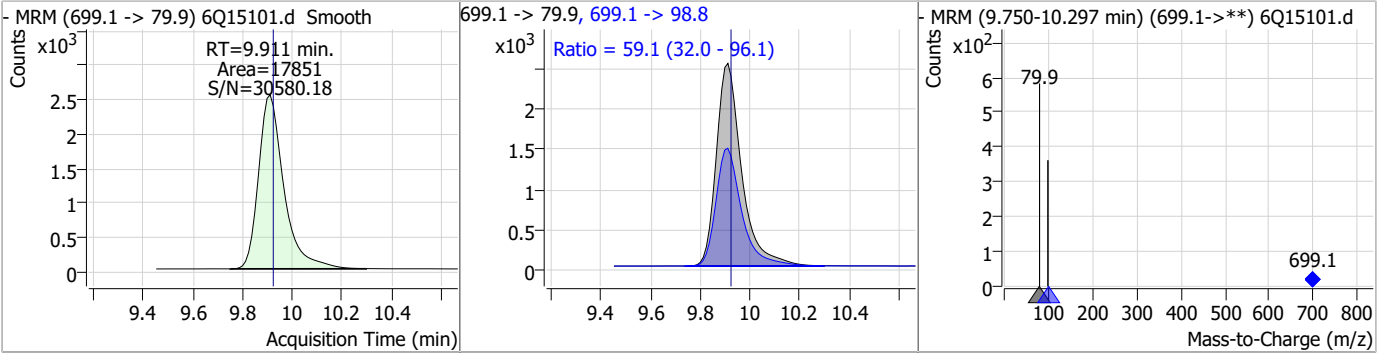


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	12.08	9.77	-0.02	190687	713.1 -> 168.9	7.0	3.5	10.5

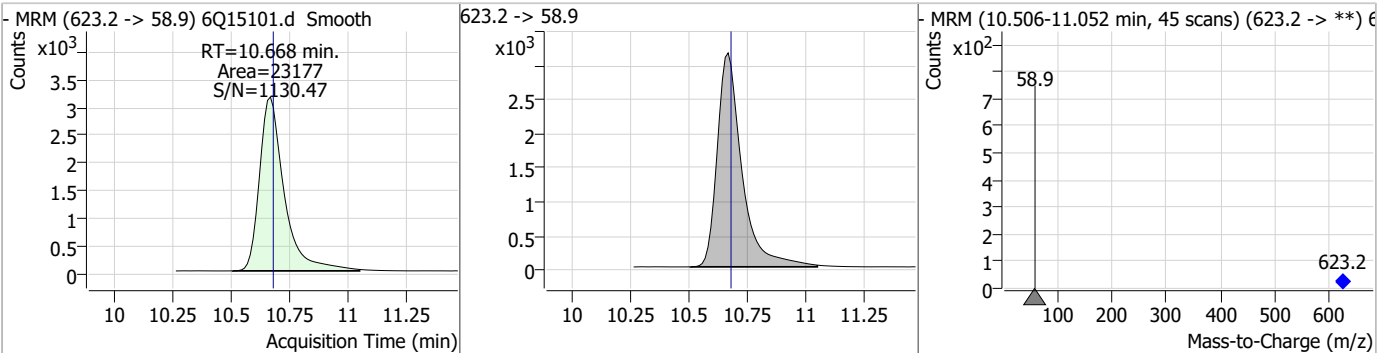


Perfluorinated Compounds by LC/MS/MS

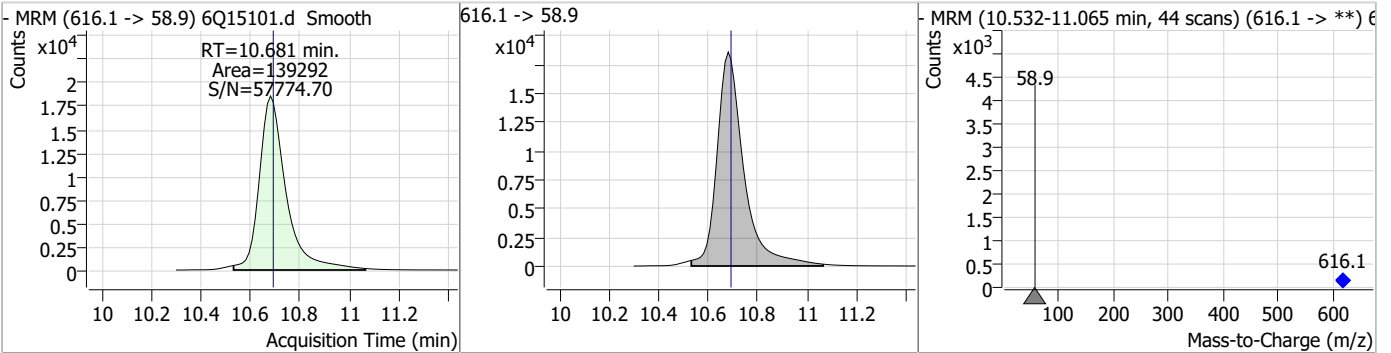
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	12.85	9.91	-0.01	17851	699.1 -> 98.8	59.1	32.0	96.1



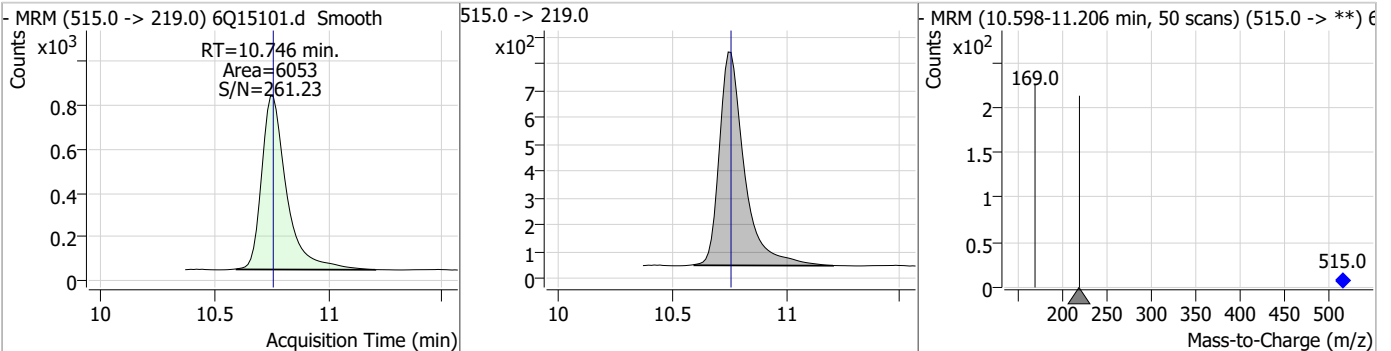
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.38	10.67	-0.01	23177				



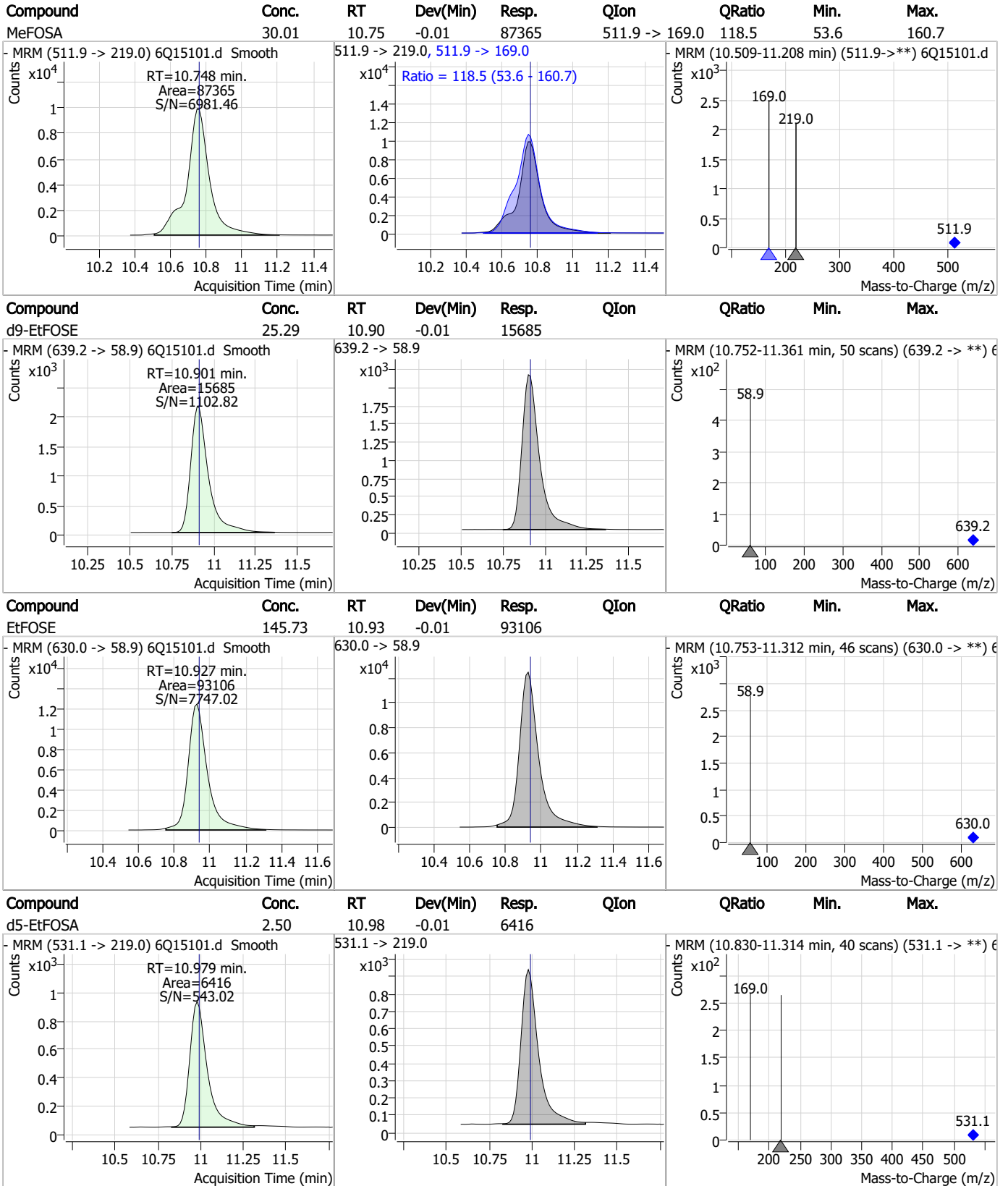
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	142.35	10.68	-0.01	139292				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.61	10.75	-0.01	6053				



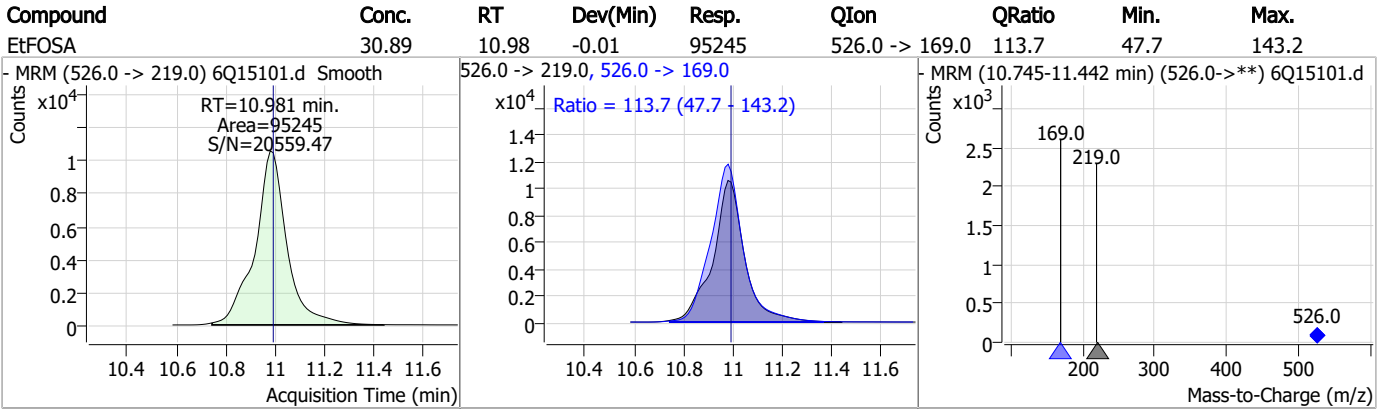
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q229-RT Method: EPA DRAFT 1633
Lab FileID: 6Q15101.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 13:32 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.16	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorononanoic acid	375-95-1		7.56	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.43	Split peak

7.6.4.1

7

QQQ Check Tune Report



Instrument Name LCMS Q6
MS Model G6495B
MS Instrument Serial SG1752D103
Software_Firmware Version 10.1.67, FW: A.00.08.112
Tune Date & Time 13 March 2023 11:23:24
File Path D:\MassHunter\Tune\QQQ\G6495B\atunes.tune.xml
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.81E+0 [R] (Torr); 2.91E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	220
Gas Flow (l/min)	14
Nebulizer (psi)	20
Capillary (V)	3000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	11

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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	112.91	-0.08	Pass	0.70	0.72	0.02	Pass	112958
302.00	301.99	-0.01	Pass	0.70	0.80	0.10	Pass	857108
601.98	601.98	0.00	Pass	0.70	0.69	-0.01	Pass	2358756
1033.99	1033.92	-0.07	Pass	0.70	0.79	0.09	Pass	827940
1633.95	1633.91	-0.04	Pass	0.70	0.80	0.10	Pass	634845
2233.91	2233.91	0.00	Pass	0.70	0.70	0.00	Pass	223943

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.04	0.04	Pass	0.70	0.63	-0.07	Pass	68068
112.99	112.99	0.00	Pass	0.70	0.70	0.00	Pass	152356
302.00	301.99	-0.01	Pass	0.70	0.66	-0.04	Pass	671838
601.98	601.95	-0.03	Pass	0.70	0.72	0.02	Pass	1618687
1033.99	1033.96	-0.03	Pass	0.70	0.72	0.02	Pass	1260991
1633.95	1633.92	-0.03	Pass	0.70	0.72	0.02	Pass	907037
2233.91	2233.86	-0.05	Pass	0.70	0.73	0.03	Pass	297747

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.93	-0.06	Pass	1.20	1.39	0.19	Pass	141724
302.00	301.96	-0.04	Pass	1.20	1.58	0.38	Pass	975368
601.98	601.91	-0.07	Pass	1.20	1.67	0.47	Pass	2909723
1033.99	1033.85	-0.14	Pass	1.20	1.55	0.35	Pass	1263912
1633.95	1633.87	-0.08	Pass	1.20	1.52	0.32	Pass	940563
2233.91	2233.88	-0.03	Pass	1.20	1.38	0.18	Pass	342810

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.01	0.01	Pass	1.20	1.15	-0.05	Pass	98007
112.99	112.94	-0.05	Pass	1.20	1.20	0.00	Pass	235523
302.00	302.05	0.05	Pass	1.20	1.15	-0.05	Pass	981409
601.98	602.02	0.04	Pass	1.20	1.36	0.16	Pass	3188222
1033.99	1033.98	-0.01	Pass	1.20	1.33	0.13	Pass	2611650
1633.95	1633.87	-0.08	Pass	1.20	1.46	0.26	Pass	2218199
2233.91	2233.91	0.00	Pass	1.20	1.35	0.15	Pass	841303

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.91	-0.08	Pass	2.50	2.67	0.17	Pass	155519
302.00	301.82	-0.18	Pass	2.50	2.79	0.29	Pass	1155561
601.98	601.75	-0.23	Pass	2.50	2.96	0.46	Pass	3661259
1033.99	1033.82	-0.17	Pass	2.50	2.77	0.27	Pass	2008983
1633.95	1633.79	-0.16	Pass	2.50	2.61	0.11	Pass	2014992
2233.91	2233.64	-0.27	Pass	2.50	2.53	0.03	Pass	915405

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.01	0.01	Pass	2.50	2.50	0.00	Pass	122032
112.99	113.01	0.02	Pass	2.50	2.62	0.12	Pass	300191
302.00	302.00	0.00	Pass	2.50	2.64	0.14	Pass	1546717
601.98	601.96	-0.02	Pass	2.50	2.87	0.37	Pass	4376968
1033.99	1033.93	-0.06	Pass	2.50	2.75	0.25	Pass	4079531
1633.95	1634.00	0.05	Pass	2.50	2.84	0.34	Pass	4211015
2233.91	2233.80	-0.11	Pass	2.50	2.55	0.05	Pass	2041050

7.7.1
7



Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14850.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 9:46:11 PM
 Sample Name : ic225-1
 Vial : P1-A2
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	73078	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	35265	5.00 µg/L	0.000
M5-PFHxA	5.593	318.0 -> 273.0	30799	2.50 µg/L	-0.012
M4-PFHpA	6.532	367.1 -> 322.0	31581	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	54978	2.50 µg/L	-0.012
M9-PFNA	7.718	472.1 -> 427.0	17382	1.25 µg/L	0.000
M6-PFDA	8.185	519.1 -> 474.1	14837	1.25 µg/L	-0.012
M7-PFUnDA	8.652	570.0 -> 525.1	15672	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	17855	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	10171	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	15310	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	12001	2.50 µg/L	-0.012
M3-PFHxS	7.302	402.1 -> 79.9	7891	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	7187	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1765	5.00 µg/L	-0.012
M2-6:2FTS	6.949	429.1 -> 80.9	2285	5.00 µg/L	-0.012
M2-8:2FTS	7.986	529.1 -> 80.9	2280	5.00 µg/L	0.000
M3-MeFOSAA	8.243	573.2 -> 419.0	22502	5.00 µg/L	0.000
M3-HFPO-DA	5.971	286.9 -> 168.9	14110	10.00 µg/L	-0.012
M5-EtFOSAA	8.438	589.2 -> 419.0	20057	5.00 µg/L	-0.012
M7-MeFOSE	10.680	623.2 -> 58.9	21578	25.00 µg/L	0.000
M9-EtFOSE	10.926	639.2 -> 58.9	15055	25.00 µg/L	0.012
M5-EtFOSA	10.991	531.1 -> 219.0	6327	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5419	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	8605	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	31687	5.00 µg/L	0.000
18O2-PFHxS	7.301	403.0 -> 83.9	5692	2.50 µg/L	-0.012
13C4-PFOA	7.176	417.1 -> 372.0	63244	2.50 µg/L	-0.012
13C2-PFDA	8.185	515.1 -> 470.1	18927	1.25 µg/L	-0.012
13C5-PFNA	7.706	468.0 -> 423.0	16427	1.25 µg/L	-0.012
13C2-PFHxA	5.594	315.1 -> 270.0	30463	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1765	5.40 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2285	5.40 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2280	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-PFDoDA	9.082	615.1 -> 570.0	17855	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C2-PFTeDA	9.797	715.2 -> 670.0	10171	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C3-PFBS	5.536	302.1 -> 79.9	12001	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C3-PFHxS	7.302	402.1 -> 79.9	7891	2.46 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C4-PFBA	2.947	216.8 -> 171.9	73078	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	6.532	367.1 -> 322.0	31581	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFHxA	5.593	318.0 -> 273.0	30799	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFPeA	4.395	268.3 -> 223.0	35265	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C6-PFDA	8.185	519.1 -> 474.1	14837	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C7-PFUnDA	8.652	570.0 -> 525.1	15672	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-FOSA	9.669	506.1 -> 77.8	15310	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-PFOA	7.175	421.1 -> 376.0	54978	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C8-PFOS	8.360	507.1 -> 79.9	7187	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C9-PFNA	7.718	472.1 -> 427.0	17382	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.8%	
d3-MeFOSAA	8.243	573.2 -> 419.0	22502	5.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.9%	
13C3-HFPO-DA	5.971	286.9 -> 168.9	14110	10.25 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
d3-MeFOSA	10.759	515.0 -> 219.0	5419	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
d5-EtFOSAA	8.438	589.2 -> 419.0	20057	5.52 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.4%	
d7-MeFOSE	10.680	623.2 -> 58.9	21578	26.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.3%	
d9-EtFOSE	10.926	639.2 -> 58.9	15055	25.76 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
d5-EtFOSA	10.991	531.1 -> 219.0	6327	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	3123	0.76 µg/L	93
		327.1 -> 80.9	675		
6:2FTS	6.950	427.1 -> 407.0	2558	0.75 µg/L	100
		427.1 -> 80.9	558		
8:2FTS	7.974	527.1 -> 507.0	1363	0.81 µg/L	94
		527.1 -> 80.8	321		
EtFOSAA	8.452	584.2 -> 419.1	807	0.22 µg/L	m 81
		584.2 -> 526.0	333		
FOSA	9.672	498.1 -> 77.9	1189	0.19 µg/L	98
		498.1 -> 478.0	53		
MeFOSAA	8.244	570.1 -> 419.0	792	0.17 µg/L	97
		570.1 -> 483.0	147		
PFBA	2.956	212.8 -> 168.9	1533	0.77 µg/L	100
PFBS	5.537	298.7 -> 79.9	918	0.17 µg/L	94
		298.7 -> 98.8	382		
PFDA	8.198	512.9 -> 469.0	3327	0.18 µg/L	97
		512.9 -> 219.0	449		
PFDODA	9.082	613.1 -> 569.0	3376	0.22 µg/L	97
		613.1 -> 319.0	402		
PFDS	9.246	599.0 -> 79.9	472	0.20 µg/L	68

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	337			
PFHpA	6.544	363.1 -> 319.0	3966	0.19	µg/L	95
		363.1 -> 169.0	625			
PFHpS	7.855	449.0 -> 79.9	658	0.21	µg/L	97
		449.0 -> 98.9	375			
PFHxA	5.607	313.0 -> 269.0	2631	0.20	µg/L	98
		313.0 -> 118.9	85			
PFHxS	7.303	398.7 -> 79.9	792	0.20	µg/L	m 92
		398.7 -> 98.9	412			
PFNA	7.707	463.0 -> 419.0	2035	0.17	µg/L	87
		463.0 -> 219.0	522			
PFNS	8.826	548.8 -> 79.9	676	0.20	µg/L	87
		548.8 -> 98.9	330			
PFOA	7.176	413.0 -> 369.0	4331	0.17	µg/L	96
		413.0 -> 169.0	635			
PFOS	8.361	498.9 -> 79.9	748	0.22	µg/L	m 84
		498.9 -> 98.8	379			
PFPeA	4.397	263.0 -> 219.0	3423	0.41	µg/L	100
PFPeS	6.596	349.1 -> 79.9	937	0.20	µg/L	100
		349.1 -> 98.9	495			
PFTeDA	9.797	713.1 -> 669.0	2638	0.21	µg/L	98
		713.1 -> 168.9	170			
PFTrDA	9.466	663.0 -> 619.0	2856	0.21	µg/L	98
		663.0 -> 168.9	201			
PFUnDA	8.652	563.1 -> 519.0	2892	0.19	µg/L	96
		563.1 -> 269.1	348			
11Cl-PF3OUdS	9.517	630.9 -> 450.9	6242	0.72	µg/L	97
		632.9 -> 452.9	2086			
9Cl-PF3ONS	8.703	530.8 -> 351.0	11408	0.72	µg/L	88
		532.8 -> 353.0	4248			
ADONA	6.794	376.9 -> 250.9	22471	0.74	µg/L	99
		376.9 -> 84.8	5104			
HFPO-DA	5.971	284.9 -> 168.9	1229	0.83	µg/L	90
		284.9 -> 184.9	107			
3:3FTCA	3.851	241.0 -> 177.0	419	1.00	µg/L	87
		241.0 -> 117.0	39			
5:3FTCA	6.259	341.0 -> 237.1	12893	4.92	µg/L	99
		341.0 -> 217.0	10848			
7:3FTCA	7.672	441.0 -> 316.9	6847	5.20	µg/L	91
		441.0 -> 336.9	11696			
EtFOSA	10.993	526.0 -> 219.0	575	0.19	µg/L	85
		526.0 -> 169.0	632			
EtFOSE	10.939	630.0 -> 58.9	1183	1.93	µg/L	100
MeFOSA	10.773	511.9 -> 219.0	540	0.21	µg/L	89
		511.9 -> 169.0	520			
MeFOSE	10.692	616.1 -> 58.9	1791	1.97	µg/L	100
PFDoDS	9.924	699.1 -> 79.9	226	0.17	µg/L	68
		699.1 -> 98.8	201			
NFDHA	5.476	295.0 -> 201.0	383	0.46	µg/L	81
		295.0 -> 84.9	124			
PFMBA	4.806	279.0 -> 85.1	1036	0.38	µg/L	100
PFMPA	3.526	229.0 -> 84.9	940	0.39	µg/L	100
PFEESA	6.077	314.8 -> 134.9	6497	0.35	µg/L	100
		314.8 -> 82.9	148			

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

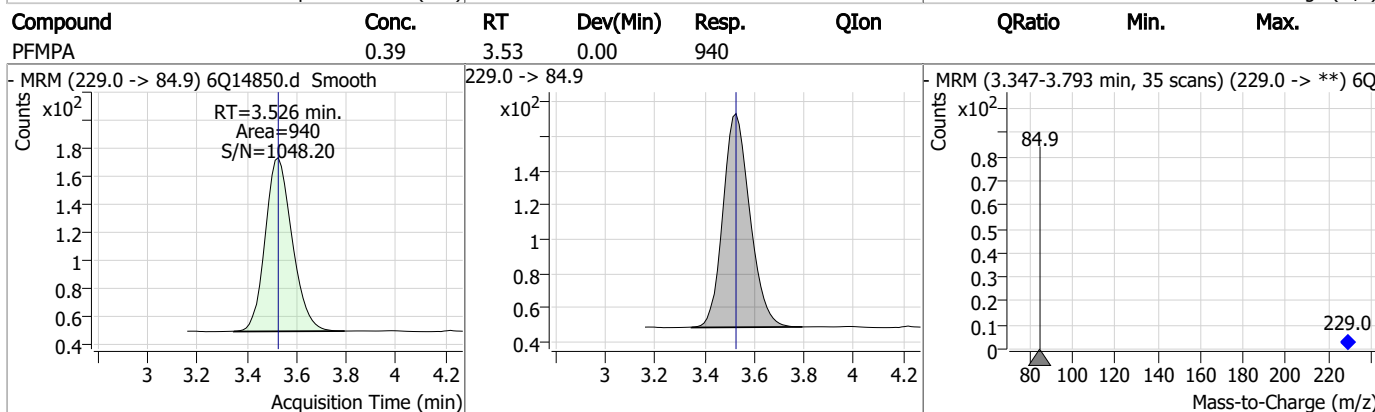
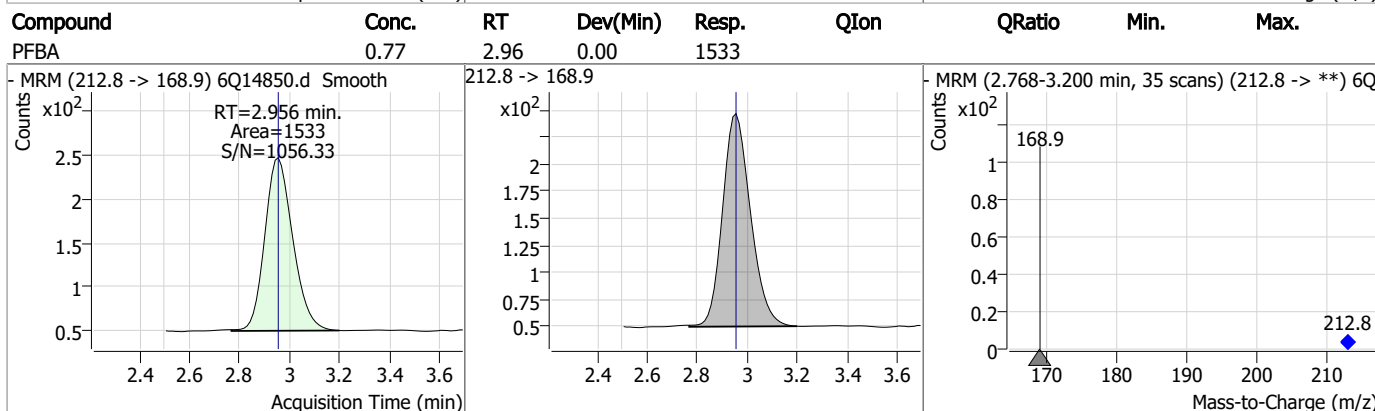
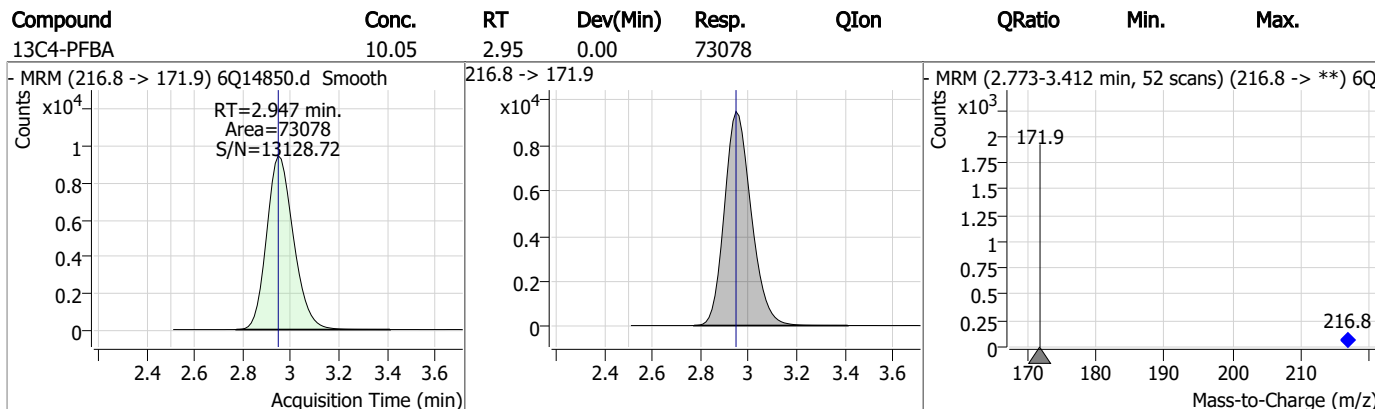
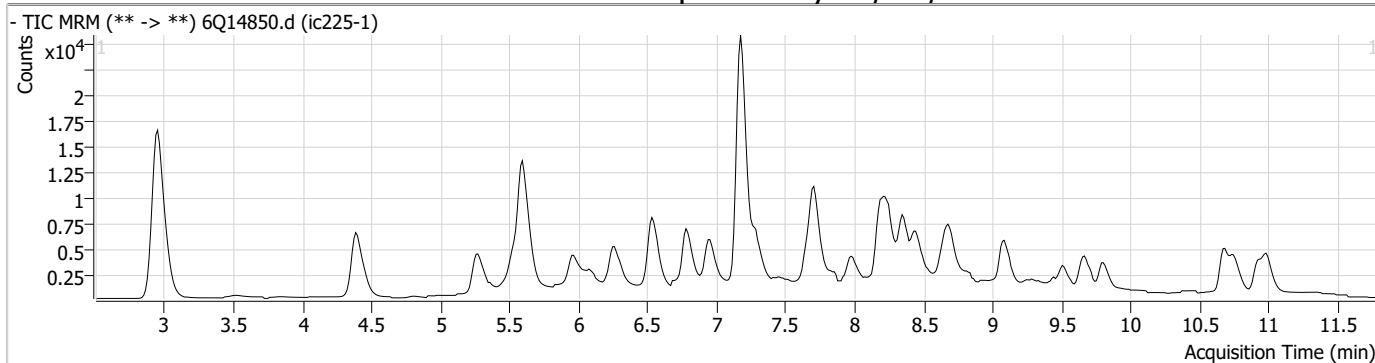
Perfluorinated Compounds by LC/MS/MS

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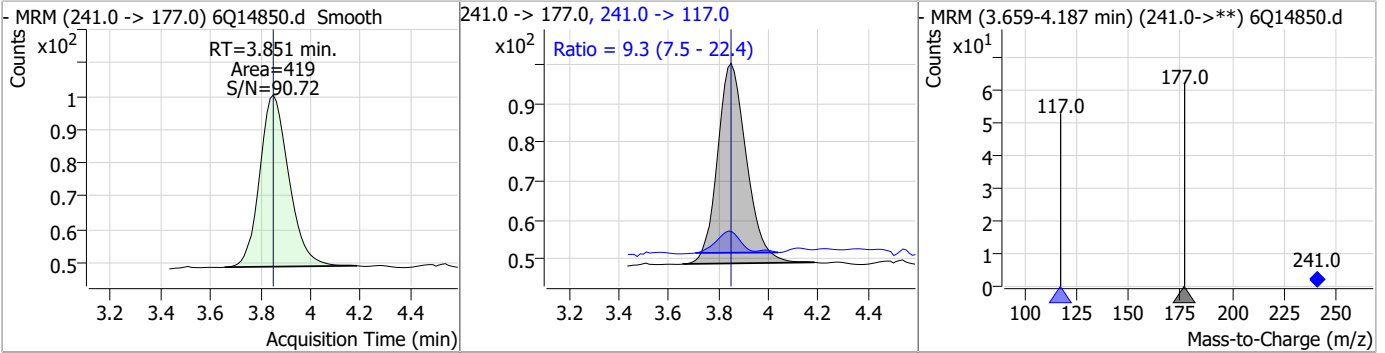
Perfluorinated Compounds by LC/MS/MS



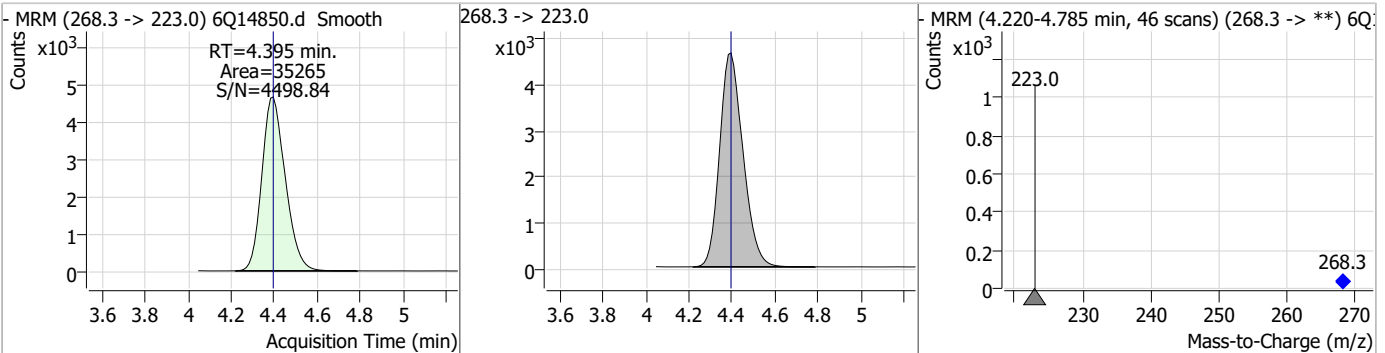
7.7.2
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Perfluorinated Compounds by LC/MS/MS

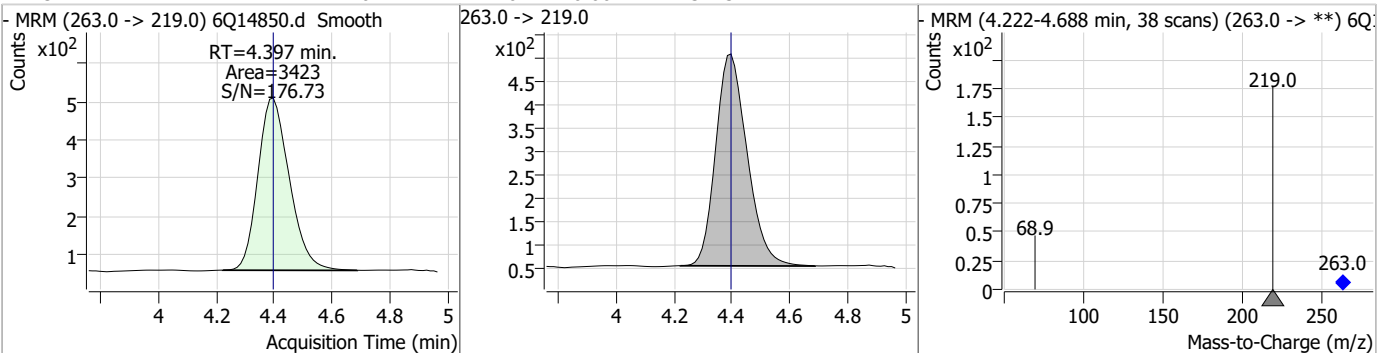
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	1.00	3.85	0.00	419	241.0 -> 117.0	9.3	7.5	22.4



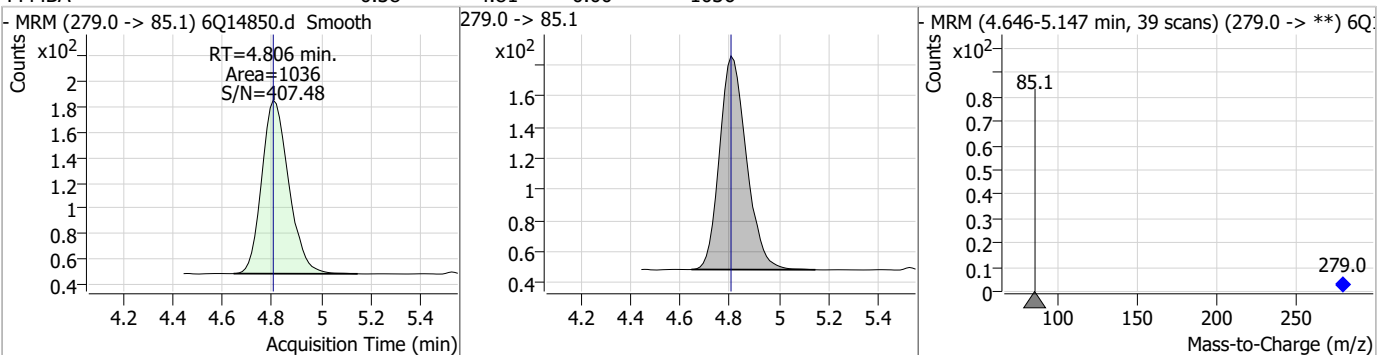
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.01	4.39	0.00	35265				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.41	4.40	0.00	3423				

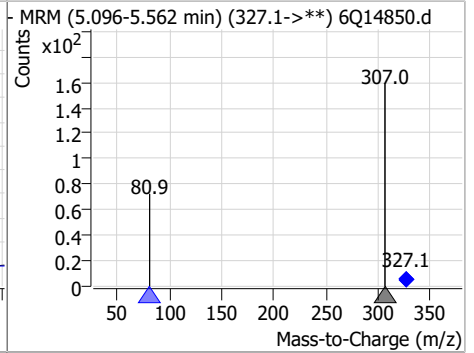
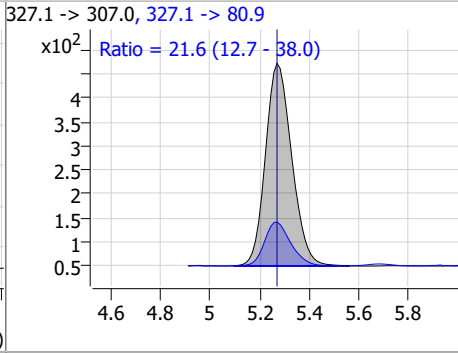
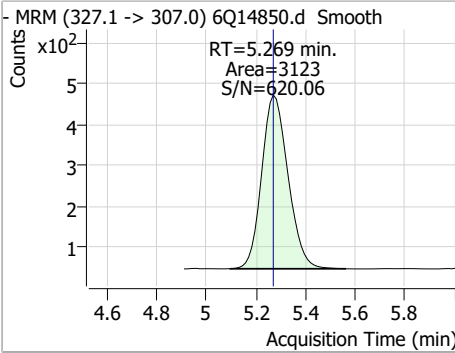


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	0.38	4.81	0.00	1036				

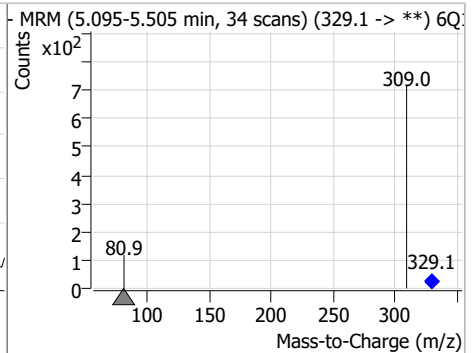
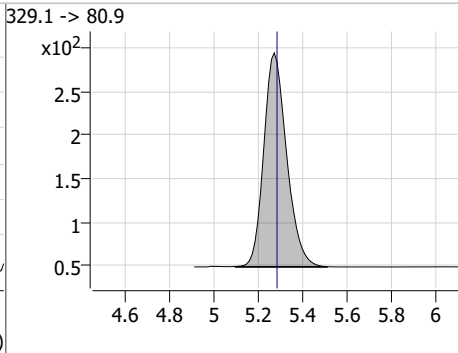
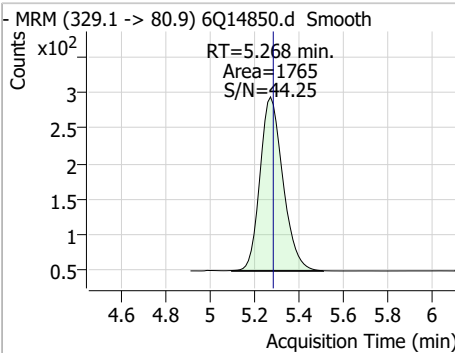


Perfluorinated Compounds by LC/MS/MS

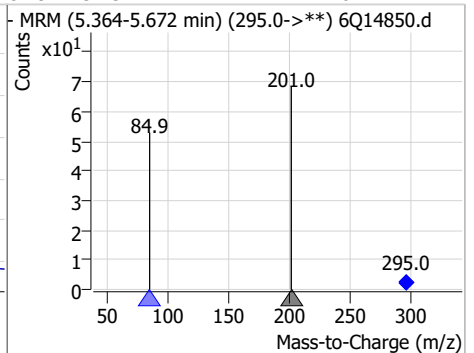
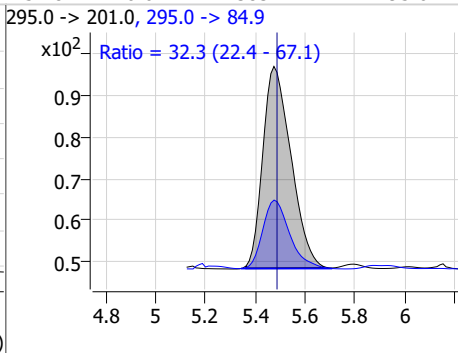
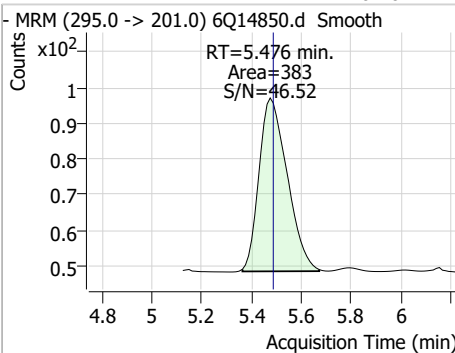
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.76	5.27	0.00	3123	327.1 -> 80.9	21.6	12.7	38.0



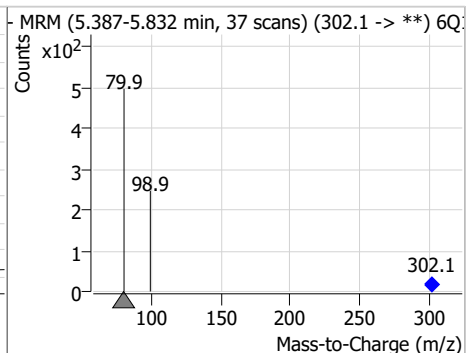
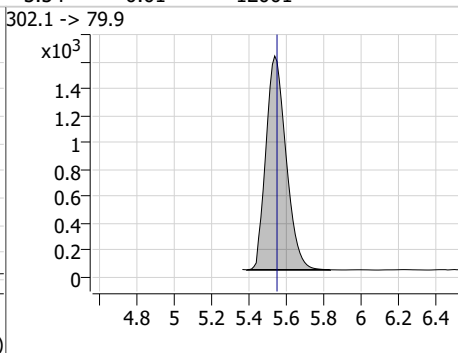
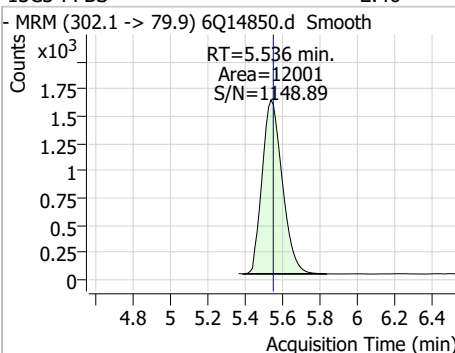
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	5.40	5.27	-0.01	1765	329.1 -> 80.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	0.46	5.48	-0.01	383	295.0 -> 84.9	32.3	22.4	67.1

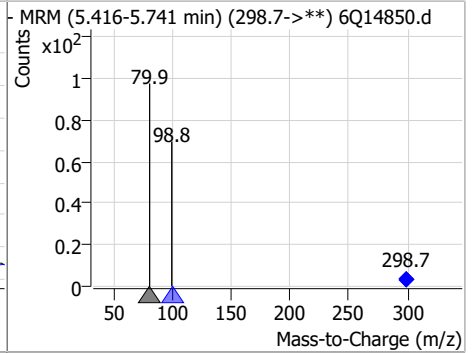
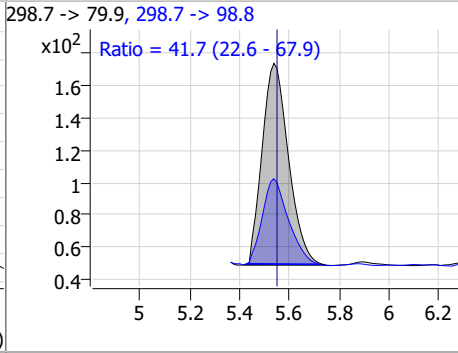
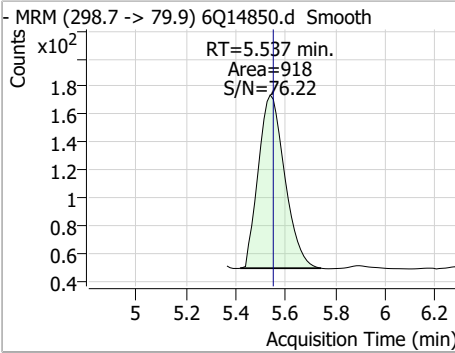


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.46	5.54	-0.01	12001	302.1 -> 79.9			

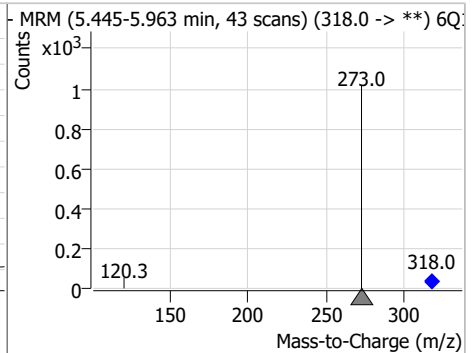
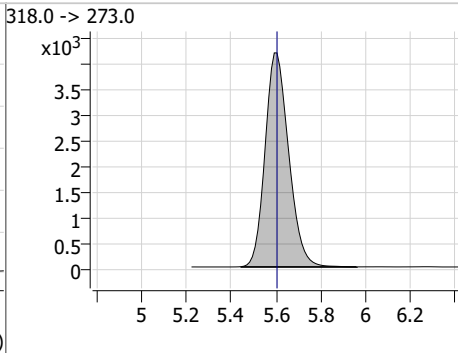
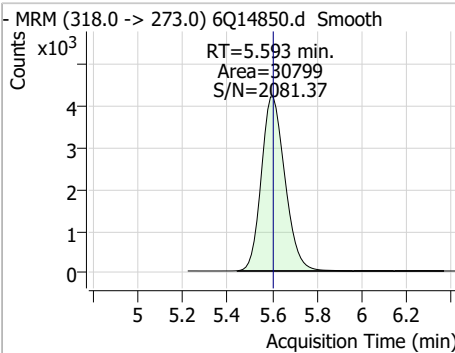


Perfluorinated Compounds by LC/MS/MS

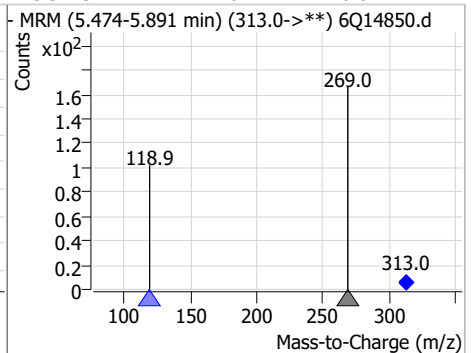
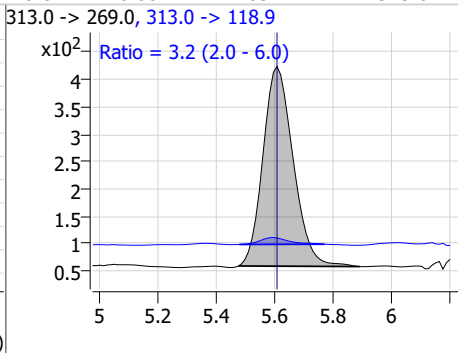
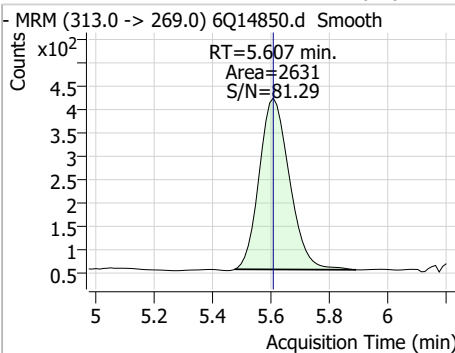
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.17	5.54	-0.01	918	298.7 -> 98.8	41.7	22.6	67.9



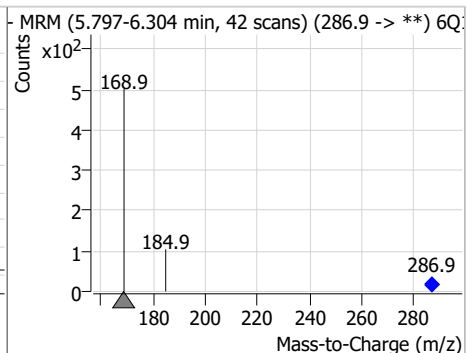
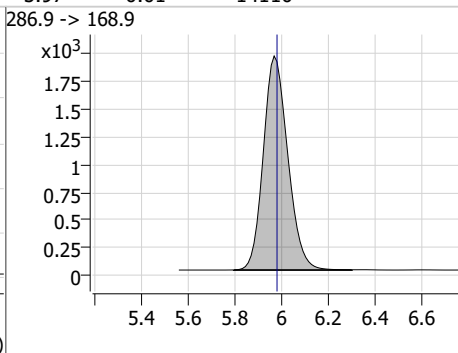
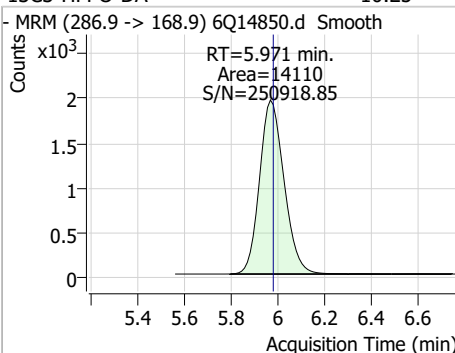
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.48	5.59	-0.01	30799				



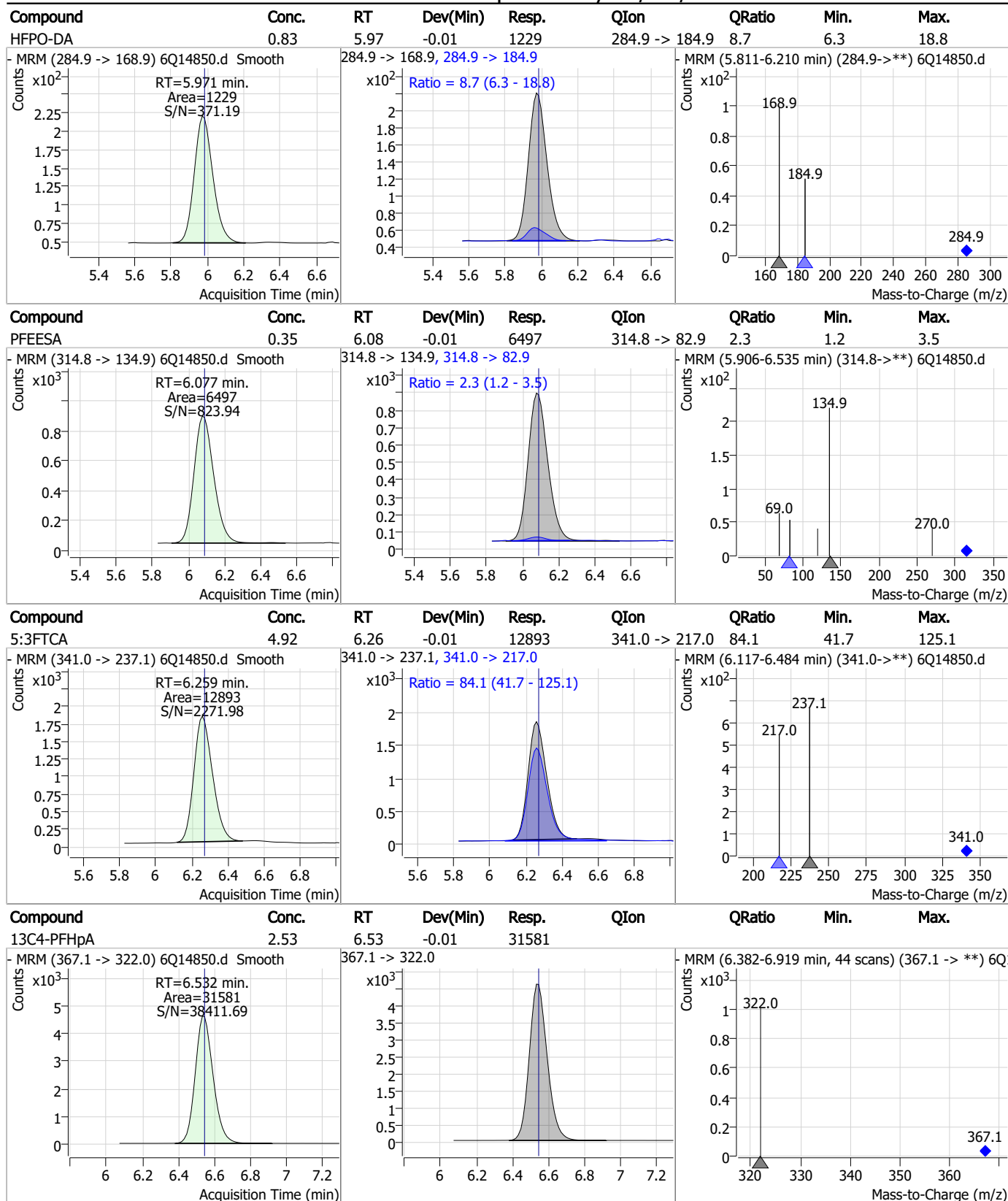
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.20	5.61	0.00	2631	313.0 -> 118.9	3.2	2.0	6.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.25	5.97	-0.01	14110				

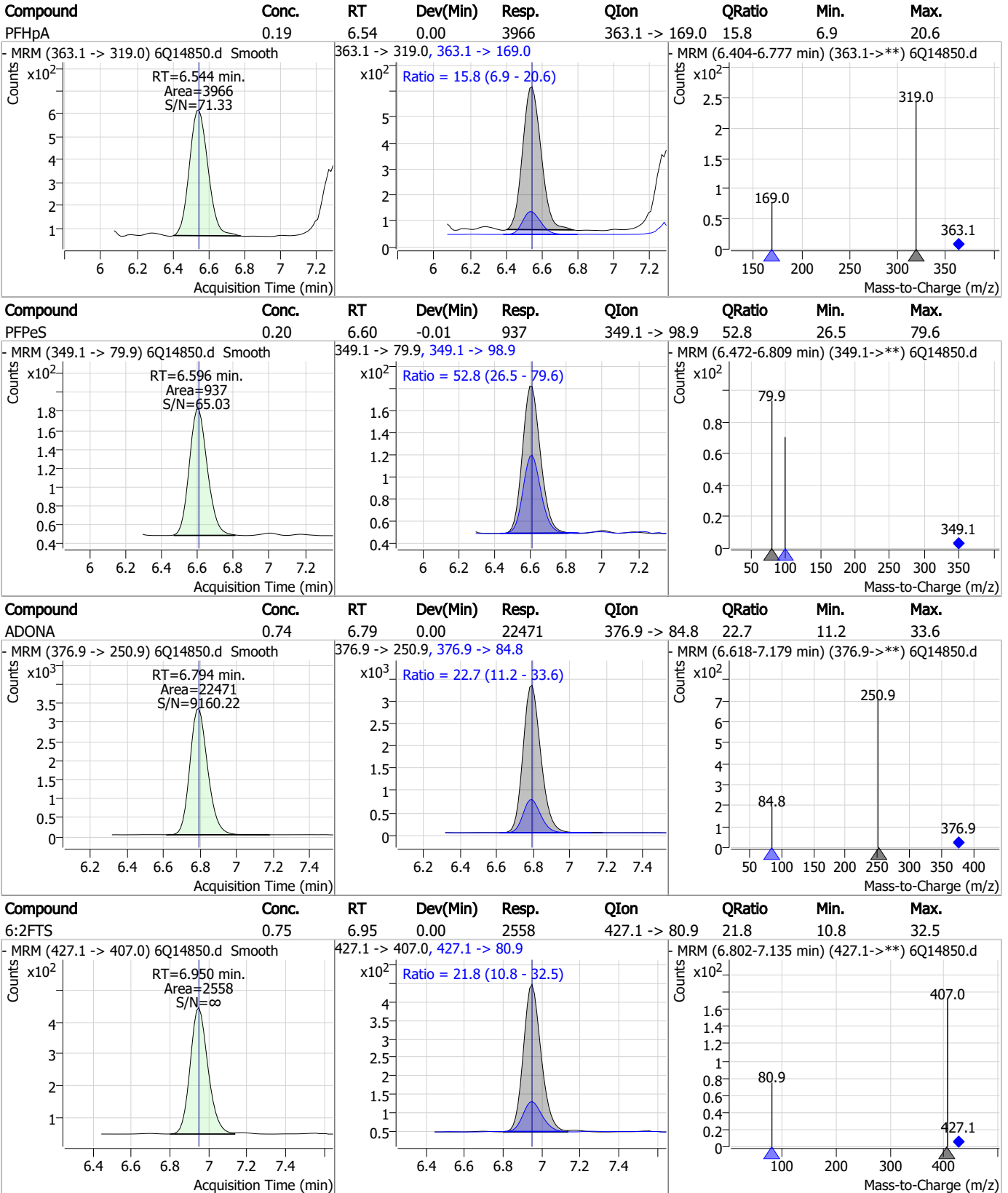


Perfluorinated Compounds by LC/MS/MS



7.7.2
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Perfluorinated Compounds by LC/MS/MS

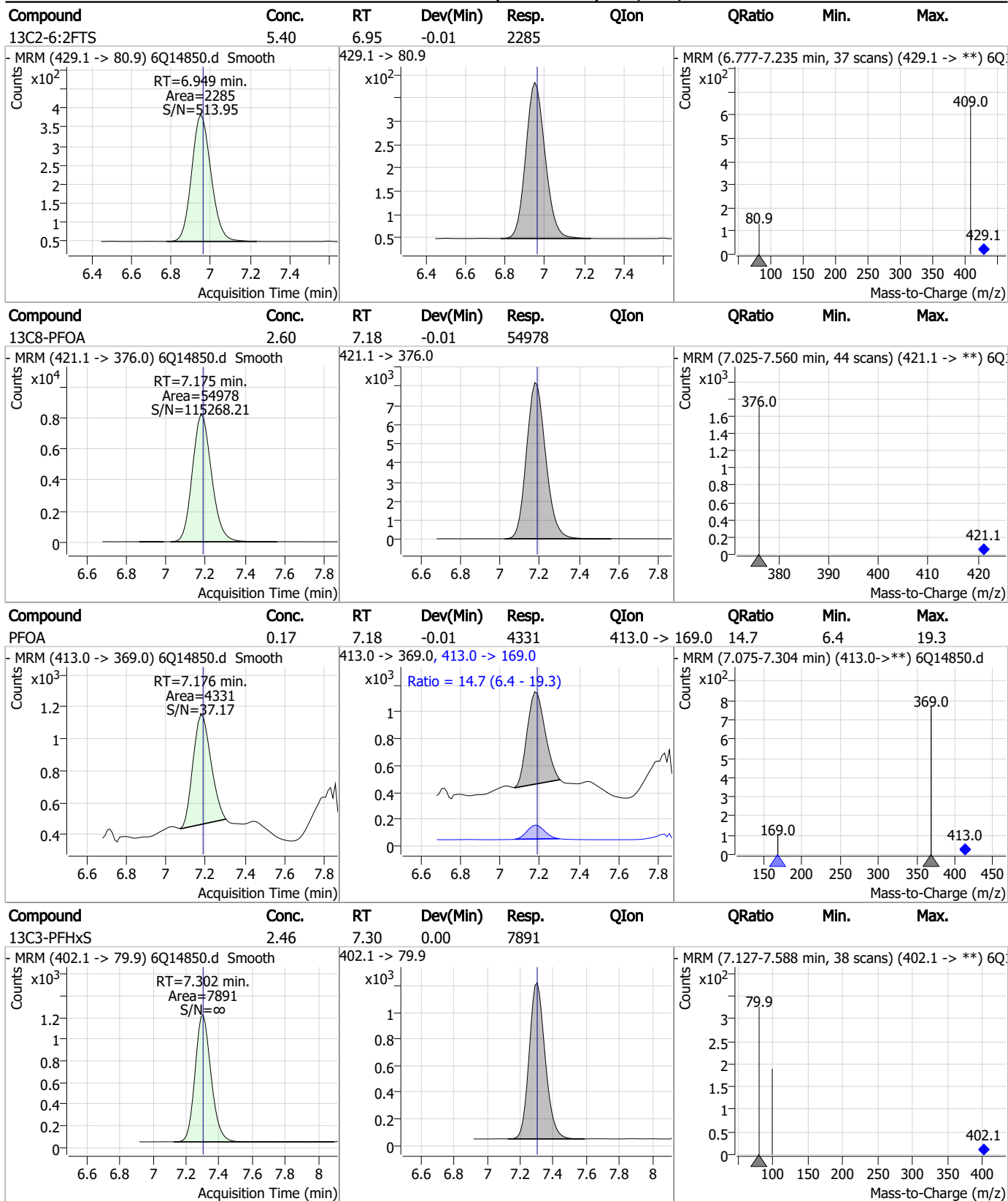


7.7.2

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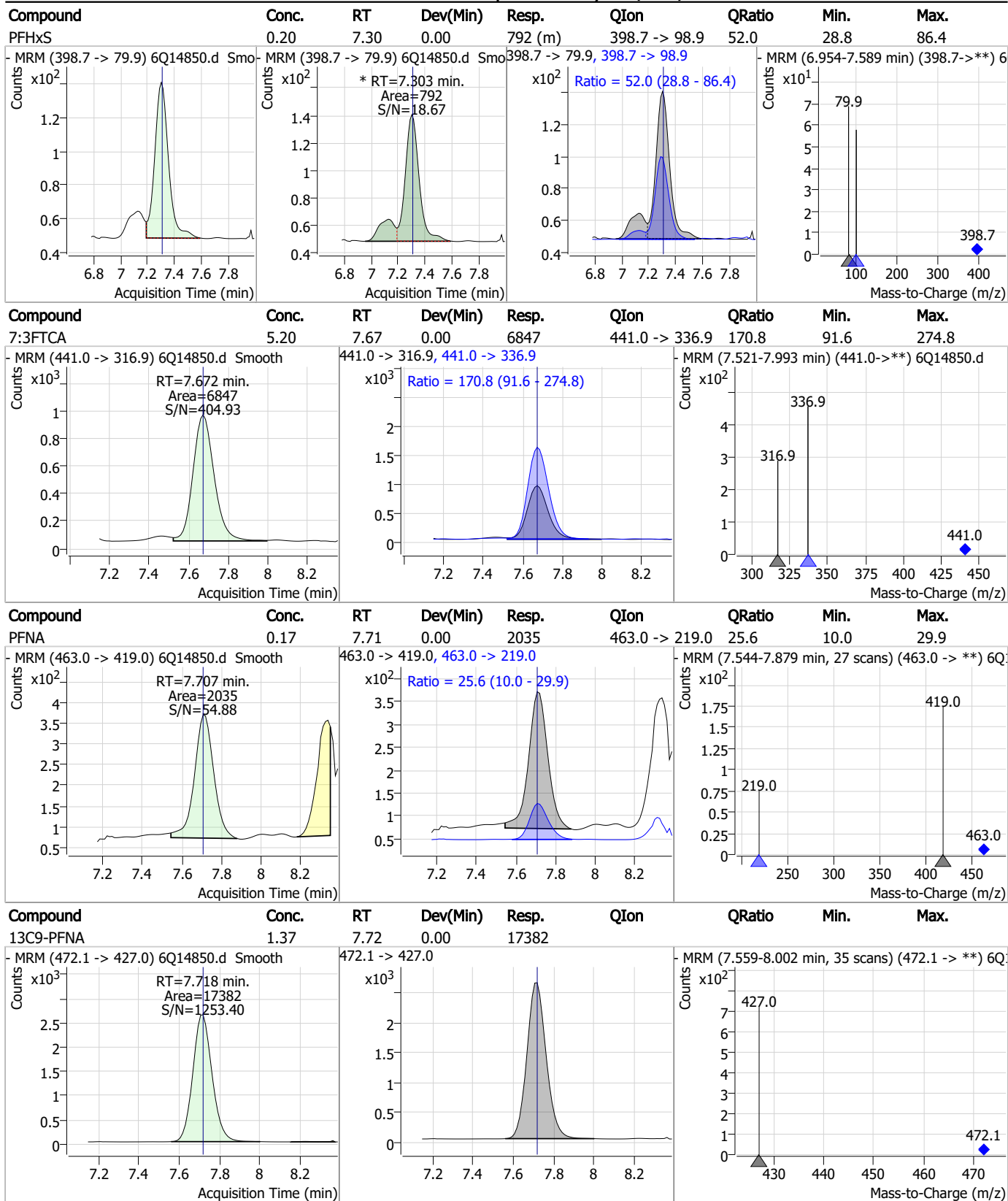
Perfluorinated Compounds by LC/MS/MS



7.7.2
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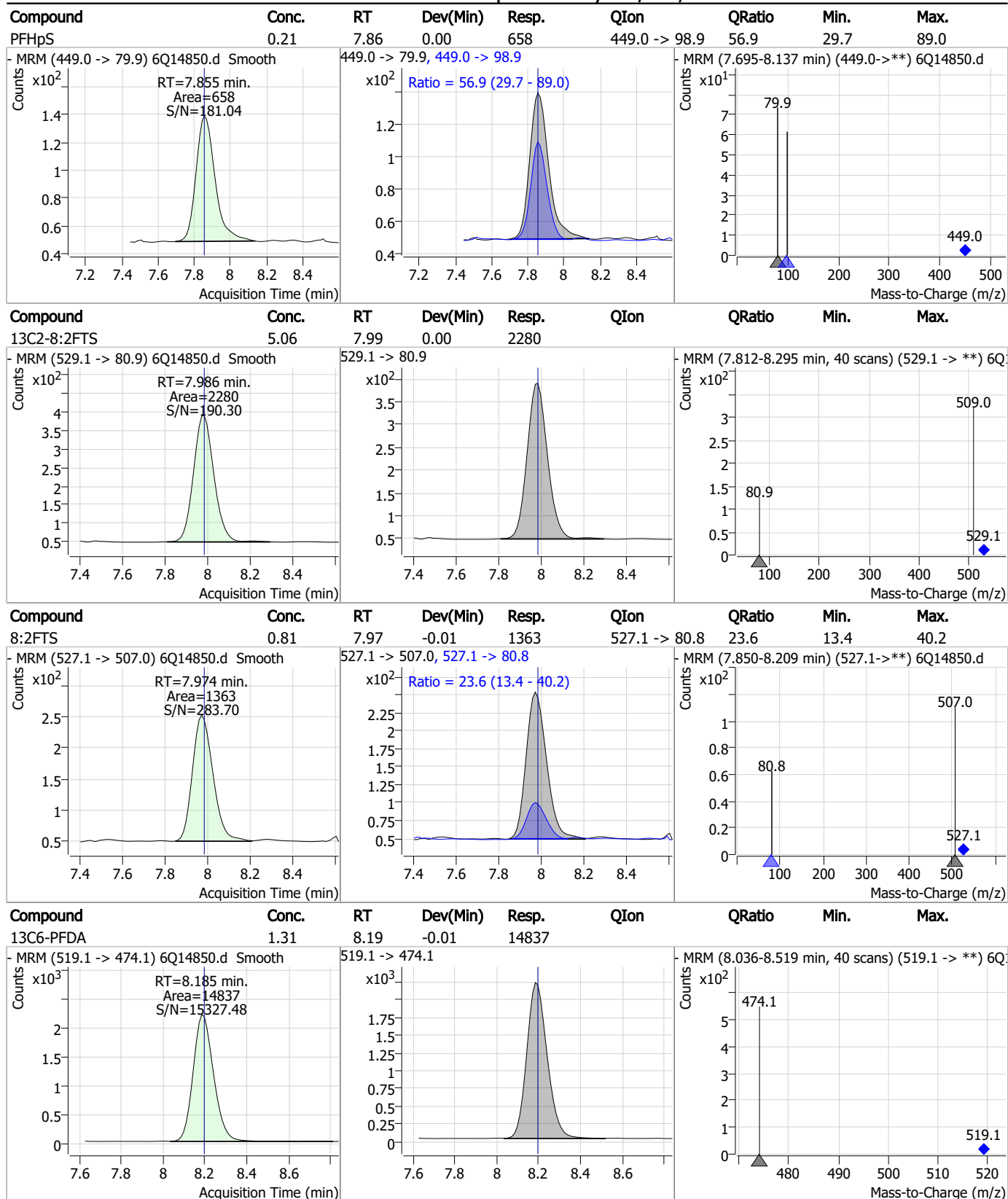


Perfluorinated Compounds by LC/MS/MS



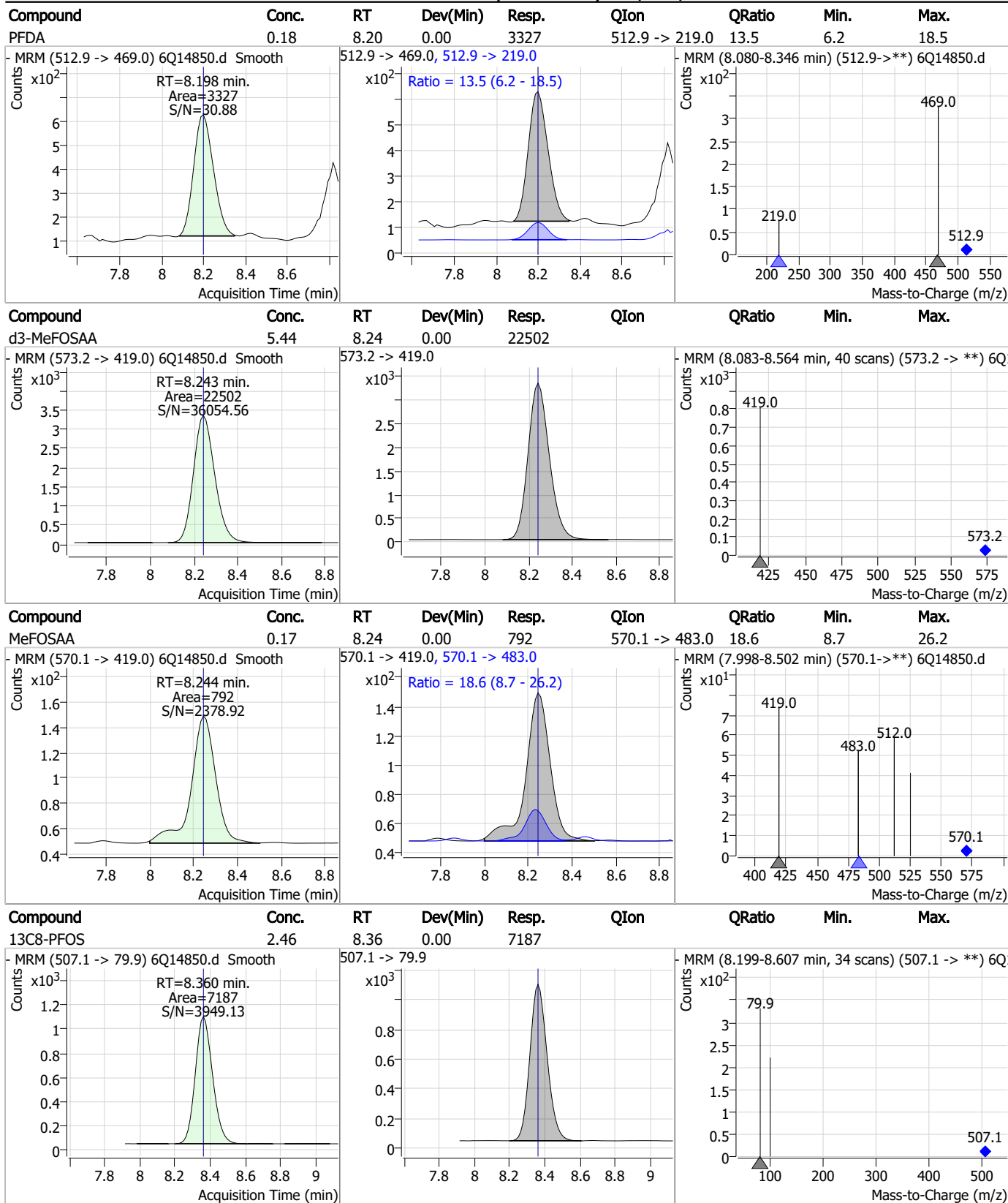
7.7.2
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Perfluorinated Compounds by LC/MS/MS



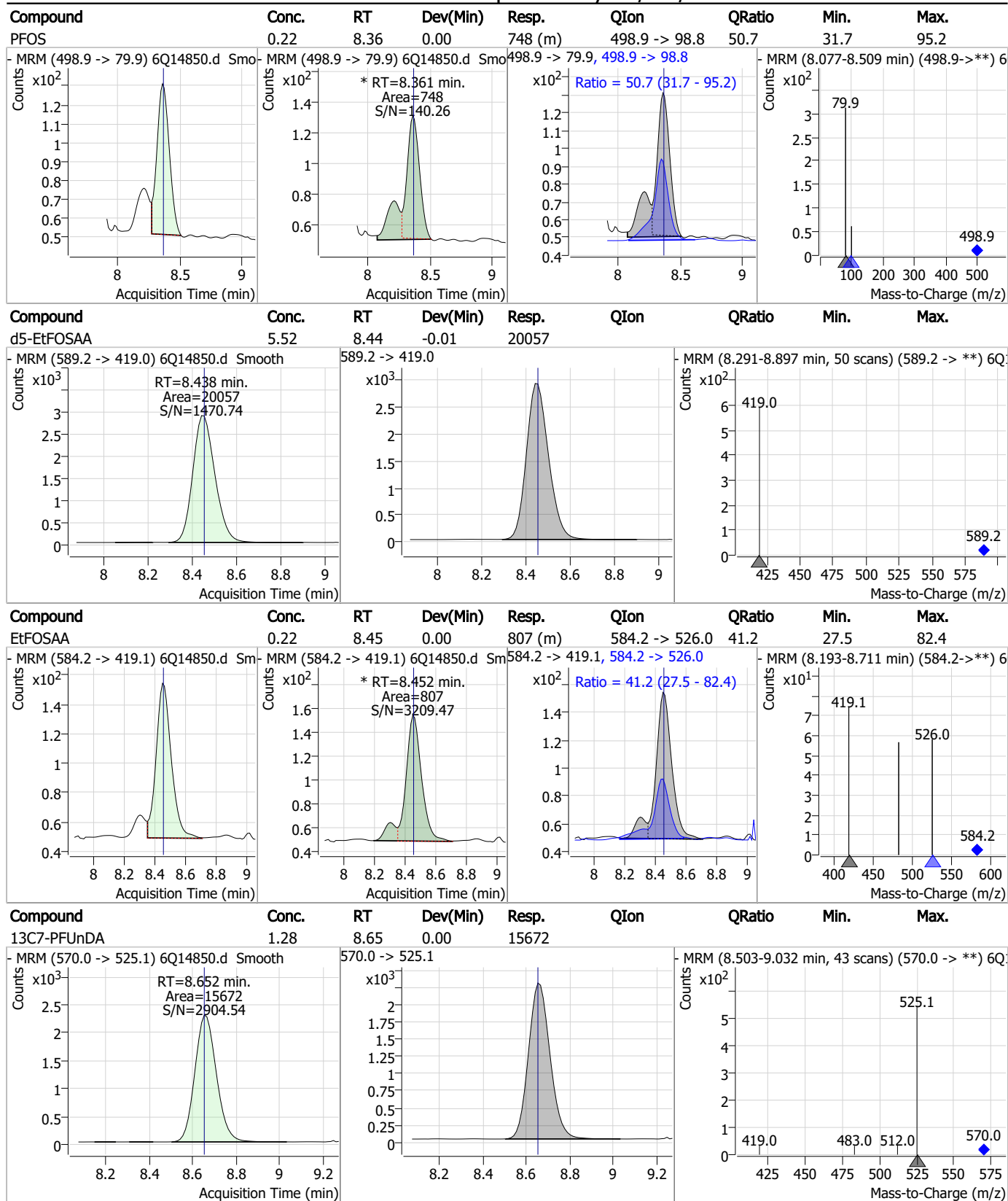
7.7.2
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Perfluorinated Compounds by LC/MS/MS



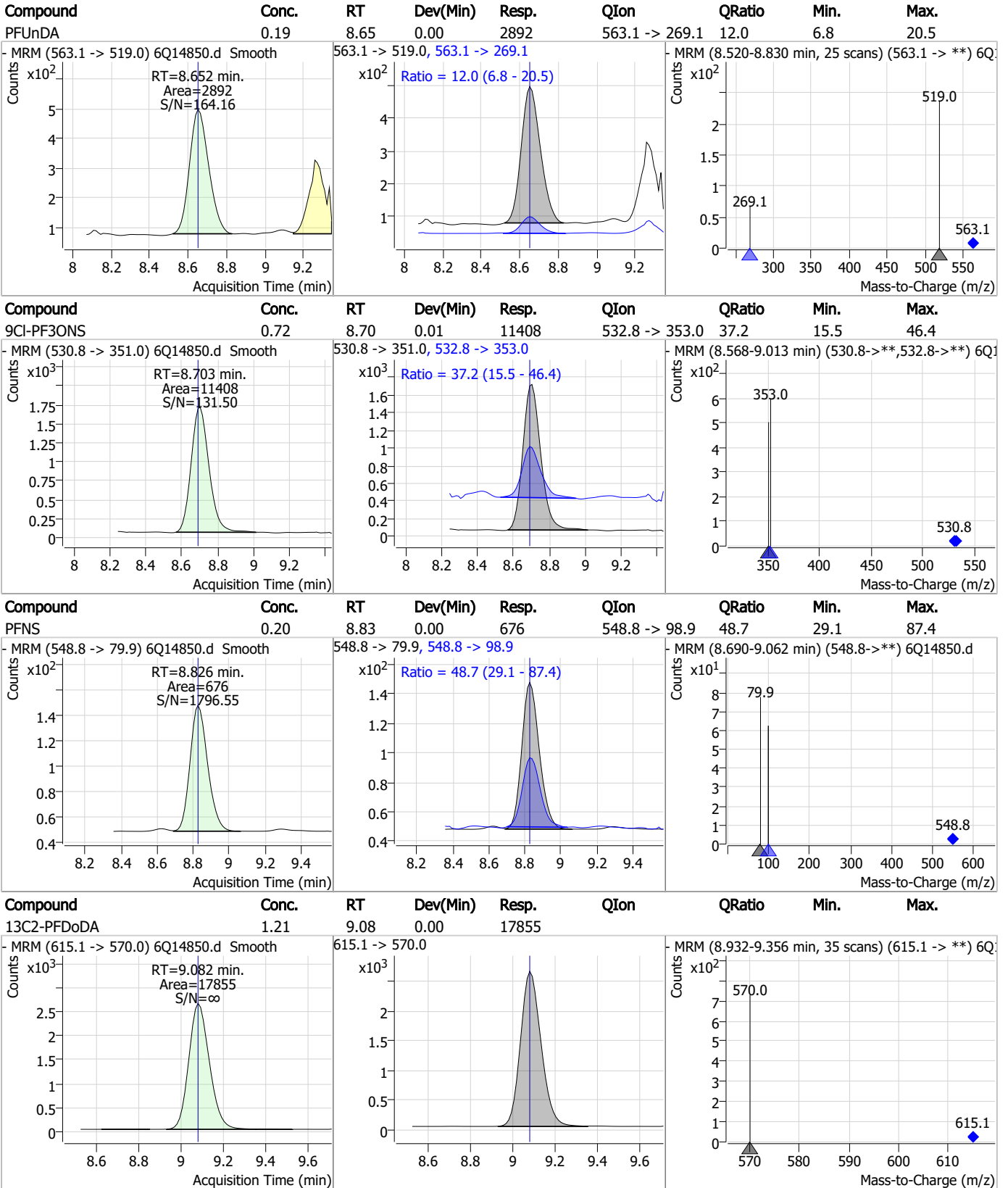
7.7.2
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Perfluorinated Compounds by LC/MS/MS

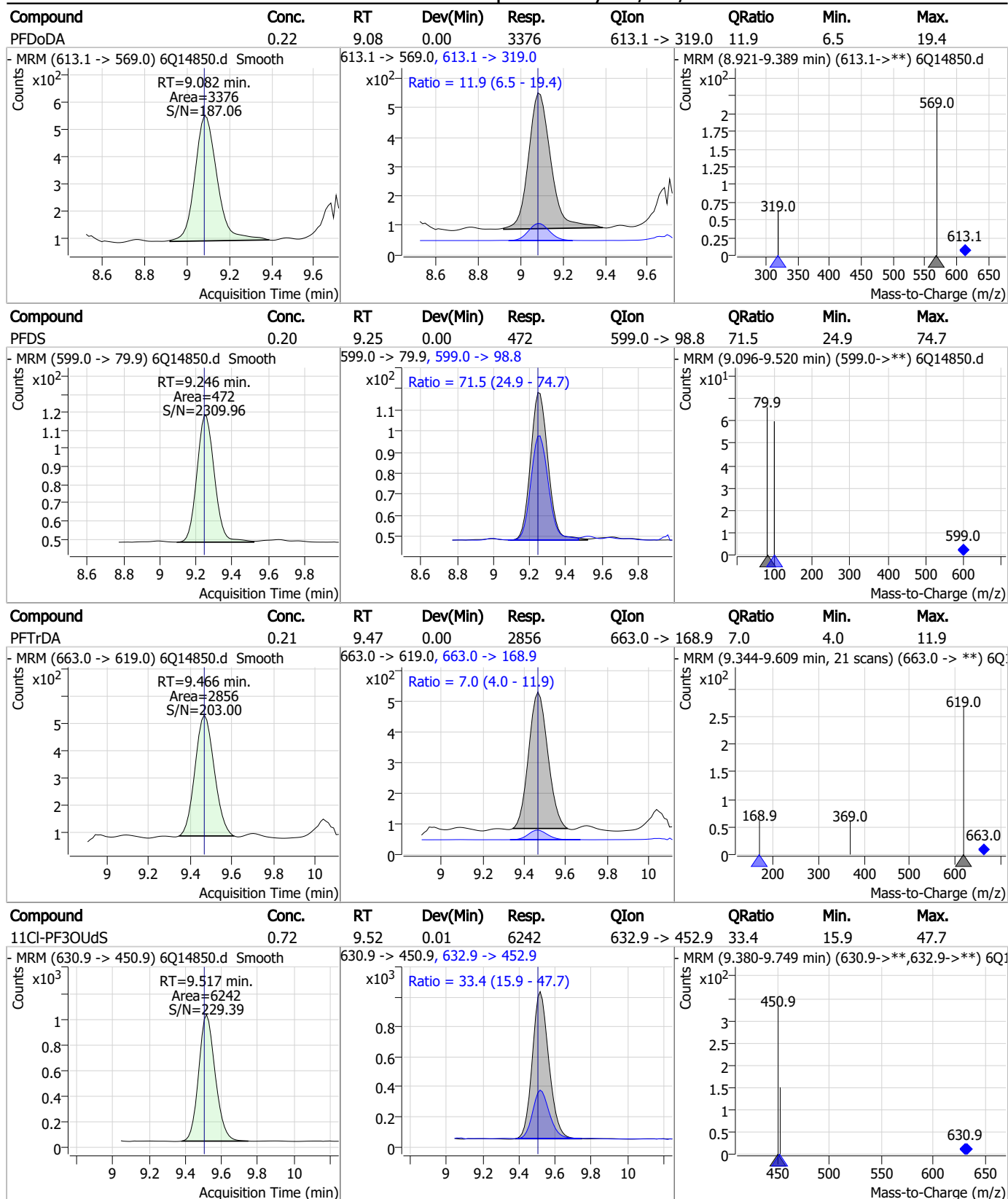


7.7.2
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Perfluorinated Compounds by LC/MS/MS



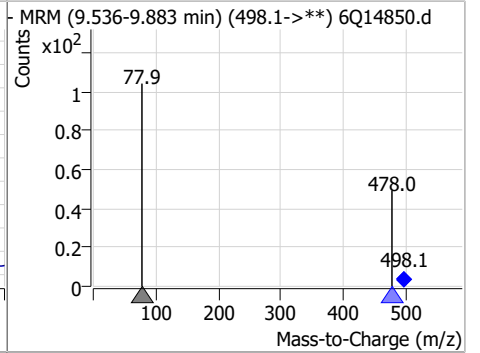
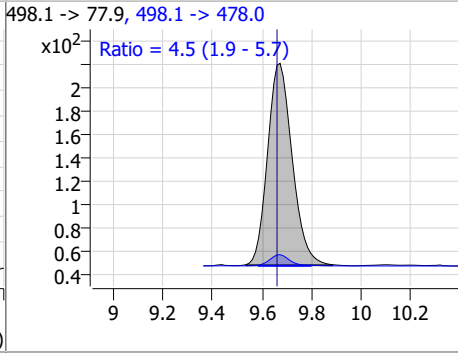
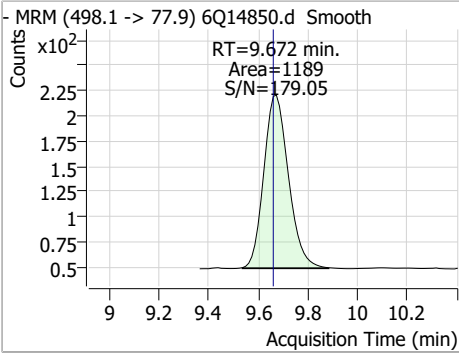
Perfluorinated Compounds by LC/MS/MS



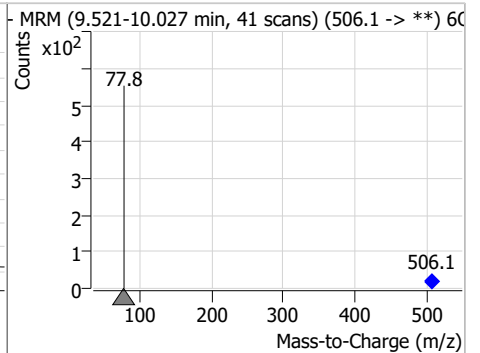
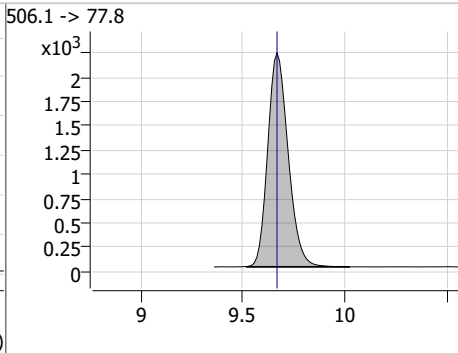
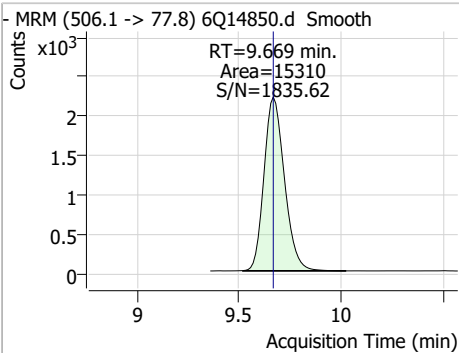
7.7.2
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Perfluorinated Compounds by LC/MS/MS

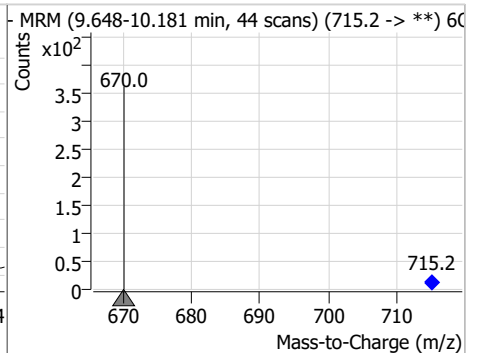
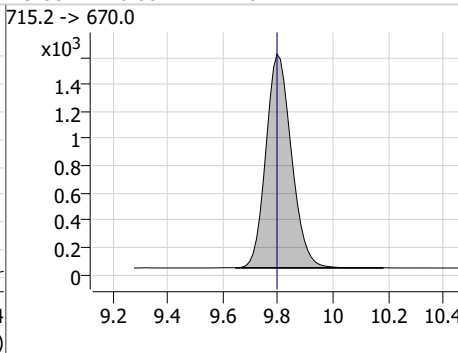
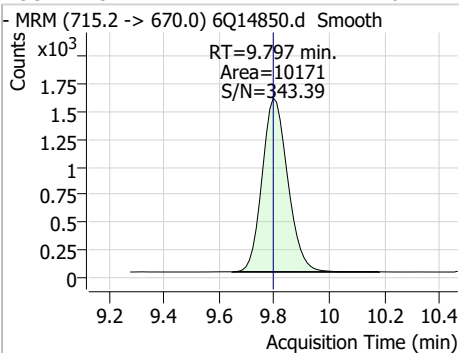
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.19	9.67	0.01	1189	498.1 -> 478.0	4.5	1.9	5.7



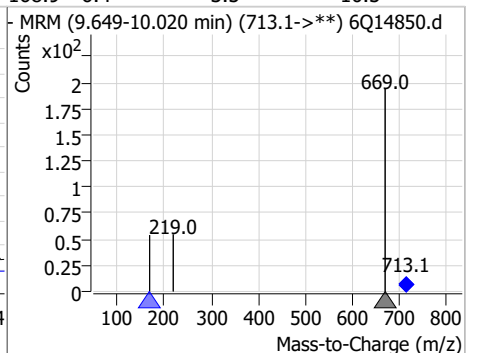
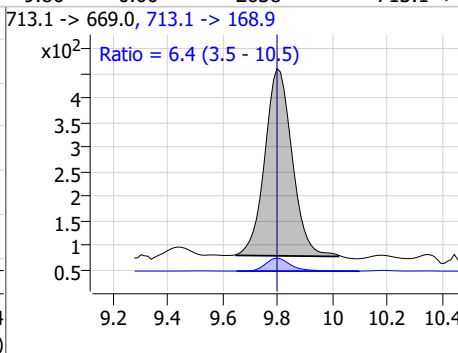
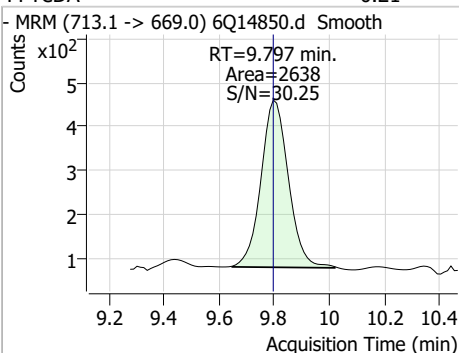
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.56	9.67	0.00	15310				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.20	9.80	0.00	10171				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.21	9.80	0.00	2638	713.1 -> 168.9	6.4	3.5	10.5

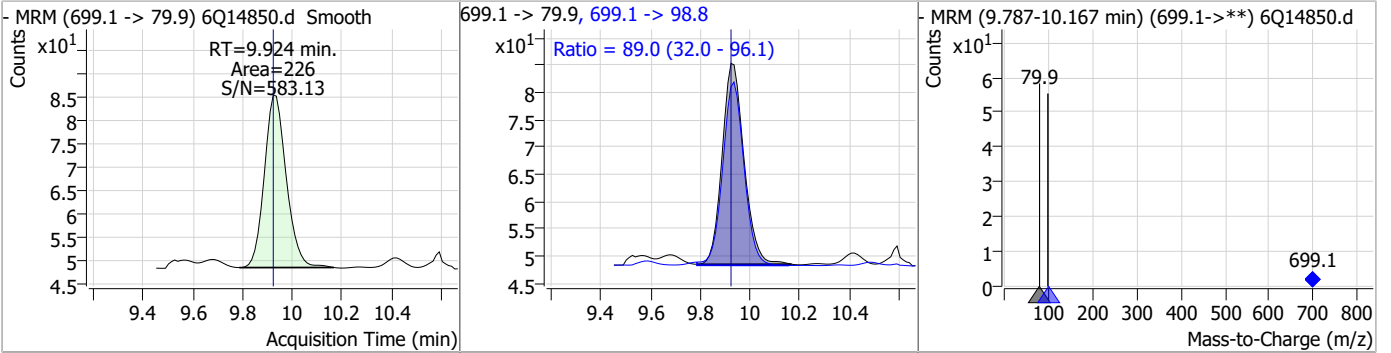


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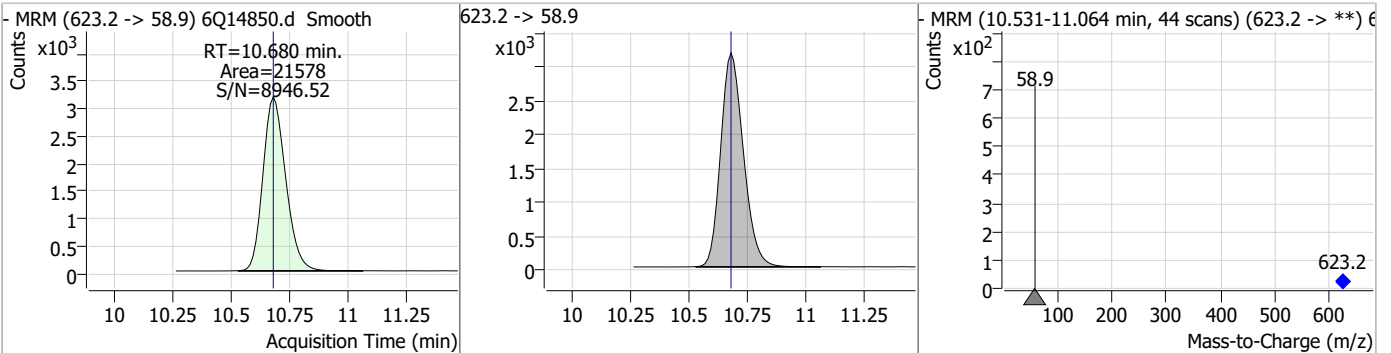
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Perfluorinated Compounds by LC/MS/MS

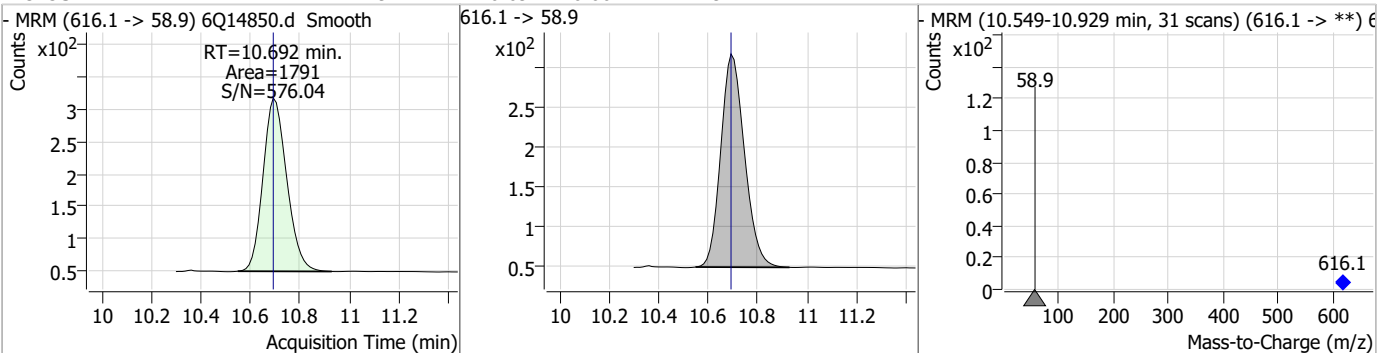
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.17	9.92	0.00	226	699.1 -> 98.8	89.0	32.0	96.1



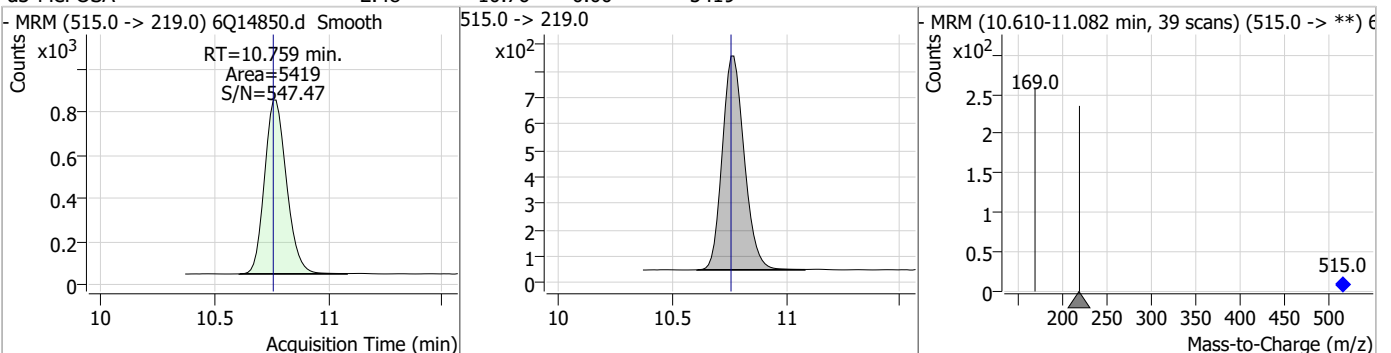
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.07	10.68	0.00	21578				



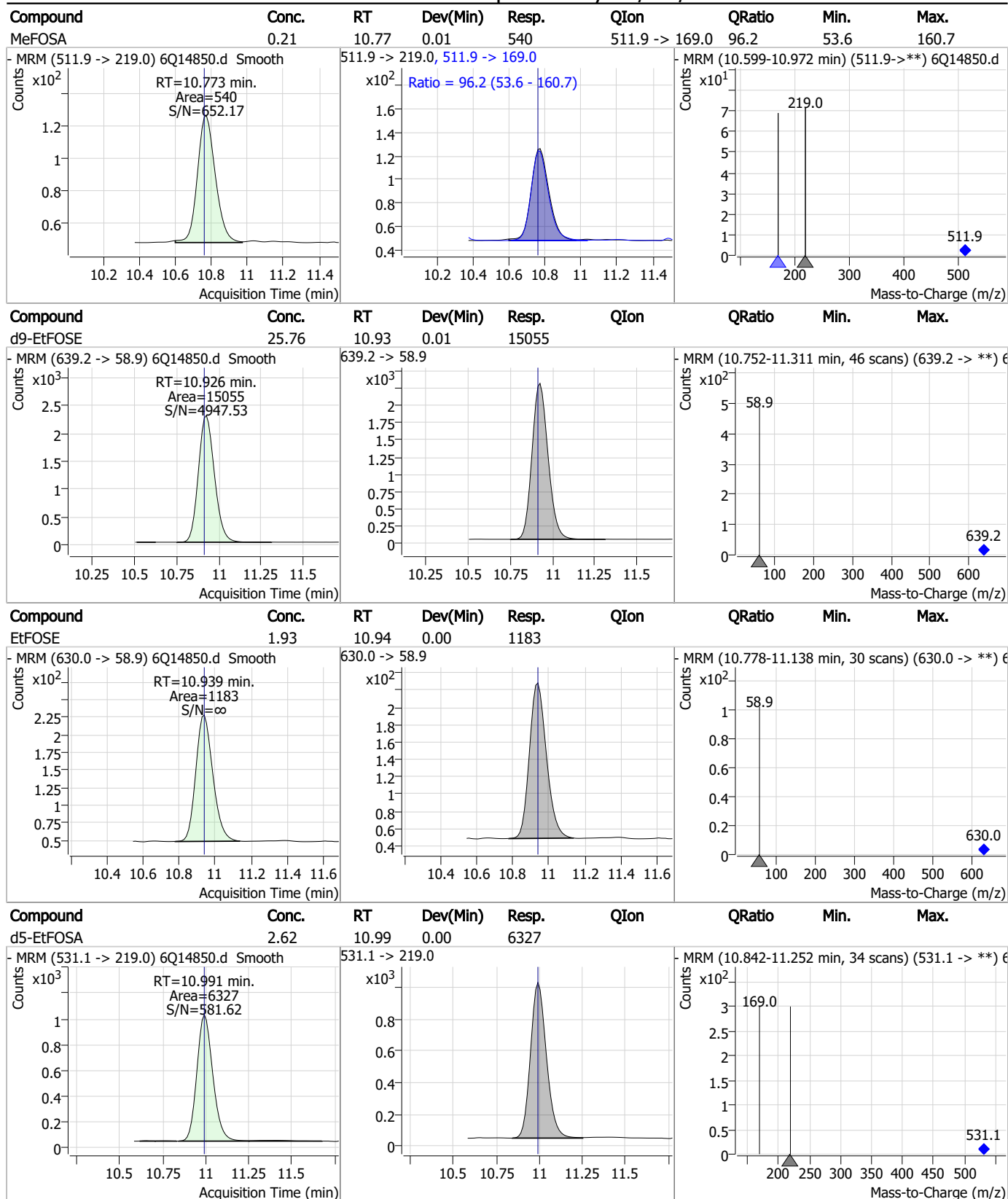
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.97	10.69	0.00	1791				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.48	10.76	0.00	5419				



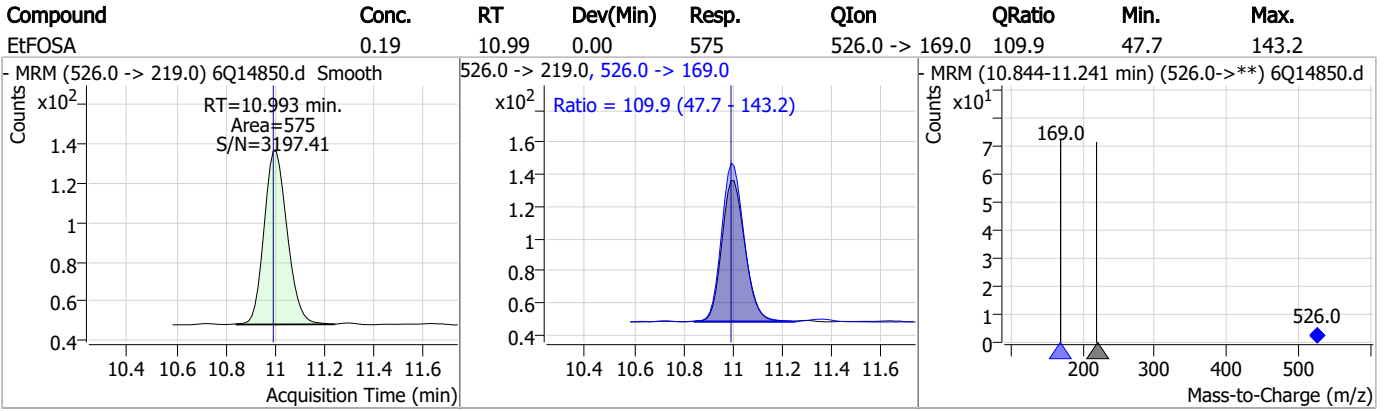
Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Manual Integration Approval Summary

Sample Number: S6Q225-IC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14850.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 21:46 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

7.7.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14851.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 10:00:11 PM
 Sample Name : ic225-2
 Vial : P1-A3
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	76731	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	37352	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	32317	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	33504	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	57565	2.50 µg/L	0.000
M9-PFNA	7.706	472.1 -> 427.0	16867	1.25 µg/L	-0.012
M6-PFDA	8.197	519.1 -> 474.1	15530	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	17052	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	18437	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	10878	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	15771	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	12373	2.50 µg/L	-0.012
M3-PFHxS	7.302	402.1 -> 79.9	8537	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	7518	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1761	5.00 µg/L	-0.012
M2-6:2FTS	6.949	429.1 -> 80.9	2170	5.00 µg/L	-0.012
M2-8:2FTS	7.986	529.1 -> 80.9	2583	5.00 µg/L	0.000
M3-MeFOSAA	8.243	573.2 -> 419.0	23009	5.00 µg/L	0.000
M3-HFPO-DA	5.971	286.9 -> 168.9	14013	10.00 µg/L	-0.012
M5-EtFOSAA	8.438	589.2 -> 419.0	19386	5.00 µg/L	-0.012
M7-MeFOSE	10.680	623.2 -> 58.9	23089	25.00 µg/L	0.000
M9-EtFOSE	10.926	639.2 -> 58.9	15658	25.00 µg/L	0.012
M5-EtFOSA	10.991	531.1 -> 219.0	6375	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5842	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	9254	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	33378	5.00 µg/L	0.000
18O2-PFHxS	7.301	403.0 -> 83.9	6333	2.50 µg/L	-0.012
13C4-PFOA	7.188	417.1 -> 372.0	68629	2.50 µg/L	0.000
13C2-PFDA	8.185	515.1 -> 470.1	20391	1.25 µg/L	-0.012
13C5-PFNA	7.706	468.0 -> 423.0	17382	1.25 µg/L	-0.012
13C2-PFHxA	5.606	315.1 -> 270.0	33187	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1761	4.85 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2170	4.61 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2583	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-PFDoDA	9.082	615.1 -> 570.0	18437	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.4%		
13C2-PFTeDA	9.797	715.2 -> 670.0	10878	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C3-PFBS	5.536	302.1 -> 79.9	12373	2.28 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.2%		
13C3-PFHxS	7.302	402.1 -> 79.9	8537	2.39 µg/L	0.000

7.7.3
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 = 95.5%	
13C4-PFBA	2.947	216.8 -> 171.9	76731	10.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.544	367.1 -> 322.0	33504	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C5-PFHxA	5.605	318.0 -> 273.0	32317	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C5-PFPeA	4.395	268.3 -> 223.0	37352	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C6-PFDA	8.197	519.1 -> 474.1	15530	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C7-PFUnDA	8.652	570.0 -> 525.1	17052	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C8-FOSA	9.669	506.1 -> 77.8	15771	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C8-PFOA	7.187	421.1 -> 376.0	57565	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C8-PFOS	8.360	507.1 -> 79.9	7518	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C9-PFNA	7.706	472.1 -> 427.0	16867	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.7%	
d3-MeFOSAA	8.243	573.2 -> 419.0	23009	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C3-HFPO-DA	5.971	286.9 -> 168.9	14013	9.35 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.5%	
d3-MeFOSA	10.759	515.0 -> 219.0	5842	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
d5-EtFOSAA	8.438	589.2 -> 419.0	19386	4.96 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d7-MeFOSE	10.680	623.2 -> 58.9	23089	25.93 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
d9-EtFOSE	10.926	639.2 -> 58.9	15658	24.92 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d5-EtFOSA	10.991	531.1 -> 219.0	6375	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	7297	1.79 µg/L	98
		327.1 -> 80.9	1779		
6:2FTS	6.950	427.1 -> 407.0	6717	2.08 µg/L	96
		427.1 -> 80.9	1312		
8:2FTS	7.974	527.1 -> 507.0	3134	1.65 µg/L	86
		527.1 -> 80.8	1064		
EtFOSAA	8.452	584.2 -> 419.1	1679	0.48 µg/L	98
		584.2 -> 526.0	894		
FOSA	9.660	498.1 -> 77.9	3059	0.49 µg/L	99
		498.1 -> 478.0	122		
MeFOSAA	8.244	570.1 -> 419.0	2119	0.44 µg/L	m 96
		570.1 -> 483.0	410		
PFBA	2.956	212.8 -> 168.9	3838	1.83 µg/L	100
PFBS	5.537	298.7 -> 79.9	2218	0.41 µg/L	96
		298.7 -> 98.8	1066		
PFDA	8.198	512.9 -> 469.0	9057	0.47 µg/L	97
		512.9 -> 219.0	1207		
PFDODA	9.082	613.1 -> 569.0	7935	0.50 µg/L	98
		613.1 -> 319.0	952		
PFDS	9.246	599.0 -> 79.9	1209	0.49 µg/L	97

7.7.3
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	580			
PFHpA	6.544	363.1 -> 319.0	9680	0.45	µg/L	100
		363.1 -> 169.0	1338			
PFHpS	7.855	449.0 -> 79.9	1566	0.47	µg/L	97
		449.0 -> 98.9	897			
PFHxA	5.607	313.0 -> 269.0	6488	0.48	µg/L	99
		313.0 -> 118.9	281			
PFHxS	7.303	398.7 -> 79.9	1697	0.40	µg/L	m 97
		398.7 -> 98.9	1011			
PFNA	7.707	463.0 -> 419.0	5923	0.50	µg/L	98
		463.0 -> 219.0	1132			
PFNS	8.826	548.8 -> 79.9	1866	0.53	µg/L	90
		548.8 -> 98.9	951			
PFOA	7.189	413.0 -> 369.0	11730	0.43	µg/L	96
		413.0 -> 169.0	1719			
PFOS	8.348	498.9 -> 79.9	1673	0.48	µg/L	m 100
		498.9 -> 98.8	1059			
PFPeA	4.397	263.0 -> 219.0	8367	0.94	µg/L	100
PFPeS	6.609	349.1 -> 79.9	2366	0.46	µg/L	98
		349.1 -> 98.9	1283			
PFTeDA	9.797	713.1 -> 669.0	6594	0.48	µg/L	99
		713.1 -> 168.9	442			
PFTrDA	9.466	663.0 -> 619.0	6915	0.49	µg/L	98
		663.0 -> 168.9	588			
PFUnDA	8.652	563.1 -> 519.0	6660	0.41	µg/L	91
		563.1 -> 269.1	1165			
11CI-PF3OUdS	9.517	630.9 -> 450.9	15299	1.76	µg/L	96
		632.9 -> 452.9	5167			
9CI-PF3ONS	8.691	530.8 -> 351.0	28438	1.81	µg/L	96
		532.8 -> 353.0	9334			
ADONA	6.794	376.9 -> 250.9	56968	1.89	µg/L	100
		376.9 -> 84.8	12679			
HFPO-DA	5.971	284.9 -> 168.9	2798	1.90	µg/L	99
		284.9 -> 184.9	342			
3:3FTCA	3.851	241.0 -> 177.0	1003	2.26	µg/L	98
		241.0 -> 117.0	143			
5:3FTCA	6.259	341.0 -> 237.1	33707	12.26	µg/L	96
		341.0 -> 217.0	29254			
7:3FTCA	7.672	441.0 -> 316.9	15844	11.47	µg/L	85
		441.0 -> 336.9	32451			
EtFOSA	10.993	526.0 -> 219.0	1489	0.49	µg/L	98
		526.0 -> 169.0	1457			
EtFOSE	10.939	630.0 -> 58.9	3069	4.81	µg/L	100
MeFOSA	10.773	511.9 -> 219.0	1339	0.48	µg/L	96
		511.9 -> 169.0	1488			
MeFOSE	10.692	616.1 -> 58.9	4409	4.52	µg/L	100
PFDoDS	9.924	699.1 -> 79.9	725	0.52	µg/L	93
		699.1 -> 98.8	423			
NFDHA	5.488	295.0 -> 201.0	858	0.98	µg/L	98
		295.0 -> 84.9	371			
PFMBA	4.806	279.0 -> 85.1	2644	0.91	µg/L	100
PFMPA	3.526	229.0 -> 84.9	2301	0.90	µg/L	100
PFEESA	6.089	314.8 -> 134.9	16806	0.87	µg/L	99
		314.8 -> 82.9	444			

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

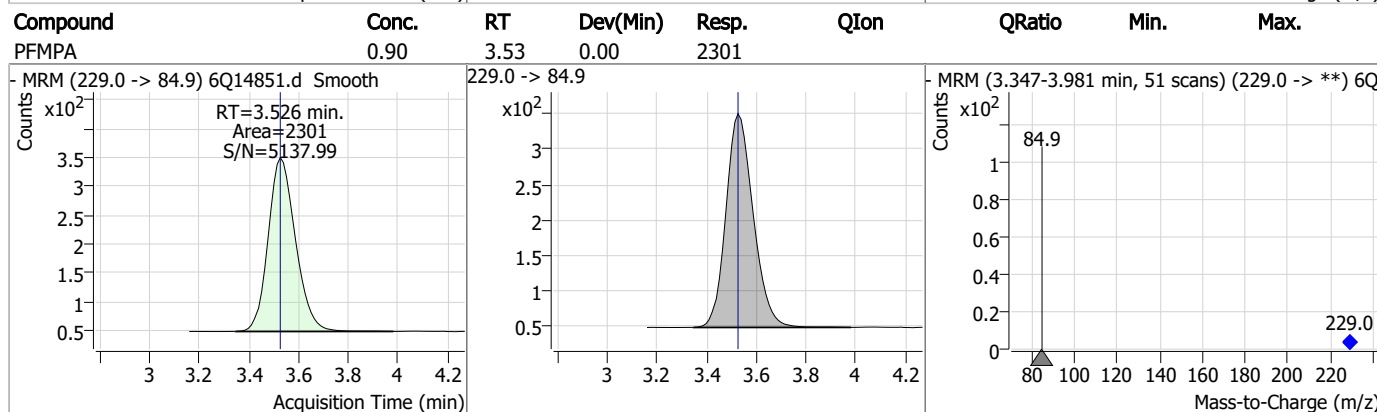
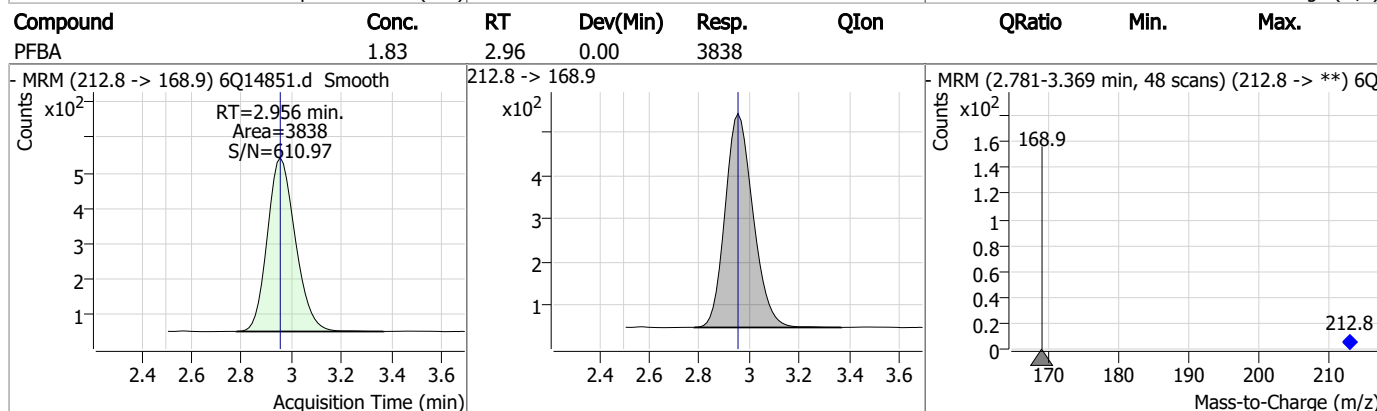
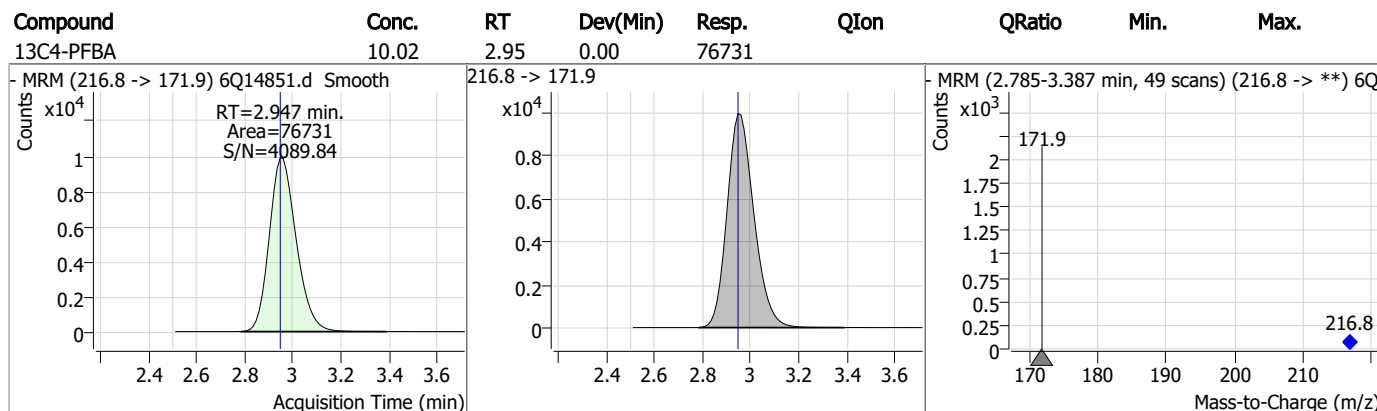
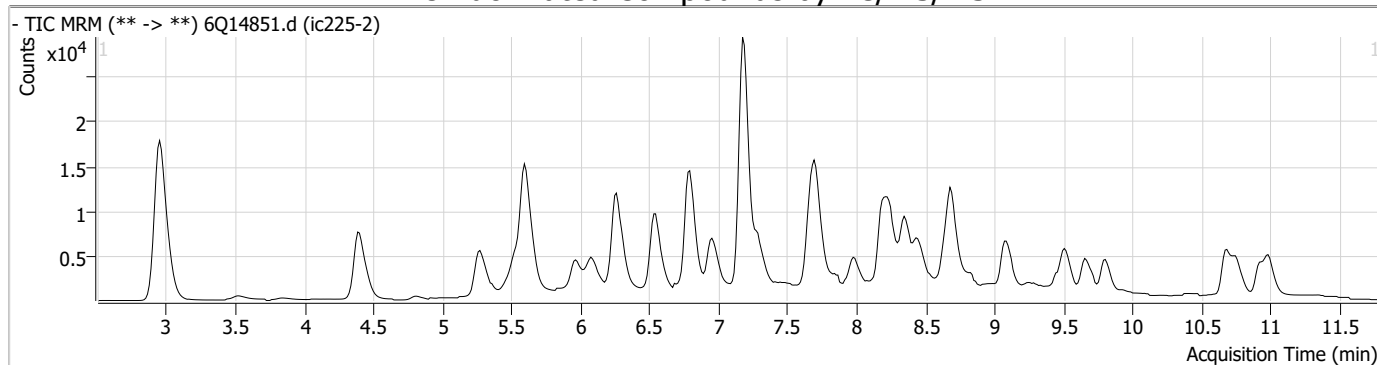
Perfluorinated Compounds by LC/MS/MS

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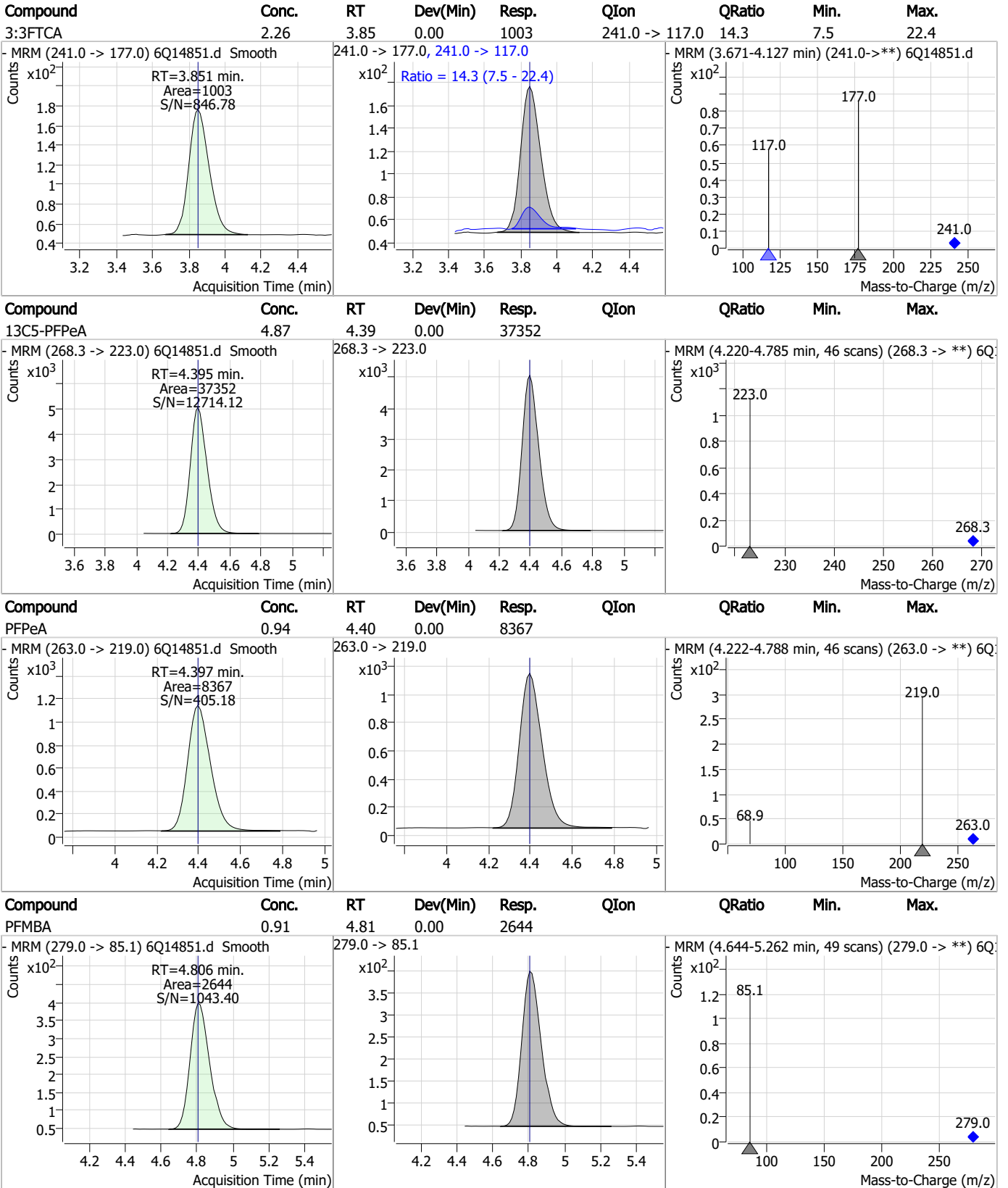
7.7.3

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

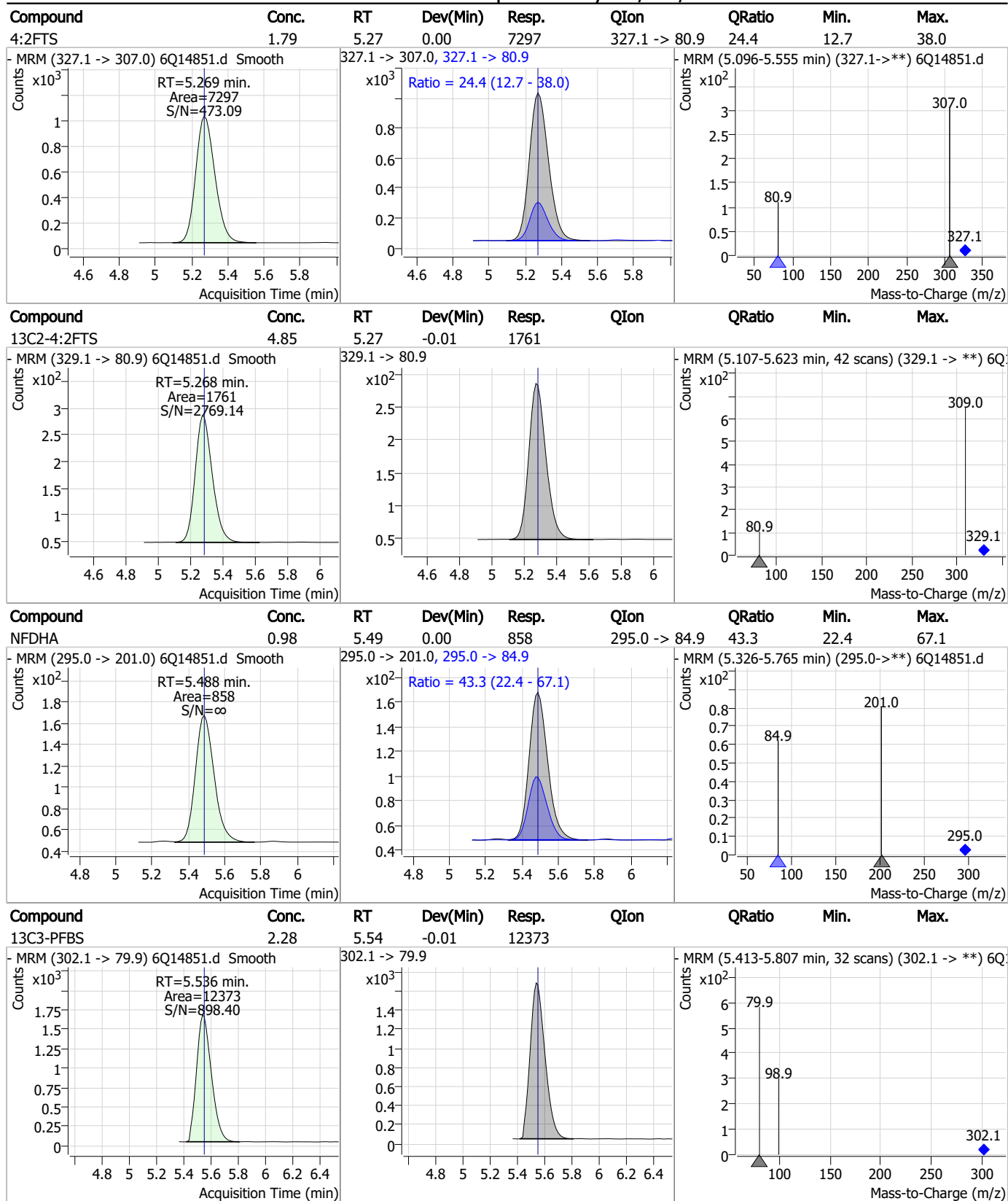


7.7.3

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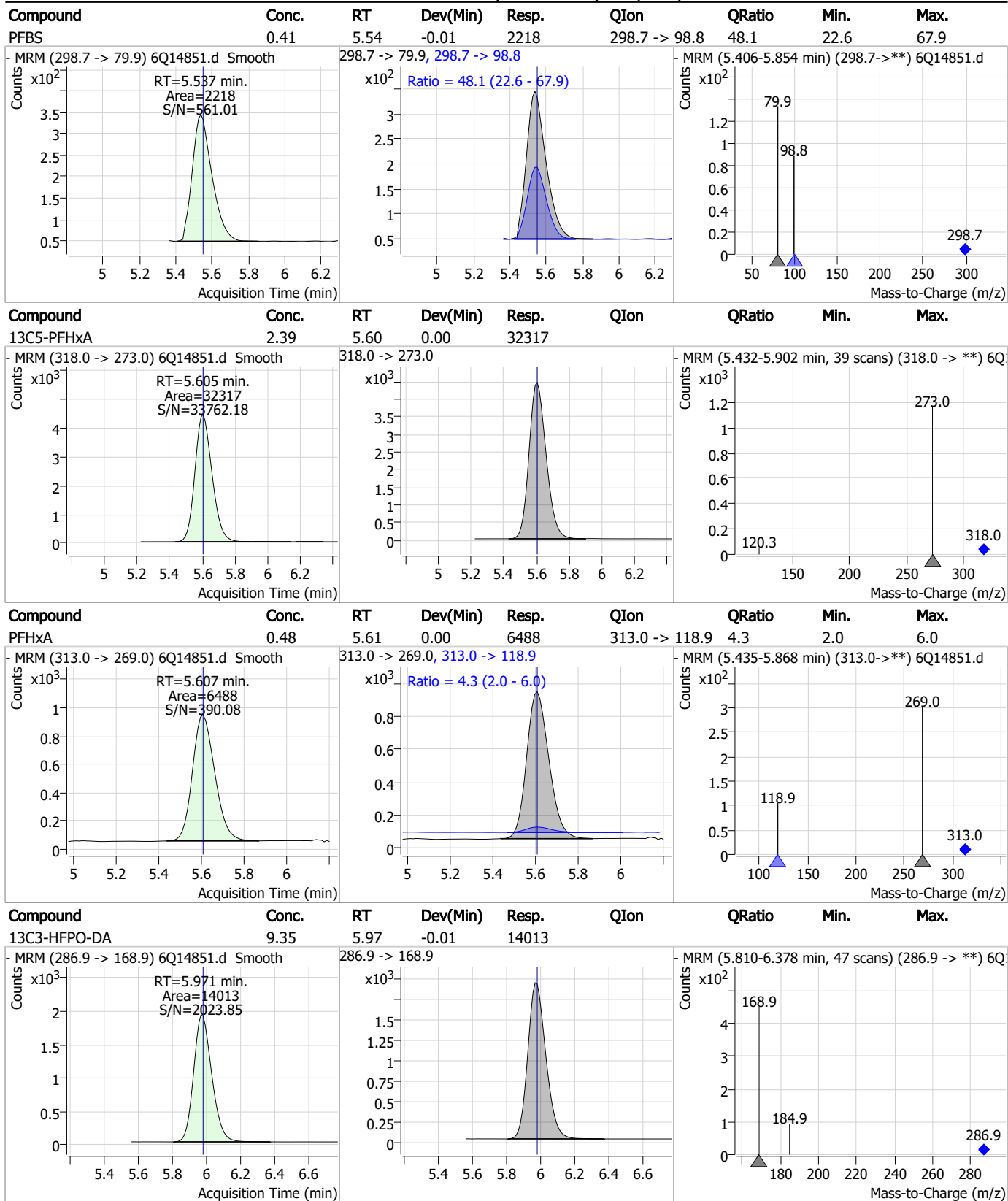


Perfluorinated Compounds by LC/MS/MS



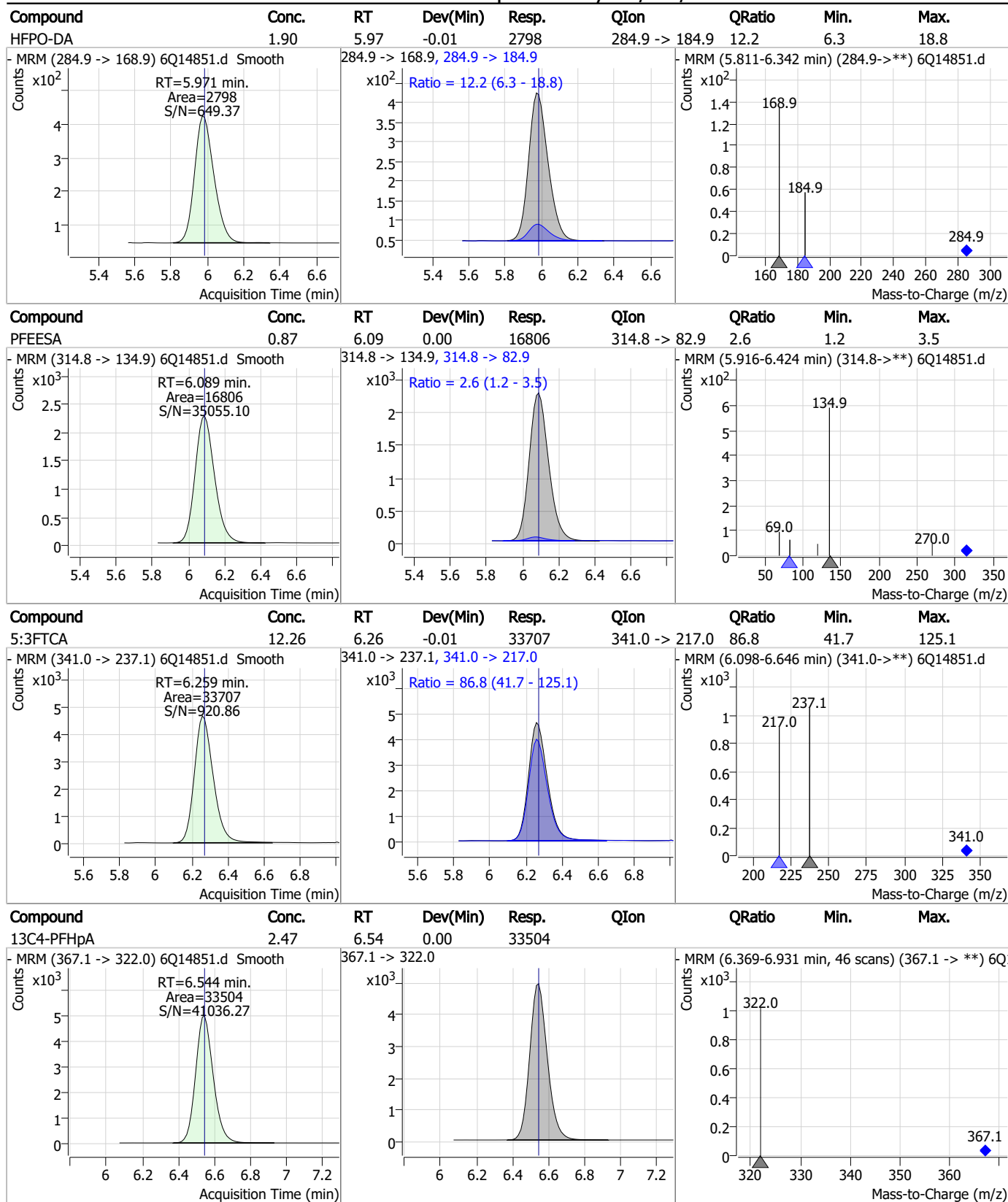
7.7.3
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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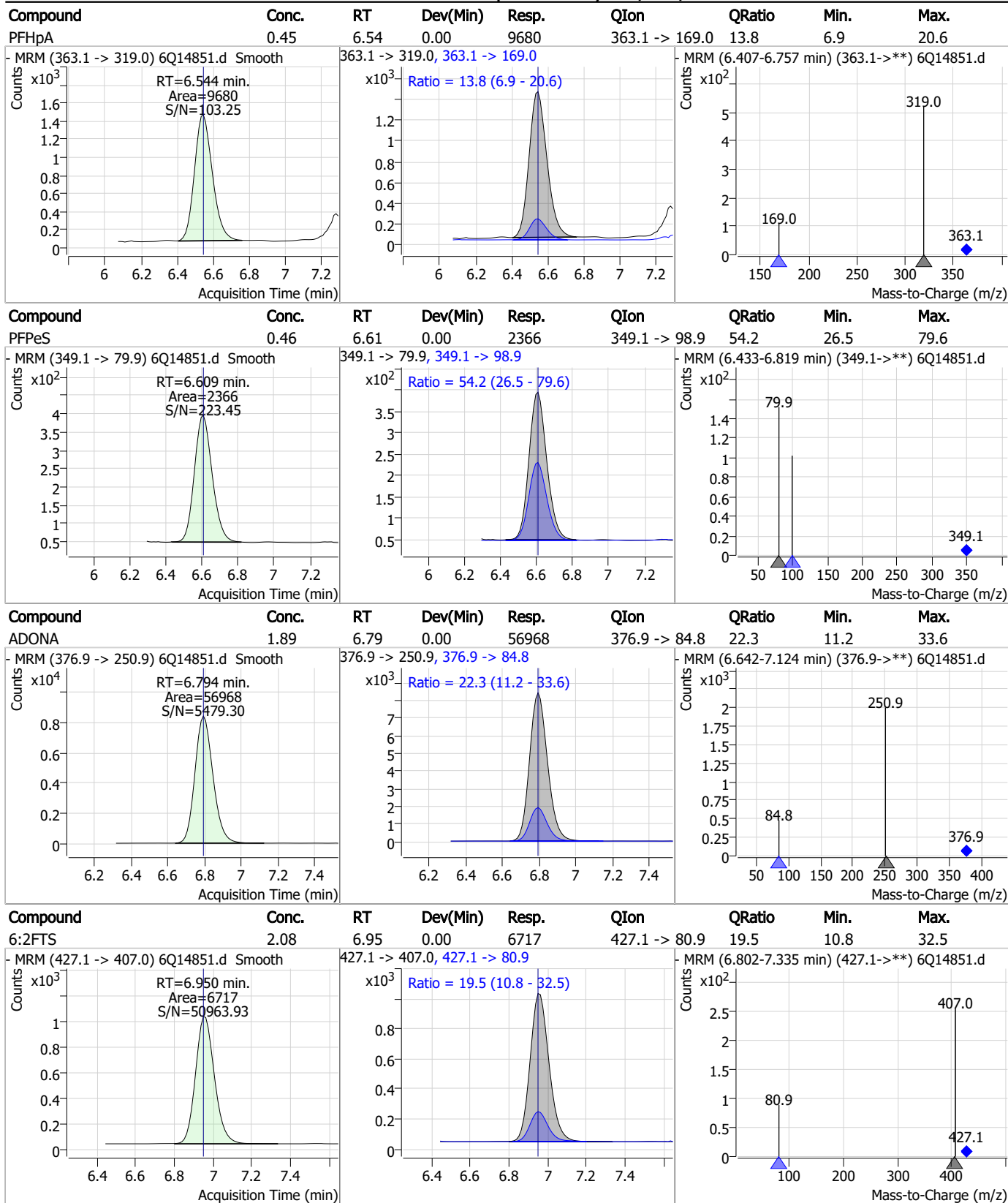
Perfluorinated Compounds by LC/MS/MS



7.7.3

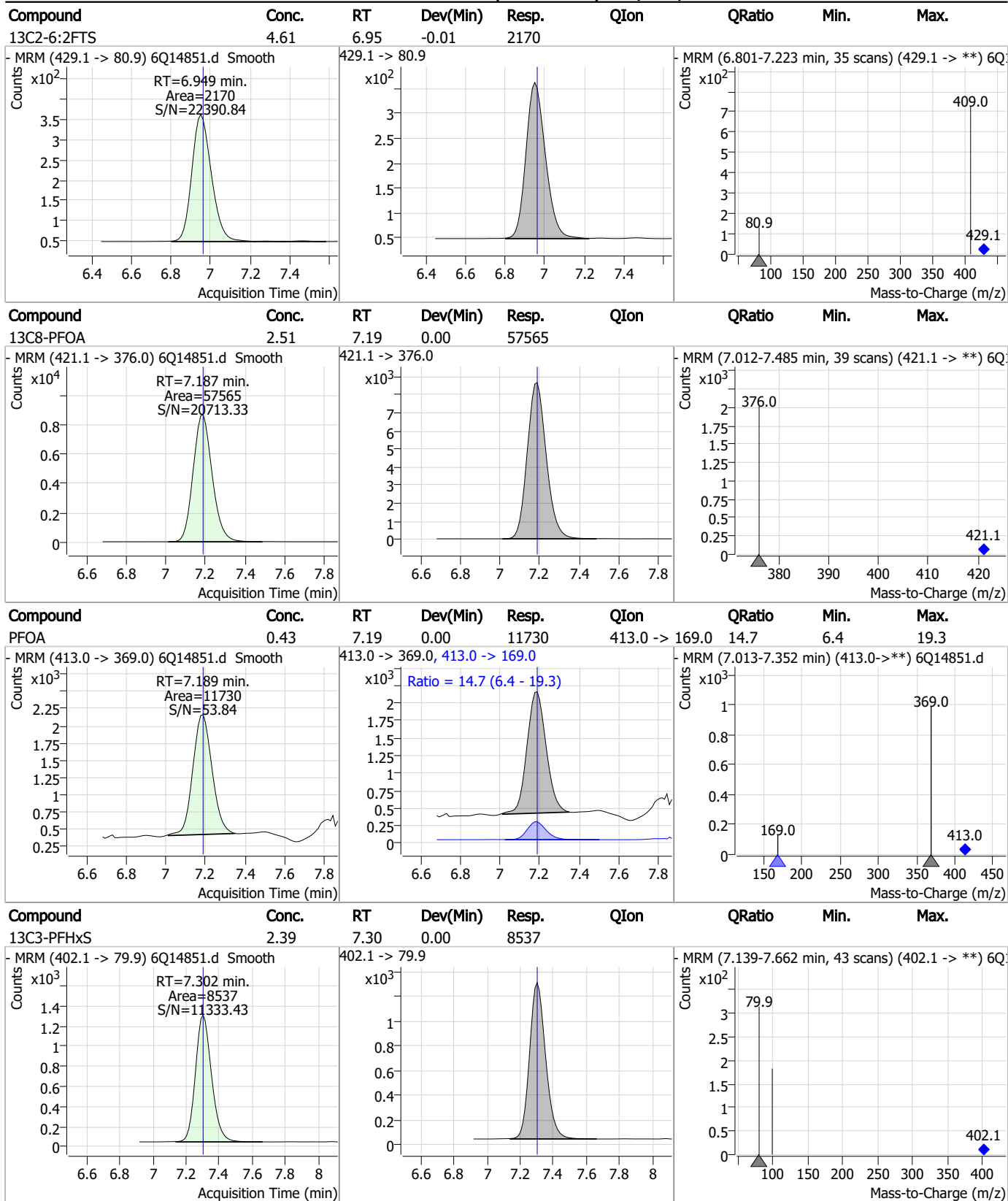
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Perfluorinated Compounds by LC/MS/MS



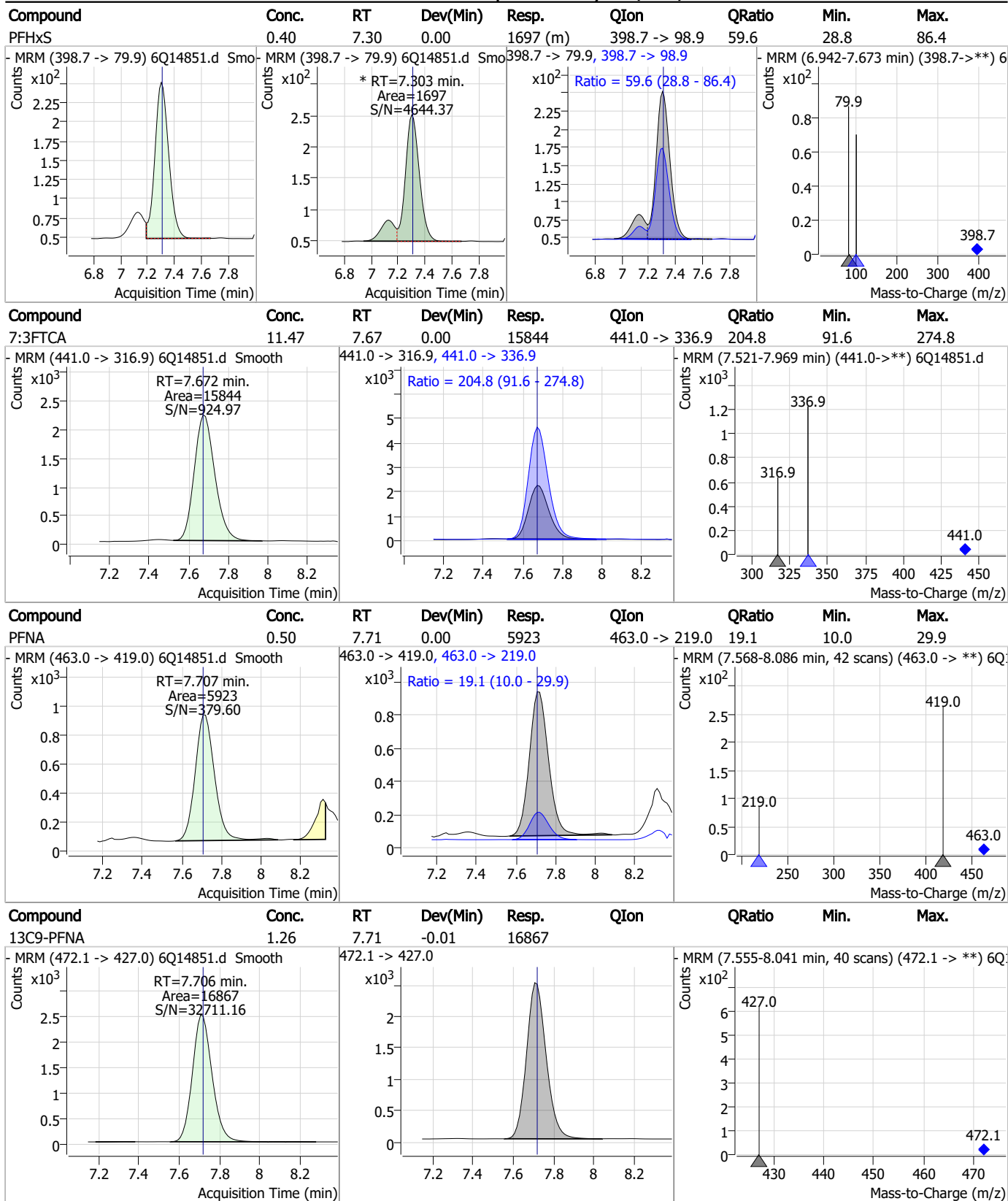
7.7.3
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Perfluorinated Compounds by LC/MS/MS



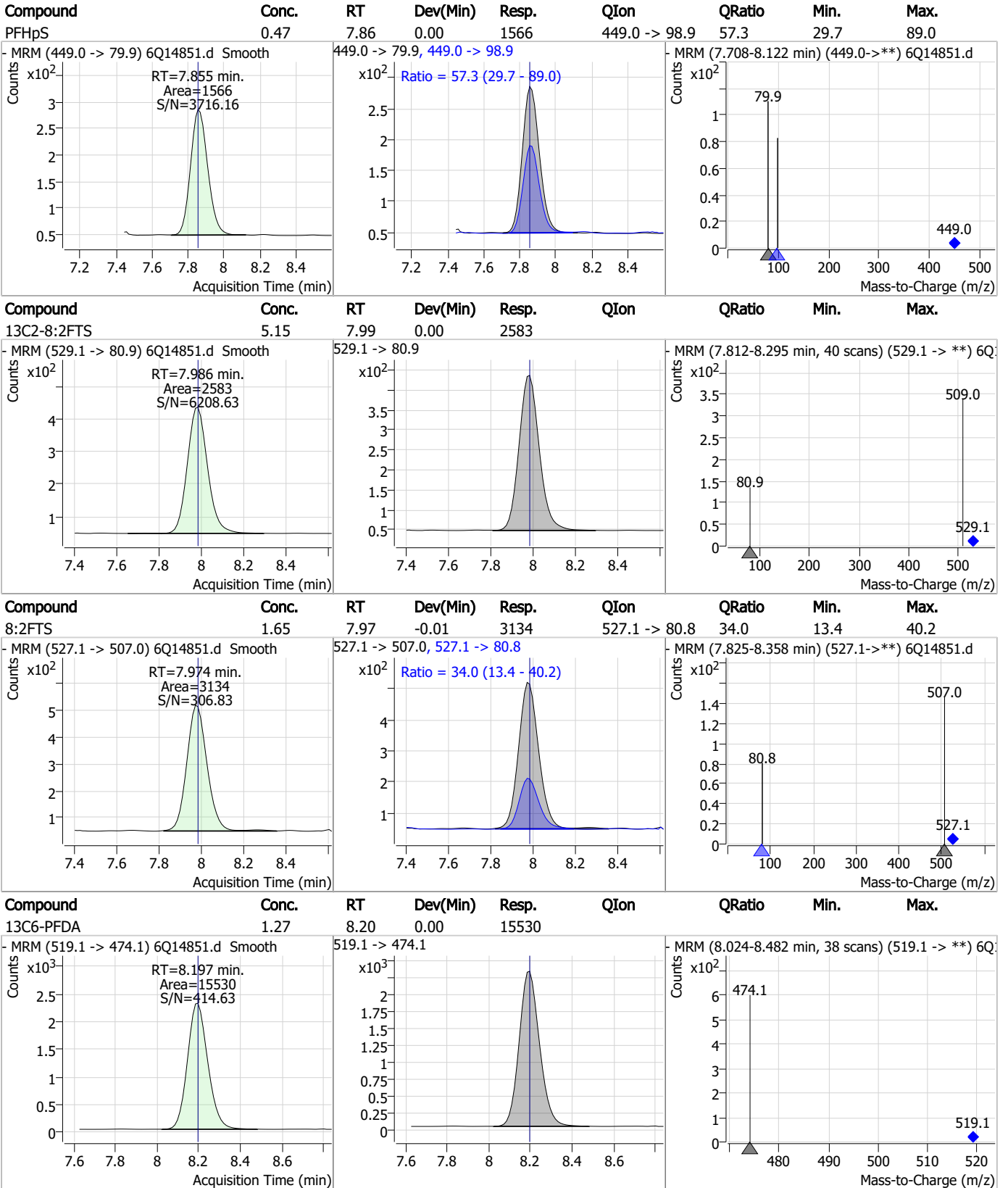
7.7.3
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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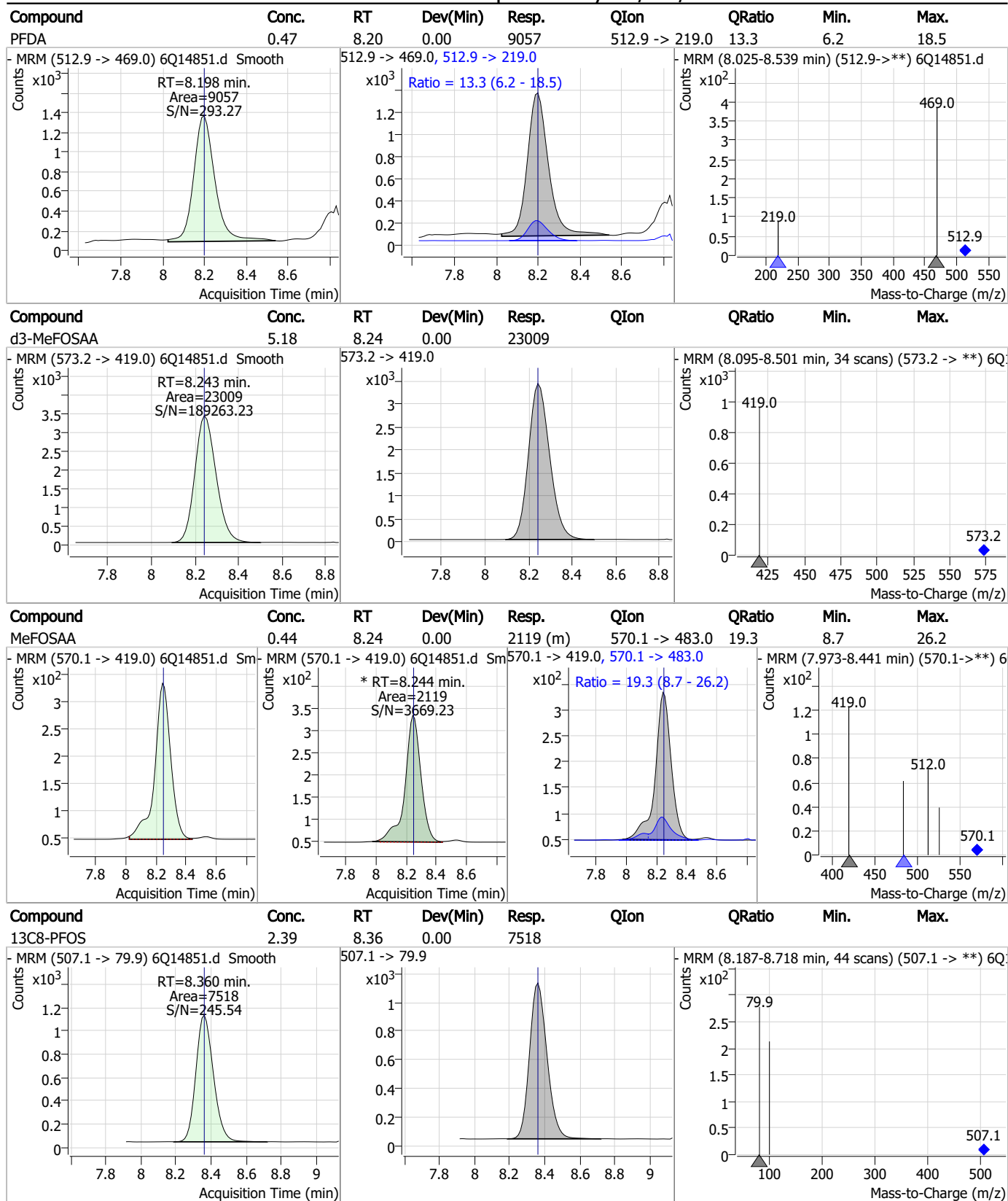
Perfluorinated Compounds by LC/MS/MS



7.7.3

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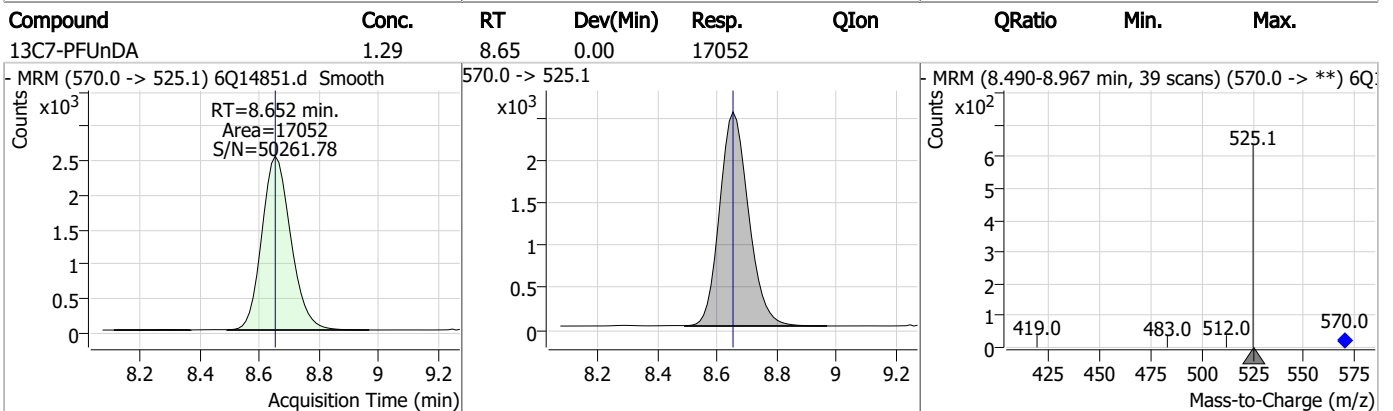
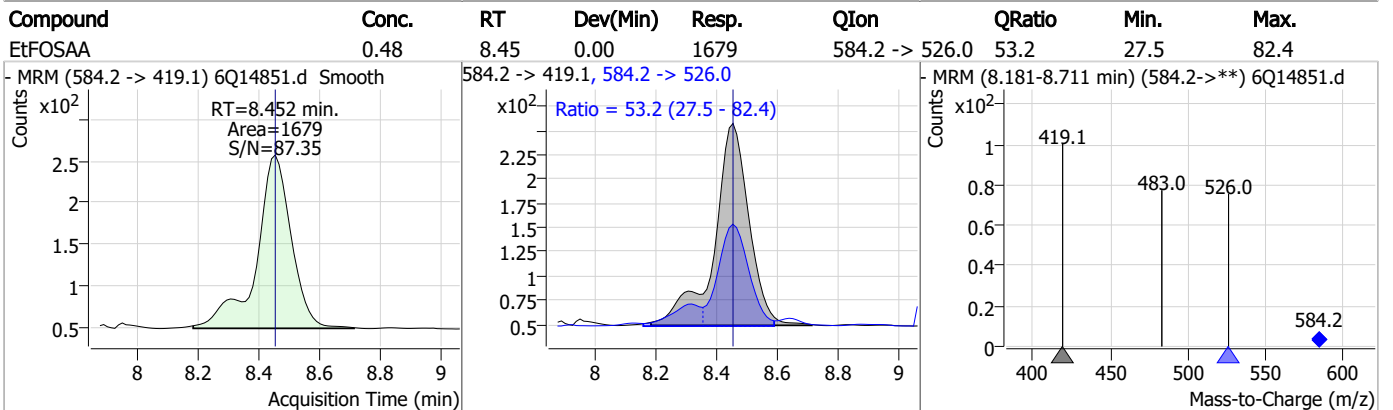
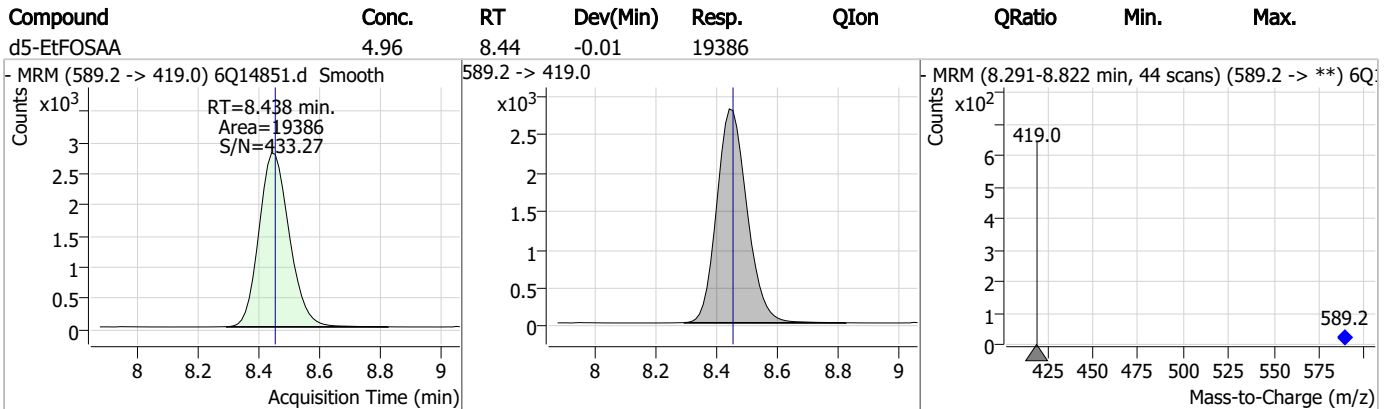
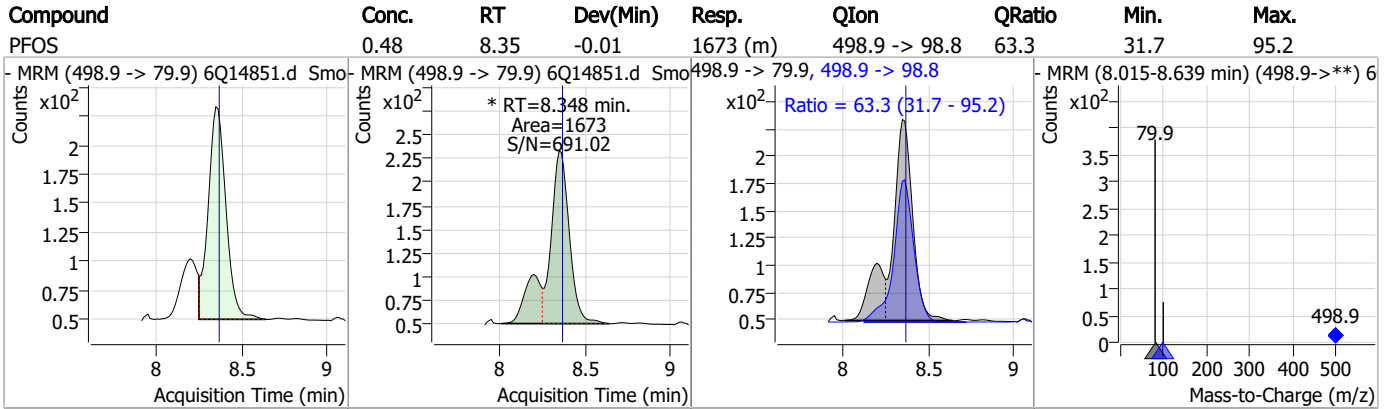
Perfluorinated Compounds by LC/MS/MS



7.7.3

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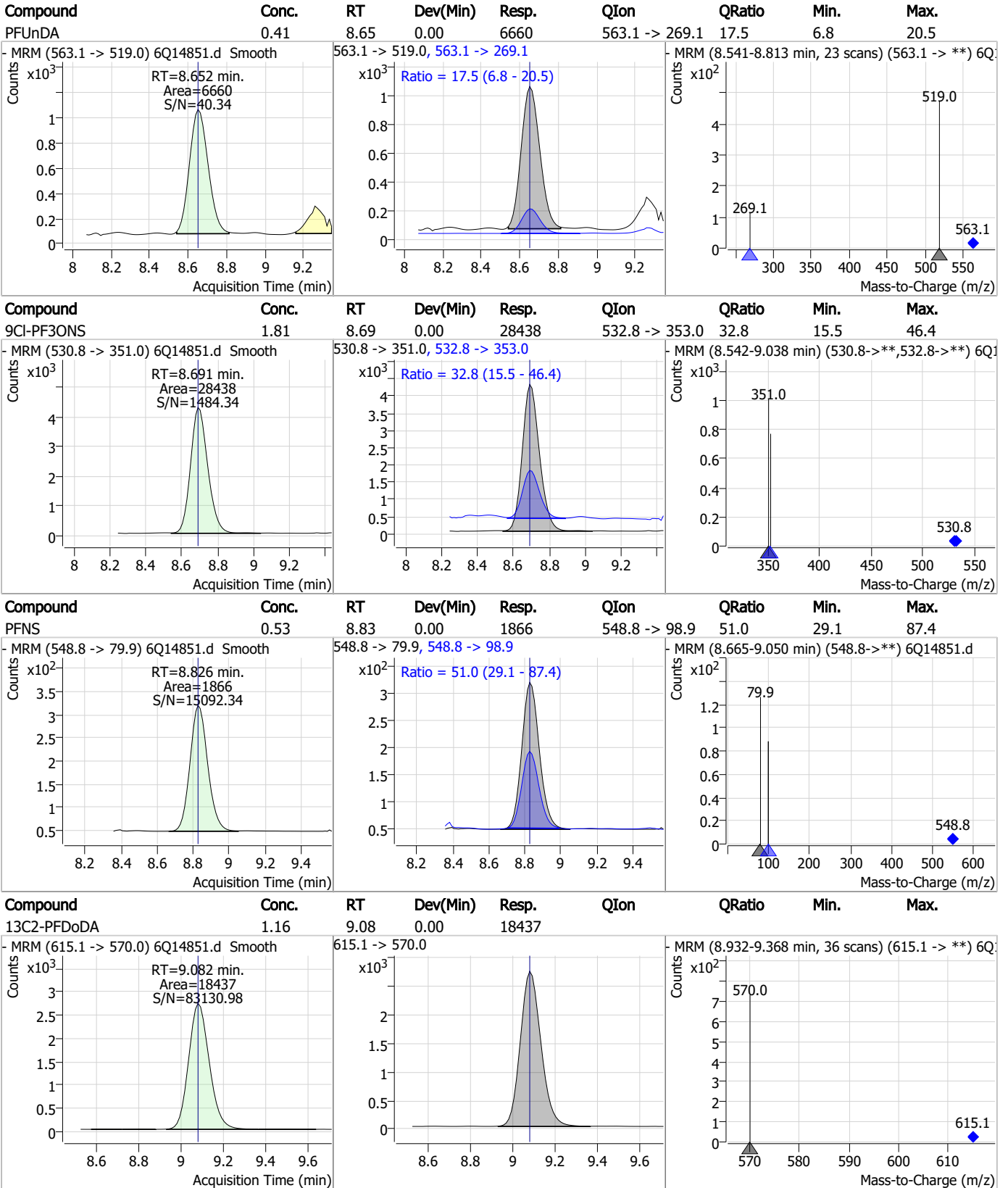
Perfluorinated Compounds by LC/MS/MS



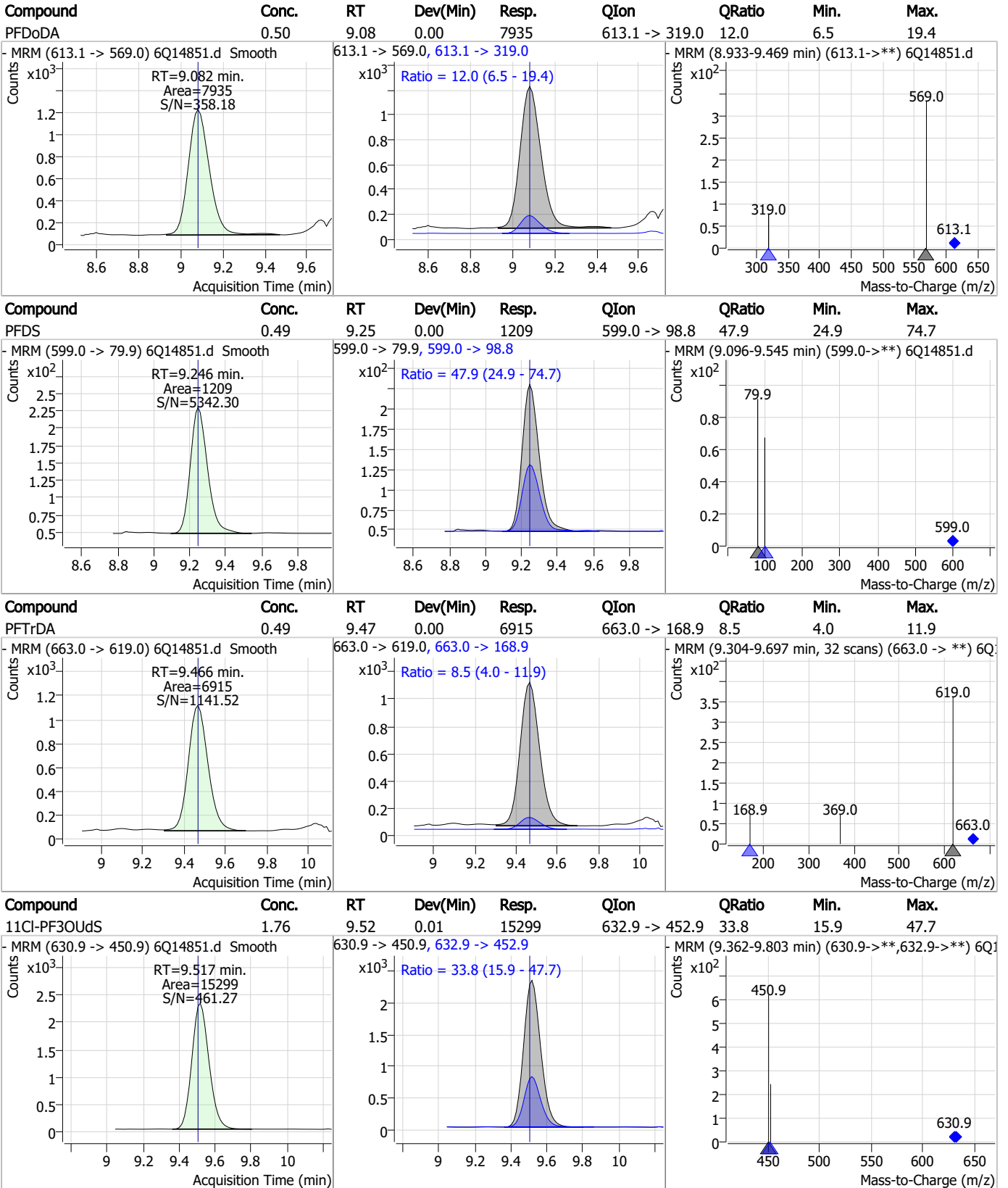
7.7.3

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



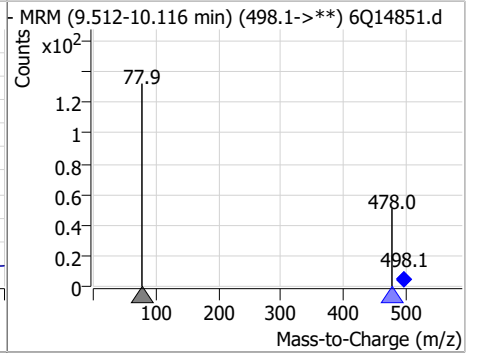
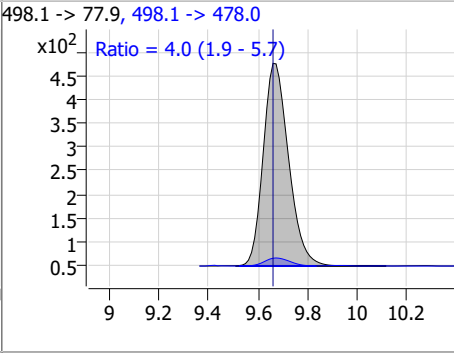
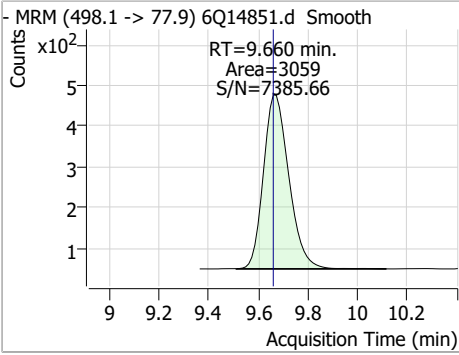
7.7.3

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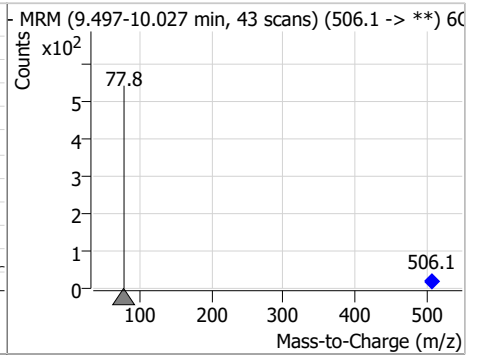
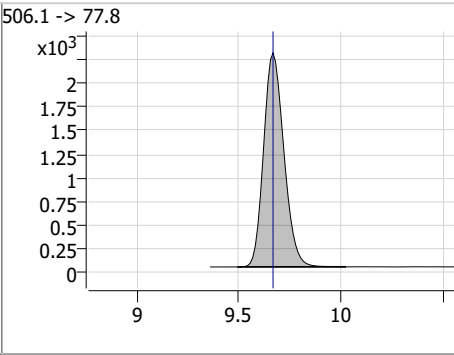
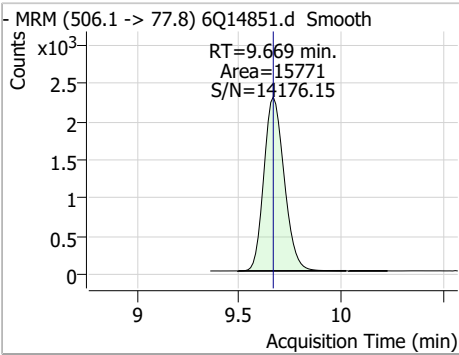


Perfluorinated Compounds by LC/MS/MS

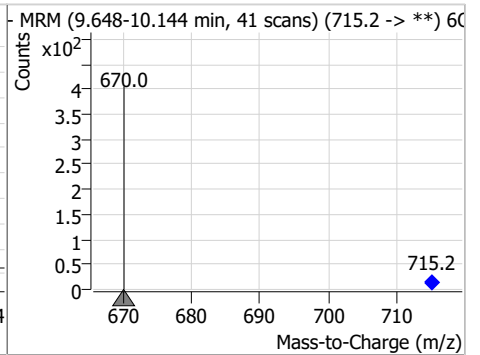
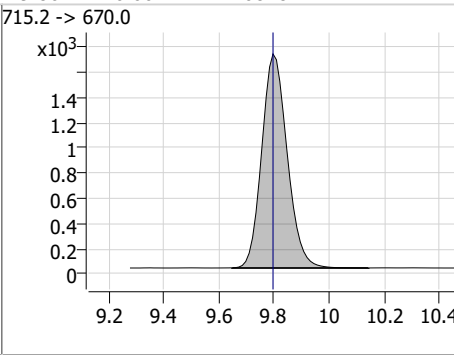
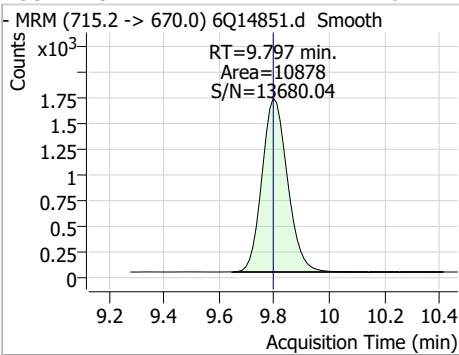
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.49	9.66	0.00	3059	498.1 -> 478.0	4.0	1.9	5.7



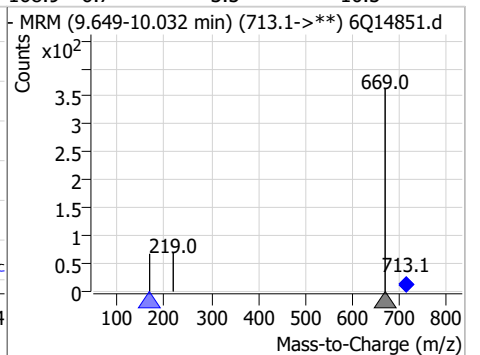
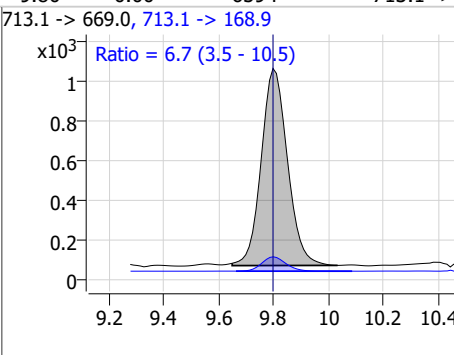
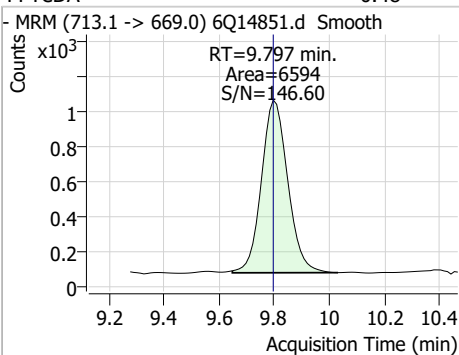
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.46	9.67	0.00	15771				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.20	9.80	0.00	10878				



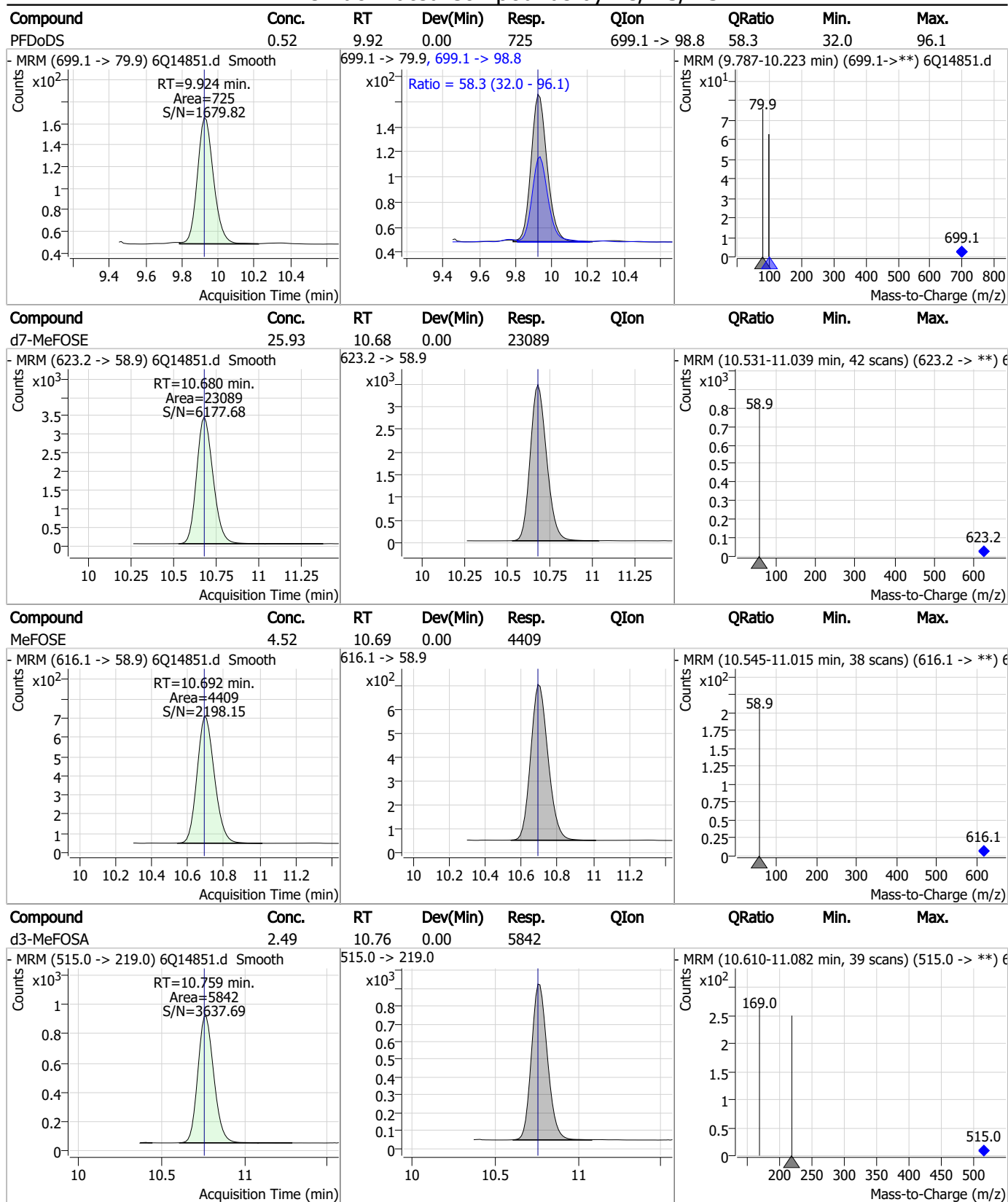
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.48	9.80	0.00	6594	713.1 -> 168.9	6.7	3.5	10.5



7.7.3
7



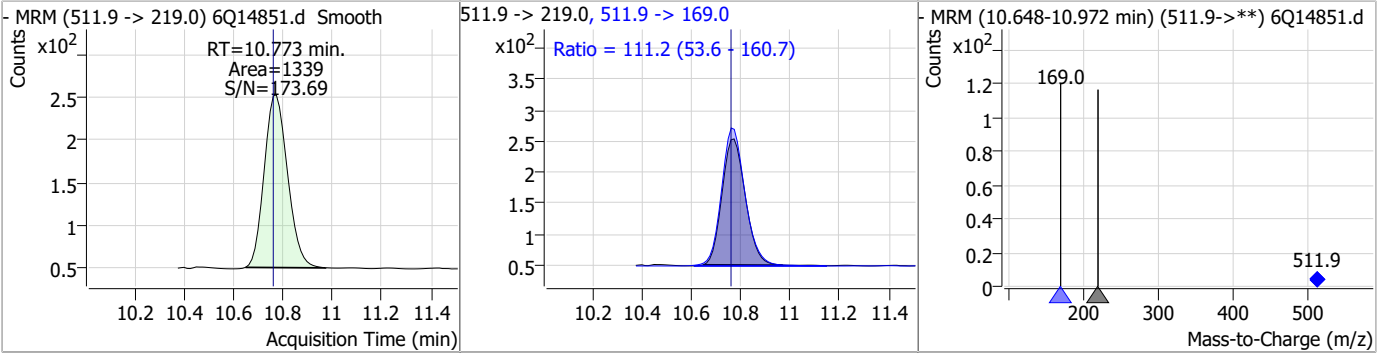
Perfluorinated Compounds by LC/MS/MS



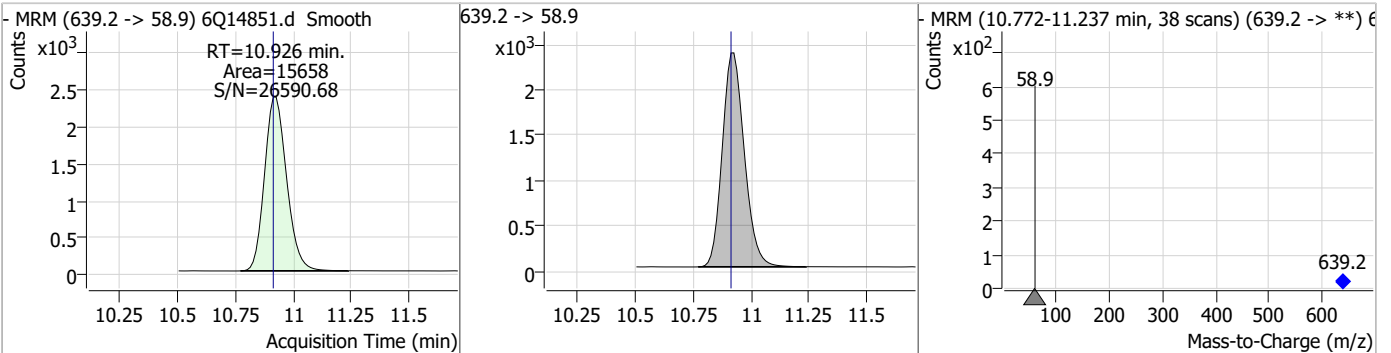
7.7.3
7

Perfluorinated Compounds by LC/MS/MS

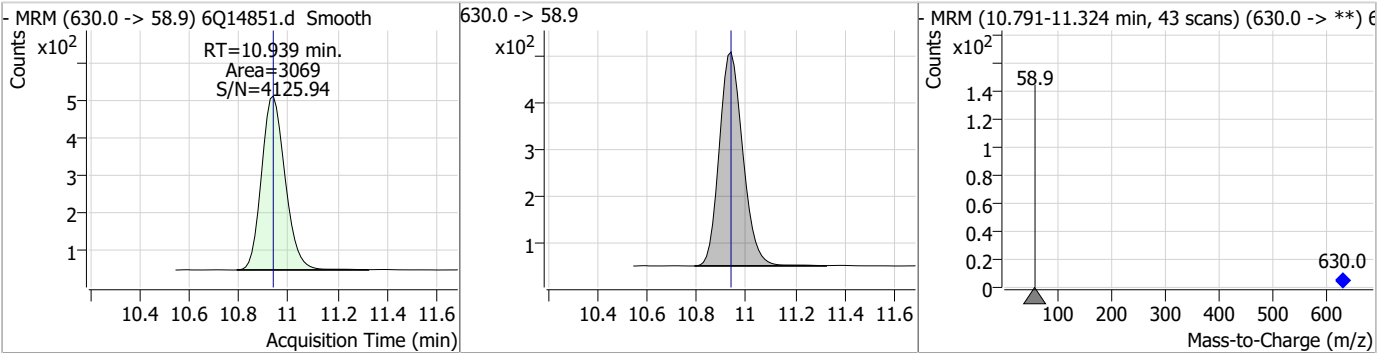
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	0.48	10.77	0.01	1339	511.9 -> 169.0	111.2	53.6	160.7



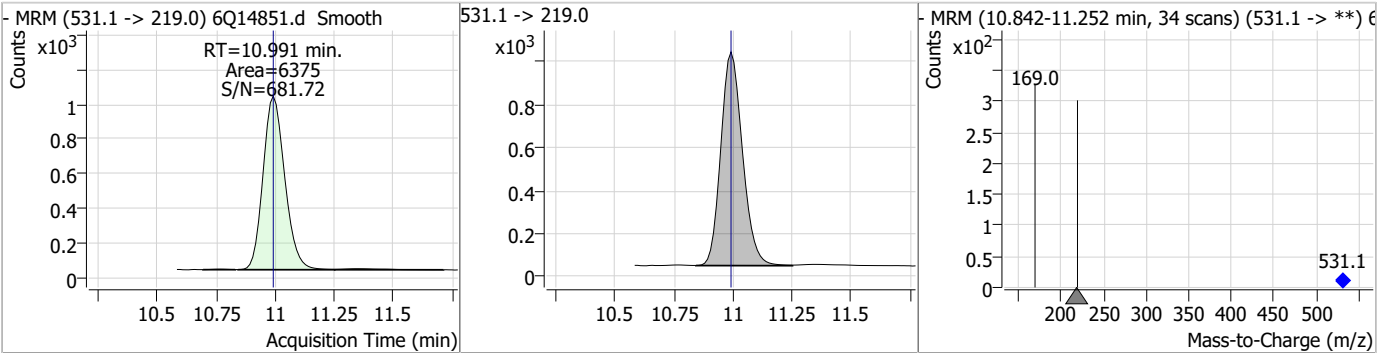
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.92	10.93	0.01	15658	639.2 -> 58.9			



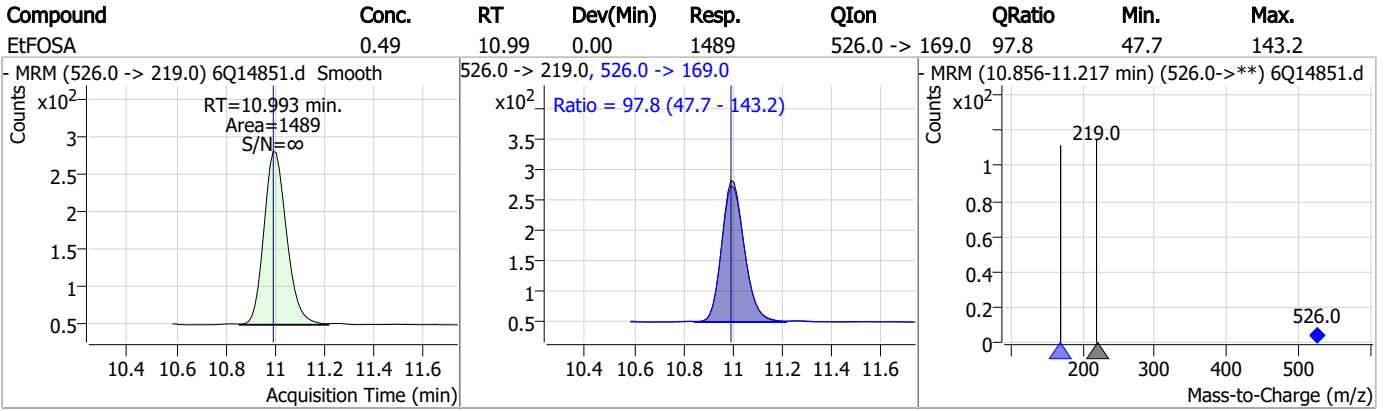
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	4.81	10.94	0.00	3069	630.0 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.46	10.99	0.00	6375	531.1 -> 219.0			



Perfluorinated Compounds by LC/MS/MS



7.7.3

7

Manual Integration Approval Summary

Sample Number: S6Q225-IC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14851.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 22:00 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.7.3.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 03/16/23 16:23

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14852.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 10:14:09 PM
 Sample Name : ic225-3
 Vial : P1-A4
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	79922	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	38751	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	35355	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	33747	2.50 µg/L	0.000
M8-PFOA	7.175	421.1 -> 376.0	57967	2.50 µg/L	-0.012
M9-PFNA	7.718	472.1 -> 427.0	19090	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	15511	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	16460	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	20420	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	11618	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	16305	2.50 µg/L	0.000
M3-PFBS	5.548	302.1 -> 79.9	13216	2.50 µg/L	0.000
M3-PFHxS	7.302	402.1 -> 79.9	8509	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	7958	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1676	5.00 µg/L	-0.012
M2-6:2FTS	6.949	429.1 -> 80.9	2359	5.00 µg/L	-0.012
M2-8:2FTS	7.986	529.1 -> 80.9	2515	5.00 µg/L	0.000
M3-MeFOSAA	8.243	573.2 -> 419.0	23182	5.00 µg/L	0.000
M3-HFPO-DA	5.983	286.9 -> 168.9	15298	10.00 µg/L	0.000
M5-EtFOSAA	8.451	589.2 -> 419.0	21422	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	23268	25.00 µg/L	0.000
M9-EtFOSE	10.914	639.2 -> 58.9	16297	25.00 µg/L	0.000
M5-EtFOSA	10.991	531.1 -> 219.0	6385	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5814	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	9188	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	34509	5.00 µg/L	0.000
18O2-PFHxS	7.301	403.0 -> 83.9	6176	2.50 µg/L	-0.012
13C4-PFOA	7.188	417.1 -> 372.0	69331	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	20084	1.25 µg/L	0.000
13C5-PFNA	7.706	468.0 -> 423.0	19789	1.25 µg/L	-0.012
13C2-PFHxA	5.606	315.1 -> 270.0	34087	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1676	4.73 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2359	5.14 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2515	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C2-PFDoDA	9.082	615.1 -> 570.0	20420	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C2-PFTeDA	9.797	715.2 -> 670.0	11618	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C3-PFBS	5.548	302.1 -> 79.9	13216	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C3-PFHxS	7.302	402.1 -> 79.9	8509	2.44 µg/L	0.000

7.7.4
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C4-PFBA	2.947	216.8 -> 171.9	79922	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.544	367.1 -> 322.0	33747	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C5-PFHxA	5.605	318.0 -> 273.0	35355	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C5-PFPeA	4.395	268.3 -> 223.0	38751	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C6-PFDA	8.197	519.1 -> 474.1	15511	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C7-PFUnDA	8.652	570.0 -> 525.1	16460	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C8-FOSA	9.669	506.1 -> 77.8	16305	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C8-PFOA	7.175	421.1 -> 376.0	57967	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOS	8.360	507.1 -> 79.9	7958	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C9-PFNA	7.718	472.1 -> 427.0	19090	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.1%	
d3-MeFOSAA	8.243	573.2 -> 419.0	23182	5.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C3-HFPO-DA	5.983	286.9 -> 168.9	15298	9.93 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSA	10.759	515.0 -> 219.0	5814	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
d5-EtFOSAA	8.451	589.2 -> 419.0	21422	5.52 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.4%	
d7-MeFOSE	10.680	623.2 -> 58.9	23268	26.32 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.3%	
d9-EtFOSE	10.914	639.2 -> 58.9	16297	26.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
d5-EtFOSA	10.991	531.1 -> 219.0	6385	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	20093	5.18 µg/L	98
		327.1 -> 80.9	4882		
6:2FTS	6.950	427.1 -> 407.0	17532	5.00 µg/L	99
		427.1 -> 80.9	3866		
8:2FTS	7.986	527.1 -> 507.0	9038	4.89 µg/L	96
		527.1 -> 80.8	2231		
EtFOSAA	8.452	584.2 -> 419.1	4480	1.15 µg/L	96
		584.2 -> 526.0	2589		
FOSA	9.660	498.1 -> 77.9	8214	1.26 µg/L	100
		498.1 -> 478.0	310		
MeFOSAA	8.244	570.1 -> 419.0	6022	1.24 µg/L	99
		570.1 -> 483.0	1063		
PFBA	2.956	212.8 -> 168.9	10476	4.80 µg/L	100
PFBS	5.537	298.7 -> 79.9	6132	1.05 µg/L	100
		298.7 -> 98.8	2759		
PFDA	8.186	512.9 -> 469.0	21702	1.13 µg/L	93
		512.9 -> 219.0	3280		
PFDODA	9.082	613.1 -> 569.0	21118	1.20 µg/L	100
		613.1 -> 319.0	2700		
PFDS	9.246	599.0 -> 79.9	3156	1.21 µg/L	92

7.7.4
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1739			
PFHpA	6.544	363.1 -> 319.0	27839	1.28	µg/L	99
		363.1 -> 169.0	3918			
PFHpS	7.855	449.0 -> 79.9	4372	1.23	µg/L	95
		449.0 -> 98.9	2424			
PFHxA	5.607	313.0 -> 269.0	17554	1.18	µg/L	98
		313.0 -> 118.9	615			
PFHxS	7.303	398.7 -> 79.9	4619	1.09	µg/L	m 99
		398.7 -> 98.9	2686			
PFNA	7.707	463.0 -> 419.0	15199	1.12	µg/L	95
		463.0 -> 219.0	2694			
PFNS	8.826	548.8 -> 79.9	4274	1.14	µg/L	100
		548.8 -> 98.9	2505			
PFOA	7.176	413.0 -> 369.0	34056	1.24	µg/L	99
		413.0 -> 169.0	4586			
PFOS	8.361	498.9 -> 79.9	3690	0.99	µg/L	m 91
		498.9 -> 98.8	2613			
PFPeA	4.397	263.0 -> 219.0	22350	2.42	µg/L	100
PFPeS	6.609	349.1 -> 79.9	5929	1.16	µg/L	94
		349.1 -> 98.9	2898			
PFTeDA	9.797	713.1 -> 669.0	18490	1.27	µg/L	98
		713.1 -> 168.9	1157			
PFTrDA	9.466	663.0 -> 619.0	18080	1.16	µg/L	99
		663.0 -> 168.9	1511			
PFUnDA	8.652	563.1 -> 519.0	21100	1.35	µg/L	98
		563.1 -> 269.1	3084			
11CI-PF3OUdS	9.517	630.9 -> 450.9	43750	4.62	µg/L	99
		632.9 -> 452.9	13551			
9CI-PF3ONS	8.691	530.8 -> 351.0	78400	4.57	µg/L	93
		532.8 -> 353.0	27374			
ADONA	6.794	376.9 -> 250.9	158826	4.83	µg/L	100
		376.9 -> 84.8	35632			
HFPO-DA	5.984	284.9 -> 168.9	7624	4.74	µg/L	98
		284.9 -> 184.9	899			
3:3FTCA	3.851	241.0 -> 177.0	2794	6.06	µg/L	98
		241.0 -> 117.0	440			
5:3FTCA	6.259	341.0 -> 237.1	87662	29.16	µg/L	92
		341.0 -> 217.0	79754			
7:3FTCA	7.672	441.0 -> 316.9	42472	28.10	µg/L	99
		441.0 -> 336.9	77292			
EtFOSA	10.993	526.0 -> 219.0	3962	1.29	µg/L	91
		526.0 -> 169.0	4137			
EtFOSE	10.939	630.0 -> 58.9	8188	12.34	µg/L	100
MeFOSA	10.760	511.9 -> 219.0	3630	1.30	µg/L	97
		511.9 -> 169.0	3760			
MeFOSE	10.692	616.1 -> 58.9	11706	11.92	µg/L	100
PFDoDS	9.924	699.1 -> 79.9	1786	1.20	µg/L	94
		699.1 -> 98.8	1221			
NFDHA	5.488	295.0 -> 201.0	2251	2.35	µg/L	99
		295.0 -> 84.9	1024			
PFMBA	4.819	279.0 -> 85.1	7137	2.37	µg/L	100
PFMPA	3.526	229.0 -> 84.9	6331	2.39	µg/L	100
PFEESA	6.089	314.8 -> 134.9	45097	2.14	µg/L	100
		314.8 -> 82.9	1123			

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

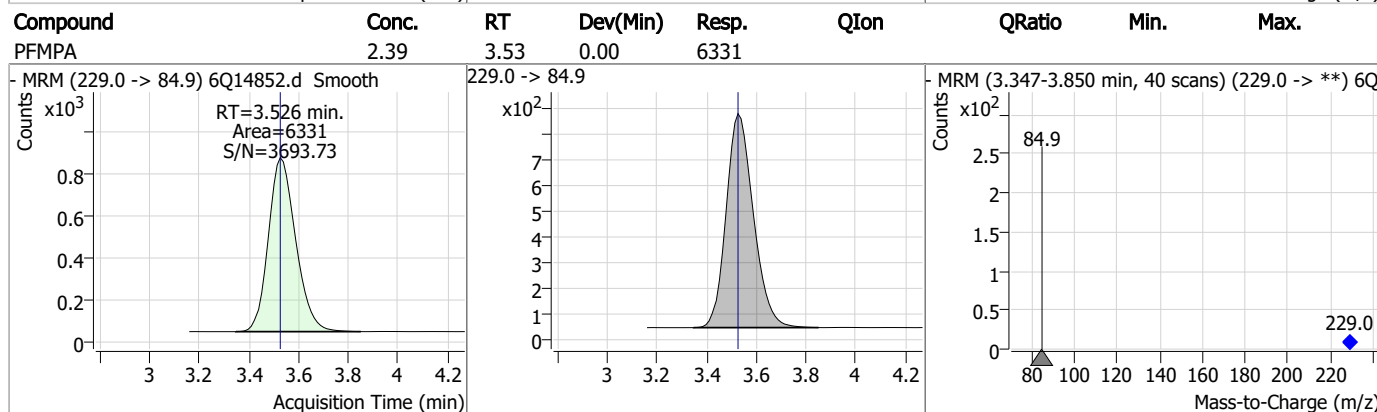
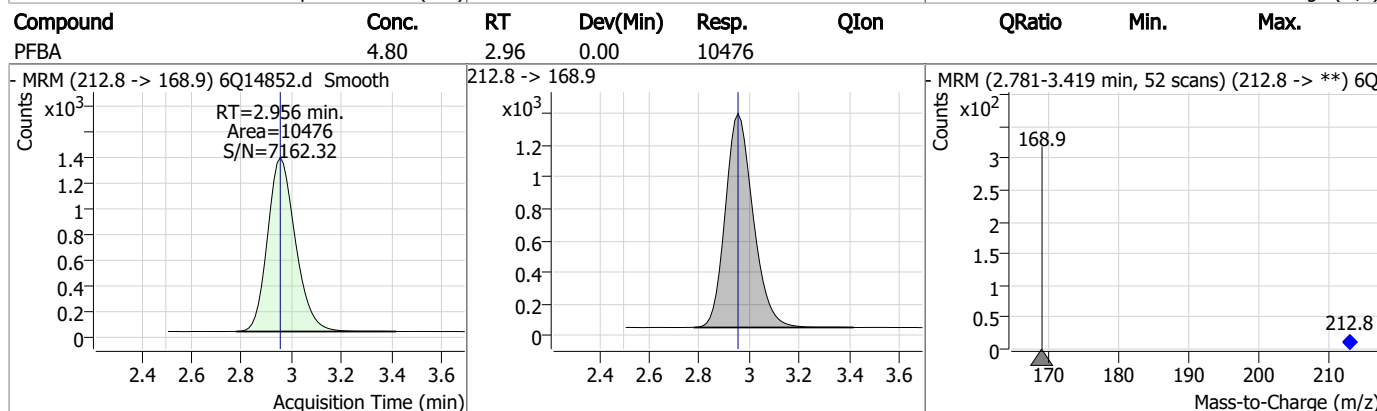
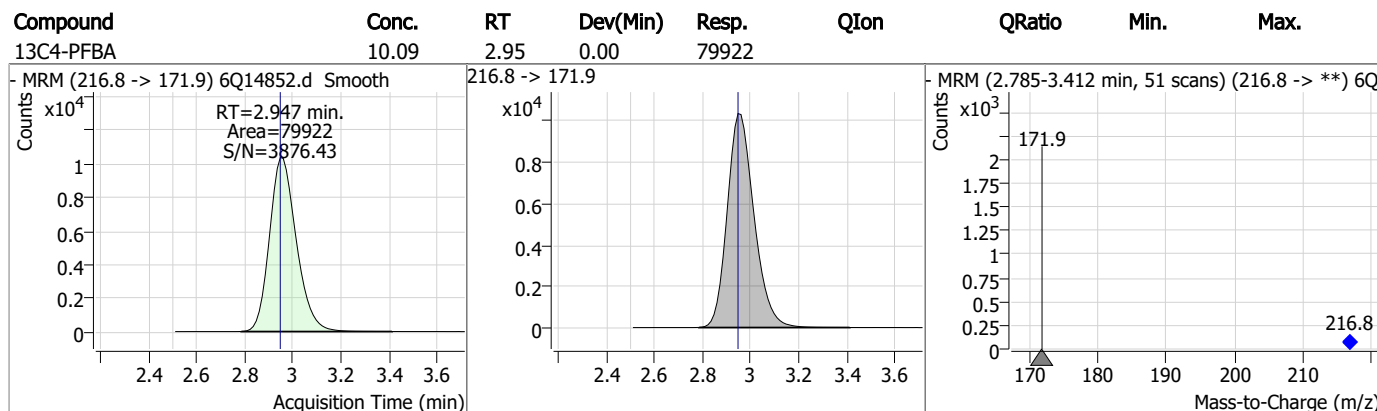
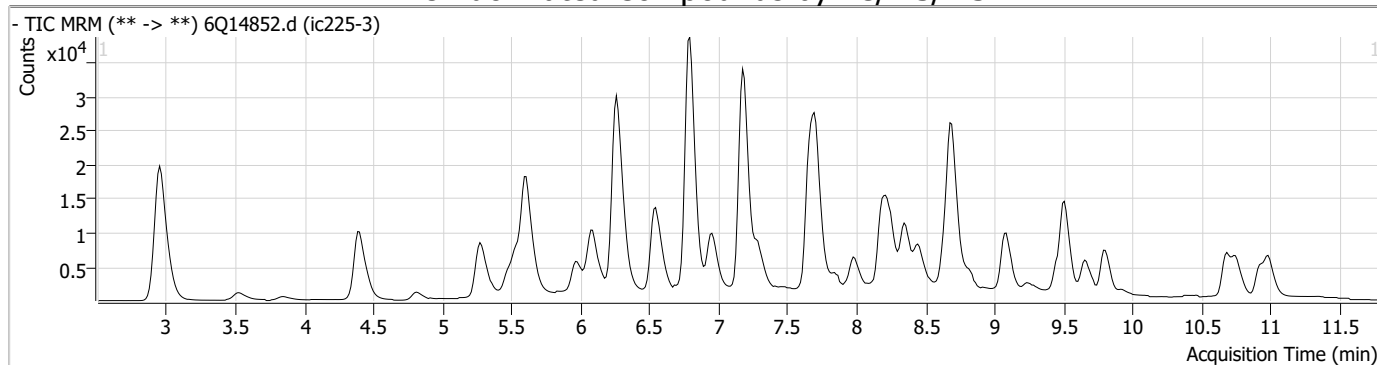
Perfluorinated Compounds by LC/MS/MS

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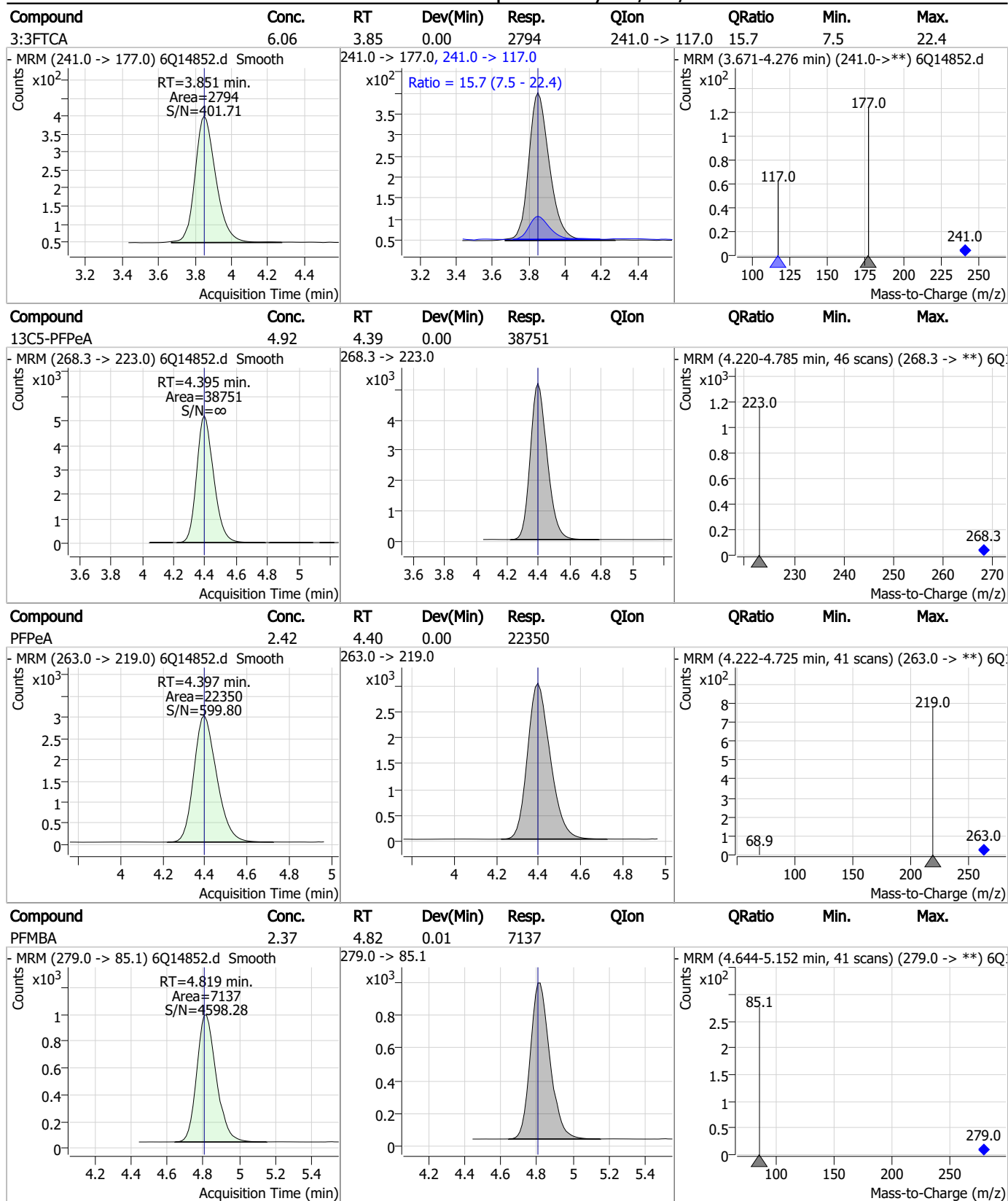
7.7.4

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Perfluorinated Compounds by LC/MS/MS



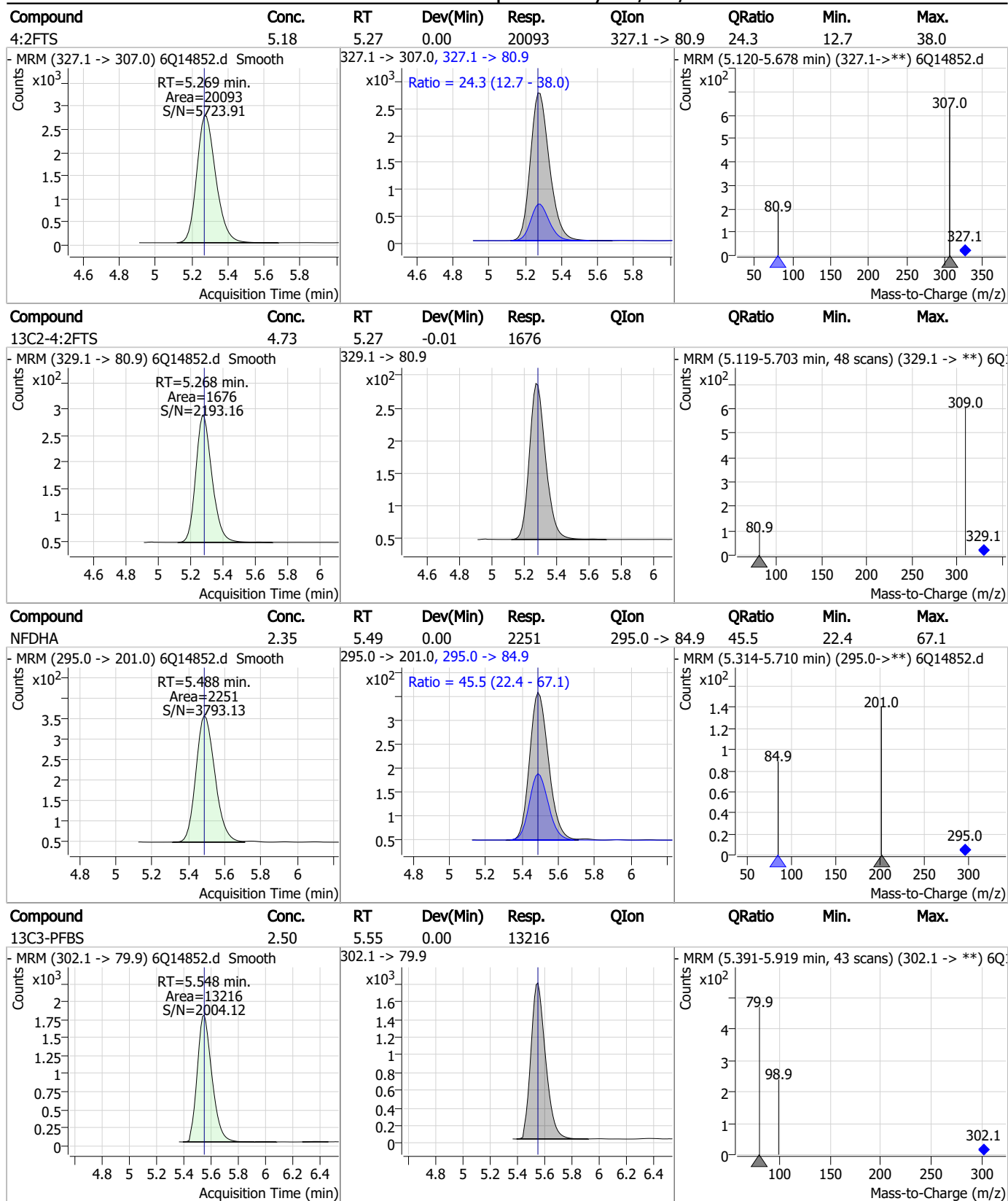
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Perfluorinated Compounds by LC/MS/MS

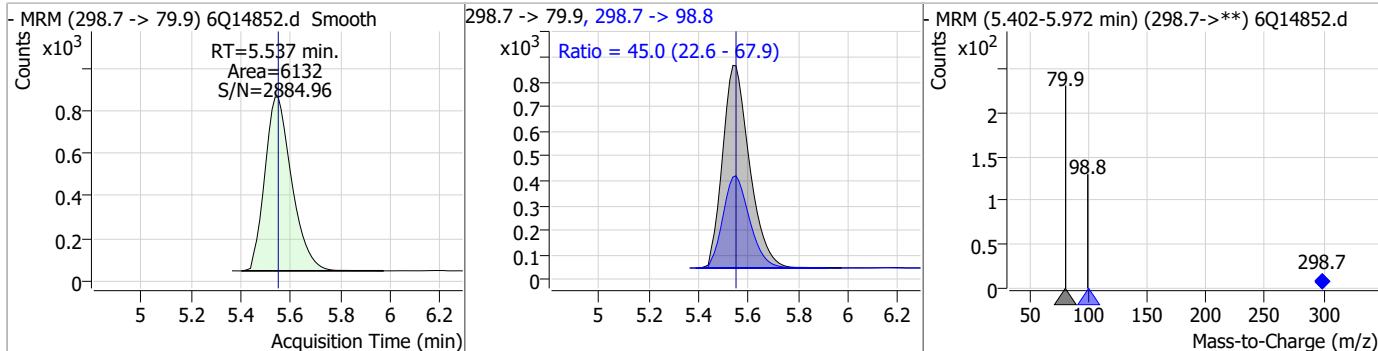


7.7.4

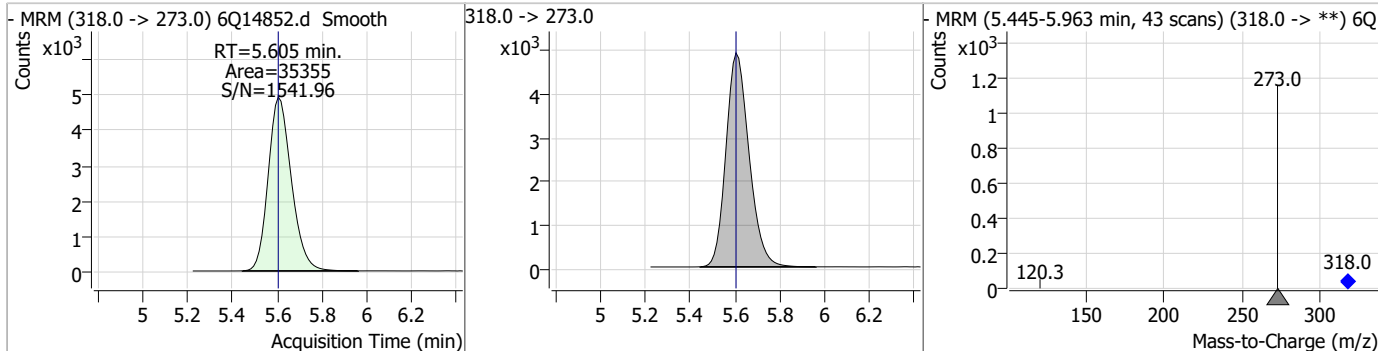
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Perfluorinated Compounds by LC/MS/MS

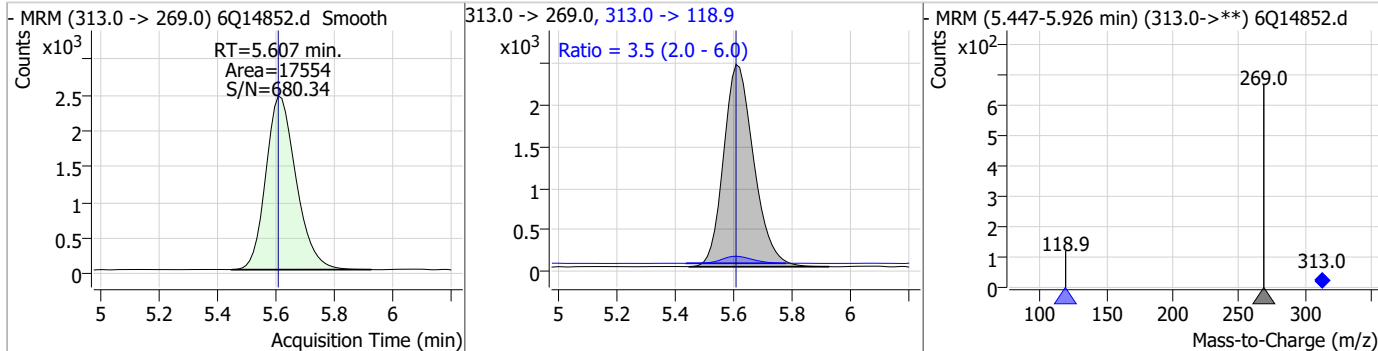
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.05	5.54	-0.01	6132	298.7 -> 98.8	45.0	22.6	67.9



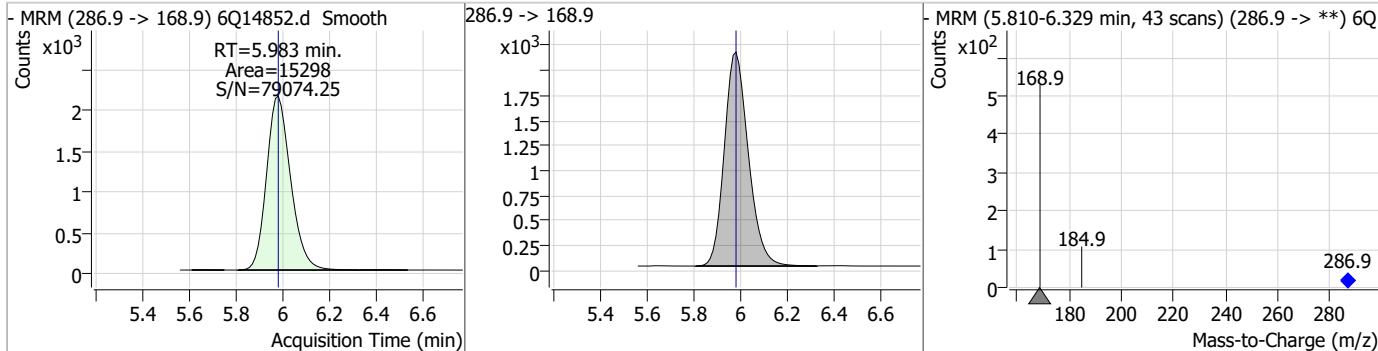
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.60	0.00	35355				



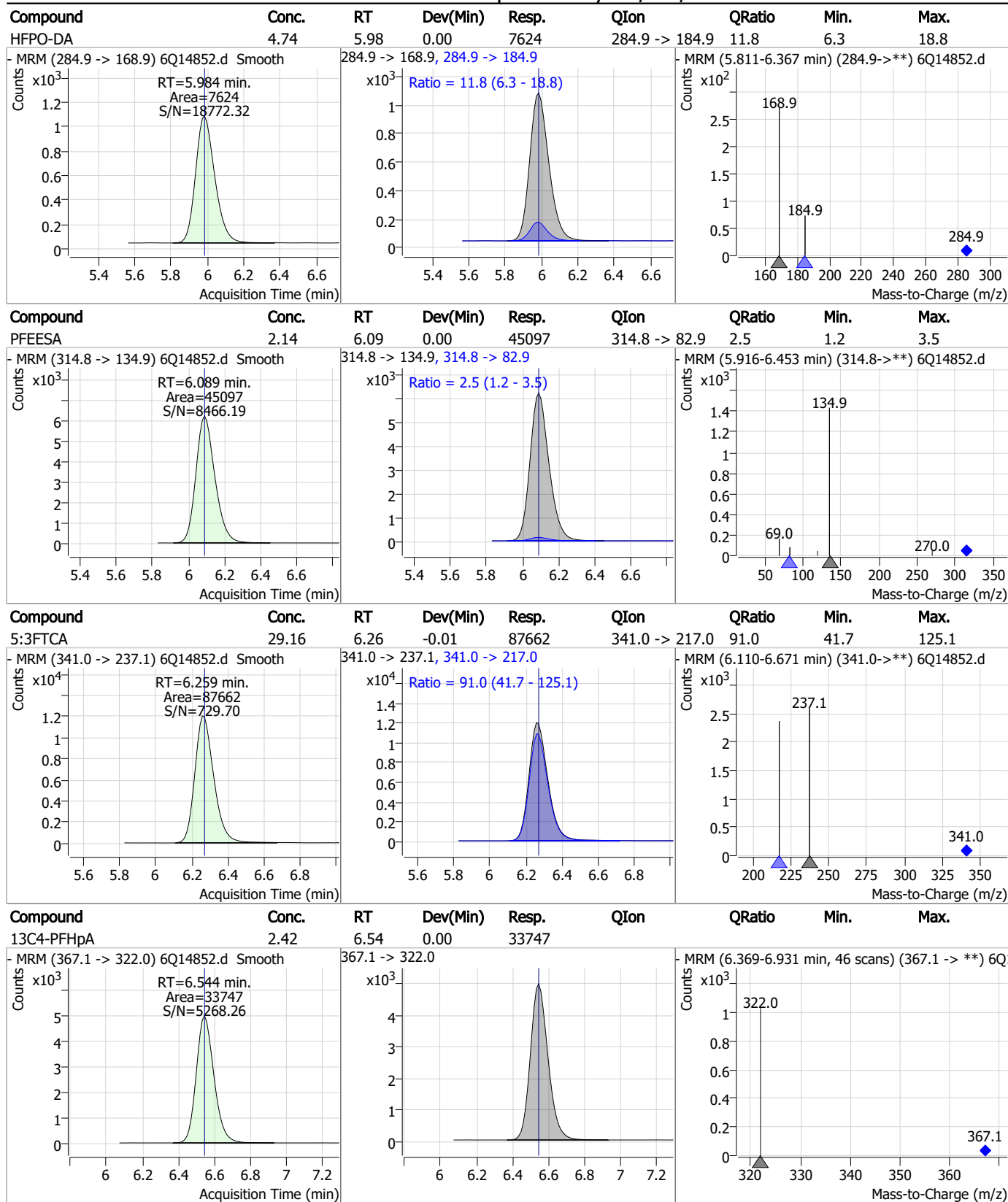
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.18	5.61	0.00	17554	313.0 -> 118.9	3.5	2.0	6.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.93	5.98	0.00	15298				



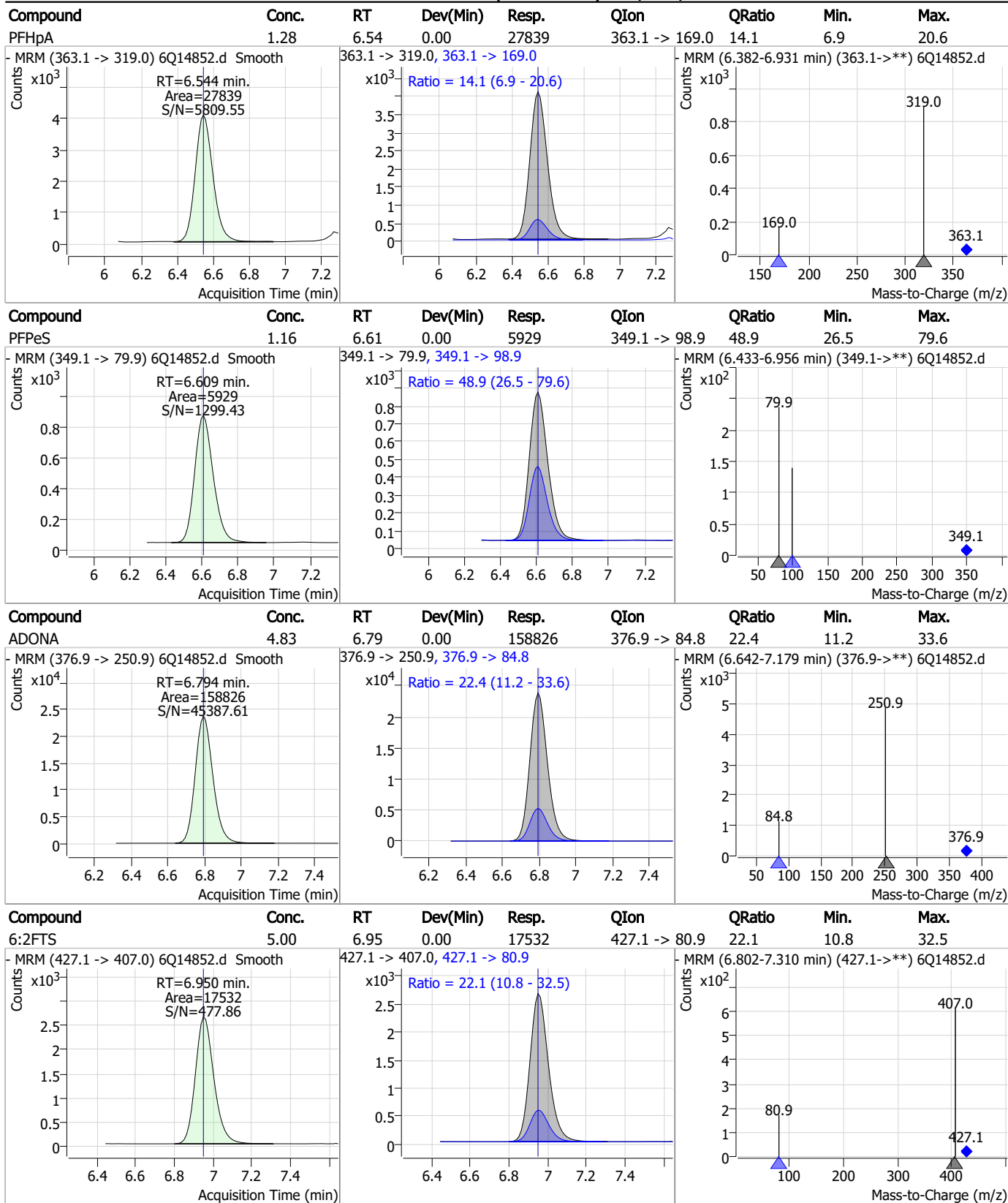
Perfluorinated Compounds by LC/MS/MS



7.7.4

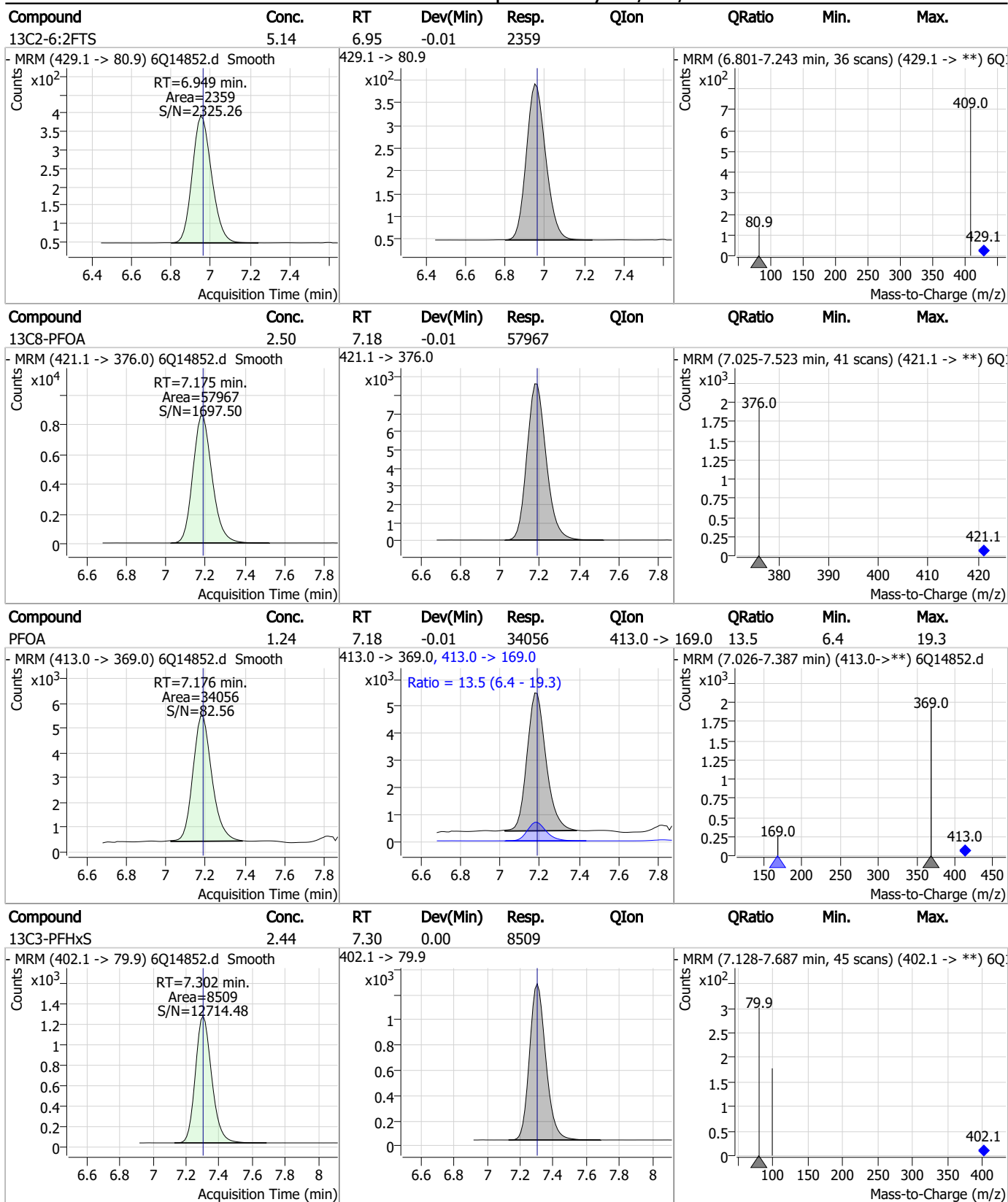
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

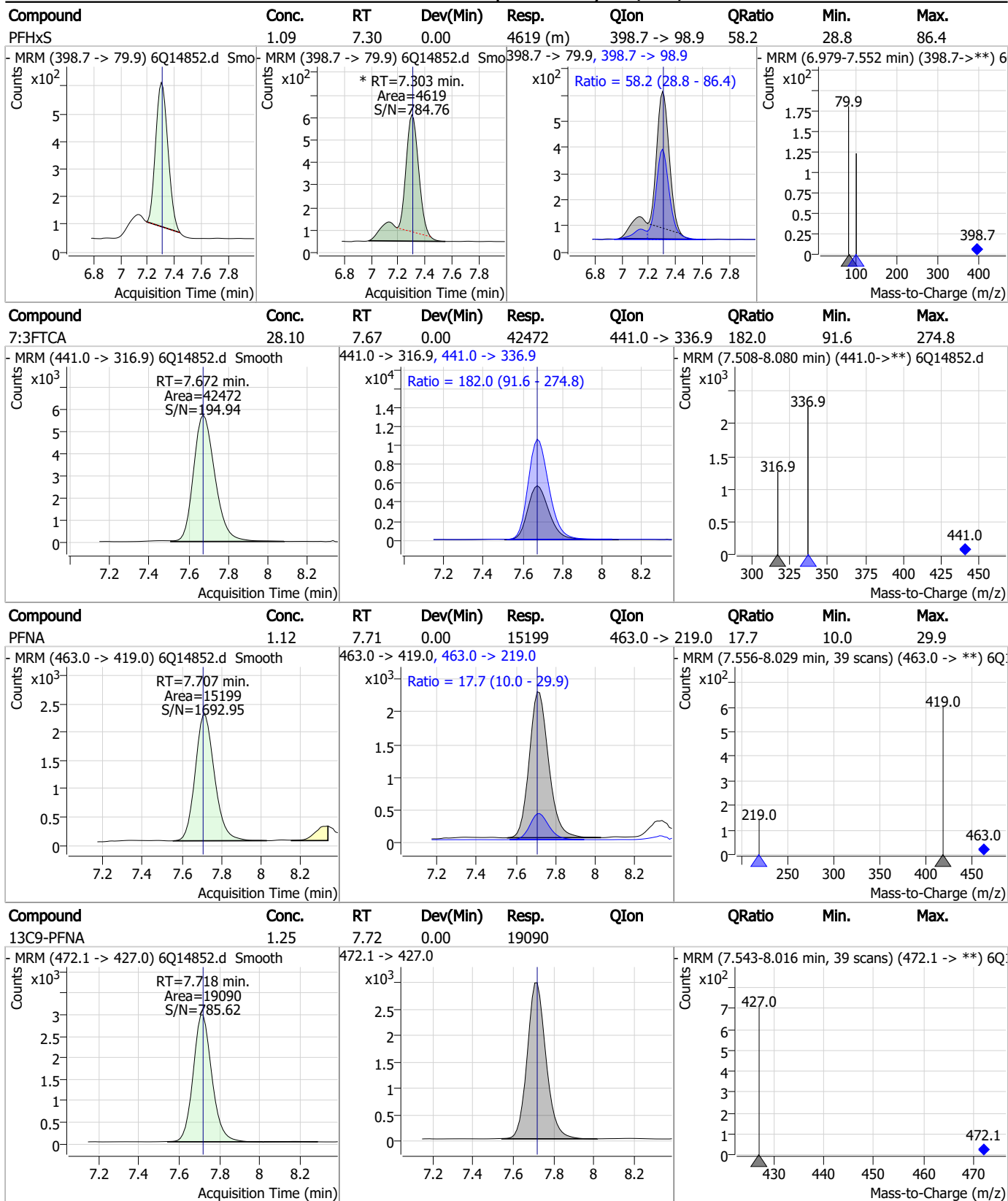
Perfluorinated Compounds by LC/MS/MS



7.7.4

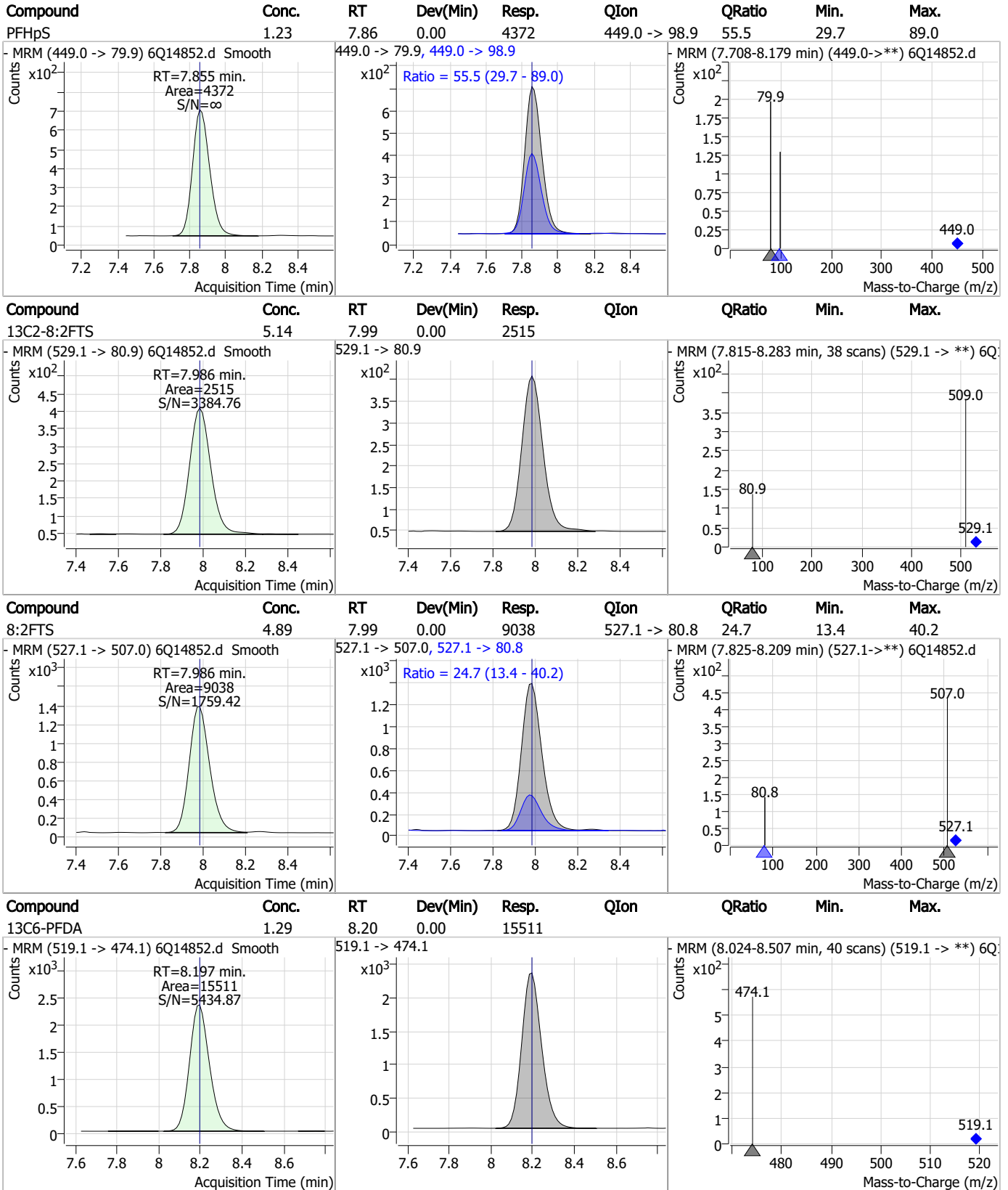
7

Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS

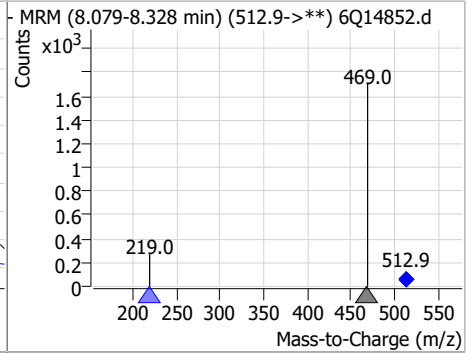
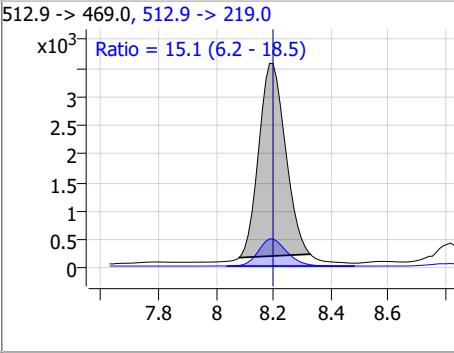
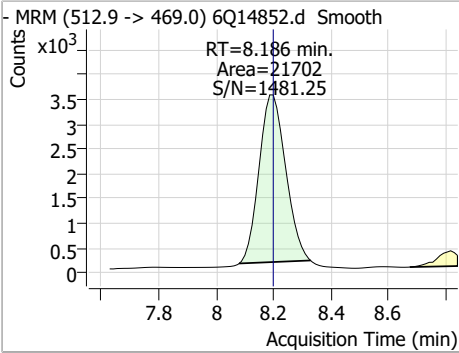


7.7.4

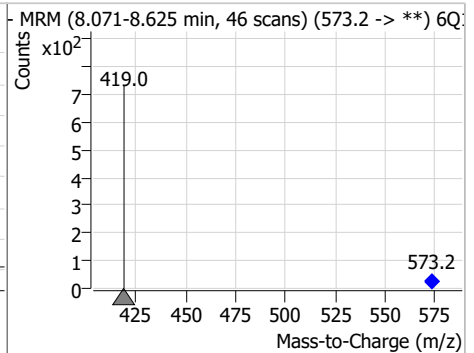
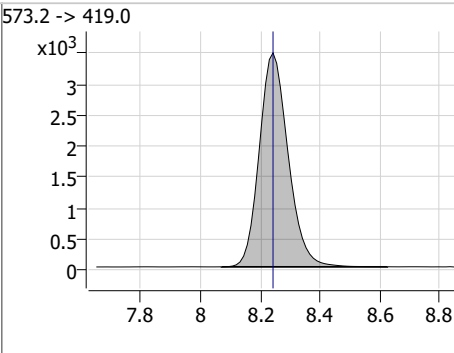
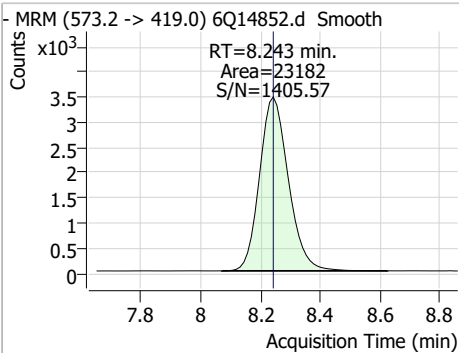
7

Perfluorinated Compounds by LC/MS/MS

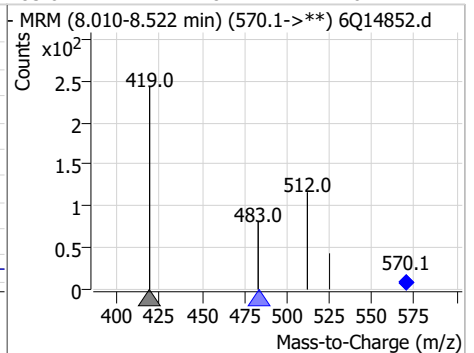
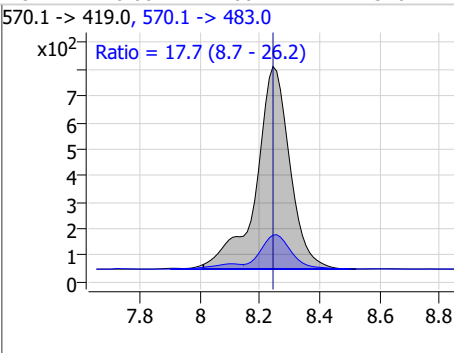
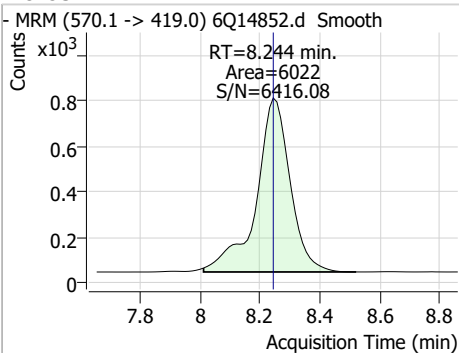
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	1.13	8.19	-0.01	21702	512.9 -> 219.0	15.1	6.2	18.5



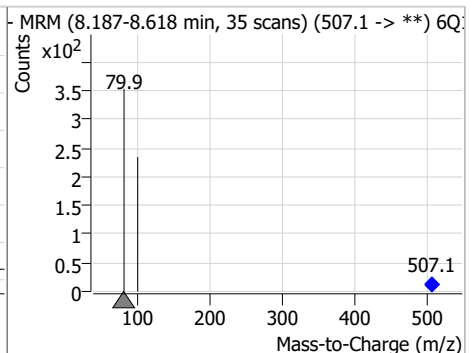
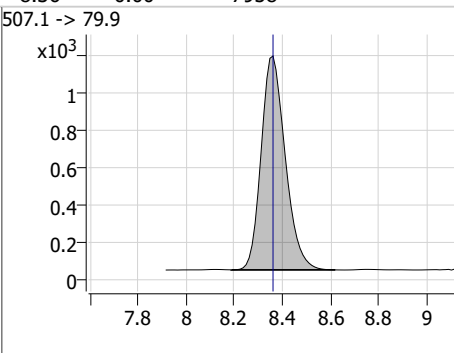
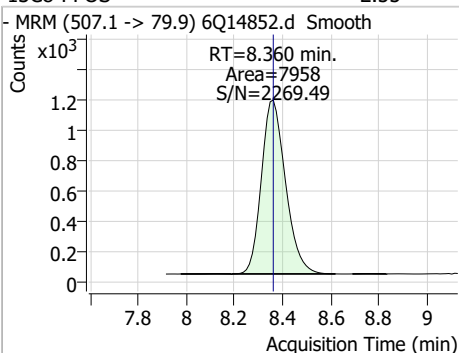
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.25	8.24	0.00	23182				



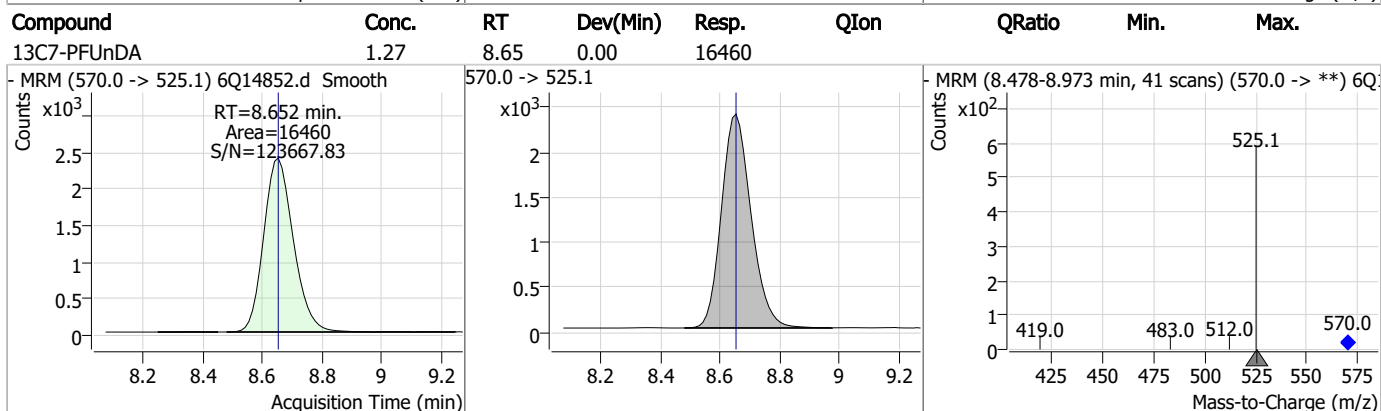
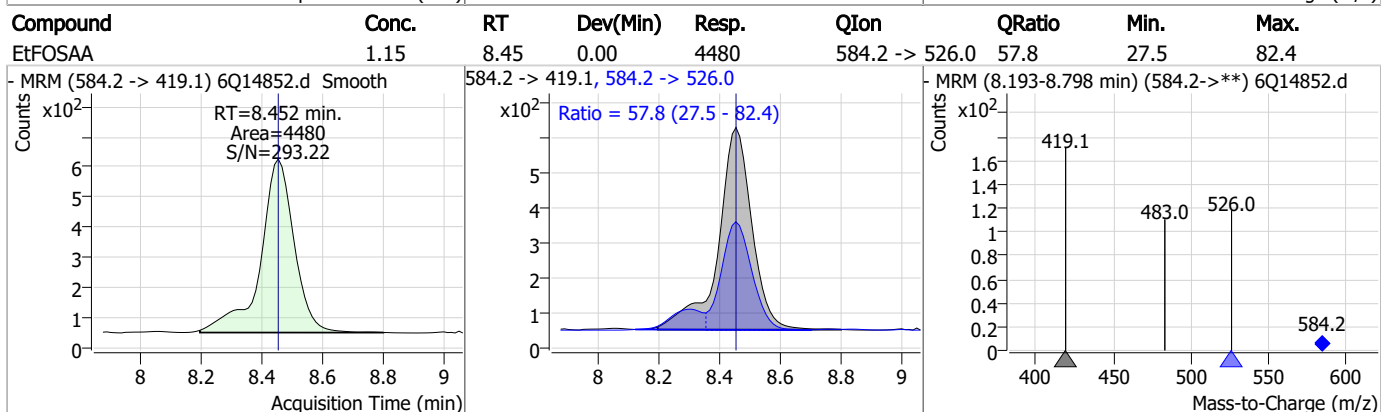
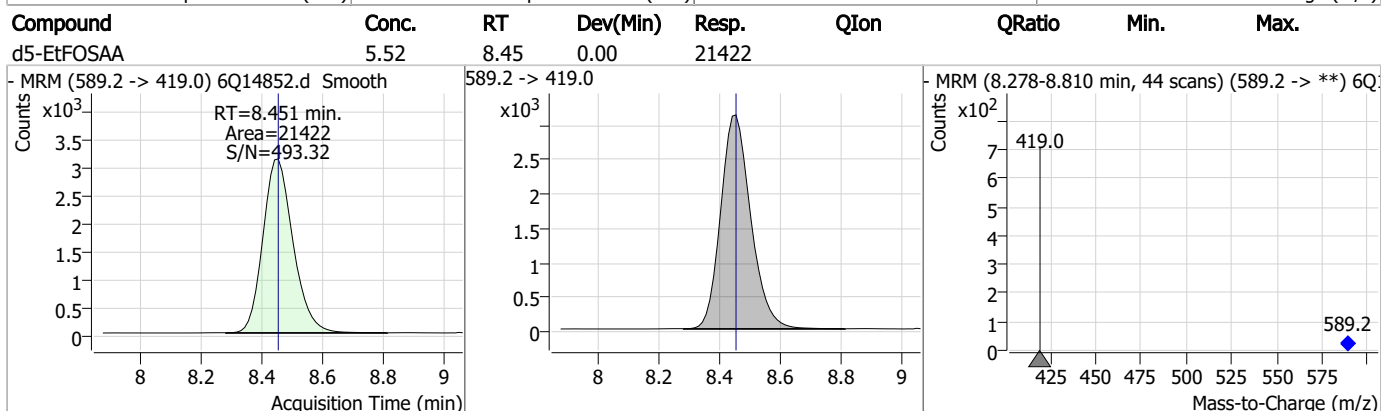
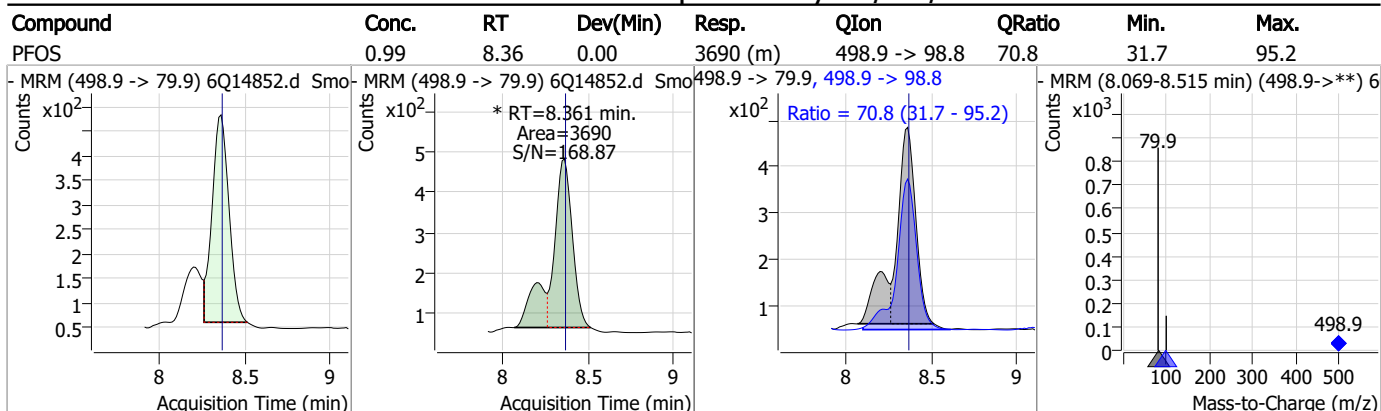
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.24	8.24	0.00	6022	570.1 -> 483.0	17.7	8.7	26.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.55	8.36	0.00	7958				

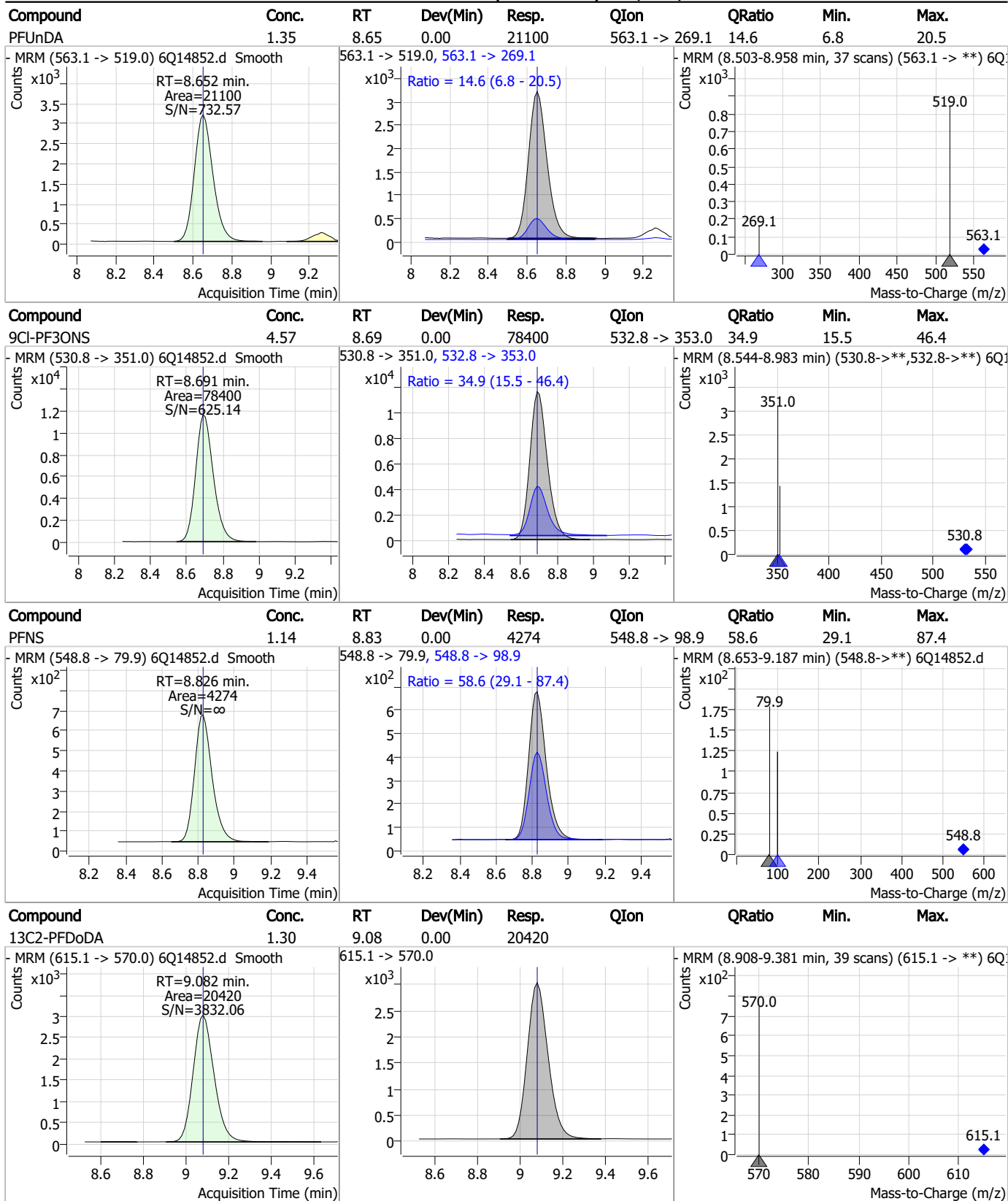


Perfluorinated Compounds by LC/MS/MS



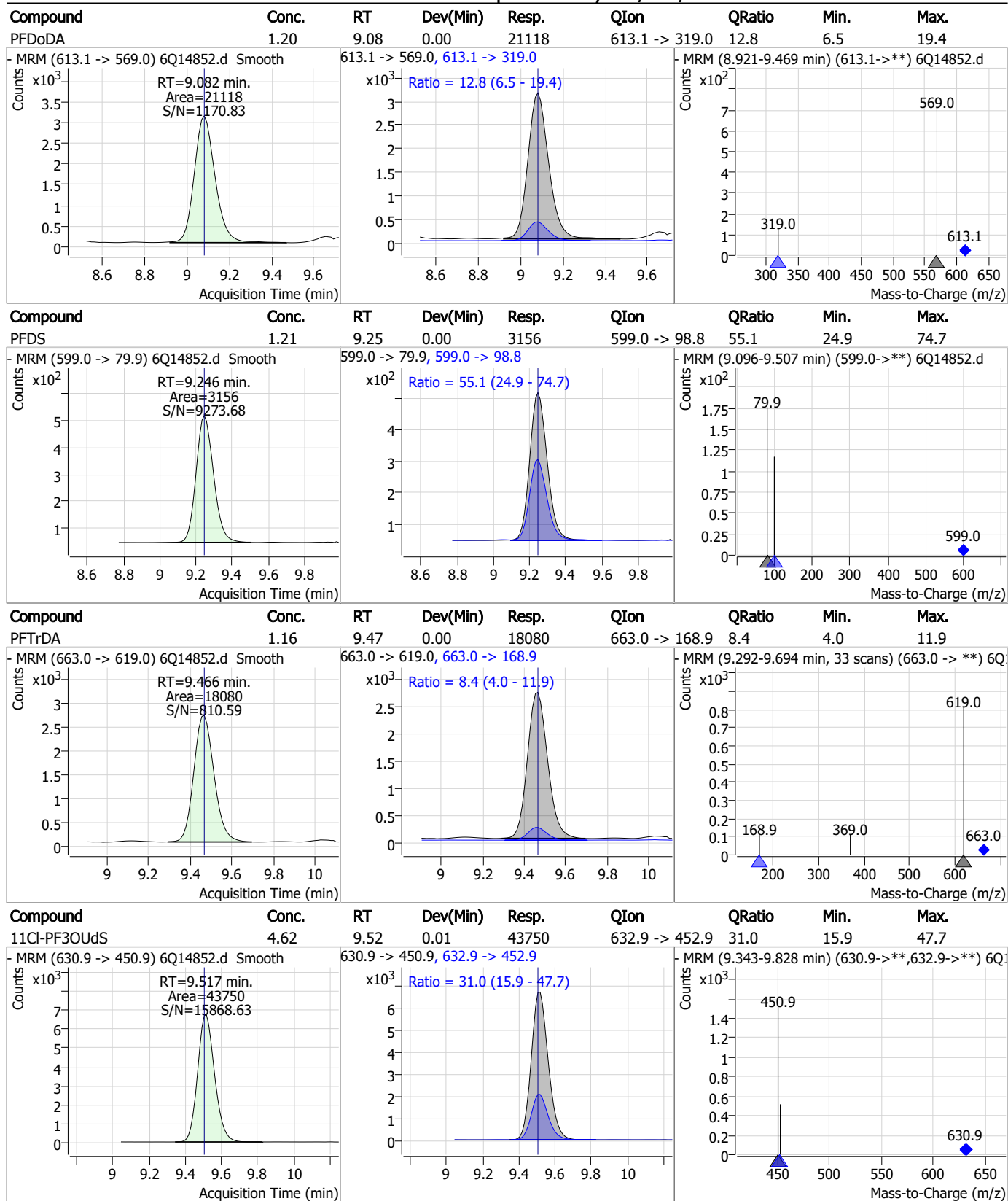
7.7.4
7

Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS

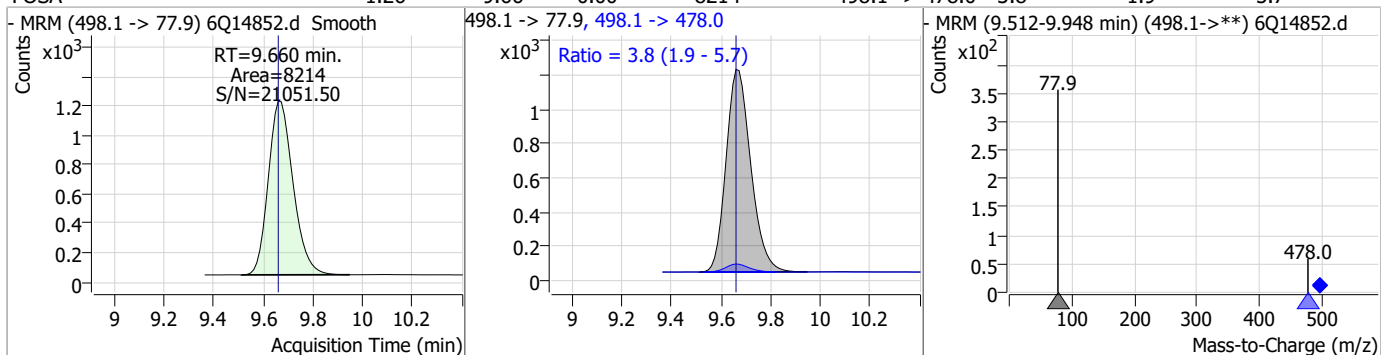


7.7.4

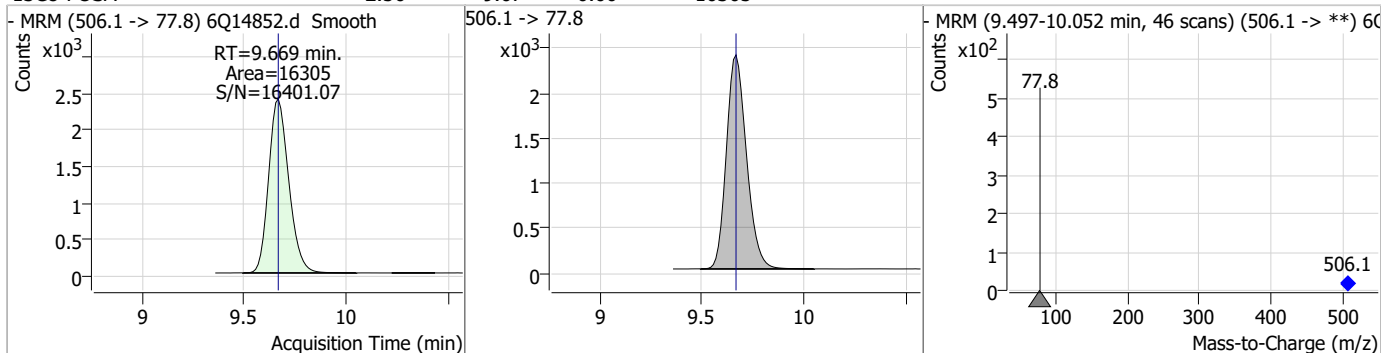
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Perfluorinated Compounds by LC/MS/MS

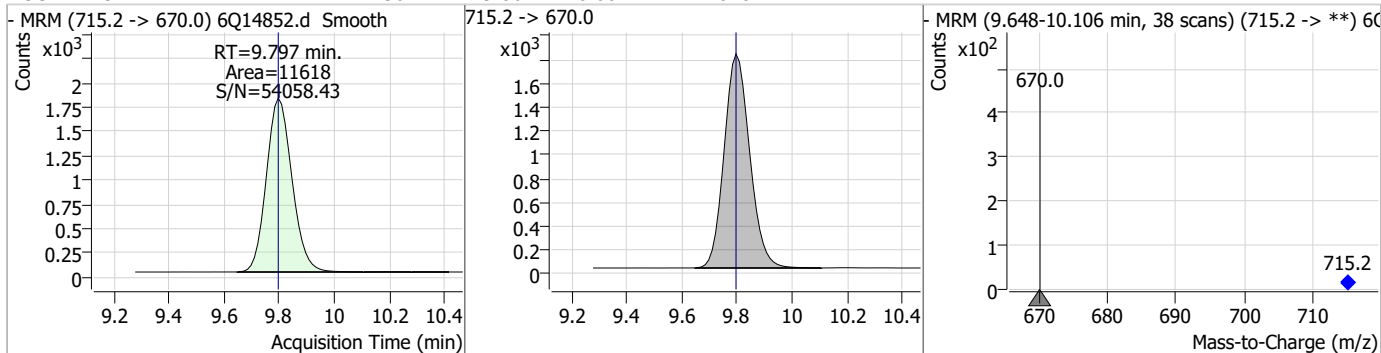
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.26	9.66	0.00	8214	498.1 -> 478.0	3.8	1.9	5.7



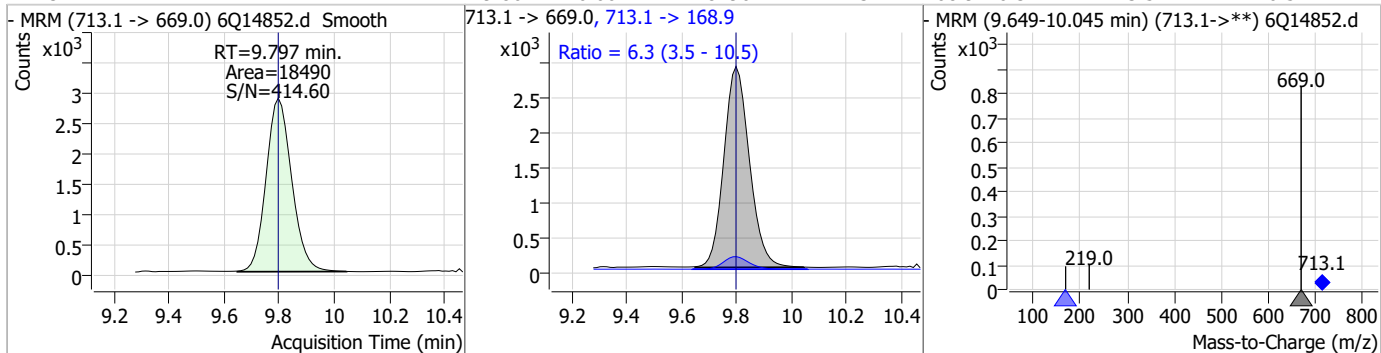
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.56	9.67	0.00	16305				



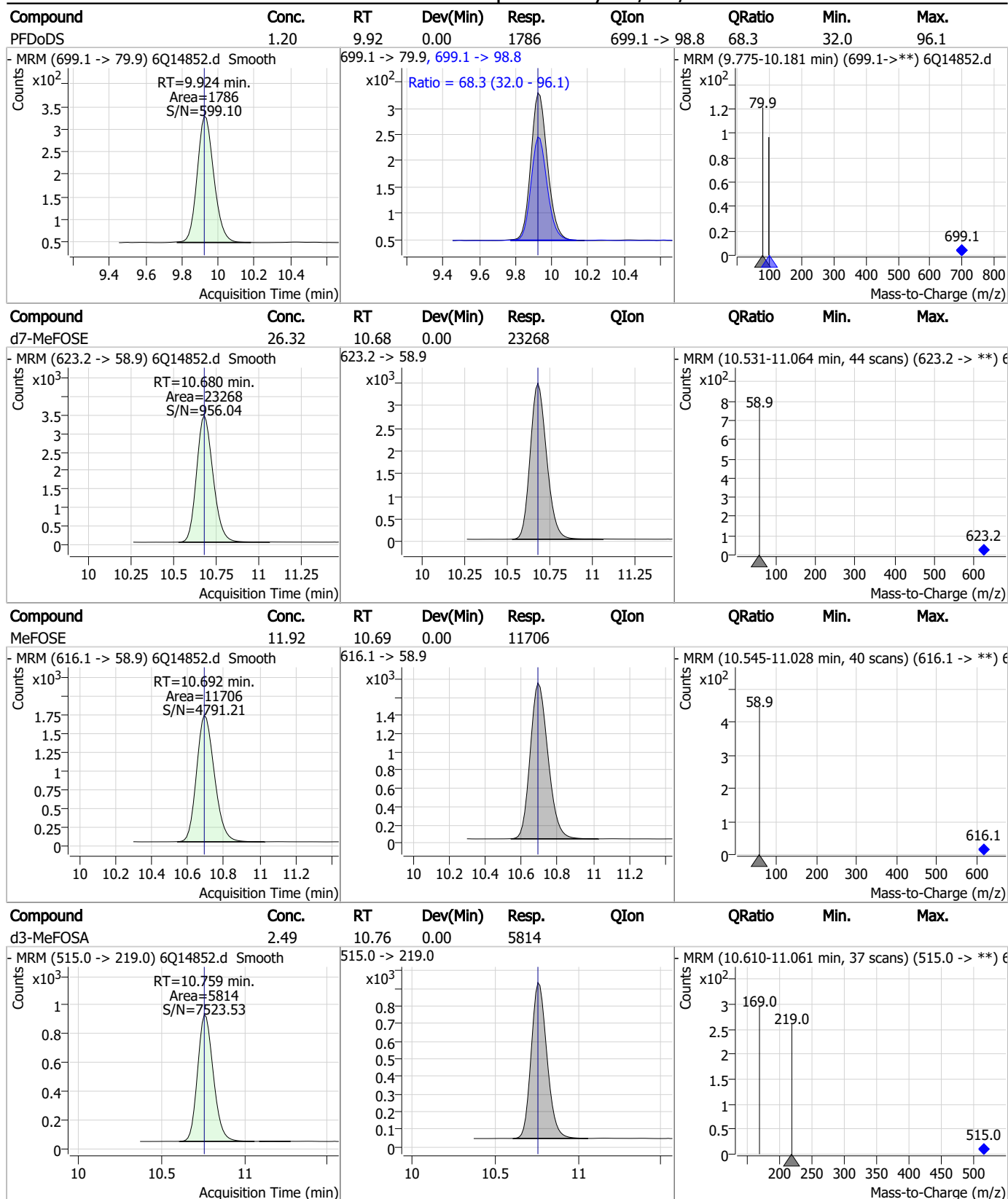
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.30	9.80	0.00	11618				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.27	9.80	0.00	18490	713.1 -> 168.9	6.3	3.5	10.5



Perfluorinated Compounds by LC/MS/MS

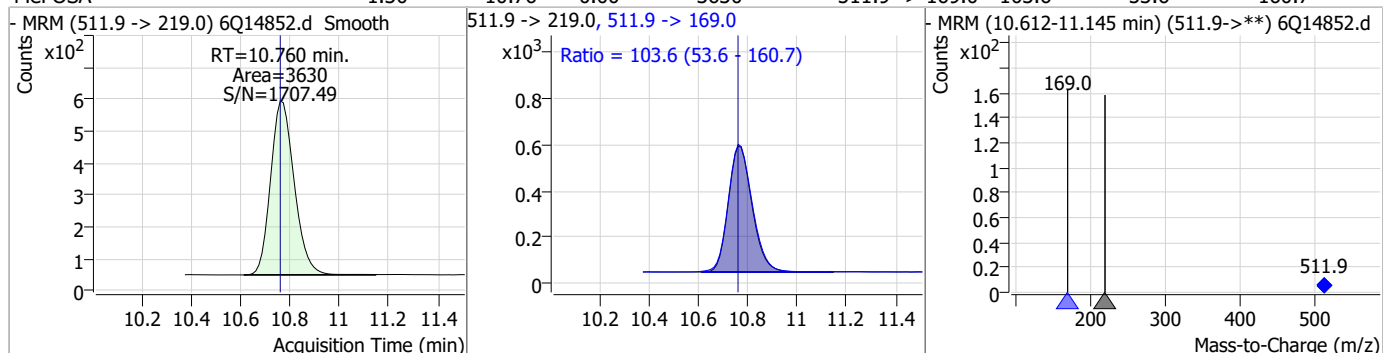


7.7.4

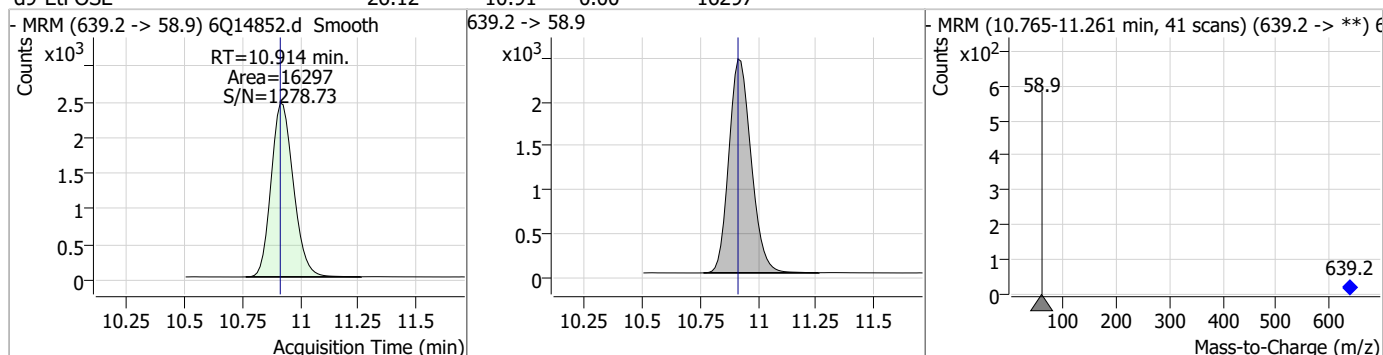
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Perfluorinated Compounds by LC/MS/MS

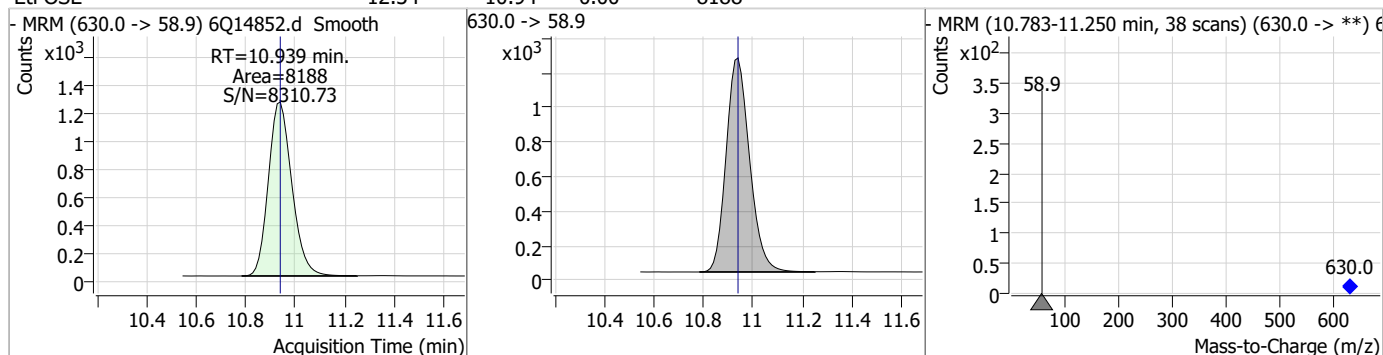
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	1.30	10.76	0.00	3630	511.9 -> 169.0	103.6	53.6	160.7



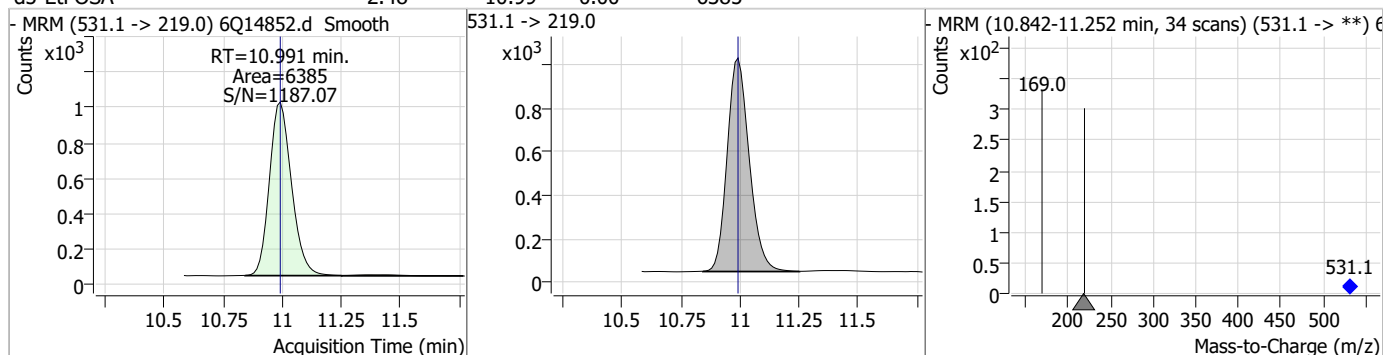
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.12	10.91	0.00	16297				



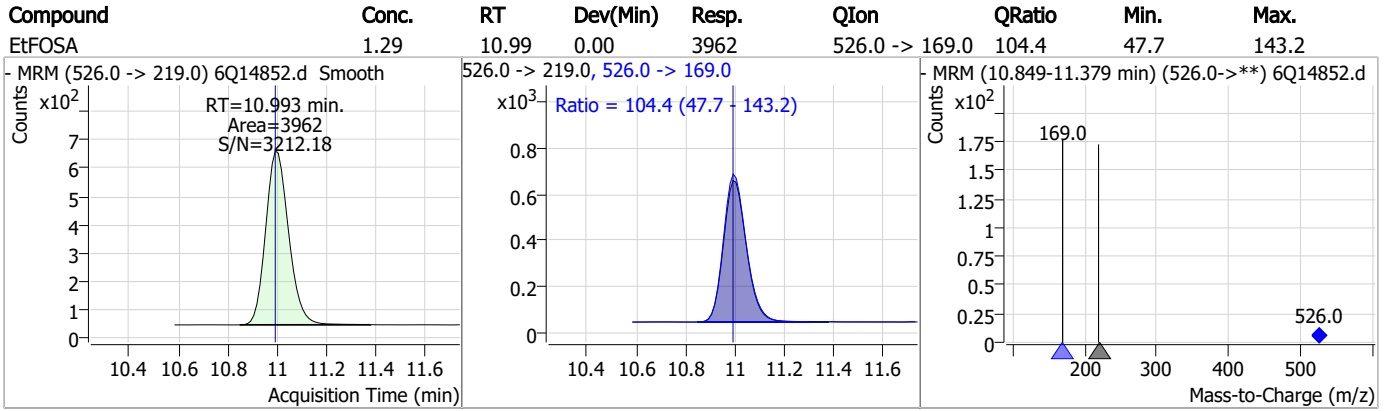
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.34	10.94	0.00	8188				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.48	10.99	0.00	6385				



Perfluorinated Compounds by LC/MS/MS



7.7.4

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Manual Integration Approval Summary

Sample Number: S6Q225-IC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14852.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 22:14 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak

7.7.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14853.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 10:28:08 PM
 Sample Name : icc225-4
 Vial : P1-A5
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	80052	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	38376	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	34900	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	34597	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	57295	2.50 µg/L	0.000
M9-PFNA	7.718	472.1 -> 427.0	16481	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	15063	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	17517	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	20931	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	11380	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	16809	2.50 µg/L	0.000
M3-PFBS	5.548	302.1 -> 79.9	12572	2.50 µg/L	0.000
M3-PFHxS	7.302	402.1 -> 79.9	9062	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	8380	2.50 µg/L	0.000
M2-4:2FTS	5.280	329.1 -> 80.9	1956	5.00 µg/L	0.000
M2-6:2FTS	6.962	429.1 -> 80.9	2225	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	2463	5.00 µg/L	0.000
M3-MeFOSAA	8.243	573.2 -> 419.0	22582	5.00 µg/L	0.000
M3-HFPO-DA	5.983	286.9 -> 168.9	15139	10.00 µg/L	0.000
M5-EtFOSAA	8.451	589.2 -> 419.0	19149	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	22436	25.00 µg/L	0.000
M9-EtFOSE	10.914	639.2 -> 58.9	17124	25.00 µg/L	0.000
M5-EtFOSA	10.991	531.1 -> 219.0	6550	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5552	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	9539	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	34405	5.00 µg/L	0.000
18O2-PFHxS	7.314	403.0 -> 83.9	6097	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	66262	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	20045	1.25 µg/L	0.000
13C5-PFNA	7.718	468.0 -> 423.0	18056	1.25 µg/L	0.000
13C2-PFHxA	5.606	315.1 -> 270.0	32960	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.280	329.1 -> 80.9	1956	5.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.8%		
13C2-6:2FTS	6.962	429.1 -> 80.9	2225	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2463	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C2-PFDoDA	9.082	615.1 -> 570.0	20931	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.8%		
13C2-PFTeDA	9.797	715.2 -> 670.0	11380	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C3-PFBS	5.548	302.1 -> 79.9	12572	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C3-PFHxS	7.302	402.1 -> 79.9	9062	2.63 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 = 105.3%		
13C4-PFBA	2.947	216.8 -> 171.9	80052	10.14 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C4-PFHpA	6.544	367.1 -> 322.0	34597	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C5-PFHxA	5.605	318.0 -> 273.0	34900	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C5-PFPeA	4.395	268.3 -> 223.0	38376	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C6-PFDA	8.197	519.1 -> 474.1	15063	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C7-PFUnDA	8.652	570.0 -> 525.1	17517	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C8-FOSA	9.669	506.1 -> 77.8	16809	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C8-PFOA	7.187	421.1 -> 376.0	57295	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C8-PFOS	8.360	507.1 -> 79.9	8380	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C9-PFNA	7.718	472.1 -> 427.0	16481	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
d3-MeFOSAA	8.243	573.2 -> 419.0	22582	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-HFPO-DA	5.983	286.9 -> 168.9	15139	10.17 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
d3-MeFOSA	10.759	515.0 -> 219.0	5552	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.7%		
d5-EtFOSAA	8.451	589.2 -> 419.0	19149	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
d7-MeFOSE	10.680	623.2 -> 58.9	22436	24.45 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
d9-EtFOSE	10.914	639.2 -> 58.9	17124	26.43 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 105.7%		
d5-EtFOSA	10.991	531.1 -> 219.0	6550	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	36939	8.16 µg/L	100
		327.1 -> 80.9	9359		
6:2FTS	6.950	427.1 -> 407.0	31522	9.53 µg/L	100
		427.1 -> 80.9	6822		
8:2FTS	7.986	527.1 -> 507.0	17303	9.56 µg/L	100
		527.1 -> 80.8	4635		
EtFOSAA	8.452	584.2 -> 419.1	8039	2.31 µg/L	100
		584.2 -> 526.0	4416	m	
FOSA	9.660	498.1 -> 77.9	15485	2.31 µg/L	100
		498.1 -> 478.0	587		
MeFOSAA	8.244	570.1 -> 419.0	11591	2.45 µg/L	100
		570.1 -> 483.0	2022		
PFBA	2.956	212.8 -> 168.9	19774	9.05 µg/L	100
PFBS	5.549	298.7 -> 79.9	12189	2.20 µg/L	100
		298.7 -> 98.8	5517		
PFDA	8.198	512.9 -> 469.0	45034	2.41 µg/L	100
		512.9 -> 219.0	5552		
PFDODA	9.082	613.1 -> 569.0	38682	2.15 µg/L	100
		613.1 -> 319.0	5000		
PFDS	9.246	599.0 -> 79.9	6170	2.25 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.544	599.0 -> 98.8	3071	2.27	µg/L	100
		363.1 -> 319.0	50561			
PFHpS	7.855	363.1 -> 169.0	6933	2.05	µg/L	100
		449.0 -> 79.9	7672			
PFHxA	5.607	449.0 -> 98.9	4551	2.23	µg/L	100
		313.0 -> 269.0	32829			
PFHxS	7.303	313.0 -> 118.9	1312	1.96	µg/L	100
		398.7 -> 79.9	8864			
PFNA	7.707	398.7 -> 98.9	5103	2.55	µg/L	100
		463.0 -> 419.0	29816			
PFNS	8.826	463.0 -> 219.0	5937	2.08	µg/L	100
		548.8 -> 79.9	8225			
PFOA	7.189	548.8 -> 98.9	4791	2.41	µg/L	100
		413.0 -> 369.0	65349			
PFOS	8.361	413.0 -> 169.0	8411	1.97	µg/L	100
		498.9 -> 79.9	7737			
PFPeA	4.397	498.9 -> 98.8	4912	4.57	µg/L	100
		263.0 -> 219.0	41763			
PFPeS	6.609	349.1 -> 79.9	11020	2.02	µg/L	100
		349.1 -> 98.9	5851			
PFTeDA	9.797	713.1 -> 669.0	32140	2.25	µg/L	100
		713.1 -> 168.9	2258			
PFTrDA	9.466	663.0 -> 619.0	34578	2.16	µg/L	100
		663.0 -> 168.9	2748			
PFUnDA	8.652	563.1 -> 519.0	39477	2.38	µg/L	100
		563.1 -> 269.1	5406			
11CI-PF3OUdS	9.505	630.9 -> 450.9	81544	8.71	µg/L	100
		632.9 -> 452.9	25929			
9CI-PF3ONS	8.691	530.8 -> 351.0	153678	9.05	µg/L	100
		532.8 -> 353.0	47525			
ADONA	6.794	376.9 -> 250.9	292473	9.00	µg/L	100
		376.9 -> 84.8	65525			
HFPO-DA	5.984	284.9 -> 168.9	14704	9.23	µg/L	100
		284.9 -> 184.9	1838			
3:3FTCA	3.851	241.0 -> 177.0	5143	11.26	µg/L	100
		241.0 -> 117.0	767			
5:3FTCA	6.271	341.0 -> 237.1	173180	58.35	µg/L	100
		341.0 -> 217.0	144485			
7:3FTCA	7.672	441.0 -> 316.9	86567	58.02	µg/L	100
		441.0 -> 336.9	158577			
EtFOSA	10.993	526.0 -> 219.0	7420	2.36	µg/L	100
		526.0 -> 169.0	7082			
EtFOSE	10.939	630.0 -> 58.9	15122	21.68	µg/L	100
		511.9 -> 219.0	6521			
MeFOSA	10.760	511.9 -> 169.0	6988	2.44	µg/L	100
		616.1 -> 58.9	22295			
MeFOSE	10.692	699.1 -> 79.9	3559	23.54	µg/L	100
		699.1 -> 98.8	2279			
PFDoDS	9.924	295.0 -> 201.0	4263	2.27	µg/L	100
		295.0 -> 84.9	1906			
NFDHA	5.488	279.0 -> 85.1	13685	4.50	µg/L	100
		229.0 -> 84.9	12002			
PFMBA	4.806	314.8 -> 134.9	83763	4.60	µg/L	100
		314.8 -> 82.9	1974			
PFMPA	3.526			4.58	µg/L	100
PFEESA	6.089			4.03	µg/L	100

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

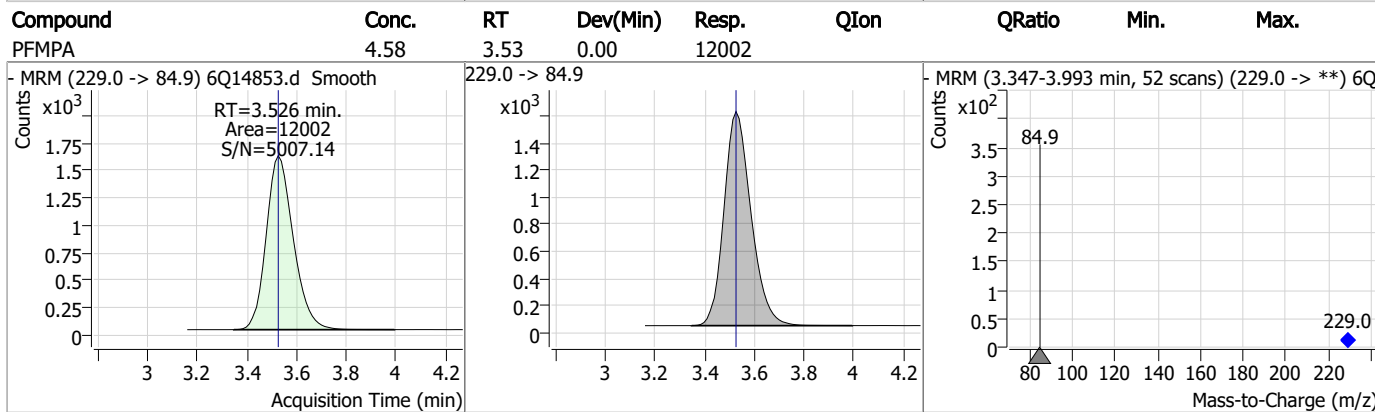
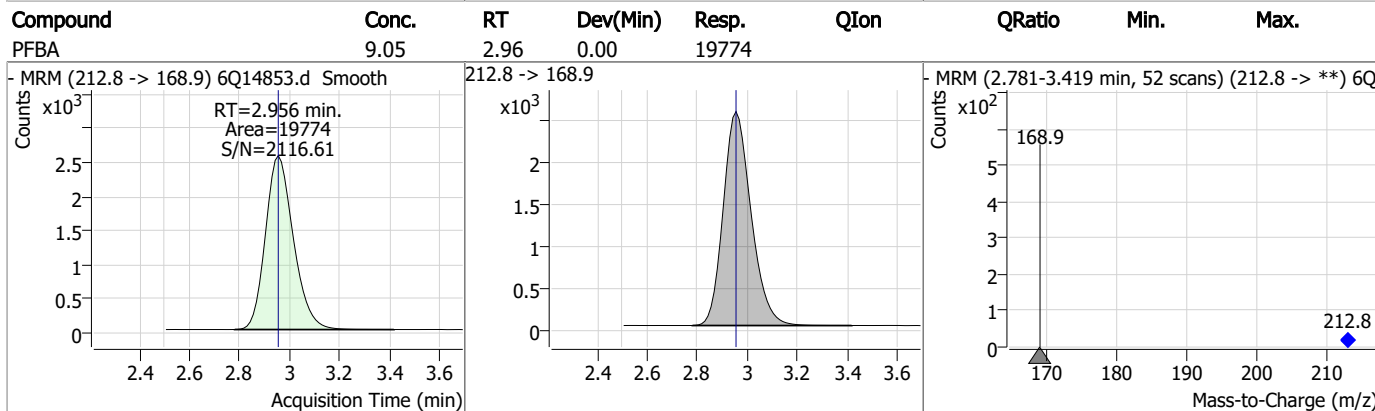
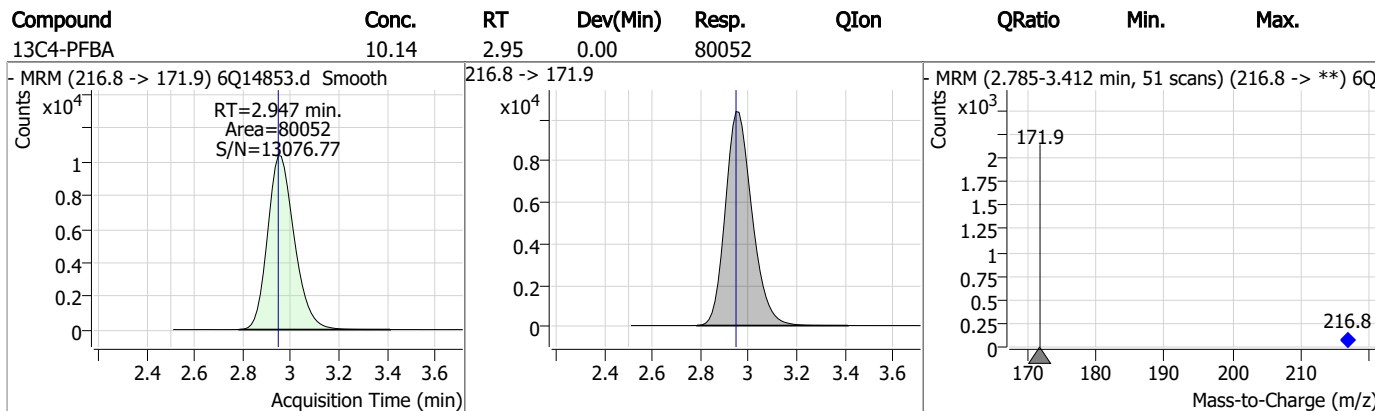
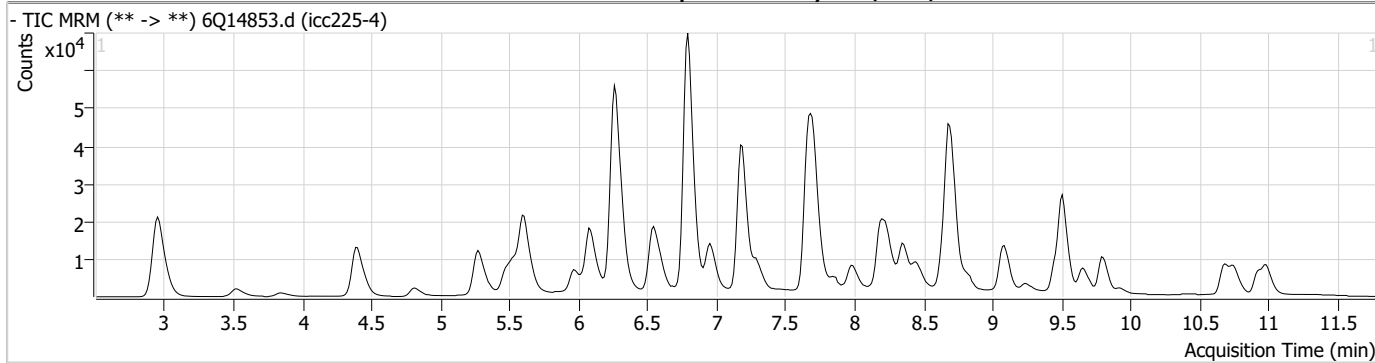
Perfluorinated Compounds by LC/MS/MS

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

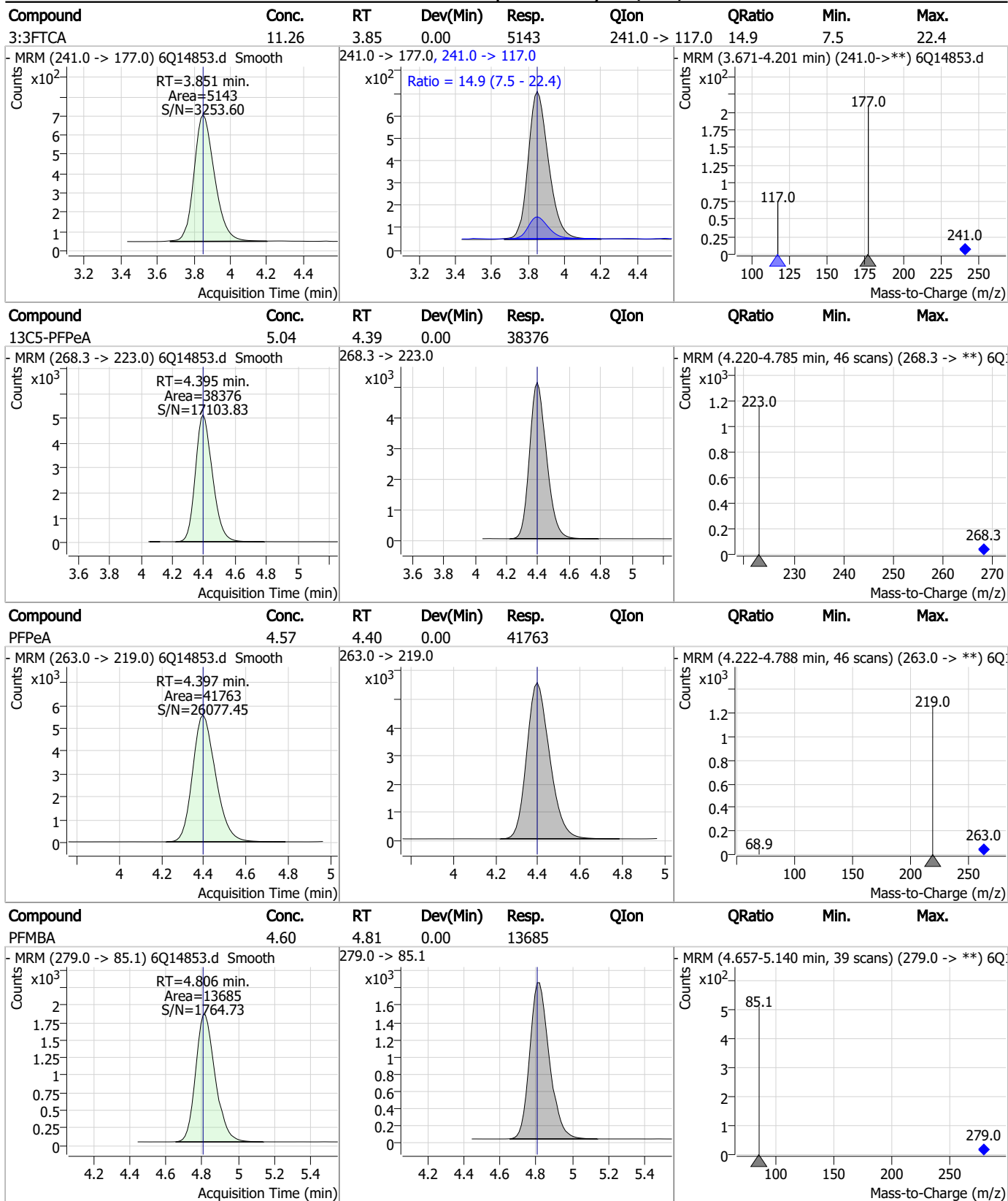
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Perfluorinated Compounds by LC/MS/MS



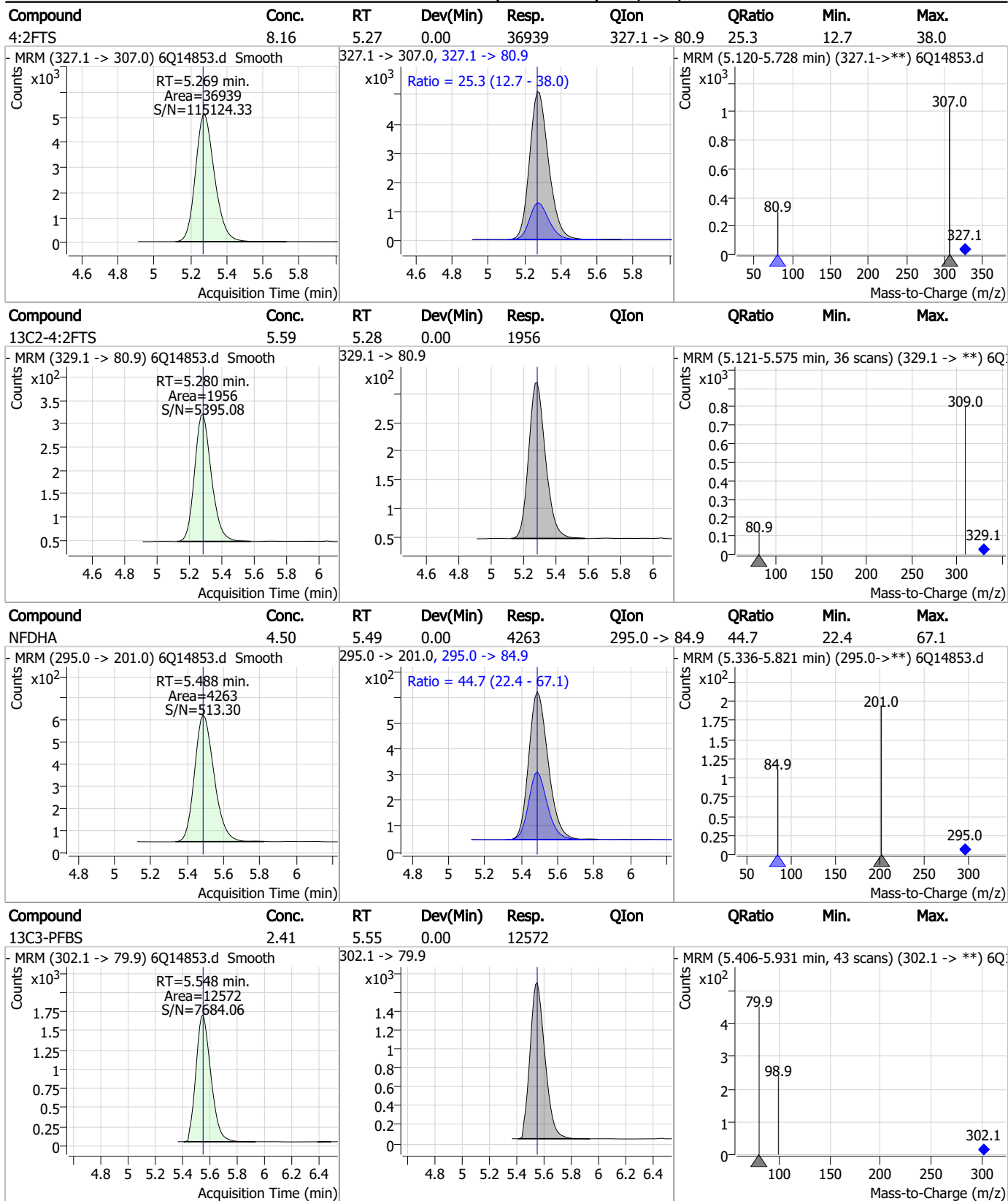
7.7.5
7

Perfluorinated Compounds by LC/MS/MS



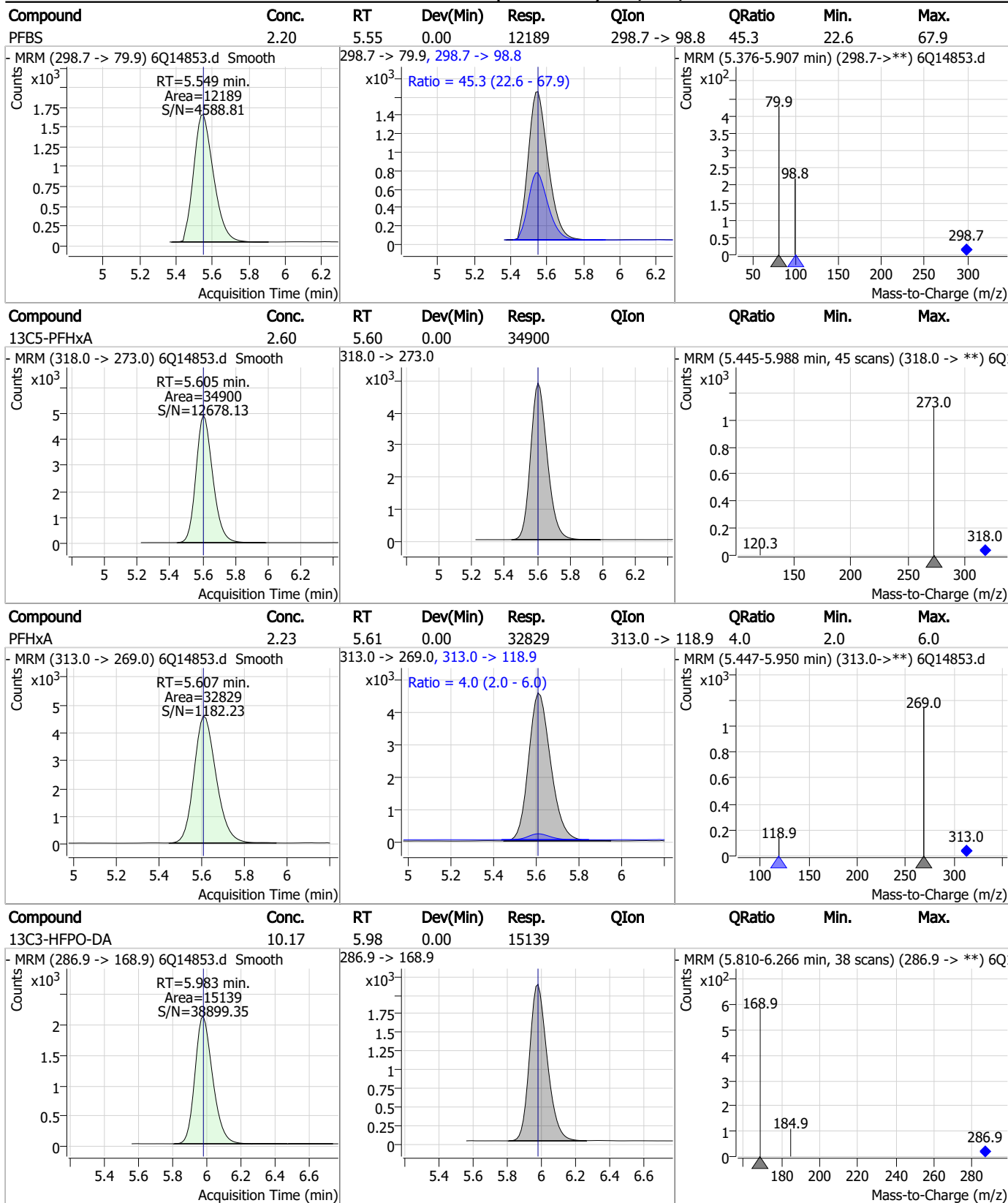
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Perfluorinated Compounds by LC/MS/MS



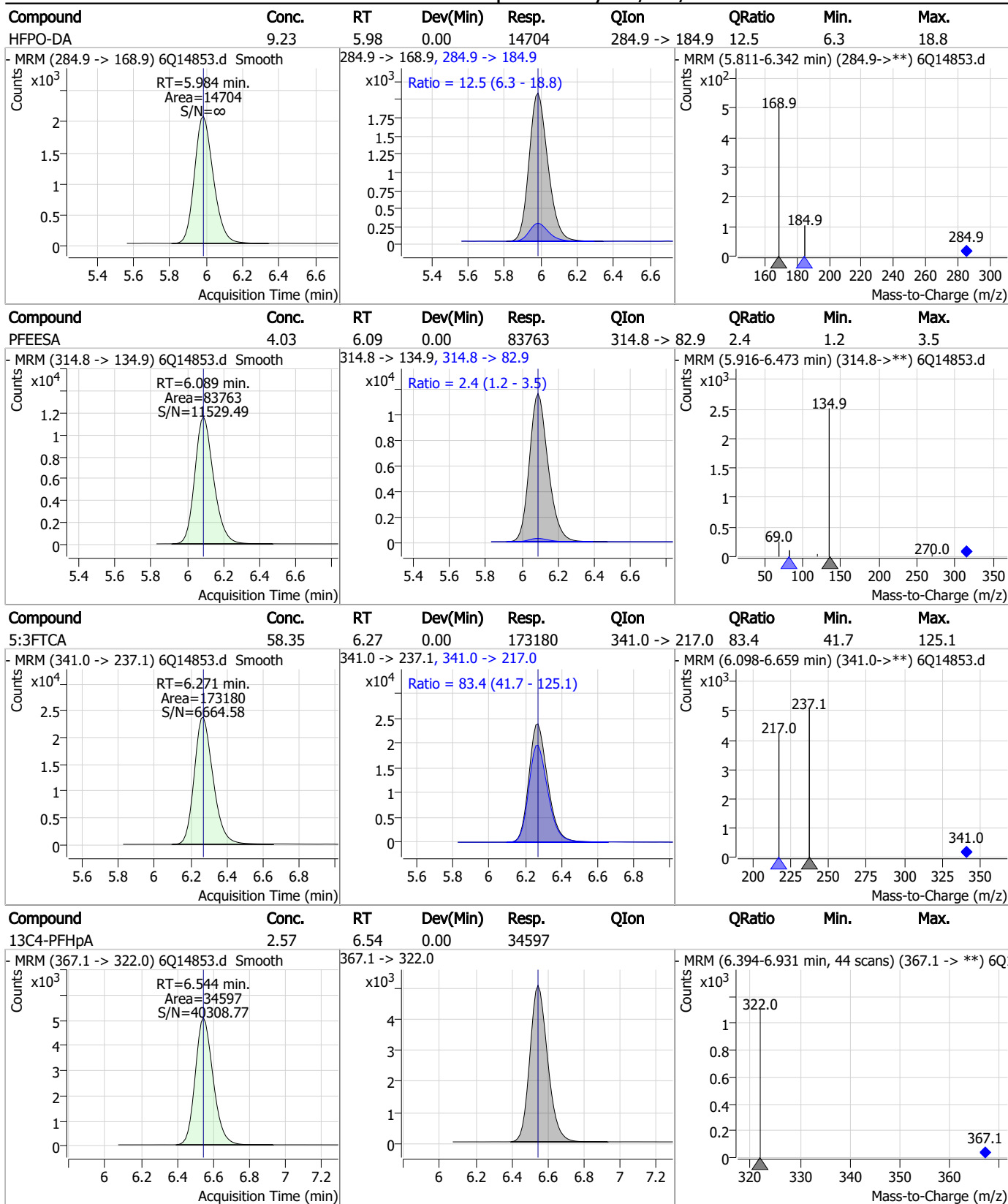
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Perfluorinated Compounds by LC/MS/MS



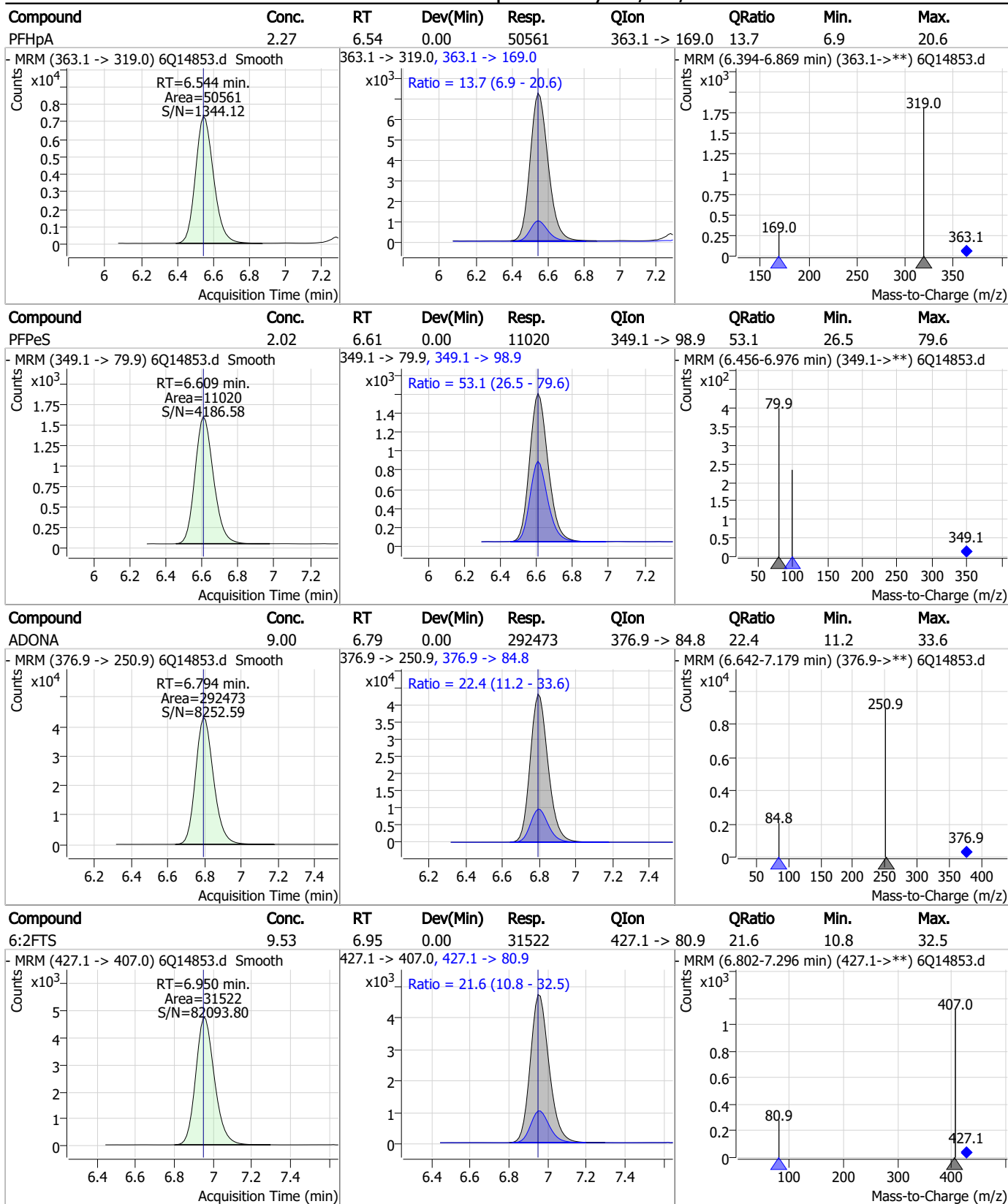
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Perfluorinated Compounds by LC/MS/MS



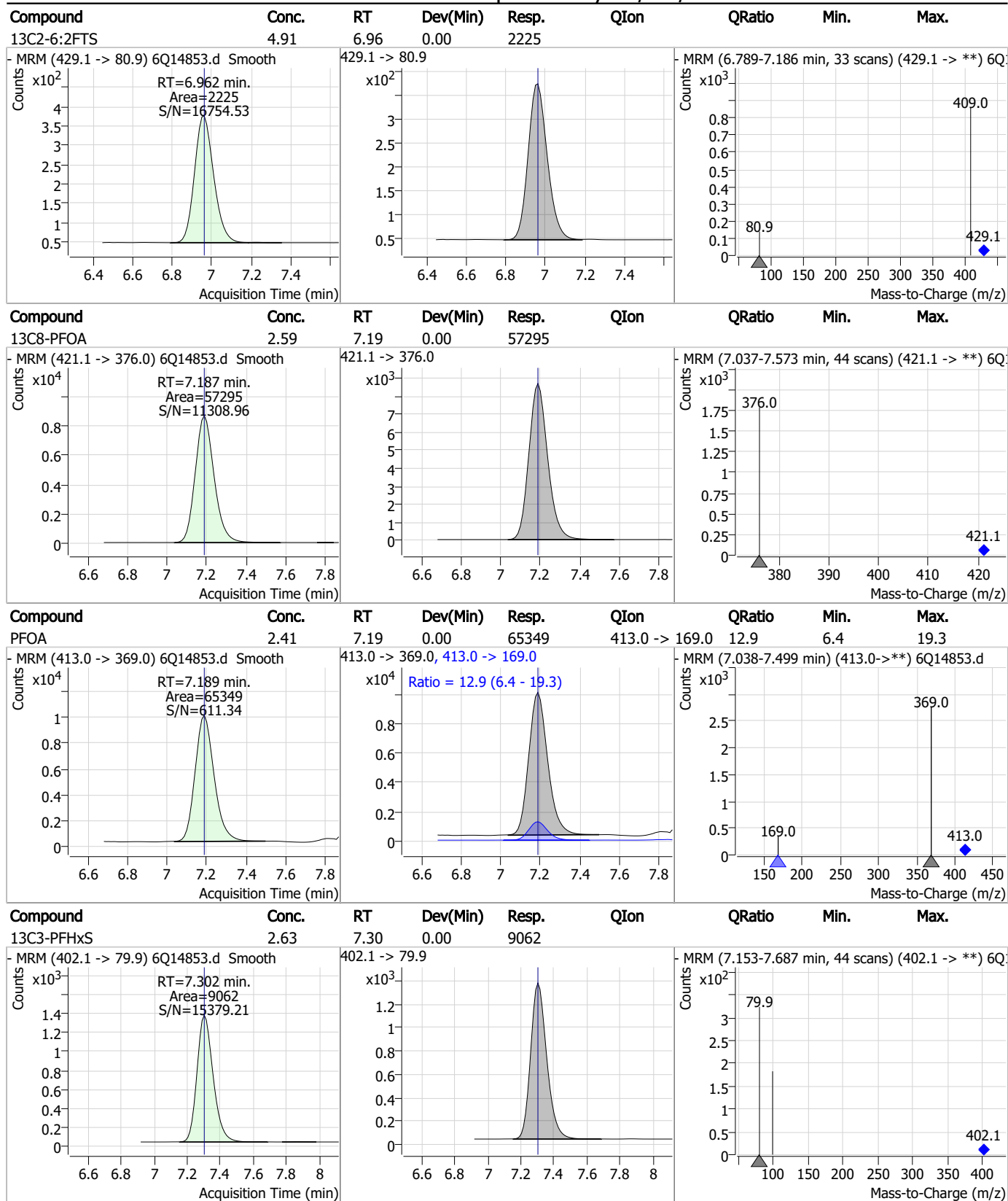
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Perfluorinated Compounds by LC/MS/MS



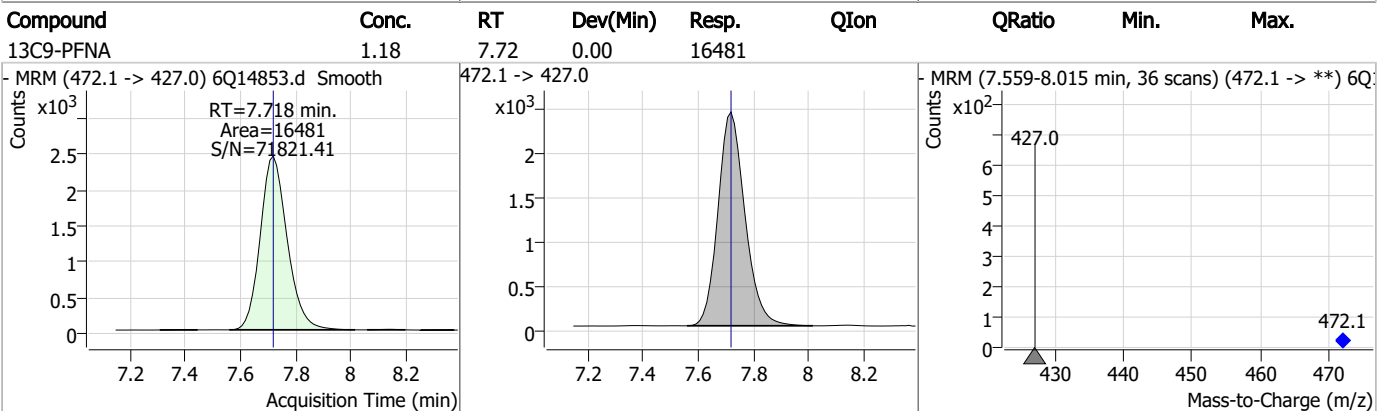
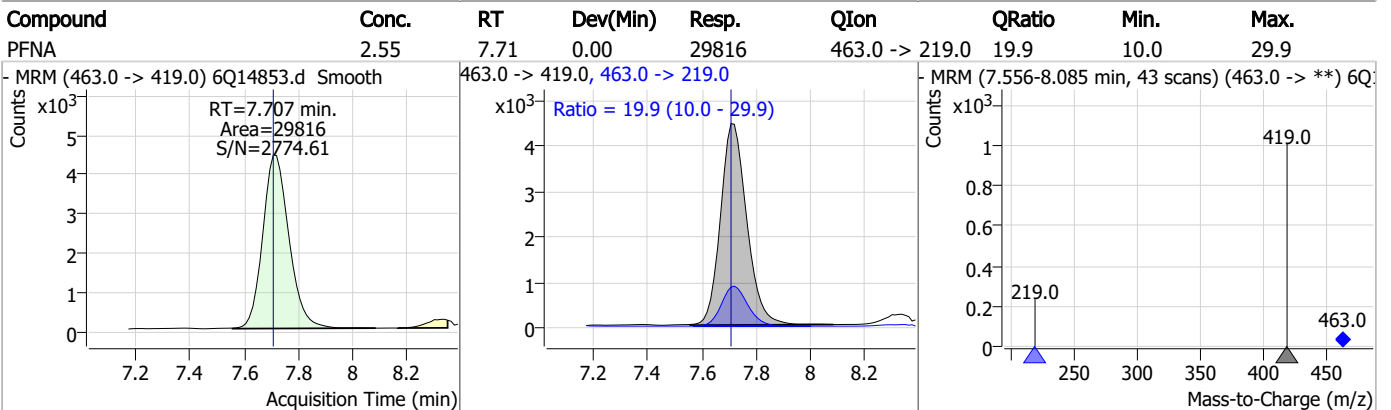
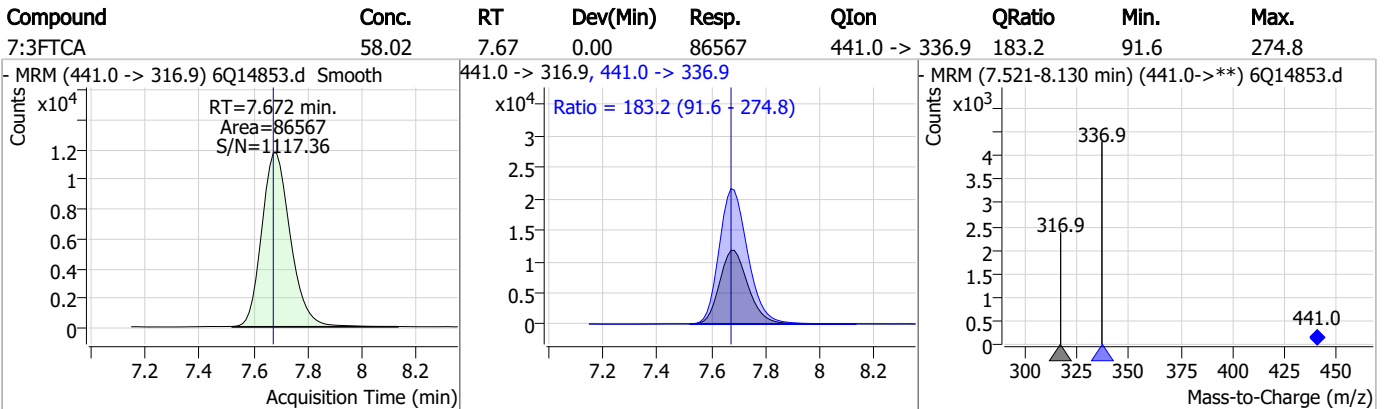
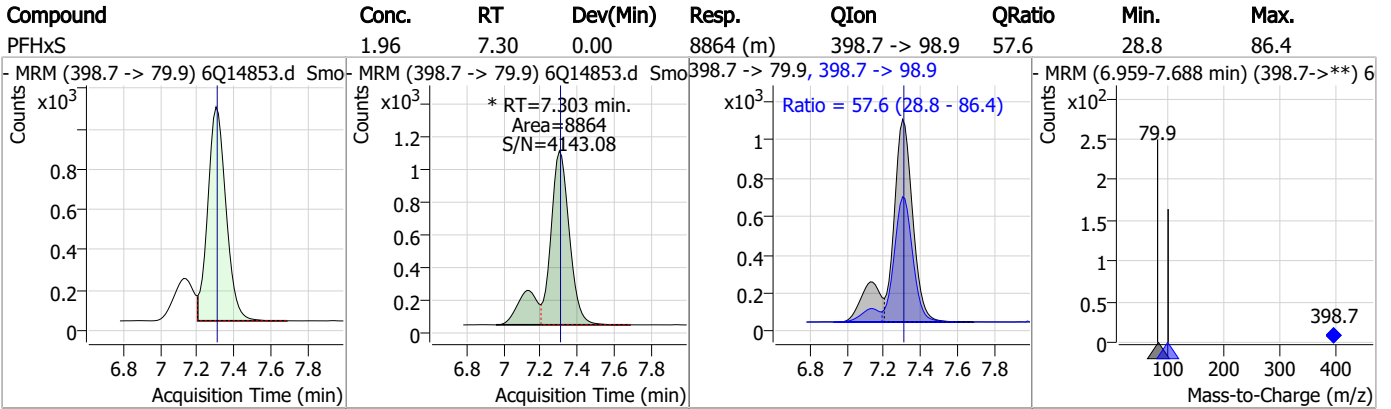
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Perfluorinated Compounds by LC/MS/MS



7.7.5
7

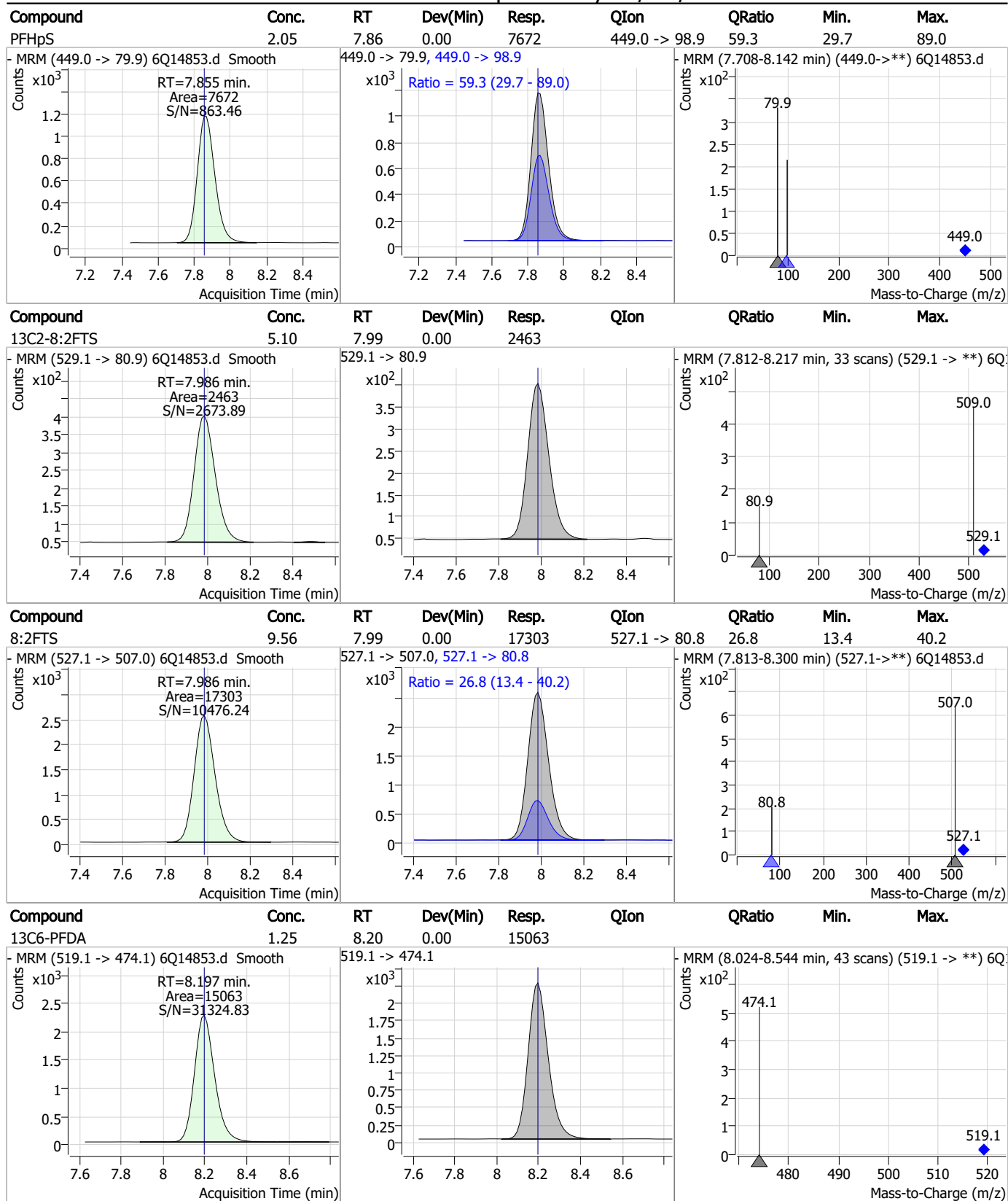
Perfluorinated Compounds by LC/MS/MS



7.7.5

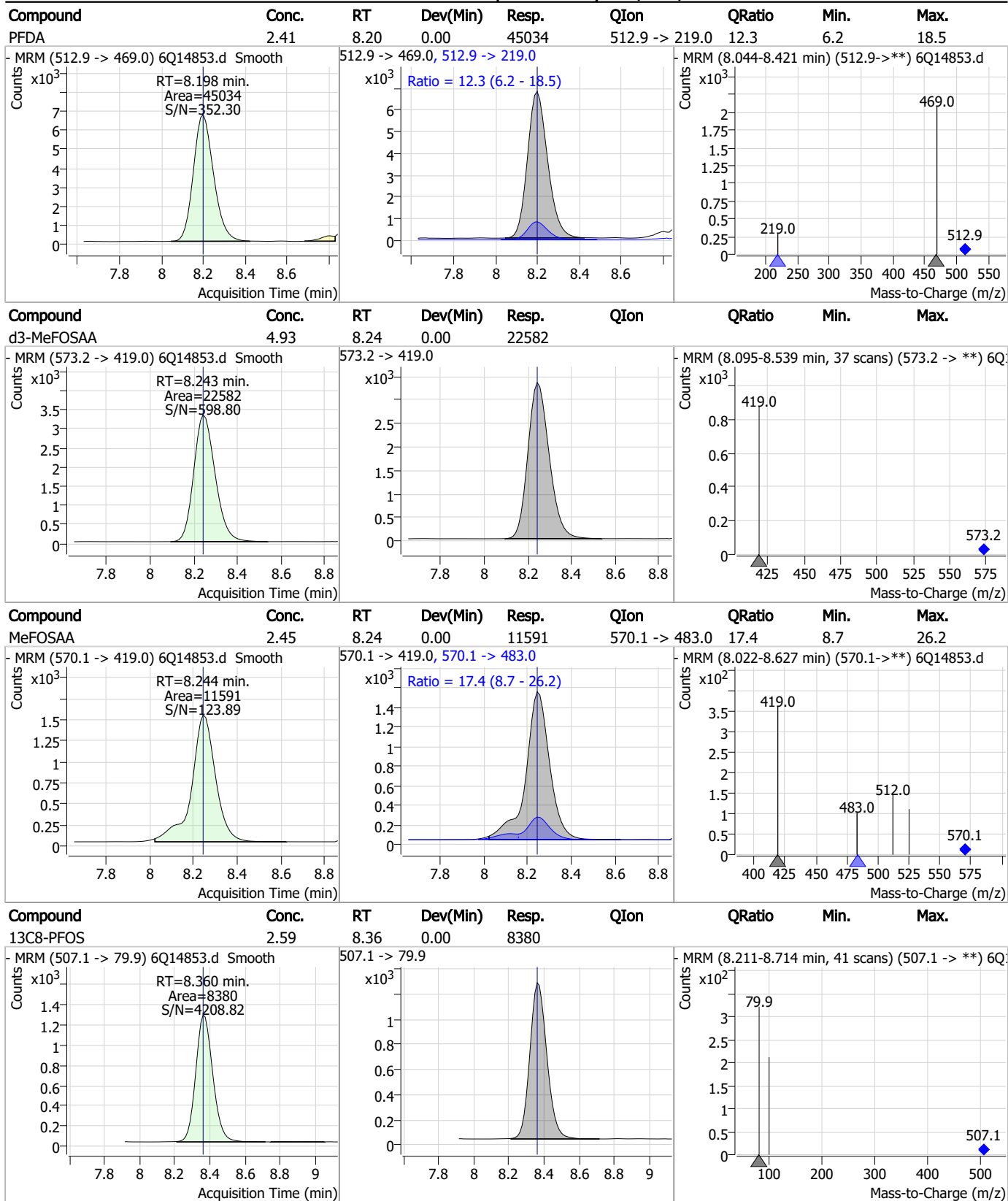
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Perfluorinated Compounds by LC/MS/MS



7.7.5
7

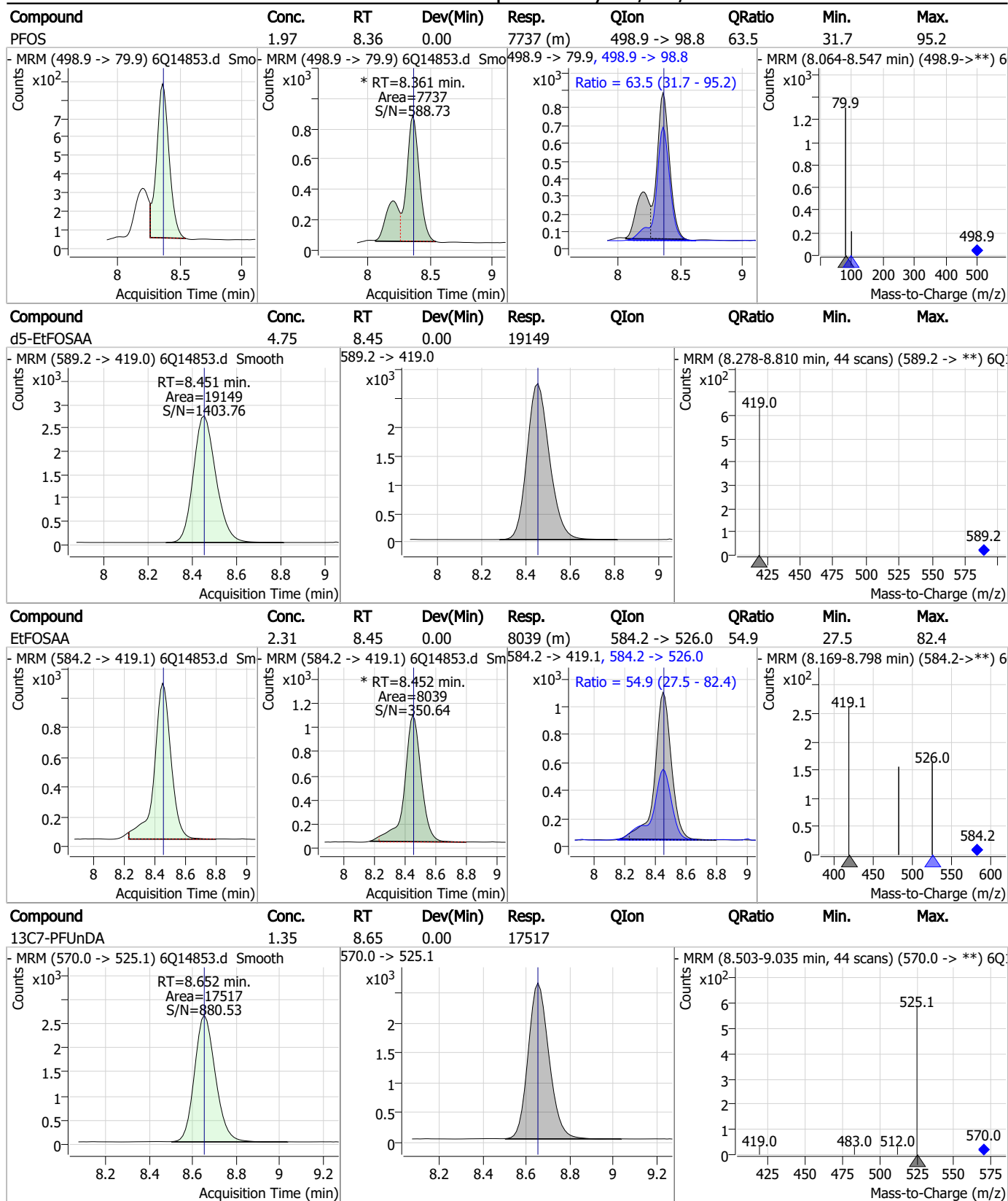
Perfluorinated Compounds by LC/MS/MS



7.7.5

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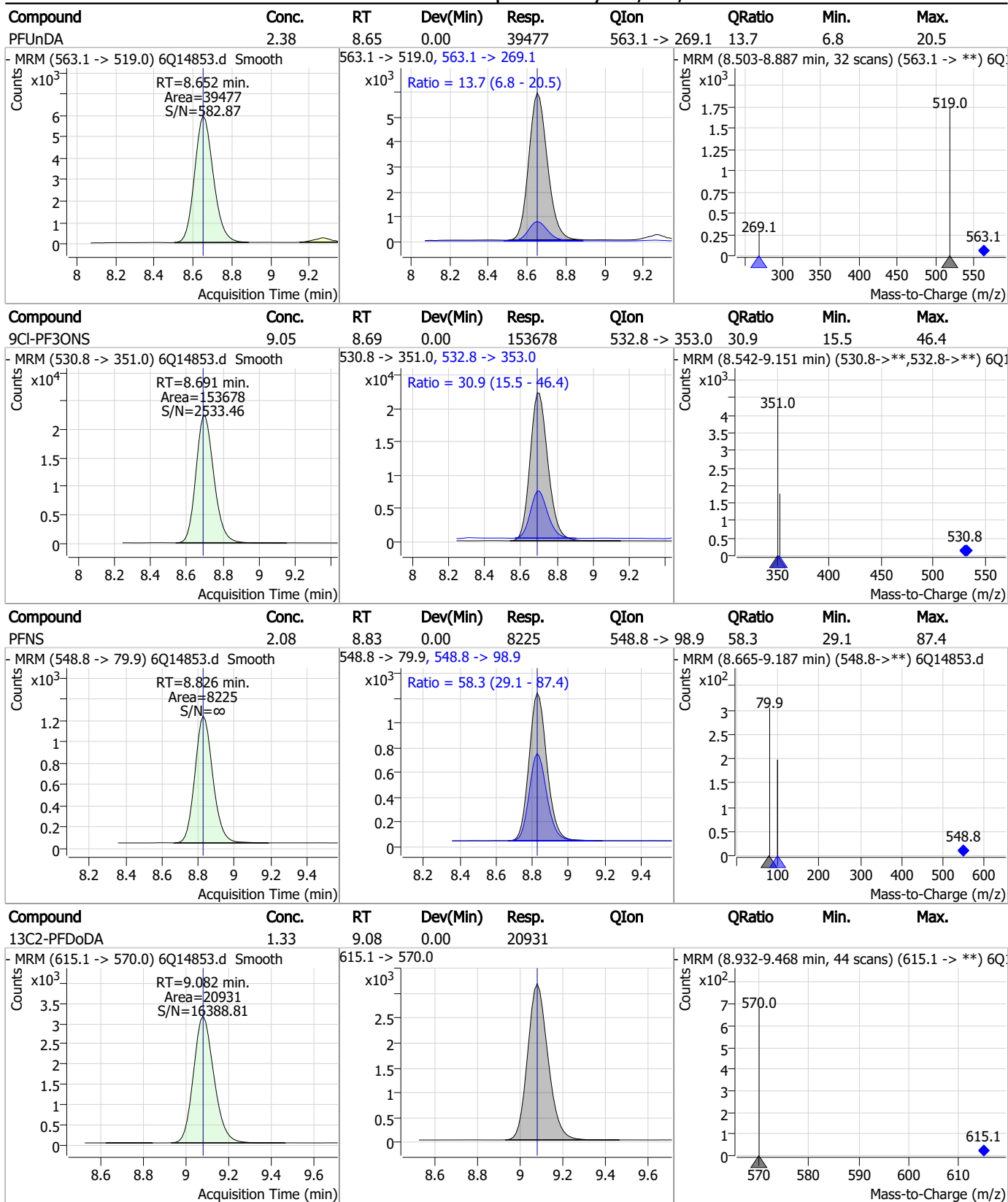
Perfluorinated Compounds by LC/MS/MS



7.7.5

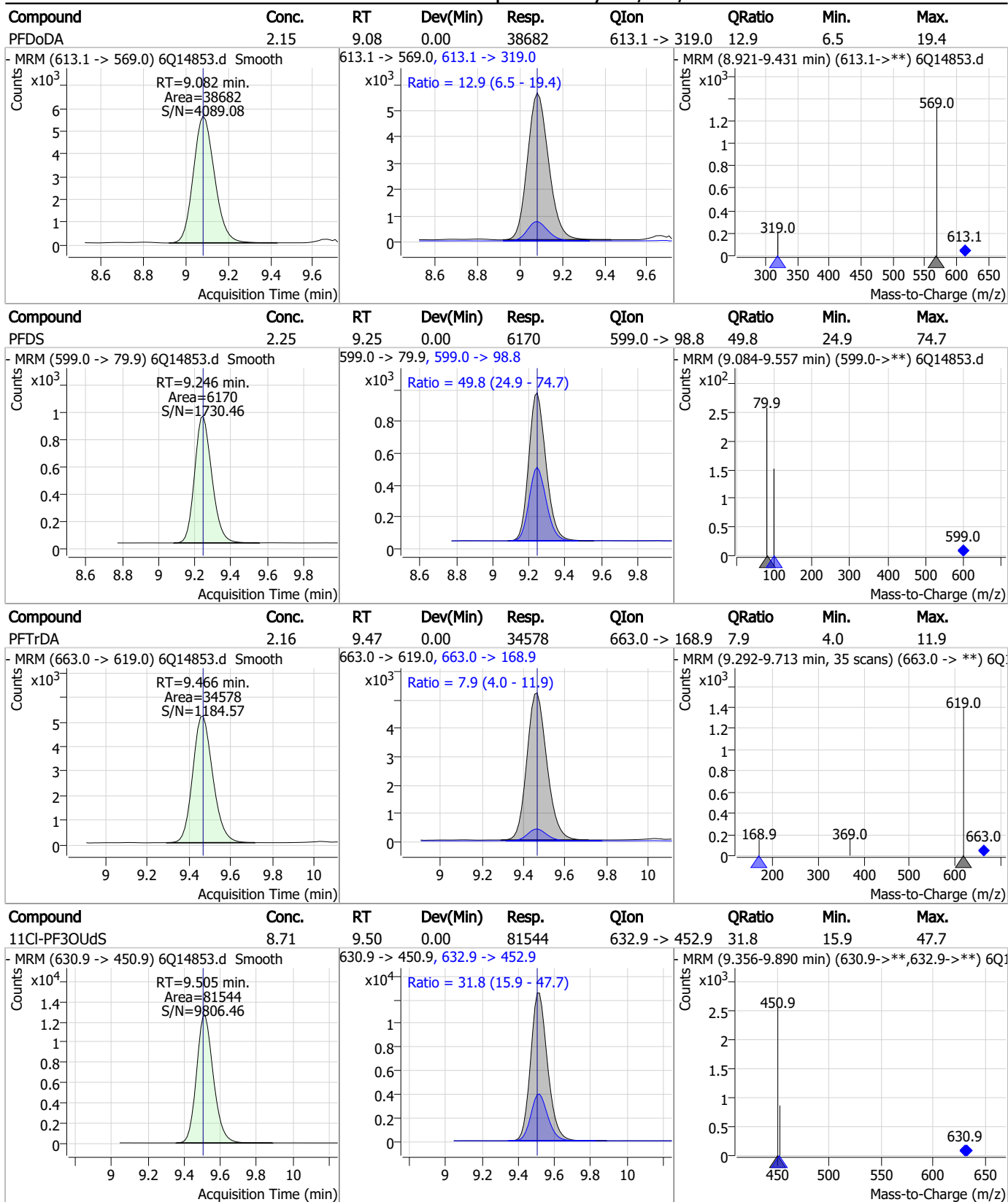
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Perfluorinated Compounds by LC/MS/MS



7.7.5
7

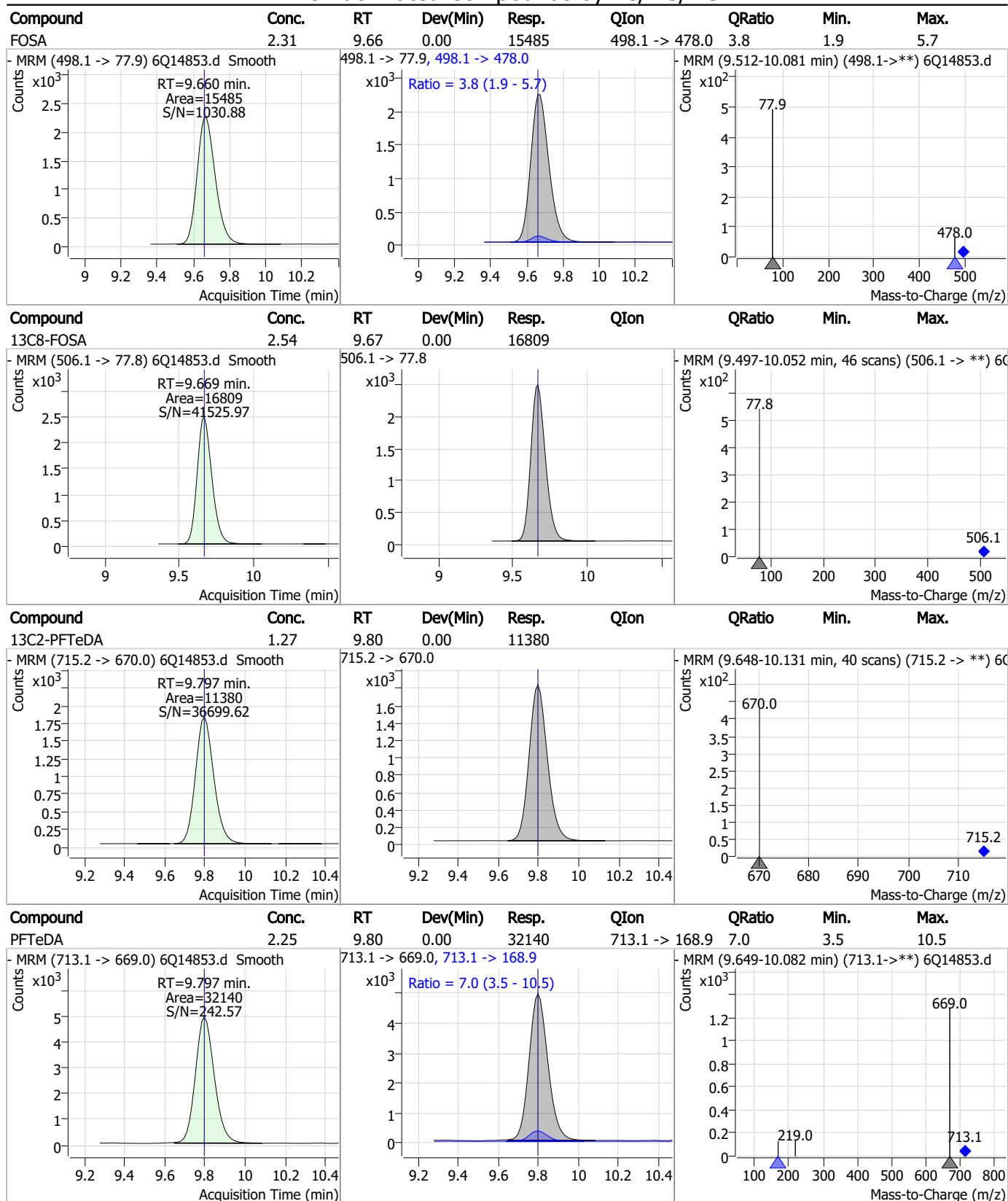
Perfluorinated Compounds by LC/MS/MS



7.7.5

7

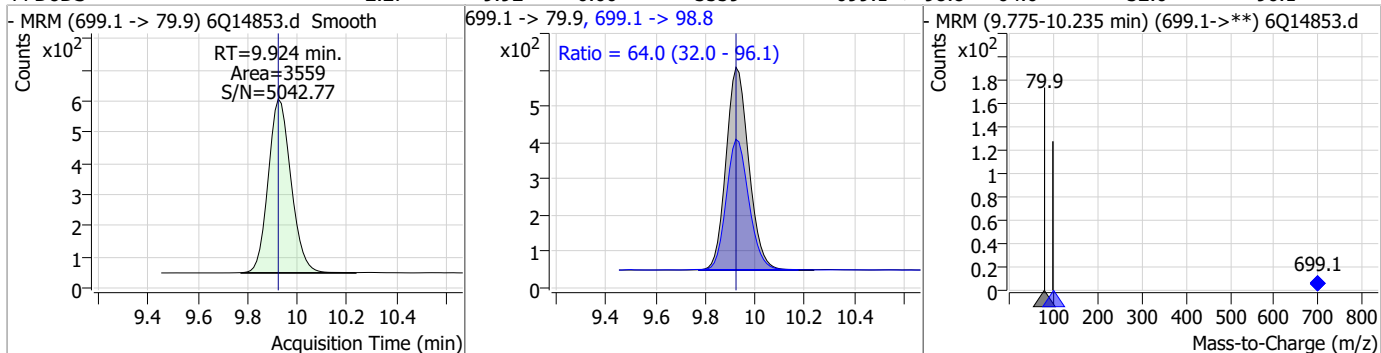
Perfluorinated Compounds by LC/MS/MS



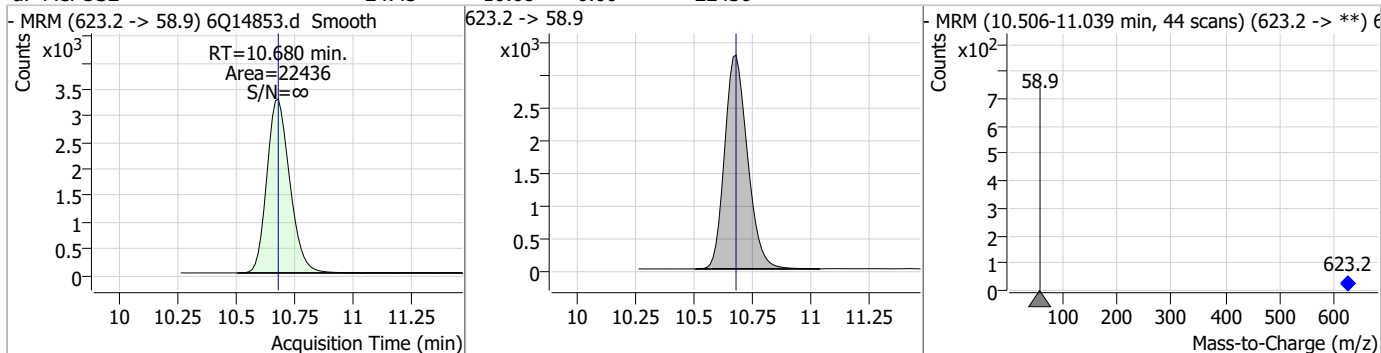
7.7.5
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Perfluorinated Compounds by LC/MS/MS

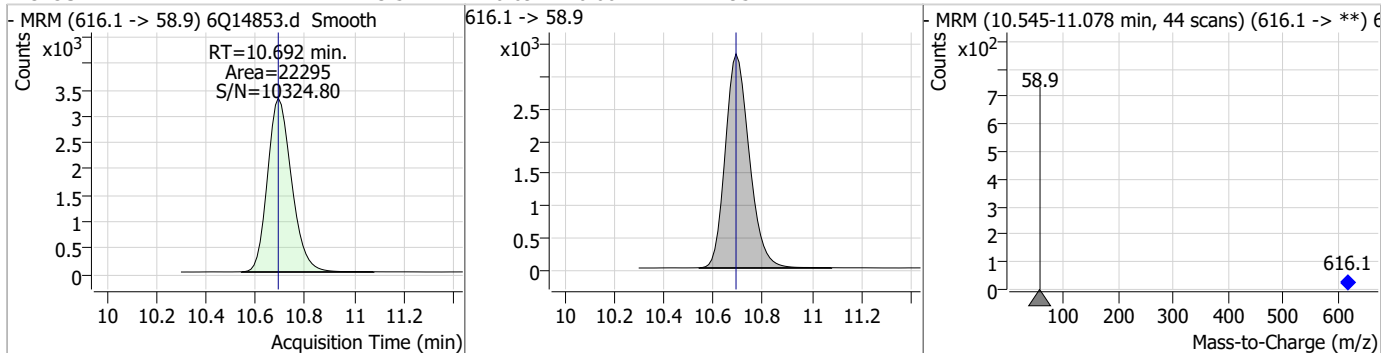
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.27	9.92	0.00	3559	699.1 -> 98.8	64.0	32.0	96.1



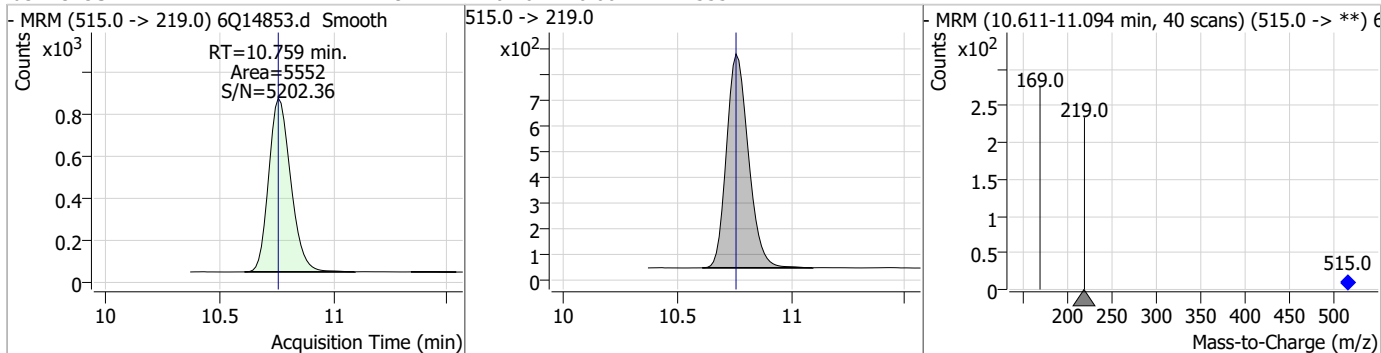
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.45	10.68	0.00	22436				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.54	10.69	0.00	22295				



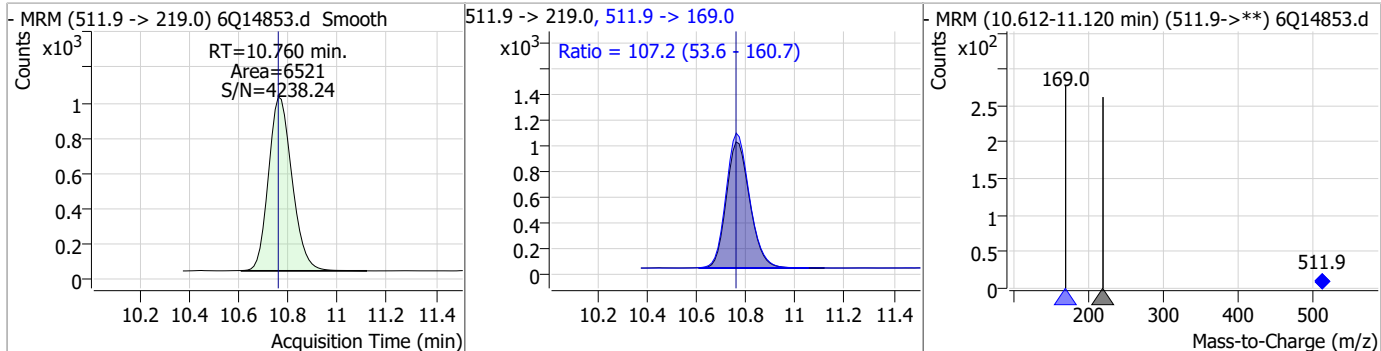
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.29	10.76	0.00	5552				



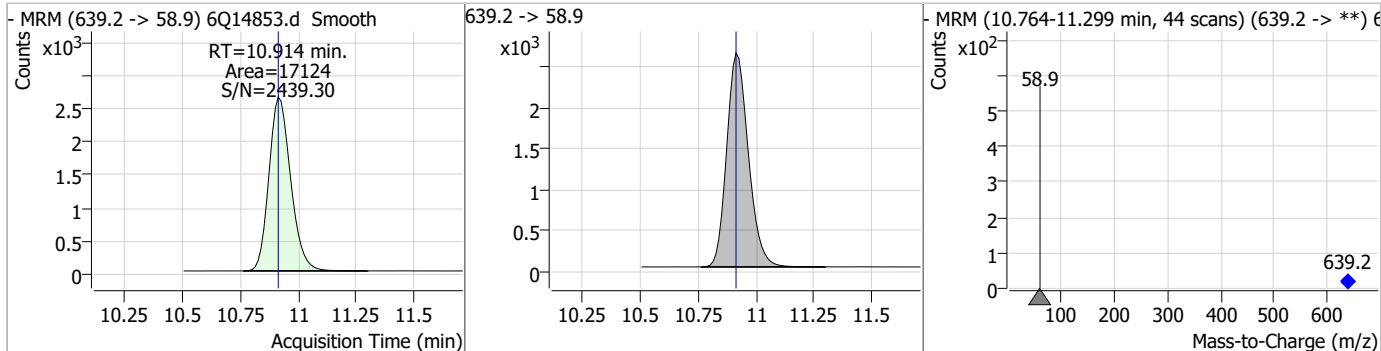
7.7.5
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Perfluorinated Compounds by LC/MS/MS

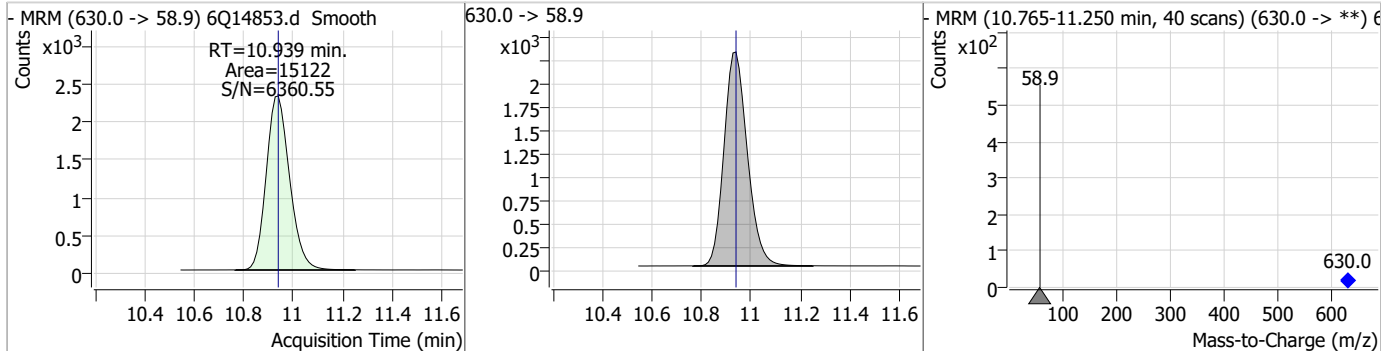
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	2.44	10.76	0.00	6521	511.9 -> 169.0	107.2	53.6	160.7



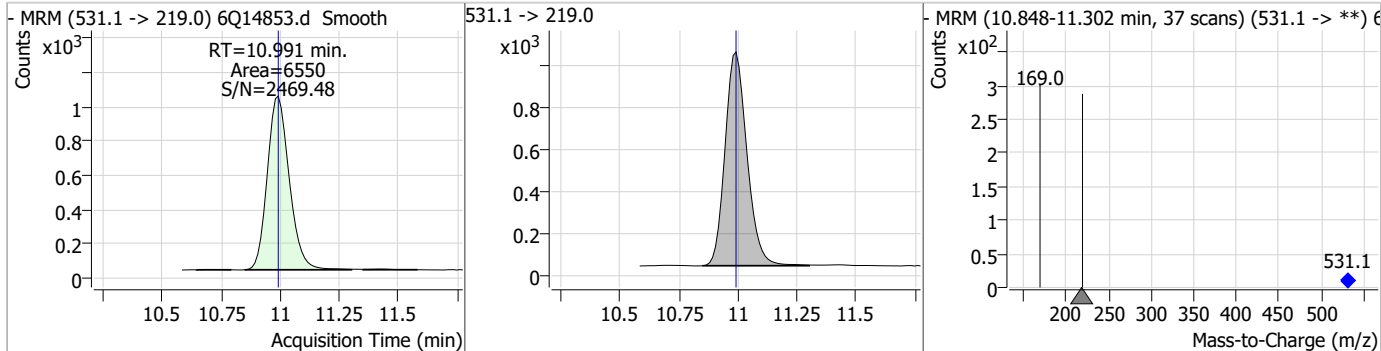
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.43	10.91	0.00	17124				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	21.68	10.94	0.00	15122				

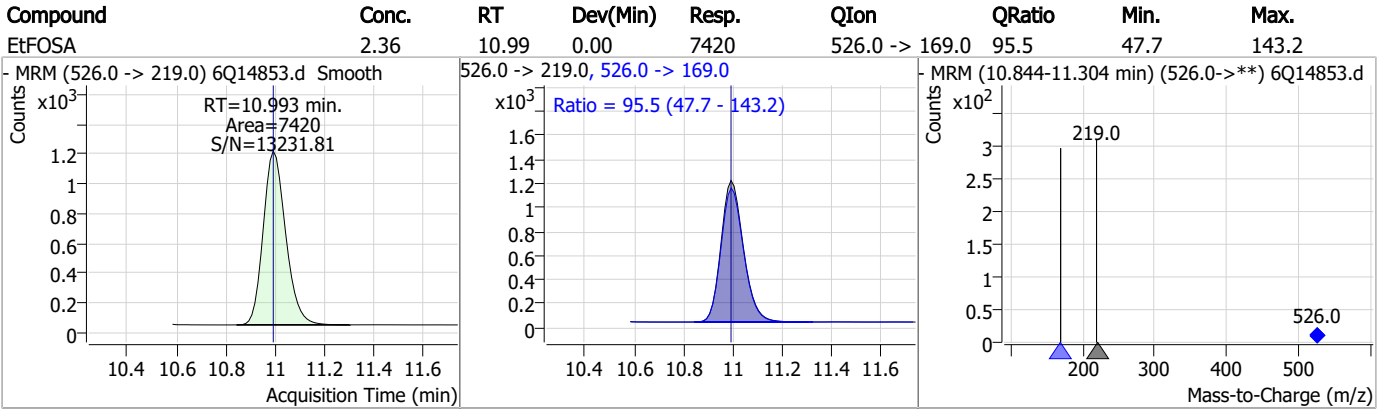


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.45	10.99	0.00	6550				



7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5

7

Manual Integration Approval Summary

Sample Number: S6Q225-ICC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14853.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 22:28 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

7.7.5.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14854.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 10:42:10 PM
 Sample Name : ic225-5
 Vial : P1-A6
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	74395	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	35941	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	31592	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	30746	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	54758	2.50 µg/L	0.000
M9-PFNA	7.718	472.1 -> 427.0	17240	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	14313	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	15380	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	18806	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	8383	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	14528	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	12096	2.50 µg/L	-0.012
M3-PFHxS	7.302	402.1 -> 79.9	8291	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	7697	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1684	5.00 µg/L	-0.012
M2-6:2FTS	6.962	429.1 -> 80.9	2156	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	2098	5.00 µg/L	0.000
M3-MeFOSAA	8.255	573.2 -> 419.0	22030	5.00 µg/L	0.012
M3-HFPO-DA	5.983	286.9 -> 168.9	13586	10.00 µg/L	0.000
M5-EtFOSAA	8.451	589.2 -> 419.0	18984	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	20909	25.00 µg/L	0.000
M9-EtFOSE	10.914	639.2 -> 58.9	14562	25.00 µg/L	0.000
M5-EtFOSA	10.991	531.1 -> 219.0	6426	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5402	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	9449	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	32320	5.00 µg/L	0.000
18O2-PFHxS	7.314	403.0 -> 83.9	5576	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	63347	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	18868	1.25 µg/L	0.000
13C5-PFNA	7.718	468.0 -> 423.0	16819	1.25 µg/L	0.000
13C2-PFHxA	5.606	315.1 -> 270.0	31471	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1684	5.26 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-6:2FTS	6.962	429.1 -> 80.9	2156	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2098	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C2-PFDoDA	9.082	615.1 -> 570.0	18806	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-PFTeDA	9.797	715.2 -> 670.0	8383	1.00 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.6%		
13C3-PFBS	5.536	302.1 -> 79.9	12096	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C3-PFHxS	7.302	402.1 -> 79.9	8291	2.63 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 = 105.3%		
13C4-PFBA	2.947	216.8 -> 171.9	74395	10.03 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C4-PFHpA	6.544	367.1 -> 322.0	30746	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C5-PFHxA	5.605	318.0 -> 273.0	31592	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C5-PFPeA	4.395	268.3 -> 223.0	35941	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C6-PFDA	8.197	519.1 -> 474.1	14313	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C7-PFUnDA	8.652	570.0 -> 525.1	15380	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C8-FOSA	9.669	506.1 -> 77.8	14528	2.22 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 88.6%		
13C8-PFOA	7.187	421.1 -> 376.0	54758	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C8-PFOS	8.360	507.1 -> 79.9	7697	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C9-PFNA	7.718	472.1 -> 427.0	17240	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
d3-MeFOSAA	8.255	573.2 -> 419.0	22030	4.85 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C3-HFPO-DA	5.983	286.9 -> 168.9	13586	9.56 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.6%		
d3-MeFOSA	10.759	515.0 -> 219.0	5402	2.25 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.1%		
d5-EtFOSAA	8.451	589.2 -> 419.0	18984	4.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
d7-MeFOSE	10.680	623.2 -> 58.9	20909	23.00 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 92.0%		
d9-EtFOSE	10.914	639.2 -> 58.9	14562	22.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 90.8%		
d5-EtFOSA	10.991	531.1 -> 219.0	6426	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	73161	18.78 µg/L	96
		327.1 -> 80.9	17052		
6:2FTS	6.962	427.1 -> 407.0	61824	19.30 µg/L	99
		427.1 -> 80.9	13129		
8:2FTS	7.986	527.1 -> 507.0	35782	23.20 µg/L	96
		527.1 -> 80.8	8763		
EtFOSAA	8.452	584.2 -> 419.1	15549	4.51 µg/L	m 99
		584.2 -> 526.0	8680		
FOSA	9.672	498.1 -> 77.9	29023	5.00 µg/L	100
		498.1 -> 478.0	1065		
MeFOSAA	8.256	570.1 -> 419.0	23004	4.99 µg/L	m 97
		570.1 -> 483.0	3709		
PFBA	2.956	212.8 -> 168.9	39978	19.69 µg/L	100
PFBS	5.537	298.7 -> 79.9	24524	4.60 µg/L	98
		298.7 -> 98.8	10859		
PFDA	8.198	512.9 -> 469.0	90276	5.08 µg/L	94
		512.9 -> 219.0	13177		
PFDODA	9.082	613.1 -> 569.0	79896	4.93 µg/L	98
		613.1 -> 319.0	9586		
PFDS	9.246	599.0 -> 79.9	11154	4.43 µg/L	94

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	5992			
PFHpA	6.544	363.1 -> 319.0	102437	5.17	µg/L	98
		363.1 -> 169.0	14808			
PFHpS	7.868	449.0 -> 79.9	16537	4.82	µg/L	90
		449.0 -> 98.9	8516			
PFHxA	5.607	313.0 -> 269.0	67308	5.06	µg/L	100
		313.0 -> 118.9	2619			
PFHxS	7.303	398.7 -> 79.9	18351	4.43	µg/L	m 93
		398.7 -> 98.9	9568			
PFNA	7.719	463.0 -> 419.0	58545	4.79	µg/L	98
		463.0 -> 219.0	11054			
PFNS	8.826	548.8 -> 79.9	16302	4.48	µg/L	99
		548.8 -> 98.9	9649			
PFOA	7.189	413.0 -> 369.0	131519	5.07	µg/L	98
		413.0 -> 169.0	18222			
PFOS	8.361	498.9 -> 79.9	16289	4.52	µg/L	m 97
		498.9 -> 98.8	10745			
PFPeA	4.397	263.0 -> 219.0	85257	9.96	µg/L	100
PFPeS	6.609	349.1 -> 79.9	22204	4.44	µg/L	100
		349.1 -> 98.9	11775			
PFTeDA	9.797	713.1 -> 669.0	56667	5.38	µg/L	97
		713.1 -> 168.9	4491			
PFTrDA	9.466	663.0 -> 619.0	73202	5.10	µg/L	100
		663.0 -> 168.9	5757			
PFUnDA	8.652	563.1 -> 519.0	75124	5.16	µg/L	97
		563.1 -> 269.1	11075			
11CI-PF3OUdS	9.517	630.9 -> 450.9	162357	19.32	µg/L	99
		632.9 -> 452.9	50697			
9CI-PF3ONS	8.703	530.8 -> 351.0	299766	19.68	µg/L	99
		532.8 -> 353.0	90728			
ADONA	6.794	376.9 -> 250.9	579566	19.86	µg/L	99
		376.9 -> 84.8	125795			
HFPO-DA	5.984	284.9 -> 168.9	27992	19.58	µg/L	97
		284.9 -> 184.9	3819			
3:3FTCA	3.851	241.0 -> 177.0	10560	24.68	µg/L	98
		241.0 -> 117.0	1504			
5:3FTCA	6.271	341.0 -> 237.1	328887	122.42	µg/L	92
		341.0 -> 217.0	297590			
7:3FTCA	7.684	441.0 -> 316.9	167862	124.30	µg/L	92
		441.0 -> 336.9	325691			
EtFOSA	10.993	526.0 -> 219.0	14368	4.65	µg/L	94
		526.0 -> 169.0	14580			
EtFOSE	10.939	630.0 -> 58.9	29967	50.52	µg/L	100
MeFOSA	10.760	511.9 -> 219.0	13139	5.06	µg/L	98
		511.9 -> 169.0	13771			
MeFOSE	10.692	616.1 -> 58.9	43552	49.34	µg/L	100
PFDoDS	9.924	699.1 -> 79.9	6387	4.44	µg/L	100
		699.1 -> 98.8	4099			
NFDHA	5.488	295.0 -> 201.0	8187	9.55	µg/L	100
		295.0 -> 84.9	3685			
PFMBA	4.806	279.0 -> 85.1	26942	9.66	µg/L	100
PFMPA	3.526	229.0 -> 84.9	24005	9.79	µg/L	100
PFEESA	6.089	314.8 -> 134.9	163646	8.69	µg/L	99
		314.8 -> 82.9	4271			

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

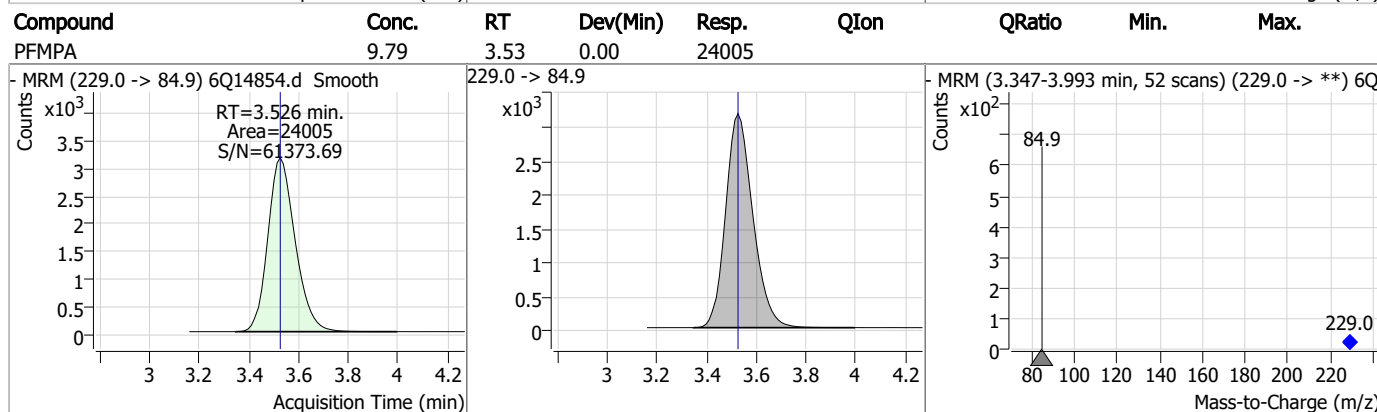
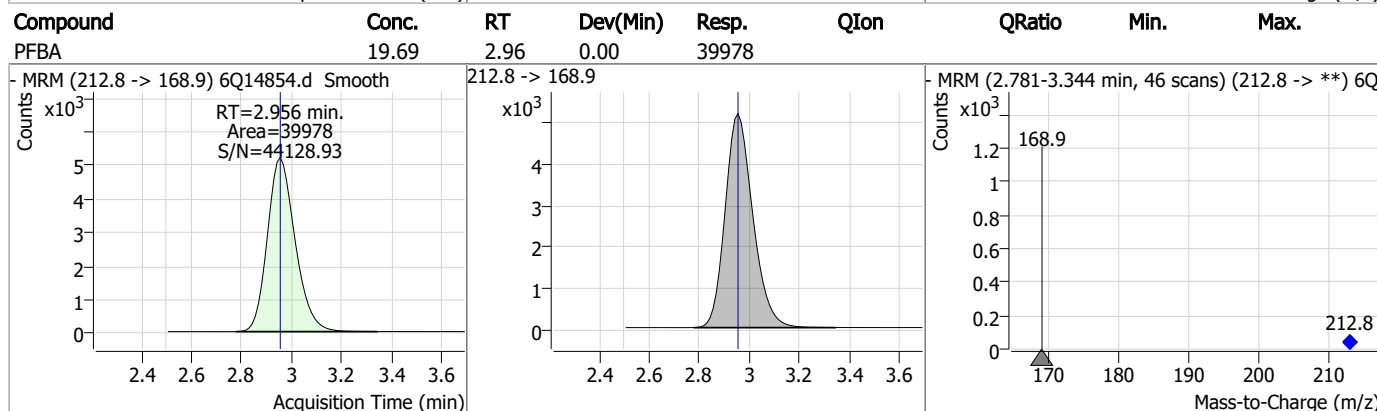
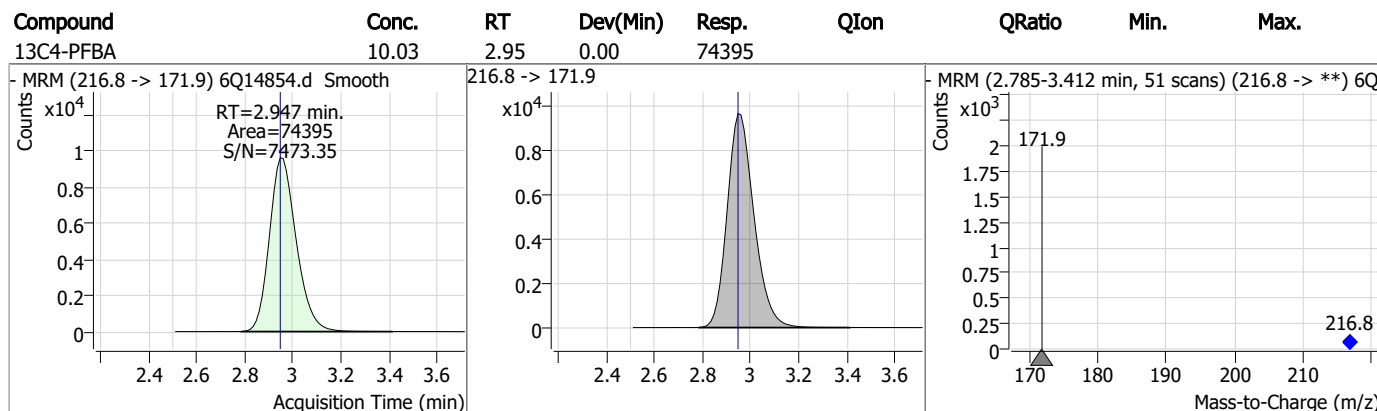
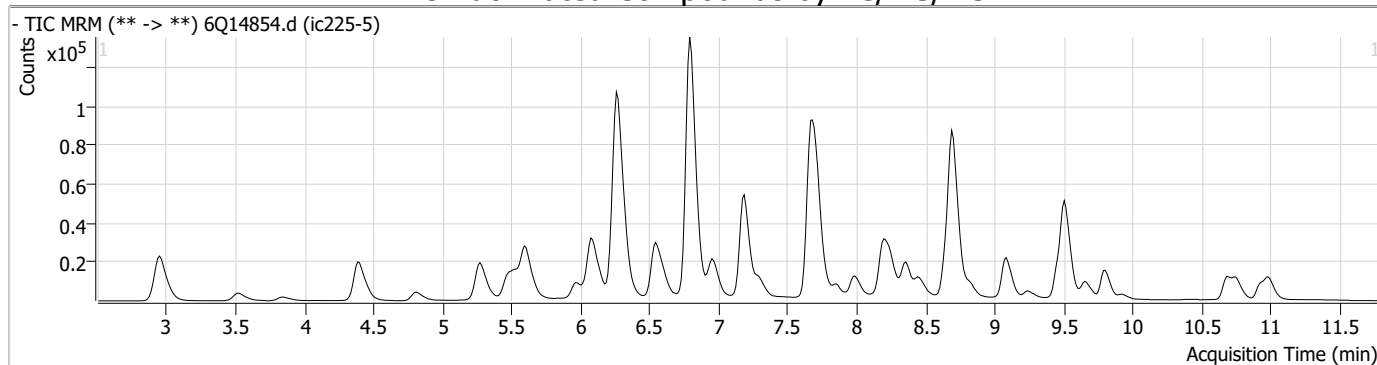
Perfluorinated Compounds by LC/MS/MS

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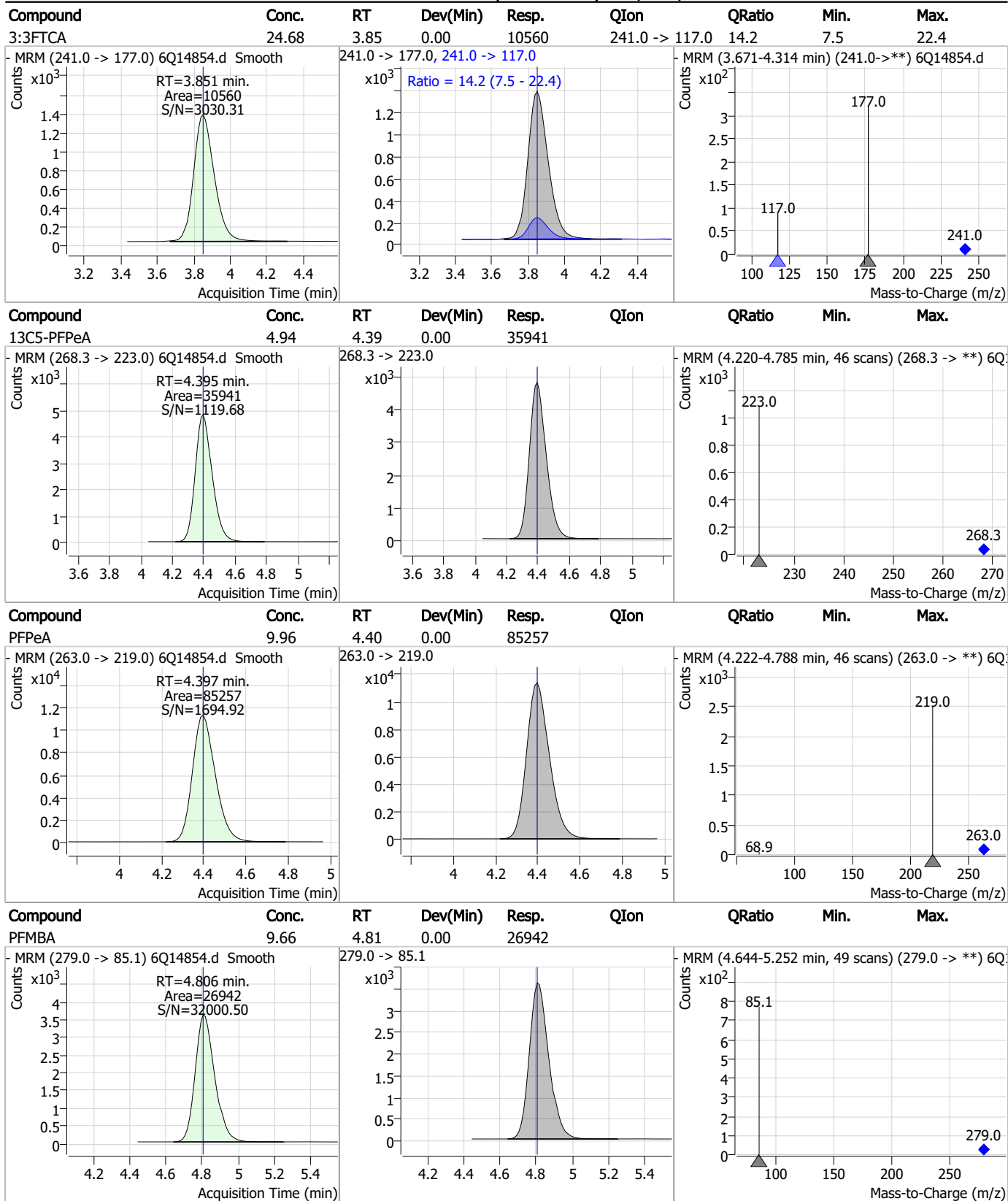
7.7.6

7

Perfluorinated Compounds by LC/MS/MS

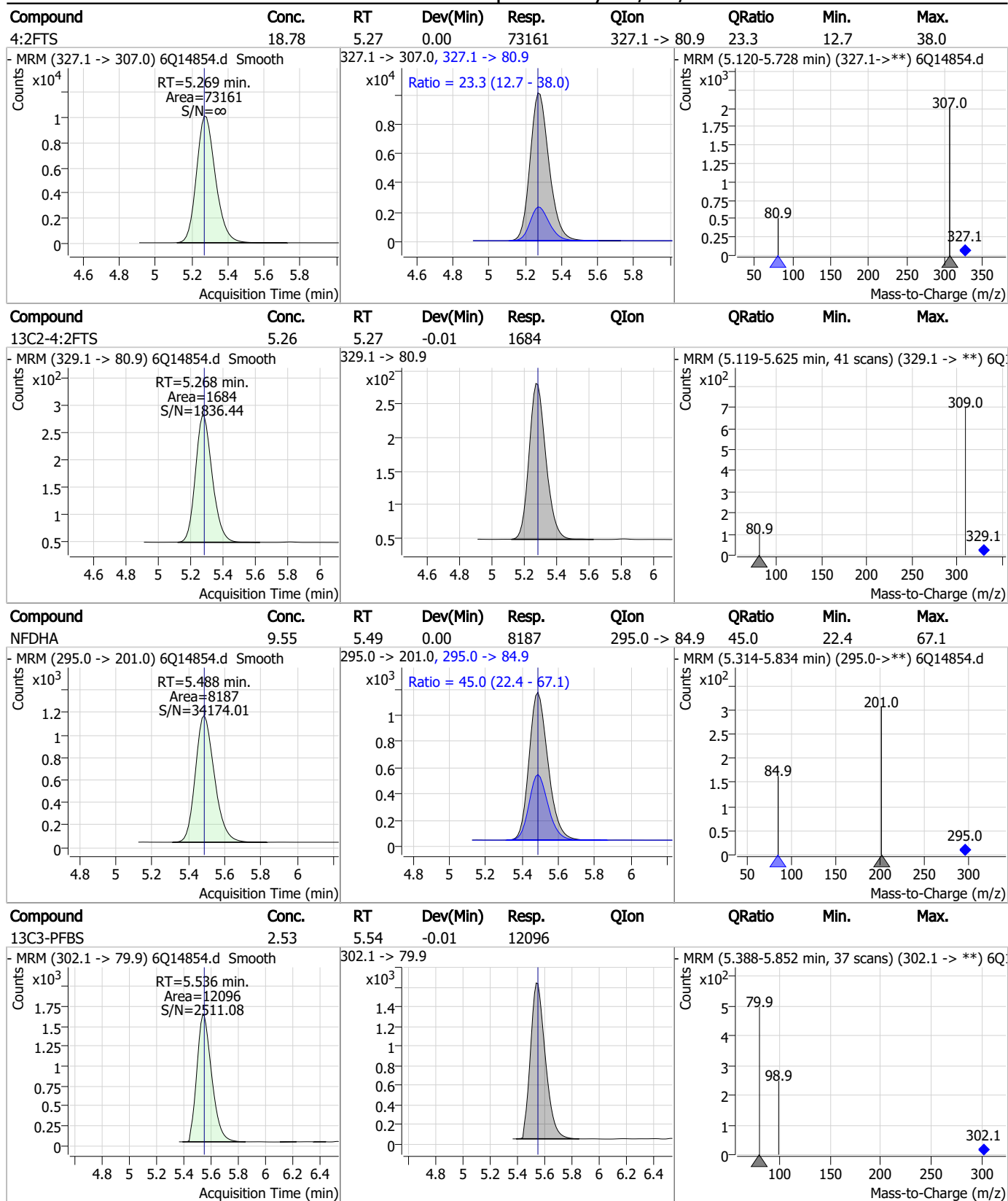


Perfluorinated Compounds by LC/MS/MS



7.7.6
7

Perfluorinated Compounds by LC/MS/MS

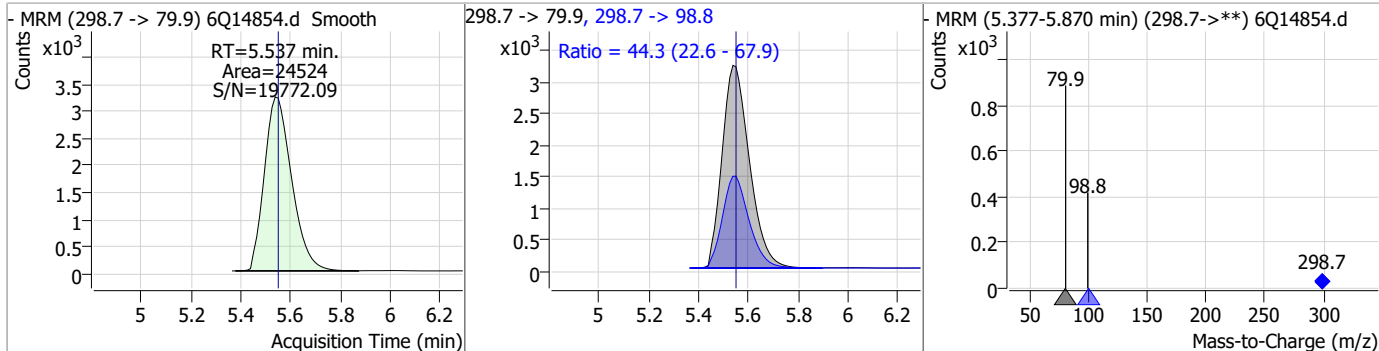


7.7.6

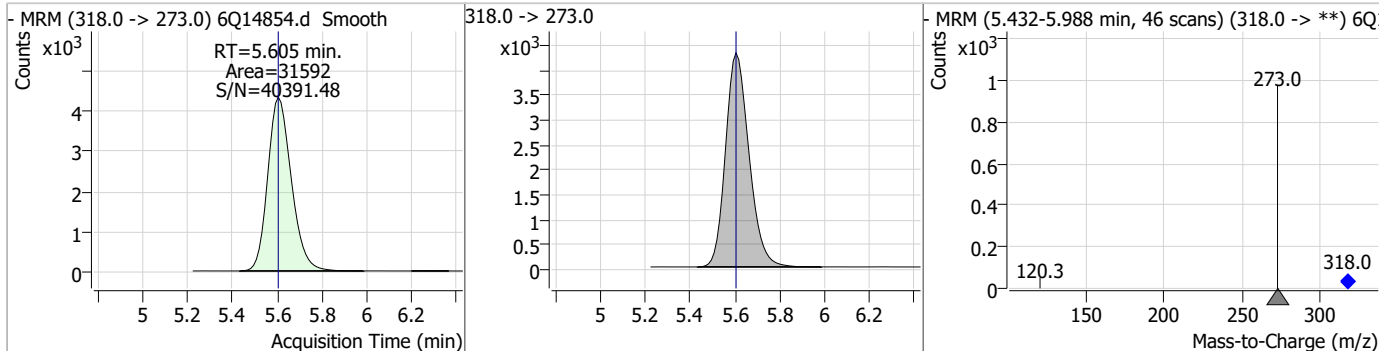
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Perfluorinated Compounds by LC/MS/MS

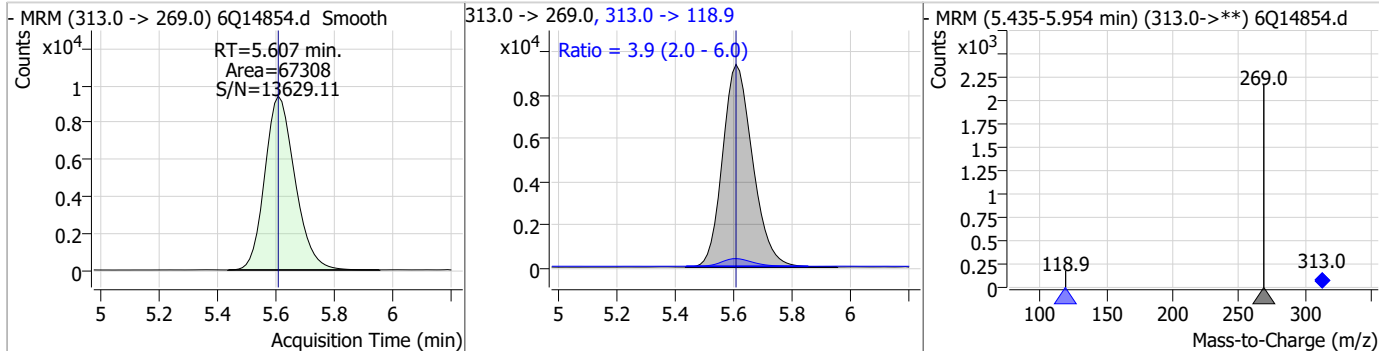
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.60	5.54	-0.01	24524	298.7 -> 98.8	44.3	22.6	67.9



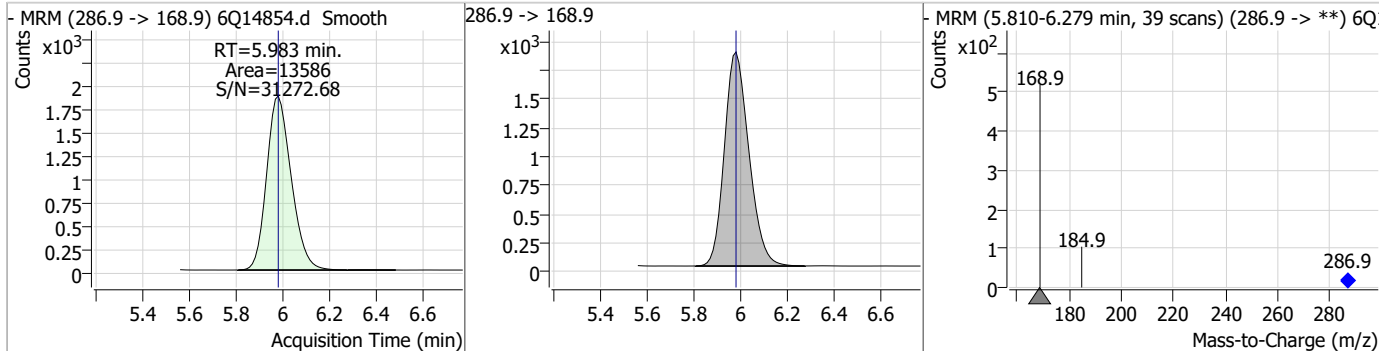
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.60	0.00	31592	318.0 -> 273.0	3.9	2.0	6.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	5.06	5.61	0.00	67308	313.0 -> 118.9	3.9	2.0	6.0

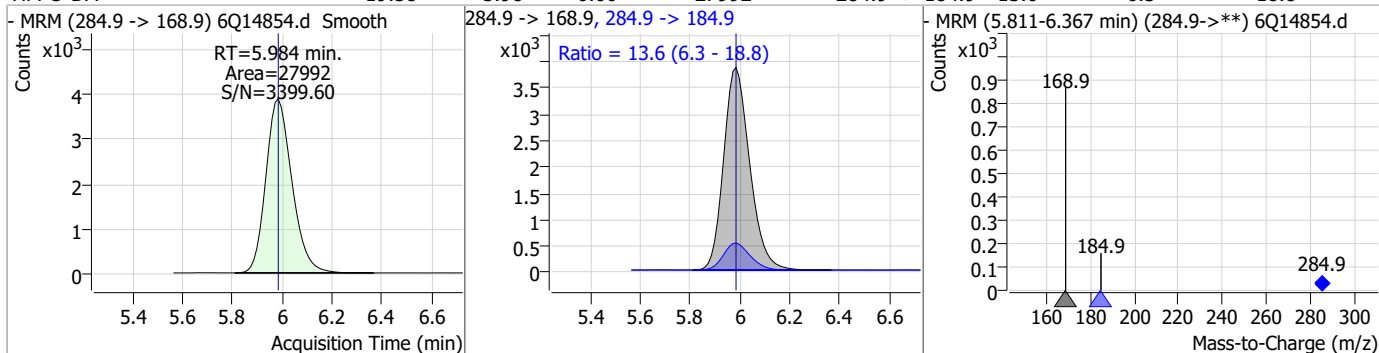


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.56	5.98	0.00	13586	286.9 -> 168.9	3.9	2.0	6.0

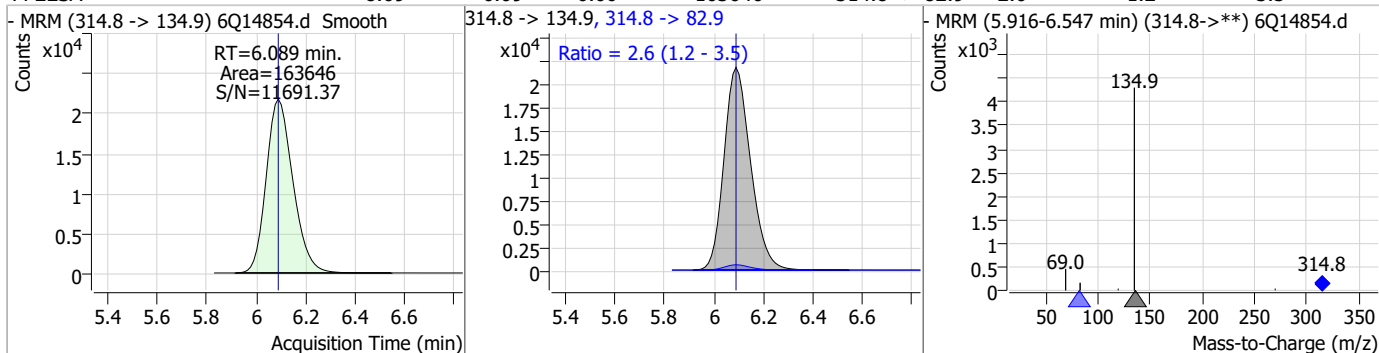


Perfluorinated Compounds by LC/MS/MS

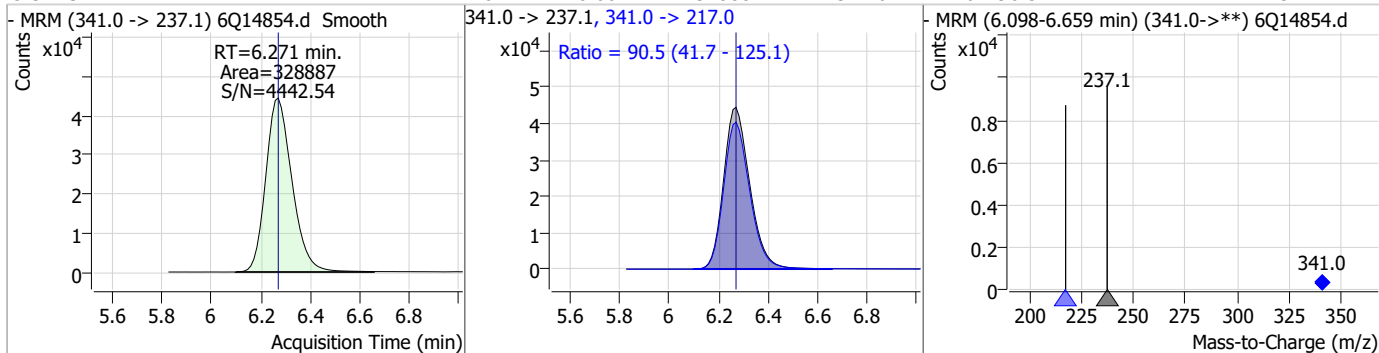
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	19.58	5.98	0.00	27992	284.9 -> 184.9	13.6	6.3	18.8



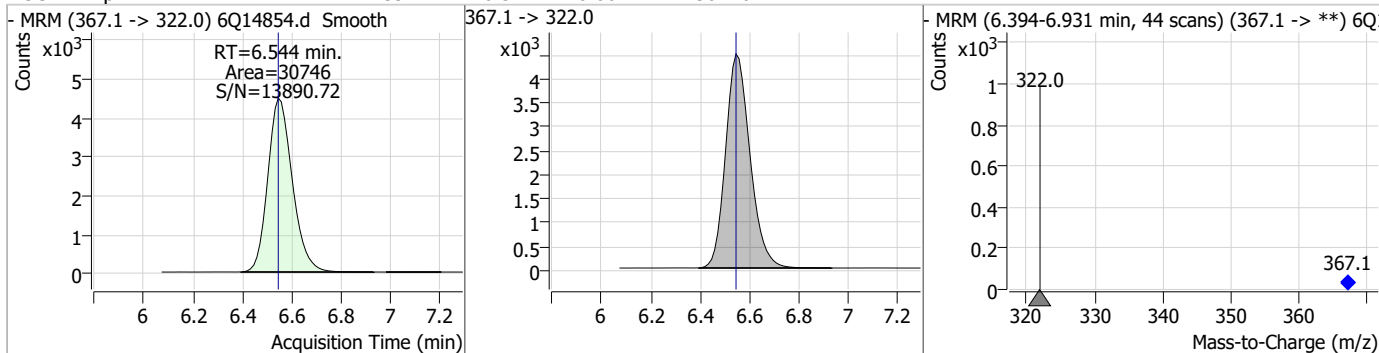
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	8.69	6.09	0.00	163646	314.8 -> 82.9	2.6	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	122.42	6.27	0.00	328887	341.0 -> 217.0	90.5	41.7	125.1

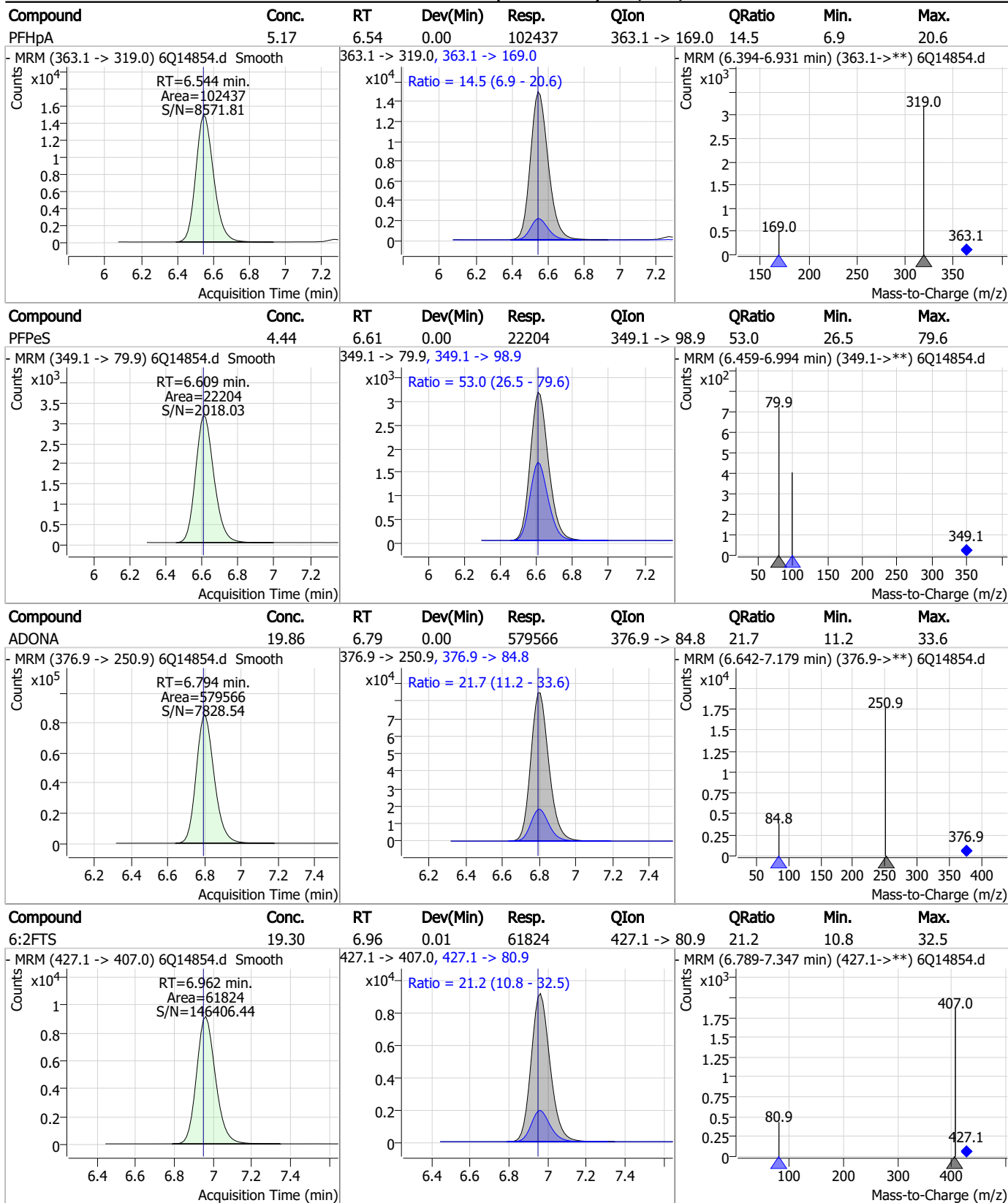


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.39	6.54	0.00	30746	367.1 -> 322.0			



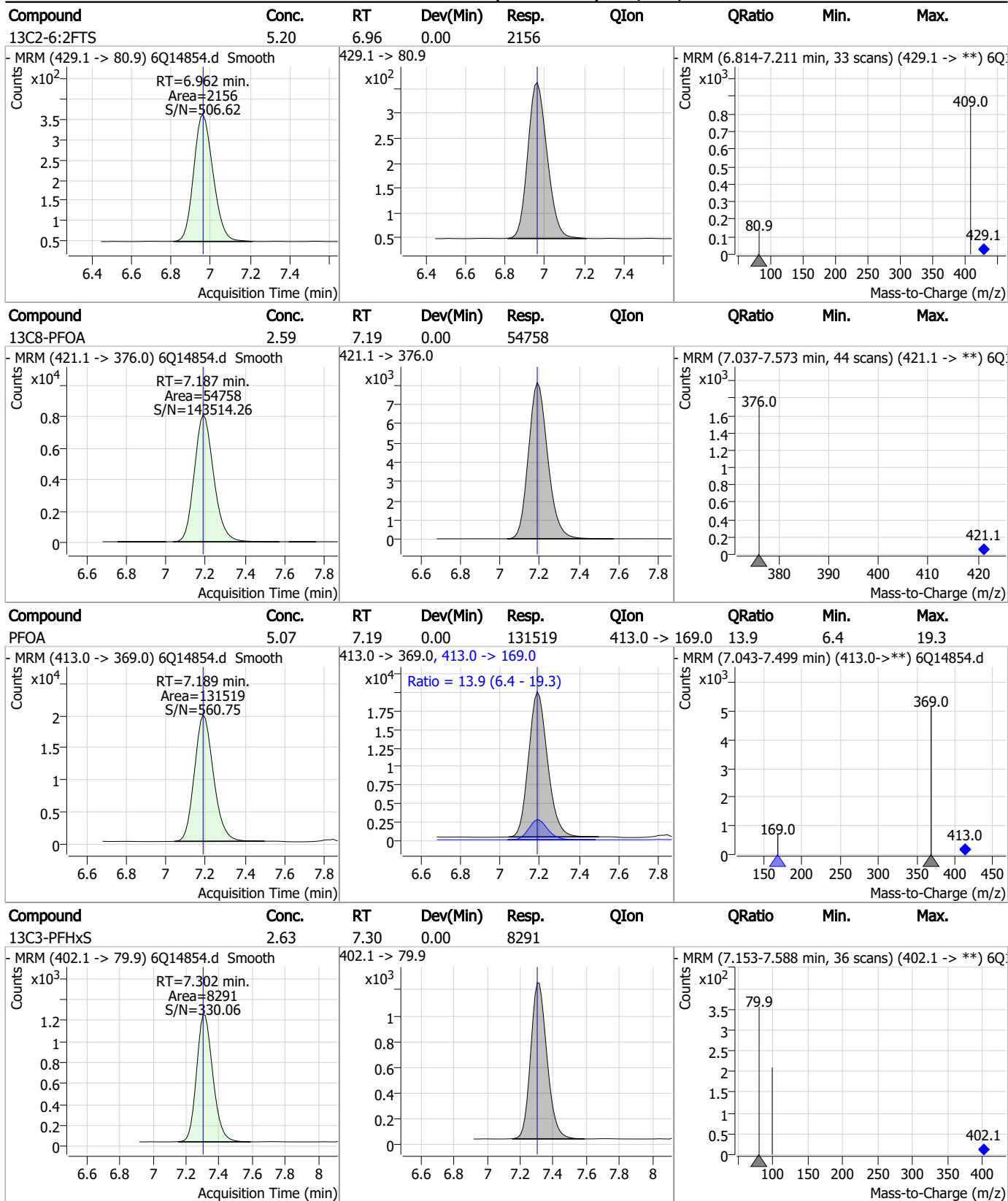
7.7.6
7

Perfluorinated Compounds by LC/MS/MS



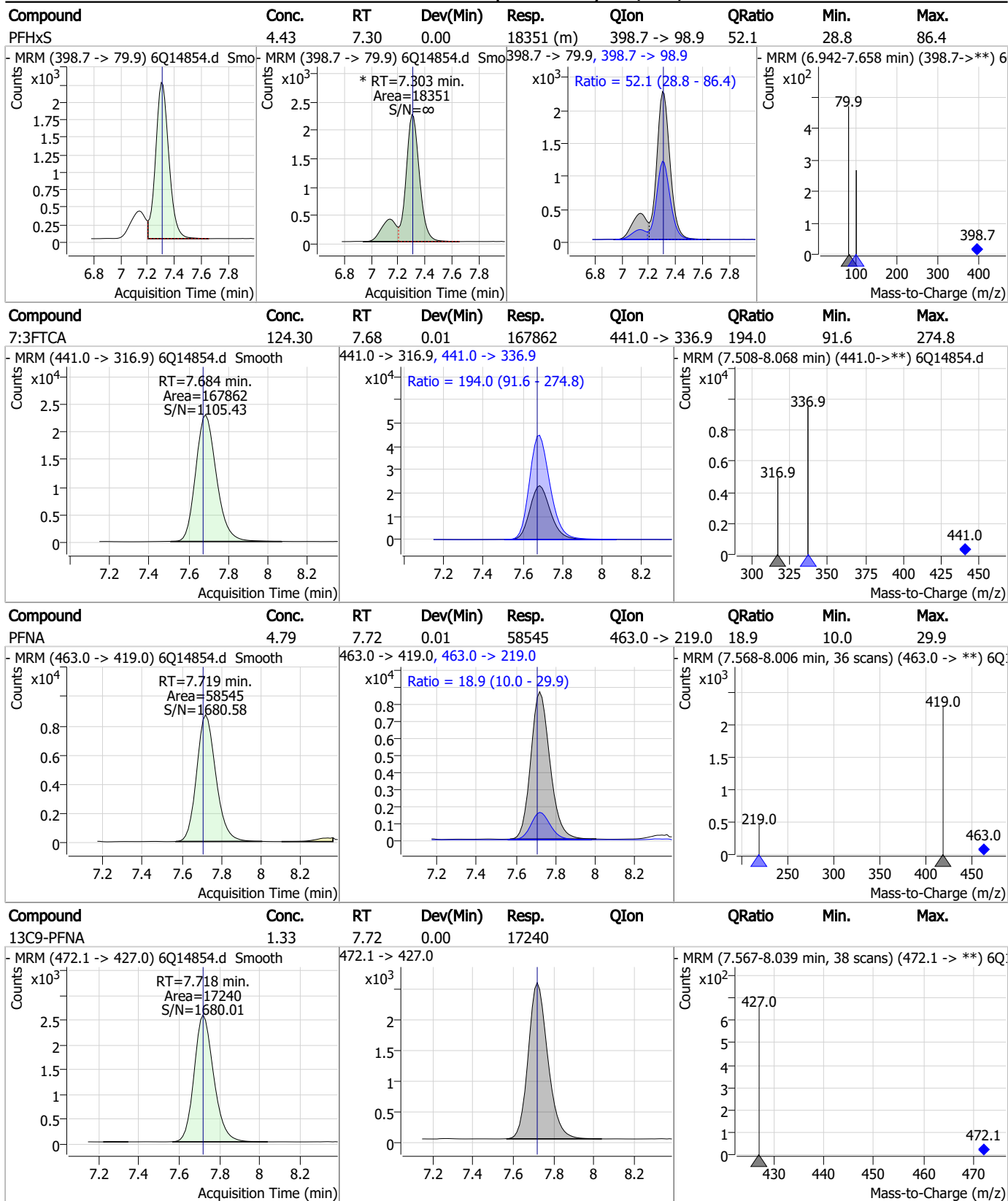
7.7.6
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Perfluorinated Compounds by LC/MS/MS



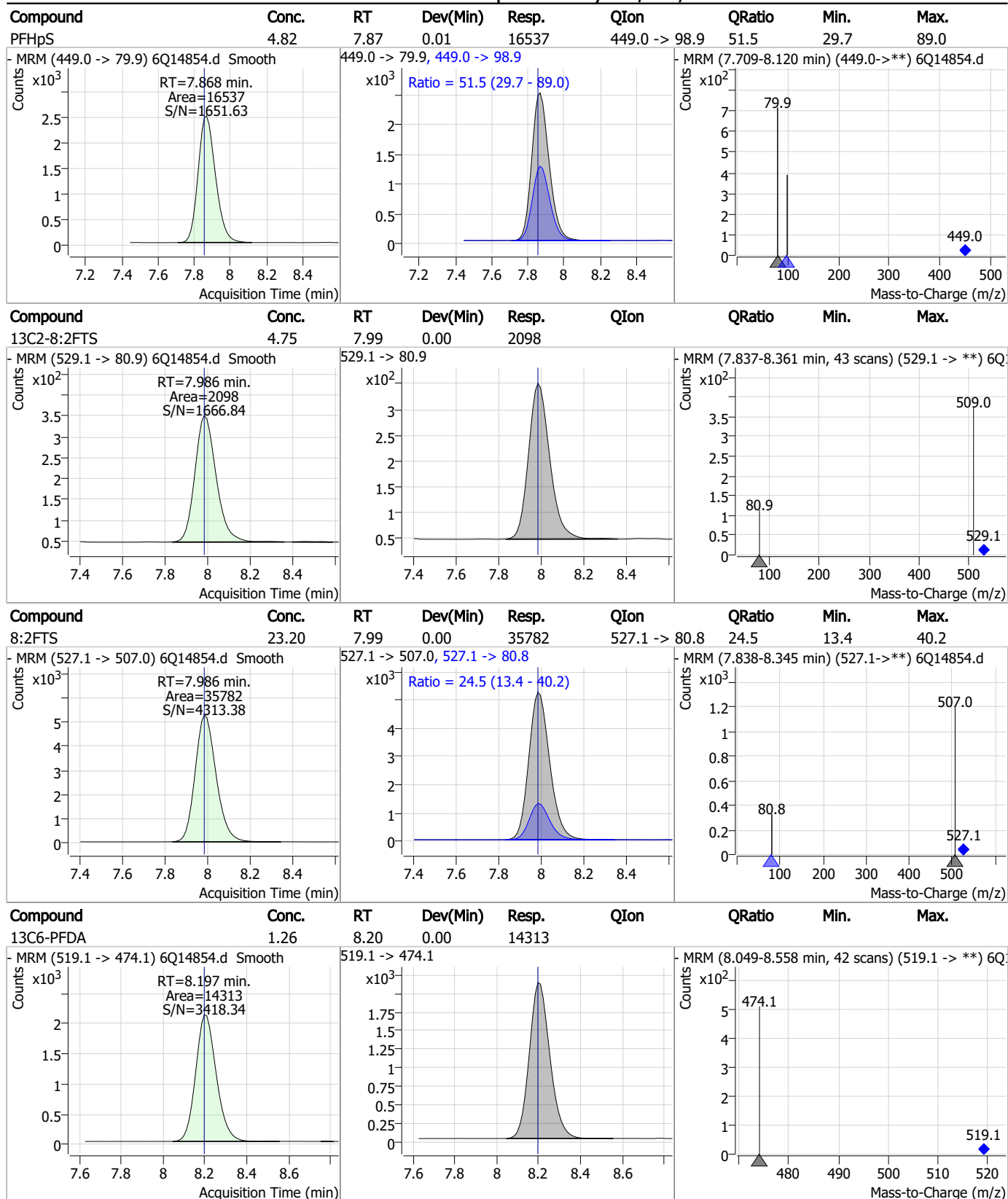
7.7.6
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Perfluorinated Compounds by LC/MS/MS



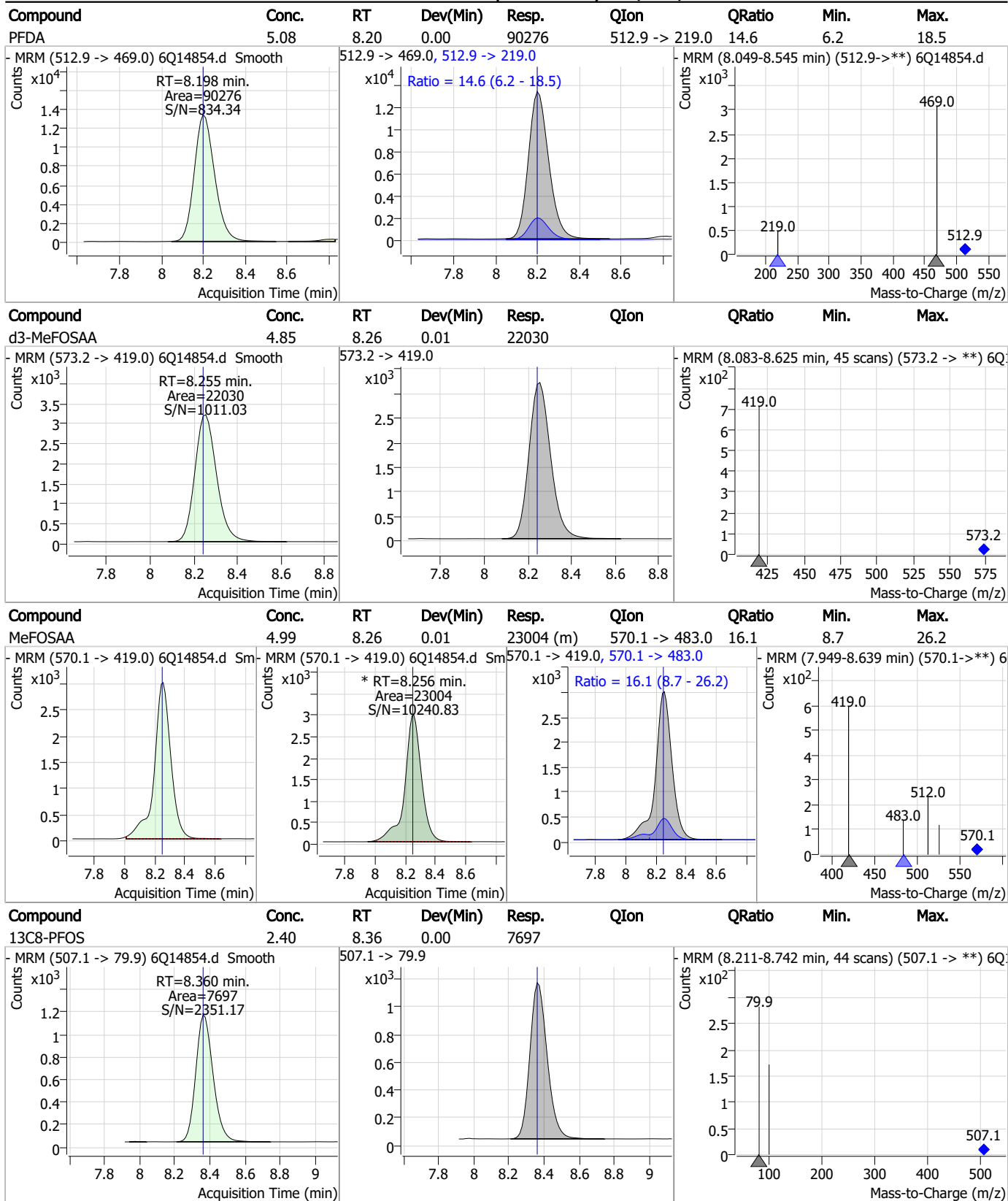
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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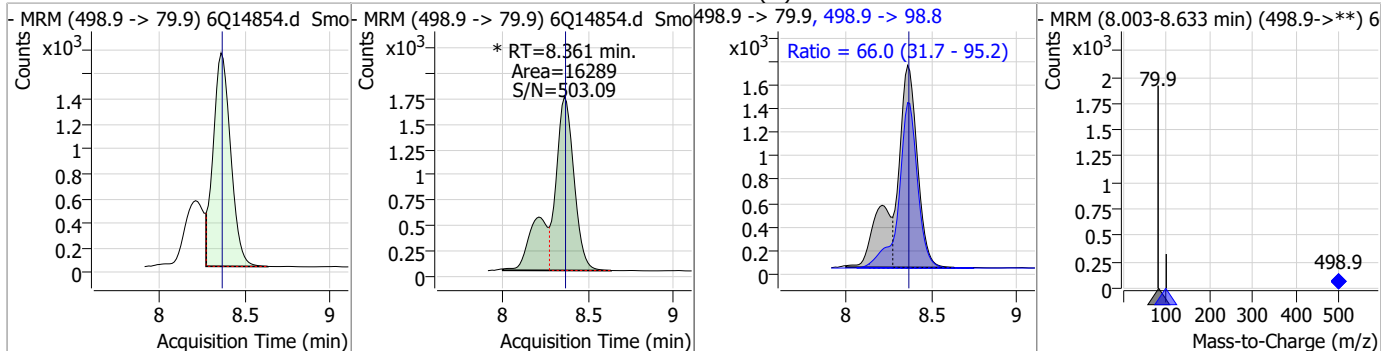
Perfluorinated Compounds by LC/MS/MS



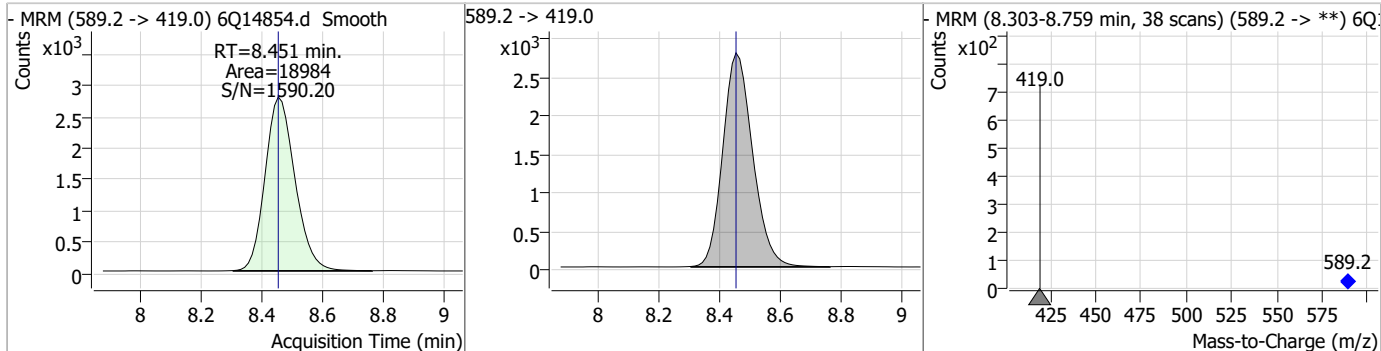
7.7.6
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Perfluorinated Compounds by LC/MS/MS

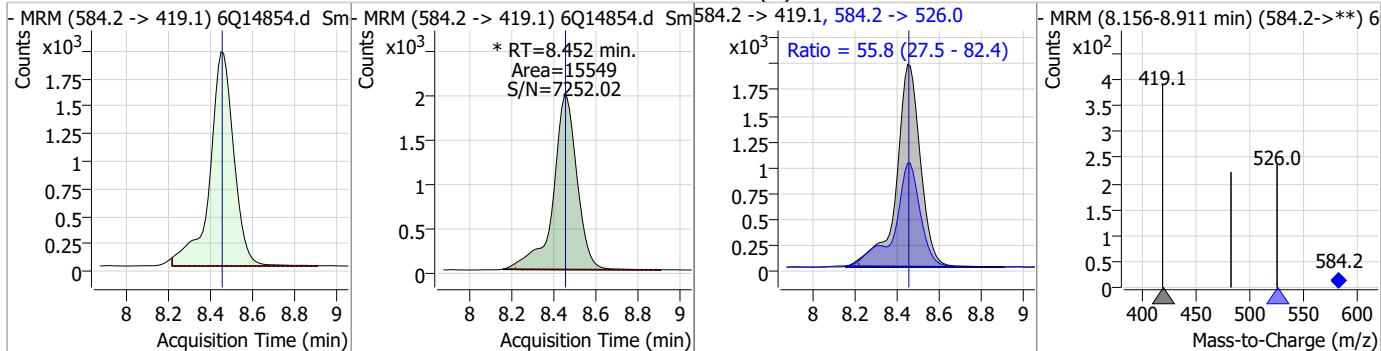
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	4.52	8.36	0.00	16289 (m)	498.9 -> 98.8	66.0	31.7	95.2



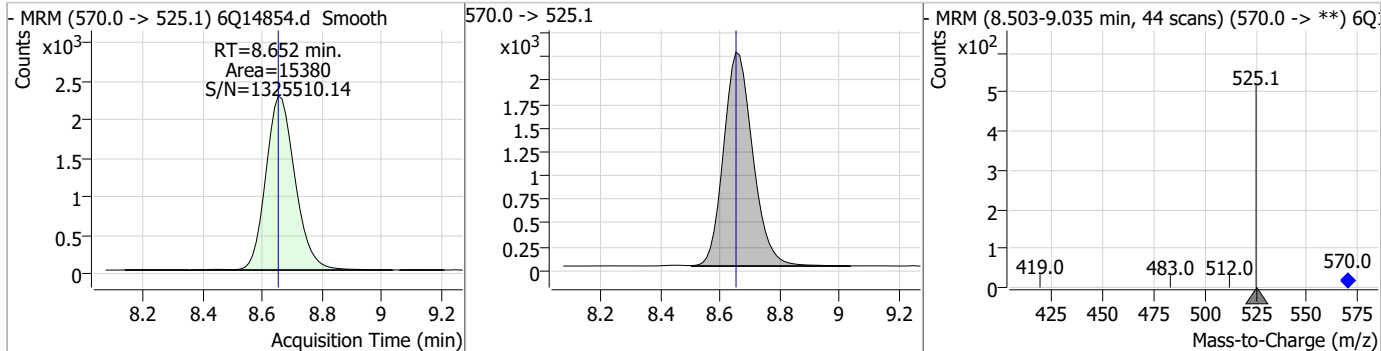
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.76	8.45	0.00	18984				



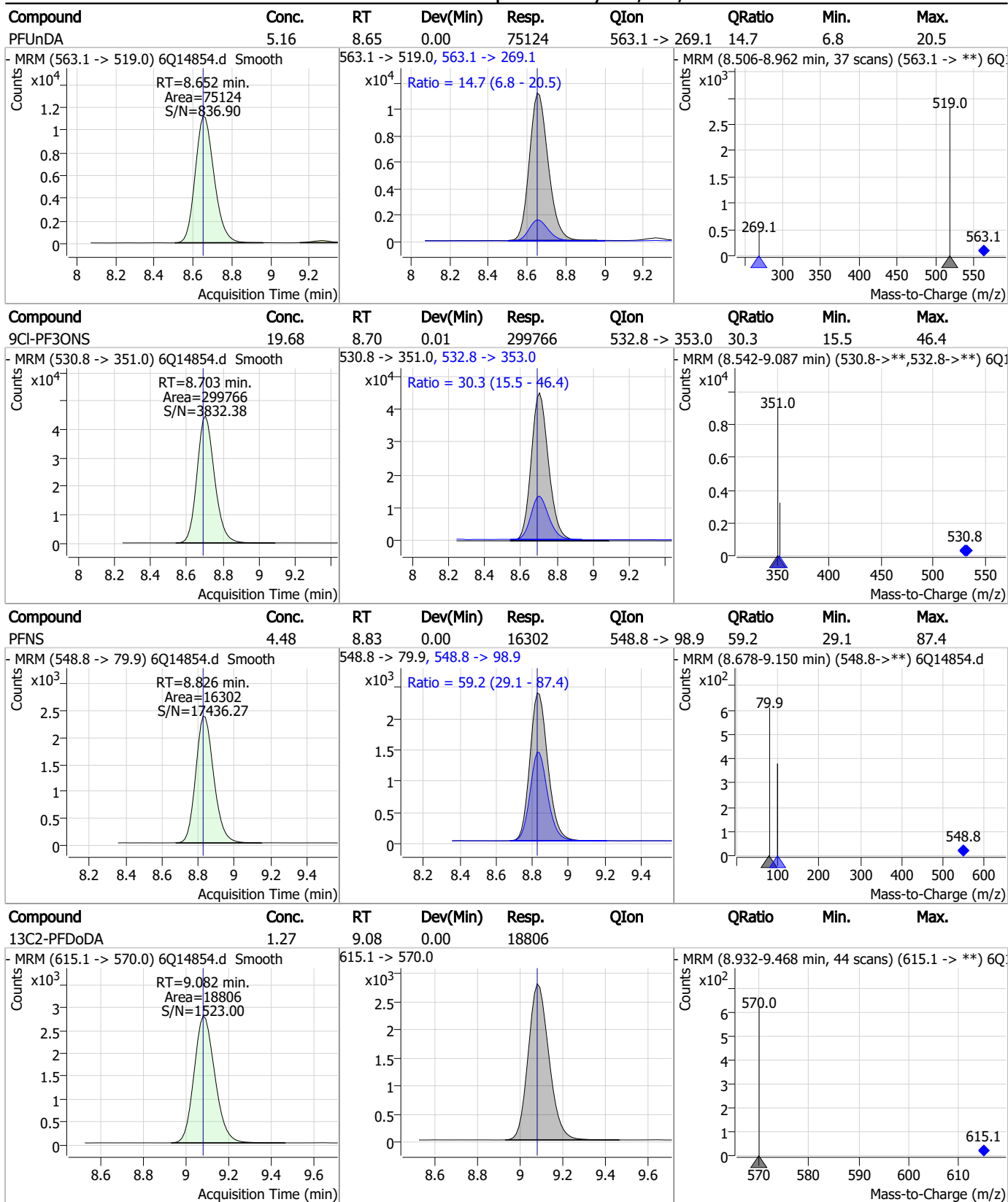
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	4.51	8.45	0.00	15549 (m)	584.2 -> 526.0	55.8	27.5	82.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.26	8.65	0.00	15380				



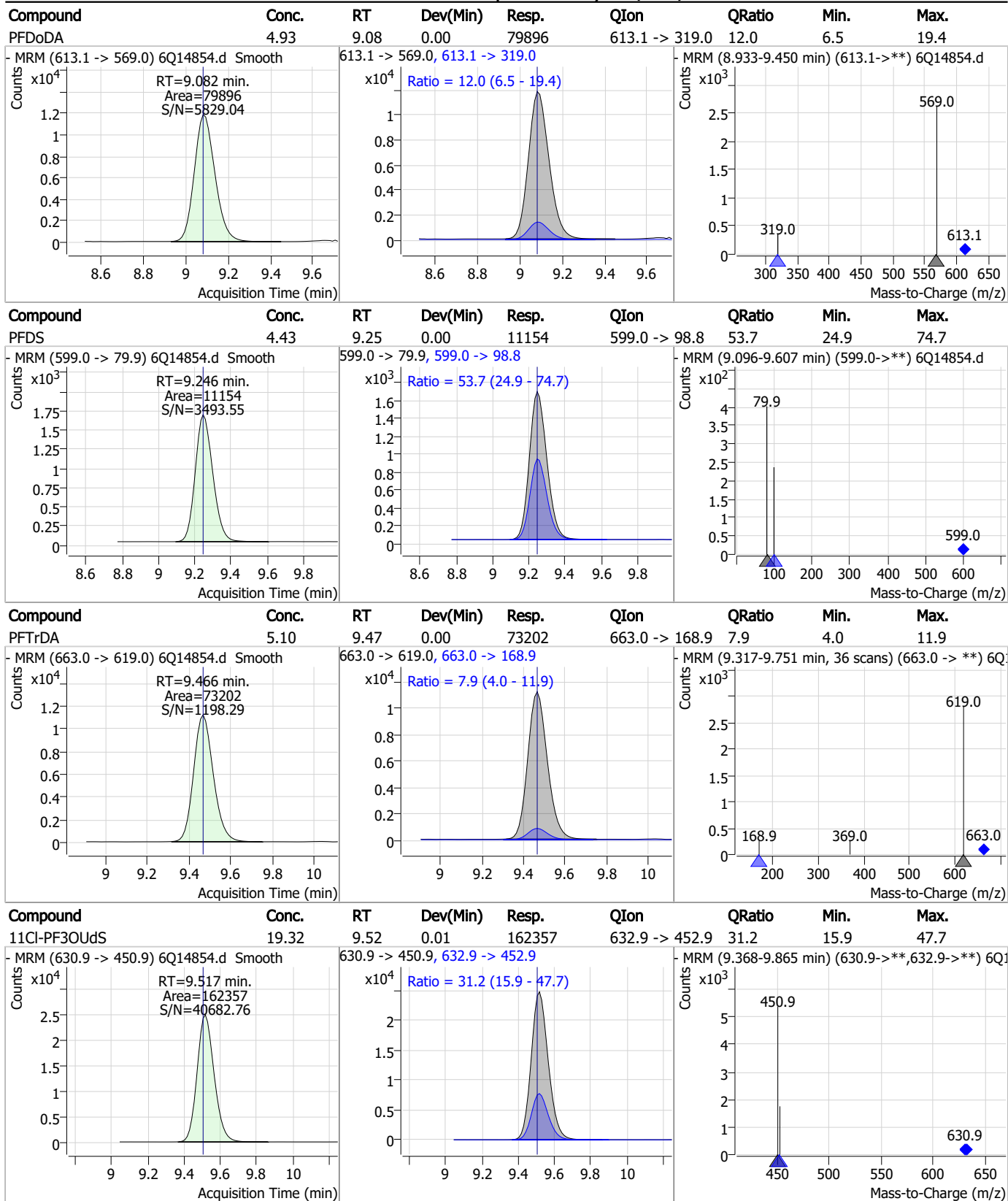
Perfluorinated Compounds by LC/MS/MS



7.7.6

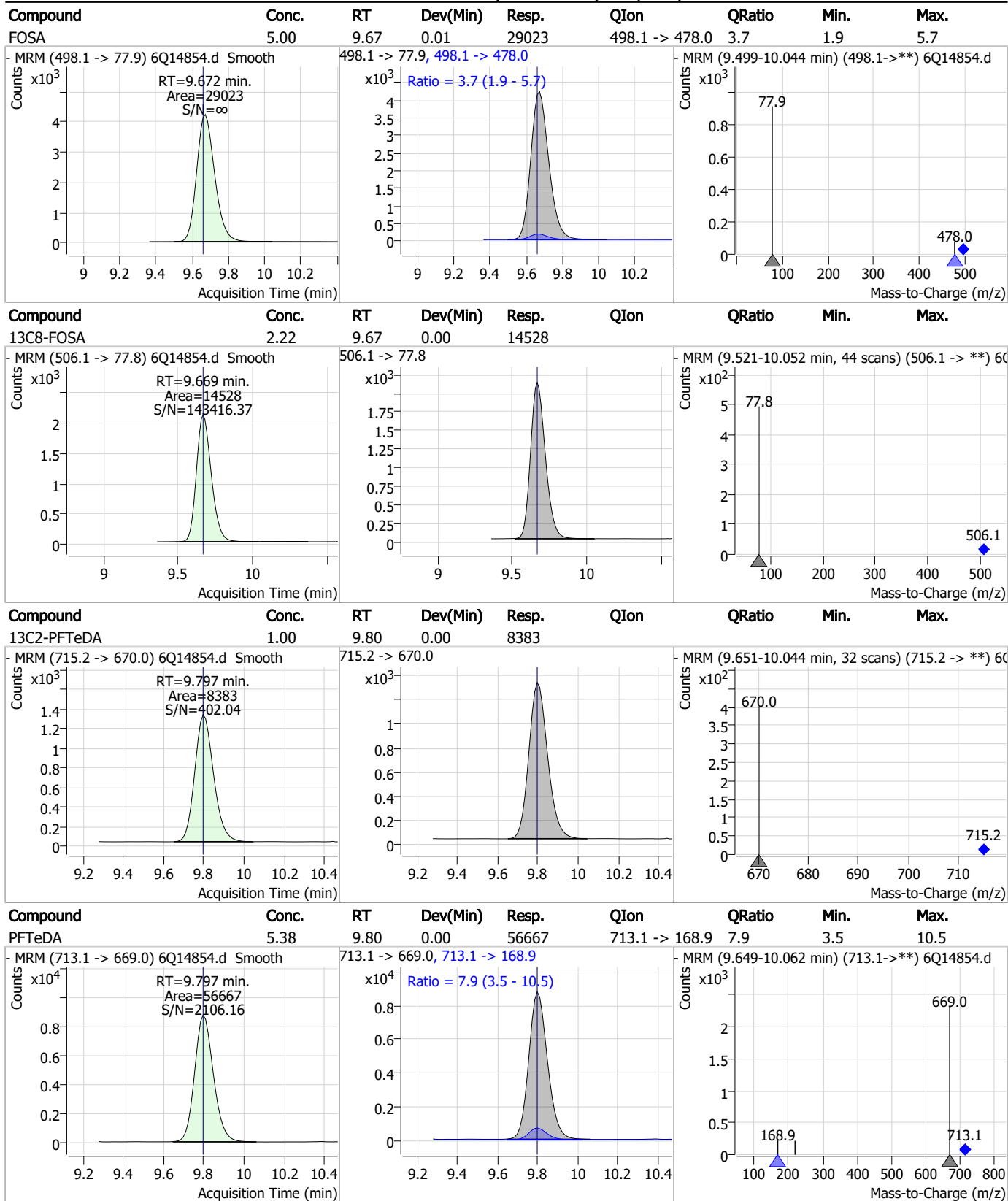
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Perfluorinated Compounds by LC/MS/MS



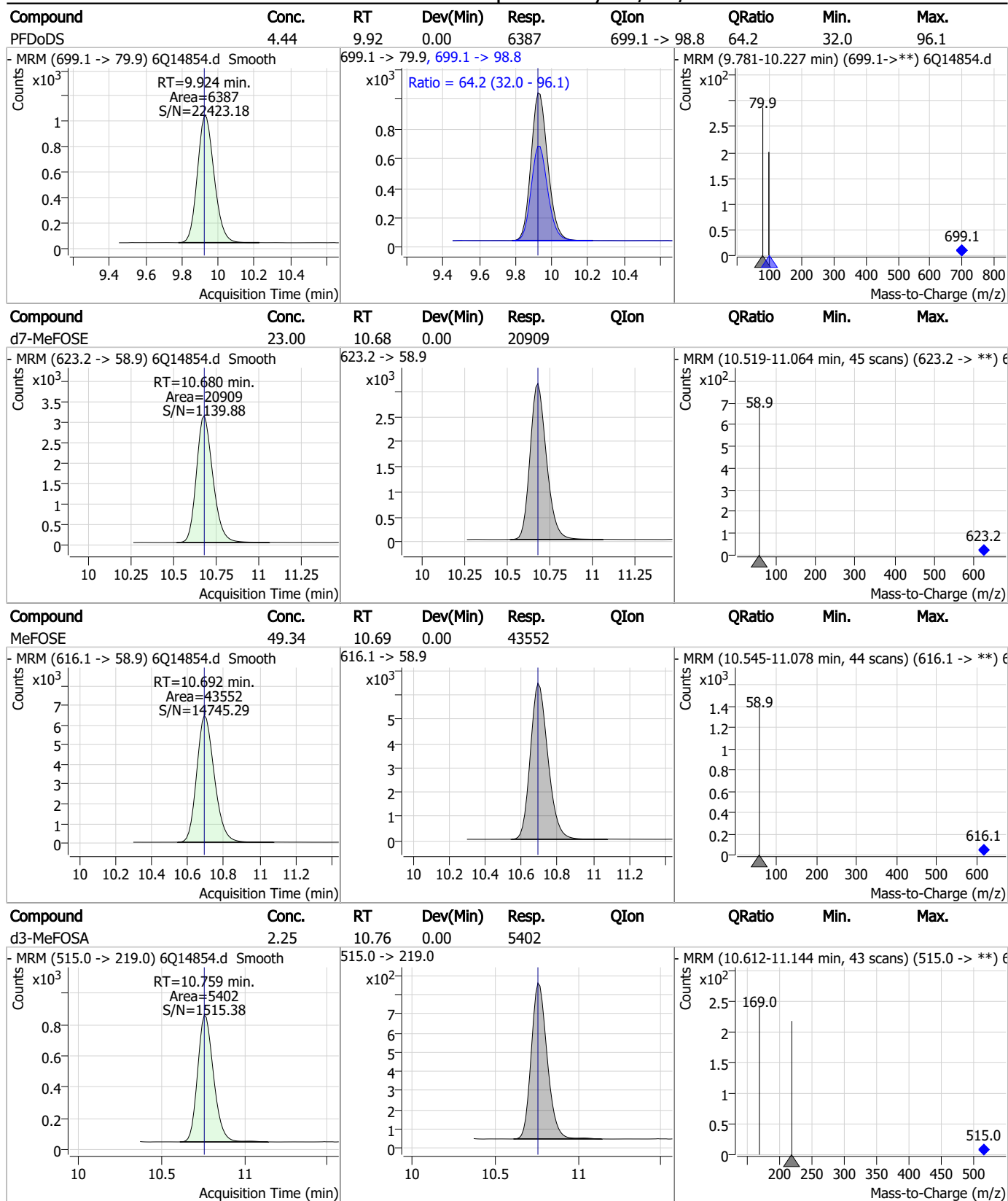
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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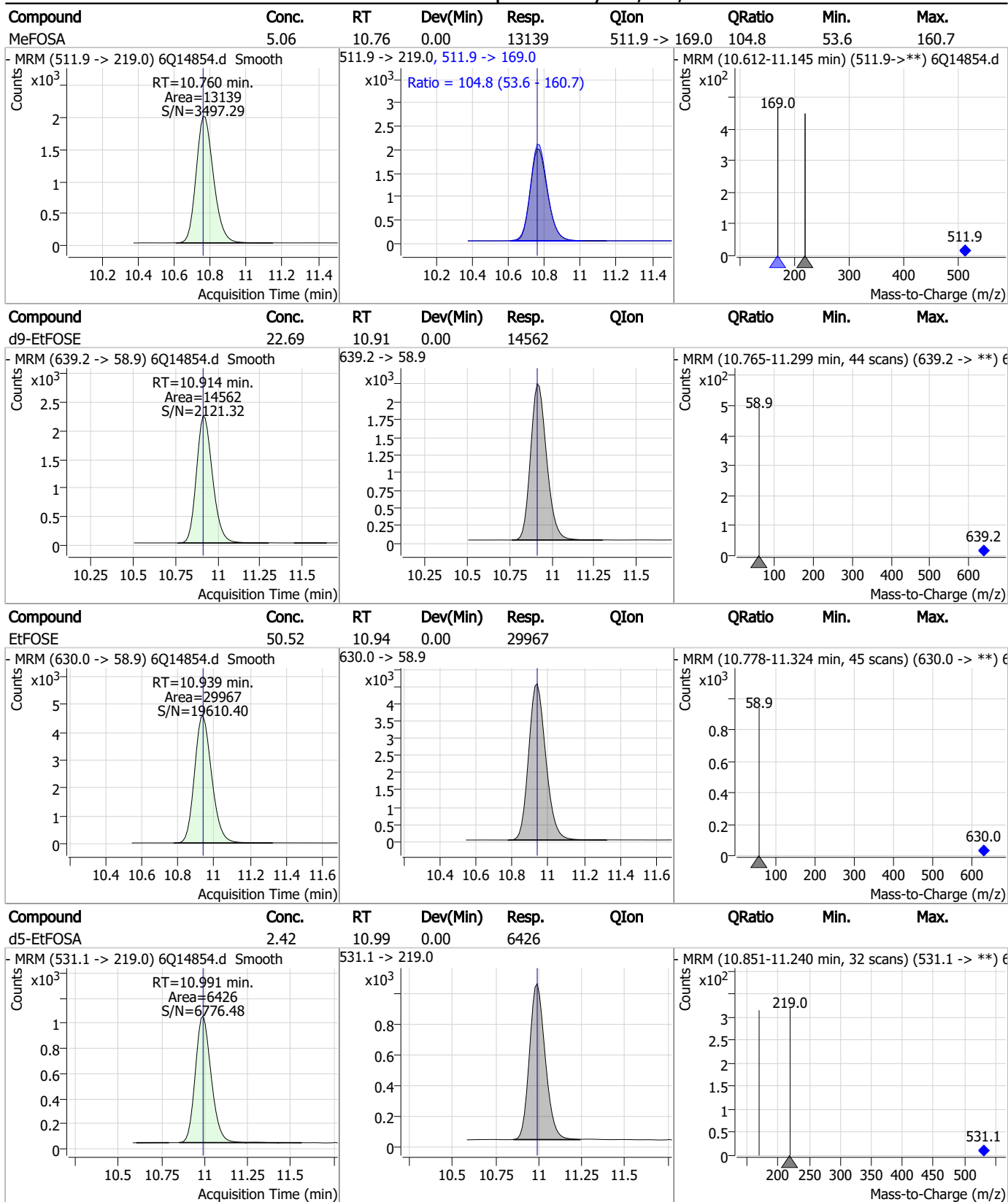
Perfluorinated Compounds by LC/MS/MS



7.7.6

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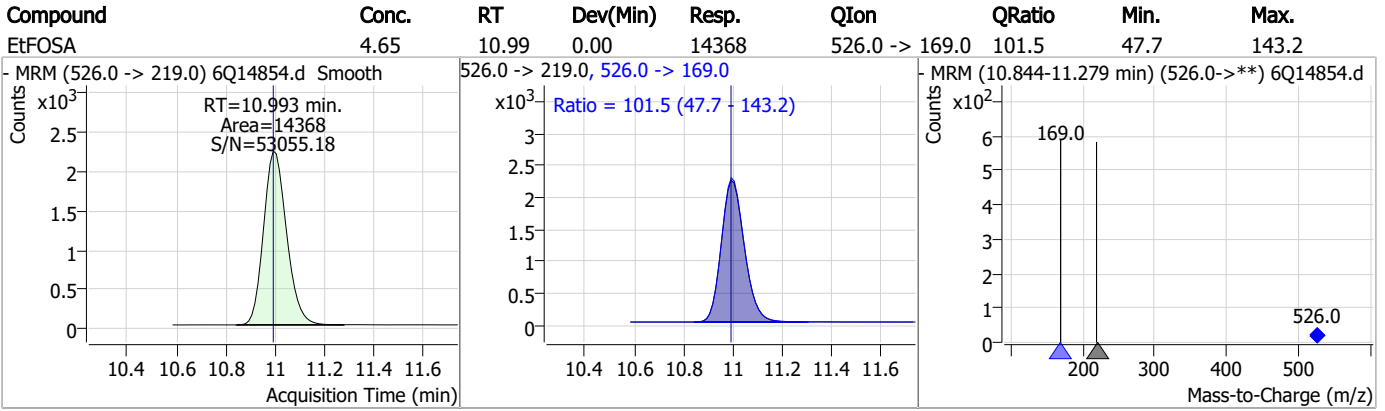
Perfluorinated Compounds by LC/MS/MS



7.7.6

7

Perfluorinated Compounds by LC/MS/MS



7.7.6

7

Manual Integration Approval Summary

Sample Number: S6Q225-IC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14854.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 22:42 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

7.7.6.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 03/16/23 16:23

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14855.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 10:56:08 PM
 Sample Name : ic225-6
 Vial : P1-A7
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	70828	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	34475	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	30727	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	31279	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	49642	2.50 µg/L	0.000
M9-PFNA	7.718	472.1 -> 427.0	16256	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	14185	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	14921	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	18370	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	10970	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	15038	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	12179	2.50 µg/L	-0.012
M3-PFHxS	7.302	402.1 -> 79.9	7279	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	7103	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1632	5.00 µg/L	-0.012
M2-6:2FTS	6.949	429.1 -> 80.9	2079	5.00 µg/L	-0.012
M2-8:2FTS	7.986	529.1 -> 80.9	1914	5.00 µg/L	0.000
M3-MeFOSAA	8.255	573.2 -> 419.0	21028	5.00 µg/L	0.012
M3-HFPO-DA	5.983	286.9 -> 168.9	14021	10.00 µg/L	0.000
M5-EtFOSAA	8.451	589.2 -> 419.0	17133	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	19840	25.00 µg/L	0.000
M9-EtFOSE	10.914	639.2 -> 58.9	14702	25.00 µg/L	0.000
M5-EtFOSA	10.991	531.1 -> 219.0	6056	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5572	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	8404	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	30682	5.00 µg/L	0.000
18O2-PFHxS	7.301	403.0 -> 83.9	5450	2.50 µg/L	-0.012
13C4-PFOA	7.188	417.1 -> 372.0	62538	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	17845	1.25 µg/L	0.000
13C5-PFNA	7.718	468.0 -> 423.0	16607	1.25 µg/L	0.000
13C2-PFHxA	5.606	315.1 -> 270.0	28894	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1632	5.22 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2079	5.13 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C2-8:2FTS	7.986	529.1 -> 80.9	1914	4.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.6%		
13C2-PFDoDA	9.082	615.1 -> 570.0	18370	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.2%		
13C2-PFTeDA	9.797	715.2 -> 670.0	10970	1.38 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.2%		
13C3-PFBS	5.536	302.1 -> 79.9	12179	2.61 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFHxS	7.302	402.1 -> 79.9	7279	2.37 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 = 94.6%		
13C4-PFBA	2.947	216.8 -> 171.9	70828	10.06 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C4-PFHpA	6.544	367.1 -> 322.0	31279	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C5-PFHxA	5.605	318.0 -> 273.0	30727	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C5-PFPeA	4.395	268.3 -> 223.0	34475	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C6-PFDA	8.197	519.1 -> 474.1	14185	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C7-PFUnDA	8.652	570.0 -> 525.1	14921	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C8-FOSA	9.669	506.1 -> 77.8	15038	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C8-PFOA	7.187	421.1 -> 376.0	49642	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C8-PFOS	8.360	507.1 -> 79.9	7103	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C9-PFNA	7.718	472.1 -> 427.0	16256	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
d3-MeFOSAA	8.255	573.2 -> 419.0	21028	5.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C3-HFPO-DA	5.983	286.9 -> 168.9	14021	10.74 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
d3-MeFOSA	10.759	515.0 -> 219.0	5572	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.5%		
d5-EtFOSAA	8.451	589.2 -> 419.0	17133	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.5%		
d7-MeFOSE	10.680	623.2 -> 58.9	19840	24.54 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
d9-EtFOSE	10.914	639.2 -> 58.9	14702	25.76 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
d5-EtFOSA	10.991	531.1 -> 219.0	6056	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	186069	49.28 µg/L	96
		327.1 -> 80.9	42857		
6:2FTS	6.950	427.1 -> 407.0	150179	48.63 µg/L	99
		427.1 -> 80.9	33481		
8:2FTS	7.986	527.1 -> 507.0	78691	55.92 µg/L	93
		527.1 -> 80.8	23966		
EtFOSAA	8.464	584.2 -> 419.1	44112	14.17 µg/L	m 97
		584.2 -> 526.0	23177		
FOSA	9.672	498.1 -> 77.9	80710	13.43 µg/L	99
		498.1 -> 478.0	2744		
MeFOSAA	8.256	570.1 -> 419.0	59103	13.43 µg/L	m 97
		570.1 -> 483.0	11175		
PFBA	2.956	212.8 -> 168.9	106957	55.33 µg/L	100
PFBS	5.537	298.7 -> 79.9	64770	12.07 µg/L	99
		298.7 -> 98.8	28897		
PFDA	8.198	512.9 -> 469.0	248379	14.10 µg/L	98
		512.9 -> 219.0	32173		
PFDoDA	9.082	613.1 -> 569.0	218038	13.78 µg/L	98
		613.1 -> 319.0	26403		
PFDS	9.246	599.0 -> 79.9	30717	13.22 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	15772			
PFHpA	6.544	363.1 -> 319.0	262994	13.04	µg/L	98
		363.1 -> 169.0	38370			
PFHpS	7.868	449.0 -> 79.9	39783	12.57	µg/L	99
		449.0 -> 98.9	23381			
PFHxA	5.607	313.0 -> 269.0	173334	13.39	µg/L	100
		313.0 -> 118.9	6950			
PFHxS	7.303	398.7 -> 79.9	47511	13.07	µg/L	m 96
		398.7 -> 98.9	25785			
PFNA	7.719	463.0 -> 419.0	162816	14.13	µg/L	98
		463.0 -> 219.0	31150			
PFNS	8.839	548.8 -> 79.9	44976	13.39	µg/L	94
		548.8 -> 98.9	24162			
PFOA	7.189	413.0 -> 369.0	344591	14.66	µg/L	98
		413.0 -> 169.0	47679			
PFOS	8.361	498.9 -> 79.9	41755	12.55	µg/L	m 99
		498.9 -> 98.8	26766			
PFPeA	4.397	263.0 -> 219.0	225353	27.46	µg/L	100
PFPeS	6.609	349.1 -> 79.9	58468	13.32	µg/L	99
		349.1 -> 98.9	30748			
PFTeDA	9.797	713.1 -> 669.0	176916	12.84	µg/L	100
		713.1 -> 168.9	12424			
PFTrDA	9.466	663.0 -> 619.0	190442	13.58	µg/L	98
		663.0 -> 168.9	16468			
PFUnDA	8.652	563.1 -> 519.0	186002	13.17	µg/L	93
		563.1 -> 269.1	30811			
11Cl-PF3OUdS	9.517	630.9 -> 450.9	422937	48.76	µg/L	99
		632.9 -> 452.9	137144			
9Cl-PF3ONS	8.703	530.8 -> 351.0	776138	49.37	µg/L	98
		532.8 -> 353.0	246770			
ADONA	6.794	376.9 -> 250.9	1502711	49.91	µg/L	100
		376.9 -> 84.8	338856			
HFPO-DA	5.984	284.9 -> 168.9	79646	53.98	µg/L	98
		284.9 -> 184.9	9337			
3:3FTCA	3.851	241.0 -> 177.0	27841	67.83	µg/L	100
		241.0 -> 117.0	4115			
5:3FTCA	6.259	341.0 -> 237.1	900774	344.71	µg/L	97
		341.0 -> 217.0	724425			
7:3FTCA	7.672	441.0 -> 316.9	454987	346.38	µg/L	100
		441.0 -> 336.9	832431			
EtFOSA	10.993	526.0 -> 219.0	39797	13.68	µg/L	95
		526.0 -> 169.0	39826			
EtFOSE	10.939	630.0 -> 58.9	78650	131.33	µg/L	100
MeFOSA	10.773	511.9 -> 219.0	35177	13.13	µg/L	94
		511.9 -> 169.0	35442			
MeFOSE	10.692	616.1 -> 58.9	118470	141.43	µg/L	100
PFDoDS	9.936	699.1 -> 79.9	18171	13.68	µg/L	97
		699.1 -> 98.8	11166			
NFDHA	5.488	295.0 -> 201.0	22298	26.75	µg/L	99
		295.0 -> 84.9	9789			
PFMBA	4.806	279.0 -> 85.1	72915	27.27	µg/L	100
PFMPA	3.526	229.0 -> 84.9	65156	27.71	µg/L	100
PFEESA	6.089	314.8 -> 134.9	437099	23.87	µg/L	100
		314.8 -> 82.9	10739			

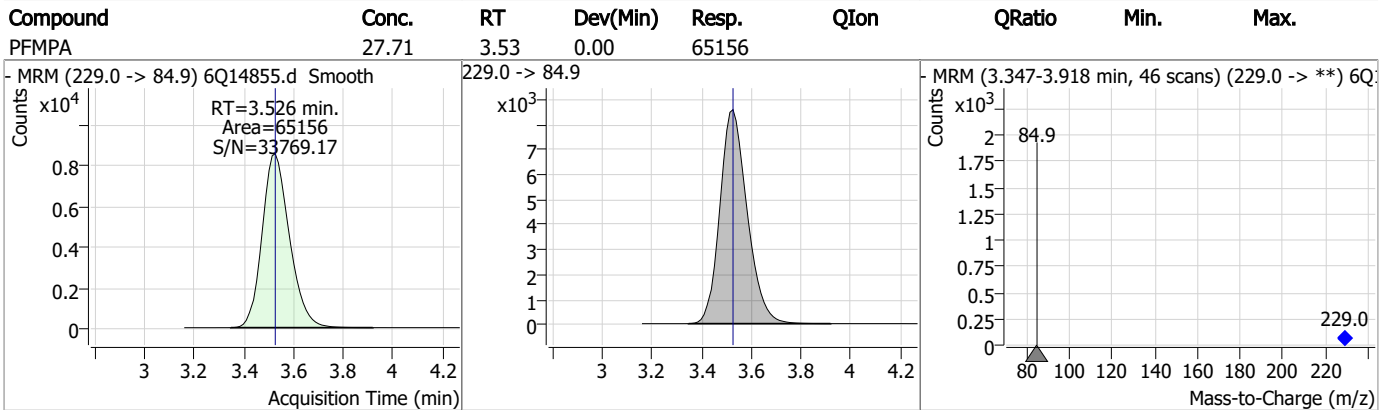
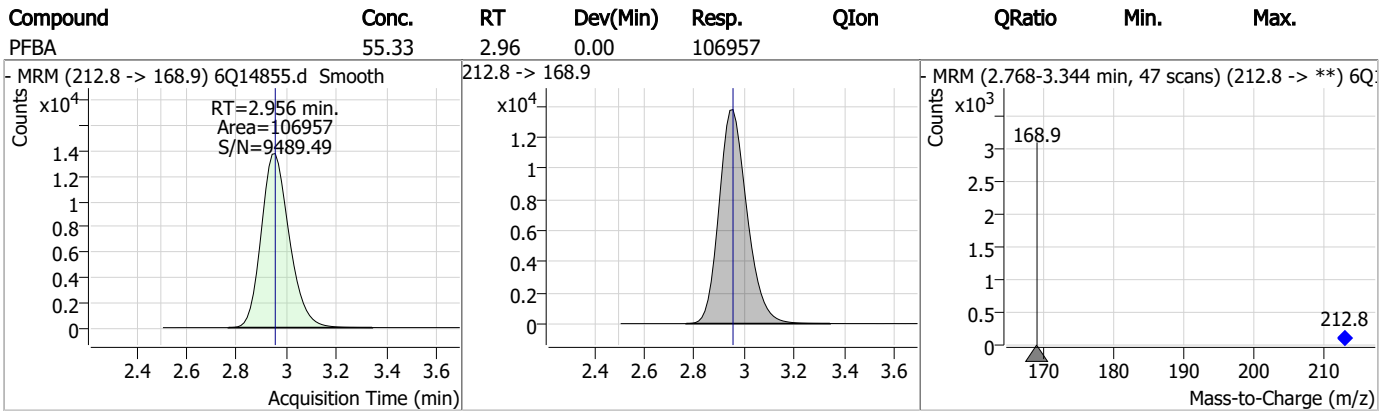
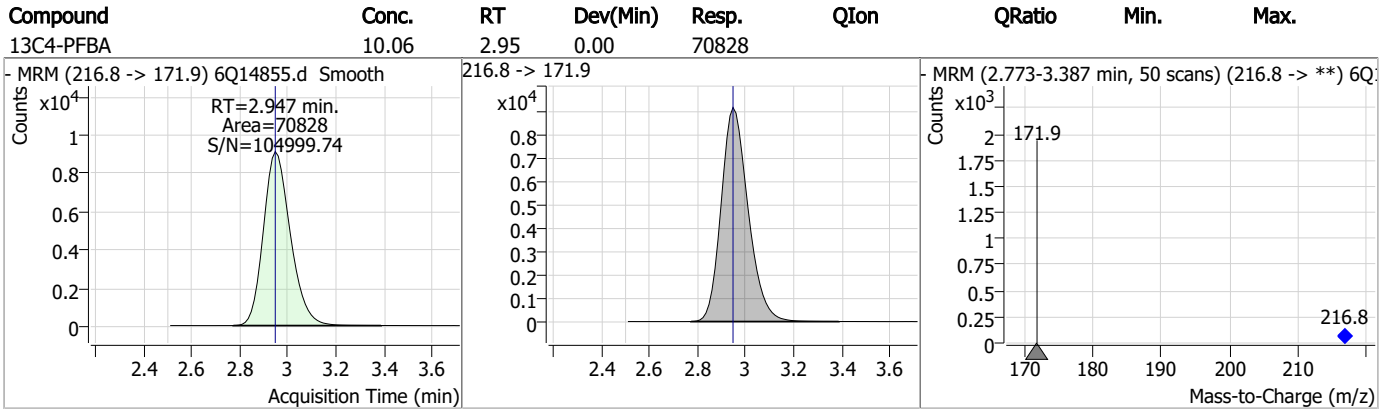
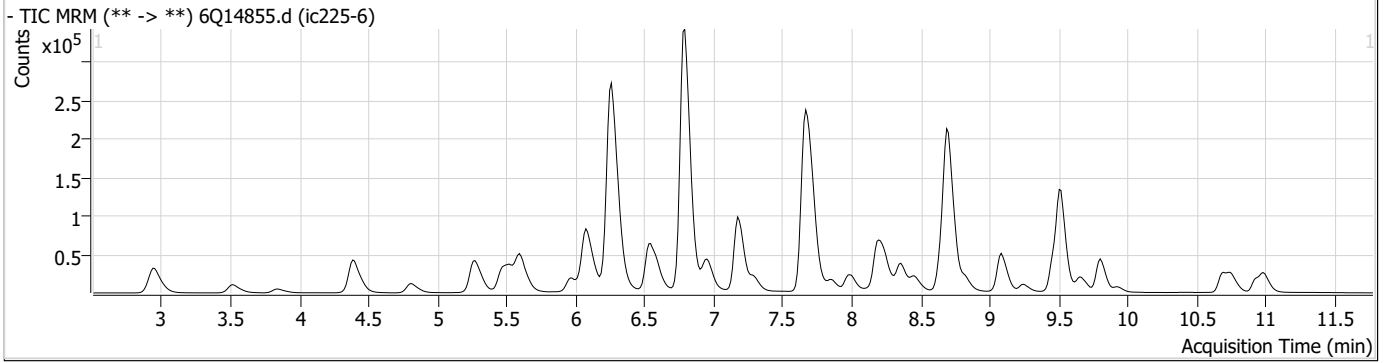
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

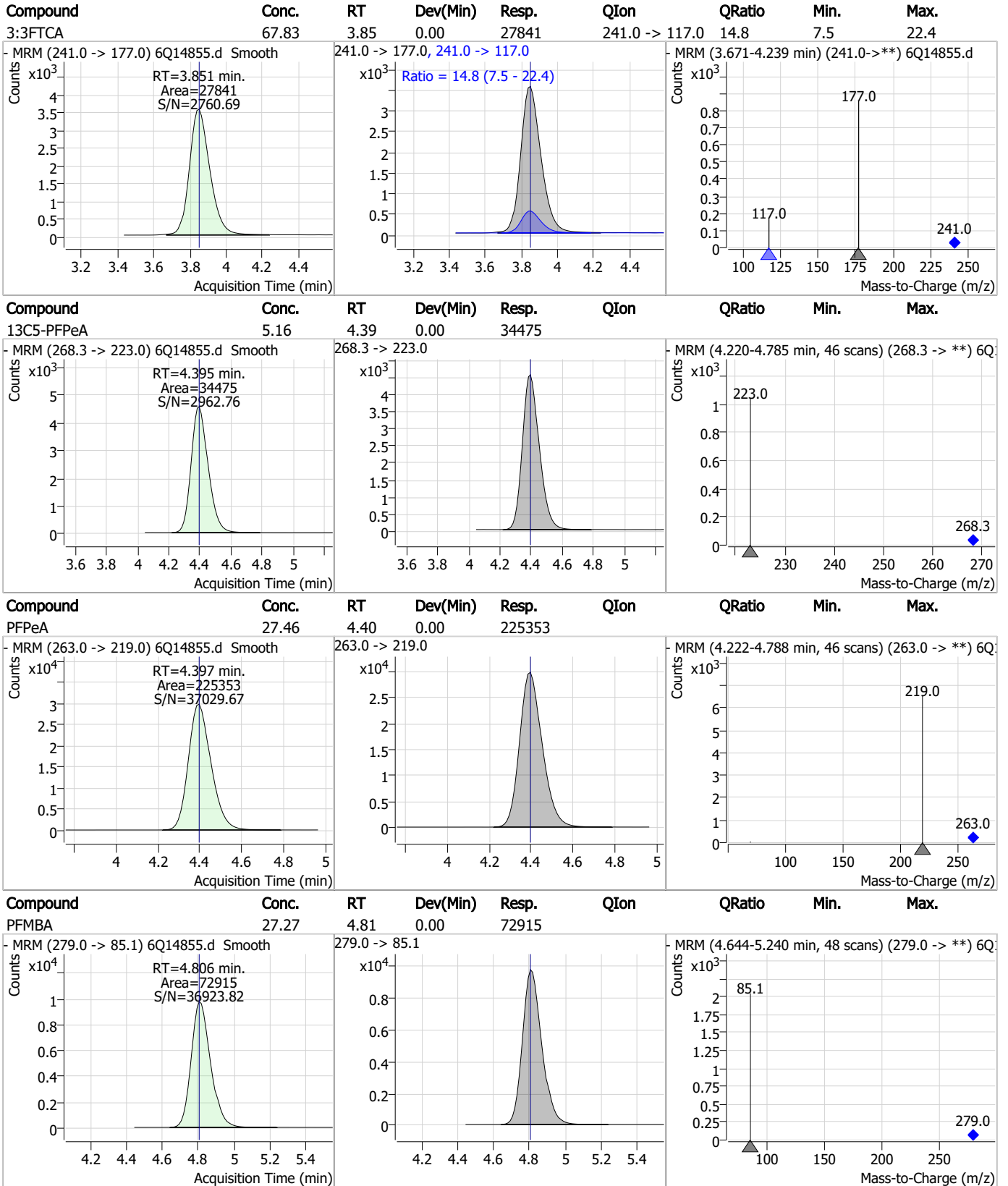
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.7.7
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Perfluorinated Compounds by LC/MS/MS



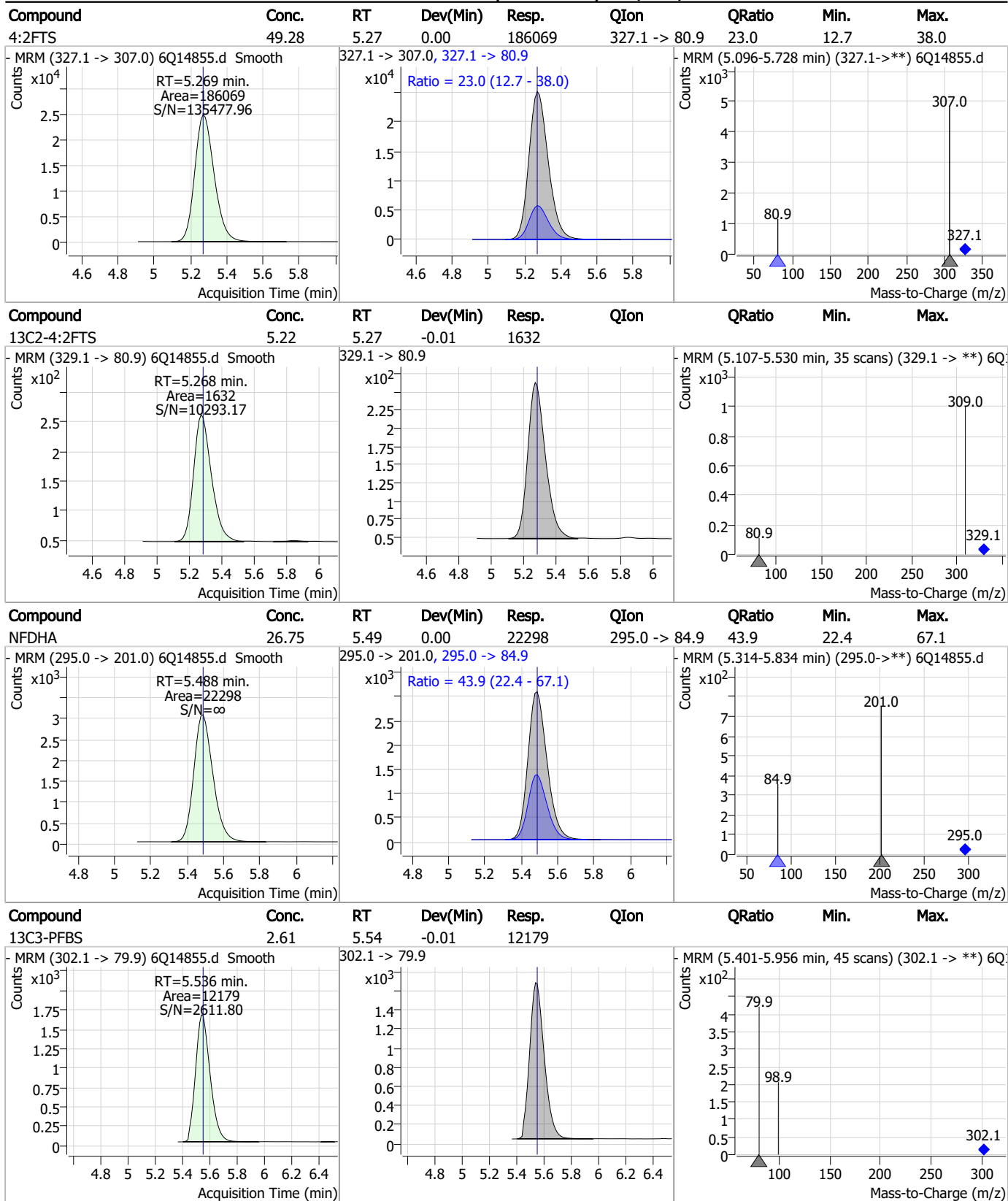
Perfluorinated Compounds by LC/MS/MS



7.7.7

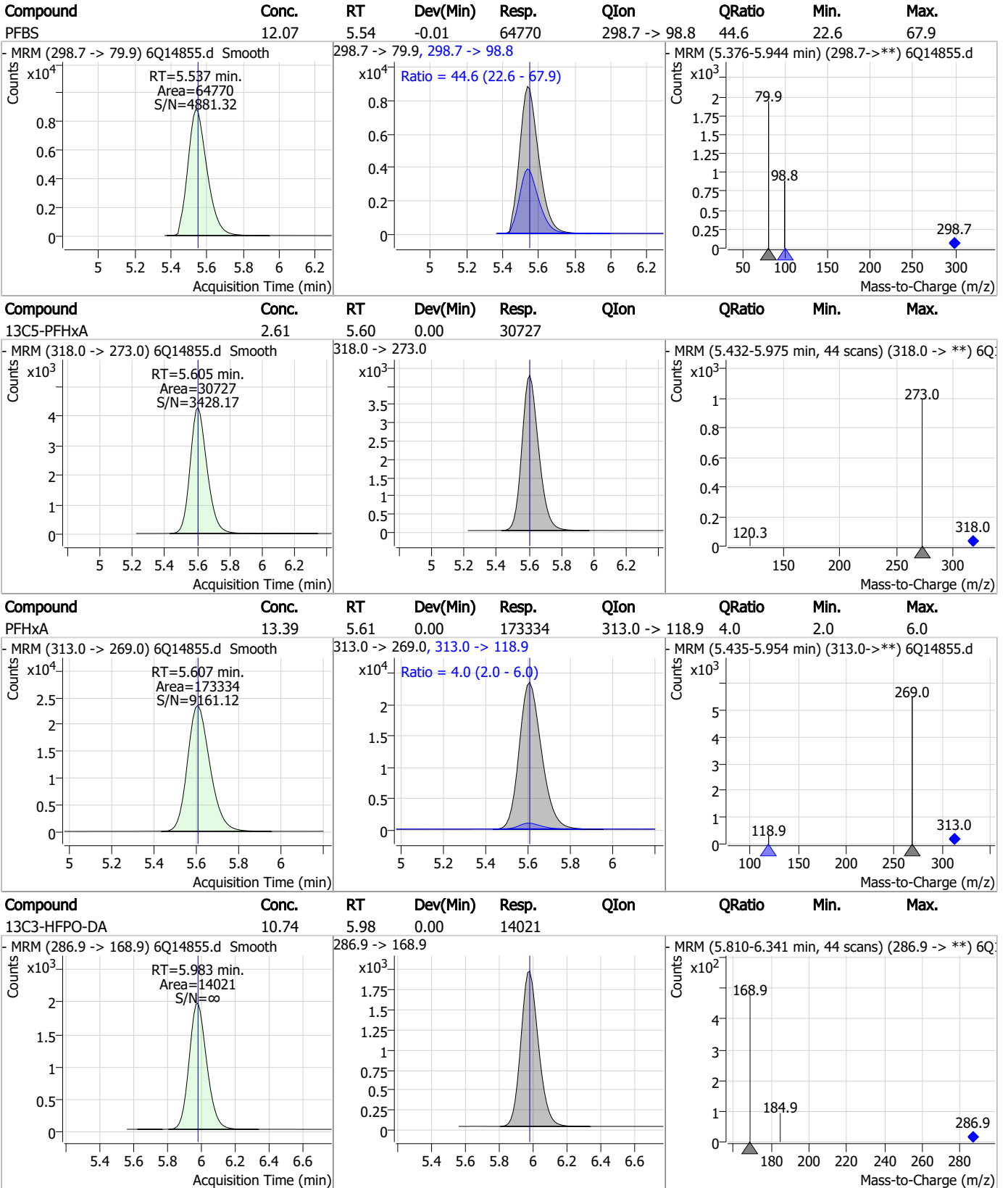
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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Perfluorinated Compounds by LC/MS/MS

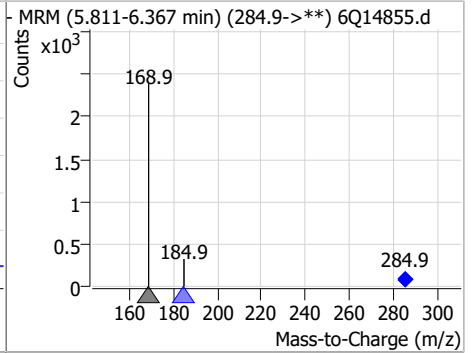
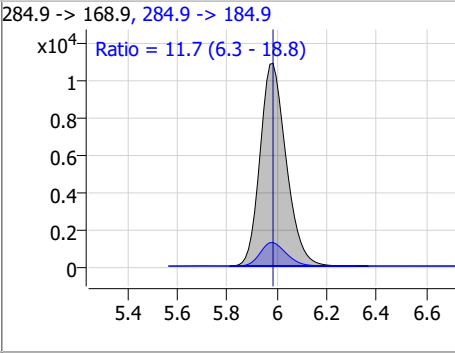
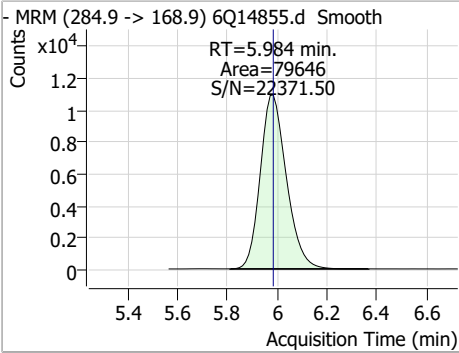


7.7.7

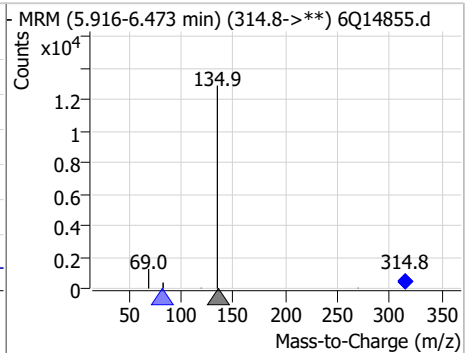
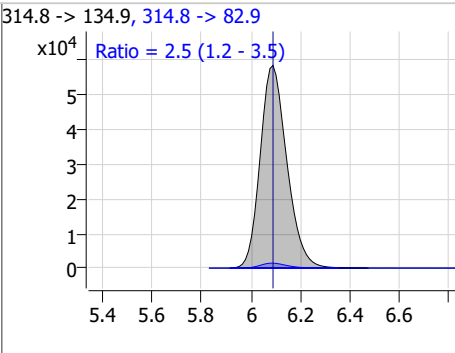
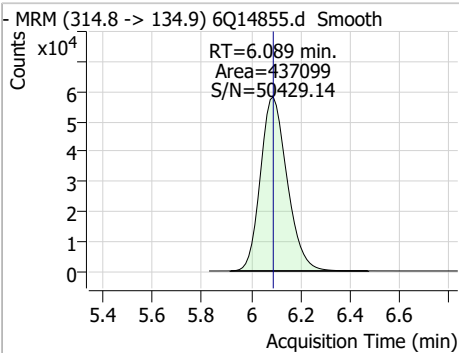
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Perfluorinated Compounds by LC/MS/MS

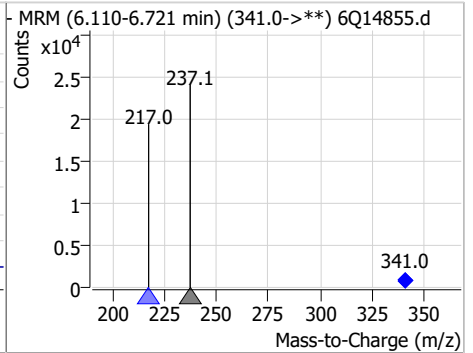
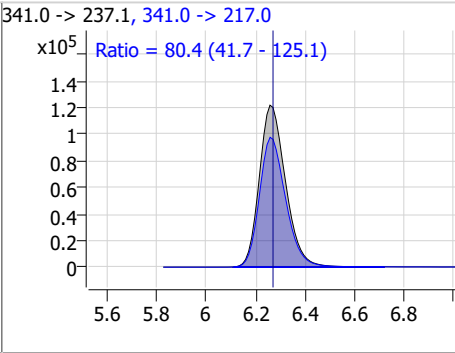
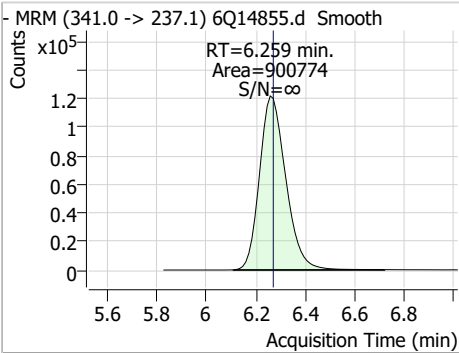
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	53.98	5.98	0.00	79646	284.9 -> 184.9	11.7	6.3	18.8



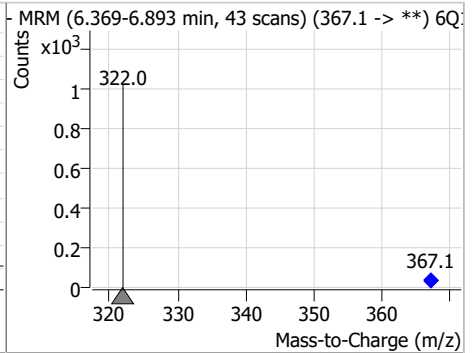
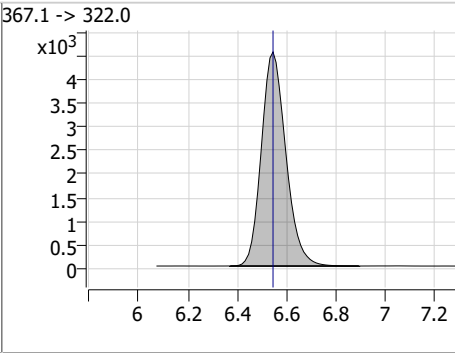
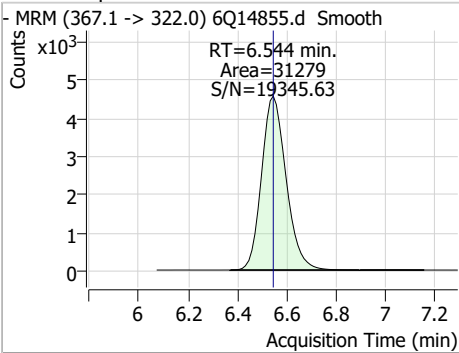
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	23.87	6.09	0.00	437099	314.8 -> 82.9	2.5	1.2	3.5



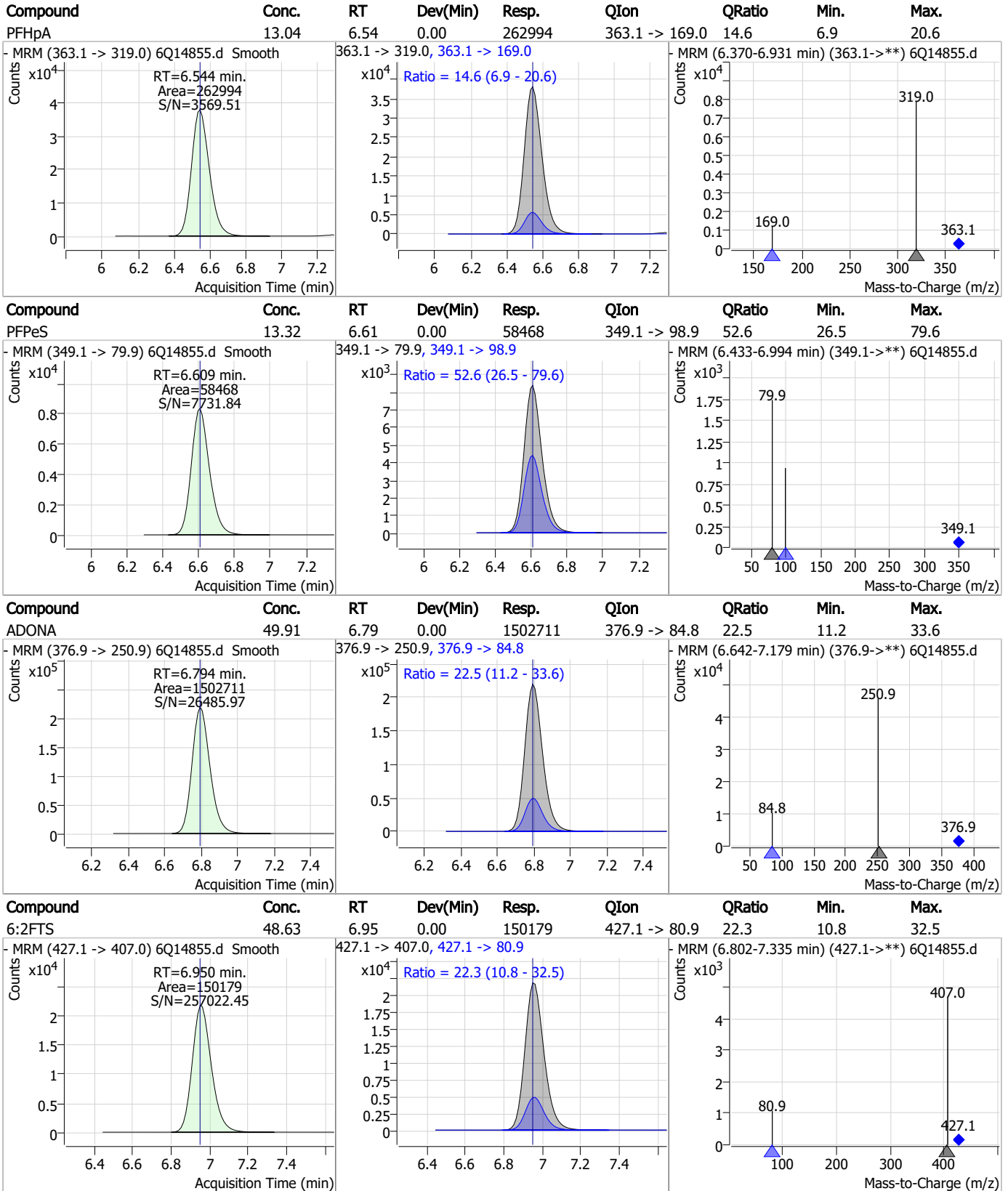
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	344.71	6.26	-0.01	900774	341.0 -> 217.0	80.4	41.7	125.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.65	6.54	0.00	31279	367.1 -> 322.0			

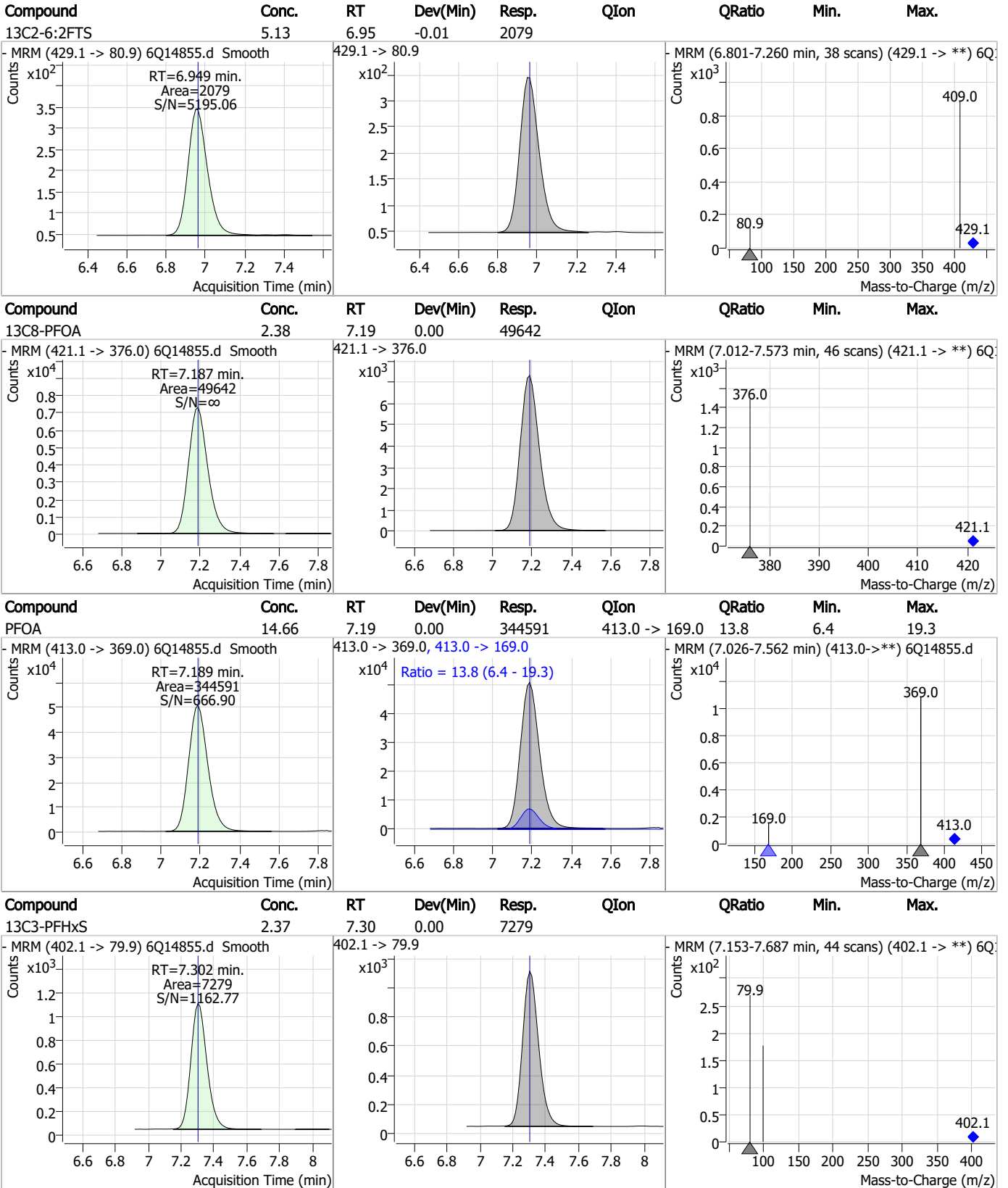


Perfluorinated Compounds by LC/MS/MS



7.7.7
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Perfluorinated Compounds by LC/MS/MS

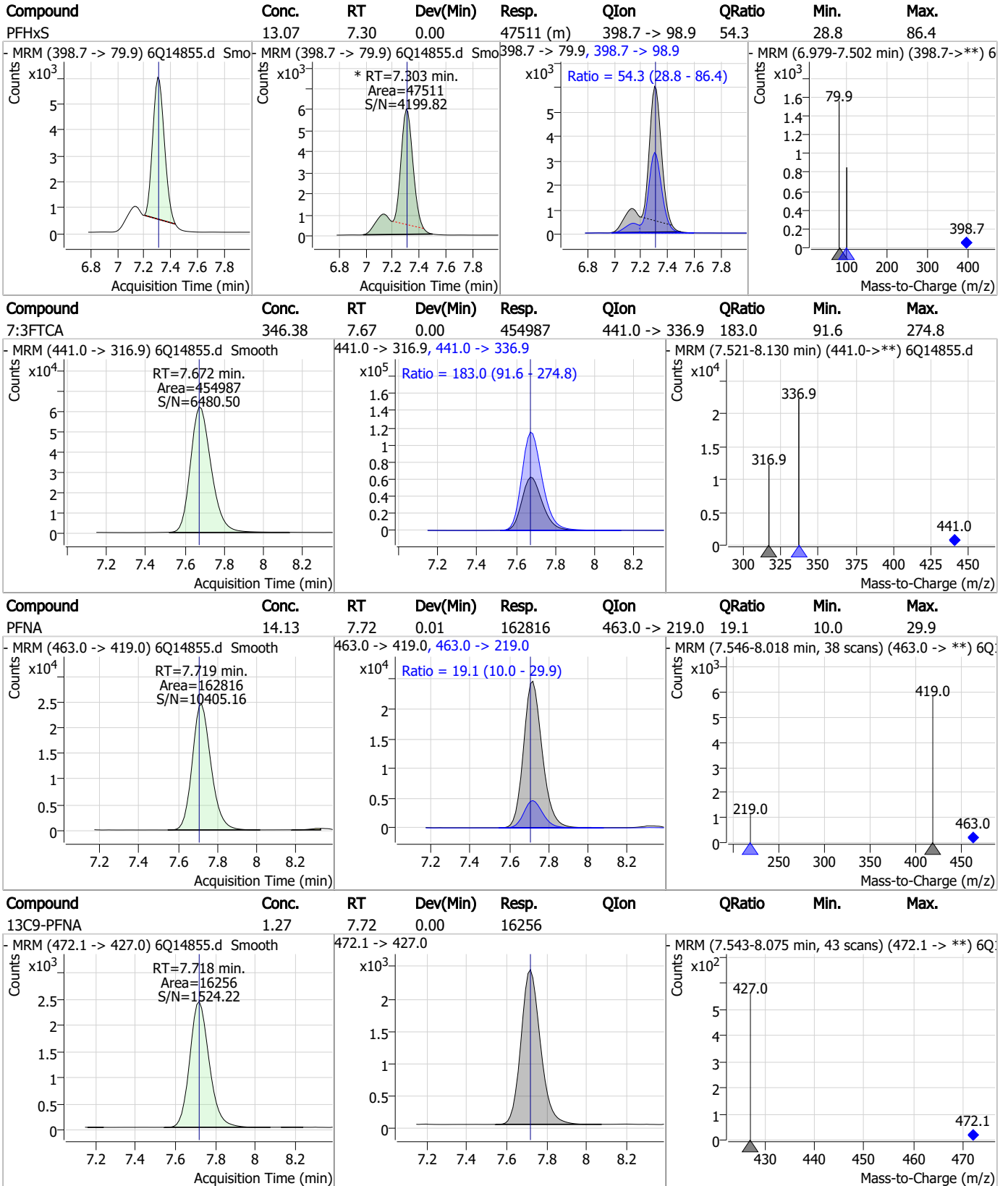


7.7.7

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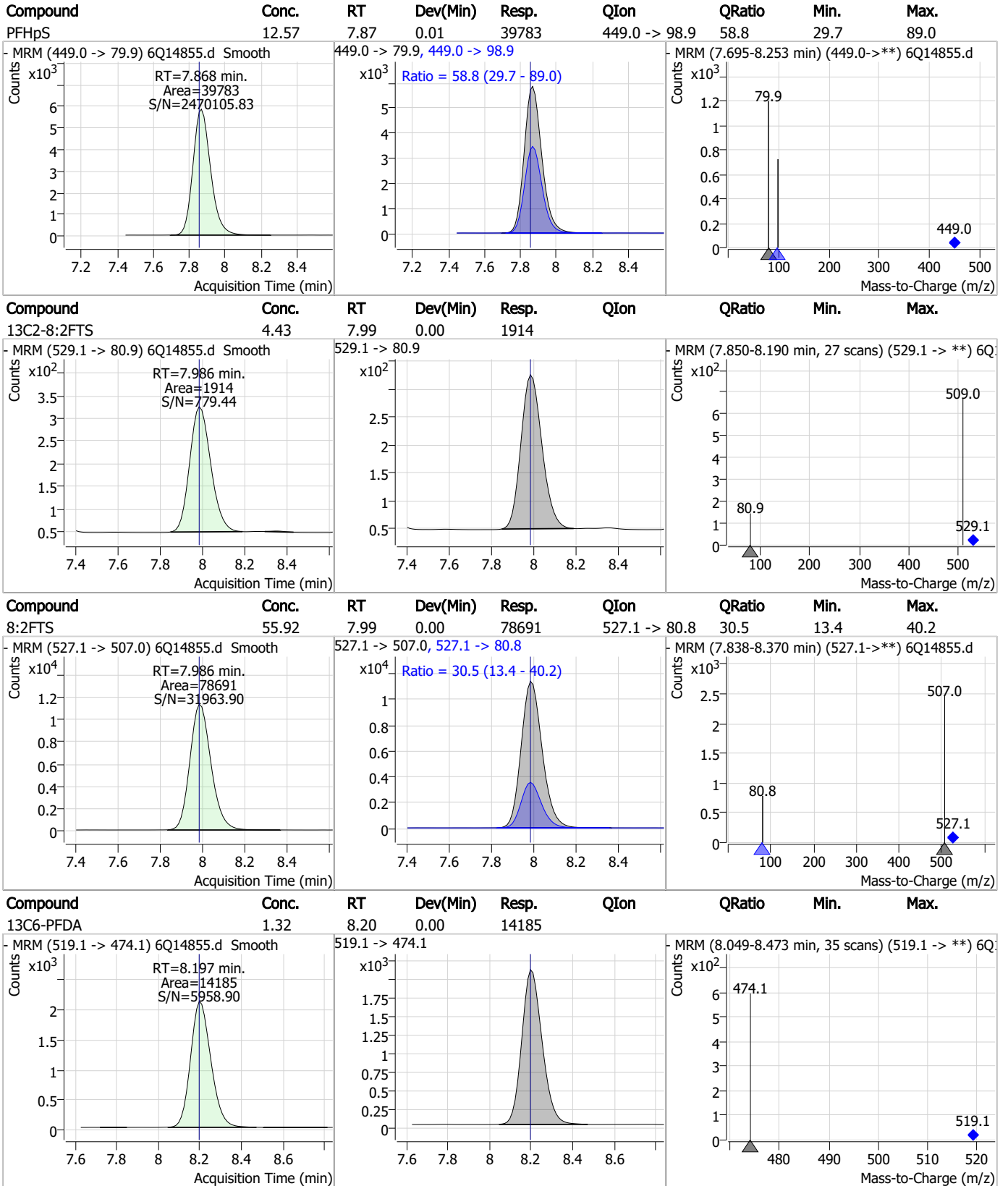


Perfluorinated Compounds by LC/MS/MS



7.7.7

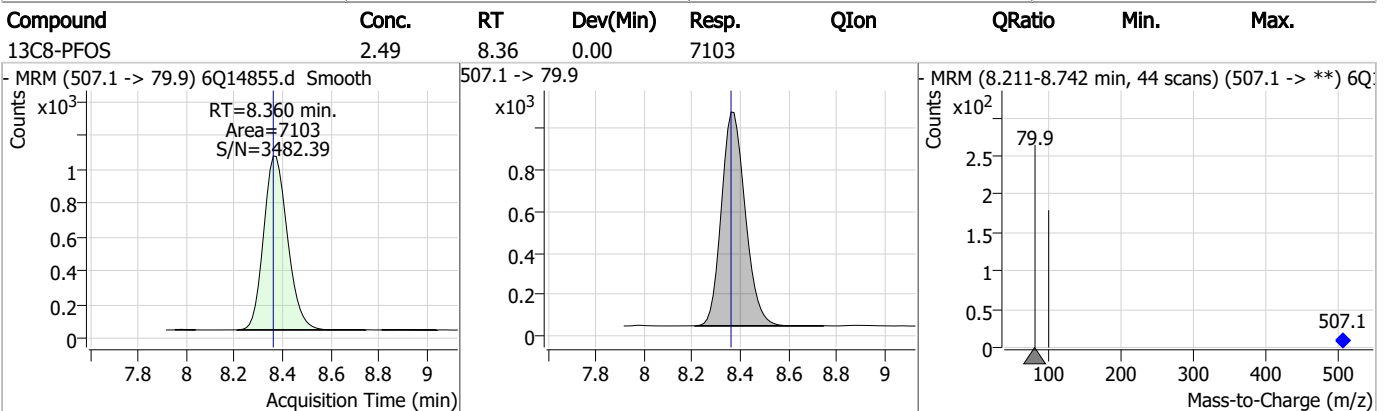
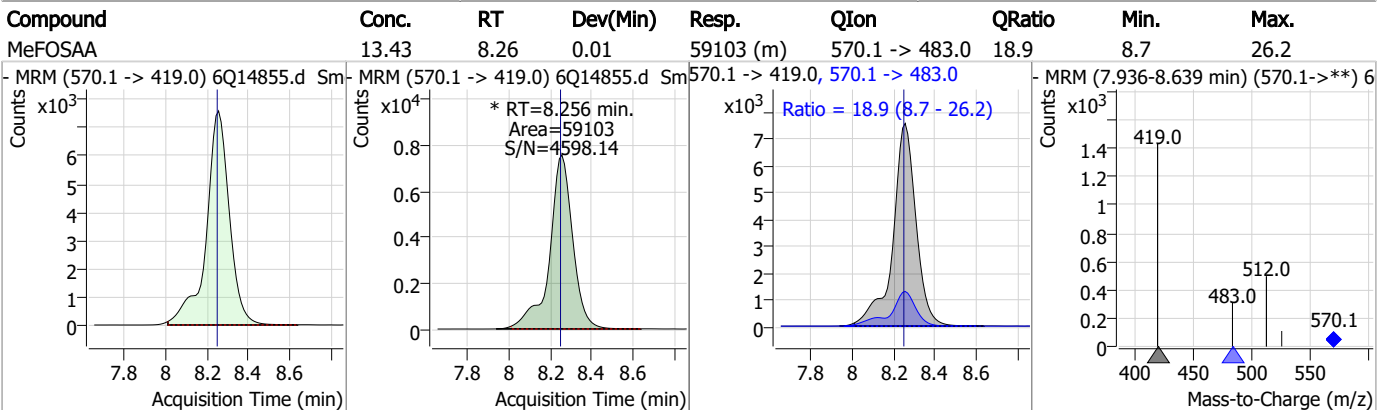
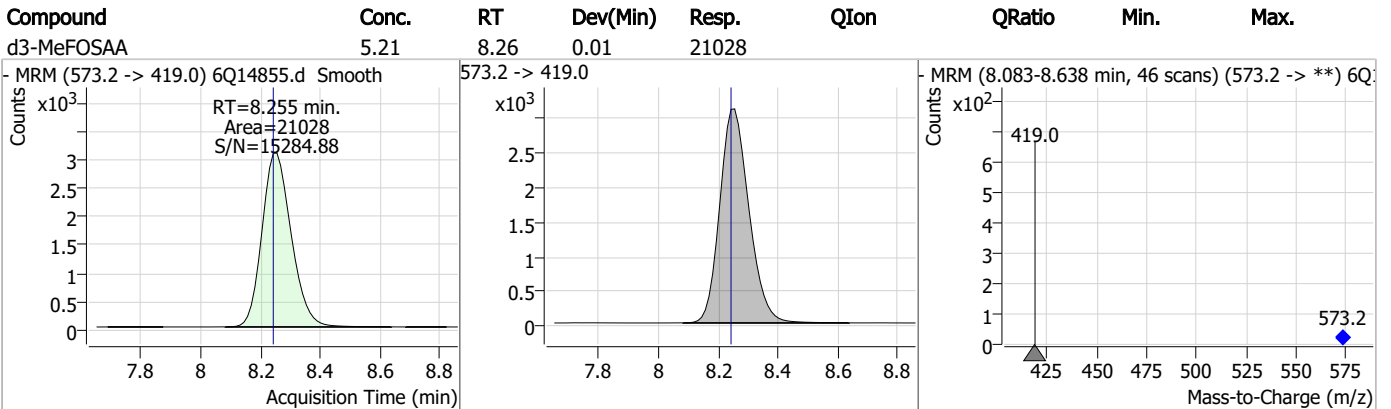
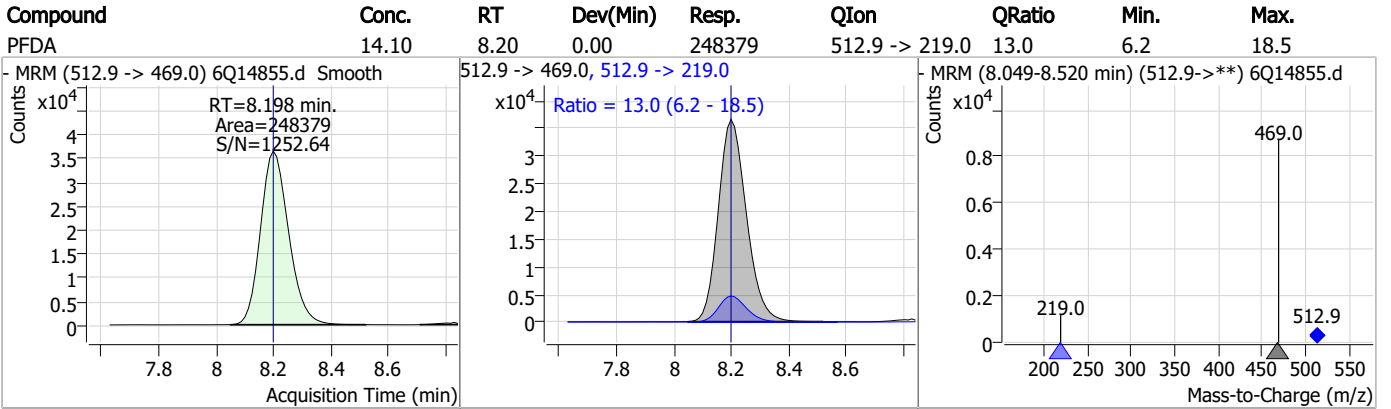
Perfluorinated Compounds by LC/MS/MS



7.7.7

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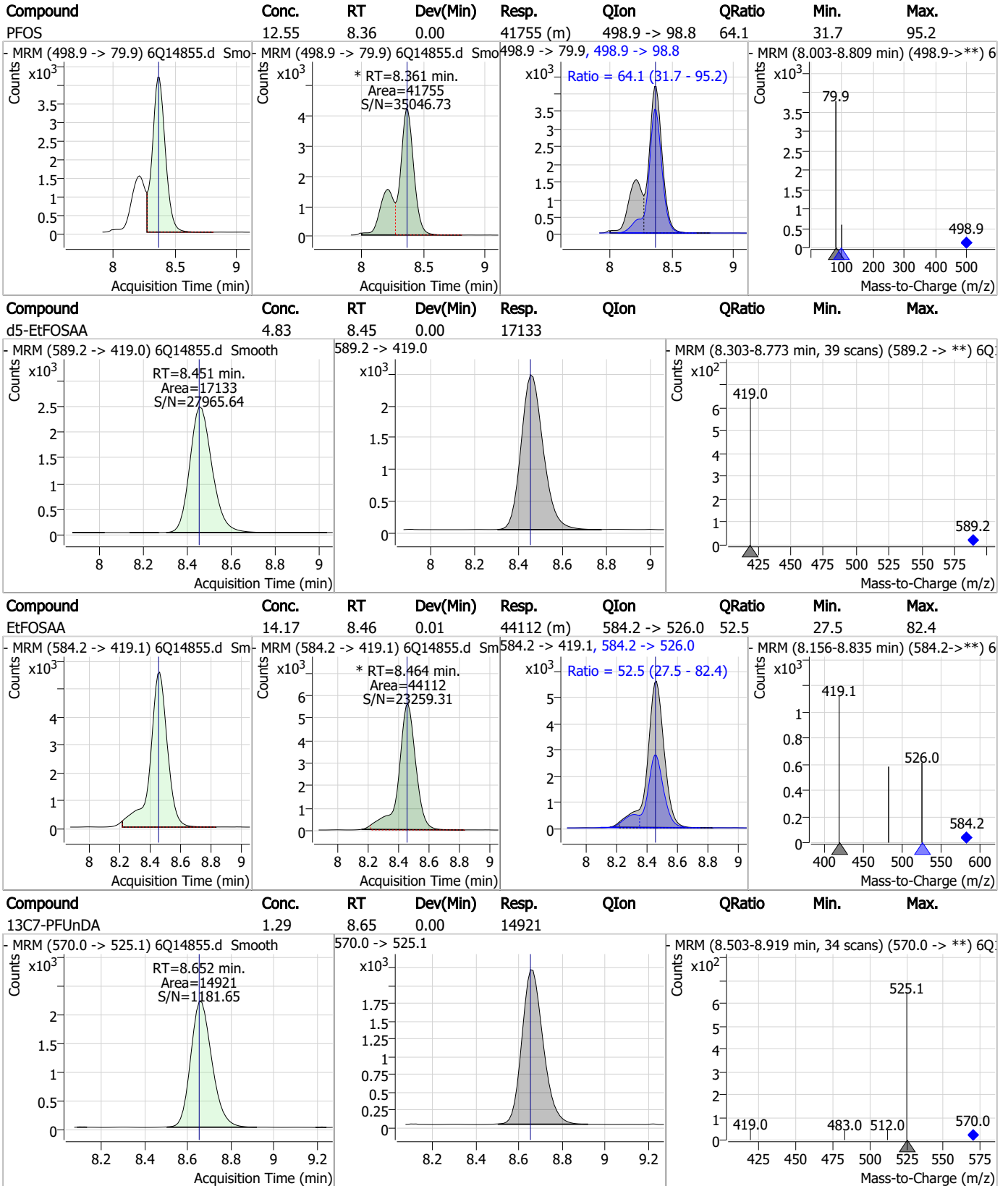
Perfluorinated Compounds by LC/MS/MS



7.7.7

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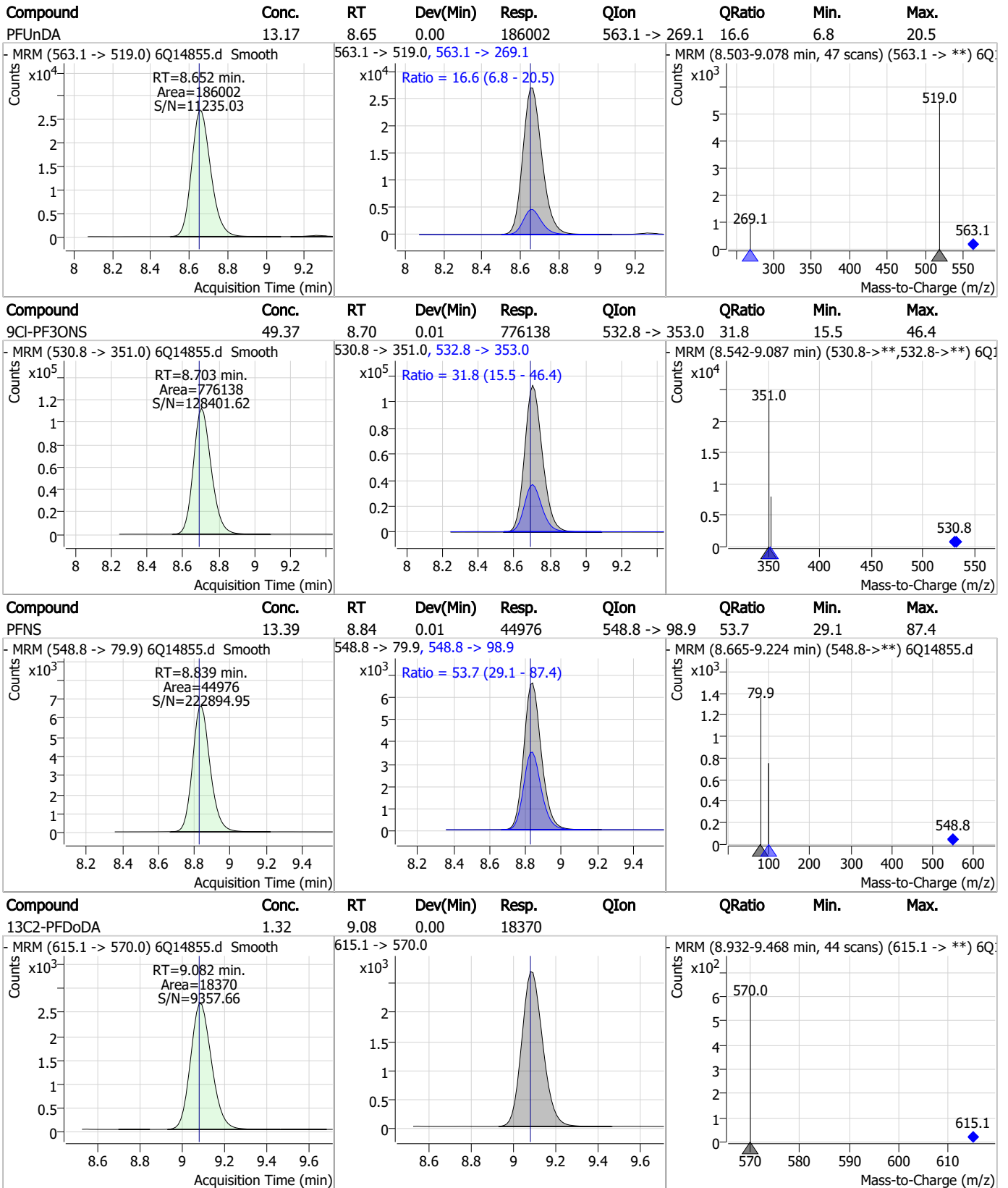
Perfluorinated Compounds by LC/MS/MS



7.7.7

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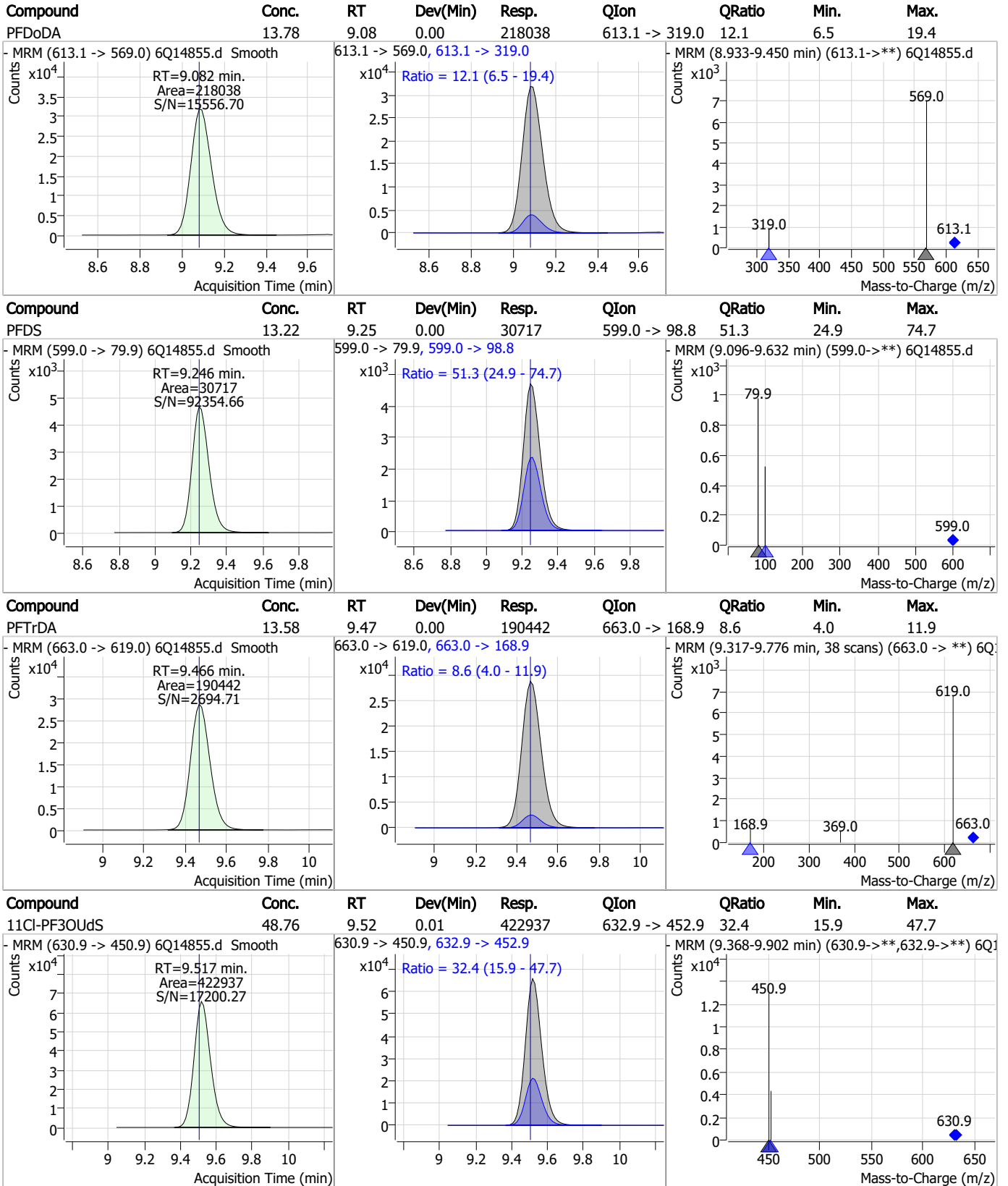
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

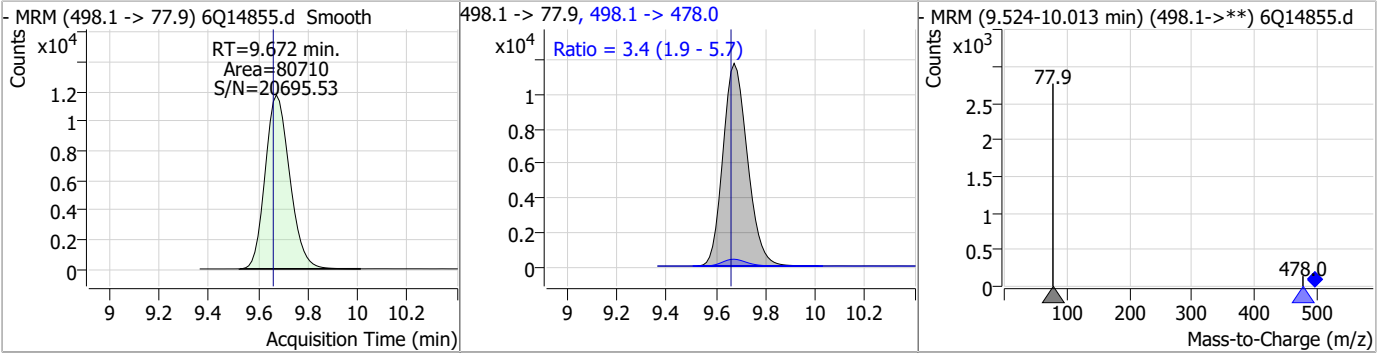


7.7.7

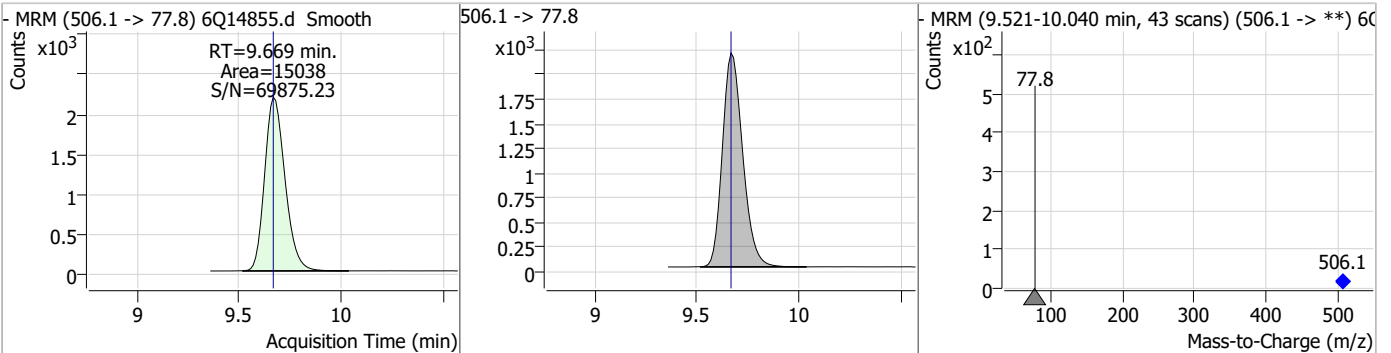
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Perfluorinated Compounds by LC/MS/MS

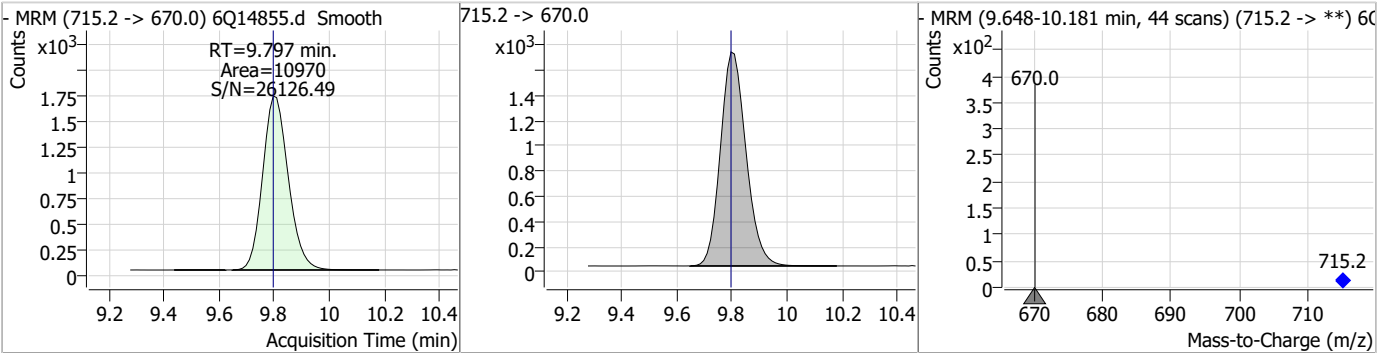
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	13.43	9.67	0.01	80710	498.1 -> 478.0	3.4	1.9	5.7



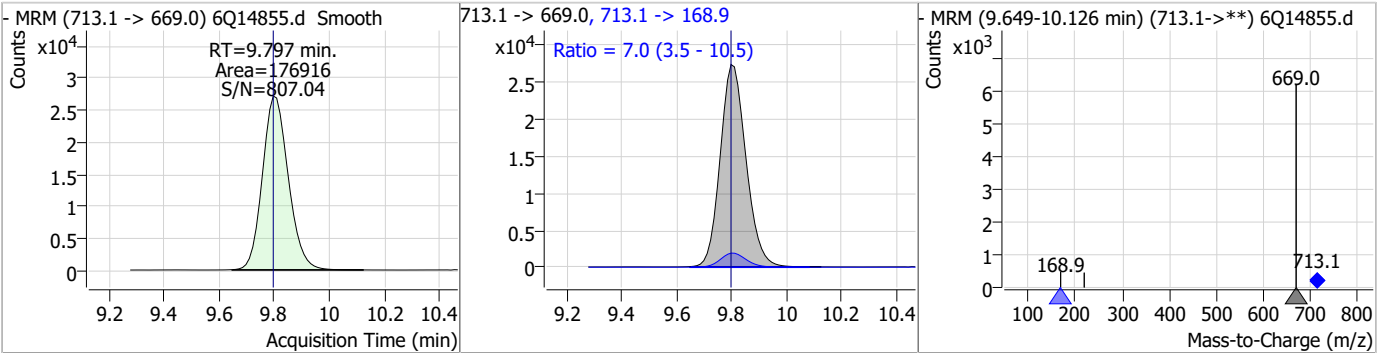
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.58	9.67	0.00	15038				



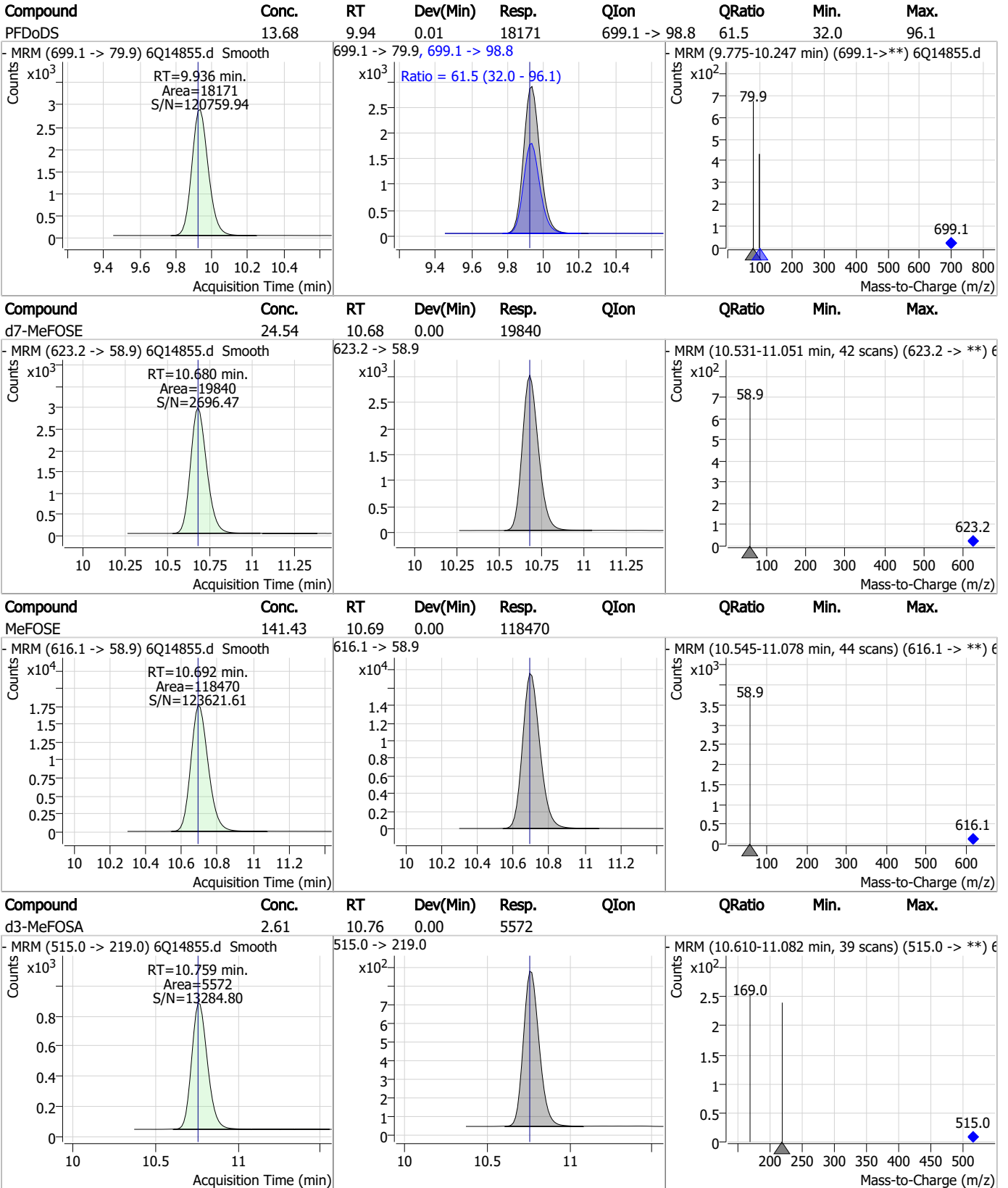
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.38	9.80	0.00	10970				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	12.84	9.80	0.00	176916	713.1 -> 168.9	7.0	3.5	10.5



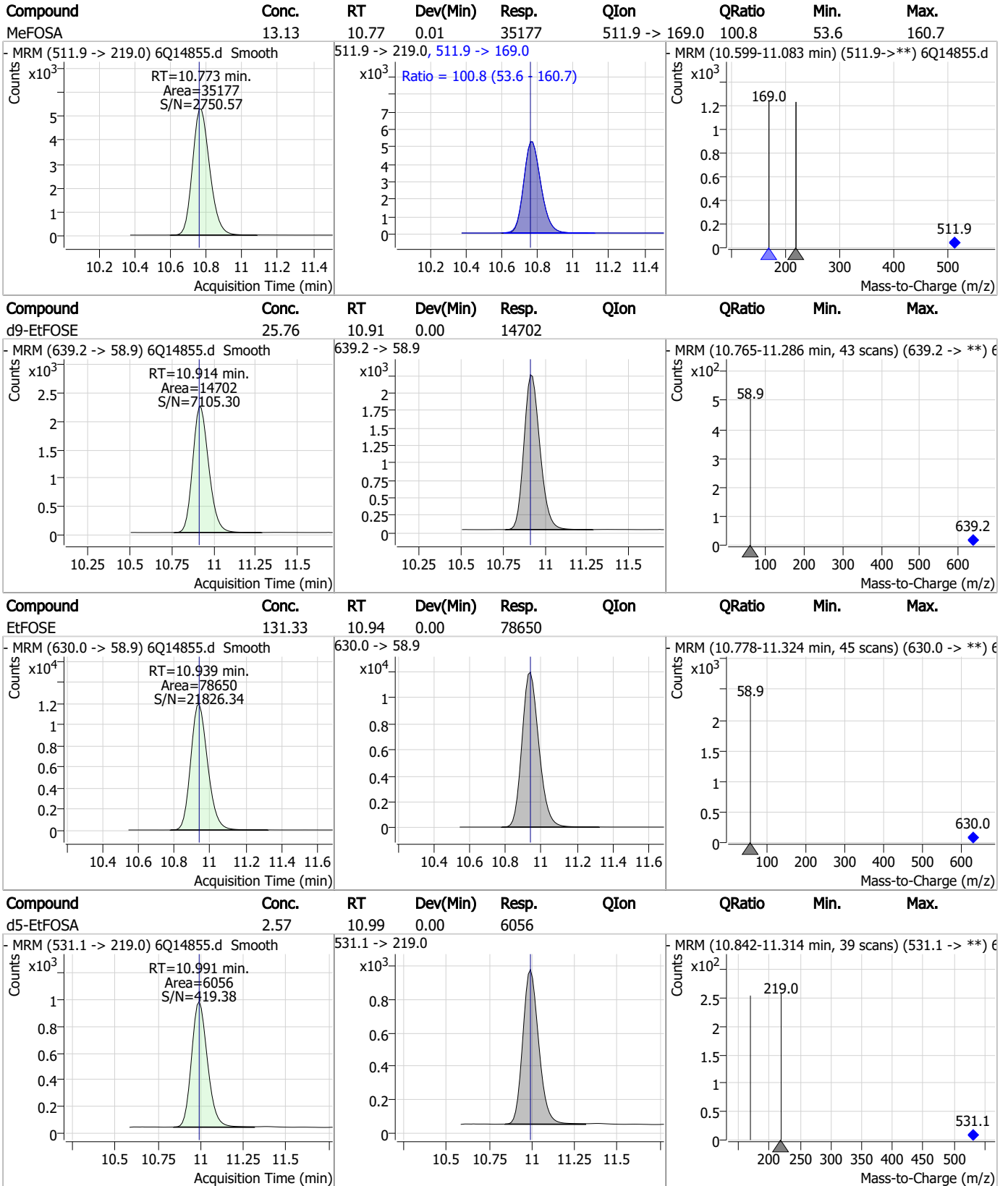
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

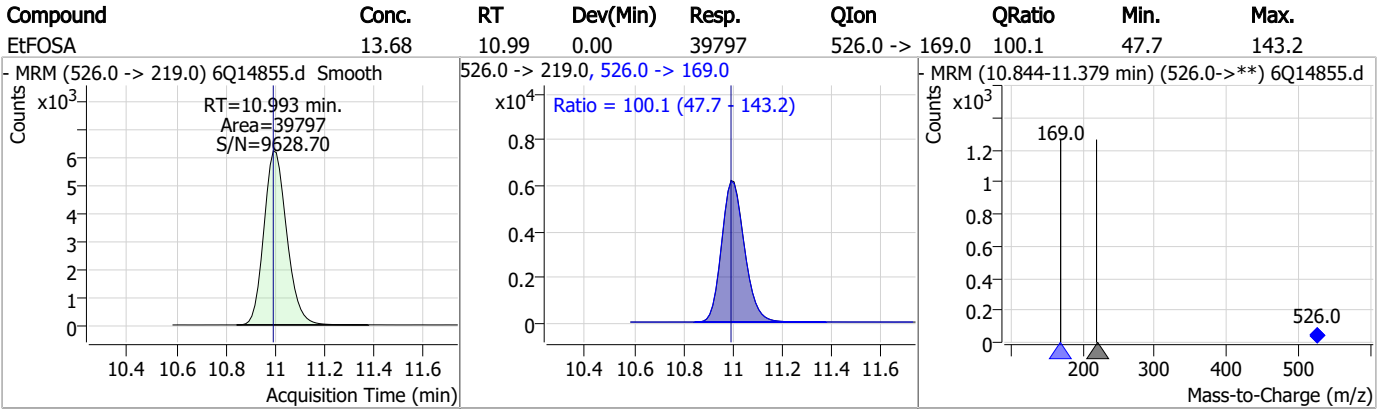


7.7.7

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Perfluorinated Compounds by LC/MS/MS



7.7.7
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Manual Integration Approval Summary

Sample Number: S6Q225-IC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14855.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 22:56 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.46	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 03/16/23 16:23

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14856.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 11:10:07 PM
 Sample Name : ic225-7
 Vial : P1-A8
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	68462	10.00 µg/L	0.000
M5-PFPeA	4.382	268.3 -> 223.0	33559	5.00 µg/L	-0.012
M5-PFHxA	5.605	318.0 -> 273.0	30051	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	31154	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	51435	2.50 µg/L	0.000
M9-PFNA	7.718	472.1 -> 427.0	14922	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	13770	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	14195	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	18100	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	10242	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	14287	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	11368	2.50 µg/L	-0.012
M3-PFHxS	7.315	402.1 -> 79.9	7475	2.50 µg/L	0.012
M8-PFOS	8.360	507.1 -> 79.9	7139	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1443	5.00 µg/L	-0.012
M2-6:2FTS	6.962	429.1 -> 80.9	1899	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	2169	5.00 µg/L	0.000
M3-MeFOSAA	8.255	573.2 -> 419.0	19962	5.00 µg/L	0.012
M3-HFPO-DA	5.983	286.9 -> 168.9	12747	10.00 µg/L	0.000
M5-EtFOSAA	8.451	589.2 -> 419.0	18296	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	19428	25.00 µg/L	0.000
M9-EtFOSE	10.926	639.2 -> 58.9	13741	25.00 µg/L	0.012
M5-EtFOSA	10.991	531.1 -> 219.0	5859	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5384	2.50 µg/L	0.000
13C4-PFOS	8.373	502.8 -> 79.9	8246	2.50 µg/L	0.012
13C3-PFBA	2.952	216.0 -> 172.0	29560	5.00 µg/L	0.000
18O2-PFHxS	7.314	403.0 -> 83.9	5253	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	62509	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	18197	1.25 µg/L	0.000
13C5-PFNA	7.718	468.0 -> 423.0	17135	1.25 µg/L	0.000
13C2-PFHxA	5.606	315.1 -> 270.0	29249	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1443	4.79 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C2-6:2FTS	6.962	429.1 -> 80.9	1899	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2169	5.21 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C2-PFDoDA	9.082	615.1 -> 570.0	18100	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-PFTeDA	9.797	715.2 -> 670.0	10242	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFBS	5.536	302.1 -> 79.9	11368	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	7.315	402.1 -> 79.9	7475	2.52 µg/L	0.012

7.7.8
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C4-PFBA	2.947	216.8 -> 171.9	68462	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C4-PFHpA	6.544	367.1 -> 322.0	31154	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C5-PFHxA	5.605	318.0 -> 273.0	30051	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C5-PFPeA	4.382	268.3 -> 223.0	33559	4.97 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C6-PFDA	8.197	519.1 -> 474.1	13770	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C7-PFUnDA	8.652	570.0 -> 525.1	14195	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C8-FOSA	9.669	506.1 -> 77.8	14287	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C8-PFOA	7.187	421.1 -> 376.0	51435	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C8-PFOS	8.360	507.1 -> 79.9	7139	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C9-PFNA	7.718	472.1 -> 427.0	14922	1.13 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.3%		
d3-MeFOSAA	8.255	573.2 -> 419.0	19962	5.04 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C3-HFPO-DA	5.983	286.9 -> 168.9	12747	9.65 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 96.5%		
d3-MeFOSA	10.759	515.0 -> 219.0	5384	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.9%		
d5-EtFOSAA	8.451	589.2 -> 419.0	18296	5.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.1%		
d7-MeFOSE	10.680	623.2 -> 58.9	19428	24.49 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
d9-EtFOSE	10.926	639.2 -> 58.9	13741	24.54 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
d5-EtFOSA	10.991	531.1 -> 219.0	5859	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	326258	97.71 µg/L	95
		327.1 -> 80.9	73740		
6:2FTS	6.962	427.1 -> 407.0	273919	97.09 µg/L	98
		427.1 -> 80.9	56986		
8:2FTS	7.986	527.1 -> 507.0	145682	91.34 µg/L	98
		527.1 -> 80.8	37488		
EtFOSAA	8.452	584.2 -> 419.1	86302	25.97 µg/L	m 97
		584.2 -> 526.0	45411		
FOSA	9.672	498.1 -> 77.9	150703	26.39 µg/L	100
		498.1 -> 478.0	5483		
MeFOSAA	8.256	570.1 -> 419.0	117937	28.23 µg/L	m 97
		570.1 -> 483.0	18734		
PFBA	2.956	212.8 -> 168.9	202349	108.30 µg/L	100
PFBS	5.537	298.7 -> 79.9	117506	23.47 µg/L	100
		298.7 -> 98.8	53351		
PFDA	8.198	512.9 -> 469.0	460268	26.92 µg/L	97
		512.9 -> 219.0	62155		
PFDoDA	9.082	613.1 -> 569.0	397035	25.46 µg/L	100
		613.1 -> 319.0	51043		
PFDS	9.246	599.0 -> 79.9	58656	25.11 µg/L	99

7.7.8

7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	28761			
PFHpA	6.544	363.1 -> 319.0	513674	25.57	µg/L	100
		363.1 -> 169.0	70885			
PFHpS	7.868	449.0 -> 79.9	77707	24.42	µg/L	98
		449.0 -> 98.9	44915			
PFHxA	5.607	313.0 -> 269.0	319037	25.19	µg/L	100
		313.0 -> 118.9	13197			
PFHxS	7.315	398.7 -> 79.9	88527	23.72	µg/L	m 95
		398.7 -> 98.9	47789			
PFNA	7.719	463.0 -> 419.0	302940	28.63	µg/L	100
		463.0 -> 219.0	60491			
PFNS	8.826	548.8 -> 79.9	82125	24.33	µg/L	97
		548.8 -> 98.9	46040			
PFOA	7.189	413.0 -> 369.0	649872	26.69	µg/L	99
		413.0 -> 169.0	87091			
PFOS	8.374	498.9 -> 79.9	76376	22.84	µg/L	m 98
		498.9 -> 98.8	49436			
PFPeA	4.385	263.0 -> 219.0	422087	52.83	µg/L	100
PFPeS	6.609	349.1 -> 79.9	110011	24.39	µg/L	98
		349.1 -> 98.9	57169			
PFTeDA	9.797	713.1 -> 669.0	329131	25.58	µg/L	100
		713.1 -> 168.9	22809			
PFTrDA	9.466	663.0 -> 619.0	337841	24.45	µg/L	99
		663.0 -> 168.9	27593			
PFUnDA	8.652	563.1 -> 519.0	358508	26.68	µg/L	98
		563.1 -> 269.1	51845			
11Cl-PF3OUdS	9.517	630.9 -> 450.9	816678	103.56	µg/L	97
		632.9 -> 452.9	273515			
9Cl-PF3ONS	8.703	530.8 -> 351.0	1425410	99.73	µg/L	98
		532.8 -> 353.0	456949			
ADONA	6.806	376.9 -> 250.9	2793912	102.06	µg/L	98
		376.9 -> 84.8	599913			
HFPO-DA	5.984	284.9 -> 168.9	146703	109.37	µg/L	99
		284.9 -> 184.9	18849			
3:3FTCA	3.851	241.0 -> 177.0	52893	132.38	µg/L	100
		241.0 -> 117.0	7844			
5:3FTCA	6.271	341.0 -> 237.1	1642329	642.64	µg/L	94
		341.0 -> 217.0	1455239			
7:3FTCA	7.684	441.0 -> 316.9	897365	698.55	µg/L	91
		441.0 -> 336.9	1529633			
EtFOSA	11.005	526.0 -> 219.0	72527	25.76	µg/L	97
		526.0 -> 169.0	71508			
EtFOSE	10.939	630.0 -> 58.9	153070	273.48	µg/L	100
MeFOSA	10.773	511.9 -> 219.0	63510	24.53	µg/L	98
		511.9 -> 169.0	69665			
MeFOSE	10.692	616.1 -> 58.9	224161	273.29	µg/L	100
PFDoDS	9.924	699.1 -> 79.9	34123	25.57	µg/L	98
		699.1 -> 98.8	21226			
NFDHA	5.488	295.0 -> 201.0	40080	49.16	µg/L	99
		295.0 -> 84.9	18234			
PFMBA	4.806	279.0 -> 85.1	139791	53.71	µg/L	100
PFMPA	3.526	229.0 -> 84.9	122998	53.73	µg/L	100
PFEESA	6.089	314.8 -> 134.9	835484	46.64	µg/L	100
		314.8 -> 82.9	19392			

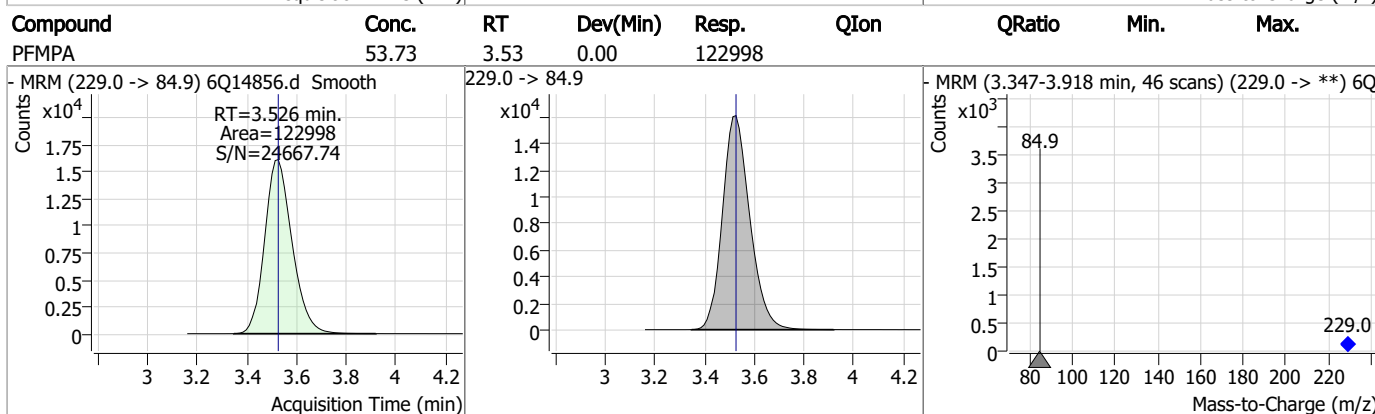
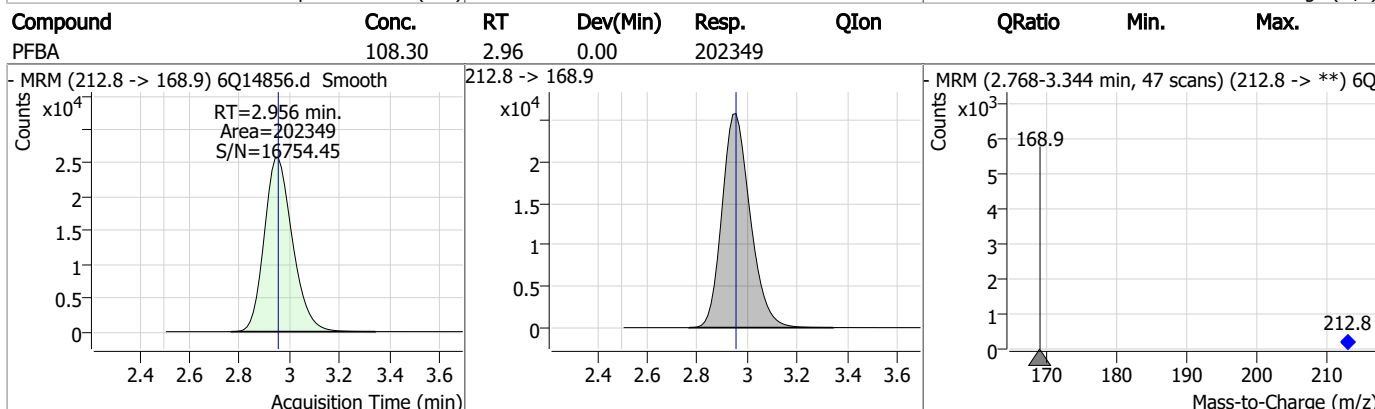
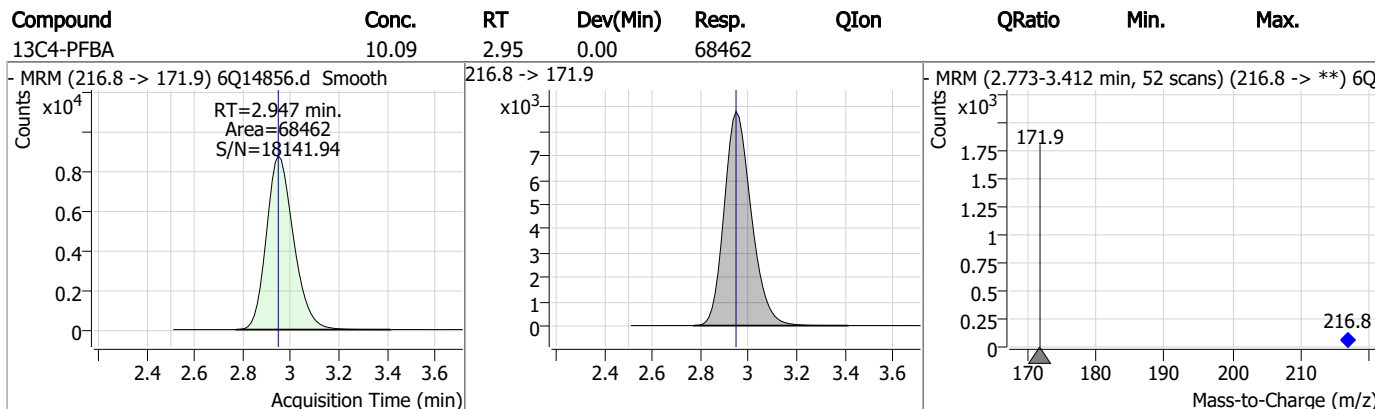
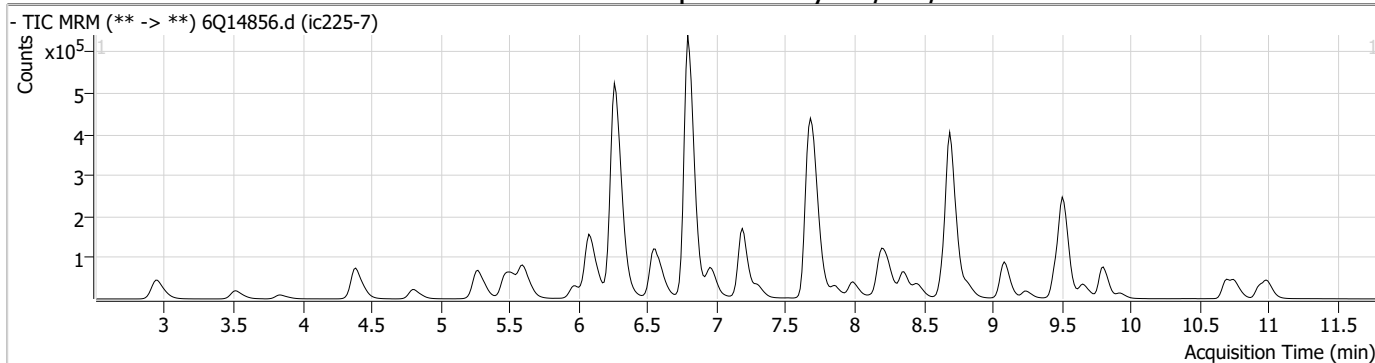
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

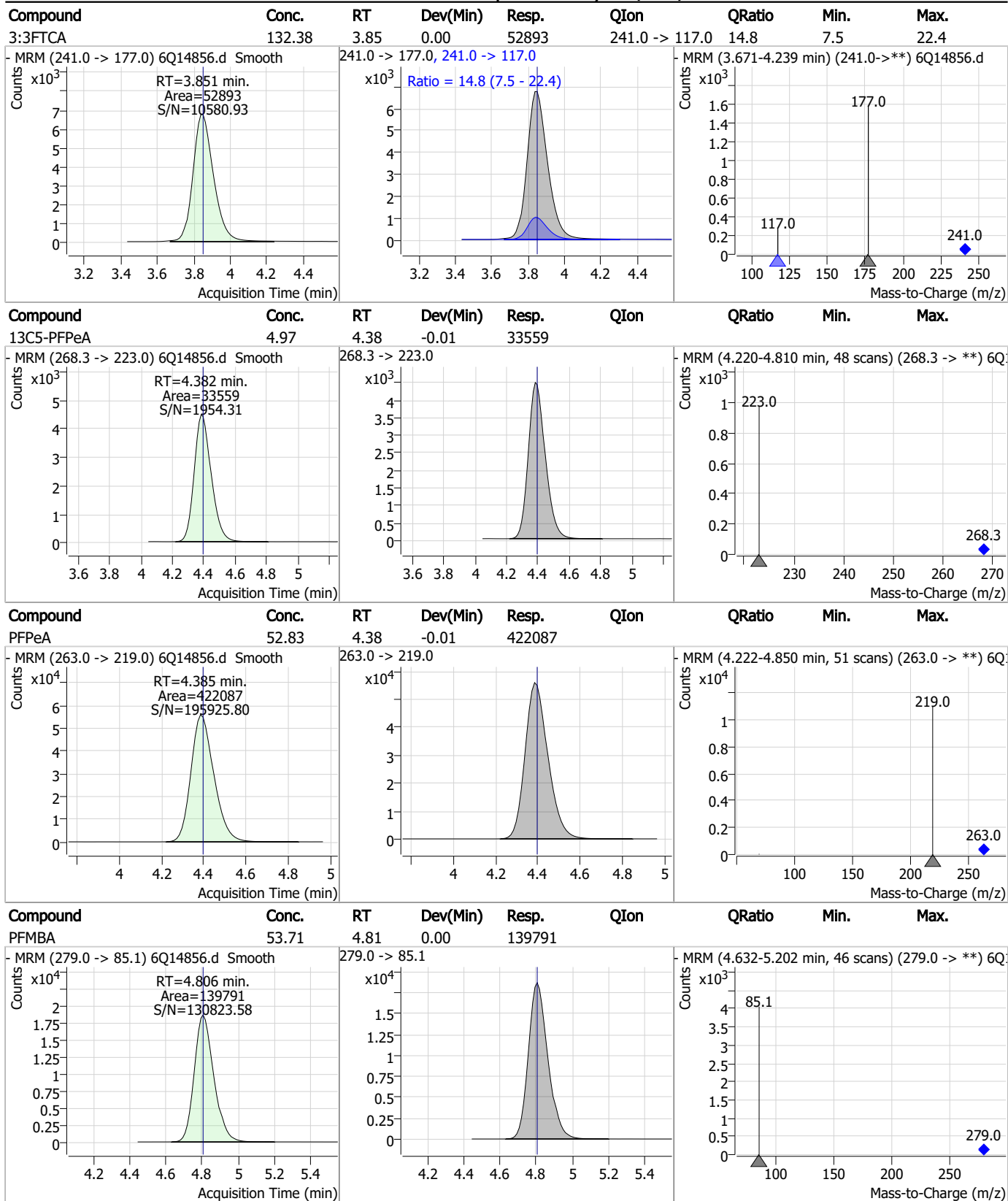
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.8
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Perfluorinated Compounds by LC/MS/MS



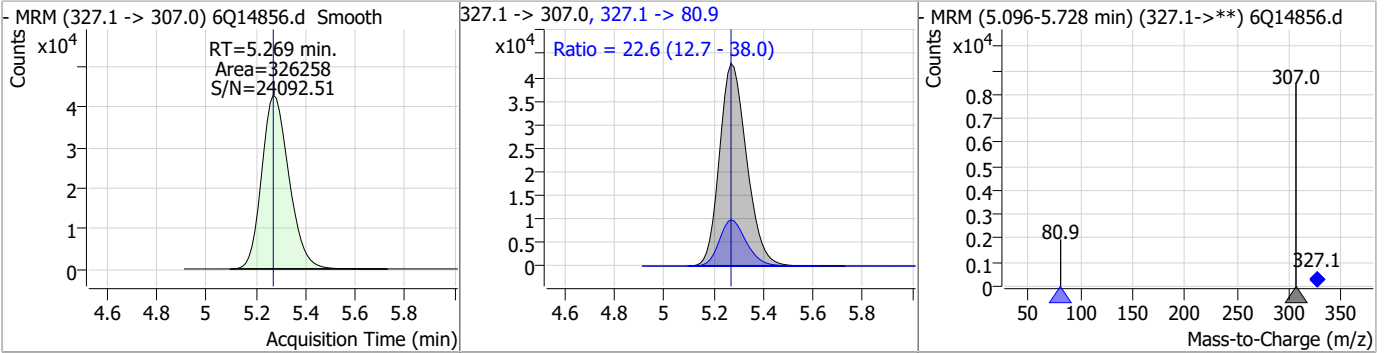
Perfluorinated Compounds by LC/MS/MS



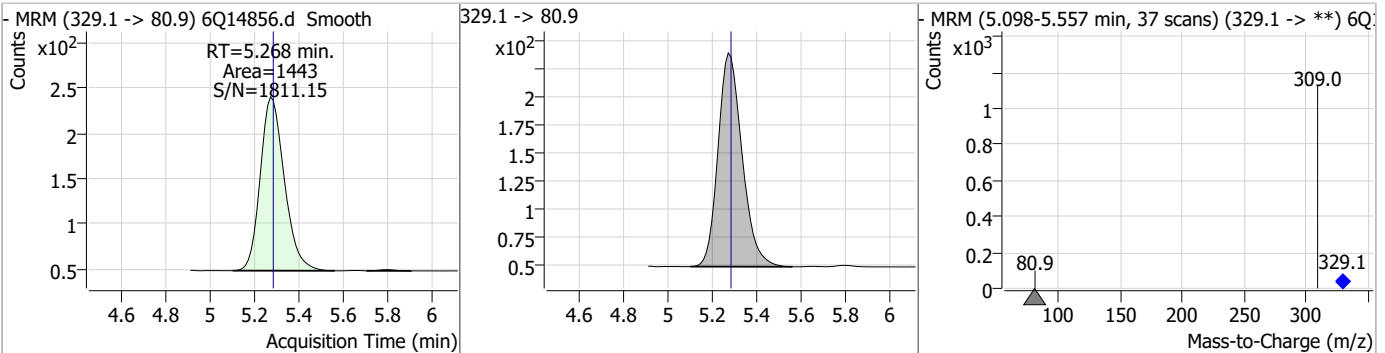
7.7.8
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Perfluorinated Compounds by LC/MS/MS

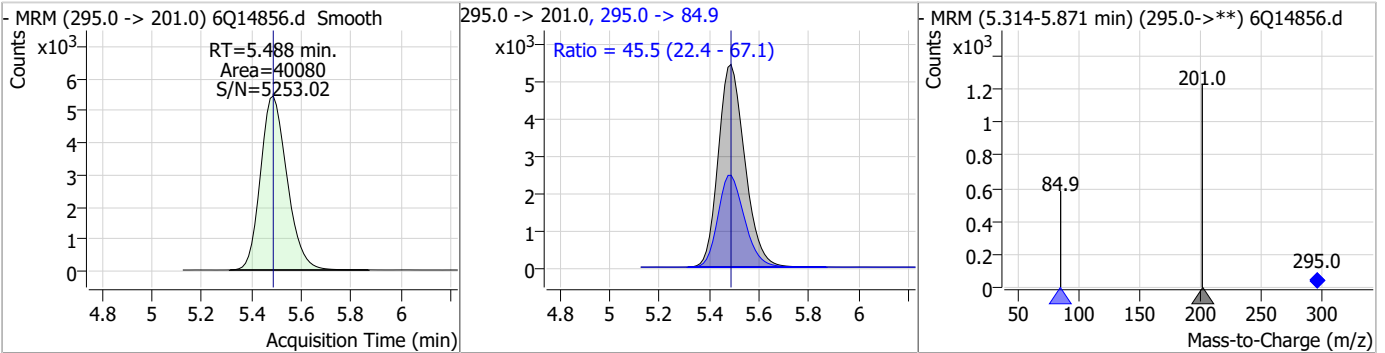
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	97.71	5.27	0.00	326258	327.1 -> 80.9	22.6	12.7	38.0



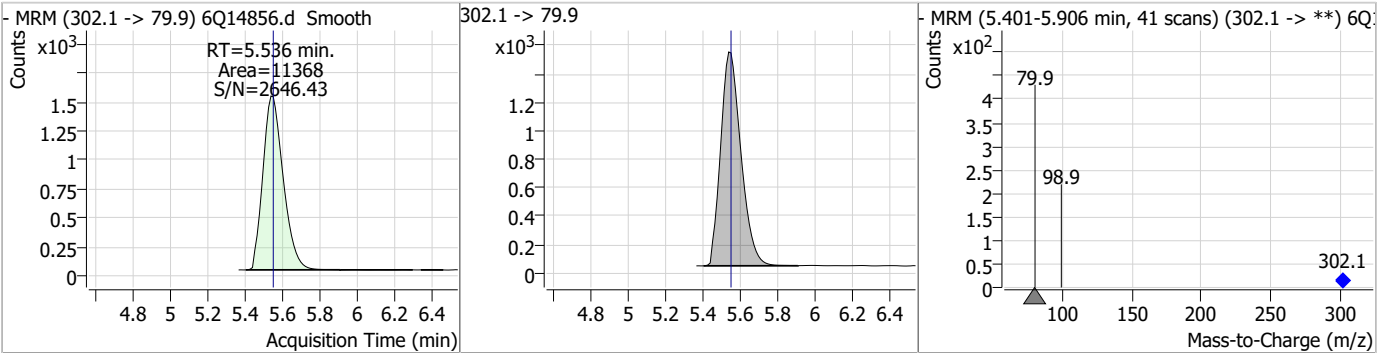
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	4.79	5.27	-0.01	1443	329.1 -> 80.9			



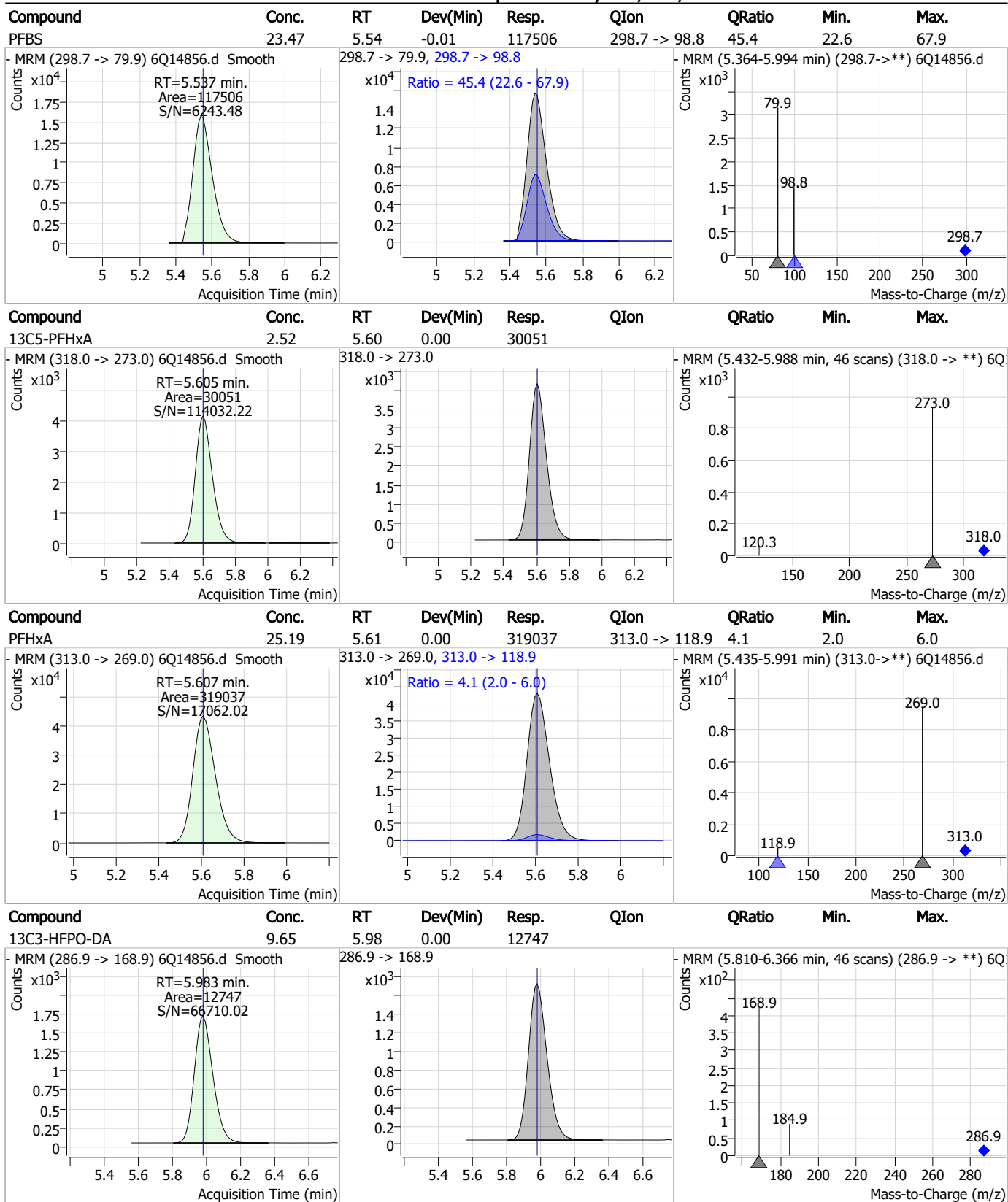
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	49.16	5.49	0.00	40080	295.0 -> 84.9	45.5	22.4	67.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.53	5.54	-0.01	11368	302.1 -> 79.9			



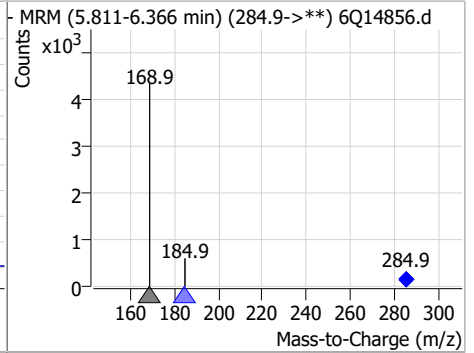
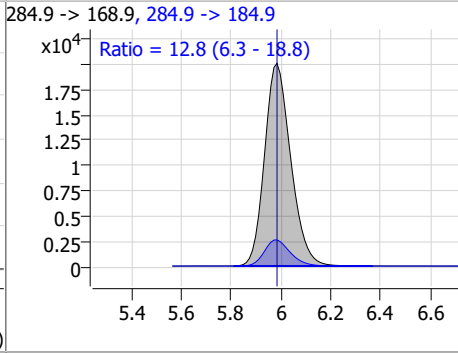
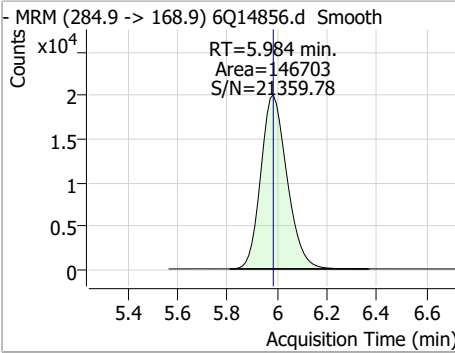
Perfluorinated Compounds by LC/MS/MS



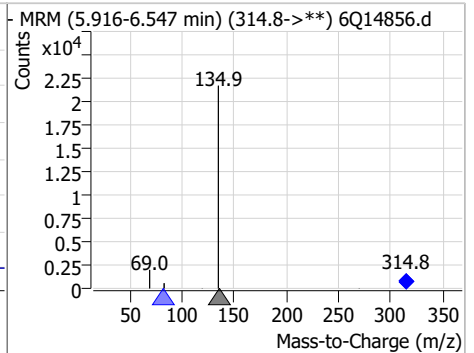
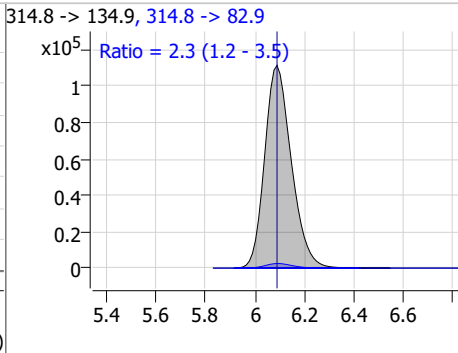
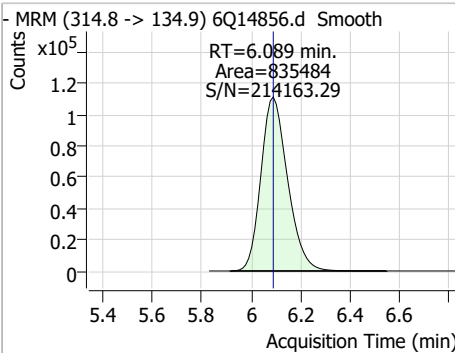
7.7.8
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Perfluorinated Compounds by LC/MS/MS

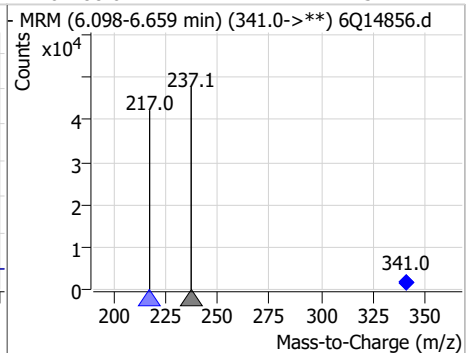
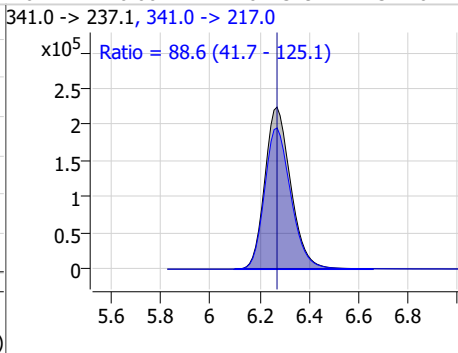
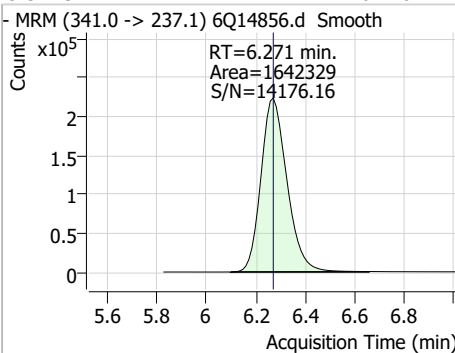
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	109.37	5.98	0.00	146703	284.9 -> 184.9	12.8	6.3	18.8



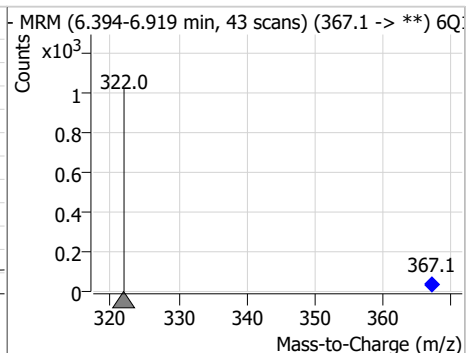
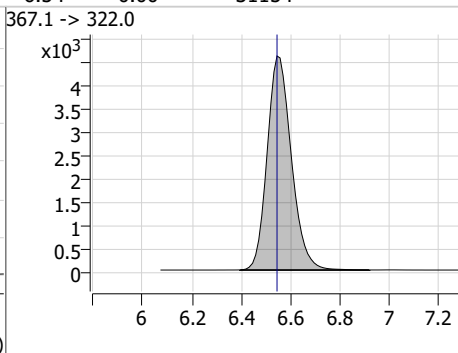
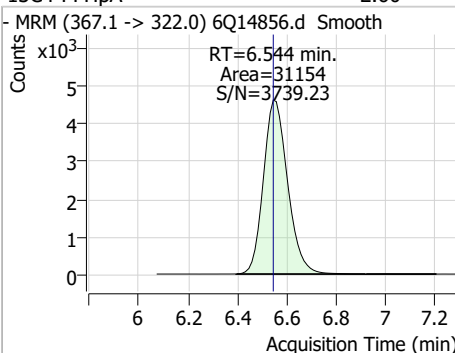
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	46.64	6.09	0.00	835484	314.8 -> 82.9	2.3	1.2	3.5



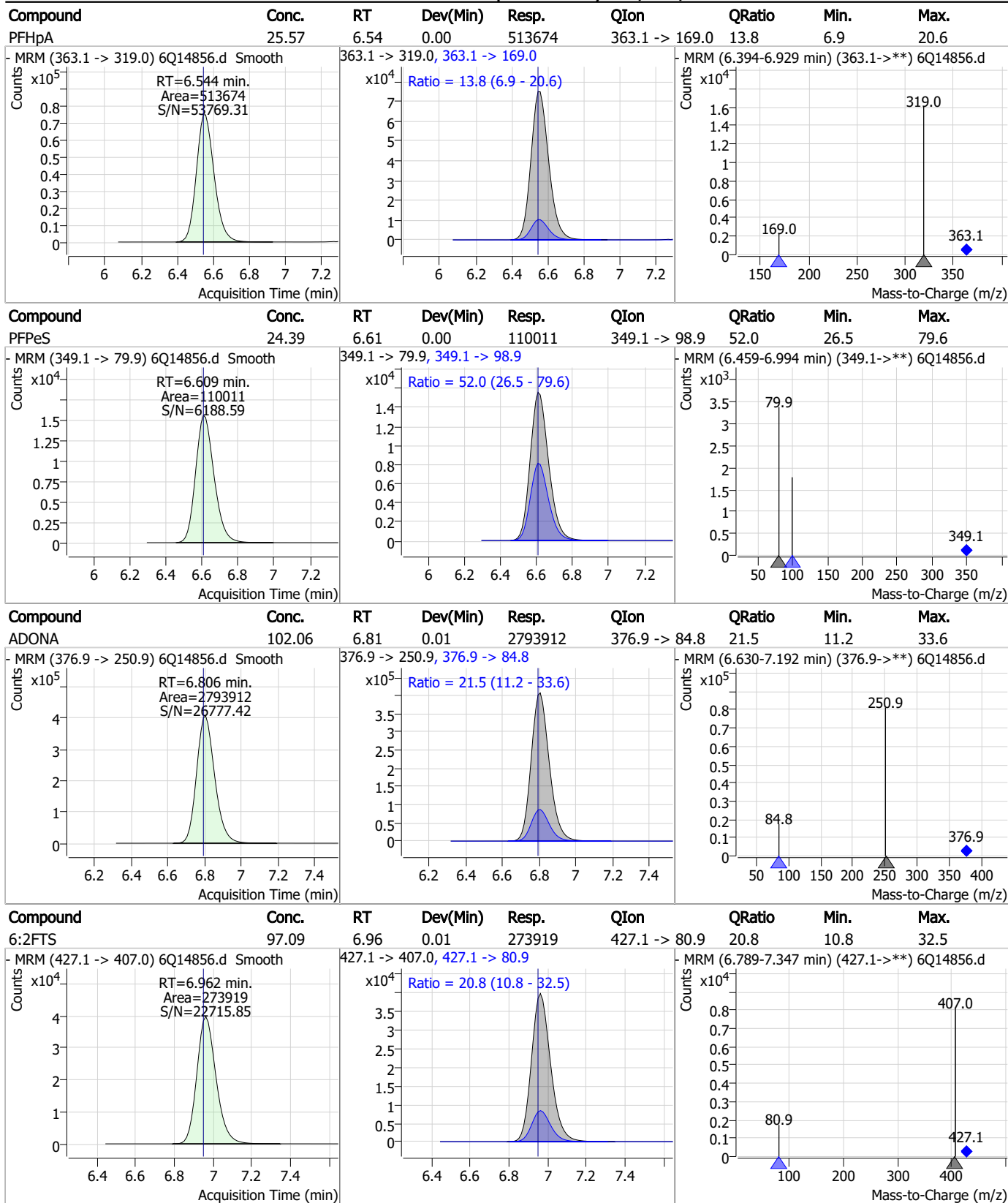
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	642.64	6.27	0.00	1642329	341.0 -> 217.0	88.6	41.7	125.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.60	6.54	0.00	31154	367.1 -> 322.0			

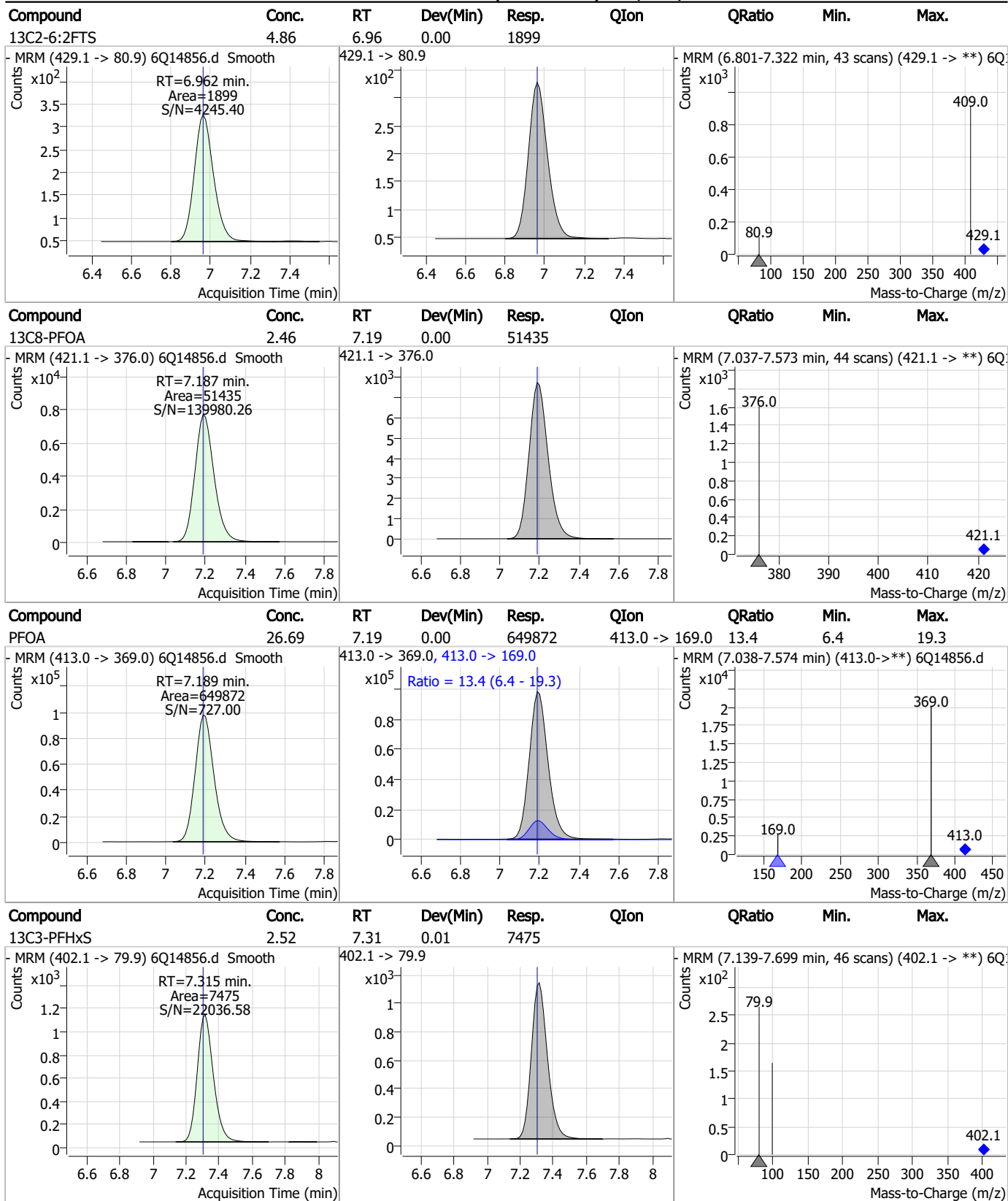


Perfluorinated Compounds by LC/MS/MS



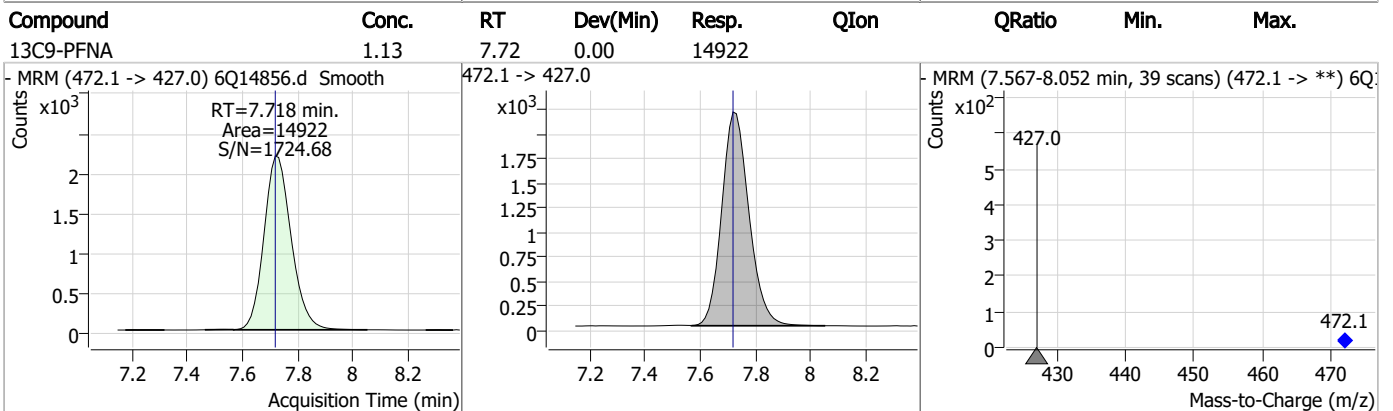
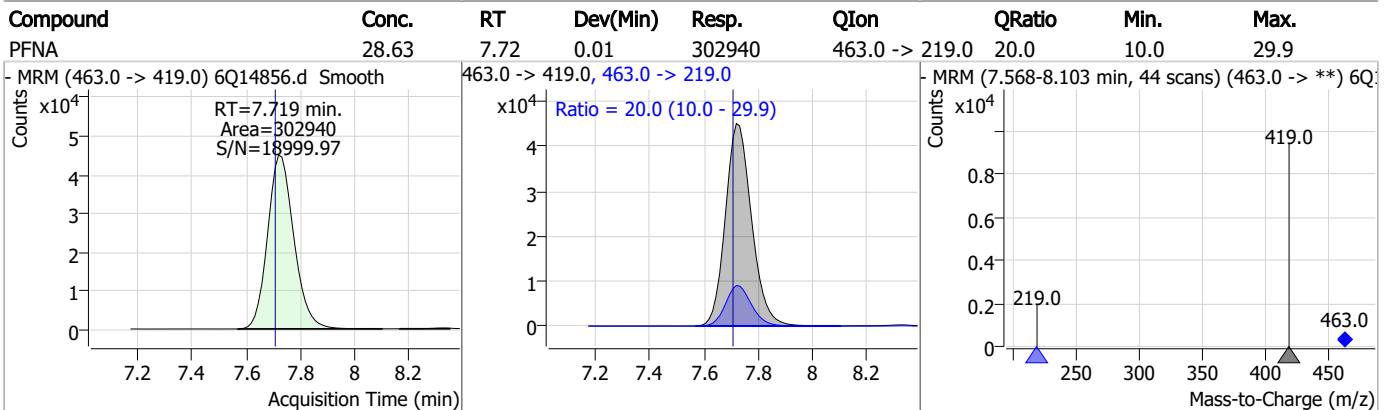
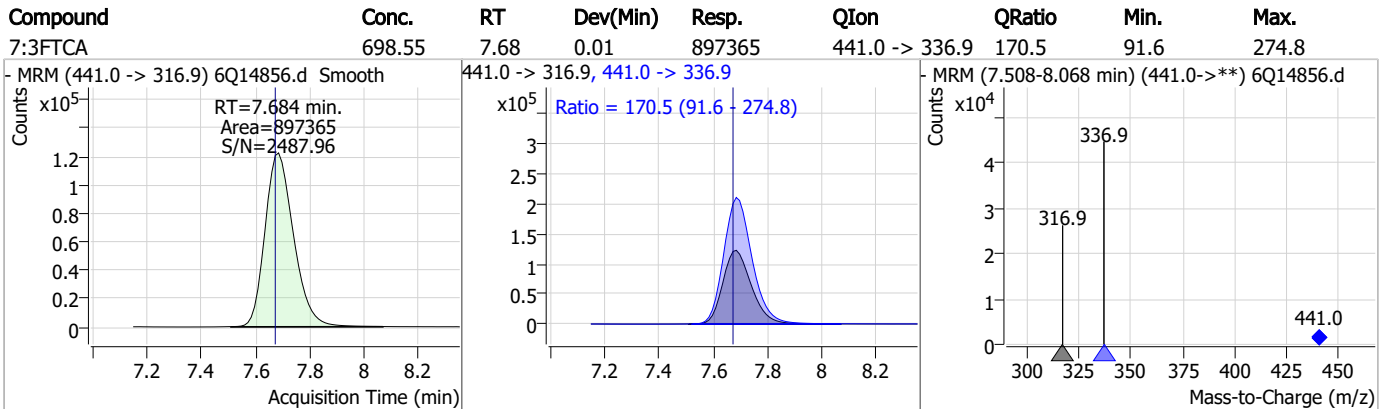
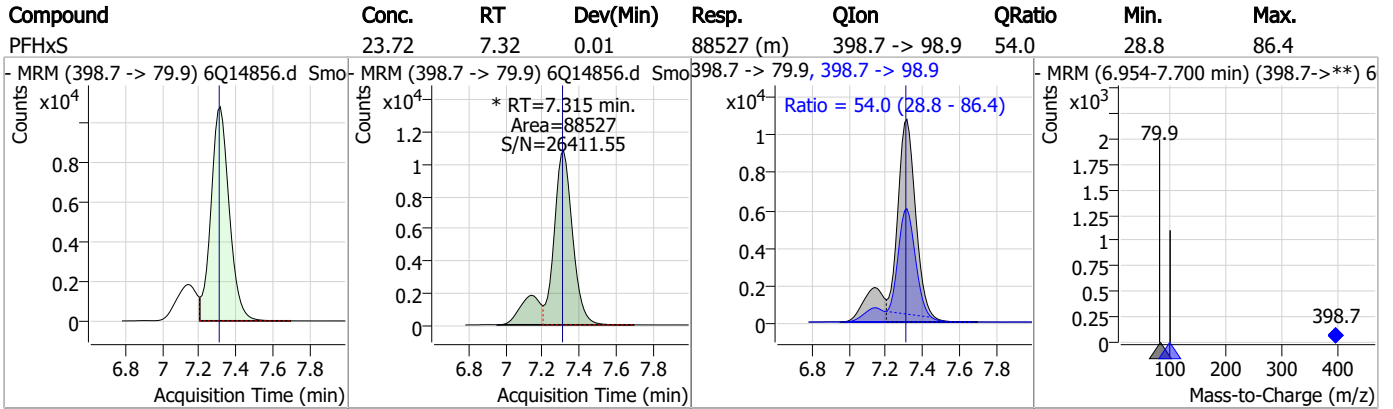
7.7.8
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Perfluorinated Compounds by LC/MS/MS



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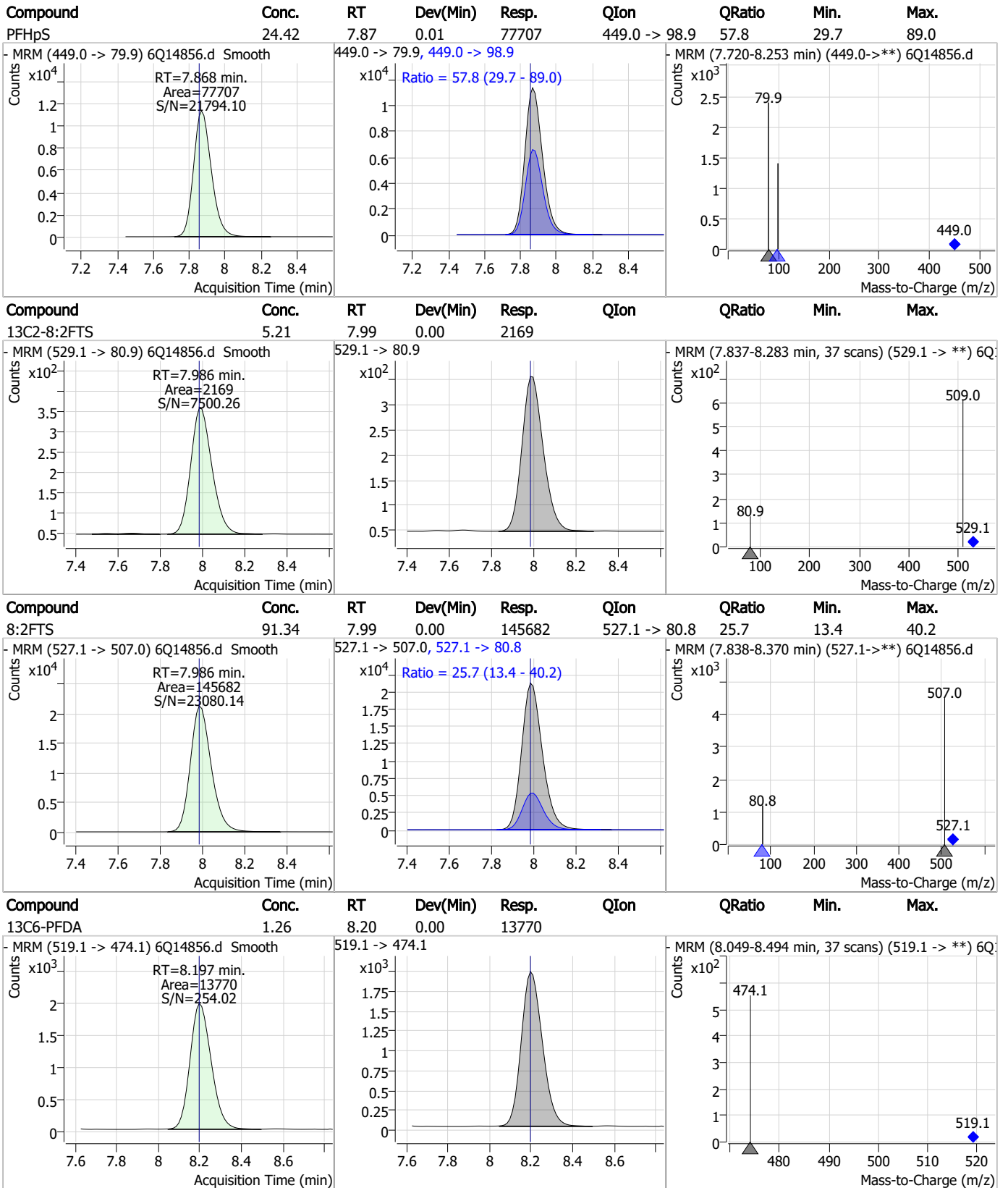
Perfluorinated Compounds by LC/MS/MS



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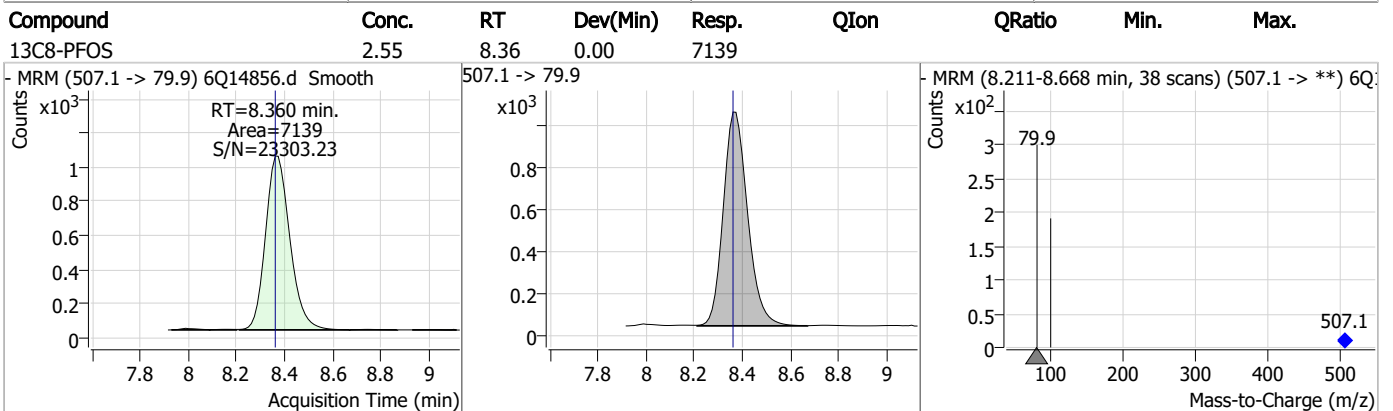
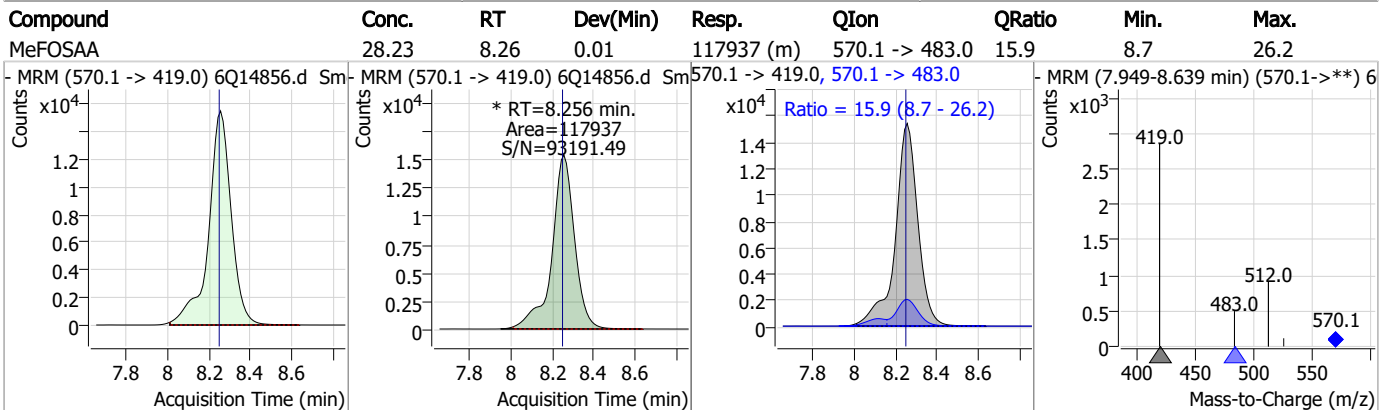
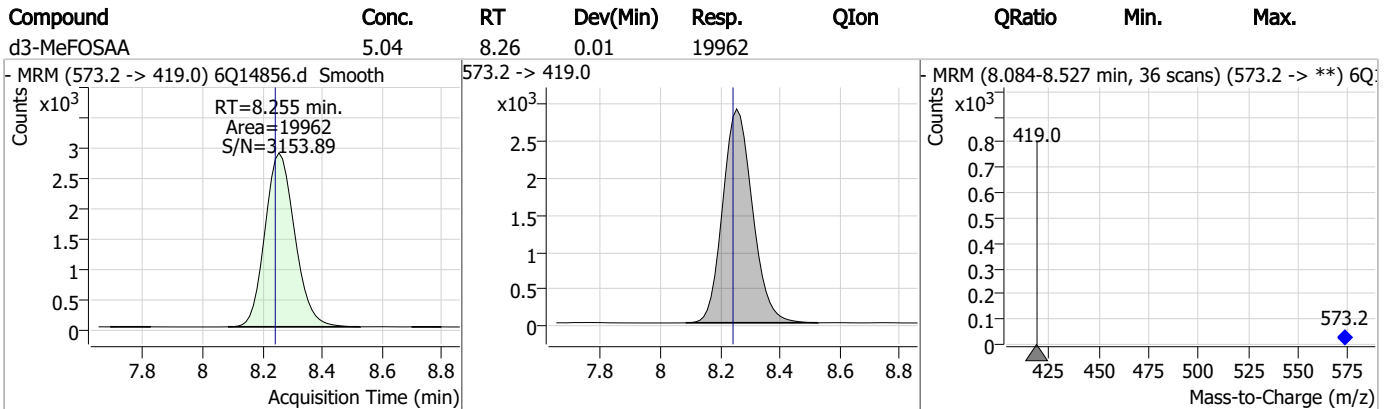
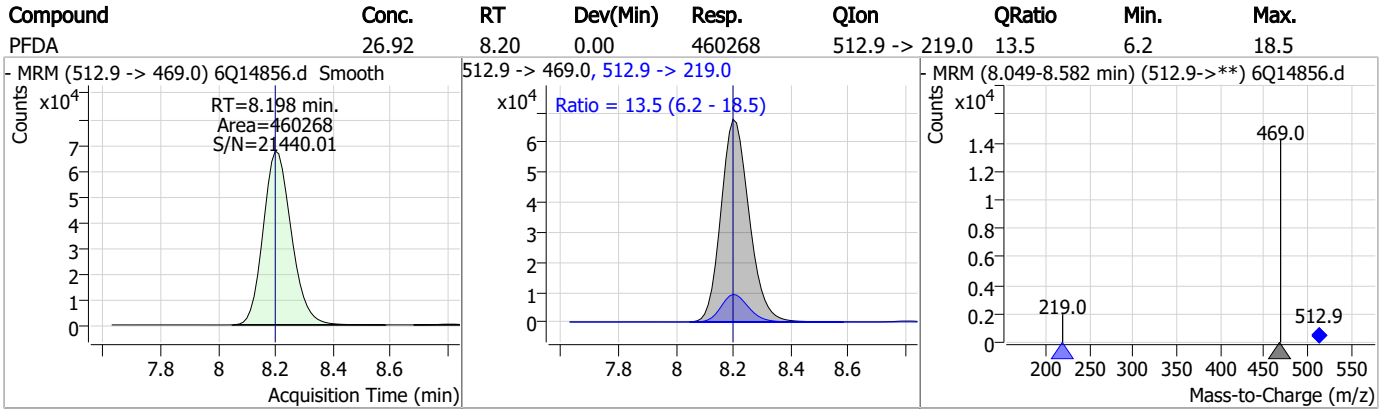
Perfluorinated Compounds by LC/MS/MS



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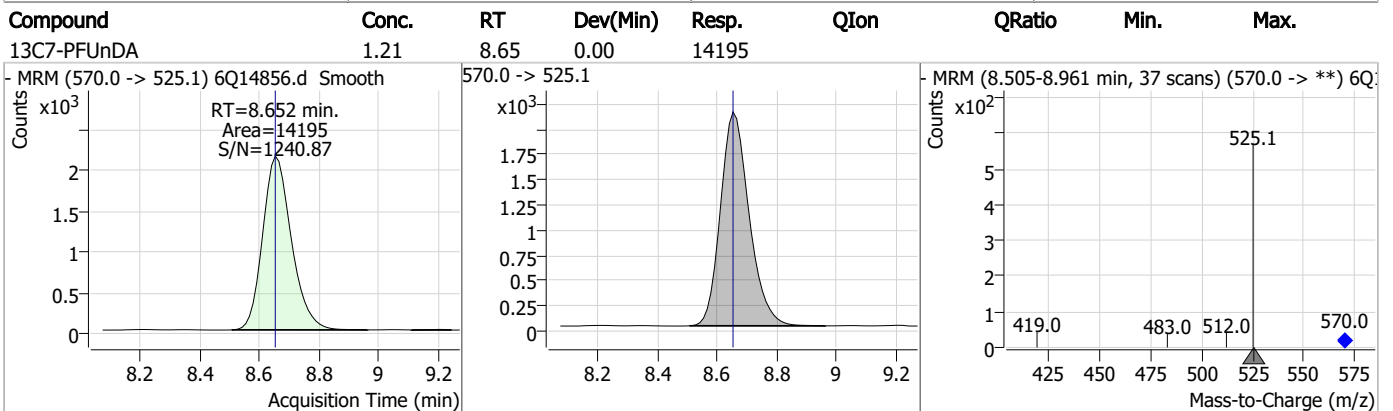
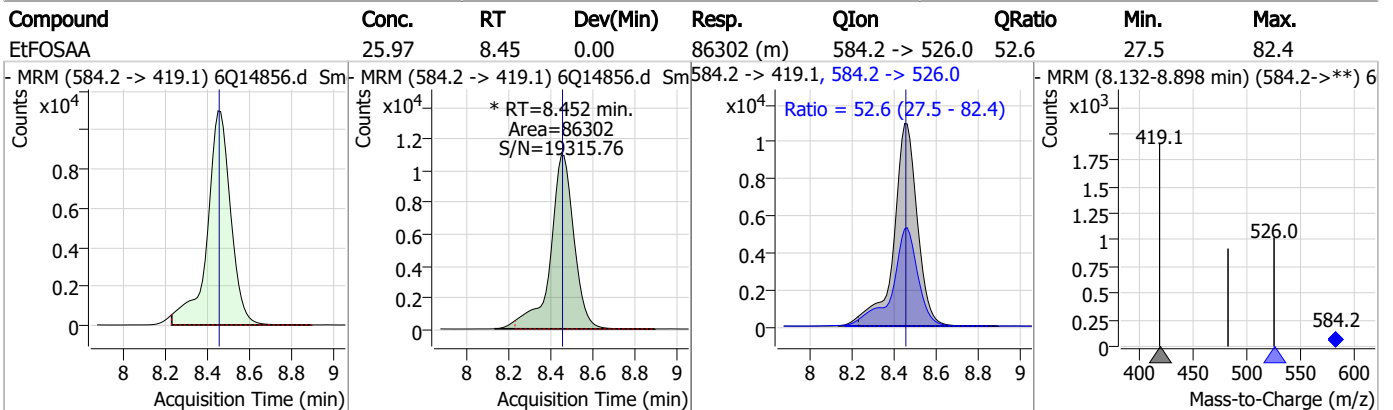
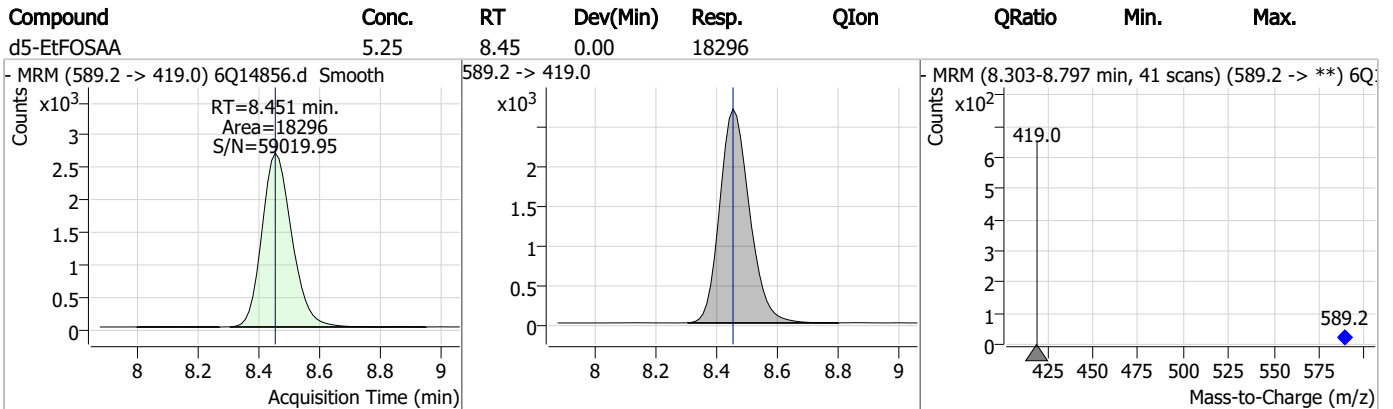
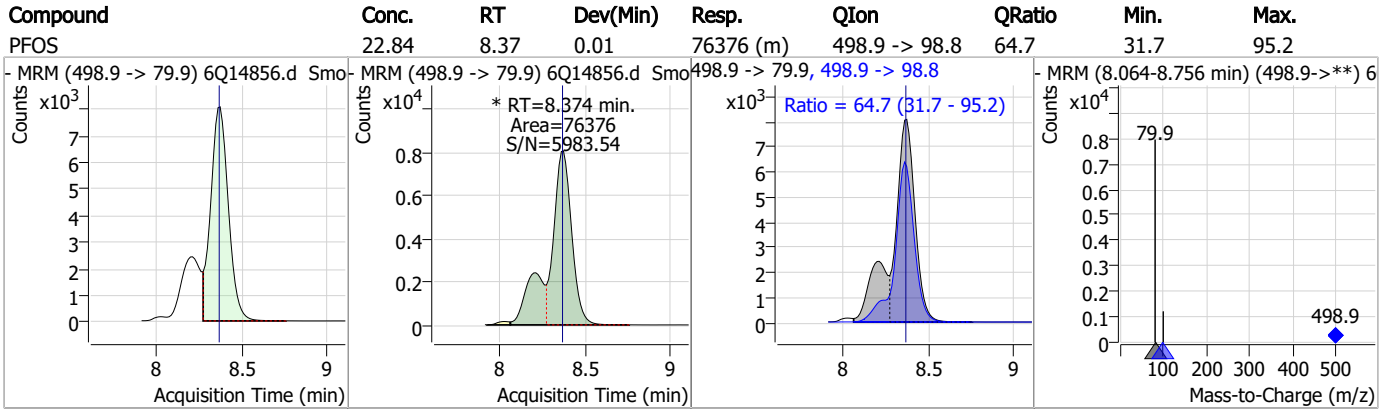
Perfluorinated Compounds by LC/MS/MS



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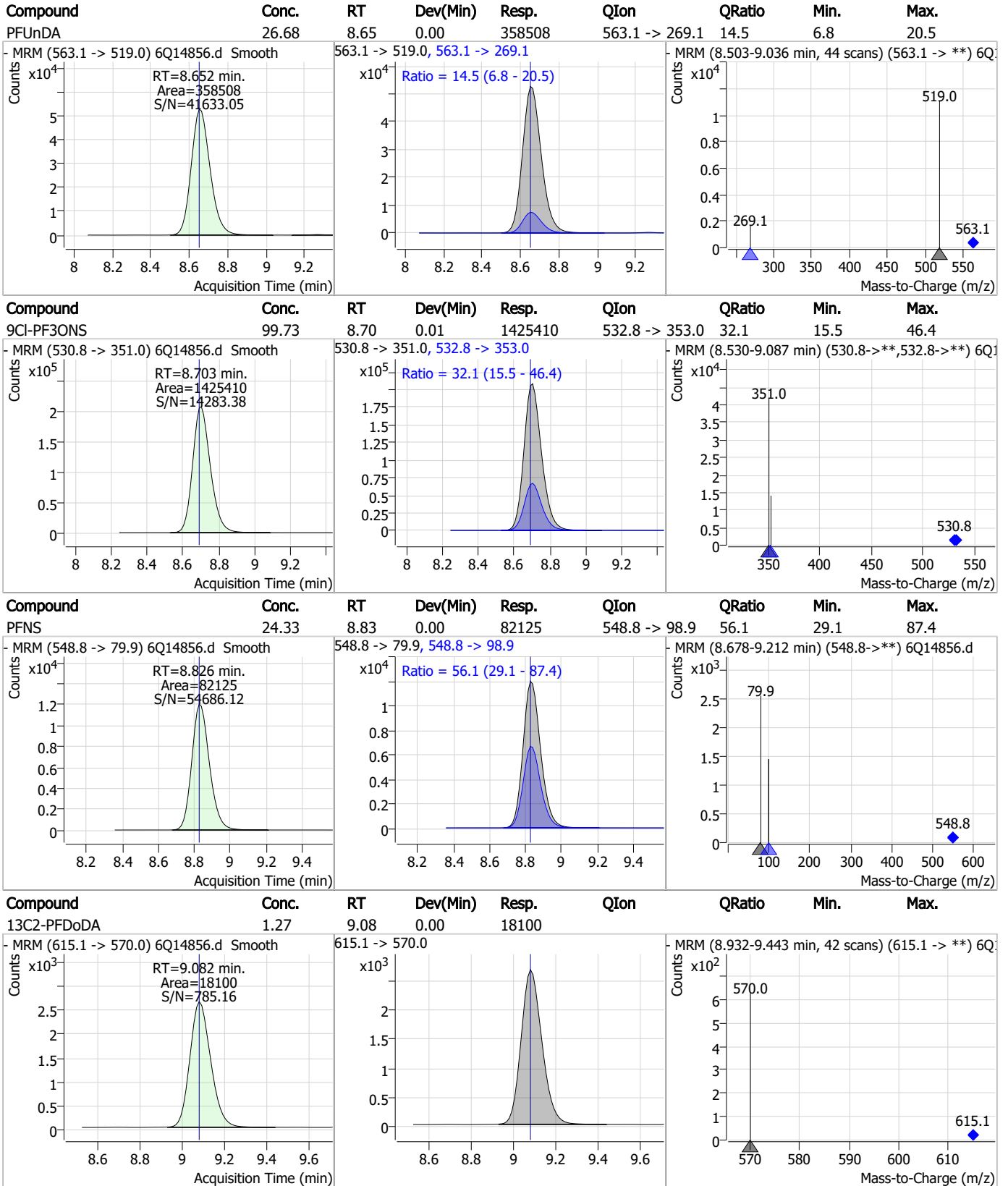
Perfluorinated Compounds by LC/MS/MS



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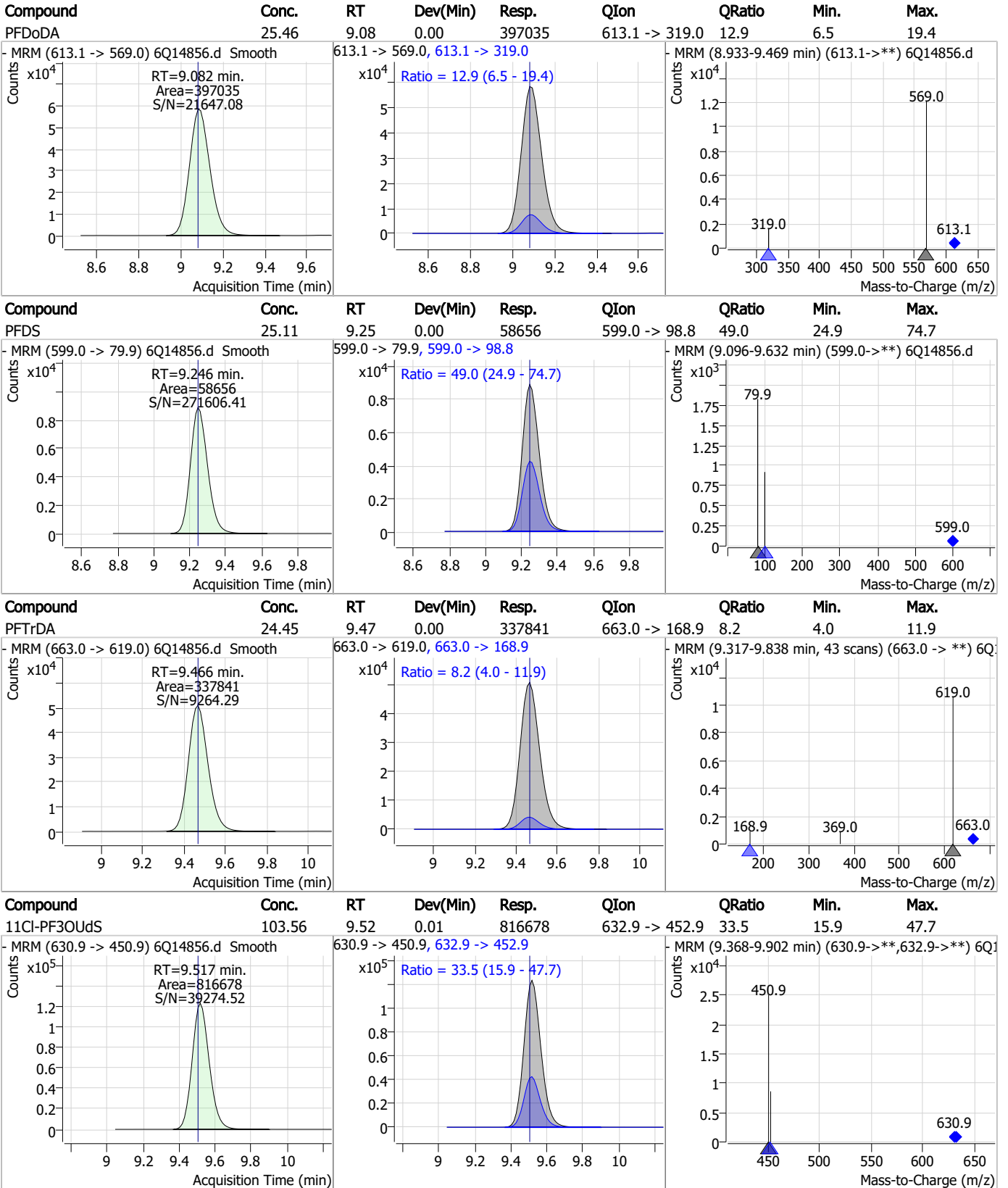
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS

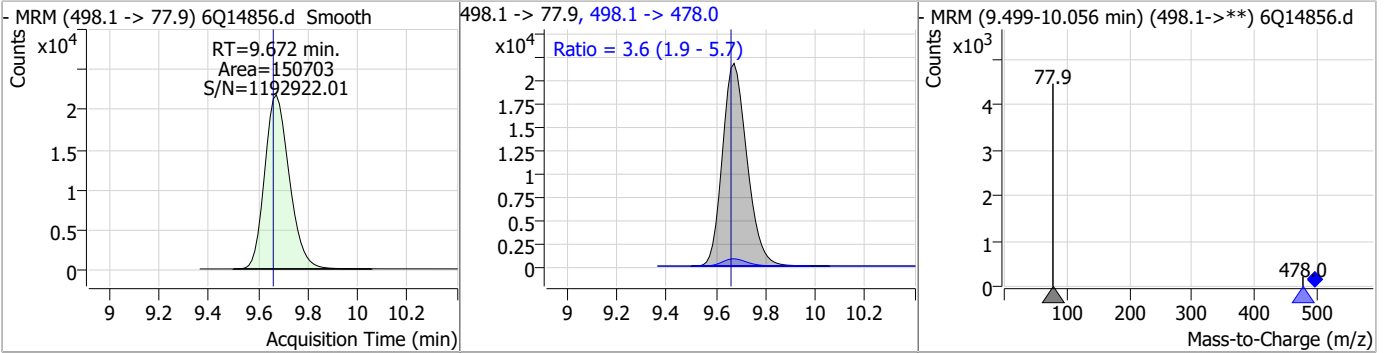


7.7.8
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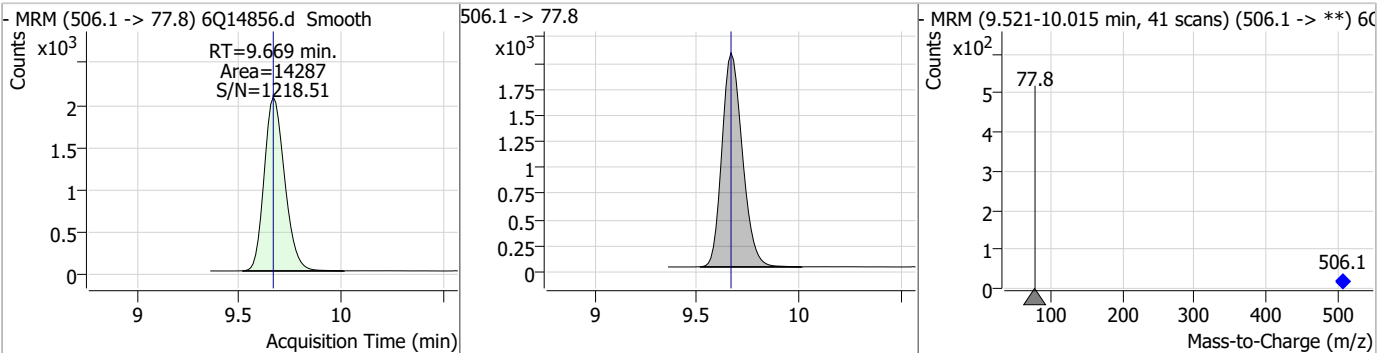


Perfluorinated Compounds by LC/MS/MS

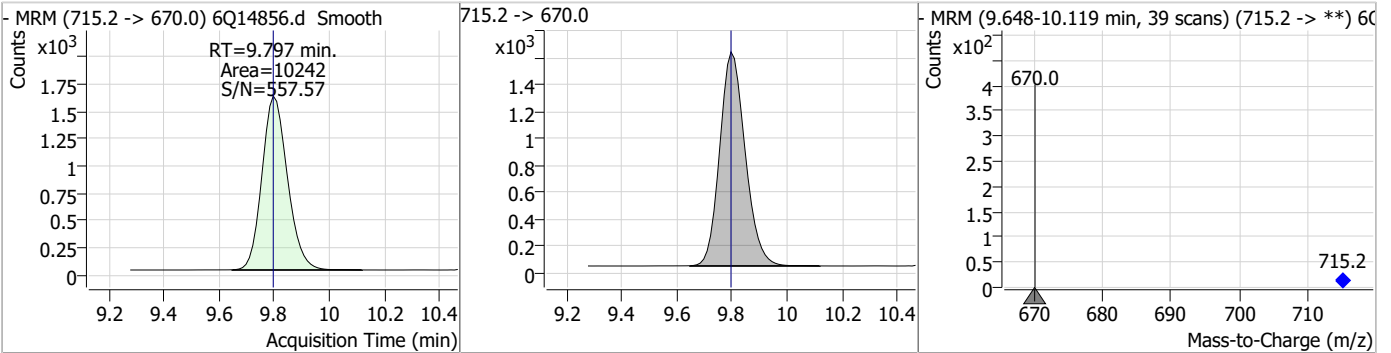
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	26.39	9.67	0.01	150703	498.1 -> 478.0	3.6	1.9	5.7



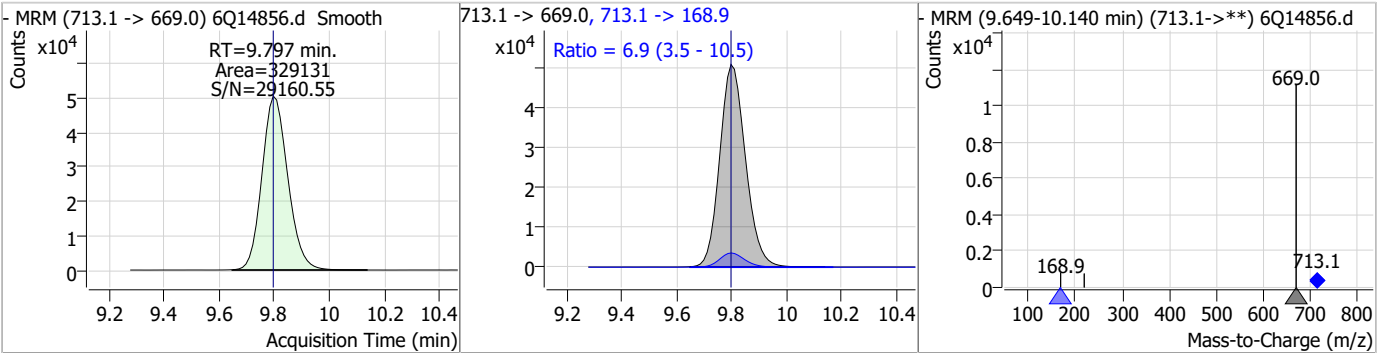
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.50	9.67	0.00	14287				



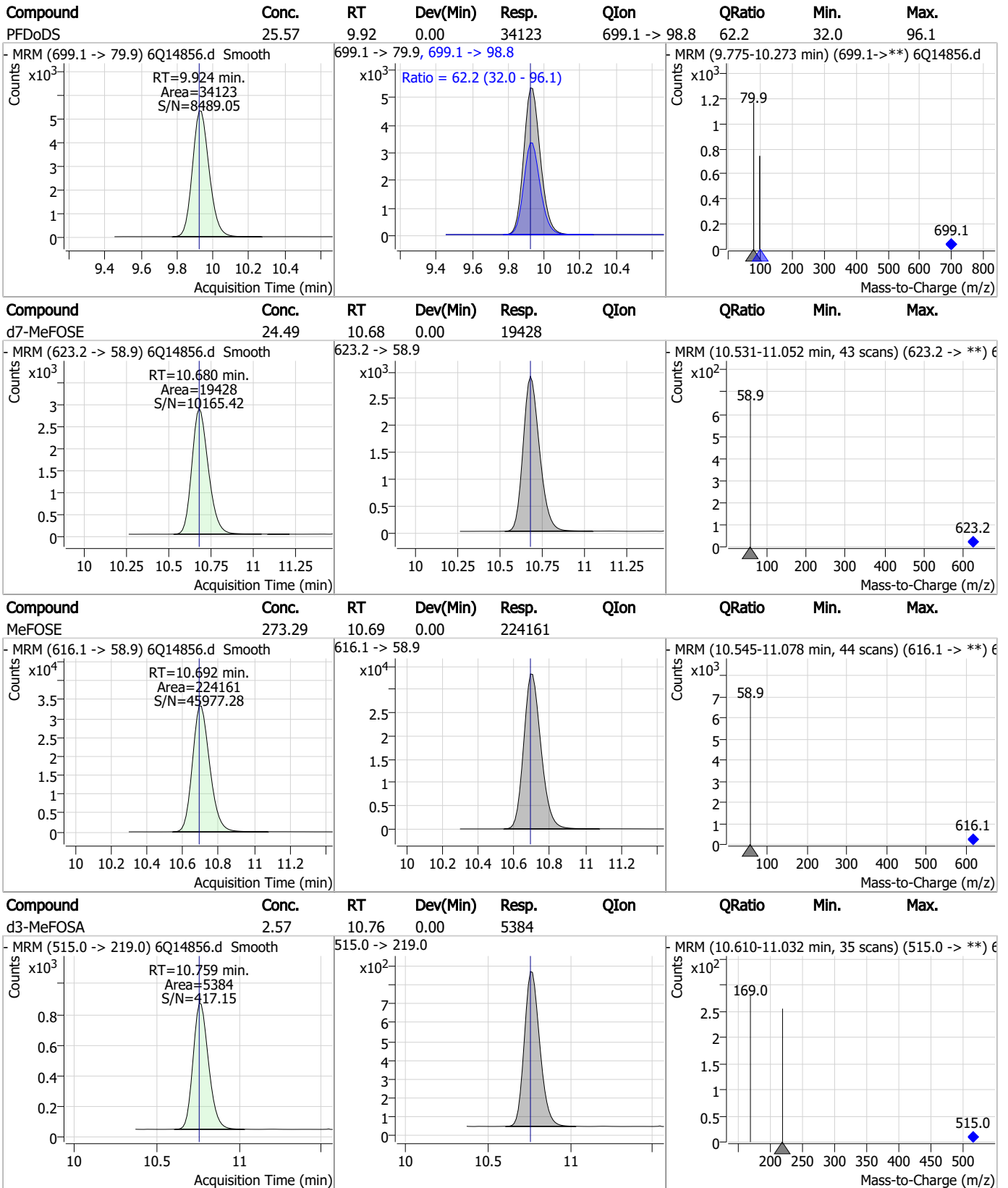
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.26	9.80	0.00	10242				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	25.58	9.80	0.00	329131	713.1 -> 168.9	6.9	3.5	10.5



Perfluorinated Compounds by LC/MS/MS

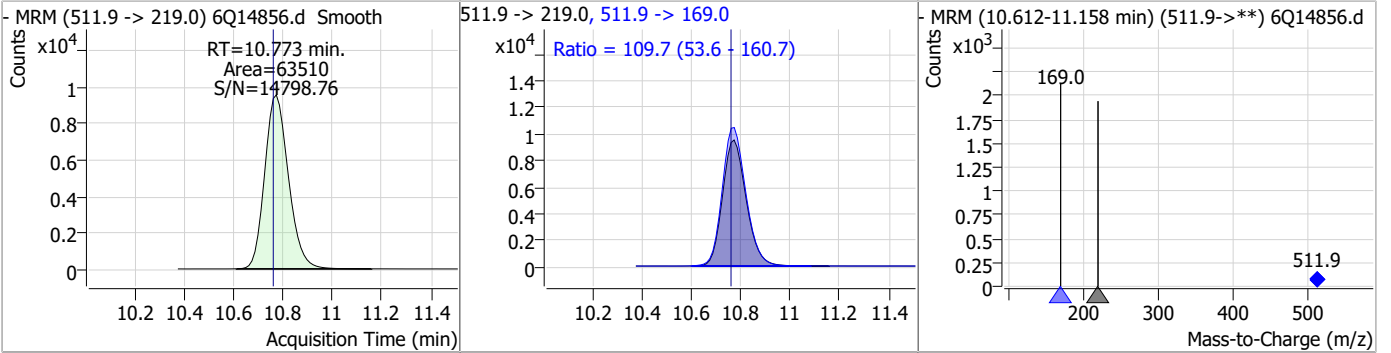


7.7.8

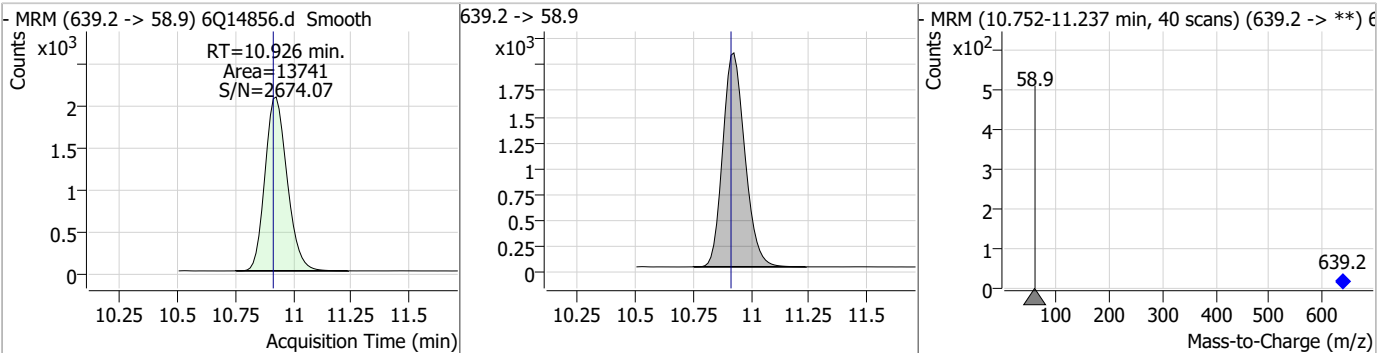
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Perfluorinated Compounds by LC/MS/MS

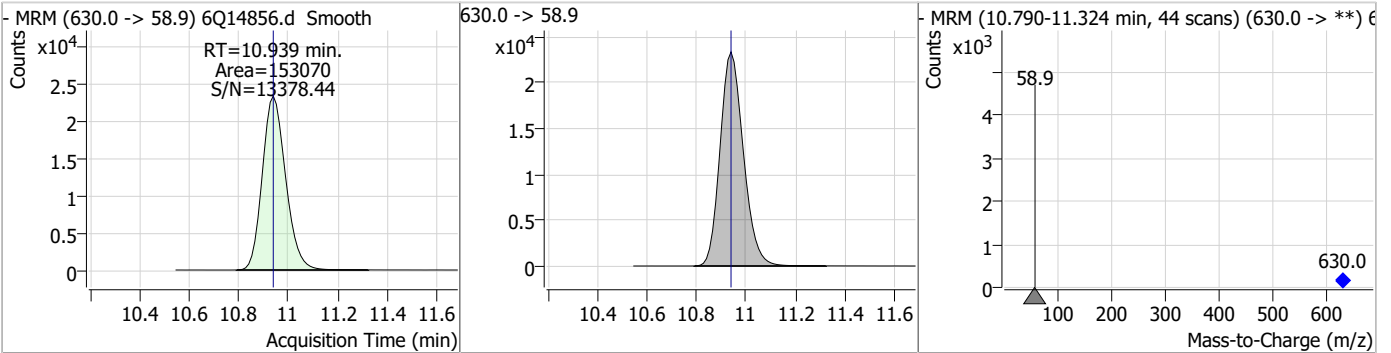
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	24.53	10.77	0.01	63510	511.9 -> 169.0	109.7	53.6	160.7



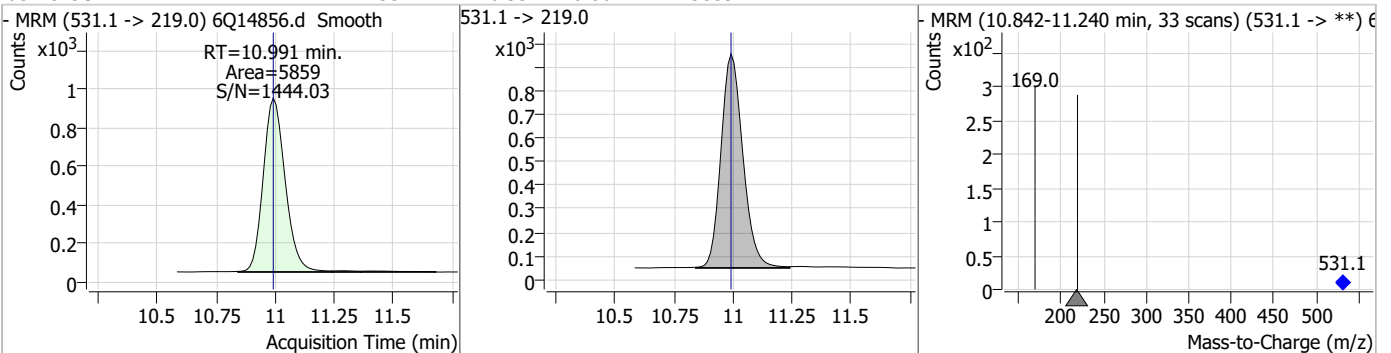
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.54	10.93	0.01	13741				



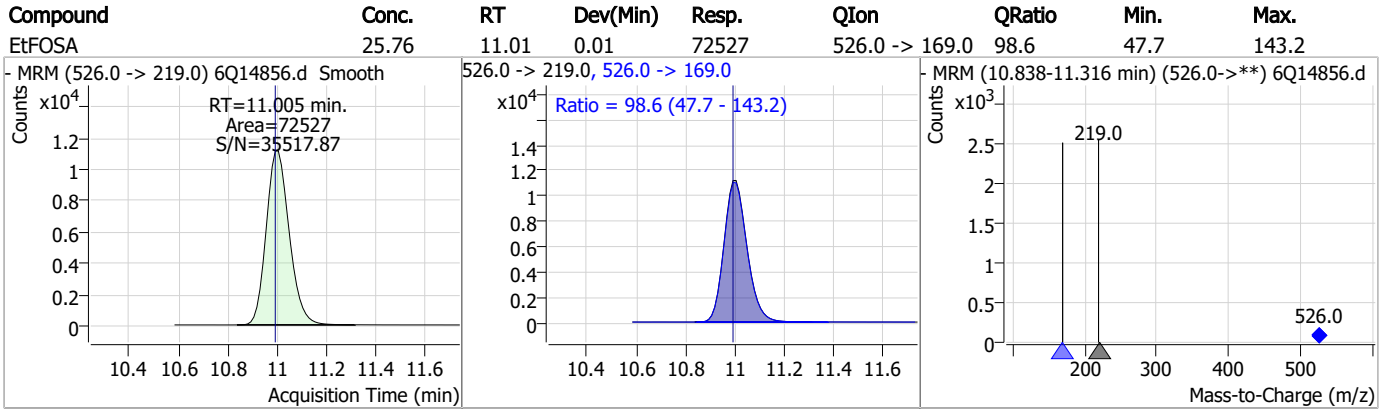
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	273.48	10.94	0.00	153070				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.53	10.99	0.00	5859				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q225-IC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14856.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 23:10 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14857.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 11:24:06 PM
 Sample Name : ic225-8
 Vial : P1-A9
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.960	216.8 -> 171.9	55297	10.00 µg/L	0.012
M5-PFPeA	4.395	268.3 -> 223.0	29785	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	24665	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	24573	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	41859	2.50 µg/L	0.000
M9-PFNA	7.706	472.1 -> 427.0	13605	1.25 µg/L	-0.012
M6-PFDA	8.197	519.1 -> 474.1	10573	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	11346	1.25 µg/L	0.000
M2-PFDoDA	9.094	615.1 -> 570.0	15094	1.25 µg/L	0.012
M2-PFTeDA	9.809	715.2 -> 670.0	10516	1.25 µg/L	0.012
M8-FOSA	9.669	506.1 -> 77.8	14429	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	11029	2.50 µg/L	-0.012
M3-PFHxS	7.302	402.1 -> 79.9	6950	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	6983	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1144	5.00 µg/L	-0.012
M2-6:2FTS	6.962	429.1 -> 80.9	1687	5.00 µg/L	0.000
M2-8:2FTS	7.973	529.1 -> 80.9	1964	5.00 µg/L	-0.012
M3-MeFOSAA	8.243	573.2 -> 419.0	15791	5.00 µg/L	0.000
M3-HFPO-DA	5.971	286.9 -> 168.9	11848	10.00 µg/L	-0.012
M5-EtFOSAA	8.451	589.2 -> 419.0	14961	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	19477	25.00 µg/L	0.000
M9-EtFOSE	10.914	639.2 -> 58.9	12970	25.00 µg/L	0.000
M5-EtFOSA	10.991	531.1 -> 219.0	5572	2.50 µg/L	0.000
M3-MeFOSA	10.771	515.0 -> 219.0	5730	2.50 µg/L	0.012
13C4-PFOS	8.361	502.8 -> 79.9	8035	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	25303	5.00 µg/L	0.000
18O2-PFHxS	7.301	403.0 -> 83.9	4800	2.50 µg/L	-0.012
13C4-PFOA	7.188	417.1 -> 372.0	53193	2.50 µg/L	0.000
13C2-PFDA	8.185	515.1 -> 470.1	16853	1.25 µg/L	-0.012
13C5-PFNA	7.706	468.0 -> 423.0	14598	1.25 µg/L	-0.012
13C2-PFHxA	5.606	315.1 -> 270.0	25317	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1144	4.16 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.1%		
13C2-6:2FTS	6.962	429.1 -> 80.9	1687	4.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-8:2FTS	7.973	529.1 -> 80.9	1964	5.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-PFDoDA	9.094	615.1 -> 570.0	15094	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.6%		
13C2-PFTeDA	9.809	715.2 -> 670.0	10516	1.40 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.9%		
13C3-PFBS	5.536	302.1 -> 79.9	11029	2.68 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.3%		
13C3-PFHxS	7.302	402.1 -> 79.9	6950	2.56 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C4-PFBA	2.960	216.8 -> 171.9	55297	9.52 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C4-PFHpA	6.544	367.1 -> 322.0	24573	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C5-PFHxA	5.605	318.0 -> 273.0	24665	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C5-PFPeA	4.395	268.3 -> 223.0	29785	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C6-PFDA	8.197	519.1 -> 474.1	10573	1.04 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 83.6%	
13C7-PFUnDA	8.652	570.0 -> 525.1	11346	1.04 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 83.3%	
13C8-FOSA	9.669	506.1 -> 77.8	14429	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C8-PFOA	7.187	421.1 -> 376.0	41859	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	
13C8-PFOS	8.360	507.1 -> 79.9	6983	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C9-PFNA	7.706	472.1 -> 427.0	13605	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.7%	
d3-MeFOSAA	8.243	573.2 -> 419.0	15791	4.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 81.8%	
13C3-HFPO-DA	5.971	286.9 -> 168.9	11848	10.36 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d3-MeFOSA	10.771	515.0 -> 219.0	5730	2.81 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.4%	
d5-EtFOSAA	8.451	589.2 -> 419.0	14961	4.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.2%	
d7-MeFOSE	10.680	623.2 -> 58.9	19477	25.20 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d9-EtFOSE	10.914	639.2 -> 58.9	12970	23.77 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.1%	
d5-EtFOSA	10.991	531.1 -> 219.0	5572	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	591317	223.40 µg/L	99
		327.1 -> 80.9	146098		
6:2FTS	6.962	427.1 -> 407.0	472543	188.47 µg/L	94
		427.1 -> 80.9	115530		
8:2FTS	7.974	527.1 -> 507.0	257438	178.26 µg/L	100
		527.1 -> 80.8	69215		
EtFOSAA	8.452	584.2 -> 419.1	173165	63.72 µg/L	m 90
		584.2 -> 526.0	82880		
FOSA	9.672	498.1 -> 77.9	359331	62.32 µg/L	100
		498.1 -> 478.0	13852		
MeFOSAA	8.244	570.1 -> 419.0	228313	69.07 µg/L	m 96
		570.1 -> 483.0	35616		
PFBA	2.956	212.8 -> 168.9	408590	270.76 µg/L	100
PFBS	5.537	298.7 -> 79.9	262520	54.04 µg/L	97
		298.7 -> 98.8	113144		
PFDA	8.198	512.9 -> 469.0	879088	66.97 µg/L	91
		512.9 -> 219.0	140635		
PFDoDA	9.094	613.1 -> 569.0	794950	61.13 µg/L	98
		613.1 -> 319.0	107695		
PFDS	9.258	599.0 -> 79.9	131088	57.37 µg/L	89

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	75116			
PFHpA	6.544	363.1 -> 319.0	1089985	68.79	µg/L	100
		363.1 -> 169.0	149034			
PFHpS	7.855	449.0 -> 79.9	177297	56.96	µg/L	98
		449.0 -> 98.9	107669			
PFHxA	5.607	313.0 -> 269.0	719835	69.26	µg/L	100
		313.0 -> 118.9	28141			
PFHxS	7.303	398.7 -> 79.9	211921	61.07	µg/L	m 95
		398.7 -> 98.9	114408			
PFNA	7.707	463.0 -> 419.0	621853	64.47	µg/L	99
		463.0 -> 219.0	120795			
PFNS	8.826	548.8 -> 79.9	200069	60.59	µg/L	91
		548.8 -> 98.9	102933			
PFOA	7.189	413.0 -> 369.0	1355409	68.41	µg/L	97
		413.0 -> 169.0	191342			
PFOS	8.361	498.9 -> 79.9	197071	60.24	µg/L	m 89
		498.9 -> 98.8	108914			
PFPeA	4.397	263.0 -> 219.0	891269	125.69	µg/L	100
PFPeS	6.609	349.1 -> 79.9	252945	60.33	µg/L	97
		349.1 -> 98.9	129244			
PFTeDA	9.810	713.1 -> 669.0	795049	60.18	µg/L	99
		713.1 -> 168.9	51853			
PFTrDA	9.466	663.0 -> 619.0	787115	68.30	µg/L	100
		663.0 -> 168.9	63262			
PFUnDA	8.652	563.1 -> 519.0	679768	63.28	µg/L	95
		563.1 -> 269.1	106468			
11Cl-PF3OUdS	9.517	630.9 -> 450.9	1854960	253.06	µg/L	97
		632.9 -> 452.9	559263			
9Cl-PF3ONS	8.703	530.8 -> 351.0	2941682	221.43	µg/L	100
		532.8 -> 353.0	901430			
ADONA	6.806	376.9 -> 250.9	5140398	202.02	µg/L	96
		376.9 -> 84.8	1246062			
HFPO-DA	5.971	284.9 -> 168.9	309900	248.56	µg/L	98
		284.9 -> 184.9	36345			
3:3FTCA	3.851	241.0 -> 177.0	120487	339.76	µg/L	99
		241.0 -> 117.0	17544			
5:3FTCA	6.259	341.0 -> 237.1	3422610	1631.71	µg/L	90
		341.0 -> 217.0	3155407			
7:3FTCA	7.672	441.0 -> 316.9	1616804	1533.42	µg/L	95
		441.0 -> 336.9	3089371			
EtFOSA	10.993	526.0 -> 219.0	175778	65.65	µg/L	94
		526.0 -> 169.0	177409			
EtFOSE	10.939	630.0 -> 58.9	351431	665.19	µg/L	100
MeFOSA	10.773	511.9 -> 219.0	163930	59.49	µg/L	91
		511.9 -> 169.0	159577			
MeFOSE	10.692	616.1 -> 58.9	517058	628.80	µg/L	100
PFDoS	9.936	699.1 -> 79.9	82703	63.34	µg/L	97
		699.1 -> 98.8	50995			
NFDHA	5.488	295.0 -> 201.0	86123	128.69	µg/L	99
		295.0 -> 84.9	38901			
PFMBA	4.806	279.0 -> 85.1	329238	142.51	µg/L	100
PFMPA	3.526	229.0 -> 84.9	275192	135.44	µg/L	100
PFEESA	6.089	314.8 -> 134.9	1736725	118.13	µg/L	99
		314.8 -> 82.9	46989			

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



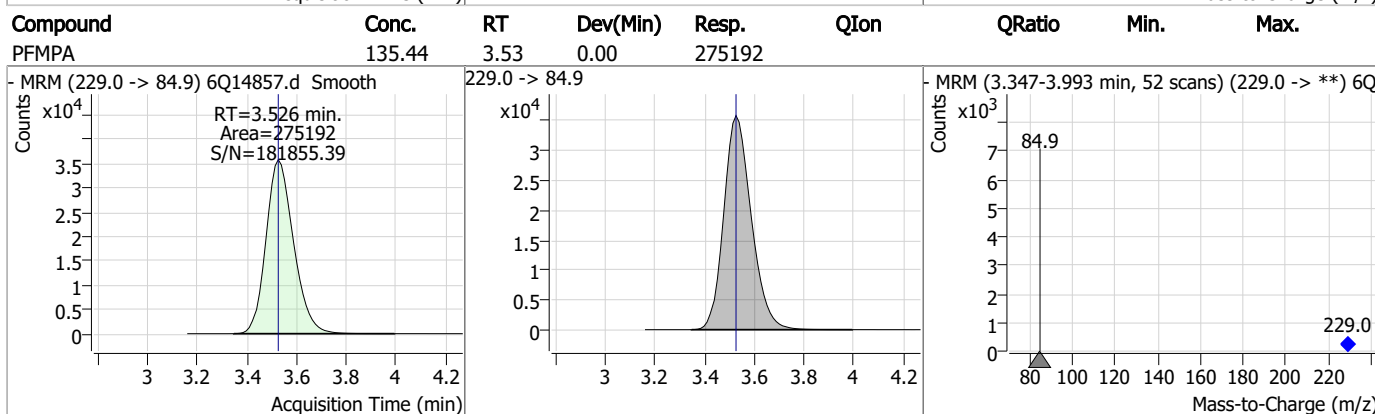
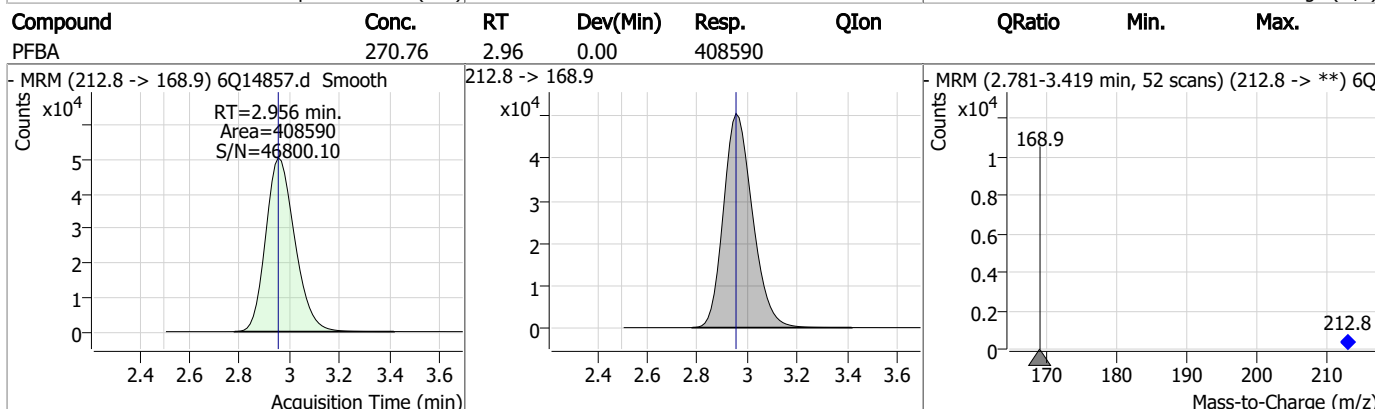
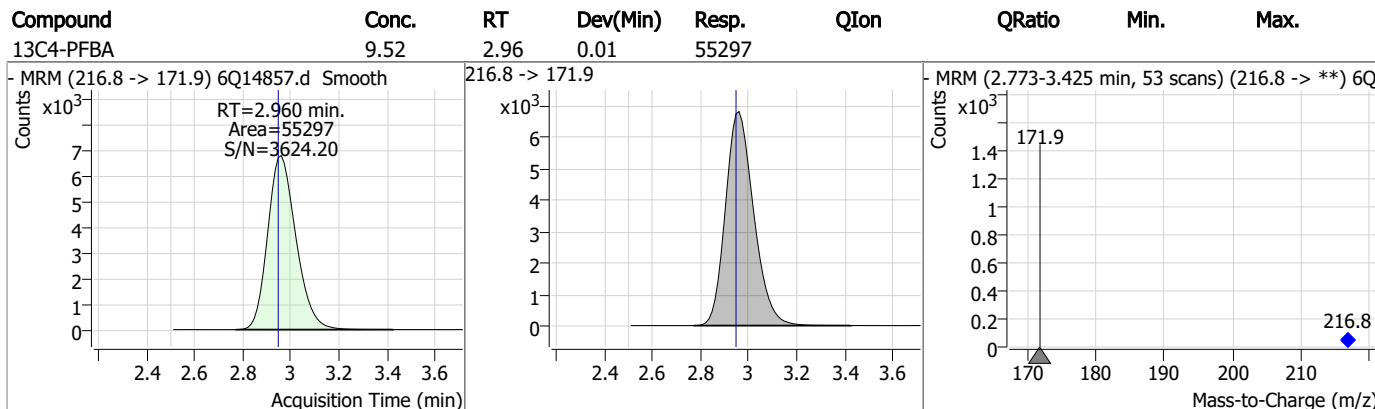
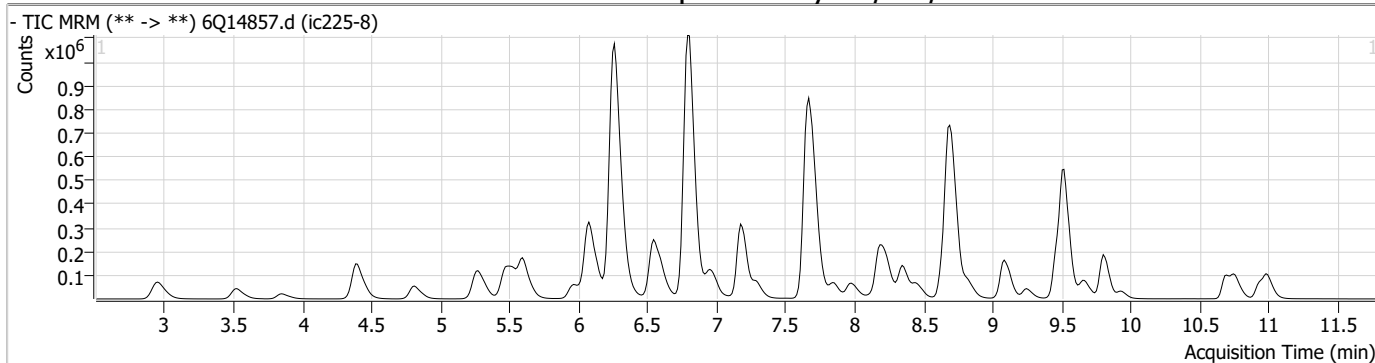
Perfluorinated Compounds by LC/MS/MS

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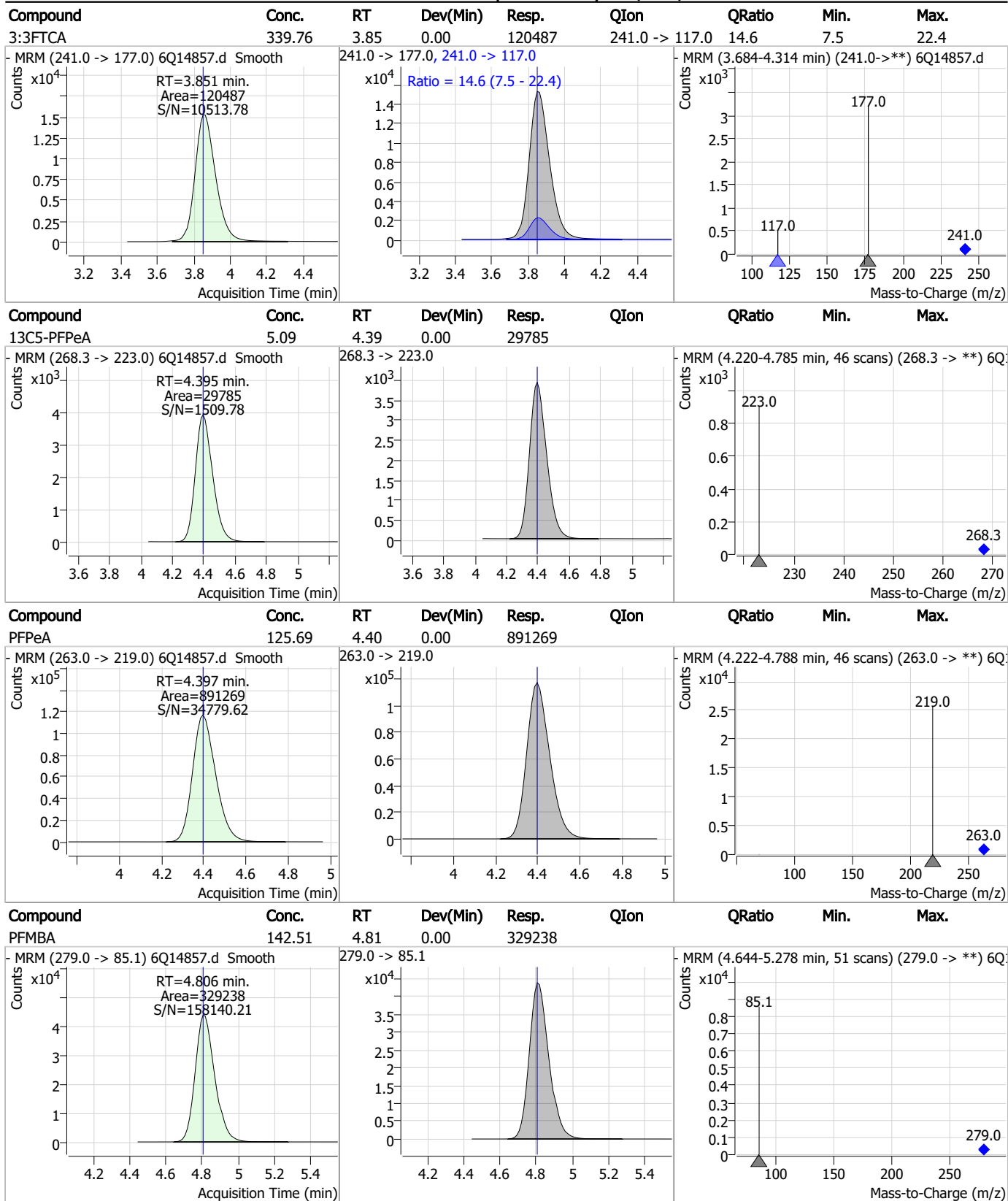
7.7.9

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Perfluorinated Compounds by LC/MS/MS

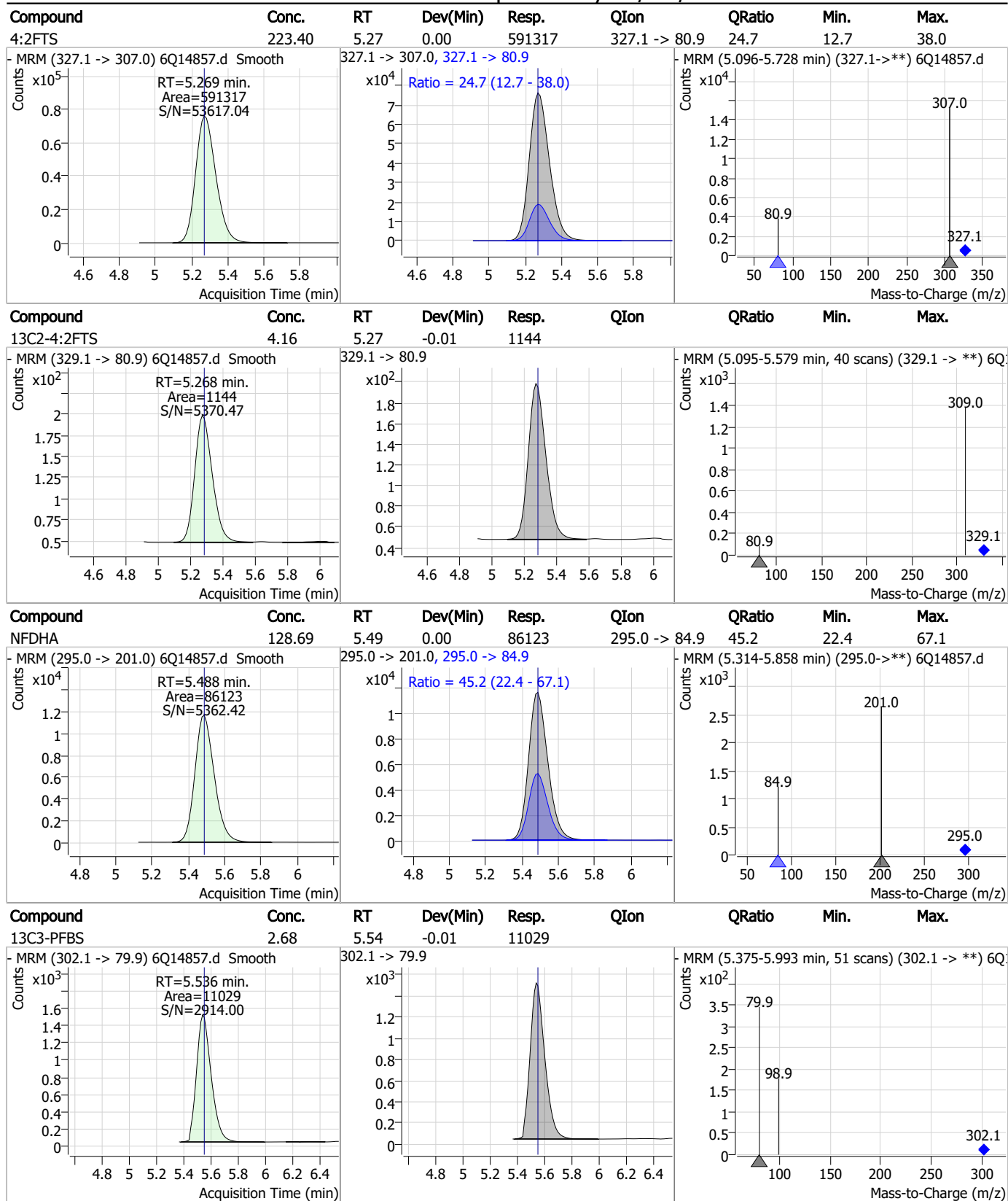


Perfluorinated Compounds by LC/MS/MS



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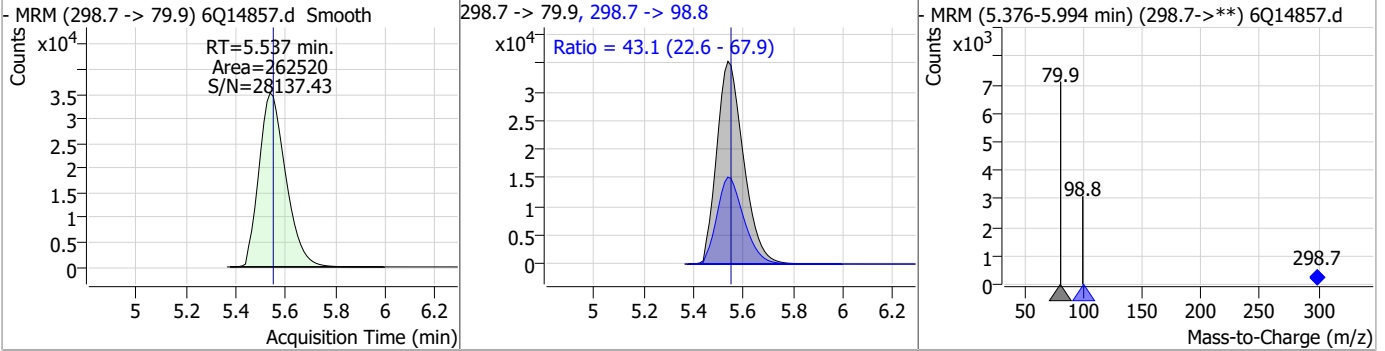
Perfluorinated Compounds by LC/MS/MS



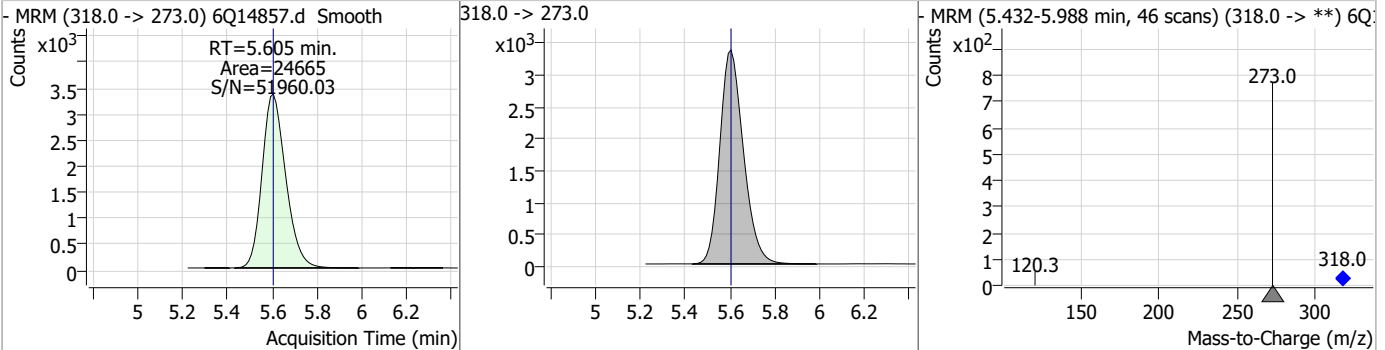
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Perfluorinated Compounds by LC/MS/MS

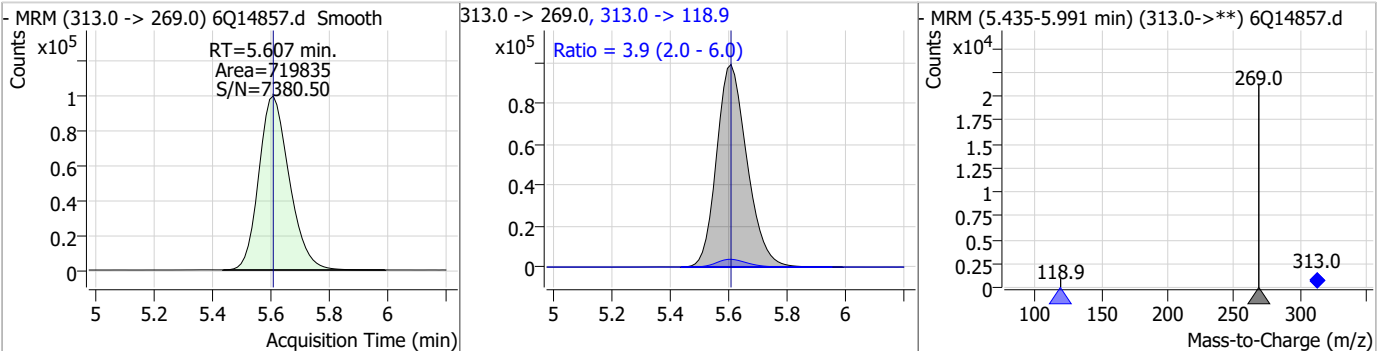
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	54.04	5.54	-0.01	262520	298.7 -> 98.8	43.1	22.6	67.9



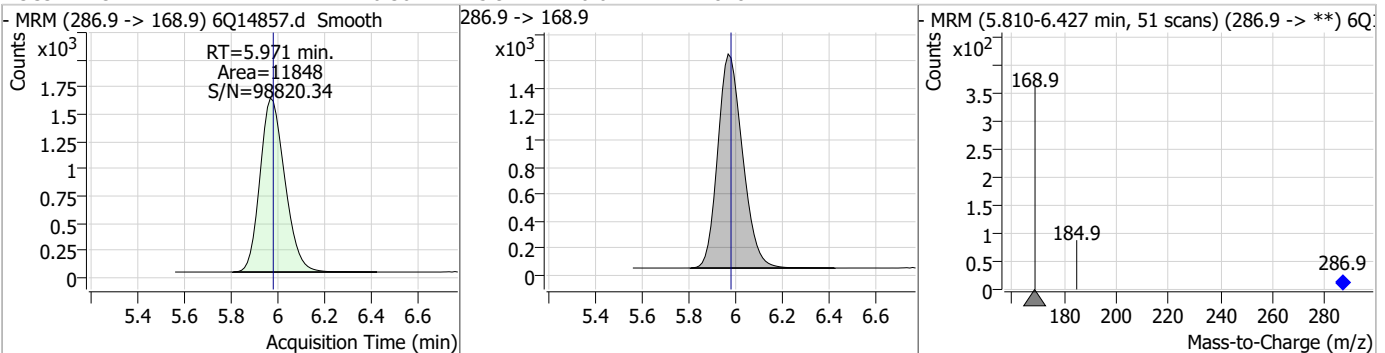
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.39	5.60	0.00	24665				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	69.26	5.61	0.00	719835	313.0 -> 118.9	3.9	2.0	6.0

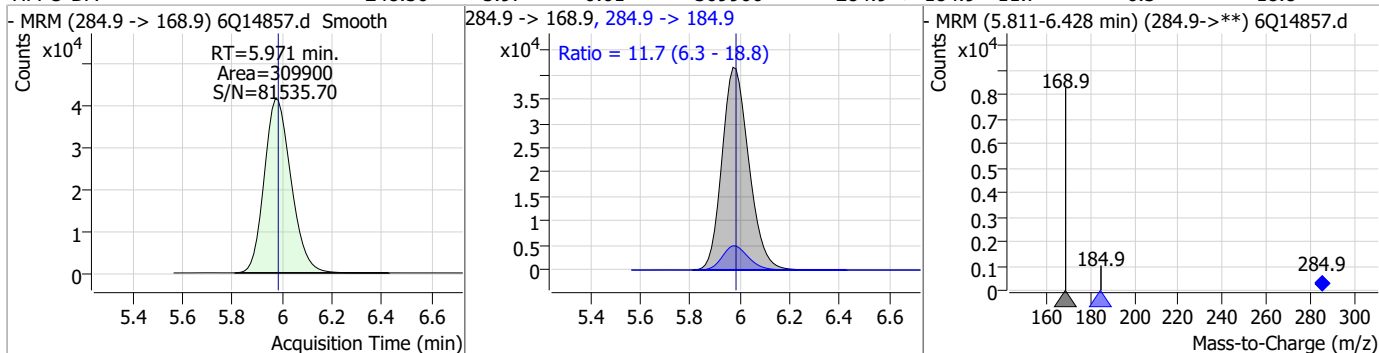


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.36	5.97	-0.01	11848				

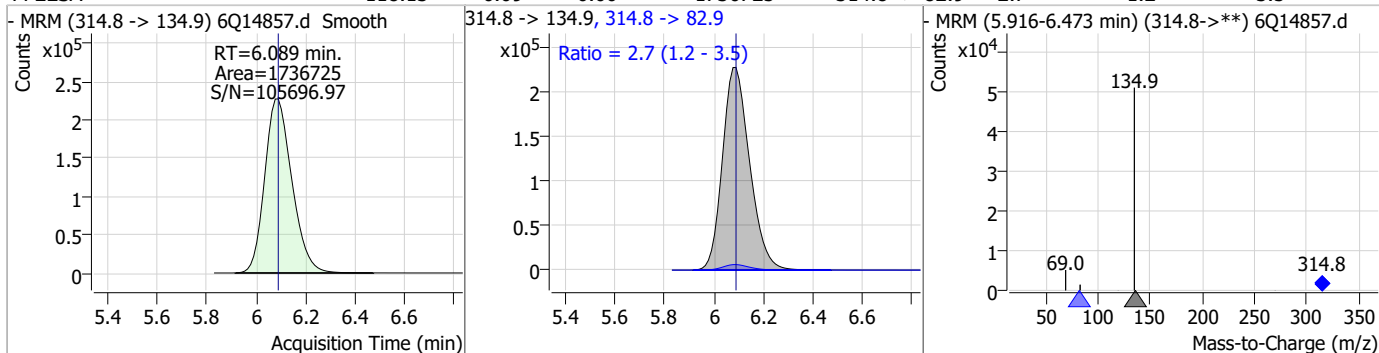


Perfluorinated Compounds by LC/MS/MS

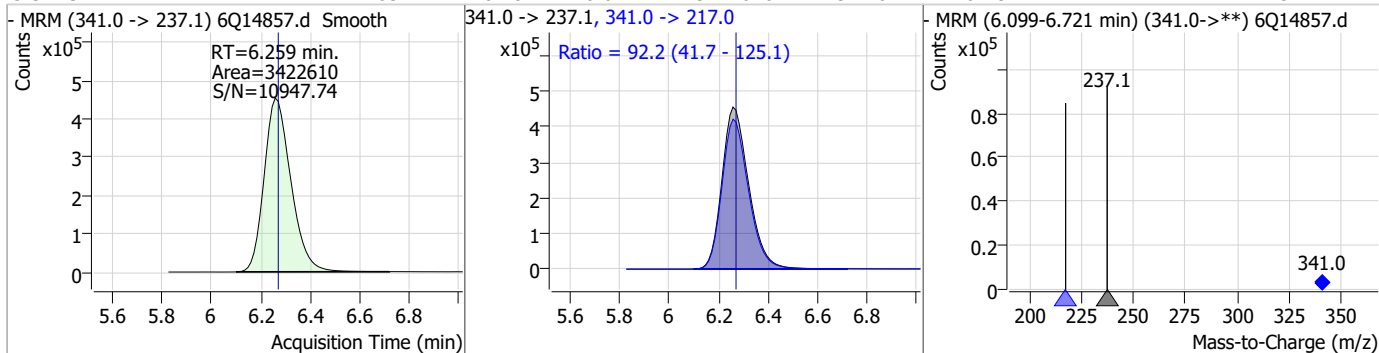
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	248.56	5.97	-0.01	309900	284.9 -> 184.9	11.7	6.3	18.8



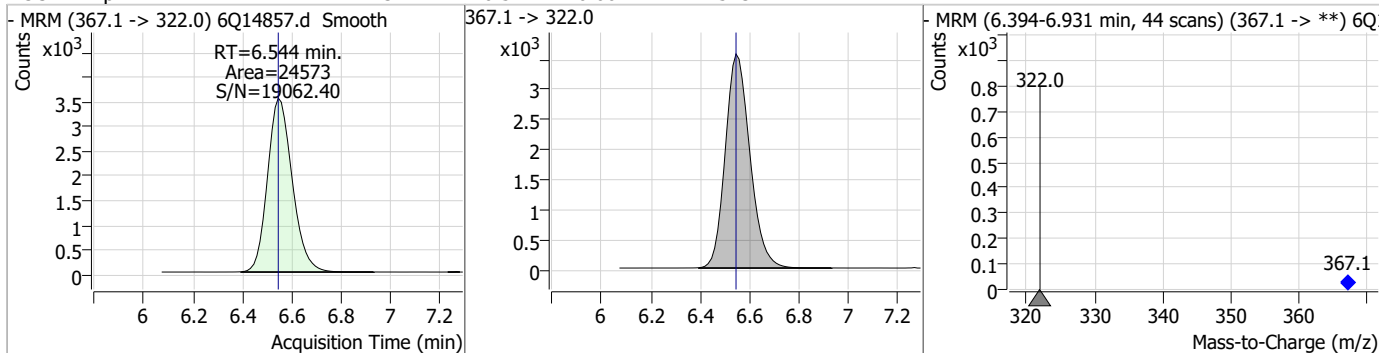
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	118.13	6.09	0.00	1736725	314.8 -> 82.9	2.7	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	1631.71	6.26	-0.01	3422610	341.0 -> 217.0	92.2	41.7	125.1

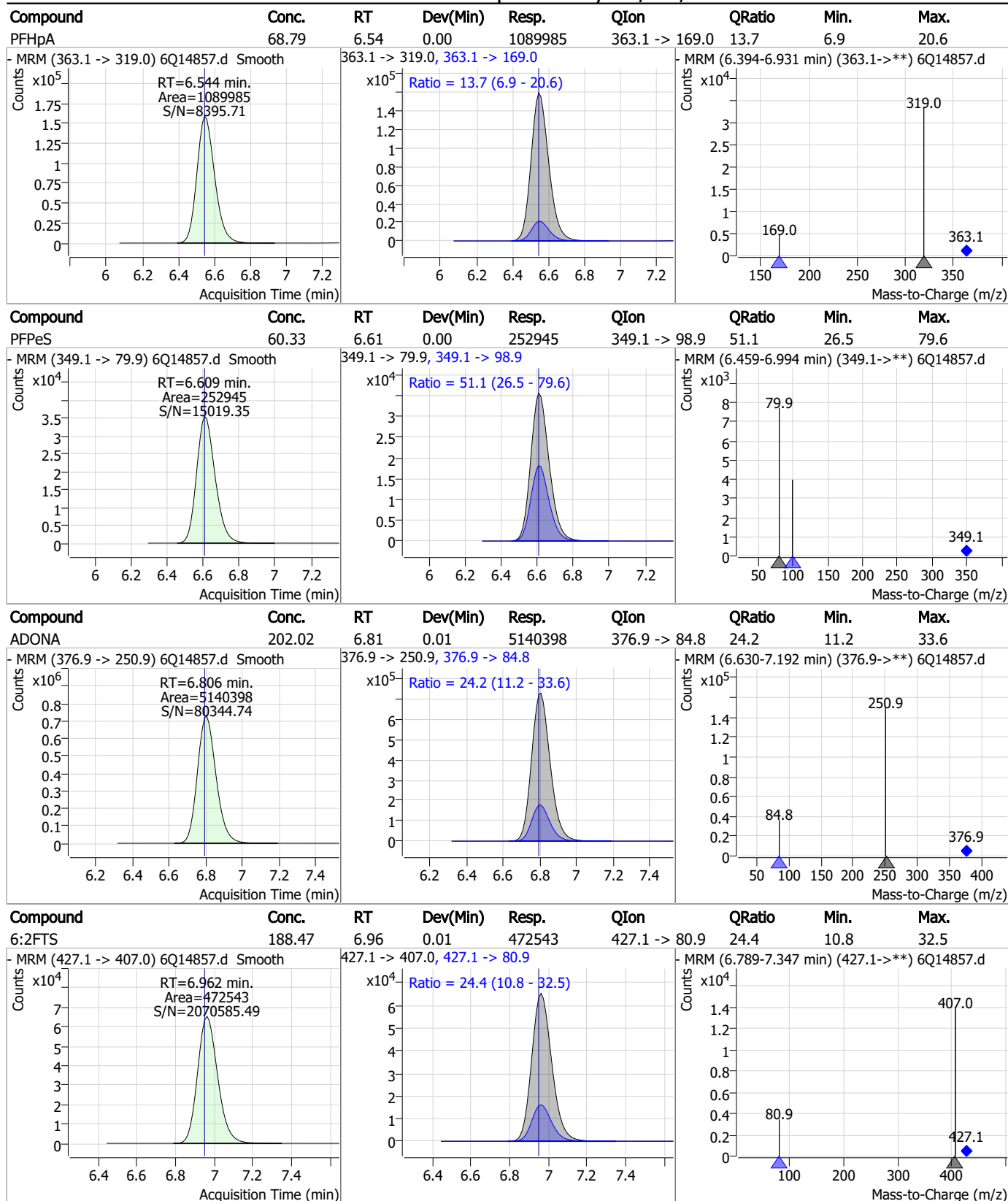


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.37	6.54	0.00	24573	367.1 -> 322.0			



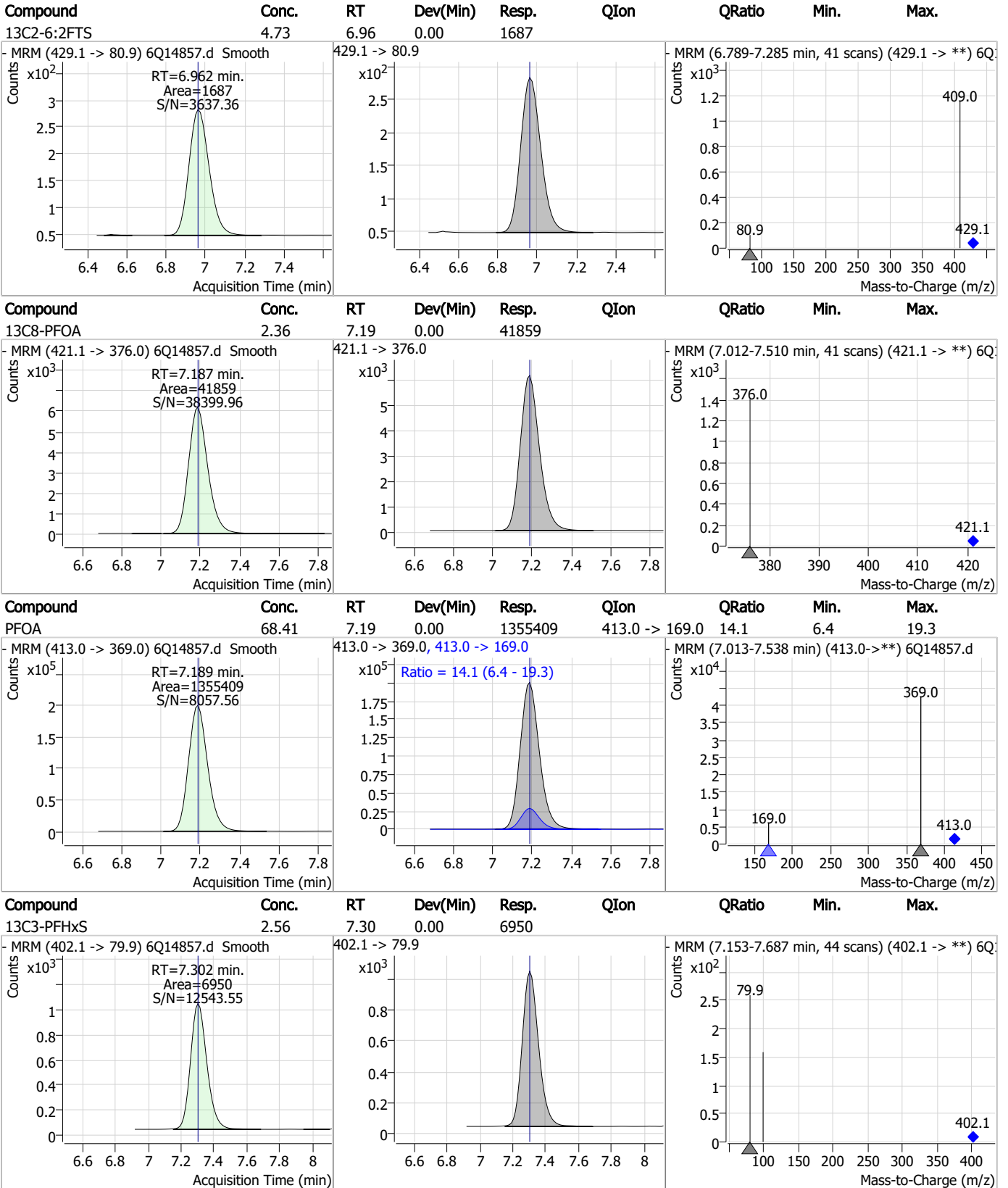
7.7.9
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

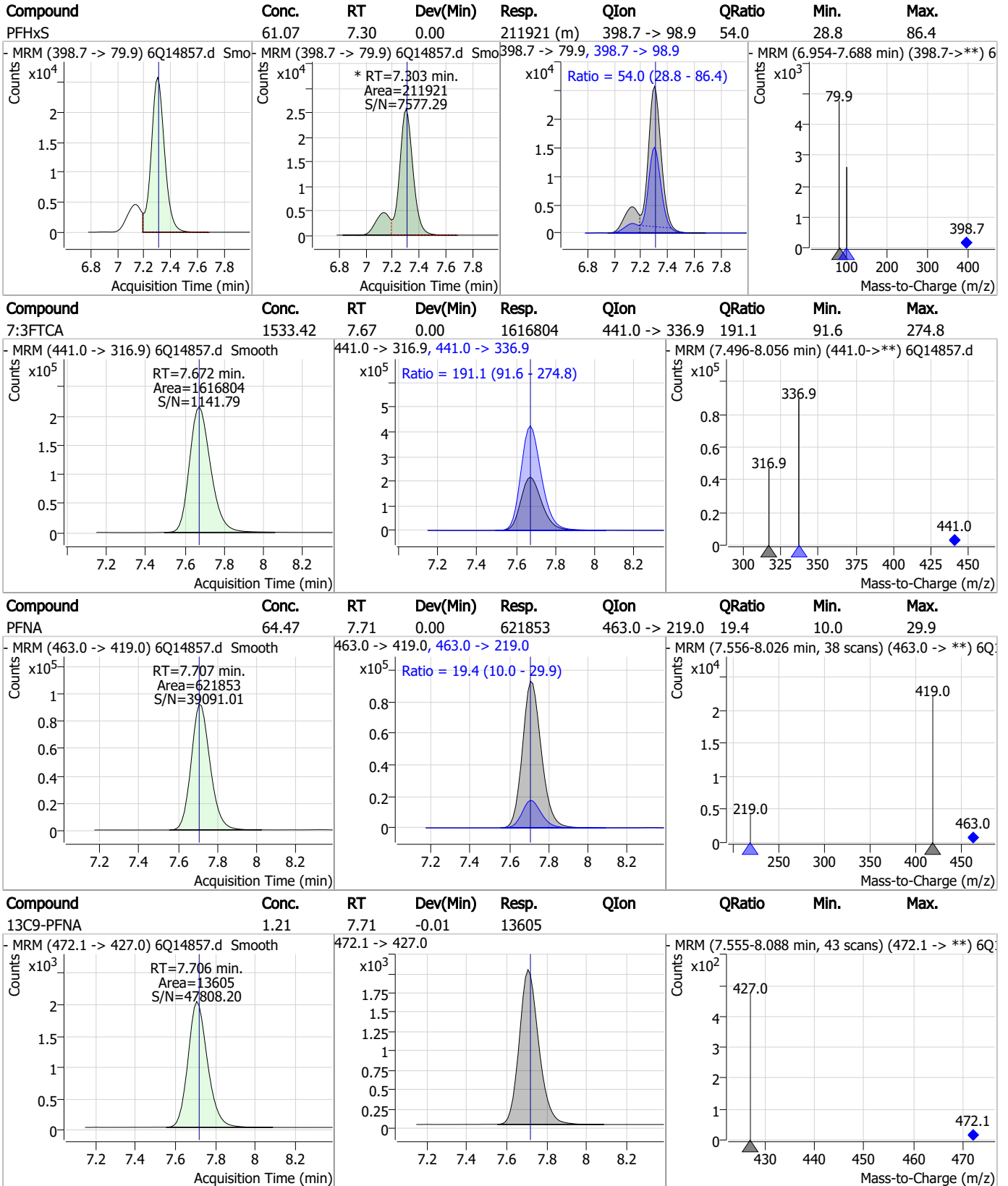


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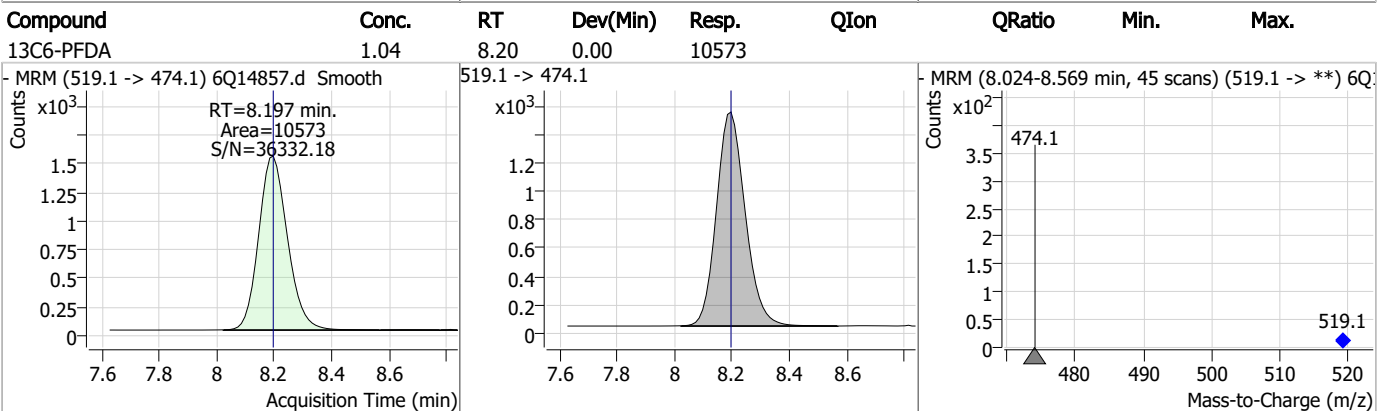
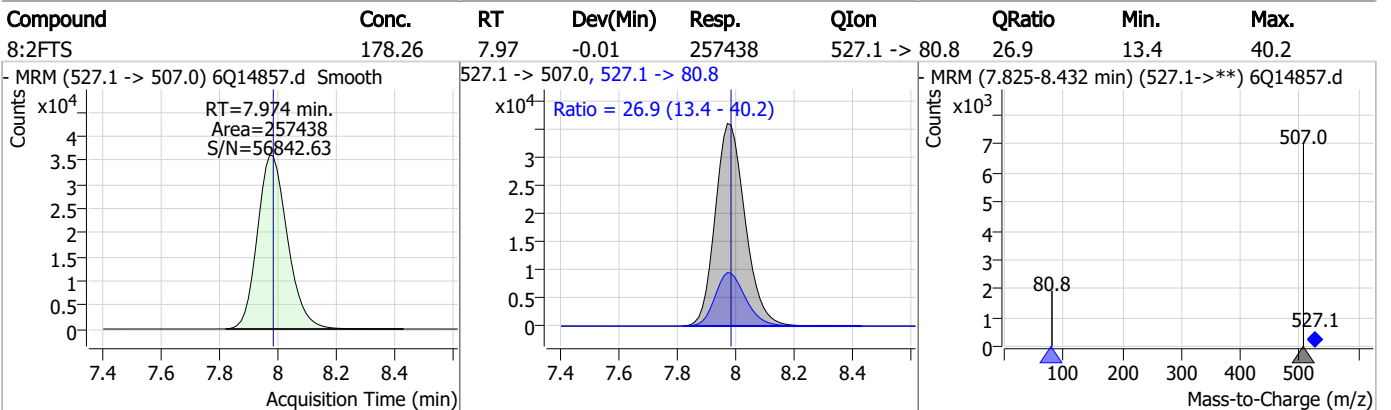
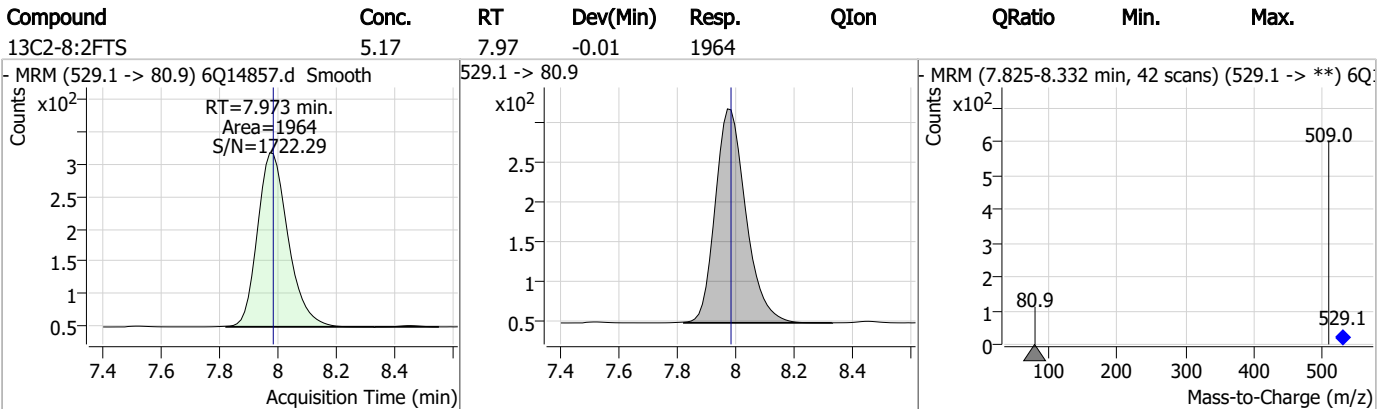
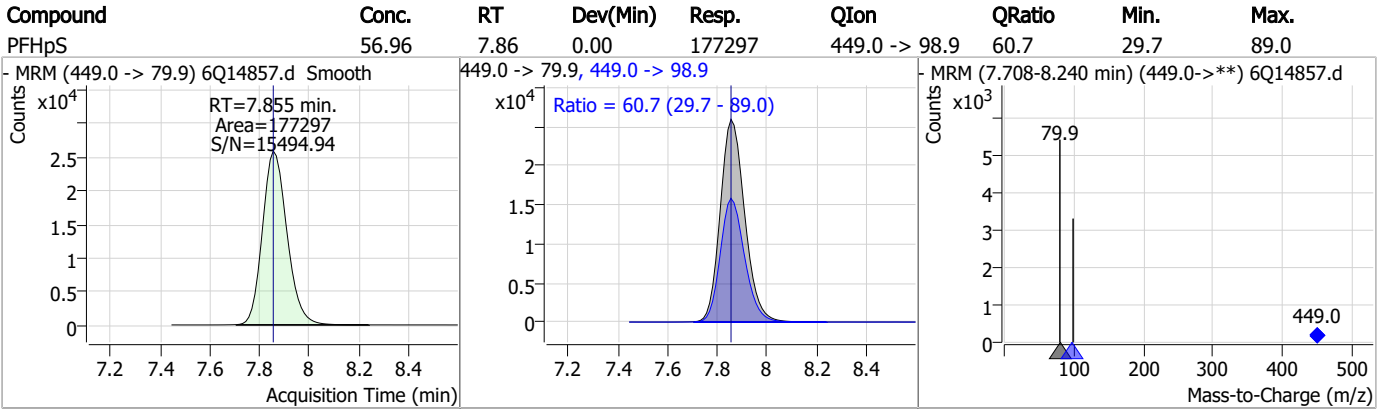
Perfluorinated Compounds by LC/MS/MS



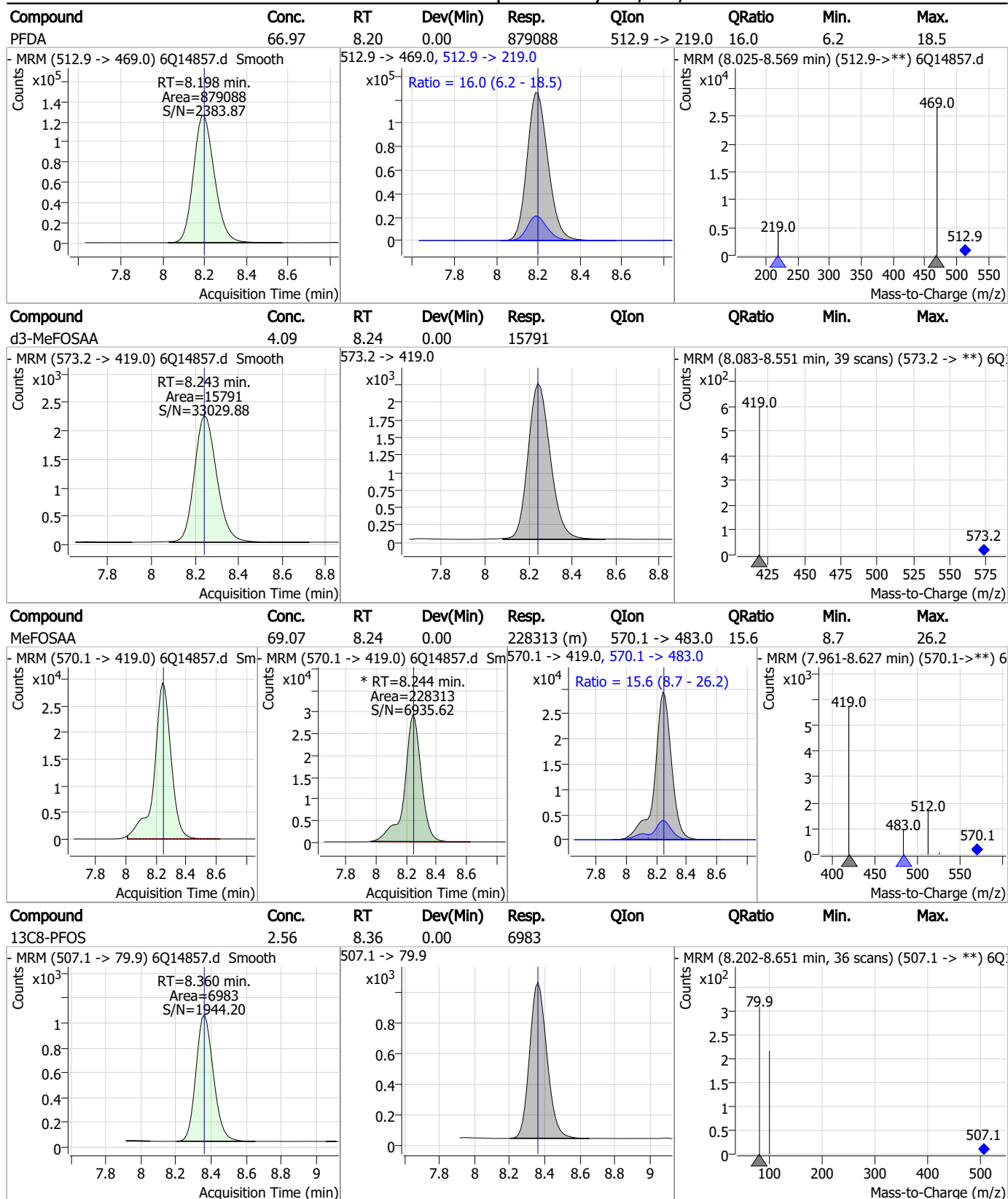
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

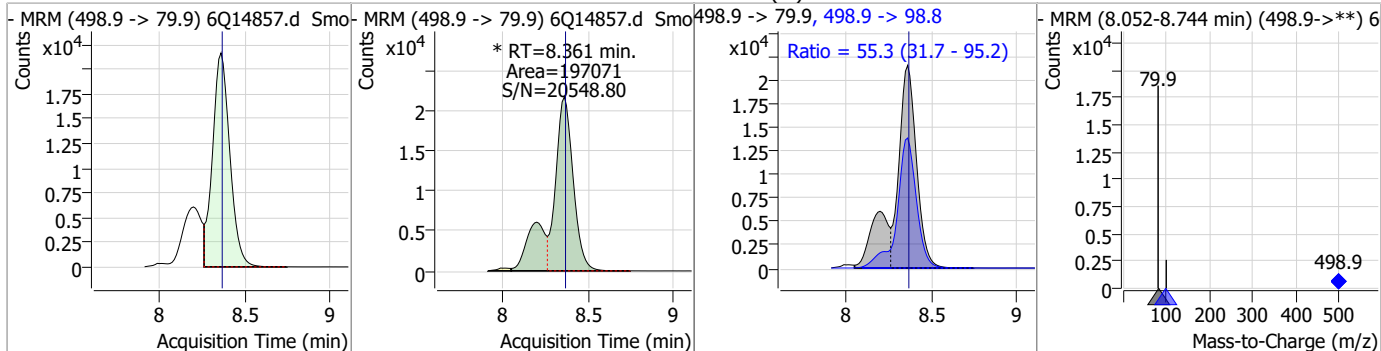


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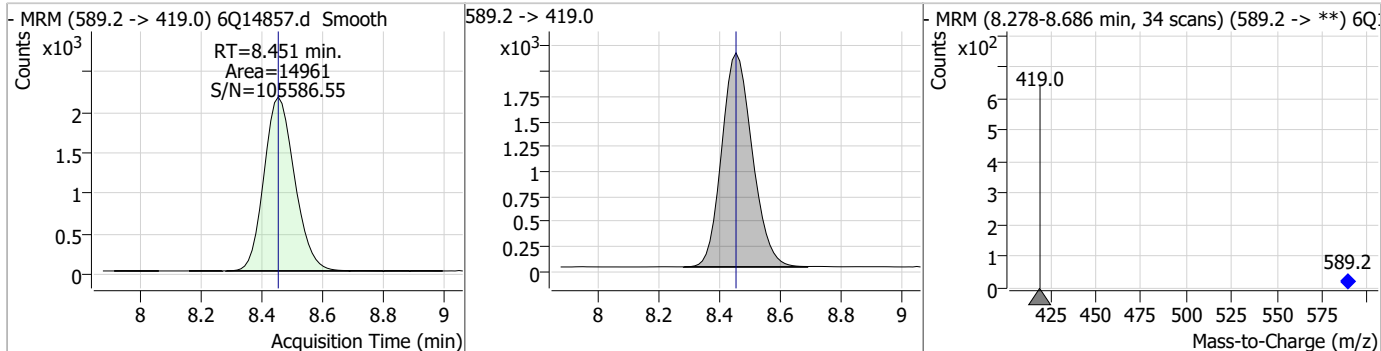
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Perfluorinated Compounds by LC/MS/MS

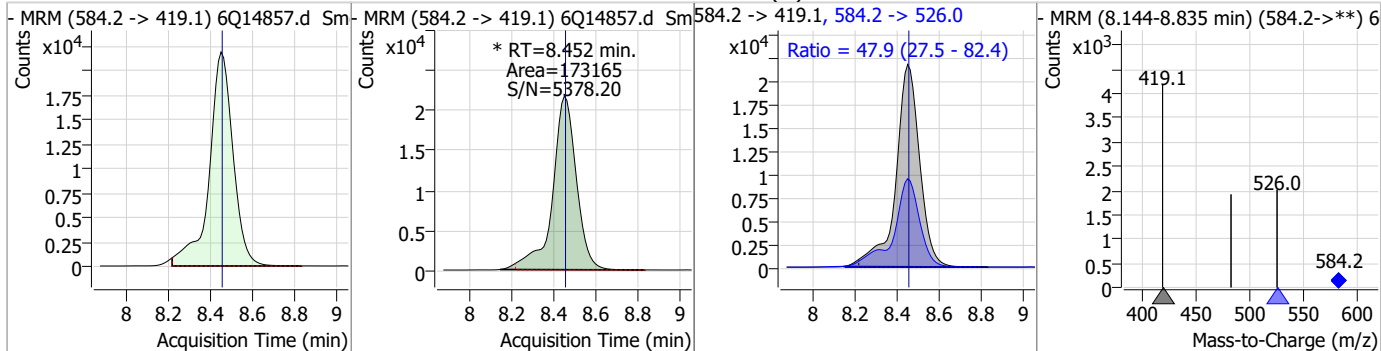
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	60.24	8.36	0.00	197071 (m)	498.9 -> 98.8	55.3	31.7	95.2



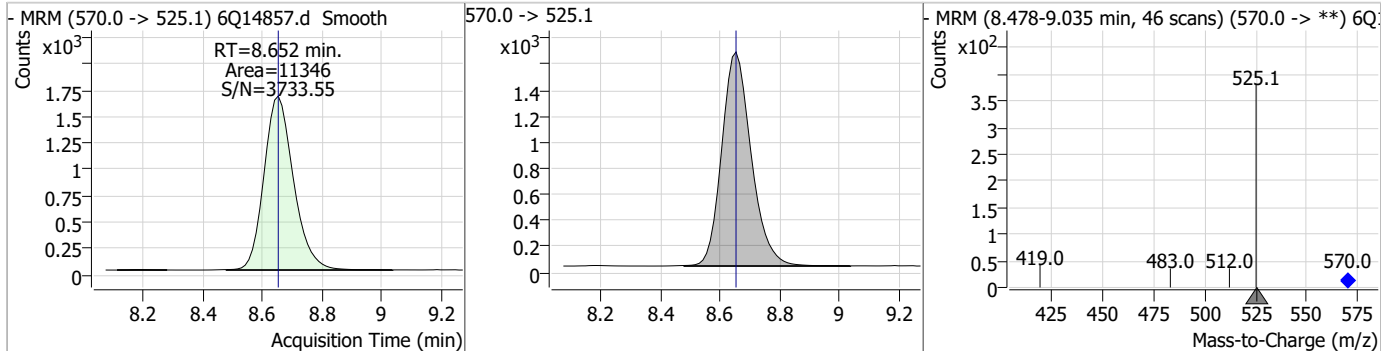
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.41	8.45	0.00	14961				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	63.72	8.45	0.00	173165 (m)	584.2 -> 526.0	47.9	27.5	82.4

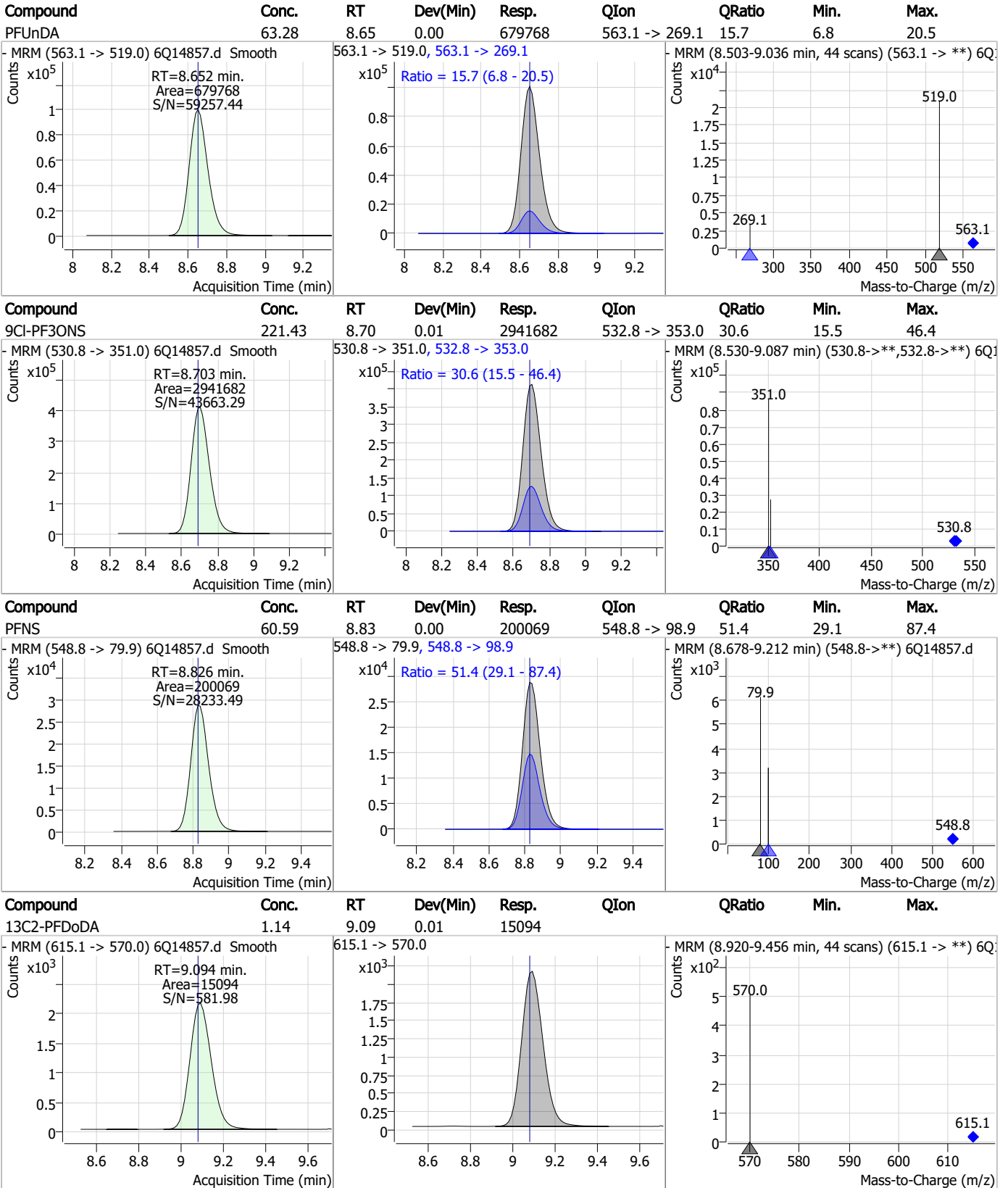


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.04	8.65	0.00	11346				



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Perfluorinated Compounds by LC/MS/MS



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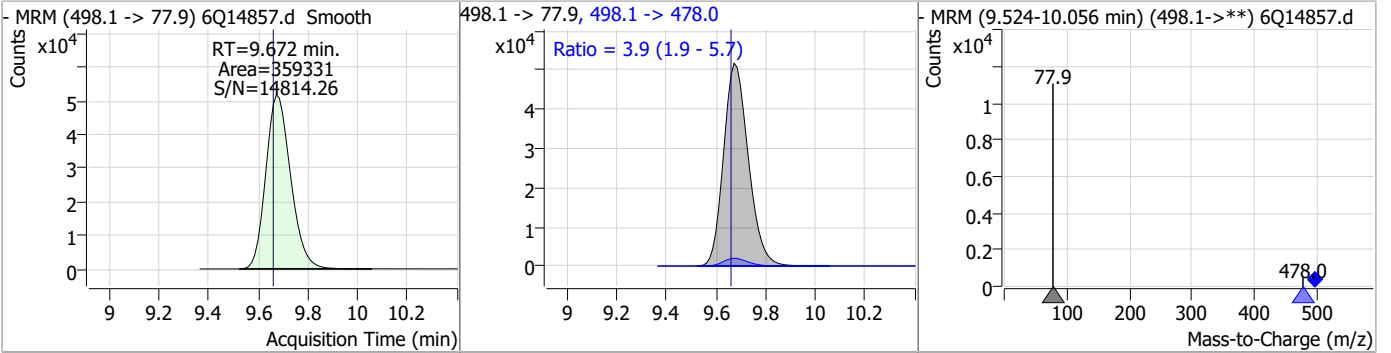
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	61.13	9.09	0.01	794950	613.1 -> 319.0	13.5	6.5	19.4
PFDS	57.37	9.26	0.01	131088	599.0 -> 98.8	57.3	24.9	74.7
PFTrDA	68.30	9.47	0.00	787115	663.0 -> 168.9	8.0	4.0	11.9
11CI-PF3OUds	253.06	9.52	0.01	1854960	632.9 -> 452.9	30.1	15.9	47.7

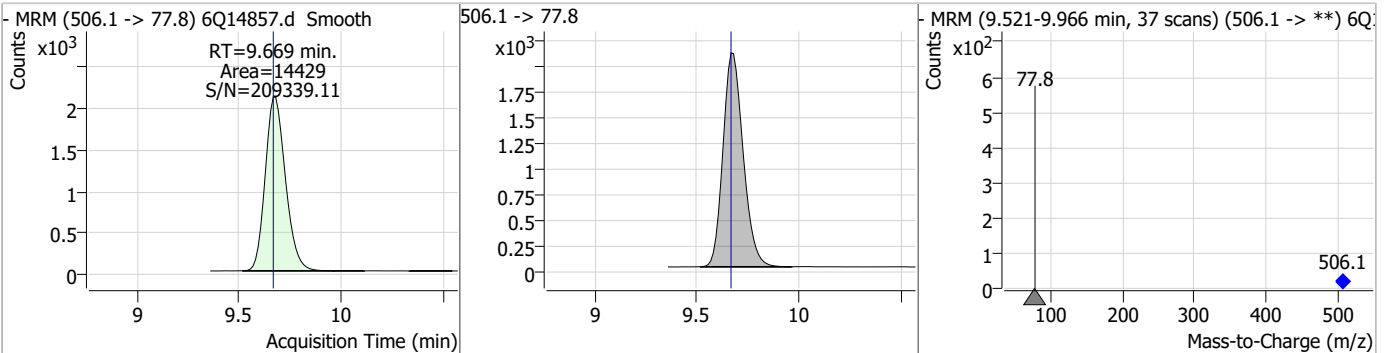
7.7.9
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Perfluorinated Compounds by LC/MS/MS

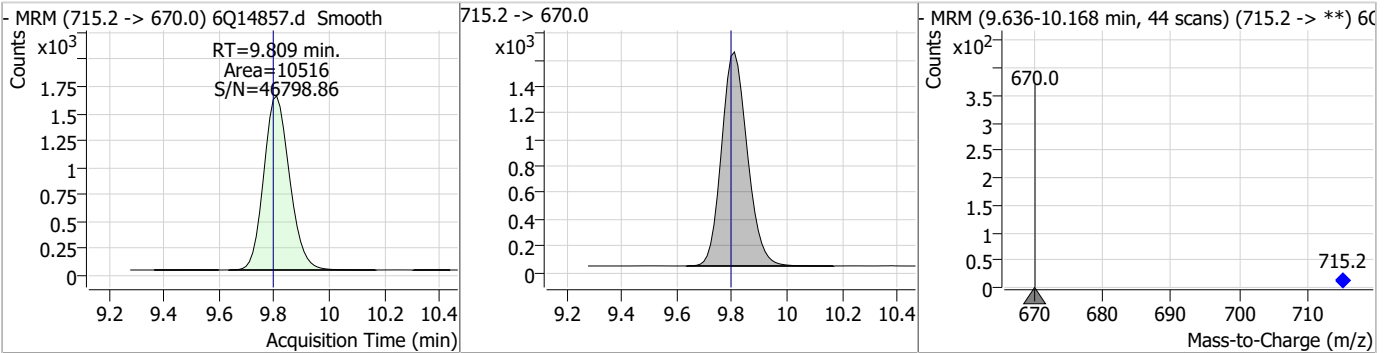
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	62.32	9.67	0.01	359331	498.1 -> 478.0	3.9	1.9	5.7



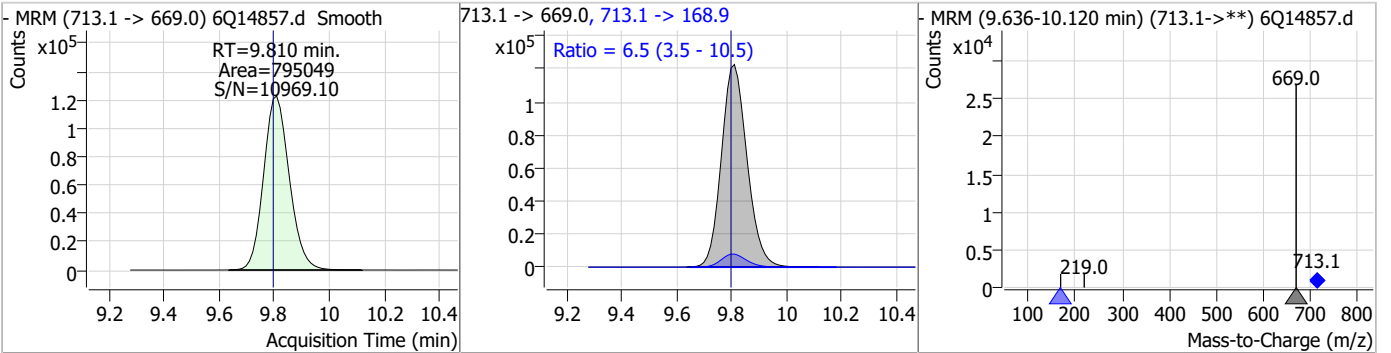
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.59	9.67	0.00	14429				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.40	9.81	0.01	10516				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	60.18	9.81	0.01	795049	713.1 -> 168.9	6.5	3.5	10.5



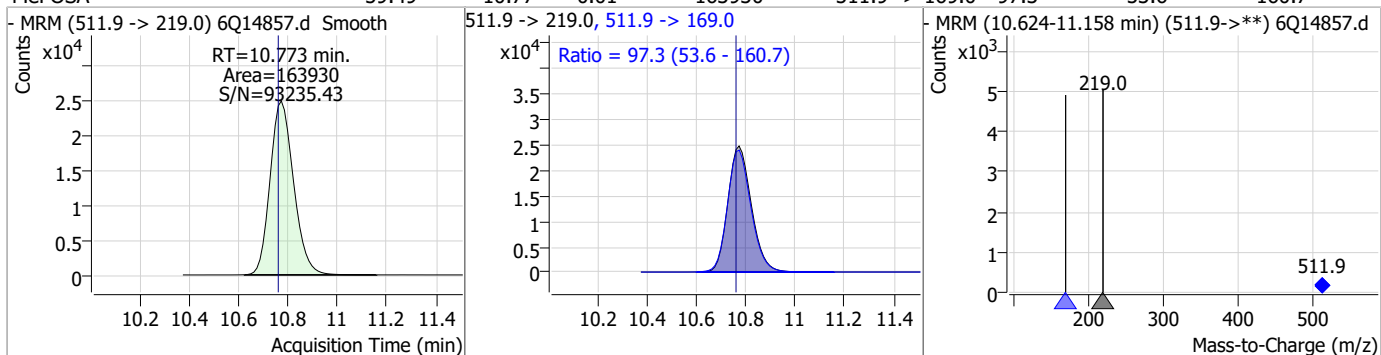
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	63.34	9.94	0.01	82703	699.1 -> 98.8	61.7	32.0	96.1
d7-MeFOSE	25.20	10.68	0.00	19477				
MeFOSE	628.80	10.69	0.00	517058				
d3-MeFOSA	2.81	10.77	0.01	5730				

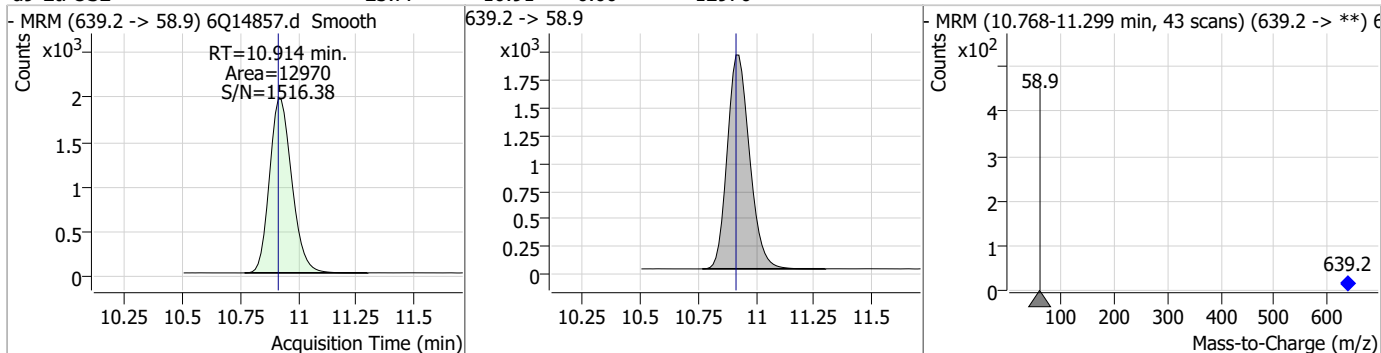
7.7.9
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Perfluorinated Compounds by LC/MS/MS

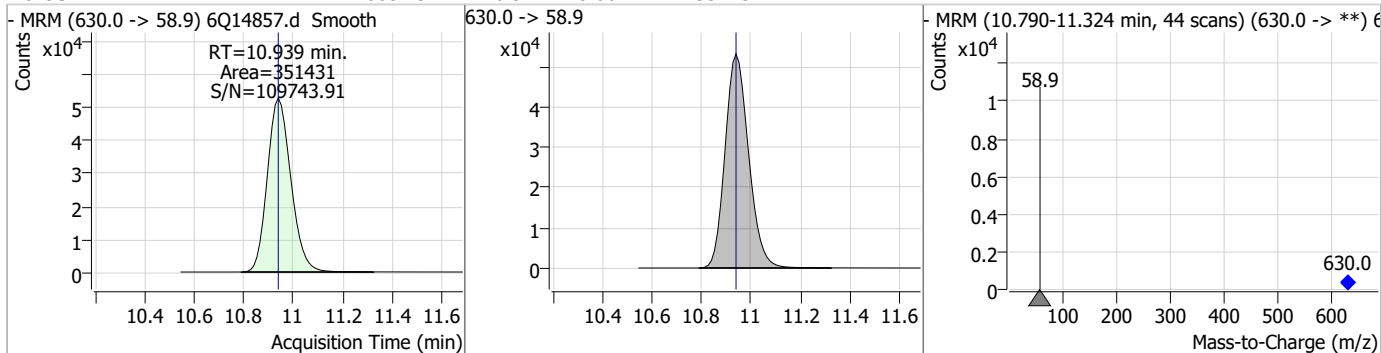
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	59.49	10.77	0.01	163930	511.9 -> 169.0	97.3	53.6	160.7



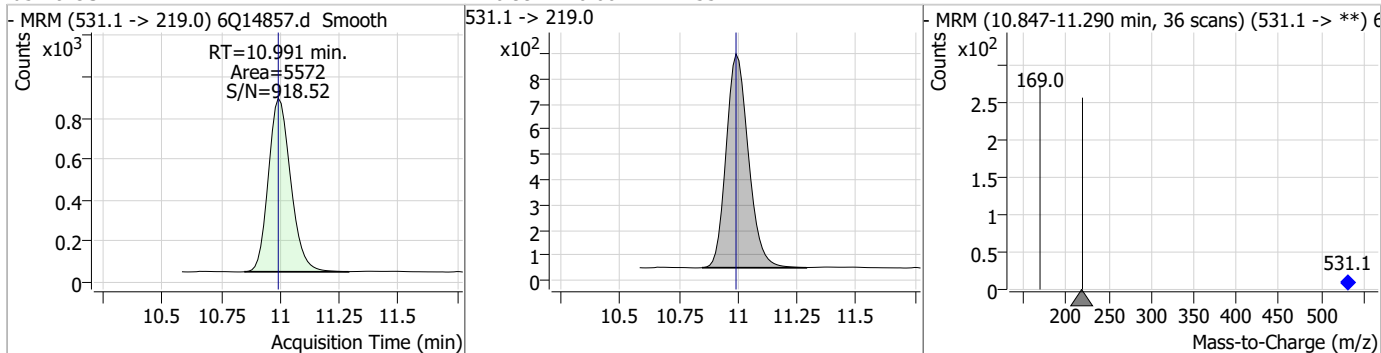
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.77	10.91	0.00	12970				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	665.19	10.94	0.00	351431				

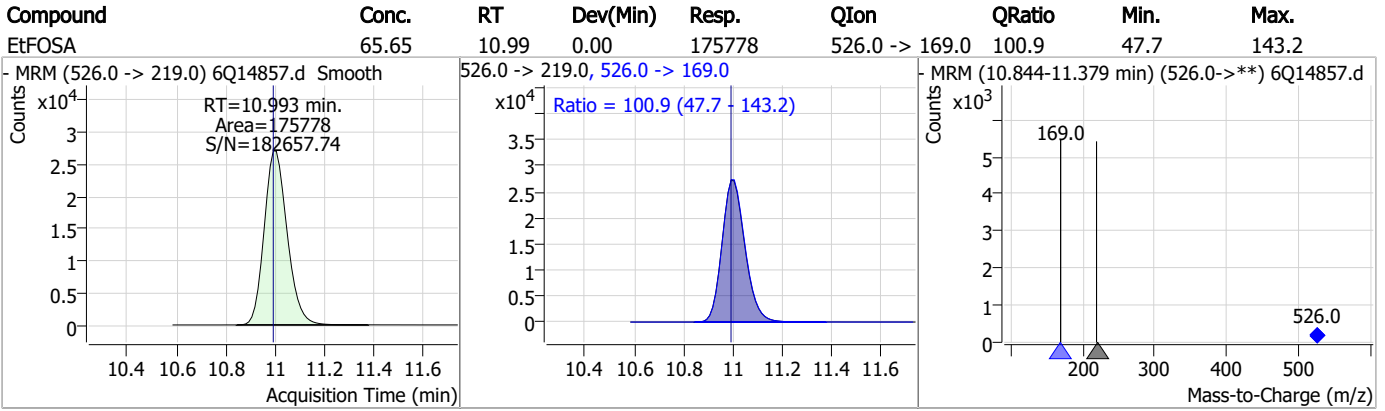


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.47	10.99	0.00	5572				



7.7.9
7

Perfluorinated Compounds by LC/MS/MS



7.7.9

7

Manual Integration Approval Summary

Sample Number: S6Q225-IC225 Method: EPA DRAFT 1633
Lab FileID: 6Q14857.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 23:24 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

7.7.9.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14859.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/15/2023 11:52:03 PM
 Sample Name : icv225-4
 Vial : P1-B1
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.947	216.8 -> 171.9	75881	10.00 µg/L	0.000
M5-PFPeA	4.395	268.3 -> 223.0	36411	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	32708	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	33311	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	54217	2.50 µg/L	0.000
M9-PFNA	7.718	472.1 -> 427.0	16870	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	15214	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	15988	1.25 µg/L	0.000
M2-PFDoDA	9.082	615.1 -> 570.0	19546	1.25 µg/L	0.000
M2-PFTeDA	9.797	715.2 -> 670.0	11210	1.25 µg/L	0.000
M8-FOSA	9.669	506.1 -> 77.8	15284	2.50 µg/L	0.000
M3-PFBS	5.536	302.1 -> 79.9	12491	2.50 µg/L	-0.012
M3-PFHxS	7.302	402.1 -> 79.9	8108	2.50 µg/L	0.000
M8-PFOS	8.360	507.1 -> 79.9	7720	2.50 µg/L	0.000
M2-4:2FTS	5.268	329.1 -> 80.9	1781	5.00 µg/L	-0.012
M2-6:2FTS	6.949	429.1 -> 80.9	2291	5.00 µg/L	-0.012
M2-8:2FTS	7.986	529.1 -> 80.9	2112	5.00 µg/L	0.000
M3-MeFOSAA	8.255	573.2 -> 419.0	21909	5.00 µg/L	0.012
M3-HFPO-DA	5.983	286.9 -> 168.9	14767	10.00 µg/L	0.000
M5-EtFOSAA	8.451	589.2 -> 419.0	20666	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	21699	25.00 µg/L	0.000
M9-EtFOSE	10.926	639.2 -> 58.9	15870	25.00 µg/L	0.012
M5-EtFOSA	10.991	531.1 -> 219.0	6260	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5514	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	8504	2.50 µg/L	0.000
13C3-PFBA	2.952	216.0 -> 172.0	32669	5.00 µg/L	0.000
18O2-PFHxS	7.314	403.0 -> 83.9	5891	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	67597	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	20276	1.25 µg/L	0.000
13C5-PFNA	7.718	468.0 -> 423.0	18425	1.25 µg/L	0.000
13C2-PFHxA	5.606	315.1 -> 270.0	32815	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.268	329.1 -> 80.9	1781	5.27 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2291	5.23 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.7%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2112	4.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C2-PFDoDA	9.082	615.1 -> 570.0	19546	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-PFTeDA	9.797	715.2 -> 670.0	11210	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFBS	5.536	302.1 -> 79.9	12491	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-PFHxS	7.302	402.1 -> 79.9	8108	2.44 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C4-PFBA	2.947	216.8 -> 171.9	75881	10.12 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C4-PFHpA	6.544	367.1 -> 322.0	33311	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C5-PFHxA	5.605	318.0 -> 273.0	32708	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C5-PFPeA	4.395	268.3 -> 223.0	36411	4.80 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C6-PFDA	8.197	519.1 -> 474.1	15214	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C7-PFUnDA	8.652	570.0 -> 525.1	15988	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C8-FOSA	9.669	506.1 -> 77.8	15284	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C8-PFOA	7.187	421.1 -> 376.0	54217	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C8-PFOS	8.360	507.1 -> 79.9	7720	2.67 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C9-PFNA	7.718	472.1 -> 427.0	16870	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.0%		
d3-MeFOSAA	8.255	573.2 -> 419.0	21909	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.3%		
13C3-HFPO-DA	5.983	286.9 -> 168.9	14767	9.96 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
d3-MeFOSA	10.759	515.0 -> 219.0	5514	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%		
d5-EtFOSAA	8.451	589.2 -> 419.0	20666	5.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.1%		
d7-MeFOSE	10.680	623.2 -> 58.9	21699	26.52 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 106.1%		
d9-EtFOSE	10.926	639.2 -> 58.9	15870	27.48 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 109.9%		
d5-EtFOSA	10.991	531.1 -> 219.0	6260	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.0%		
Target Compounds					QValue
4:2FTS	5.269	327.1 -> 307.0	38481	9.34 µg/L	96
		327.1 -> 80.9	9051		
6:2FTS	6.950	427.1 -> 407.0	31606	9.29 µg/L	97
		427.1 -> 80.9	7212		
8:2FTS	7.986	527.1 -> 507.0	18394	11.84 µg/L	98
		527.1 -> 80.8	4774		
EtFOSAA	8.464	584.2 -> 419.1	8331	2.22 µg/L	m 93
		584.2 -> 526.0	4996		
FOSA	9.660	498.1 -> 77.9	15440	2.53 µg/L	99
		498.1 -> 478.0	547		
MeFOSAA	8.256	570.1 -> 419.0	11247	2.45 µg/L	m 97
		570.1 -> 483.0	2108		
PFBA	2.956	212.8 -> 168.9	19970	9.64 µg/L	100
PFBS	5.537	298.7 -> 79.9	12670	2.30 µg/L	94
		298.7 -> 98.8	5230		
PFDA	8.198	512.9 -> 469.0	44489	2.36 µg/L	98
		512.9 -> 219.0	5899		
PFDoDA	9.082	613.1 -> 569.0	40576	2.41 µg/L	98
		613.1 -> 319.0	4847		
PFDS	9.246	599.0 -> 79.9	5981	2.37 µg/L	93

7.7.10
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.544	599.0 -> 98.8	3250	2.44	µg/L	99
		363.1 -> 319.0	52431			
PFHpS	7.868	363.1 -> 169.0	7378	2.27	µg/L	96
		449.0 -> 79.9	7817			
PFHxA	5.607	449.0 -> 98.9	4897	2.52	µg/L	99
		313.0 -> 269.0	34686			
PFHxS	7.303	313.0 -> 118.9	1309	2.26	µg/L	98
		398.7 -> 79.9	9155			
PFNA	7.719	398.7 -> 98.9	5135	2.31	µg/L	97
		463.0 -> 419.0	27648			
PFNS	8.826	463.0 -> 219.0	5901	2.39	µg/L	99
		548.8 -> 79.9	8739			
PFOA	7.189	548.8 -> 98.9	5021	2.50	µg/L	95
		413.0 -> 369.0	64093			
PFOS	8.361	413.0 -> 169.0	9474	2.21	µg/L	86
		498.9 -> 79.9	7987			
PFPeA	4.397	498.9 -> 98.8	5927	4.99	µg/L	100
		263.0 -> 219.0	43268			
PFPeS	6.609	349.1 -> 79.9	11710	2.39	µg/L	99
		349.1 -> 98.9	6133			
PFTeDA	9.797	713.1 -> 669.0	33490	2.38	µg/L	99
		713.1 -> 168.9	2411			
PFTrDA	9.453	663.0 -> 619.0	39954	2.68	µg/L	98
		663.0 -> 168.9	2935			
PFUnDA	8.652	563.1 -> 519.0	37409	2.47	µg/L	95
		563.1 -> 269.1	5877			
11CI-PF3OUdS	9.505	630.9 -> 450.9	82977	9.08	µg/L	98
		632.9 -> 452.9	27226			
9CI-PF3ONS	8.703	530.8 -> 351.0	149137	9.01	µg/L	98
		532.8 -> 353.0	47312			
ADONA	6.794	376.9 -> 250.9	294431	9.28	µg/L	99
		376.9 -> 84.8	64794			
HFPO-DA	5.984	284.9 -> 168.9	15158	9.75	µg/L	98
		284.9 -> 184.9	1748			
3:3FTCA	3.851	241.0 -> 177.0	5277	12.17	µg/L	100
		241.0 -> 117.0	790			
5:3FTCA	6.259	341.0 -> 237.1	168918	60.73	µg/L	88
		341.0 -> 217.0	158862			
7:3FTCA	7.684	441.0 -> 316.9	84378	60.35	µg/L	97
		441.0 -> 336.9	157824			
EtFOSA	10.993	526.0 -> 219.0	7520	2.50	µg/L	100
		526.0 -> 169.0	7179			
EtFOSE	10.939	630.0 -> 58.9	15766	24.39	µg/L	100
		511.9 -> 219.0	6883			
MeFOSA	10.760	511.9 -> 169.0	7095	2.60	µg/L	96
		616.1 -> 58.9	23019			
MeFOSE	10.692	699.1 -> 79.9	3582	25.13	µg/L	100
		699.1 -> 98.8	2274			
PFDoDS	9.924	295.0 -> 201.0	4422	4.98	µg/L	99
		295.0 -> 84.9	2003			
NFDHA	5.488	279.0 -> 85.1	13733	4.86	µg/L	100
		229.0 -> 84.9	12382			
PFMBA	3.526	314.8 -> 134.9	86664	4.99	µg/L	100
		314.8 -> 82.9	2024			
PFEESA	6.089			4.45	µg/L	100

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



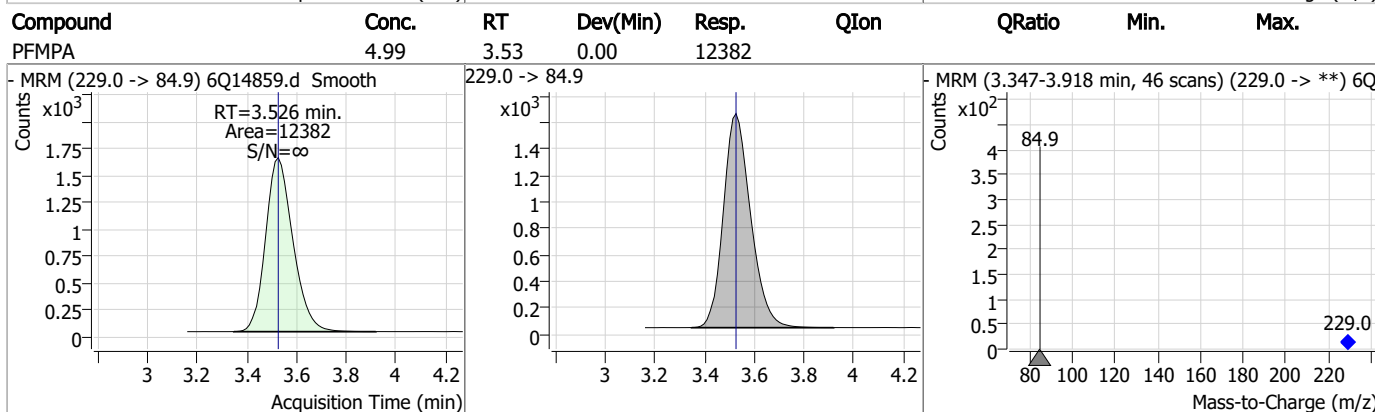
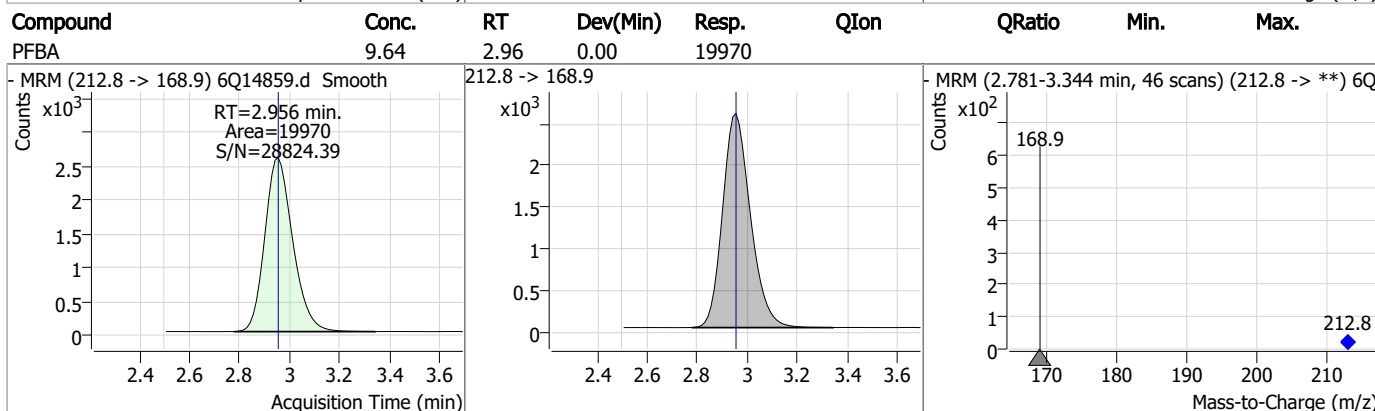
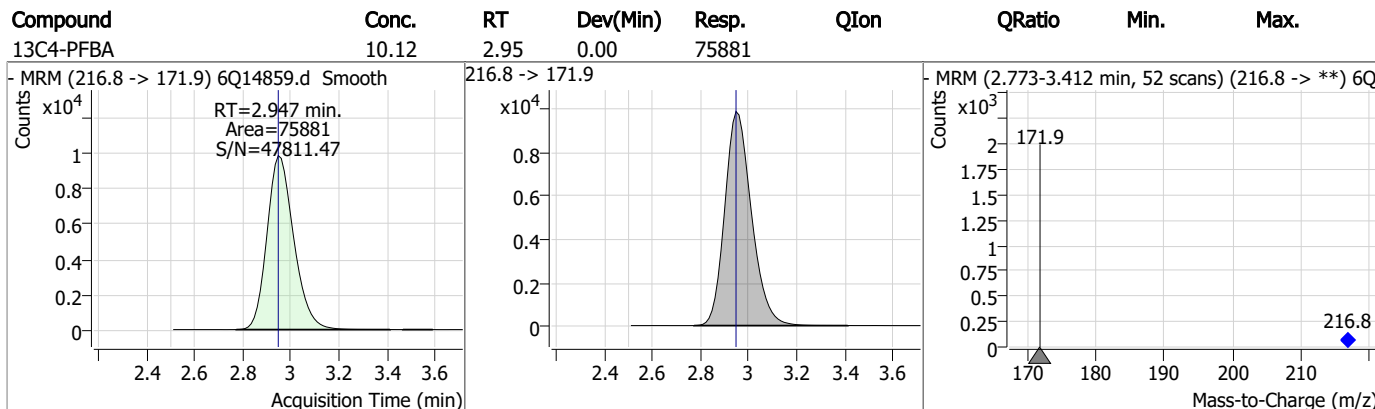
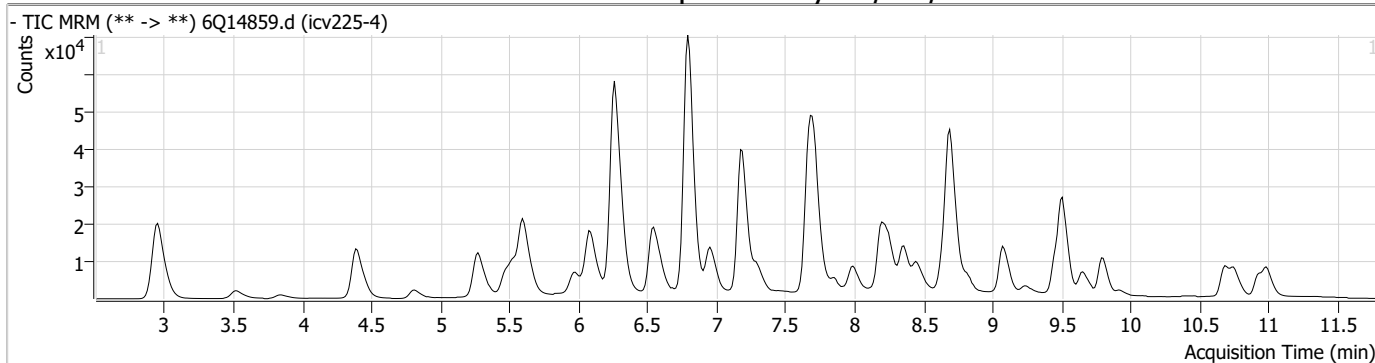
Perfluorinated Compounds by LC/MS/MS

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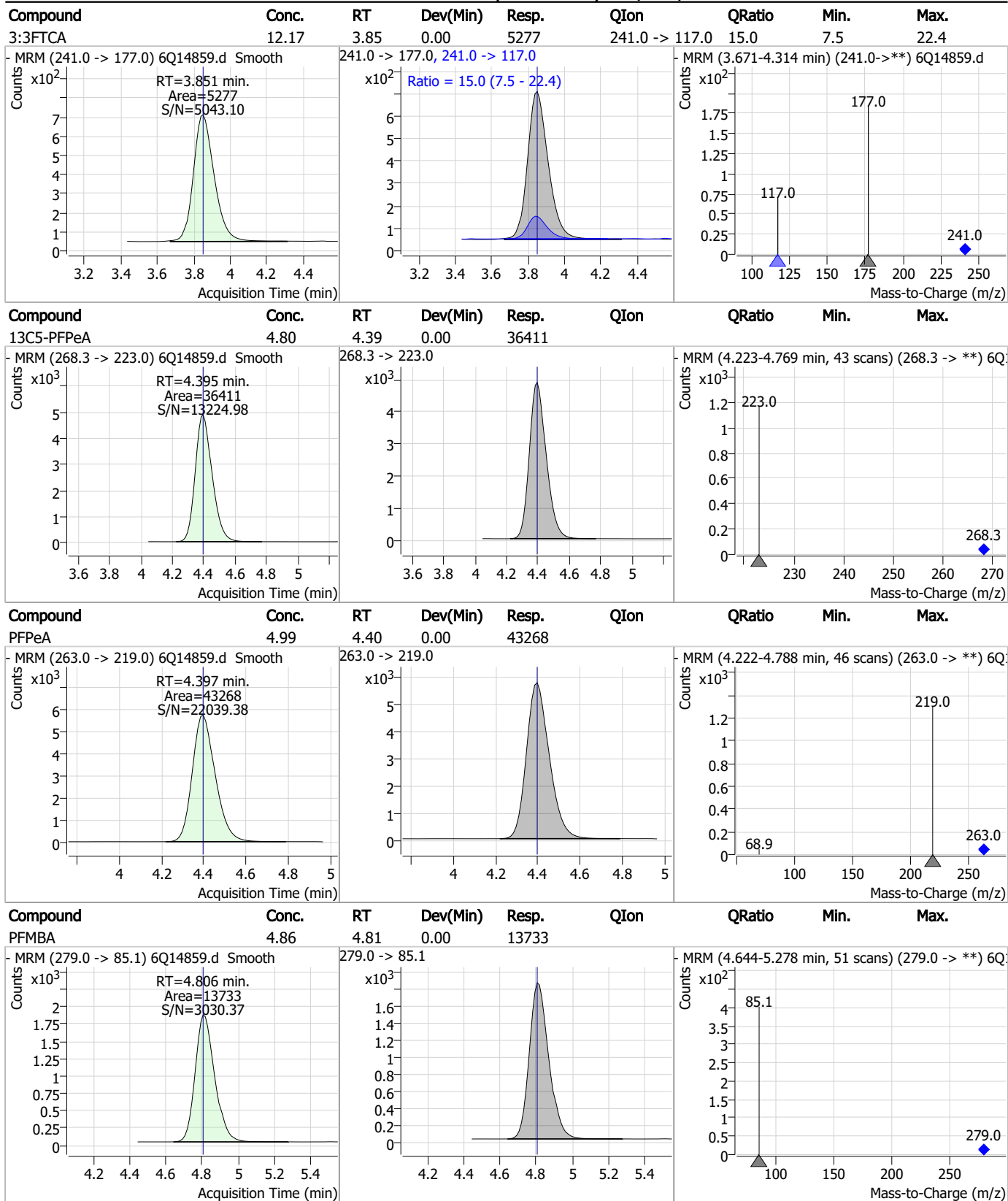
7.7.10

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Perfluorinated Compounds by LC/MS/MS

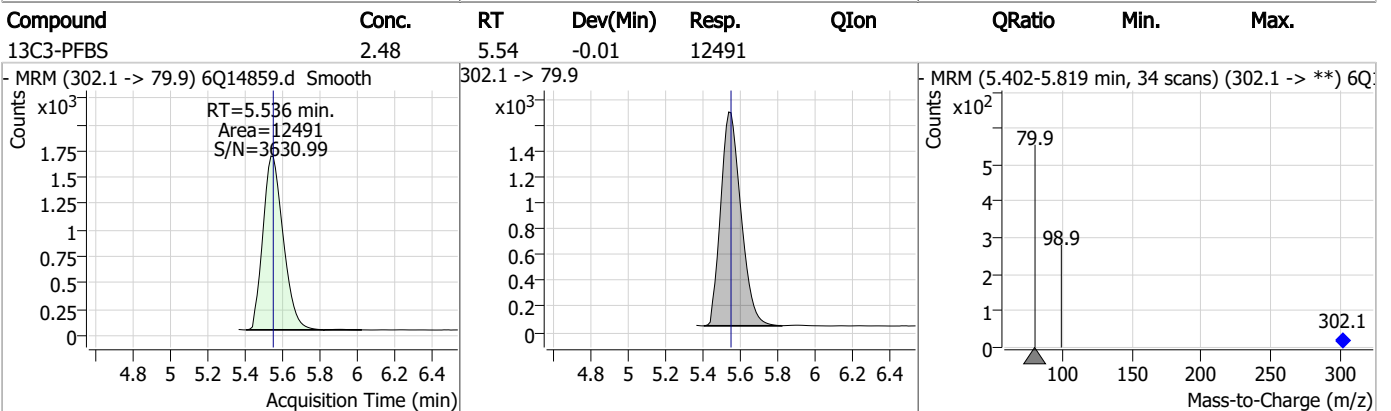
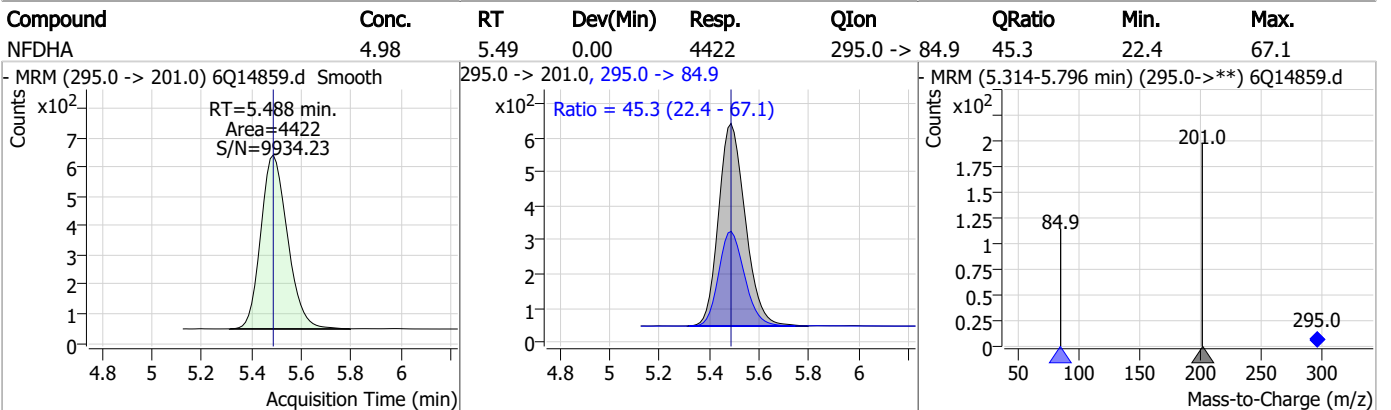
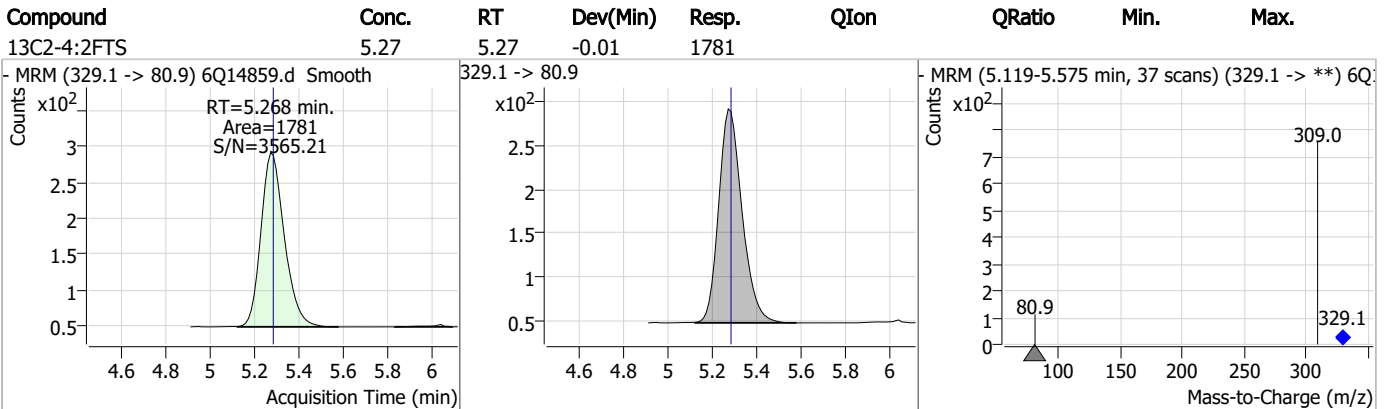
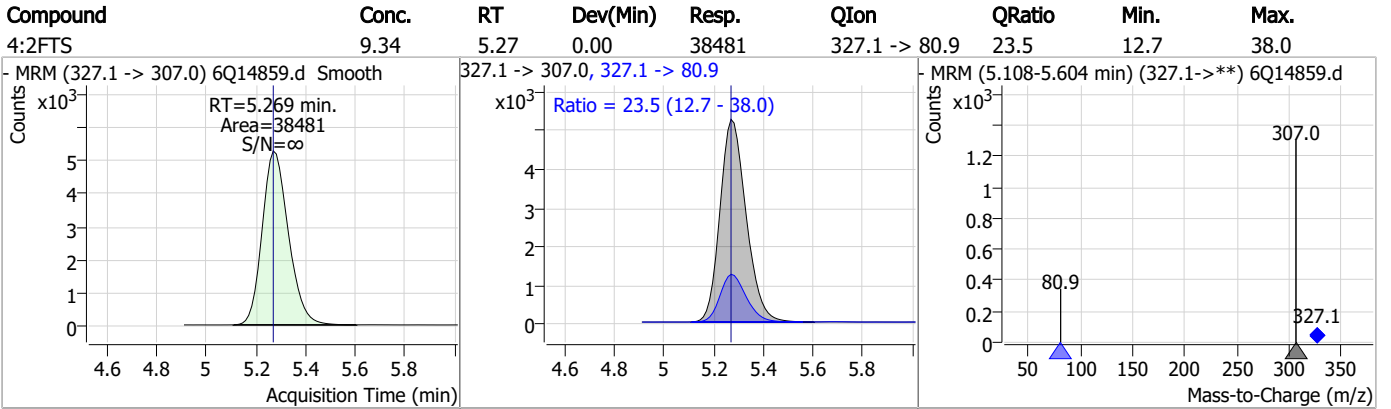


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS



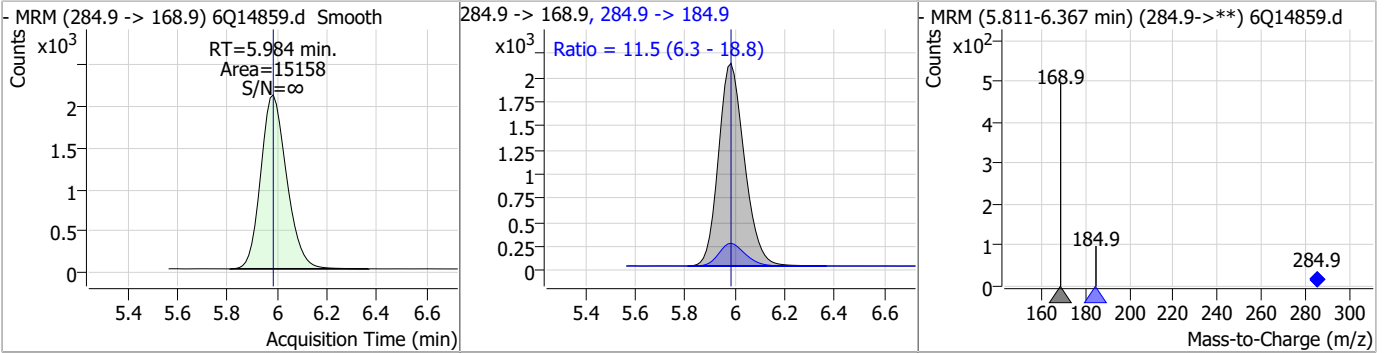
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.30	5.54	-0.01	12670	298.7 -> 98.8	41.3	22.6	67.9
13C5-PFHxA	2.45	5.60	0.00	32708	318.0 -> 273.0	3.8	2.0	6.0
PFHxA	2.52	5.61	0.00	34686	313.0 -> 118.9	3.8	2.0	6.0
13C3-HFPO-DA	9.96	5.98	0.00	14767	286.9 -> 168.9	3.8	2.0	6.0

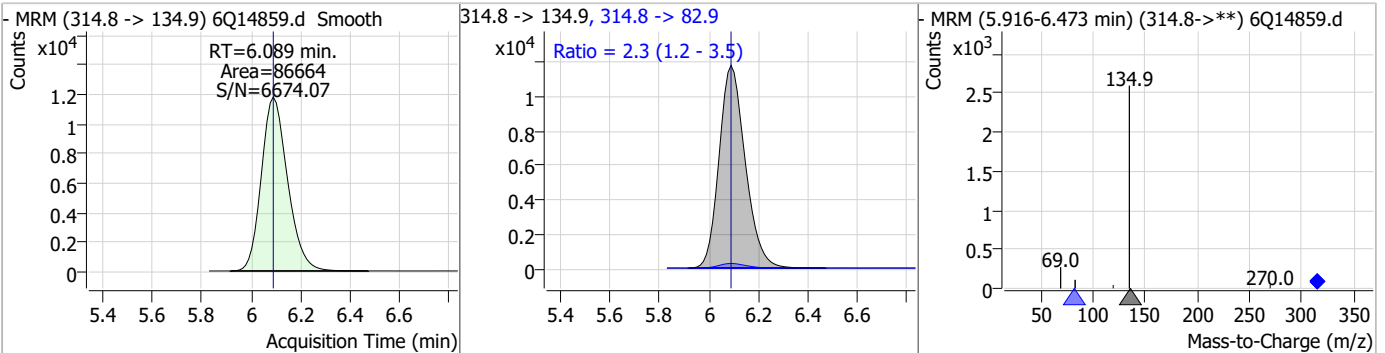
7.7.10
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Perfluorinated Compounds by LC/MS/MS

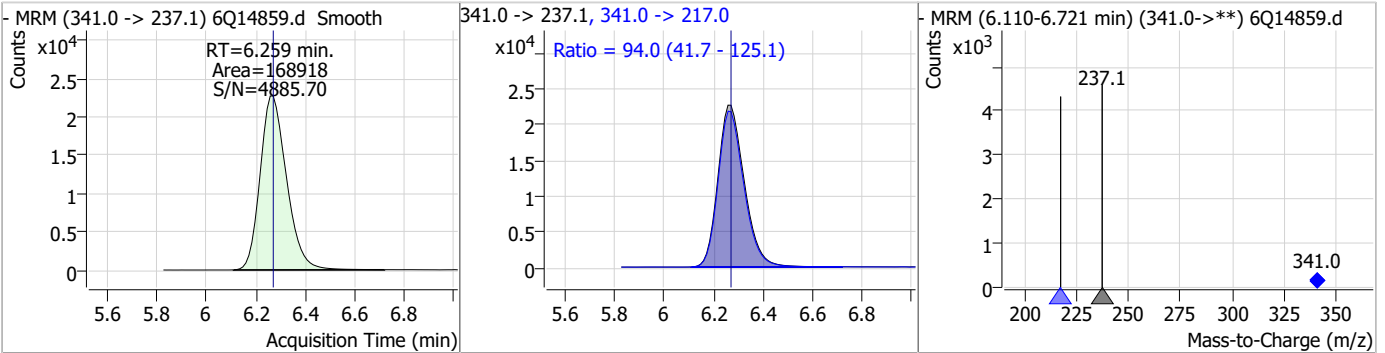
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.75	5.98	0.00	15158	284.9 -> 184.9	11.5	6.3	18.8



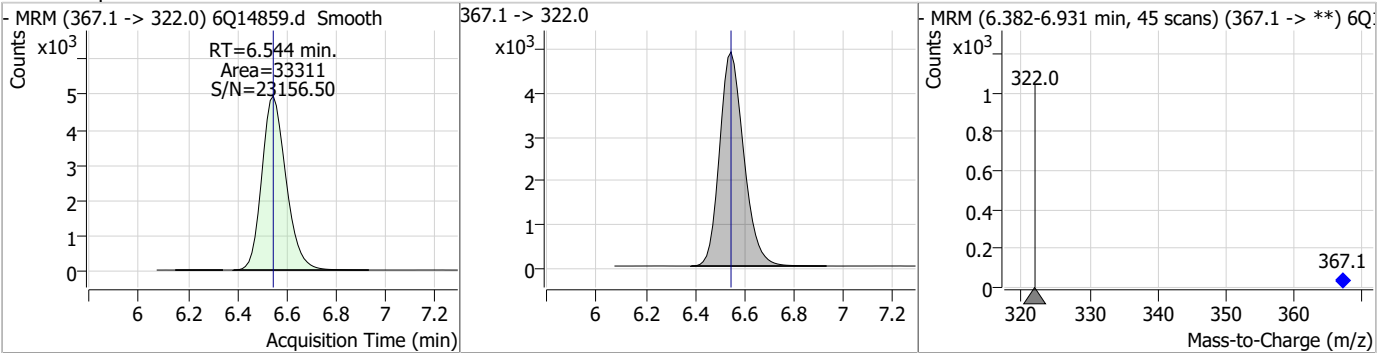
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.45	6.09	0.00	86664	314.8 -> 82.9	2.3	1.2	3.5



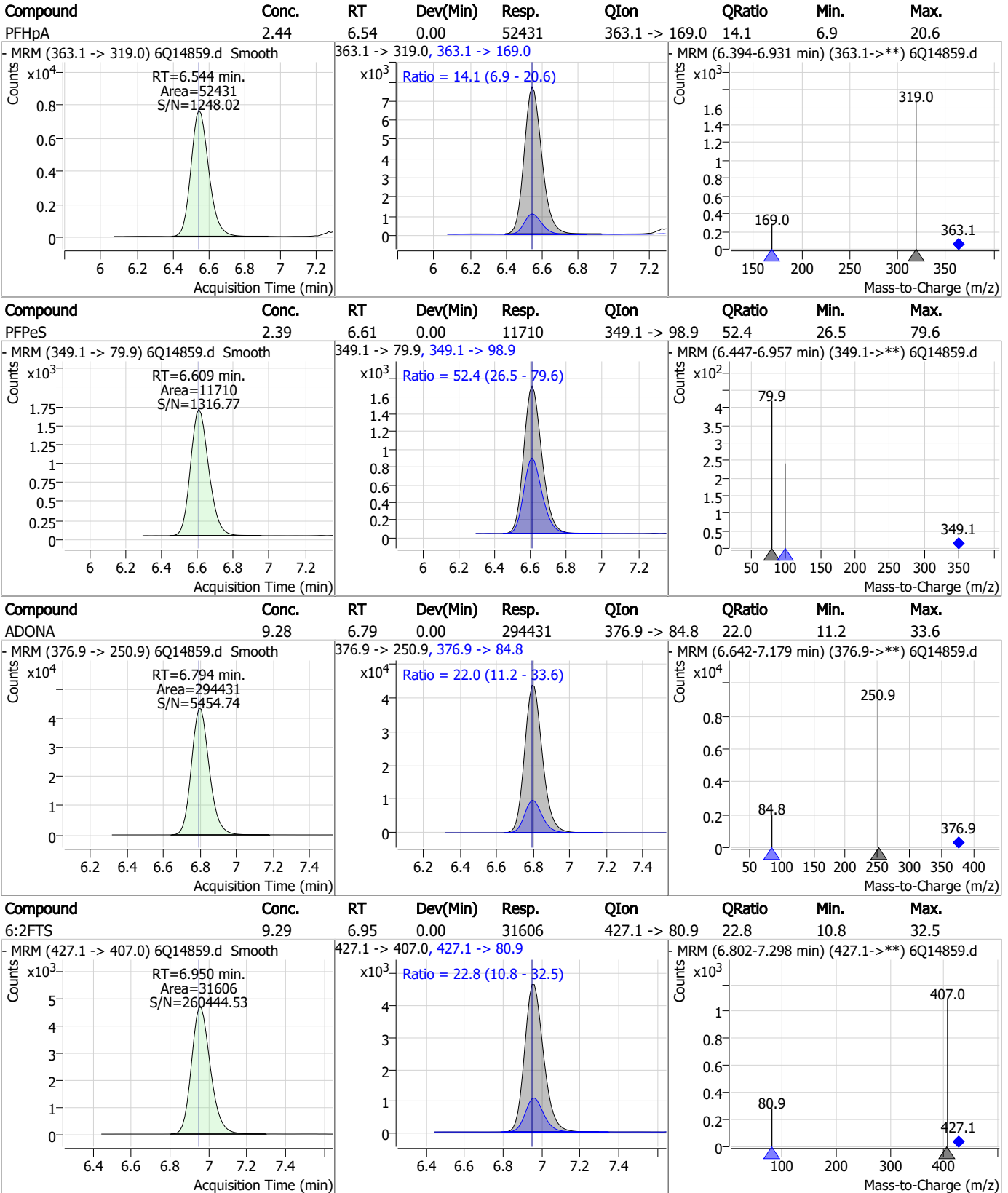
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	60.73	6.26	-0.01	168918	341.0 -> 217.0	94.0	41.7	125.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.48	6.54	0.00	33311	367.1 -> 322.0	-	-	-



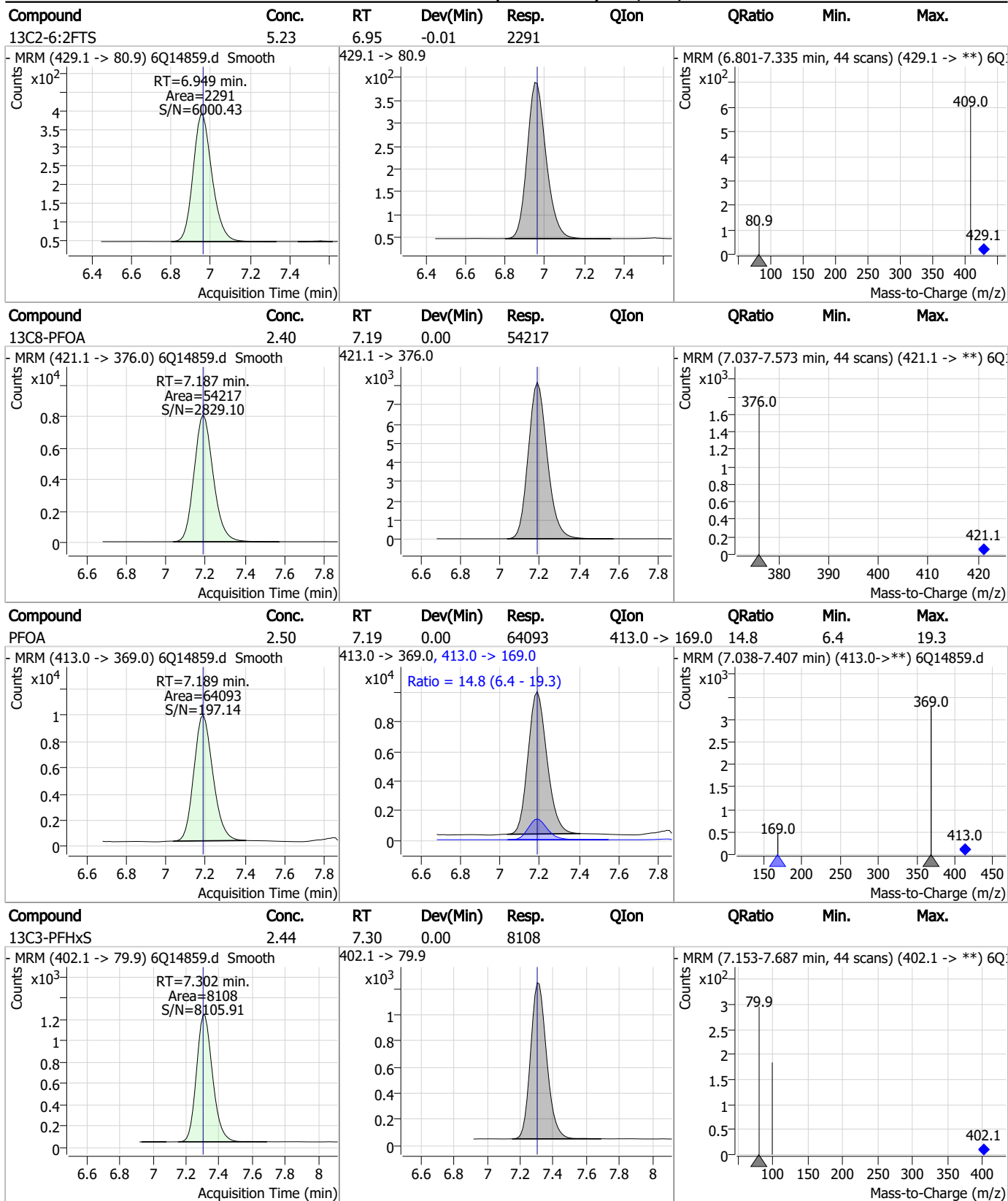
Perfluorinated Compounds by LC/MS/MS



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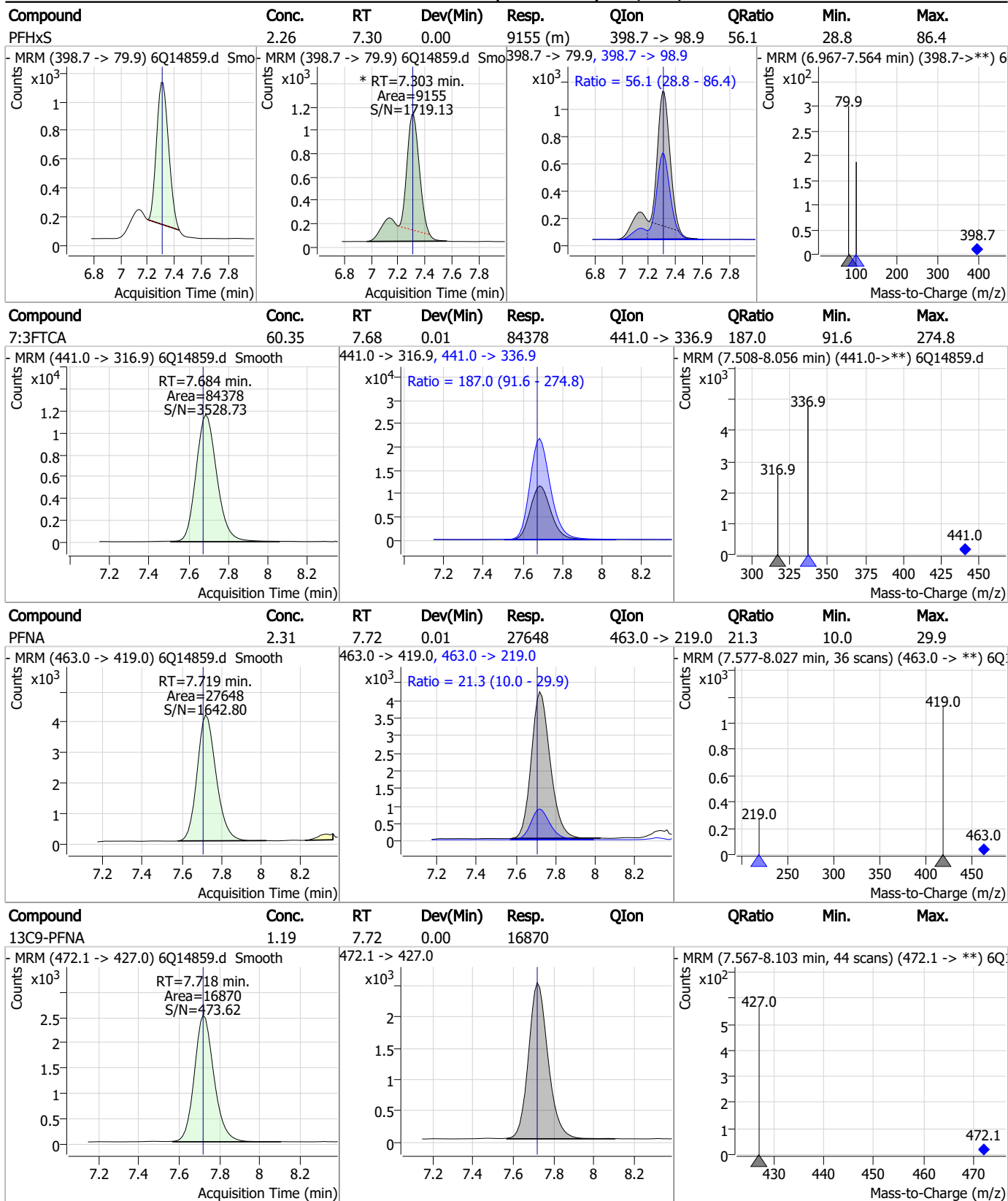
Perfluorinated Compounds by LC/MS/MS



7.7.10
7

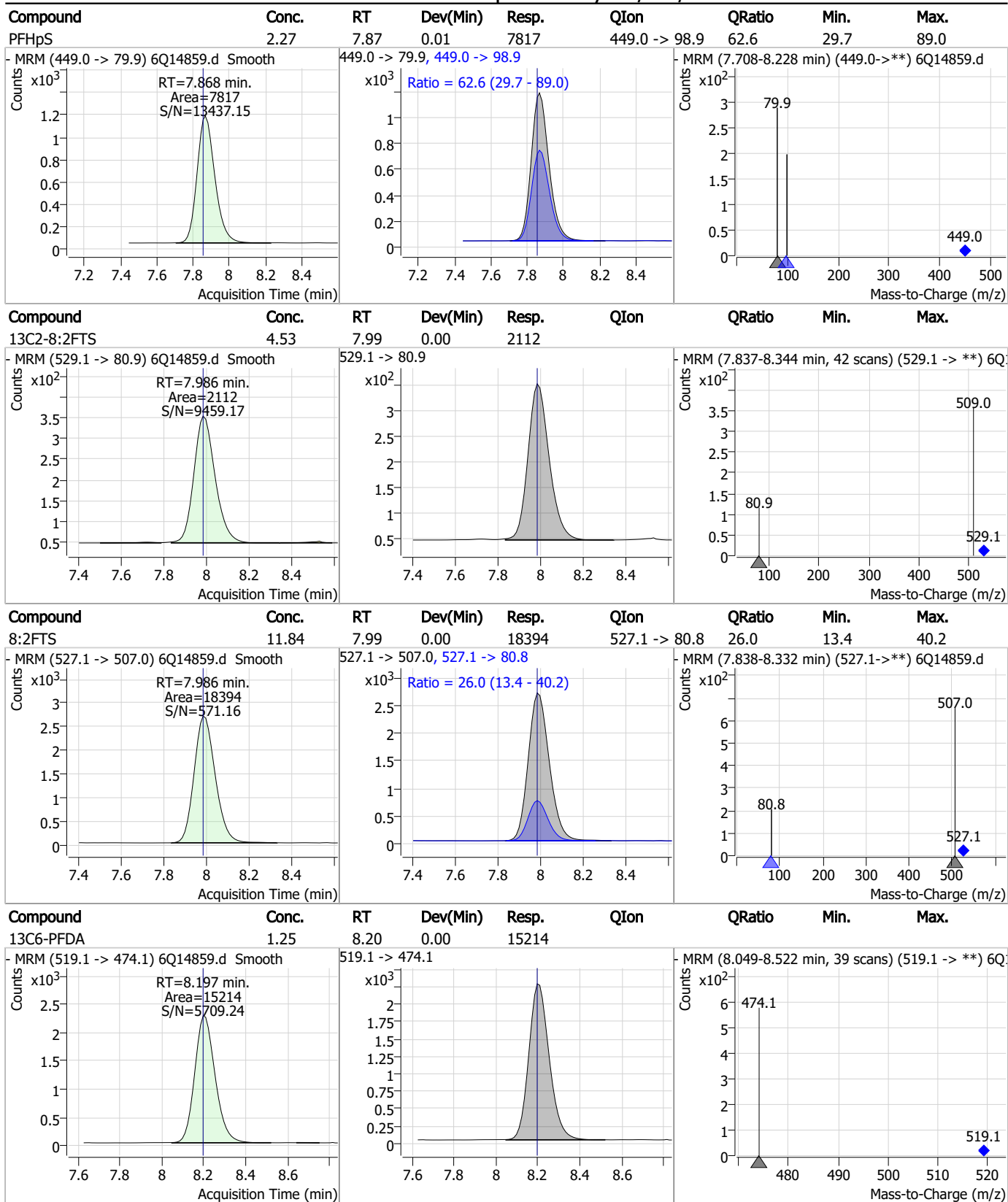


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

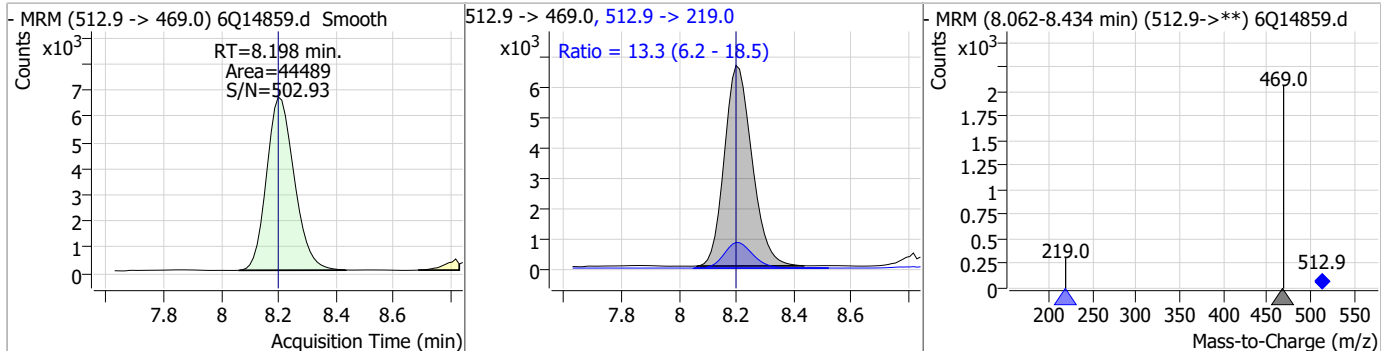
Perfluorinated Compounds by LC/MS/MS



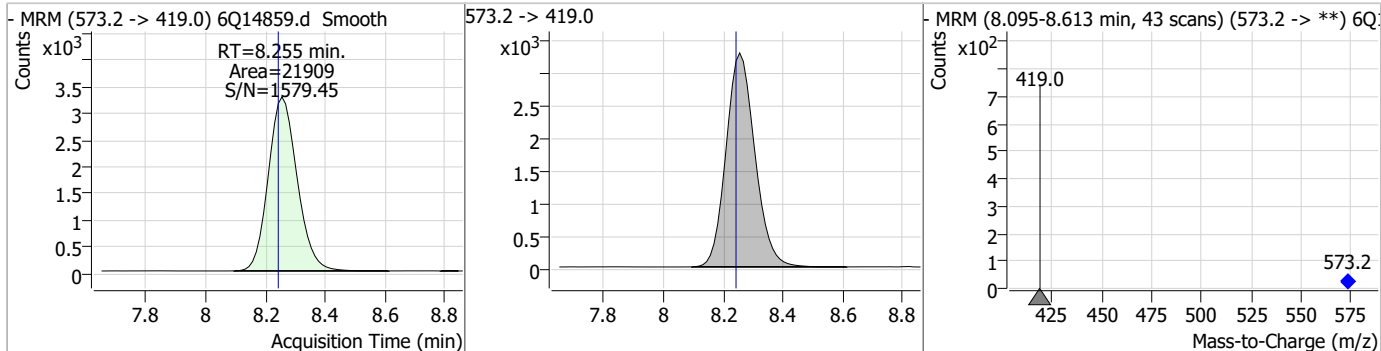
7.7.10
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Perfluorinated Compounds by LC/MS/MS

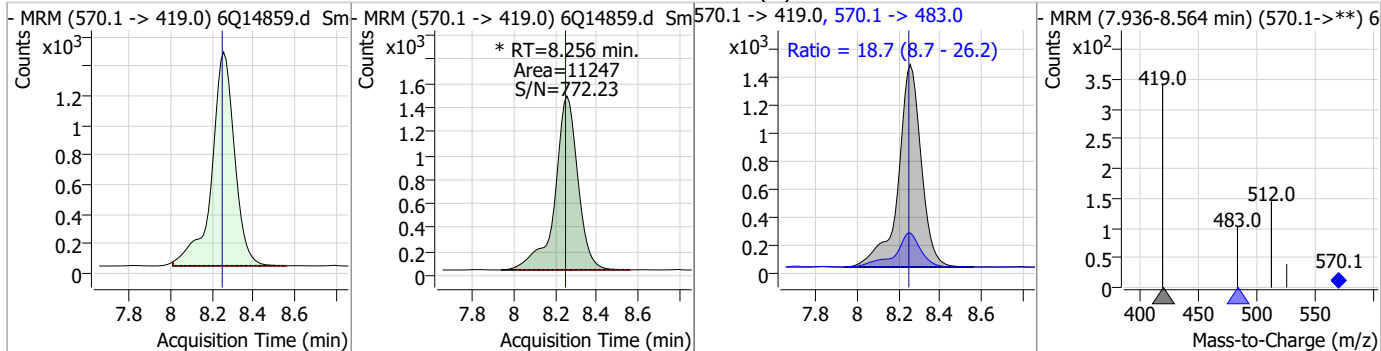
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.36	8.20	0.00	44489	512.9 -> 219.0	13.3	6.2	18.5



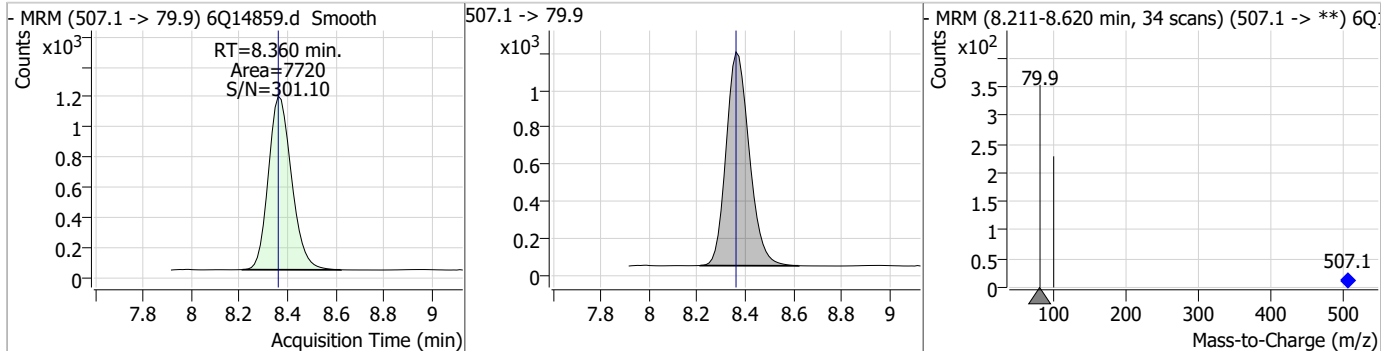
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.36	8.26	0.01	21909				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.45	8.26	0.01	11247 (m)	570.1 -> 483.0	18.7	8.7	26.2



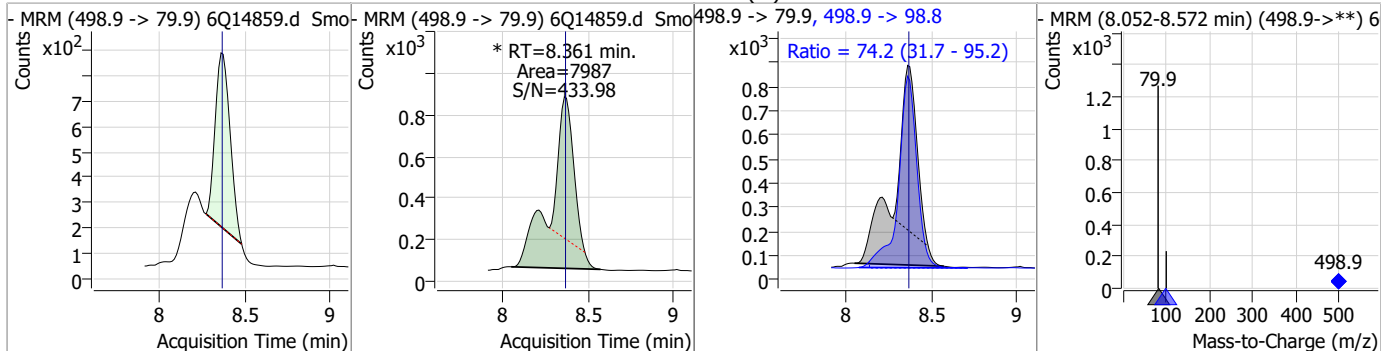
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.67	8.36	0.00	7720				



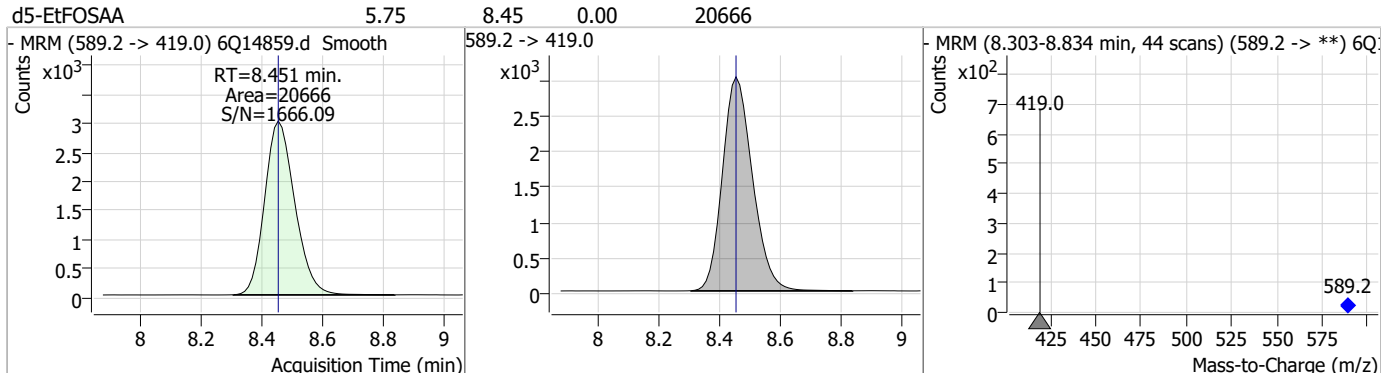
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

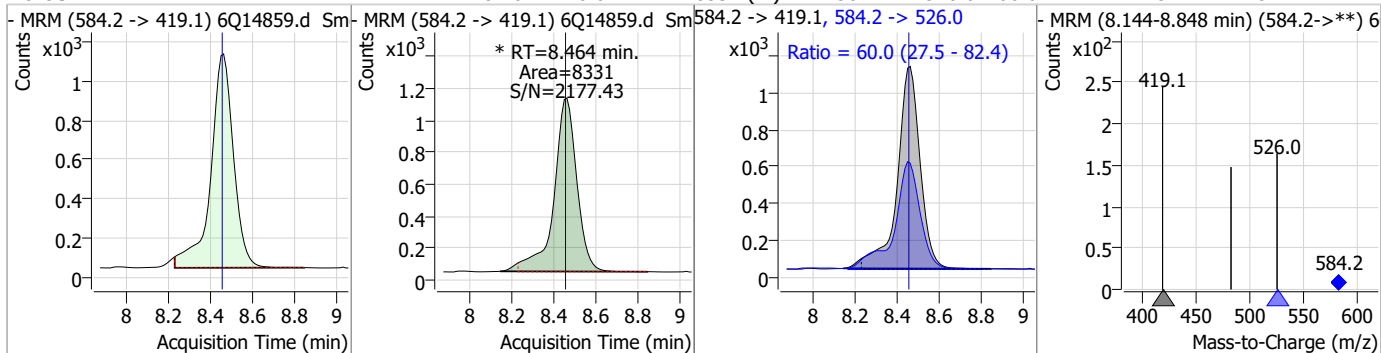
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.21	8.36	0.00	7987 (m)	498.9 -> 98.8	74.2	31.7	95.2



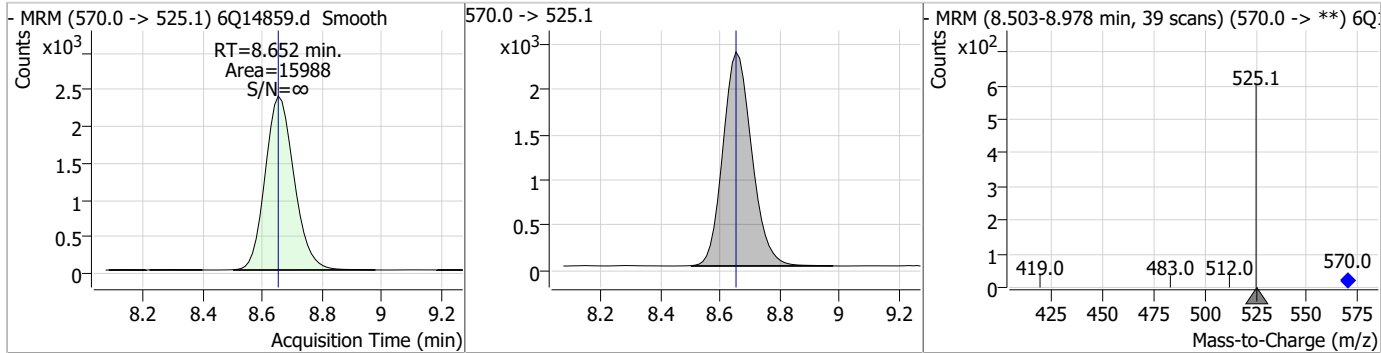
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.75	8.45	0.00	20666				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.22	8.46	0.01	8331 (m)	584.2 -> 526.0	60.0	27.5	82.4

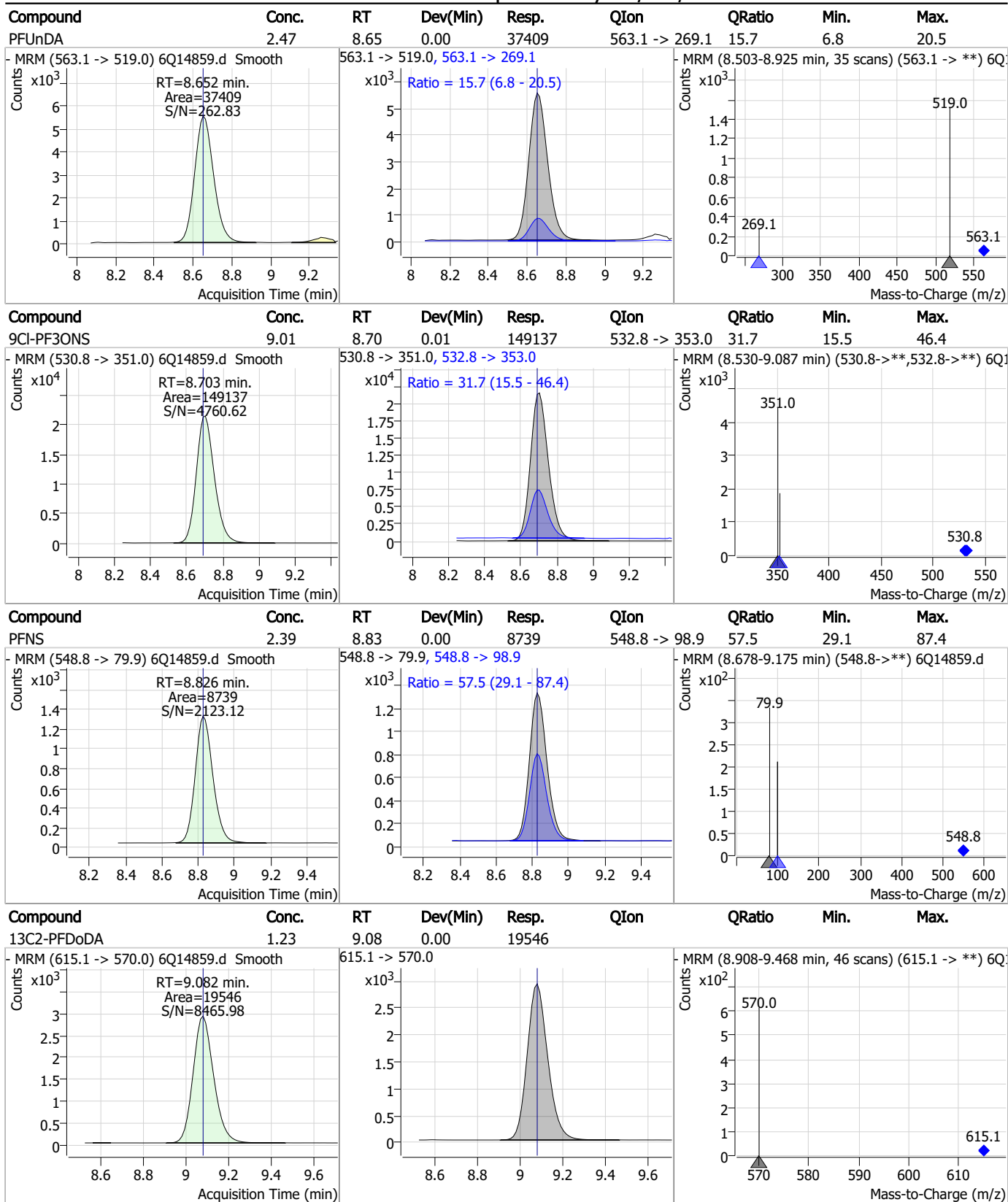


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.22	8.65	0.00	15988				



7.7.10
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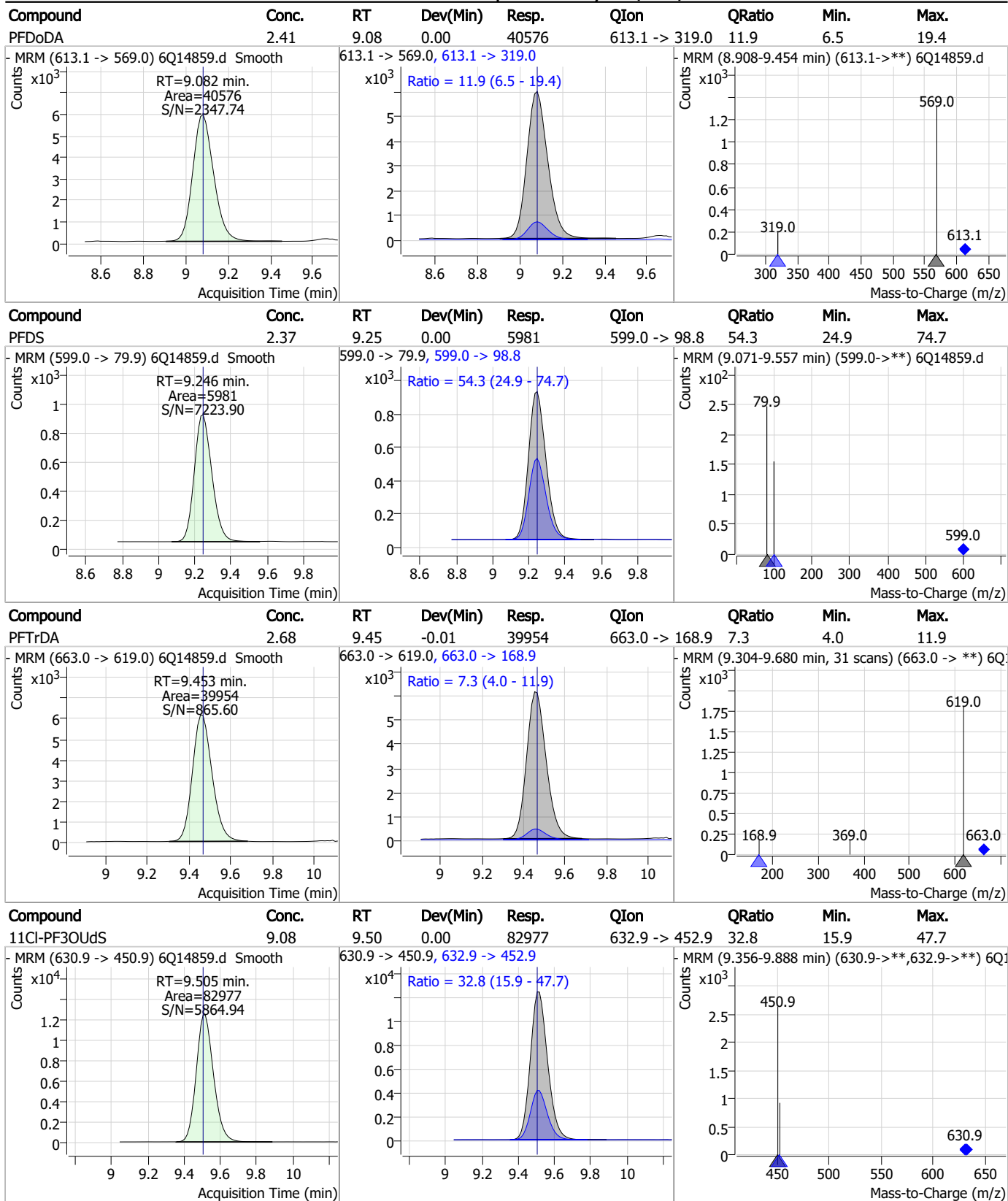
Perfluorinated Compounds by LC/MS/MS



7.7.10
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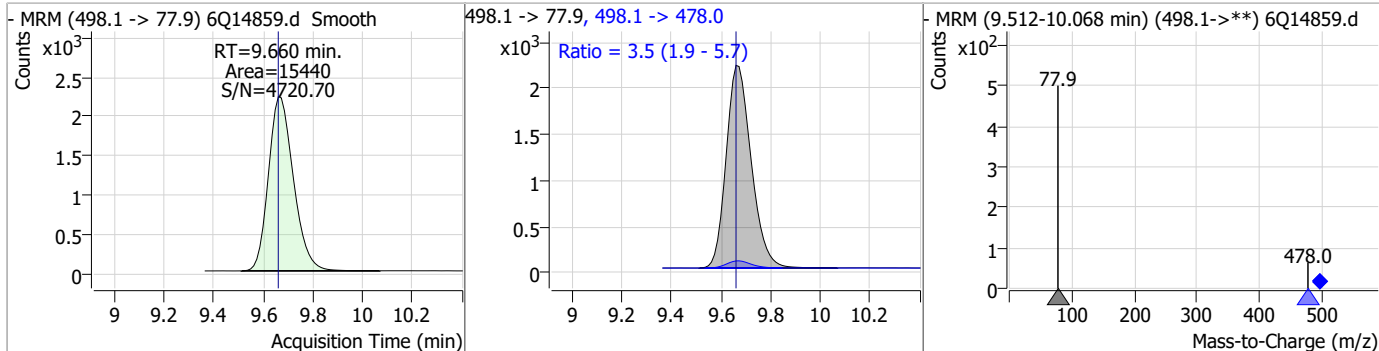
Perfluorinated Compounds by LC/MS/MS



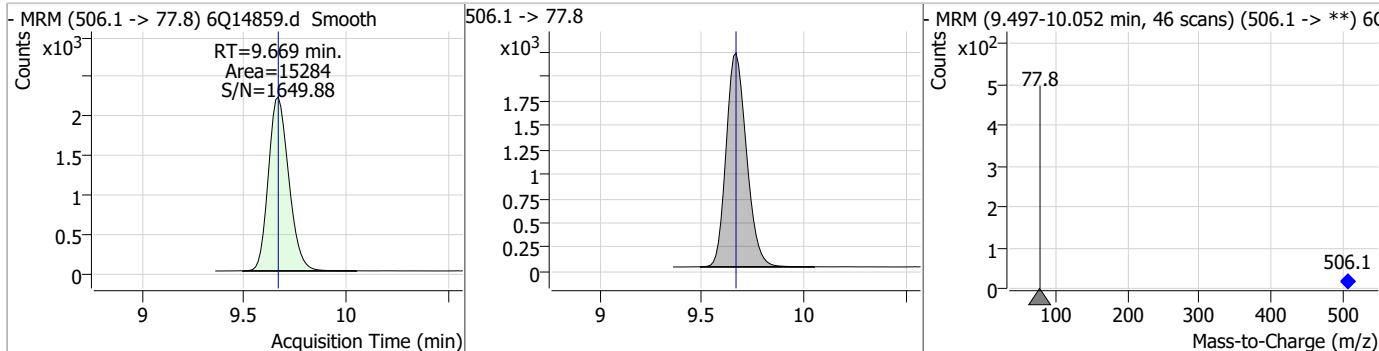
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

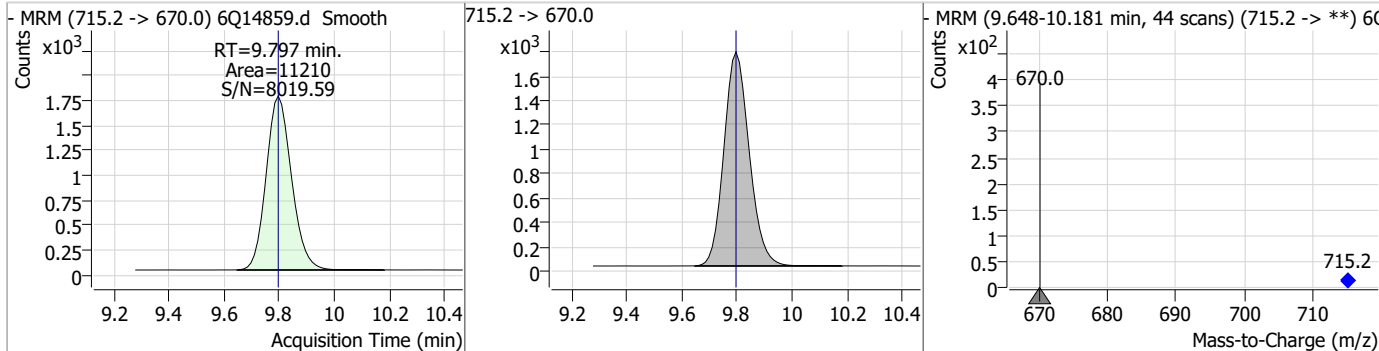
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.53	9.66	0.00	15440	498.1 -> 478.0	3.5	1.9	5.7



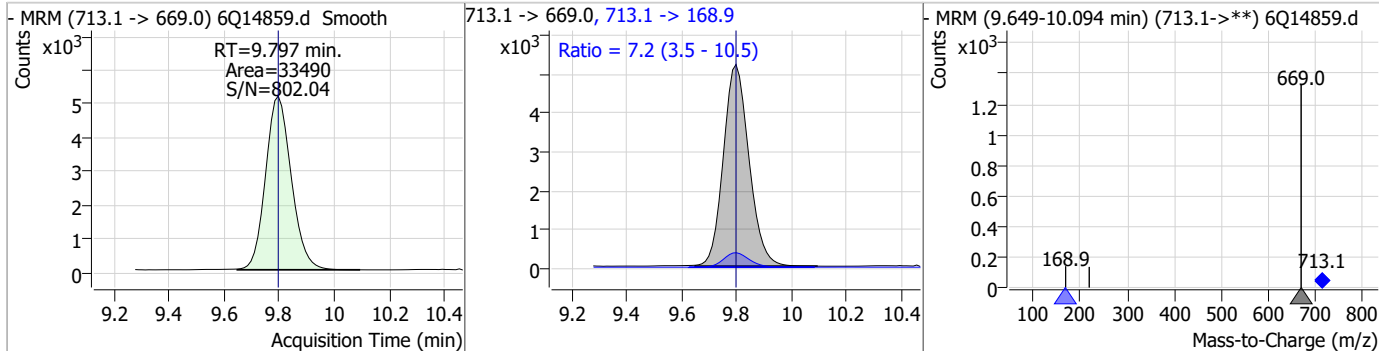
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.59	9.67	0.00	15284				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.24	9.80	0.00	11210				

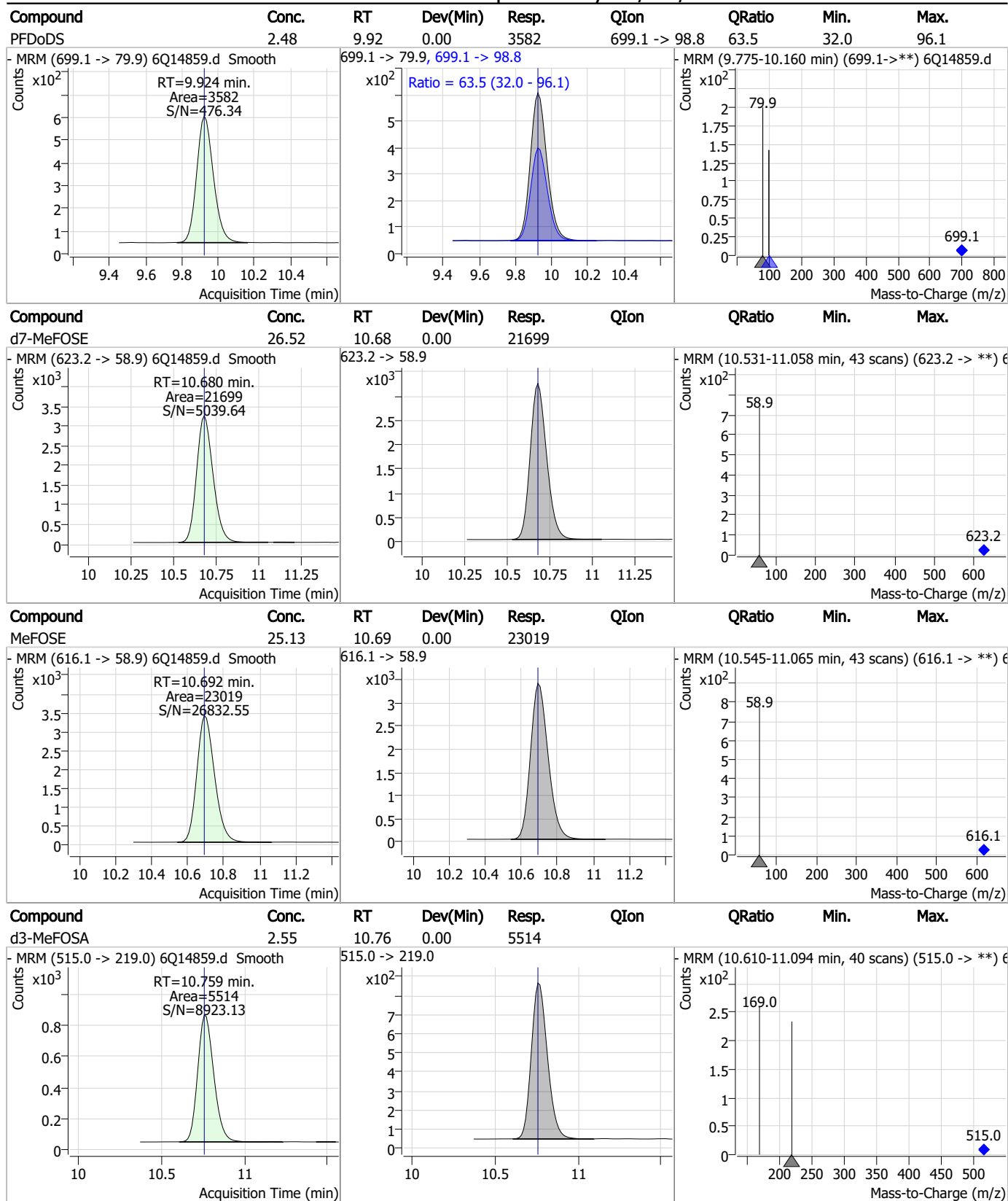


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.38	9.80	0.00	33490	713.1 -> 168.9	7.2	3.5	10.5



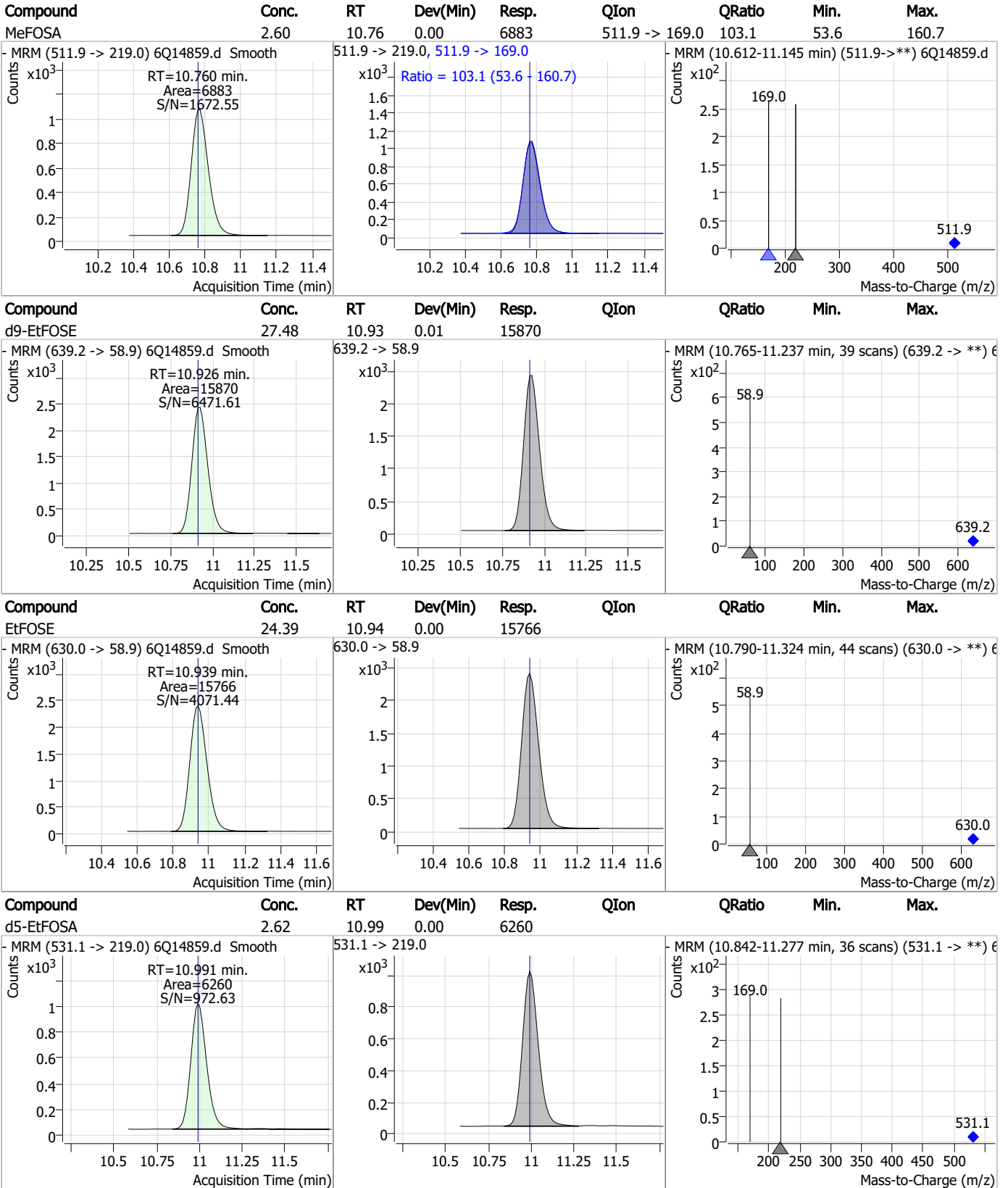
7.7.10
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Perfluorinated Compounds by LC/MS/MS



7.7.10
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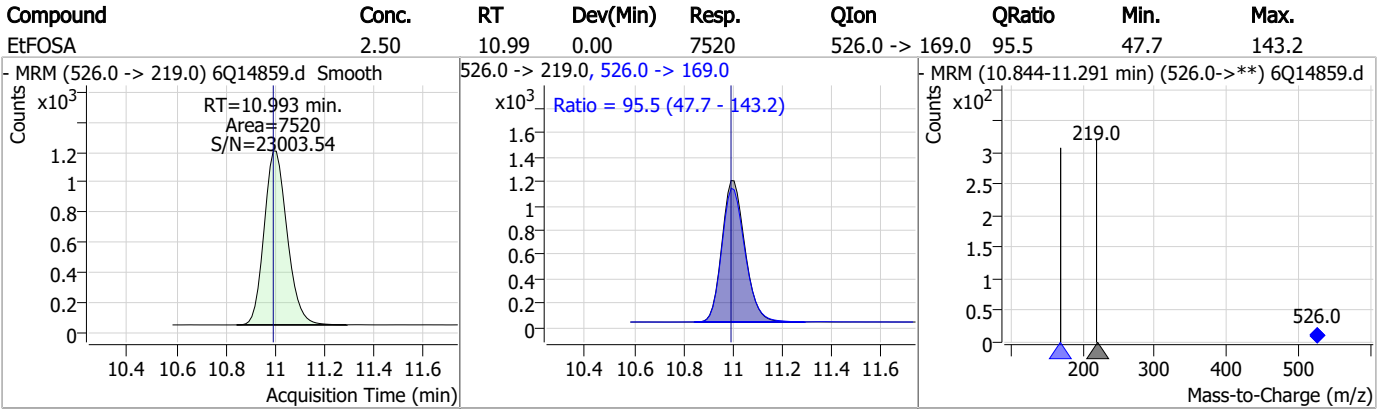
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q225-ICV225 Method: EPA DRAFT 1633
Lab FileID: 6Q14859.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/15/23 23:52 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.46	Split peak

7.7.10.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q14860.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/16/2023 12:06:01 AM
 Sample Name : icv225-20
 Vial : P1-B2
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q225.batch.bin
 Sample Information : OP95881,S6Q225,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.960	216.8 -> 171.9	71936	10.00 µg/L	0.012
M5-PFPeA	4.395	268.3 -> 223.0	33788	5.00 µg/L	0.000
M5-PFHxA	5.605	318.0 -> 273.0	29973	2.50 µg/L	0.000
M4-PFHpA	6.544	367.1 -> 322.0	31302	2.50 µg/L	0.000
M8-PFOA	7.187	421.1 -> 376.0	52084	2.50 µg/L	0.000
M9-PFNA	7.718	472.1 -> 427.0	15245	1.25 µg/L	0.000
M6-PFDA	8.197	519.1 -> 474.1	14103	1.25 µg/L	0.000
M7-PFUnDA	8.652	570.0 -> 525.1	14390	1.25 µg/L	0.000
M2-PFDoDA	9.069	615.1 -> 570.0	16980	1.25 µg/L	-0.012
M2-PFTeDA	9.784	715.2 -> 670.0	10384	1.25 µg/L	-0.012
M8-FOSA	9.657	506.1 -> 77.8	15002	2.50 µg/L	-0.012
M3-PFBS	5.548	302.1 -> 79.9	12248	2.50 µg/L	0.000
M3-PFHxS	7.315	402.1 -> 79.9	7537	2.50 µg/L	0.012
M8-PFOS	8.360	507.1 -> 79.9	7220	2.50 µg/L	0.000
M2-4:2FTS	5.280	329.1 -> 80.9	1663	5.00 µg/L	0.000
M2-6:2FTS	6.962	429.1 -> 80.9	2156	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	2170	5.00 µg/L	0.000
M3-MeFOSAA	8.243	573.2 -> 419.0	20754	5.00 µg/L	0.000
M3-HFPO-DA	5.983	286.9 -> 168.9	14472	10.00 µg/L	0.000
M5-EtFOSAA	8.451	589.2 -> 419.0	17391	5.00 µg/L	0.000
M7-MeFOSE	10.680	623.2 -> 58.9	20084	25.00 µg/L	0.000
M9-EtFOSE	10.914	639.2 -> 58.9	14482	25.00 µg/L	0.000
M5-EtFOSA	10.991	531.1 -> 219.0	5968	2.50 µg/L	0.000
M3-MeFOSA	10.759	515.0 -> 219.0	5278	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	8641	2.50 µg/L	0.000
13C3-PFBA	2.964	216.0 -> 172.0	31213	5.00 µg/L	0.012
18O2-PFHxS	7.314	403.0 -> 83.9	5674	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	63455	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	19584	1.25 µg/L	0.000
13C5-PFNA	7.718	468.0 -> 423.0	16963	1.25 µg/L	0.000
13C2-PFHxA	5.606	315.1 -> 270.0	29250	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.280	329.1 -> 80.9	1663	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C2-6:2FTS	6.962	429.1 -> 80.9	2156	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-8:2FTS	7.986	529.1 -> 80.9	2170	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C2-PFDoDA	9.069	615.1 -> 570.0	16980	1.11 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.6%		
13C2-PFTeDA	9.784	715.2 -> 670.0	10384	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C3-PFBS	5.548	302.1 -> 79.9	12248	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C3-PFHxS	7.315	402.1 -> 79.9	7537	2.35 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C4-PFBA	2.960	216.8 -> 171.9	71936	10.04 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.544	367.1 -> 322.0	31302	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C5-PFHxA	5.605	318.0 -> 273.0	29973	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C5-PFPeA	4.395	268.3 -> 223.0	33788	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C6-PFDA	8.197	519.1 -> 474.1	14103	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C7-PFUnDA	8.652	570.0 -> 525.1	14390	1.14 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.0%	
13C8-FOSA	9.657	506.1 -> 77.8	15002	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-PFOA	7.187	421.1 -> 376.0	52084	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C8-PFOS	8.360	507.1 -> 79.9	7220	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C9-PFNA	7.718	472.1 -> 427.0	15245	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.2%	
d3-MeFOSAA	8.243	573.2 -> 419.0	20754	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	5.983	286.9 -> 168.9	14472	10.95 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.5%	
d3-MeFOSA	10.759	515.0 -> 219.0	5278	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
d5-EtFOSAA	8.451	589.2 -> 419.0	17391	4.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
d7-MeFOSE	10.680	623.2 -> 58.9	20084	24.16 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d9-EtFOSE	10.914	639.2 -> 58.9	14482	24.68 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d5-EtFOSA	10.991	531.1 -> 219.0	5968	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
Target Compounds					QValue
4:2FTS	5.281	327.1 -> 307.0	76279	19.83 µg/L	98
		327.1 -> 80.9	18529		
6:2FTS	6.962	427.1 -> 407.0	64704	20.20 µg/L	96
		427.1 -> 80.9	15096		
8:2FTS	7.986	527.1 -> 507.0	33425	20.95 µg/L	100
		527.1 -> 80.8	9002		
EtFOSAA	8.452	584.2 -> 419.1	64505	20.42 µg/L	m 97
		584.2 -> 526.0	36587		
FOSA	9.660	498.1 -> 77.9	127294	21.23 µg/L	99
		498.1 -> 478.0	4530		
MeFOSAA	8.244	570.1 -> 419.0	87344	20.11 µg/L	m 98
		570.1 -> 483.0	15908		
PFBA	2.956	212.8 -> 168.9	38454	19.59 µg/L	100
PFBS	5.549	298.7 -> 79.9	112470	20.85 µg/L	96
		298.7 -> 98.8	48349		
PFDA	8.198	512.9 -> 469.0	372296	21.26 µg/L	97
		512.9 -> 219.0	49663		
PFDoDA	9.070	613.1 -> 569.0	286035	19.55 µg/L	97
		613.1 -> 319.0	33771		
PFDS	9.233	599.0 -> 79.9	47785	20.23 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.544	599.0 -> 98.8	25453	19.01	µg/L	97
		363.1 -> 319.0	383744			
PFHpS	7.868	363.1 -> 169.0	57753	20.82	µg/L	95
		449.0 -> 79.9	67004			
PFHxA	5.607	449.0 -> 98.9	36991	21.45	µg/L	100
		313.0 -> 269.0	270899			
PFHxS	7.303	313.0 -> 118.9	10892	21.33	µg/L	99
		398.7 -> 79.9	80254			
PFNA	7.719	398.7 -> 98.9	45782	22.41	µg/L	98
		463.0 -> 419.0	242266			
PFNS	8.826	463.0 -> 219.0	50230	20.75	µg/L	96
		548.8 -> 79.9	70851			
PFOA	7.189	548.8 -> 98.9	39452	21.00	µg/L	98
		413.0 -> 369.0	517751			
PFOS	8.361	413.0 -> 169.0	70887	17.70	µg/L	97
		498.9 -> 79.9	59853			
PFPeA	4.397	498.9 -> 98.8	36724	22.08	µg/L	100
		263.0 -> 219.0	177618			
PFPeS	6.609	349.1 -> 79.9	97096	21.35	µg/L	100
		349.1 -> 98.9	51547			
PFTeDA	9.785	713.1 -> 669.0	286267	21.95	µg/L	98
		713.1 -> 168.9	17960			
PFTrDA	9.453	663.0 -> 619.0	250602	19.33	µg/L	99
		663.0 -> 168.9	20816			
PFUnDA	8.652	563.1 -> 519.0	272262	19.99	µg/L	94
		563.1 -> 269.1	43540			
11CI-PF3OUdS	9.505	630.9 -> 450.9	183038	20.44	µg/L	97
		632.9 -> 452.9	55327			
9CI-PF3ONS	8.691	530.8 -> 351.0	331100	20.40	µg/L	100
		532.8 -> 353.0	102732			
ADONA	6.794	376.9 -> 250.9	636966	20.49	µg/L	100
		376.9 -> 84.8	141589			
HFPO-DA	5.984	284.9 -> 168.9	27719	18.20	µg/L	99
		284.9 -> 184.9	3398			
3:3FTCA	3.863	241.0 -> 177.0	8188	20.35	µg/L	100
		241.0 -> 117.0	1214			
5:3FTCA	6.271	341.0 -> 237.1	55781	21.88	µg/L	99
		341.0 -> 217.0	47199			
7:3FTCA	7.684	441.0 -> 316.9	26140	20.40	µg/L	95
		441.0 -> 336.9	49669			
EtFOSA	10.993	526.0 -> 219.0	57038	19.89	µg/L	97
		526.0 -> 169.0	56071			
EtFOSE	10.939	630.0 -> 58.9	57709	97.83	µg/L	100
		511.9 -> 219.0	51133			
MeFOSA	10.760	511.9 -> 169.0	53612	20.14	µg/L	98
		616.1 -> 58.9	81834			
MeFOSE	10.692	699.1 -> 79.9	26865	96.51	µg/L	100
		699.1 -> 98.8	17466			
PFDoDS	9.924	295.0 -> 201.0	16507	19.90	µg/L	99
		295.0 -> 84.9	7901			
NFDHA	5.488	279.0 -> 85.1	54877	20.30	µg/L	95
		229.0 -> 84.9	47974			
PFMBA	4.819	314.8 -> 134.9	326131	20.94	µg/L	100
		314.8 -> 82.9	8057			
PFMPA	3.526			20.81	µg/L	100
PFEESA	6.089			18.25	µg/L	100

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



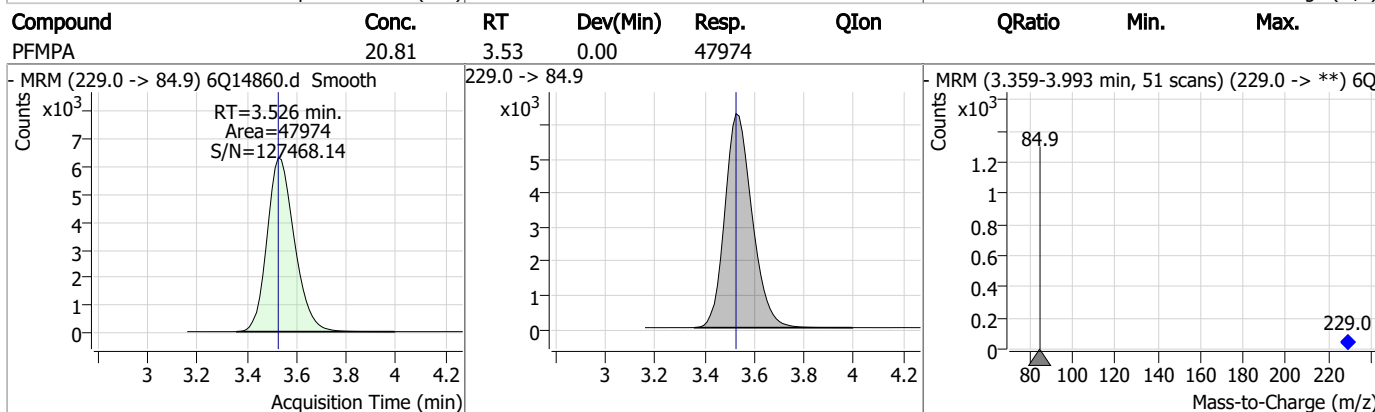
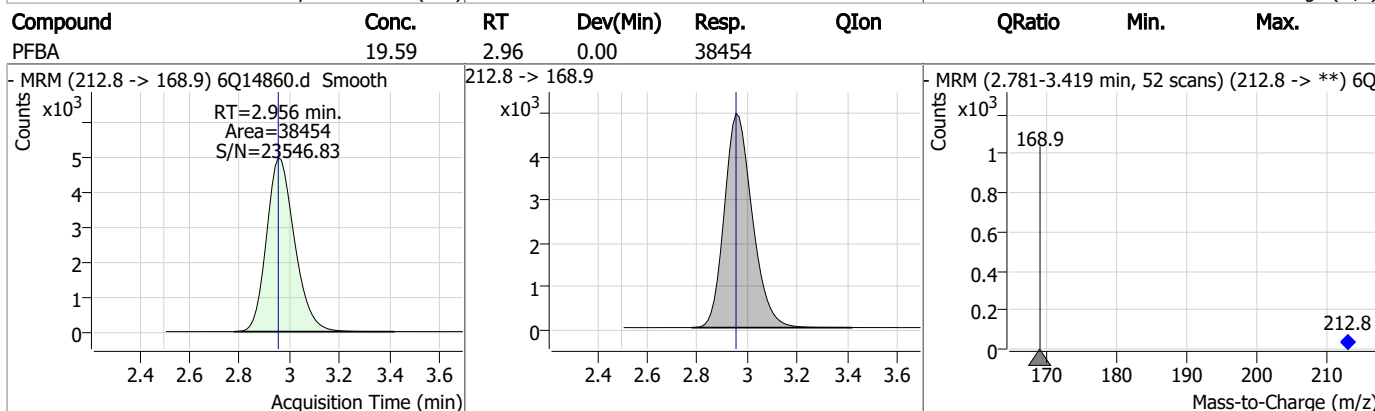
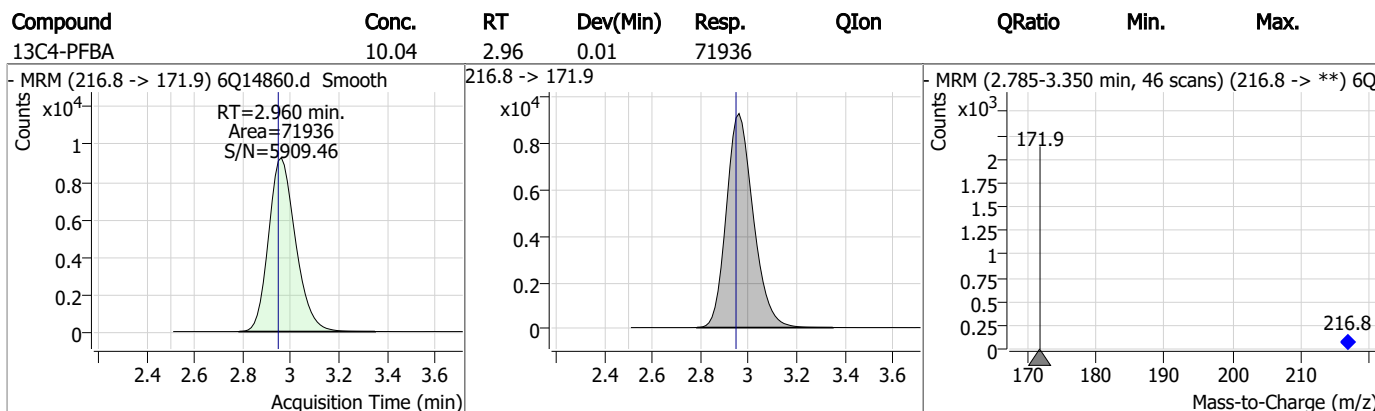
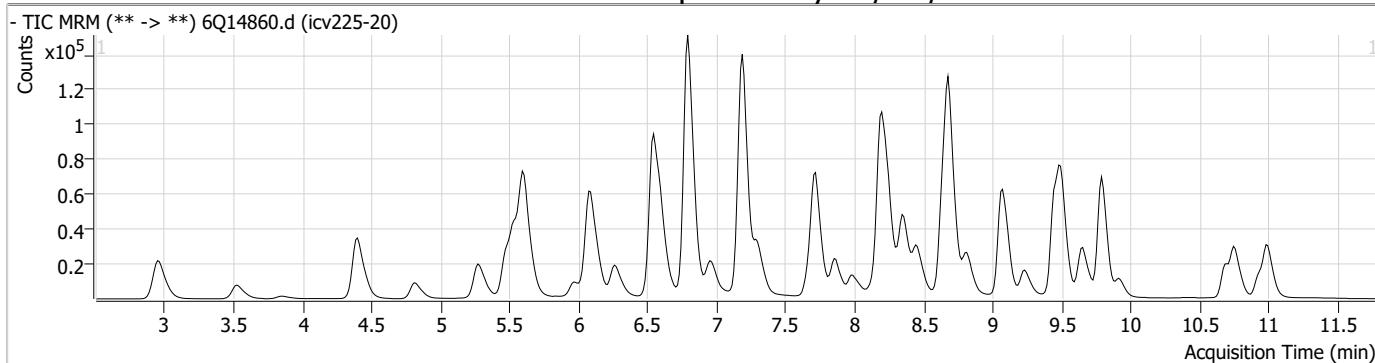
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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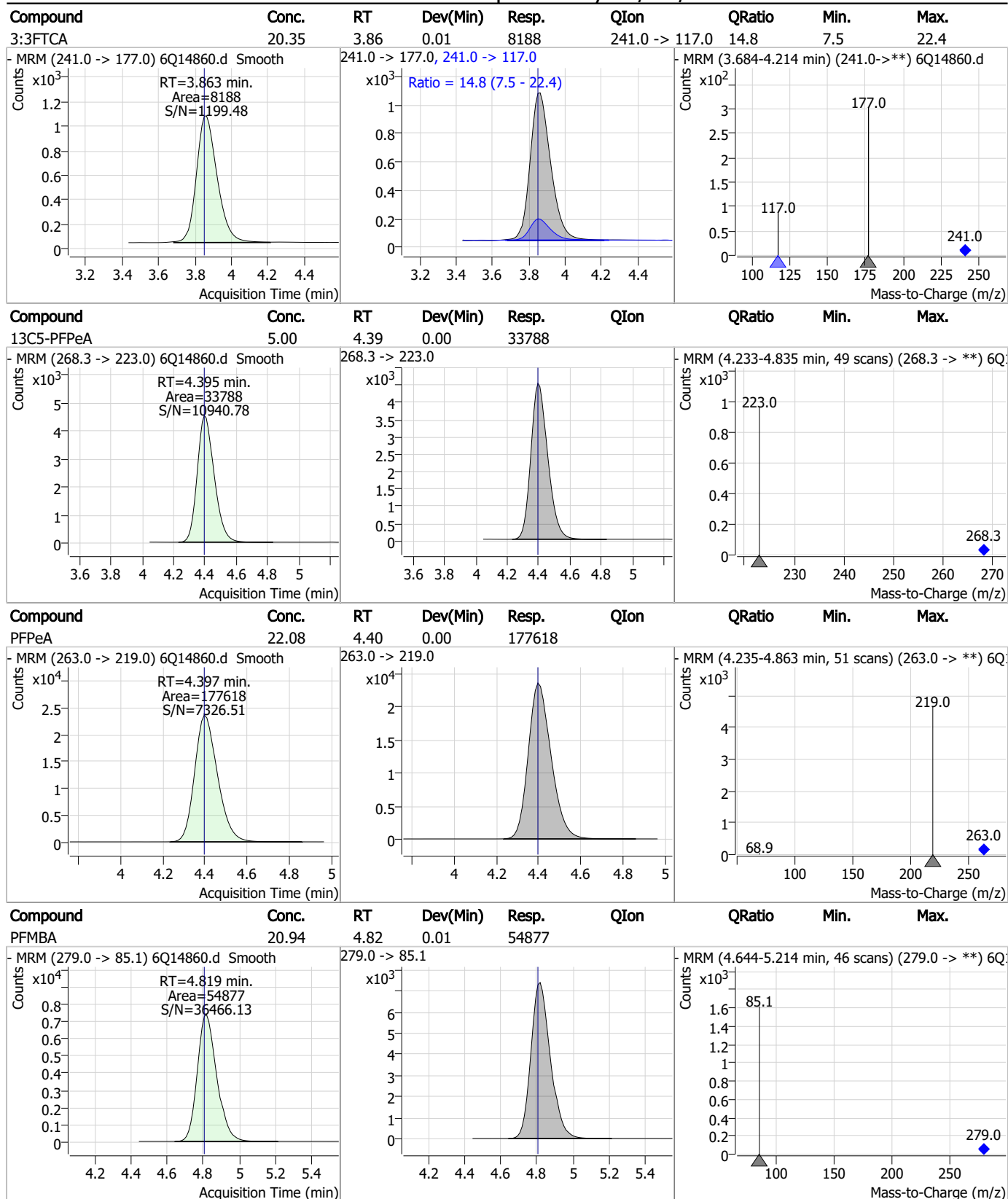
7:7.11

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Perfluorinated Compounds by LC/MS/MS



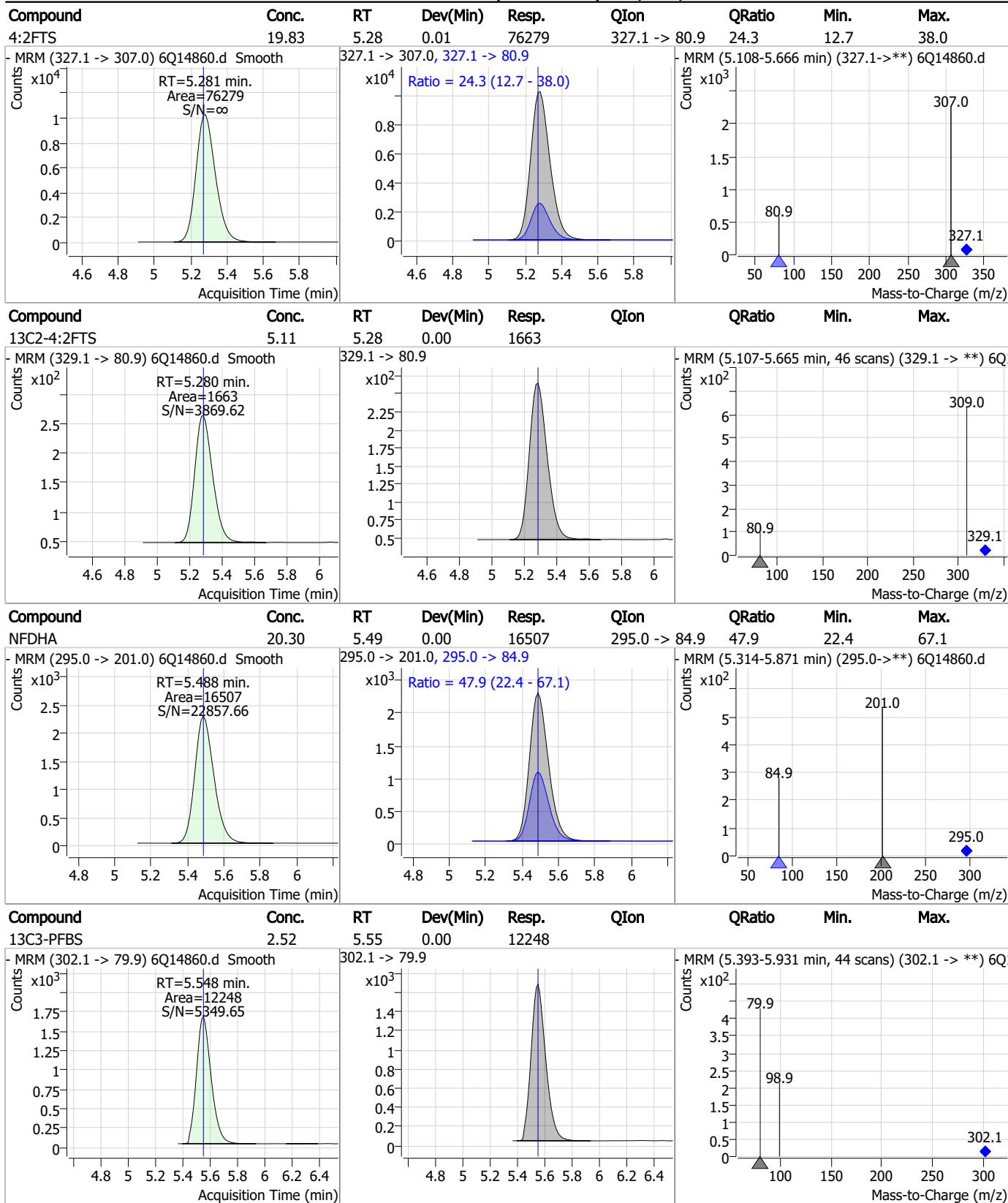
Perfluorinated Compounds by LC/MS/MS



7.7.11

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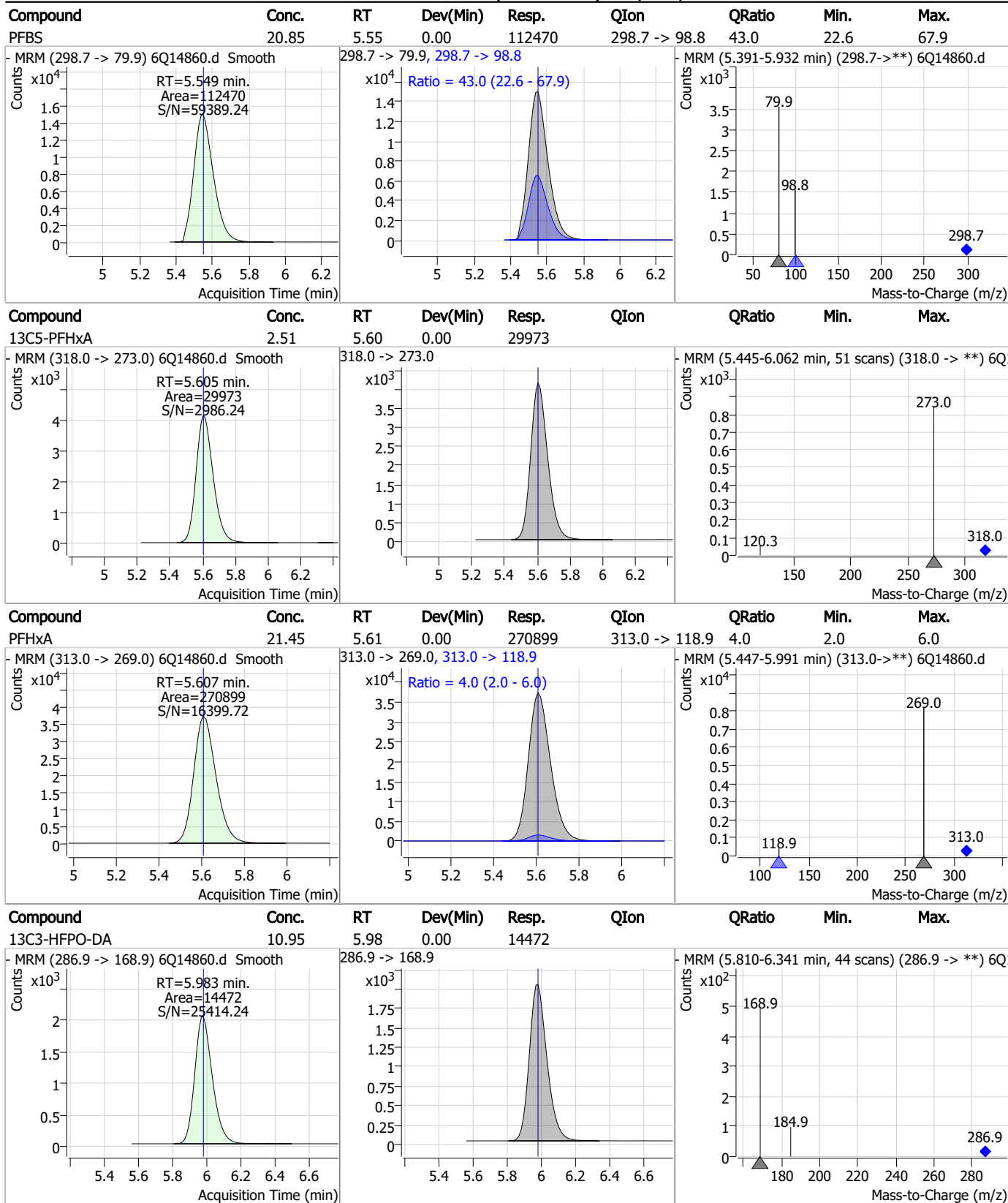
Perfluorinated Compounds by LC/MS/MS



7.7.11

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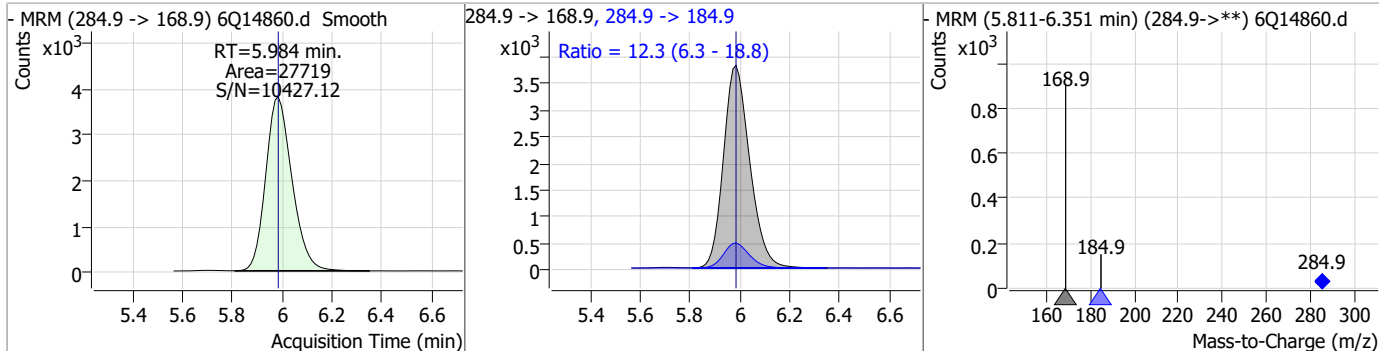
Perfluorinated Compounds by LC/MS/MS



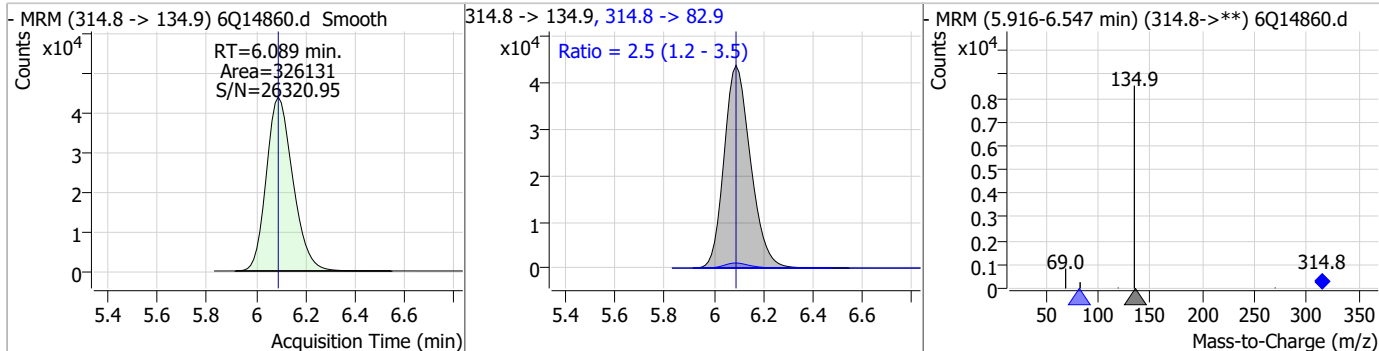
7.7.11
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Perfluorinated Compounds by LC/MS/MS

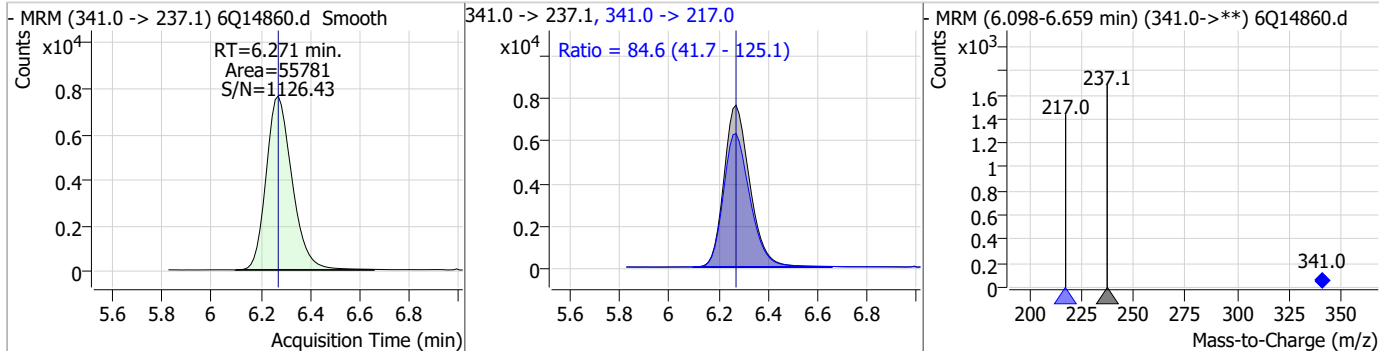
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	18.20	5.98	0.00	27719	284.9 -> 184.9	12.3	6.3	18.8



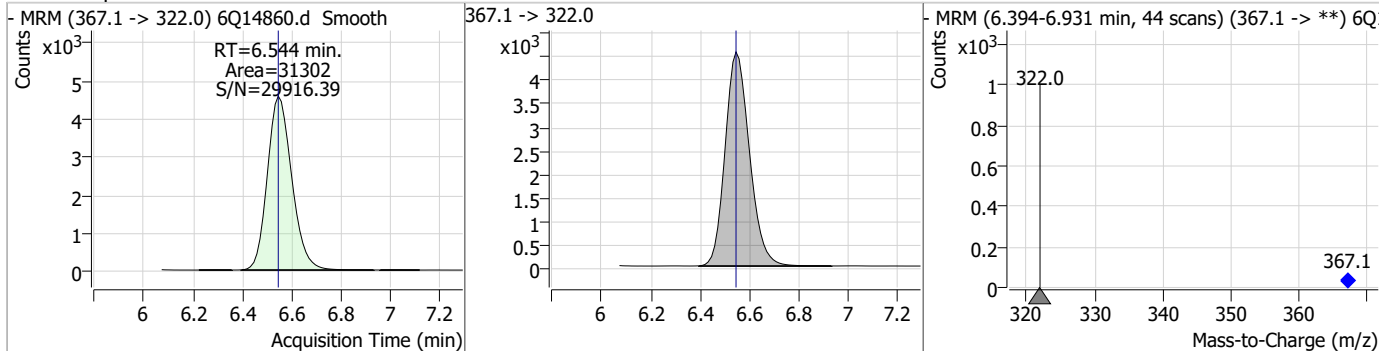
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	18.25	6.09	0.00	326131	314.8 -> 82.9	2.5	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	21.88	6.27	0.00	55781	341.0 -> 217.0	84.6	41.7	125.1

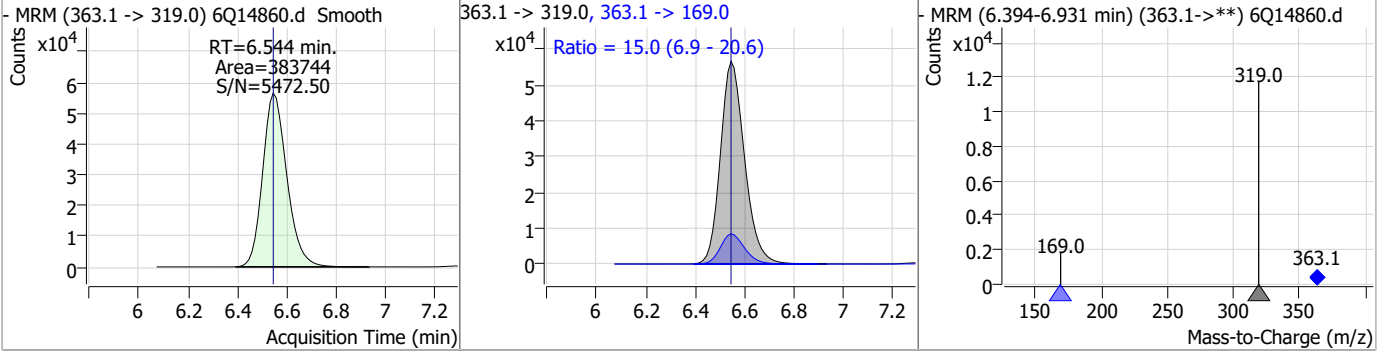


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.62	6.54	0.00	31302	367.1 -> 322.0			

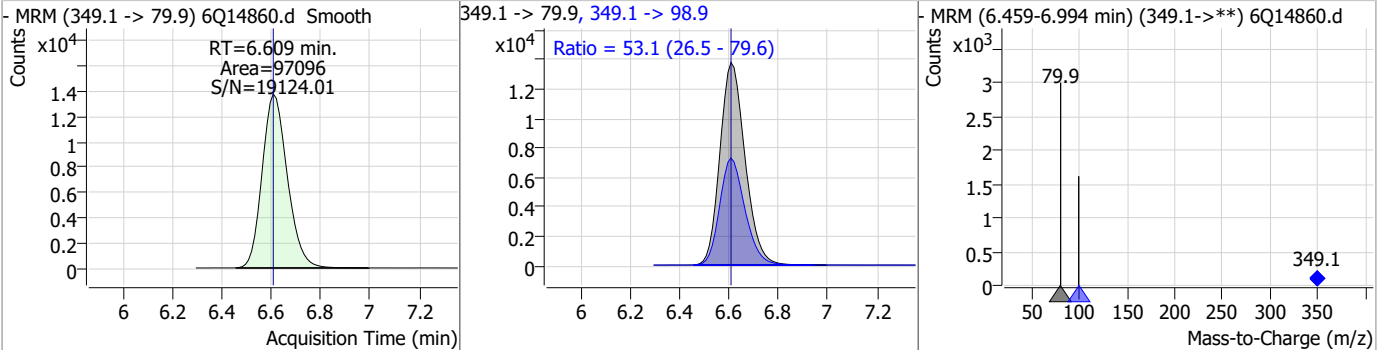


Perfluorinated Compounds by LC/MS/MS

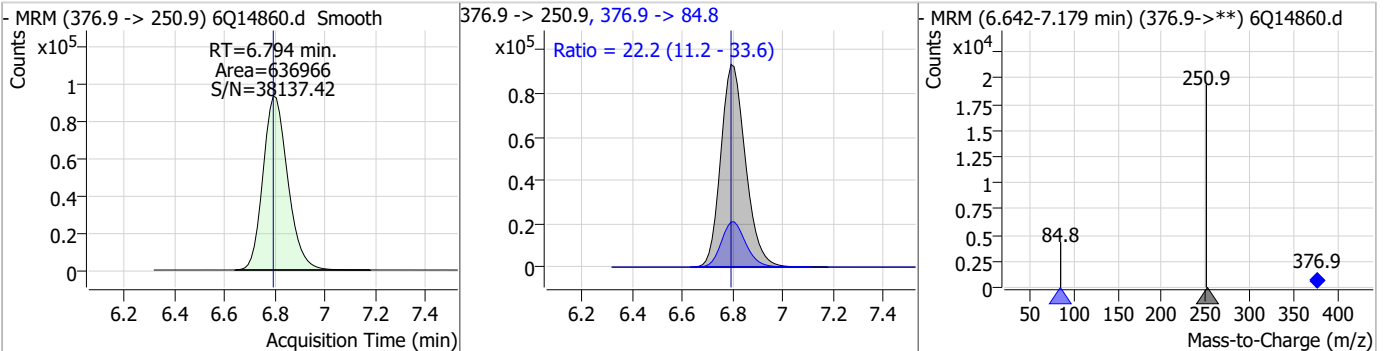
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.01	6.54	0.00	383744	363.1 -> 169.0	15.0	6.9	20.6



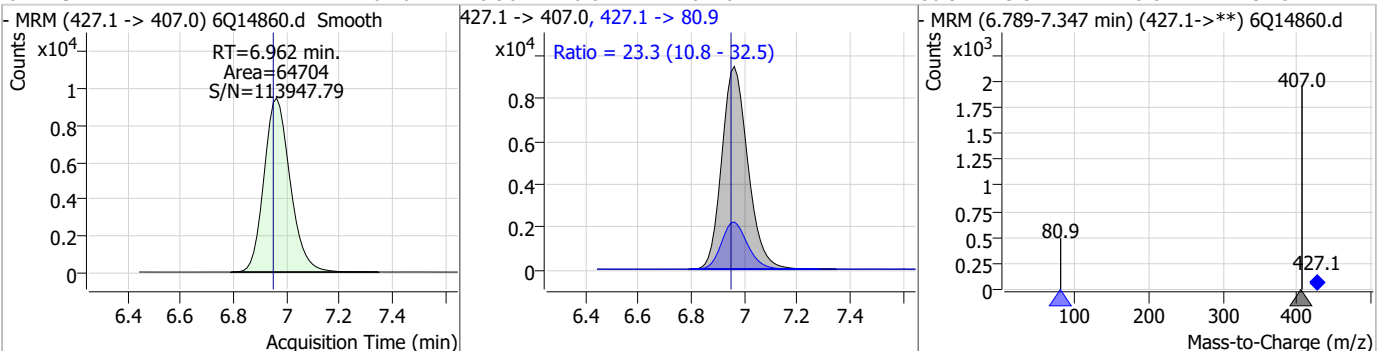
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	21.35	6.61	0.00	97096	349.1 -> 98.9	53.1	26.5	79.6



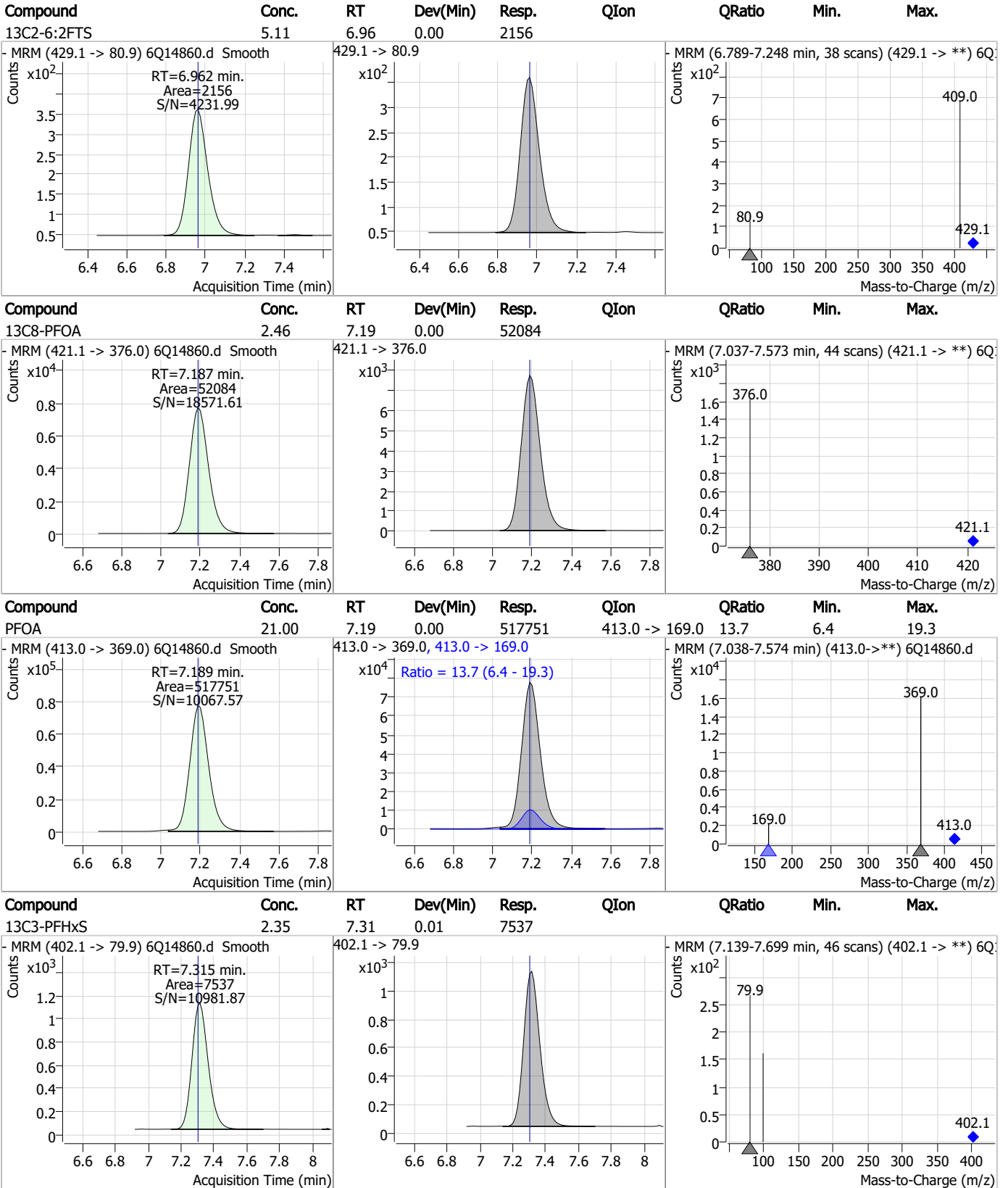
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	20.49	6.79	0.00	636966	376.9 -> 84.8	22.2	11.2	33.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.20	6.96	0.01	64704	427.1 -> 80.9	23.3	10.8	32.5



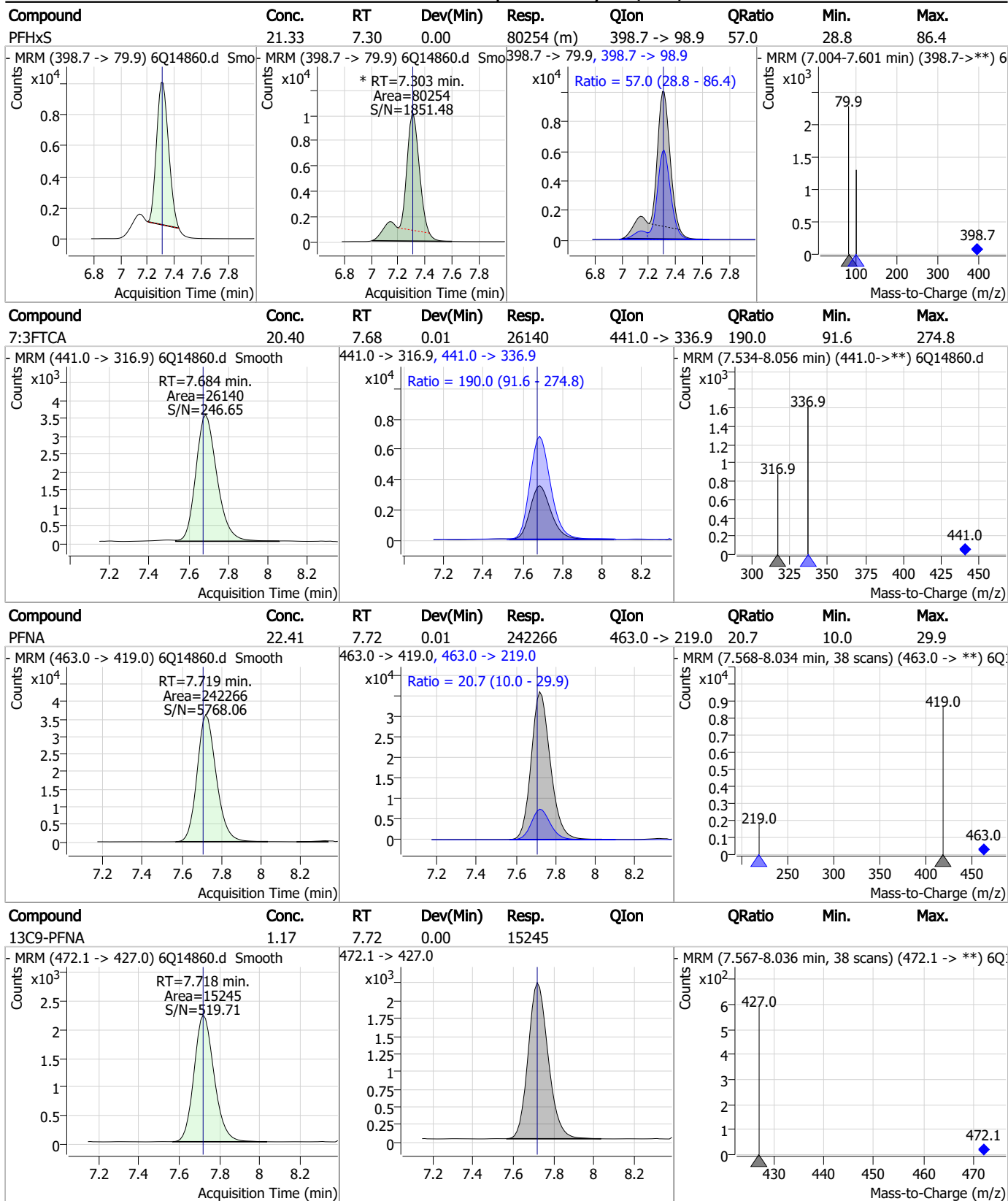
Perfluorinated Compounds by LC/MS/MS



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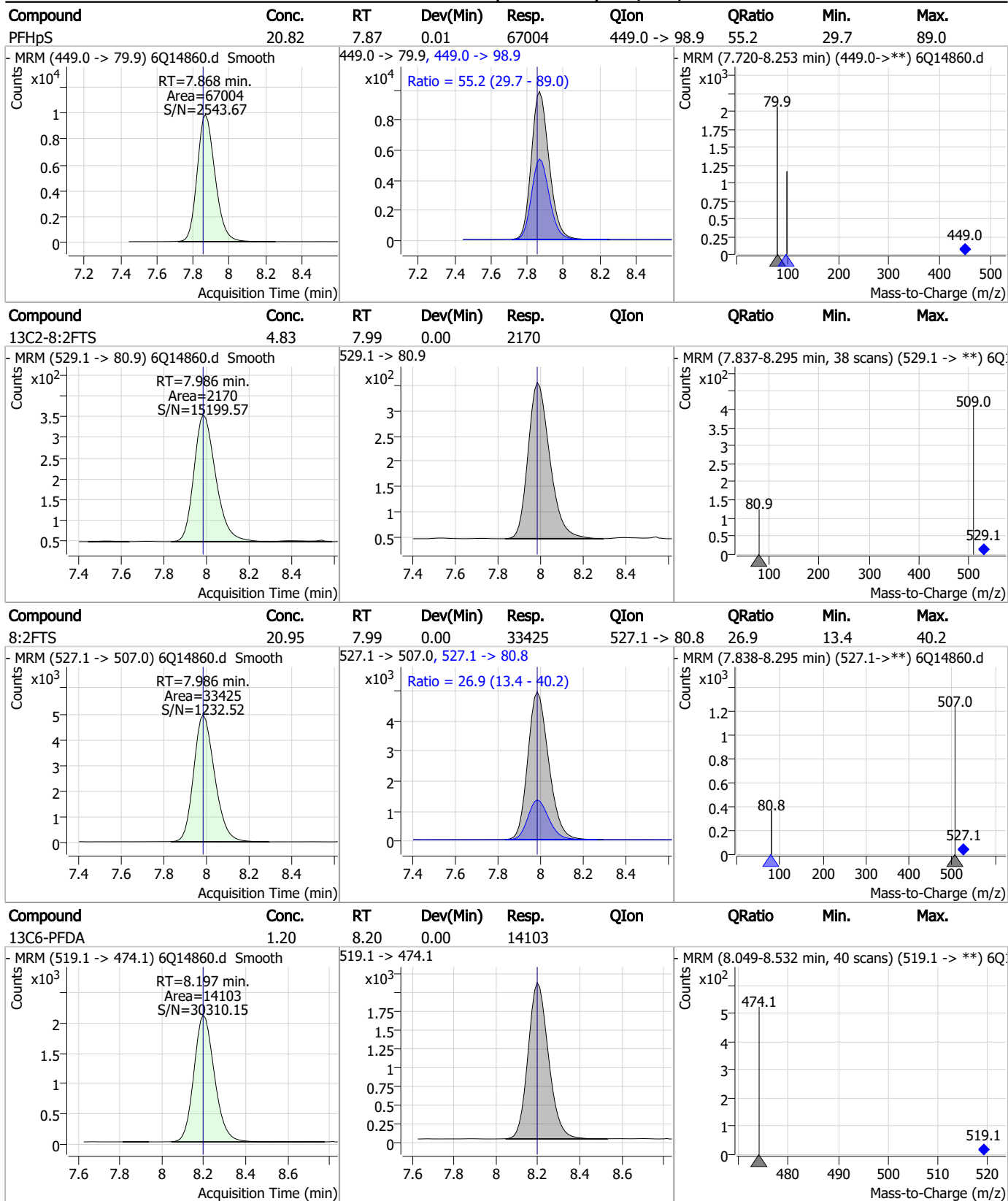


Perfluorinated Compounds by LC/MS/MS



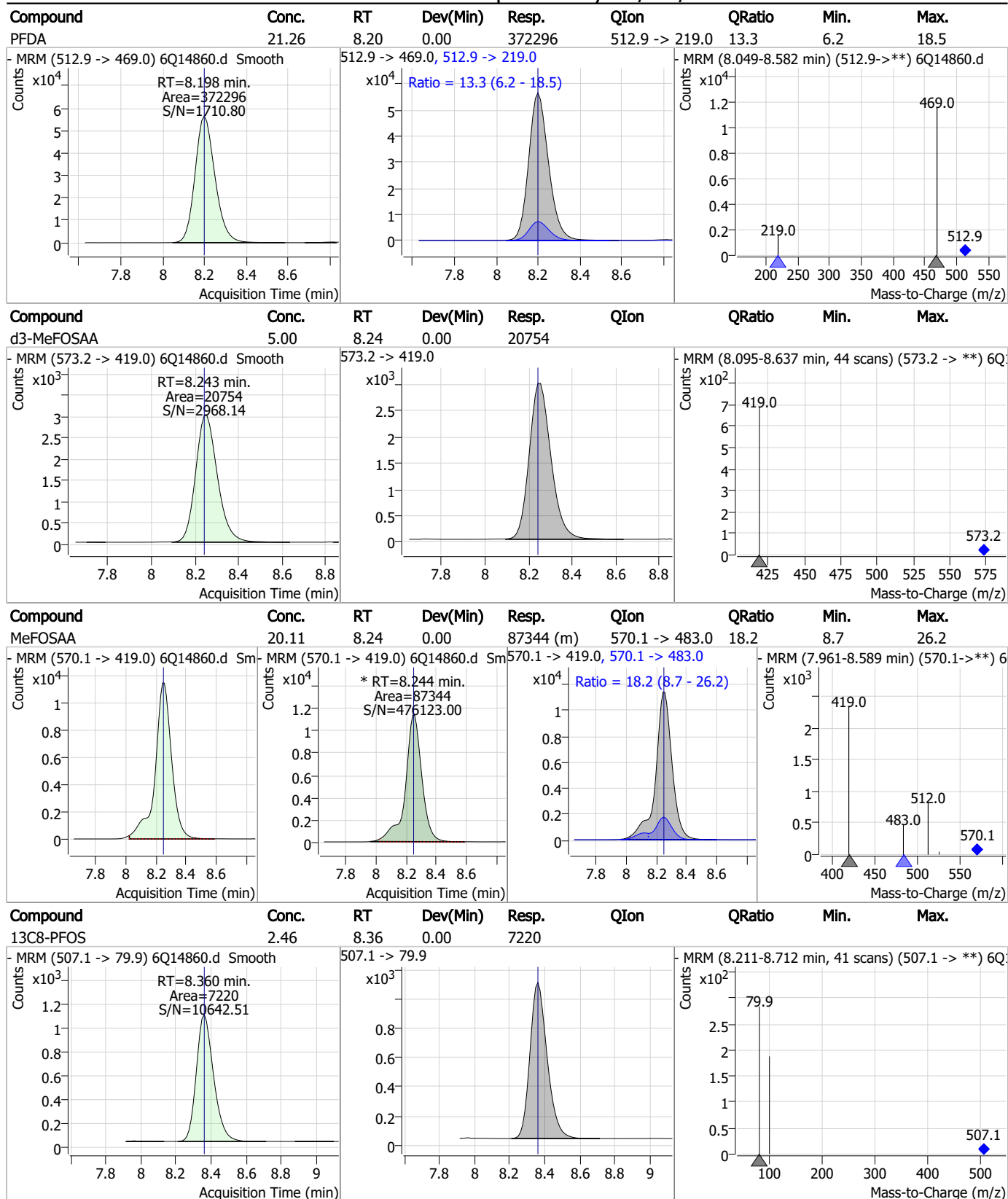
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Perfluorinated Compounds by LC/MS/MS



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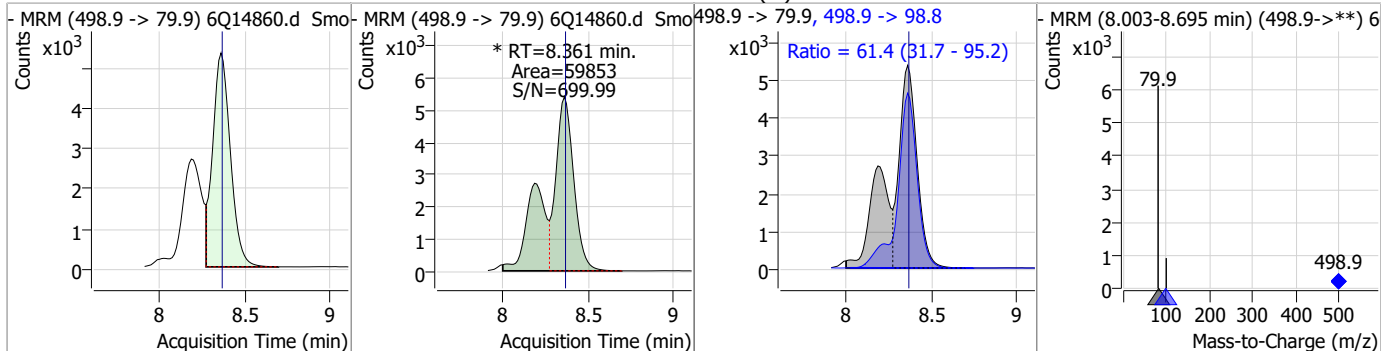
Perfluorinated Compounds by LC/MS/MS



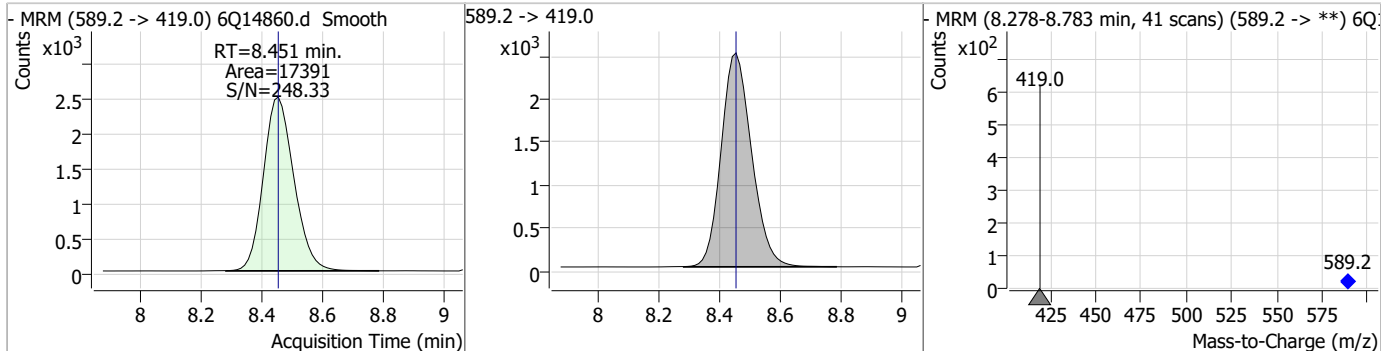
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Perfluorinated Compounds by LC/MS/MS

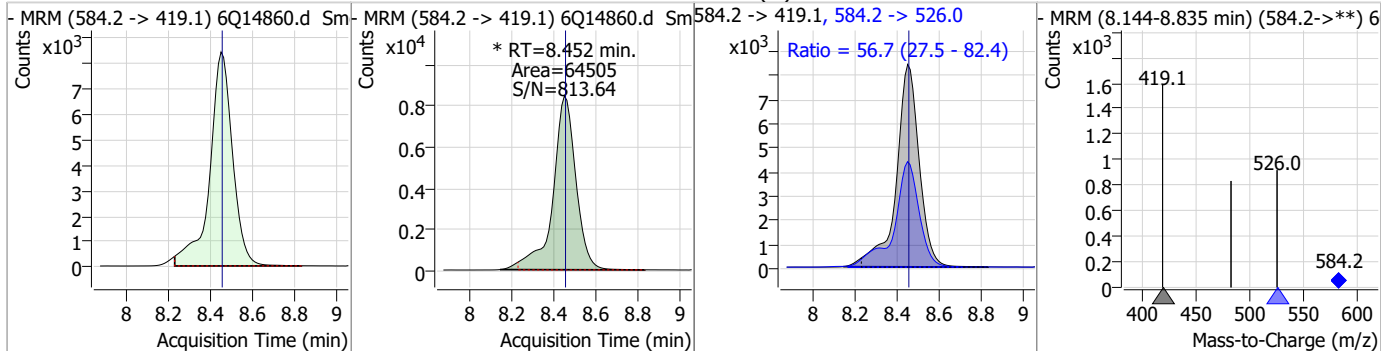
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.70	8.36	0.00	59853 (m)	498.9 -> 98.8	61.4	31.7	95.2



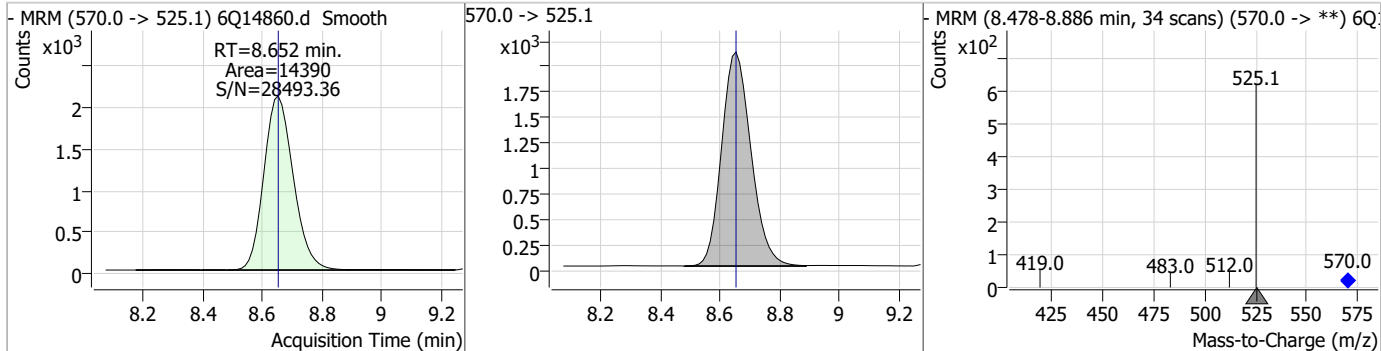
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.77	8.45	0.00	17391				



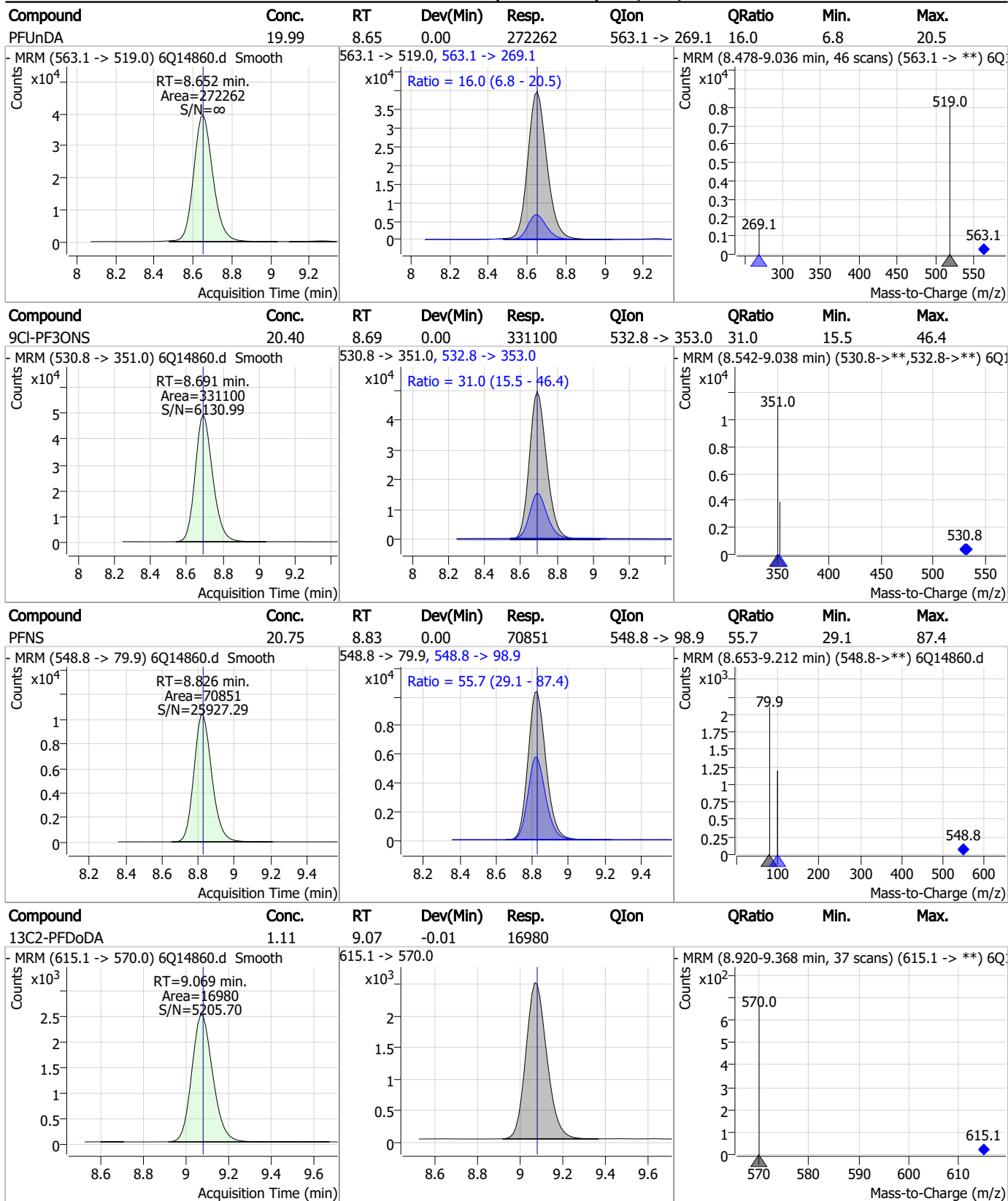
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.42	8.45	0.00	64505 (m)	584.2 -> 526.0	56.7	27.5	82.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.14	8.65	0.00	14390				

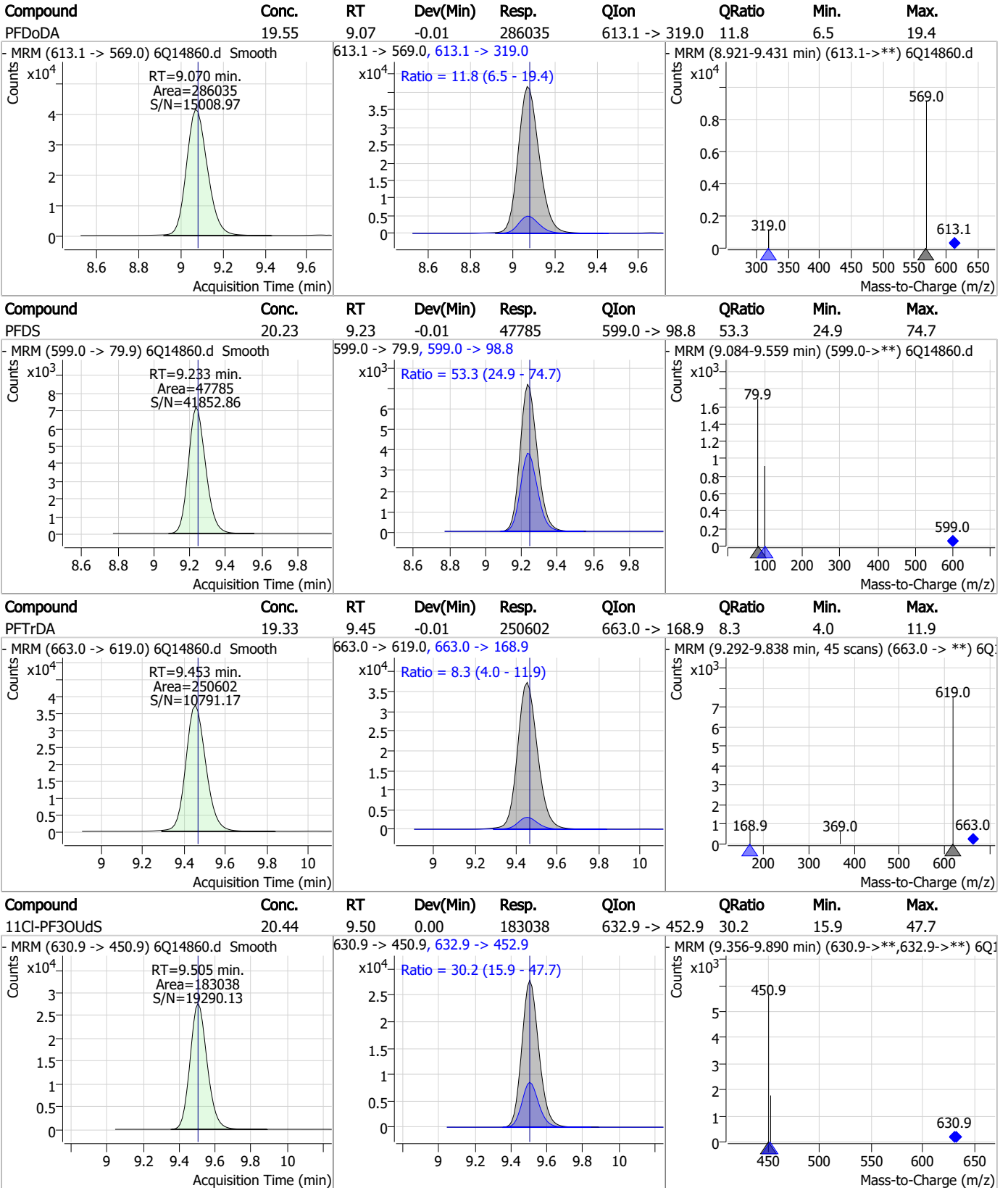


Perfluorinated Compounds by LC/MS/MS



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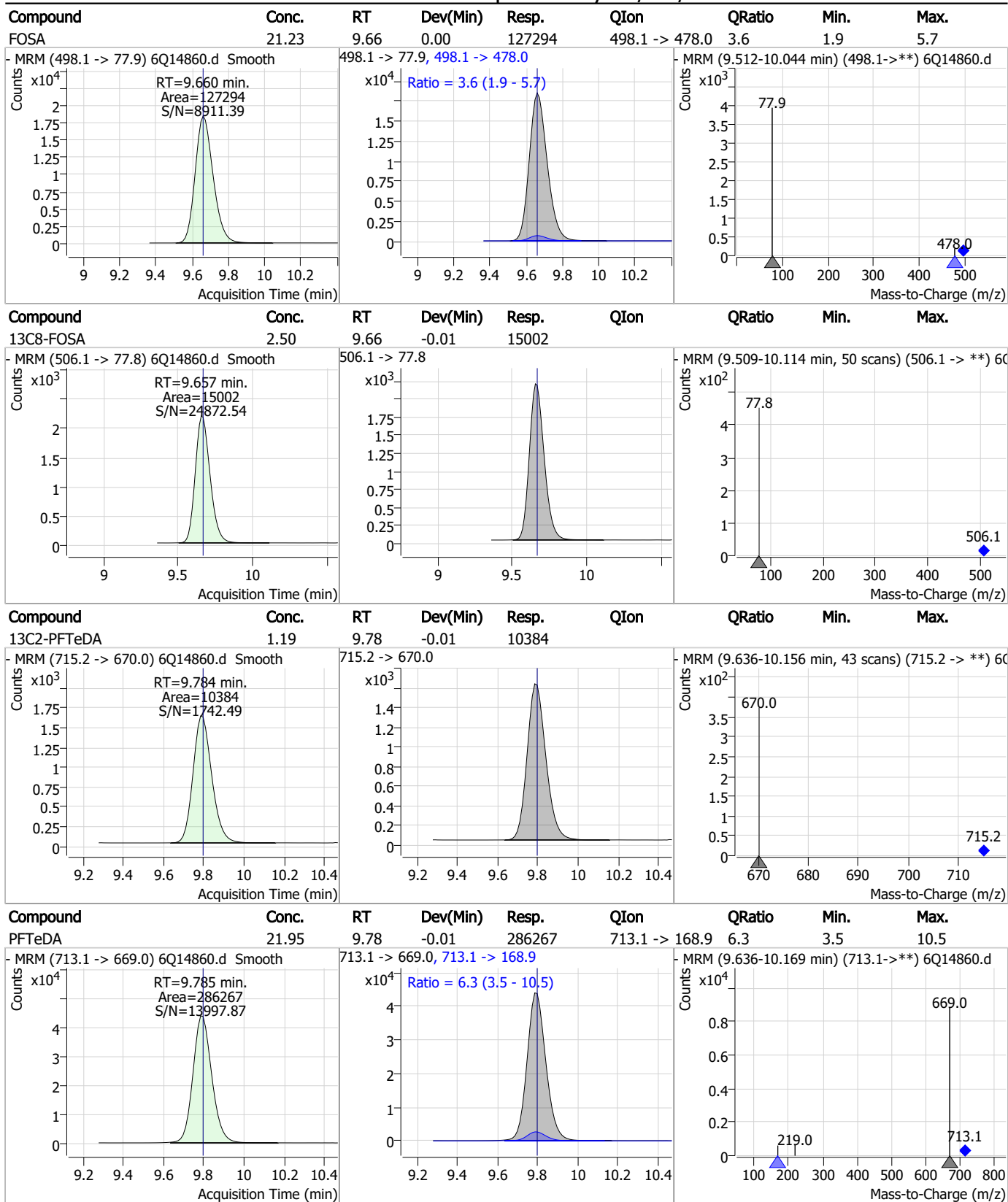
Perfluorinated Compounds by LC/MS/MS



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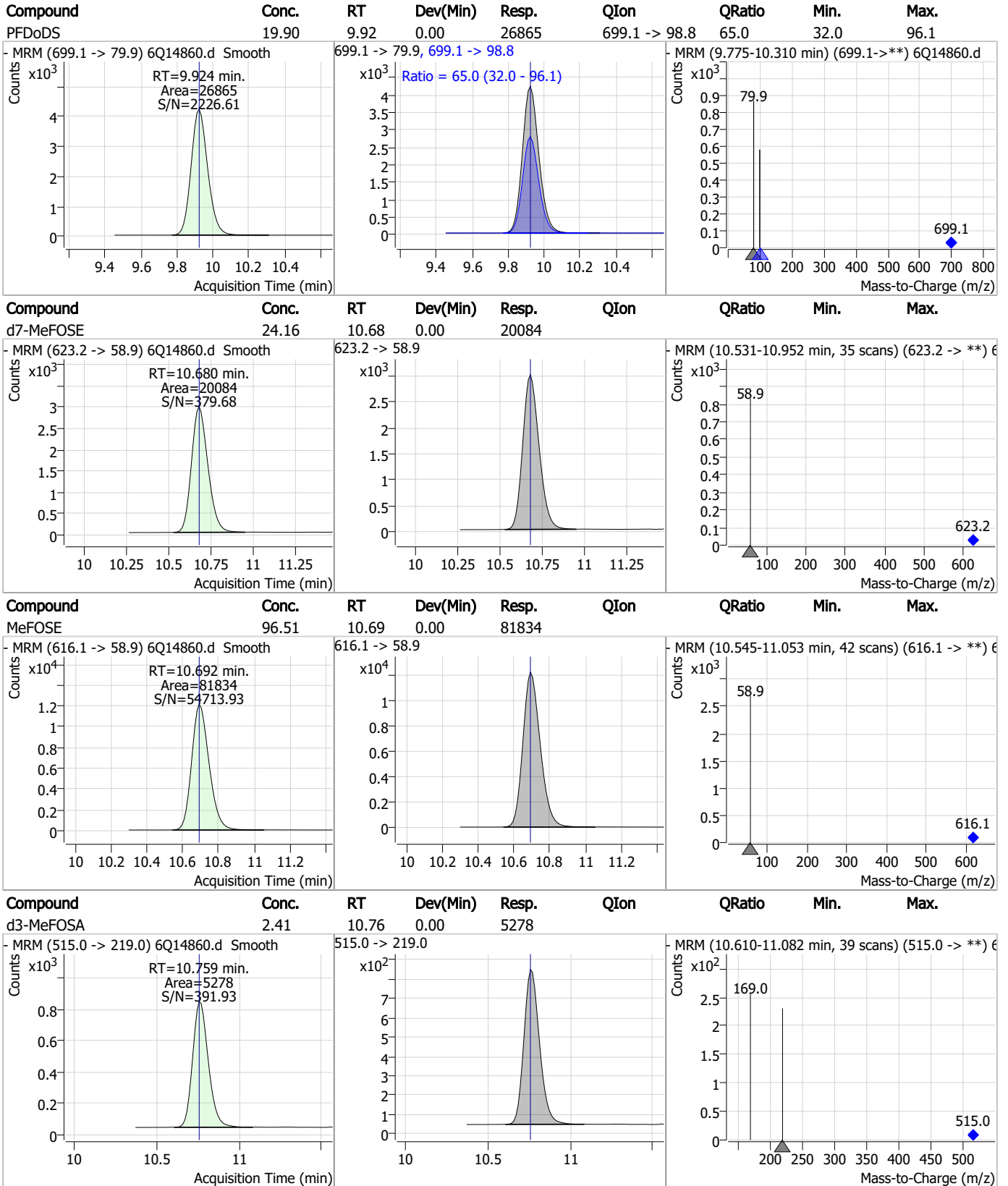


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

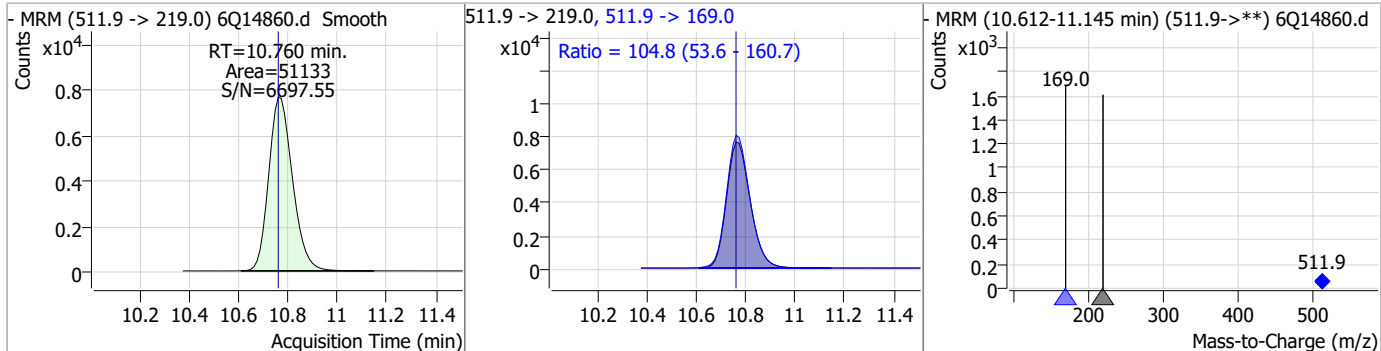


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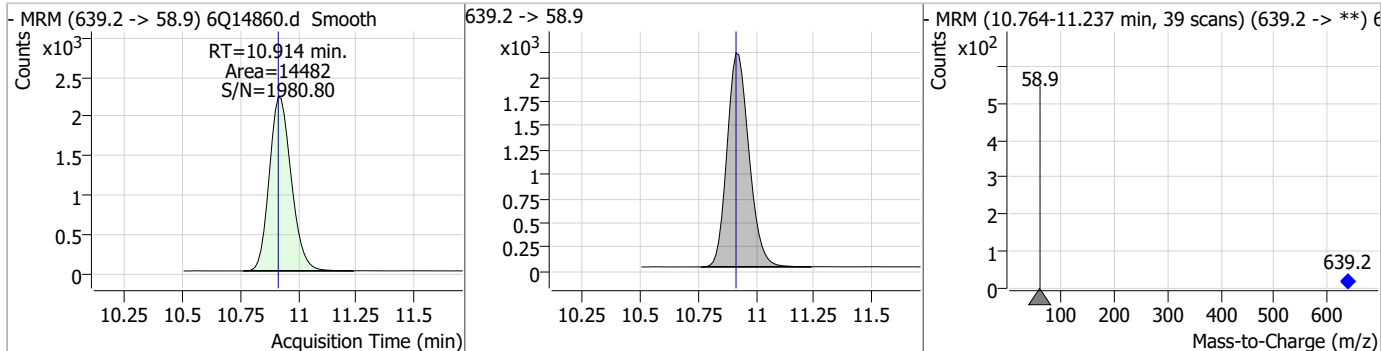
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Perfluorinated Compounds by LC/MS/MS

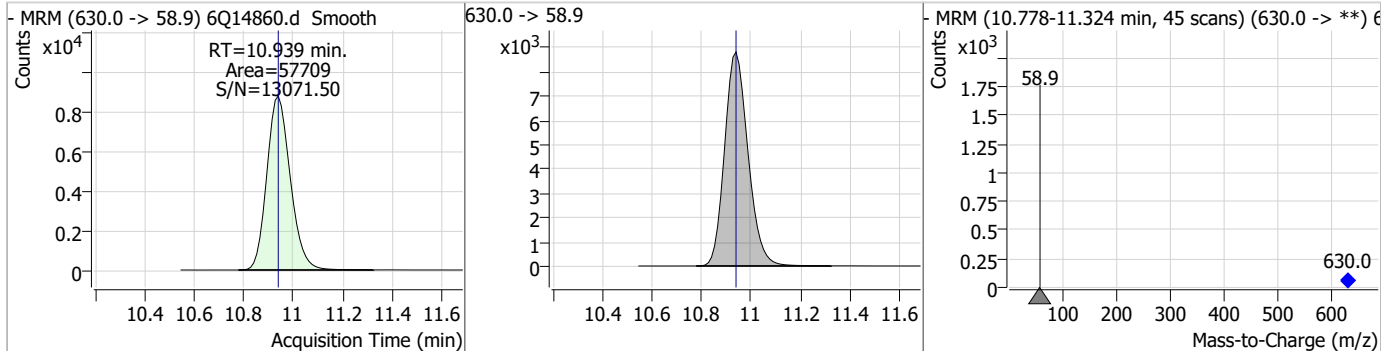
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	20.14	10.76	0.00	51133	511.9 -> 169.0	104.8	53.6	160.7



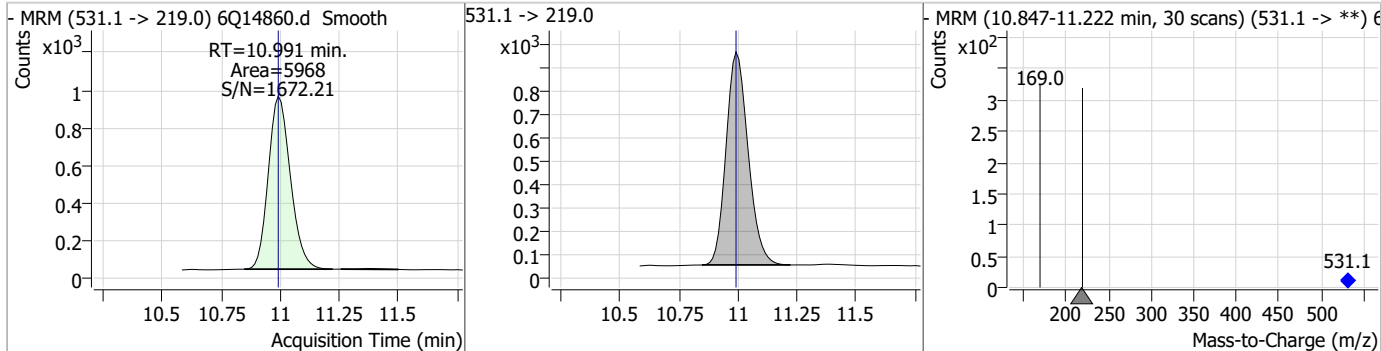
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.68	10.91	0.00	14482				



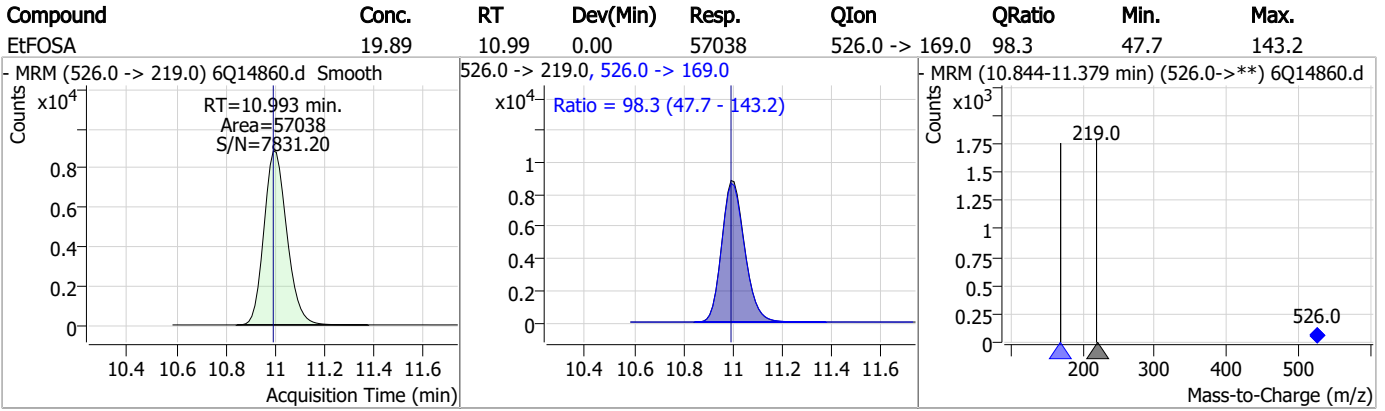
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	97.83	10.94	0.00	57709				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.46	10.99	0.00	5968				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q225-ICV225 Method: EPA DRAFT 1633
Lab FileID: 6Q14860.D Analyst approved: 03/16/23 10:03 Natasha Gumtie
Injection Time: 03/16/23 00:06 Supervisor approved: 03/16/23 16:23 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15104.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 3:27:33 PM
 Sample Name : cc225-4
 Vial : P1-A5
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.960	216.8 -> 171.9	80257	10.00 µg/L	0.012
M5-PFPeA	4.382	268.3 -> 223.0	38782	5.00 µg/L	-0.012
M5-PFHxA	5.593	318.0 -> 273.0	33872	2.50 µg/L	-0.012
M4-PFHpA	6.519	367.1 -> 322.0	35237	2.50 µg/L	-0.025
M8-PFOA	7.162	421.1 -> 376.0	58784	2.50 µg/L	-0.025
M9-PFNA	7.693	472.1 -> 427.0	19162	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	15185	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	16872	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	21605	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	12370	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	16966	2.50 µg/L	-0.025
M3-PFBS	5.523	302.1 -> 79.9	13763	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	8484	2.50 µg/L	-0.013
M8-PFOS	8.335	507.1 -> 79.9	7747	2.50 µg/L	-0.025
M2-4:2FTS	5.256	329.1 -> 80.9	2043	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2587	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2666	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	22491	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	14845	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	20114	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	23875	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	16769	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	6553	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	6021	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	10081	2.50 µg/L	-0.025
13C3-PFBA	2.952	216.0 -> 172.0	34732	5.00 µg/L	0.000
18O2-PFHxS	7.288	403.0 -> 83.9	6317	2.50 µg/L	-0.026
13C4-PFOA	7.163	417.1 -> 372.0	74610	2.50 µg/L	-0.025
13C2-PFDA	8.173	515.1 -> 470.1	21246	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	19153	1.25 µg/L	-0.025
13C2-PFHxA	5.581	315.1 -> 270.0	34155	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	2043	5.64 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.8%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2587	5.51 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.2%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2666	5.33 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C2-PFDoDA	9.057	615.1 -> 570.0	21605	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-PFTeDA	9.772	715.2 -> 670.0	12370	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFBS	5.523	302.1 -> 79.9	13763	2.54 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C3-PFHxS	7.289	402.1 -> 79.9	8484	2.38 µg/L	-0.013

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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 = 95.2%		
13C4-PFBA	2.960	216.8 -> 171.9	80257	10.07 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C4-PFHpA	6.519	367.1 -> 322.0	35237	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C5-PFHxA	5.593	318.0 -> 273.0	33872	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C5-PFPeA	4.382	268.3 -> 223.0	38782	4.91 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C6-PFDA	8.173	519.1 -> 474.1	15185	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.2%		
13C7-PFUnDA	8.627	570.0 -> 525.1	16872	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C8-FOSA	9.645	506.1 -> 77.8	16966	2.43 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C8-PFOA	7.162	421.1 -> 376.0	58784	2.36 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.4%		
13C8-PFOS	8.335	507.1 -> 79.9	7747	2.26 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.6%		
13C9-PFNA	7.693	472.1 -> 427.0	19162	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%		
d3-MeFOSAA	8.231	573.2 -> 419.0	22491	4.65 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	14845	9.62 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
d3-MeFOSA	10.746	515.0 -> 219.0	6021	2.35 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%		
d5-EtFOSAA	8.426	589.2 -> 419.0	20114	4.72 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
d7-MeFOSE	10.668	623.2 -> 58.9	23875	24.62 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
d9-EtFOSE	10.901	639.2 -> 58.9	16769	24.49 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
d5-EtFOSA	10.979	531.1 -> 219.0	6553	2.32 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.7%		
Target Compounds					QValue
4:2FTS	5.256	327.1 -> 307.0	44414	9.40 µg/L	98
		327.1 -> 80.9	10768		
6:2FTS	6.937	427.1 -> 407.0	37479	9.75 µg/L	100
		427.1 -> 80.9	8059		
8:2FTS	7.962	527.1 -> 507.0	20746	10.58 µg/L	97
		527.1 -> 80.8	5194		
EtFOSAA	8.427	584.2 -> 419.1	9168	2.51 µg/L	m 99
		584.2 -> 526.0	4952		
FOSA	9.647	498.1 -> 77.9	17302	2.55 µg/L	99
		498.1 -> 478.0	625		
MeFOSAA	8.232	570.1 -> 419.0	11399	2.42 µg/L	95
		570.1 -> 483.0	2233		
PFBA	2.956	212.8 -> 168.9	21059	9.61 µg/L	100
PFBS	5.525	298.7 -> 79.9	12526	2.07 µg/L	100
		298.7 -> 98.8	5681		
PFDA	8.174	512.9 -> 469.0	52933	2.81 µg/L	99
		512.9 -> 219.0	6818		
PFDODA	9.057	613.1 -> 569.0	44187	2.37 µg/L	100
		613.1 -> 319.0	5711		
PFDS	9.221	599.0 -> 79.9	6260	2.47 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8	3348	2.48	µg/L	99
		363.1 -> 319.0	56268			
PFHpS	7.843	363.1 -> 169.0	7920	2.44	µg/L	95
		449.0 -> 79.9	8430			
PFHxA	5.582	449.0 -> 98.9	4683	2.52	µg/L	100
		313.0 -> 269.0	35929			
PFHxS	7.290	313.0 -> 118.9	1402	2.38	µg/L	93
		398.7 -> 79.9	10085			
PFNA	7.694	398.7 -> 98.9	5316	2.48	µg/L	98
		463.0 -> 419.0	33641			
PFNS	8.802	463.0 -> 219.0	6391	2.39	µg/L	99
		548.8 -> 79.9	8745			
PFOA	7.163	548.8 -> 98.9	5058	2.53	µg/L	98
		413.0 -> 369.0	70475			
PFOS	8.336	413.0 -> 169.0	9564	2.48	µg/L	89
		498.9 -> 79.9	8991			
PFPeA	4.385	498.9 -> 98.8	4917	4.96	µg/L	100
		263.0 -> 219.0	45798			
PFPeS	6.584	349.1 -> 79.9	12011	2.35	µg/L	97
		349.1 -> 98.9	6146			
PFTeDA	9.772	713.1 -> 669.0	39124	2.52	µg/L	100
		713.1 -> 168.9	2720			
PFTrDA	9.440	663.0 -> 619.0	39836	2.42	µg/L	98
		663.0 -> 168.9	3476			
PFUnDA	8.627	563.1 -> 519.0	43702	2.74	µg/L	100
		563.1 -> 269.1	6027			
11CI-PF3OUdS	9.493	630.9 -> 450.9	86352	9.40	µg/L	100
		632.9 -> 452.9	27413			
9CI-PF3ONS	8.666	530.8 -> 351.0	158387	9.52	µg/L	95
		532.8 -> 353.0	53299			
ADONA	6.781	376.9 -> 250.9	322158	10.10	µg/L	100
		376.9 -> 84.8	72352			
HFPO-DA	5.959	284.9 -> 168.9	15789	10.11	µg/L	100
		284.9 -> 184.9	1995			
3:3FTCA	3.851	241.0 -> 177.0	6136	13.29	µg/L	100
		241.0 -> 117.0	914			
5:3FTCA	6.246	341.0 -> 237.1	193455	67.16	µg/L	95
		341.0 -> 217.0	169356			
7:3FTCA	7.659	441.0 -> 316.9	101821	70.32	µg/L	97
		441.0 -> 336.9	182248			
EtFOSA	10.981	526.0 -> 219.0	8142	2.59	µg/L	100
		526.0 -> 169.0	7795			
EtFOSE	10.927	630.0 -> 58.9	17479	25.59	µg/L	100
		511.9 -> 219.0	7220			
MeFOSA	10.748	511.9 -> 169.0	7216	2.49	µg/L	93
		616.1 -> 58.9	25764			
MeFOSE	10.681	699.1 -> 79.9	3885	25.56	µg/L	100
		699.1 -> 98.8	2244			
PFDoDS	9.911	295.0 -> 201.0	4421	2.68	µg/L	92
		295.0 -> 84.9	1980			
NFDHA	5.463	279.0 -> 85.1	14778	4.81	µg/L	100
		229.0 -> 84.9	13202			
PFMBA	4.794	314.8 -> 134.9	87324	4.99	µg/L	100
		314.8 -> 82.9	2268			
PFMPA	3.526			4.33	µg/L	99
PFEESA	6.064					

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



7.7.12
7

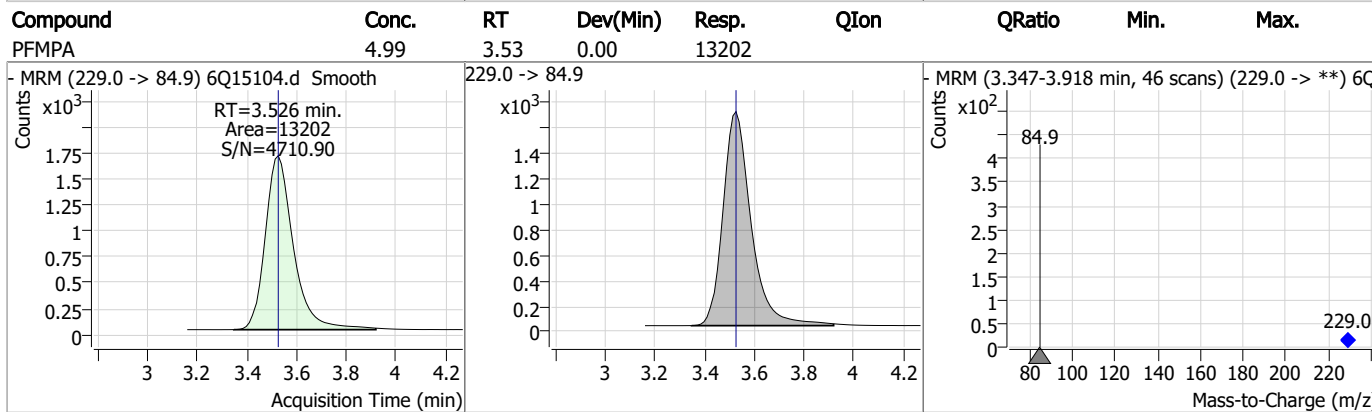
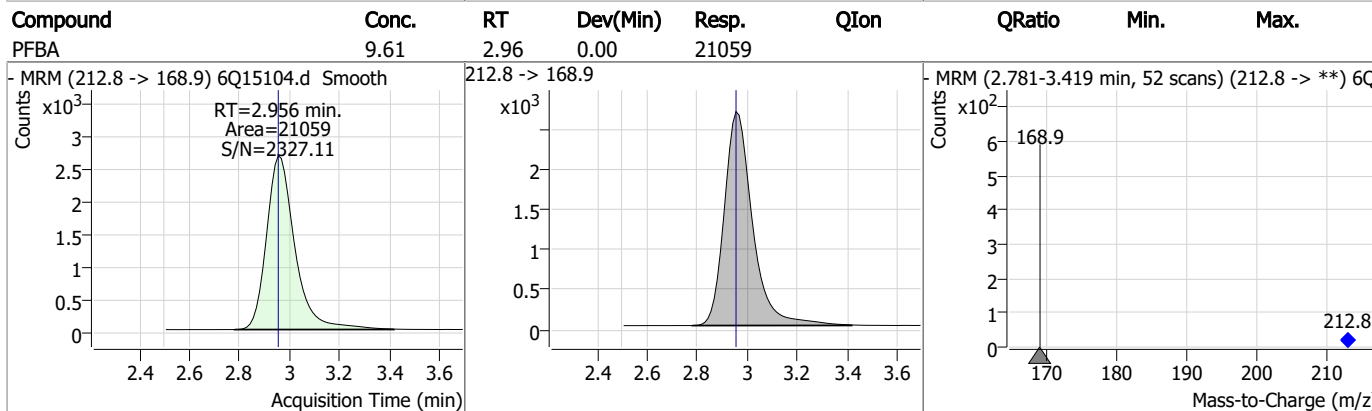
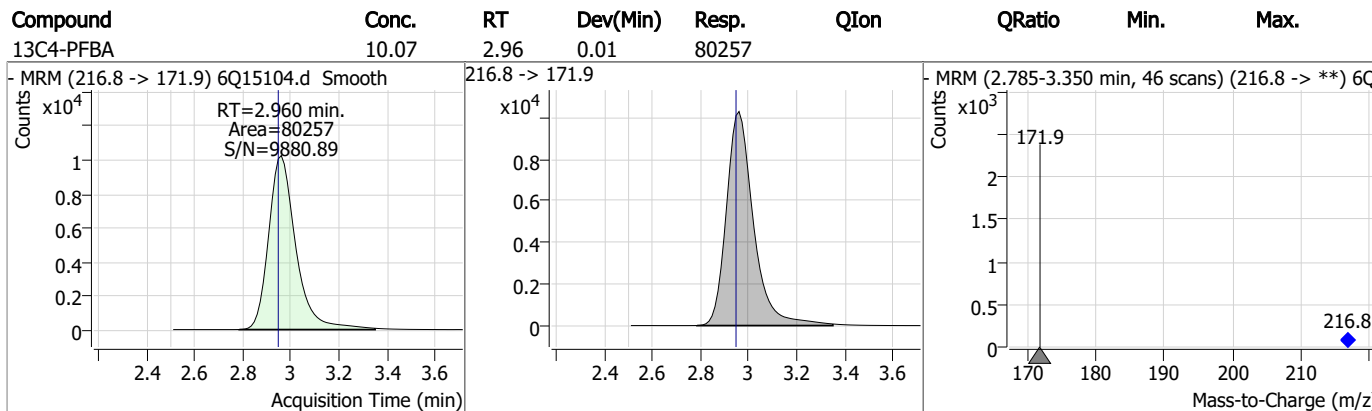
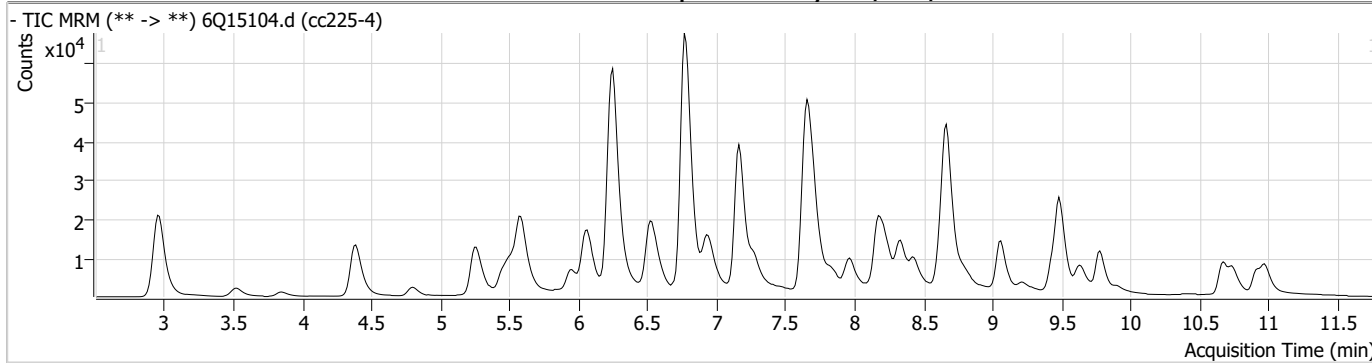
Perfluorinated Compounds by LC/MS/MS

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

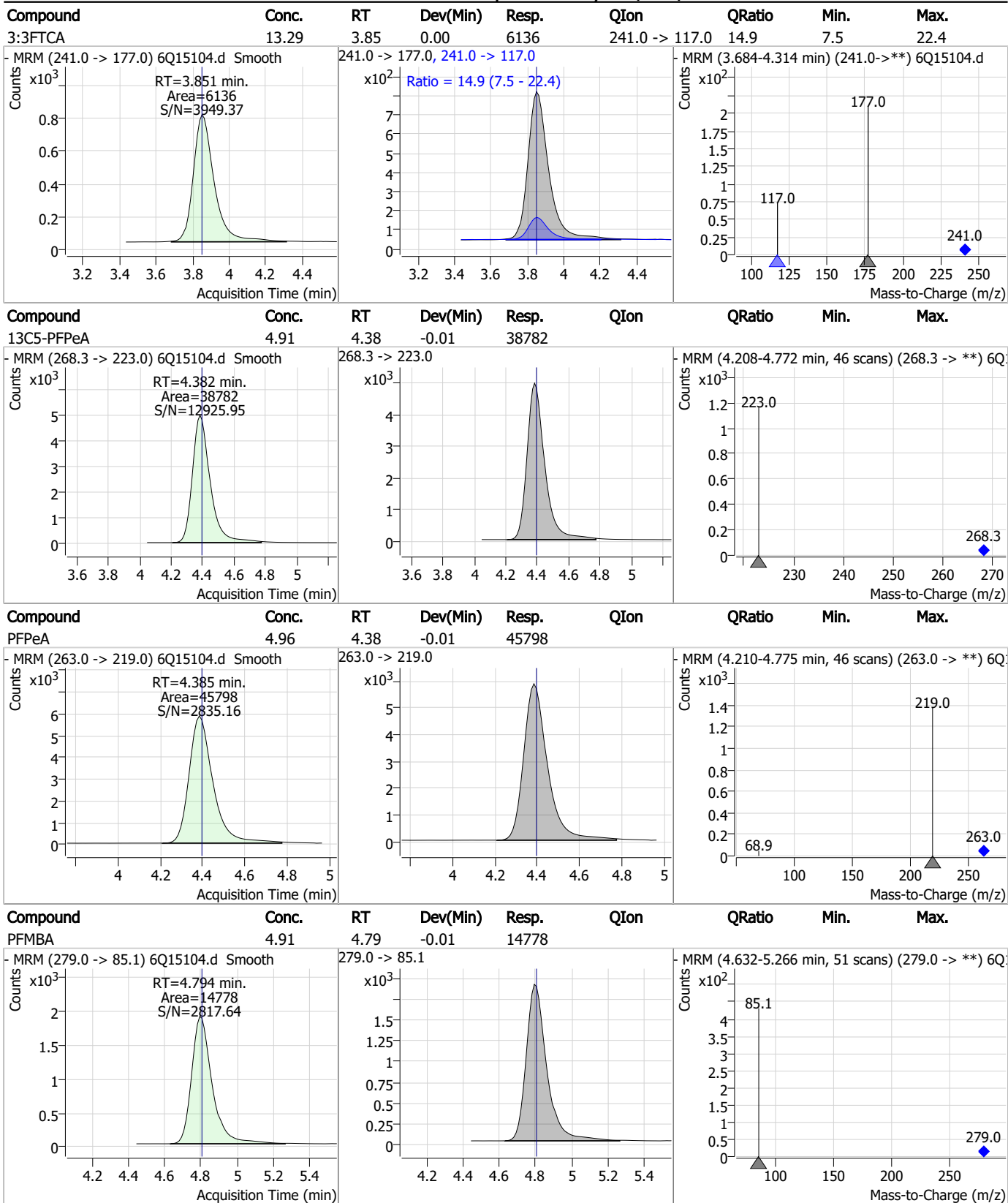
7

Perfluorinated Compounds by LC/MS/MS



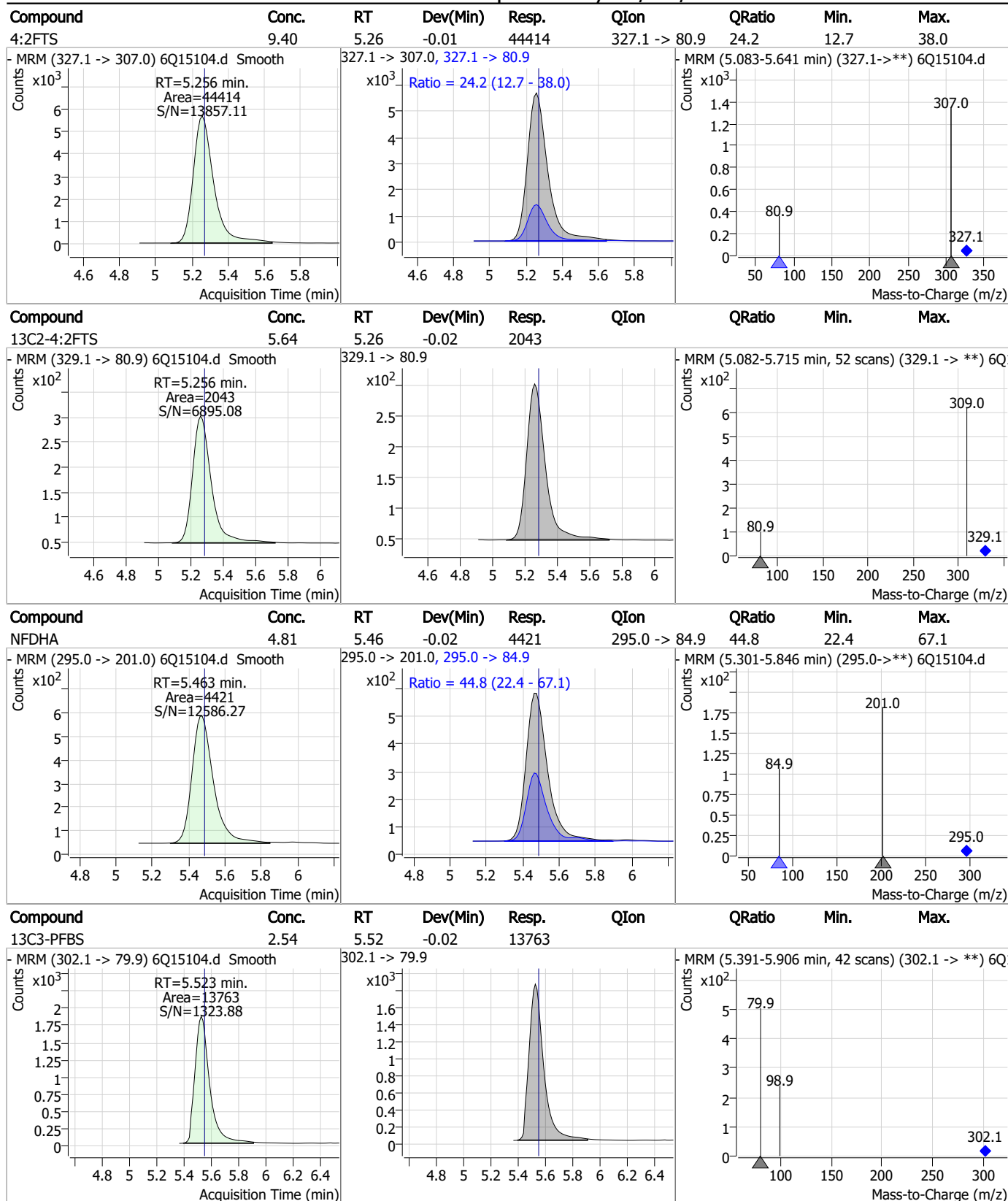
7.7.12
7

Perfluorinated Compounds by LC/MS/MS



7.7.12
7

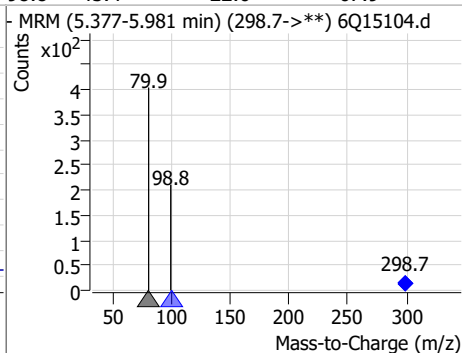
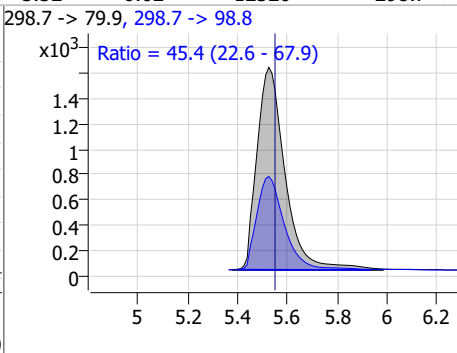
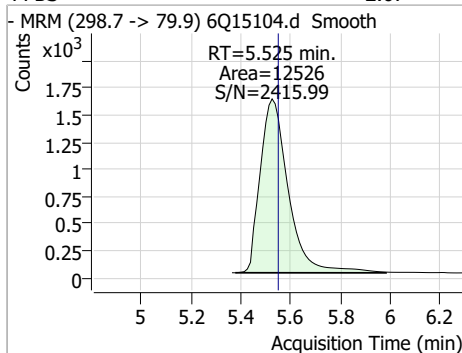
Perfluorinated Compounds by LC/MS/MS



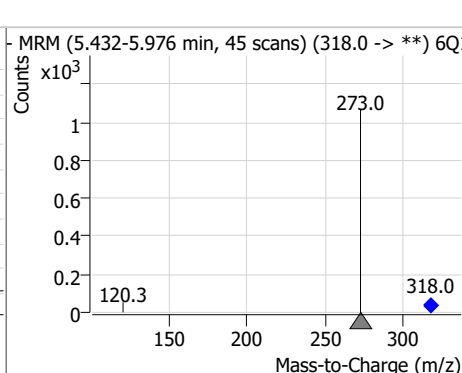
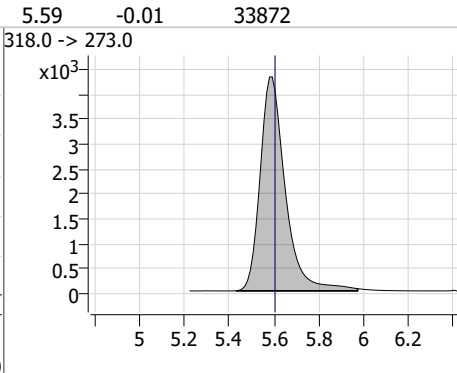
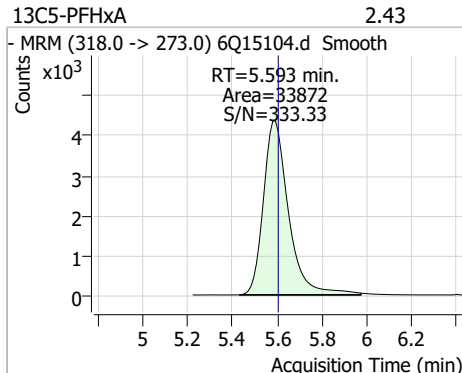
7.7.12

Perfluorinated Compounds by LC/MS/MS

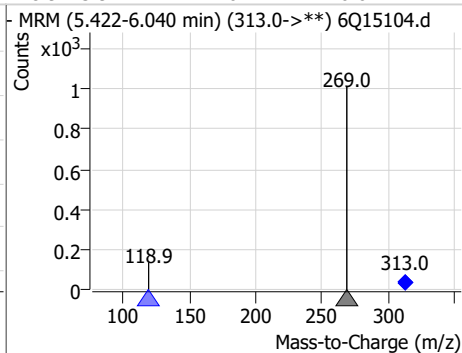
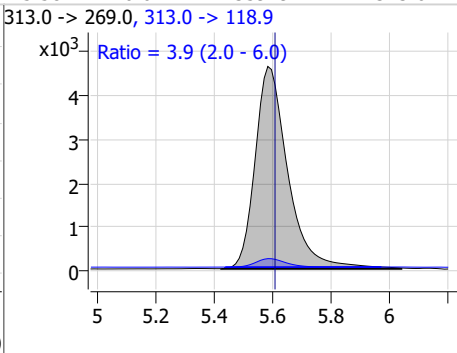
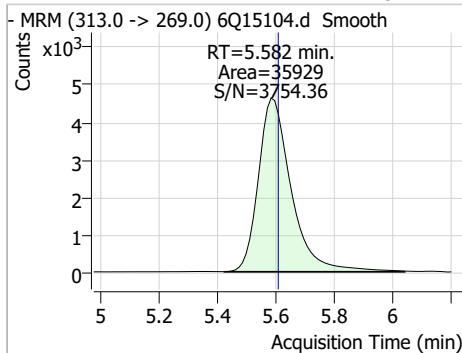
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.07	5.52	-0.02	12526	298.7 -> 98.8	45.4	22.6	67.9



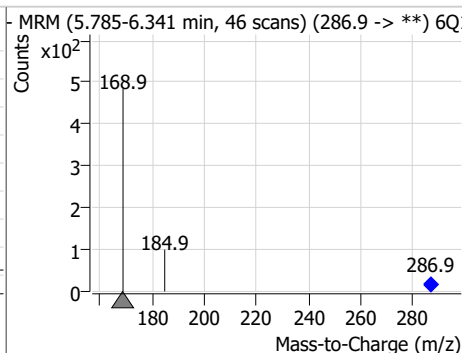
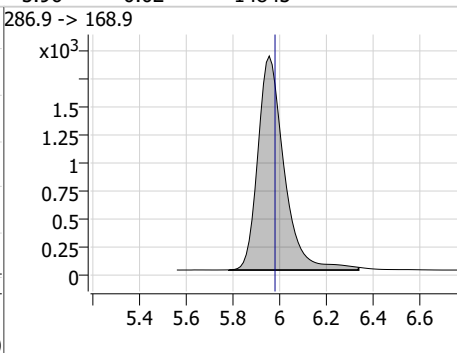
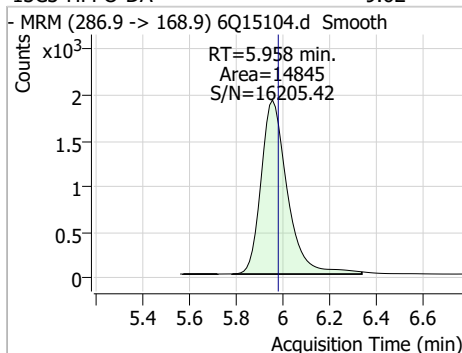
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.43	5.59	-0.01	33872				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.52	5.58	-0.02	35929	313.0 -> 118.9	3.9	2.0	6.0

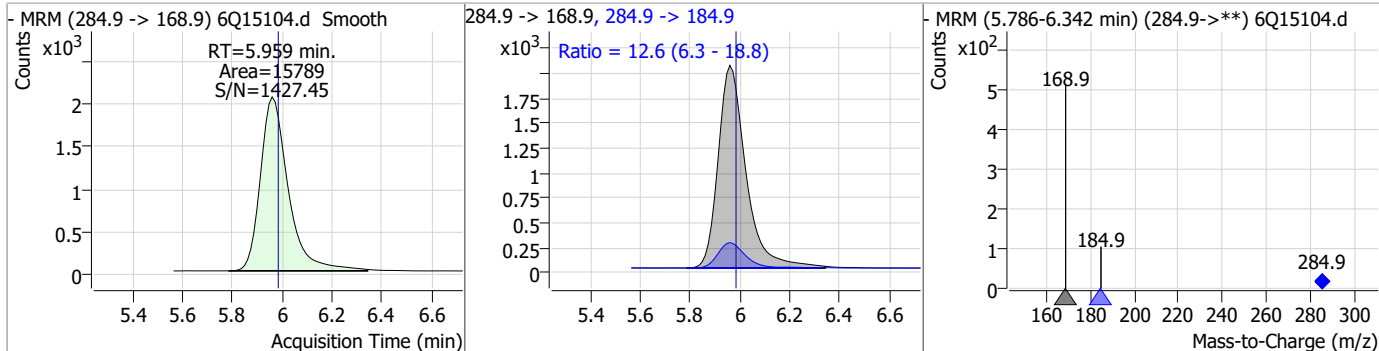


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.62	5.96	-0.02	14845				

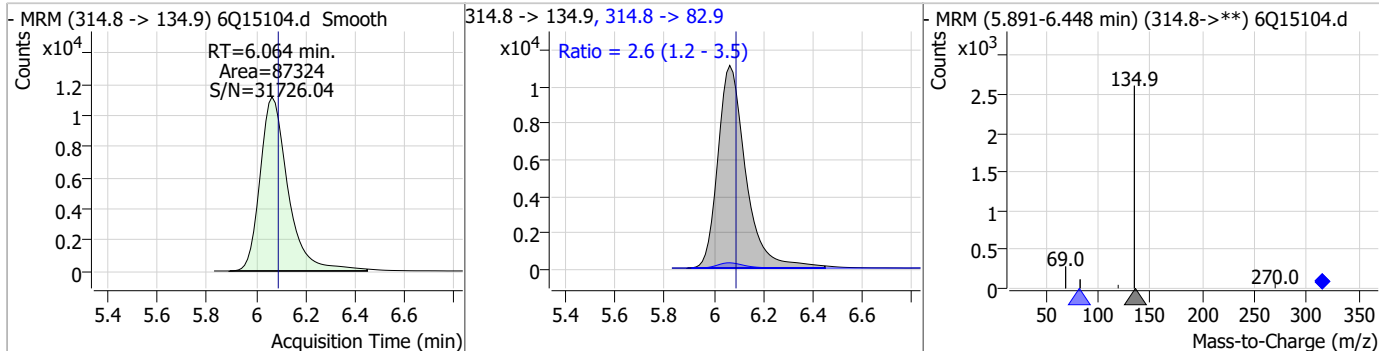


Perfluorinated Compounds by LC/MS/MS

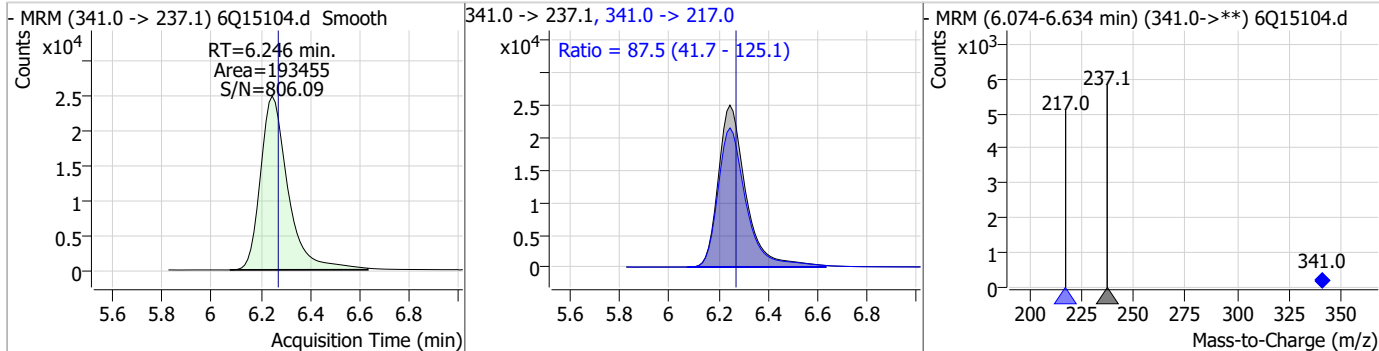
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	10.11	5.96	-0.02	15789	284.9 -> 184.9	12.6	6.3	18.8



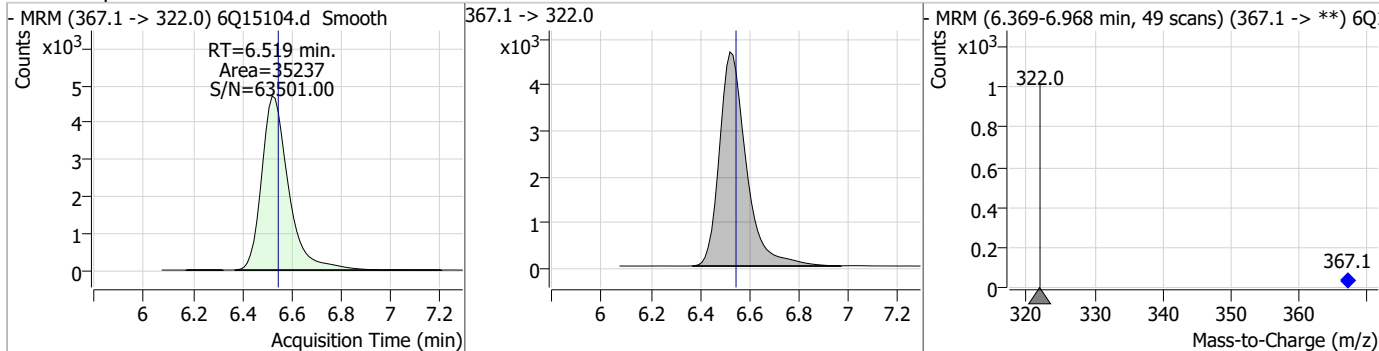
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.33	6.06	-0.03	87324	314.8 -> 82.9	2.6	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	67.16	6.25	-0.02	193455	341.0 -> 217.0	87.5	41.7	125.1

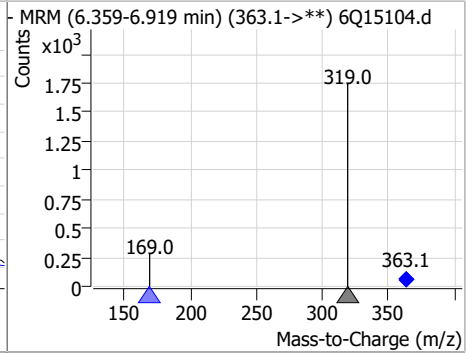
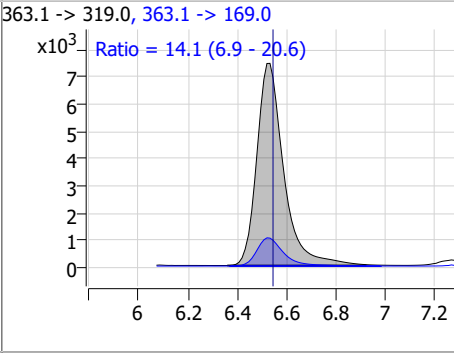
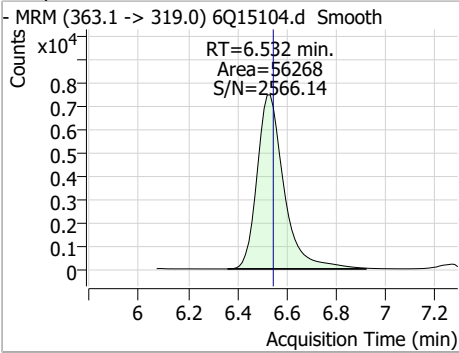


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.52	6.52	-0.02	35237	367.1 -> 322.0			

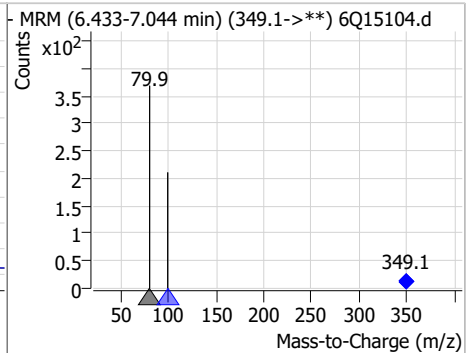
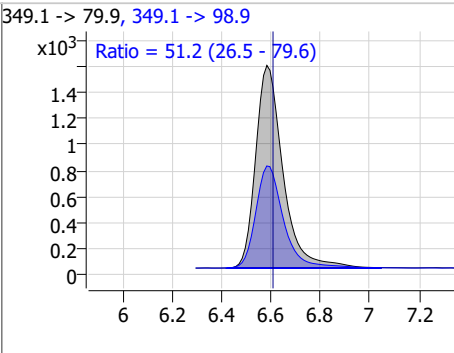
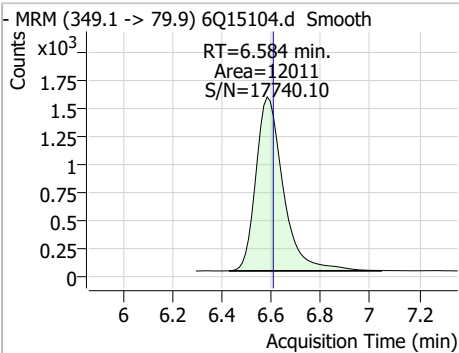


Perfluorinated Compounds by LC/MS/MS

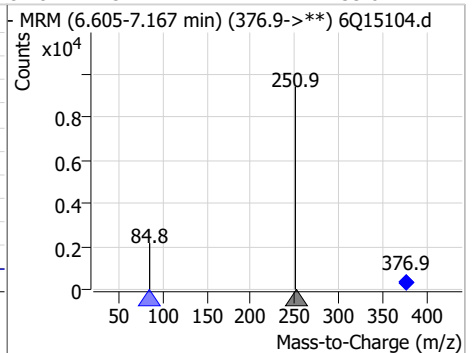
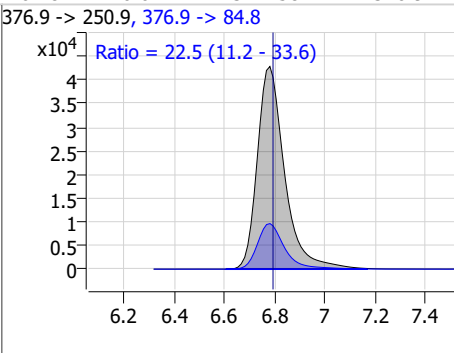
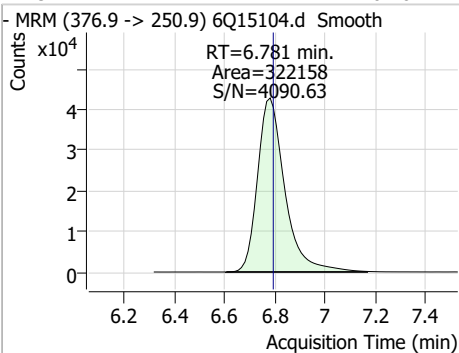
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.48	6.53	-0.01	56268	363.1 -> 169.0	14.1	6.9	20.6



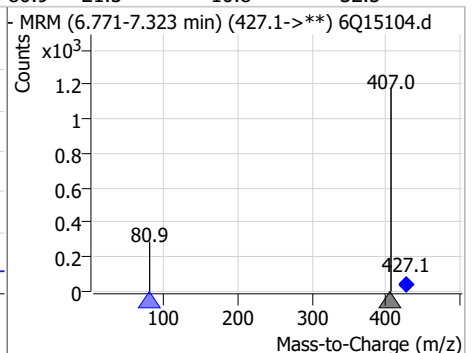
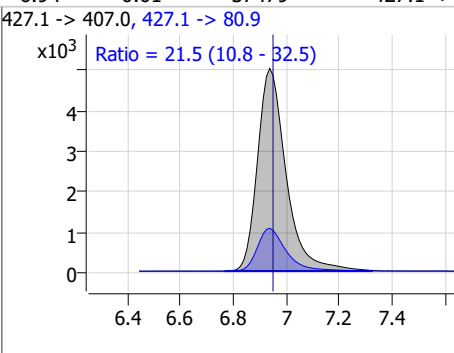
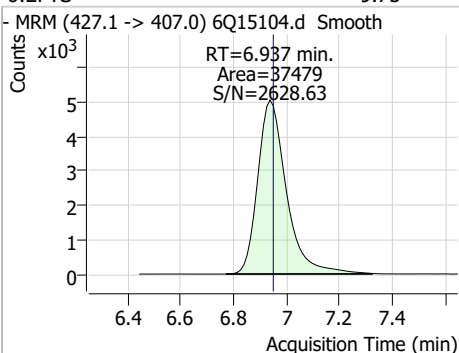
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.35	6.58	-0.02	12011	349.1 -> 98.9	51.2	26.5	79.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	10.10	6.78	-0.01	322158	376.9 -> 84.8	22.5	11.2	33.6

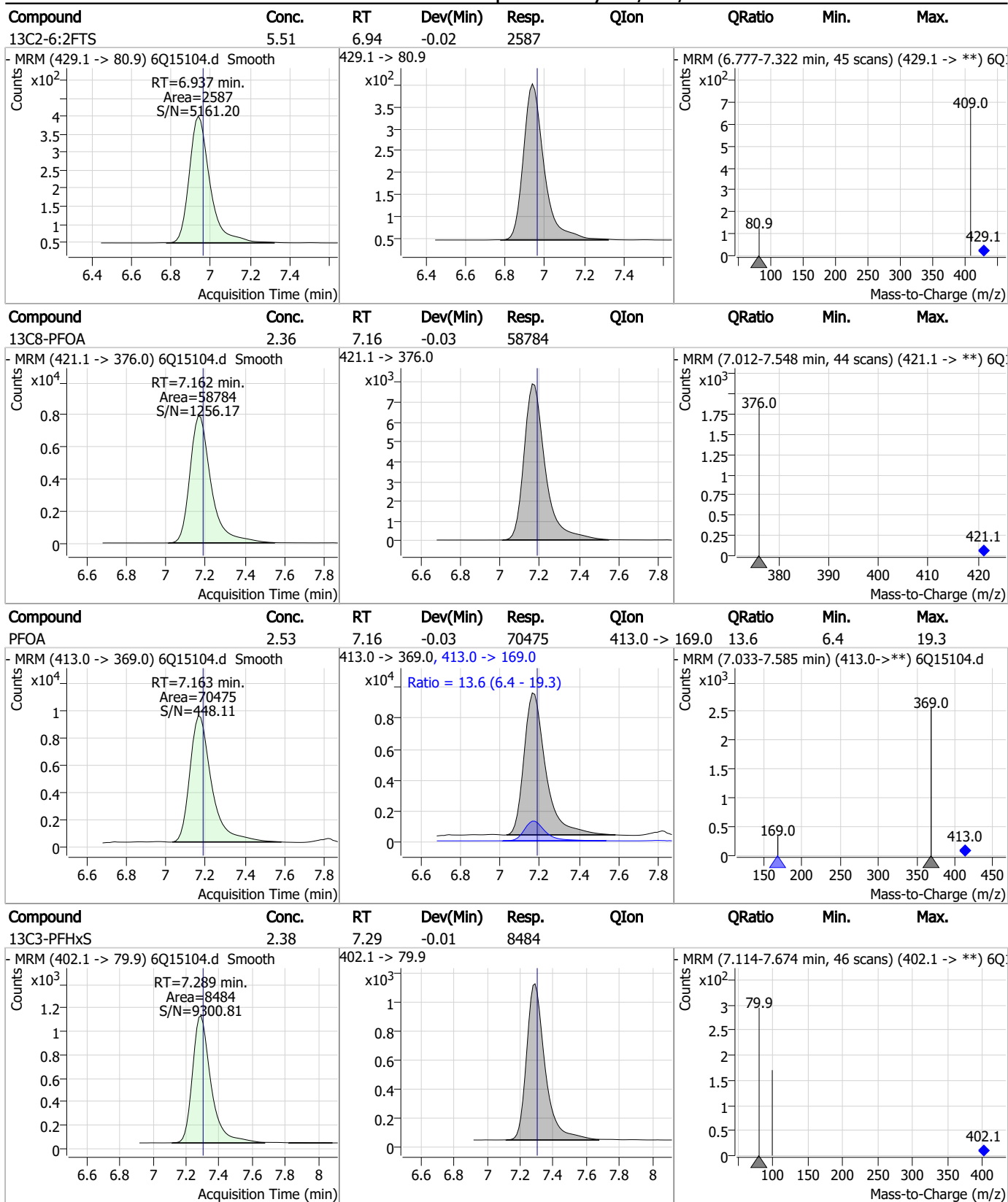


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	9.75	6.94	-0.01	37479	427.1 -> 80.9	21.5	10.8	32.5



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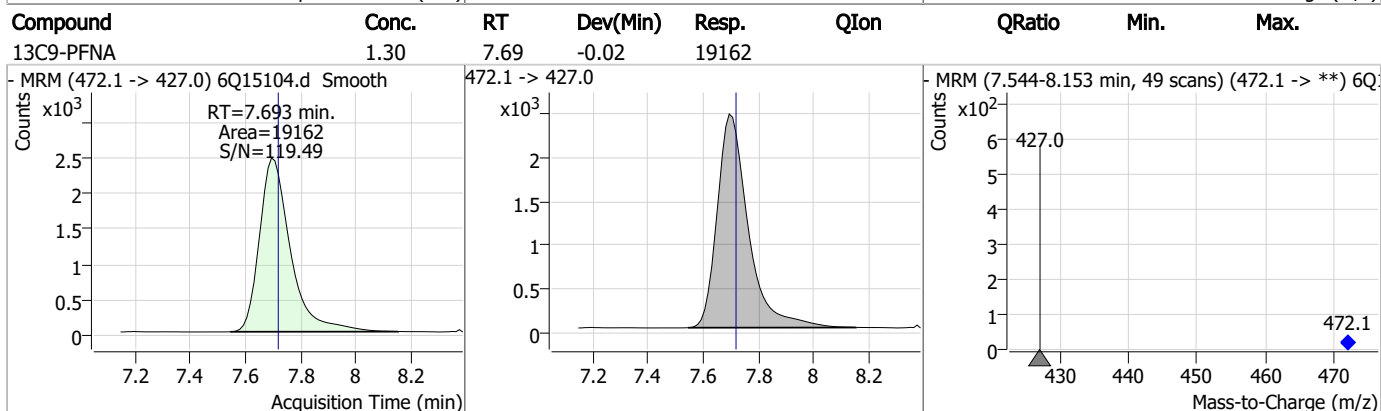
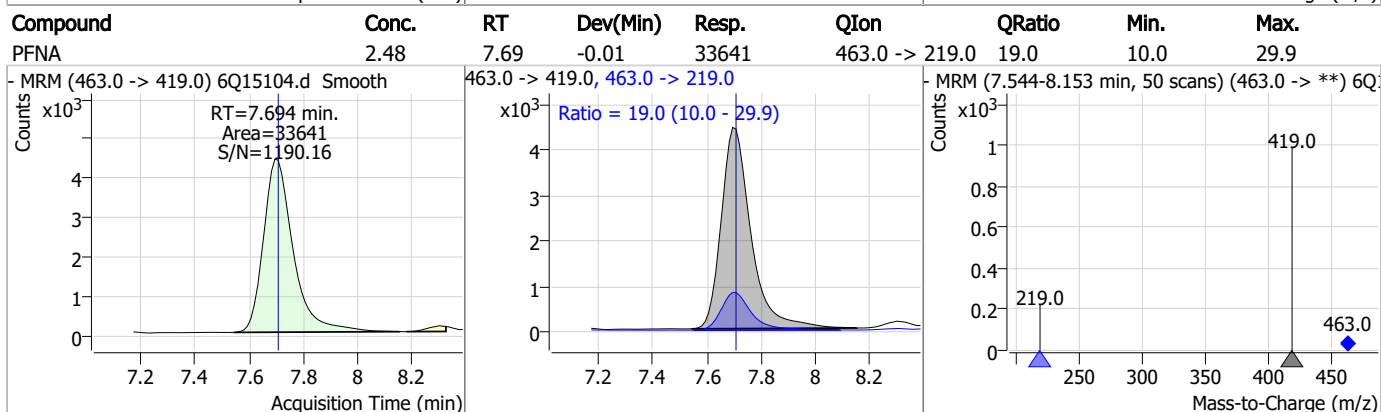
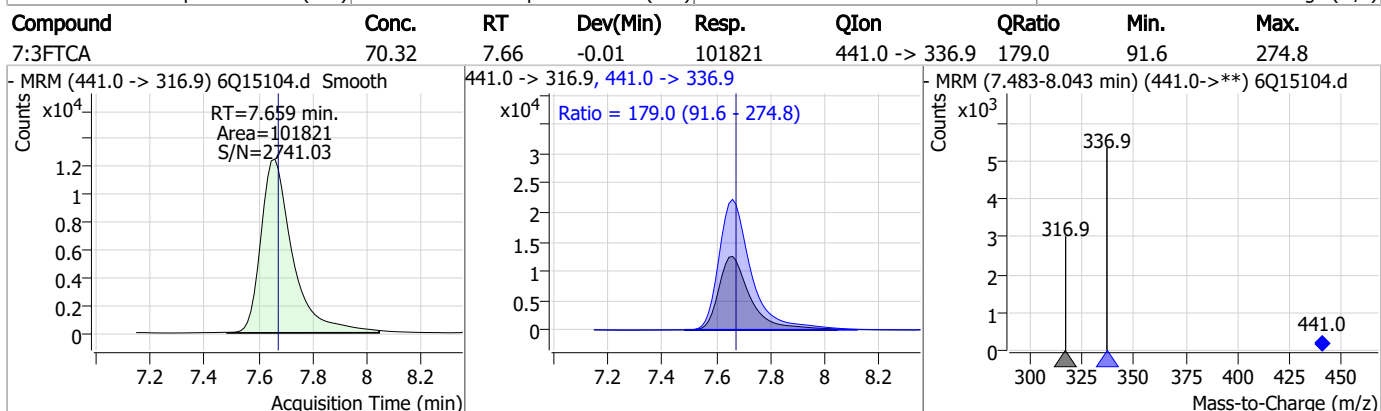
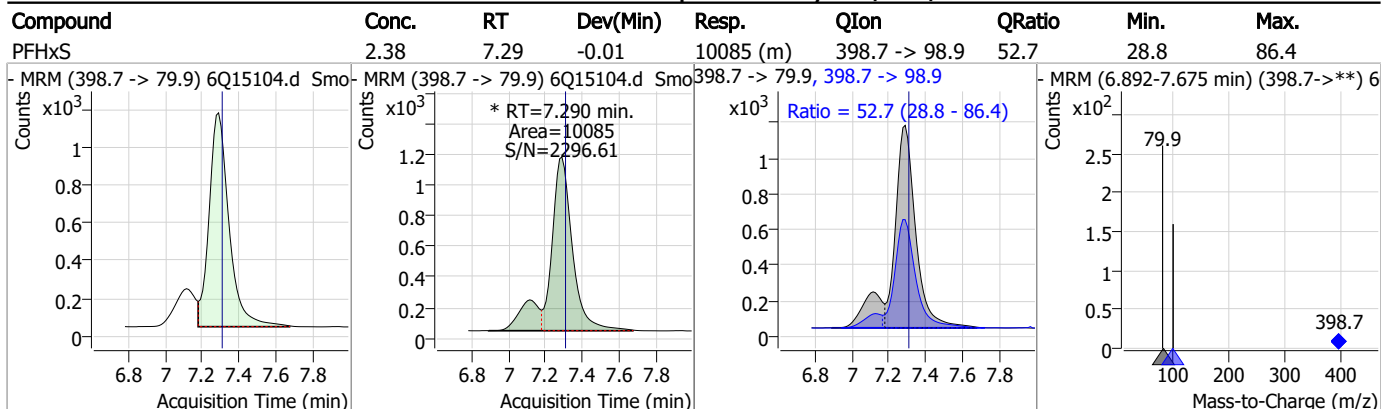
Perfluorinated Compounds by LC/MS/MS



7.7.12 7

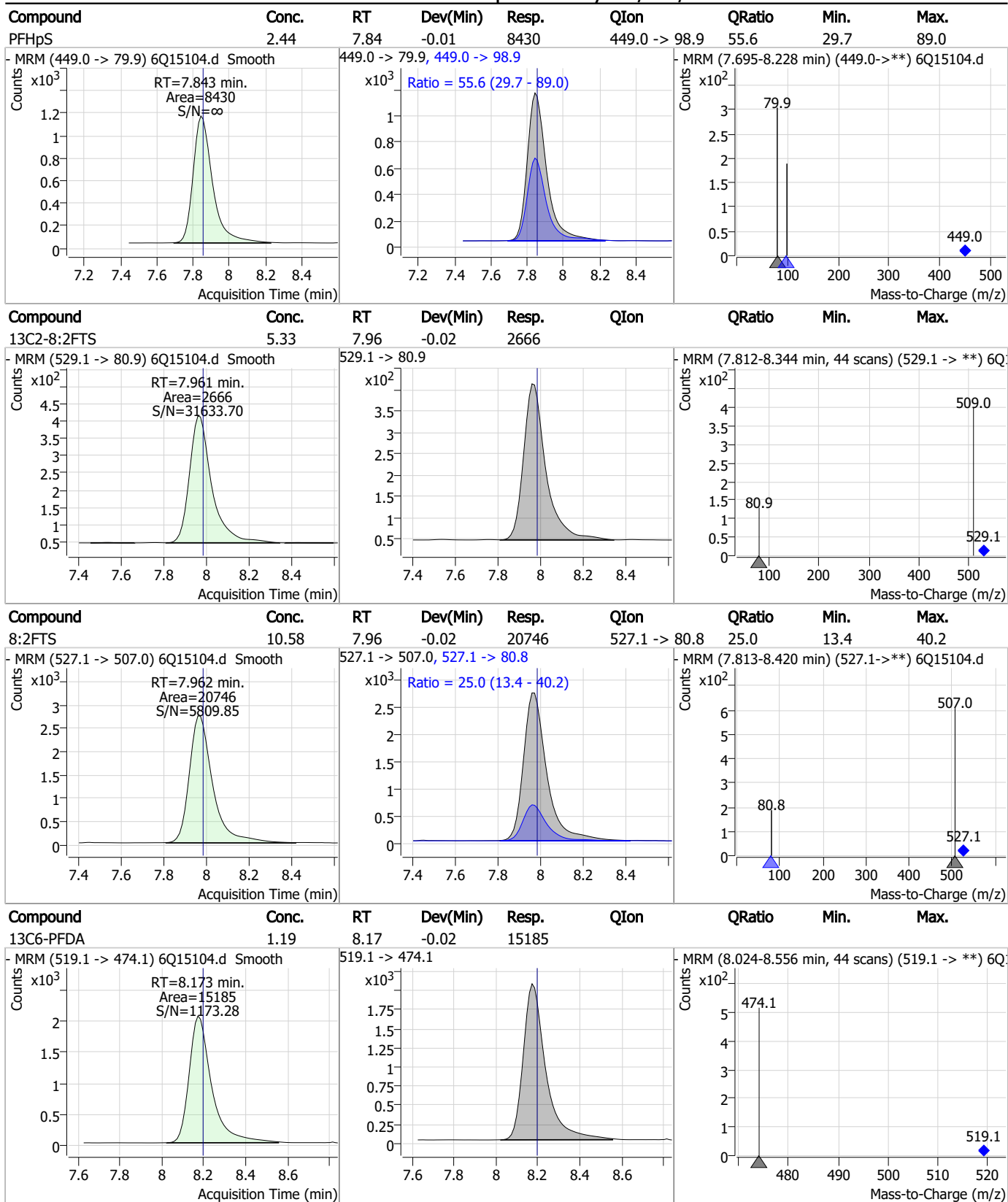


Perfluorinated Compounds by LC/MS/MS



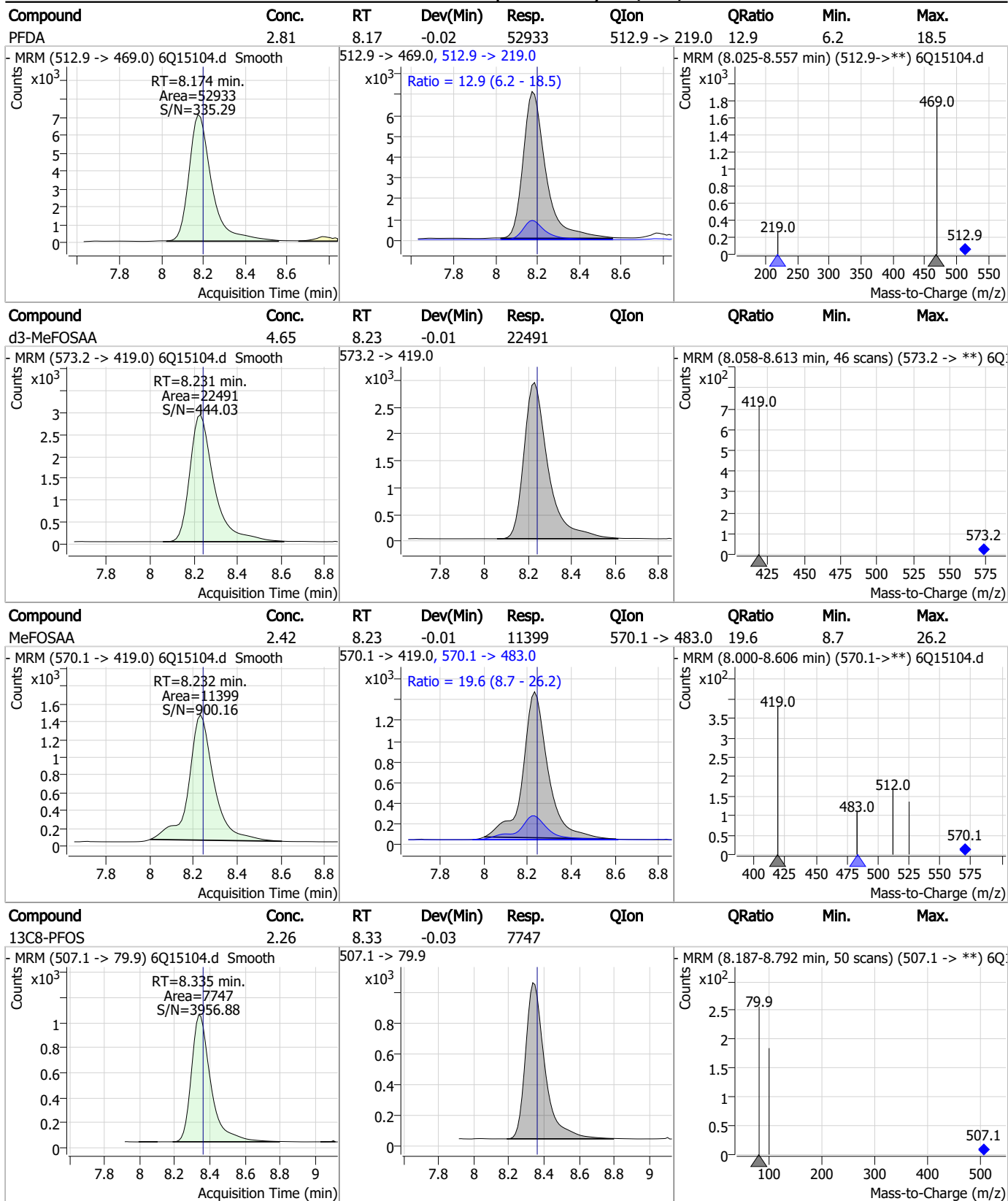
7.7.12
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



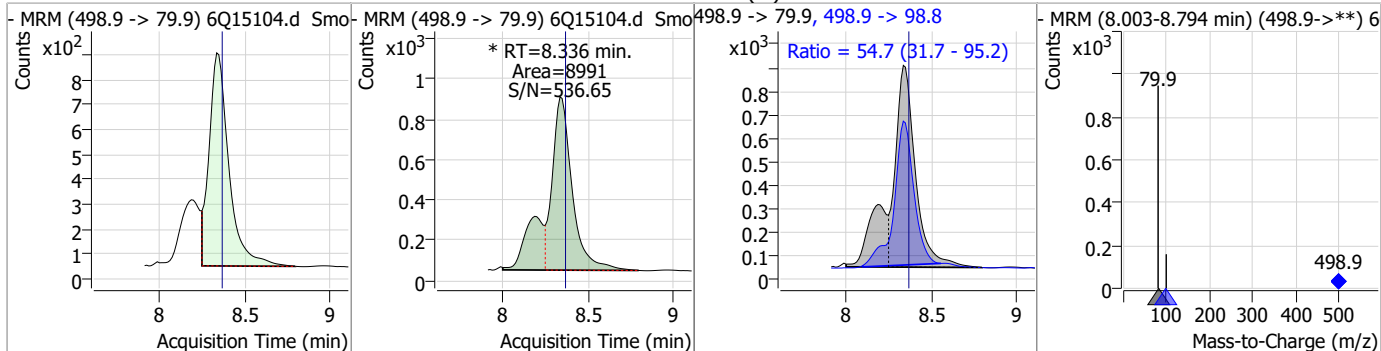
7.7.12

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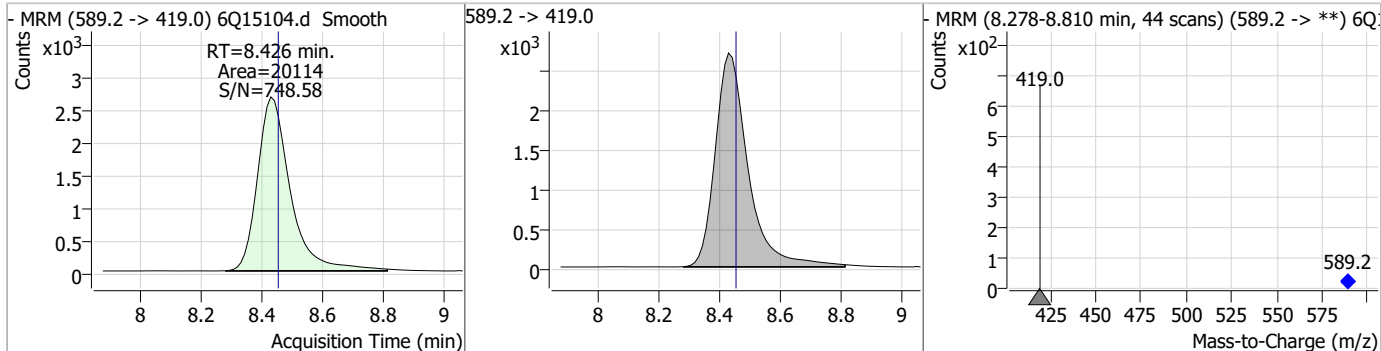


Perfluorinated Compounds by LC/MS/MS

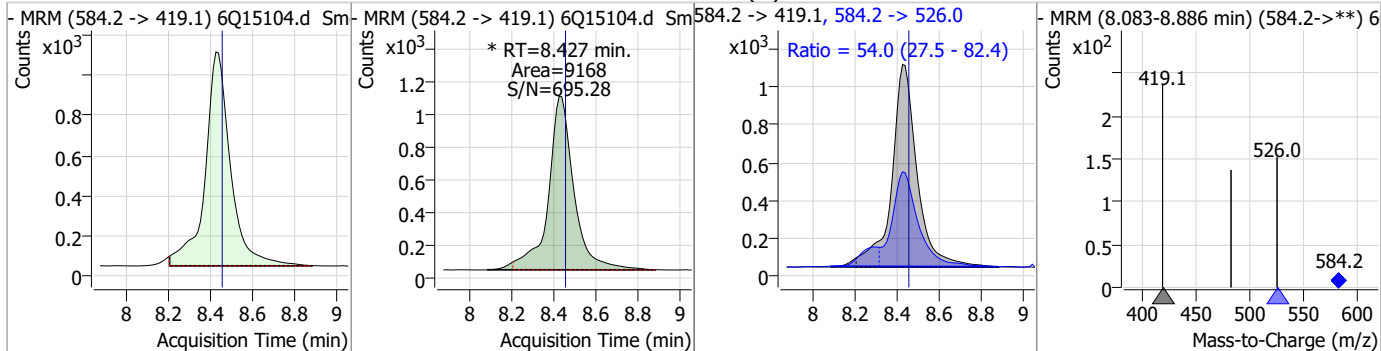
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.48	8.34	-0.03	8991 (m)	498.9 -> 98.8	54.7	31.7	95.2



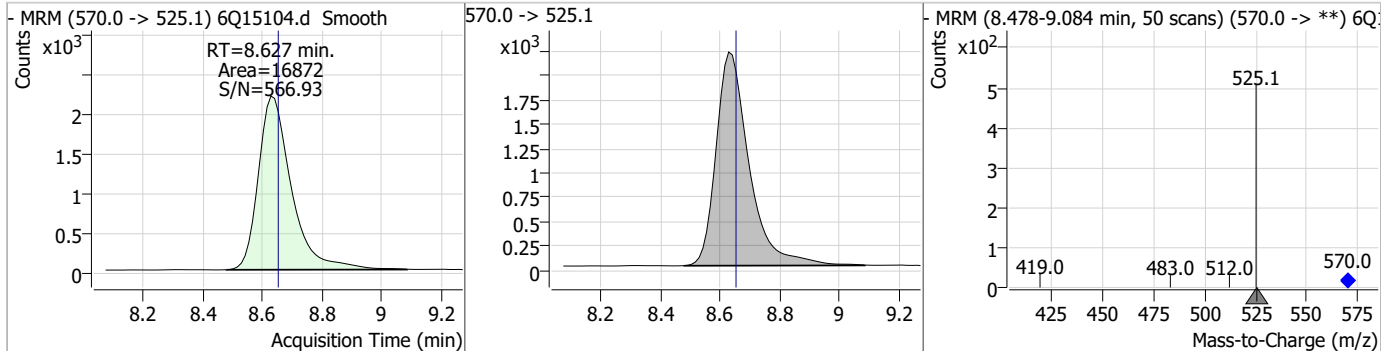
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.72	8.43	-0.02	20114				



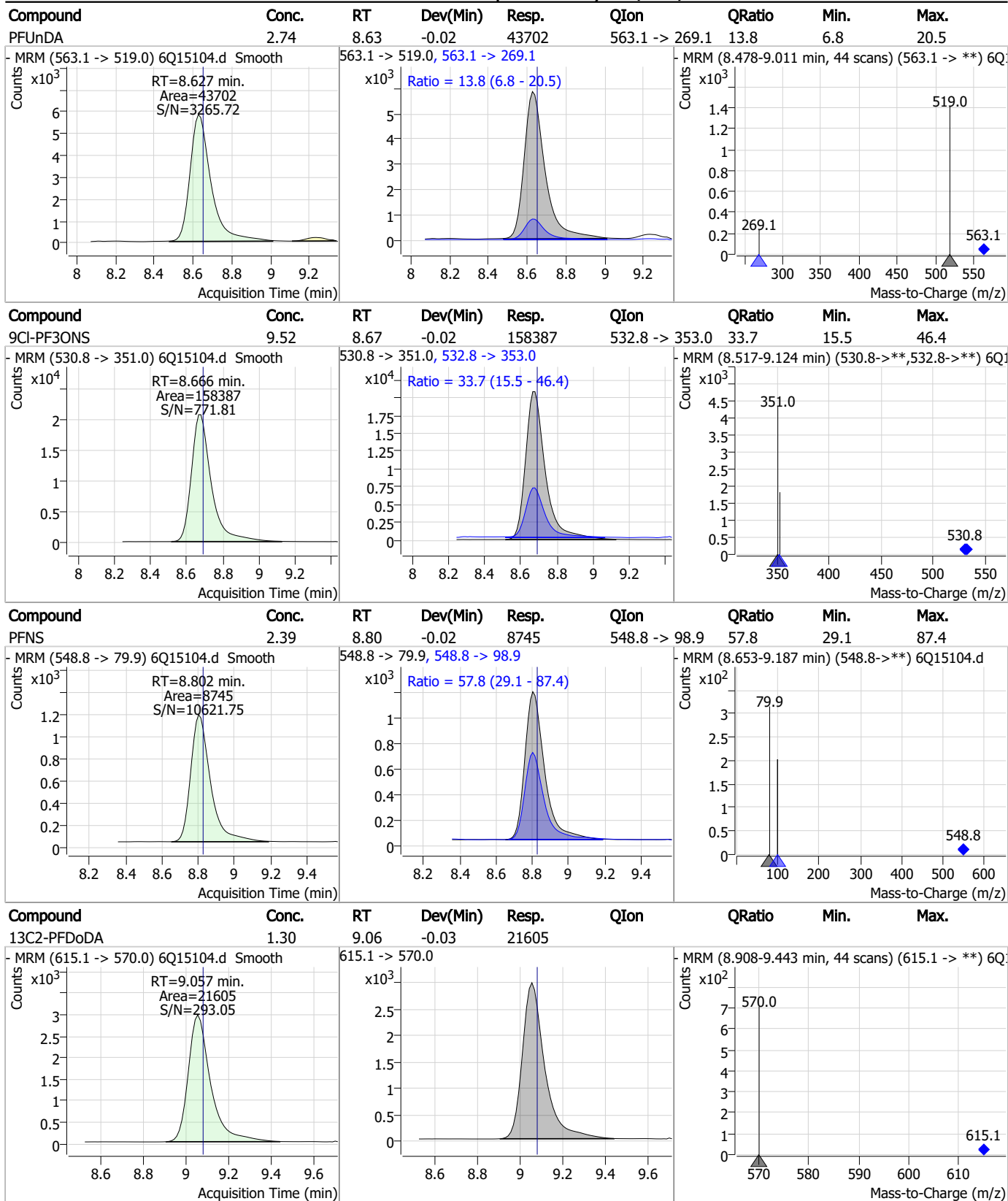
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.51	8.43	-0.02	9168 (m)	584.2 -> 526.0	54.0	27.5	82.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.23	8.63	-0.02	16872				

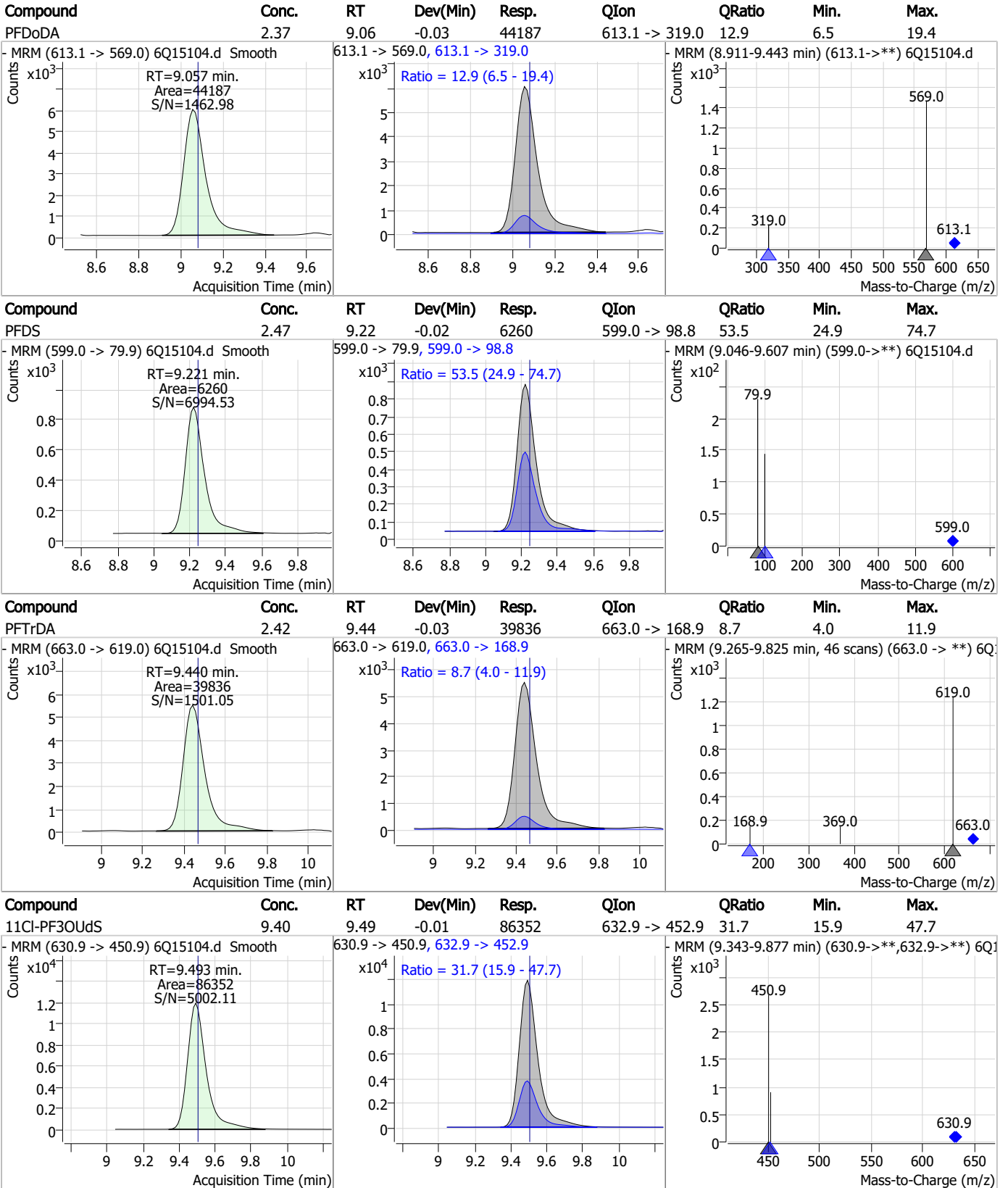


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

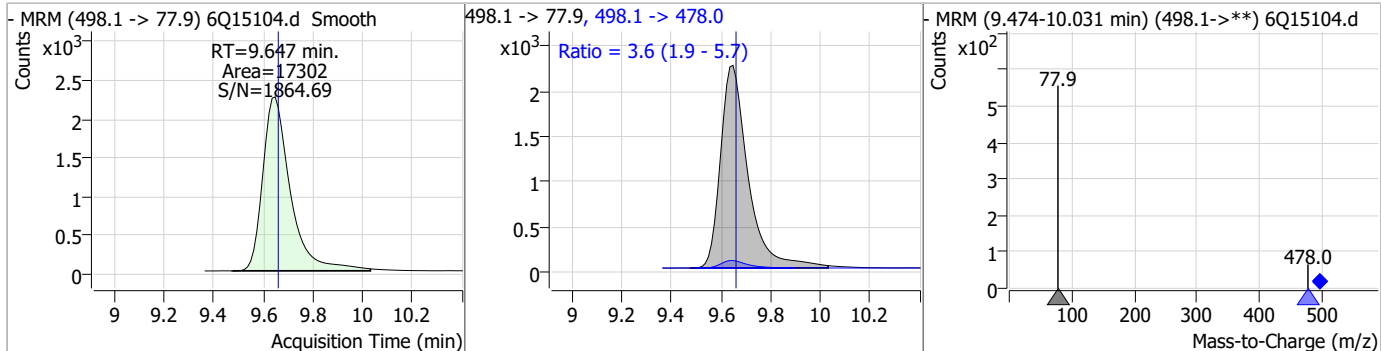


7.7.12 7

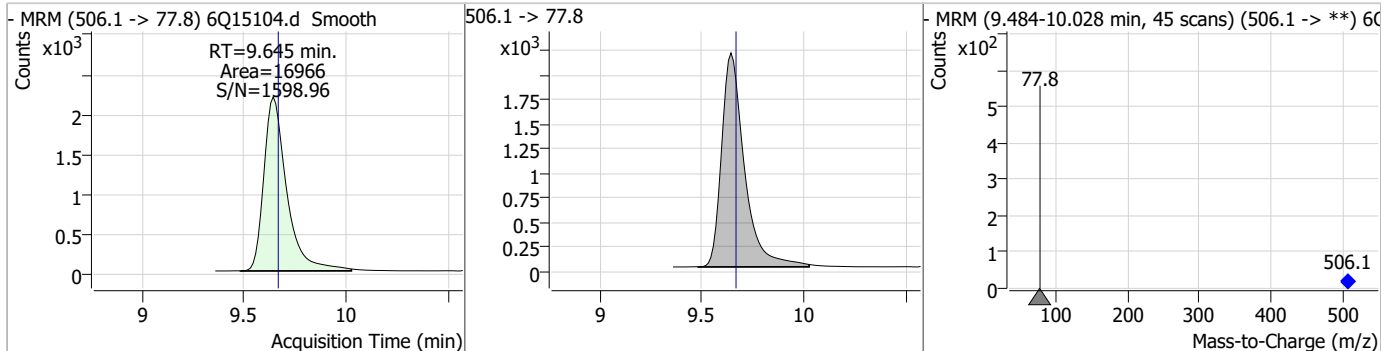


Perfluorinated Compounds by LC/MS/MS

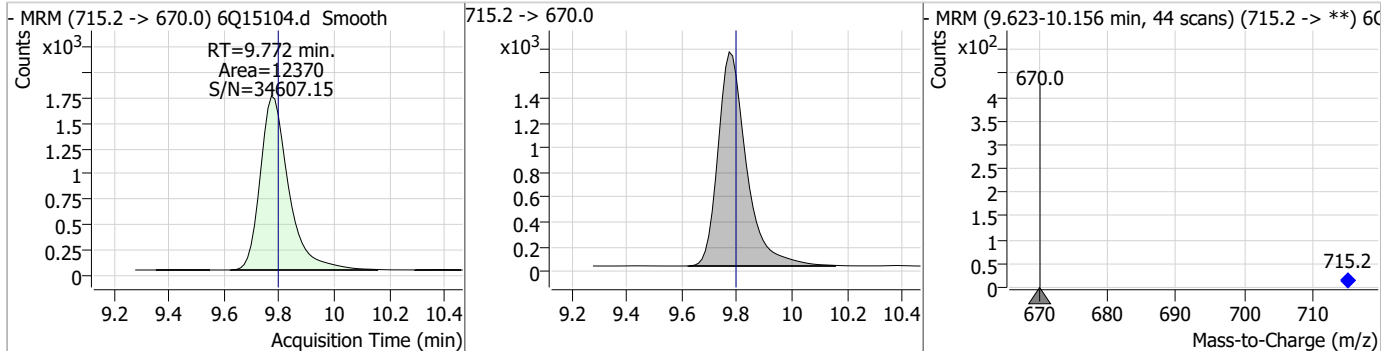
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.55	9.65	-0.01	17302	498.1 -> 478.0	3.6	1.9	5.7



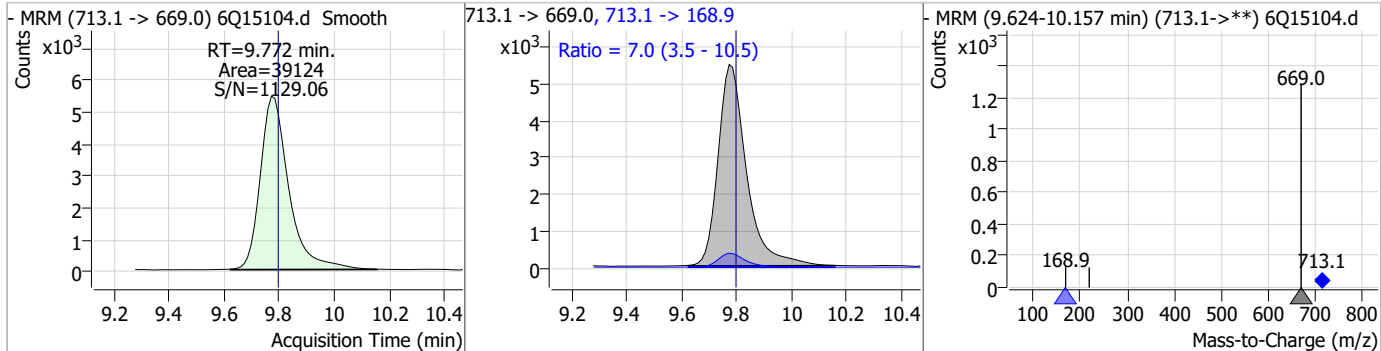
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.43	9.64	-0.02	16966				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.30	9.77	-0.02	12370				



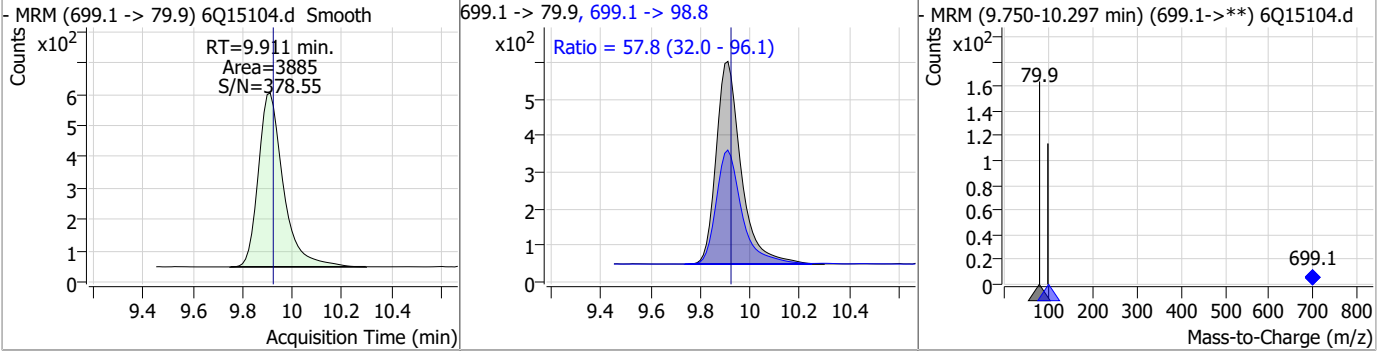
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.52	9.77	-0.02	39124	713.1 -> 168.9	7.0	3.5	10.5



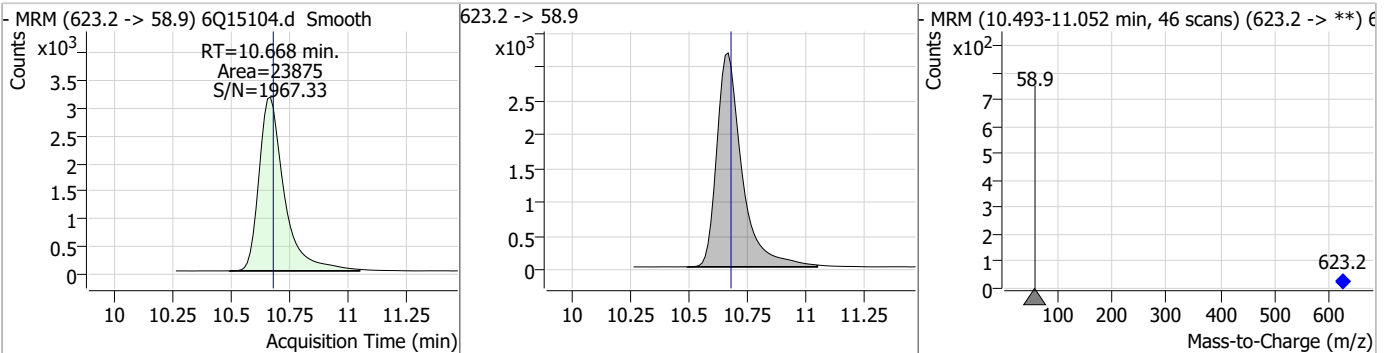
7.7.12
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Perfluorinated Compounds by LC/MS/MS

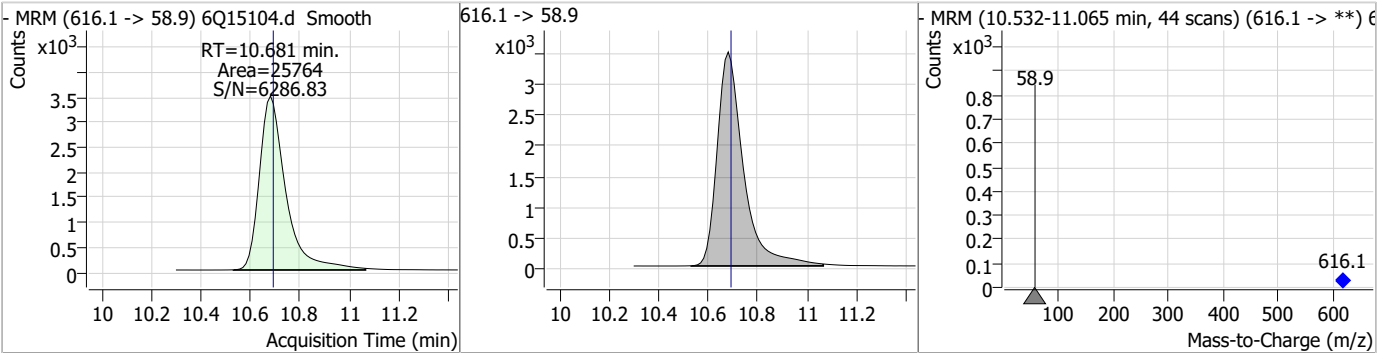
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.68	9.91	-0.01	3885	699.1 -> 98.8	57.8	32.0	96.1



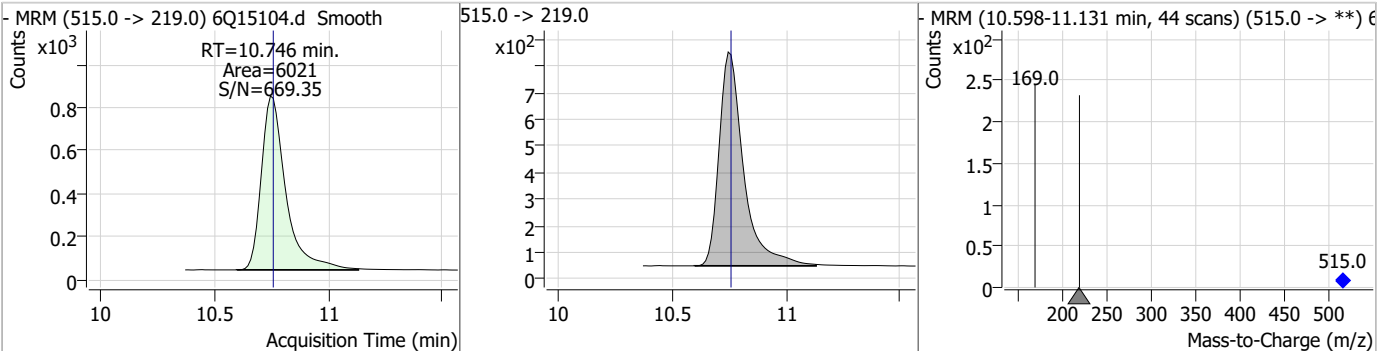
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.62	10.67	-0.01	23875				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	25.56	10.68	-0.01	25764				

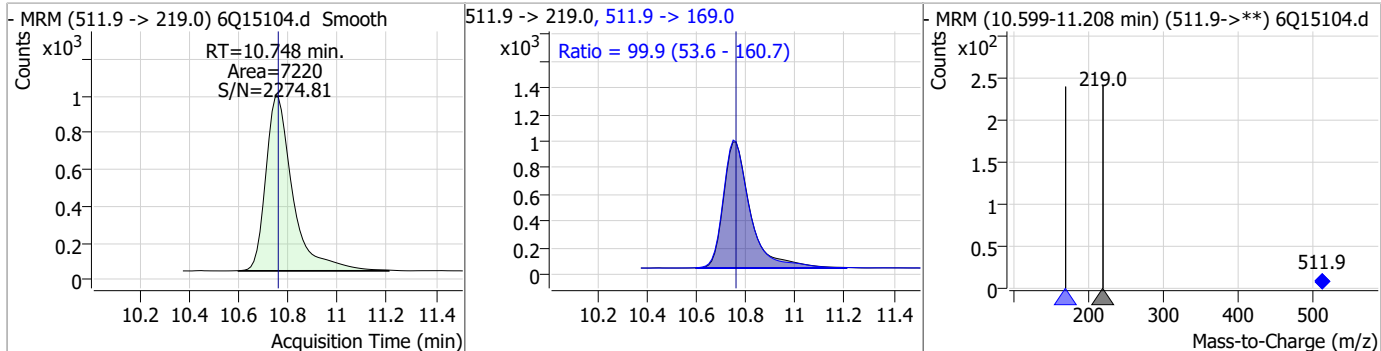


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	10.75	-0.01	6021				

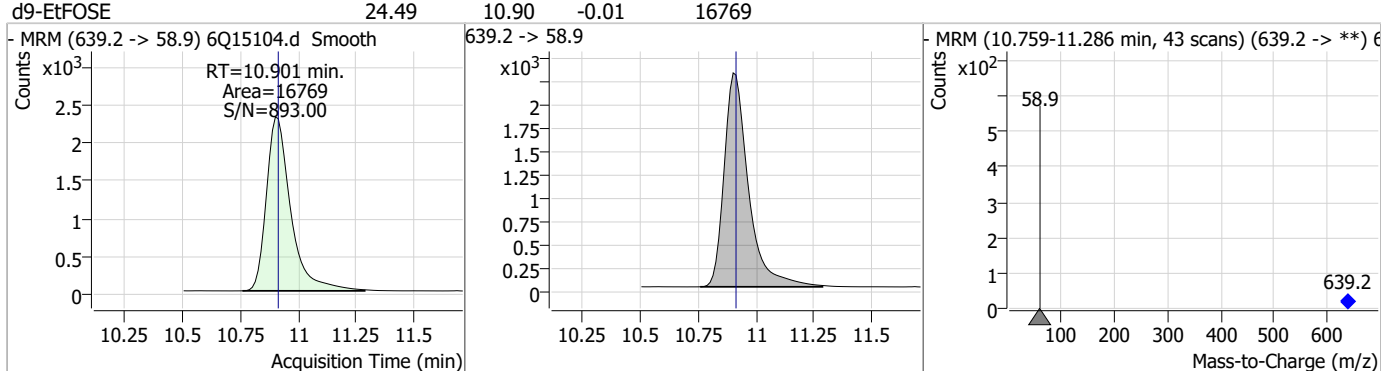


Perfluorinated Compounds by LC/MS/MS

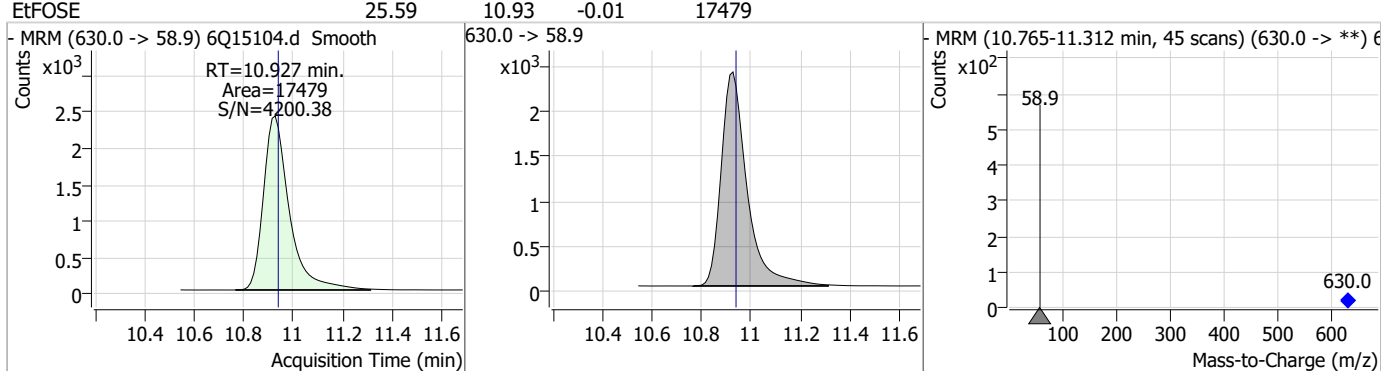
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	2.49	10.75	-0.01	7220	511.9 -> 169.0	99.9	53.6	160.7



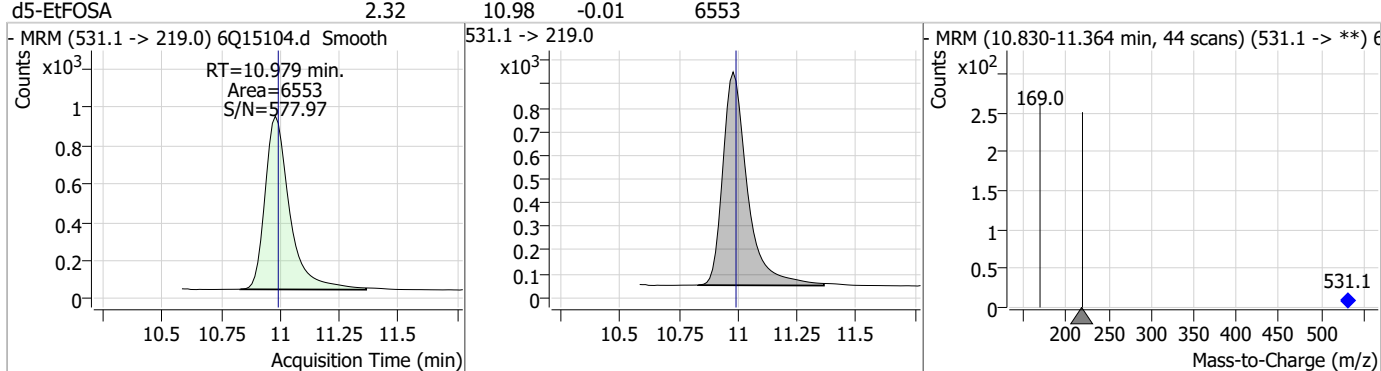
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.49	10.90	-0.01	16769				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	25.59	10.93	-0.01	17479				



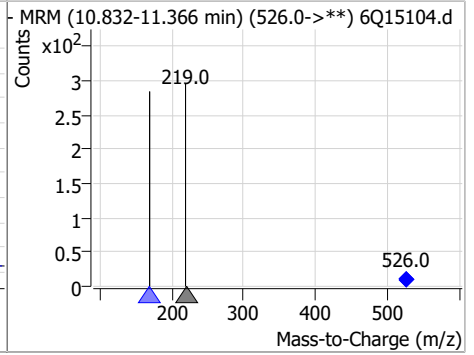
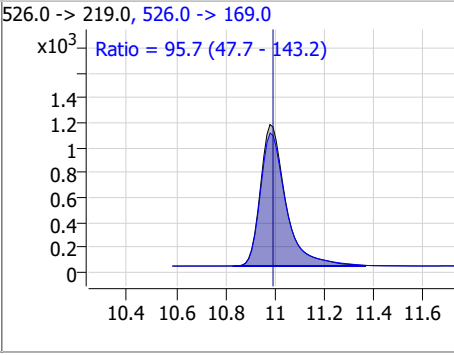
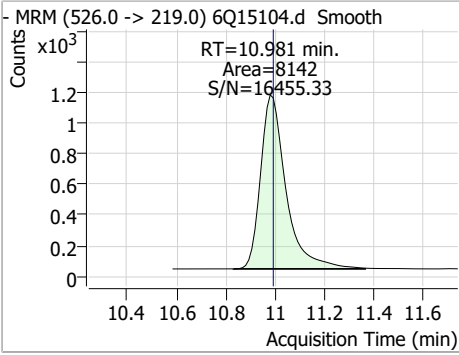
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.32	10.98	-0.01	6553				



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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.59	10.98	-0.01	8142	526.0 -> 169.0	95.7	47.7	143.2



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Manual Integration Approval Summary

Sample Number: S6Q229-CC225 Method: EPA DRAFT 1633
Lab FileID: 6Q15104.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 15:27 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.43	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15105.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 3:41:33 PM
 Sample Name : cc225-1.0LL
 Vial : P1-A2
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.935	216.8 -> 171.9	75547	10.00 µg/L	-0.012
M5-PFPeA	4.370	268.3 -> 223.0	36137	5.00 µg/L	-0.025
M5-PFHxA	5.580	318.0 -> 273.0	31700	2.50 µg/L	-0.025
M4-PFHpA	6.519	367.1 -> 322.0	32639	2.50 µg/L	-0.025
M8-PFOA	7.162	421.1 -> 376.0	54899	2.50 µg/L	-0.025
M9-PFNA	7.693	472.1 -> 427.0	18421	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	14607	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	16413	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	19302	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	11150	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	16044	2.50 µg/L	-0.025
M3-PFBS	5.511	302.1 -> 79.9	11985	2.50 µg/L	-0.037
M3-PFHxS	7.289	402.1 -> 79.9	7971	2.50 µg/L	-0.013
M8-PFOS	8.347	507.1 -> 79.9	7371	2.50 µg/L	-0.013
M2-4:2FTS	5.243	329.1 -> 80.9	1902	5.00 µg/L	-0.037
M2-6:2FTS	6.937	429.1 -> 80.9	2674	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2778	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	21167	5.00 µg/L	-0.012
M3-HFPO-DA	5.946	286.9 -> 168.9	14013	10.00 µg/L	-0.037
M5-EtFOSAA	8.426	589.2 -> 419.0	19084	5.00 µg/L	-0.025
M7-MeFOSE	10.668	623.2 -> 58.9	22541	25.00 µg/L	-0.012
M9-EtFOSE	10.901	639.2 -> 58.9	15962	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	6327	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	5542	2.50 µg/L	-0.012
13C4-PFOS	8.348	502.8 -> 79.9	8789	2.50 µg/L	-0.013
13C3-PFBA	2.939	216.0 -> 172.0	32692	5.00 µg/L	-0.013
18O2-PFHxS	7.288	403.0 -> 83.9	5858	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	68011	2.50 µg/L	-0.012
13C2-PFDA	8.173	515.1 -> 470.1	20359	1.25 µg/L	-0.025
13C5-PFNA	7.706	468.0 -> 423.0	17766	1.25 µg/L	-0.012
13C2-PFHxA	5.581	315.1 -> 270.0	31698	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.243	329.1 -> 80.9	1902	5.66 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.2%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2674	6.14 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.9%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2778	5.99 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.7%		
13C2-PFDoDA	9.057	615.1 -> 570.0	19302	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C2-PFTeDA	9.772	715.2 -> 670.0	11150	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-PFBS	5.511	302.1 -> 79.9	11985	2.39 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C3-PFHxS	7.289	402.1 -> 79.9	7971	2.41 µg/L	-0.013

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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 = 96.4%	
13C4-PFBA	2.935	216.8 -> 171.9	75547	10.07 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C4-PFHpA	6.519	367.1 -> 322.0	32639	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFHxA	5.580	318.0 -> 273.0	31700	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFPeA	4.370	268.3 -> 223.0	36137	4.93 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C6-PFDA	8.173	519.1 -> 474.1	14607	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C7-PFUnDA	8.627	570.0 -> 525.1	16413	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-FOSA	9.645	506.1 -> 77.8	16044	2.63 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C8-PFOA	7.162	421.1 -> 376.0	54899	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C8-PFOS	8.347	507.1 -> 79.9	7371	2.47 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C9-PFNA	7.693	472.1 -> 427.0	18421	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.5%	
d3-MeFOSAA	8.231	573.2 -> 419.0	21167	5.01 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C3-HFPO-DA	5.946	286.9 -> 168.9	14013	9.78 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d3-MeFOSA	10.746	515.0 -> 219.0	5542	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
d5-EtFOSAA	8.426	589.2 -> 419.0	19084	5.14 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d7-MeFOSE	10.668	623.2 -> 58.9	22541	26.66 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
d9-EtFOSE	10.901	639.2 -> 58.9	15962	26.74 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.0%	
d5-EtFOSA	10.979	531.1 -> 219.0	6327	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
Target Compounds					QValue
4:2FTS	5.244	327.1 -> 307.0	3197	0.73 µg/L	98
		327.1 -> 80.9	770		
6:2FTS	6.937	427.1 -> 407.0	2859	0.72 µg/L	99
		427.1 -> 80.9	602		
8:2FTS	7.962	527.1 -> 507.0	1620	0.79 µg/L	93
		527.1 -> 80.8	375		
EtFOSAA	8.427	584.2 -> 419.1	723	0.21 µg/L	m 89
		584.2 -> 526.0	341		
FOSA	9.647	498.1 -> 77.9	1375	0.21 µg/L	99
		498.1 -> 478.0	56		
MeFOSAA	8.232	570.1 -> 419.0	896	0.20 µg/L	m 99
		570.1 -> 483.0	158		
PFBA	2.931	212.8 -> 168.9	1575	0.76 µg/L	100
PFBS	5.512	298.7 -> 79.9	839	0.16 µg/L	97
		298.7 -> 98.8	364		
PFDA	8.186	512.9 -> 469.0	3474	0.19 µg/L	96
		512.9 -> 219.0	478		
PFDODA	9.057	613.1 -> 569.0	3537	0.21 µg/L	98
		613.1 -> 319.0	480		
PFDS	9.221	599.0 -> 79.9	457	0.19 µg/L	87

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	270			
PFHpA	6.520	363.1 -> 319.0	4276	0.20	µg/L	99
		363.1 -> 169.0	601			
PFHpS	7.843	449.0 -> 79.9	669	0.20	µg/L	89
		449.0 -> 98.9	340			
PFHxA	5.570	313.0 -> 269.0	2588	0.19	µg/L	97
		313.0 -> 118.9	128			
PFHxS	7.290	398.7 -> 79.9	857	0.22	µg/L	m 97
		398.7 -> 98.9	475			
PFNA	7.694	463.0 -> 419.0	2555	0.20	µg/L	91
		463.0 -> 219.0	407			
PFNS	8.802	548.8 -> 79.9	765	0.22	µg/L	98
		548.8 -> 98.9	436			
PFOA	7.176	413.0 -> 369.0	4869	0.19	µg/L	93
		413.0 -> 169.0	757			
PFOS	8.336	498.9 -> 79.9	664	0.19	µg/L	91
		498.9 -> 98.8	467			
PFPeA	4.372	263.0 -> 219.0	3389	0.39	µg/L	100
PFPeS	6.584	349.1 -> 79.9	912	0.19	µg/L	100
		349.1 -> 98.9	485			
PFTeDA	9.772	713.1 -> 669.0	3124	0.22	µg/L	98
		713.1 -> 168.9	199			
PFTrDA	9.440	663.0 -> 619.0	3072	0.21	µg/L	98
		663.0 -> 168.9	226			
PFUnDA	8.627	563.1 -> 519.0	2847	0.18	µg/L	89
		563.1 -> 269.1	513			
11Cl-PF3OUdS	9.493	630.9 -> 450.9	6295	0.73	µg/L	93
		632.9 -> 452.9	2259			
9Cl-PF3ONS	8.678	530.8 -> 351.0	11501	0.73	µg/L	90
		532.8 -> 353.0	4188			
ADONA	6.781	376.9 -> 250.9	23131	0.77	µg/L	97
		376.9 -> 84.8	5504			
HFPO-DA	5.959	284.9 -> 168.9	1290	0.87	µg/L	87
		284.9 -> 184.9	93			
3:3FTCA	3.826	241.0 -> 177.0	439	1.02	µg/L	96
		241.0 -> 117.0	73			
5:3FTCA	6.246	341.0 -> 237.1	14713	5.46	µg/L	99
		341.0 -> 217.0	12113			
7:3FTCA	7.659	441.0 -> 316.9	7342	5.42	µg/L	100
		441.0 -> 336.9	13422			
EtFOSA	10.981	526.0 -> 219.0	584	0.19	µg/L	88
		526.0 -> 169.0	626			
EtFOSE	10.927	630.0 -> 58.9	1287	1.98	µg/L	100
MeFOSA	10.748	511.9 -> 219.0	558	0.21	µg/L	91
		511.9 -> 169.0	547			
MeFOSE	10.681	616.1 -> 58.9	1877	1.97	µg/L	100
PFDoDS	9.911	699.1 -> 79.9	345	0.25	µg/L	76
		699.1 -> 98.8	155			
NFDHA	5.463	295.0 -> 201.0	338	0.39	µg/L	97
		295.0 -> 84.9	157			
PFMBA	4.781	279.0 -> 85.1	1093	0.39	µg/L	100
PFMPA	3.501	229.0 -> 84.9	983	0.40	µg/L	100
PFEESA	6.064	314.8 -> 134.9	6604	0.35	µg/L	100
		314.8 -> 82.9	151			

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

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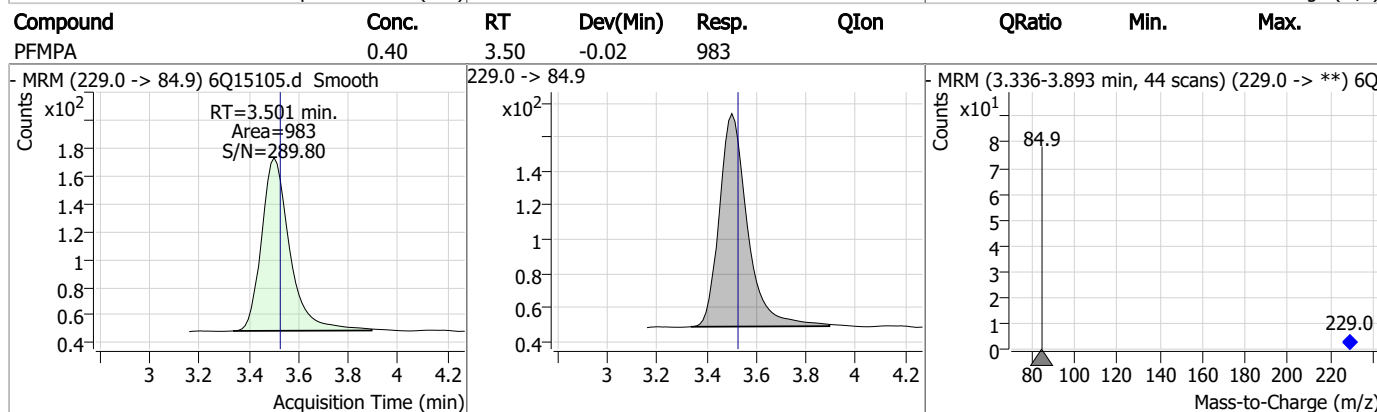
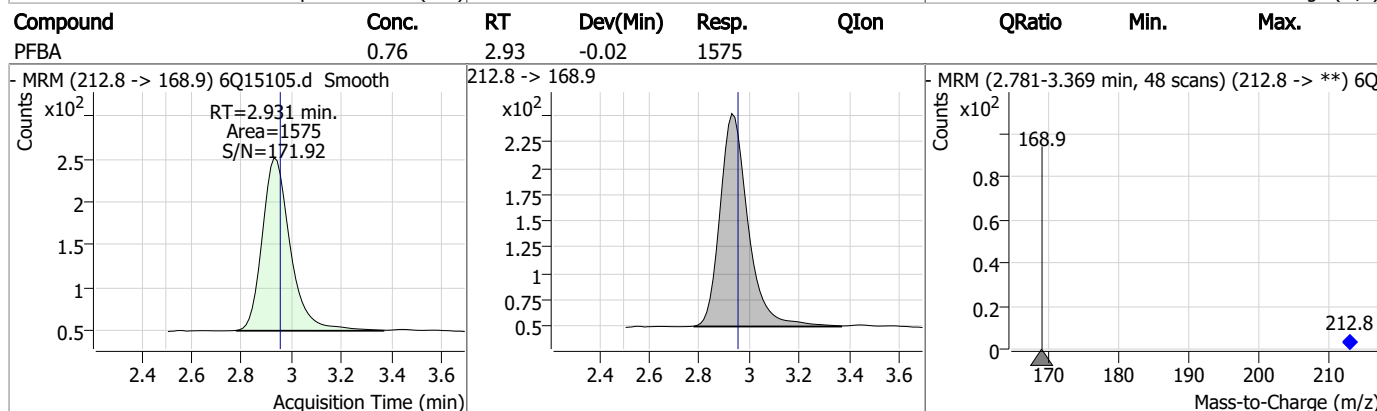
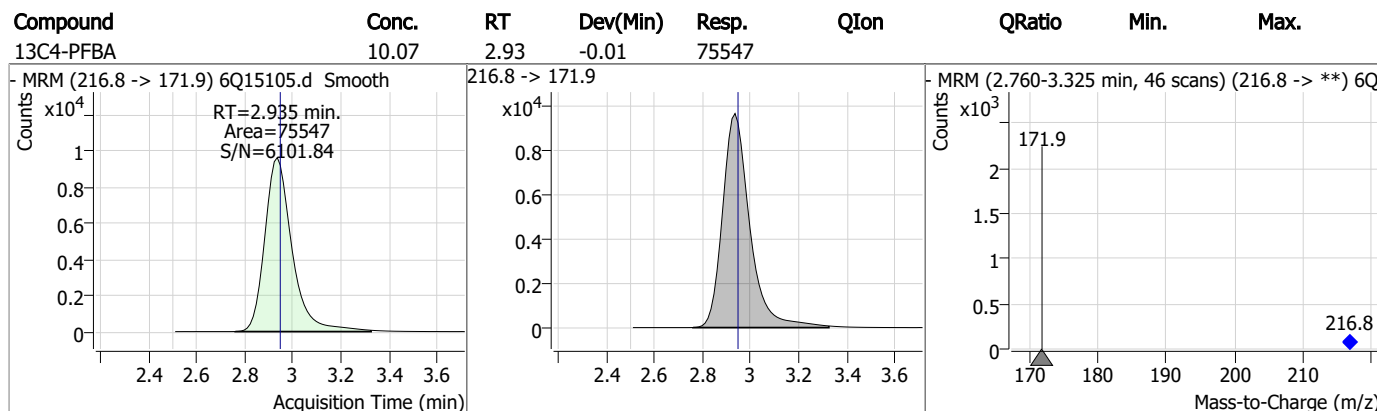
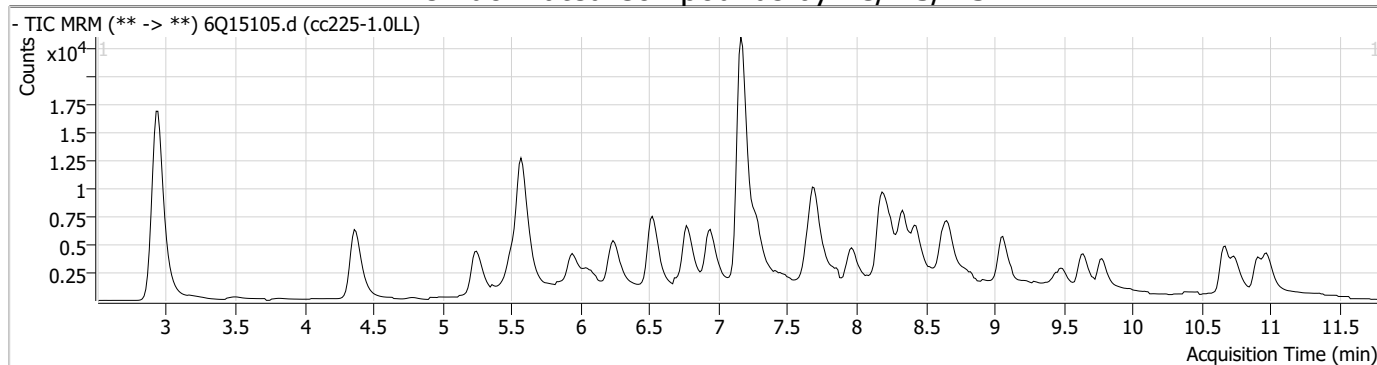
Perfluorinated Compounds by LC/MS/MS

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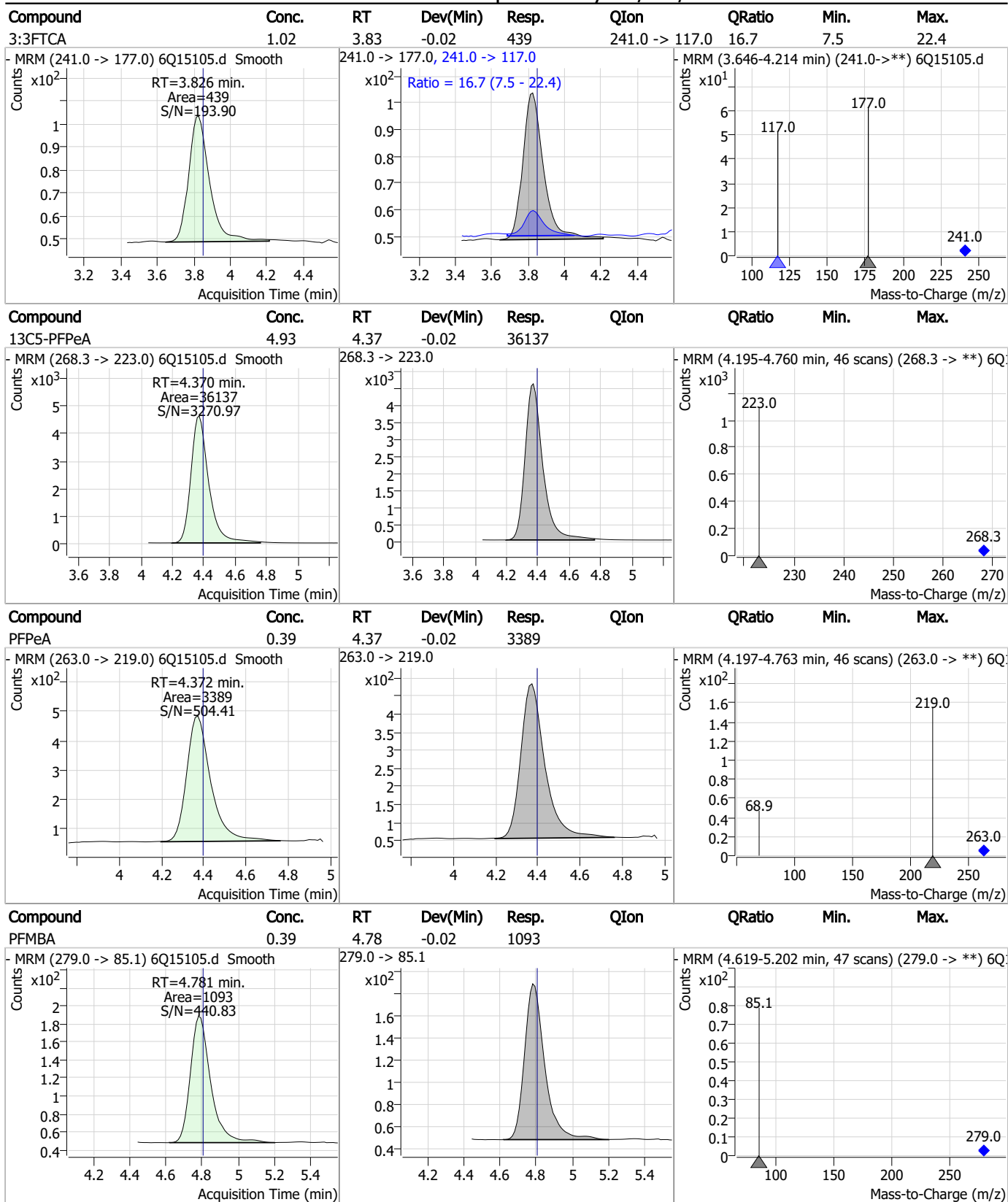
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Perfluorinated Compounds by LC/MS/MS



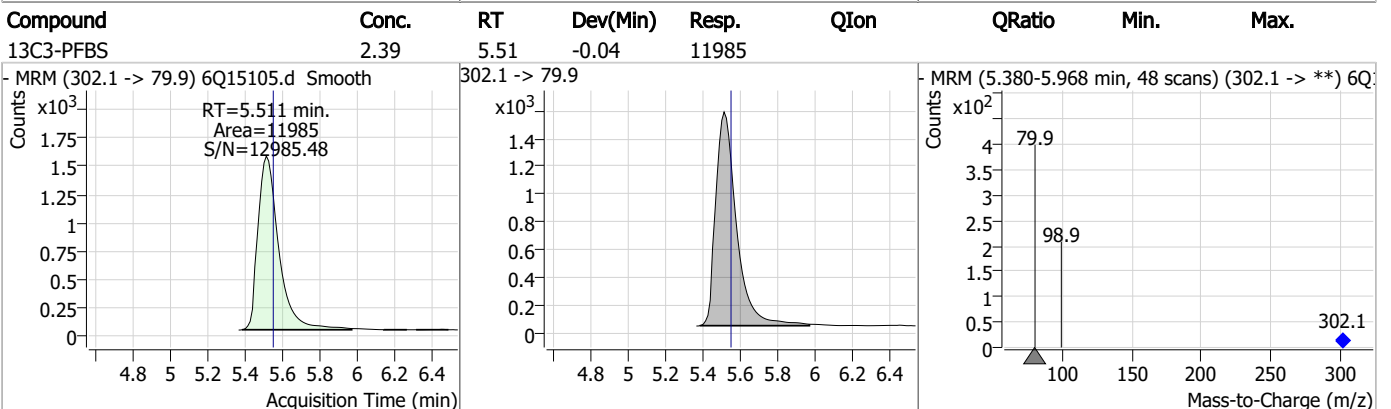
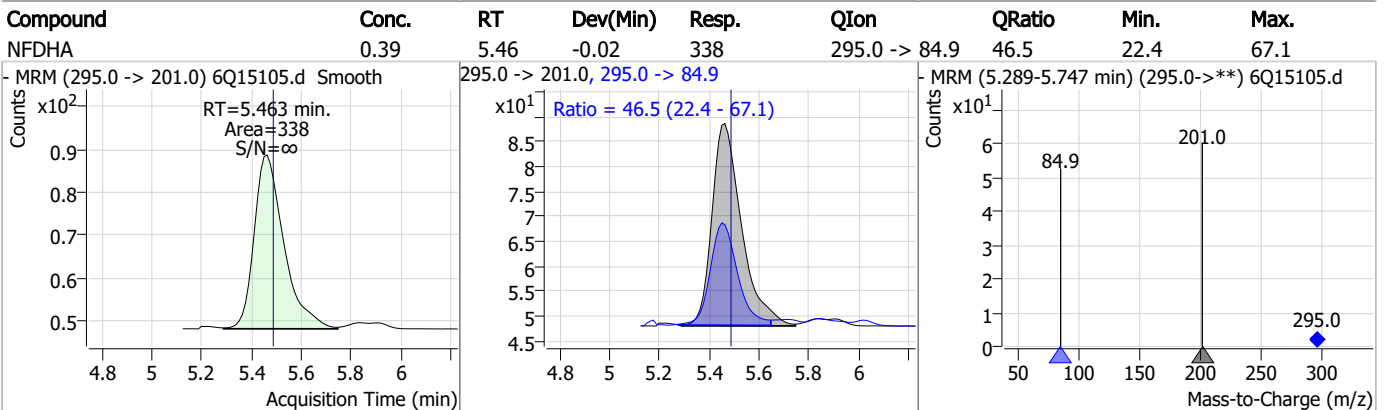
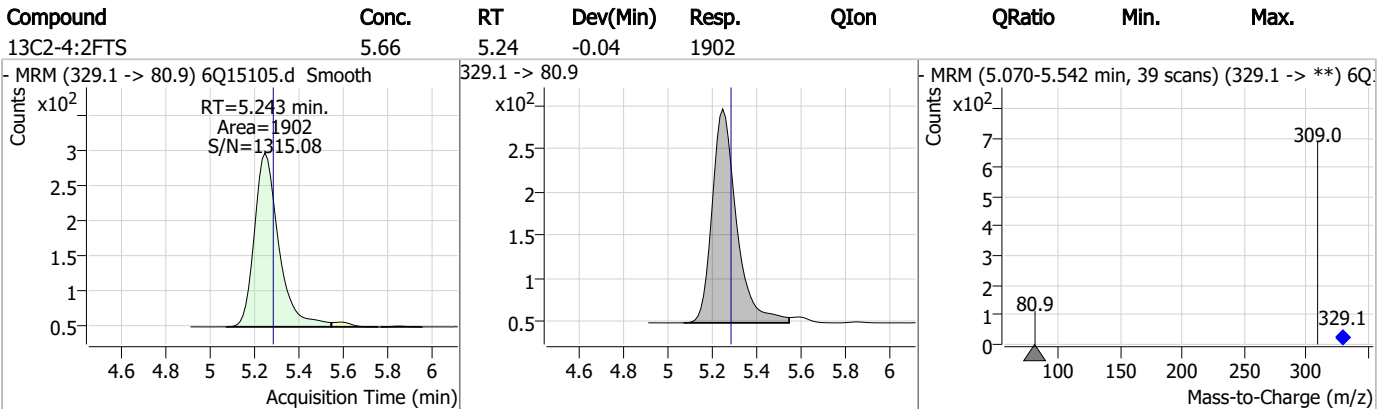
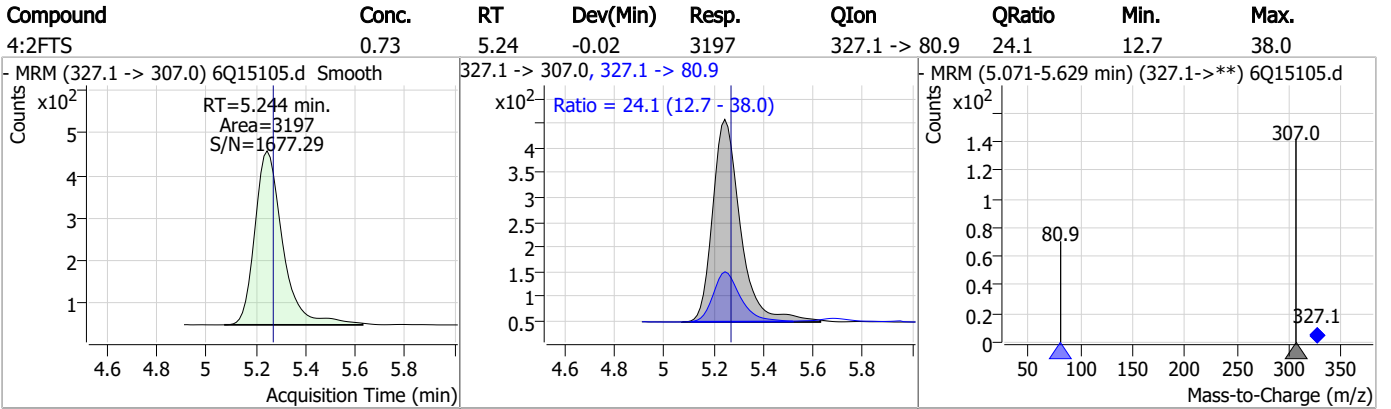
Perfluorinated Compounds by LC/MS/MS



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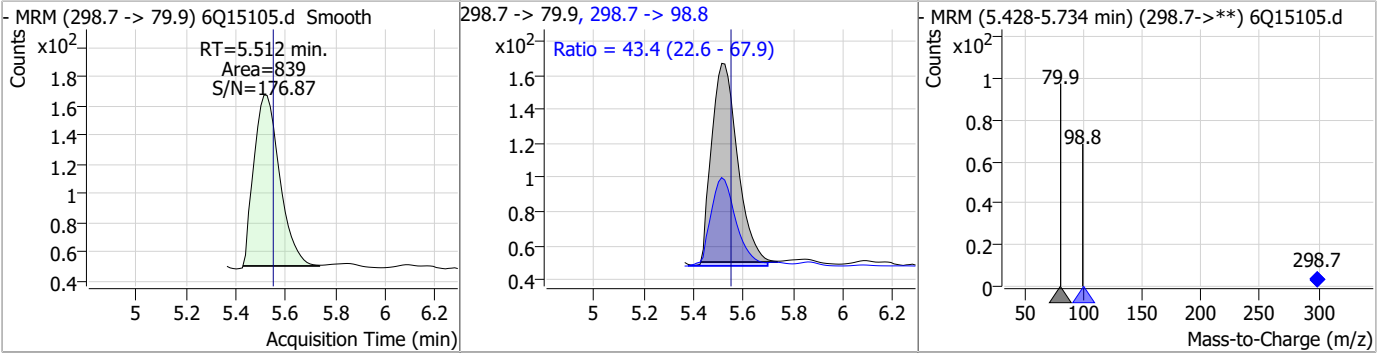
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Perfluorinated Compounds by LC/MS/MS

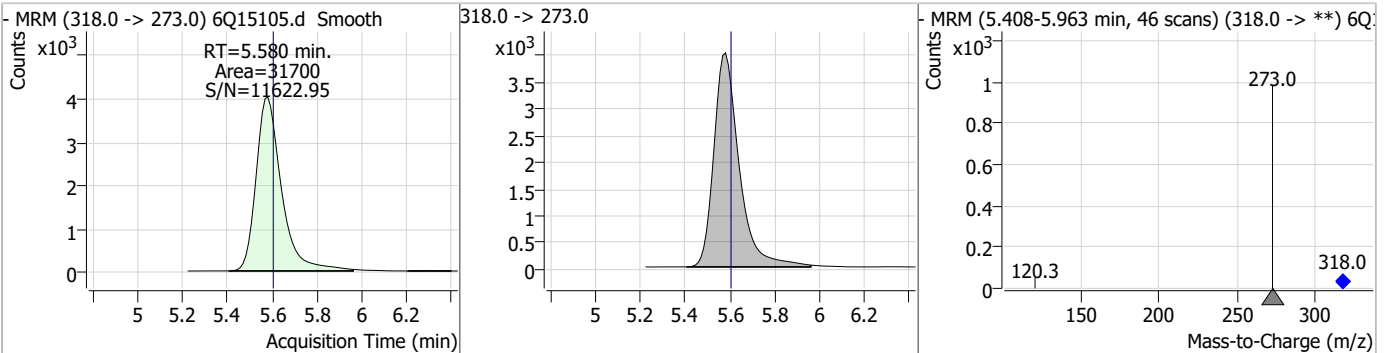


Perfluorinated Compounds by LC/MS/MS

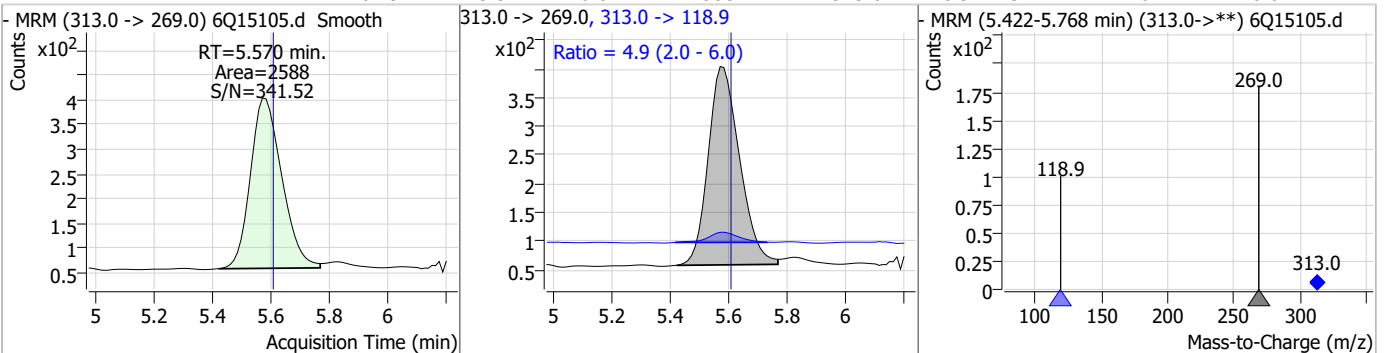
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.16	5.51	-0.04	839	298.7 -> 98.8	43.4	22.6	67.9



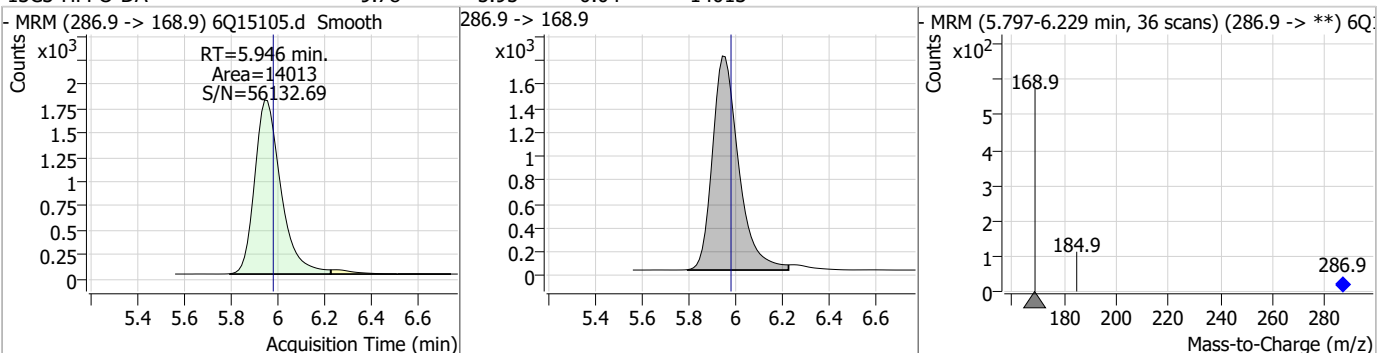
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.45	5.58	-0.02	31700				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.19	5.57	-0.04	2588	313.0 -> 118.9	4.9	2.0	6.0

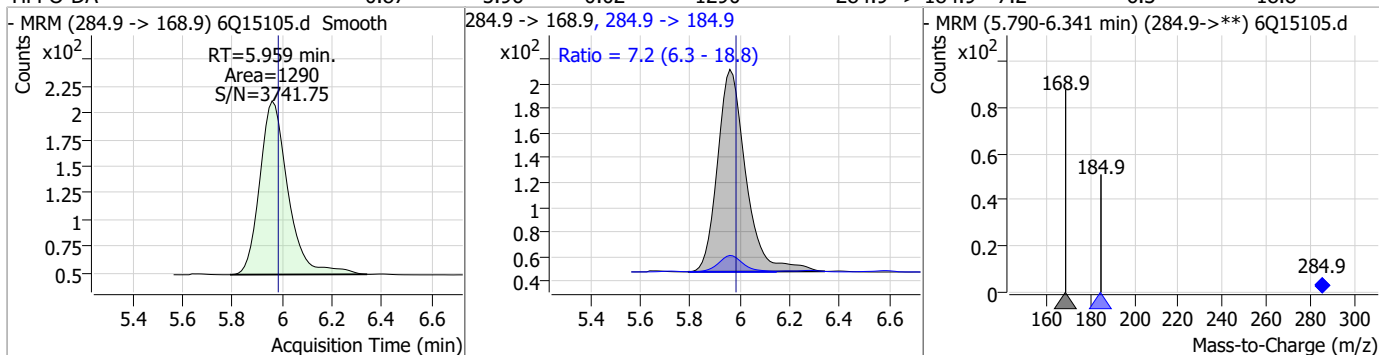


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.78	5.95	-0.04	14013				

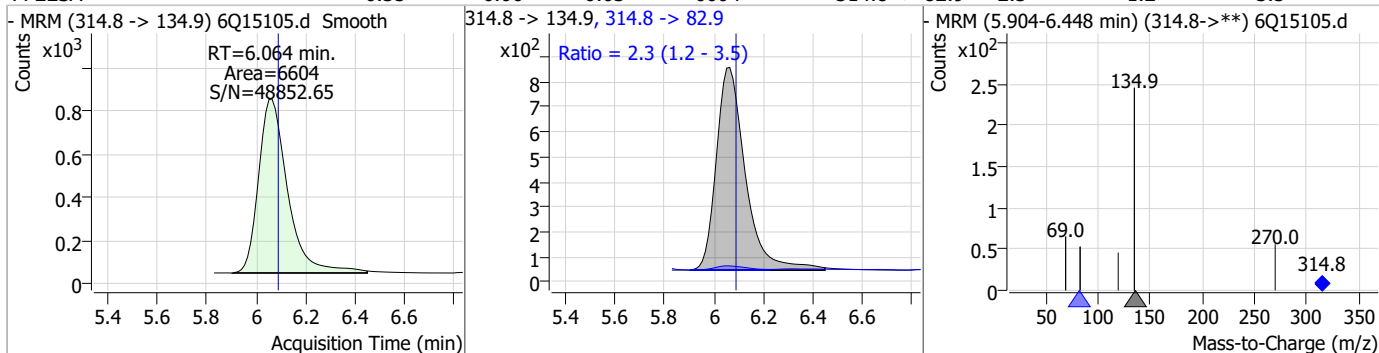


Perfluorinated Compounds by LC/MS/MS

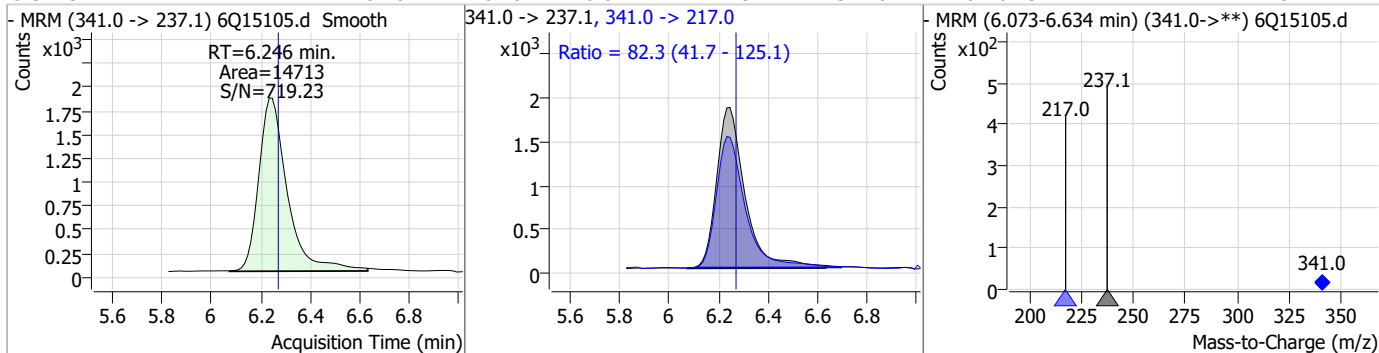
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.87	5.96	-0.02	1290	284.9 -> 184.9	7.2	6.3	18.8



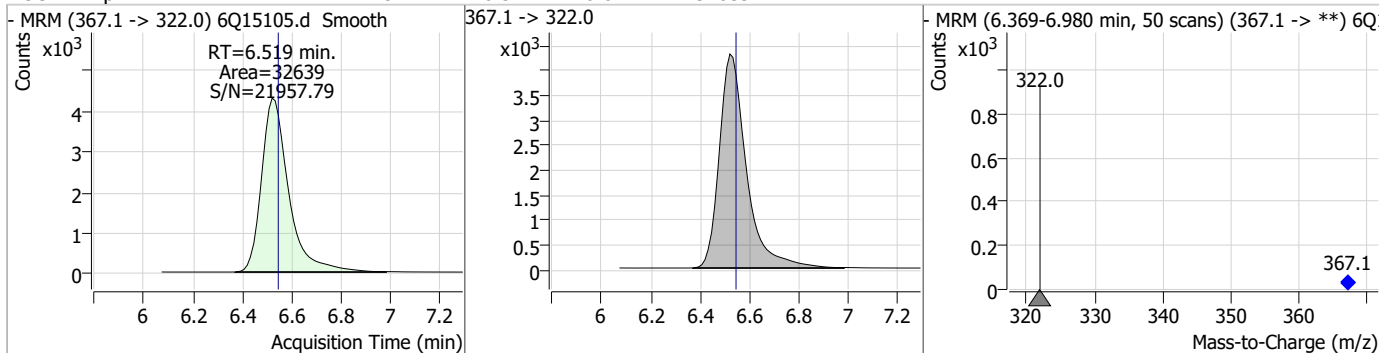
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.35	6.06	-0.03	6604	314.8 -> 82.9	2.3	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	5.46	6.25	-0.02	14713	341.0 -> 217.0	82.3	41.7	125.1



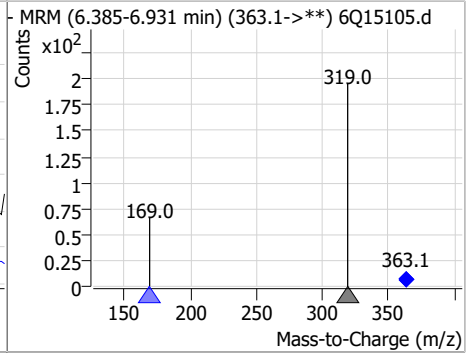
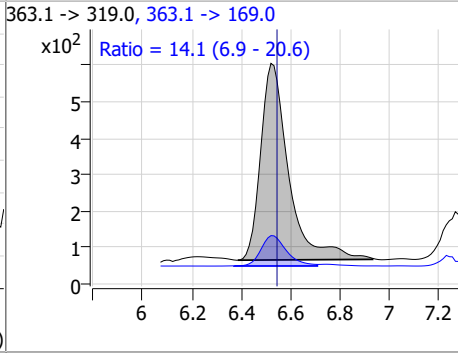
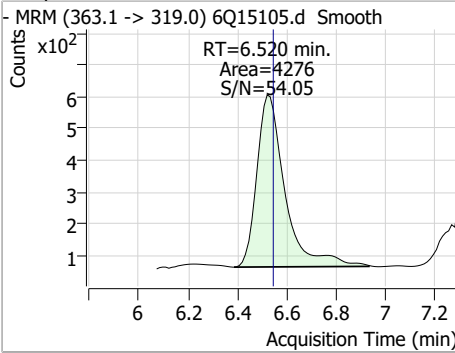
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.52	6.52	-0.02	32639	367.1 -> 322.0			



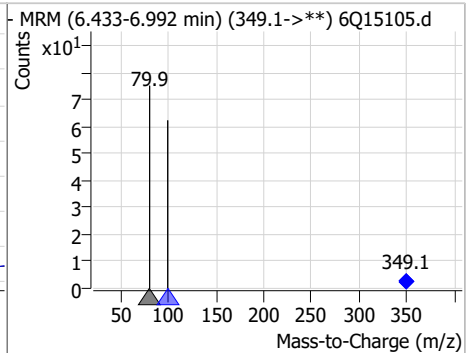
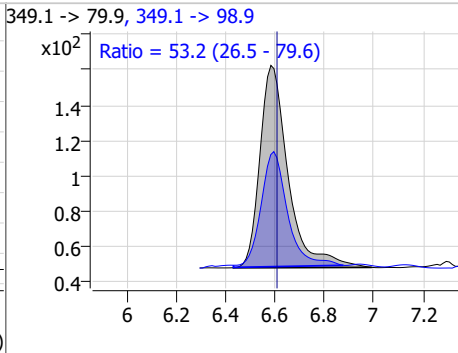
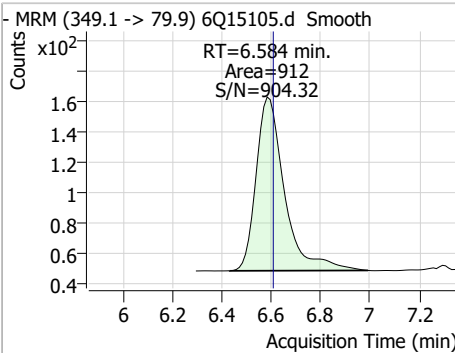
7.7.13
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Perfluorinated Compounds by LC/MS/MS

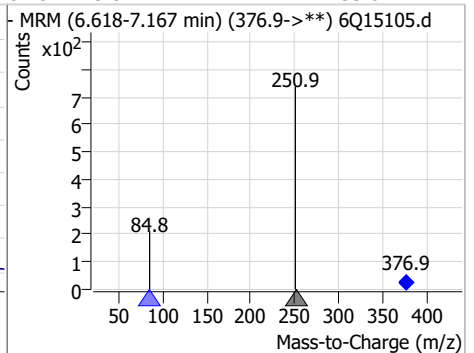
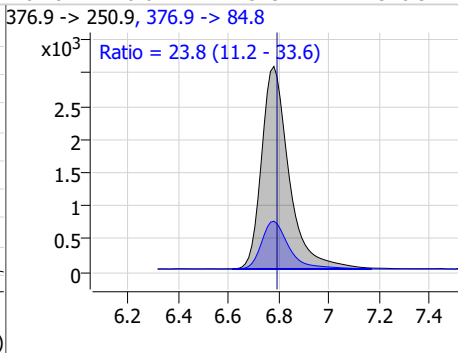
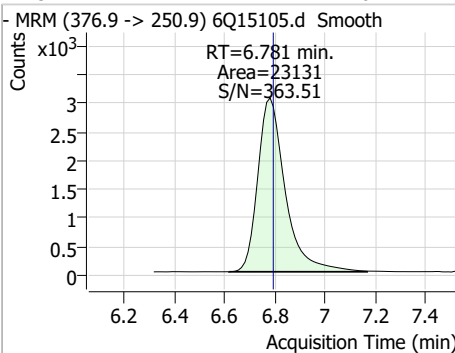
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.20	6.52	-0.02	4276	363.1 -> 169.0	14.1	6.9	20.6



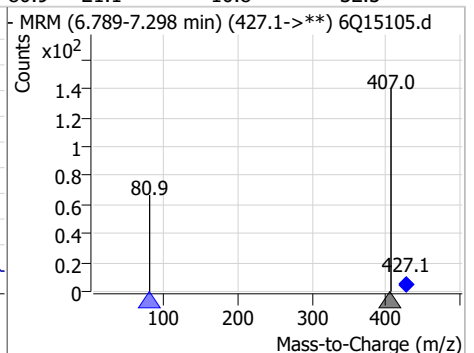
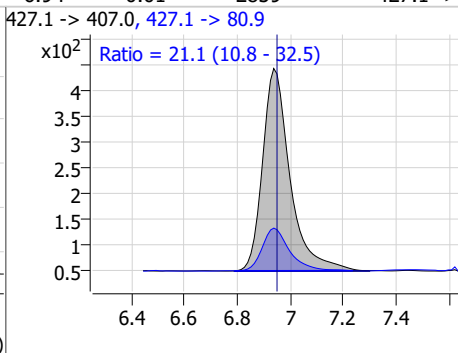
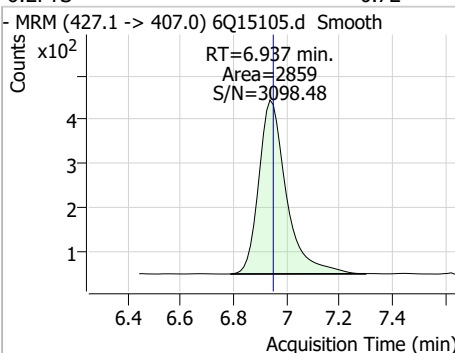
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.19	6.58	-0.02	912	349.1 -> 98.9	53.2	26.5	79.6



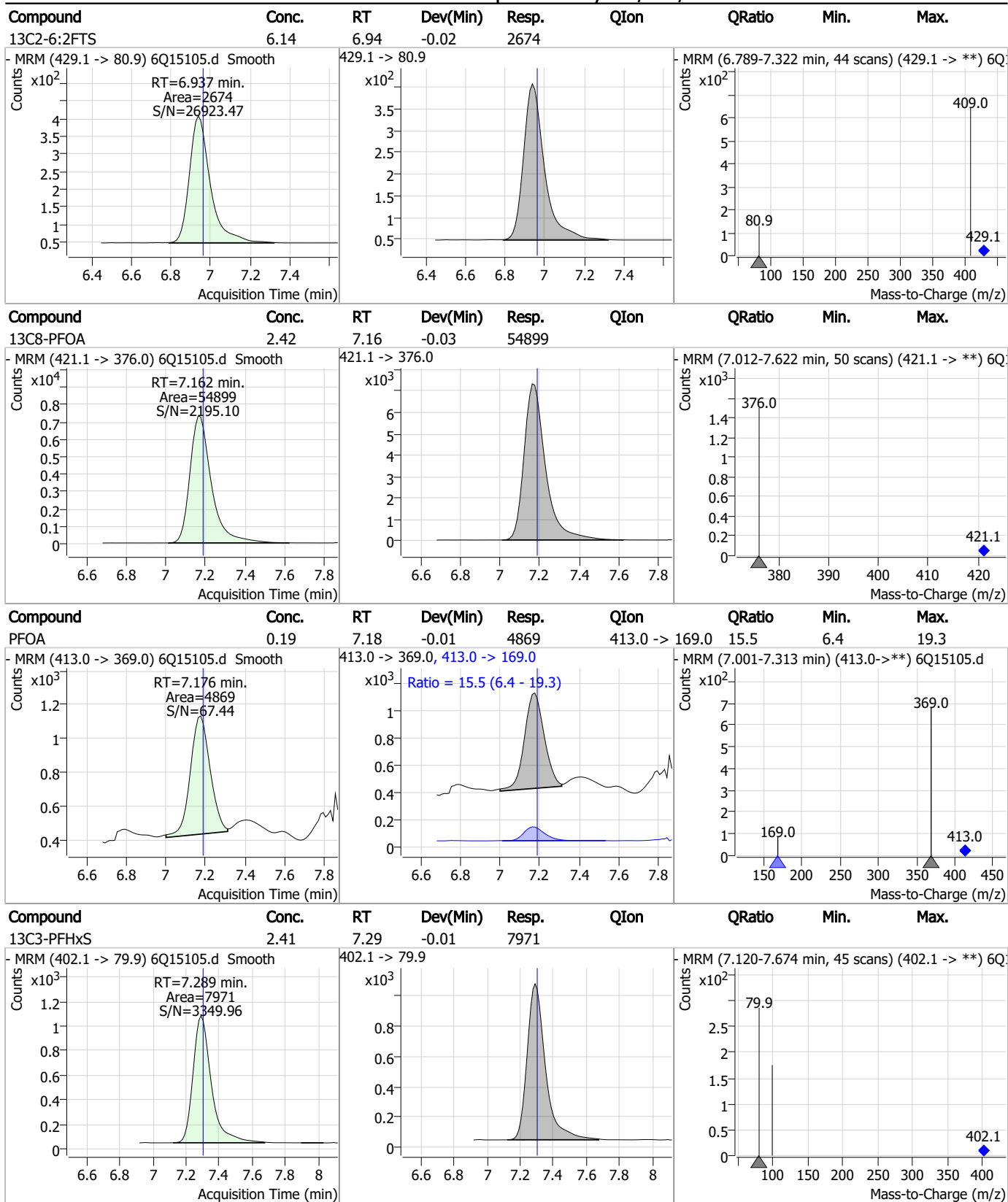
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.77	6.78	-0.01	23131	376.9 -> 84.8	23.8	11.2	33.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.72	6.94	-0.01	2859	427.1 -> 80.9	21.1	10.8	32.5



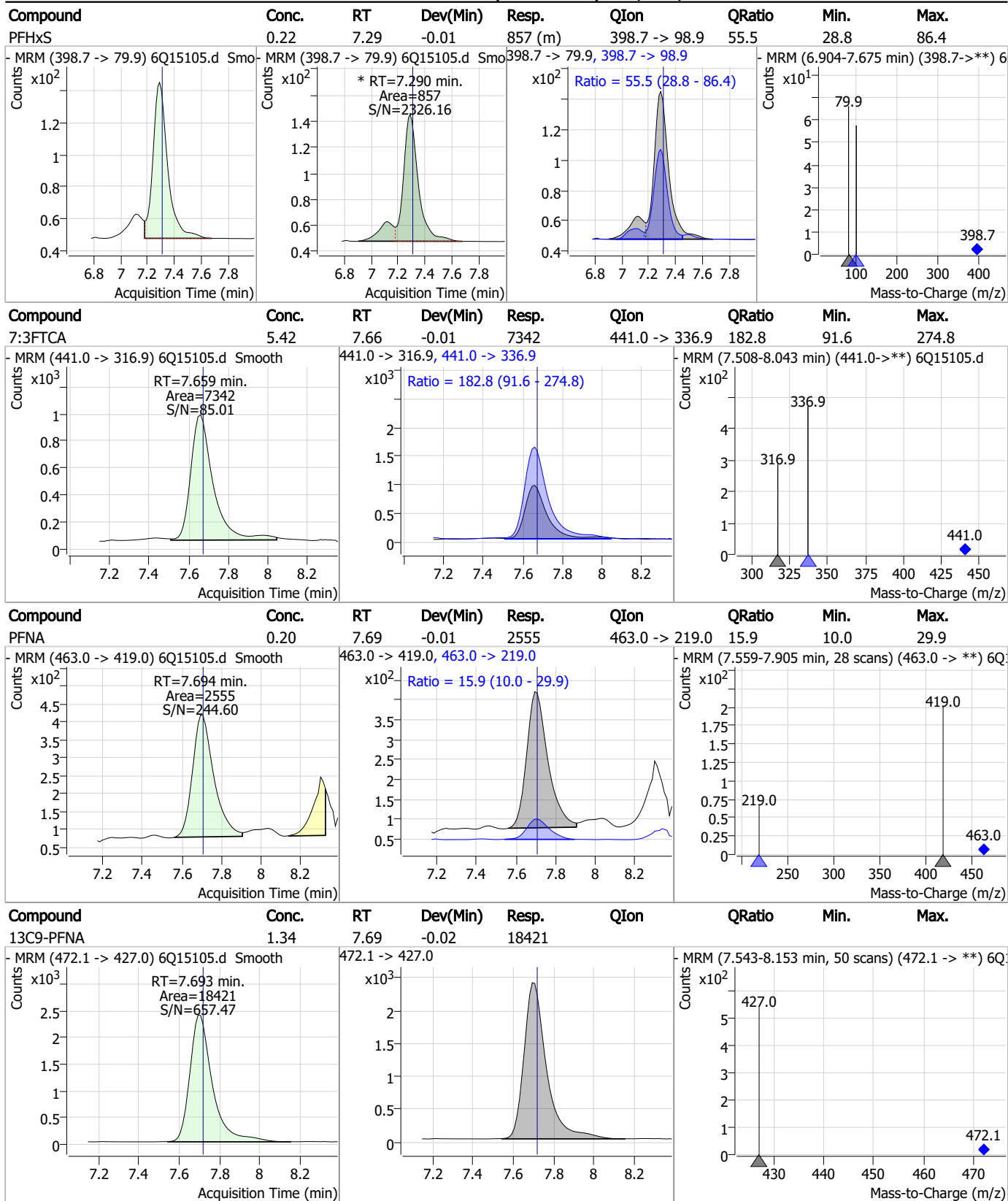
Perfluorinated Compounds by LC/MS/MS



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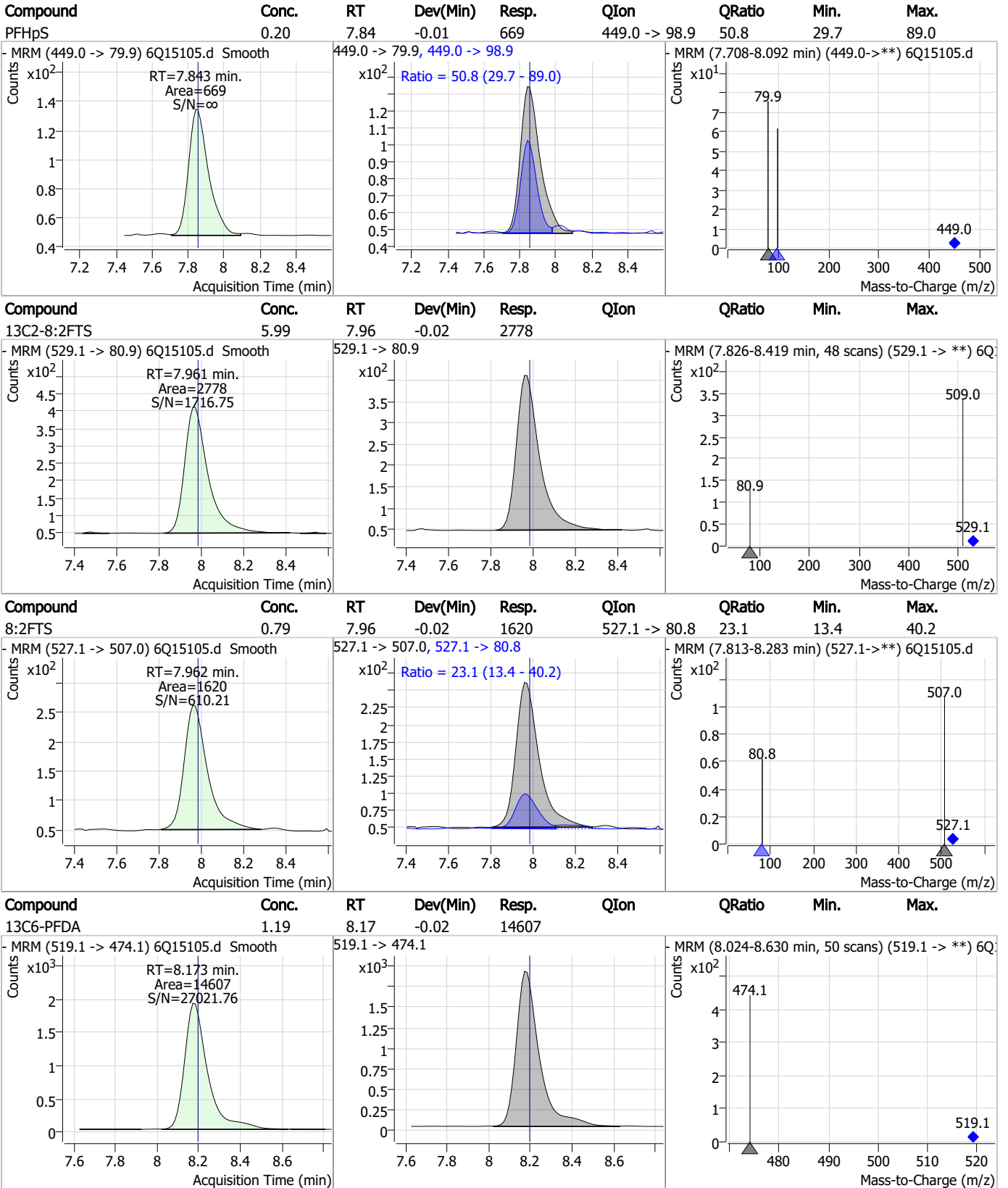


Perfluorinated Compounds by LC/MS/MS



7.7.13
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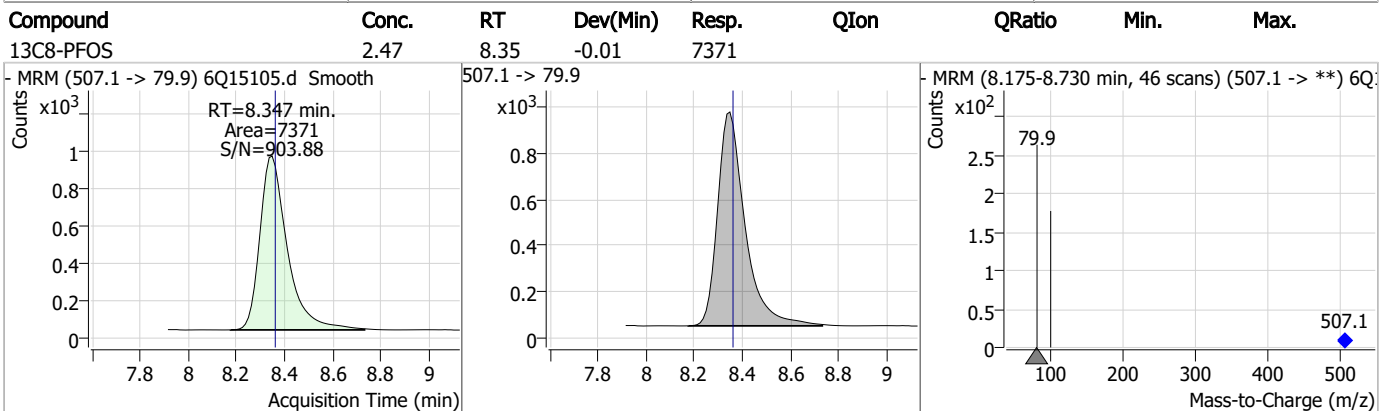
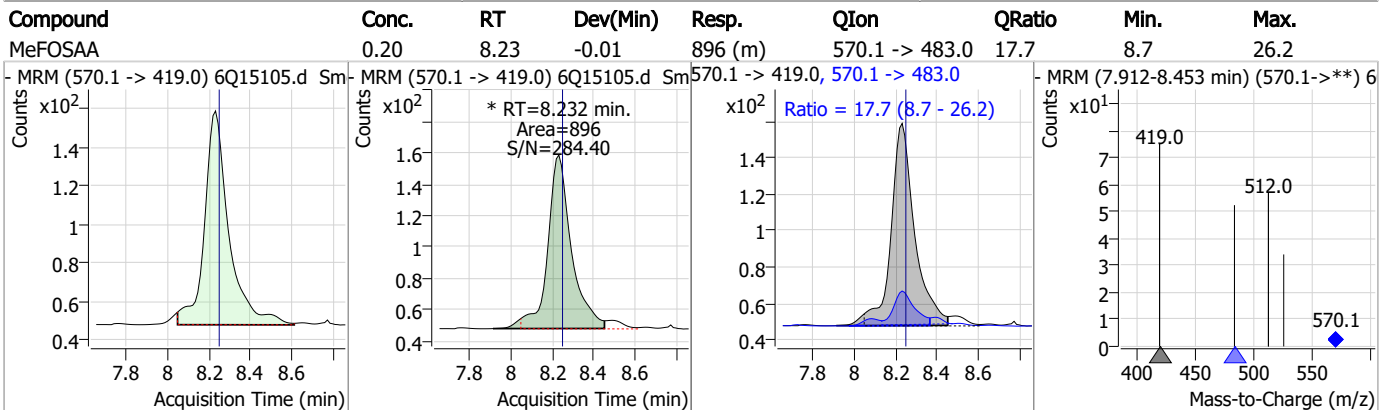
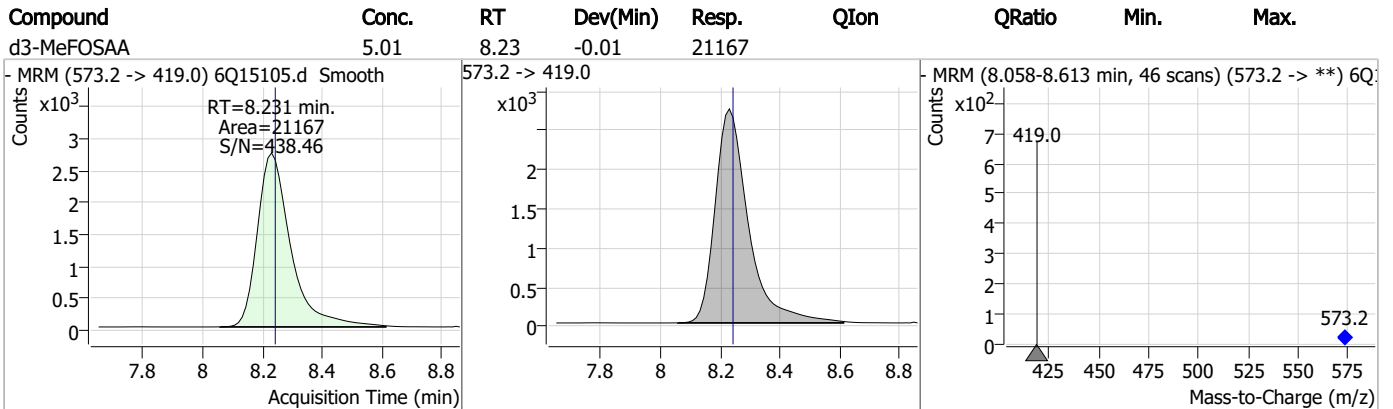
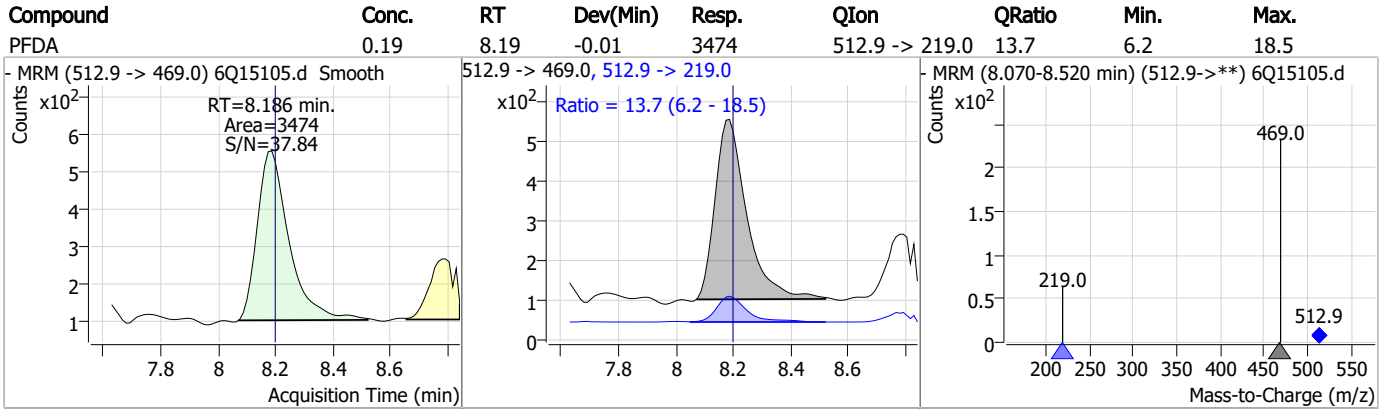
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

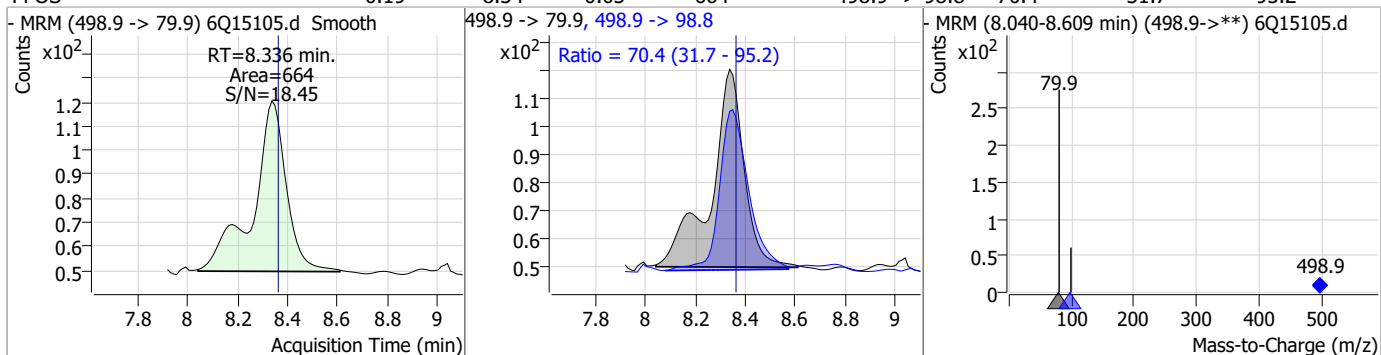


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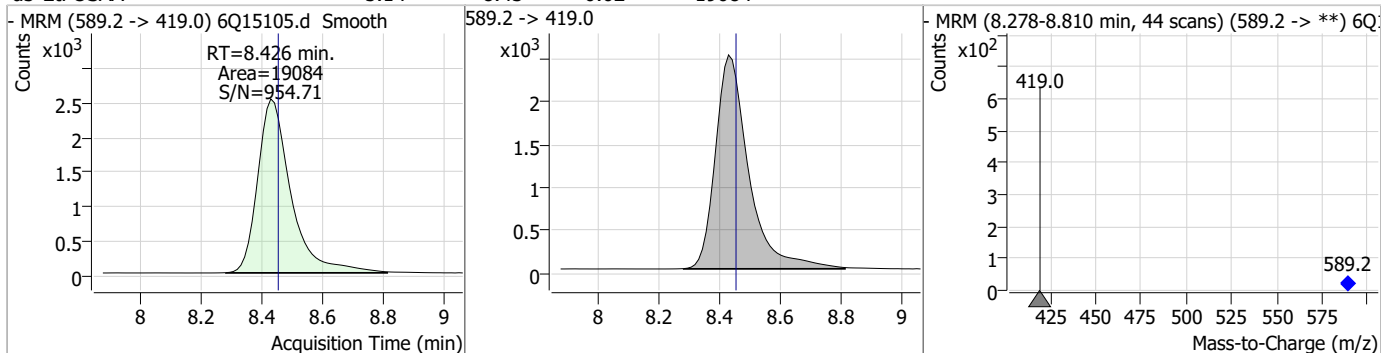


Perfluorinated Compounds by LC/MS/MS

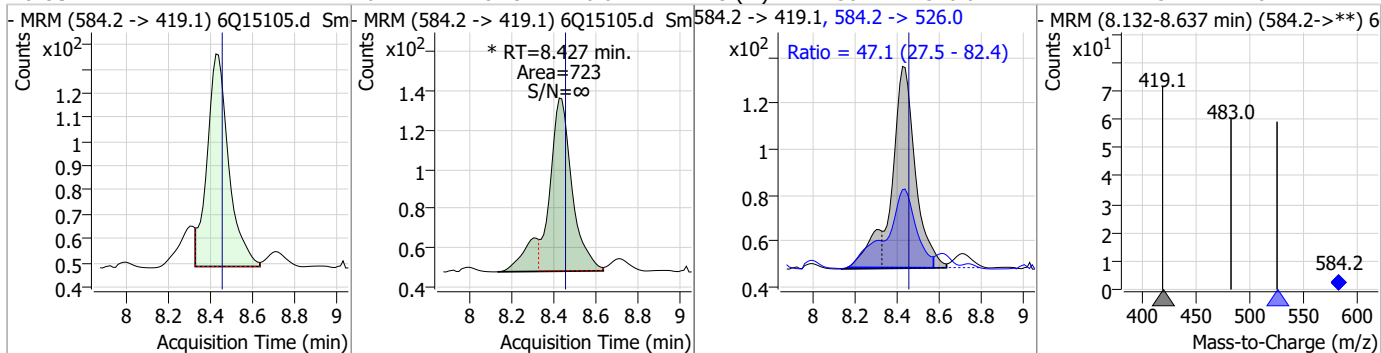
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.19	8.34	-0.03	664	498.9 -> 98.8	70.4	31.7	95.2



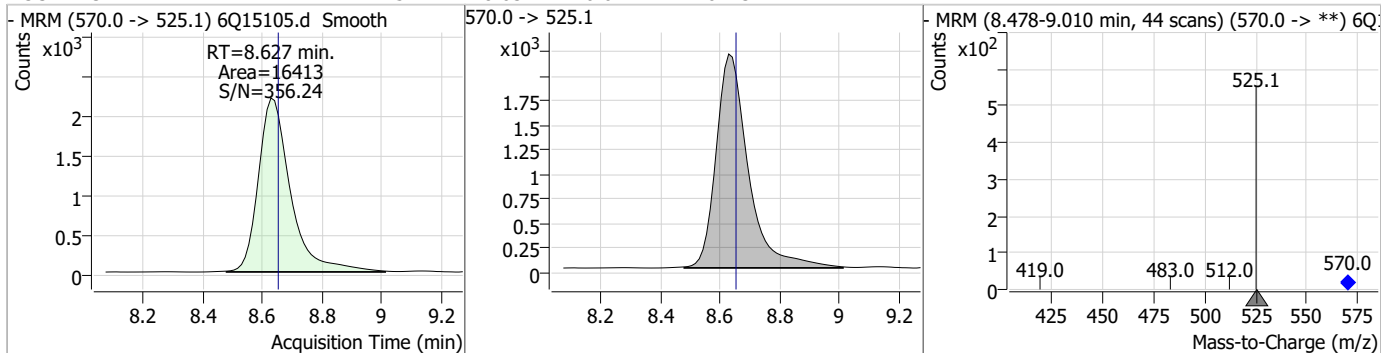
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.14	8.43	-0.02	19084				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.21	8.43	-0.02	723 (m)	584.2 -> 526.0	47.1	27.5	82.4

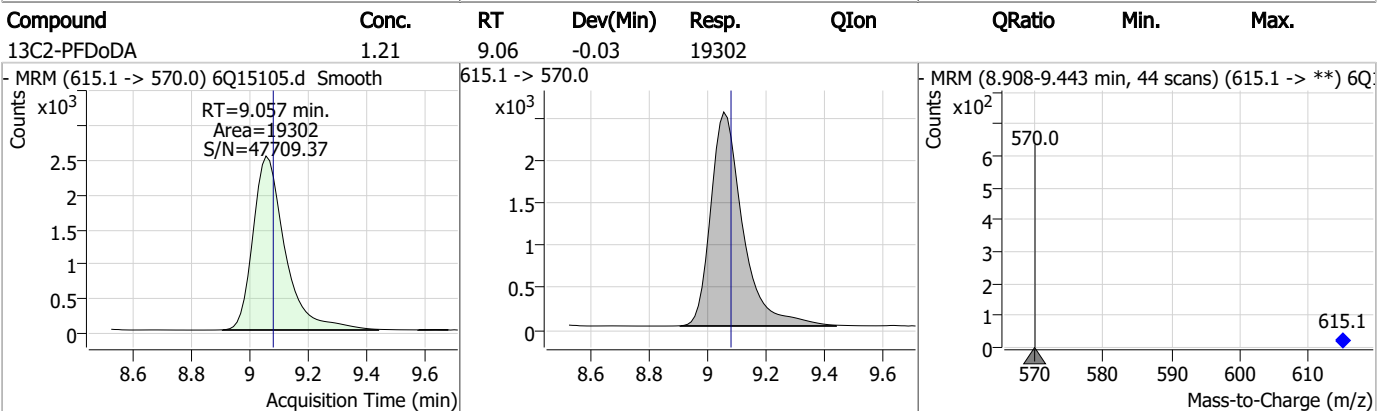
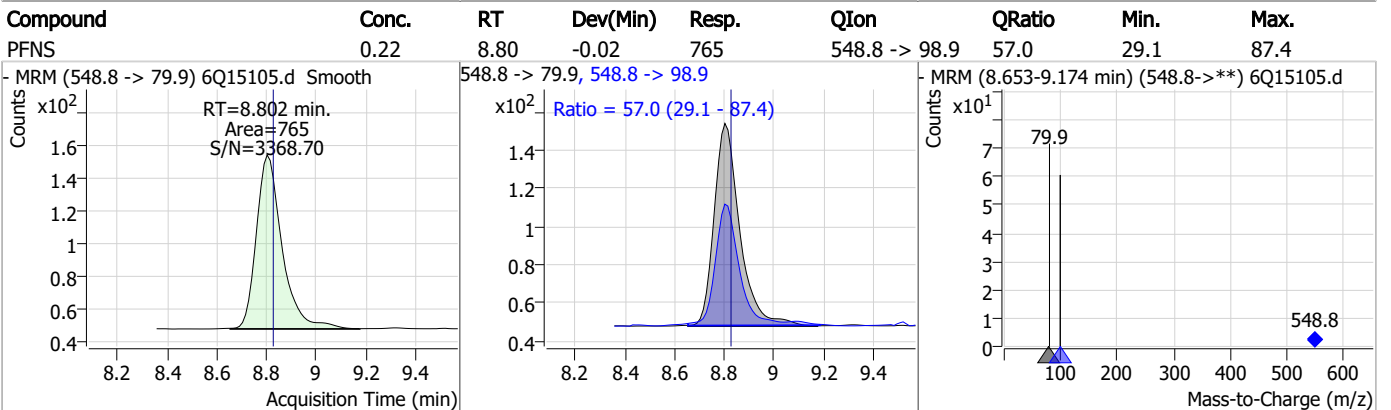
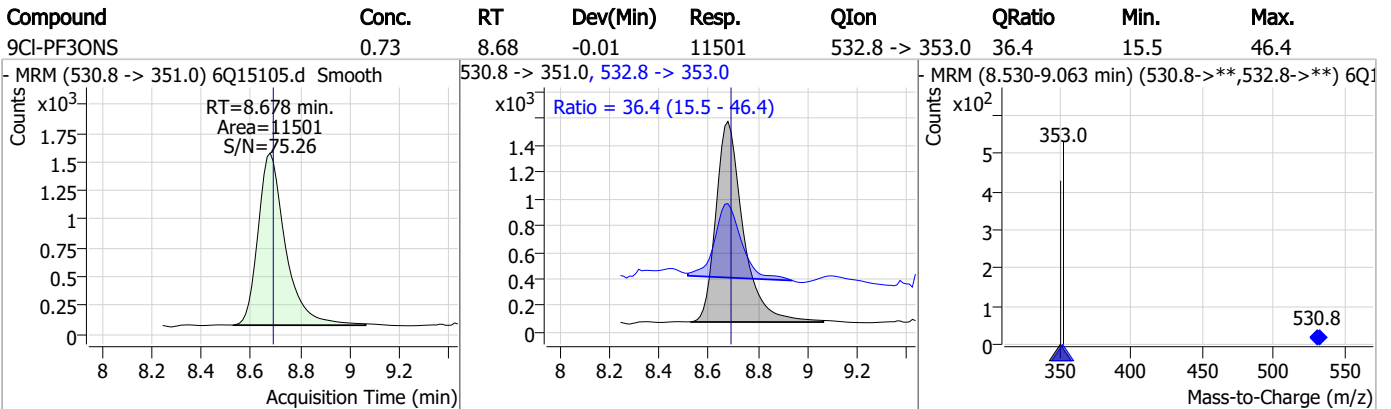
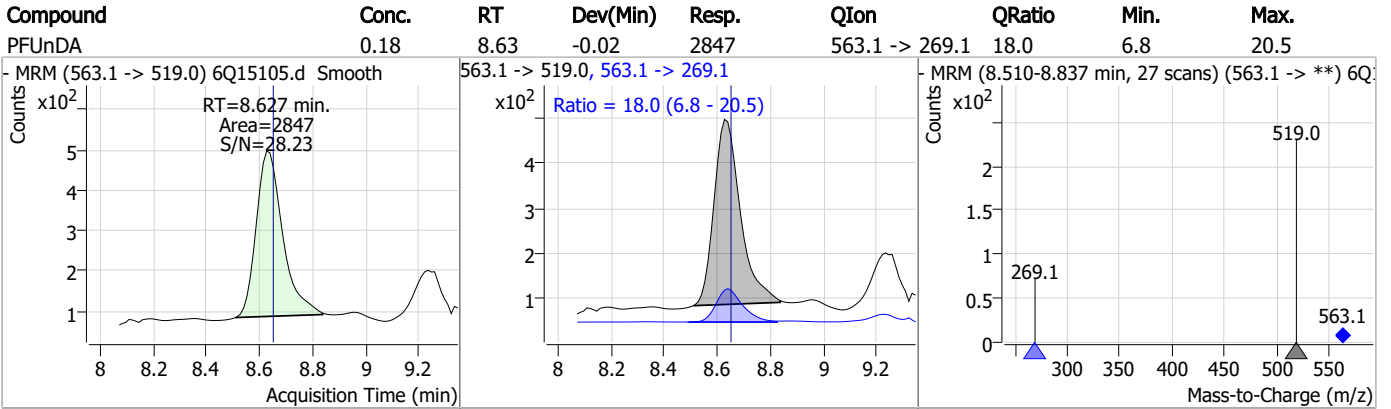


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.25	8.63	-0.02	16413				



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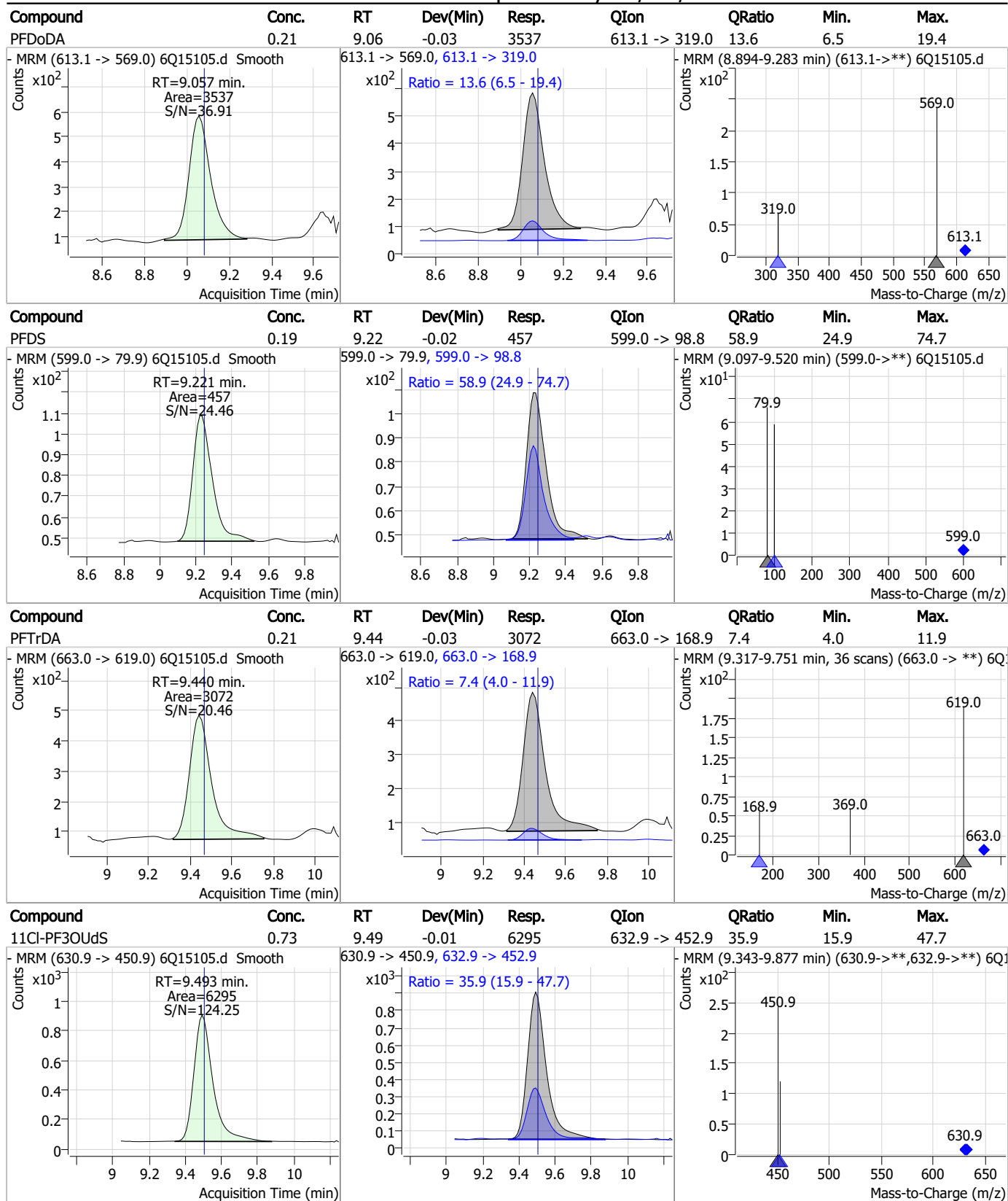
Perfluorinated Compounds by LC/MS/MS



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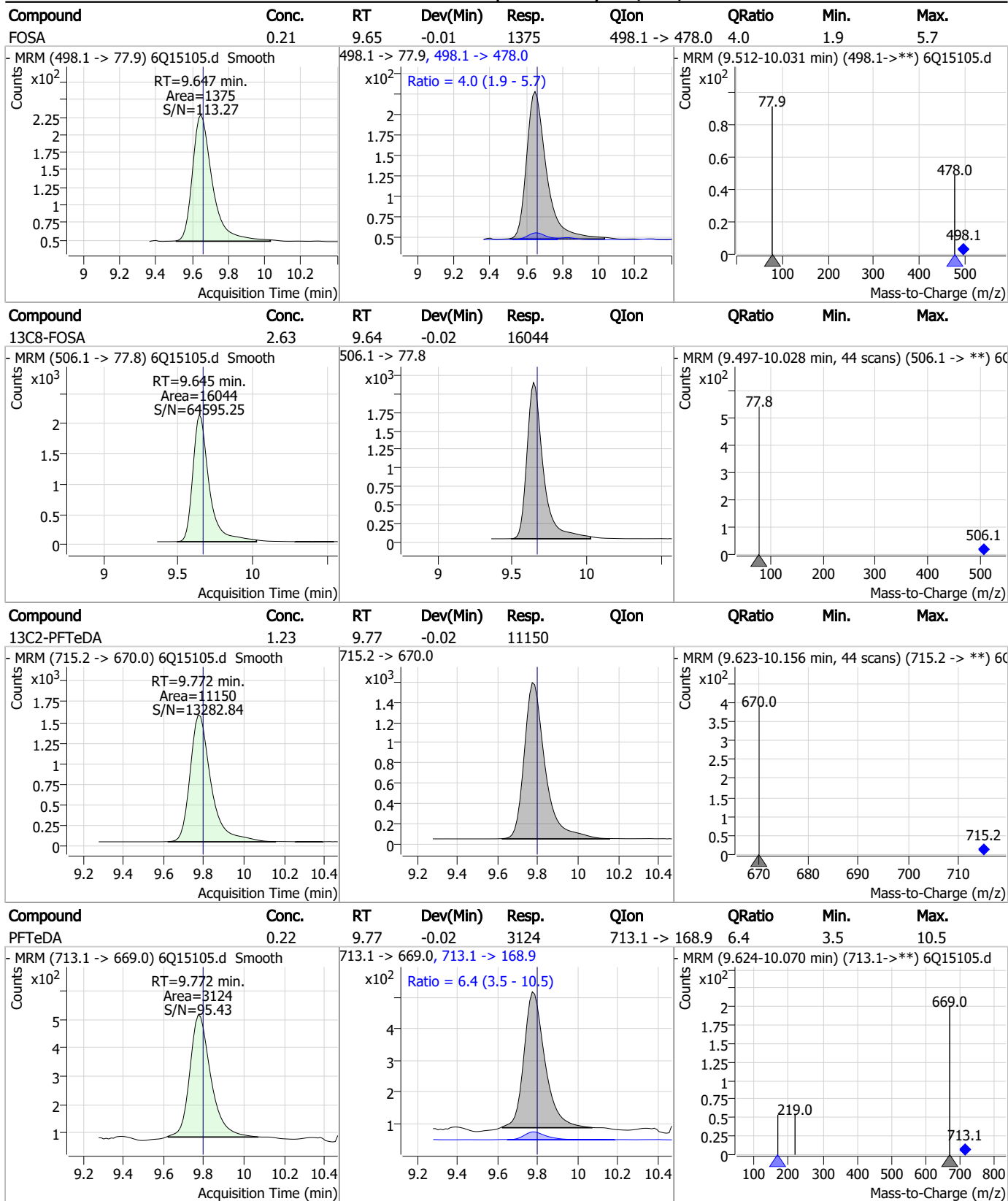


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

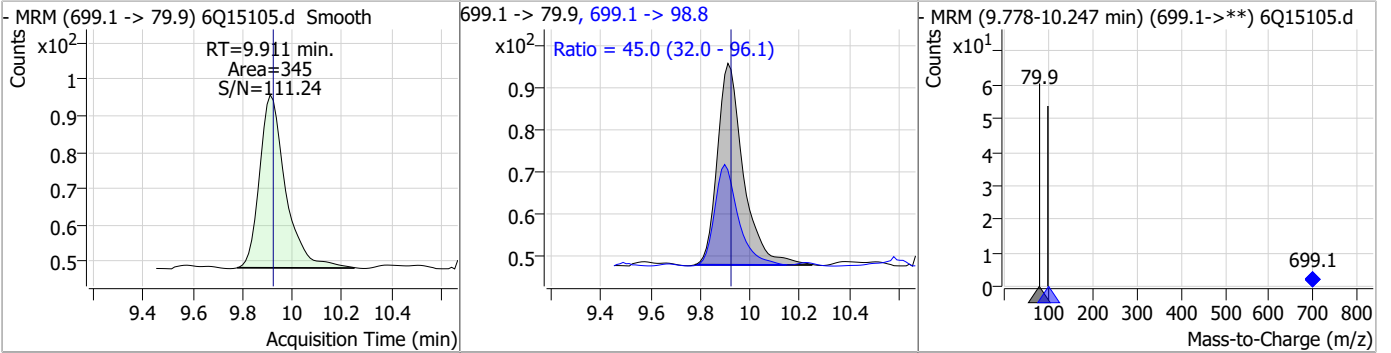


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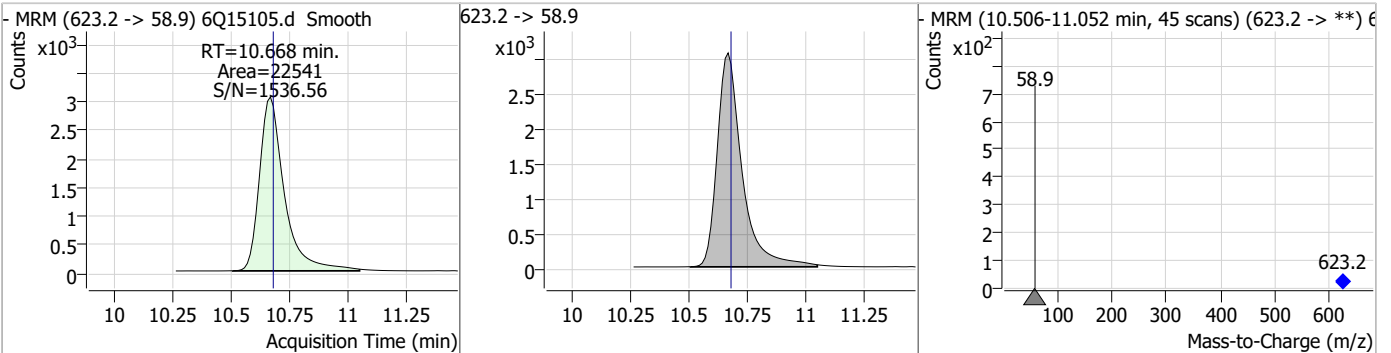
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Perfluorinated Compounds by LC/MS/MS

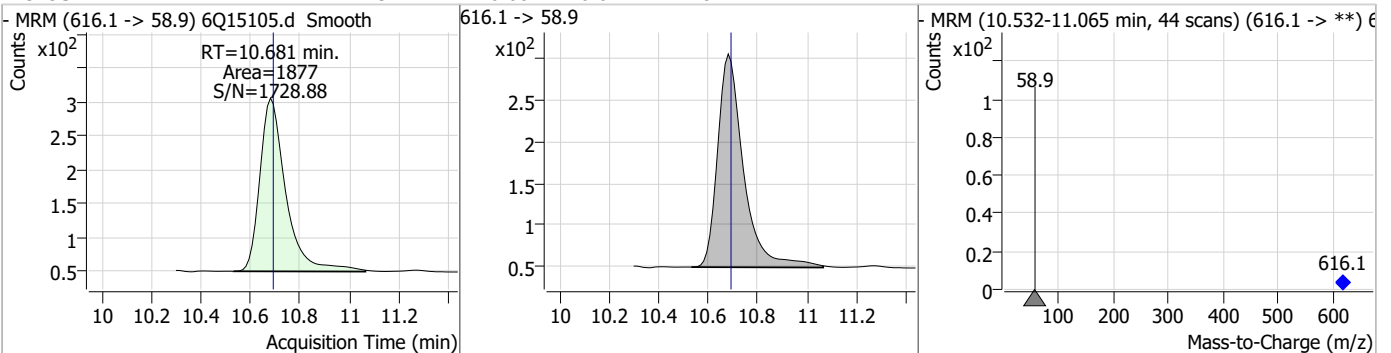
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.25	9.91	-0.01	345	699.1 -> 98.8	45.0	32.0	96.1



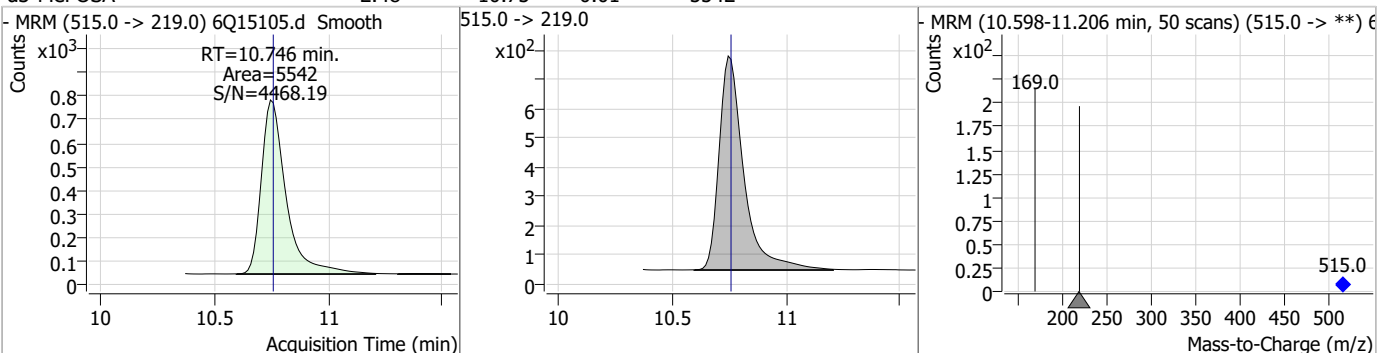
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.66	10.67	-0.01	22541				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.97	10.68	-0.01	1877				

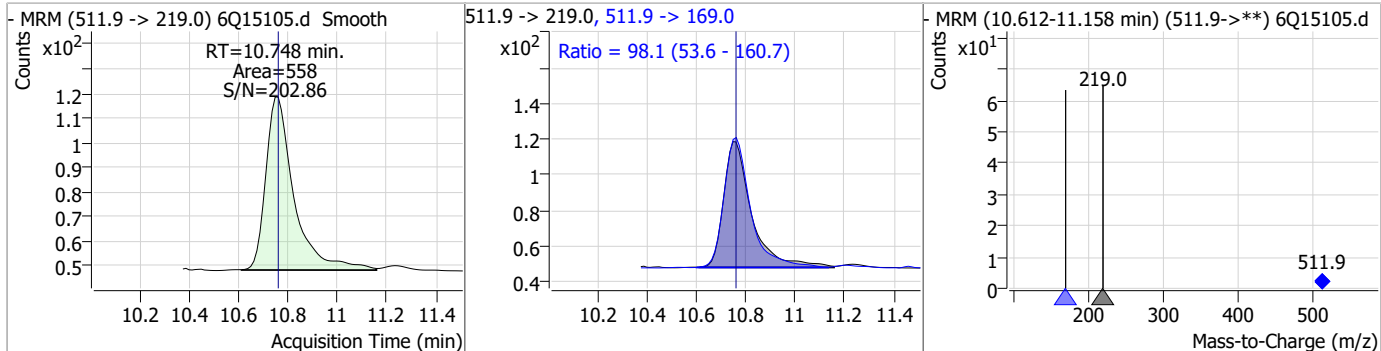


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.48	10.75	-0.01	5542				

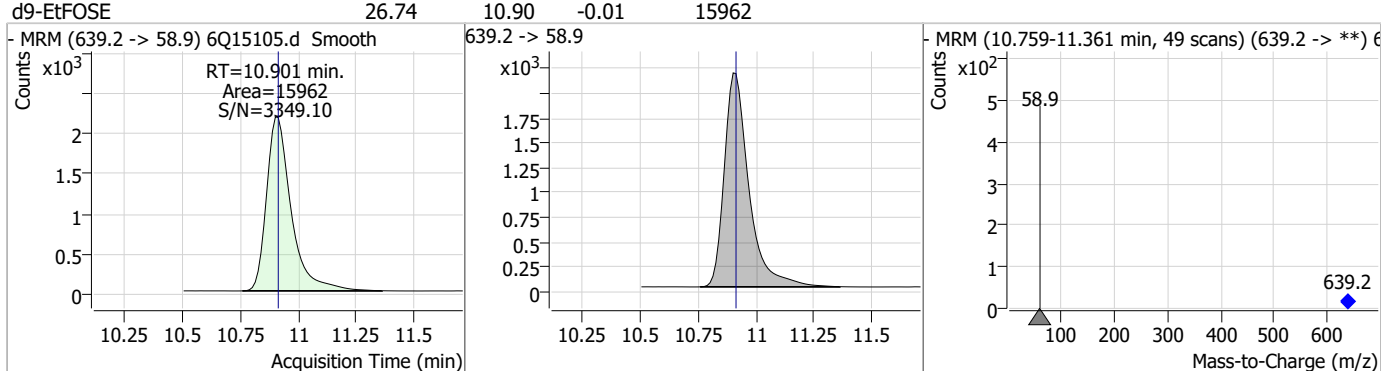


Perfluorinated Compounds by LC/MS/MS

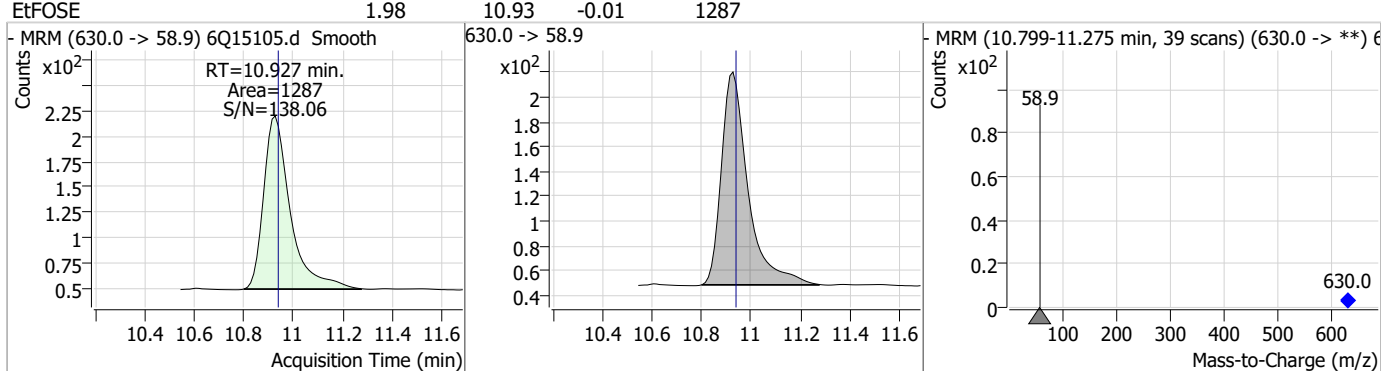
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	0.21	10.75	-0.01	558	511.9 -> 169.0	98.1	53.6	160.7



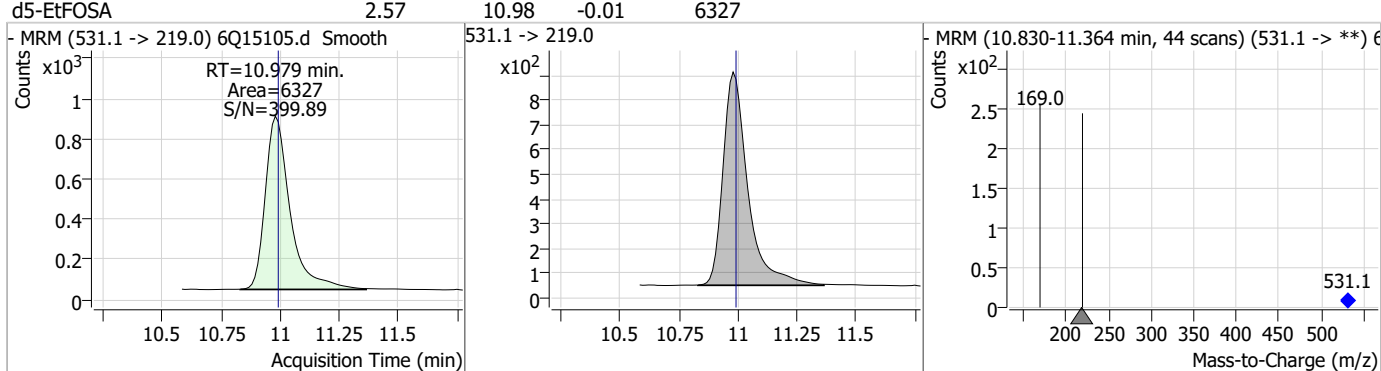
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.74	10.90	-0.01	15962				



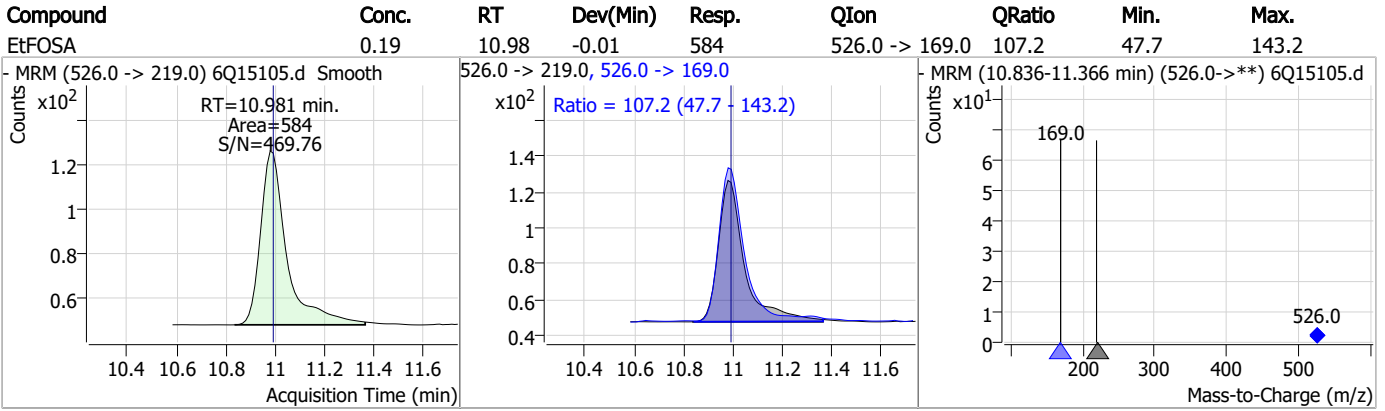
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	1.98	10.93	-0.01	1287				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.57	10.98	-0.01	6327				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q229-CC225 Method: EPA DRAFT 1633
Lab FileID: 6Q15105.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 15:41 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.23	Split peak
EtFOSAA	2991-50-6		8.43	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15116.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 6:15:59 PM
 Sample Name : cc225-4
 Vial : P1-A5
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.935	216.8 -> 171.9	81051	10.00 µg/L	-0.012
M5-PFPeA	4.370	268.3 -> 223.0	38676	5.00 µg/L	-0.025
M5-PFHxA	5.580	318.0 -> 273.0	35914	2.50 µg/L	-0.025
M4-PFHpA	6.519	367.1 -> 322.0	34346	2.50 µg/L	-0.025
M8-PFOA	7.162	421.1 -> 376.0	60477	2.50 µg/L	-0.025
M9-PFNA	7.693	472.1 -> 427.0	19085	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	16335	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	17981	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	21689	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	12031	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	17593	2.50 µg/L	-0.025
M3-PFBS	5.511	302.1 -> 79.9	13238	2.50 µg/L	-0.037
M3-PFHxS	7.289	402.1 -> 79.9	8998	2.50 µg/L	-0.013
M8-PFOS	8.335	507.1 -> 79.9	7967	2.50 µg/L	-0.025
M2-4:2FTS	5.256	329.1 -> 80.9	1907	5.00 µg/L	-0.025
M2-6:2FTS	6.937	429.1 -> 80.9	2832	5.00 µg/L	-0.025
M2-8:2FTS	7.961	529.1 -> 80.9	2728	5.00 µg/L	-0.025
M3-MeFOSAA	8.218	573.2 -> 419.0	25502	5.00 µg/L	-0.025
M3-HFPO-DA	5.946	286.9 -> 168.9	14797	10.00 µg/L	-0.037
M5-EtFOSAA	8.426	589.2 -> 419.0	21692	5.00 µg/L	-0.025
M7-MeFOSE	10.656	623.2 -> 58.9	23306	25.00 µg/L	-0.025
M9-EtFOSE	10.901	639.2 -> 58.9	17356	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	6753	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	6062	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	9092	2.50 µg/L	-0.025
13C3-PFBA	2.939	216.0 -> 172.0	34805	5.00 µg/L	-0.013
18O2-PFHxS	7.288	403.0 -> 83.9	6210	2.50 µg/L	-0.026
13C4-PFOA	7.163	417.1 -> 372.0	71381	2.50 µg/L	-0.025
13C2-PFDA	8.173	515.1 -> 470.1	20601	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	19201	1.25 µg/L	-0.025
13C2-PFHxA	5.581	315.1 -> 270.0	34516	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.256	329.1 -> 80.9	1907	5.35 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-6:2FTS	6.937	429.1 -> 80.9	2832	6.14 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.8%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2728	5.54 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.9%		
13C2-PFDoDA	9.057	615.1 -> 570.0	21689	1.35 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C2-PFTeDA	9.772	715.2 -> 670.0	12031	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
13C3-PFBS	5.511	302.1 -> 79.9	13238	2.49 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C3-PFHxS	7.289	402.1 -> 79.9	8998	2.57 µg/L	-0.013

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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 = 102.7%	
13C4-PFBA	2.935	216.8 -> 171.9	81051	10.15 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C4-PFHpA	6.519	367.1 -> 322.0	34346	2.43 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C5-PFHxA	5.580	318.0 -> 273.0	35914	2.55 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C5-PFPeA	4.370	268.3 -> 223.0	38676	4.85 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C6-PFDA	8.173	519.1 -> 474.1	16335	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C7-PFUnDA	8.627	570.0 -> 525.1	17981	1.35 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C8-FOSA	9.645	506.1 -> 77.8	17593	2.79 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.6%	
13C8-PFOA	7.162	421.1 -> 376.0	60477	2.54 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C8-PFOS	8.335	507.1 -> 79.9	7967	2.58 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C9-PFNA	7.693	472.1 -> 427.0	19085	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.1%	
d3-MeFOSAA	8.218	573.2 -> 419.0	25502	5.84 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.8%	
13C3-HFPO-DA	5.946	286.9 -> 168.9	14797	9.49 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
d3-MeFOSA	10.746	515.0 -> 219.0	6062	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.1%	
d5-EtFOSAA	8.426	589.2 -> 419.0	21692	5.65 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.0%	
d7-MeFOSE	10.656	623.2 -> 58.9	23306	26.65 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
d9-EtFOSE	10.901	639.2 -> 58.9	17356	28.11 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 112.4%	
d5-EtFOSA	10.979	531.1 -> 219.0	6753	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.9%	
Target Compounds					QValue
4:2FTS	5.244	327.1 -> 307.0	43929	9.96 µg/L	97
		327.1 -> 80.9	10425		
6:2FTS	6.937	427.1 -> 407.0	36596	8.70 µg/L	99
		427.1 -> 80.9	8049		
8:2FTS	7.962	527.1 -> 507.0	20230	10.09 µg/L	96
		527.1 -> 80.8	5847		
EtFOSAA	8.427	584.2 -> 419.1	9116	2.31 µg/L	m 98
		584.2 -> 526.0	5130		
FOSA	9.647	498.1 -> 77.9	17366	2.47 µg/L	100
		498.1 -> 478.0	676		
MeFOSAA	8.232	570.1 -> 419.0	12647	2.37 µg/L	97
		570.1 -> 483.0	2033		
PFBA	2.943	212.8 -> 168.9	21410	9.68 µg/L	100
PFBS	5.512	298.7 -> 79.9	12296	2.11 µg/L	99
		298.7 -> 98.8	5673		
PFDA	8.174	512.9 -> 469.0	51151	2.52 µg/L	96
		512.9 -> 219.0	7027		
PFDODA	9.057	613.1 -> 569.0	43939	2.35 µg/L	99
		613.1 -> 319.0	5873		
PFDS	9.221	599.0 -> 79.9	6186	2.37 µg/L	89

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.520	599.0 -> 98.8	3566	2.55	µg/L	99
		363.1 -> 319.0	56414			
PFHpS	7.843	363.1 -> 169.0	8011	2.39	µg/L	96
		449.0 -> 79.9	8492			
PFHxA	5.582	449.0 -> 98.9	4754	2.46	µg/L	100
		313.0 -> 269.0	37155			
PFHxS	7.290	313.0 -> 118.9	1452	2.14	µg/L	98
		398.7 -> 79.9	9633			
PFNA	7.694	398.7 -> 98.9	5427	2.33	µg/L	96
		463.0 -> 419.0	31559			
PFNS	8.802	463.0 -> 219.0	6874	2.47	µg/L	89
		548.8 -> 79.9	9295			
PFOA	7.163	548.8 -> 98.9	4679	2.51	µg/L	99
		413.0 -> 369.0	71992			
PFOS	8.336	413.0 -> 169.0	9715	2.28	µg/L	97
		498.9 -> 79.9	8502			
PFPeA	4.372	498.9 -> 98.8	5188	5.03	µg/L	100
		263.0 -> 219.0	46328			
PFPeS	6.584	349.1 -> 79.9	12216	2.25	µg/L	95
		349.1 -> 98.9	6064			
PFTeDA	9.772	713.1 -> 669.0	40047	2.65	µg/L	99
		713.1 -> 168.9	2624			
PFTrDA	9.440	663.0 -> 619.0	41946	2.53	µg/L	99
		663.0 -> 168.9	3526			
PFUnDA	8.627	563.1 -> 519.0	41886	2.46	µg/L	97
		563.1 -> 269.1	6202			
11CI-PF3OUdS	9.493	630.9 -> 450.9	91967	10.05	µg/L	96
		632.9 -> 452.9	27444			
9CI-PF3ONS	8.666	530.8 -> 351.0	158814	9.57	µg/L	96
		532.8 -> 353.0	52371			
ADONA	6.781	376.9 -> 250.9	317723	10.00	µg/L	99
		376.9 -> 84.8	72047			
HFPO-DA	5.959	284.9 -> 168.9	15372	9.87	µg/L	99
		284.9 -> 184.9	1831			
3:3FTCA	3.826	241.0 -> 177.0	6023	13.08	µg/L	99
		241.0 -> 117.0	883			
5:3FTCA	6.234	341.0 -> 237.1	196718	64.41	µg/L	99
		341.0 -> 217.0	166678			
7:3FTCA	7.645	441.0 -> 316.9	101899	66.37	µg/L	94
		441.0 -> 336.9	178326			
EtFOSA	10.981	526.0 -> 219.0	8114	2.50	µg/L	96
		526.0 -> 169.0	8064			
EtFOSE	10.927	630.0 -> 58.9	17111	24.20	µg/L	100
		511.9 -> 219.0	7298			
MeFOSA	10.748	511.9 -> 169.0	7406	2.50	µg/L	95
		616.1 -> 58.9	25423			
MeFOSE	10.681	699.1 -> 79.9	3808	25.84	µg/L	100
		699.1 -> 98.8	2427			
PFDoDS	9.899	295.0 -> 201.0	4636	2.56	µg/L	100
		295.0 -> 84.9	2043			
NFDHA	5.463	279.0 -> 85.1	14829	4.76	µg/L	99
		229.0 -> 84.9	13368			
PFMBA	4.794	314.8 -> 134.9	88151	4.94	µg/L	100
PFMPA	3.501	314.8 -> 82.9	2249	5.07	µg/L	100
PFEESA	6.064			4.12	µg/L	100

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

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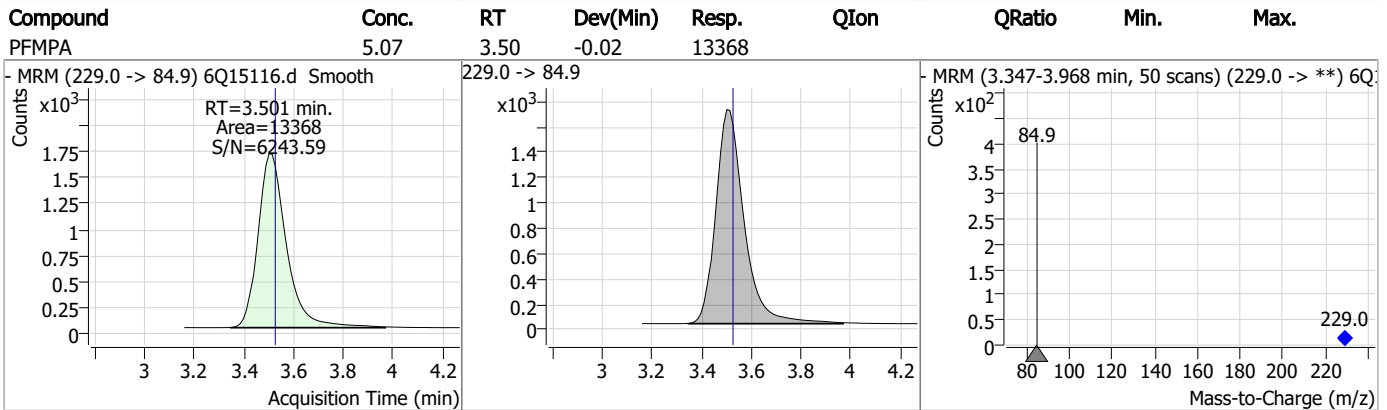
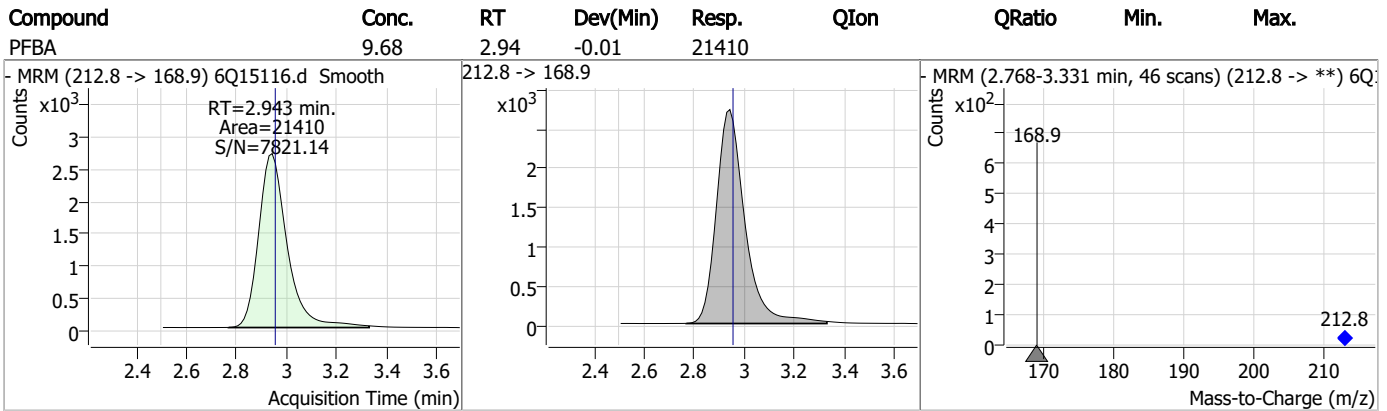
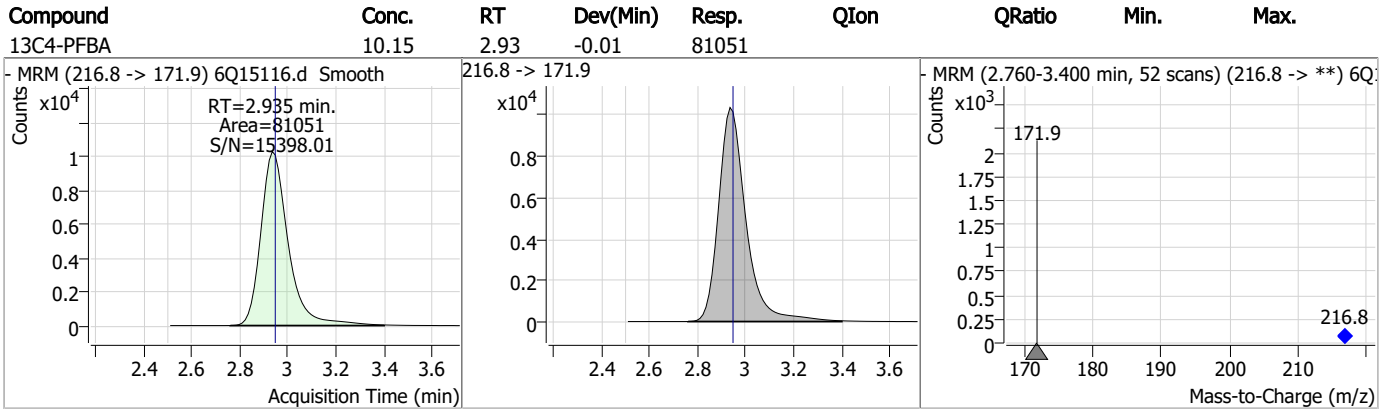
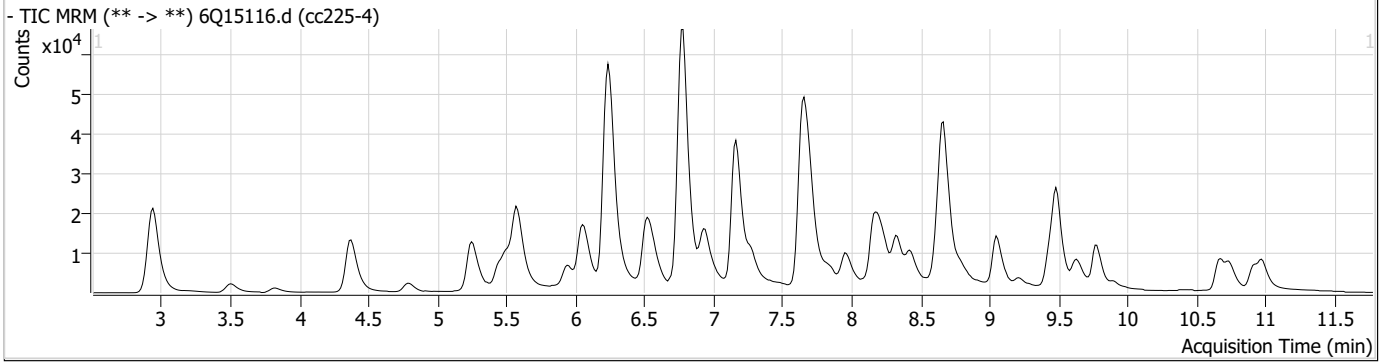
Perfluorinated Compounds by LC/MS/MS

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

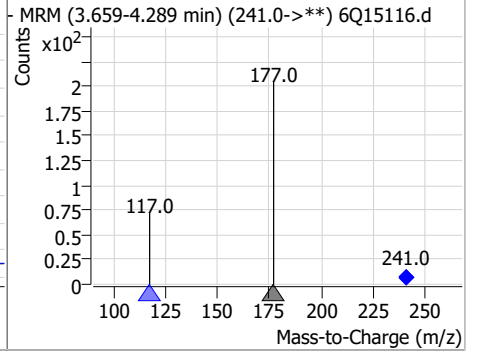
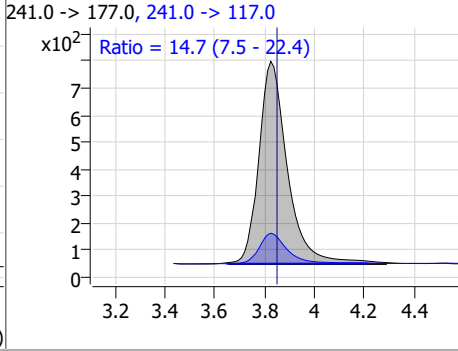
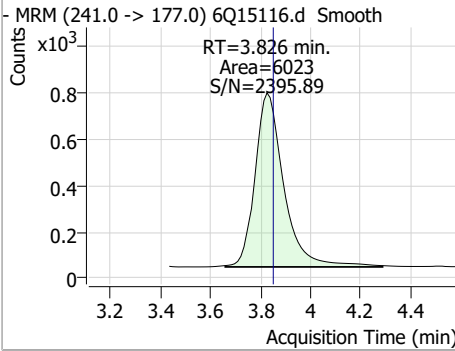
7

Perfluorinated Compounds by LC/MS/MS

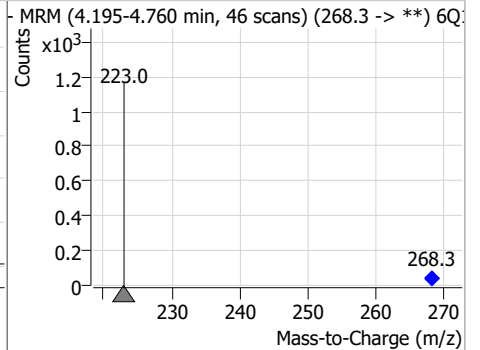
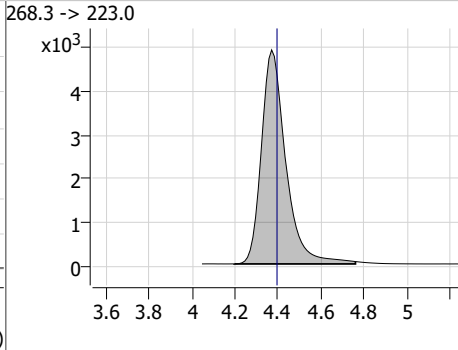
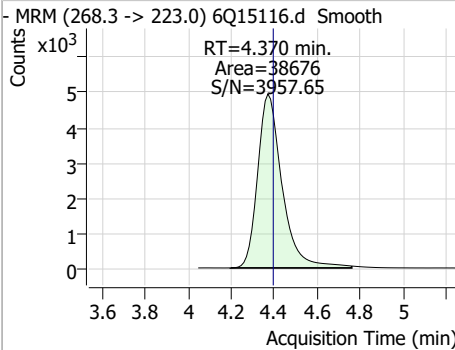


Perfluorinated Compounds by LC/MS/MS

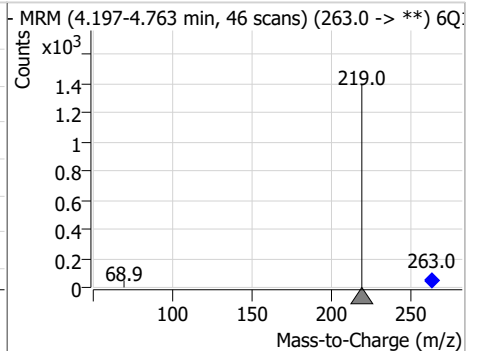
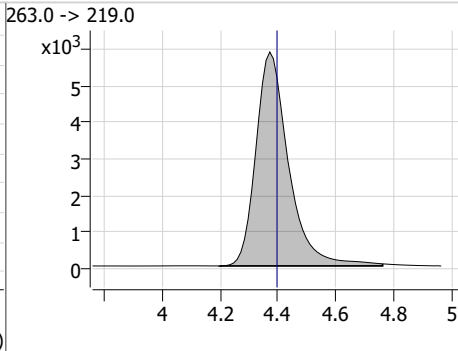
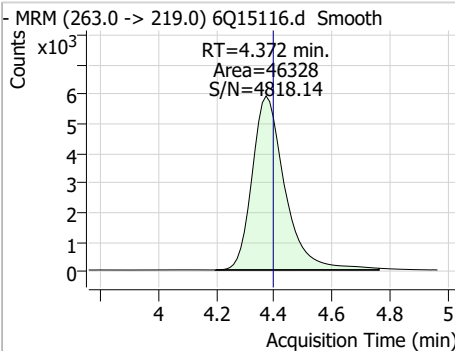
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	13.08	3.83	-0.02	6023	241.0 -> 117.0	14.7	7.5	22.4



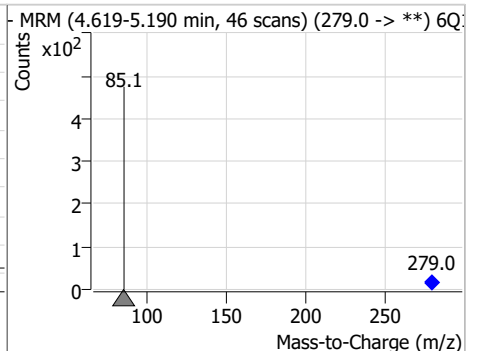
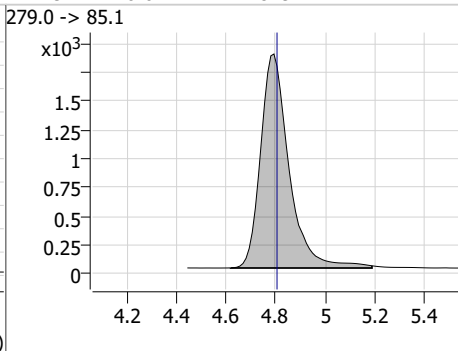
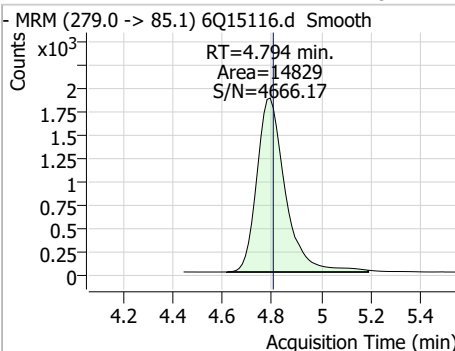
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.85	4.37	-0.02	38676				



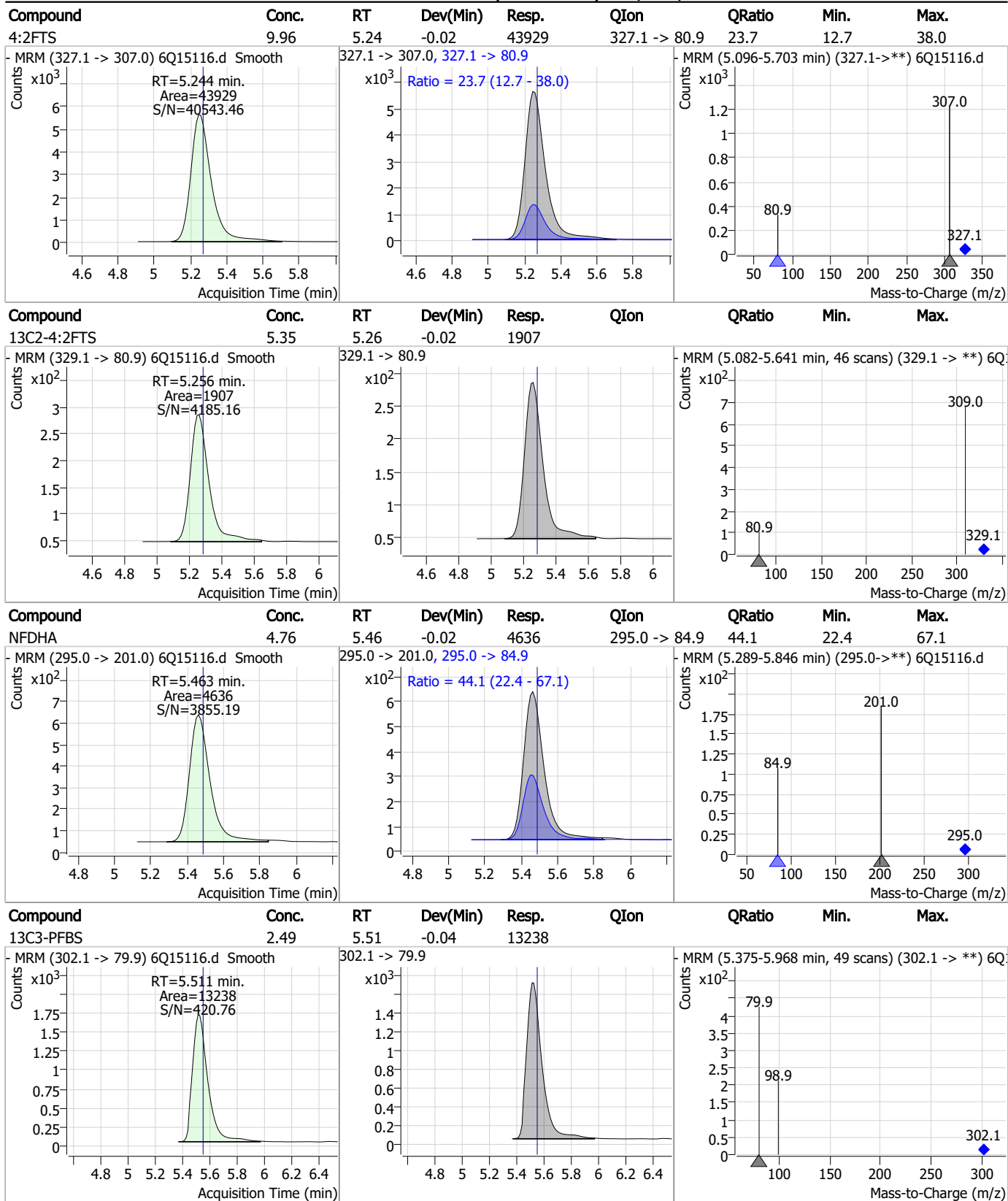
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	5.03	4.37	-0.02	46328				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.94	4.79	-0.01	14829				



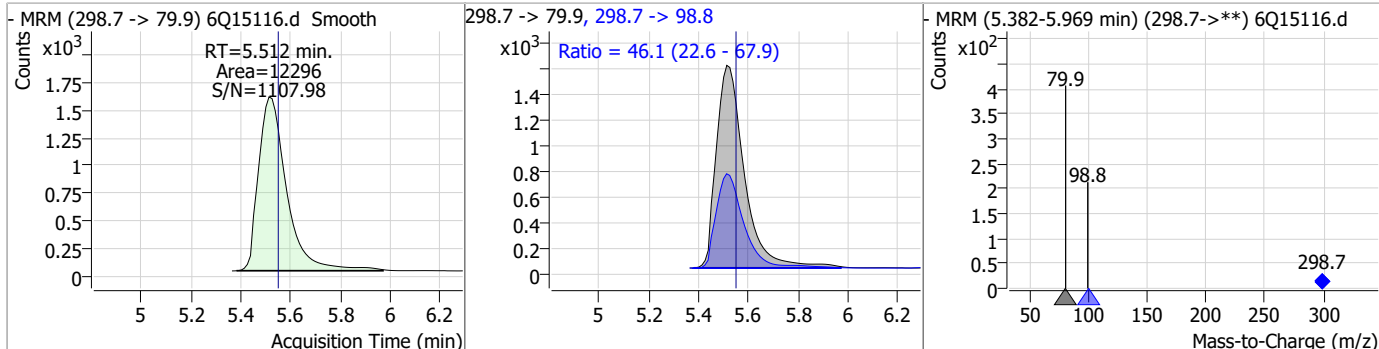
Perfluorinated Compounds by LC/MS/MS



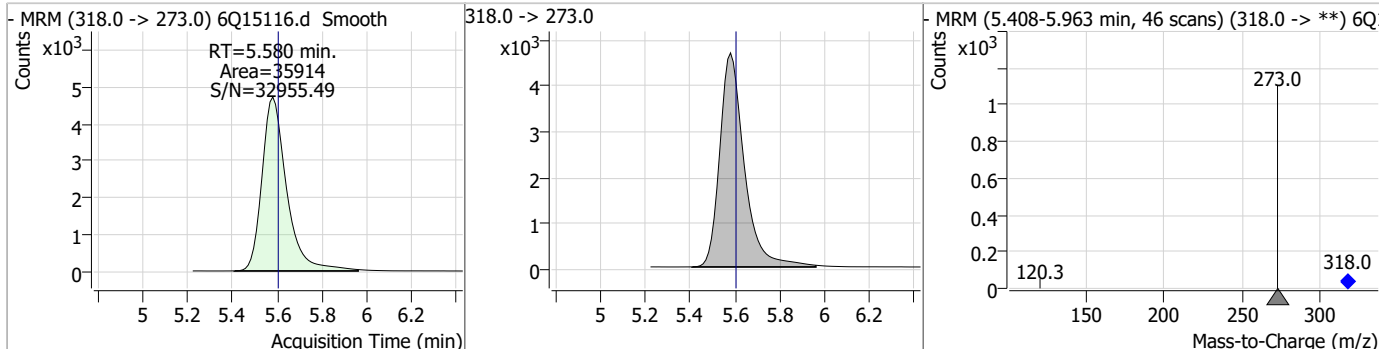
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Perfluorinated Compounds by LC/MS/MS

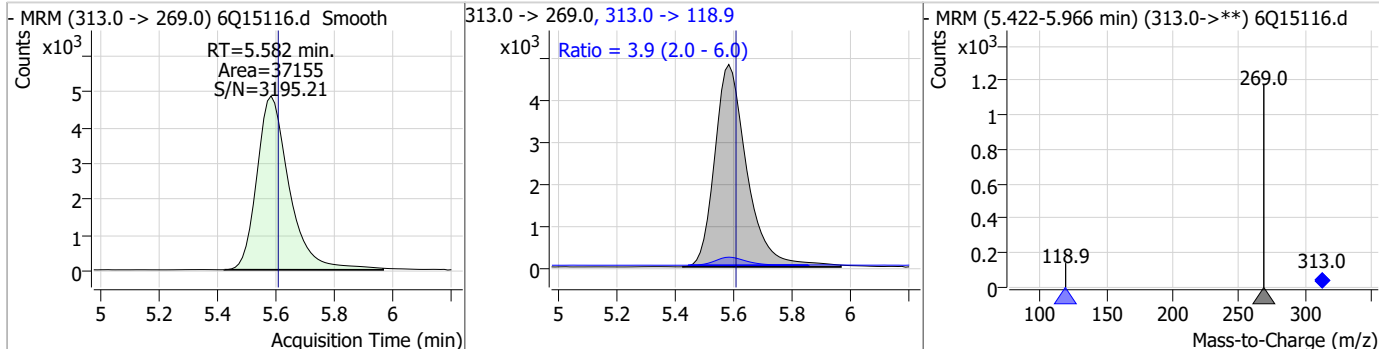
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.11	5.51	-0.04	12296	298.7 -> 98.8	46.1	22.6	67.9



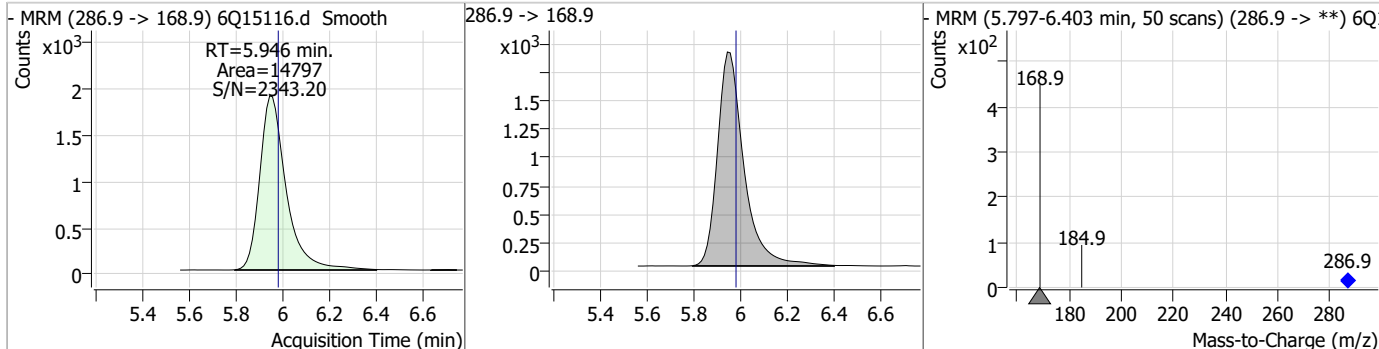
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.58	-0.02	35914				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.46	5.58	-0.02	37155	313.0 -> 118.9	3.9	2.0	6.0

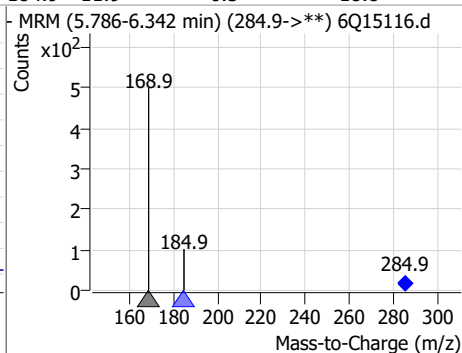
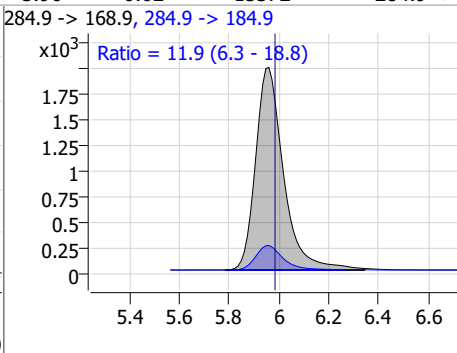
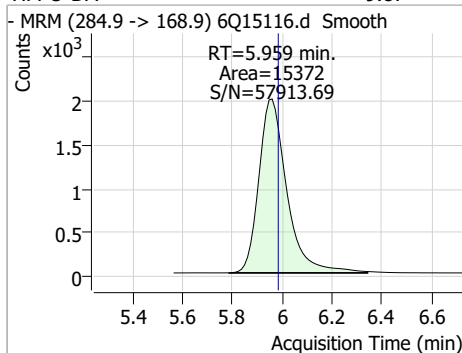


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.49	5.95	-0.04	14797				

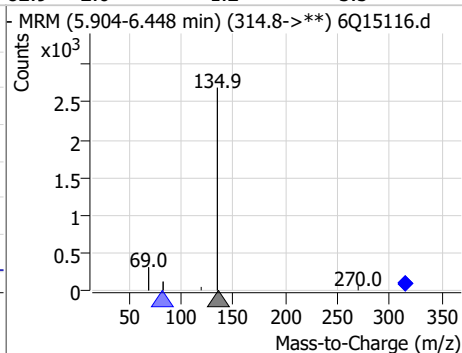
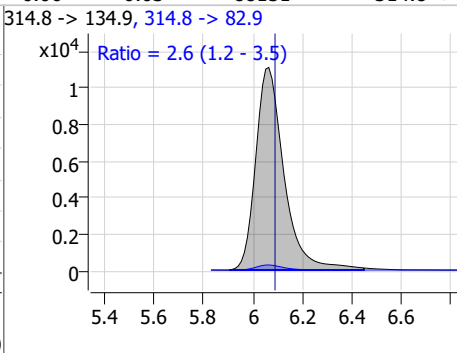
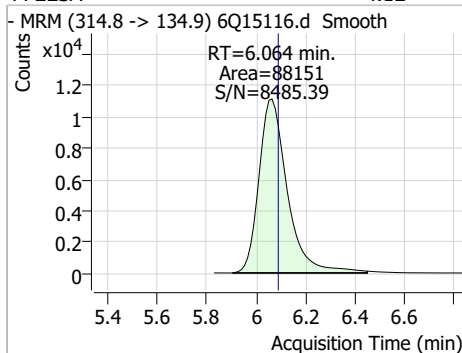


Perfluorinated Compounds by LC/MS/MS

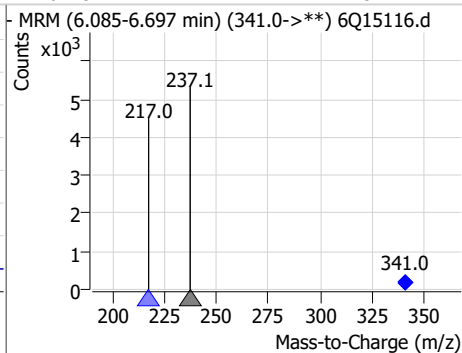
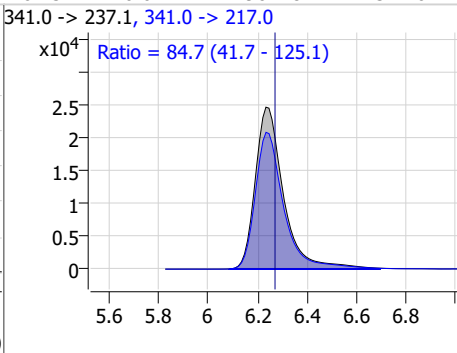
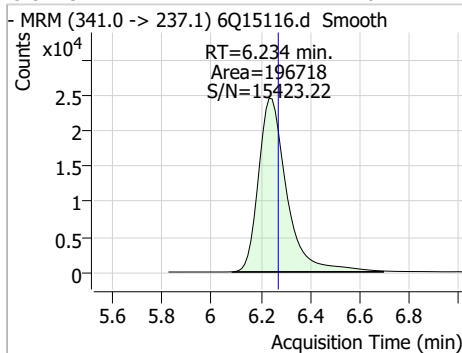
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.87	5.96	-0.02	15372	284.9 -> 184.9	11.9	6.3	18.8



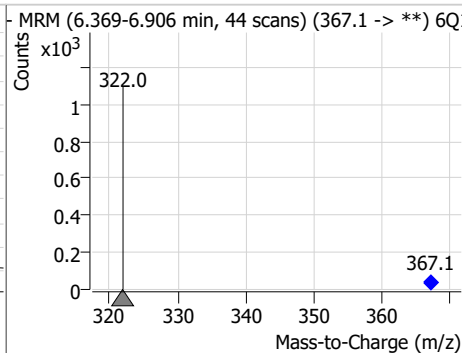
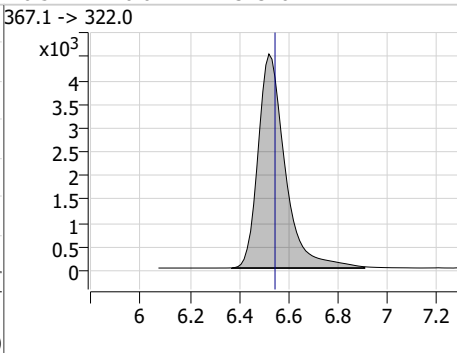
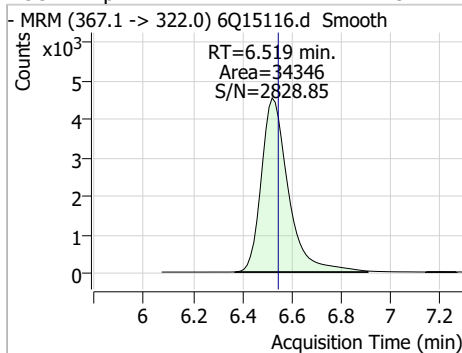
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.12	6.06	-0.03	88151	314.8 -> 82.9	2.6	1.2	3.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	64.41	6.23	-0.04	196718	341.0 -> 217.0	84.7	41.7	125.1

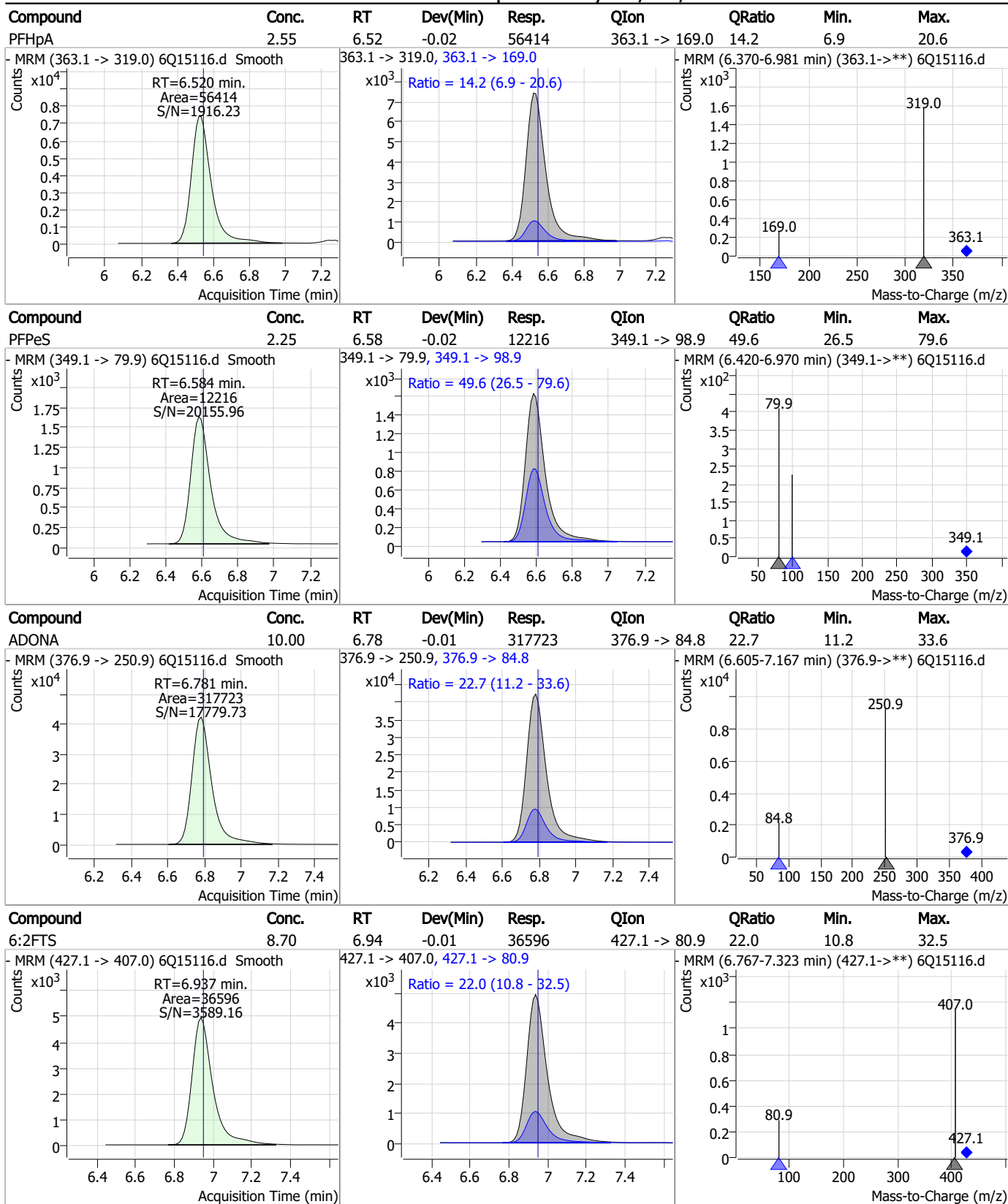


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.43	6.52	-0.02	34346	367.1 -> 322.0			



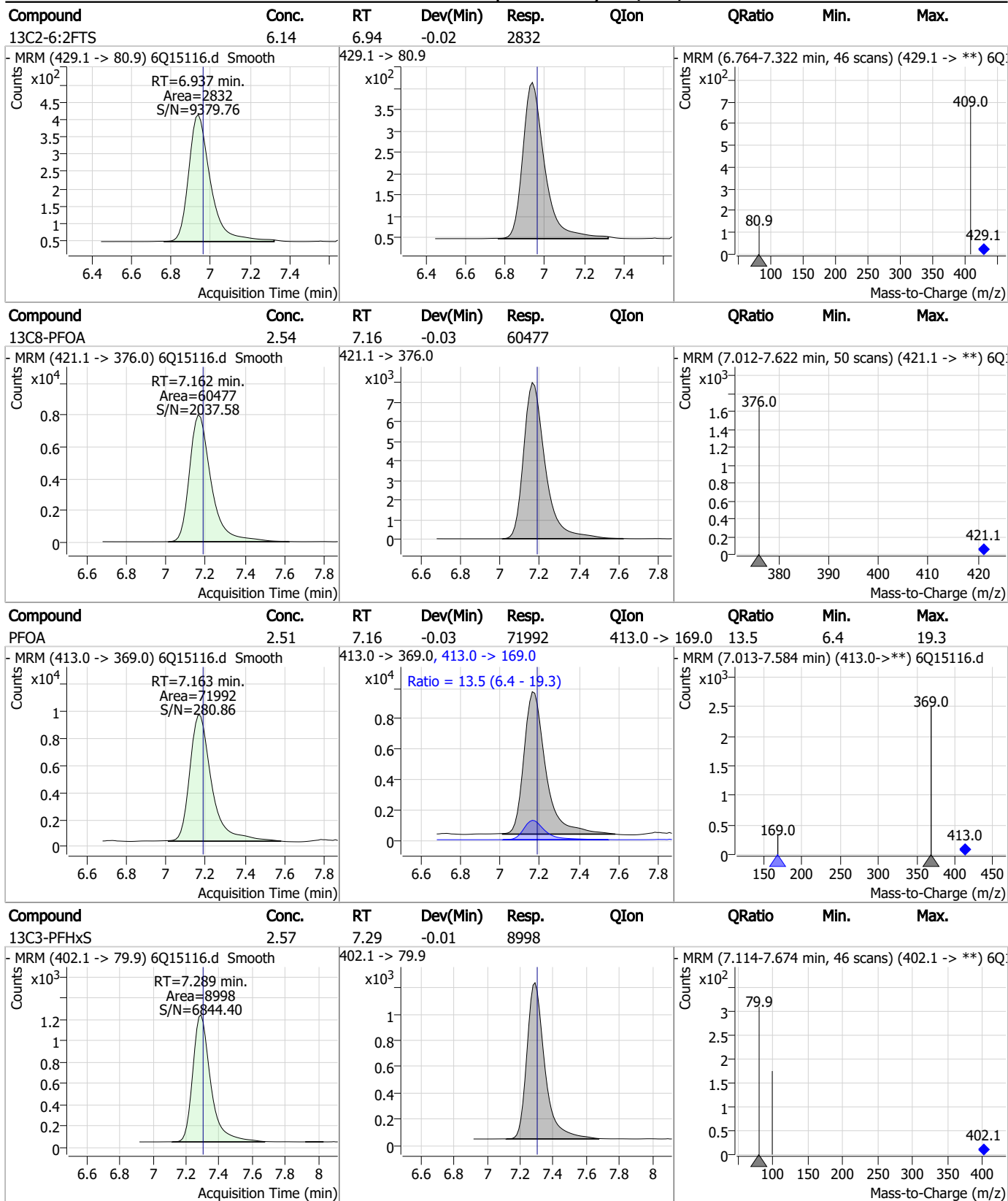
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Perfluorinated Compounds by LC/MS/MS



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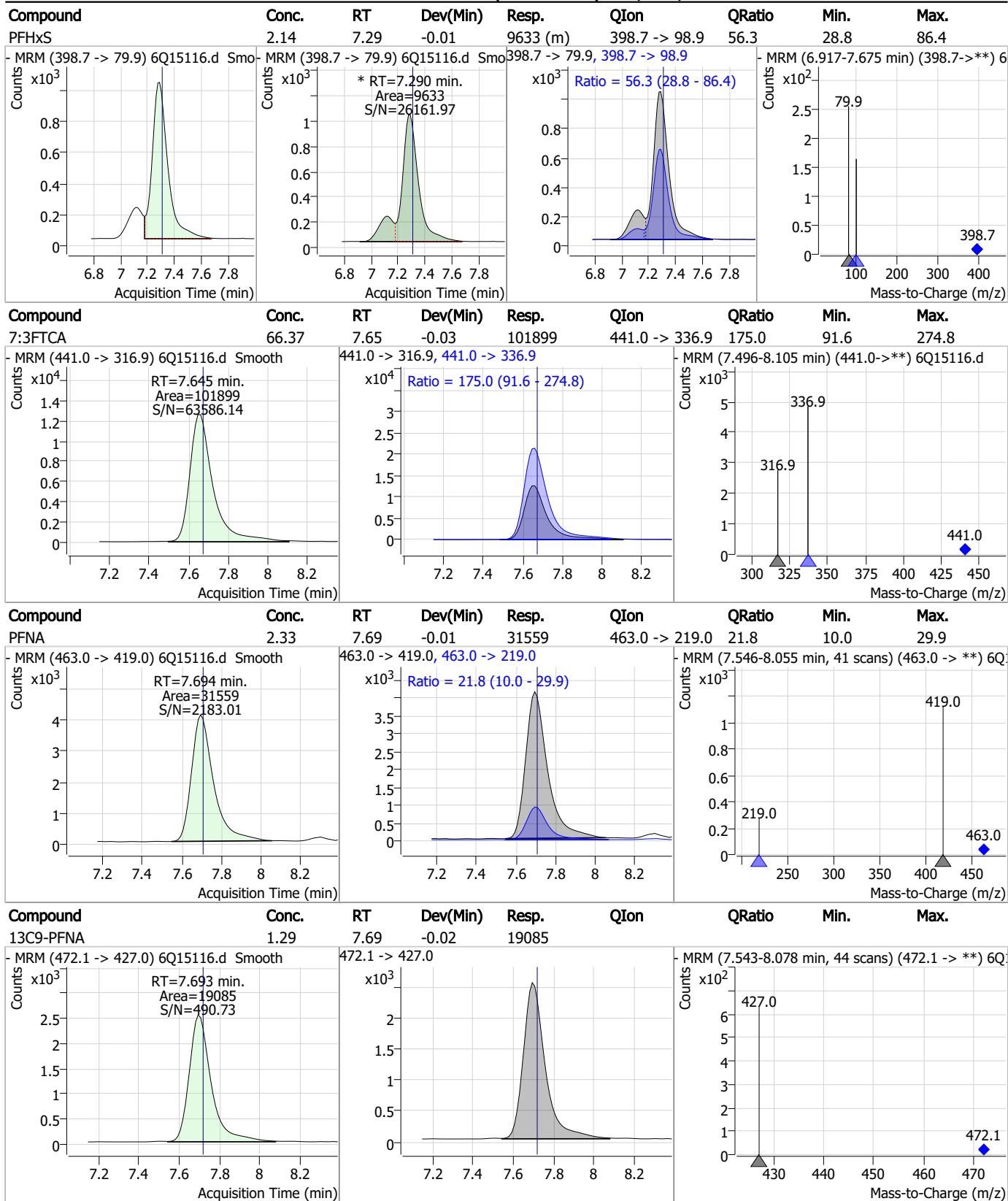
Perfluorinated Compounds by LC/MS/MS



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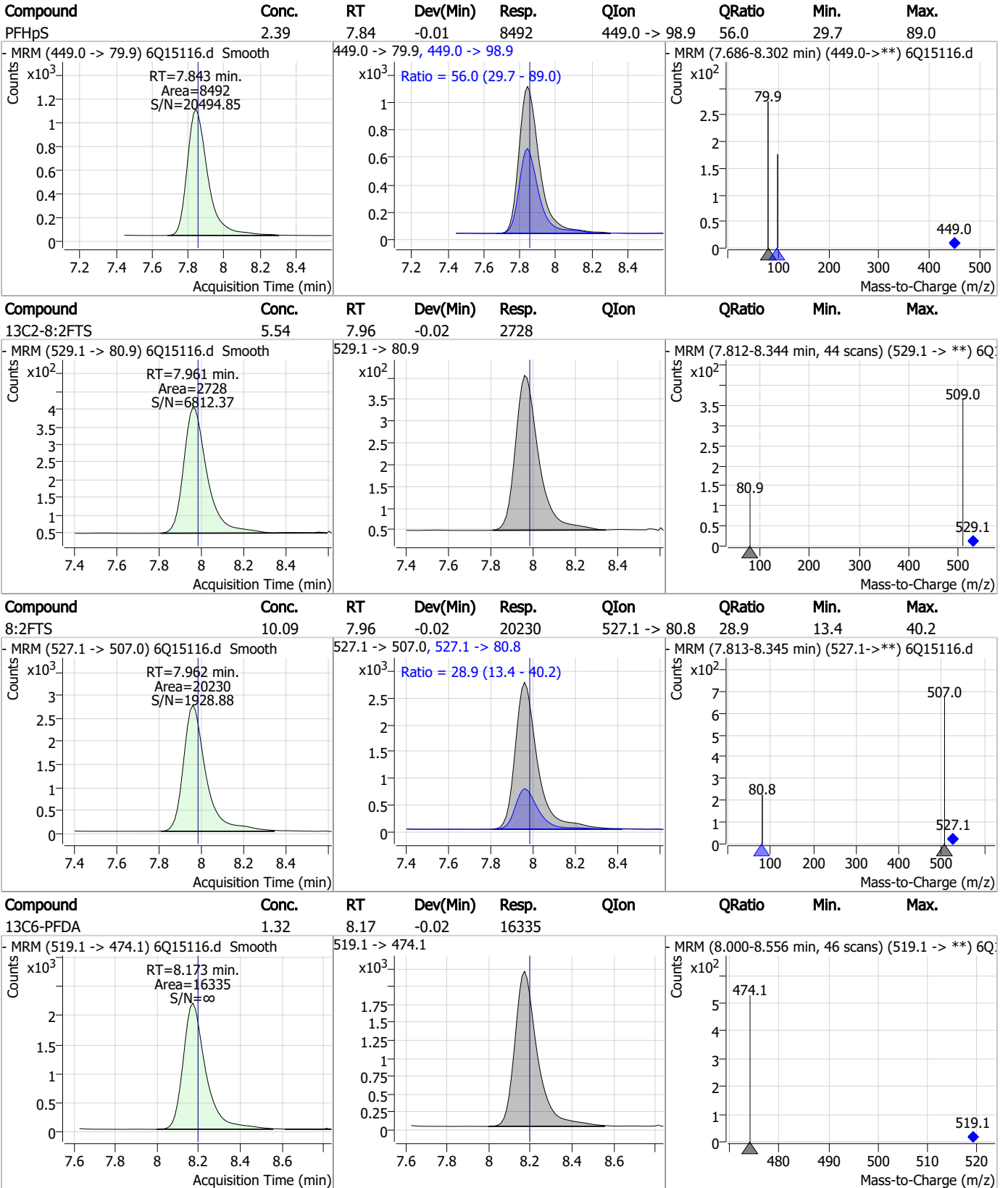
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

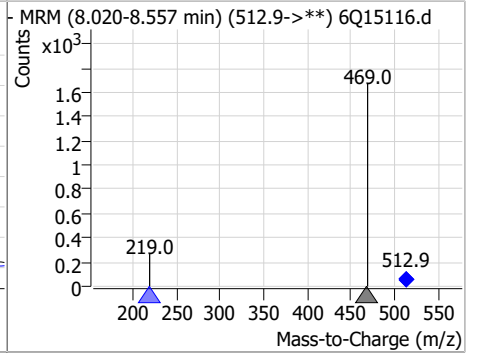
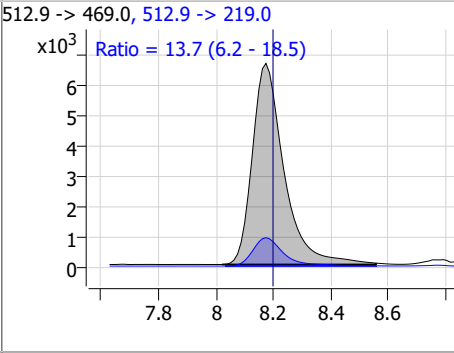
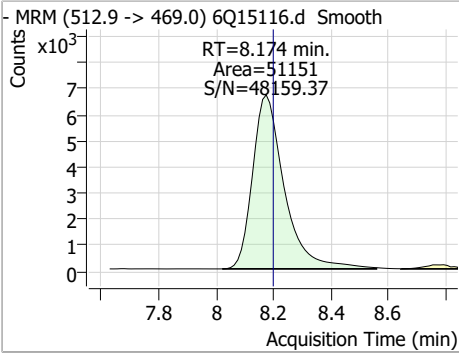


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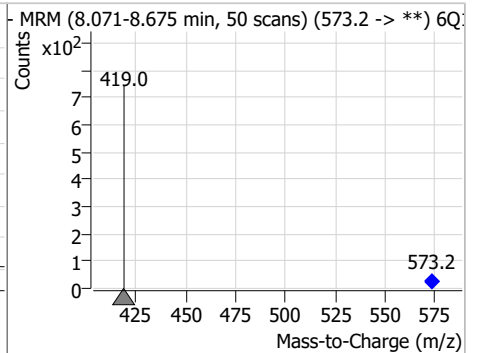
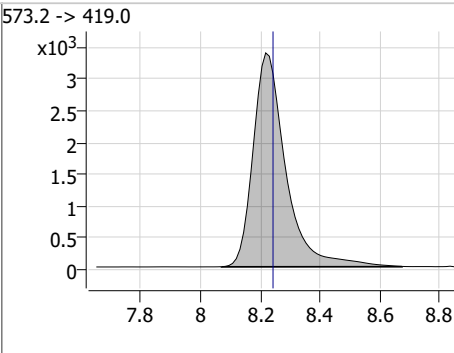
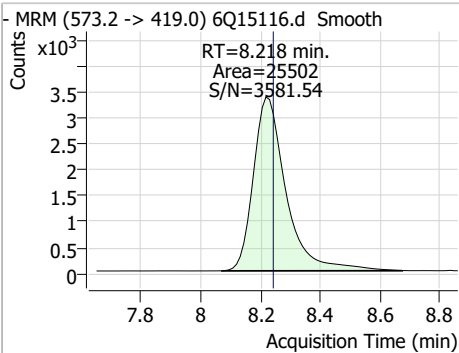


Perfluorinated Compounds by LC/MS/MS

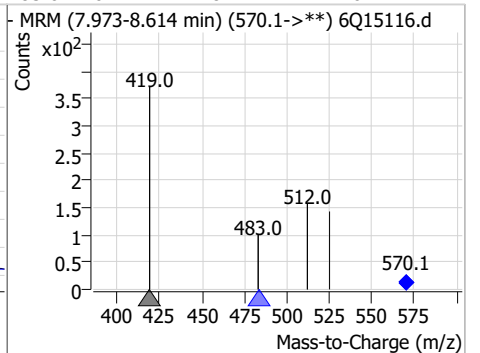
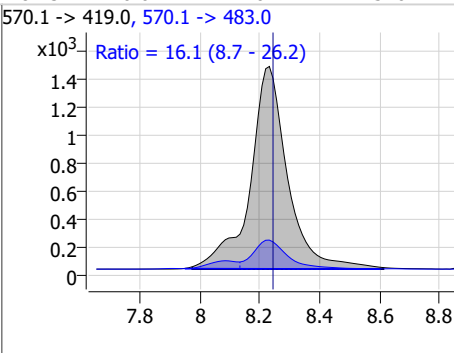
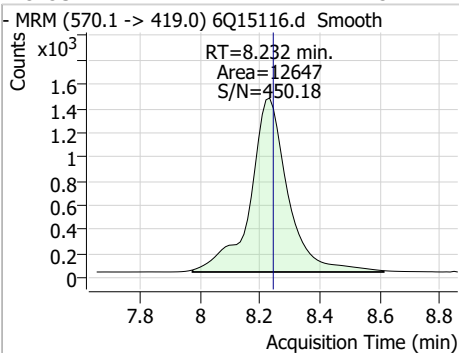
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.52	8.17	-0.02	51151	512.9 -> 219.0	13.7	6.2	18.5



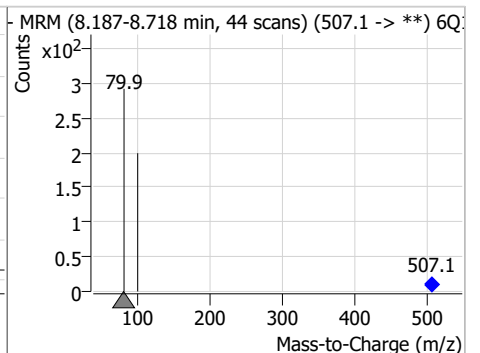
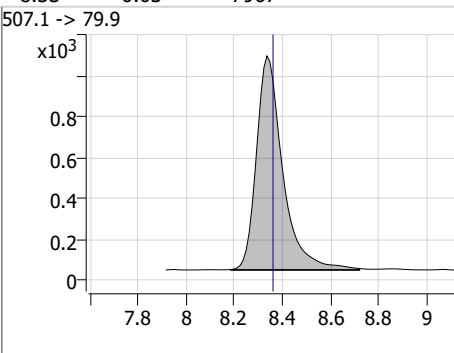
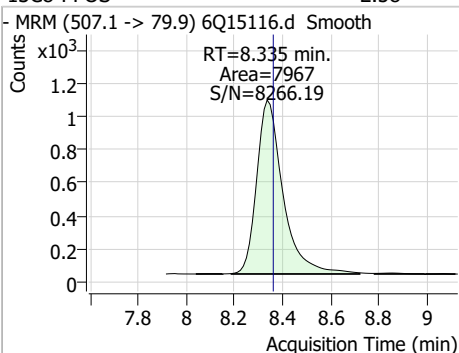
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.84	8.22	-0.02	25502				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.37	8.23	-0.01	12647	570.1 -> 483.0	16.1	8.7	26.2

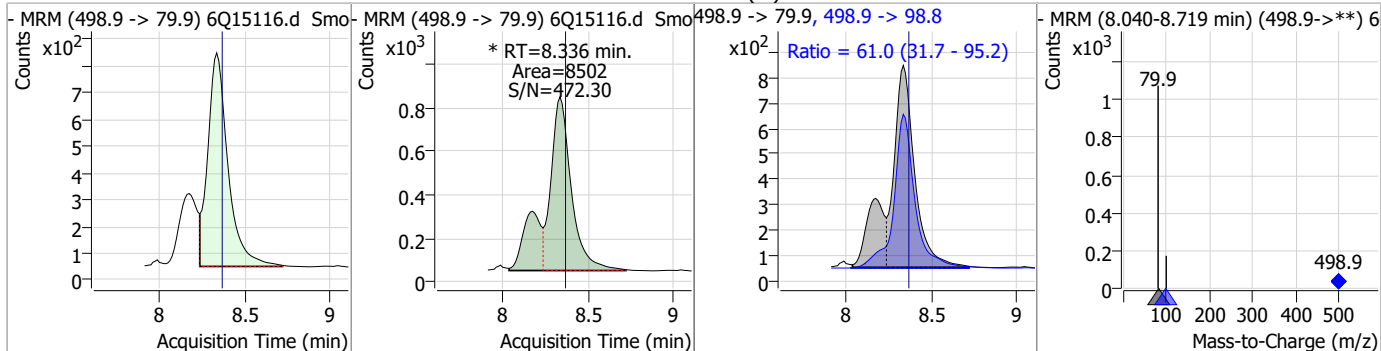


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.58	8.33	-0.03	7967				

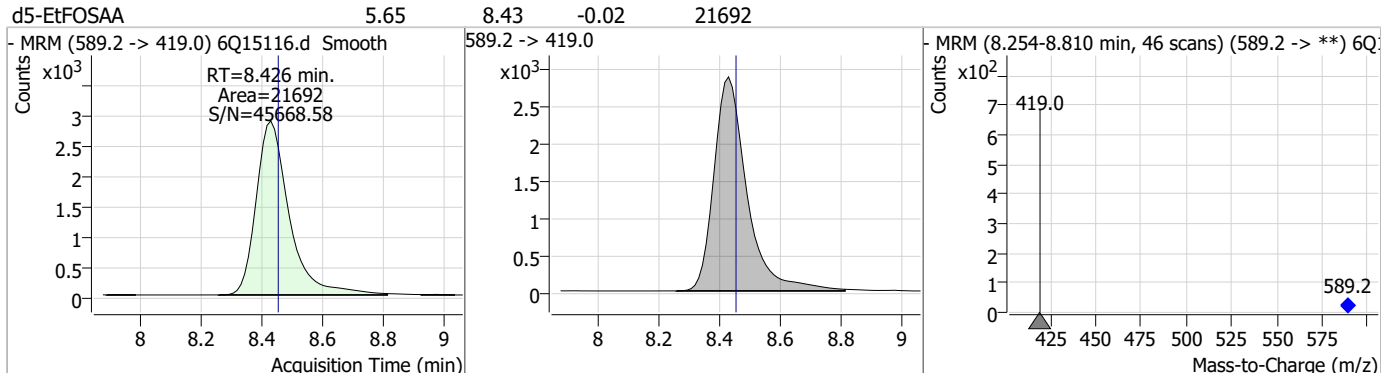


Perfluorinated Compounds by LC/MS/MS

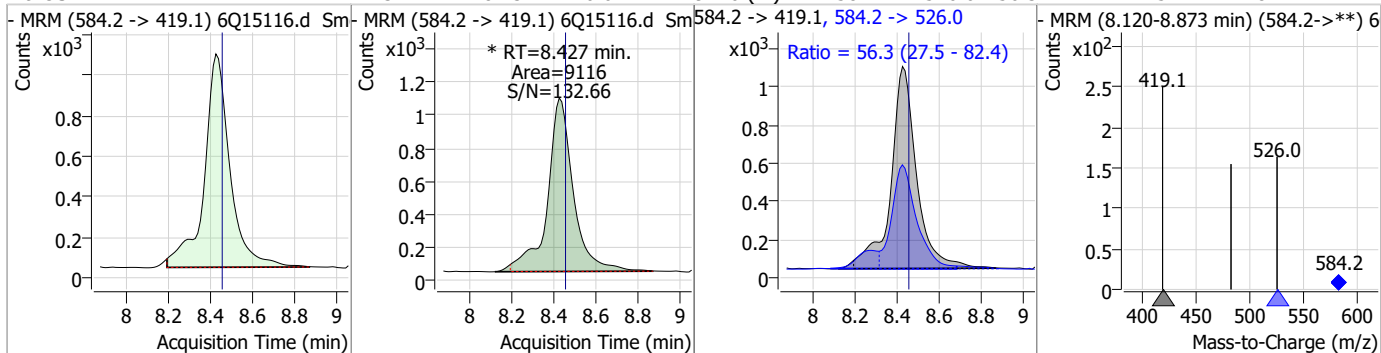
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.28	8.34	-0.03	8502 (m)	498.9 -> 98.8	61.0	31.7	95.2



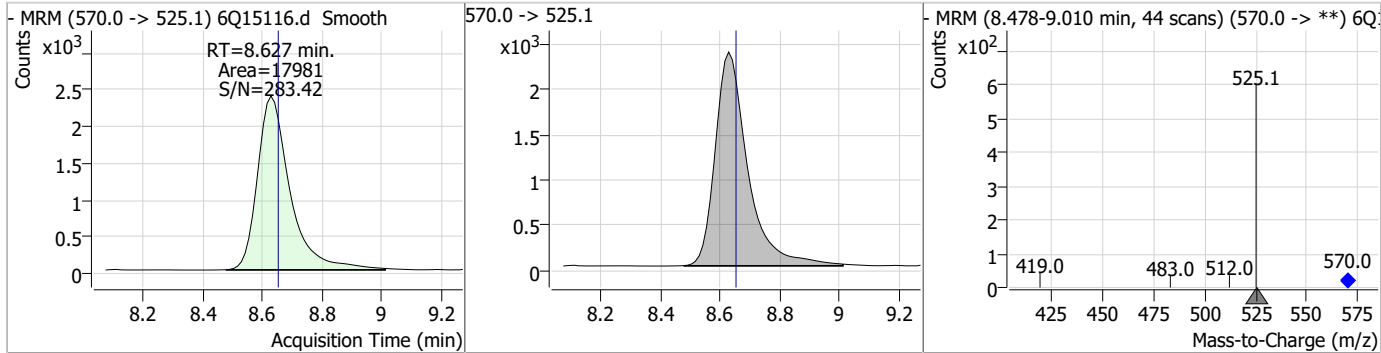
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.65	8.43	-0.02	21692				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.31	8.43	-0.02	9116 (m)	584.2 -> 526.0	56.3	27.5	82.4

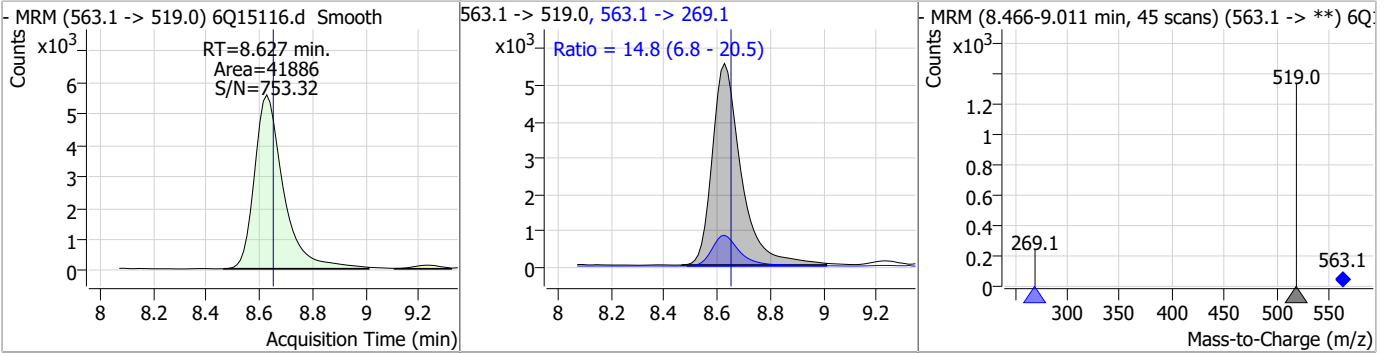


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.35	8.63	-0.02	17981				

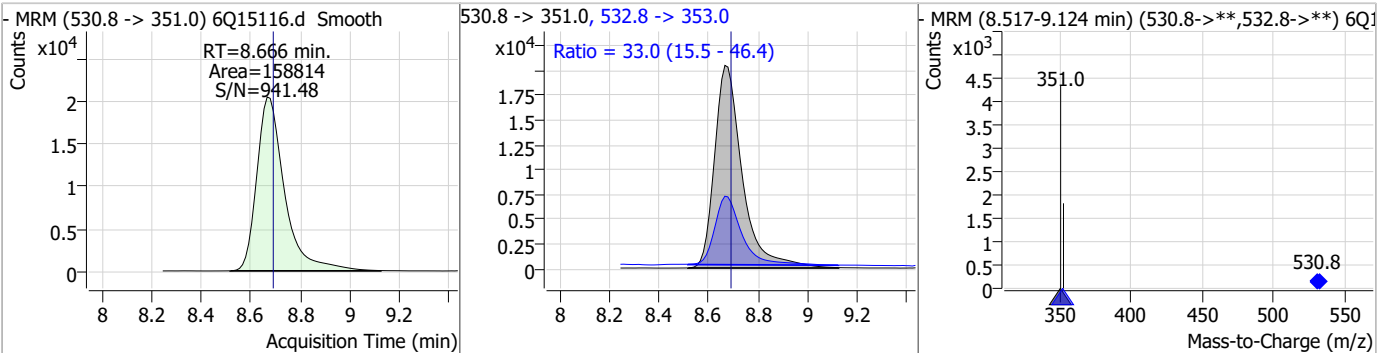


Perfluorinated Compounds by LC/MS/MS

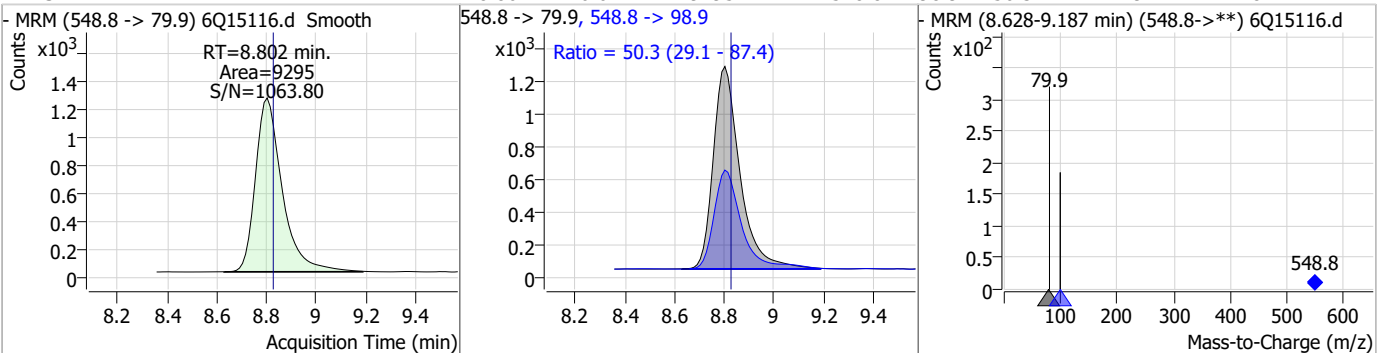
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	2.46	8.63	-0.02	41886	563.1 -> 269.1	14.8	6.8	20.5



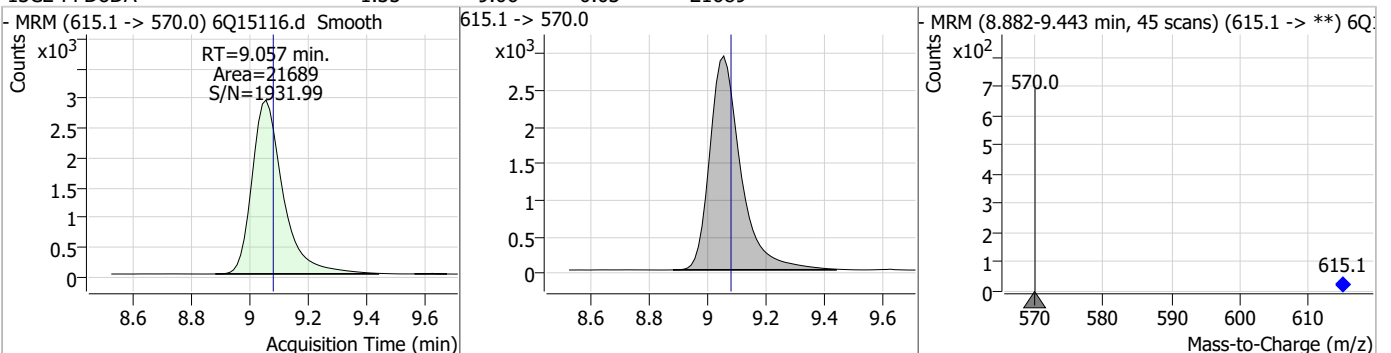
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	9.57	8.67	-0.02	158814	532.8 -> 353.0	33.0	15.5	46.4



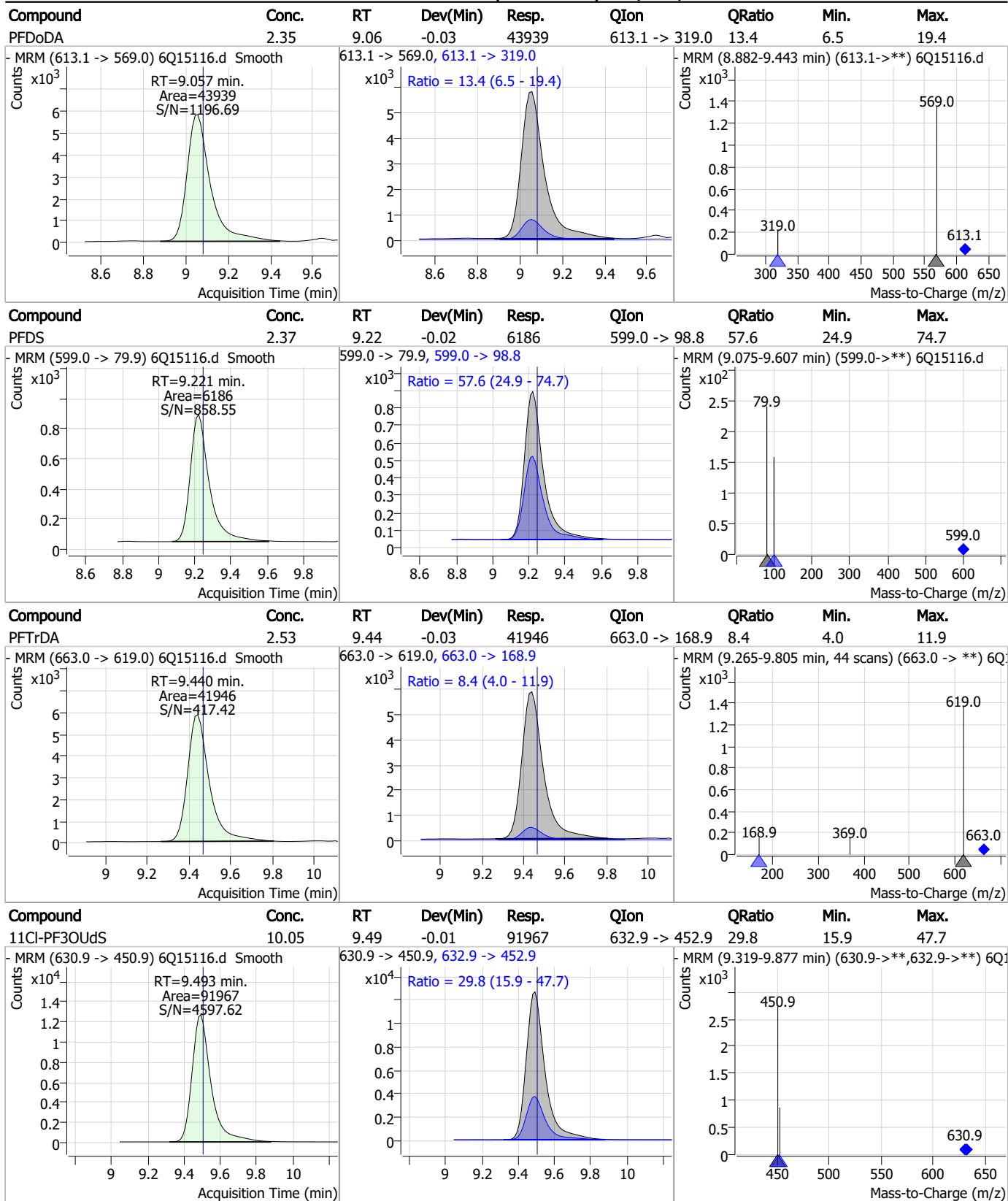
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.47	8.80	-0.02	9295	548.8 -> 98.9	50.3	29.1	87.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.35	9.06	-0.03	21689	615.1 -> 570.0			



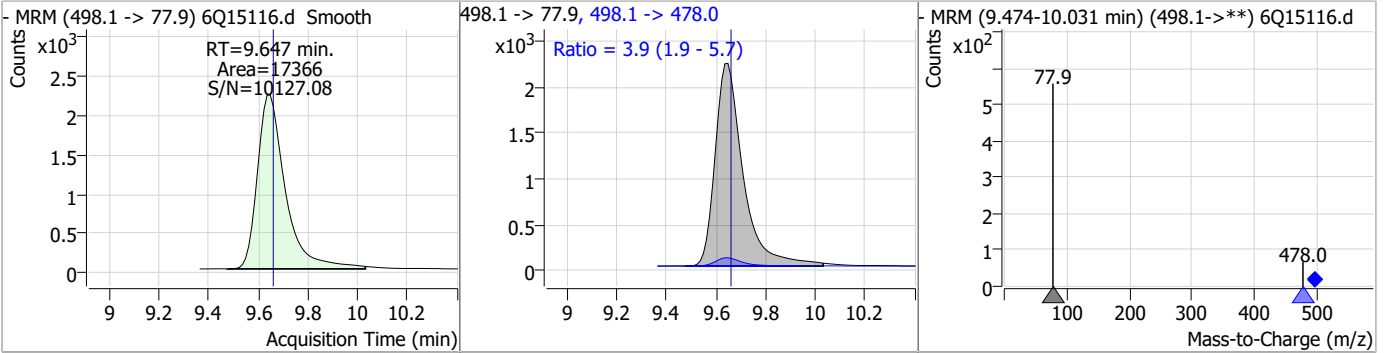
Perfluorinated Compounds by LC/MS/MS



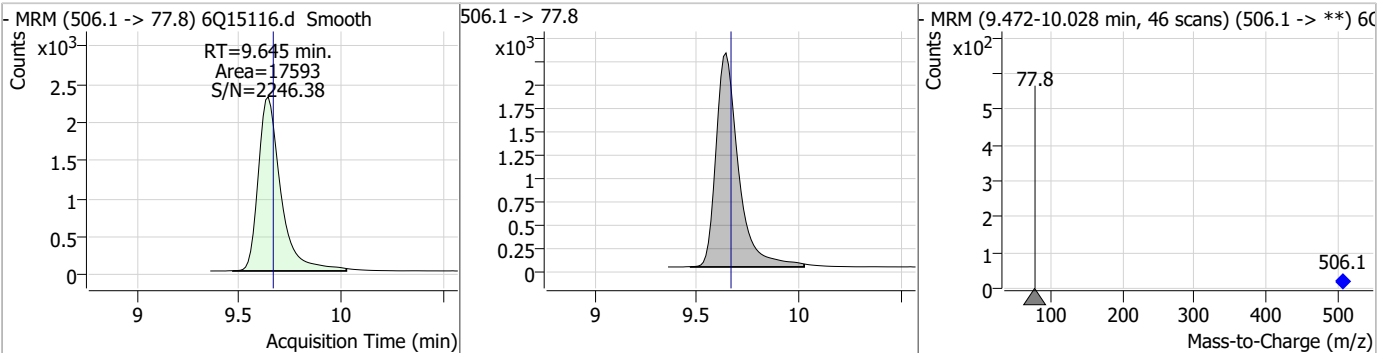
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Perfluorinated Compounds by LC/MS/MS

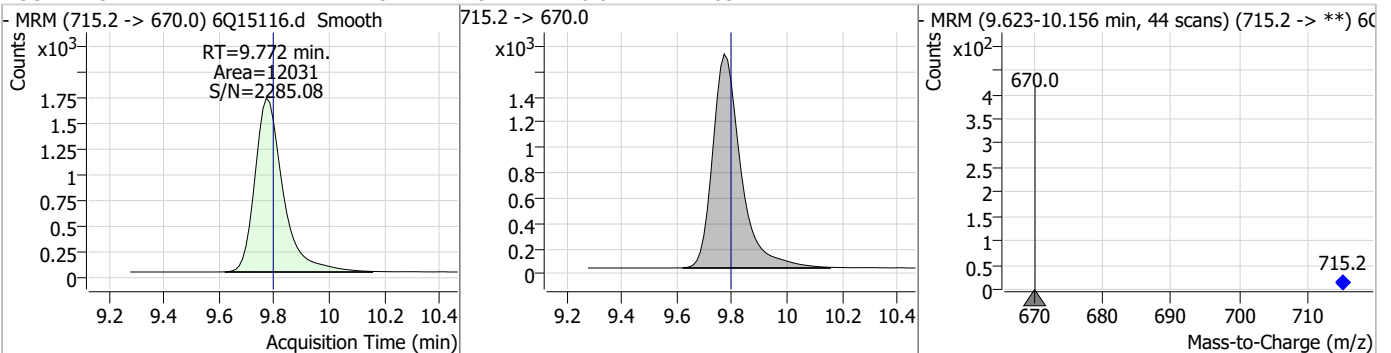
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.47	9.65	-0.01	17366	498.1 -> 478.0	3.9	1.9	5.7



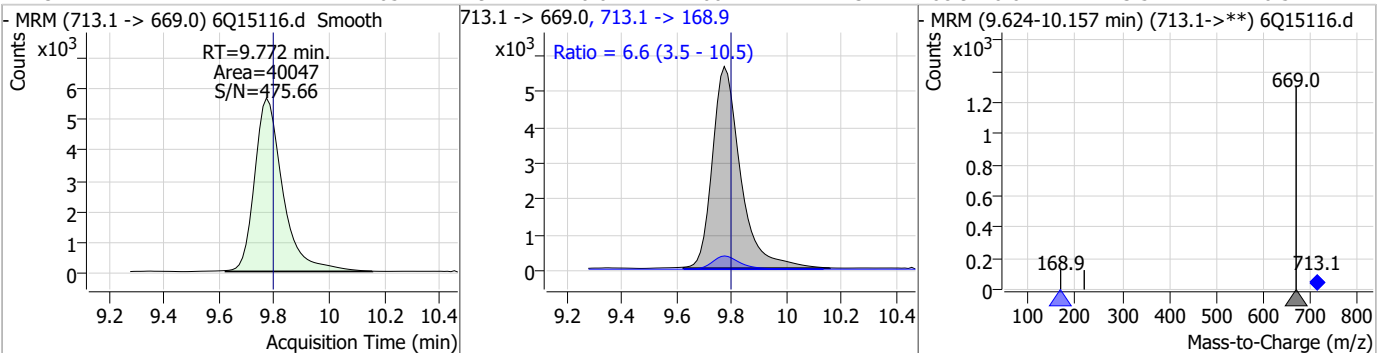
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.79	9.64	-0.02	17593				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.31	9.77	-0.02	12031				

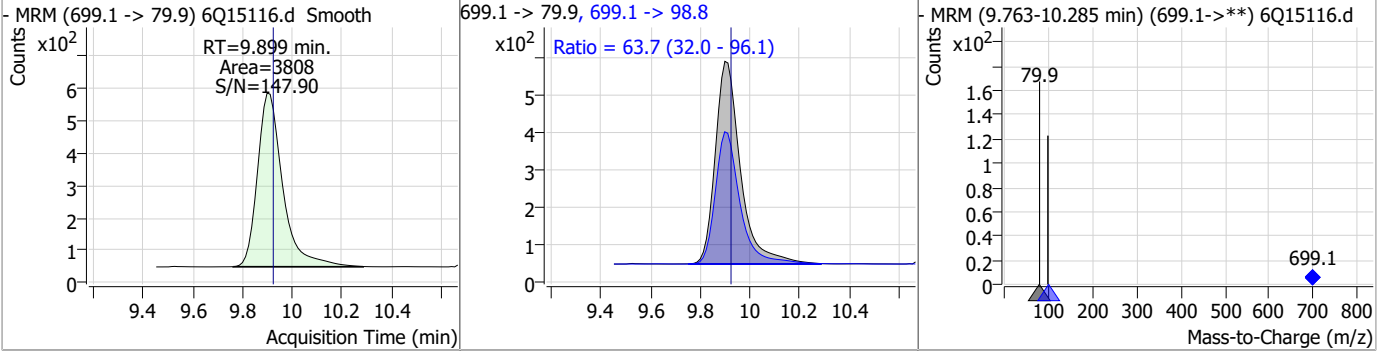


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.65	9.77	-0.02	40047	713.1 -> 168.9	6.6	3.5	10.5

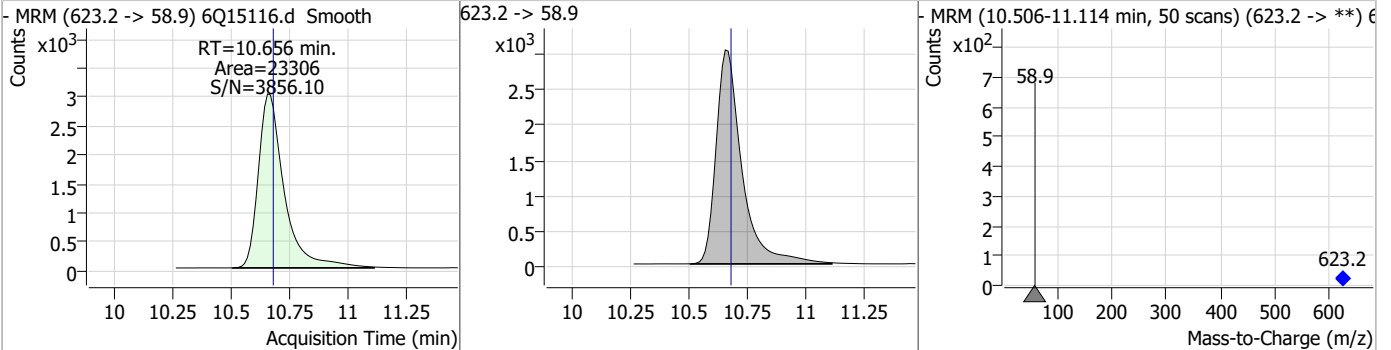


Perfluorinated Compounds by LC/MS/MS

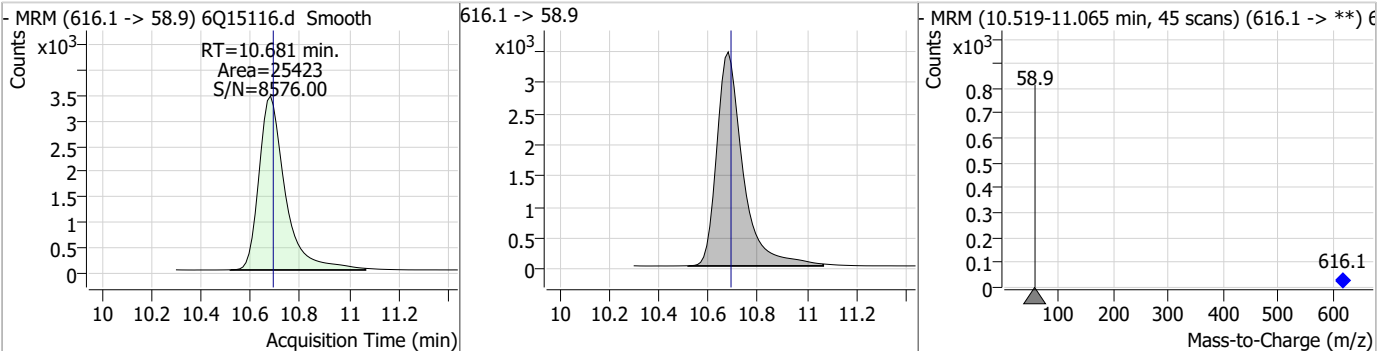
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.56	9.90	-0.02	3808	699.1 -> 98.8	63.7	32.0	96.1



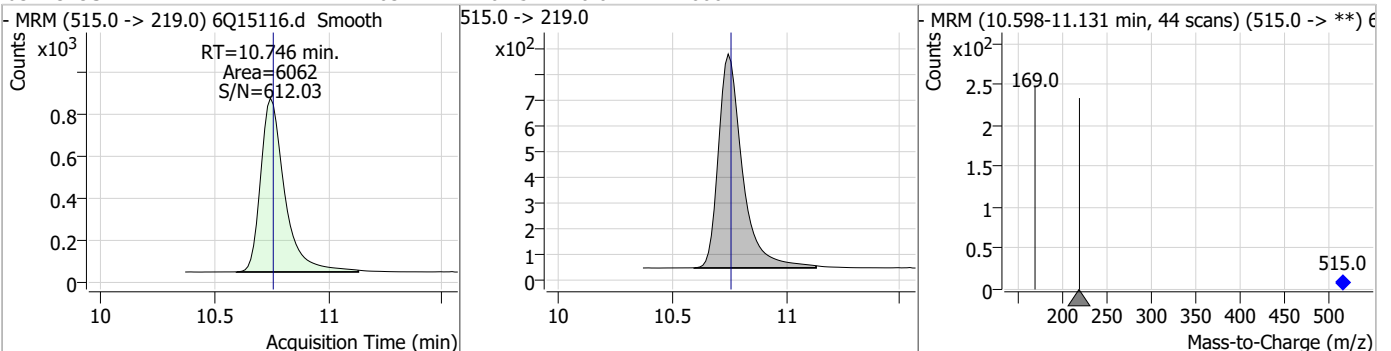
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.65	10.66	-0.02	23306				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	25.84	10.68	-0.01	25423				

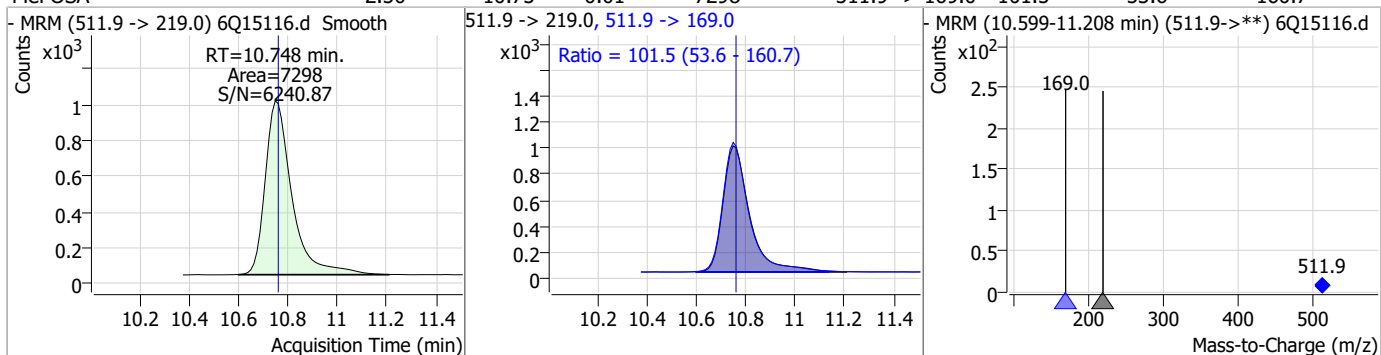


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.63	10.75	-0.01	6062				

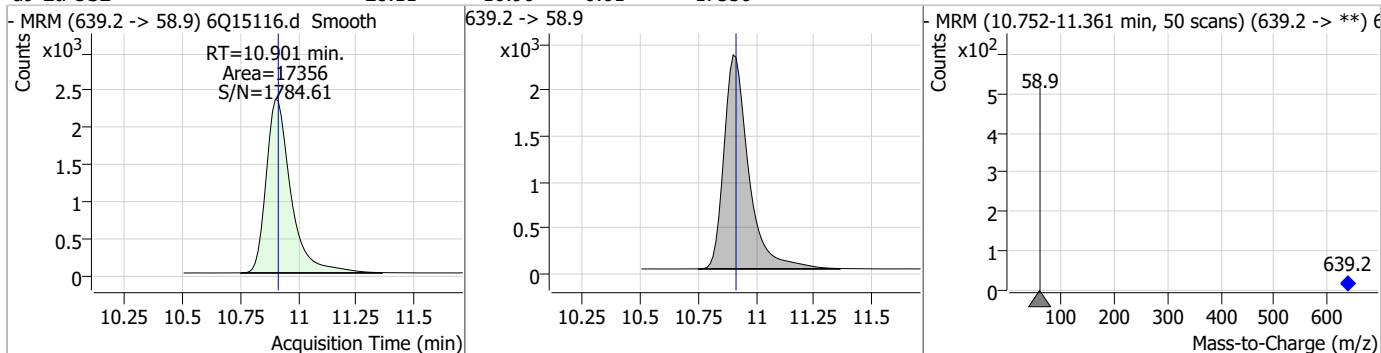


Perfluorinated Compounds by LC/MS/MS

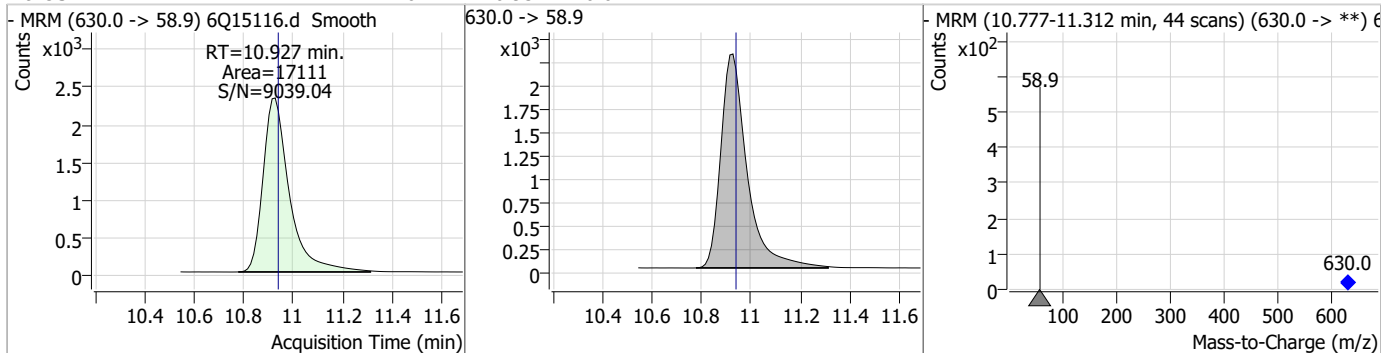
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.50	10.75	-0.01	7298	511.9 -> 169.0	101.5	53.6	160.7



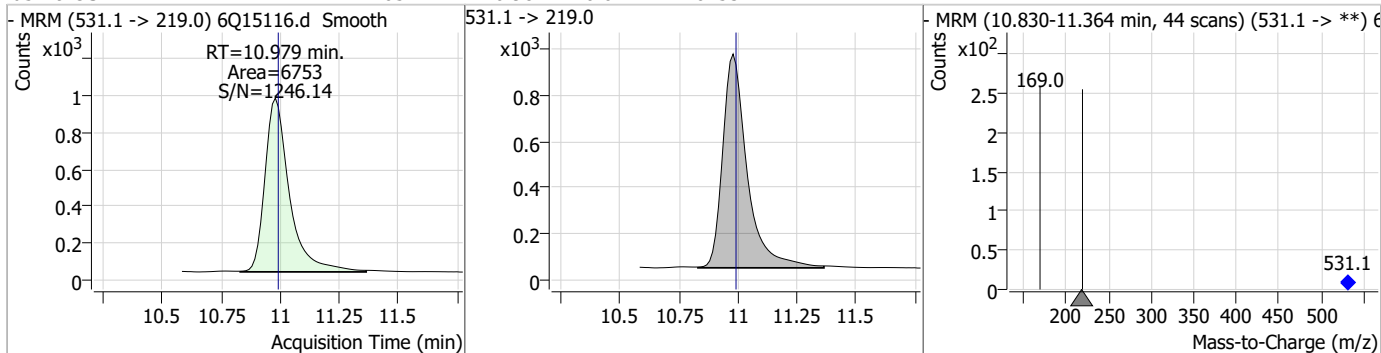
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	28.11	10.90	-0.01	17356				



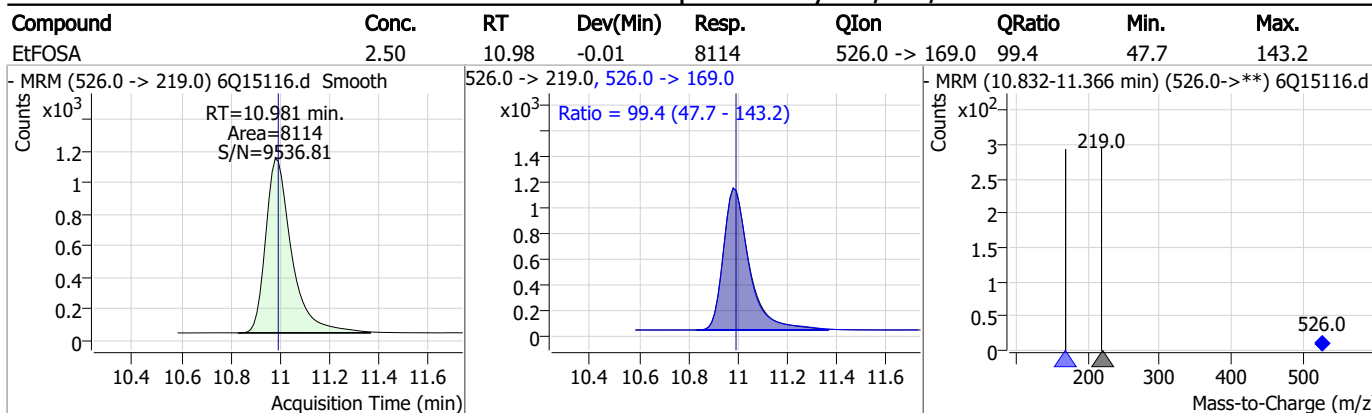
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	24.20	10.93	-0.01	17111				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.65	10.98	-0.01	6753				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q229-CC225 Method: EPA DRAFT 1633
Lab FileID: 6Q15116.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 18:15 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.43	Split peak

7.7.14.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q15124.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 3/21/2023 8:07:53 PM
 Sample Name : cc225-4
 Vial : P1-A5
 DA Method File : 1633_031523_S6Q225.quantmethod.xml
 Batch Name : s6q229.batch.bin
 Sample Information : OP95881,S6Q229,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.935	216.8 -> 171.9	82009	10.00 µg/L	-0.012
M5-PFPeA	4.370	268.3 -> 223.0	38857	5.00 µg/L	-0.025
M5-PFHxA	5.580	318.0 -> 273.0	34753	2.50 µg/L	-0.025
M4-PFHpA	6.532	367.1 -> 322.0	35266	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	60840	2.50 µg/L	-0.012
M9-PFNA	7.693	472.1 -> 427.0	18750	1.25 µg/L	-0.025
M6-PFDA	8.173	519.1 -> 474.1	15825	1.25 µg/L	-0.025
M7-PFUnDA	8.627	570.0 -> 525.1	18392	1.25 µg/L	-0.025
M2-PFDoDA	9.057	615.1 -> 570.0	22342	1.25 µg/L	-0.025
M2-PFTeDA	9.772	715.2 -> 670.0	12608	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	17656	2.50 µg/L	-0.025
M3-PFBS	5.524	302.1 -> 79.9	13154	2.50 µg/L	-0.025
M3-PFHxS	7.289	402.1 -> 79.9	8484	2.50 µg/L	-0.013
M8-PFOS	8.335	507.1 -> 79.9	8613	2.50 µg/L	-0.025
M2-4:2FTS	5.243	329.1 -> 80.9	1994	5.00 µg/L	-0.037
M2-6:2FTS	6.949	429.1 -> 80.9	2732	5.00 µg/L	-0.012
M2-8:2FTS	7.961	529.1 -> 80.9	2847	5.00 µg/L	-0.025
M3-MeFOSAA	8.231	573.2 -> 419.0	24950	5.00 µg/L	-0.012
M3-HFPO-DA	5.958	286.9 -> 168.9	15030	10.00 µg/L	-0.025
M5-EtFOSAA	8.426	589.2 -> 419.0	20932	5.00 µg/L	-0.025
M7-MeFOSE	10.656	623.2 -> 58.9	24990	25.00 µg/L	-0.025
M9-EtFOSE	10.901	639.2 -> 58.9	16980	25.00 µg/L	-0.012
M5-EtFOSA	10.979	531.1 -> 219.0	6879	2.50 µg/L	-0.012
M3-MeFOSA	10.746	515.0 -> 219.0	5786	2.50 µg/L	-0.012
13C4-PFOS	8.335	502.8 -> 79.9	9761	2.50 µg/L	-0.025
13C3-PFBA	2.939	216.0 -> 172.0	34834	5.00 µg/L	-0.013
18O2-PFHxS	7.288	403.0 -> 83.9	6147	2.50 µg/L	-0.026
13C4-PFOA	7.176	417.1 -> 372.0	72517	2.50 µg/L	-0.012
13C2-PFDA	8.173	515.1 -> 470.1	21257	1.25 µg/L	-0.025
13C5-PFNA	7.694	468.0 -> 423.0	19128	1.25 µg/L	-0.025
13C2-PFHxA	5.581	315.1 -> 270.0	35487	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.243	329.1 -> 80.9	1994	5.65 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.1%		
13C2-6:2FTS	6.949	429.1 -> 80.9	2732	5.98 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.6%		
13C2-8:2FTS	7.961	529.1 -> 80.9	2847	5.85 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.9%		
13C2-PFDoDA	9.057	615.1 -> 570.0	22342	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C2-PFTeDA	9.772	715.2 -> 670.0	12608	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C3-PFBS	5.524	302.1 -> 79.9	13154	2.50 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C3-PFHxS	7.289	402.1 -> 79.9	8484	2.44 µg/L	-0.013

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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 = 97.8%		
13C4-PFBA	2.935	216.8 -> 171.9	82009	10.26 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C4-PFHpA	6.532	367.1 -> 322.0	35266	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C5-PFHxA	5.580	318.0 -> 273.0	34753	2.40 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C5-PFPeA	4.370	268.3 -> 223.0	38857	4.74 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C6-PFDA	8.173	519.1 -> 474.1	15825	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C7-PFUnDA	8.627	570.0 -> 525.1	18392	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C8-FOSA	9.645	506.1 -> 77.8	17656	2.61 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C8-PFOA	7.175	421.1 -> 376.0	60840	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C8-PFOS	8.335	507.1 -> 79.9	8613	2.60 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C9-PFNA	7.693	472.1 -> 427.0	18750	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.7%		
d3-MeFOSAA	8.231	573.2 -> 419.0	24950	5.32 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C3-HFPO-DA	5.958	286.9 -> 168.9	15030	9.37 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 93.7%		
d3-MeFOSA	10.746	515.0 -> 219.0	5786	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.4%		
d5-EtFOSAA	8.426	589.2 -> 419.0	20932	5.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
d7-MeFOSE	10.656	623.2 -> 58.9	24990	26.61 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 106.5%		
d9-EtFOSE	10.901	639.2 -> 58.9	16980	25.62 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
d5-EtFOSA	10.979	531.1 -> 219.0	6879	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
Target Compounds					QValue
4:2FTS	5.256	327.1 -> 307.0	43577	9.45 µg/L	98
		327.1 -> 80.9	10681		
6:2FTS	6.937	427.1 -> 407.0	39714	9.78 µg/L	98
		427.1 -> 80.9	8293		
8:2FTS	7.962	527.1 -> 507.0	21845	10.44 µg/L	95
		527.1 -> 80.8	5319		
EtFOSAA	8.427	584.2 -> 419.1	9458	2.49 µg/L	m 94
		584.2 -> 526.0	5598		
FOSA	9.635	498.1 -> 77.9	17719	2.51 µg/L	100
		498.1 -> 478.0	649		
MeFOSAA	8.232	570.1 -> 419.0	12742	2.44 µg/L	95
		570.1 -> 483.0	2477		
PFBA	2.943	212.8 -> 168.9	21505	9.61 µg/L	100
PFBS	5.525	298.7 -> 79.9	12770	2.20 µg/L	94
		298.7 -> 98.8	5273		
PFDA	8.174	512.9 -> 469.0	50309	2.56 µg/L	98
		512.9 -> 219.0	6661		
PFDODA	9.057	613.1 -> 569.0	45874	2.38 µg/L	99
		613.1 -> 319.0	6117		
PFDS	9.221	599.0 -> 79.9	6295	2.23 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.532	599.0 -> 98.8	3372	2.41	µg/L	98
		363.1 -> 319.0	54735			
PFHpS	7.843	363.1 -> 169.0	7842	2.20	µg/L	94
		449.0 -> 79.9	8454			
PFHxA	5.582	449.0 -> 98.9	4651	2.48	µg/L	99
		313.0 -> 269.0	36348			
PFHxS	7.290	313.0 -> 118.9	1544	2.26	µg/L	98
		398.7 -> 79.9	9591			
PFNA	7.694	398.7 -> 98.9	5365	2.55	µg/L	99
		463.0 -> 419.0	33850			
PFNS	8.802	463.0 -> 219.0	6560	2.36	µg/L	96
		548.8 -> 79.9	9598			
PFOA	7.176	548.8 -> 98.9	5315	2.45	µg/L	100
		413.0 -> 369.0	70542			
PFOS	8.336	413.0 -> 169.0	9013	2.27	µg/L	97
		498.9 -> 79.9	9145			
PFPeA	4.372	498.9 -> 98.8	5611	4.99	µg/L	100
		263.0 -> 219.0	46169			
PFPeS	6.596	349.1 -> 79.9	11437	2.23	µg/L	93
		349.1 -> 98.9	6603			
PFTeDA	9.772	713.1 -> 669.0	39672	2.50	µg/L	99
		713.1 -> 168.9	2579			
PFTrDA	9.428	663.0 -> 619.0	44097	2.59	µg/L	99
		663.0 -> 168.9	3349			
PFUnDA	8.627	563.1 -> 519.0	43255	2.48	µg/L	98
		563.1 -> 269.1	6333			
11CI-PF3OUdS	9.480	630.9 -> 450.9	92338	9.93	µg/L	95
		632.9 -> 452.9	26888			
9CI-PF3ONS	8.666	530.8 -> 351.0	162283	9.63	µg/L	99
		532.8 -> 353.0	49598			
ADONA	6.781	376.9 -> 250.9	316541	9.81	µg/L	97
		376.9 -> 84.8	75382			
HFPO-DA	5.959	284.9 -> 168.9	15253	9.64	µg/L	99
		284.9 -> 184.9	1825			
3:3FTCA	3.826	241.0 -> 177.0	6161	13.32	µg/L	97
		241.0 -> 117.0	847			
5:3FTCA	6.246	341.0 -> 237.1	197002	66.66	µg/L	100
		341.0 -> 217.0	163944			
7:3FTCA	7.659	441.0 -> 316.9	96574	65.01	µg/L	91
		441.0 -> 336.9	189177			
EtFOSA	10.981	526.0 -> 219.0	7909	2.39	µg/L	94
		526.0 -> 169.0	8026			
EtFOSE	10.914	630.0 -> 58.9	17289	25.00	µg/L	100
		511.9 -> 219.0	7237			
MeFOSA	10.748	511.9 -> 169.0	7589	2.60	µg/L	98
		616.1 -> 58.9	25221			
MeFOSE	10.681	699.1 -> 79.9	3838	23.90	µg/L	100
		699.1 -> 98.8	2257			
PFDoDS	9.899	295.0 -> 201.0	4694	2.38	µg/L	93
		295.0 -> 84.9	2140			
NFDHA	5.463	279.0 -> 85.1	15042	4.98	µg/L	99
		229.0 -> 84.9	13459			
PFMBA	4.794	314.8 -> 134.9	90872	4.39	µg/L	99
		314.8 -> 82.9	2340			

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



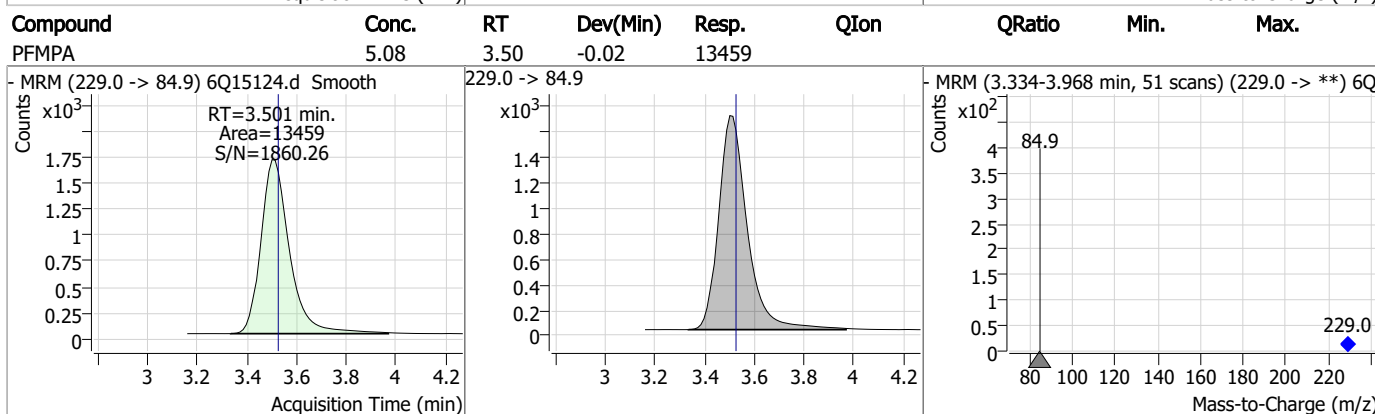
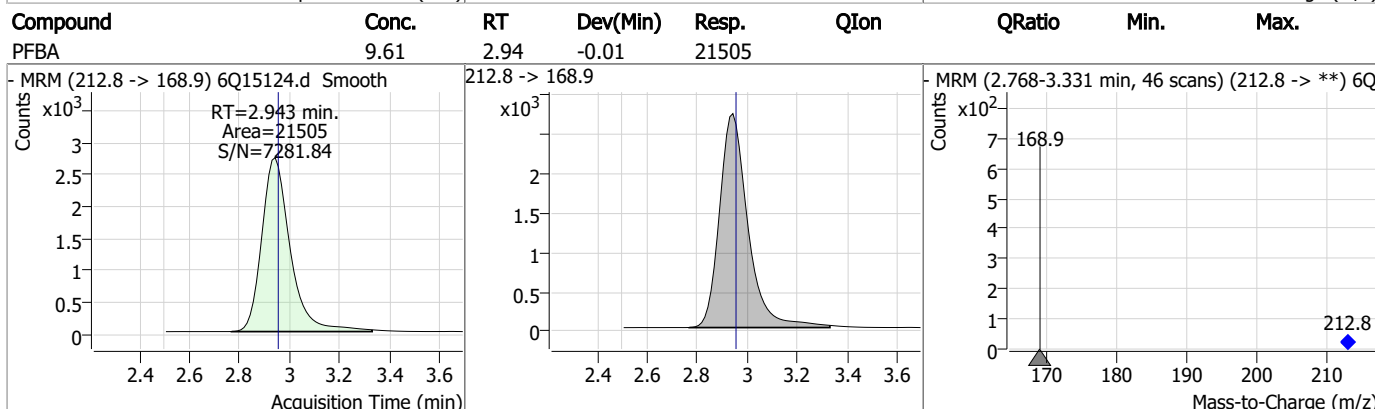
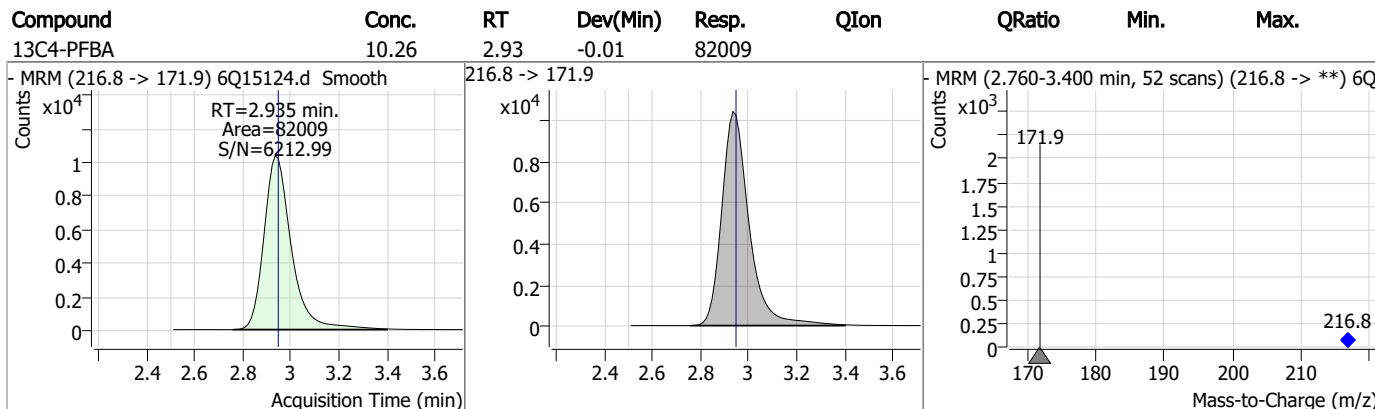
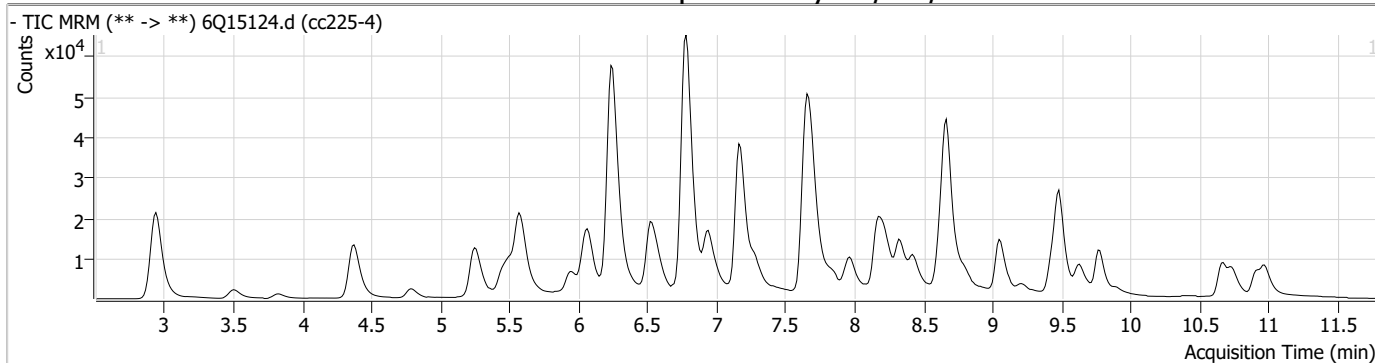
Perfluorinated Compounds by LC/MS/MS

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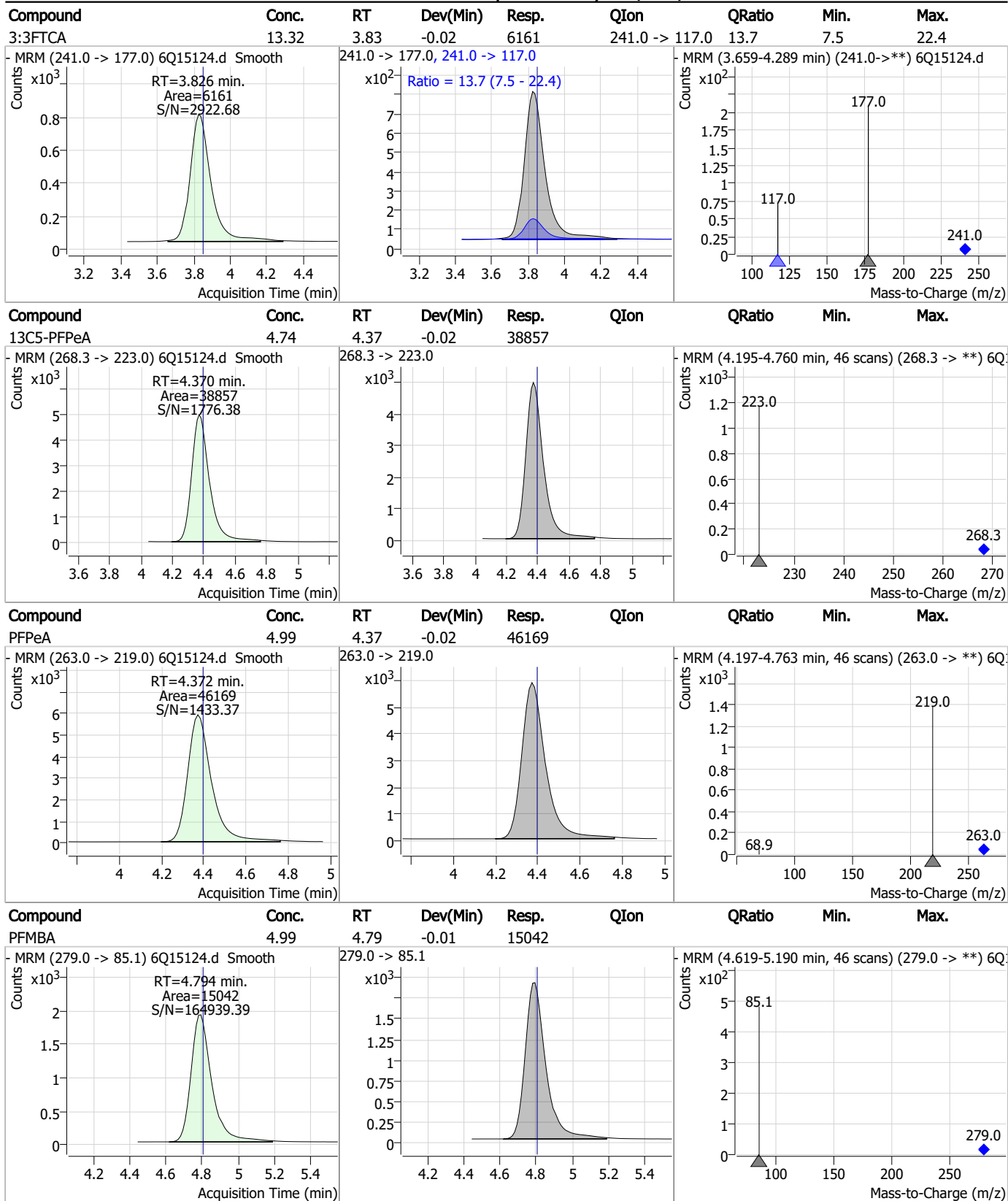
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Perfluorinated Compounds by LC/MS/MS



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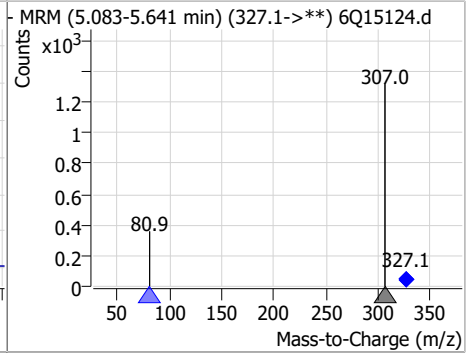
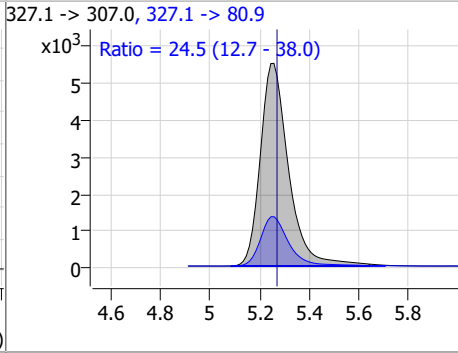
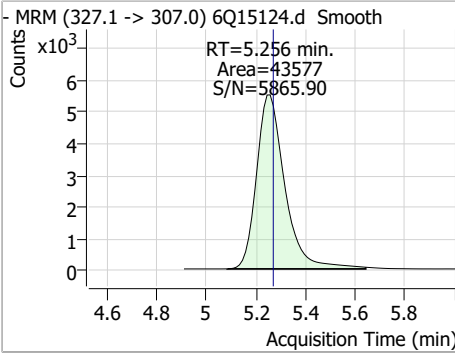
Perfluorinated Compounds by LC/MS/MS



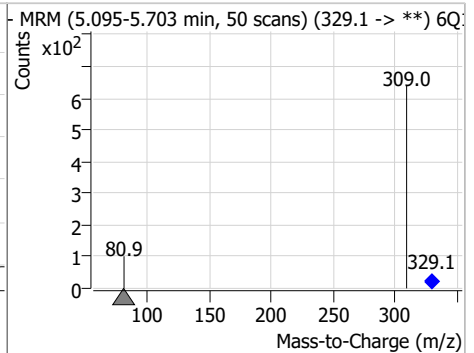
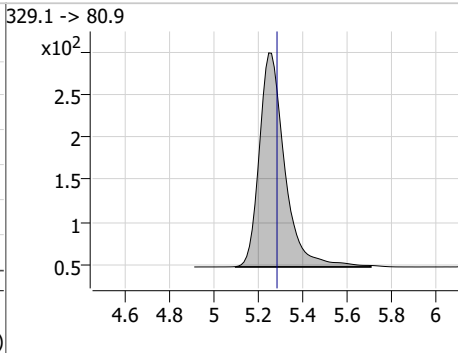
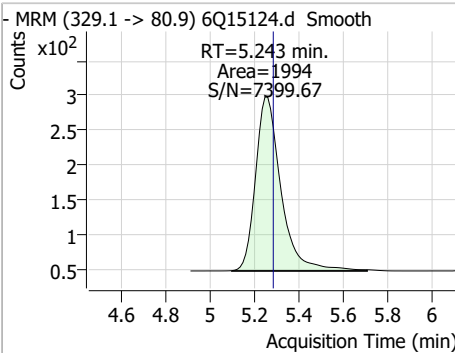
7.7.15
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Perfluorinated Compounds by LC/MS/MS

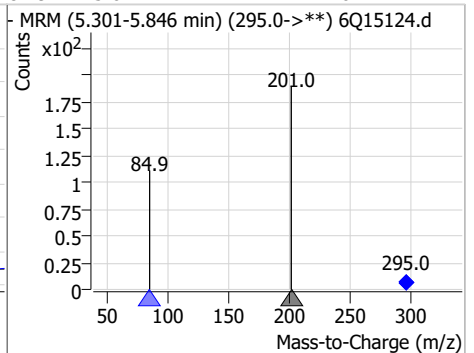
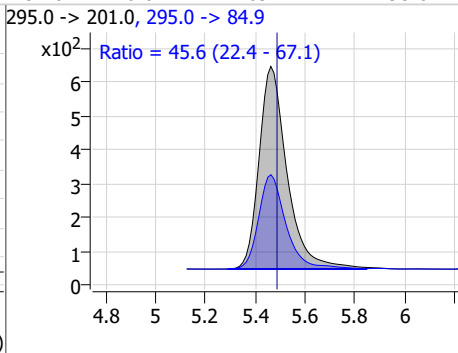
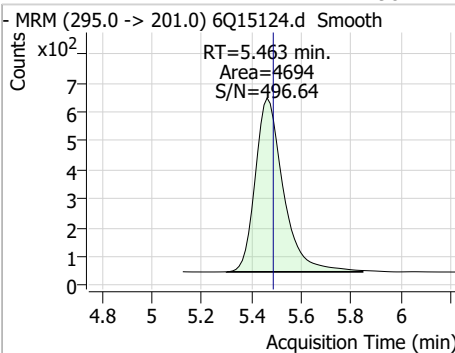
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	9.45	5.26	-0.01	43577	327.1 -> 80.9	24.5	12.7	38.0



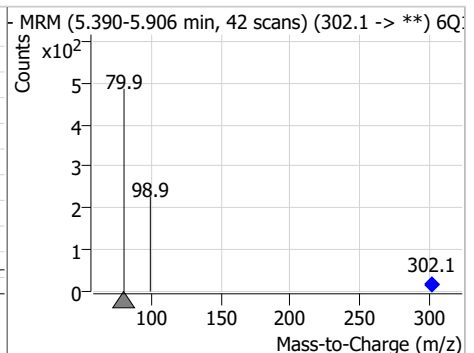
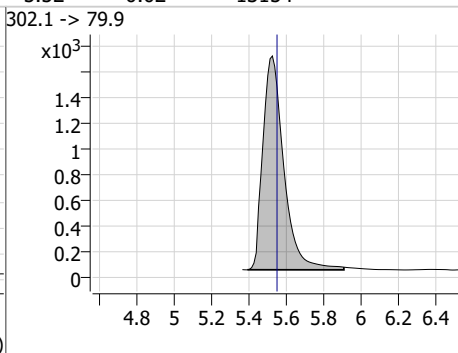
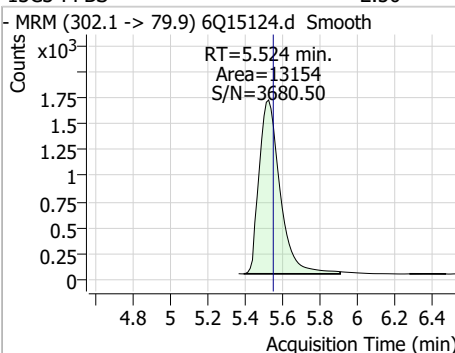
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	5.65	5.24	-0.04	1994	329.1 -> 80.9			



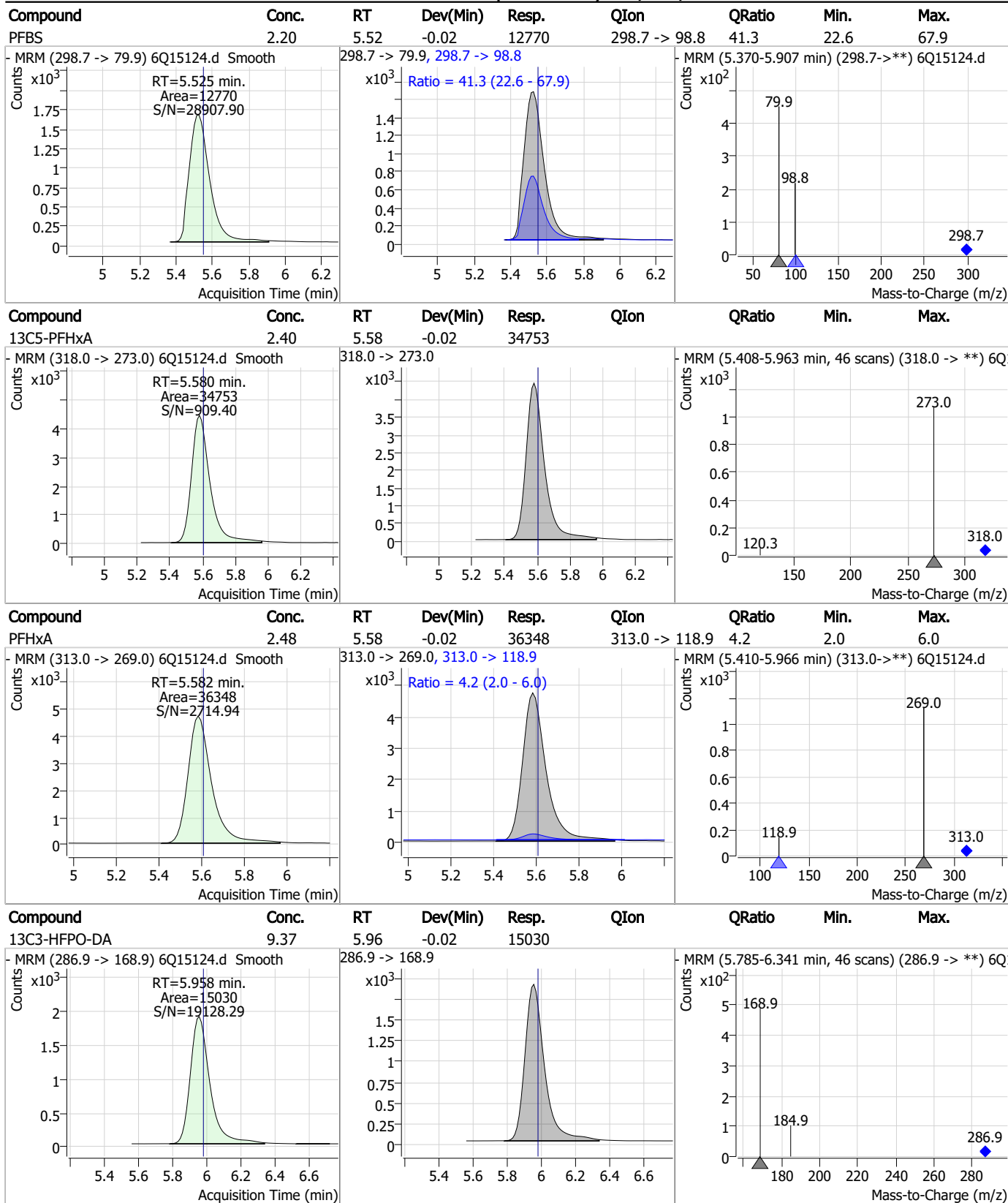
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	4.98	5.46	-0.02	4694	295.0 -> 84.9	45.6	22.4	67.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.50	5.52	-0.02	13154	302.1 -> 79.9			

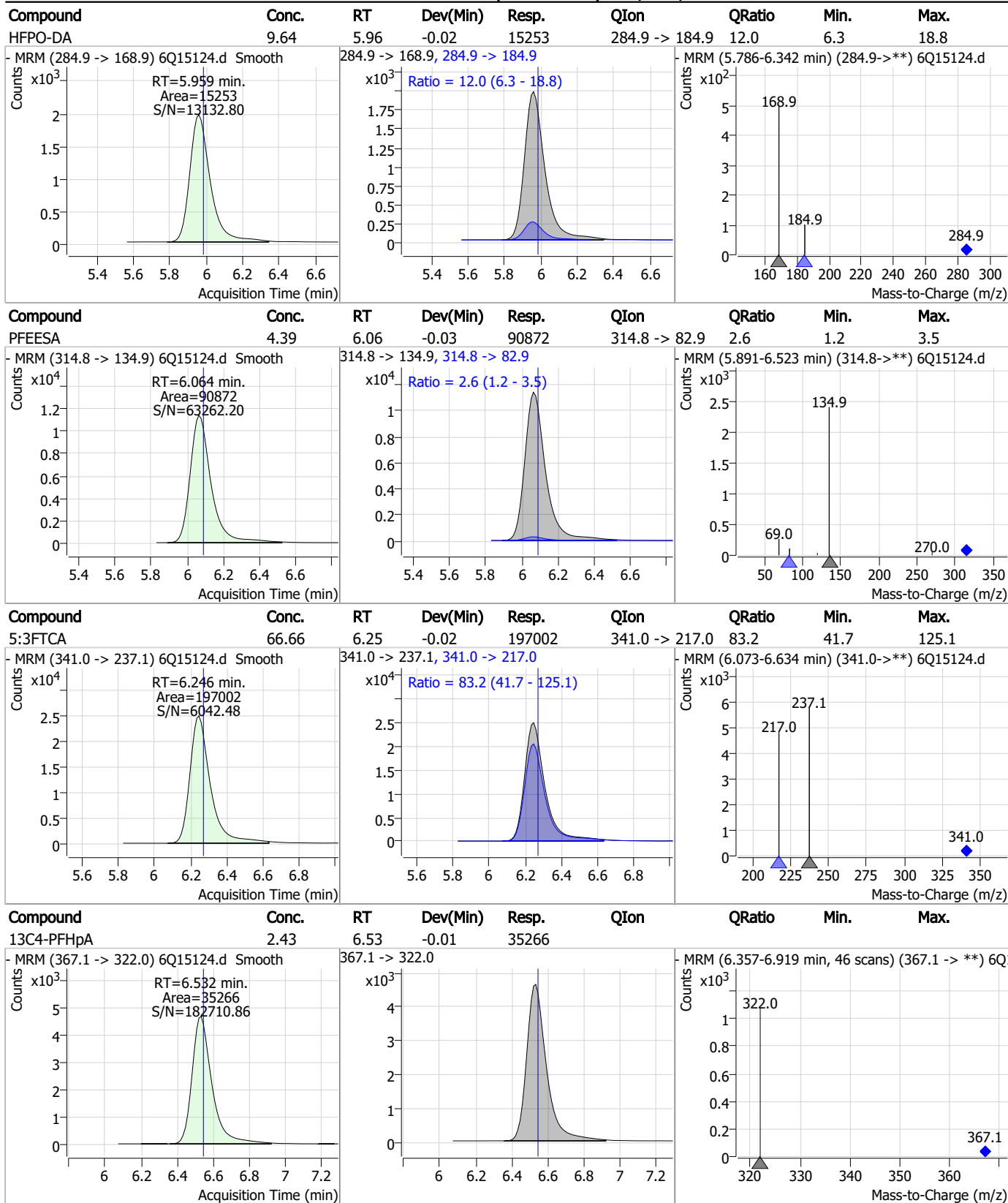


Perfluorinated Compounds by LC/MS/MS



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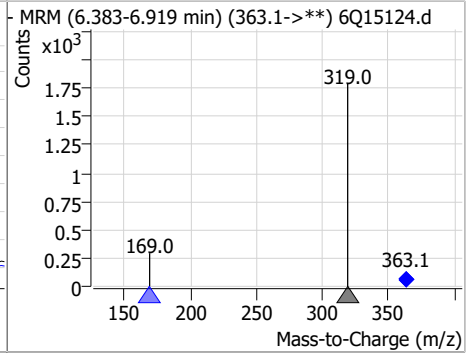
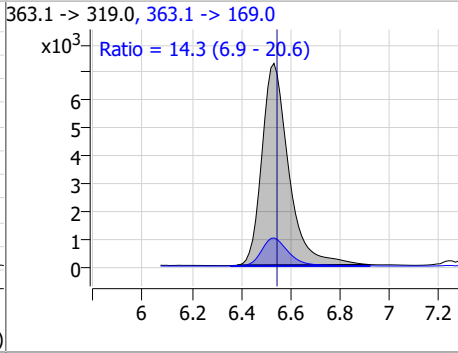
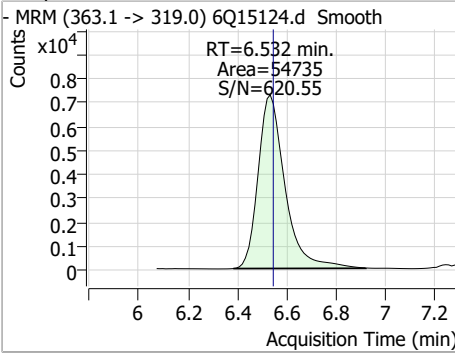
Perfluorinated Compounds by LC/MS/MS



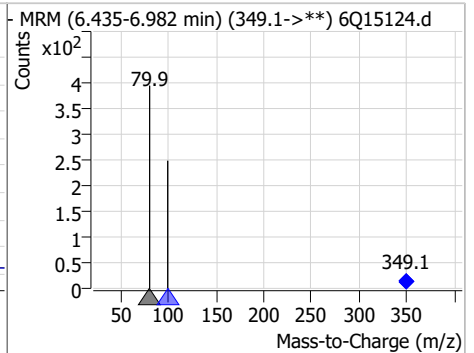
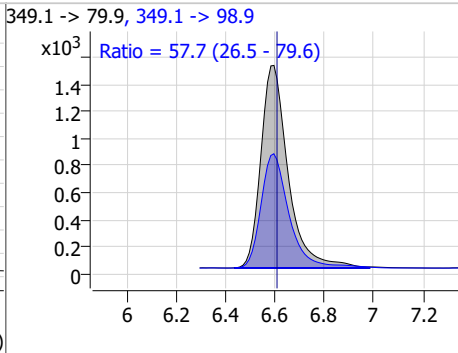
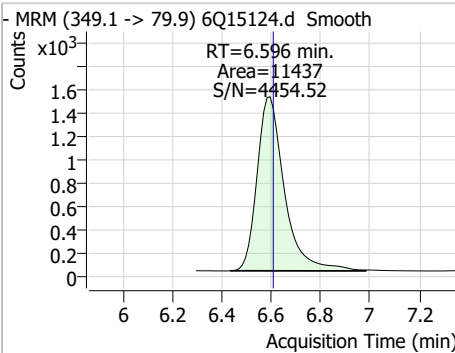
7.7.15
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Perfluorinated Compounds by LC/MS/MS

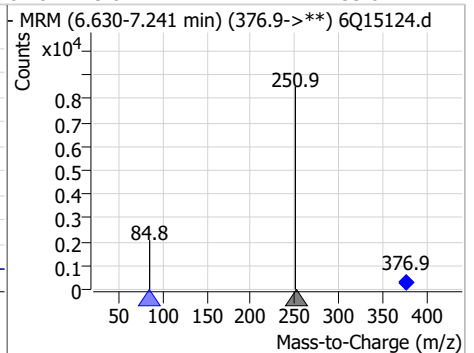
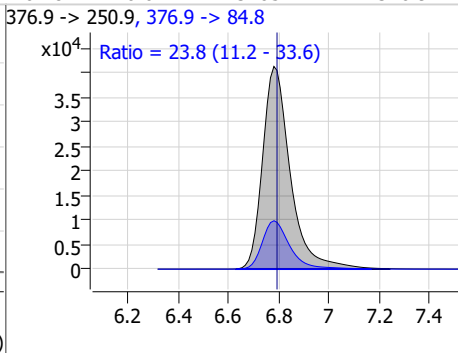
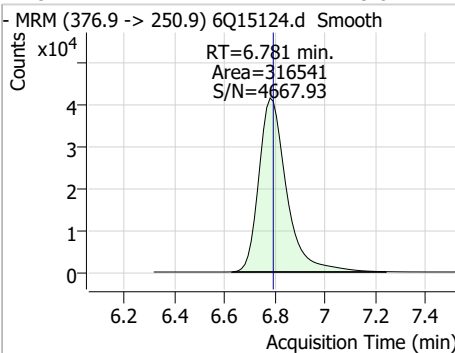
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.41	6.53	-0.01	54735	363.1 -> 169.0	14.3	6.9	20.6



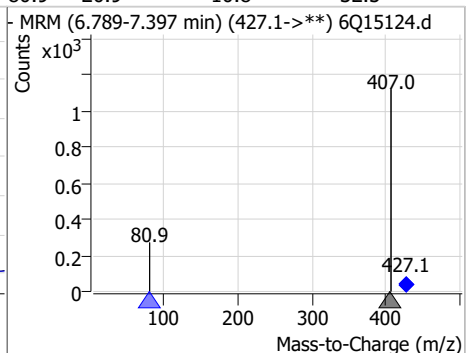
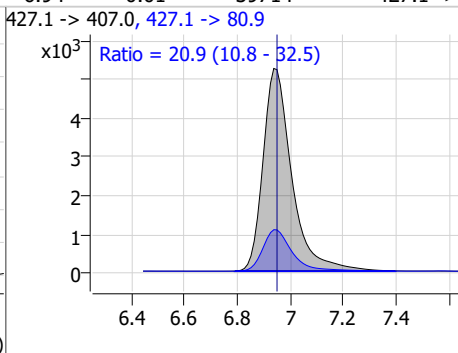
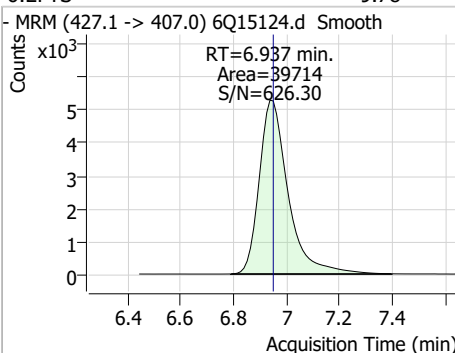
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.23	6.60	-0.01	11437	349.1 -> 98.9	57.7	26.5	79.6



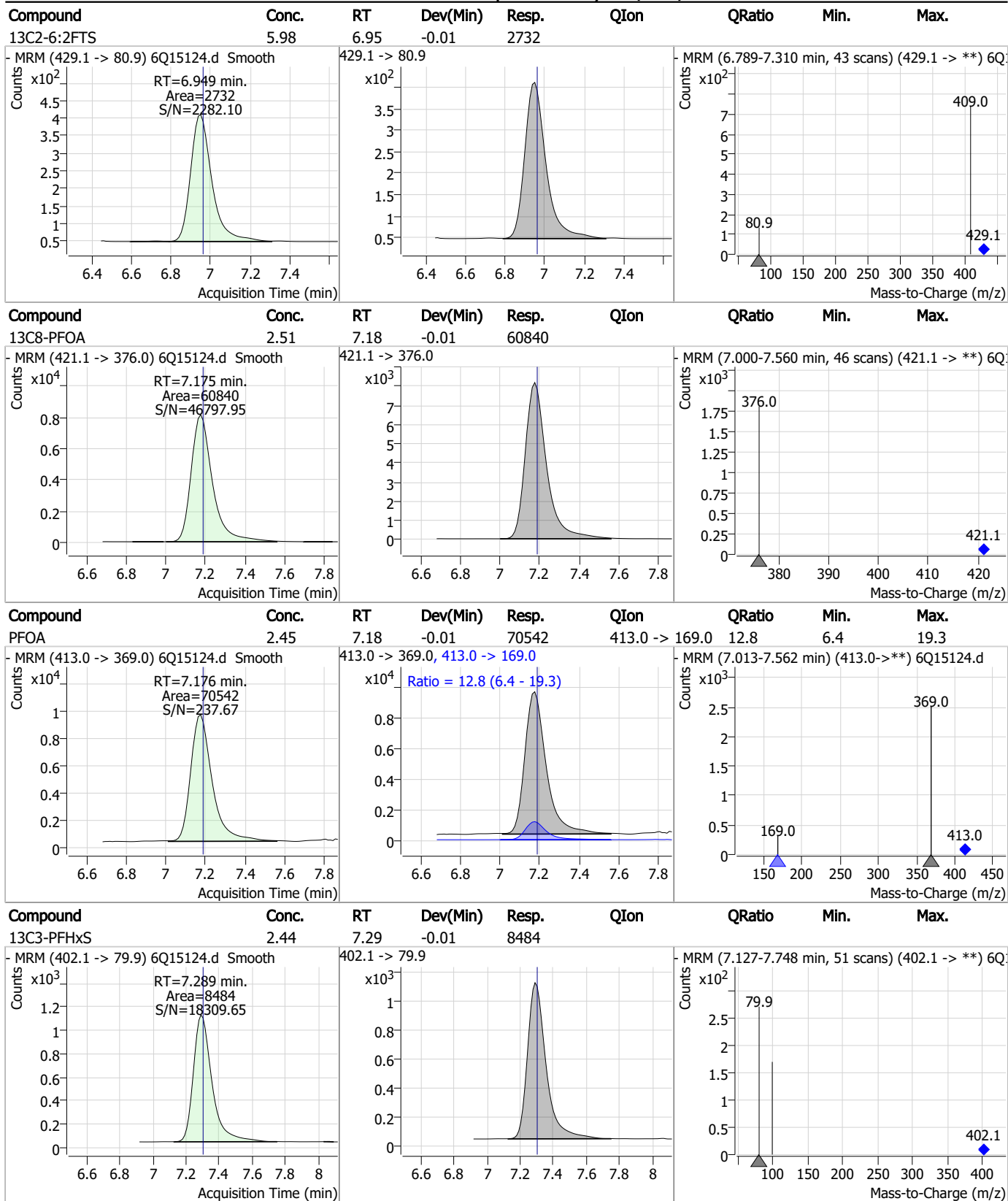
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	9.81	6.78	-0.01	316541	376.9 -> 84.8	23.8	11.2	33.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	9.78	6.94	-0.01	39714	427.1 -> 80.9	20.9	10.8	32.5

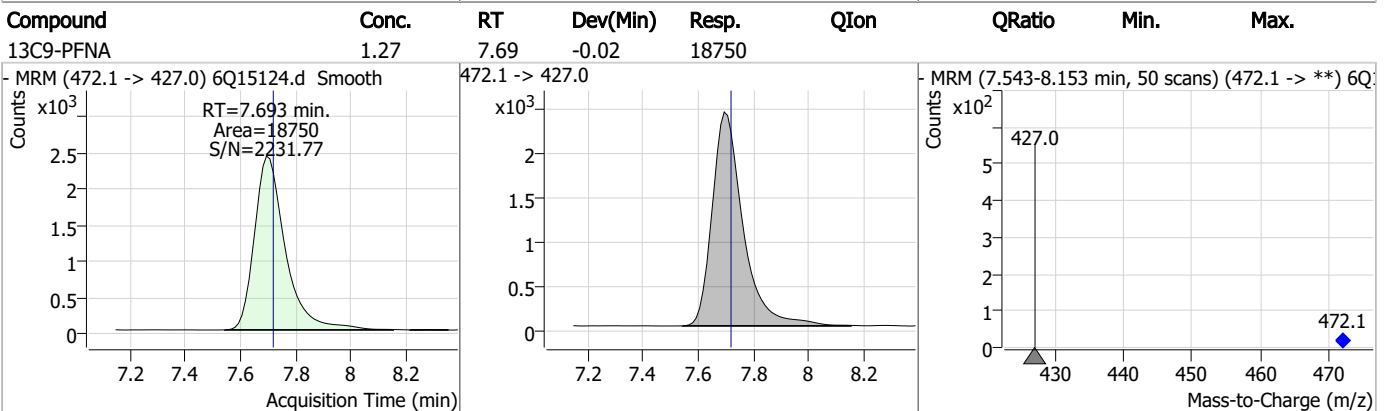
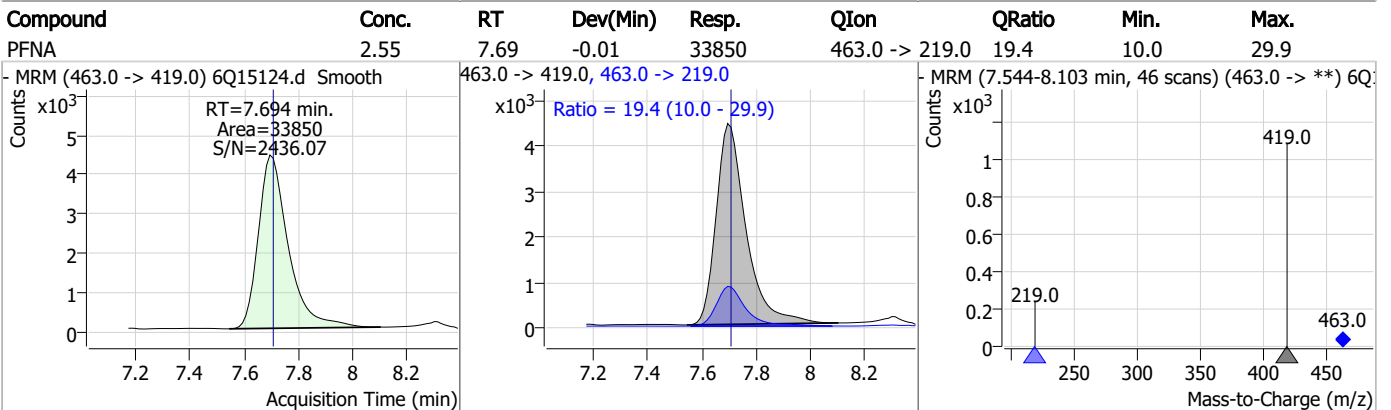
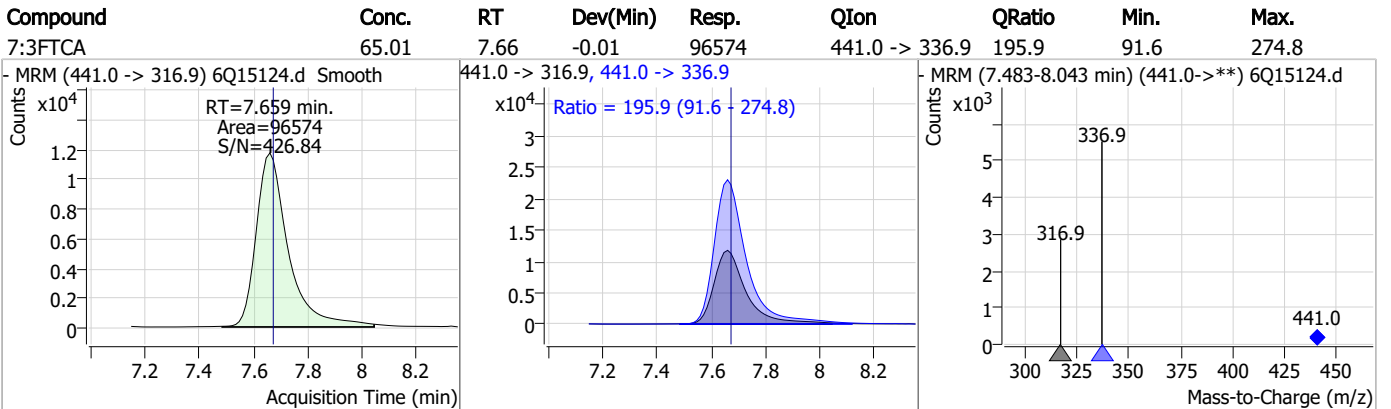
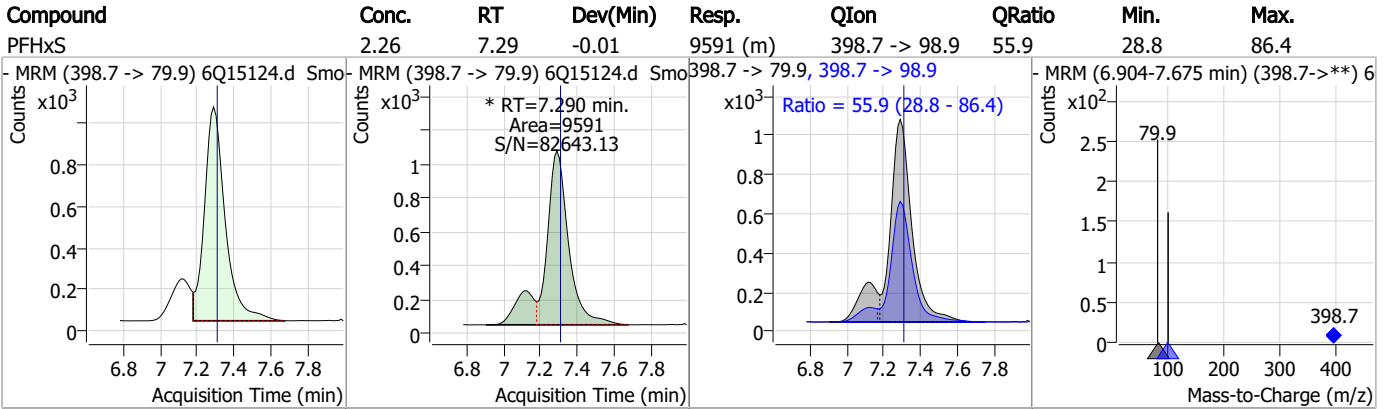


Perfluorinated Compounds by LC/MS/MS



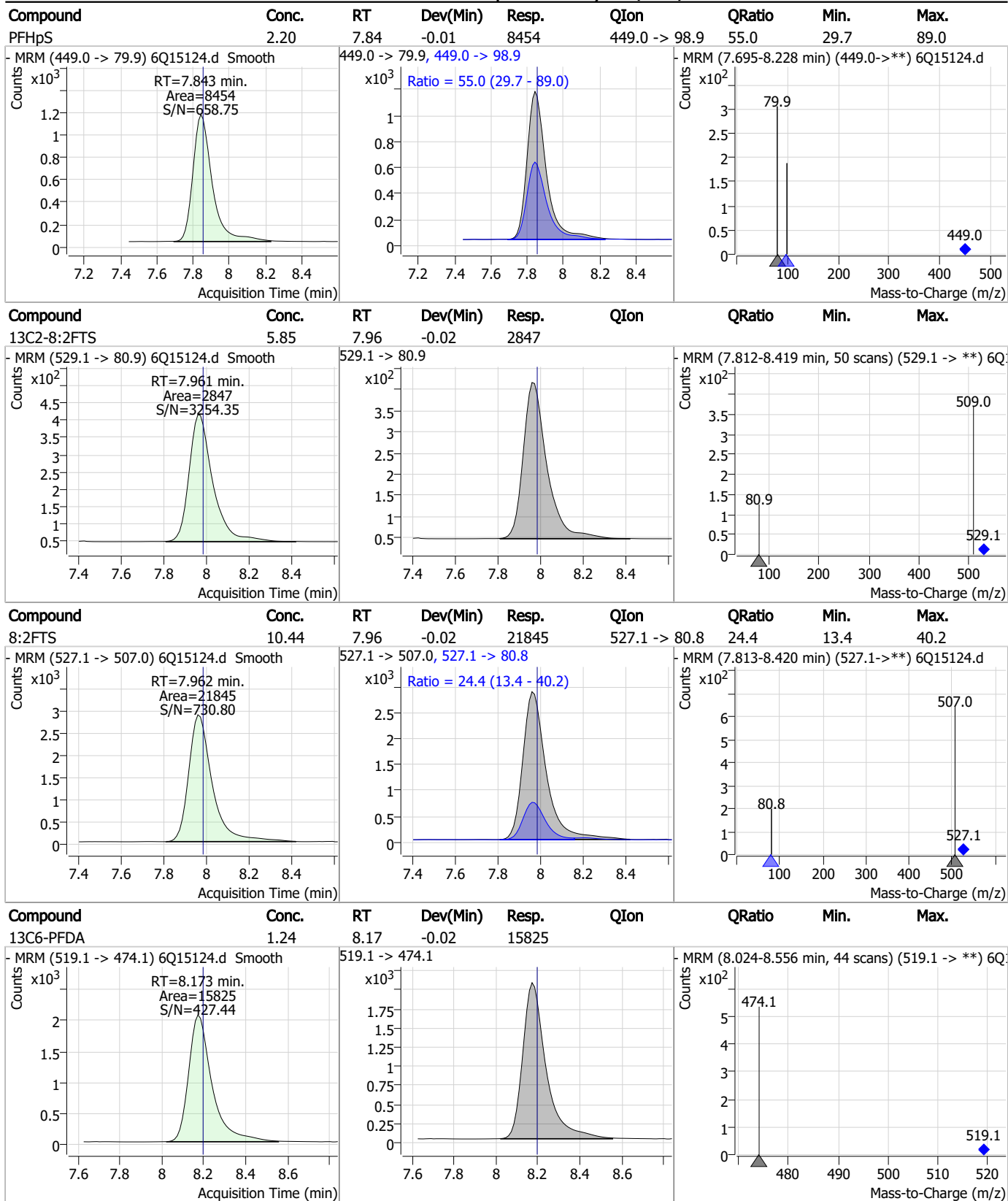
7.7.15
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Perfluorinated Compounds by LC/MS/MS



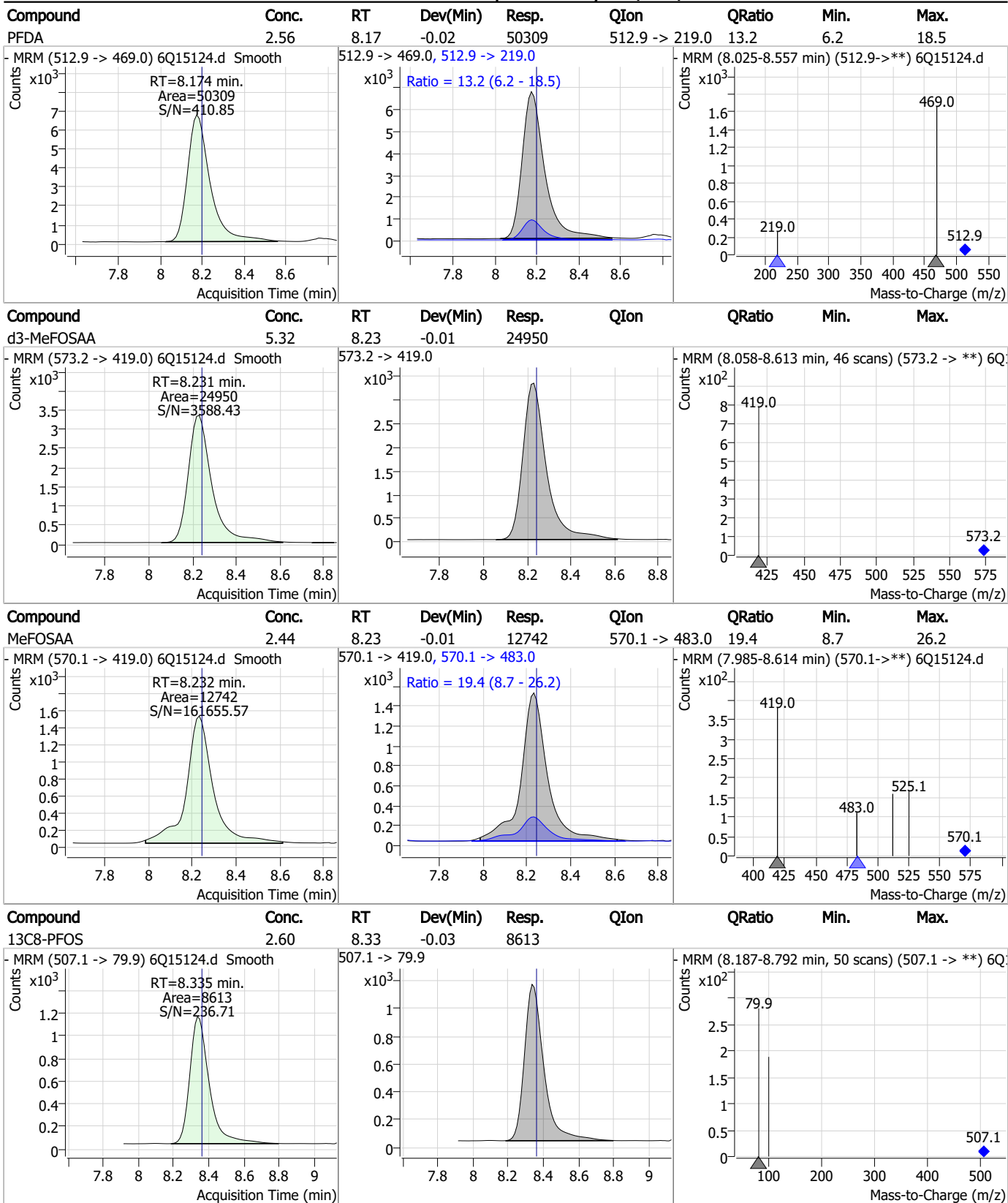
7.7.15
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Perfluorinated Compounds by LC/MS/MS



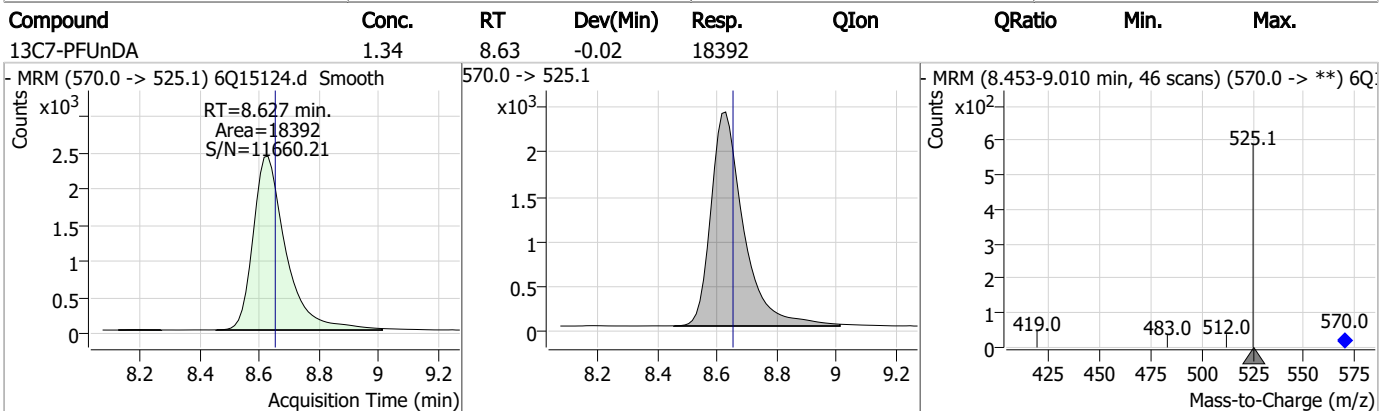
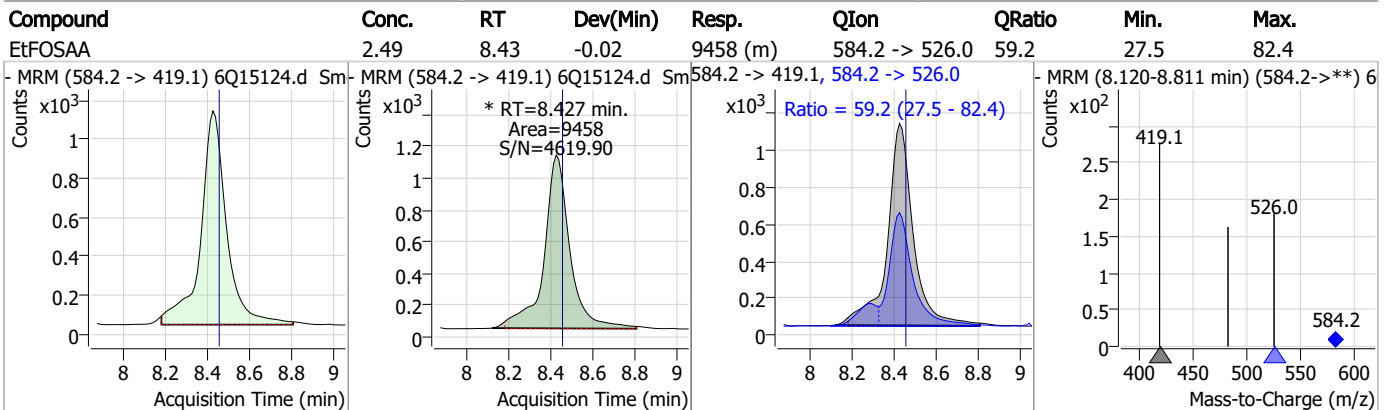
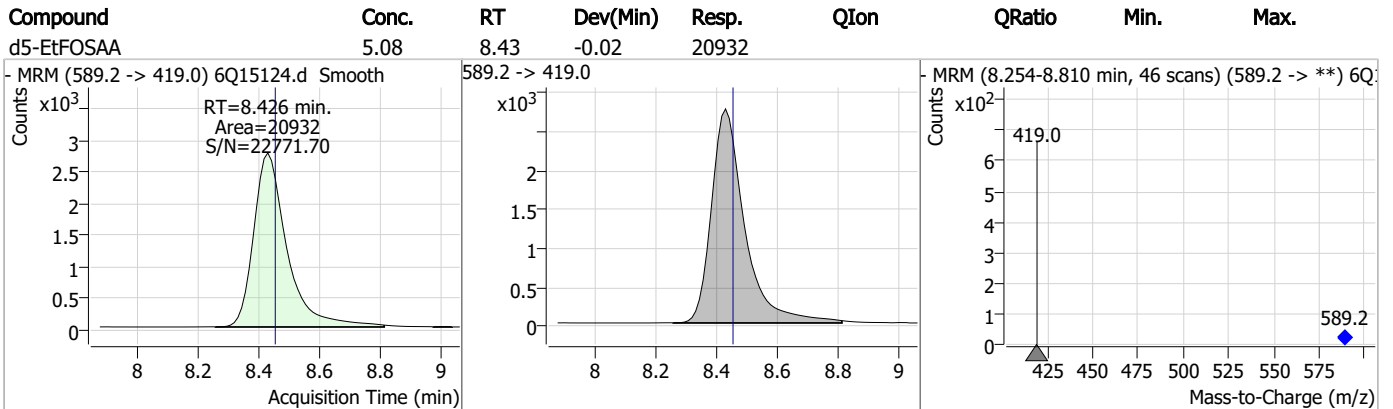
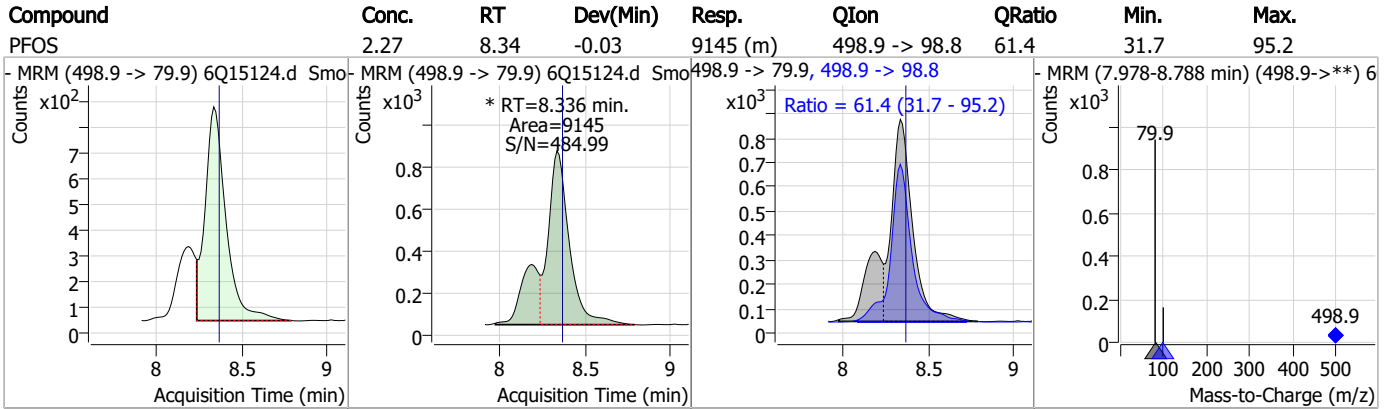
7.7.15
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Perfluorinated Compounds by LC/MS/MS

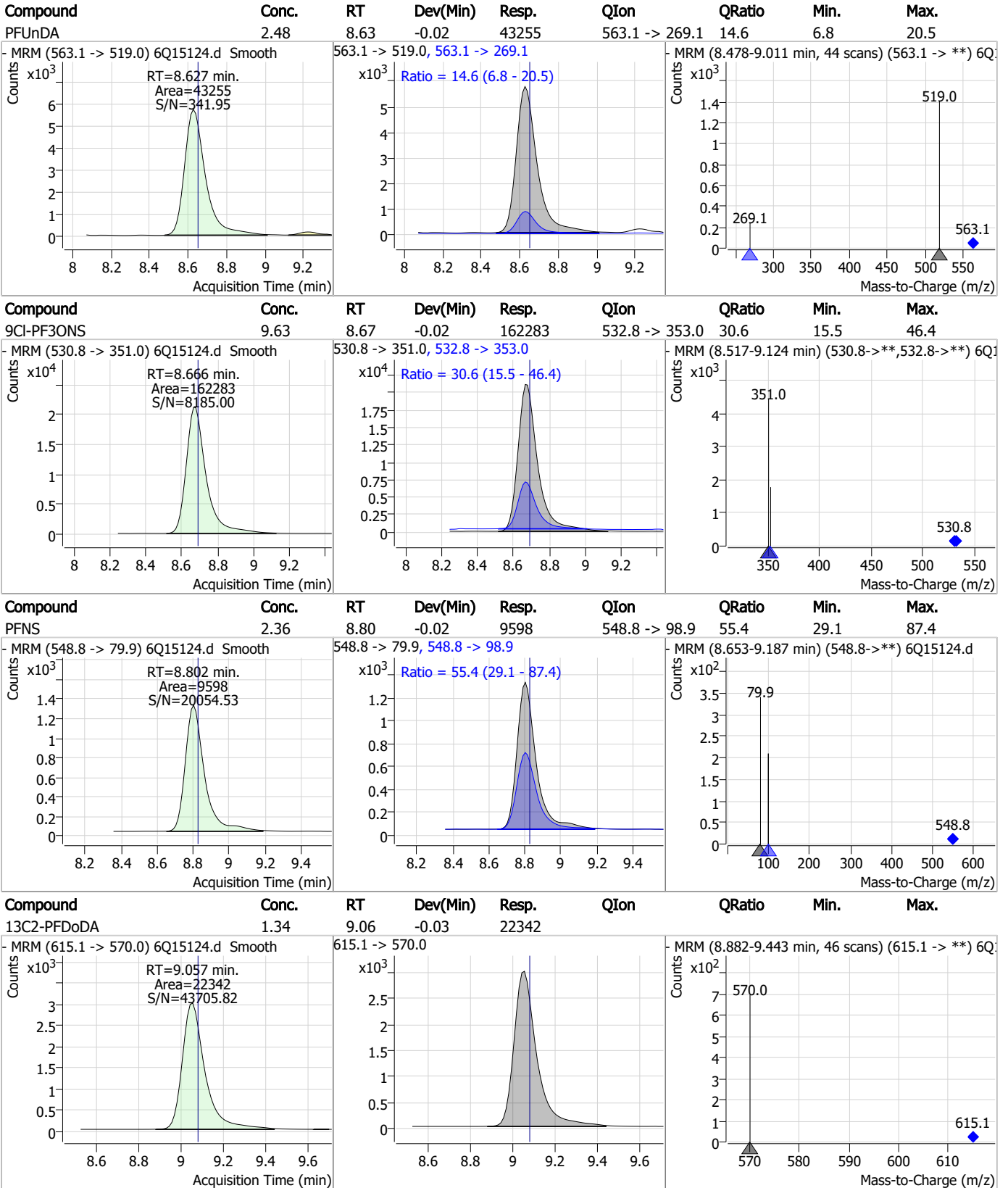


7.7.15
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Perfluorinated Compounds by LC/MS/MS



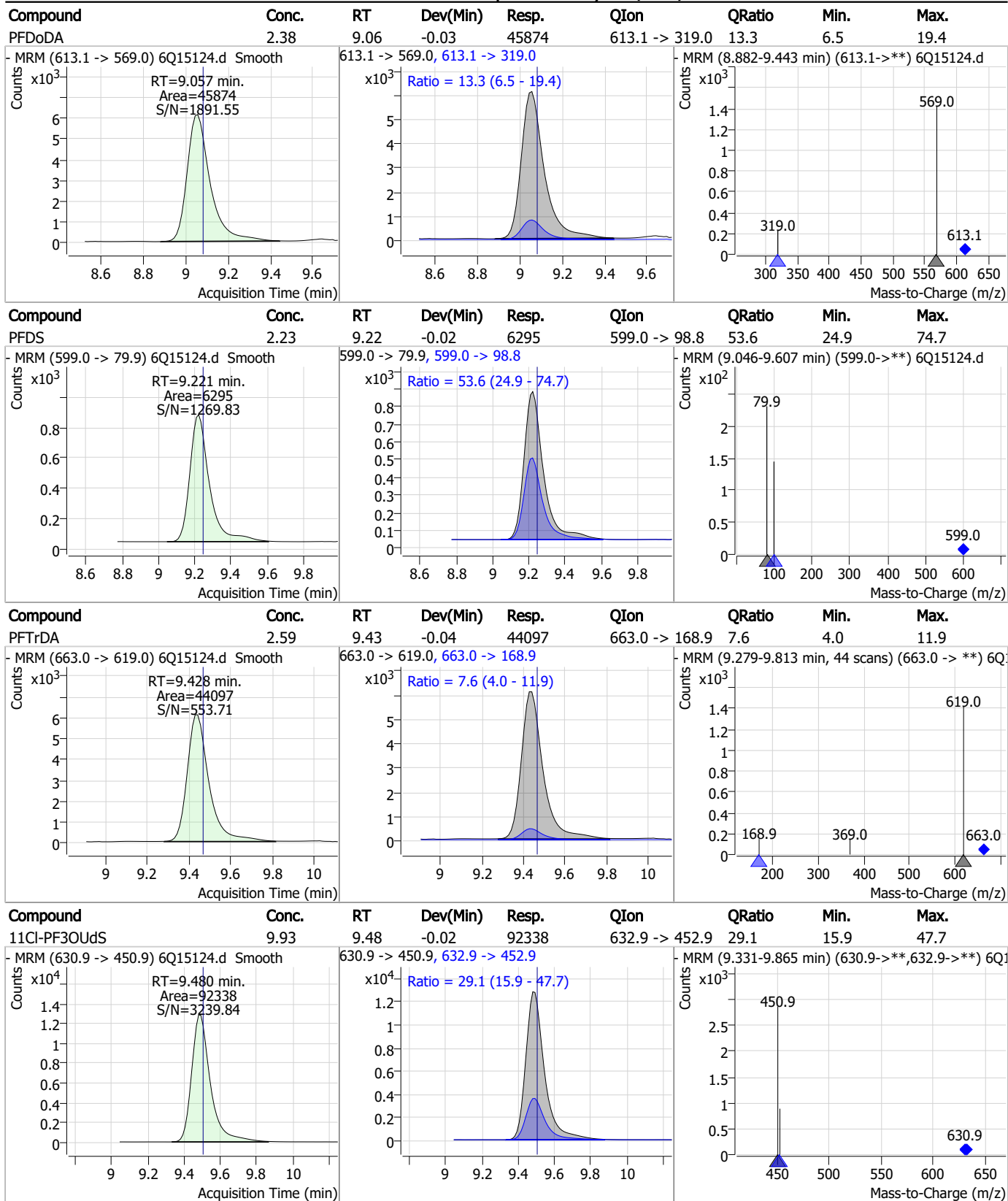
Perfluorinated Compounds by LC/MS/MS



7.7.15 7



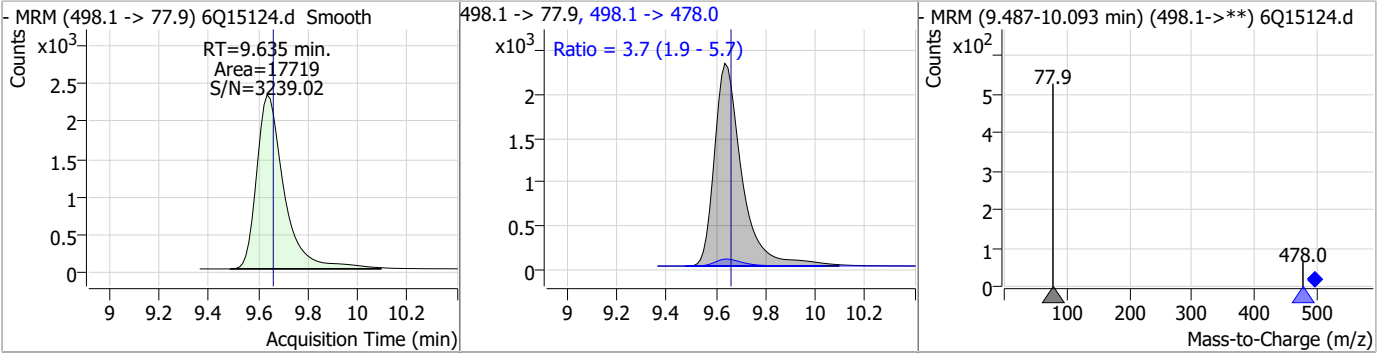
Perfluorinated Compounds by LC/MS/MS



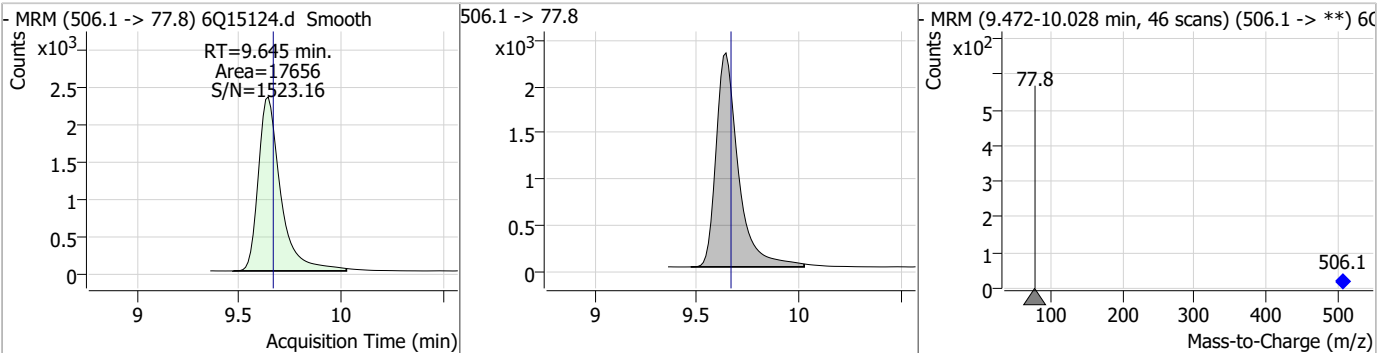
7.7.15
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Perfluorinated Compounds by LC/MS/MS

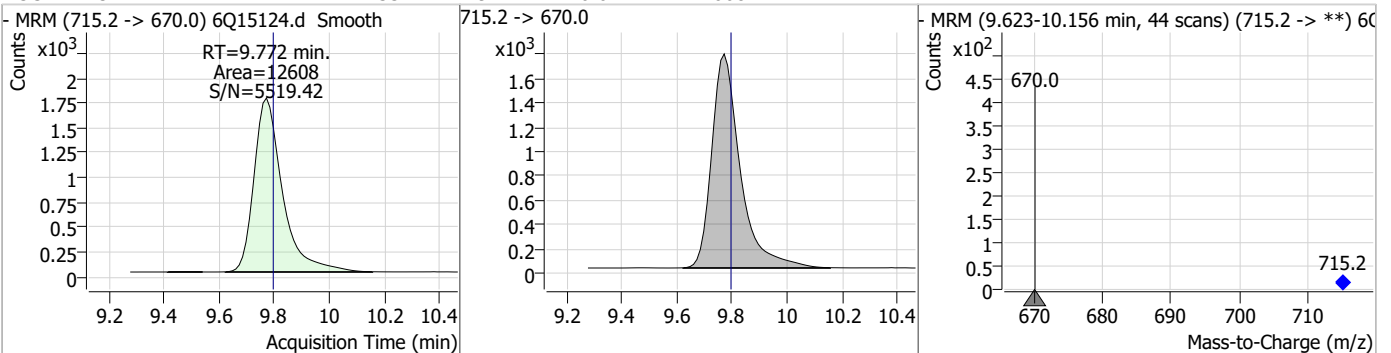
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.51	9.64	-0.02	17719	498.1 -> 478.0	3.7	1.9	5.7



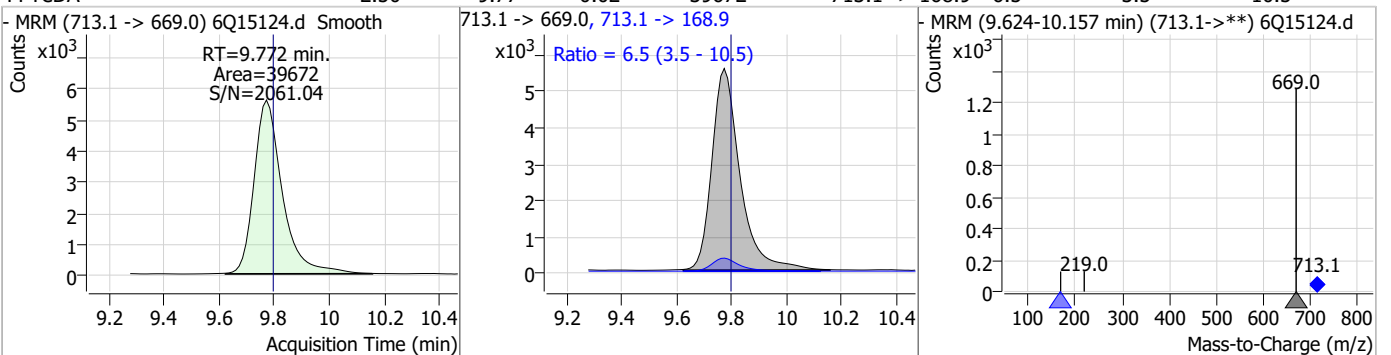
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.61	9.64	-0.02	17656				



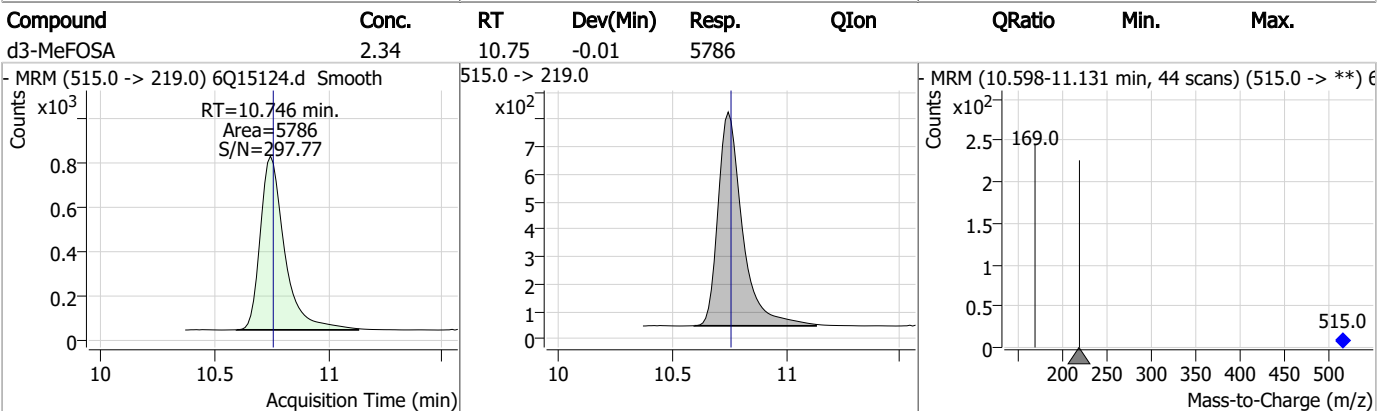
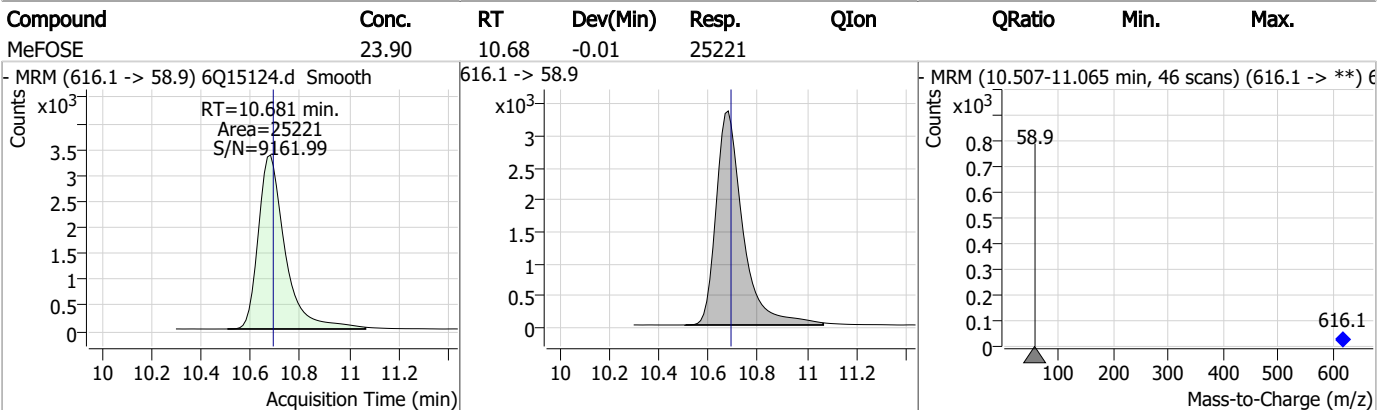
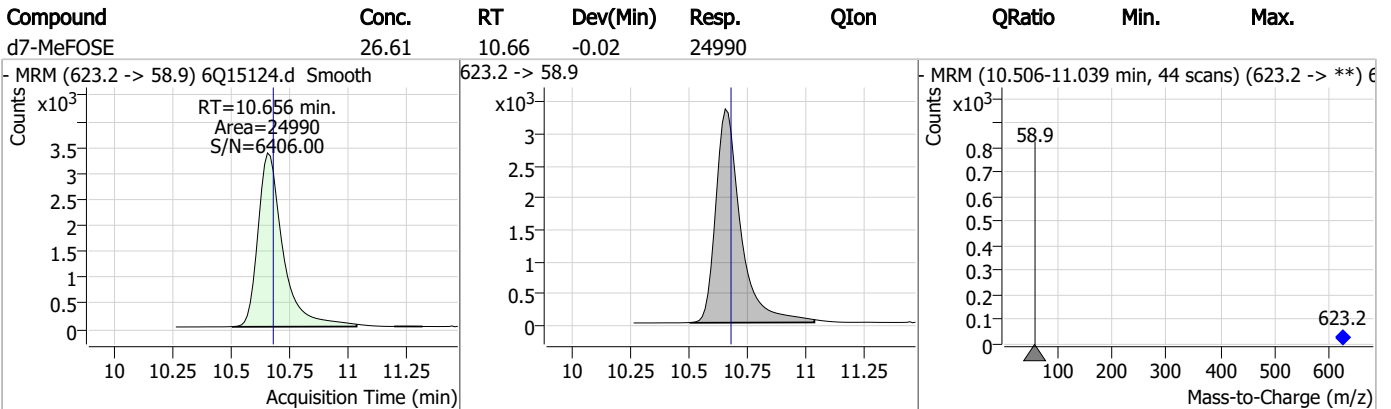
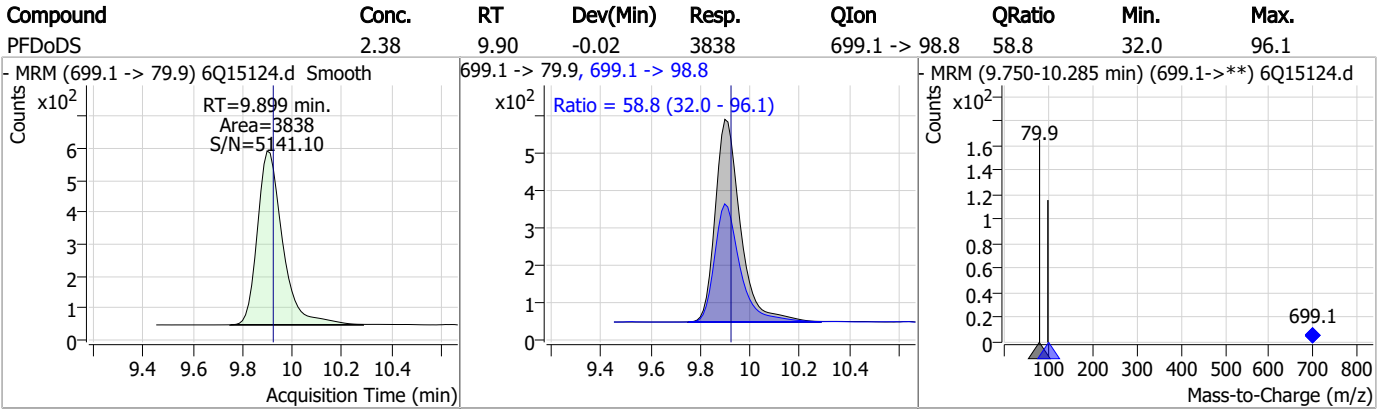
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.33	9.77	-0.02	12608				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.50	9.77	-0.02	39672	713.1 -> 168.9	6.5	3.5	10.5

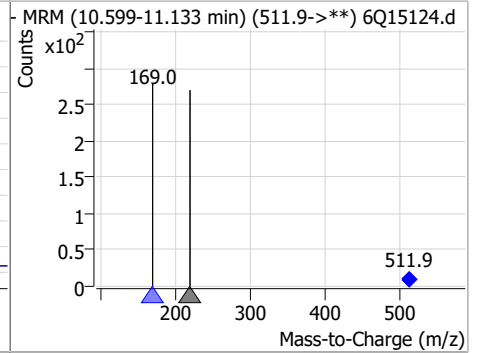
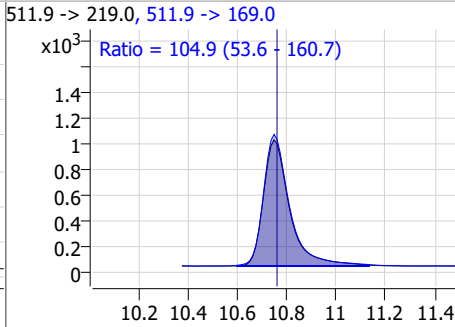
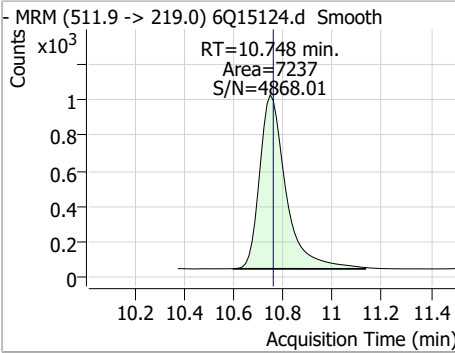


Perfluorinated Compounds by LC/MS/MS

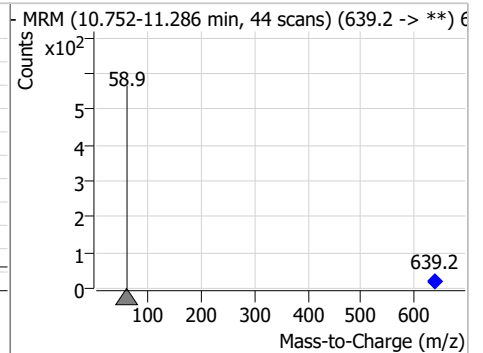
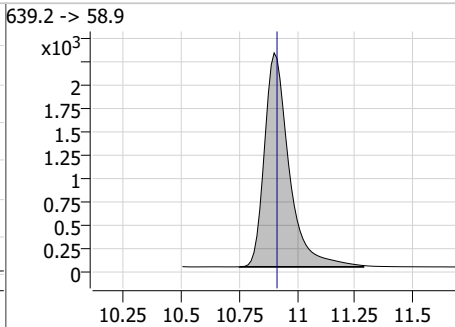
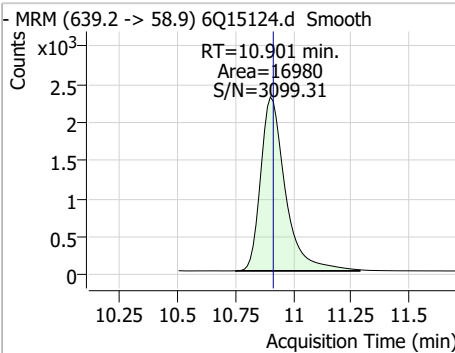


Perfluorinated Compounds by LC/MS/MS

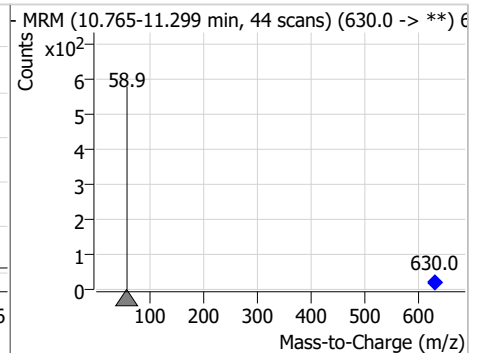
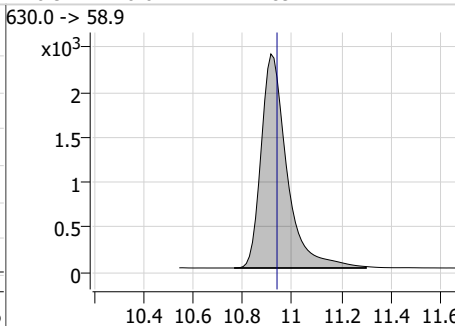
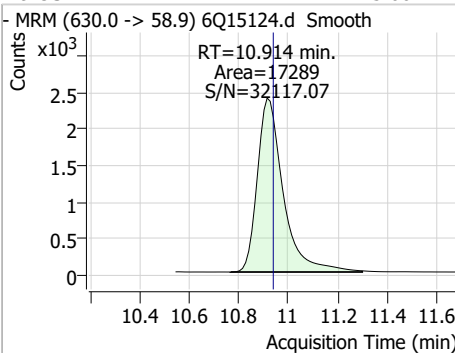
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.60	10.75	-0.01	7237	511.9 -> 169.0	104.9	53.6	160.7



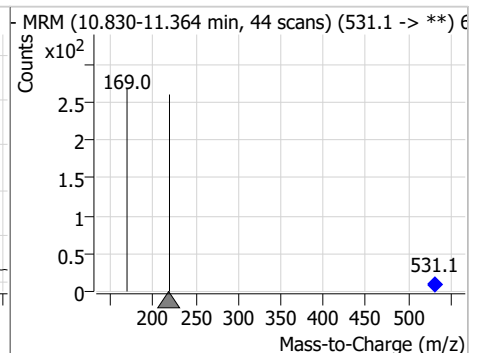
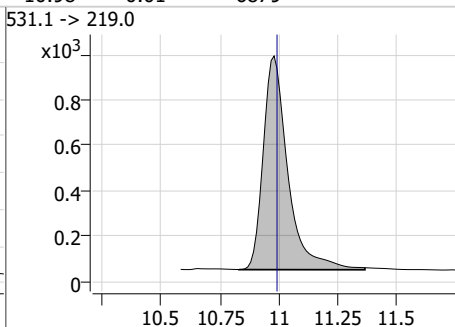
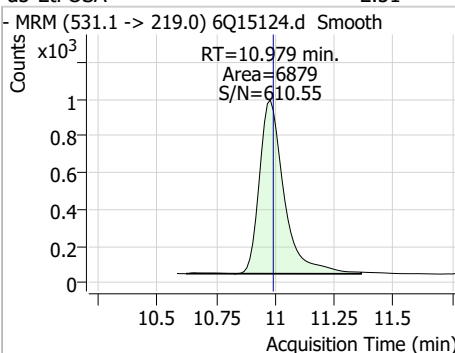
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.62	10.90	-0.01	16980				



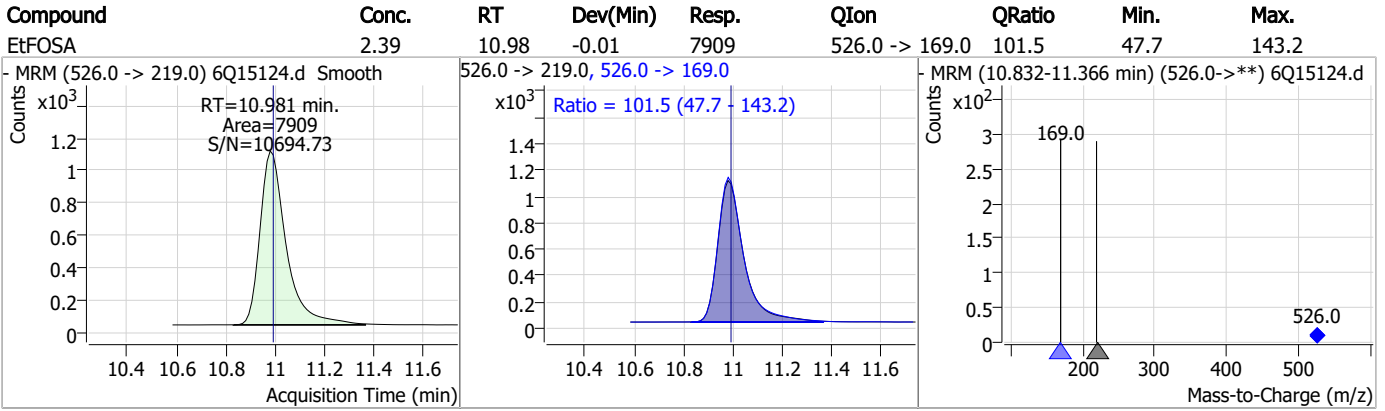
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	25.00	10.91	-0.02	17289				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.51	10.98	-0.01	6879				



Perfluorinated Compounds by LC/MS/MS



7.7.15
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Manual Integration Approval Summary

Sample Number: S6Q229-CC225 Method: EPA DRAFT 1633
Lab FileID: 6Q15124.D Analyst approved: 03/22/23 10:48 Martha Valls
Injection Time: 03/21/23 20:07 Supervisor approved: 03/22/23 11:41 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.43	Split peak

7.7.15.1

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SGS ORLANDO

DATE:	03/15/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 uI
INSTRUMENT:	LCMS6-6Q

LCMS6-6Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_031523_S6Q225
CAL DATE:	03/15/23
ANALYST:	M. Valls
RUN BATCH:	S6Q225

ELUENT A LOT #:	ACN 220228
ELUENT B LOT #:	HPLC WATER LOT: 224870 W5% CAN 220225 2mM AMAC: 11387
IC/CC STD LOT #:	LCMS 2083D
ICV STD LOT #:	LCMS 2073D/2071
ISTD/ID STD LOT #:	11384/11383

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	6Q14838.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	needle cleaning, temp. check
2	6Q14839.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
3	6Q14840.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
4	6Q14841.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
5	6Q14842.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
6	6Q14843.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
7	6Q14844.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
8	6Q14845.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
9	6Q14846.d	P1-B9	CCB	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	↓
10	6Q14847.d	P1-B3	RT TDCA	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	✓
11	6Q14848.d	P1-B4	RT BR-LN	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	✓
12	6Q14849.d	P1-A1	ic225-0	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	Check Tune File
13	6Q14850.d	P1-A2	ic225-1	1633full.m	Calibration	1.6/500	OP95881,S6Q225,500,,5.0,1,,water	✓
14	6Q14851.d	P1-A3	ic225-2	1633full.m	Calibration	4/500	OP95881,S6Q225,500,,5.0,1,,water	✓
15	6Q14852.d	P1-A4	ic225-3	1633full.m	Calibration	10/500	OP95881,S6Q225,500,,5.0,1,,water	✓
16	6Q14853.d	P1-A5	icc225-4	1633full.m	Calibration	20/500	OP95881,S6Q225,500,,5.0,1,,water	✓
17	6Q14854.d	P1-A6	ic225-5	1633full.m	Calibration	40/500	OP95881,S6Q225,500,,5.0,1,,water	✓
18	6Q14855.d	P1-A7	ic225-6	1633full.m	Calibration	100/500	OP95881,S6Q225,500,,5.0,1,,water	✓
19	6Q14856.d	P1-A8	ic225-7	1633full.m	Calibration	200/500	OP95881,S6Q225,500,,5.0,1,,water	✓
20	6Q14857.d	P1-A9	ic225-8	1633full.m	Calibration	1x	OP95881,S6Q225,500,,5.0,1,,water	✓
21	6Q14858.d	P1-A1	IBLK	1633full.m	Sample		OP95881,S6Q225,500,,5.0,1,,water	✓
22	6Q14859.d	P1-B1	icv225-4	1633full.m	QC	20/500	OP95881,S6Q225,500,,5.0,1,,water	✓
23	6Q14860.d	P1-B2	icv225-20	1633full.m	QC	100/500	OP95881,S6Q225,500,,5.0,1,,water	✓, Prepped by NG
24	6Q14861.d	P1-A5	cc225-4	1633full.m	QC	20/500	OP95881,S6Q225,500,,5.0,1,,water	✓
25	6Q14862.d	P1-A2	cc225-1,0LL	1633full.m	QC	1.6/500	OP95881,S6Q225,500,,5.0,1,,water	✓
26	6Q14863.d	P3-A1	op95856-bs	1633full.m	Sample		OP95856,S6Q225,500,,5.0,1,,soil	Windows update, rebooted
27	6Q14864.d	P3-A2	op95856-llbs:2	1633full.m	Sample		OP95856,S6Q225,500,,5.0,1,,soil	Windows update, rebooted
28	6Q14865.d	P3-A3	op95856-mb	1633full.m	Sample		OP95856,S6Q225,500,,5.0,1,,soil	Windows update, rebooted
29	6Q14866.d	P3-A4	JD61406-1	1633full.m	Sample		OP95856,S6Q225,5.03,,5.0,1,,soil	Windows update, rebooted
30	6Q14867.d	P3-A5	JD61406-2	1633full.m	Sample		OP95856,S6Q225,4.98,,5.0,1,,soil	Windows update, rebooted
31	6Q14868.d	P3-A6	JD61406-3	1633full.m	Sample		OP95856,S6Q225,5.05,,5.0,1,,soil	Windows update, rebooted
32	6Q14869.d	P3-A7	op95856-ms	1633full.m	Sample		OP95856,S6Q225,5.00,,5.0,1,,soil	Windows update, rebooted
33	6Q14870.d	P3-A8	op95856-msd	1633full.m	Sample		OP95856,S6Q225,4.96,,5.0,1,,soil	Windows update, rebooted
34	6Q14871.d	P3-A9	JD61406-4	1633full.m	Sample		OP95856,S6Q225,5.04,,5.0,1,,soil	Windows update, rebooted
35	6Q14872.d	P1-A5	cc225-4	1633full.m	QC	20/500	OP95881,S6Q225,500,,5.0,1,,water	Windows update, rebooted



LCMS6-6Q ANALYSIS LOG

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36	6Q14873.d	P1-A1	iccb	1633full.m	Sample	OP95881.S6Q225.500,,,5.0,1,water	Windows update, rebooted
37	6Q14874.d	P3-B1	op95880-bs	1633full.m	Sample	OP95880.S6Q225.500,,,5.0,1,water	Windows update, rebooted
38	6Q14875.d	P3-B2	op95880-llbs:2	1633full.m	Sample	OP95880.S6Q225.500,,,5.0,1,water	Windows update, rebooted
39	6Q14876.d	P3-B3	op95880-mb	1633full.m	Sample	OP95880.S6Q225.500,,,5.0,1,water	Windows update, rebooted
40	6Q14877.d	P3-B4	FC3313-1	1633full.m	Sample	OP95880.S6Q225.500,,,5.0,1,water	Windows update, rebooted
41	6Q14878.d	P3-B5	FC3313-2	1633full.m	Sample	OP95880.S6Q225.500,,,5.0,1,water	Windows update, rebooted
42	6Q14879.d	P3-B6	FC3313-3	1633full.m	Sample	OP95880.S6Q225.490,,,5.0,1,water	Windows update, rebooted
43	6Q14880.d	P3-B7	FC3313-4	1633full.m	Sample	OP95880.S6Q225.515,,,5.0,1,water	Windows update, rebooted
44	6Q14881.d	P3-B8	op95880-ms	1633full.m	Sample	OP95880.S6Q225.515,,,5.0,1,water	Windows update, rebooted
45	6Q14882.d	P3-B9	op95880-msd	1633full.m	Sample	OP95880.S6Q225.515,,,5.0,1,water	Windows update, rebooted
46	6Q14883.d	P3-C1	FC3313-5	1633full.m	Sample	OP95880.S6Q225.515,,,5.0,1,water	Windows update, rebooted
47	6Q14884.d	P1-A5	cc225-4	1633full.m	QC	20/500	Windows update, rebooted
48	6Q14885.d	P1-A1	iccb	1633full.m	Sample	OP95881.S6Q225.500,,,5.0,1,water	Windows update, rebooted
49	6Q14886.d	P3-C2	FC3313-6	1633full.m	Sample	OP95880.S6Q225.500,,,5.0,1,water	Windows update, rebooted
50	6Q14887.d	P3-C3	FC3313-7	1633full.m	Sample	OP95880.S6Q225.60,,,5.0,1,water	Windows update, rebooted
51	6Q14888.d	P3-C4	FC3313-8	1633full.m	Sample	OP95880.S6Q225.525,,,5.0,1,water	Windows update, rebooted
52	6Q14889.d	P3-C5	FC3313-9	1633full.m	Sample	OP95880.S6Q225.535,,,5.0,1,water	Windows update, rebooted
53	6Q14890.d	P3-C6	FC3313-10	1633full.m	Sample	OP95880.S6Q225.525,,,5.0,1,water	Windows update, rebooted
54	6Q14891.d	P3-C7	FC3369-1	1633full.m	Sample	OP95880.S6Q225.560,,,5.0,1,water	Windows update, rebooted
55	6Q14892.d	P3-C8	FC3369-2	1633full.m	Sample	OP95880.S6Q225.515,,,5.0,1,water	Windows update, rebooted
56	6Q14893.d	P3-C9	FC3369-3	1633full.m	Sample	OP95880.S6Q225.510,,,5.0,1,water	Windows update, rebooted
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58	6Q14895.d	P3-D2	FC3369-5	1633full.m	Sample	OP95880.S6Q225.480,,,5.0,1,water	Windows update, rebooted
59	6Q14896.d	P1-A5	cc225-4	1633full.m	QC	20/500	Windows update, rebooted
60	6Q14897.d	P1-A2	cc225-1.0LL	1633full.m	QC	1.6/500	Windows update, rebooted
61	6Q14898.d	P1-A1	iccb	1633full.m	Sample	OP95881.S6Q225.500,,,5.0,1,water	Windows update, rebooted
62	6Q14899.d	P3-D3	FC3369-6	1633full.m	Sample	OP95880.S6Q225.500,,,5.0,1,water	Windows update, rebooted
63	6Q14900.d	P3-D4	FC3369-7	1633full.m	Sample	OP95880.S6Q225.560,,,5.0,1,water	Windows update, rebooted
64	6Q14901.d	P3-D5	FC3369-8	1633full.m	Sample	OP95880.S6Q225.510,,,5.0,1,water	Windows update, rebooted
65	6Q14902.d	P3-D6	op95881-bs	1633full.m	Sample	OP95880.S6Q225.480,,,5.0,1,water	Windows update, rebooted
66	6Q14903.d	P3-D7	op95881-llbs:3	1633full.m	Sample	OP95881.S6Q225.500,,,5.0,1,water	Windows update, rebooted
67	6Q14904.d	P3-D8	op95881-mb	1633full.m	Sample	OP95881.S6Q225.500,,,5.0,1,water	Windows update, rebooted
68	6Q14905.d	P3-D9	FC3312-1	1633full.m	Sample	OP95881.S6Q225.550,,,5.0,1,water	Windows update, rebooted
69	6Q14906.d	P3-E1	FC3315-1	1633full.m	Sample	OP95881.S6Q225.550,,,5.0,1,water	Windows update, rebooted
70	6Q14907.d	P3-E2	FC3315-2	1633full.m	Sample	OP95881.S6Q225.570,,,5.0,1,water	Windows update, rebooted
71	6Q14908.d	P3-E3	FC3315-3	1633full.m	Sample	OP95881.S6Q225.570,,,5.0,1,water	Windows update, rebooted
72	6Q14909.d	P1-A5	cc225-4	1633full.m	QC	20/500	Windows update, rebooted
73	6Q14910.d	P1-A1	iccb	1633full.m	Sample	OP95881.S6Q225.500,,,5.0,1,water	Windows update, rebooted
74	6Q14911.d	P3-E4	FC3315-4	1633full.m	Sample	OP95881.S6Q225.570,,,5.0,1,water	Windows update, rebooted
75	6Q14912.d	P3-E5	FC3315-5	1633full.m	Sample	OP95881.S6Q225.570,,,5.0,1,water	Windows update, rebooted
76	6Q14913.d	P3-E6	FC3315-6	1633full.m	Sample	OP95881.S6Q225.560,,,5.0,1,water	Windows update, rebooted
77	6Q14914.d	P3-E7	FC3315-7	1633full.m	Sample	OP95881.S6Q225.570,,,5.0,1,water	Windows update, rebooted
78	6Q14915.d	P3-E8	FC3315-8	1633full.m	Sample	OP95881.S6Q225.560,,,5.0,1,water	Windows update, rebooted



SGS ORLANDO LCMS6-6Q ANALYSIS LOG

79	6Q14916.d	P3-E9	FC3328-1	1633full.m	Sample	OP95881,S6Q225,520,,,5.0,1,water	Windows update, rebooted
80	6Q14917.d	P3-F1	FC3329-1	1633full.m	Sample	OP95881,S6Q225,530,,,5.0,1,water	Windows update, rebooted
81	6Q14918.d	P3-F2	FC3346-1	1633full.m	Sample	OP95881,S6Q225,500,,,5.0,1,water	Windows update, rebooted
82	6Q14919.d	P1-A5	cc225-4	1633full.m	QC	OP95881,S6Q225,500,,,5.0,1,water	Windows update, rebooted
83	6Q14920.d	P1-A1	iccb	1633full.m	Sample	OP95881,S6Q225,500,,,5.0,1,water	Windows update, rebooted
84	6Q14921.d	P3-F3	FC3371-1	1633full.m	Sample	OP95881,S6Q225,570,,,5.0,1,water	Windows update, rebooted
85	6Q14922.d	P3-F4	op95881-rms	1633full.m	Sample	OP95881,S6Q225,560,,,5.0,1,water	Windows update, rebooted
86	6Q14923.d	P3-F5	op95881-rmsd	1633full.m	Sample	OP95881,S6Q225,550,,,5.0,1,water	Windows update, rebooted
87	6Q14924.d	P3-F6	FC3371-2	1633full.m	Sample	OP95881,S6Q225,570,,,5.0,1,water	Windows update, rebooted
88	6Q14925.d	P3-F7	FC3371-3	1633full.m	Sample	OP95881,S6Q225,570,,,5.0,1,water	Windows update, rebooted
89	6Q14926.d	P3-F8	FC3371-4	1633full.m	Sample	OP95881,S6Q225,570,,,5.0,1,water	Windows update, rebooted
90	6Q14927.d	P3-F9	FC3371-5	1633full.m	Sample	OP95881,S6Q225,570,,,5.0,1,water	Windows update, rebooted
91	6Q14928.d	P1-E1	FC3371-6	1633full.m	Sample	OP95881,S6Q225,570,,,5.0,1,water	Windows update, rebooted
92	6Q14929.d	P1-E2	FC3371-7	1633full.m	Sample	OP95881,S6Q225,570,,,5.0,1,water	Windows update, rebooted
93	6Q14930.d	P1-A5	cc225-4	1633full.m	QC	OP95881,S6Q225,500,,,5.0,1,water	Windows update, rebooted
94	6Q14931.d	P1-A1	iccb	1633full.m	Sample	OP95881,S6Q225,500,,,5.0,1,water	Windows update, rebooted

SGS ORLANDO

DATE:	03/21/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 uI
INSTRUMENT:	LCMS6-6Q

LCMS6-6Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_031523_S6Q225
CAL DATE:	03/15/23
ANALYST:	M. Valls
RUN BATCH:	S6Q229

ELUENT A LOT #:	ACN 220228
ELUENT B LOT #:	HPLC WATER LOT: 224870 W15% CAN 220225 2mM AMAC: 11387
IC/CC STD LOT #:	LCMS 2083D
ICV STD LOT #:	LCMS 2073D/2071
ISTD/D STD LOT #:	11384/11383

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	6Q15098.d	P1-A1	CCB	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
2	6Q15099.d	P1-A1	CCB	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
3	6Q15100.d	P1-B3	RT TDCA	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
4	6Q15101.d	P1-B4	RT BR-LN	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
5	6Q15102.d	P1-A9	high std	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
6	6Q15103.d	P1-A1	IBLK	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
7	6Q15104.d	P1-A5	cc225-4	1633full.m	QC	20/500	OP95881,S6Q229,500,,,5.0,1,water	✓
8	6Q15105.d	P1-A2	cc225-1,0LL	1633full.m	QC	1.6/500	OP95881,S6Q229,500,,,5.0,1,water	✓
9	6Q15106.d	P3-A1	op95968-bs	1633full.m	Sample		OP95968,S6Q229,500,,,5.0,1,water	✓
10	6Q15107.d	P3-A2	op95968-llbs:3	1633full.m	Sample		OP95968,S6Q229,500,,,5.0,1,water	✓
11	6Q15108.d	P3-A3	op95968-mb	1633full.m	Sample		OP95968,S6Q229,500,,,5.0,1,water	✓
12	6Q15109.d	P3-A4	FC3534-1	1633full.m	Sample		OP95968,S6Q229,530,,,5.0,1,water	✓
13	6Q15110.d	P3-A5	FC3534-2	1633full.m	Sample		OP95968,S6Q229,540,,,5.0,1,water	✓
14	6Q15111.d	P3-A6	FC3534-3	1633full.m	Sample		OP95968,S6Q229,550,,,5.0,1,water	✓
15	6Q15112.d	P3-A7	FC3558-1	1633full.m	Sample		OP95968,S6Q229,540,,,5.0,1,water	✓
16	6Q15113.d	P3-A8	FC3558-2	1633full.m	Sample		OP95968,S6Q229,560,,,5.0,1,water	✓
17	6Q15114.d	P3-A9	op95968-ms	1633full.m	Sample		OP95968,S6Q229,570,,,5.0,1,water	✓
18	6Q15115.d	P3-B1	FC3558-3	1633full.m	Sample		OP95968,S6Q229,530,,,5.0,1,water	✓
19	6Q15116.d	P1-A5	cc225-4	1633full.m	QC	20/500	OP95881,S6Q229,500,,,5.0,1,water	✓
20	6Q15117.d	P1-A1	iccb	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
21	6Q15118.d	P3-B2	op95968-dup	1633full.m	Sample		OP95968,S6Q229,500,,,5.0,1,water	✓
22	6Q15119.d	P3-B3	op95971-bs	1633full.m	Sample		OP95968,S6Q229,540,,,5.0,1,water	✓
23	6Q15120.d	P3-B4	op95971-llbs:2	1633full.m	Sample		OP95971,S6Q229,125,,,5.0,1,water	✓
24	6Q15121.d	P3-B5	op95971-mb	1633full.m	Sample		OP95971,S6Q229,125,,,5.0,1,water	✓
25	6Q15122.d	P3-B6	FC3313-6	1633full.m	Sample		OP95971,S6Q229,60,,,5.0,1,water	✓
26	6Q15123.d	P3-B7	FC3369-6	1633full.m	Sample		OP95971,S6Q229,60,,,5.0,1,water	rr10x PFNA HIGH
27	6Q15124.d	P1-A5	cc225-4	1633full.m	QC	20/500	OP95881,S6Q229,500,,,5.0,1,water	✓
28	6Q15125.d	P1-A1	iccb	1633full.m	Sample		OP95881,S6Q229,500,,,5.0,1,water	✓
29	6Q15126.d	P3-B8	op95917-bs	1633full.m	Sample		OP95917,S6Q229,500,,,5.0,1,water	✓
30	6Q15127.d	P3-B9	op95917-llbs:2	1633full.m	Sample		OP95917,S6Q229,500,,,5.0,1,soil	✓
31	6Q15128.d	P3-C1	op95917-mb	1633full.m	Sample		OP95917,S6Q229,500,,,5.0,1,soil	✓
32	6Q15129.d	P3-C2	JD61307-2A	1633full.m	Sample		OP95917,S6Q229,5.02,,,5.0,1,soil	✓
33	6Q15130.d	P3-C3	op95917-ms	1633full.m	Sample		OP95917,S6Q229,5.00,,,5.0,1,soil	✓
34	6Q15131.d	P3-C4	op95917-msd	1633full.m	Sample		OP95917,S6Q229,4.95,,,5.0,1,soil	✓
35	6Q15132.d	P1-A5	cc225-4	1633full.m	QC	20/500	OP95881,S6Q229,500,,,5.0,1,water	✓

LCMS6-6Q ANALYSIS LOG

SGS ORLANDO

36	6Q15133.d	P1-A1	iccb	1633full.m	Sample	OP95881,S6Q229,500,,,5.0,1,water	✓
37	6Q15134.d	P3-C5	op95900-bs	1633full.m	Sample	OP95900,S6Q229,5.00,,,5.0,1,soil	✓
38	6Q15135.d	P3-C6	op95900-llbs:2	1633full.m	Sample	OP95900,S6Q229,5.00,,,5.0,1,soil	✓
39	6Q15136.d	P3-C7	op95900-mb	1633full.m	Sample	OP95900,S6Q229,5.00,,,5.0,1,soil	✓
40	6Q15137.d	P3-C8	JD61785-3B	1633full.m	Sample	OP95900,S6Q229,5.00,,,5.0,1,soil	✓
41	6Q15138.d	P3-C9	op95900-ms	1633full.m	Sample	OP95900,S6Q229,5.03,,,5.0,1,soil	✓
42	6Q15139.d	P3-D1	op95900-mnsd	1633full.m	Sample	OP95900,S6Q229,4.97,,,5.0,1,soil	✓
43	6Q15140.d	P3-D2	JD61785-4B	1633full.m	Sample	OP95900,S6Q229,5.00,,,5.0,1,soil	✓
44	6Q15141.d	P3-D3	JD61785-5B	1633full.m	Sample	OP95900,S6Q229,5.00,,,5.0,1,soil	✓
45	6Q15142.d	P1-A5	cc225-4	1633full.m	QC	OP95881,S6Q229,500,,,5.0,1,water	✓
46	6Q15143.d	P1-A2	cc225-1,0LL	1633full.m	QC	OP95881,S6Q229,500,,,5.0,1,water	✓
47	6Q15144.d	P1-A1	iccb	1633full.m	Sample	OP95881,S6Q229,500,,,5.0,1,water	✓
48	6Q15145.d	P3-D4	op95924-bs	1633full.m	Sample	OP95924,S6Q229,500,,,5.0,1,water	✓
49	6Q15146.d	P3-D5	op95924-llbs:3	1633full.m	Sample	OP95924,S6Q229,500,,,5.0,1,water	✓
50	6Q15147.d	P3-D6	op95924-mb	1633full.m	Sample	OP95924,S6Q229,500,,,5.0,1,water	✓
51	6Q15148.d	P3-D7	FC3316-1	1633full.m	Sample	OP95924,S6Q229,525,,,5.0,1,water	✓
52	6Q15149.d	P3-D8	FC3316-2	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
53	6Q15150.d	P3-D9	FC3316-3	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
54	6Q15151.d	P3-E1	FC3316-4	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
55	6Q15152.d	P3-E2	FC3316-5	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
56	6Q15153.d	P3-E3	FC3316-6	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
57	6Q15154.d	P3-E4	FC3316-7	1633full.m	Sample	OP95924,S6Q229,540,,,5.0,1,water	✓
58	6Q15155.d	P1-A5	cc225-4	1633full.m	QC	OP95881,S6Q229,500,,,5.0,1,water	✓
59	6Q15156.d	P1-A1	iccb	1633full.m	Sample	OP95881,S6Q229,500,,,5.0,1,water	✓
60	6Q15157.d	P3-E5	FC3316-8	1633full.m	Sample	OP95924,S6Q229,545,,,5.0,1,water	✓
61	6Q15158.d	P3-E6	FC3316-9	1633full.m	Sample	OP95924,S6Q229,540,,,5.0,1,water	✓
62	6Q15159.d	P3-E7	FC3363-1	1633full.m	Sample	OP95924,S6Q229,500,,,5.0,1,water	rr10x pfoa
63	6Q15160.d	P3-E8	FC3364-1	1633full.m	Sample	OP95924,S6Q229,490,,,5.0,1,water	rr1x co
64	6Q15161.d	P3-E9	FC3371-8	1633full.m	Sample	OP95924,S6Q229,535,,,5.0,1,water	✓
65	6Q15162.d	P3-F1	op95924-ms	1633full.m	Sample	OP95924,S6Q229,535,,,5.0,1,water	✓
66	6Q15163.d	P3-F2	FC3371-9	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
67	6Q15164.d	P3-F3	op95924-dup	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
68	6Q15165.d	P3-F4	FC3371-10	1633full.m	Sample	OP95924,S6Q229,565,,,5.0,1,water	✓
69	6Q15166.d	P1-A5	ecc225-4	1633full.m	QC	OP95881,S6Q229,500,,,5.0,1,water	✓
70	6Q15167.d	P1-A1	iccb	1633full.m	Sample	OP95881,S6Q229,500,,,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 2083	1633 spike (cal catd)	11638	PFAC-MxH	Wellington	8-8-27	2-22-24	1-4 ppm	250NL	4mL	62.5	1633	3/6/23	9/16/23	NW
		11657	PFAC-MxH			3-6-24				250ppb				
		11639	PFAC-MxI		9-14-26	2-22-24	1-10 ppm	250NL		62.5				
		11058	PFAC-MxI			3-6-24				625ppb				
		11640B	PFAC-MxI		1-11-25	2-22-24	2 ppm	500NL		250ppb				
		11659A	PFAC-MxI			3-6-24								
		11641	PFAC-MxG		2-1-27	2-22-24	2 ppm	250NL		125ppb				
		11660	PFAC-MxG			3-6-24								
		11628B	PFAC-MxJ		9-14-26	3-6-24	4-20 ppm	312NL		312/1100 ppb				
		11642A	PFAC-MxJ											

* 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 2071	SPiKE FULL list std.	11606	PFOA DOD 28	Absolute	11/9/27	2/7/24	1.0ppm	200uL	2.0mL	100ppb	95% meth + 5% H2O	2/16/23	3/21/23	MW
		LCMS 1987	40LIST PFOA 28 #1	SGS std.	—	3/21/23	1.0ppm	200uL						
		LCMS 1986	40LIST PFOA 28 #2	—	—	4/18/23	1.0ppm	200uL						
		LCMS 2012	FOSS std.	—	—	5/11/23	5.0ppm	200uL		500ppb				
LCMS 2072	A-C 1633 (spike) Cal std.	11599	PFAC-MxH	Wilmington	8/8/27	2/7/24	1-4 ppm	250uL	4mL	62.5 250ppb	1633 MIX	2/20/23	8/20/23	MV
		11491	PFAC-MxI	—	9/14/26	2/7/24	1-10 ppm	250uL		62.5 250ppb				
		11600	PFAC-MxG	—	11/11/25	2/20/24	2 ppm	500uL		250ppb				
		11489	PFAC-MxJ	—	2/22/27	2/7/24	2 ppm	250uL		125ppb				
		11602	PFAC-MxH	—	12/11/27	2/20/24	4-20 ppm	312uL		312/100 ppb				
		11618B	PFAC-MxI	—	9/14/26	2/7/24	4-20 ppm	250uL		62.5 250ppb				
LCMS 2073 A-D	1633 spike Cal std.	11599	PFAC-MxH	Wilmington	8/8/27	2/7/24	1-4 ppm	250uL	4mL	62.5 250ppb	1633 MIX	2/22/23	8/22/23	MV
		11638	PFAC-MxI	—	8/18/27	2/22/24	1-10 ppm	250uL		62.5 250ppb				
		11600	PFAC-MxG	—	9/14/26	2/20/24	2 ppm	500uL		250ppb				
		11639	PFAC-MxJ	—	9/14/26	2/22/24	2 ppm	250uL		125ppb				
		11627B	PFAC-MxH	—	11/11/25	2/20/24	4-20 ppm	312uL		312/100 ppb				
		11640AB	PFAC-MxI	—	1/11/25	2/22/24	2 ppm	250uL		62.5 250ppb				
		11602	PFAC-MxG	—	12/11/27	2/20/24	2 ppm	250uL		125ppb				
		11641	PFAC-MxJ	—	12/11/27	2/22/24	4-20 ppm	312uL		312/100 ppb				
		11618B	PFAC-MxH	—	9/14/26	2/7/24	4-20 ppm	250uL		62.5 250ppb				
		11628A	PFAC-MxJ	—	9/14/26	2/22/24	4-20 ppm	312uL		312/100 ppb				
					NS	02/23/23								

* 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
LCMS 1987	40 List Std ADD-ON #1	10726A	10-2 PF3	Wellington Lab	03/03/26	03/31/23	50ppm	80uL	4.0mL	1ppm	05/NEOH 5/14/20	10/18/22	03/21/23	NG
		10840	PF20S		07/01/26	10/18/23								
		10889	N-HFOA		08/03/26	08/12/23								
		10837	N-HFOA		08/12/26	08/12/23								
		10843	PF-HDA	NS Vanda	09/30/26	10/18/23								
		10841	PFODA		05/12/26	10/18/23								
		10684A	3:3FPA		11/12/25	03/21/23								
		10685A	PFPA		11/12/25	03/21/23								
		10683A	7:3FPA		11/12/25	03/21/23								
		11117	PFCHS		10/14/26	06/23/23								
		10762B	PFESA		05/12/25	10/18/23								
		10763B	PFCHA		03/21/25	10/18/23								
		10764A	PFOPA		03/21/25	03/21/23								
		10765B	PFHDA		03/21/25	10/18/23								
			3:6 PFHDA											

* 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 1985A-B	List 40 ADD-ON	11333	D7-N- METHOSE	Wellington Labs	01/21/27	10/12/23	50ppm	200uL	2.0mL	15 ppm	95/MCOH 5% H2O	10/18/22	04/18/23	NGS
		11339	D4-N- ETHOSE		01/27/27	10/12/23		200uL						NGS
		11115	M2- PERHDA		11/23/28	08/12/23		40uL						NGS
		10836	D-N- ETHOSA		12/30/25	08/12/23		40uL						NGS
LCMS 1986	40 List Std. ADD-ON #2	11224	FBSA-1	Wellington Labs	11/10/26	06/12/23	50ppm	80uL	4.0mL	1ppm	95/MCOH 5% H2O	10/18/22	04/18/23	NGS
		11225	FHSA-1		12/21/26	06/12/23	50ppm	80uL						NGS
		11140	L-PFRS		01/12/26	05/12/23	50ppm	80uL						NGS

NG 10/18/22

* based on date opened as specified in each SGS - Orlando SOP.
ORLD-QAC-0017-6-03-FORM-icms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS A 2009 B	PFC SPIKE	11483	PF0A-D00 (2850000)	Wellington Labs	08/05/27	11/08/23	1.0 ppm	2 mL	5 mL	400 ppb	95% MEOH 5% H2O	11/08/22	05/08/23	NG
		10839	N-HE-TOSA-M		08/23/26	09/23/23	500 ppm	40 uL						NG
		11294	PF6A-1		11/10/26	06/23/23								NG
		11249	PFXSA-1		12/29/26	11/03/23								NG
		11332	PF6CHS		03/28/27	10/18/23								NG
LCMS A-B 2010	(SPIKE) 1623 CAL STD.	10855F	PFAC-MXH	Wellington Labs	09/14/26	11/04/23	1-4 ppm	250 uL	4 mL	62.5/125/250 ppb	1623 Mix	11/09/22	05/10/23	NG
		10853E	PFAC-MXI		09/14/26	11/04/23	1-10 ppm	250 uL		62.5/125 ppb				NG
		10856I	PFAC-MXF		05/10/23	05/10/23	2 ppm	500 uL		250 ppb				NG
		10854E	PFAC-MXG		03/04/25	11/04/23	2 ppm	250 uL		125 ppb				NG
		10857D	PFAC-MXS		10/12/23	11/02/23	4-20 ppm	312 uL		212/1160 ppb				NG
LCMS 2011	(SPIKE) FULL LIST STD.	11440	PF0A-D00 (2850000)	Absolute	08/05/27	10/24/23	1.0 ppm	400 uL	4.0 mL	100 ppb	95% MEOH 5% H2O	11/11/22	02/11/23	NG
		LCMS 1987	40 LIST ADDON #1			02/21/23	1.0 ppm	400 uL		100 ppb				NG
		LCMS 1986	40 LIST ADDON #2			01/18/23	1.0 ppm	400 uL		100 ppb				NG
		LCMS 2012	FOSE STD.			05/11/23	500 ppm	400 uL		500 ppb				NG
LCMS 2012	FOSE STD.	11336	N-ET-FOSE	Wellington Labs	05/13/27	09/19/23	500 ppm	200 uL	2.0 mL	5 ppm	95% MEOH 5% H2O	11/11/22	05/11/23	NG
		11336	N-HE-FOSE		05/13/27	09/19/23	500 ppm	200 uL						NG

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

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

11599
rec'd 01/10/23



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

7.9.1

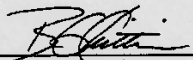
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Table A: PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment In Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFFHpA	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	PFDaA	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 ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment In Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFFHpS	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)

11600
rec'd 01/10/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXI

**Native Perfluorooctanesulfonamide
and Perfluorooctanesulfonamidoethanol
Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXI
<u>LOT NUMBER:</u>	PFACMXI0921
<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-MXI is a solution/mixture of two native perfluorooctanesulfonamides (FOSAs) and two native perfluorooctanesulfonamidoethanols (FOSEs). 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

PFACMXI0921 (1 of 5)
rev0

7.9.1

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Table A: PFAC-MXI; Components and Concentrations ($\mu\text{g}/\text{mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g}/\text{mL}$)	Peak Assignment in Figure 1
N-methylperfluoro-1-octanesulfonamide	N-MeFOSA	1.00	B
N-ethylperfluoro-1-octanesulfonamide	N-EtFOSA	1.00	D
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	N-MeFOSE	10.0	A
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	N-EtFOSE	10.0	C

Certified By: _____

B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

11602
rec'd 01/10/23



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PFAC-MXG

**Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXG
<u>LOT NUMBER:</u>	PFACMXG1122
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	11/30/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	12/01/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	12/01/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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PFACMXG1122 (1 of 5)
revG

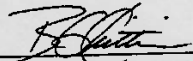
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Table A: PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 12/09/2022
(mm/dd/yyyy)

7.9.1
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11618 A-B rec'd 01/19/23



**WELLINGTON
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**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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Revision#: 9, Revised 2020-12-23

PFACMXJ0921 (1 of 5)
rev1

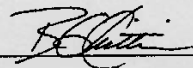
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Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g}/\text{mL}$; $\pm 5\%$ in methanol)

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
(mm/dd/yyyy)

11627 A-B
rec'd 01/26/23



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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PFACMXF0122 (1 of 5)
rev0

7.9.1

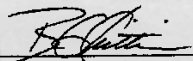
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Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

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-dioxanonanoate	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)

11628 A-B
rec'd 01/26/23



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PFAC-MXJ

**Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture**

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0921
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 09/08/2021
LAST TESTED: (mm/dd/yyyy) 09/14/2021
EXPIRY DATE: (mm/dd/yyyy) 09/14/2026
RECOMMENDED STORAGE: 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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Revision# 9, Revised 2020-12-23

PFACMXJC921 (1 of 5)
rev1

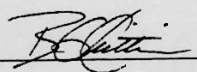
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Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g}/\text{mL}$; $\pm 5\%$ in methanol)

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
(mm/dd/yyyy)

11638
rec'd 02/06/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

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

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₈, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide (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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7.9.1
7

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-butyric acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		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 ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanedisulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentadisulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanedisulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptadisulfonate	L-PFFpS	1000	953	12
Potassium perfluorooctanedisulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanedisulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanedisulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanedisulfonate	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-perfluorodecanedisulfonate	8.2FTS	4000	3840	16

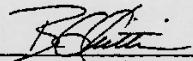
^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^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)

11639
rec'd: 02/06/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXI

**Native Perfluorooctanesulfonamide
and Perfluorooctanesulfonamidoethanol
Solution/Mixture**

PRODUCT CODE:	PFAC-MXI
LOT NUMBER:	PFACMXI0921
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/08/2021
LAST TESTED: (mm/dd/yyyy)	09/14/2021
EXPIRY DATE: (mm/dd/yyyy)	09/14/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXI is a solution/mixture of two native perfluorooctanesulfonamides (FOSAs) and two native perfluorooctanesulfonamidoethanols (FOSEs). 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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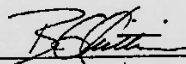
PFACMXI0921 (1 of 5)
rev0

7.9.1
7

Table A: PFAC-MXI; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)	Peak Assignment in Figure 1
N-methylperfluoro-1-octanesulfonamide	N-MeFOSA	1.00	B
N-ethylperfluoro-1-octanesulfonamide	N-EtFOSA	1.00	D
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	N-MeFOSE	10.0	A
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	N-EtFOSE	10.0	C

Certified By:


 B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

11640A-B
rev'd: 02/06/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXF
<u>LOT NUMBER:</u>	PFACMXF0122
<u>SOLVENT(S):</u>	Methanol / Water (<1%)
<u>DATE PREPARED:</u> (mm:dd/yyyy)	01/10/2022
<u>LAST TESTED:</u> (mm:dd/yyyy)	01/11/2022
<u>EXPIRY DATE:</u> (mm:dd/yyyy)	01/11/2025
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and 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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PFACMXF0122 (1 of 5)
rev0

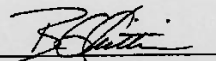
7.9.1

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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)

11641
rec'd: 02/06/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXG
<u>LOT NUMBER:</u>	PFACMXG1122
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	11/30/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	12/01/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	12/01/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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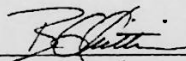
PFACMXG1122 (1 of 5)
rev0

7.9.1
7

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

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 12/09/2022
(mm/dd/yyyy)

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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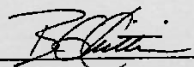
PFACMXJ:0921 (1 of 5)
rev1

7.9.1
7

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)

11657 rec'd: 02/20/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

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

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₆, C₇, C₈, C₁₀ and C₁₂ linear; C₈ and C₉ 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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PFACMXH0822 (1 of 11)
rev0

7.9.1

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

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		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 ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanefulfonate	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

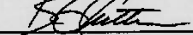
^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^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)

11658 rec'd 02/20/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXI

**Native Perfluorooctanesulfonamide
and Perfluorooctanesulfonamidoethanol
Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXI
<u>LOT NUMBER:</u>	PFACMXI0921
<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-MXI is a solution/mixture of two native perfluorooctanesulfonamides (FOSAs) and two native perfluorooctanesulfonamidoethanols (FOSEs). 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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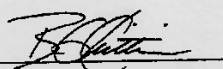
PFACMXI0921 (1 of 5)
rev0

7.9.1
7

Table A: PFAC-MXI; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)	Peak Assignment in Figure 1
N-methylperfluoro-1-octanesulfonamide	N-MeFOSA	1.00	B
N-ethylperfluoro-1-octanesulfonamide	N-EtFOSA	1.00	D
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	N-MeFOSE	10.0	A
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	N-EtFOSE	10.0	C

Certified By:


B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

11659 A-B rec'd: 02/20/23



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 (9Cl-PF3ONS and 11Cl-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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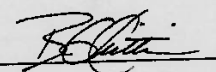
PFACMXF0122 (1 of 5)
rev0

7.9.1
7

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-dioxanonanoate	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)

7.9.1
7

11660 rec'd: 02/20/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic Acids and Sulfonate Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXG
<u>LOT NUMBER:</u>	PFACMXG1122
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	11/30/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	12/01/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	12/01/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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PFACMXG1122 (1 of 5)
revD

7.9.1
7

Table A: PFAC-MXG; Components and Concentrations (ng/mL; $\pm 5\%$ in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 12/09/2022
(mm/dd/yyyy)

10683A



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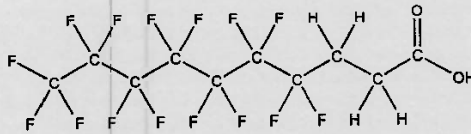
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FHpPA
COMPOUND: 3-Perfluoroheptyl propanoic acid

LOT NUMBER: FHpPA1020

STRUCTURE:

CAS #: 812-70-4



MOLECULAR FORMULA: C₁₀H₉F₁₅O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/12/2020
EXPIRY DATE: (mm/dd/yyyy) 11/12/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 442.12
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

Date: 11/27/2020
(mm/dd/yyyy)

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

FHpPA1020 (1 of 4)
rev0

7.9.1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPrPA

LOT NUMBER:

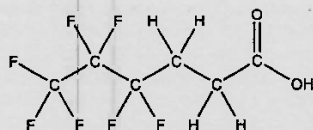
FPrPA1020

COMPOUND:

3-Perfluoropropyl propanoic acid

STRUCTURE:**CAS #:**

356-02-5

**MOLECULAR FORMULA:** $C_6H_5F_7O_2$ **MOLECULAR WEIGHT:**

242.09

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

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.
- Contains <1% of the unsaturated 3:3 telomer acid ($C_8H_5F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

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Date: 11/27/2020

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

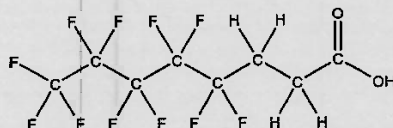
FPePA1120

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.

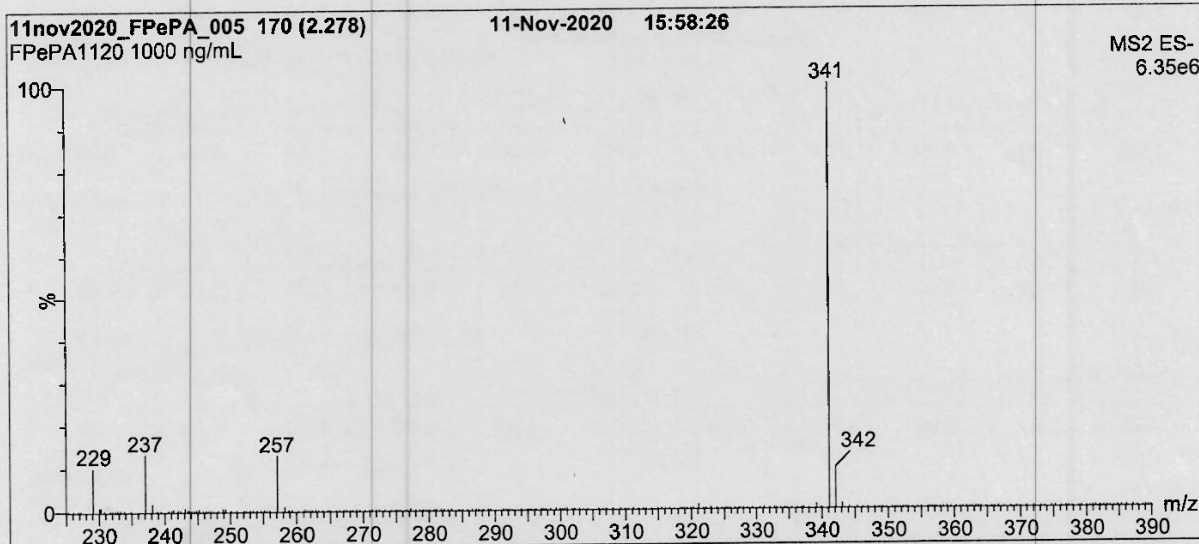
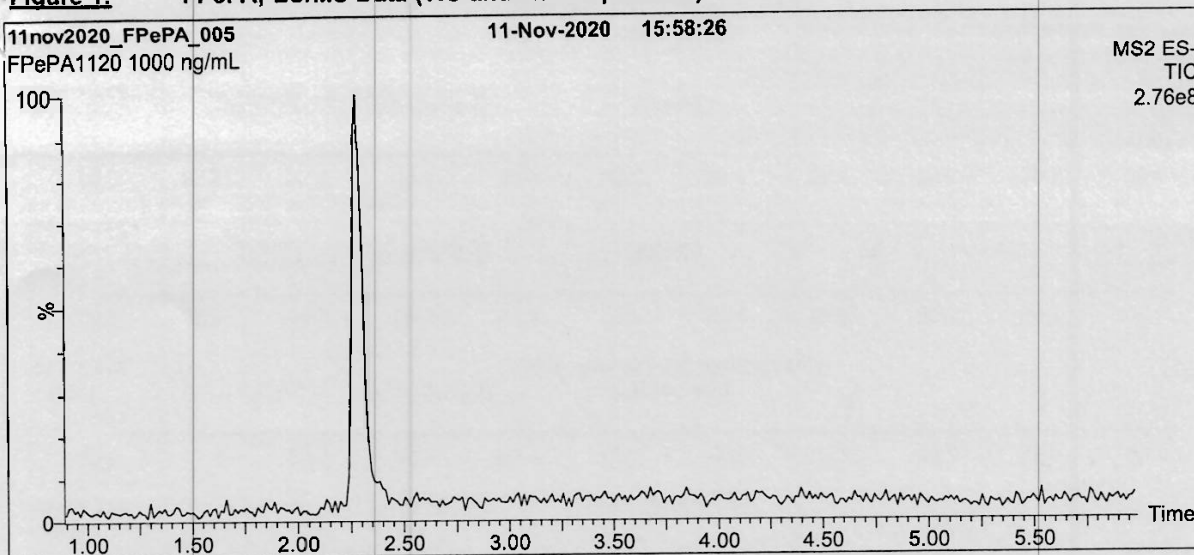
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Date: 11/27/2020
(mm/dd/yyyy)

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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 μm, 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 μL/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 18.50
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (L/hr) = 1000

10726 A

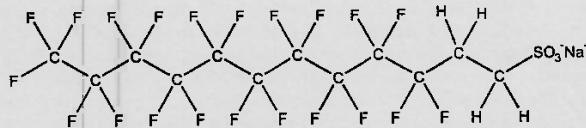


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

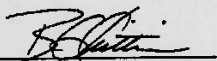
DOCUMENTATION/ DATA ATTACHED:

- 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.

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

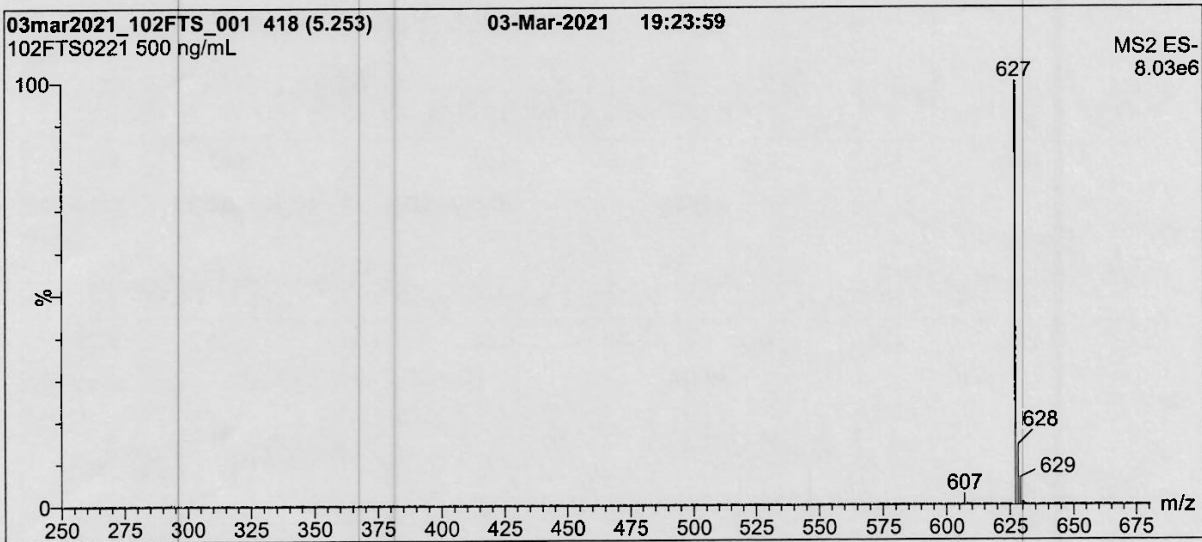
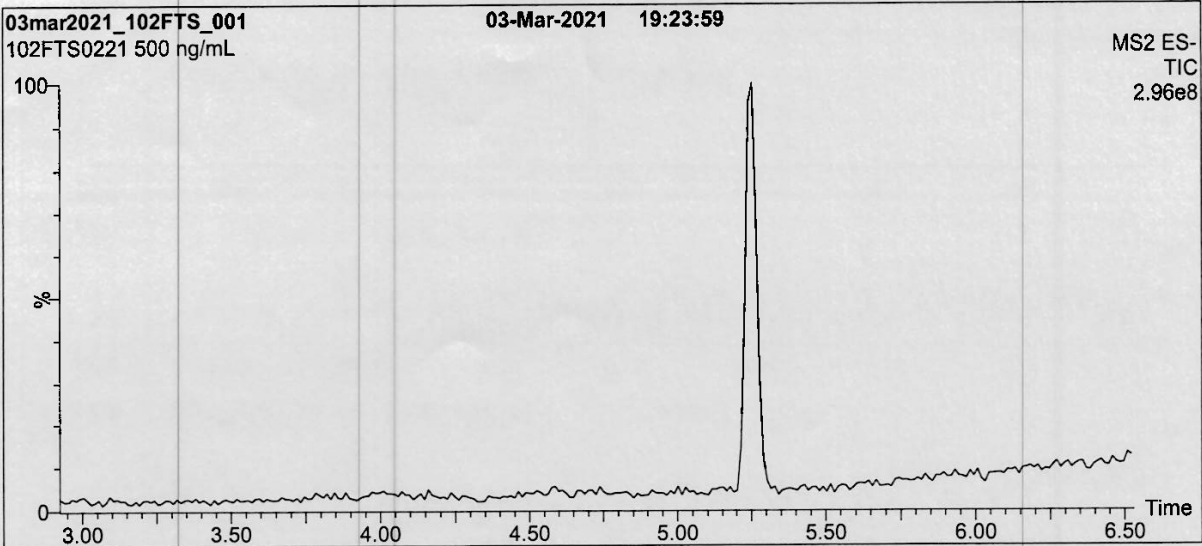
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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

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

10762 A-B



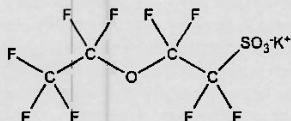
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CERTIFICATE OF ANALYSIS DOCUMENTATION

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:

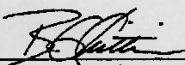
Figure 1: LC/MS Data (TIC and Mass Spectrum)

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).

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

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Revision#:7, Revised 2020-01-09

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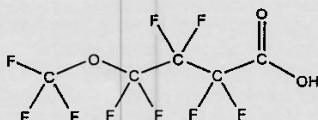
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

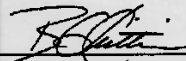
DOCUMENTATION/ DATA ATTACHED:

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

PF5OHxA0320 (1 of 4)
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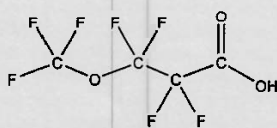
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

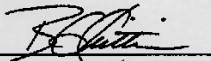
DOCUMENTATION/ DATA ATTACHED:

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.

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Certified By: 
B.G. Chittim, General Manager

Date: 12/21/2020
(mm/dd/yyyy)

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PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

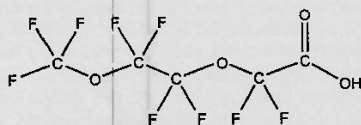
COMPOUND:

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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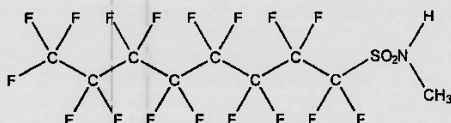
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

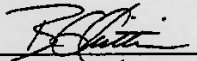
DOCUMENTATION/ DATA ATTACHED:

- 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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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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PRODUCT CODE:

N-EtFOSA-M

10837

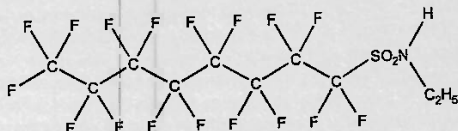
LOT NUMBER: NEtFOSA0821M

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)

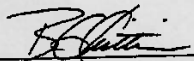
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

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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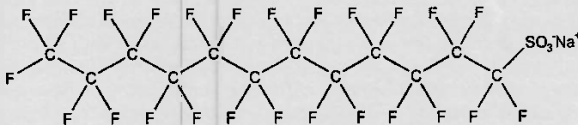
10840

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

LPFDoS0721 (1 of 4)
rev0

7.9.1
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CERTIFICATE OF ANALYSIS DOCUMENTATION

10847 NS 01/18/23

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0821

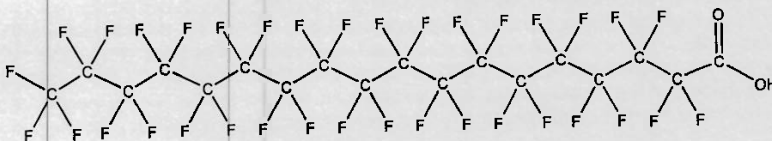
COMPOUND:

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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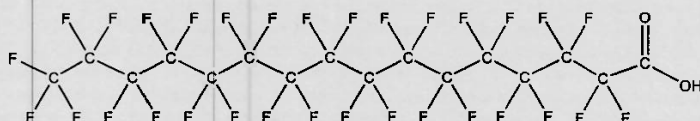
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

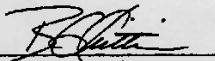
DOCUMENTATION/ DATA ATTACHED:

- 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

PFHxDA0421 (1 of 4)
 rev0

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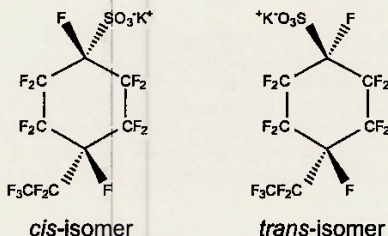


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFECHS **LOT NUMBER:** PFECHS1021
COMPOUND: Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE: **CAS #:** 335-24-0



MOLECULAR FORMULA: $C_8F_{16}SO_3K$ **MOLECULAR WEIGHT:** 500.22
CONCENTRATION: 50.0 ± 2.5 µg/mL (K salt) **SOLVENT(S):** Methanol
 46.2 ± 2.3 µg/mL (PFECHS acid)
 46.1 ± 2.3 µg/mL (PFECHS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/14/2021
EXPIRY DATE: (mm/dd/yyyy) 10/14/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

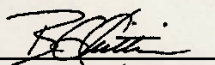
DOCUMENTATION/ DATA ATTACHED:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager **Date:** 10/15/2021
(mm/dd/yyyy)

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

PFECHS1021 (1 of 4)
 rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

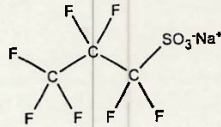
COMPOUND:

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.

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Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

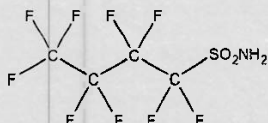
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11224


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CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: FBSA-I **LOT NUMBER:** FBSA11211
COMPOUND: Perfluoro-1-butanesulfonamide
STRUCTURE: **CAS #:** 30334-69-1



MOLECULAR FORMULA: C₄H₂F₉NO₂S **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.

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Certified By: _____

B.G. Chittim, General Manager

Date: 11/10/2021

(mm/dd/yyyy)

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11225



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

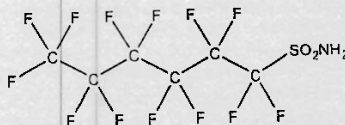
LOT NUMBER: FHxSA12211

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

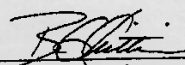
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

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

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11338



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

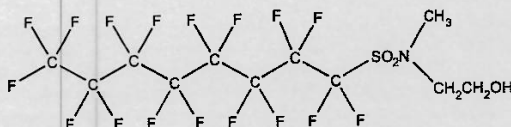
NMeFOSE0522M

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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CERTIFICATE OF ANALYSIS
DOCUMENTATION

MPFAC-HIF-ES
Mass-Labelled PFAS Extraction
Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES0822
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/20/2022
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2025
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) perfluorooctane-sulfonamidoethanols, 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.

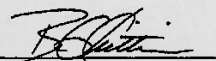
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Table A: MPFAC-HIF-ES; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

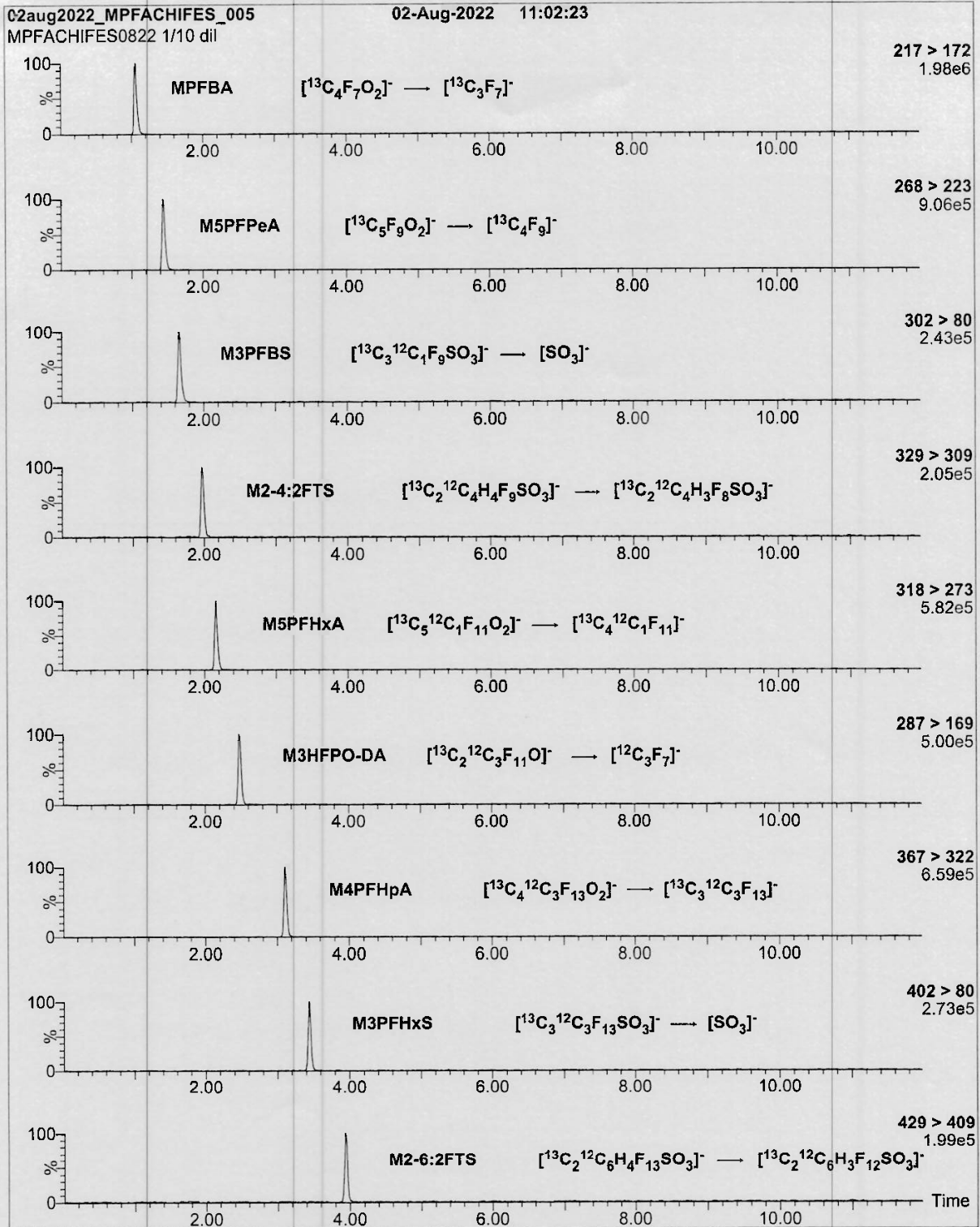
Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₅)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₆)heptanoic acid	M4PFHpA	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		17
Perfluoro-n-(1,2- ¹³ C ₁₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₁₄)tetradecanoic acid	M2PFTeDA	250		23
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		18
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		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 08/02/2022
(mm/dd/yyyy)

Figure 2: MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)



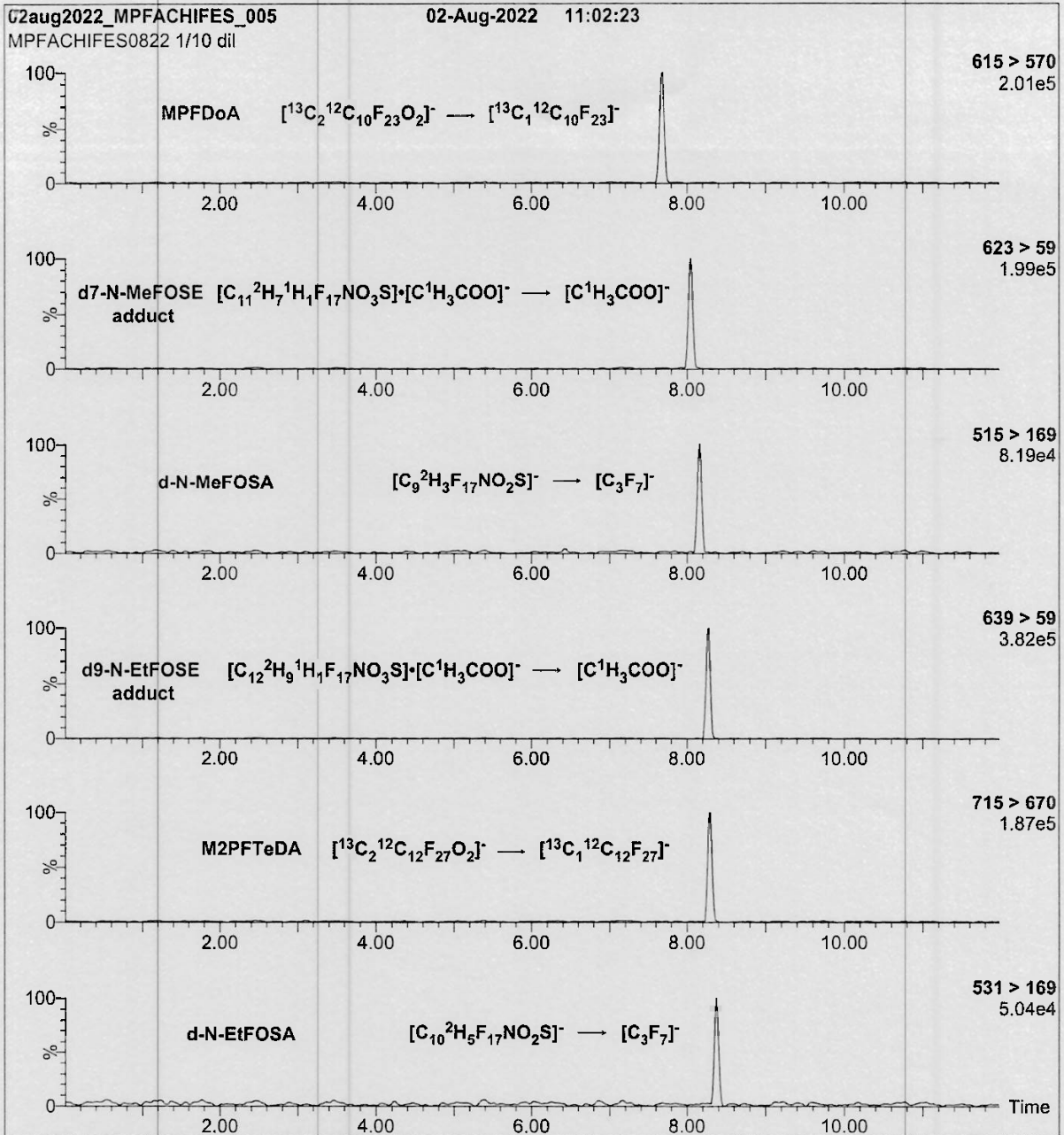
Form# 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFES0822 (5 of 7)
rev0

7.9.1

7

Figure 2: MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-ES)
 Mobile phase: Same as Figure 1
 Flow: 300 $\mu\text{L}/\text{min}$

MS Parameters:

Collision Gas (mbar) = 3.24e-3
 Collision Energy (eV) = 4-64 (variable)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled Perfluoroalkyl Substance
Injection Standard Solution/Mixture

<u>PRODUCT CODE:</u>	MPFAC-HIF-IS
<u>LOT NUMBER:</u>	MPFACHIFIS0921
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/07/2021
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/07/2021
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	09/07/2026
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₈ and C₉). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and mass-labelled perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ¹³C or >94% per ¹⁸O.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFIS0921 (1 of 5)
rev1


7.9.1

7

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

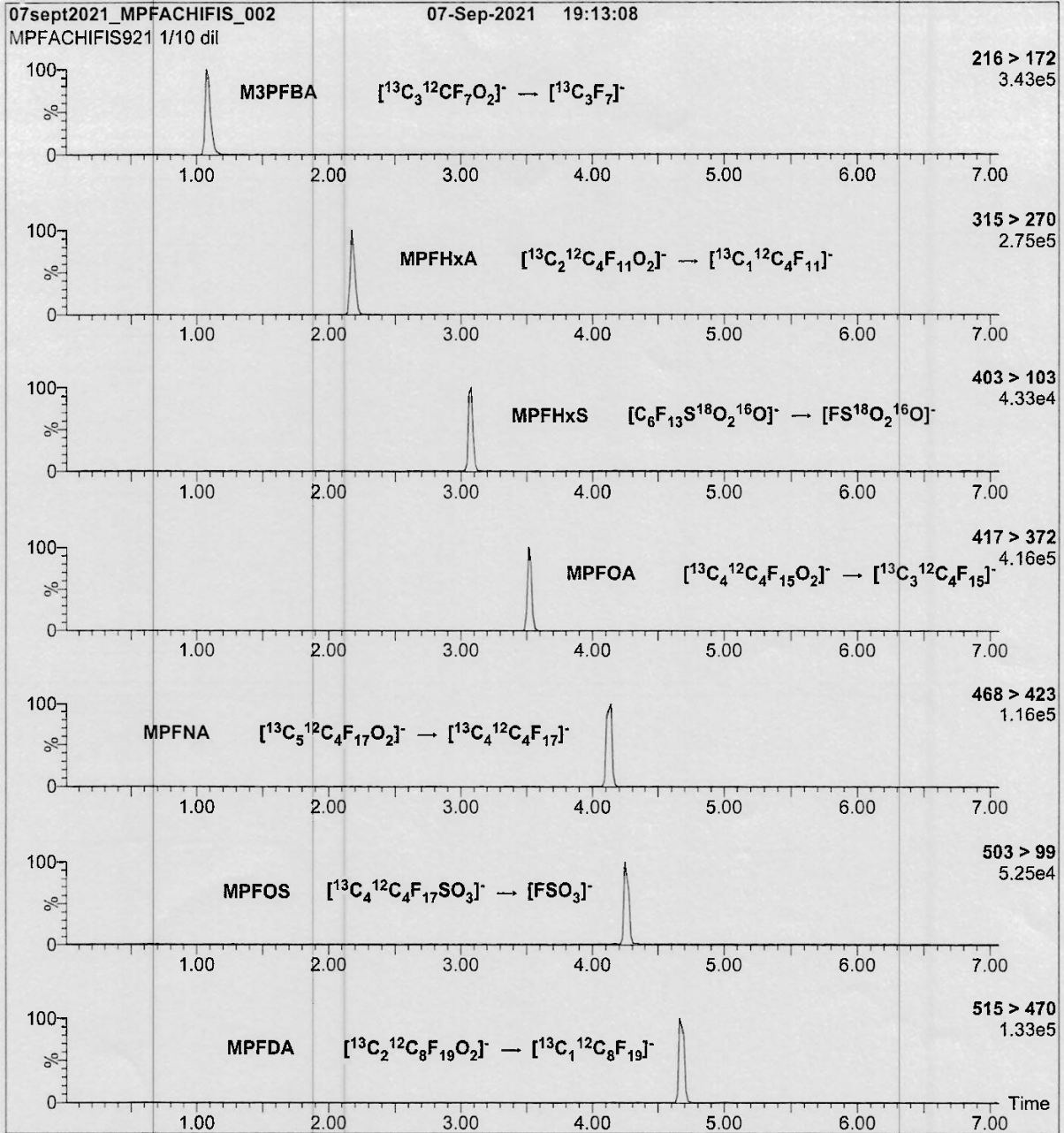
Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 10/13/2021
(mm/dd/yyyy)

Figure 2: MPFAC-HIF-IS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-IS)
 Mobile phase: Same as Figure 1
 Flow: 300 $\mu\text{L}/\text{min}$

MS Parameters:

Collision Gas (mbar) = 3.18e-3
 Collision Energy (eV) = 4-64 (variable)



11606 rec'd 01/13/23

CERTIFIED WEIGHT REPORT

Part Number: 64029A
Lot Number: 110922
Description: PFOA - DOD
28 components
Expiry Date: 11/09/27
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 1.0
NIST Test ID#: 8UTB

Solvent(s): Methanol (1 mM KOH)
2-Propanol
Lot# 102722 (98%)
32500 (2%)

SE-05 Balance Uncertainty
0.018 Flask Uncertainty

Formulated By:	Prashant Chauhan	110922
		DATE
Reviewed By:	Pedro L. Rentas	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	ipr-ret 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	ori-ret 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 (PFDDA)	99196	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A
10. Perfluorotridecanoic acid (PFTDA)	99204	110922	0.02	2.00	0.017	50.1	1.00	0.02	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid (PFTEA)	99203	033022	0.02	2.00	0.017	50.1	1.00	0.02	378-06-7	N/A	N/A
12. Perfluoro-1-octanesulfonamide (FOSA)	3677	FOSA03221	0.02	2.00	0.017	50.0	1.00	0.05	754-91-6	N/A	N/A
13. N-Methylperfluorooctanesulfonamidoacetic acid (br-NMeFOSAA)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	50.0	1.00	0.05	2355-31-9 (L)	N/A	N/A
14. N-Ethylperfluorooctanesulfonamidoacetic 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	0.02	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-Perfluorooctane sulfonic acid (8:2FTS)	65272	071522	0.02	2.00	0.017	50.2	1.00	0.05	27819-97-2	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane 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-(Heptadecaproxy)-2,3,3,3-tetrafluoropropanoic acid (HPFO-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-oxaundecane-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-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	4164	9ClPF3ONS0522	0.021	2.14	0.017	46.6	1.00	0.05	756426-58-1	N/A	N/A
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	ipr-ret 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	ipr-ret 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	5.3	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 Kuyatt, 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).

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 03/20/23 09:00
 Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (QSM)

Date/Time: 3/21/23 13:01
 Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP 95968 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 95968 MB	/	500	7	N/A	25		5	AG	
OP 95968 BS	/	500	7						
OP 95968 LLBS	/	500	7			200			
FC 3534-1	2	530	6			80			
	2	540	6						dirty
	3	550	6						
FC 3558-1	2	540	6	N/A					
	2	500	7						
	3	530	6	N/A	25		5	AG	
OPFC3558-2MS	3	570	7	6	25	200	5	AG	
OP MSD									
OPFC3558-3DUP	3	540	6	N/A	25		5	AG	

Comments:

EIS (SURR) ID: 11670B-C Conc: 250-400 ng/ml Exp. Date: 03/16/24 Inj. By: GH Ver. By: DBL
 SPIKE.1 ID: LCM'S 2083D Conc: VARIED Exp. Date: 09/10/23 Inj. By: GH Ver. By: DBL
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11615J-J Conc: 250-1000 ng/ml Exp. Date: 3/16/24 Inj. By: MS Ver. By: NG

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

Methanol Lot # 224231 1% NH4OH MeOH PF321 SPE Lot # S23-000963
 Water Lot# OP95448 0.3M Formic Acid PF317 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF320 5% Formic Acid PF203 Carbon Lot# 160898

Relinquished By: Gabriella Verdine
 Accepted By: MS

Date: 03/20/23
 Date: 3/21/23

7.10.1
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