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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC6891

Sampling Date: 06/09/23



Report to:

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Total number of pages in report: 571



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: FC6891

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC6891-1	06/09/23	10:20	MYCW06/14/23	AQ	Ground Water	AF-RHMW02-WGN01LF-2306
FC6891-2	06/09/23	12:05	MYEM06/14/23	AQ	Ground Water	AF-RHMW03-WGN01LF-2306

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: AECOM, INC.

Job No: FC6891

Site: N6274223F0104 RH Fire Suppression System

Report Date: 6/21/2023 5:04:38 PM

On 06/14/2023, 2 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 3.9 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC6891 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: OP97425

Sample(s) FC6474-2MS, FC6474-3DUP were used as the QC samples indicated.

Blank Spike Recovery(s) for 3:3 Fluorotelomer carboxylate are outside control limits.

FC6891-1 for 3:3 Fluorotelomer carboxylate: Associated BS recovery outside control limits.

FC6891-2 for 3:3 Fluorotelomer carboxylate: Associated BS recovery outside control limits.

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

Narrative prepared by:

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

Summary of Hits

Job Number: FC6891
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 06/09/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC6891-1 AF-RHMW02-WGN01LF-2306

Perfluorobutanoic acid	37.9	14	3.5	ng/l	EPA DRAFT 1633
Perfluoropentanoic acid	34.7	7.0	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.60 J	3.5	1.8	ng/l	EPA DRAFT 1633

FC6891-2 AF-RHMW03-WGN01LF-2306

Perfluoropentanoic acid	3.3 J	7.0	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	1.5 J	3.5	1.8	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	1.4 J	3.5	1.8	ng/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	6.6 J	18	7.0	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-2306		
Lab Sample ID:	FC6891-1	Date Sampled:	06/09/23
Matrix:	AQ - Ground Water	Date Received:	06/14/23
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	6Q19679.D	1	06/21/23 15:14	MV	06/20/23 13:00	OP97425	S6Q293
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	37.9	14	3.5	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	34.7	7.0	1.8	0.82	ng/l	
307-24-4	Perfluorohexanoic acid	0.60	3.5	1.8	0.44	ng/l	J
375-85-9	Perfluoroheptanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
335-67-1	Perfluorooctanoic acid	0.88 U	3.5	0.88	0.44	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.5	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.5	1.8	0.74	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.5 U	4.4	3.5	0.98	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.5	1.8	0.61	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.5	1.8	0.47	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.5	1.8	0.50	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.5	1.8	0.56	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.5 U	4.4	3.5	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.0 U	18	7.0	2.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.0	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.6	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.5	1.8	0.59	ng/l	
31506-32-8	MeFOSA	3.5 U	7.0	3.5	0.88	ng/l	
4151-50-2	EtFOSA	3.5 U	7.0	3.5	0.88	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2306		
Lab Sample ID:	FC6891-1	Date Sampled:	06/09/23
Matrix:	AQ - Ground Water	Date Received:	06/14/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

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

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

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

FLUOROTELOMER CARBOXYLIC ACIDS

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

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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13C4-PFBA	84%	20-150%
13C5-PFPeA	107%	20-150%
13C5-PFHxA	117%	20-150%
13C4-PFHpA	112%	20-150%
13C8-PFOA	108%	20-150%
13C9-PFNA	126%	20-150%
13C6-PFDA	103%	20-150%
13C7-PFUnDA	111%	20-150%
13C2-PFDoDA	102%	20-150%
13C2-PFTeDA	70%	20-150%
13C3-PFBS	119%	20-150%
13C3-PFHxS	113%	20-150%

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

4.1
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Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2306		Date Sampled:	06/09/23
Lab Sample ID:	FC6891-1		Date Received:	06/14/23
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	100%		20-150%
	13C8-FOSA	93%		20-150%
	d3-MeFOSA	85%		20-150%
	d5-EtFOSA	86%		20-150%
	d3-MeFOSAA	101%		20-150%
	d5-EtFOSAA	90%		20-150%
	d7-MeFOSE	65%		20-150%
	d9-EtFOSE	77%		20-150%
	13C2-4:2FTS	112%		20-180%
	13C2-6:2FTS	103%		20-180%
	13C2-8:2FTS	100%		20-180%
	13C3-HFPO-DA	91%		20-150%

(a) Associated BS recovery outside control limits.

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

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW03-WGN01LF-2306		
Lab Sample ID:	FC6891-2	Date Sampled:	06/09/23
Matrix:	AQ - Ground Water	Date Received:	06/14/23
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	6Q19680.D	1	06/21/23 15:28	MV	06/20/23 13:00	OP97425	S6Q293
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.5 U	14	3.5	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	3.3	7.0	1.8	0.82	ng/l	J
307-24-4	Perfluorohexanoic acid	1.5	3.5	1.8	0.44	ng/l	J
375-85-9	Perfluoroheptanoic acid	1.4	3.5	1.8	0.44	ng/l	J
335-67-1	Perfluorooctanoic acid	0.88 U	3.5	0.88	0.44	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.5	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.5	1.8	0.74	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.5 U	4.4	3.5	0.98	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.5	1.8	0.61	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.5	1.8	0.47	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.5	1.8	0.50	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.5	1.8	0.56	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.5 U	4.4	3.5	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.0 U	18	7.0	2.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	6.6	18	7.0	3.0	ng/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.6	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.5	1.8	0.59	ng/l	
31506-32-8	MeFOSA	3.5 U	7.0	3.5	0.88	ng/l	
4151-50-2	EtFOSA	3.5 U	7.0	3.5	0.88	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2306		
Lab Sample ID:	FC6891-2	Date Sampled:	06/09/23
Matrix:	AQ - Ground Water	Date Received:	06/14/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

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

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

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

FLUOROTELOMER CARBOXYLIC ACIDS

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

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	102%		20-150%
	13C5-PFPeA	115%		20-150%
	13C5-PFHxA	117%		20-150%
	13C4-PFHpA	113%		20-150%
	13C8-PFOA	106%		20-150%
	13C9-PFNA	119%		20-150%
	13C6-PFDA	106%		20-150%
	13C7-PFUnDA	88%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	68%		20-150%
	13C3-PFBS	117%		20-150%
	13C3-PFHxS	116%		20-150%

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

4.2
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Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2306		
Lab Sample ID:	FC6891-2	Date Sampled:	06/09/23
Matrix:	AQ - Ground Water	Date Received:	06/14/23
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	108%		20-150%
	13C8-FOSA	86%		20-150%
	d3-MeFOSA	88%		20-150%
	d5-EtFOSA	85%		20-150%
	d3-MeFOSAA	106%		20-150%
	d5-EtFOSAA	94%		20-150%
	d7-MeFOSE	63%		20-150%
	d9-EtFOSE	75%		20-150%
	13C2-4:2FTS	99%		20-180%
	13C2-6:2FTS	101%		20-180%
	13C2-8:2FTS	100%		20-180%
	13C3-HFPO-DA	100%		20-150%

(a) Associated BS recovery outside control limits.

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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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

SGS Sample Receipt Summary

Job Number: FC6891

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 6/14/2023 2:00:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-94047671

Therm ID: IR 1;

Therm CF: -0.1;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.0);

Cooler Temps (Corrected) °C: Cooler 1: (3.9);

Cooler Information

Y or N

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

Trip Blank Information

Y or N N/A

- 1. Trip Blank present / cooler
 - 2. Trip Blank listed on COC
- W or S N/A
- 3. Type Of TB Received

Sample Information

Y or N N/A

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

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____

Number of 5035 Field Kits: _____

Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230320

pH 10-12 _____

Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS

Date: 6/14/2023 2:00:00 PM

Reviewer: CD

Date: 6/15/2023

FC6891: Chain of Custody

Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6891
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 06/09/23

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 FC6891

5.2
5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Instrument Blank

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q293-IBLK	6Q19668.D	1	06/21/23	MV	n/a	n/a	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

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

Instrument Blank

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q293-IBLK	6Q19668.D	1	06/21/23	MV	n/a	n/a	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	105% 20-150%
	13C5-PFHxA	105% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	111% 20-150%
	13C6-PFDA	97% 20-150%
	13C7-PFUnDA	92% 20-150%
	13C2-PFDoDA	91% 20-150%
	13C2-PFTeDA	83% 20-150%
	13C3-PFBS	96% 20-150%
	13C3-PFHxS	101% 20-150%
	13C8-PFOS	96% 20-150%
	13C8-FOSA	96% 20-150%
	d3-MeFOSA	94% 20-150%
	d5-EtFOSA	97% 20-150%
	d3-MeFOSAA	94% 20-150%
	d5-EtFOSAA	88% 20-150%
	d7-MeFOSE	79% 20-150%
	d9-EtFOSE	80% 20-150%
	13C2-4:2FTS	112% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	91% 20-180%
	13C3-HFPO-DA	95% 20-150%

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Method Blank Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-MB	6Q19673.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	0.00080	0.0040	0.00050	ug/l	J
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Method Blank Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-MB	6Q19673.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	115% 20-150%
	13C5-PFPeA	121% 20-150%
	13C5-PFHxA	114% 20-150%
	13C4-PFHpA	110% 20-150%
	13C8-PFOA	112% 20-150%
	13C9-PFNA	110% 20-150%
	13C6-PFDA	115% 20-150%
	13C7-PFUnDA	115% 20-150%
	13C2-PFDoDA	117% 20-150%
	13C2-PFTeDA	101% 20-150%
	13C3-PFBS	126% 20-150%
	13C3-PFHxS	121% 20-150%
	13C8-PFOS	105% 20-150%
	13C8-FOSA	74% 20-150%
	d3-MeFOSA	76% 20-150%
	d5-EtFOSA	87% 20-150%
	d3-MeFOSAA	101% 20-150%
	d5-EtFOSAA	100% 20-150%
	d7-MeFOSE	54% 20-150%
	d9-EtFOSE	66% 20-150%
	13C2-4:2FTS	138% 20-180%
	13C2-6:2FTS	144% 20-180%
	13C2-8:2FTS	123% 20-180%
	13C3-HFPO-DA	108% 20-150%

Blank Spike Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-LLBS	6Q19672.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0266	89	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0134	89	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0071	95	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0068	91	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0069	92	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0066	88	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0069	92	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0069	92	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0076	101	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0067	89	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0071	95	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0060	90	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0064	91	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0059	86	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0057	80	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0054	78	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0058	80	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0058	80	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0050	69	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0264	94	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0265	93	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0282	98	40-150
754-91-6	PFOSA	0.0075	0.0072	96	40-150
31506-32-8	MeFOSA	0.015	0.0132	88	40-150
4151-50-2	EtFOSA	0.015	0.0132	88	40-150
2355-31-9	MeFOSAA	0.0075	0.0064	85	40-150
2991-50-6	EtFOSAA	0.0075	0.0064	85	40-150
24448-09-7	MeFOSE	0.0375	0.0333	89	40-150
1691-99-2	EtFOSE	0.0375	0.0320	85	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0130	87	40-150
919005-14-4	ADONA	0.0142	0.0128	90	40-150
377-73-1	PFMPA	0.015	0.0140	93	40-150
863090-89-5	PFMBA	0.015	0.0136	91	40-150
151772-58-6	NFDHA	0.015	0.0144	96	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0112	80	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0119	84	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-LLBS	6Q19672.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0122	91	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0209	56	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.156	83	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.175	93	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	108%	20-150%
	13C5-PFPeA	113%	20-150%
	13C5-PFHxA	105%	20-150%
	13C4-PFHpA	107%	20-150%
	13C8-PFOA	103%	20-150%
	13C9-PFNA	114%	20-150%
	13C6-PFDA	107%	20-150%
	13C7-PFUnDA	106%	20-150%
	13C2-PFDoDA	98%	20-150%
	13C2-PFTeDA	85%	20-150%
	13C3-PFBS	106%	20-150%
	13C3-PFHxS	105%	20-150%
	13C8-PFOS	117%	20-150%
	13C8-FOSA	71%	20-150%
	d3-MeFOSA	75%	20-150%
	d5-EtFOSA	78%	20-150%
	d3-MeFOSAA	100%	20-150%
	d5-EtFOSAA	101%	20-150%
	d7-MeFOSE	49%	20-150%
	d9-EtFOSE	63%	20-150%
	13C2-4:2FTS	116%	20-180%
	13C2-6:2FTS	120%	20-180%
	13C2-8:2FTS	106%	20-180%
	13C3-HFPO-DA	107%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-BS	6Q19671.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0894	89	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0463	93	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0257	103	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0241	96	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0221	88	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0214	86	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0243	97	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0247	99	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0242	97	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0207	83	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0252	101	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0201	91	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0211	90	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0192	84	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0221	93	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0210	91	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0223	93	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0199	82	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0193	80	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0882	94	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0926	97	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0867	90	40-150
754-91-6	PFOSA	0.025	0.0228	91	40-150
31506-32-8	MeFOSA	0.05	0.0439	88	40-150
4151-50-2	EtFOSA	0.05	0.0469	94	40-150
2355-31-9	MeFOSAA	0.025	0.0227	91	40-150
2991-50-6	EtFOSAA	0.025	0.0224	90	40-150
24448-09-7	MeFOSE	0.125	0.121	97	40-150
1691-99-2	EtFOSE	0.125	0.106	85	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0476	95	40-150
919005-14-4	ADONA	0.0473	0.0442	94	40-150
377-73-1	PFMPA	0.05	0.0235	47	40-150
863090-89-5	PFMBA	0.05	0.0479	96	40-150
151772-58-6	NFDHA	0.05	0.0495	99	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0439	94	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0414	88	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-BS	6Q19671.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0470	106	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0396	32*	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.549	88	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.593	95	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	25%	20-150%
	13C5-PFPeA	103%	20-150%
	13C5-PFHxA	97%	20-150%
	13C4-PFHpA	100%	20-150%
	13C8-PFOA	101%	20-150%
	13C9-PFNA	107%	20-150%
	13C6-PFDA	102%	20-150%
	13C7-PFUnDA	97%	20-150%
	13C2-PFDoDA	98%	20-150%
	13C2-PFTeDA	81%	20-150%
	13C3-PFBS	106%	20-150%
	13C3-PFHxS	108%	20-150%
	13C8-PFOS	92%	20-150%
	13C8-FOSA	64%	20-150%
	d3-MeFOSA	69%	20-150%
	d5-EtFOSA	69%	20-150%
	d3-MeFOSAA	94%	20-150%
	d5-EtFOSAA	93%	20-150%
	d7-MeFOSE	43%	20-150%
	d9-EtFOSE	57%	20-150%
	13C2-4:2FTS	119%	20-180%
	13C2-6:2FTS	111%	20-180%
	13C2-8:2FTS	113%	20-180%
	13C3-HFPO-DA	96%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-MS	6Q19676.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293
FC6474-2	6Q19675.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	FC6474-2 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.0909	0.0774	85	40-150
2706-90-3	Perfluoropentanoic acid	0.0074 U	0.0455	0.0402	88	40-150
307-24-4	Perfluorohexanoic acid	0.0037 U	0.0227	0.0175	77	40-150
375-85-9	Perfluoroheptanoic acid	0.0037 U	0.0227	0.0183	81	40-150
335-67-1	Perfluorooctanoic acid	0.0037 U	0.0227	0.0176	77	40-150
375-95-1	Perfluorononanoic acid	0.0037 U	0.0227	0.0192	84	40-150
335-76-2	Perfluorodecanoic acid	0.0037 U	0.0227	0.0191	84	40-150
2058-94-8	Perfluoroundecanoic acid	0.0037 U	0.0227	0.0180	79	40-150
307-55-1	Perfluorododecanoic acid	0.0037 U	0.0227	0.0207	91	40-150
72629-94-8	Perfluorotridecanoic acid	0.0037 U	0.0227	0.0178	78	40-150
376-06-7	Perfluorotetradecanoic acid	0.0037 U	0.0227	0.0213	94	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	0.0202	0.0159	79	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	0.0214	0.0176	82	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	0.0208	0.0162	78	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	0.0217	0.0203	94	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0037 U	0.0211	0.0172	82	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	0.0219	0.0178	81	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	0.0219	0.0161	73	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	0.022	0.0162	73	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0852	0.0743	87	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0864	0.0762	88	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0873	0.0799	92	40-150
754-91-6	PFOSA	0.0037 U	0.0227	0.0211	93	40-150
31506-32-8	MeFOSA	0.0074 U	0.0455	0.0394	87	40-150
4151-50-2	EtFOSA	0.0074 U	0.0455	0.0395	87	40-150
2355-31-9	MeFOSAA	0.0046 U	0.0227	0.0209	92	40-150
2991-50-6	EtFOSAA	0.0046 U	0.0227	0.0189	83	40-150
24448-09-7	MeFOSE	0.037 U	0.114	0.102	90	40-150
1691-99-2	EtFOSE	0.037 U	0.114	0.0942	83	40-150
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0455	0.0431	95	40-150
919005-14-4	ADONA	0.0074 U	0.043	0.0382	89	40-150
377-73-1	PFMPA	0.0074 U	0.0455	0.0313	69	40-150
863090-89-5	PFMBA	0.0074 U	0.0455	0.0402	88	40-150
151772-58-6	NFDHA	0.0074 U	0.0455	0.0366	81	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	0.0425	0.0338	80	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	0.043	0.0347	81	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-MS	6Q19676.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293
FC6474-2	6Q19675.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	FC6474-2 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0074 U	0.0405	0.0328	81	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.114	0.0515	45	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.093 U	0.568	0.400	70	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.093 U	0.568	0.422	74	40-150

CAS No.	ID Standard Recoveries	MS	FC6474-2	Limits
	13C4-PFBA	42%	46%	20-150%
	13C5-PFPeA	123%	109%	20-150%
	13C5-PFHxA	132%	101%	20-150%
	13C4-PFHpA	122%	99%	20-150%
	13C8-PFOA	108%	104%	20-150%
	13C9-PFNA	98%	102%	20-150%
	13C6-PFDA	101%	106%	20-150%
	13C7-PFUnDA	95%	98%	20-150%
	13C2-PFDoDA	89%	91%	20-150%
	13C2-PFTeDA	81%	85%	20-150%
	13C3-PFBS	115%	116%	20-150%
	13C3-PFHxS	119%	112%	20-150%
	13C8-PFOS	107%	100%	20-150%
	13C8-FOSA	72%	67%	20-150%
	d3-MeFOSA	79%		20-150%
	d5-EtFOSA	84%		20-150%
	d3-MeFOSAA	95%	98%	20-150%
	d5-EtFOSAA	99%	94%	20-150%
	d7-MeFOSE	56%		20-150%
	d9-EtFOSE	71%		20-150%
	13C2-4:2FTS	132%	136%	20-180%
	13C2-6:2FTS	122%	128%	20-180%
	13C2-8:2FTS	113%	113%	20-180%
	13C3-HFPO-DA	110%		20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-DUP	6Q19678.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293
FC6474-3	6Q19677.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	FC6474-3 ug/l	DUP Q	ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	ND		nc		30
2706-90-3	Perfluoropentanoic acid	0.0074 U	ND		nc		30
307-24-4	Perfluorohexanoic acid	0.0037 U	ND		nc		30
375-85-9	Perfluoroheptanoic acid	0.0037 U	ND		nc		30
335-67-1	Perfluorooctanoic acid	0.0037 U	ND		nc		30
375-95-1	Perfluorononanoic acid	0.0037 U	ND		nc		30
335-76-2	Perfluorodecanoic acid	0.0037 U	ND		nc		30
2058-94-8	Perfluoroundecanoic acid	0.0037 U	ND		nc		30
307-55-1	Perfluorododecanoic acid	0.0037 U	ND		nc		30
72629-94-8	Perfluorotridecanoic acid	0.0037 U	ND		nc		30
376-06-7	Perfluorotetradecanoic acid	0.0037 U	ND		nc		30
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	ND		nc		30
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	ND		nc		30
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	ND		nc		30
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	ND		nc		30
1763-23-1	Perfluorooctanesulfonic acid	0.0017 J	0.0015 J		13		30
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	ND		nc		30
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	ND		nc		30
79780-39-5	Perfluorododecanesulfonic aci	0.0046 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	0.0037 U	ND		nc		30
31506-32-8	MeFOSA	0.0074 U	ND		nc		30
4151-50-2	EtFOSA	0.0074 U	ND		nc		30
2355-31-9	MeFOSAA	0.0046 U	ND		nc		30
2991-50-6	EtFOSAA	0.0046 U	ND		nc		30
24448-09-7	MeFOSE	0.037 U	ND		nc		30
1691-99-2	EtFOSE	0.037 U	ND		nc		30
13252-13-6	HFPO-DA (GenX)	0.0037 U	ND		nc		30
919005-14-4	ADONA	0.0074 U	ND		nc		30
377-73-1	PFMPA	0.0074 U	ND		nc		30
863090-89-5	PFMBA	0.0074 U	ND		nc		30
151772-58-6	NFDHA	0.0074 U	ND		nc		30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	ND		nc		30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	ND		nc		30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97425-DUP	6Q19678.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293
FC6474-3	6Q19677.D	1	06/21/23	MV	06/20/23	OP97425	S6Q293

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC6891-1, FC6891-2

CAS No.	Compound	FC6474-3 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0074 U	ND			nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	ND			nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.093 U	ND			nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.093 U	ND			nc	30

CAS No.	ID Standard Recoveries	DUP	FC6474-3	Limits
	13C4-PFBA	54%	53%	20-150%
	13C5-PFPeA	118%	125%	20-150%
	13C5-PFHxA	112%	115%	20-150%
	13C4-PFHpA	114%	116%	20-150%
	13C8-PFOA	104%	109%	20-150%
	13C9-PFNA	112%	108%	20-150%
	13C6-PFDA	98%	112%	20-150%
	13C7-PFUnDA	89%	101%	20-150%
	13C2-PFDoDA	88%	99%	20-150%
	13C2-PFTeDA	76%	76%	20-150%
	13C3-PFBS	105%	111%	20-150%
	13C3-PFHxS	106%	120%	20-150%
	13C8-PFOS	93%	102%	20-150%
	13C8-FOSA	66%	76%	20-150%
	d3-MeFOSA	67%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	91%	100%	20-150%
	d5-EtFOSAA	83%	90%	20-150%
	d7-MeFOSE	47%		20-150%
	d9-EtFOSE	64%		20-150%
	13C2-4:2FTS	130%	128%	20-180%
	13C2-6:2FTS	123%	131%	20-180%
	13C2-8:2FTS	117%	124%	20-180%
	13C3-HFPO-DA	107%		20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q293-CC288	Injection Date:	06/21/23
Lab File ID:	6Q19669.D	Injection Time:	12:55
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	59753	3.09	49109	5.79	80981	7.35	45376	7.88	29139	8.39
Check Std ^c	60918	3.09	45967	5.79	76608	7.34	42452	7.88	27317	8.38
Upper Limit ^d	119506	3.49	98218	6.19	161962	7.74	90752	8.28	58278	8.78
Lower Limit ^e	17926	2.69	14733	5.39	24294	6.94	13613	7.48	8742	7.98

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
OP97425-BS	54679	3.10	41257	5.79	68304	7.34	36729	7.88	23334	8.38	1
OP97425-LLBS	52711	3.10	40304	5.79	67616	7.34	37055	7.88	23366	8.38	1
OP97425-MB	54913	3.10	42214	5.79	68870	7.34	40493	7.88	22643	8.38	1
ZZZZZZ	52153	3.10	39666	5.79	66988	7.34	36360	7.88	24919	8.38	1
FC6474-2	55611	3.10	43698	5.79	71627	7.34	40090	7.88	24804	8.39	1
OP97425-MS	53315	3.10	37629	5.79	66192	7.34	40389	7.88	24541	8.38	1
FC6474-3	54993	3.10	40786	5.79	69221	7.34	39296	7.88	23410	8.38	1
OP97425-DUP	54335	3.10	40872	5.79	72160	7.34	38384	7.88	24434	8.39	1
FC6891-1	42473	3.09	42651	5.78	72120	7.34	37424	7.88	24817	8.39	1
FC6891-2	51666	3.10	41292	5.79	67039	7.34	35354	7.88	24374	8.38	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: S6Q288-ICC288 6Q19298.D 06/13/23 12:17. 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: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q293-CC288	Injection Date:	06/21/23
Lab File ID:	6Q19669.D	Injection Time:	12:55
Instrument ID:	GCMS6Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	8909	7.48	14635	8.56
Check Std ^c	8196	7.46	13997	8.55
Upper Limit ^d	17818	7.86	29270	8.95
Lower Limit ^e	2673	7.06	4391	8.15

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
OP97425-BS	7062	7.48	13206	8.55	1
OP97425-LLBS	7431	7.46	12274	8.55	1
OP97425-MB	7266	7.48	13201	8.55	1
ZZZZZZ	7120	7.48	12271	8.56	1
FC6474-2	7643	7.48	12405	8.56	1
OP97425-MS	6997	7.48	12020	8.56	1
FC6474-3	7636	7.48	12874	8.55	1
OP97425-DUP	7605	7.48	12903	8.56	1
FC6891-1	7212	7.48	13166	8.56	1
FC6891-2	7401	7.48	12131	8.55	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S6Q288-ICC288 6Q19298.D 06/13/23 12:17. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
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TDCA Retention Time Check

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S6Q288-RT	Injection Date:	06/13/23
Lab File ID:	6Q19292.D	Injection Time:	10:53
Instrument ID:	GCMS6Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.564	--	--
TDCA	7.012	1.552	1.000
TCDCA	6.863	1.701	1.000
TUDCA	6.048	2.516	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
S6Q288-IC288	6Q19294.D	06/13/23	11:21	00:28	Mass Calibration Verification
S6Q288-IC288	6Q19295.D	06/13/23	11:35	00:42	Initial cal 1
S6Q288-IC288	6Q19296.D	06/13/23	11:49	00:56	Initial cal 2
S6Q288-IC288	6Q19297.D	06/13/23	12:03	01:10	Initial cal 3
S6Q288-ICC288	6Q19298.D	06/13/23	12:17	01:24	Initial cal 4
S6Q288-IC288	6Q19299.D	06/13/23	12:31	01:38	Initial cal 5
S6Q288-IC288	6Q19300.D	06/13/23	12:45	01:52	Initial cal 6
S6Q288-IC288	6Q19301.D	06/13/23	12:59	02:06	Initial cal 7
S6Q288-IC288	6Q19302.D	06/13/23	13:13	02:20	Initial cal 8
S6Q288-IBLK	6Q19303.D	06/13/23	13:27	02:34	Instrument Blank
S6Q288-IBLK	6Q19303.D	06/13/23	13:27	02:34	Instrument Blank
S6Q288-ICV288	6Q19304.D	06/13/23	13:41	02:48	Initial cal verification 4
S6Q288-ICV288	6Q19305.D	06/13/23	13:55	03:02	Initial cal verification 20
S6Q288-CC288	6Q19306.D	06/13/23	14:09	03:16	Continuing cal 4
S6Q288-CC288	6Q19307.D	06/13/23	14:31	03:38	Continuing cal 1.0LL
OP97303-BS	6Q19308.D	06/13/23	14:45	03:52	Blank Spike
OP97303-LLBS	6Q19309.D	06/13/23	14:59	04:06	Blank Spike
OP97303-MB	6Q19310.D	06/13/23	15:13	04:20	Method Blank
ZZZZZZ	6Q19311.D	06/13/23	15:27	04:34	(unrelated sample)
ZZZZZZ	6Q19312.D	06/13/23	15:41	04:48	(unrelated sample)
FC6266-3	6Q19313.D	06/13/23	15:55	05:02	(used for QC only; not part of job FC6891)
OP97303-MS	6Q19314.D	06/13/23	16:09	05:16	Matrix Spike
OP97303-MSD	6Q19315.D	06/13/23	16:23	05:30	Matrix Spike Duplicate
ZZZZZZ	6Q19316.D	06/13/23	16:37	05:44	(unrelated sample)
ZZZZZZ	6Q19317.D	06/13/23	16:51	05:58	(unrelated sample)
S6Q288-CC288	6Q19318.D	06/13/23	17:05	06:12	Continuing cal 4
S6Q288-ICCB	6Q19319.D	06/13/23	17:19	06:26	Continuing Calibration Blank
ZZZZZZ	6Q19320.D	06/13/23	17:33	06:40	(unrelated sample)
ZZZZZZ	6Q19321.D	06/13/23	17:47	06:54	(unrelated sample)
ZZZZZZ	6Q19324.D	06/13/23	18:28	07:35	(unrelated sample)
ZZZZZZ	6Q19325.D	06/13/23	18:42	07:49	(unrelated sample)
S6Q288-ECC288	6Q19326.D	06/13/23	18:56	08:03	Ending cal 4
S6Q288-ICCB	6Q19327.D	06/13/23	19:10	08:17	Continuing Calibration Blank

TDCA Retention Time Check

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S6Q293-RT	Injection Date:	06/21/23
Lab File ID:	6Q19665.D	Injection Time:	11:59
Instrument ID:	GCMS6Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.552	--	--
TDCA	7.012	1.540	1.000
TCDCA	6.851	1.701	1.000
TUDCA	6.035	2.517	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
S6Q293-IBLK	6Q19668.D	06/21/23	12:41	00:42	Instrument Blank
S6Q293-IBLK	6Q19668.D	06/21/23	12:41	00:42	Instrument Blank
S6Q293-CC288	6Q19669.D	06/21/23	12:55	00:56	Continuing cal 4
S6Q293-CC288	6Q19670.D	06/21/23	13:09	01:10	Continuing cal 1.0LL
OP97425-BS	6Q19671.D	06/21/23	13:23	01:24	Blank Spike
OP97425-LLBS	6Q19672.D	06/21/23	13:36	01:37	Blank Spike
OP97425-MB	6Q19673.D	06/21/23	13:51	01:52	Method Blank
ZZZZZZ	6Q19674.D	06/21/23	14:05	02:06	(unrelated sample)
FC6474-2	6Q19675.D	06/21/23	14:18	02:19	(used for QC only; not part of job FC6891)
OP97425-MS	6Q19676.D	06/21/23	14:32	02:33	Matrix Spike
FC6474-3	6Q19677.D	06/21/23	14:46	02:47	(used for QC only; not part of job FC6891)
OP97425-DUP	6Q19678.D	06/21/23	15:00	03:01	Duplicate
FC6891-1	6Q19679.D	06/21/23	15:14	03:15	AF-RHMW02-WGN01LF-2306
FC6891-2	6Q19680.D	06/21/23	15:28	03:29	AF-RHMW03-WGN01LF-2306
S6Q293-CC288	6Q19681.D	06/21/23	15:42	03:43	Continuing cal 4
S6Q293-ICCB	6Q19682.D	06/21/23	15:56	03:57	Continuing Calibration Blank

Ion Ratio Summary

Job Number: FC6891
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q293	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios				
		PFBA	PFPeA	PFHxA	PFHpA	6:2FTS
S6Q288-ICC288	6Q19298.D	0	0	5.2	15.2	32.7
FC6891-1	6Q19679.D	0	0	3		
FC6891-2	6Q19680.D		0	4.3	14.2	32.4

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC6891
 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
FC6891-1	6Q19679.D	84	107	117	112	108	126	103	111
FC6891-2	6Q19680.D	102	115	117	113	106	119	106	88
OP97425-BS	6Q19671.D	25	103	97	100	101	107	102	97
OP97425-DUP	6Q19678.D	54	118	112	114	104	112	98	89
OP97425-LLBS	6Q19672.D	108	113	105	107	103	114	107	106
OP97425-MB	6Q19673.D	115	121	114	110	112	110	115	115
OP97425-MS	6Q19676.D	42	123	132	122	108	98	101	95
S6Q293-IBLK	6Q19668.D	101	105	105	100	104	111	97	92

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%

Isotope Dilution Standard Recovery Summary

Job Number: FC6891
 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
FC6891-1	6Q19679.D	102	70	119	113	100	93	85	86
FC6891-2	6Q19680.D	89	68	117	116	108	86	88	85
OP97425-BS	6Q19671.D	98	81	106	108	92	64	69	69
OP97425-DUP	6Q19678.D	88	76	105	106	93	66	67	72
OP97425-LLBS	6Q19672.D	98	85	106	105	117	71	75	78
OP97425-MB	6Q19673.D	117	101	126	121	105	74	76	87
OP97425-MS	6Q19676.D	89	81	115	119	107	72	79	84
S6Q293-IBLK	6Q19668.D	91	83	96	101	96	96	94	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

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Isotope Dilution Standard Recovery Summary

Job Number: FC6891
 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
FC6891-1	6Q19679.D	101	90	65	77	112	103	100	91
FC6891-2	6Q19680.D	106	94	63	75	99	101	100	100
OP97425-BS	6Q19671.D	94	93	43	57	119	111	113	96
OP97425-DUP	6Q19678.D	91	83	47	64	130	123	117	107
OP97425-LLBS	6Q19672.D	100	101	49	63	116	120	106	107
OP97425-MB	6Q19673.D	101	100	54	66	138	144	123	108
OP97425-MS	6Q19676.D	95	99	56	71	132	122	113	110
S6Q293-IBLK	6Q19668.D	94	88	79	80	112	107	91	95

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

6.8.1
6

Initial Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICC288
 Lab FileID: 6Q19298.D

Initial Calibration Report

Method Path	Method File	Batch Name	Last Calib Update	Calibration Files	Level Name	1	2	3	4	5	6	7	8	Avg RF	%RSD
D:\MassHunter\Methods	1633_061323_S6Q288.quantmethod.xml	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19295.d	1	0.4709	0.4055	0.3923	0.3855	0.3832	0.3937	0.3976	0.3950	0.4030	7.025
D:\MassHunter\Data\061323_1633_S6Q288	6Q19296.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19297.d	2	0.8341	0.8022	0.7841	0.7839	0.8034	0.8082	0.8110	0.8110	0.8232	6.937
D:\MassHunter\Data\061323_1633_S6Q288	6Q19298.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19299.d	3	1.1143	0.0954	0.0938	0.0921	0.0969	0.0991	0.1037	0.1037	0.0999	7.175
D:\MassHunter\Data\061323_1633_S6Q288	6Q19300.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	4	1.7616	1.4429	1.4055	1.3886	1.4373	1.4440	1.4189	1.4189	1.4763	8.190
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	5	1.2014	1.0930	1.0175	1.0046	0.9935	1.0353	1.0327	1.0401	1.0523	6.391
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	6	0.1517	0.1432	0.1196	0.1176	0.1246	0.1220	0.1352	0.1172	0.1289	10.064
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	7	1.2830	0.9817	0.9664	0.9710	0.9423	0.9691	0.9780	0.9814	1.0091	11.039
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	8	1.6049	1.3973	1.3615	1.3198	1.2700	1.3034	1.3935	1.2581	1.3636	8.113
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	9	0.2502	0.2205	0.1912	0.1886	0.1888	0.1957	0.1928	0.1766	0.2005	11.760
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	10	0.1613	0.1485	0.1293	0.1288	0.1279	0.1338	0.1283	0.1267	0.1356	9.273
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	11	1.6468	1.3725	1.2938	1.3007	1.2238	1.3095	1.2722	1.2582	1.3347	9.985
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	12	1.7157	1.5949	1.2096	1.3296	1.2169	1.3610	1.2540	1.3041	1.3732	13.448
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	13	1.3734	1.2092	1.0482	1.1629	1.0592	1.1654	1.0740	1.1529	1.1557	9.130
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	14	2.0907	2.0894	1.6726	1.6652	1.9278	1.6720	1.9241	1.8333	1.8594	9.613
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	15	1.0682	0.9126	1.0621	0.9133	0.8399	0.9636	0.9568	1.0041	0.9651	8.099
D:\MassHunter\Data\061323_1633_S6Q288	6Q19302.d	D:\MassHunter\Data\061323_1633_S6Q288	6/13/2023 2:27:45 PM	D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d	16										

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Initial Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICC288
 Lab FileID: 6Q19298.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	1.2146	1.1257	0.9233	1.0266	1.0482	1.0124	0.9472	1.0033	1.0377	9.095
T PFTfDA	Avg RF	1.2277	1.1567	0.9483	1.0910	0.9610	0.9982	1.0079	1.0380	1.0536	9.314
I M2-PFTeDA	Avg RF	1.8126	1.6221	1.3727	1.4101	1.4203	1.4583	1.4553	1.4322	1.4979	9.822
T PFTeDA											
I M8-FOSA	Avg RF	1.1072	0.9666	1.0067	1.0422	0.8654	1.0772	0.9254	0.9553	0.9933	8.136
T FOSA											
I M3-PFBS	Avg RF	1.2968	1.1681	1.0795	1.1037	1.0281	1.0570	1.0931	1.1052	1.1164	7.474
T PFBS											
I M3-PFHxS	Avg RF	1.7019	1.3450	1.3674	1.3961	1.3046	1.3496	1.3132	1.4282	1.4008	9.159
T PFPeS	Avg RF	1.9019	1.6116	1.4484	1.4493	1.3736	1.3879	1.3966	1.4750	1.5055	11.744
T PFHxS											
I M8-PFOS	Avg RF	1.6314	1.6543	1.3399	1.3537	1.4075	1.4731	1.5151	1.5777	1.4941	8.133
T PFHpS	Avg RF	1.7625	1.6221	1.4278	1.3589	1.3677	1.4440	1.3642	1.5191	1.4833	9.743
T PFOs	Avg RF	1.4752	1.4267	1.1898	1.2449	1.2676	1.2403	1.2932	1.2375	1.2969	7.733
T PFNS	Avg RF	0.8698	0.7977	0.7147	0.6740	0.7531	0.7451	0.7375	0.7542	0.7558	7.680
T PFDS	Avg RF	0.4256	0.4058	0.3604	0.3414	0.3722	0.3648	0.3393	0.3713	0.3726	7.988
T PFDoDS											
I M2-4:2FTS	Avg RF	10.28	9.0415	8.6135	8.3433	8.1207	8.8835	8.4190	7.8553	8.6949	8.604
T 4:2FTS											
I M2-6:2FTS	Avg RF	7.4339	5.8846	5.9867	5.9121	5.8586	6.1793	5.5047	4.8707	5.9538	12.100
T 6:2FTS											
I M2-8:2FTS	Avg RF	4.0612	3.6210	3.3675	3.1532	3.1579	3.2193	3.1776	2.8278	3.3232	11.195
T 8:2FTS											
I M3-MeFOSAA	Avg RF	1.4468	1.5472	1.3882	1.0928	1.0963	1.2503	1.2816	1.2649	1.2960	12.330
T MeFOSAA											
I M3-HFO-DA	Avg RF	1.3311	1.0343	0.9948	0.9986	1.0148	1.0589	1.0116	0.9282	1.0465	11.562
T HFPO-DA	Avg RF	19.40	16.54	16.83	15.91	14.86	16.25	15.91	13.74	16.18	10.109
T ADONA	Avg RF	10.13	7.8820	7.6737	7.5276	7.6359	6.9100	7.1628	7.8463	7.8463	13.515
T 9Cl-PF3ONS	Avg RF	5.1507	5.0035	4.5152	4.8162	4.4022	4.6091	4.5187	3.4150	4.5538	11.599
T 11Cl-PF3OUds											
I M5-EFOSAA	Avg RF	0.9831	0.8325	0.8554	0.9532	0.7683	0.7679	0.8002	0.8134	0.8467	9.559
T EFOSAA											
I M7-MeFOSE	Avg RF	1.2749	1.1000	1.0460	1.0291	1.0362	1.0134	1.0977	1.0702	1.0834	7.709
T MeFOSE											
I M9-EFOSE	Avg RF	1.4753	1.2990	1.2953	1.2461	1.2146	1.2386	1.2839	1.2977	1.2938	6.173
T EFOSE											

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Initial Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICC288
 Lab FileID: 6Q19298.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA											
T EFOSA	Avg RF	1.6494	1.3088	1.3015	1.1840	1.3180	1.2702	1.3263	1.3246	1.3354	10.132
I M3-MeFOSA											
T MeFOSA	Avg RF	1.4472	1.1650	1.1141	1.0255	1.0789	1.0582	1.0356		1.1321	12.985
I 13C4-PFOS											
S d3-MeFOSAA	Linear	0.9776	0.8957	0.8746	1.0105	1.0794	0.9685	0.8696	0.8912	0.9459	7.983
S 13C8-PFOS	Linear	0.7971	0.7264	0.7236	0.7766	0.7578	0.7628	0.7617	0.7326	0.7548	3.419
S d5-EFOSAA	Linear	0.8311	0.8345	0.7083	0.6928	0.8313	0.8408	0.8433	0.8409	0.8029	7.903
S 13C8-FOSA	Linear	1.9941	2.0083	1.7496	1.8075	1.9896	1.8362	1.8652	1.8977	1.8935	5.079
S d7-MeFOSE	Linear	0.8482	0.8700	0.7960	0.8415	0.8668	0.8701	0.8107	0.8077	0.8389	3.610
S d3-MeFOSA	Linear	0.7646	0.7907	0.7224	0.8436	0.7959	0.8432	0.8741	0.9477	0.8228	8.508
S d9-EFOSE	Linear	1.0271	0.9982	0.9239	0.9795	1.0332	1.0220	0.9801	0.9474	0.9889	3.954
S d5-EFOSA	Linear	0.7725	0.8159	0.7355	0.8543	0.7963	0.8344	0.8070	0.8096	0.8032	4.558
I 13C3-PFBA											
S 13C4-PFBA	Linear	1.1665	1.1824	1.1699	1.1819	1.1784	1.1677	1.1720	1.1656	1.1731	0.586
I 18O2-PFHxS											
S 13C2-4:2FTS	Linear	0.1707	0.1641	0.1745	0.1729	0.1543	0.1395	0.1183	0.1058	0.1500	17.528
S 13C3-PBBS	Linear	1.8997	2.0329	2.2545	2.1885	2.1113	2.2212	1.9792	1.9609	2.0810	6.349
S 13C2-6:2FTS	Linear	0.2298	0.2664	0.2638	0.2611	0.2334	0.2125	0.1777	0.1676	0.2265	16.918
S 13C3-PFHxS	Linear	1.2482	1.3091	1.4001	1.3103	1.2967	1.4201	1.2825	1.2429	1.3137	4.933
S 13C2-8:2FTS	Linear	0.2116	0.2225	0.2360	0.2413	0.2179	0.2218	0.1816	0.1718	0.2130	11.514
I 13C4-PFOA											
S 13C8-PFOA	Linear	0.9414	0.8962	0.9270	0.9576	0.9705	0.8616	0.9732	0.9491	0.9346	4.131
I 13C2-PFDA											
S 13C6-PFDA	Linear	0.7418	0.6520	0.7553	0.7505	0.7176	0.7378	0.6804	0.7033	0.7173	5.105
S 13C7-PFUnDA	Linear	0.9900	0.9637	0.9294	0.9241	1.0696	0.9363	0.9704	0.9058	0.9612	5.385
S 13C2-PFDODA	Linear	0.8079	0.7758	0.9141	0.8250	0.8639	0.8038	0.8894	0.8058	0.8357	5.758
S 13C2-PFTeDA	Linear	0.4416	0.4513	0.4786	0.4790	0.4770	0.4606	0.4671	0.4761	0.4664	3.023
I 13C5-PFNA											
S 13C9-PFNA	Linear	0.7938	0.7909	0.7764	0.7370	0.7337	0.7606	0.8079	0.6869	0.7609	5.258
I 13C2-PFHxA											
S 13C5-PPeA	Linear	0.4599	0.4765	0.4865	0.4683	0.4570	0.4837	0.4794	0.4716	0.4729	2.264
S 13C5-PFHxA	Linear	0.9778	1.0213	1.0660	1.0116	0.9844	1.0455	1.0270	1.1199	1.0317	4.461
S 13C3-HPOD-A	Linear	0.1575	0.1698	0.1747	0.1634	0.1641	0.1720	0.1790	0.2006	0.1726	7.659
S 13C4-PFHpA	Linear	0.9274	0.9658	0.9495	0.9359	0.8996	0.9934	1.0280	1.0209	0.9651	4.745

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

Initial Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICC288
 Lab FileID: 6Q19298.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PFBA	Linear	y = 1.173051 * x	
S 13C5-PFPeA	Linear	y = 0.472874 * x	
S 13C2-4:2FTS	Linear	y = 0.150010 * x	
S 13C3-PFBS	Linear	y = 2.081041 * x	
S 13C5-PFHxA	Linear	y = 1.031698 * x	
S 13C3-HFPO-DA	Linear	y = 0.172644 * x	
S 13C4-PFHpA	Linear	y = 0.965070 * x	
S 13C8-PFOA	Linear	y = 0.226550 * x	
S 13C3-PFHxS	Linear	y = 0.934571 * x	
S 13C9-PFNA	Linear	y = 1.313731 * x	
S 13C2-8:2FTS	Linear	y = 0.760904 * x	
S 13C6-PEDA	Linear	y = 0.213050 * x	
S d3-MeFOSAA	Linear	y = 0.717341 * x	
S 13C8-PFOS	Linear	y = 0.945865 * x	
S d5-EFOSAA	Linear	y = 0.802864 * x	
S 13C7-PFUInDA	Linear	y = 0.961183 * x	
S 13C2-PFDODA	Linear	y = 0.835729 * x	
S 13C8-FOSA	Linear	y = 1.893528 * x	
S 13C2-PFTeDA	Linear	y = 0.466418 * x	
S d7-MeFOSE	Linear	y = 0.838871 * x	
S d3-MeFOSA	Linear	y = 0.822778 * x	
S d9-EFOSE	Linear	y = 0.988935 * x	
S d5-EFOSA	Linear	y = 0.803180 * x	

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

Initial Calibration Verification

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICV288
 Lab FileID: 6Q19304.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\061323_1633_S6Q288\s6q288.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\061323_1633_S6Q288\6Q19295.d
 2:D:\MassHunter\Data\061323_1633_S6Q288\6Q19296.d
 3:D:\MassHunter\Data\061323_1633_S6Q288\6Q19297.d
 4:D:\MassHunter\Data\061323_1633_S6Q288\6Q19298.d
 5:D:\MassHunter\Data\061323_1633_S6Q288\6Q19299.d
 6:D:\MassHunter\Data\061323_1633_S6Q288\6Q19300.d
 7:D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d
 8:D:\MassHunter\Data\061323_1633_S6Q288\6Q19302.d

Data File: 6Q19304
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.026	20.5	120.5
13C2-6:2FTS	5.000	5.860	17.2	117.2
13C2-8:2FTS	5.000	5.924	18.5	118.5
13C2-PFDoDA	1.250	1.272	1.8	101.8
13C2-PFTeDA	1.250	1.236	-1.1	98.9
13C3-PFBS	2.500	2.557	2.3	102.3
13C3-PFHxS	2.500	2.560	2.4	102.4
13C4-PFBA	10.000	10.040	0.4	100.4
13C4-PFHpA	2.500	2.662	6.5	106.5
13C5-PFHxA	2.500	2.758	10.3	110.3
13C5-PFPeA	5.000	5.322	6.4	106.4
13C6-PFDA	1.250	1.272	1.8	101.8
13C7-PFUnDA	1.250	1.285	2.8	102.8
13C8-FOSA	2.500	2.424	-3.1	96.9
13C8-PFOA	2.500	2.503	0.1	100.1
13C8-PFOS	2.500	2.548	1.9	101.9
13C9-PFNA	1.250	1.239	-0.9	99.1
4:2FTS	9.375	9.637	2.8	102.8
6:2FTS	9.500	8.953	-5.8	94.2
8:2FTS	9.600	9.132	-4.9	95.1
d3-MeFOSAA	5.000	4.778	-4.4	95.6
EtFOSAA	2.500	2.580	3.2	103.2
FOSA	2.500	2.478	-0.9	99.1
MeFOSAA	2.500	2.657	6.3	106.3
PFBA	10.000	9.897	-1.0	99.0
PFBS	2.218	2.271	2.4	102.4
PFDA	2.500	2.468	-1.3	98.7
PFDoDA	2.500	2.461	-1.6	98.4
PFDS	2.413	2.315	-4.1	95.9
PFHpA	2.500	2.436	-2.6	97.4
PFHpS	2.383	2.171	-8.9	91.1
PFHxA	2.500	2.412	-3.5	96.5
PFHxS	2.285	2.322	1.6	101.6
PFNA	2.500	2.392	-4.3	95.7
PFNS	2.405	2.350	-2.3	97.7
PFOA	2.500	2.398	-4.1	95.9
PFOS	2.320	2.231	-3.8	96.2

Initial Calibration Verification

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICV288
 Lab FileID: 6Q19304.D

PFPeA	5.000	4.954	-0.9	99.1
PFPeS	2.353	2.293	-2.5	97.5
PFTeDA	2.500	2.651	6.0	106.0
PFTTrDA	2.500	2.350	-6.0	94.0
PFUnDA	2.500	2.434	-2.6	97.4
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	4.725	4.672	-1.1	98.9
13C3-HFPO-DA	10.000	10.404	4.0	104.0
9C1-PF3ONS	4.675	4.717	0.9	100.9
ADONA	4.725	4.569	-3.3	96.7
HFPO-DA	5.000	4.990	-0.2	99.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.041	-3.5	96.5
5:3FTCA	62.400	56.633	-9.2	90.8
7:3FTCA	62.400	61.492	-1.5	98.5
d3-MeFOSA	2.500	2.406	-3.7	96.3
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.880	-2.4	97.6
EtFOSE	12.500	12.941	3.5	103.5
MeFOSA	5.000	4.972	-0.6	99.4
MeFOSE	12.500	12.195	-2.4	97.6
PFDoDS	2.425	2.288	-5.6	94.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.788	-4.2	95.8
d7-MeFOSE	25.000	25.069	0.3	100.3
d9-EtFOSE	25.000	24.296	-2.8	97.2
d5-EtFOSA	2.500	2.493	-0.3	99.7
NFDHA	5.000	4.912	-1.8	98.2
PFMBA	5.000	5.009	0.2	100.2
PFMPA	5.000	4.918	-1.6	98.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.522	1.6	101.6

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICV288
 Lab FileID: 6Q19305.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\061323_1633_S6Q288\s6q288.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\061323_1633_S6Q288\6Q19295.d
 2:D:\MassHunter\Data\061323_1633_S6Q288\6Q19296.d
 3:D:\MassHunter\Data\061323_1633_S6Q288\6Q19297.d
 4:D:\MassHunter\Data\061323_1633_S6Q288\6Q19298.d
 5:D:\MassHunter\Data\061323_1633_S6Q288\6Q19299.d
 6:D:\MassHunter\Data\061323_1633_S6Q288\6Q19300.d
 7:D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d
 8:D:\MassHunter\Data\061323_1633_S6Q288\6Q19302.d

Data File: 6Q19305
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.731	14.6	114.6
13C2-6:2FTS	5.000	5.612	12.2	112.2
13C2-8:2FTS	5.000	5.234	4.7	104.7
13C2-PFDoDA	1.250	1.288	3.0	103.0
13C2-PFTeDA	1.250	1.214	-2.9	97.1
13C3-PFBS	2.500	2.743	9.7	109.7
13C3-PFHxS	2.500	2.649	5.9	105.9
13C4-PFBA	10.000	9.958	-0.4	99.6
13C4-PFHpA	2.500	2.613	4.5	104.5
13C5-PFHxA	2.500	2.697	7.9	107.9
13C5-PFPeA	5.000	5.311	6.2	106.2
13C6-PFDA	1.250	1.266	1.3	101.3
13C7-PFUnDA	1.250	1.245	-0.4	99.6
13C8-FOSA	2.500	2.422	-3.1	96.9
13C8-PFOA	2.500	2.292	-8.3	91.7
13C8-PFOS	2.500	2.563	2.5	102.5
13C9-PFNA	1.250	1.392	11.3	111.3
4:2FTS	20.000	21.171	5.9	105.9
6:2FTS	20.000	21.083	5.4	105.4
8:2FTS	20.000	23.139	15.7	115.7
d3-MeFOSAA	5.000	4.602	-8.0	92.0
EtFOSAA	20.000	19.408	-3.0	97.0
FOSA	20.000	20.248	1.2	101.2
MeFOSAA	20.000	22.276	11.4	111.4
PFBA	20.000	20.330	1.6	101.6
PFBS	20.000	20.960	4.8	104.8
PFDA	20.000	20.468	2.3	102.3
PFDoDA	20.000	17.722	-11.4	88.6
PFDS	20.000	20.333	1.7	101.7
PFHpA	20.000	20.522	2.6	102.6
PFHpS	20.000	19.727	-1.4	98.6
PFHxA	20.000	20.090	0.4	100.4
PFHxS	20.000	21.862	9.3	109.3
PFNA	20.000	19.497	-2.5	97.5
PFNS	20.000	21.102	5.5	105.5
PFOA	20.000	19.576	-2.1	97.9
PFOS	20.000	17.275	-13.6	86.4

Initial Calibration Verification

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q288-ICV288
 Lab FileID: 6Q19305.D

PFPeA	20.000	21.388	6.9	106.9
PFPeS	20.000	21.716	8.6	108.6
PFTeDA	20.000	21.949	9.7	109.7
PFTrDA	20.000	15.865	-20.7	79.3
PFUnDA	20.000	20.239	1.2	101.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	20.689	3.4	103.4
13C3-HFPO-DA	10.000	10.566	5.7	105.7
9C1-PF3ONS	20.000	19.994	0.0	100.0
ADONA	20.000	18.483	-7.6	92.4
HFPO-DA	20.000	20.895	4.5	104.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	20.003	0.0	100.0
5:3FTCA	20.000	20.892	4.5	104.5
7:3FTCA	20.000	20.709	3.5	103.5
d3-MeFOSA	2.500	2.580	3.2	103.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	20.300	1.5	101.5
EtFOSE	100.000	113.865	13.9	113.9
MeFOSA	20.000	18.484	-7.6	92.4
MeFOSE	100.000	103.084	3.1	103.1
PFDoDS	20.000	18.616	-6.9	93.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.366	7.3	107.3
d7-MeFOSE	25.000	25.726	2.9	102.9
d9-EtFOSE	25.000	23.849	-4.6	95.4
d5-EtFOSA	2.500	2.473	-1.1	98.9
NFDHA	20.000	20.647	3.2	103.2
PFMBA	20.000	20.529	2.6	102.6
PFMPA	20.000	20.587	2.9	102.9
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	17.336	-13.3	86.7

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q293-CC288
 Lab FileID: 6Q19669.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\062123_1633_S6Q293\s6q293.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\061323_1633_S6Q288\6Q19295.d
 2:D:\MassHunter\Data\061323_1633_S6Q288\6Q19296.d
 3:D:\MassHunter\Data\061323_1633_S6Q288\6Q19297.d
 4:D:\MassHunter\Data\061323_1633_S6Q288\6Q19298.d
 5:D:\MassHunter\Data\061323_1633_S6Q288\6Q19299.d
 6:D:\MassHunter\Data\061323_1633_S6Q288\6Q19300.d
 7:D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d
 8:D:\MassHunter\Data\061323_1633_S6Q288\6Q19302.d

Data File: 6Q19669
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.711	14.2	114.2
13C2-6:2FTS	5.000	5.383	7.7	107.7
13C2-8:2FTS	5.000	4.912	-1.8	98.2
13C2-PFDoDA	1.250	1.252	0.2	100.2
13C2-PFTeDA	1.250	1.143	-8.5	91.5
13C3-PFBS	2.500	2.589	3.5	103.5
13C3-PFHxS	2.500	2.752	10.1	110.1
13C4-PFBA	10.000	10.041	0.4	100.4
13C4-PFHpA	2.500	2.477	-0.9	99.1
13C5-PFHxA	2.500	2.516	0.6	100.6
13C5-PFPeA	5.000	5.340	6.8	106.8
13C6-PFDA	1.250	1.267	1.4	101.4
13C7-PFUnDA	1.250	1.264	1.1	101.1
13C8-FOSA	2.500	2.488	-0.5	99.5
13C8-PFOA	2.500	2.524	1.0	101.0
13C8-PFOS	2.500	2.520	0.8	100.8
13C9-PFNA	1.250	1.311	4.9	104.9
4:2FTS	9.375	9.352	-0.2	99.8
6:2FTS	9.500	9.346	-1.6	98.4
8:2FTS	9.600	11.170	16.4	116.4
d3-MeFOSAA	5.000	4.846	-3.1	96.9
EtFOSAA	2.500	2.462	-1.5	98.5
FOSA	2.500	2.510	0.4	100.4
MeFOSAA	2.500	2.566	2.6	102.6
PFBA	10.000	9.610	-3.9	96.1
PFBS	2.218	2.131	-3.9	96.1
PFDA	2.500	2.480	-0.8	99.2
PFDoDA	2.500	2.299	-8.0	92.0
PFDS	2.413	2.207	-8.5	91.5
PFHpA	2.500	2.611	4.4	104.4
PFHpS	2.383	2.170	-8.9	91.1
PFHxA	2.500	2.507	0.3	100.3
PFHxS	2.285	2.042	-10.7	89.3
PFNA	2.500	2.517	0.7	100.7
PFNS	2.405	2.319	-3.6	96.4
PFOA	2.500	2.399	-4.1	95.9
PFOS	2.320	2.155	-7.1	92.9

Continuing Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q293-CC288
 Lab FileID: 6Q19669.D

PFPeA	5.000	4.942	-1.2	98.8
PFPeS	2.353	2.112	-10.2	89.8
PFTeDA	2.500	2.543	1.7	101.7
PFTrDA	2.500	2.219	-11.2	88.8
PFUnDA	2.500	2.435	-2.6	97.4
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	4.725	4.698	-0.6	99.4
13C3-HFPO-DA	10.000	9.380	-6.2	93.8
9C1-PF3ONS	4.675	4.961	6.1	106.1
ADONA	4.725	5.113	8.2	108.2
HFPO-DA	5.000	5.567	11.3	111.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.385	-8.8	91.2
5:3FTCA	62.400	60.689	-2.7	97.3
7:3FTCA	62.400	64.808	3.9	103.9
d3-MeFOSA	2.500	2.511	0.4	100.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.067	1.3	101.3
EtFOSE	12.500	11.877	-5.0	95.0
MeFOSA	5.000	4.765	-4.7	95.3
MeFOSE	12.500	12.251	-2.0	98.0
PFDoDS	2.425	2.115	-12.8	87.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.707	-5.9	94.1
d7-MeFOSE	25.000	19.706	-21.2	78.8
d9-EtFOSE	25.000	20.571	-17.7	82.3
d5-EtFOSA	2.500	2.484	-0.6	99.4
NFDHA	5.000	4.852	-3.0	97.0
PFMBA	5.000	4.935	-1.3	98.7
PFMPA	5.000	5.027	0.5	100.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.624	3.9	103.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q293-CC288
 Lab FileID: 6Q19670.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\062123_1633_S6Q293\s6q293.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\061323_1633_S6Q288\6Q19295.d
 2:D:\MassHunter\Data\061323_1633_S6Q288\6Q19296.d
 3:D:\MassHunter\Data\061323_1633_S6Q288\6Q19297.d
 4:D:\MassHunter\Data\061323_1633_S6Q288\6Q19298.d
 5:D:\MassHunter\Data\061323_1633_S6Q288\6Q19299.d
 6:D:\MassHunter\Data\061323_1633_S6Q288\6Q19300.d
 7:D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d
 8:D:\MassHunter\Data\061323_1633_S6Q288\6Q19302.d

Data File: 6Q19670
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.915	18.3	118.3
13C2-6:2FTS	5.000	5.647	12.9	112.9
13C2-8:2FTS	5.000	5.530	10.6	110.6
13C2-PFDoDA	1.250	1.113	-10.9	89.1
13C2-PFTeDA	1.250	1.040	-16.8	83.2
13C3-PFBS	2.500	2.484	-0.6	99.4
13C3-PFHxS	2.500	2.578	3.1	103.1
13C4-PFBA	10.000	10.118	1.2	101.2
13C4-PFHpA	2.500	2.511	0.4	100.4
13C5-PFHxA	2.500	2.563	2.5	102.5
13C5-PFPeA	5.000	5.427	8.5	108.5
13C6-PFDA	1.250	1.229	-1.6	98.4
13C7-PFUnDA	1.250	1.153	-7.8	92.2
13C8-FOSA	2.500	2.443	-2.3	97.7
13C8-PFOA	2.500	2.499	0.0	100.0
13C8-PFOS	2.500	2.337	-6.5	93.5
13C9-PFNA	1.250	1.346	7.7	107.7
4:2FTS	0.750	0.667	-11.1	88.9
6:2FTS	0.760	0.711	-6.5	93.5
8:2FTS	0.768	0.709	-7.7	92.3
d3-MeFOSAA	5.000	4.972	-0.6	99.4
EtFOSAA	0.200	0.199	-0.3	99.7
FOSA	0.200	0.211	5.4	105.4
MeFOSAA	0.200	0.160	-20.0	80.0
PFBA	0.800	0.689	-13.9	86.1
PFBS	0.177	0.152	-14.1	85.9
PFDA	0.200	0.190	-4.9	95.1
PFDoDA	0.200	0.207	3.5	103.5
PFDS	0.193	0.168	-13.1	86.9
PFHpA	0.200	0.188	-6.1	93.9
PFHpS	0.191	0.196	2.4	102.4
PFHxA	0.200	0.174	-13.0	87.0
PFHxS	0.183	0.155	-15.0	85.0
PFNA	0.200	0.173	-13.6	86.4
PFNS	0.192	0.186	-3.3	96.7
PFOA	0.200	0.190	-5.0	95.0
PFOS	0.186	0.205	10.3	110.3

Continuing Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q293-CC288
 Lab FileID: 6Q19670.D

PFPeA	0.400	0.360	-10.1	89.9
PFPeS	0.188	0.153	-18.8	81.2
PFTeDA	0.200	0.193	-3.6	96.4
PFTTrDA	0.200	0.175	-12.7	87.3
PFUnDA	0.200	0.187	-6.7	93.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.321	-15.1	84.9
13C3-HFPO-DA	10.000	9.517	-4.8	95.2
9C1-PF3ONS	0.367	0.342	-6.8	93.2
ADONA	0.378	0.363	-4.1	95.9
HFPO-DA	0.400	0.386	-3.6	96.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.983	-1.5	98.5
5:3FTCA	4.992	5.683	13.9	113.9
7:3FTCA	4.992	6.245	25.1	125.1
d3-MeFOSA	2.500	2.420	-3.2	96.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.358	-10.6	89.4
EtFOSE	1.000	0.941	-5.9	94.1
MeFOSA	0.400	0.362	-9.6	90.4
MeFOSE	1.000	0.782	-21.8	78.2
PFDoDS	0.194	0.191	-1.6	98.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.856	-2.9	97.1
d7-MeFOSE	25.000	21.939	-12.2	87.8
d9-EtFOSE	25.000	19.699	-21.2	78.8
d5-EtFOSA	2.500	2.527	1.1	101.1
NFDHA	0.400	0.332	-17.0	83.0
PFMBA	0.400	0.332	-16.9	83.1
PFMPA	0.400	0.350	-12.4	87.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.296	-16.8	83.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q293-CC288
 Lab FileID: 6Q19681.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\062123_1633_S6Q293\s6q293.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\061323_1633_S6Q288\6Q19295.d
 2:D:\MassHunter\Data\061323_1633_S6Q288\6Q19296.d
 3:D:\MassHunter\Data\061323_1633_S6Q288\6Q19297.d
 4:D:\MassHunter\Data\061323_1633_S6Q288\6Q19298.d
 5:D:\MassHunter\Data\061323_1633_S6Q288\6Q19299.d
 6:D:\MassHunter\Data\061323_1633_S6Q288\6Q19300.d
 7:D:\MassHunter\Data\061323_1633_S6Q288\6Q19301.d
 8:D:\MassHunter\Data\061323_1633_S6Q288\6Q19302.d

Data File: 6Q19681
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.623	12.5	112.5
13C2-6:2FTS	5.000	5.248	5.0	105.0
13C2-8:2FTS	5.000	5.084	1.7	101.7
13C2-PFDoDA	1.250	1.244	-0.5	99.5
13C2-PFTeDA	1.250	1.077	-13.8	86.2
13C3-PFBS	2.500	2.631	5.2	105.2
13C3-PFHxS	2.500	2.538	1.5	101.5
13C4-PFBA	10.000	9.969	-0.3	99.7
13C4-PFHpA	2.500	2.433	-2.7	97.3
13C5-PFHxA	2.500	2.534	1.4	101.4
13C5-PFPeA	5.000	5.366	7.3	107.3
13C6-PFDA	1.250	1.263	1.1	101.1
13C7-PFUnDA	1.250	1.150	-8.0	92.0
13C8-FOSA	2.500	2.115	-15.4	84.6
13C8-PFOA	2.500	2.703	8.1	108.1
13C8-PFOS	2.500	2.361	-5.6	94.4
13C9-PFNA	1.250	1.231	-1.5	98.5
4:2FTS	9.375	9.334	-0.4	99.6
6:2FTS	9.500	10.624	11.8	111.8
8:2FTS	9.600	10.063	4.8	104.8
d3-MeFOSAA	5.000	4.361	-12.8	87.2
EtFOSAA	2.500	2.520	0.8	100.8
FOSA	2.500	2.515	0.6	100.6
MeFOSAA	2.500	2.539	1.6	101.6
PFBA	10.000	9.842	-1.6	98.4
PFBS	2.218	2.205	-0.6	99.4
PFDA	2.500	2.408	-3.7	96.3
PFDoDA	2.500	2.287	-8.5	91.5
PFDS	2.413	2.108	-12.6	87.4
PFHpA	2.500	2.514	0.6	100.6
PFHpS	2.383	2.193	-8.0	92.0
PFHxA	2.500	2.452	-1.9	98.1
PFHxS	2.285	2.111	-7.6	92.4
PFNA	2.500	2.374	-5.0	95.0
PFNS	2.405	2.191	-8.9	91.1
PFOA	2.500	2.377	-4.9	95.1
PFOS	2.320	2.118	-8.7	91.3

Continuing Calibration Summary

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q293-CC288
 Lab FileID: 6Q19681.D

PFPeA	5.000	4.908	-1.8	98.2
PFPeS	2.353	2.387	1.4	101.4
PFTeDA	2.500	2.572	2.9	102.9
PFTTrDA	2.500	2.353	-5.9	94.1
PFUnDA	2.500	2.782	11.3	111.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.147	-12.2	87.8
13C3-HFPO-DA	10.000	9.959	-0.4	99.6
9C1-PF3ONS	4.675	4.502	-3.7	96.3
ADONA	4.725	4.860	2.9	102.9
HFPO-DA	5.000	5.167	3.3	103.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.181	-10.4	89.6
5:3FTCA	62.400	59.660	-4.4	95.6
7:3FTCA	62.400	65.697	5.3	105.3
d3-MeFOSA	2.500	2.195	-12.2	87.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.806	-3.9	96.1
EtFOSE	12.500	12.211	-2.3	97.7
MeFOSA	5.000	4.723	-5.5	94.5
MeFOSE	12.500	12.146	-2.8	97.2
PFDoDS	2.425	2.051	-15.4	84.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.151	-17.0	83.0
d7-MeFOSE	25.000	17.653	-29.4	70.6
d9-EtFOSE	25.000	18.362	-26.6	73.4
d5-EtFOSA	2.500	2.315	-7.4	92.6
NFDHA	5.000	5.138	2.8	102.8
PFMBA	5.000	4.883	-2.3	97.7
PFMPA	5.000	5.035	0.7	100.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.732	6.3	106.3

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q288	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
S6Q288-RT	6Q19292.D	06/13/23 10:53	n/a	Retention Time Marker
S6Q288-RT	6Q19293.D	06/13/23 11:07	n/a	Retention Time Marker
S6Q288-IC288	6Q19294.D	06/13/23 11:21	n/a	Mass Calibration Verification
S6Q288-IC288	6Q19295.D	06/13/23 11:35	n/a	Initial cal 1
S6Q288-IC288	6Q19296.D	06/13/23 11:49	n/a	Initial cal 2
S6Q288-IC288	6Q19297.D	06/13/23 12:03	n/a	Initial cal 3
S6Q288-ICC288	6Q19298.D	06/13/23 12:17	n/a	Initial cal 4
S6Q288-IC288	6Q19299.D	06/13/23 12:31	n/a	Initial cal 5
S6Q288-IC288	6Q19300.D	06/13/23 12:45	n/a	Initial cal 6
S6Q288-IC288	6Q19301.D	06/13/23 12:59	n/a	Initial cal 7
S6Q288-IC288	6Q19302.D	06/13/23 13:13	n/a	Initial cal 8
S6Q288-IBLK	6Q19303.D	06/13/23 13:27	n/a	Instrument Blank
S6Q288-IBLK	6Q19303.D	06/13/23 13:27	n/a	Instrument Blank
S6Q288-ICV288	6Q19304.D	06/13/23 13:41	n/a	Initial cal verification 4
S6Q288-ICV288	6Q19305.D	06/13/23 13:55	n/a	Initial cal verification 20
S6Q288-CC288	6Q19306.D	06/13/23 14:09	n/a	Continuing cal 4
S6Q288-CC288	6Q19307.D	06/13/23 14:31	n/a	Continuing cal 1.0LL
OP97303-BS	6Q19308.D	06/13/23 14:45	OP97303	Blank Spike
OP97303-LLBS	6Q19309.D	06/13/23 14:59	OP97303	Blank Spike
OP97303-MB	6Q19310.D	06/13/23 15:13	OP97303	Method Blank
ZZZZZZ	6Q19311.D	06/13/23 15:27	OP97303	(unrelated sample)
ZZZZZZ	6Q19312.D	06/13/23 15:41	OP97303	(unrelated sample)
FC6266-3	6Q19313.D	06/13/23 15:55	OP97303	(used for QC only; not part of job FC6891)
OP97303-MS	6Q19314.D	06/13/23 16:09	OP97303	Matrix Spike
OP97303-MSD	6Q19315.D	06/13/23 16:23	OP97303	Matrix Spike Duplicate
ZZZZZZ	6Q19316.D	06/13/23 16:37	OP97303	(unrelated sample)
ZZZZZZ	6Q19317.D	06/13/23 16:51	OP97303	(unrelated sample)
S6Q288-CC288	6Q19318.D	06/13/23 17:05	n/a	Continuing cal 4
S6Q288-ICCB	6Q19319.D	06/13/23 17:19	n/a	Continuing Calibration Blank
ZZZZZZ	6Q19320.D	06/13/23 17:33	OP97303	(unrelated sample)
ZZZZZZ	6Q19321.D	06/13/23 17:47	OP97303	(unrelated sample)
ZZZZZZ	6Q19324.D	06/13/23 18:28	OP97303	(unrelated sample)
ZZZZZZ	6Q19325.D	06/13/23 18:42	OP97303	(unrelated sample)
S6Q288-ECC288	6Q19326.D	06/13/23 18:56	n/a	Ending cal 4
S6Q288-ICCB	6Q19327.D	06/13/23 19:10	n/a	Continuing Calibration Blank

Run Sequence Report

Job Number: FC6891
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q293	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
S6Q293-RT	6Q19665.D	06/21/23 11:59	n/a	Retention Time Marker
S6Q293-RT	6Q19666.D	06/21/23 12:13	n/a	Retention Time Marker
S6Q293-IBLK	6Q19668.D	06/21/23 12:41	n/a	Instrument Blank
S6Q293-IBLK	6Q19668.D	06/21/23 12:41	n/a	Instrument Blank
S6Q293-CC288	6Q19669.D	06/21/23 12:55	n/a	Continuing cal 4
S6Q293-CC288	6Q19670.D	06/21/23 13:09	n/a	Continuing cal 1.0LL
OP97425-BS	6Q19671.D	06/21/23 13:23	OP97425	Blank Spike
OP97425-LLBS	6Q19672.D	06/21/23 13:36	OP97425	Blank Spike
OP97425-MB	6Q19673.D	06/21/23 13:51	OP97425	Method Blank
ZZZZZZ	6Q19674.D	06/21/23 14:05	OP97425	(unrelated sample)
FC6474-2	6Q19675.D	06/21/23 14:18	OP97425	(used for QC only; not part of job FC6891)
OP97425-MS	6Q19676.D	06/21/23 14:32	OP97425	Matrix Spike
FC6474-3	6Q19677.D	06/21/23 14:46	OP97425	(used for QC only; not part of job FC6891)
OP97425-DUP	6Q19678.D	06/21/23 15:00	OP97425	Duplicate
FC6891-1	6Q19679.D	06/21/23 15:14	OP97425	AF-RHMW02-WGN01LF-2306
FC6891-2	6Q19680.D	06/21/23 15:28	OP97425	AF-RHMW03-WGN01LF-2306
S6Q293-CC288	6Q19681.D	06/21/23 15:42	n/a	Continuing cal 4
S6Q293-ICCB	6Q19682.D	06/21/23 15:56	n/a	Continuing Calibration Blank

MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19679.d
Operator : marthav
Acq. Method : 1633full.m
Acq. Date-Time : 6/21/2023 3:14:53 PM
Sample Name : FC6891-1
Vial : P3-C3
DA Method File : 1633_061323_S6Q288.quantmethod.xml
Batch Name : s6q293.batch.bin
Sample Information : OP97425,S6Q293,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	84042	10.00 µg/L	0.000
M5-PFPeA	4.548	268.3 -> 223.0	43250	5.00 µg/L	-0.012
M5-PFHxA	5.779	318.0 -> 273.0	51430	2.50 µg/L	-0.013
M4-PFHpA	6.707	367.1 -> 322.0	46204	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	72985	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	35774	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	18364	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	26566	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	21178	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	8080	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	23186	2.50 µg/L	0.012
M3-PFBS	5.733	302.1 -> 79.9	17789	2.50 µg/L	-0.013
M3-PFHxS	7.466	402.1 -> 79.9	10689	2.50 µg/L	-0.012
M8-PFOS	8.563	507.1 -> 79.9	9911	2.50 µg/L	0.000
M2-4:2FTS	5.442	329.1 -> 80.9	2424	5.00 µg/L	0.000
M2-6:2FTS	7.100	429.1 -> 80.9	3357	5.00 µg/L	-0.012
M2-8:2FTS	8.163	529.1 -> 80.9	3058	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	25063	5.00 µg/L	-0.012
M3-HFPO-DA	6.156	286.9 -> 168.9	26949	10.00 µg/L	-0.012
M5-EtFOSAA	8.615	589.2 -> 419.0	19086	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	72203	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	100171	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	9100	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	9191	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	13166	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	42473	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	7212	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	72120	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	24817	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	37424	1.25 µg/L	0.000
13C2-PFHxA	5.779	315.1 -> 270.0	42651	2.50 µg/L	-0.013
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2424	5.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.0%		
13C2-6:2FTS	7.100	429.1 -> 80.9	3357	5.14 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3058	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C2-PFDoDA	9.285	615.1 -> 570.0	21178	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C2-PFTeDA	10.000	715.2 -> 670.0	8080	0.87 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.8%		
13C3-PFBS	5.733	302.1 -> 79.9	17789	2.96 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 118.5%		
13C3-PFHxS	7.466	402.1 -> 79.9	10689	2.82 µg/L	-0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.8%	
13C4-PFBA	3.085	216.8 -> 171.9	84042	8.43 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 84.3%	
13C4-PFHpA	6.707	367.1 -> 322.0	46204	2.81 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C5-PFHxA	5.779	318.0 -> 273.0	51430	2.92 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.9%	
13C5-PFPeA	4.548	268.3 -> 223.0	43250	5.36 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.2%	
13C6-PFDA	8.375	519.1 -> 474.1	18364	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C7-PFUnDA	8.853	570.0 -> 525.1	26566	1.39 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C8-FOSA	9.687	506.1 -> 77.8	23186	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.0%	
13C8-PFOA	7.339	421.1 -> 376.0	72985	2.71 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C8-PFOS	8.563	507.1 -> 79.9	9911	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C9-PFNA	7.882	472.1 -> 427.0	35774	1.57 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 125.6%	
d3-MeFOSAA	8.407	573.2 -> 419.0	25063	5.03 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C3-HFPO-DA	6.156	286.9 -> 168.9	26949	9.15 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.5%	
d3-MeFOSA	10.775	515.0 -> 219.0	9191	2.12 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.8%	
d5-EtFOSAA	8.615	589.2 -> 419.0	19086	4.51 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.3%	
d7-MeFOSE	10.696	623.2 -> 58.9	72203	16.34 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 65.4%	
d9-EtFOSE	10.930	639.2 -> 58.9	100171	19.23 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 76.9%	
d5-EtFOSA	10.996	531.1 -> 219.0	9100	2.15 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.1%	

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	3.018	212.8 -> 168.9	14643	4.32 µg/L	100
PFBS	5.450	298.7 -> 79.9	0	µg/L	m 1
		298.7 -> 98.8	0		
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	5.795	449.0 -> 98.9	1420	0.07	µg/L	m
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	43	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	4.563	498.9 -> 98.8	50457	3.95	µg/L	
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	3.709	241.0 -> 177.0	0		µg/L	m
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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



7.1.1
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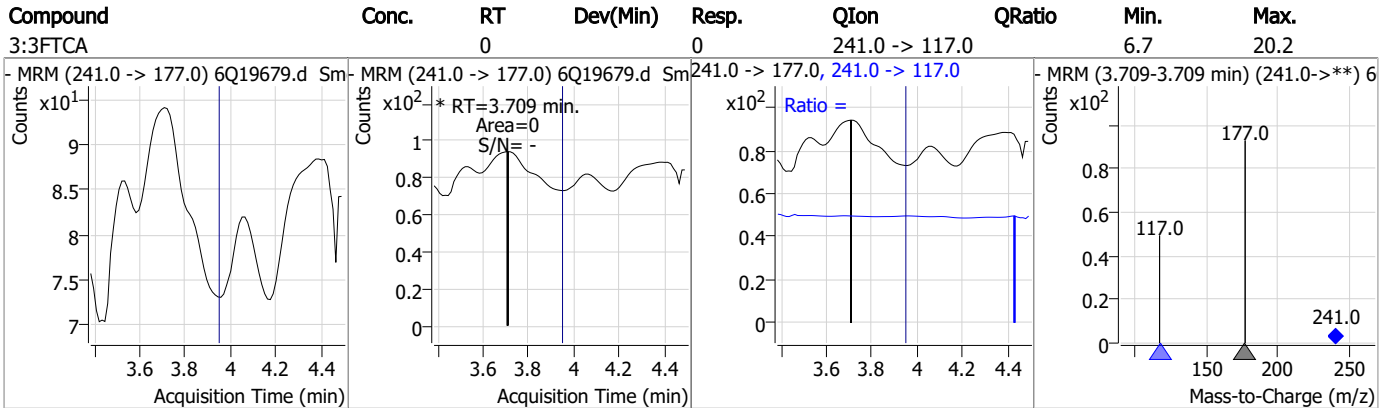
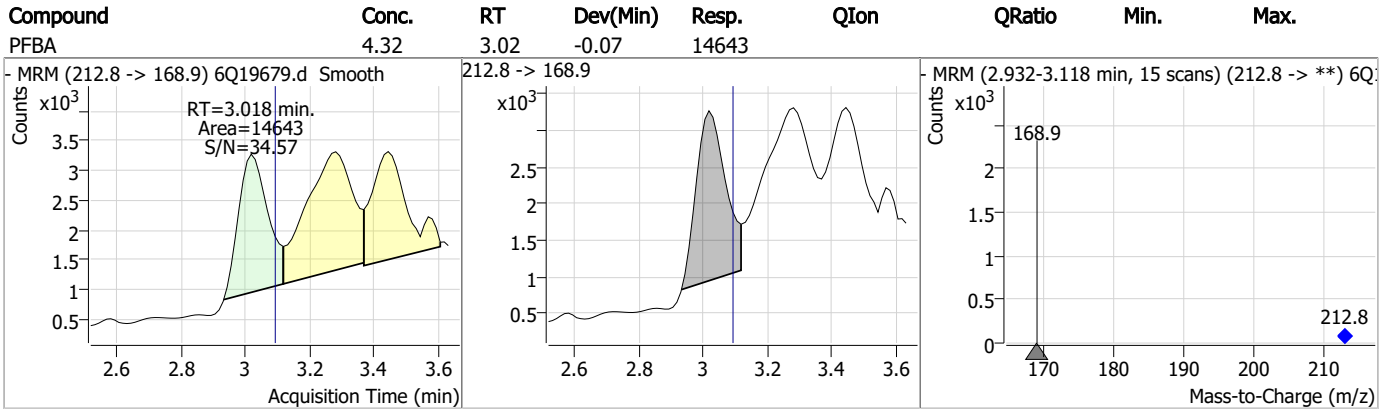
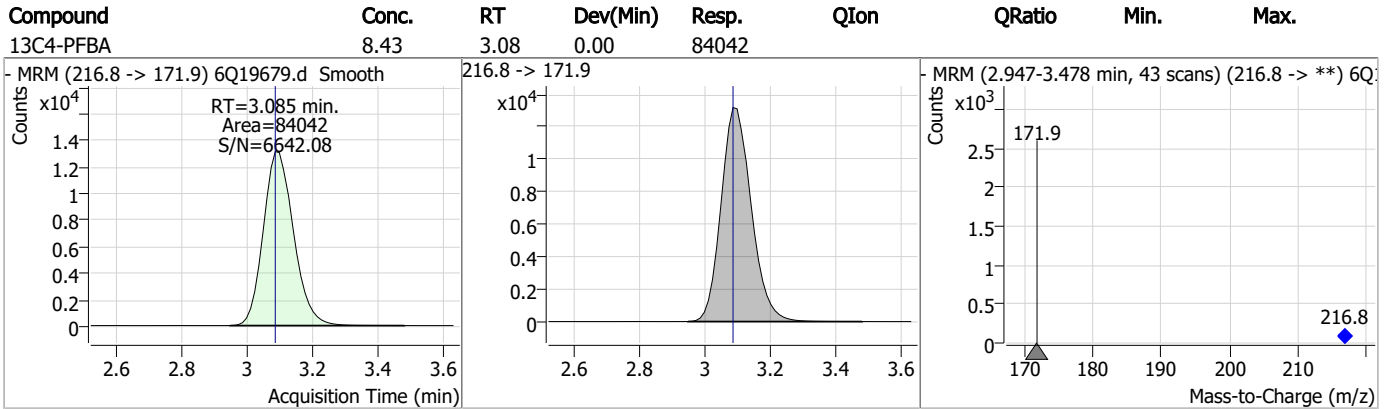
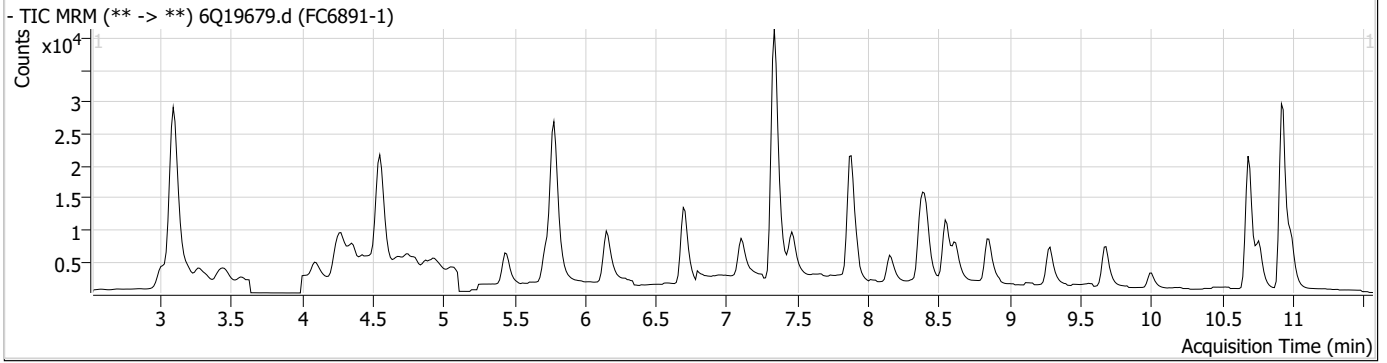
Perfluorinated Compounds by LC/MS/MS

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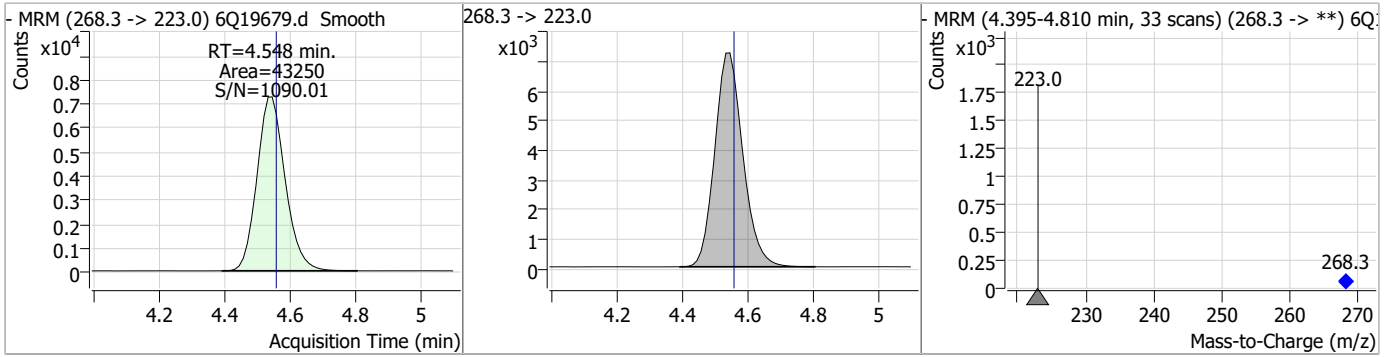


Perfluorinated Compounds by LC/MS/MS

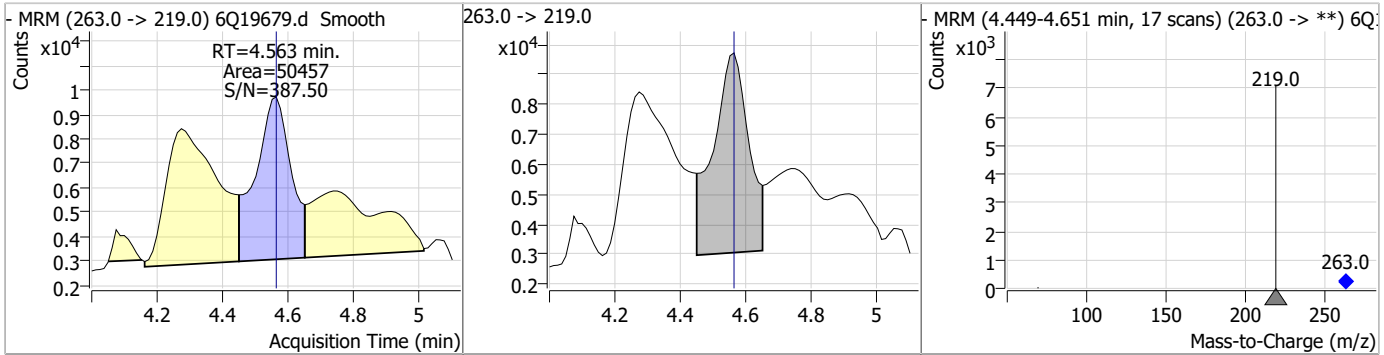


Perfluorinated Compounds by LC/MS/MS

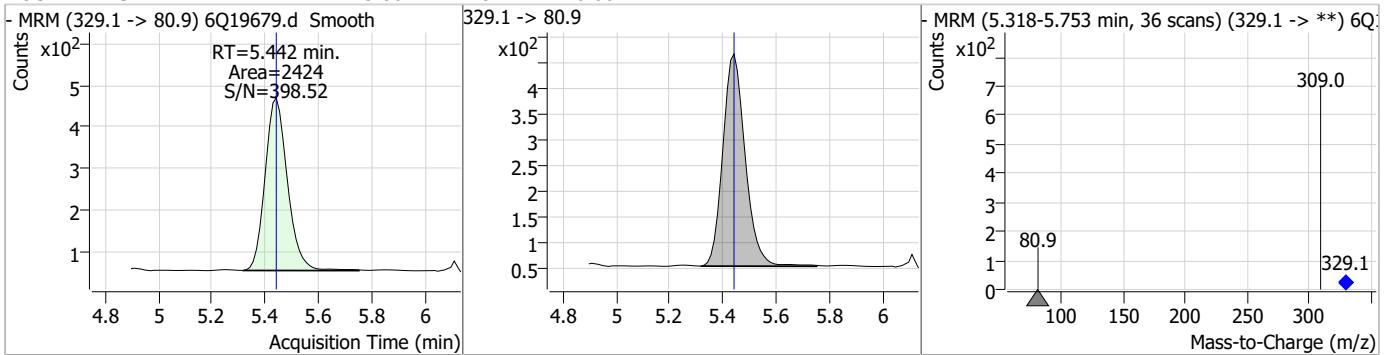
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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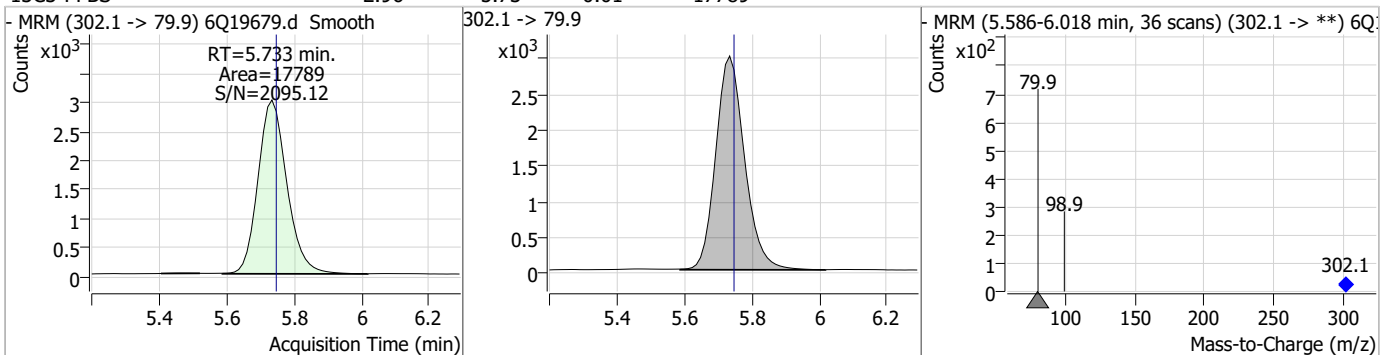
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Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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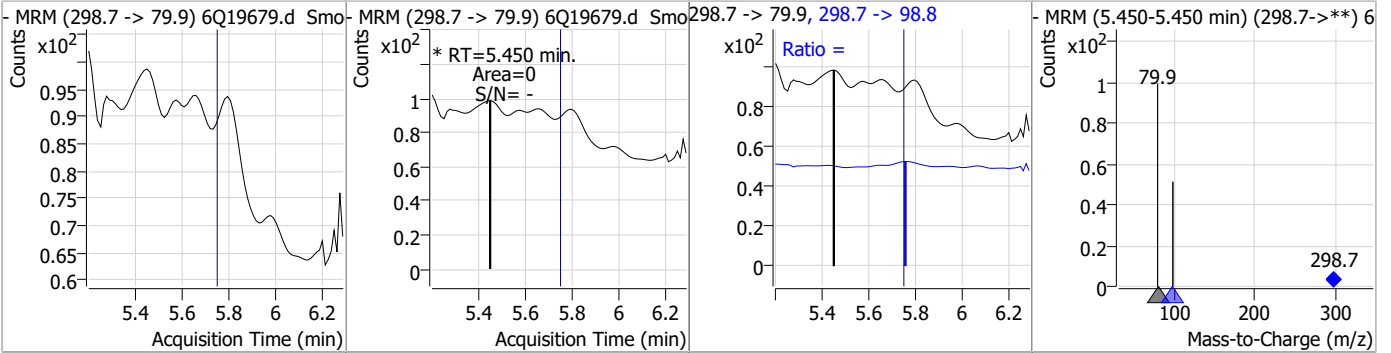
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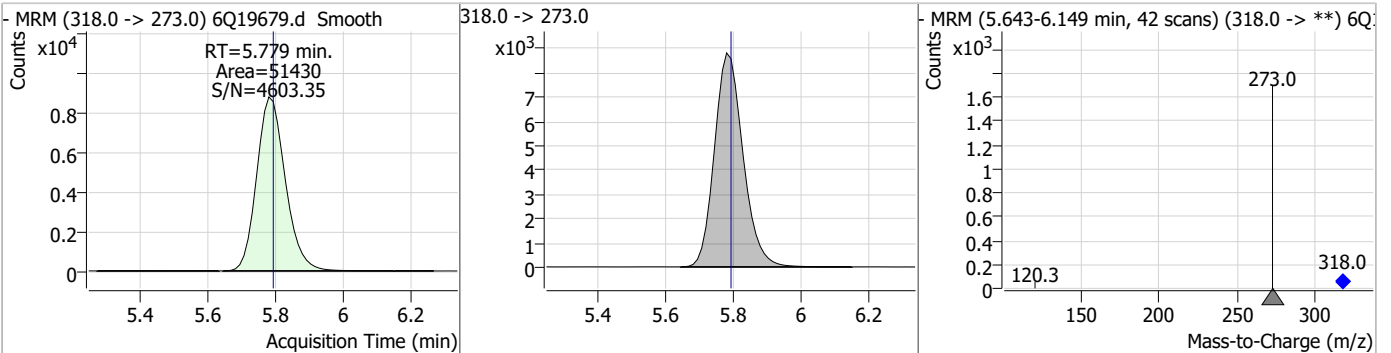
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Perfluorinated Compounds by LC/MS/MS

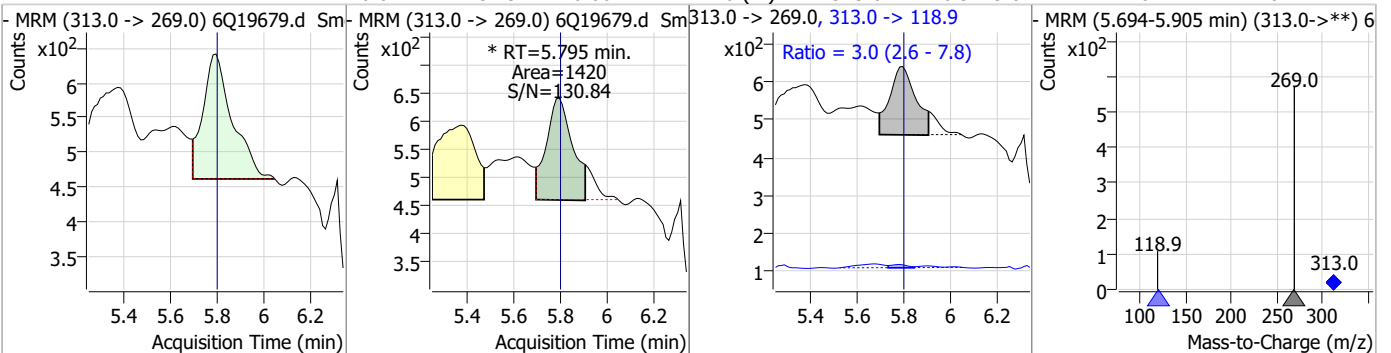
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0	0		0	298.7 -> 98.8		19.0	57.0



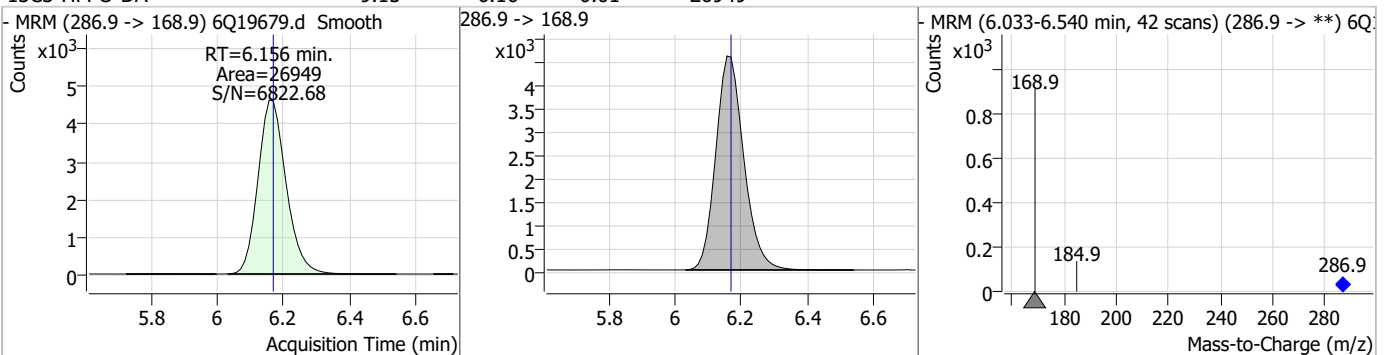
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.92	5.78	-0.01	51430				



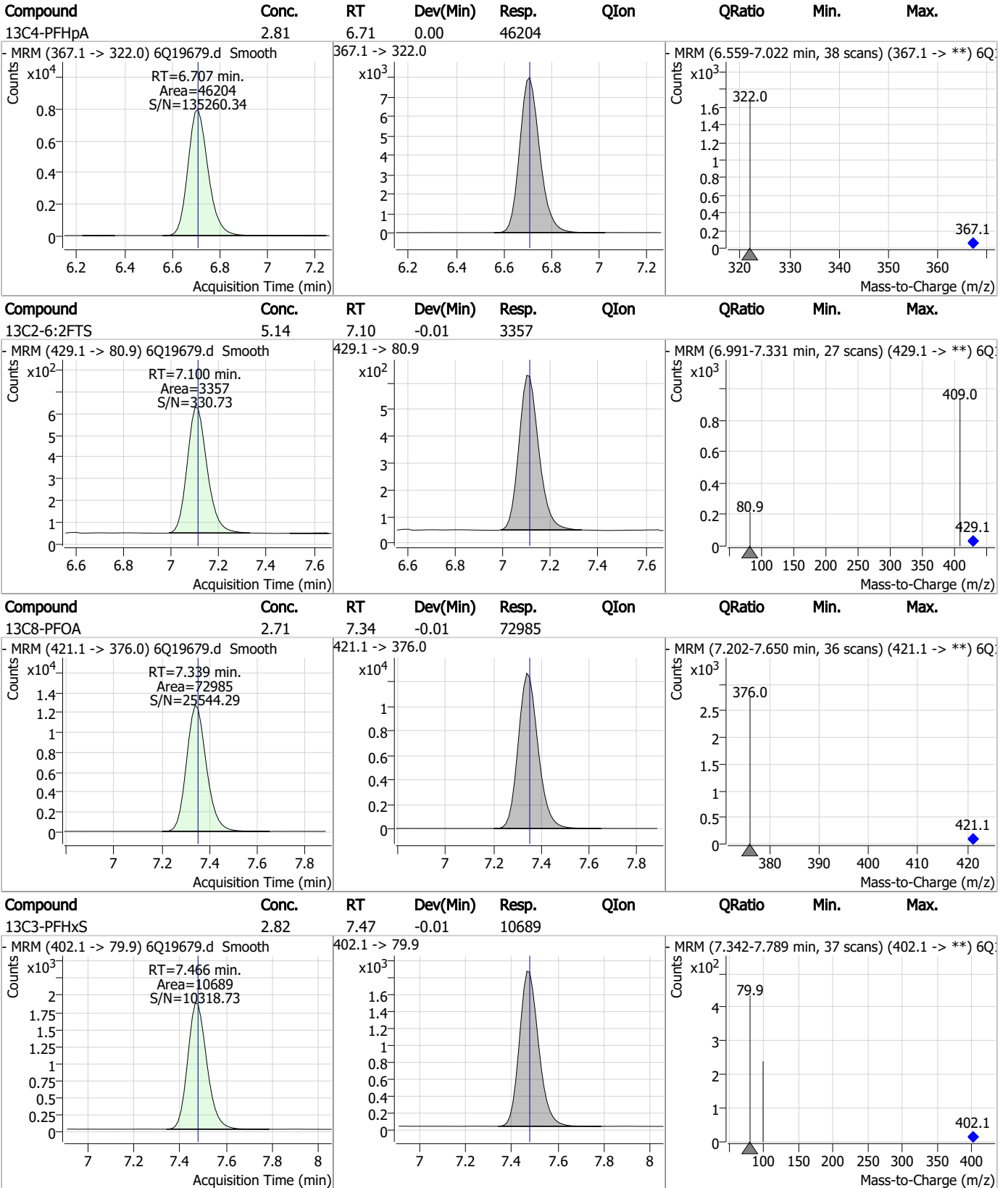
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.07	5.79	0.00	1420 (m)	313.0 -> 118.9	3.0	2.6	7.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.15	6.16	-0.01	26949				



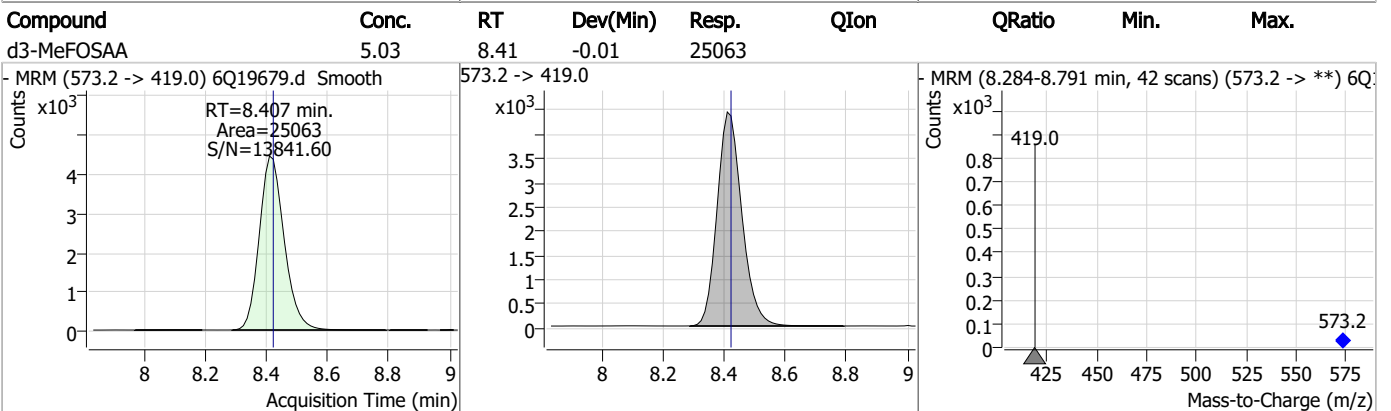
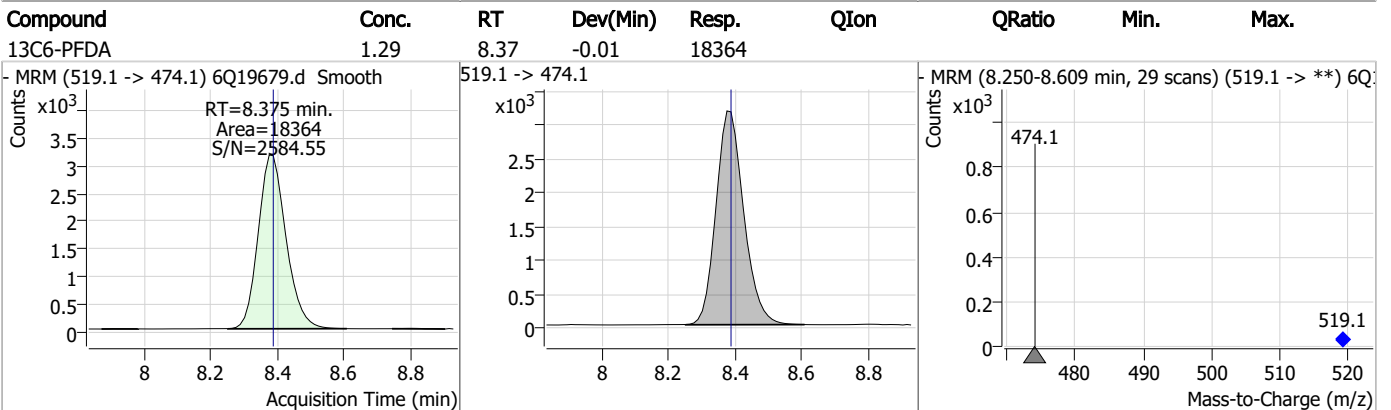
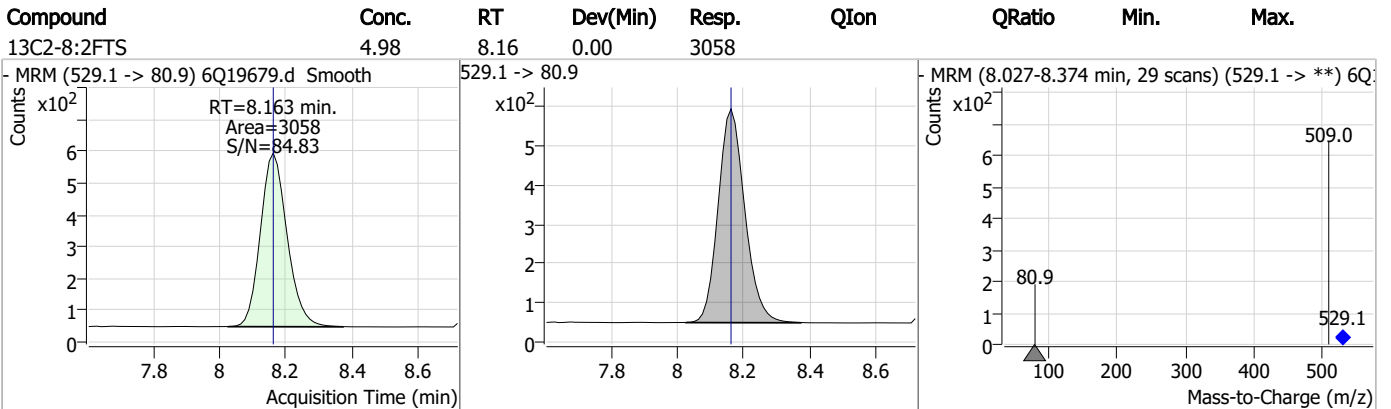
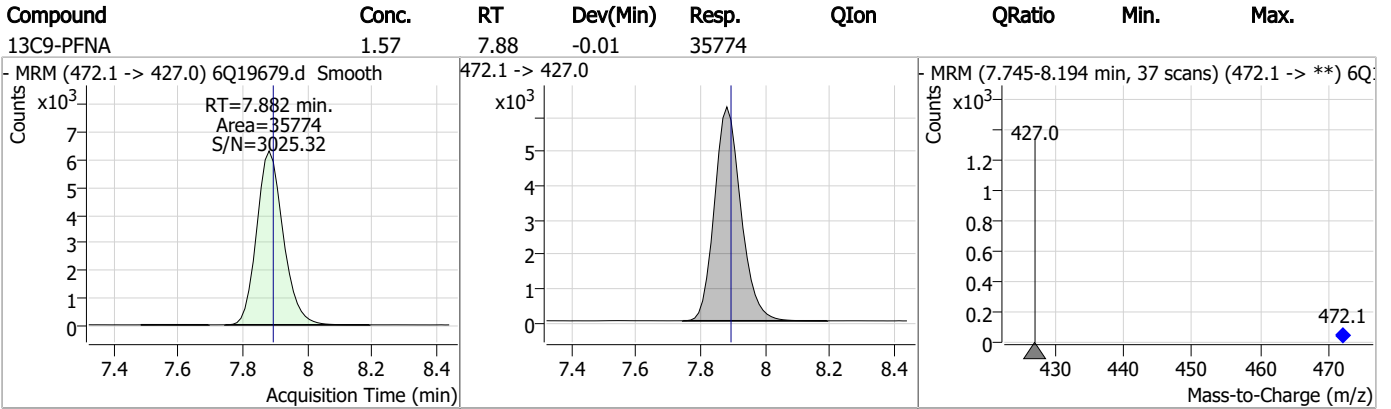
Perfluorinated Compounds by LC/MS/MS



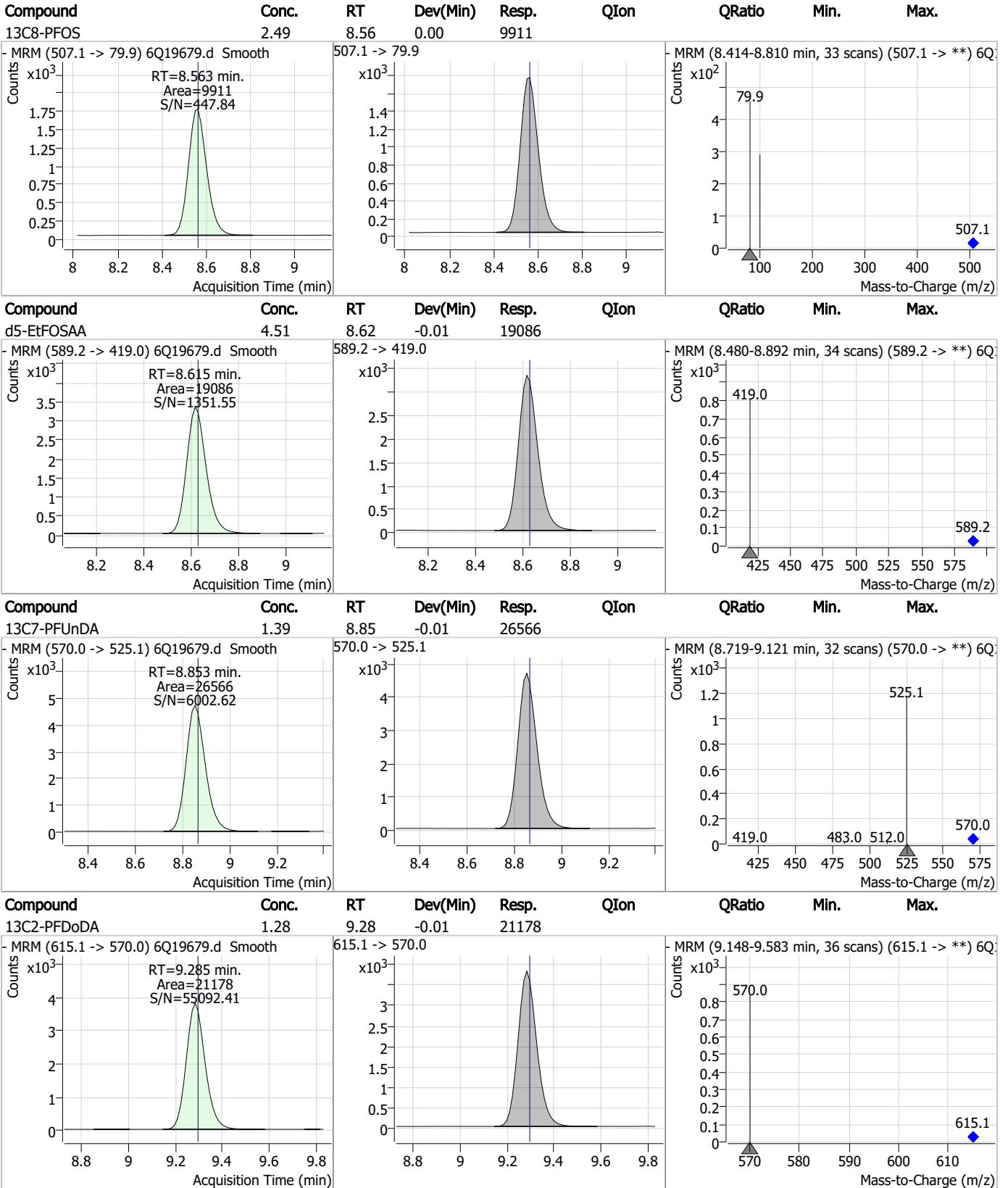
7.1.1

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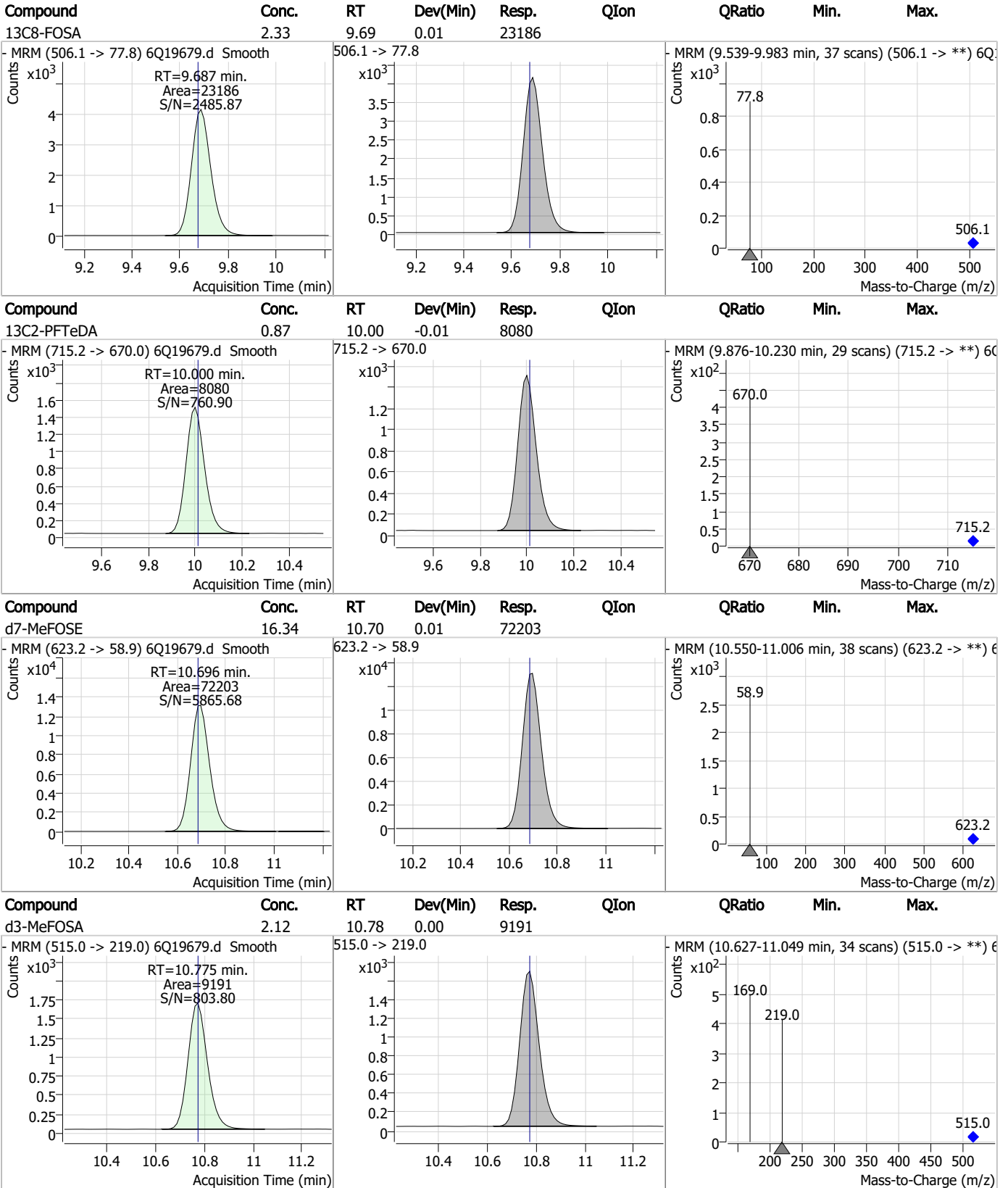
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

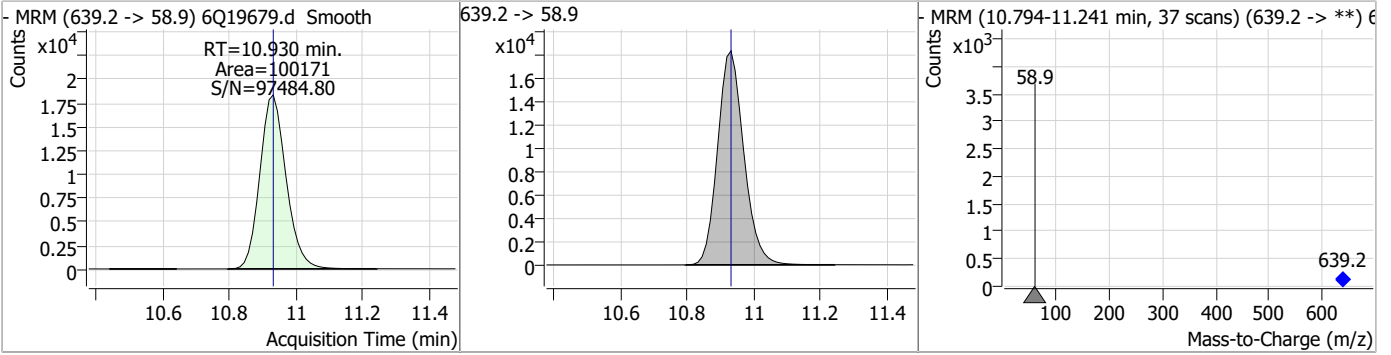


Perfluorinated Compounds by LC/MS/MS

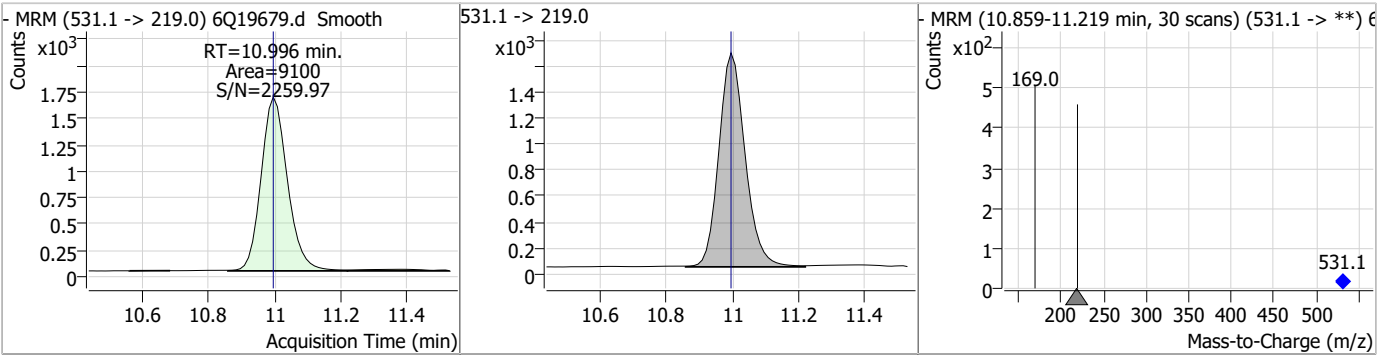


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.23	10.93	0.00	100171				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.15	11.00	0.00	9100				



7.1.1
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Manual Integration Approval Summary

Sample Number: FC6891-1 Method: EPA DRAFT 1633
Lab FileID: 6Q19679.D Analyst approved: 06/21/23 16:17 Martha Valls
Injection Time: 06/21/23 15:14 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanoic acid	307-24-4		5.79	Split peak

7.1.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19680.d
Operator : marthav
Acq. Method : 1633full.m
Acq. Date-Time : 6/21/2023 3:28:51 PM
Sample Name : FC6891-2
Vial : P3-C4
DA Method File : 1633_061323_S6Q288.quantmethod.xml
Batch Name : s6q293.batch.bin
Sample Information : OP97425,S6Q293,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	123805	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	44782	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	49824	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	45223	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	66521	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	31885	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	18469	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	20591	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	18029	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	7707	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	19760	2.50 µg/L	0.012
M3-PFBS	5.746	302.1 -> 79.9	18022	2.50 µg/L	0.000
M3-PFHxS	7.466	402.1 -> 79.9	11247	2.50 µg/L	-0.012
M8-PFOS	8.550	507.1 -> 79.9	9913	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	2200	5.00 µg/L	0.000
M2-6:2FTS	7.100	429.1 -> 80.9	3394	5.00 µg/L	-0.012
M2-8:2FTS	8.163	529.1 -> 80.9	3154	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	24251	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	28506	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	18308	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	63620	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	89515	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	8310	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	8806	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	12131	2.50 µg/L	-0.012
13C3-PFBA	3.101	216.0 -> 172.0	51666	5.00 µg/L	0.012
18O2-PFHxS	7.477	403.0 -> 83.9	7401	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	67039	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	24374	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	35354	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	41292	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.442	329.1 -> 80.9	2200	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-6:2FTS	7.100	429.1 -> 80.9	3394	5.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3154	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-PFDoDA	9.285	615.1 -> 570.0	18029	1.11 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.5%		
13C2-PFTeDA	10.000	715.2 -> 670.0	7707	0.85 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 67.8%		
13C3-PFBS	5.746	302.1 -> 79.9	18022	2.93 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 117.0%		
13C3-PFHxS	7.466	402.1 -> 79.9	11247	2.89 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 = 115.7%	
13C4-PFBA	3.097	216.8 -> 171.9	123805	10.21 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C4-PFHpA	6.707	367.1 -> 322.0	45223	2.84 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.5%	
13C5-PFHxA	5.792	318.0 -> 273.0	49824	2.92 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 117.0%	
13C5-PFPeA	4.560	268.3 -> 223.0	44782	5.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.7%	
13C6-PFDA	8.375	519.1 -> 474.1	18469	1.32 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C7-PFUnDA	8.853	570.0 -> 525.1	20591	1.10 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.9%	
13C8-FOSA	9.687	506.1 -> 77.8	19760	2.15 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.0%	
13C8-PFOA	7.339	421.1 -> 376.0	66521	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C8-PFOS	8.550	507.1 -> 79.9	9913	2.71 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C9-PFNA	7.882	472.1 -> 427.0	31885	1.48 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 118.5%	
d3-MeFOSAA	8.407	573.2 -> 419.0	24251	5.28 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	28506	10.00 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
d3-MeFOSA	10.775	515.0 -> 219.0	8806	2.21 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.2%	
d5-EtFOSAA	8.615	589.2 -> 419.0	18308	4.70 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.0%	
d7-MeFOSE	10.696	623.2 -> 58.9	63620	15.63 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 62.5%	
d9-EtFOSE	10.930	639.2 -> 58.9	89515	18.65 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.6%	
d5-EtFOSA	10.996	531.1 -> 219.0	8310	2.13 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.3%	

7.12
7

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	7.101	427.1 -> 407.0	3030	0.75 µg/L	99
		427.1 -> 80.9	981		
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	5.438	298.7 -> 79.9	0	µg/L m	1
		298.7 -> 98.8	0		
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	6.708	599.0 -> 98.8				
		363.1 -> 319.0	3892	0.16	µg/L	98
PFHpS	-	363.1 -> 169.0	552			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.782	449.0 -> 98.9				
		313.0 -> 269.0	3342	0.17	µg/L	m 97
PFHxS	-	313.0 -> 118.9	142			
		398.7 -> 79.9	-	N.D.		
PFNA	7.883	398.7 -> 98.9				
		463.0 -> 419.0	493	0.02	µg/L	m 98
PFNS	-	463.0 -> 219.0	89			
		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	4.551	498.9 -> 98.8				
		263.0 -> 219.0	4999	0.38	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	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEEESA	-					

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

7.1.2
7

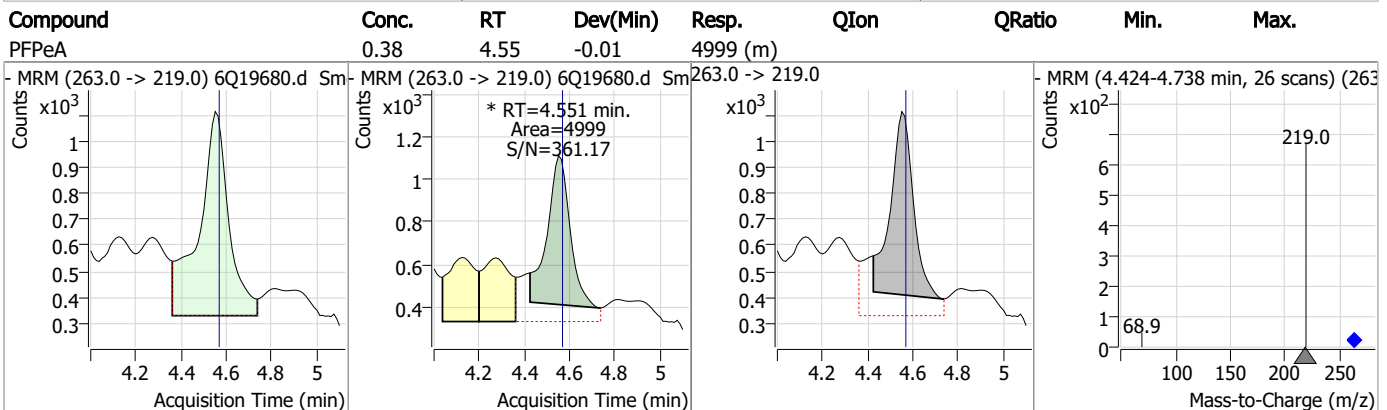
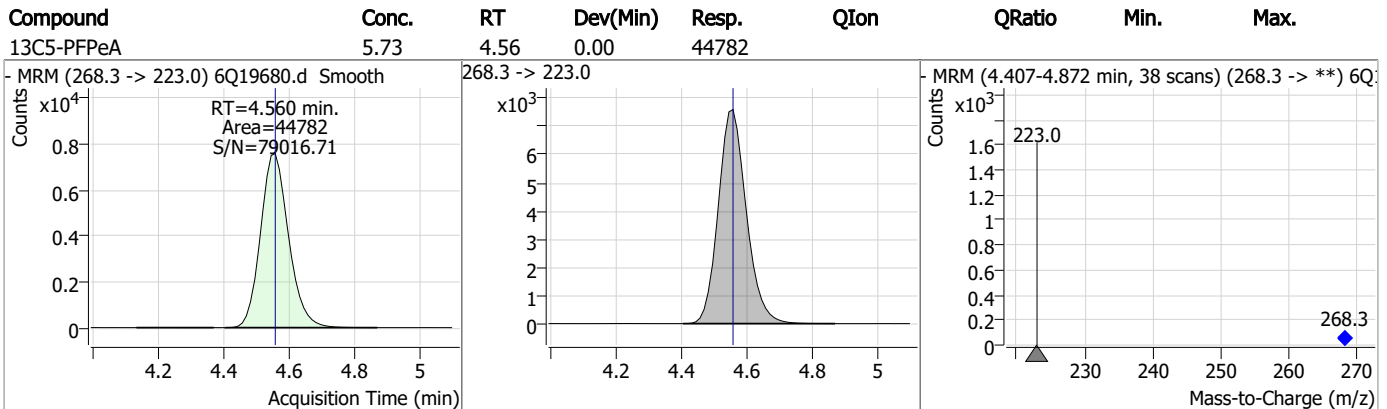
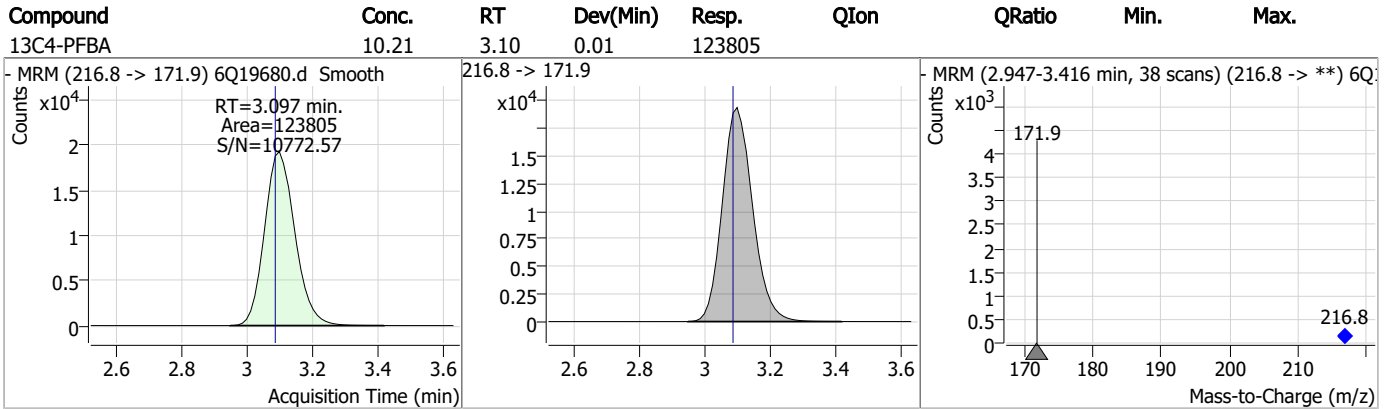
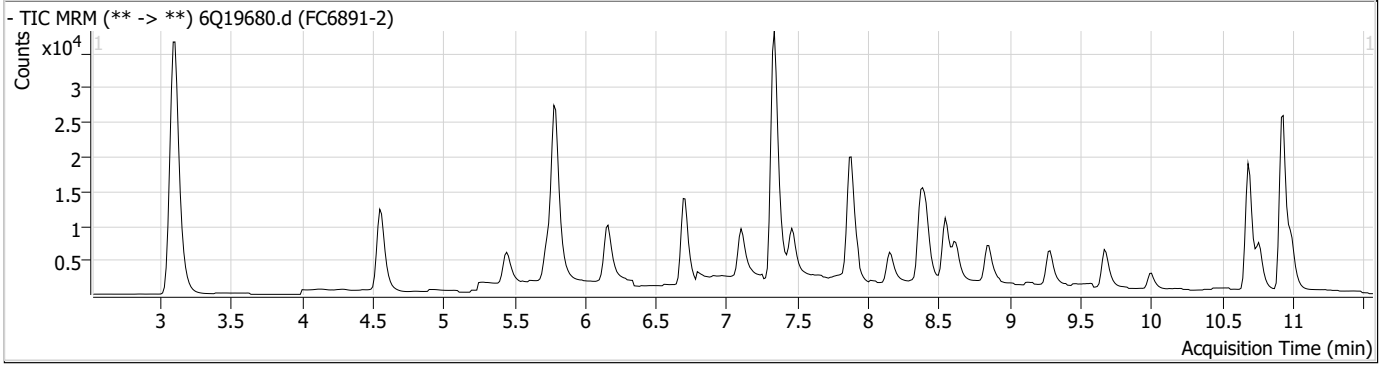
Perfluorinated Compounds by LC/MS/MS

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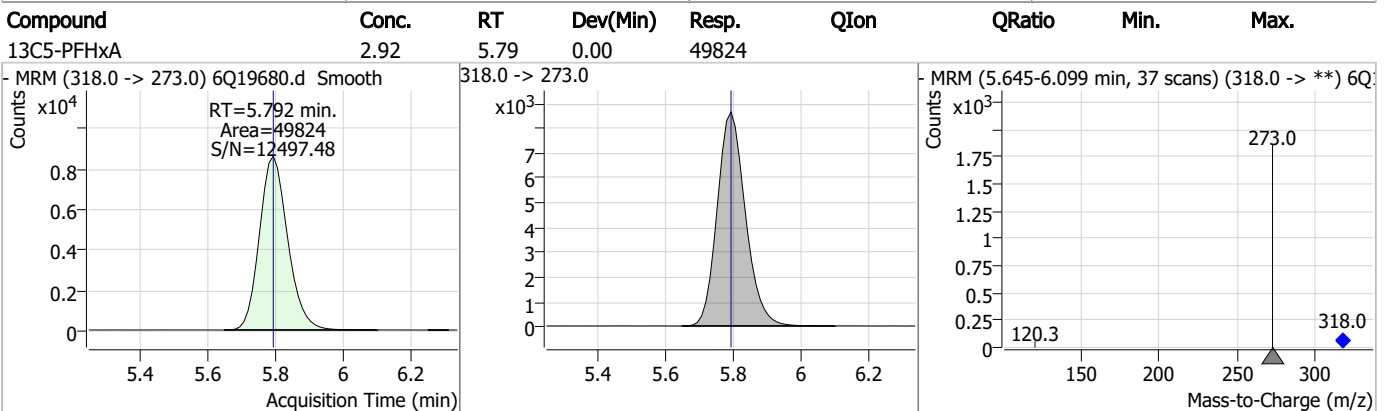
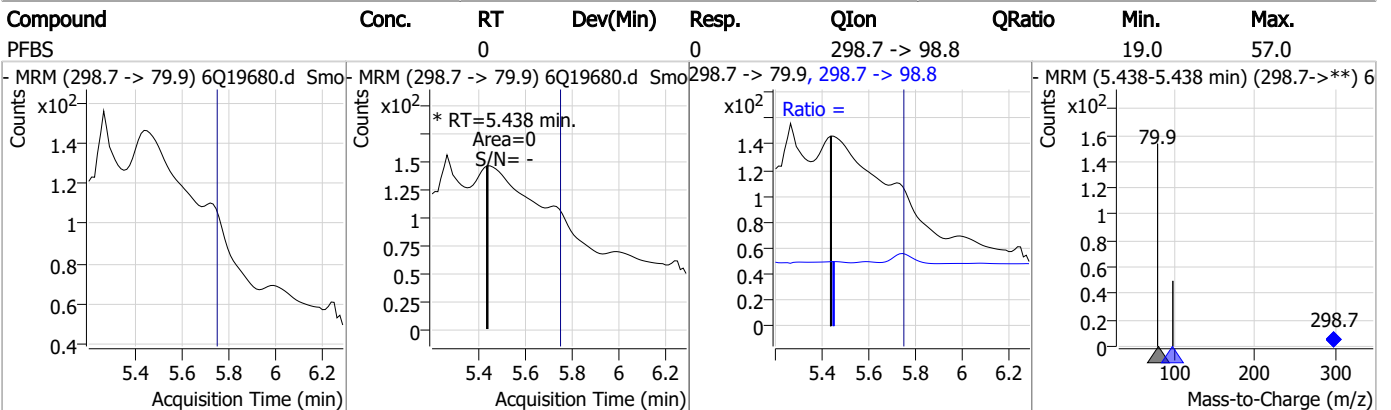
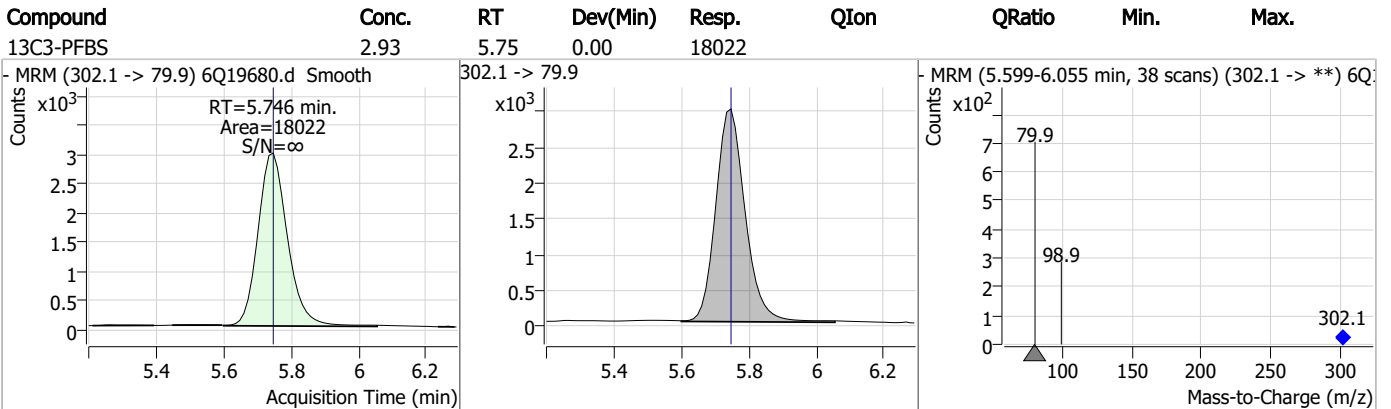
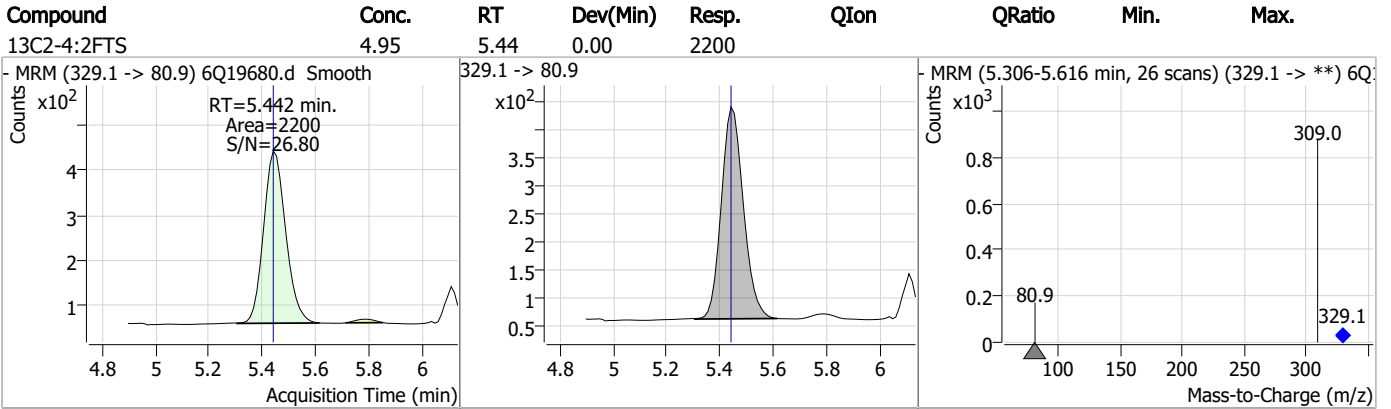
7.1.2
7



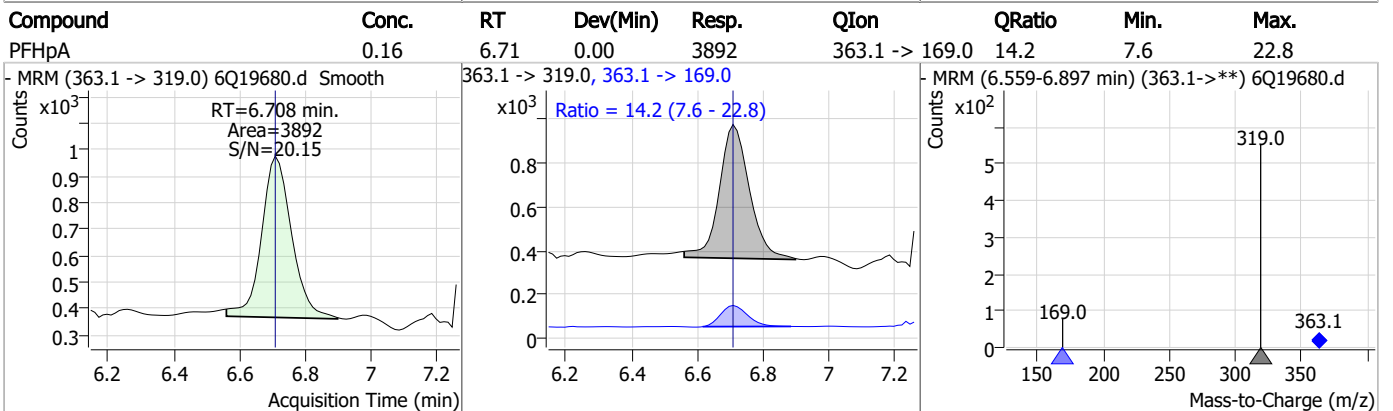
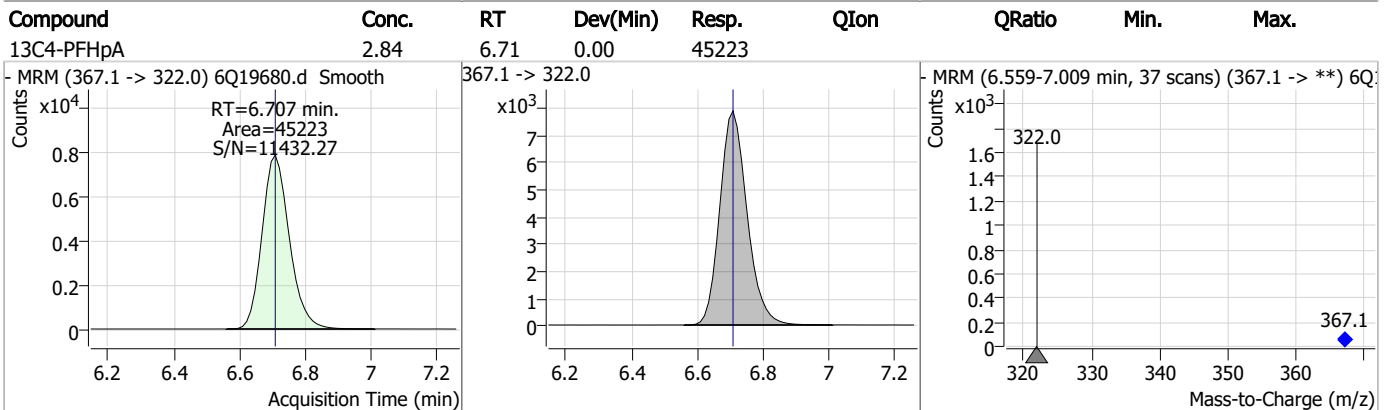
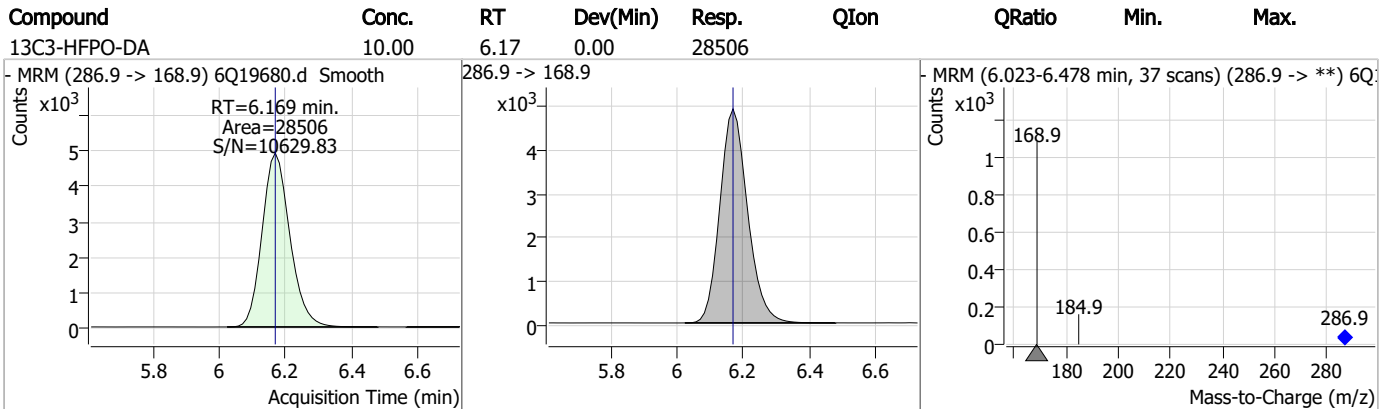
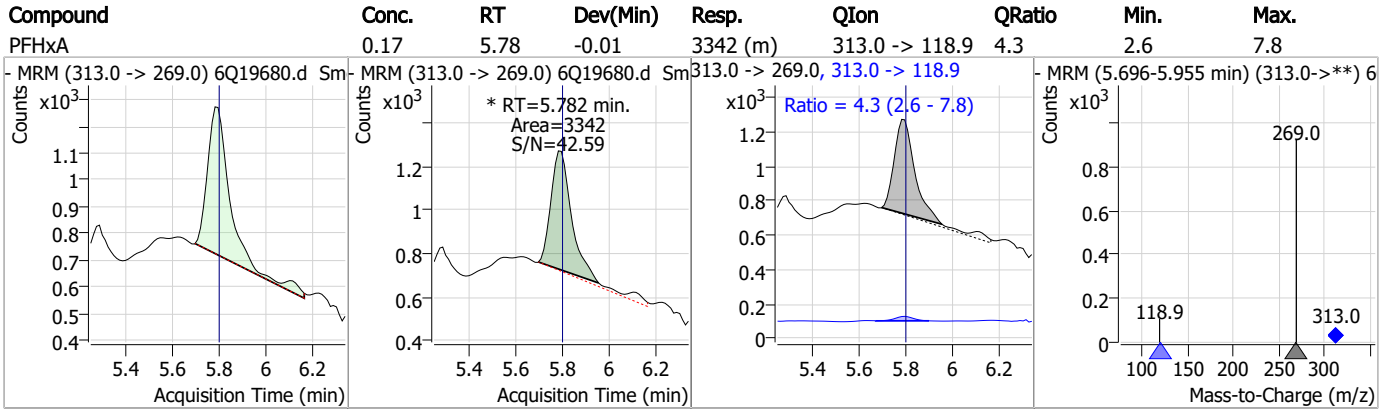
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

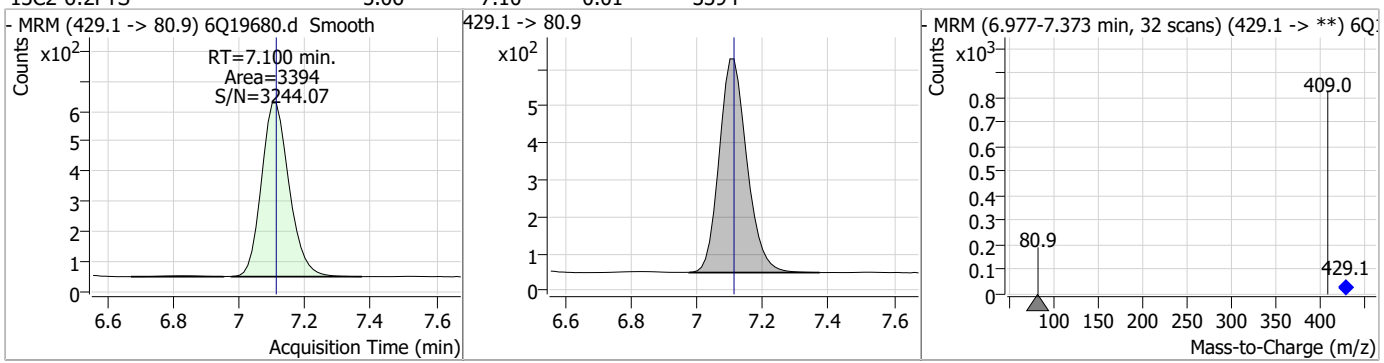


Perfluorinated Compounds by LC/MS/MS

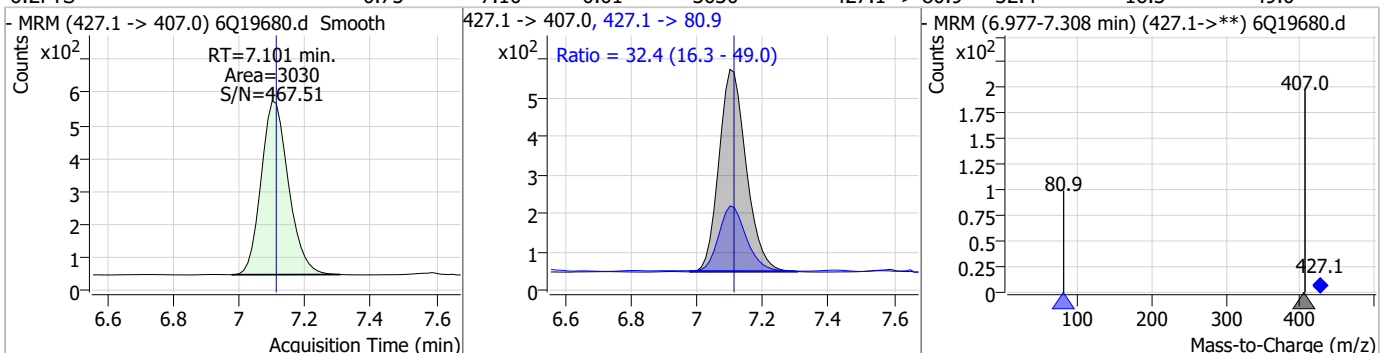


Perfluorinated Compounds by LC/MS/MS

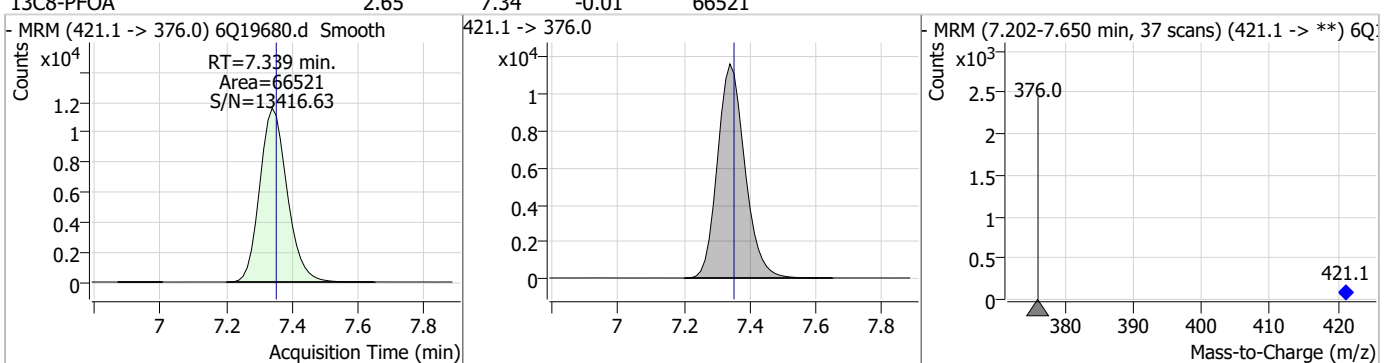
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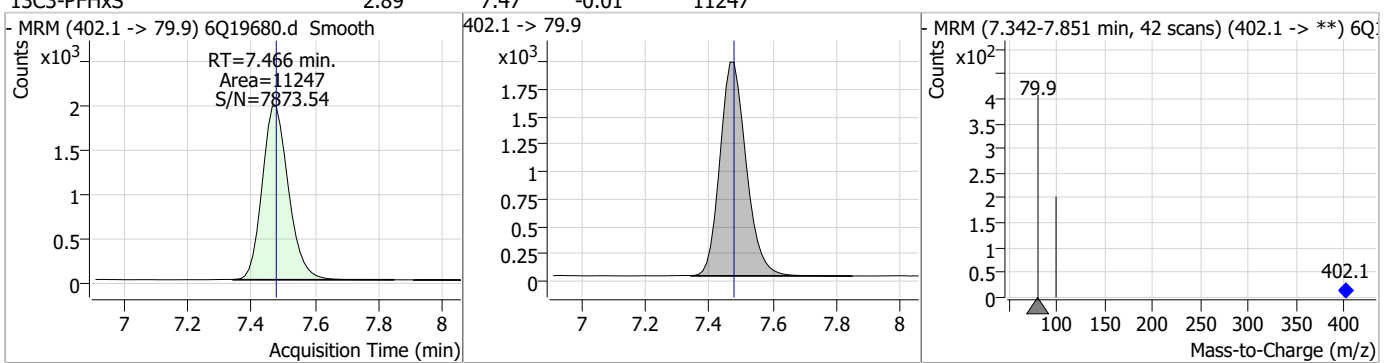
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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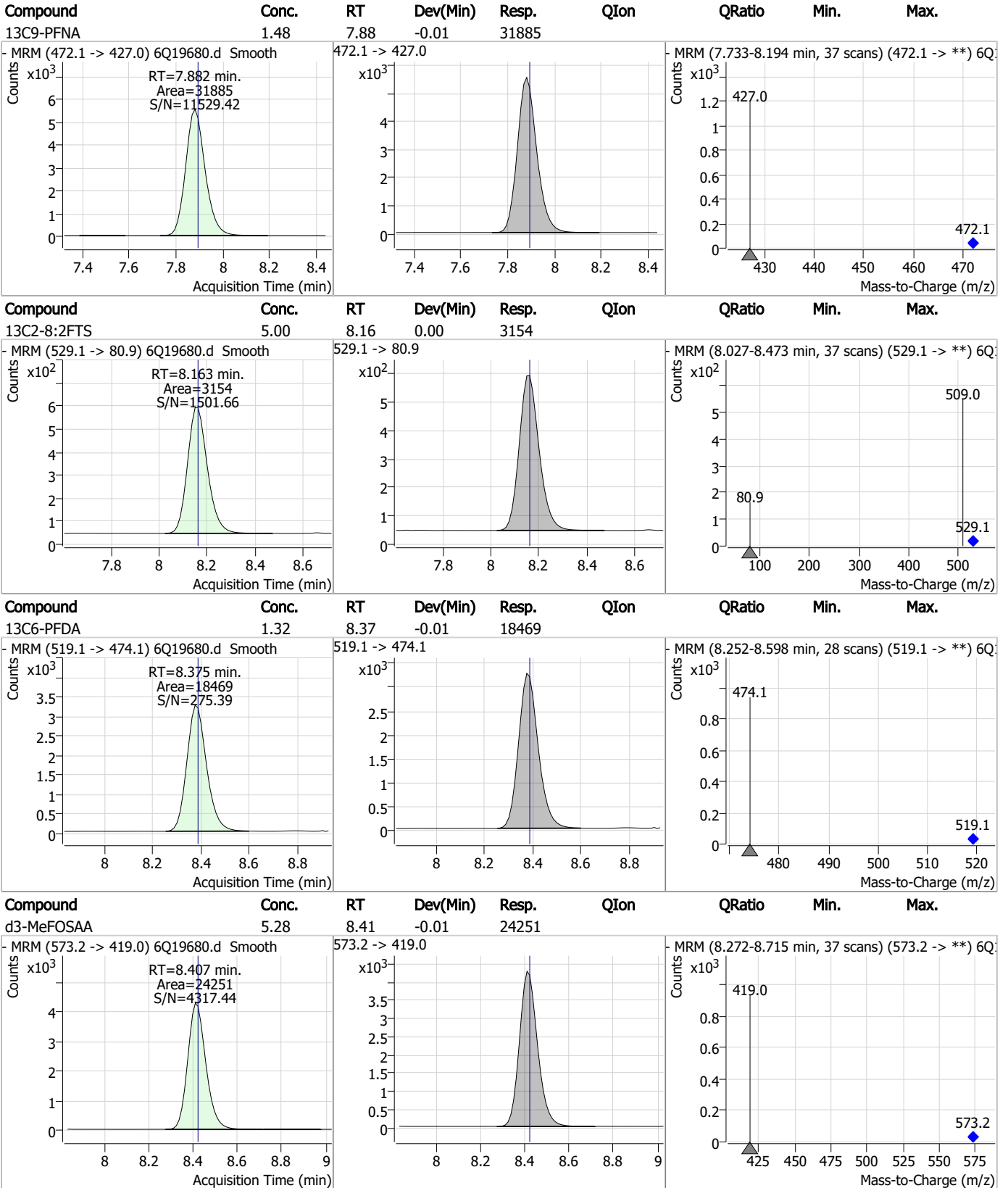


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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7.1.2
7

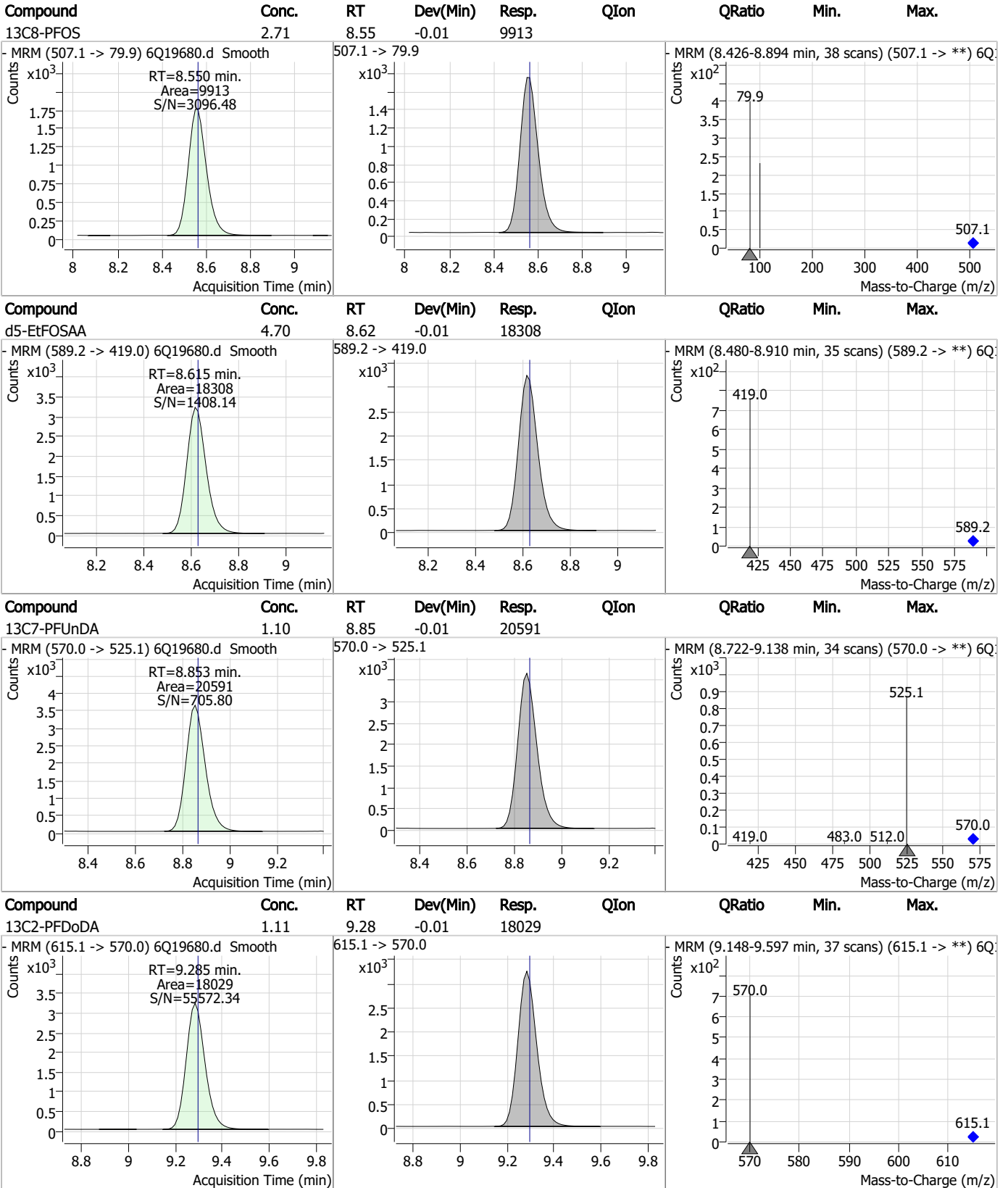
Perfluorinated Compounds by LC/MS/MS



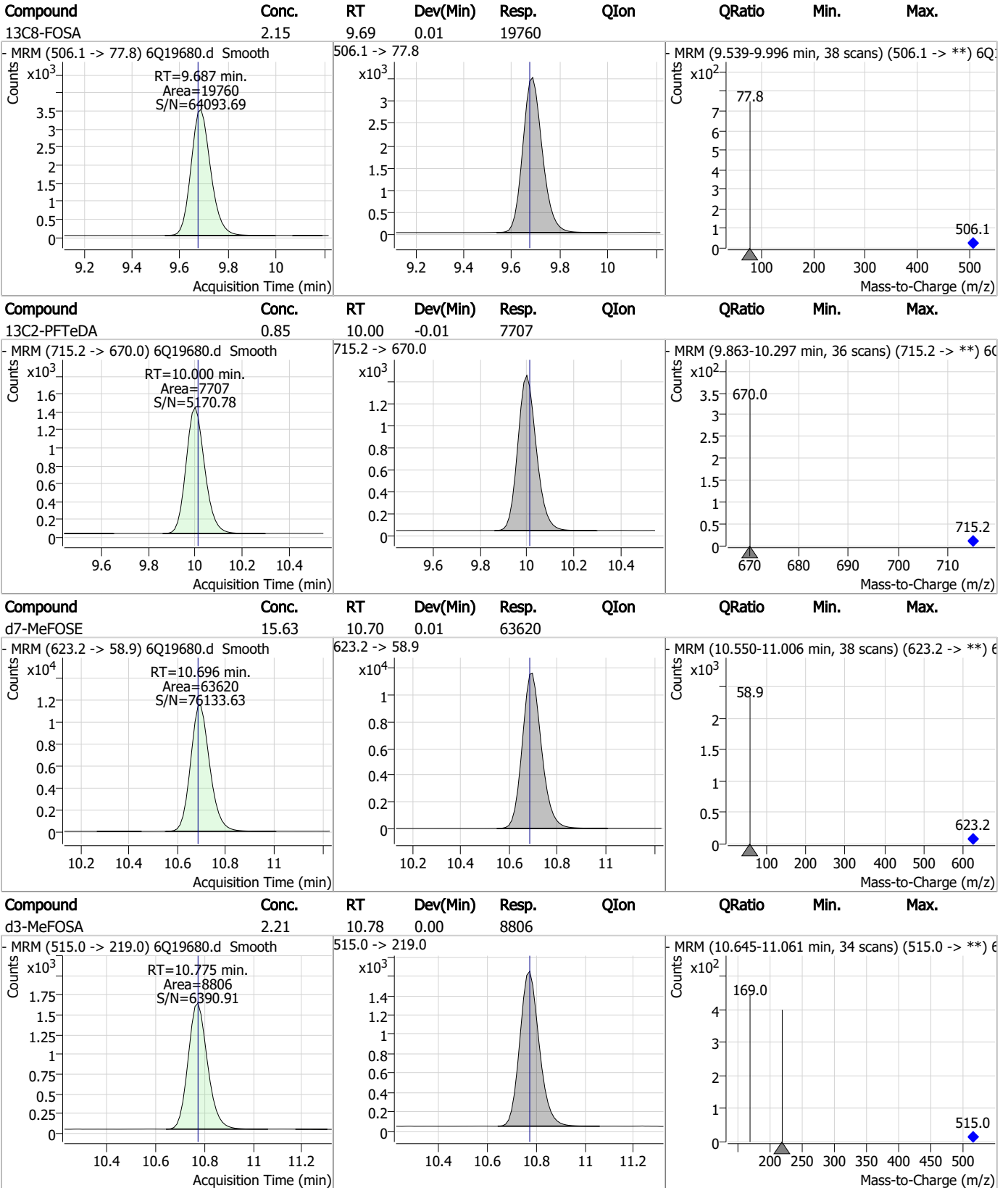
7.1.2

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Perfluorinated Compounds by LC/MS/MS

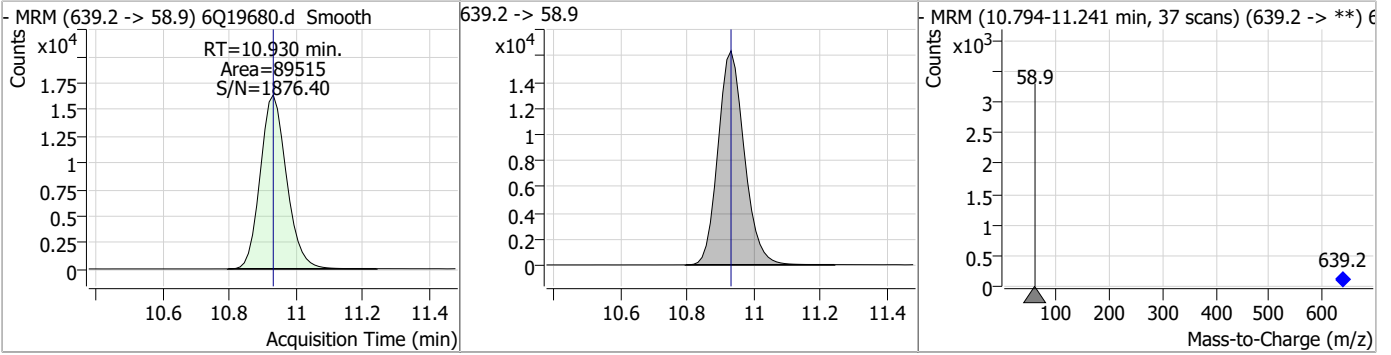


Perfluorinated Compounds by LC/MS/MS

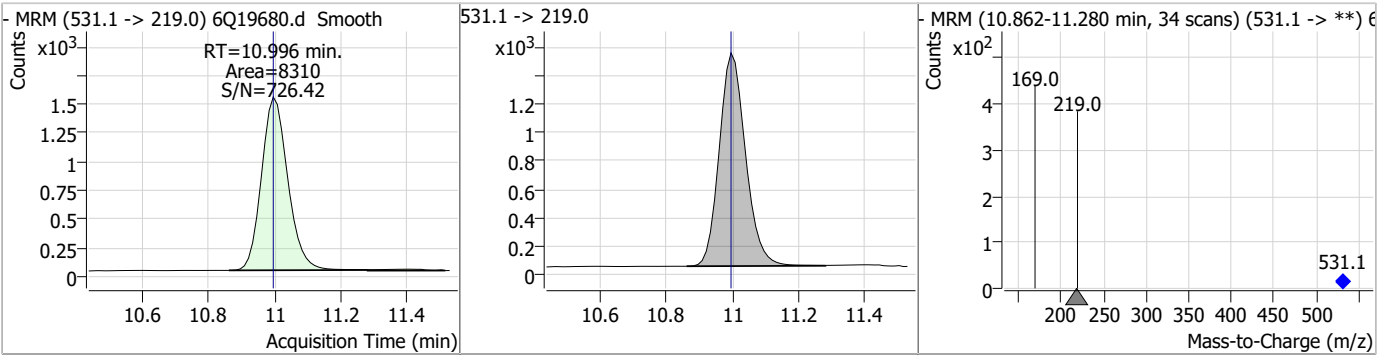


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	18.65	10.93	0.00	89515				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.13	11.00	0.00	8310				



7.1.2

7

Manual Integration Approval Summary

Sample Number: FC6891-2 Method: EPA DRAFT 1633
Lab FileID: 6Q19680.D Analyst approved: 06/21/23 16:17 Martha Valls
Injection Time: 06/21/23 15:28 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanoic acid	2706-90-3		4.55	Split peak
Perfluorohexanoic acid	307-24-4		5.78	Split peak
Perfluorononanoic acid	375-95-1		7.88	Split peak

7.1.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19673.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 1:51:01 PM
 Sample Name : op97425-mb
 Vial : P3-A3
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97425,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	148434	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	48383	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	49457	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	44917	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	72030	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	33795	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	18604	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	24922	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	22213	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	10680	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	18466	2.50 µg/L	0.012
M3-PFBS	5.746	302.1 -> 79.9	18995	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	11572	2.50 µg/L	0.000
M8-PFOS	8.550	507.1 -> 79.9	10465	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	3019	5.00 µg/L	0.000
M2-6:2FTS	7.100	429.1 -> 80.9	4733	5.00 µg/L	-0.012
M2-8:2FTS	8.163	529.1 -> 80.9	3803	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	25271	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	31476	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	21296	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	59698	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	86201	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	9211	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	8209	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	13201	2.50 µg/L	-0.012
13C3-PFBA	3.101	216.0 -> 172.0	54913	5.00 µg/L	0.012
18O2-PFHxS	7.477	403.0 -> 83.9	7266	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	68870	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	22643	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	40493	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	42214	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	3019	6.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.5%		
13C2-6:2FTS	7.100	429.1 -> 80.9	4733	7.19 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 143.7%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3803	6.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.8%		
13C2-PFDoDA	9.285	615.1 -> 570.0	22213	1.47 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 117.4%		
13C2-PFTeDA	10.000	715.2 -> 670.0	10680	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFBS	5.746	302.1 -> 79.9	18995	3.14 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 125.6%		
13C3-PFHxS	7.478	402.1 -> 79.9	11572	3.03 µg/L	0.000

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 = 121.2%	
13C4-PFBA	3.097	216.8 -> 171.9	148434	11.52 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 115.2%	
13C4-PFHpA	6.707	367.1 -> 322.0	44917	2.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.3%	
13C5-PFHxA	5.792	318.0 -> 273.0	49457	2.84 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.6%	
13C5-PFPeA	4.560	268.3 -> 223.0	48383	6.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 121.2%	
13C6-PFDA	8.375	519.1 -> 474.1	18604	1.43 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.5%	
13C7-PFUnDA	8.853	570.0 -> 525.1	24922	1.43 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.5%	
13C8-FOSA	9.687	506.1 -> 77.8	18466	1.85 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.9%	
13C8-PFOA	7.339	421.1 -> 376.0	72030	2.80 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C8-PFOS	8.550	507.1 -> 79.9	10465	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C9-PFNA	7.882	472.1 -> 427.0	33795	1.37 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.7%	
d3-MeFOSAA	8.407	573.2 -> 419.0	25271	5.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	31476	10.80 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.0%	
d3-MeFOSA	10.775	515.0 -> 219.0	8209	1.89 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 75.6%	
d5-EtFOSAA	8.615	589.2 -> 419.0	21296	5.02 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
d7-MeFOSE	10.685	623.2 -> 58.9	59698	13.48 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 53.9%	
d9-EtFOSE	10.930	639.2 -> 58.9	86201	16.51 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 66.0%	
d5-EtFOSA	10.996	531.1 -> 219.0	9211	2.17 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.9%	

7.21
7

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

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
		599.0 -> 98.8			
PFHpA	-	363.1 -> 319.0	-	N.D.	
		363.1 -> 169.0			
PFHpS	-	449.0 -> 79.9	-	N.D.	
		449.0 -> 98.9			
PFHxA	5.795	313.0 -> 269.0	1592	0.08 µg/L	97
		313.0 -> 118.9	97		
PFHxS	-	398.7 -> 79.9	-	N.D.	
		398.7 -> 98.9			
PFNA	-	463.0 -> 419.0	-	N.D.	
		463.0 -> 219.0			
PFNS	-	548.8 -> 79.9	-	N.D.	
		548.8 -> 98.9			
PFOA	-	413.0 -> 369.0	-	N.D.	
		413.0 -> 169.0			
PFOS	-	498.9 -> 79.9	-	N.D.	
		498.9 -> 98.8			
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.1 -> 79.9	-	N.D.	
		349.1 -> 98.9			
PFTeDA	-	713.1 -> 669.0	-	N.D.	
		713.1 -> 168.9			
PFTTrDA	-	663.0 -> 619.0	-	N.D.	
		663.0 -> 168.9			
PFUnDA	-	563.1 -> 519.0	-	N.D.	
		563.1 -> 269.1			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.	
		632.9 -> 452.9			
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.	
		532.8 -> 353.0			
ADONA	-	376.9 -> 250.9	-	N.D.	
		376.9 -> 84.8			
HFPO-DA	-	284.9 -> 168.9	-	N.D.	
		284.9 -> 184.9			
3:3FTCA	-	241.0 -> 177.0	-	N.D.	
		241.0 -> 117.0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.	
		341.0 -> 217.0			
7:3FTCA	-	441.0 -> 316.9	-	N.D.	
		441.0 -> 336.9			
EtFOSA	-	526.0 -> 219.0	-	N.D.	
		526.0 -> 169.0			
EtFOSE	-	630.0 -> 58.9	-	N.D.	
MeFOSA	-	511.9 -> 219.0	-	N.D.	
		511.9 -> 169.0			
MeFOSE	-	616.1 -> 58.9	-	N.D.	
PFDoDS	-	699.1 -> 79.9	-	N.D.	
		699.1 -> 98.8			
NFDHA	-	295.0 -> 201.0	-	N.D.	
		295.0 -> 84.9			
PFMBA	-	279.0 -> 85.1	-	N.D.	
PFMPA	-	229.0 -> 84.9	-	N.D.	
PFEESA	-	314.8 -> 134.9	-	N.D.	
		314.8 -> 82.9			

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

7.2.1
7

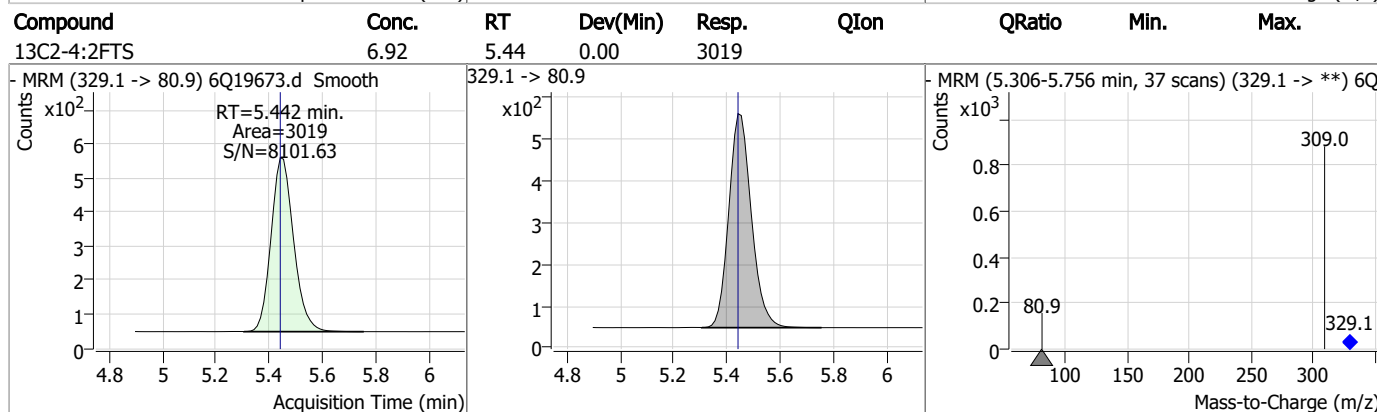
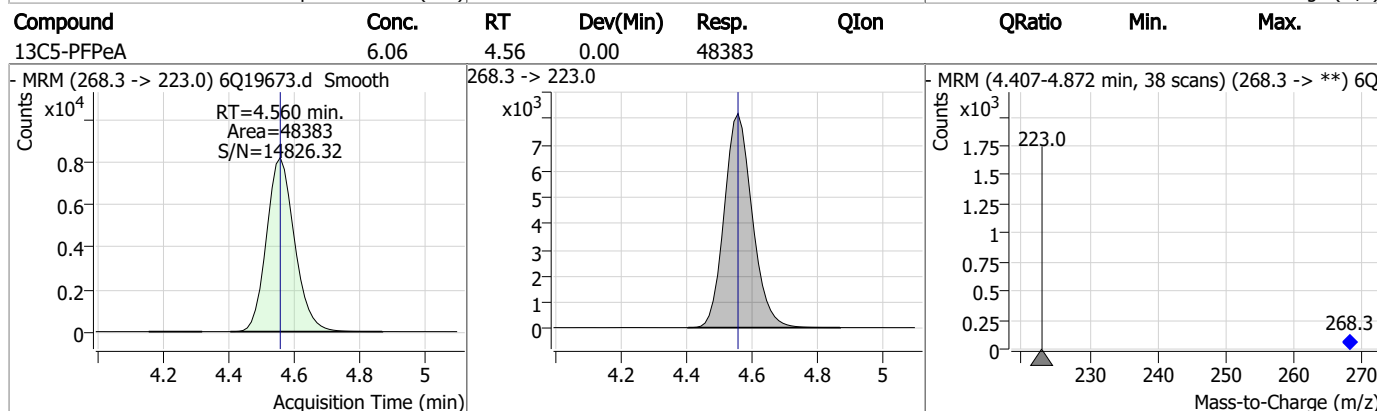
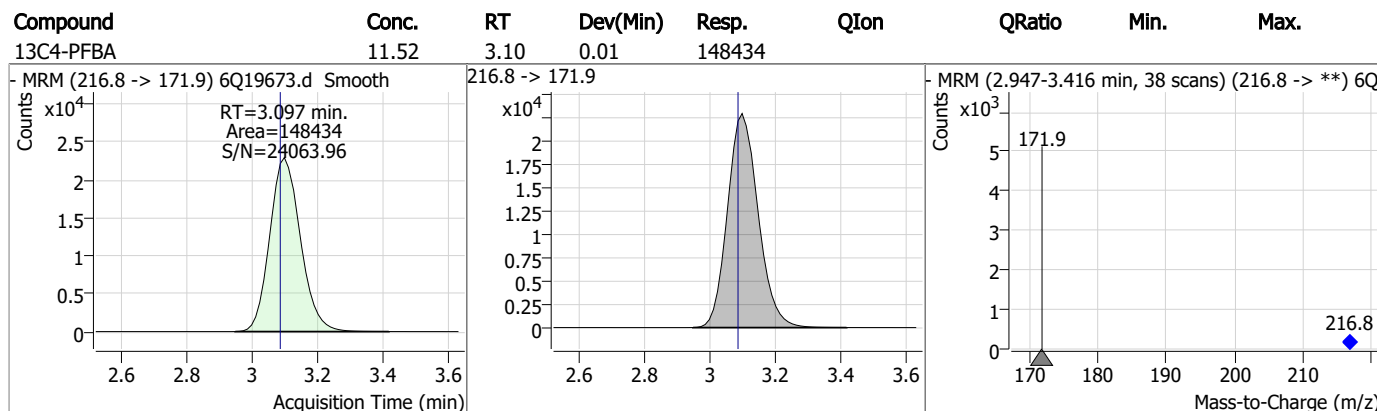
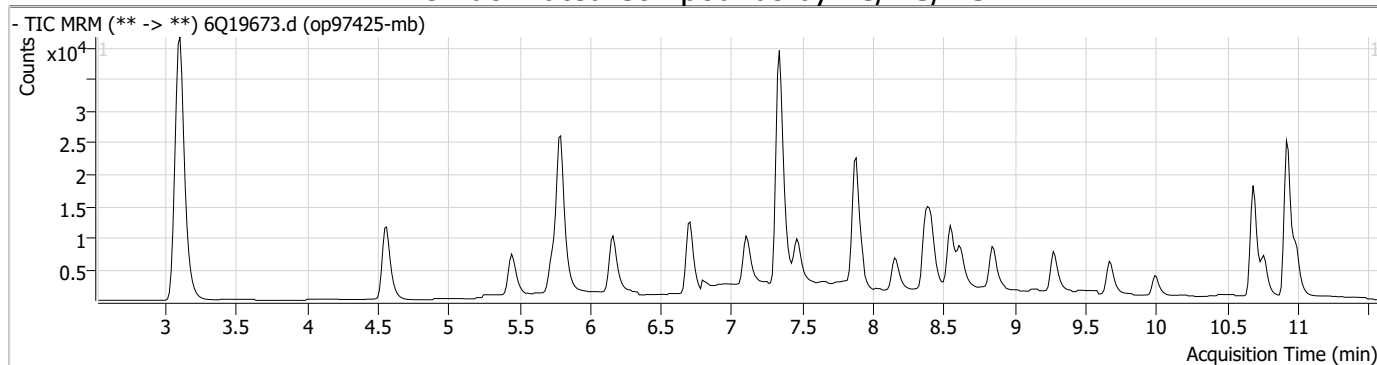
Perfluorinated Compounds by LC/MS/MS

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

7

Perfluorinated Compounds by LC/MS/MS



7.2.1
7

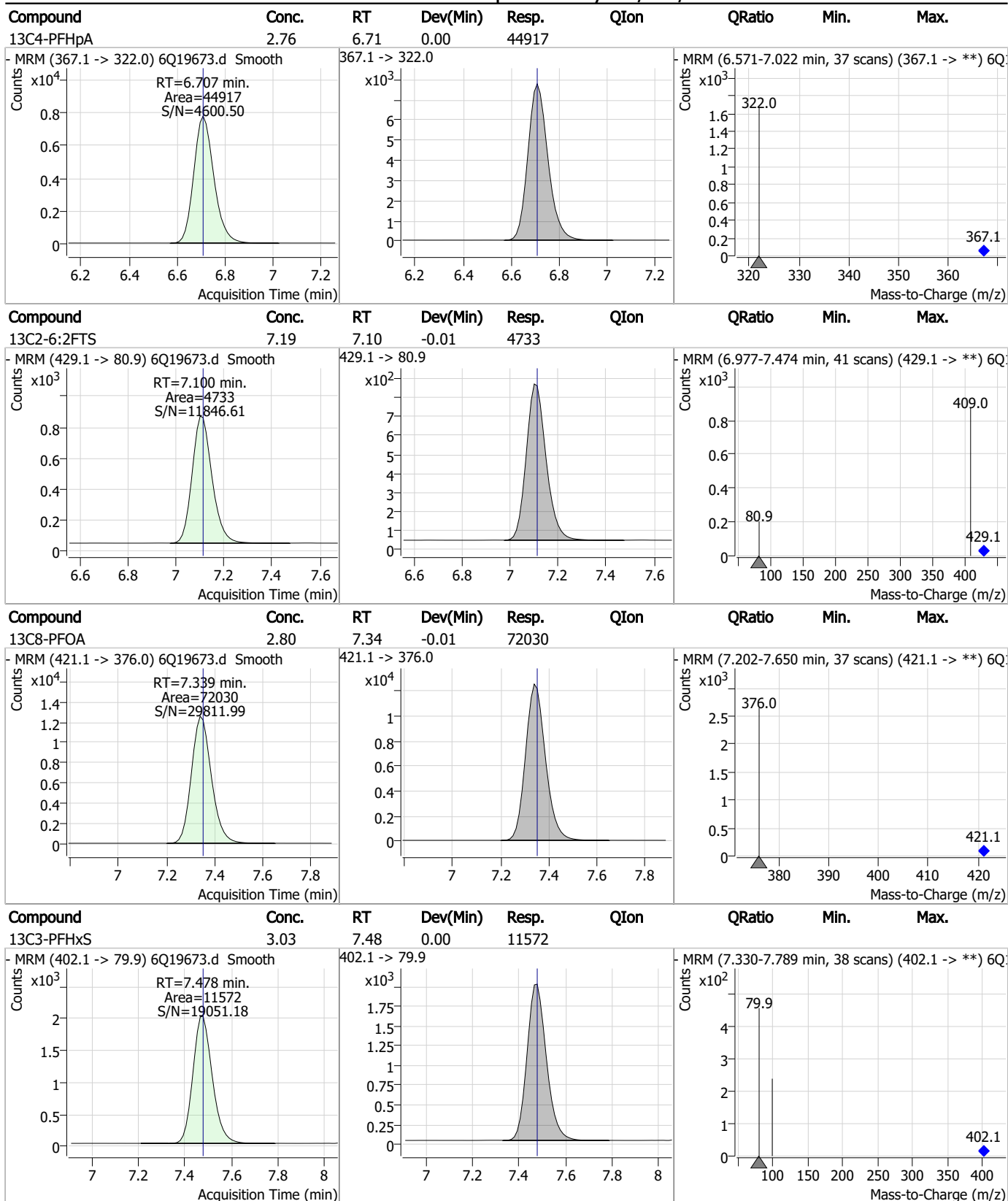
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	3.14	5.75	0.00	18995				
13C5-PFHxA	2.84	5.79	0.00	49457				
PFHxA	0.08	5.79	0.00	1592	313.0 -> 118.9	6.1	2.6	7.8
13C3-HFPO-DA	10.80	6.17	0.00	31476				

7.2.1

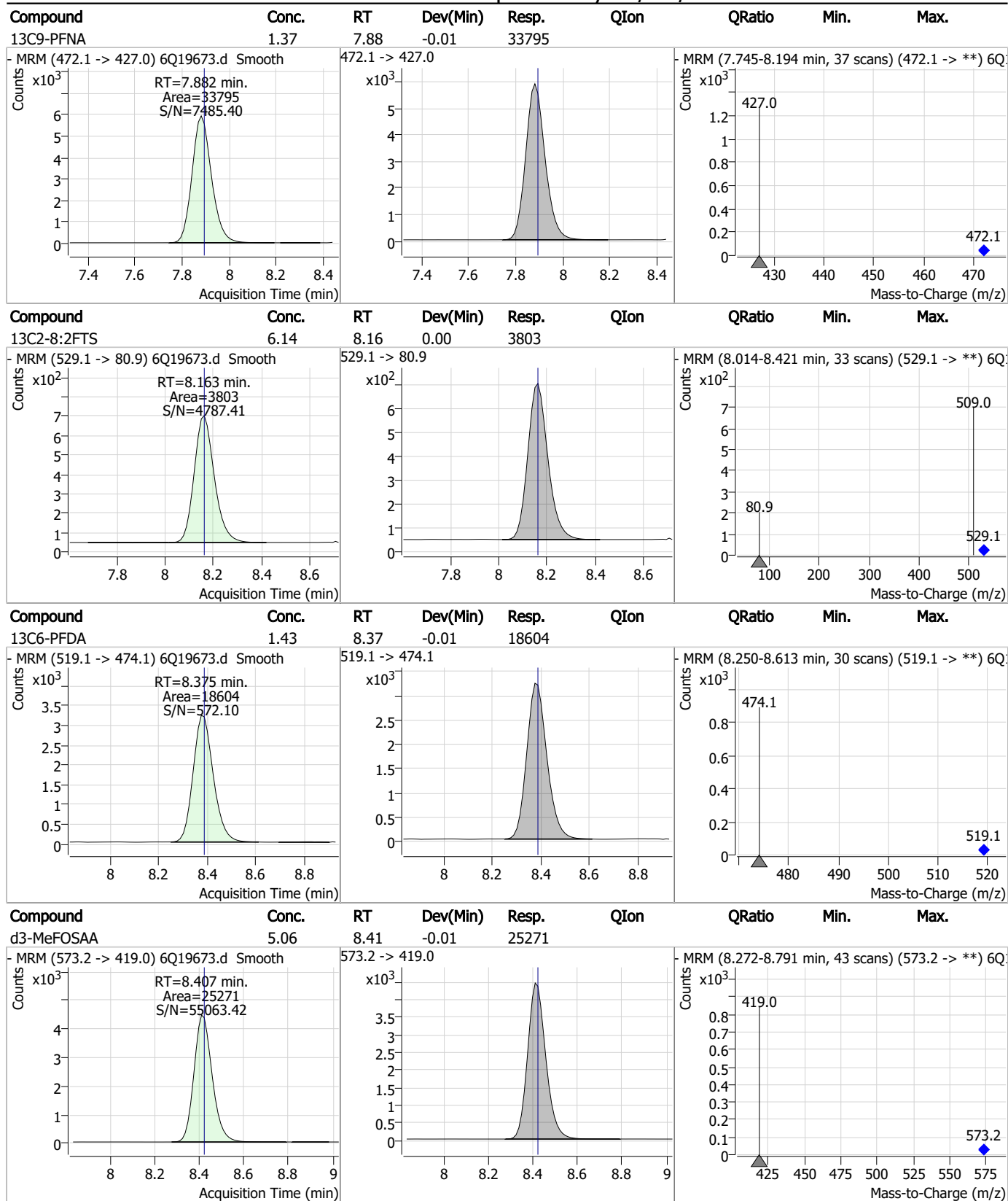
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Perfluorinated Compounds by LC/MS/MS



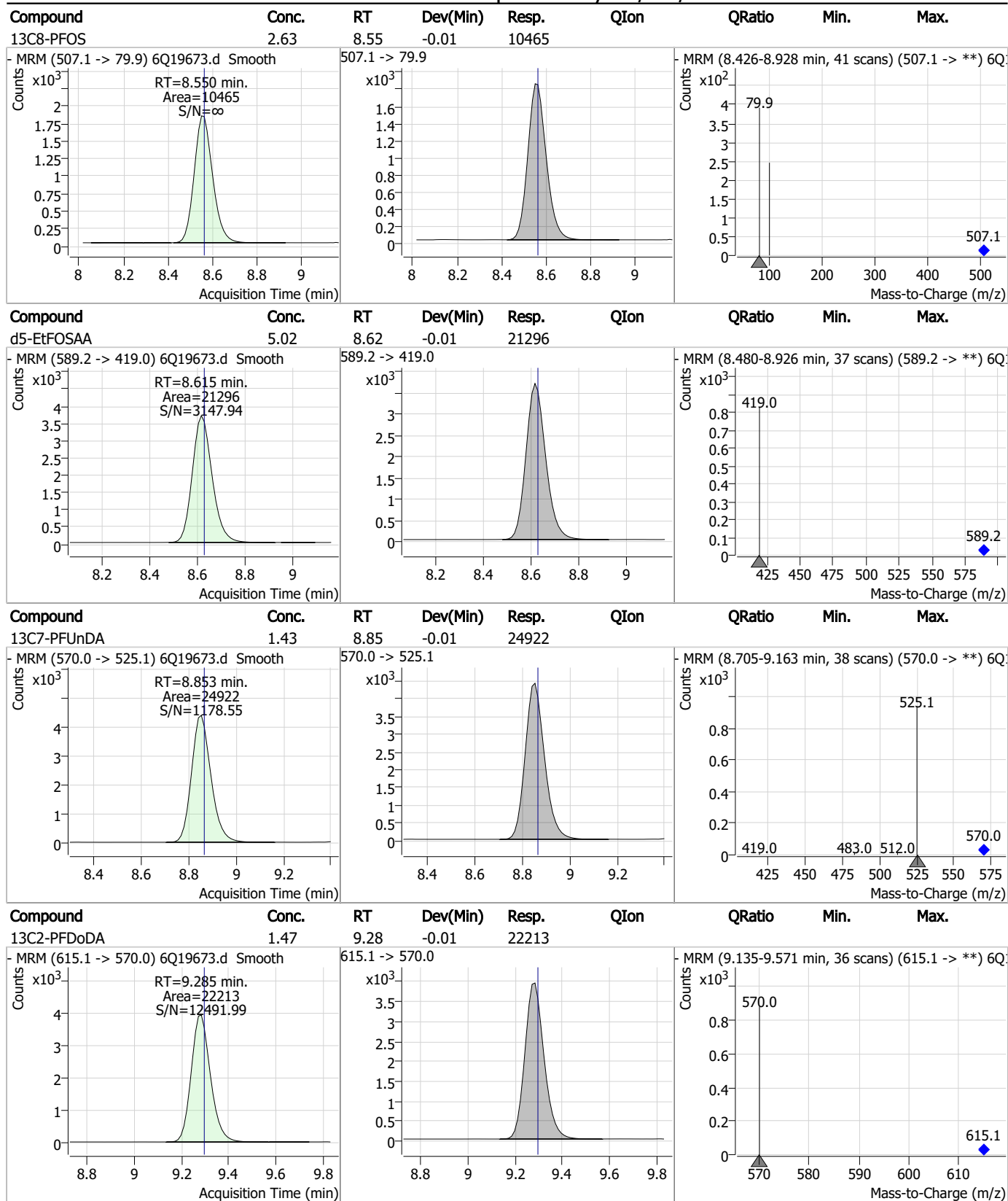
7.2.1
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Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS



7.2.1

7

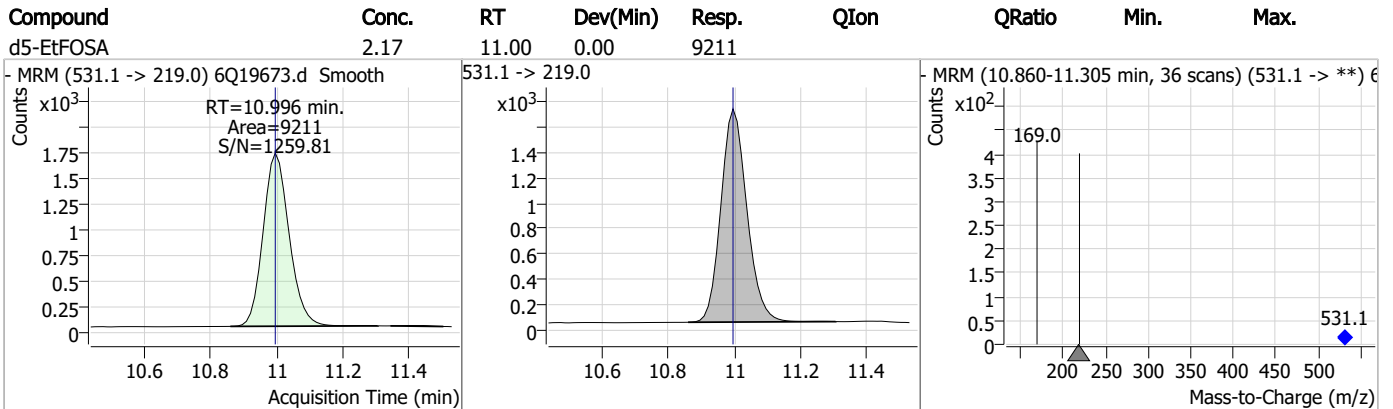
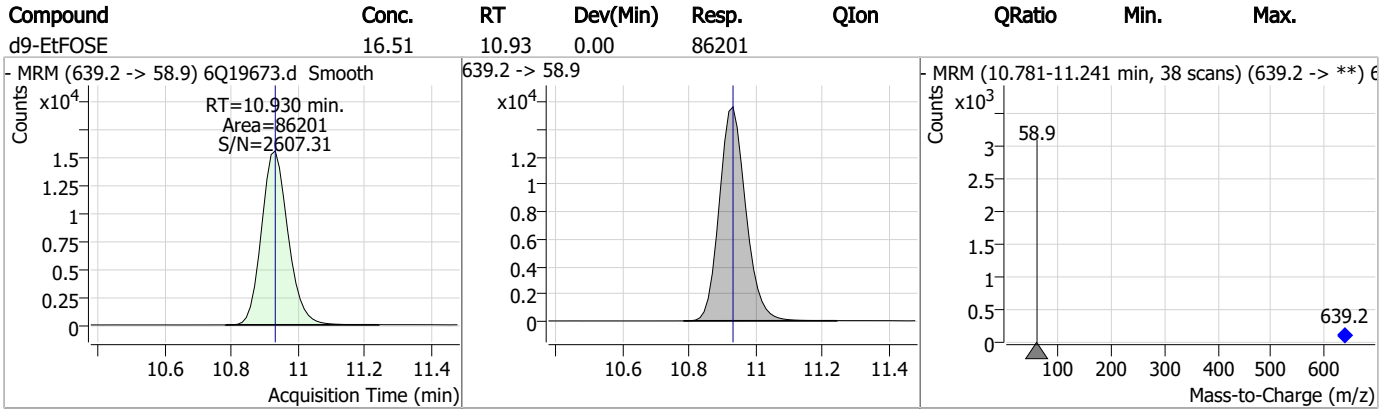
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	1.85	9.69	0.01	18466				
13C2-PFTeDA	1.26	10.00	-0.01	10680				
d7-MeFOSE	13.48	10.68	0.00	59698				
d3-MeFOSA	1.89	10.78	0.00	8209				

7.2.1
7



Perfluorinated Compounds by LC/MS/MS



7.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19668.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 12:41:04 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97325,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	147112	10.00 µg/L	0.000
M5-PFPeA	4.548	268.3 -> 223.0	48199	5.00 µg/L	-0.012
M5-PFHxA	5.792	318.0 -> 273.0	52659	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	46975	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	75490	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	36002	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	20586	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	26175	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	22291	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	11344	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	27261	2.50 µg/L	0.012
M3-PFBS	5.733	302.1 -> 79.9	18552	2.50 µg/L	-0.013
M3-PFHxS	7.466	402.1 -> 79.9	12412	2.50 µg/L	-0.012
M8-PFOS	8.550	507.1 -> 79.9	10874	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	3141	5.00 µg/L	0.000
M2-6:2FTS	7.100	429.1 -> 80.9	4513	5.00 µg/L	-0.012
M2-8:2FTS	8.163	529.1 -> 80.9	3596	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	26814	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	31827	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	21255	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	99796	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	118648	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11638	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11652	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	15016	2.50 µg/L	-0.012
13C3-PFBA	3.089	216.0 -> 172.0	62119	5.00 µg/L	0.000
18O2-PFHxS	7.465	403.0 -> 83.9	9324	2.50 µg/L	-0.012
13C4-PFOA	7.340	417.1 -> 372.0	77811	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	29460	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	42491	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	48689	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	3141	5.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.3%		
13C2-6:2FTS	7.100	429.1 -> 80.9	4513	5.34 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.8%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3596	4.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C2-PFDoDA	9.285	615.1 -> 570.0	22291	1.13 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C2-PFTeDA	10.000	715.2 -> 670.0	11344	1.03 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 82.6%		
13C3-PFBS	5.733	302.1 -> 79.9	18552	2.39 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C3-PFHxS	7.466	402.1 -> 79.9	12412	2.53 µg/L	-0.012

7.22
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C4-PFBA	3.085	216.8 -> 171.9	147112	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.707	367.1 -> 322.0	46975	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFHxA	5.792	318.0 -> 273.0	52659	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C5-PFPeA	4.548	268.3 -> 223.0	48199	5.23 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C6-PFDA	8.375	519.1 -> 474.1	20586	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C7-PFUnDA	8.853	570.0 -> 525.1	26175	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.4%	
13C8-FOSA	9.687	506.1 -> 77.8	27261	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C8-PFOA	7.339	421.1 -> 376.0	75490	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOS	8.550	507.1 -> 79.9	10874	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C9-PFNA	7.882	472.1 -> 427.0	36002	1.39 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.4%	
d3-MeFOSAA	8.407	573.2 -> 419.0	26814	4.72 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	31827	9.47 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
d3-MeFOSA	10.775	515.0 -> 219.0	11652	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	
d5-EtFOSAA	8.615	589.2 -> 419.0	21255	4.41 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.2%	
d7-MeFOSE	10.696	623.2 -> 58.9	99796	19.81 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.2%	
d9-EtFOSE	10.930	639.2 -> 58.9	118648	19.98 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.9%	
d5-EtFOSA	10.996	531.1 -> 219.0	11638	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	

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

7.22
7

Perfluorinated Compounds by LC/MS/MS

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

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

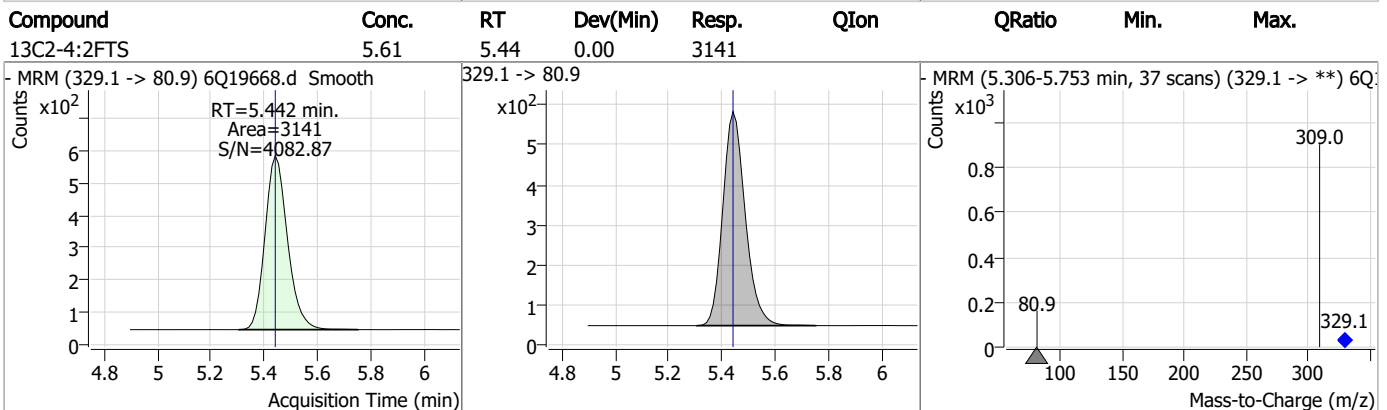
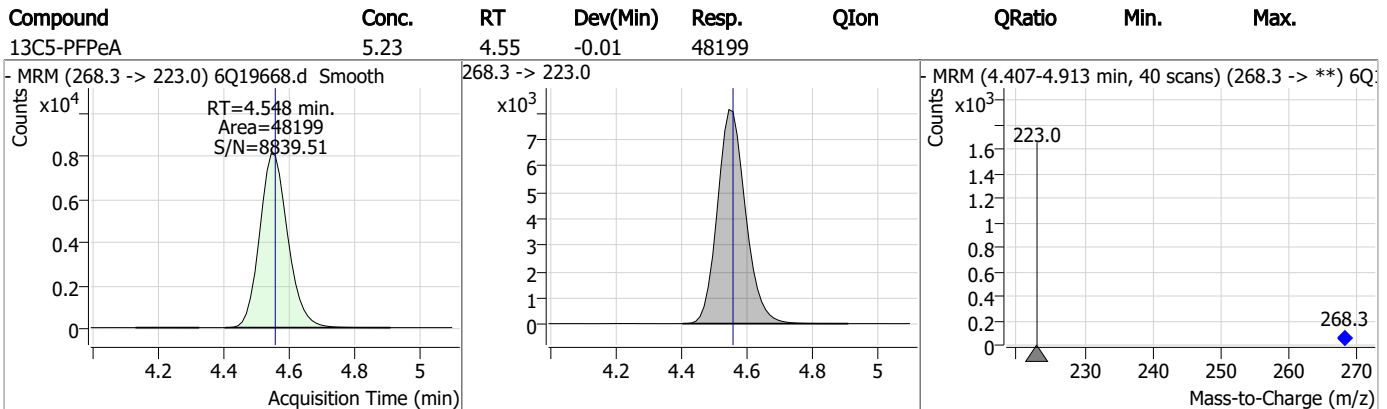
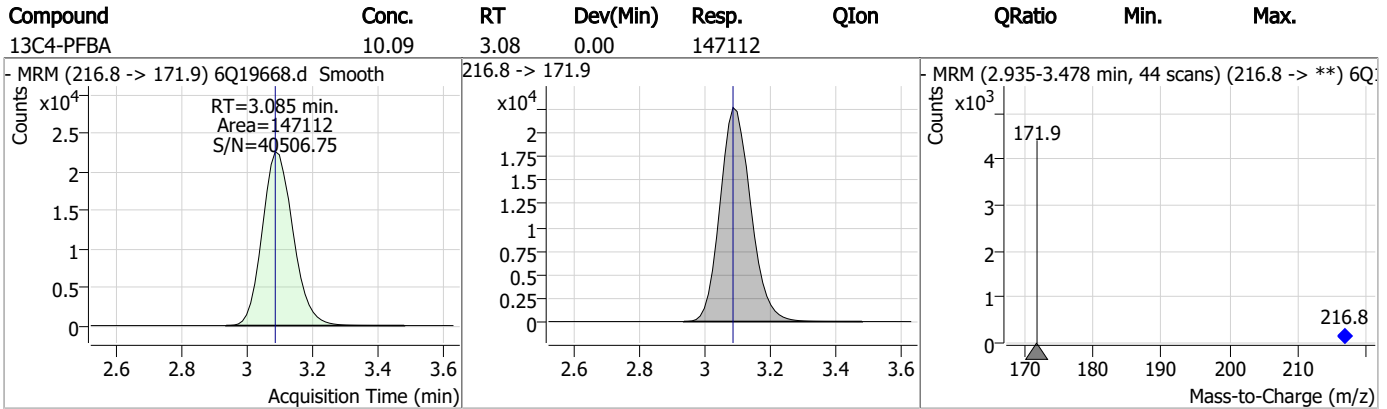
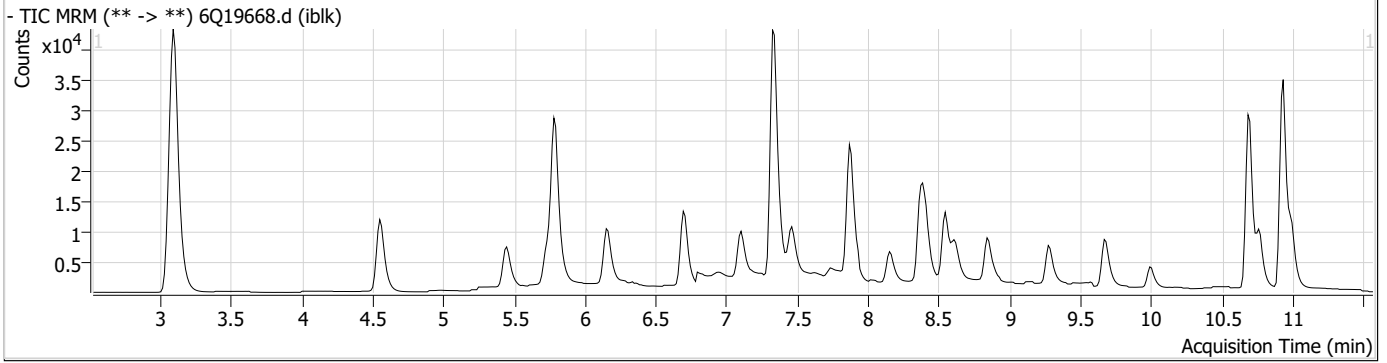
Perfluorinated Compounds by LC/MS/MS

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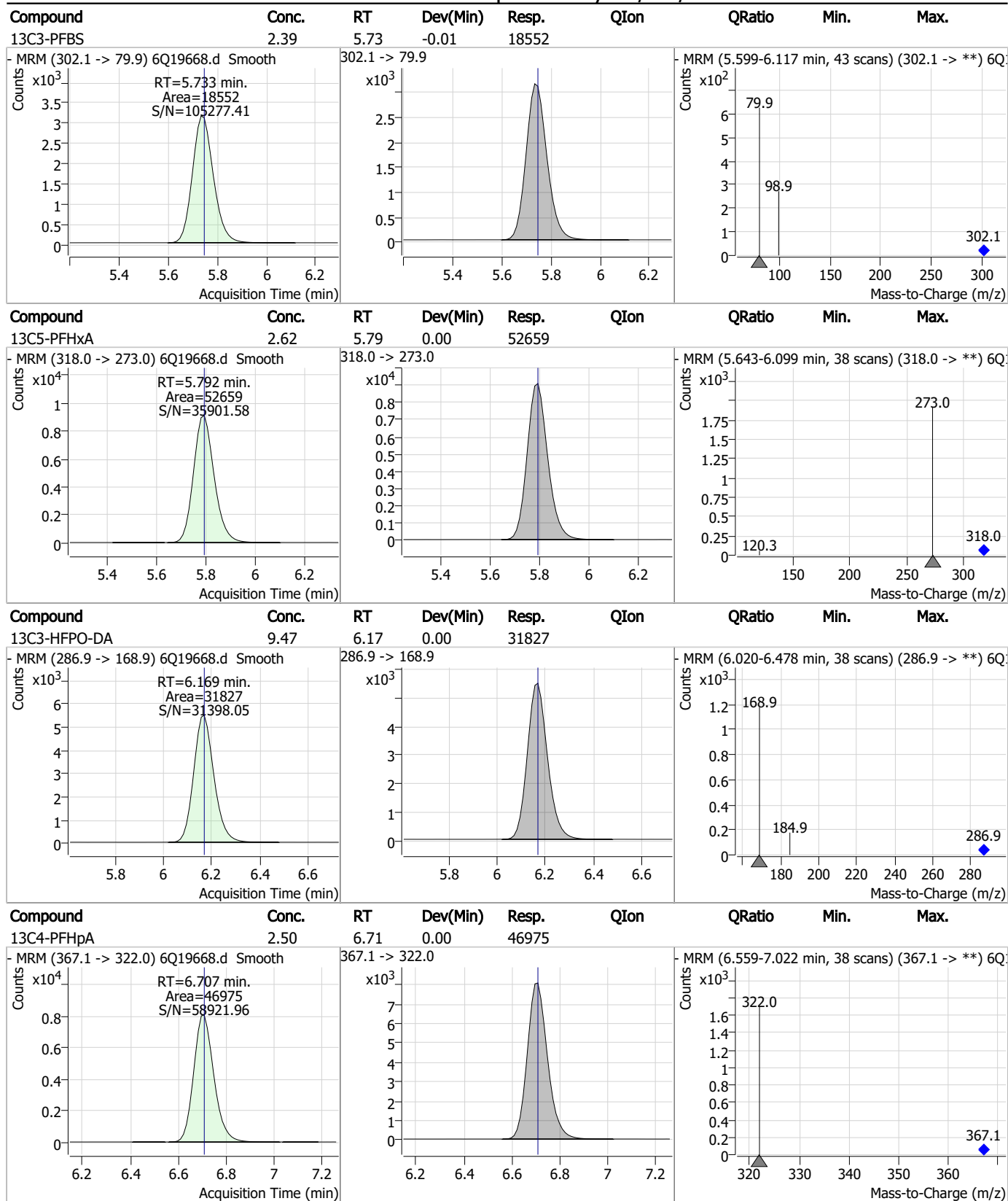
7.2.2

7

Perfluorinated Compounds by LC/MS/MS



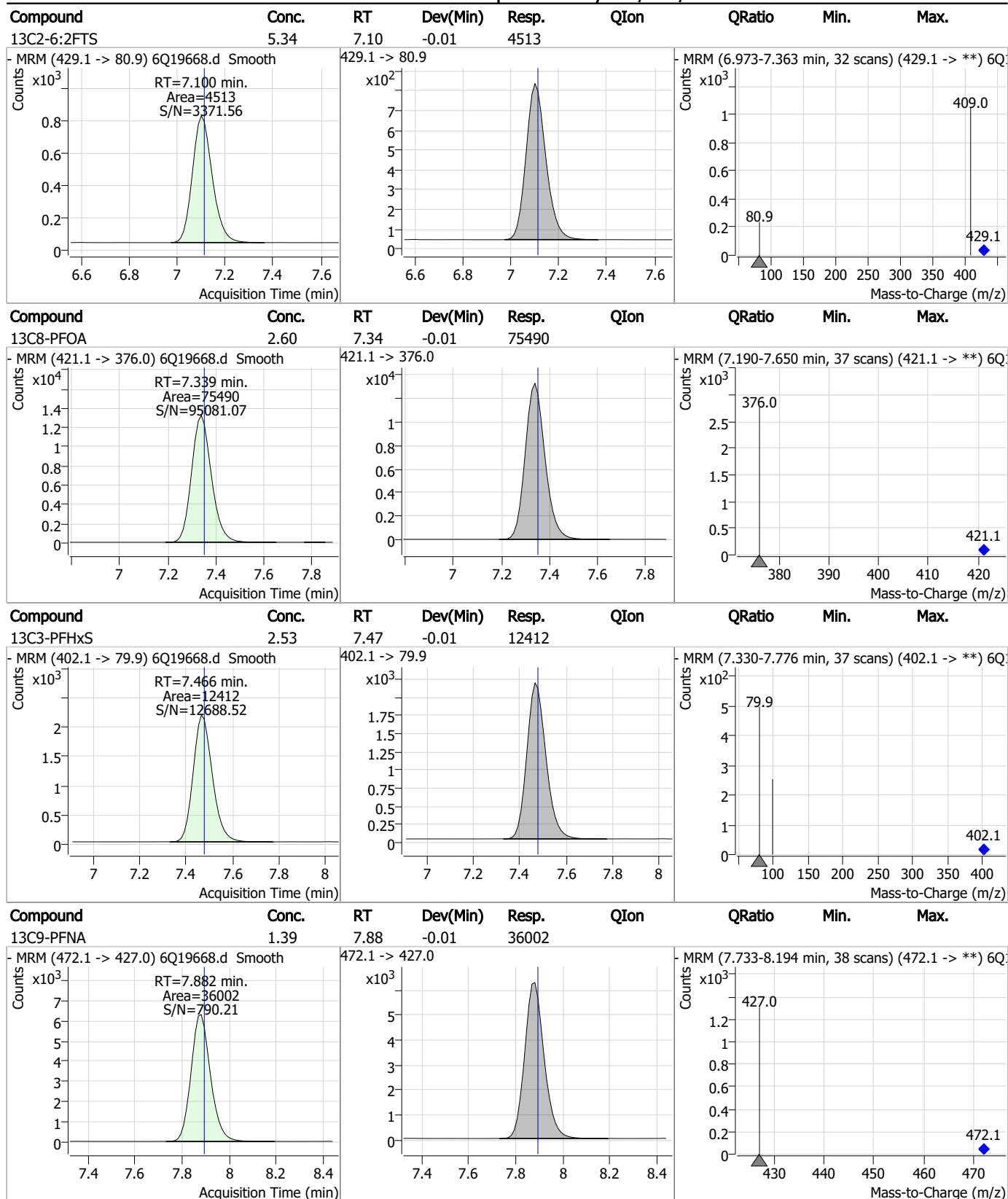
Perfluorinated Compounds by LC/MS/MS



7.22
7

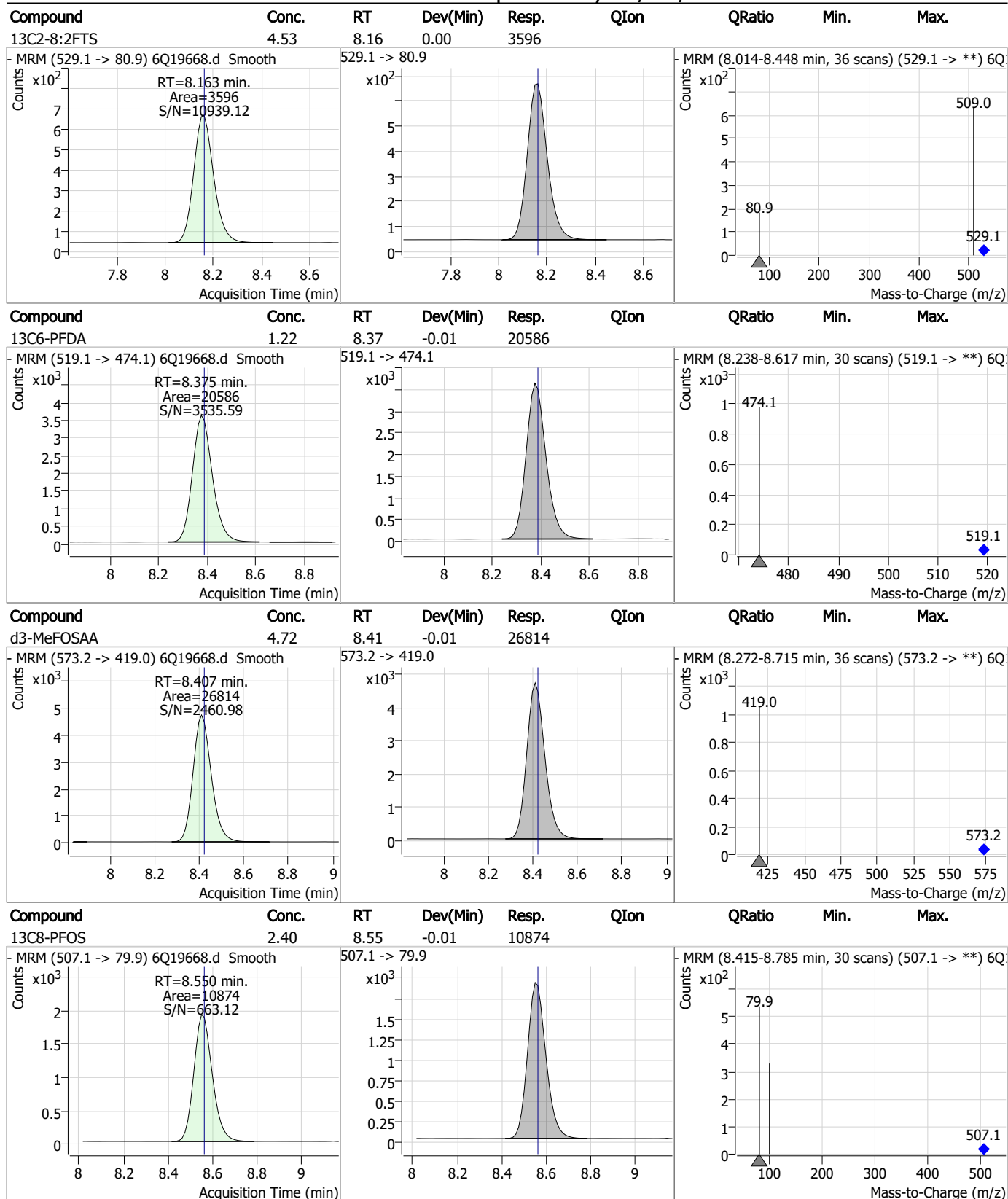


Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS



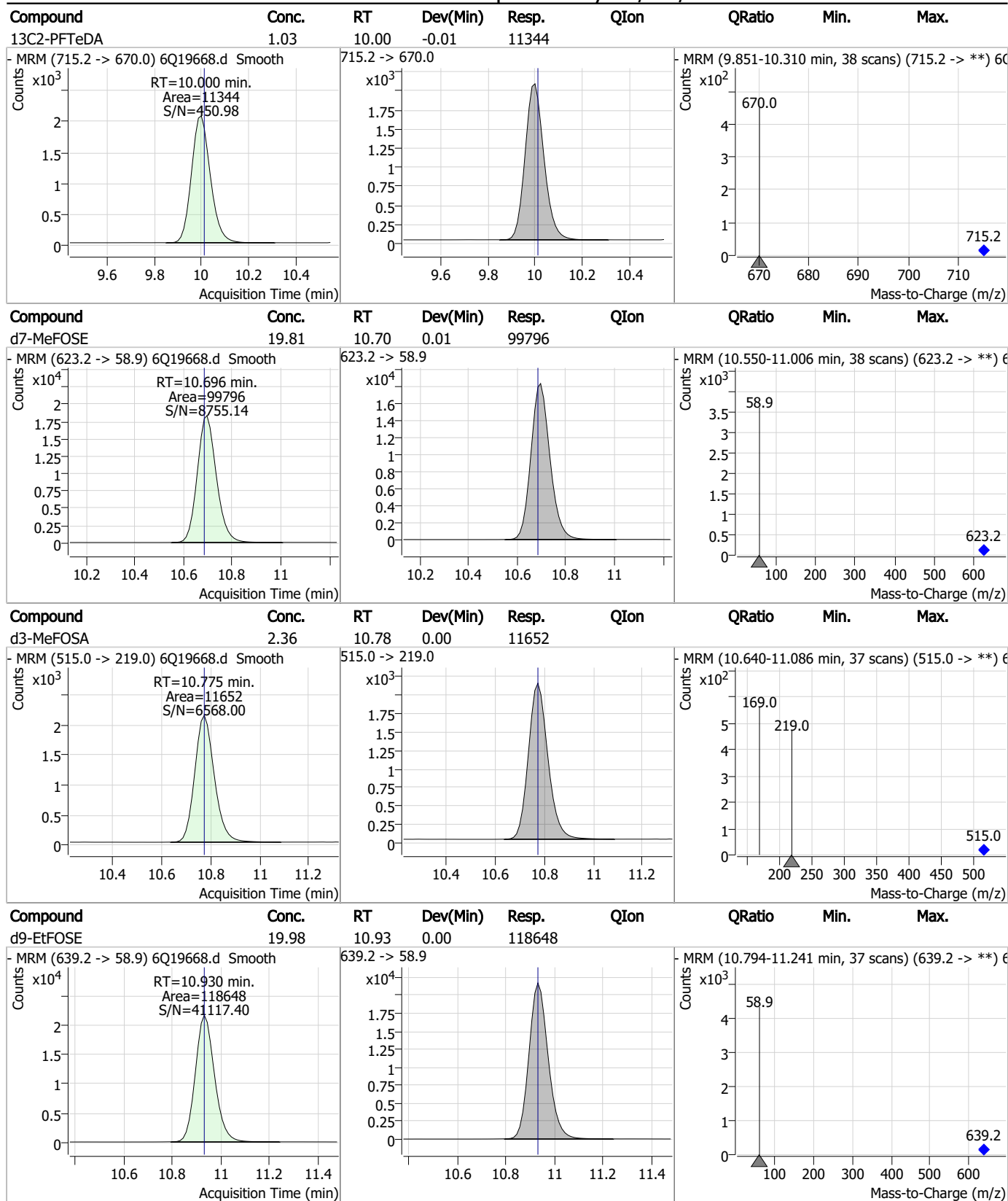
7.2.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.41	8.62	-0.01	21255				
13C7-PFUnDA	1.16	8.85	-0.01	26175				
13C2-PFDoDA	1.13	9.28	-0.01	22291				
13C8-FOSA	2.40	9.69	0.01	27261				

7.2.2
7

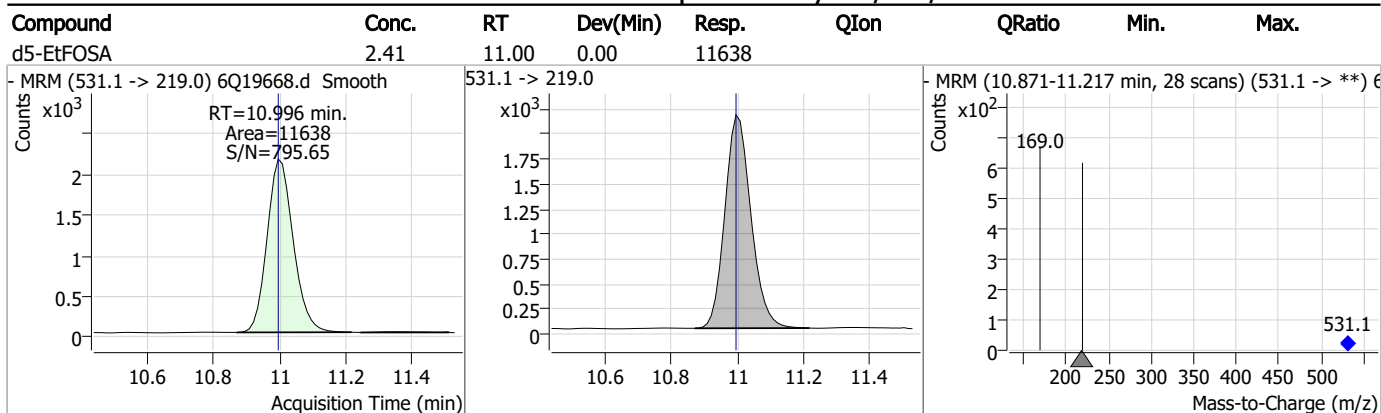
Perfluorinated Compounds by LC/MS/MS



7.2.2
7



Perfluorinated Compounds by LC/MS/MS



7.22
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19671.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 1:23:00 PM
 Sample Name : op97425-bs
 Vial : P3-A1
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97425,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	32659	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	40185	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	41435	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	39920	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	64253	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	30017	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	17106	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	21815	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	19207	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	8777	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	15980	2.50 µg/L	0.012
M3-PFBS	5.746	302.1 -> 79.9	15611	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	9982	2.50 µg/L	0.000
M8-PFOS	8.550	507.1 -> 79.9	9155	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	2525	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	3551	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	3411	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	23433	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	27280	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	19655	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	47340	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	74447	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	7311	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	7542	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	13206	2.50 µg/L	-0.012
13C3-PFBA	3.101	216.0 -> 172.0	54679	5.00 µg/L	0.012
18O2-PFHxS	7.477	403.0 -> 83.9	7062	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	68304	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	23334	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	36729	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	41257	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2525	5.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.2%		
13C2-6:2FTS	7.113	429.1 -> 80.9	3551	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3411	5.67 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.4%		
13C2-PFDoDA	9.285	615.1 -> 570.0	19207	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-PFTeDA	10.000	715.2 -> 670.0	8777	1.01 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.6%		
13C3-PFBS	5.746	302.1 -> 79.9	15611	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C3-PFHxS	7.478	402.1 -> 79.9	9982	2.69 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 = 107.6%		
13C4-PFBA	3.097	216.8 -> 171.9	32659	2.55 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 25.5%		
13C4-PFHpA	6.707	367.1 -> 322.0	39920	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C5-PFHxA	5.792	318.0 -> 273.0	41435	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C5-PFPeA	4.560	268.3 -> 223.0	40185	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C6-PFDA	8.375	519.1 -> 474.1	17106	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C7-PFUnDA	8.853	570.0 -> 525.1	21815	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C8-FOSA	9.687	506.1 -> 77.8	15980	1.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 63.9%		
13C8-PFOA	7.339	421.1 -> 376.0	64253	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOS	8.550	507.1 -> 79.9	9155	2.30 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C9-PFNA	7.882	472.1 -> 427.0	30017	1.34 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.4%		
d3-MeFOSAA	8.407	573.2 -> 419.0	23433	4.69 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C3-HFPO-DA	6.169	286.9 -> 168.9	27280	9.57 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
d3-MeFOSA	10.775	515.0 -> 219.0	7542	1.74 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 69.4%		
d5-EtFOSAA	8.615	589.2 -> 419.0	19655	4.63 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.7%		
d7-MeFOSE	10.696	623.2 -> 58.9	47340	10.68 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 42.7%		
d9-EtFOSE	10.930	639.2 -> 58.9	74447	14.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 57.0%		
d5-EtFOSA	10.996	531.1 -> 219.0	7311	1.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 68.9%		
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	38736	8.82 µg/L	98
		327.1 -> 80.9	14802		
6:2FTS	7.113	427.1 -> 407.0	39163	9.26 µg/L	98
		427.1 -> 80.9	12267		
8:2FTS	8.164	527.1 -> 507.0	19656	8.67 µg/L	97
		527.1 -> 80.8	8073		
EtFOSAA	8.617	584.2 -> 419.1	7453	2.24 µg/L	m 100
		584.2 -> 526.0	3928		
FOSA	9.677	498.1 -> 77.9	14472	2.28 µg/L	100
		498.1 -> 478.0	470		
MeFOSAA	8.408	570.1 -> 419.0	13803	2.27 µg/L	m 99
		570.1 -> 483.0	2668		
PFBA	3.093	212.8 -> 168.9	11761	8.94 µg/L	100
PFBS	5.747	298.7 -> 79.9	13979	2.01 µg/L	98
		298.7 -> 98.8	5461		
PFDA	8.376	512.9 -> 469.0	61920	2.43 µg/L	97
		512.9 -> 219.0	8967		
PFDODA	9.285	613.1 -> 569.0	38656	2.42 µg/L	98
		613.1 -> 319.0	5338		
PFDS	9.450	599.0 -> 79.9	5513	1.99 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	2893	2.41	µg/L	100
		363.1 -> 319.0	51419			
PFHpS	8.046	363.1 -> 169.0	7838	2.21	µg/L	99
		449.0 -> 79.9	12118			
PFHxA	5.795	449.0 -> 98.9	6114	2.57	µg/L	100
		313.0 -> 269.0	43041			
PFHxS	7.479	313.0 -> 118.9	2180	1.92	µg/L	m
		398.7 -> 79.9	11537			
PFNA	7.883	398.7 -> 98.9	5687	2.14	µg/L	100
		463.0 -> 419.0	59473			
PFNS	9.029	463.0 -> 219.0	11225	2.23	µg/L	96
		548.8 -> 79.9	10588			
PFOA	7.341	548.8 -> 98.9	5472	2.21	µg/L	98
		413.0 -> 369.0	78053			
PFOS	8.552	413.0 -> 169.0	13764	2.10	µg/L	m
		498.9 -> 79.9	11411			
PFPeA	4.563	498.9 -> 98.8	6239	4.63	µg/L	100
		263.0 -> 219.0	54953			
PFPeS	6.785	349.1 -> 79.9	11808	2.11	µg/L	100
		349.1 -> 98.9	5630			
PFTeDA	10.000	713.1 -> 669.0	26468	2.52	µg/L	100
		713.1 -> 168.9	2279			
PFTrDA	9.656	663.0 -> 619.0	33437	2.07	µg/L	99
		663.0 -> 168.9	3636			
PFUnDA	8.854	563.1 -> 519.0	41605	2.47	µg/L	93
		563.1 -> 269.1	6457			
11CI-PF3OUdS	9.708	630.9 -> 450.9	51441	4.14	µg/L	92
		632.9 -> 452.9	16802			
9CI-PF3ONS	8.906	530.8 -> 351.0	93986	4.39	µg/L	98
		532.8 -> 353.0	28225			
ADONA	6.959	376.9 -> 250.9	194908	4.42	µg/L	98
		376.9 -> 84.8	54773			
HFPO-DA	6.169	284.9 -> 168.9	13583	4.76	µg/L	97
		284.9 -> 184.9	1751			
3:3FTCA	3.971	241.0 -> 177.0	3180	3.96	µg/L	100
		241.0 -> 117.0	435			
5:3FTCA	6.374	341.0 -> 237.1	182521	54.91	µg/L	98
		341.0 -> 217.0	138982			
7:3FTCA	7.748	441.0 -> 316.9	133310	59.32	µg/L	99
		441.0 -> 336.9	298996			
EtFOSA	10.997	526.0 -> 219.0	18300	4.69	µg/L	95
		526.0 -> 169.0	25292			
EtFOSE	10.943	630.0 -> 58.9	40989	10.64	µg/L	100
		511.9 -> 219.0	15003			
MeFOSA	10.777	511.9 -> 169.0	22061	4.39	µg/L	m
		616.1 -> 58.9	24769			
MeFOSE	10.709	699.1 -> 79.9	2634	12.07	µg/L	m
		699.1 -> 98.8	1514			
PFDoDS	10.127	295.0 -> 201.0	10582	1.93	µg/L	98
		295.0 -> 84.9	2857			
NFDHA	5.673	279.0 -> 85.1	40483	4.95	µg/L	100
		229.0 -> 84.9	15536			
PFMBA	4.988	314.8 -> 134.9	106245	2.35	µg/L	100
		314.8 -> 82.9	3136			
PFMPA	3.667			4.70	µg/L	98
PFEESA	6.288					

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

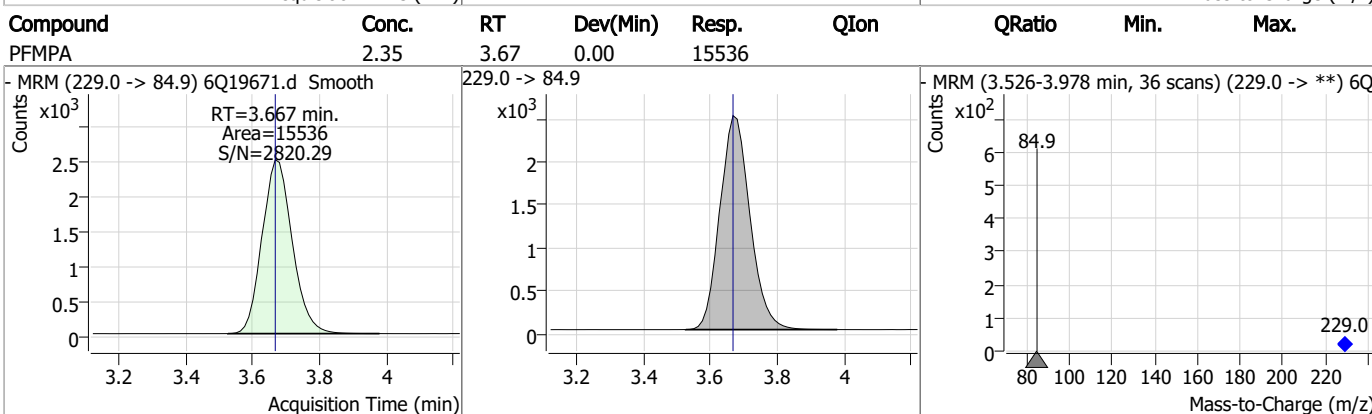
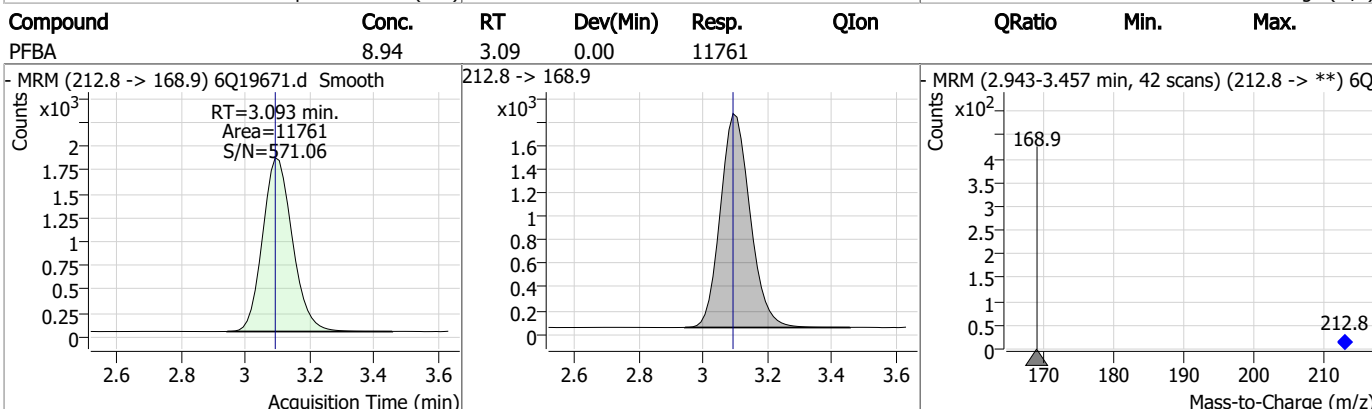
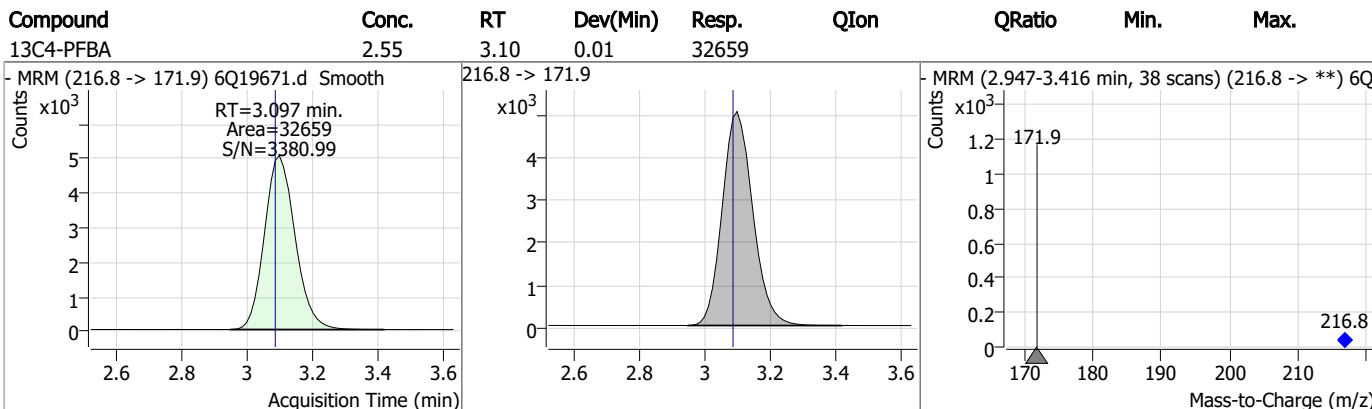
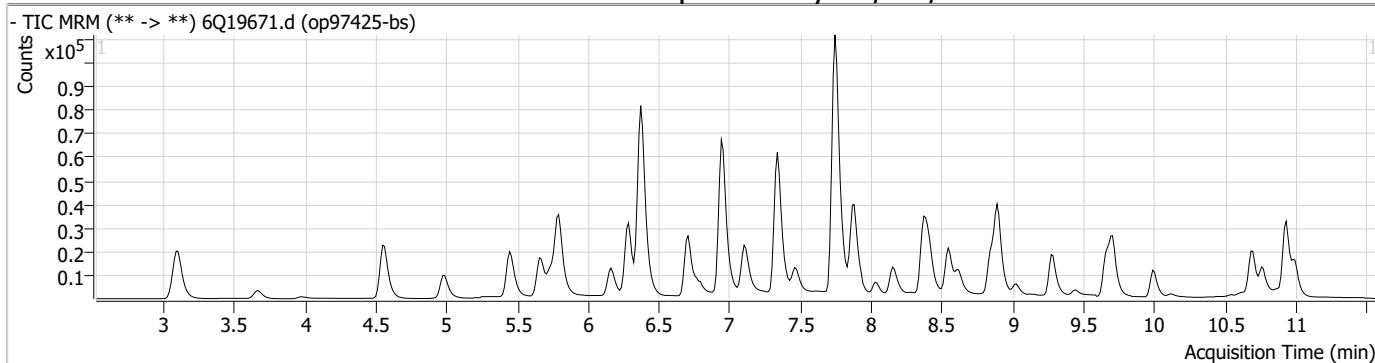
Perfluorinated Compounds by LC/MS/MS

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

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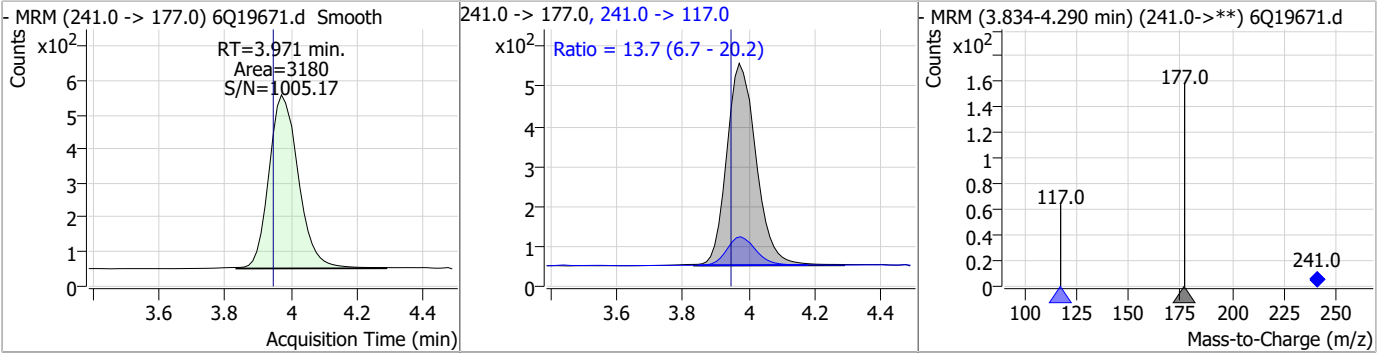
Perfluorinated Compounds by LC/MS/MS



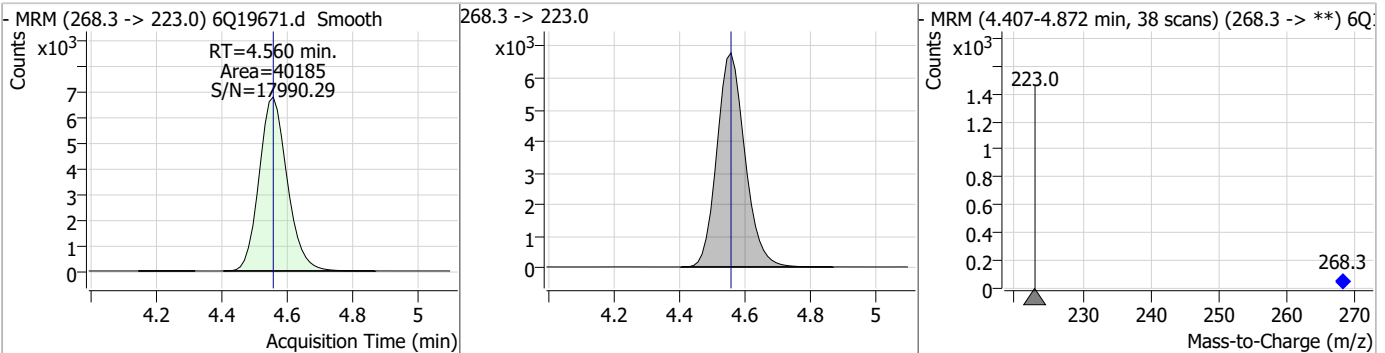
7.3.1
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Perfluorinated Compounds by LC/MS/MS

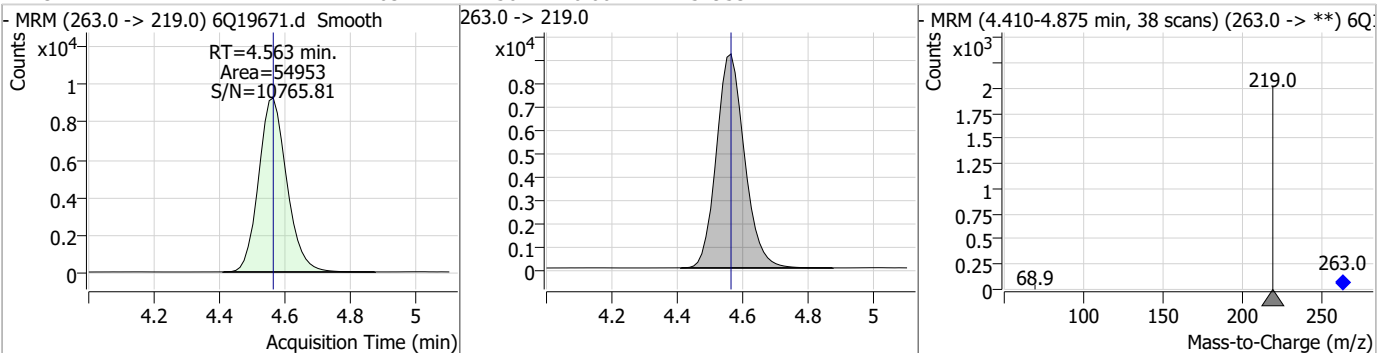
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	3.96	3.97	0.02	3180	241.0 -> 117.0	13.7	6.7	20.2



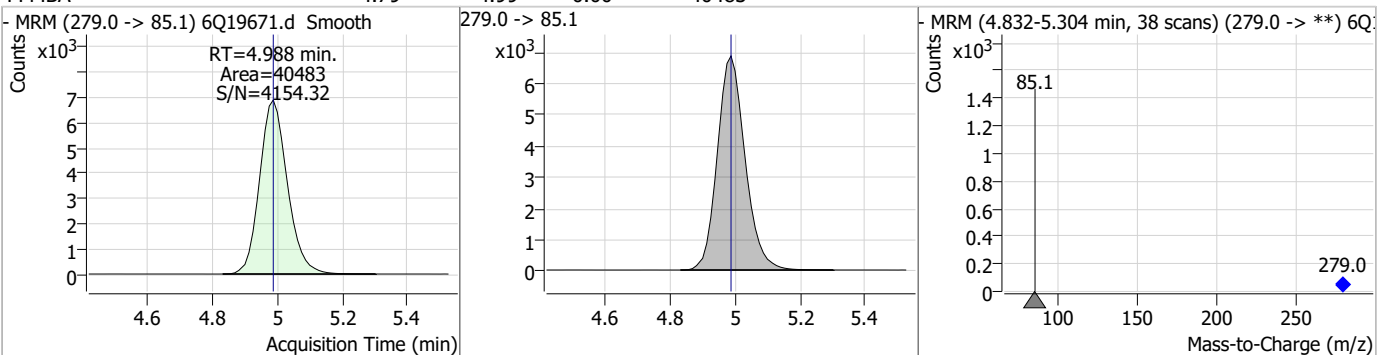
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.15	4.56	0.00	40185	268.3 -> 223.0			



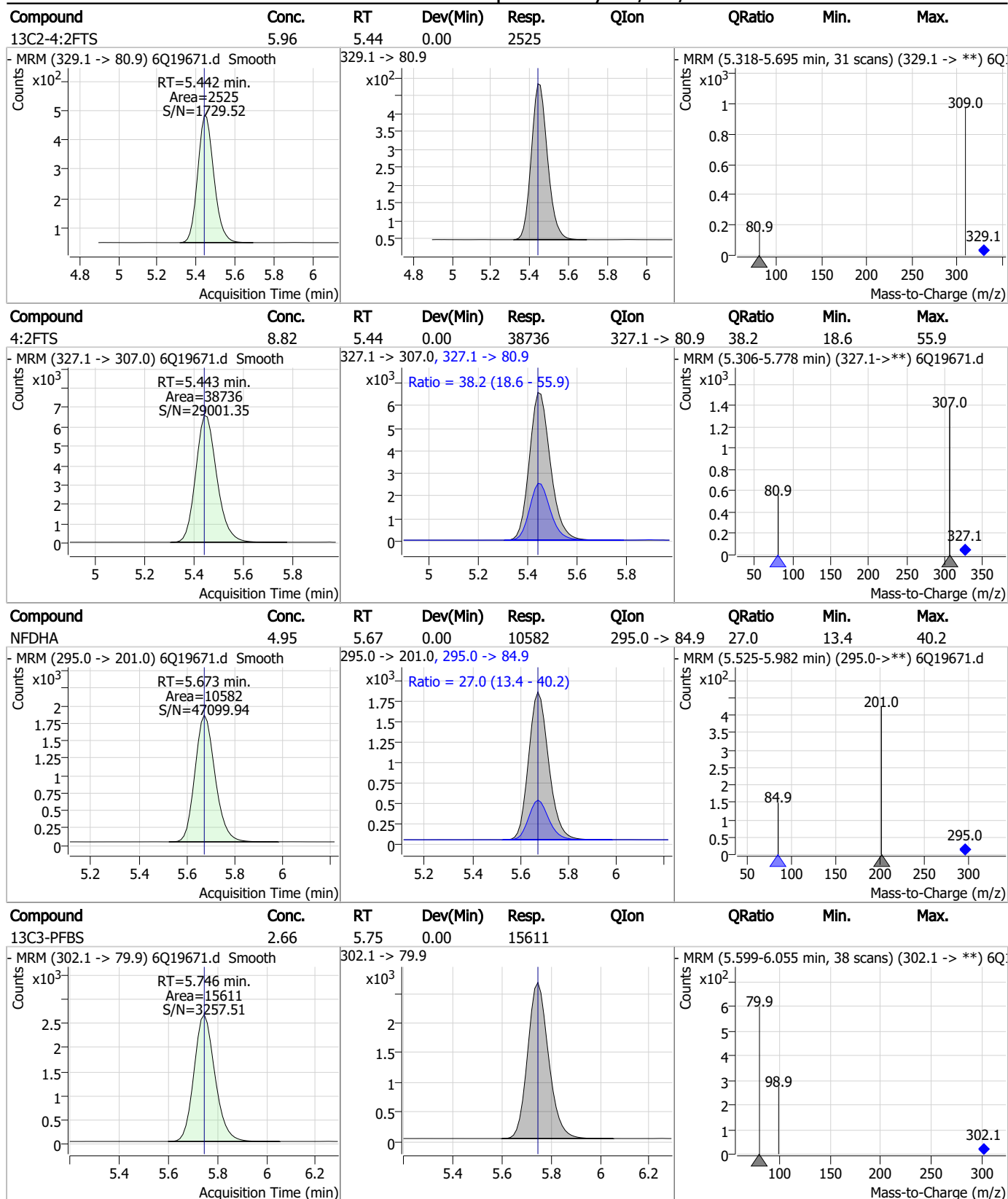
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.63	4.56	0.00	54953	263.0 -> 219.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.79	4.99	0.00	40483	279.0 -> 85.1			



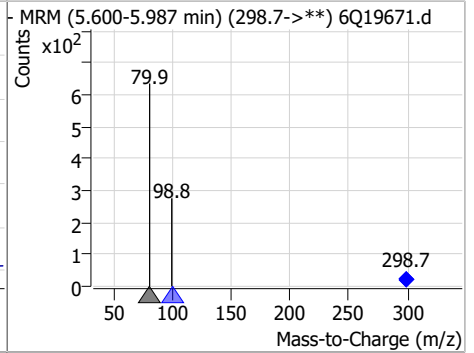
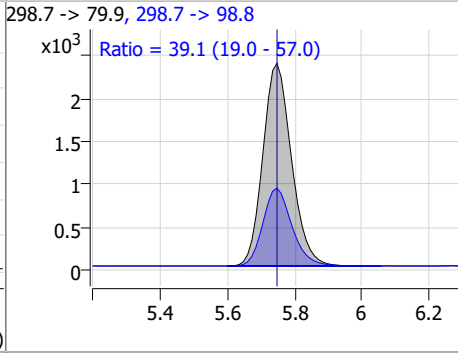
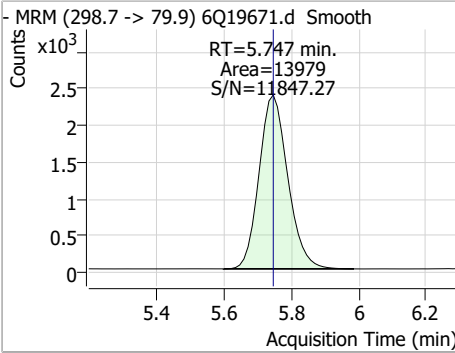
Perfluorinated Compounds by LC/MS/MS



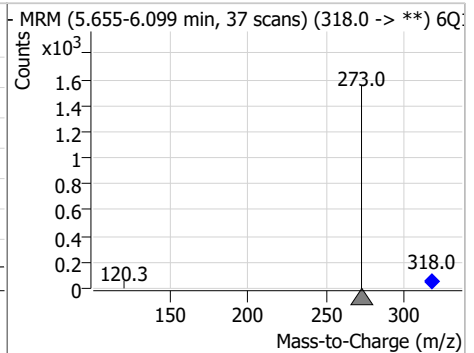
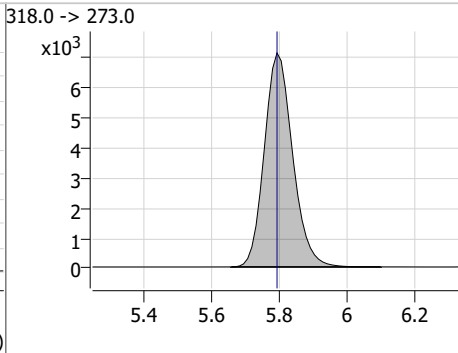
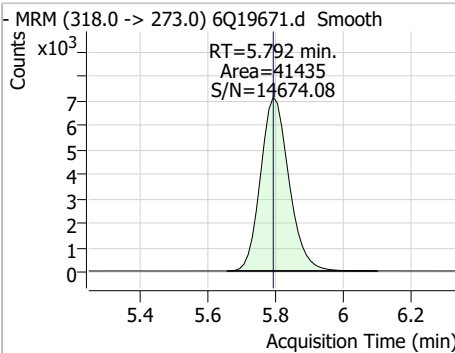
7.3.1
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Perfluorinated Compounds by LC/MS/MS

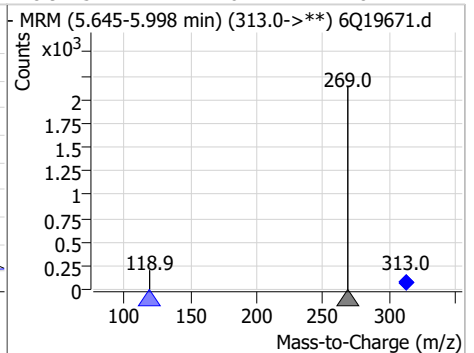
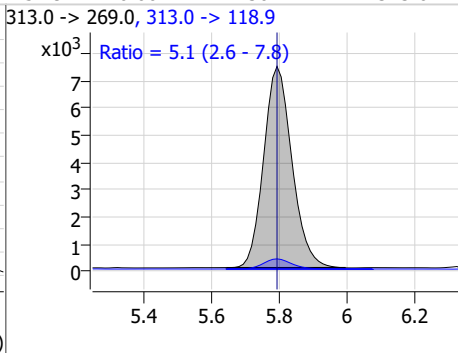
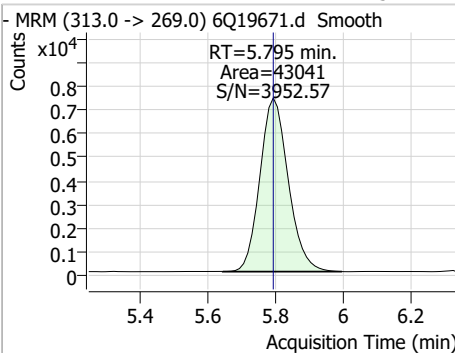
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.01	5.75	0.00	13979	298.7 -> 98.8	39.1	19.0	57.0



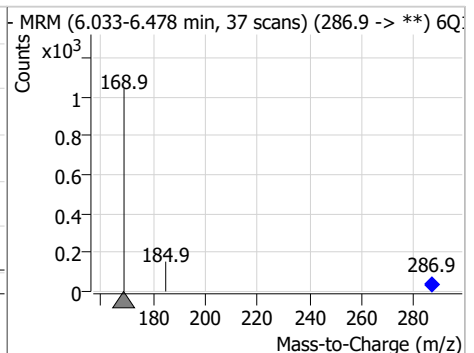
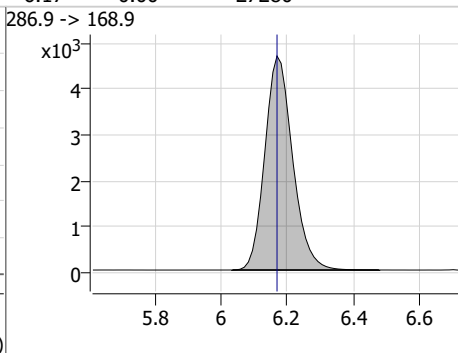
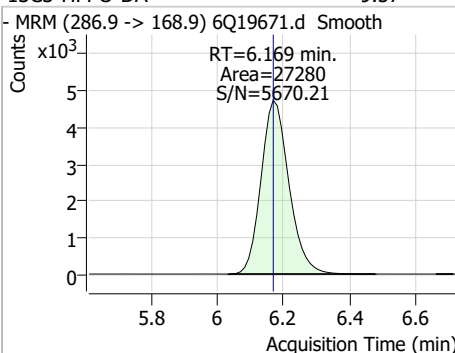
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.43	5.79	0.00	41435				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.57	5.79	0.00	43041	313.0 -> 118.9	5.1	2.6	7.8

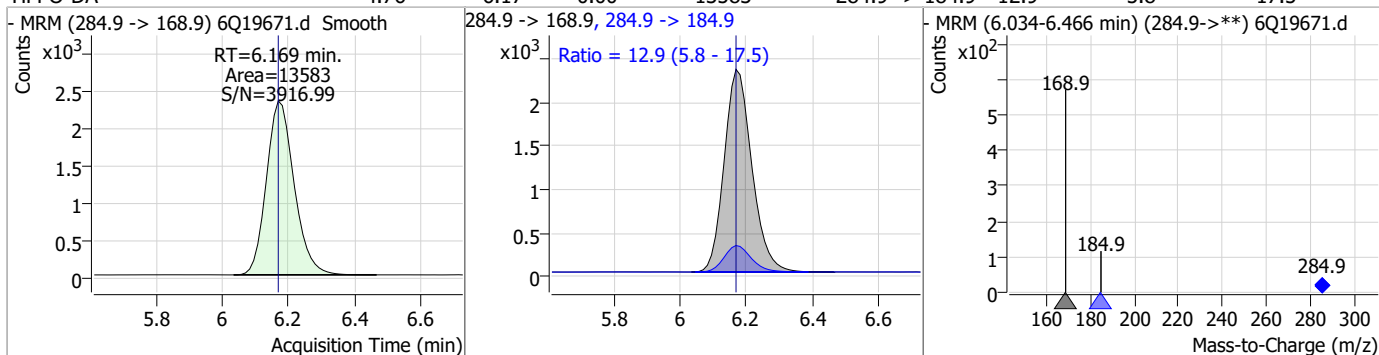


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.57	6.17	0.00	27280				

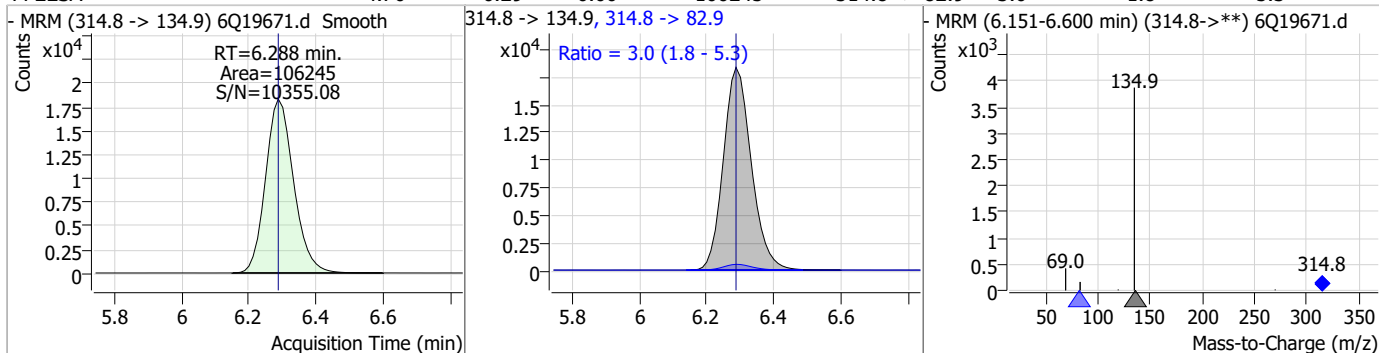


Perfluorinated Compounds by LC/MS/MS

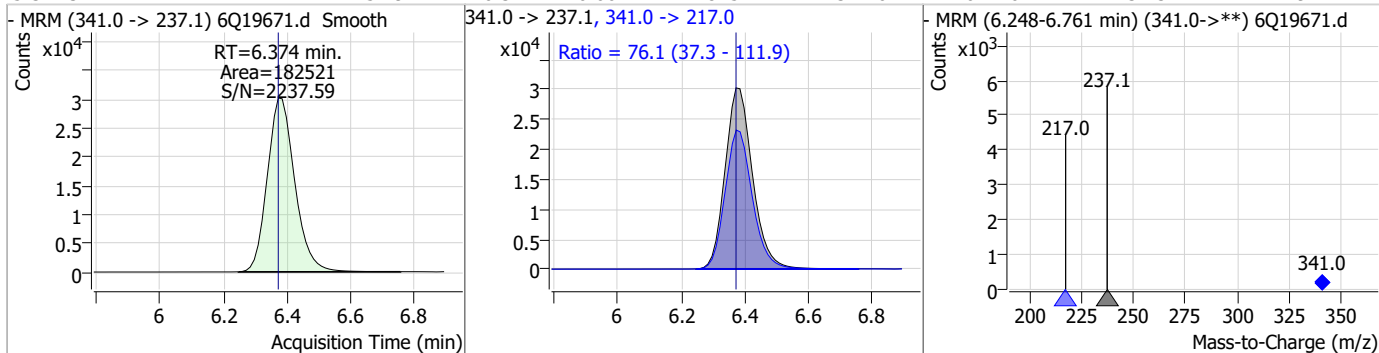
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.76	6.17	0.00	13583	284.9 -> 184.9	12.9	5.8	17.5



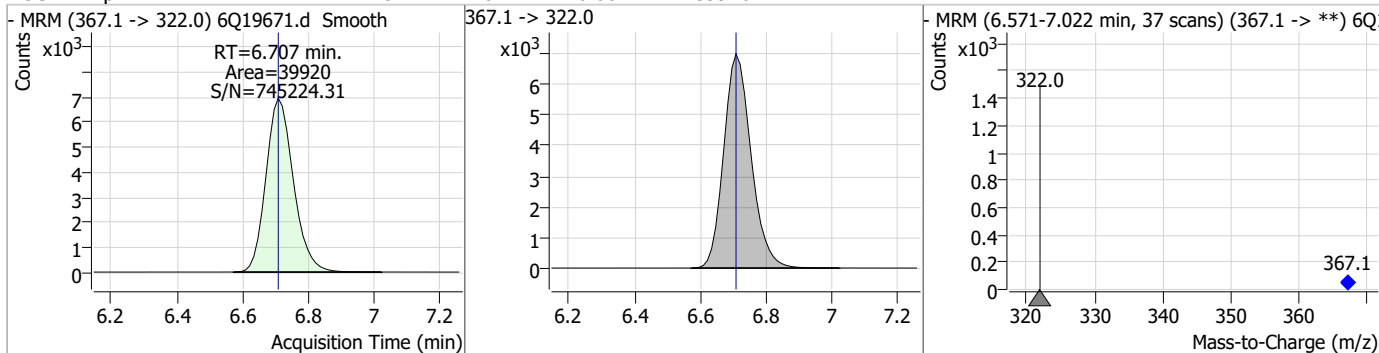
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.70	6.29	0.00	106245	314.8 -> 82.9	3.0	1.8	5.3



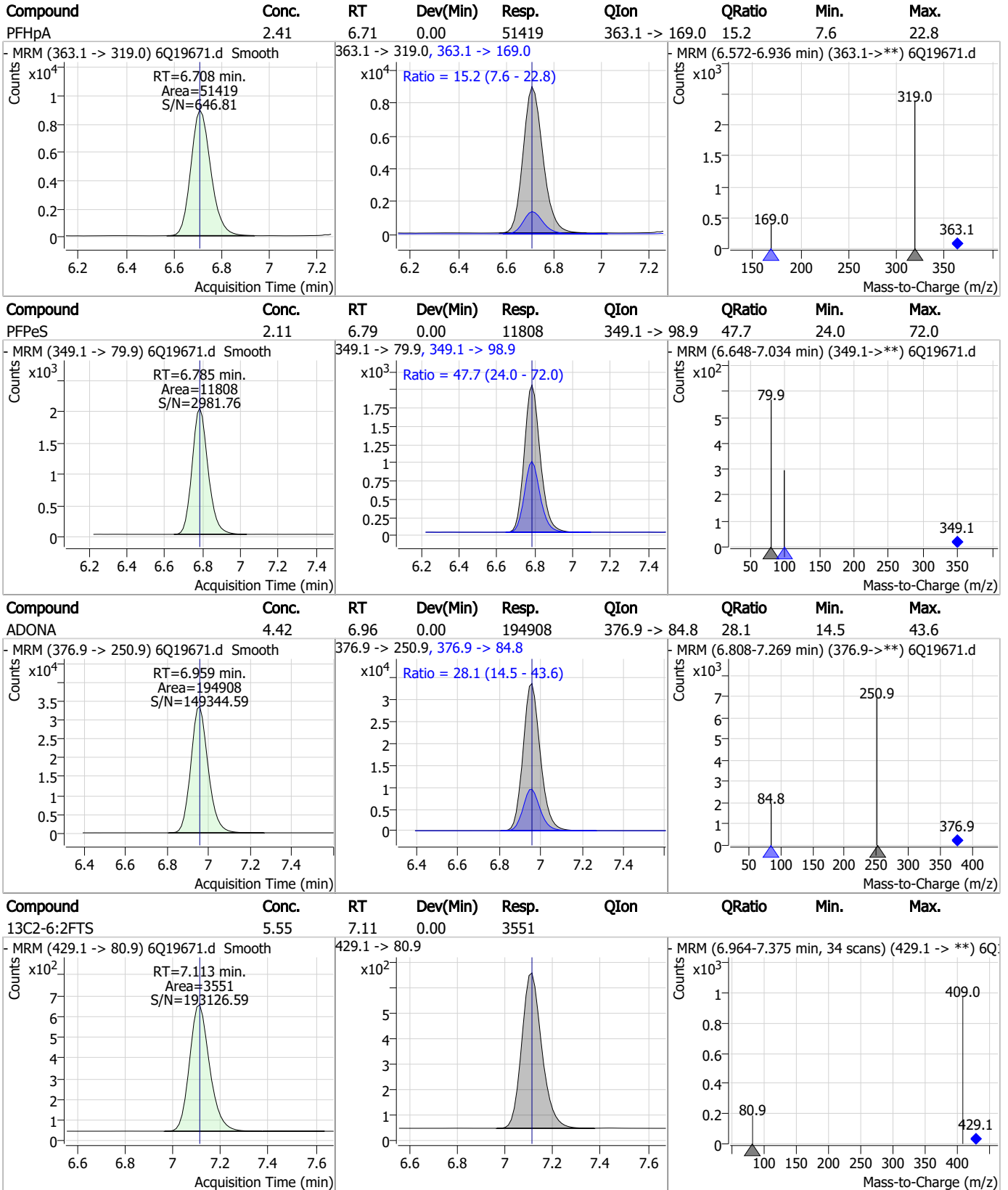
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	54.91	6.37	0.00	182521	341.0 -> 217.0	76.1	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.51	6.71	0.00	39920	367.1 -> 322.0			



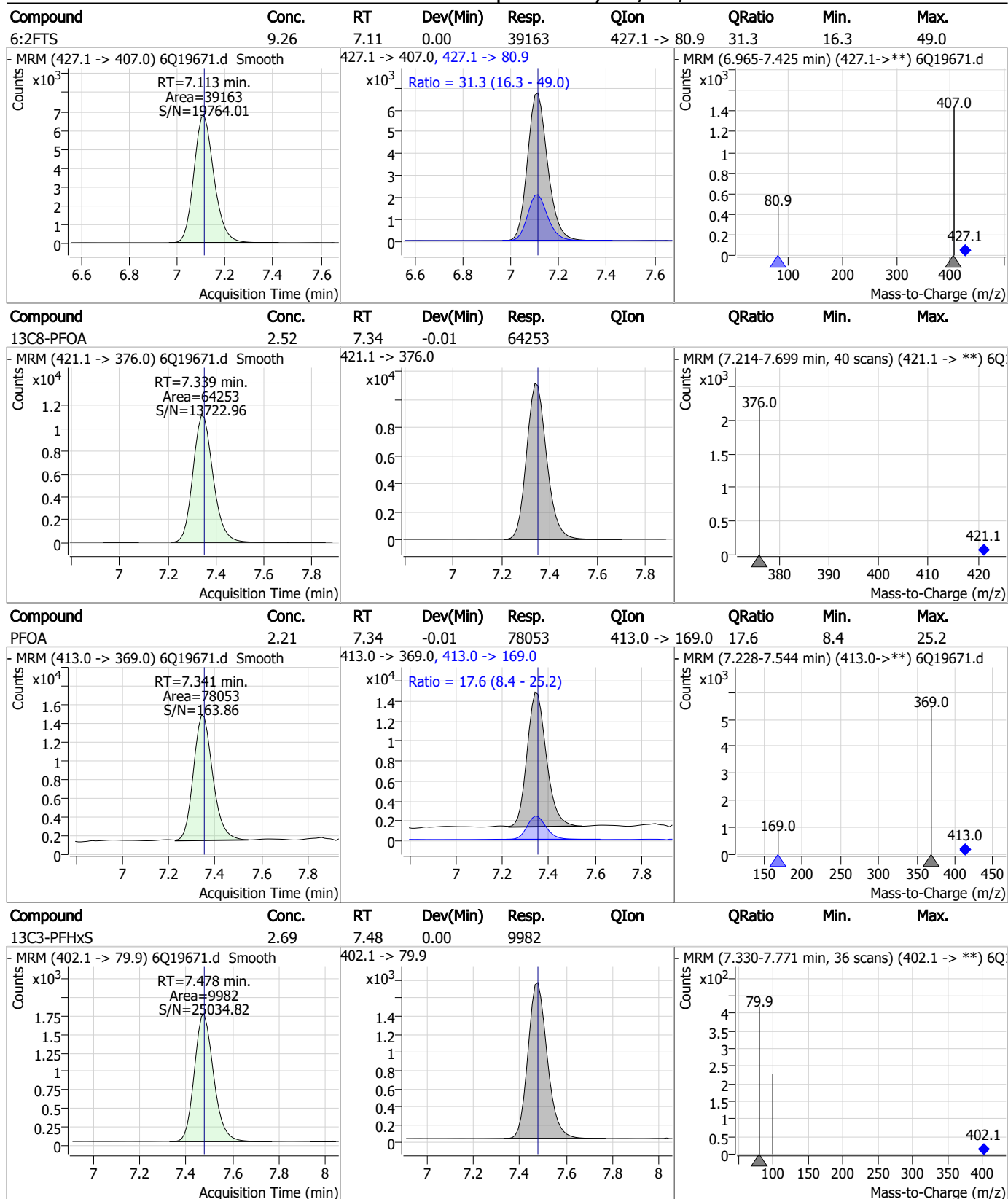
Perfluorinated Compounds by LC/MS/MS



7.3.1

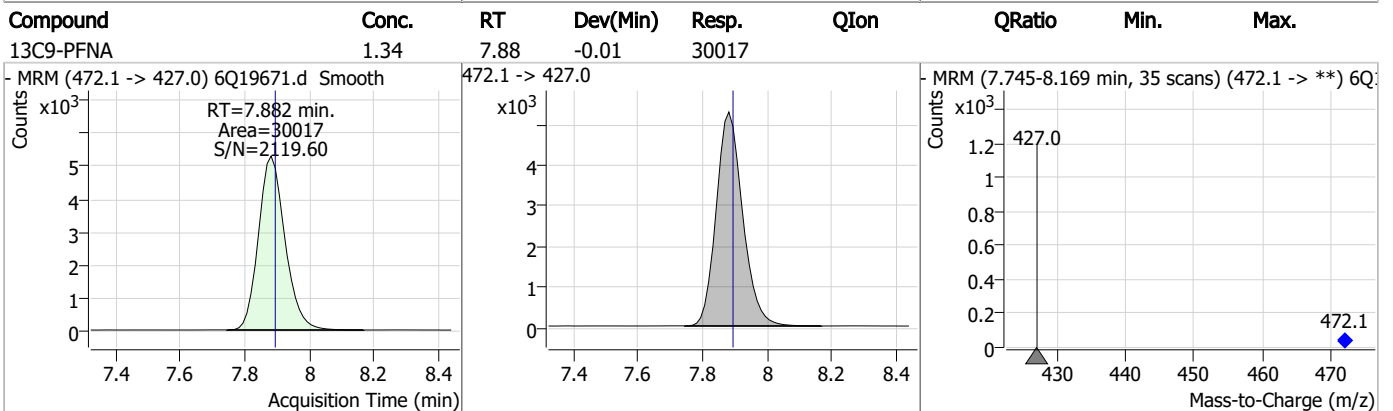
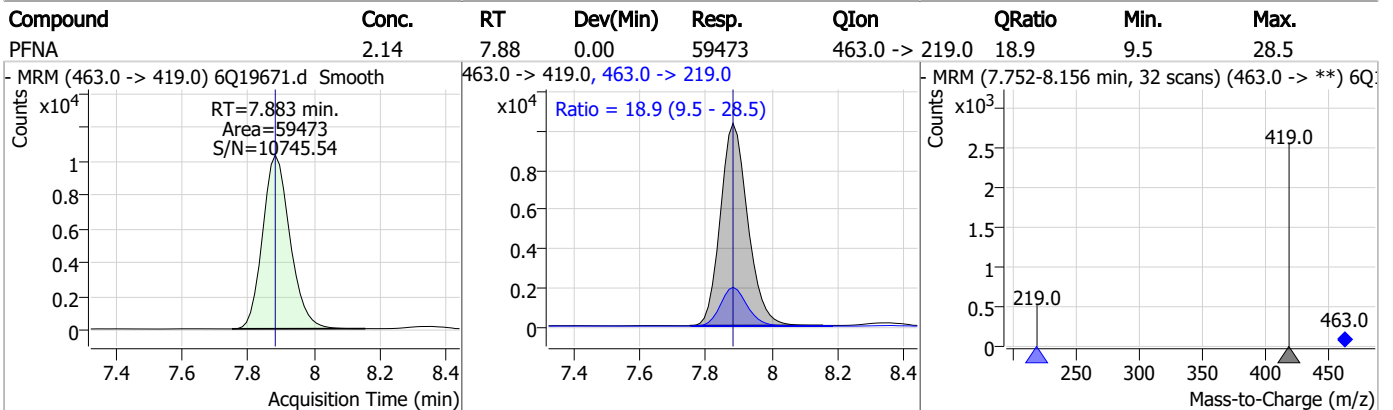
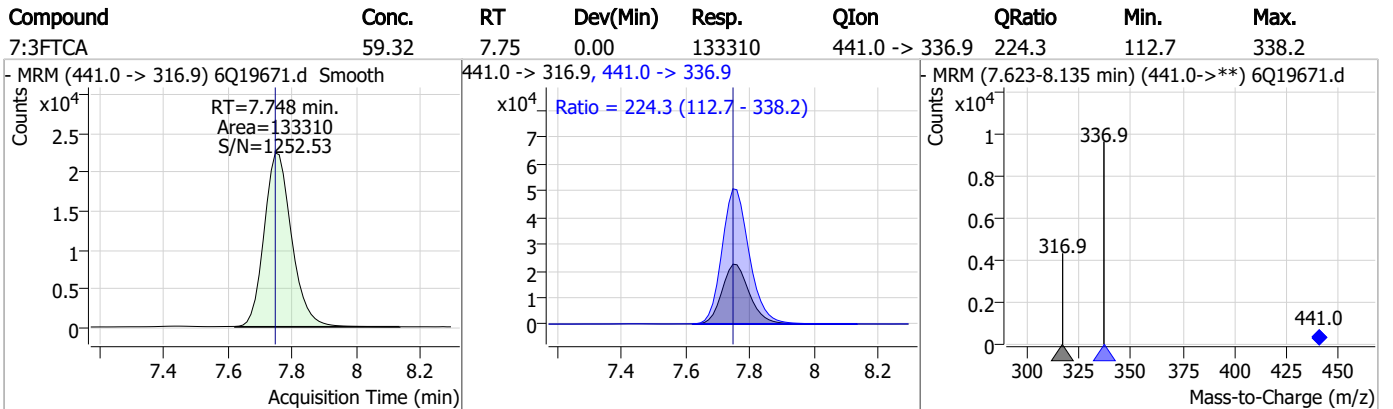
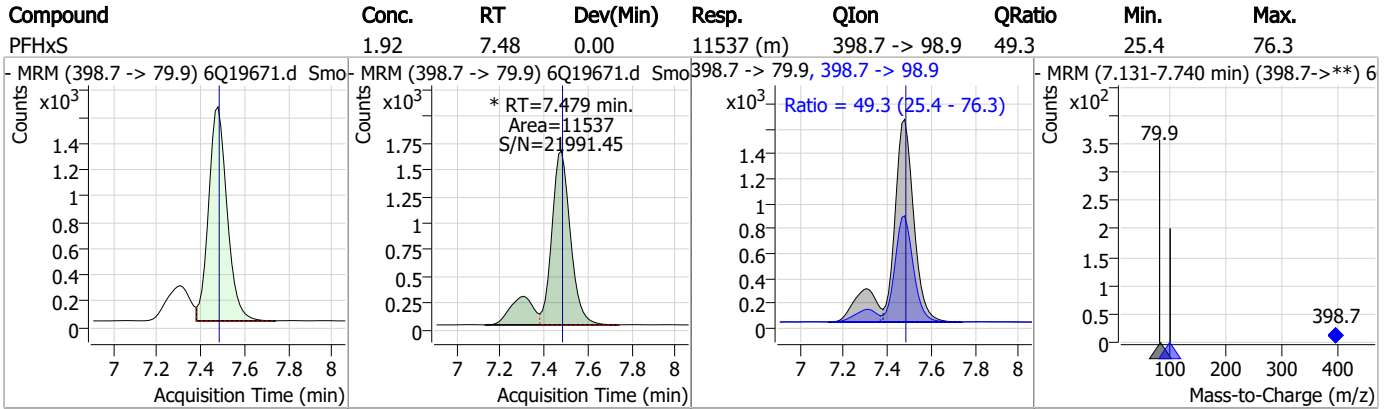
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Perfluorinated Compounds by LC/MS/MS

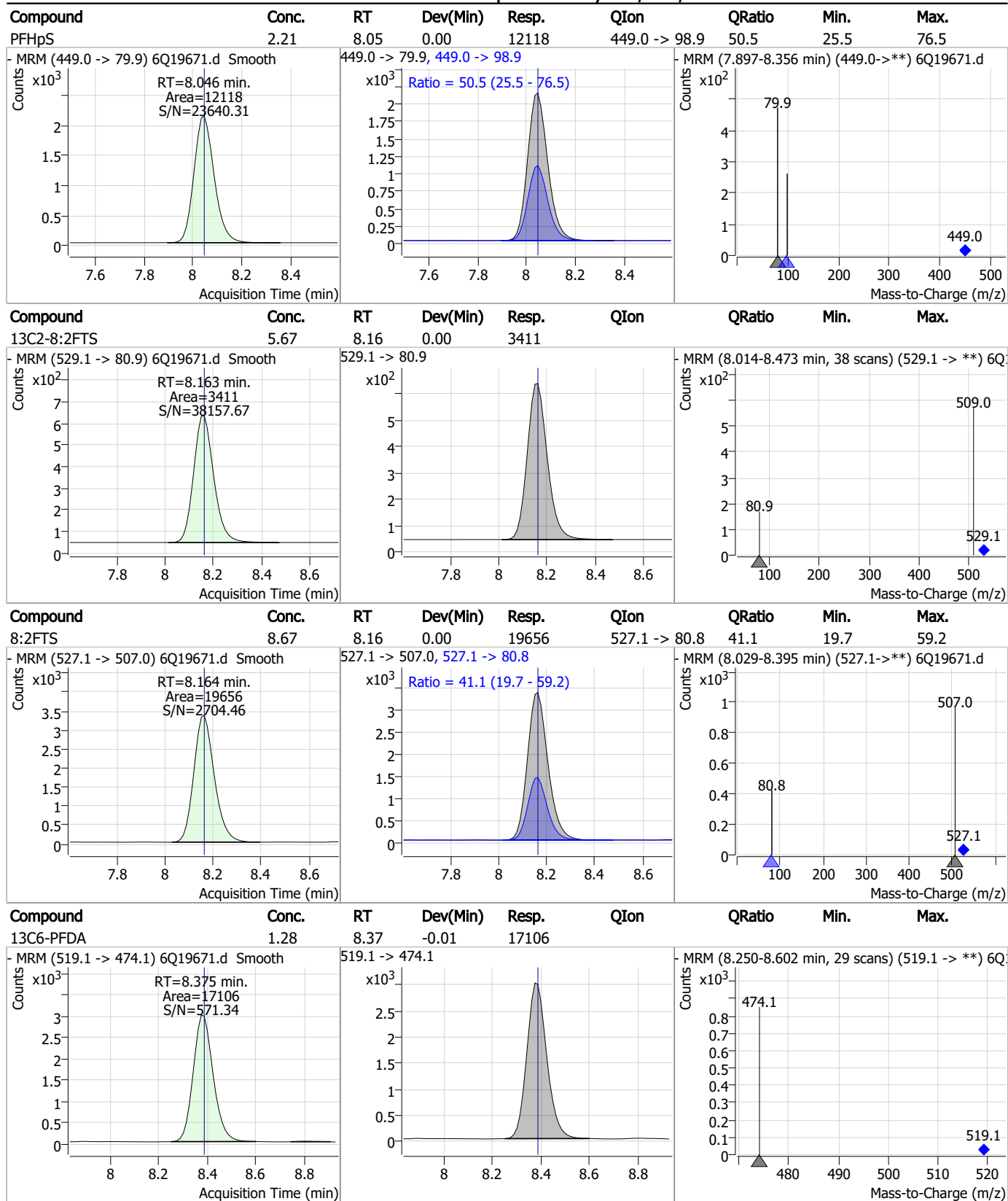


7.3.1

Perfluorinated Compounds by LC/MS/MS



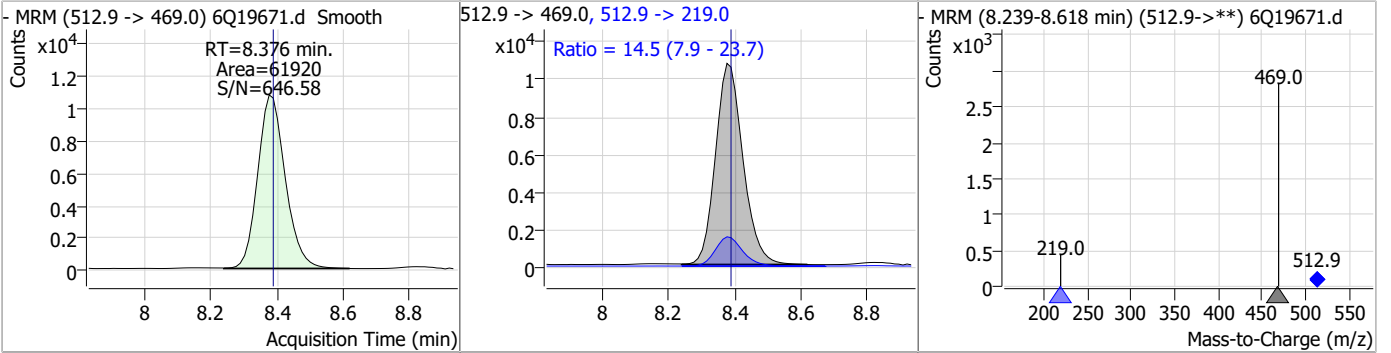
Perfluorinated Compounds by LC/MS/MS



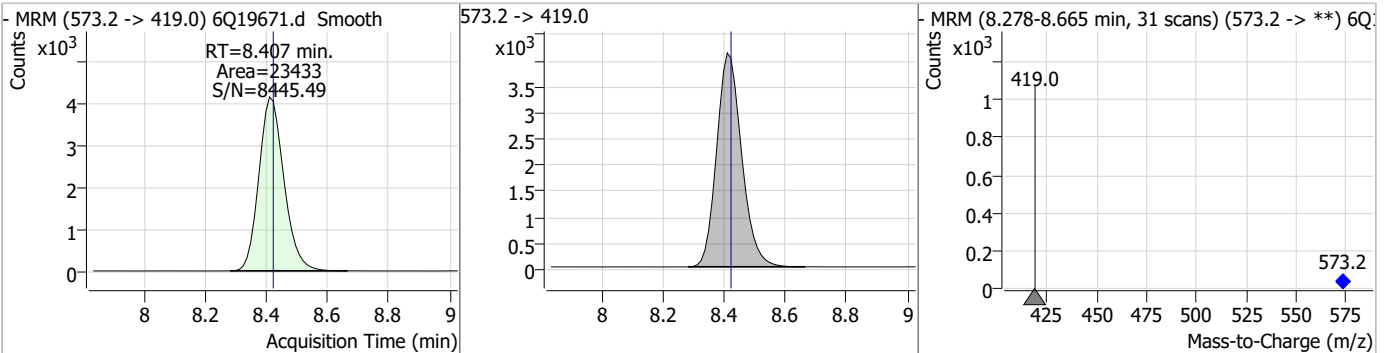
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Perfluorinated Compounds by LC/MS/MS

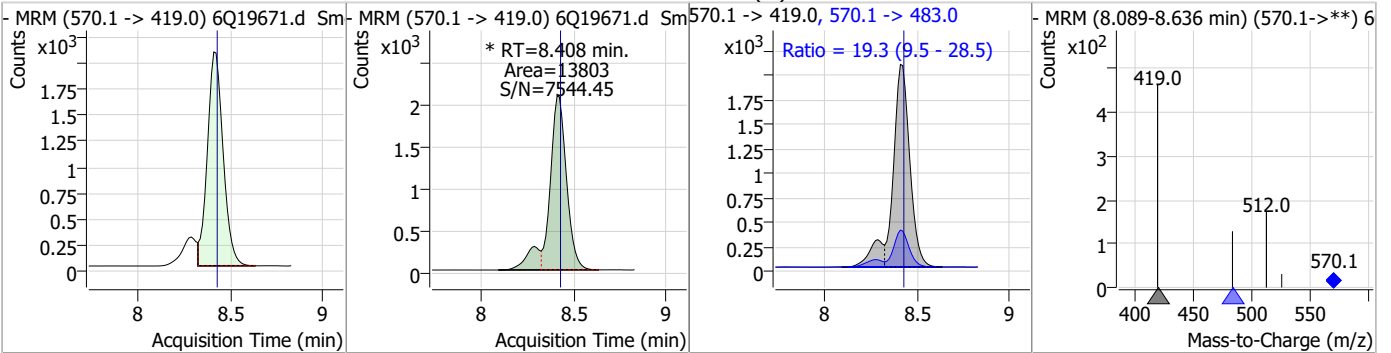
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.43	8.38	-0.01	61920	512.9 -> 219.0	14.5	7.9	23.7



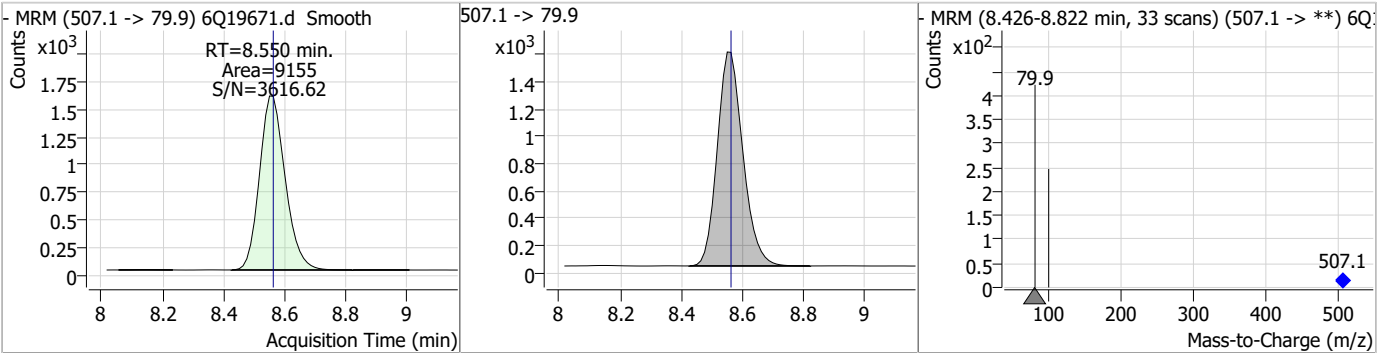
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.69	8.41	-0.01	23433				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.27	8.41	-0.01	13803 (m)	570.1 -> 483.0	19.3	9.5	28.5

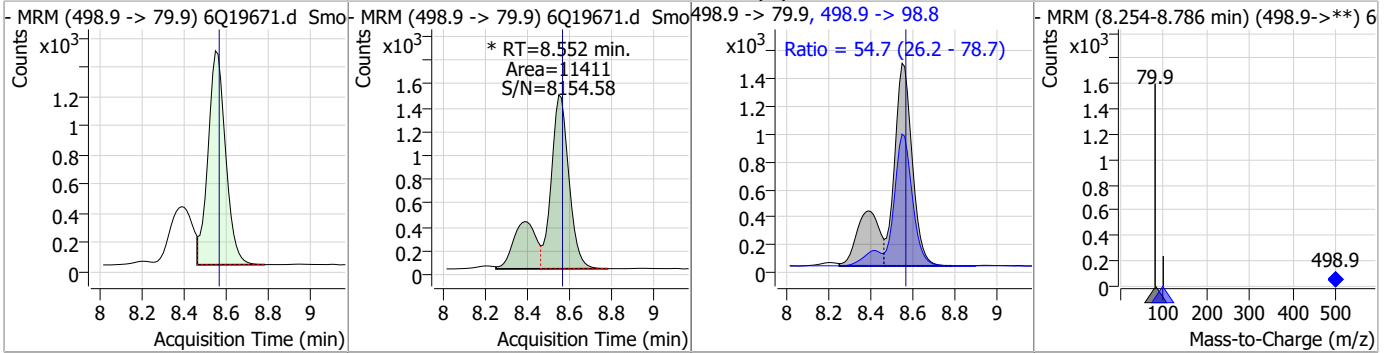


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.30	8.55	-0.01	9155				

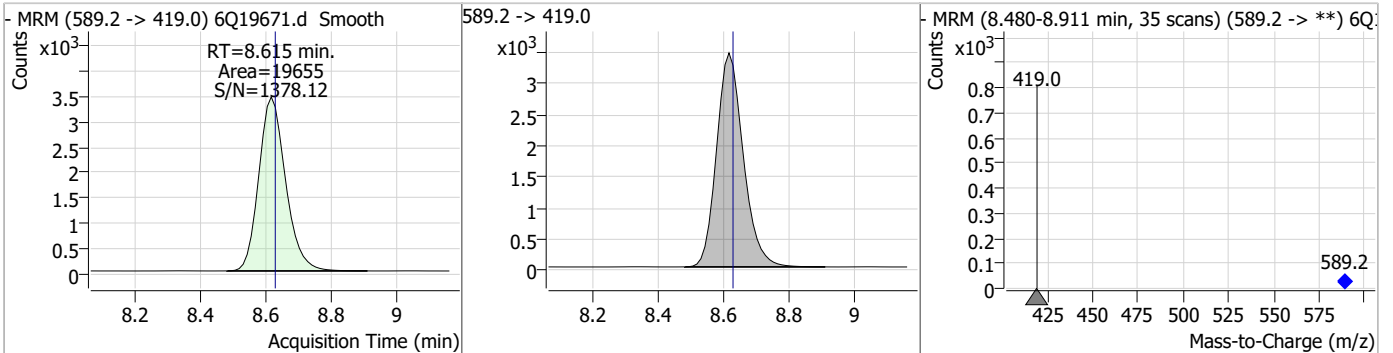


Perfluorinated Compounds by LC/MS/MS

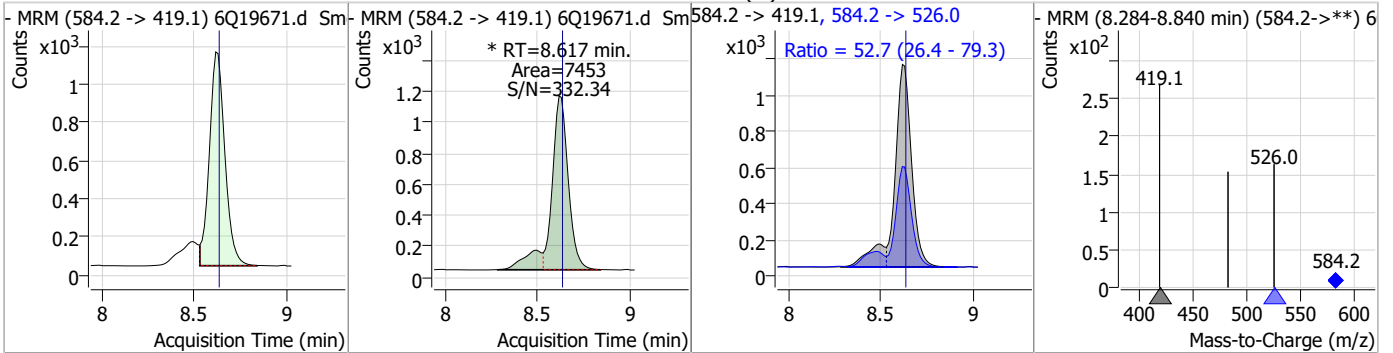
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.10	8.55	-0.01	11411 (m)	498.9 -> 98.8	54.7	26.2	78.7



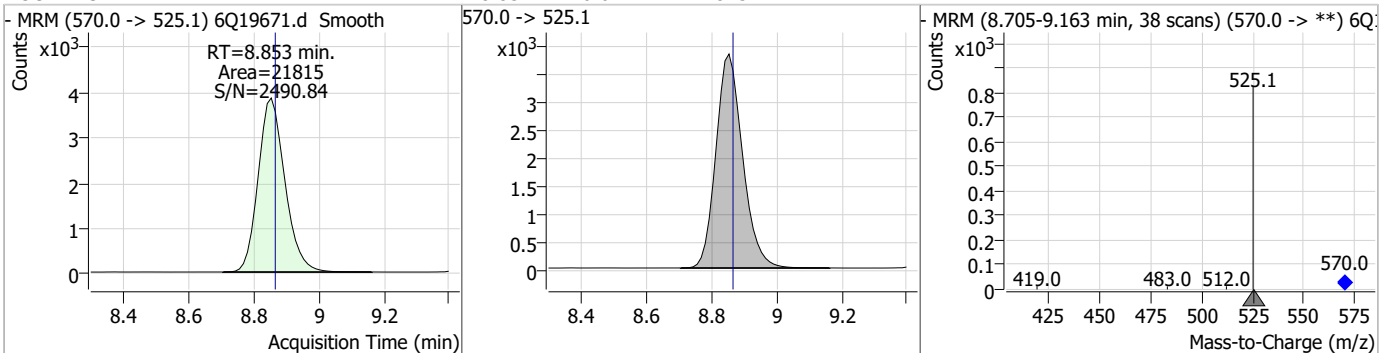
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.63	8.62	-0.01	19655				



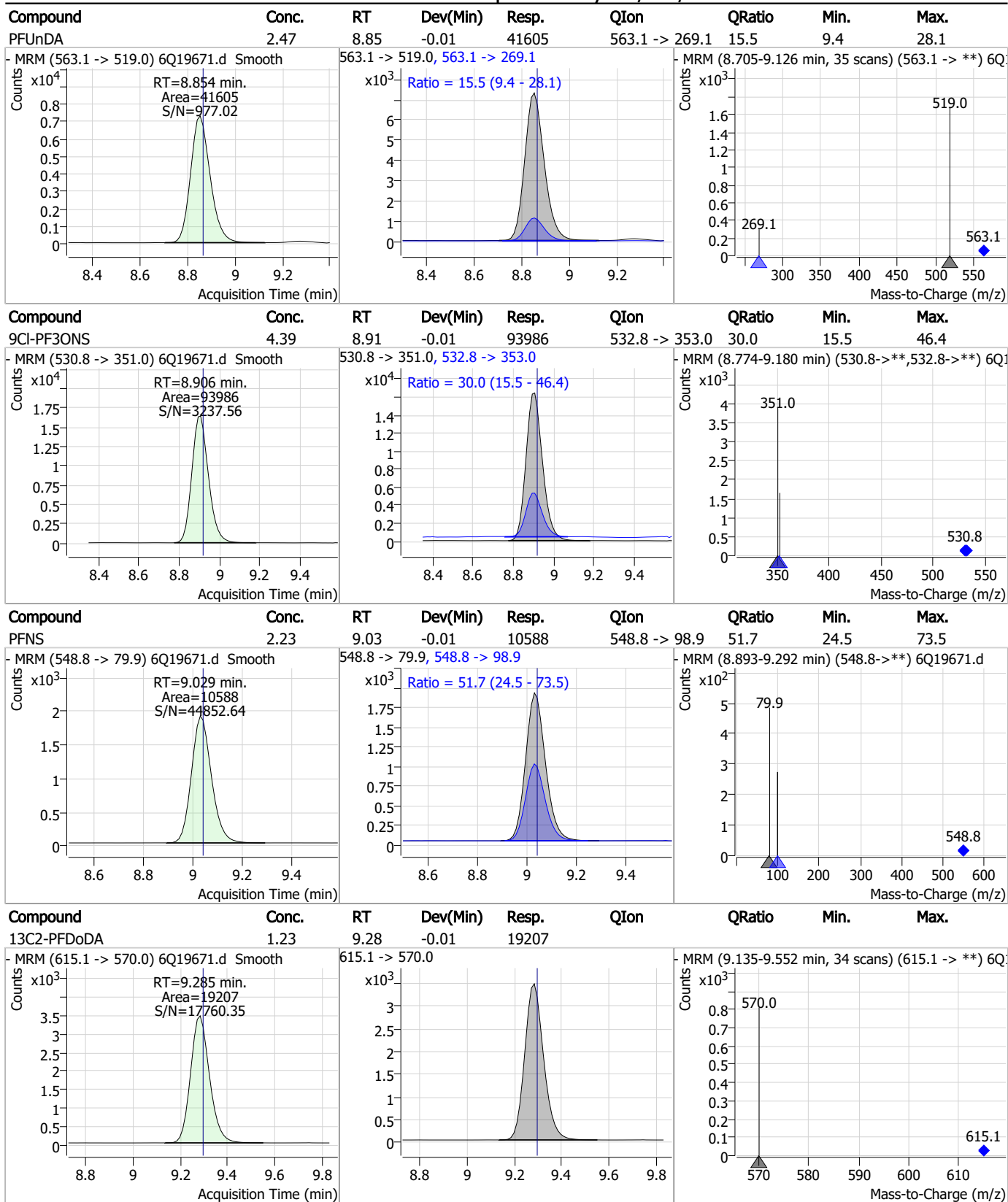
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.24	8.62	-0.01	7453 (m)	584.2 -> 526.0	52.7	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.22	8.85	-0.01	21815				



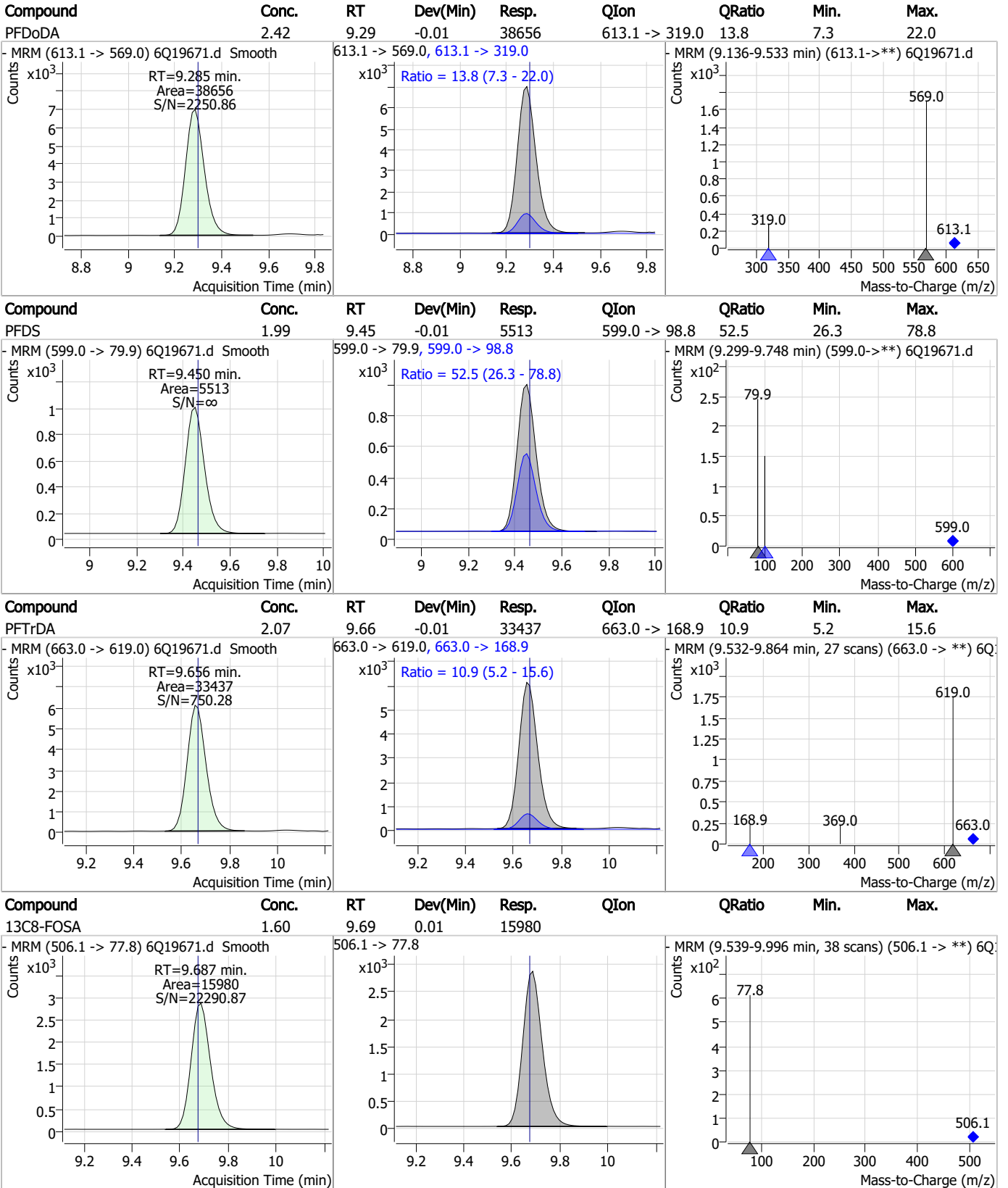
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



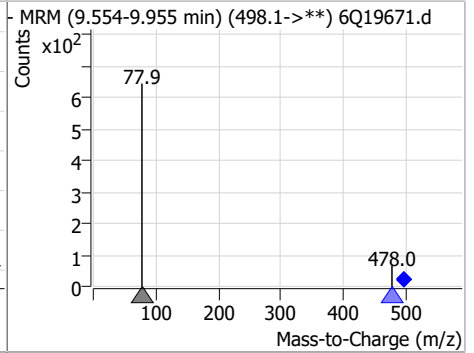
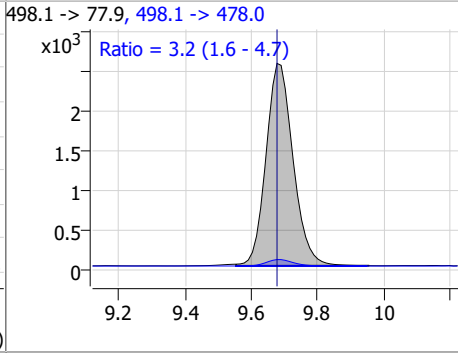
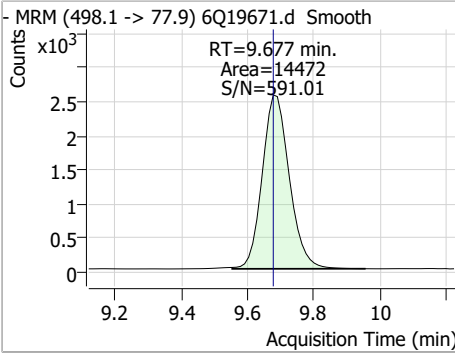
7.3.1

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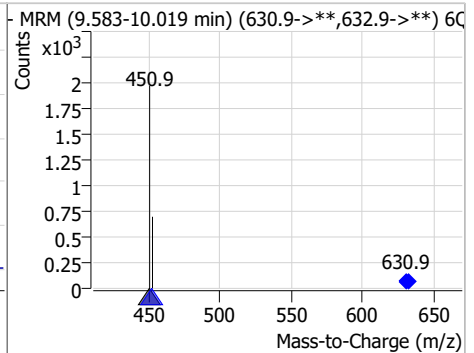
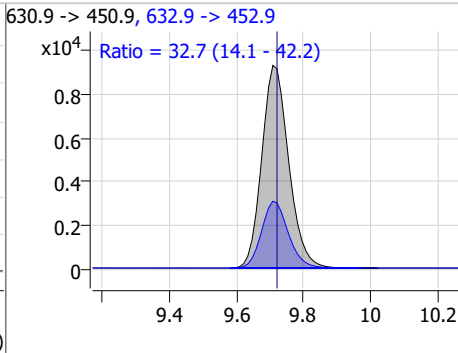
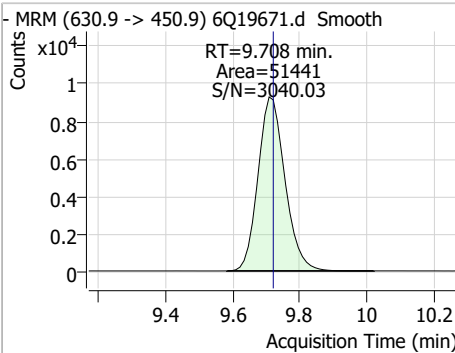


Perfluorinated Compounds by LC/MS/MS

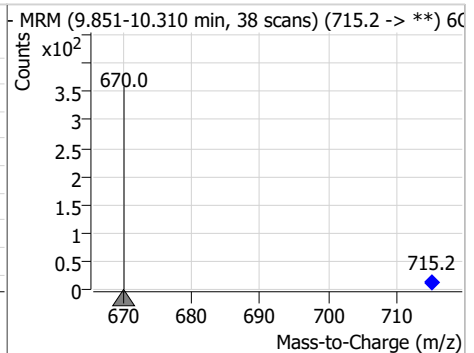
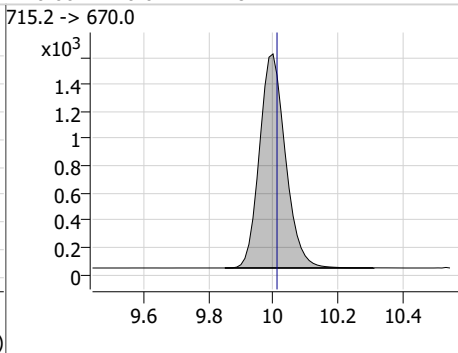
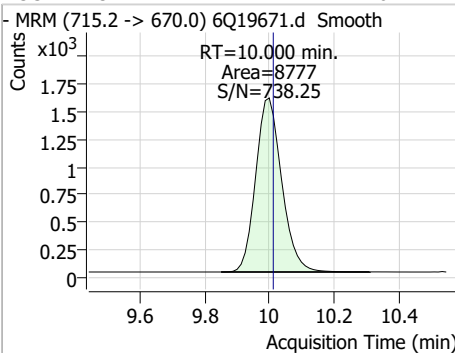
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.28	9.68	0.00	14472	498.1 -> 478.0	3.2	1.6	4.7



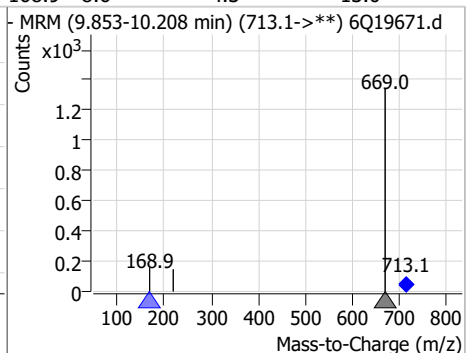
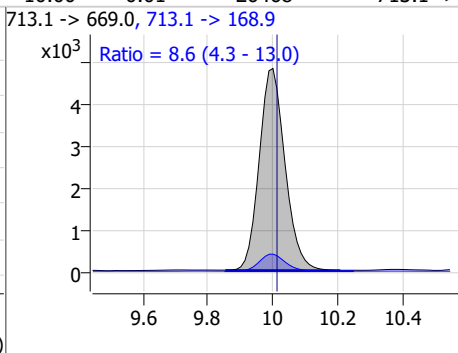
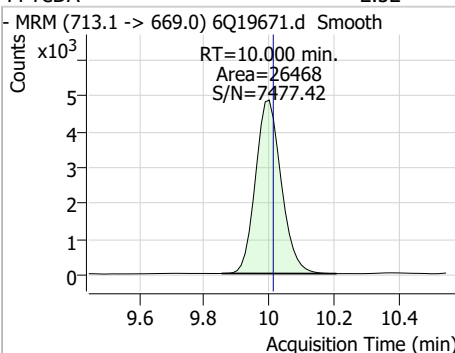
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	4.14	9.71	-0.01	51441	630.9 -> 452.9	32.7	14.1	42.2



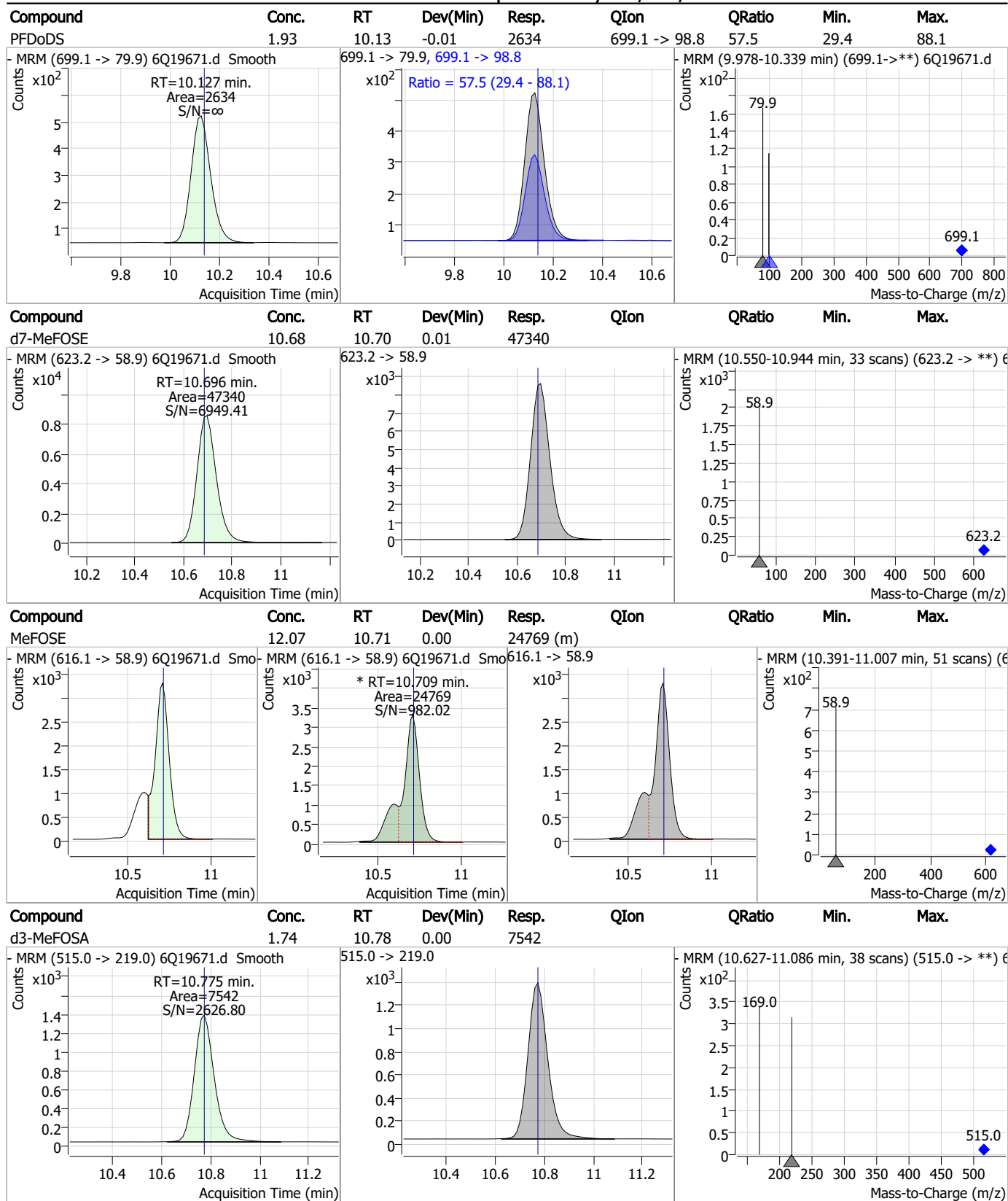
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.01	10.00	-0.01	8777	715.2 -> 670.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.52	10.00	-0.01	26468	713.1 -> 168.9	8.6	4.3	13.0



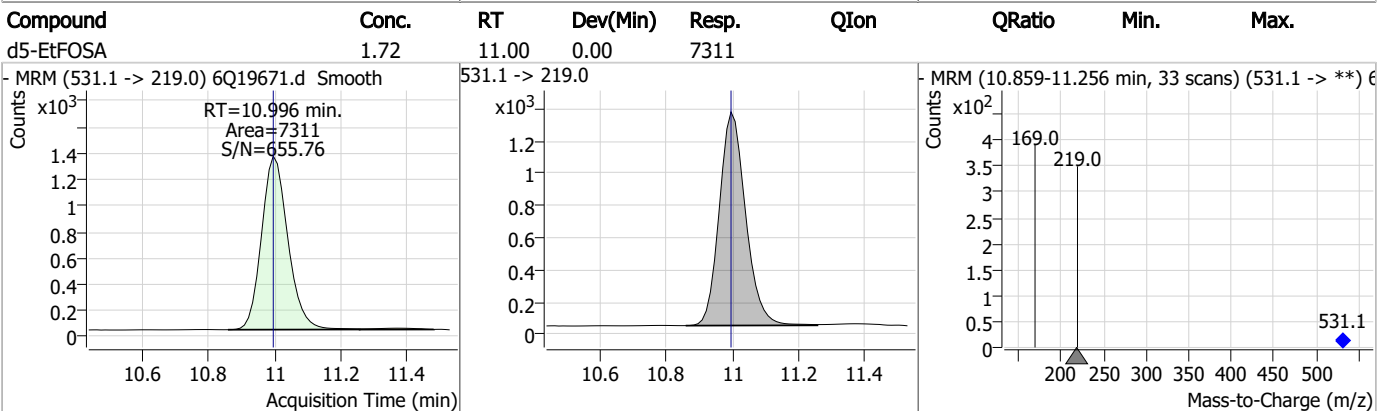
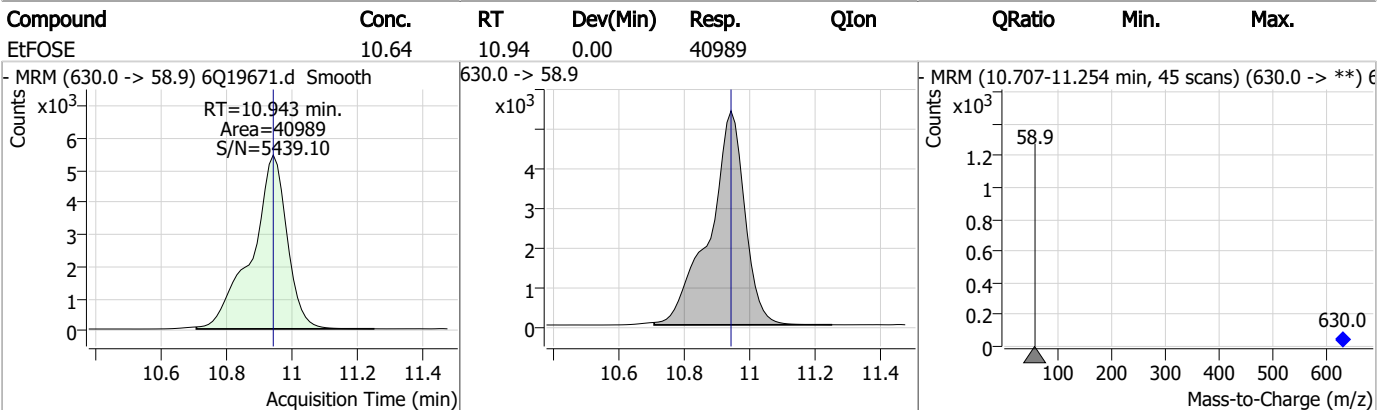
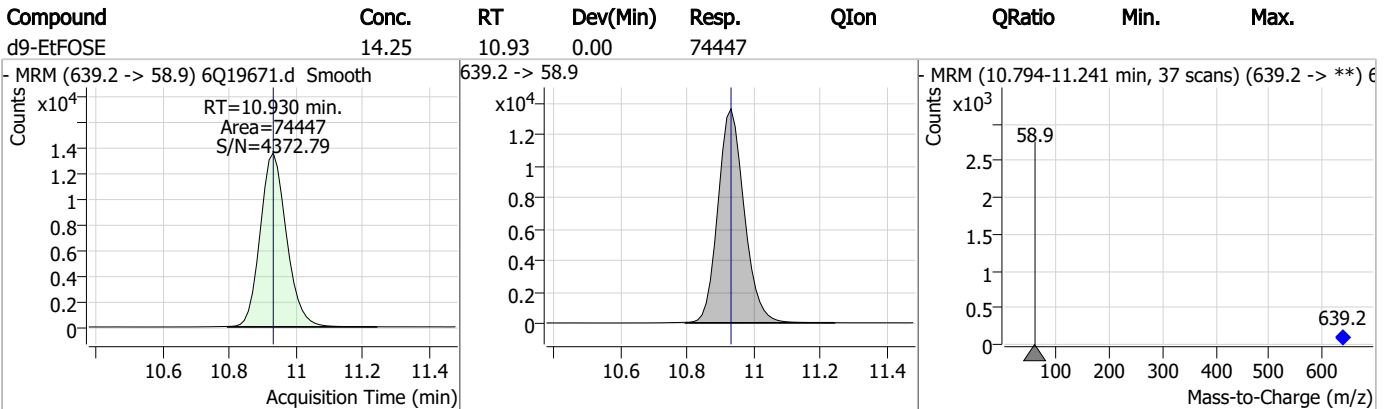
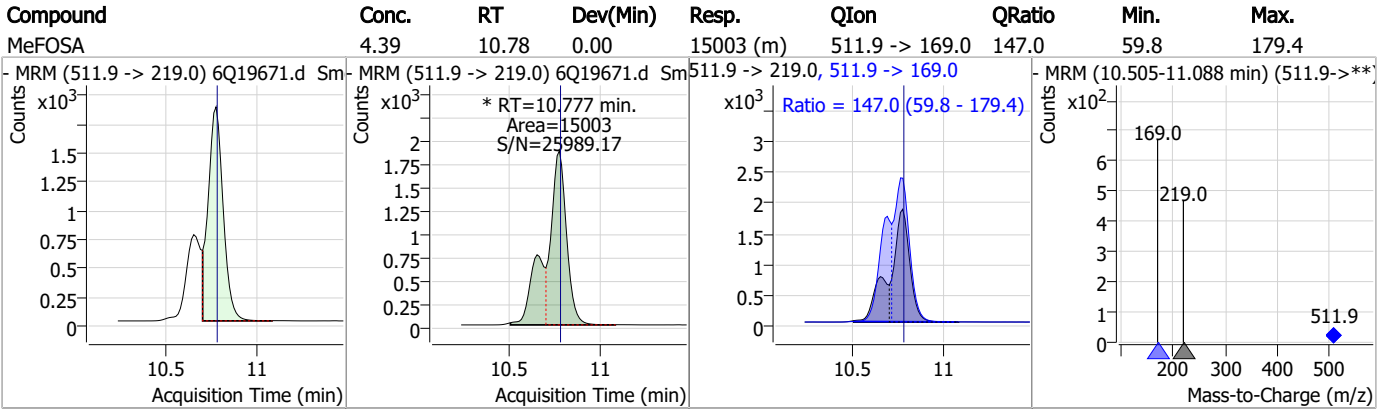
Perfluorinated Compounds by LC/MS/MS



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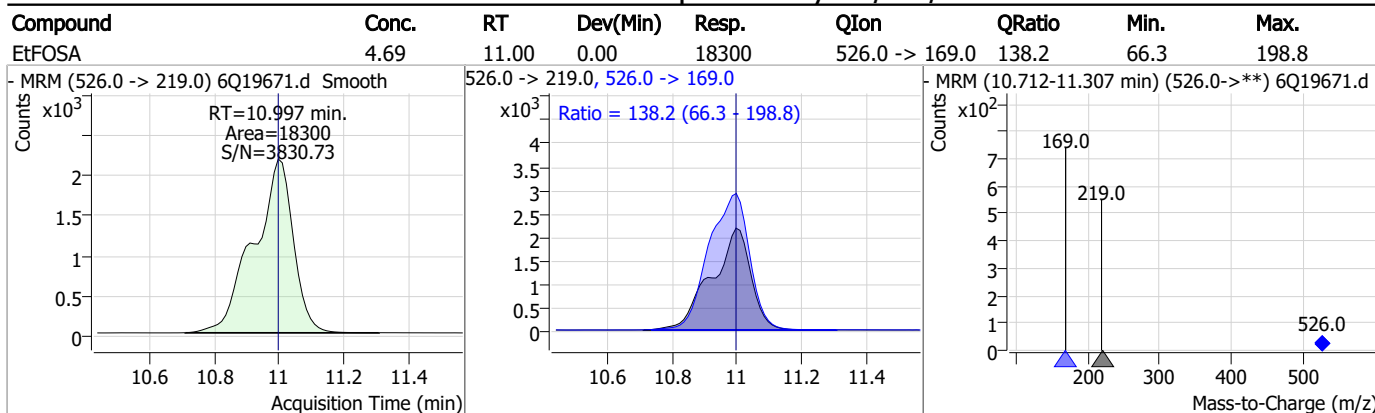
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: OP97425-BS Method: EPA DRAFT 1633
Lab FileID: 6Q19671.D Analyst approved: 06/21/23 16:11 Martha Valls
Injection Time: 06/21/23 13:23 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.41	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.55	Split peak
EtFOSAA	2991-50-6		8.62	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19672.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 1:36:59 PM
 Sample Name : op97425-llbs:3
 Vial : P3-A2
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97425,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	133200	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	43185	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	43533	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	41802	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	64848	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	32111	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	17982	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	23817	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	19232	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	9271	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	16465	2.50 µg/L	0.012
M3-PFBS	5.746	302.1 -> 79.9	16445	2.50 µg/L	0.000
M3-PFHxS	7.466	402.1 -> 79.9	10209	2.50 µg/L	-0.012
M8-PFOS	8.550	507.1 -> 79.9	10810	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	2586	5.00 µg/L	0.000
M2-6:2FTS	7.100	429.1 -> 80.9	4050	5.00 µg/L	-0.012
M2-8:2FTS	8.150	529.1 -> 80.9	3362	5.00 µg/L	-0.012
M3-MeFOSAA	8.407	573.2 -> 419.0	23222	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	29783	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	19880	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	50533	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	76052	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	7736	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	7568	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	12274	2.50 µg/L	-0.012
13C3-PFBA	3.101	216.0 -> 172.0	52711	5.00 µg/L	0.012
18O2-PFHxS	7.465	403.0 -> 83.9	7431	2.50 µg/L	-0.012
13C4-PFOA	7.340	417.1 -> 372.0	67616	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	23366	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	37055	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	40304	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2586	5.80 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.0%		
13C2-6:2FTS	7.100	429.1 -> 80.9	4050	6.01 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.3%		
13C2-8:2FTS	8.150	529.1 -> 80.9	3362	5.31 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C2-PFDoDA	9.285	615.1 -> 570.0	19232	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-PFTeDA	10.000	715.2 -> 670.0	9271	1.06 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 85.1%		
13C3-PFBS	5.746	302.1 -> 79.9	16445	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C3-PFHxS	7.466	402.1 -> 79.9	10209	2.61 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 = 104.6%	
13C4-PFBA	3.097	216.8 -> 171.9	133200	10.77 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C4-PFHpA	6.707	367.1 -> 322.0	41802	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C5-PFHxA	5.792	318.0 -> 273.0	43533	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C5-PFPeA	4.560	268.3 -> 223.0	43185	5.66 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.3%	
13C6-PFDA	8.375	519.1 -> 474.1	17982	1.34 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C7-PFUnDA	8.853	570.0 -> 525.1	23817	1.33 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C8-FOSA	9.687	506.1 -> 77.8	16465	1.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 70.8%	
13C8-PFOA	7.339	421.1 -> 376.0	64848	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-PFOS	8.550	507.1 -> 79.9	10810	2.92 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.7%	
13C9-PFNA	7.882	472.1 -> 427.0	32111	1.42 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.9%	
d3-MeFOSAA	8.407	573.2 -> 419.0	23222	5.00 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	29783	10.70 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.0%	
d3-MeFOSA	10.775	515.0 -> 219.0	7568	1.87 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.9%	
d5-EtFOSAA	8.615	589.2 -> 419.0	19880	5.04 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d7-MeFOSE	10.696	623.2 -> 58.9	50533	12.27 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 49.1%	
d9-EtFOSE	10.930	639.2 -> 58.9	76052	15.66 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 62.7%	
d5-EtFOSA	10.996	531.1 -> 219.0	7736	1.96 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.5%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	11860	2.64 µg/L	97
		327.1 -> 80.9	4620		
6:2FTS	7.101	427.1 -> 407.0	12786	2.65 µg/L	99
		427.1 -> 80.9	4221		
8:2FTS	8.151	527.1 -> 507.0	6294	2.82 µg/L	99
		527.1 -> 80.8	2434		
EtFOSAA	8.617	584.2 -> 419.1	2162	0.64 µg/L	m 97
		584.2 -> 526.0	1101		
FOSA	9.677	498.1 -> 77.9	4697	0.72 µg/L	100
		498.1 -> 478.0	149		
MeFOSAA	8.408	570.1 -> 419.0	3881	0.64 µg/L	m 93
		570.1 -> 483.0	855		
PFBA	3.106	212.8 -> 168.9	14274	2.66 µg/L	100
PFBS	5.747	298.7 -> 79.9	4399	0.60 µg/L	97
		298.7 -> 98.8	1760		
PFDA	8.376	512.9 -> 469.0	18449	0.69 µg/L	96
		512.9 -> 219.0	2593		
PFDODA	9.285	613.1 -> 569.0	12212	0.76 µg/L	100
		613.1 -> 319.0	1784		
PFDS	9.450	599.0 -> 79.9	1886	0.58 µg/L	89

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	842	0.68	µg/L	96
		363.1 -> 319.0	15166			
PFHpS	8.046	363.1 -> 169.0	2547	0.57	µg/L	95
		449.0 -> 79.9	3675			
PFHxA	5.795	449.0 -> 98.9	2009	0.71	µg/L	99
		313.0 -> 269.0	12428			
PFHxS	7.467	313.0 -> 118.9	684	0.59	µg/L	99
		398.7 -> 79.9	3640			
PFNA	7.883	398.7 -> 98.9	1834	0.66	µg/L	97
		463.0 -> 419.0	19591			
PFNS	9.029	463.0 -> 219.0	3431	0.58	µg/L	95
		548.8 -> 79.9	3258			
PFOA	7.341	548.8 -> 98.9	1714	0.69	µg/L	100
		413.0 -> 369.0	24531			
PFOS	8.552	413.0 -> 169.0	4134	0.54	µg/L	92
		498.9 -> 79.9	3471			
PFPeA	4.563	498.9 -> 98.8	1622	1.34	µg/L	100
		263.0 -> 219.0	17071			
PFPeS	6.785	349.1 -> 79.9	3657	0.64	µg/L	99
		349.1 -> 98.9	1735			
PFTeDA	10.000	713.1 -> 669.0	7907	0.71	µg/L	95
		713.1 -> 168.9	808			
PFTrDA	9.656	663.0 -> 619.0	10855	0.67	µg/L	97
		663.0 -> 168.9	1240			
PFUnDA	8.854	563.1 -> 519.0	12754	0.69	µg/L	95
		563.1 -> 269.1	2105			
11CI-PF3OUdS	9.708	630.9 -> 450.9	16190	1.19	µg/L	94
		632.9 -> 452.9	5115			
9CI-PF3ONS	8.893	530.8 -> 351.0	26095	1.12	µg/L	95
		532.8 -> 353.0	8747			
ADONA	6.946	376.9 -> 250.9	61452	1.28	µg/L	94
		376.9 -> 84.8	15792			
HFPO-DA	6.169	284.9 -> 168.9	4063	1.30	µg/L	99
		284.9 -> 184.9	465			
3:3FTCA	3.983	241.0 -> 177.0	1804	2.09	µg/L	96
		241.0 -> 117.0	271			
5:3FTCA	6.374	341.0 -> 237.1	54456	15.59	µg/L	97
		341.0 -> 217.0	39039			
7:3FTCA	7.748	441.0 -> 316.9	41346	17.51	µg/L	100
		441.0 -> 336.9	92875			
EtFOSA	10.997	526.0 -> 219.0	5450	1.32	µg/L	98
		526.0 -> 169.0	7379			
EtFOSE	10.943	630.0 -> 58.9	12590	3.20	µg/L	100
		511.9 -> 219.0	4514			
MeFOSA	10.777	511.9 -> 169.0	6342	1.32	µg/L	81
		616.1 -> 58.9	7297			
MeFOSE	10.709	699.1 -> 79.9	800	3.33	µg/L	100
		699.1 -> 98.8	436			
PFDoDS	10.127	295.0 -> 201.0	3228	0.50	µg/L	94
		295.0 -> 84.9	857			
NFDHA	5.673	279.0 -> 85.1	12403	1.44	µg/L	100
		229.0 -> 84.9	9986			
PFMBA	4.988	314.8 -> 134.9	29051	1.36	µg/L	100
		314.8 -> 82.9	1083			
PFMPA	3.680			1.40	µg/L	100
PFEESA	6.288			1.22	µg/L	99

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

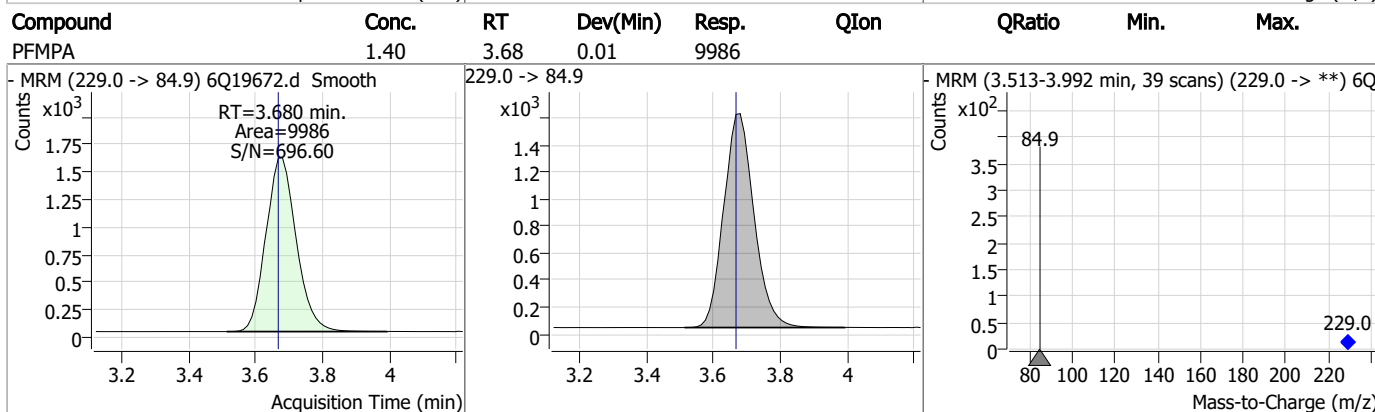
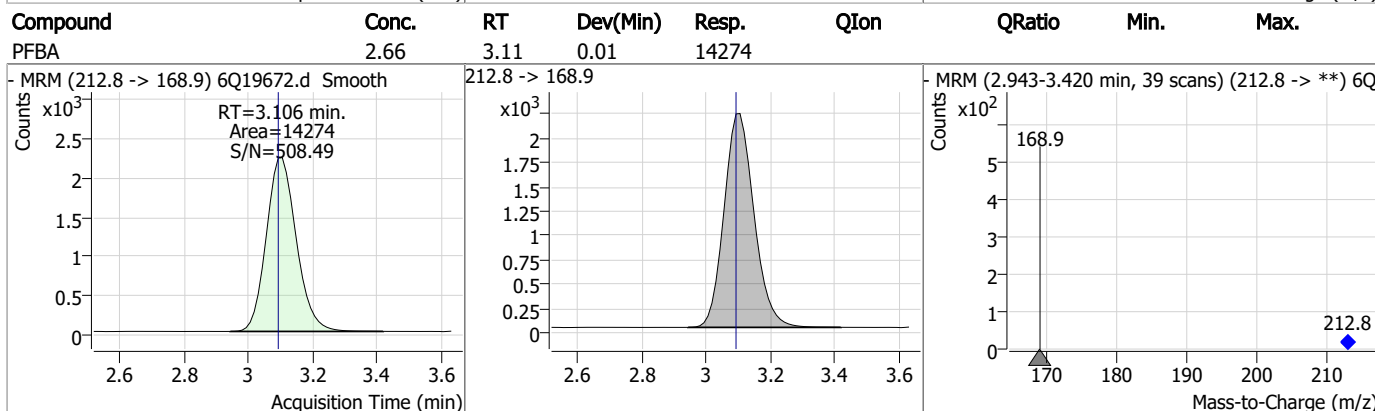
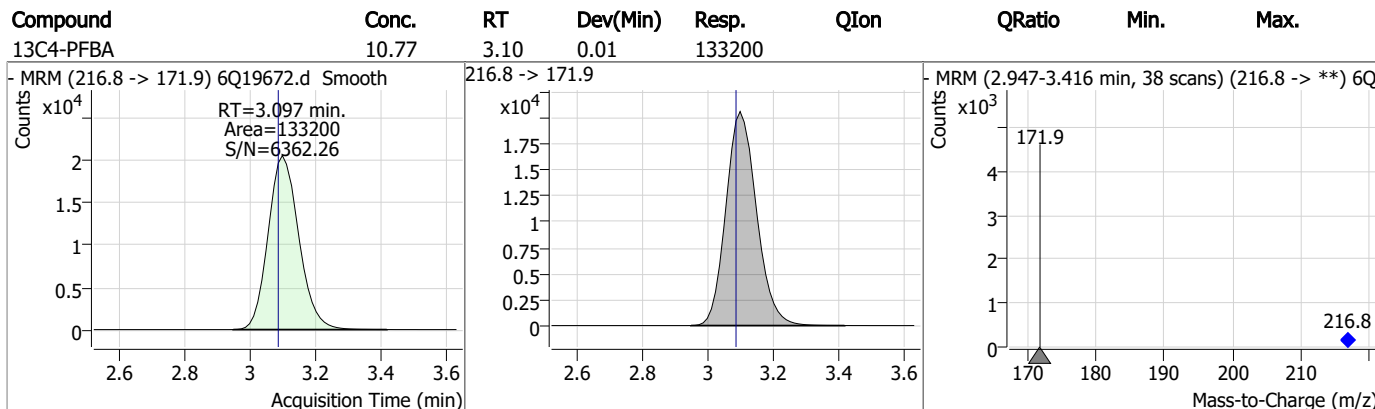
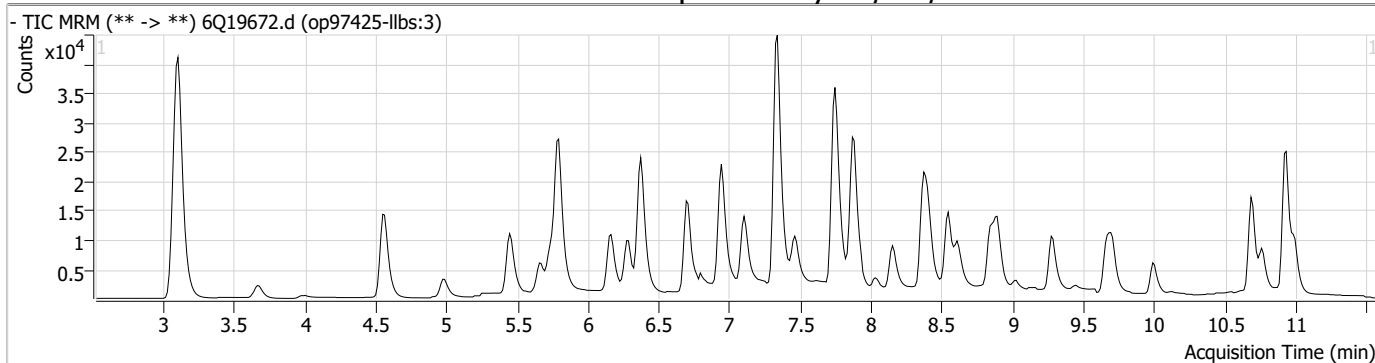
Perfluorinated Compounds by LC/MS/MS

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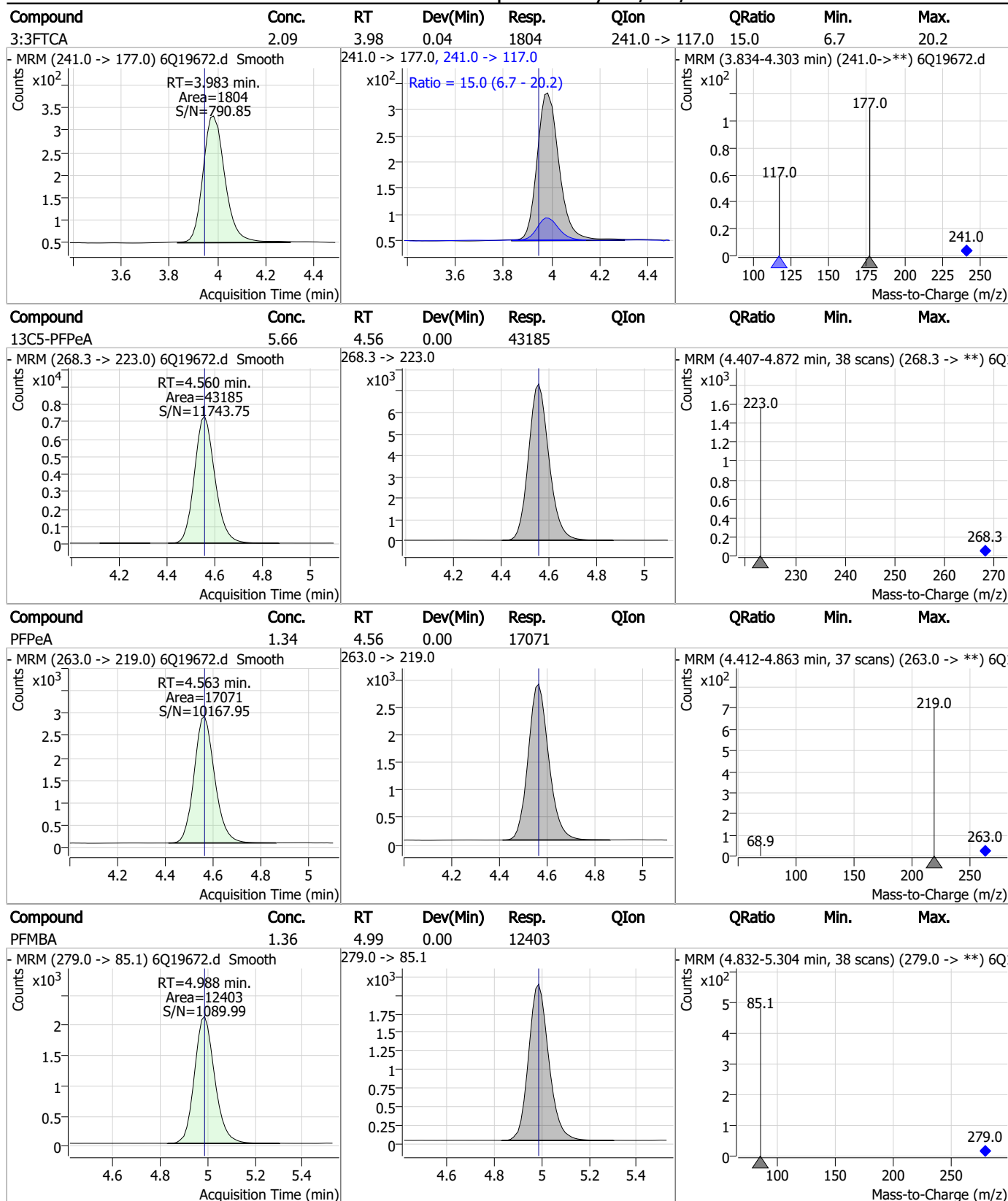
7.3.2

7

Perfluorinated Compounds by LC/MS/MS

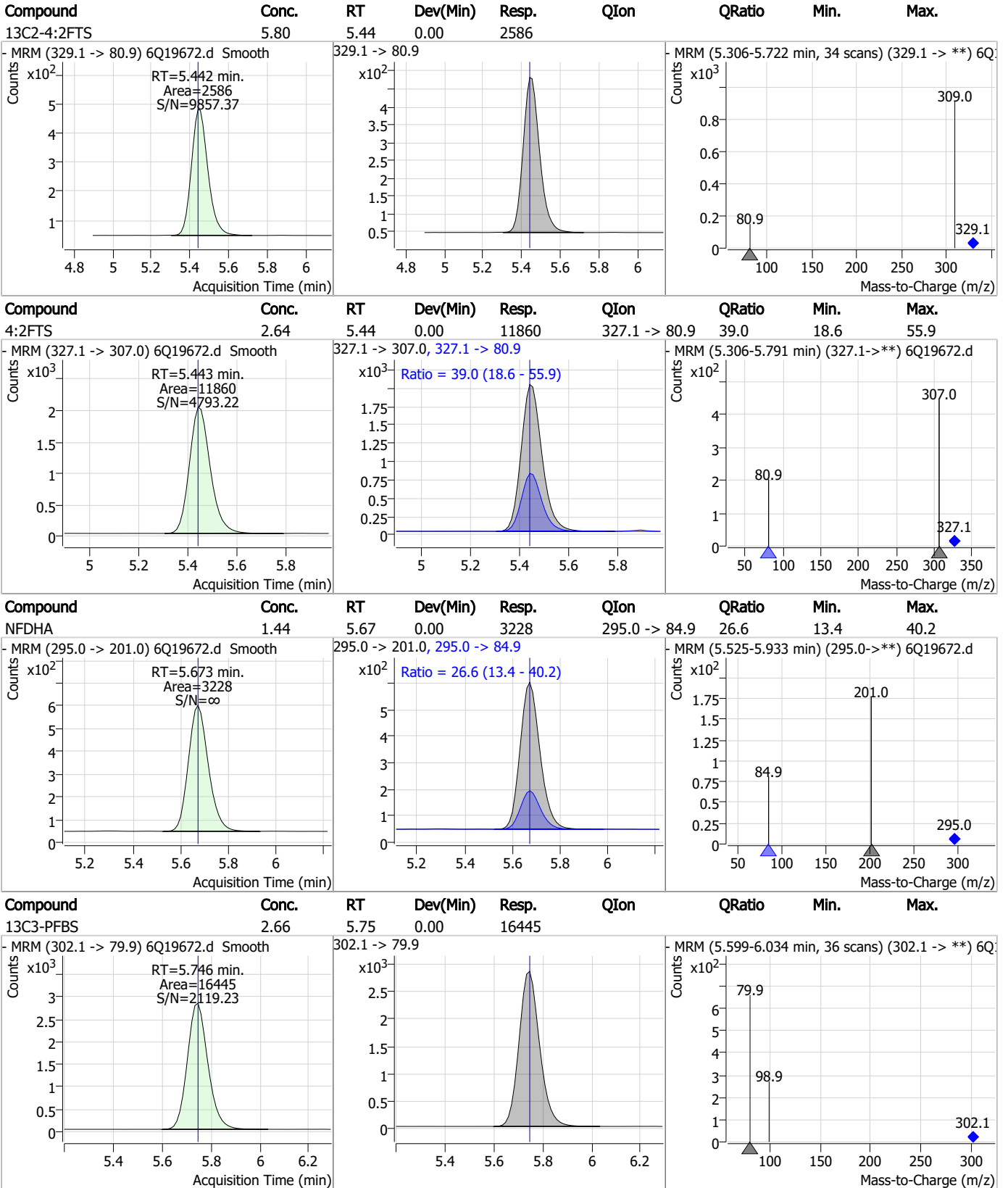


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

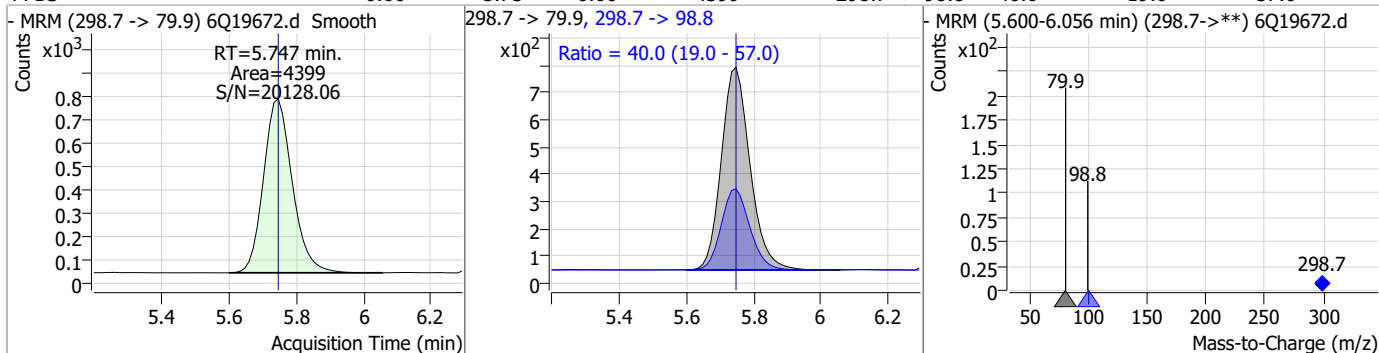
Perfluorinated Compounds by LC/MS/MS



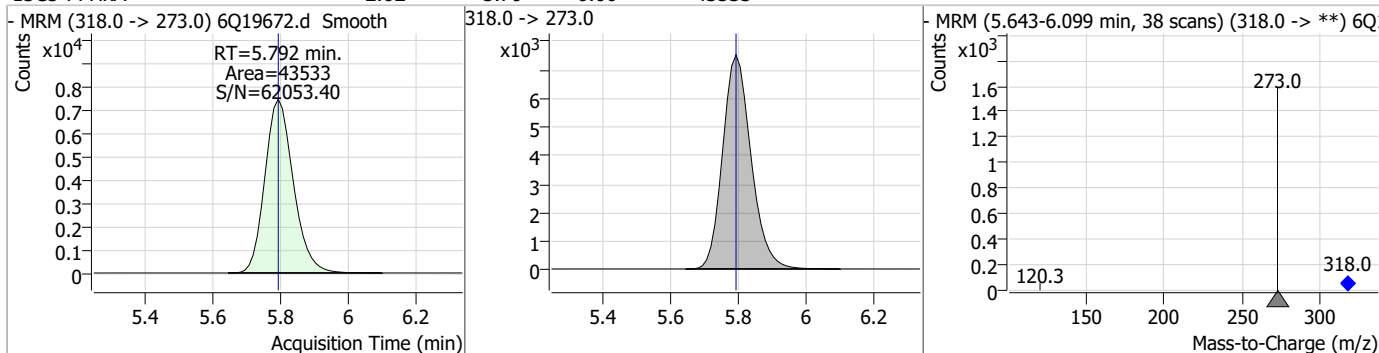
7.3.2
7

Perfluorinated Compounds by LC/MS/MS

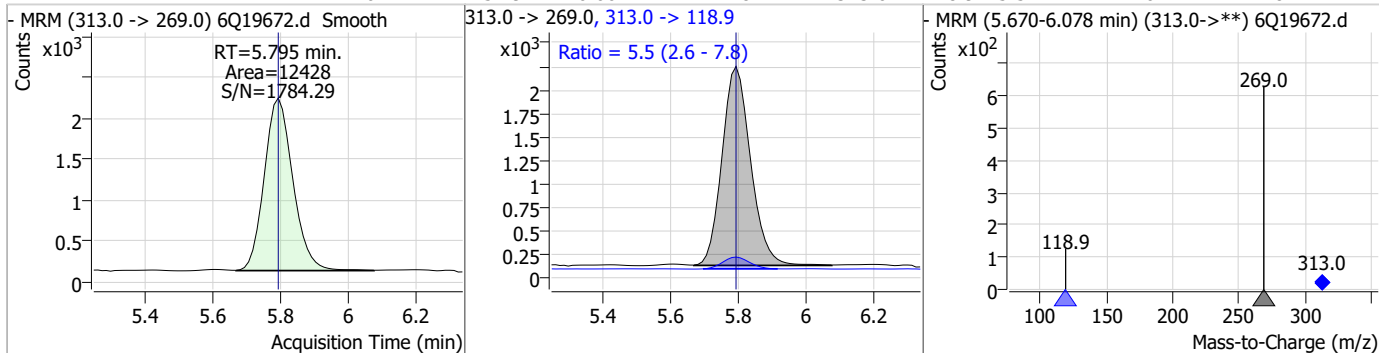
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.60	5.75	0.00	4399	298.7 -> 98.8	40.0	19.0	57.0



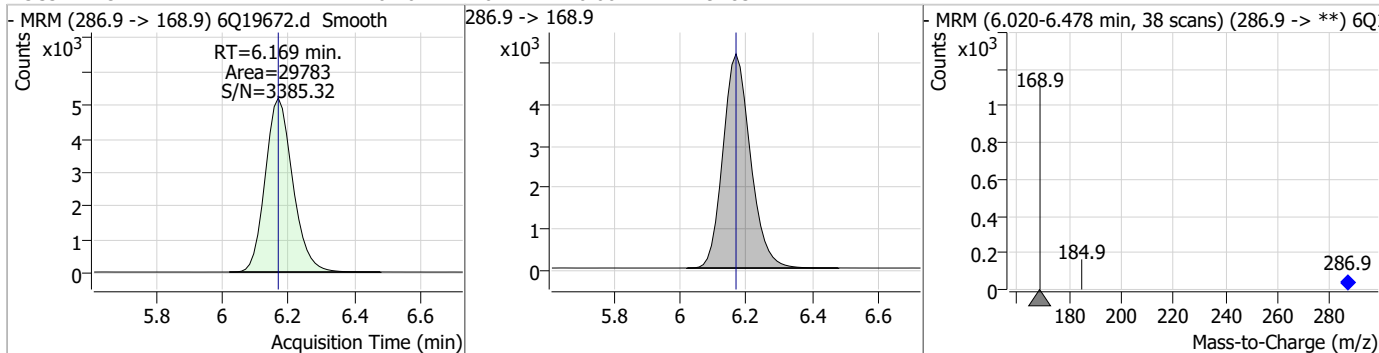
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.62	5.79	0.00	43533				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.71	5.79	0.00	12428	313.0 -> 118.9	5.5	2.6	7.8



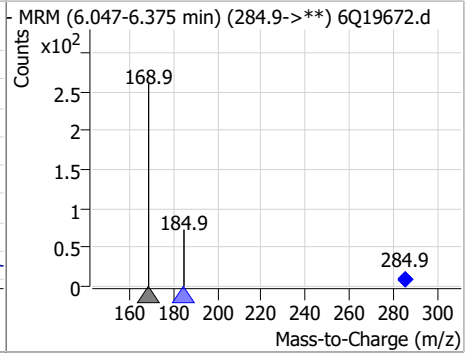
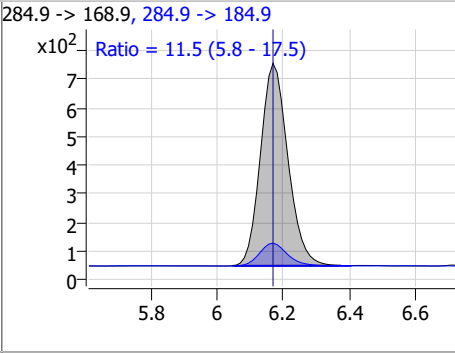
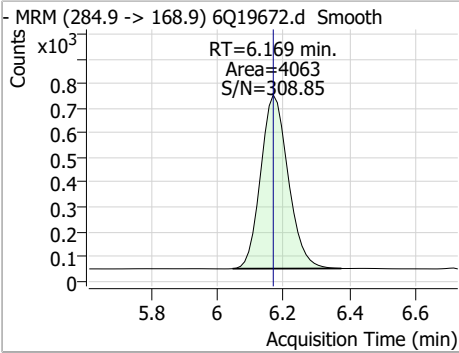
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.70	6.17	0.00	29783				



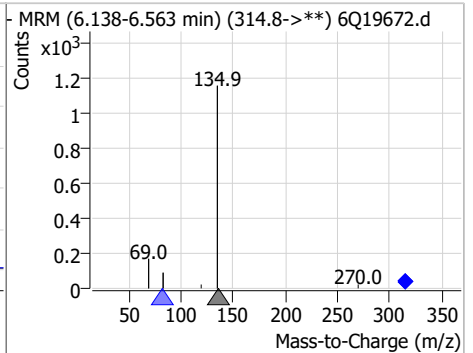
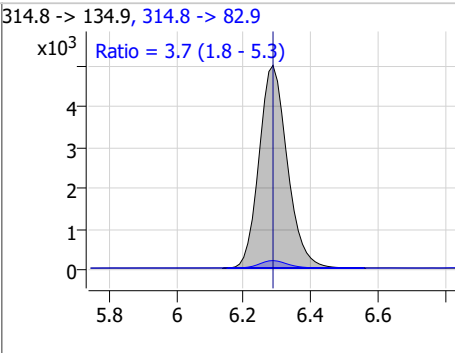
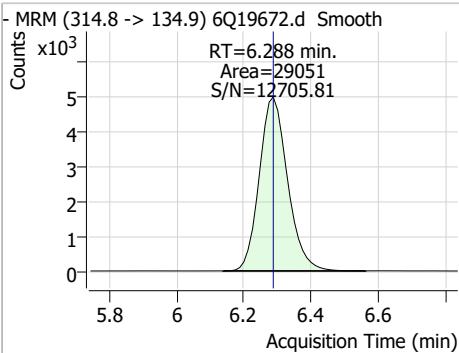
7.3.2
7

Perfluorinated Compounds by LC/MS/MS

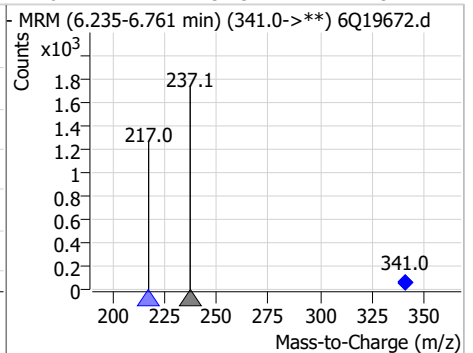
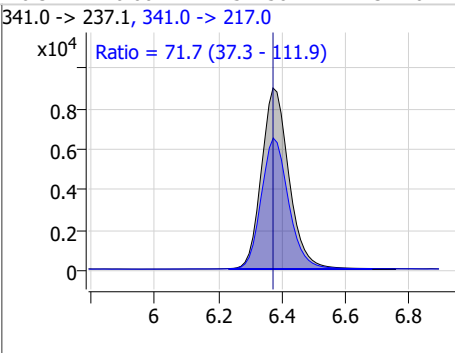
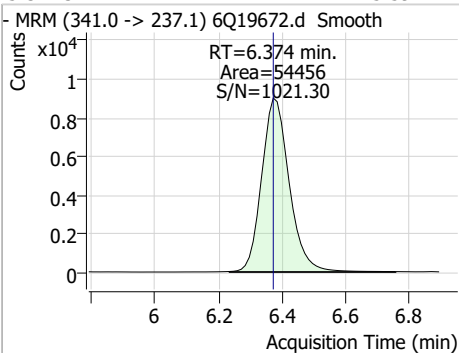
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.30	6.17	0.00	4063	284.9 -> 184.9	11.5	5.8	17.5



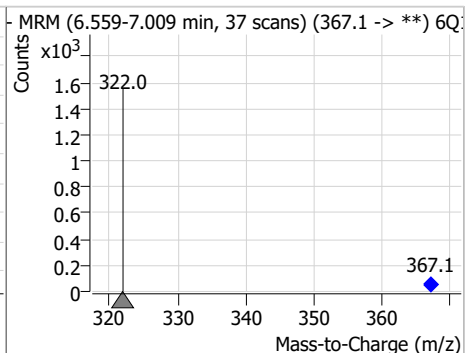
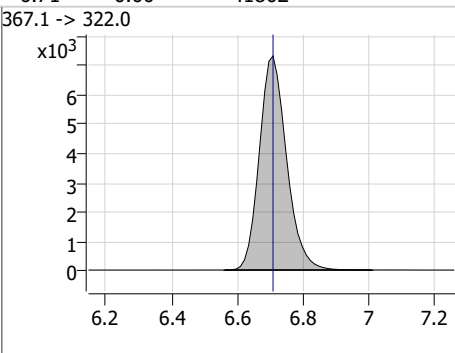
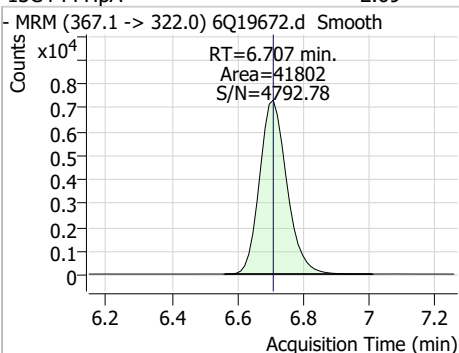
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	1.22	6.29	0.00	29051	314.8 -> 82.9	3.7	1.8	5.3



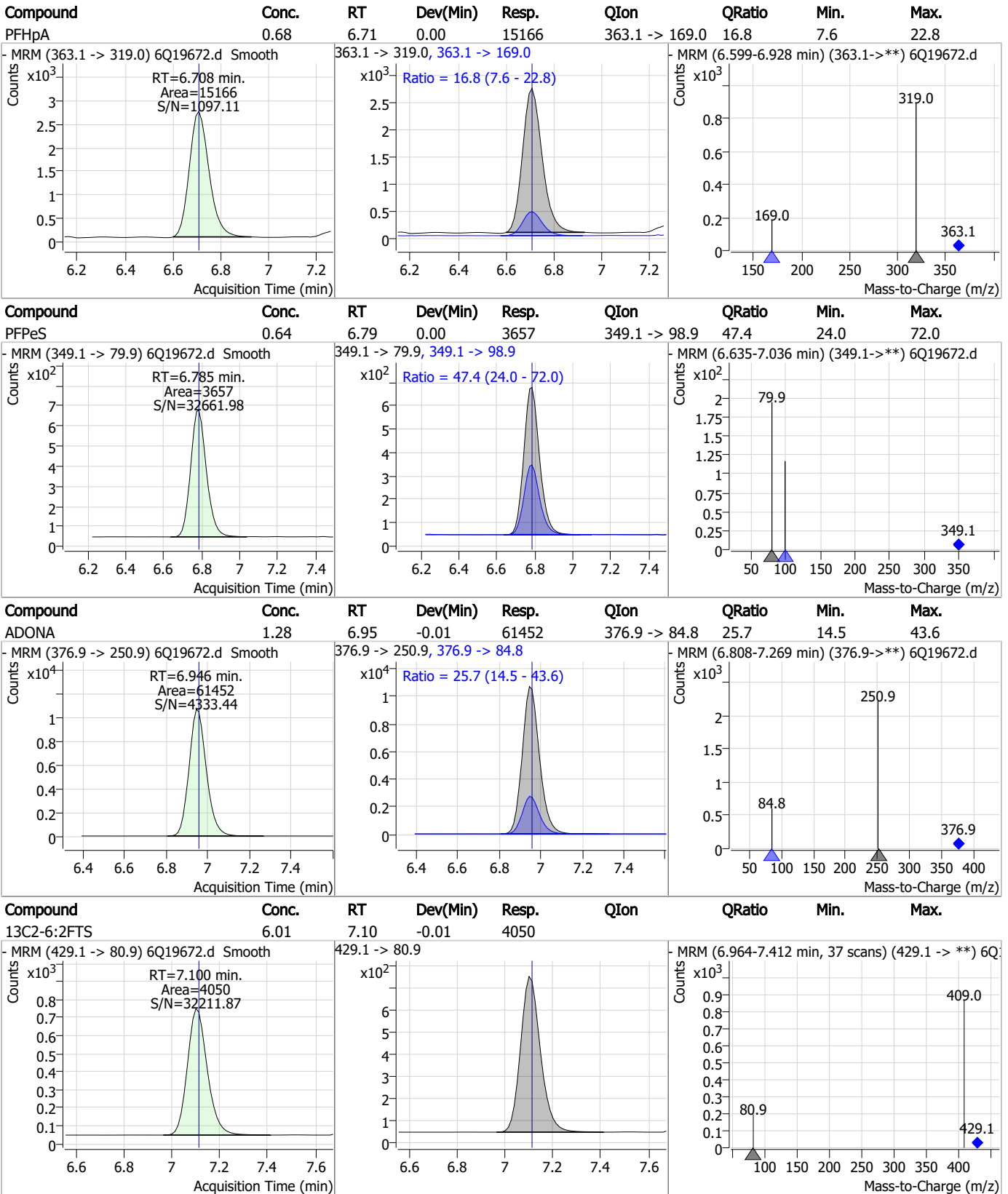
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	15.59	6.37	0.00	54456	341.0 -> 217.0	71.7	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.69	6.71	0.00	41802	367.1 -> 322.0			



Perfluorinated Compounds by LC/MS/MS

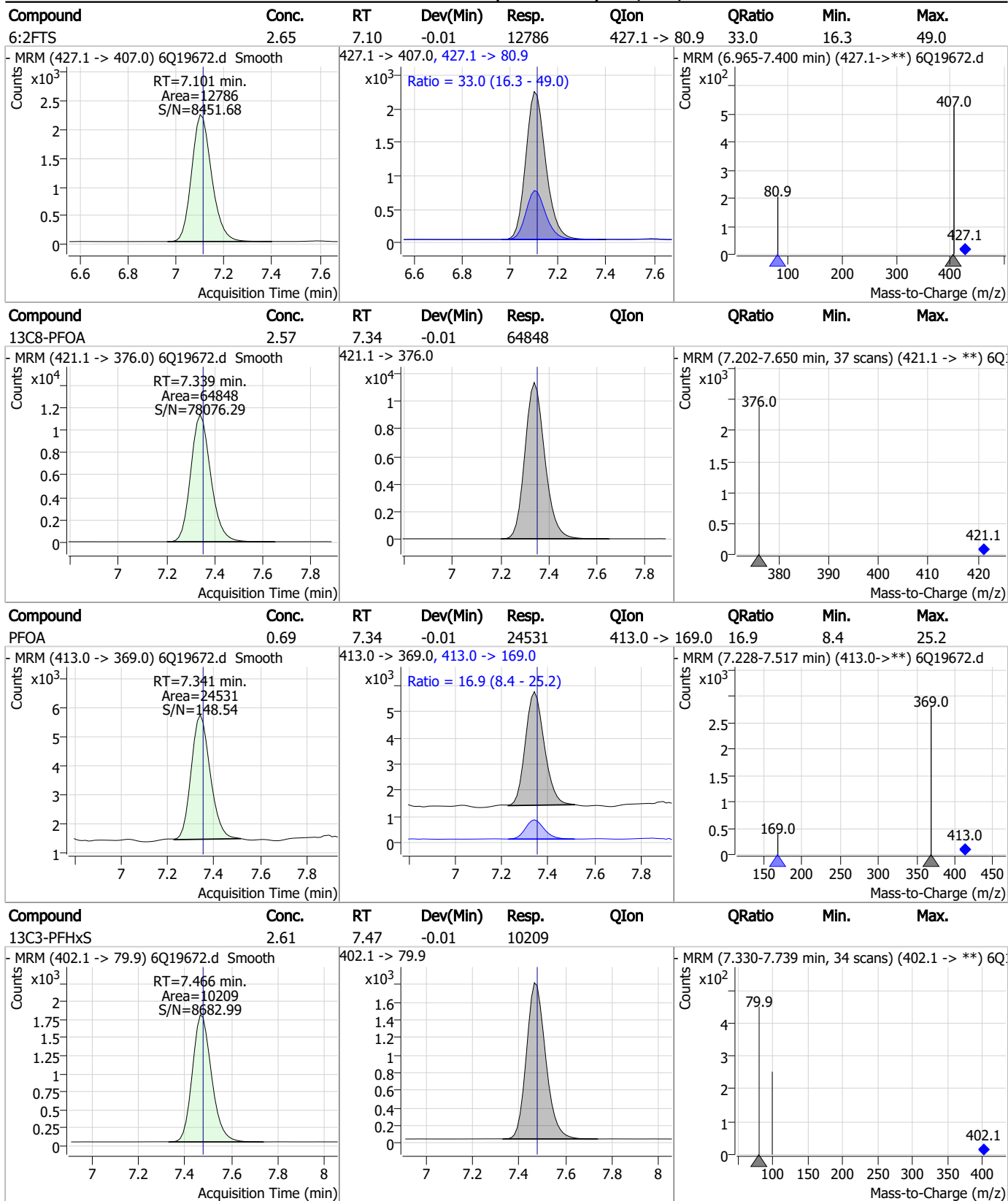


7.3.2

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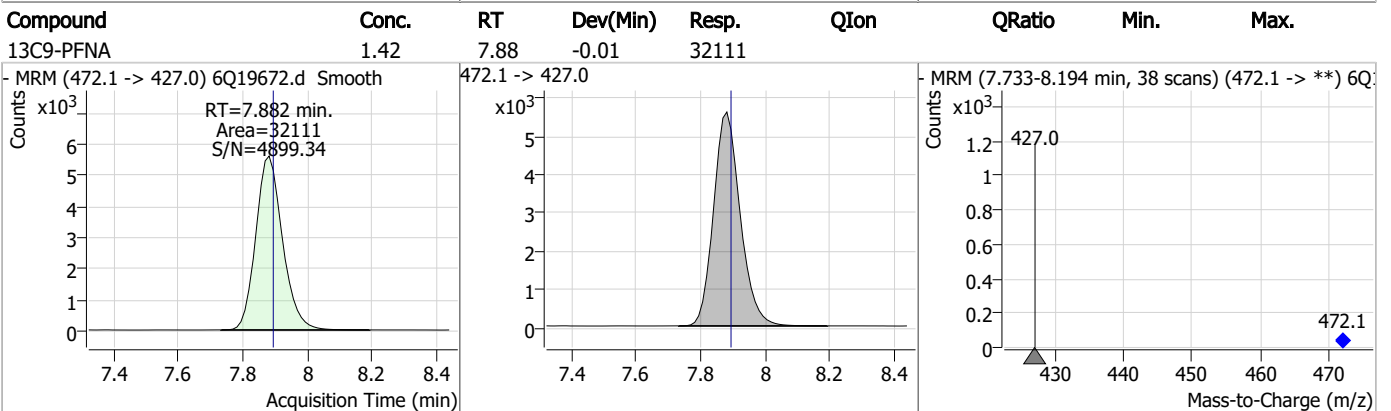
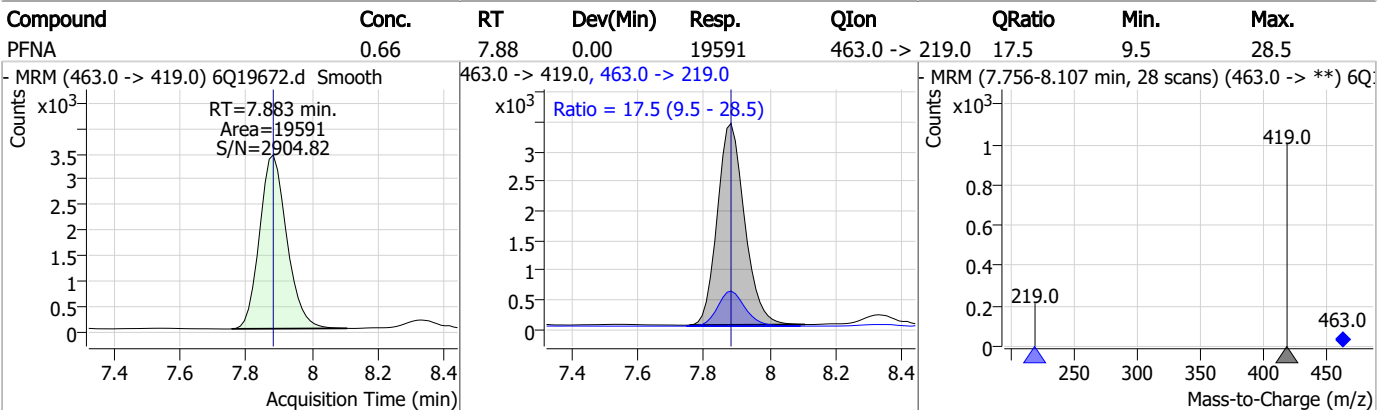
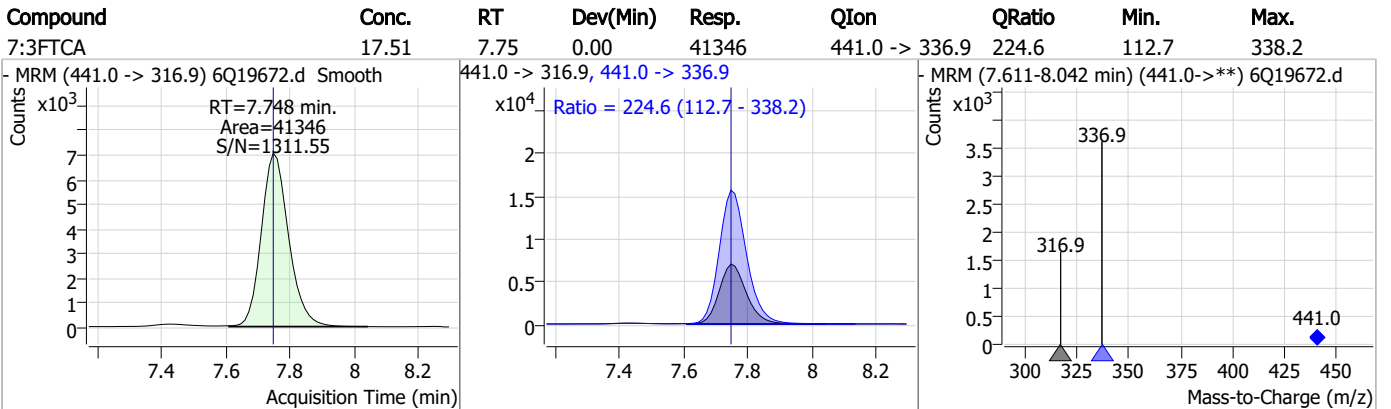
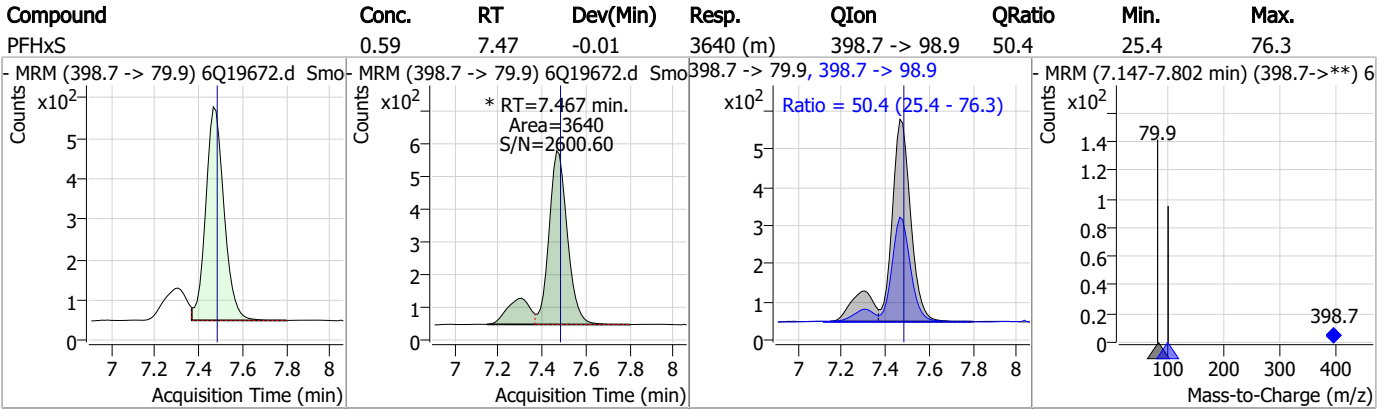


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

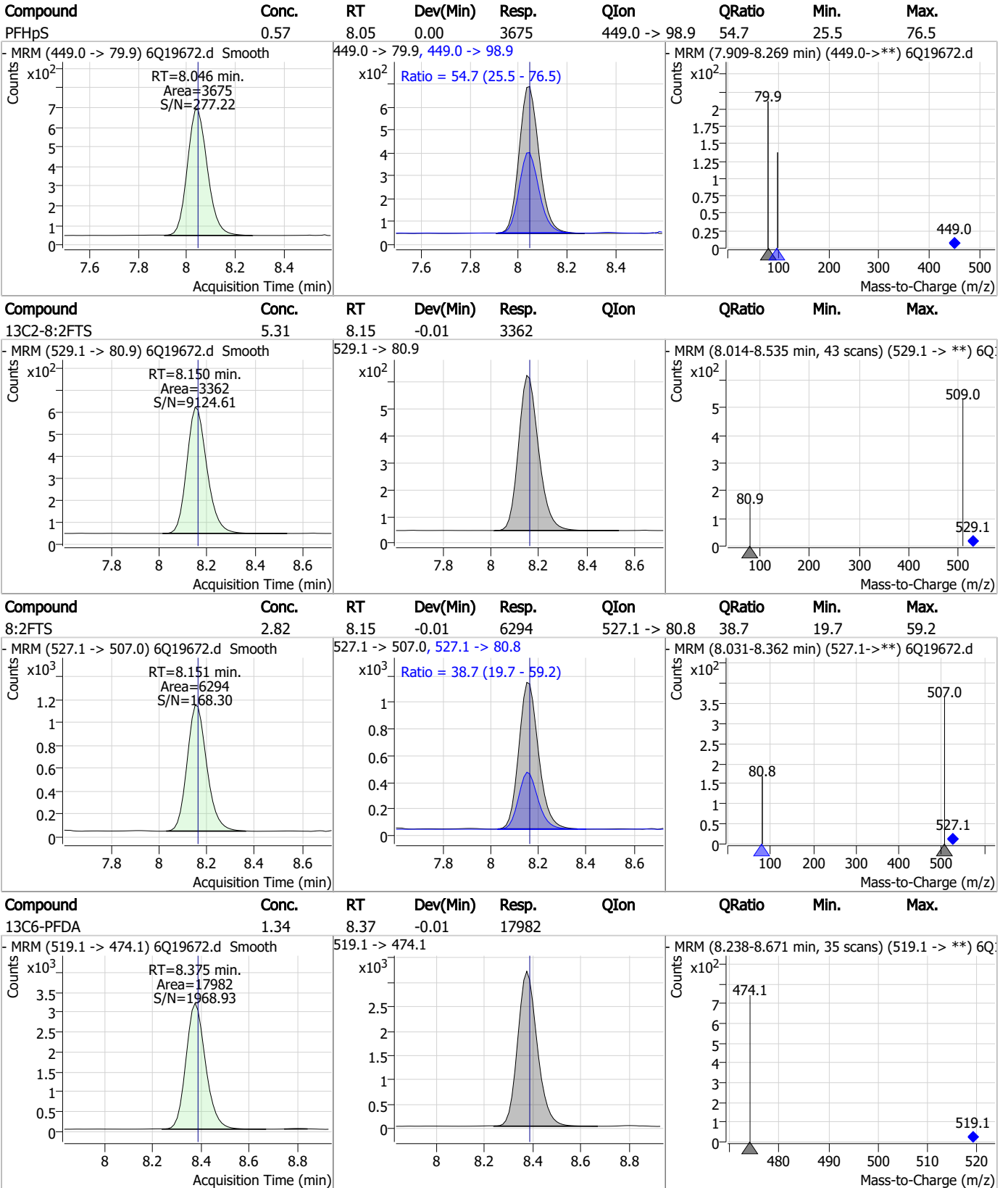
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

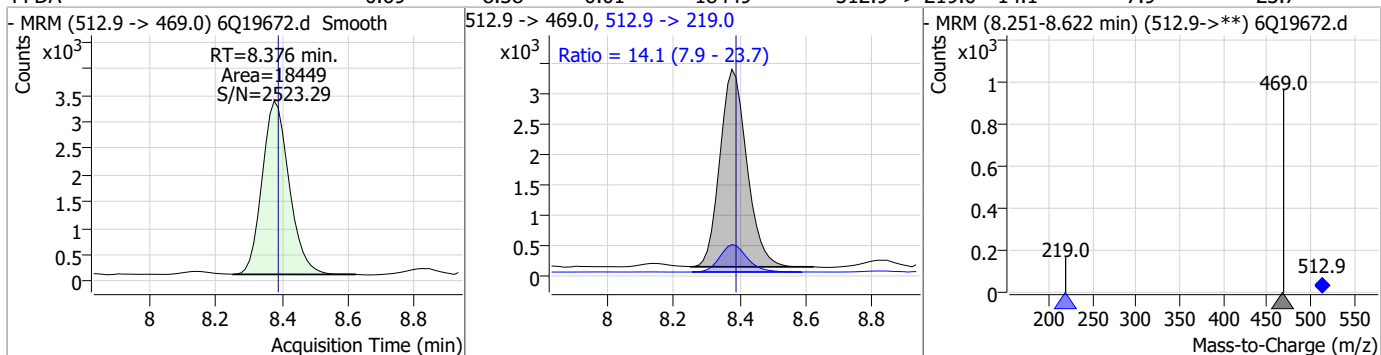


7.3.2
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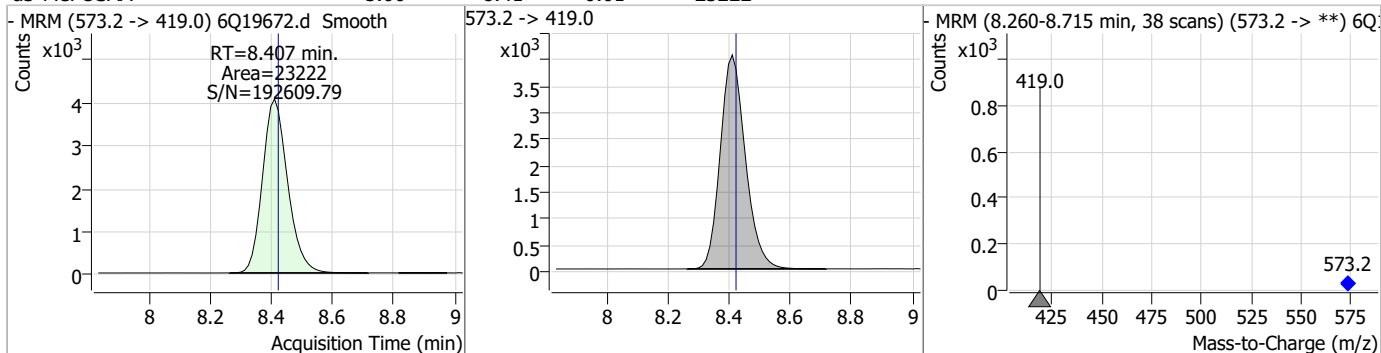


Perfluorinated Compounds by LC/MS/MS

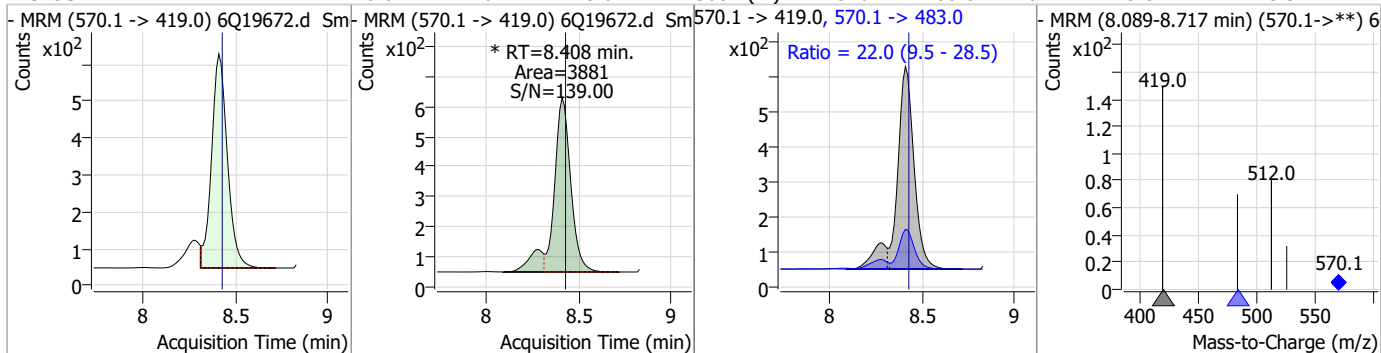
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.69	8.38	-0.01	18449	512.9 -> 219.0	14.1	7.9	23.7



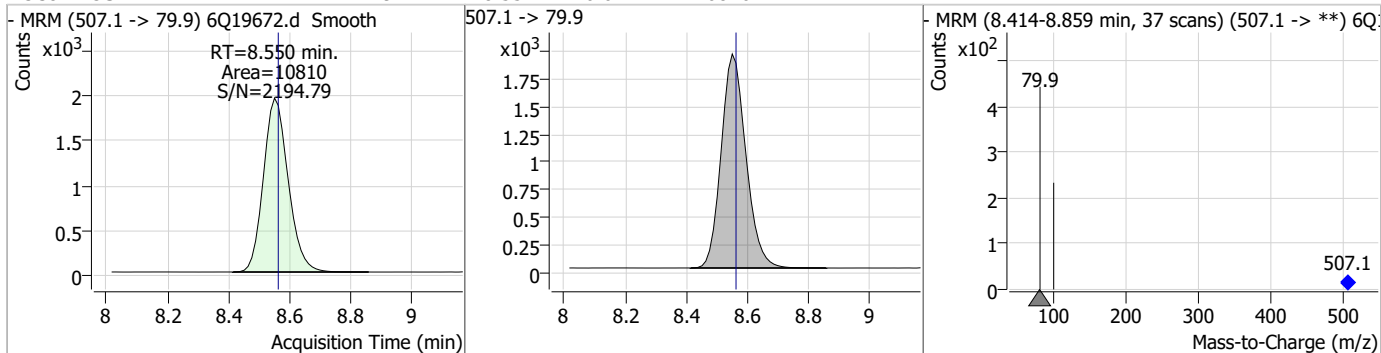
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.00	8.41	-0.01	23222				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.64	8.41	-0.01	3881 (m)	570.1 -> 483.0	22.0	9.5	28.5



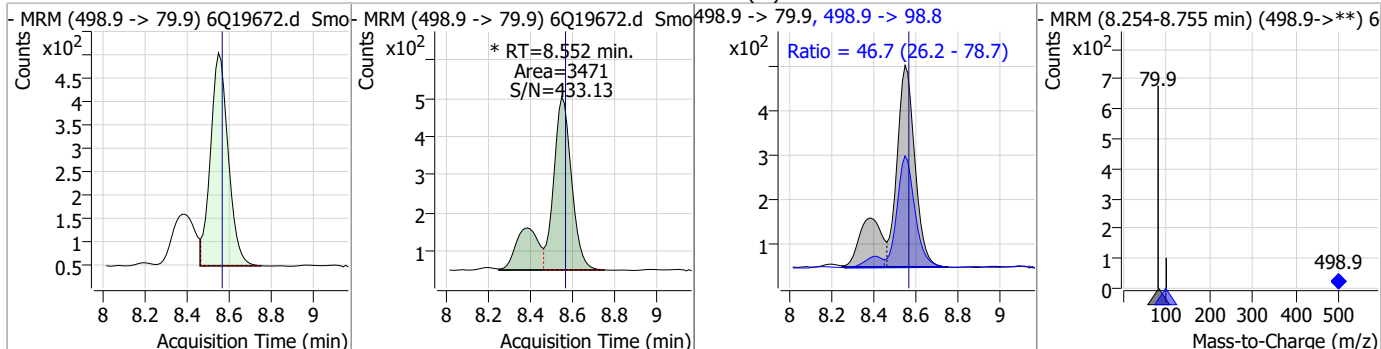
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.92	8.55	-0.01	10810				



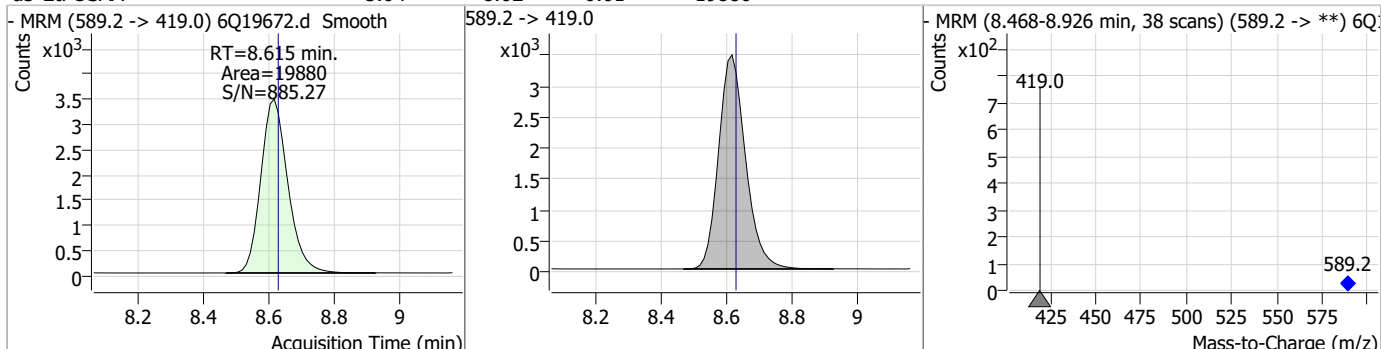
7.3.2
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Perfluorinated Compounds by LC/MS/MS

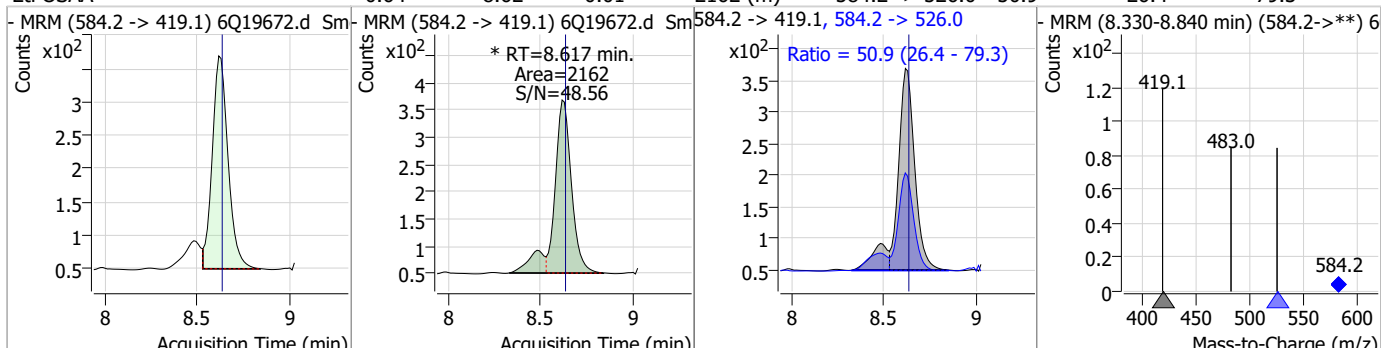
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.54	8.55	-0.01	3471 (m)	498.9 -> 98.8	46.7	26.2	78.7



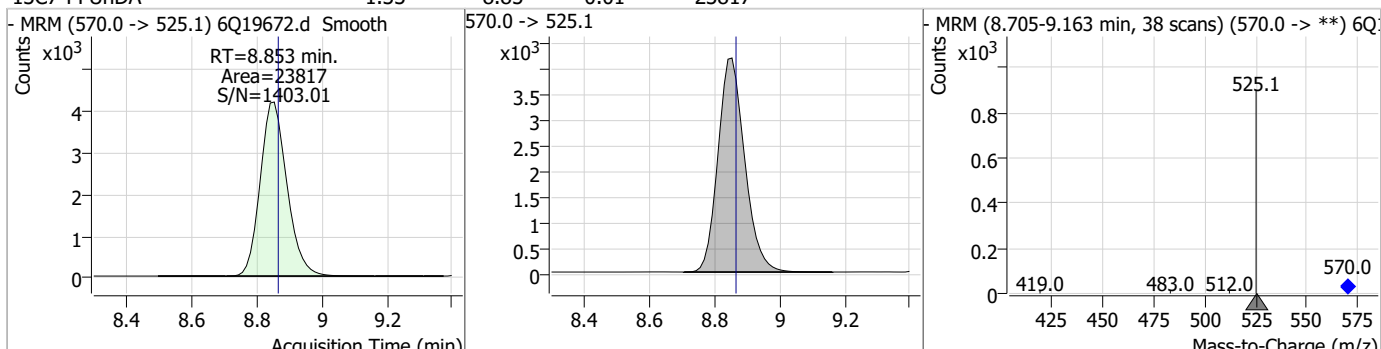
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.04	8.62	-0.01	19880				



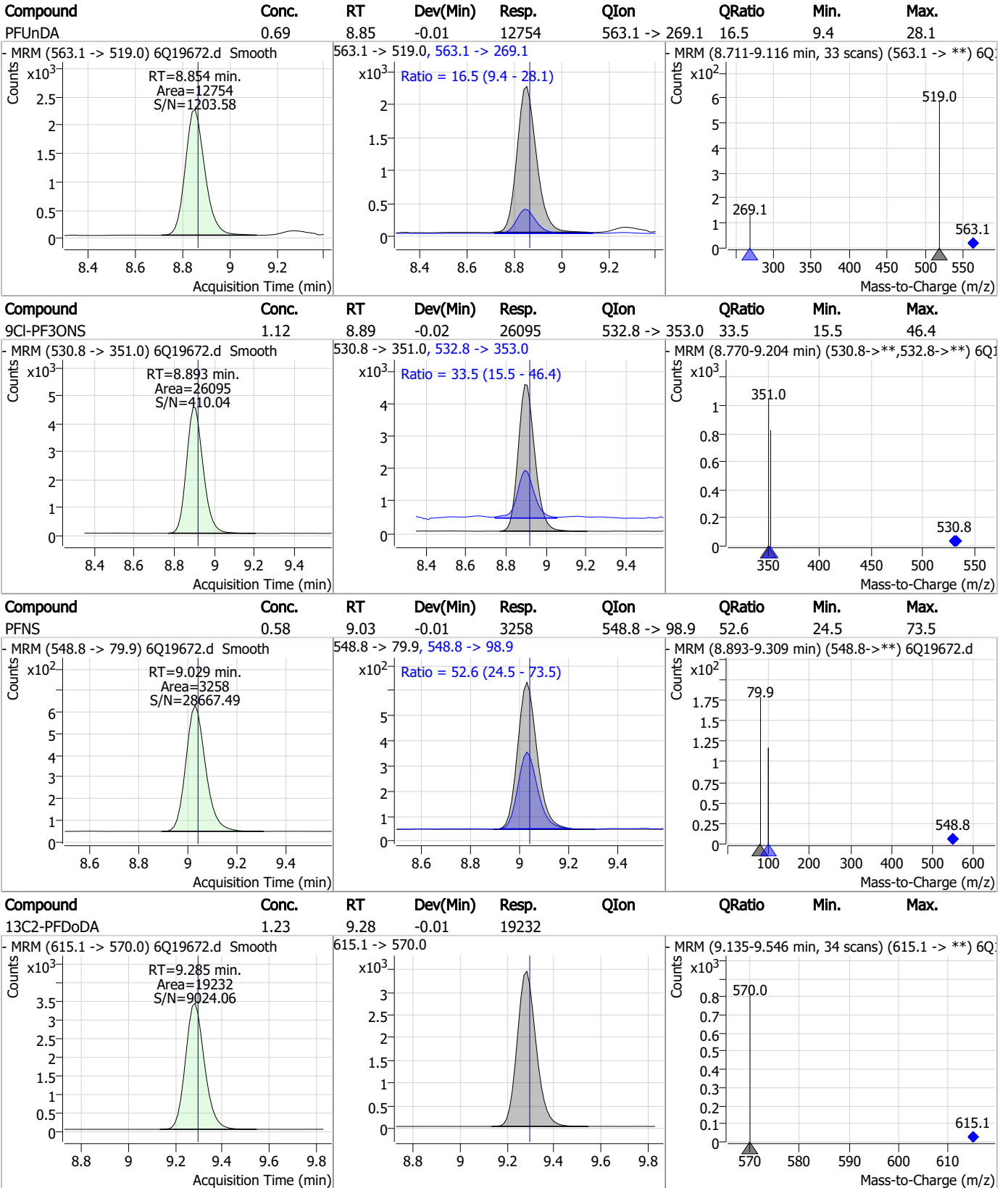
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.64	8.62	-0.01	2162 (m)	584.2 -> 526.0	50.9	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.33	8.85	-0.01	23817				



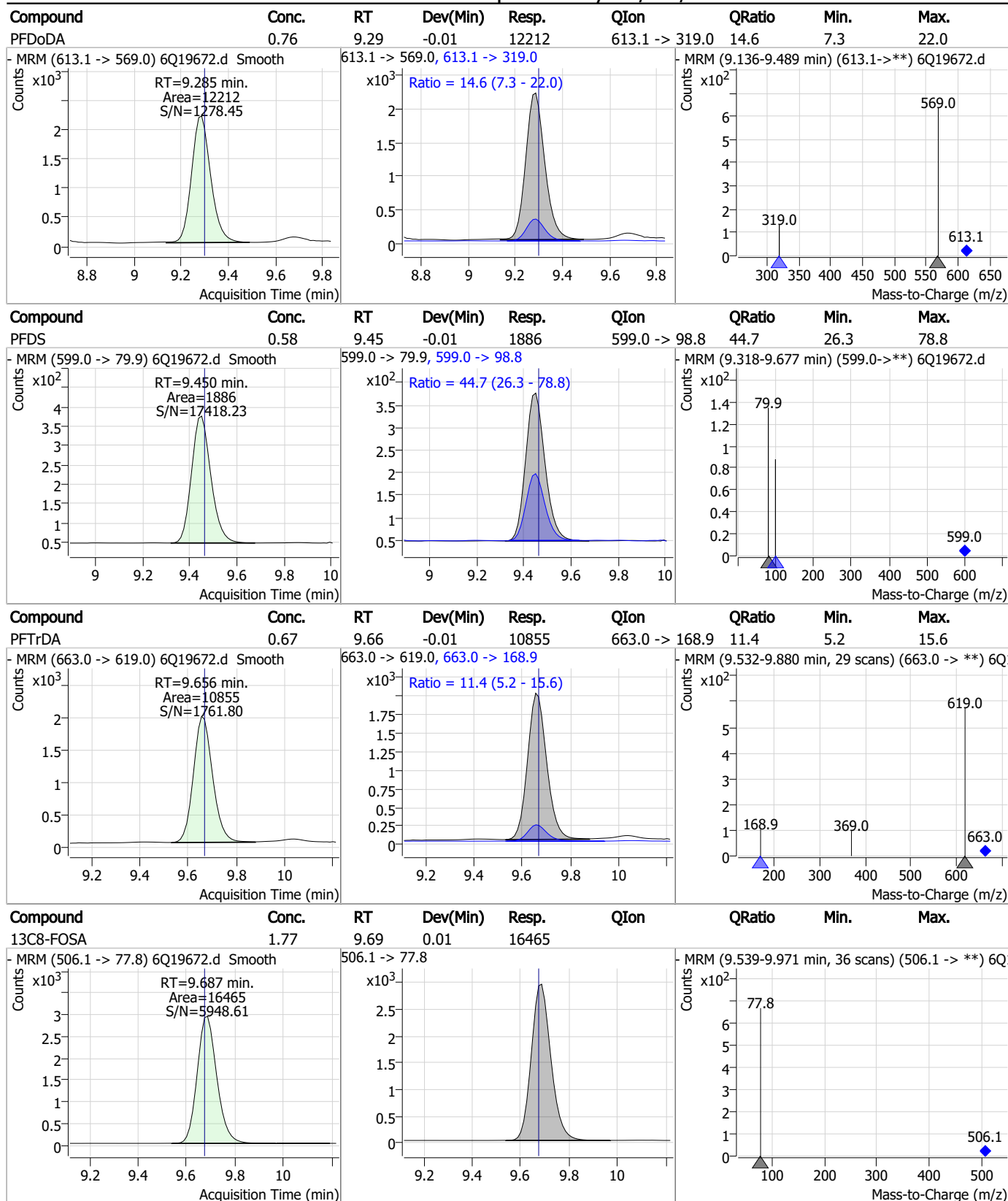
Perfluorinated Compounds by LC/MS/MS



7.3.2

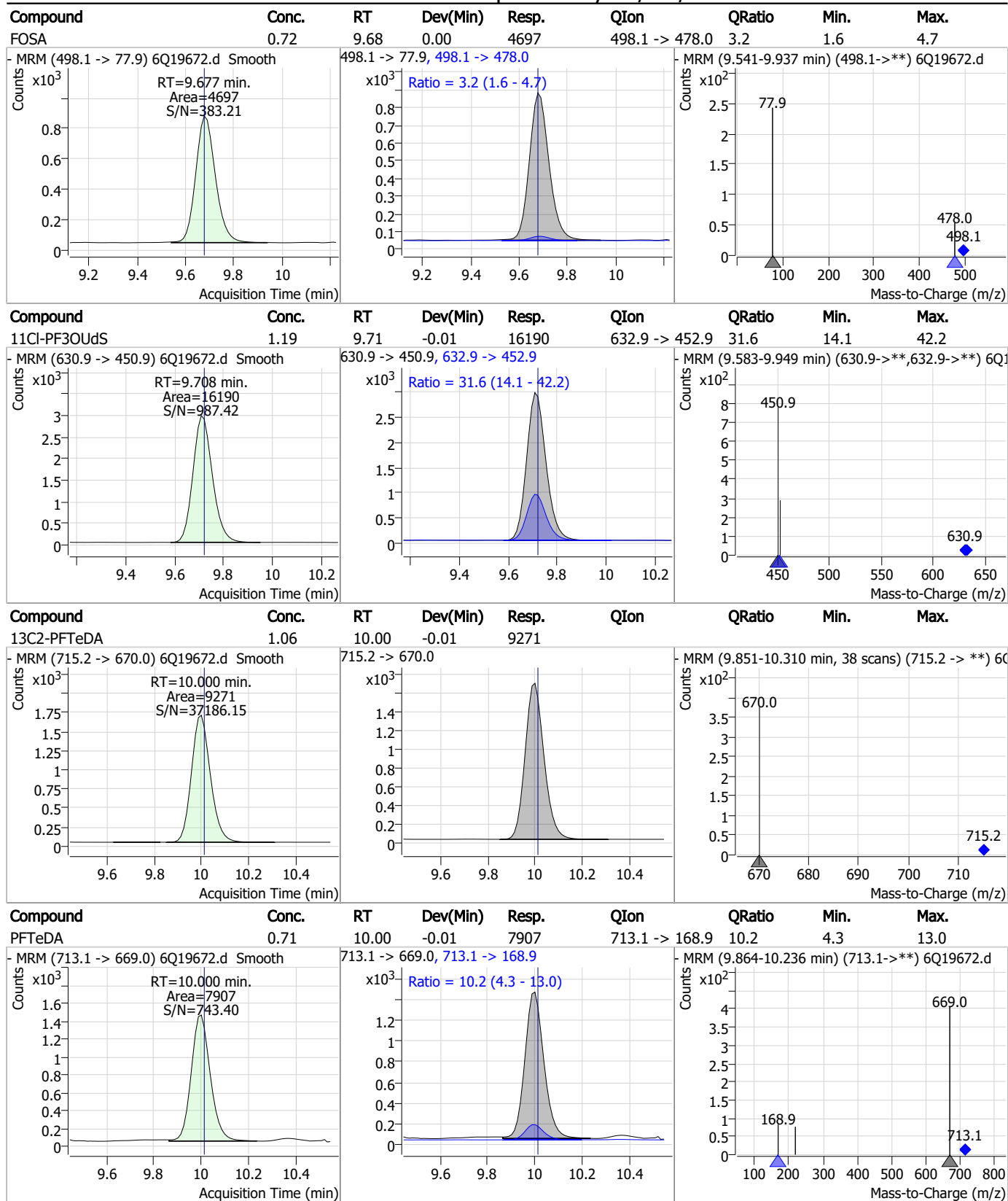
7

Perfluorinated Compounds by LC/MS/MS



7.3.2
7

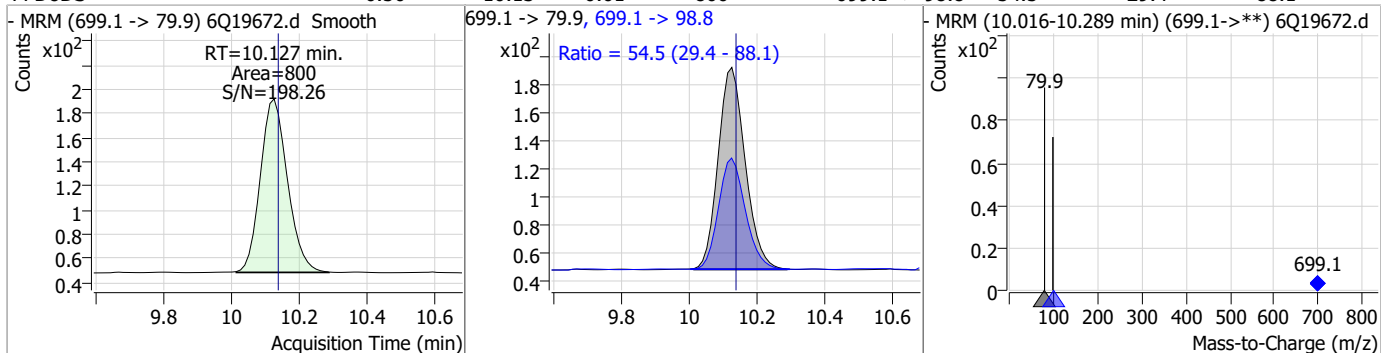
Perfluorinated Compounds by LC/MS/MS



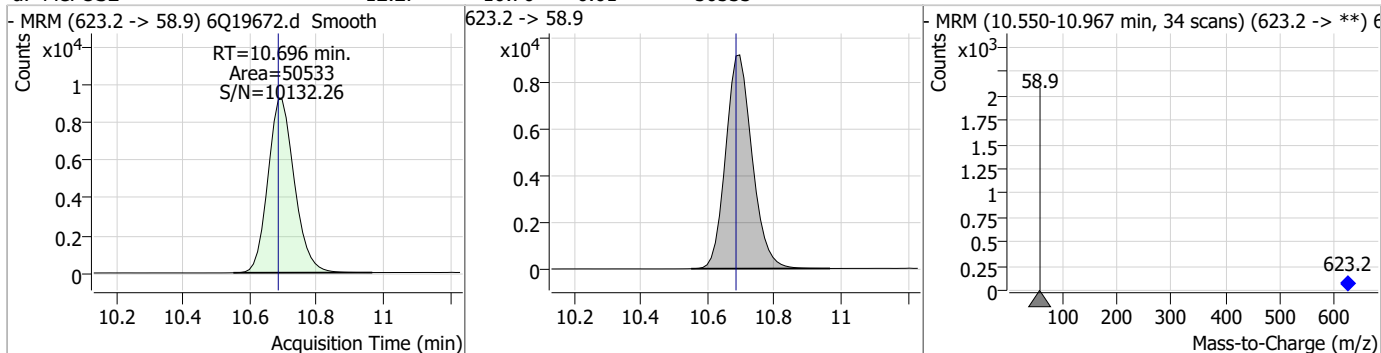
7.3.2
7

Perfluorinated Compounds by LC/MS/MS

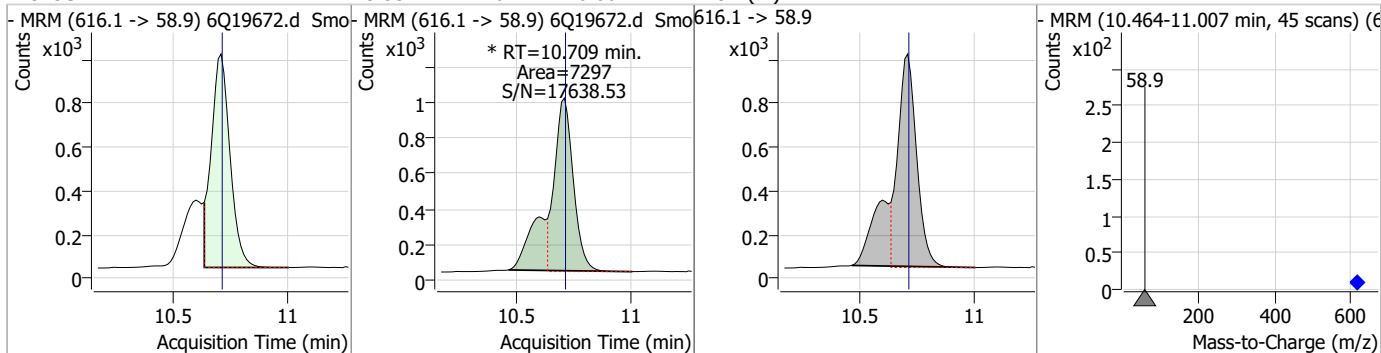
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.50	10.13	-0.01	800	699.1 -> 98.8	54.5	29.4	88.1



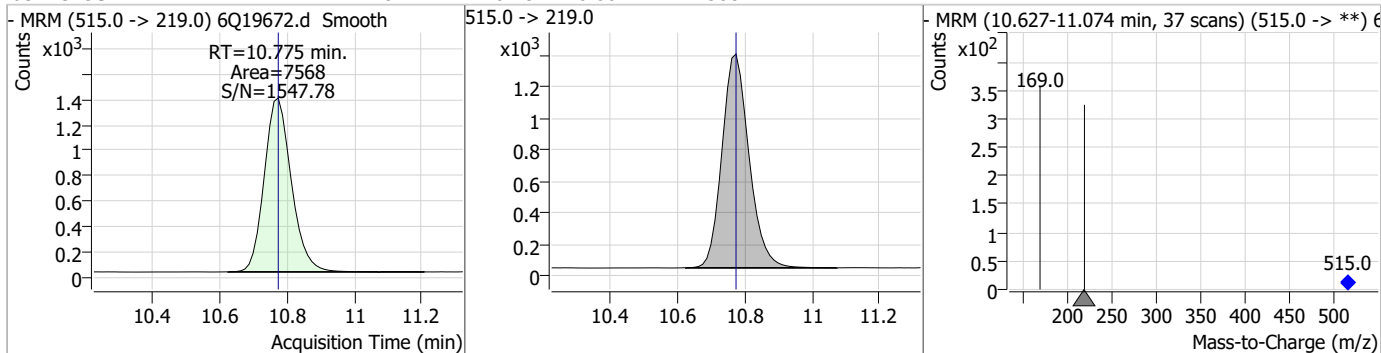
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	12.27	10.70	0.01	50533				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.33	10.71	0.00	7297 (m)				

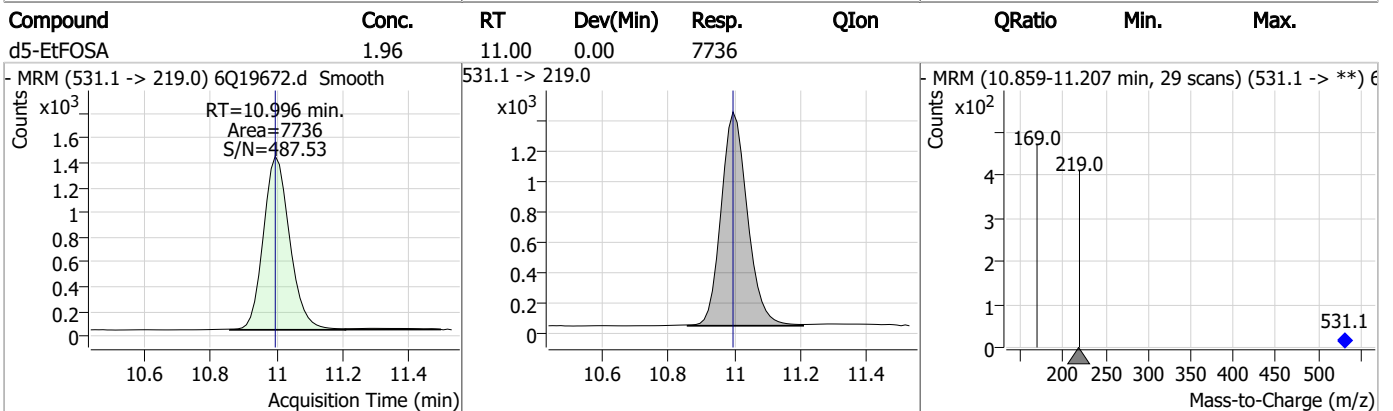
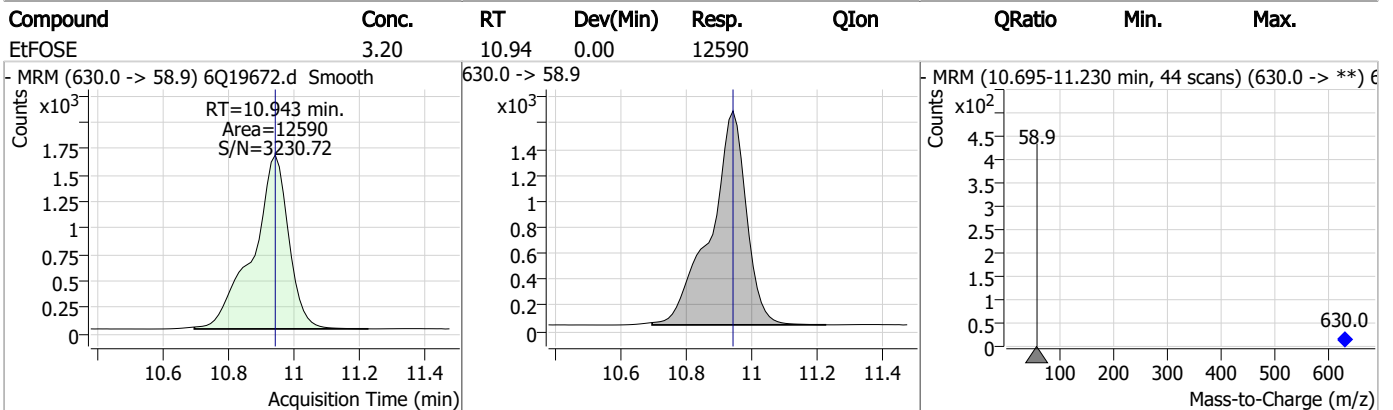
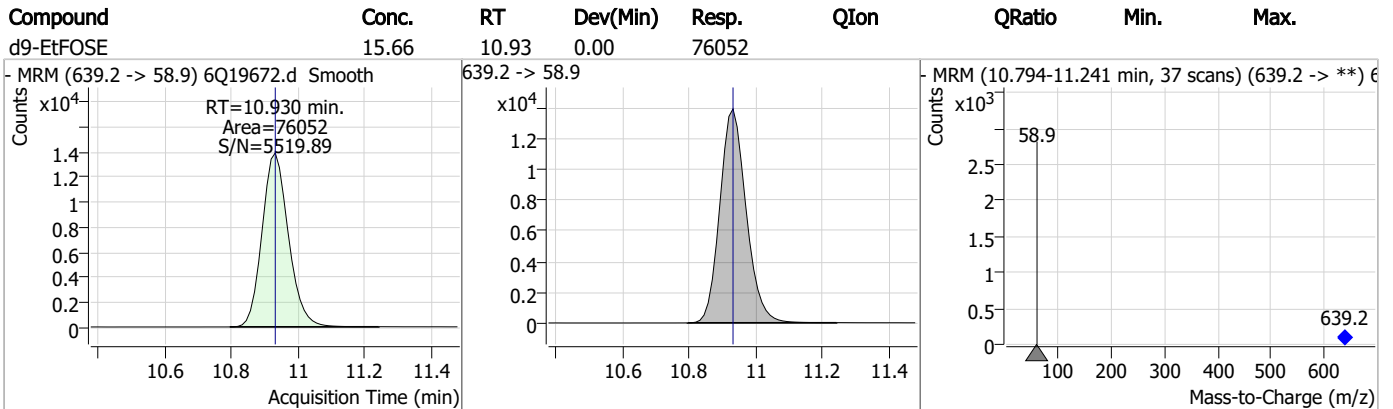
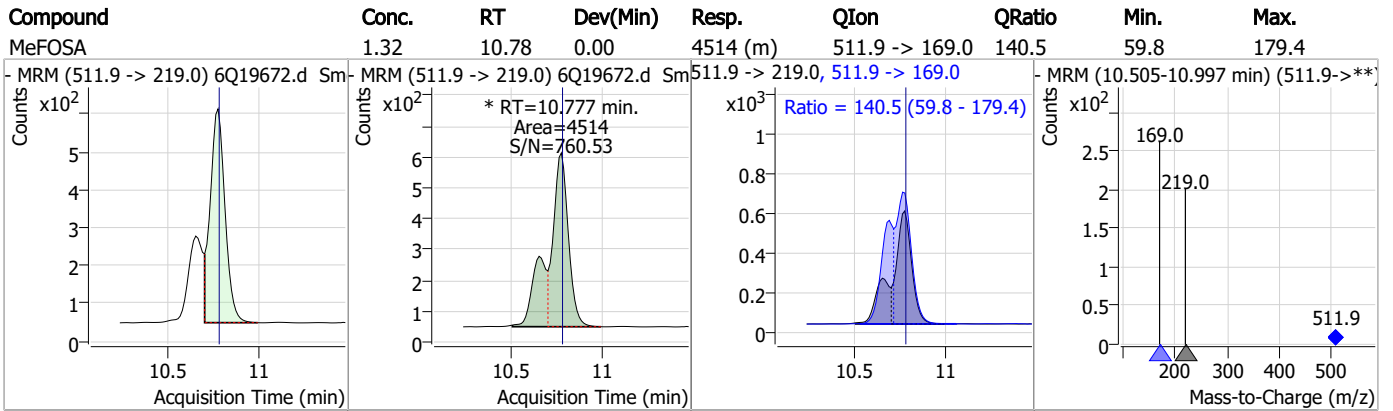


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.87	10.78	0.00	7568				



7.3.2
7

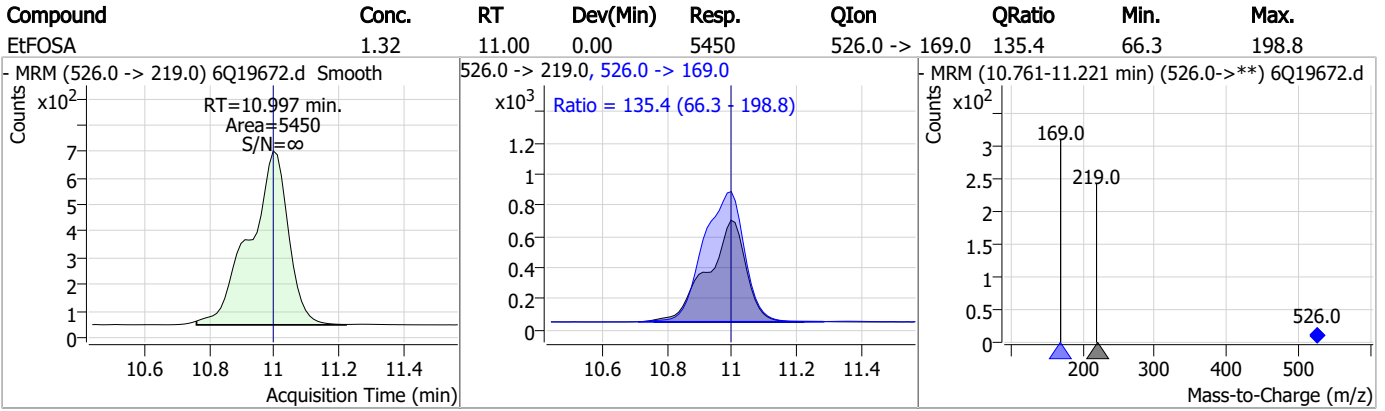
Perfluorinated Compounds by LC/MS/MS



7.3.2

7

Perfluorinated Compounds by LC/MS/MS



7.3.2

7

Manual Integration Approval Summary

Sample Number: OP97425-LLBS Method: EPA DRAFT 1633
Lab FileID: 6Q19672.D Analyst approved: 06/21/23 16:11 Martha Valls
Injection Time: 06/21/23 13:36 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.47	Split peak
MeFOSAA	2355-31-9		8.41	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.55	Split peak
EtFOSAA	2991-50-6		8.62	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.3.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19676.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 2:32:57 PM
 Sample Name : op97425-ms
 Vial : P3-A6
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97425,S6Q293,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	52867	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	43821	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	51111	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	44192	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	67013	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	30134	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	17815	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	22517	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	18327	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	9275	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	16496	2.50 µg/L	0.012
M3-PFBS	5.746	302.1 -> 79.9	16771	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	10924	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	9718	2.50 µg/L	0.000
M2-4:2FTS	5.454	329.1 -> 80.9	2782	5.00 µg/L	0.012
M2-6:2FTS	7.113	429.1 -> 80.9	3883	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	3371	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	21490	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	28713	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	19054	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	55980	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	84436	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	8079	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	7799	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	12020	2.50 µg/L	0.000
13C3-PFBA	3.101	216.0 -> 172.0	53315	5.00 µg/L	0.012
18O2-PFHxS	7.477	403.0 -> 83.9	6997	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	66192	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	24541	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	40389	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	37629	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.454	329.1 -> 80.9	2782	6.62 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.5%		
13C2-6:2FTS	7.113	429.1 -> 80.9	3883	6.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.5%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3371	5.65 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.1%		
13C2-PFDoDA	9.285	615.1 -> 570.0	18327	1.12 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.4%		
13C2-PFTeDA	10.000	715.2 -> 670.0	9275	1.01 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.0%		
13C3-PFBS	5.746	302.1 -> 79.9	16771	2.88 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.2%		
13C3-PFHxS	7.478	402.1 -> 79.9	10924	2.97 µg/L	0.000

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 = 118.8%		
13C4-PFBA	3.097	216.8 -> 171.9	52867	4.23 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 42.3%		
13C4-PFHpA	6.707	367.1 -> 322.0	44192	3.04 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 121.7%		
13C5-PFHxA	5.792	318.0 -> 273.0	51111	3.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 131.7%		
13C5-PFPeA	4.560	268.3 -> 223.0	43821	6.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.1%		
13C6-PFDA	8.387	519.1 -> 474.1	17815	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C7-PFUnDA	8.853	570.0 -> 525.1	22517	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C8-FOSA	9.687	506.1 -> 77.8	16496	1.81 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 72.5%		
13C8-PFOA	7.339	421.1 -> 376.0	67013	2.71 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C8-PFOS	8.563	507.1 -> 79.9	9718	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C9-PFNA	7.882	472.1 -> 427.0	30134	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.1%		
d3-MeFOSAA	8.407	573.2 -> 419.0	21490	4.73 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C3-HFPO-DA	6.169	286.9 -> 168.9	28713	11.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 110.5%		
d3-MeFOSA	10.775	515.0 -> 219.0	7799	1.97 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 78.9%		
d5-EtFOSAA	8.615	589.2 -> 419.0	19054	4.94 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
d7-MeFOSE	10.685	623.2 -> 58.9	55980	13.88 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 55.5%		
d9-EtFOSE	10.930	639.2 -> 58.9	84436	17.76 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 71.0%		
d5-EtFOSA	10.996	531.1 -> 219.0	8079	2.09 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.7%		
Target Compounds					QValue
4:2FTS	5.455	327.1 -> 307.0	39508	8.17 µg/L	98
		327.1 -> 80.9	14304		
6:2FTS	7.113	427.1 -> 407.0	38748	8.38 µg/L	96
		427.1 -> 80.9	13593		
8:2FTS	8.164	527.1 -> 507.0	19681	8.78 µg/L	97
		527.1 -> 80.8	8156		
EtFOSAA	8.629	584.2 -> 419.1	6710	2.08 µg/L	m 97
		584.2 -> 526.0	3694		
FOSA	9.677	498.1 -> 77.9	15214	2.32 µg/L	99
		498.1 -> 478.0	507		
MeFOSAA	8.421	570.1 -> 419.0	12835	2.30 µg/L	m 95
		570.1 -> 483.0	2706		
PFBA	3.093	212.8 -> 168.9	18145	8.52 µg/L	100
PFBS	5.747	298.7 -> 79.9	13091	1.75 µg/L	92
		298.7 -> 98.8	5634		
PFDA	8.388	512.9 -> 469.0	55790	2.11 µg/L	99
		512.9 -> 219.0	8564		
PFDODA	9.285	613.1 -> 569.0	34583	2.27 µg/L	99
		613.1 -> 319.0	5206		
PFDS	9.450	599.0 -> 79.9	5215	1.78 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	2780	2.01	µg/L	95
		363.1 -> 319.0	47529			
PFHpS	8.046	363.1 -> 169.0	8299	2.23	µg/L	87
		449.0 -> 79.9	12951			
PFHxA	5.795	449.0 -> 98.9	5398	1.92	µg/L	100
		313.0 -> 269.0	39627			
PFHxS	7.479	313.0 -> 118.9	2040	1.78	µg/L	99
		398.7 -> 79.9	11700			
PFNA	7.883	398.7 -> 98.9	5848	2.11	µg/L	99
		463.0 -> 419.0	58697			
PFNS	9.029	463.0 -> 219.0	10845	1.96	µg/L	94
		548.8 -> 79.9	9871			
PFOA	7.341	548.8 -> 98.9	5230	1.93	µg/L	95
		413.0 -> 369.0	71064			
PFOS	8.564	413.0 -> 169.0	13413	1.89	µg/L	100
		498.9 -> 79.9	10906			
PFPeA	4.563	498.9 -> 98.8	5751	4.42	µg/L	100
		263.0 -> 219.0	57165			
PFPeS	6.785	349.1 -> 79.9	11839	1.93	µg/L	98
		349.1 -> 98.9	5515			
PFTeDA	10.000	713.1 -> 669.0	26022	2.34	µg/L	100
		713.1 -> 168.9	2205			
PFTrDA	9.656	663.0 -> 619.0	30256	1.96	µg/L	96
		663.0 -> 168.9	3640			
PFUnDA	8.854	563.1 -> 519.0	34469	1.98	µg/L	100
		563.1 -> 269.1	6385			
11CI-PF3OUdS	9.708	630.9 -> 450.9	49902	3.82	µg/L	99
		632.9 -> 452.9	14326			
9CI-PF3ONS	8.906	530.8 -> 351.0	83680	3.71	µg/L	92
		532.8 -> 353.0	29649			
ADONA	6.959	376.9 -> 250.9	195192	4.20	µg/L	99
		376.9 -> 84.8	55284			
HFPO-DA	6.169	284.9 -> 168.9	14233	4.74	µg/L	99
		284.9 -> 184.9	1631			
3:3FTCA	3.983	241.0 -> 177.0	4960	5.67	µg/L	98
		241.0 -> 117.0	701			
5:3FTCA	6.386	341.0 -> 237.1	180402	44.00	µg/L	96
		341.0 -> 217.0	129205			
7:3FTCA	7.761	441.0 -> 316.9	128607	46.39	µg/L	95
		441.0 -> 336.9	299580			
EtFOSA	10.997	526.0 -> 219.0	18775	4.35	µg/L	100
		526.0 -> 169.0	24990			
EtFOSE	10.943	630.0 -> 58.9	45272	10.36	µg/L	100
		511.9 -> 219.0	15321			
MeFOSA	10.777	511.9 -> 169.0	20831	4.34	µg/L	85
		616.1 -> 58.9	27207			
MeFOSE	10.709	699.1 -> 79.9	2576	11.21	µg/L	100
		699.1 -> 98.8	1260			
PFDoDS	10.127	295.0 -> 201.0	10602	1.78	µg/L	87
		295.0 -> 84.9	2806			
NFDHA	5.673	279.0 -> 85.1	40744	4.02	µg/L	99
		229.0 -> 84.9	24822			
PFMBA	4.988	314.8 -> 134.9	100426	3.44	µg/L	100
		314.8 -> 82.9	3398			
PFMPA	3.680			3.60	µg/L	100
PFEESA	6.288					

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

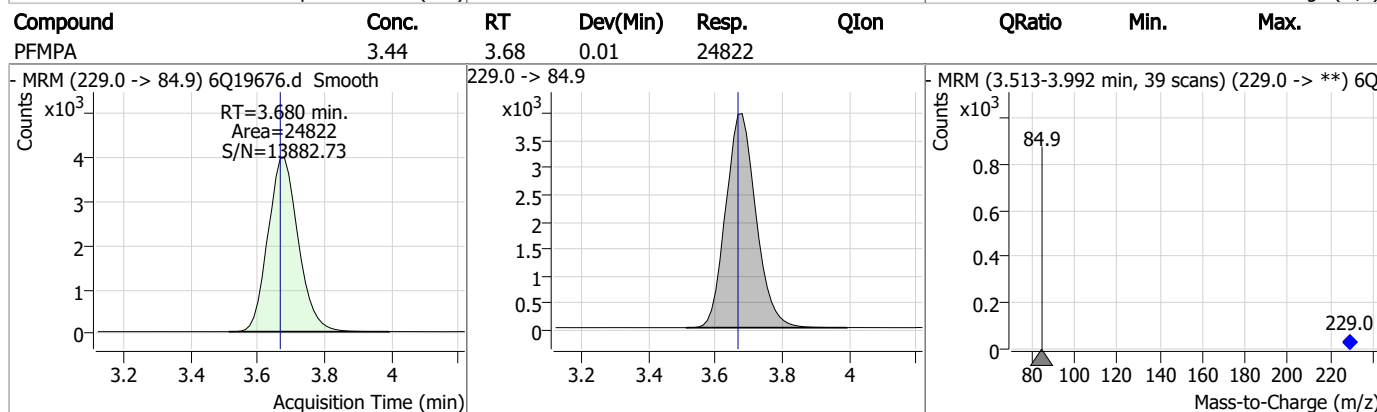
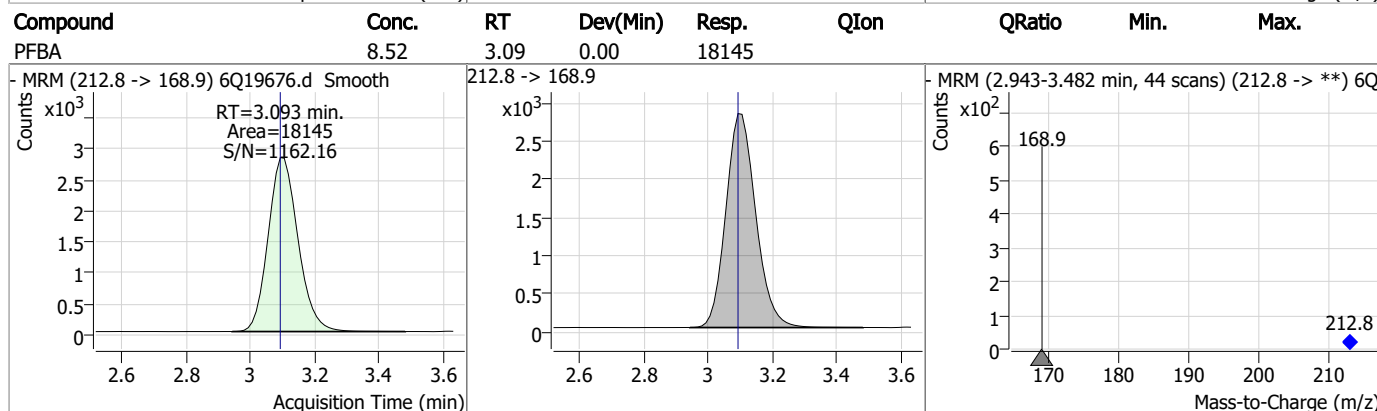
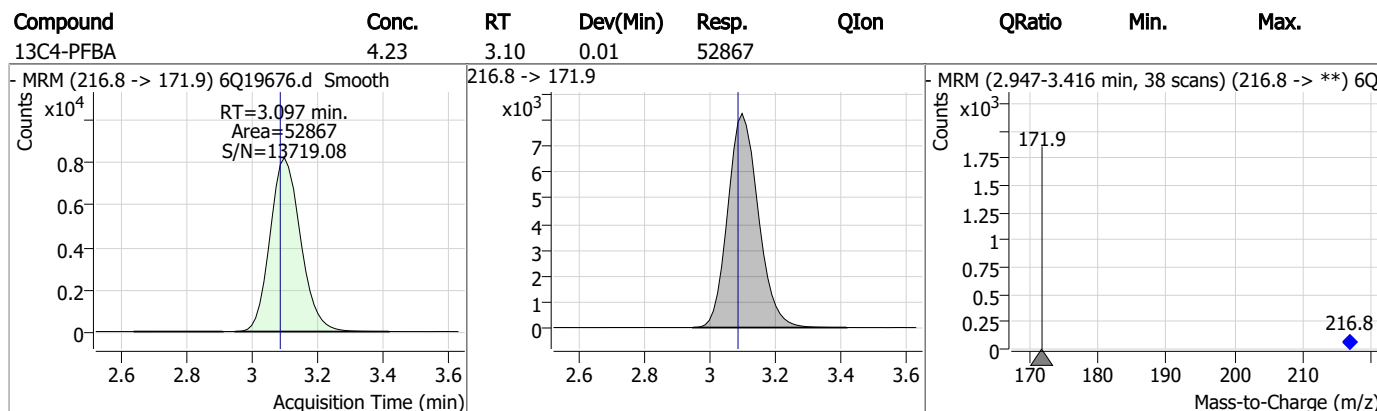
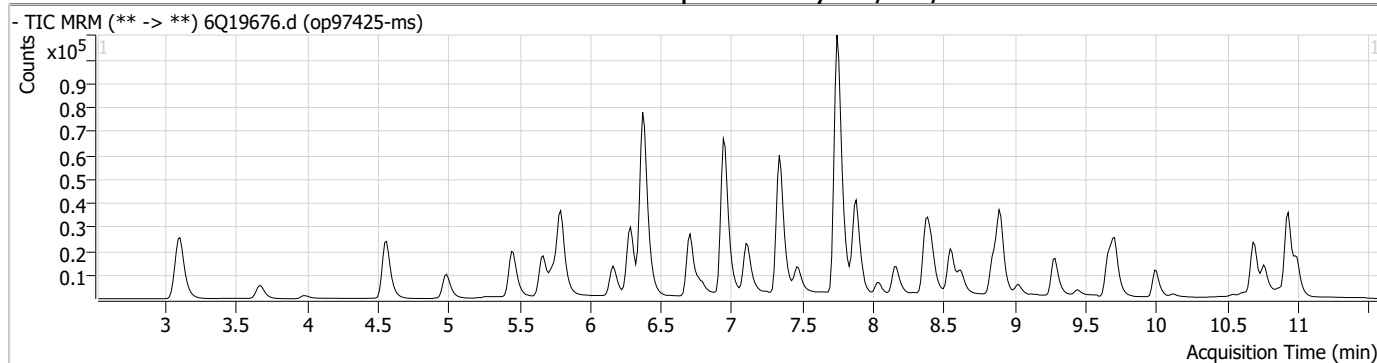
Perfluorinated Compounds by LC/MS/MS

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

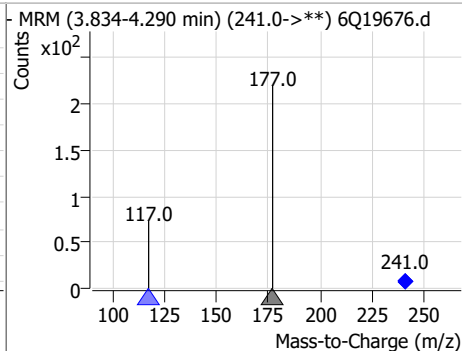
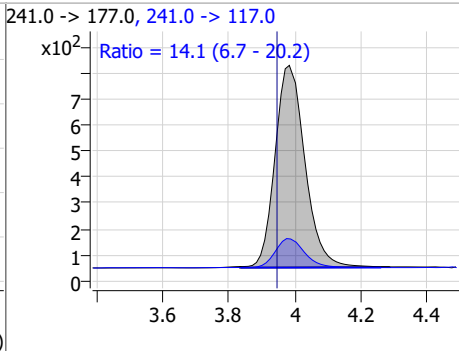
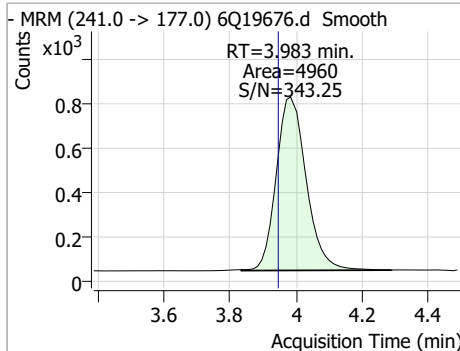
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Perfluorinated Compounds by LC/MS/MS

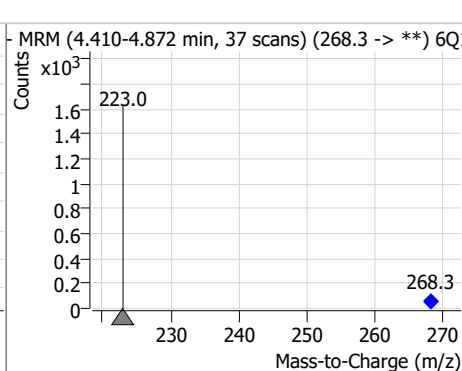
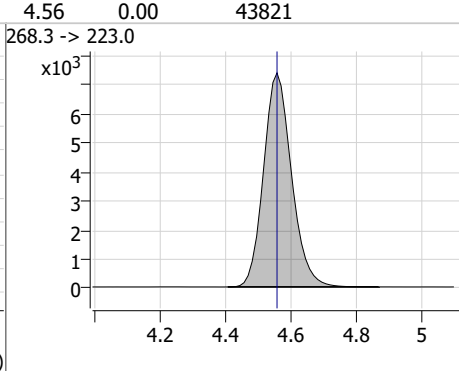
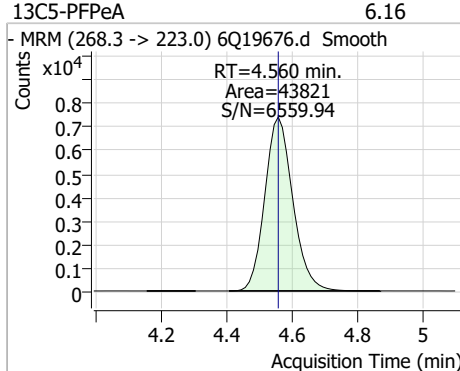


Perfluorinated Compounds by LC/MS/MS

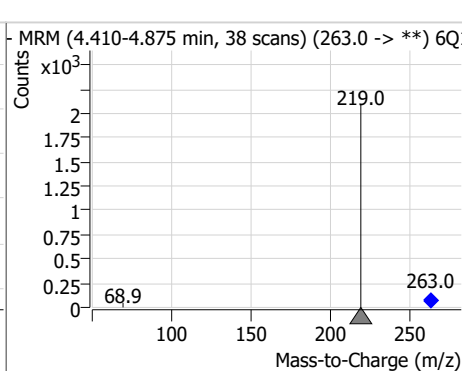
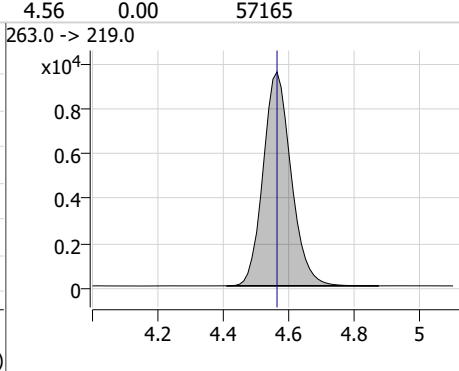
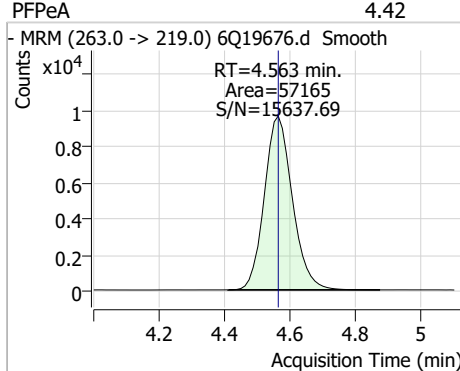
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	5.67	3.98	0.04	4960	241.0 -> 117.0	14.1	6.7	20.2



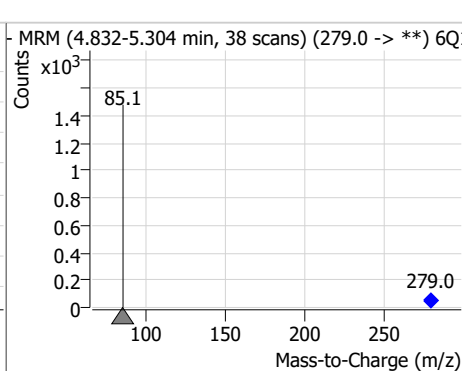
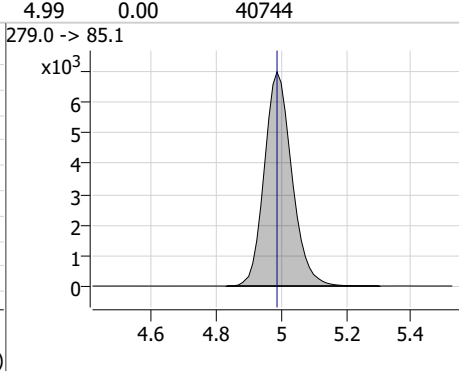
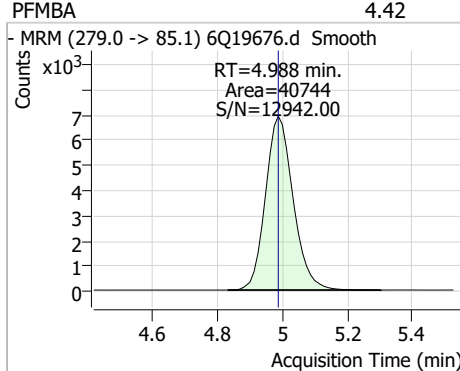
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	6.16	4.56	0.00	43821				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.42	4.56	0.00	57165				

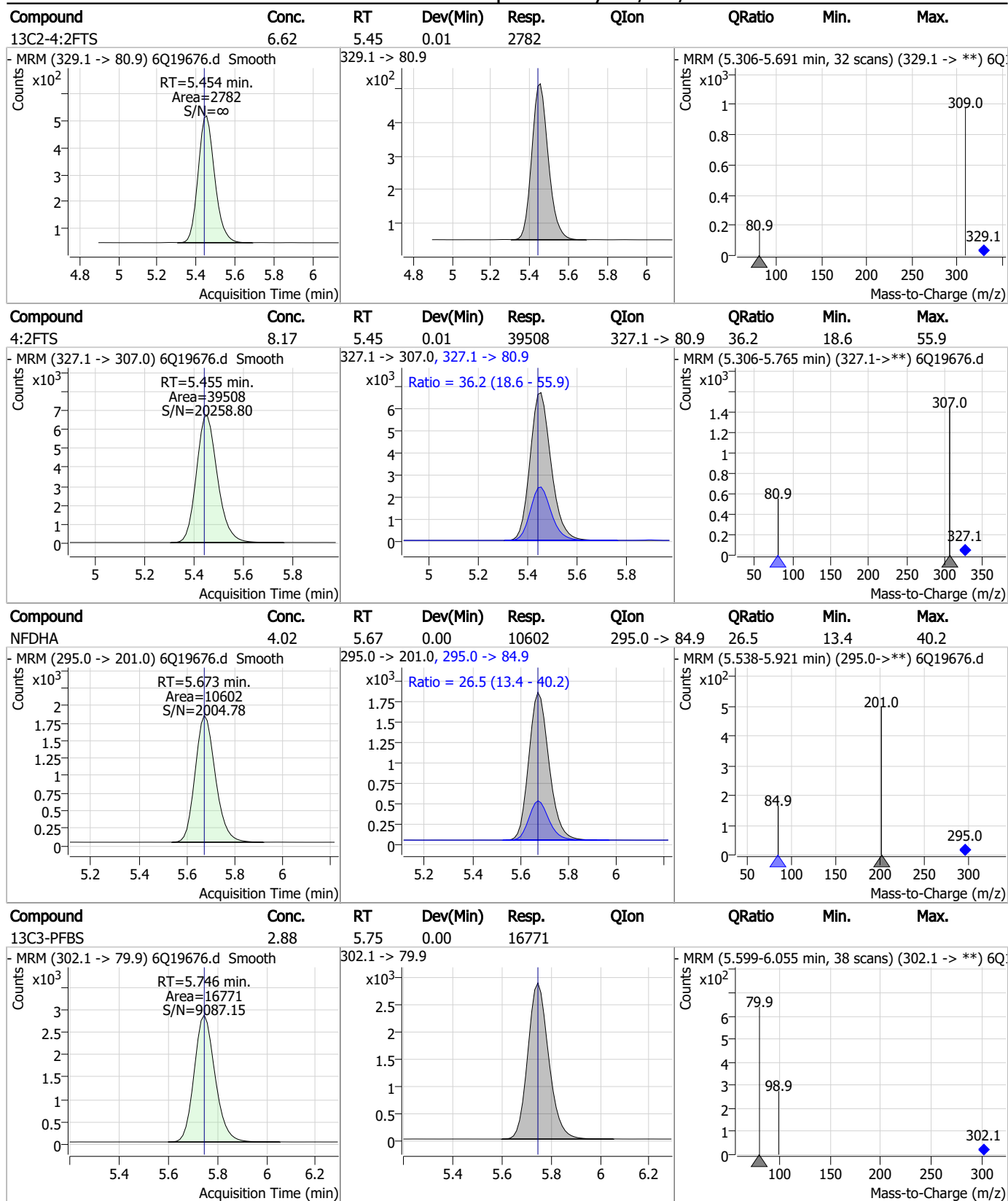


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.42	4.99	0.00	40744				



7.4.1
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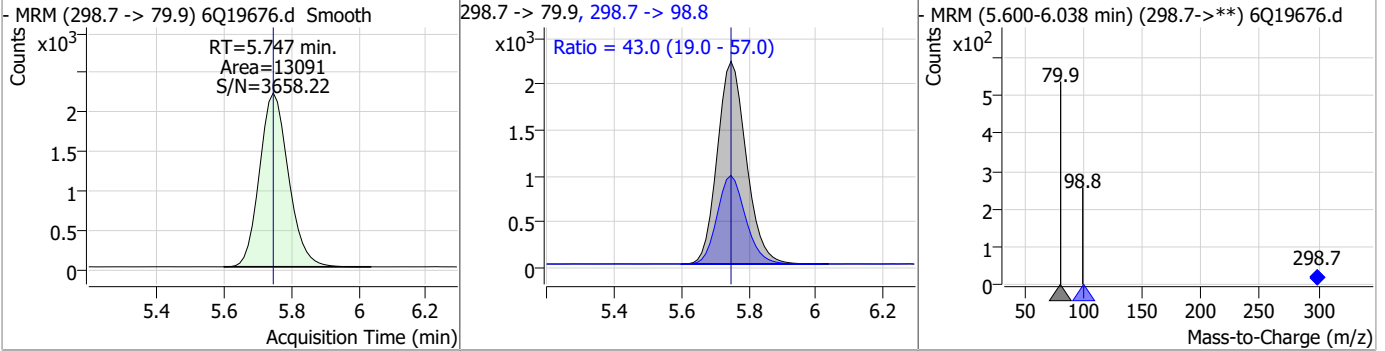
Perfluorinated Compounds by LC/MS/MS



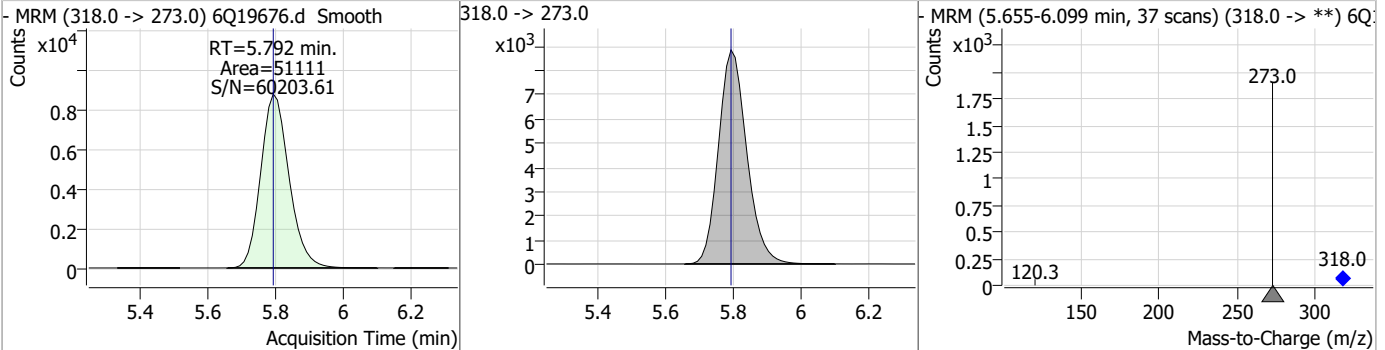
7.4.1
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Perfluorinated Compounds by LC/MS/MS

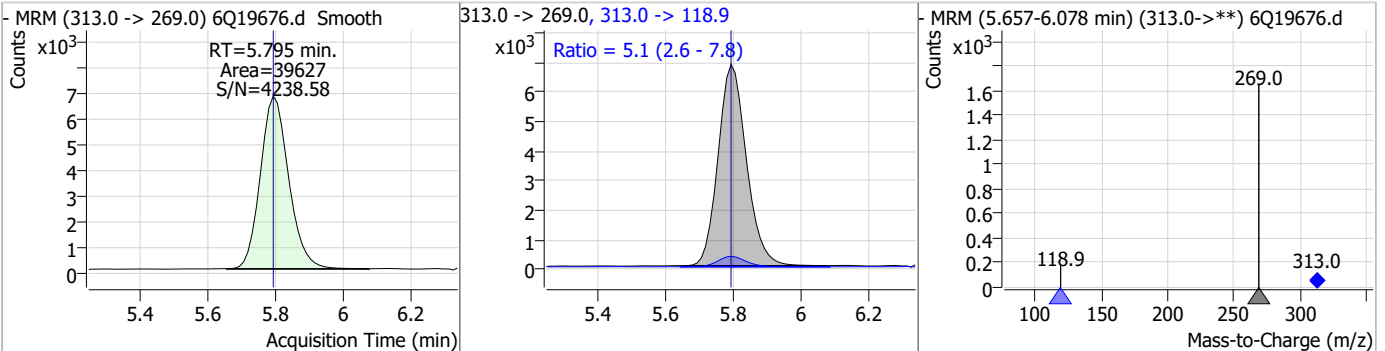
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.75	5.75	0.00	13091	298.7 -> 98.8	43.0	19.0	57.0



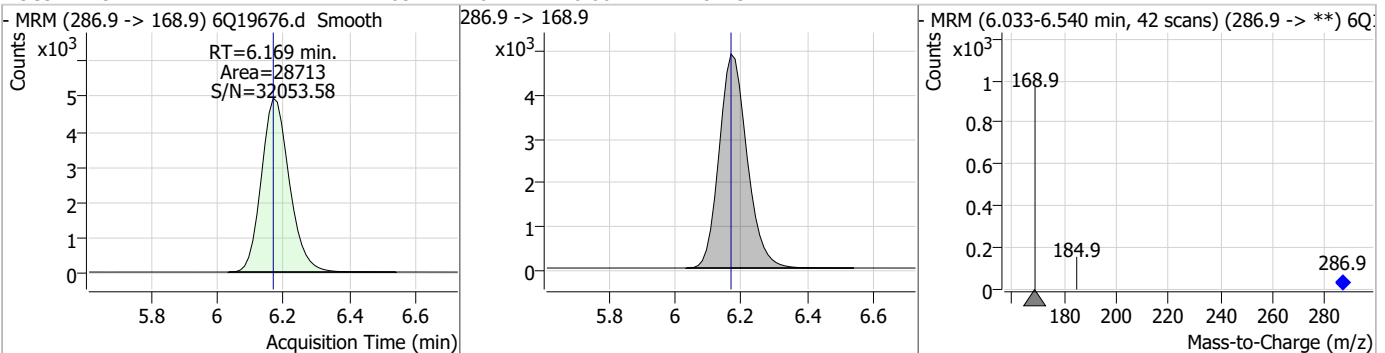
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	3.29	5.79	0.00	51111				



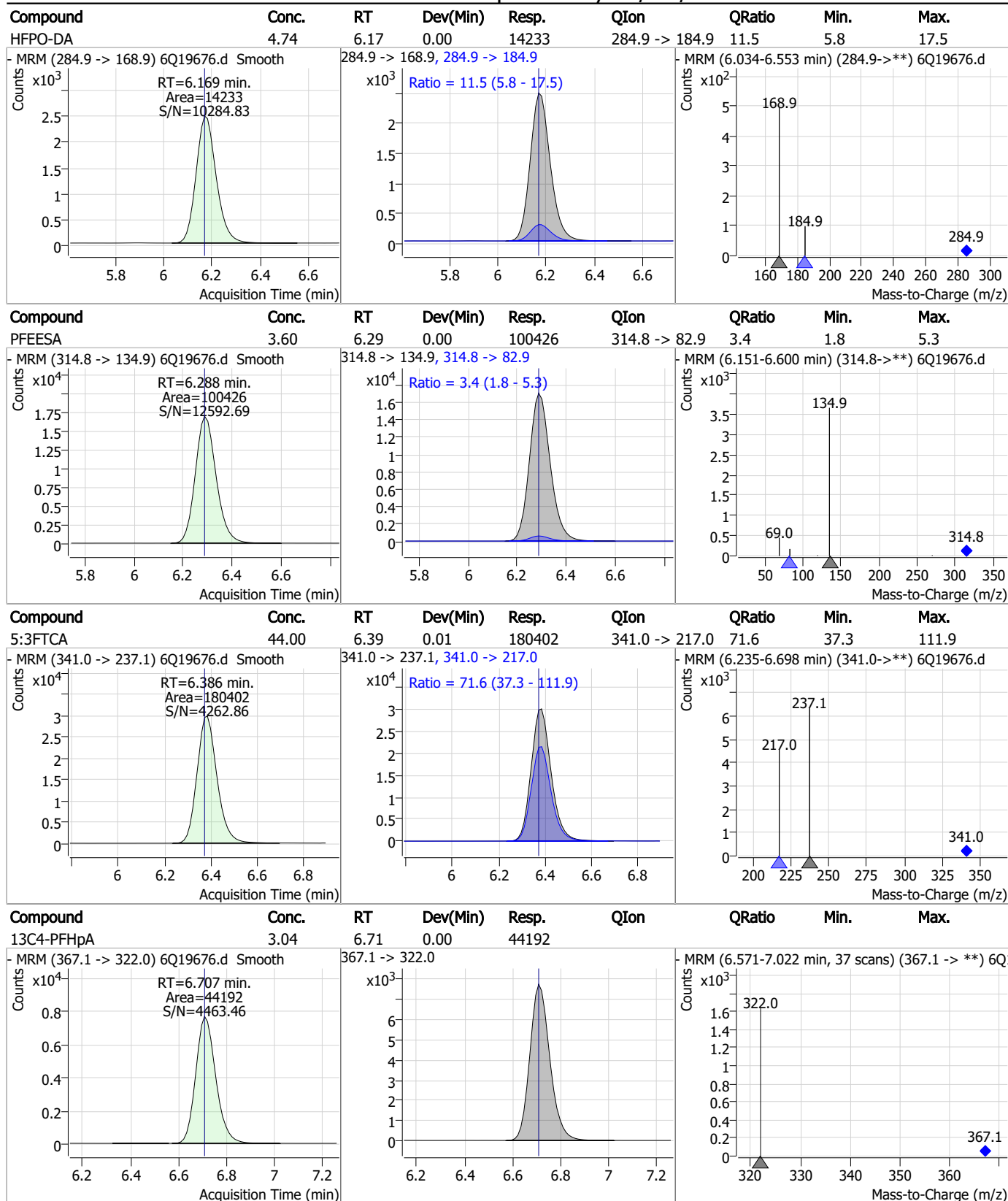
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.92	5.79	0.00	39627	313.0 -> 118.9	5.1	2.6	7.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	11.05	6.17	0.00	28713				



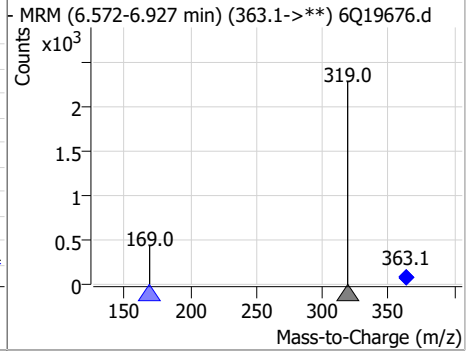
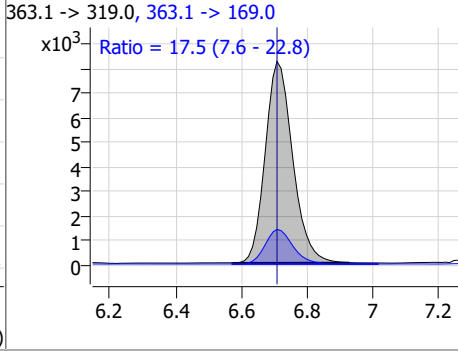
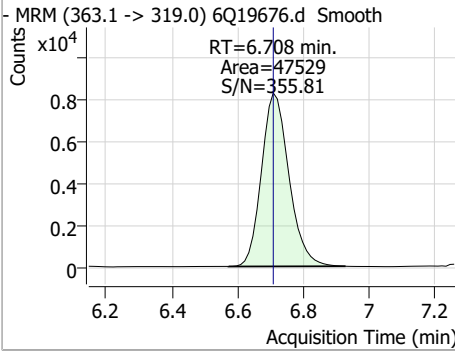
Perfluorinated Compounds by LC/MS/MS



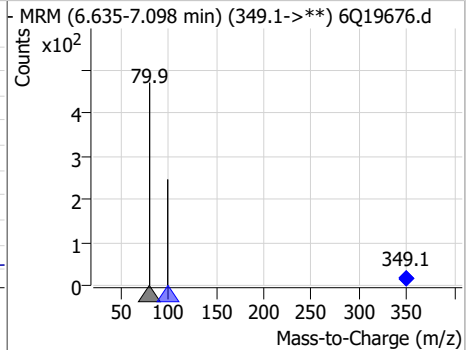
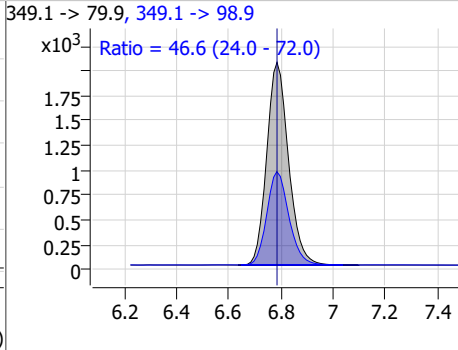
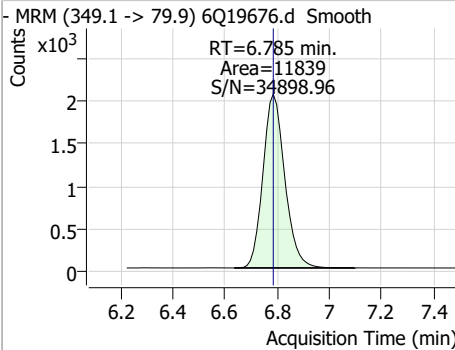
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Perfluorinated Compounds by LC/MS/MS

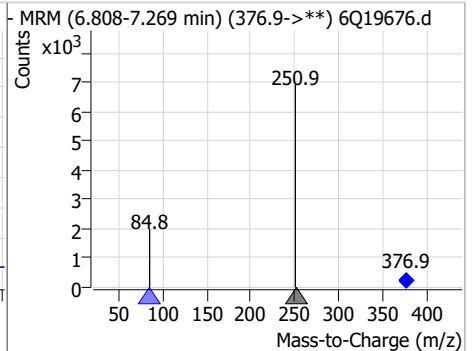
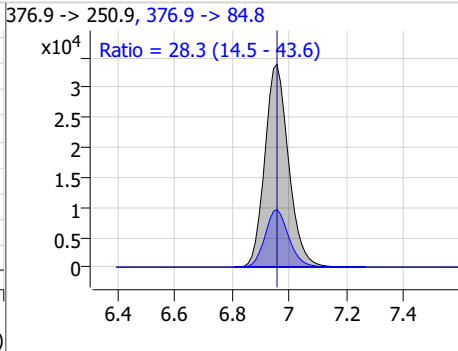
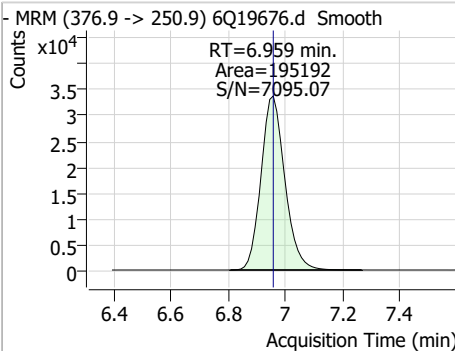
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.01	6.71	0.00	47529	363.1 -> 169.0	17.5	7.6	22.8



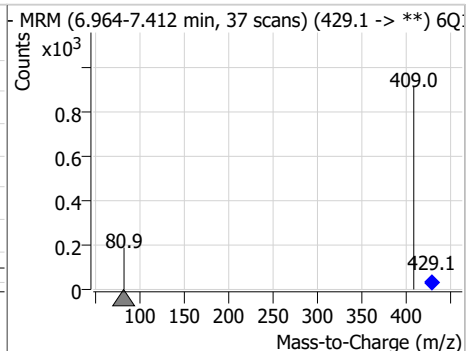
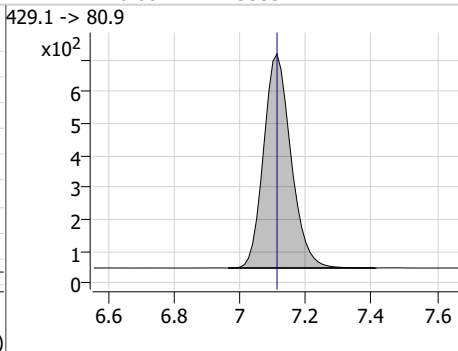
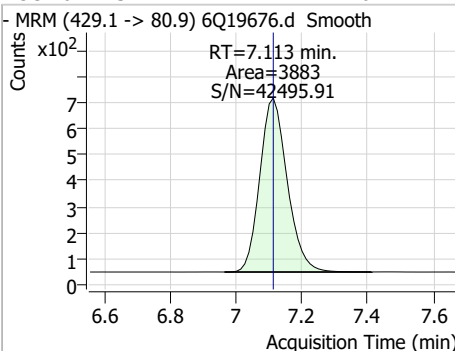
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.93	6.79	0.00	11839	349.1 -> 98.9	46.6	24.0	72.0



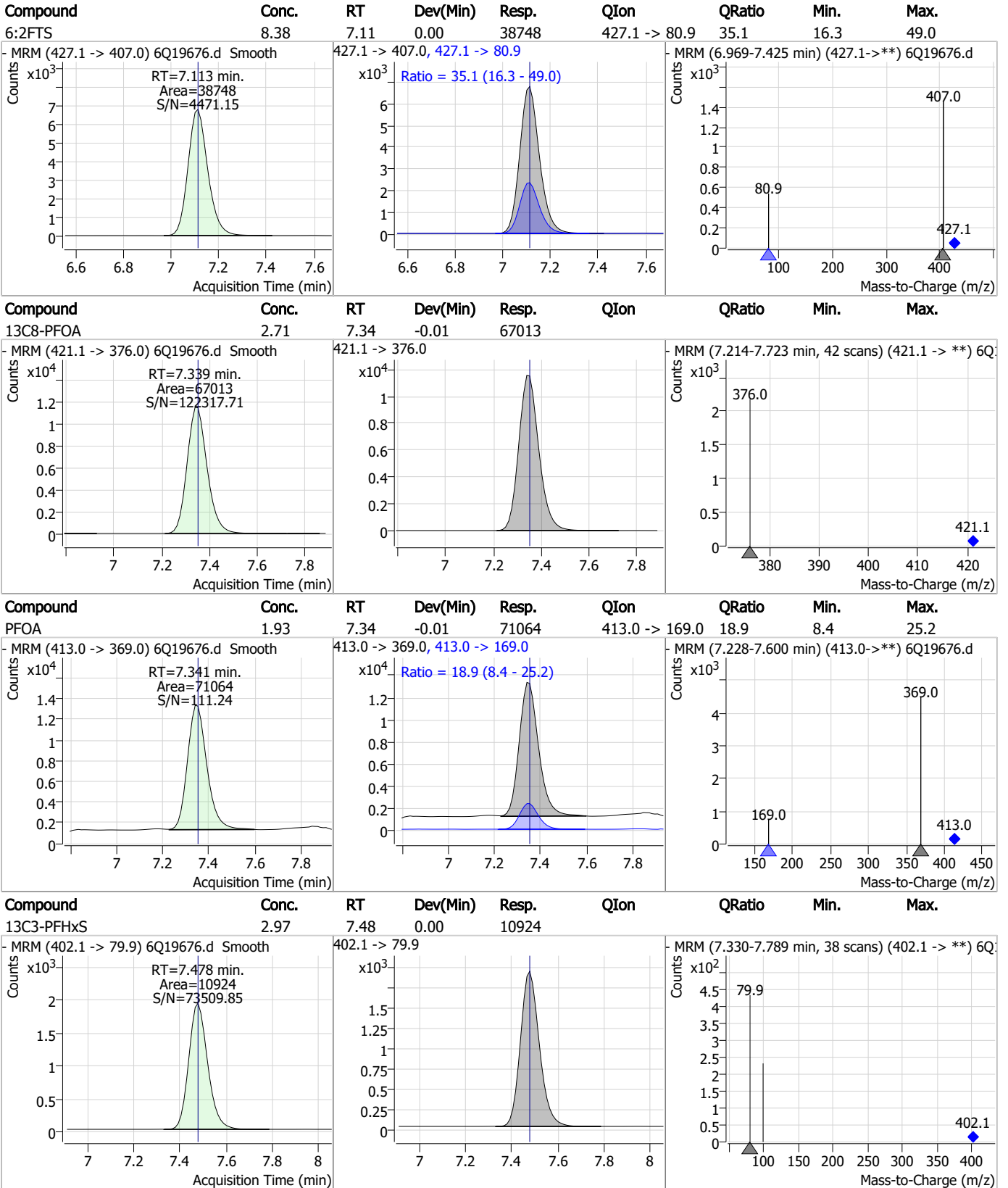
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.20	6.96	0.00	195192	376.9 -> 84.8	28.3	14.5	43.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	6.12	7.11	0.00	3883	429.1 -> 80.9			



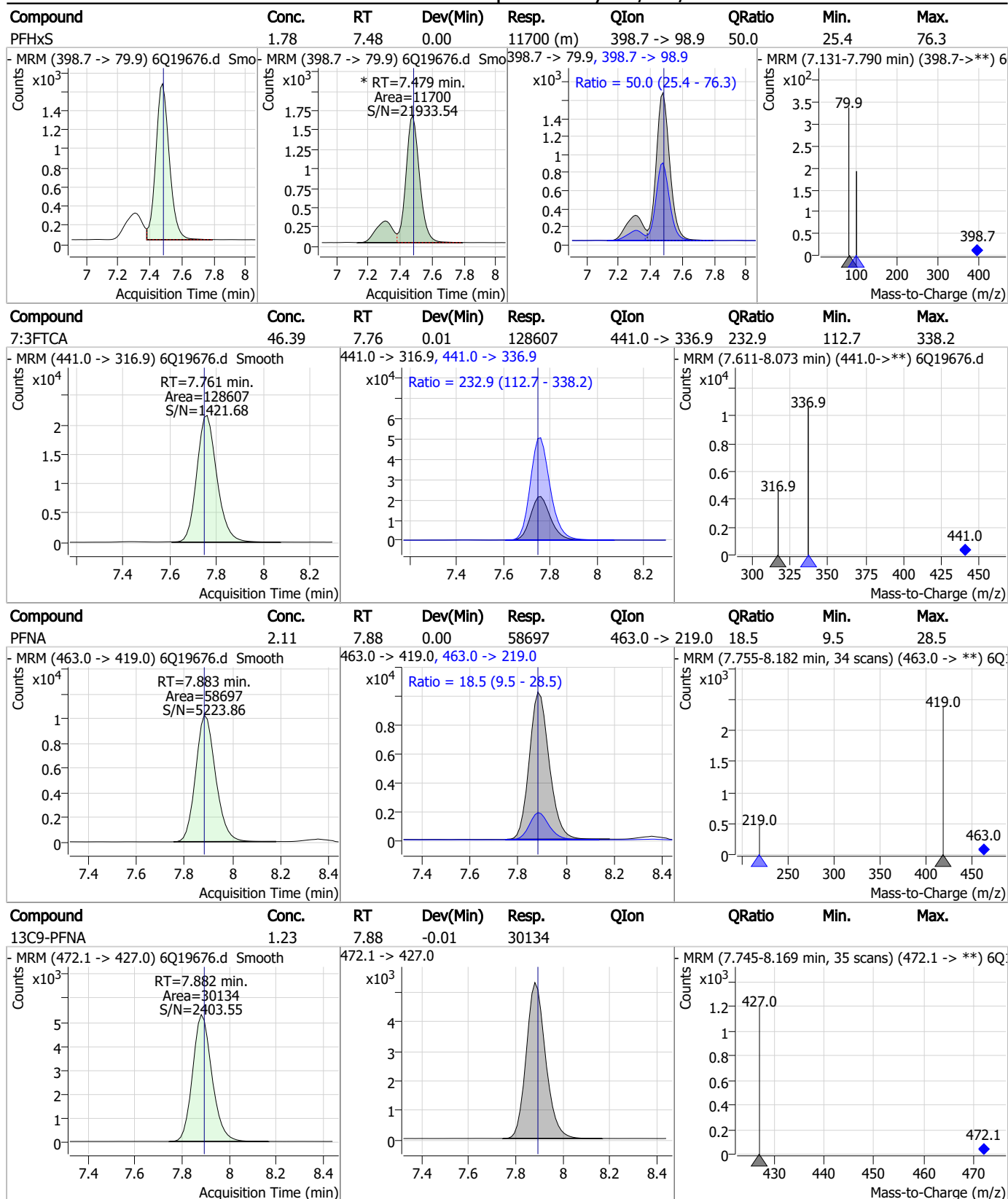
Perfluorinated Compounds by LC/MS/MS



7.4.1

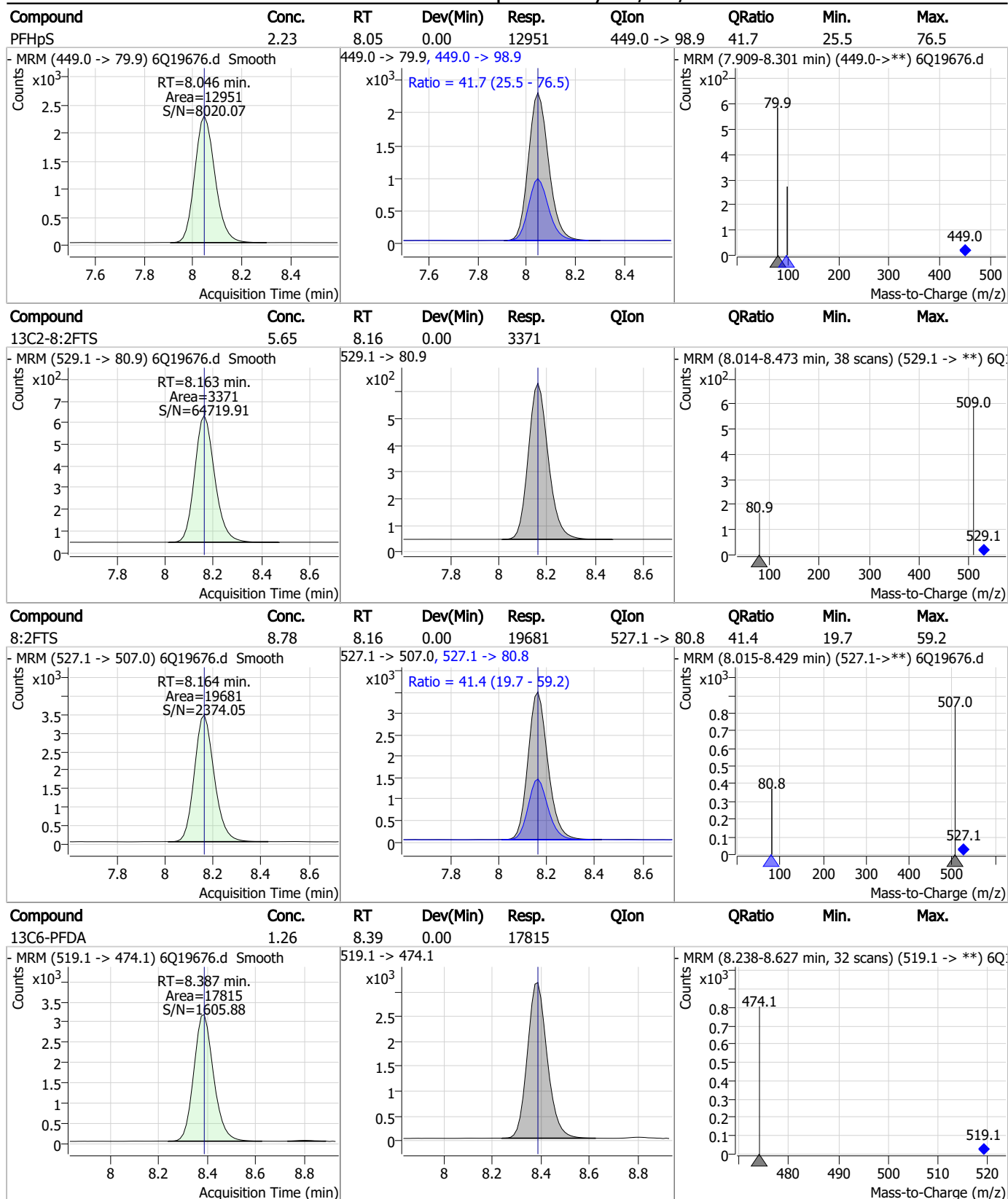
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Perfluorinated Compounds by LC/MS/MS



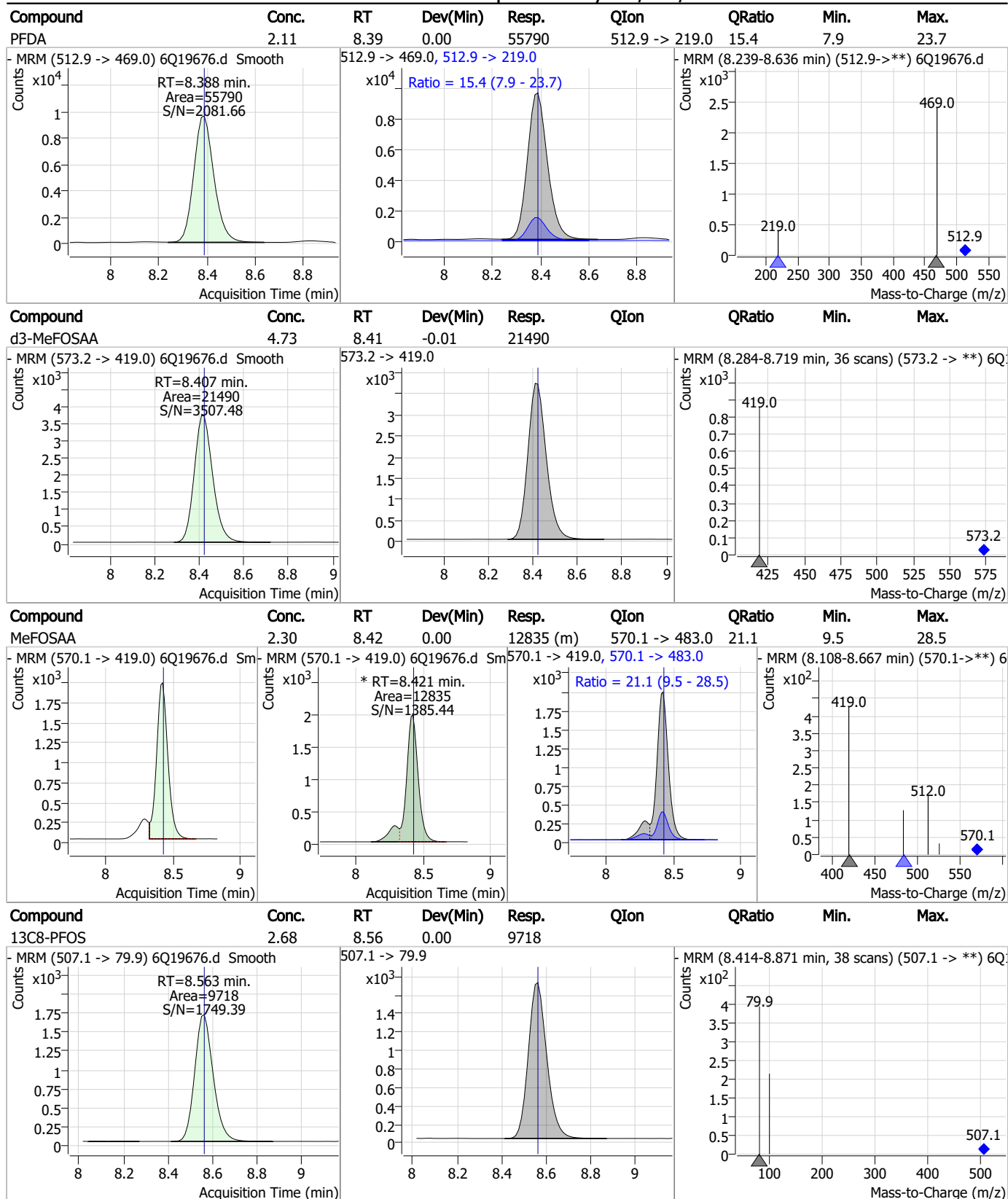
7.4.1
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Perfluorinated Compounds by LC/MS/MS



7.4.1
7

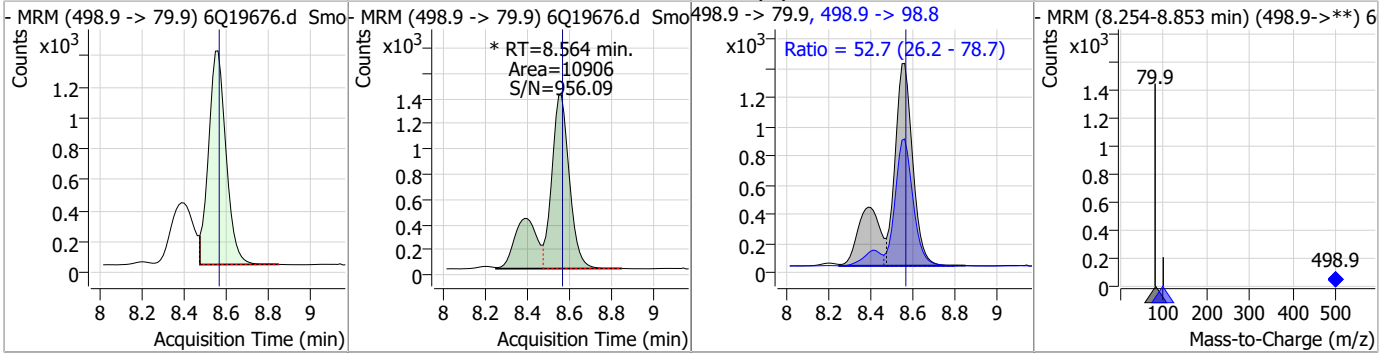
Perfluorinated Compounds by LC/MS/MS



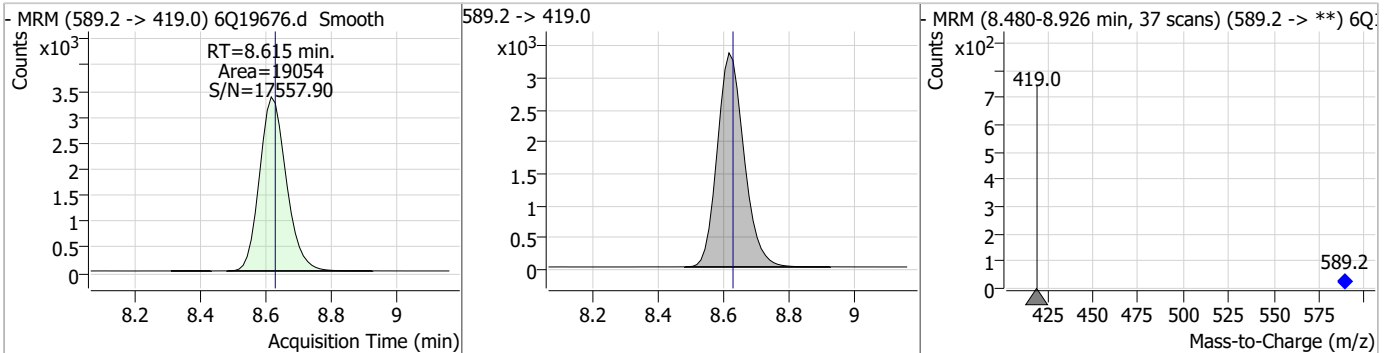
7.4.1
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Perfluorinated Compounds by LC/MS/MS

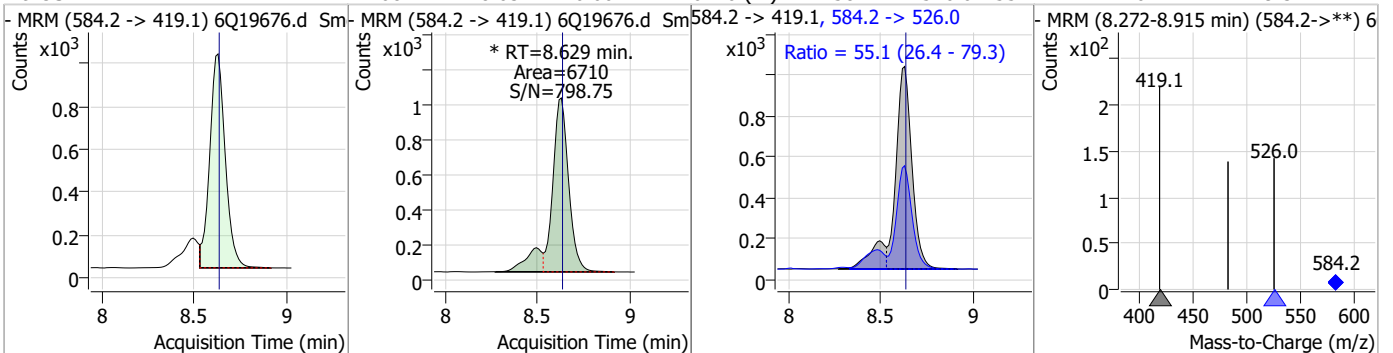
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.89	8.56	0.00	10906 (m)	498.9 -> 98.8	52.7	26.2	78.7



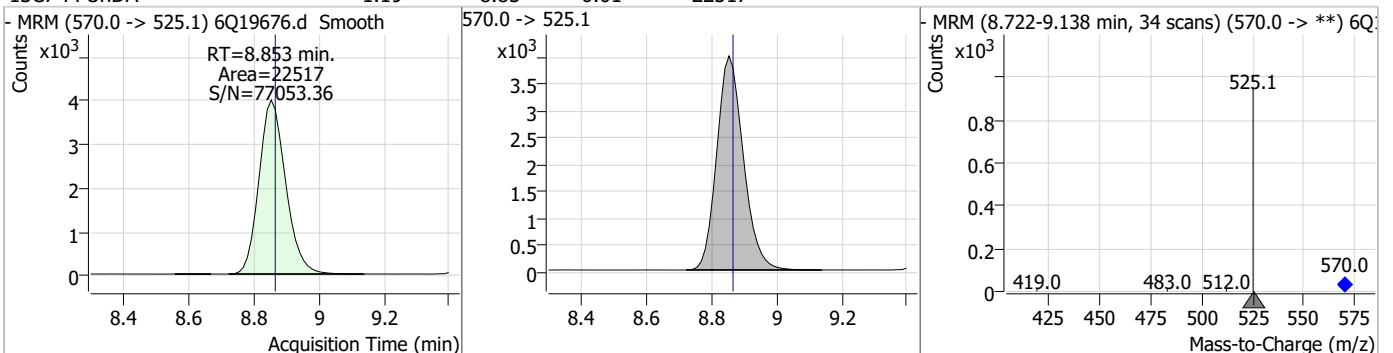
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.94	8.62	-0.01	19054				



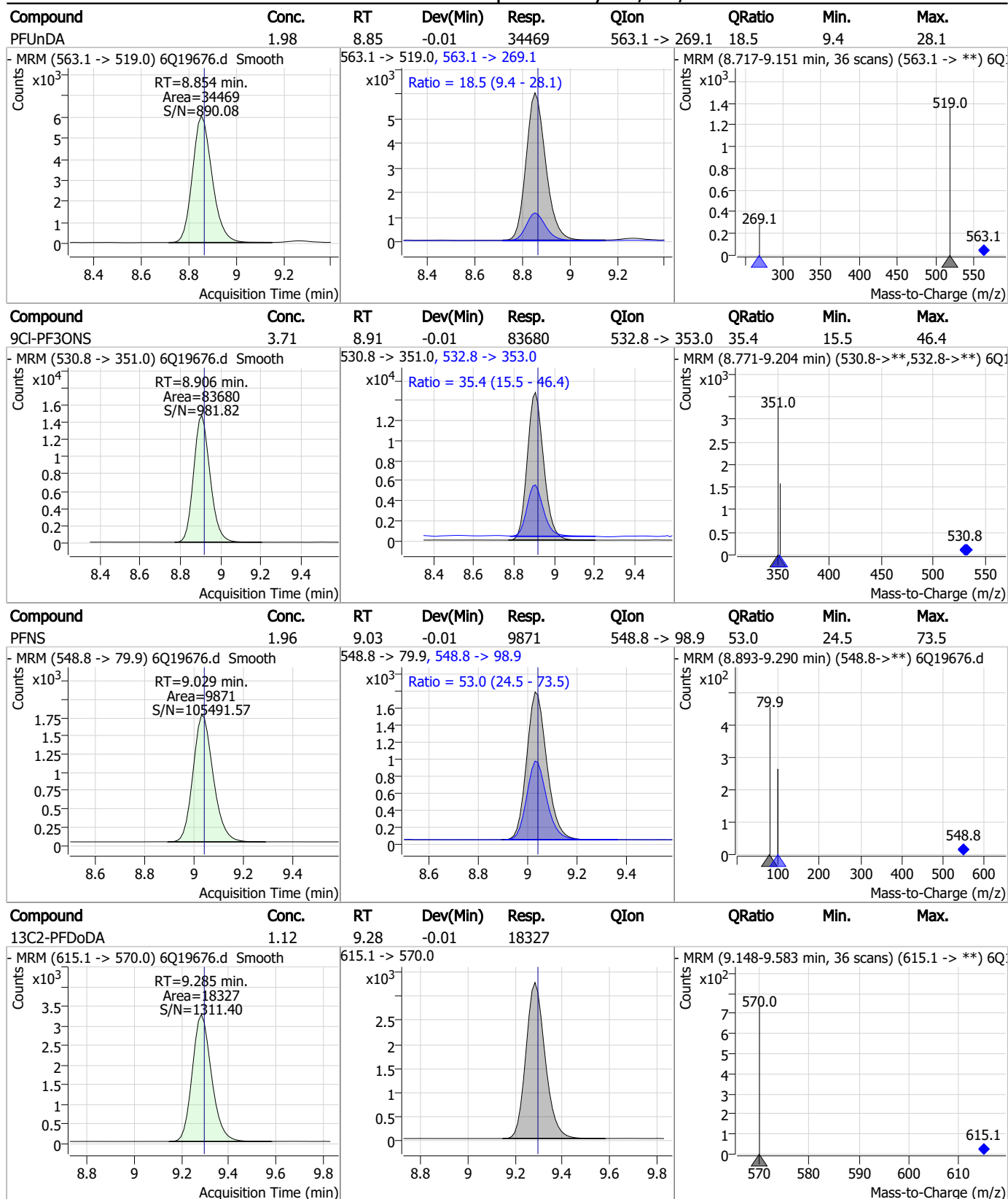
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.08	8.63	0.00	6710 (m)	584.2 -> 526.0	55.1	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.19	8.85	-0.01	22517				



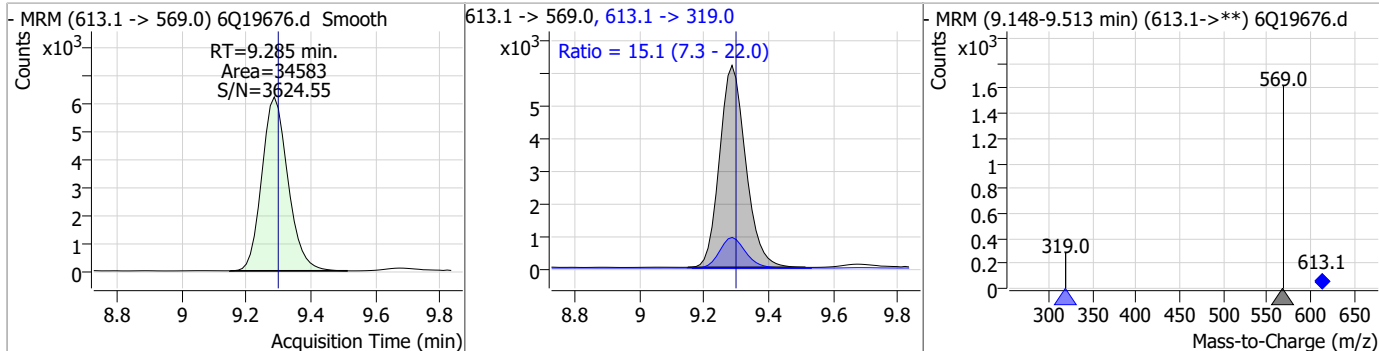
Perfluorinated Compounds by LC/MS/MS



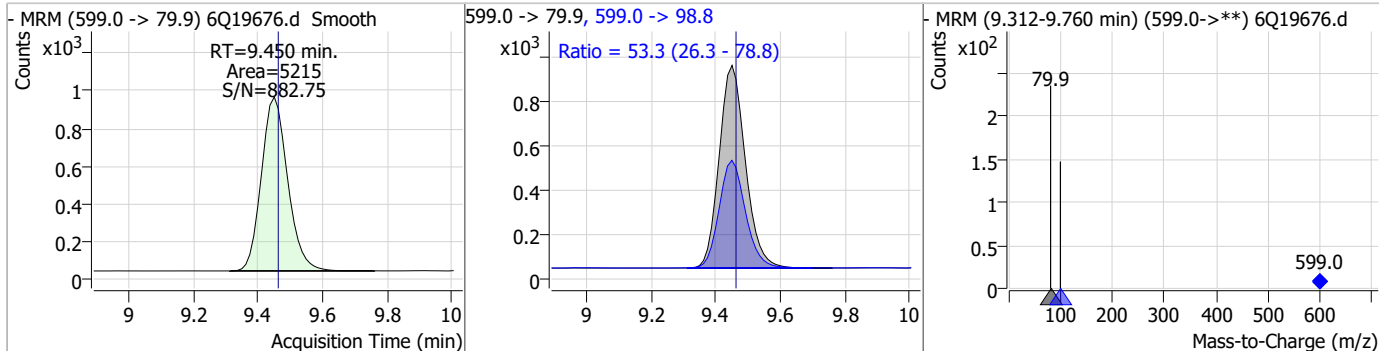
7.4.1
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Perfluorinated Compounds by LC/MS/MS

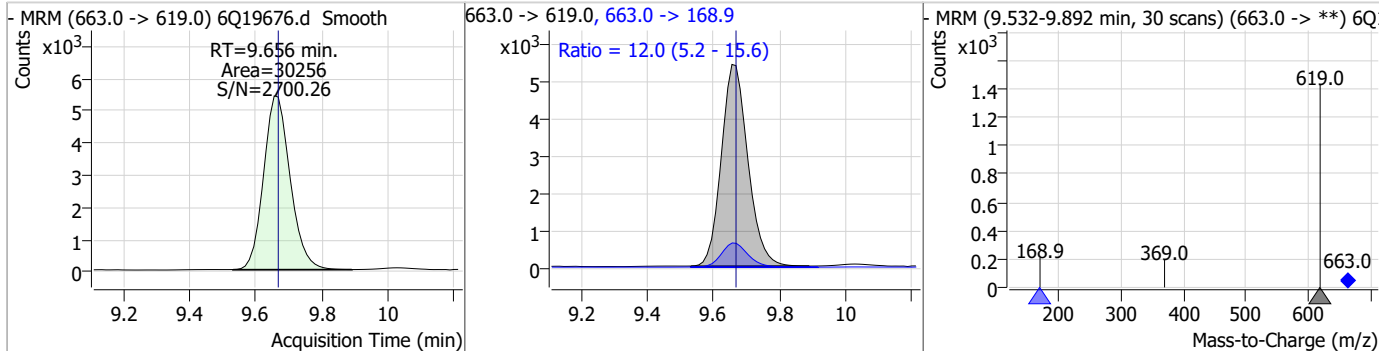
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.27	9.29	-0.01	34583	613.1 -> 319.0	15.1	7.3	22.0



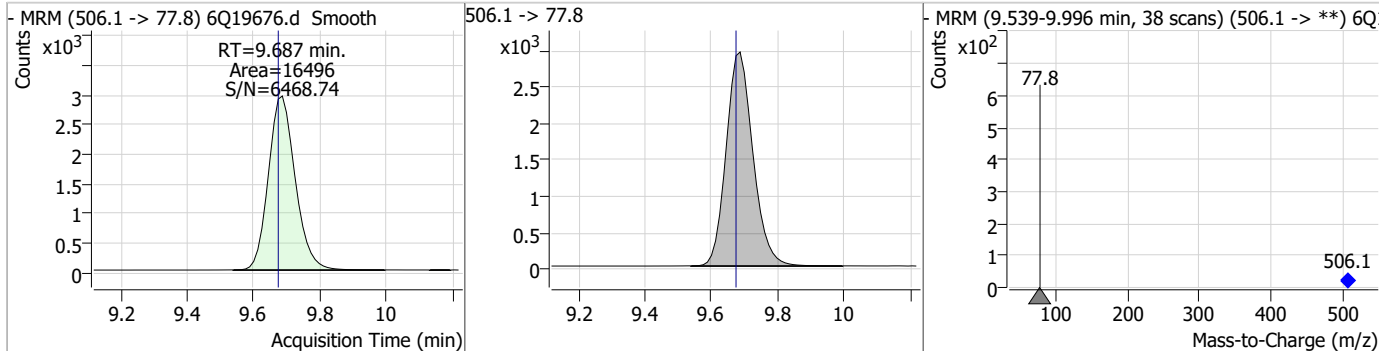
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDs	1.78	9.45	-0.01	5215	599.0 -> 98.8	53.3	26.3	78.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	1.96	9.66	-0.01	30256	663.0 -> 168.9	12.0	5.2	15.6

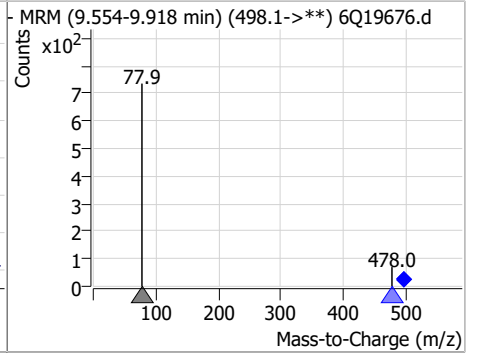
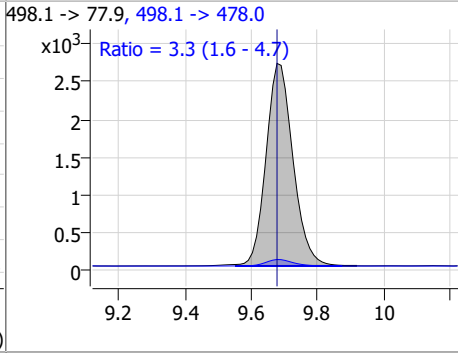
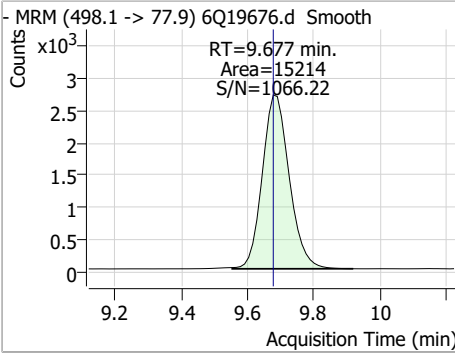


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	1.81	9.69	0.01	16496	506.1 -> 77.8			

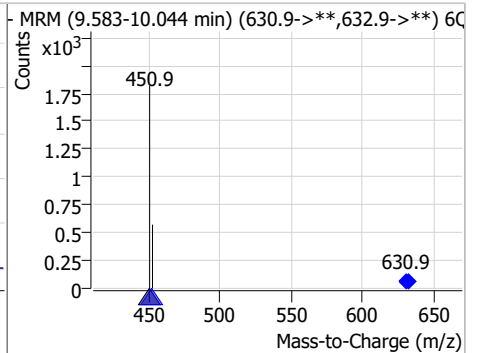
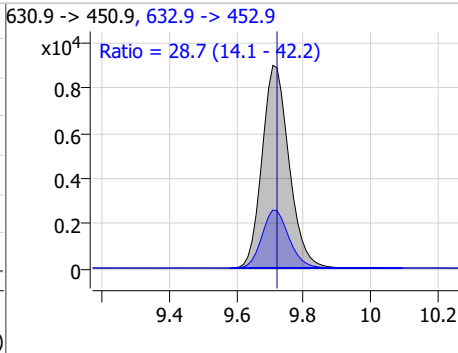
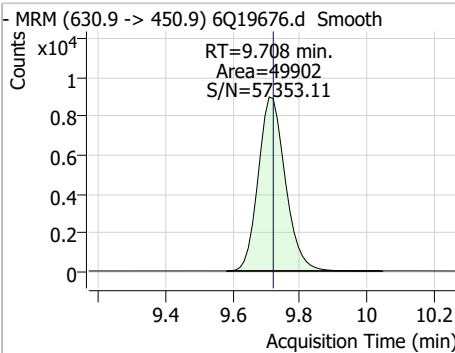


Perfluorinated Compounds by LC/MS/MS

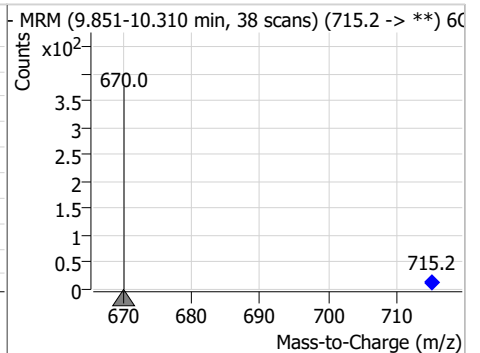
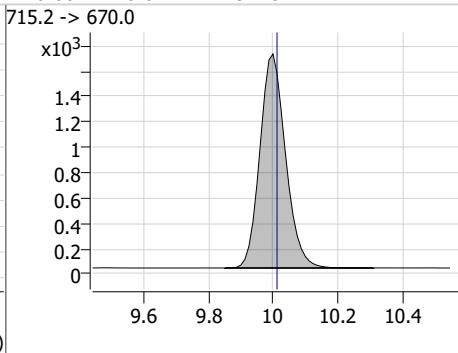
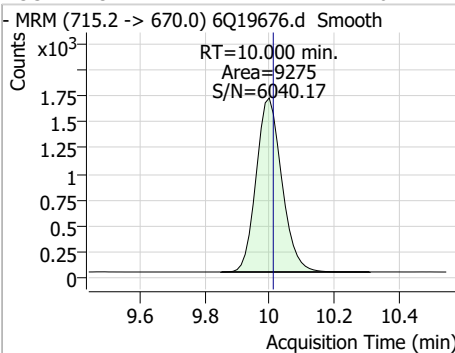
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.32	9.68	0.00	15214	498.1 -> 478.0	3.3	1.6	4.7



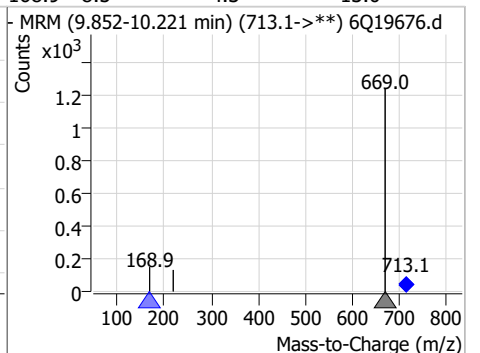
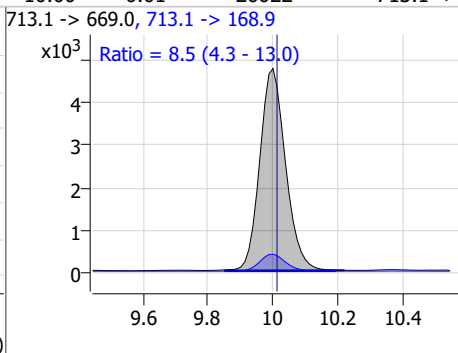
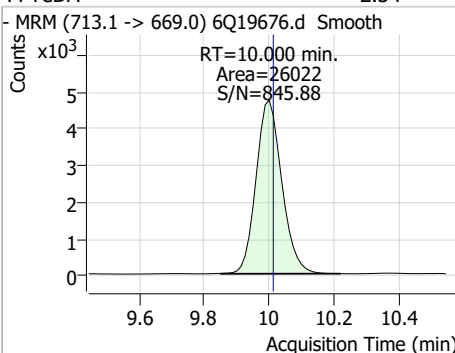
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	3.82	9.71	-0.01	49902	632.9 -> 452.9	28.7	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.01	10.00	-0.01	9275	715.2 -> 670.0			

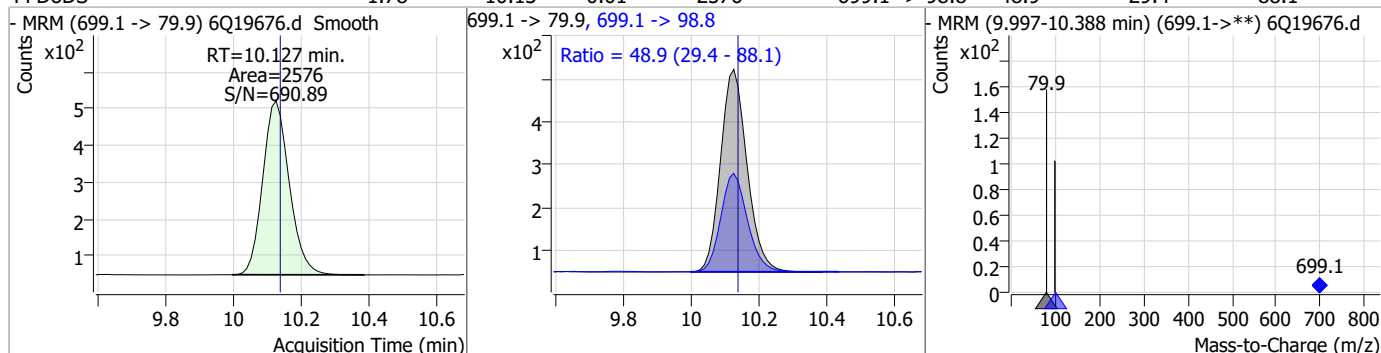


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.34	10.00	-0.01	26022	713.1 -> 168.9	8.5	4.3	13.0

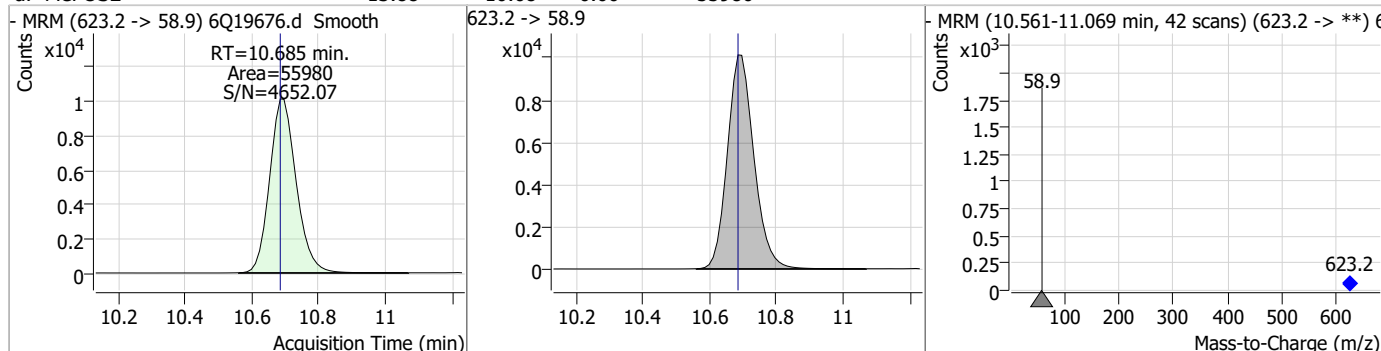


Perfluorinated Compounds by LC/MS/MS

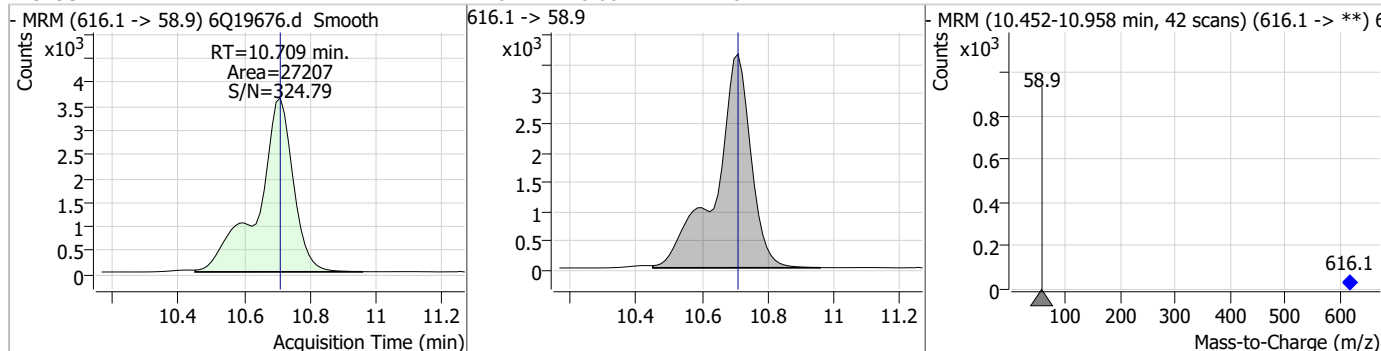
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.78	10.13	-0.01	2576	699.1 -> 98.8	48.9	29.4	88.1



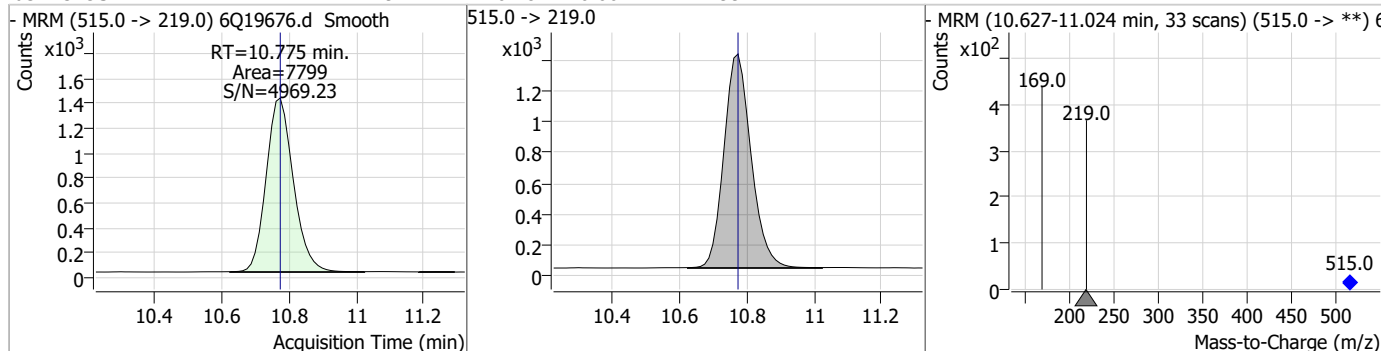
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	13.88	10.68	0.00	55980				



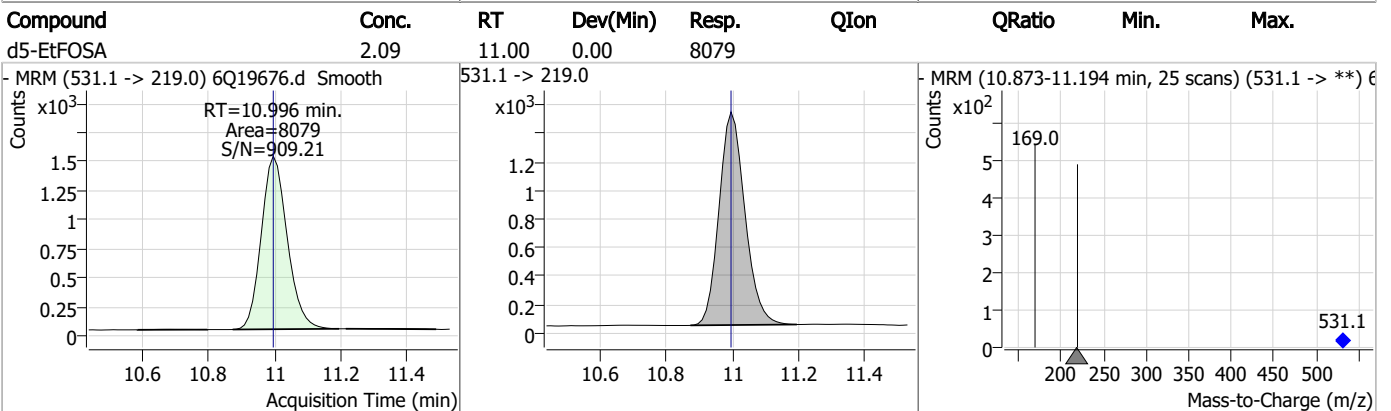
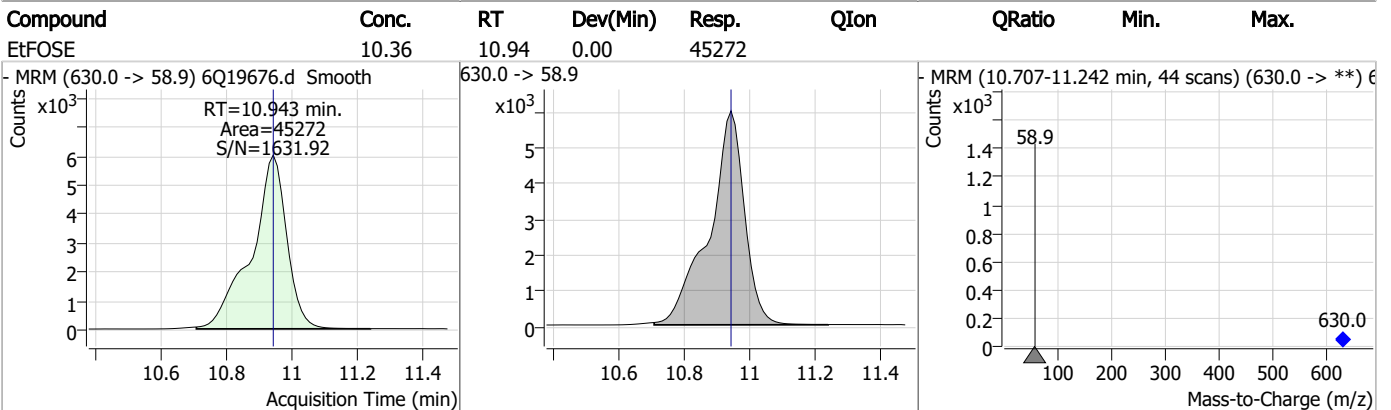
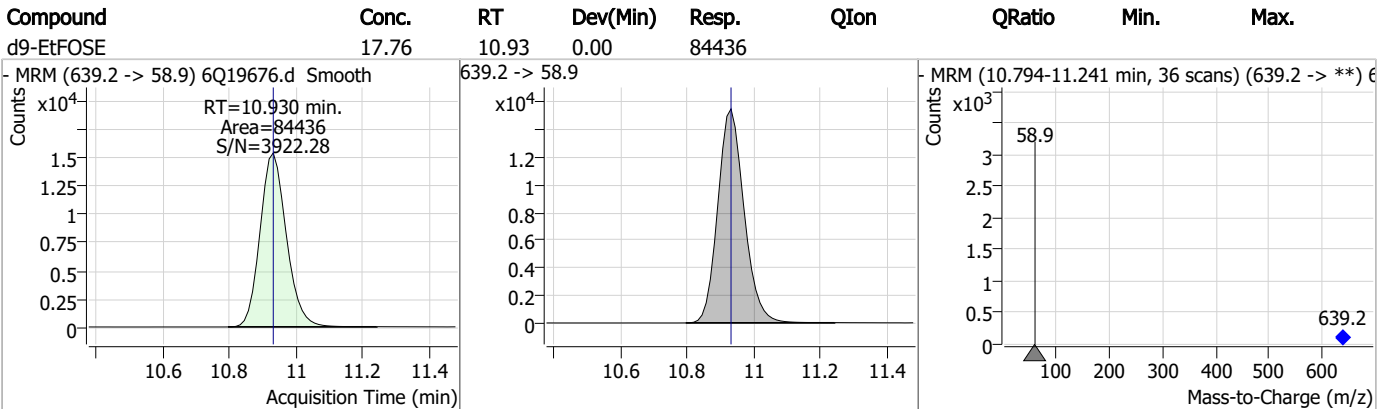
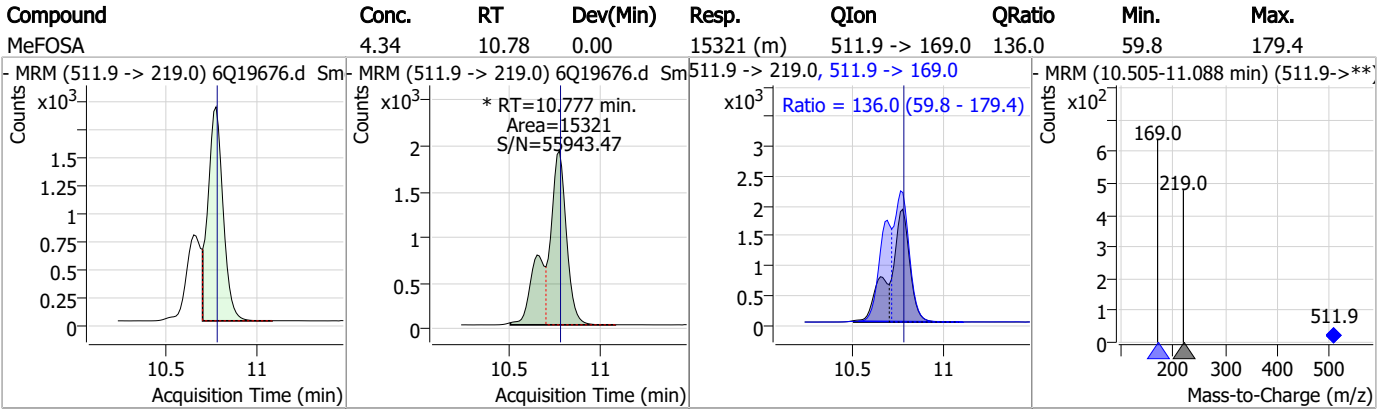
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.21	10.71	0.00	27207				



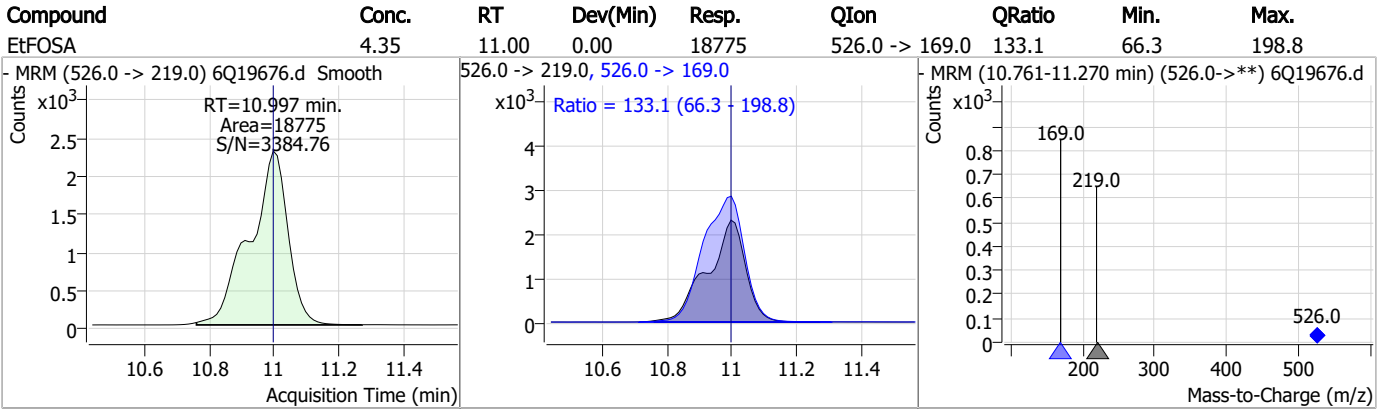
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.97	10.78	0.00	7799				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.4.1

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Manual Integration Approval Summary

Sample Number: OP97425-MS Method: EPA DRAFT 1633
Lab FileID: 6Q19676.D Analyst approved: 06/21/23 16:17 Martha Valls
Injection Time: 06/21/23 14:32 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.4.1.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19678.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 3:00:55 PM
 Sample Name : op97425-dup
 Vial : P3-A8
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97425,S6Q293,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	69324	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	45728	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	47184	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	45038	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	70042	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	32776	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	17224	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	20859	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	17942	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	8715	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	16065	2.50 µg/L	0.012
M3-PFBS	5.746	302.1 -> 79.9	16589	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	10610	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	9089	2.50 µg/L	0.000
M2-4:2FTS	5.442	329.1 -> 80.9	2956	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	4250	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	3781	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	22280	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	30111	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	17228	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	50944	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	81358	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	7428	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	7152	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	12903	2.50 µg/L	0.000
13C3-PFBA	3.101	216.0 -> 172.0	54335	5.00 µg/L	0.012
18O2-PFHxS	7.477	403.0 -> 83.9	7605	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	72160	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	24434	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	38384	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	40872	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2956	6.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.5%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4250	6.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.3%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3781	5.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.7%		
13C2-PFDoDA	9.285	615.1 -> 570.0	17942	1.10 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.9%		
13C2-PFTeDA	10.000	715.2 -> 670.0	8715	0.96 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.5%		
13C3-PFBS	5.746	302.1 -> 79.9	16589	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C3-PFHxS	7.478	402.1 -> 79.9	10610	2.65 µg/L	0.000

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 = 106.2%	
13C4-PFBA	3.097	216.8 -> 171.9	69324	5.44 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 54.4%	
13C4-PFHpA	6.707	367.1 -> 322.0	45038	2.85 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.2%	
13C5-PFHxA	5.792	318.0 -> 273.0	47184	2.80 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C5-PFPeA	4.560	268.3 -> 223.0	45728	5.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 118.3%	
13C6-PFDA	8.387	519.1 -> 474.1	17224	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C7-PFUnDA	8.853	570.0 -> 525.1	20859	1.11 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 88.8%	
13C8-FOSA	9.687	506.1 -> 77.8	16065	1.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 65.8%	
13C8-PFOA	7.339	421.1 -> 376.0	70042	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C8-PFOS	8.563	507.1 -> 79.9	9089	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C9-PFNA	7.882	472.1 -> 427.0	32776	1.40 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 112.2%	
d3-MeFOSAA	8.407	573.2 -> 419.0	22280	4.56 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.3%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	30111	10.67 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
d3-MeFOSA	10.775	515.0 -> 219.0	7152	1.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 67.4%	
d5-EtFOSAA	8.615	589.2 -> 419.0	17228	4.16 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 83.2%	
d7-MeFOSE	10.696	623.2 -> 58.9	50944	11.77 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 47.1%	
d9-EtFOSE	10.930	639.2 -> 58.9	81358	15.94 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 63.8%	
d5-EtFOSA	10.996	531.1 -> 219.0	7428	1.79 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 71.7%	

7.5.1
7

Target Compounds

QValue

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

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	8.552	413.0 -> 169.0	918 413	0.17 µg/L	m	89
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.5.1
7

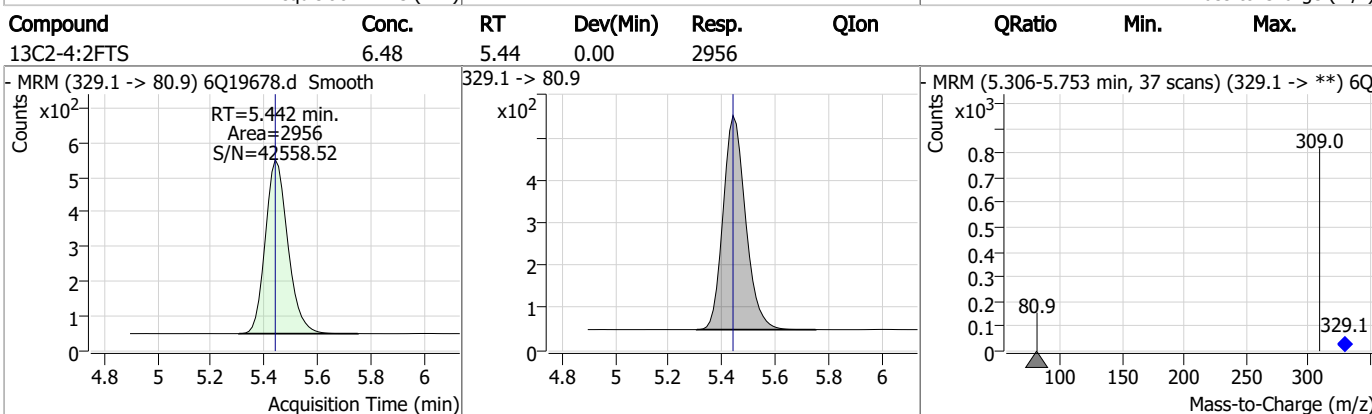
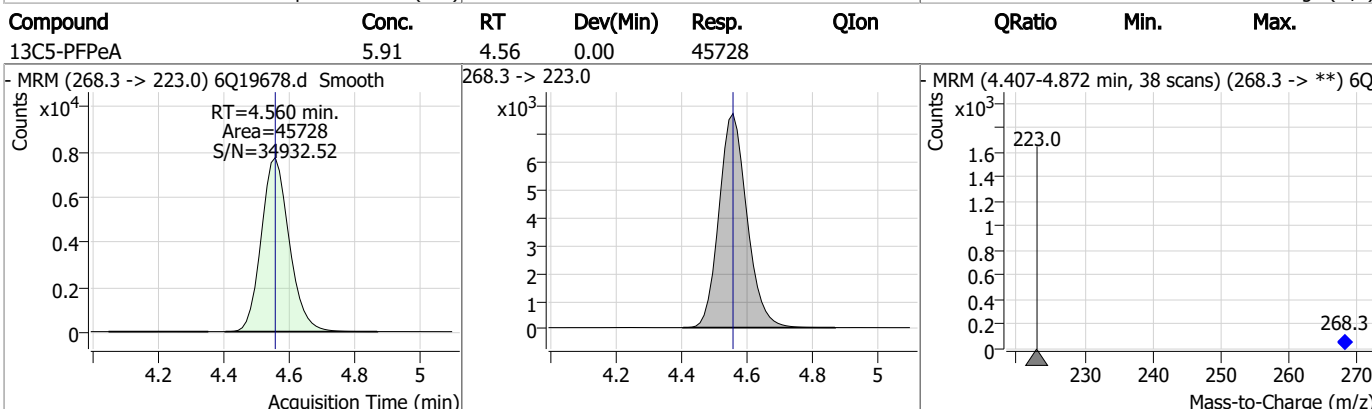
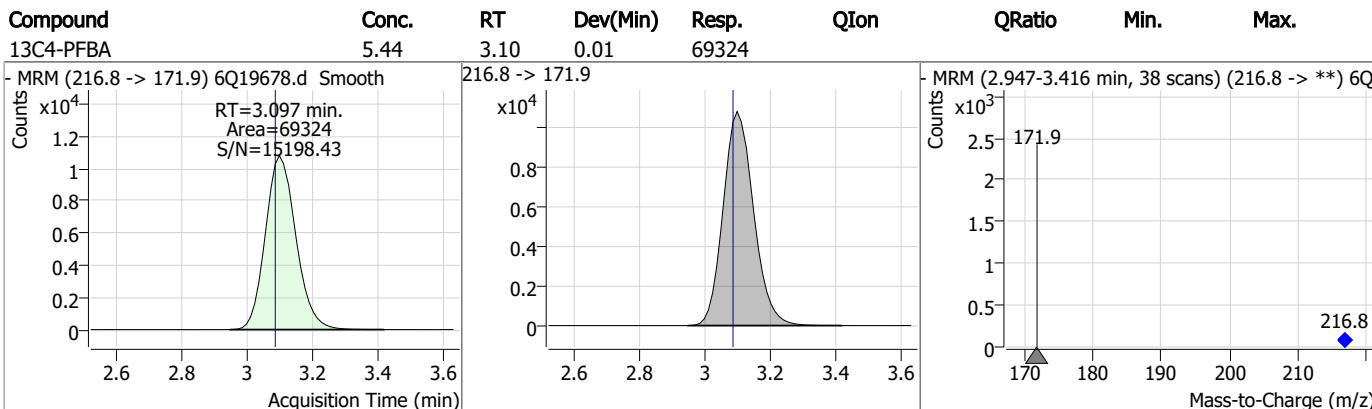
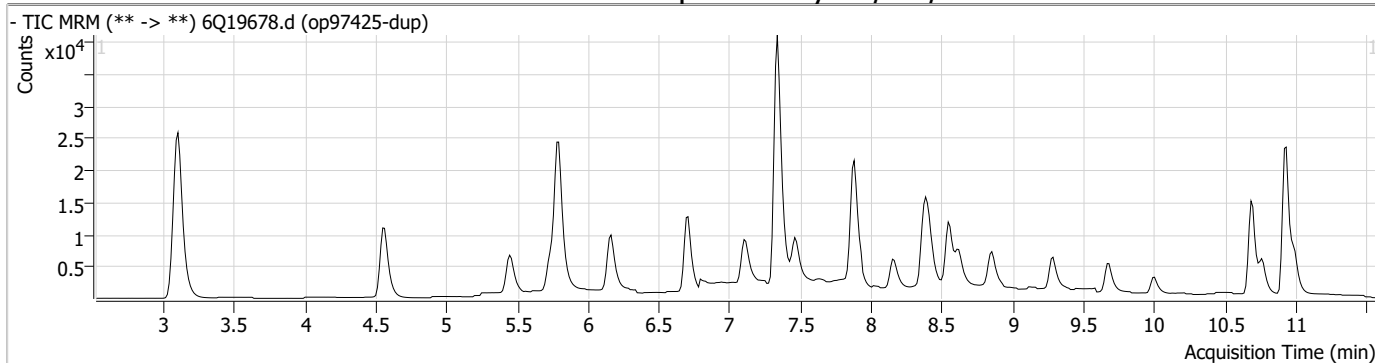
Perfluorinated Compounds by LC/MS/MS

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

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Perfluorinated Compounds by LC/MS/MS



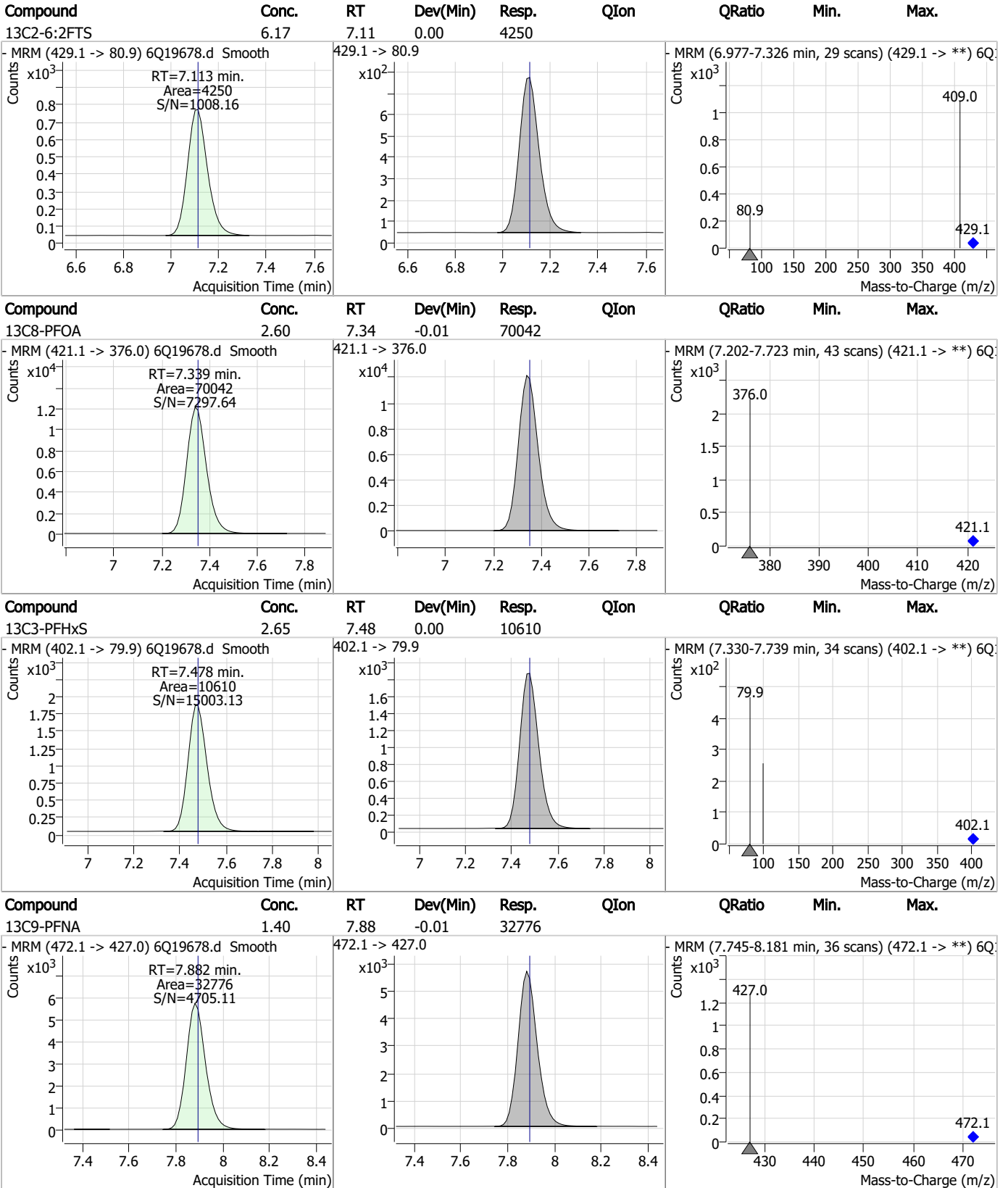
7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.62	5.75	0.00	16589				
13C5-PFHxA	2.80	5.79	0.00	47184				
13C3-HFPO-DA	10.67	6.17	0.00	30111				
13C4-PFHpA	2.85	6.71	0.00	45038				

7.5.1
7

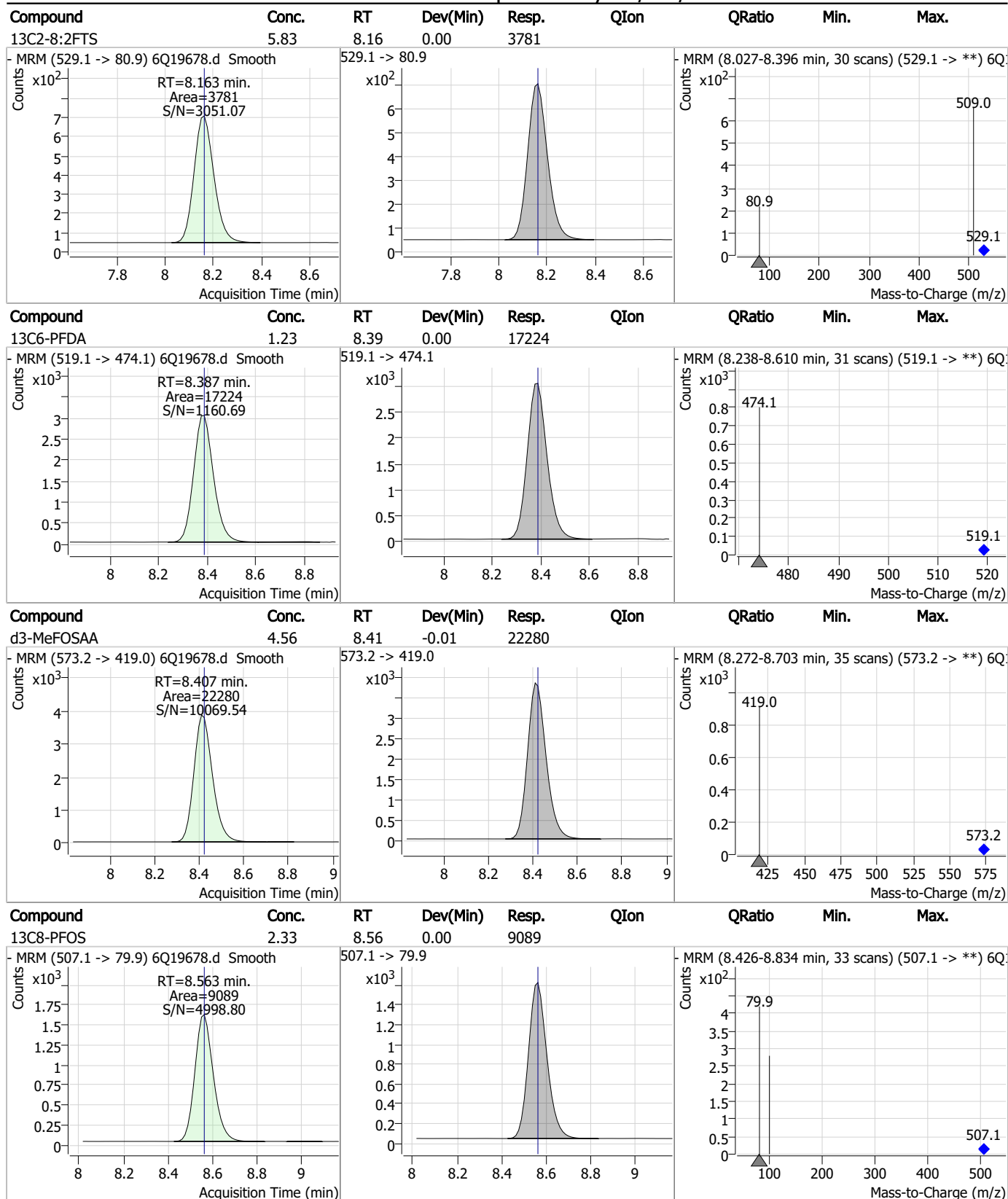
Perfluorinated Compounds by LC/MS/MS



7.5.1

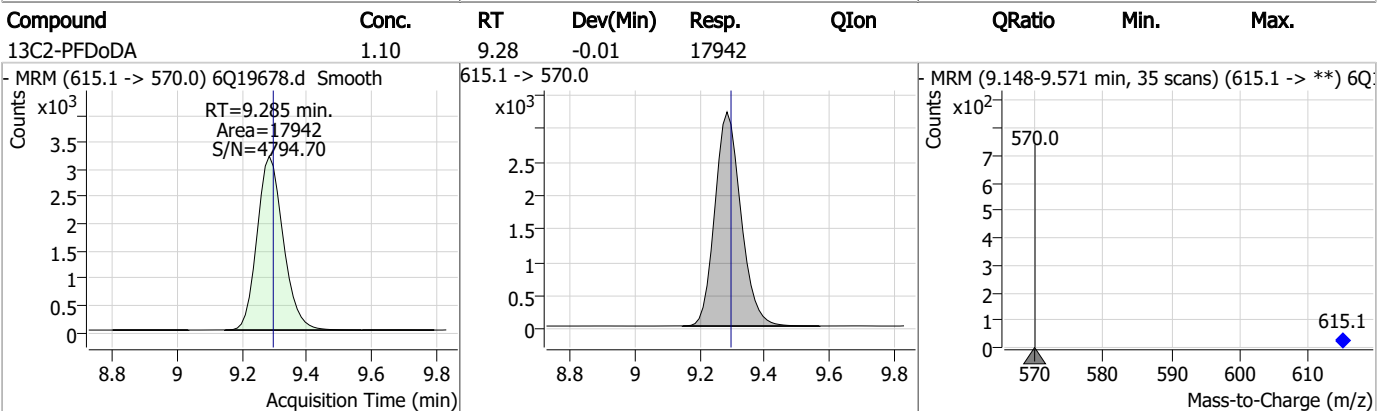
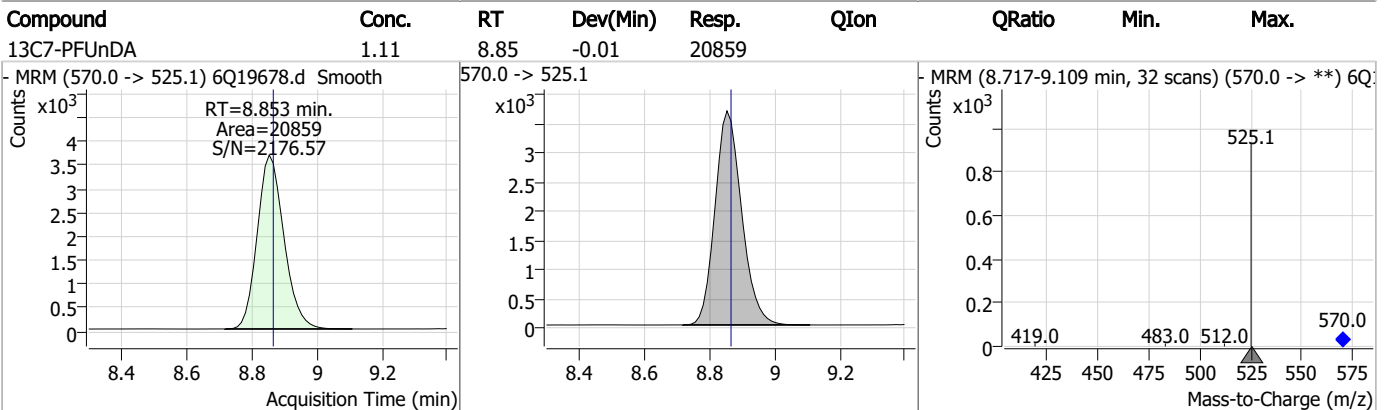
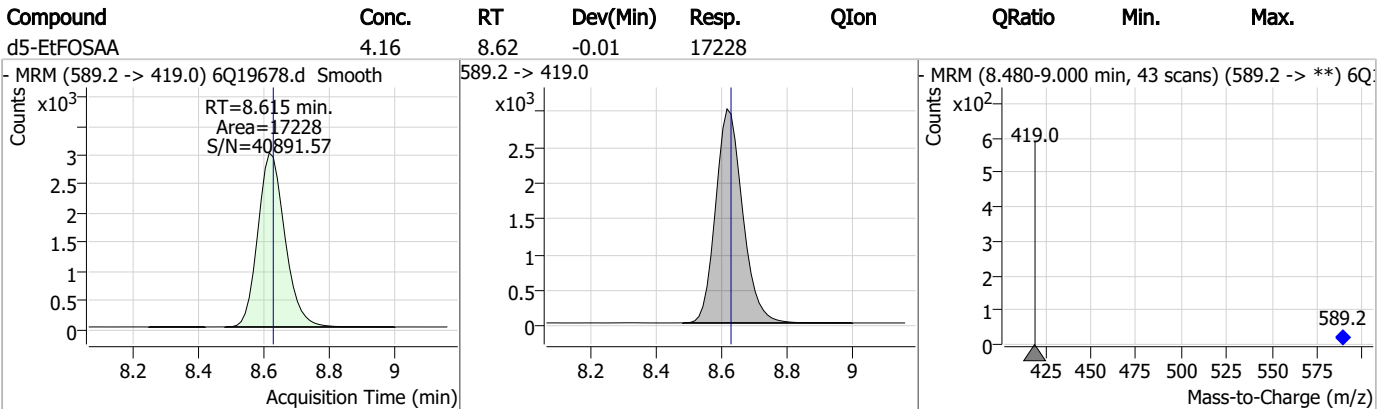
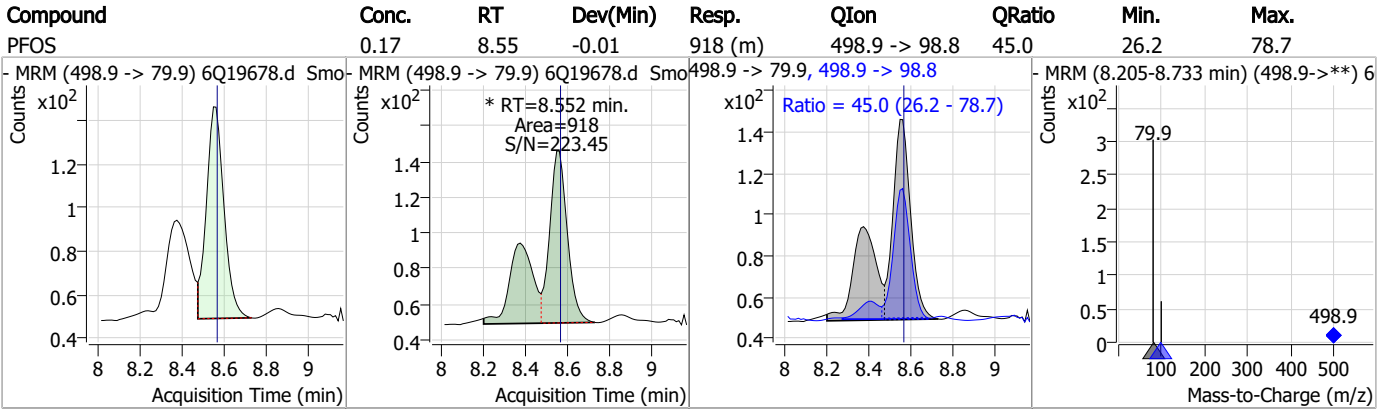
7

Perfluorinated Compounds by LC/MS/MS

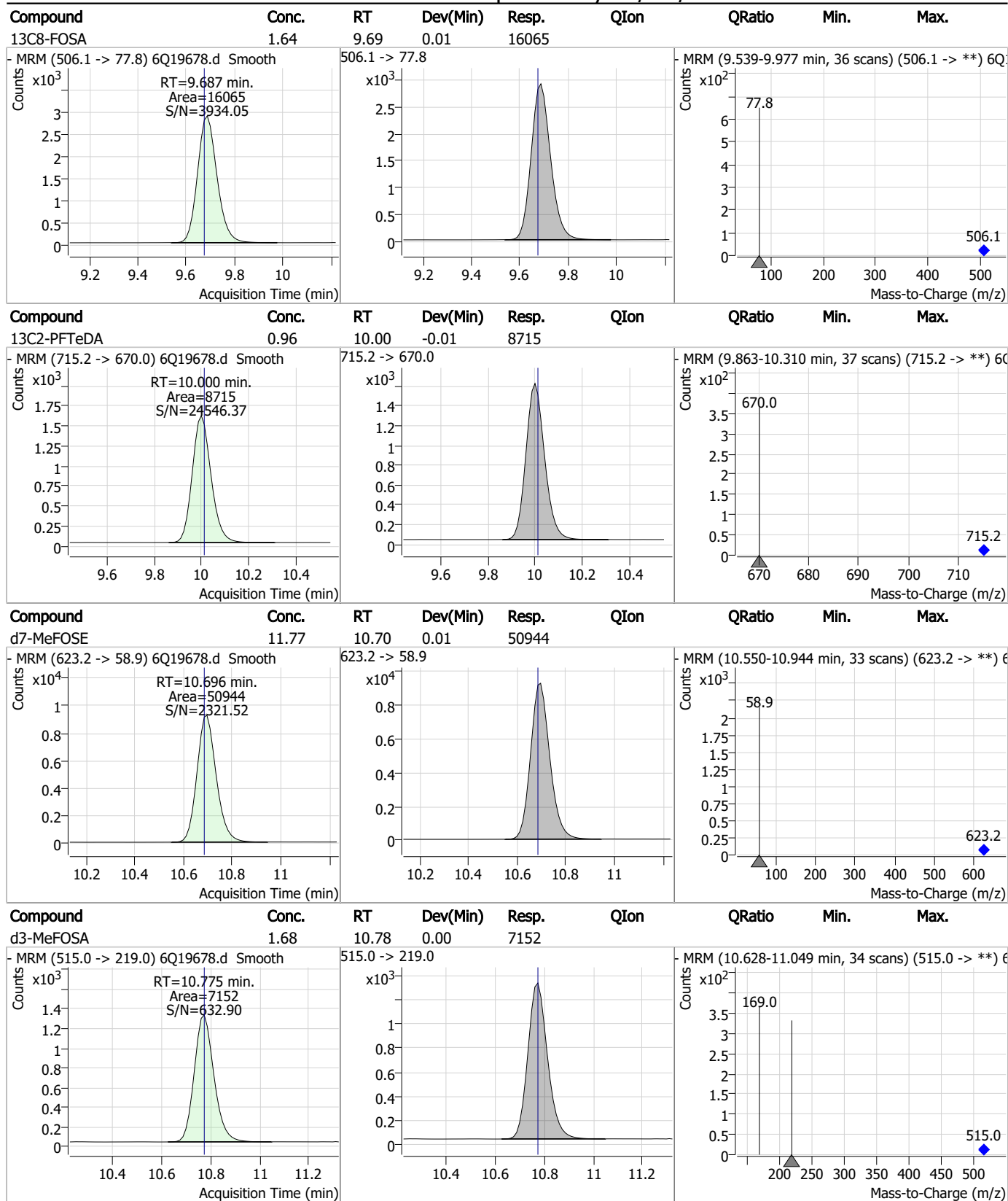


7.5.1
7

Perfluorinated Compounds by LC/MS/MS

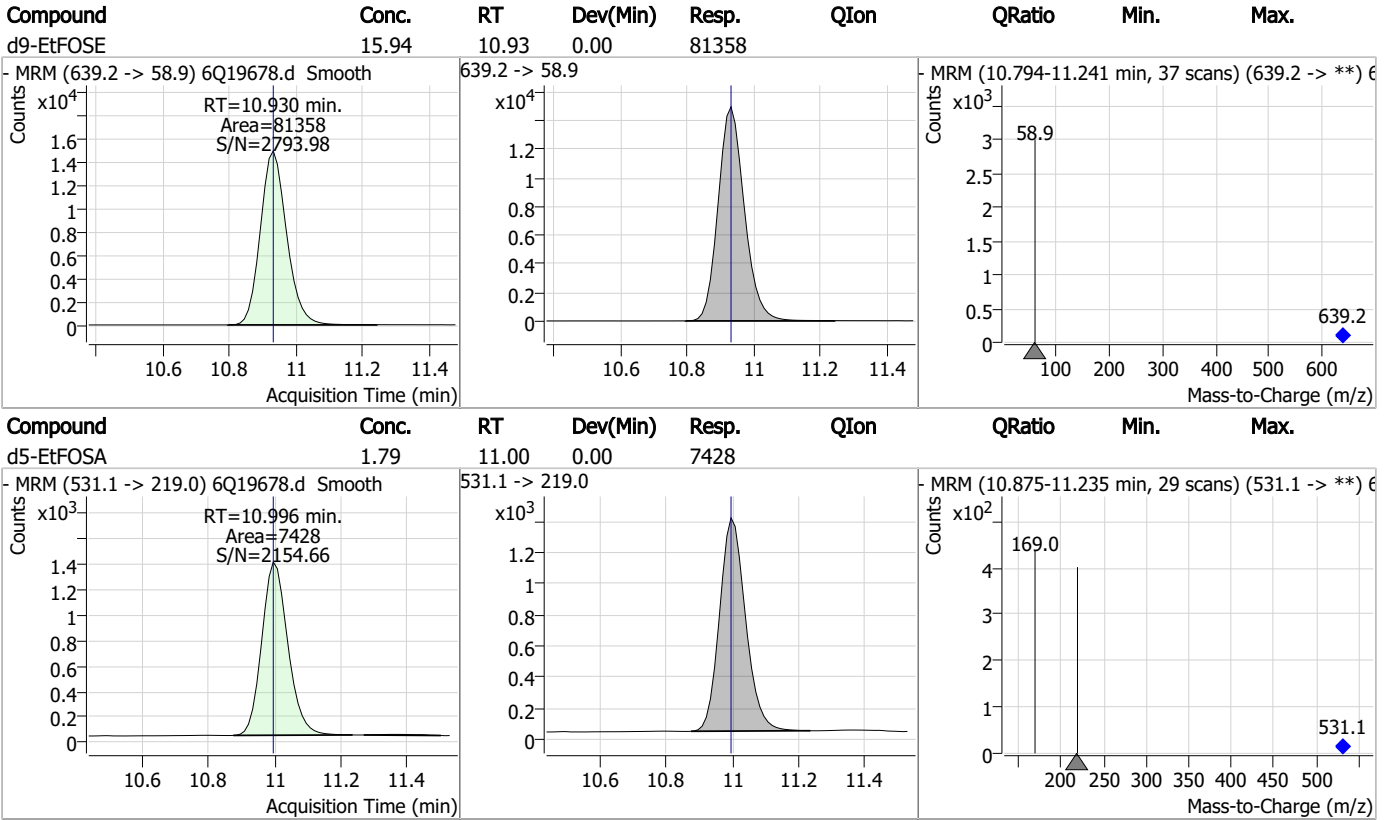


Perfluorinated Compounds by LC/MS/MS



7.5.1
7

Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Manual Integration Approval Summary

Sample Number: OP97425-DUP Method: EPA DRAFT 1633
Lab FileID: 6Q19678.D Analyst approved: 06/21/23 16:17 Martha Valls
Injection Time: 06/21/23 15:00 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.55	Split peak

7.5.1.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 06/14/23 11:30

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19292.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 10:53:54 AM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s6q288 TDCA.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

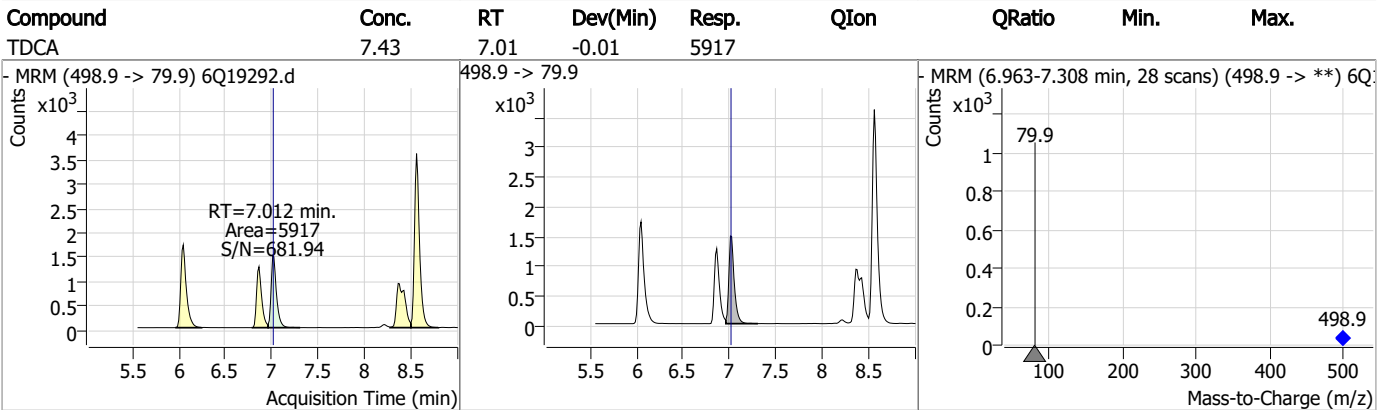
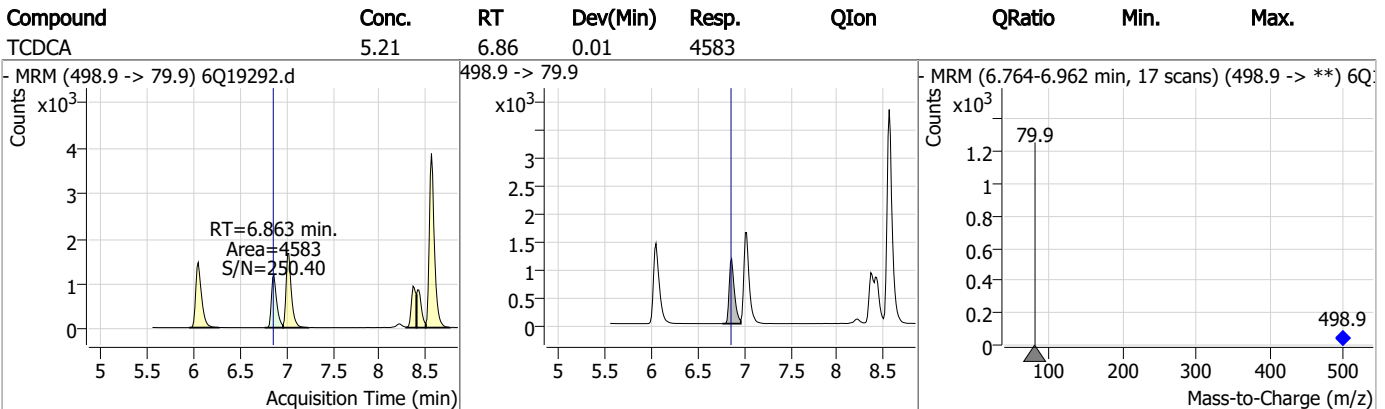
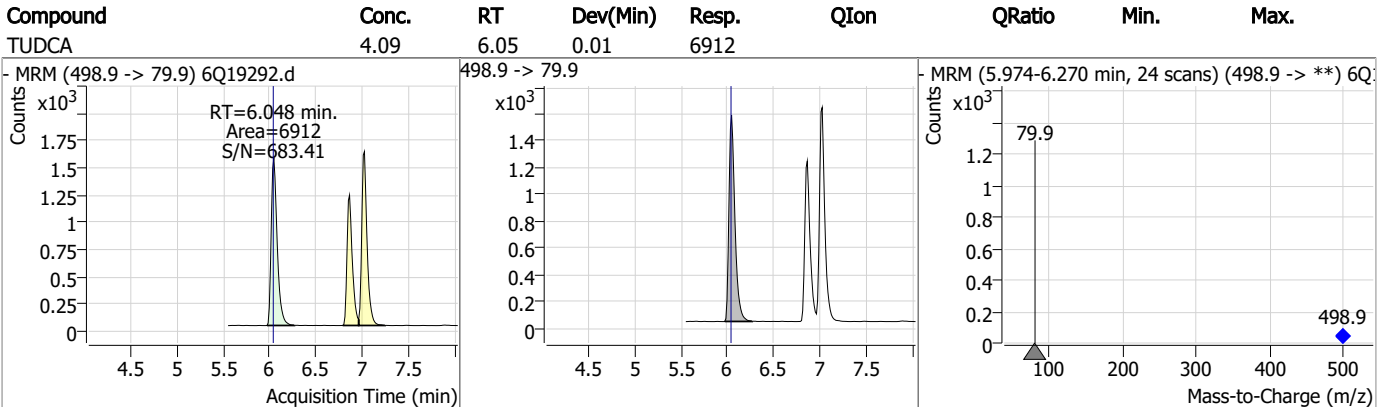
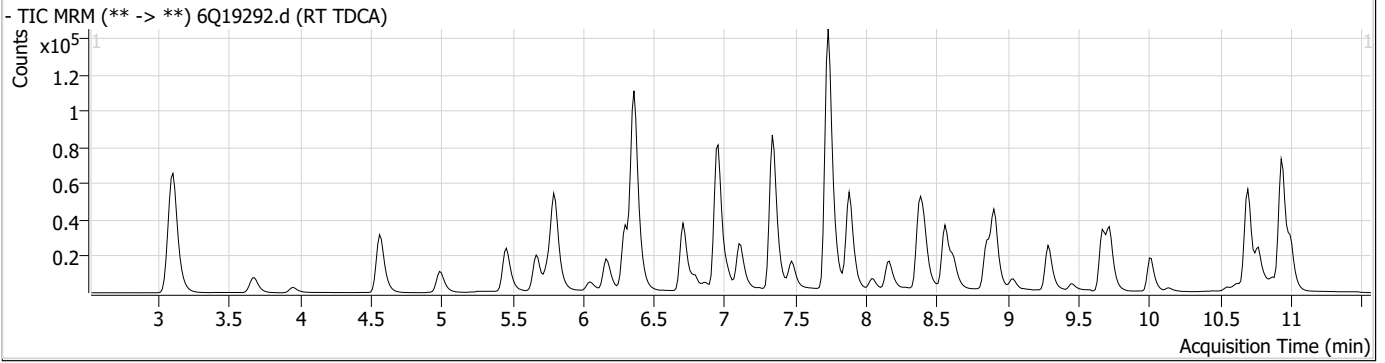
Compound	RT	Transition	Response	Conc. Units	Dev(Min)	QValue
Internal Standards						
M8-PFOS	8.563	507.1 -> 79.9	19065	2.50 µg/L	-0.008	
13C4-PFOS	8.563	502.8 -> 79.9	25866	2.50 µg/L	-0.008	
System Monitoring Compounds						
13C8-PFOS	8.563	507.1 -> 79.9	19065	1.87 µg/L	-0.008	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 74.8%			
Target Compounds						
PFOS	8.564	498.9 -> 79.9 498.9 -> 98.8	19847 9422	3.05 µg/L m		90
TCDCa	6.863	498.9 -> 79.9	4583	5.21 ng/ml		100
TDCA	7.012	498.9 -> 79.9	5917	7.43 ng/ml		100
TUDCA	6.048	498.9 -> 79.9	6912	4.09 ng/ml		100

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

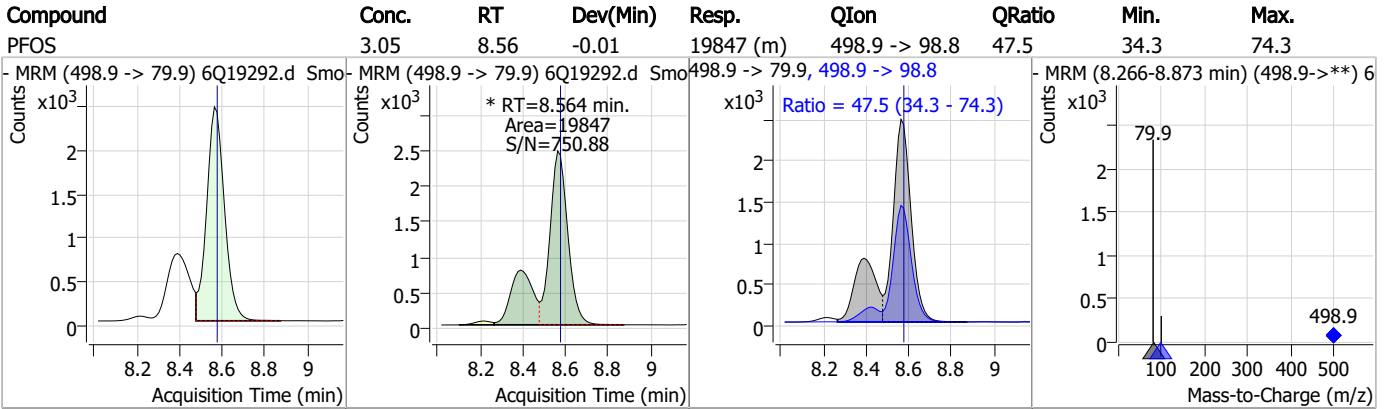
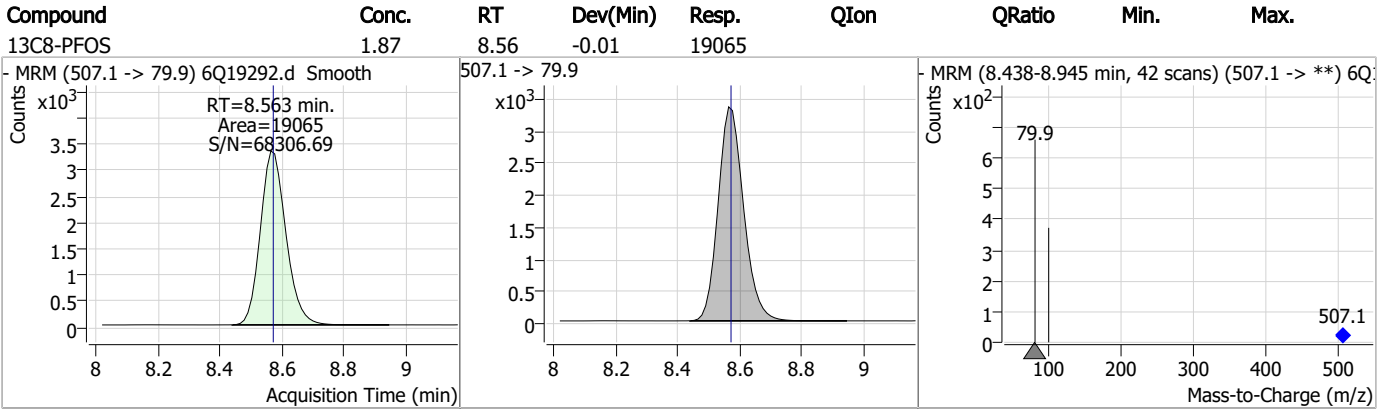
7.6.1
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1
7



Manual Integration Approval Summary

Sample Number: S6Q288-RT Method: EPA DRAFT 1633
Lab FileID: 6Q19292.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 10:53 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19293.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 11:07:53 AM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	185293	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	61252	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	69071	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	66329	2.50 µg/L	0.000
M8-PFOA	7.352	421.1 -> 376.0	96149	2.50 µg/L	0.000
M9-PFNA	7.882	472.1 -> 427.0	47253	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	27583	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	37107	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	33611	1.25 µg/L	-0.012
M2-PFTeDA	10.012	715.2 -> 670.0	17751	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	34932	2.50 µg/L	0.000
M3-PFBS	5.759	302.1 -> 79.9	24899	2.50 µg/L	0.012
M3-PFHxS	7.478	402.1 -> 79.9	15648	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	14742	2.50 µg/L	0.000
M2-4:2FTS	5.454	329.1 -> 80.9	3213	5.00 µg/L	0.012
M2-6:2FTS	7.113	429.1 -> 80.9	4891	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4461	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	36760	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	46243	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	34638	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	135953	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	173253	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	14218	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	14630	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	18232	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	77152	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	10970	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	99695	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	37538	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	54617	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	63398	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.454	329.1 -> 80.9	3213	4.88 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4891	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4461	4.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C2-PFDoDA	9.285	615.1 -> 570.0	33611	1.34 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C2-PFTeDA	10.012	715.2 -> 670.0	17751	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C3-PFBS	5.759	302.1 -> 79.9	24899	2.73 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.1%		
13C3-PFHxS	7.478	402.1 -> 79.9	15648	2.71 µg/L	0.000

7.6.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.6%	
13C4-PFBA	3.097	216.8 -> 171.9	185293	10.24 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C4-PFHpA	6.707	367.1 -> 322.0	66329	2.71 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.4%	
13C5-PFHxA	5.792	318.0 -> 273.0	69071	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C5-PFPeA	4.560	268.3 -> 223.0	61252	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C6-PFDA	8.387	519.1 -> 474.1	27583	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C7-PFUnDA	8.853	570.0 -> 525.1	37107	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C8-FOSA	9.674	506.1 -> 77.8	34932	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C8-PFOA	7.352	421.1 -> 376.0	96149	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C8-PFOS	8.563	507.1 -> 79.9	14742	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C9-PFNA	7.882	472.1 -> 427.0	47253	1.42 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.7%	
d3-MeFOSAA	8.407	573.2 -> 419.0	36760	5.33 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	46243	10.56 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.6%	
d3-MeFOSA	10.775	515.0 -> 219.0	14630	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
d5-EtFOSAA	8.615	589.2 -> 419.0	34638	5.92 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 118.3%	
d7-MeFOSE	10.696	623.2 -> 58.9	135953	22.22 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.9%	
d9-EtFOSE	10.930	639.2 -> 58.9	173253	24.02 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.1%	
d5-EtFOSA	10.996	531.1 -> 219.0	14218	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
Target Compounds					QValue
4:2FTS	5.455	327.1 -> 307.0	193103	34.56 µg/L	98
		327.1 -> 80.9	74475		
6:2FTS	7.113	427.1 -> 407.0	205303	35.25 µg/L	100
		427.1 -> 80.9	67497		
8:2FTS	8.164	527.1 -> 507.0	112480	37.94 µg/L	100
		527.1 -> 80.8	44228		
EtFOSAA	8.617	584.2 -> 419.1	49823	8.49 µg/L	m 96
		584.2 -> 526.0	24871		
FOSA	9.677	498.1 -> 77.9	328157	23.64 µg/L	m 100
		498.1 -> 478.0	10244		
MeFOSAA	8.408	570.1 -> 419.0	80679	8.47 µg/L	m 91
		570.1 -> 483.0	18542		
PFBA	3.093	212.8 -> 168.9	281074	37.64 µg/L	100
PFBS	5.760	298.7 -> 79.9	93983	8.45 µg/L	96
		298.7 -> 98.8	33226		
PFDA	8.388	512.9 -> 469.0	409766	9.99 µg/L	96
		512.9 -> 219.0	57516		
PFDoDA	9.285	613.1 -> 569.0	266390	9.55 µg/L	100
		613.1 -> 319.0	38981		
PFDS	9.462	599.0 -> 79.9	40683	9.13 µg/L	92

7.6.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	19080	8.79	µg/L	97
		363.1 -> 319.0	311337			
PFHpS	8.046	363.1 -> 169.0	51020	8.83	µg/L	99
		449.0 -> 79.9	77815			
PFHxA	5.795	449.0 -> 98.9	39050	8.94	µg/L	100
		313.0 -> 269.0	249268			
PFHxS	7.479	313.0 -> 118.9	12924	8.31	µg/L	97
		398.7 -> 79.9	78334			
PFNA	7.883	398.7 -> 98.9	38425	17.28	µg/L	94
		463.0 -> 419.0	754914			
PFNS	9.041	463.0 -> 219.0	163205	9.32	µg/L	98
		548.8 -> 79.9	71310			
PFOA	7.353	548.8 -> 98.9	34115	20.82	µg/L	98
		413.0 -> 369.0	1099471			
PFOS	8.564	413.0 -> 169.0	192638	8.14	µg/L	98
		498.9 -> 79.9	71194			
PFPeA	4.563	498.9 -> 98.8	36208	19.21	µg/L	100
		263.0 -> 219.0	347327			
PFPeS	6.785	349.1 -> 79.9	77571	8.85	µg/L	95
		349.1 -> 98.9	34788			
PFTeDA	10.013	713.1 -> 669.0	224325	10.55	µg/L	97
		713.1 -> 168.9	16977			
PFTrDA	9.669	663.0 -> 619.0	248160	8.76	µg/L	100
		663.0 -> 168.9	25955			
PFUnDA	8.854	563.1 -> 519.0	255137	8.91	µg/L	95
		563.1 -> 269.1	42425			
11CI-PF3OUdS	9.721	630.9 -> 450.9	371119	17.62	µg/L	97
		632.9 -> 452.9	111349			
9CI-PF3ONS	8.906	530.8 -> 351.0	592461	16.33	µg/L	100
		532.8 -> 353.0	183556			
ADONA	6.959	376.9 -> 250.9	1232661	16.47	µg/L	99
		376.9 -> 84.8	364795			
HFPO-DA	6.169	284.9 -> 168.9	91765	18.96	µg/L	99
		284.9 -> 184.9	10993			
3:3FTCA	3.946	241.0 -> 177.0	59127	48.33	µg/L	98
		241.0 -> 117.0	7625			
5:3FTCA	6.361	341.0 -> 237.1	1262996	227.95	µg/L	94
		341.0 -> 217.0	879710			
7:3FTCA	7.736	441.0 -> 316.9	825347	220.31	µg/L	94
		441.0 -> 336.9	1935354			
EtFOSA	10.997	526.0 -> 219.0	271639	35.77	µg/L	98
		526.0 -> 169.0	354354			
EtFOSE	10.943	630.0 -> 58.9	599797	66.89	µg/L	100
		511.9 -> 219.0	223788			
MeFOSA	10.777	511.9 -> 169.0	319476	33.78	µg/L	79
		616.1 -> 58.9	409896			
MeFOSE	10.709	699.1 -> 79.9	19441	69.57	µg/L	100
		699.1 -> 98.8	10640			
PFDoDS	10.139	295.0 -> 201.0	69279	8.85	µg/L	95
		295.0 -> 84.9	17622			
NFDHA	5.673	279.0 -> 85.1	245794	19.46	µg/L	97
		229.0 -> 84.9	195801			
PFMBA	4.988	314.8 -> 134.9	601591	19.07	µg/L	100
		314.8 -> 82.9	23181			
PFMPA	3.680			19.42	µg/L	100
PFEESA	6.301			15.97	µg/L	99

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

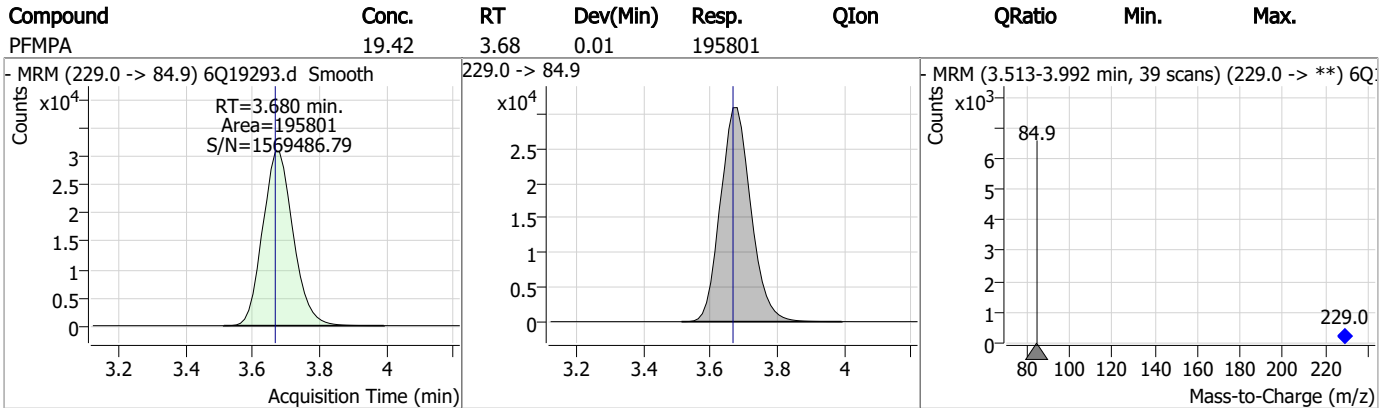
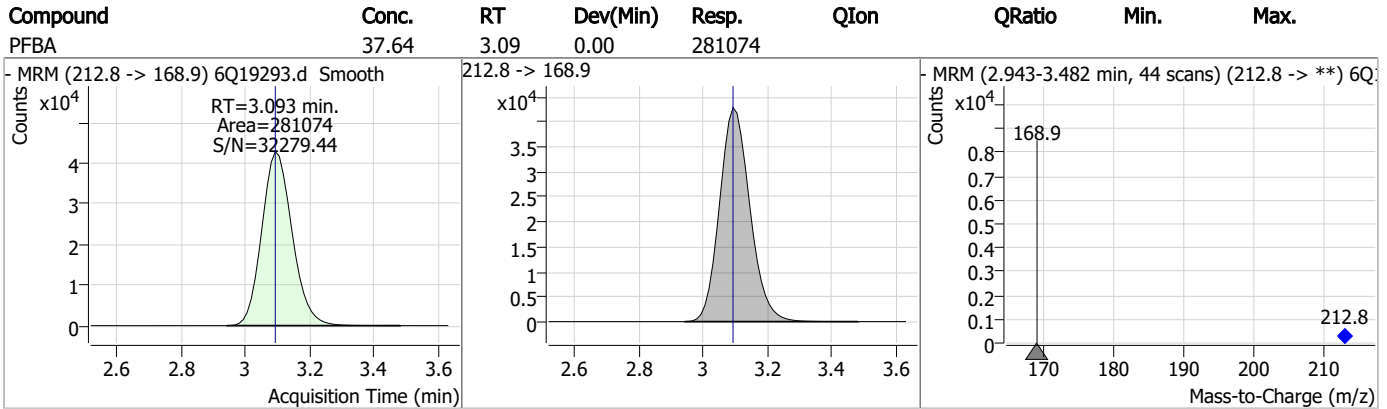
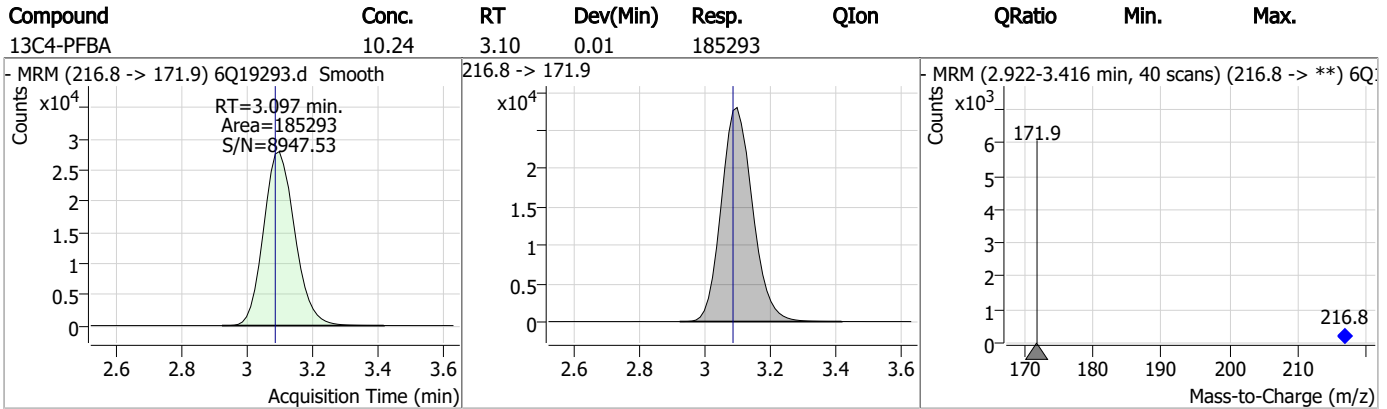
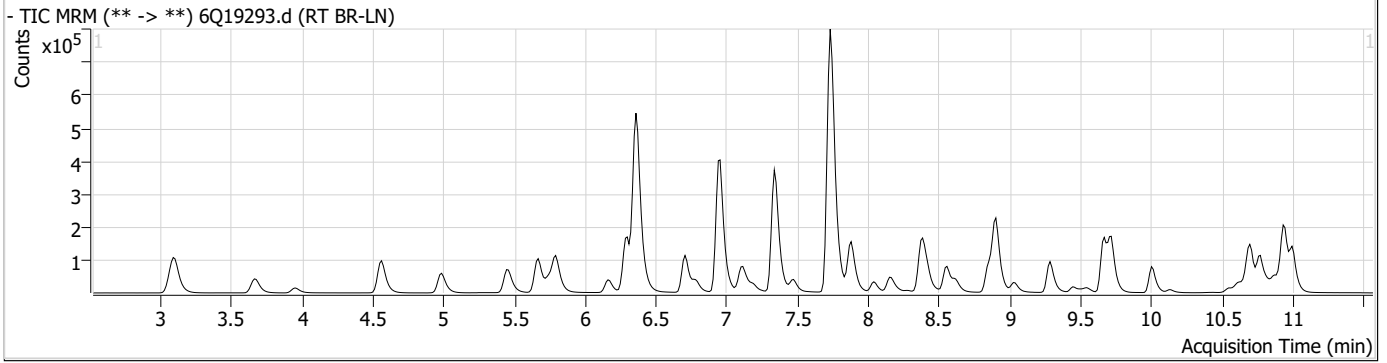
Perfluorinated Compounds by LC/MS/MS

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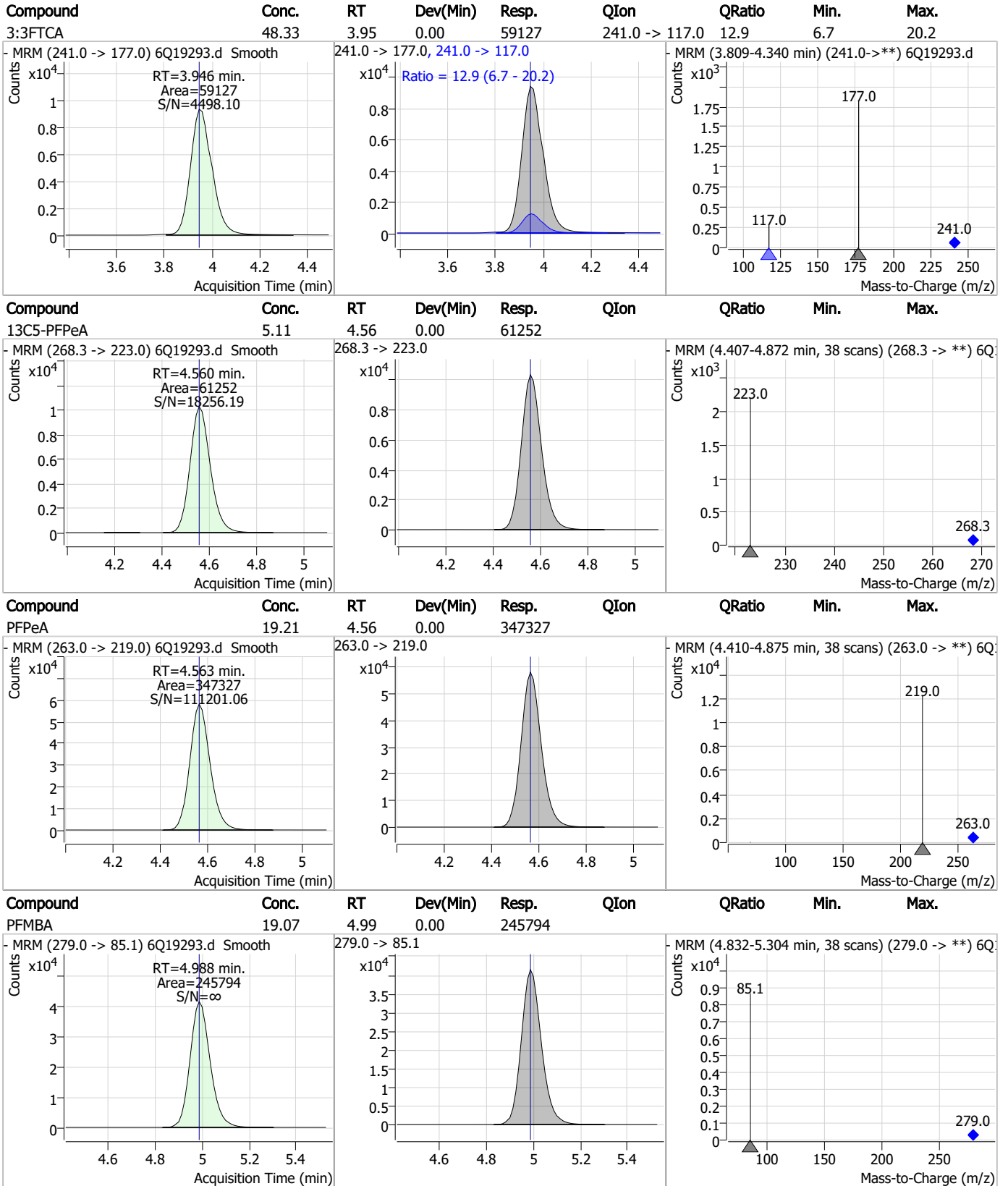
7.6.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

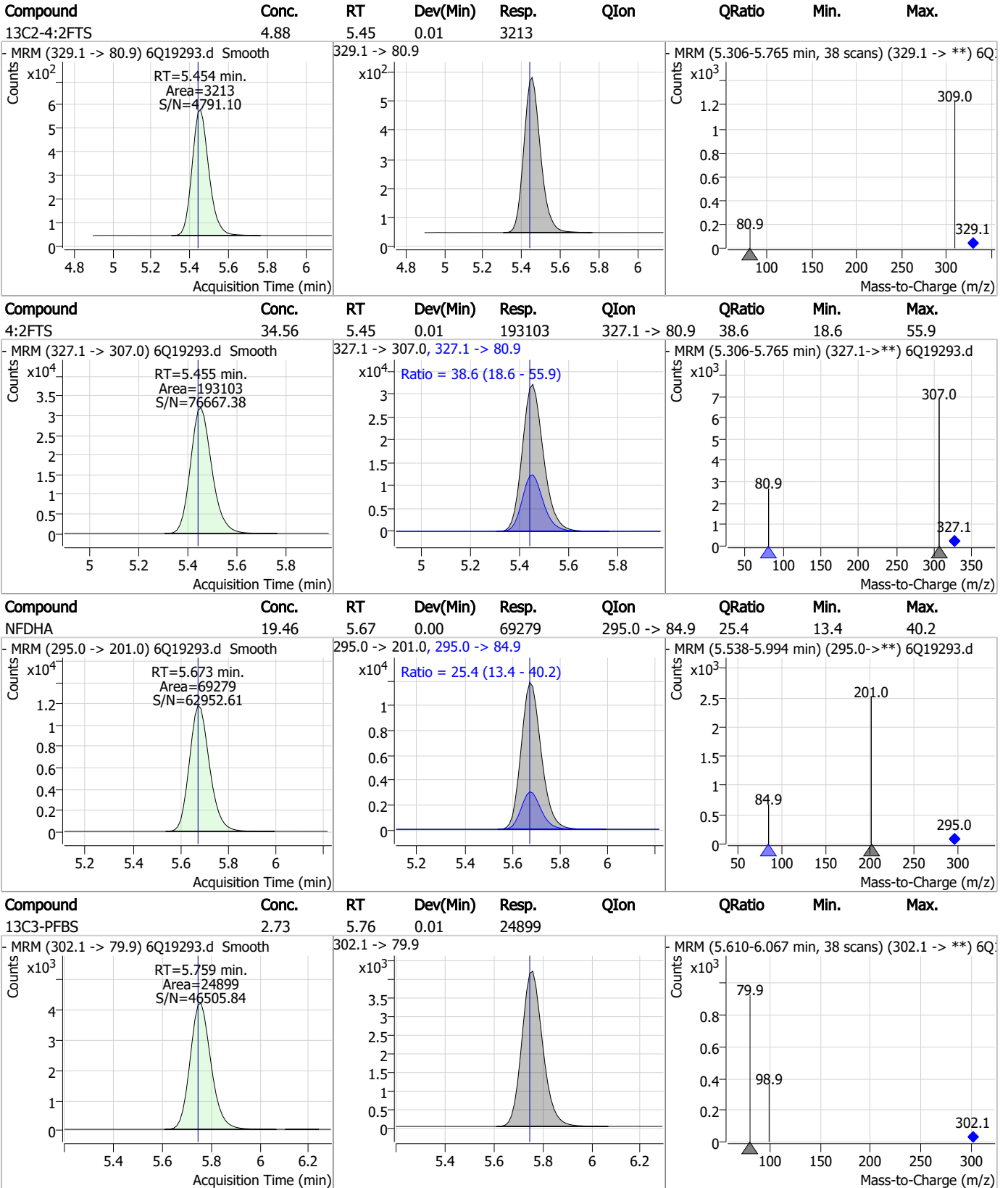


7.6.2

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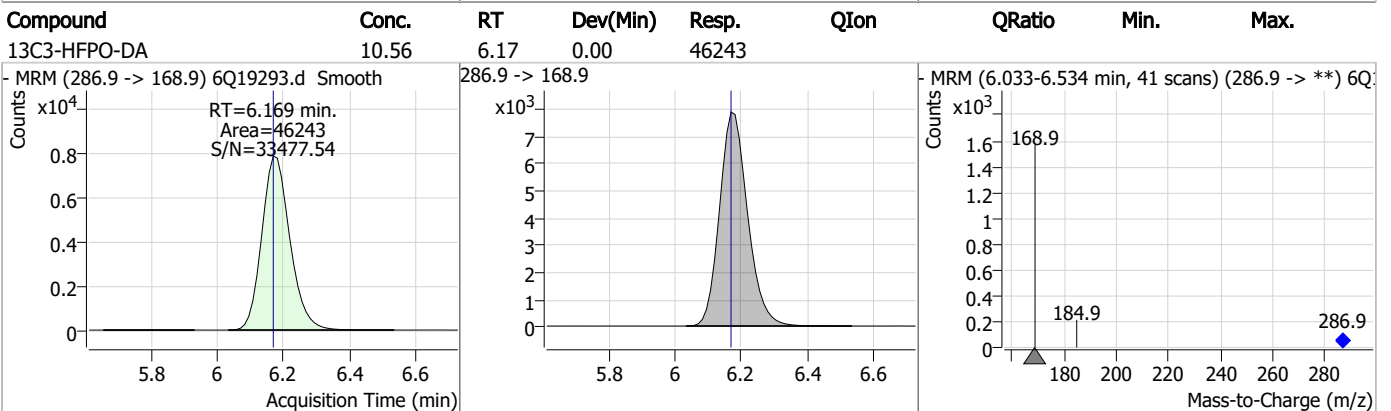
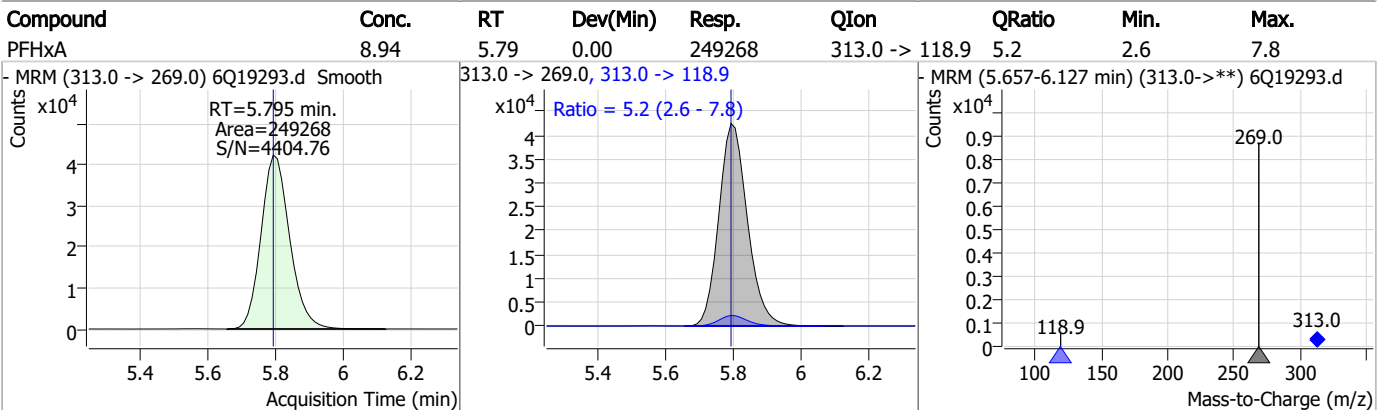
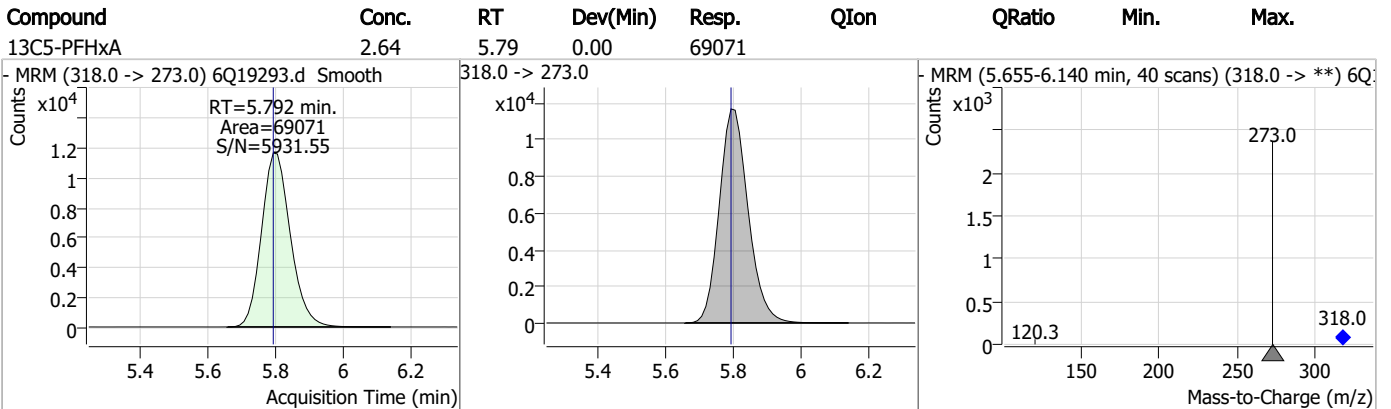
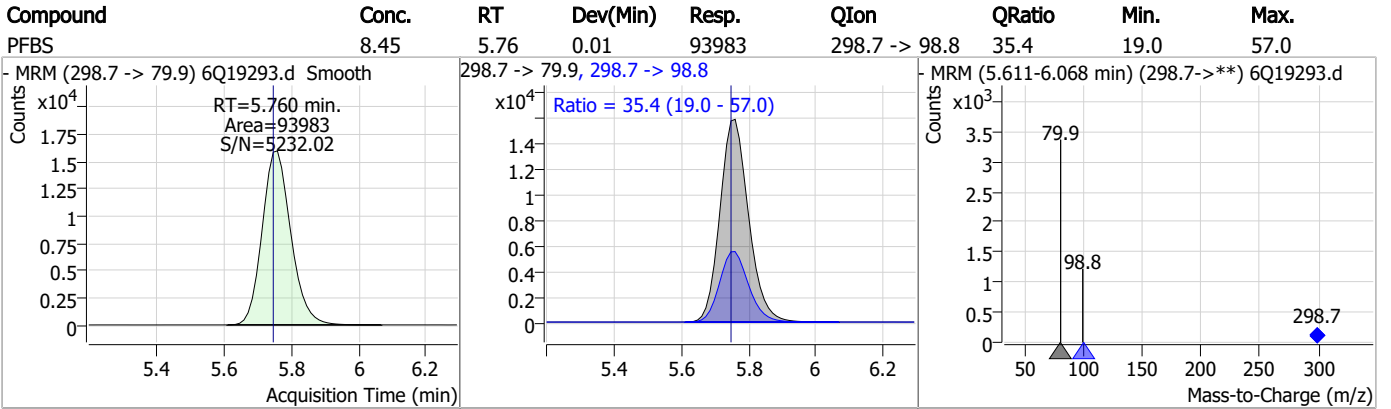
Perfluorinated Compounds by LC/MS/MS



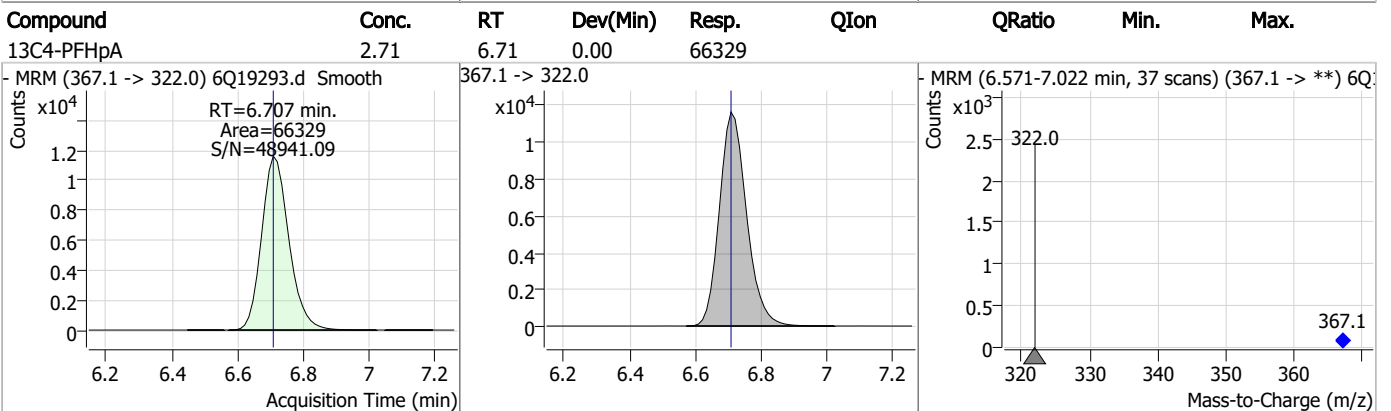
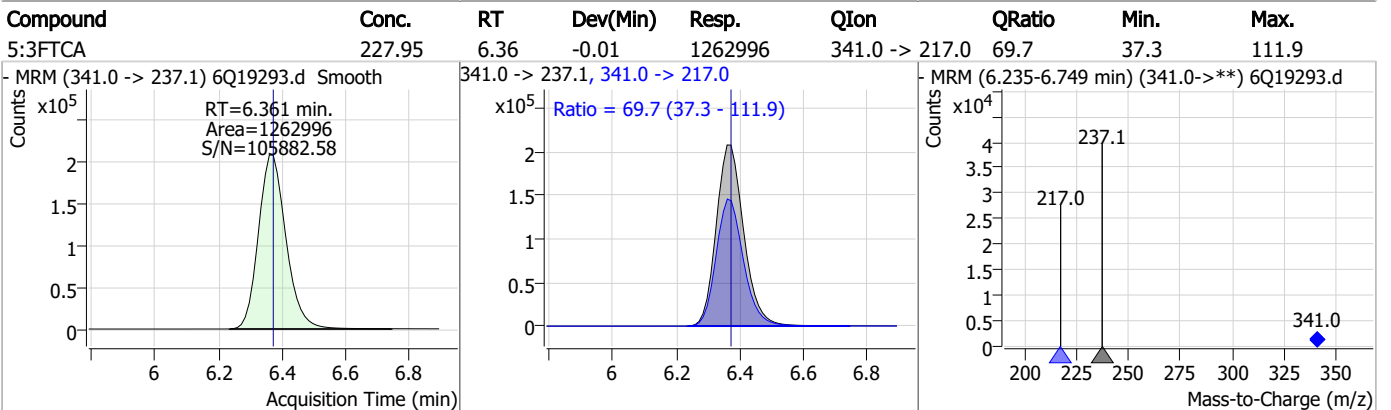
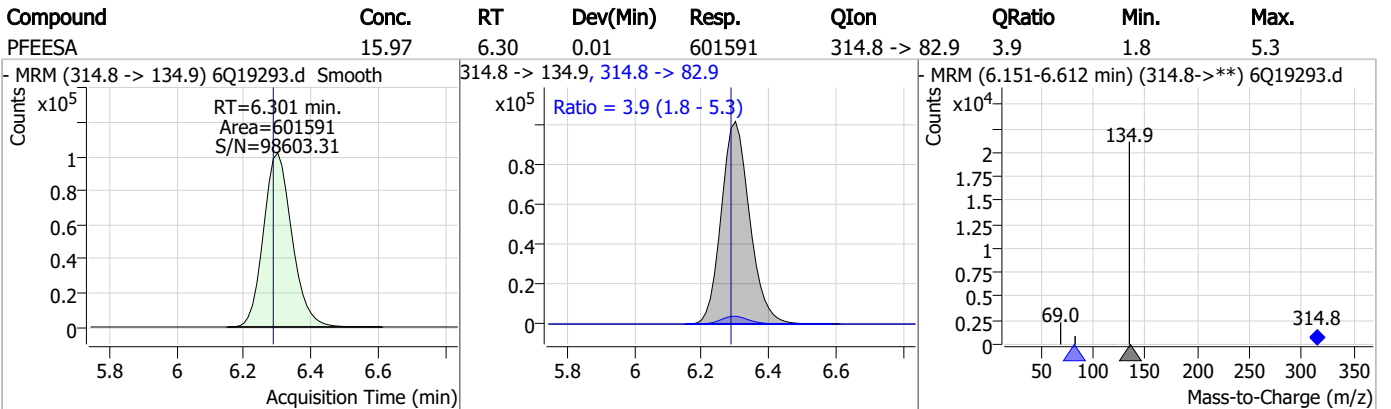
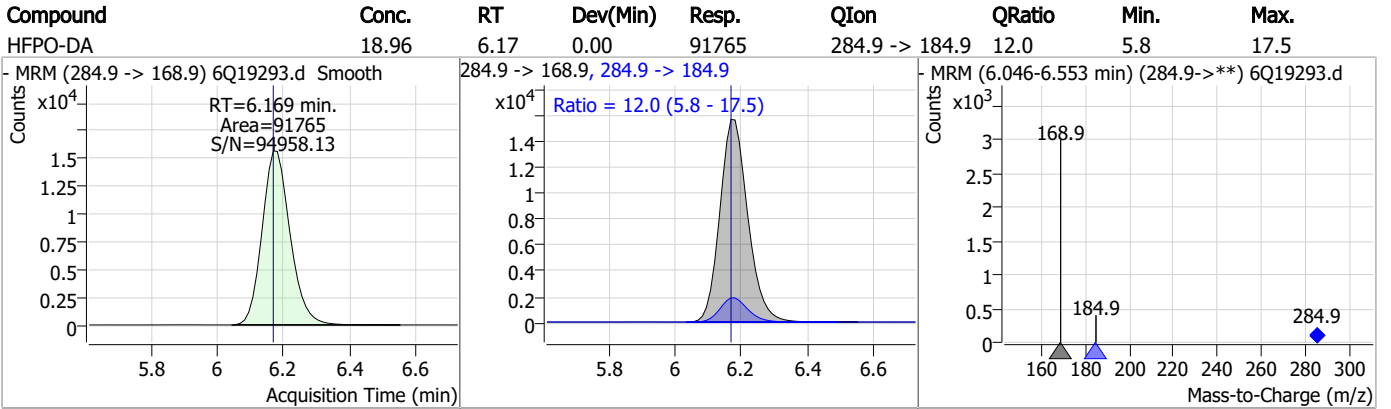
7.6.2

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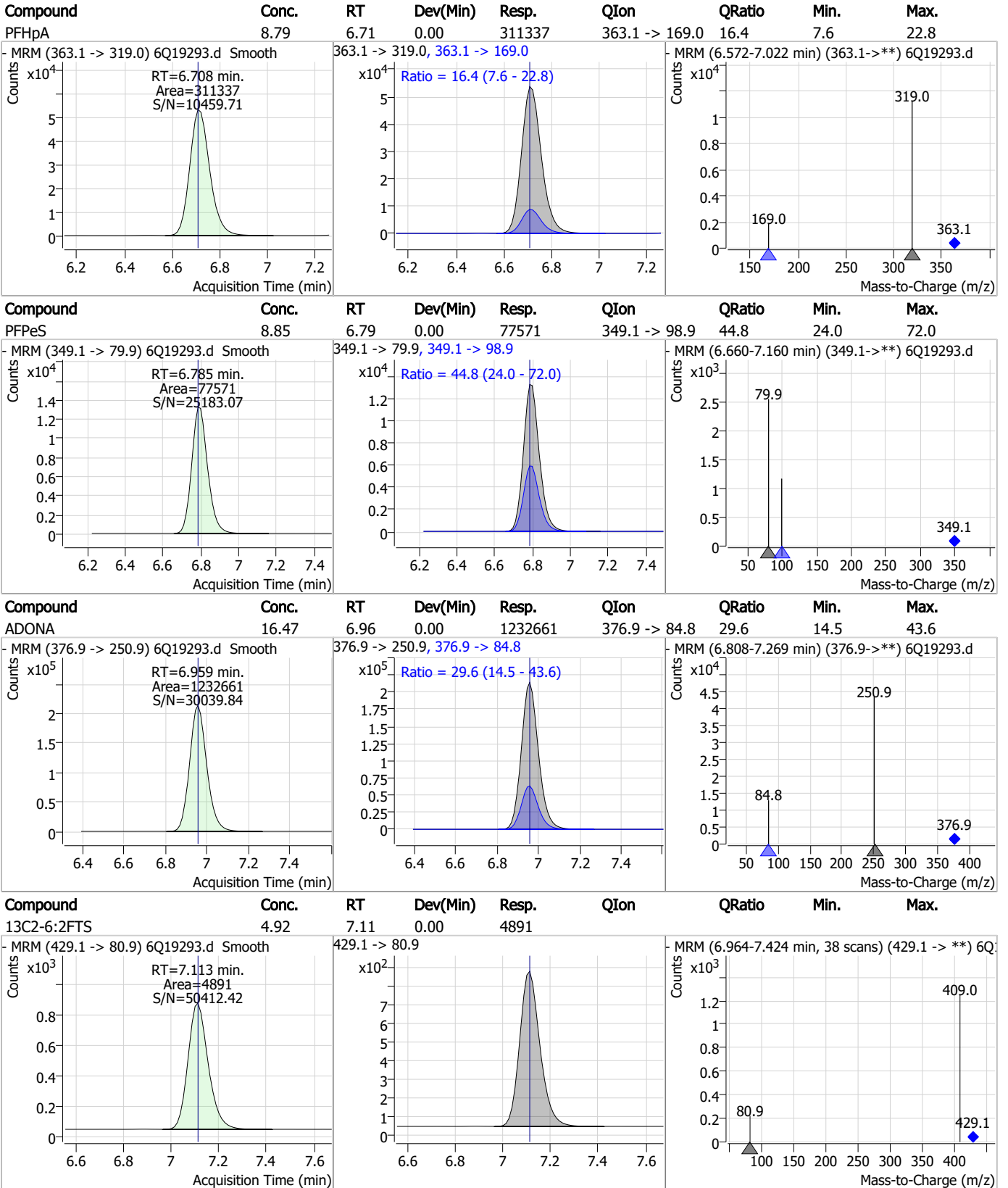
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



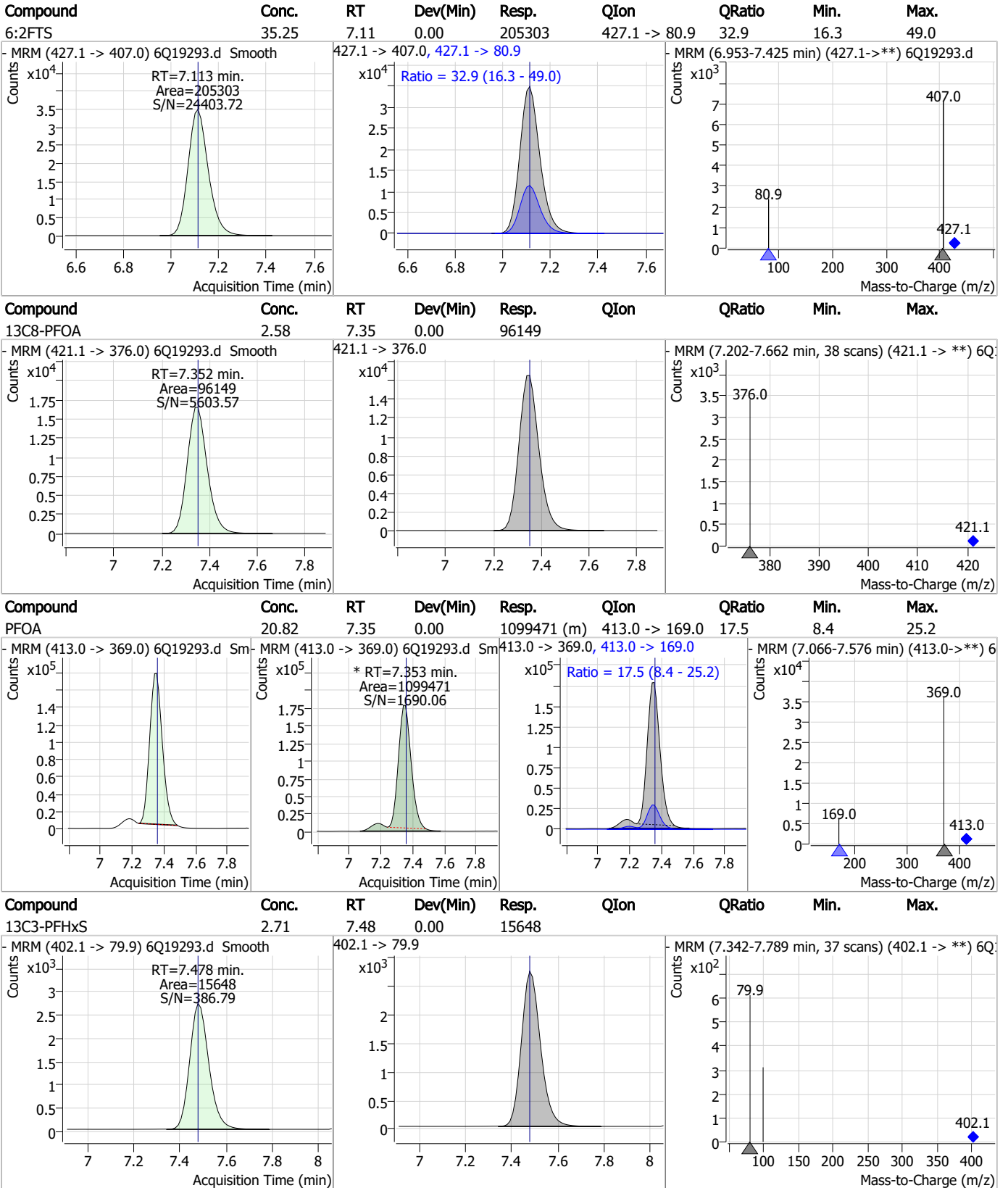
Perfluorinated Compounds by LC/MS/MS



7.6.2

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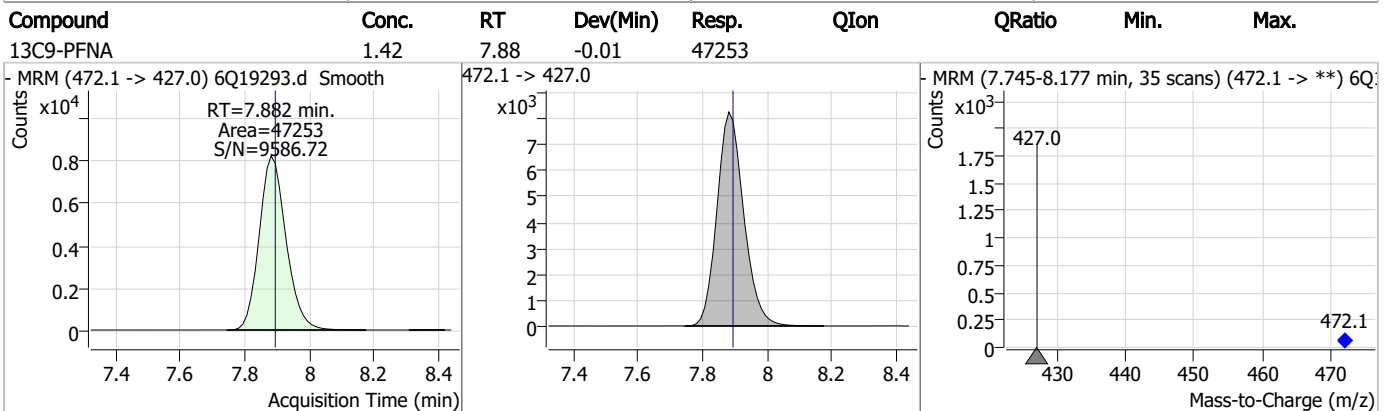
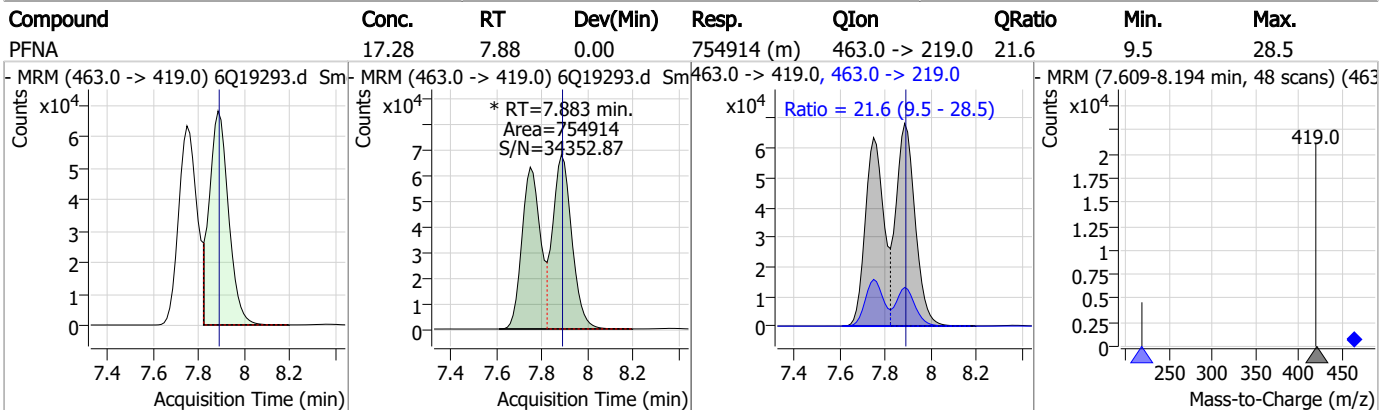
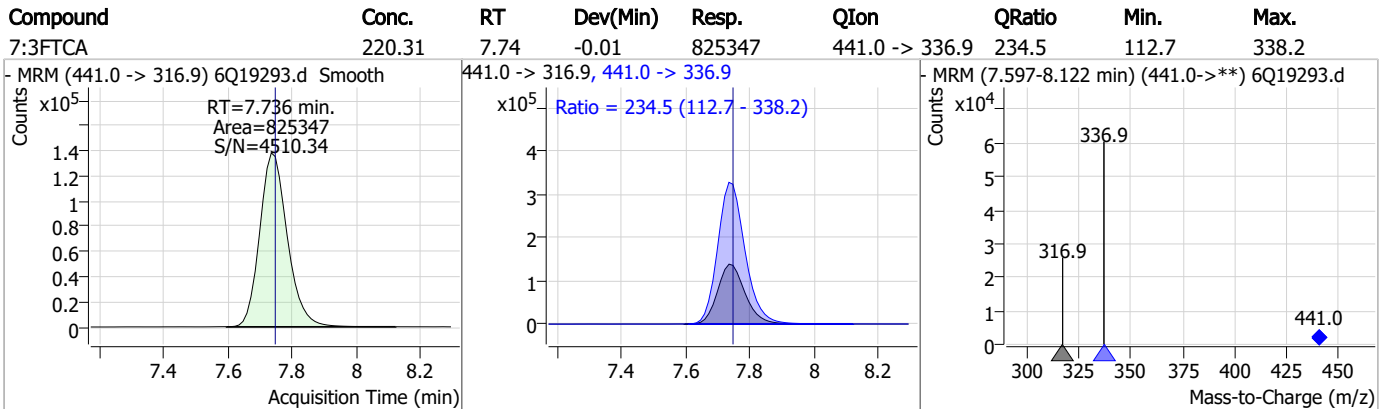
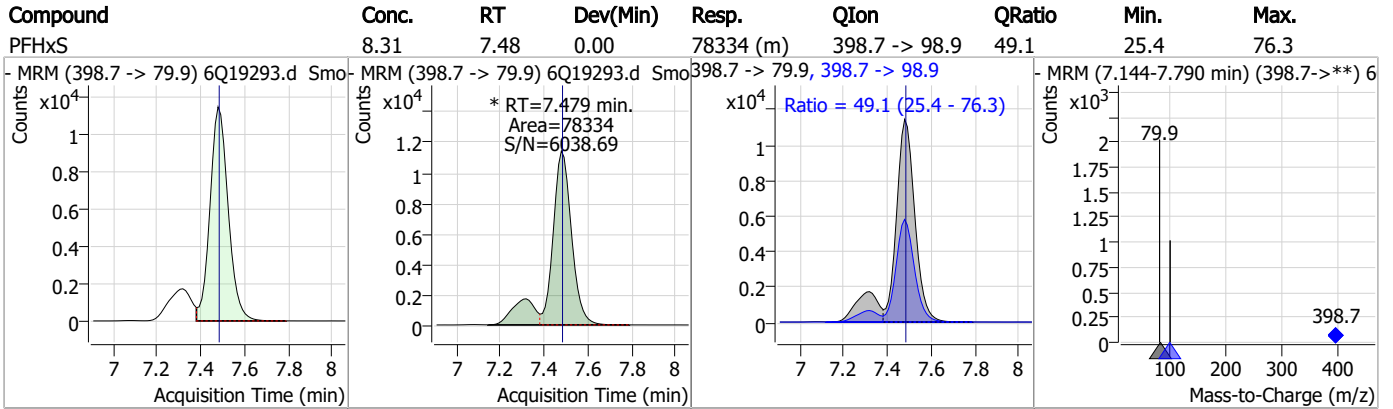
Perfluorinated Compounds by LC/MS/MS



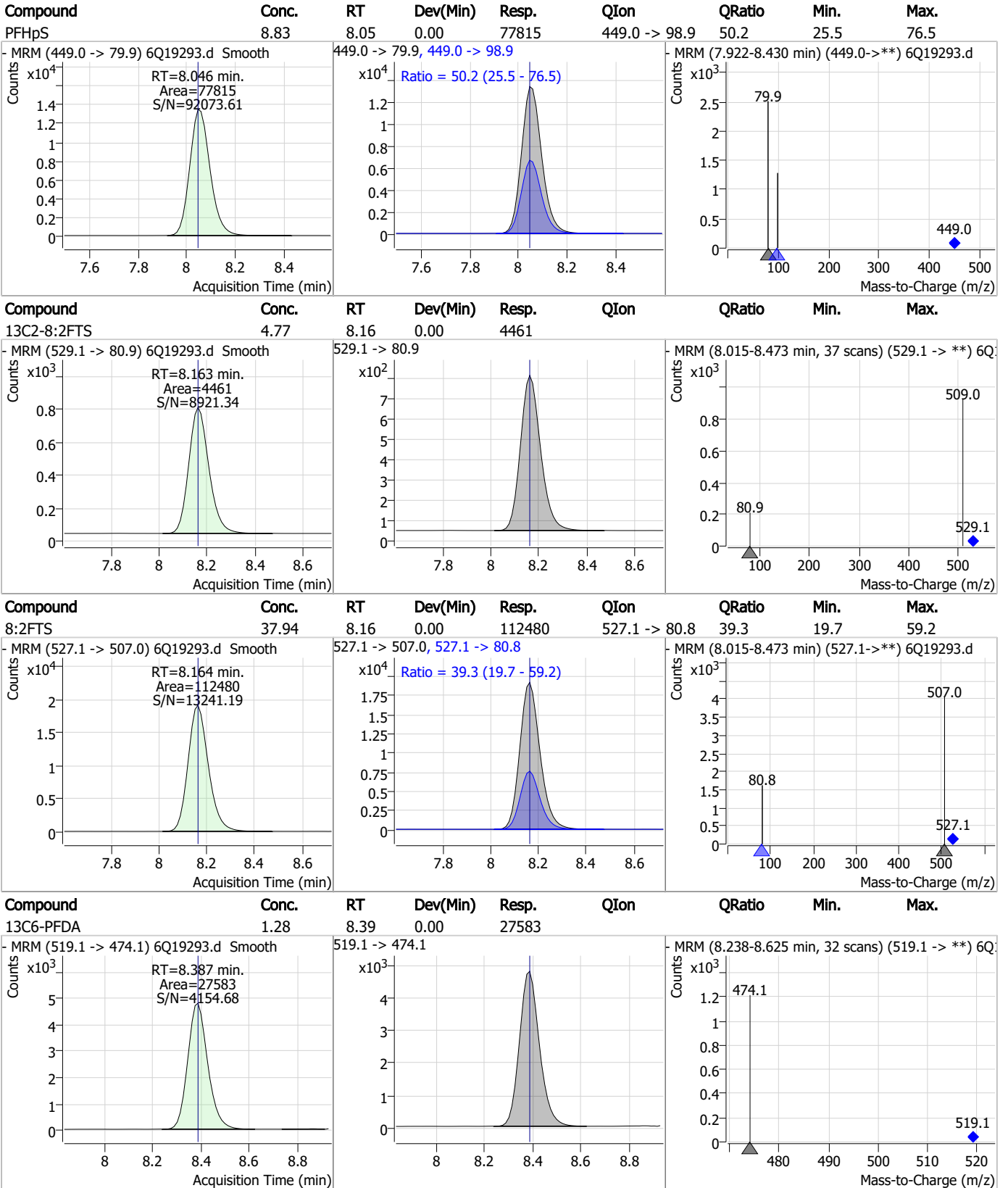
7.6.2

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Perfluorinated Compounds by LC/MS/MS



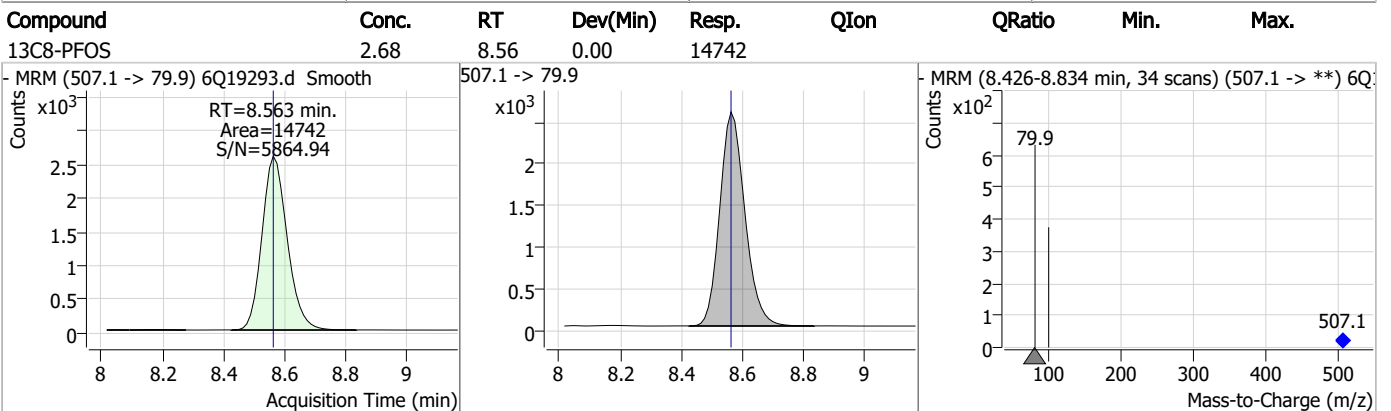
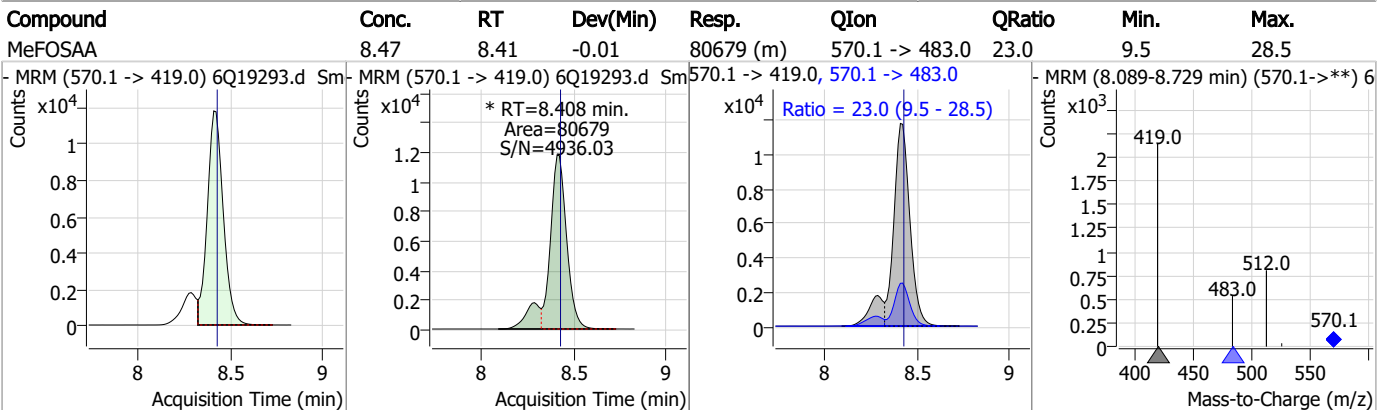
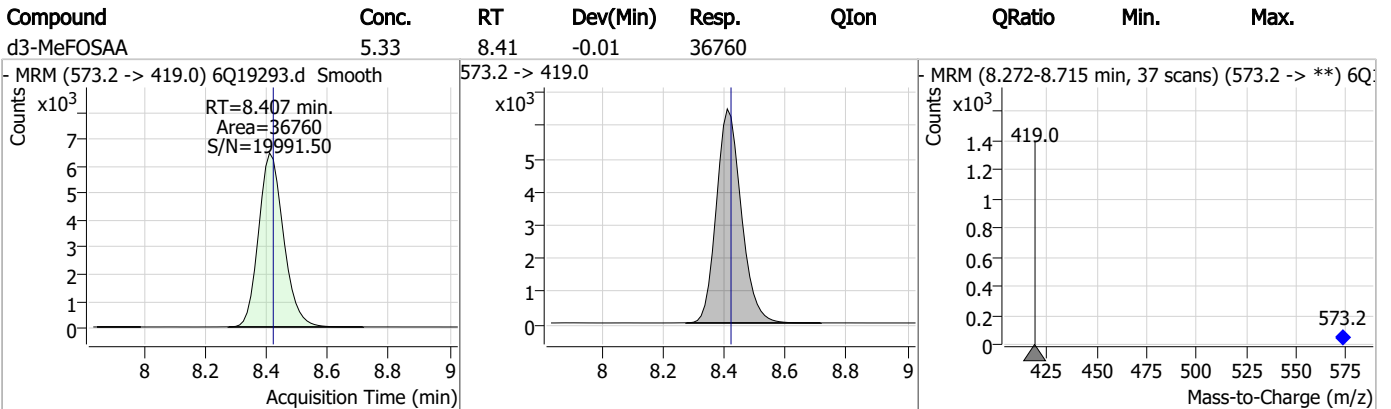
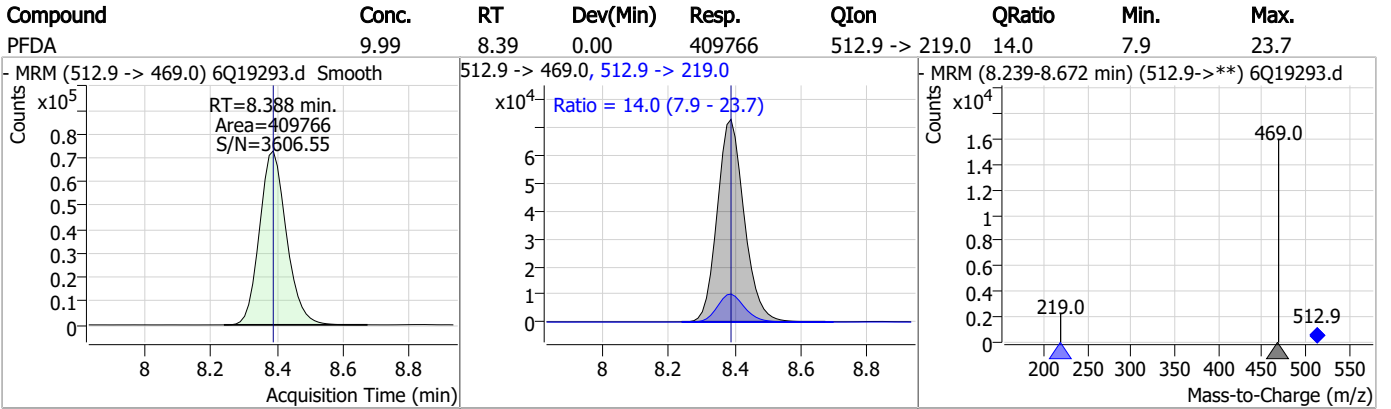
Perfluorinated Compounds by LC/MS/MS



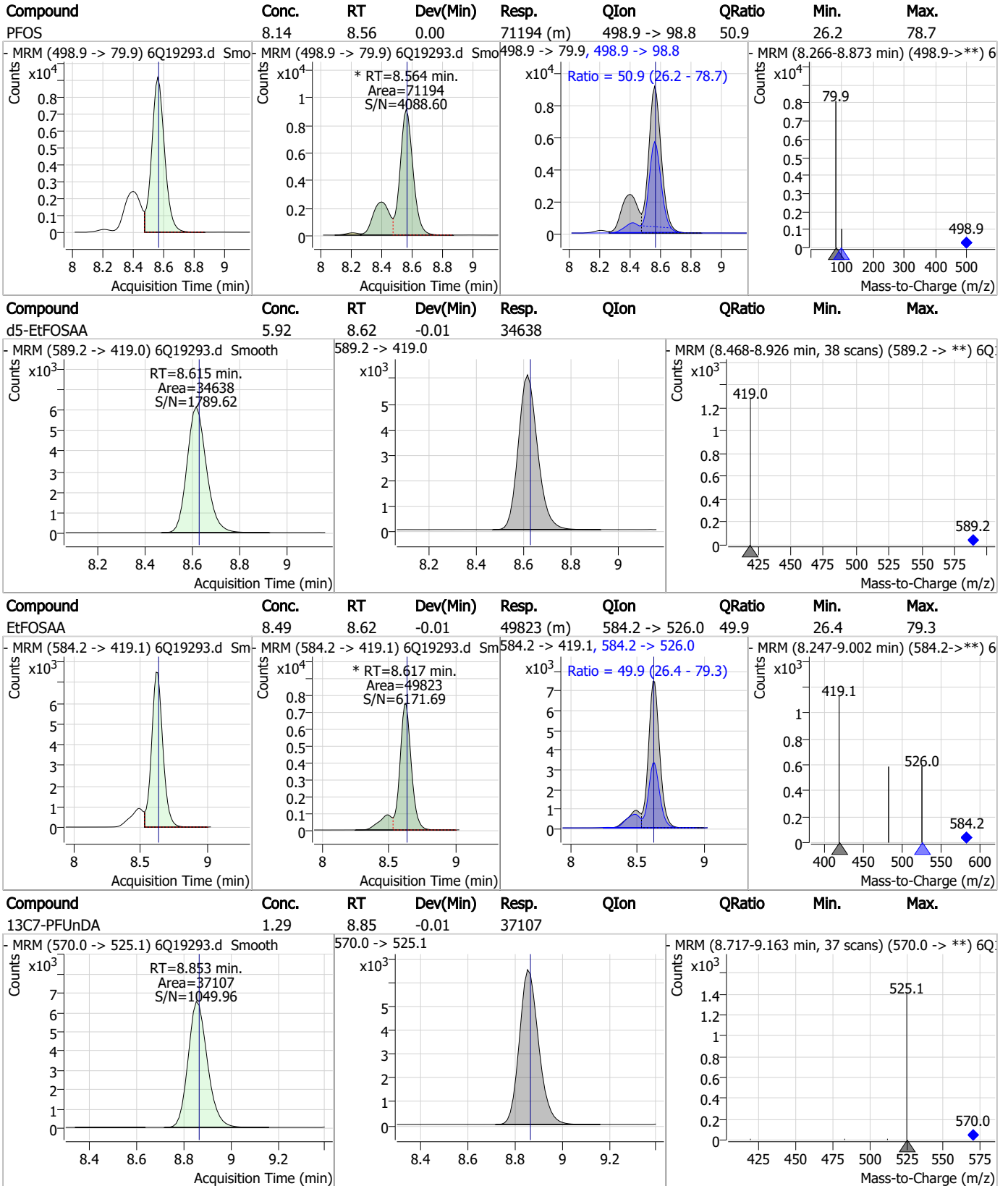
7.6.2

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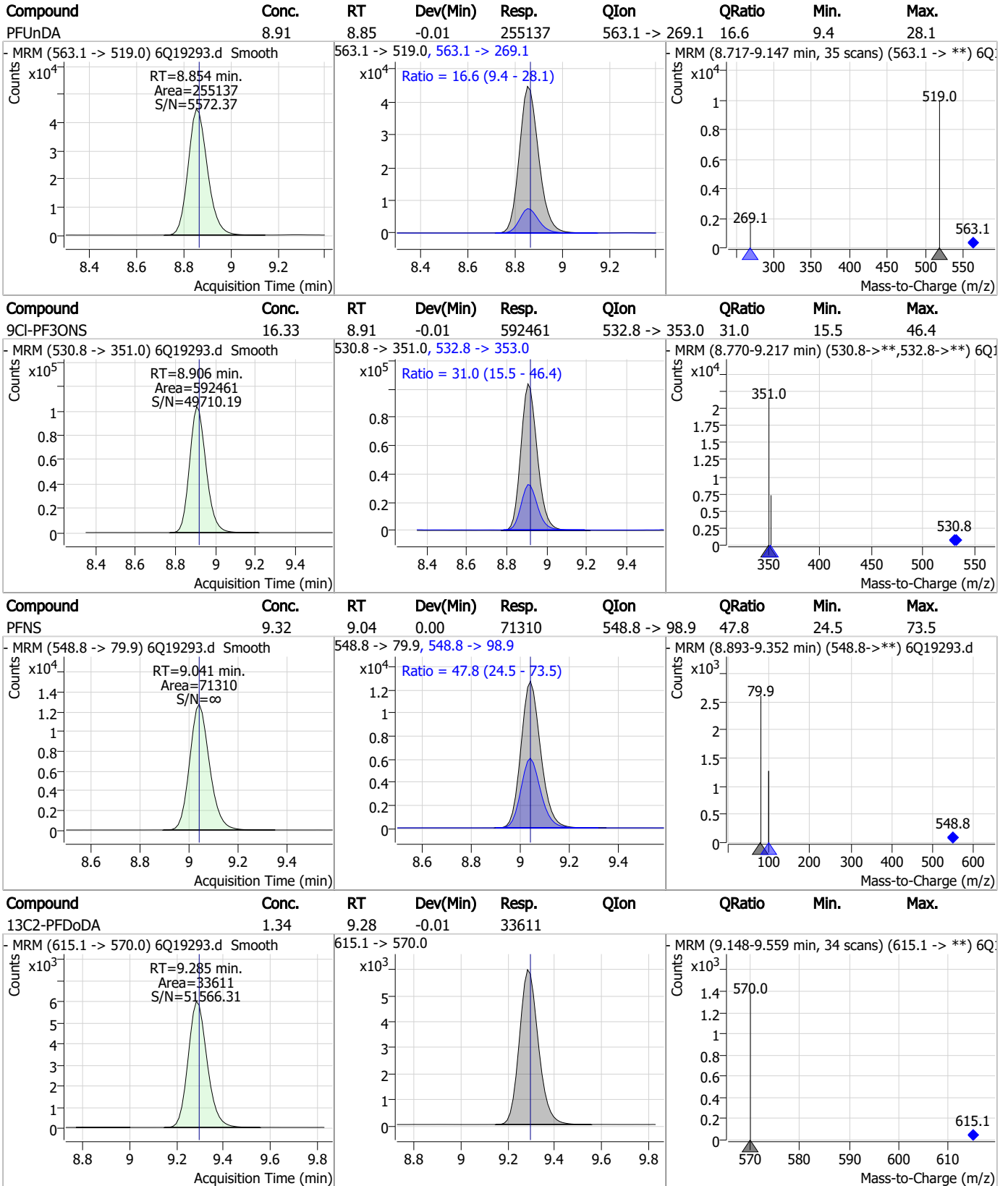
Perfluorinated Compounds by LC/MS/MS



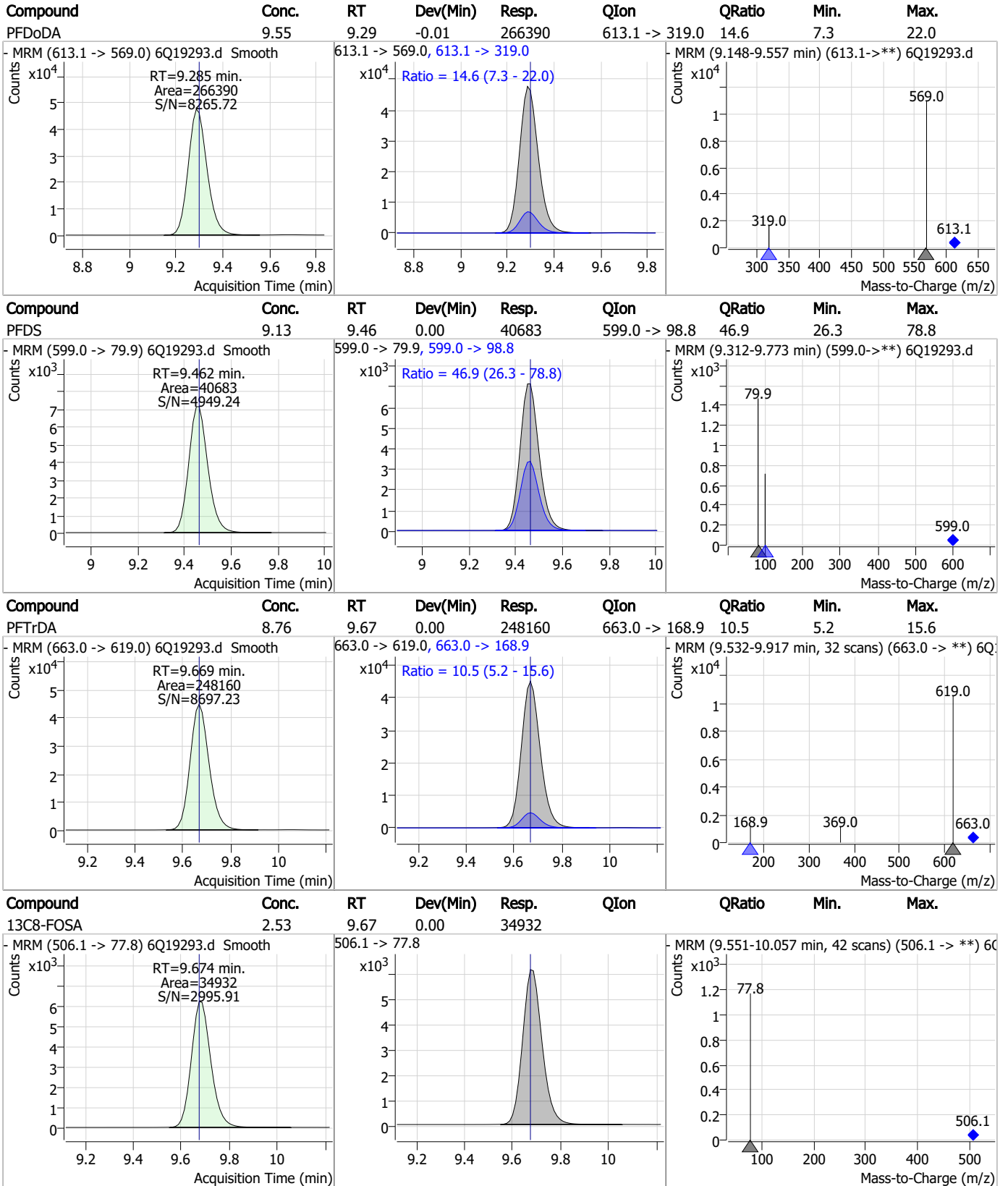
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



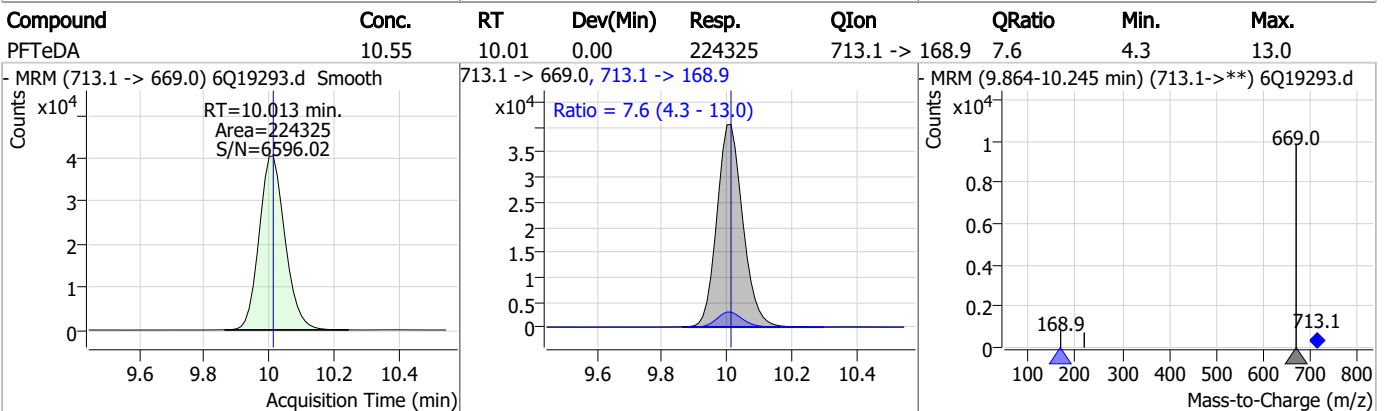
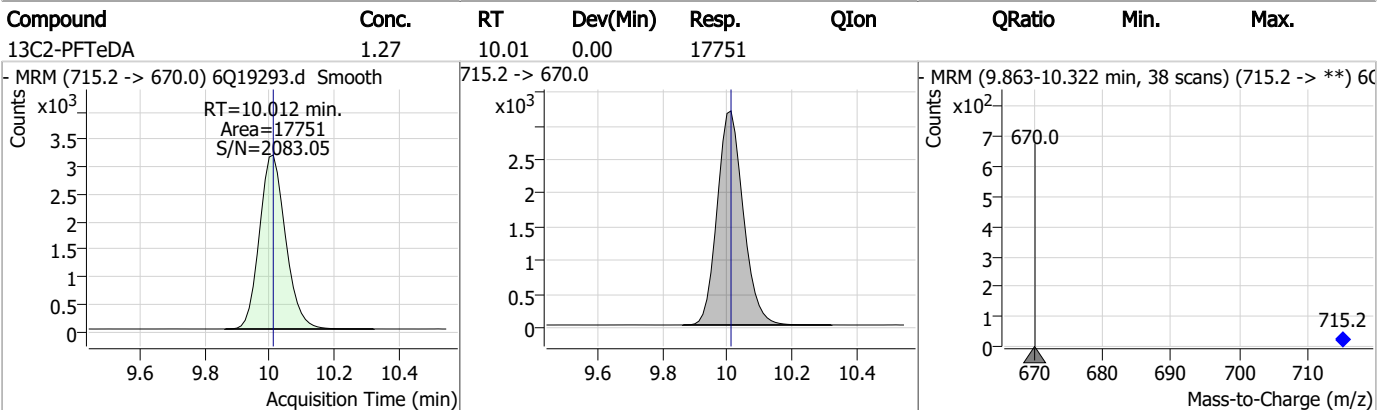
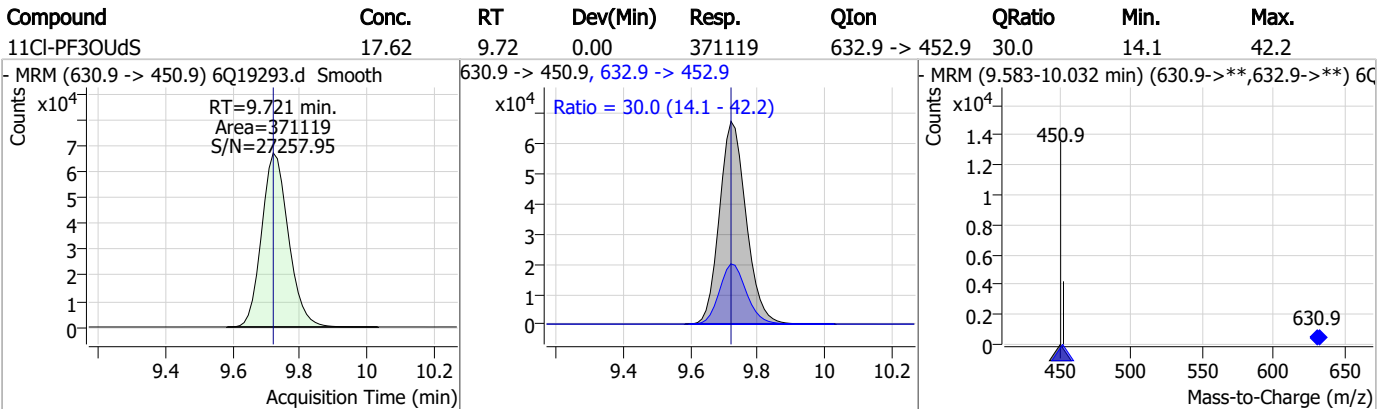
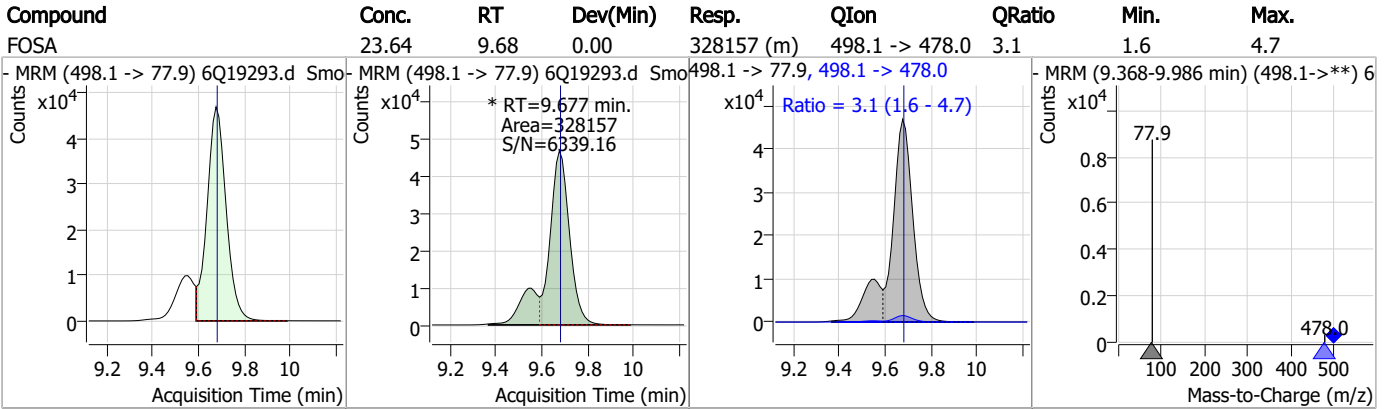
Perfluorinated Compounds by LC/MS/MS



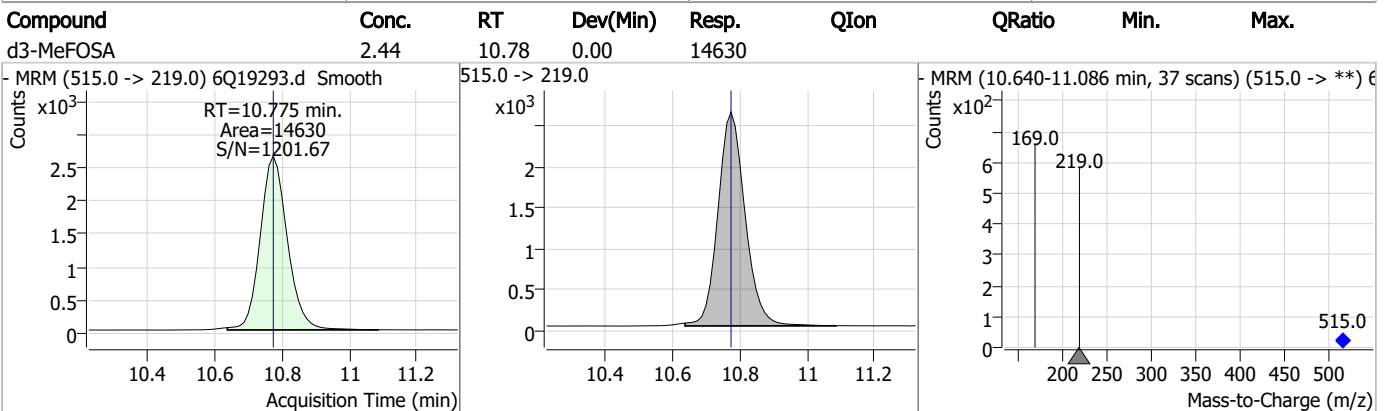
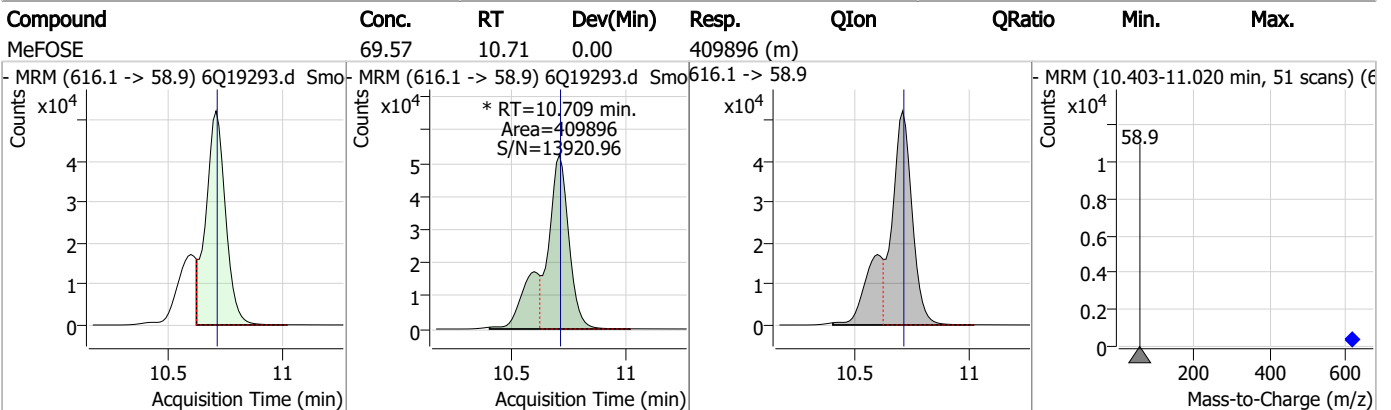
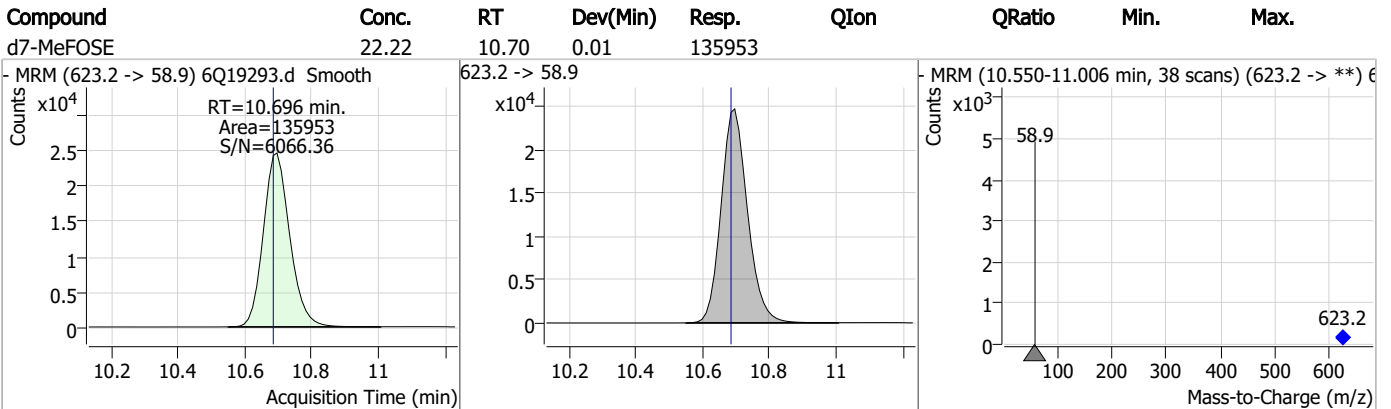
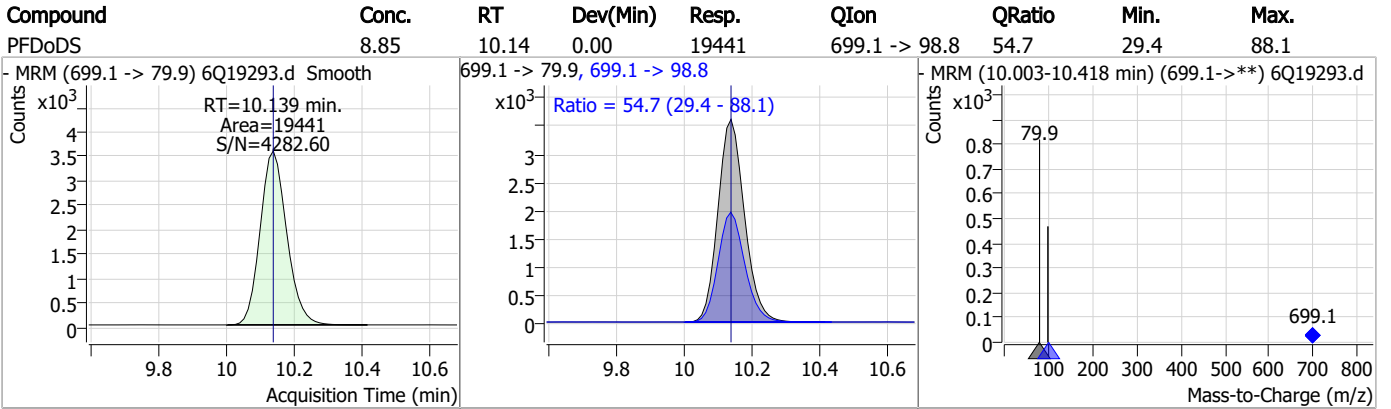
7.6.2

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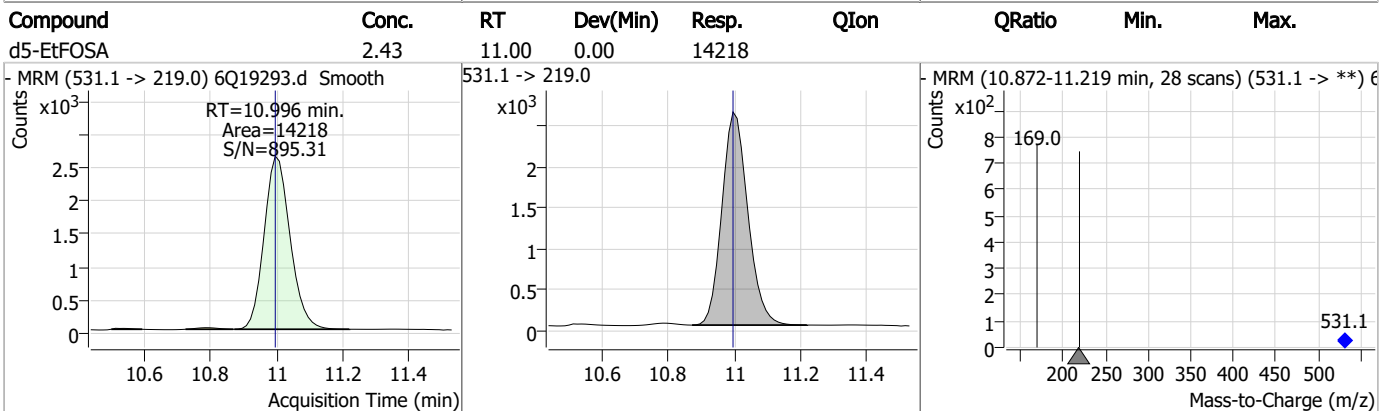
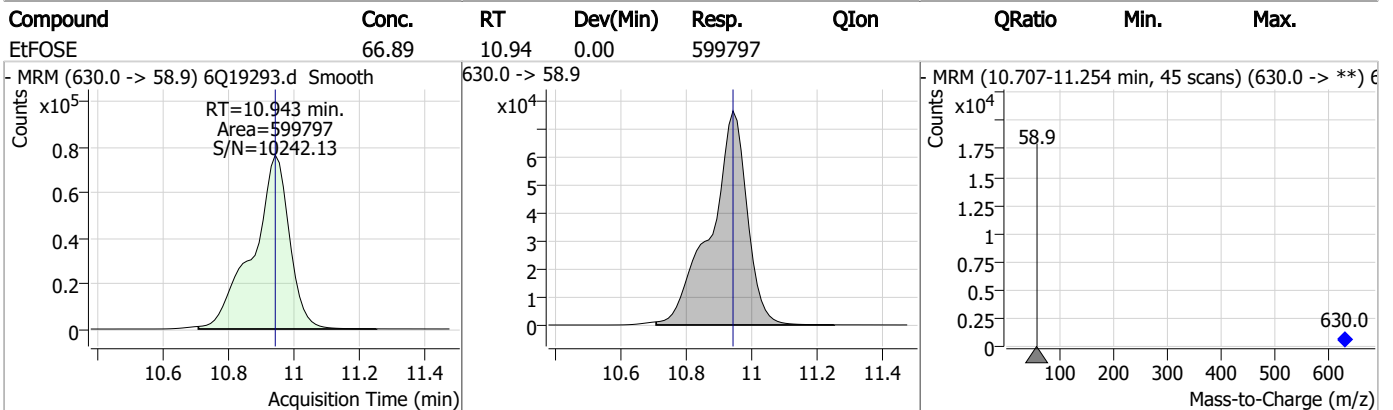
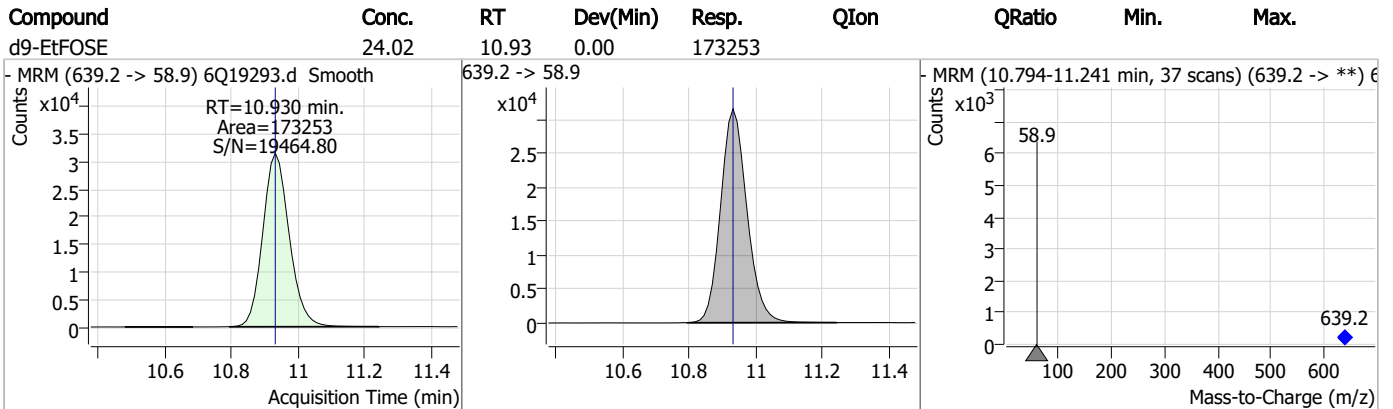
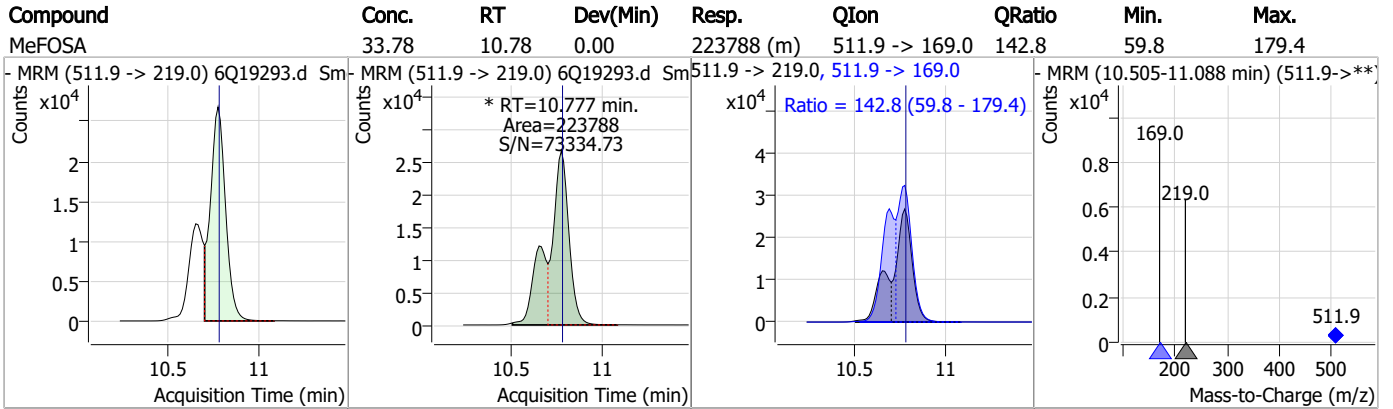
Perfluorinated Compounds by LC/MS/MS



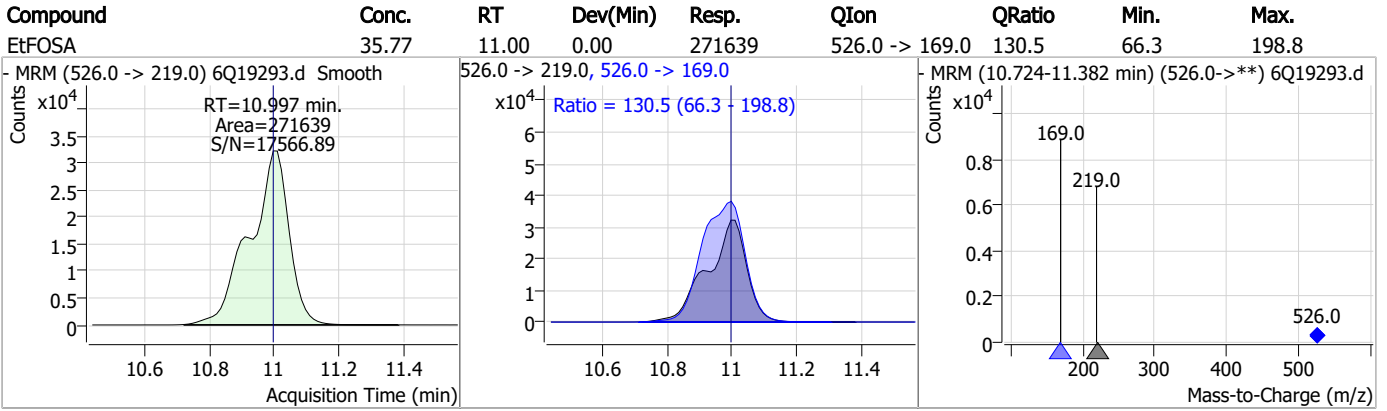
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S6Q288-RT Method: EPA DRAFT 1633
Lab FileID: 6Q19293.D Analyst approved: 06/14/23 11:49 Martha Valls
Injection Time: 06/13/23 11:07 Supervisor approved: 06/14/23 12:01 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.35	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
Perfluorononanoic acid	375-95-1		7.88	Split peak
MeFOSAA	2355-31-9		8.41	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.62	Split peak
PFOSA	754-91-6		9.68	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.6.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19665.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 11:59:07 AM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s6q293 TDCA.batch.bin
 Sample Information : OP97325,S6Q293,500,,,5.0,1,water

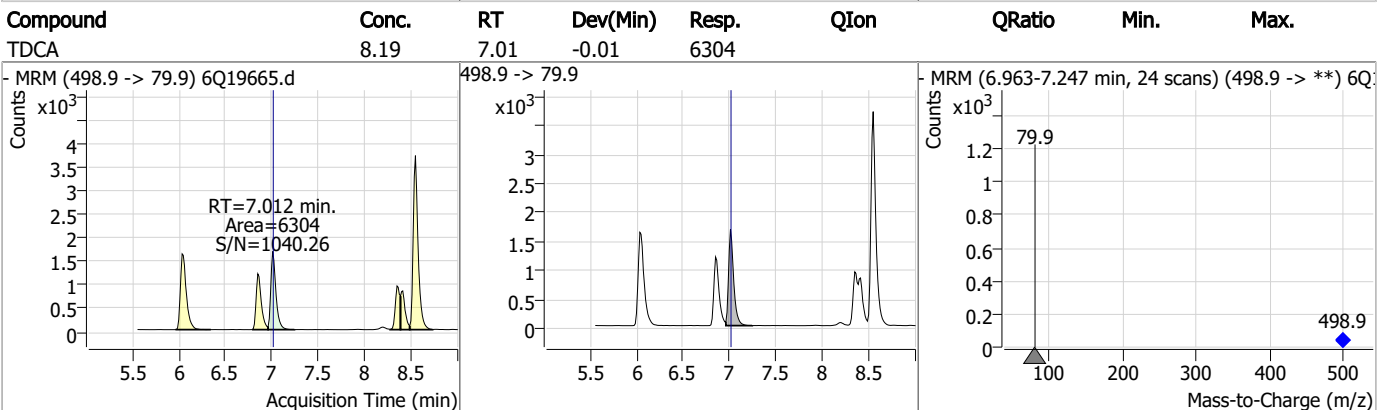
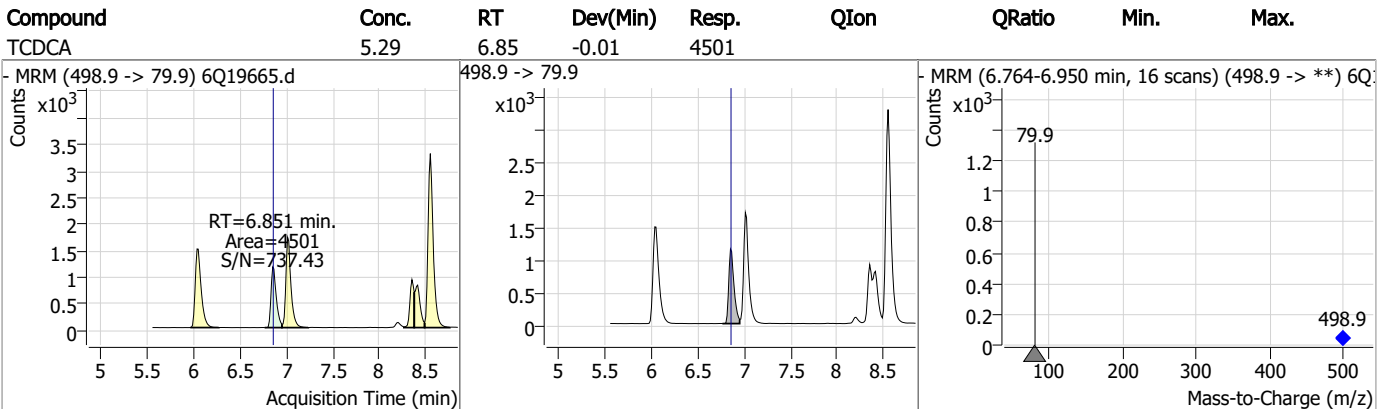
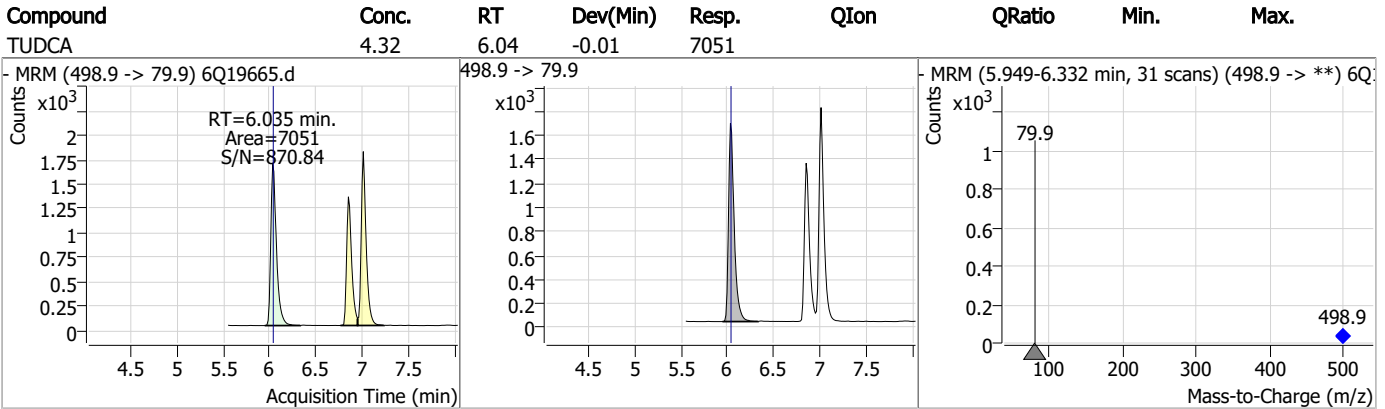
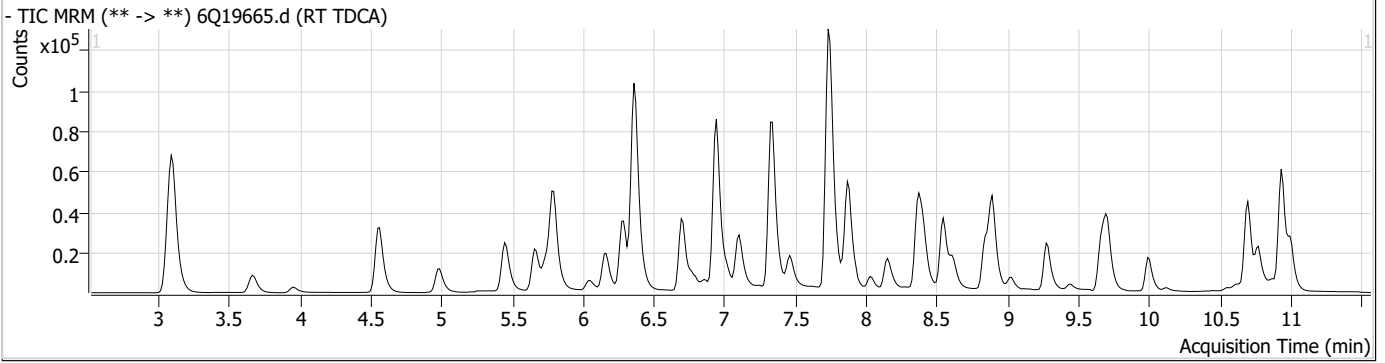
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.550	507.1 -> 79.9	18425	2.50	µg/L	-0.020	
13C4-PFOS	8.551	502.8 -> 79.9	26306	2.50	µg/L	-0.020	
System Monitoring Compounds							
13C8-PFOS	8.550	507.1 -> 79.9	18425	1.78	µg/L	-0.020	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 71.1%				
Target Compounds							
PFOS	8.552	498.9 -> 79.9 498.9 -> 98.8	19121 9074	3.04	µg/L	m	90
TCDCa	6.851	498.9 -> 79.9	4501	5.29	ng/ml		100
TDCA	7.012	498.9 -> 79.9	6304	8.19	ng/ml		100
TUDCA	6.035	498.9 -> 79.9	7051	4.32	ng/ml		100

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

7.6.3

7

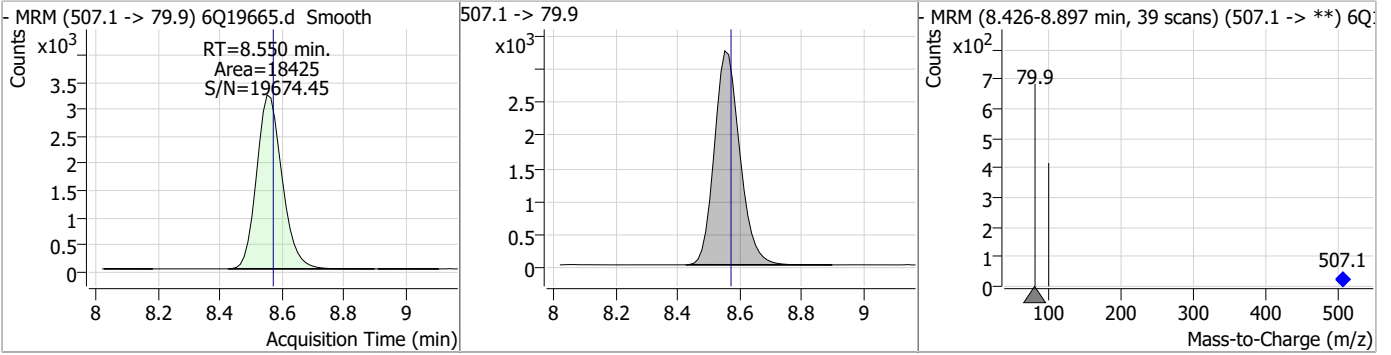
Perfluorinated Compounds by LC/MS/MS



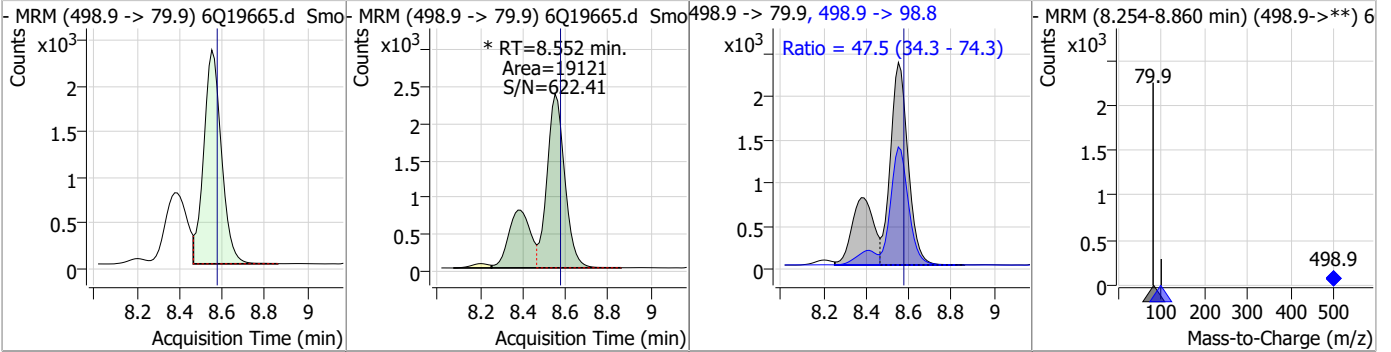
7.6.3
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	1.78	8.55	-0.02	18425				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.04	8.55	-0.02	19121 (m)	498.9 -> 98.8	47.5	34.3	74.3



7.6.3
7



Manual Integration Approval Summary

Sample Number: S6Q293-RT Method: EPA DRAFT 1633
Lab FileID: 6Q19665.D Analyst approved: 06/21/23 16:11 Martha Valls
Injection Time: 06/21/23 11:59 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.55	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19666.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 12:13:06 PM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97325,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	182656	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	61354	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	63102	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	59799	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	90991	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	44160	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	27590	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	37505	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	28535	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	14924	1.25 µg/L	-0.012
M8-FOSA	9.687	506.1 -> 77.8	33230	2.50 µg/L	0.012
M3-PFBS	5.746	302.1 -> 79.9	25125	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	15341	2.50 µg/L	0.000
M8-PFOS	8.550	507.1 -> 79.9	14127	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	2976	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	4147	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4091	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	35201	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	47729	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	27211	5.00 µg/L	-0.012
M7-MeFOSE	10.696	623.2 -> 58.9	96047	25.00 µg/L	0.011
M9-EtFOSE	10.930	639.2 -> 58.9	135393	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11993	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	13676	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	18864	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	76174	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	10462	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	98017	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	35708	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	53371	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	57865	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2976	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4147	4.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.5%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4091	4.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C2-PFDoDA	9.285	615.1 -> 570.0	28535	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C2-PFTeDA	10.000	715.2 -> 670.0	14924	1.12 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.6%		
13C3-PFBS	5.746	302.1 -> 79.9	25125	2.89 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.4%		
13C3-PFHxS	7.478	402.1 -> 79.9	15341	2.79 µg/L	0.000

7.6.4
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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 = 111.6%	
13C4-PFBA	3.085	216.8 -> 171.9	182656	10.22 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C4-PFHpA	6.707	367.1 -> 322.0	59799	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C5-PFHxA	5.792	318.0 -> 273.0	63102	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C5-PFPeA	4.560	268.3 -> 223.0	61354	5.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C6-PFDA	8.375	519.1 -> 474.1	27590	1.35 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C7-PFUnDA	8.853	570.0 -> 525.1	37505	1.37 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.3%	
13C8-FOSA	9.687	506.1 -> 77.8	33230	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.0%	
13C8-PFOA	7.339	421.1 -> 376.0	90991	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-PFOS	8.550	507.1 -> 79.9	14127	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C9-PFNA	7.882	472.1 -> 427.0	44160	1.36 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.7%	
d3-MeFOSAA	8.407	573.2 -> 419.0	35201	4.93 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	47729	11.94 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 119.4%	
d3-MeFOSA	10.775	515.0 -> 219.0	13676	2.20 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.1%	
d5-EtFOSAA	8.615	589.2 -> 419.0	27211	4.49 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.8%	
d7-MeFOSE	10.696	623.2 -> 58.9	96047	15.17 µg/L	0.011
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 60.7%	
d9-EtFOSE	10.930	639.2 -> 58.9	135393	18.14 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 72.6%	
d5-EtFOSA	10.996	531.1 -> 219.0	11993	1.98 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.2%	
Target Compounds					QValue
4:2FTS	5.455	327.1 -> 307.0	193531	37.40 µg/L	97
		327.1 -> 80.9	69277		
6:2FTS	7.113	427.1 -> 407.0	195832	39.66 µg/L	100
		427.1 -> 80.9	64337		
8:2FTS	8.164	527.1 -> 507.0	105209	38.70 µg/L	99
		527.1 -> 80.8	41234		
EtFOSAA	8.617	584.2 -> 419.1	45090	9.78 µg/L	m 97
		584.2 -> 526.0	22932		
FOSA	9.690	498.1 -> 77.9	313239	23.73 µg/L	m 100
		498.1 -> 478.0	9414		
MeFOSAA	8.421	570.1 -> 419.0	79323	8.69 µg/L	m 98
		570.1 -> 483.0	15835		
PFBA	3.093	212.8 -> 168.9	278026	37.77 µg/L	100
PFBS	5.747	298.7 -> 79.9	87485	7.80 µg/L	98
		298.7 -> 98.8	32203		
PFDA	8.376	512.9 -> 469.0	370662	9.03 µg/L	99
		512.9 -> 219.0	57071		
PFDoDA	9.285	613.1 -> 569.0	225805	9.53 µg/L	97
		613.1 -> 319.0	35946		
PFDS	9.450	599.0 -> 79.9	38349	8.98 µg/L	90

7.6.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	17384	9.32	µg/L	98
		363.1 -> 319.0	297627			
PFHpS	8.046	363.1 -> 169.0	48153	8.73	µg/L	96
		449.0 -> 79.9	73721			
PFHxA	5.795	449.0 -> 98.9	39421	10.41	µg/L	98
		313.0 -> 269.0	265066			
PFHxS	7.479	313.0 -> 118.9	12285	7.87	µg/L	m
		398.7 -> 79.9	72721			
PFNA	7.746	398.7 -> 98.9	35144	19.30	µg/L	m
		463.0 -> 419.0	787815			
PFNS	9.029	463.0 -> 219.0	154801	9.23	µg/L	95
		548.8 -> 79.9	67672			
PFOA	7.341	548.8 -> 98.9	35289	20.03	µg/L	m
		413.0 -> 369.0	1000908			
PFOS	8.564	413.0 -> 169.0	177509	7.74	µg/L	m
		498.9 -> 79.9	64900			
PFPeA	4.563	498.9 -> 98.8	34697	18.69	µg/L	100
		263.0 -> 219.0	338496			
PFPeS	6.785	349.1 -> 79.9	75865	8.83	µg/L	91
		349.1 -> 98.9	31916			
PFTeDA	9.988	713.1 -> 669.0	179154	10.02	µg/L	100
		713.1 -> 168.9	15118			
PFTrDA	9.656	663.0 -> 619.0	213812	8.89	µg/L	97
		663.0 -> 168.9	24367			
PFUnDA	8.854	563.1 -> 519.0	248300	8.58	µg/L	96
		563.1 -> 269.1	41884			
11CI-PF3OUdS	9.708	630.9 -> 450.9	317722	14.62	µg/L	92
		632.9 -> 452.9	103603			
9CI-PF3ONS	8.893	530.8 -> 351.0	566594	15.13	µg/L	100
		532.8 -> 353.0	176278			
ADONA	6.959	376.9 -> 250.9	1198532	15.52	µg/L	96
		376.9 -> 84.8	324888			
HFPO-DA	6.169	284.9 -> 168.9	79630	15.94	µg/L	98
		284.9 -> 184.9	10032			
3:3FTCA	3.958	241.0 -> 177.0	53892	43.98	µg/L	99
		241.0 -> 117.0	7387			
5:3FTCA	6.374	341.0 -> 237.1	1146046	226.41	µg/L	99
		341.0 -> 217.0	844470			
7:3FTCA	7.748	441.0 -> 316.9	776449	226.87	µg/L	97
		441.0 -> 336.9	1789842			
EtFOSA	10.997	526.0 -> 219.0	248879	38.85	µg/L	100
		526.0 -> 169.0	329394			
EtFOSE	10.943	630.0 -> 58.9	461041	65.80	µg/L	100
		511.9 -> 219.0	205053			
MeFOSA	10.777	511.9 -> 169.0	303728	33.11	µg/L	m
		616.1 -> 58.9	300639			
MeFOSE	10.709	699.1 -> 79.9	16856	72.23	µg/L	m
		699.1 -> 98.8	9686			
PFDoDS	10.127	295.0 -> 201.0	66819	8.01	µg/L	98
		295.0 -> 84.9	16077			
NFDHA	5.673	279.0 -> 85.1	246925	20.54	µg/L	95
		229.0 -> 84.9	195143			
PFMBA	4.988	314.8 -> 134.9	616622	19.12	µg/L	100
		314.8 -> 82.9	20643			
PFMPA	3.667			19.32	µg/L	100
PFEESA	6.288			17.92	µg/L	100

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

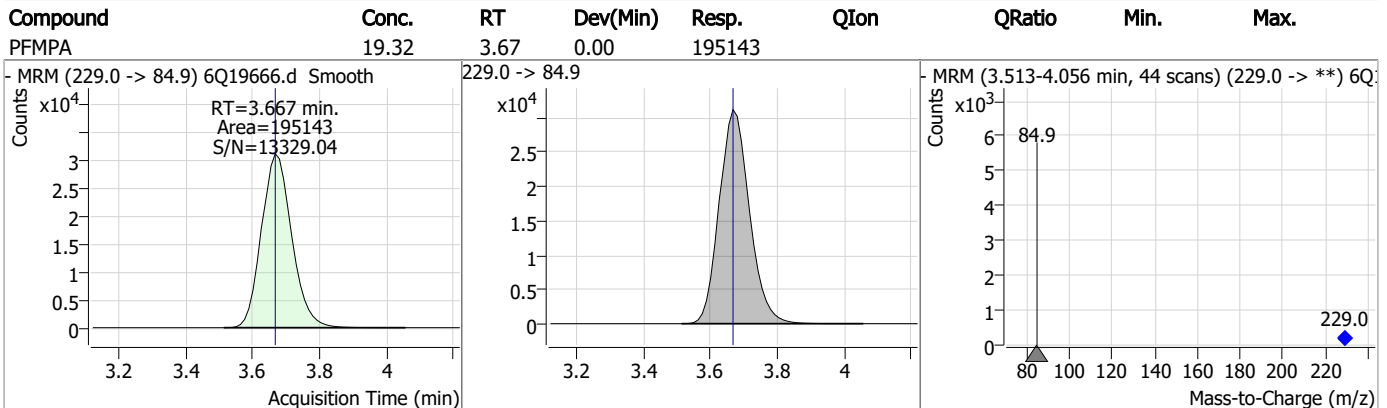
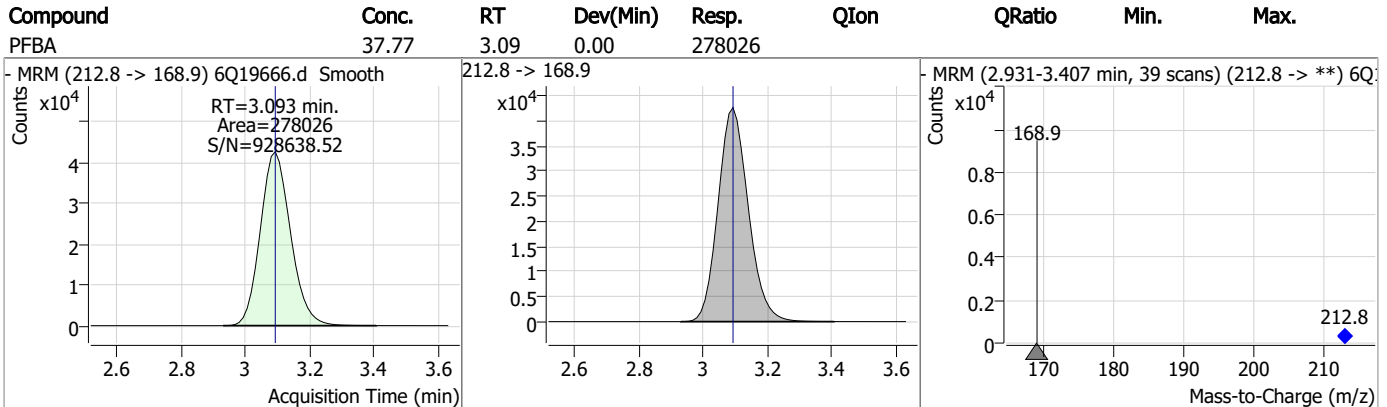
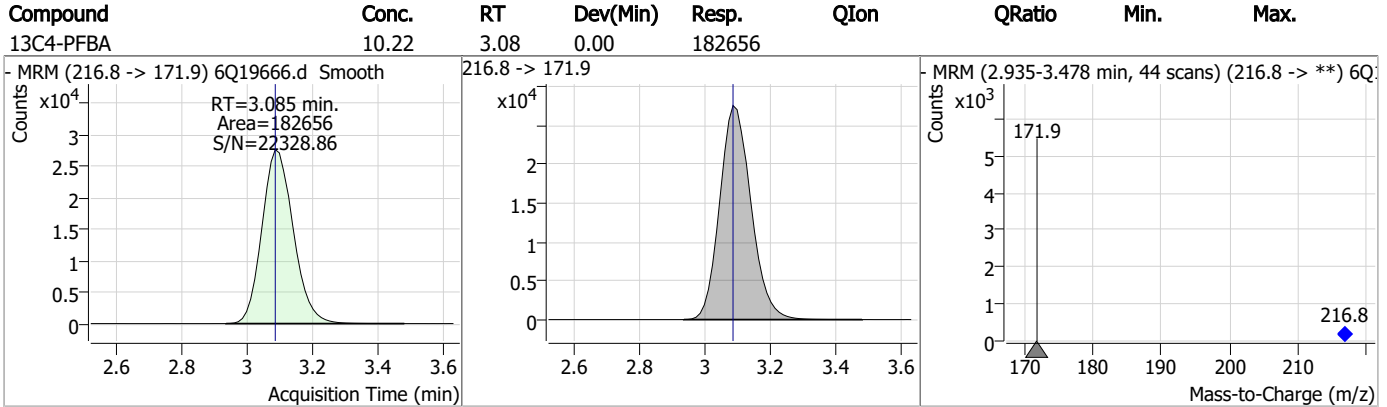
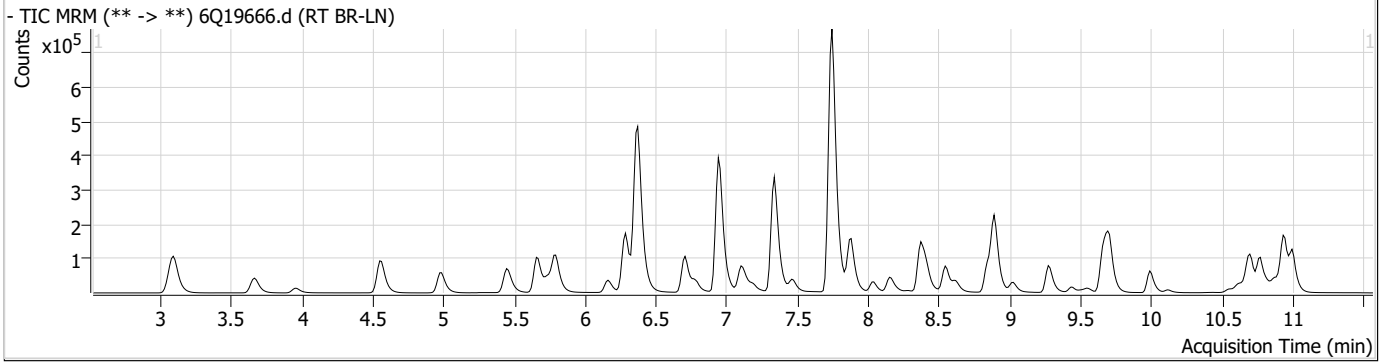
Perfluorinated Compounds by LC/MS/MS

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

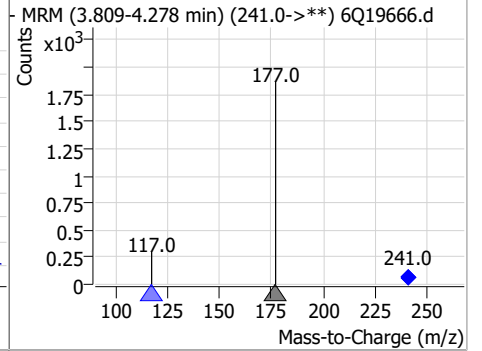
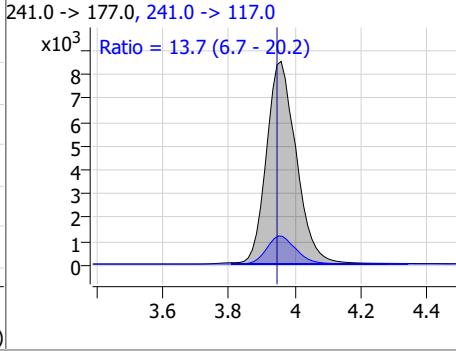
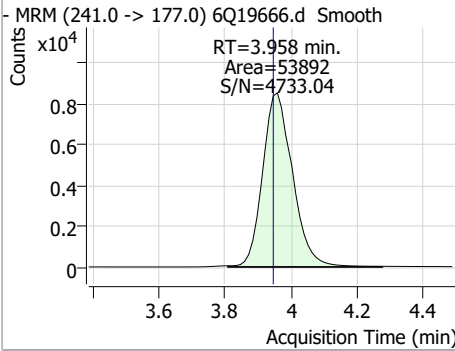
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Perfluorinated Compounds by LC/MS/MS

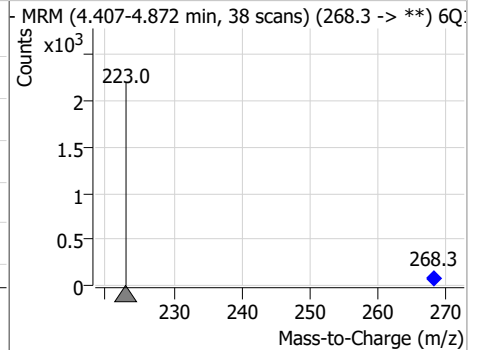
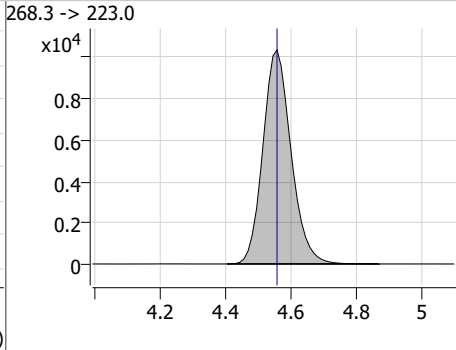
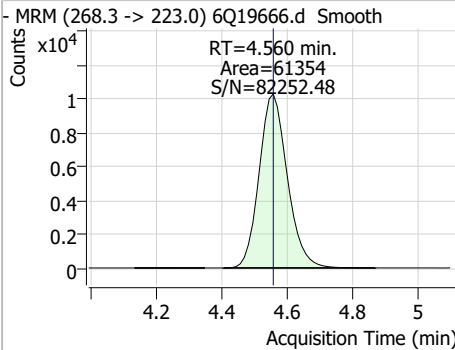


Perfluorinated Compounds by LC/MS/MS

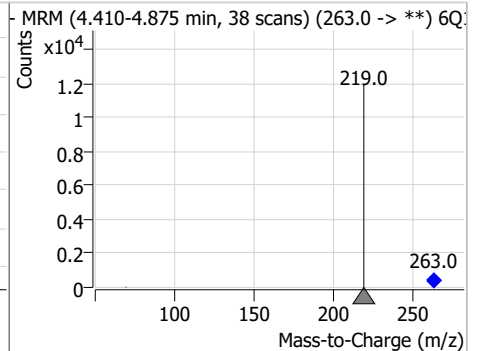
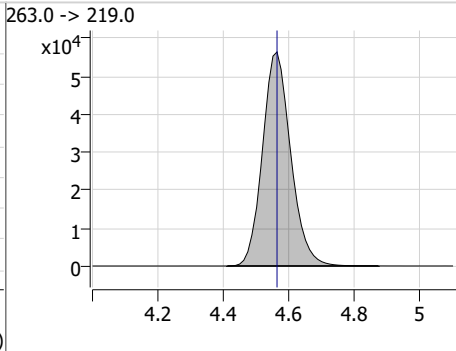
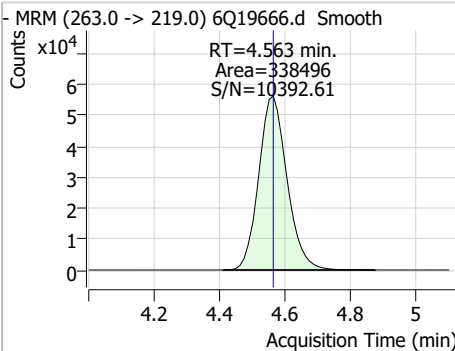
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	43.98	3.96	0.01	53892	241.0 -> 117.0	13.7	6.7	20.2



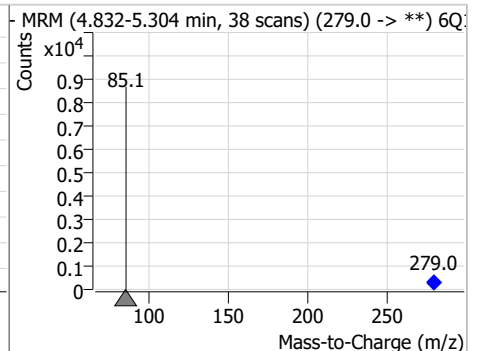
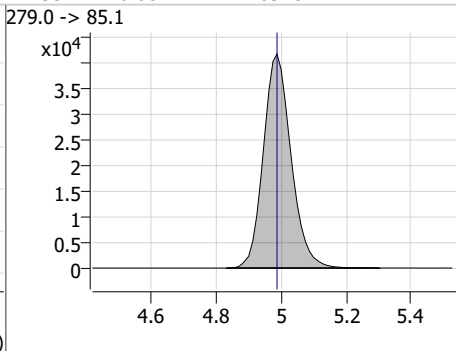
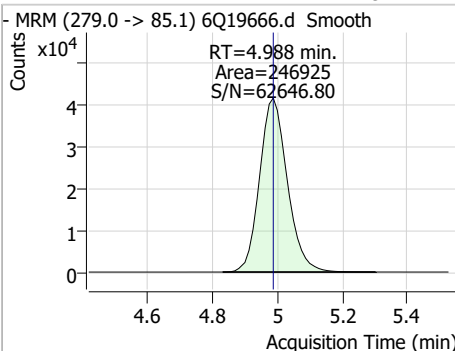
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.61	4.56	0.00	61354				



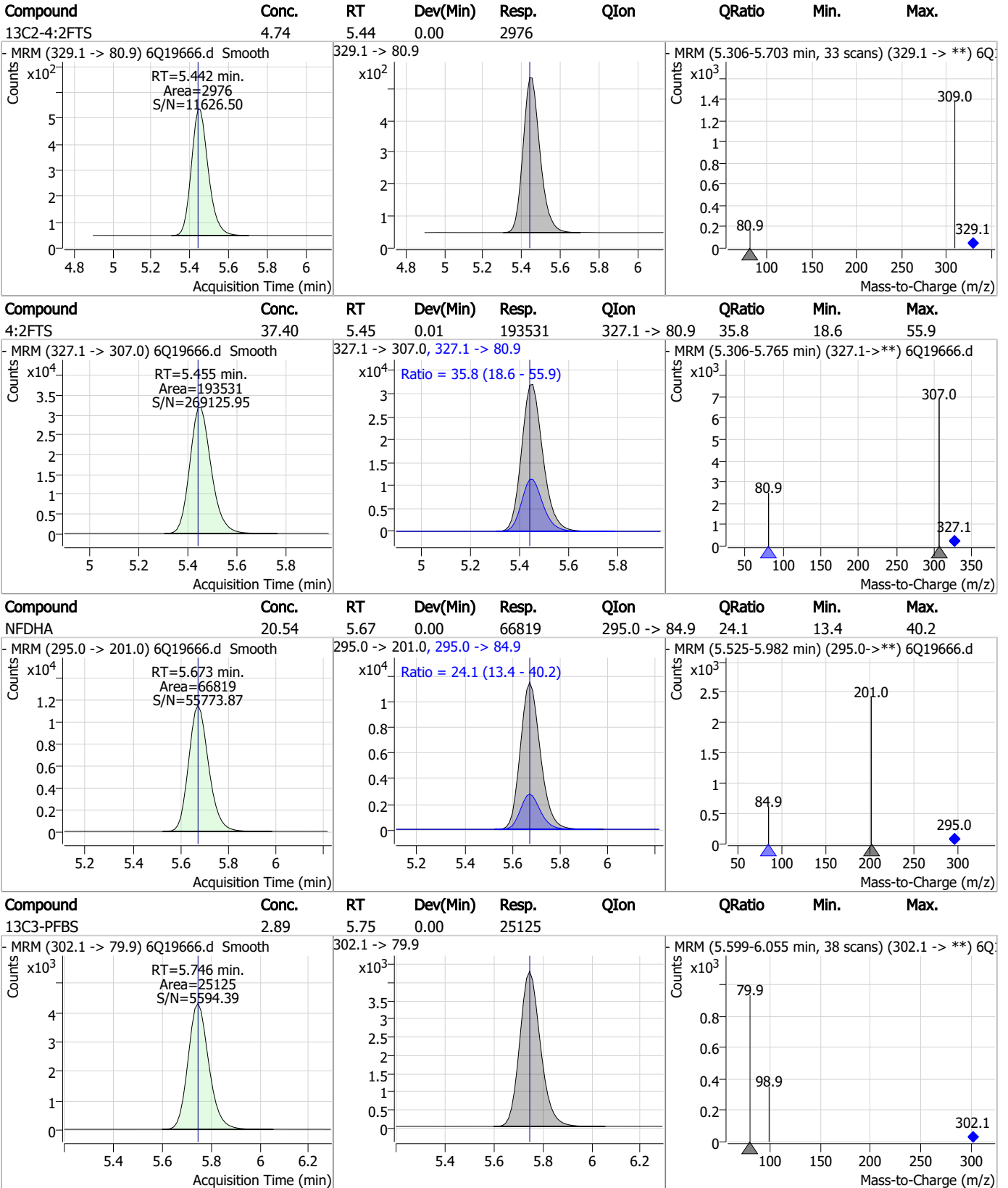
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	18.69	4.56	0.00	338496				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	19.12	4.99	0.00	246925				



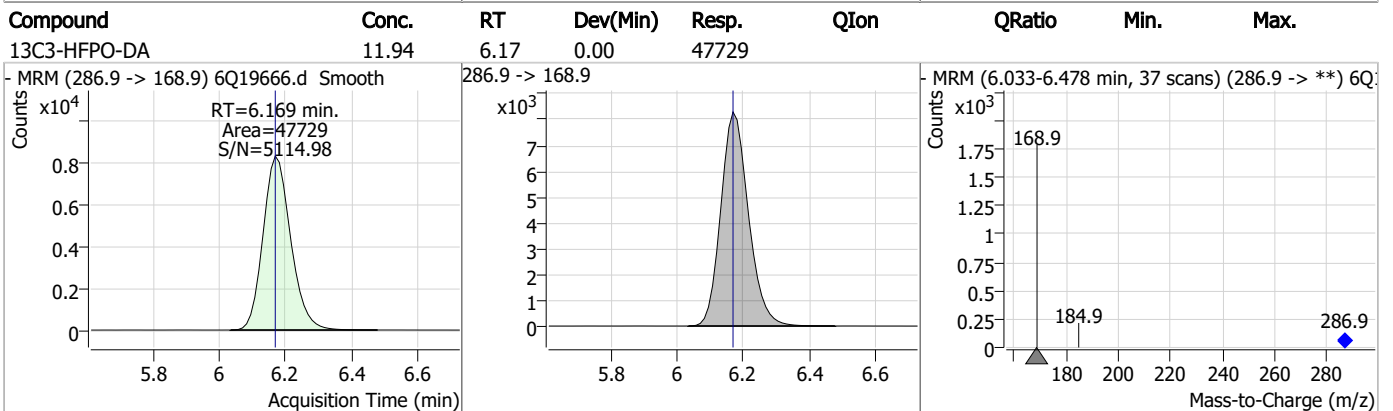
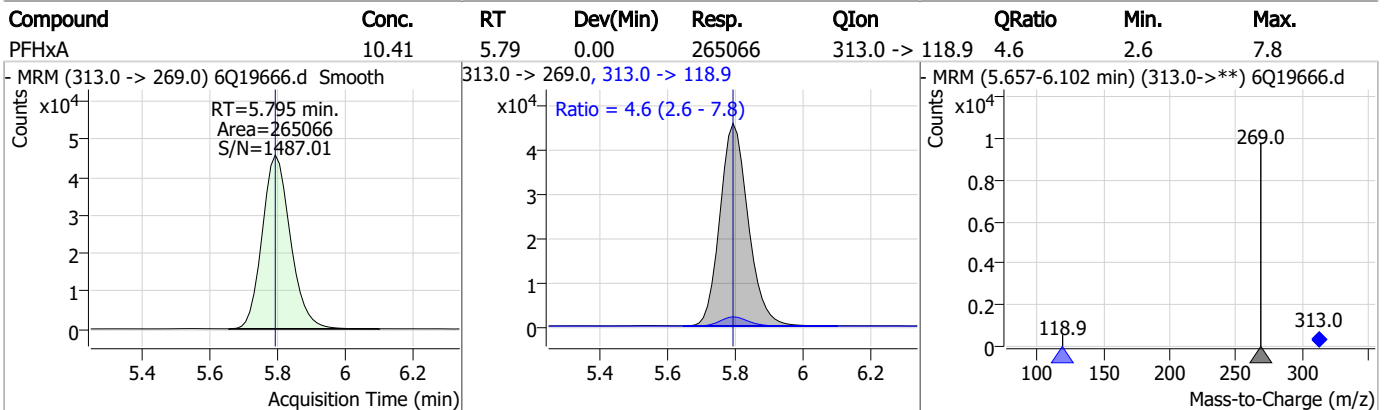
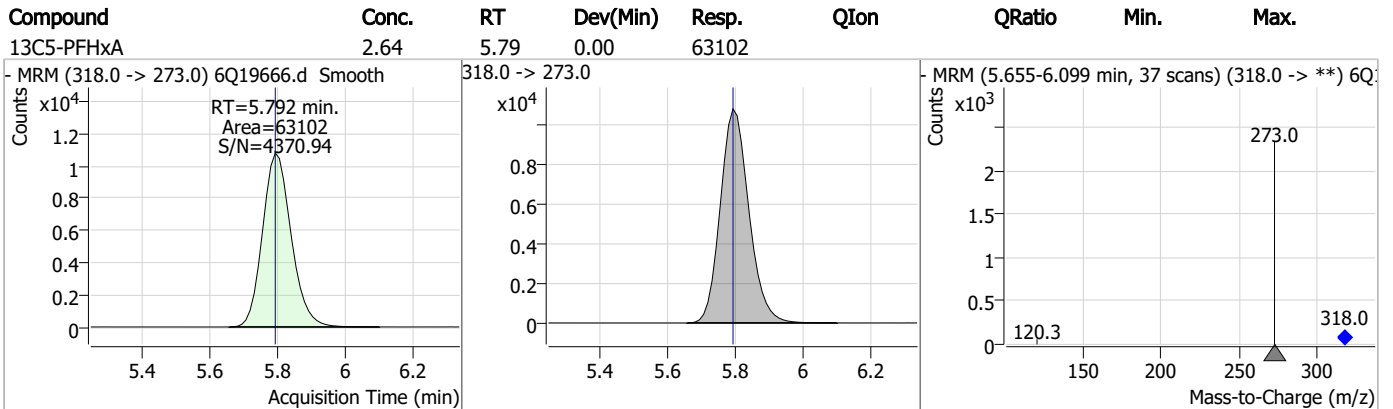
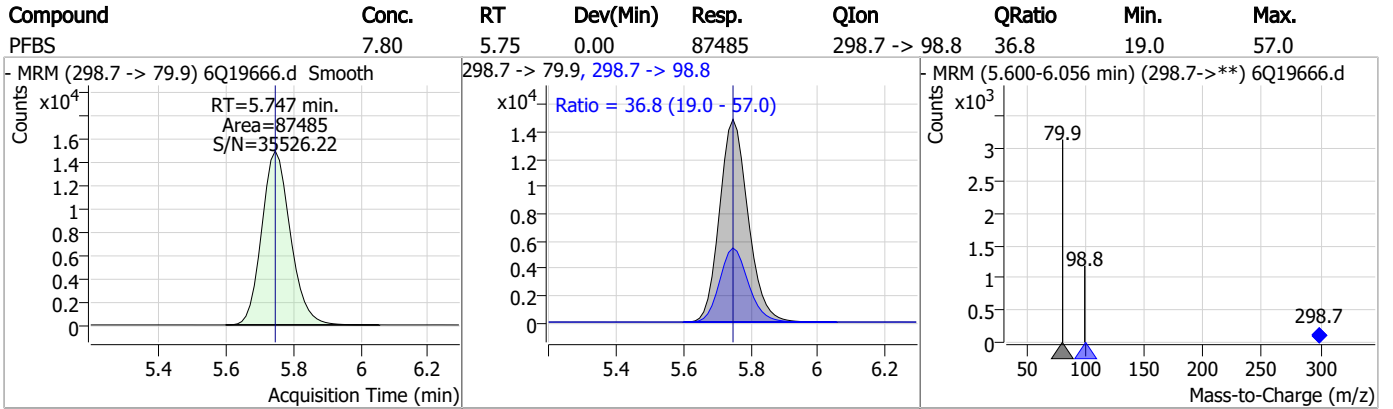
Perfluorinated Compounds by LC/MS/MS



7.6.4

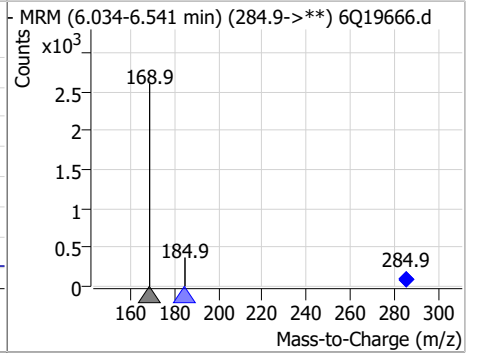
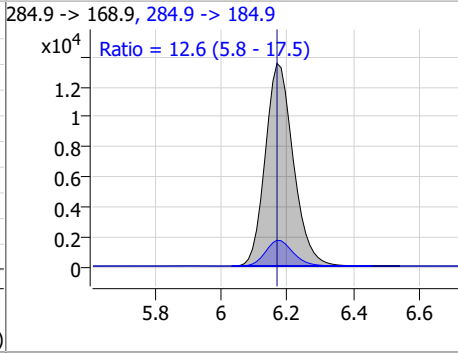
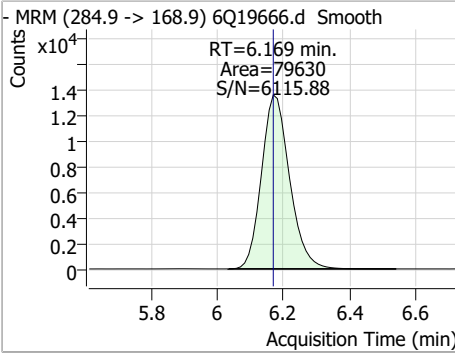
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Perfluorinated Compounds by LC/MS/MS

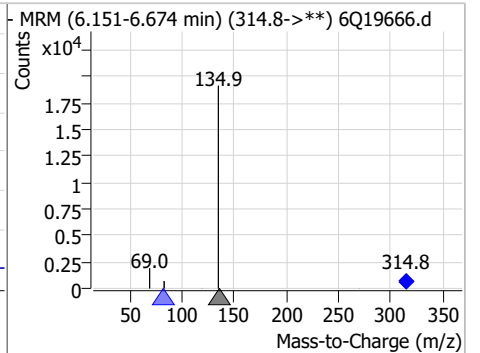
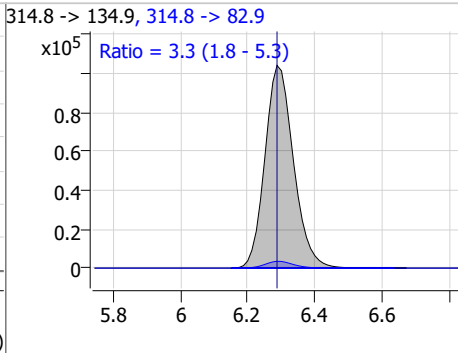
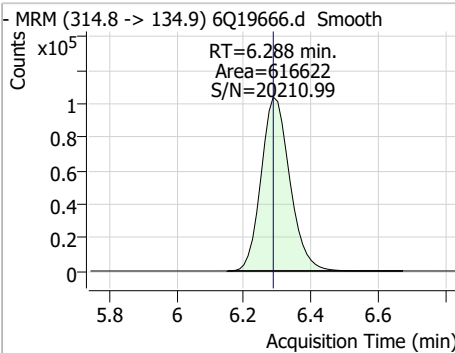


Perfluorinated Compounds by LC/MS/MS

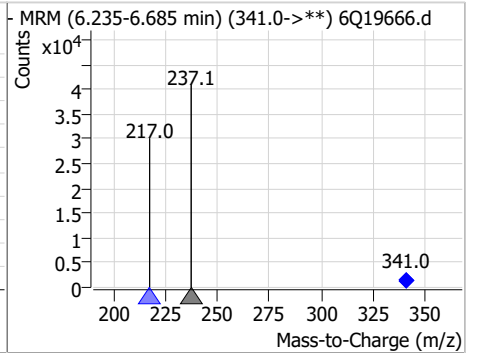
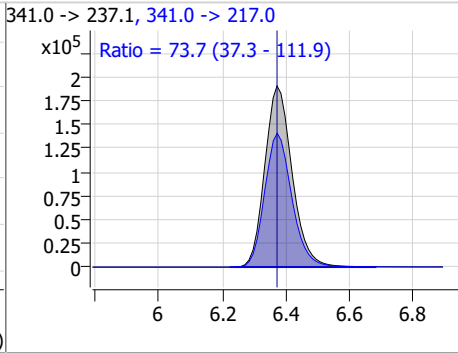
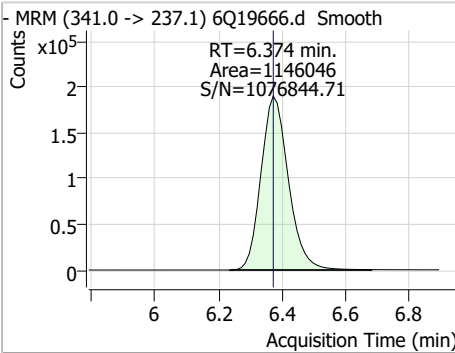
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	15.94	6.17	0.00	79630	284.9 -> 184.9	12.6	5.8	17.5



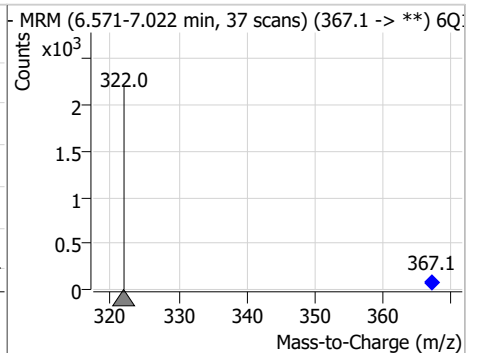
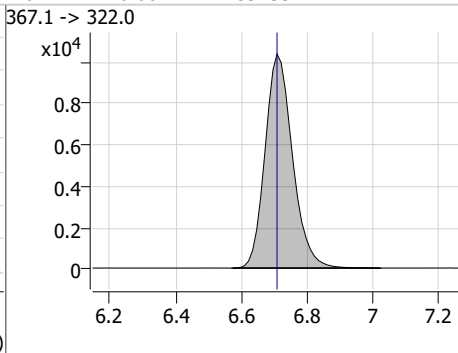
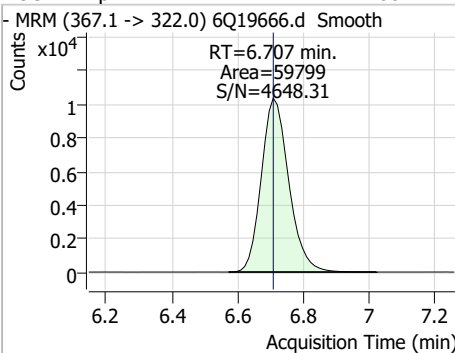
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	17.92	6.29	0.00	616622	314.8 -> 82.9	3.3	1.8	5.3



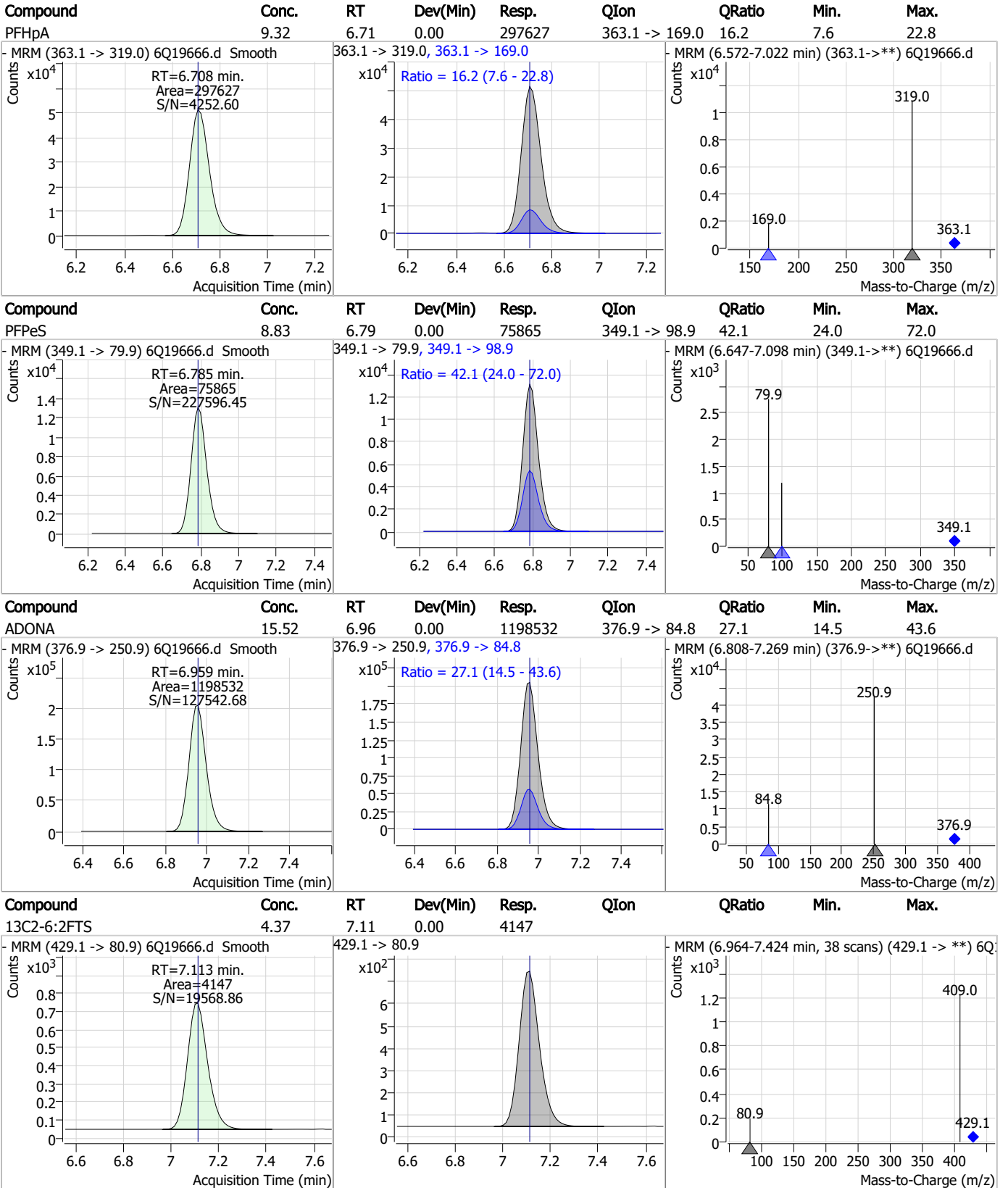
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	226.41	6.37	0.00	1146046	341.0 -> 217.0	73.7	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.68	6.71	0.00	59799	367.1 -> 322.0	-	-	-



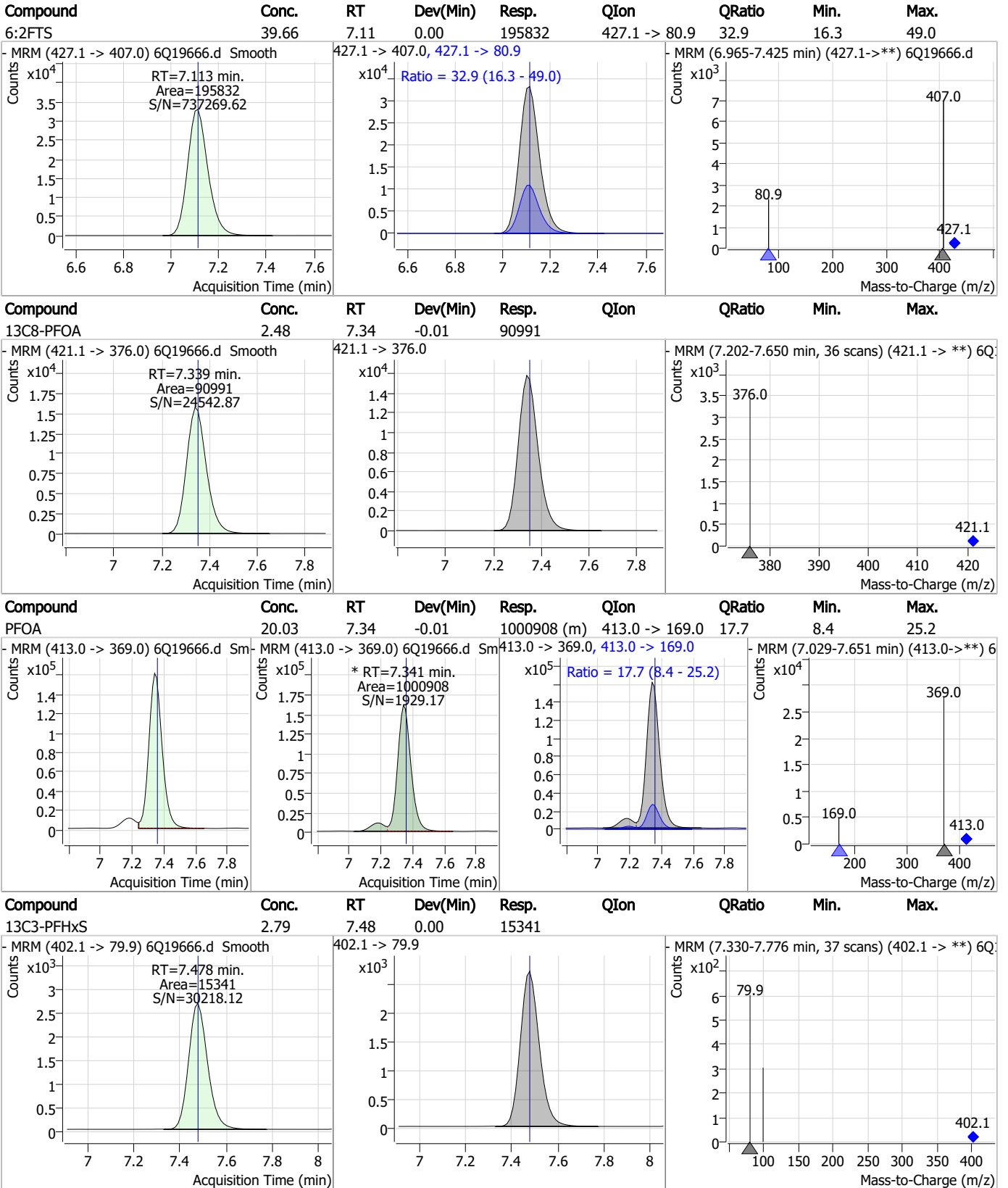
Perfluorinated Compounds by LC/MS/MS



7.6.4

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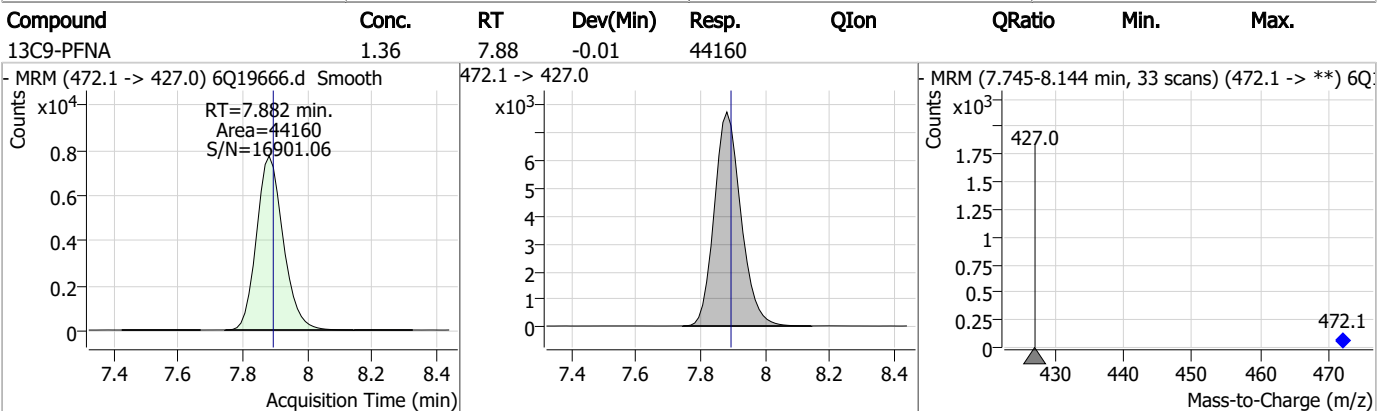
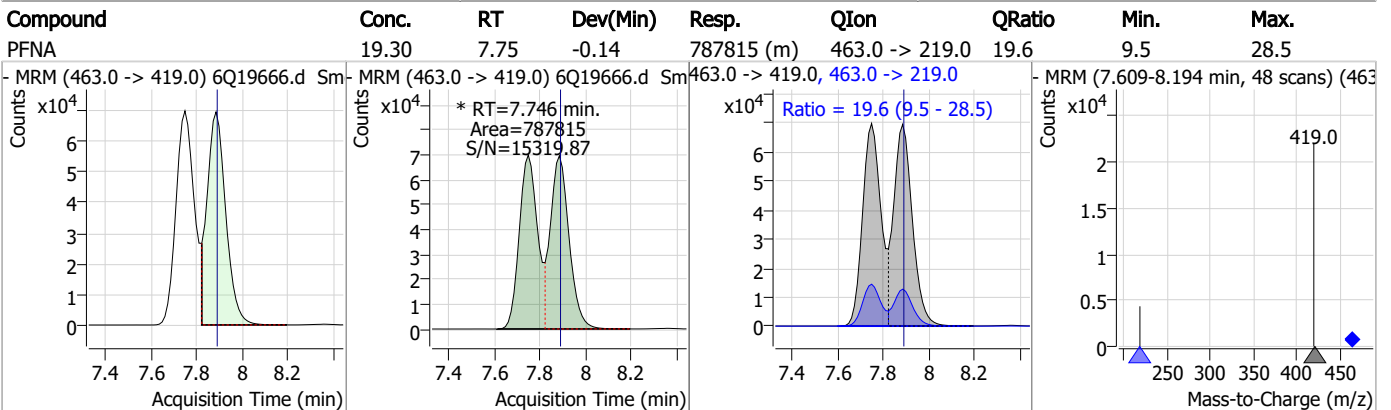
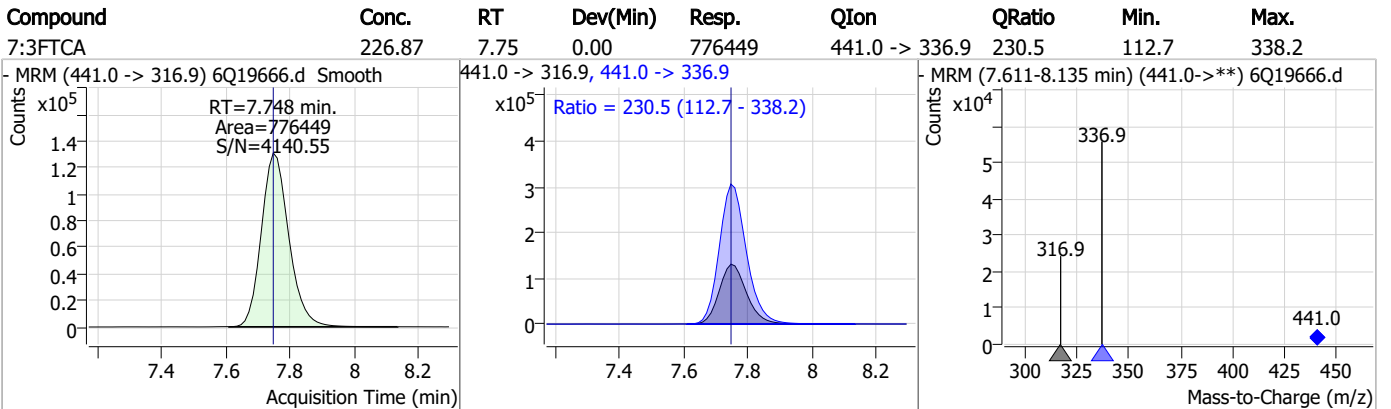
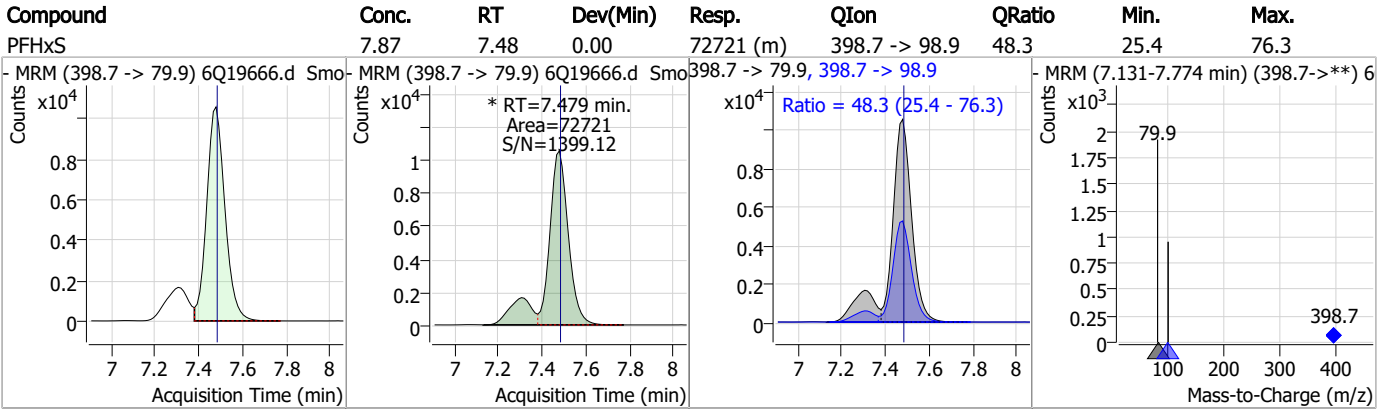
Perfluorinated Compounds by LC/MS/MS



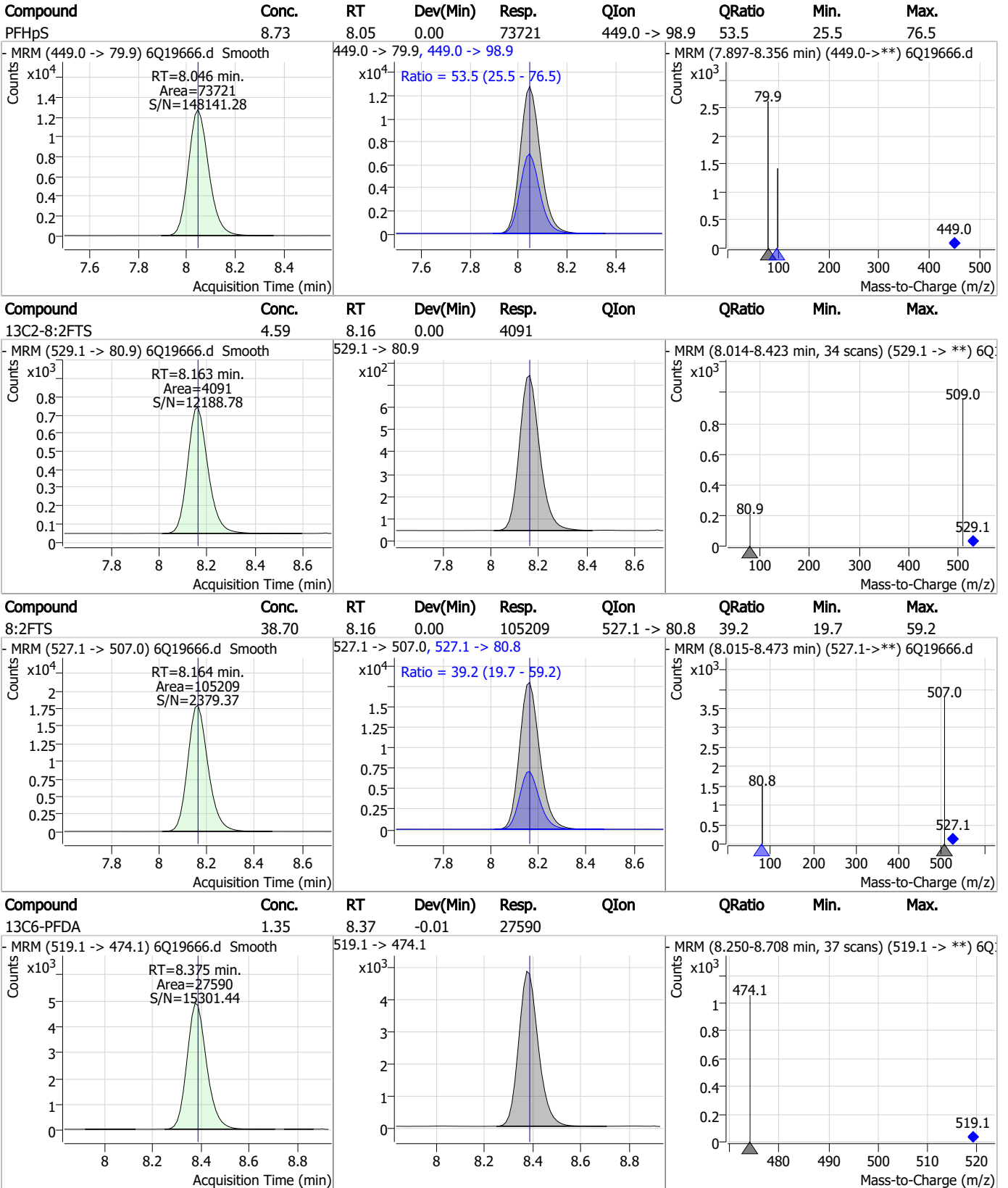
7.6.4

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

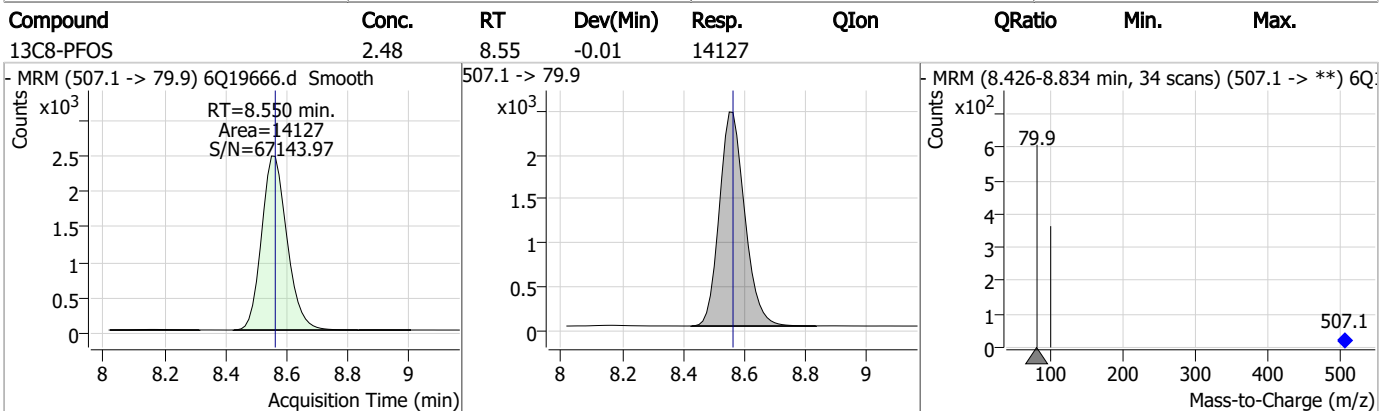
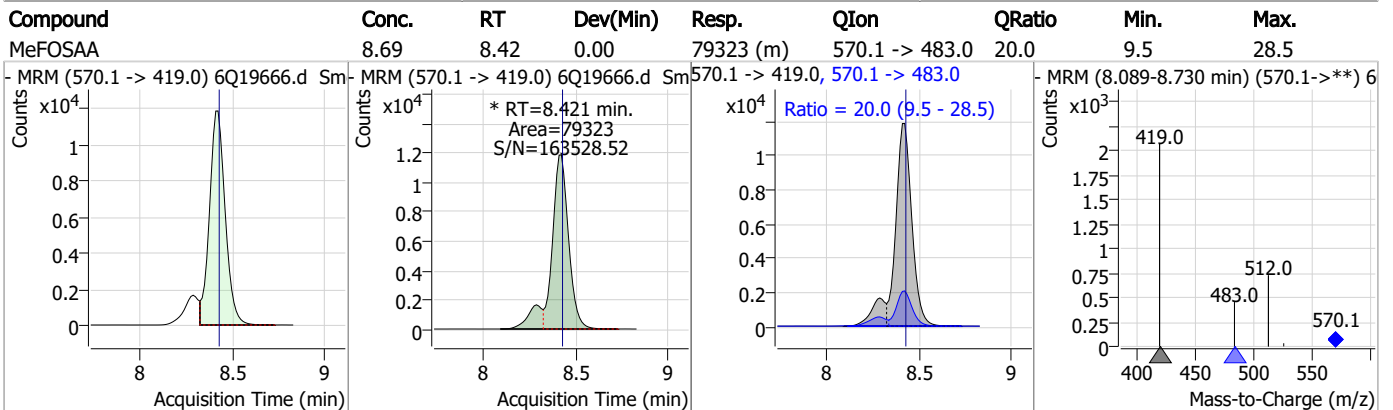
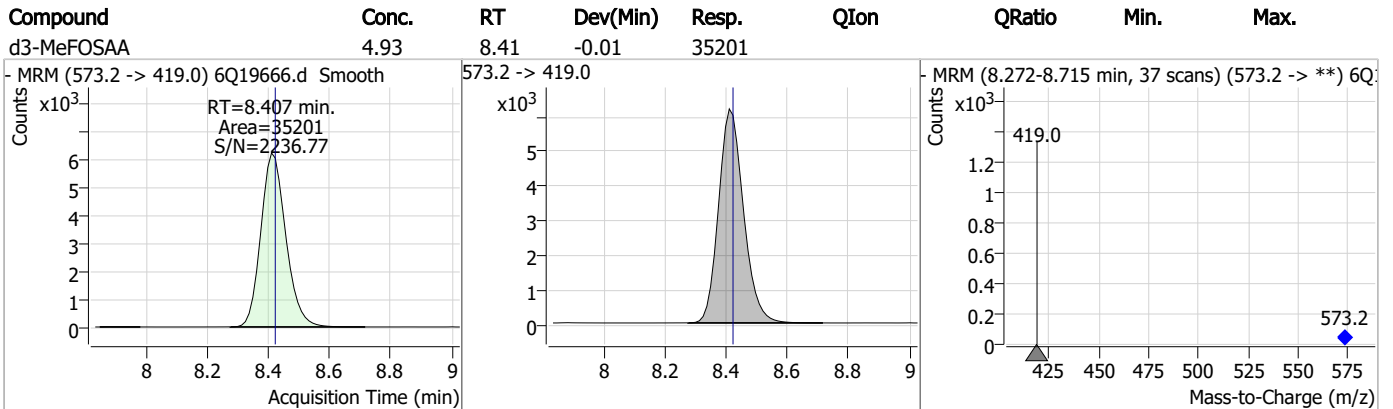
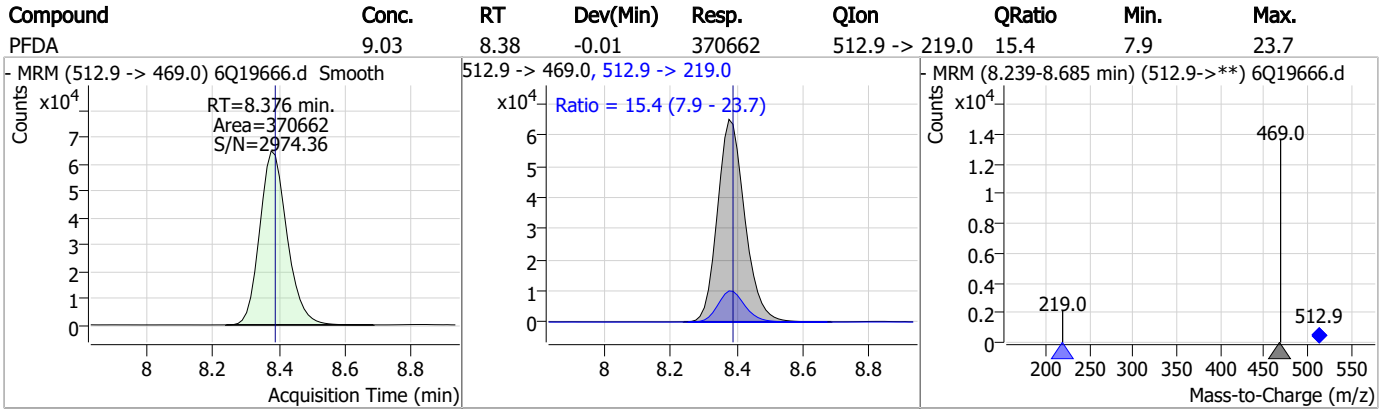


7.6.4

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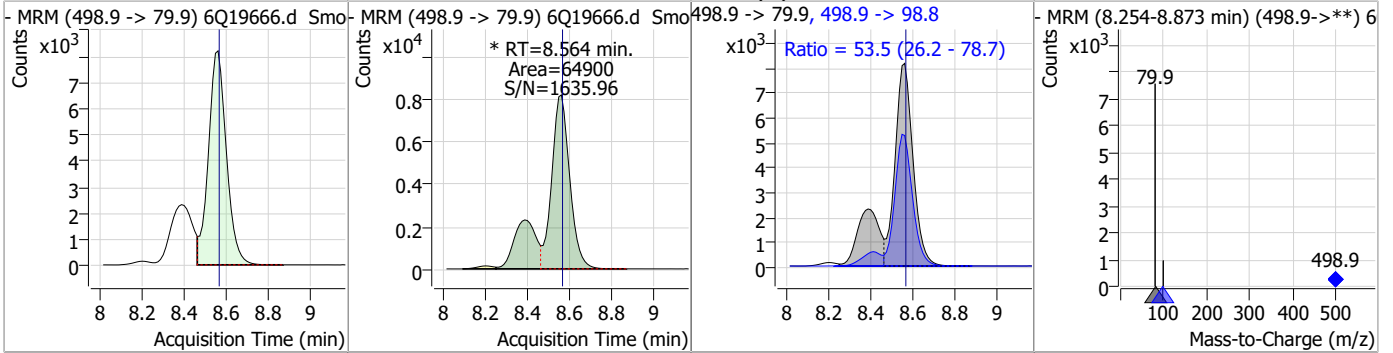


Perfluorinated Compounds by LC/MS/MS

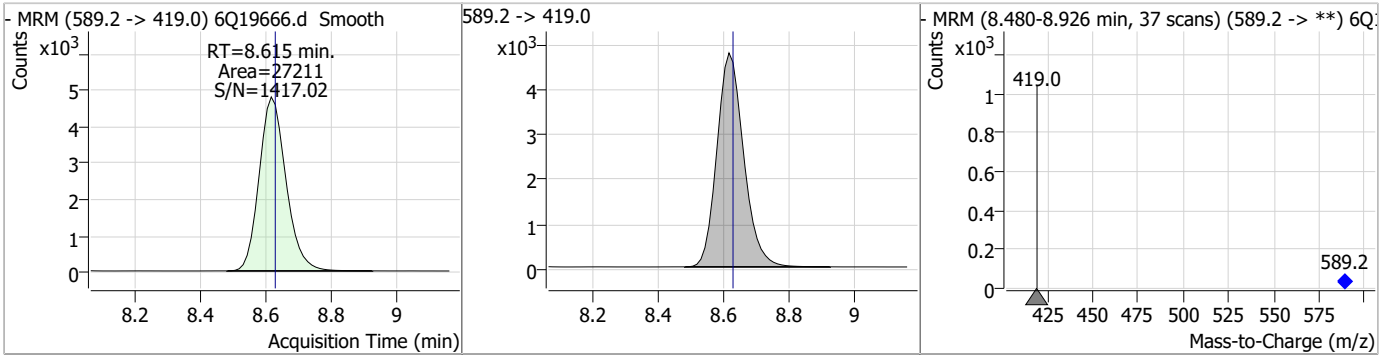


Perfluorinated Compounds by LC/MS/MS

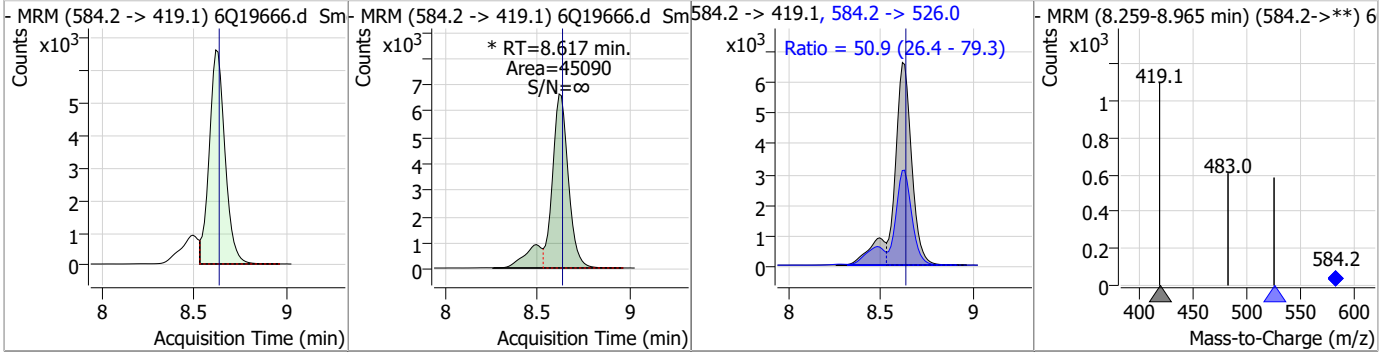
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	7.74	8.56	0.00	64900 (m)	498.9 -> 98.8	53.5	26.2	78.7



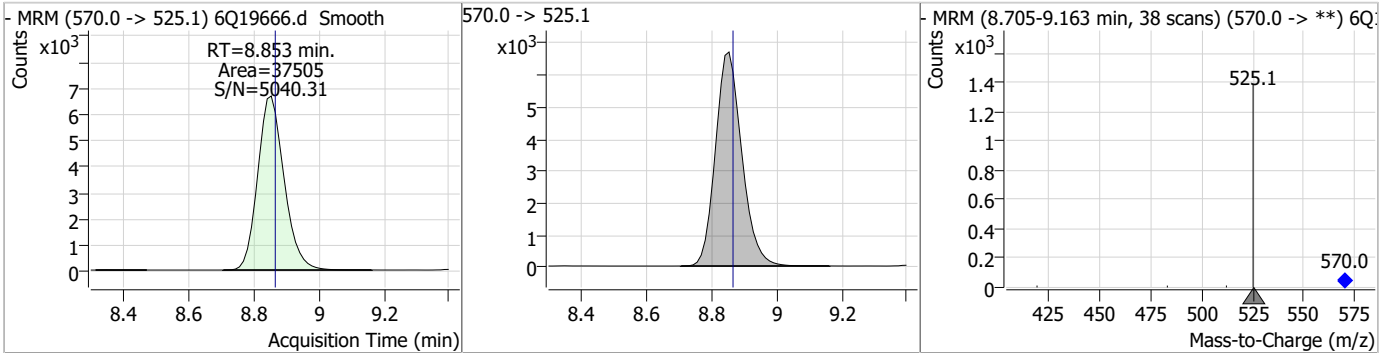
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.49	8.62	-0.01	27211				



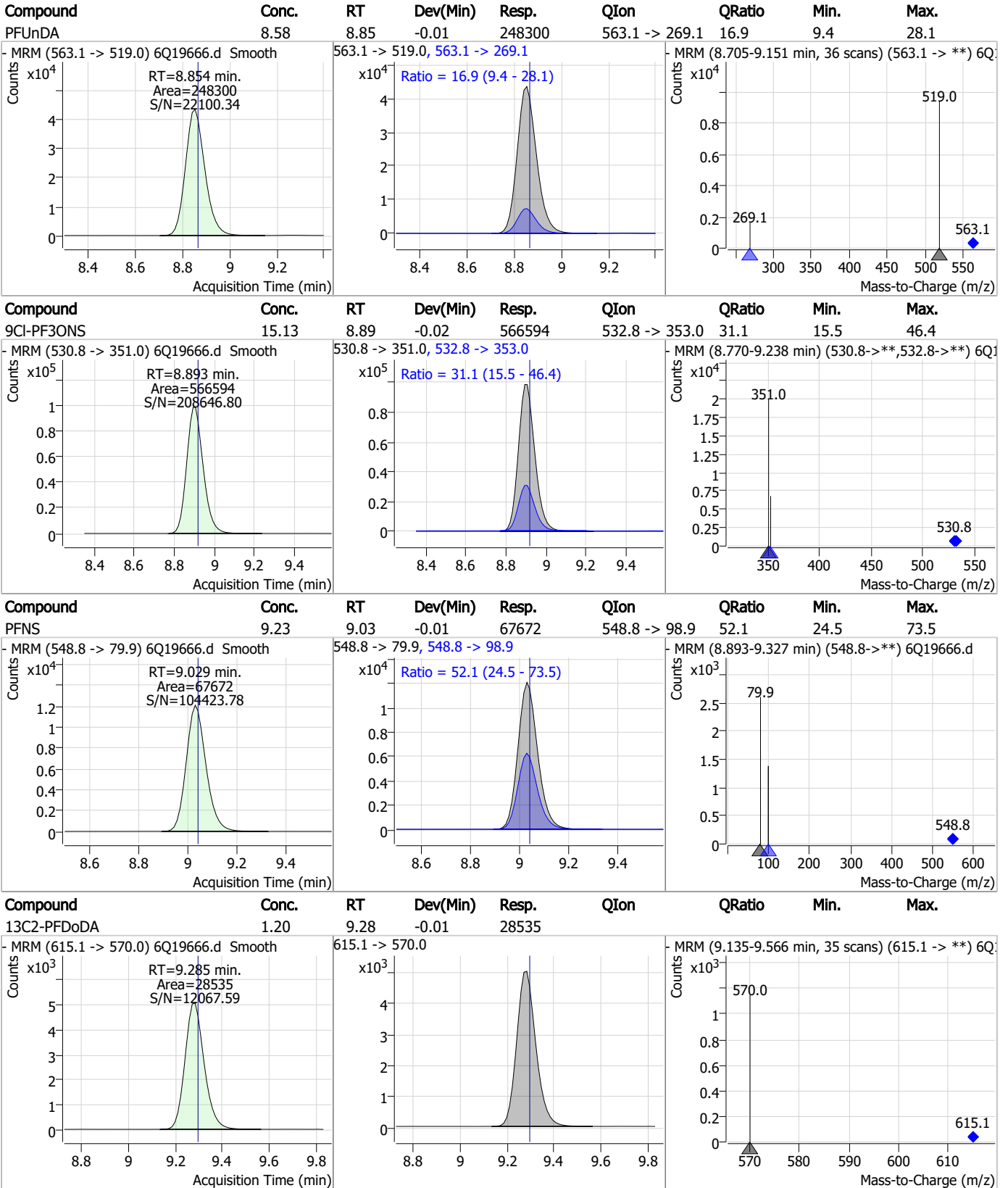
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	9.78	8.62	-0.01	45090 (m)	584.2 -> 526.0	50.9	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.37	8.85	-0.01	37505				



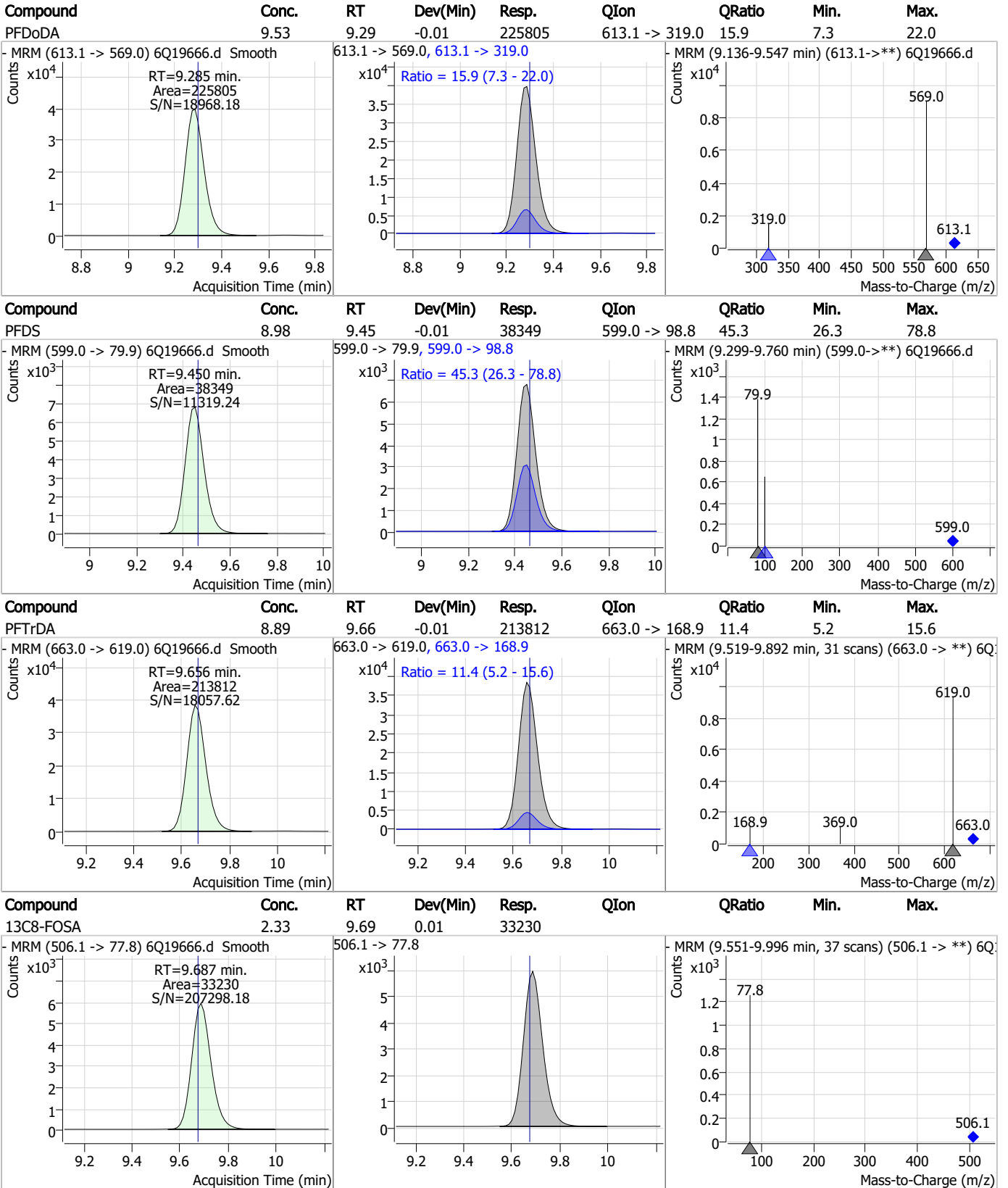
Perfluorinated Compounds by LC/MS/MS



7.6.4

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Perfluorinated Compounds by LC/MS/MS

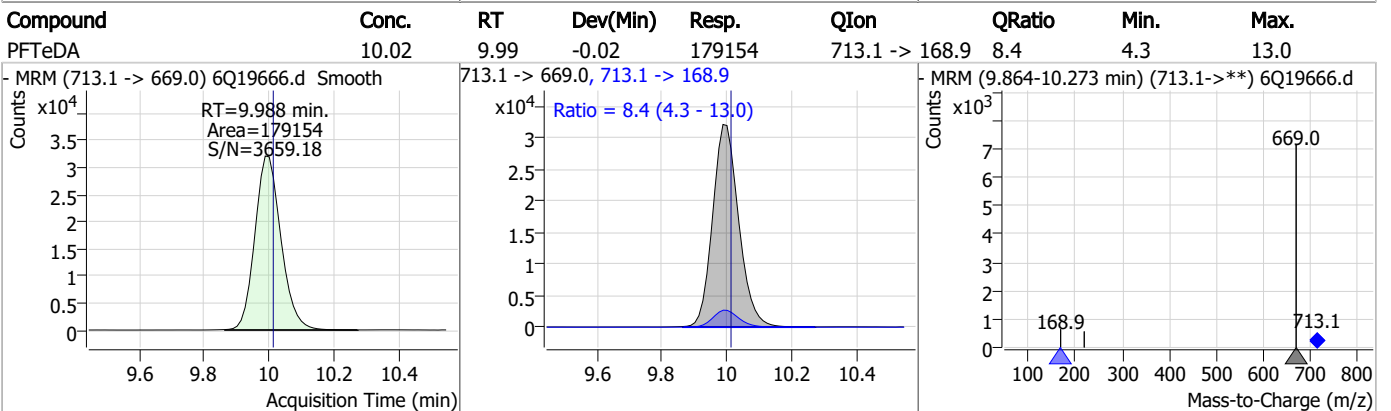
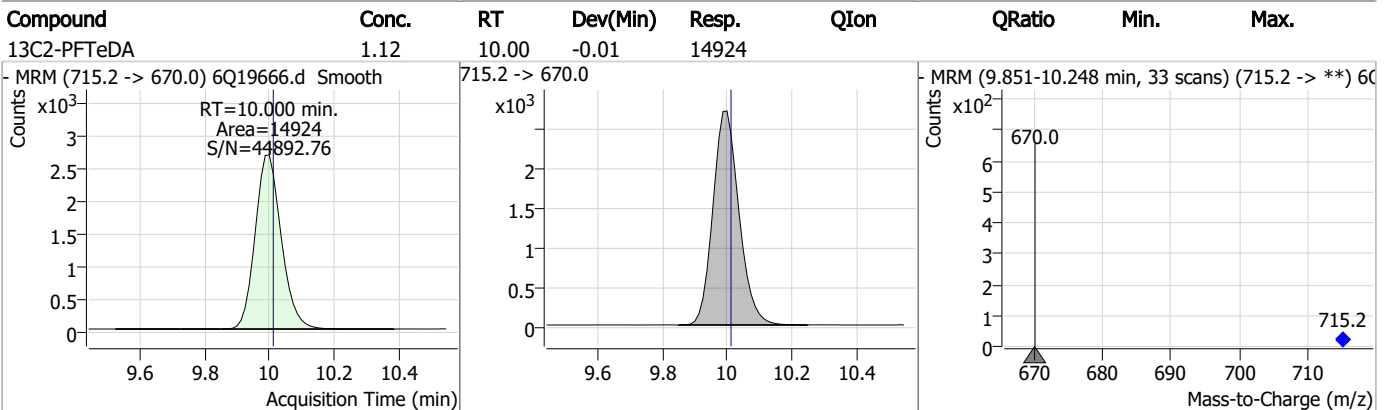
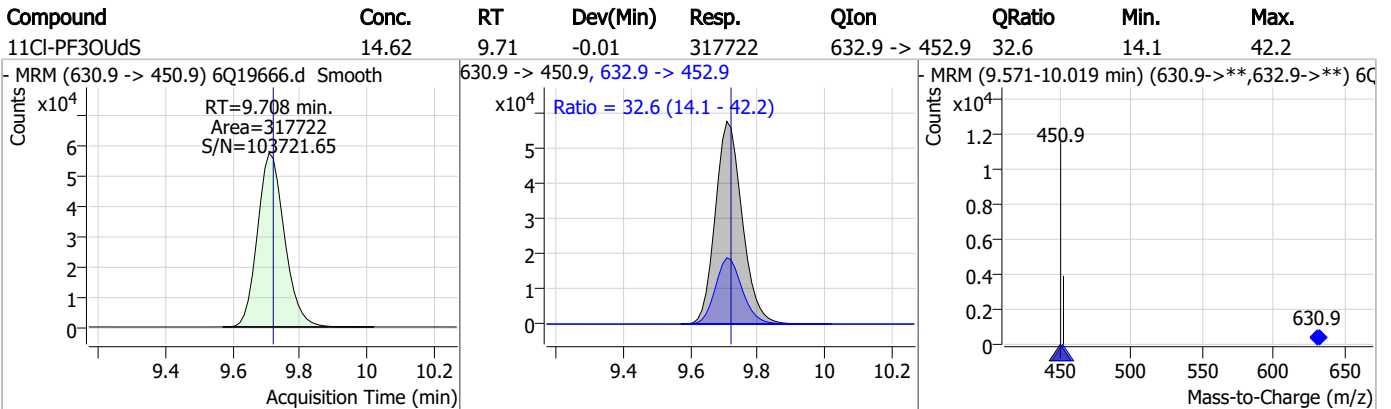
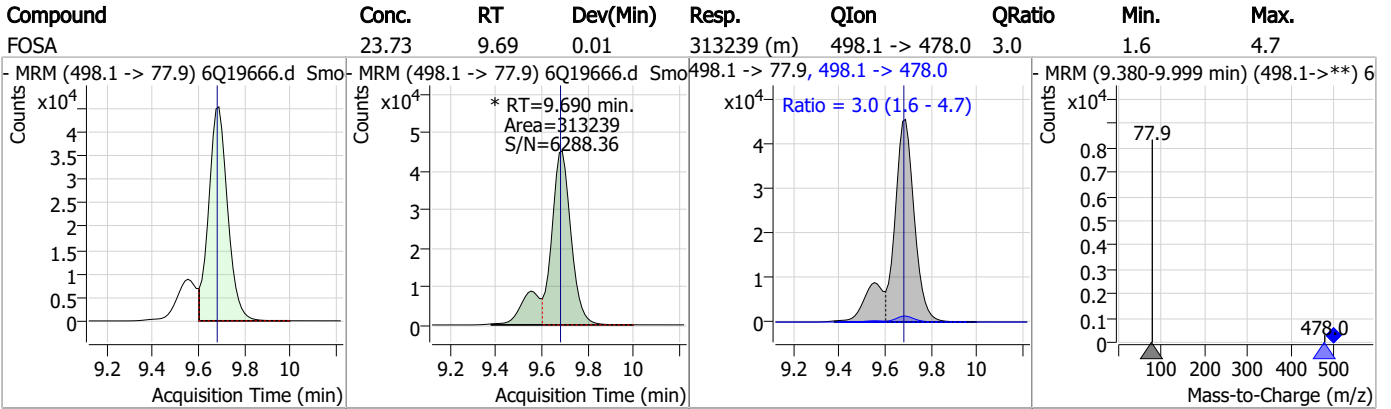


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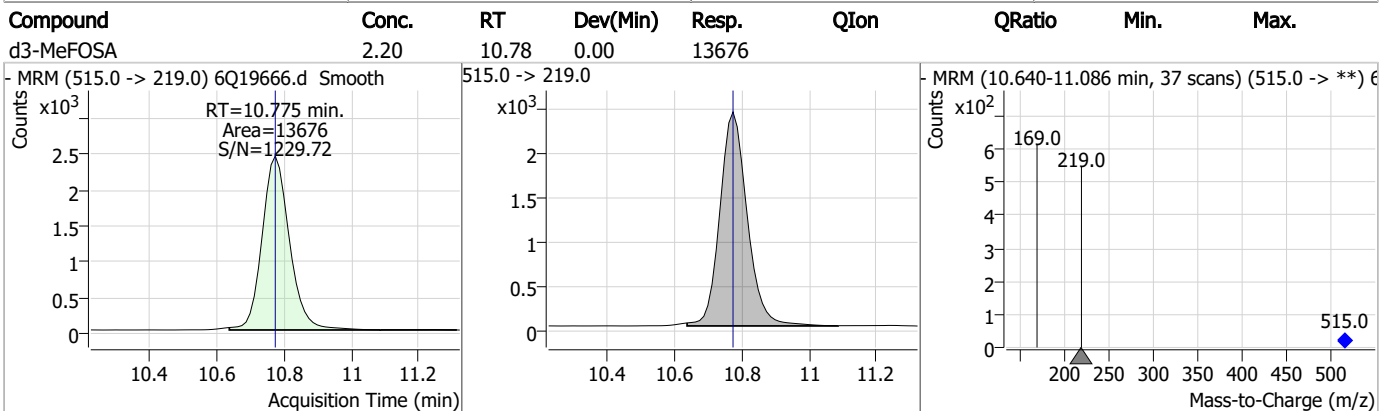
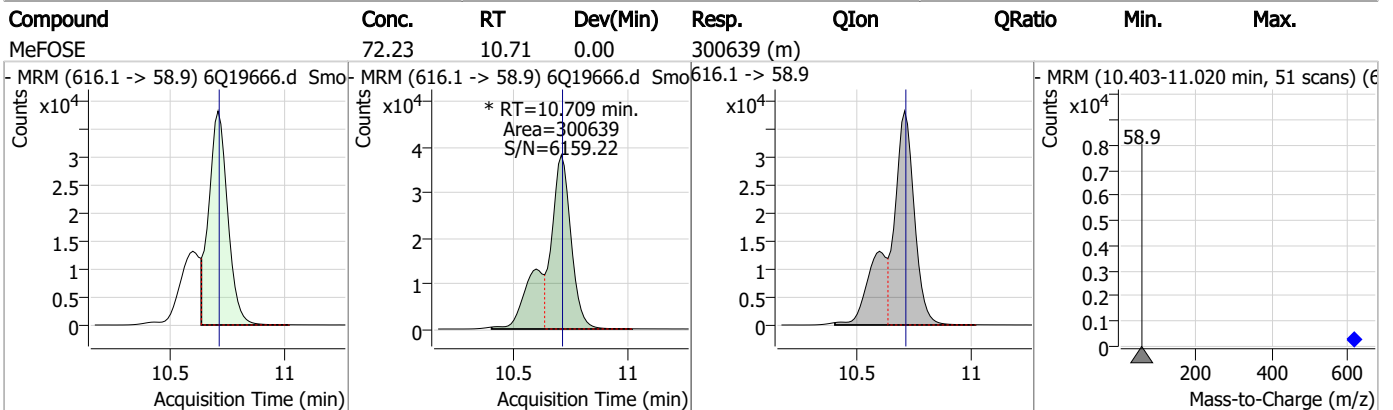
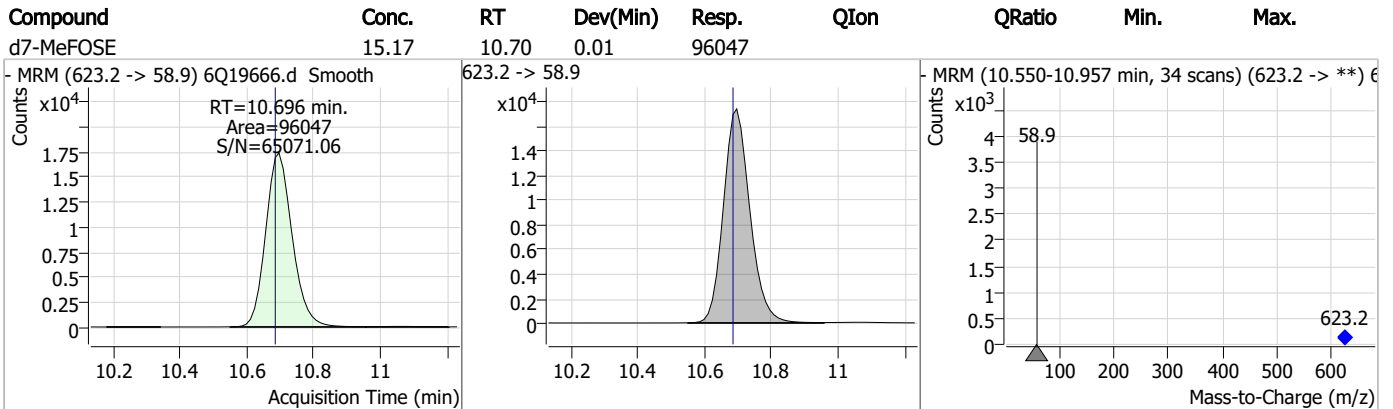
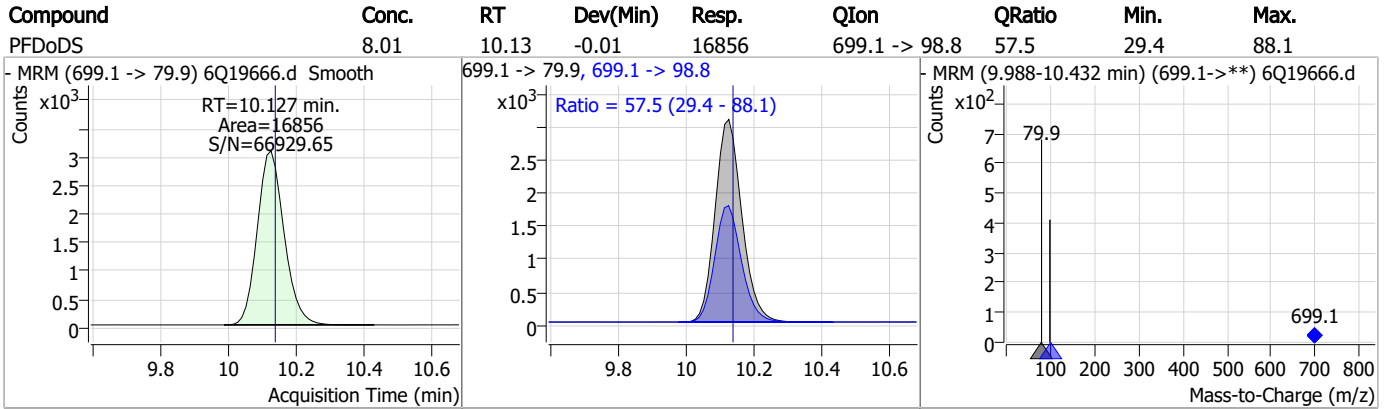
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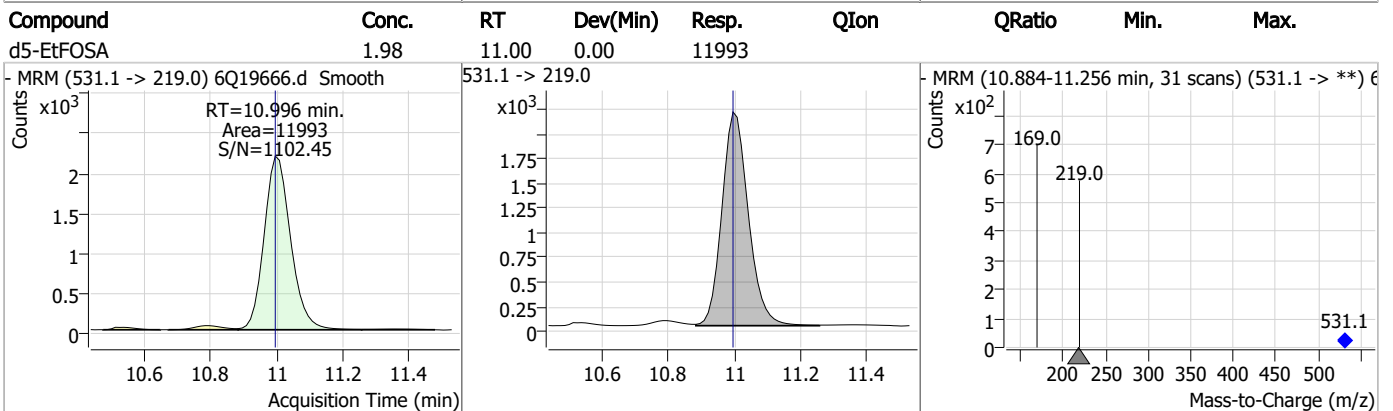
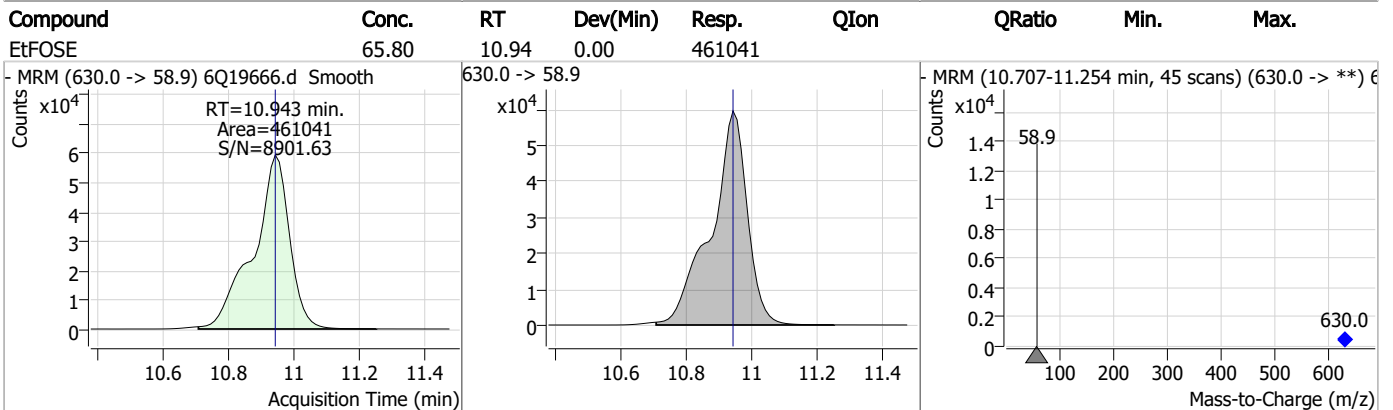
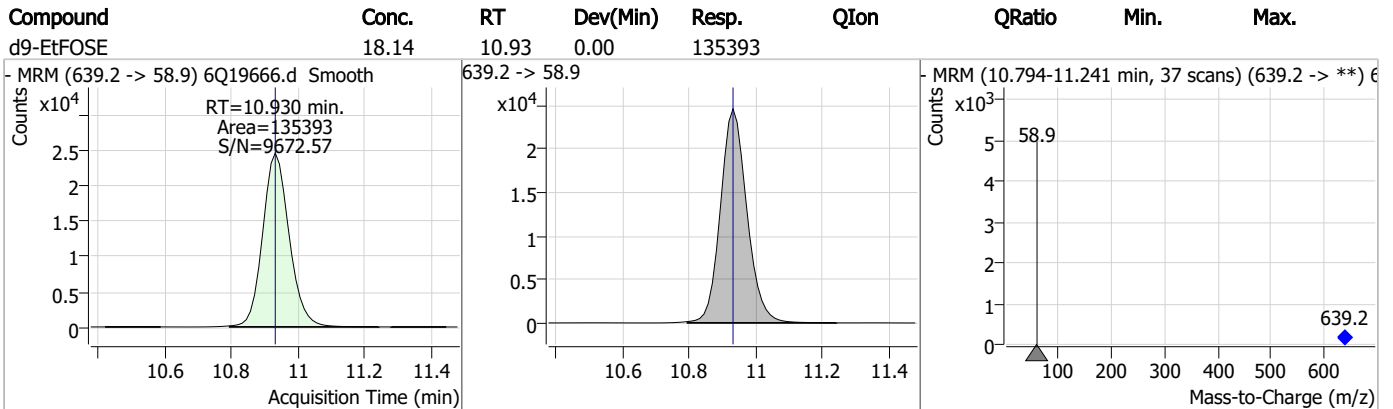
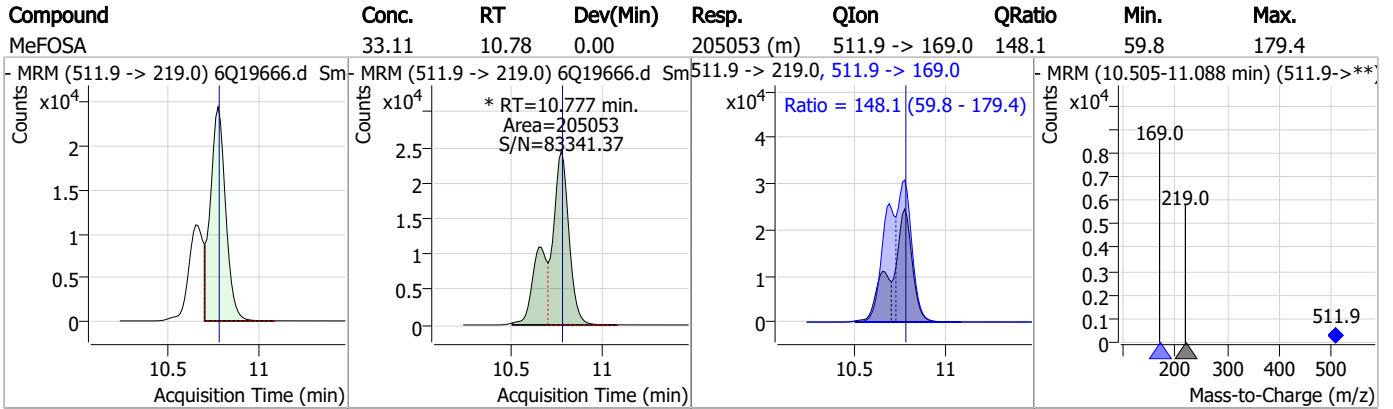
Perfluorinated Compounds by LC/MS/MS



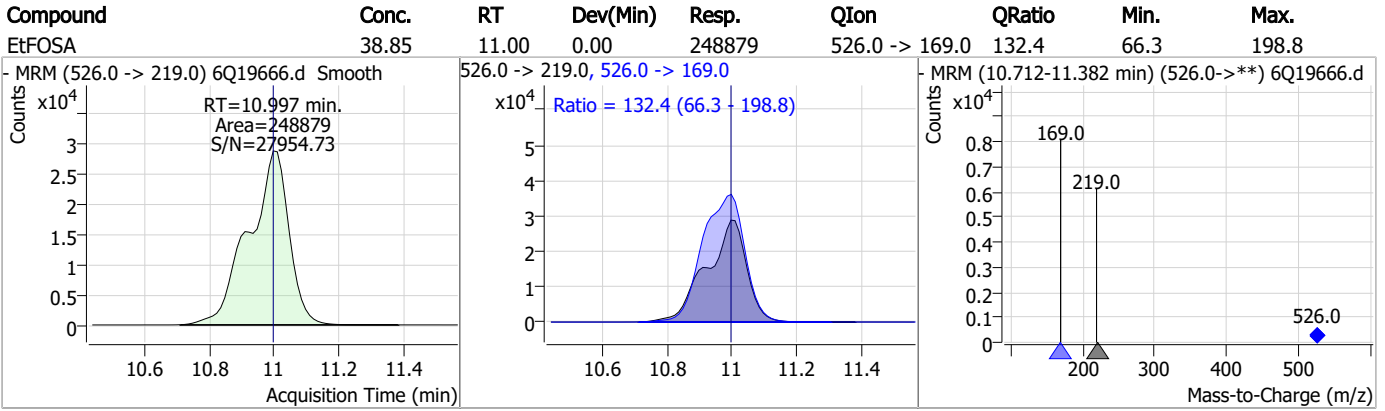
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.4

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Manual Integration Approval Summary

Sample Number: S6Q293-RT Method: EPA DRAFT 1633
Lab FileID: 6Q19666.D Analyst approved: 06/21/23 16:11 Martha Valls
Injection Time: 06/21/23 12:13 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.34	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
Perfluorononanoic acid	375-95-1		7.75	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.62	Split peak
PFOSA	754-91-6		9.69	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	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	12 June 2023 11:10:10
File Path	D:\MassHunter\Tune\QQQ\G6495B\atunes.TUNE.XML
Ion Source	AJS ESI
Ionization Mode	AJS ESI
Tuned Resolution	All
Vacuum Pressure	1.75E+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

7.7.1

7

QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z	m/z	Delta	Result	FWHM	FWHM	Delta	Result	Abundance
Expected	Measured			Expected	Measured			
112.99	112.94	-0.05	Pass	0.70	0.68	-0.02	Pass	505636
302.00	302.00	0.00	Pass	0.70	0.62	-0.08	Pass	1713538
601.98	601.91	-0.07	Pass	0.70	0.63	-0.07	Pass	2651543
1033.99	1033.84	-0.15	Pass	0.70	0.62	-0.08	Pass	1652200
1633.95	1633.75	-0.20	Pass	0.70	0.65	-0.05	Pass	1203916
2233.91	2233.49	-0.42	Adjust	0.70	0.72	0.02	Pass	450099

Analyzer: MS2 Polarity: Negative Width: Unit

m/z	m/z	Delta	Result	FWHM	FWHM	Delta	Result	Abundance
Expected	Measured			Expected	Measured			
69.00	69.02	0.02	Pass	0.70	0.71	0.01	Pass	136298
112.99	112.97	-0.02	Pass	0.70	0.75	0.05	Pass	568475
302.00	301.95	-0.05	Pass	0.70	0.68	-0.02	Pass	1432404
601.98	601.92	-0.06	Pass	0.70	0.68	-0.02	Pass	1573782
1033.99	1033.86	-0.13	Pass	0.70	0.80	0.10	Pass	668021
1633.95	1633.75	-0.20	Pass	0.70	0.72	0.02	Pass	626213
2233.91	2233.65	-0.26	Pass	0.70	0.73	0.03	Pass	238662

Analyzer: MS1 Polarity: Negative Width: Wide

m/z	m/z	Delta	Result	FWHM	FWHM	Delta	Result	Abundance
Expected	Measured			Expected	Measured			
112.99	112.93	-0.06	Pass	1.20	1.24	0.04	Pass	551558
302.00	301.92	-0.08	Pass	1.20	1.36	0.16	Pass	1926886
601.98	601.92	-0.06	Pass	1.20	1.47	0.27	Pass	3639494
1033.99	1033.80	-0.19	Pass	1.20	1.42	0.22	Pass	2675380
1633.95	1633.67	-0.28	Pass	1.20	1.43	0.23	Pass	1854895
2233.91	2233.61	-0.30	Pass	1.20	1.44	0.24	Pass	889574

Analyzer: MS2 Polarity: Negative Width: Wide

m/z	m/z	Delta	Result	FWHM	FWHM	Delta	Result	Abundance
Expected	Measured			Expected	Measured			
69.00	69.00	0.00	Pass	1.20	1.06	-0.14	Pass	187295
112.99	112.95	-0.04	Pass	1.20	1.17	-0.03	Pass	689310
302.00	301.93	-0.07	Pass	1.20	1.10	-0.10	Pass	1593512
601.98	601.87	-0.11	Pass	1.20	1.35	0.15	Pass	2900281
1033.99	1033.80	-0.19	Pass	1.20	1.34	0.14	Pass	1283499
1633.95	1633.70	-0.25	Pass	1.20	1.34	0.14	Pass	1424585
2233.91	2233.57	-0.34	Pass	1.20	1.24	0.04	Pass	536341

Analyzer: MS1 Polarity: Negative Width: Widest

m/z	m/z	Delta	Result	FWHM	FWHM	Delta	Result	Abundance
Expected	Measured			Expected	Measured			
112.99	112.89	-0.10	Pass	2.50	2.43	-0.07	Pass	635982
302.00	301.79	-0.21	Pass	2.50	2.58	0.08	Pass	2260761
601.98	601.84	-0.14	Pass	2.50	2.68	0.18	Pass	4333703
1033.99	1033.78	-0.21	Pass	2.50	2.53	0.03	Pass	3946646
1633.95	1633.60	-0.35	Pass	2.50	2.40	-0.10	Pass	3760339
2233.91	2233.47	-0.44	Pass	2.50	2.39	-0.11	Pass	2129248

Analyzer: MS2 Polarity: Negative Width: Widest

m/z	m/z	Delta	Result	FWHM	FWHM	Delta	Result	Abundance
Expected	Measured			Expected	Measured			
69.00	68.94	-0.06	Pass	2.50	2.52	0.02	Pass	211683
112.99	112.90	-0.09	Pass	2.50	2.58	0.08	Pass	913590
302.00	301.94	-0.06	Pass	2.50	2.42	-0.08	Pass	3054825
601.98	601.90	-0.08	Pass	2.50	2.65	0.15	Pass	3596588
1033.99	1033.90	-0.09	Pass	2.50	2.77	0.27	Pass	2872723
1633.95	1633.61	-0.34	Pass	2.50	2.44	-0.06	Pass	3054172
2233.91	2233.67	-0.24	Pass	2.50	2.44	-0.06	Pass	1493945

7.7.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19295.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 11:35:49 AM
 Sample Name : ic288-1
 Vial : P1-A2
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	148066	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	48312	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	51360	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	48710	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	79165	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	35005	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	23124	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	30863	1.25 µg/L	-0.012
M2-PFDoDA	9.297	615.1 -> 570.0	25185	1.25 µg/L	0.000
M2-PFTeDA	10.012	715.2 -> 670.0	13765	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	30069	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	18260	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	11997	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	12019	2.50 µg/L	0.000
M2-4:2FTS	5.454	329.1 -> 80.9	3282	5.00 µg/L	0.012
M2-6:2FTS	7.113	429.1 -> 80.9	4418	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4068	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	29480	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	33087	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	25062	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	127890	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	154865	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11648	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11529	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	15078	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	63464	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	9612	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	84092	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	31173	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	44099	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	52525	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.454	329.1 -> 80.9	3282	5.69 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.8%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4418	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4068	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-PFDoDA	9.297	615.1 -> 570.0	25185	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-PFTeDA	10.012	715.2 -> 670.0	13765	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C3-PFBS	5.746	302.1 -> 79.9	18260	2.28 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.3%		
13C3-PFHxS	7.478	402.1 -> 79.9	11997	2.38 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 = 95.0%	
13C4-PFBA	3.085	216.8 -> 171.9	148066	9.94 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C4-PFHpA	6.707	367.1 -> 322.0	48710	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C5-PFHxA	5.792	318.0 -> 273.0	51360	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C5-PFPeA	4.560	268.3 -> 223.0	48312	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C6-PFDA	8.387	519.1 -> 474.1	23124	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C7-PFUnDA	8.853	570.0 -> 525.1	30863	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C8-FOSA	9.674	506.1 -> 77.8	30069	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C8-PFOA	7.339	421.1 -> 376.0	79165	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C8-PFOS	8.563	507.1 -> 79.9	12019	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C9-PFNA	7.882	472.1 -> 427.0	35005	1.30 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.3%	
d3-MeFOSAA	8.407	573.2 -> 419.0	29480	5.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	33087	9.12 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.2%	
d3-MeFOSA	10.775	515.0 -> 219.0	11529	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.9%	
d5-EtFOSAA	8.615	589.2 -> 419.0	25062	5.18 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d7-MeFOSE	10.685	623.2 -> 58.9	127890	25.28 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d9-EtFOSE	10.930	639.2 -> 58.9	154865	25.96 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d5-EtFOSA	10.996	531.1 -> 219.0	11648	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
Target Compounds					QValue
4:2FTS	5.455	327.1 -> 307.0	5062	0.89 µg/L	96
		327.1 -> 80.9	1758		
6:2FTS	7.113	427.1 -> 407.0	4992	0.95 µg/L	95
		427.1 -> 80.9	1777		
8:2FTS	8.164	527.1 -> 507.0	2538	0.94 µg/L	99
		527.1 -> 80.8	1020		
EtFOSAA	8.629	584.2 -> 419.1	986	0.23 µg/L	m 88
		584.2 -> 526.0	604		
FOSA	9.677	498.1 -> 77.9	2663	0.22 µg/L	97
		498.1 -> 478.0	113		
MeFOSAA	8.421	570.1 -> 419.0	1706	0.22 µg/L	m 97
		570.1 -> 483.0	299		
PFBA	3.093	212.8 -> 168.9	5578	0.93 µg/L	100
PFBS	5.747	298.7 -> 79.9	1677	0.21 µg/L	96
		298.7 -> 98.8	676		
PFDA	8.388	512.9 -> 469.0	7735	0.22 µg/L	95
		512.9 -> 219.0	1045		
PFDODA	9.285	613.1 -> 569.0	4894	0.23 µg/L	98
		613.1 -> 319.0	749		
PFDS	9.450	599.0 -> 79.9	807	0.22 µg/L	98

7.7.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	412			
PFHpA	6.708	363.1 -> 319.0	6417	0.25	µg/L	97
		363.1 -> 169.0	1043			
PFHpS	8.046	449.0 -> 79.9	1498	0.21	µg/L	89
		449.0 -> 98.9	646			
PFHxA	5.795	313.0 -> 269.0	5272	0.25	µg/L	97
		313.0 -> 118.9	329			
PFHxS	7.479	398.7 -> 79.9	1670	0.23	µg/L	m 90
		398.7 -> 98.9	729			
PFNA	7.883	463.0 -> 419.0	7692	0.24	µg/L	98
		463.0 -> 219.0	1406			
PFNS	9.041	548.8 -> 79.9	1362	0.22	µg/L	96
		548.8 -> 98.9	703			
PFOA	7.353	413.0 -> 369.0	10866	0.25	µg/L	97
		413.0 -> 169.0	1697			
PFOS	8.564	498.9 -> 79.9	1576	0.22	µg/L	m 95
		498.9 -> 98.8	772			
PFPeA	4.563	263.0 -> 219.0	6809	0.48	µg/L	100
PFPeS	6.785	349.1 -> 79.9	1535	0.23	µg/L	98
		349.1 -> 98.9	758			
PFTeDA	10.013	713.1 -> 669.0	3992	0.24	µg/L	100
		713.1 -> 168.9	349			
PFTrDA	9.669	663.0 -> 619.0	4947	0.23	µg/L	98
		663.0 -> 168.9	555			
PFUnDA	8.854	563.1 -> 519.0	5275	0.22	µg/L	93
		563.1 -> 269.1	828			
11CI-PF3OUdS	9.721	630.9 -> 450.9	6442	0.43	µg/L	87
		632.9 -> 452.9	2257			
9CI-PF3ONS	8.906	530.8 -> 351.0	12317	0.47	µg/L	99
		532.8 -> 353.0	3724			
ADONA	6.959	376.9 -> 250.9	24260	0.45	µg/L	98
		376.9 -> 84.8	6853			
HFPO-DA	6.169	284.9 -> 168.9	1762	0.51	µg/L	97
		284.9 -> 184.9	228			
3:3FTCA	3.958	241.0 -> 177.0	1102	1.14	µg/L	99
		241.0 -> 117.0	146			
5:3FTCA	6.374	341.0 -> 237.1	25660	6.23	µg/L	96
		341.0 -> 217.0	18255			
7:3FTCA	7.748	441.0 -> 316.9	16545	5.94	µg/L	94
		441.0 -> 336.9	38793			
EtFOSA	10.997	526.0 -> 219.0	3074	0.49	µg/L	89
		526.0 -> 169.0	3668			
EtFOSE	10.943	630.0 -> 58.9	9139	1.14	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	2669	0.51	µg/L	m 87
		511.9 -> 169.0	3591			
MeFOSE	10.709	616.1 -> 58.9	6522	1.18	µg/L	m 100
PFDoDS	10.139	699.1 -> 79.9	397	0.22	µg/L	98
		699.1 -> 98.8	228			
NFDHA	5.673	295.0 -> 201.0	1246	0.47	µg/L	98
		295.0 -> 84.9	348			
PFMBA	4.988	279.0 -> 85.1	4643	0.46	µg/L	100
PFMPA	3.667	229.0 -> 84.9	3706	0.47	µg/L	100
PFEESA	6.288	314.8 -> 134.9	11738	0.42	µg/L	99
		314.8 -> 82.9	378			

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

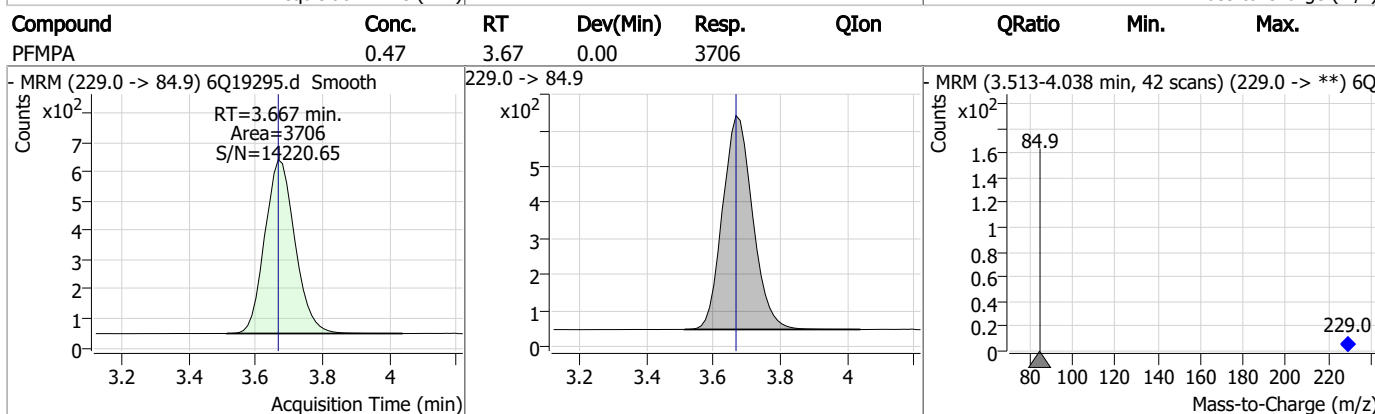
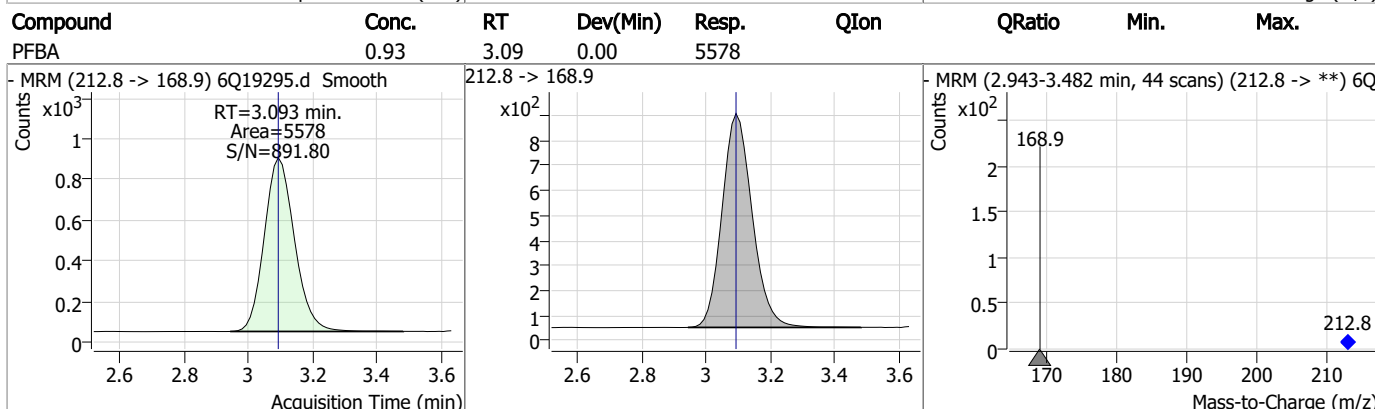
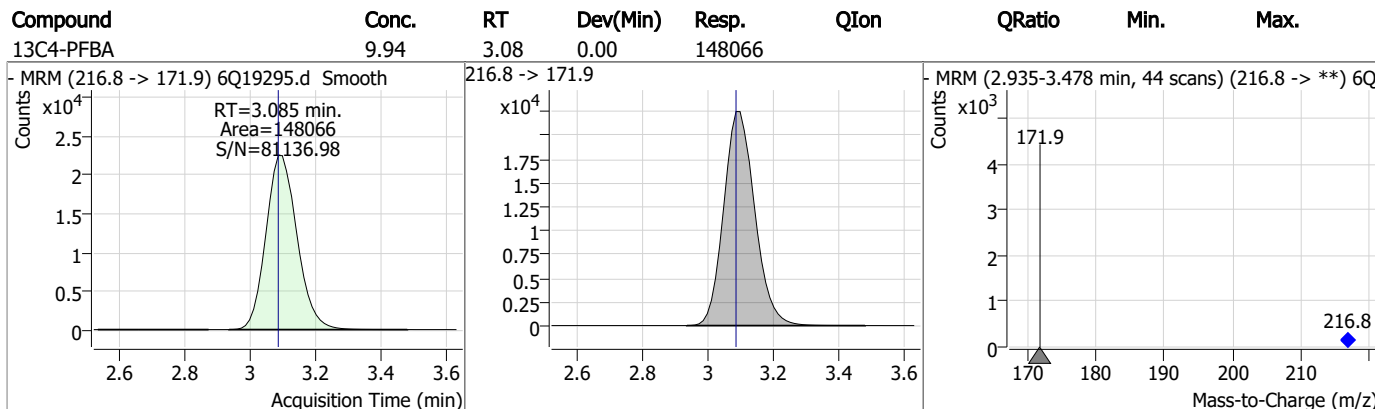
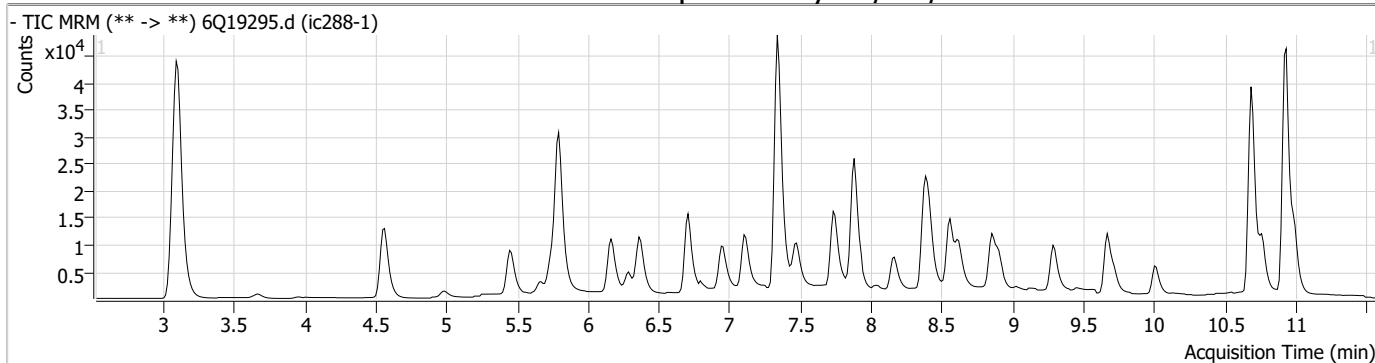
Perfluorinated Compounds by LC/MS/MS

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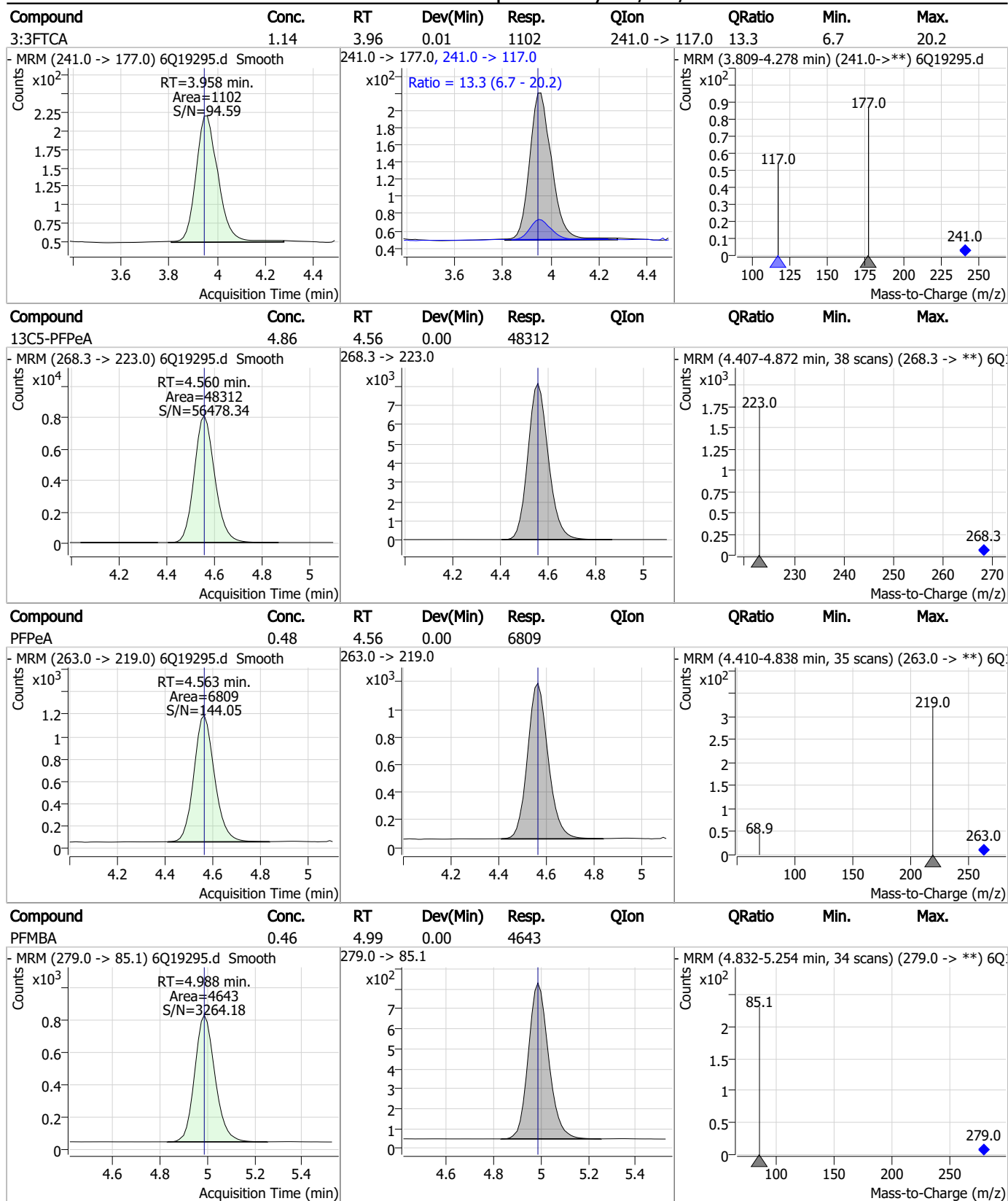


Perfluorinated Compounds by LC/MS/MS



7.7.2
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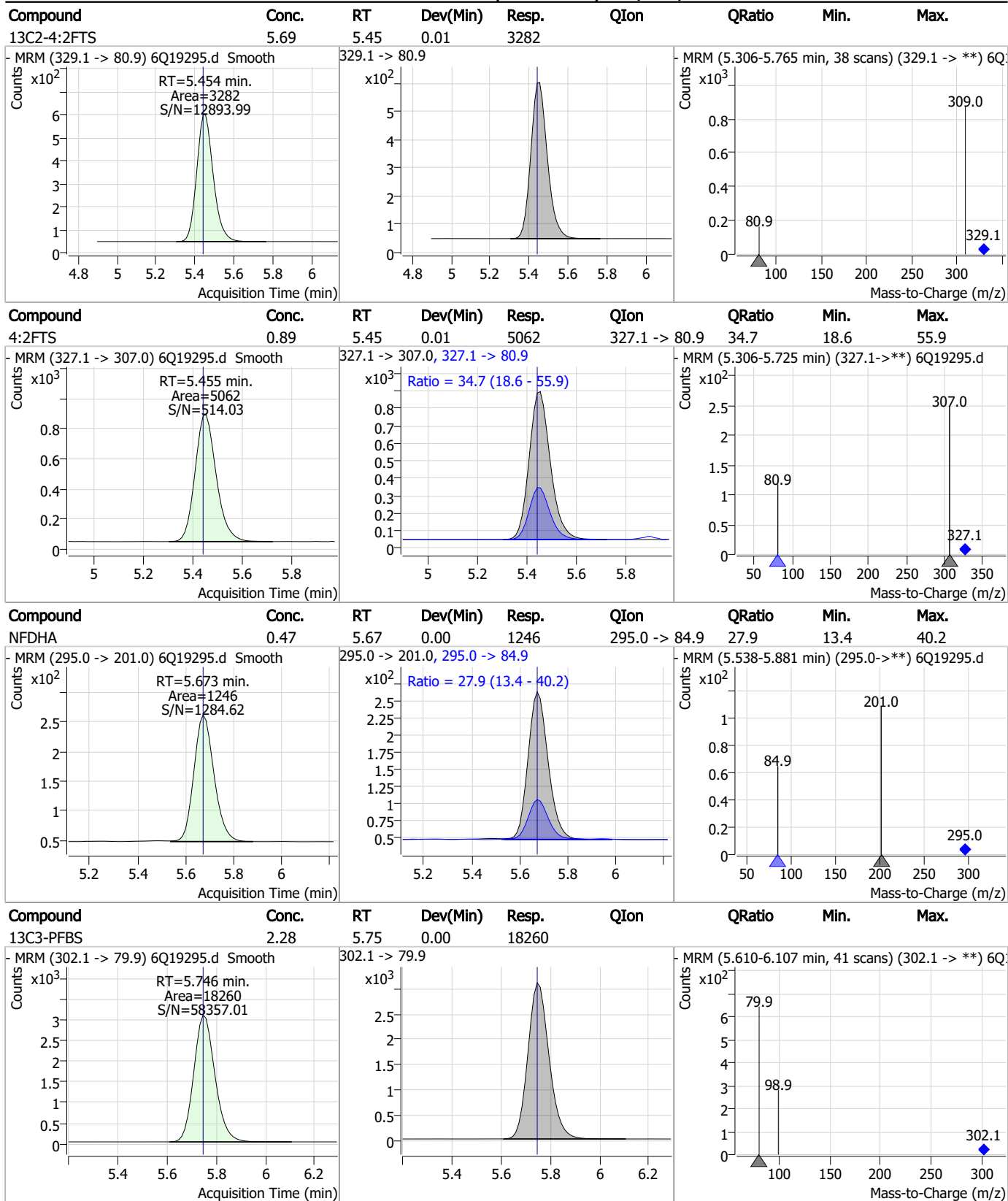
Perfluorinated Compounds by LC/MS/MS



7.7.2
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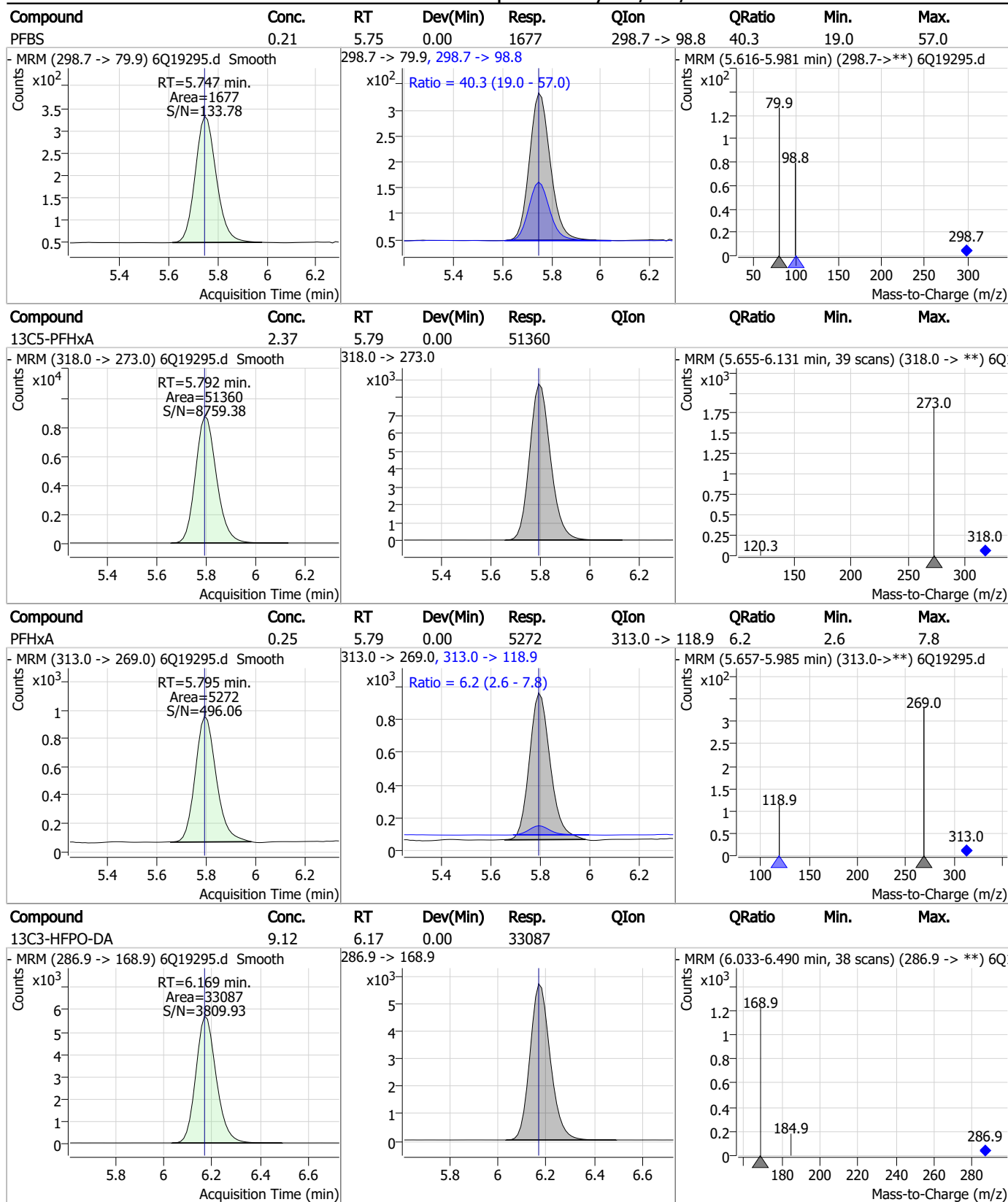


Perfluorinated Compounds by LC/MS/MS



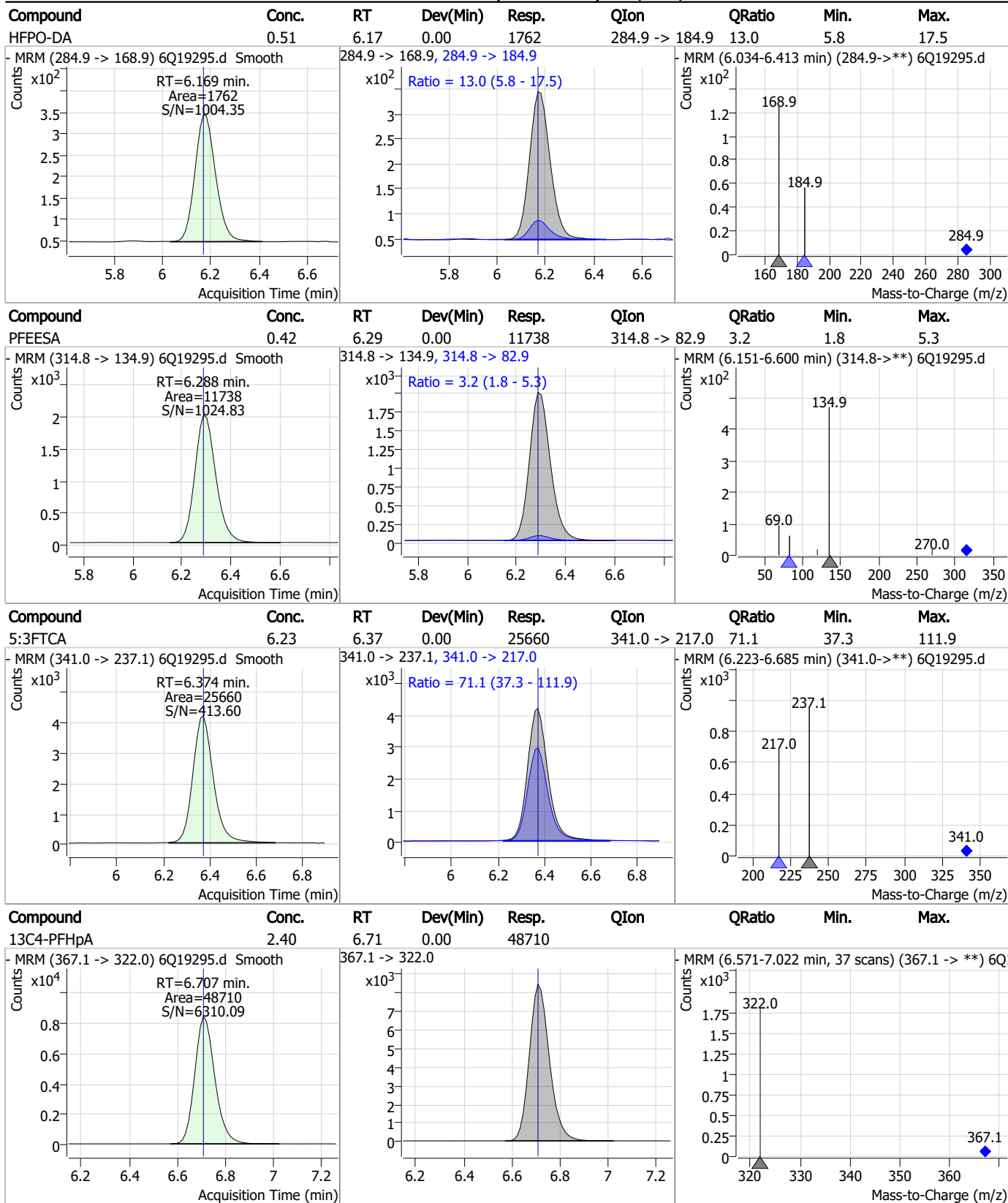
7.7.2
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Perfluorinated Compounds by LC/MS/MS



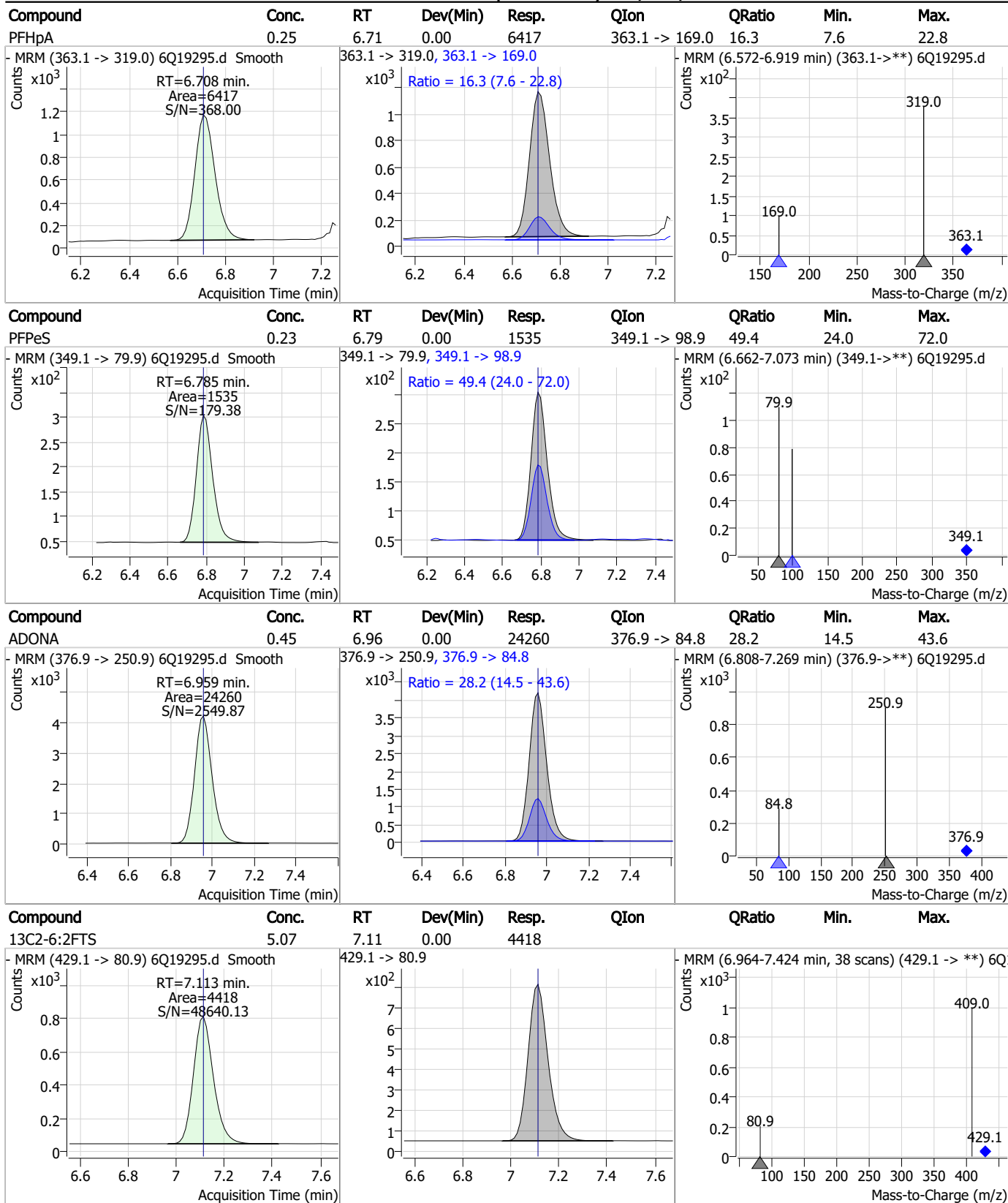
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Perfluorinated Compounds by LC/MS/MS



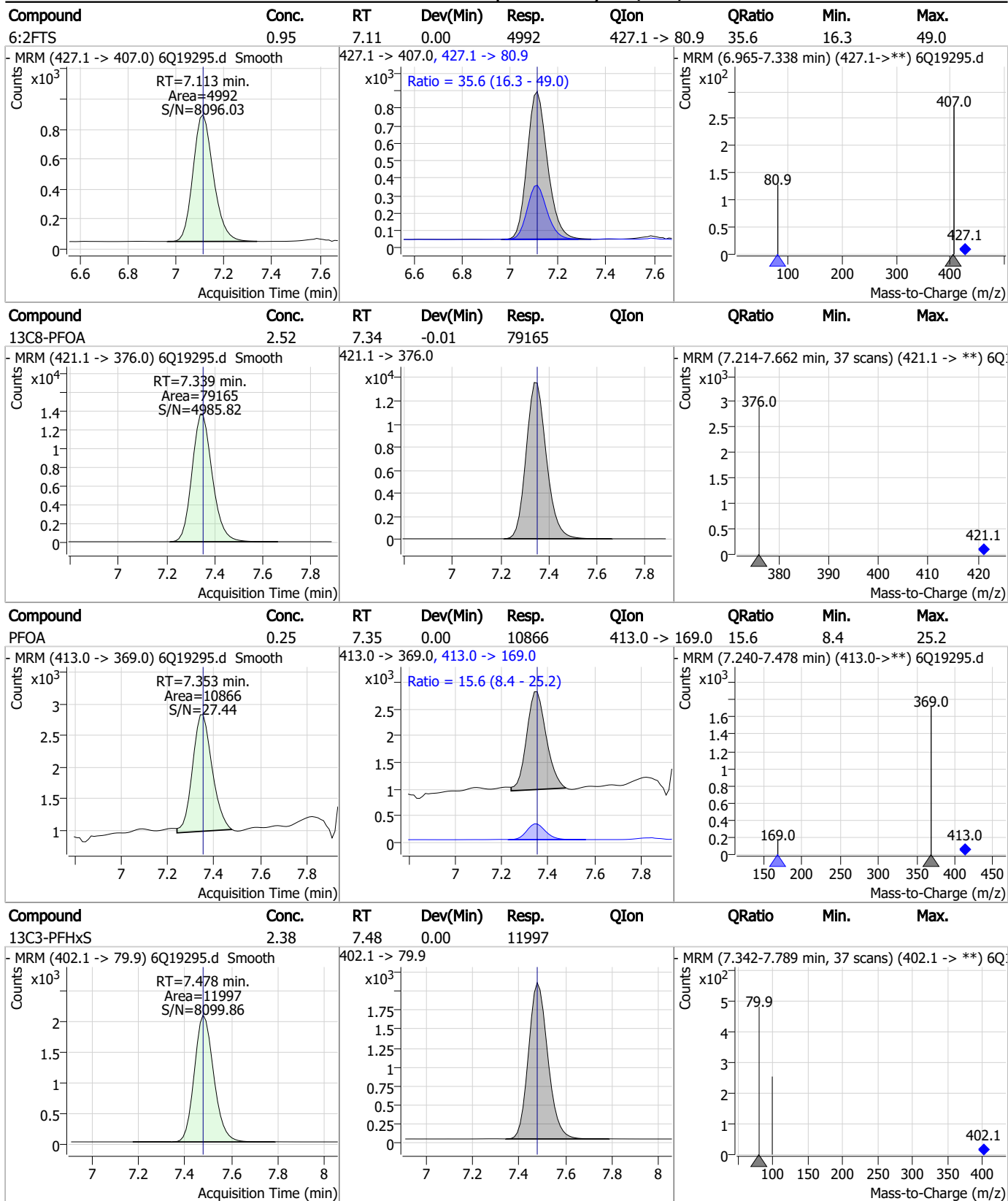
7.7.2
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Perfluorinated Compounds by LC/MS/MS



7.7.2
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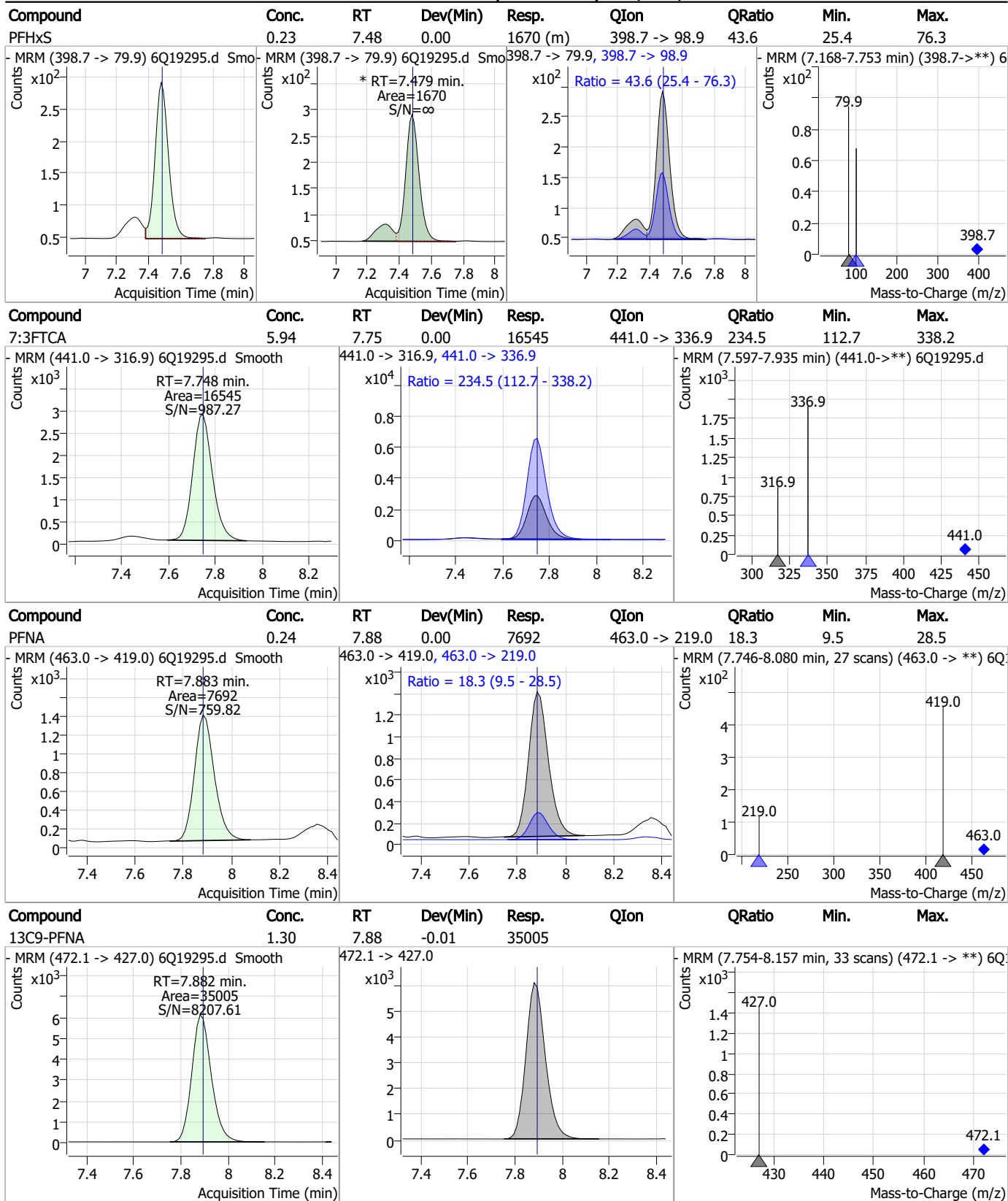
Perfluorinated Compounds by LC/MS/MS



7.7.2
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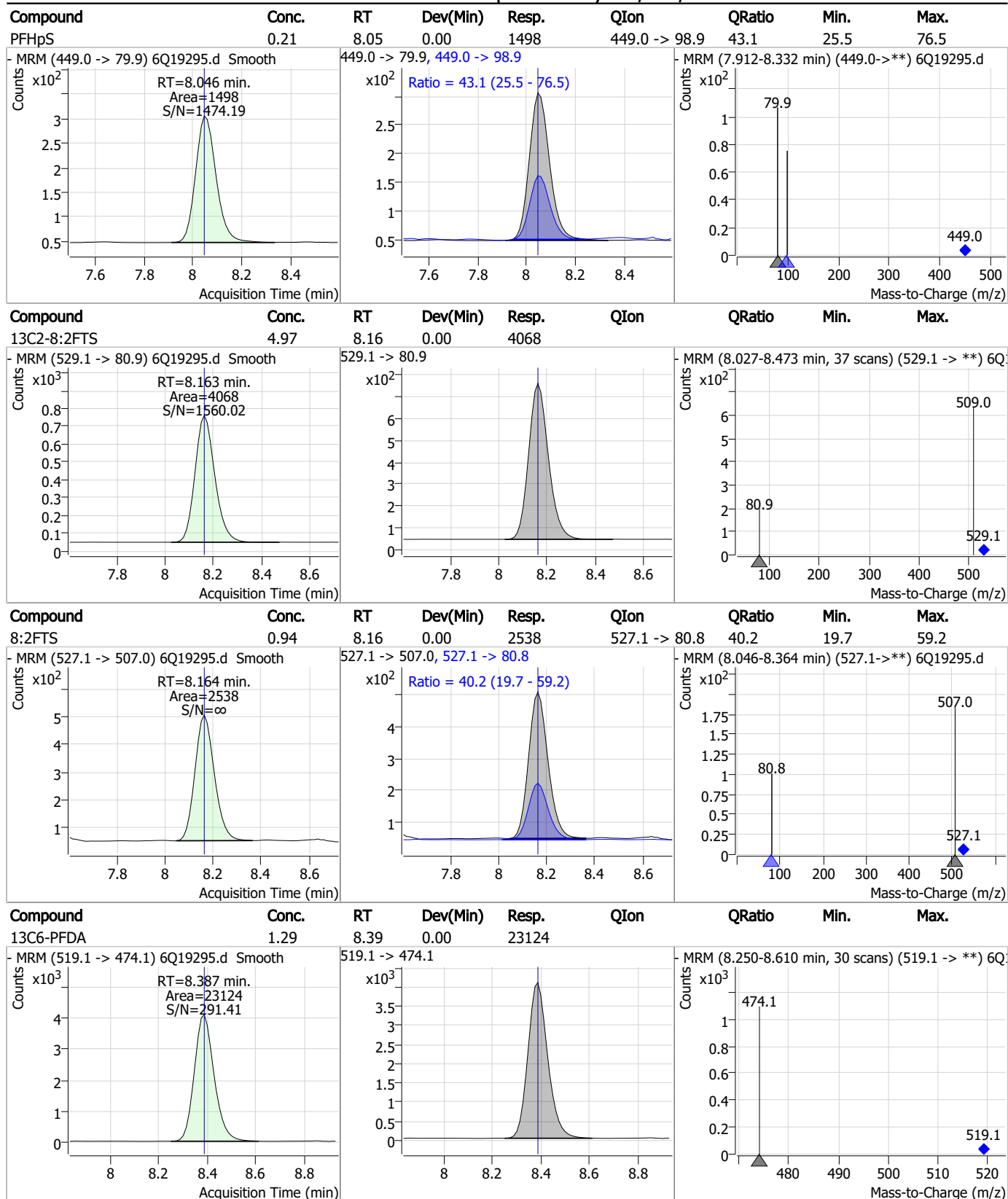


Perfluorinated Compounds by LC/MS/MS



7.7.2
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Perfluorinated Compounds by LC/MS/MS

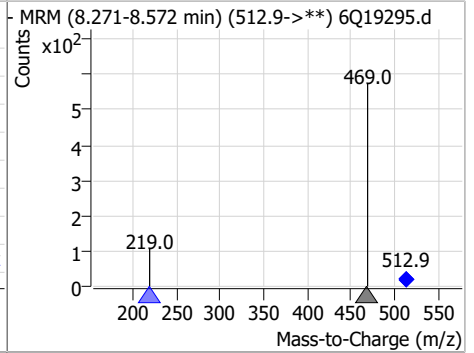
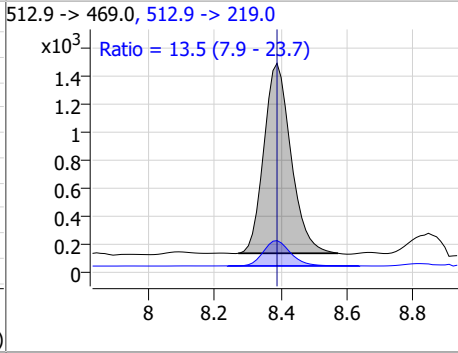
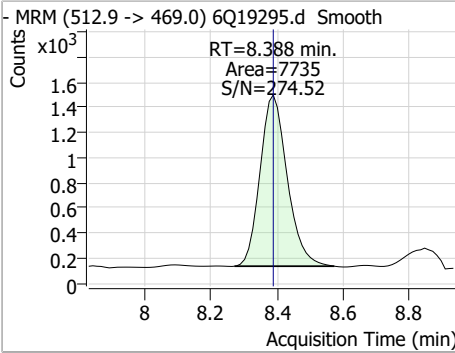


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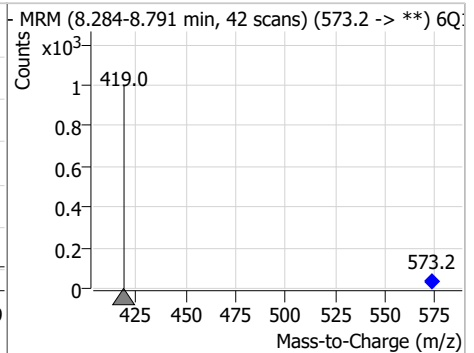
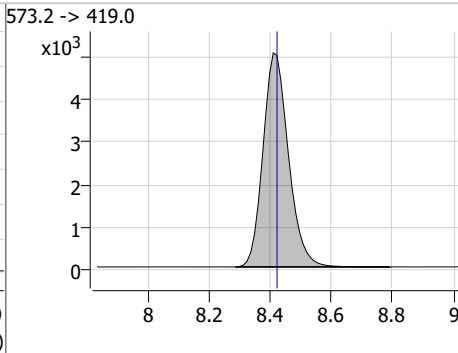
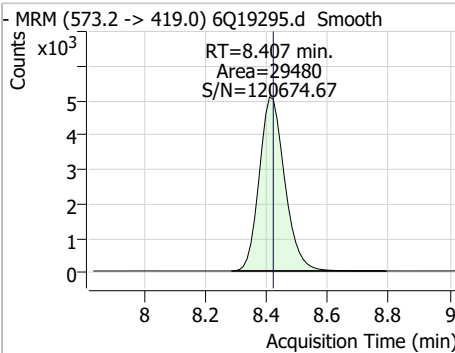


Perfluorinated Compounds by LC/MS/MS

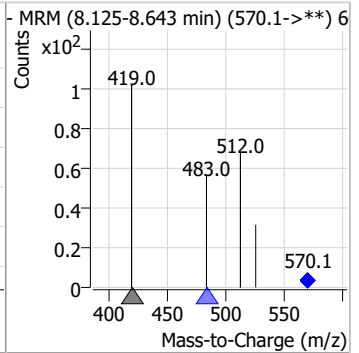
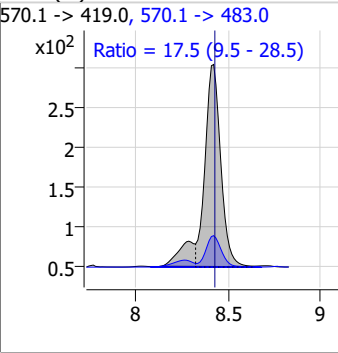
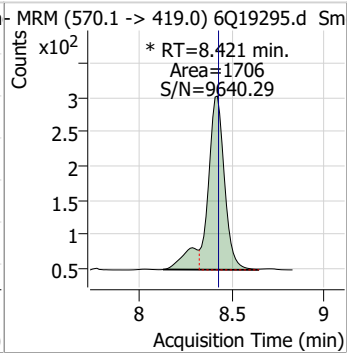
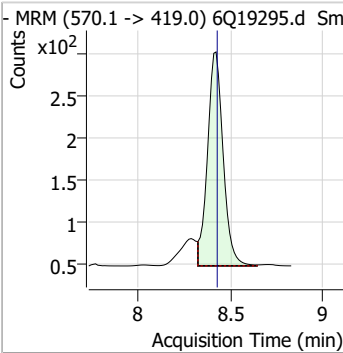
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.22	8.39	0.00	7735	512.9 -> 219.0	13.5	7.9	23.7



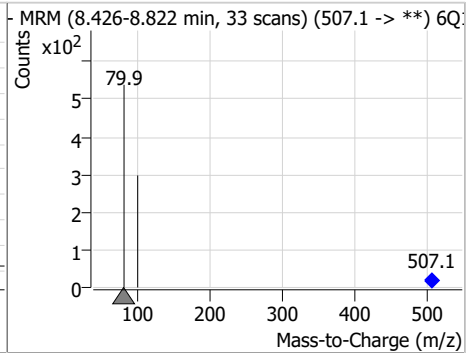
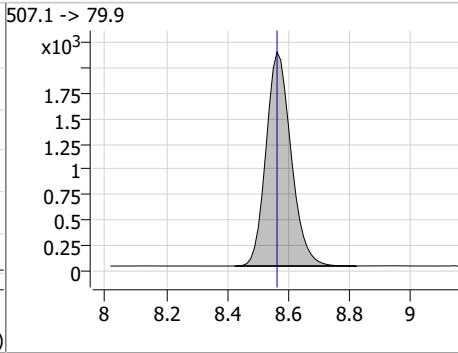
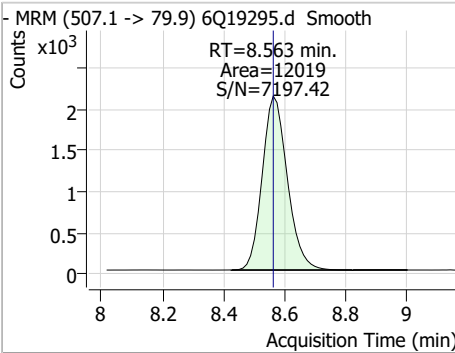
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.17	8.41	-0.01	29480				



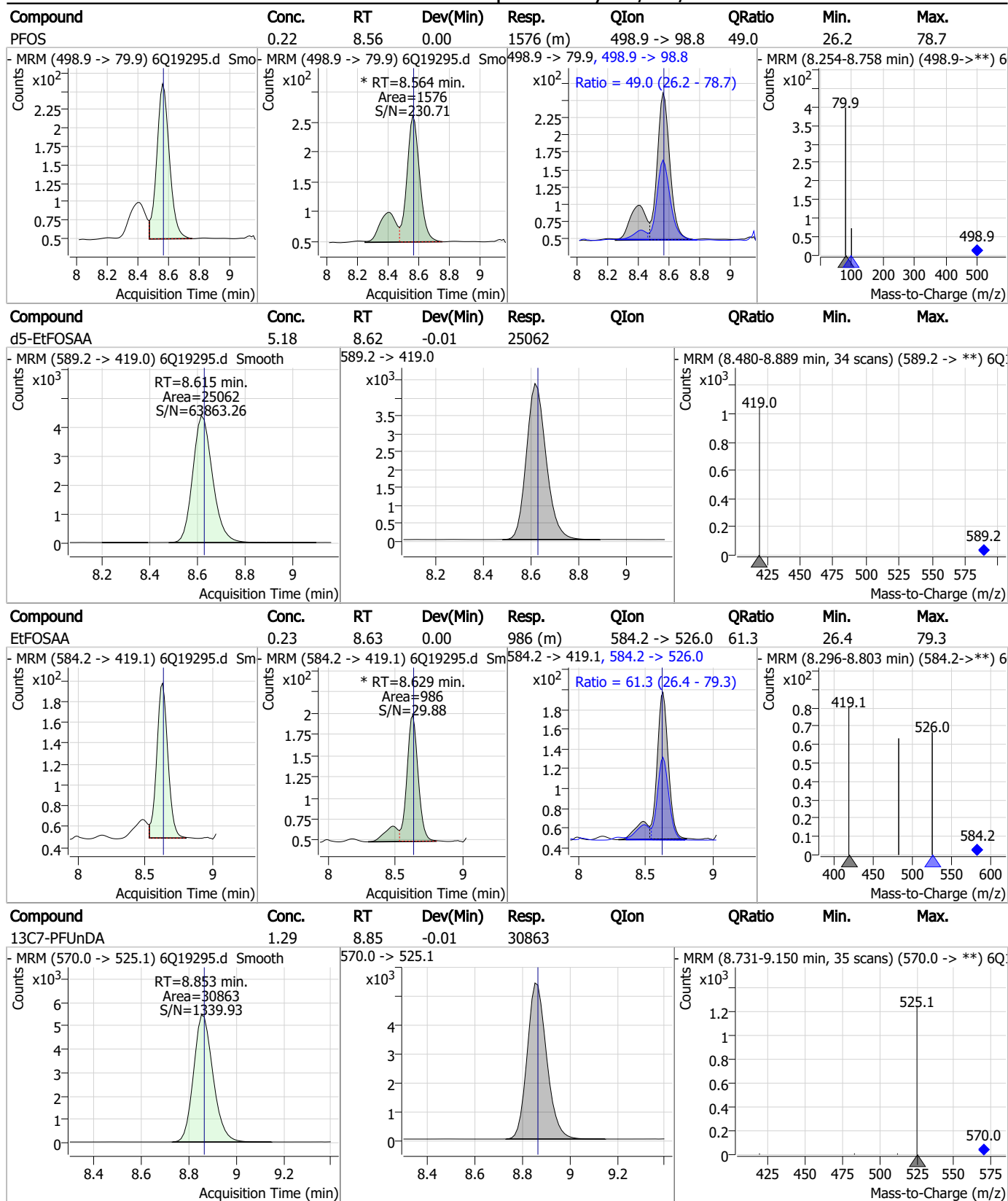
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.22	8.42	0.00	1706 (m)	570.1 -> 483.0	17.5	9.5	28.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.64	8.56	0.00	12019				

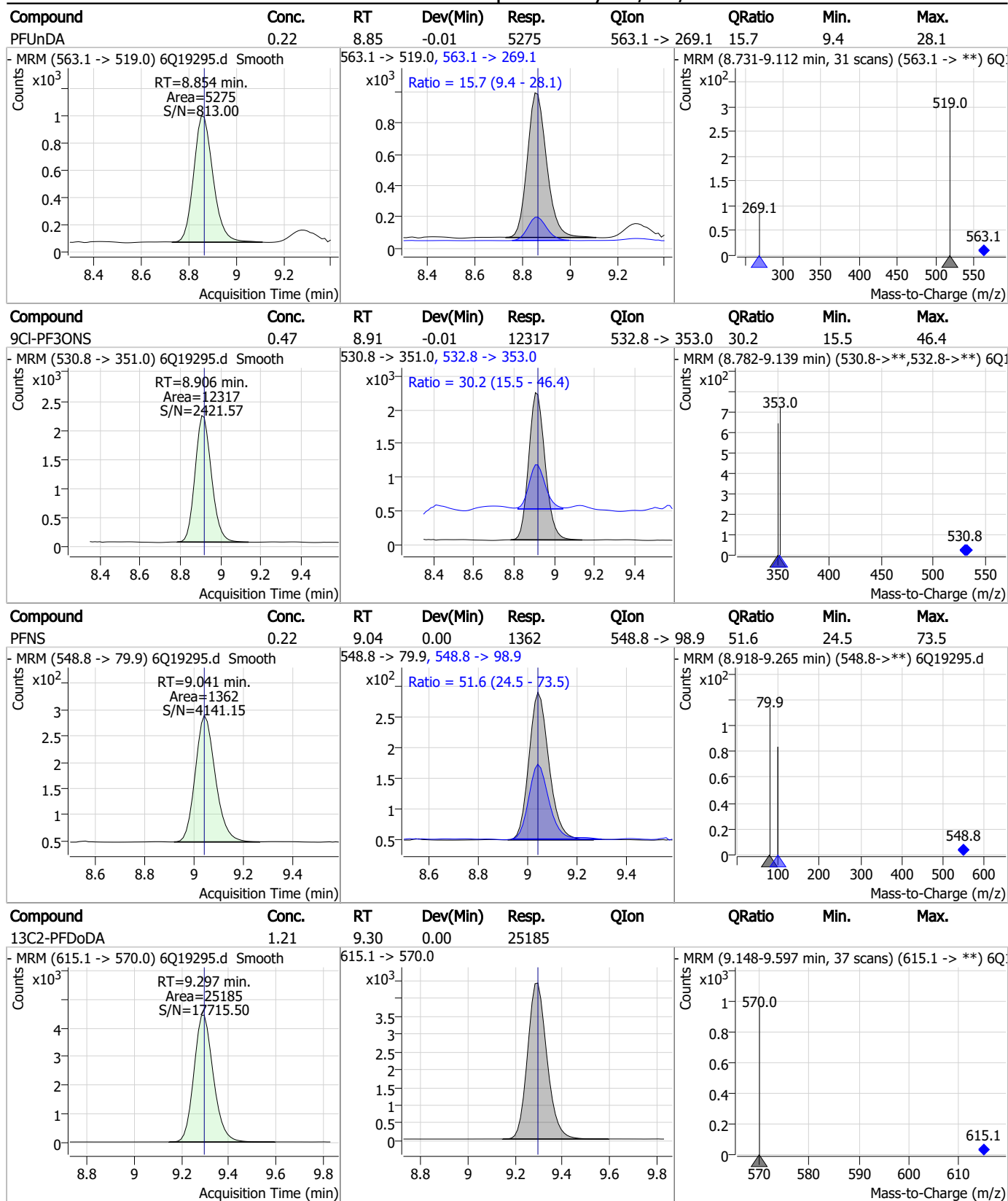


Perfluorinated Compounds by LC/MS/MS



7.7.2
7

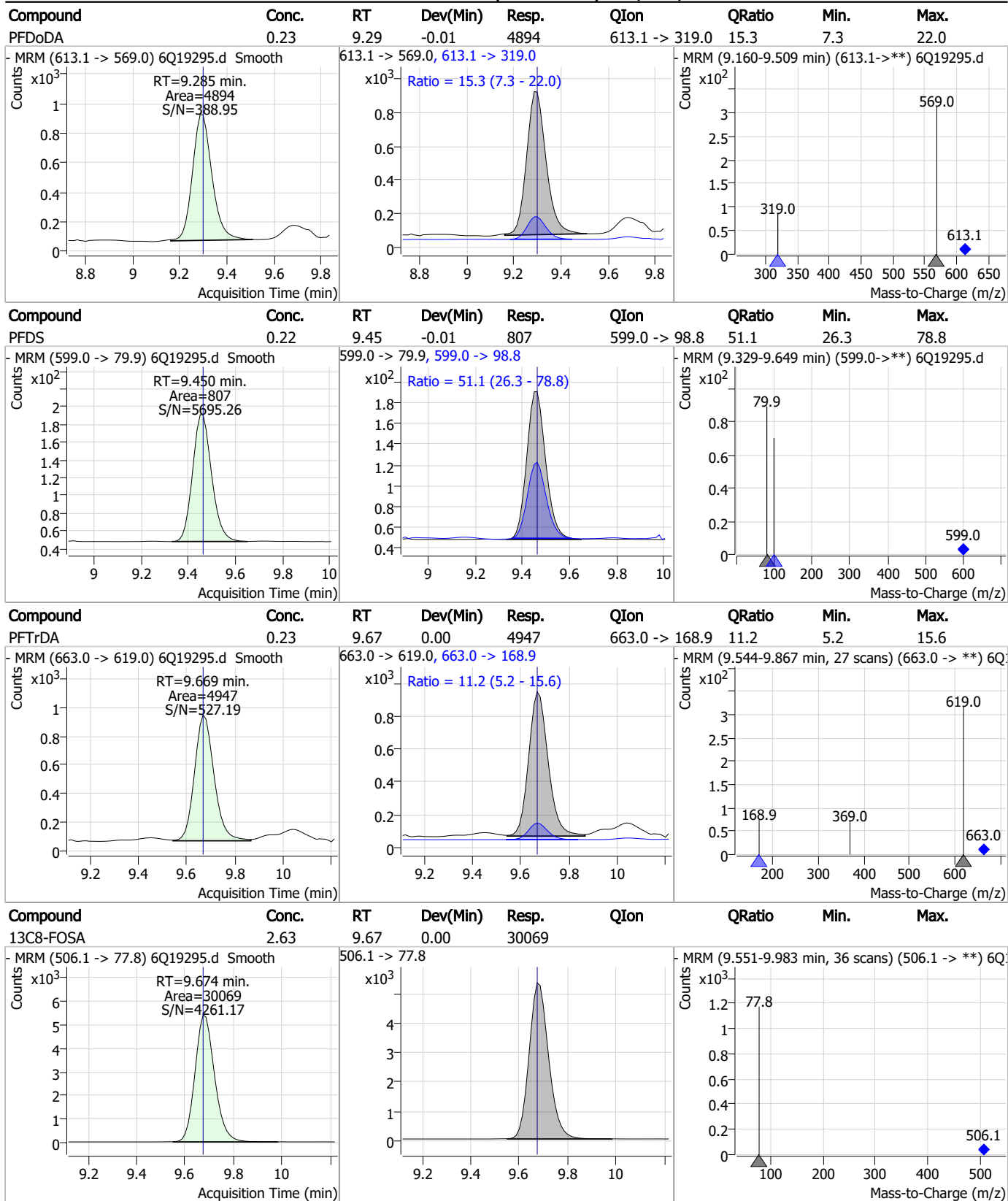
Perfluorinated Compounds by LC/MS/MS



7.7.2
7



Perfluorinated Compounds by LC/MS/MS

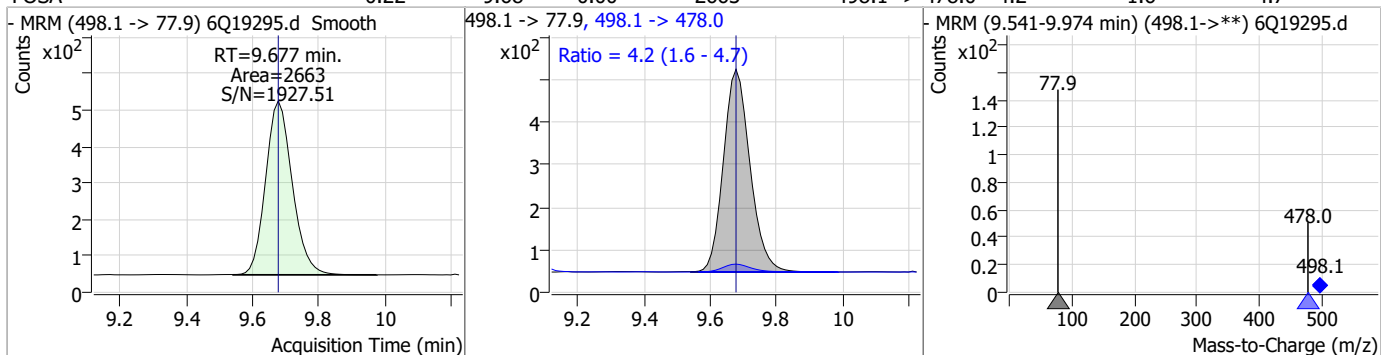


7.7.2
7

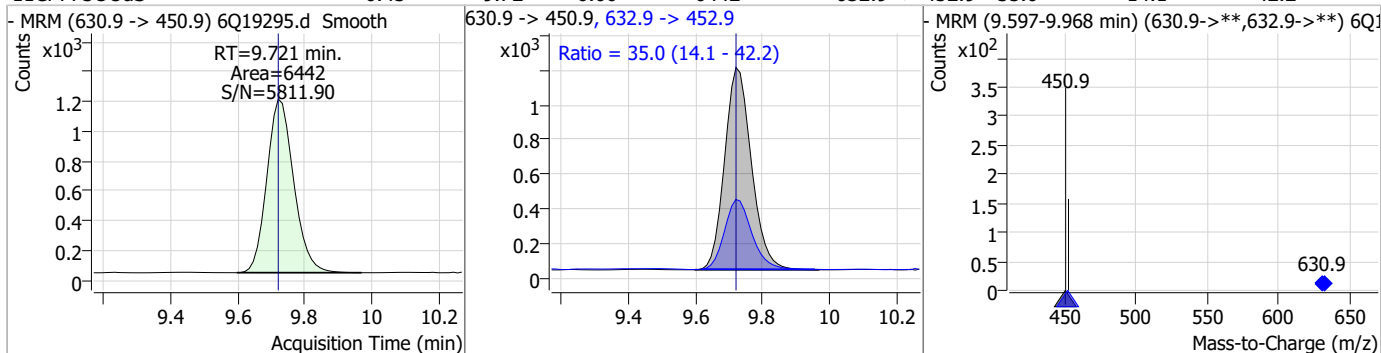


Perfluorinated Compounds by LC/MS/MS

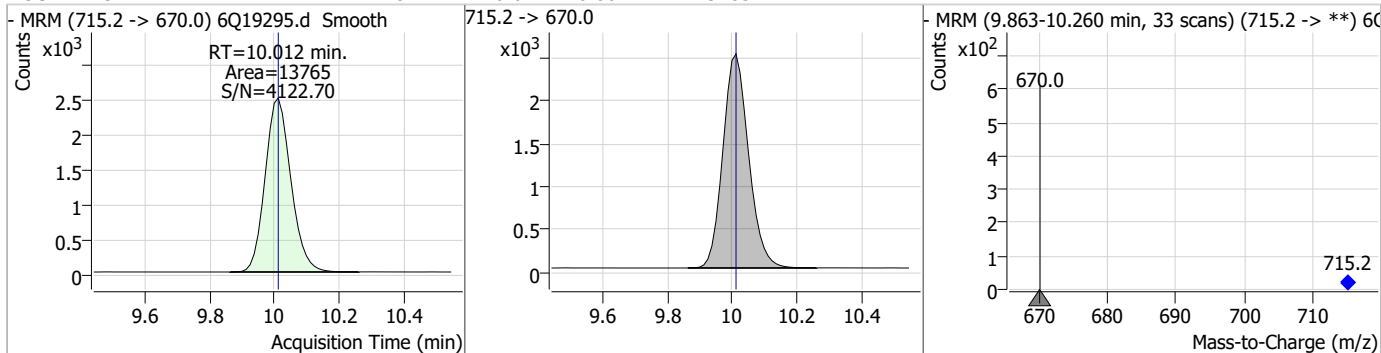
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.22	9.68	0.00	2663	498.1 -> 478.0	4.2	1.6	4.7



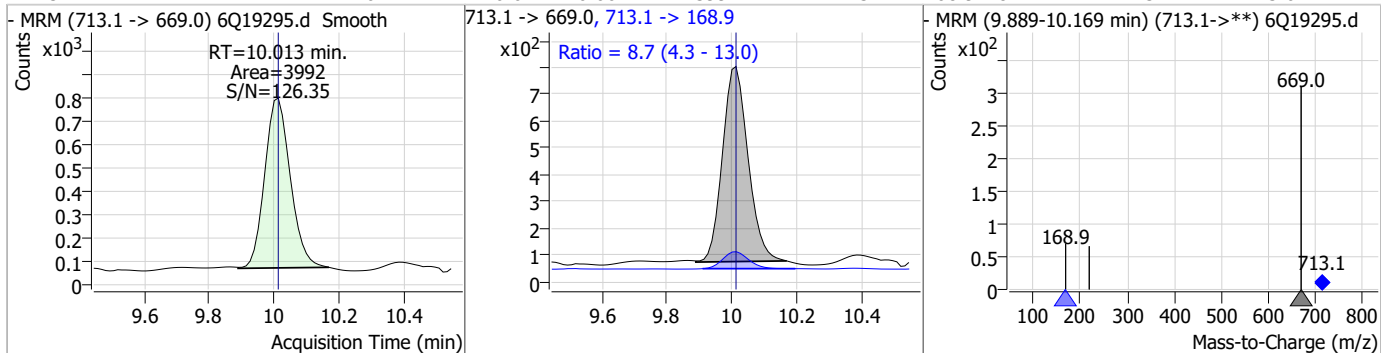
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	0.43	9.72	0.00	6442	632.9 -> 452.9	35.0	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.18	10.01	0.00	13765				

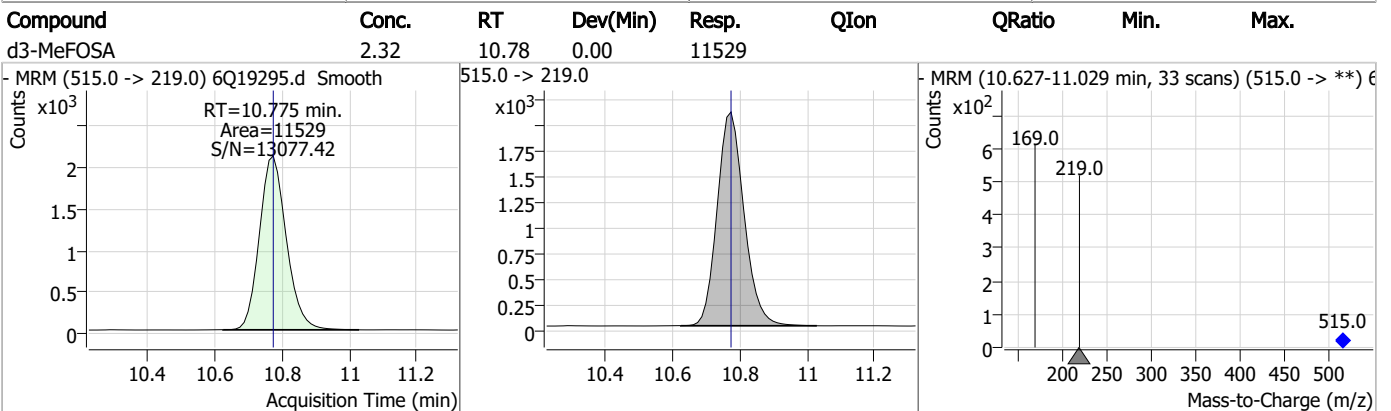
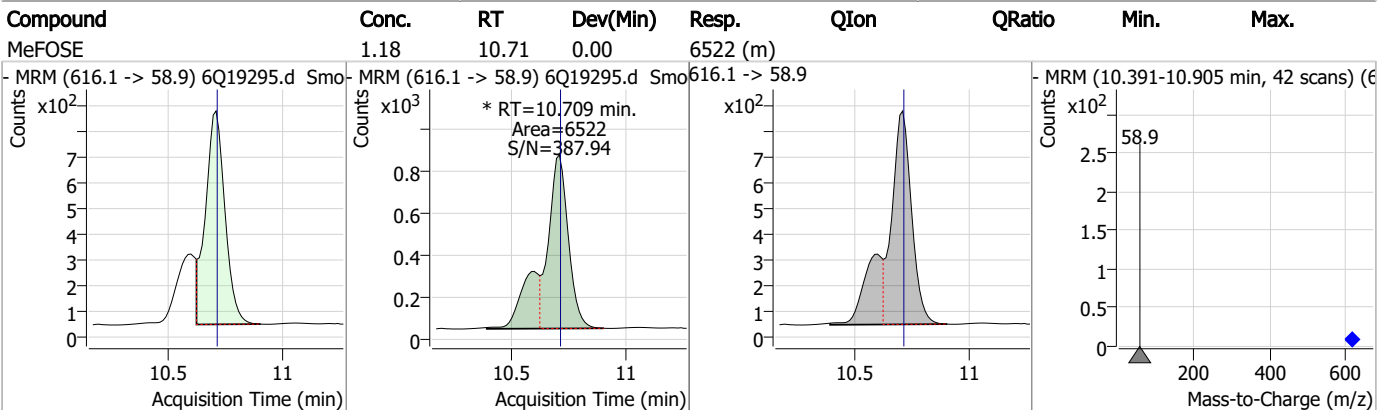
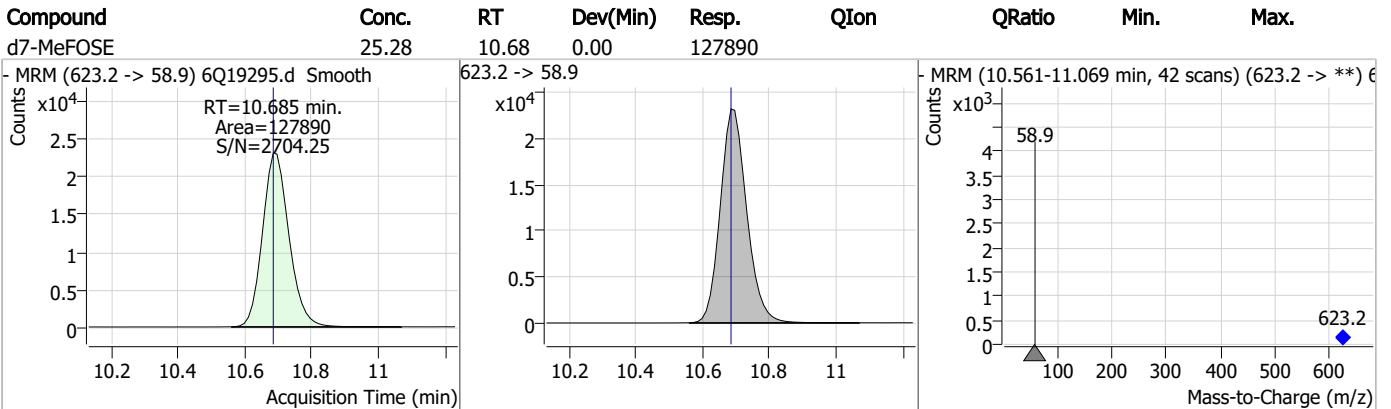
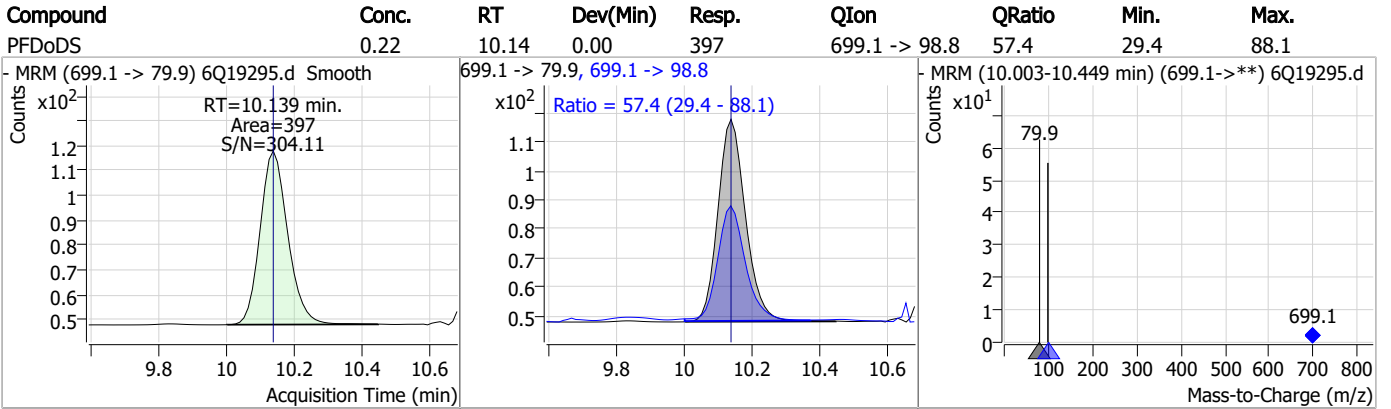


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.24	10.01	0.00	3992	713.1 -> 168.9	8.7	4.3	13.0



7.7.2
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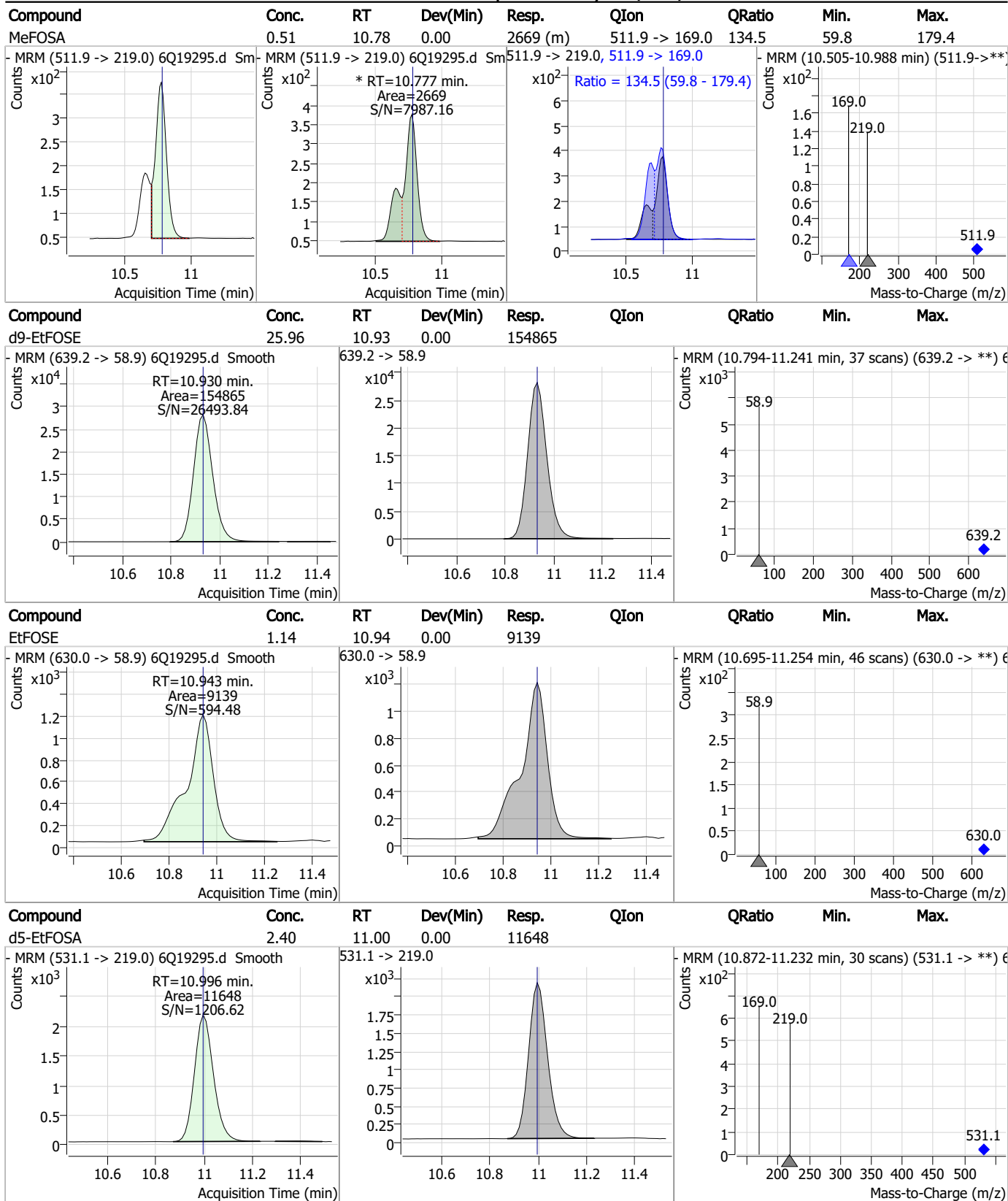
Perfluorinated Compounds by LC/MS/MS



7.7.2

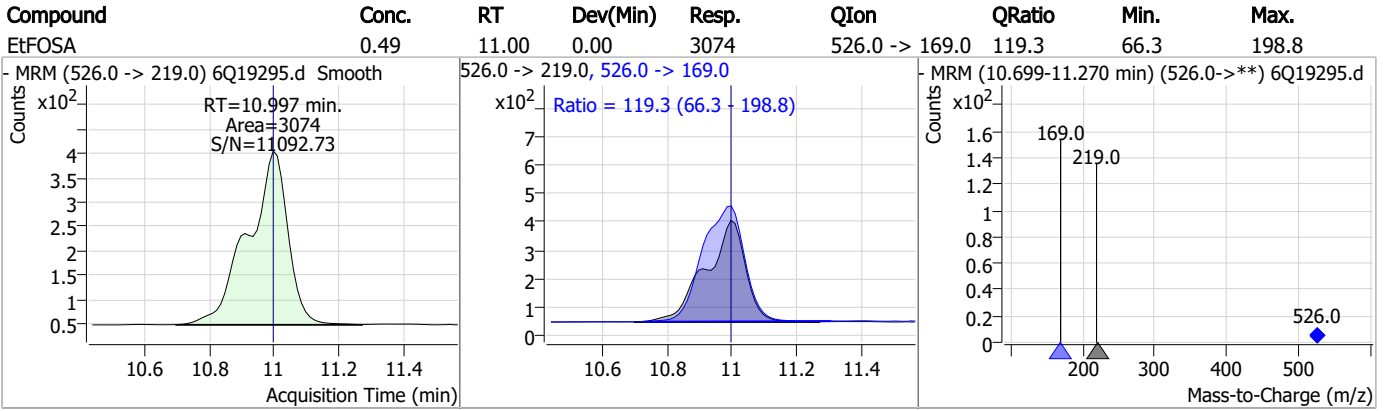
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Perfluorinated Compounds by LC/MS/MS



7.7.2
7

Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Manual Integration Approval Summary

Sample Number: S6Q288-IC288
Lab FileID: 6Q19295.D
Injection Time: 06/13/23 11:35

Method: EPA DRAFT 1633
Analyst approved: 06/14/23 10:15 Martha Valls
Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.7.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19296.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 11:49:47 AM
 Sample Name : ic288-2
 Vial : P1-A3
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	148883	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	48353	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	51816	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	49001	2.50 µg/L	0.000
M8-PFOA	7.352	421.1 -> 376.0	75164	2.50 µg/L	0.000
M9-PFNA	7.882	472.1 -> 427.0	35952	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	20294	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	29995	1.25 µg/L	-0.012
M2-PFDoDA	9.297	615.1 -> 570.0	24147	1.25 µg/L	0.000
M2-PFTeDA	10.012	715.2 -> 670.0	14046	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	30446	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	19021	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	12249	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	11012	2.50 µg/L	0.000
M2-4:2FTS	5.454	329.1 -> 80.9	3070	5.00 µg/L	0.012
M2-6:2FTS	7.113	429.1 -> 80.9	4984	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4163	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	27158	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	34466	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	25303	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	131899	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	151329	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	12369	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11987	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	15160	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	62960	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	9356	2.50 µg/L	0.000
13C4-PFOA	7.352	417.1 -> 372.0	83872	2.50 µg/L	0.000
13C2-PFDA	8.388	515.1 -> 470.1	31124	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	45459	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	50735	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.454	329.1 -> 80.9	3070	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.4%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4984	5.88 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.6%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4163	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C2-PFDoDA	9.297	615.1 -> 570.0	24147	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C2-PFTeDA	10.012	715.2 -> 670.0	14046	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-PFBS	5.746	302.1 -> 79.9	19021	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C3-PFHxS	7.478	402.1 -> 79.9	12249	2.49 µg/L	0.000

7.7.3
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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 = 99.7%	
13C4-PFBA	3.085	216.8 -> 171.9	148883	10.08 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C4-PFHpA	6.707	367.1 -> 322.0	49001	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C5-PFHxA	5.792	318.0 -> 273.0	51816	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C5-PFPeA	4.560	268.3 -> 223.0	48353	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C6-PFDA	8.387	519.1 -> 474.1	20294	1.14 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.9%	
13C7-PFUnDA	8.853	570.0 -> 525.1	29995	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-FOSA	9.674	506.1 -> 77.8	30446	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C8-PFOA	7.352	421.1 -> 376.0	75164	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C8-PFOS	8.563	507.1 -> 79.9	11012	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C9-PFNA	7.882	472.1 -> 427.0	35952	1.30 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.9%	
d3-MeFOSAA	8.420	573.2 -> 419.0	27158	4.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	34466	9.84 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
d3-MeFOSA	10.775	515.0 -> 219.0	11987	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
d5-EtFOSAA	8.615	589.2 -> 419.0	25303	5.20 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d7-MeFOSE	10.685	623.2 -> 58.9	131899	25.93 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
d9-EtFOSE	10.930	639.2 -> 58.9	151329	25.23 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d5-EtFOSA	10.996	531.1 -> 219.0	12369	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	8327	1.56 µg/L	99
		327.1 -> 80.9	3160		
6:2FTS	7.113	427.1 -> 407.0	8916	1.50 µg/L	97
		427.1 -> 80.9	3053		
8:2FTS	8.164	527.1 -> 507.0	4631	1.67 µg/L	96
		527.1 -> 80.8	1933		
EtFOSAA	8.629	584.2 -> 419.1	1685	0.39 µg/L	m 97
		584.2 -> 526.0	922		
FOSA	9.677	498.1 -> 77.9	4709	0.39 µg/L	99
		498.1 -> 478.0	127		
MeFOSAA	8.421	570.1 -> 419.0	3362	0.48 µg/L	m 95
		570.1 -> 483.0	713		
PFBA	3.093	212.8 -> 168.9	9659	1.61 µg/L	100
PFBS	5.747	298.7 -> 79.9	3155	0.37 µg/L	100
		298.7 -> 98.8	1190		
PFDA	8.388	512.9 -> 469.0	13569	0.45 µg/L	99
		512.9 -> 219.0	2191		
PFDODA	9.298	613.1 -> 569.0	8698	0.43 µg/L	98
		613.1 -> 319.0	1328		
PFDS	9.462	599.0 -> 79.9	1356	0.41 µg/L	93

7.7.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	649			
PFHpA	6.708	363.1 -> 319.0	10761	0.41	µg/L	99
		363.1 -> 169.0	1699			
PFHpS	8.046	449.0 -> 79.9	2776	0.42	µg/L	96
		449.0 -> 98.9	1484			
PFHxA	5.795	313.0 -> 269.0	8139	0.39	µg/L	99
		313.0 -> 118.9	460			
PFHxS	7.479	398.7 -> 79.9	2890	0.39	µg/L	m 90
		398.7 -> 98.9	1275			
PFNA	7.896	463.0 -> 419.0	13911	0.42	µg/L	100
		463.0 -> 219.0	2624			
PFNS	9.041	548.8 -> 79.9	2419	0.42	µg/L	96
		548.8 -> 98.9	1250			
PFOA	7.341	413.0 -> 369.0	19180	0.46	µg/L	96
		413.0 -> 169.0	2859			
PFOS	8.564	498.9 -> 79.9	2651	0.41	µg/L	m 99
		498.9 -> 98.8	1374			
PFPeA	4.563	263.0 -> 219.0	11694	0.82	µg/L	100
PFPeS	6.785	349.1 -> 79.9	2478	0.36	µg/L	98
		349.1 -> 98.9	1224			
PFTeDA	10.013	713.1 -> 669.0	7291	0.43	µg/L	99
		713.1 -> 168.9	602			
PFTrDA	9.669	663.0 -> 619.0	8938	0.44	µg/L	97
		663.0 -> 168.9	1035			
PFUnDA	8.866	563.1 -> 519.0	8760	0.38	µg/L	97
		563.1 -> 269.1	1530			
11CI-PF3OUdS	9.721	630.9 -> 450.9	13037	0.83	µg/L	97
		632.9 -> 452.9	3502			
9CI-PF3ONS	8.906	530.8 -> 351.0	20320	0.75	µg/L	86
		532.8 -> 353.0	4714			
ADONA	6.959	376.9 -> 250.9	43098	0.77	µg/L	96
		376.9 -> 84.8	11720			
HFPO-DA	6.169	284.9 -> 168.9	2852	0.79	µg/L	98
		284.9 -> 184.9	352			
3:3FTCA	3.946	241.0 -> 177.0	1996	2.07	µg/L	99
		241.0 -> 117.0	277			
5:3FTCA	6.374	341.0 -> 237.1	45342	10.91	µg/L	90
		341.0 -> 217.0	30154			
7:3FTCA	7.748	441.0 -> 316.9	30528	10.86	µg/L	91
		441.0 -> 336.9	64422			
EtFOSA	10.997	526.0 -> 219.0	5181	0.78	µg/L	98
		526.0 -> 169.0	7001			
EtFOSE	10.943	630.0 -> 58.9	15726	2.01	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	4469	0.82	µg/L	m 81
		511.9 -> 169.0	6291			
MeFOSE	10.709	616.1 -> 58.9	11608	2.03	µg/L	m 100
PFDoDS	10.139	699.1 -> 79.9	694	0.42	µg/L	100
		699.1 -> 98.8	406			
NFDHA	5.673	295.0 -> 201.0	2374	0.89	µg/L	98
		295.0 -> 84.9	663			
PFMBA	4.988	279.0 -> 85.1	8456	0.83	µg/L	100
PFMPA	3.667	229.0 -> 84.9	6453	0.81	µg/L	100
PFEESA	6.288	314.8 -> 134.9	20621	0.73	µg/L	100
		314.8 -> 82.9	699			

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

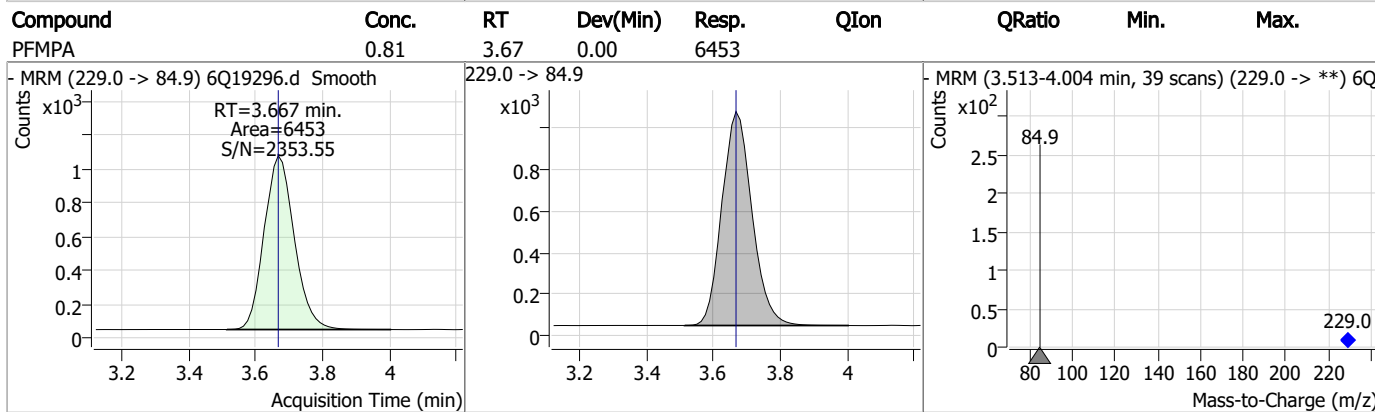
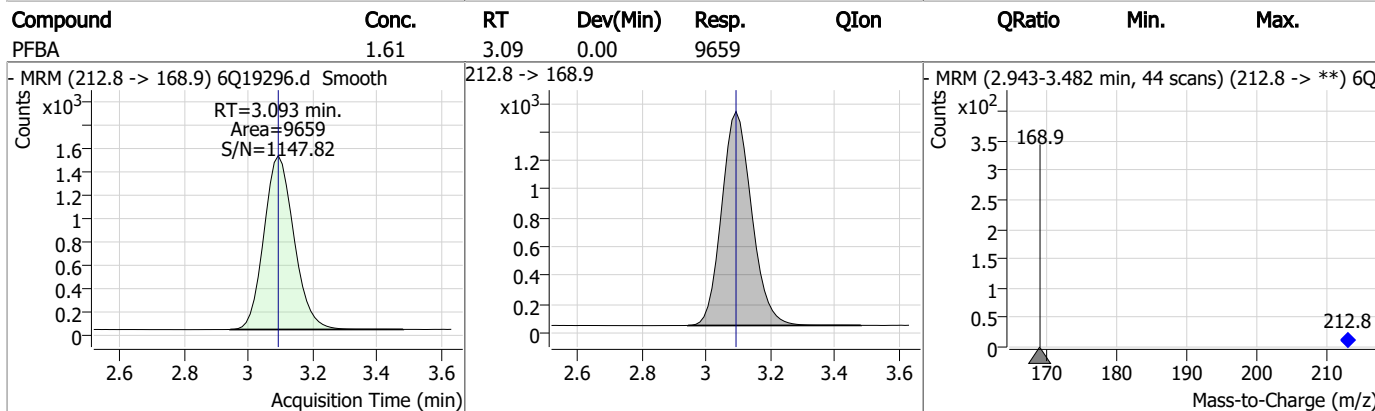
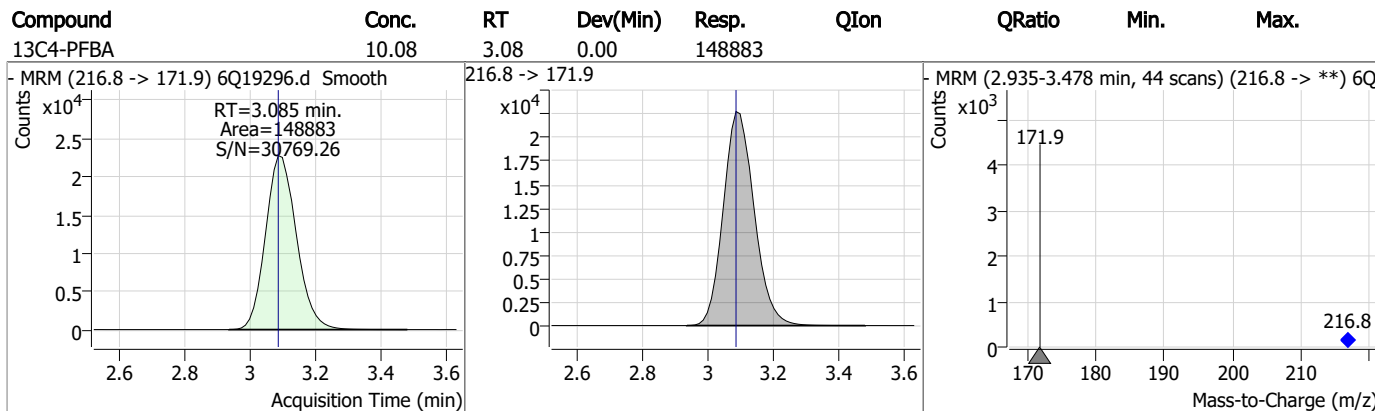
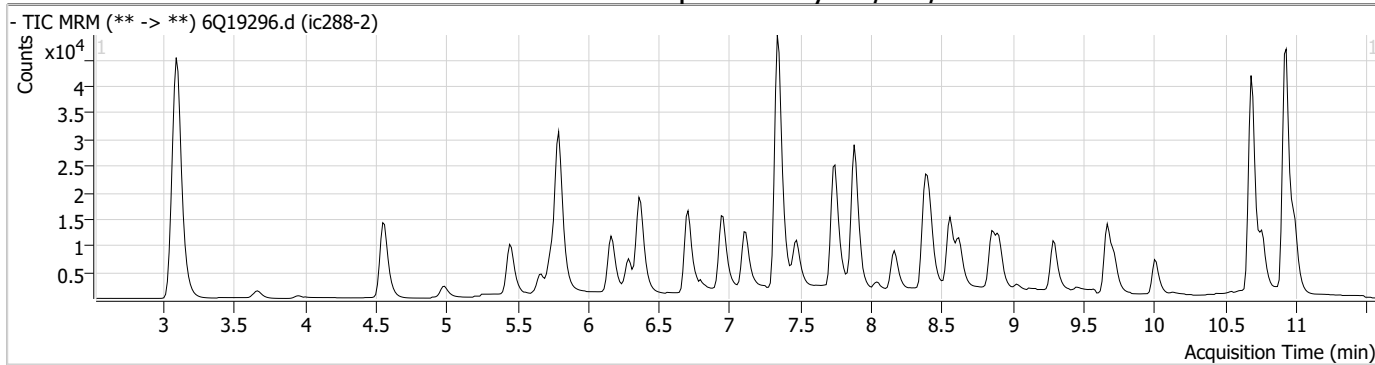
Perfluorinated Compounds by LC/MS/MS

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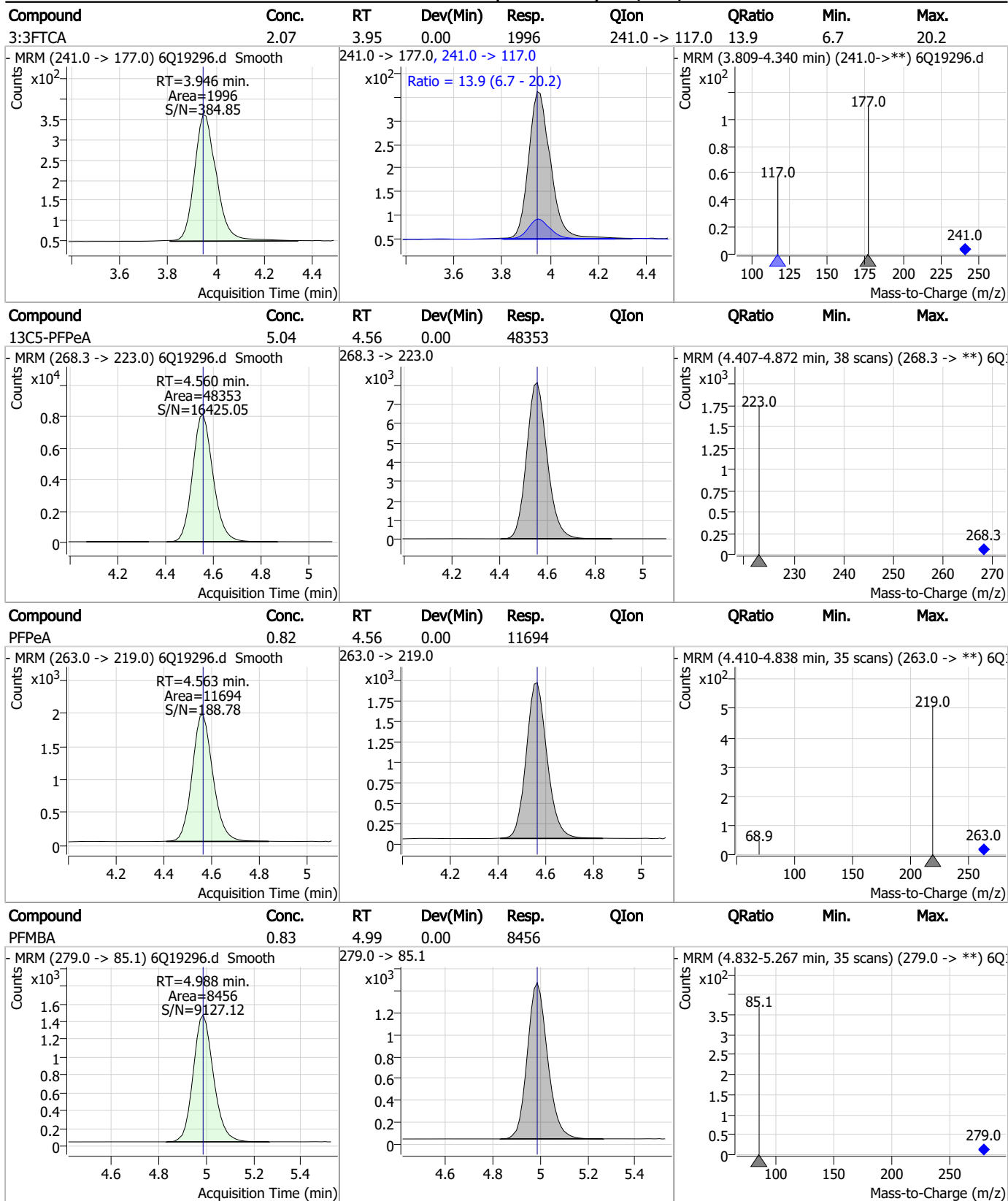
7.7.3

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Perfluorinated Compounds by LC/MS/MS



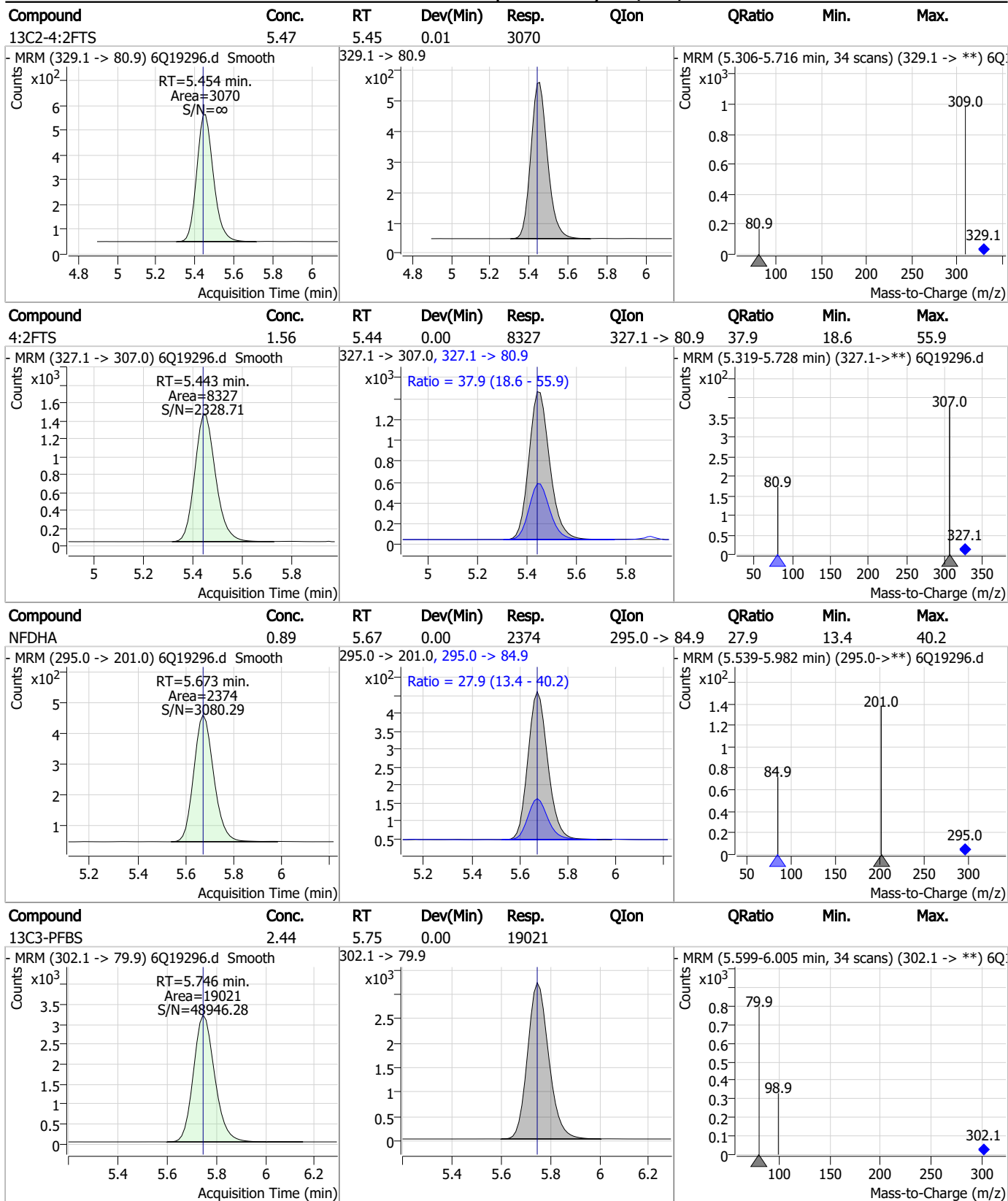
Perfluorinated Compounds by LC/MS/MS



7.7.3

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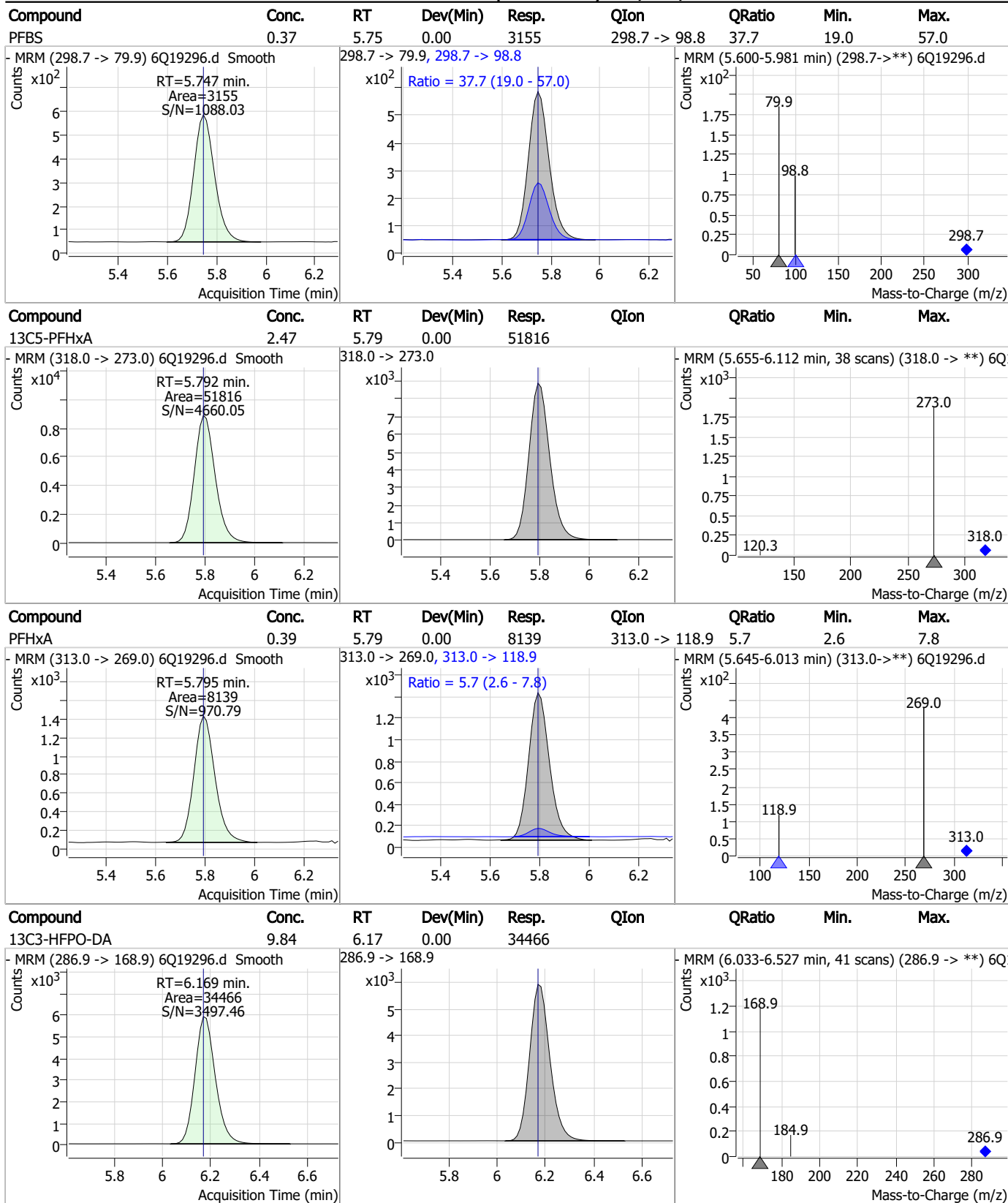
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS

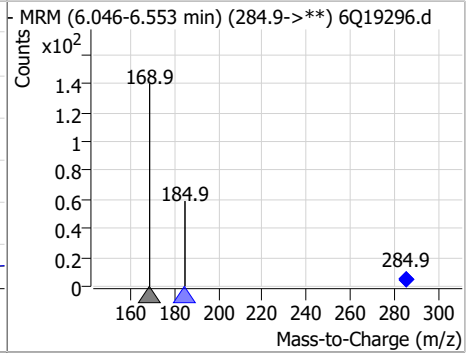
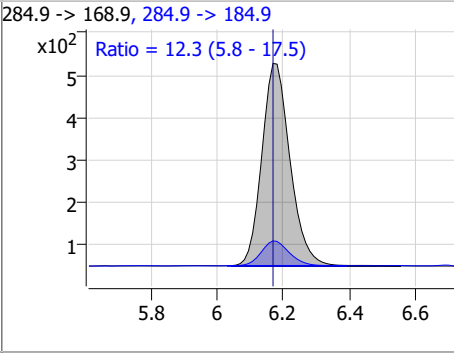
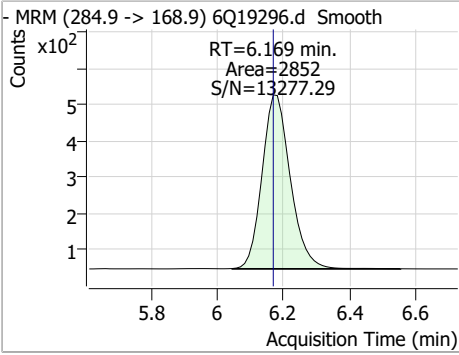


7.7.3
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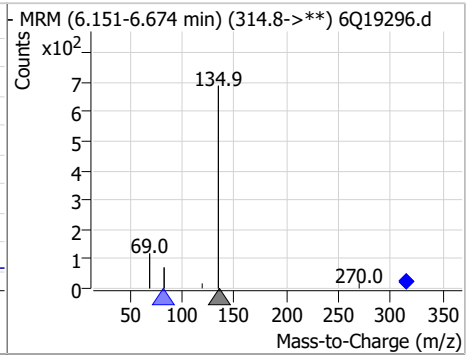
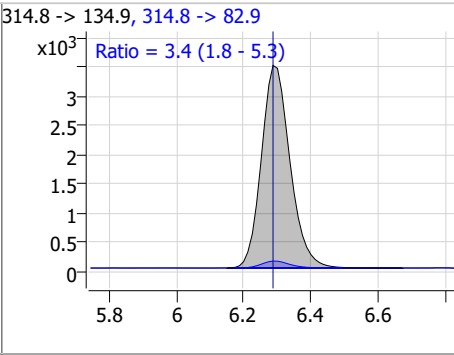
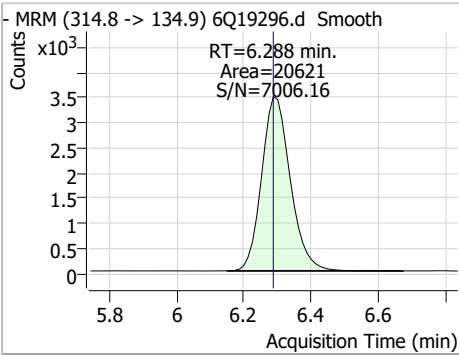


Perfluorinated Compounds by LC/MS/MS

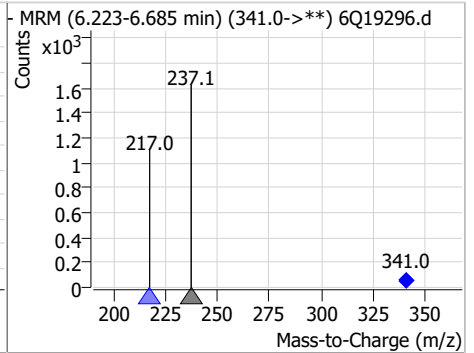
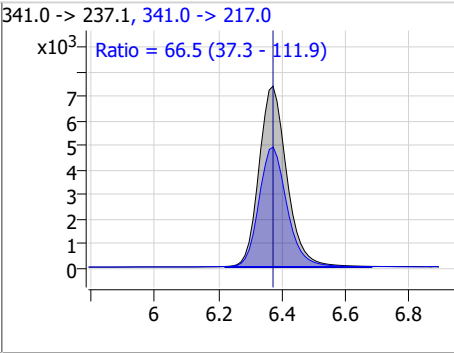
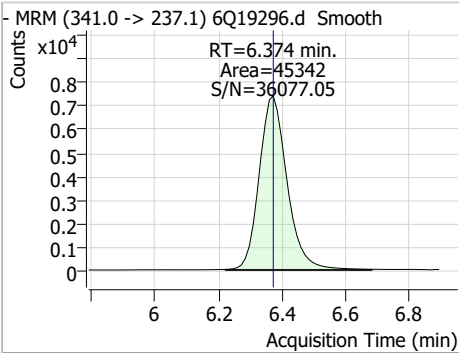
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.79	6.17	0.00	2852	284.9 -> 184.9	12.3	5.8	17.5



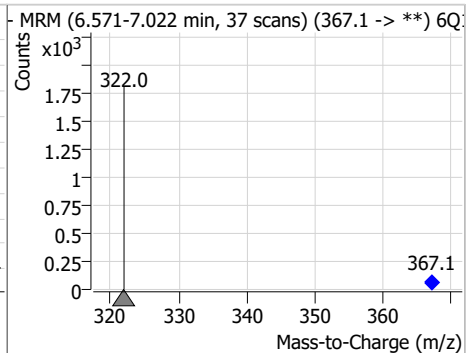
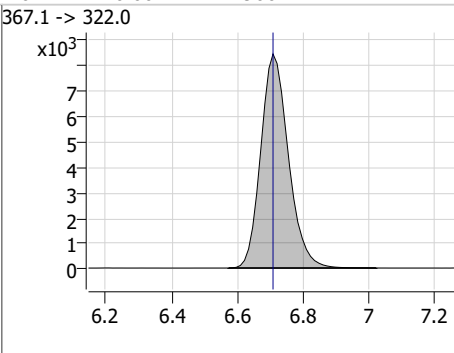
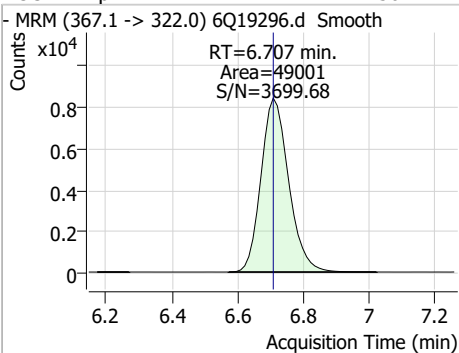
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.73	6.29	0.00	20621	314.8 -> 82.9	3.4	1.8	5.3



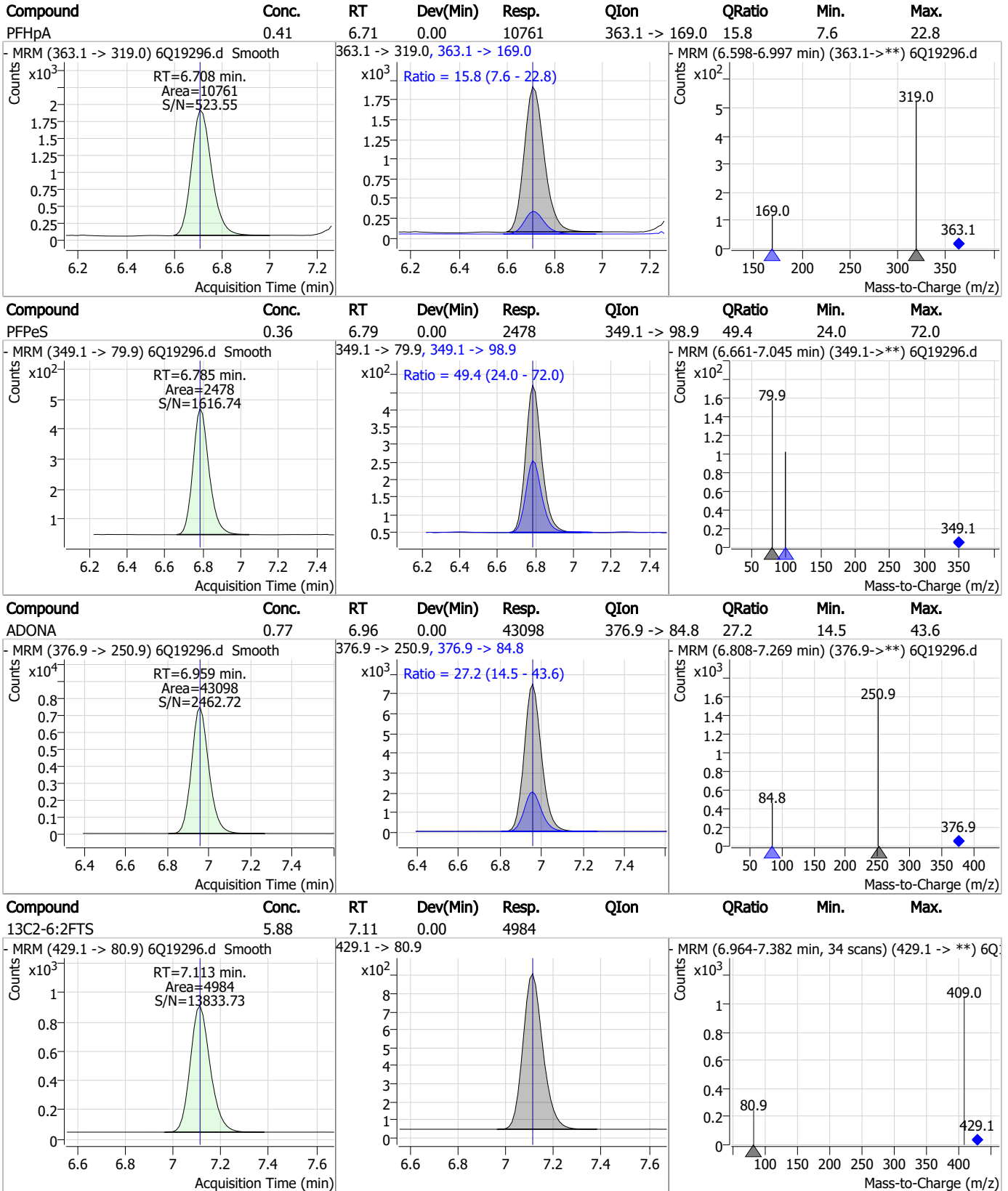
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	10.91	6.37	0.00	45342	341.0 -> 217.0	66.5	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.50	6.71	0.00	49001	367.1 -> 322.0			



Perfluorinated Compounds by LC/MS/MS

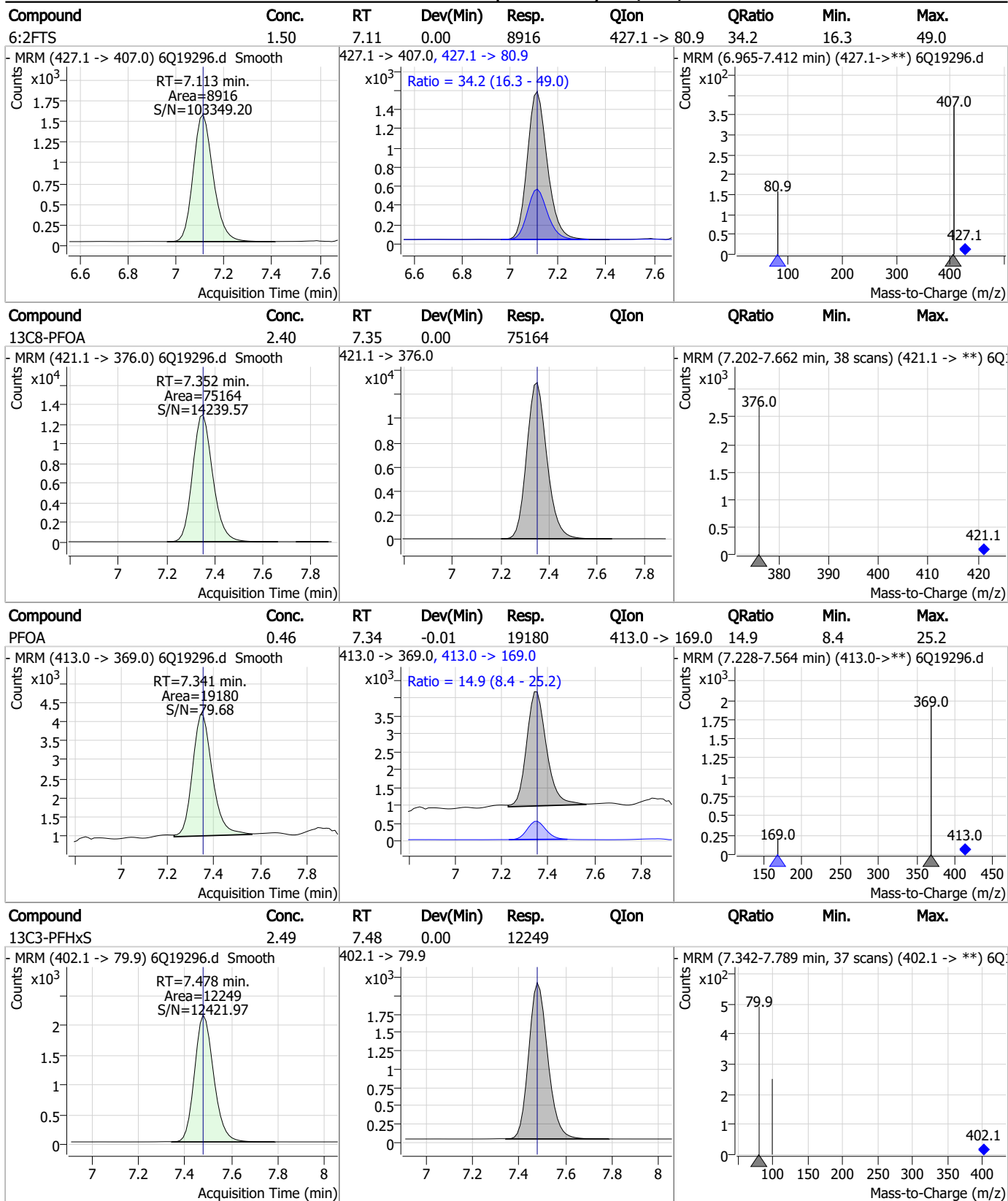


7.7.3

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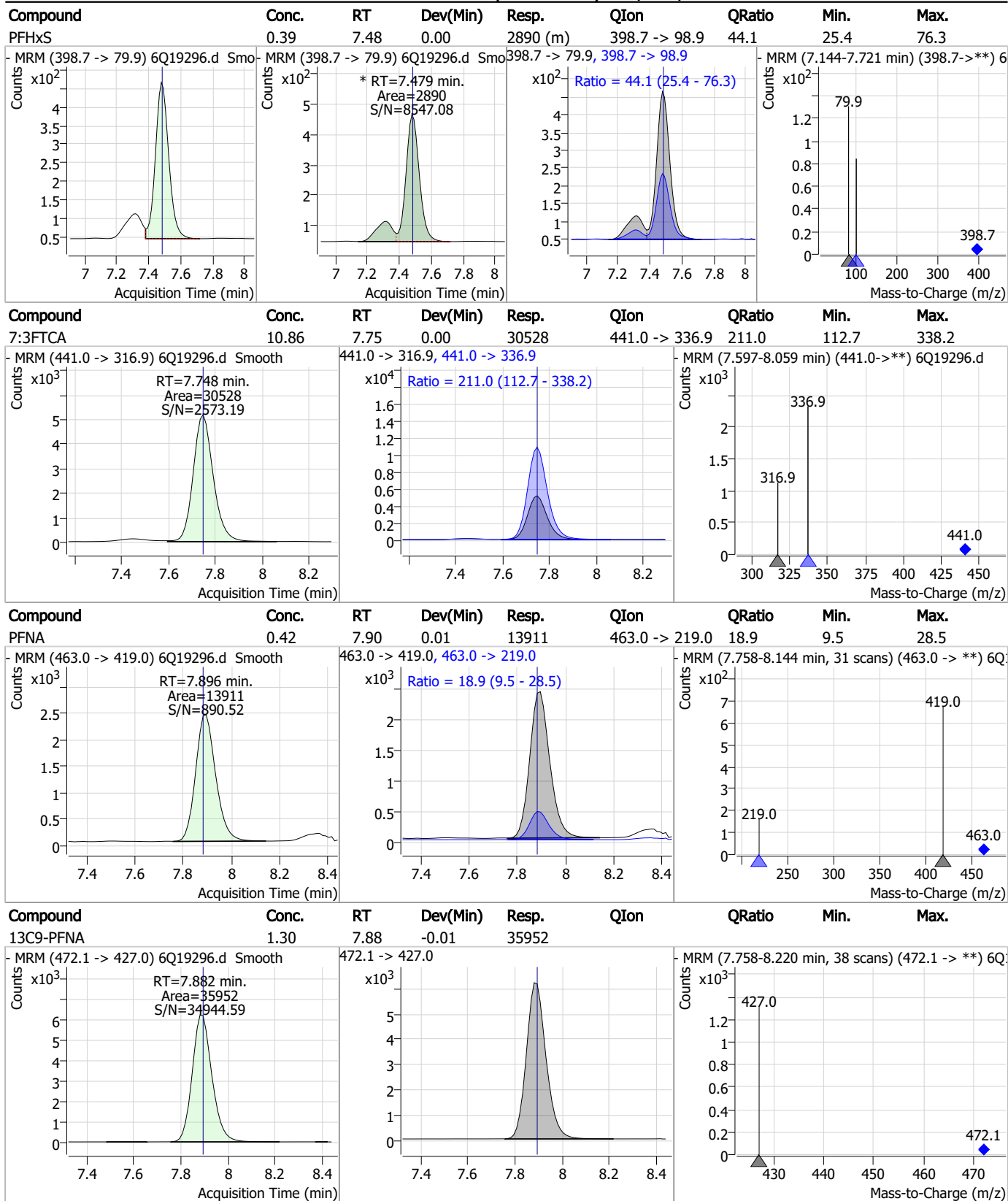


Perfluorinated Compounds by LC/MS/MS



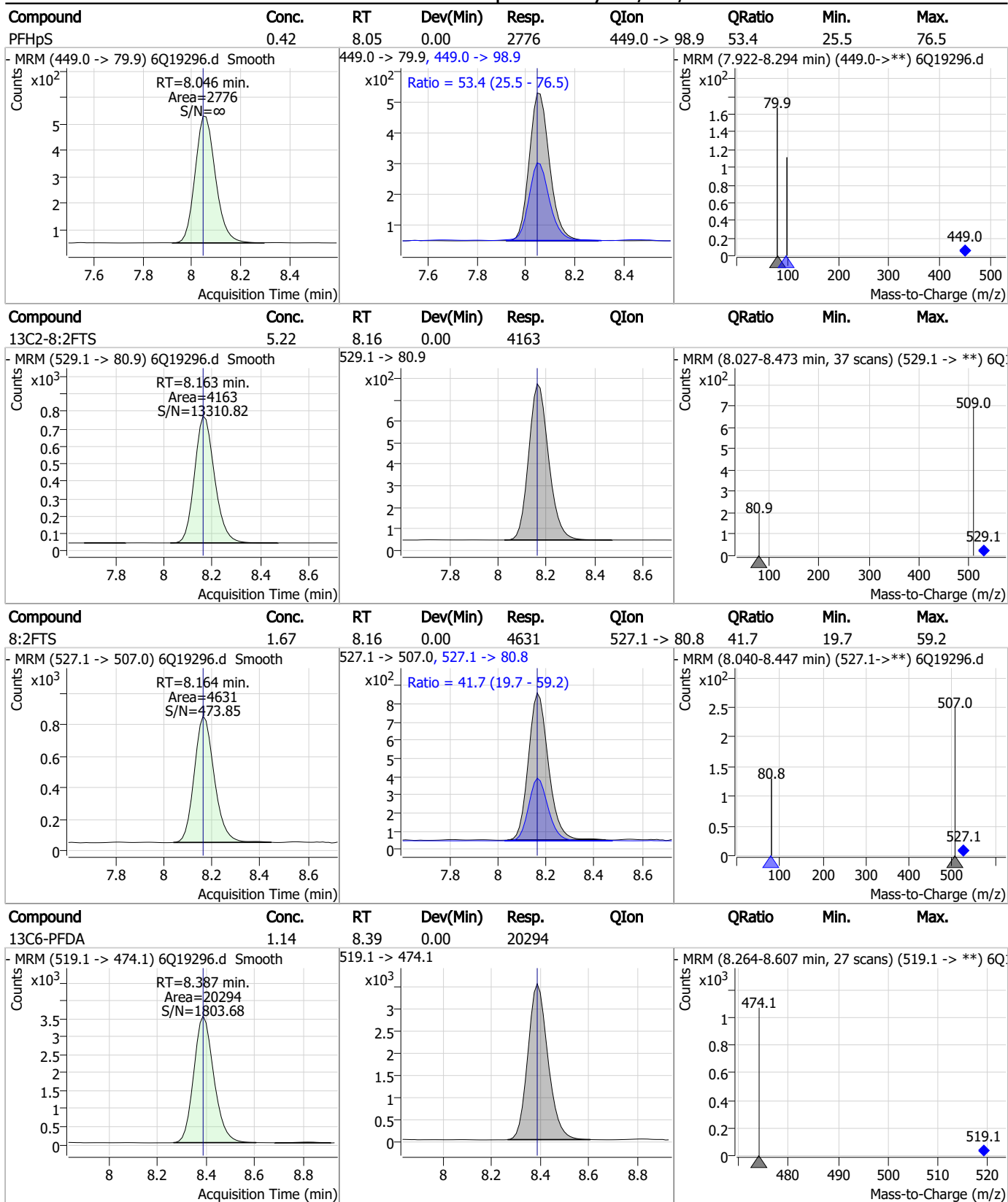
7.7.3
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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Perfluorinated Compounds by LC/MS/MS

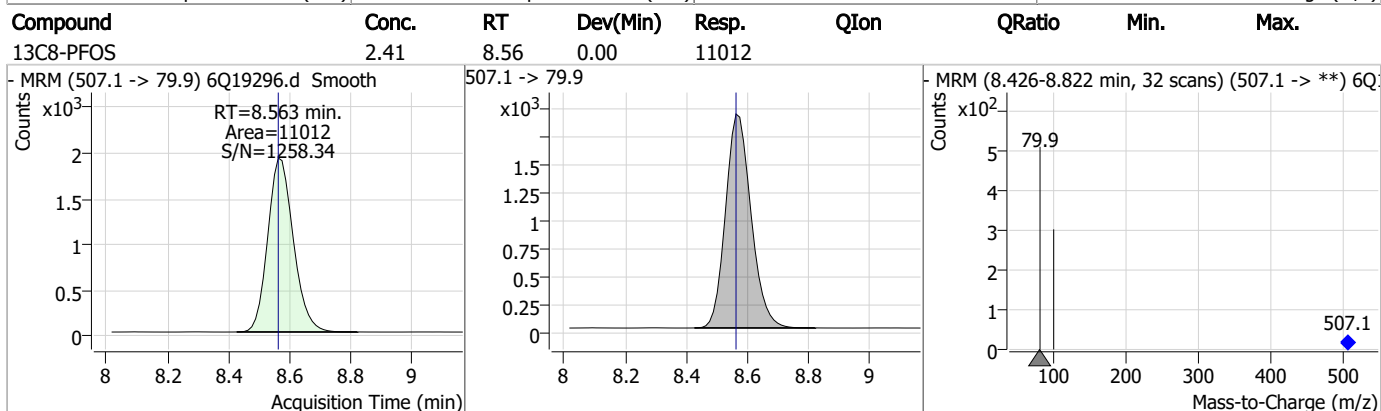
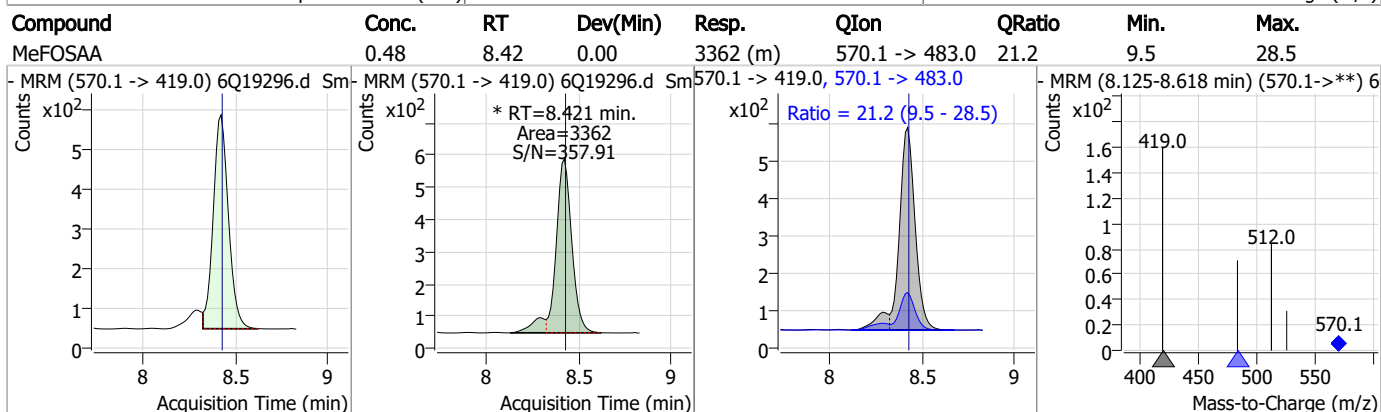
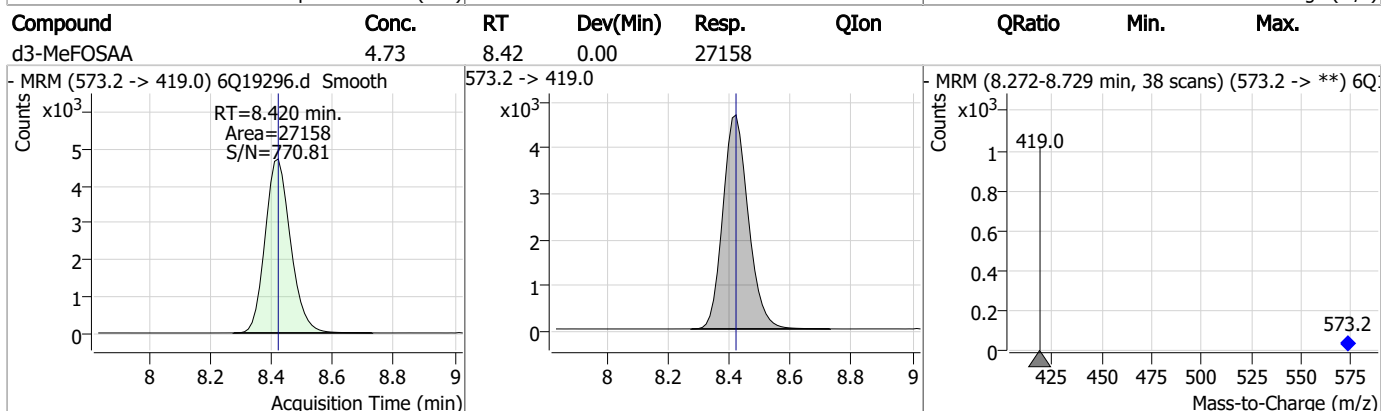
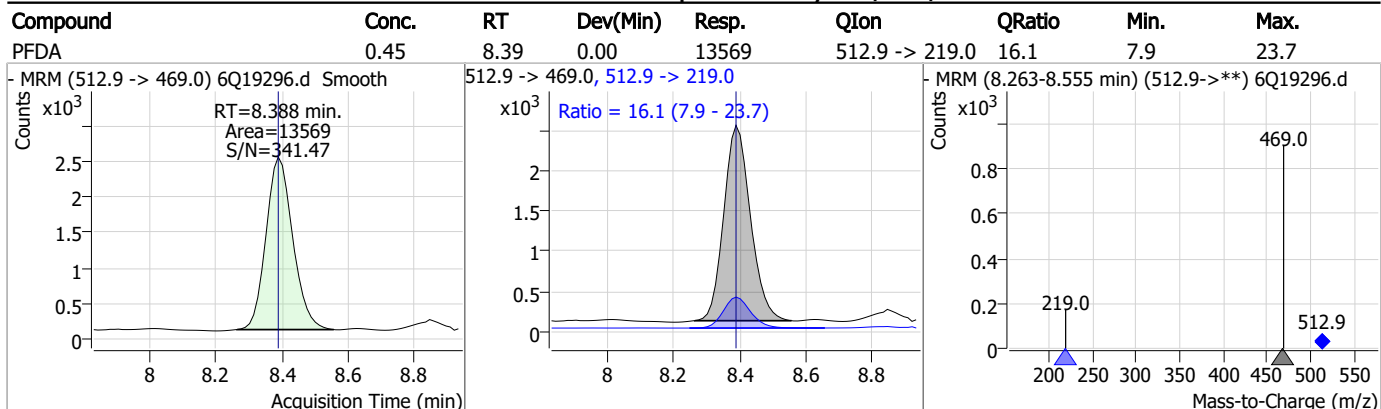


7.7.3

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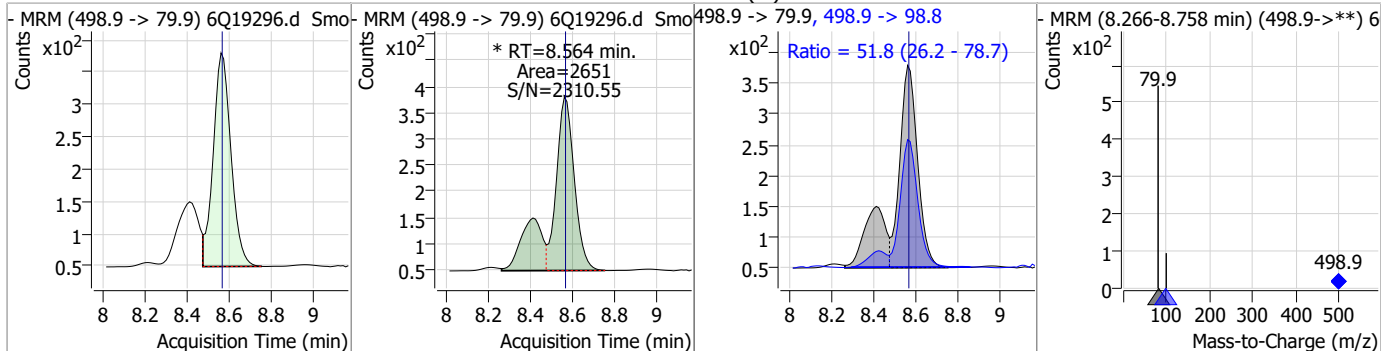
Perfluorinated Compounds by LC/MS/MS



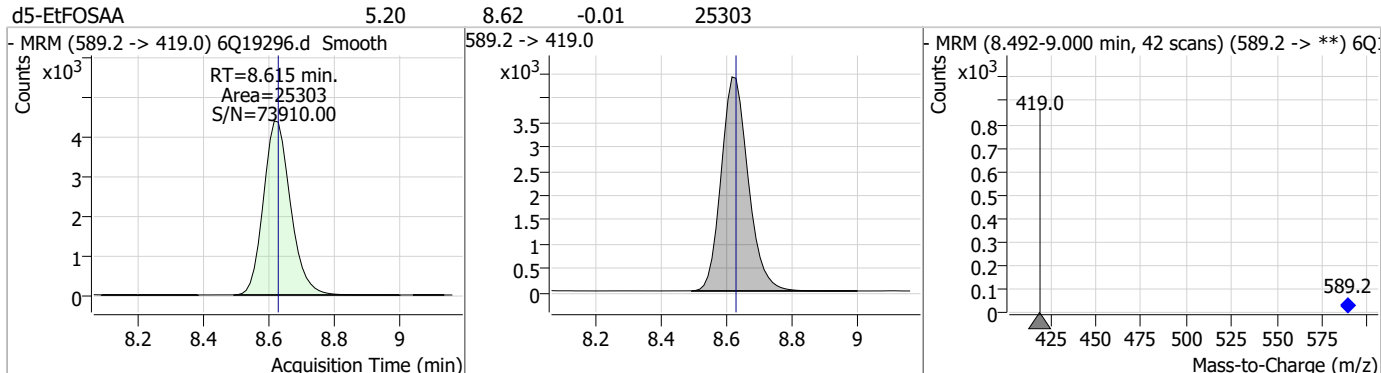
7.7.3
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Perfluorinated Compounds by LC/MS/MS

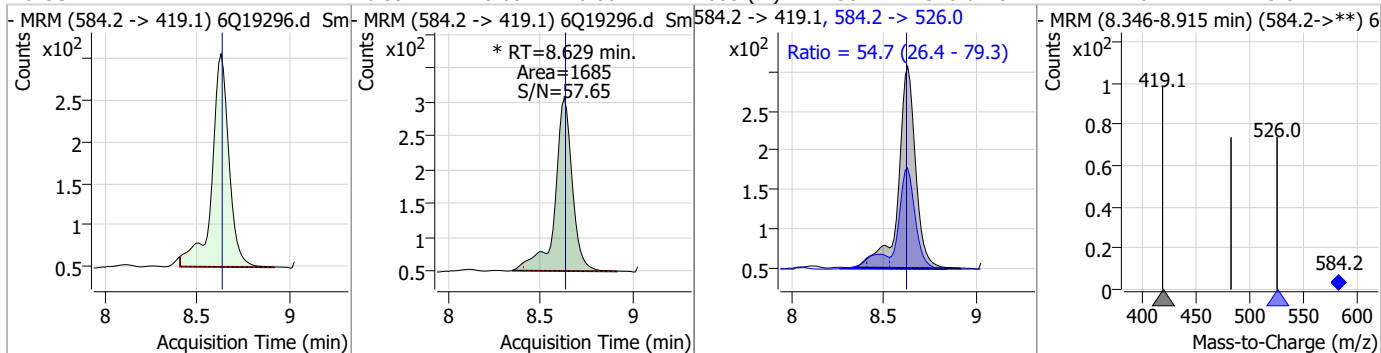
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.41	8.56	0.00	2651 (m)	498.9 -> 98.8	51.8	26.2	78.7



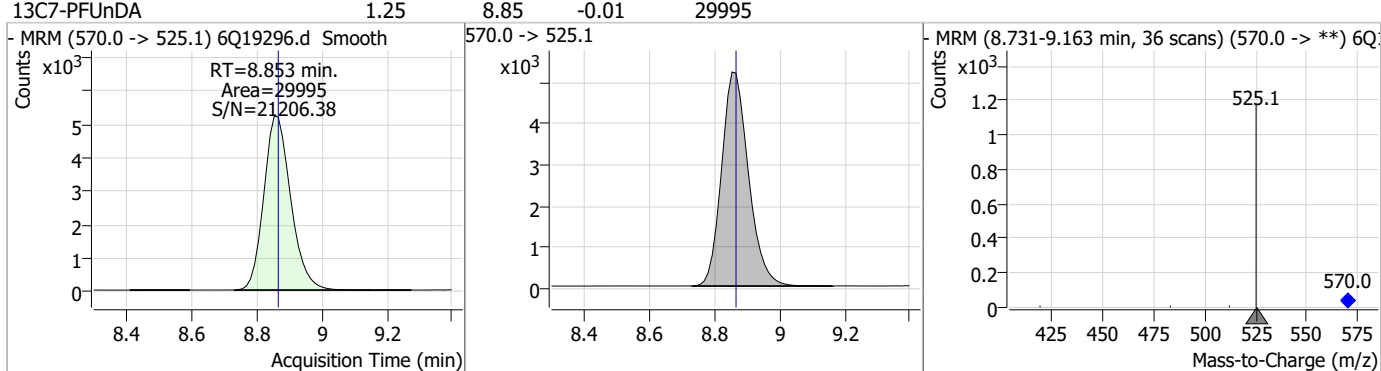
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.20	8.62	-0.01	25303				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.39	8.63	0.00	1685 (m)	584.2 -> 526.0	54.7	26.4	79.3

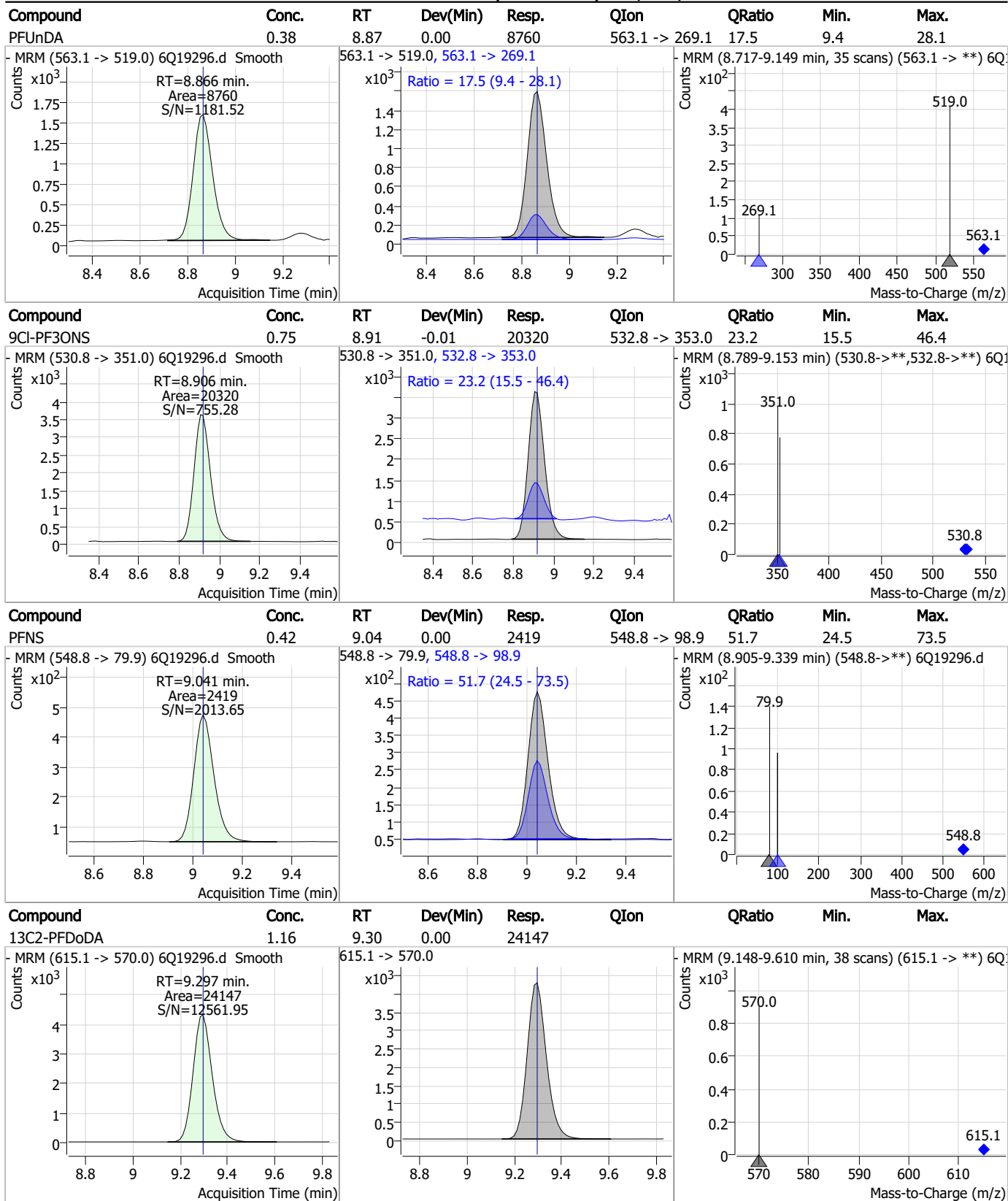


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.25	8.85	-0.01	29995				



7.7.3
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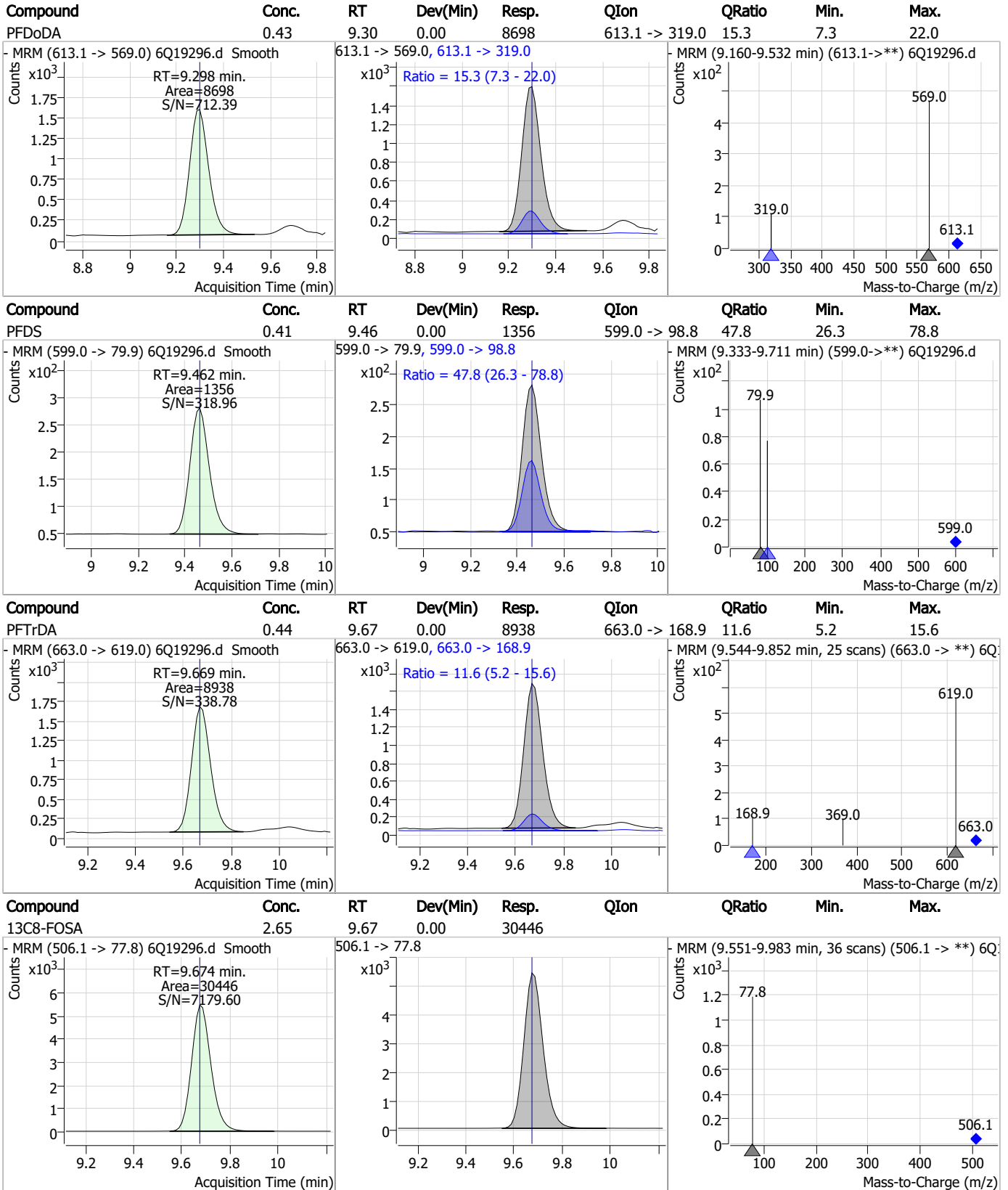
Perfluorinated Compounds by LC/MS/MS



7.7.3
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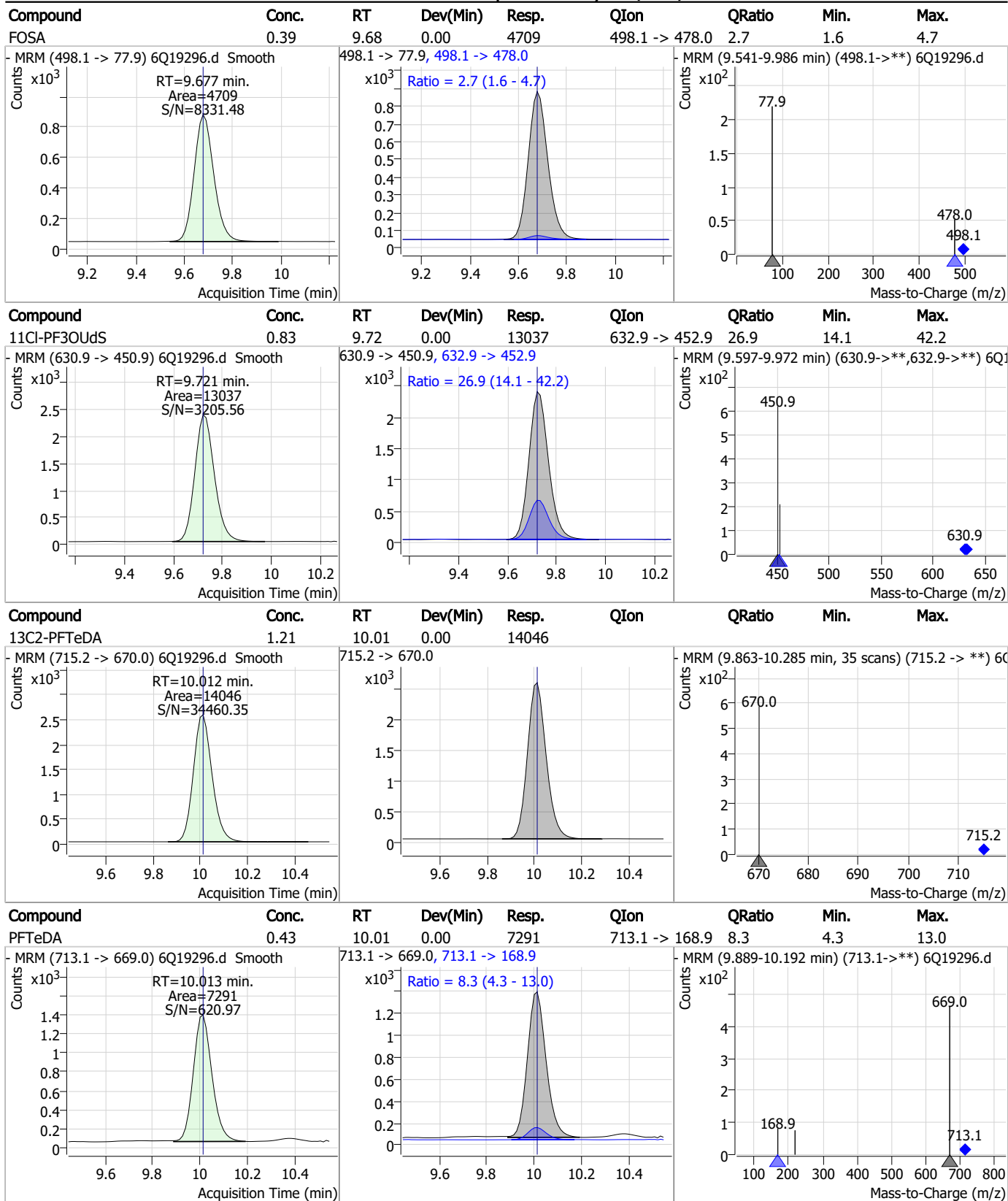
Perfluorinated Compounds by LC/MS/MS



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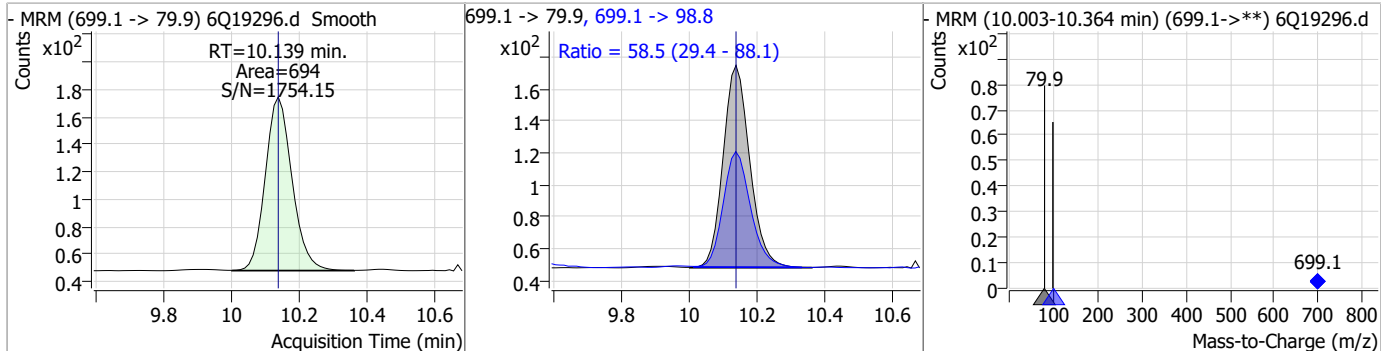
Perfluorinated Compounds by LC/MS/MS



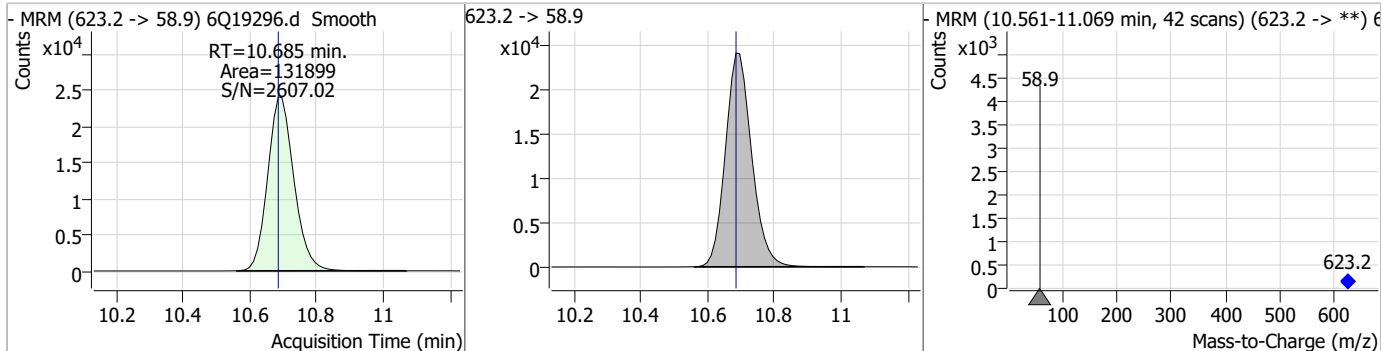
7.7.3
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Perfluorinated Compounds by LC/MS/MS

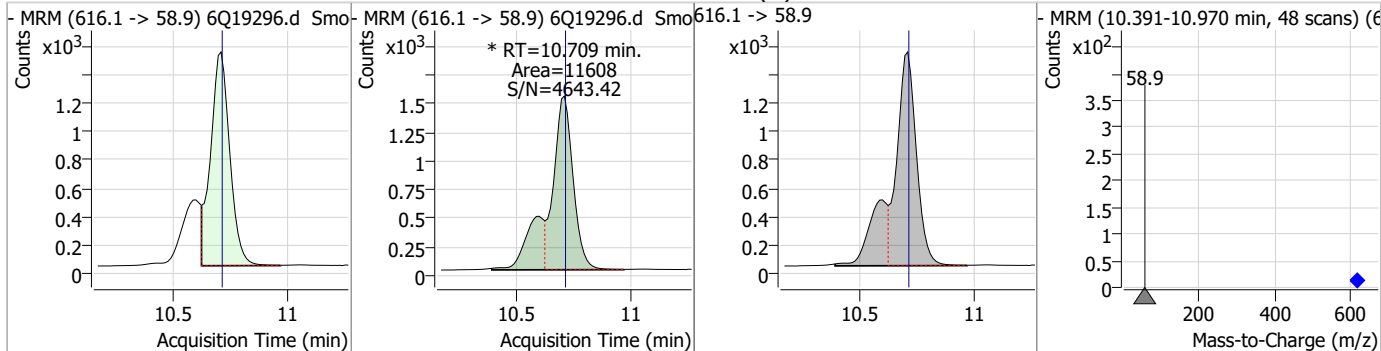
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.42	10.14	0.00	694	699.1 -> 98.8	58.5	29.4	88.1



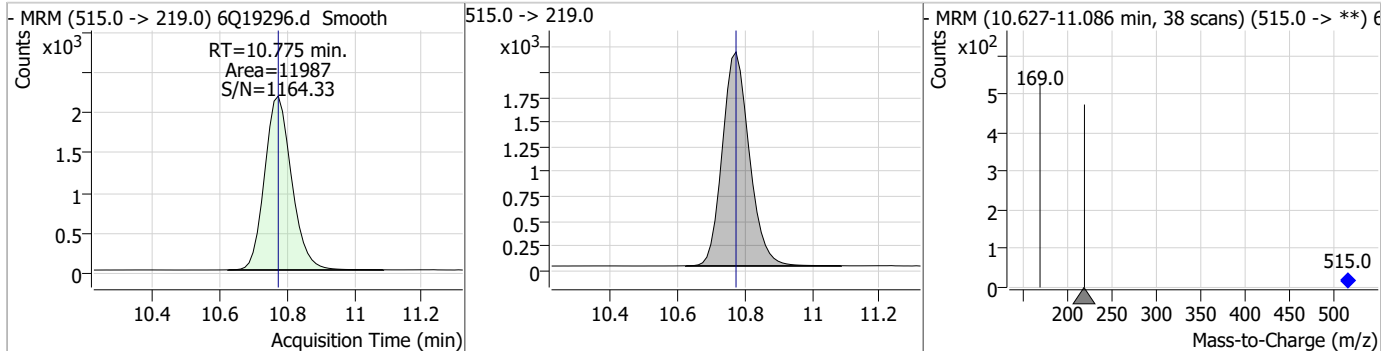
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.93	10.68	0.00	131899				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	2.03	10.71	0.00	11608 (m)				

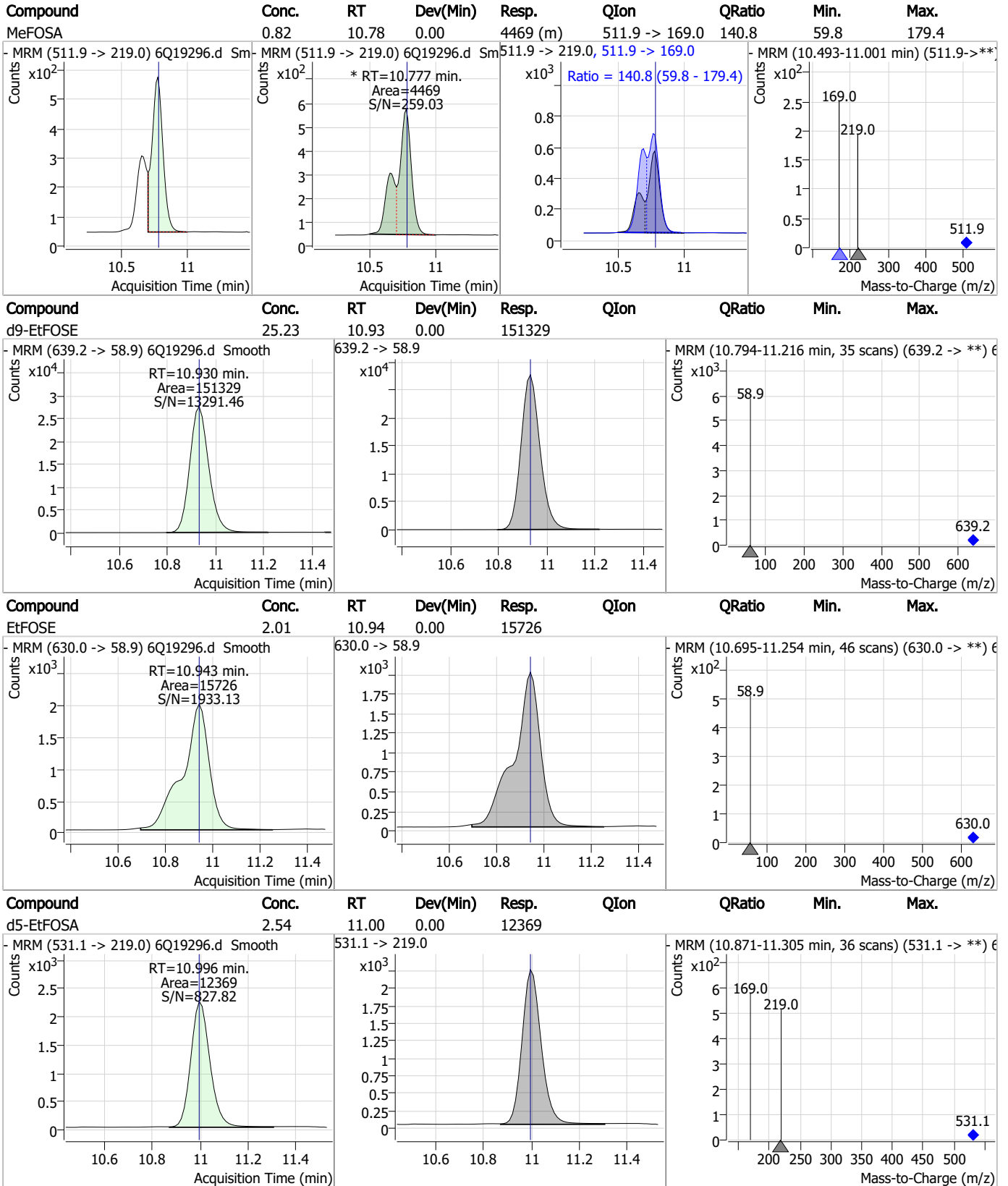


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.40	10.78	0.00	11987				



7.7.3
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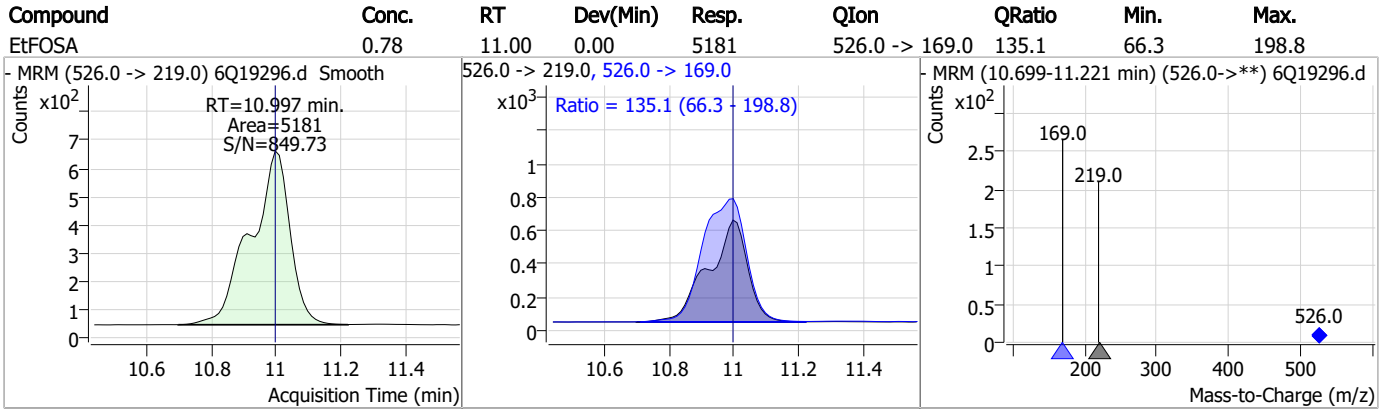
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



7.7.3

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Manual Integration Approval Summary

Sample Number: S6Q288-IC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19296.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 11:49 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.7.3.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19297.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 12:03:47 PM
 Sample Name : ic288-3
 Vial : P1-A4
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.097	216.8 -> 171.9	148237	10.00 µg/L	0.012
M5-PFPeA	4.560	268.3 -> 223.0	48384	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	53004	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	47212	2.50 µg/L	0.000
M8-PFOA	7.352	421.1 -> 376.0	80359	2.50 µg/L	0.000
M9-PFNA	7.895	472.1 -> 427.0	36274	1.25 µg/L	0.000
M6-PFDA	8.387	519.1 -> 474.1	22493	1.25 µg/L	0.000
M7-PFUnDA	8.866	570.0 -> 525.1	27677	1.25 µg/L	0.000
M2-PFDoDA	9.297	615.1 -> 570.0	27220	1.25 µg/L	0.000
M2-PFTeDA	10.012	715.2 -> 670.0	14251	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	28490	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	19925	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	12374	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	11783	2.50 µg/L	0.000
M2-4:2FTS	5.454	329.1 -> 80.9	3085	5.00 µg/L	0.012
M2-6:2FTS	7.113	429.1 -> 80.9	4664	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4172	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	28484	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	34746	10.00 µg/L	0.000
M5-EtFOSAA	8.628	589.2 -> 419.0	23067	5.00 µg/L	0.000
M7-MeFOSE	10.685	623.2 -> 58.9	129619	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	150458	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11977	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11764	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	16284	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	63353	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	8838	2.50 µg/L	0.000
13C4-PFOA	7.352	417.1 -> 372.0	86690	2.50 µg/L	0.000
13C2-PFDA	8.388	515.1 -> 470.1	29778	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	46722	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	49724	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.454	329.1 -> 80.9	3085	5.82 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.3%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4664	5.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.5%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4172	5.54 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.8%		
13C2-PFDoDA	9.297	615.1 -> 570.0	27220	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.4%		
13C2-PFTeDA	10.012	715.2 -> 670.0	14251	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C3-PFBS	5.746	302.1 -> 79.9	19925	2.71 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C3-PFHxS	7.478	402.1 -> 79.9	12374	2.66 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 = 106.6%	
13C4-PFBA	3.097	216.8 -> 171.9	148237	9.97 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C4-PFHpA	6.707	367.1 -> 322.0	47212	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C5-PFHxA	5.792	318.0 -> 273.0	53004	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFPeA	4.560	268.3 -> 223.0	48384	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C6-PFDA	8.387	519.1 -> 474.1	22493	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C7-PFUnDA	8.866	570.0 -> 525.1	27677	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C8-FOSA	9.674	506.1 -> 77.8	28490	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.4%	
13C8-PFOA	7.352	421.1 -> 376.0	80359	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C8-PFOS	8.563	507.1 -> 79.9	11783	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C9-PFNA	7.895	472.1 -> 427.0	36274	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.0%	
d3-MeFOSAA	8.420	573.2 -> 419.0	28484	4.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.5%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	34746	10.12 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d3-MeFOSA	10.775	515.0 -> 219.0	11764	2.20 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.8%	
d5-EtFOSAA	8.628	589.2 -> 419.0	23067	4.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.2%	
d7-MeFOSE	10.685	623.2 -> 58.9	129619	23.72 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
d9-EtFOSE	10.930	639.2 -> 58.9	150458	23.36 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.4%	
d5-EtFOSA	10.996	531.1 -> 219.0	11977	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.6%	
Target Compounds					QValue
4:2FTS	5.455	327.1 -> 307.0	24913	4.64 µg/L	99
		327.1 -> 80.9	9211		
6:2FTS	7.113	427.1 -> 407.0	26523	4.78 µg/L	100
		427.1 -> 80.9	8655		
8:2FTS	8.164	527.1 -> 507.0	13488	4.86 µg/L	100
		527.1 -> 80.8	5304		
EtFOSAA	8.629	584.2 -> 419.1	4933	1.26 µg/L	m 89
		584.2 -> 526.0	3002		
FOSA	9.677	498.1 -> 77.9	14340	1.27 µg/L	100
		498.1 -> 478.0	446		
MeFOSAA	8.421	570.1 -> 419.0	9885	1.34 µg/L	m 98
		570.1 -> 483.0	1771		
PFBA	3.093	212.8 -> 168.9	29077	4.87 µg/L	100
PFBS	5.747	298.7 -> 79.9	9541	1.07 µg/L	98
		298.7 -> 98.8	3512		
PFDA	8.388	512.9 -> 469.0	37621	1.12 µg/L	99
		512.9 -> 219.0	5713		
PFDODA	9.298	613.1 -> 569.0	25133	1.11 µg/L	95
		613.1 -> 319.0	4150		
PFDS	9.462	599.0 -> 79.9	4063	1.14 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2082			
PFHpA	6.708	363.1 -> 319.0	30542	1.21	µg/L	96
		363.1 -> 169.0	5124			
PFHpS	8.059	449.0 -> 79.9	7522	1.07	µg/L	98
		449.0 -> 98.9	3950			
PFHxA	5.795	313.0 -> 269.0	25610	1.20	µg/L	99
		313.0 -> 118.9	1458			
PFHxS	7.479	398.7 -> 79.9	8194	1.10	µg/L	m 94
		398.7 -> 98.9	3812			
PFNA	7.896	463.0 -> 419.0	38023	1.13	µg/L	95
		463.0 -> 219.0	8002			
PFNS	9.041	548.8 -> 79.9	6746	1.10	µg/L	89
		548.8 -> 98.9	3809			
PFOA	7.353	413.0 -> 369.0	48600	1.10	µg/L	97
		413.0 -> 169.0	8738			
PFOS	8.564	498.9 -> 79.9	7806	1.12	µg/L	m 93
		498.9 -> 98.8	3709			
PFPeA	4.563	263.0 -> 219.0	34905	2.44	µg/L	100
PFPeS	6.785	349.1 -> 79.9	7959	1.15	µg/L	93
		349.1 -> 98.9	3437			
PFTeDA	10.013	713.1 -> 669.0	19563	1.15	µg/L	99
		713.1 -> 168.9	1778			
PFTrDA	9.669	663.0 -> 619.0	25811	1.13	µg/L	98
		663.0 -> 168.9	2539			
PFUnDA	8.866	563.1 -> 519.0	29397	1.38	µg/L	91
		563.1 -> 269.1	4304			
11CI-PF3OUdS	9.721	630.9 -> 450.9	37063	2.34	µg/L	94
		632.9 -> 452.9	11589			
9CI-PF3ONS	8.906	530.8 -> 351.0	62324	2.29	µg/L	93
		532.8 -> 353.0	16866			
ADONA	6.959	376.9 -> 250.9	138179	2.46	µg/L	94
		376.9 -> 84.8	35988			
HFPO-DA	6.169	284.9 -> 168.9	8641	2.38	µg/L	98
		284.9 -> 184.9	1092			
3:3FTCA	3.958	241.0 -> 177.0	5763	5.96	µg/L	100
		241.0 -> 117.0	774			
5:3FTCA	6.374	341.0 -> 237.1	126491	29.75	µg/L	99
		341.0 -> 217.0	93688			
7:3FTCA	7.748	441.0 -> 316.9	85564	29.76	µg/L	96
		441.0 -> 336.9	198396			
EtFOSA	10.997	526.0 -> 219.0	15588	2.44	µg/L	96
		526.0 -> 169.0	21380			
EtFOSE	10.943	630.0 -> 58.9	48724	6.26	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	13107	2.46	µg/L	m 83
		511.9 -> 169.0	18116			
MeFOSE	10.709	616.1 -> 58.9	33894	6.03	µg/L	100
PFDoDS	10.139	699.1 -> 79.9	2060	1.17	µg/L	88
		699.1 -> 98.8	1020			
NFDHA	5.673	295.0 -> 201.0	6337	2.32	µg/L	99
		295.0 -> 84.9	1670			
PFMBA	4.988	279.0 -> 85.1	24615	2.42	µg/L	100
PFMPA	3.667	229.0 -> 84.9	19406	2.44	µg/L	100
PFEESA	6.288	314.8 -> 134.9	64227	2.22	µg/L	100
		314.8 -> 82.9	2172			

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

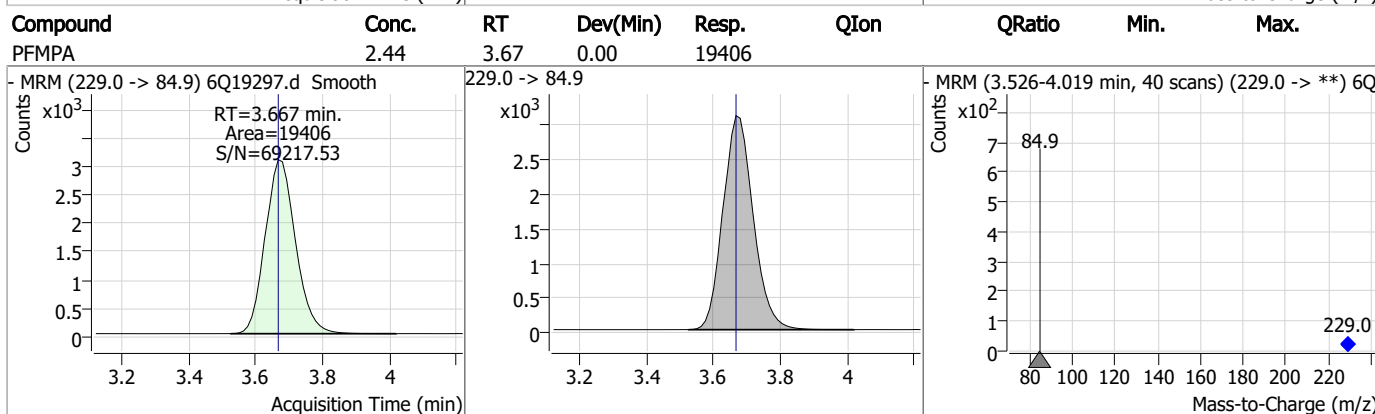
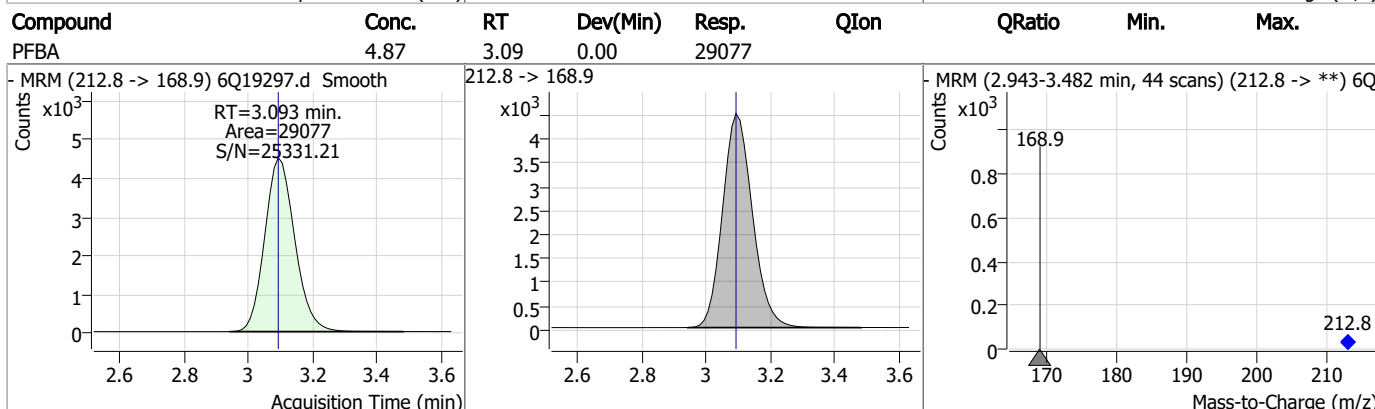
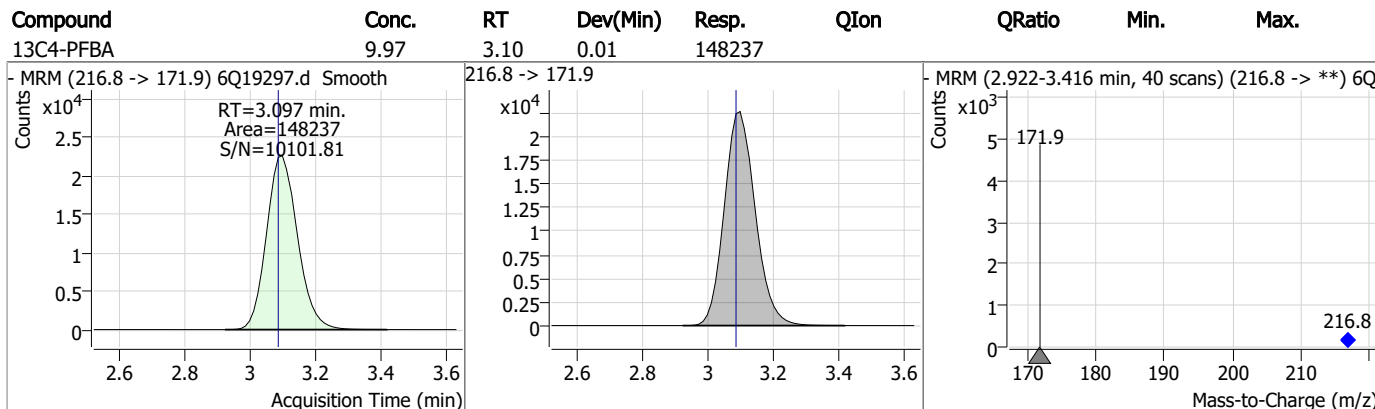
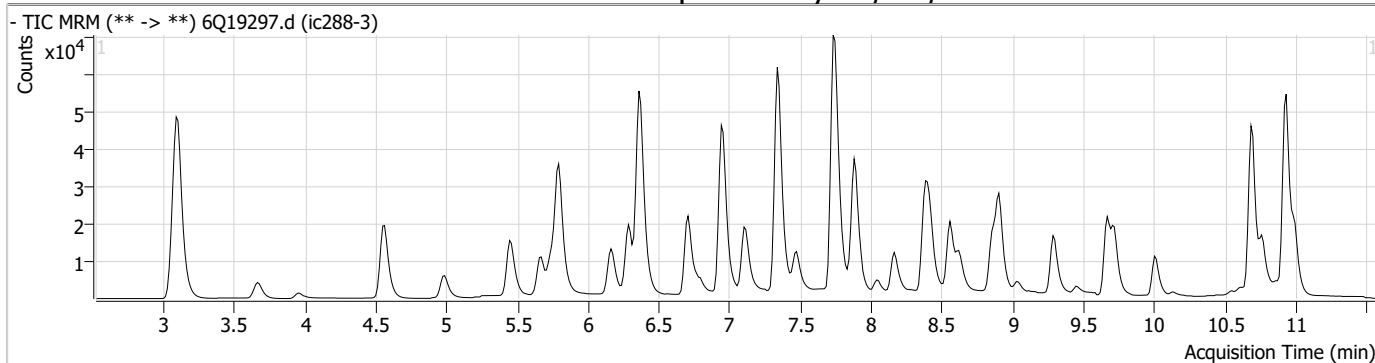
Perfluorinated Compounds by LC/MS/MS

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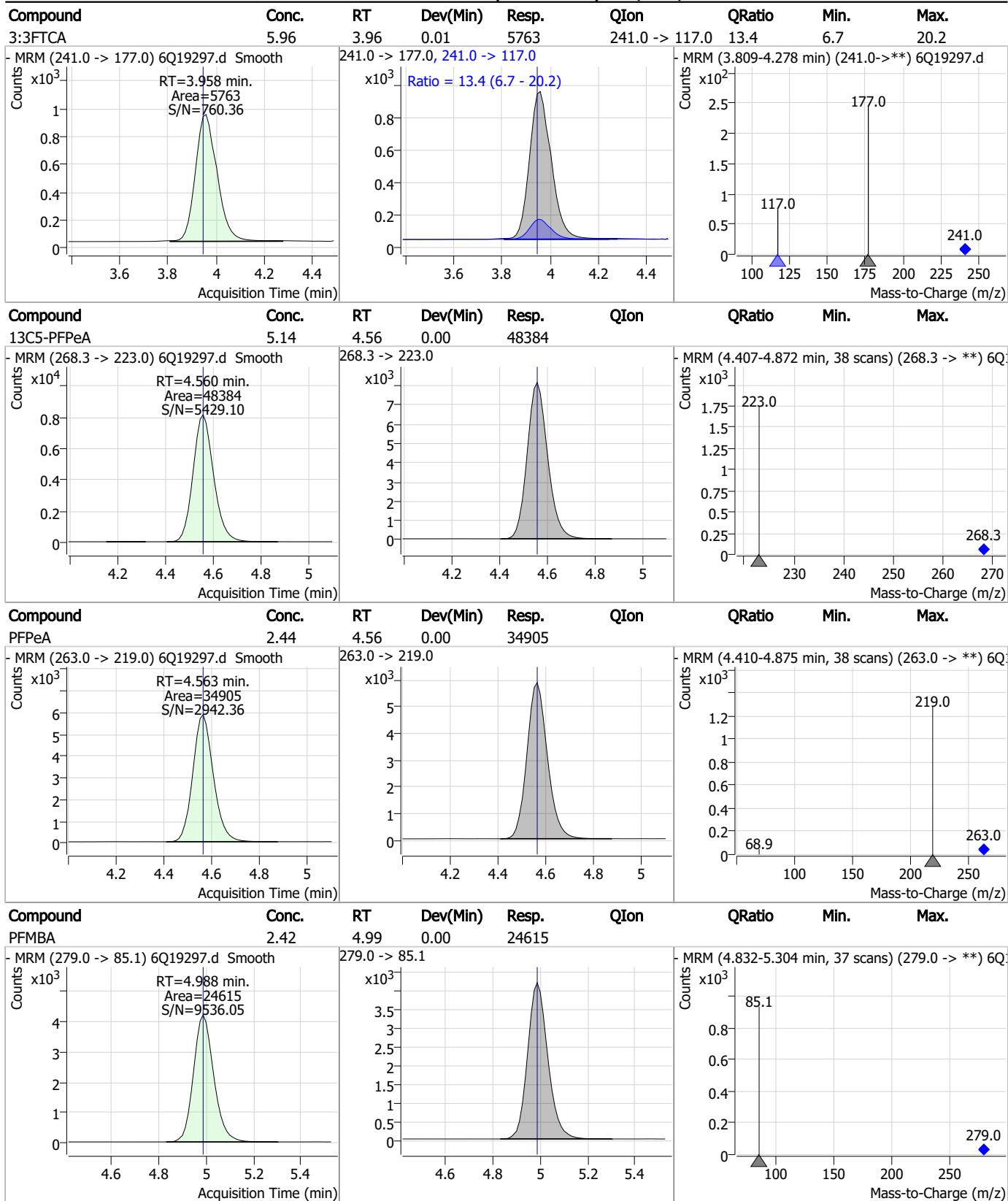
7.7.4

7

Perfluorinated Compounds by LC/MS/MS

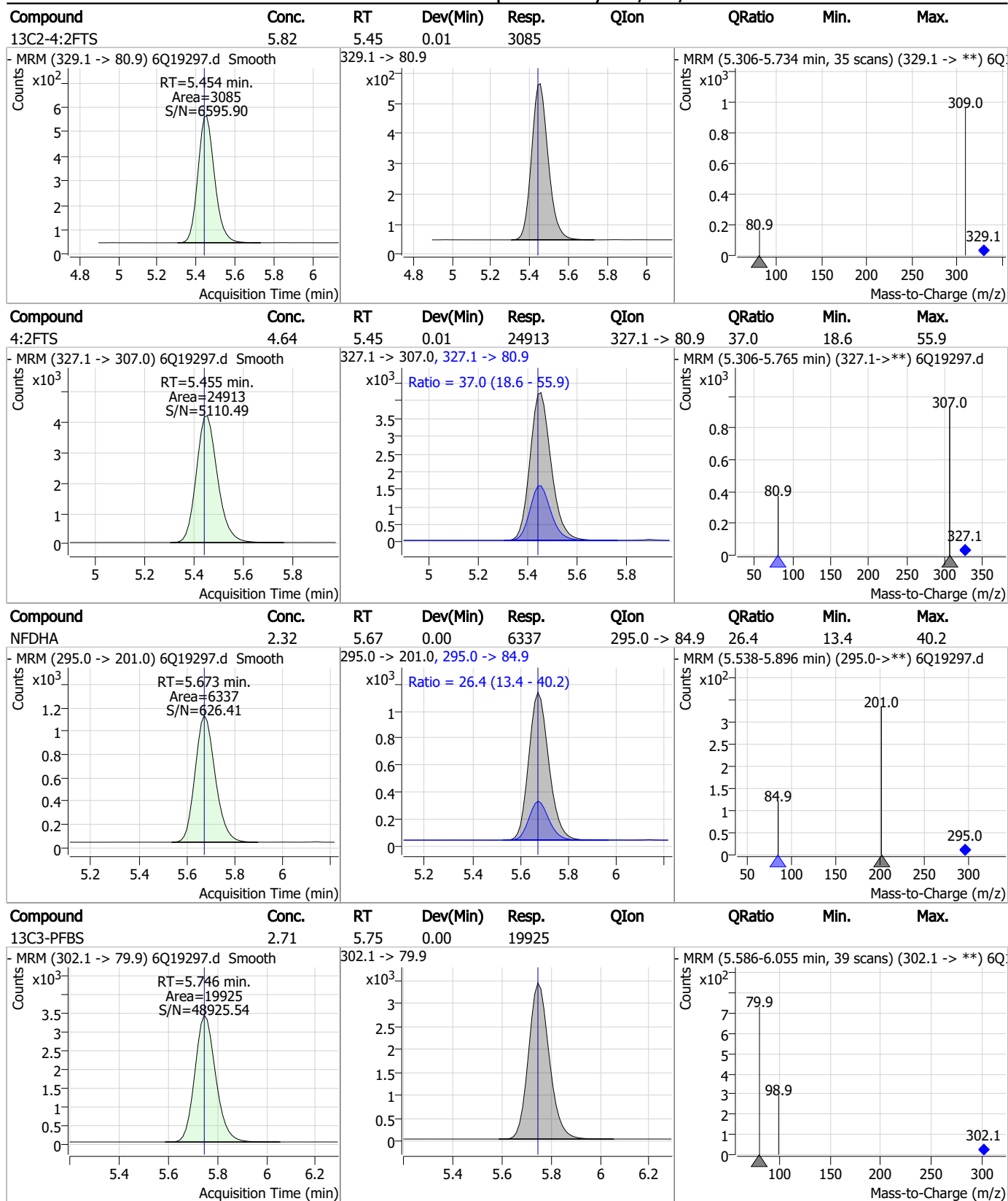


Perfluorinated Compounds by LC/MS/MS



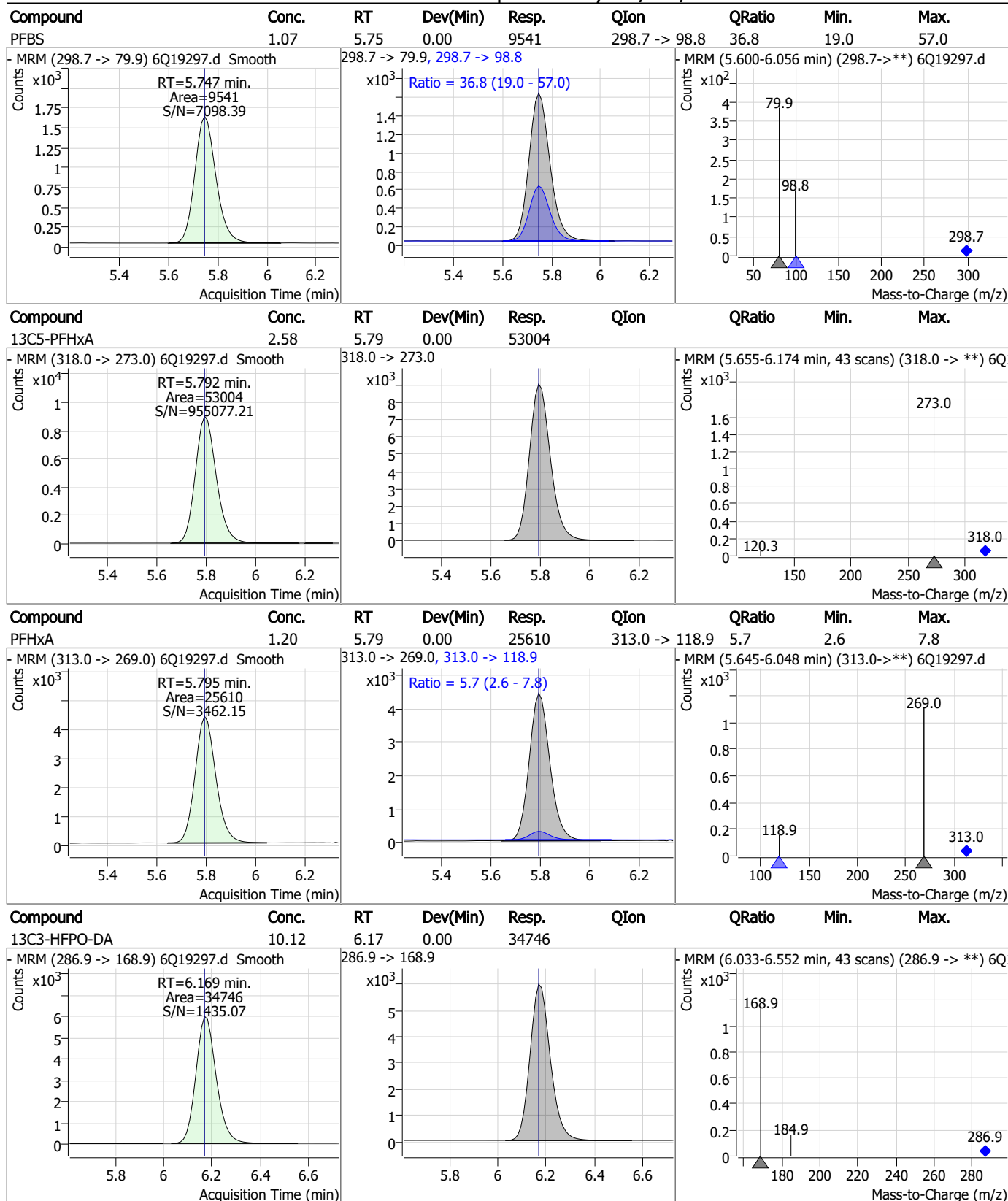
7.7.4
7

Perfluorinated Compounds by LC/MS/MS



7.7.4
7

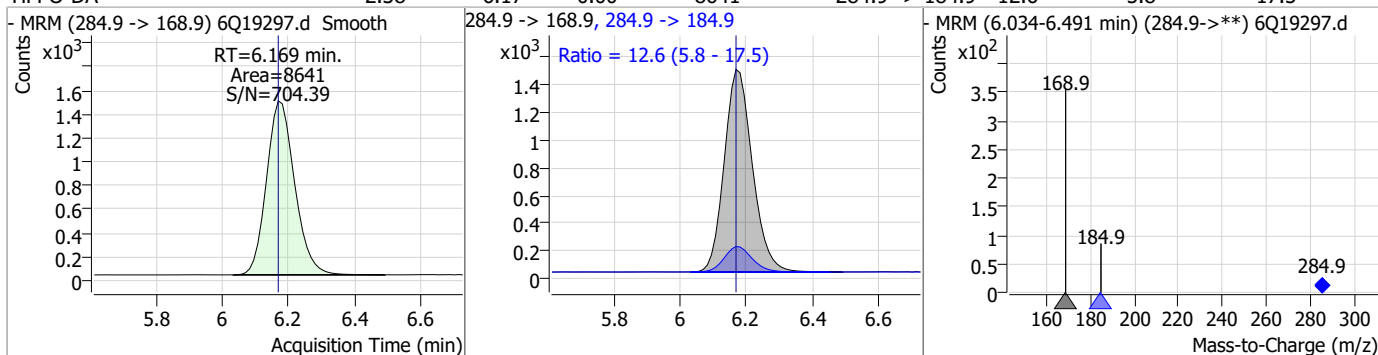
Perfluorinated Compounds by LC/MS/MS



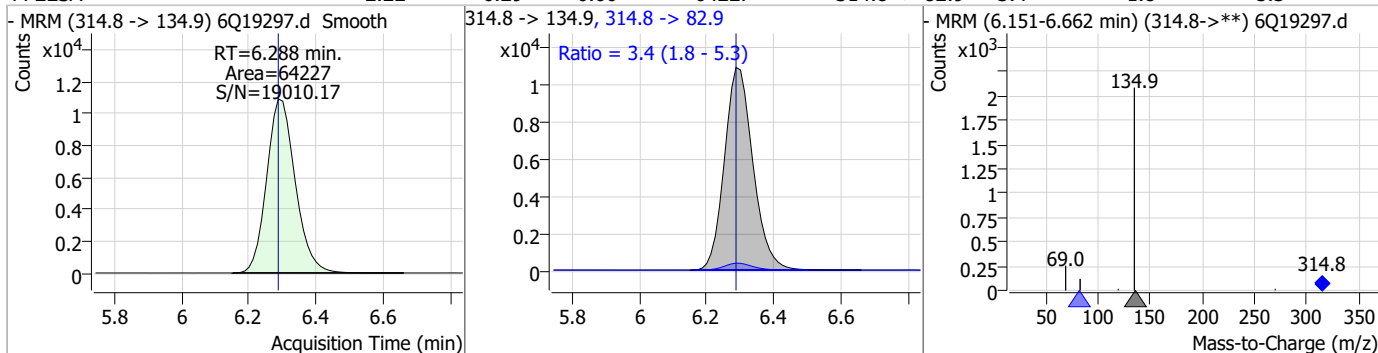
7.7.4
7

Perfluorinated Compounds by LC/MS/MS

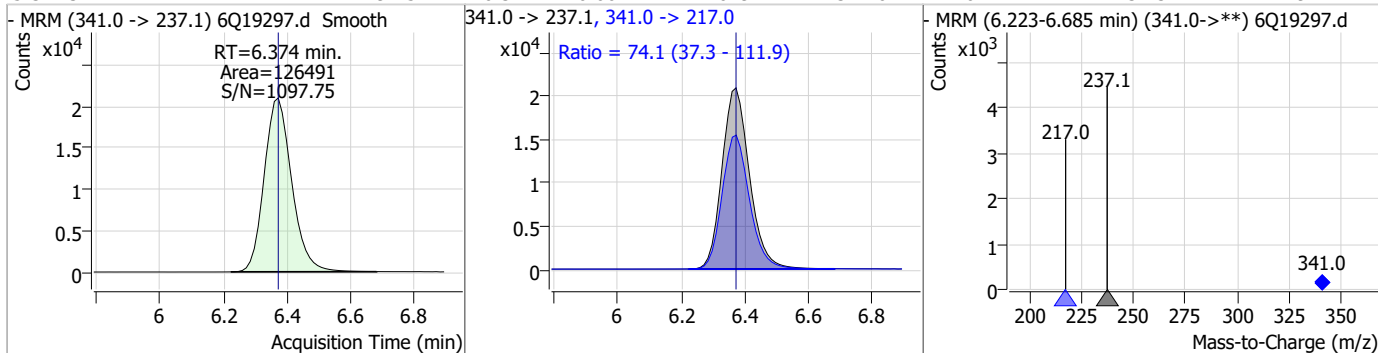
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	2.38	6.17	0.00	8641	284.9 -> 184.9	12.6	5.8	17.5



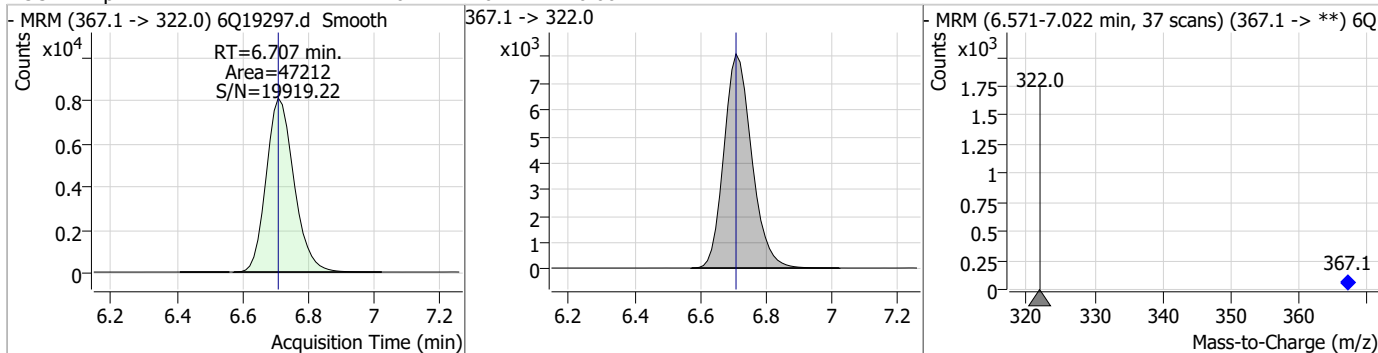
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	2.22	6.29	0.00	64227	314.8 -> 82.9	3.4	1.8	5.3



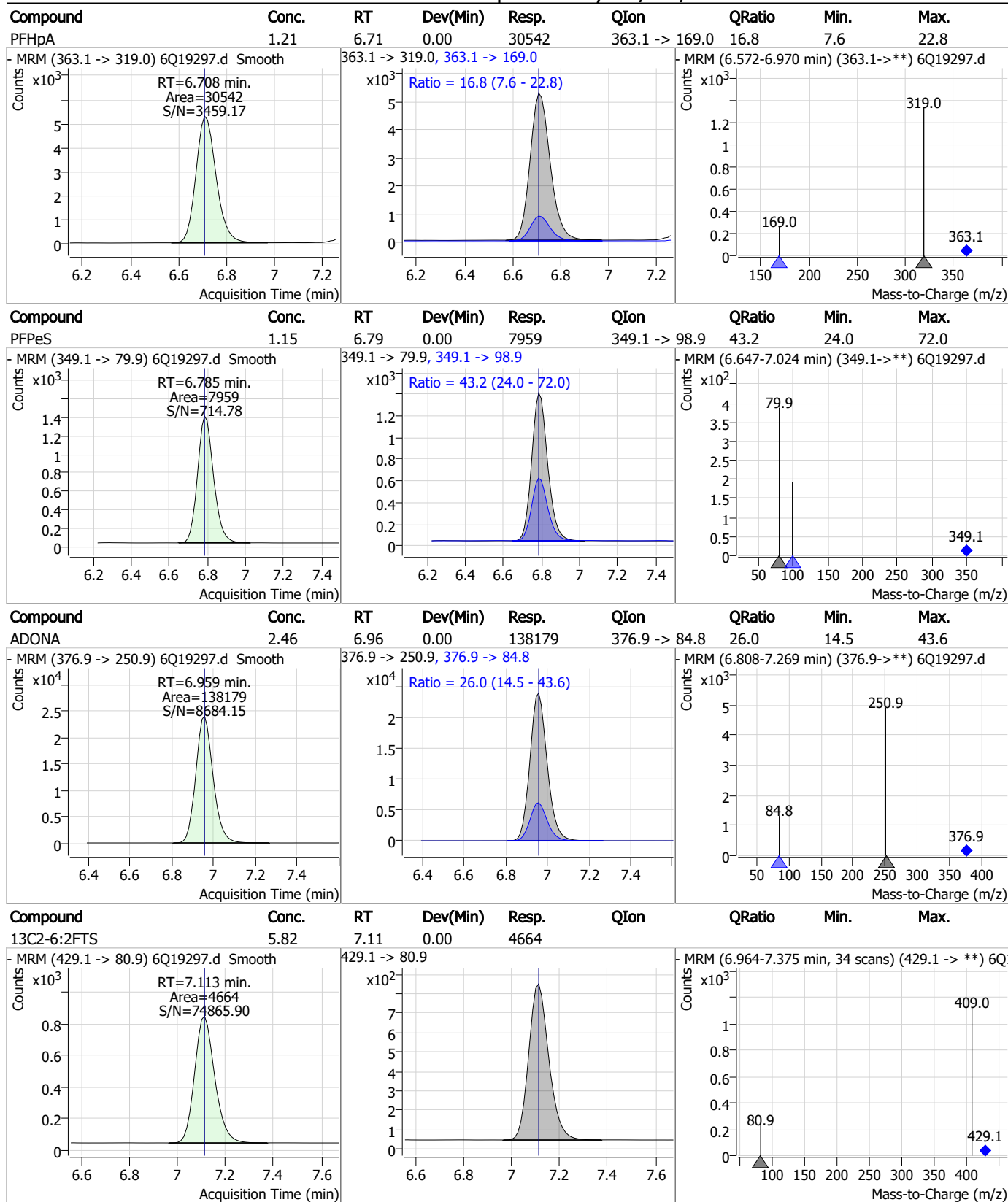
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	29.75	6.37	0.00	126491	341.0 -> 217.0	74.1	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.46	6.71	0.00	47212	367.1 -> 322.0			

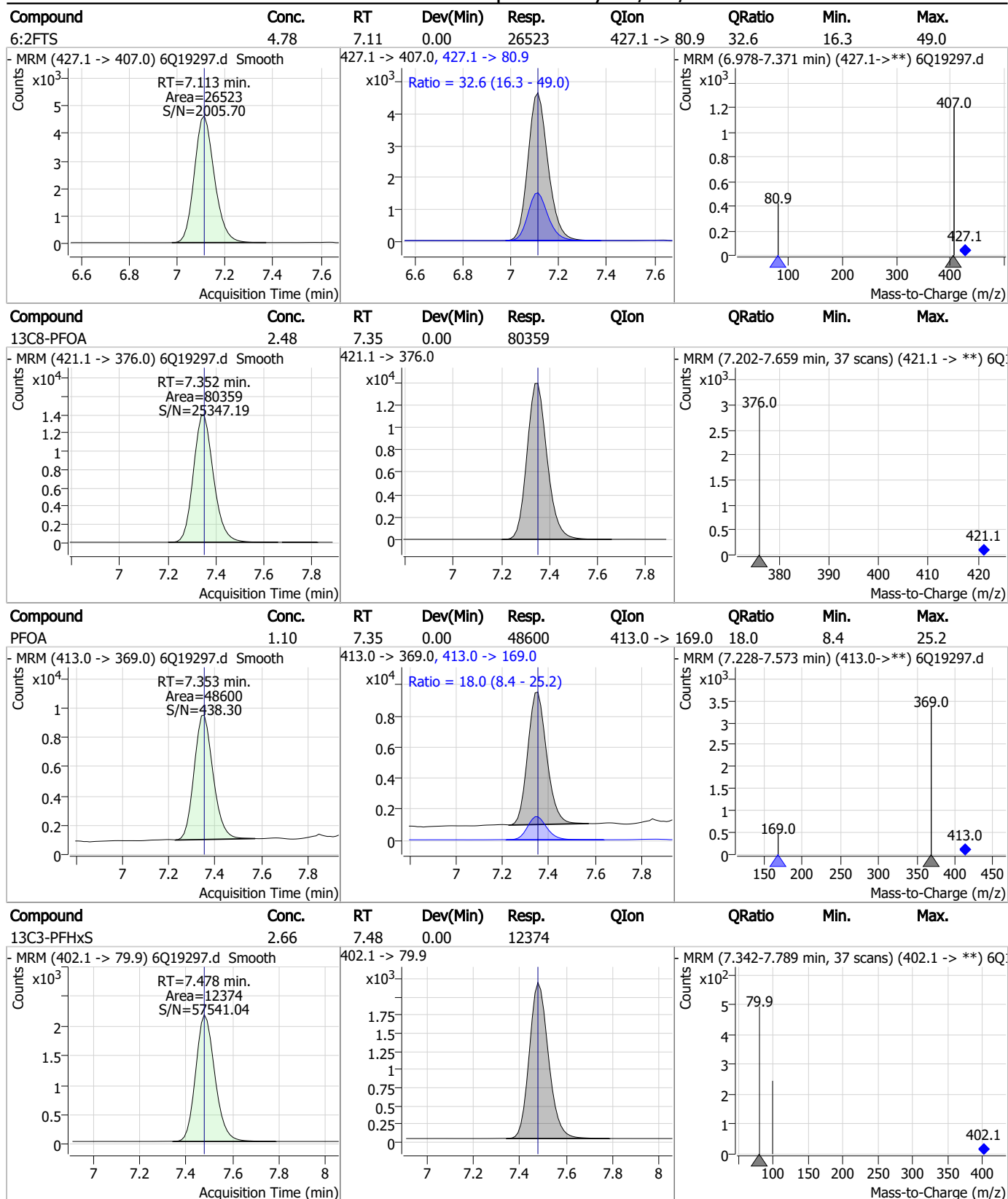


Perfluorinated Compounds by LC/MS/MS



7.7.4
7

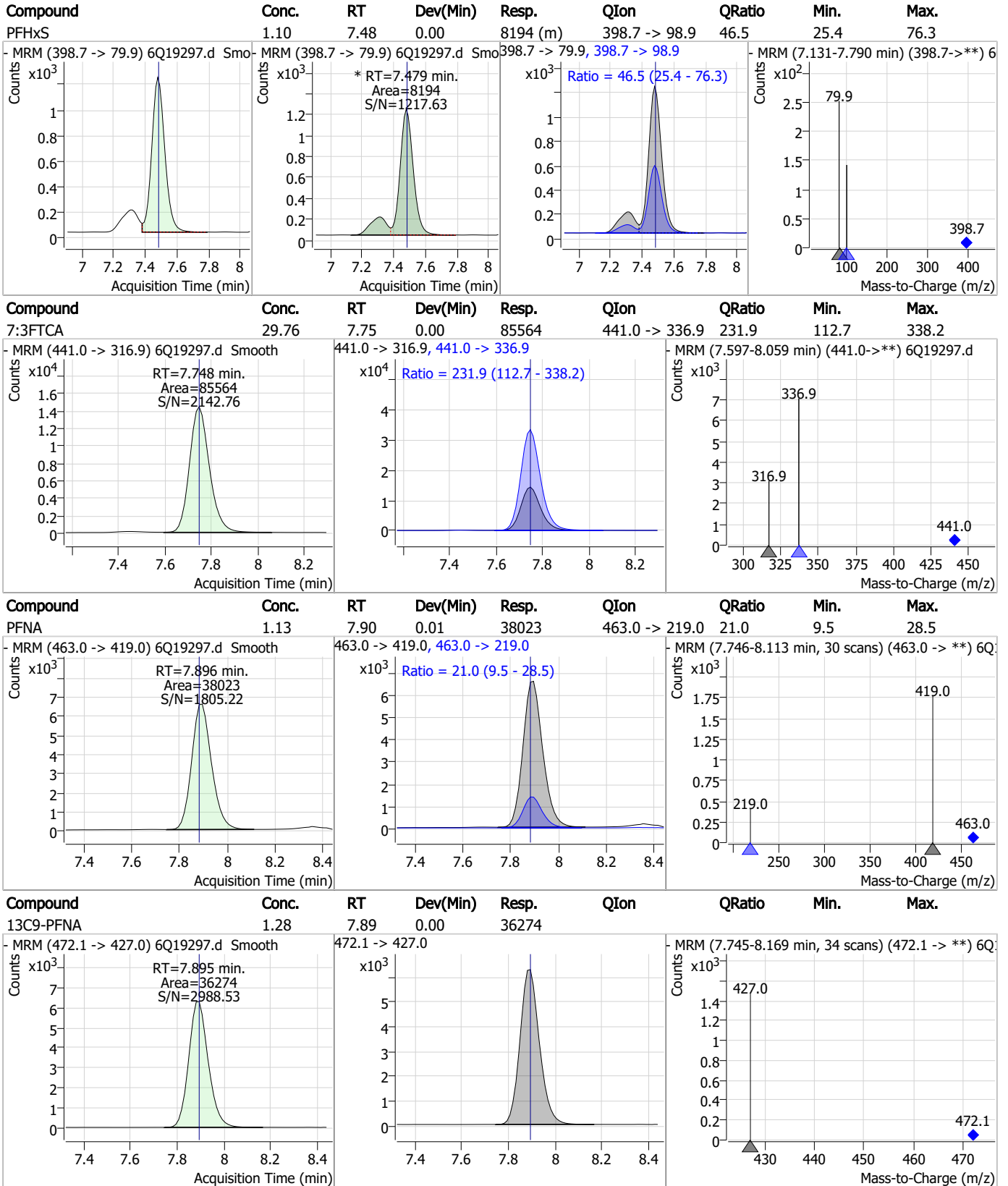
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

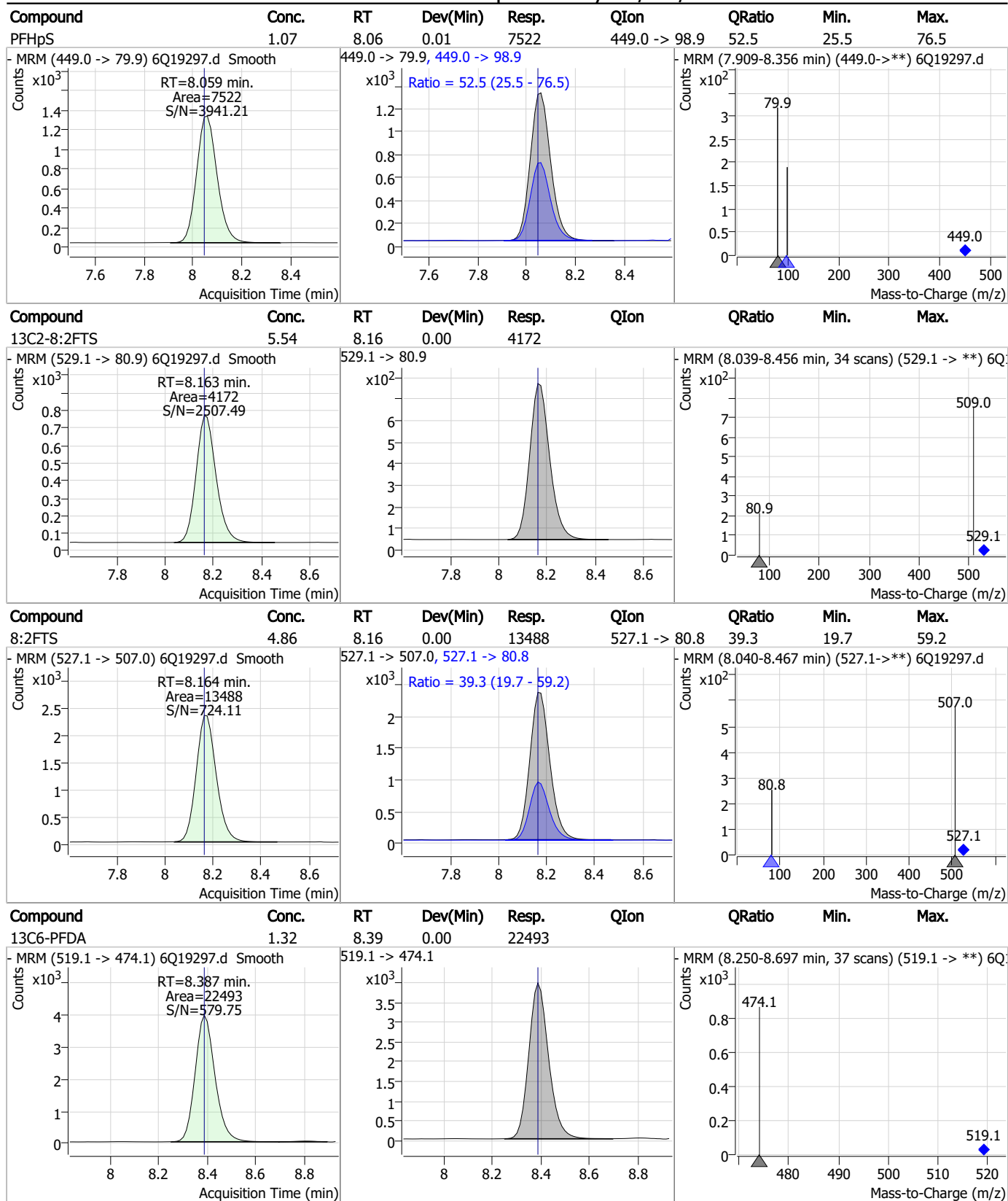
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Perfluorinated Compounds by LC/MS/MS

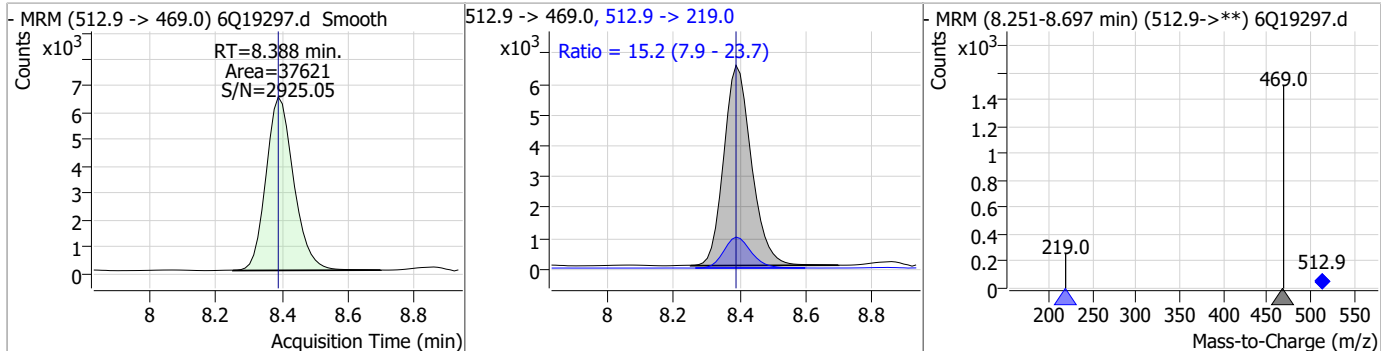


7.7.4

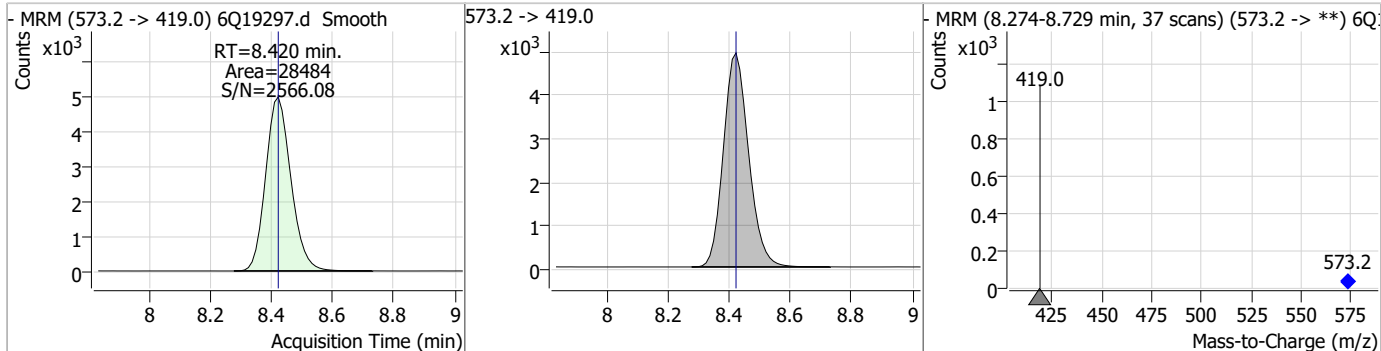
7

Perfluorinated Compounds by LC/MS/MS

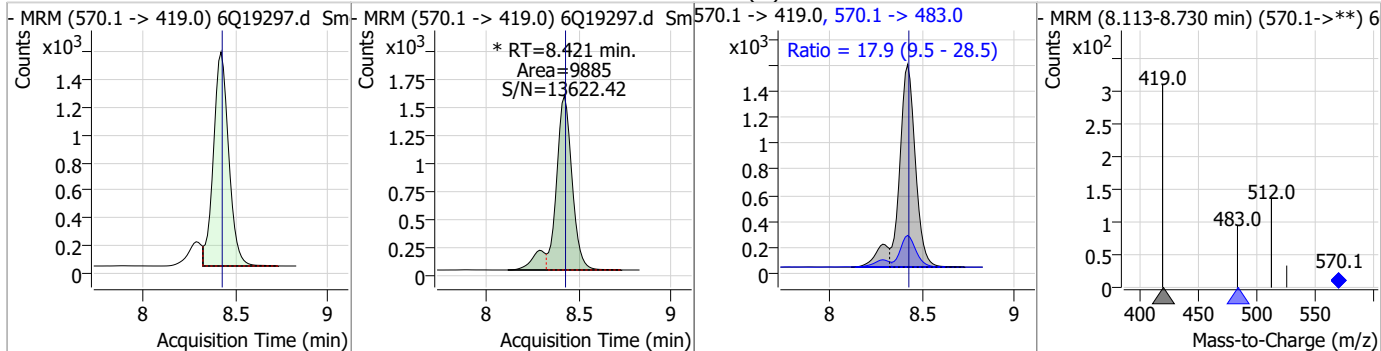
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	1.12	8.39	0.00	37621	512.9 -> 219.0	15.2	7.9	23.7



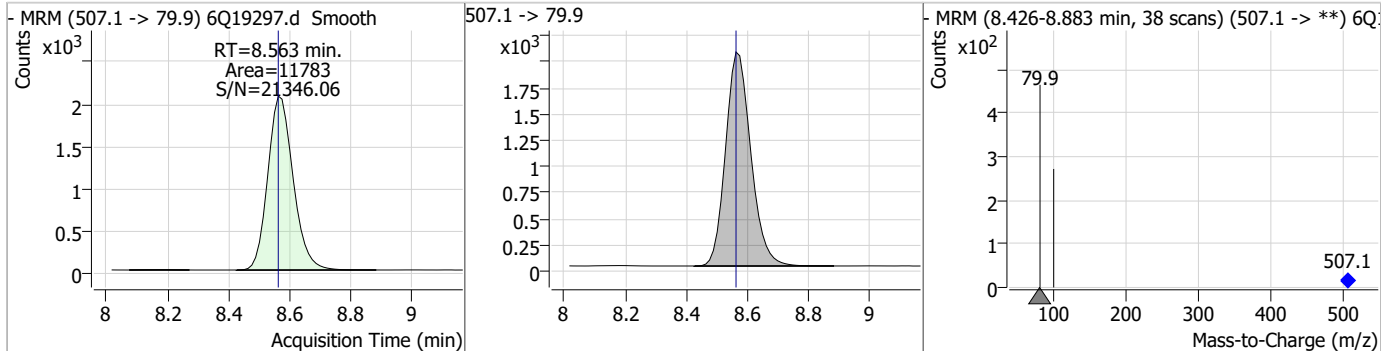
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.62	8.42	0.00	28484				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.34	8.42	0.00	9885 (m)	570.1 -> 483.0	17.9	9.5	28.5

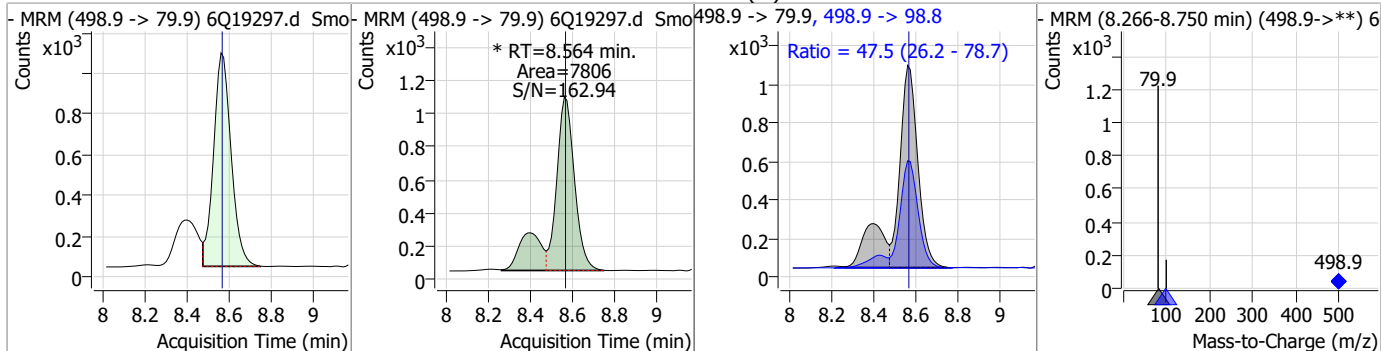


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.40	8.56	0.00	11783				

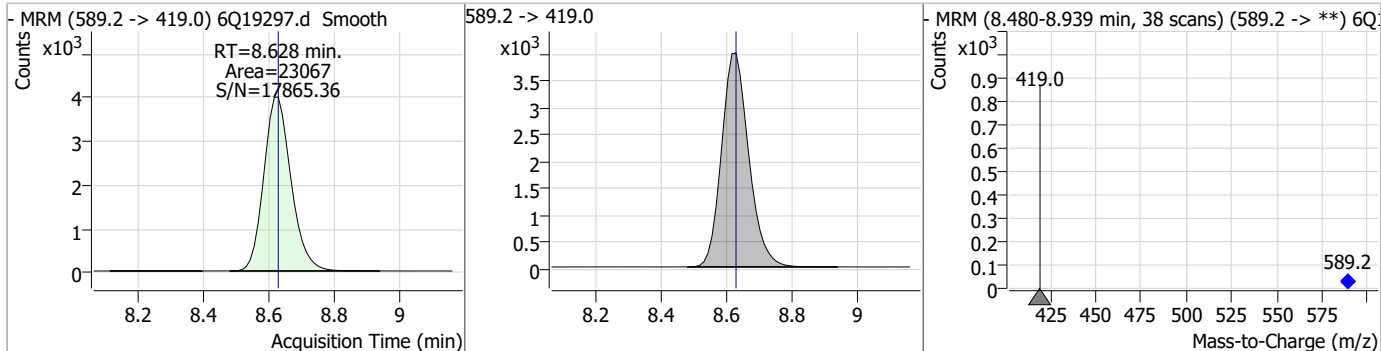


Perfluorinated Compounds by LC/MS/MS

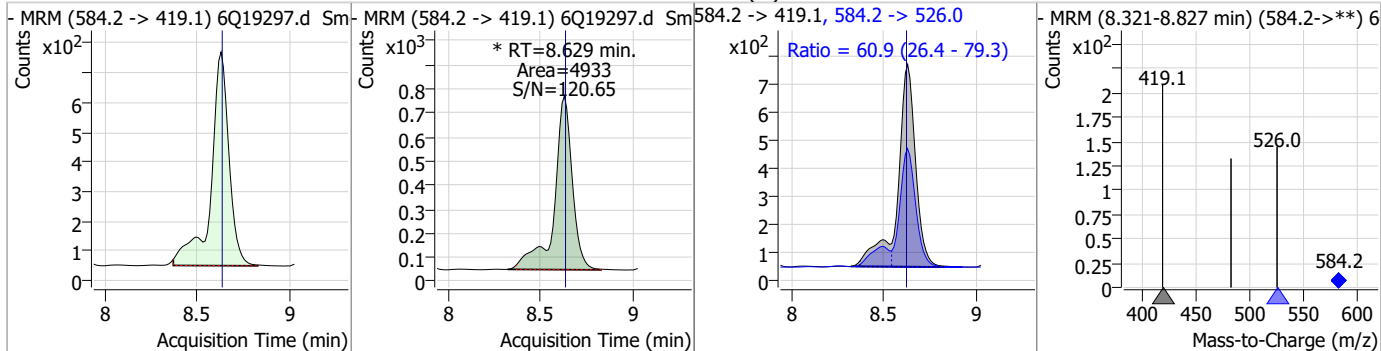
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.12	8.56	0.00	7806 (m)	498.9 -> 98.8	47.5	26.2	78.7



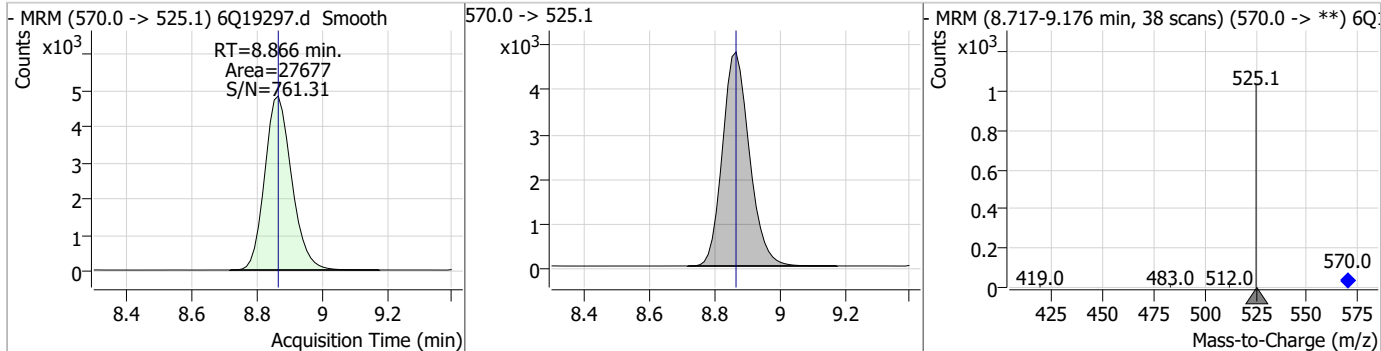
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.41	8.63	0.00	23067				



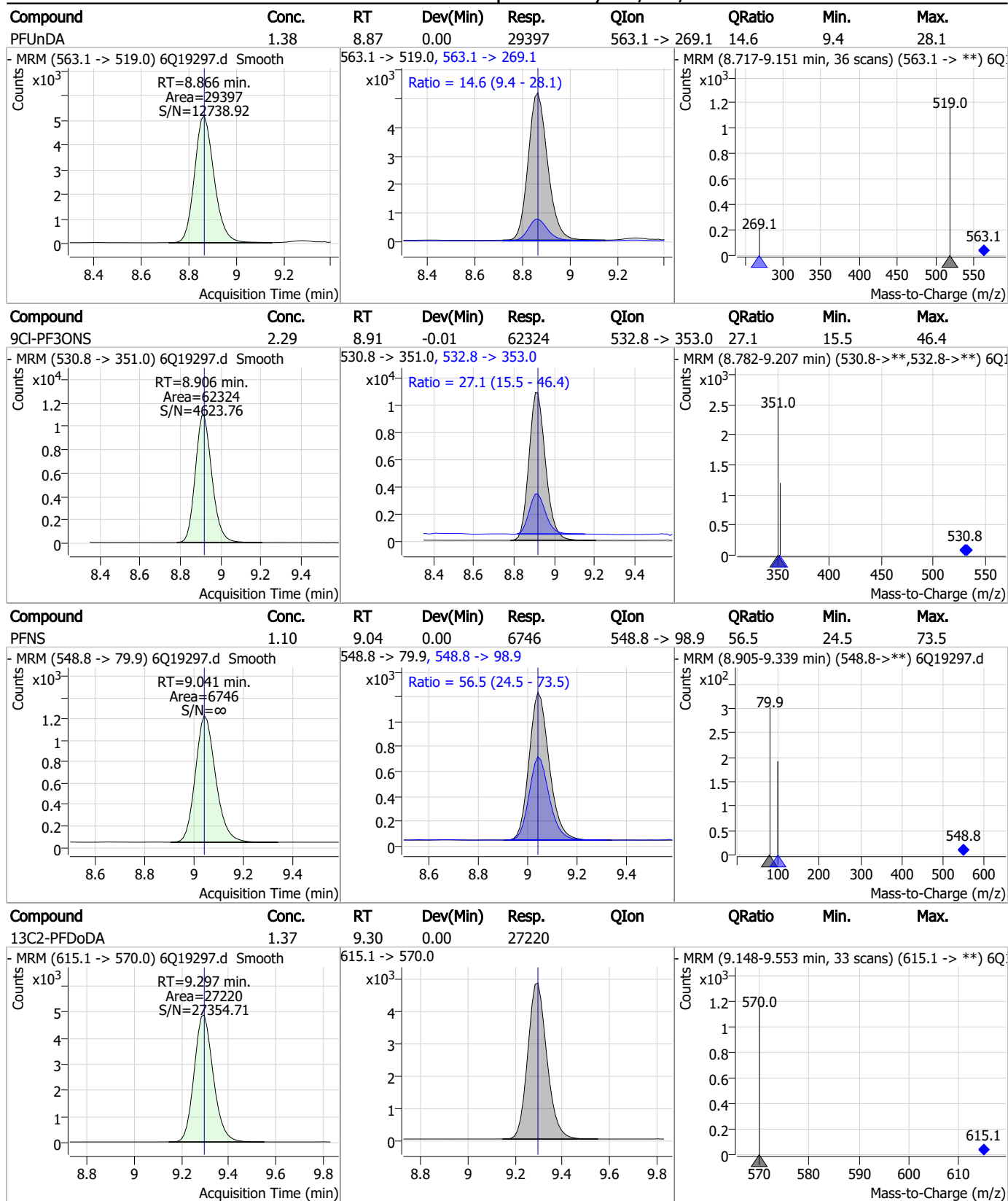
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.26	8.63	0.00	4933 (m)	584.2 -> 526.0	60.9	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.21	8.87	0.00	27677				



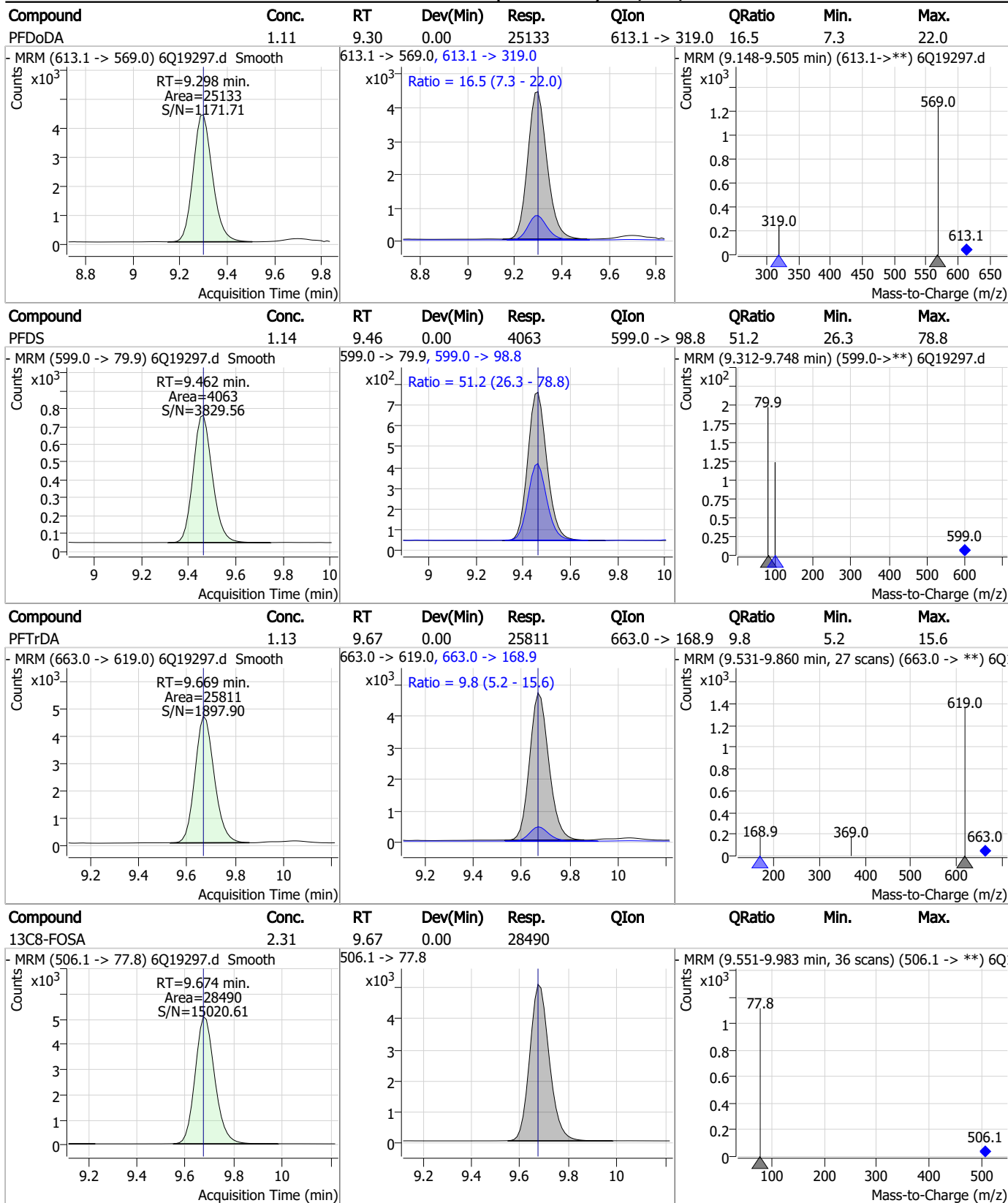
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Perfluorinated Compounds by LC/MS/MS

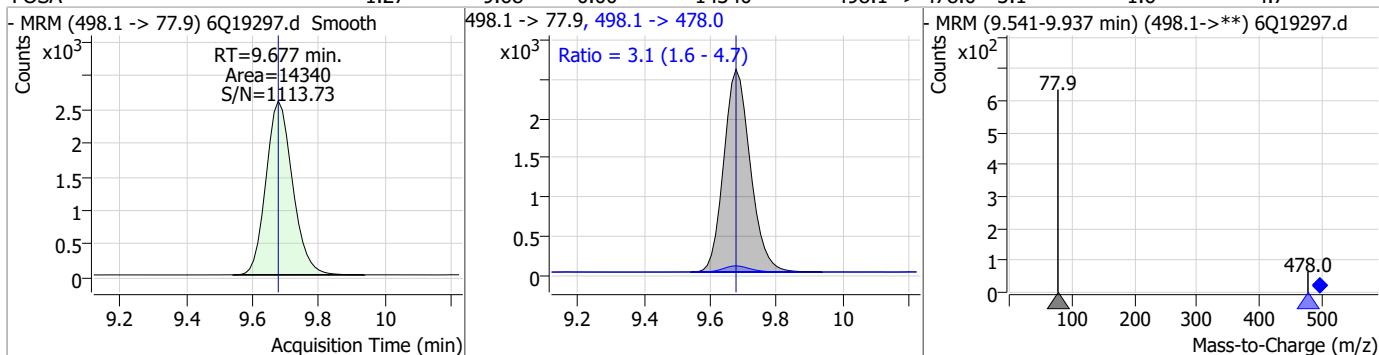


7.7.4

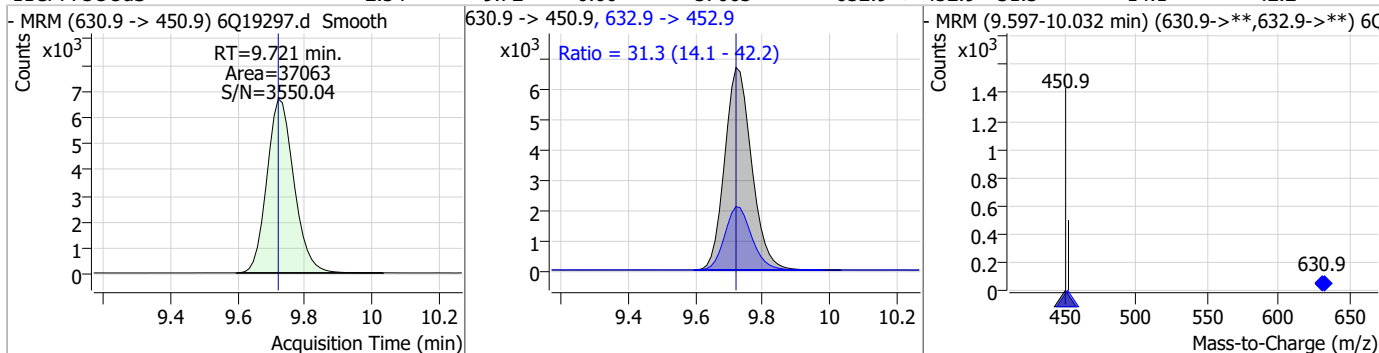
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Perfluorinated Compounds by LC/MS/MS

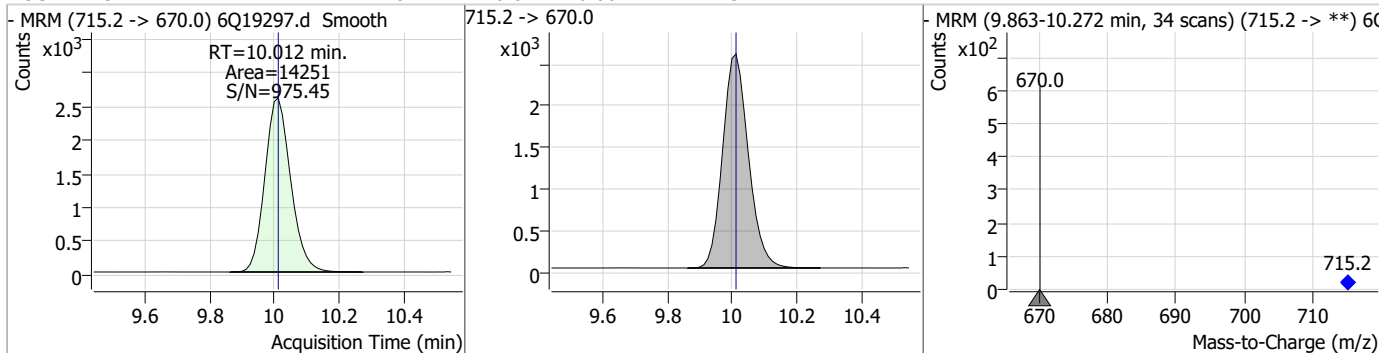
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.27	9.68	0.00	14340	498.1 -> 478.0	3.1	1.6	4.7



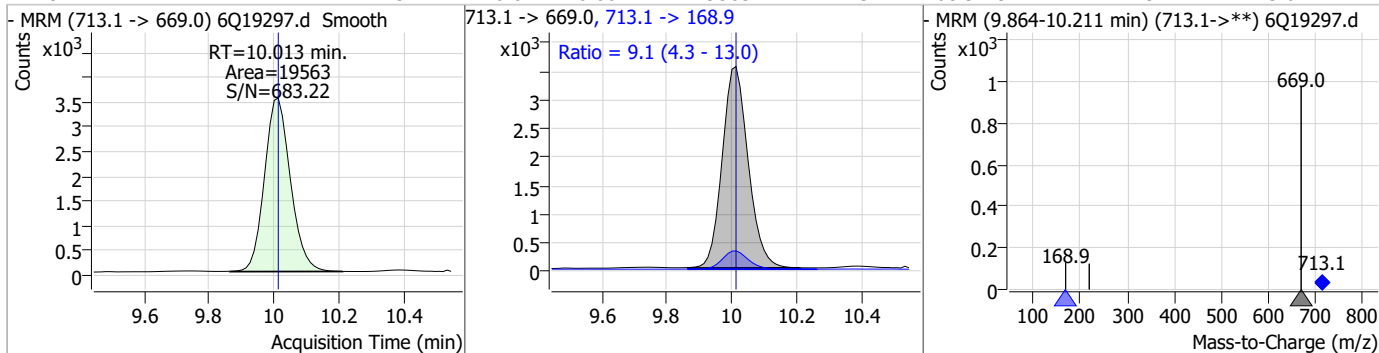
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11CI-PF3OUds	2.34	9.72	0.00	37063	632.9 -> 452.9	31.3	14.1	42.2



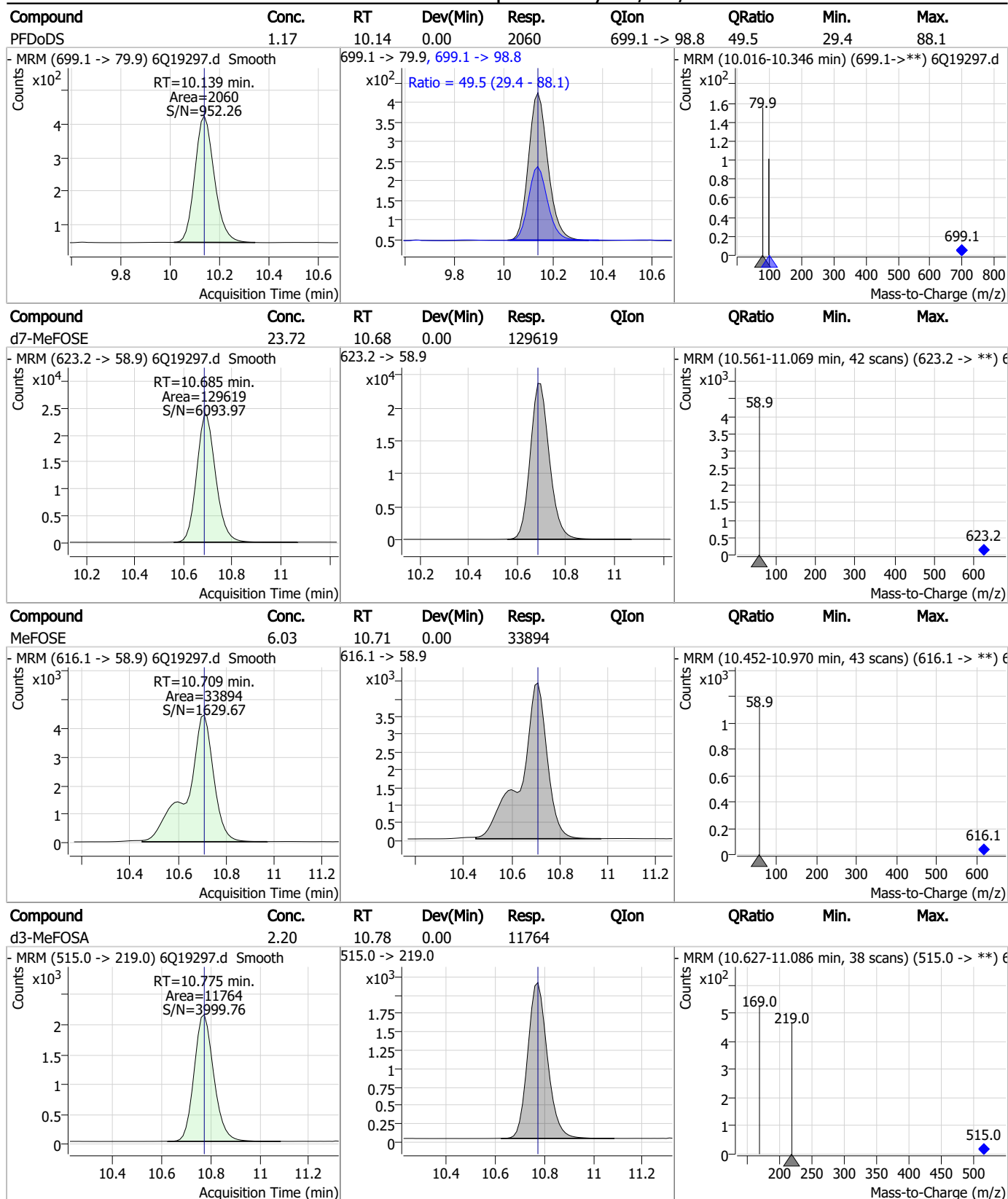
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.28	10.01	0.00	14251	715.2 -> 670.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.15	10.01	0.00	19563	713.1 -> 168.9	9.1	4.3	13.0



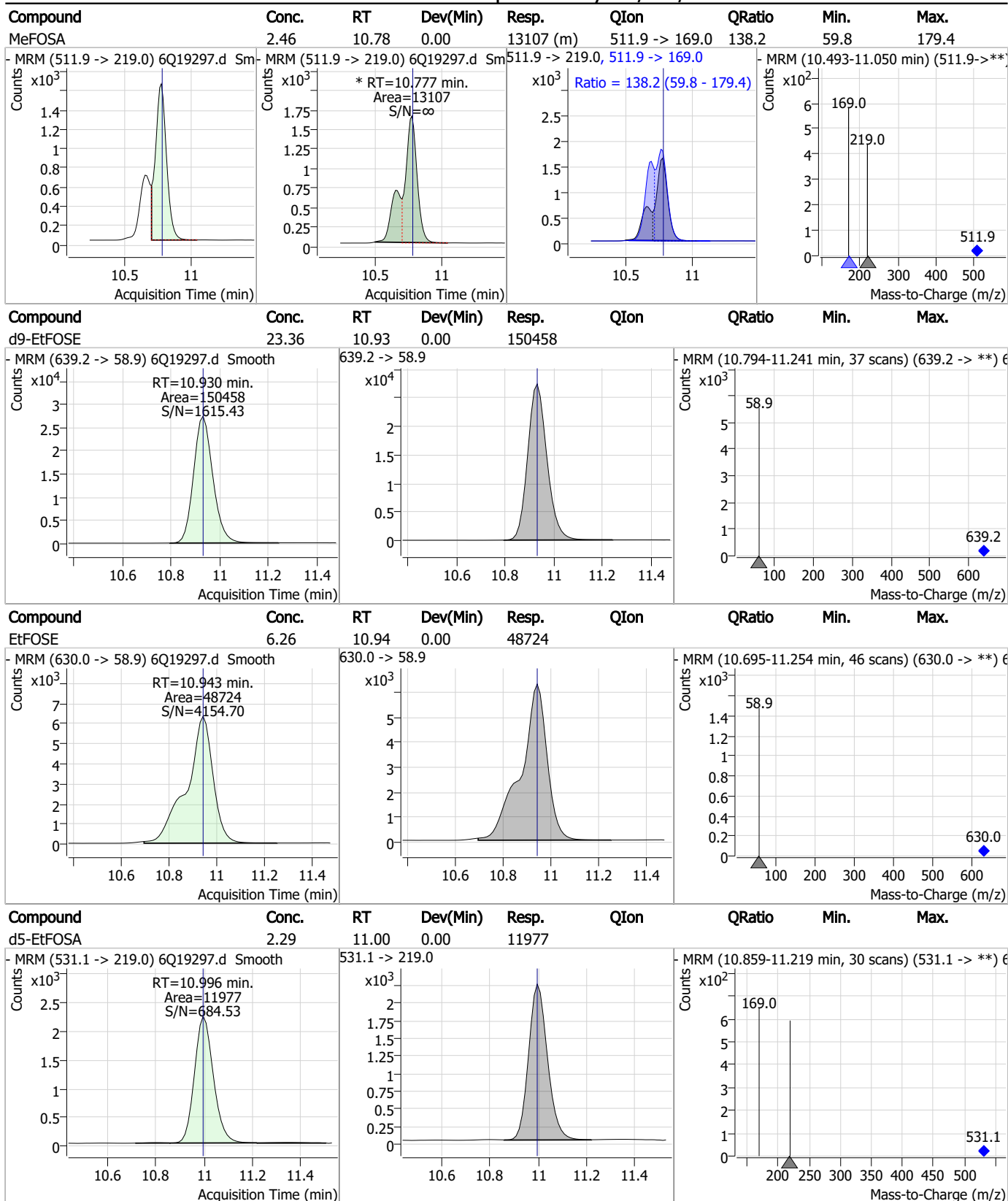
Perfluorinated Compounds by LC/MS/MS



7.7.4

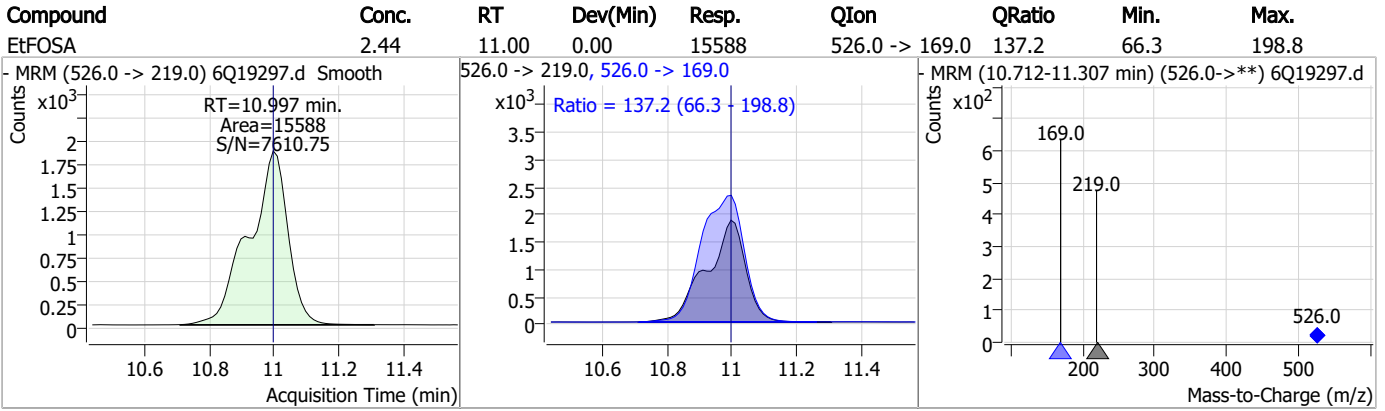
7

Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Manual Integration Approval Summary

Sample Number: S6Q288-IC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19297.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 12:03 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19298.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 12:17:48 PM
 Sample Name : icc288-4
 Vial : P1-A5
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	147686	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	48304	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	52173	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	48270	2.50 µg/L	0.000
M8-PFOA	7.352	421.1 -> 376.0	76706	2.50 µg/L	0.000
M9-PFNA	7.895	472.1 -> 427.0	35073	1.25 µg/L	0.000
M6-PFDA	8.387	519.1 -> 474.1	22130	1.25 µg/L	0.000
M7-PFUnDA	8.866	570.0 -> 525.1	27246	1.25 µg/L	0.000
M2-PFDoDA	9.297	615.1 -> 570.0	24326	1.25 µg/L	0.000
M2-PFTeDA	10.012	715.2 -> 670.0	14124	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	27523	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	18789	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	11249	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	11826	2.50 µg/L	0.000
M2-4:2FTS	5.442	329.1 -> 80.9	2969	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	4483	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4143	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	30773	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	33718	10.00 µg/L	0.000
M5-EtFOSAA	8.628	589.2 -> 419.0	21099	5.00 µg/L	0.000
M7-MeFOSE	10.685	623.2 -> 58.9	128138	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	149155	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	13009	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	12845	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	15227	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	62478	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	8585	2.50 µg/L	0.000
13C4-PFOA	7.352	417.1 -> 372.0	80099	2.50 µg/L	0.000
13C2-PFDA	8.388	515.1 -> 470.1	29485	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	47586	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	51574	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2969	5.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.3%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4483	5.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.3%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4143	5.66 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.2%		
13C2-PFDoDA	9.297	615.1 -> 570.0	24326	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C2-PFTeDA	10.012	715.2 -> 670.0	14124	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C3-PFBS	5.746	302.1 -> 79.9	18789	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.2%		
13C3-PFHxS	7.478	402.1 -> 79.9	11249	2.49 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 = 99.7%	
13C4-PFBA	3.085	216.8 -> 171.9	147686	10.08 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C4-PFHpA	6.707	367.1 -> 322.0	48270	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFHxA	5.792	318.0 -> 273.0	52173	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C5-PFPeA	4.560	268.3 -> 223.0	48304	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C6-PFDA	8.387	519.1 -> 474.1	22130	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C7-PFUnDA	8.866	570.0 -> 525.1	27246	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C8-FOSA	9.674	506.1 -> 77.8	27523	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C8-PFOA	7.352	421.1 -> 376.0	76706	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-PFOS	8.563	507.1 -> 79.9	11826	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C9-PFNA	7.895	472.1 -> 427.0	35073	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
d3-MeFOSAA	8.420	573.2 -> 419.0	30773	5.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.8%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	33718	9.47 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
d3-MeFOSA	10.775	515.0 -> 219.0	12845	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
d5-EtFOSAA	8.628	589.2 -> 419.0	21099	4.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.3%	
d7-MeFOSE	10.685	623.2 -> 58.9	128138	25.08 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d9-EtFOSE	10.930	639.2 -> 58.9	149155	24.76 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
d5-EtFOSA	10.996	531.1 -> 219.0	13009	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.4%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	46444	9.00 µg/L	100
		327.1 -> 80.9	17322		
6:2FTS	7.113	427.1 -> 407.0	50360	9.43 µg/L	100
		427.1 -> 80.9	16464		
8:2FTS	8.164	527.1 -> 507.0	25081	9.11 µg/L	100
		527.1 -> 80.8	9904		
EtFOSAA	8.629	584.2 -> 419.1	10056	2.81 µg/L	m 96
		584.2 -> 526.0	5636		
FOSA	9.677	498.1 -> 77.9	28684	2.62 µg/L	100
		498.1 -> 478.0	903		
MeFOSAA	8.421	570.1 -> 419.0	16815	2.11 µg/L	m 95
		570.1 -> 483.0	3577		
PFBA	3.093	212.8 -> 168.9	56930	9.57 µg/L	100
PFBS	5.747	298.7 -> 79.9	18398	2.19 µg/L	100
		298.7 -> 98.8	6995		
PFDA	8.388	512.9 -> 469.0	73702	2.24 µg/L	100
		512.9 -> 219.0	11646		
PFDODA	9.298	613.1 -> 569.0	49948	2.47 µg/L	100
		613.1 -> 319.0	7313		
PFDS	9.462	599.0 -> 79.9	7694	2.15 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	4043	2.44	µg/L	100
		363.1 -> 319.0	62784			
PFHpS	8.046	363.1 -> 169.0	9525	2.16	µg/L	100
		449.0 -> 79.9	15260			
PFHxA	5.795	449.0 -> 98.9	7786	2.41	µg/L	100
		313.0 -> 269.0	50658			
PFHxS	7.479	313.0 -> 118.9	2634	2.20	µg/L	m
		398.7 -> 79.9	14902			
PFNA	7.883	398.7 -> 98.9	7243	2.52	µg/L	100
		463.0 -> 419.0	81575			
PFNS	9.041	463.0 -> 219.0	15502	2.31	µg/L	100
		548.8 -> 79.9	14162			
PFOA	7.353	548.8 -> 98.9	6938	2.42	µg/L	100
		413.0 -> 369.0	101986			
PFOS	8.564	413.0 -> 169.0	17132	2.13	µg/L	m
		498.9 -> 79.9	14913			
PFPeA	4.563	498.9 -> 98.8	6923	4.76	µg/L	100
		263.0 -> 219.0	67890			
PFPeS	6.785	349.1 -> 79.9	14782	2.35	µg/L	100
		349.1 -> 98.9	7095			
PFTeDA	10.013	713.1 -> 669.0	39832	2.35	µg/L	100
		713.1 -> 168.9	3439			
PFTrDA	9.669	663.0 -> 619.0	53081	2.59	µg/L	100
		663.0 -> 168.9	5537			
PFUnDA	8.866	563.1 -> 519.0	49768	2.37	µg/L	100
		563.1 -> 269.1	9310			
11Cl-PF3OUdS	9.721	630.9 -> 450.9	76730	5.00	µg/L	100
		632.9 -> 452.9	21610			
9Cl-PF3ONS	8.918	530.8 -> 351.0	118658	4.49	µg/L	100
		532.8 -> 353.0	36684			
ADONA	6.959	376.9 -> 250.9	253535	4.65	µg/L	100
		376.9 -> 84.8	73690			
HFPO-DA	6.169	284.9 -> 168.9	16836	4.77	µg/L	100
		284.9 -> 184.9	1968			
3:3FTCA	3.946	241.0 -> 177.0	11315	11.73	µg/L	100
		241.0 -> 117.0	1525			
5:3FTCA	6.374	341.0 -> 237.1	245565	58.68	µg/L	100
		341.0 -> 217.0	183131			
7:3FTCA	7.748	441.0 -> 316.9	167768	59.29	µg/L	100
		441.0 -> 336.9	378221			
EtFOSA	10.997	526.0 -> 219.0	30806	4.43	µg/L	100
		526.0 -> 169.0	40834			
EtFOSE	10.943	630.0 -> 58.9	92932	12.04	µg/L	100
		511.9 -> 219.0	26346			
MeFOSA	10.777	511.9 -> 169.0	36941	4.53	µg/L	m
		616.1 -> 58.9	65930			
MeFOSE	10.709	699.1 -> 79.9	3916	11.87	µg/L	m
		699.1 -> 98.8	2299			
PFDoDS	10.139	295.0 -> 201.0	12275	2.22	µg/L	100
		295.0 -> 84.9	3286			
NFDHA	5.673	279.0 -> 85.1	48526	4.56	µg/L	100
		229.0 -> 84.9	37874			
PFMBA	4.988	314.8 -> 134.9	122567	4.76	µg/L	100
		314.8 -> 82.9	4351			
PFMPA	3.667			4.31	µg/L	100
PFEESA	6.288			4.31	µg/L	100

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

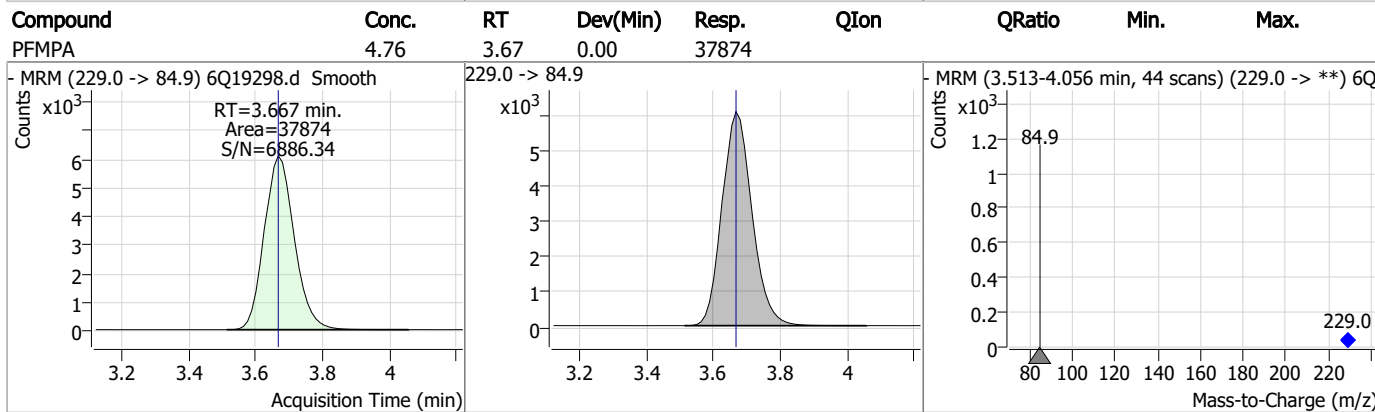
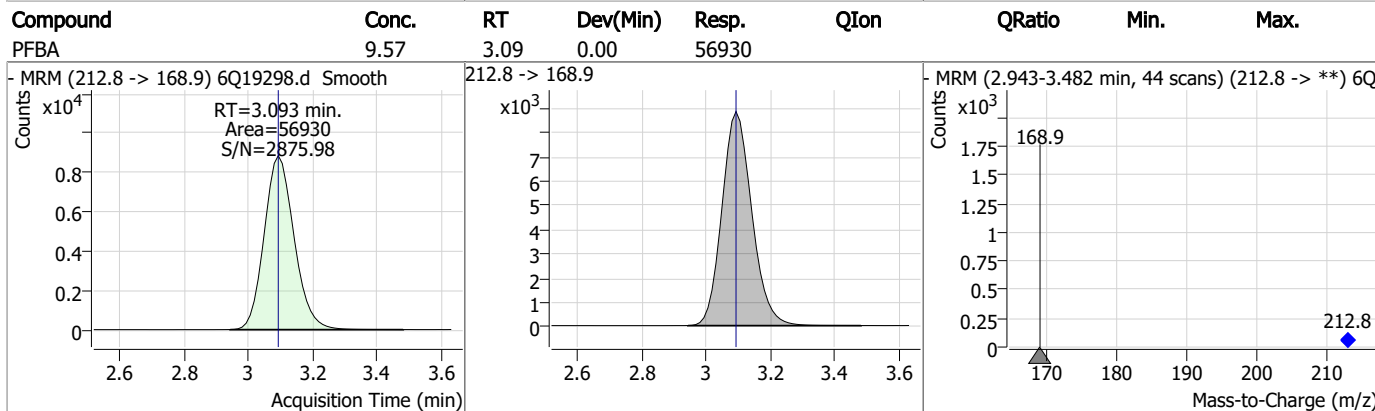
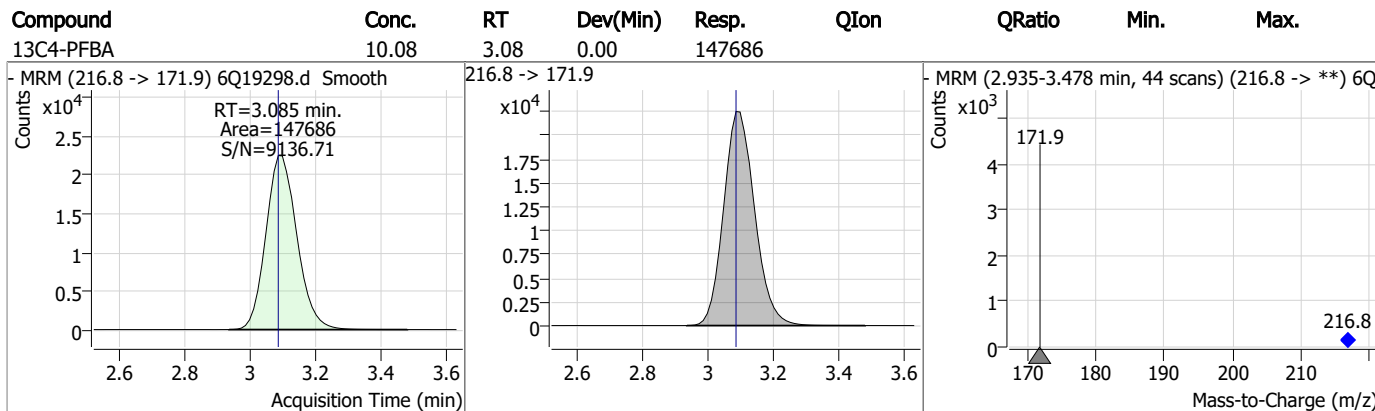
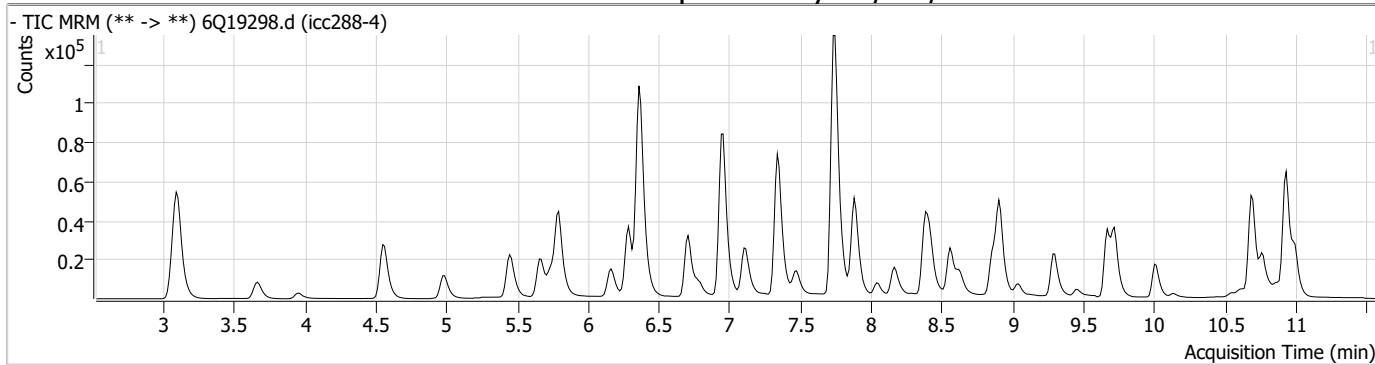
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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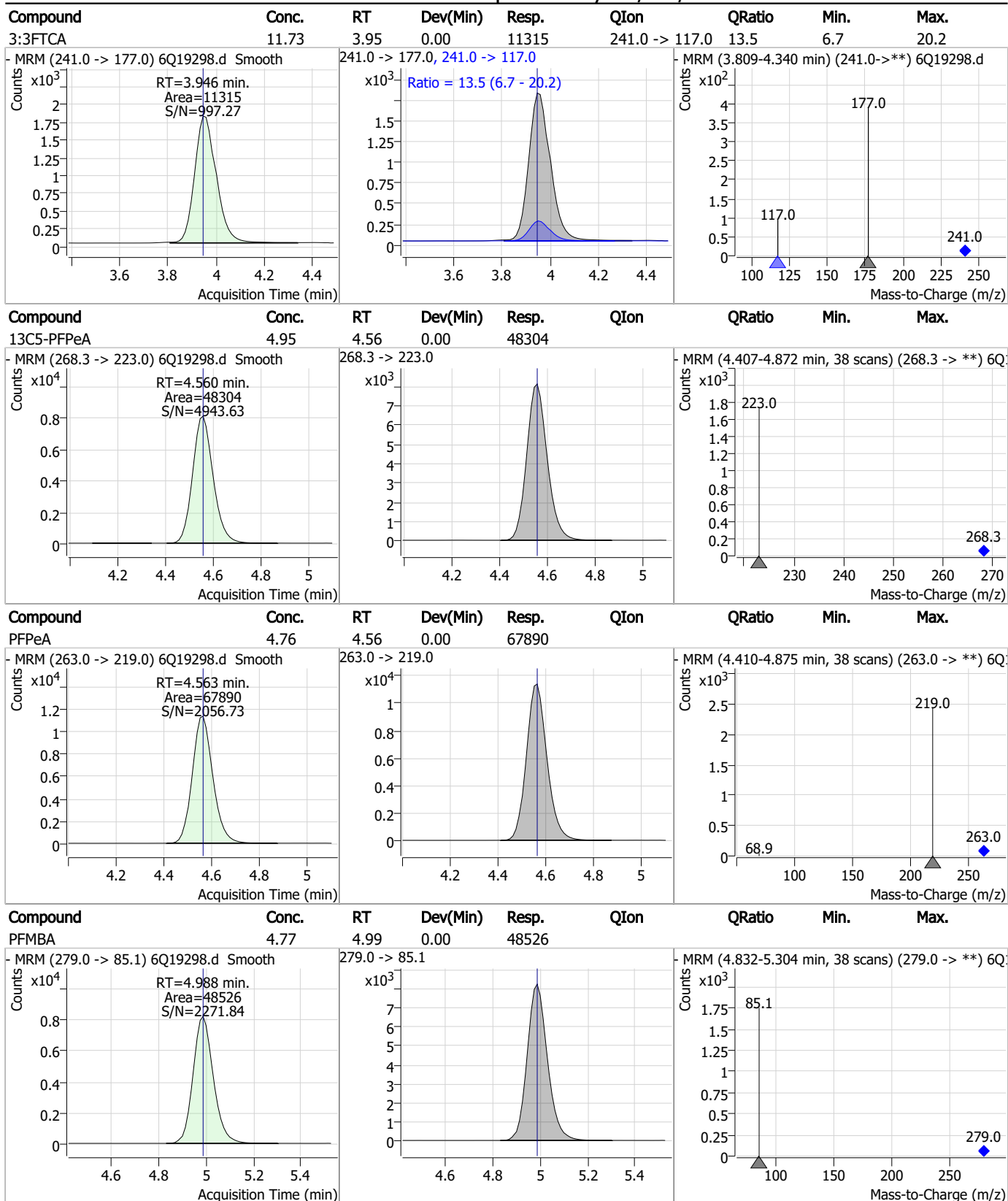
7.7.5
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Perfluorinated Compounds by LC/MS/MS

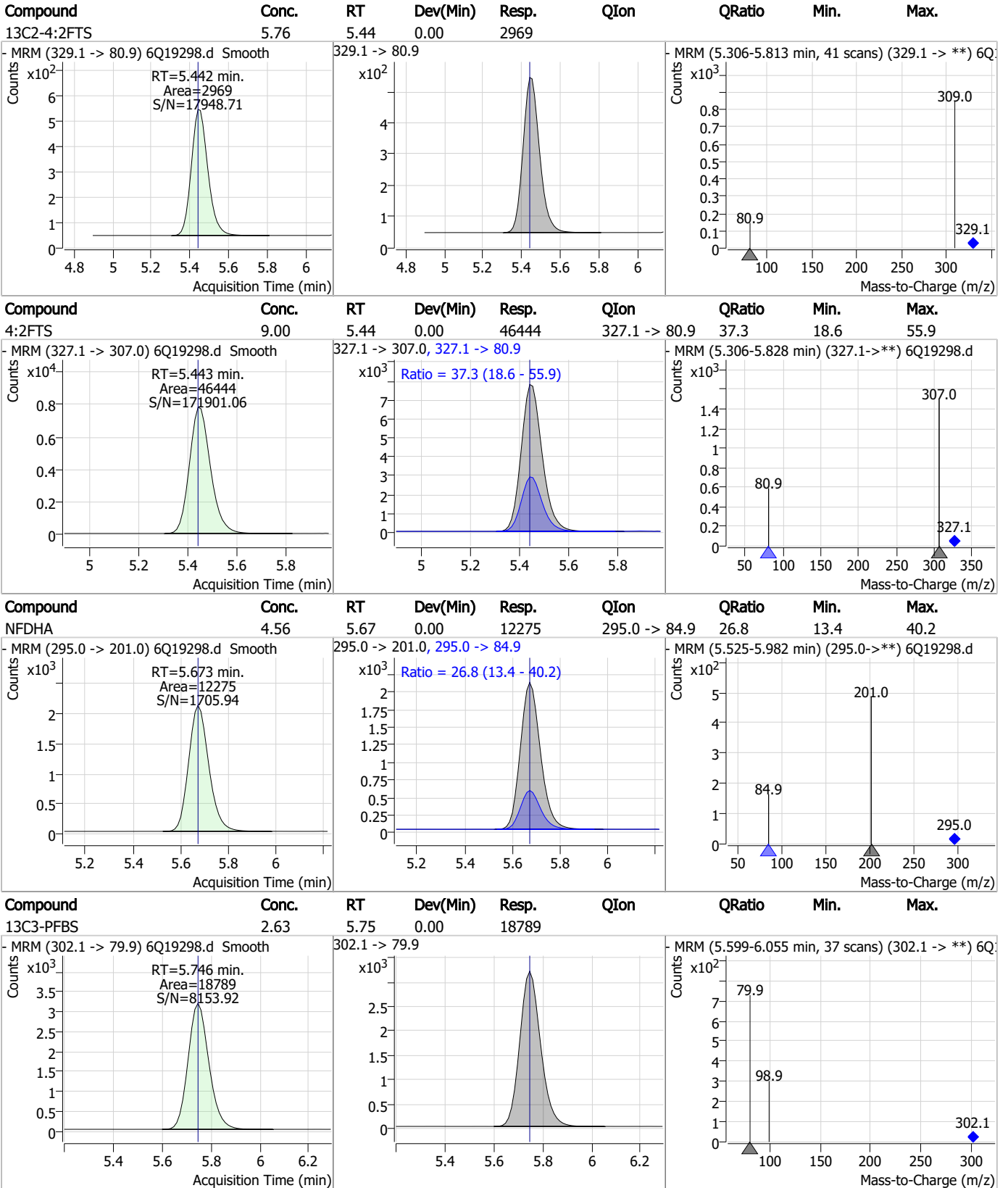


Perfluorinated Compounds by LC/MS/MS



7.7.5
7

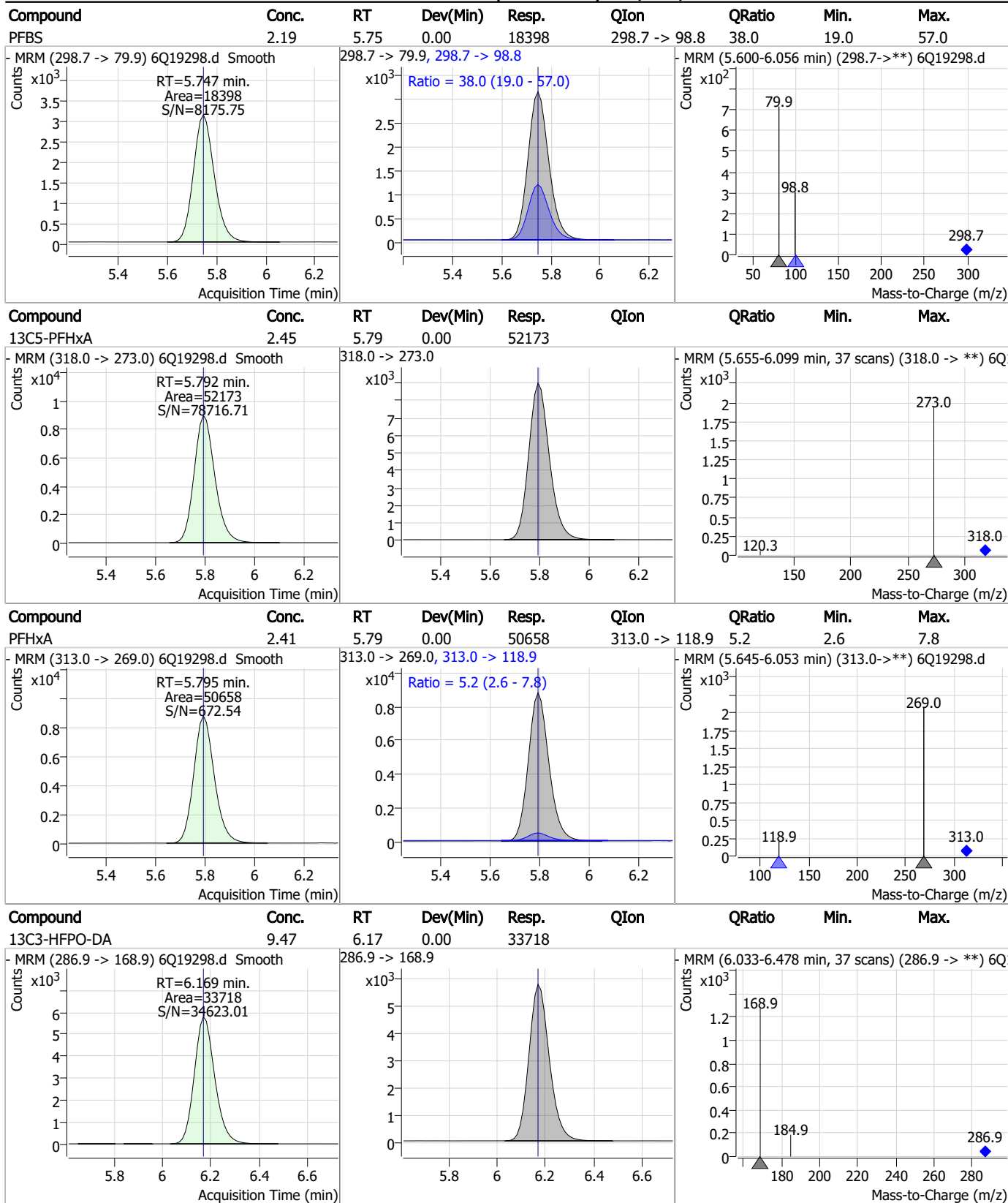
Perfluorinated Compounds by LC/MS/MS



7.7.5

7

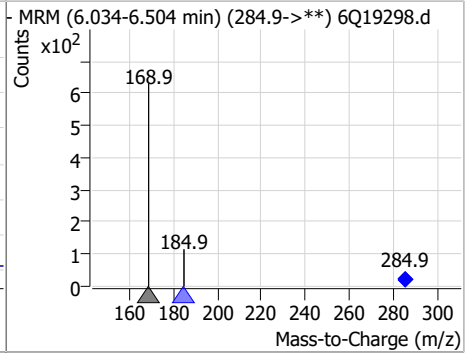
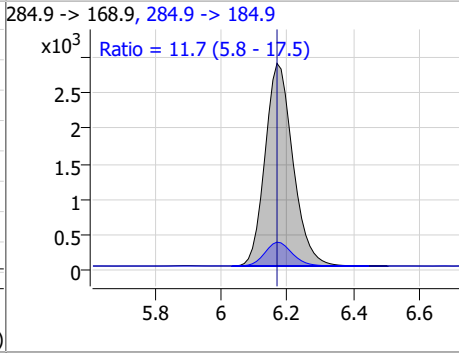
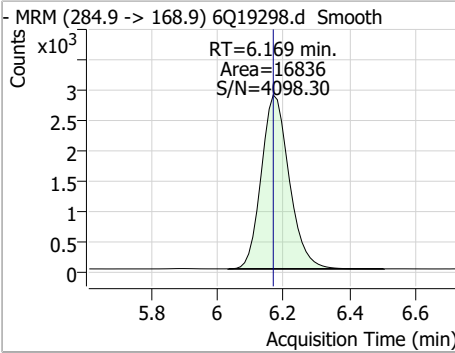
Perfluorinated Compounds by LC/MS/MS



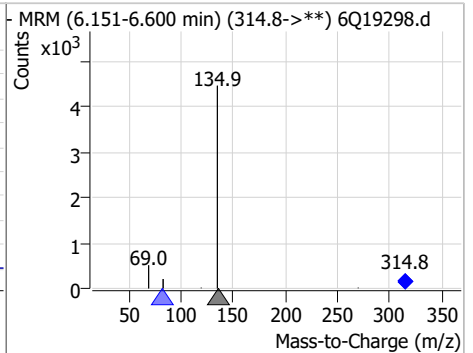
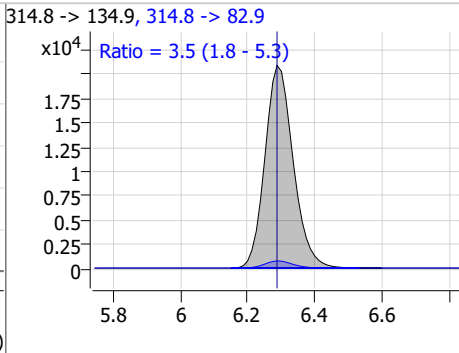
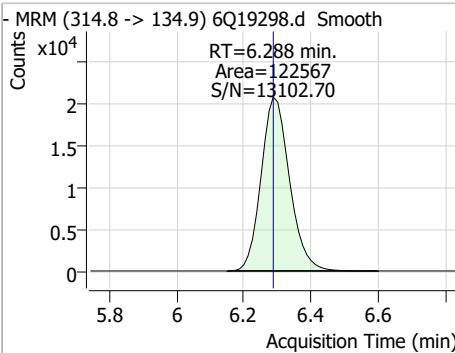
7.7.5
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Perfluorinated Compounds by LC/MS/MS

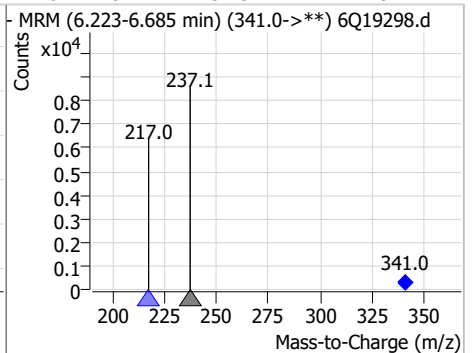
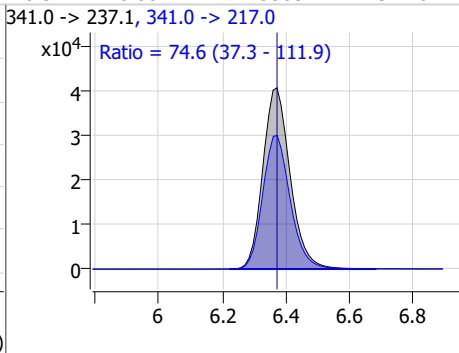
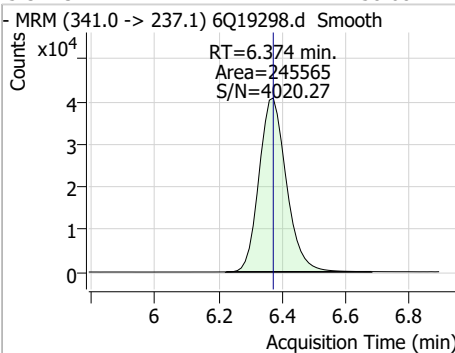
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.77	6.17	0.00	16836	284.9 -> 184.9	11.7	5.8	17.5



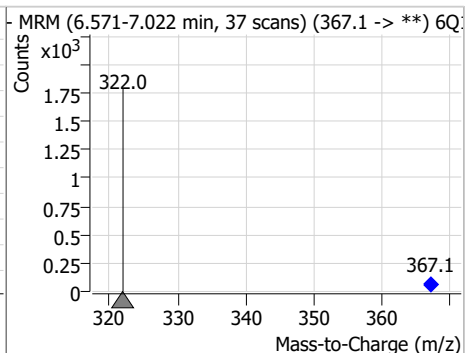
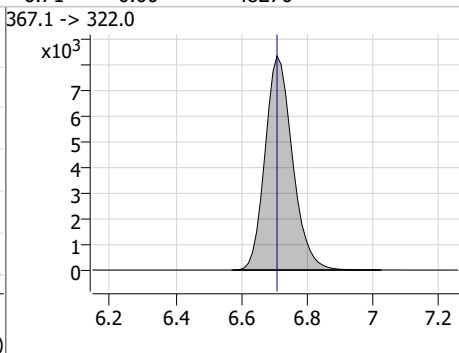
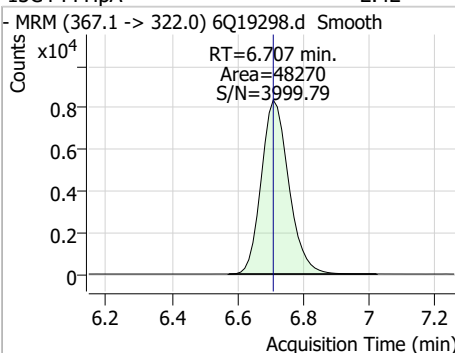
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.31	6.29	0.00	122567	314.8 -> 82.9	3.5	1.8	5.3



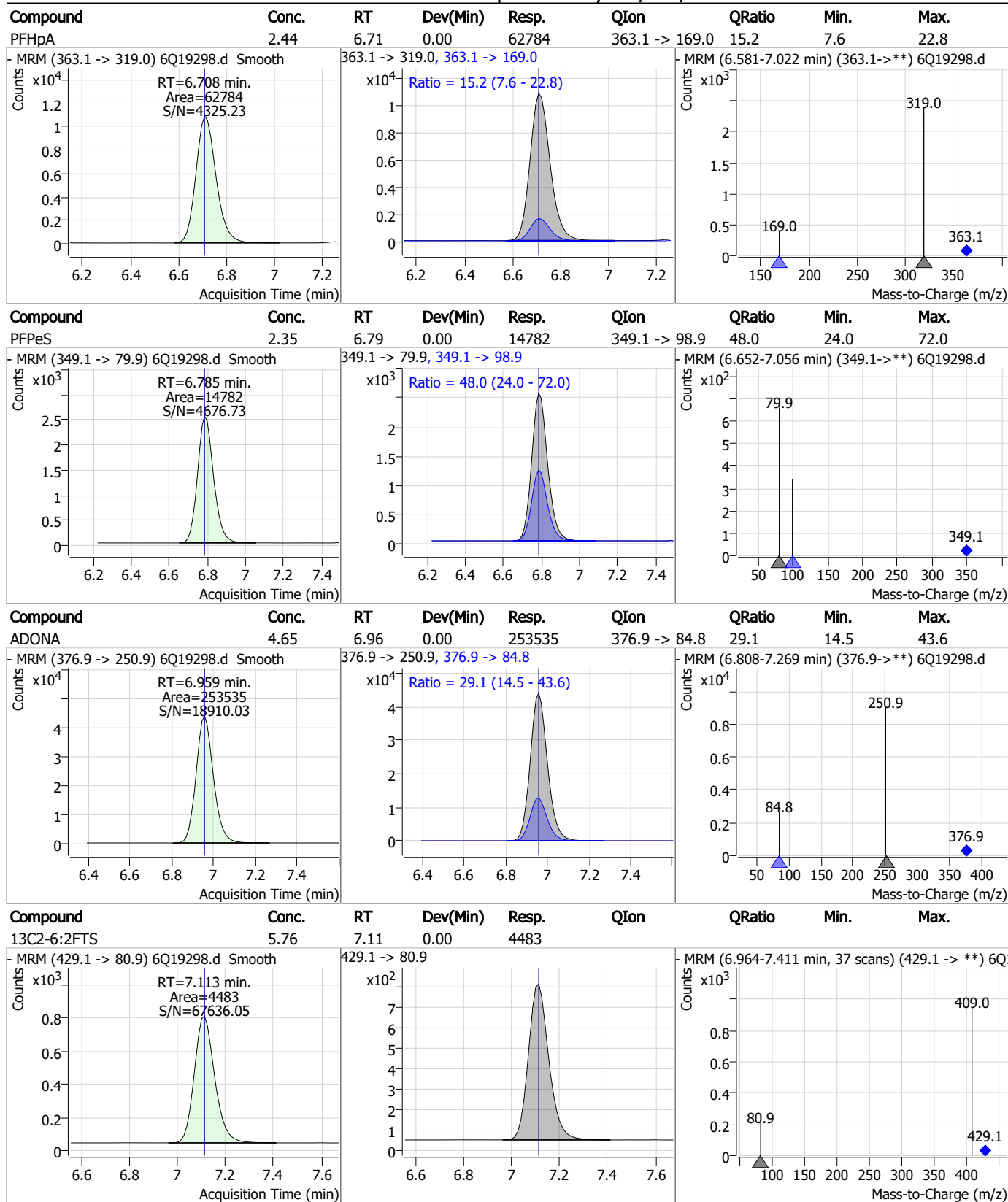
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	58.68	6.37	0.00	245565	341.0 -> 217.0	74.6	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.42	6.71	0.00	48270	367.1 -> 322.0			

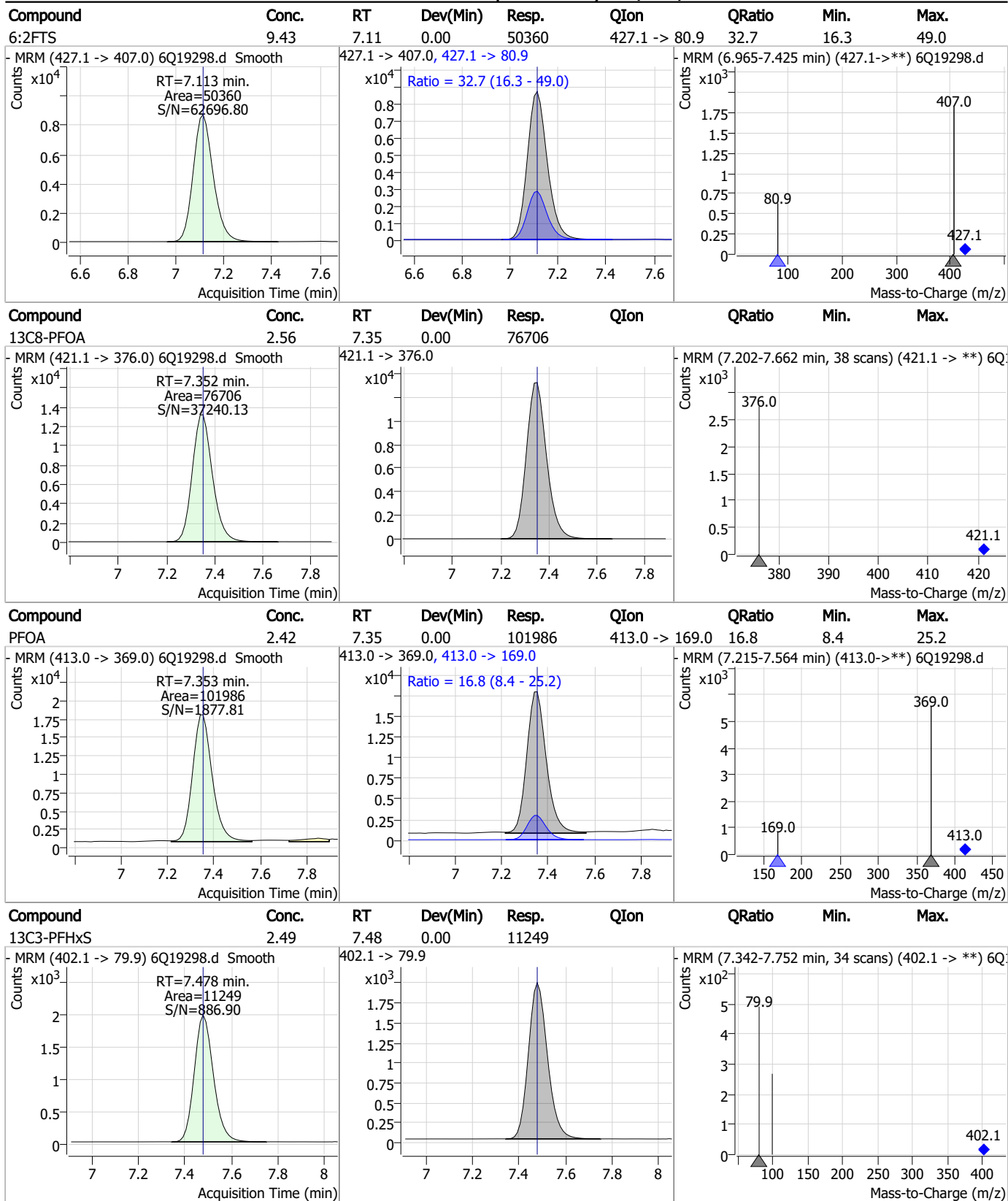


Perfluorinated Compounds by LC/MS/MS



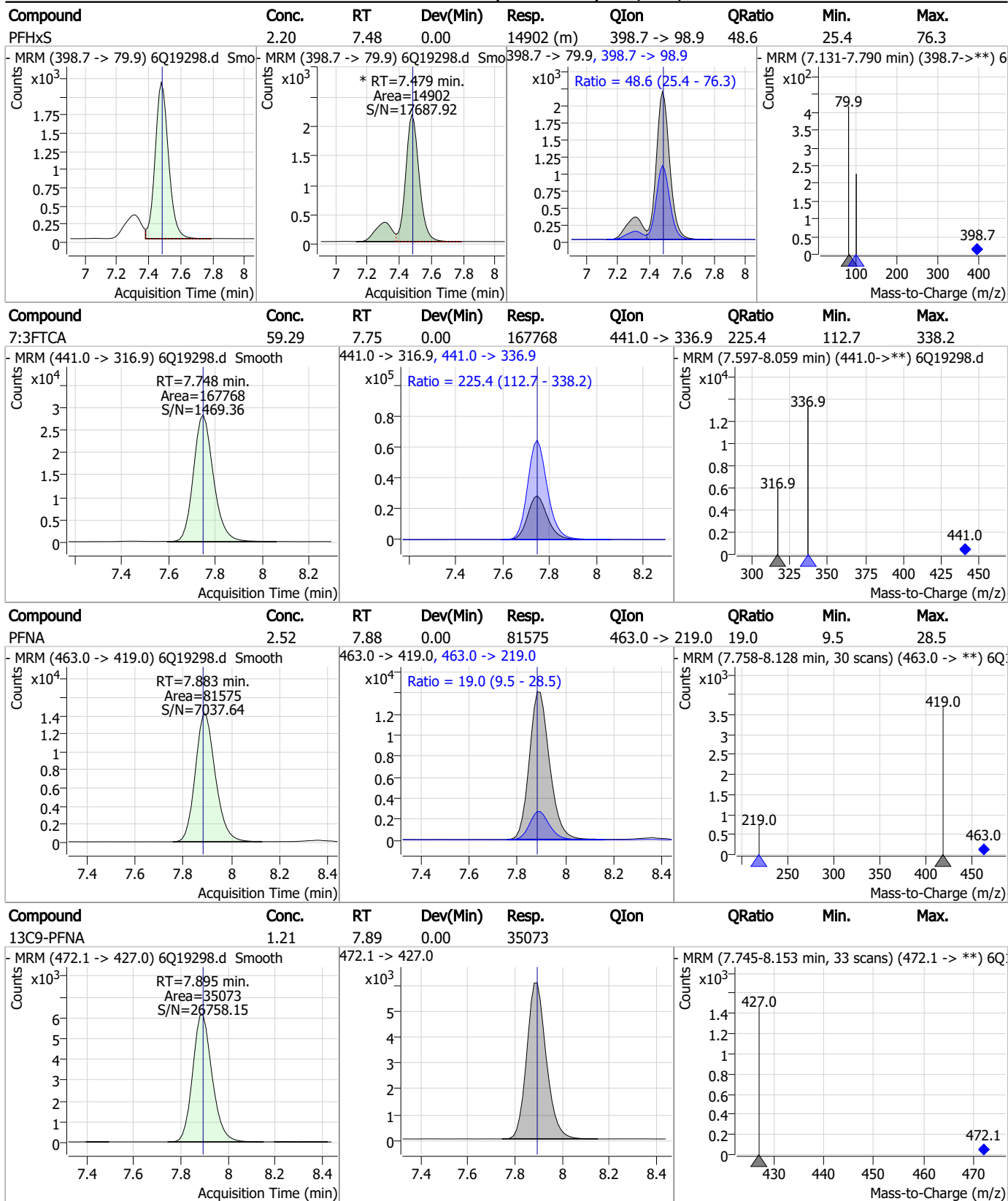
7.7.5
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Perfluorinated Compounds by LC/MS/MS



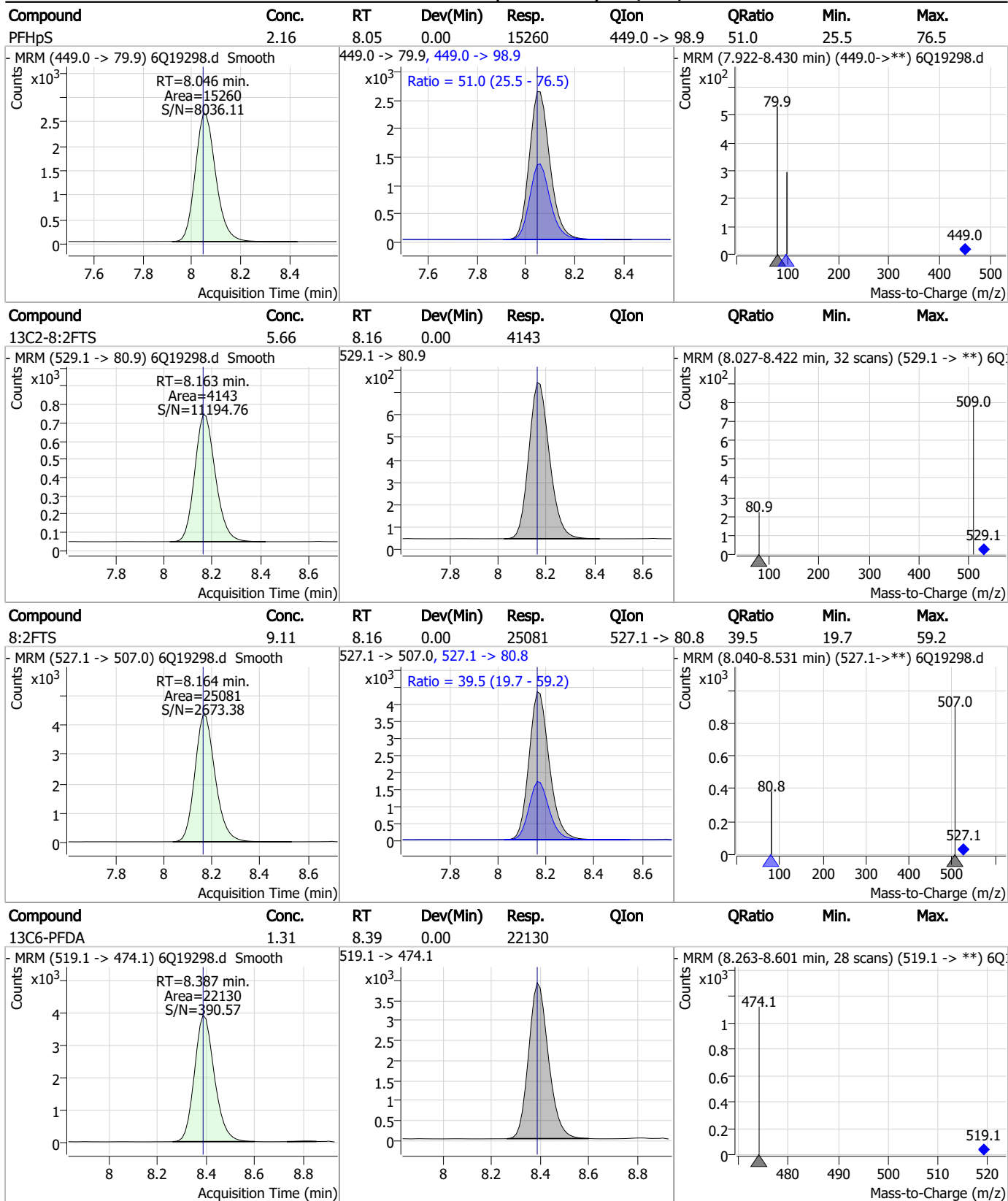
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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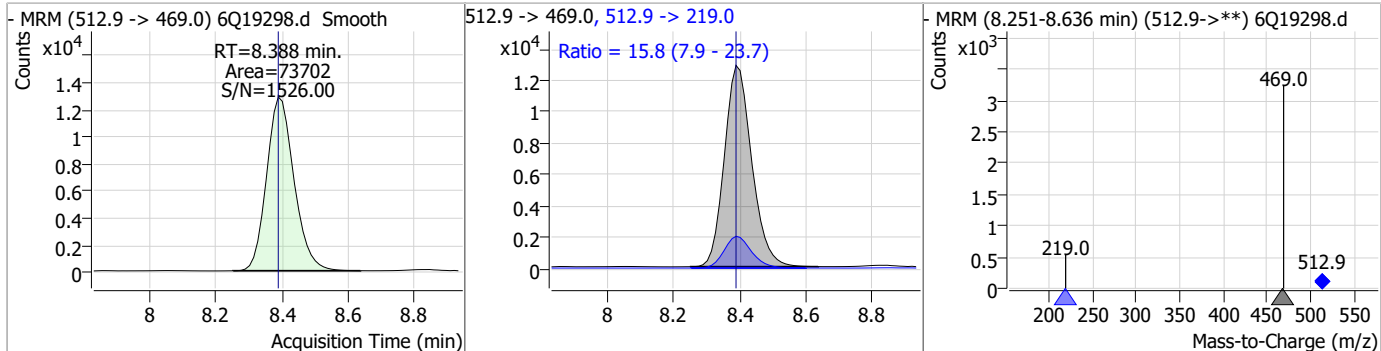
Perfluorinated Compounds by LC/MS/MS



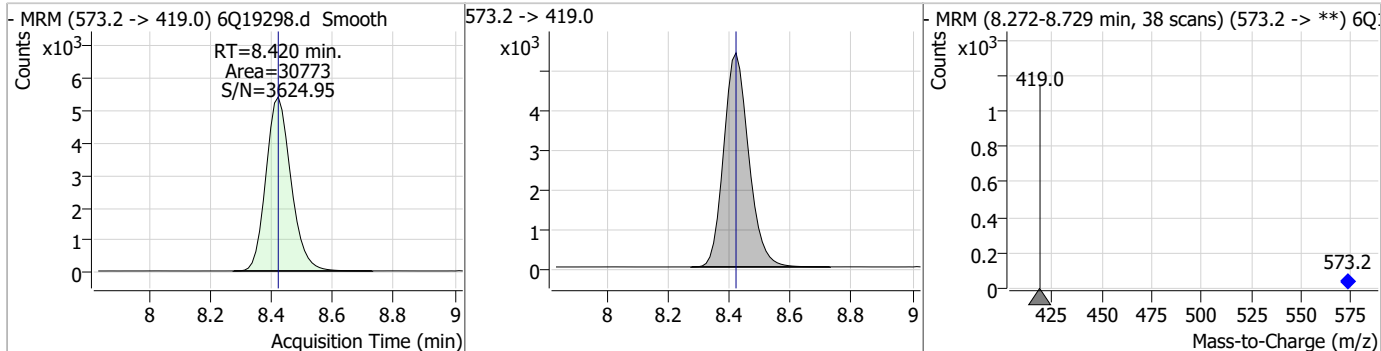
7.7.5
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Perfluorinated Compounds by LC/MS/MS

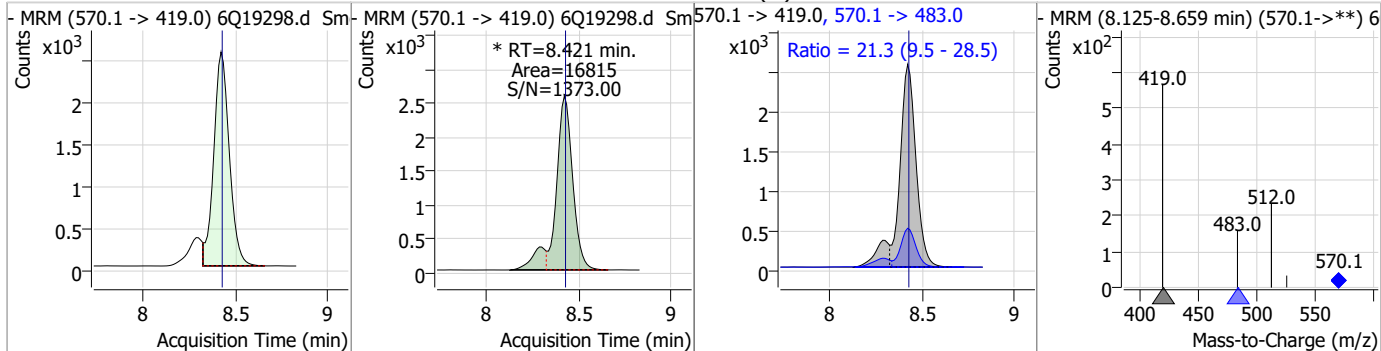
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.24	8.39	0.00	73702	512.9 -> 219.0	15.8	7.9	23.7



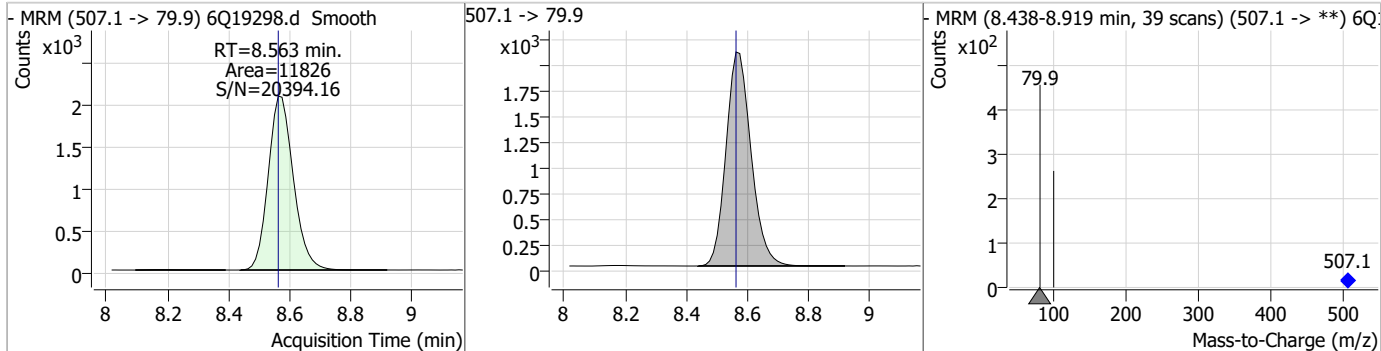
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.34	8.42	0.00	30773				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.11	8.42	0.00	16815 (m)	570.1 -> 483.0	21.3	9.5	28.5

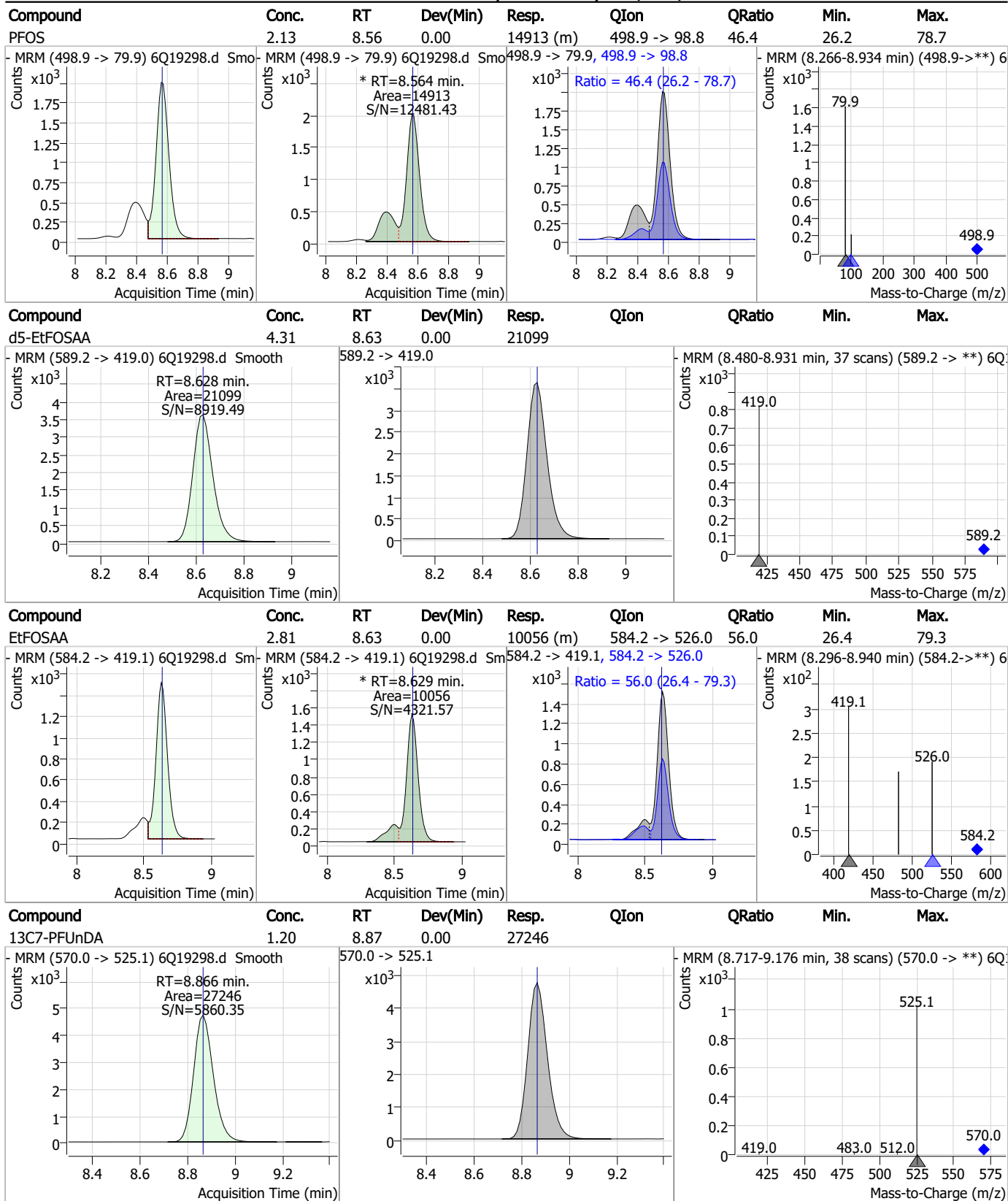


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.57	8.56	0.00	11826				



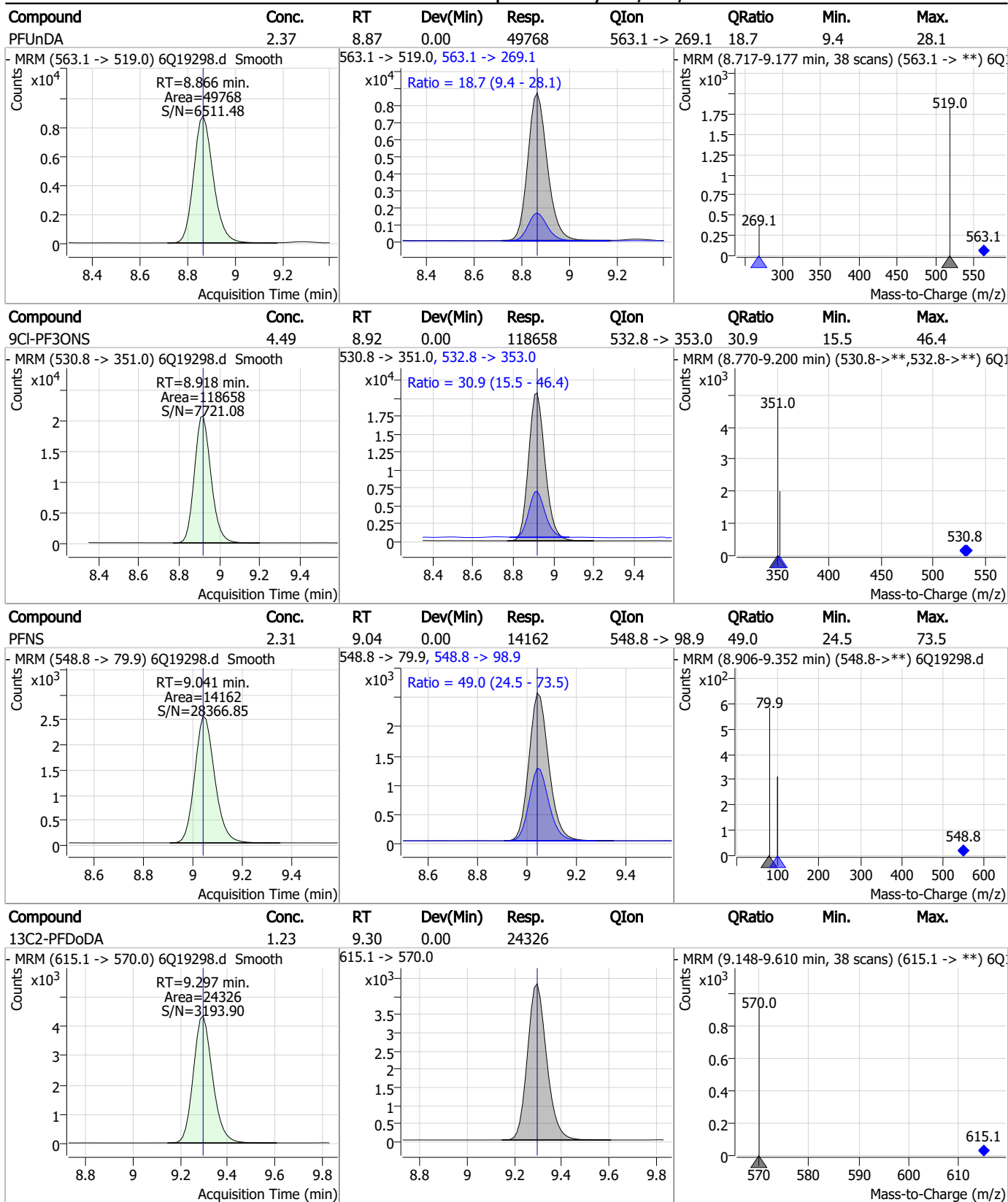
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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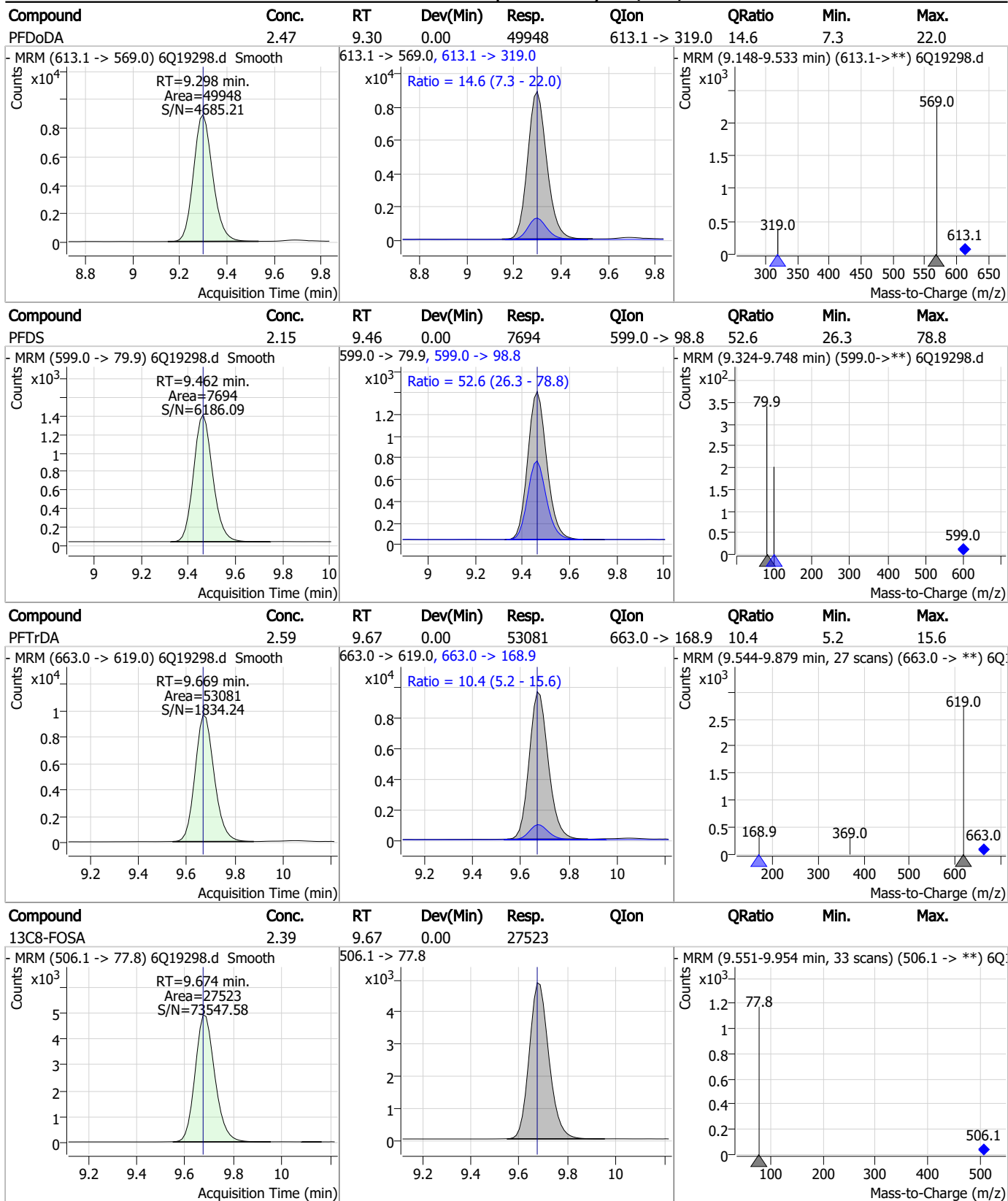
Perfluorinated Compounds by LC/MS/MS



7.7.5

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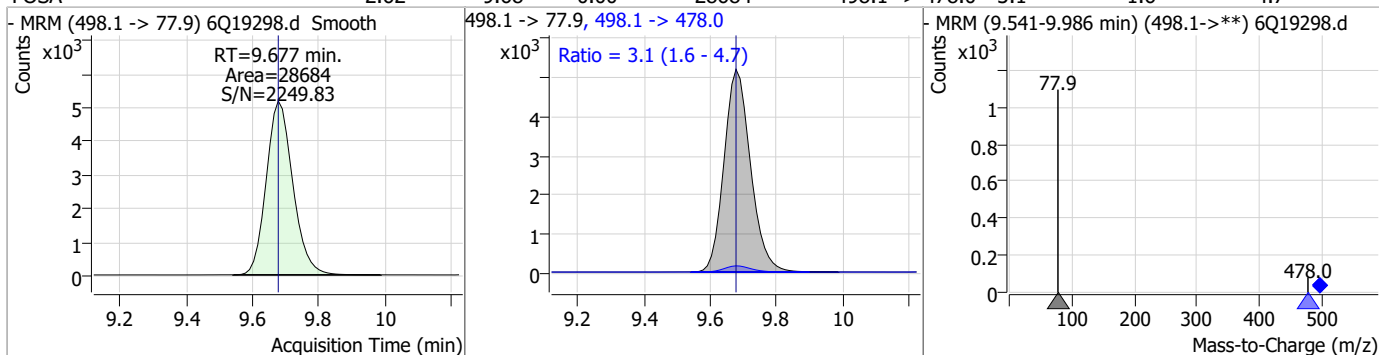
Perfluorinated Compounds by LC/MS/MS



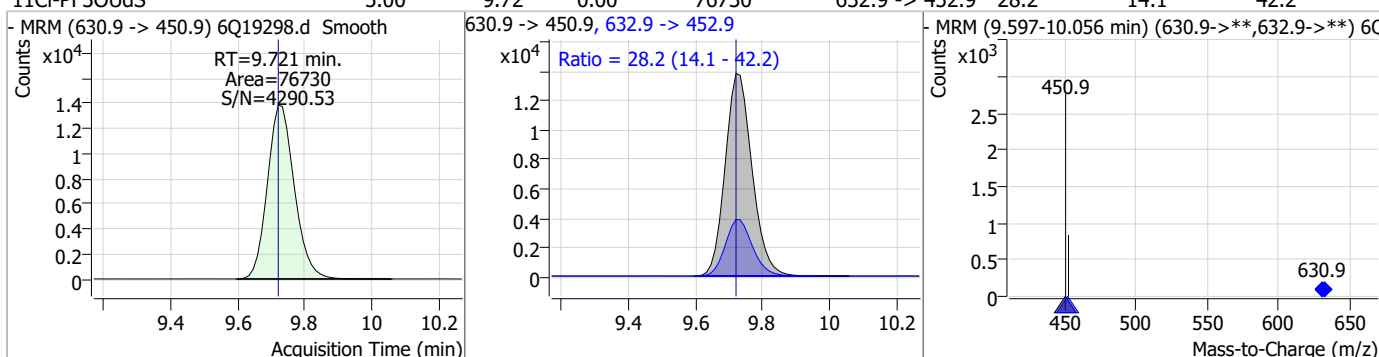
7.7.5
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Perfluorinated Compounds by LC/MS/MS

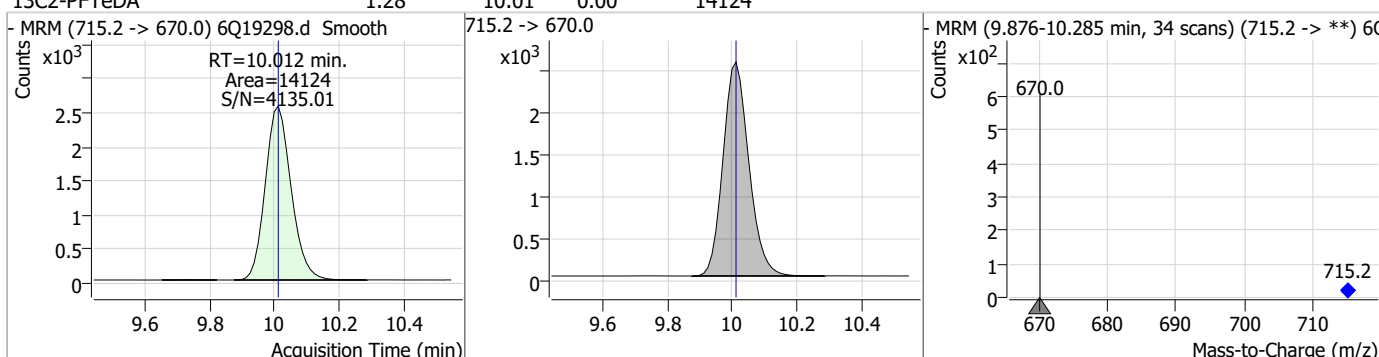
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.62	9.68	0.00	28684	498.1 -> 478.0	3.1	1.6	4.7



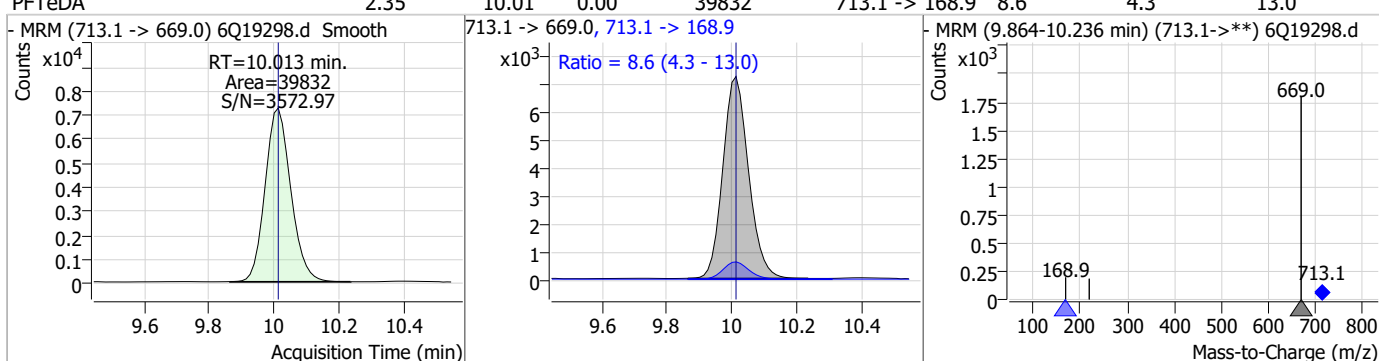
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11CI-PF3OUds	5.00	9.72	0.00	76730	632.9 -> 452.9	28.2	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.28	10.01	0.00	14124	715.2 -> 670.0			

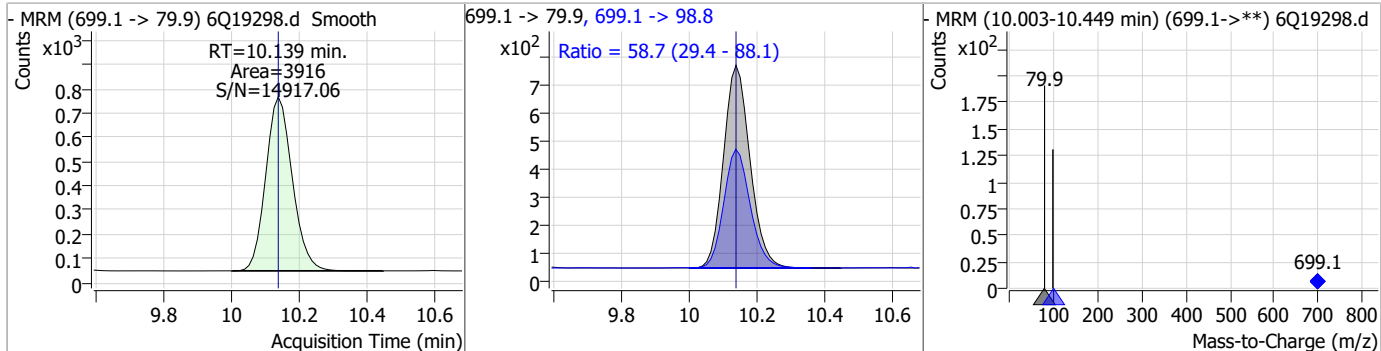


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.35	10.01	0.00	39832	713.1 -> 168.9	8.6	4.3	13.0

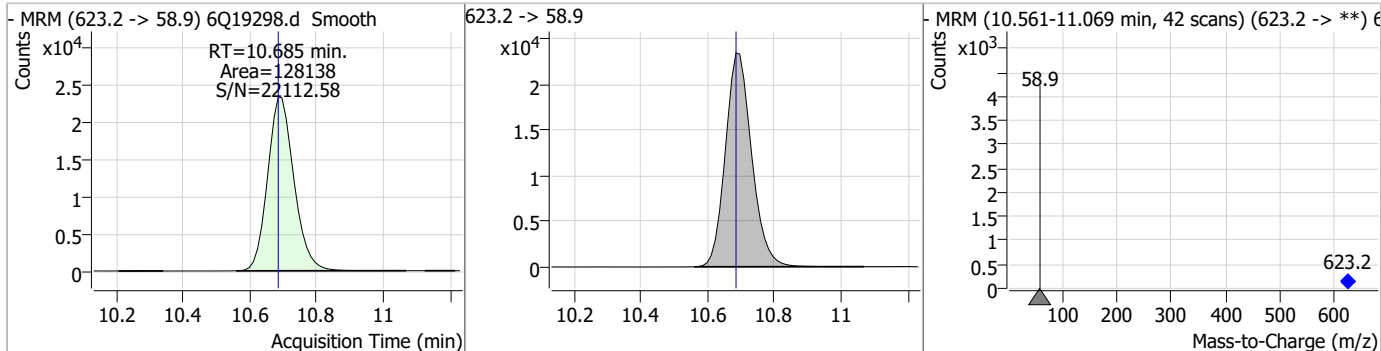


Perfluorinated Compounds by LC/MS/MS

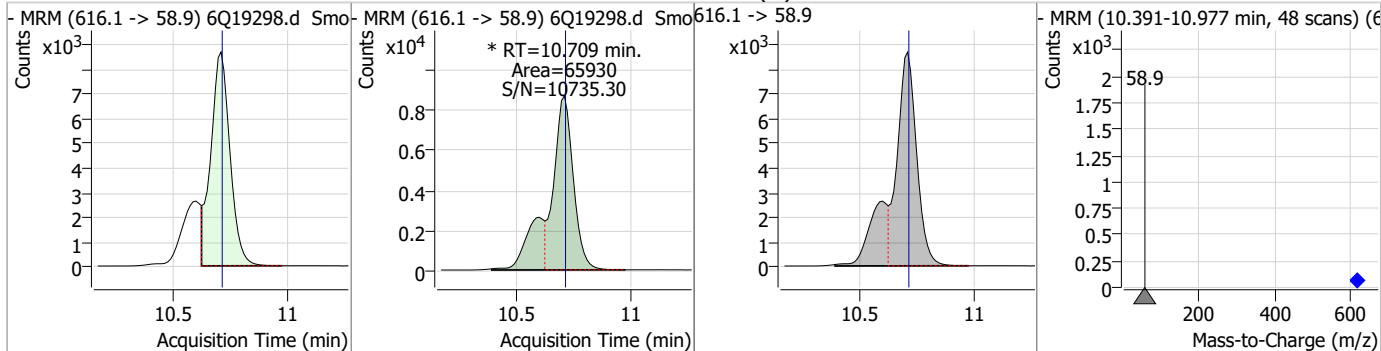
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.22	10.14	0.00	3916	699.1 -> 98.8	58.7	29.4	88.1



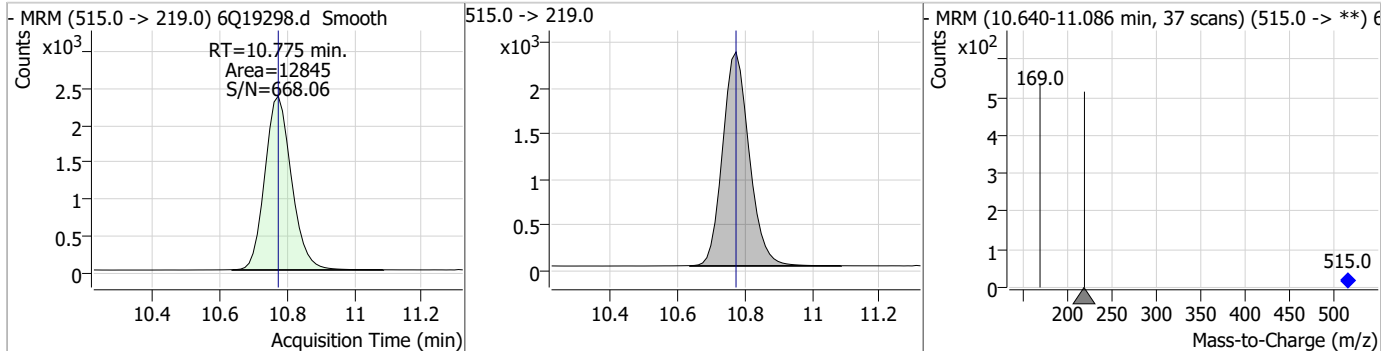
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.08	10.68	0.00	128138				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.87	10.71	0.00	65930 (m)				



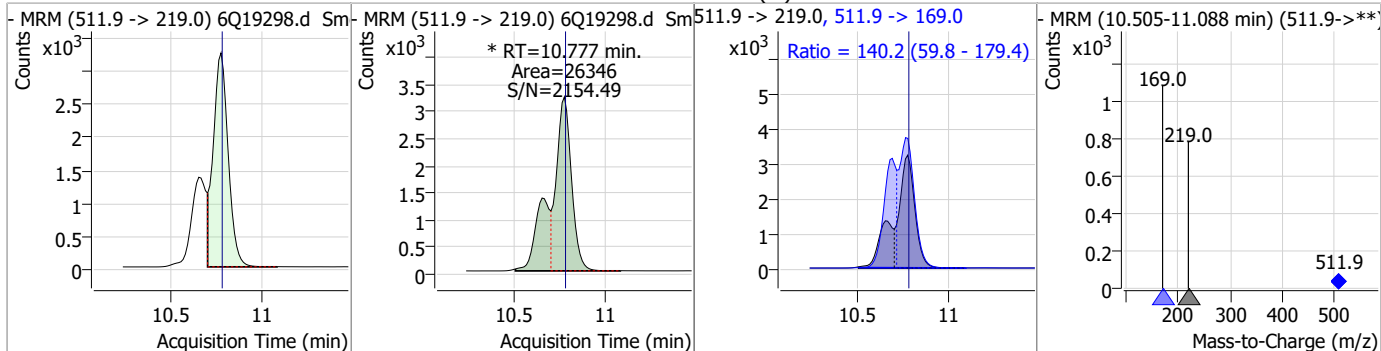
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.56	10.78	0.00	12845				



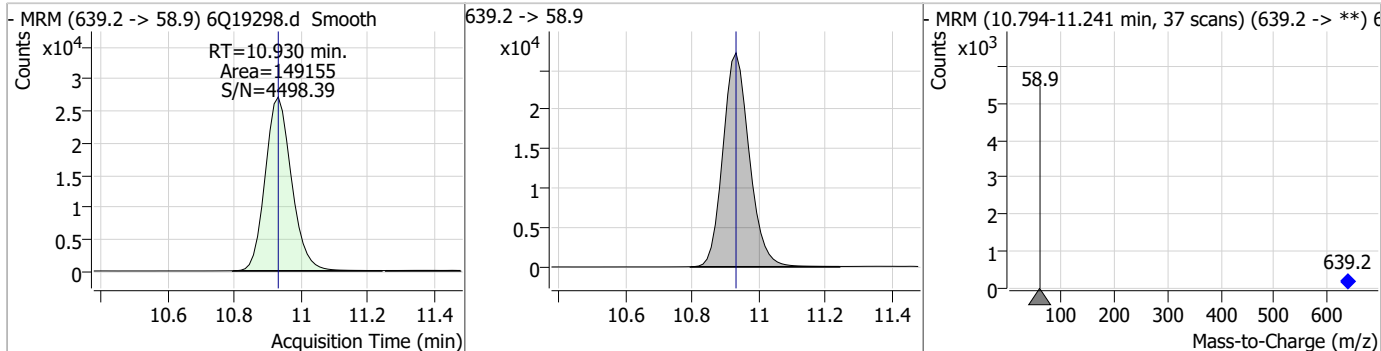
7.7.5
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Perfluorinated Compounds by LC/MS/MS

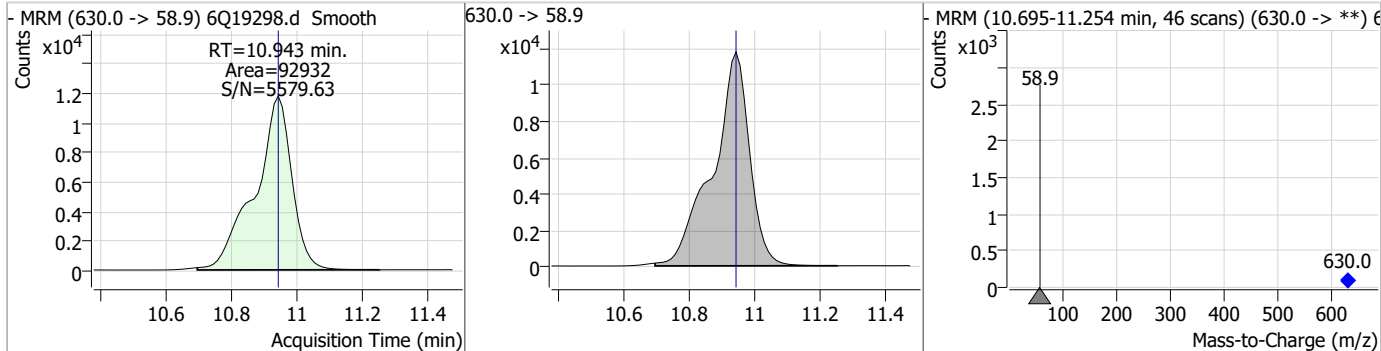
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.53	10.78	0.00	26346 (m)	511.9 -> 169.0	140.2	59.8	179.4



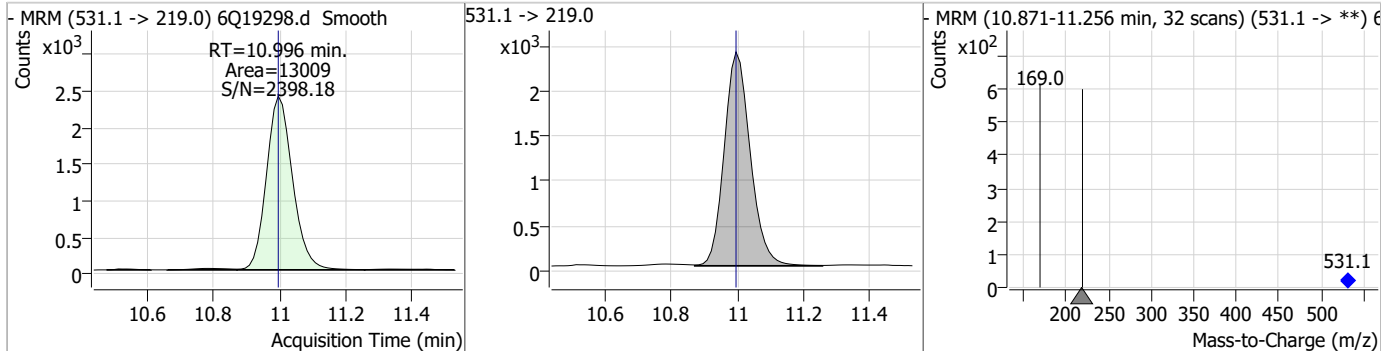
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.76	10.93	0.00	149155				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.04	10.94	0.00	92932				



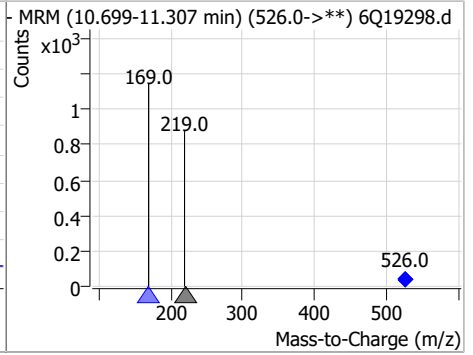
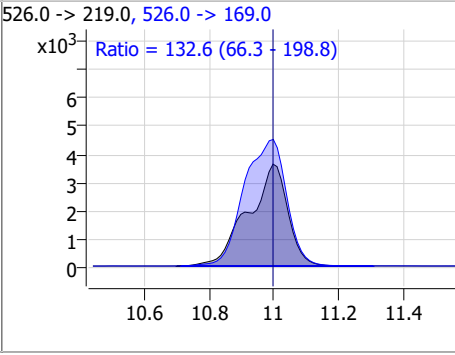
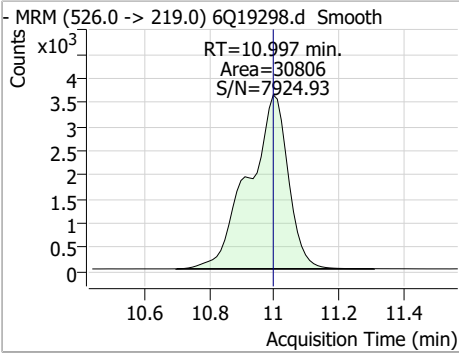
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.66	11.00	0.00	13009				



7.7.5
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.43	11.00	0.00	30806	526.0 -> 169.0	132.6	66.3	198.8



7.7.5

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Manual Integration Approval Summary

Sample Number: S6Q288-ICC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19298.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 12:17 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.7.5.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 06/14/23 11:30

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19299.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 12:31:46 PM
 Sample Name : ic288-5
 Vial : P1-A6
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	147336	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	48024	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	51720	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	47267	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	79732	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	36394	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	20691	1.25 µg/L	0.000
M7-PFUnDA	8.866	570.0 -> 525.1	30841	1.25 µg/L	0.000
M2-PFDoDA	9.297	615.1 -> 570.0	24910	1.25 µg/L	0.000
M2-PFTeDA	10.012	715.2 -> 670.0	13753	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	29051	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	19727	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	12115	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	11065	2.50 µg/L	0.000
M2-4:2FTS	5.454	329.1 -> 80.9	2883	5.00 µg/L	0.012
M2-6:2FTS	7.113	429.1 -> 80.9	4362	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4072	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	31521	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	34487	10.00 µg/L	0.000
M5-EtFOSAA	8.628	589.2 -> 419.0	24278	5.00 µg/L	0.000
M7-MeFOSE	10.685	623.2 -> 58.9	126565	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	150866	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11628	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11622	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	14602	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	62518	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	9344	2.50 µg/L	0.000
13C4-PFOA	7.352	417.1 -> 372.0	82152	2.50 µg/L	0.000
13C2-PFDA	8.388	515.1 -> 470.1	28834	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	49603	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	52539	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.454	329.1 -> 80.9	2883	5.14 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4362	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4072	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-PFDoDA	9.297	615.1 -> 570.0	24910	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C2-PFTeDA	10.012	715.2 -> 670.0	13753	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C3-PFBS	5.746	302.1 -> 79.9	19727	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C3-PFHxS	7.478	402.1 -> 79.9	12115	2.47 µg/L	0.000

7.7.6
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFBA	3.085	216.8 -> 171.9	147336	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	6.707	367.1 -> 322.0	47267	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
13C5-PFHxA	5.792	318.0 -> 273.0	51720	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C5-PFPeA	4.560	268.3 -> 223.0	48024	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C6-PFDA	8.387	519.1 -> 474.1	20691	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C7-PFUnDA	8.866	570.0 -> 525.1	30841	1.39 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.3%	
13C8-FOSA	9.674	506.1 -> 77.8	29051	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C8-PFOA	7.339	421.1 -> 376.0	79732	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOS	8.563	507.1 -> 79.9	11065	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C9-PFNA	7.882	472.1 -> 427.0	36394	1.21 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.4%	
d3-MeFOSAA	8.420	573.2 -> 419.0	31521	5.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.1%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	34487	9.51 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.1%	
d3-MeFOSA	10.775	515.0 -> 219.0	11622	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
d5-EtFOSAA	8.628	589.2 -> 419.0	24278	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d7-MeFOSE	10.685	623.2 -> 58.9	126565	25.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
d9-EtFOSE	10.930	639.2 -> 58.9	150866	26.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
d5-EtFOSA	10.996	531.1 -> 219.0	11628	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
Target Compounds					QValue
4:2FTS	5.455	327.1 -> 307.0	87794	17.51 µg/L	99
		327.1 -> 80.9	33141		
6:2FTS	7.113	427.1 -> 407.0	97119	18.70 µg/L	98
		427.1 -> 80.9	30546		
8:2FTS	8.164	527.1 -> 507.0	49383	18.25 µg/L	100
		527.1 -> 80.8	19460		
EtFOSAA	8.629	584.2 -> 419.1	18652	4.54 µg/L	m 93
		584.2 -> 526.0	10730		
FOSA	9.677	498.1 -> 77.9	50279	4.36 µg/L	99
		498.1 -> 478.0	1660		
MeFOSAA	8.421	570.1 -> 419.0	34557	4.23 µg/L	m 99
		570.1 -> 483.0	6734		
PFBA	3.093	212.8 -> 168.9	112932	19.02 µg/L	100
PFBS	5.747	298.7 -> 79.9	35978	4.08 µg/L	97
		298.7 -> 98.8	13117		
PFDA	8.388	512.9 -> 469.0	159557	5.18 µg/L	97
		512.9 -> 219.0	23261		
PFDoDA	9.298	613.1 -> 569.0	104442	5.05 µg/L	99
		613.1 -> 319.0	15661		
PFDS	9.462	599.0 -> 79.9	16082	4.81 µg/L	96

7.7.6
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	8020			
PFHpA	6.708	363.1 -> 319.0	115693	4.58	µg/L	94
		363.1 -> 169.0	20515			
PFHpS	8.046	449.0 -> 79.9	29684	4.49	µg/L	99
		449.0 -> 98.9	14970			
PFHxA	5.795	313.0 -> 269.0	97470	4.67	µg/L	99
		313.0 -> 118.9	5284			
PFHxS	7.479	398.7 -> 79.9	30421	4.17	µg/L	m 95
		398.7 -> 98.9	14507			
PFNA	7.883	463.0 -> 419.0	154194	4.58	µg/L	98
		463.0 -> 219.0	28147			
PFNS	9.041	548.8 -> 79.9	26987	4.70	µg/L	98
		548.8 -> 98.9	13651			
PFOA	7.353	413.0 -> 369.0	194053	4.43	µg/L	96
		413.0 -> 169.0	35708			
PFOS	8.564	498.9 -> 79.9	28088	4.28	µg/L	m 93
		498.9 -> 98.8	13451			
PFPeA	4.563	263.0 -> 219.0	133376	9.41	µg/L	100
PFPeS	6.785	349.1 -> 79.9	29748	4.38	µg/L	94
		349.1 -> 98.9	13030			
PFTeDA	10.013	713.1 -> 669.0	78134	4.74	µg/L	99
		713.1 -> 168.9	6975			
PFTrDA	9.669	663.0 -> 619.0	95750	4.56	µg/L	97
		663.0 -> 168.9	11096			
PFUnDA	8.866	563.1 -> 519.0	103611	4.35	µg/L	96
		563.1 -> 269.1	17297			
11Cl-PF3OUdS	9.721	630.9 -> 450.9	143468	9.14	µg/L	92
		632.9 -> 452.9	46231			
9Cl-PF3ONS	8.906	530.8 -> 351.0	246224	9.10	µg/L	97
		532.8 -> 353.0	72548			
ADONA	6.959	376.9 -> 250.9	484374	8.68	µg/L	100
		376.9 -> 84.8	140675			
HFPO-DA	6.182	284.9 -> 168.9	34998	9.70	µg/L	99
		284.9 -> 184.9	4231			
3:3FTCA	3.958	241.0 -> 177.0	22087	23.03	µg/L	100
		241.0 -> 117.0	3007			
5:3FTCA	6.374	341.0 -> 237.1	487451	117.49	µg/L	97
		341.0 -> 217.0	349500			
7:3FTCA	7.748	441.0 -> 316.9	330335	117.76	µg/L	98
		441.0 -> 336.9	735022			
EtFOSA	10.997	526.0 -> 219.0	61301	9.87	µg/L	99
		526.0 -> 169.0	80731			
EtFOSE	10.943	630.0 -> 58.9	183243	23.47	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	50153	9.53	µg/L	m 75
		511.9 -> 169.0	73867			
MeFOSE	10.709	616.1 -> 58.9	131142	23.91	µg/L	m 100
PFDoDS	10.139	699.1 -> 79.9	7989	4.84	µg/L	93
		699.1 -> 98.8	4263			
NFDHA	5.673	295.0 -> 201.0	25778	9.67	µg/L	96
		295.0 -> 84.9	6384			
PFMBA	4.988	279.0 -> 85.1	95425	9.44	µg/L	100
PFMPA	3.667	229.0 -> 84.9	75295	9.52	µg/L	100
PFEESA	6.288	314.8 -> 134.9	233834	8.29	µg/L	99
		314.8 -> 82.9	9045			

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

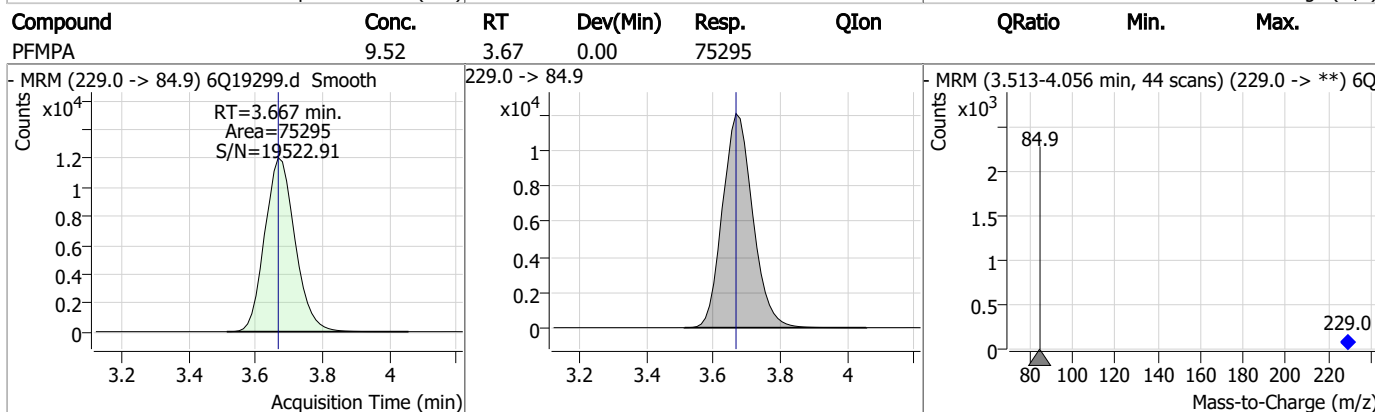
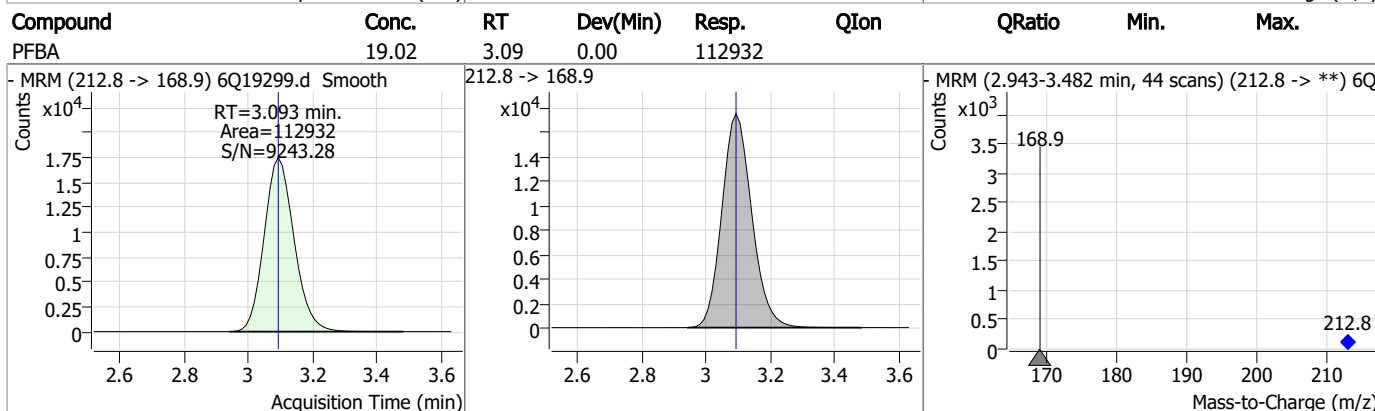
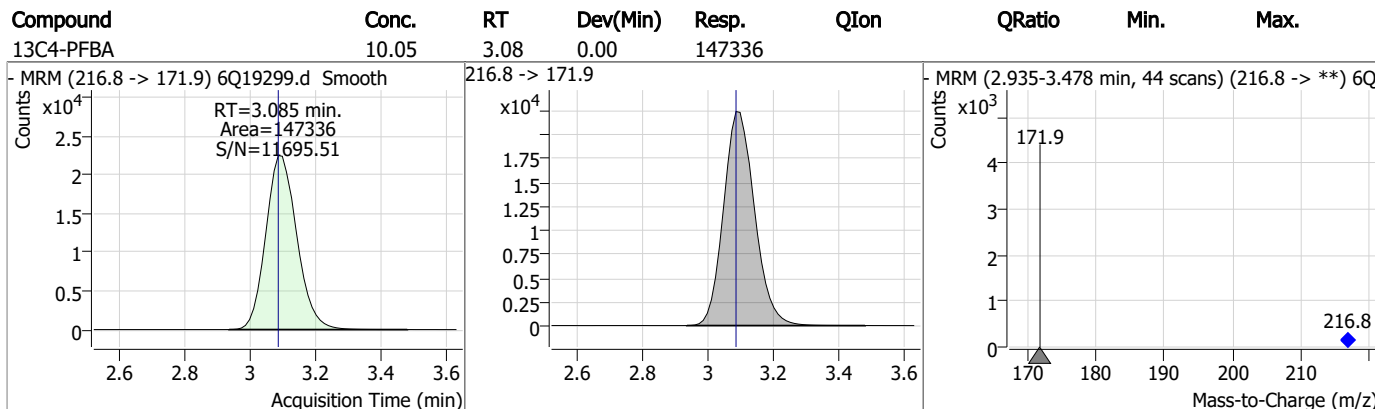
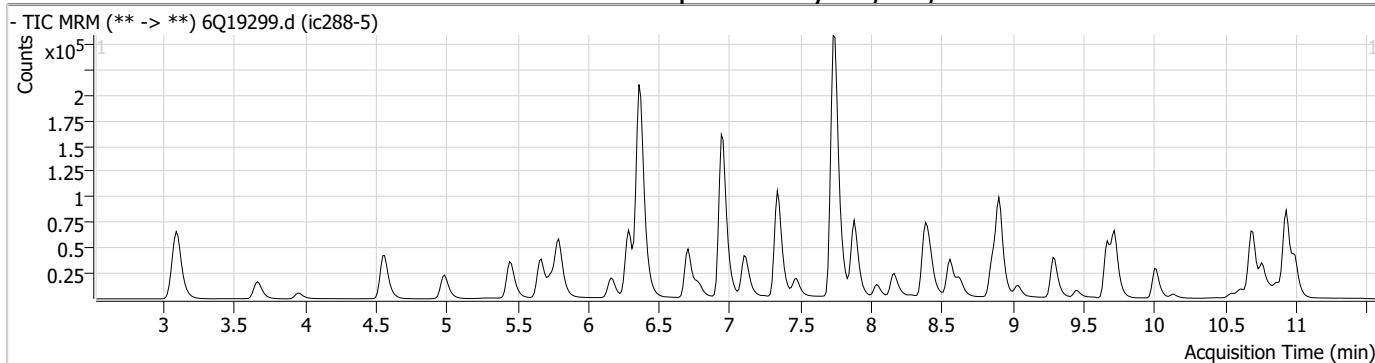
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.6
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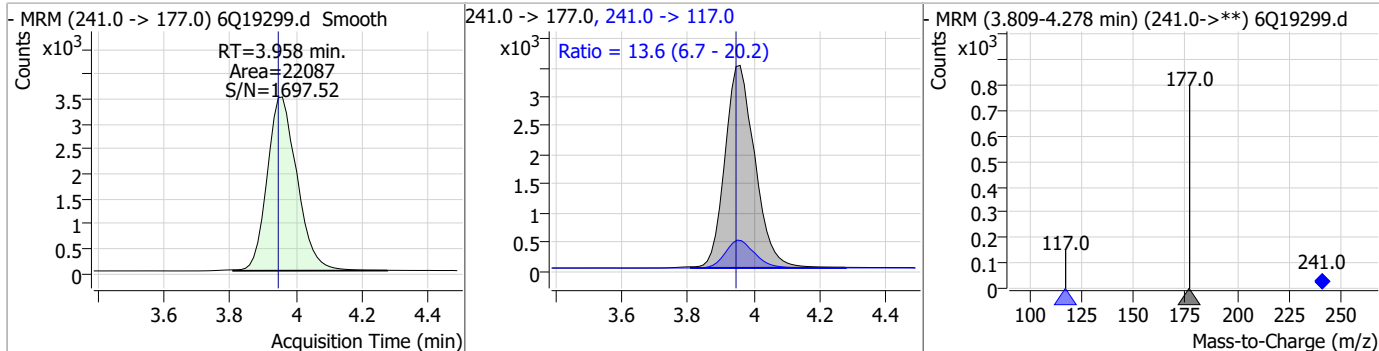
Perfluorinated Compounds by LC/MS/MS



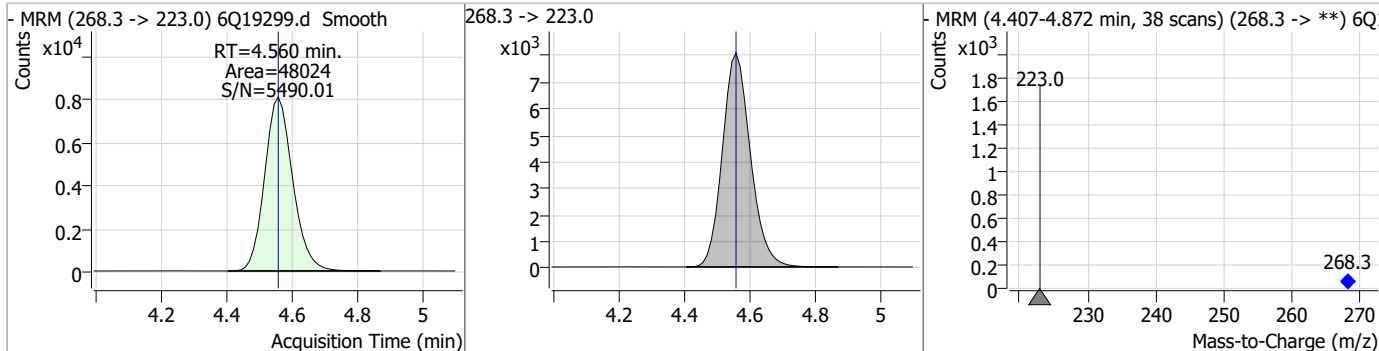
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Perfluorinated Compounds by LC/MS/MS

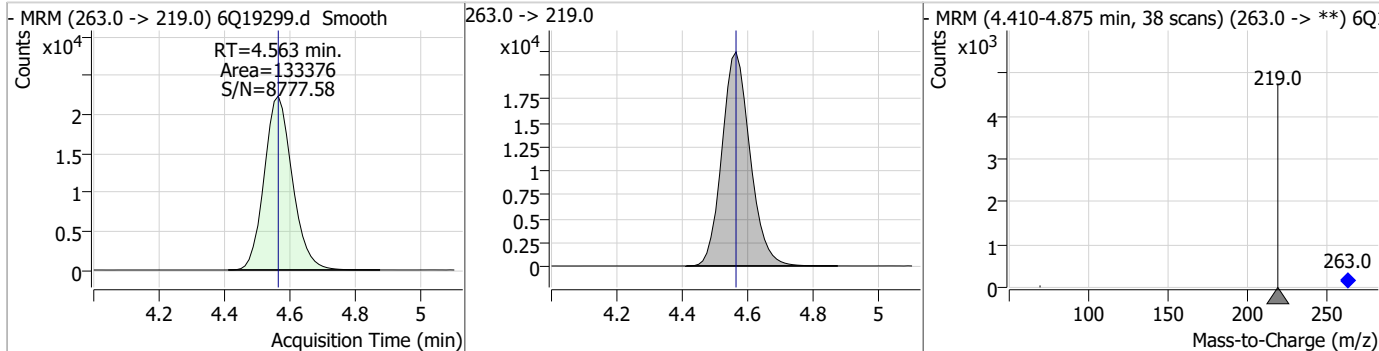
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	23.03	3.96	0.01	22087	241.0 -> 117.0	13.6	6.7	20.2



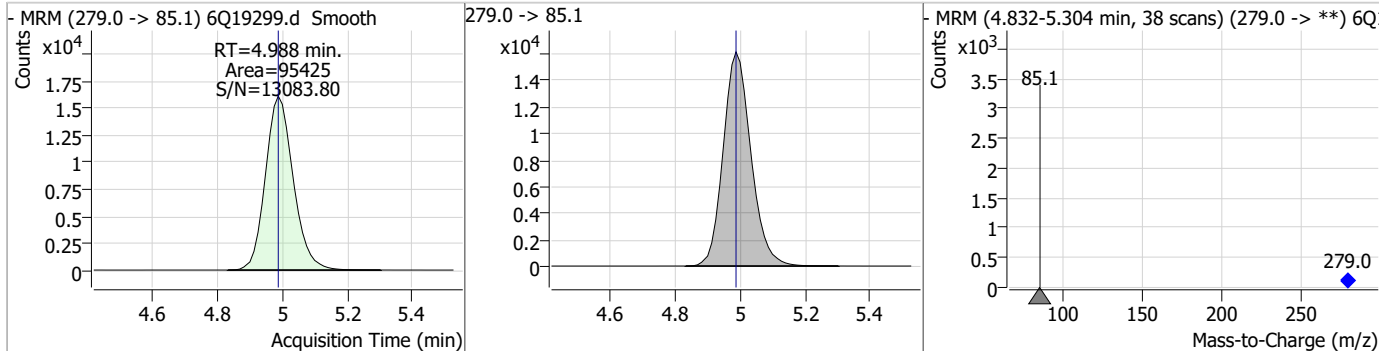
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.83	4.56	0.00	48024				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	9.41	4.56	0.00	133376				

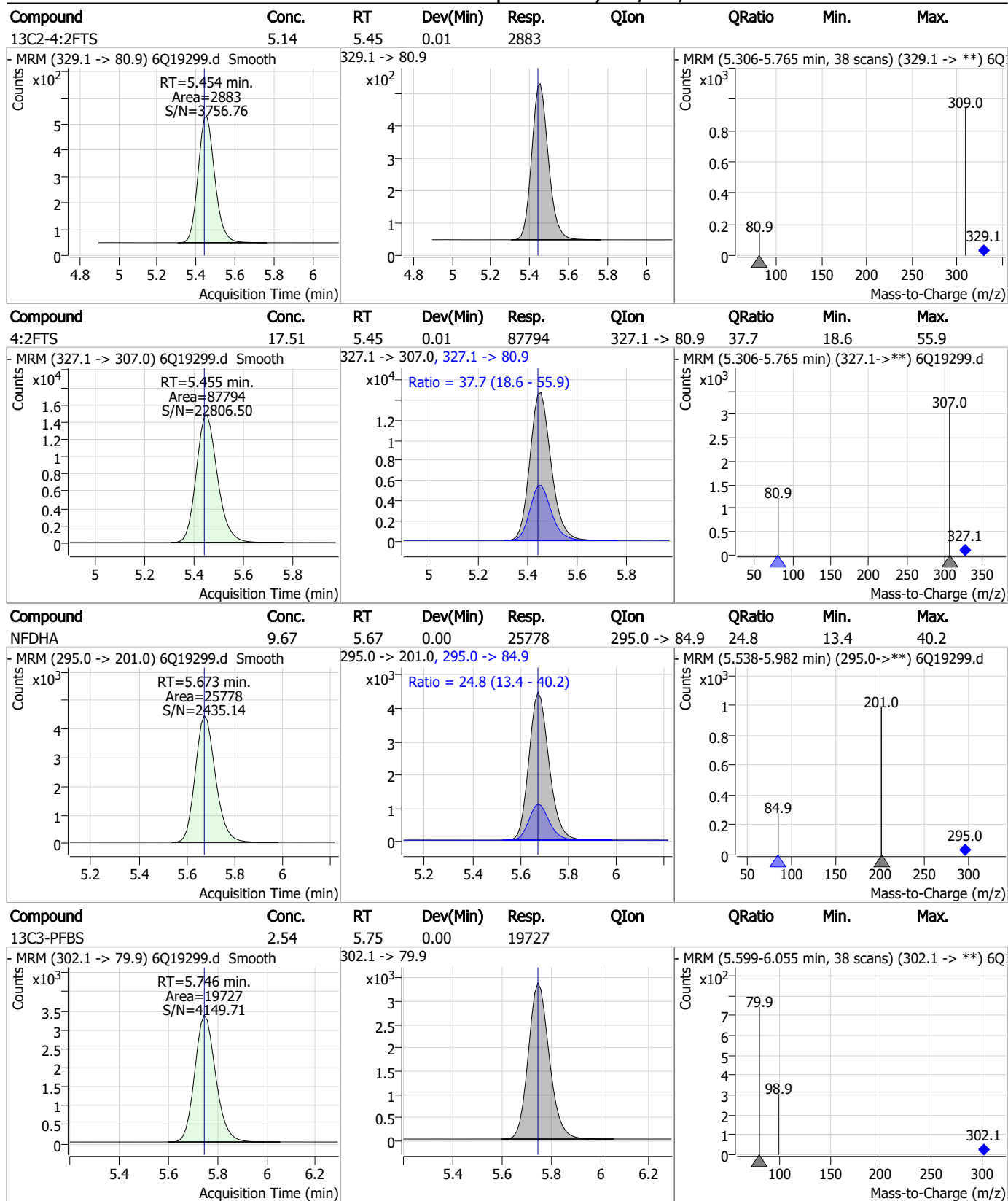


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	9.44	4.99	0.00	95425				



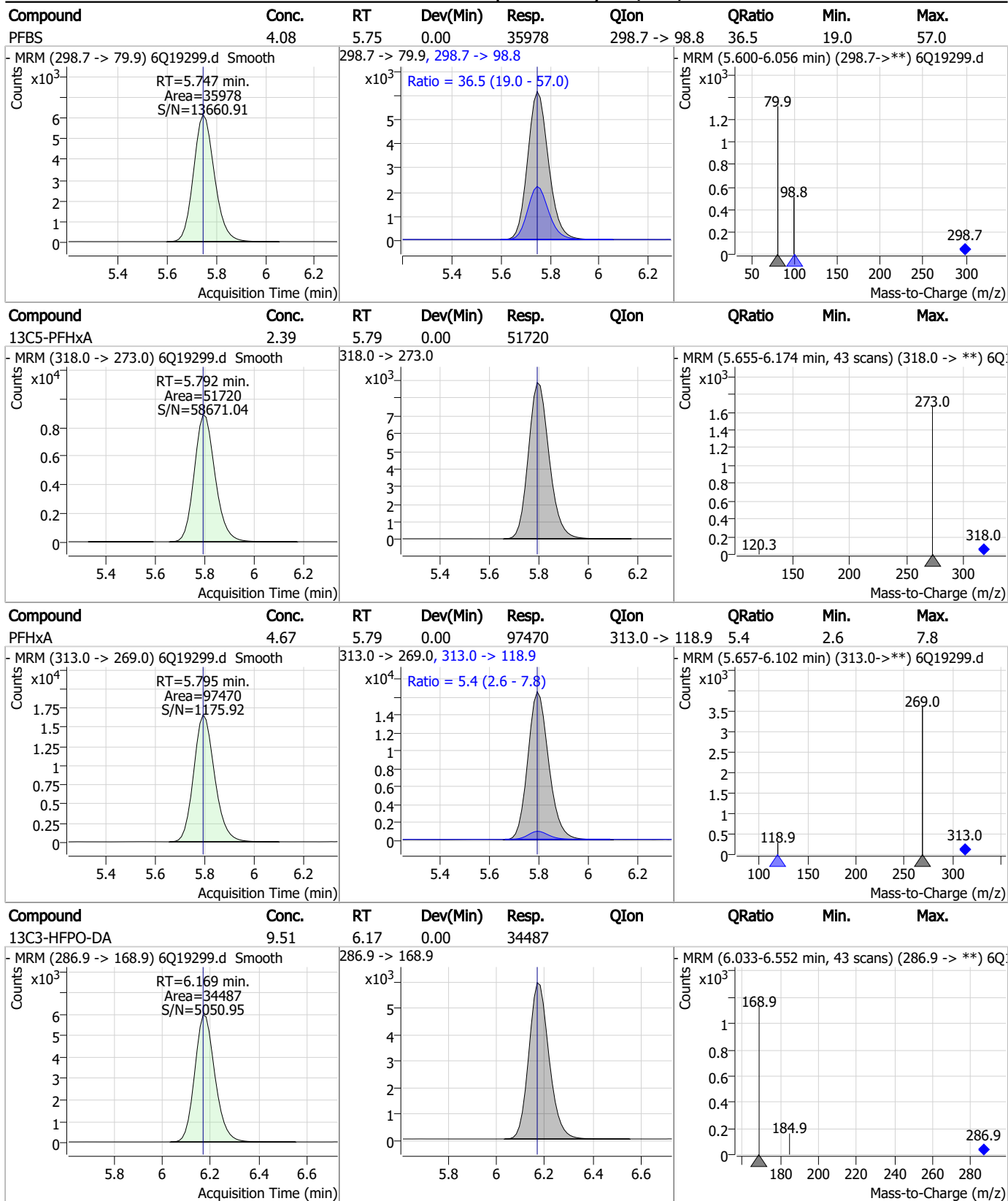
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Perfluorinated Compounds by LC/MS/MS



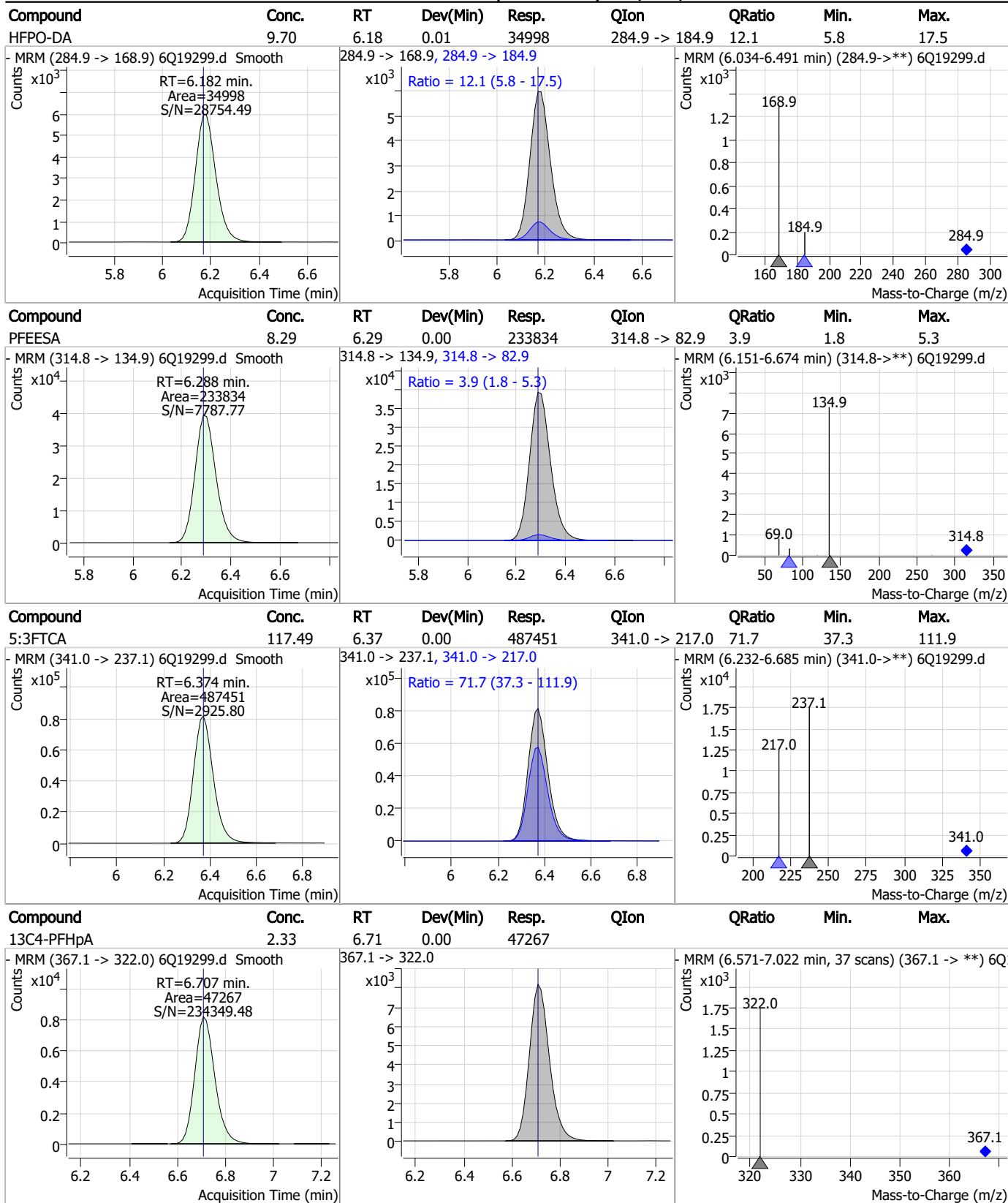
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Perfluorinated Compounds by LC/MS/MS



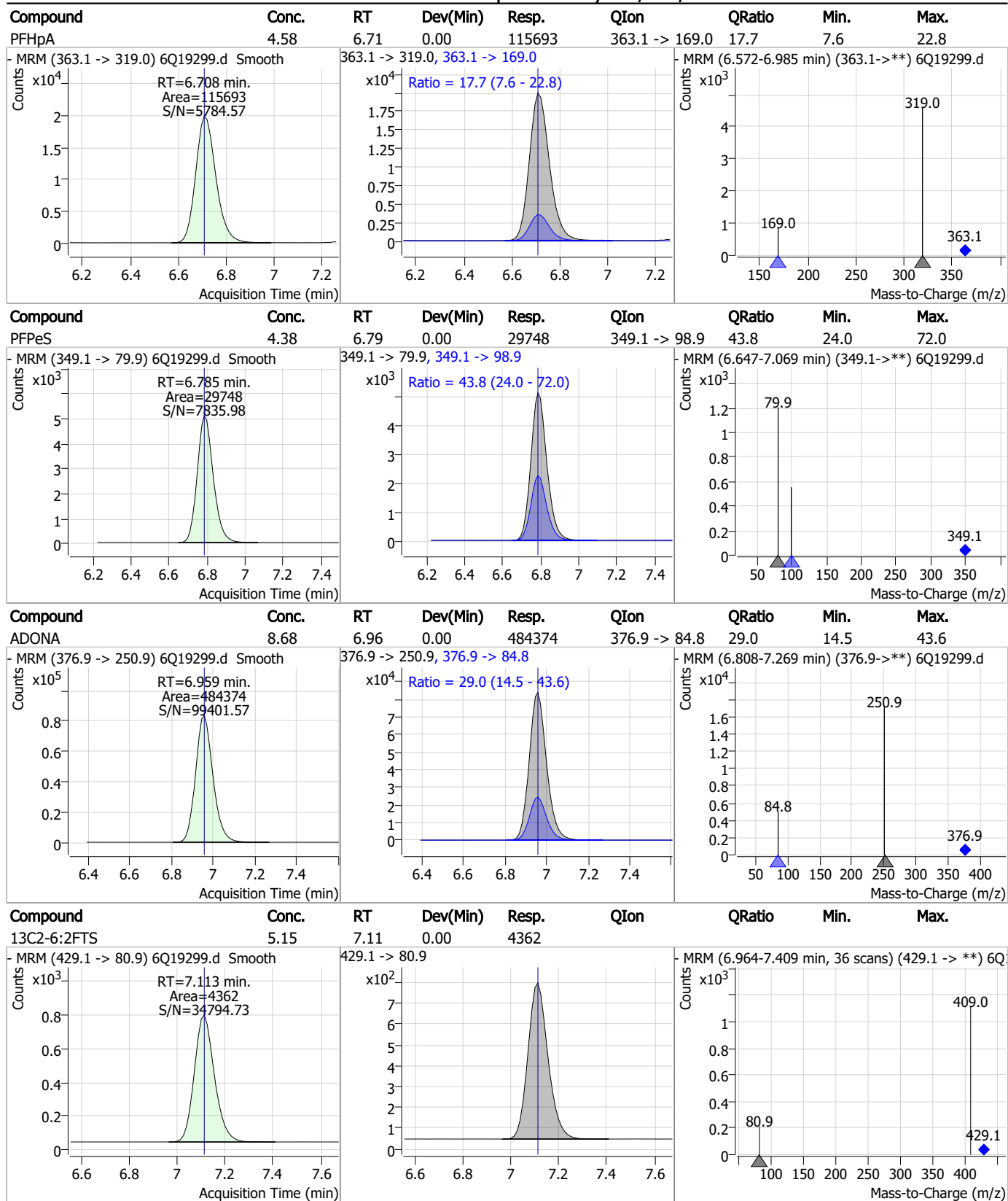
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Perfluorinated Compounds by LC/MS/MS



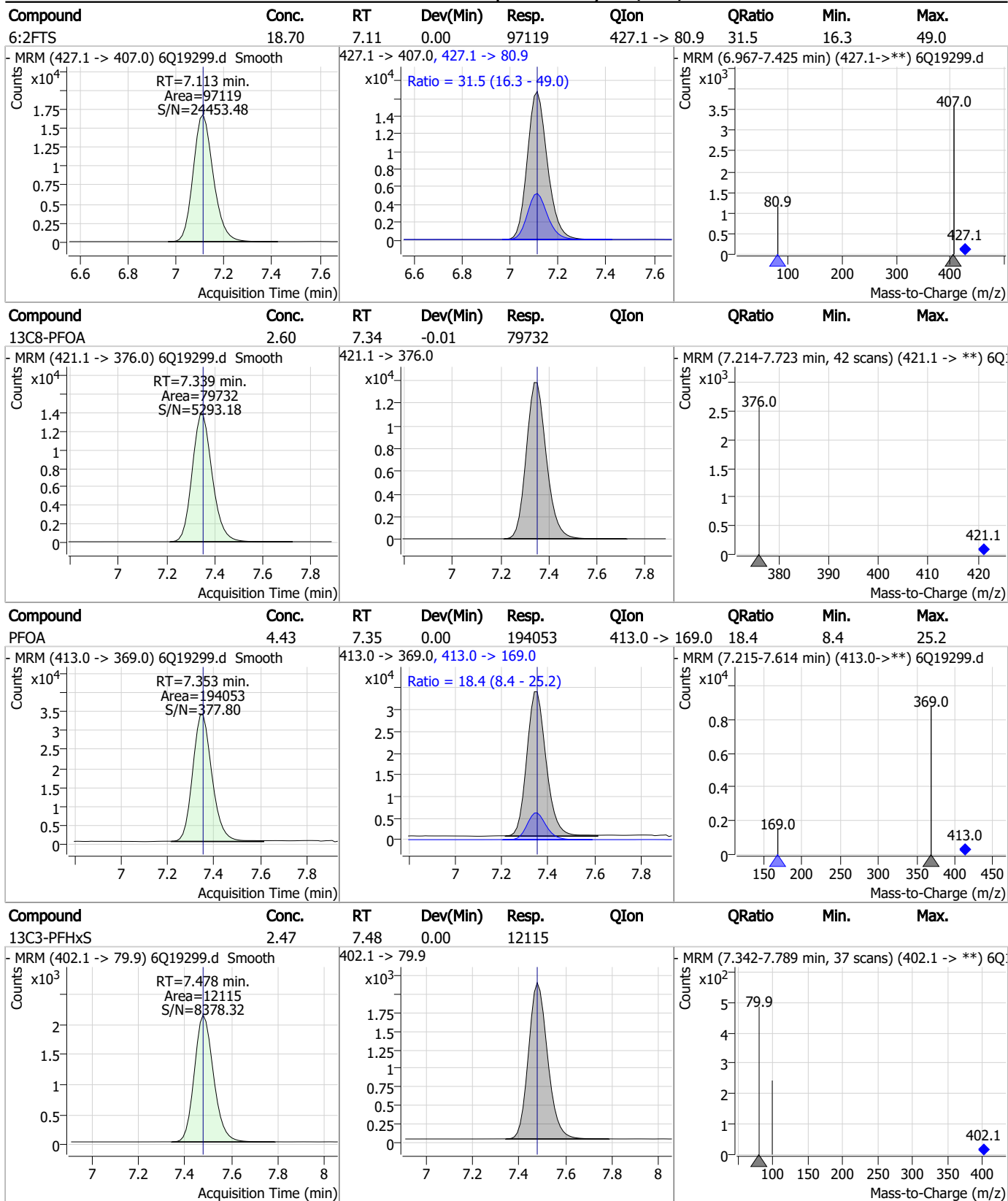
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Perfluorinated Compounds by LC/MS/MS



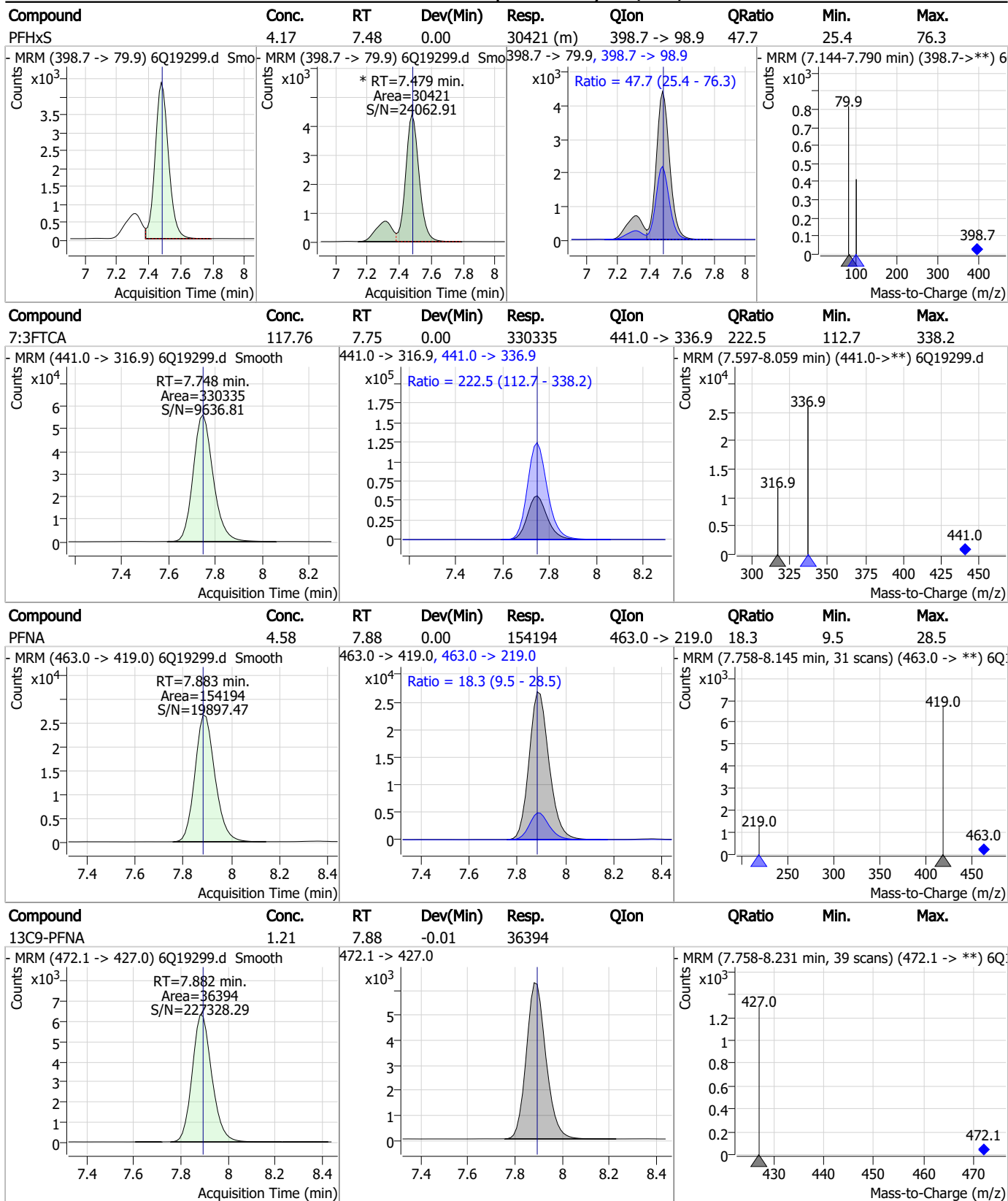
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Perfluorinated Compounds by LC/MS/MS



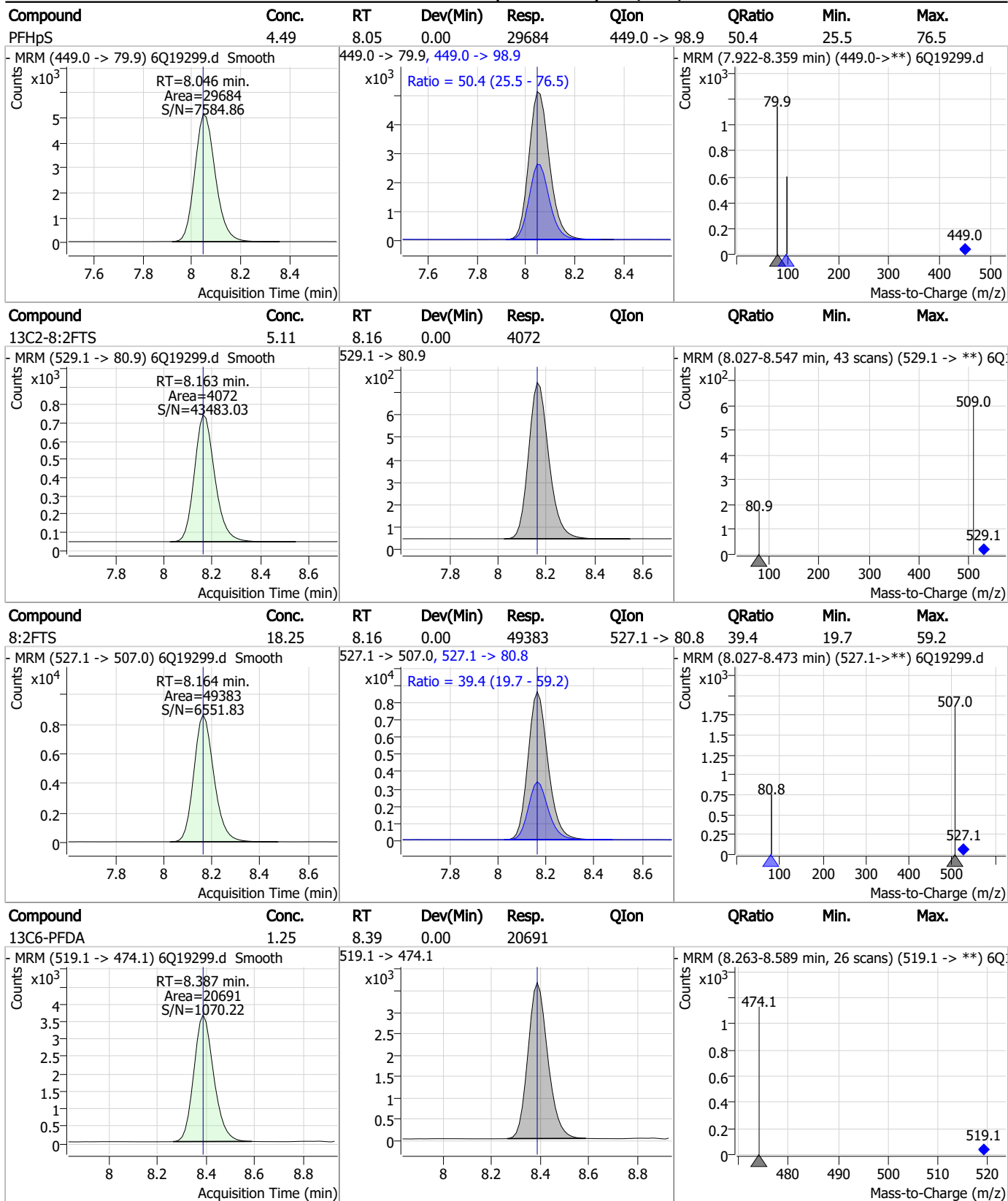
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Perfluorinated Compounds by LC/MS/MS



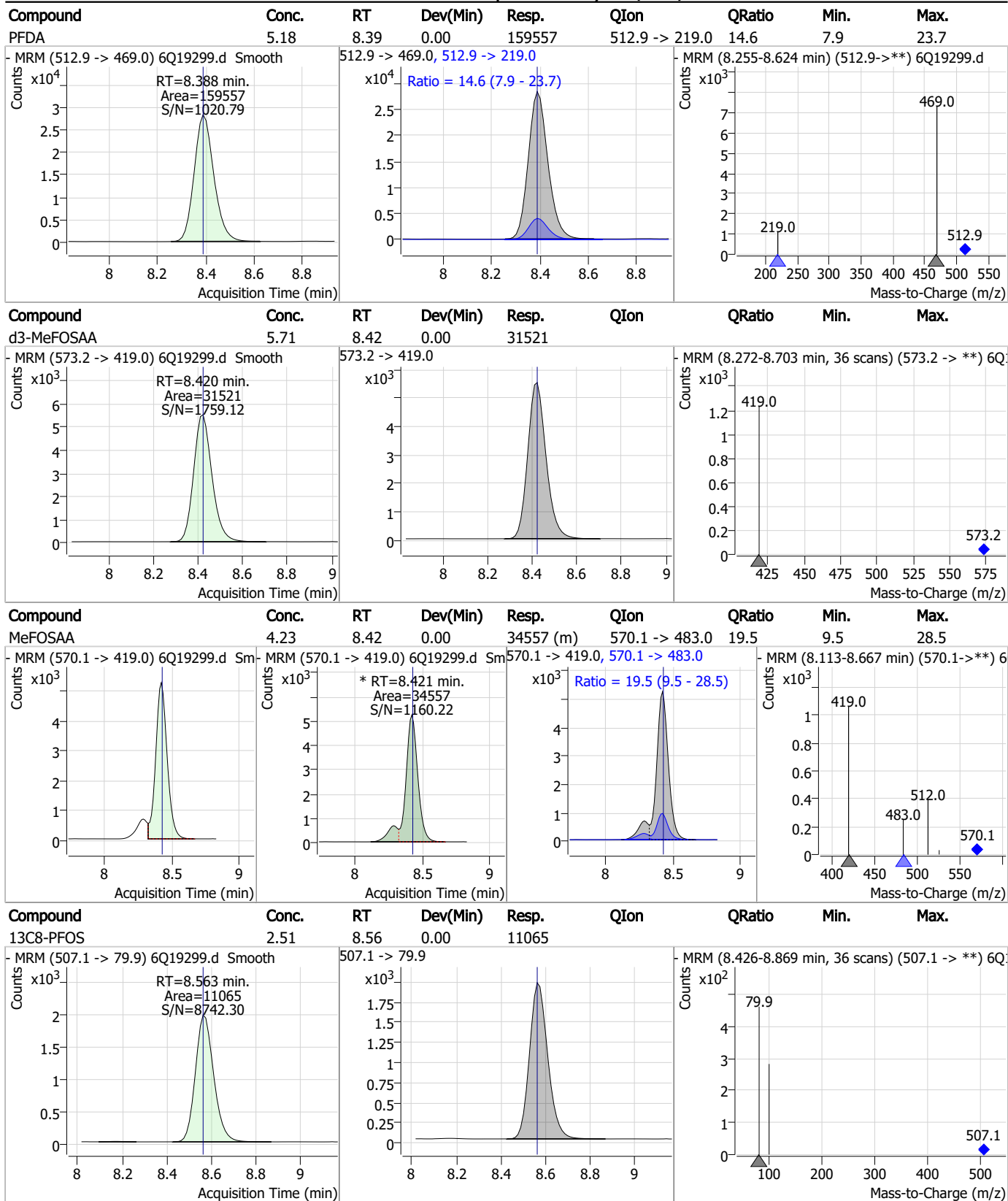
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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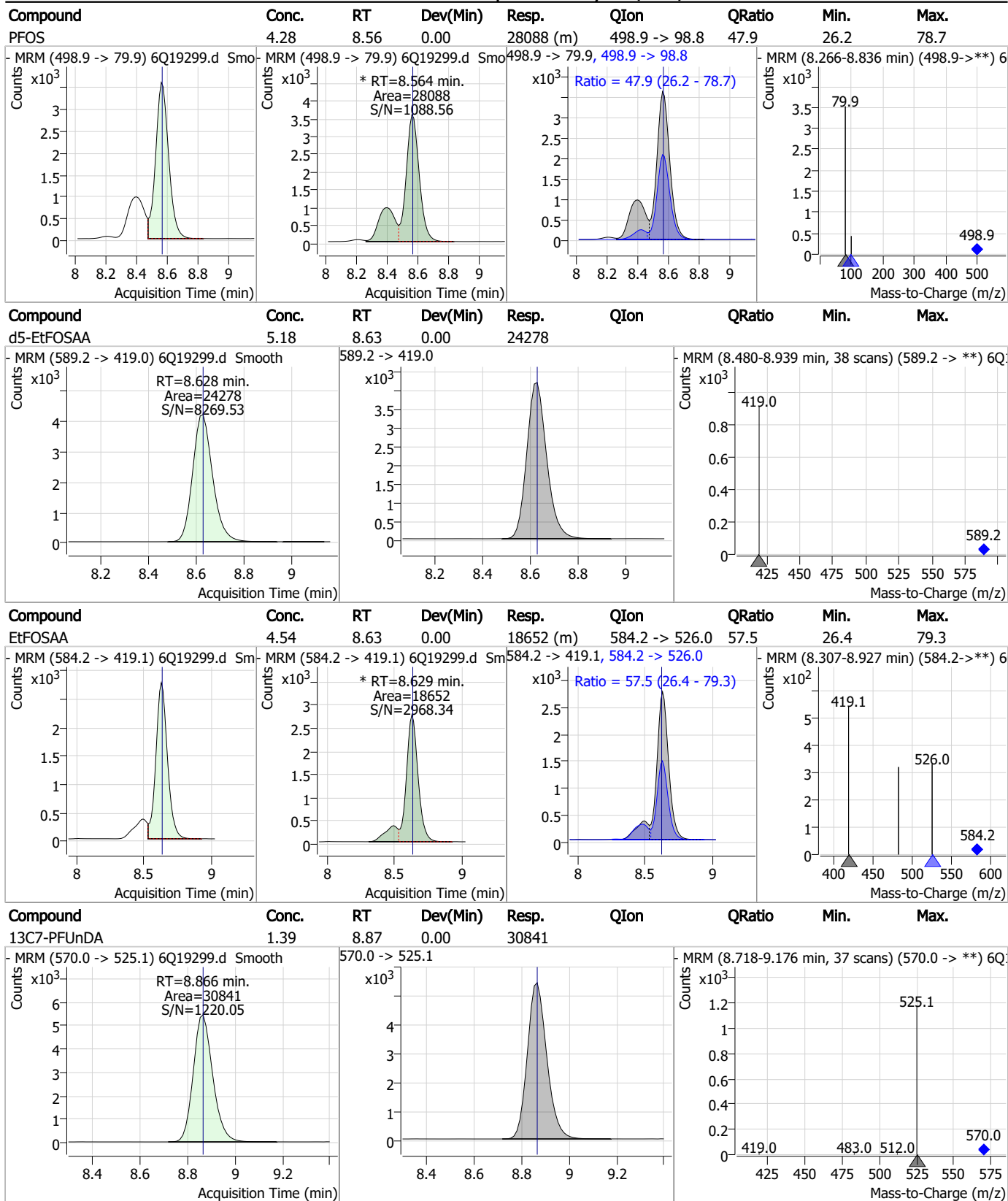
Perfluorinated Compounds by LC/MS/MS



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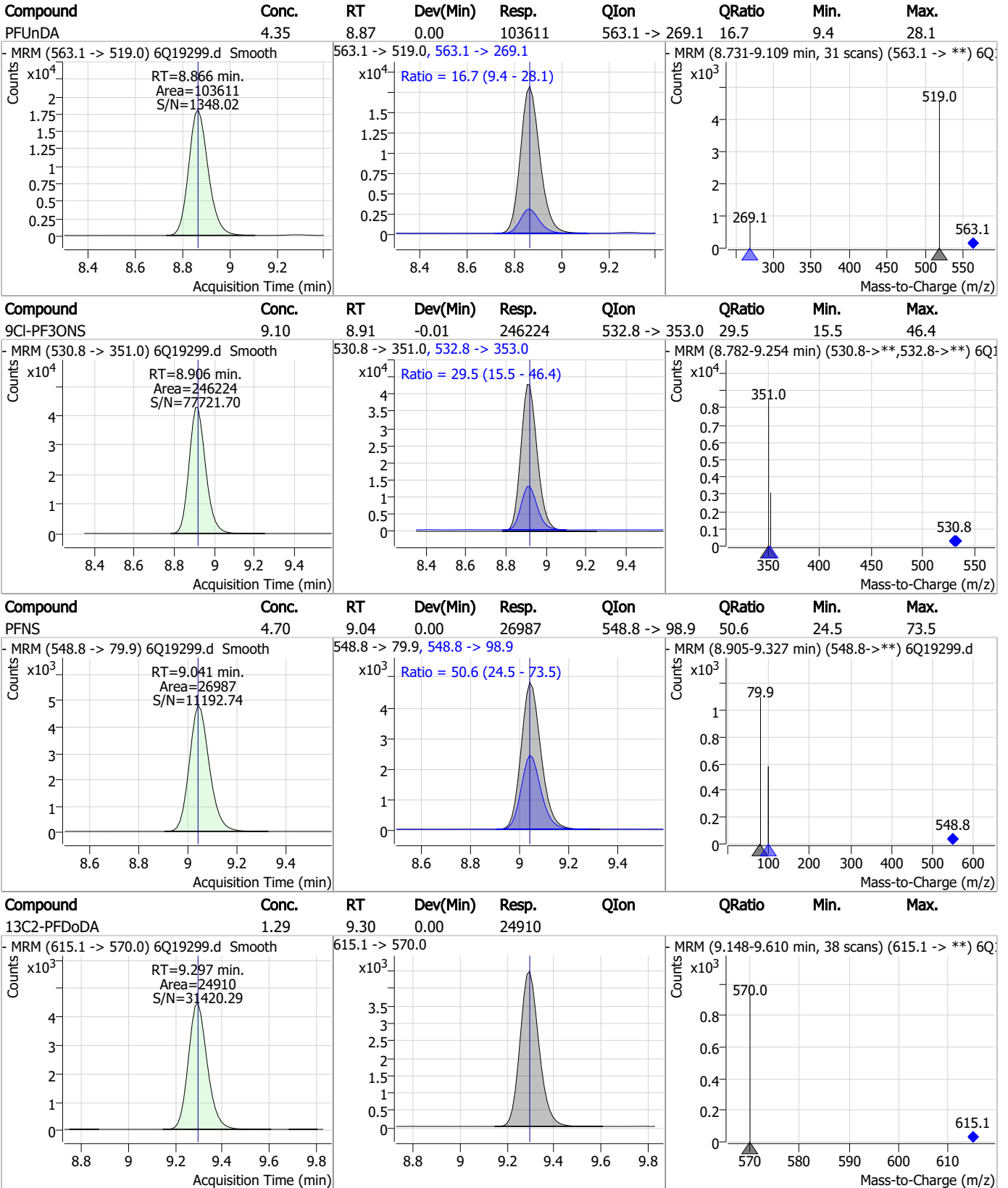
Perfluorinated Compounds by LC/MS/MS



7.7.6

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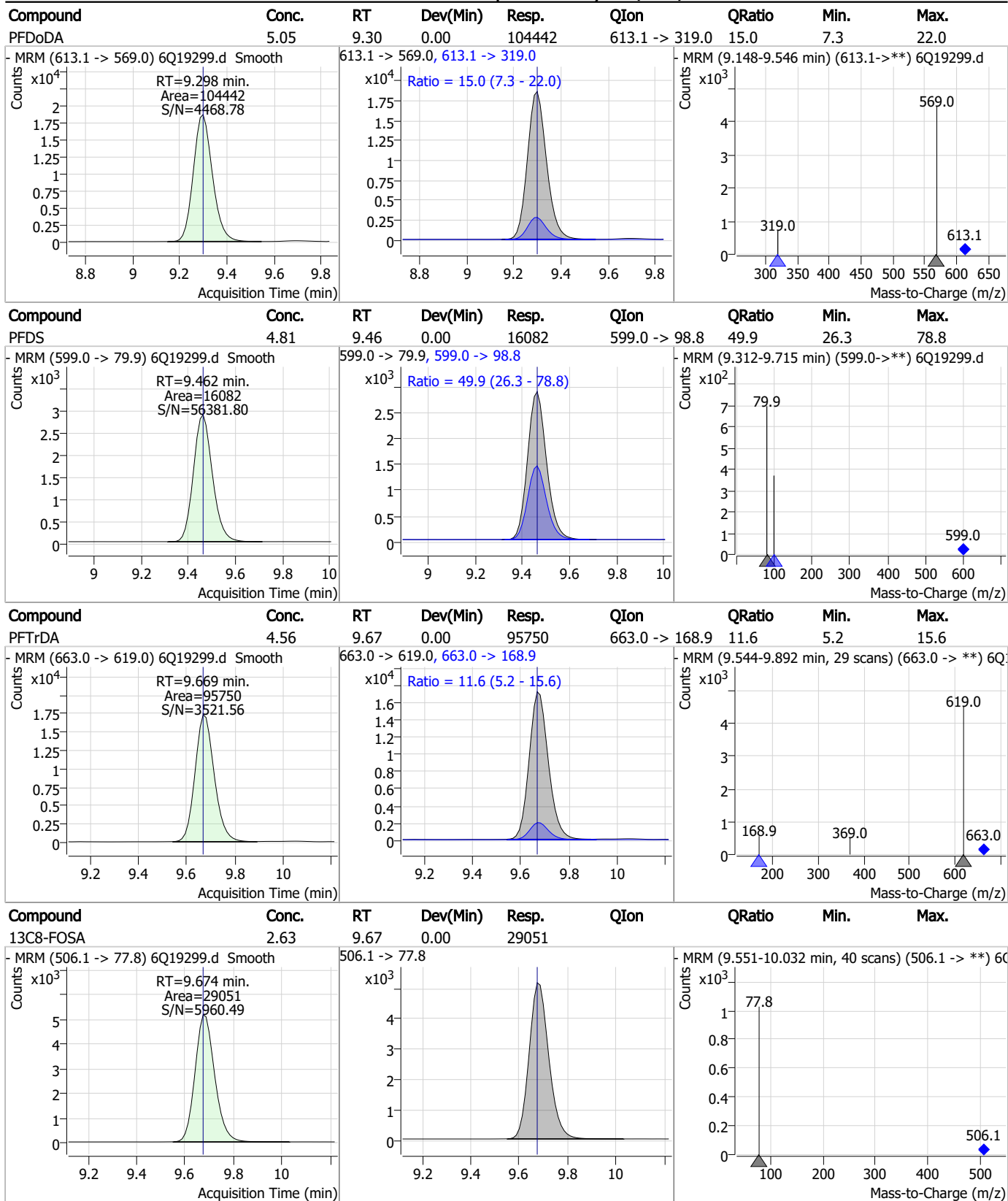
Perfluorinated Compounds by LC/MS/MS



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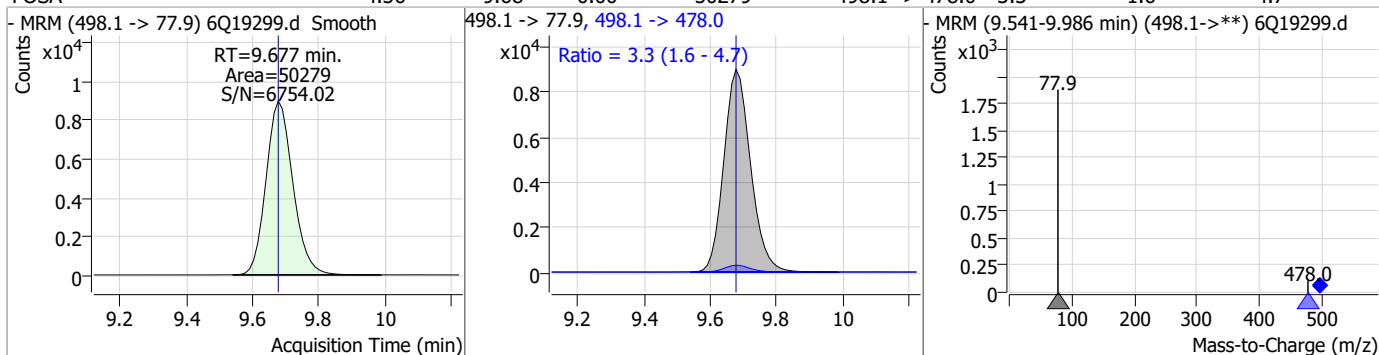
Perfluorinated Compounds by LC/MS/MS



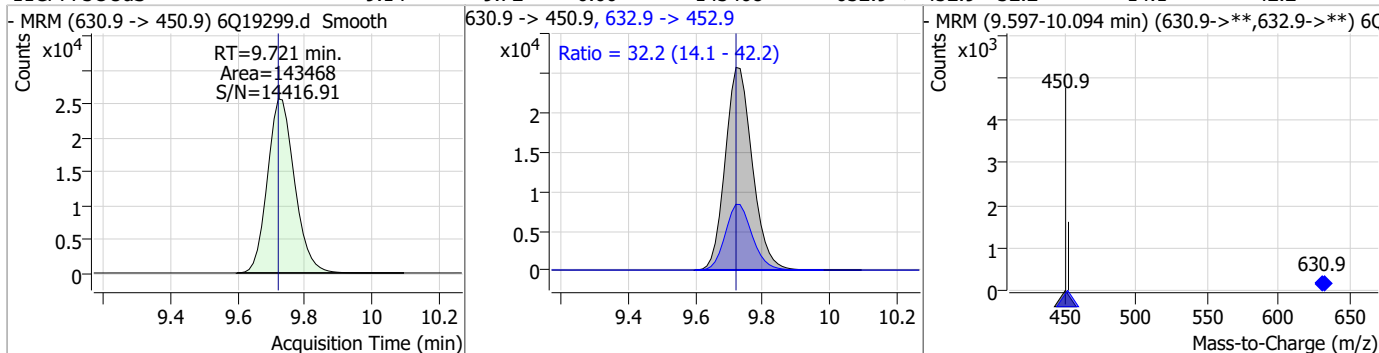
7.7.6
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Perfluorinated Compounds by LC/MS/MS

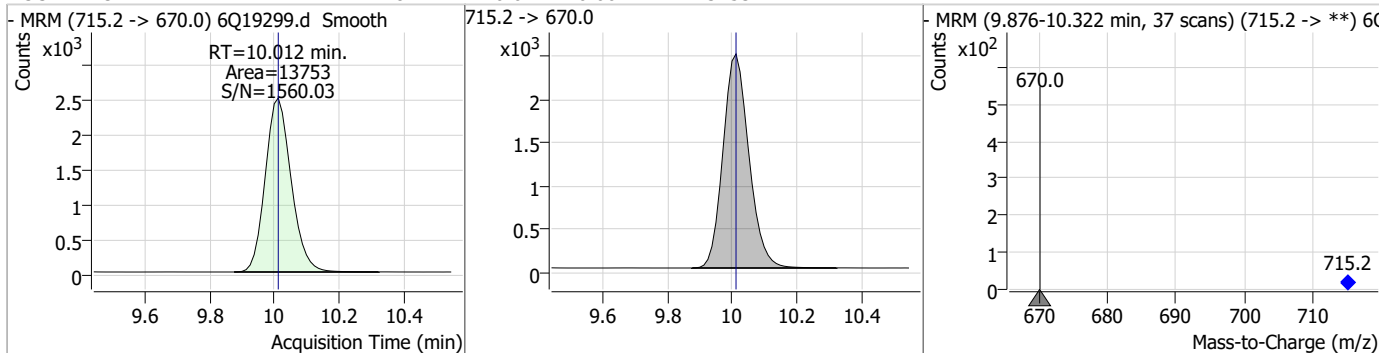
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	4.36	9.68	0.00	50279	498.1 -> 478.0	3.3	1.6	4.7



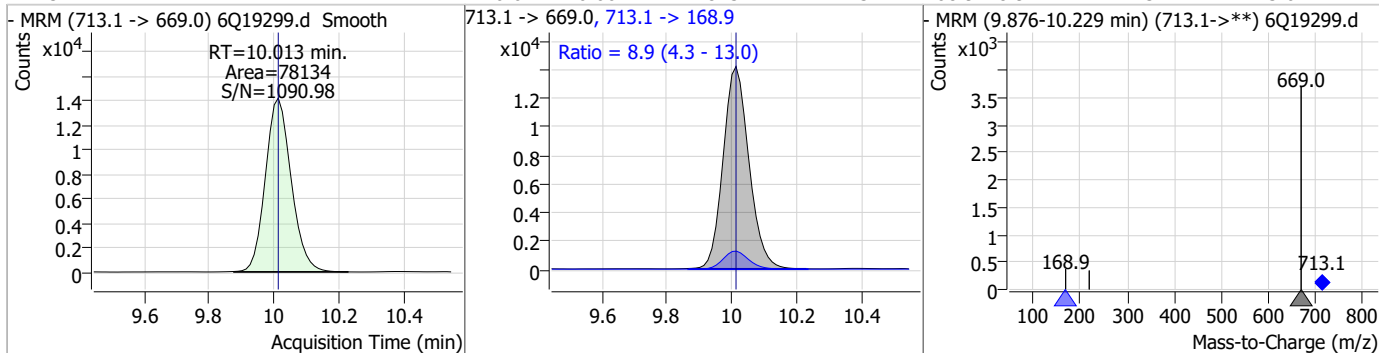
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	9.14	9.72	0.00	143468	632.9 -> 452.9	32.2	14.1	42.2



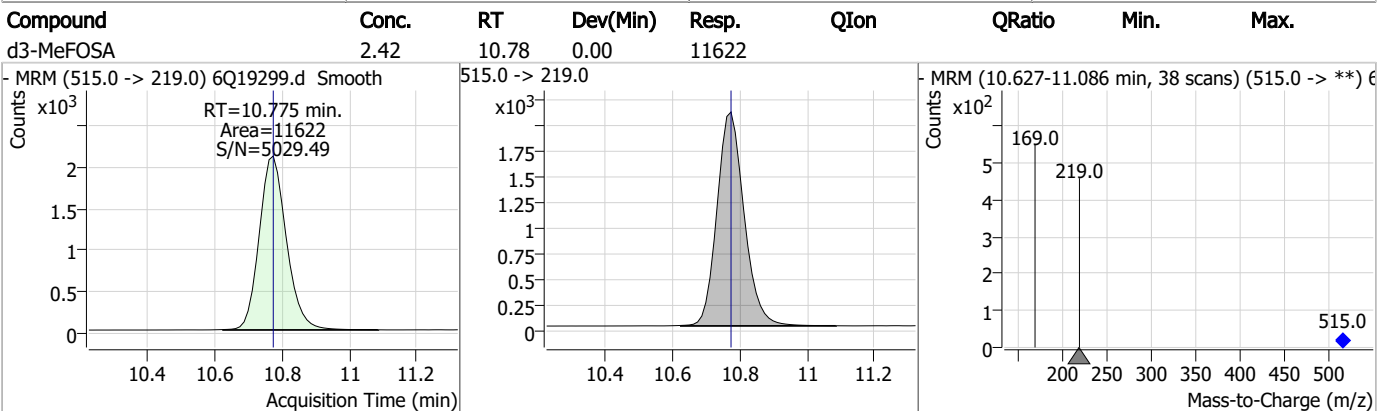
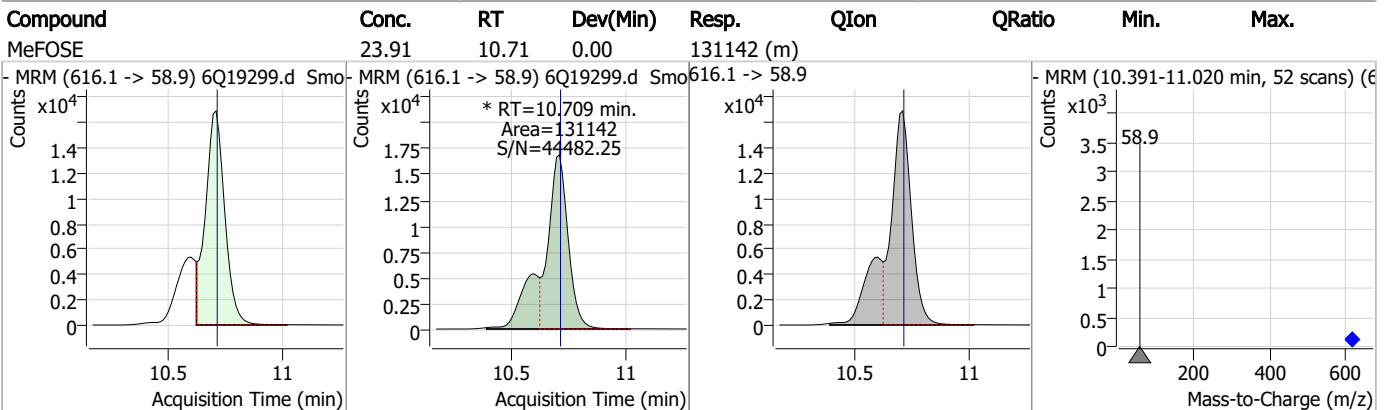
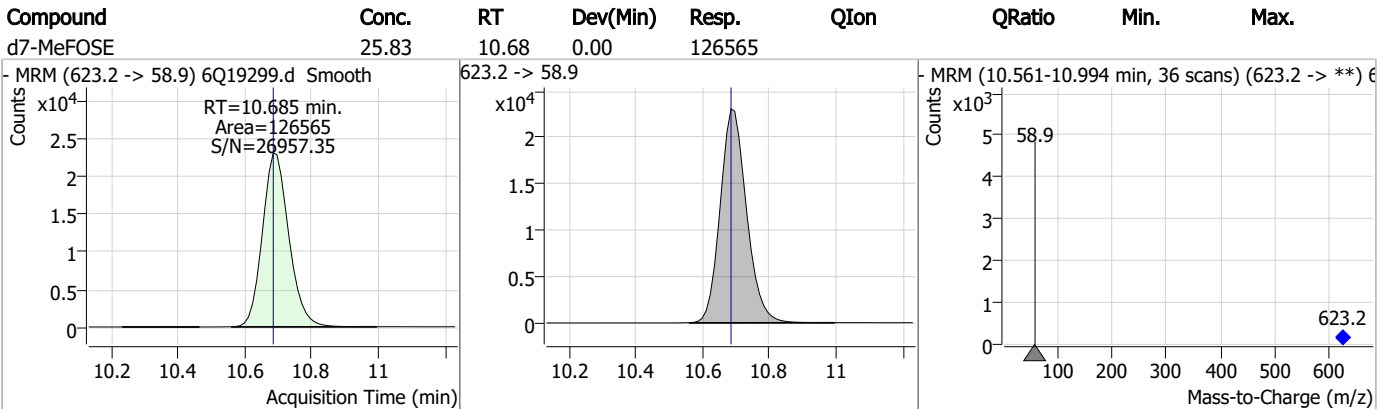
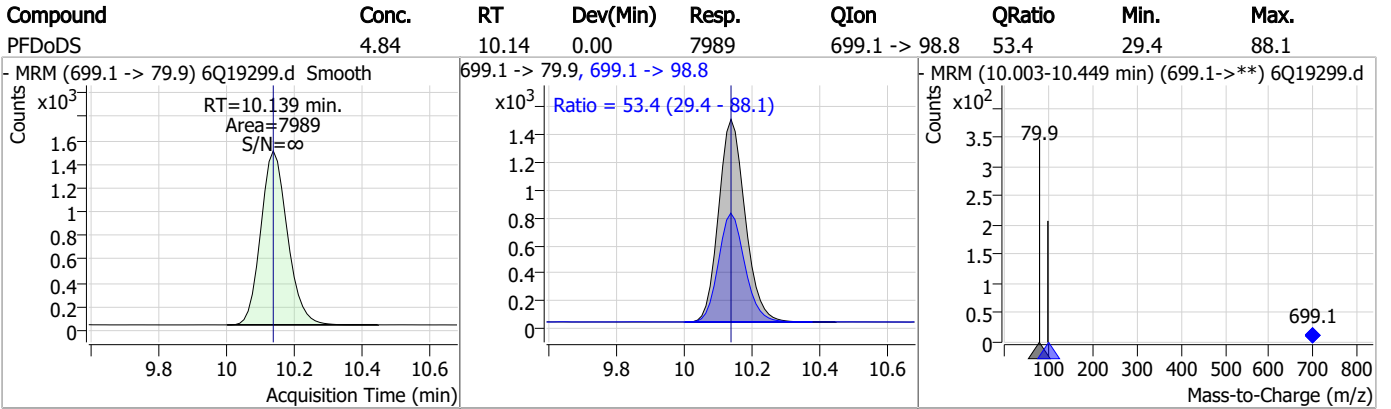
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.28	10.01	0.00	13753	715.2 -> 670.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	4.74	10.01	0.00	78134	713.1 -> 168.9	8.9	4.3	13.0



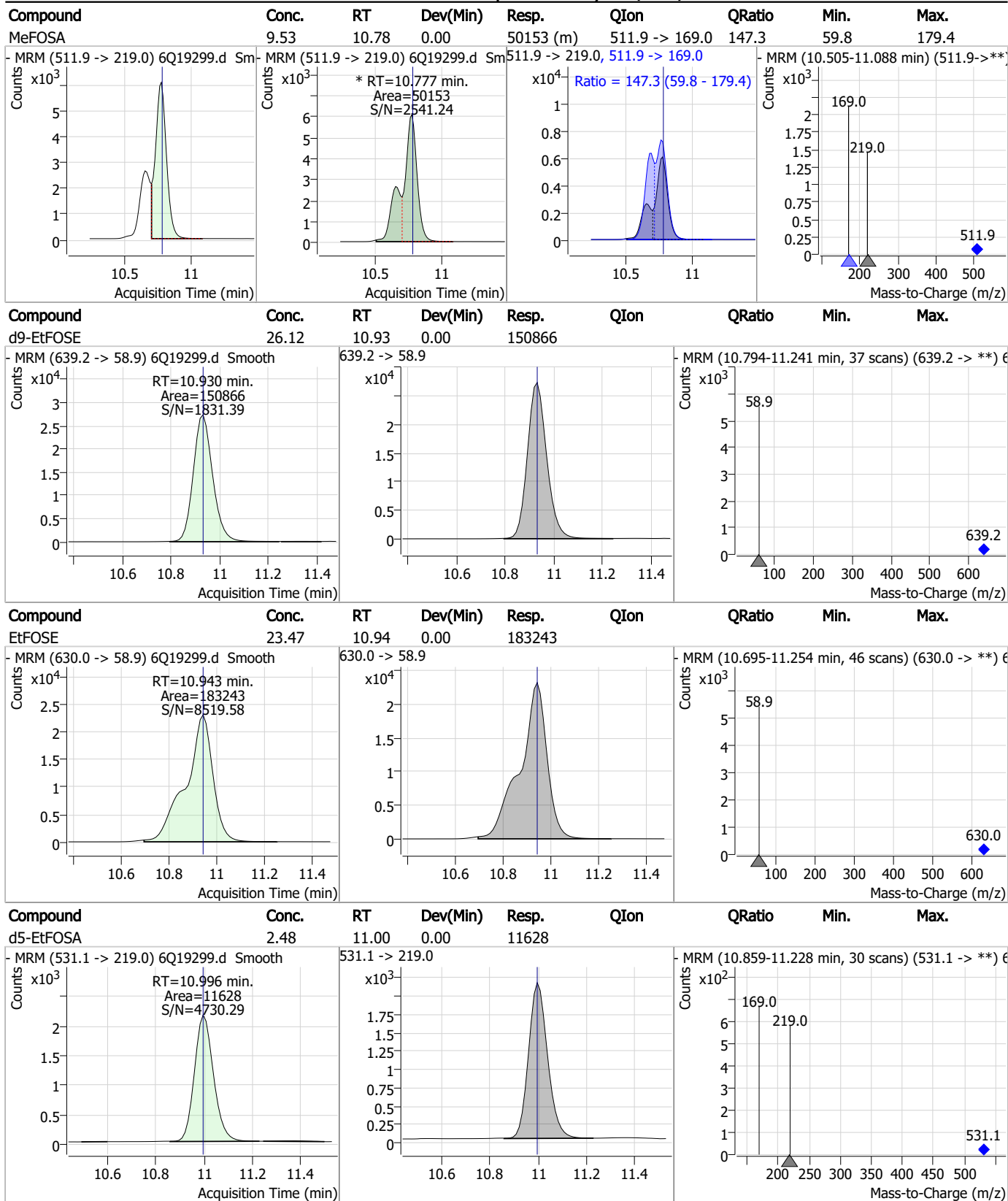
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

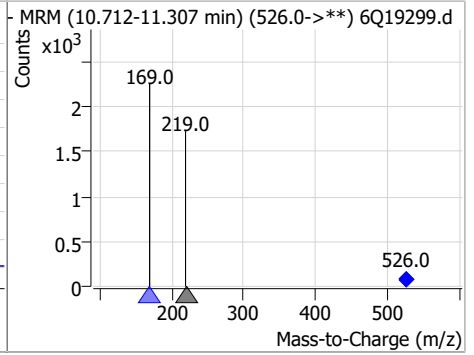
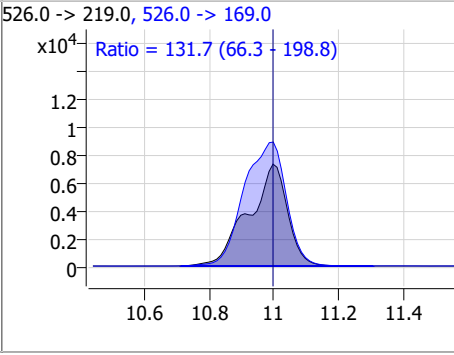
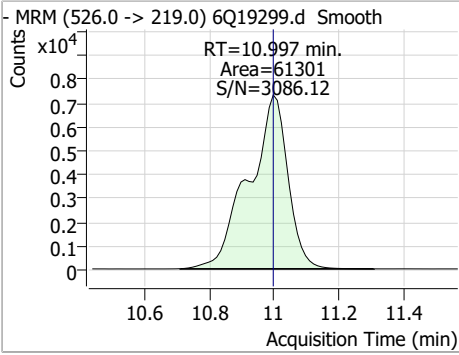


7.7.6
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	9.87	11.00	0.00	61301	526.0 -> 169.0	131.7	66.3	198.8



7.7.6

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Manual Integration Approval Summary

Sample Number: S6Q288-IC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19299.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 12:31 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 06/14/23 11:30

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19300.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 12:45:45 PM
 Sample Name : ic288-6
 Vial : P1-A7
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	137408	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	45517	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	49191	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	46741	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	69561	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	33653	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	21327	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	27066	1.25 µg/L	-0.012
M2-PFDoDA	9.297	615.1 -> 570.0	23236	1.25 µg/L	0.000
M2-PFTeDA	10.012	715.2 -> 670.0	13316	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	26037	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	18512	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	11835	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	10816	2.50 µg/L	0.000
M2-4:2FTS	5.454	329.1 -> 80.9	2325	5.00 µg/L	0.012
M2-6:2FTS	7.113	429.1 -> 80.9	3542	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	3697	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	27464	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	32372	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	23843	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	123372	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	144908	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11831	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11956	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	14179	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	58838	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	8334	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	80738	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	28907	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	44243	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	47050	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.454	329.1 -> 80.9	2325	4.65 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.0%		
13C2-6:2FTS	7.113	429.1 -> 80.9	3542	4.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3697	5.21 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C2-PFDoDA	9.297	615.1 -> 570.0	23236	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C2-PFTeDA	10.012	715.2 -> 670.0	13316	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C3-PFBS	5.746	302.1 -> 79.9	18512	2.67 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C3-PFHxS	7.478	402.1 -> 79.9	11835	2.70 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 = 108.1%	
13C4-PFBA	3.085	216.8 -> 171.9	137408	9.95 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.707	367.1 -> 322.0	46741	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C5-PFHxA	5.792	318.0 -> 273.0	49191	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C5-PFPeA	4.560	268.3 -> 223.0	45517	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C6-PFDA	8.387	519.1 -> 474.1	21327	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C7-PFUnDA	8.853	570.0 -> 525.1	27066	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C8-FOSA	9.674	506.1 -> 77.8	26037	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-PFOA	7.339	421.1 -> 376.0	69561	2.30 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C8-PFOS	8.563	507.1 -> 79.9	10816	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C9-PFNA	7.882	472.1 -> 427.0	33653	1.25 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.0%	
d3-MeFOSAA	8.407	573.2 -> 419.0	27464	5.12 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	32372	9.96 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d3-MeFOSA	10.775	515.0 -> 219.0	11956	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
d5-EtFOSAA	8.615	589.2 -> 419.0	23843	5.24 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.7%	
d7-MeFOSE	10.685	623.2 -> 58.9	123372	25.93 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
d9-EtFOSE	10.930	639.2 -> 58.9	144908	25.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
d5-EtFOSA	10.996	531.1 -> 219.0	11831	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	193625	47.89 µg/L	100
		327.1 -> 80.9	72011		
6:2FTS	7.101	427.1 -> 407.0	207940	49.30 µg/L	99
		427.1 -> 80.9	67370		
8:2FTS	8.164	527.1 -> 507.0	114249	46.50 µg/L	98
		527.1 -> 80.8	43847		
EtFOSAA	8.629	584.2 -> 419.1	45772	11.34 µg/L	m 98
		584.2 -> 526.0	24705		
FOSA	9.677	498.1 -> 77.9	140237	13.56 µg/L	99
		498.1 -> 478.0	3963		
MeFOSAA	8.408	570.1 -> 419.0	85849	12.06 µg/L	m 98
		570.1 -> 483.0	16992		
PFBA	3.093	212.8 -> 168.9	270482	48.85 µg/L	100
PFBS	5.747	298.7 -> 79.9	86784	10.50 µg/L	99
		298.7 -> 98.8	33731		
PFDA	8.388	512.9 -> 469.0	356587	11.24 µg/L	99
		512.9 -> 219.0	57714		
PFDoDA	9.298	613.1 -> 569.0	235249	12.20 µg/L	96
		613.1 -> 319.0	38632		
PFDS	9.462	599.0 -> 79.9	38887	11.89 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	19879			
PFHpA	6.708	363.1 -> 319.0	306029	12.26	µg/L	98
		363.1 -> 169.0	49560			
PFHpS	8.046	449.0 -> 79.9	75920	11.75	µg/L	97
		449.0 -> 98.9	37093			
PFHxA	5.795	313.0 -> 269.0	238359	12.00	µg/L	99
		313.0 -> 118.9	13059			
PFHxS	7.479	398.7 -> 79.9	75065	10.53	µg/L	m 96
		398.7 -> 98.9	35967			
PFNA	7.883	463.0 -> 419.0	392208	12.61	µg/L	98
		463.0 -> 219.0	70174			
PFNS	9.041	548.8 -> 79.9	64523	11.50	µg/L	99
		548.8 -> 98.9	32029			
PFOA	7.341	413.0 -> 369.0	473355	12.39	µg/L	97
		413.0 -> 169.0	85830			
PFOS	8.564	498.9 -> 79.9	72468	11.29	µg/L	m 94
		498.9 -> 98.8	34857			
PFPeA	4.563	263.0 -> 219.0	327107	24.34	µg/L	100
PFPeS	6.785	349.1 -> 79.9	75157	11.33	µg/L	93
		349.1 -> 98.9	32745			
PFTeDA	10.013	713.1 -> 669.0	194186	12.17	µg/L	100
		713.1 -> 168.9	16422			
PFTrDA	9.669	663.0 -> 619.0	231955	11.84	µg/L	97
		663.0 -> 168.9	26562			
PFUnDA	8.866	563.1 -> 519.0	260800	12.48	µg/L	95
		563.1 -> 269.1	43403			
11Cl-PF3OUdS	9.721	630.9 -> 450.9	352493	23.91	µg/L	94
		632.9 -> 452.9	111334			
9Cl-PF3ONS	8.906	530.8 -> 351.0	522868	20.59	µg/L	93
		532.8 -> 353.0	181561			
ADONA	6.946	376.9 -> 250.9	1242433	23.72	µg/L	98
		376.9 -> 84.8	347404			
HFPO-DA	6.169	284.9 -> 168.9	85692	25.29	µg/L	100
		284.9 -> 184.9	9990			
3:3FTCA	3.946	241.0 -> 177.0	55069	60.58	µg/L	99
		241.0 -> 117.0	7221			
5:3FTCA	6.361	341.0 -> 237.1	1201141	304.40	µg/L	96
		341.0 -> 217.0	858719			
7:3FTCA	7.736	441.0 -> 316.9	821667	307.98	µg/L	97
		441.0 -> 336.9	1891783			
EtFOSA	10.997	526.0 -> 219.0	150276	23.78	µg/L	m 96
		526.0 -> 169.0	192978			
EtFOSE	10.943	630.0 -> 58.9	448717	59.83	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	126519	23.37	µg/L	m 79
		511.9 -> 169.0	181020			
MeFOSE	10.709	616.1 -> 58.9	312563	58.46	µg/L	m 100
PFDoS	10.139	699.1 -> 79.9	19137	11.87	µg/L	91
		699.1 -> 98.8	9913			
NFDHA	5.673	295.0 -> 201.0	60037	23.67	µg/L	96
		295.0 -> 84.9	14899			
PFMBA	4.988	279.0 -> 85.1	235609	24.60	µg/L	100
PFMPA	3.667	229.0 -> 84.9	182840	24.40	µg/L	100
PFEESA	6.288	314.8 -> 134.9	570640	21.27	µg/L	99
		314.8 -> 82.9	21454			

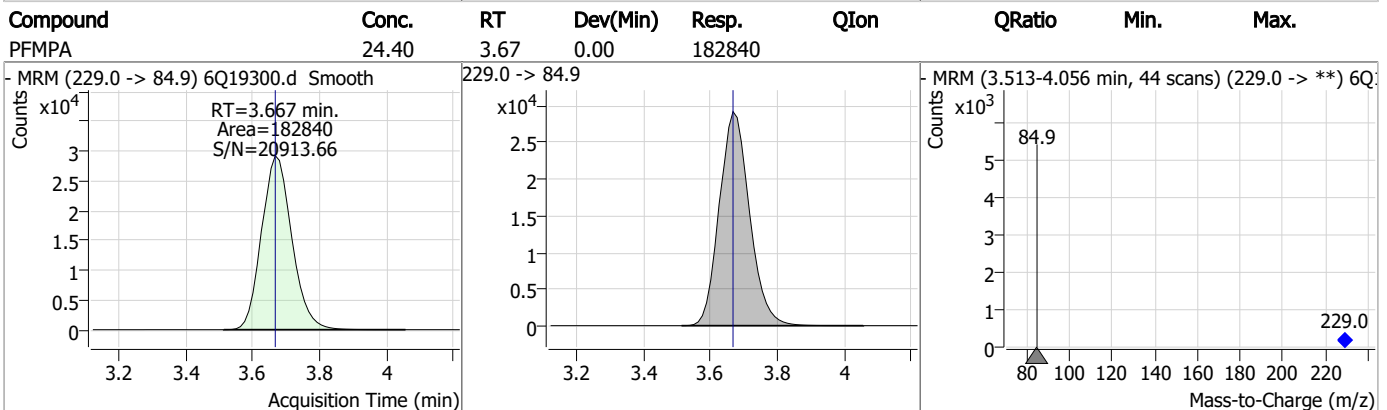
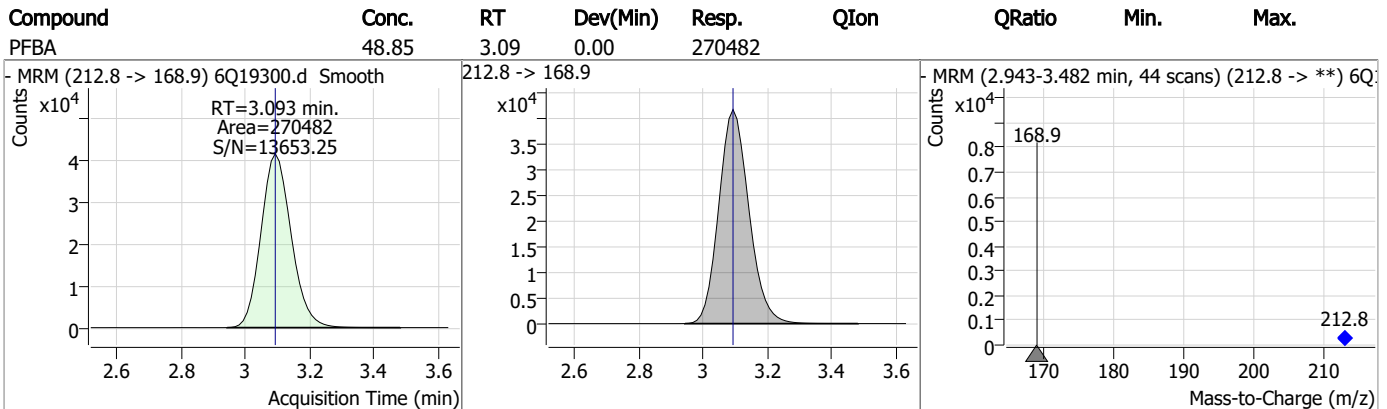
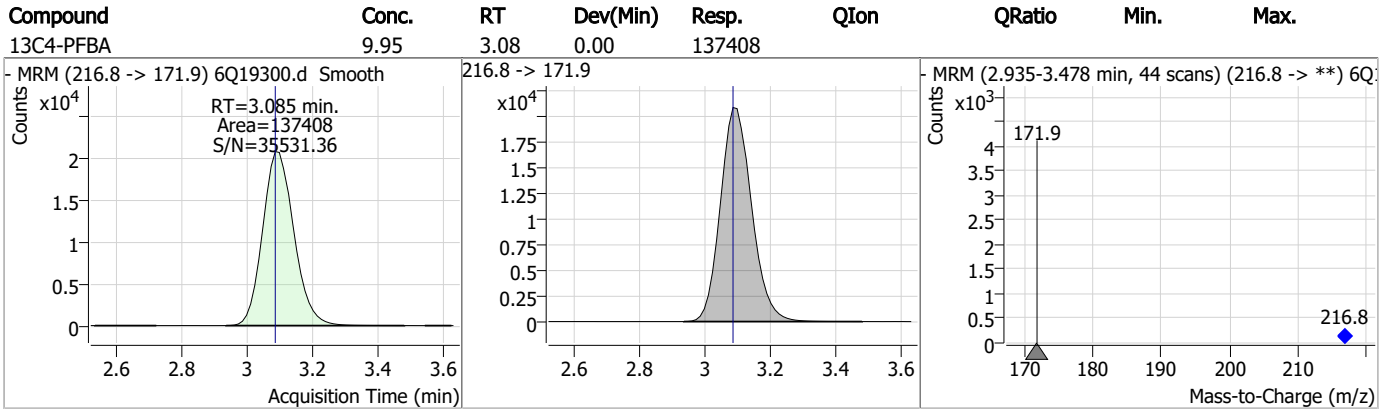
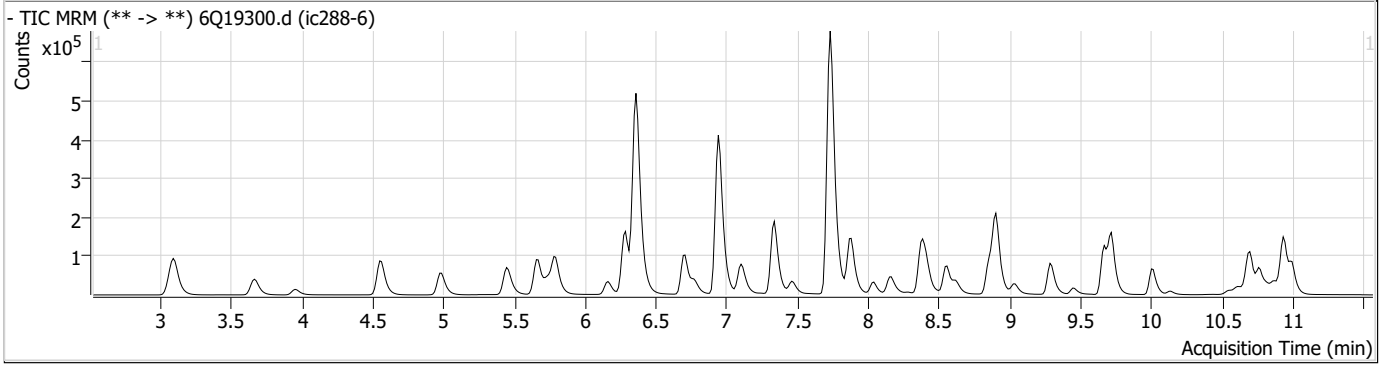
= Qualifier out of range, m = manually integrated, + = Area summed

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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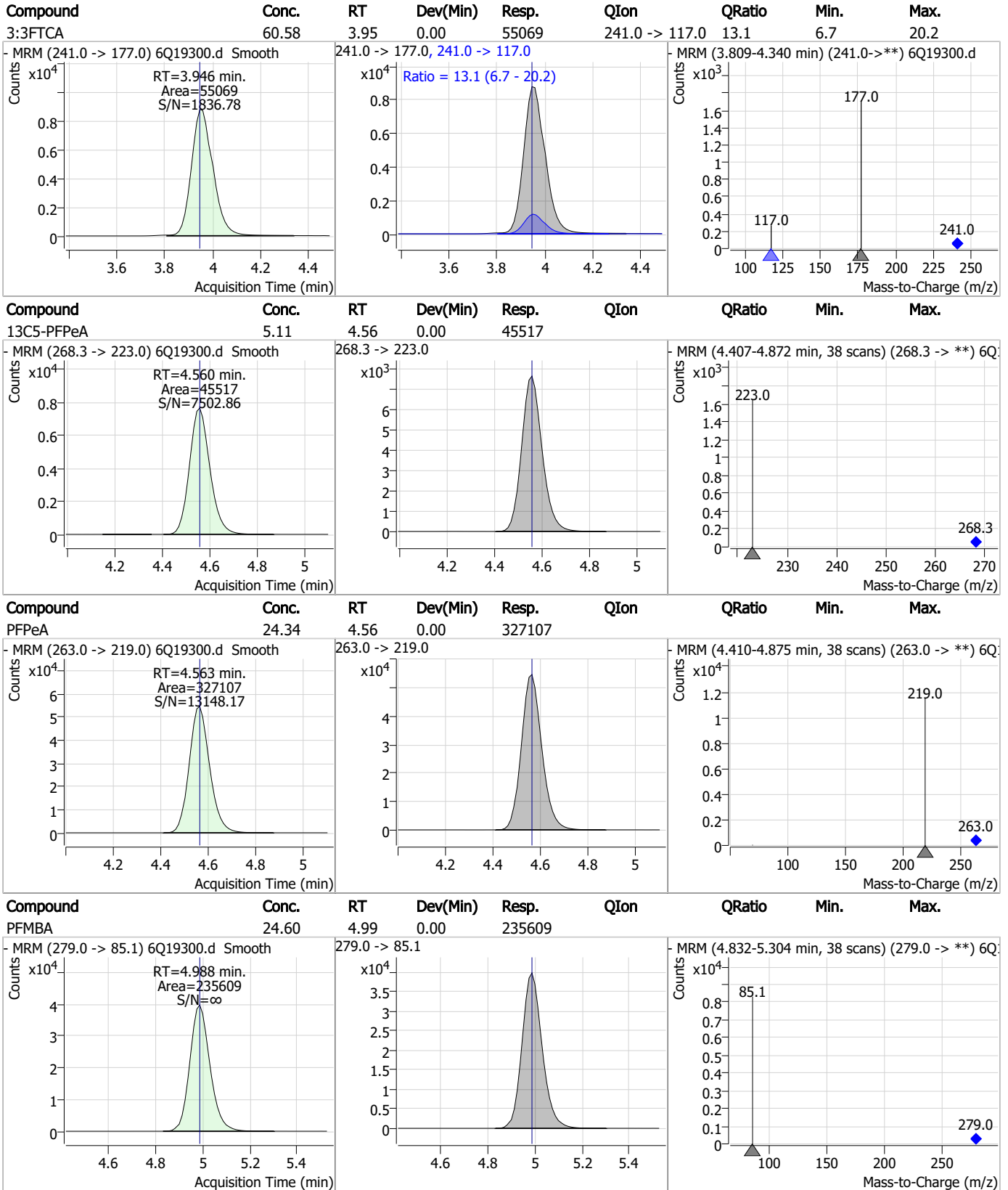
Perfluorinated Compounds by LC/MS/MS



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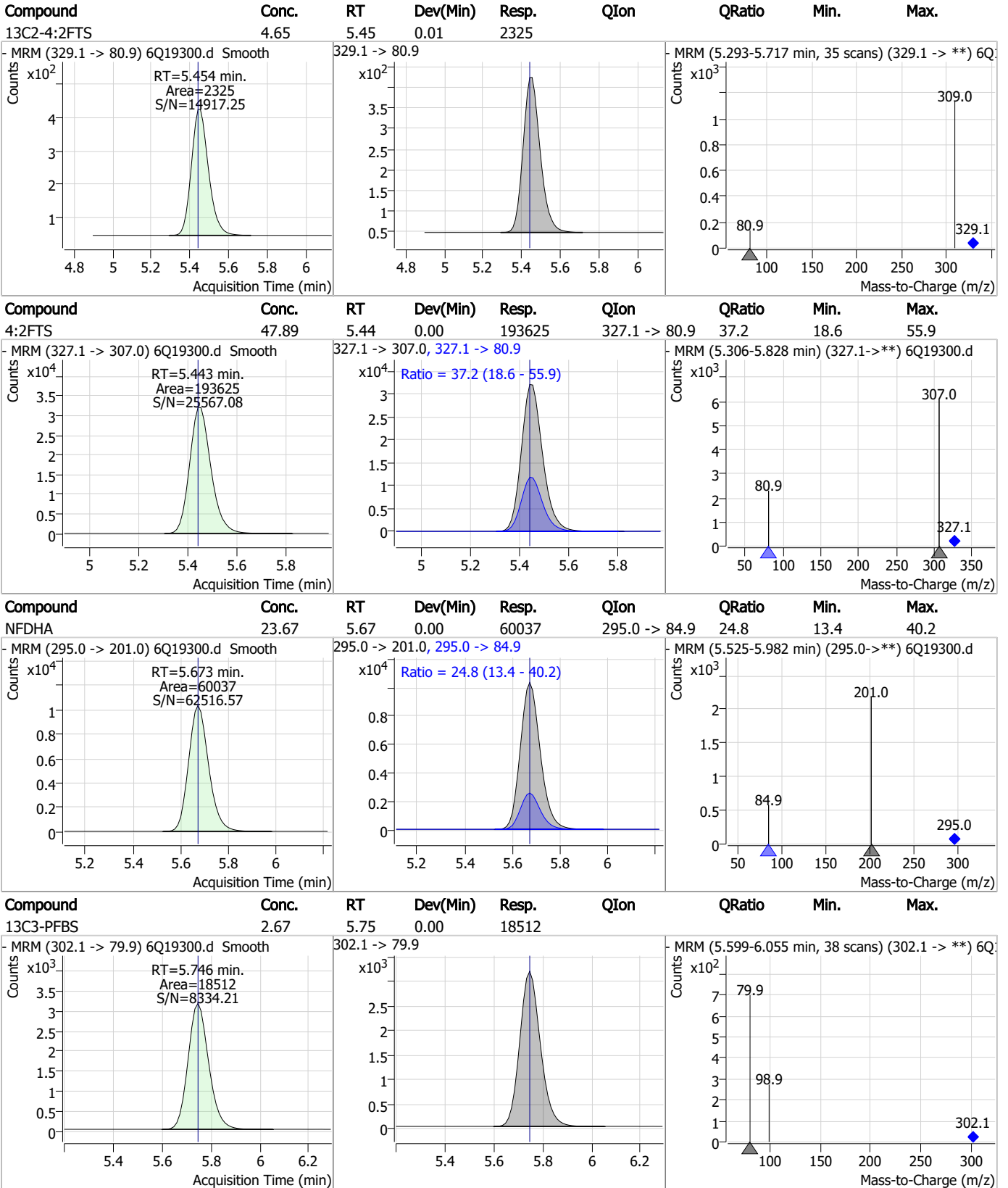
Perfluorinated Compounds by LC/MS/MS



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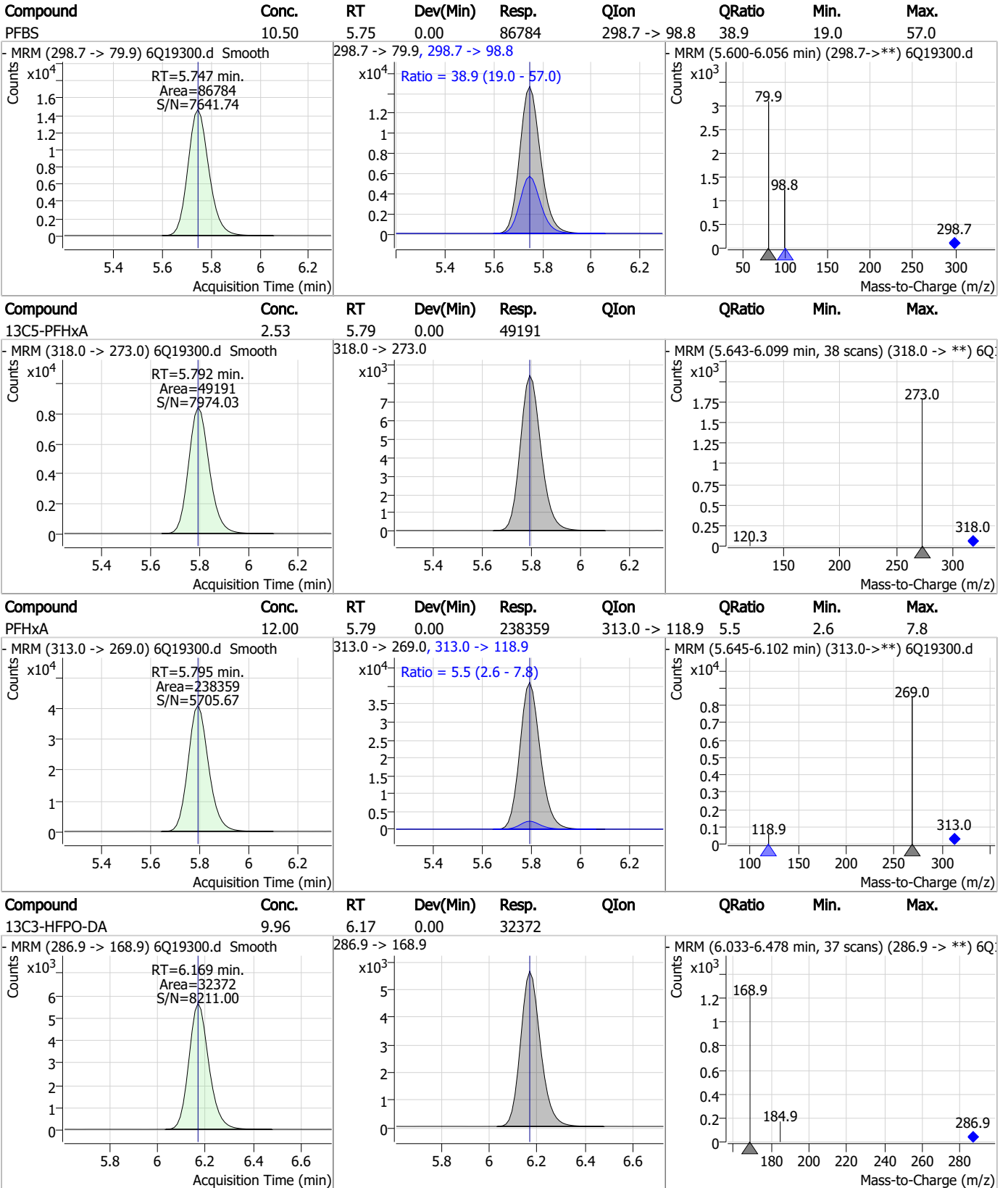
Perfluorinated Compounds by LC/MS/MS



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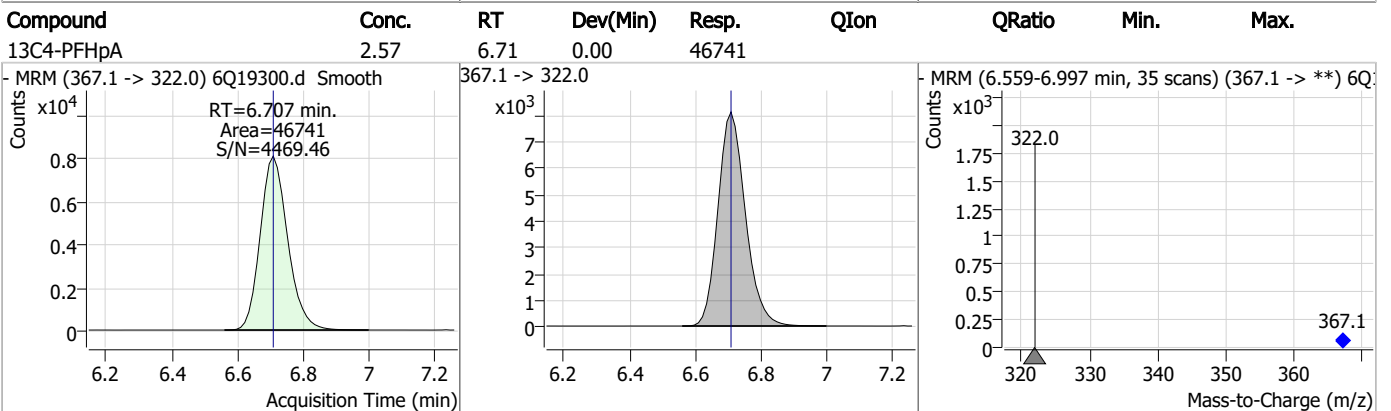
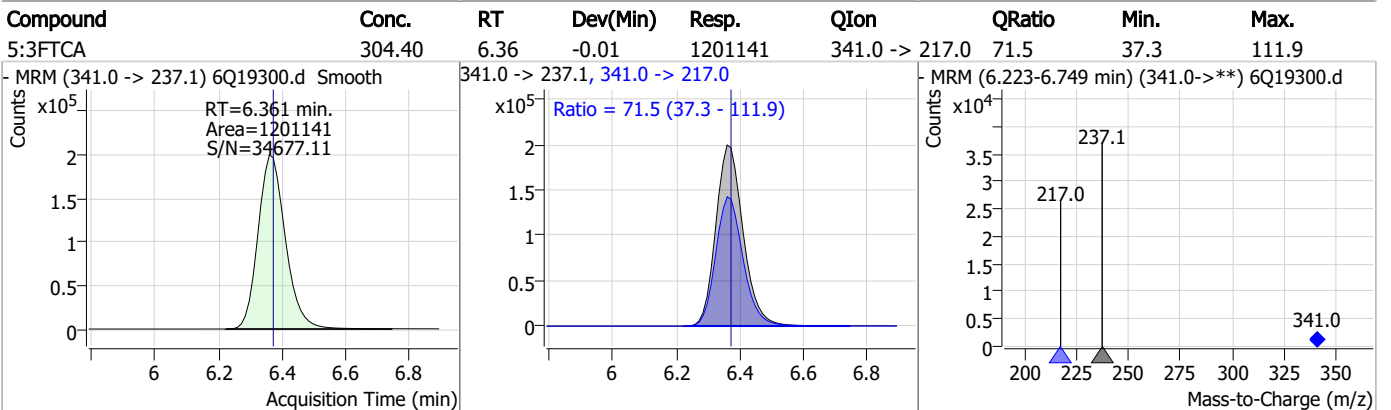
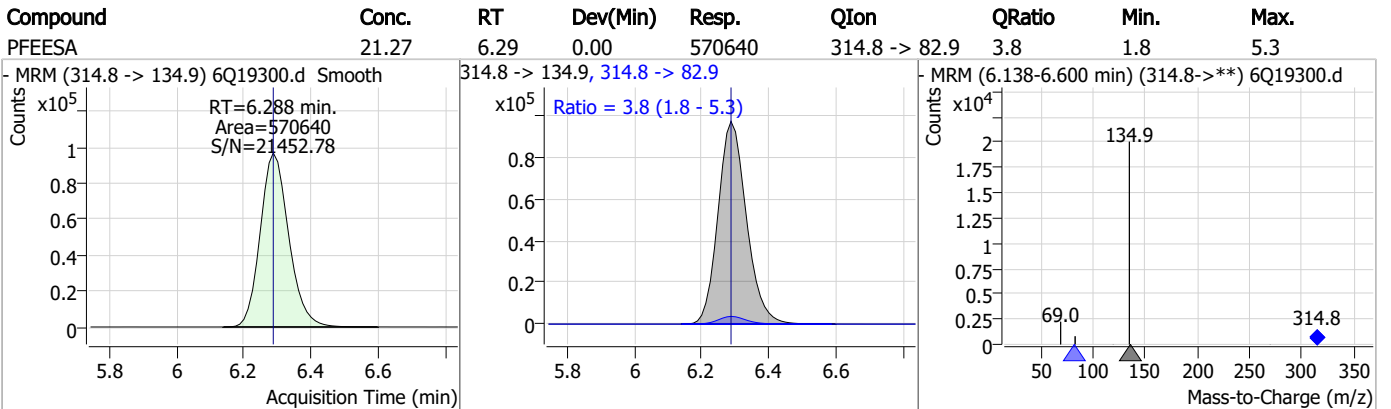
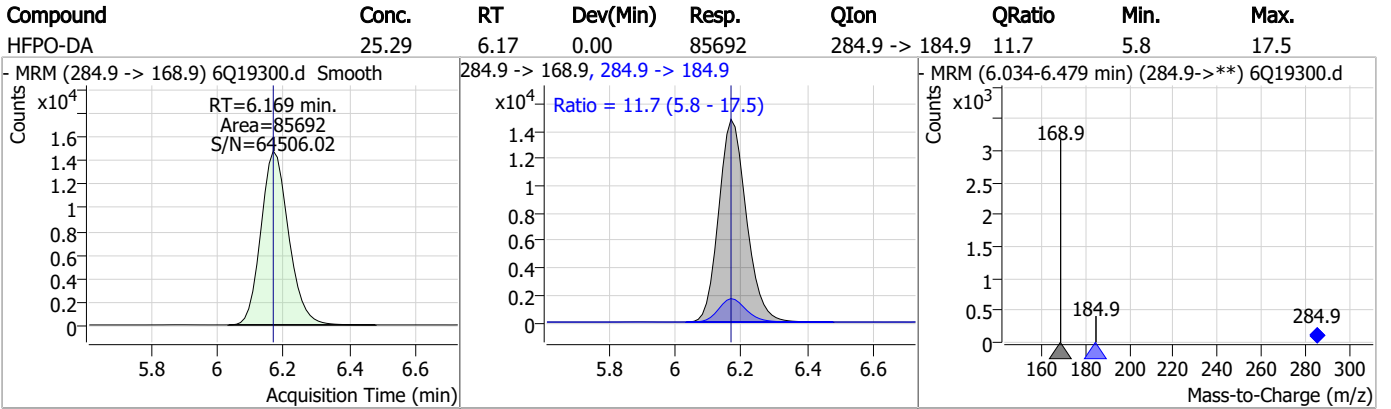
Perfluorinated Compounds by LC/MS/MS



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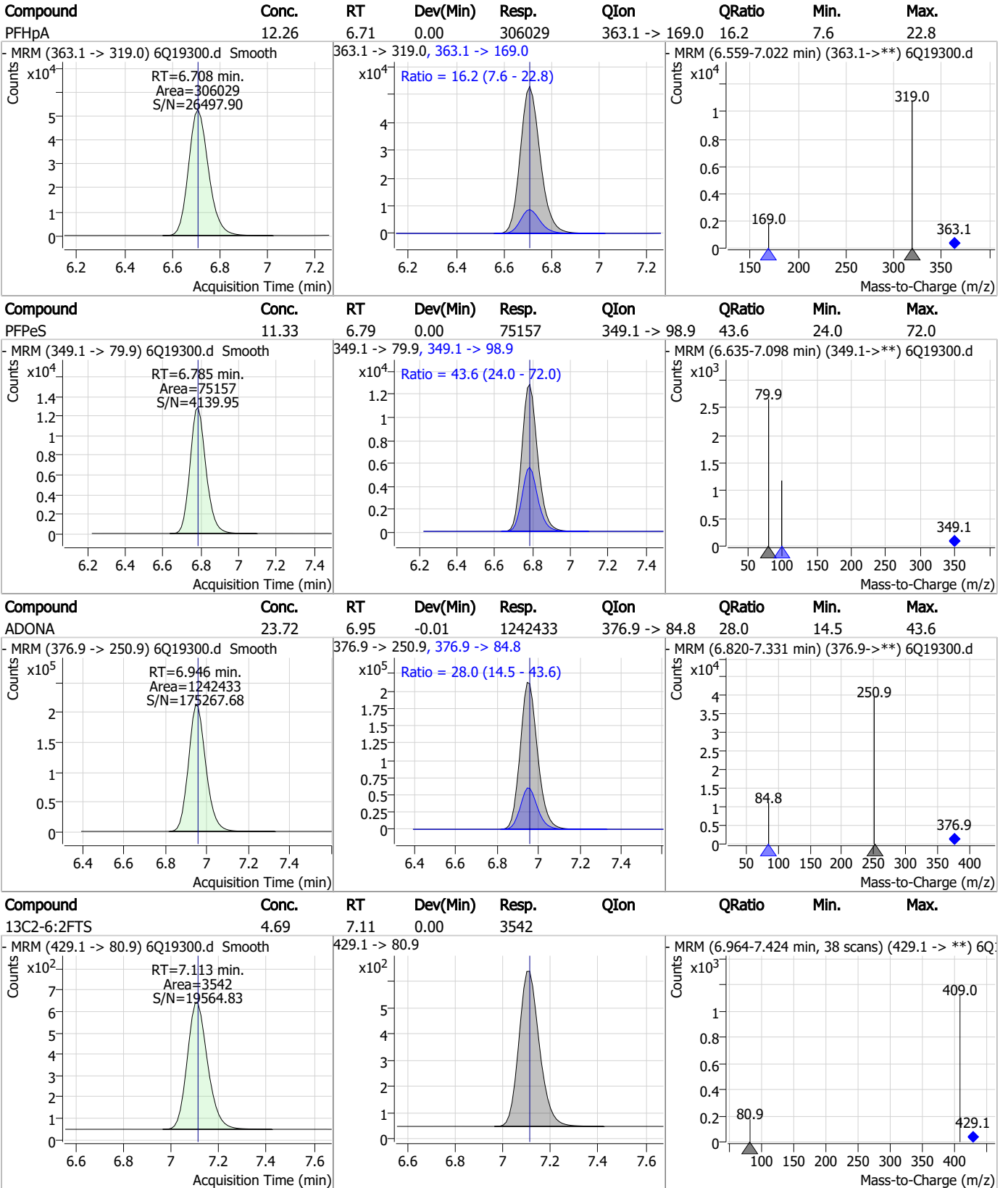
Perfluorinated Compounds by LC/MS/MS



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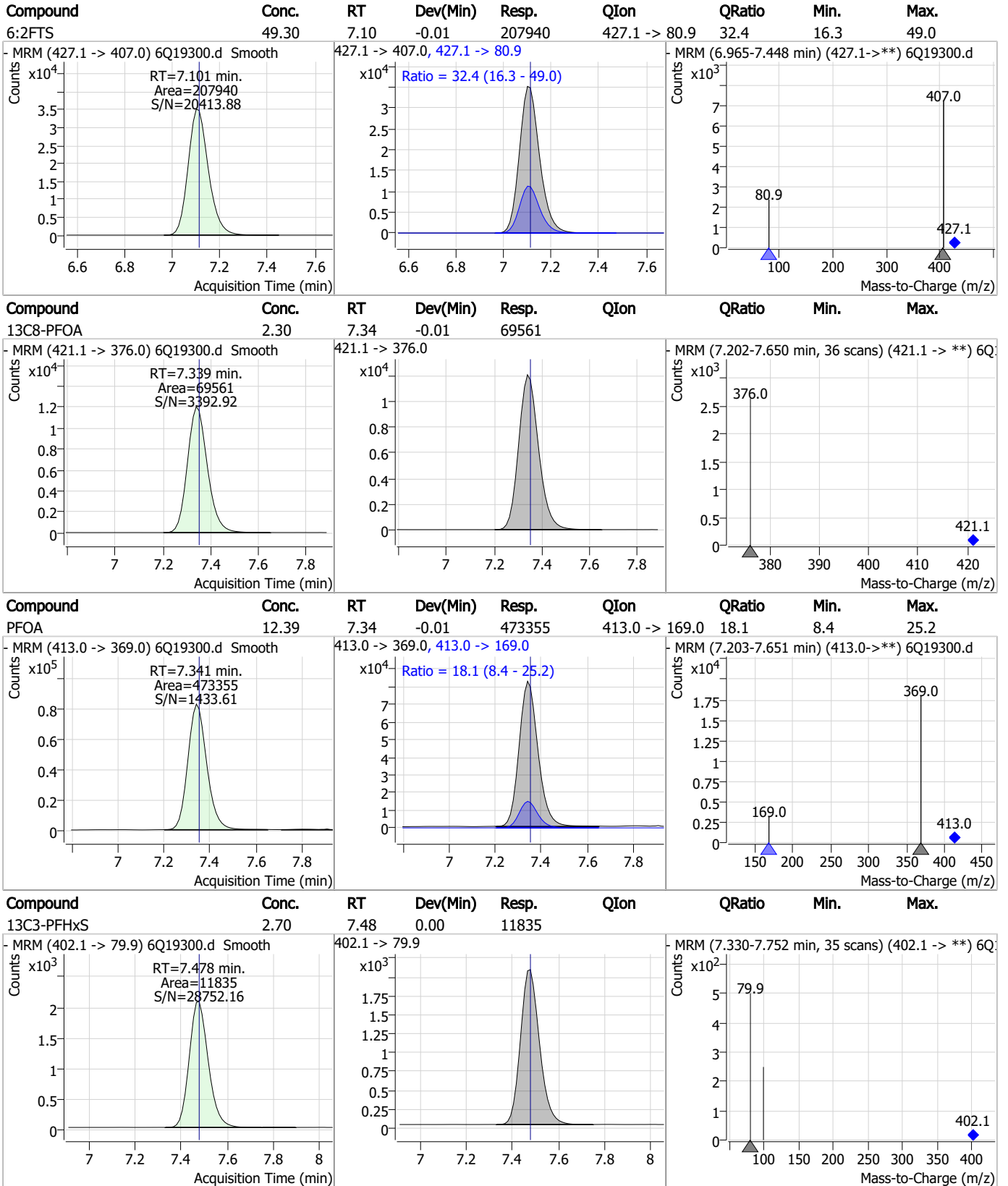
Perfluorinated Compounds by LC/MS/MS



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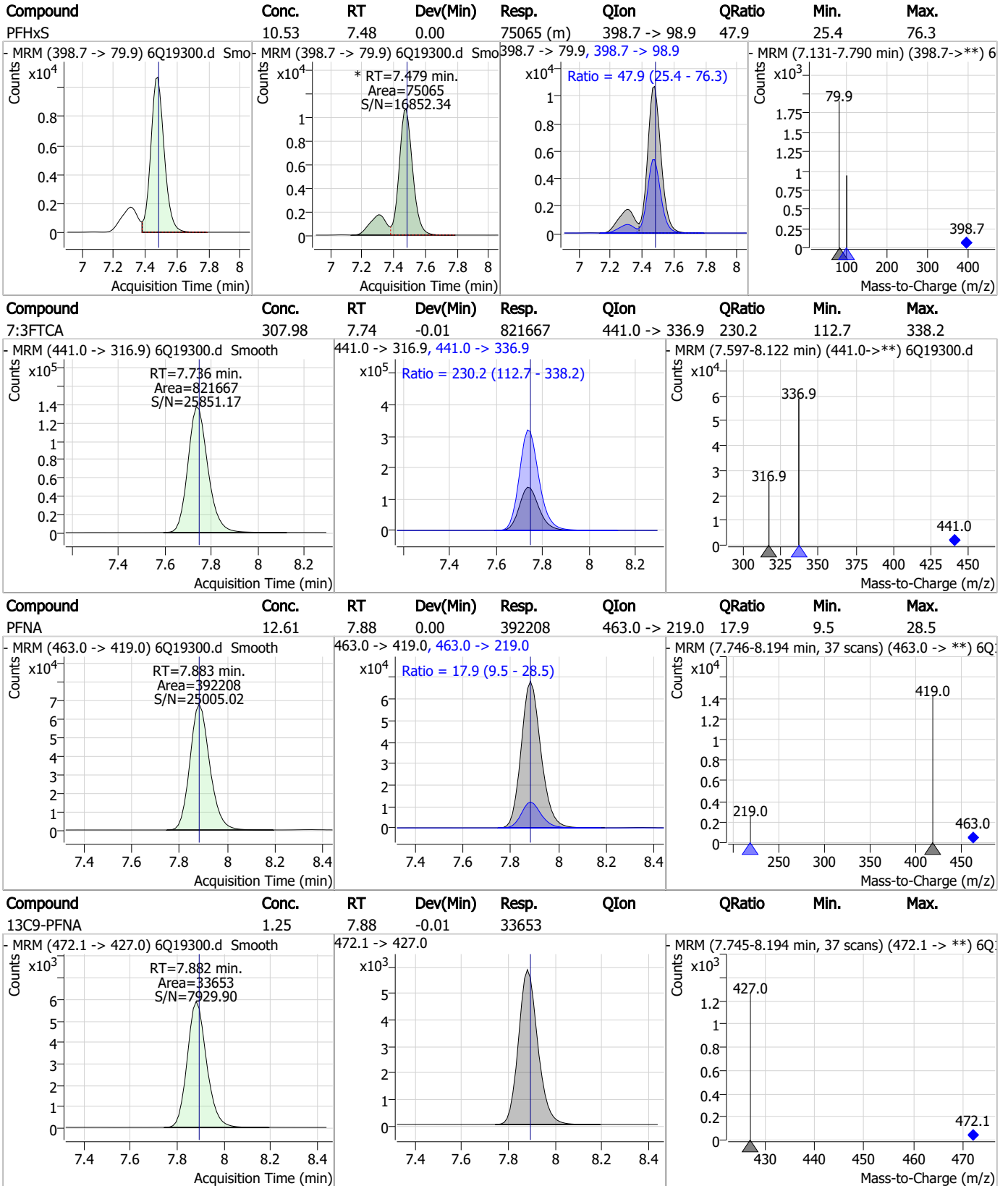
Perfluorinated Compounds by LC/MS/MS



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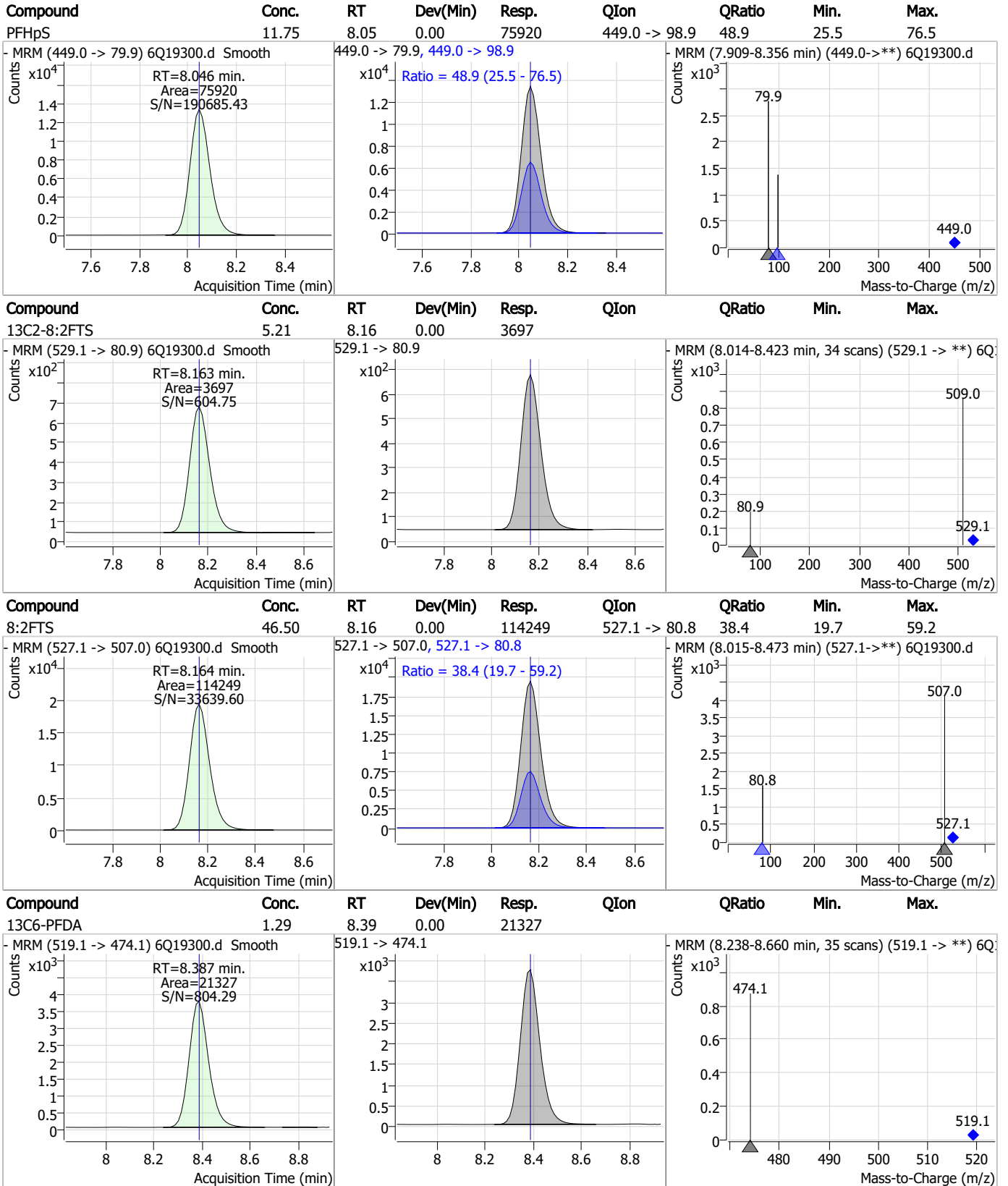
Perfluorinated Compounds by LC/MS/MS



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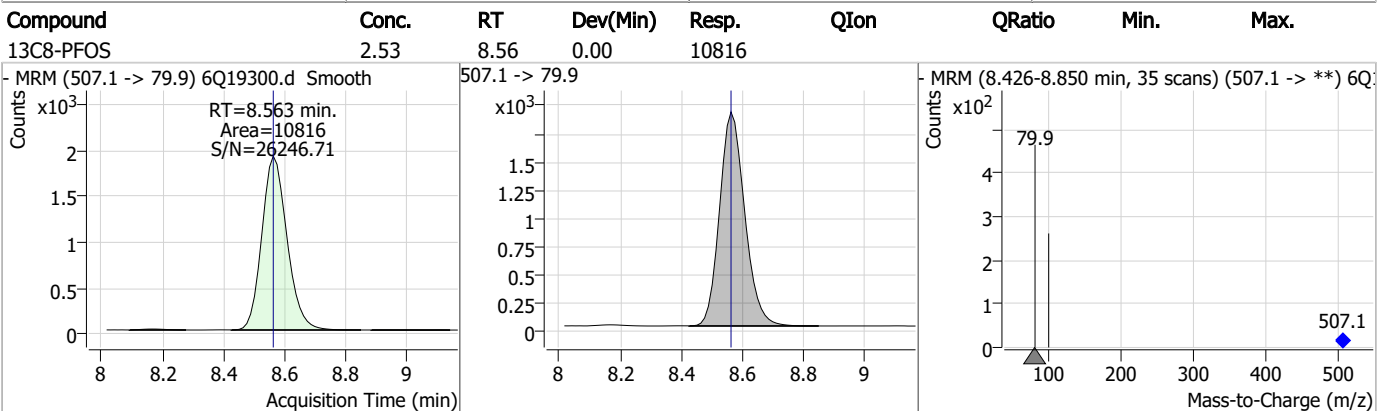
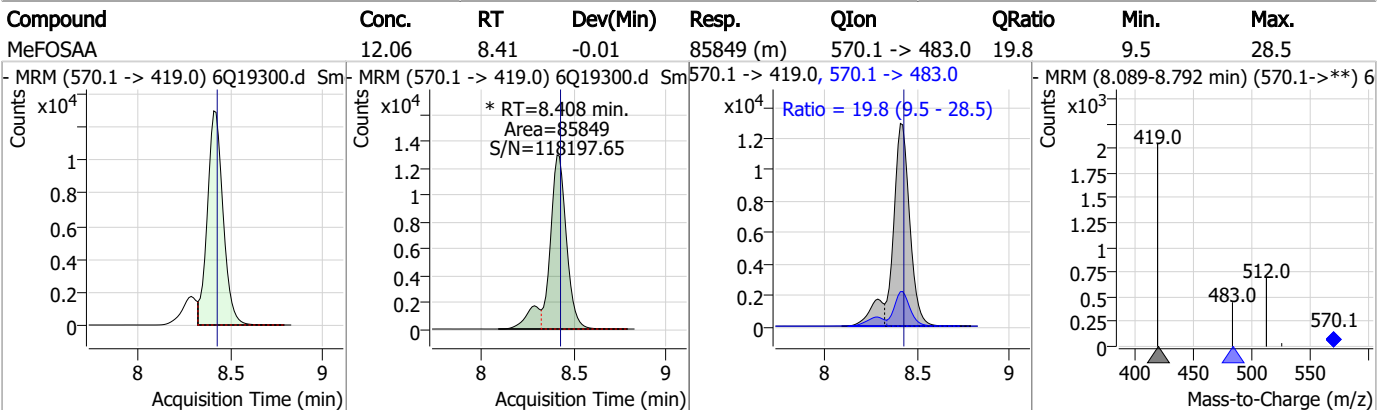
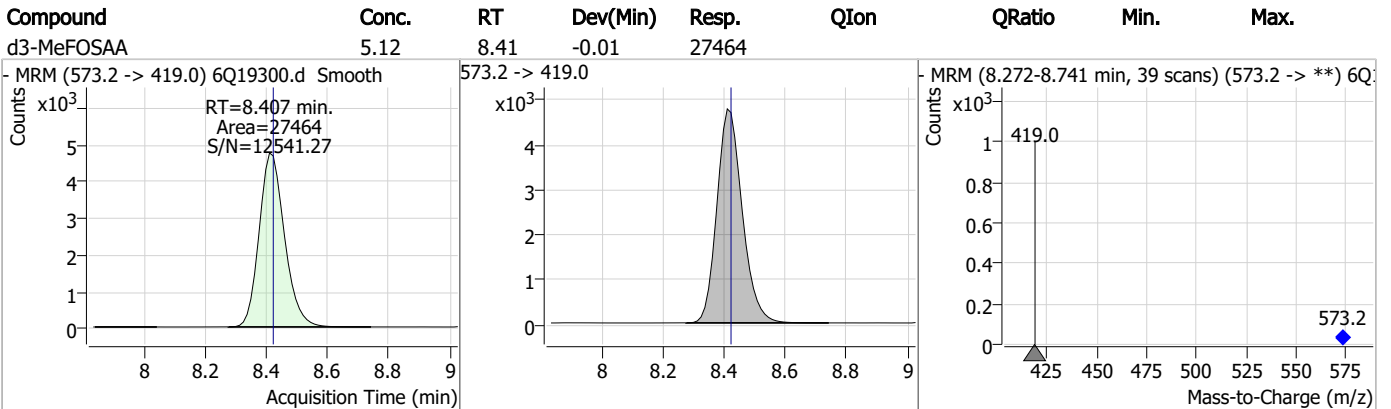
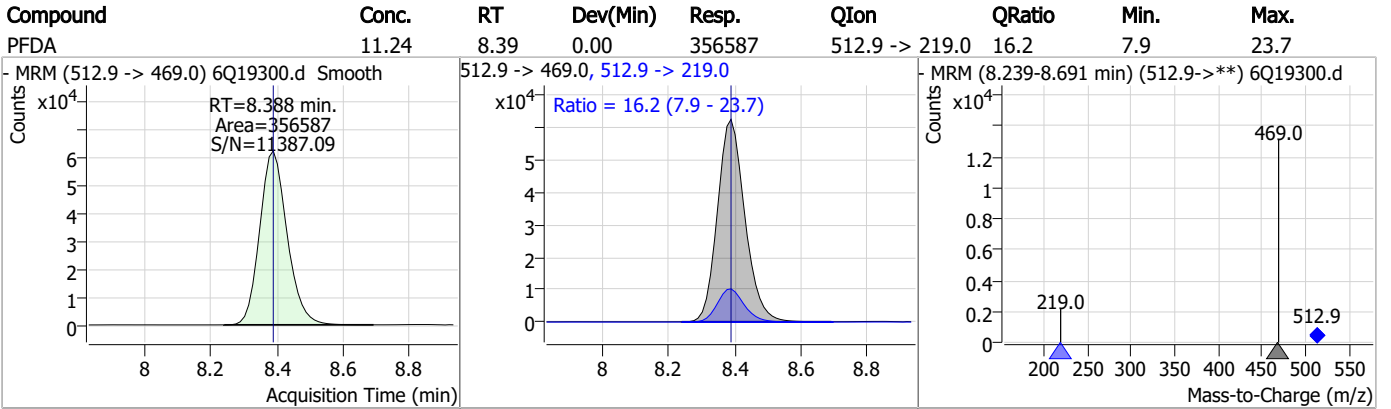
Perfluorinated Compounds by LC/MS/MS



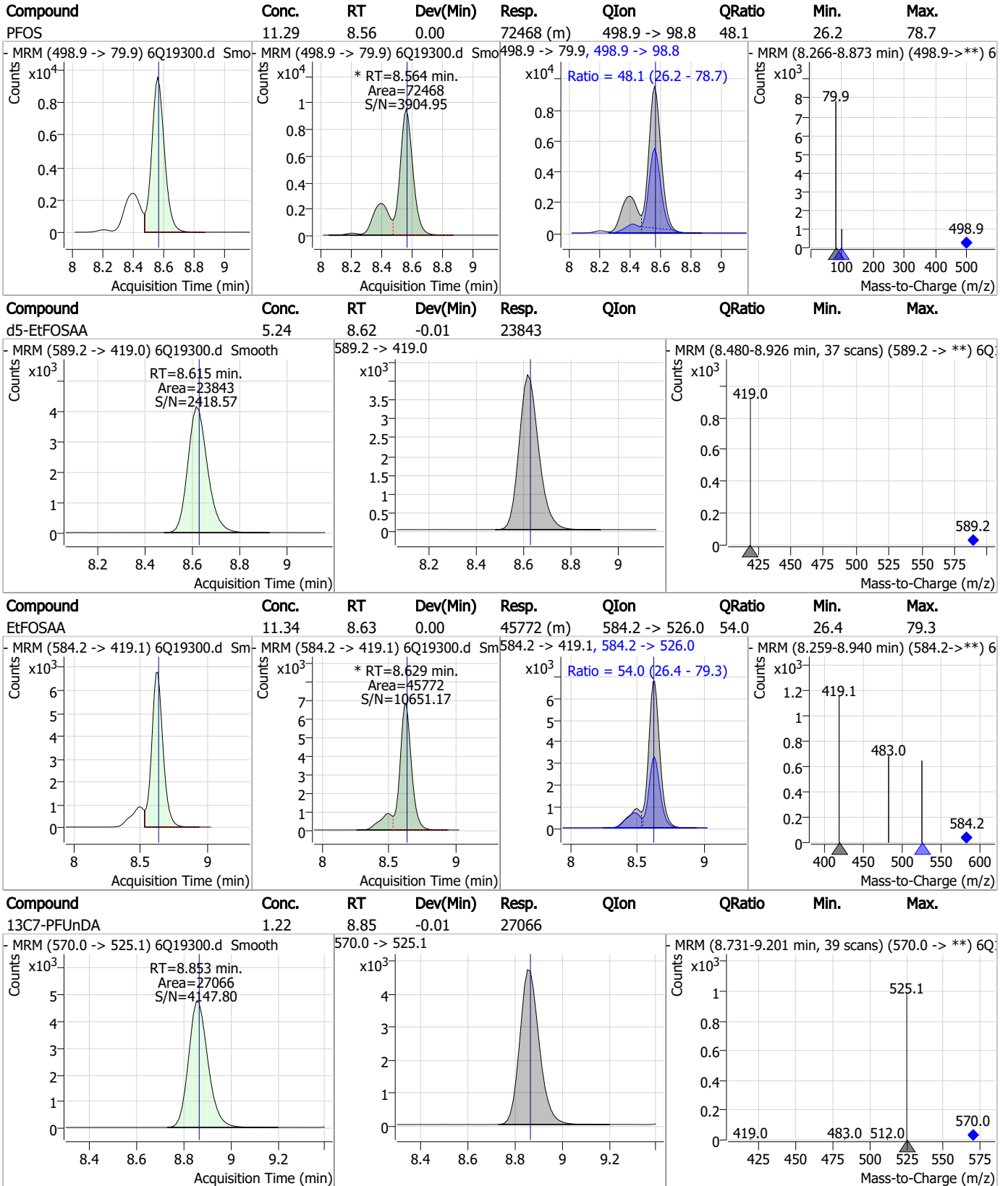
7.7.7

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Perfluorinated Compounds by LC/MS/MS



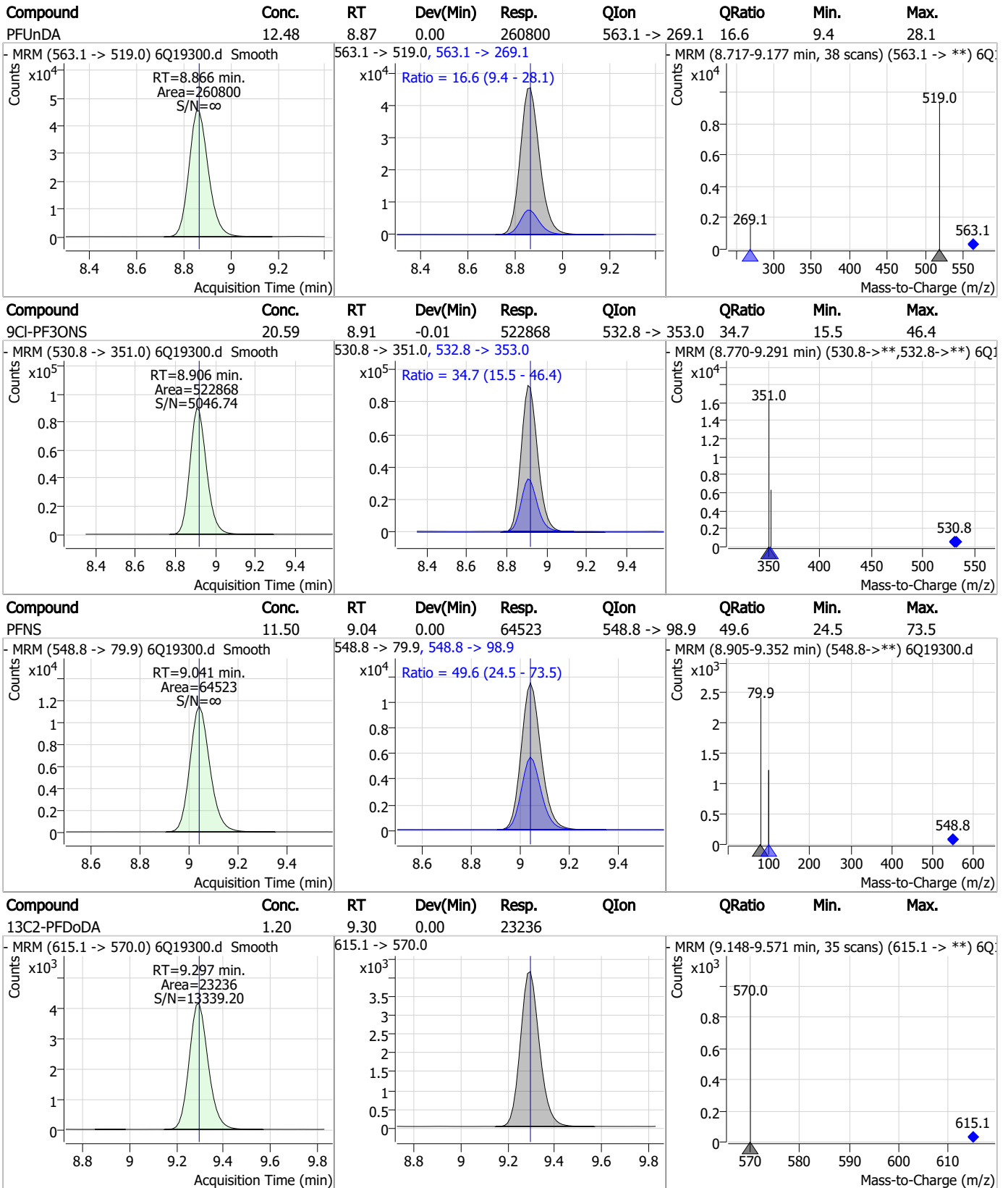
Perfluorinated Compounds by LC/MS/MS



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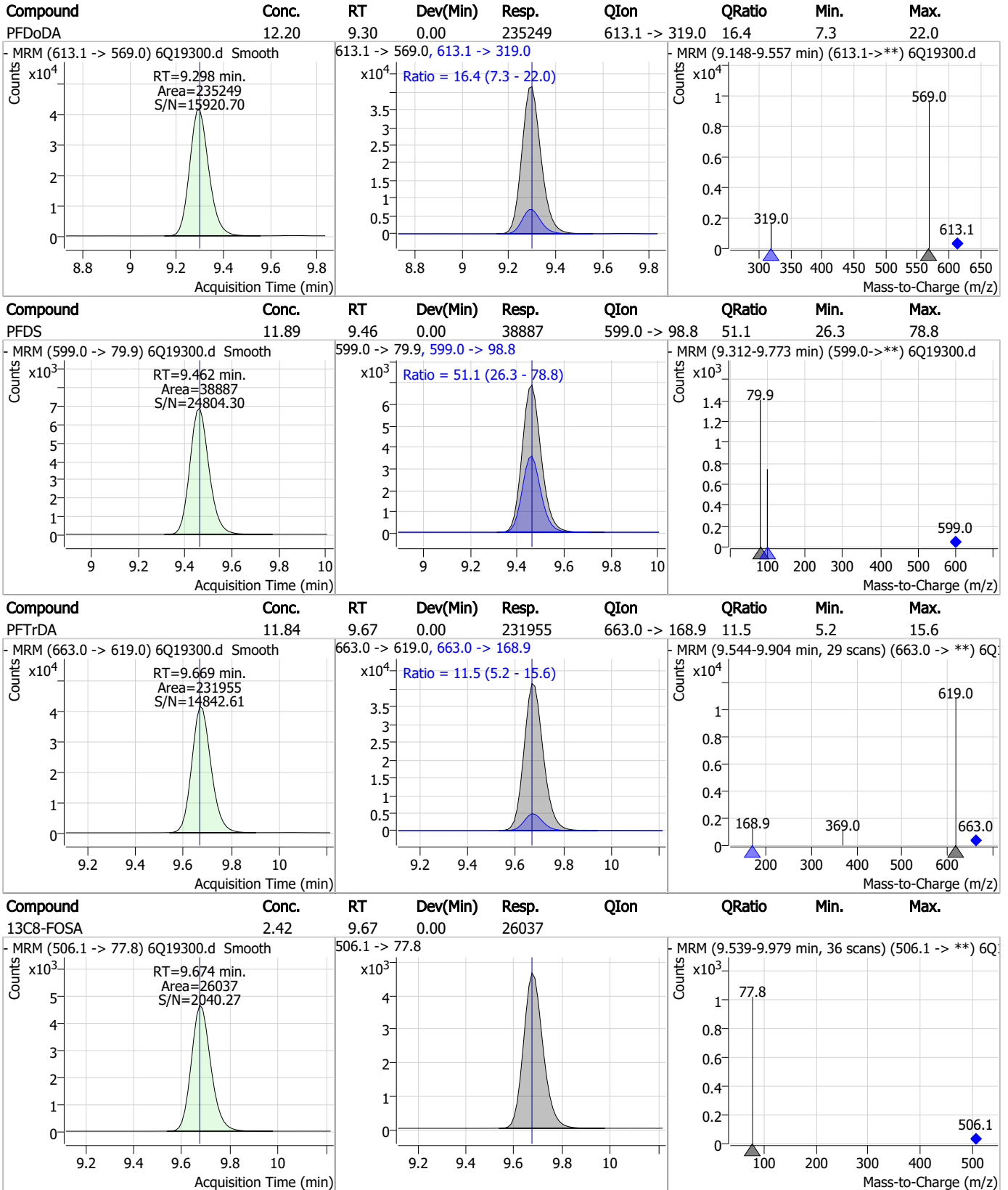
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



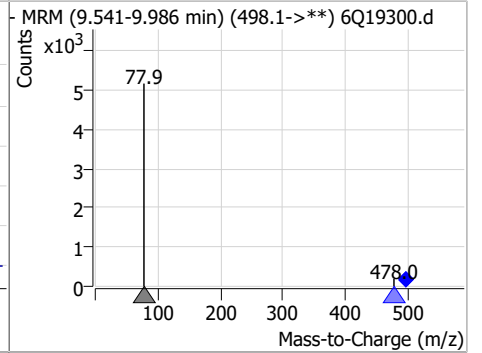
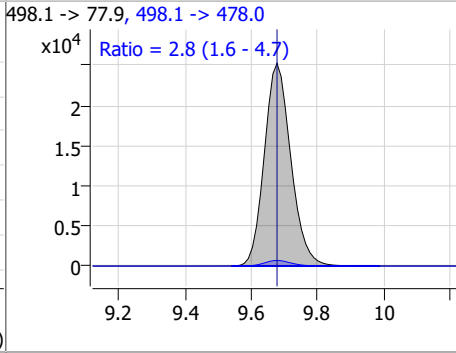
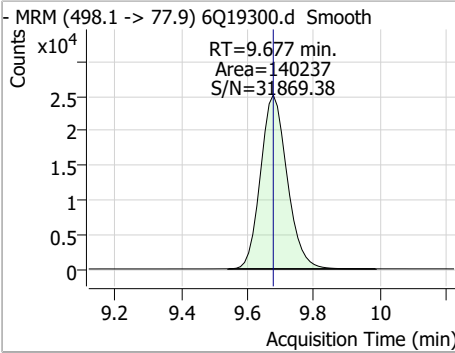
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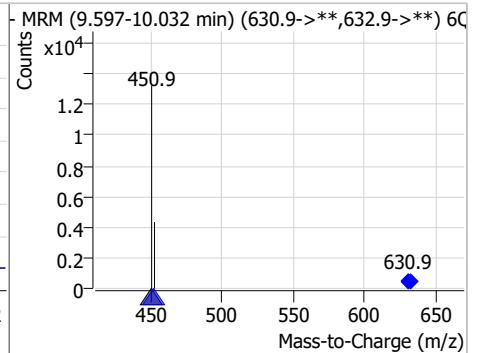
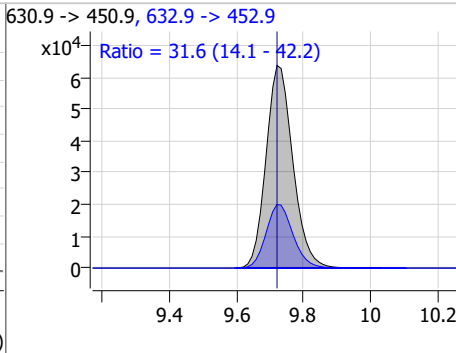
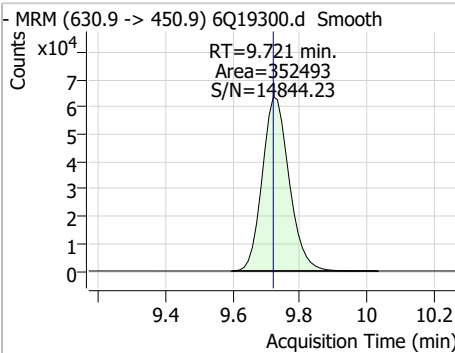


Perfluorinated Compounds by LC/MS/MS

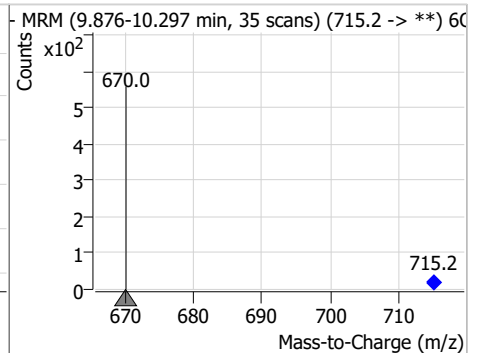
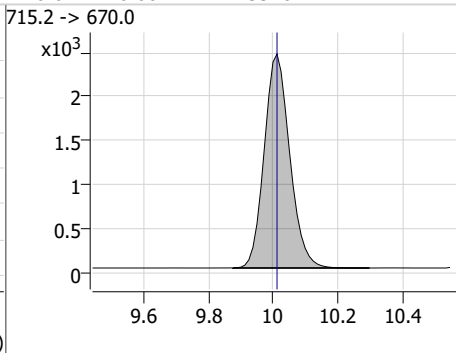
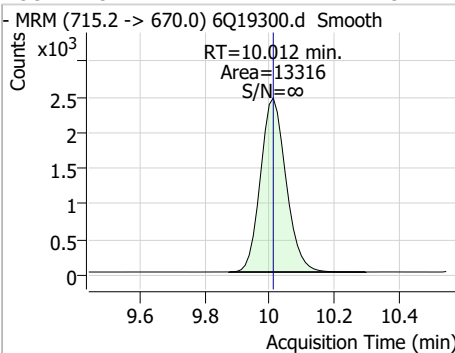
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	13.56	9.68	0.00	140237	498.1 -> 478.0	2.8	1.6	4.7



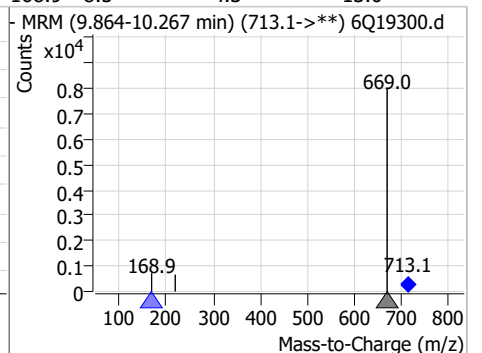
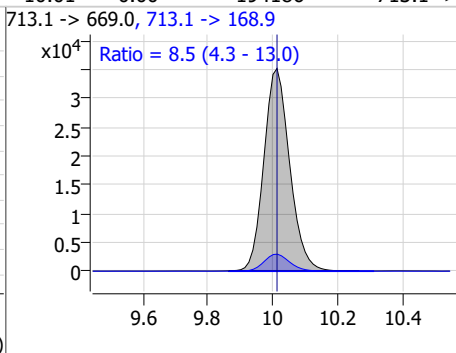
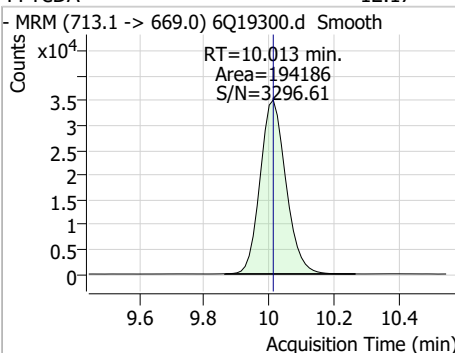
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	23.91	9.72	0.00	352493	632.9 -> 452.9	31.6	14.1	42.2



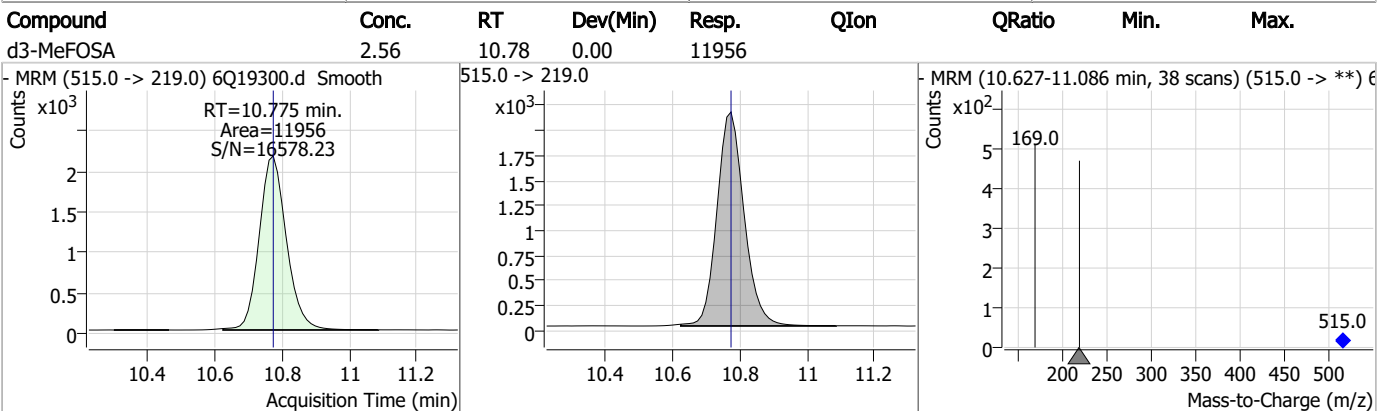
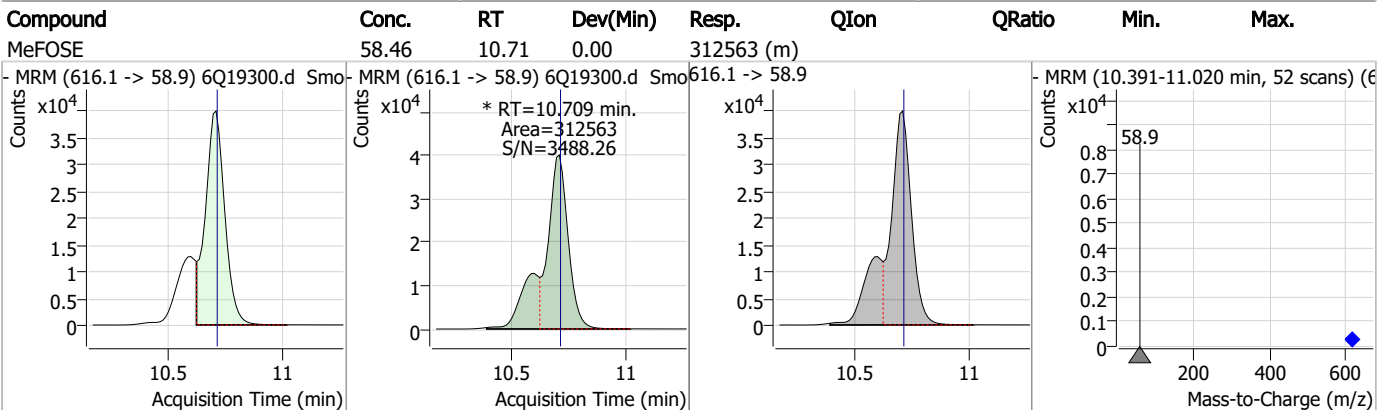
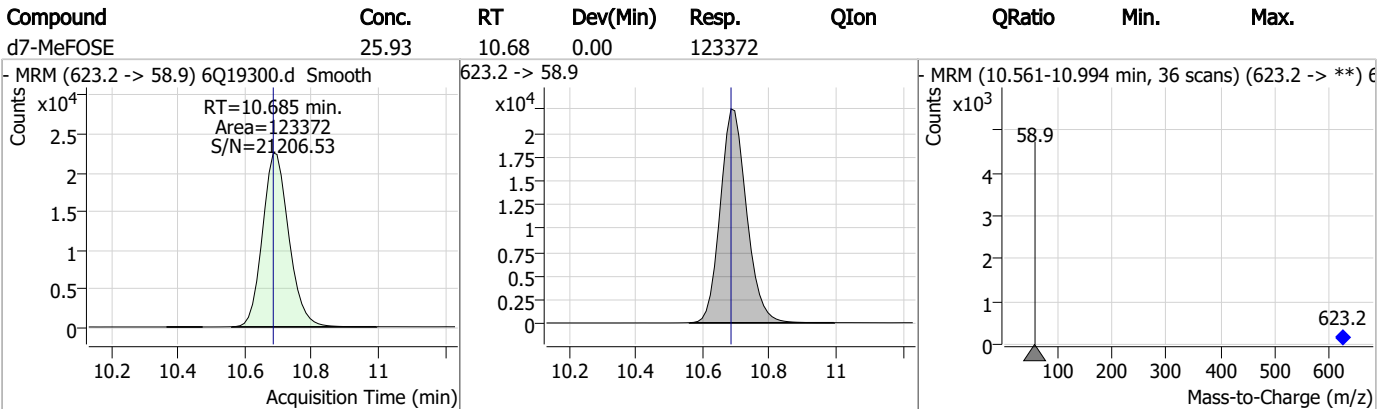
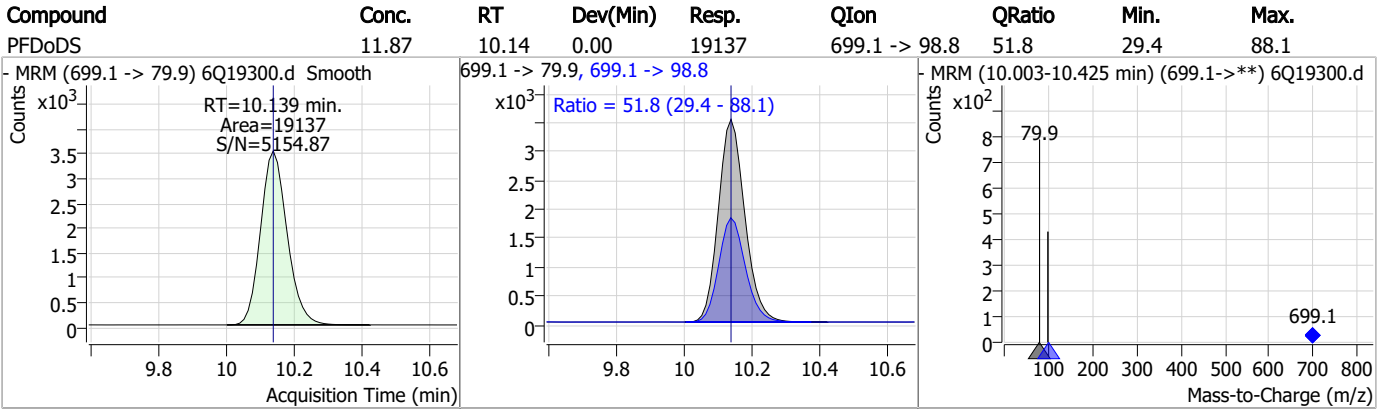
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.23	10.01	0.00	13316	715.2 -> 670.0			



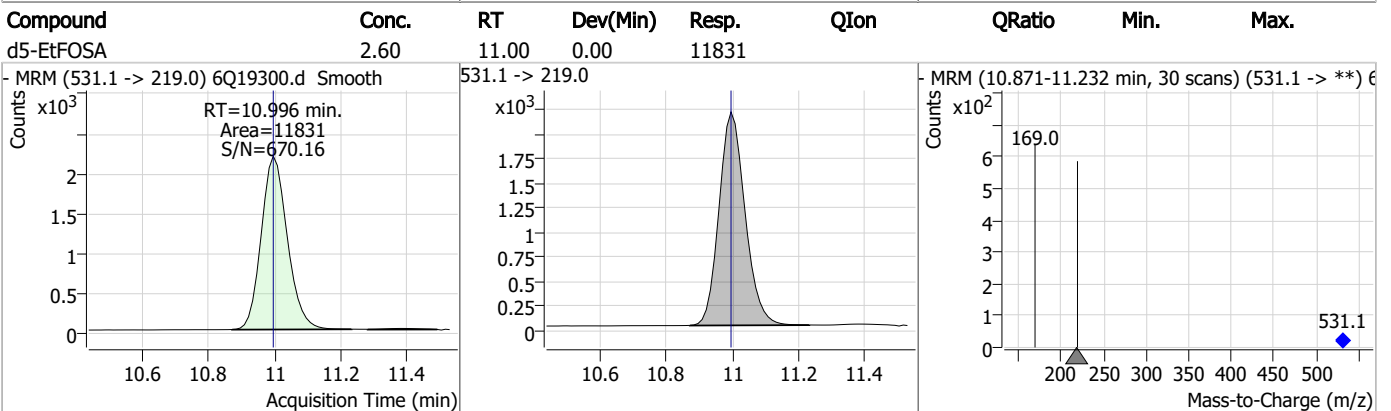
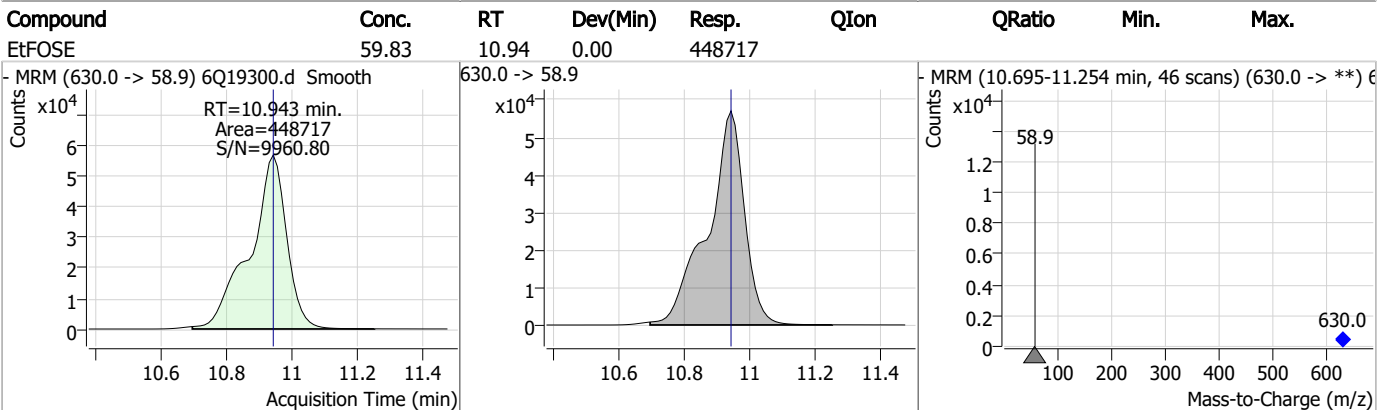
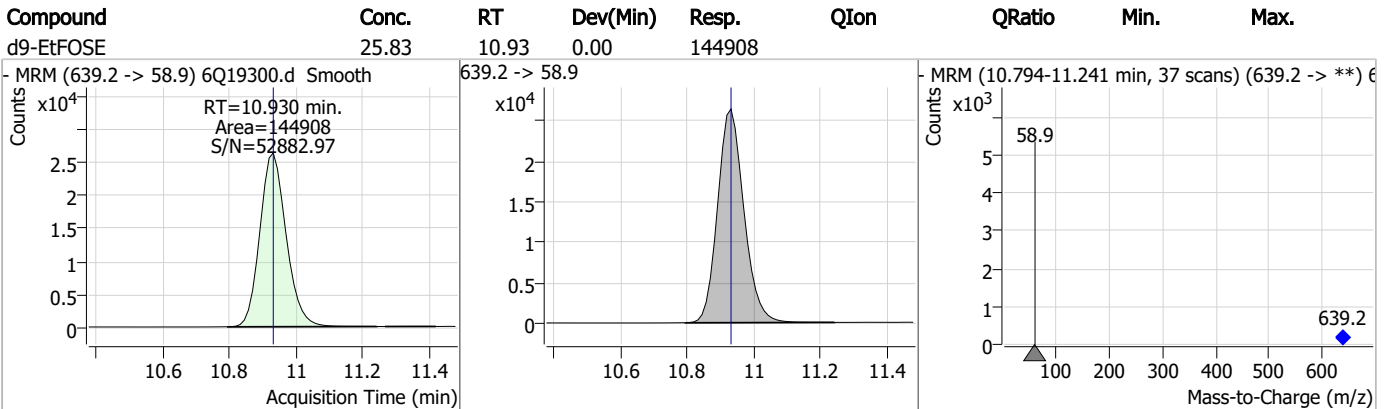
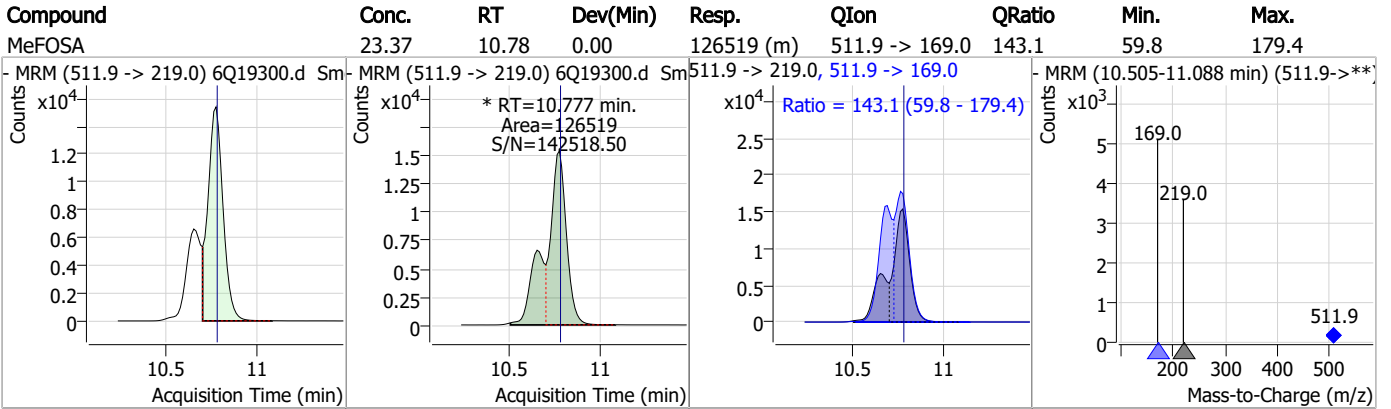
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	12.17	10.01	0.00	194186	713.1 -> 168.9	8.5	4.3	13.0



Perfluorinated Compounds by LC/MS/MS

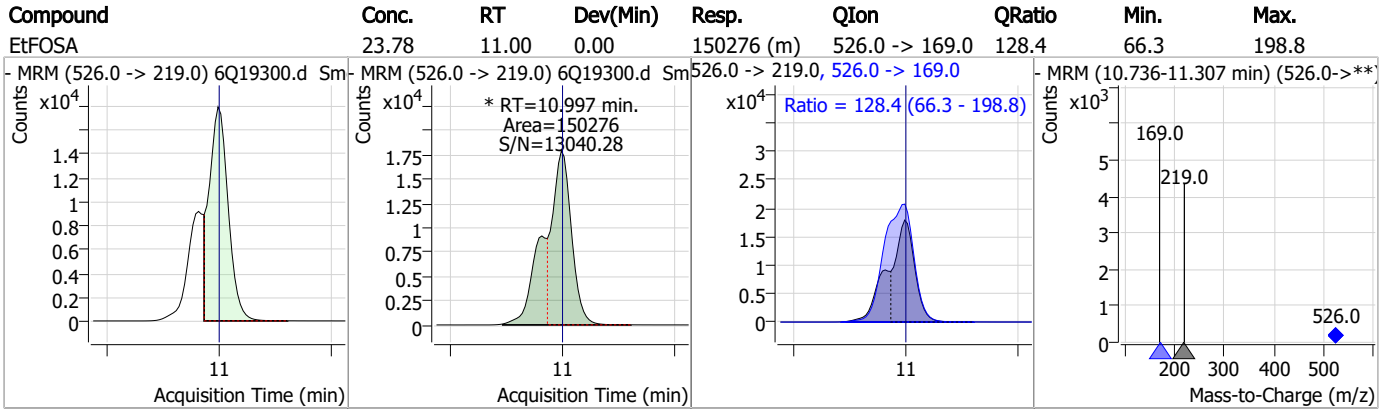


Perfluorinated Compounds by LC/MS/MS



7.7.7
7

Perfluorinated Compounds by LC/MS/MS



7.7.7

7

Manual Integration Approval Summary

Sample Number: S6Q288-IC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19300.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 12:45 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.41	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak
EtFOSA	4151-50-2		11.00	Split peak

7.7.7.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 06/14/23 11:30

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19301.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 12:59:43 PM
 Sample Name : ic288-7
 Vial : P1-A8
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	131187	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	44327	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	47479	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	47524	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	76063	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	34037	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	18801	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	26815	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	24577	1.25 µg/L	-0.012
M2-PFTeDA	10.012	715.2 -> 670.0	12908	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	25751	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	17662	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	11444	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	10515	2.50 µg/L	0.000
M2-4:2FTS	5.442	329.1 -> 80.9	2112	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	3172	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	3240	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	24011	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	33091	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	23284	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	111921	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	135313	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11141	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	12067	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	13806	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	55966	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	8923	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	78158	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	27632	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	42130	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	46229	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2112	3.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 78.9%		
13C2-6:2FTS	7.113	429.1 -> 80.9	3172	3.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 78.4%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3240	4.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.2%		
13C2-PFDoDA	9.285	615.1 -> 570.0	24577	1.33 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C2-PFTeDA	10.012	715.2 -> 670.0	12908	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C3-PFBS	5.746	302.1 -> 79.9	17662	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C3-PFHxS	7.478	402.1 -> 79.9	11444	2.44 µg/L	0.000

7.7.8
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C4-PFBA	3.085	216.8 -> 171.9	131187	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.707	367.1 -> 322.0	47524	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C5-PFHxA	5.792	318.0 -> 273.0	47479	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	4.560	268.3 -> 223.0	44327	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C6-PFDA	8.387	519.1 -> 474.1	18801	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C7-PFUnDA	8.853	570.0 -> 525.1	26815	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-FOSA	9.674	506.1 -> 77.8	25751	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C8-PFOA	7.339	421.1 -> 376.0	76063	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C8-PFOS	8.563	507.1 -> 79.9	10515	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C9-PFNA	7.882	472.1 -> 427.0	34037	1.33 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.2%	
d3-MeFOSAA	8.420	573.2 -> 419.0	24011	4.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.9%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	33091	10.37 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
d3-MeFOSA	10.775	515.0 -> 219.0	12067	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
d5-EtFOSAA	8.615	589.2 -> 419.0	23284	5.25 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.0%	
d7-MeFOSE	10.685	623.2 -> 58.9	111921	24.16 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d9-EtFOSE	10.930	639.2 -> 58.9	135313	24.78 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d5-EtFOSA	10.996	531.1 -> 219.0	11141	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	333362	90.77 µg/L	98
		327.1 -> 80.9	128291		
6:2FTS	7.113	427.1 -> 407.0	331719	87.83 µg/L	97
		427.1 -> 80.9	113922		
8:2FTS	8.164	527.1 -> 507.0	197687	91.79 µg/L	96
		527.1 -> 80.8	73227		
EtFOSAA	8.629	584.2 -> 419.1	93160	23.63 µg/L	m 98
		584.2 -> 526.0	48275		
FOSA	9.677	498.1 -> 77.9	238306	23.29 µg/L	100
		498.1 -> 478.0	7762		
MeFOSAA	8.421	570.1 -> 419.0	153857	24.72 µg/L	m 94
		570.1 -> 483.0	33672		
PFBA	3.093	212.8 -> 168.9	521546	98.66 µg/L	100
PFBS	5.747	298.7 -> 79.9	171238	21.71 µg/L	99
		298.7 -> 98.8	66394		
PFDA	8.388	512.9 -> 469.0	723504	25.87 µg/L	98
		512.9 -> 219.0	106893		
PFDoDA	9.298	613.1 -> 569.0	465606	22.82 µg/L	99
		613.1 -> 319.0	69282		
PFDS	9.462	599.0 -> 79.9	74838	23.54 µg/L	95

7.7.8

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	36597			
PFHpA	6.708	363.1 -> 319.0	604599	23.83	µg/L	100
		363.1 -> 169.0	92260			
PFHpS	8.046	449.0 -> 79.9	151825	24.16	µg/L	90
		449.0 -> 98.9	67175			
PFHxA	5.795	313.0 -> 269.0	464351	24.23	µg/L	100
		313.0 -> 118.9	24187			
PFHxS	7.479	398.7 -> 79.9	146077	21.20	µg/L	m 98
		398.7 -> 98.9	72129			
PFNA	7.883	463.0 -> 419.0	731120	23.23	µg/L	98
		463.0 -> 219.0	146078			
PFNS	9.041	548.8 -> 79.9	130819	23.98	µg/L	94
		548.8 -> 98.9	69235			
PFOA	7.341	413.0 -> 369.0	953809	22.83	µg/L	99
		413.0 -> 169.0	163964			
PFOS	8.564	498.9 -> 79.9	133122	21.34	µg/L	m 94
		498.9 -> 98.8	64247			
PFPeA	4.563	263.0 -> 219.0	640084	48.91	µg/L	100
PFPeS	6.785	349.1 -> 79.9	141415	22.05	µg/L	100
		349.1 -> 98.9	67930			
PFTeDA	10.013	713.1 -> 669.0	375701	24.29	µg/L	99
		713.1 -> 168.9	30496			
PFTrDA	9.669	663.0 -> 619.0	495452	23.92	µg/L	99
		663.0 -> 168.9	49321			
PFUnDA	8.854	563.1 -> 519.0	513115	24.78	µg/L	92
		563.1 -> 269.1	78313			
11Cl-PF3OUdS	9.721	630.9 -> 450.9	706520	46.89	µg/L	98
		632.9 -> 452.9	206556			
9Cl-PF3ONS	8.906	530.8 -> 351.0	1108089	42.68	µg/L	98
		532.8 -> 353.0	351540			
ADONA	6.959	376.9 -> 250.9	2487179	46.45	µg/L	93
		376.9 -> 84.8	635922			
HFPO-DA	6.169	284.9 -> 168.9	167383	48.33	µg/L	100
		284.9 -> 184.9	19764			
3:3FTCA	3.946	241.0 -> 177.0	109692	123.91	µg/L	99
		241.0 -> 117.0	14218			
5:3FTCA	6.361	341.0 -> 237.1	2284537	599.84	µg/L	95
		341.0 -> 217.0	1613969			
7:3FTCA	7.736	441.0 -> 316.9	1519930	590.24	µg/L	89
		441.0 -> 336.9	3688064			
EtFOSA	10.997	526.0 -> 219.0	295531	49.66	µg/L	96
		526.0 -> 169.0	377778			
EtFOSE	10.943	630.0 -> 58.9	868643	124.04	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	249921	45.74	µg/L	m 79
		511.9 -> 169.0	356205			
MeFOSE	10.709	616.1 -> 58.9	614256	126.64	µg/L	m 100
PFDoDS	10.139	699.1 -> 79.9	34613	22.09	µg/L	99
		699.1 -> 98.8	20530			
NFDHA	5.673	295.0 -> 201.0	128368	52.44	µg/L	95
		295.0 -> 84.9	30981			
PFMBA	4.988	279.0 -> 85.1	457785	49.07	µg/L	100
PFMPA	3.667	229.0 -> 84.9	358247	49.09	µg/L	100
PFEESA	6.288	314.8 -> 134.9	1177671	45.48	µg/L	100
		314.8 -> 82.9	40208			

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

7.7.8
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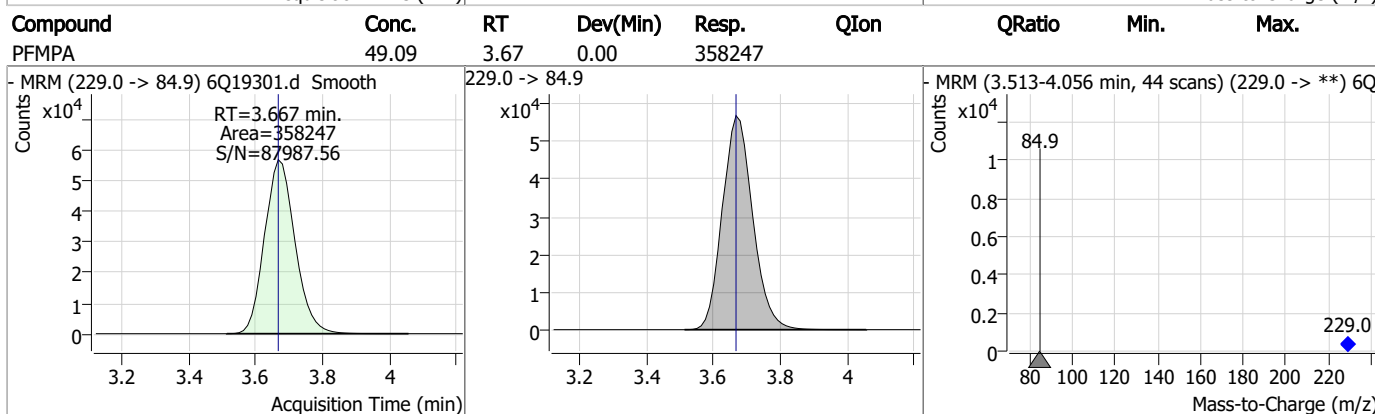
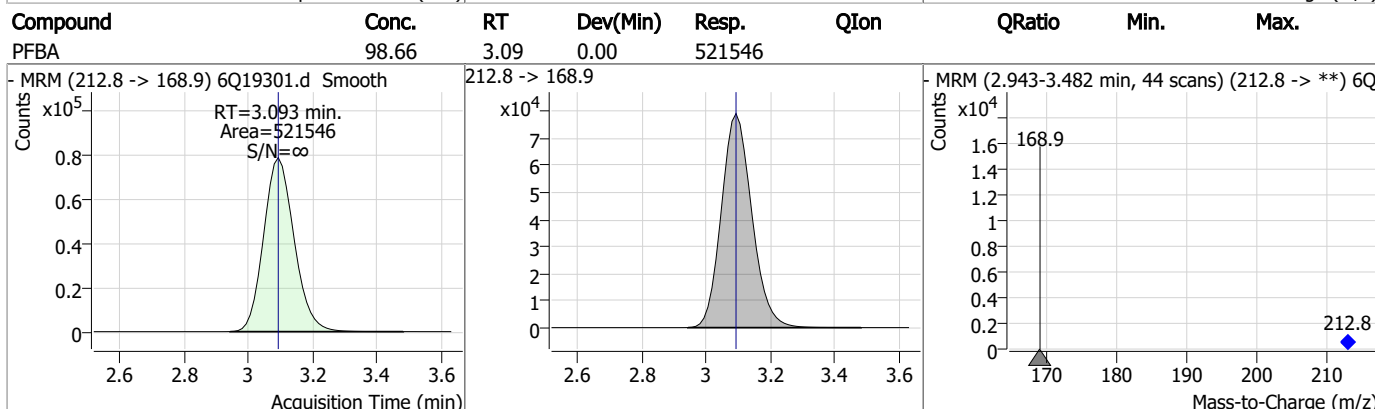
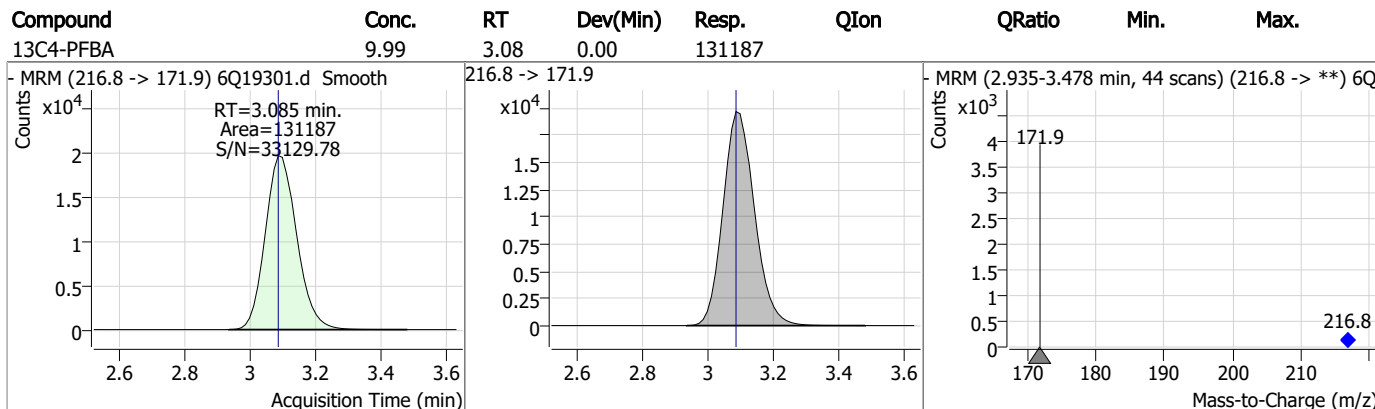
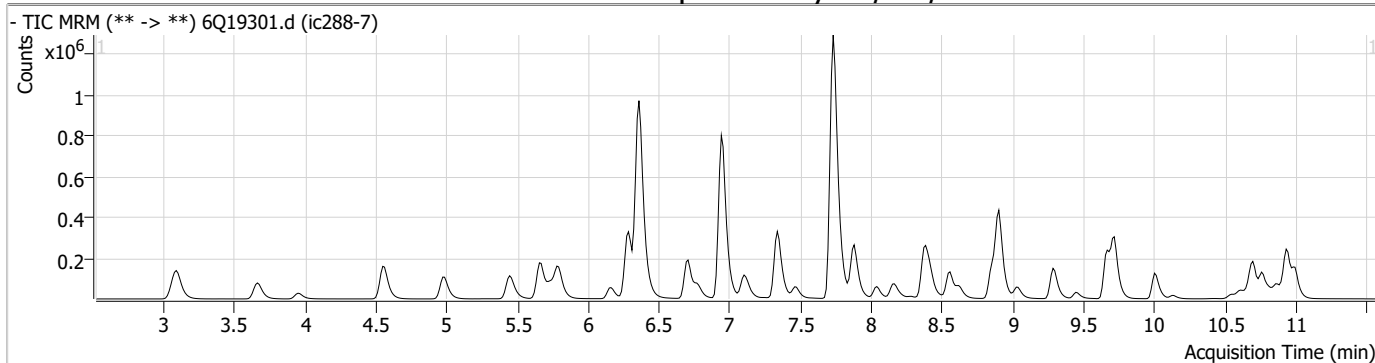
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.8
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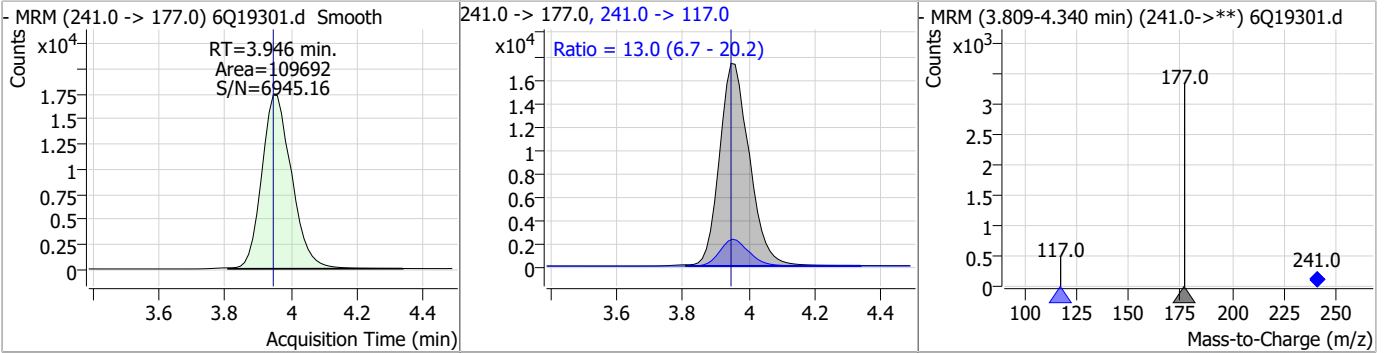


Perfluorinated Compounds by LC/MS/MS

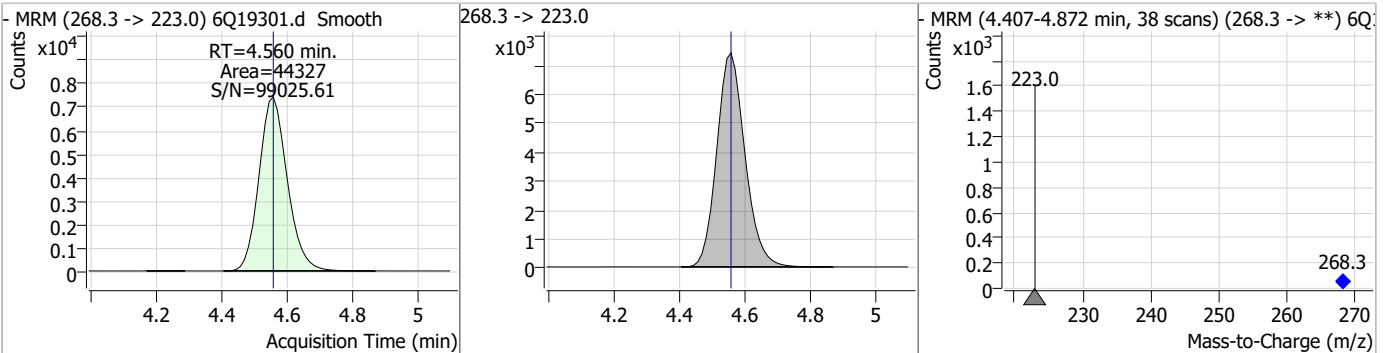


Perfluorinated Compounds by LC/MS/MS

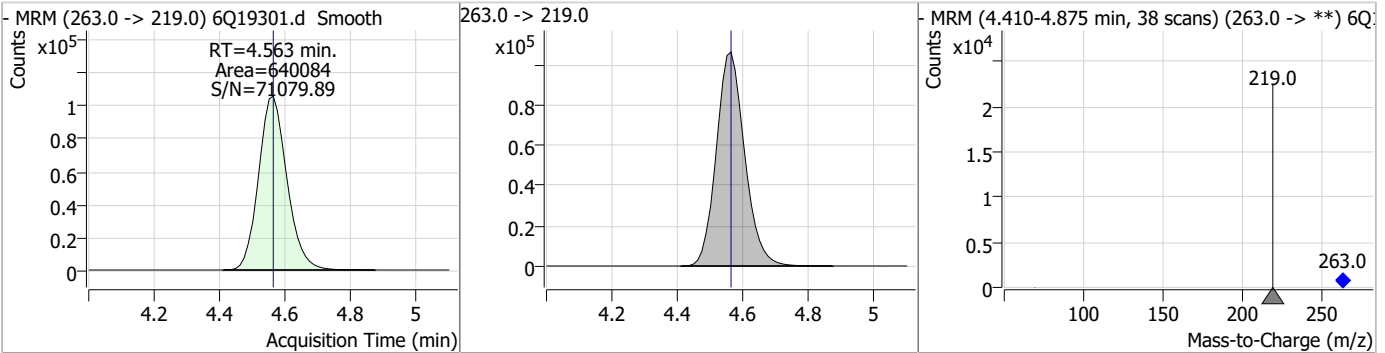
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	123.91	3.95	0.00	109692	241.0 -> 117.0	13.0	6.7	20.2



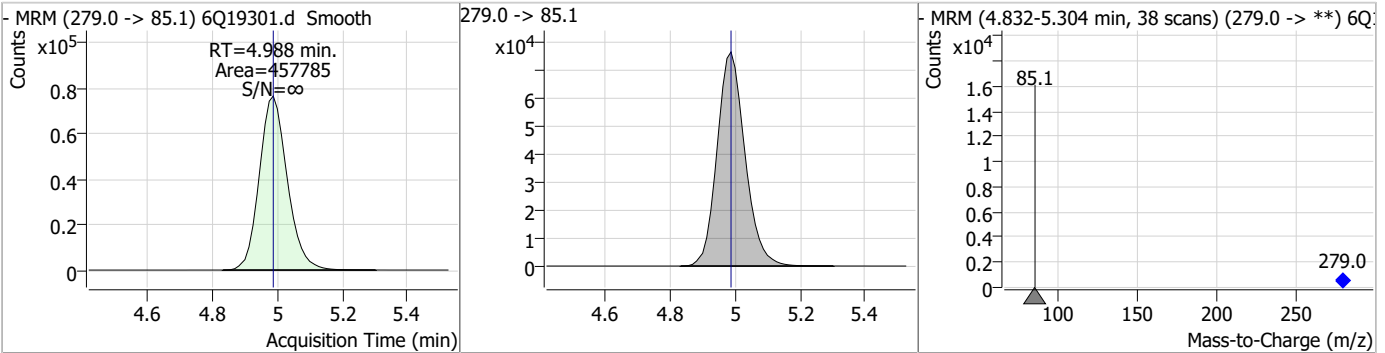
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.07	4.56	0.00	44327				



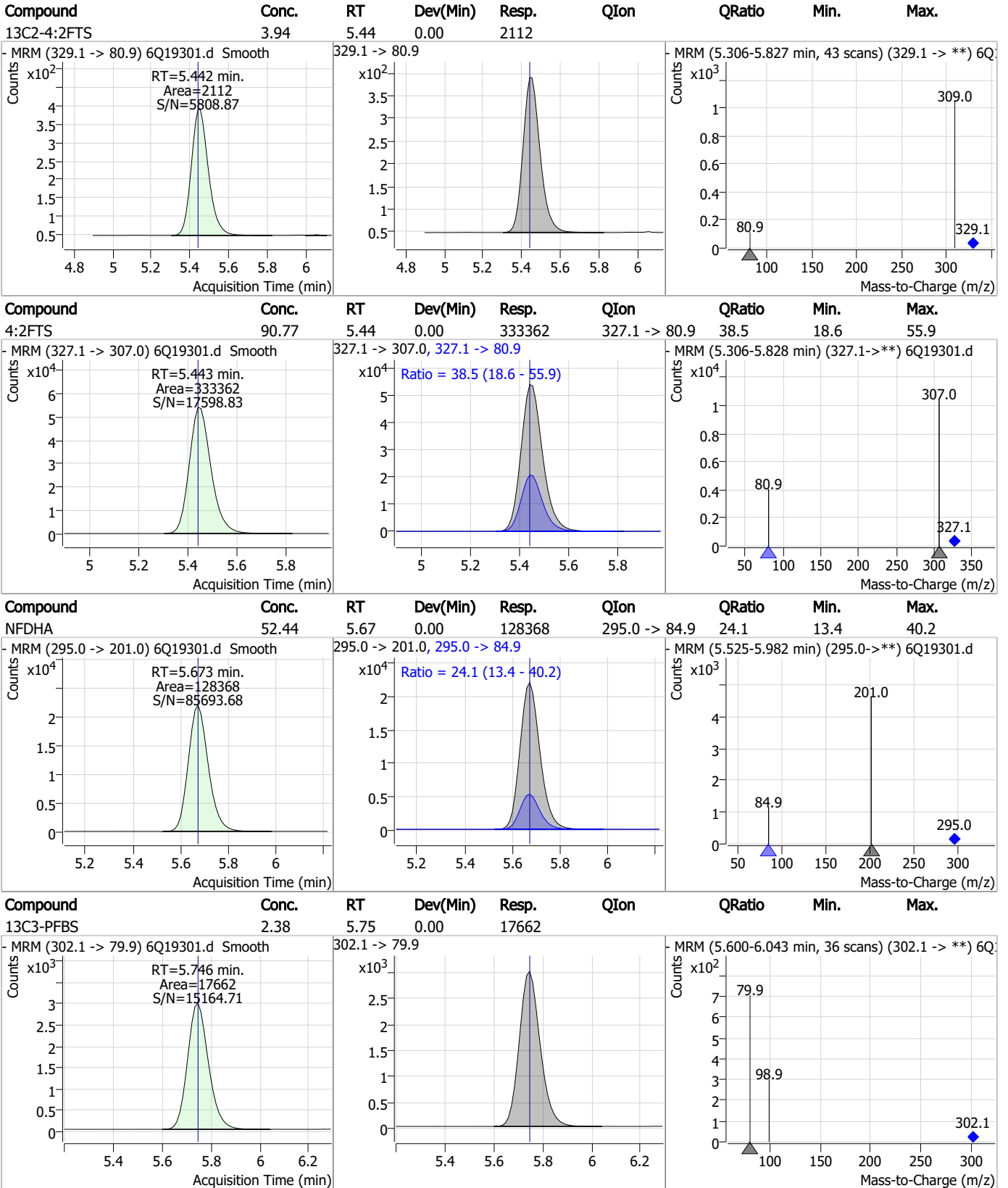
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	48.91	4.56	0.00	640084				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	49.07	4.99	0.00	457785				



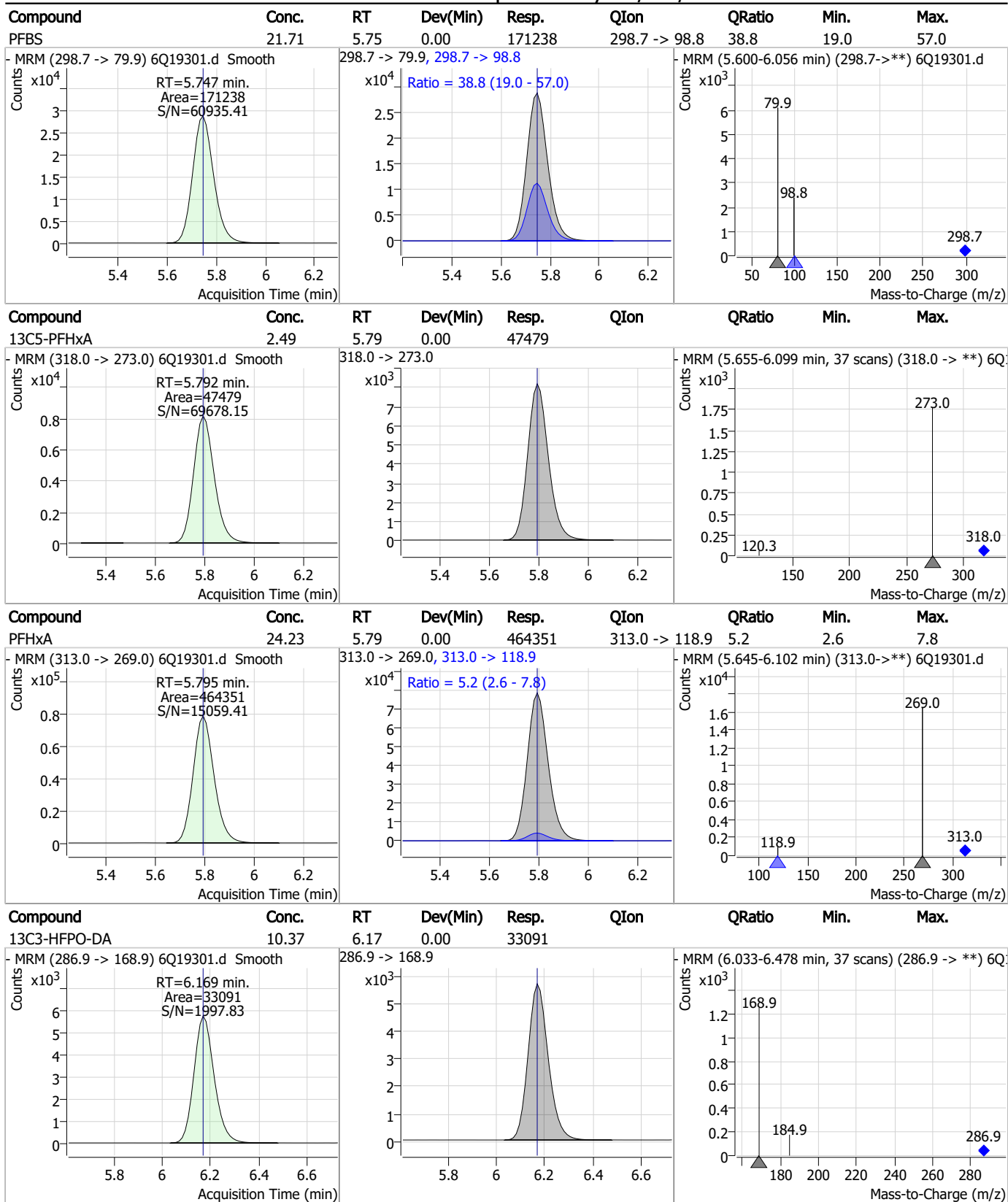
Perfluorinated Compounds by LC/MS/MS



7.7.8

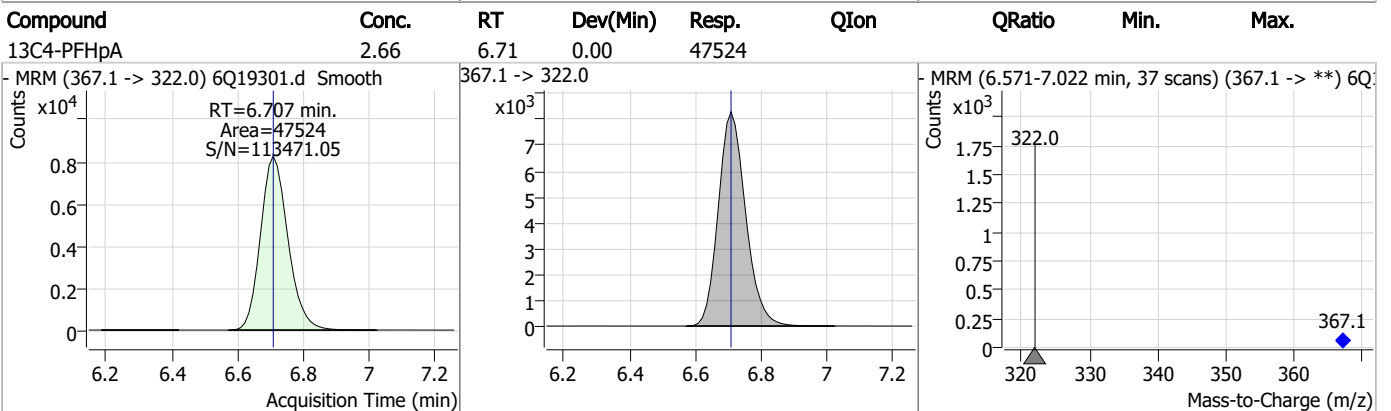
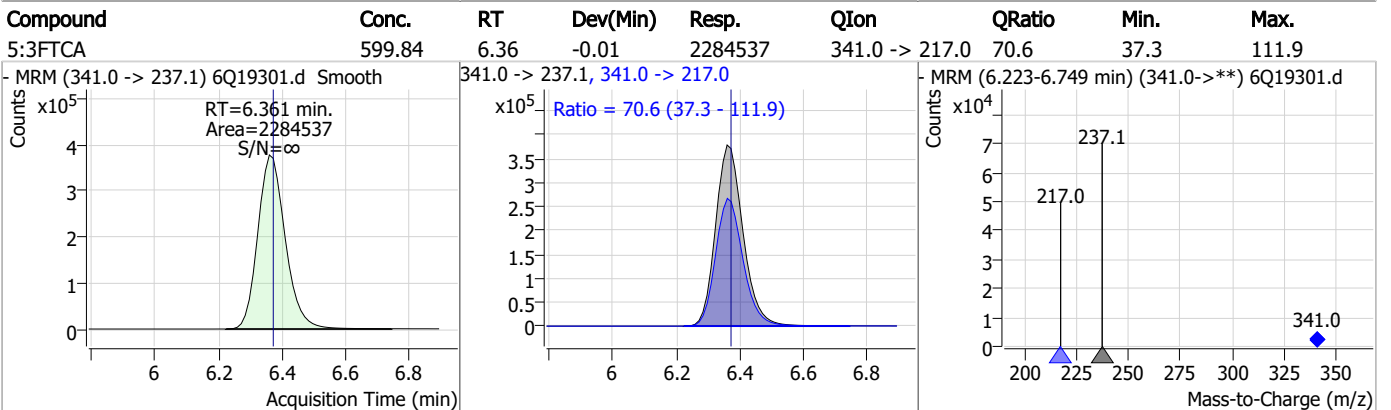
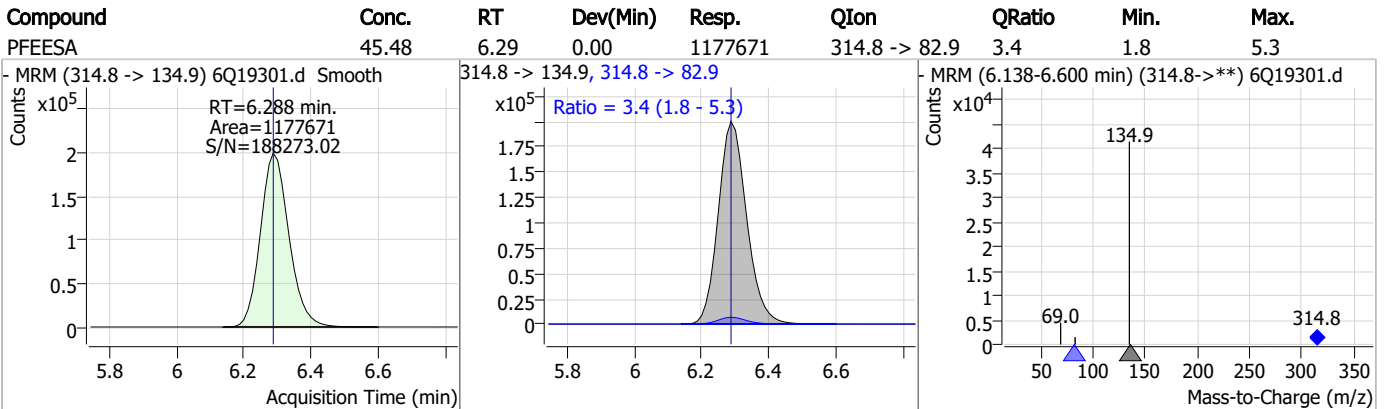
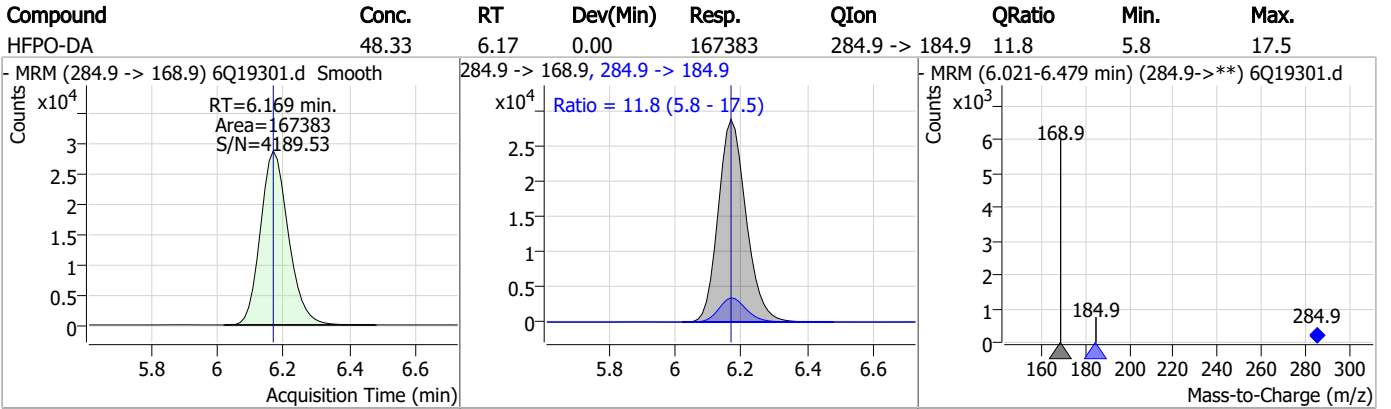
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Perfluorinated Compounds by LC/MS/MS



7.7.8
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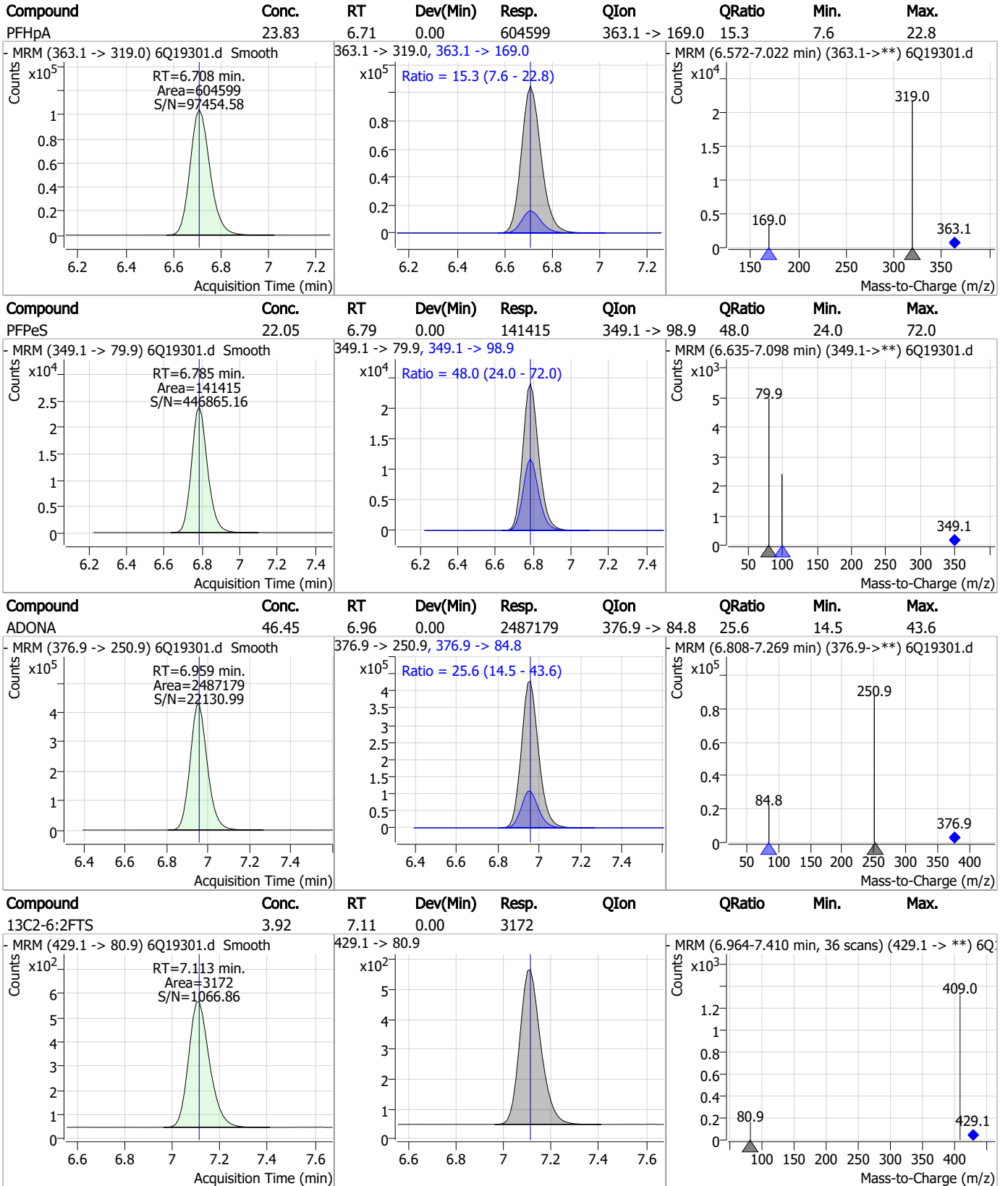
Perfluorinated Compounds by LC/MS/MS



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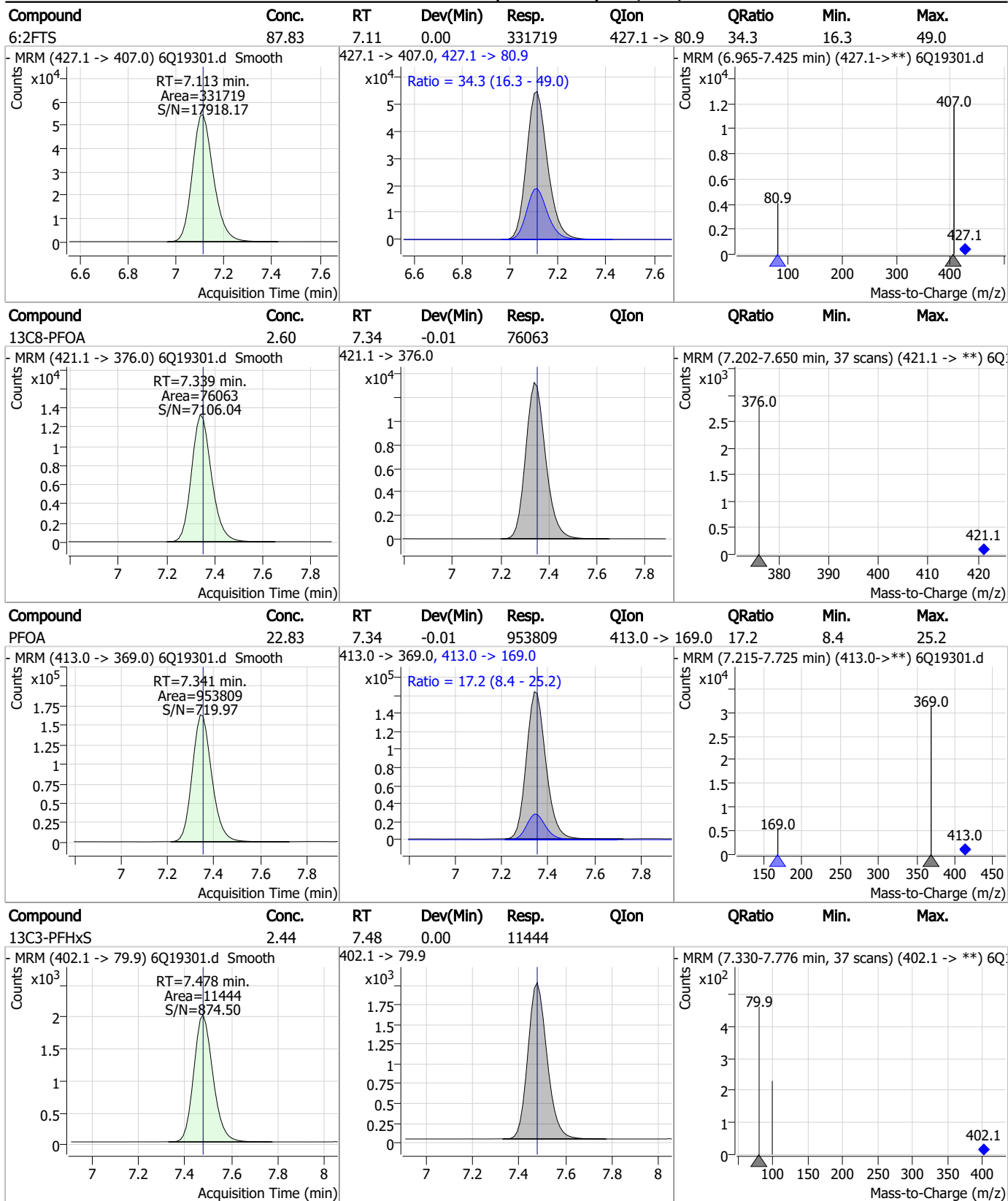
Perfluorinated Compounds by LC/MS/MS



7.7.8

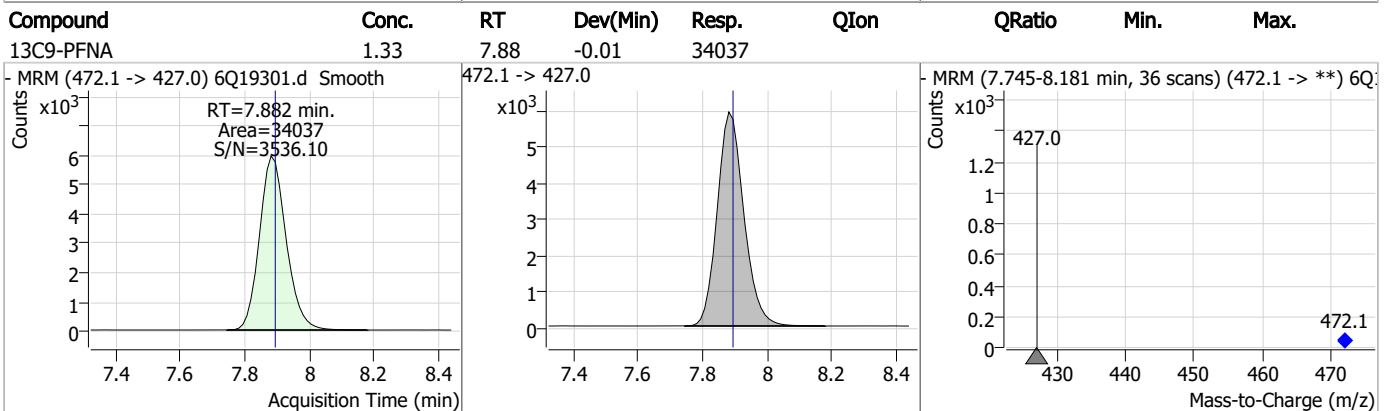
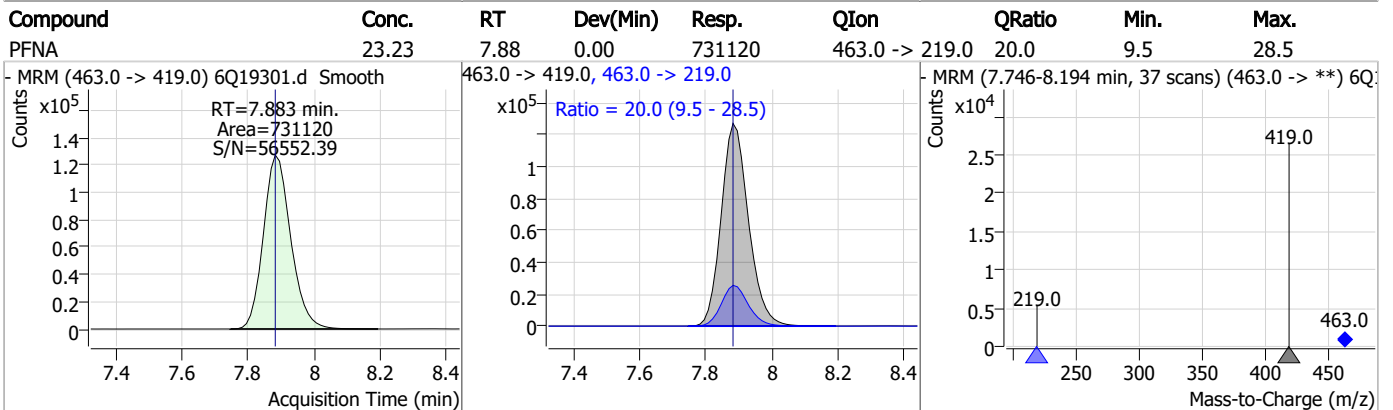
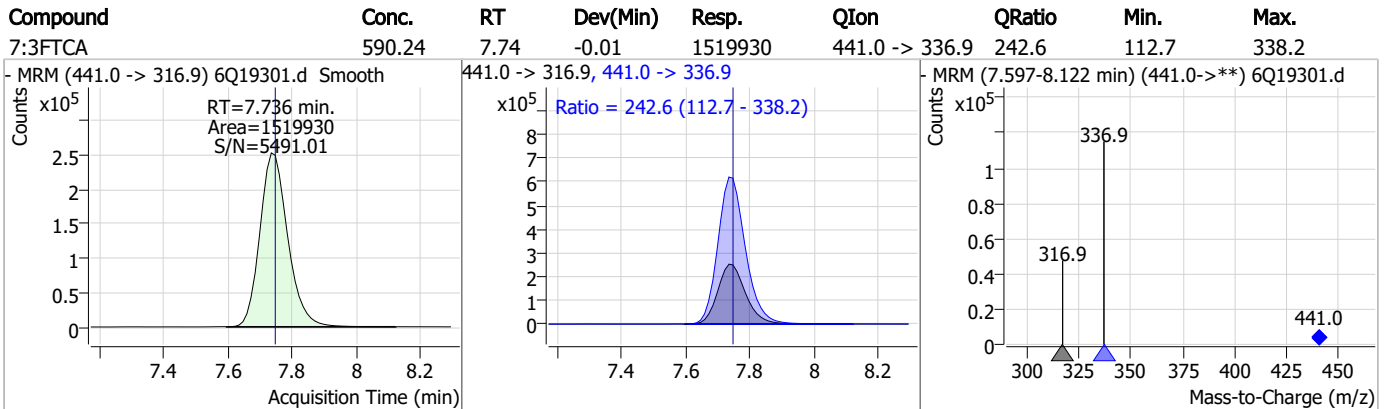
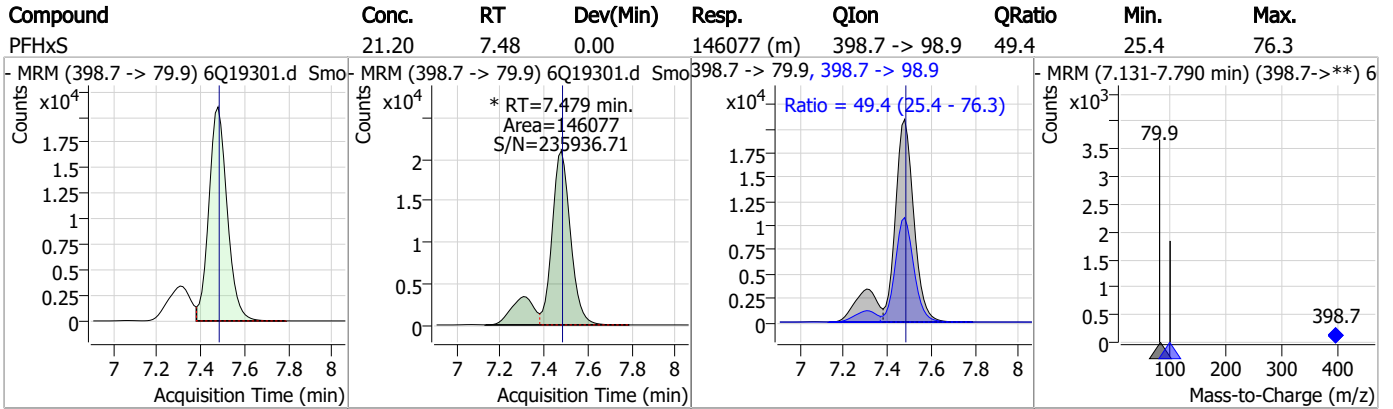
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Perfluorinated Compounds by LC/MS/MS



7.7.8
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Perfluorinated Compounds by LC/MS/MS



7.7.8

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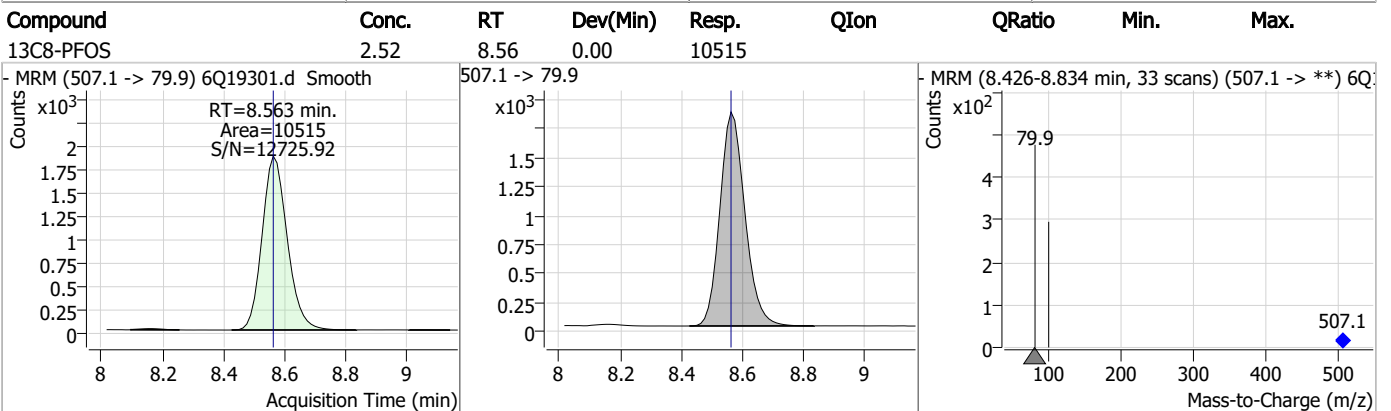
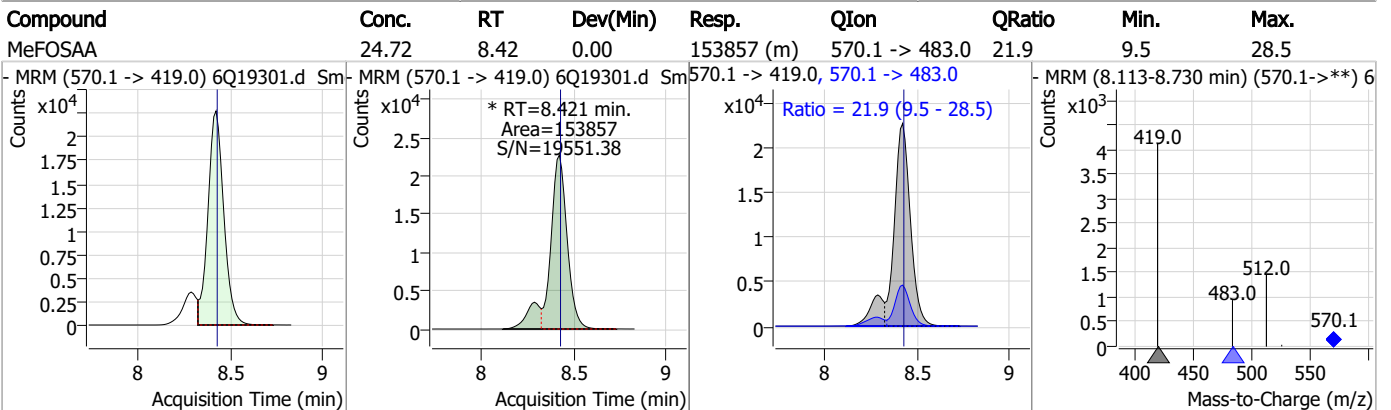
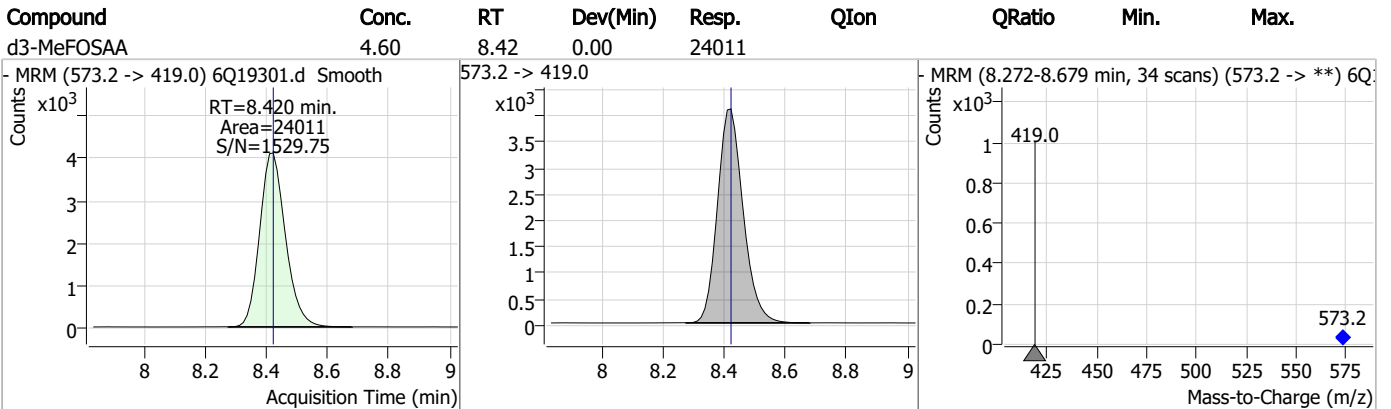
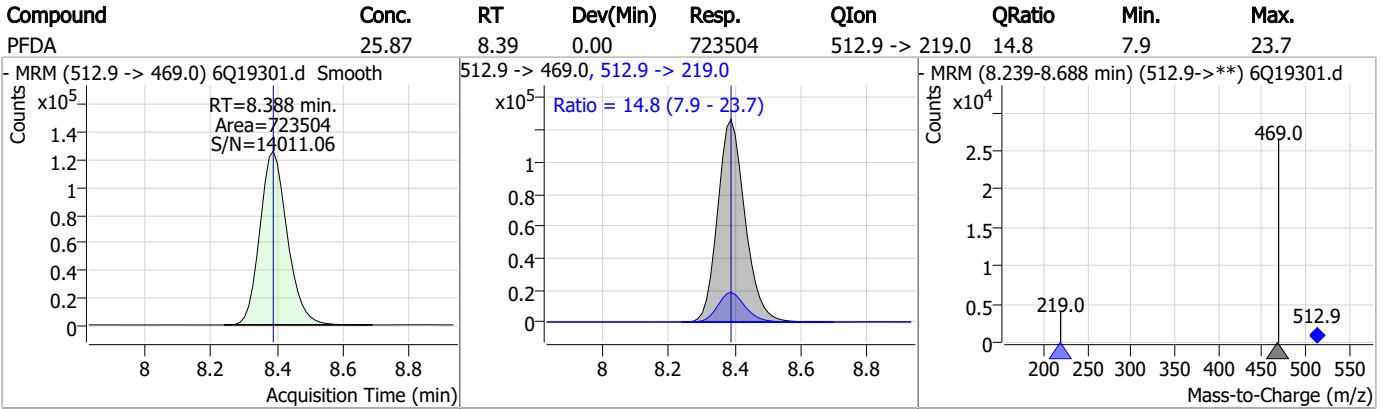
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	24.16	8.05	0.00	151825	449.0 -> 98.9	44.2	25.5	76.5
13C2-8:2FTS	4.26	8.16	0.00	3240				
8:2FTS	91.79	8.16	0.00	197687	527.1 -> 80.8	37.0	19.7	59.2
13C6-PFDA	1.19	8.39	0.00	18801				

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7

Perfluorinated Compounds by LC/MS/MS

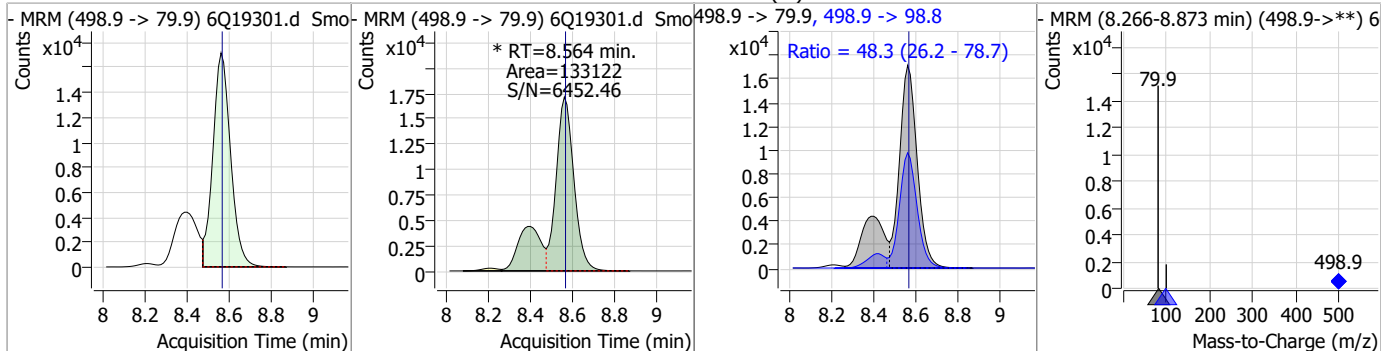


7.7.8

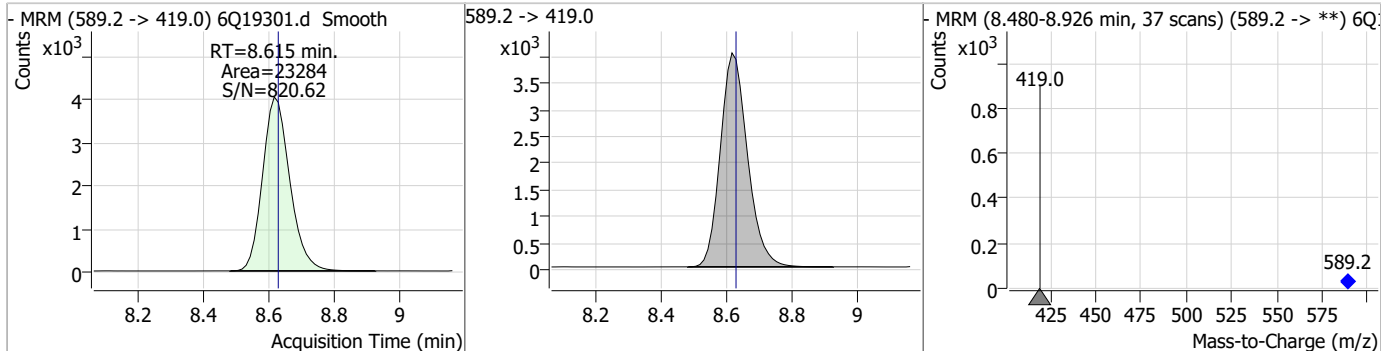
7

Perfluorinated Compounds by LC/MS/MS

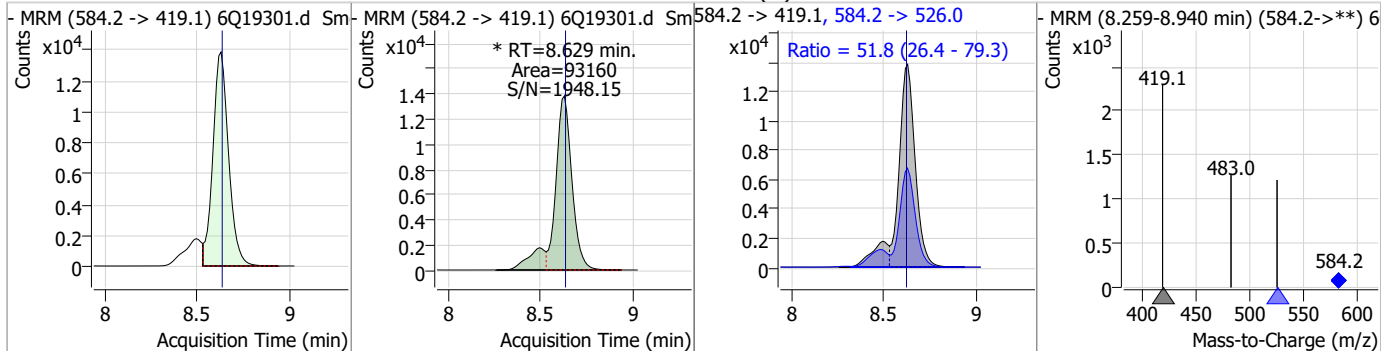
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	21.34	8.56	0.00	133122 (m)	498.9 -> 98.8	48.3	26.2	78.7



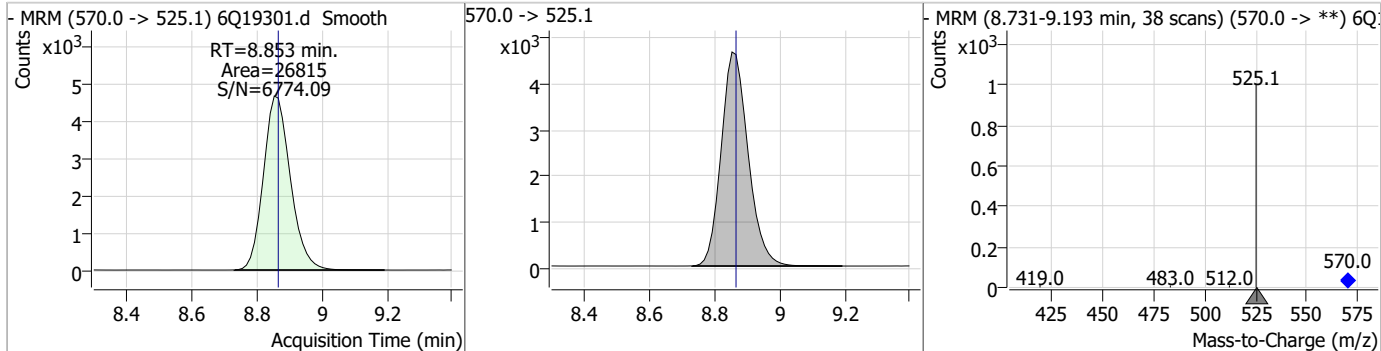
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.25	8.62	-0.01	23284				



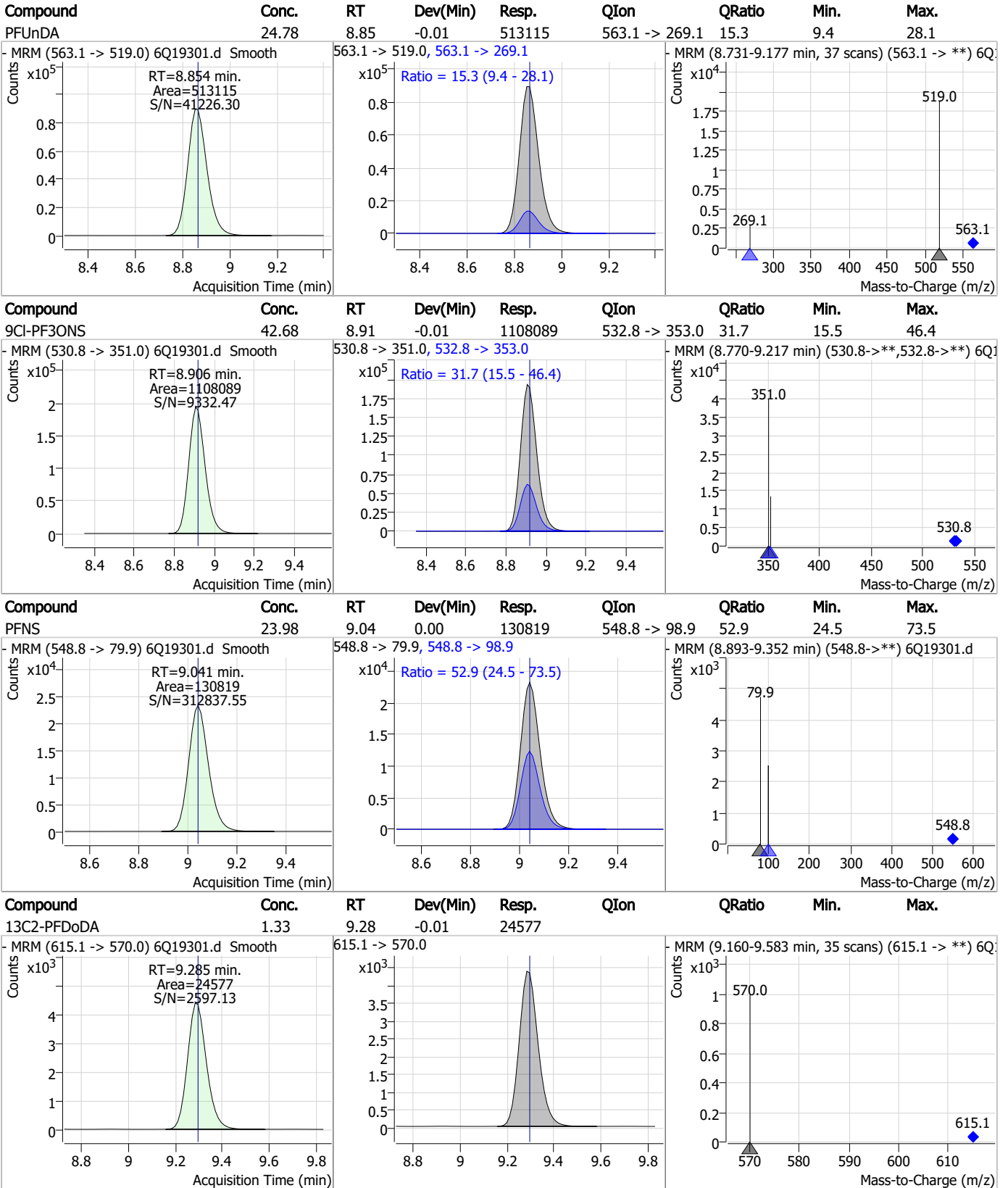
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	23.63	8.63	0.00	93160 (m)	584.2 -> 526.0	51.8	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.26	8.85	-0.01	26815				



Perfluorinated Compounds by LC/MS/MS



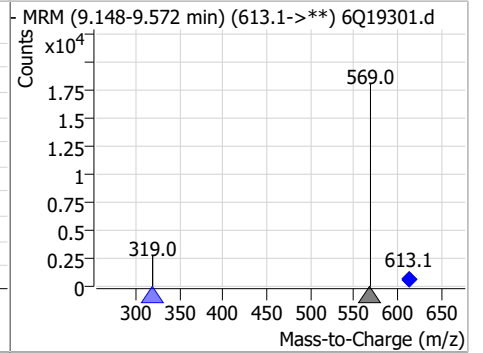
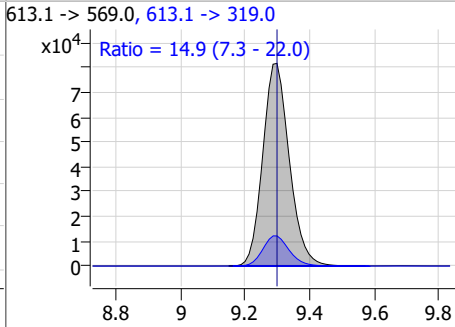
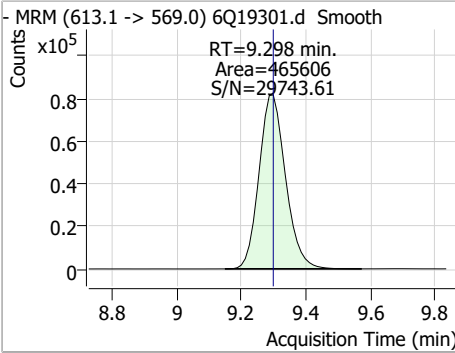
7.7.8

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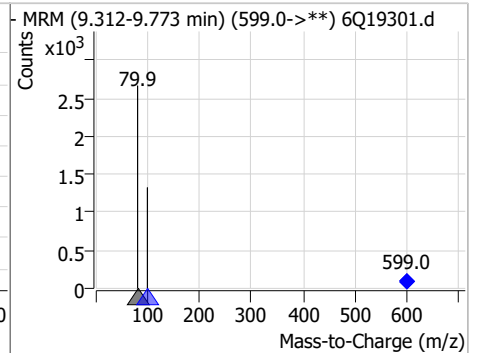
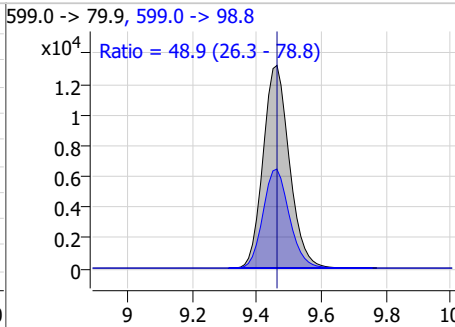
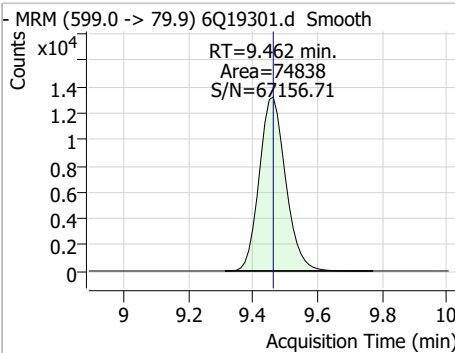


Perfluorinated Compounds by LC/MS/MS

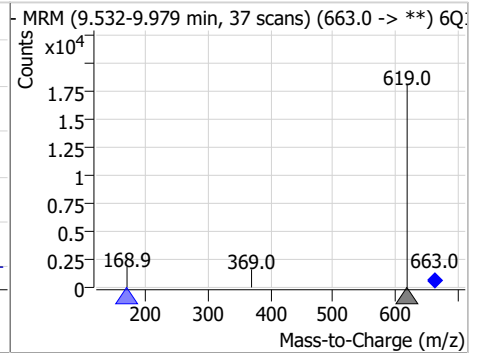
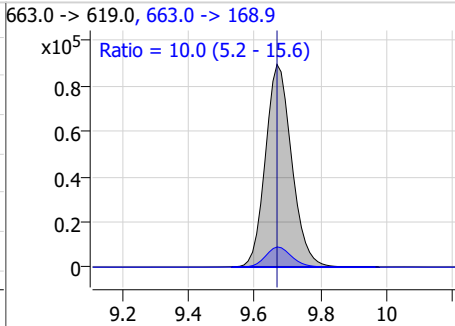
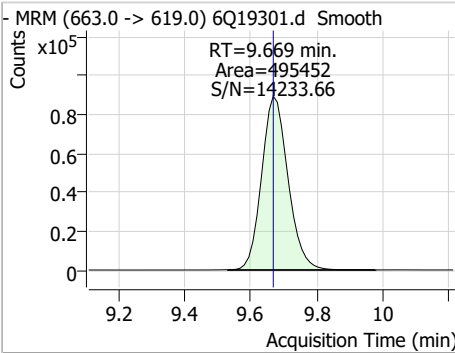
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDODA	22.82	9.30	0.00	465606	613.1 -> 319.0	14.9	7.3	22.0



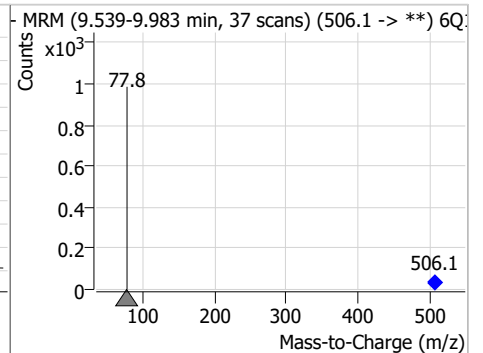
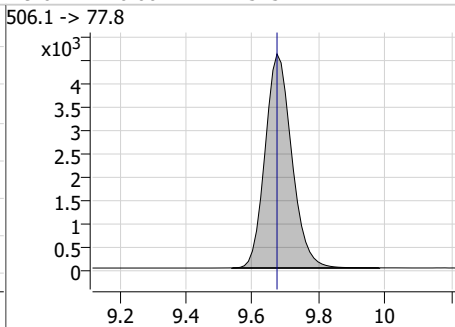
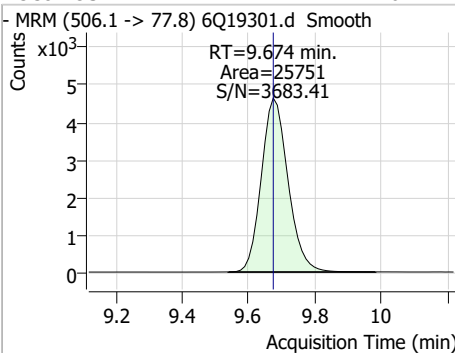
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	23.54	9.46	0.00	74838	599.0 -> 98.8	48.9	26.3	78.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	23.92	9.67	0.00	495452	663.0 -> 168.9	10.0	5.2	15.6

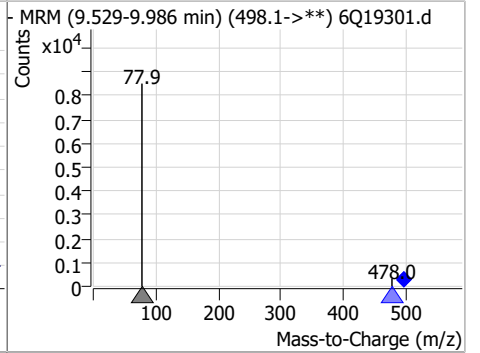
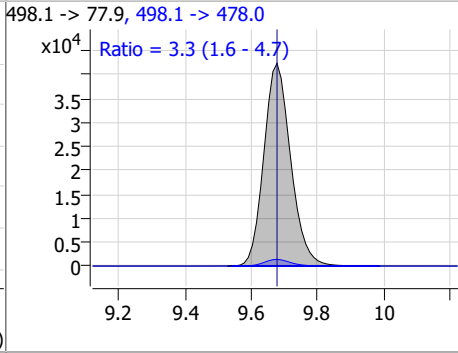
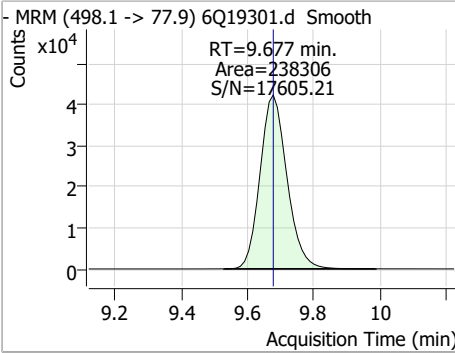


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.46	9.67	0.00	25751	506.1 -> 77.8			

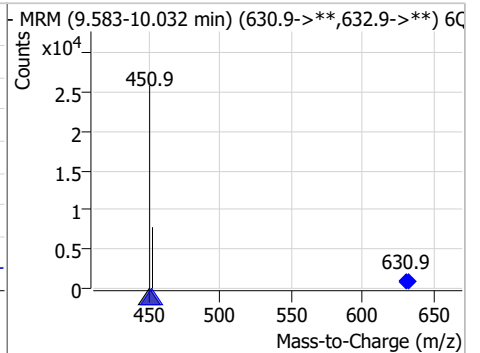
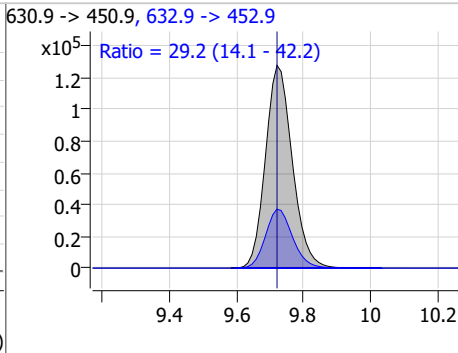
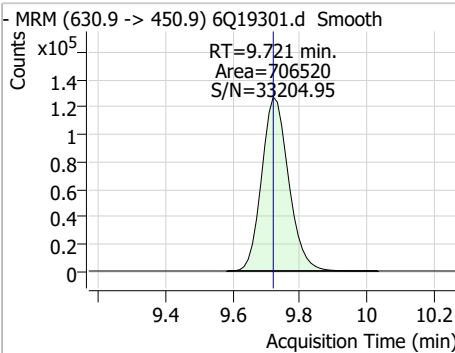


Perfluorinated Compounds by LC/MS/MS

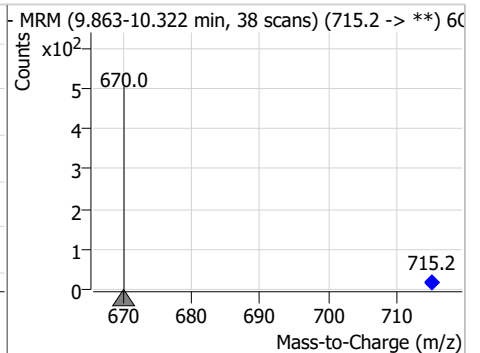
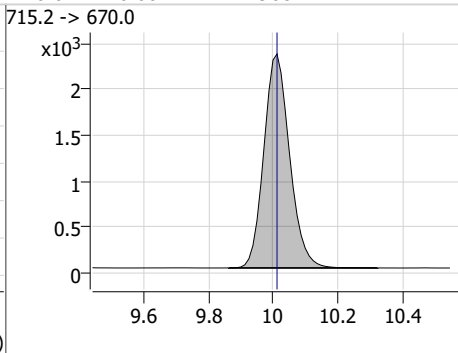
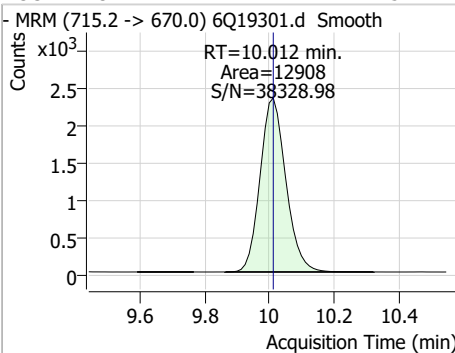
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	23.29	9.68	0.00	238306	498.1 -> 478.0	3.3	1.6	4.7



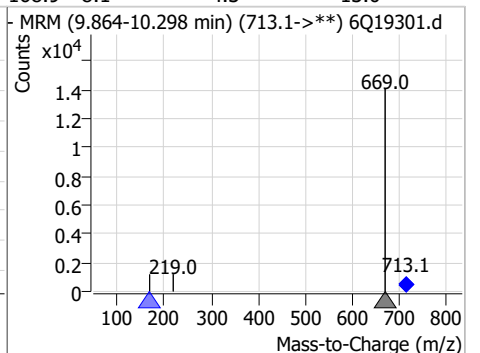
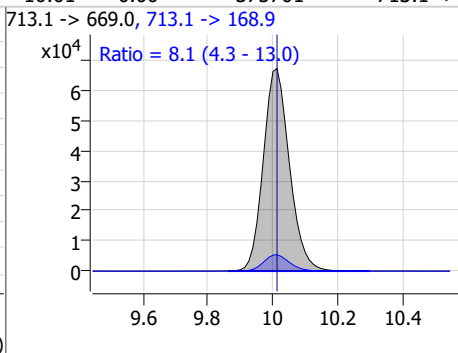
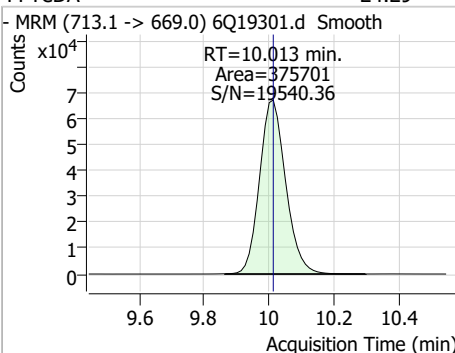
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11CI-PF3OUds	46.89	9.72	0.00	706520	632.9 -> 452.9	29.2	14.1	42.2



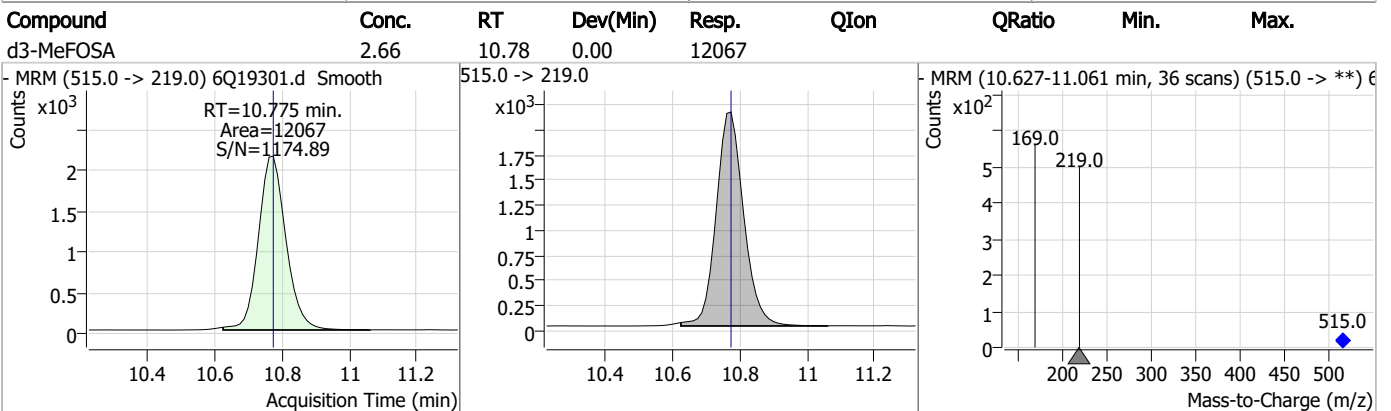
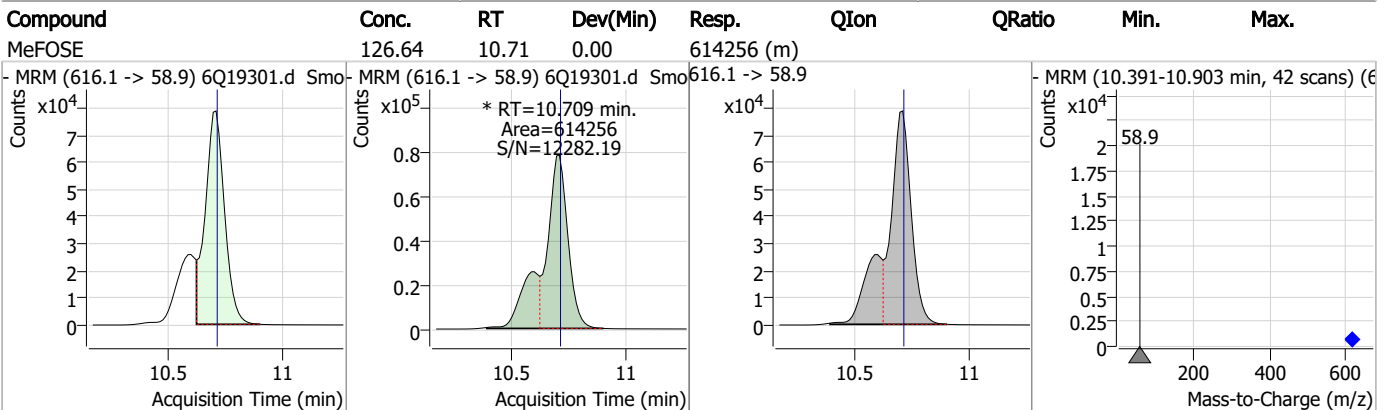
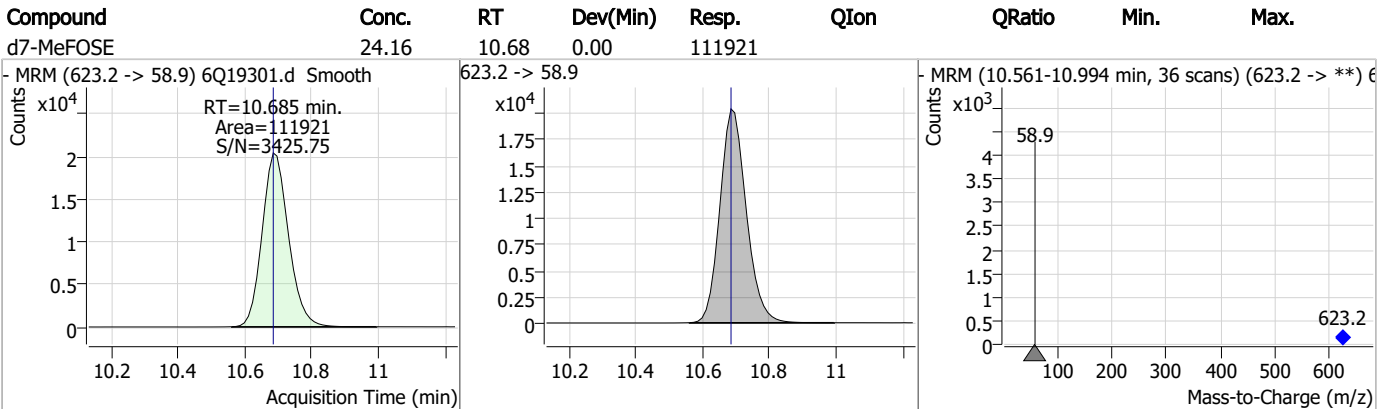
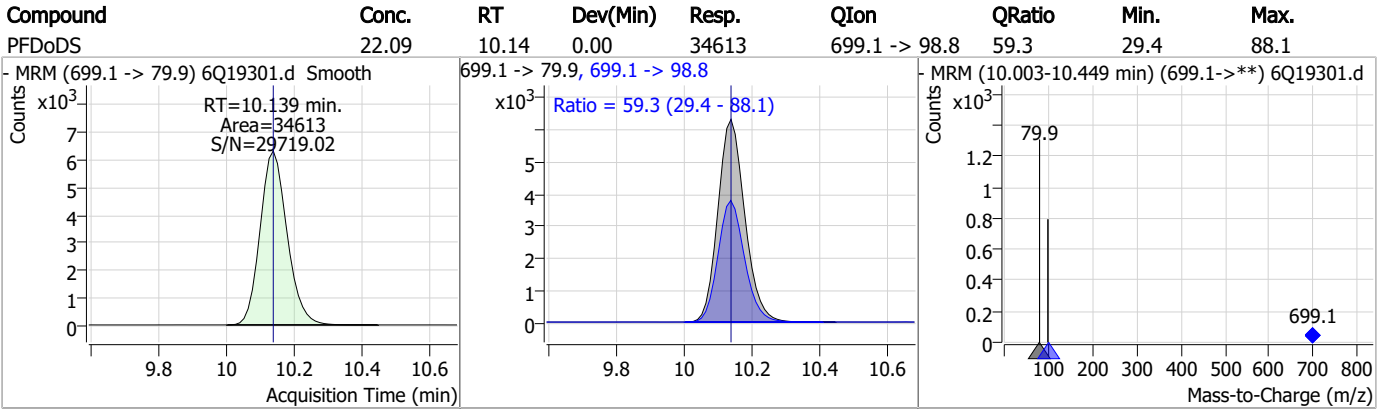
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.25	10.01	0.00	12908	715.2 -> 670.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	24.29	10.01	0.00	375701	713.1 -> 168.9	8.1	4.3	13.0



Perfluorinated Compounds by LC/MS/MS

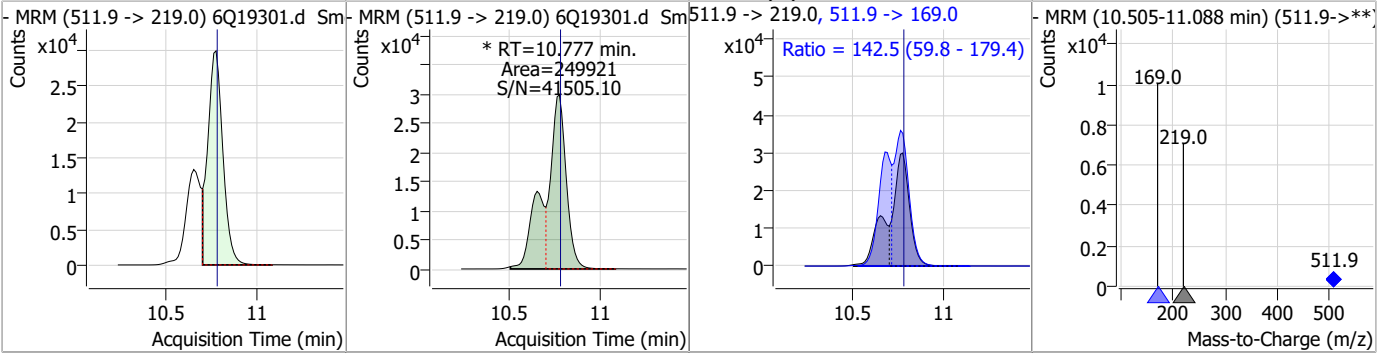


7.7.8

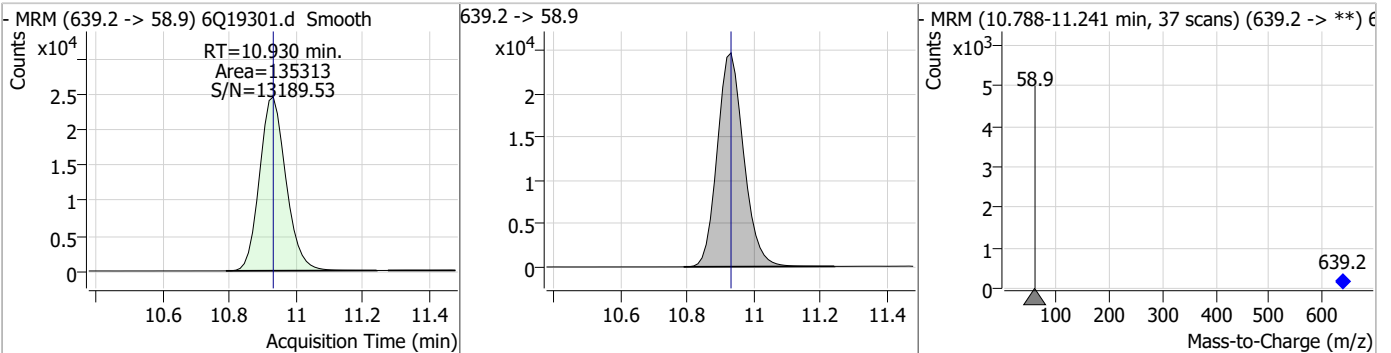
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Perfluorinated Compounds by LC/MS/MS

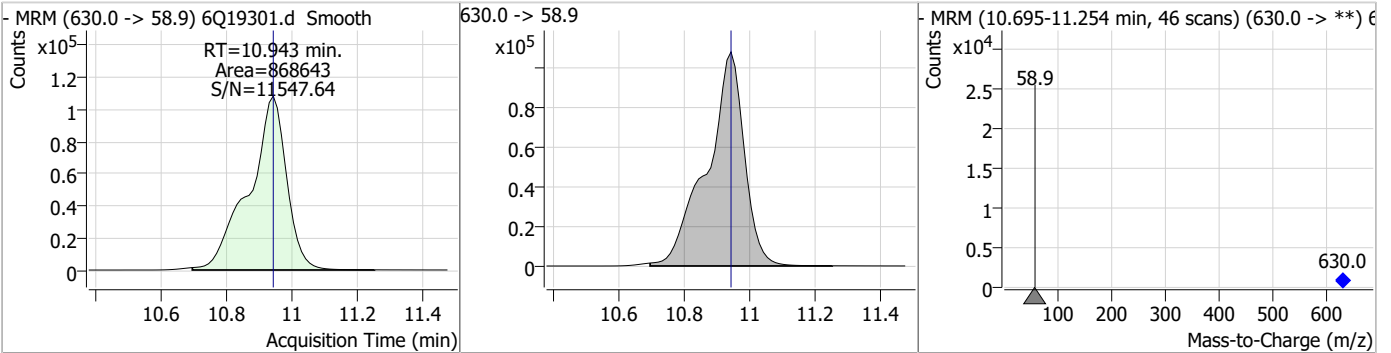
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	45.74	10.78	0.00	249921 (m)	511.9 -> 169.0	142.5	59.8	179.4



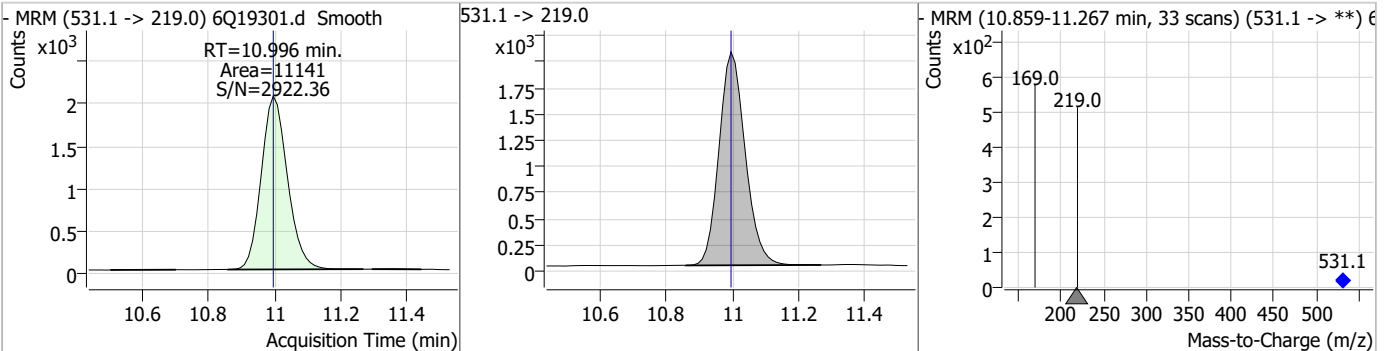
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.78	10.93	0.00	135313				



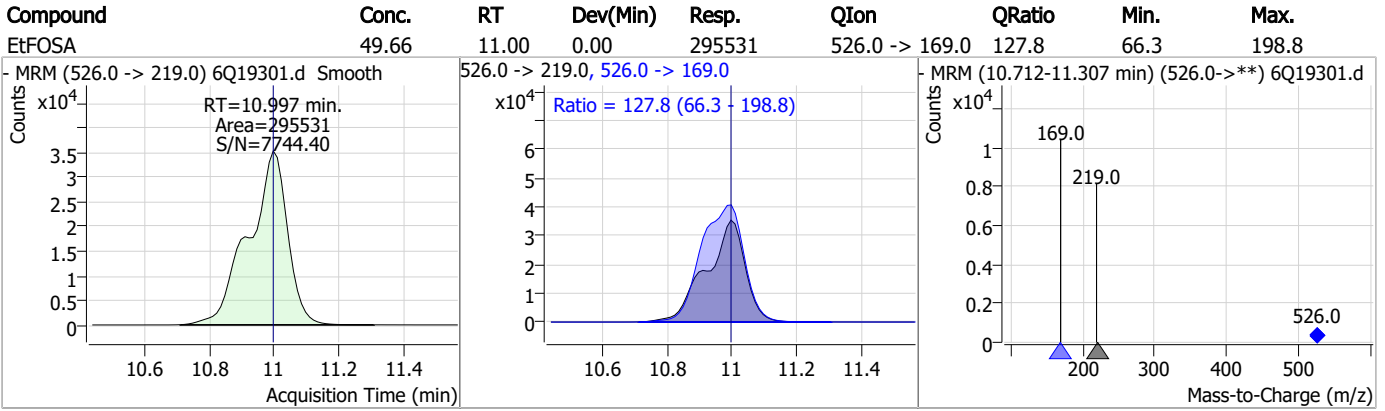
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	124.04	10.94	0.00	868643				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.51	11.00	0.00	11141				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q288-IC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19301.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 12:59 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.7.8.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19302.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 1:13:42 PM
 Sample Name : ic288-8
 Vial : P1-A9
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	112938	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	40083	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	47594	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	43385	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	68380	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	29654	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	18412	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	23717	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	21098	1.25 µg/L	-0.012
M2-PFTeDA	10.012	715.2 -> 670.0	12465	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	24187	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	16235	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	10290	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	9337	2.50 µg/L	0.000
M2-4:2FTS	5.442	329.1 -> 80.9	1752	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	2775	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	2844	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	22717	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	34106	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	21434	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	102946	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	120752	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	10318	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	12079	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	12745	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	48446	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	8279	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	72049	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	26182	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	43168	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	42496	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	1752	3.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 70.5%		
13C2-6:2FTS	7.113	429.1 -> 80.9	2775	3.70 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 74.0%		
13C2-8:2FTS	8.163	529.1 -> 80.9	2844	4.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 80.6%		
13C2-PFDoDA	9.285	615.1 -> 570.0	21098	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C2-PFTeDA	10.012	715.2 -> 670.0	12465	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C3-PFBS	5.746	302.1 -> 79.9	16235	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C3-PFHxS	7.478	402.1 -> 79.9	10290	2.37 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 = 94.6%	
13C4-PFBA	3.085	216.8 -> 171.9	112938	9.94 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C4-PFHpA	6.707	367.1 -> 322.0	43385	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C5-PFHxA	5.792	318.0 -> 273.0	47594	2.71 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.6%	
13C5-PFPeA	4.560	268.3 -> 223.0	40083	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C6-PFDA	8.387	519.1 -> 474.1	18412	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C7-PFUnDA	8.853	570.0 -> 525.1	23717	1.18 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.2%	
13C8-FOSA	9.674	506.1 -> 77.8	24187	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOA	7.339	421.1 -> 376.0	68380	2.54 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C8-PFOS	8.563	507.1 -> 79.9	9337	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C9-PFNA	7.882	472.1 -> 427.0	29654	1.13 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.3%	
d3-MeFOSAA	8.420	573.2 -> 419.0	22717	4.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.2%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	34106	11.62 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 116.2%	
d3-MeFOSA	10.775	515.0 -> 219.0	12079	2.88 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.2%	
d5-EtFOSAA	8.615	589.2 -> 419.0	21434	5.24 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.7%	
d7-MeFOSE	10.685	623.2 -> 58.9	102946	24.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.3%	
d9-EtFOSE	10.930	639.2 -> 58.9	120752	23.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
d5-EtFOSA	10.996	531.1 -> 219.0	10318	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	644998	211.74 µg/L	99
		327.1 -> 80.9	243943		
6:2FTS	7.113	427.1 -> 407.0	642106	194.29 µg/L	98
		427.1 -> 80.9	218216		
8:2FTS	8.164	527.1 -> 507.0	386031	204.22 µg/L	94
		527.1 -> 80.8	138203		
EtFOSAA	8.629	584.2 -> 419.1	217929	60.04 µg/L	m 98
		584.2 -> 526.0	117980		
FOSA	9.677	498.1 -> 77.9	577665	60.11 µg/L	100
		498.1 -> 478.0	17245		
MeFOSAA	8.421	570.1 -> 419.0	359186	61.00 µg/L	m 97
		570.1 -> 483.0	72999		
PFBA	3.093	212.8 -> 168.9	1115139	245.04 µg/L	100
PFBS	5.747	298.7 -> 79.9	397863	54.88 µg/L	98
		298.7 -> 98.8	145294		
PFDA	8.388	512.9 -> 469.0	1687738	61.62 µg/L	99
		512.9 -> 219.0	259479		
PFDoDA	9.298	613.1 -> 569.0	1058362	60.43 µg/L	99
		613.1 -> 319.0	160999		
PFDS	9.462	599.0 -> 79.9	169884	60.19 µg/L	93

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	80749			
PFHpA	6.708	363.1 -> 319.0	1364666	58.92	µg/L	96
		363.1 -> 169.0	231820			
PFHpS	8.046	449.0 -> 79.9	350962	62.90	µg/L	97
		449.0 -> 98.9	170565			
PFHxA	5.795	313.0 -> 269.0	1167653	60.78	µg/L	99
		313.0 -> 118.9	56904			
PFHxS	7.479	398.7 -> 79.9	346813	55.97	µg/L	m 95
		398.7 -> 98.9	163553			
PFNA	7.883	463.0 -> 419.0	1709441	62.35	µg/L	99
		463.0 -> 219.0	333399			
PFNS	9.041	548.8 -> 79.9	277894	57.37	µg/L	88
		548.8 -> 98.9	158853			
PFOA	7.341	413.0 -> 369.0	2229390	59.36	µg/L	100
		413.0 -> 169.0	379241			
PFOS	8.564	498.9 -> 79.9	329067	59.40	µg/L	m 94
		498.9 -> 98.8	158030			
PFPeA	4.563	263.0 -> 219.0	1421792	120.14	µg/L	100
PFPeS	6.785	349.1 -> 79.9	345731	59.97	µg/L	94
		349.1 -> 98.9	151572			
PFTeDA	10.013	713.1 -> 669.0	892653	59.76	µg/L	99
		713.1 -> 168.9	73237			
PFTrDA	9.669	663.0 -> 619.0	1095025	61.58	µg/L	98
		663.0 -> 168.9	107408			
PFUnDA	8.854	563.1 -> 519.0	1190752	65.03	µg/L	94
		563.1 -> 269.1	192591			
11Cl-PF3OUdS	9.721	630.9 -> 450.9	1375838	88.58	µg/L	90
		632.9 -> 452.9	459532			
9Cl-PF3ONS	8.906	530.8 -> 351.0	2617361	97.81	µg/L	96
		532.8 -> 353.0	752327			
ADONA	6.946	376.9 -> 250.9	5537068	100.34	µg/L	95
		376.9 -> 84.8	1464988			
HFPO-DA	6.169	284.9 -> 168.9	395714	110.86	µg/L	99
		284.9 -> 184.9	44957			
3:3FTCA	3.946	241.0 -> 177.0	259887	324.64	µg/L	99
		241.0 -> 117.0	34047			
5:3FTCA	6.361	341.0 -> 237.1	5243815	1373.52	µg/L	96
		341.0 -> 217.0	3719870			
7:3FTCA	7.736	441.0 -> 316.9	3763487	1457.96	µg/L	99
		441.0 -> 336.9	8421354			
EtFOSA	10.997	526.0 -> 219.0	683328	123.99	µg/L	m 100
		526.0 -> 169.0	903319			
EtFOSE	10.943	630.0 -> 58.9	1958731	313.44	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	583556	106.69	µg/L	m 82
		511.9 -> 169.0	814334			
MeFOSE	10.709	616.1 -> 58.9	1377110	308.67	µg/L	m 100
PFDoS	10.139	699.1 -> 79.9	84082	60.42	µg/L	94
		699.1 -> 98.8	45811			
NFDHA	5.673	295.0 -> 201.0	278920	113.68	µg/L	99
		295.0 -> 84.9	72731			
PFMBA	4.988	279.0 -> 85.1	1042222	123.55	µg/L	100
PFMPA	3.667	229.0 -> 84.9	812703	123.15	µg/L	100
PFEESA	6.288	314.8 -> 134.9	2664647	102.65	µg/L	100
		314.8 -> 82.9	89643			

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

7.7.9
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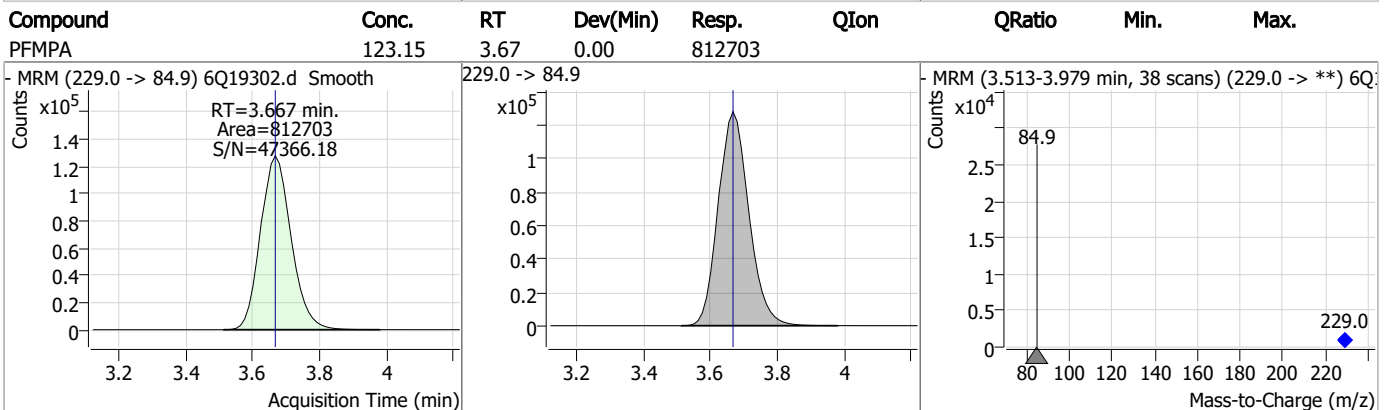
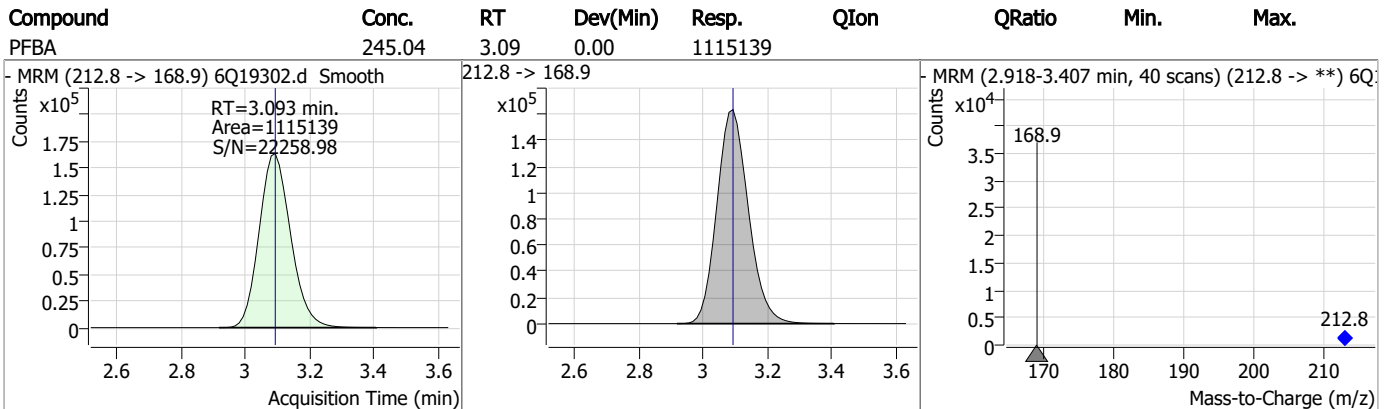
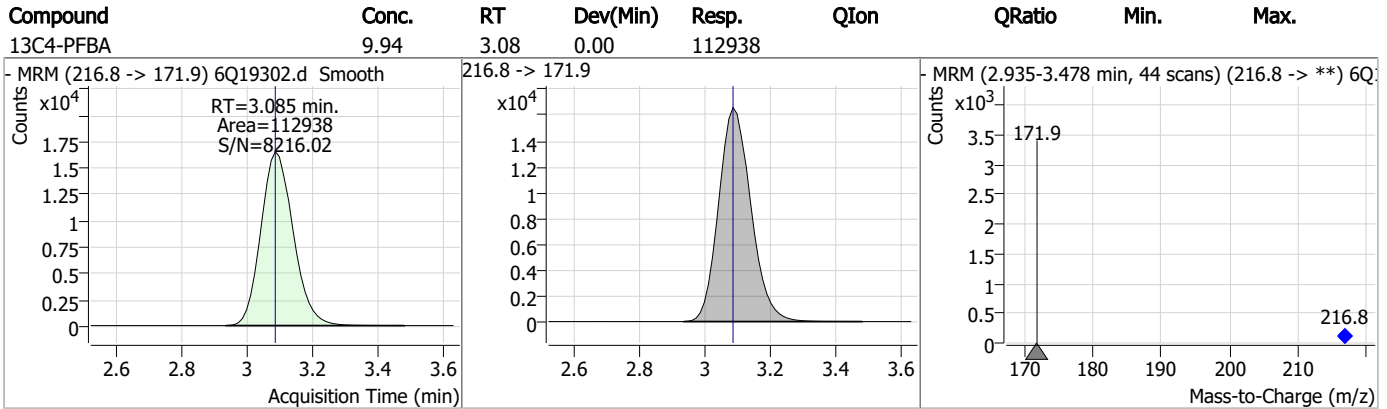
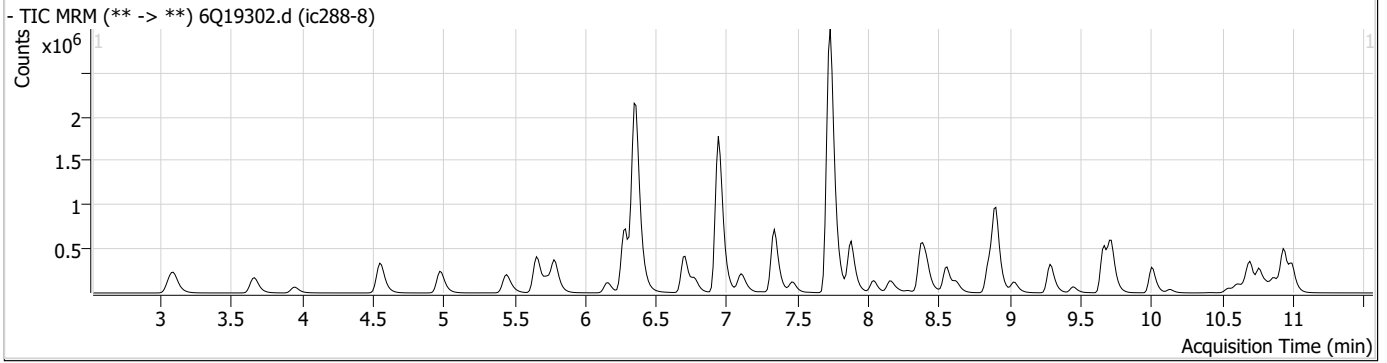
Perfluorinated Compounds by LC/MS/MS

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

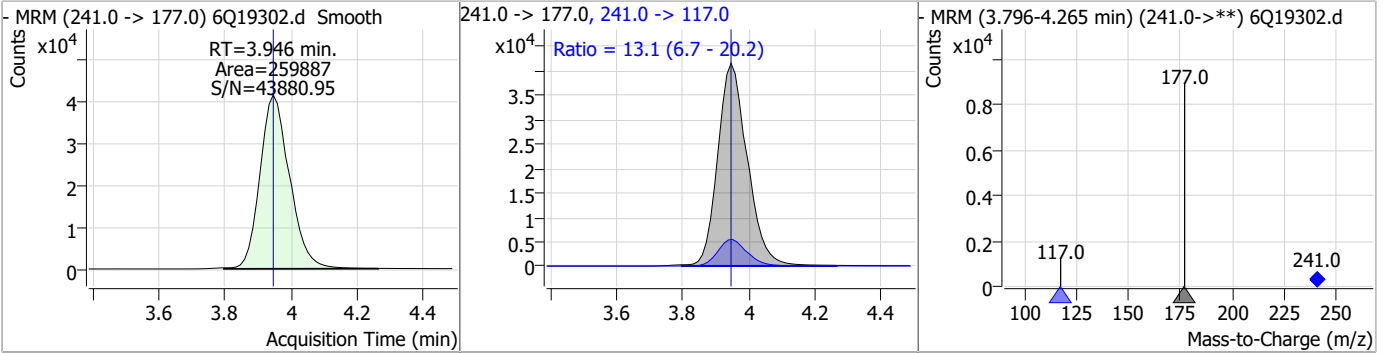
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Perfluorinated Compounds by LC/MS/MS

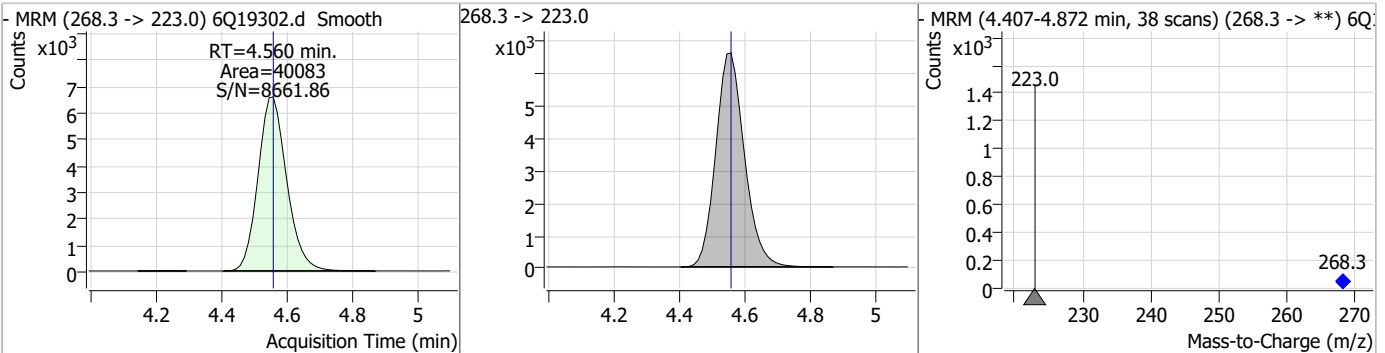


Perfluorinated Compounds by LC/MS/MS

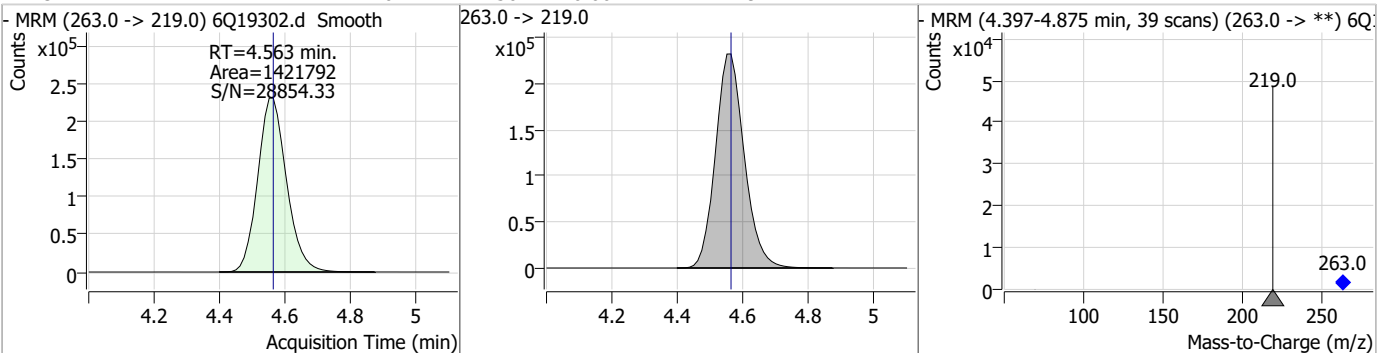
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	324.64	3.95	0.00	259887	241.0 -> 117.0	13.1	6.7	20.2



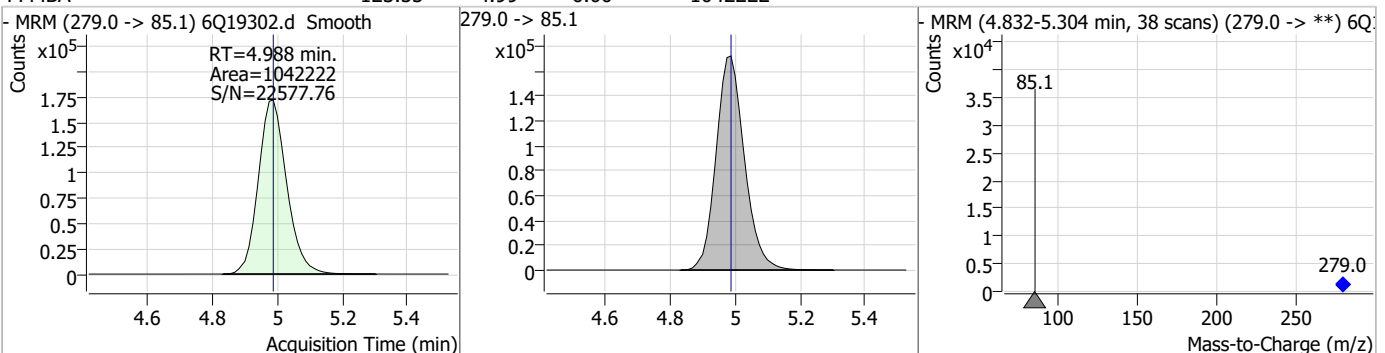
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.99	4.56	0.00	40083				



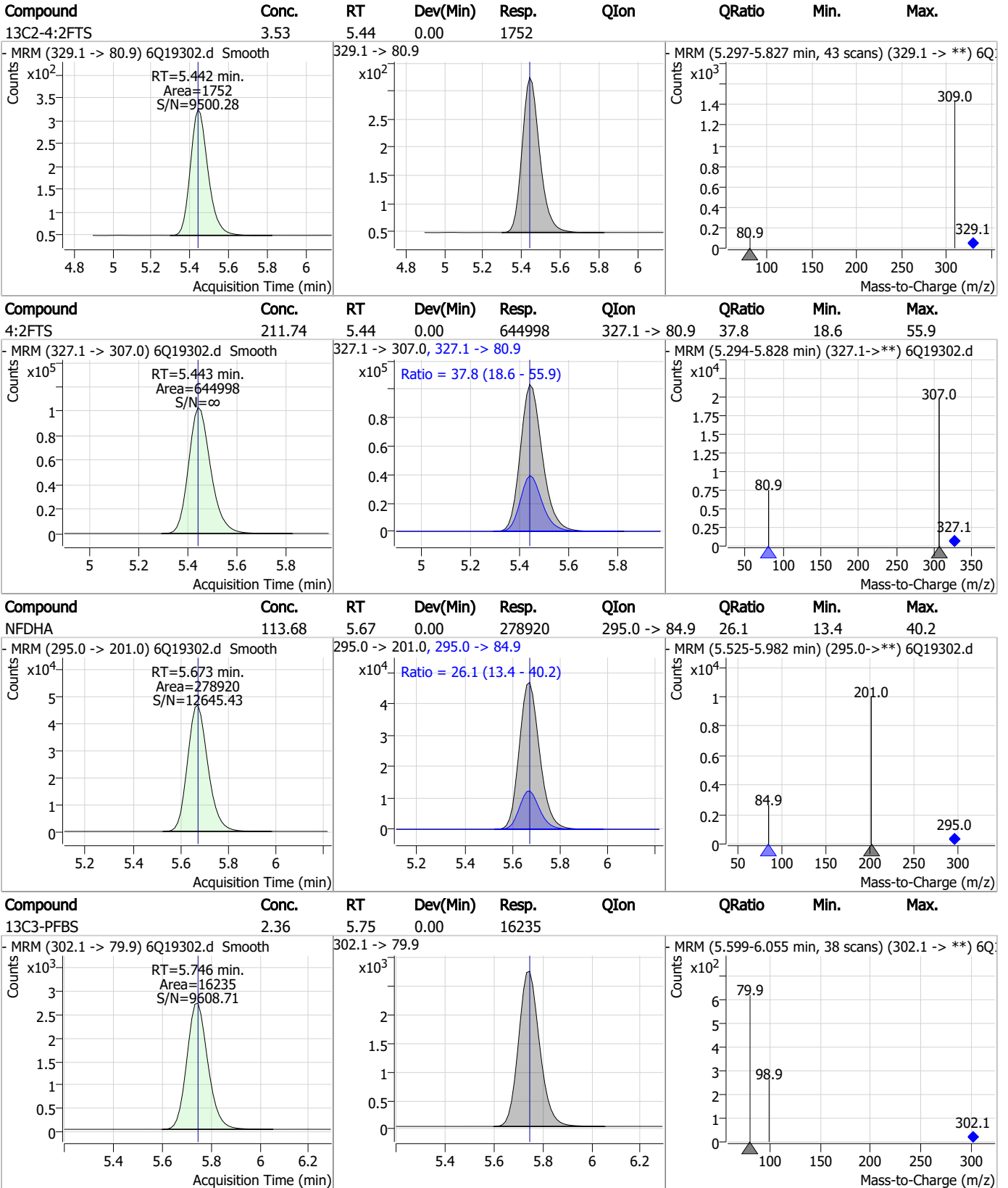
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	120.14	4.56	0.00	1421792				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	123.55	4.99	0.00	1042222				



Perfluorinated Compounds by LC/MS/MS

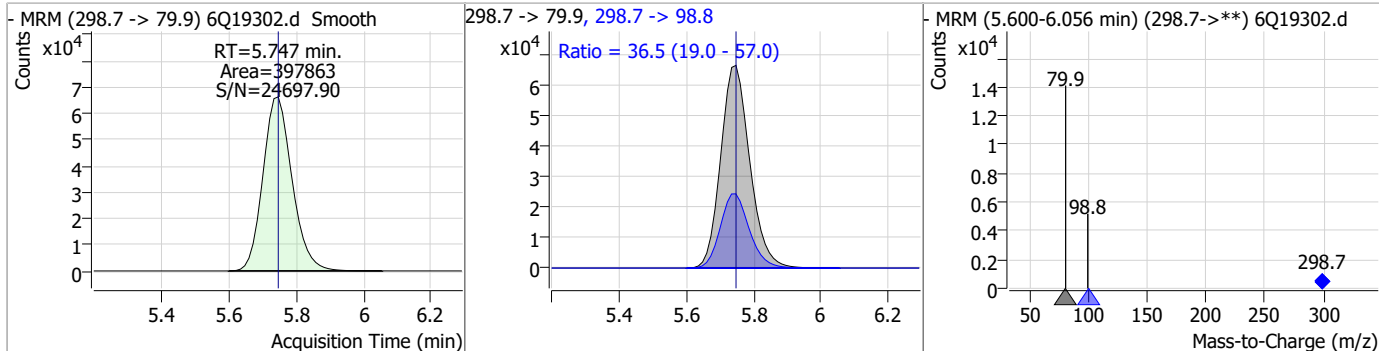


7.7.9

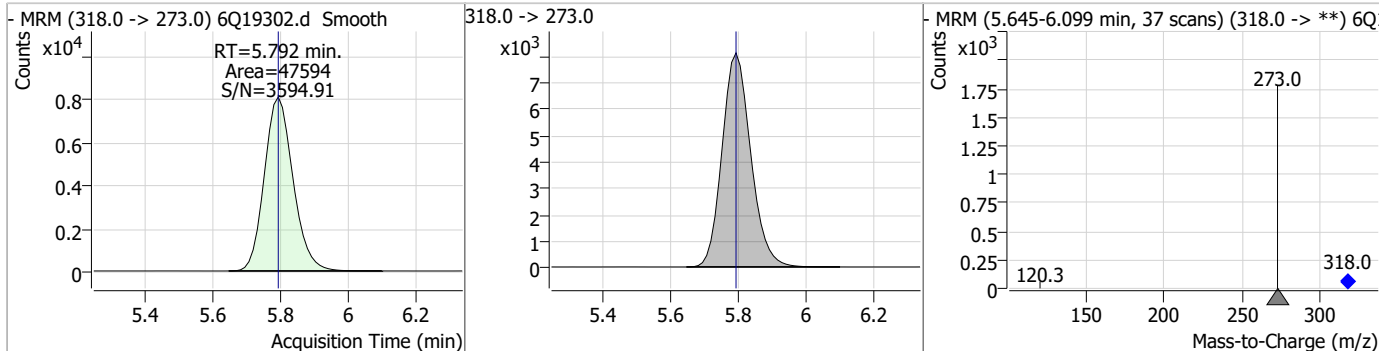
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Perfluorinated Compounds by LC/MS/MS

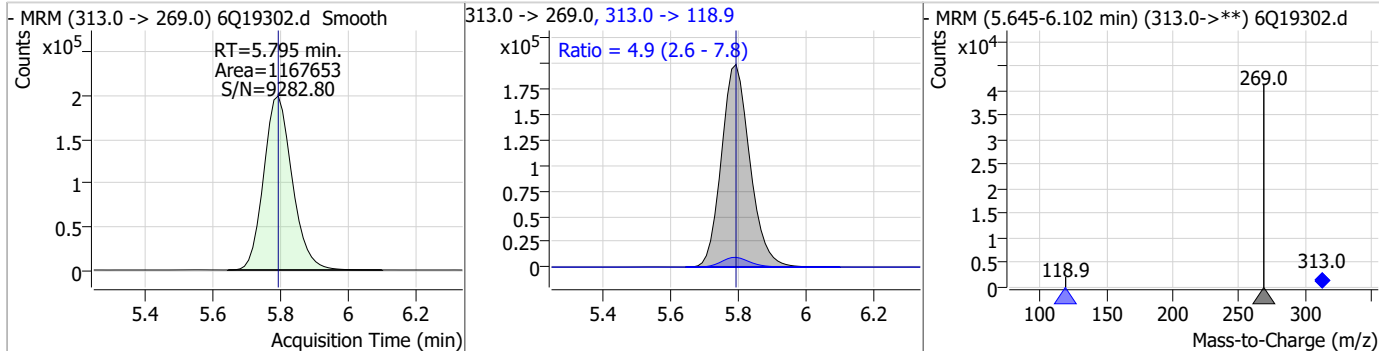
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	54.88	5.75	0.00	397863	298.7 -> 98.8	36.5	19.0	57.0



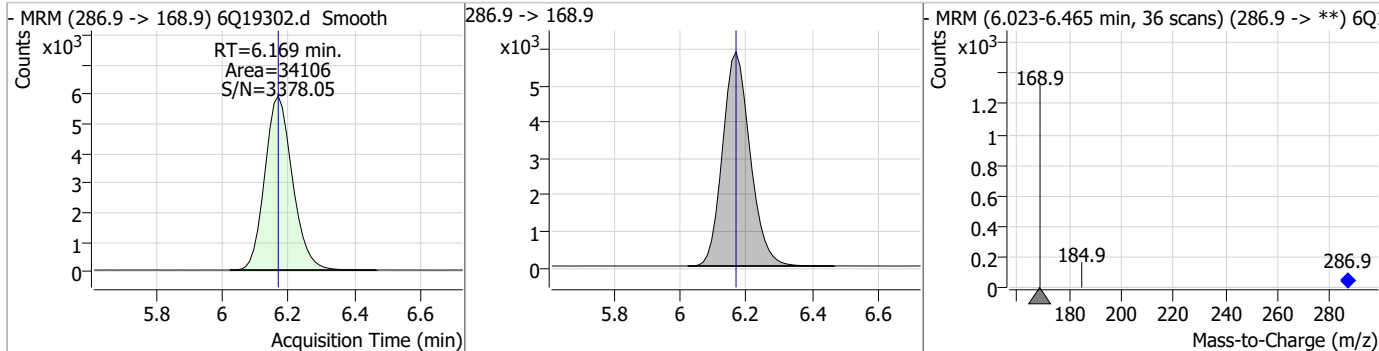
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.71	5.79	0.00	47594				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	60.78	5.79	0.00	1167653	313.0 -> 118.9	4.9	2.6	7.8

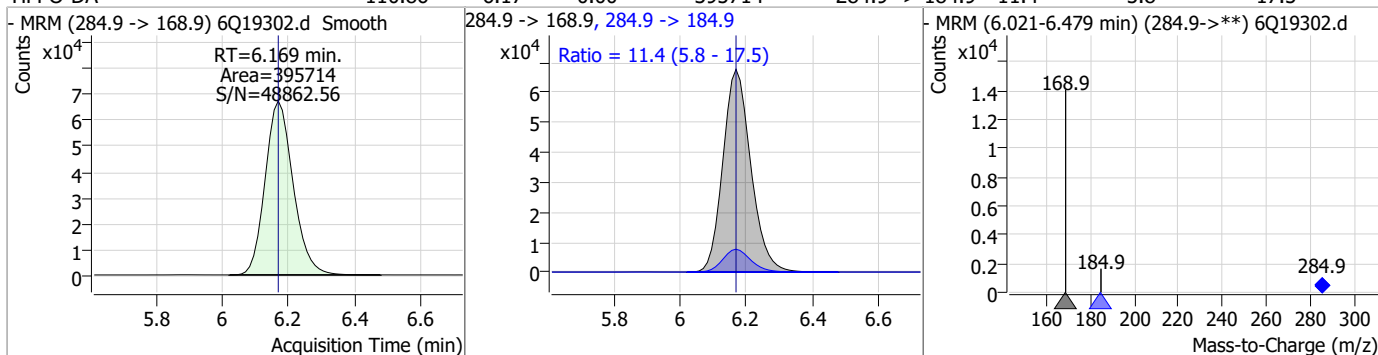


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	11.62	6.17	0.00	34106				

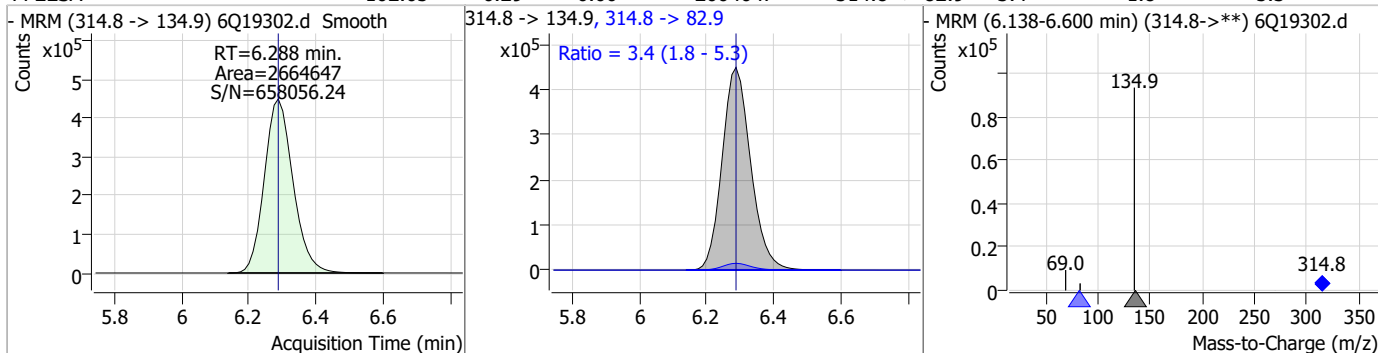


Perfluorinated Compounds by LC/MS/MS

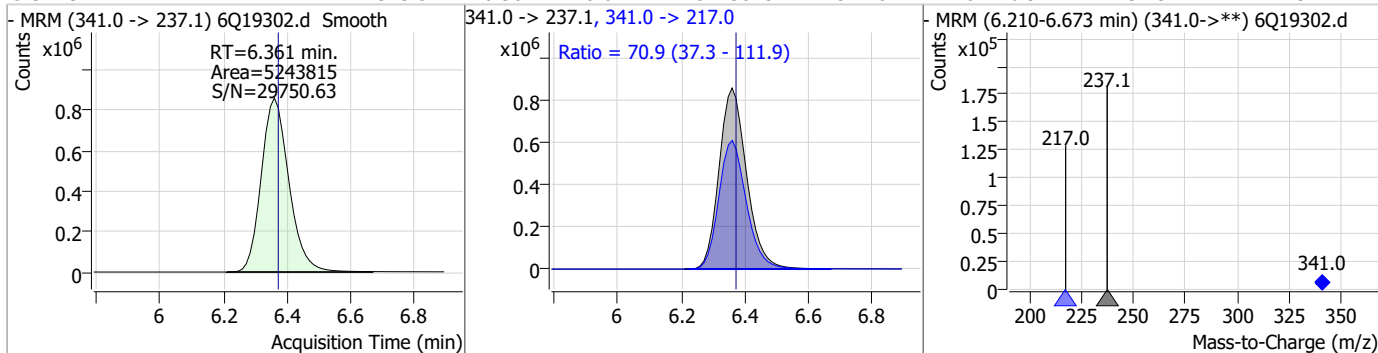
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	110.86	6.17	0.00	395714	284.9 -> 184.9	11.4	5.8	17.5



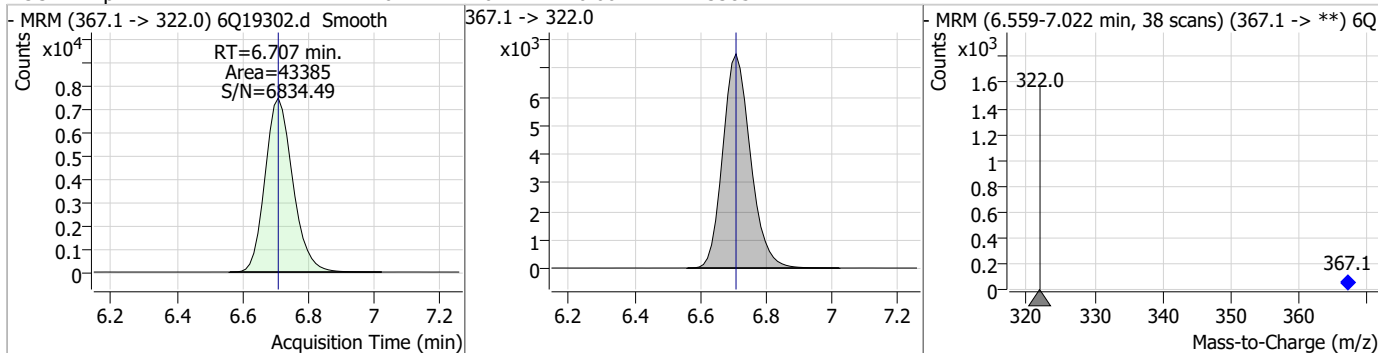
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	102.65	6.29	0.00	2664647	314.8 -> 82.9	3.4	1.8	5.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	1373.52	6.36	-0.01	5243815	341.0 -> 217.0	70.9	37.3	111.9

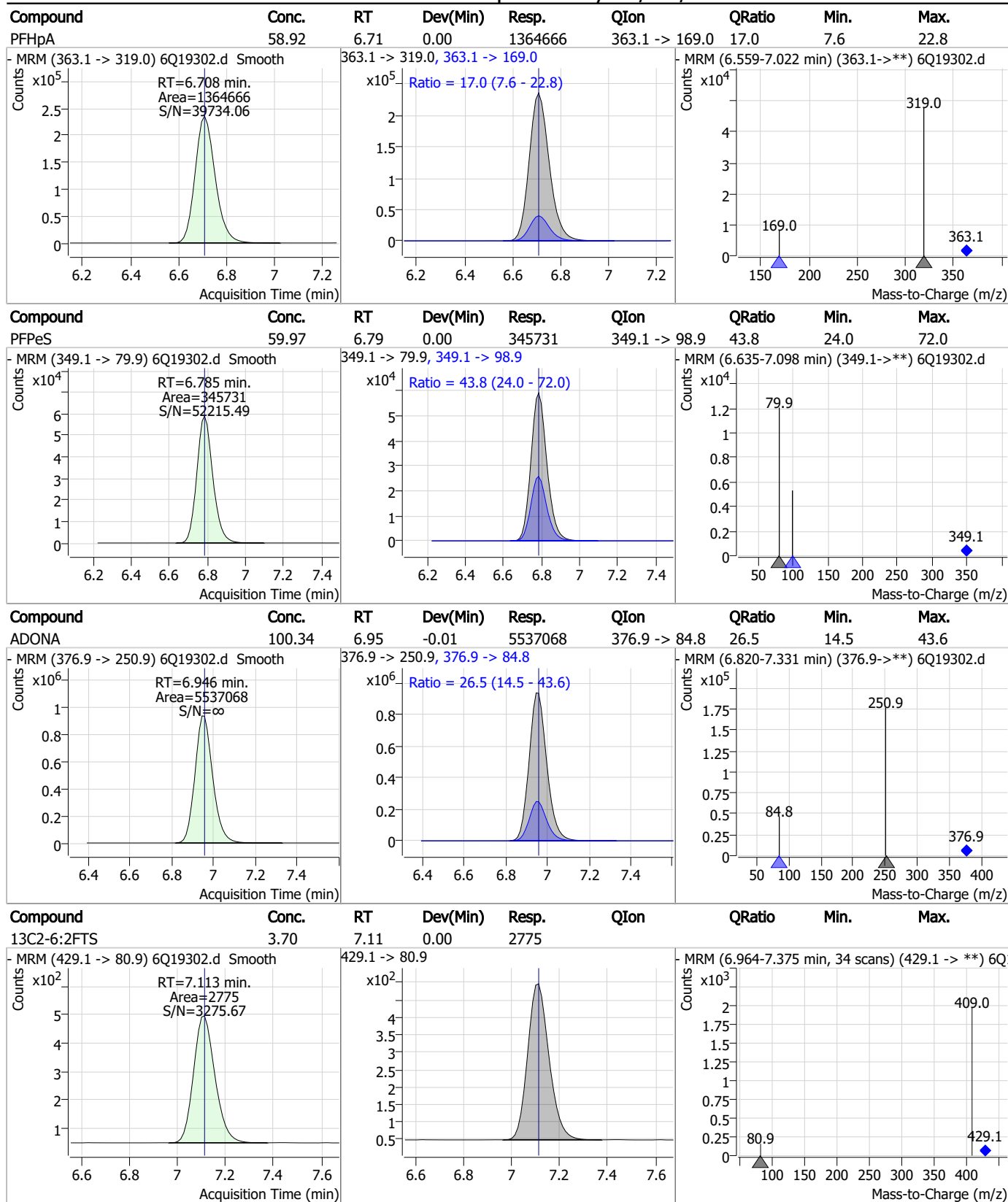


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.64	6.71	0.00	43385	367.1 -> 322.0	-	-	-



7.7.9
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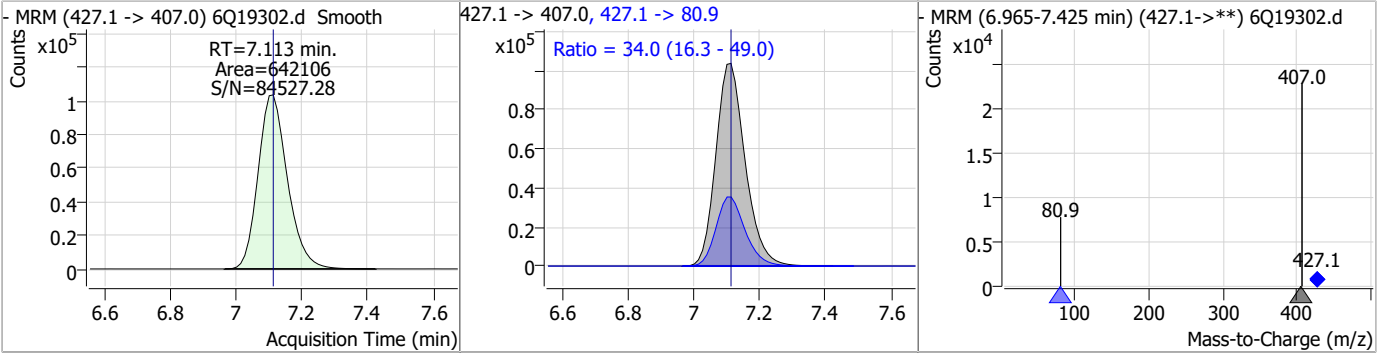
Perfluorinated Compounds by LC/MS/MS



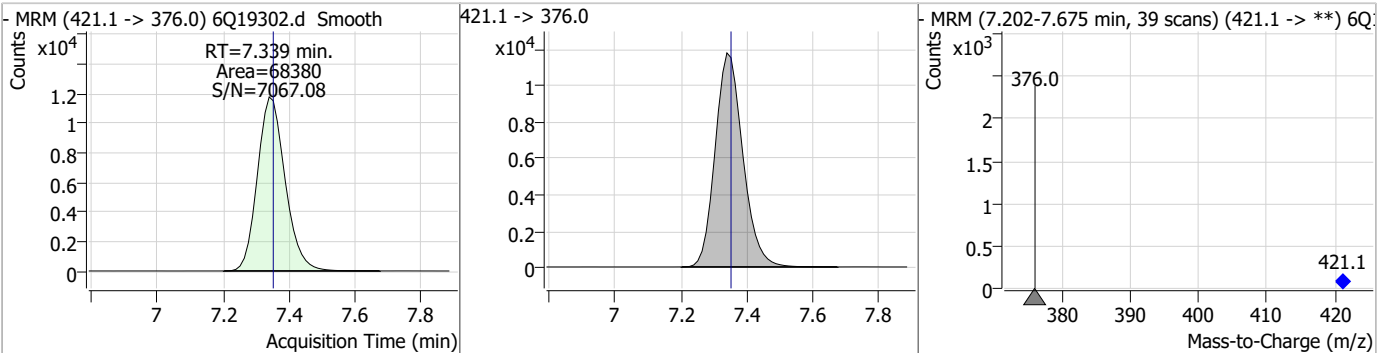
7.7.9
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Perfluorinated Compounds by LC/MS/MS

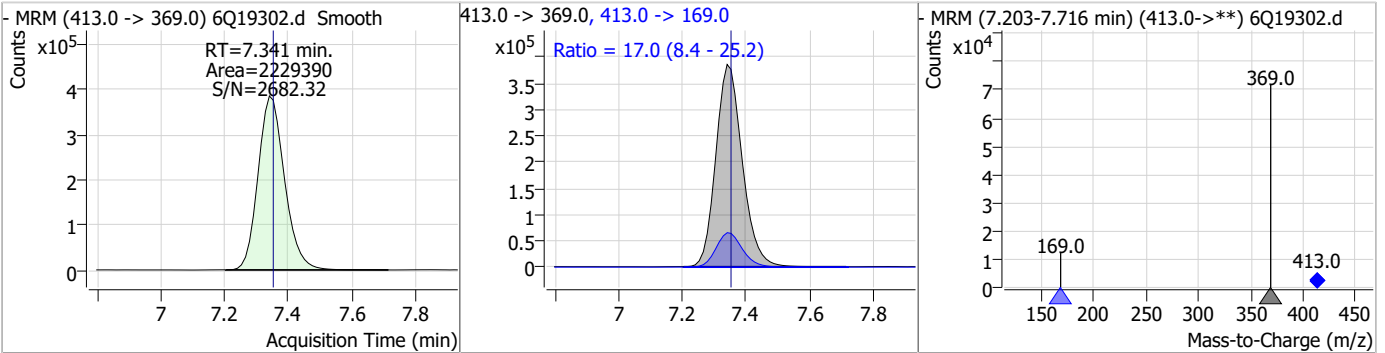
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	194.29	7.11	0.00	642106	427.1 -> 80.9	34.0	16.3	49.0



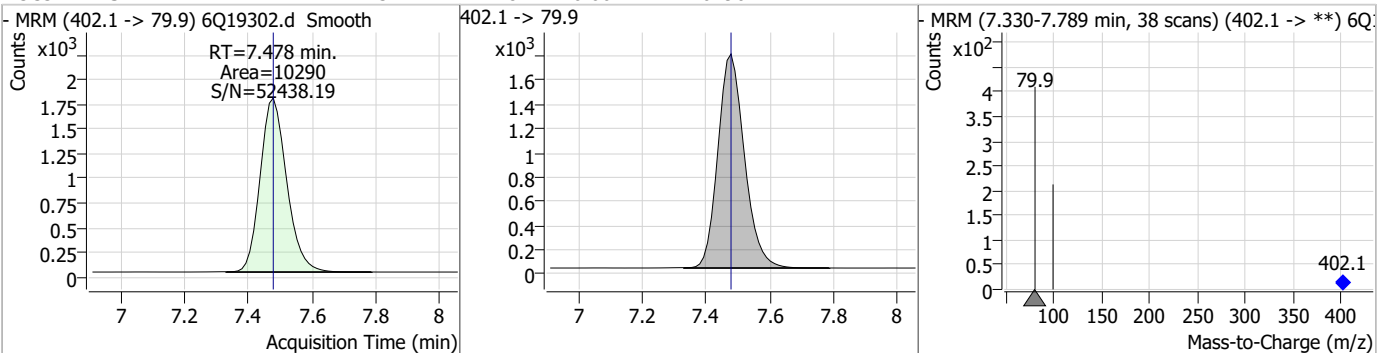
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.54	7.34	-0.01	68380	421.1 -> 376.0	17.0	8.4	25.2



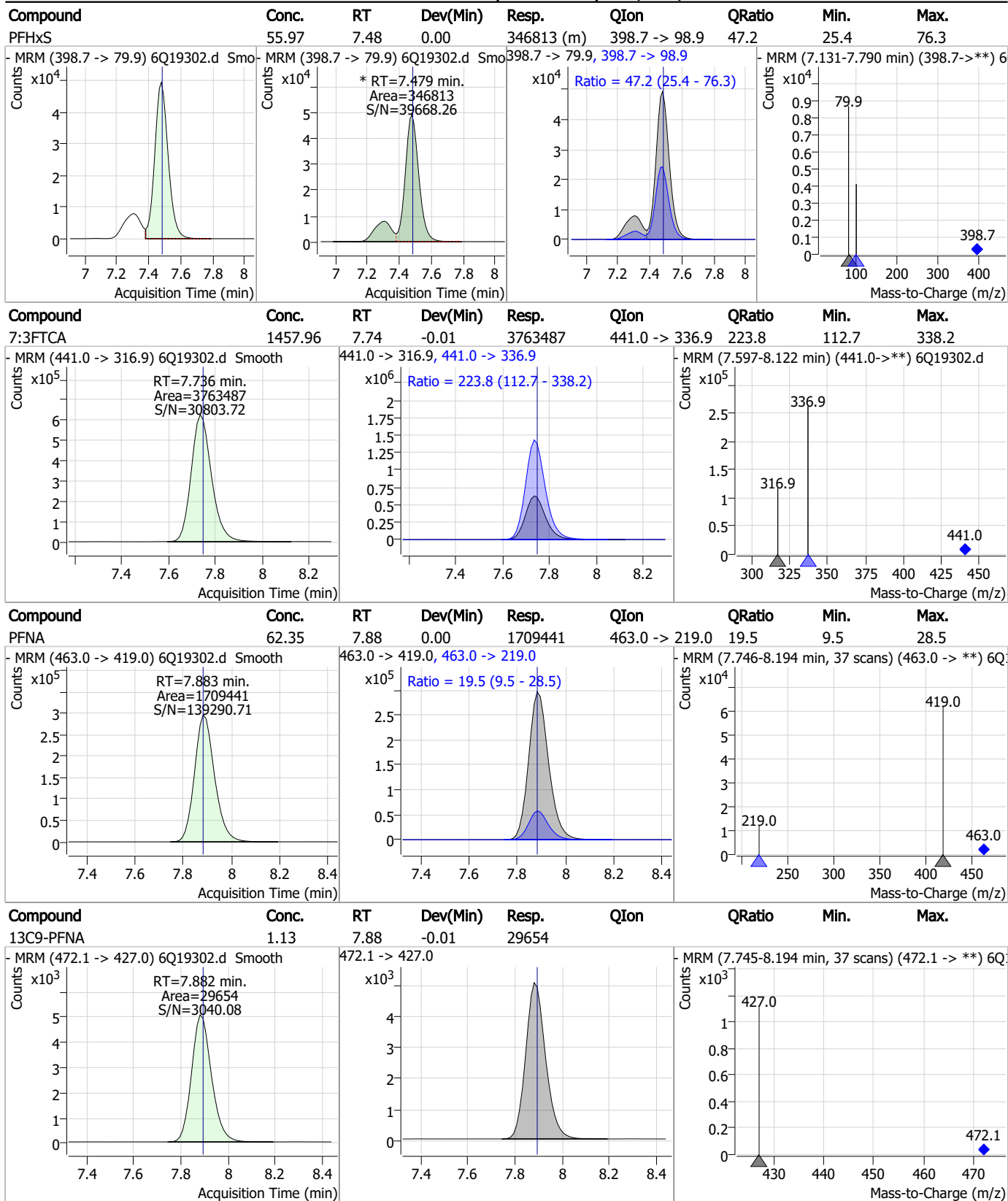
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	59.36	7.34	-0.01	2229390	413.0 -> 169.0	17.0	8.4	25.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.37	7.48	0.00	10290	402.1 -> 79.9	17.0	8.4	25.2

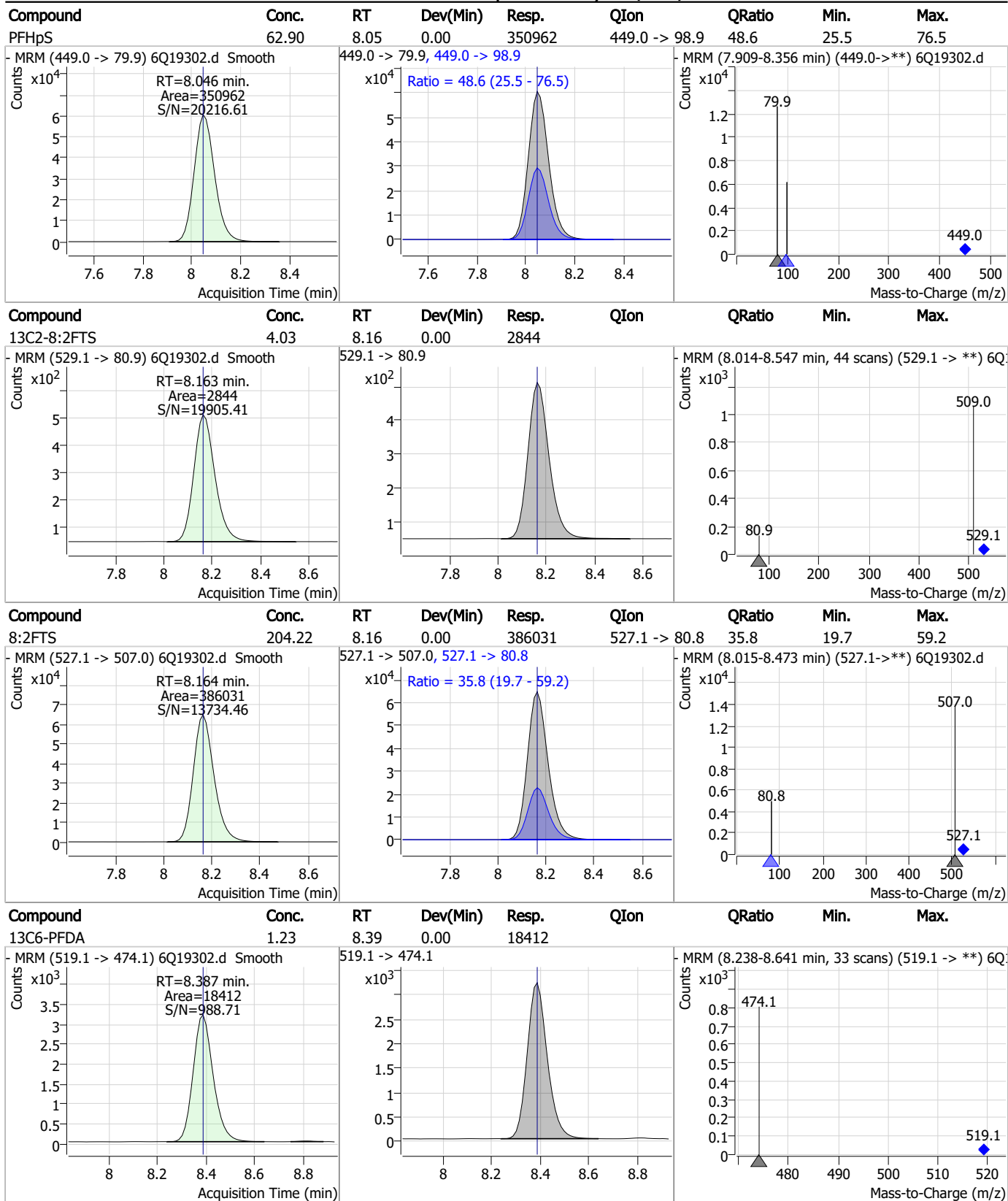


Perfluorinated Compounds by LC/MS/MS



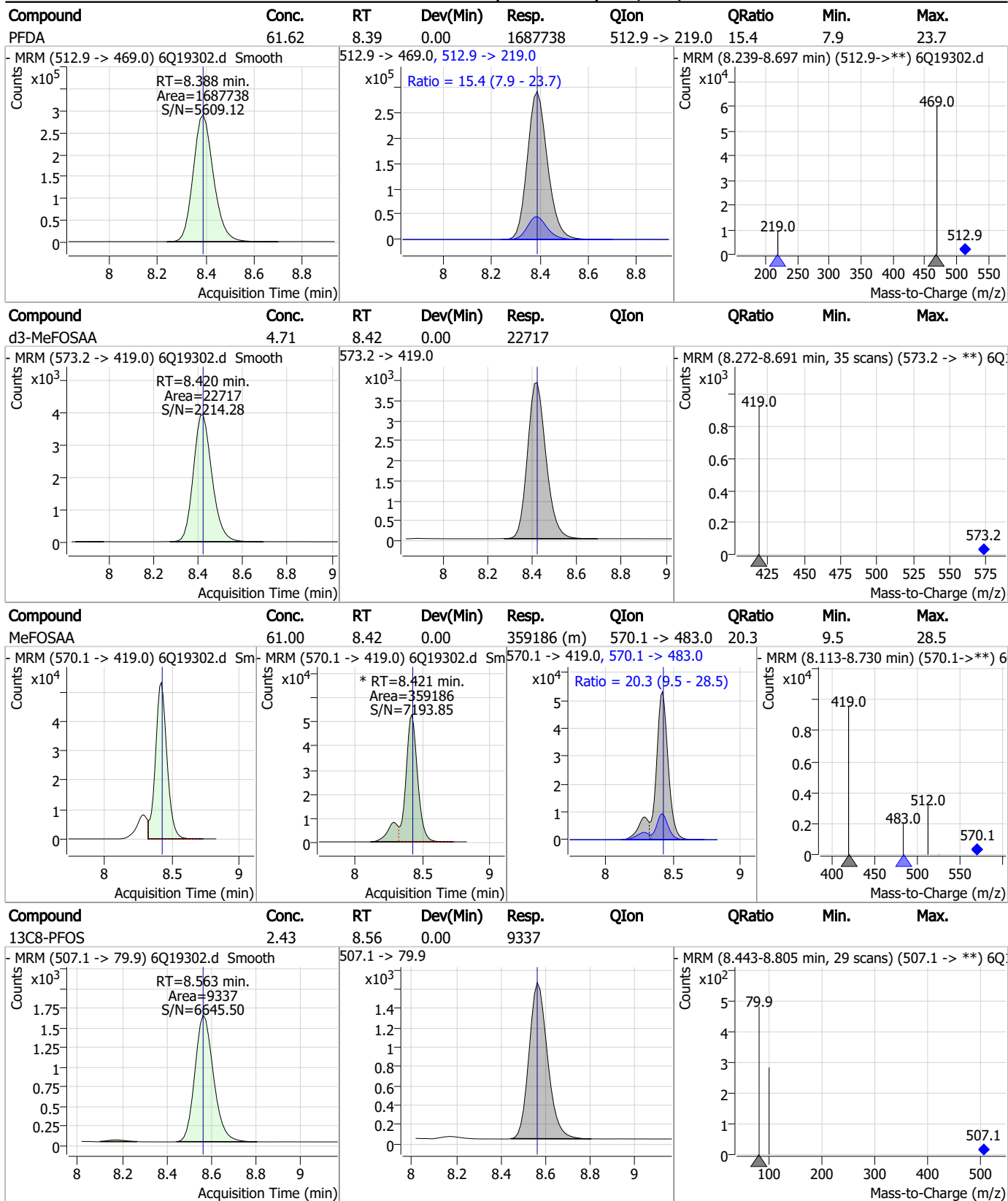
7.7.9
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Perfluorinated Compounds by LC/MS/MS



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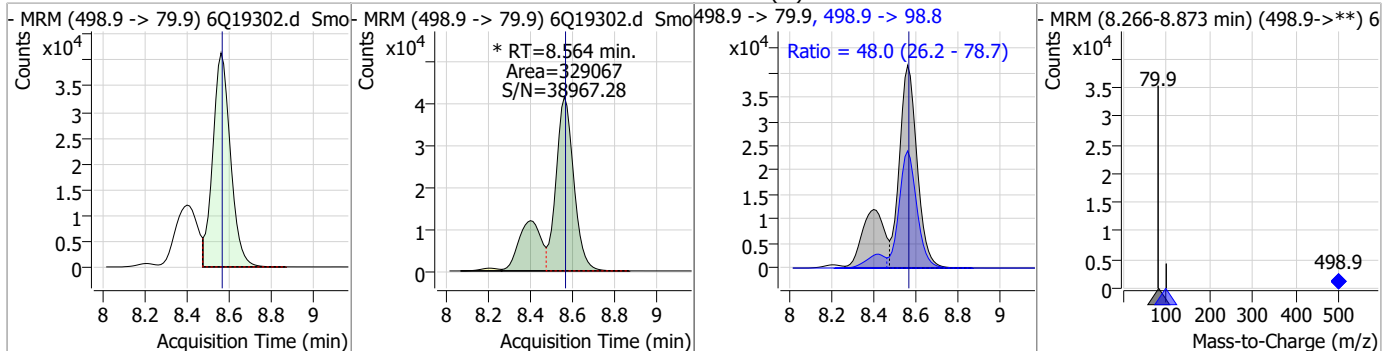
Perfluorinated Compounds by LC/MS/MS



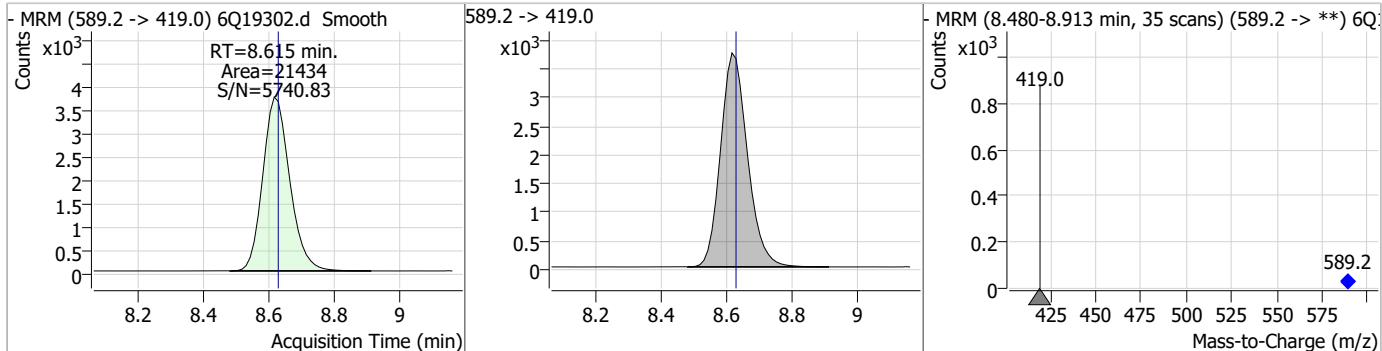
7.7.9
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Perfluorinated Compounds by LC/MS/MS

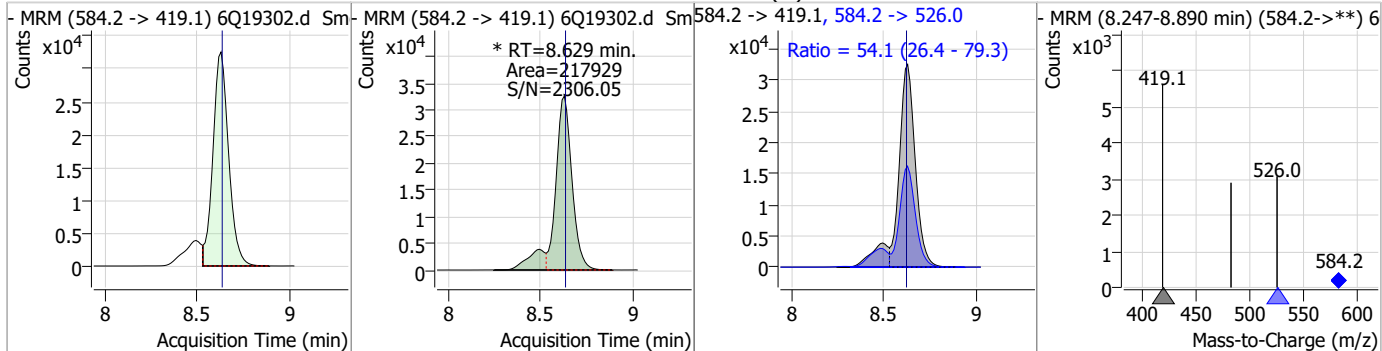
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	59.40	8.56	0.00	329067 (m)	498.9 -> 98.8	48.0	26.2	78.7



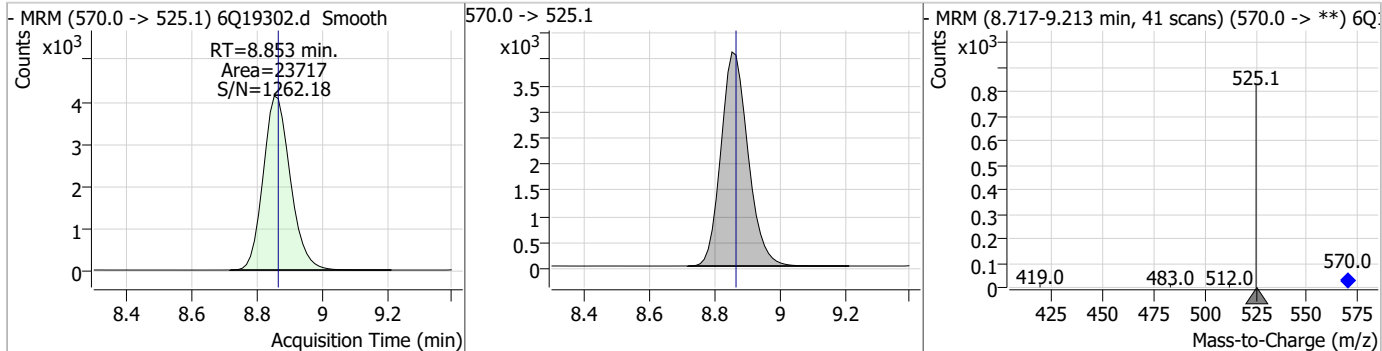
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.24	8.62	-0.01	21434				



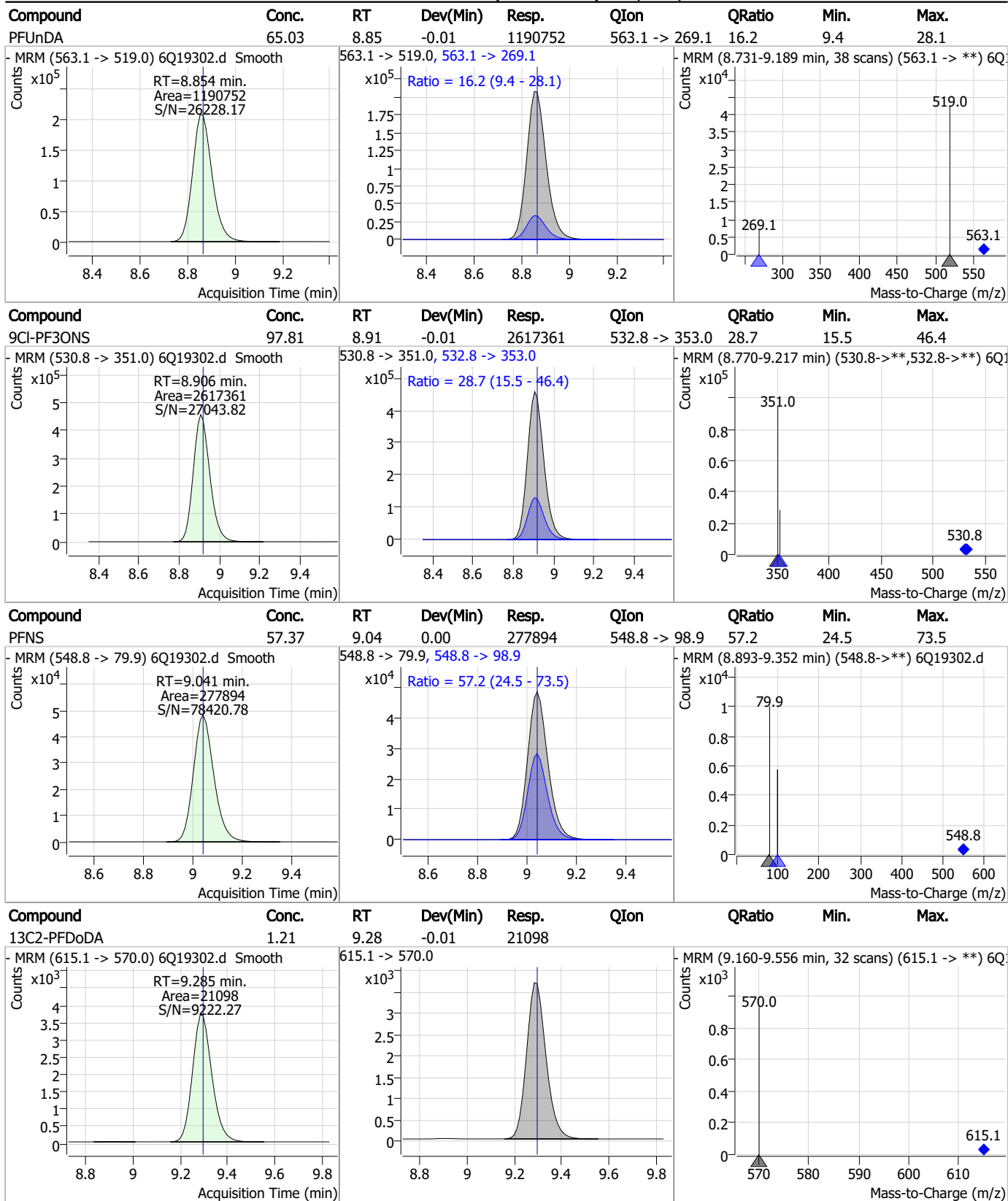
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	60.04	8.63	0.00	217929 (m)	584.2 -> 526.0	54.1	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.18	8.85	-0.01	23717				



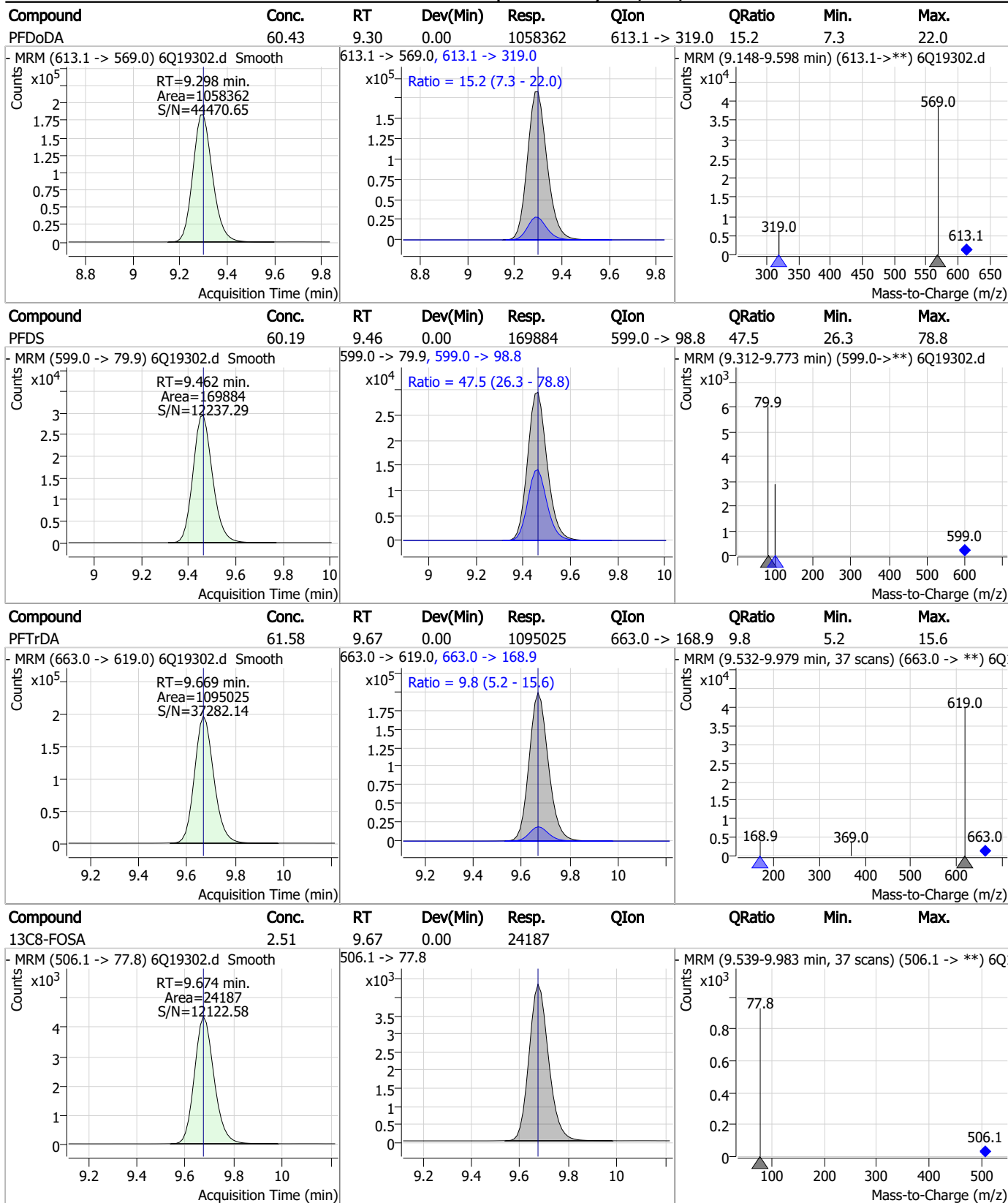
Perfluorinated Compounds by LC/MS/MS



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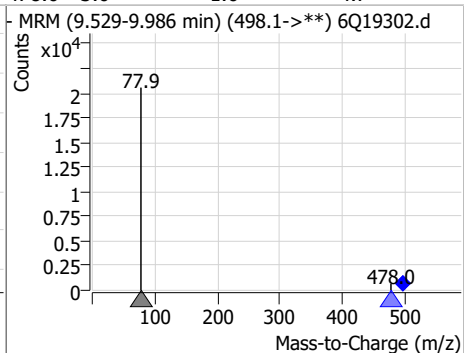
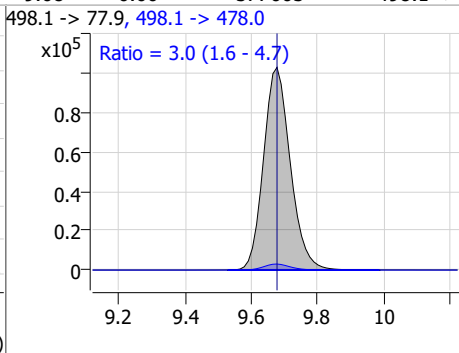
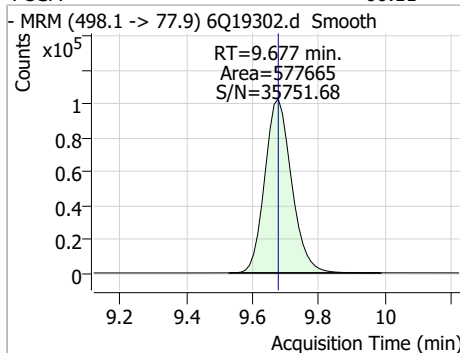
Perfluorinated Compounds by LC/MS/MS



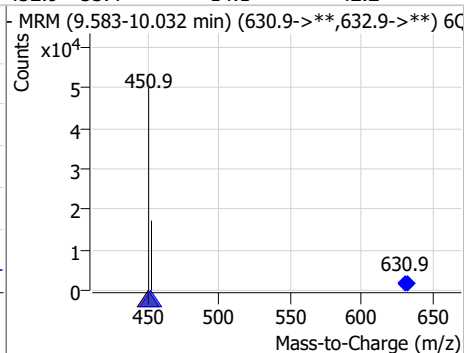
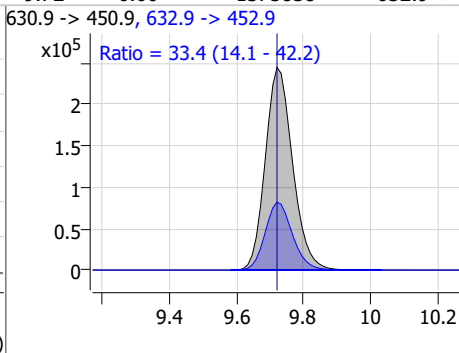
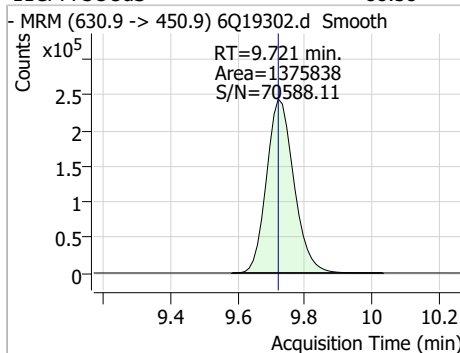
7.7.9
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Perfluorinated Compounds by LC/MS/MS

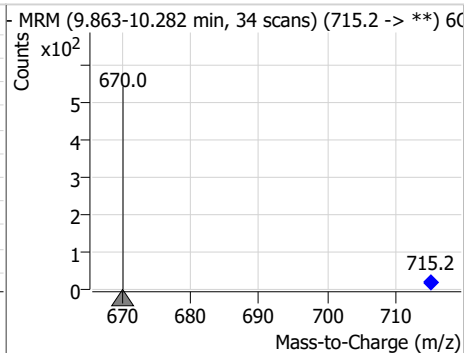
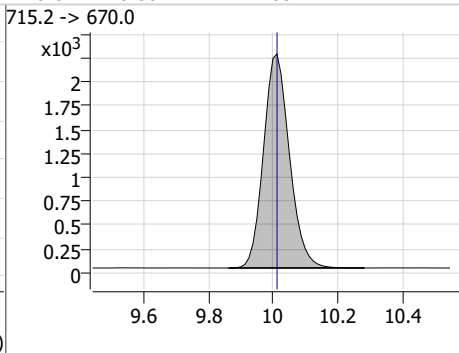
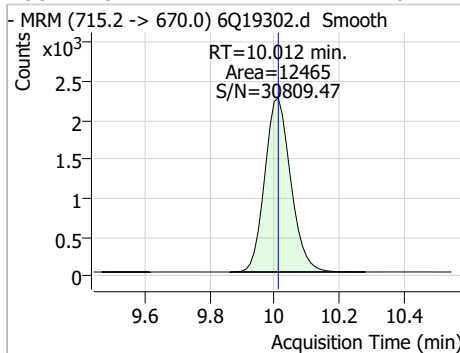
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	60.11	9.68	0.00	577665	498.1 -> 478.0	3.0	1.6	4.7



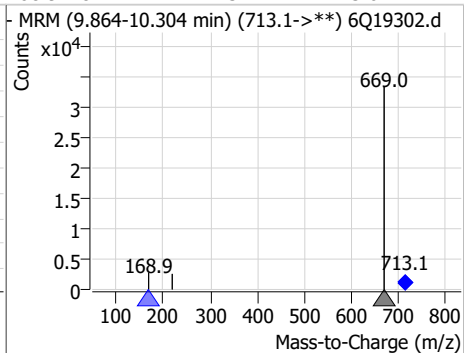
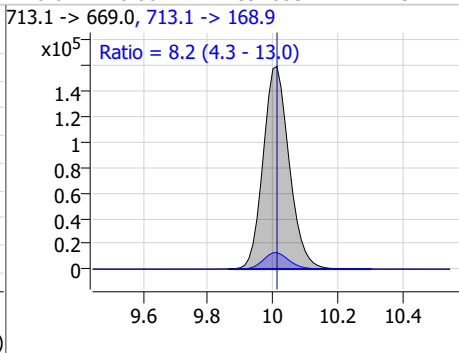
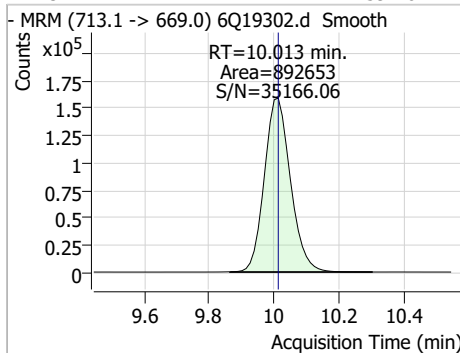
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	88.58	9.72	0.00	1375838	632.9 -> 452.9	33.4	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.28	10.01	0.00	12465	715.2 -> 670.0			

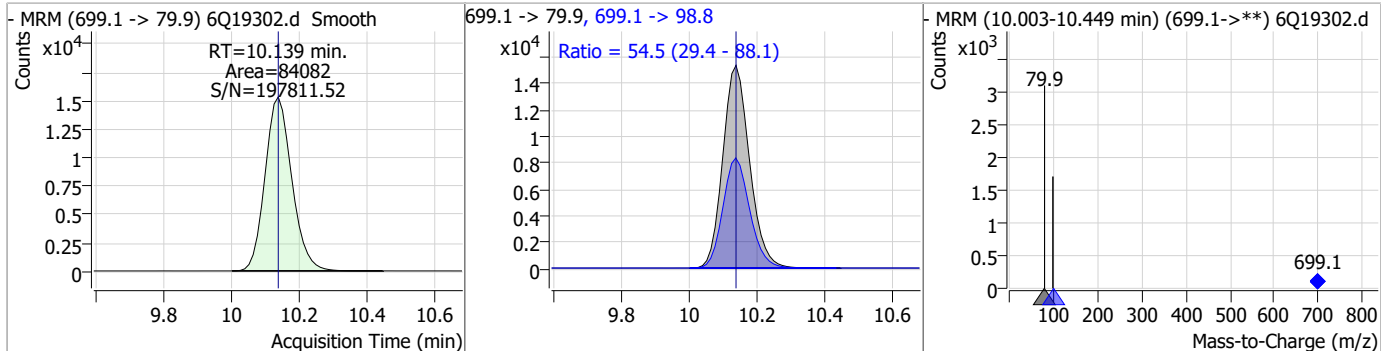


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	59.76	10.01	0.00	892653	713.1 -> 168.9	8.2	4.3	13.0

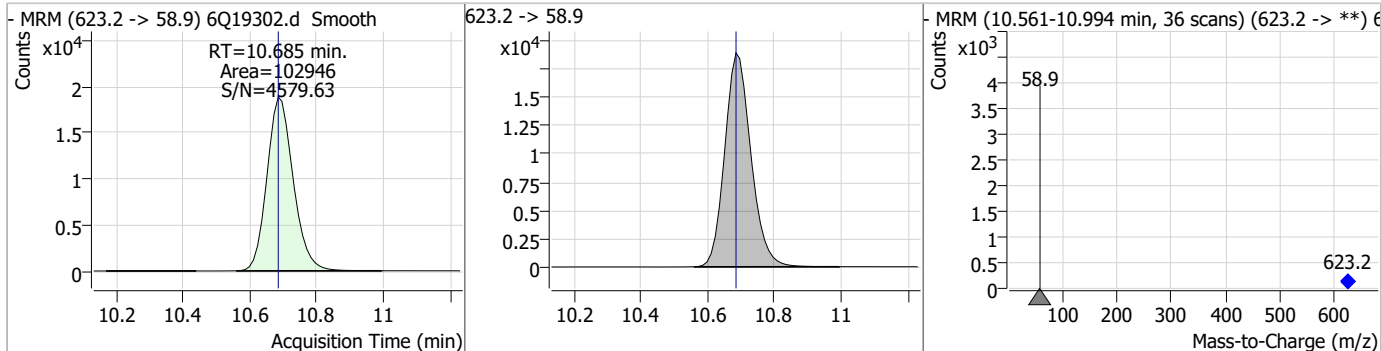


Perfluorinated Compounds by LC/MS/MS

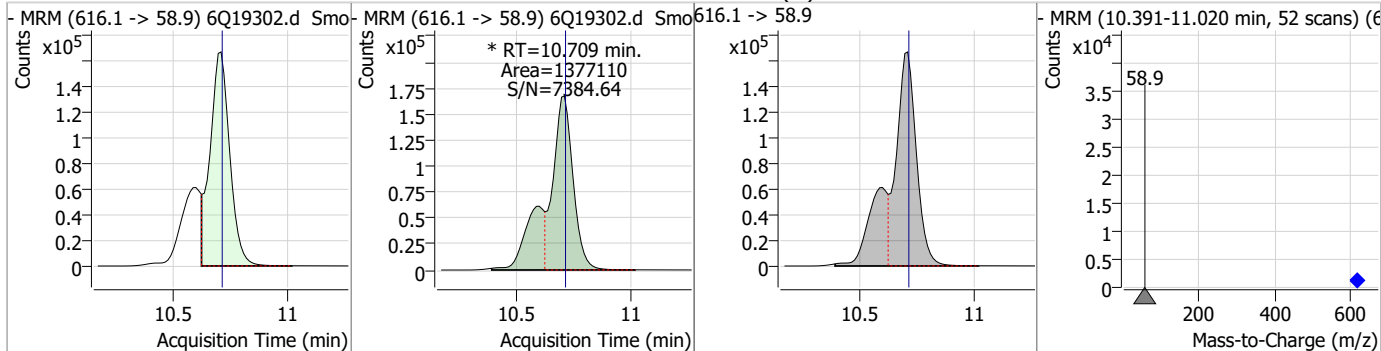
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	60.42	10.14	0.00	84082	699.1 -> 98.8	54.5	29.4	88.1



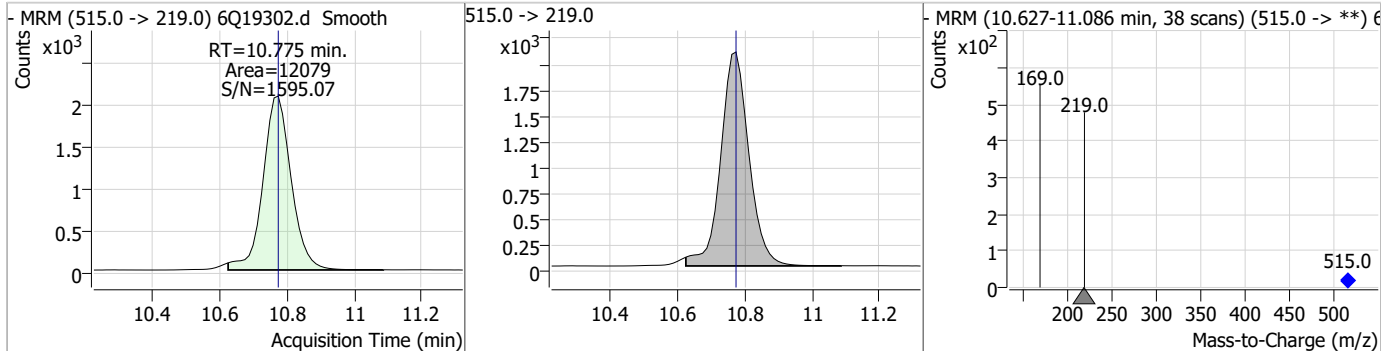
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.07	10.68	0.00	102946				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	308.67	10.71	0.00	1377110 (m)				

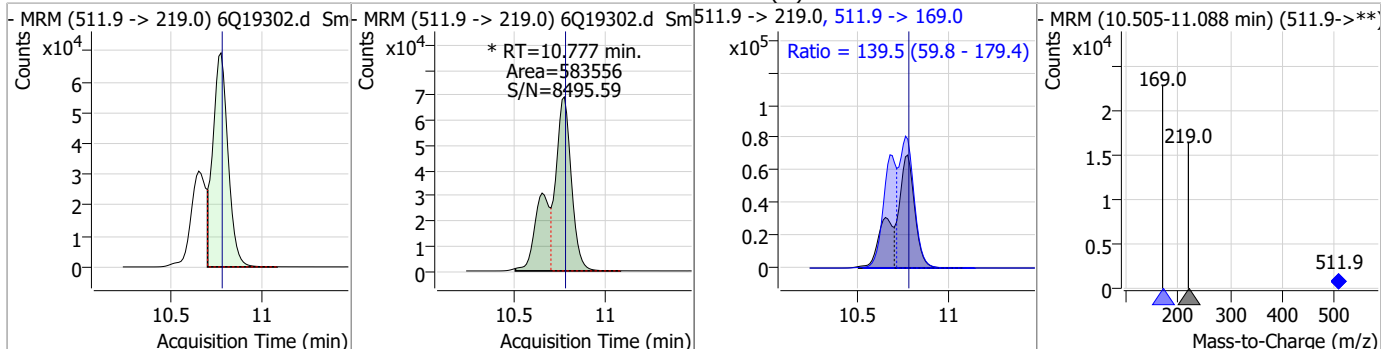


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.88	10.78	0.00	12079				

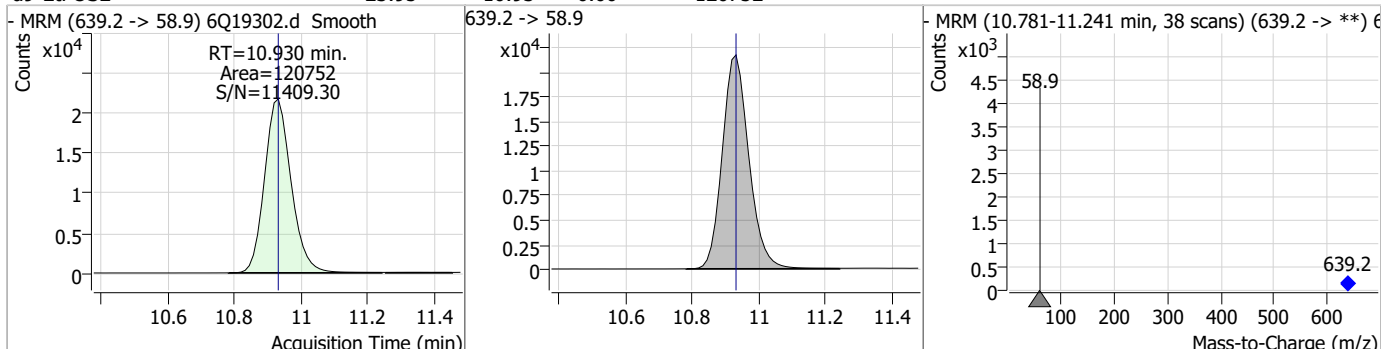


Perfluorinated Compounds by LC/MS/MS

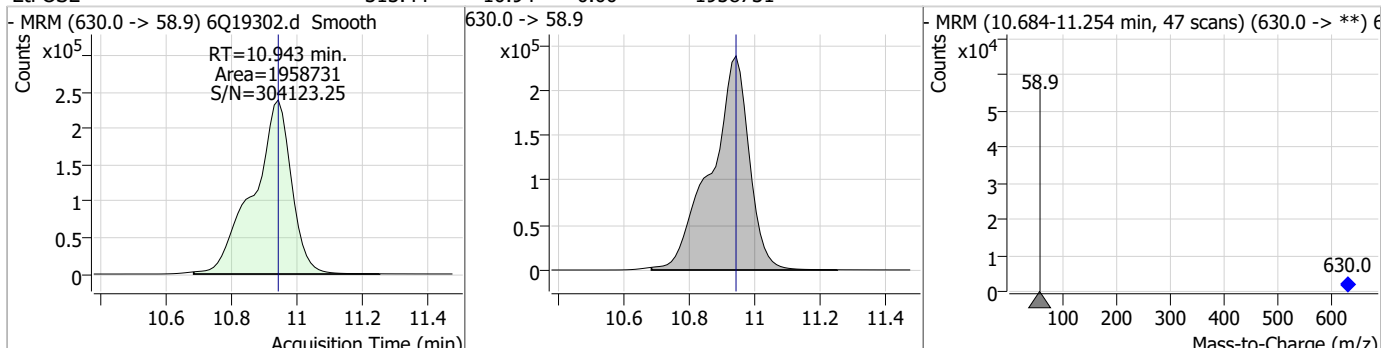
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	106.69	10.78	0.00	583556 (m)	511.9 -> 169.0	139.5	59.8	179.4



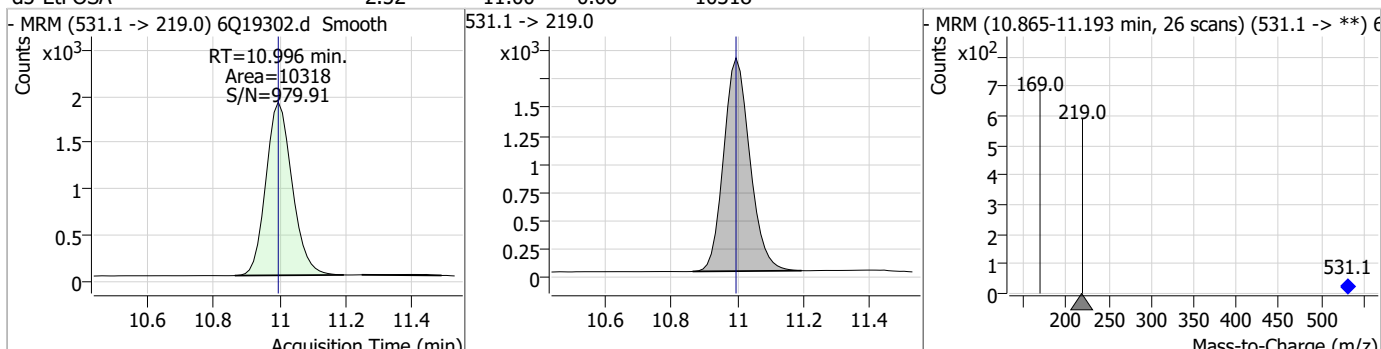
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.95	10.93	0.00	120752				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	313.44	10.94	0.00	1958731				

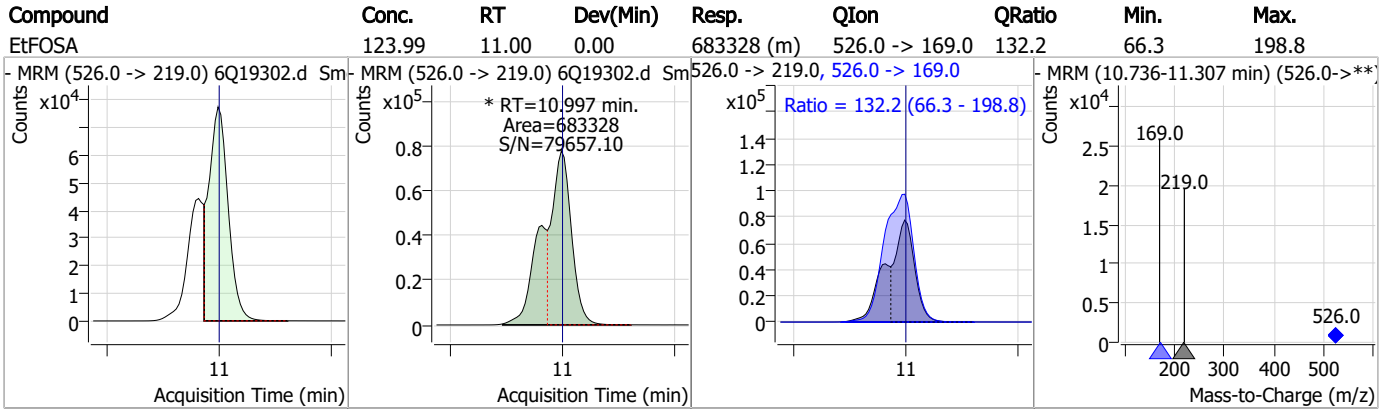


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.52	11.00	0.00	10318				



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q288-IC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19302.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 13:13 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak
EtFOSA	4151-50-2		11.00	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19304.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 1:41:39 PM
 Sample Name : icv288-4
 Vial : P1-B1
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	143600	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	46975	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	53110	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	47958	2.50 µg/L	0.000
M8-PFOA	7.352	421.1 -> 376.0	74512	2.50 µg/L	0.000
M9-PFNA	7.882	472.1 -> 427.0	35310	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	21193	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	28683	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	24687	1.25 µg/L	-0.012
M2-PFTeDA	10.012	715.2 -> 670.0	13388	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	27399	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	17757	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	11222	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	11483	2.50 µg/L	0.000
M2-4:2FTS	5.442	329.1 -> 80.9	3016	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	4430	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	4211	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	26983	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	33525	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	22950	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	125555	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	143450	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11955	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11821	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	14926	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	60965	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	8341	2.50 µg/L	0.000
13C4-PFOA	7.352	417.1 -> 372.0	79640	2.50 µg/L	0.000
13C2-PFDA	8.388	515.1 -> 470.1	29028	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	46812	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	46664	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	3016	6.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.5%		
13C2-6:2FTS	7.113	429.1 -> 80.9	4430	5.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.2%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4211	5.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.5%		
13C2-PFDoDA	9.285	615.1 -> 570.0	24687	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-PFTeDA	10.012	715.2 -> 670.0	13388	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-PFBS	5.746	302.1 -> 79.9	17757	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C3-PFHxS	7.478	402.1 -> 79.9	11222	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 = 102.4%		
13C4-PFBA	3.085	216.8 -> 171.9	143600	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C4-PFHpA	6.707	367.1 -> 322.0	47958	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C5-PFHxA	5.792	318.0 -> 273.0	53110	2.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C5-PFPeA	4.560	268.3 -> 223.0	46975	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C6-PFDA	8.387	519.1 -> 474.1	21193	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C7-PFUnDA	8.853	570.0 -> 525.1	28683	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C8-FOSA	9.674	506.1 -> 77.8	27399	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C8-PFOA	7.352	421.1 -> 376.0	74512	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C8-PFOS	8.563	507.1 -> 79.9	11483	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C9-PFNA	7.882	472.1 -> 427.0	35310	1.24 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
d3-MeFOSAA	8.420	573.2 -> 419.0	26983	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C3-HFPO-DA	6.169	286.9 -> 168.9	33525	10.40 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
d3-MeFOSA	10.775	515.0 -> 219.0	11821	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
d5-EtFOSAA	8.615	589.2 -> 419.0	22950	4.79 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.8%		
d7-MeFOSE	10.685	623.2 -> 58.9	125555	25.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
d9-EtFOSE	10.930	639.2 -> 58.9	143450	24.30 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.2%		
d5-EtFOSA	10.996	531.1 -> 219.0	11955	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.7%		
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	50547	9.64 µg/L	93
		327.1 -> 80.9	16818		
6:2FTS	7.113	427.1 -> 407.0	47223	8.95 µg/L	95
		427.1 -> 80.9	16703		
8:2FTS	8.164	527.1 -> 507.0	25560	9.13 µg/L	98
		527.1 -> 80.8	10452		
EtFOSAA	8.629	584.2 -> 419.1	10028	2.58 µg/L	m 96
		584.2 -> 526.0	4998		
FOSA	9.677	498.1 -> 77.9	26975	2.48 µg/L	100
		498.1 -> 478.0	822		
MeFOSAA	8.421	570.1 -> 419.0	18585	2.66 µg/L	m 100
		570.1 -> 483.0	3557		
PFBA	3.093	212.8 -> 168.9	57267	9.90 µg/L	100
PFBS	5.747	298.7 -> 79.9	18008	2.27 µg/L	98
		298.7 -> 98.8	6636		
PFDA	8.388	512.9 -> 469.0	77790	2.47 µg/L	97
		512.9 -> 219.0	11395		
PFDODA	9.298	613.1 -> 569.0	50430	2.46 µg/L	99
		613.1 -> 319.0	7490		
PFDS	9.462	599.0 -> 79.9	8036	2.31 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	4058	2.44	µg/L	98
		363.1 -> 319.0	62363			
PFHpS	8.046	363.1 -> 169.0	10115	2.17	µg/L	96
		449.0 -> 79.9	14901			
PFHxA	5.795	449.0 -> 98.9	7967	2.41	µg/L	100
		313.0 -> 269.0	51699			
PFHxS	7.479	313.0 -> 118.9	2741	2.32	µg/L	94
		398.7 -> 79.9	15694			
PFNA	7.883	398.7 -> 98.9	7358	2.39	µg/L	98
		463.0 -> 419.0	78085			
PFNS	9.041	463.0 -> 219.0	15670	2.35	µg/L	97
		548.8 -> 79.9	13997			
PFOA	7.353	548.8 -> 98.9	7138	2.40	µg/L	100
		413.0 -> 369.0	98136			
PFOS	8.564	413.0 -> 169.0	16316	2.23	µg/L	91
		498.9 -> 79.9	15198			
PFPeA	4.563	498.9 -> 98.8	7036	4.95	µg/L	100
		263.0 -> 219.0	68707			
PFPeS	6.785	349.1 -> 79.9	14418	2.29	µg/L	98
		349.1 -> 98.9	6717			
PFTeDA	10.013	713.1 -> 669.0	42536	2.65	µg/L	99
		713.1 -> 168.9	3430			
PFTrDA	9.669	663.0 -> 619.0	48895	2.35	µg/L	99
		663.0 -> 168.9	5255			
PFUnDA	8.866	563.1 -> 519.0	53903	2.43	µg/L	96
		563.1 -> 269.1	9187			
11CI-PF3OUdS	9.721	630.9 -> 450.9	71322	4.67	µg/L	93
		632.9 -> 452.9	22932			
9CI-PF3ONS	8.906	530.8 -> 351.0	124073	4.72	µg/L	100
		532.8 -> 353.0	38211			
ADONA	6.959	376.9 -> 250.9	247867	4.57	µg/L	99
		376.9 -> 84.8	72947			
HFPO-DA	6.169	284.9 -> 168.9	17508	4.99	µg/L	100
		284.9 -> 184.9	2039			
3:3FTCA	3.946	241.0 -> 177.0	11297	12.04	µg/L	99
		241.0 -> 117.0	1495			
5:3FTCA	6.374	341.0 -> 237.1	241276	56.63	µg/L	99
		341.0 -> 217.0	182018			
7:3FTCA	7.748	441.0 -> 316.9	177132	61.49	µg/L	98
		441.0 -> 336.9	394086			
EtFOSA	10.997	526.0 -> 219.0	31160	4.88	µg/L	98
		526.0 -> 169.0	40747			
EtFOSE	10.943	630.0 -> 58.9	96074	12.94	µg/L	100
		511.9 -> 219.0	26617			
MeFOSA	10.777	511.9 -> 169.0	36956	4.97	µg/L	83
		616.1 -> 58.9	66353			
MeFOSE	10.709	699.1 -> 79.9	3916	12.19	µg/L	100
		699.1 -> 98.8	2308			
PFDoDS	10.139	295.0 -> 201.0	13450	2.29	µg/L	100
		295.0 -> 84.9	3576			
NFDHA	5.673	279.0 -> 85.1	49516	4.91	µg/L	100
		229.0 -> 84.9	38038			
PFMBA	4.988	314.8 -> 134.9	130995	4.52	µg/L	99
		314.8 -> 82.9	4086			

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



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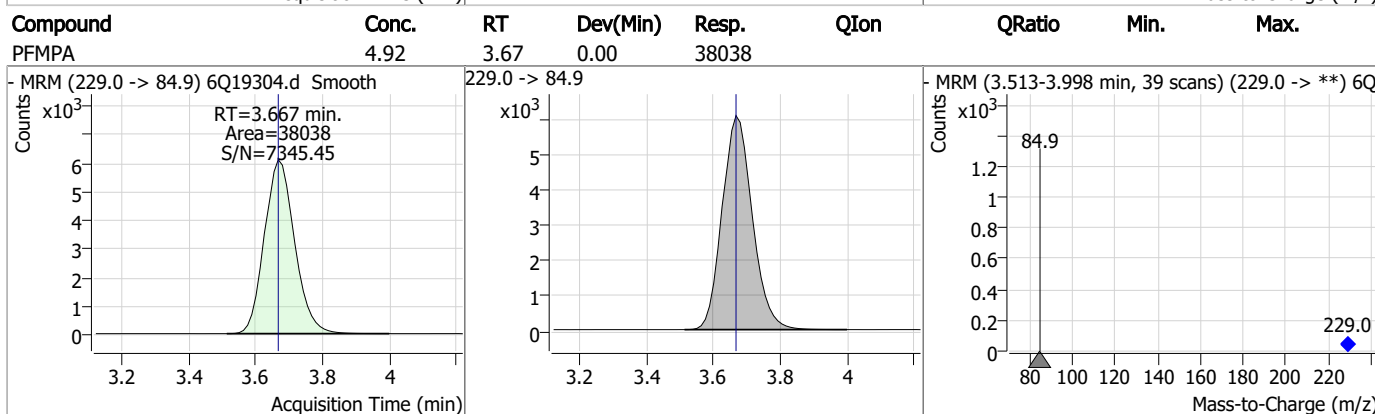
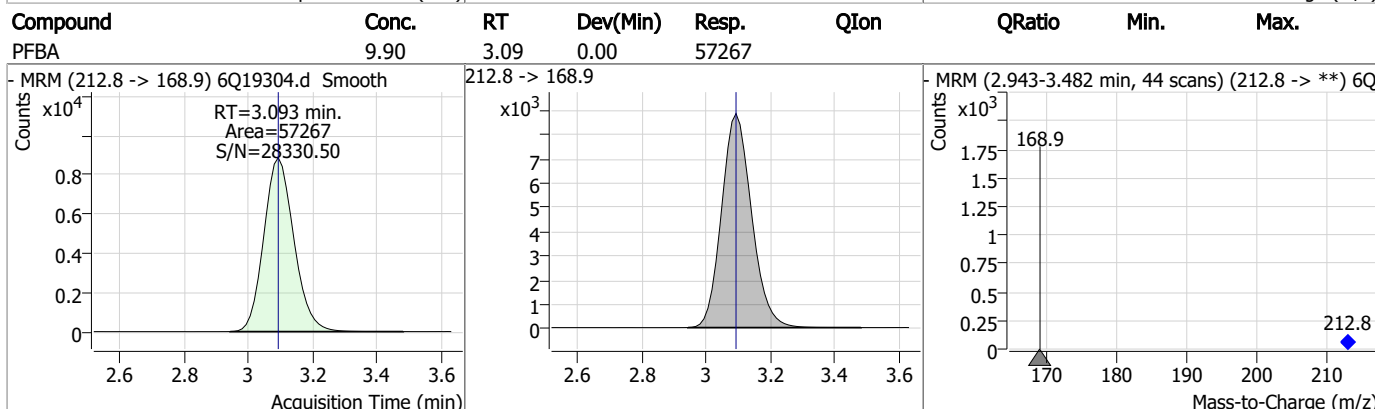
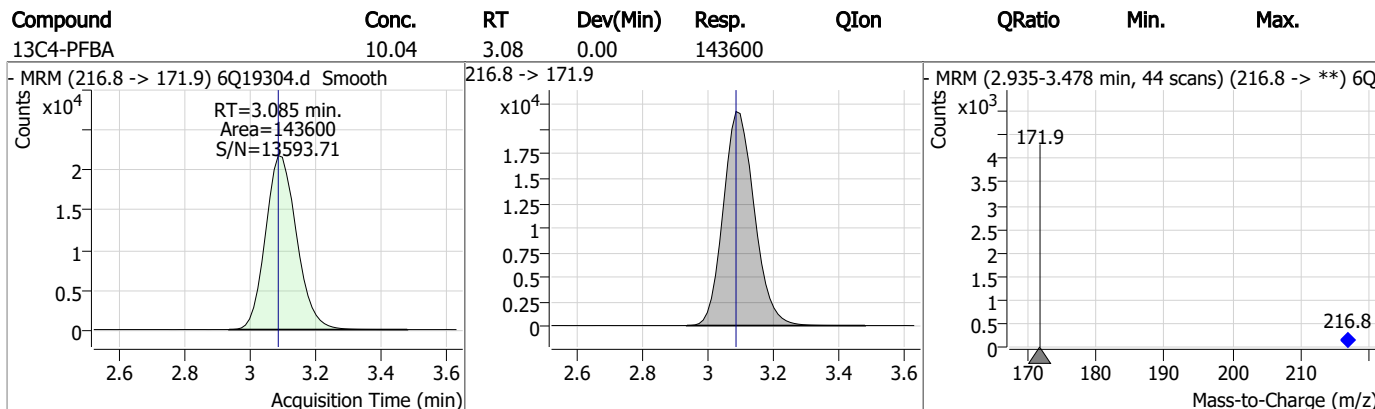
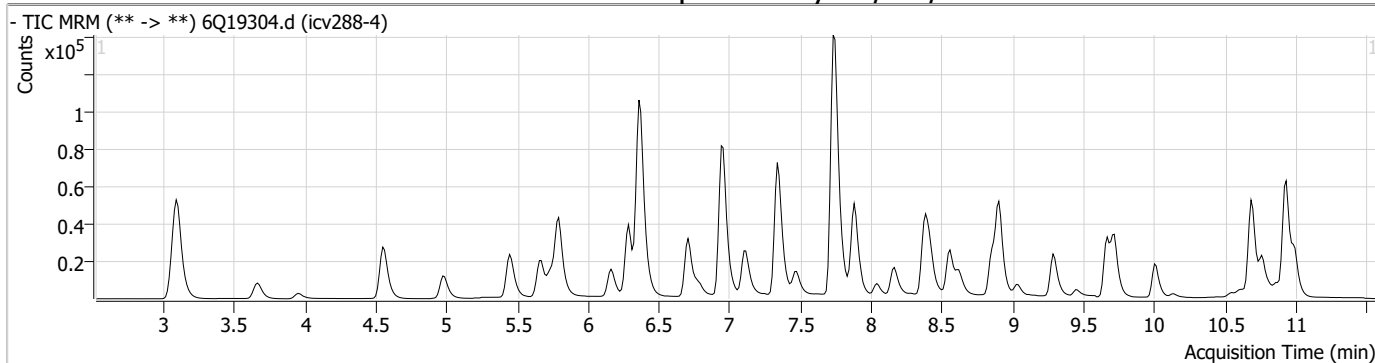
Perfluorinated Compounds by LC/MS/MS

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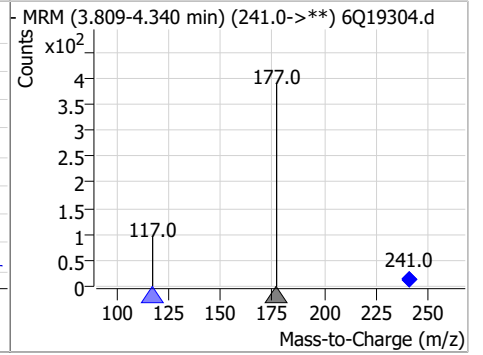
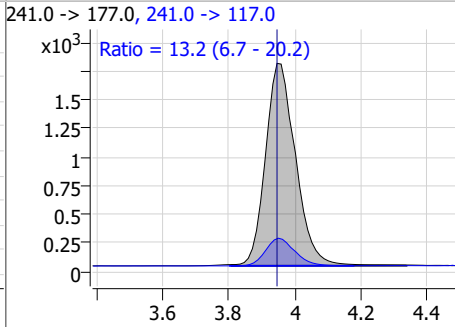
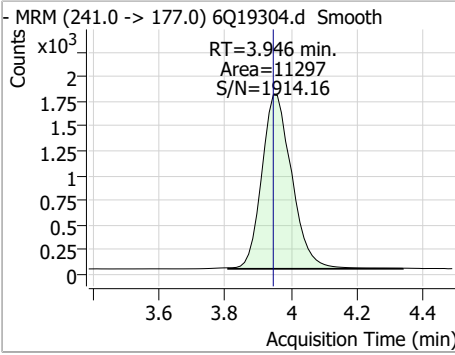
Perfluorinated Compounds by LC/MS/MS



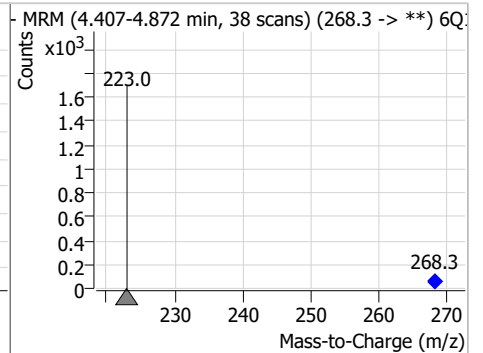
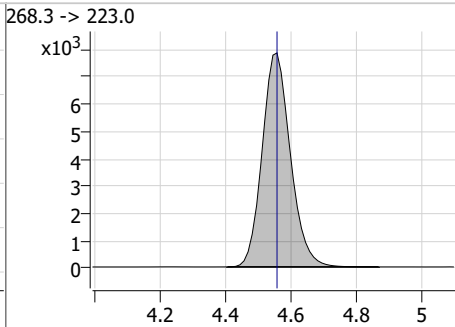
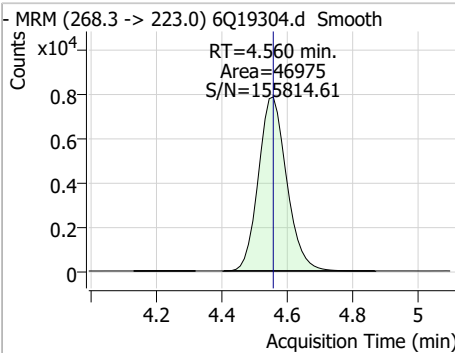
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Perfluorinated Compounds by LC/MS/MS

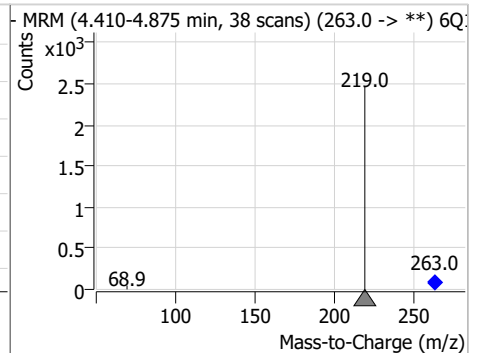
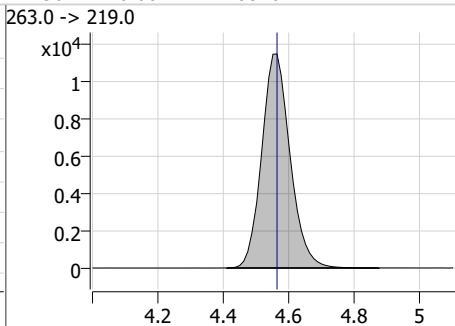
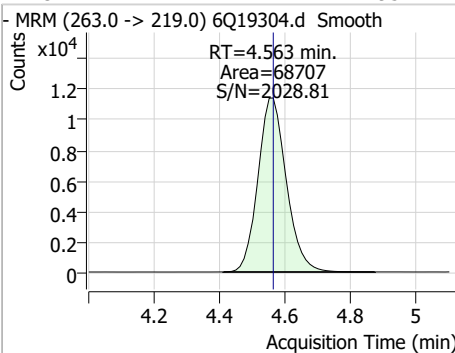
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	12.04	3.95	0.00	11297	241.0 -> 117.0	13.2	6.7	20.2



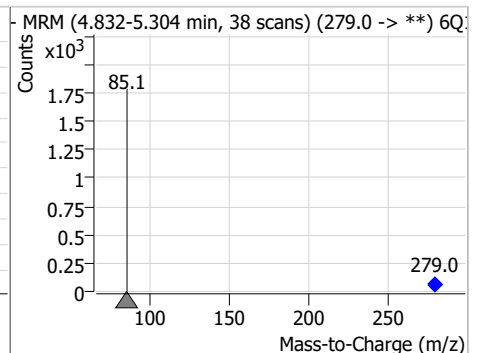
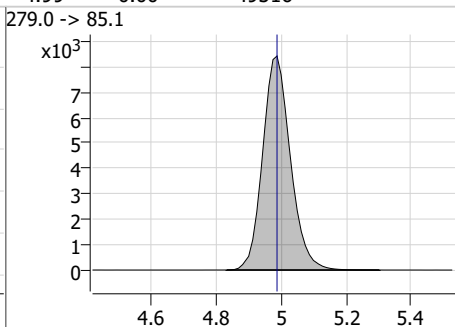
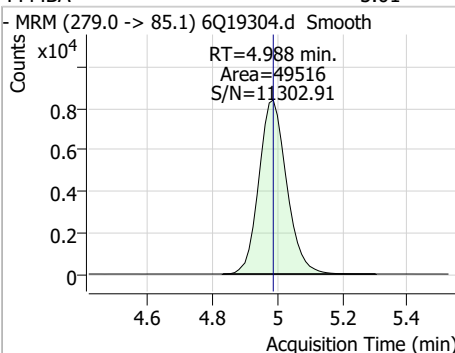
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.32	4.56	0.00	46975	268.3 -> 223.0			



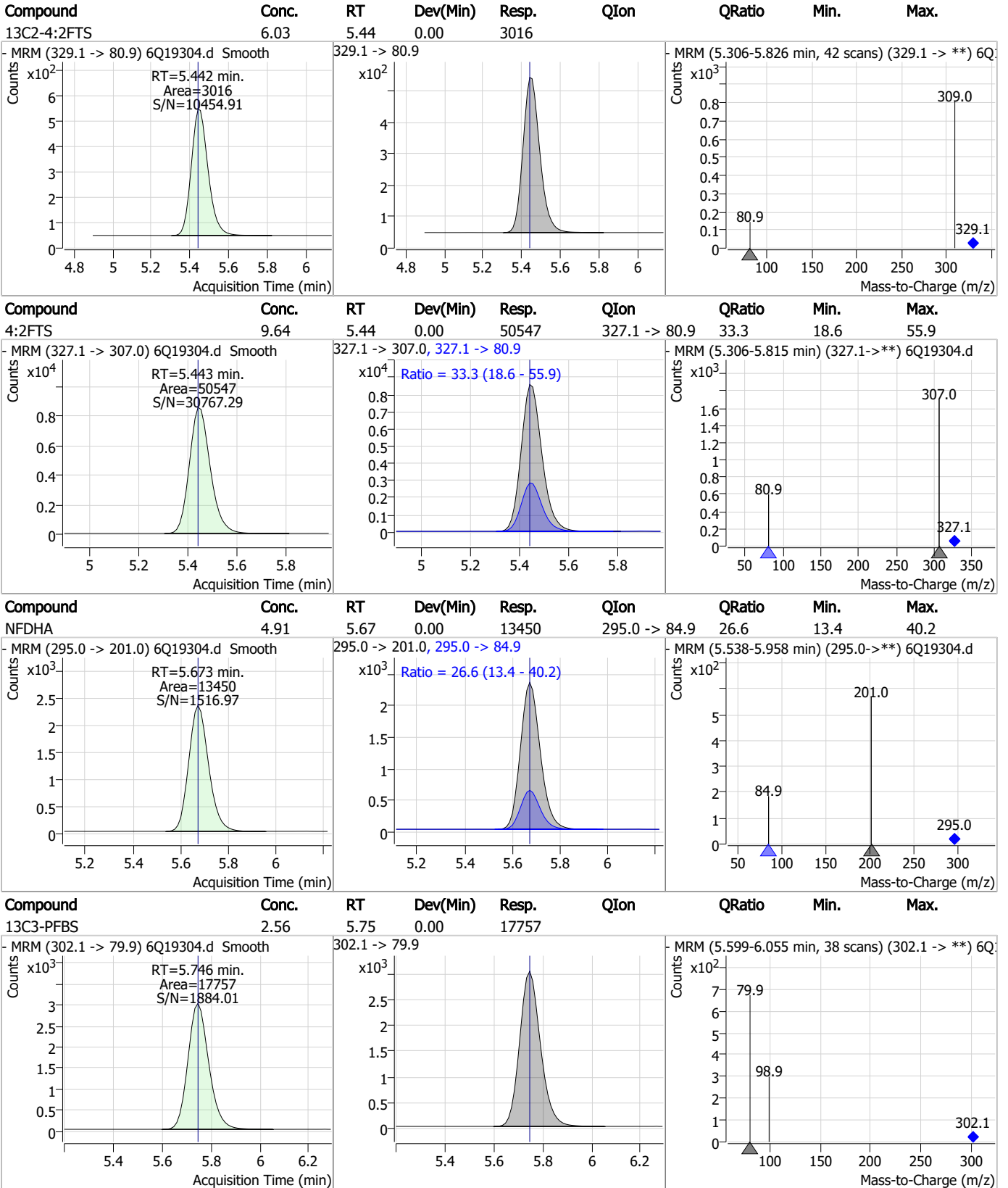
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.95	4.56	0.00	68707	263.0 -> 219.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	5.01	4.99	0.00	49516	279.0 -> 85.1			



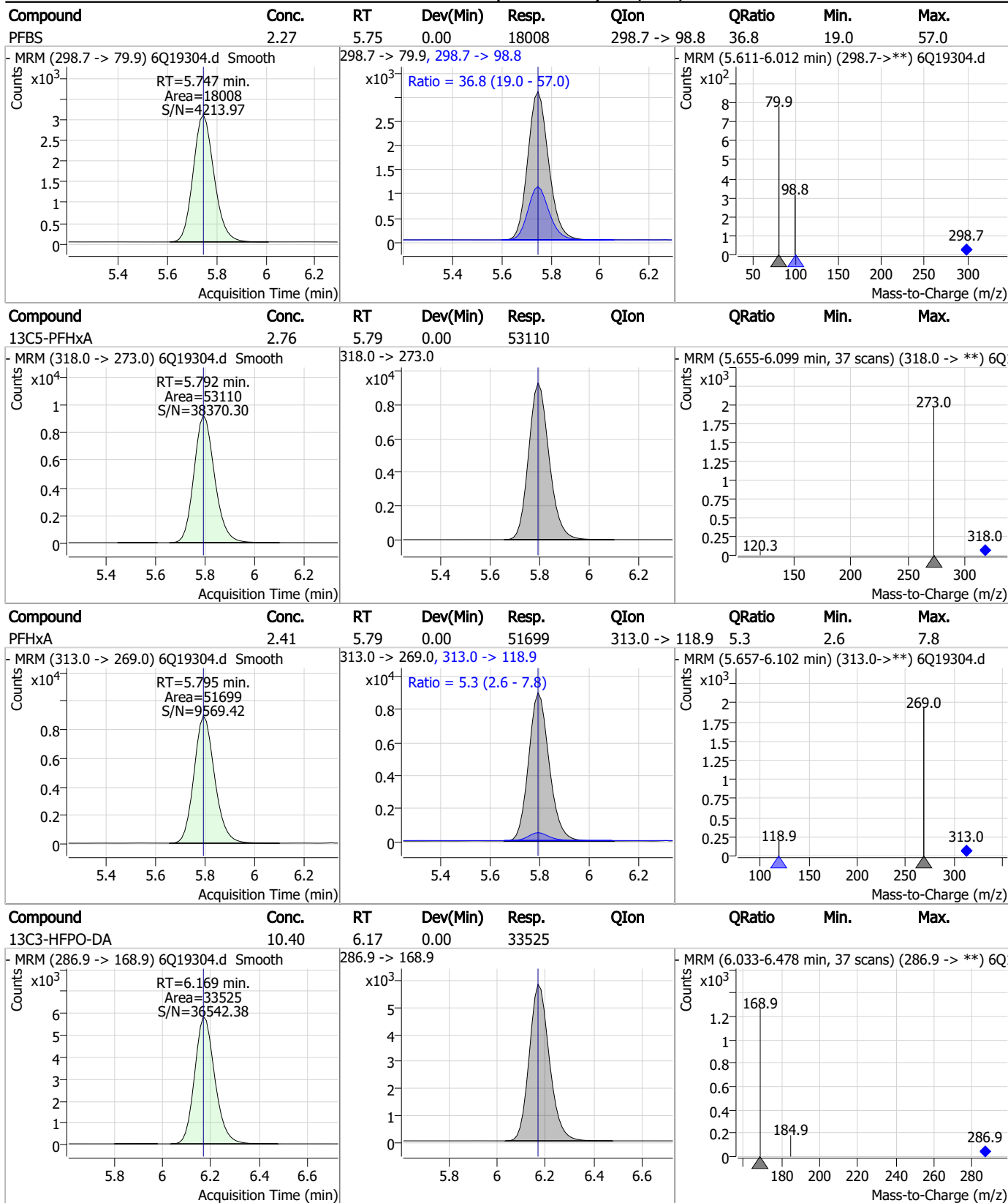
Perfluorinated Compounds by LC/MS/MS



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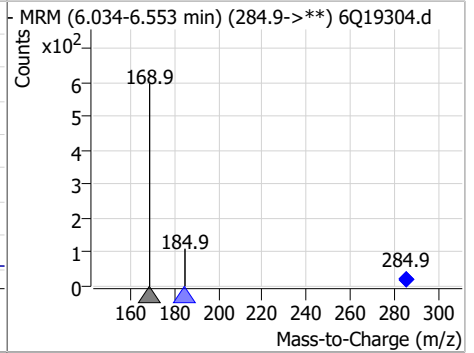
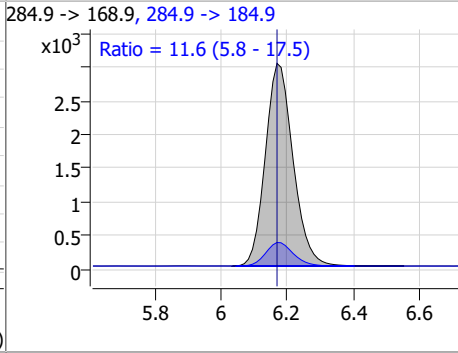
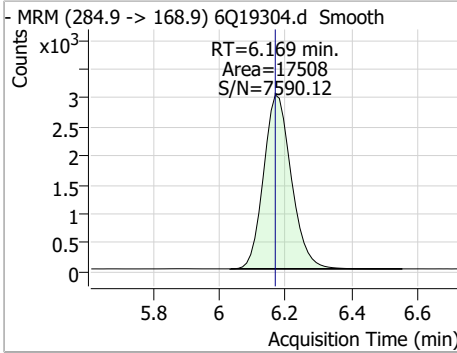
Perfluorinated Compounds by LC/MS/MS



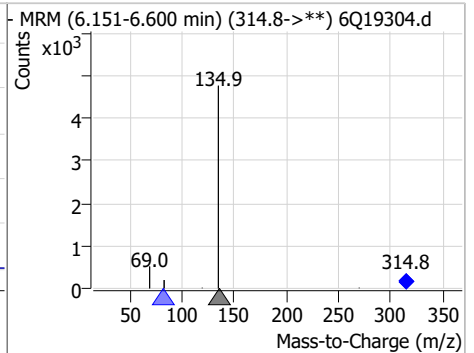
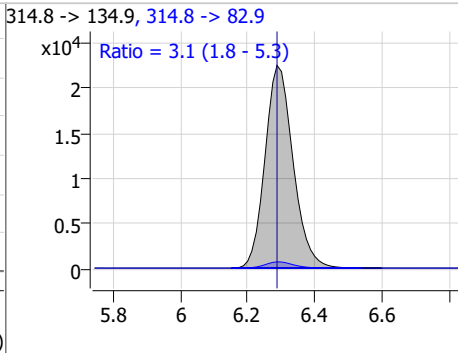
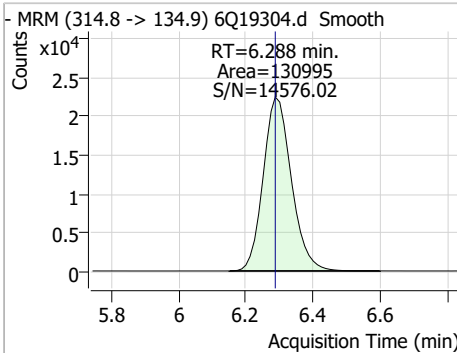
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Perfluorinated Compounds by LC/MS/MS

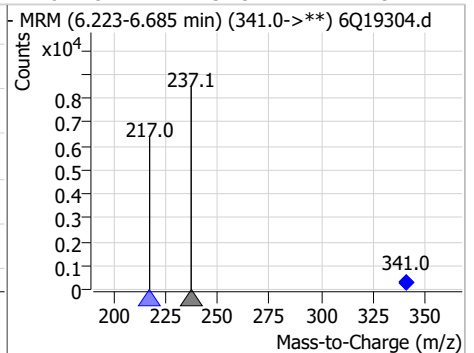
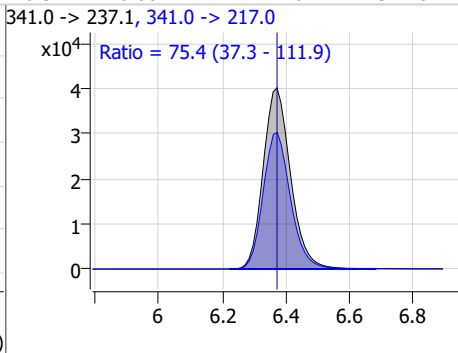
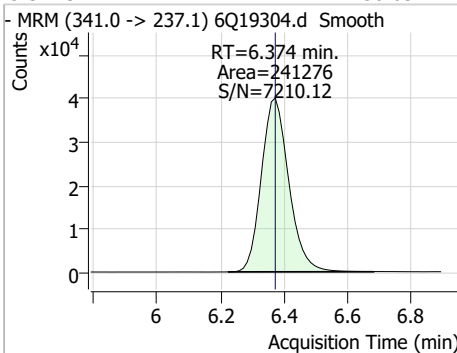
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.99	6.17	0.00	17508	284.9 -> 184.9	11.6	5.8	17.5



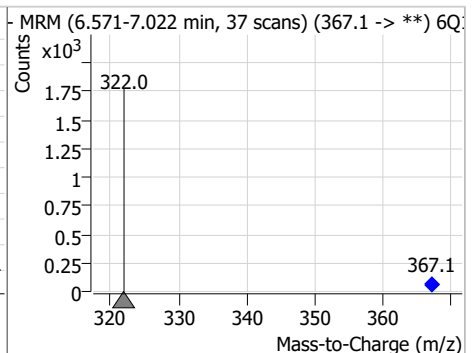
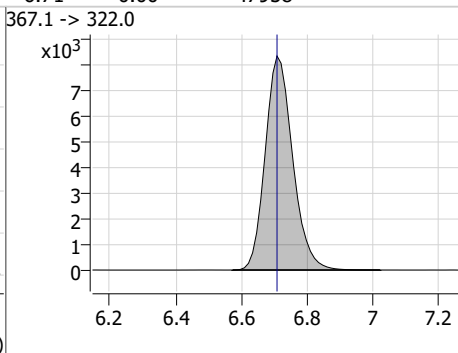
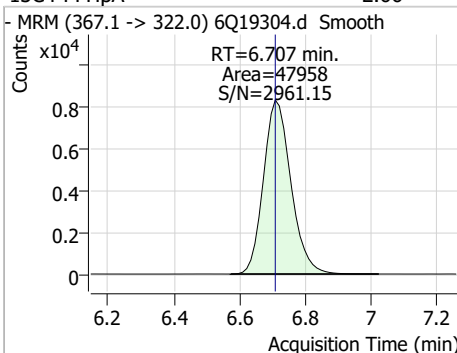
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.52	6.29	0.00	130995	314.8 -> 82.9	3.1	1.8	5.3



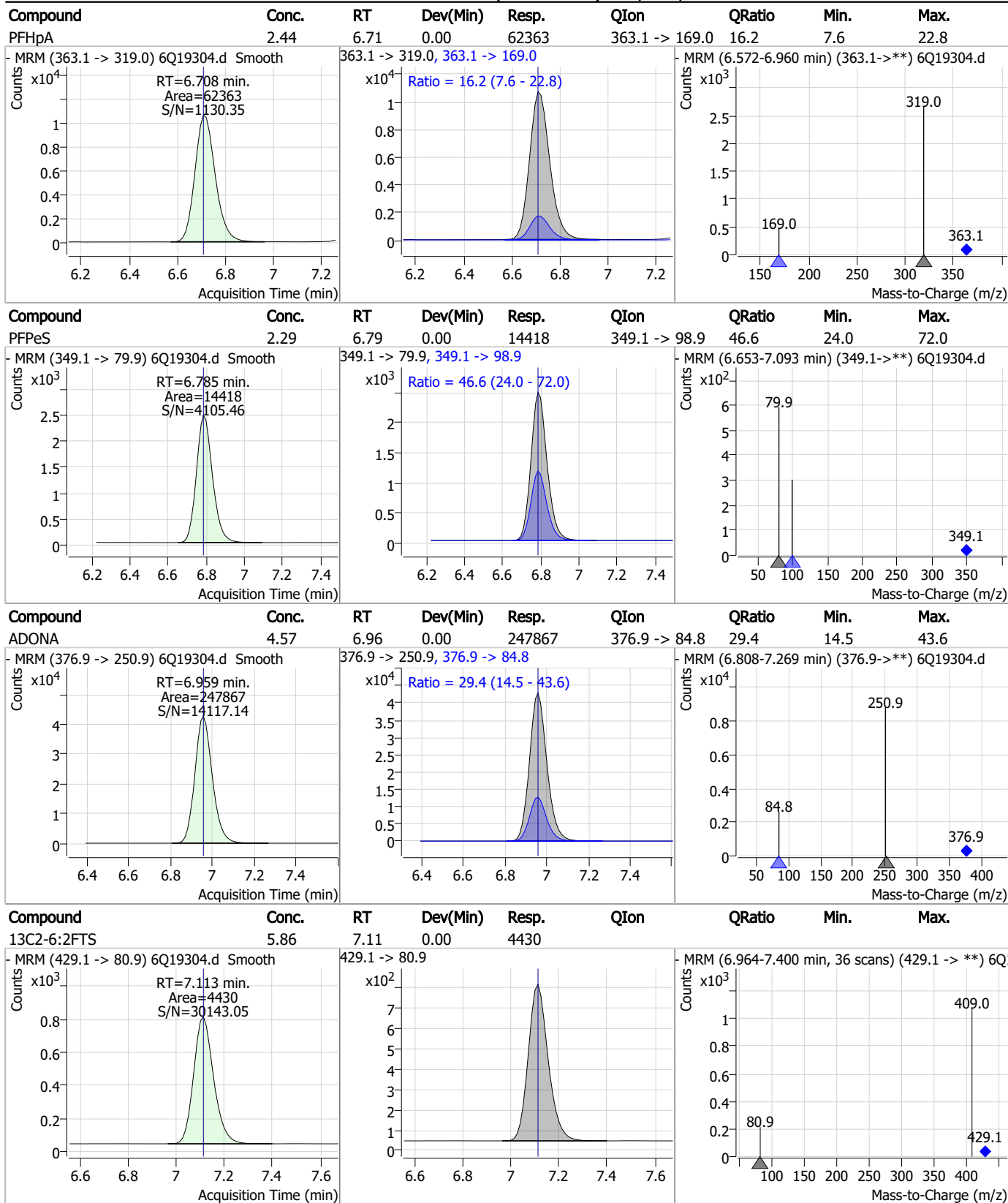
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	56.63	6.37	0.00	241276	341.0 -> 217.0	75.4	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.66	6.71	0.00	47958	367.1 -> 322.0			

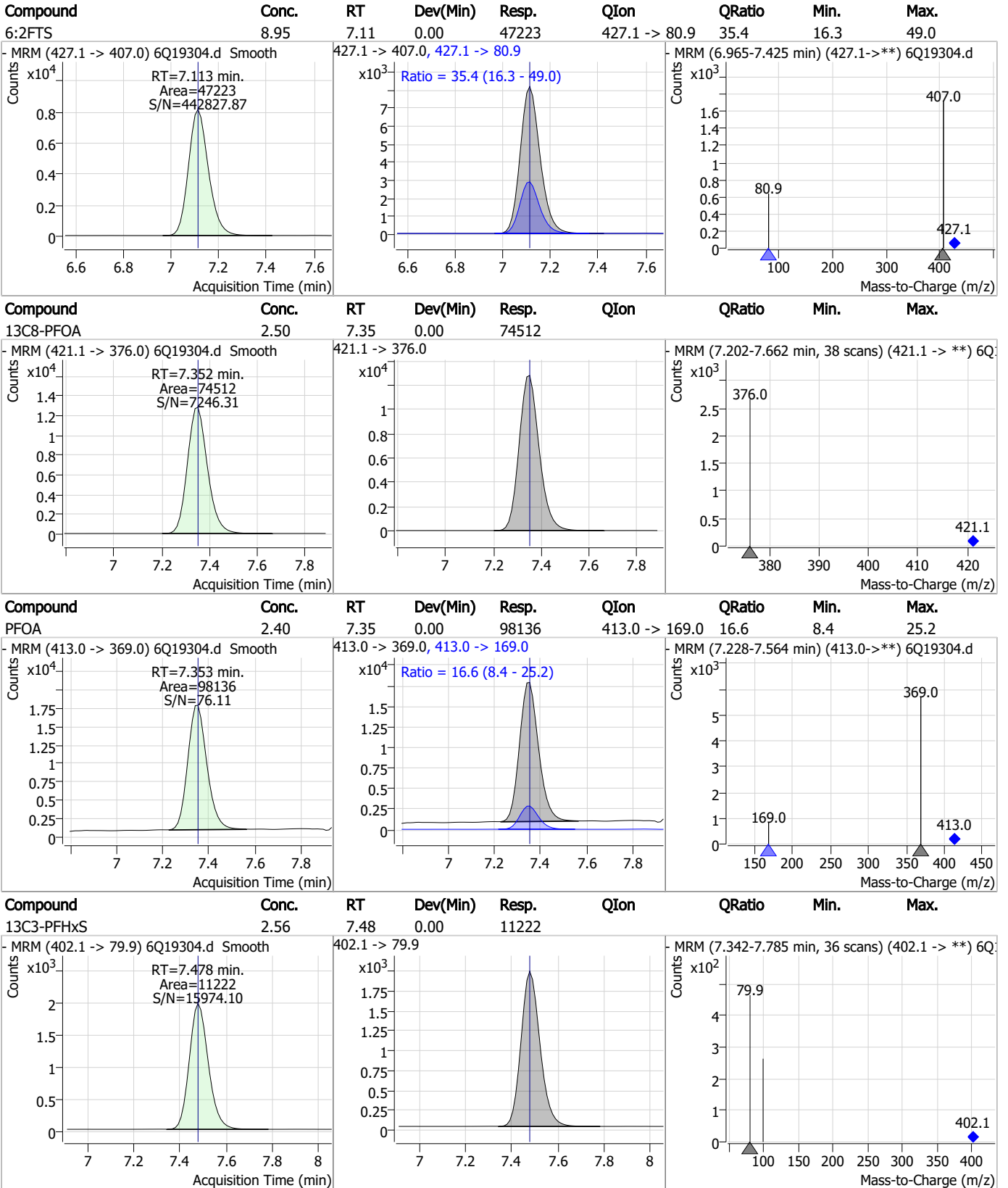


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

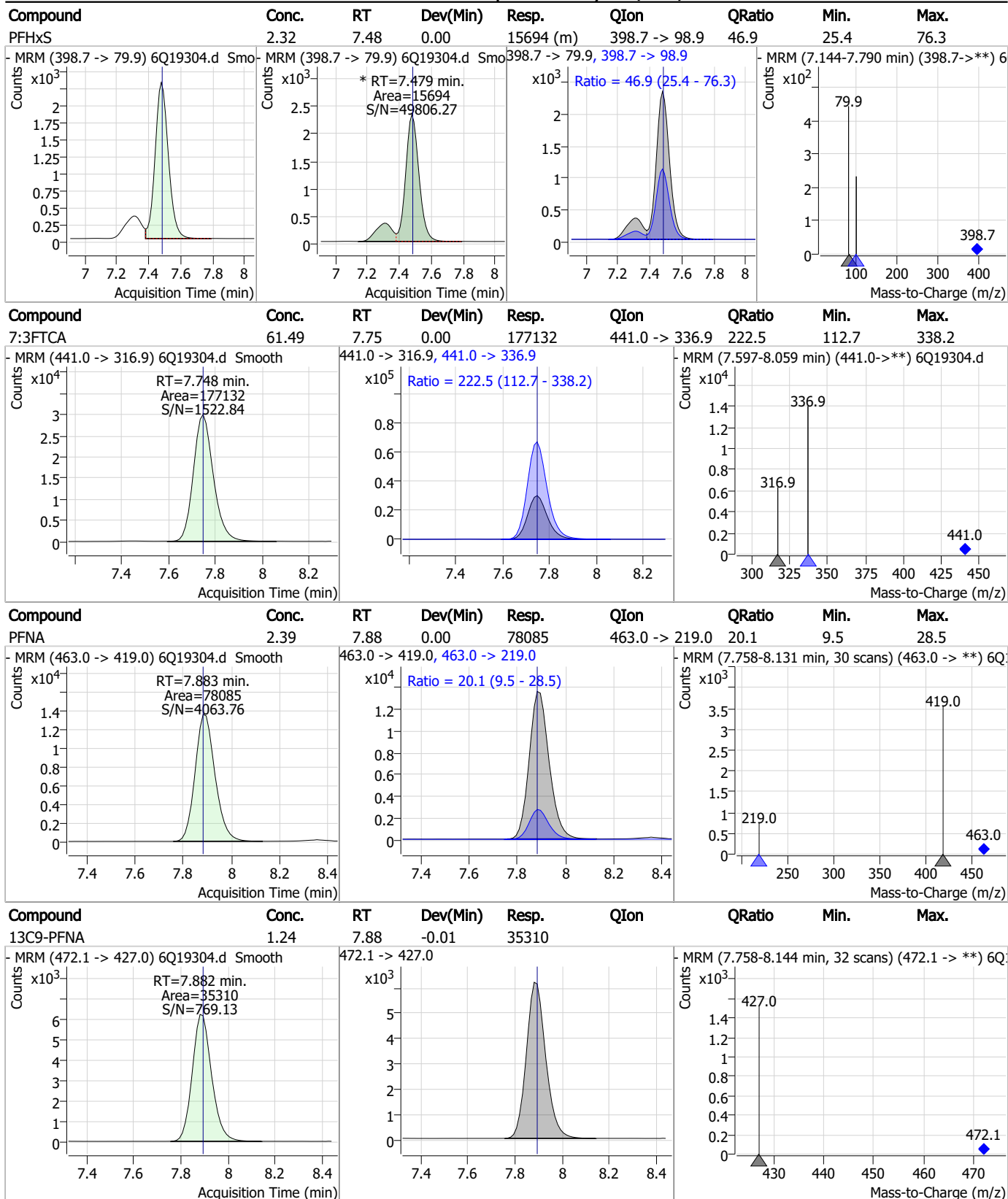
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

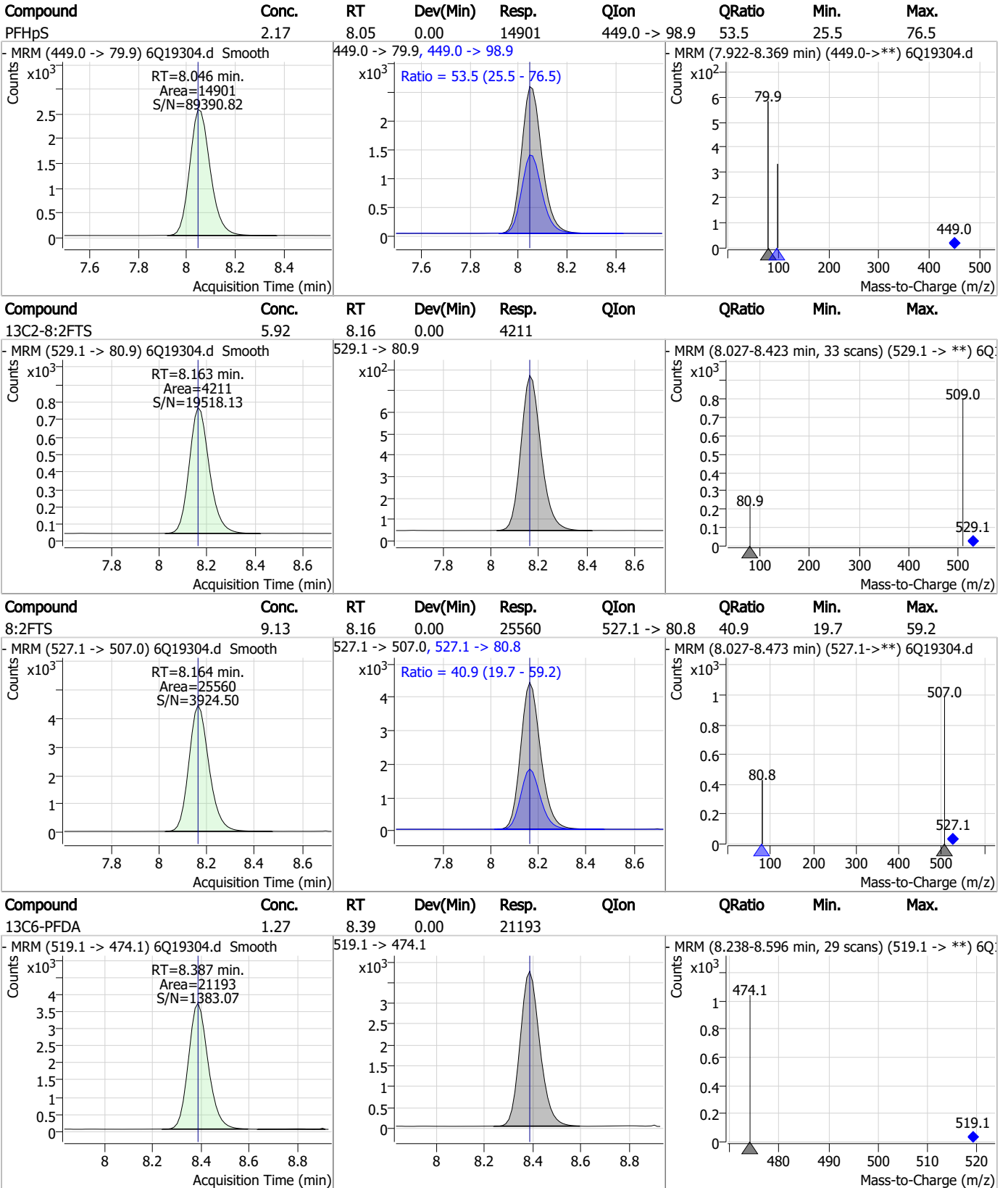


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS

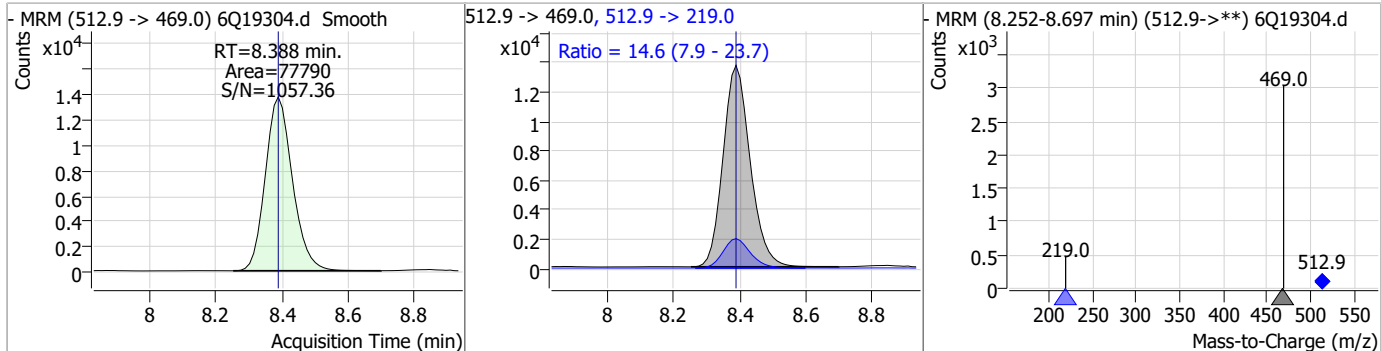


7.7.10 7

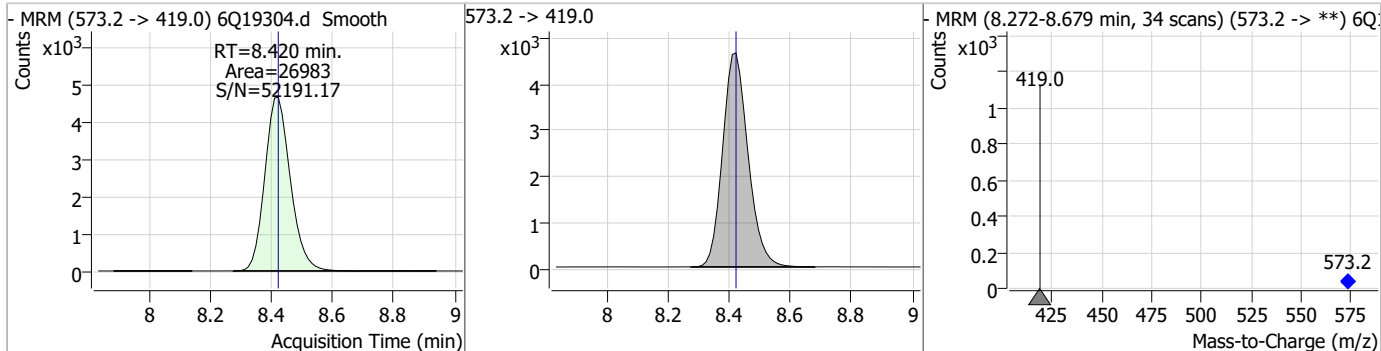


Perfluorinated Compounds by LC/MS/MS

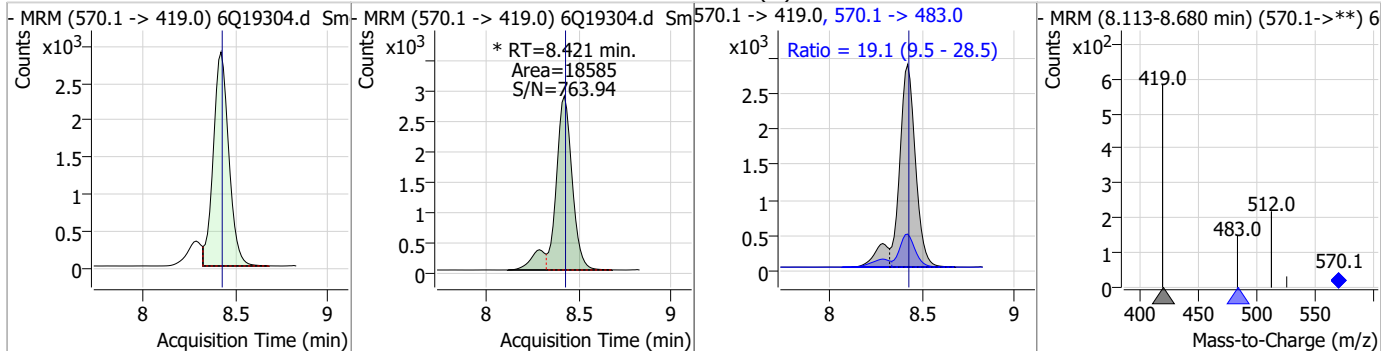
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.47	8.39	0.00	77790	512.9 -> 219.0	14.6	7.9	23.7



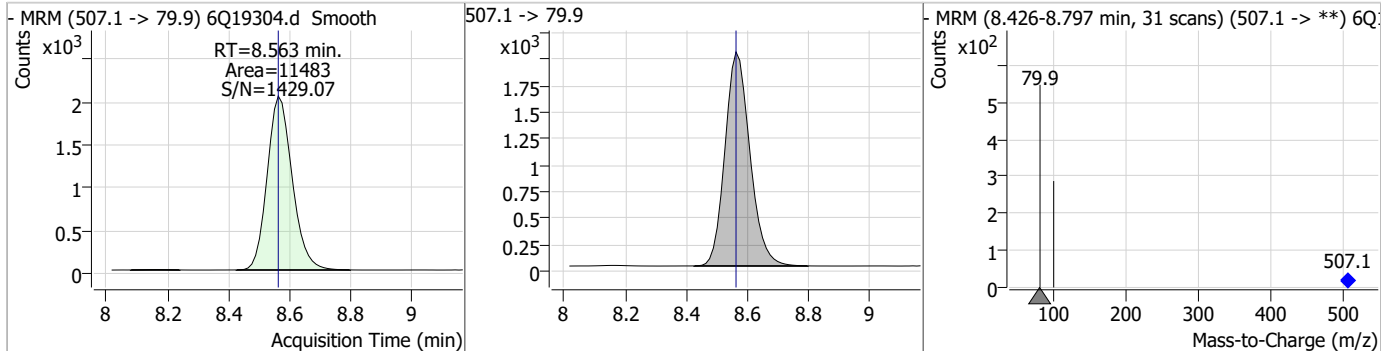
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.78	8.42	0.00	26983				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.66	8.42	0.00	18585 (m)	570.1 -> 483.0	19.1	9.5	28.5



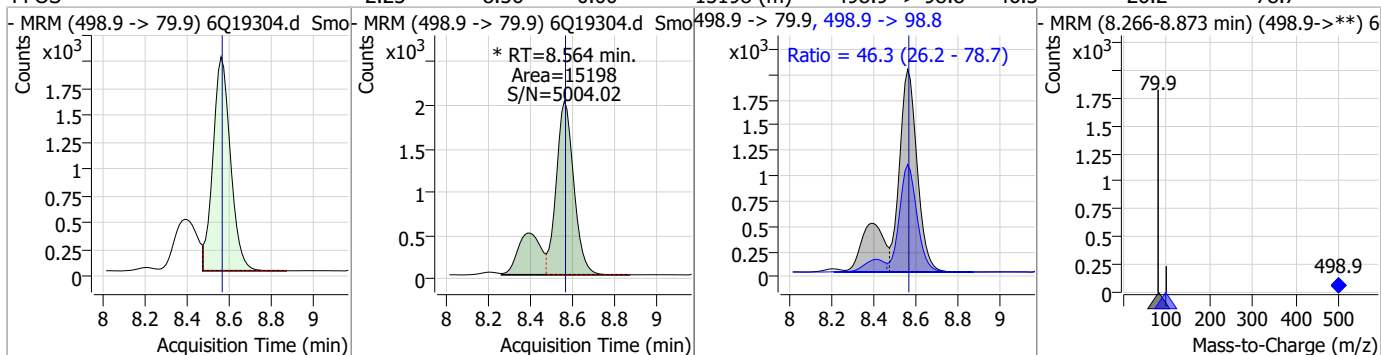
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.55	8.56	0.00	11483				



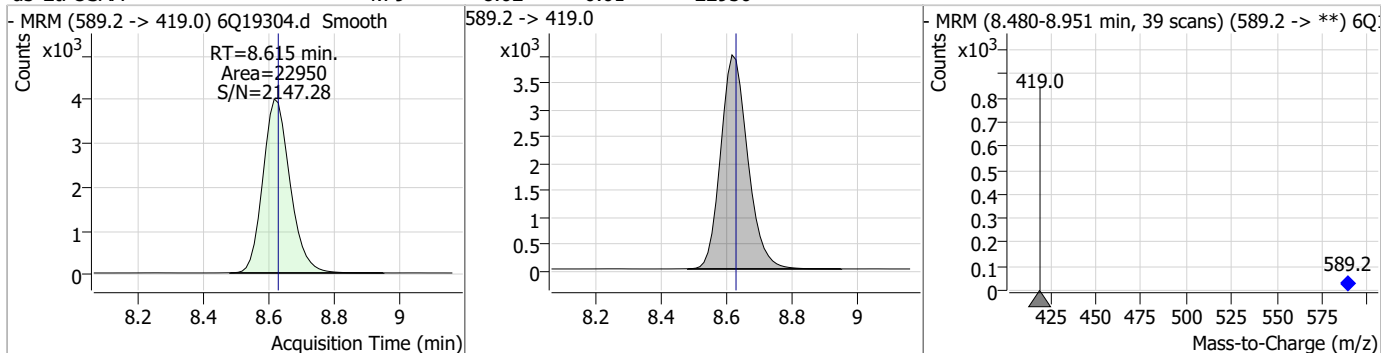
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

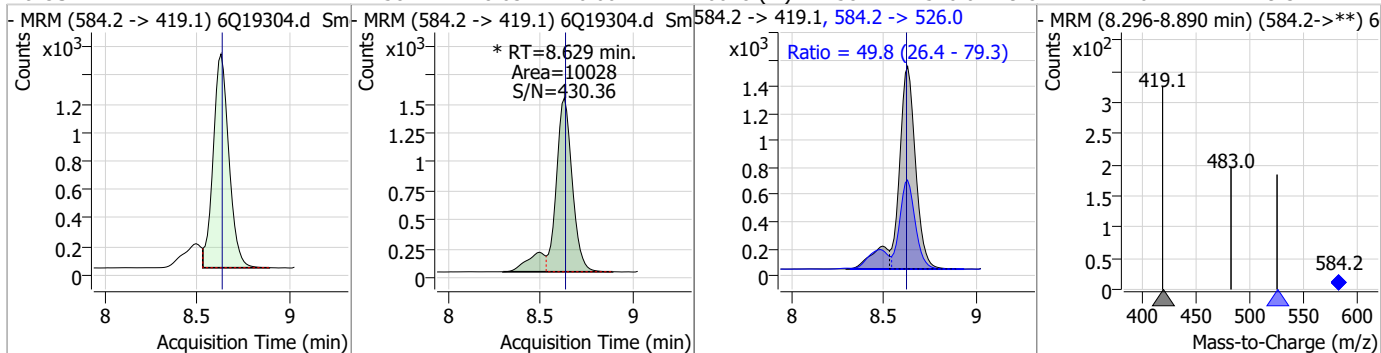
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.23	8.56	0.00	15198 (m)	498.9 -> 98.8	46.3	26.2	78.7



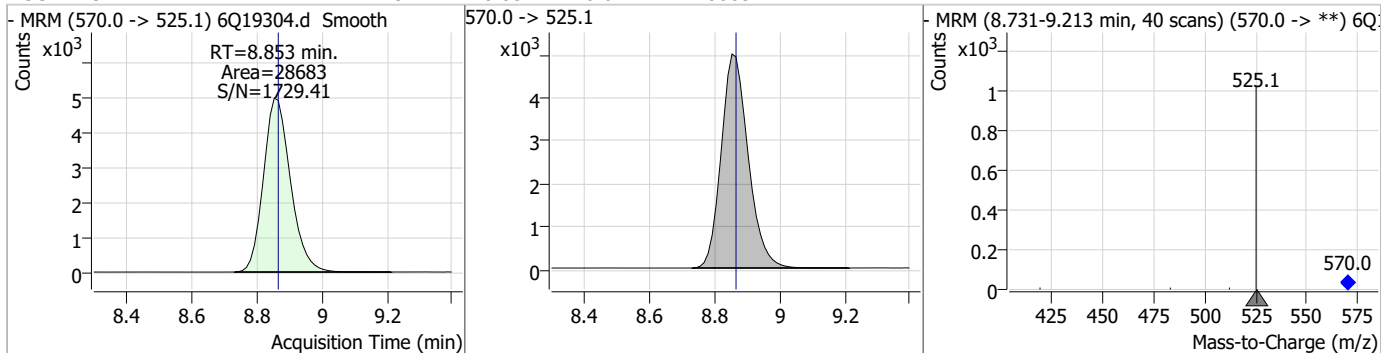
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.79	8.62	-0.01	22950				



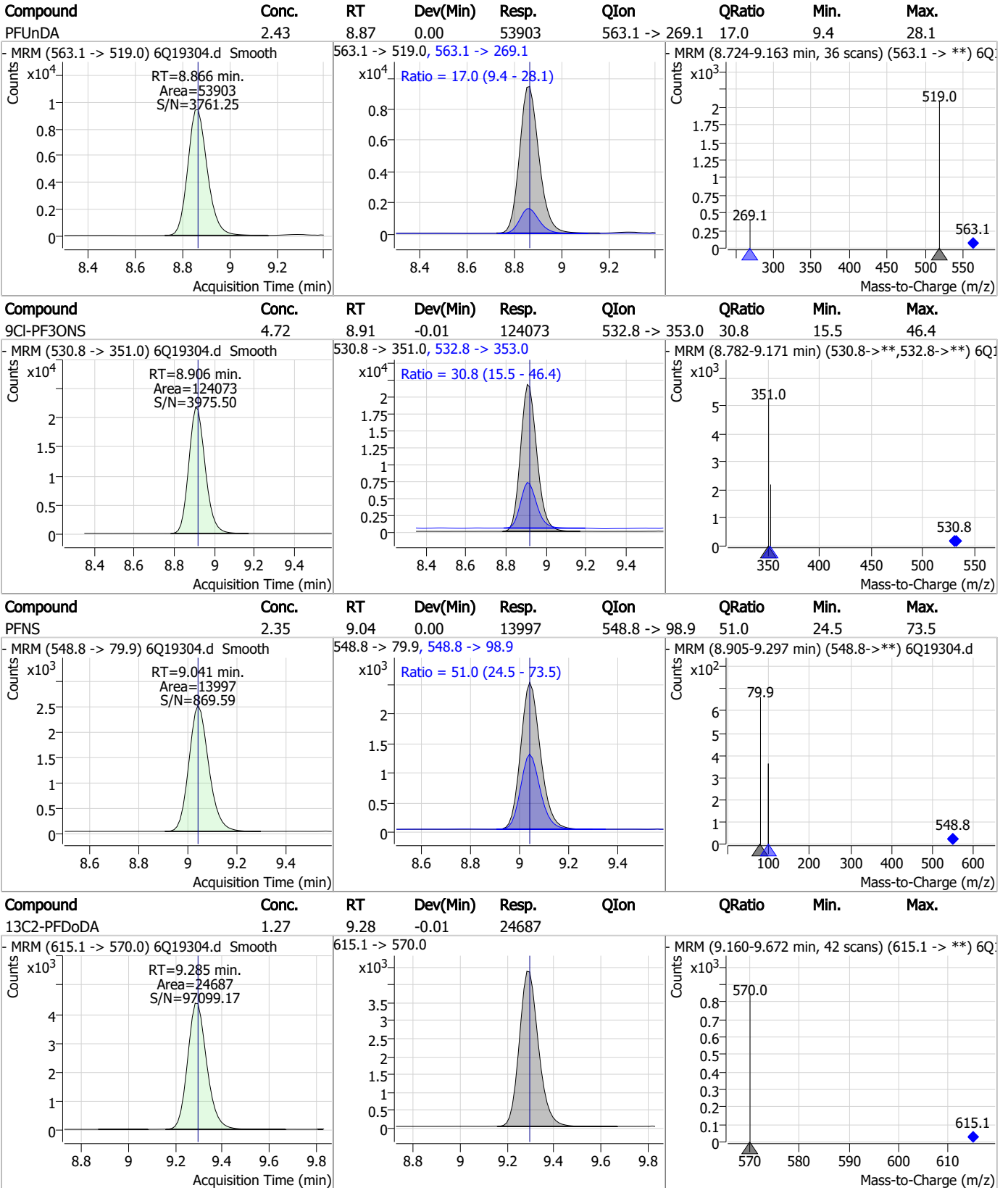
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.58	8.63	0.00	10028 (m)	584.2 -> 526.0	49.8	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.29	8.85	-0.01	28683				



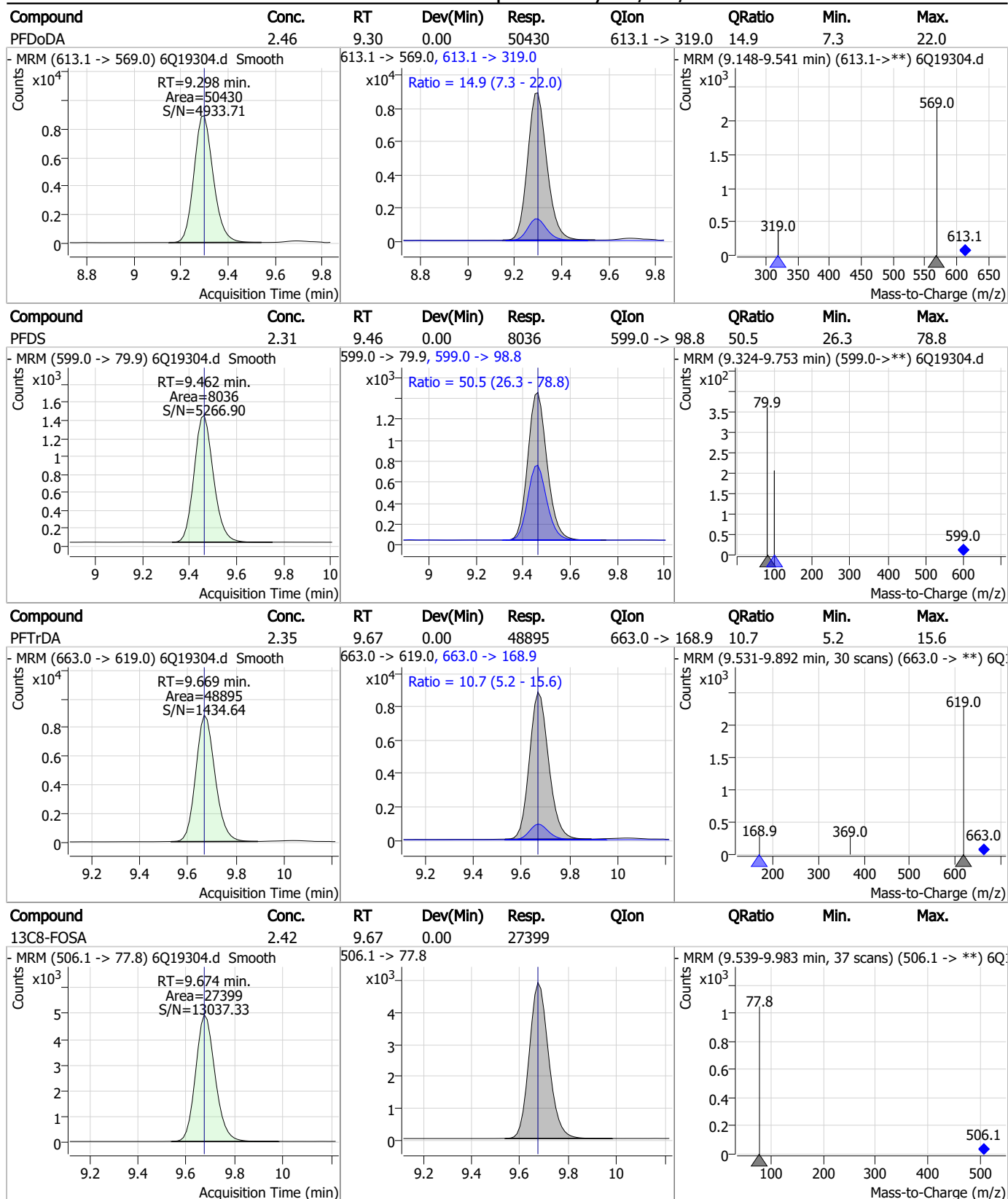
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



Perfluorinated Compounds by LC/MS/MS

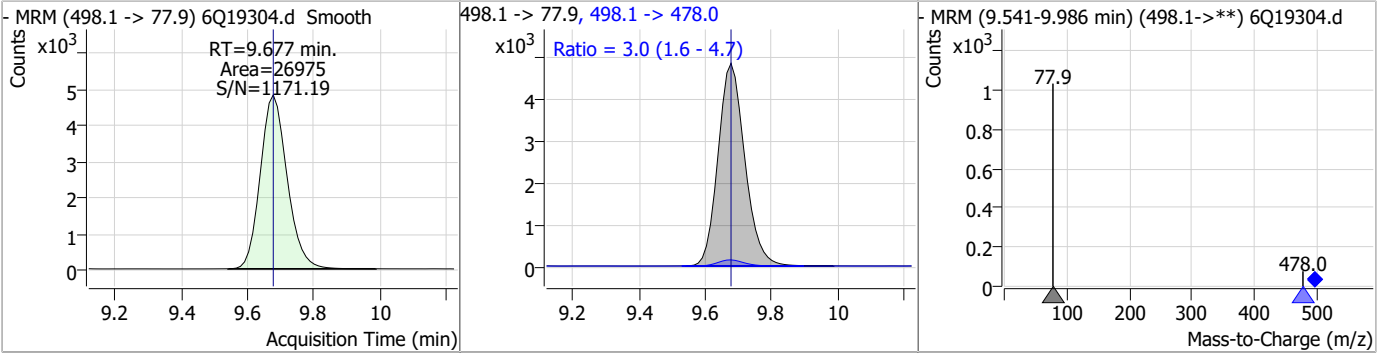


7.7.10 7

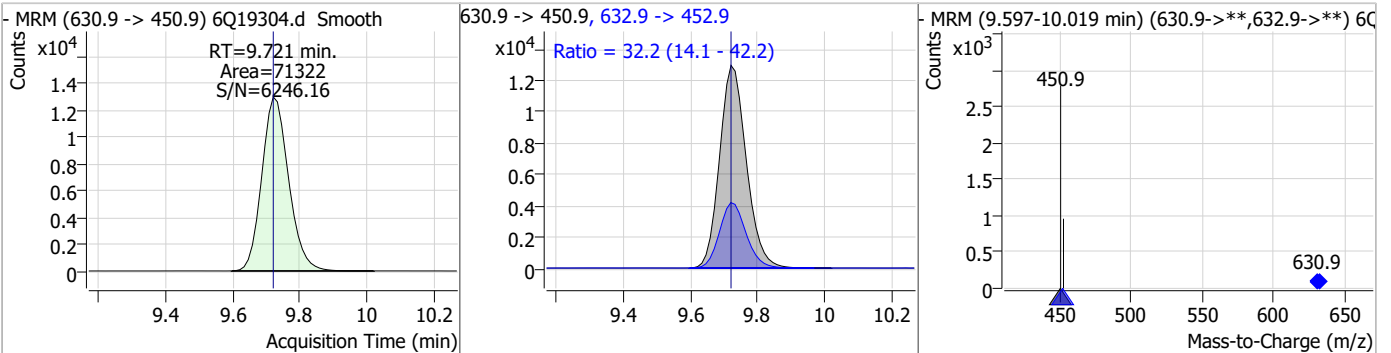


Perfluorinated Compounds by LC/MS/MS

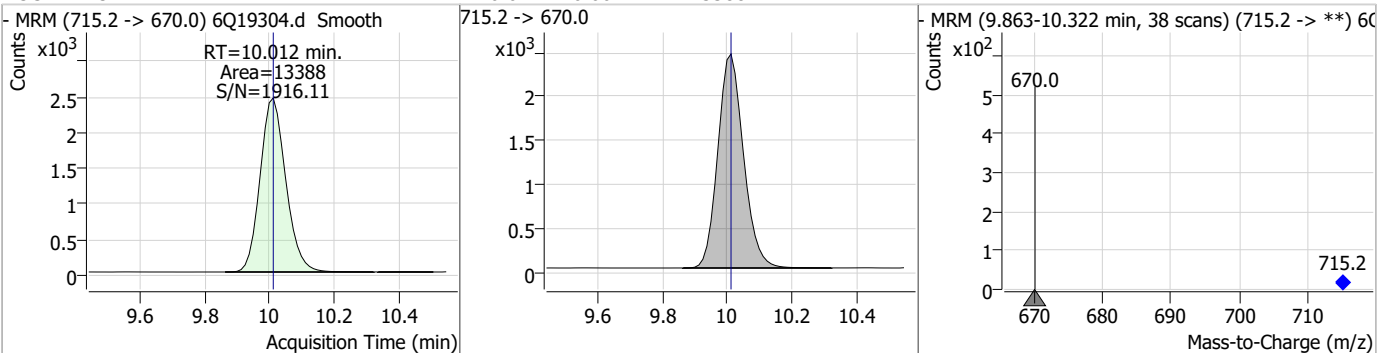
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.48	9.68	0.00	26975	498.1 -> 478.0	3.0	1.6	4.7



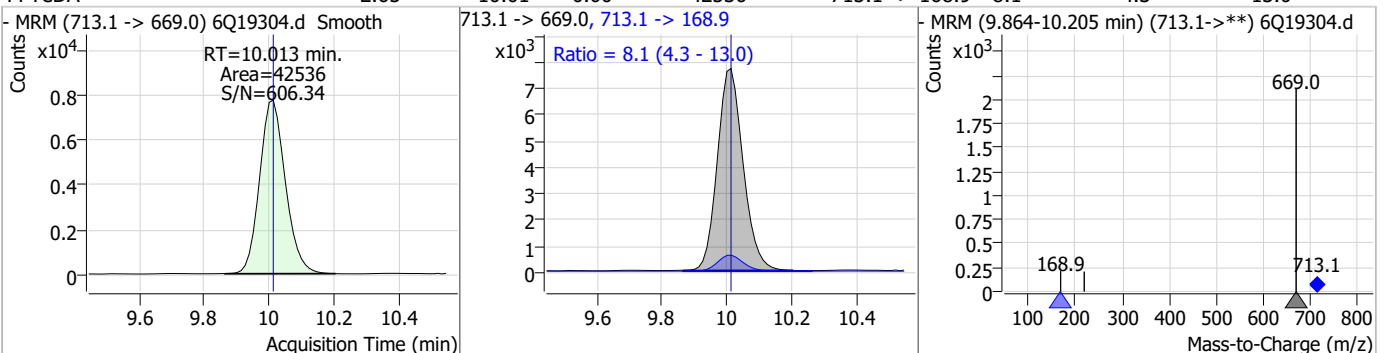
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11CI-PF3OUds	4.67	9.72	0.00	71322	630.9 -> 452.9	32.2	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.24	10.01	0.00	13388	715.2 -> 670.0	8.1	4.3	13.0



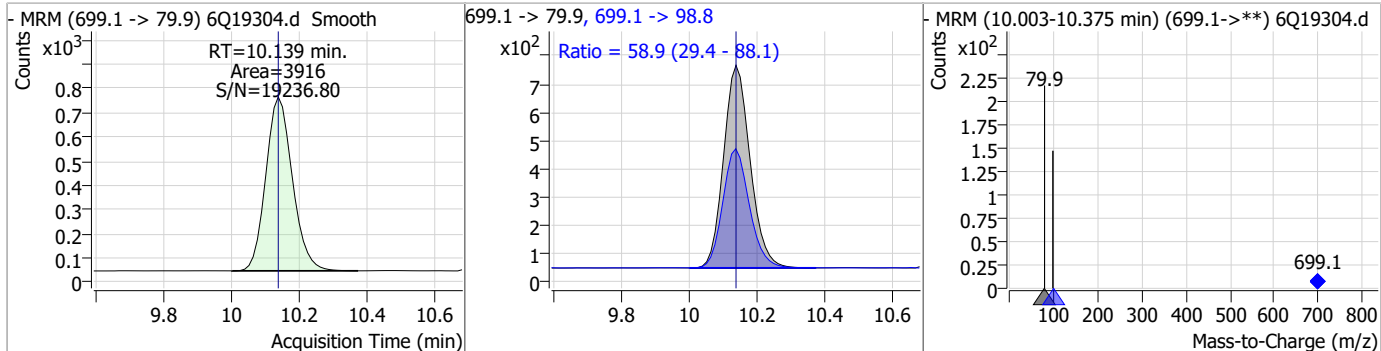
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.65	10.01	0.00	42536	713.1 -> 168.9	8.1	4.3	13.0



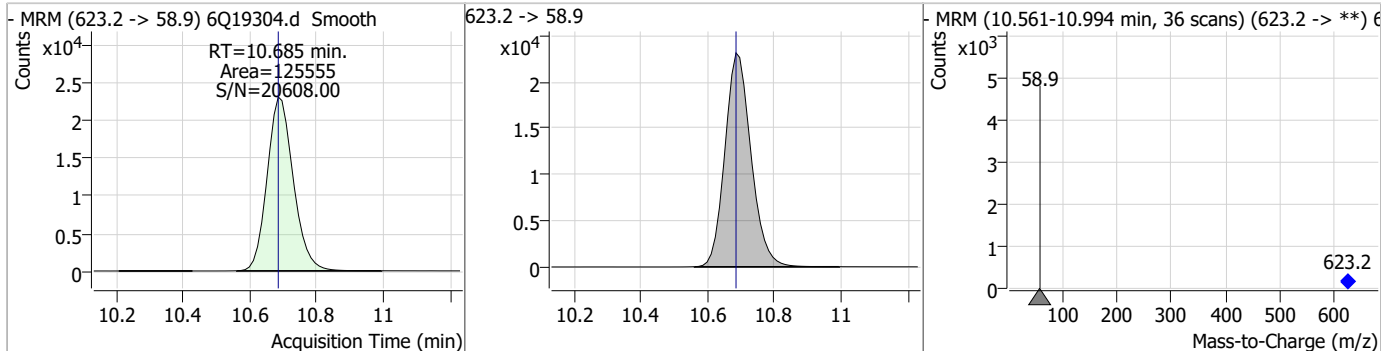
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

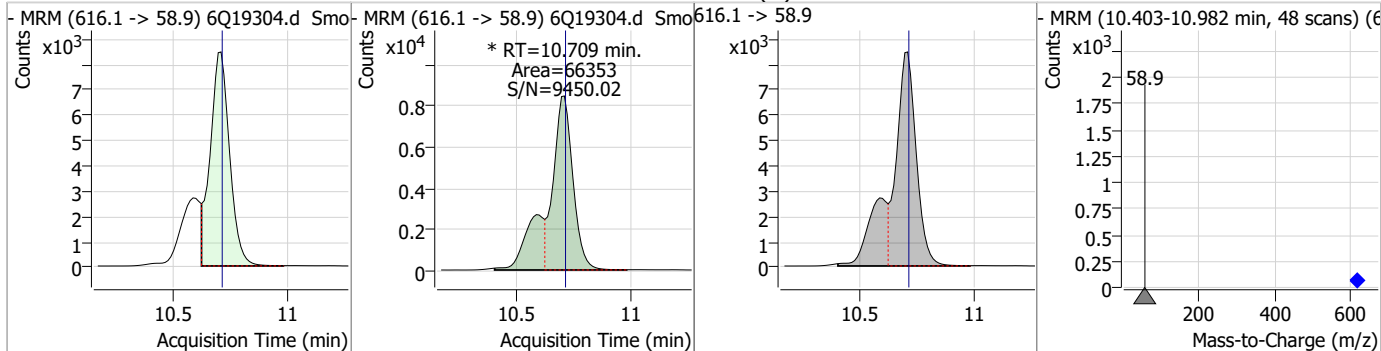
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.29	10.14	0.00	3916	699.1 -> 98.8	58.9	29.4	88.1



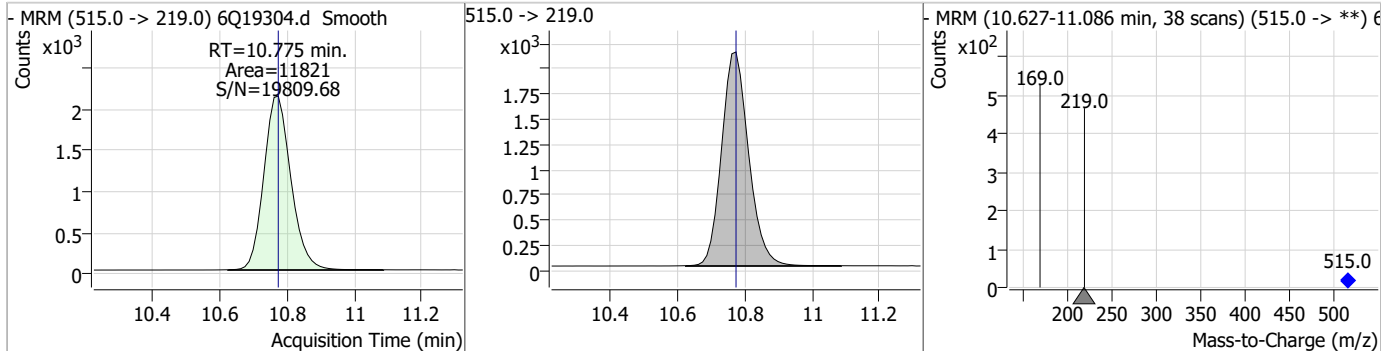
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.07	10.68	0.00	125555				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.19	10.71	0.00	66353 (m)				

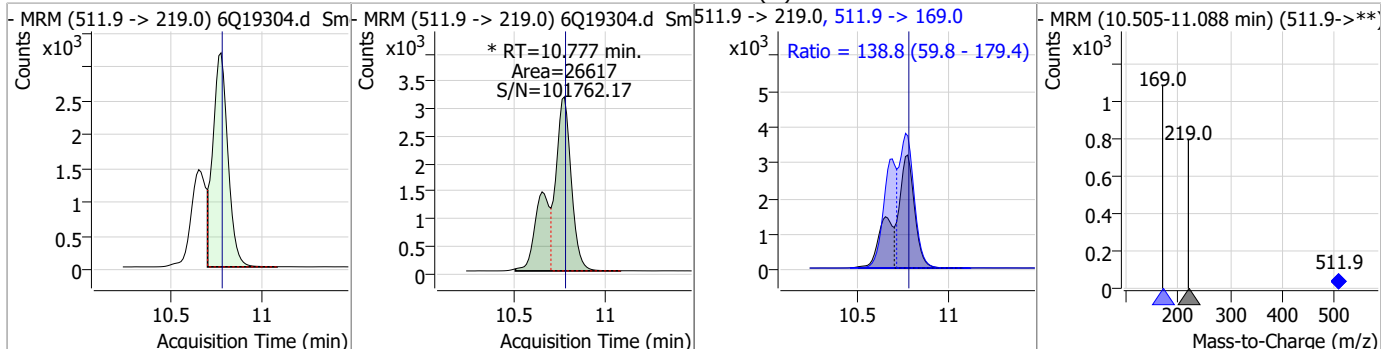


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.41	10.78	0.00	11821				

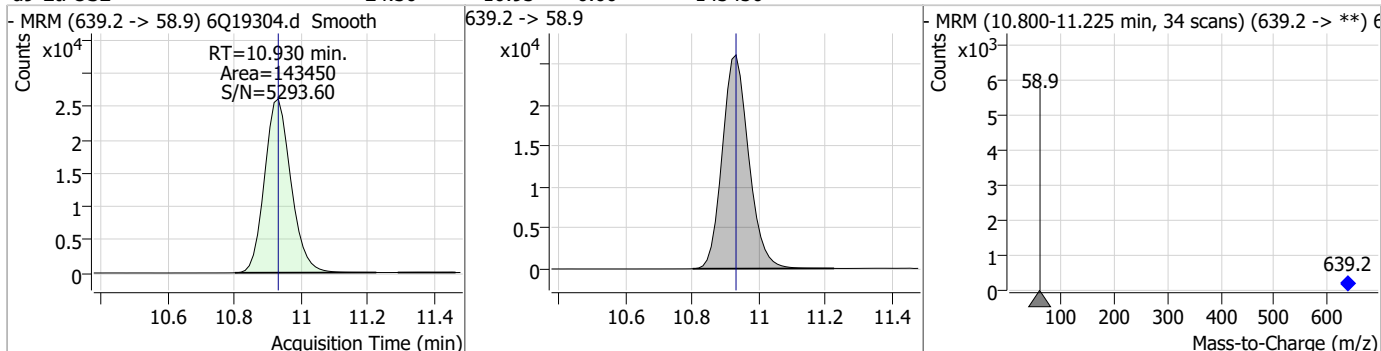


Perfluorinated Compounds by LC/MS/MS

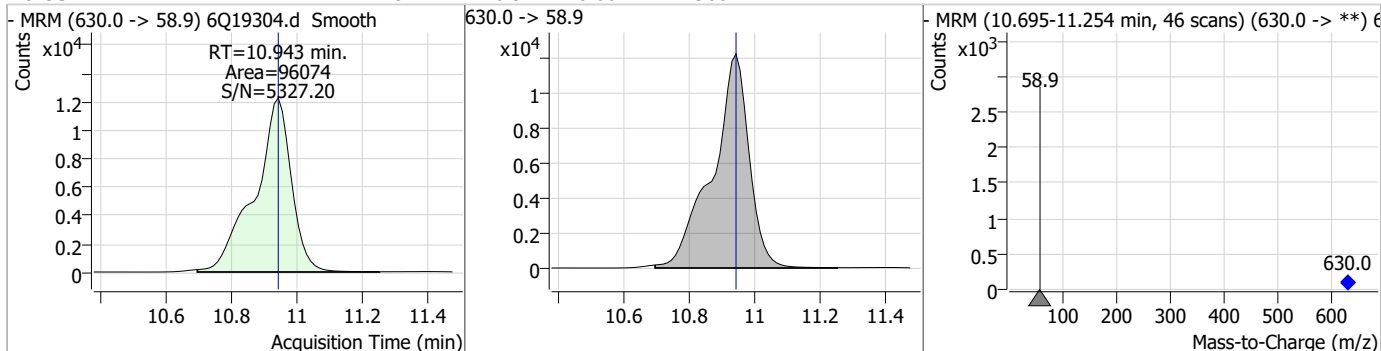
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.97	10.78	0.00	26617 (m)	511.9 -> 169.0	138.8	59.8	179.4



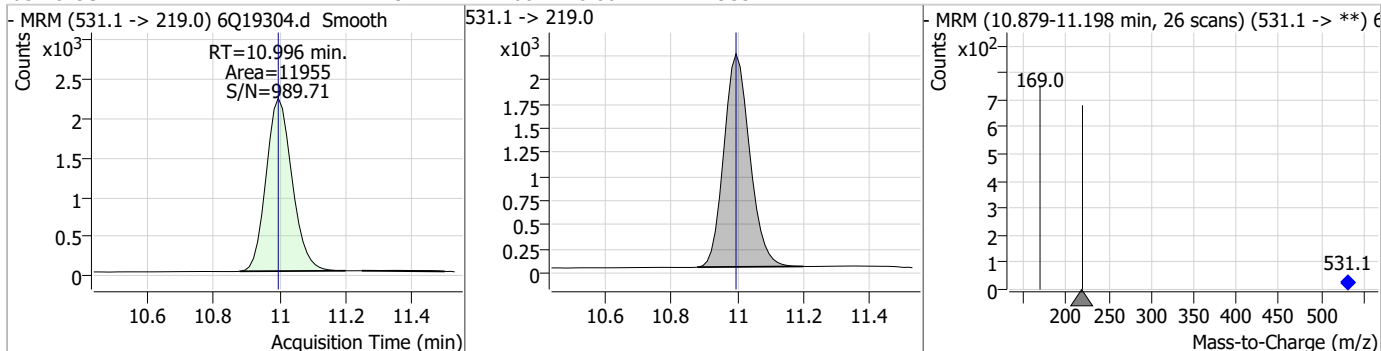
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.30	10.93	0.00	143450				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.94	10.94	0.00	96074				

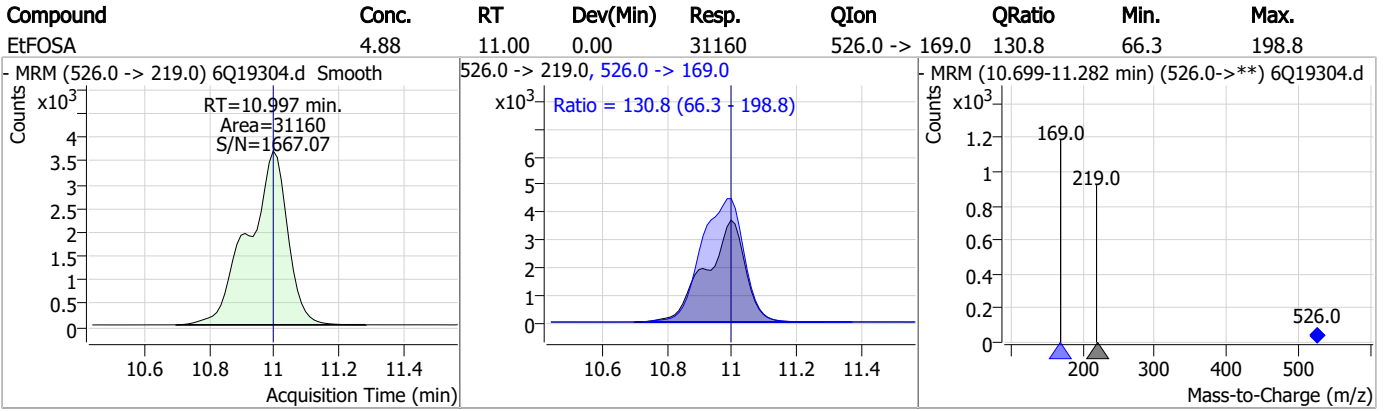


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	11.00	0.00	11955				



7.7.10
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Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Manual Integration Approval Summary

Sample Number: S6Q288-ICV288 Method: EPA DRAFT 1633
Lab FileID: 6Q19304.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 13:41 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19305.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/13/2023 1:55:37 PM
 Sample Name : icv288-20
 Vial : P1-B2
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q288.batch.bin
 Sample Information : OP97215,S6Q288,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	132779	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	42502	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	47097	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	42669	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	66682	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	33145	1.25 µg/L	-0.013
M6-PFDA	8.387	519.1 -> 474.1	19378	1.25 µg/L	0.000
M7-PFUnDA	8.853	570.0 -> 525.1	25530	1.25 µg/L	-0.012
M2-PFDoDA	9.297	615.1 -> 570.0	22968	1.25 µg/L	0.000
M2-PFTeDA	10.012	715.2 -> 670.0	12081	1.25 µg/L	0.000
M8-FOSA	9.674	506.1 -> 77.8	23551	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	16855	2.50 µg/L	0.000
M3-PFHxS	7.478	402.1 -> 79.9	10273	2.50 µg/L	0.000
M8-PFOS	8.563	507.1 -> 79.9	9937	2.50 µg/L	0.000
M2-4:2FTS	5.442	329.1 -> 80.9	2538	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	3754	5.00 µg/L	0.000
M2-8:2FTS	8.163	529.1 -> 80.9	3292	5.00 µg/L	0.000
M3-MeFOSAA	8.420	573.2 -> 419.0	22357	5.00 µg/L	0.000
M3-HFPO-DA	6.169	286.9 -> 168.9	30871	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	22127	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	110836	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	121128	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	10202	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	10903	2.50 µg/L	0.000
13C4-PFOS	8.563	502.8 -> 79.9	12840	2.50 µg/L	0.000
13C3-PFBA	3.089	216.0 -> 172.0	56833	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	7381	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	77814	2.50 µg/L	-0.012
13C2-PFDA	8.388	515.1 -> 470.1	26670	1.25 µg/L	0.000
13C5-PFNA	7.882	468.0 -> 423.0	39123	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	42310	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2538	5.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.6%		
13C2-6:2FTS	7.113	429.1 -> 80.9	3754	5.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.2%		
13C2-8:2FTS	8.163	529.1 -> 80.9	3292	5.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.7%		
13C2-PFDoDA	9.297	615.1 -> 570.0	22968	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-PFTeDA	10.012	715.2 -> 670.0	12081	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C3-PFBS	5.746	302.1 -> 79.9	16855	2.74 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.7%		
13C3-PFHxS	7.478	402.1 -> 79.9	10273	2.65 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 = 105.9%		
13C4-PFBA	3.085	216.8 -> 171.9	132779	9.96 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C4-PFHpA	6.707	367.1 -> 322.0	42669	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C5-PFHxA	5.792	318.0 -> 273.0	47097	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.9%		
13C5-PFPeA	4.560	268.3 -> 223.0	42502	5.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C6-PFDA	8.387	519.1 -> 474.1	19378	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C7-PFUnDA	8.853	570.0 -> 525.1	25530	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C8-FOSA	9.674	506.1 -> 77.8	23551	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C8-PFOA	7.339	421.1 -> 376.0	66682	2.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.7%		
13C8-PFOS	8.563	507.1 -> 79.9	9937	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C9-PFNA	7.882	472.1 -> 427.0	33145	1.39 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.3%		
d3-MeFOSAA	8.420	573.2 -> 419.0	22357	4.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C3-HFPO-DA	6.169	286.9 -> 168.9	30871	10.57 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 105.7%		
d3-MeFOSA	10.775	515.0 -> 219.0	10903	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.2%		
d5-EtFOSAA	8.615	589.2 -> 419.0	22127	5.37 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.3%		
d7-MeFOSE	10.685	623.2 -> 58.9	110836	25.73 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
d9-EtFOSE	10.930	639.2 -> 58.9	121128	23.85 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
d5-EtFOSA	10.996	531.1 -> 219.0	10202	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	93449	21.17 µg/L	99
		327.1 -> 80.9	34439		
6:2FTS	7.113	427.1 -> 407.0	94231	21.08 µg/L	96
		427.1 -> 80.9	32703		
8:2FTS	8.164	527.1 -> 507.0	50630	23.14 µg/L	98
		527.1 -> 80.8	19418		
EtFOSAA	8.629	584.2 -> 419.1	72726	19.41 µg/L	m 100
		584.2 -> 526.0	38280		
FOSA	9.677	498.1 -> 77.9	189455	20.25 µg/L	100
		498.1 -> 478.0	5690		
MeFOSAA	8.421	570.1 -> 419.0	129087	22.28 µg/L	m 98
		570.1 -> 483.0	25909		
PFBA	3.093	212.8 -> 168.9	108770	20.33 µg/L	100
PFBS	5.747	298.7 -> 79.9	157762	20.96 µg/L	100
		298.7 -> 98.8	60366		
PFDA	8.388	512.9 -> 469.0	589984	20.47 µg/L	98
		512.9 -> 219.0	87478		
PFDoDA	9.298	613.1 -> 569.0	337893	17.72 µg/L	97
		613.1 -> 319.0	53958		
PFDS	9.462	599.0 -> 79.9	61082	20.33 µg/L	94

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	29460			
PFHpA	6.708	363.1 -> 319.0	467497	20.52	µg/L	98
		363.1 -> 169.0	74848			
PFHpS	8.046	449.0 -> 79.9	117149	19.73	µg/L	99
		449.0 -> 98.9	59176			
PFHxA	5.795	313.0 -> 269.0	381914	20.09	µg/L	100
		313.0 -> 118.9	19743			
PFHxS	7.479	398.7 -> 79.9	135254	21.86	µg/L	m 95
		398.7 -> 98.9	64289			
PFNA	7.883	463.0 -> 419.0	597455	19.50	µg/L	99
		463.0 -> 219.0	111302			
PFNS	9.041	548.8 -> 79.9	108782	21.10	µg/L	97
		548.8 -> 98.9	55428			
PFOA	7.341	413.0 -> 369.0	717025	19.58	µg/L	99
		413.0 -> 169.0	124827			
PFOS	8.564	498.9 -> 79.9	101848	17.27	µg/L	m 99
		498.9 -> 98.8	54142			
PFPeA	4.551	263.0 -> 219.0	268395	21.39	µg/L	100
PFPeS	6.785	349.1 -> 79.9	125000	21.72	µg/L	96
		349.1 -> 98.9	57003			
PFTeDA	10.013	713.1 -> 669.0	317758	21.95	µg/L	99
		713.1 -> 168.9	26351			
PFTrDA	9.669	663.0 -> 619.0	307140	15.87	µg/L	97
		663.0 -> 168.9	35374			
PFUnDA	8.866	563.1 -> 519.0	398918	20.24	µg/L	92
		563.1 -> 269.1	59890			
11CI-PF3OUdS	9.721	630.9 -> 450.9	290847	20.69	µg/L	98
		632.9 -> 452.9	85261			
9CI-PF3ONS	8.906	530.8 -> 351.0	484301	19.99	µg/L	99
		532.8 -> 353.0	152886			
ADONA	6.959	376.9 -> 250.9	923233	18.48	µg/L	98
		376.9 -> 84.8	256839			
HFPO-DA	6.169	284.9 -> 168.9	67507	20.89	µg/L	98
		284.9 -> 184.9	7407			
3:3FTCA	3.946	241.0 -> 177.0	16979	20.00	µg/L	99
		241.0 -> 117.0	2239			
5:3FTCA	6.374	341.0 -> 237.1	78928	20.89	µg/L	99
		341.0 -> 217.0	57885			
7:3FTCA	7.748	441.0 -> 316.9	52898	20.71	µg/L	95
		441.0 -> 336.9	114650			
EtFOSA	10.997	526.0 -> 219.0	110623	20.30	µg/L	77
		526.0 -> 169.0	117058			
EtFOSE	10.943	630.0 -> 58.9	713787	113.87	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	91259	18.48	µg/L	94
		511.9 -> 169.0	102983			
MeFOSE	10.709	616.1 -> 58.9	495140	103.08	µg/L	100
PFDoDS	10.139	699.1 -> 79.9	27570	18.62	µg/L	93
		699.1 -> 98.8	14679			
NFDHA	5.673	295.0 -> 201.0	50132	20.65	µg/L	100
		295.0 -> 84.9	13417			
PFMBA	4.988	279.0 -> 85.1	183620	20.53	µg/L	100
PFMPA	3.667	229.0 -> 84.9	144065	20.59	µg/L	100
PFEESA	6.288	314.8 -> 134.9	445335	17.34	µg/L	100
		314.8 -> 82.9	16083			

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



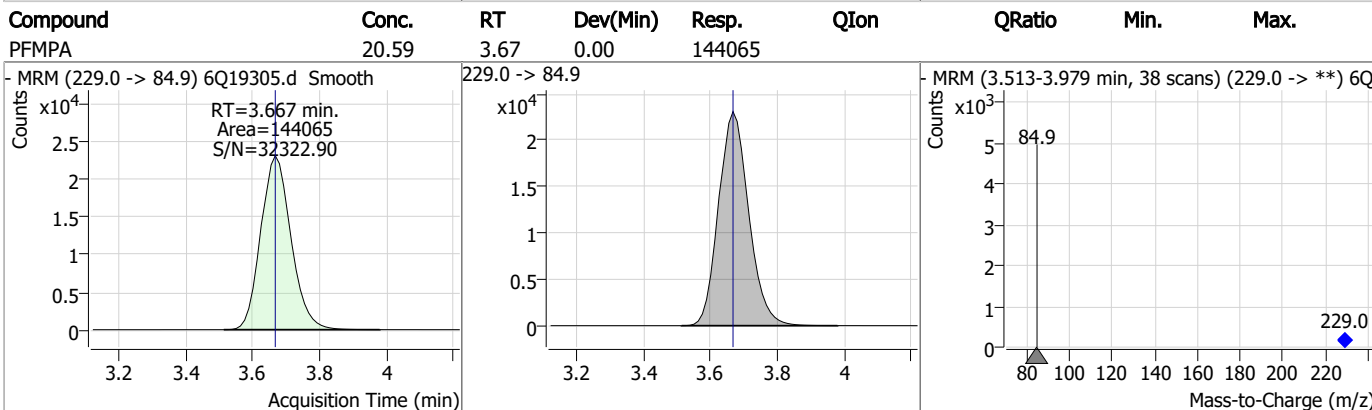
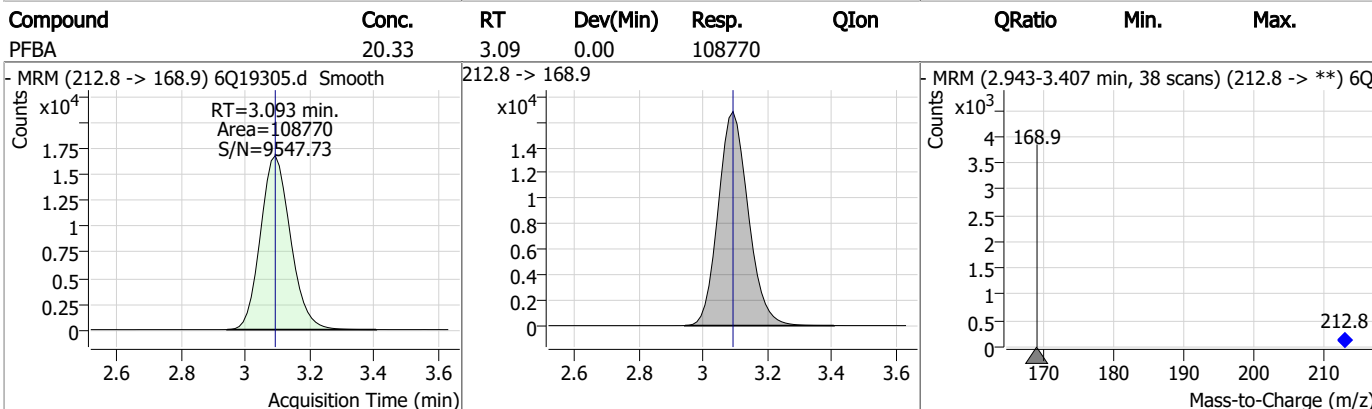
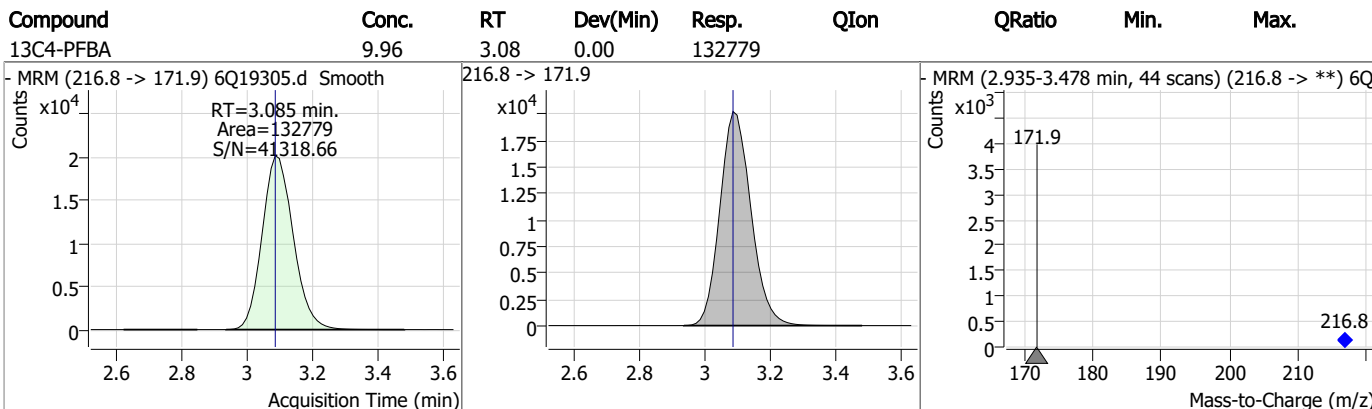
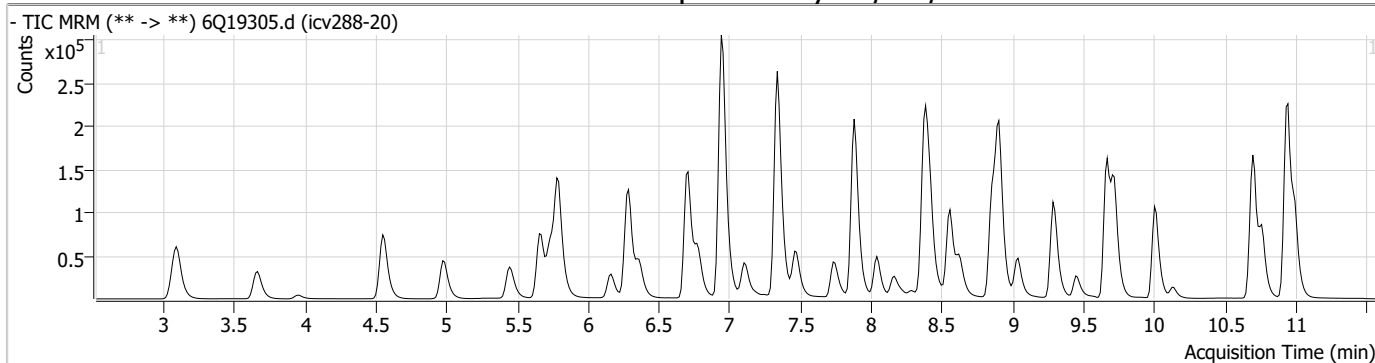
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7:7:11

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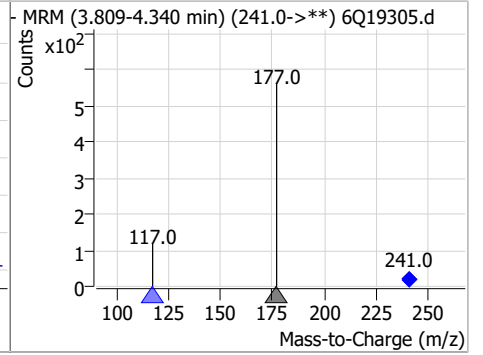
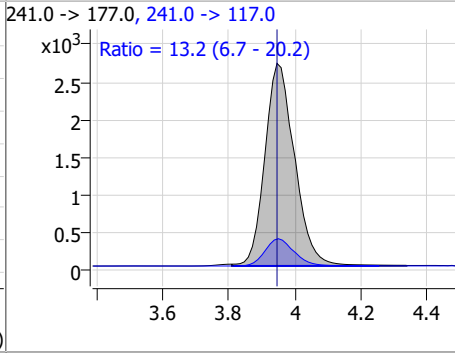
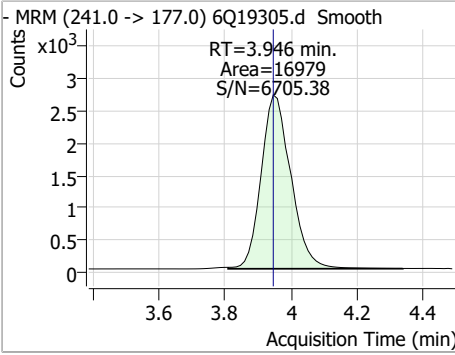
Perfluorinated Compounds by LC/MS/MS



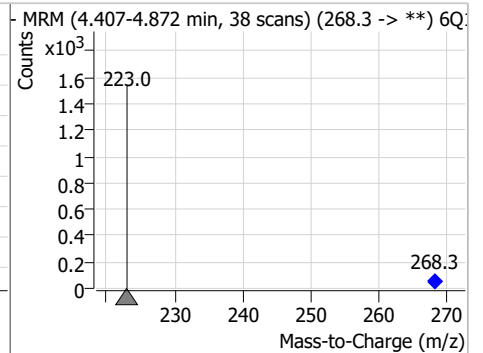
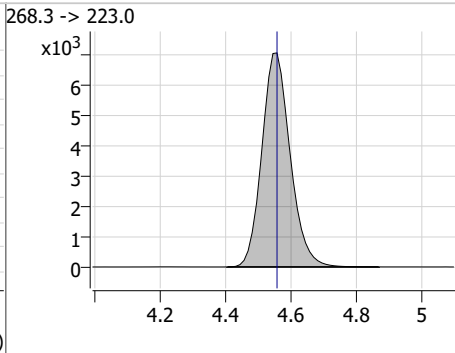
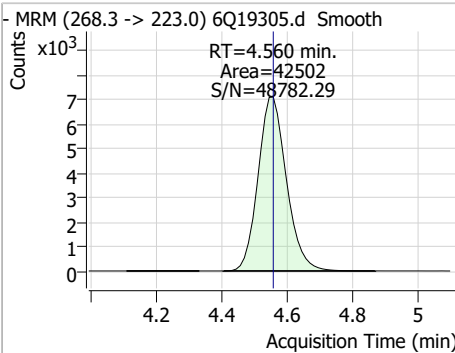
7.7.11
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Perfluorinated Compounds by LC/MS/MS

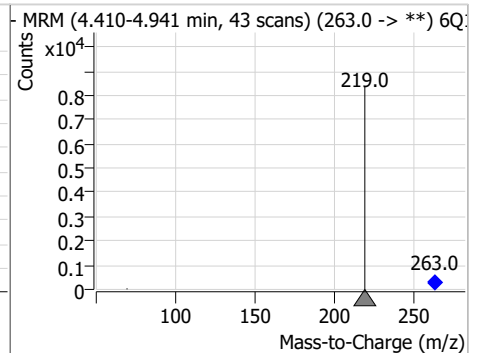
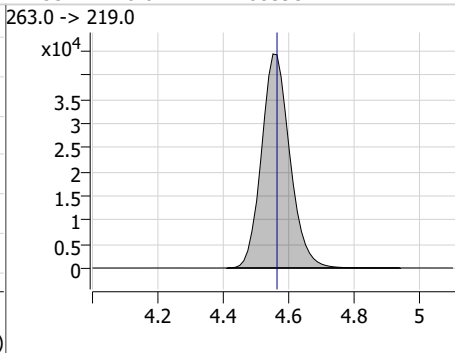
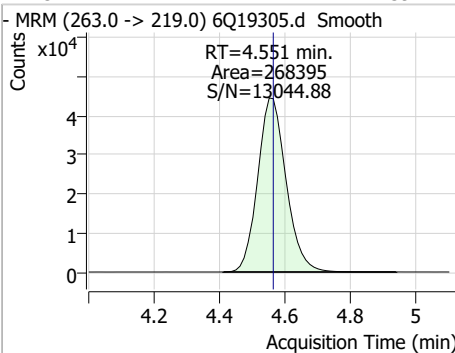
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	20.00	3.95	0.00	16979	241.0 -> 117.0	13.2	6.7	20.2



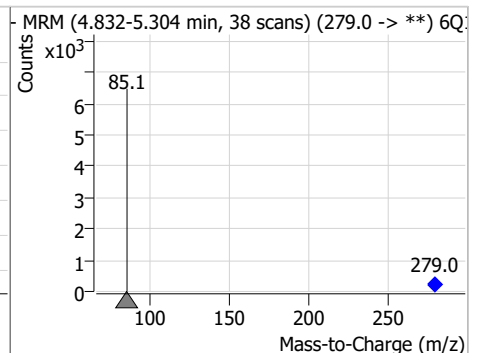
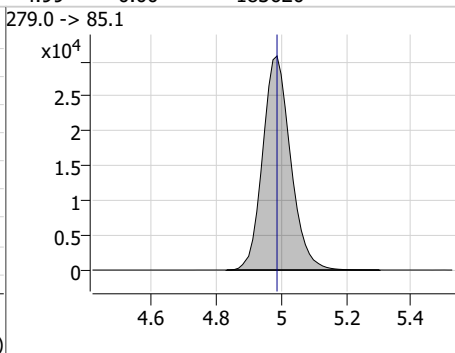
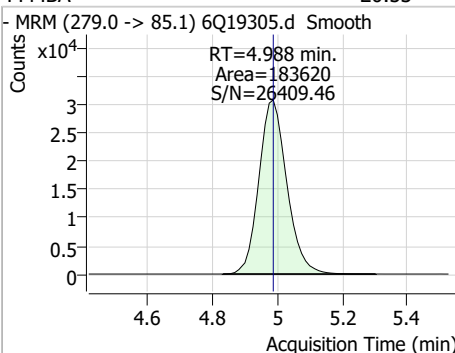
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.31	4.56	0.00	42502				



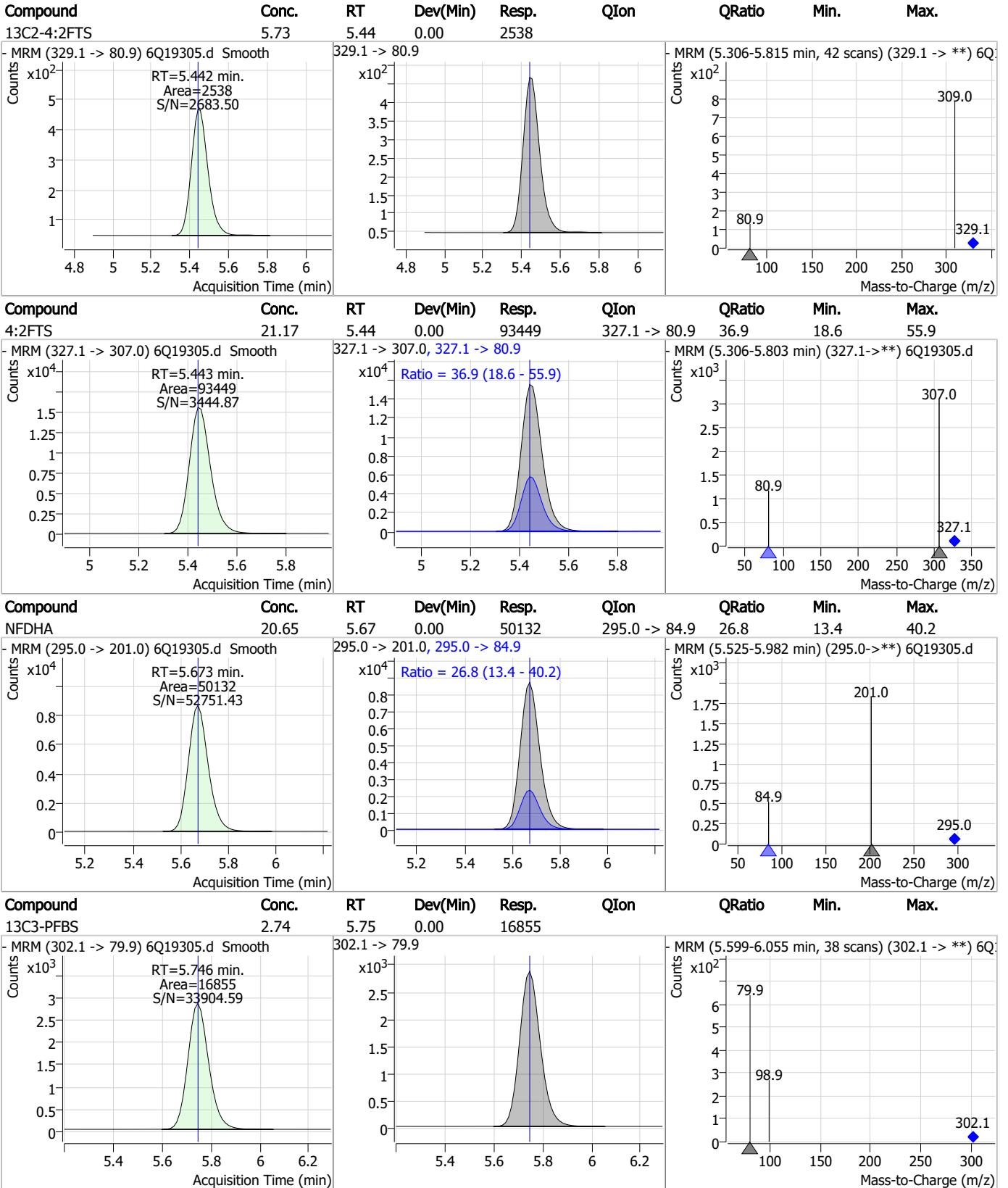
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	21.39	4.55	-0.01	268395				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	20.53	4.99	0.00	183620				



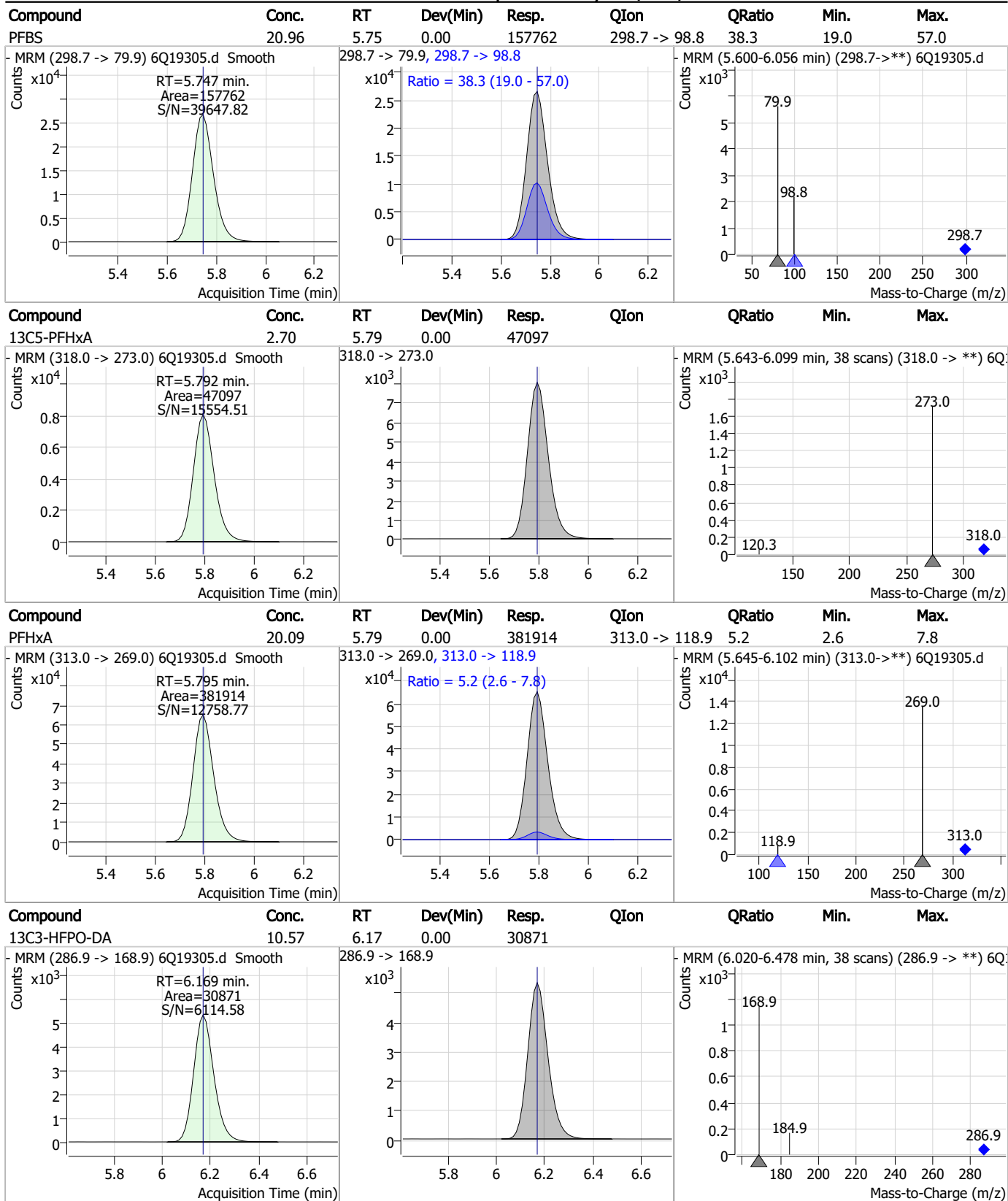
Perfluorinated Compounds by LC/MS/MS



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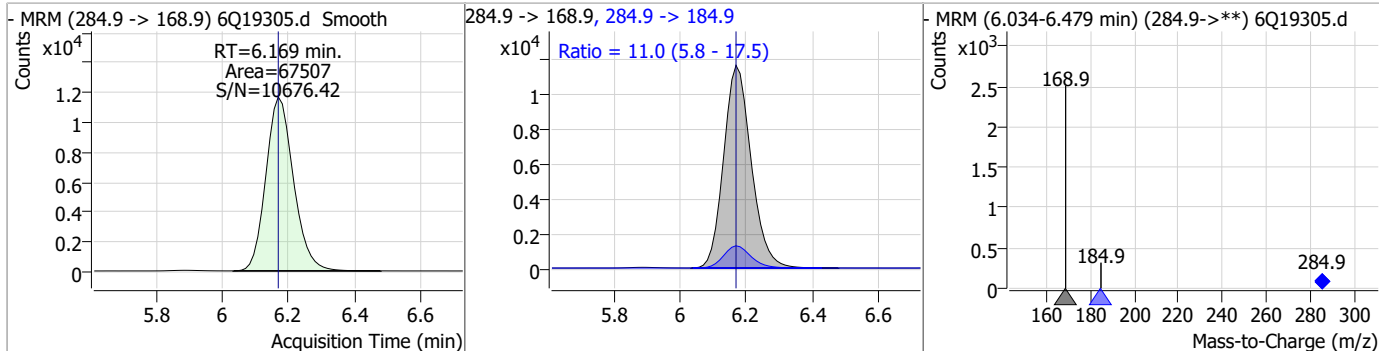
Perfluorinated Compounds by LC/MS/MS



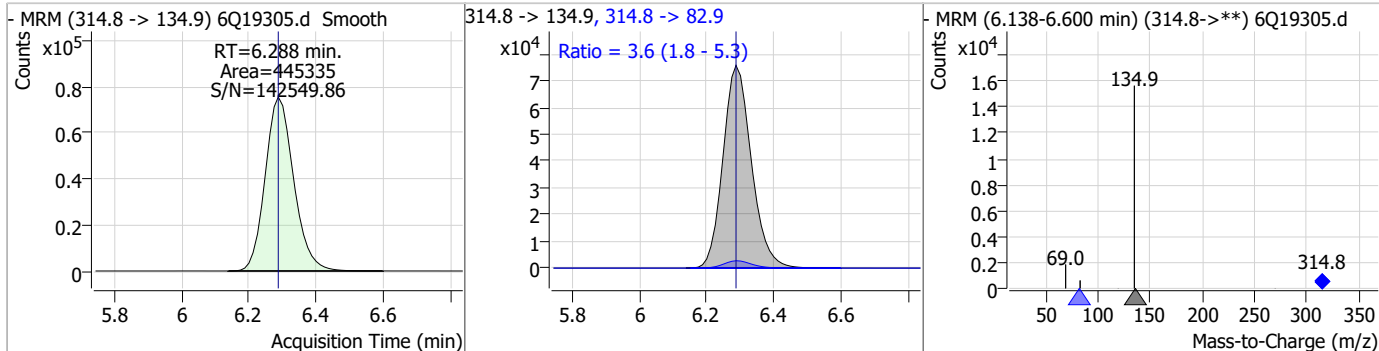
7.7.11
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Perfluorinated Compounds by LC/MS/MS

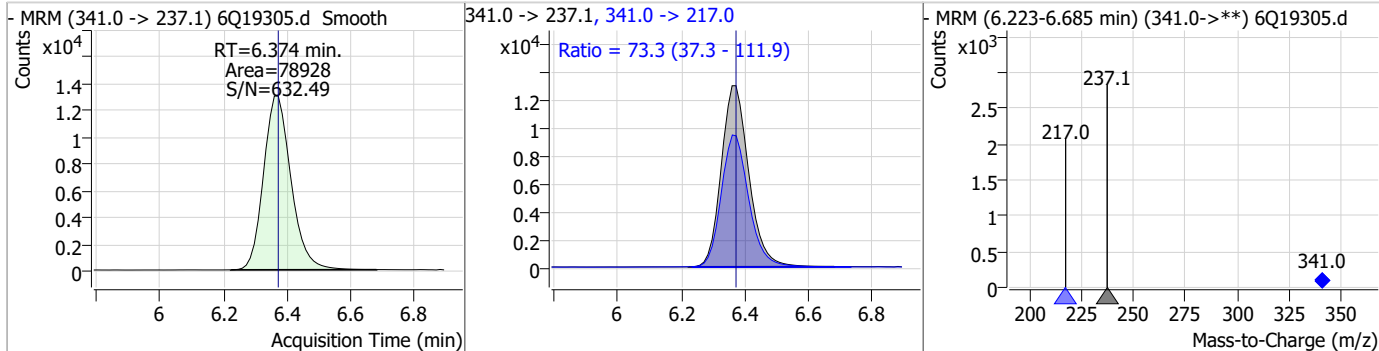
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	20.89	6.17	0.00	67507	284.9 -> 184.9	11.0	5.8	17.5



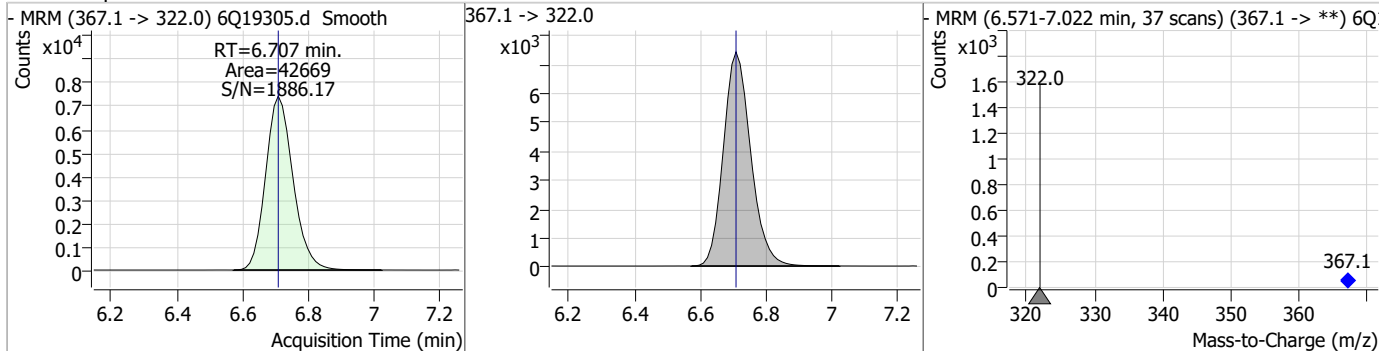
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	17.34	6.29	0.00	445335	314.8 -> 82.9	3.6	1.8	5.3



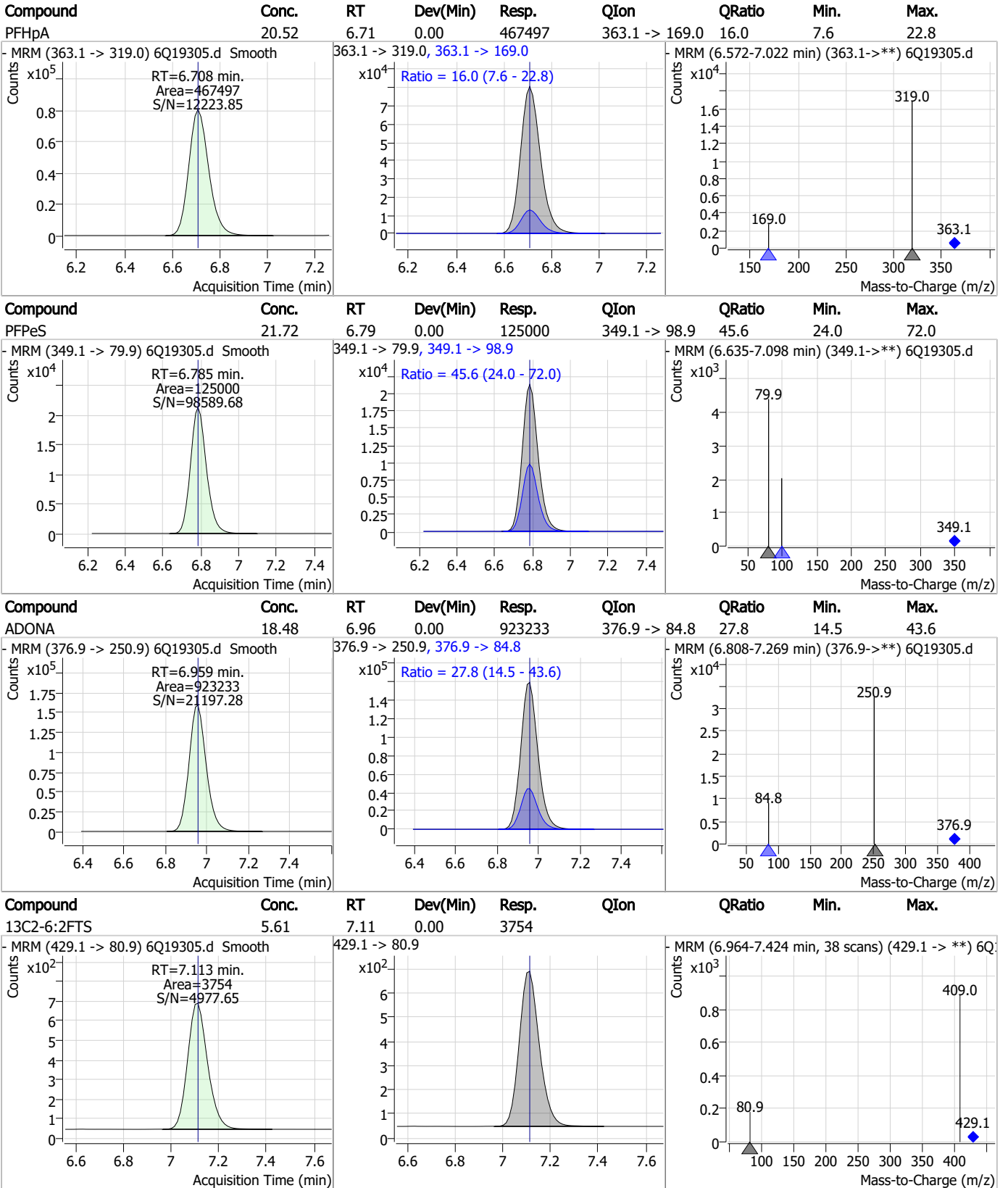
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	20.89	6.37	0.00	78928	341.0 -> 217.0	73.3	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.61	6.71	0.00	42669	367.1 -> 322.0	-	-	-



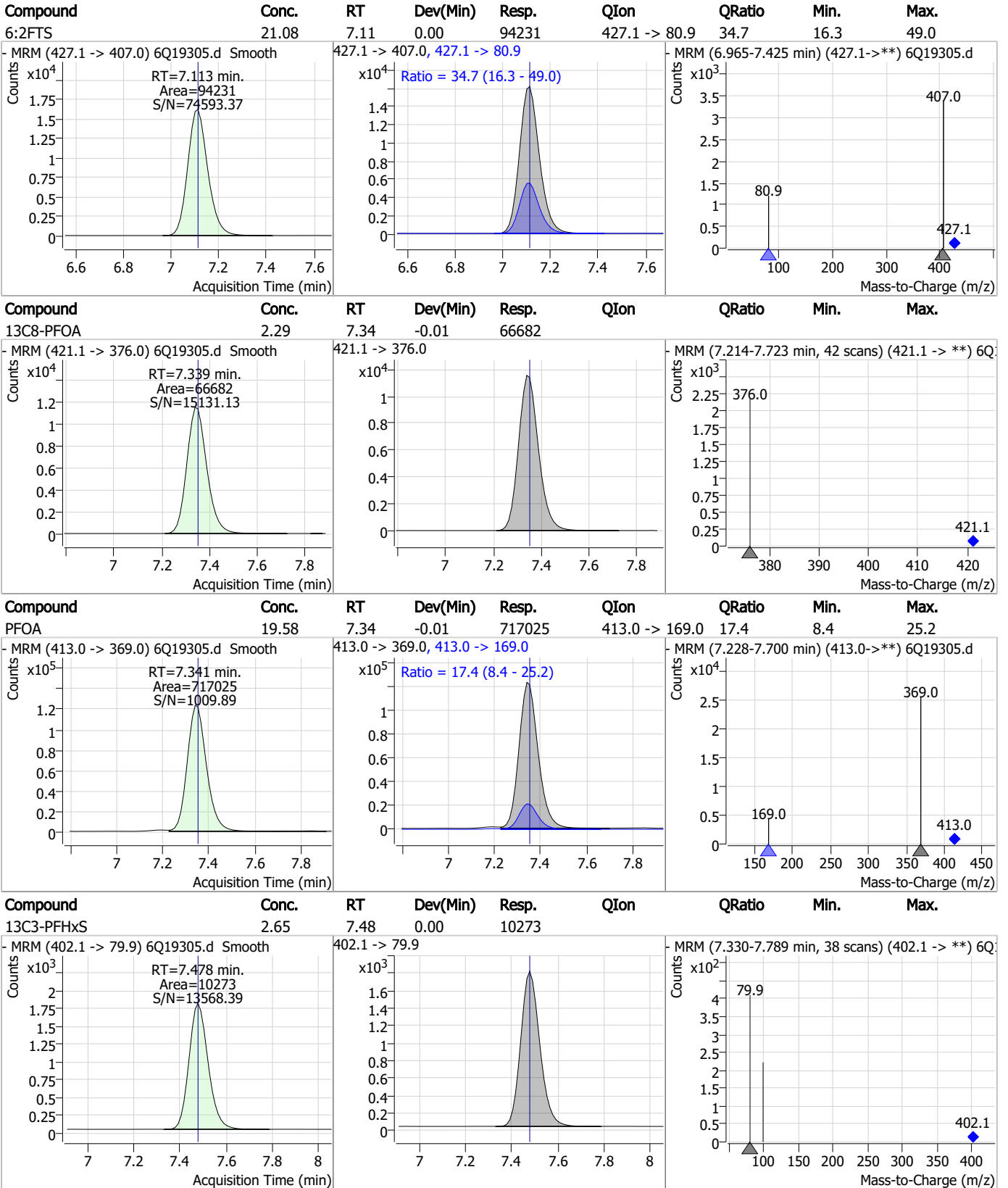
Perfluorinated Compounds by LC/MS/MS



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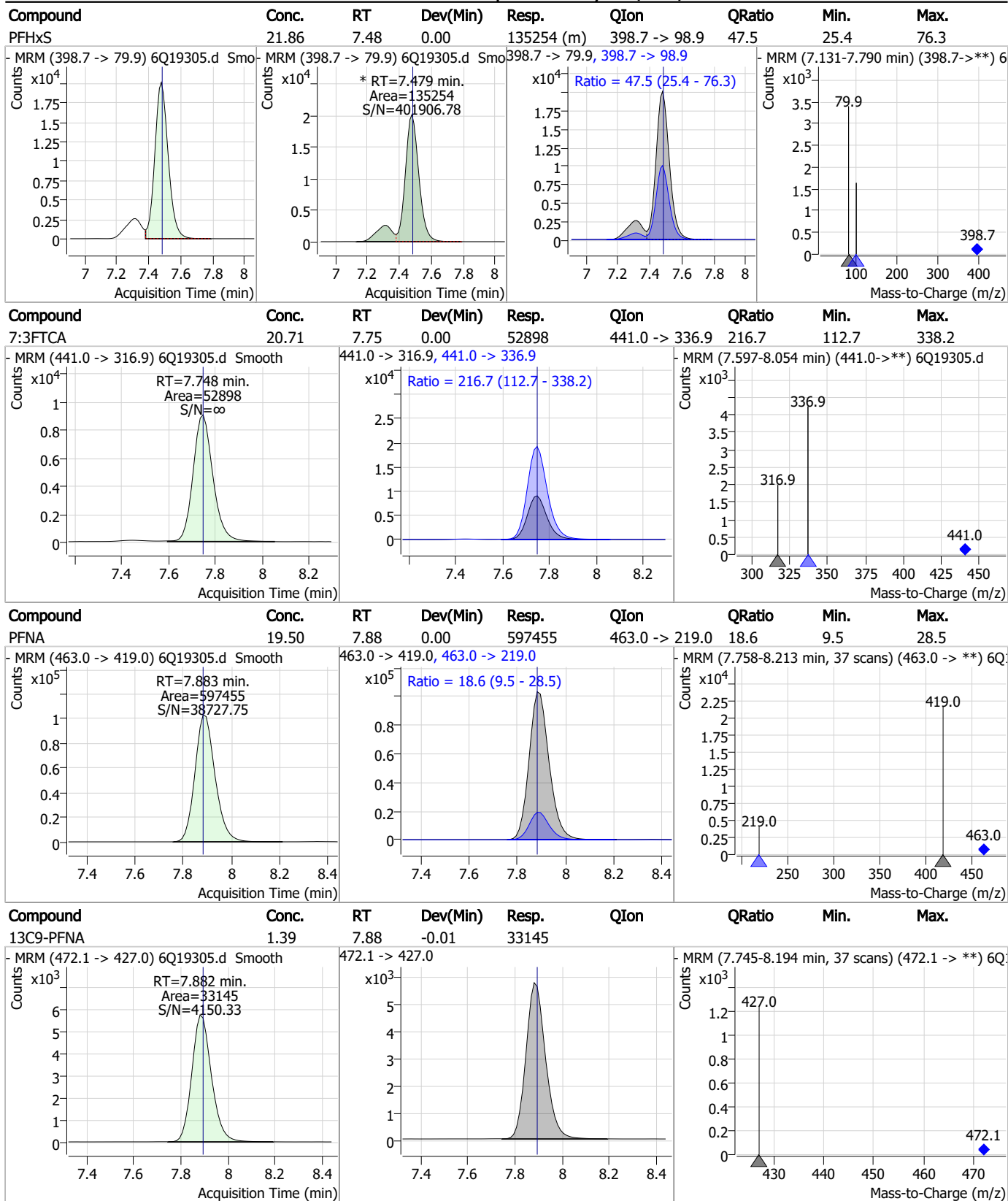
Perfluorinated Compounds by LC/MS/MS



7.7.11

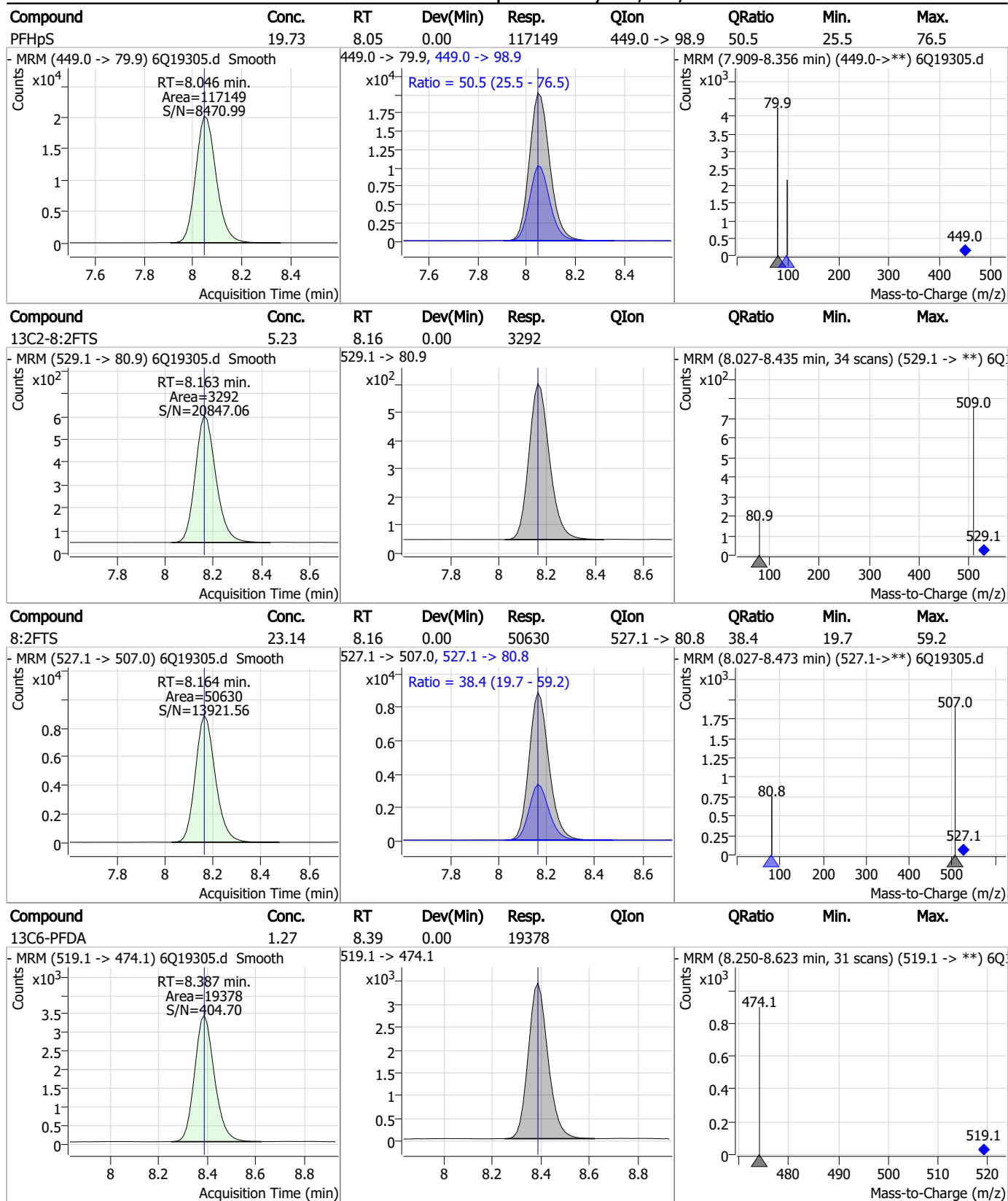
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

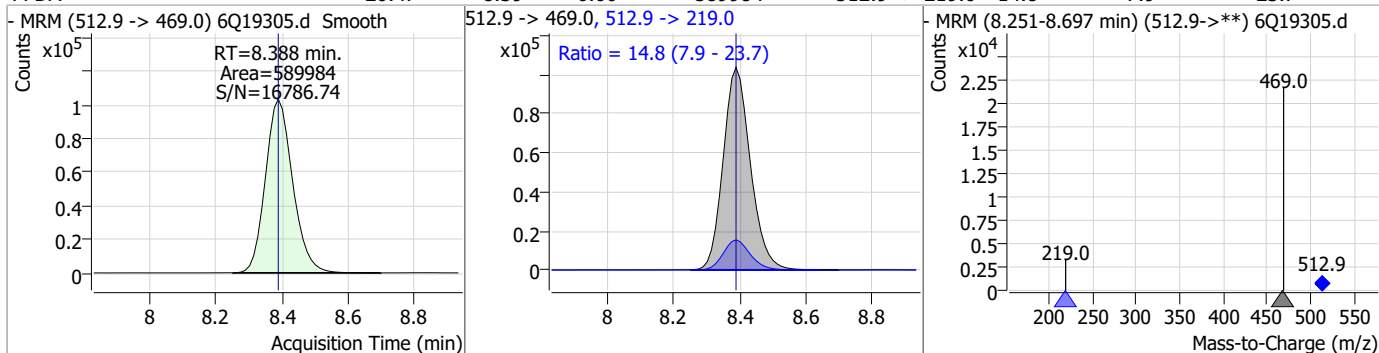


7.7.11

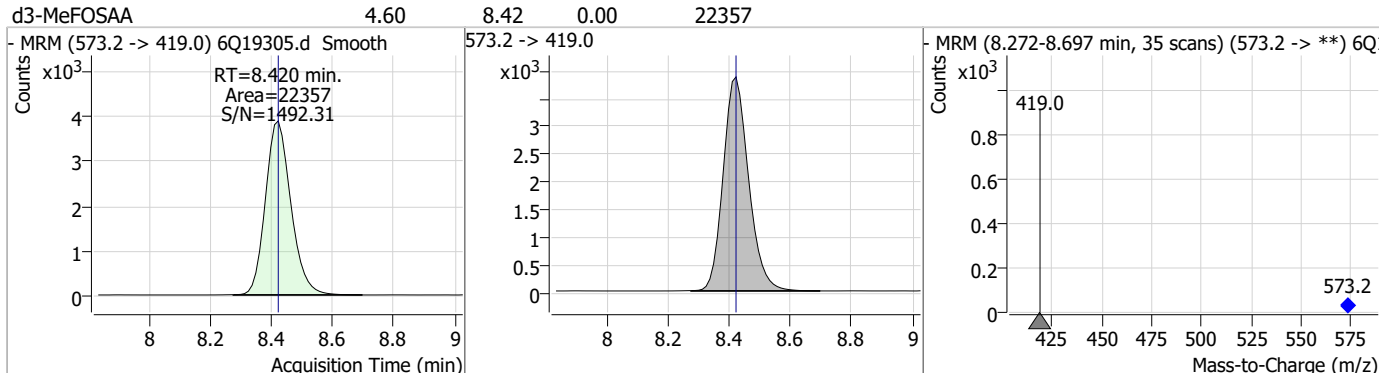
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Perfluorinated Compounds by LC/MS/MS

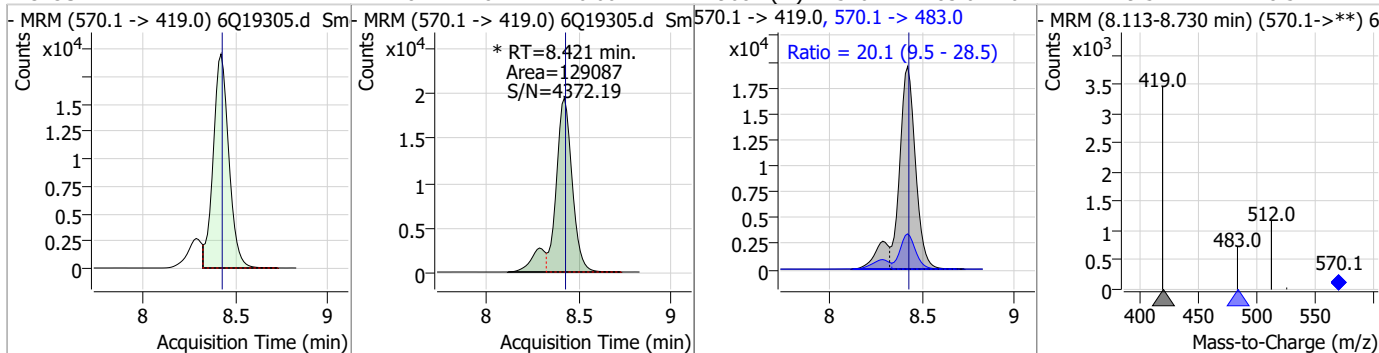
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	20.47	8.39	0.00	589984	512.9 -> 219.0	14.8	7.9	23.7



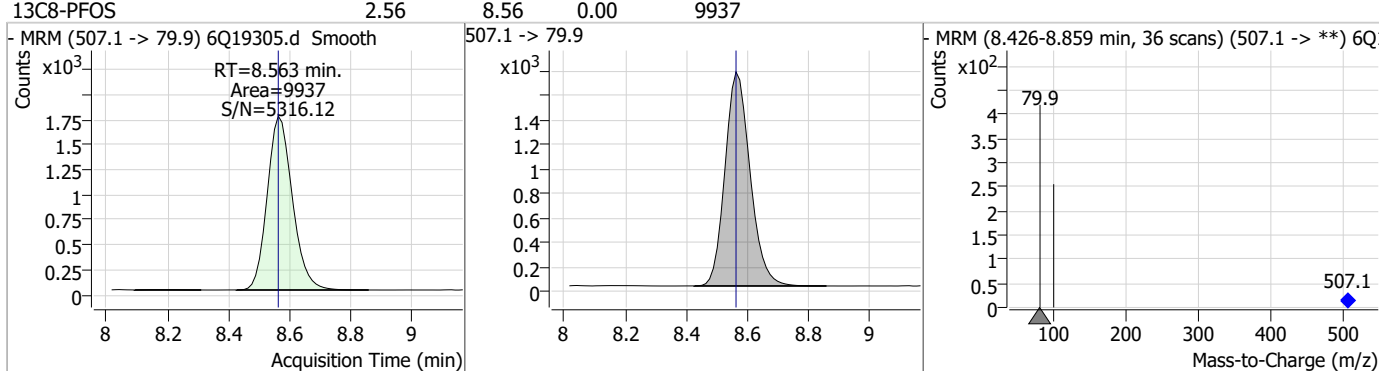
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.60	8.42	0.00	22357				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	22.28	8.42	0.00	129087 (m)	570.1 -> 483.0	20.1	9.5	28.5

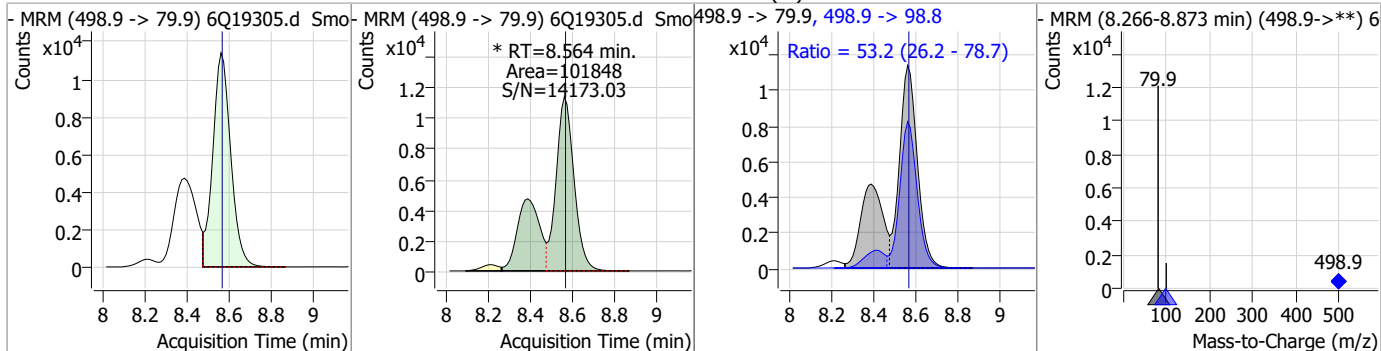


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.56	8.56	0.00	9937				

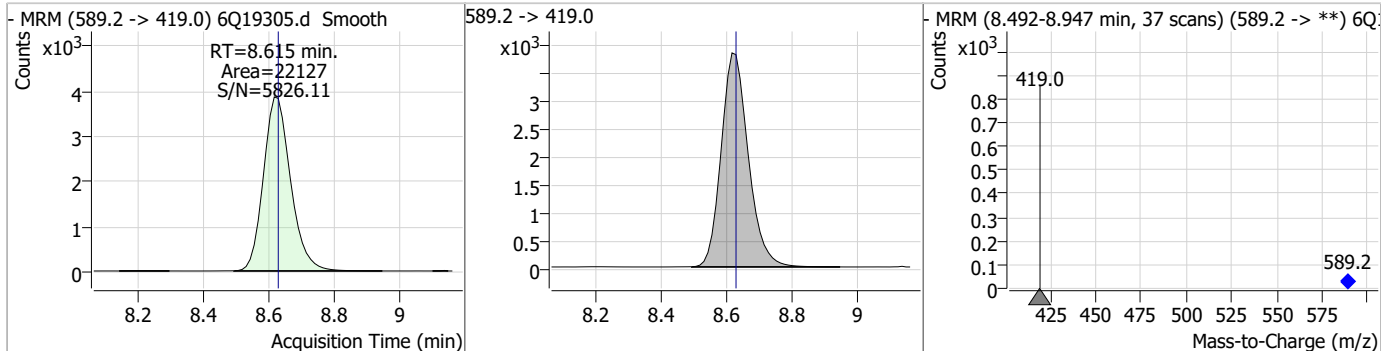


Perfluorinated Compounds by LC/MS/MS

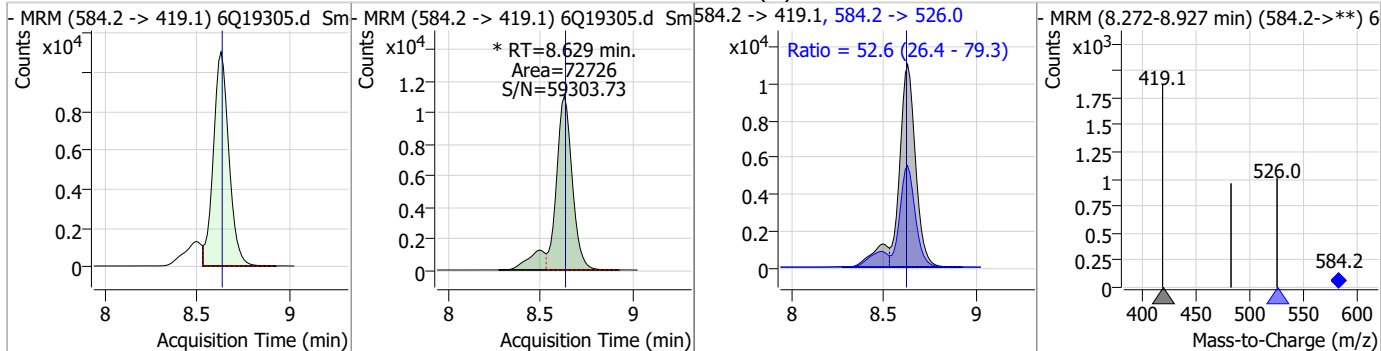
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.27	8.56	0.00	101848 (m)	498.9 -> 98.8	53.2	26.2	78.7



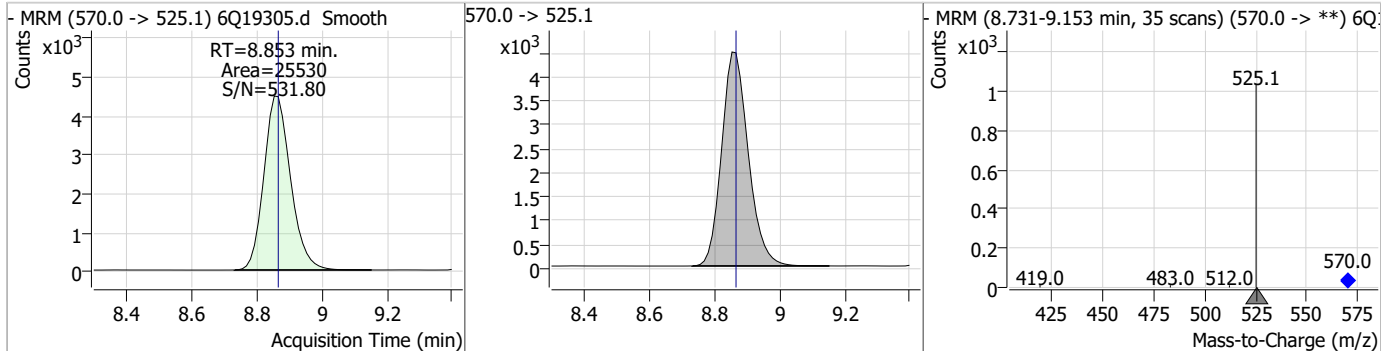
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.37	8.62	-0.01	22127				



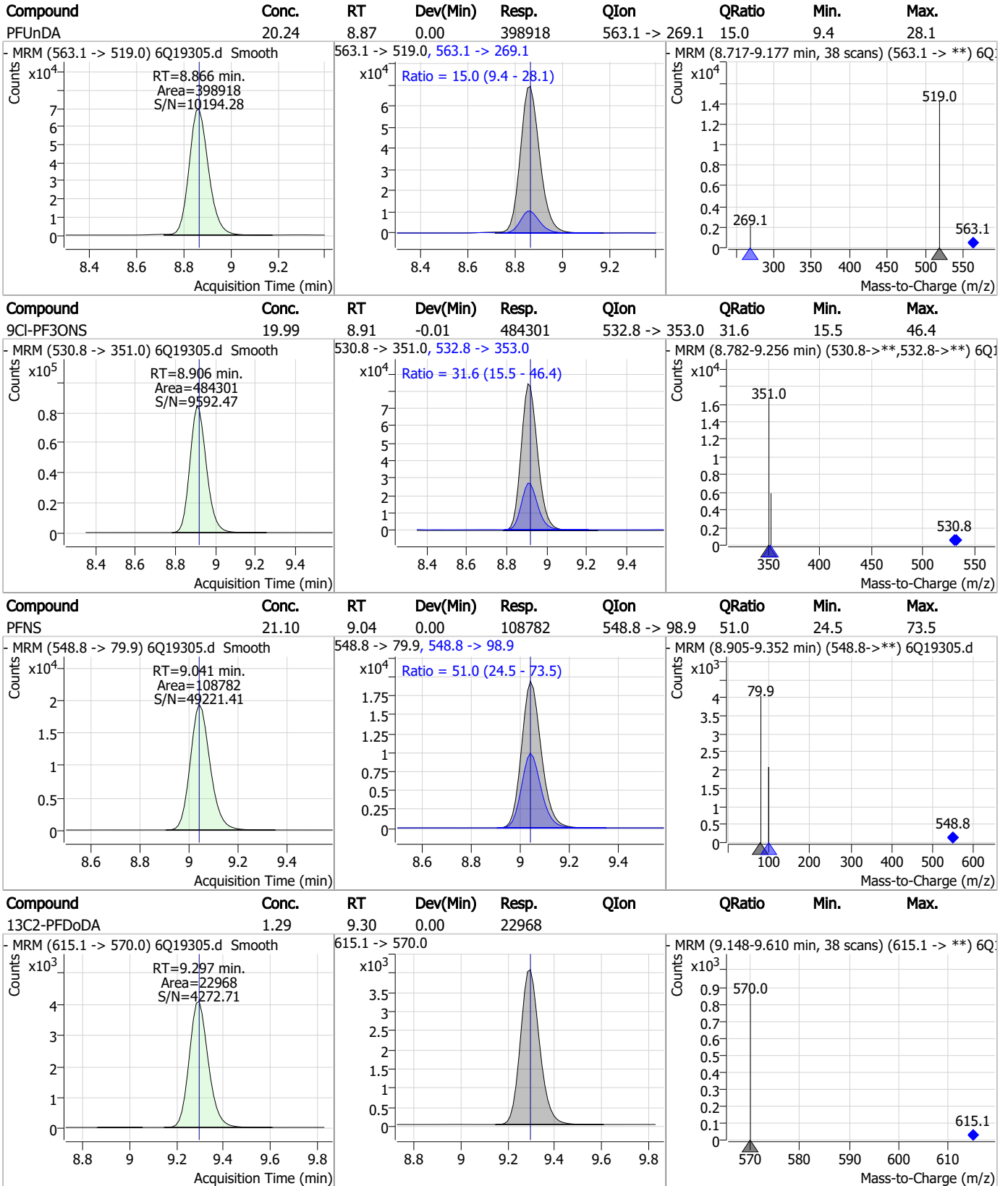
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.41	8.63	0.00	72726 (m)	584.2 -> 526.0	52.6	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.24	8.85	-0.01	25530				



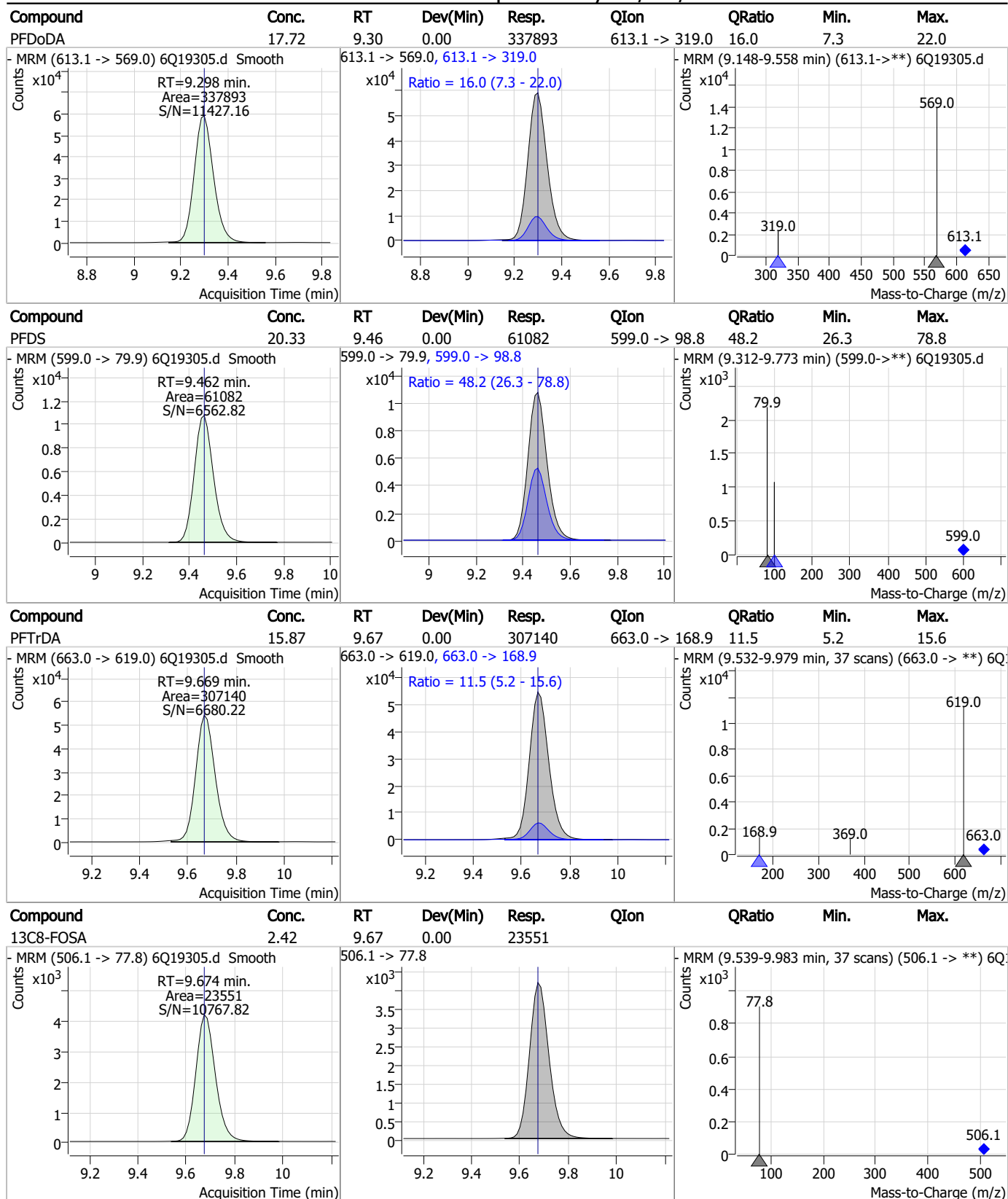
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

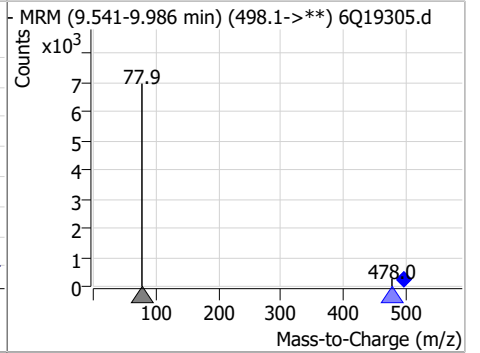
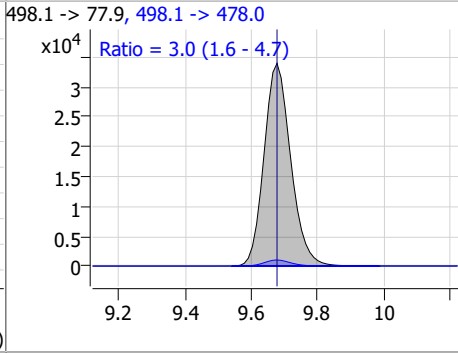
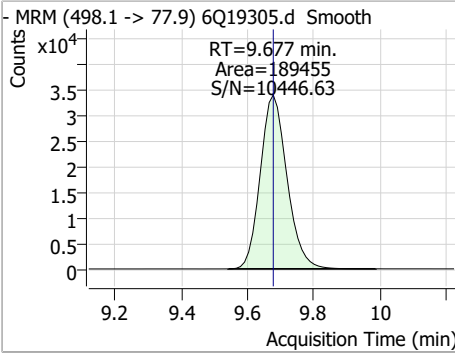


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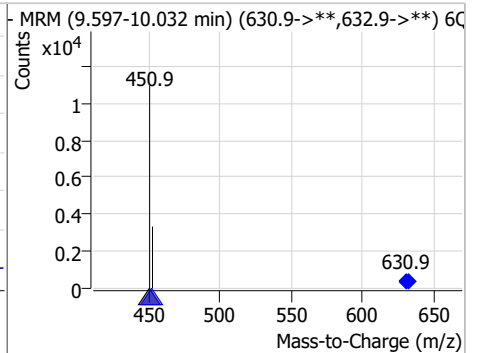
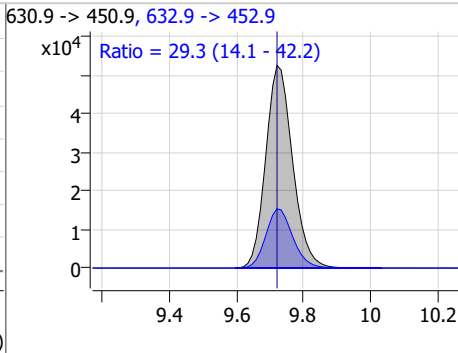
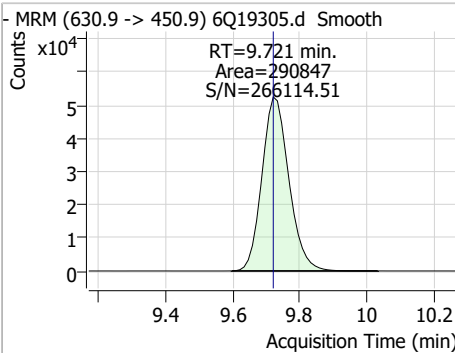
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Perfluorinated Compounds by LC/MS/MS

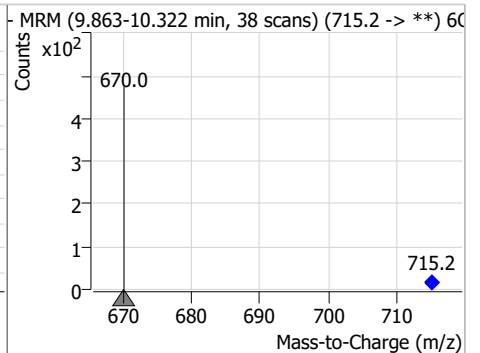
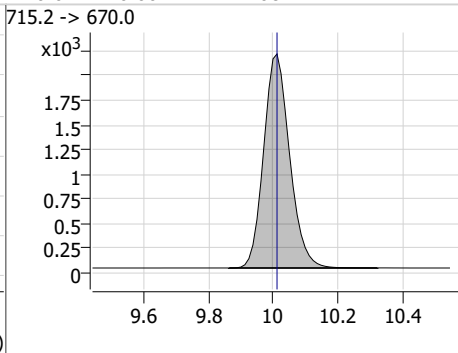
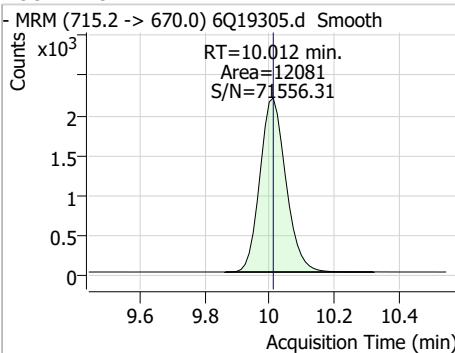
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.25	9.68	0.00	189455	498.1 -> 478.0	3.0	1.6	4.7



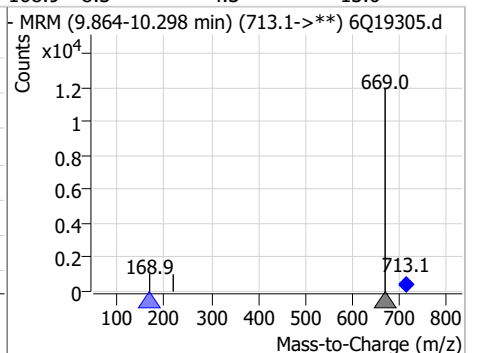
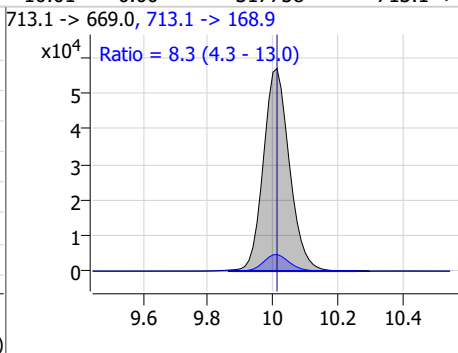
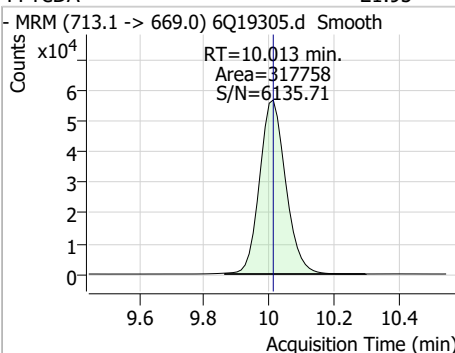
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	20.69	9.72	0.00	290847	632.9 -> 452.9	29.3	14.1	42.2



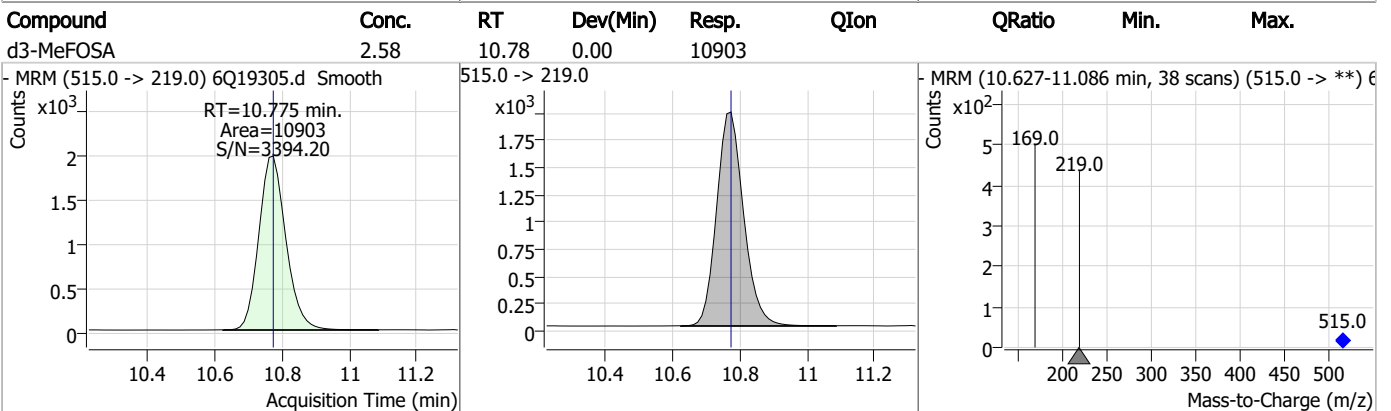
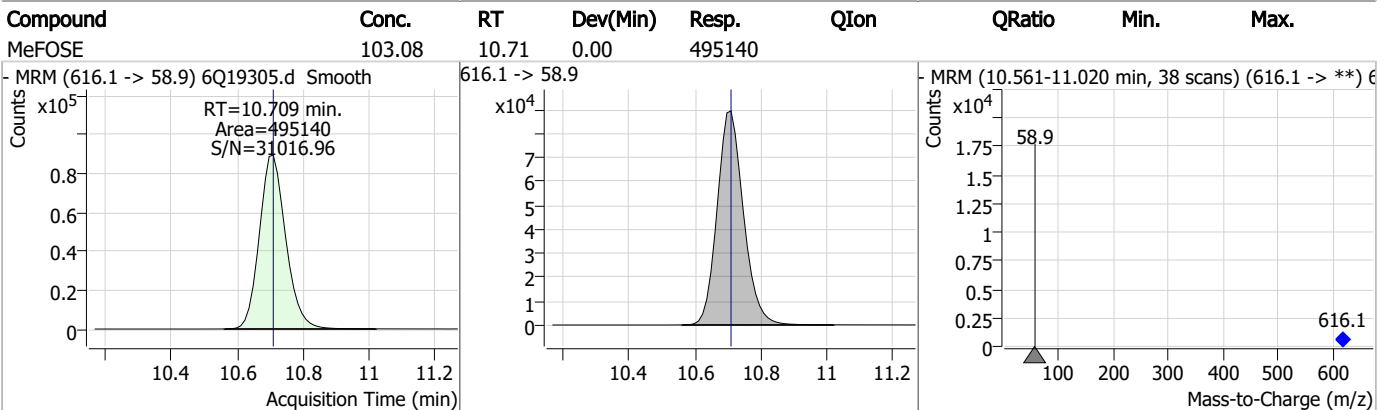
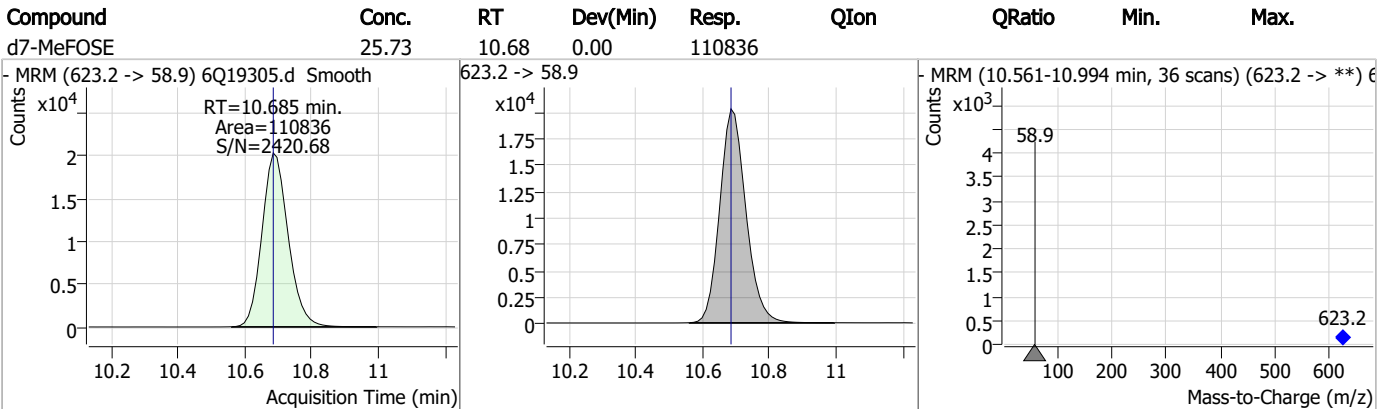
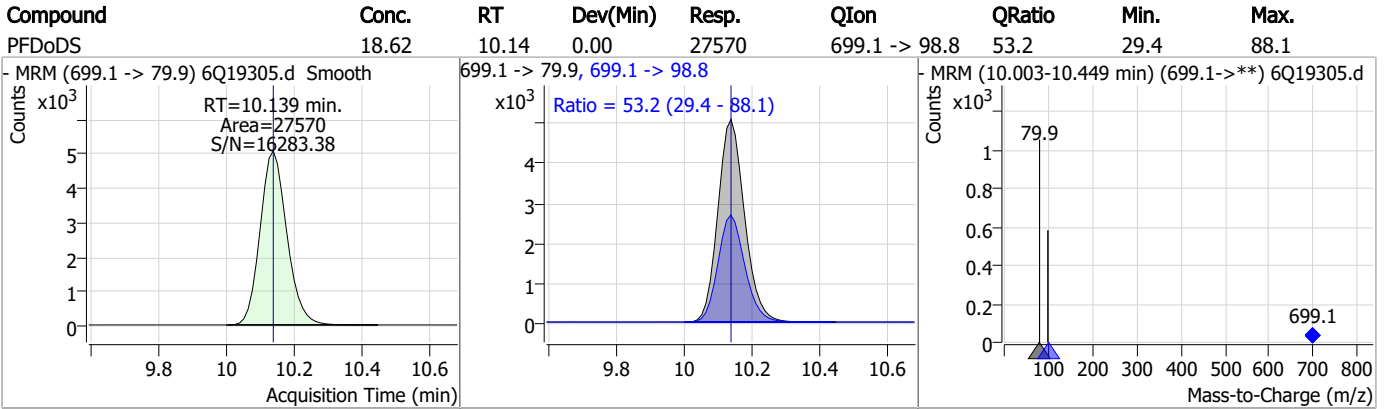
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.21	10.01	0.00	12081	715.2 -> 670.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	21.95	10.01	0.00	317758	713.1 -> 168.9	8.3	4.3	13.0

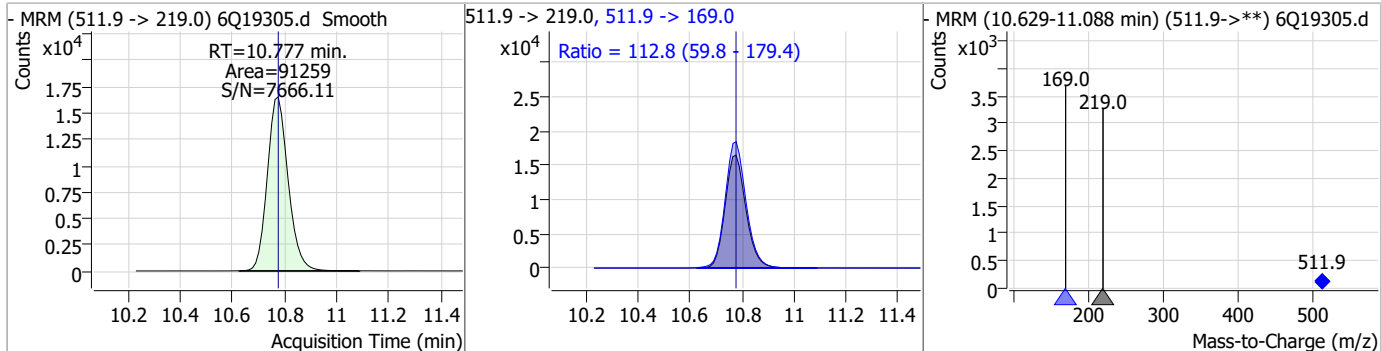


Perfluorinated Compounds by LC/MS/MS

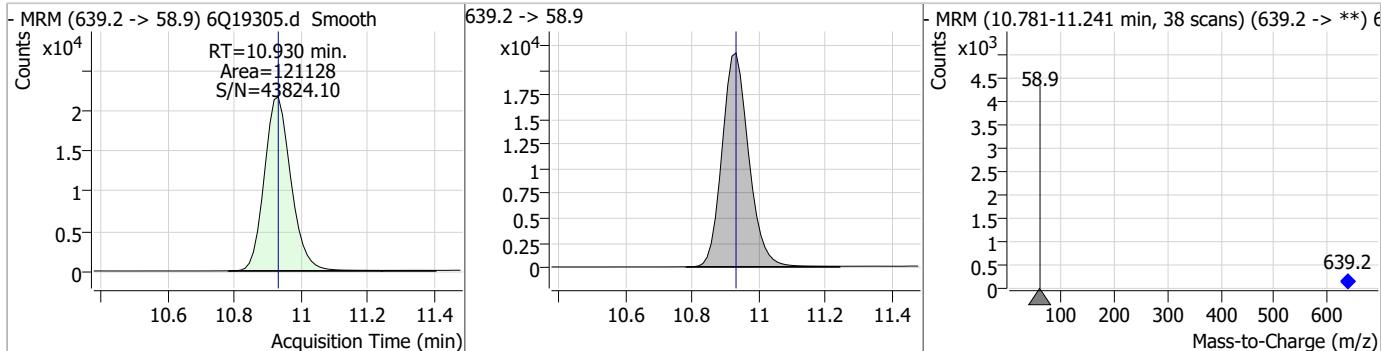


Perfluorinated Compounds by LC/MS/MS

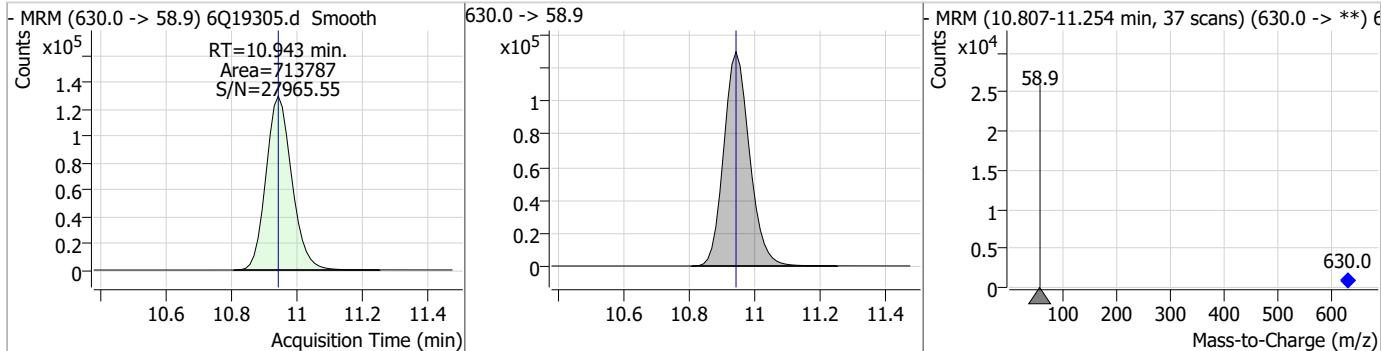
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.48	10.78	0.00	91259	511.9 -> 169.0	112.8	59.8	179.4



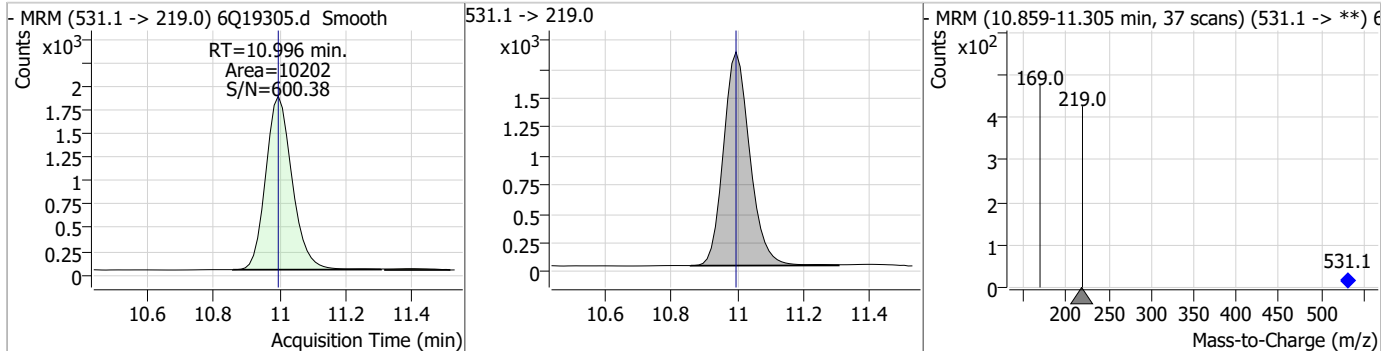
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.85	10.93	0.00	121128				



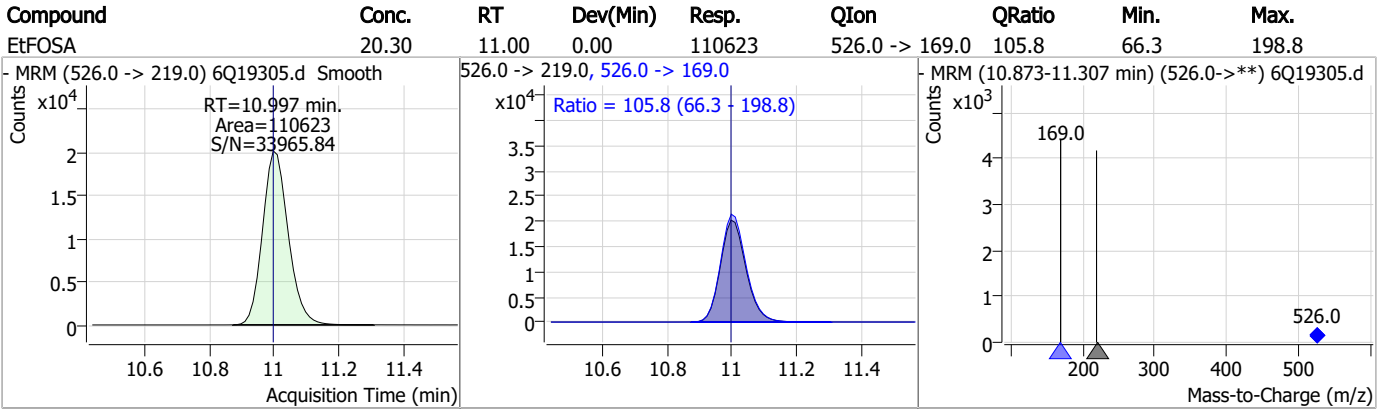
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	113.87	10.94	0.00	713787				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.47	11.00	0.00	10202				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q288-ICV288 Method: EPA DRAFT 1633
Lab FileID: 6Q19305.D Analyst approved: 06/14/23 10:15 Martha Valls
Injection Time: 06/13/23 13:55 Supervisor approved: 06/14/23 11:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.48	Split peak
MeFOSAA	2355-31-9		8.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.56	Split peak
EtFOSAA	2991-50-6		8.63	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19669.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 12:55:02 PM
 Sample Name : cc288-4
 Vial : P1-A5
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97325,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	143507	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	46429	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	47729	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	43944	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	72285	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	33883	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	19870	1.25 µg/L	-0.012
M7-PFUnDA	8.841	570.0 -> 525.1	26556	1.25 µg/L	-0.025
M2-PFDoDA	9.272	615.1 -> 570.0	22871	1.25 µg/L	-0.025
M2-PFTeDA	9.987	715.2 -> 670.0	11654	1.25 µg/L	-0.025
M8-FOSA	9.674	506.1 -> 77.8	26374	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	17660	2.50 µg/L	0.000
M3-PFHxS	7.466	402.1 -> 79.9	11854	2.50 µg/L	-0.012
M8-PFOS	8.550	507.1 -> 79.9	10651	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	2808	5.00 µg/L	0.000
M2-6:2FTS	7.113	429.1 -> 80.9	3998	5.00 µg/L	0.000
M2-8:2FTS	8.150	529.1 -> 80.9	3431	5.00 µg/L	-0.012
M3-MeFOSAA	8.407	573.2 -> 419.0	25666	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	29776	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	21157	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	92556	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	113900	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11171	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11567	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	13997	2.50 µg/L	-0.012
13C3-PFBA	3.089	216.0 -> 172.0	60918	5.00 µg/L	0.000
18O2-PFHxS	7.465	403.0 -> 83.9	8196	2.50 µg/L	-0.012
13C4-PFOA	7.340	417.1 -> 372.0	76608	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	27317	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	42452	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	45967	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2808	5.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.2%		
13C2-6:2FTS	7.113	429.1 -> 80.9	3998	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C2-8:2FTS	8.150	529.1 -> 80.9	3431	4.91 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-PFDoDA	9.272	615.1 -> 570.0	22871	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-PFTeDA	9.987	715.2 -> 670.0	11654	1.14 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.5%		
13C3-PFBS	5.746	302.1 -> 79.9	17660	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C3-PFHxS	7.466	402.1 -> 79.9	11854	2.75 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 = 110.1%	
13C4-PFBA	3.085	216.8 -> 171.9	143507	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.707	367.1 -> 322.0	43944	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFHxA	5.792	318.0 -> 273.0	47729	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C5-PFPeA	4.560	268.3 -> 223.0	46429	5.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.8%	
13C6-PFDA	8.375	519.1 -> 474.1	19870	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C7-PFUnDA	8.841	570.0 -> 525.1	26556	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-FOSA	9.674	506.1 -> 77.8	26374	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOA	7.339	421.1 -> 376.0	72285	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-PFOS	8.550	507.1 -> 79.9	10651	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C9-PFNA	7.882	472.1 -> 427.0	33883	1.31 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.9%	
d3-MeFOSAA	8.407	573.2 -> 419.0	25666	4.85 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	29776	9.38 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.8%	
d3-MeFOSA	10.775	515.0 -> 219.0	11567	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
d5-EtFOSAA	8.615	589.2 -> 419.0	21157	4.71 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.1%	
d7-MeFOSE	10.685	623.2 -> 58.9	92556	19.71 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.8%	
d9-EtFOSE	10.930	639.2 -> 58.9	113900	20.57 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.3%	
d5-EtFOSA	10.996	531.1 -> 219.0	11171	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	45673	9.35 µg/L	98
		327.1 -> 80.9	17649		
6:2FTS	7.101	427.1 -> 407.0	44489	9.35 µg/L	98
		427.1 -> 80.9	14944		
8:2FTS	8.151	527.1 -> 507.0	25470	11.17 µg/L	94
		527.1 -> 80.8	9127		
EtFOSAA	8.617	584.2 -> 419.1	8820	2.46 µg/L	m 95
		584.2 -> 526.0	4949		
FOSA	9.677	498.1 -> 77.9	26306	2.51 µg/L	99
		498.1 -> 478.0	874		
MeFOSAA	8.408	570.1 -> 419.0	17071	2.57 µg/L	m 96
		570.1 -> 483.0	3584		
PFBA	3.093	212.8 -> 168.9	55574	9.61 µg/L	100
PFBS	5.747	298.7 -> 79.9	16809	2.13 µg/L	96
		298.7 -> 98.8	6835		
PFDA	8.376	512.9 -> 469.0	73288	2.48 µg/L	98
		512.9 -> 219.0	11048		
PFDODA	9.273	613.1 -> 569.0	43653	2.30 µg/L	98
		613.1 -> 319.0	6701		
PFDS	9.436	599.0 -> 79.9	7107	2.21 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3687			
PFHpA	6.708	363.1 -> 319.0	61248	2.61	µg/L	99
		363.1 -> 169.0	9641			
PFHpS	8.046	449.0 -> 79.9	13814	2.17	µg/L	97
		449.0 -> 98.9	7296			
PFHxA	5.795	313.0 -> 269.0	48306	2.51	µg/L	99
		313.0 -> 118.9	2349			
PFHxS	7.467	398.7 -> 79.9	14574	2.04	µg/L	m 100
		398.7 -> 98.9	7388			
PFNA	7.883	463.0 -> 419.0	78855	2.52	µg/L	97
		463.0 -> 219.0	13965			
PFNS	9.029	548.8 -> 79.9	12816	2.32	µg/L	96
		548.8 -> 98.9	6595			
PFOA	7.341	413.0 -> 369.0	95233	2.40	µg/L	100
		413.0 -> 169.0	16177			
PFOS	8.552	498.9 -> 79.9	13618	2.15	µg/L	m 95
		498.9 -> 98.8	6659			
PFPeA	4.563	263.0 -> 219.0	67750	4.94	µg/L	100
PFPeS	6.785	349.1 -> 79.9	14030	2.11	µg/L	99
		349.1 -> 98.9	6677			
PFTeDA	9.988	713.1 -> 669.0	35516	2.54	µg/L	99
		713.1 -> 168.9	3126			
PFTrDA	9.656	663.0 -> 619.0	42784	2.22	µg/L	96
		663.0 -> 168.9	5092			
PFUnDA	8.841	563.1 -> 519.0	49922	2.43	µg/L	98
		563.1 -> 269.1	8847			
11CI-PF3OUdS	9.708	630.9 -> 450.9	63697	4.70	µg/L	92
		632.9 -> 452.9	20563			
9CI-PF3ONS	8.893	530.8 -> 351.0	115895	4.96	µg/L	99
		532.8 -> 353.0	35099			
ADONA	6.946	376.9 -> 250.9	246352	5.11	µg/L	96
		376.9 -> 84.8	66716			
HFPO-DA	6.169	284.9 -> 168.9	17347	5.57	µg/L	99
		284.9 -> 184.9	2093			
3:3FTCA	3.958	241.0 -> 177.0	10557	11.38	µg/L	99
		241.0 -> 117.0	1463			
5:3FTCA	6.374	341.0 -> 237.1	232359	60.69	µg/L	97
		341.0 -> 217.0	178335			
7:3FTCA	7.748	441.0 -> 316.9	167768	64.81	µg/L	97
		441.0 -> 336.9	385853			
EtFOSA	10.997	526.0 -> 219.0	30237	5.07	µg/L	95
		526.0 -> 169.0	38459			
EtFOSE	10.943	630.0 -> 58.9	70012	11.88	µg/L	100
MeFOSA	10.777	511.9 -> 219.0	24961	4.77	µg/L	m 78
		511.9 -> 169.0	35823			
MeFOSE	10.709	616.1 -> 58.9	49139	12.25	µg/L	m 100
PFDoDS	10.127	699.1 -> 79.9	3357	2.11	µg/L	99
		699.1 -> 98.8	1948			
NFDHA	5.673	295.0 -> 201.0	11940	4.85	µg/L	96
		295.0 -> 84.9	3442			
PFMBA	4.988	279.0 -> 85.1	48217	4.93	µg/L	100
PFMPA	3.667	229.0 -> 84.9	38426	5.03	µg/L	100
PFEESA	6.288	314.8 -> 134.9	120384	4.62	µg/L	100
		314.8 -> 82.9	4104			

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



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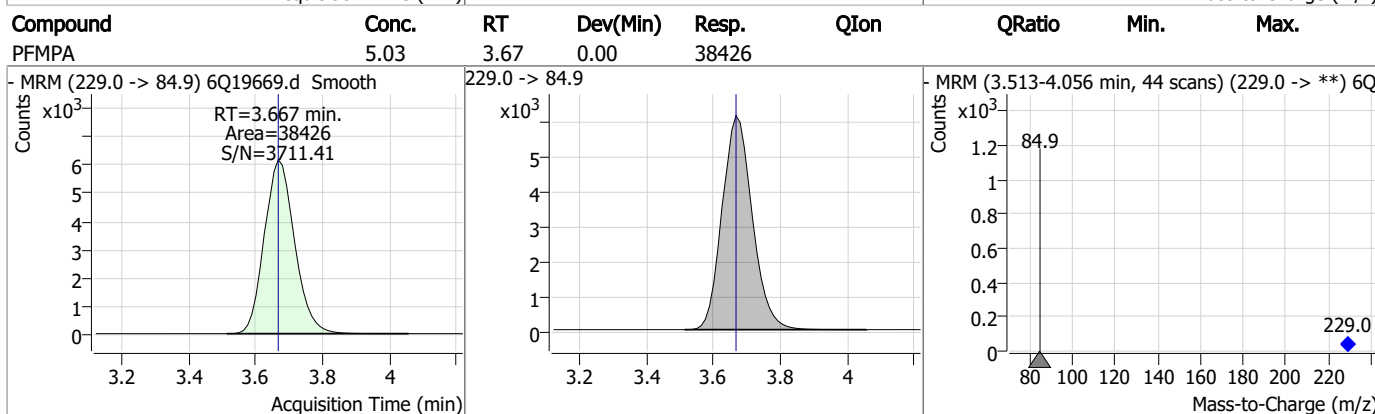
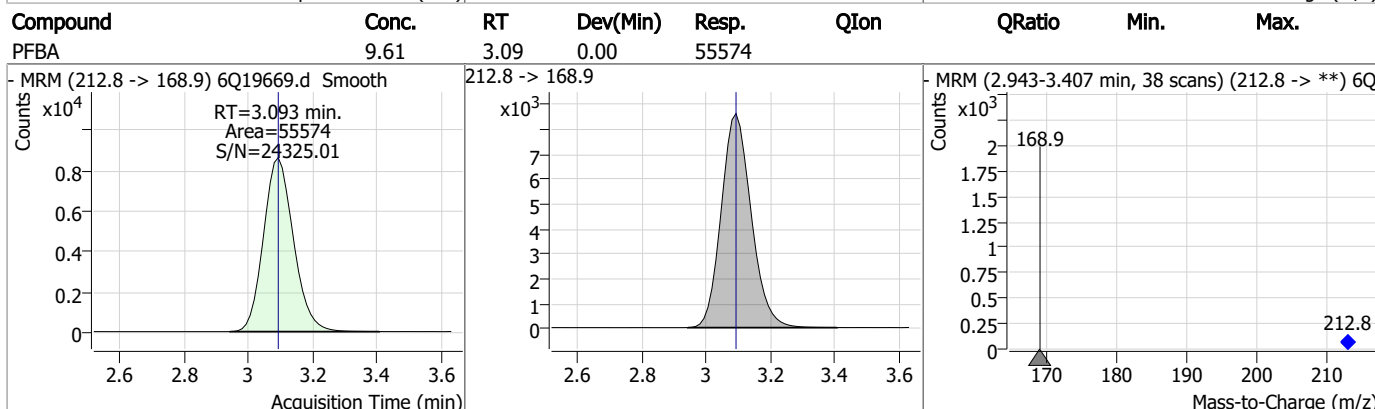
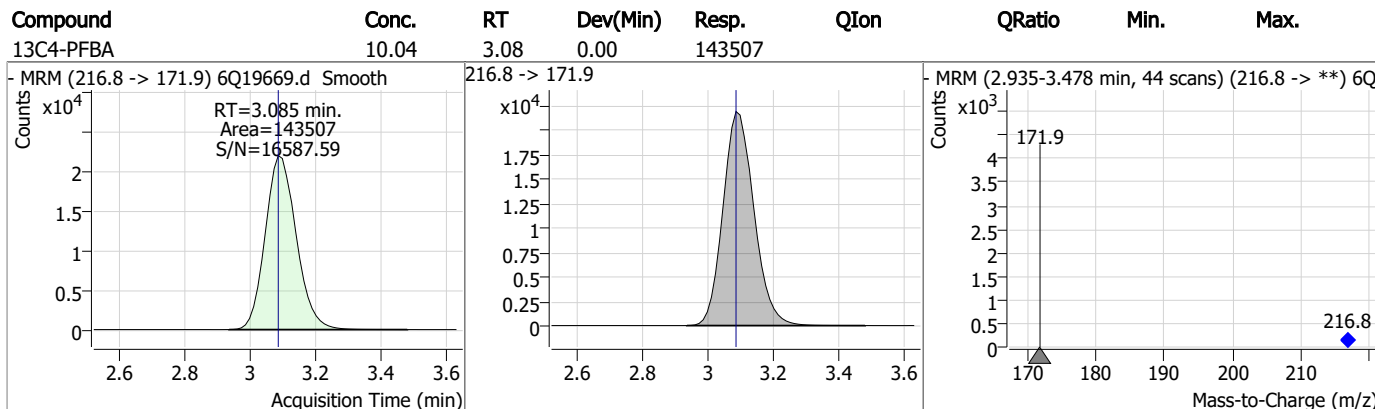
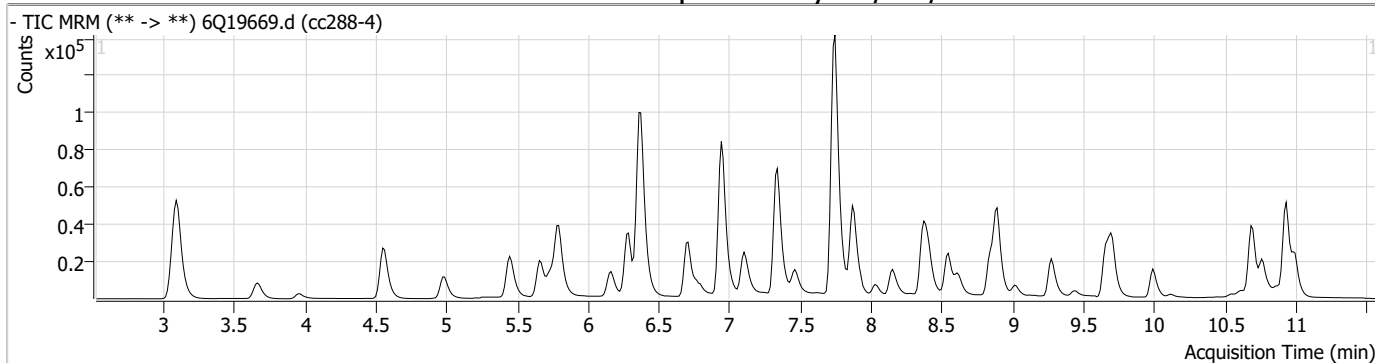
Perfluorinated Compounds by LC/MS/MS

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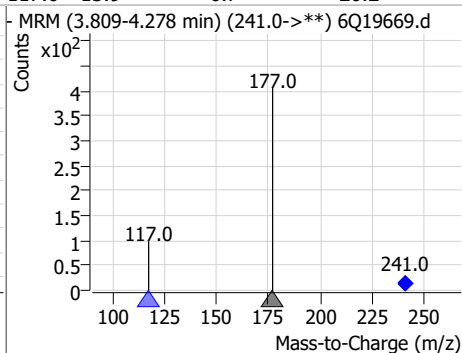
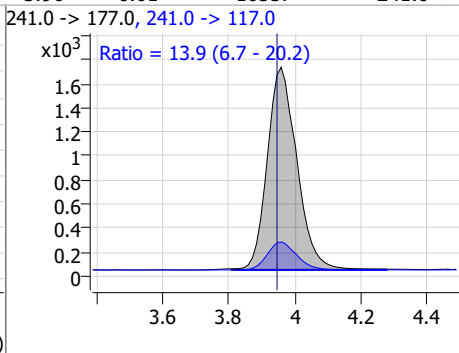
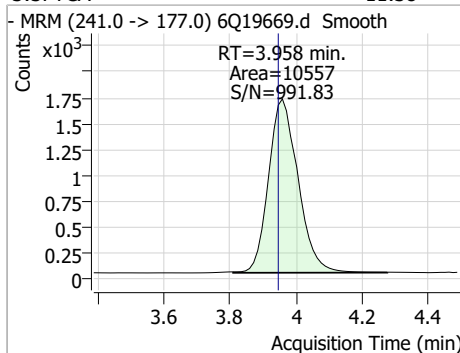
Perfluorinated Compounds by LC/MS/MS



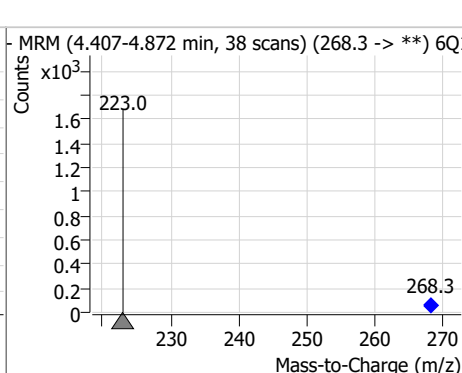
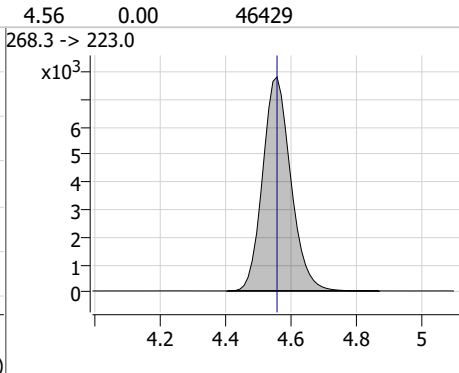
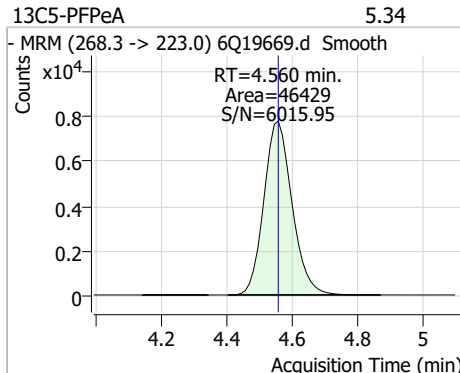
7.7.12
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Perfluorinated Compounds by LC/MS/MS

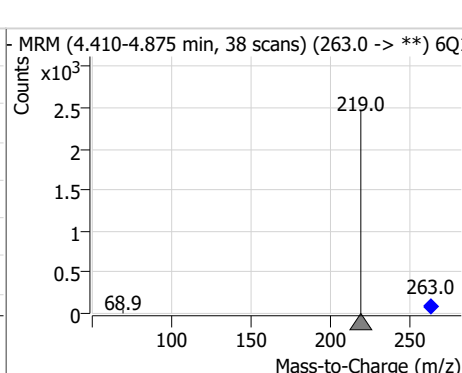
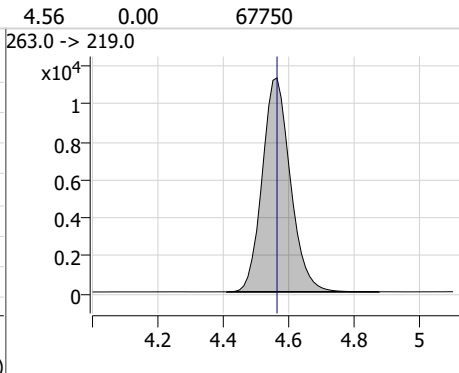
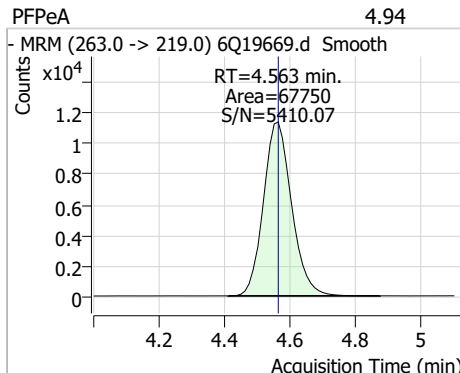
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.38	3.96	0.01	10557	241.0 -> 117.0	13.9	6.7	20.2



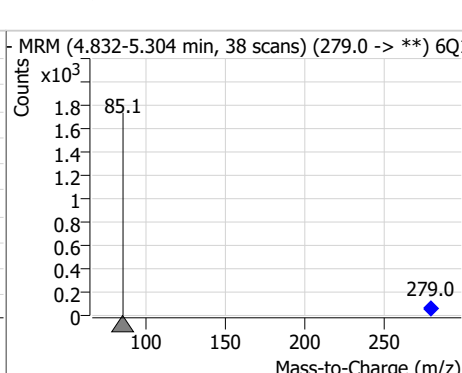
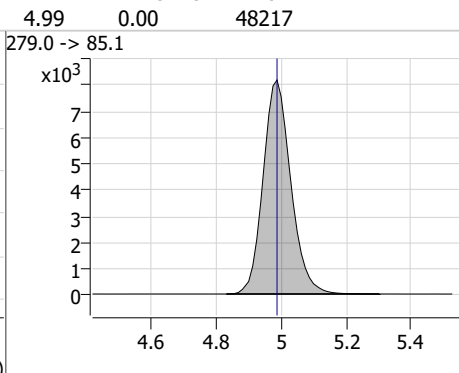
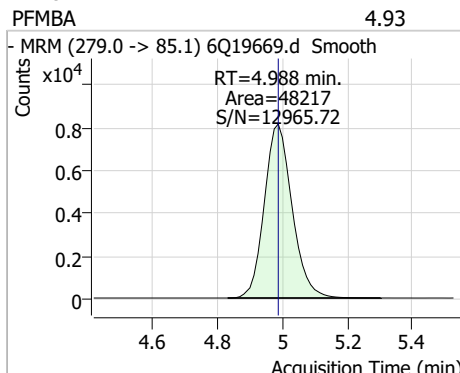
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.34	4.56	0.00	46429				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.94	4.56	0.00	67750				

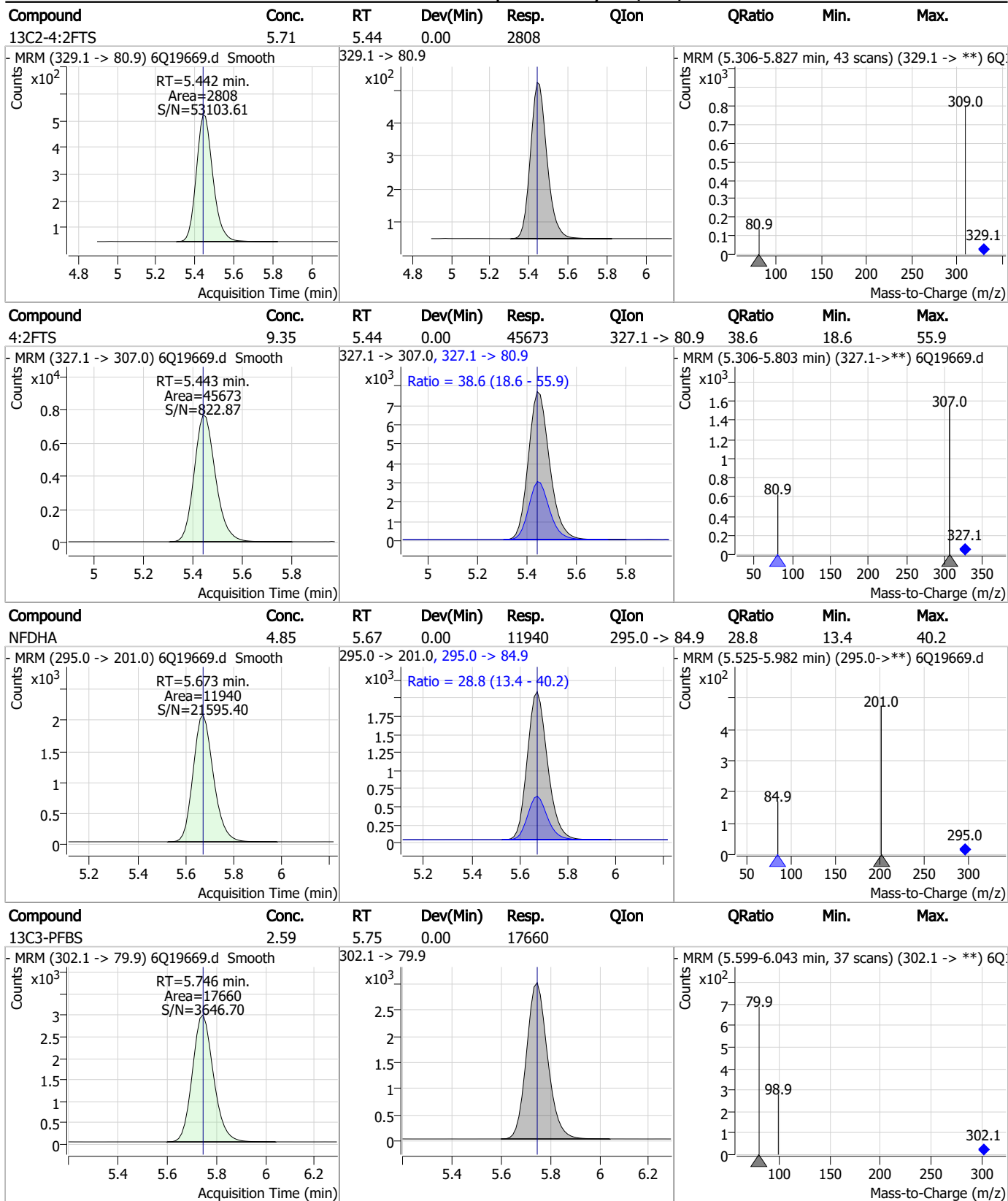


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.93	4.99	0.00	48217				



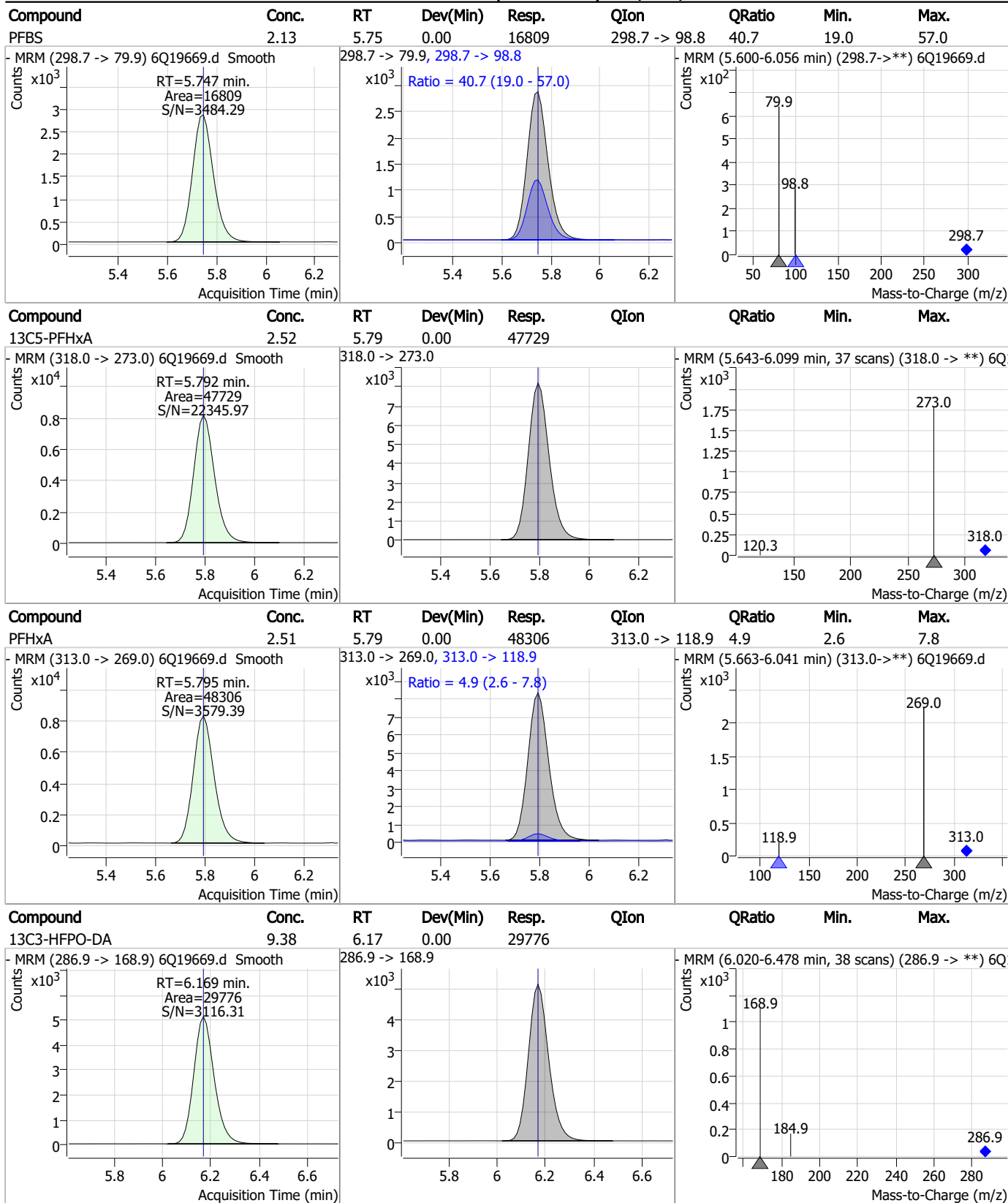
7.7.12
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Perfluorinated Compounds by LC/MS/MS



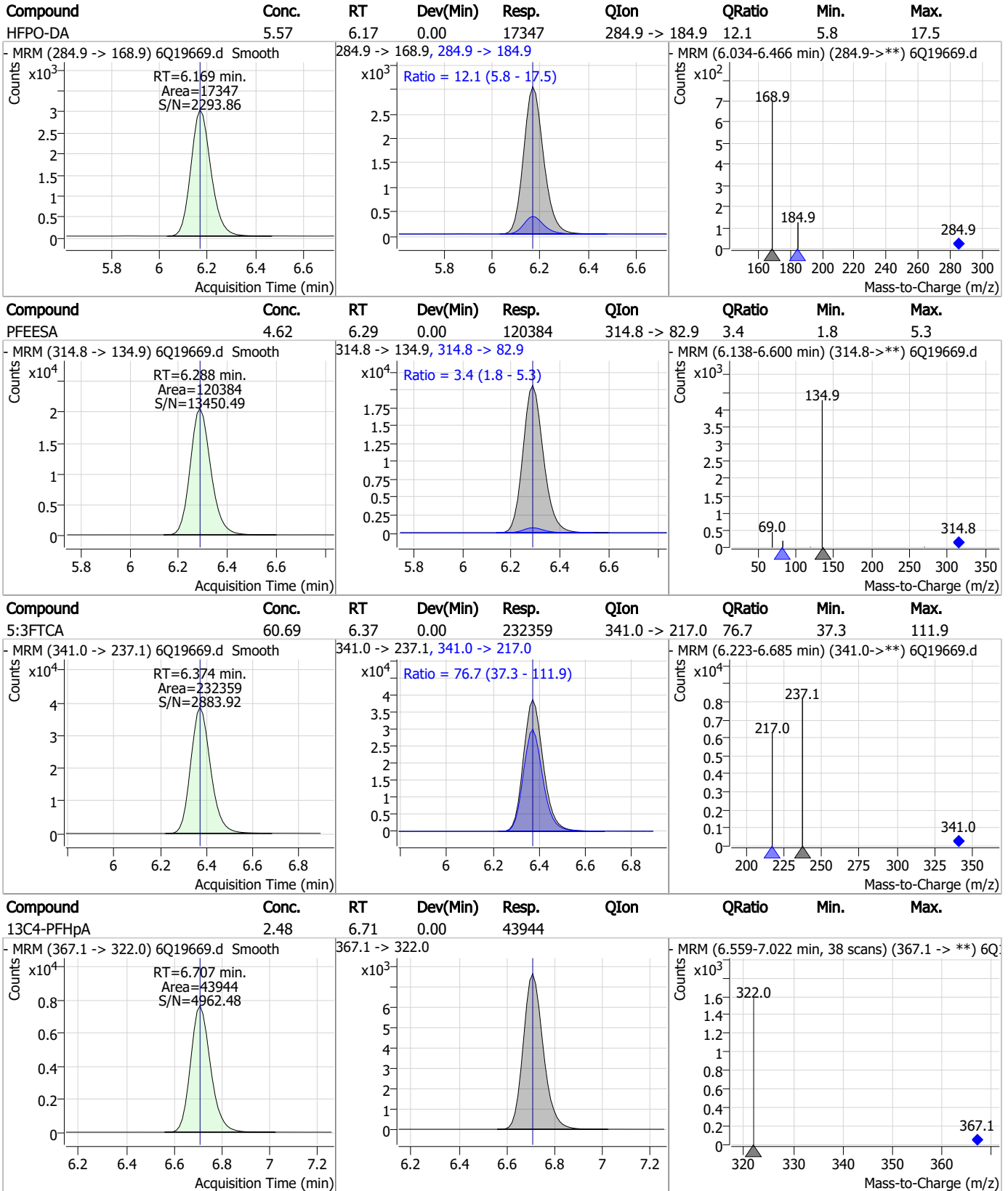
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Perfluorinated Compounds by LC/MS/MS



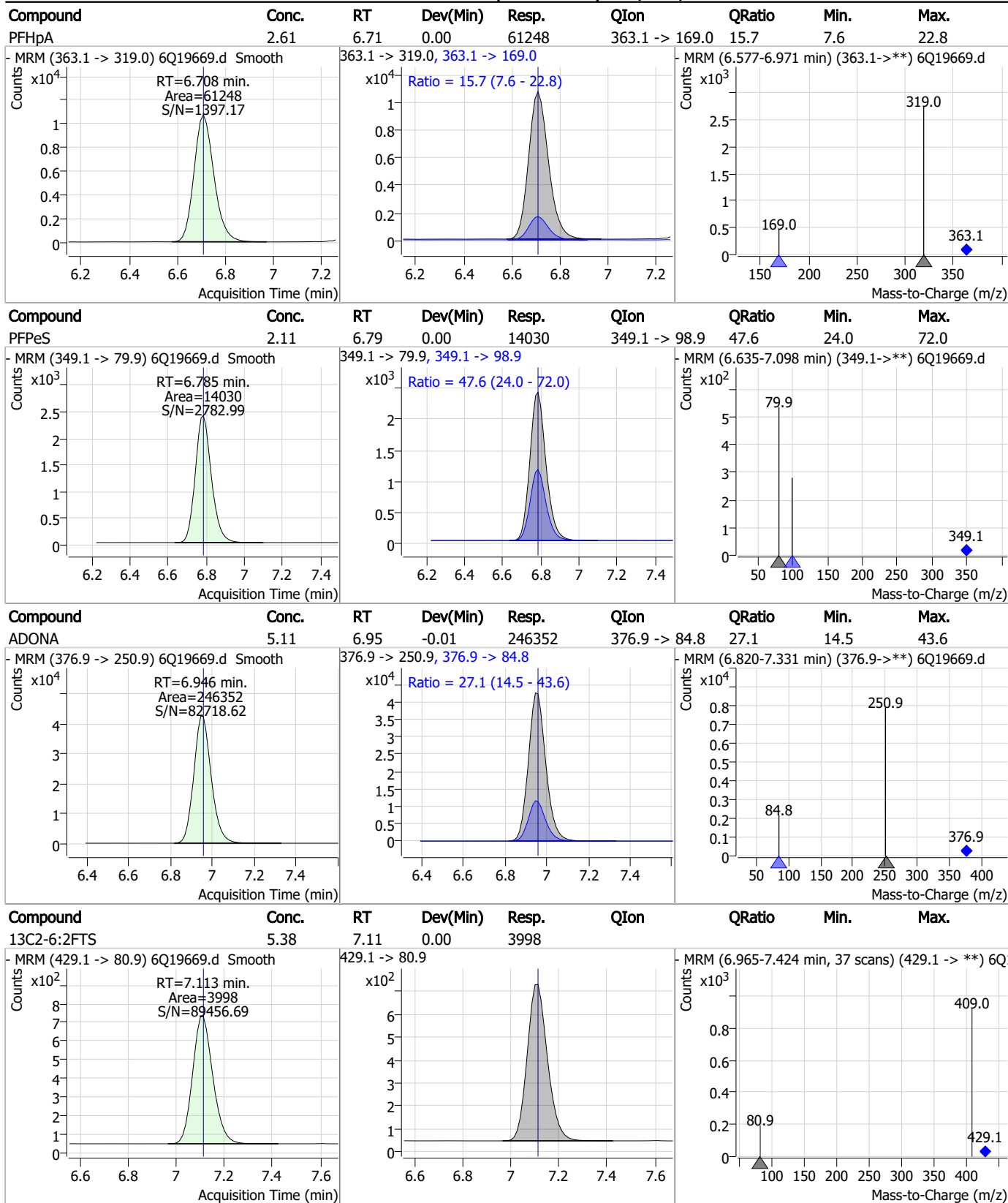
7.7.12
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Perfluorinated Compounds by LC/MS/MS



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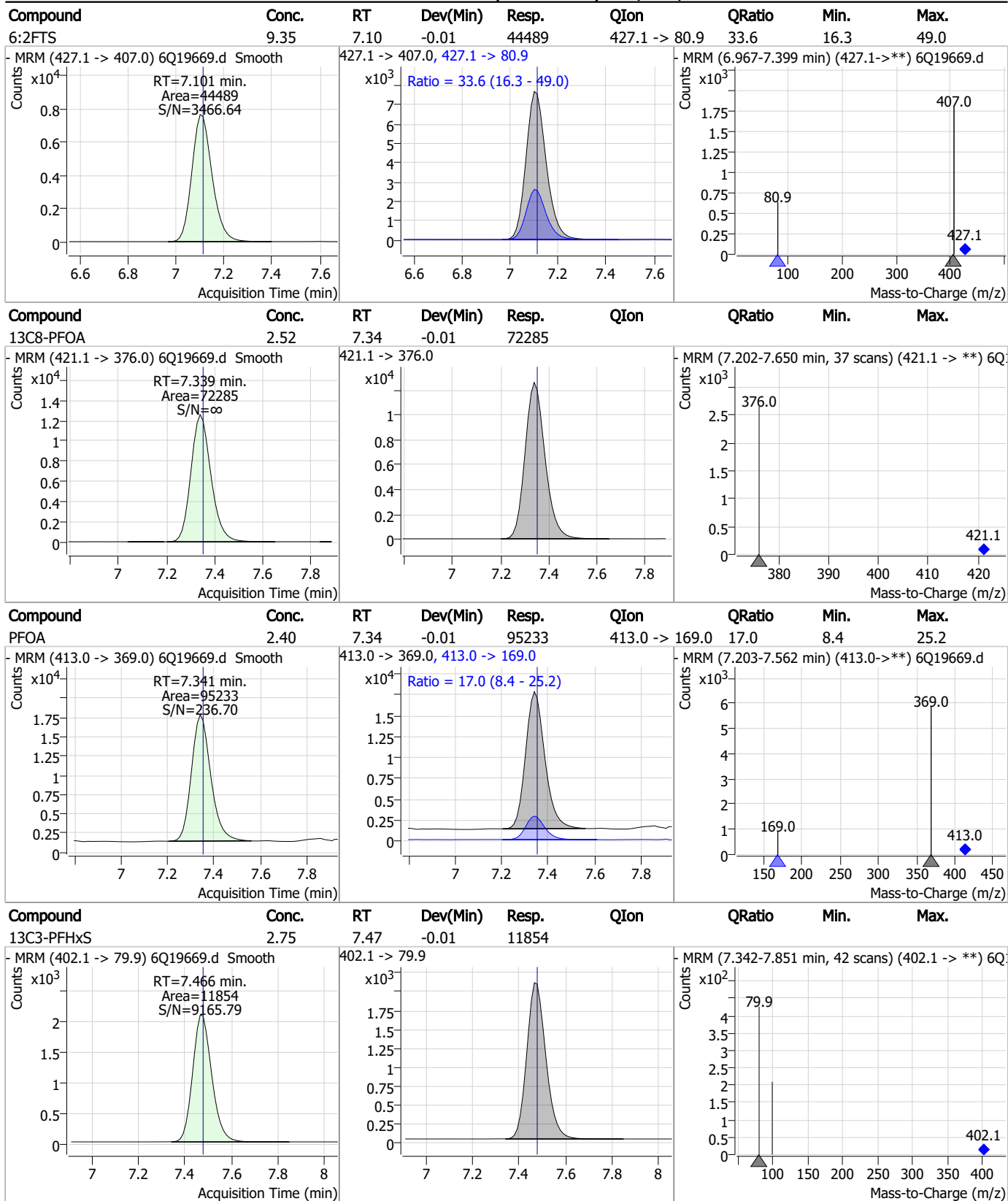
Perfluorinated Compounds by LC/MS/MS



7.7.12

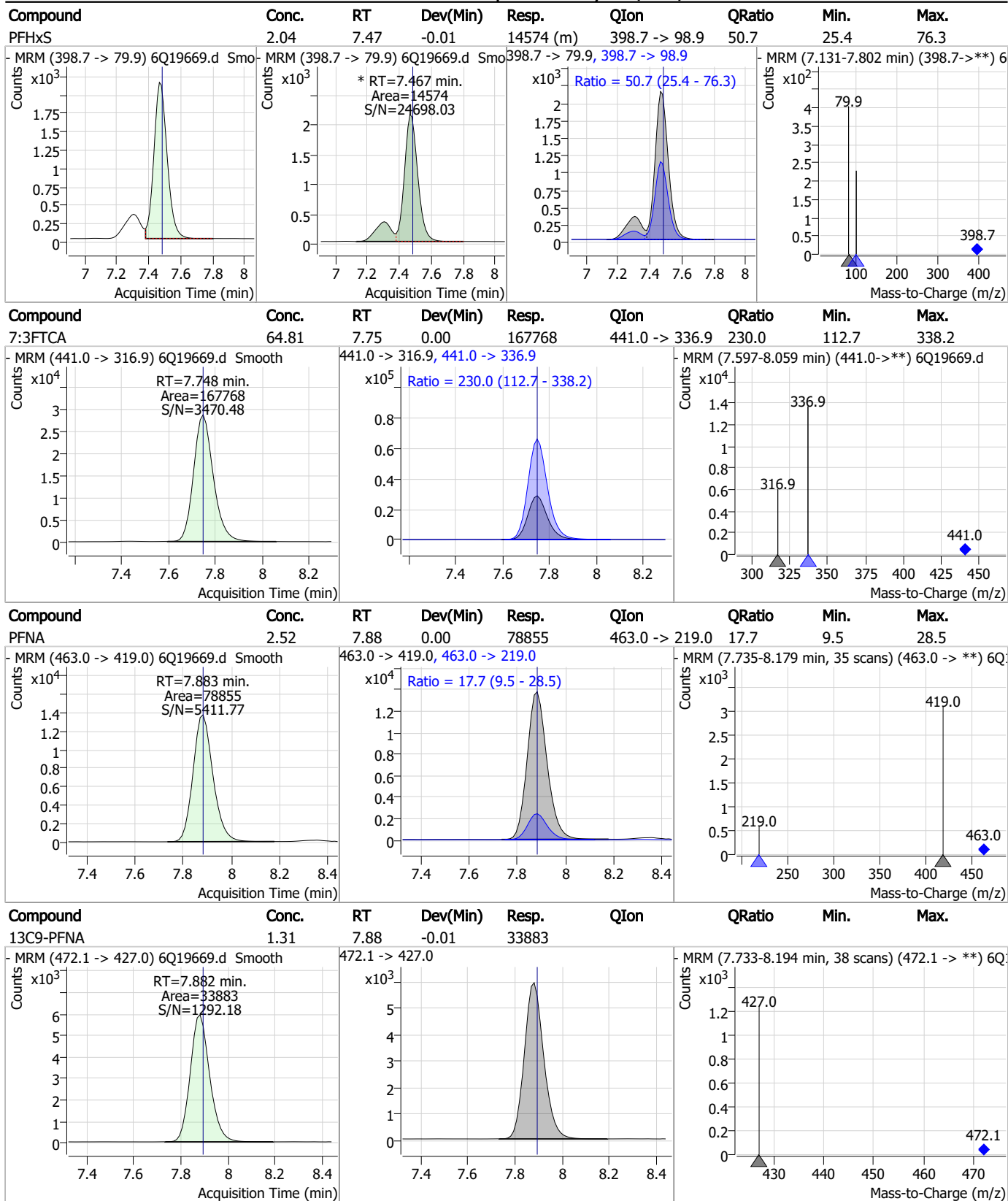


Perfluorinated Compounds by LC/MS/MS



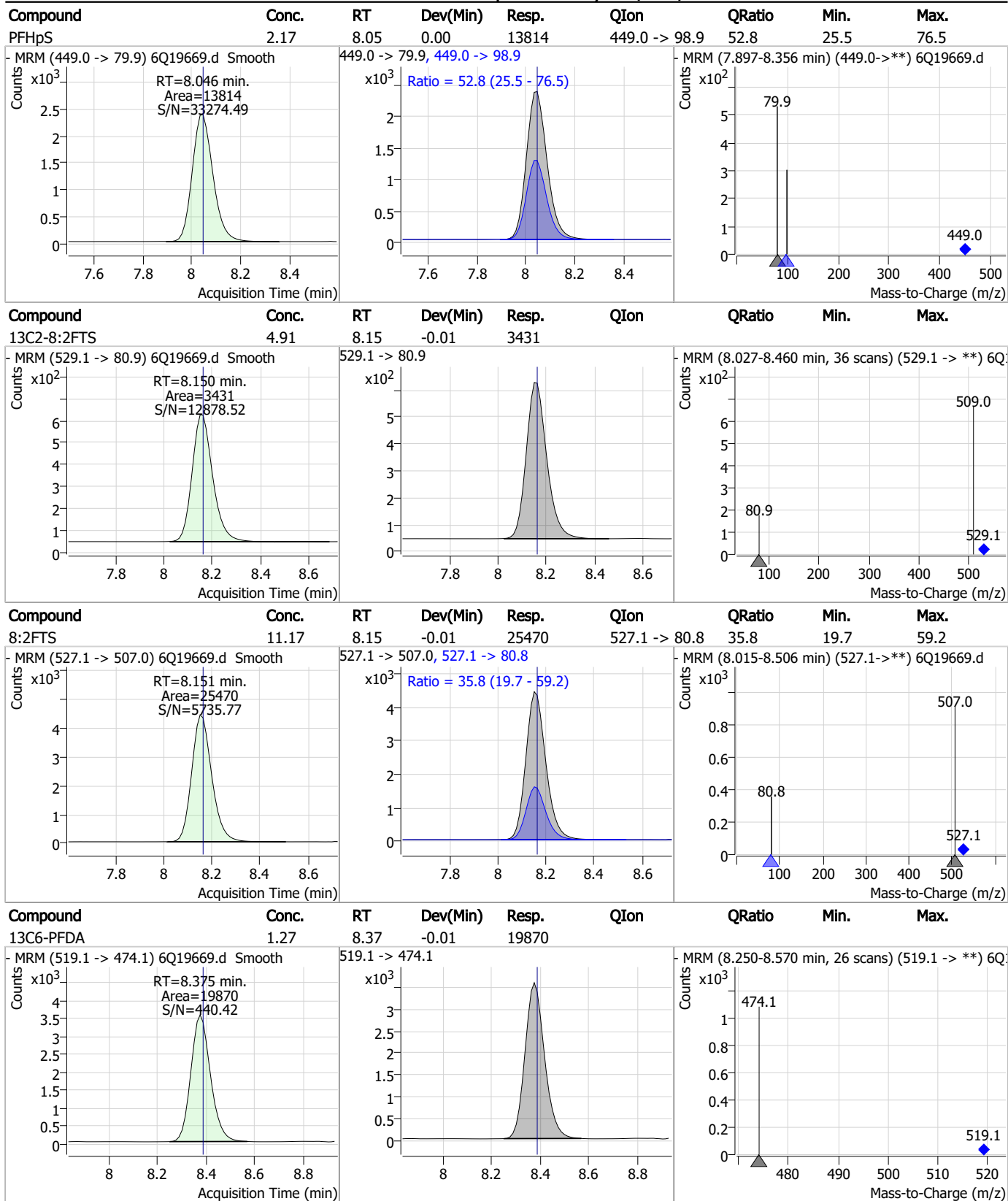
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Perfluorinated Compounds by LC/MS/MS



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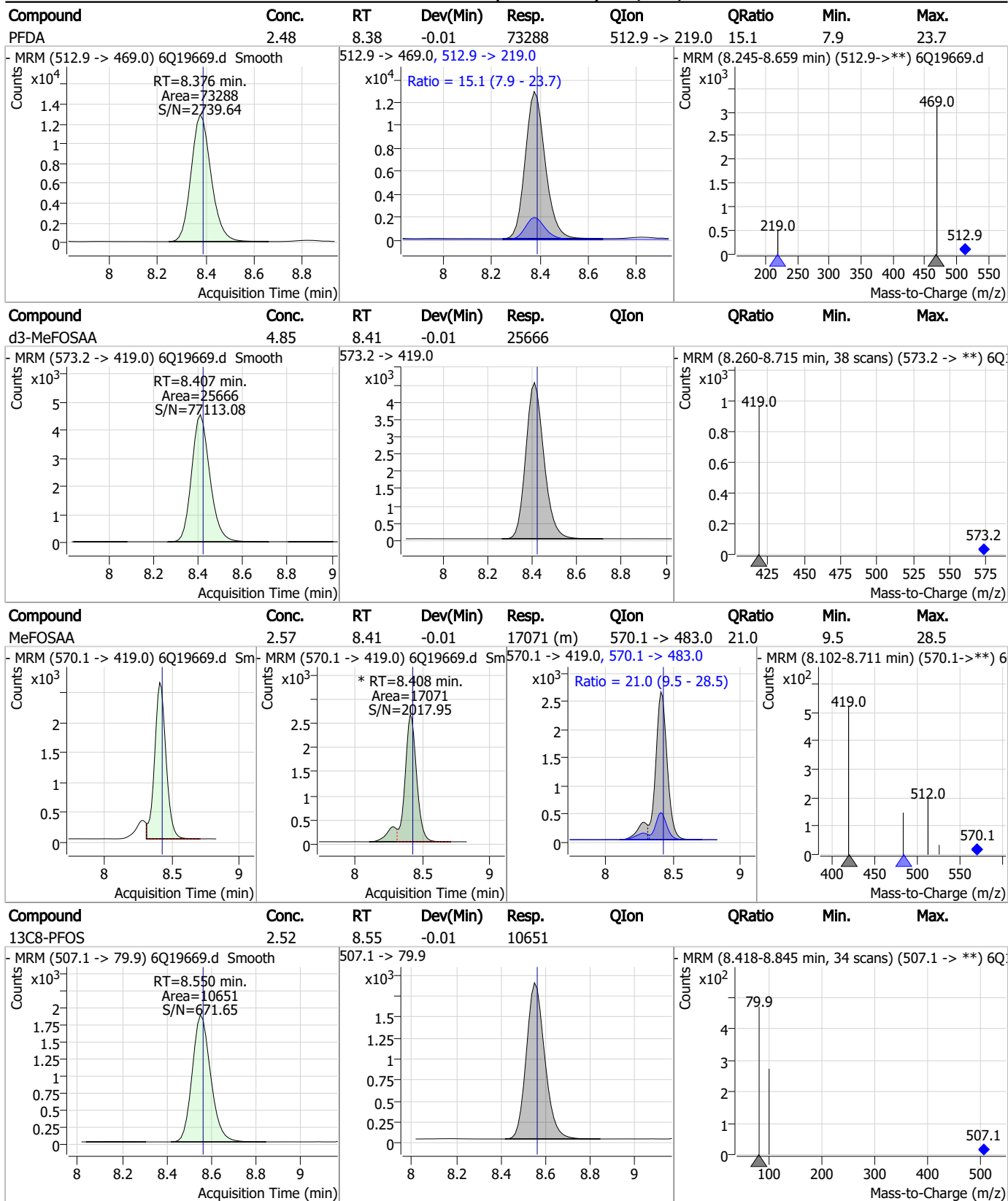
Perfluorinated Compounds by LC/MS/MS



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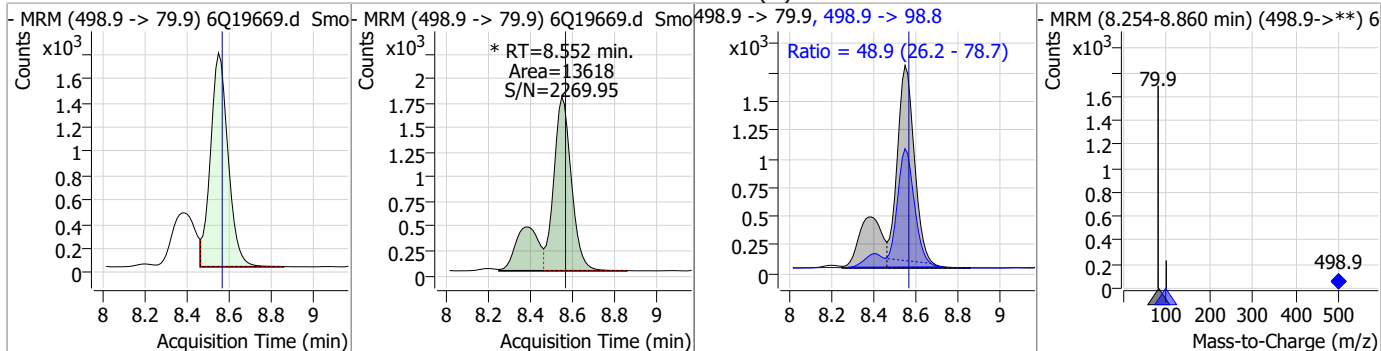
Perfluorinated Compounds by LC/MS/MS



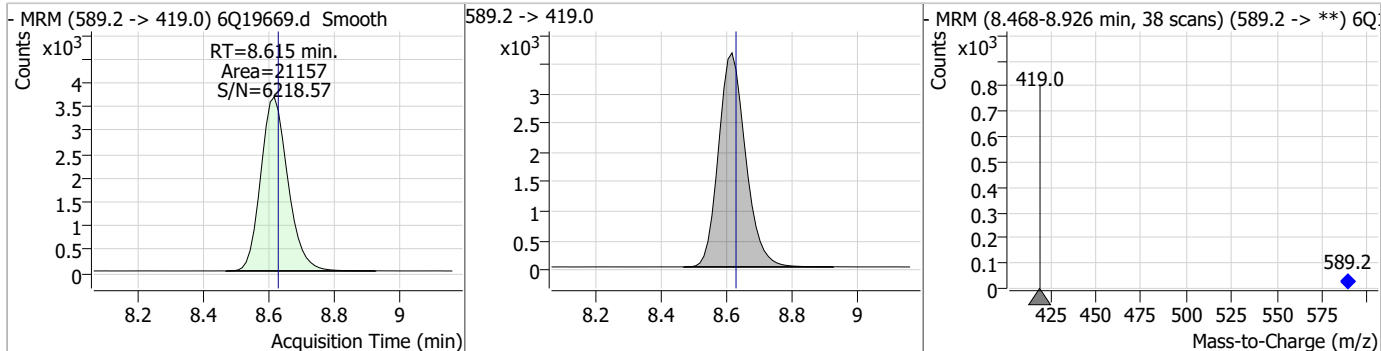
7.7.12
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Perfluorinated Compounds by LC/MS/MS

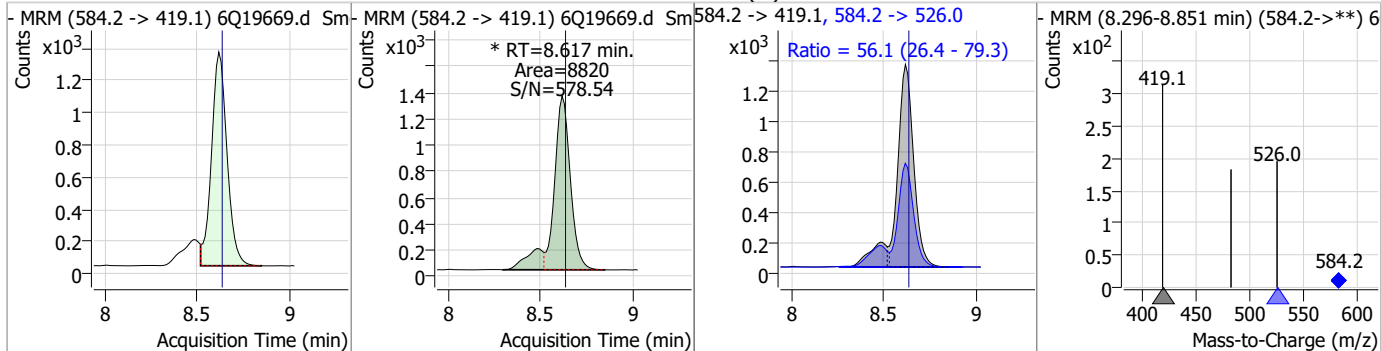
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.15	8.55	-0.01	13618 (m)	498.9 -> 98.8	48.9	26.2	78.7



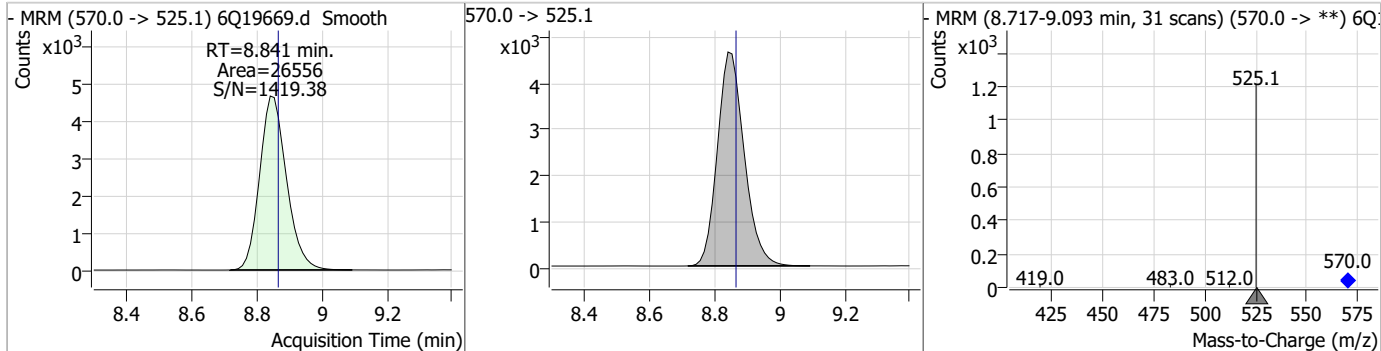
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.71	8.62	-0.01	21157				



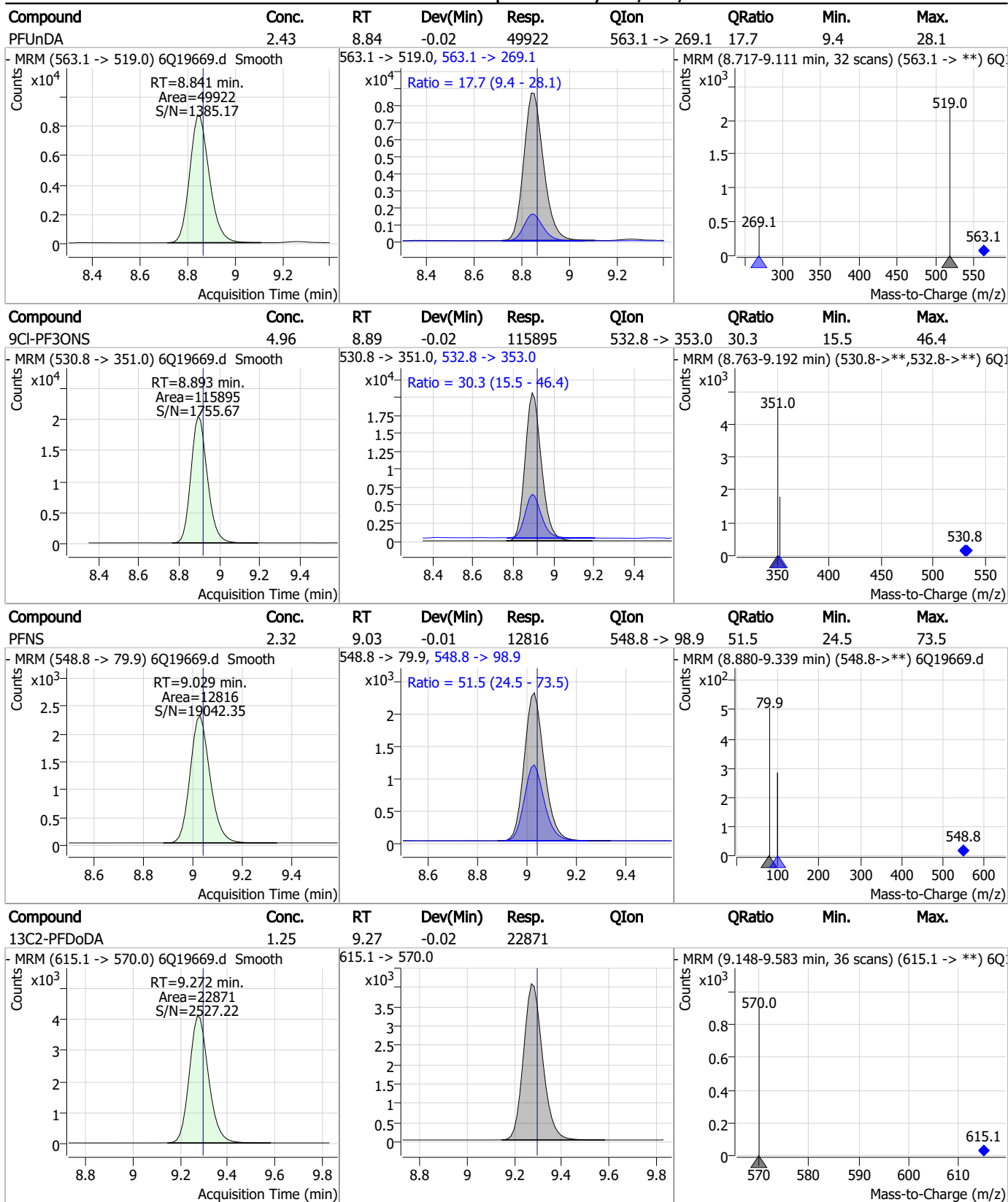
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.46	8.62	-0.01	8820 (m)	584.2 -> 526.0	56.1	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.26	8.84	-0.02	26556				

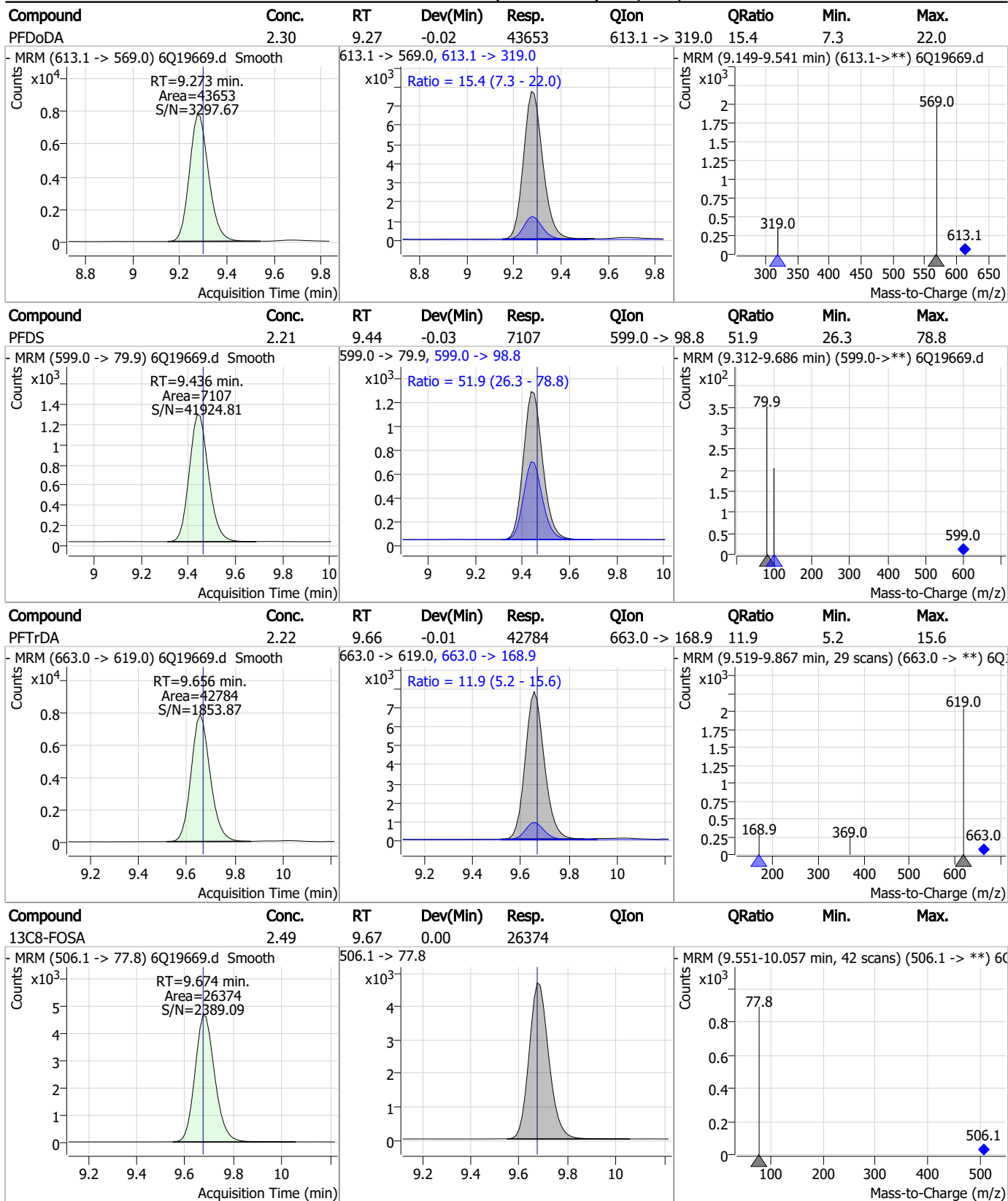


Perfluorinated Compounds by LC/MS/MS



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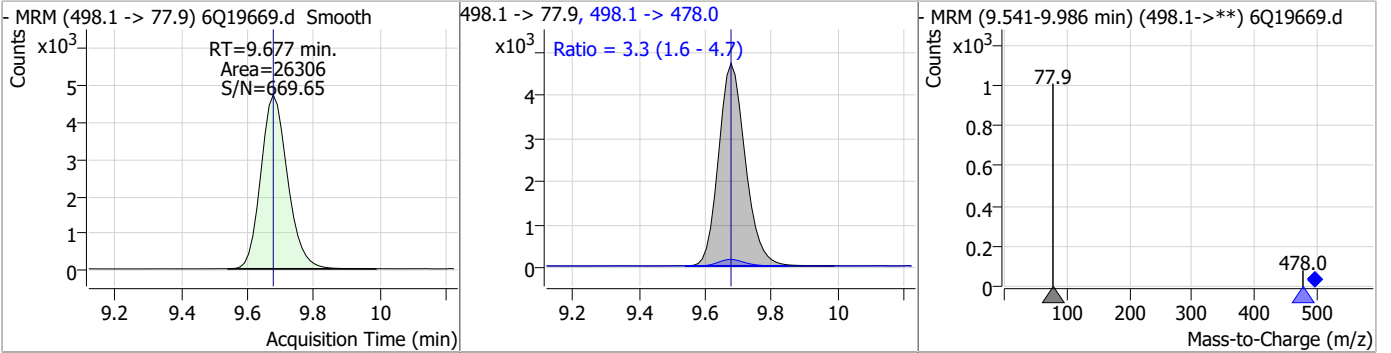
Perfluorinated Compounds by LC/MS/MS



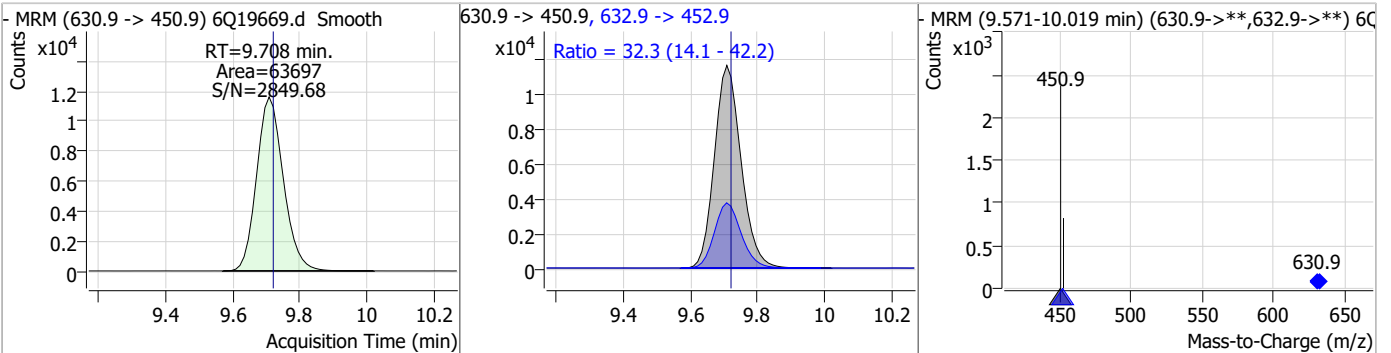
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Perfluorinated Compounds by LC/MS/MS

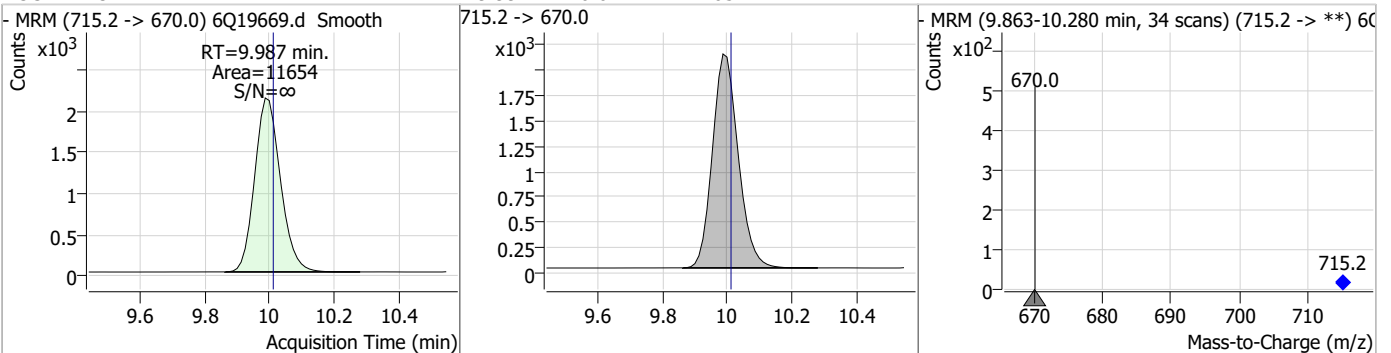
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.51	9.68	0.00	26306	498.1 -> 478.0	3.3	1.6	4.7



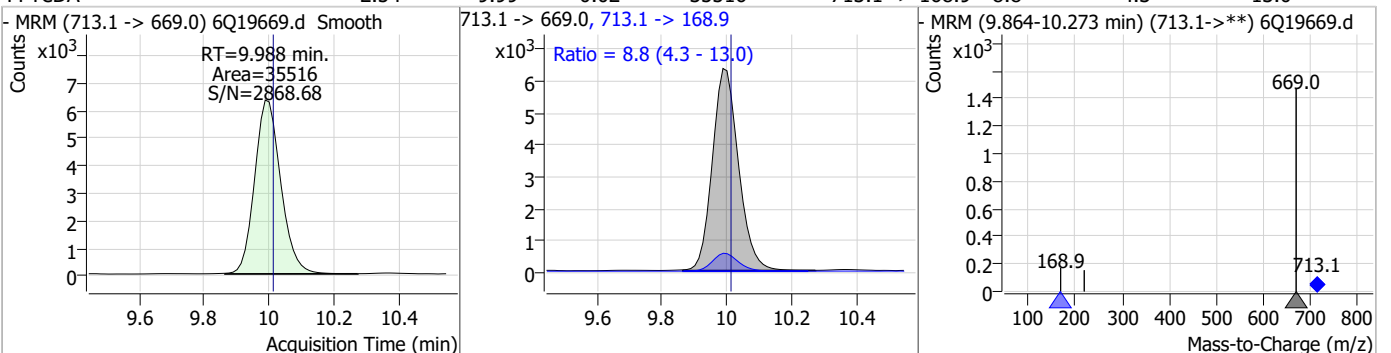
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11CI-PF3OUds	4.70	9.71	-0.01	63697	630.9 -> 452.9	32.3	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.14	9.99	-0.02	11654	715.2 -> 670.0	-	-	-

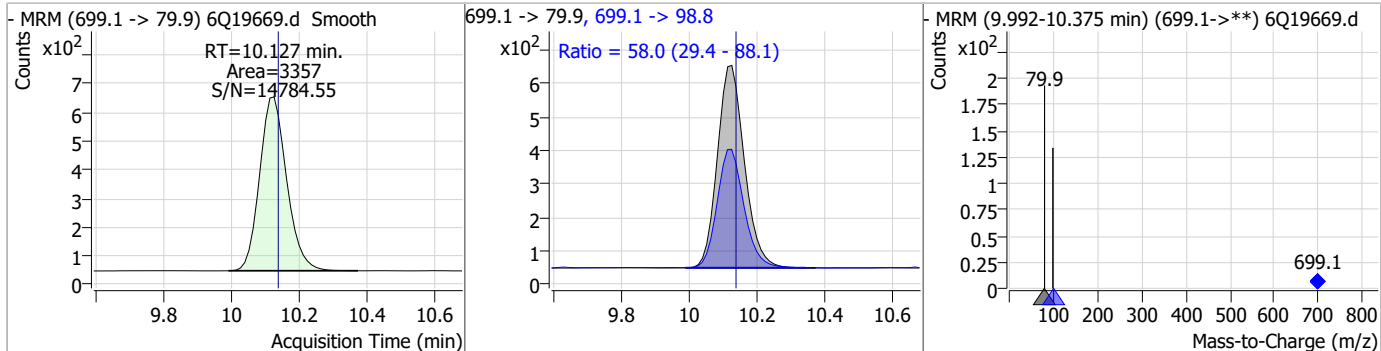


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.54	9.99	-0.02	35516	713.1 -> 168.9	8.8	4.3	13.0

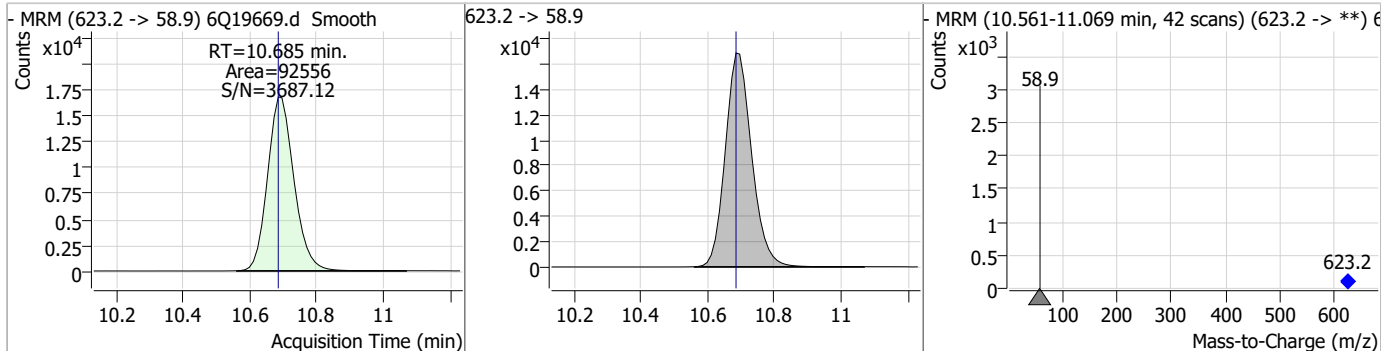


Perfluorinated Compounds by LC/MS/MS

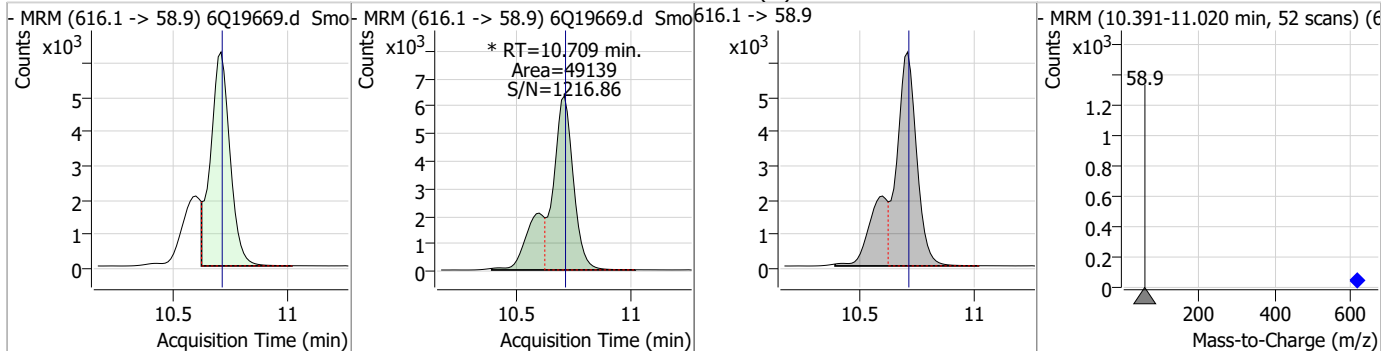
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.11	10.13	-0.01	3357	699.1 -> 98.8	58.0	29.4	88.1



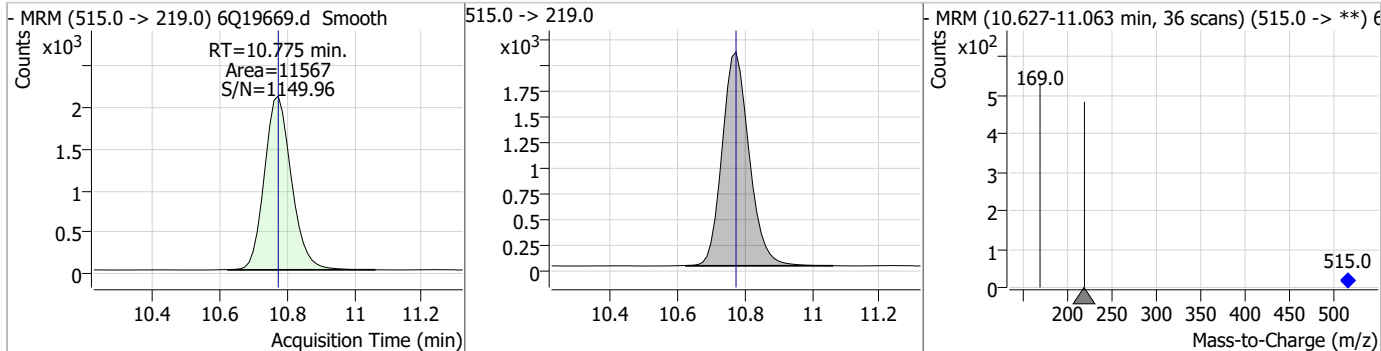
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.71	10.68	0.00	92556				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.25	10.71	0.00	49139 (m)				

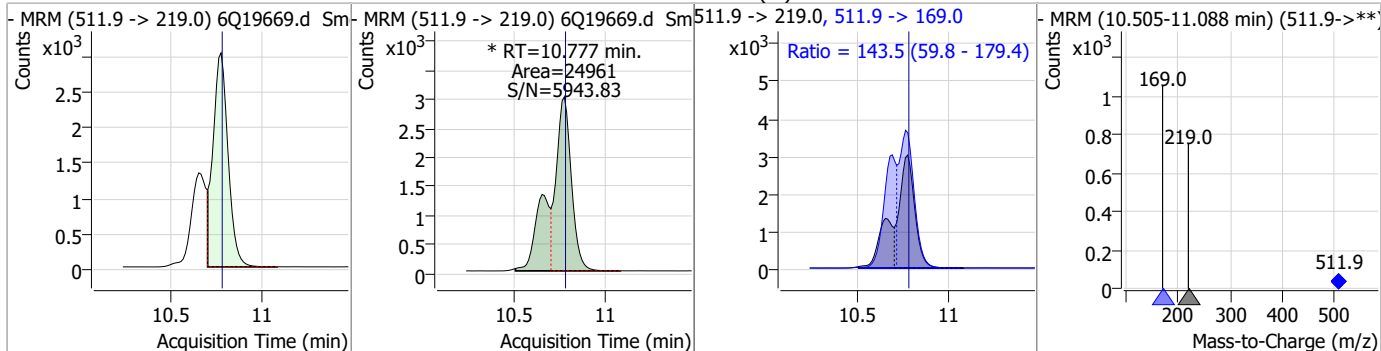


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.51	10.78	0.00	11567				

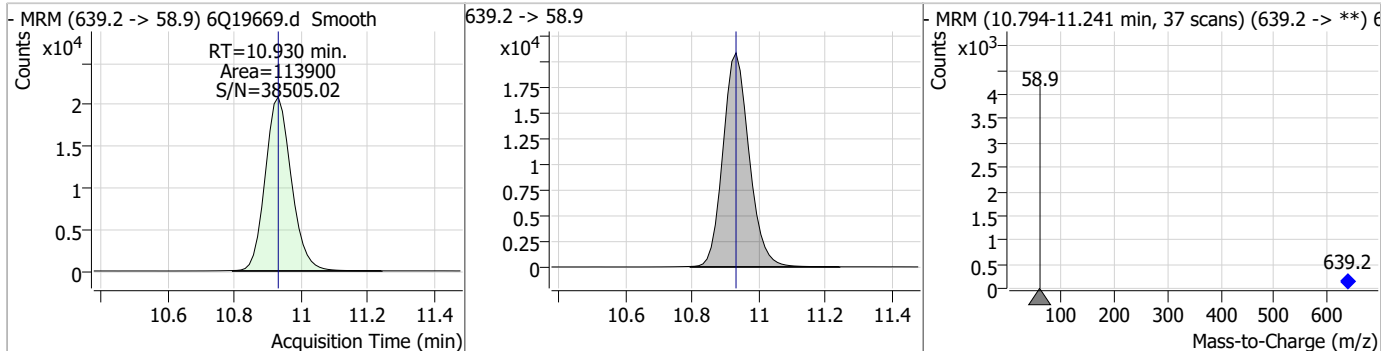


Perfluorinated Compounds by LC/MS/MS

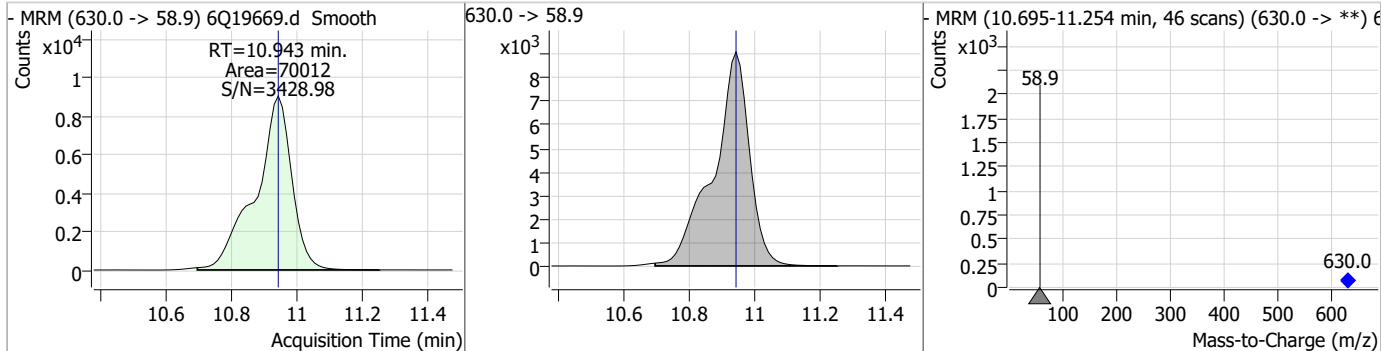
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.77	10.78	0.00	24961 (m)	511.9 -> 169.0	143.5	59.8	179.4



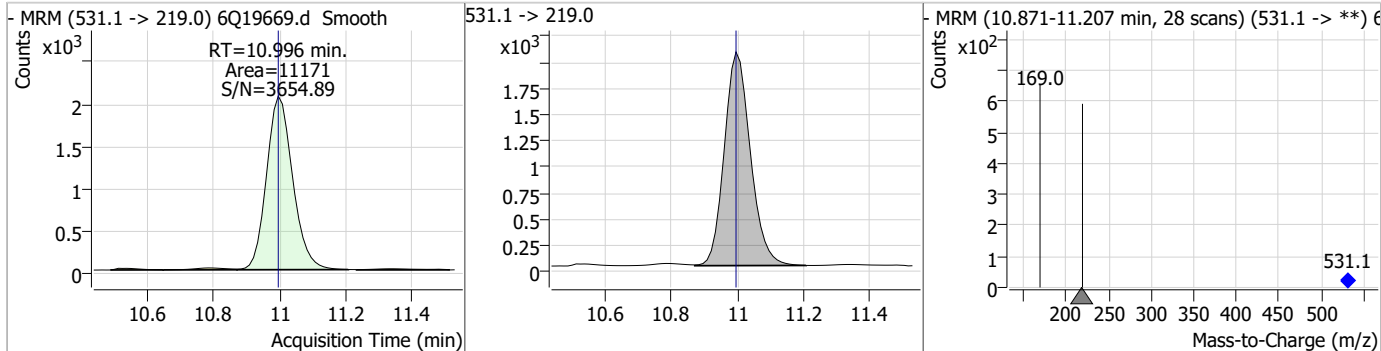
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.57	10.93	0.00	113900				



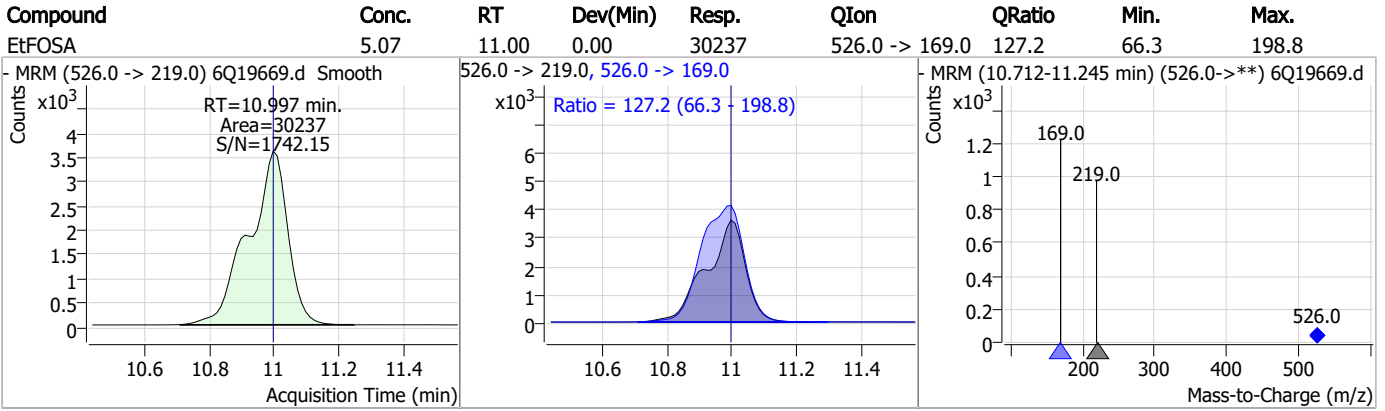
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.88	10.94	0.00	70012				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.48	11.00	0.00	11171				



Perfluorinated Compounds by LC/MS/MS



7.7.12
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Manual Integration Approval Summary

Sample Number: S6Q293-CC288
Lab FileID: 6Q19669.D
Injection Time: 06/21/23 12:55

Method: EPA DRAFT 1633
Analyst approved: 06/21/23 16:11 Martha Valls
Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.47	Split peak
MeFOSAA	2355-31-9		8.41	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.55	Split peak
EtFOSAA	2991-50-6		8.62	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.7.12.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19670.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 1:09:02 PM
 Sample Name : cc288-1.0LL
 Vial : P1-A2
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97325,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	152142	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	50363	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	51888	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	47550	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	76451	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	37311	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	21057	1.25 µg/L	-0.012
M7-PFUnDA	8.841	570.0 -> 525.1	26453	1.25 µg/L	-0.025
M2-PFDoDA	9.285	615.1 -> 570.0	22214	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	11578	1.25 µg/L	-0.012
M8-FOSA	9.674	506.1 -> 77.8	27499	2.50 µg/L	0.000
M3-PFBS	5.746	302.1 -> 79.9	18517	2.50 µg/L	0.000
M3-PFHxS	7.466	402.1 -> 79.9	12134	2.50 µg/L	-0.012
M8-PFOS	8.550	507.1 -> 79.9	10484	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	3179	5.00 µg/L	0.000
M2-6:2FTS	7.100	429.1 -> 80.9	4583	5.00 µg/L	-0.012
M2-8:2FTS	8.163	529.1 -> 80.9	4220	5.00 µg/L	0.000
M3-MeFOSAA	8.407	573.2 -> 419.0	27952	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	32241	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	23174	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	109399	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	115800	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	12063	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11834	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	14861	2.50 µg/L	-0.012
13C3-PFBA	3.089	216.0 -> 172.0	64095	5.00 µg/L	0.000
18O2-PFHxS	7.477	403.0 -> 83.9	8956	2.50 µg/L	0.000
13C4-PFOA	7.340	417.1 -> 372.0	81832	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	29846	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	45546	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	49058	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	3179	5.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.3%		
13C2-6:2FTS	7.100	429.1 -> 80.9	4583	5.65 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.9%		
13C2-8:2FTS	8.163	529.1 -> 80.9	4220	5.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.6%		
13C2-PFDoDA	9.285	615.1 -> 570.0	22214	1.11 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.1%		
13C2-PFTeDA	10.000	715.2 -> 670.0	11578	1.04 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.2%		
13C3-PFBS	5.746	302.1 -> 79.9	18517	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C3-PFHxS	7.466	402.1 -> 79.9	12134	2.58 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 = 103.1%	
13C4-PFBA	3.085	216.8 -> 171.9	152142	10.12 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C4-PFHpA	6.707	367.1 -> 322.0	47550	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFHxA	5.792	318.0 -> 273.0	51888	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C5-PFPeA	4.560	268.3 -> 223.0	50363	5.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.5%	
13C6-PFDA	8.375	519.1 -> 474.1	21057	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C7-PFUnDA	8.841	570.0 -> 525.1	26453	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C8-FOSA	9.674	506.1 -> 77.8	27499	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C8-PFOA	7.339	421.1 -> 376.0	76451	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-PFOS	8.550	507.1 -> 79.9	10484	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.5%	
13C9-PFNA	7.882	472.1 -> 427.0	37311	1.35 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.7%	
d3-MeFOSAA	8.407	573.2 -> 419.0	27952	4.97 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	32241	9.52 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d3-MeFOSA	10.775	515.0 -> 219.0	11834	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
d5-EtFOSAA	8.615	589.2 -> 419.0	23174	4.86 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d7-MeFOSE	10.685	623.2 -> 58.9	109399	21.94 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.8%	
d9-EtFOSE	10.930	639.2 -> 58.9	115800	19.70 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.8%	
d5-EtFOSA	10.996	531.1 -> 219.0	12063	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	3686	0.67 µg/L	98
		327.1 -> 80.9	1339		
6:2FTS	7.101	427.1 -> 407.0	3878	0.71 µg/L	98
		427.1 -> 80.9	1321		
8:2FTS	8.164	527.1 -> 507.0	1989	0.71 µg/L	86
		527.1 -> 80.8	612		
EtFOSAA	8.617	584.2 -> 419.1	783	0.20 µg/L	m 95
		584.2 -> 526.0	439		
FOSA	9.677	498.1 -> 77.9	2303	0.21 µg/L	99
		498.1 -> 478.0	66		
MeFOSAA	8.408	570.1 -> 419.0	1159	0.16 µg/L	m 97
		570.1 -> 483.0	236		
PFBA	3.093	212.8 -> 168.9	4222	0.69 µg/L	100
PFBS	5.747	298.7 -> 79.9	1257	0.15 µg/L	97
		298.7 -> 98.8	497		
PFDA	8.376	512.9 -> 469.0	5960	0.19 µg/L	m 98
		512.9 -> 219.0	897		
PFDODA	9.285	613.1 -> 569.0	3816	0.21 µg/L	97
		613.1 -> 319.0	514		
PFDS	9.450	599.0 -> 79.9	532	0.17 µg/L	94

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	302	0.19	µg/L	100
		363.1 -> 319.0	4767			
PFHpS	8.046	363.1 -> 169.0	732	0.20	µg/L	98
		449.0 -> 79.9	1225			
PFHxA	5.795	449.0 -> 98.9	605	0.17	µg/L	99
		313.0 -> 269.0	3643			
PFHxS	7.467	313.0 -> 118.9	196	0.16	µg/L	99
		398.7 -> 79.9	1136			
PFNA	7.883	398.7 -> 98.9	584	0.17	µg/L	100
		463.0 -> 419.0	5963			
PFNS	9.029	463.0 -> 219.0	1144	0.19	µg/L	98
		548.8 -> 79.9	1009			
PFOA	7.341	548.8 -> 98.9	506	0.19	µg/L	99
		413.0 -> 369.0	7976			
PFOS	8.552	413.0 -> 169.0	1362	0.21	µg/L	95
		498.9 -> 79.9	1277			
PFPeA	4.563	498.9 -> 98.8	630	0.36	µg/L	100
		263.0 -> 219.0	5349			
PFPeS	6.785	349.1 -> 79.9	1038	0.15	µg/L	100
		349.1 -> 98.9	500			
PFTeDA	10.000	713.1 -> 669.0	2674	0.19	µg/L	97
		713.1 -> 168.9	259			
PFTrDA	9.656	663.0 -> 619.0	3271	0.17	µg/L	97
		663.0 -> 168.9	382			
PFUnDA	8.854	563.1 -> 519.0	3812	0.19	µg/L	98
		563.1 -> 269.1	683			
11CI-PF3OUdS	9.708	630.9 -> 450.9	4711	0.32	µg/L	90
		632.9 -> 452.9	1589			
9CI-PF3ONS	8.893	530.8 -> 351.0	8662	0.34	µg/L	86
		532.8 -> 353.0	1996			
ADONA	6.946	376.9 -> 250.9	18916	0.36	µg/L	95
		376.9 -> 84.8	4957			
HFPO-DA	6.169	284.9 -> 168.9	1301	0.39	µg/L	99
		284.9 -> 184.9	156			
3:3FTCA	3.958	241.0 -> 177.0	989	0.98	µg/L	95
		241.0 -> 117.0	152			
5:3FTCA	6.374	341.0 -> 237.1	23656	5.68	µg/L	99
		341.0 -> 217.0	17401			
7:3FTCA	7.748	441.0 -> 316.9	17575	6.24	µg/L	95
		441.0 -> 336.9	38174			
EtFOSA	10.997	526.0 -> 219.0	2304	0.36	µg/L	99
		526.0 -> 169.0	3031			
EtFOSE	10.943	630.0 -> 58.9	5641	0.94	µg/L	100
		511.9 -> 219.0	1938			
MeFOSA	10.777	511.9 -> 169.0	2727	0.36	µg/L	81
		616.1 -> 58.9	3705			
MeFOSE	10.709	699.1 -> 79.9	298	0.78	µg/L	100
		699.1 -> 98.8	181			
PFDoDS	10.127	295.0 -> 201.0	889	0.19	µg/L	98
		295.0 -> 84.9	272			
NFDHA	5.673	279.0 -> 85.1	3523	0.33	µg/L	100
		229.0 -> 84.9	2904			
PFMBA	4.988	314.8 -> 134.9	8385	0.35	µg/L	100
		314.8 -> 82.9	288			
PFMPA	3.667			0.30	µg/L	100
PFEESA	6.288			0.30	µg/L	100

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



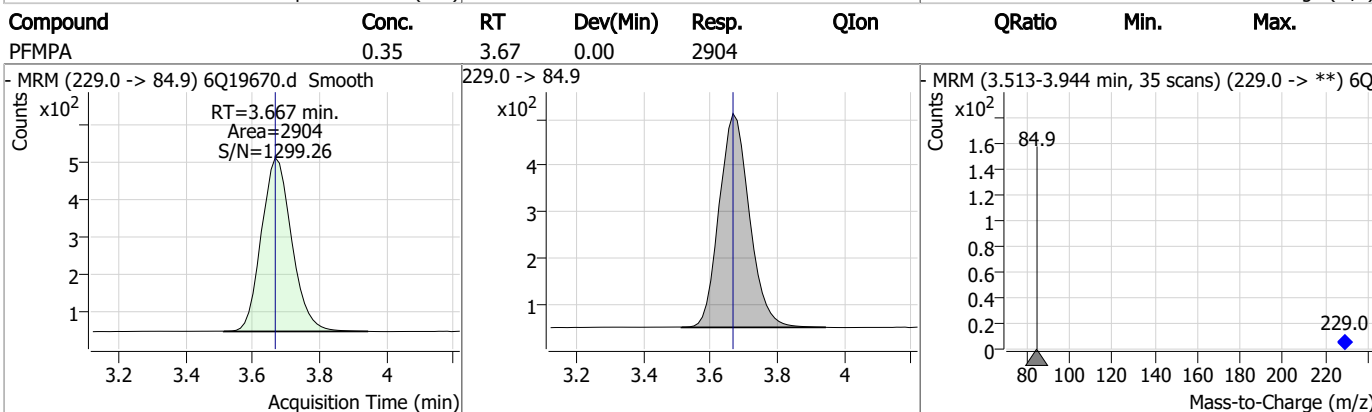
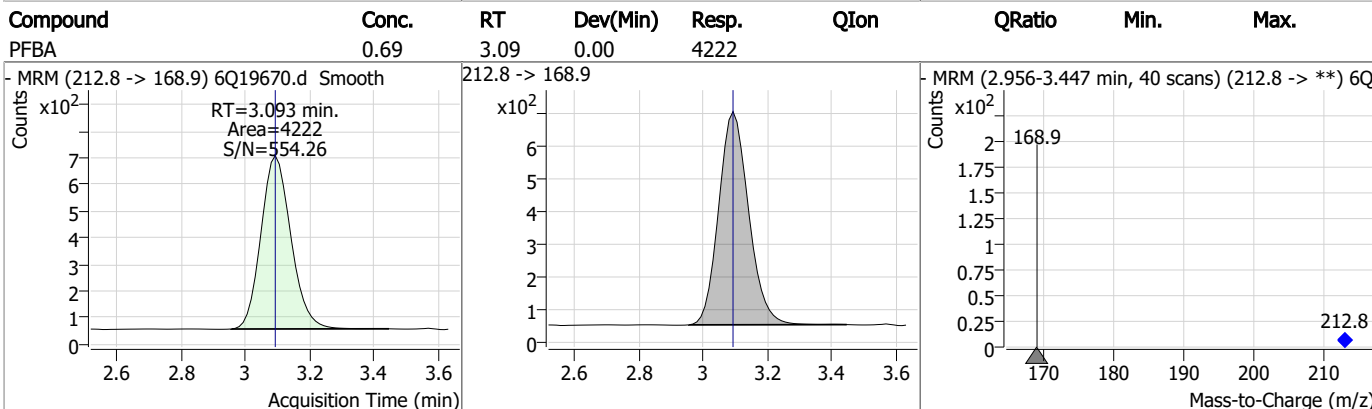
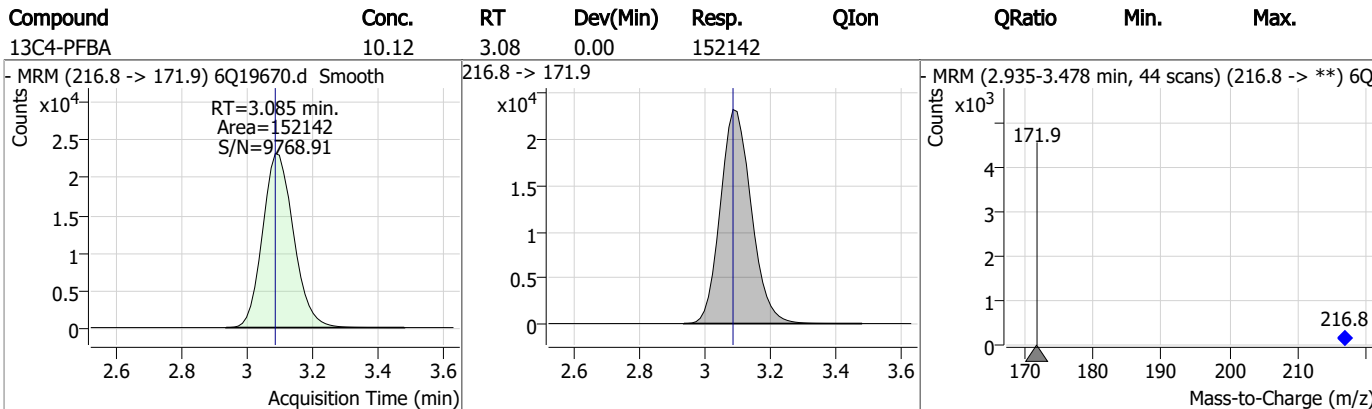
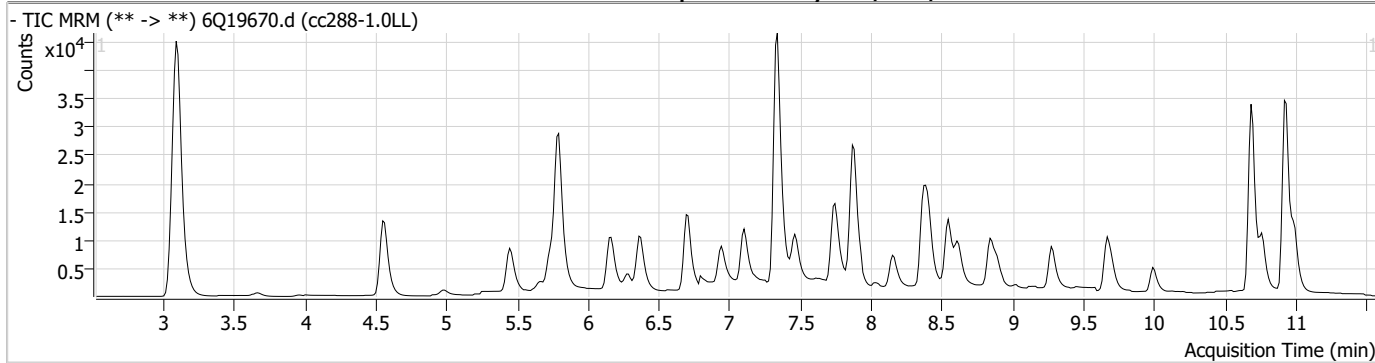
Perfluorinated Compounds by LC/MS/MS

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

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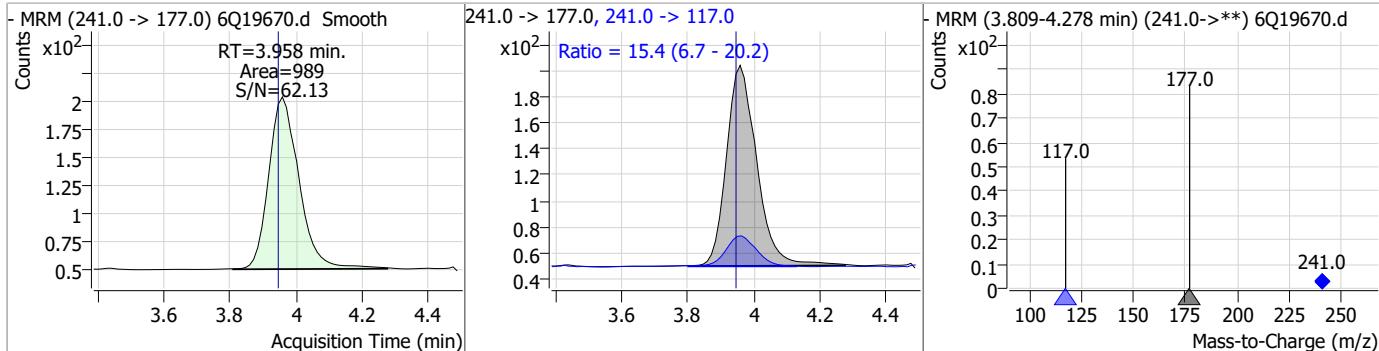
Perfluorinated Compounds by LC/MS/MS



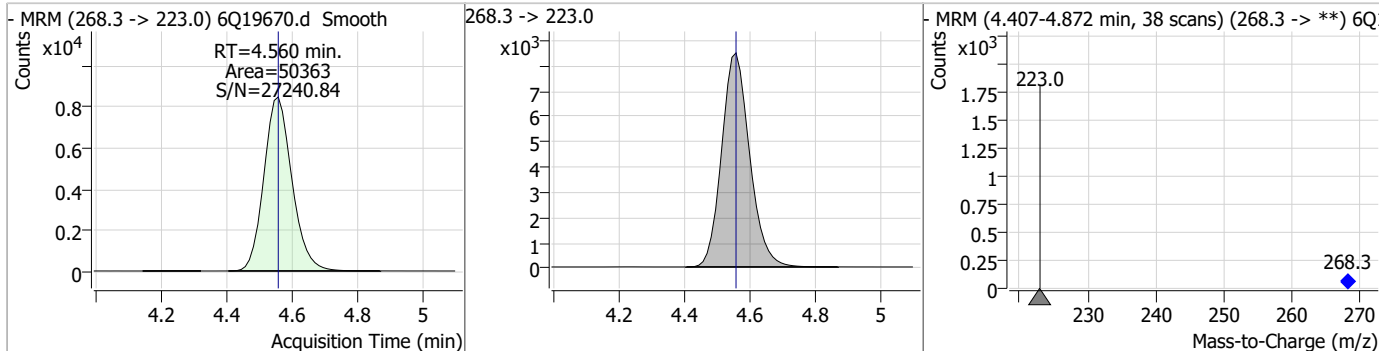
7.7.13
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Perfluorinated Compounds by LC/MS/MS

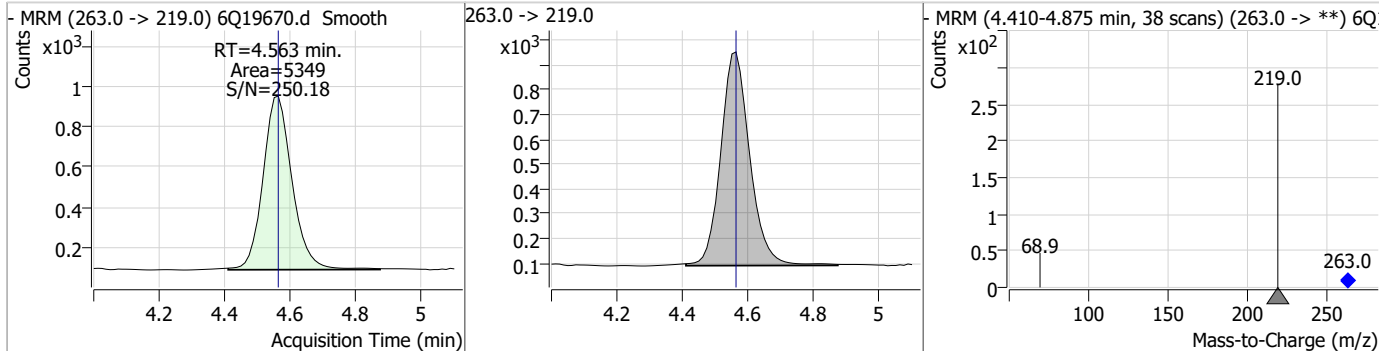
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	0.98	3.96	0.01	989	241.0 -> 117.0	15.4	6.7	20.2



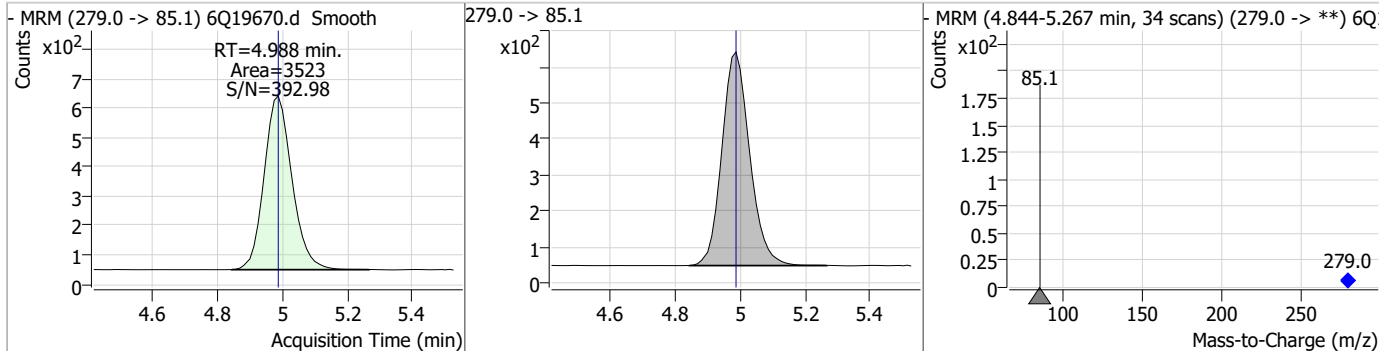
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.43	4.56	0.00	50363				



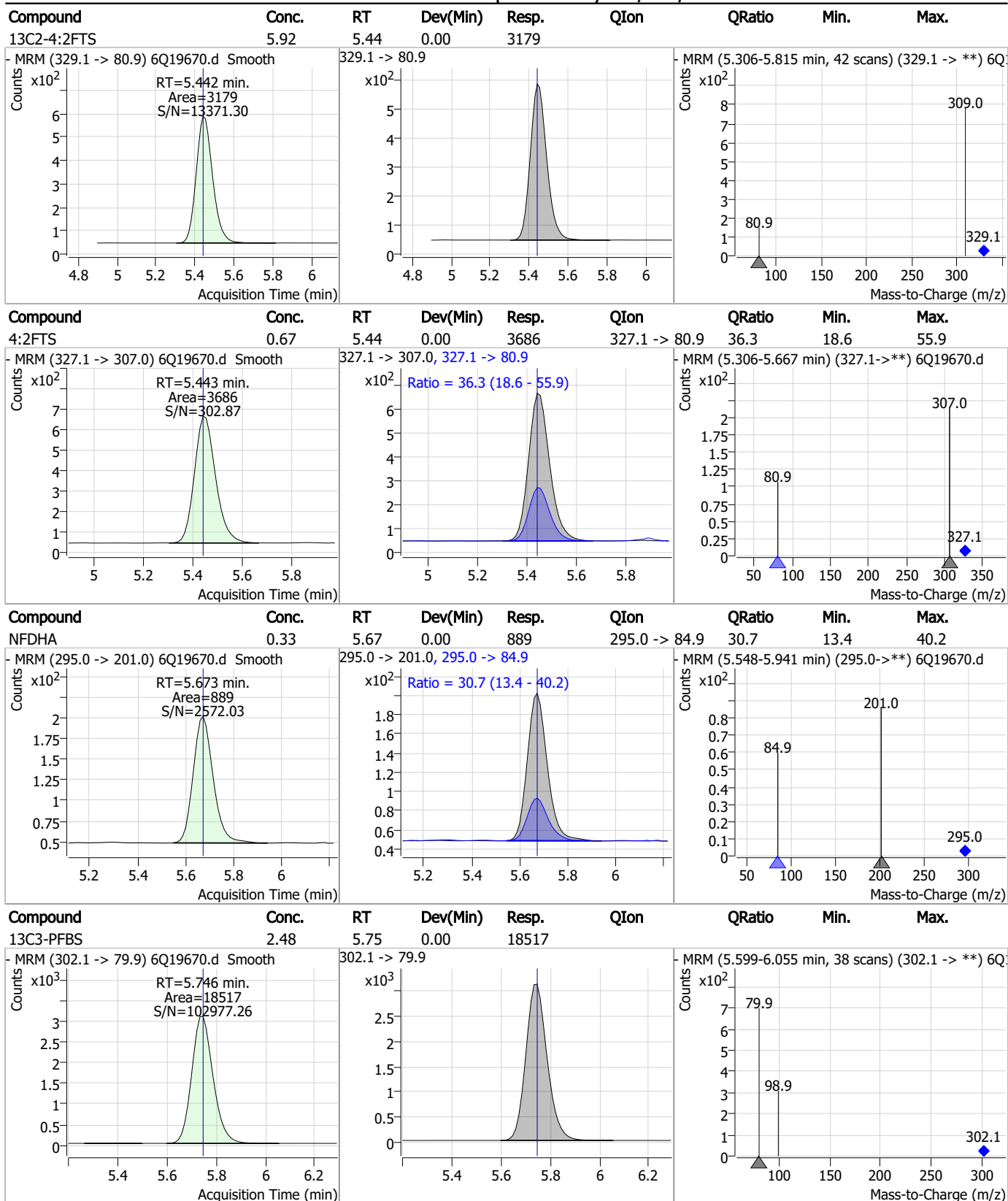
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.36	4.56	0.00	5349				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	0.33	4.99	0.00	3523				



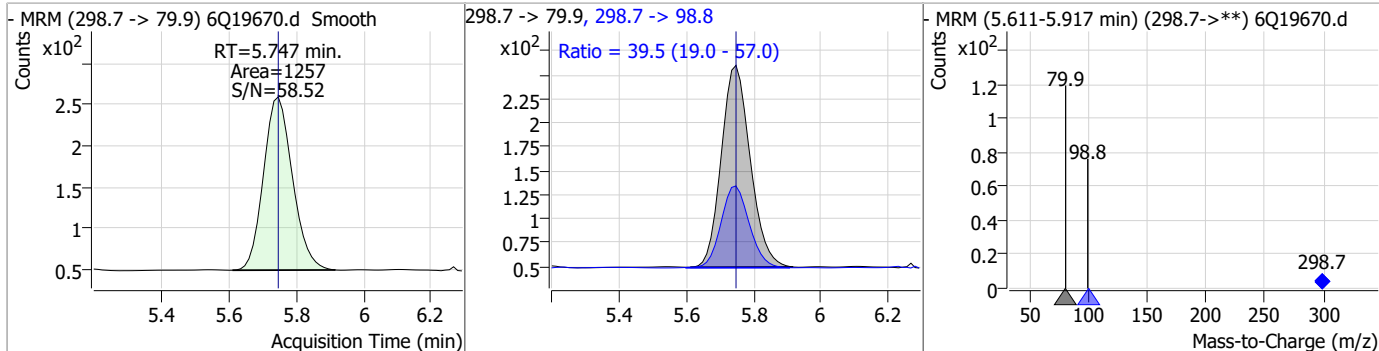
Perfluorinated Compounds by LC/MS/MS



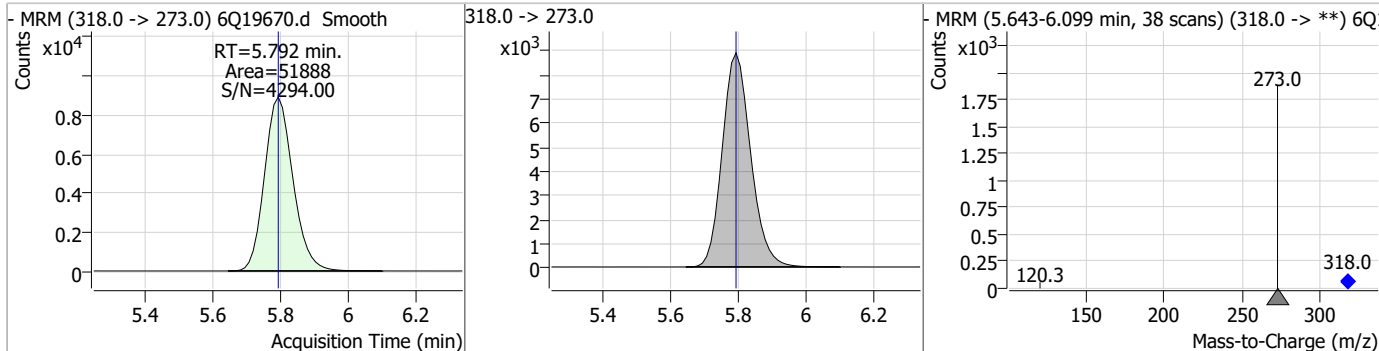
7.7.13
7

Perfluorinated Compounds by LC/MS/MS

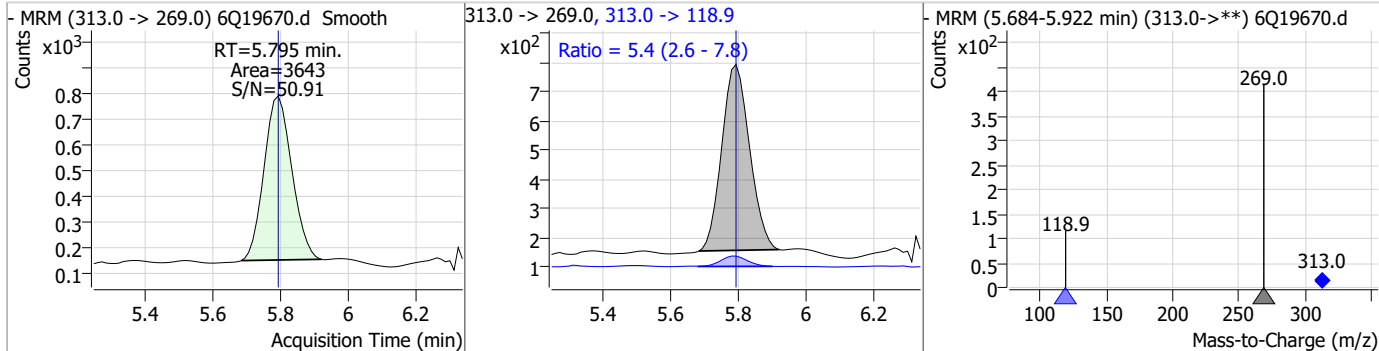
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.15	5.75	0.00	1257	298.7 -> 98.8	39.5	19.0	57.0



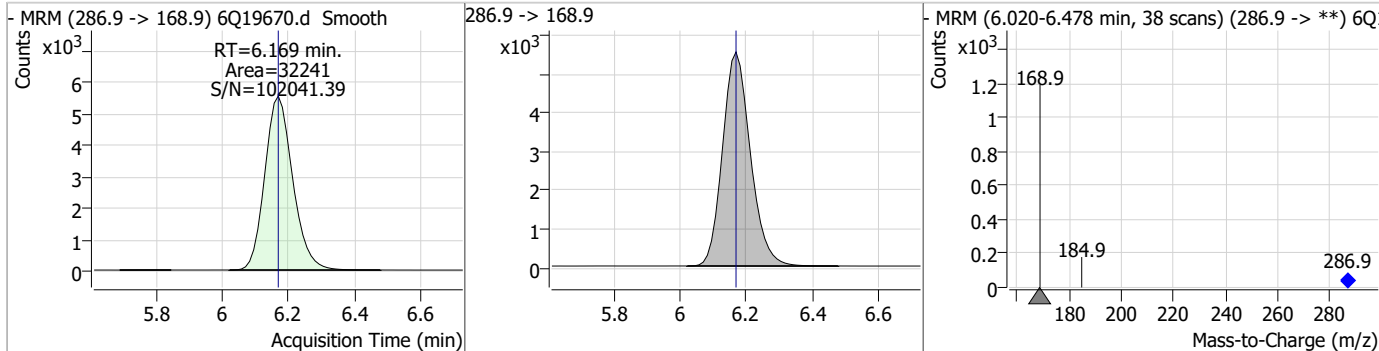
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.56	5.79	0.00	51888				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.17	5.79	0.00	3643	313.0 -> 118.9	5.4	2.6	7.8



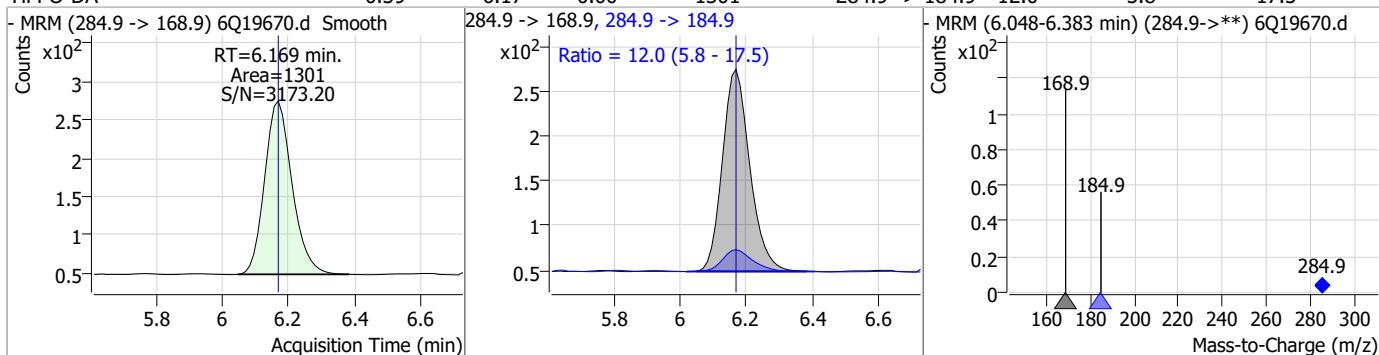
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.52	6.17	0.00	32241				



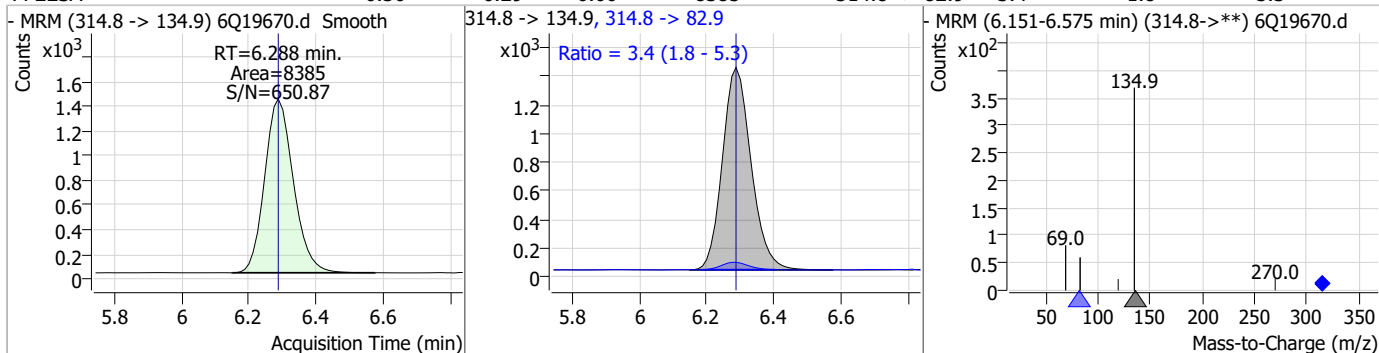
7.7.13
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Perfluorinated Compounds by LC/MS/MS

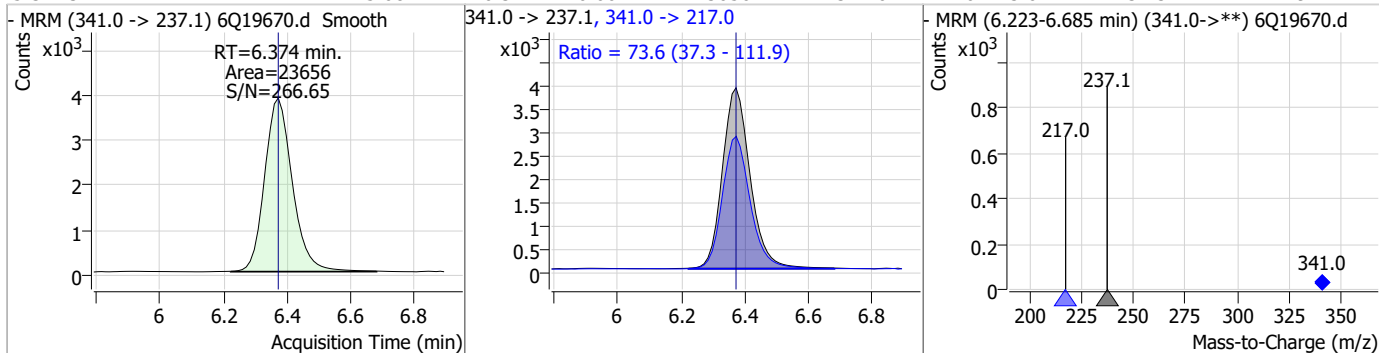
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.39	6.17	0.00	1301	284.9 -> 184.9	12.0	5.8	17.5



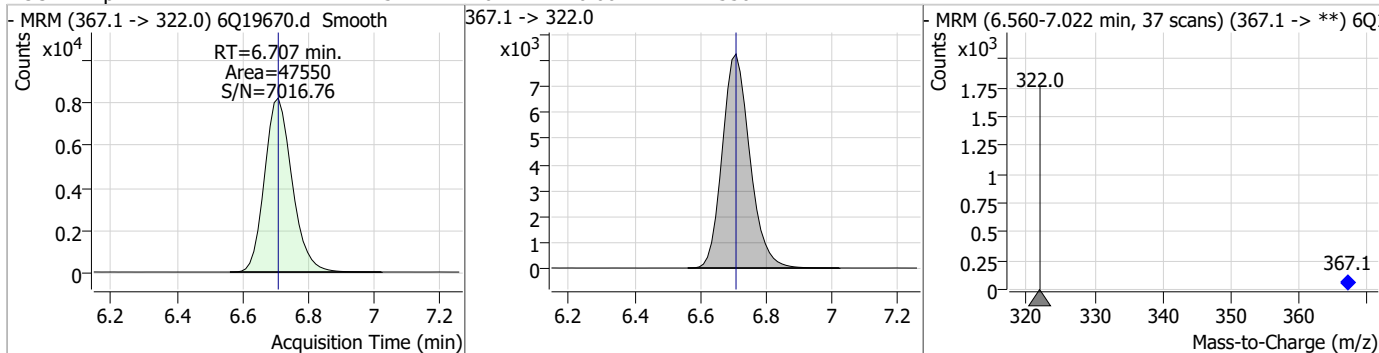
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.30	6.29	0.00	8385	314.8 -> 82.9	3.4	1.8	5.3



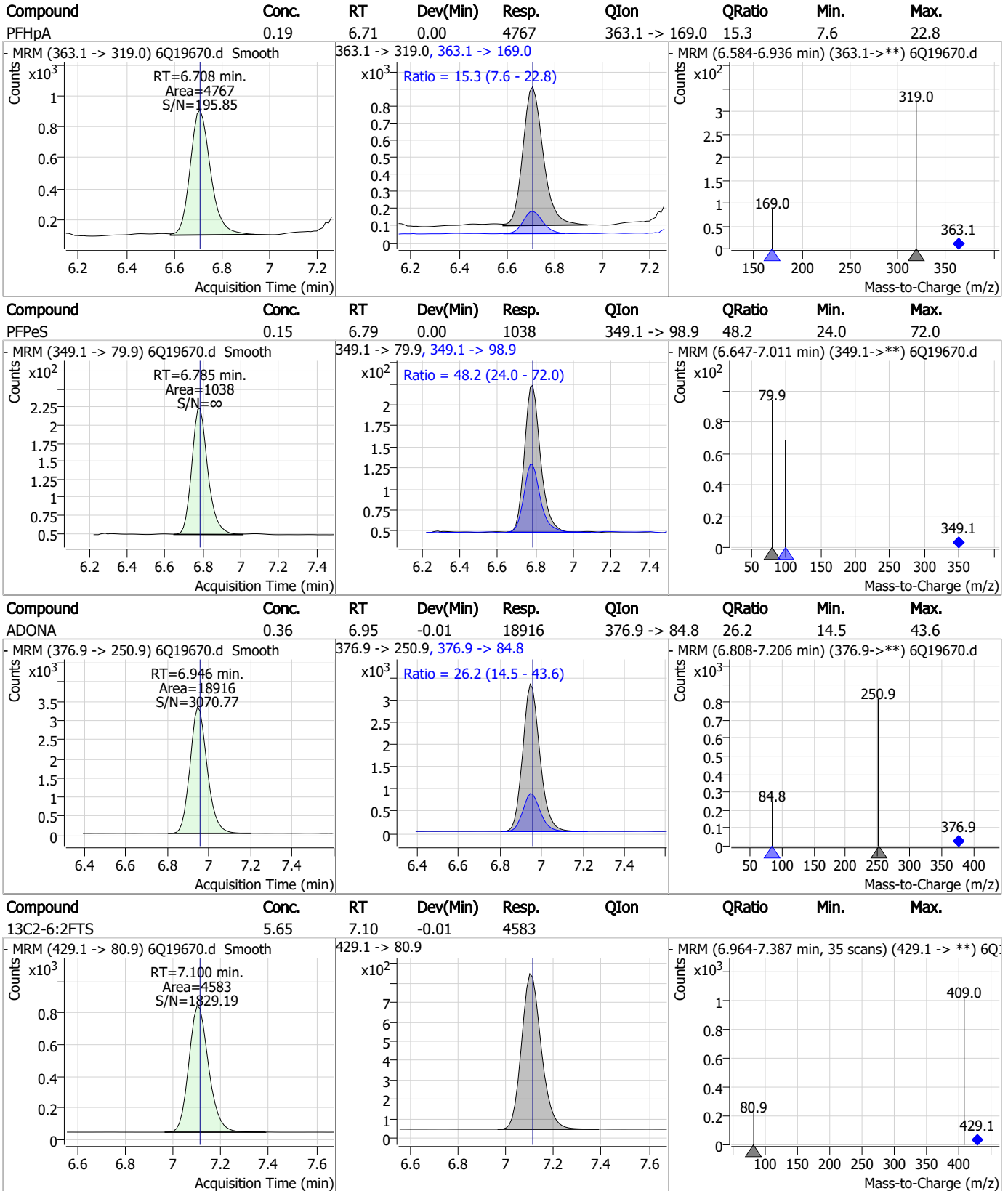
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	5.68	6.37	0.00	23656	341.0 -> 217.0	73.6	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.51	6.71	0.00	47550	367.1 -> 322.0			



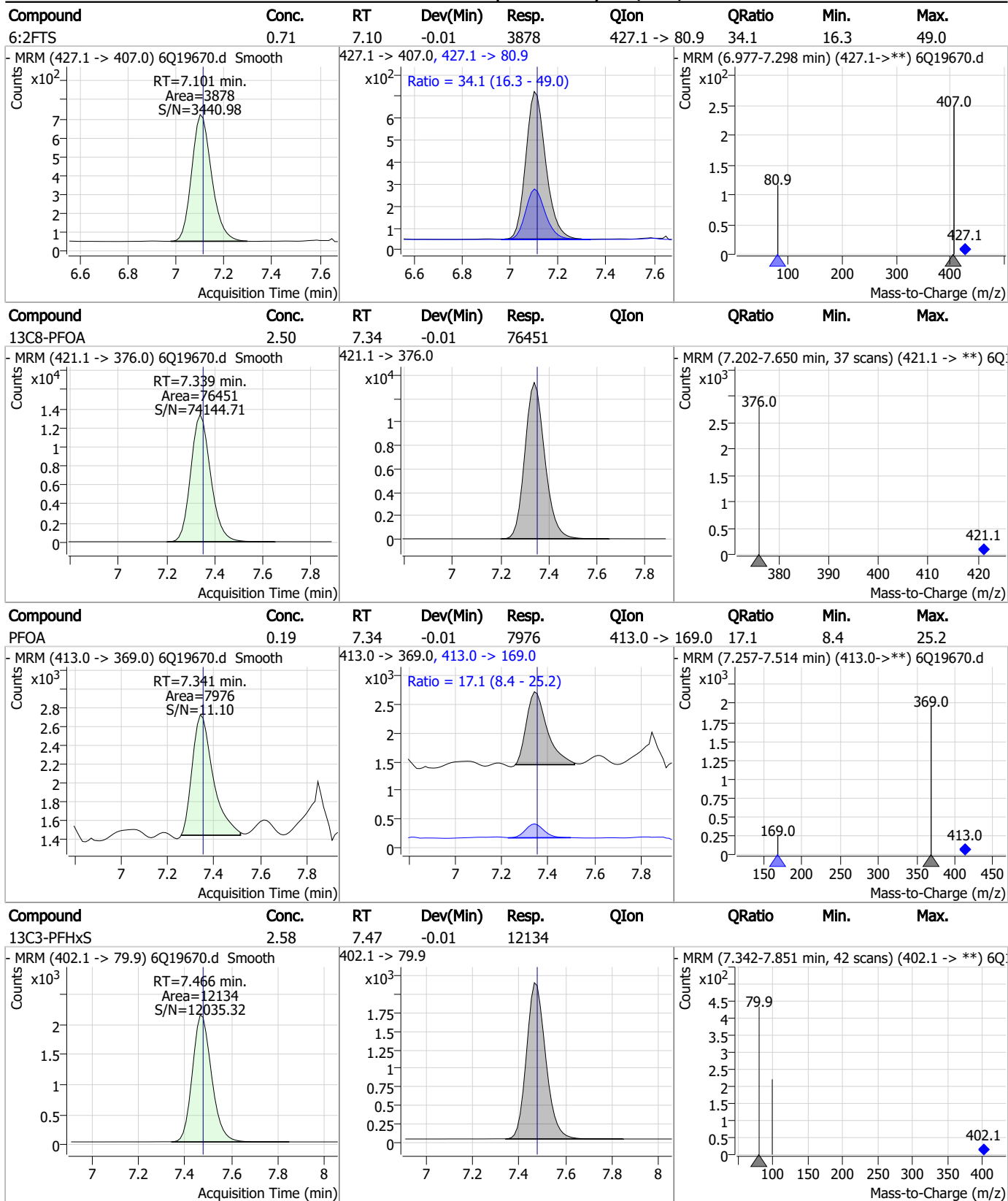
Perfluorinated Compounds by LC/MS/MS



7.7.13 7

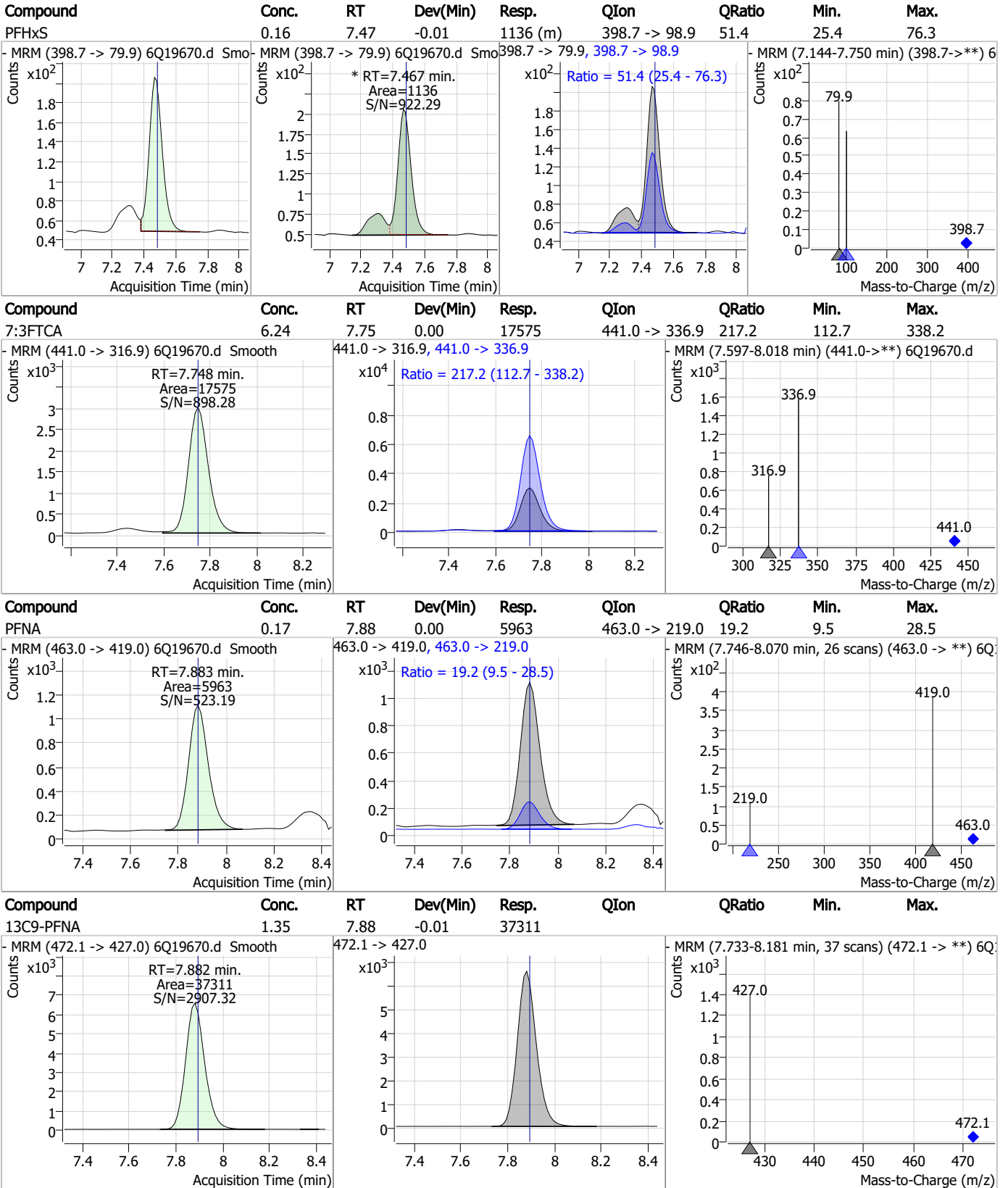


Perfluorinated Compounds by LC/MS/MS



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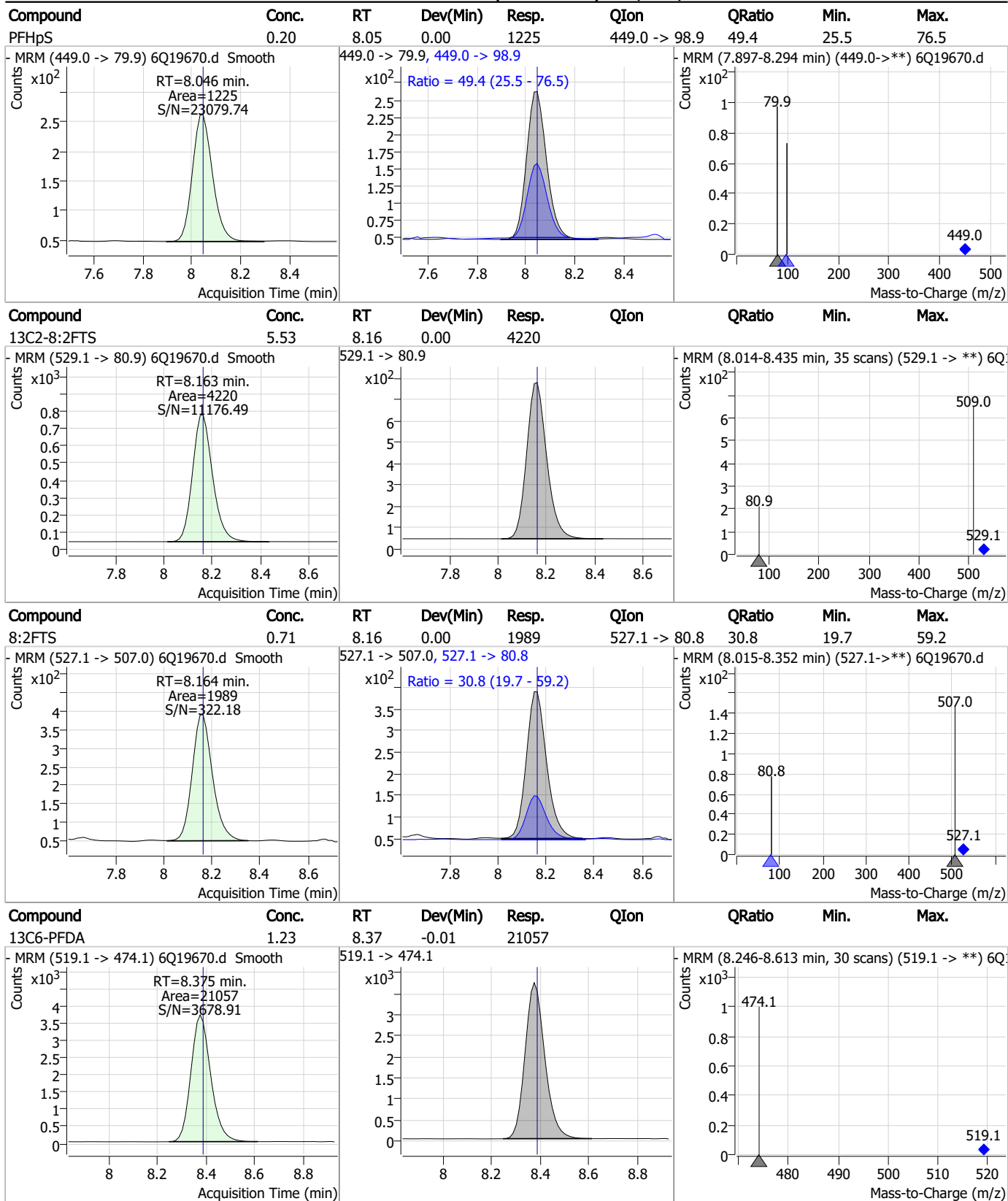
Perfluorinated Compounds by LC/MS/MS



7.7.13
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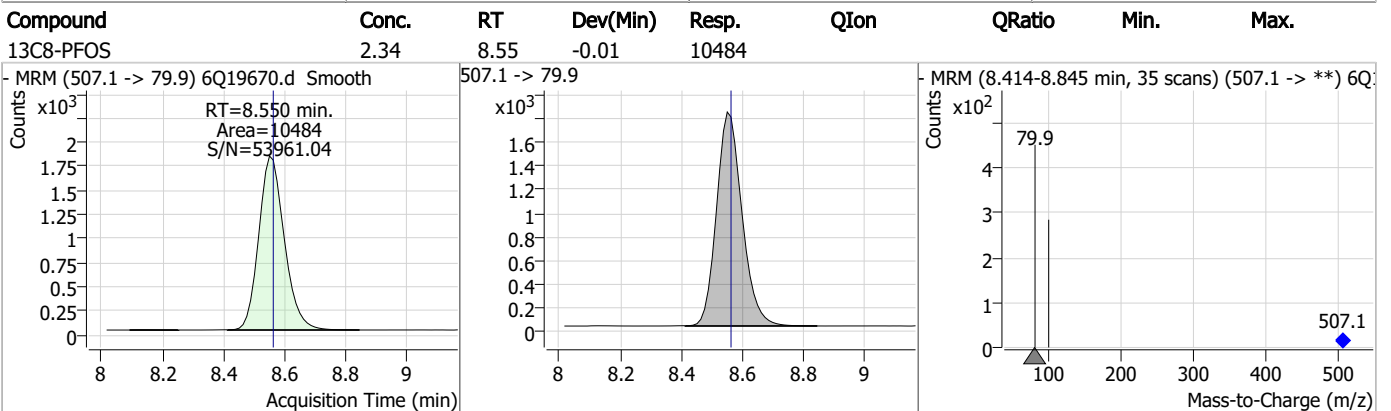
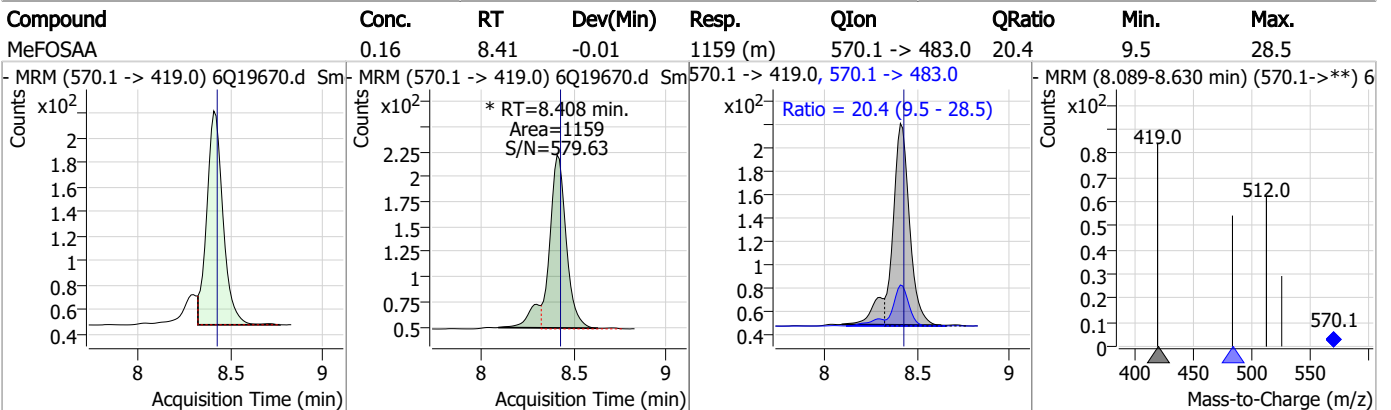
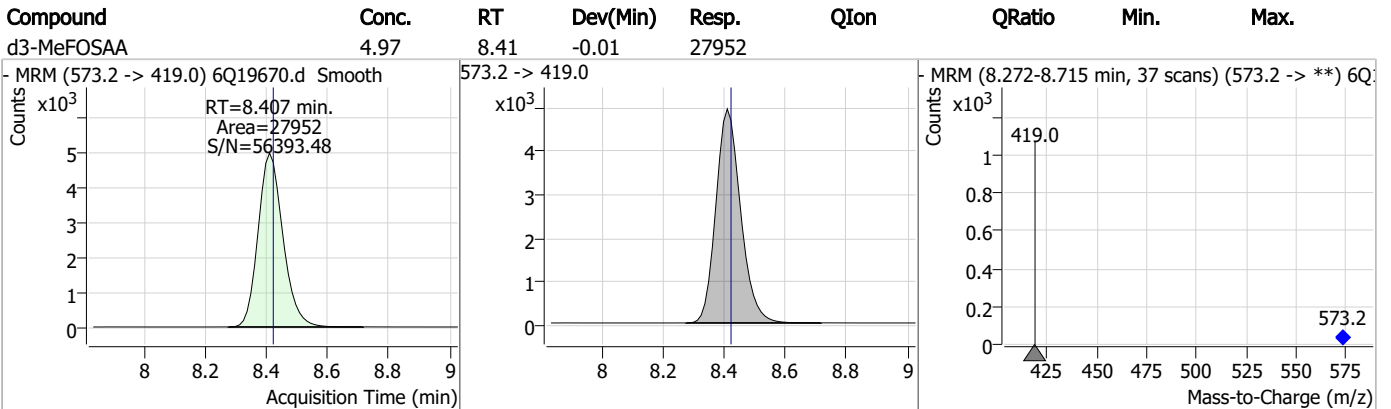
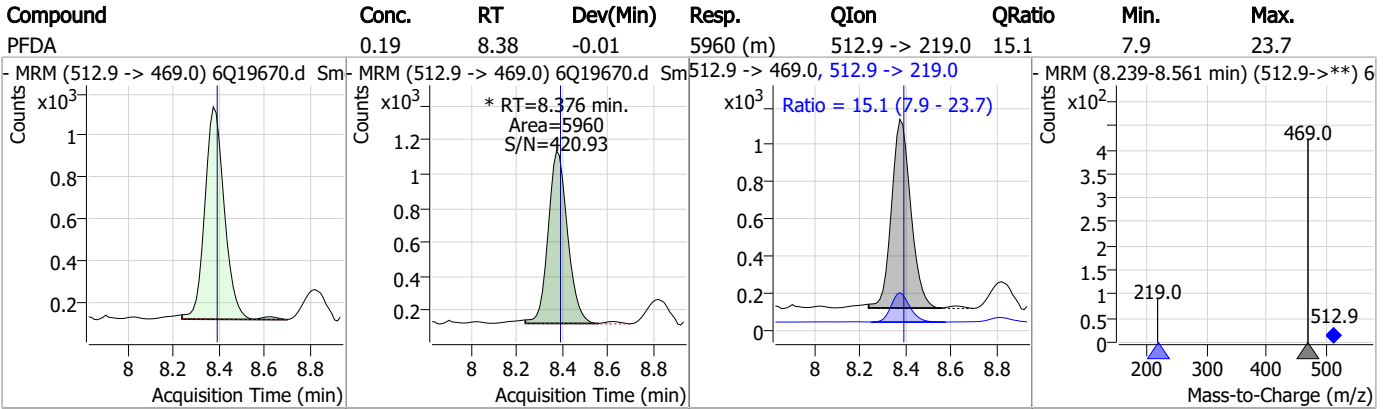


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

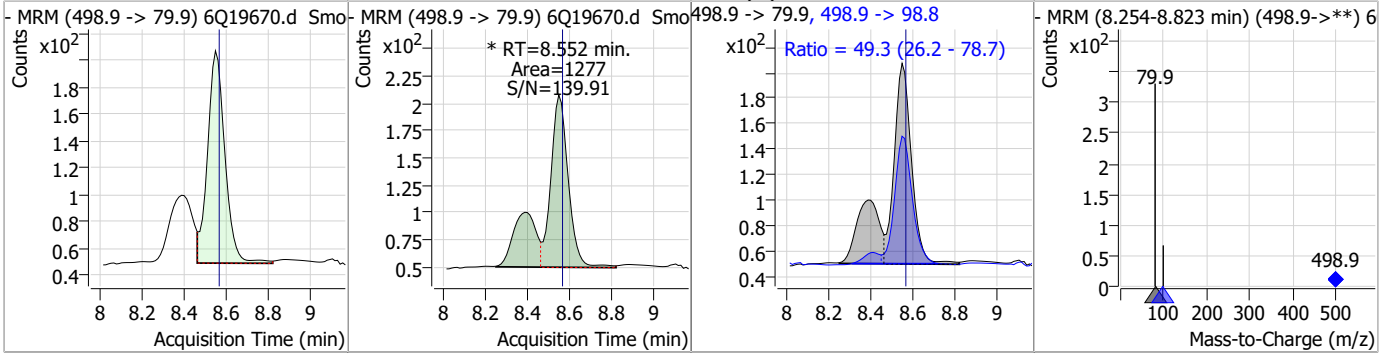


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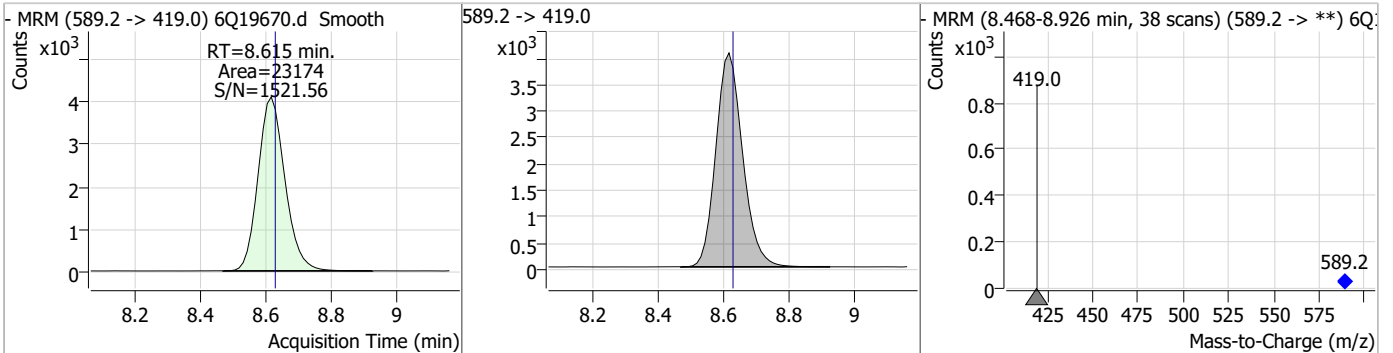


Perfluorinated Compounds by LC/MS/MS

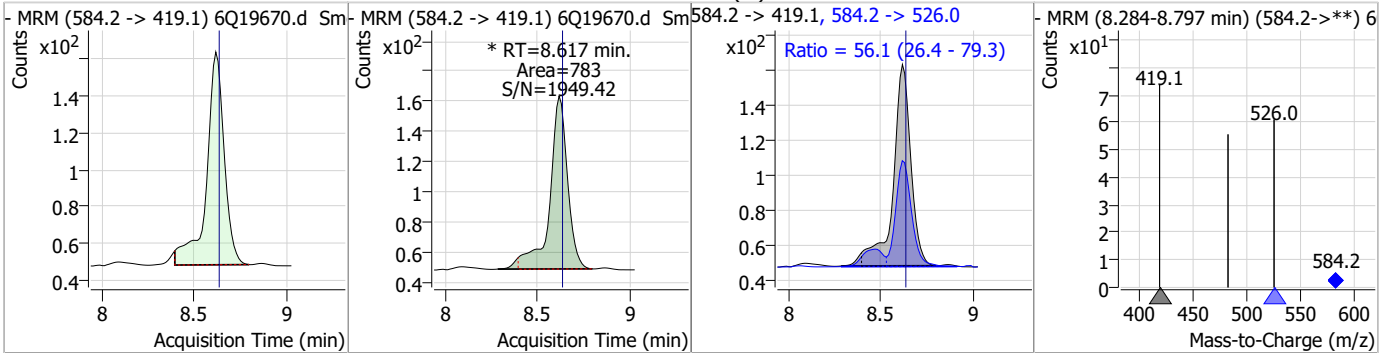
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.21	8.55	-0.01	1277 (m)	498.9 -> 98.8	49.3	26.2	78.7



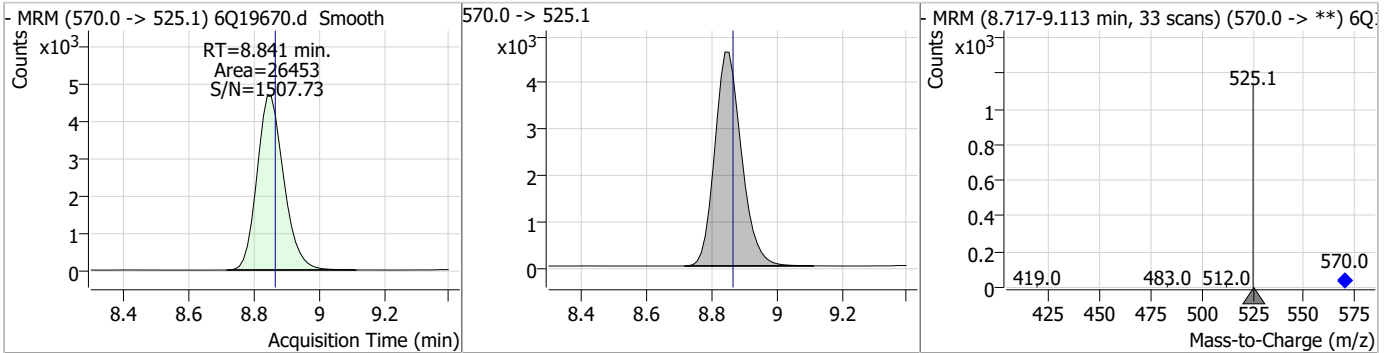
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.86	8.62	-0.01	23174				



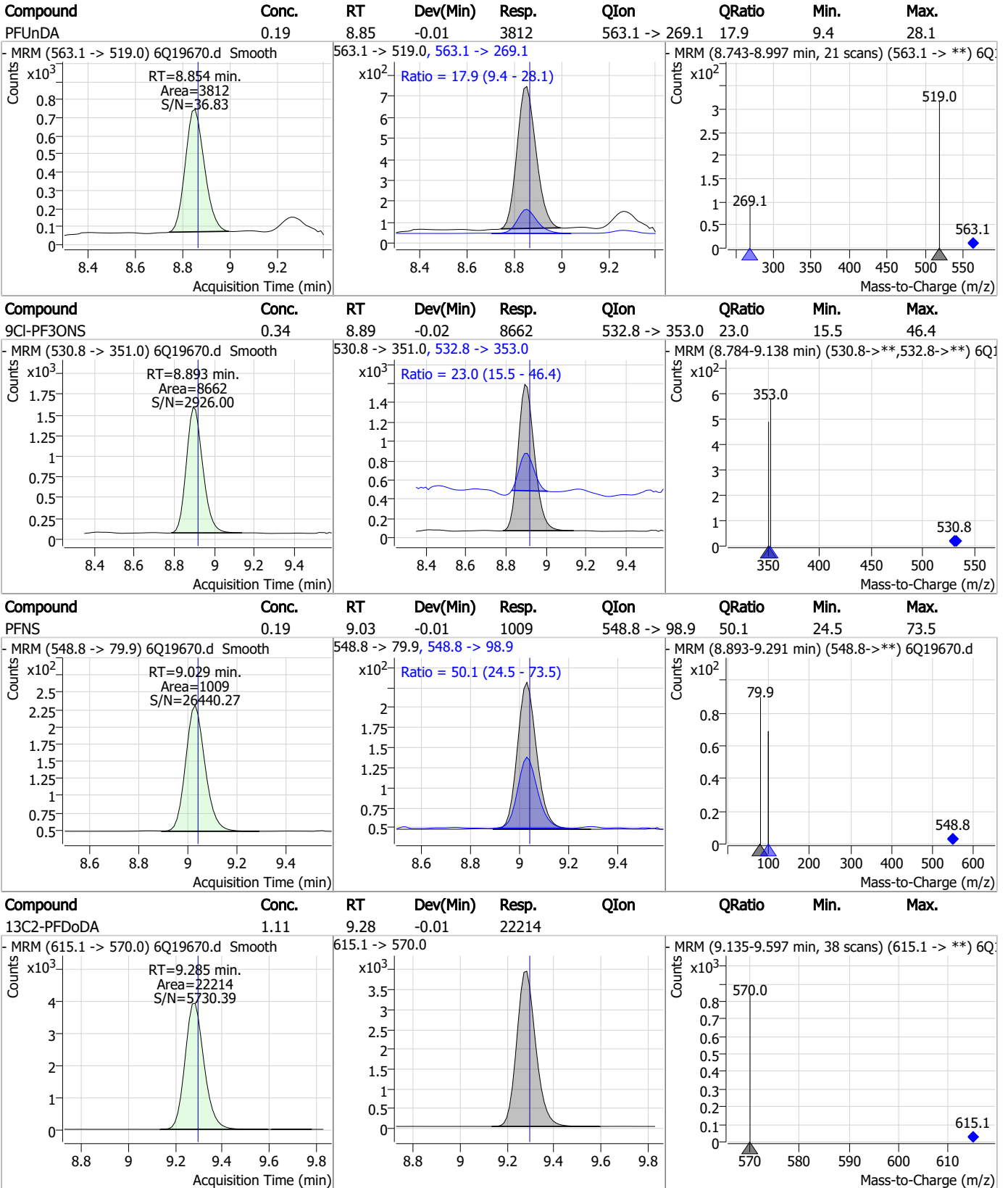
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.20	8.62	-0.01	783 (m)	584.2 -> 526.0	56.1	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.15	8.84	-0.02	26453				



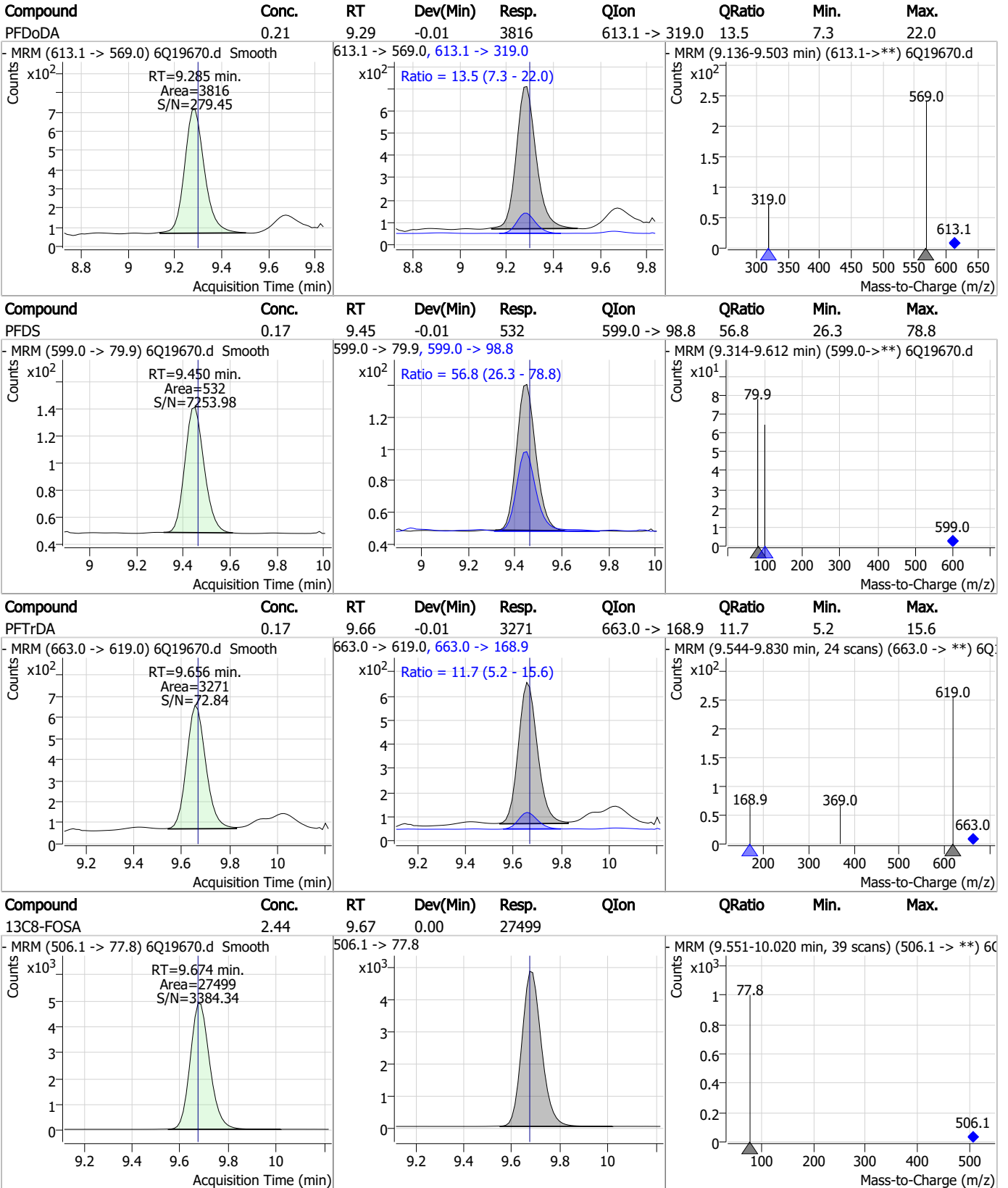
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

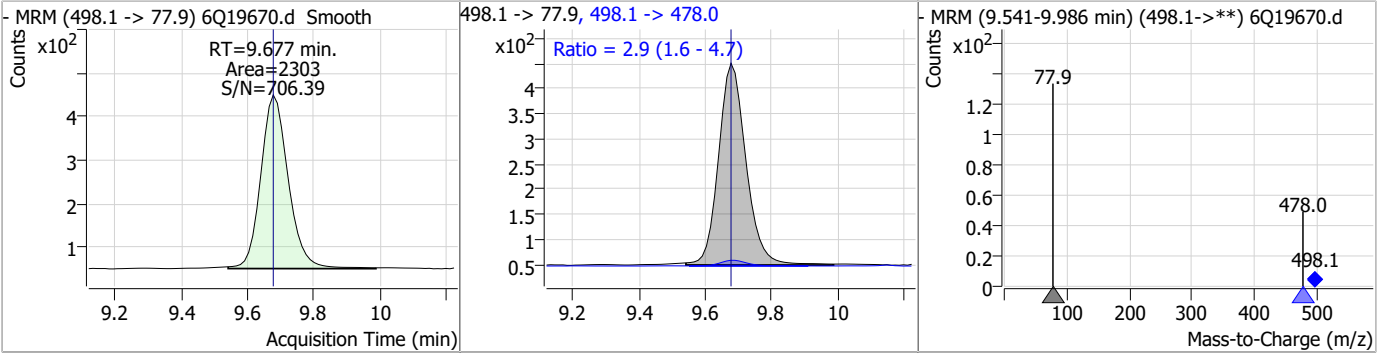


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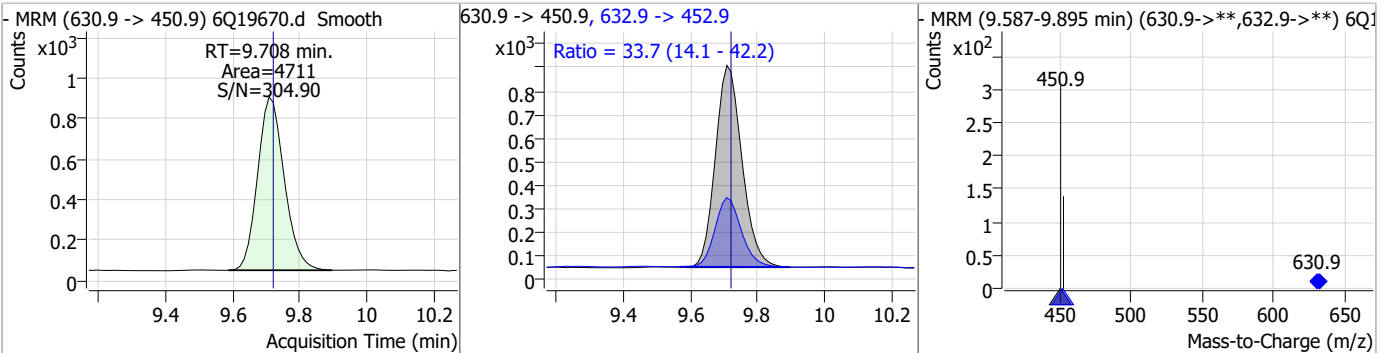


Perfluorinated Compounds by LC/MS/MS

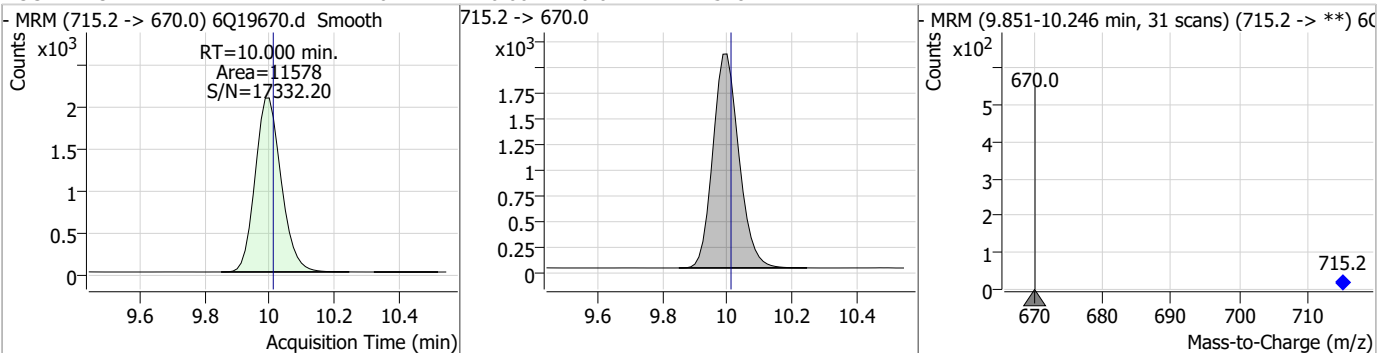
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.21	9.68	0.00	2303	498.1 -> 478.0	2.9	1.6	4.7



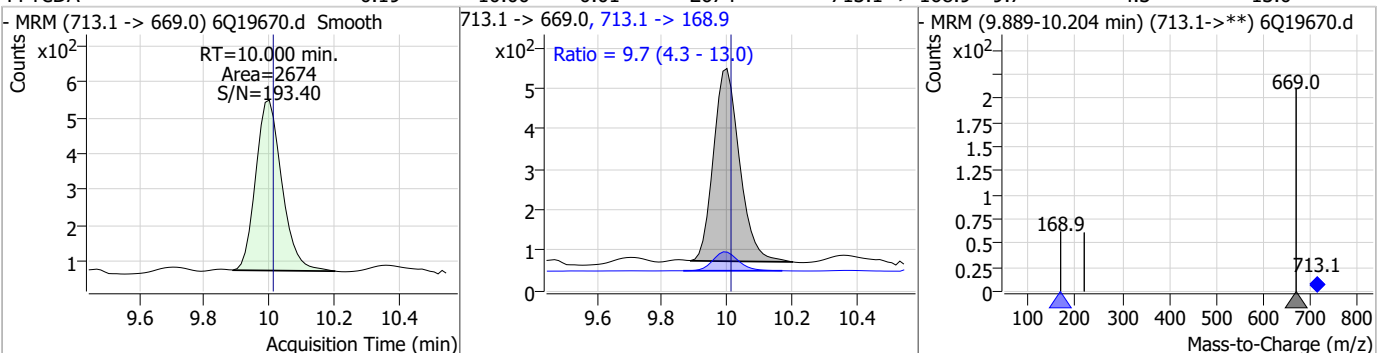
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	0.32	9.71	-0.01	4711	632.9 -> 452.9	33.7	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.04	10.00	-0.01	11578				



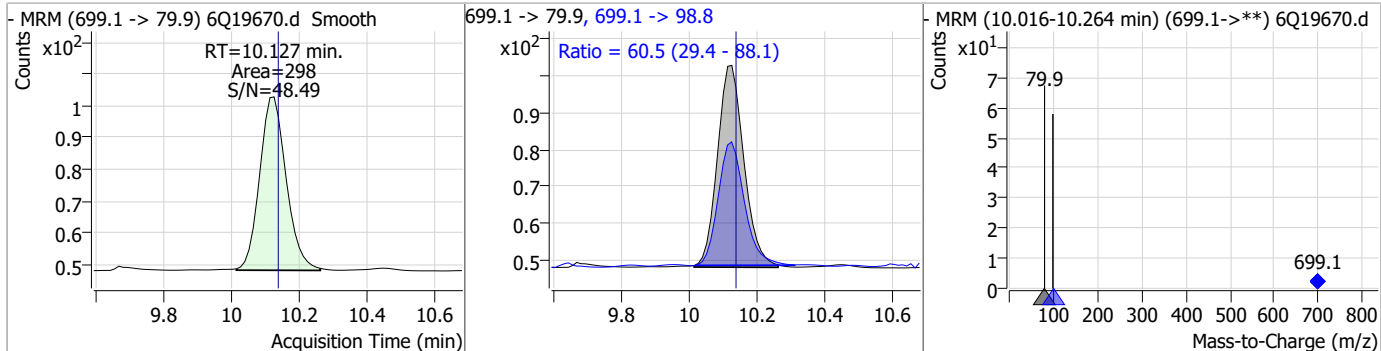
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.19	10.00	-0.01	2674	713.1 -> 168.9	9.7	4.3	13.0



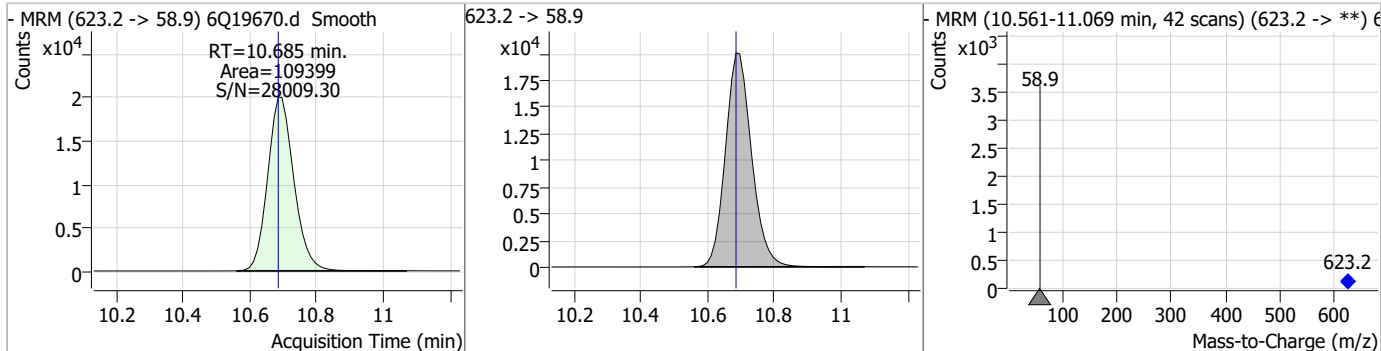
7.7.13
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Perfluorinated Compounds by LC/MS/MS

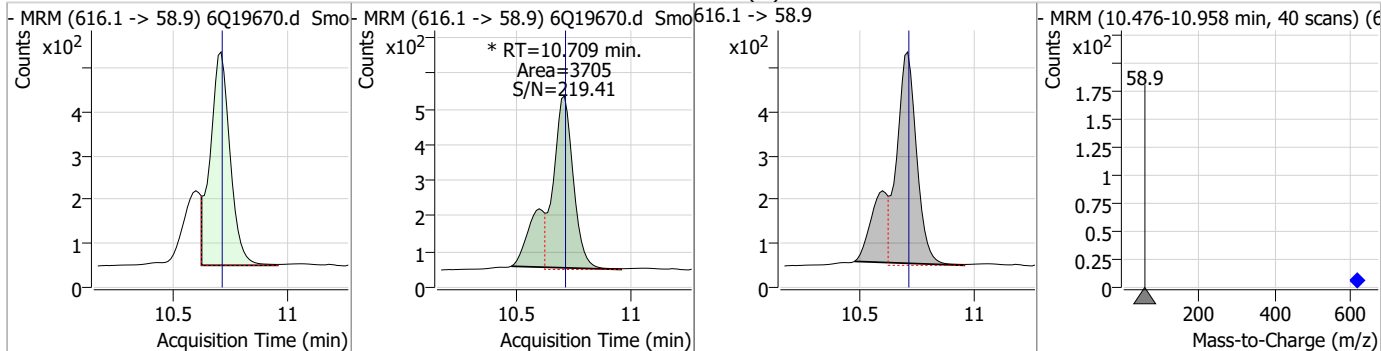
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.19	10.13	-0.01	298	699.1 -> 98.8	60.5	29.4	88.1



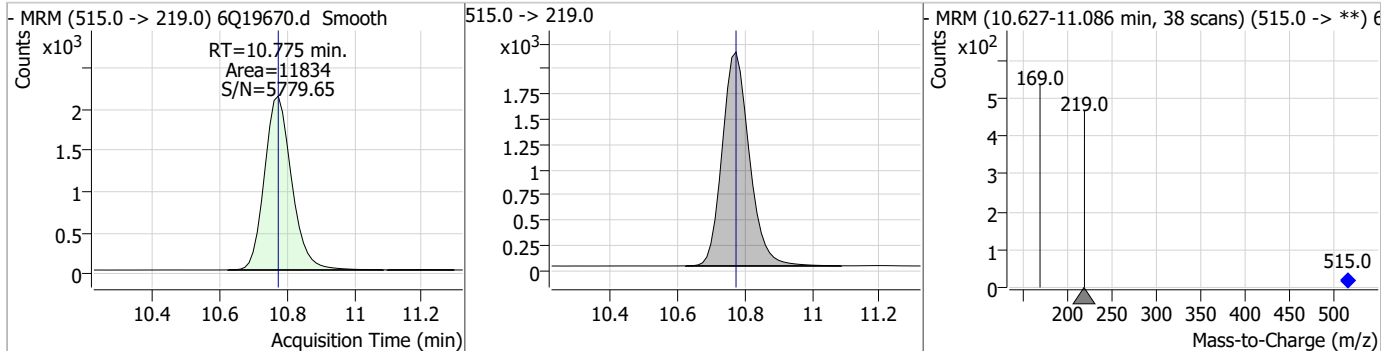
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	21.94	10.68	0.00	109399				



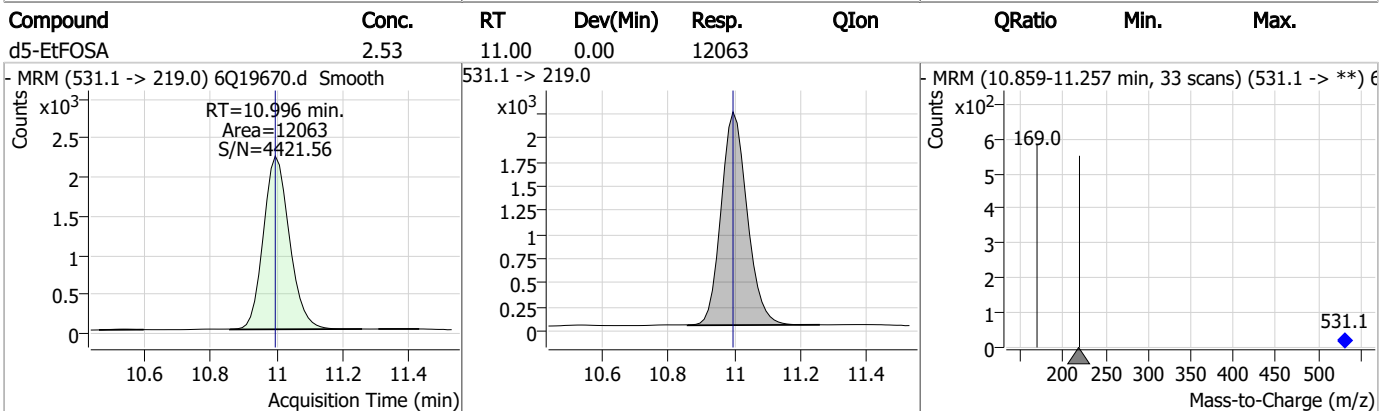
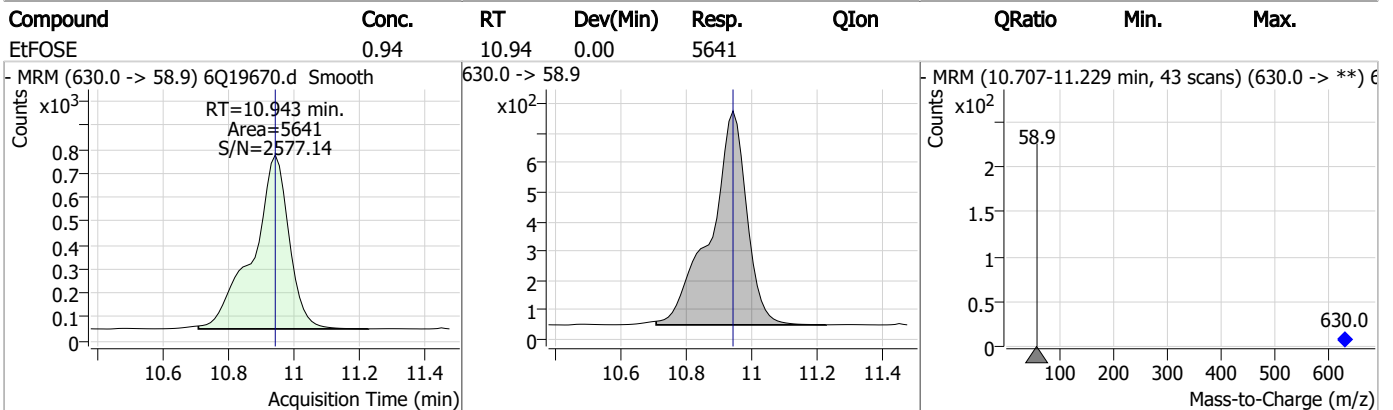
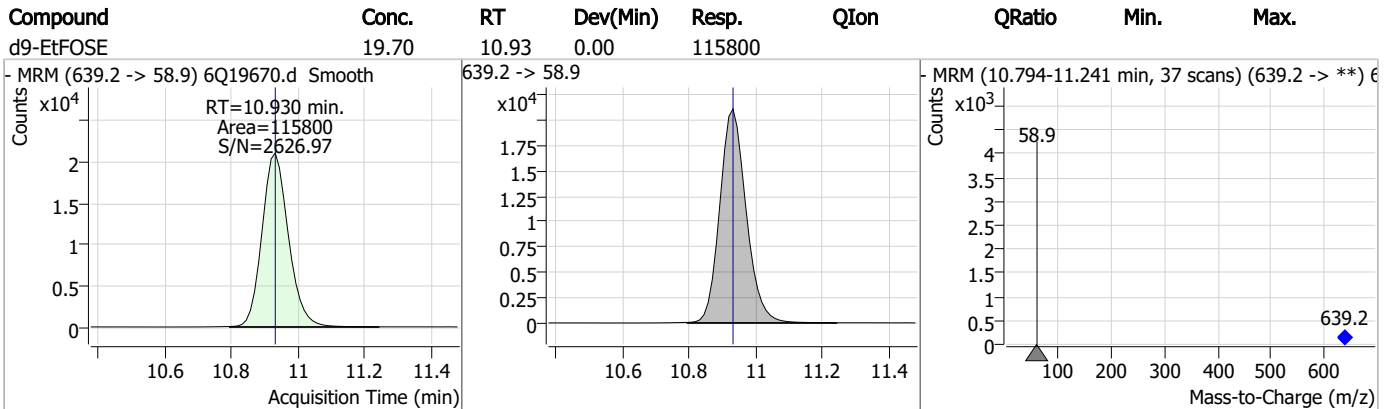
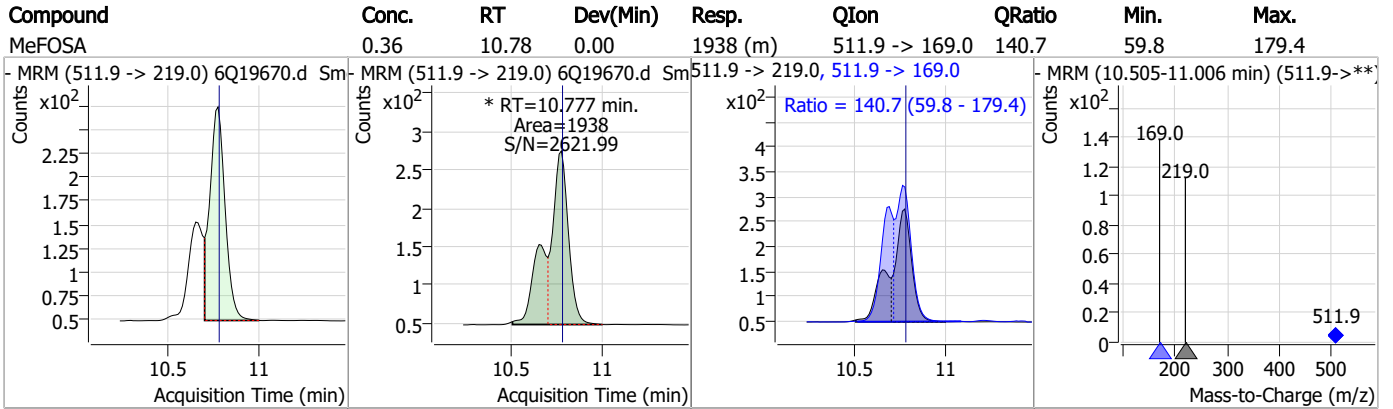
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.78	10.71	0.00	3705 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.42	10.78	0.00	11834				



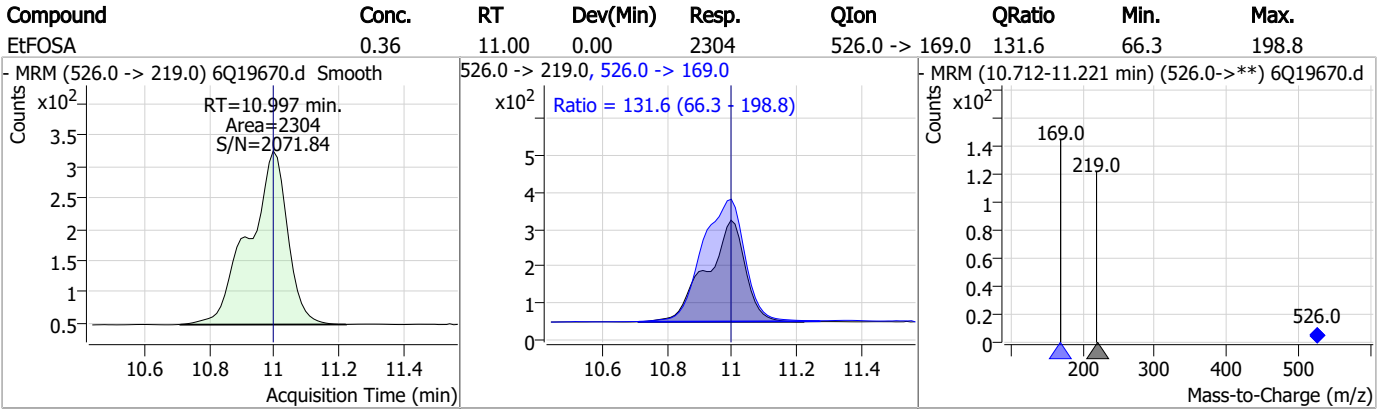
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q293-CC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19670.D Analyst approved: 06/21/23 16:11 Martha Valls
Injection Time: 06/21/23 13:09 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.47	Split peak
Perfluorodecanoic acid	335-76-2		8.38	Poor instrument integration
MeFOSAA	2355-31-9		8.41	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.55	Split peak
EtFOSAA	2991-50-6		8.62	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q19681.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 6/21/2023 3:42:50 PM
 Sample Name : cc288-4
 Vial : P1-A5
 DA Method File : 1633_061323_S6Q288.quantmethod.xml
 Batch Name : s6q293.batch.bin
 Sample Information : OP97325,S6Q293,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.085	216.8 -> 171.9	144232	10.00 µg/L	0.000
M5-PFPeA	4.560	268.3 -> 223.0	47547	5.00 µg/L	0.000
M5-PFHxA	5.792	318.0 -> 273.0	48987	2.50 µg/L	0.000
M4-PFHpA	6.707	367.1 -> 322.0	43995	2.50 µg/L	0.000
M8-PFOA	7.339	421.1 -> 376.0	74609	2.50 µg/L	-0.012
M9-PFNA	7.882	472.1 -> 427.0	33245	1.25 µg/L	-0.013
M6-PFDA	8.375	519.1 -> 474.1	19715	1.25 µg/L	-0.012
M7-PFUnDA	8.853	570.0 -> 525.1	24055	1.25 µg/L	-0.012
M2-PFDoDA	9.285	615.1 -> 570.0	22614	1.25 µg/L	-0.012
M2-PFTeDA	10.000	715.2 -> 670.0	10935	1.25 µg/L	-0.012
M8-FOSA	9.674	506.1 -> 77.8	25007	2.50 µg/L	0.000
M3-PFBS	5.733	302.1 -> 79.9	18249	2.50 µg/L	-0.013
M3-PFHxS	7.466	402.1 -> 79.9	11114	2.50 µg/L	-0.012
M8-PFOS	8.550	507.1 -> 79.9	11128	2.50 µg/L	-0.012
M2-4:2FTS	5.442	329.1 -> 80.9	2812	5.00 µg/L	0.000
M2-6:2FTS	7.100	429.1 -> 80.9	3963	5.00 µg/L	-0.012
M2-8:2FTS	8.150	529.1 -> 80.9	3611	5.00 µg/L	-0.012
M3-MeFOSAA	8.407	573.2 -> 419.0	25766	5.00 µg/L	-0.012
M3-HFPO-DA	6.169	286.9 -> 168.9	32216	10.00 µg/L	0.000
M5-EtFOSAA	8.615	589.2 -> 419.0	20816	5.00 µg/L	-0.012
M7-MeFOSE	10.685	623.2 -> 58.9	92490	25.00 µg/L	0.000
M9-EtFOSE	10.930	639.2 -> 58.9	113414	25.00 µg/L	0.000
M5-EtFOSA	10.996	531.1 -> 219.0	11613	2.50 µg/L	0.000
M3-MeFOSA	10.775	515.0 -> 219.0	11280	2.50 µg/L	0.000
13C4-PFOS	8.551	502.8 -> 79.9	15614	2.50 µg/L	-0.012
13C3-PFBA	3.089	216.0 -> 172.0	61667	5.00 µg/L	0.000
18O2-PFHxS	7.465	403.0 -> 83.9	8333	2.50 µg/L	-0.012
13C4-PFOA	7.340	417.1 -> 372.0	73840	2.50 µg/L	-0.012
13C2-PFDA	8.375	515.1 -> 470.1	27198	1.25 µg/L	-0.012
13C5-PFNA	7.882	468.0 -> 423.0	44359	1.25 µg/L	0.000
13C2-PFHxA	5.792	315.1 -> 270.0	46843	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.442	329.1 -> 80.9	2812	5.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.5%		
13C2-6:2FTS	7.100	429.1 -> 80.9	3963	5.25 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C2-8:2FTS	8.150	529.1 -> 80.9	3611	5.08 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-PFDoDA	9.285	615.1 -> 570.0	22614	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C2-PFTeDA	10.000	715.2 -> 670.0	10935	1.08 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.2%		
13C3-PFBS	5.733	302.1 -> 79.9	18249	2.63 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.2%		
13C3-PFHxS	7.466	402.1 -> 79.9	11114	2.54 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C4-PFBA	3.085	216.8 -> 171.9	144232	9.97 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C4-PFHpA	6.707	367.1 -> 322.0	43995	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C5-PFHxA	5.792	318.0 -> 273.0	48987	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFPeA	4.560	268.3 -> 223.0	47547	5.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C6-PFDA	8.375	519.1 -> 474.1	19715	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C7-PFUnDA	8.853	570.0 -> 525.1	24055	1.15 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C8-FOSA	9.674	506.1 -> 77.8	25007	2.11 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.6%	
13C8-PFOA	7.339	421.1 -> 376.0	74609	2.70 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.1%	
13C8-PFOS	8.550	507.1 -> 79.9	11128	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C9-PFNA	7.882	472.1 -> 427.0	33245	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
d3-MeFOSAA	8.407	573.2 -> 419.0	25766	4.36 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.2%	
13C3-HFPO-DA	6.169	286.9 -> 168.9	32216	9.96 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d3-MeFOSA	10.775	515.0 -> 219.0	11280	2.19 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.8%	
d5-EtFOSAA	8.615	589.2 -> 419.0	20816	4.15 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 83.0%	
d7-MeFOSE	10.685	623.2 -> 58.9	92490	17.65 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 70.6%	
d9-EtFOSE	10.930	639.2 -> 58.9	113414	18.36 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 73.4%	
d5-EtFOSA	10.996	531.1 -> 219.0	11613	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.6%	
Target Compounds					QValue
4:2FTS	5.443	327.1 -> 307.0	45639	9.33 µg/L	97
		327.1 -> 80.9	16309		
6:2FTS	7.101	427.1 -> 407.0	50143	10.62 µg/L	94
		427.1 -> 80.9	14758		
8:2FTS	8.151	527.1 -> 507.0	24150	10.06 µg/L	96
		527.1 -> 80.8	8982		
EtFOSAA	8.617	584.2 -> 419.1	8882	2.52 µg/L	m 100
		584.2 -> 526.0	4690		
FOSA	9.677	498.1 -> 77.9	24988	2.51 µg/L	100
		498.1 -> 478.0	763		
MeFOSAA	8.408	570.1 -> 419.0	16959	2.54 µg/L	m 98
		570.1 -> 483.0	3054		
PFBA	3.093	212.8 -> 168.9	57198	9.84 µg/L	100
PFBS	5.734	298.7 -> 79.9	17965	2.20 µg/L	99
		298.7 -> 98.8	6672		
PFDA	8.376	512.9 -> 469.0	70605	2.41 µg/L	99
		512.9 -> 219.0	11501		
PFDODA	9.285	613.1 -> 569.0	42937	2.29 µg/L	98
		613.1 -> 319.0	6702		
PFDS	9.450	599.0 -> 79.9	7093	2.11 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.708	599.0 -> 98.8	3456	2.51	µg/L	97
		363.1 -> 319.0	59057			
PFHpS	8.034	363.1 -> 169.0	9712	2.19	µg/L	89
		449.0 -> 79.9	14584			
PFHxA	5.795	449.0 -> 98.9	8533	2.45	µg/L	99
		313.0 -> 269.0	48486			
PFHxS	7.467	313.0 -> 118.9	2631	2.11	µg/L	m
		398.7 -> 79.9	14129			
PFNA	7.883	398.7 -> 98.9	7102	2.37	µg/L	100
		463.0 -> 419.0	72979			
PFNS	9.029	463.0 -> 219.0	13885	2.19	µg/L	95
		548.8 -> 79.9	12649			
PFOA	7.341	548.8 -> 98.9	6638	2.38	µg/L	99
		413.0 -> 369.0	97432			
PFOS	8.552	413.0 -> 169.0	16133	2.12	µg/L	m
		498.9 -> 79.9	13987			
PFPeA	4.551	498.9 -> 98.8	6425	4.91	µg/L	100
		263.0 -> 219.0	68894			
PFPeS	6.773	349.1 -> 79.9	14865	2.39	µg/L	95
		349.1 -> 98.9	6673			
PFTeDA	10.000	713.1 -> 669.0	33699	2.57	µg/L	100
		713.1 -> 168.9	2936			
PFTrDA	9.656	663.0 -> 619.0	44851	2.35	µg/L	99
		663.0 -> 168.9	4831			
PFUnDA	8.854	563.1 -> 519.0	51677	2.78	µg/L	95
		563.1 -> 269.1	8439			
11CI-PF3OUdS	9.708	630.9 -> 450.9	60838	4.15	µg/L	87
		632.9 -> 452.9	21183			
9CI-PF3ONS	8.893	530.8 -> 351.0	113808	4.50	µg/L	100
		532.8 -> 353.0	35190			
ADONA	6.946	376.9 -> 250.9	253337	4.86	µg/L	94
		376.9 -> 84.8	65218			
HFPO-DA	6.169	284.9 -> 168.9	17422	5.17	µg/L	98
		284.9 -> 184.9	1908			
3:3FTCA	3.958	241.0 -> 177.0	10617	11.18	µg/L	98
		241.0 -> 117.0	1523			
5:3FTCA	6.374	341.0 -> 237.1	234436	59.66	µg/L	99
		341.0 -> 217.0	177046			
7:3FTCA	7.748	441.0 -> 316.9	174551	65.70	µg/L	98
		441.0 -> 336.9	388768			
EtFOSA	10.997	526.0 -> 219.0	29809	4.81	µg/L	98
		526.0 -> 169.0	38794			
EtFOSE	10.943	630.0 -> 58.9	71674	12.21	µg/L	100
		511.9 -> 219.0	24126			
MeFOSA	10.777	511.9 -> 169.0	35677	4.72	µg/L	m
		616.1 -> 58.9	48684			
MeFOSE	10.709	699.1 -> 79.9	3402	12.15	µg/L	m
		699.1 -> 98.8	1797			
PFDoDS	10.127	295.0 -> 201.0	12975	2.05	µg/L	92
		295.0 -> 84.9	3523			
NFDHA	5.673	279.0 -> 85.1	48865	5.14	µg/L	99
		229.0 -> 84.9	39419			
PFMBA	4.988	314.8 -> 134.9	126444	4.73	µg/L	99
		314.8 -> 82.9	4016			

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

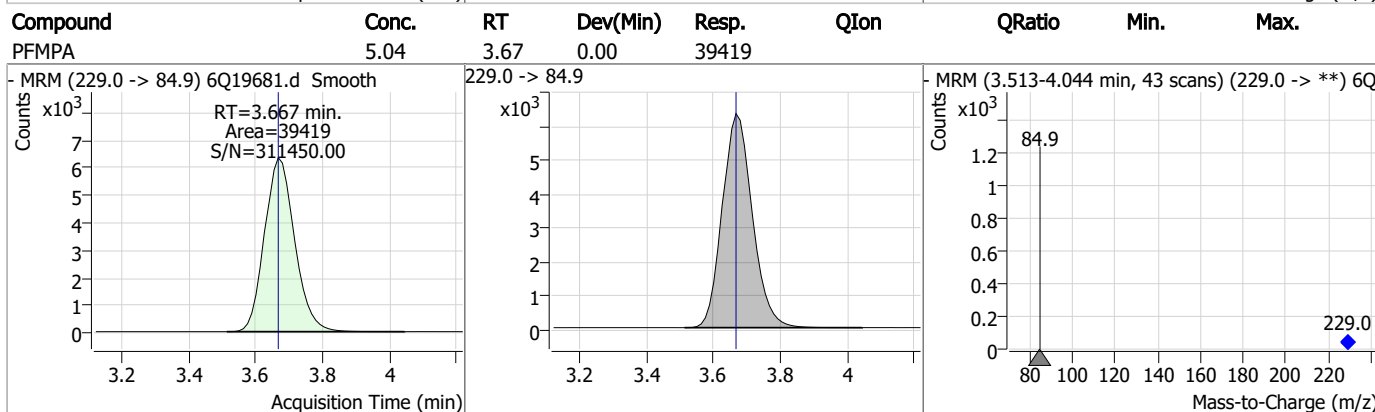
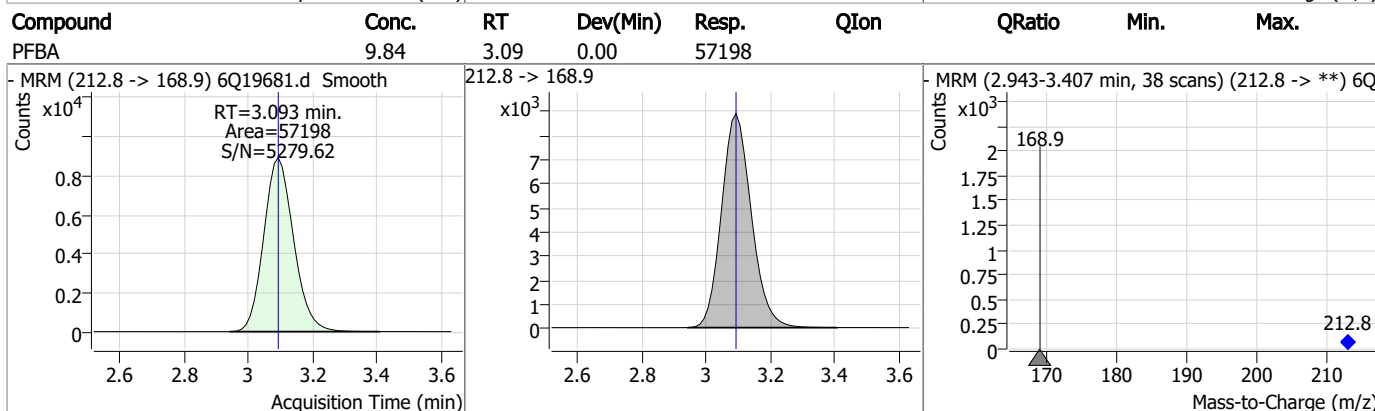
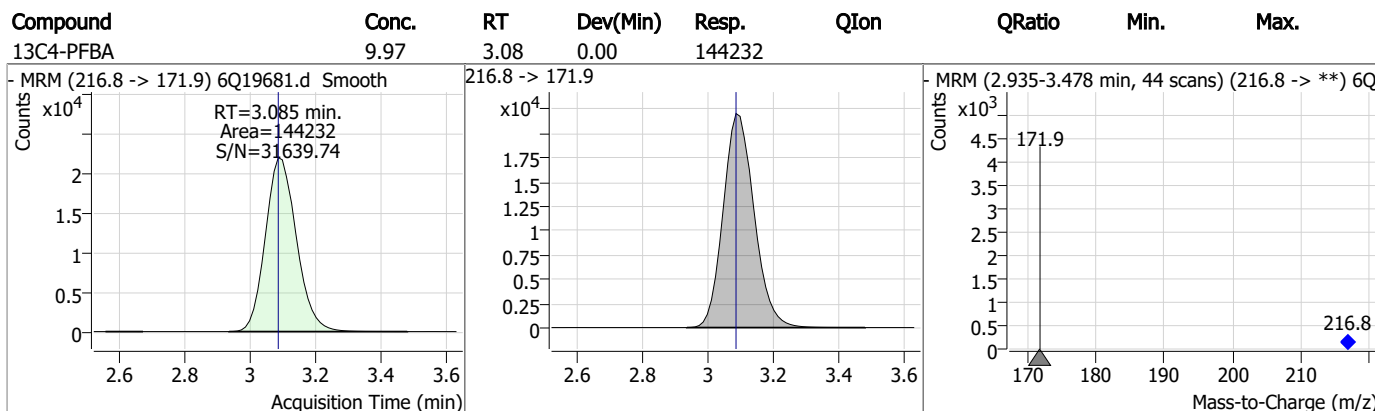
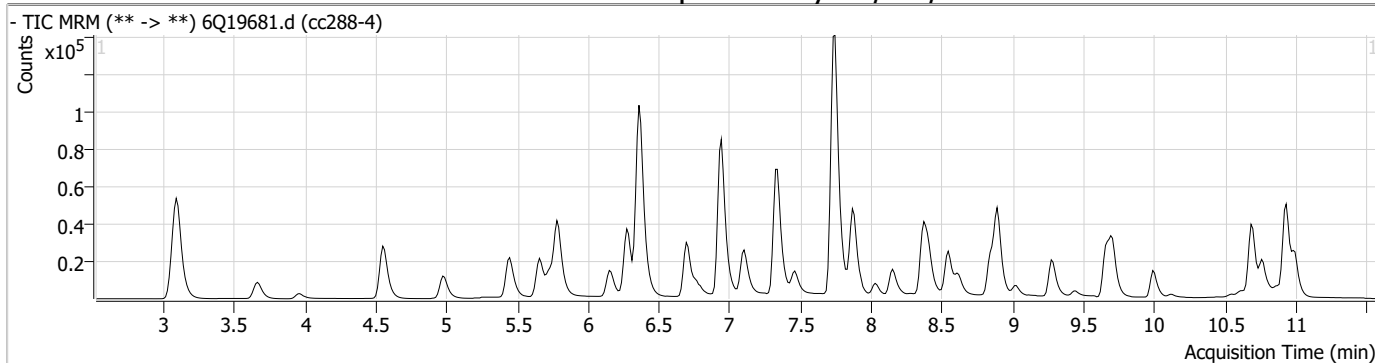
Perfluorinated Compounds by LC/MS/MS

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

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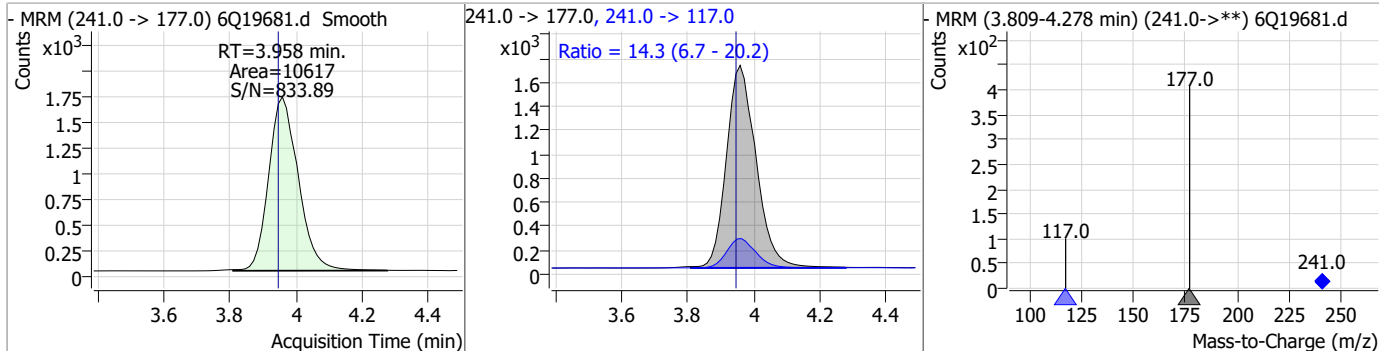
Perfluorinated Compounds by LC/MS/MS



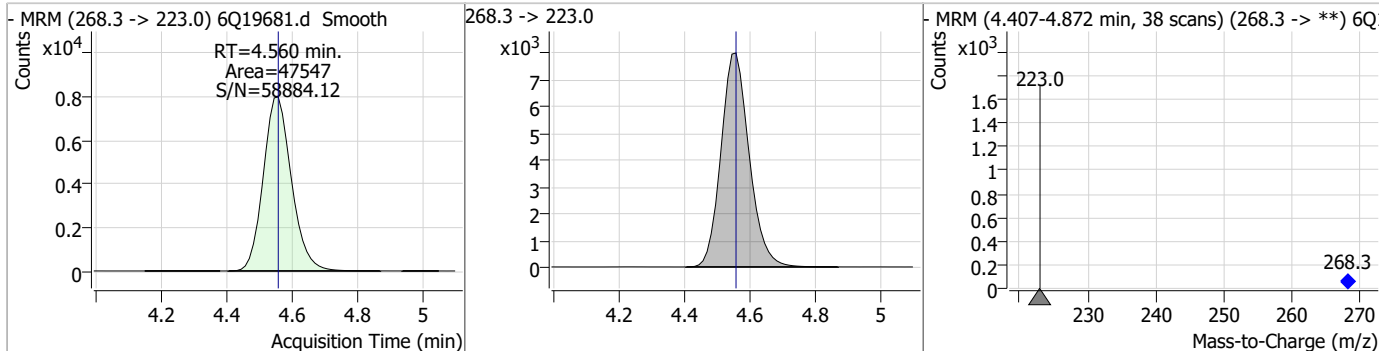
7.7.14
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Perfluorinated Compounds by LC/MS/MS

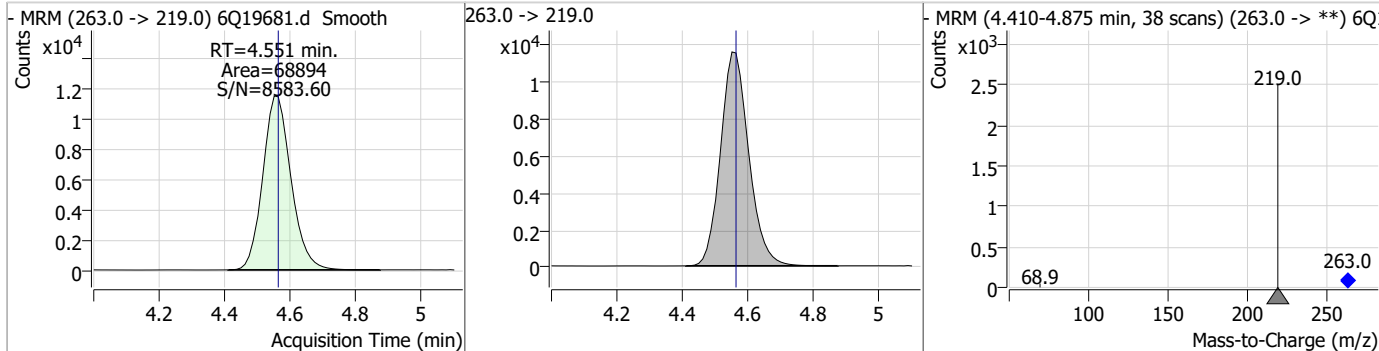
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.18	3.96	0.01	10617	241.0 -> 117.0	14.3	6.7	20.2



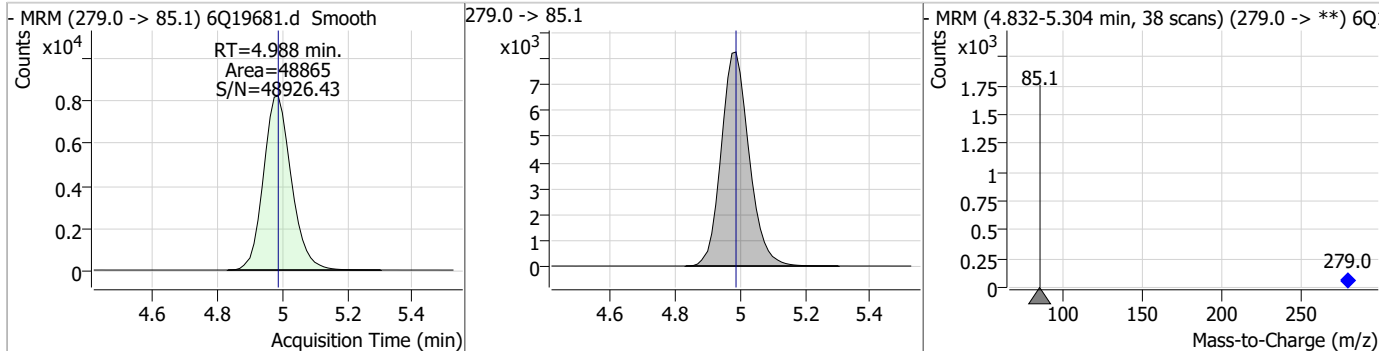
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.37	4.56	0.00	47547				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.91	4.55	-0.01	68894				

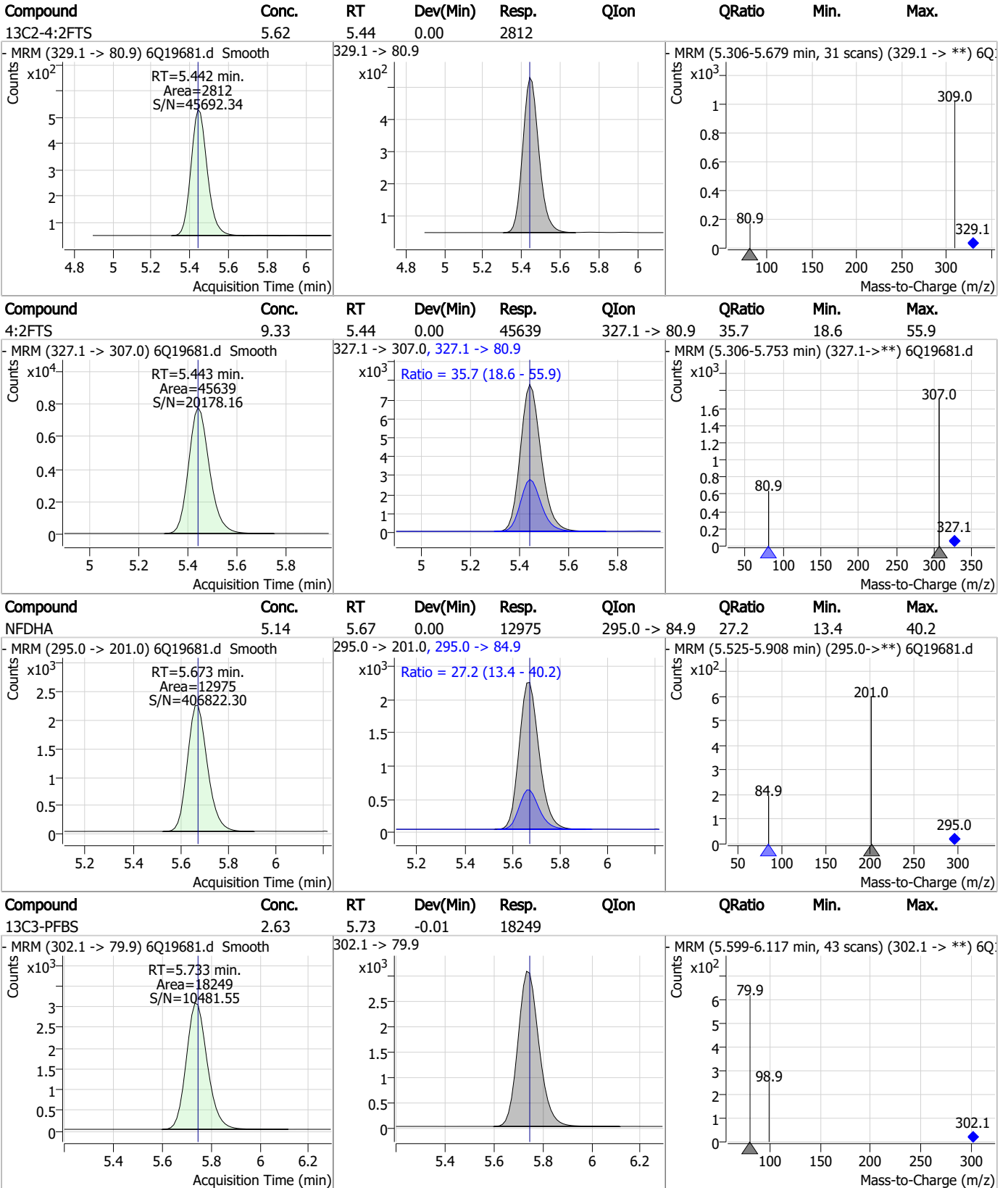


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.88	4.99	0.00	48865				



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Perfluorinated Compounds by LC/MS/MS

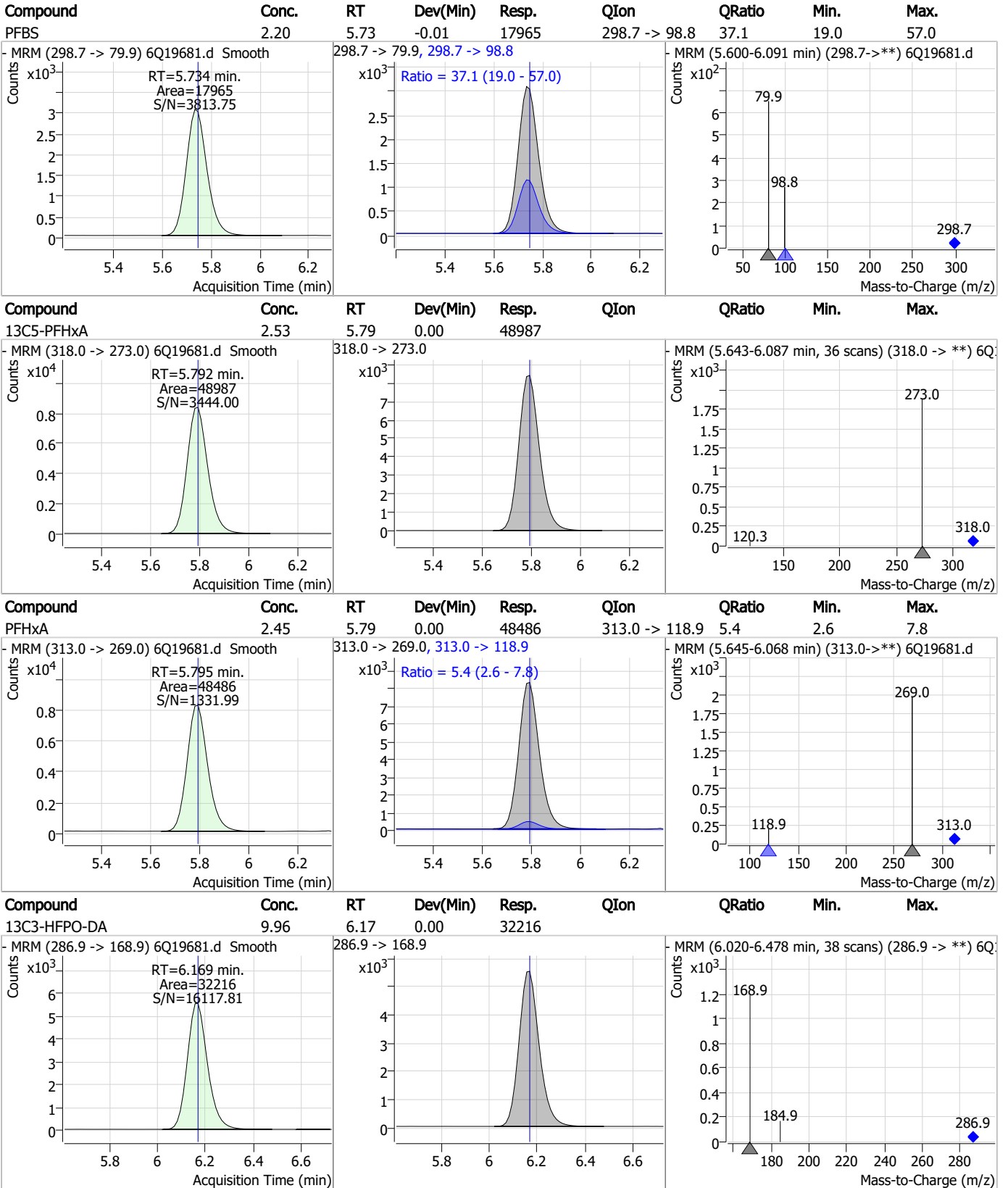


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Perfluorinated Compounds by LC/MS/MS

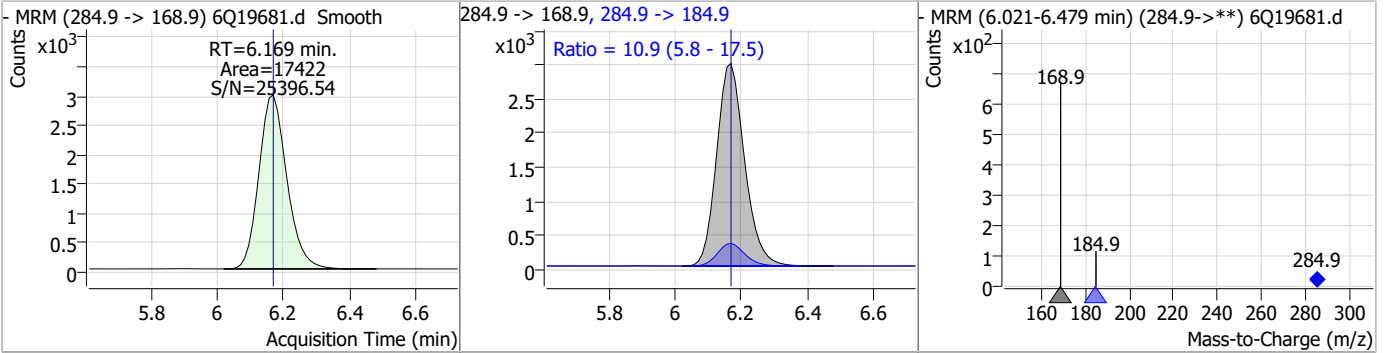


7.7.14

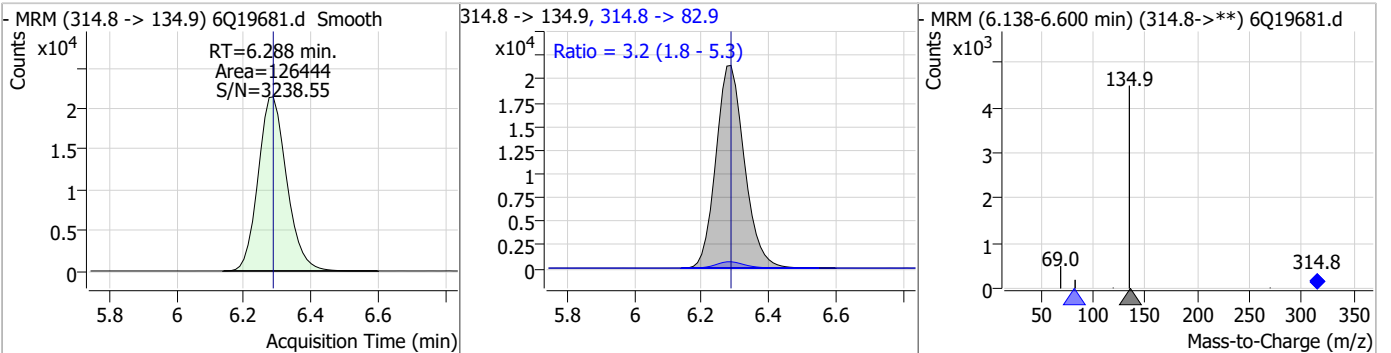


Perfluorinated Compounds by LC/MS/MS

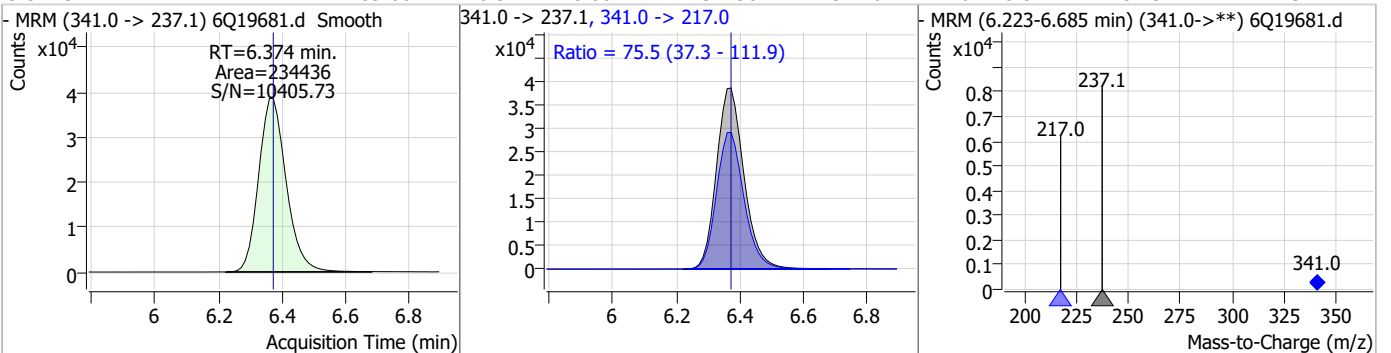
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.17	6.17	0.00	17422	284.9 -> 184.9	10.9	5.8	17.5



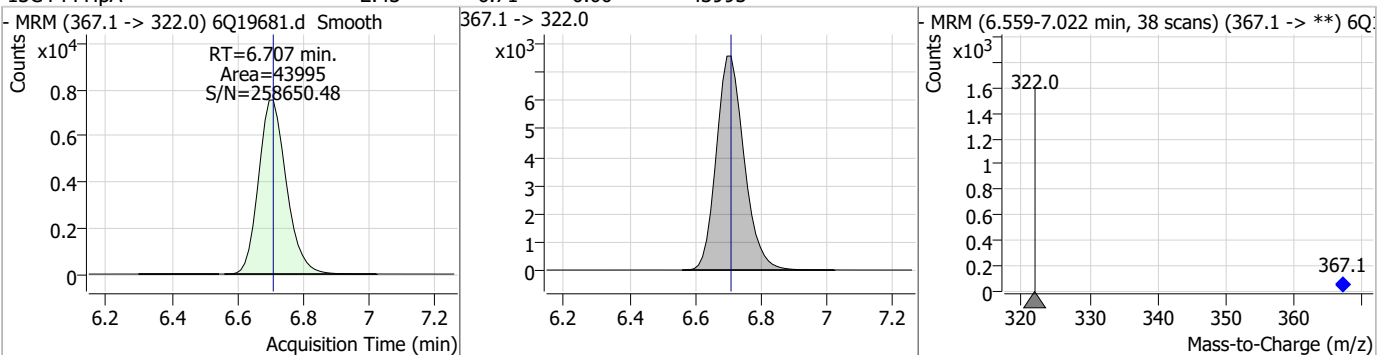
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.73	6.29	0.00	126444	314.8 -> 82.9	3.2	1.8	5.3



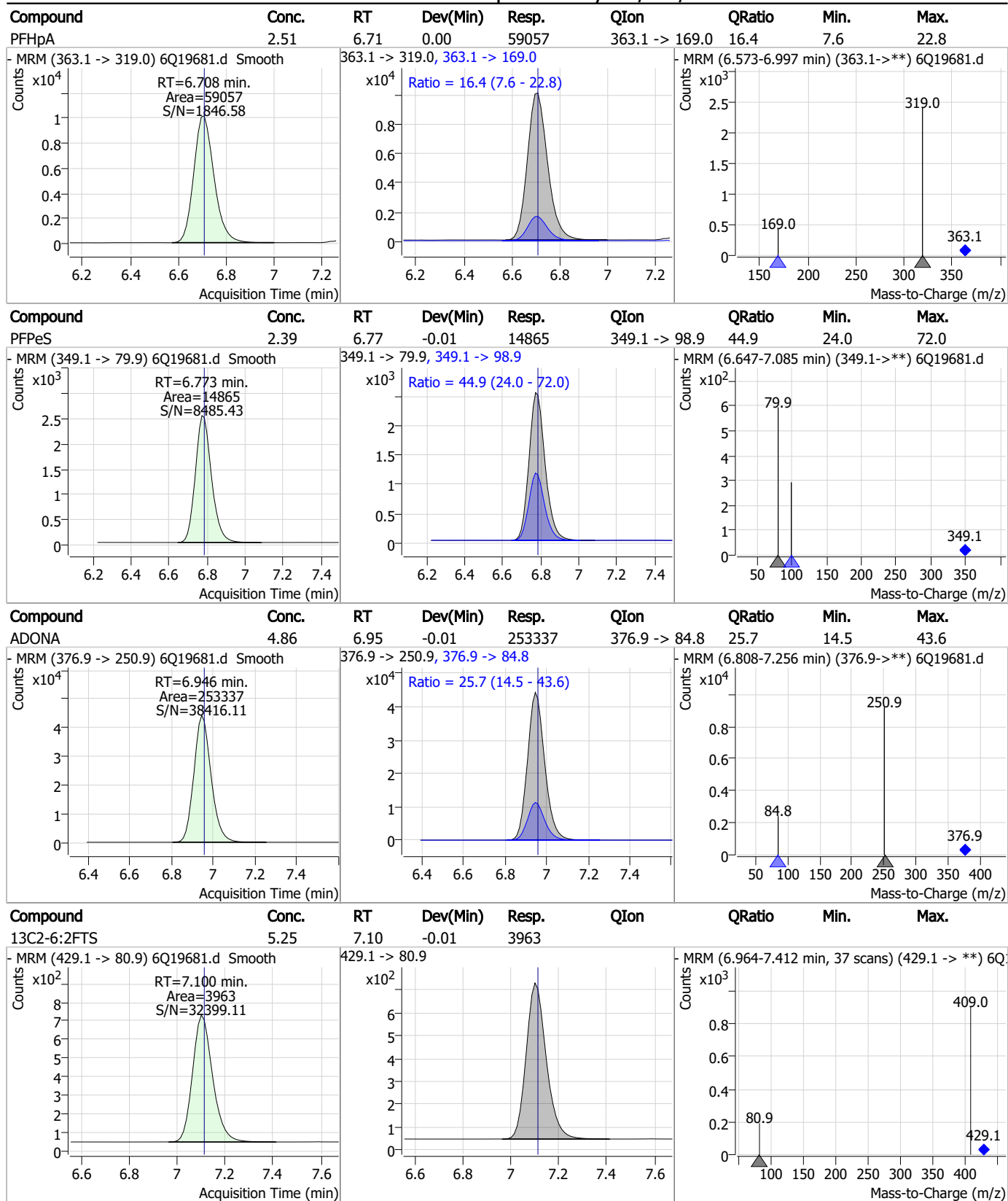
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	59.66	6.37	0.00	234436	341.0 -> 217.0	75.5	37.3	111.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.43	6.71	0.00	43995	367.1 -> 322.0	-	-	-



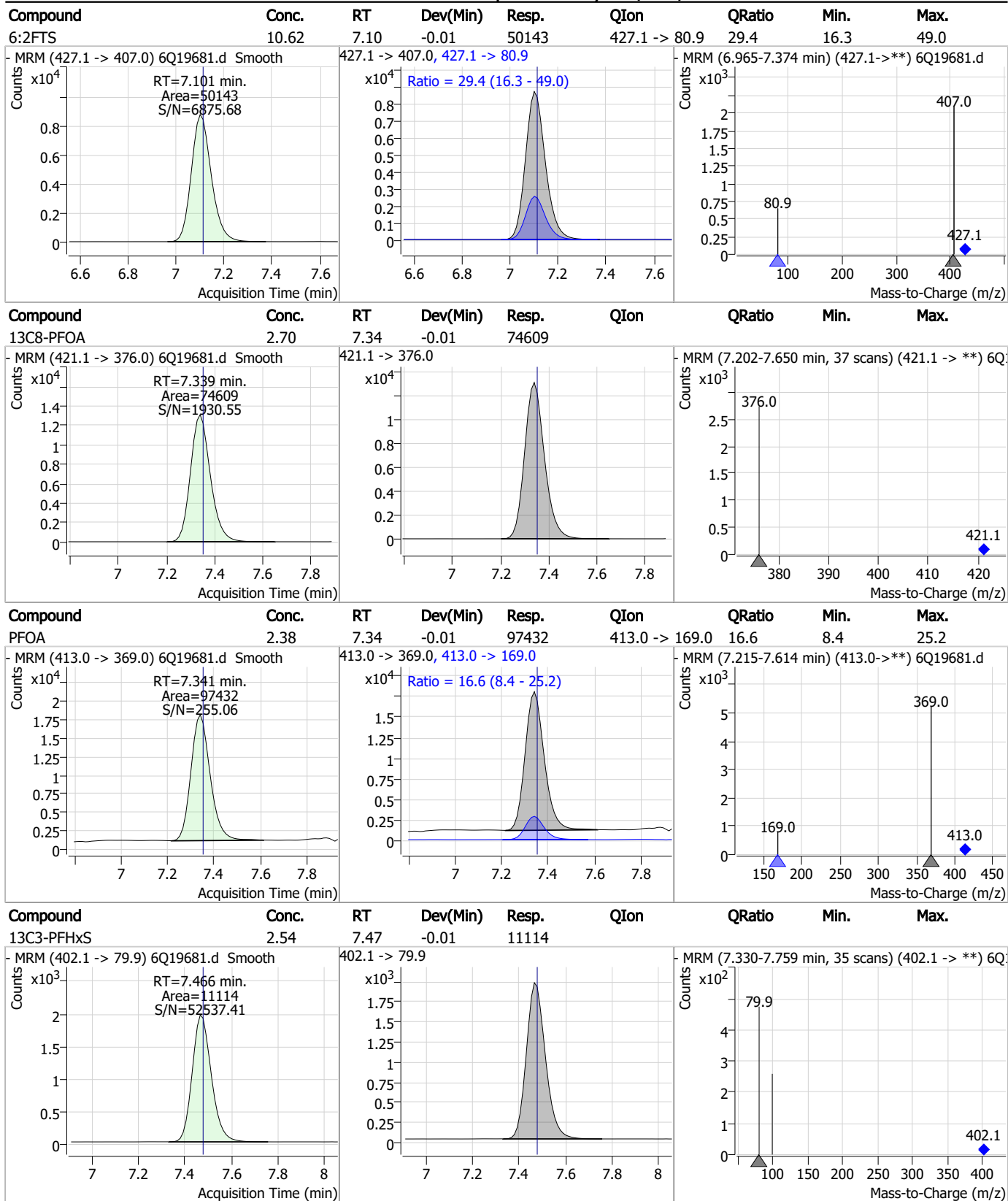
Perfluorinated Compounds by LC/MS/MS



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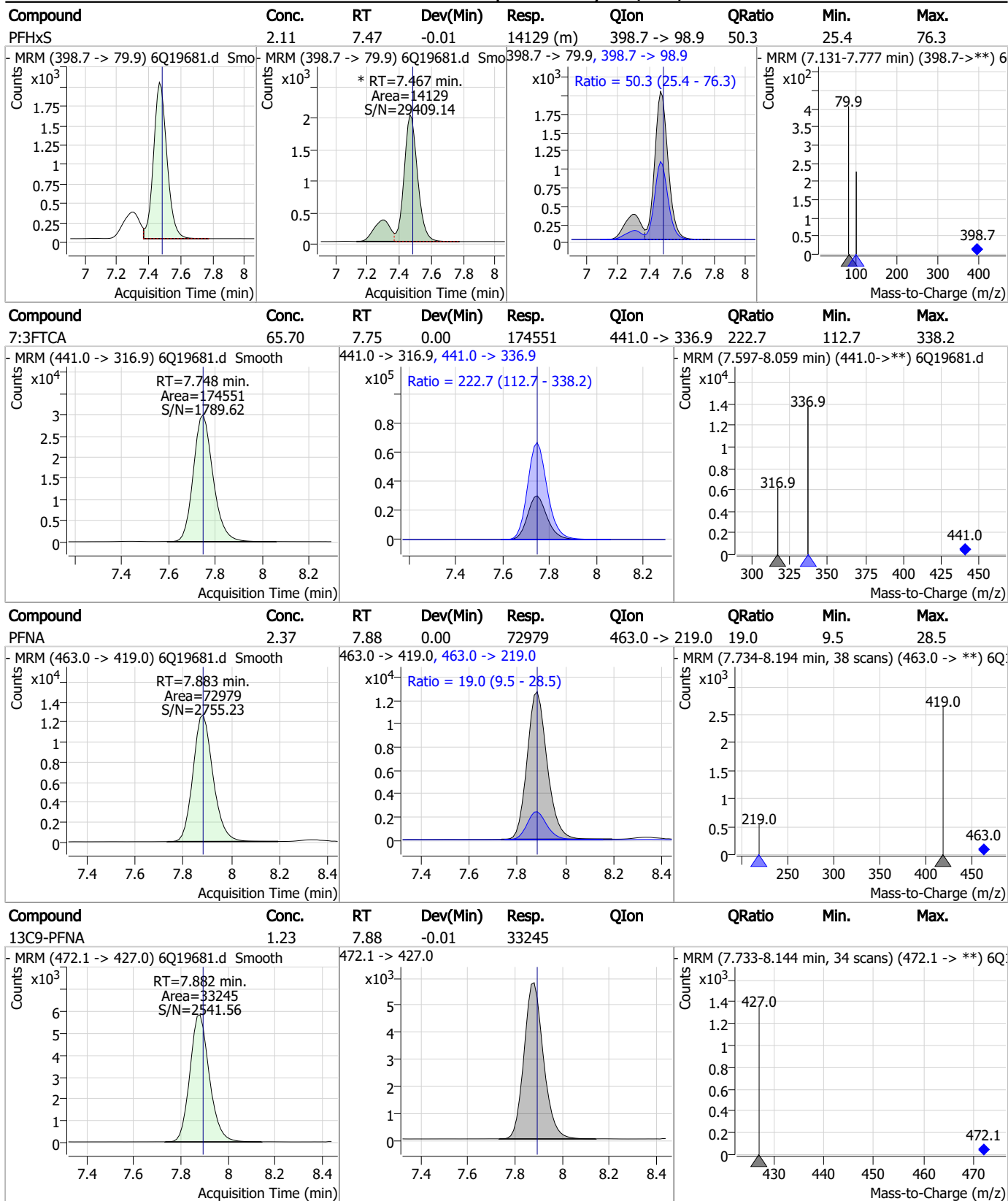
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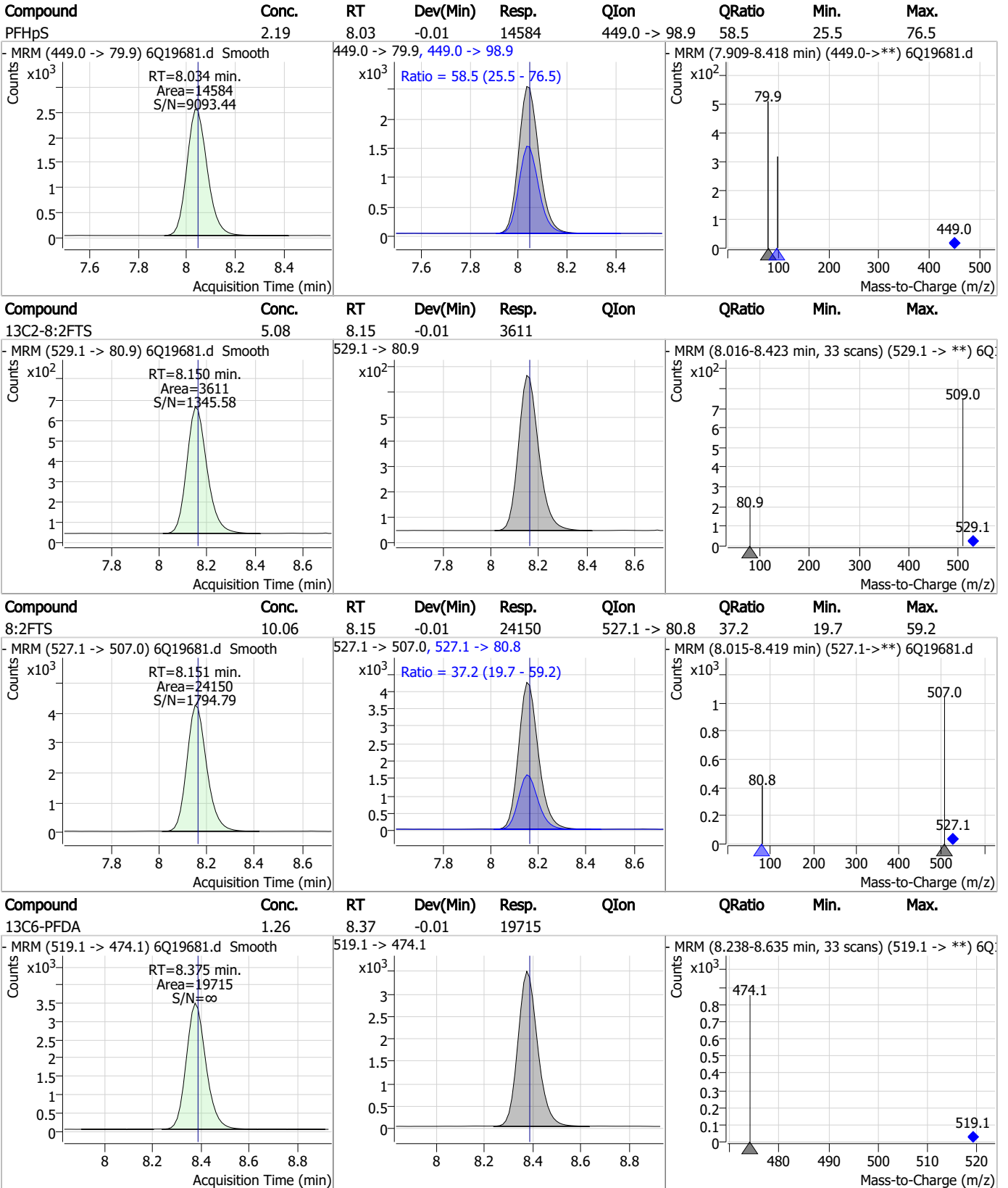
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Perfluorinated Compounds by LC/MS/MS



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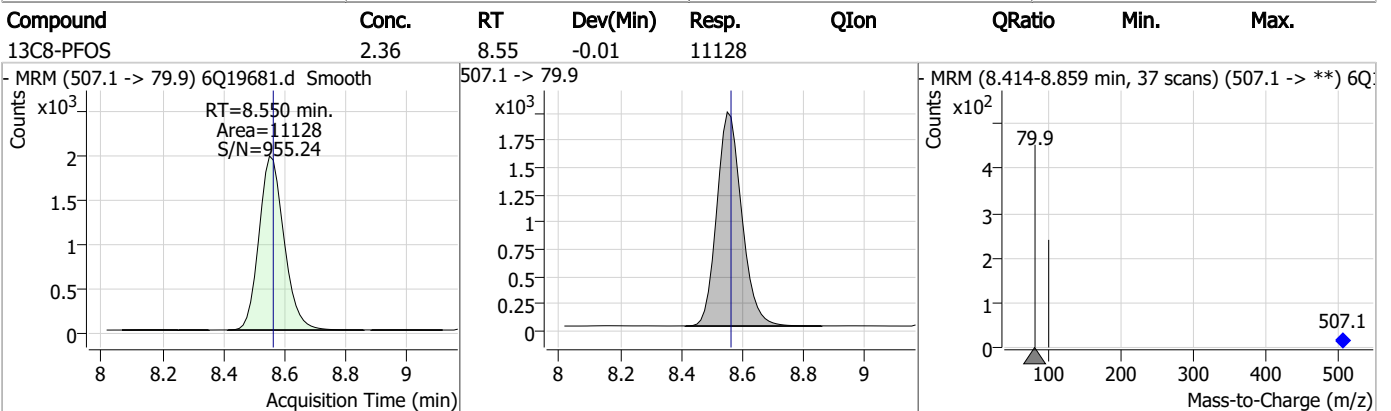
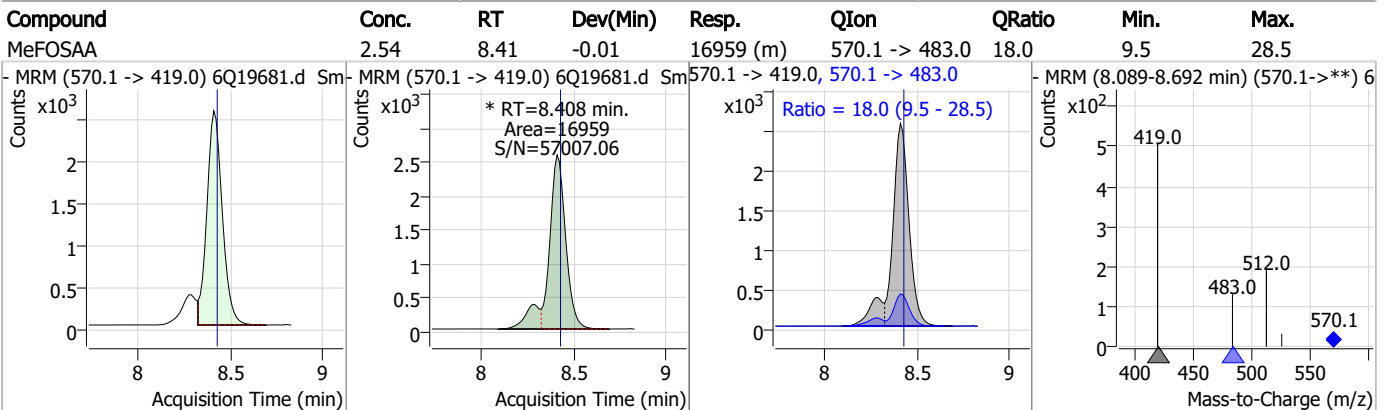
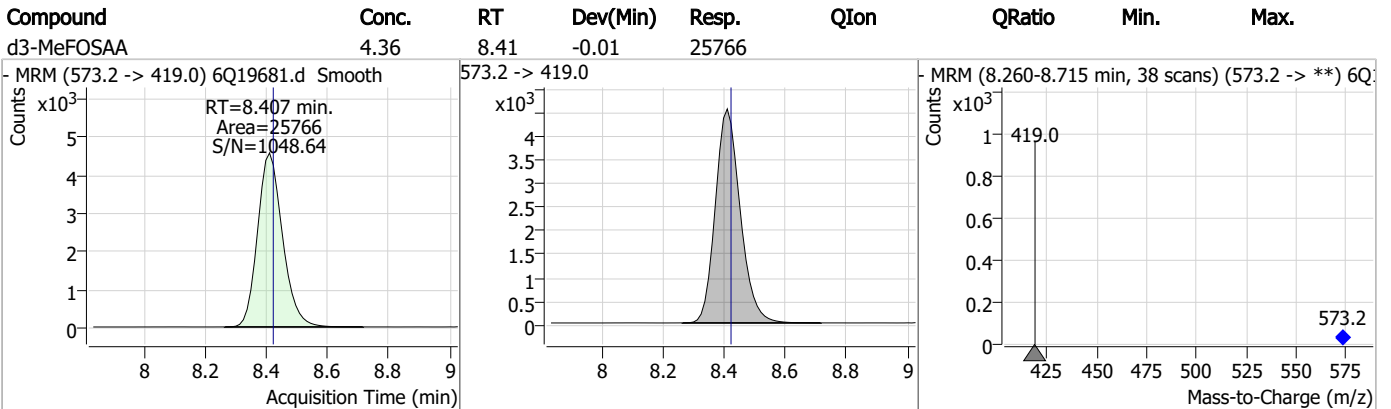
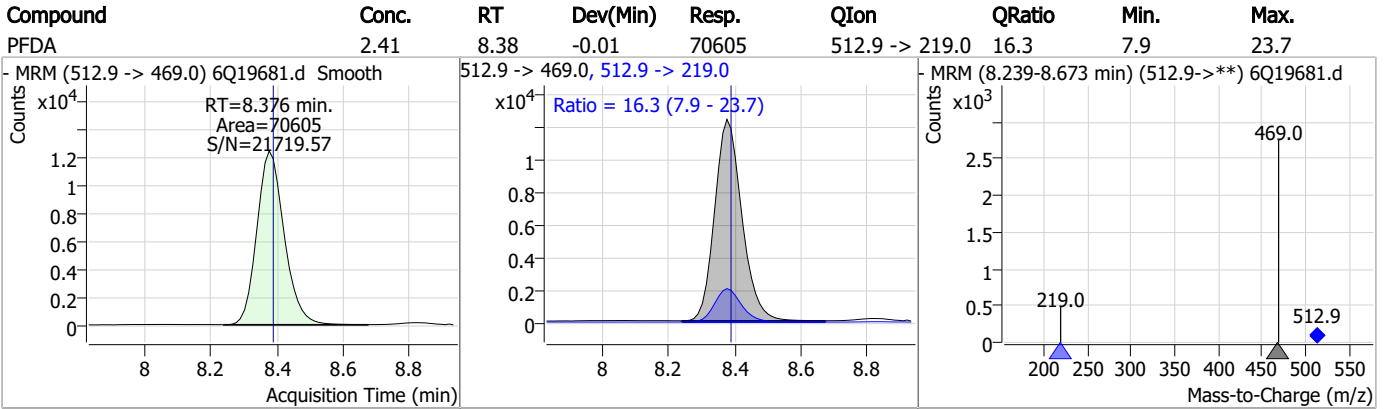
Perfluorinated Compounds by LC/MS/MS



7.7.14

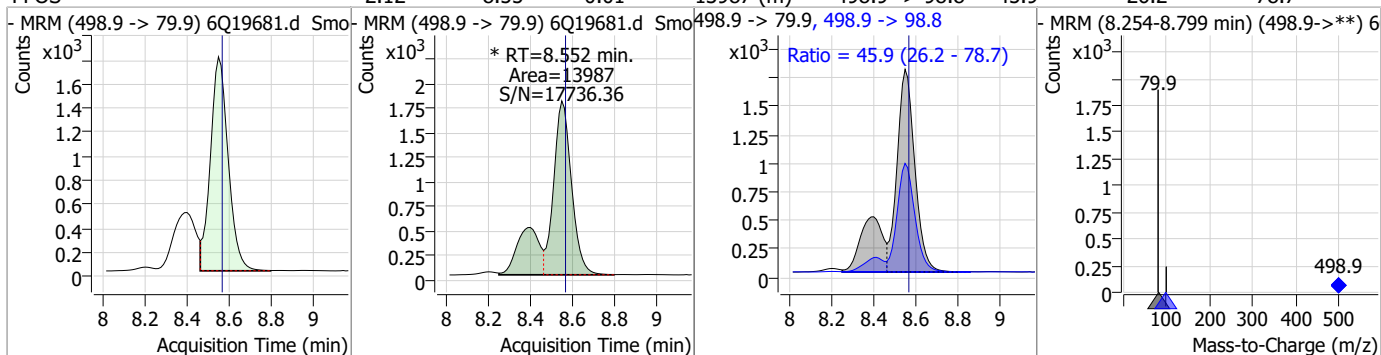


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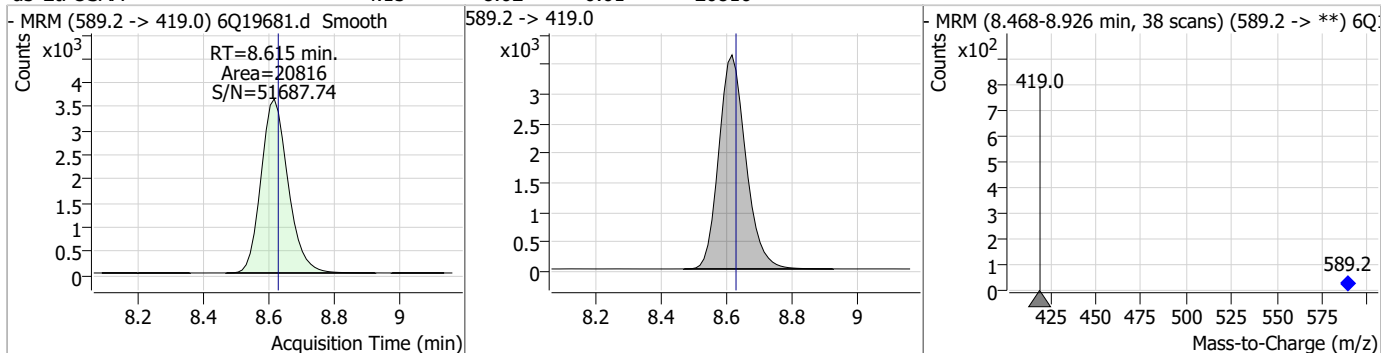


Perfluorinated Compounds by LC/MS/MS

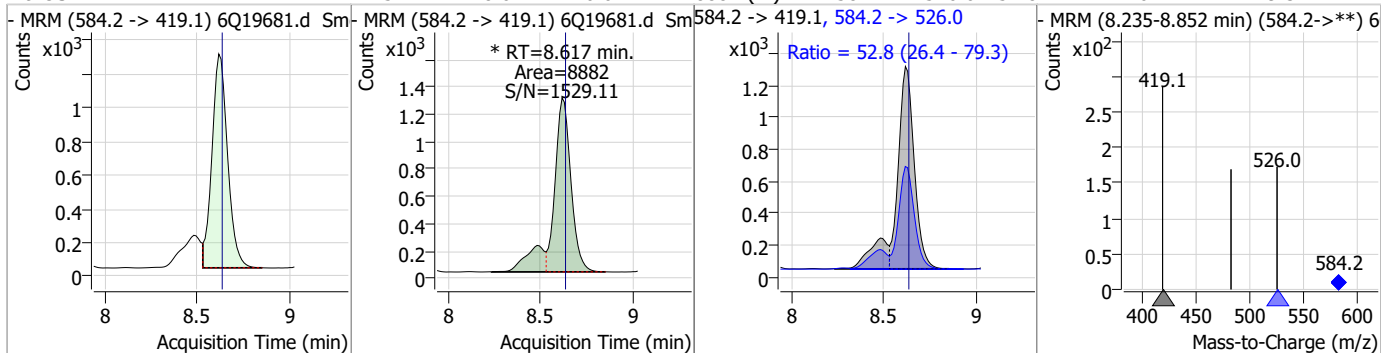
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.12	8.55	-0.01	13987 (m)	498.9 -> 98.8	45.9	26.2	78.7



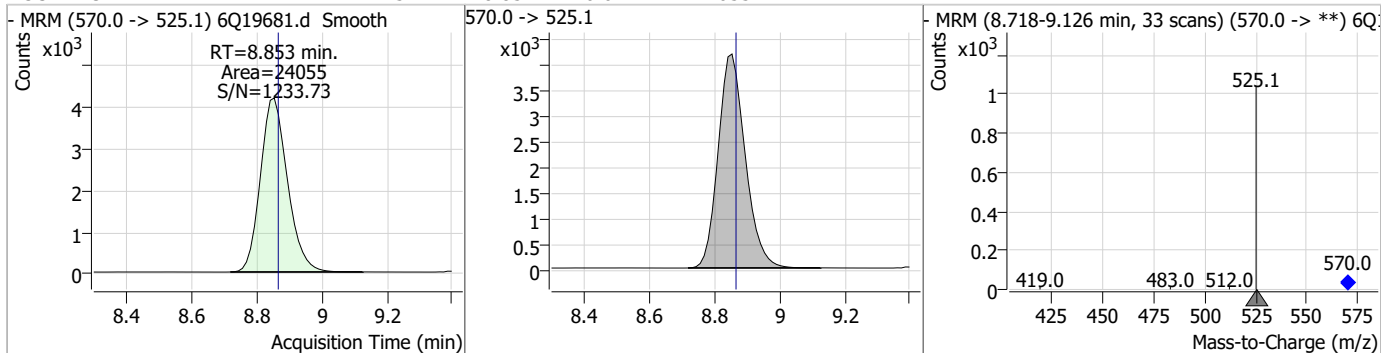
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.15	8.62	-0.01	20816				



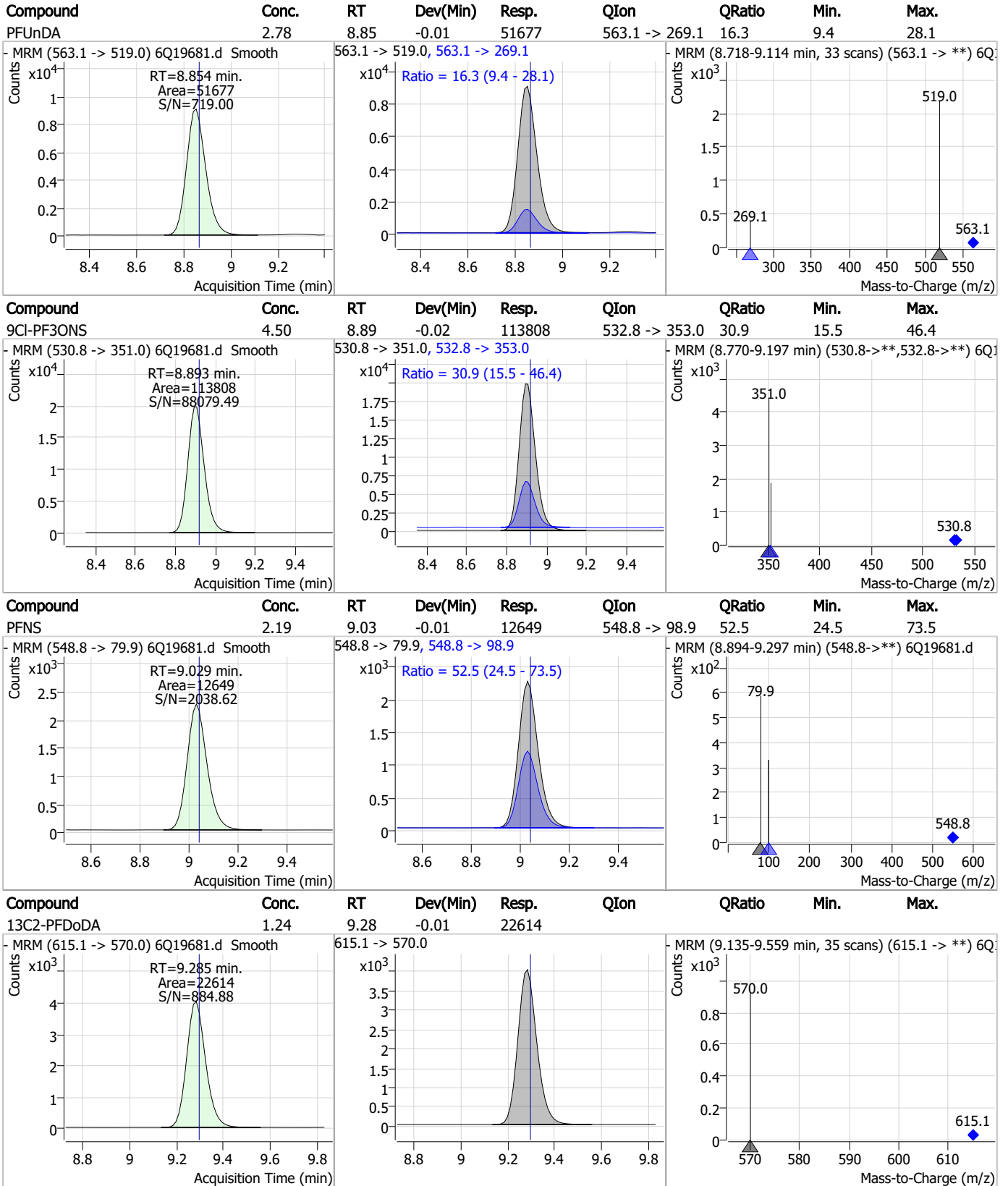
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.52	8.62	-0.01	8882 (m)	584.2 -> 526.0	52.8	26.4	79.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.15	8.85	-0.01	24055				



Perfluorinated Compounds by LC/MS/MS

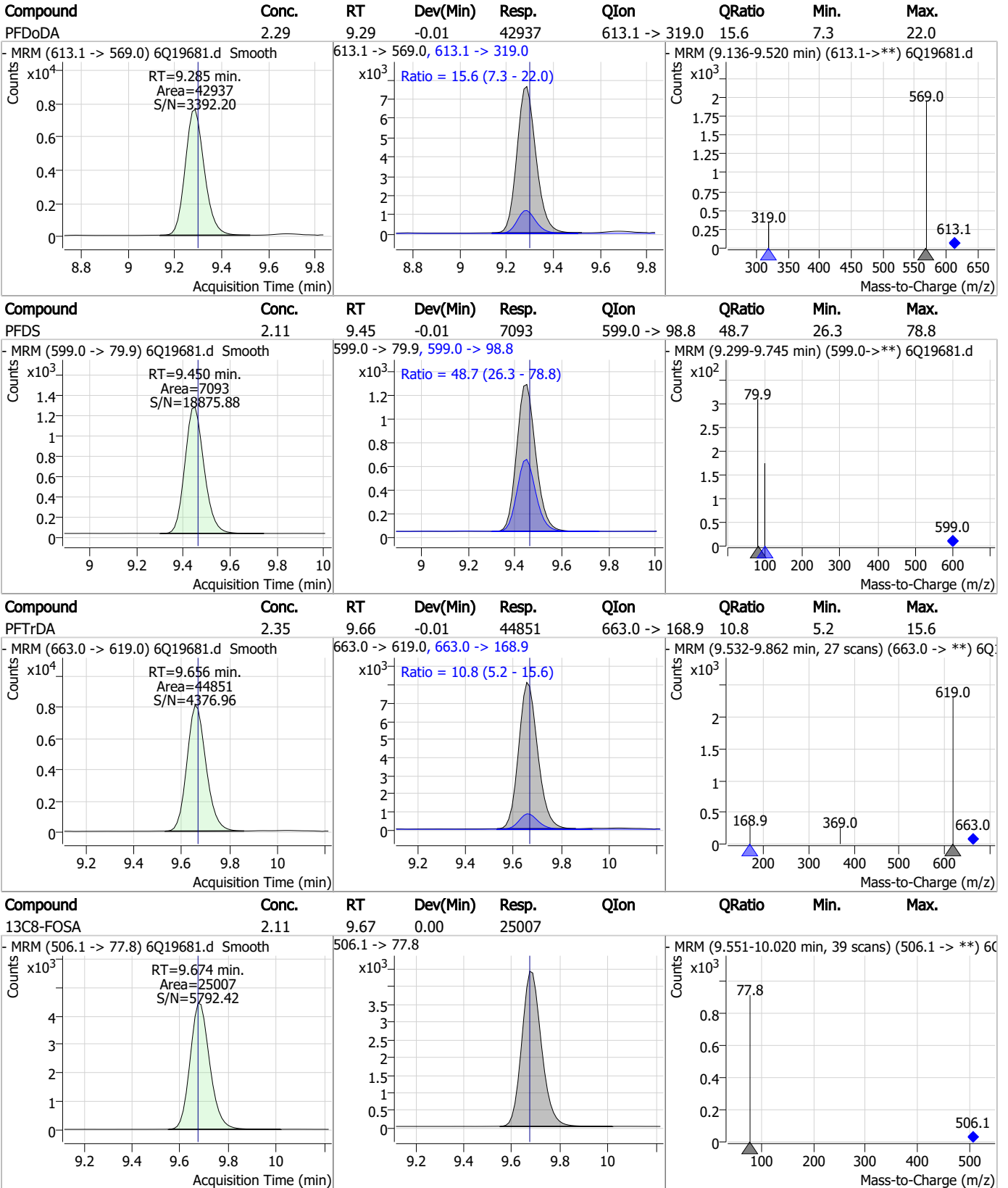


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Perfluorinated Compounds by LC/MS/MS

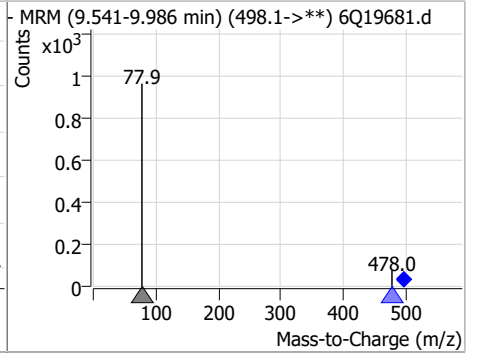
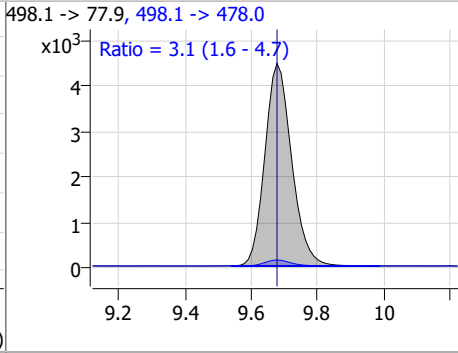
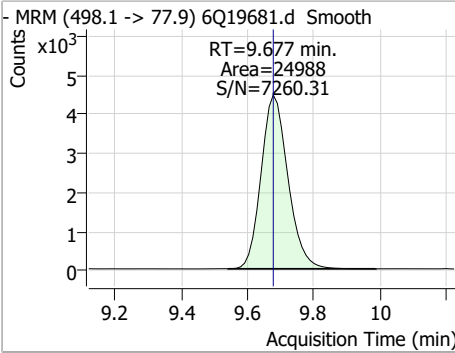


7.7.14

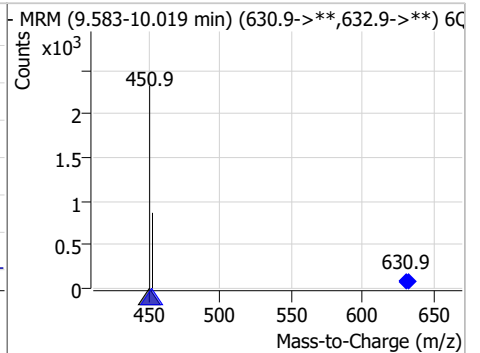
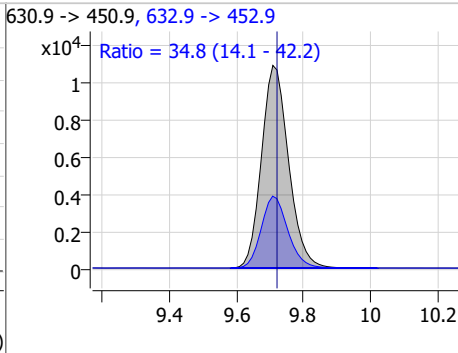
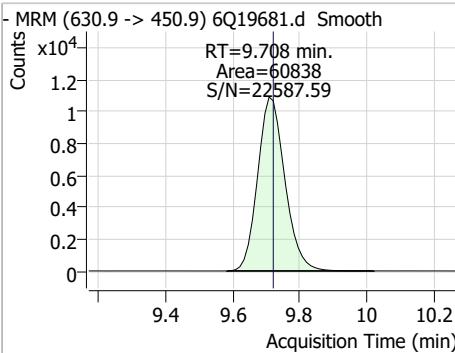


Perfluorinated Compounds by LC/MS/MS

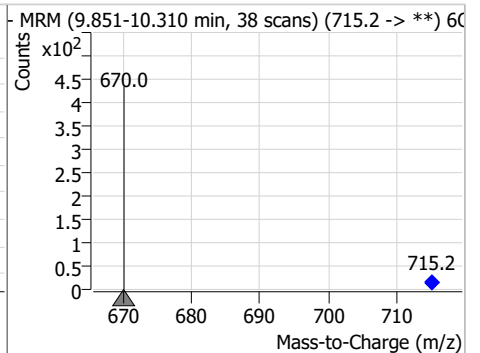
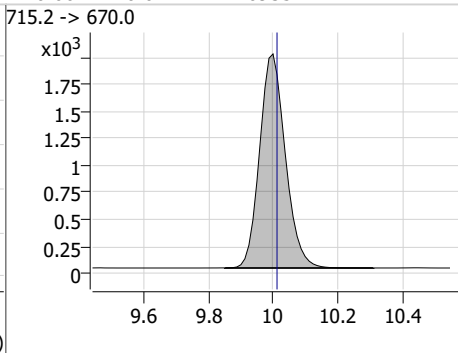
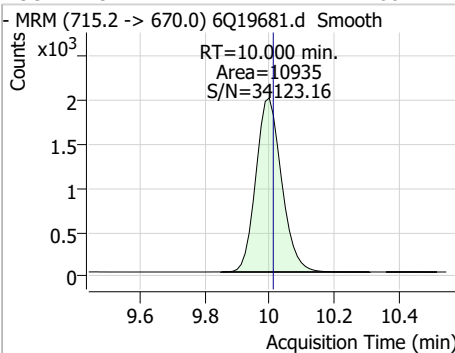
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.51	9.68	0.00	24988	498.1 -> 478.0	3.1	1.6	4.7



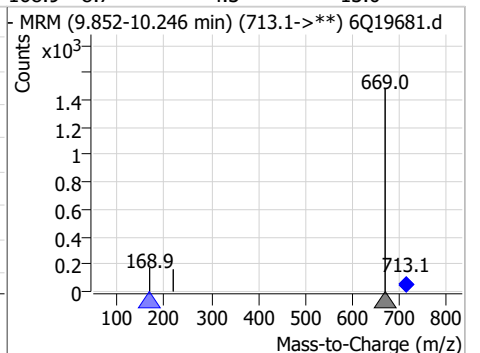
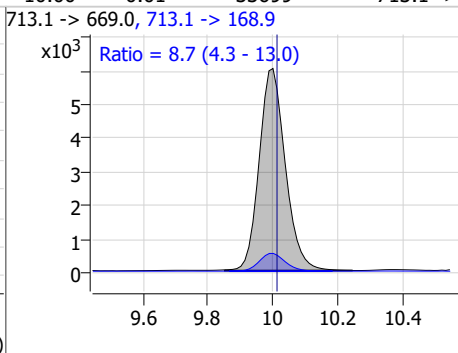
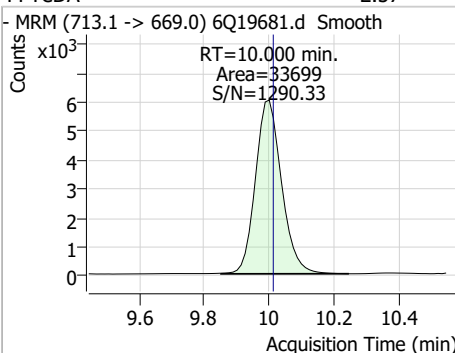
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUds	4.15	9.71	-0.01	60838	632.9 -> 452.9	34.8	14.1	42.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.08	10.00	-0.01	10935	715.2 -> 670.0			

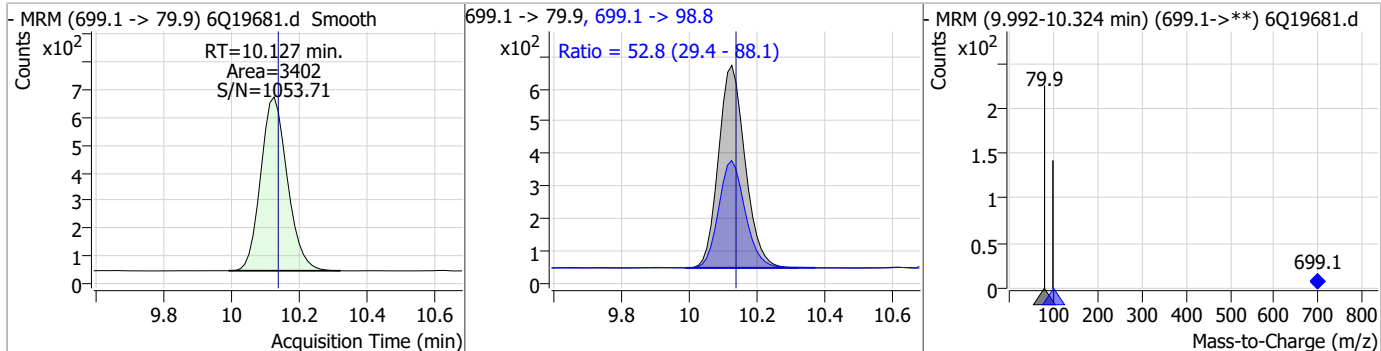


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.57	10.00	-0.01	33699	713.1 -> 168.9	8.7	4.3	13.0

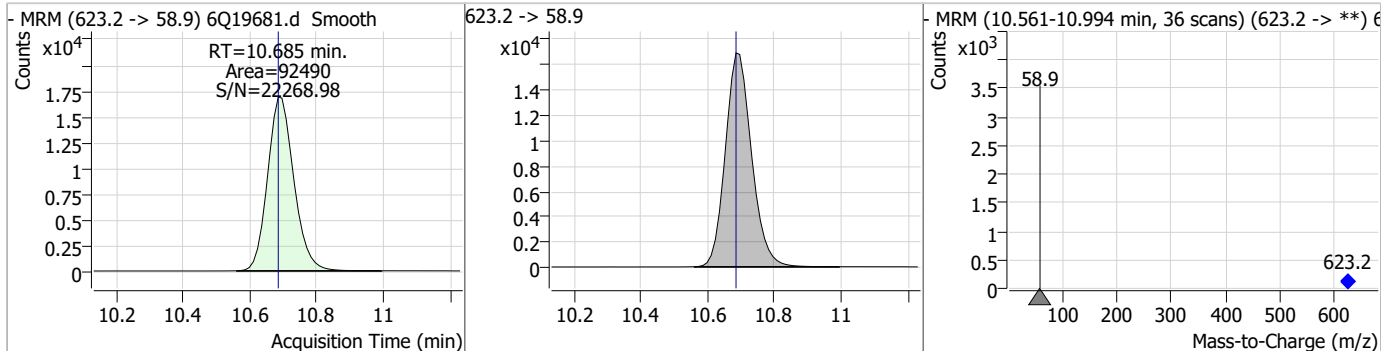


Perfluorinated Compounds by LC/MS/MS

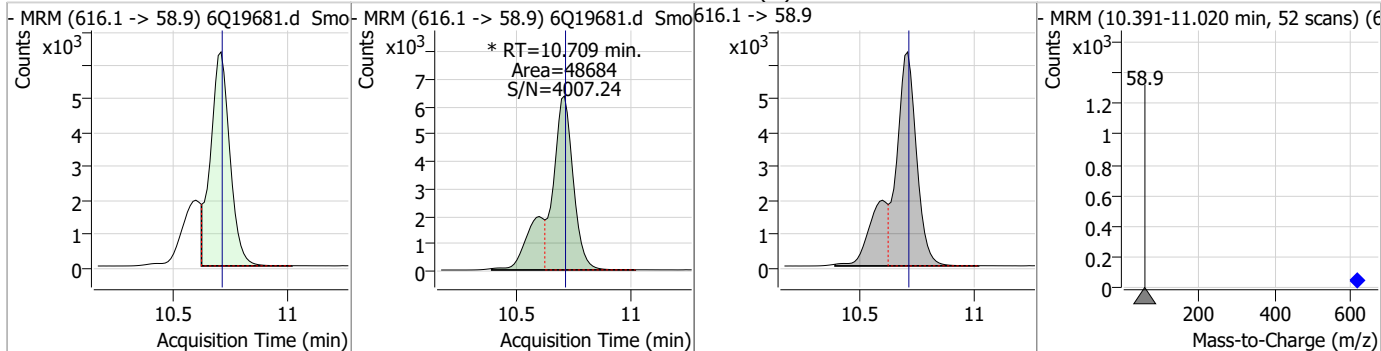
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.05	10.13	-0.01	3402	699.1 -> 98.8	52.8	29.4	88.1



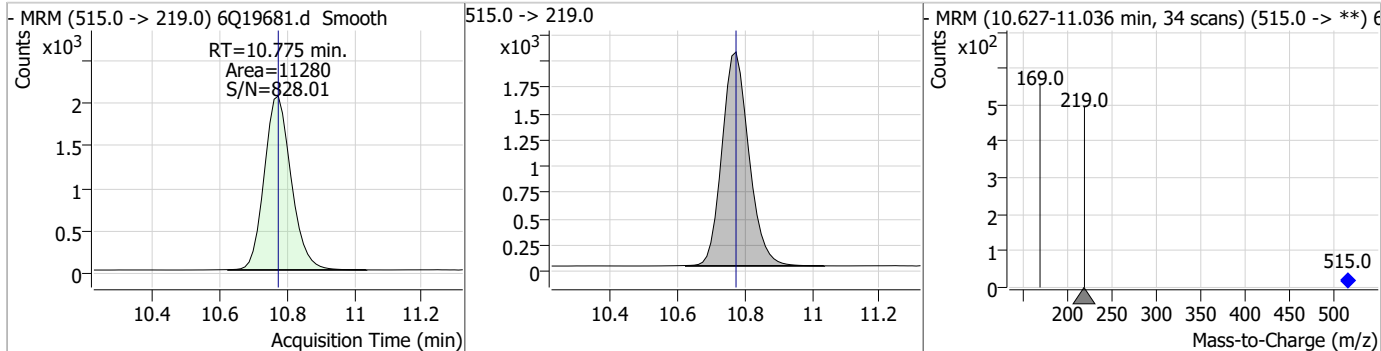
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	17.65	10.68	0.00	92490				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.15	10.71	0.00	48684 (m)				



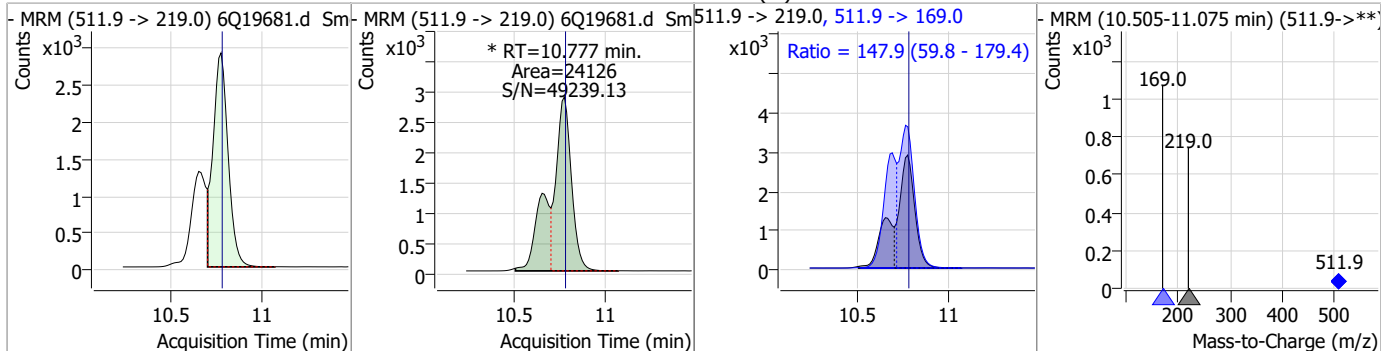
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.19	10.78	0.00	11280				



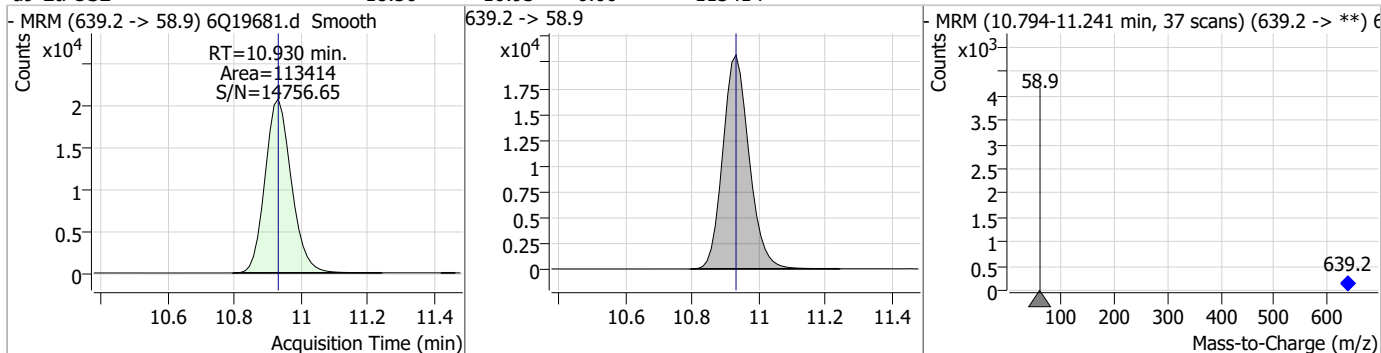
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Perfluorinated Compounds by LC/MS/MS

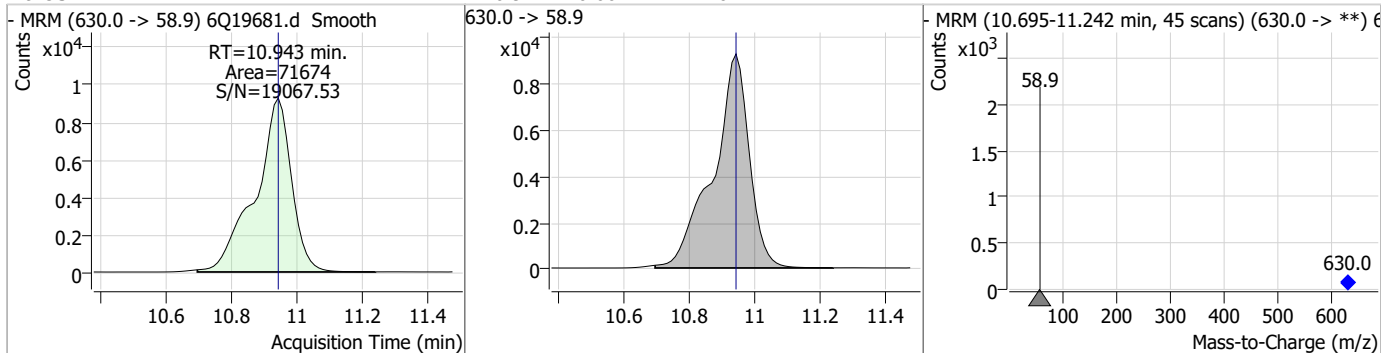
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.72	10.78	0.00	24126 (m)	511.9 -> 169.0	147.9	59.8	179.4



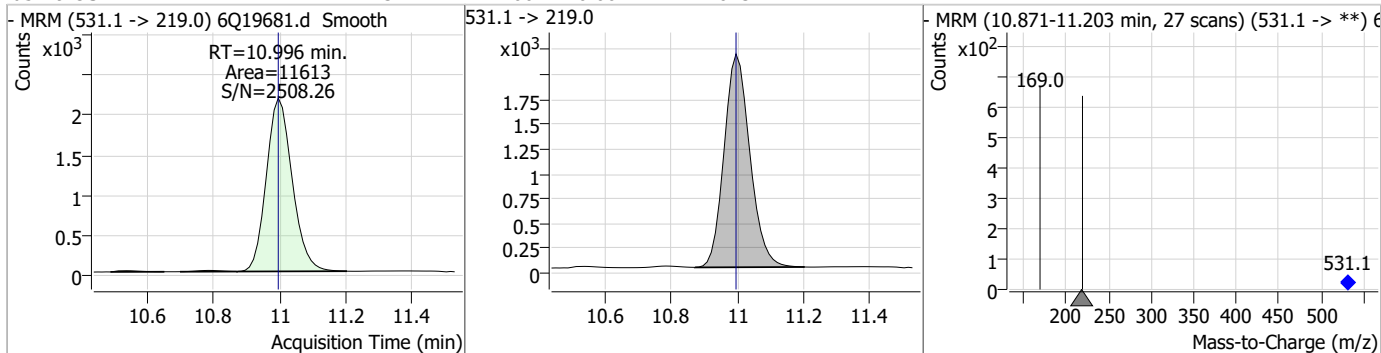
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	18.36	10.93	0.00	113414				



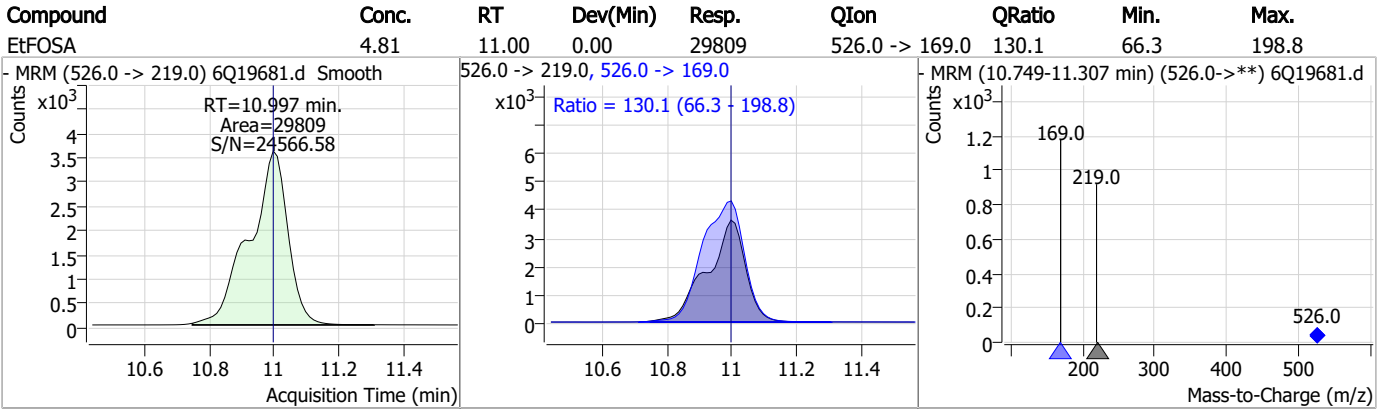
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.21	10.94	0.00	71674				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.31	11.00	0.00	11613				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q293-CC288 Method: EPA DRAFT 1633
Lab FileID: 6Q19681.D Analyst approved: 06/21/23 16:11 Martha Valls
Injection Time: 06/21/23 15:42 Supervisor approved: 06/21/23 16:47 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.47	Split peak
MeFOSAA	2355-31-9		8.41	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.55	Split peak
EtFOSAA	2991-50-6		8.62	Split peak
MeFOSE	24448-09-7		10.71	Split peak
MeFOSA	31506-32-8		10.78	Split peak

7.7.14.1
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SGS ORLANDO

DATE:	06/13/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 uI
INSTRUMENT:	LCMS6-6Q

LCMS6-6Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_061323_S6Q288
CAL DATE:	06/13/23
ANALYST:	M. Valls
RUN BATCH:	S6Q288

ELUENT A LOT #:	ACN 220811
ELUENT B LOT #:	HPLC WATER LOT: 230470 W5% Methanol 224279 2ml AMAC: 11387
IC/CC STD LOT #:	LCMS 2124-D
ICV STD LOT #:	LCMS 2124D/2125B
ISTD/ID STD LOT #:	11851/11850

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	6Q19290.d	P1-B9	CCB	1633full.m	Sample		OP97215.S6Q288.500,,,5.0,1,,water	✓
2	6Q19291.d	P1-B9	CCB	1633full.m	Sample		OP97215.S6Q288.500,,,5.0,1,,water	✓
3	6Q19292.d	P1-B3	RT TDCA	1633full.m	Sample		OP97215.S6Q288.500,,,5.0,1,,water	✓
4	6Q19293.d	P1-B4	RT BR-LN	1633full.m	Sample		OP97215.S6Q288.500,,,5.0,1,,water	✓
5	6Q19294.d	P1-A1	ic288-0	1633full.m	Sample		OP97215.S6Q288.500,,,5.0,1,,water	Check Tune File
6	6Q19295.d	P1-A2	ic288-1	1633full.m	Calibration	1.6/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
7	6Q19296.d	P1-A3	ic288-2	1633full.m	Calibration	3.2/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
8	6Q19297.d	P1-A4	ic288-3	1633full.m	Calibration	10/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
9	6Q19298.d	P1-A5	ic288-4	1633full.m	Calibration	20/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
10	6Q19299.d	P1-A6	ic288-5	1633full.m	Calibration	40/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
11	6Q19300.d	P1-A7	ic288-6	1633full.m	Calibration	100/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
12	6Q19301.d	P1-A8	ic288-7	1633full.m	Calibration	200/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
13	6Q19302.d	P1-A9	ic288-8	1633full.m	Calibration	1x	OP97215.S6Q288.500,,,5.0,1,,water	✓, MeFOSA, 9CI dropped
14	6Q19303.d	P1-A1	iblk	1633full.m	Sample		OP97215.S6Q288.500,,,5.0,1,,water	✓
15	6Q19304.d	P1-B1	icv288-4	1633full.m	QC	20/500	OP97215.S6Q288.500,,,5.0,1,,water	Prepped by NG
16	6Q19305.d	P1-B2	icv288-20	1633full.m	QC	100/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
17	6Q19306.d	P1-A5	cc288-4	1633full.m	QC	20/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
18	6Q19307.d	P1-A2	cc288-1.0LL	1633full.m	QC	1.6/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
19	6Q19308.d	P3-A1	op97303-bs	1633full.m	Sample		OP97303.S6Q288.500,,,5.0,1,,water	✓
20	6Q19309.d	P3-A2	op97303-llbs:2	1633full.m	Sample		OP97303.S6Q288.500,,,5.0,1,,water	✓
21	6Q19310.d	P3-A3	op97303-mb	1633full.m	Sample		OP97303.S6Q288.500,,,5.0,1,,water	✓
22	6Q19311.d	P3-A4	FC6266-1	1633full.m	Sample		OP97303.S6Q288.460,,,5.0,1,,water	✓
23	6Q19312.d	P3-A5	FC6266-2	1633full.m	Sample		OP97303.S6Q288.60,,,5.0,1,,water	✓
24	6Q19313.d	P3-A6	FC6266-3	1633full.m	Sample		OP97303.S6Q288.530,,,5.0,1,,water	✓
25	6Q19314.d	P3-A7	op97303-ms	1633full.m	Sample		OP97303.S6Q288.520,,,5.0,1,,water	✓
26	6Q19315.d	P3-A8	op97303-msd	1633full.m	Sample		OP97303.S6Q288.510,,,5.0,1,,water	✓
27	6Q19316.d	P3-A9	FC6266-4	1633full.m	Sample		OP97303.S6Q288.510,,,5.0,1,,water	✓
28	6Q19317.d	P3-B1	FC6266-5	1633full.m	Sample		OP97303.S6Q288.510,,,5.0,1,,water	✓
29	6Q19318.d	P1-A5	cc288-4	1633full.m	QC	20/500	OP97215.S6Q288.500,,,5.0,1,,water	✓
30	6Q19319.d	P1-A1	iccb	1633full.m	Sample		OP97215.S6Q288.500,,,5.0,1,,water	✓
31	6Q19320.d	P3-B2	FC6266-6	1633full.m	Sample		OP97303.S6Q288.480,,,5.0,1,,water	✓
32	6Q19321.d	P3-B3	FC6266-7	1633full.m	Sample		OP97303.S6Q288.500,,,5.0,1,,water	✓
33	6Q19322.d	P3-B4	FC6459-1	1633full.m	Sample		OP97303.S6Q288.570,,,5.0,1,,water	rr1x
34	6Q19323.d	P3-B5	FC6459-1A	1633full.m	Sample		OP97303.S6Q288.570,,,5.0,1,,water	rr1x
35	6Q19324.d	P3-B6	FC6439-1	1633full.m	Sample		OP97303.S6Q288.490,,,5.0,1,,water	✓

SGS ORLANDO LCMS6-6Q ANALYSIS LOG

36	6Q19325.d	P3-B7	FC6439-2	1633full.m	Sample	OP97303.S6Q288.510,,,5.0.1,.water	✓
37	6Q19326.d	P1-A5	ecc288-4	1633full.m	QC	OP97215.S6Q288.500,,,5.0.1,.water	✓
38	6Q19327.d	P1-A1	iccb	1633full.m	Sample	OP97215.S6Q288.500,,,5.0.1,.water	✓

SGS ORLANDO

DATE:	06/20/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 uI
INSTRUMENT:	LCMS6-6Q

LCMS6-6Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_061323_S6Q288
CAL DATE:	06/13/23
ANALYST:	M. Valls
RUN BATCH:	S6Q293

ELUENT A LOT #:	ACN 220811
ELUENT B LOT #:	HPLC WATER LOT: 230470 W5% Methanol 224279 2mM AMAC: 11387
IC/CC STD LOT #:	LCMS 2124-D
ICV STD LOT #:	LCMS 2124D/2125B
ISTD/ID STD LOT #:	11851/11850

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	6Q19663.d	P1-B9	CCB	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
2	6Q19664.d	P1-B9	CCB	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
3	6Q19665.d	P1-B3	RT TDCA	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
4	6Q19666.d	P1-B4	RT BR-LN	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
5	6Q19667.d	P1-A9	High Std	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
6	6Q19668.d	P1-A1	iblk	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
7	6Q19669.d	P1-A5	cc288-4	1633full.m	QC	20/500	OP97325:S6Q293.500,,,5.0,1,water	✓
8	6Q19670.d	P1-A2	cc288-1.0LL	1633full.m	QC	1.6/500	OP97325:S6Q293.500,,,5.0,1,water	✓
9	6Q19671.d	P3-A1	op97425-bs	1633full.m	Sample		OP97425:S6Q293.500,,,5.0,1,water	✓
10	6Q19672.d	P3-A2	op97425-llbs:3	1633full.m	Sample		OP97425:S6Q293.500,,,5.0,1,water	✓
11	6Q19673.d	P3-A3	op97425-mb	1633full.m	Sample		OP97425:S6Q293.500,,,5.0,1,water	✓
12	6Q19674.d	P3-A4	FC6474-1	1633full.m	Sample		OP97425:S6Q293.540,,,5.0,1,water	✓
13	6Q19675.d	P3-A5	FC6474-2	1633full.m	Sample		OP97425:S6Q293.540,,,5.0,1,water	✓
14	6Q19676.d	P3-A6	op97425-ms	1633full.m	Sample		OP97425:S6Q293.550,,,5.0,1,water	✓
15	6Q19677.d	P3-A7	FC6474-3	1633full.m	Sample		OP97425:S6Q293.540,,,5.0,1,water	✓
16	6Q19678.d	P3-A8	op97425-dup	1633full.m	Sample		OP97425:S6Q293.550,,,5.0,1,water	✓
17	6Q19679.d	P3-C3	FC6891-1	1633full.m	Sample		OP97425:S6Q293.570,,,5.0,1,water	✓
18	6Q19680.d	P3-C4	FC6891-2	1633full.m	Sample		OP97425:S6Q293.570,,,5.0,1,water	✓
19	6Q19681.d	P1-A5	cc288-4	1633full.m	QC	20/500	OP97325:S6Q293.500,,,5.0,1,water	✓
20	6Q19682.d	P1-A1	iccb	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
21	6Q19683.d	P3-A9	FC6474-4	1633full.m	Sample		OP97425:S6Q293.550,,,5.0,1,water	✓
22	6Q19684.d	P3-B1	FC6474-5	1633full.m	Sample		OP97425:S6Q293.530,,,5.0,1,water	✓
23	6Q19685.d	P3-B2	FC6474-6	1633full.m	Sample		OP97425:S6Q293.540,,,5.0,1,water	✓
24	6Q19686.d	P3-B3	FC6474-7	1633full.m	Sample		OP97425:S6Q293.550,,,5.0,1,water	✓
25	6Q19687.d	P3-B4	FC6474-8	1633full.m	Sample		OP97425:S6Q293.550,,,5.0,1,water	✓
26	6Q19688.d	P3-B5	FC6474-9	1633full.m	Sample		OP97425:S6Q293.540,,,5.0,1,water	✓
27	6Q19689.d	P3-B6	FC6593-1	1633full.m	Sample		OP97425:S6Q293.510,,,5.0,1,water	✓
28	6Q19690.d	P3-B7	FC6593-2	1633full.m	Sample		OP97425:S6Q293.500,,,5.0,1,water	✓
29	6Q19691.d	P3-B8	FC6593-3	1633full.m	Sample		OP97425:S6Q293.550,,,5.0,1,water	✓
30	6Q19692.d	P3-B9	FC6593-4	1633full.m	Sample		OP97425:S6Q293.510,,,5.0,1,water	✓
31	6Q19693.d	P1-A5	cc288-4	1633full.m	QC	4	OP97325:S6Q293.500,,,5.0,1,water	✓
32	6Q19694.d	P1-A1	iccb	1633full.m	Sample		OP97325:S6Q293.500,,,5.0,1,water	✓
33	6Q19695.d	P3-C1	FC6593-5	1633full.m	Sample		OP97425:S6Q293.530,,,5.0,1,water	✓
34	6Q19696.d	P3-C2	FC6593-6	1633full.m	Sample		OP97425:S6Q293.550,,,5.0,1,water	✓
35	6Q19697.d	P3-C5	op97406-bs	1633full.m	Sample		OP97406:S6Q293.500,,,5.0,1,water	✓

LCMS6-6Q ANALYSIS LOG

SGS ORLANDO

36	6Q19698.d	P3-C6	op97406-llbs:3	1633full.m	Sample	OP97406.S6Q293.500,,,5.0,1,water	10x
37	6Q19699.d	P3-C7	op97406-mb	1633full.m	Sample	OP97406.S6Q293.500,,,5.0,1,water	10x
38	6Q19700.d	P3-C8	FC6740-2	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
39	6Q19701.d	P3-C9	FC6740-3	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
40	6Q19702.d	P3-D1	FC6740-4	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
41	6Q19703.d	P3-D2	FC6740-5	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
42	6Q19704.d	P3-D3	FC6740-6	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
43	6Q19705.d	P1-A5	cc288-4	1633full.m	QC	OP97325.S6Q293.500,,,5.0,1,water	10x
44	6Q19706.d	P1-A2	cc288-1.0.LL	1633full.m	QC	OP97325.S6Q293.500,,,5.0,1,water	10x
45	6Q19707.d	P1-A1	iccb	1633full.m	Sample	OP97325.S6Q293.500,,,5.0,1,water	10x
46	6Q19708.d	P3-D4	FC6740-7	1633full.m	Sample	OP97406.S6Q293.530,,,5.0,10,water	10x
47	6Q19709.d	P3-D5	FC6740-8	1633full.m	Sample	OP97406.S6Q293.510,,,5.0,10,water	10x
48	6Q19710.d	P3-D6	FC6740-9	1633full.m	Sample	OP97406.S6Q293.510,,,5.0,10,water	10x
49	6Q19711.d	P3-D7	FC6740-10	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
50	6Q19712.d	P3-D8	op97406-ms	1633full.m	Sample	OP97406.S6Q293.560,,,5.0,10,water	10x
51	6Q19713.d	P3-D9	op97406-msd	1633full.m	Sample	OP97406.S6Q293.560,,,5.0,10,water	10x
52	6Q19714.d	P3-E1	FC6740-11	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
53	6Q19715.d	P3-E2	FC6740-12	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
54	6Q19716.d	P3-E3	FC6740-14	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
55	6Q19717.d	P3-E4	FC6740-15	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
56	6Q19718.d	P1-A5	cc288-4	1633full.m	QC	OP97325.S6Q293.500,,,5.0,1,water	10x
57	6Q19719.d	P1-A1	iccb	1633full.m	Sample	OP97325.S6Q293.500,,,5.0,1,water	10x
58	6Q19720.d	P3-E5	FC6740-16	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
59	6Q19721.d	P3-E6	FC6740-17	1633full.m	Sample	OP97406.S6Q293.570,,,5.0,10,water	10x
60	6Q19722.d	P1-A5	ecc288-4	1633full.m	QC	OP97325.S6Q293.500,,,5.0,1,water	10x
61	6Q19723.d	P1-A1	iccb	1633full.m	Sample	OP97325.S6Q293.500,,,5.0,1,water	10x

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 2122A-E	1633 opike Cal std.	11771 11799A	PFAC MXF	wellington	4/19/28	4-27-24 5-15-24	1-4 ppm	250uL	4mL	62.5 125 250ppb	1633 mix	5/15/23	10/28/23	MU
		LCMS 2097A	Br-LN Et+Me	sgs labo	N/A	10/28/23	2 ppm 5 ppm	250uL		125 312.5 ppb	2088ml			
		11772 11801A	PFAC MXF	wellington	3/24/26	4-27-24 5-15-24	2 ppm	250uL		125ppb				
		11774 11802A	PFAC MXG		12-01-27 12-01-27	4-27-24 5-15-24	2 ppm	250uL		125ppb				
		11738 11803A	PFAC MXJ		9/14/26 3-28-28	4-27-24 5-15-24	4-20 ppm	312uL	V	312/1160 ppb				
LCMS 2123A-B	PFC SPIKE	11750	PFAC 500 (aromatic)	Absolute Wellington Labs	03/10/28	05/16/24	1.0 ppm	2mL	5mL	95/1400H 5% H2O	100ppb	05/16/23	11/02/23	NG
		11432	N-Me-FOSA-M	wellington Labs	02/18/27	03/16/24	50 ppm	40uL						NG
		11513	FBSA-1		11/10/26	04/18/24								NG
		11514	FWSA-1		10/29/26	04/18/24								NG
		11332	PFECHS		03/18/27	04/18/24								NG
LCMS 2123-2124	1633 opike Cal std.	11799B	PFAC MXH	wellington	4/19/28	5/22/23 5-15-24	1-4 ppm	250uL	4mL	62.5 125 250ppb	1633 mix	5/22/23	10/28/23	MU
		LCMS 2097A 4801B	Br-LN Et+Me	sgs labo	N/A	10/28/23	2 ppm 5 ppm			125 312.5 ppb	(2088ml)			
		11801B	PFAC MXF	wellington	3/24/26	5/22/23 5-15-24	2 ppm			125ppb				
		11802B	PFAC MXG		12/1/27	5/22/24	2 ppm			125ppb				
		11803B	PFAC MXJ		3/28/28	5/22/24	4-20 ppm	312uL	V	312/1160 ppb				
						N/A	MU	Continue next page 5/22/23						

* See 2123A-B on 5/22/23

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



Organic Standards Preparation Log

SGS - Orlando Sid. #	Name Description	Parent Sid. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2095A-J	(10PTD) PFC ID SURR	11669	PFAC-2YES	Wellington Labs	01/18/18	03/28/24	1.0ppm	2.4mL	~50mL	0.5ppm	95/100th 51420	02/08/23	09/18/23	NS
↓	↓	11585	PFAC-DA	↓	11/08/18	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
↓	↓	11431	PFAC-d-N	↓	05/06/17	03/13/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
LCMS 20940 A-B	1033 spike Cal std.	11672	PFAC-MxH	Wellington Labs	8/8/27	3/23/24	1-4 ppm	250uL	4mL	02.5 125 250ppb	1033 MIX	3/30/23	9/30/23	MU
↓	↓	11686	PFAC-MxI	↓	2/27/28	3/30/24	170 ppm	250uL	↓	02.5 625ppb	↓	↓	↓	↓
↓	↓	11674A	PFAC-MxJ	↓	1/11/25	3/23/24	2ppm	500uL	↓	250ppb	↓	↓	↓	↓
↓	↓	11674B	PFAC-MxK	↓	12/11/27	3/30/24	2ppm	250uL	↓	125ppb	↓	↓	↓	↓
↓	↓	11600	PFAC-MxL	↓	9/14/26	3/23/24	4-20 ppm	312uL	↓	312/100 ppb	↓	↓	↓	↓
↓	↓	11675	PFAC-MxM	↓	10/28/23	10/28/23	50ppm	200uL	5mL	2ppm	1033 MIX	4/16/23	10/28/23	MU
LCMS 2097A-B	BR-LN metel for 1633	11497	br-N metosa	Wellington Labs	08/23/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11498	br-N Etfose	↓	10/07/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11495	br-N Metose	↓	10/07/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11494	br-N Etfose	↓	10/17/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓					4/8/25								

* tested & used on 3/22/24

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

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2125A-B	FULL LIST 40 SPIKE (CALC)	11750	PFOA 28 Comp	Alabate	3/13/28	5/10/24	1.0ppm	400ul	4.0mL	100ppb	951MEOH 581H2O (2,400ml)	5/22/23	8/23/23	MW
↓	↓	LCMS 2067	40 LIST Aged on	SGS old.	—	8/23/23	1.0ppm	400ul	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2117	40 LIST Aged on	↓	—	11/8/23	1.0ppm	400ul	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2101	F05E Std.	↓	—	7/19/23	5.0ppm	400ul	↓	50ppb	↓	↓	↓	↓
LCMS 2126A-J	PRC ID SURT (10 PPB)	11804	MPAC - 24ES	Wellington Labs	01/18/28	05/23/24	1.0ppm	1.2mL	~2.5mL	0.5ppm	951MEOH 571H2O	05/23/23	10/28/23	NG
↓	↓	11635A	M3HFO DA	↓	11/08/25	04/14/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
↓	↓	11431	D-N- MERSAM	↓	05/06/27	02/10/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
LCMS 2127A-E	1633-OPICE CAL STD.	11799B	PFAC	Wellington	4/19/28	5/22/24	1-4 ppm	2.50ul	4mL	62.5 125 250ppb	1033 MIX (268ml)	5/24/23	10/28/23	MW
↓	↓	11807	MxH	↓	10/28/23	5/24/24	2 ppm	↓	↓	125 250ppb	↓	↓	↓	↓
↓	↓	LCMS 2097A-B	BT IN ET ME	SGS Labo	MA	5/22/24	2 ppm	↓	↓	125ppb	↓	↓	↓	↓
↓	↓	11801B	PFAC Mx F	Wellington	3/24/26	5/24/24	2 ppm	↓	↓	125ppb	↓	↓	↓	↓
↓	↓	11802B	PFAC Mx G	↓	12/1/27	5/24/24	2 ppm	↓	↓	125ppb	↓	↓	↓	↓
↓	↓	11803B	PFAC Mx J	↓	3/28/28	5/24/24	4-20 ppm	3/2ul	↓	3/2 160ppb	↓	↓	↓	↓
LCMS 2128A-J	PRC ID SURT (10 PPB)	F-5 11819	MPAC - 24ES	Wellington Labs	01/18/28	06/10/24	1.0ppm	1.2mL	~2.5mL	0.5ppm	951MEOH 571H2O	06/10/23	10/28/23	NG
↓	↓	11635A	M3HFO DA	↓	11/08/25	04/14/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
↓	↓	11584	D-N- MERSAM	↓	11/11/27	06/10/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
						NG 06/10/24								

* 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 2067	40 List std. ADD-ON #1	10726A	10:2 FTS	Wellington	3/3/26	3/21/23	50 ppm	80 uL	4.0 mL	1 ppm	95% MeOH 5% H2O	2/8/23	3/21/23 8/23/23	MV
		10840	L- PFDOS		7/9/26	10/18/23							8/23/23	
		10829	N- MCFOSA		8/3/26	8/23/23								
		10837	N- Etfosa		8/3/26	8/23/23								
		10842	PFHxDA		9/3/26	10/18/23								
		10841	PFOBA		5/7/26	10/18/23								
		11116B	3:3 FTCA PFR-PA		2/3/27	2/8/24								
		10685A	5:3 FTCA PFPePA		11/11/25	8/23/23								
		11116A	7:3 FTCA FHP-PA		11/12/25	2/8/24								
		11332	PFECHS		3/2/27	10/18/23								
		10762B	PFEESA		5/13/25	10/18/23								
		10763B	PFMBA		3/31/25	10/18/23								
		10764	PFMFA		3/31/25	2/8/24								
		10765B	PF406A		3/31/25	10/18/23								
			NFHDA		3/31/25	10/18/23								
			3:6-OPFPA											
					NS	02/10/23								

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

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

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2098A	1033 spike Cal std.	11672A	PFAC MxH	Wellington	8/18/24	3/23/24	1-4 ppm	2.50mL	4mL	6.25 250ppb	1033 mix	4/16/23	10/6/23	MU
LCMS 2097		LCMS 2097	Gr-in Et. Me	SGS	1/9	10/28/23	3ppm 5ppm	2.50mL		125ppb 312.5ppb				
LCMS 11674B		11674B	PFAC MxH	Wellington	11/1/25	3/30/24	2ppm	500uL 250uL		350ppb 125ppb				
LCMS 11675		11675	PFAC MxG		12/1/27	3/30/24	2ppm	250uL		125ppb				
LCMS 11642B		11642B	PFAC MxJ		9/14/26	3/23/24	4-20 ppm	312uL		312/1000 ppb				
LCMS 2099	537.1 Duw std. (Interim)	11670	M3PF-PEA	Wellington Labs	07/06/25	04/06/24	50ppm	80uL	4mL	10ppm	16:1 MeOH 4:1 H2O	04/16/23	06/15/23	NG
LCMS 10436A		10436A	MAG-a FTS		11/05/25	04/06/24		80uL		10ppm				NG
LCMS 10512B		10512B	D3-N-MEFOAA		10/22/25	05/15/23		160uL		20ppm				NG
LCMS 10498A		10498A	MPTOS		11/02/25	04/06/24		80uL		10ppm				NG
LCMS 11069		11069	MARFA		12/01/26	03/20/24		80uL		10ppm				NG
LCMS 2098	Full List (40)	11026	PF0A DEP 28 Comp.	Absolute	11/9/27 4/23/24	4/11/24	1.0ppm	400uL	4.0mL	100ppb	75% MeOH 5% H2O (2.40031)	4/11/23	7/24/23	MU
LCMS 2067		LCMS 2067	40 List ADP FN	SGS add.		8/23/23	1.0ppm	400uL						
LCMS 2070		LCMS 2070	40 List ADP FN			5/12/23	1.0ppm	400uL						
LCMS 2054		LCMS 2054	F055 Std.			7/24/23	5.0ppm	400uL		50ppb				
LCMS 11336	F055 std.	11336	N-et F055	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% MeOH 5% H2O	9/11/23	9/19/23	MU
LCMS 11338		11338	N-me f055		5/13/27	9/19/23	50ppm	200uL						

* based on date opened as specified in each SGS - Orlando SOP. (1,000)

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



10685A



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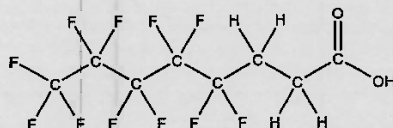
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FPePA
COMPOUND: 3-Perfluoropentyl propanoic acid

LOT NUMBER: FPePA1120

STRUCTURE:

CAS #: 914637-49-3



MOLECULAR FORMULA: C₈H₅F₁₁O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/11/2020
EXPIRY DATE: (mm/dd/yyyy) 11/11/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 342.11
SOLVENT(S): Methanol

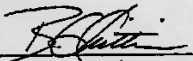
DOCUMENTATION/ DATA ATTACHED:

- 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.
- Contains <1% of the unsaturated 5:3 telomer acid (C₈H₃F₁₁O₂) as an impurity determined by ¹⁹F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager
Date: 11/27/2020
(mm/dd/yyyy)

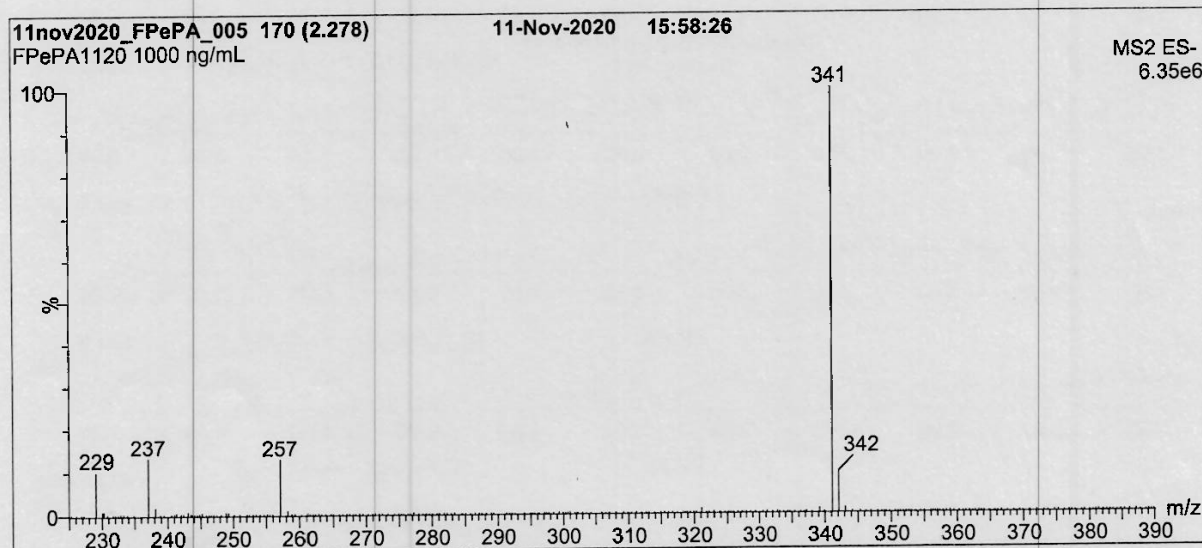
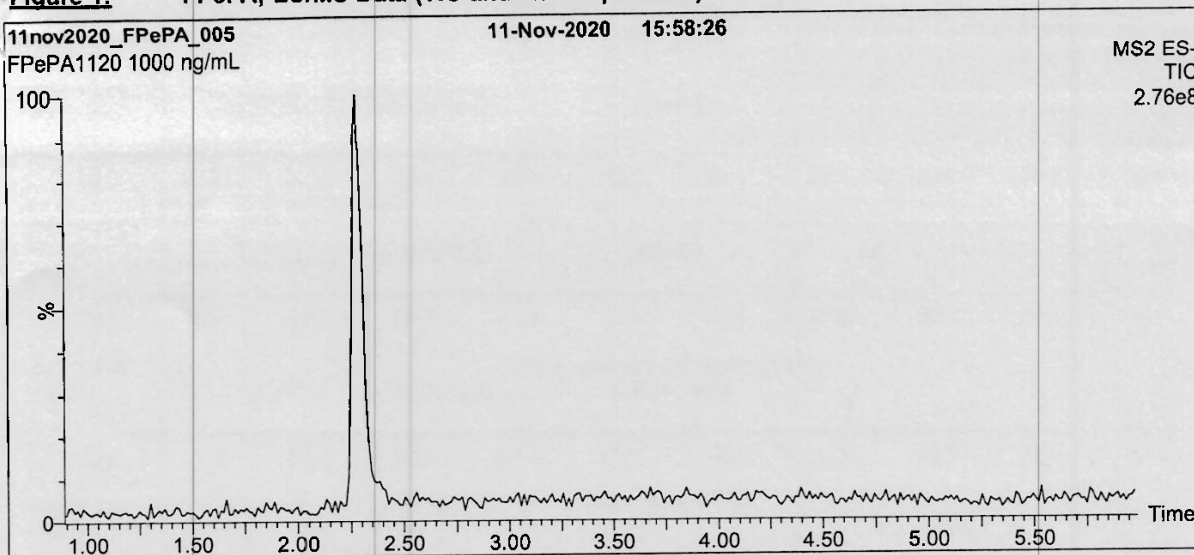
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Form#:27, Issued 2004-11-10
Revision#:8, Revised 2020-09-10

FPePA1120 (1 of 4)
rev0

7.9.1
7

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



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{1a}
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 18.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

10726 A

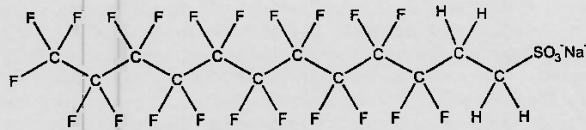


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

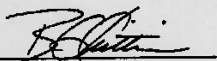
DOCUMENTATION/ DATA ATTACHED:

- 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

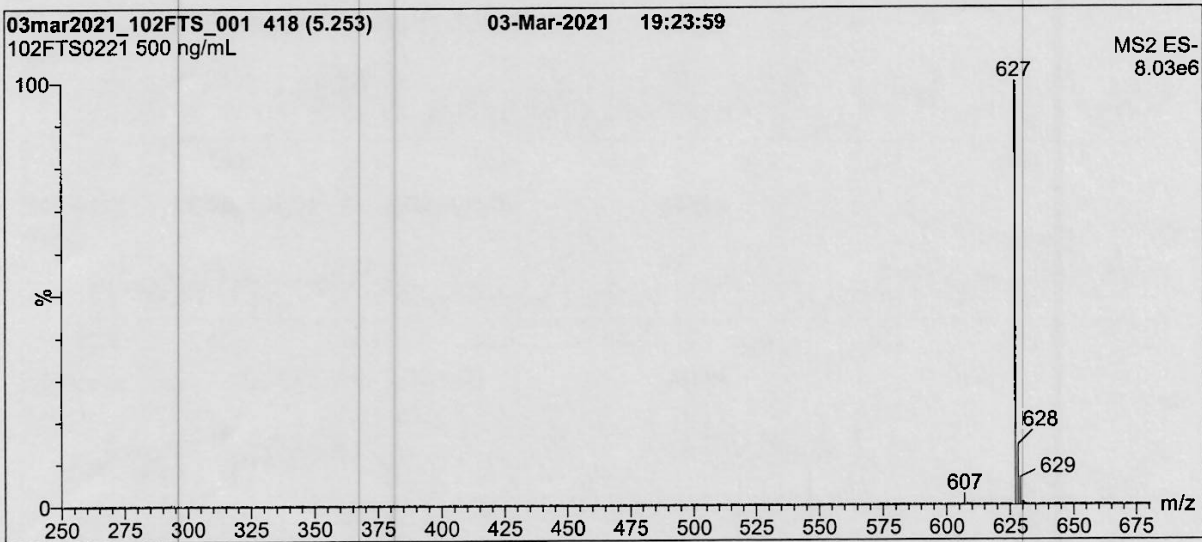
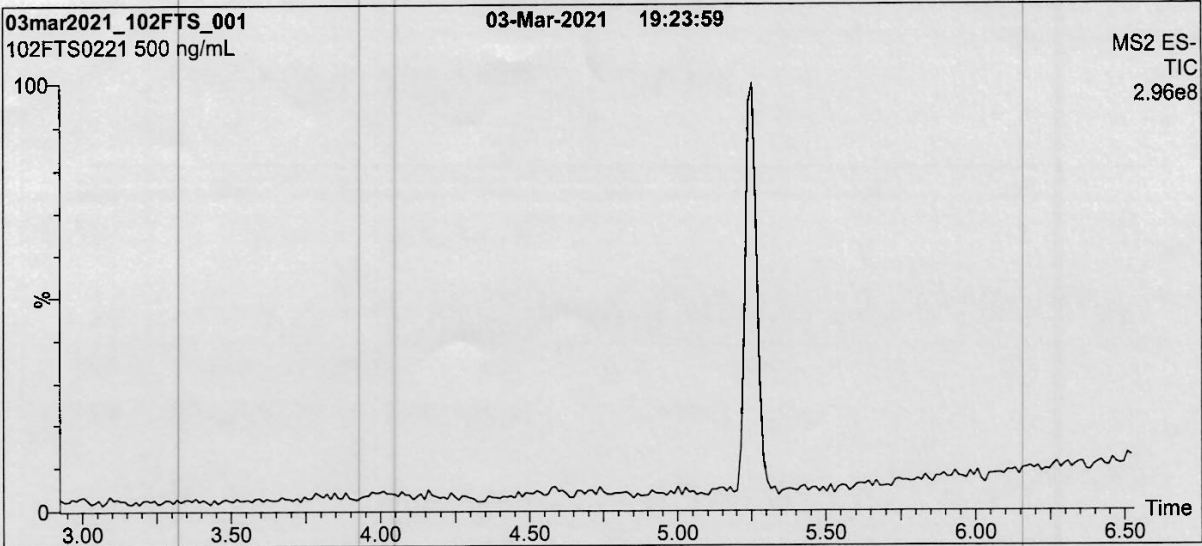
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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

7.9.1

7

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

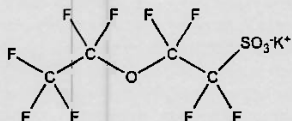
LOT NUMBER:

PFEESA0520

COMPOUND:

Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE:



CAS #:

117205-07-9

MOLECULAR FORMULA:

$C_4F_9SO_4K$

MOLECULAR WEIGHT:

354.19

CONCENTRATION:

50.0 ± 2.5 µg/ml (K salt)
44.6 ± 2.2 µg/ml (PFEESA acid)
44.5 ± 2.2 µg/ml (PFEESA anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

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:

B.G. Chittim, General Manager

Date: 05/29/2020
(mm/dd/yyyy)

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Revision#:7, Revised 2020-01-09

PFEESA0520 (1 of 4)
rev0

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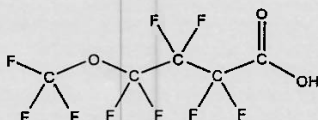
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

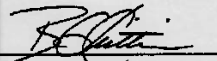
DOCUMENTATION/ DATA ATTACHED:

- 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:  **Date:** 12/21/2020
(mm/dd/yyyy)

B.G. Chittim, General Manager

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

PF5OHxA0320 (1 of 4)
rev1

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7

10764A-B



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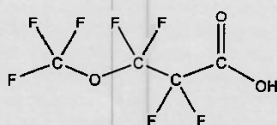
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

STRUCTURE: **CAS #:** 377-73-1



MOLECULAR FORMULA: C₄HF₇O₃ **MOLECULAR WEIGHT:** 230.04

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

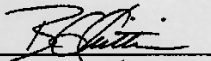
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (TIC and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 12/21/2020
(mm/dd/yyyy)

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10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

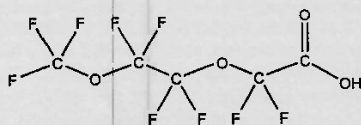
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/27/2020
(mm/dd/yyyy)

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10829



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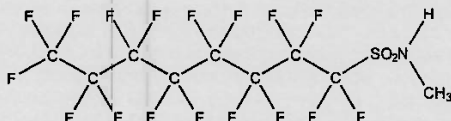
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPA
10/5/21

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

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

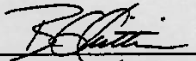
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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Revision#:9, Revised 2020-12-23

NMeFOSA0721M (1 of 4)
rev0

7.9.1

7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

LOT NUMBER:

NEtFOSA0821M

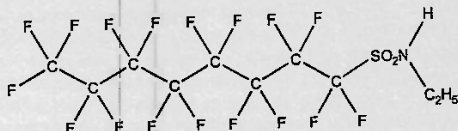
COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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10

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

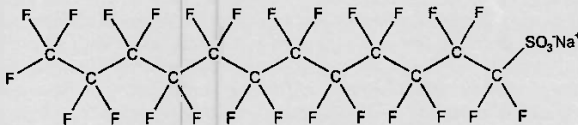
10840

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

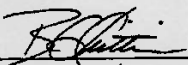
DOCUMENTATION/ DATA ATTACHED:

- 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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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

10847 NG 01/18/23

LOT NUMBER:

PFODA0821

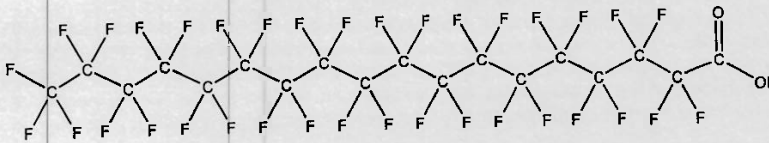
COMPOUND:

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 ampoules 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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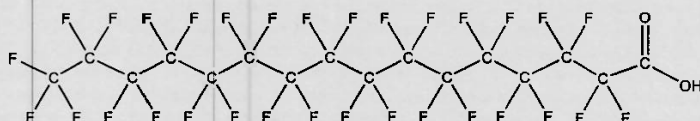
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

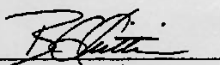
DOCUMENTATION/ DATA ATTACHED:

- 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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 Revision#:9, Revised 2020-12-23

PFHxDA0421 (1 of 4)
 rev0

1116 A/B NW

1116B on the back NW



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PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

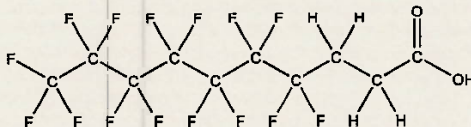
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

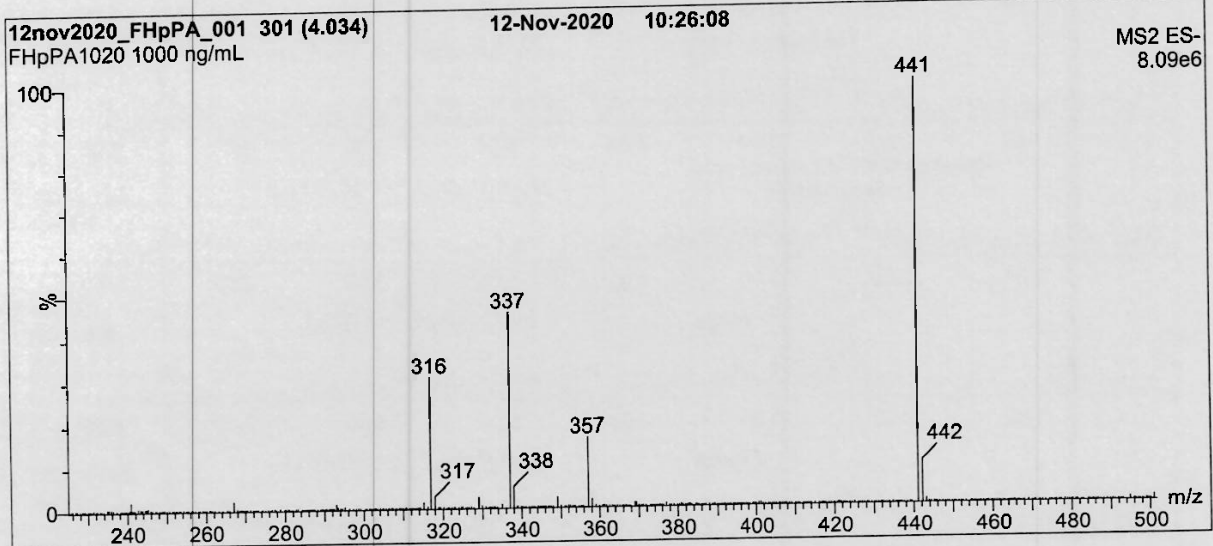
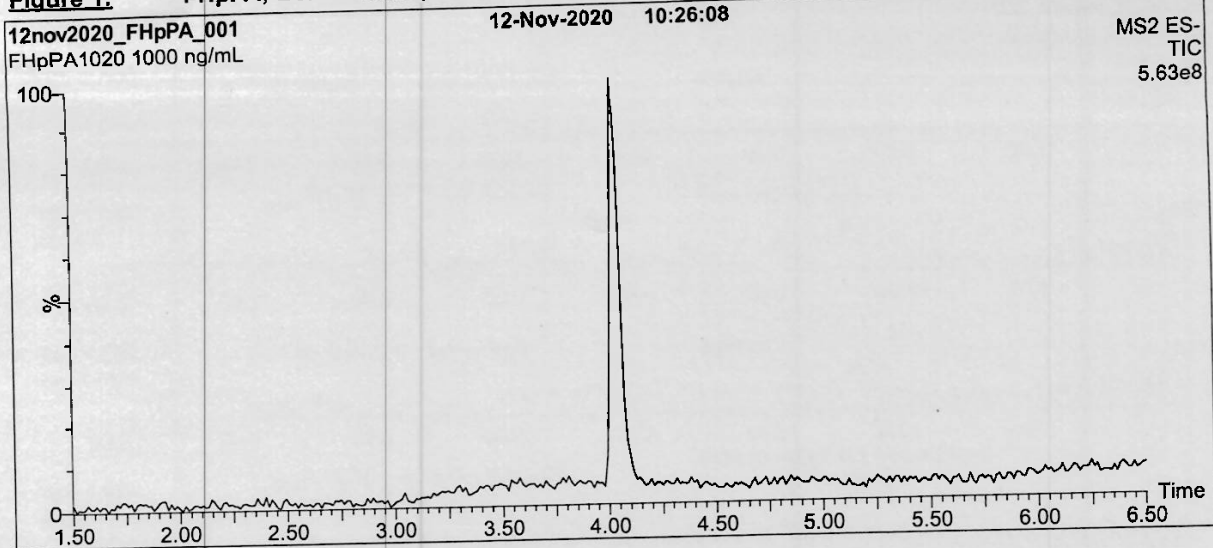
Date: 11/27/2020

(mm/dd/yyyy)

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

FHpPA1020 (1 of 4)
rev0

Figure 1: FHpPA; LC/MS Data (TIC and Mass Spectrum)**Conditions for Figure 1:**

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 28.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

FPPrPA(3:3FTCA) 1116 B



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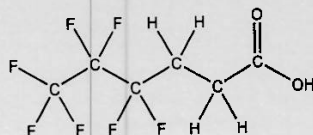
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPPrPA0122

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: C₆H₅F₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/03/2022
EXPIRY DATE: (mm/dd/yyyy) 02/03/2027
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

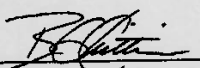
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid (C₆H₃F₇O₂) as an impurity determined by ¹⁹F NMR.

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Certified By: 
B.G. Chittim, General Manager

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

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PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

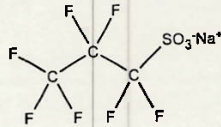
COMPOUND:

Sodium perfluoro-1-propanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₃F₇SO₃Na

MOLECULAR WEIGHT:

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)

46.0 ± 2.3 µg/mL (PFPrS acid)

45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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PRODUCT CODE:

FHxSA-I

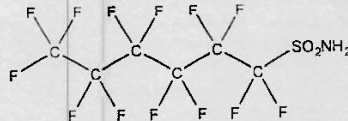
LOT NUMBER: FHxSA12211

COMPOUND:

Perfluoro-1-hexanesulfonamide

STRUCTURE:

CAS #: 41997-13-1



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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PRODUCT CODE:

FBSA-I

LOT NUMBER:

FBSA11211

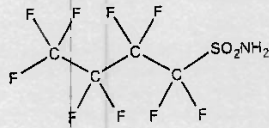
COMPOUND:

Perfluoro-1-butananesulfonamide

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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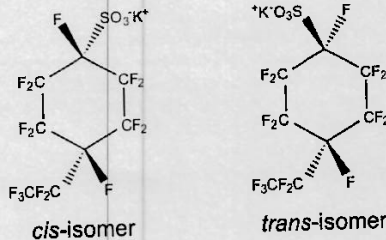
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:
COMPOUND:

PFECHS
Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

LOT NUMBER: PFECHS0222

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:
CONCENTRATION:

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

MOLECULAR WEIGHT: 500.22
SOLVENT(S): Methanol

CHEMICAL PURITY:

LAST TESTED: (mm/dd/yyyy)

03/28/2022

EXPIRY DATE: (mm/dd/yyyy)

03/28/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*).

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Certified By:

B.G. Chittim, General Manager

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

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11336

PRODUCT CODE:

N-EtFOSE-M

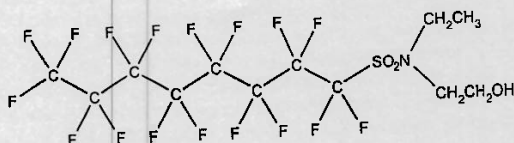
LOT NUMBER: NEtFOSE0622M

COMPOUND:

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

CAS #: 1691-99-2

STRUCTURE:



MOLECULAR FORMULA:

C₁₂H₁₀F₁₇NO₃S

MOLECULAR WEIGHT: 571.25

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/13/2022
(mm/dd/yyyy)

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NEtFOSE0622M (1 of 5)
rev0

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

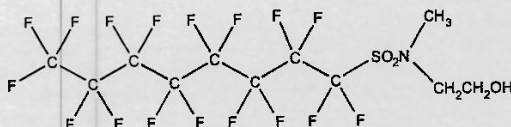
NMeFOSE0522M

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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11494



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol Isomeric Mix

<u>PRODUCT CODE:</u>	br-NMeFOSE
<u>LOT NUMBER:</u>	brNMeFOSE0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/02/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/07/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-methylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
 Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 3: LC/MS Data (SIR)
 Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 24448-09-7 (for linear isomer).

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

brNMeFOSE0922 (1 of 7)
rev1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

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

<u>PRODUCT CODE:</u>	br-NEtFOSE
<u>LOT NUMBER:</u>	brNEtFOSE1022
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/12/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-ethylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS Data (SIR)
- Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 1691-99-2 (for linear isomer).

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Revision#:9, Revised 2020-12-23

brNEtFOSE1022 (1 of 7)
rev1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

PRODUCT CODE: br-NMeFOSA
LOT NUMBER: brNMeFOSA0822
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 08/18/2022
LAST TESTED: (mm/dd/yyyy) 08/23/2022
EXPIRY DATE: (mm/dd/yyyy) 08/23/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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Revision#:9, Revised 2020-12-23

brNMeFOSA0822 (1 of 6)
rev1

11498



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

N-Ethylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (SIR)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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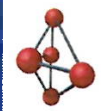
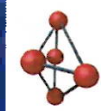
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

brNEtFOSA0922 (1 of 6)
rev1

7.9.1

7



11750
rec'd: 04/17/23

CERTIFIED WEIGHT REPORT

Part Number: 031323
Lot Number: 64029A
Description: 28 components
Methanol (1 mL KOH)
2-Propanol
1.0
60TB

Formulated By: Prashant Chauhan
Reviewed By: Pedro L. Ramos

Q31323 DATE
Q31323 DATE

Solvent(s): Methanol (1 mL KOH)
2-Propanol

Lot: 10722 (8%)
32500 (2%)

Balance Uncertainty: 0.01
Peak Uncertainty: 0.01

Expiration Date: N/A
Recommended Storage: N/A
Minimum Concentration (µg/mL): 1.0
Notes: All assigned values are atom concentrations.

Compound	Part Number	Lot Number	Dilution Factor	Initial Conc. (µg/mL)	Uncertainty (µg/mL)	Final Conc. (µg/mL)	Uncertainty (µg/mL)	Initial Conc. (ppm)	Uncertainty (ppm)	Final Conc. (ppm)	Uncertainty (ppm)	Expanded Uncertainty (ppm)	SOCS Information (Government CAS#)	OSHA PEL (TWA)	LD50
Perfluoro-n-butanoic acid (PFNA)	99542	110422	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A
Perfluoro-n-pentanoic acid (PFPeA)	99543	011723	0.02	2.00	0.017	50.3	1.01	0.02	0.017	50.3	1.01	0.02	2705-90-3	N/A	N/A
Perfluoro-n-hexanoic acid (PFHxA)	99199	071122	0.02	2.00	0.017	50.2	1.00	0.02	0.017	50.2	1.00	0.02	307-24-4	N/A	N/A
Perfluoro-n-heptanoic acid (PFHpA)	99197	110922	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	375-85-9	N/A	N/A
Perfluorooctanoic acid (PFPOA)*	99202	090522	0.02	2.00	0.017	50.2	1.00	0.02	0.017	50.2	1.00	0.02	355-87-1 (L)	N/A	per os 180mg/kg
Perfluorononanoic acid (PFNA)	99200	110922	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	375-95-1	N/A	per os 57mg/kg
Perfluorodecanoic acid (PFDA)	99195	110922	0.02	2.00	0.017	50.2	1.00	0.02	0.017	50.2	1.00	0.02	2059-94-8	N/A	N/A
Perfluoroundecanoic acid (PFUdA)	99205	071522	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A
Perfluorododecanoic acid (PFDDA)	99196	071522	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	72609-84-8	N/A	N/A
Perfluorotridecanoic acid (PFTDA)	99204	110922	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	376-06-7	N/A	N/A
Perfluorotetradecanoic acid (PFTDA)	99203	033022	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	376-06-7	N/A	N/A
Perfluoro-1-iodooctanamide (FOSA)	3677	FOSA0321	0.02	2.00	0.017	50.0	1.00	0.05	0.017	50.0	1.00	0.05	754-91-6	N/A	N/A
N-Methylperfluorooctanesulfonamide acid (N-MeFOA)*	4162	NMeFOA0422	0.02	2.00	0.017	50.0	1.00	0.05	0.017	50.0	1.00	0.05	2955-31-9 (L)	N/A	N/A
N-Ethylperfluorooctanesulfonamide acid (N-EFOA)*	4163	N-EFOA1121	0.02	2.00	0.017	50.0	1.00	0.05	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
Perfluorobutanesulfonic acid (PFBS)	99194	060522	0.02	2.00	0.017	50.2	1.00	0.02	0.017	50.2	1.00	0.02	375-73-5	N/A	N/A
Perfluoropentanesulfonic acid (PFPS)	99544	091522	0.02	2.00	0.017	50.1	1.00	0.02	0.017	50.1	1.00	0.02	2706-91-4	N/A	N/A
Perfluorohexanesulfonic acid (PFHxS)	99198	030923	0.02	2.00	0.017	50.0	1.00	0.02	0.017	50.0	1.00	0.02	355-46-4 (L)	N/A	N/A
Perfluoroheptanesulfonic acid (PFHpS)	3672	PFHPS0822	0.02	2.10	0.017	47.8	1.00	0.02	0.017	47.8	1.00	0.02	375-95-8	N/A	N/A
Perfluorooctanesulfonic acid (PFOS)*	99201	030923	0.02	2.10	0.017	47.9	1.01	0.02	0.017	47.9	1.01	0.02	1783-23-1 (L)	N/A	N/A
Perfluorononanesulfonic acid (PFNS)	3987	PFNS1122	0.02	2.10	0.017	48.0	1.01	0.05	0.017	48.0	1.01	0.05	68259-12-1	N/A	N/A
Perfluorodecane sulfonic acid (PFDS)	3671	PFDS1122	0.02	2.10	0.017	48.2	1.01	0.05	0.017	48.2	1.01	0.05	335-77-3	N/A	N/A
Perfluoroundecane sulfonic acid (PFUS)	68271	060522	0.02	2.00	0.017	50.2	1.00	0.05	0.017	50.2	1.00	0.05	27124-72-4	N/A	N/A
Perfluorododecane sulfonic acid (PFDS)	68272	031023	0.02	2.10	0.017	47.9	1.01	0.05	0.017	47.9	1.01	0.05	98108-34-4	N/A	N/A
Perfluorotridecane sulfonic acid (PFTS)	3662	PF-TS0822	0.02	2.10	0.017	48.1	1.01	0.05	0.017	48.1	1.01	0.05	32155-13-6	N/A	N/A
Perfluorotetradecane sulfonic acid (PFTS)	99598	060522	0.02	2.10	0.017	47.1	1.00	0.05	0.017	47.1	1.00	0.05	75928-36-1	N/A	N/A
Perfluoropentadecane sulfonic acid (PFPS)	4166	NMeFOA0422	0.02	2.12	0.017	47.1	1.00	0.05	0.017	47.1	1.00	0.05	91905-14-4	N/A	N/A
Perfluorohexadecane sulfonic acid (PFPS)	4164	PF-P-S051022	0.02	2.14	0.017	46.8	1.00	0.05	0.017	46.8	1.00	0.05	75928-36-1	N/A	N/A
Perfluorooctadecane sulfonic acid (PFPS)	4163	PF-P-S051022	0.02	2.14	0.017	46.8	1.00	0.05	0.017	46.8	1.00	0.05	75928-36-1	N/A	N/A
Perfluorooctadecane sulfonic acid (PFPS)	4163	NMeFOA0422	0.02	2.12	0.017	47.1	1.00	0.05	0.017	47.1	1.00	0.05	91905-14-4	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	060622	0.02	2.00	0.004	49.6	0.99	0.10	0.004	49.6	0.99	0.10	355-87-1 (L)	N/A	per os 180mg/kg
Perfluorodecanoic acid (branched isomer)*	99202	060622	0.02	2.00	0.004	0.6	0.01	0.001	0.004	0.6	0.01	0.001	355-87-1 (L)	N/A	per os 180mg/kg
Perfluoroundecanoic acid (linear)*	99198	030923	0.02	2.00	0.017	44.0	0.88	0.02	0.017	44.0	0.88	0.02	355-46-4 (L)	N/A	N/A
Perfluorodecane sulfonic acid (branched isomer)*	99198	030923	0.02	2.00	0.017	8.0	0.12	0.0020	0.017	8.0	0.12	0.0020	355-46-4 (L)	N/A	N/A
Perfluoroundecane sulfonic acid (linear)*	99201	030923	0.02	2.00	0.017	38.1	0.76	0.02	0.017	38.1	0.76	0.02	1783-23-1 (L)	N/A	N/A
Perfluorodecane sulfonic acid (branched isomer)*	99201	030923	0.02	2.00	0.017	7.5	0.15	0.005	0.017	7.5	0.15	0.005	1783-23-1 (L)	N/A	N/A
Perfluoroundecane sulfonic acid (branched isomer)*	99201	030923	0.02	2.00	0.017	4.0	0.08	0.002	0.017	4.0	0.08	0.002	1783-23-1 (L)	N/A	N/A
Perfluorodecane sulfonic acid (branched isomer)*	99201	030923	0.02	2.00	0.017	0.5	0.010	0.0002	0.017	0.5	0.010	0.0002	1783-23-1 (L)	N/A	N/A
Methylperfluorooctanesulfonamide acid (linear)*	4162	NMeFOA0422	0.02	2.00	0.017	36.0	0.72	0.04	0.017	36.0	0.72	0.04	2955-31-9 (L)	N/A	N/A
N-Ethylperfluorooctanesulfonamide acid (linear)*	4162	NMeFOA0422	0.02	2.00	0.017	6.5	0.13	0.011	0.017	6.5	0.13	0.011	2955-31-9 (L)	N/A	N/A
Methylperfluorodecane sulfonic acid (branched)*	4162	NMeFOA0422	0.02	2.00	0.017	5.0	0.10	0.005	0.017	5.0	0.10	0.005	2955-31-9 (L)	N/A	N/A
Methylperfluoroundecane sulfonic acid (branched)*	4162	NMeFOA0422	0.02	2.00	0.017	2.5	0.05	0.0009	0.017	2.5	0.05	0.0009	2955-31-9 (L)	N/A	N/A
N-Ethylperfluoroundecane sulfonic acid (linear)*	4163	N-EFOA1121	0.02	2.00	0.017	36.5	0.73	0.04	0.017	36.5	0.73	0.04	2991-50-6 (L)	N/A	N/A
N-Ethylperfluorodecane sulfonic acid (branched)*	4163	N-EFOA1121	0.02	2.00	0.017	7.7	0.15	0.009	0.017	7.7	0.15	0.009	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoroundecane sulfonic acid (branched)*	4163	N-EFOA1121	0.02	2.00	0.017	5.3	0.11	0.005	0.017	5.3	0.11	0.005	2991-50-6 (L)	N/A	N/A
N-Ethylperfluorodecane sulfonic acid (branched)*	4163	N-EFOA1121	0.02	2.00	0.017	0.4	0.007	0.0006	0.017	0.4	0.007	0.0006	2991-50-6 (L)	N/A	N/A

*Qualitative standard (Sect. 3.13) 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. Subsequent PFOA analysis must be done using a quantitative standard (Sect. 12.2) and a quantitative PFOA standard containing the branched and linear isomers become commercially available.

*The certified value is the concentration calculated from gravimetric and volumetric measurements under atmospheric conditions. All standards are certified to 0.5% of the stated value, unless otherwise noted.
*All standards, after opening ampule, should be stored with cap tightly and under appropriate laboratory conditions.
*This report is the property of Absolute Standards, Inc. and is not to be distributed outside of your organization.
*NIST Technical Note 1871, U.S. Government Printing Office, Washington, DC, (1994).



11799 A-B
rec'd: 05/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXH
<u>LOT NUMBER:</u>	PFACMXH0423
<u>SOLVENT(S):</u>	Methanol/Isopropanol (2%)/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	04/06/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	04/19/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	04/19/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev1

7.9.1
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Table A:**PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))**

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-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: 05/11/2023

(mm/dd/yyyy)

11801A-B
rec'd: 05/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

PRODUCT CODE:

PFAC-MXF

LOT NUMBER:

PFACMXF0323

SOLVENT(S):

Methanol / Water (<1%)

DATE PREPARED: (mm/dd/yyyy)

03/23/2023

LAST TESTED: (mm/dd/yyyy)

03/24/2023

EXPIRY DATE: (mm/dd/yyyy)

03/24/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Revision# 9, Revised 2020-12-23

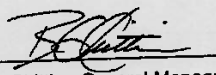
PFACMXF0323 (1 of 5)
rev0

7.9.1
7

Table A: PFAC-MXF; Components and Concentrations (ng/mL; \pm 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxanonanoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By:  Date: 03/29/2023
(mm/dd/yyyy)
 B.G. Chittim, General Manager

11802 A-B
rec'd: 05/15/23



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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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXG1122 (1 of 5)
rev0

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-dioxahexanoic acid	3,6-OPFHxA	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)

11803 A-B
rec'd: 05/15/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE:

LOT NUMBER:

SOLVENT(S):

DATE PREPARED: (mm/dd/yyyy)

LAST TESTED: (mm/dd/yyyy)

EXPIRY DATE: (mm/dd/yyyy)

RECOMMENDED STORAGE:

PFAC-MXJ
PFACMXJ0323
Methanol
03/27/2023
03/28/2023
03/28/2028
Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

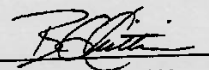
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Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
Tel: 519-822-2849 • Fax: 519-822-2849 • info@well-labs.com

Concentrations (µg/mL; ± 5% in methanol)

Table A: PFAC-MXJ; Components and

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

PFACMXJ0323 (3 of 5)
rev0

11850 A-J
rec'd: 06/01/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction
Standard Solution/Mixture

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

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) 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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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFES1022 (1 of 7)
rev0

7.9.1

7

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		18
Perfluoro-n-(1,2- ¹³ C ₁₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₁₄)tetradecanoic acid	M2PFTeDA	250		22
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		17
N-methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-ethyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		24
N-methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-ethyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		16
2-(N-methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d7-N-MeFOSE	5000		20
2-(N-ethyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d9-N-EtFOSE	5000		23
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 11/24/2022
(mm/dd/yyyy)

11851 A-J
REC'D: 06/01/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

**Mass-Labelled PFAS Injection
Standard Solution/Mixture**

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

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₆ and C₈). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and 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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**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

MPFACHIFIS1122 (1 of 5)
rev0

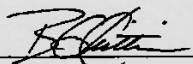
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Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

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

SGS - ORLANDO

Date/Time Started 06/20/23 13:00
(mm/dd/yyyy 24:00)

Date/Time Finished 6/21/23 9:40
(mm/dd/yyyy 24:00)

Batch# OP97425 Ext. By GH

SPE LIQUID SAMPLE PREP REPORT

Method EPA 1633 Draft (QSM)

Balance ID _____

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 97425 MB		500	7	N/A	25		5	E	
OP 97425 BS		500	7	N/A		200			
OP 97425 LLBS		500	7	N/A		60			
FC6474-1	1	540	6						
2	1	540							
3	1	540							
4	1	550							
5	1	530							
6	1	540							
7	1	550							
8	1	550							
9	1	540							
FC6593-1	1	510							
2	2	500							
3	2	550							high soil conc.
4	2	510							high soil conc.
5	2	530							high soil conc.
6	2	550							high soil conc.
FC6891-1	2	570							
2	2	570	6	N/A	25		5	F	
OPFC6474-2MS	2	550	6	N/A	25		5	E	
OP MSD									
OPFC6474-3DUP	2	550	6	N/A	25		5	E	

Comments: FC6593-2 to 6 were decanted and centrifuge

EIS (SURR) ID: 11850D-E Conc: 250-5000 ng/ml Exp. Date: 06/08/24 Inj. By: GH Ver. By: AG
 SPIKE.1 ID: LEMS a1a7C Conc: VARIED Exp. Date: 10/28/23 Inj. By: GH Ver. By: AG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11851E-6 Conc: 250-1000 ng/ml Exp. Date: 0/15/24 Inj. By: MU 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# 224279 1% NH4OH MeOH PF449 SPE Lot# 6686211-03
 Water Lot# OP97000 0.3M Formic Acid PF445 Syringe filter Lot# _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PFL47 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: Halimella Hosten
 Accepted By: MU

Date: 06/20/23
 Date: 6/21/23

7.10.1
7