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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC2684

Sampling Date: 02/13/23



Report to:

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Total number of pages in report: 701



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)
DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),
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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC2684

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC2684-1	02/13/23	10:30	AYNT 02/14/23	AQ	Ground Water	AF-RHMW04-WGN01LF-2302W2
FC2684-2	02/13/23	12:00	AYNT 02/14/23	AQ	Ground Water	AF-RHMW06-WGN01LF-2302W2

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC2684

Site: N6274223F0104 RH Fire Suppression System

Report Date: 2/22/2023 7:14:11 PM

On 02/14/2023, 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 3.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC2684 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: OP95481

Sample(s) FC2684-1MS, FC2684-2DUP were used as the QC samples indicated.

RPD(s) for Duplicate for Perfluoroheptanoic acid are outside control limits for sample OP95481-DUP. Probable cause is due to sample non-homogeneity.

FC2684-1 for 3:3 Fluorotelomer carboxylate: Associated Low Level CCV outside of control limits high, sample was ND.

FC2684-1 for EtFOSAA: Associated Low Level CCV outside of control limits high, sample was ND.

FC2684-2 for 3:3 Fluorotelomer carboxylate: Associated Low Level CCV outside of control limits high, sample was ND.

FC2684-2 for EtFOSAA: Associated Low Level CCV outside of control limits high, sample was ND.

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: FC2684
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 02/13/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC2684-1 AF-RHMW04-WGN01LF-2302W2

No hits reported in this sample.

FC2684-2 AF-RHMW06-WGN01LF-2302W2

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW04-WGN01LF-2302W2		
Lab Sample ID:	FC2684-1	Date Sampled:	02/13/23
Matrix:	AQ - Ground Water	Date Received:	02/14/23
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	5Q11029.D	1	02/17/23 17:11	NG	02/15/23 10:25	OP95481	S5Q170
Run #2							

Run #	Initial Volume	Final Volume
Run #1	535 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.7 U	19	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	9.3	1.9	0.88	ng/l	
307-24-4	Perfluorohexanoic acid	0.93 U	4.7	0.93	0.47	ng/l	
375-85-9	Perfluoroheptanoic acid	0.93 U	4.7	0.93	0.47	ng/l	
335-67-1	Perfluorooctanoic acid	0.93 U	4.7	0.93	0.47	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	4.7	1.9	0.57	ng/l	
335-76-2	Perfluorodecanoic acid	0.93 U	4.7	0.93	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	4.7	1.9	0.56	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	4.7	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	4.7	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.93 U	4.7	0.93	0.47	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.93 U	4.7	0.93	0.47	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.7	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	4.7	1.9	0.65	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.93 U	4.7	0.93	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	4.7	1.9	0.50	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	4.7	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	4.7	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.7	3.7	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.8	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	4.7	1.9	0.63	ng/l	
31506-32-8	MeFOSA	1.9 U	4.7	1.9	0.93	ng/l	
4151-50-2	EtFOSA	1.9 U	4.7	1.9	0.93	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW04-WGN01LF-2302W2		
Lab Sample ID:	FC2684-1	Date Sampled:	02/13/23
Matrix:	AQ - Ground Water	Date Received:	02/14/23
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	3.7 U	4.7	3.7	0.93	ng/l	
2991-50-6	EfOSAA ^a	3.7 U	4.7	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	9.3 U	47	9.3	4.1	ng/l	
1691-99-2	EtFOSE	19 U	47	19	6.9	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.7 U	19	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	19	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.9 U	9.3	1.9	0.73	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	9.3 U	23	9.3	4.2	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	120	19	8.2	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	120	19	7.3	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	89%		20-150%
	13C5-PFPeA	78%		20-150%
	13C5-PFHxA	90%		20-150%
	13C4-PFHpA	86%		20-150%
	13C8-PFOA	83%		20-150%
	13C9-PFNA	86%		20-150%
	13C6-PFDA	81%		20-150%
	13C7-PFUnDA	69%		20-150%
	13C2-PFDoDA	63%		20-150%
	13C2-PFTeDA	56%		20-150%
	13C3-PFBS	82%		20-150%
	13C3-PFHxS	88%		20-150%

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

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Report of Analysis

Client Sample ID:	AF-RHMW04-WGN01LF-2302W2		Date Sampled:	02/13/23
Lab Sample ID:	FC2684-1		Date Received:	02/14/23
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	79%		20-150%
	13C8-FOSA	81%		20-150%
	d3-MeFOSA	66%		20-150%
	d5-EtFOSA	58%		20-150%
	d3-MeFOSAA	74%		20-150%
	d5-EtFOSAA	59%		20-150%
	d7-MeFOSE	57%		20-150%
	d9-EtFOSE	56%		20-150%
	13C2-4:2FTS	78%		20-150%
	13C2-6:2FTS	78%		20-150%
	13C2-8:2FTS	81%		20-150%
	13C3-HFPO-DA	94%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW06-WGN01LF-2302W2		
Lab Sample ID:	FC2684-2	Date Sampled:	02/13/23
Matrix:	AQ - Ground Water	Date Received:	02/14/23
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	5Q11031.D	1	02/17/23 17:39	NG	02/15/23 10:25	OP95481	S5Q170
Run #2							

Run #	Initial Volume	Final Volume
Run #1	545 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.7 U	18	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	9.2	1.8	0.86	ng/l	
307-24-4	Perfluorohexanoic acid	0.92 U	4.6	0.92	0.46	ng/l	
375-85-9	Perfluoroheptanoic acid	0.92 U	4.6	0.92	0.46	ng/l	
335-67-1	Perfluorooctanoic acid	0.92 U	4.6	0.92	0.46	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	4.6	1.8	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	0.92 U	4.6	0.92	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	4.6	1.8	0.55	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	4.6	1.8	0.55	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	4.6	1.8	0.77	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.92 U	4.6	0.92	0.46	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.92 U	4.6	0.92	0.46	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	4.6	1.8	0.64	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.92 U	4.6	0.92	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	4.6	1.8	0.50	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	4.6	1.8	0.52	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	4.6	1.8	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.8	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	4.6	1.8	0.61	ng/l	
31506-32-8	MeFOSA	1.8 U	4.6	1.8	0.92	ng/l	
4151-50-2	EtFOSA	1.8 U	4.6	1.8	0.92	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-RHMW06-WGN01LF-2302W2		
Lab Sample ID:	FC2684-2	Date Sampled:	02/13/23
Matrix:	AQ - Ground Water	Date Received:	02/14/23
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	3.7 U	4.6	3.7	0.92	ng/l	
2991-50-6	EtFOSAA ^a	3.7 U	4.6	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	9.2 U	46	9.2	4.0	ng/l	
1691-99-2	EtFOSE	18 U	46	18	6.8	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.7 U	18	3.7	0.92	ng/l	
919005-14-4	ADONA	3.7 U	18	3.7	1.7	ng/l	
377-73-1	PFMPA	1.8 U	9.2	1.8	0.92	ng/l	
863090-89-5	PFMBA	3.7 U	9.2	3.7	1.0	ng/l	
151772-58-6	NFDHA	3.7 U	9.2	3.7	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.7 U	18	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	18	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	9.2	1.8	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	9.2 U	23	9.2	4.1	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	110	18	8.0	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	110	18	7.2	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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13C4-PFBA	84%		20-150%
13C5-PFPeA	78%		20-150%
13C5-PFHxA	89%		20-150%
13C4-PFHpA	85%		20-150%
13C8-PFOA	82%		20-150%
13C9-PFNA	88%		20-150%
13C6-PFDA	74%		20-150%
13C7-PFUnDA	64%		20-150%
13C2-PFDoDA	62%		20-150%
13C2-PFTeDA	68%		20-150%
13C3-PFBS	87%		20-150%
13C3-PFHxS	90%		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-RHMW06-WGN01LF-2302W2		Date Sampled:	02/13/23
Lab Sample ID:	FC2684-2		Date Received:	02/14/23
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	76%		20-150%
	13C8-FOSA	74%		20-150%
	d3-MeFOSA	68%		20-150%
	d5-EtFOSA	66%		20-150%
	d3-MeFOSAA	67%		20-150%
	d5-EtFOSAA	57%		20-150%
	d7-MeFOSE	62%		20-150%
	d9-EtFOSE	61%		20-150%
	13C2-4:2FTS	88%		20-150%
	13C2-6:2FTS	82%		20-150%
	13C2-8:2FTS	76%		20-150%
	13C3-HFPO-DA	94%		20-150%

(a) Associated Low Level CCV outside of control limits high, sample was ND.

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



Client / Reporting Information			Project Information			SGS - ORLANDO Quote #				SKIFF #										
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System			Analytical Information Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe LAB USE ONLY				PFAS EPA Draft 1633 <i>AS</i> 2/13/23										
Address: 1001 Bishop St. ste 1600			Street																	
City: Honolulu State: HI Zip: 96813		City: Honolulu		State: Hawaii																
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Project # 60697810																
Phone #: 303-796-4624 / 808-954-4512		Fax #		Client Purchase Order #																
Sampler(s) Name(s) (Printed) Sampler 1: NICAH TURNER Sampler 2: ANDY YOUNG																				
SGS Orlando Sample #	COLLECTION			CONTAINER INFORMATION																
	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NH3	HNO3	H2SO4	NH4OH-ZnAC	DI WATER	MEOH					
1	AF-RHMW04-WGN01LF-2302W2	2/13/23	1030	NT,AY,C	GW	3			X											
Turnaround Time (Business days) 10 Day (Business) Approved By: / Date: _____ 7 Day _____ <input checked="" type="checkbox"/> 5 Day _____ 3 Day RUSH _____ 2 Day RUSH _____ 1 Day RUSH _____ Other _____ Rush T/A Data Available VIA Email or Lablink													Data Deliverable Information <input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				Comments / Remarks EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWB 016-77393956			
Relinquished by Sampler/Affiliation: 1 Andy Young / AECOM Date Time: 2/13/23 1305 Received By/Affiliation: 2 [Signature] AECOM												Relinquished by Sampler/Affiliation: 3 [Signature] AECOM Date Time: 2/13/23 1335 Received By/Affiliation: 4 [Signature]								
Relinquished by/Affiliation: 5 Date Time: 2/14/23 Received By/Affiliation: 6 [Signature]					Relinquished By/Affiliation: 7 Date Time: 2/14/23 Received By/Affiliation: 8															
Lab Use Only : Cooler Temperature (s) Celsius (corrected): <u>3.6</u>												http://www.sgs.com/en/terms-and-conditions								

5.1
5



SGS North America Inc - Orlando
Chain of Custody

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

FC2684
SGS - ORLANDO JOB # :

COC #: 2302W2AFSG09

PAGE 1 OF 1

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes			
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PFAS EPA Draft 1633</div> <div style="text-align: center;"> <p>2/13/2023</p> <p>NT</p> </div> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe			
Address: 1001 Bishop St. ste 1600		Street															
City: Honolulu State: HI Zip: 96813		City Honolulu State Hawaii															
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 60697810															
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #															
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order #															
Sampler(s) Name(s) (Printed) Sampler 1: <u>NOAH TANNER</u> Sampler 2: <u>ANDY YOUNG</u>																	
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NACH	HNO3	H2SO4	NACH-ZINC	DISTILL WATER	MEDIA	LAB USE ONLY	
2	AF-RHMW06-WGN01LF-2302W2	2/13/23	1200	NT/TN/05	GW	3		X									
<div style="display: flex; justify-content: space-between;"> <div> <p>NT</p> <p>2/13/23</p> </div> <div> <p>INITIAL ASSESSMENT</p> <p>LABEL VERIFICATION</p> </div> </div>																	
Turnaround Time (Business days)				Data Deliverable Information				Comments / Remarks									
10 Day (Business)		Approved By: / Date:		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWC 016-77393956									
7 Day																	
5 Day																	
3 Day RUSH																	
2 Day RUSH																	
1 Day RUSH																	
Other																	
Rush T/A Data Available VIA Email or Lablink																	
Sample Custody must be documented below each time samples change possession, including courier delivery.																	
Relinquished by Sampler/Affiliation		Date Time: 2/13/2023		Received By/Affiliation		Date Time: 2/13/23		Relinquished By/Affiliation		Date Time: 2/13/23		Received By/Affiliation		Date Time: 2/13/23		Received By/Affiliation	
1 <u>NT</u> / AECOM				2 <u>Andy Young</u> / AECOM				3 <u>Andy Young</u> / AECOM				4 <u>Andy Young</u> / AECOM				5 <u>Andy Young</u> / AECOM	
5		Date Time: 2/14/23		6		7		8		9		10		11		12	
Lab Use Only : Cooler Temperature (s) Celsius (corrected):																	
http://www.sgs.com/en/terms-and-conditions																	

PFAS_COCS_ALL.xls Rev 031318

FC2684: Chain of Custody

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SGS Sample Receipt Summary

Job Number: FC2684

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 2/14/2023 3:00:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-77393956

Therm ID: IR 1;

Therm CF: 0.2;

of Coolers: 1

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

Cooler Temps (Corrected) °C: Cooler 1: (3.8);

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 230315

pH 10-12 219813A

Other: (Specify) _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD

Date: 2/14/2023 3:00:00 PM

Reviewer: CD

Date: 2/15/2023

FC2684: Chain of Custody

Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FC2684
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 02/13/23

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 FC2684

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
- Isotope Dilution Standard Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Instrument Blank

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q170-IBLK	5Q11023.D	1	02/17/23	NG	n/a	n/a	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0050	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Instrument Blank

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S5Q170-IBLK	5Q11023.D	1	02/17/23	NG	n/a	n/a	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.010	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.025	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.13	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	0.0085	0.13	0.0079	ug/l	J

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	95% 20-150%
	13C5-PFPeA	81% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	101% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	103% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	93% 20-150%
	13C3-PFBS	80% 20-150%
	13C3-PFHxS	105% 20-150%
	13C8-PFOS	102% 20-150%
	13C8-FOSA	98% 20-150%
	d3-MeFOSAA	97% 20-150%
	d5-EtFOSAA	83% 20-150%
	13C2-4:2FTS	98% 20-150%
	13C2-6:2FTS	92% 20-150%
	13C2-8:2FTS	93% 20-150%

6.1.1
6

Method Blank Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-MB	5Q11028.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0050	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Method Blank Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-MB	5Q11028.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	95% 20-150%
	13C5-PFPeA	89% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	96% 20-150%
	13C8-PFOA	93% 20-150%
	13C9-PFNA	95% 20-150%
	13C6-PFDA	94% 20-150%
	13C7-PFUnDA	91% 20-150%
	13C2-PFDoDA	88% 20-150%
	13C2-PFTeDA	83% 20-150%
	13C3-PFBS	95% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	94% 20-150%
	13C8-FOSA	86% 20-150%
	d3-MeFOSA	82% 20-150%
	d5-EtFOSA	76% 20-150%
	d3-MeFOSAA	89% 20-150%
	d5-EtFOSAA	81% 20-150%
	d7-MeFOSE	84% 20-150%
	d9-EtFOSE	84% 20-150%
	13C2-4:2FTS	89% 20-150%
	13C2-6:2FTS	90% 20-150%
	13C2-8:2FTS	91% 20-150%
	13C3-HFPO-DA	108% 20-150%

Blank Spike Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-LLBS	5Q11027.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.04	0.0515	129	40-150
2706-90-3	Perfluoropentanoic acid	0.02	0.0252	126	40-150
307-24-4	Perfluorohexanoic acid	0.01	0.0123	123	40-150
375-85-9	Perfluoroheptanoic acid	0.01	0.0121	121	40-150
335-67-1	Perfluorooctanoic acid	0.01	0.0120	120	40-150
375-95-1	Perfluorononanoic acid	0.01	0.0113	113	40-150
335-76-2	Perfluorodecanoic acid	0.01	0.0120	120	40-150
2058-94-8	Perfluoroundecanoic acid	0.01	0.0123	123	40-150
307-55-1	Perfluorododecanoic acid	0.01	0.0119	119	40-150
72629-94-8	Perfluorotridecanoic acid	0.01	0.0107	107	40-150
376-06-7	Perfluorotetradecanoic acid	0.01	0.0125	125	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00887	0.0120	135	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00941	0.0133	141	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00914	0.0110	120	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00953	0.0110	115	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00928	0.0112	121	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00962	0.0119	124	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00965	0.0104	108	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0097	0.0101	104	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0375	0.0494	132	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.038	0.0499	131	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0384	0.0378	98	40-150
754-91-6	PFOSA	0.01	0.0121	121	40-150
31506-32-8	MeFOSA	0.01	0.0116	116	40-150
4151-50-2	EtFOSA	0.01	0.0113	113	40-150
2355-31-9	MeFOSAA	0.01	0.0121	121	40-150
2991-50-6	EtFOSAA	0.01	0.0126	126	40-150
24448-09-7	MeFOSE	0.1	0.114	114	40-150
1691-99-2	EtFOSE	0.1	0.120	120	40-150
13252-13-6	HFPO-DA (GenX)	0.04	0.0494	124	40-150
919005-14-4	ADONA	0.0378	0.0408	108	40-150
377-73-1	PFMPA	0.02	0.0251	126	40-150
863090-89-5	PFMBA	0.02	0.0275	138	40-150
151772-58-6	NFDHA	0.02	0.0257	129	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0374	0.0386	103	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0378	0.0352	93	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-LLBS	5Q11027.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0178	0.0245	138	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.05	0.0630	126	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.25	0.255	102	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.25	0.251	100	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	102%	20-150%
	13C5-PFPeA	91%	20-150%
	13C5-PFHxA	102%	20-150%
	13C4-PFHpA	97%	20-150%
	13C8-PFOA	96%	20-150%
	13C9-PFNA	97%	20-150%
	13C6-PFDA	102%	20-150%
	13C7-PFUnDA	98%	20-150%
	13C2-PFDoDA	98%	20-150%
	13C2-PFTeDA	81%	20-150%
	13C3-PFBS	93%	20-150%
	13C3-PFHxS	98%	20-150%
	13C8-PFOS	92%	20-150%
	13C8-FOSA	89%	20-150%
	d3-MeFOSA	73%	20-150%
	d5-EtFOSA	75%	20-150%
	d3-MeFOSAA	87%	20-150%
	d5-EtFOSAA	79%	20-150%
	d7-MeFOSE	76%	20-150%
	d9-EtFOSE	75%	20-150%
	13C2-4:2FTS	85%	20-150%
	13C2-6:2FTS	81%	20-150%
	13C2-8:2FTS	92%	20-150%
	13C3-HFPO-DA	109%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-BS	5Q11026.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.124	124	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0625	125	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0311	124	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0300	120	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0297	119	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0304	122	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0281	112	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0296	118	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0312	125	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0282	113	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0291	116	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0318	143	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0344	146	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0256	112	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0293	123	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0274	118	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0284	118	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0282	117	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0246	101	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.124	132	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.125	132	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0971	101	40-150
754-91-6	PFOSA	0.025	0.0291	116	40-150
31506-32-8	MeFOSA	0.025	0.0275	110	40-150
4151-50-2	EtFOSA	0.025	0.0291	116	40-150
2355-31-9	MeFOSAA	0.025	0.0317	127	40-150
2991-50-6	EtFOSAA	0.025	0.0329	132	40-150
24448-09-7	MeFOSE	0.25	0.297	119	40-150
1691-99-2	EtFOSE	0.25	0.296	118	40-150
13252-13-6	HFPO-DA (GenX)	0.1	0.125	125	40-150
919005-14-4	ADONA	0.0945	0.105	111	40-150
377-73-1	PFMPA	0.05	0.0651	130	40-150
863090-89-5	PFMBA	0.05	0.0699	140	40-150
151772-58-6	NFDHA	0.05	0.0644	129	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0935	0.0982	105	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0945	0.0915	97	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-BS	5Q11026.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0629	141	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.164	131	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.648	104	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.623	100	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	100%	20-150%
	13C5-PFPeA	104%	20-150%
	13C5-PFHxA	99%	20-150%
	13C4-PFHpA	96%	20-150%
	13C8-PFOA	95%	20-150%
	13C9-PFNA	91%	20-150%
	13C6-PFDA	104%	20-150%
	13C7-PFUnDA	102%	20-150%
	13C2-PFDoDA	92%	20-150%
	13C2-PFTeDA	79%	20-150%
	13C3-PFBS	90%	20-150%
	13C3-PFHxS	93%	20-150%
	13C8-PFOS	94%	20-150%
	13C8-FOSA	95%	20-150%
	d3-MeFOSA	85%	20-150%
	d5-EtFOSA	75%	20-150%
	d3-MeFOSAA	94%	20-150%
	d5-EtFOSAA	77%	20-150%
	d7-MeFOSE	73%	20-150%
	d9-EtFOSE	73%	20-150%
	13C2-4:2FTS	80%	20-150%
	13C2-6:2FTS	75%	20-150%
	13C2-8:2FTS	82%	20-150%
	13C3-HFPO-DA	106%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-MS	5Q11030.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170
FC2684-1	5Q11029.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	FC2684-1 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.019 U	0.0893	0.118	132	40-150
2706-90-3	Perfluoropentanoic acid	0.0093 U	0.0446	0.0594	133	40-150
307-24-4	Perfluorohexanoic acid	0.0047 U	0.0223	0.0278	125	40-150
375-85-9	Perfluoroheptanoic acid	0.0047 U	0.0223	0.0273	122	40-150
335-67-1	Perfluorooctanoic acid	0.0047 U	0.0223	0.0277	124	40-150
375-95-1	Perfluorononanoic acid	0.0047 U	0.0223	0.0275	123	40-150
335-76-2	Perfluorodecanoic acid	0.0047 U	0.0223	0.0279	125	40-150
2058-94-8	Perfluoroundecanoic acid	0.0047 U	0.0223	0.0269	121	40-150
307-55-1	Perfluorododecanoic acid	0.0047 U	0.0223	0.0273	122	40-150
72629-94-8	Perfluorotridecanoic acid	0.0047 U	0.0223	0.0276	124	40-150
376-06-7	Perfluorotetradecanoic acid	0.0047 U	0.0223	0.0274	123	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0047 U	0.0198	0.0264	133	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0047 U	0.021	0.0284	135	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0047 U	0.0204	0.0231	113	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0047 U	0.0213	0.0274	129	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0047 U	0.0207	0.0262	126	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0047 U	0.0215	0.0251	117	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0047 U	0.0215	0.0243	113	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0047 U	0.0217	0.0242	112	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0837	0.105	125	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0848	0.105	124	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0857	0.0892	104	40-150
754-91-6	PFOSA	0.0047 U	0.0223	0.0268	120	40-150
31506-32-8	MeFOSA	0.0047 U	0.0223	0.0263	118	40-150
4151-50-2	EtFOSA	0.0047 U	0.0223	0.0253	113	40-150
2355-31-9	MeFOSAA	0.0047 U	0.0223	0.0285	128	40-150
2991-50-6	EtFOSAA	0.0047 U	0.0223	0.0305	137	40-150
24448-09-7	MeFOSE	0.047 U	0.223	0.270	121	40-150
1691-99-2	EtFOSE	0.047 U	0.223	0.273	122	40-150
13252-13-6	HFPO-DA (GenX)	0.019 U	0.0893	0.114	128	40-150
919005-14-4	ADONA	0.019 U	0.0844	0.0962	114	40-150
377-73-1	PFMPA	0.0093 U	0.0446	0.0588	132	40-150
863090-89-5	PFMBA	0.0093 U	0.0446	0.0637	143	40-150
151772-58-6	NFDHA	0.0093 U	0.0446	0.0624	140	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.019 U	0.0835	0.0868	104	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.019 U	0.0844	0.0786	93	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-MS	5Q11030.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170
FC2684-1	5Q11029.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	FC2684-1 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0093 U	0.0397	0.0579	146	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.023 U	0.112	0.144	129	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.12 U	0.558	0.594	106	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.12 U	0.558	0.569	102	40-150

CAS No.	ID Standard Recoveries	MS	FC2684-1	Limits
	13C4-PFBA	88%	89%	20-150%
	13C5-PFPeA	83%	78%	20-150%
	13C5-PFHxA	91%	90%	20-150%
	13C4-PFHpA	88%	86%	20-150%
	13C8-PFOA	88%	83%	20-150%
	13C9-PFNA	85%	86%	20-150%
	13C6-PFDA	83%	81%	20-150%
	13C7-PFUnDA	76%	69%	20-150%
	13C2-PFDoDA	75%	63%	20-150%
	13C2-PFTeDA	74%	56%	20-150%
	13C3-PFBS	94%	82%	20-150%
	13C3-PFHxS	95%	88%	20-150%
	13C8-PFOS	78%	79%	20-150%
	13C8-FOSA	79%	81%	20-150%
	d3-MeFOSA	72%	66%	20-150%
	d5-EtFOSA	73%	58%	20-150%
	d3-MeFOSAA	74%	74%	20-150%
	d5-EtFOSAA	63%	59%	20-150%
	d7-MeFOSE	70%	57%	20-150%
	d9-EtFOSE	70%	56%	20-150%
	13C2-4:2FTS	85%	78%	20-150%
	13C2-6:2FTS	81%	78%	20-150%
	13C2-8:2FTS	78%	81%	20-150%
	13C3-HFPO-DA	97%	94%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-DUP	5Q11032.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170
FC2684-2	5Q11031.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	FC2684-2 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.018 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0092 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0046 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0046 U	0.00049 J		200*	30
335-67-1	Perfluorooctanoic acid	0.0046 U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0046 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0046 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0046 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0046 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0046 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0046 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0046 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0046 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0046 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0046 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0046 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0046 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	ND		nc	30
754-91-6	PFOSA	0.0046 U	ND		nc	30
31506-32-8	MeFOSA	0.0046 U	ND		nc	30
4151-50-2	EtFOSA	0.0046 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	0.046 U	ND		nc	30
1691-99-2	EtFOSE	0.046 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.018 U	ND		nc	30
919005-14-4	ADONA	0.018 U	ND		nc	30
377-73-1	PFMPA	0.0092 U	ND		nc	30
863090-89-5	PFMBA	0.0092 U	ND		nc	30
151772-58-6	NFDHA	0.0092 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.018 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.018 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95481-DUP	5Q11032.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170
FC2684-2	5Q11031.D	1	02/17/23	NG	02/15/23	OP95481	S5Q170

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2684-1, FC2684-2

CAS No.	Compound	FC2684-2 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0092	U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.023	U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.11	U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.11	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC2684-2	Limits
	13C4-PFBA	89%	84%	20-150%
	13C5-PFPeA	83%	78%	20-150%
	13C5-PFHxA	91%	89%	20-150%
	13C4-PFHpA	88%	85%	20-150%
	13C8-PFOA	83%	82%	20-150%
	13C9-PFNA	88%	88%	20-150%
	13C6-PFDA	77%	74%	20-150%
	13C7-PFUnDA	72%	64%	20-150%
	13C2-PFDoDA	63%	62%	20-150%
	13C2-PFTeDA	67%	68%	20-150%
	13C3-PFBS	86%	87%	20-150%
	13C3-PFHxS	91%	90%	20-150%
	13C8-PFOS	84%	76%	20-150%
	13C8-FOSA	80%	74%	20-150%
	d3-MeFOSA	64%	68%	20-150%
	d5-EtFOSA	63%	66%	20-150%
	d3-MeFOSAA	73%	67%	20-150%
	d5-EtFOSAA	60%	57%	20-150%
	d7-MeFOSE	62%	62%	20-150%
	d9-EtFOSE	62%	61%	20-150%
	13C2-4:2FTS	84%	88%	20-150%
	13C2-6:2FTS	87%	82%	20-150%
	13C2-8:2FTS	77%	76%	20-150%
	13C3-HFPO-DA	95%	94%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S5Q170-CC169	Injection Date:	02/17/23
Lab File ID:	5Q11024.D	Injection Time:	16:01
Instrument ID:	GCMS5Q	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	27443	2.80	36131	5.34	42914	6.95	12565	7.53	12407	8.07
Check Std ^c	22672	2.78	37622	5.31	45233	6.92	13088	7.50	13008	8.04
Upper Limit ^d	54886	3.18	72262	5.71	85828	7.32	25130	7.90	24814	8.44
Lower Limit ^e	8233	2.38	10839	4.91	12874	6.52	3770	7.10	3722	7.64

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
OP95481-BS	23995	2.79	31717	5.31	37490	6.94	11227	7.51	10401	8.04	1
OP95481-LLBS	23399	2.79	32149	5.31	38214	6.94	11284	7.51	10474	8.04	1
OP95481-MB	21713	2.79	31187	5.31	37484	6.93	10866	7.51	11005	8.04	1
FC2684-1	22806	2.79	30829	5.31	36785	6.94	10699	7.51	10717	8.04	1
OP95481-MS	23608	2.79	31259	5.31	37715	6.94	11200	7.51	10885	8.04	1
FC2684-2	23173	2.79	31715	5.31	38524	6.94	10854	7.51	10708	8.04	1
OP95481-DUP	24135	2.79	31936	5.31	39407	6.94	11444	7.51	11152	8.04	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: S5Q169-ICC169 5Q10944.D 02/16/23 21:13. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
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Injection Standard Area Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S5Q170-CC169	Injection Date:	02/17/23
Lab File ID:	5Q11024.D	Injection Time:	16:01
Instrument ID:	GCMS5Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4466	7.09	8437	8.26
Check Std ^c	4622	7.05	8381	8.22
Upper Limit ^d	8932	7.45	16874	8.62
Lower Limit ^e	1340	6.65	2531	7.82

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
OP95481-BS	3924	7.07	7414	8.23	1
OP95481-LLBS	3918	7.07	7871	8.23	1
OP95481-MB	3779	7.05	7528	8.22	1
FC2684-1	3899	7.05	7558	8.23	1
OP95481-MS	3800	7.05	7782	8.23	1
FC2684-2	3751	7.07	7603	8.23	1
OP95481-DUP	3901	7.07	7705	8.23	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S5Q169-ICC169 5Q10944.D 02/16/23 21:13. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
6

TDCA Retention Time Check

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S5Q169-RT	Injection Date:	02/16/23
Lab File ID:	5Q10938.D	Injection Time:	19:49
Instrument ID:	GCMS5Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.269	--	--
TDCA	6.623	1.646	1.000
TCDCA	6.461	1.808	1.000
TUDCA	5.593	2.676	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
S5Q169-IC169	5Q10940.D	02/16/23	20:17	00:28	Mass Calibration Verification
S5Q169-IC169	5Q10941.D	02/16/23	20:31	00:42	Initial cal 1
S5Q169-IC169	5Q10942.D	02/16/23	20:45	00:56	Initial cal 2
S5Q169-IC169	5Q10943.D	02/16/23	20:59	01:10	Initial cal 3
S5Q169-ICC169	5Q10944.D	02/16/23	21:13	01:24	Initial cal 4
S5Q169-IC169	5Q10945.D	02/16/23	21:27	01:38	Initial cal 5
S5Q169-IC169	5Q10946.D	02/16/23	21:41	01:52	Initial cal 6
S5Q169-IC169	5Q10947.D	02/16/23	21:56	02:07	Initial cal 7
S5Q169-IC169	5Q10948.D	02/16/23	22:10	02:21	Initial cal 8
S5Q169-IBLK	5Q10949.D	02/16/23	22:24	02:35	Instrument Blank
S5Q169-IBLK	5Q10949.D	02/16/23	22:24	02:35	Instrument Blank
S5Q169-ICV169	5Q10950.D	02/16/23	22:38	02:49	Initial cal verification 4
S5Q169-ICV169	5Q10951.D	02/16/23	22:52	03:03	Initial cal verification 4
S5Q169-CC169	5Q10959.D	02/17/23	00:45	04:56	Continuing cal 4
S5Q169-CC169	5Q10960.D	02/17/23	00:59	05:10	Continuing cal 1.0LL
S5Q169-ICCB	5Q10961.D	02/17/23	01:13	05:24	Continuing Calibration Blank
OP95307-BS	5Q10962.D	02/17/23	01:27	05:38	Blank Spike
OP95307-LLBS	5Q10963.D	02/17/23	01:41	05:52	Blank Spike
OP95307-MB	5Q10964.D	02/17/23	01:55	06:06	Method Blank
FC2144-1	5Q10965.D	02/17/23	02:09	06:20	(used for QC only; not part of job FC2684)
OP95307-MS	5Q10966.D	02/17/23	02:23	06:34	Matrix Spike
FC2144-2	5Q10967.D	02/17/23	02:37	06:48	(used for QC only; not part of job FC2684)
OP95307-DUP	5Q10968.D	02/17/23	02:51	07:02	Duplicate
ZZZZZZ	5Q10969.D	02/17/23	03:06	07:17	(unrelated sample)
ZZZZZZ	5Q10970.D	02/17/23	03:20	07:31	(unrelated sample)
ZZZZZZ	5Q10971.D	02/17/23	03:34	07:45	(unrelated sample)
S5Q169-CC169	5Q10972.D	02/17/23	03:48	07:59	Continuing cal 4
S5Q169-ICCB	5Q10973.D	02/17/23	04:02	08:13	Continuing Calibration Blank
ZZZZZZ	5Q10974.D	02/17/23	04:16	08:27	(unrelated sample)
ZZZZZZ	5Q10975.D	02/17/23	04:30	08:41	(unrelated sample)
ZZZZZZ	5Q10976.D	02/17/23	04:44	08:55	(unrelated sample)
ZZZZZZ	5Q10977.D	02/17/23	04:58	09:09	(unrelated sample)
ZZZZZZ	5Q10978.D	02/17/23	05:12	09:23	(unrelated sample)
ZZZZZZ	5Q10979.D	02/17/23	05:27	09:38	(unrelated sample)

TDCA Retention Time Check

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S5Q169-RT	Injection Date:	02/16/23
Lab File ID:	5Q10938.D	Injection Time:	19:49
Instrument ID:	GCMS5Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	5Q10980.D	02/17/23	05:41	09:52	(unrelated sample)
ZZZZZZ	5Q10981.D	02/17/23	05:55	10:06	(unrelated sample)
ZZZZZZ	5Q10982.D	02/17/23	06:09	10:20	(unrelated sample)
ZZZZZZ	5Q10983.D	02/17/23	06:23	10:34	(unrelated sample)
S5Q169-CC169	5Q10984.D	02/17/23	06:37	10:48	Continuing cal 4
S5Q169-ICCB	5Q10985.D	02/17/23	06:51	11:02	Continuing Calibration Blank
ZZZZZZ	5Q10986.D	02/17/23	07:05	11:16	(unrelated sample)
ZZZZZZ	5Q10987.D	02/17/23	07:19	11:30	(unrelated sample)
ZZZZZZ	5Q10988.D	02/17/23	07:33	11:44	(unrelated sample)
S5Q169-CC169	5Q10989.D	02/17/23	07:48	11:59	Continuing cal 4
S5Q169-CC169	5Q10990.D	02/17/23	08:02	12:13	Continuing cal 1.0LL
S5Q169-ICCB	5Q10991.D	02/17/23	08:16	12:27	Continuing Calibration Blank
OP95328-BS	5Q10992.D	02/17/23	08:30	12:41	Blank Spike
OP95328-LLBS	5Q10993.D	02/17/23	08:44	12:55	Blank Spike
OP95328-MB	5Q10994.D	02/17/23	08:58	13:09	Method Blank
ZZZZZZ	5Q10995.D	02/17/23	09:12	13:23	(unrelated sample)
FC2145-2	5Q10996.D	02/17/23	09:26	13:37	(used for QC only; not part of job FC2684)
OP95328-MS	5Q10997.D	02/17/23	09:40	13:51	Matrix Spike
OP95328-MSD	5Q10998.D	02/17/23	09:54	14:05	Matrix Spike Duplicate
ZZZZZZ	5Q10999.D	02/17/23	10:08	14:19	(unrelated sample)
ZZZZZZ	5Q11000.D	02/17/23	10:23	14:34	(unrelated sample)
ZZZZZZ	5Q11001.D	02/17/23	10:37	14:48	(unrelated sample)
S5Q169-CC169	5Q11002.D	02/17/23	10:51	15:02	Continuing cal 4
S5Q169-ICCB	5Q11003.D	02/17/23	11:05	15:16	Continuing Calibration Blank
ZZZZZZ	5Q11004.D	02/17/23	11:19	15:30	(unrelated sample)
ZZZZZZ	5Q11005.D	02/17/23	11:33	15:44	(unrelated sample)
ZZZZZZ	5Q11006.D	02/17/23	11:47	15:58	(unrelated sample)
ZZZZZZ	5Q11007.D	02/17/23	12:01	16:12	(unrelated sample)
ZZZZZZ	5Q11008.D	02/17/23	12:15	16:26	(unrelated sample)
ZZZZZZ	5Q11009.D	02/17/23	12:29	16:40	(unrelated sample)
ZZZZZZ	5Q11010.D	02/17/23	12:43	16:54	(unrelated sample)
ZZZZZZ	5Q11011.D	02/17/23	12:58	17:09	(unrelated sample)
ZZZZZZ	5Q11012.D	02/17/23	13:12	17:23	(unrelated sample)
ZZZZZZ	5Q11013.D	02/17/23	13:26	17:37	(unrelated sample)
S5Q169-CC169	5Q11014.D	02/17/23	13:40	17:51	Continuing cal 4
S5Q169-ICCB	5Q11015.D	02/17/23	13:54	18:05	Continuing Calibration Blank
ZZZZZZ	5Q11016.D	02/17/23	14:08	18:19	(unrelated sample)
ZZZZZZ	5Q11017.D	02/17/23	14:22	18:33	(unrelated sample)
S5Q169-ECC169	5Q11018.D	02/17/23	14:36	18:47	Ending cal 4
S5Q169-ICCB	5Q11019.D	02/17/23	14:50	19:01	Continuing Calibration Blank

6.6.1

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TDCA Retention Time Check

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S5Q170-RT	Injection Date:	02/17/23
Lab File ID:	5Q11020.D	Injection Time:	15:04
Instrument ID:	GCMS5Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.219	--	--
TDCA	6.611	1.608	1.000
TCDCA	6.449	1.770	1.000
TUDCA	5.580	2.639	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
S5Q170-IBLK	5Q11023.D	02/17/23	15:47	00:43	Instrument Blank
S5Q170-IBLK	5Q11023.D	02/17/23	15:47	00:43	Instrument Blank
S5Q170-CC169	5Q11024.D	02/17/23	16:01	00:57	Continuing cal 4
S5Q170-CC169	5Q11025.D	02/17/23	16:15	01:11	Continuing cal 1.0LL
OP95481-BS	5Q11026.D	02/17/23	16:29	01:25	Blank Spike
OP95481-LLBS	5Q11027.D	02/17/23	16:43	01:39	Blank Spike
OP95481-MB	5Q11028.D	02/17/23	16:57	01:53	Method Blank
FC2684-1	5Q11029.D	02/17/23	17:11	02:07	AF-RHMW04-WGN01LF-2302W2
OP95481-MS	5Q11030.D	02/17/23	17:25	02:21	Matrix Spike
FC2684-2	5Q11031.D	02/17/23	17:39	02:35	AF-RHMW06-WGN01LF-2302W2
OP95481-DUP	5Q11032.D	02/17/23	17:53	02:49	Duplicate
S5Q170-CC169	5Q11033.D	02/17/23	18:08	03:04	Continuing cal 4
S5Q170-CC169	5Q11034.D	02/17/23	18:22	03:18	Continuing cal 1.0LL
S5Q170-ICCB	5Q11035.D	02/17/23	18:36	03:32	Continuing Calibration Blank
OP95374-BS	5Q11036.D	02/17/23	18:50	03:46	Blank Spike
OP95374-LLBS	5Q11037.D	02/17/23	19:04	04:00	Blank Spike
OP95374-MB	5Q11038.D	02/17/23	19:18	04:14	Method Blank
ZZZZZZ	5Q11039.D	02/17/23	19:32	04:28	(unrelated sample)
ZZZZZZ	5Q11040.D	02/17/23	19:46	04:42	(unrelated sample)
ZZZZZZ	5Q11041.D	02/17/23	20:00	04:56	(unrelated sample)
ZZZZZZ	5Q11042.D	02/17/23	20:14	05:10	(unrelated sample)
ZZZZZZ	5Q11043.D	02/17/23	20:29	05:25	(unrelated sample)
ZZZZZZ	5Q11044.D	02/17/23	20:43	05:39	(unrelated sample)
S5Q170-CC169	5Q11045.D	02/17/23	20:57	05:53	Continuing cal 4
S5Q170-ICCB	5Q11046.D	02/17/23	21:11	06:07	Continuing Calibration Blank
FC2216-7	5Q11047.D	02/17/23	21:25	06:21	(used for QC only; not part of job FC2684)
OP95374-MS	5Q11048.D	02/17/23	21:39	06:35	Matrix Spike
OP95374-MSD	5Q11049.D	02/17/23	21:53	06:49	Matrix Spike Duplicate
ZZZZZZ	5Q11050.D	02/17/23	22:07	07:03	(unrelated sample)
ZZZZZZ	5Q11051.D	02/17/23	22:21	07:17	(unrelated sample)
ZZZZZZ	5Q11052.D	02/17/23	22:35	07:31	(unrelated sample)
ZZZZZZ	5Q11053.D	02/17/23	22:49	07:45	(unrelated sample)
ZZZZZZ	5Q11054.D	02/17/23	23:04	08:00	(unrelated sample)
ZZZZZZ	5Q11055.D	02/17/23	23:18	08:14	(unrelated sample)

TDCA Retention Time Check

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S5Q170-RT	Injection Date:	02/17/23
Lab File ID:	5Q11020.D	Injection Time:	15:04
Instrument ID:	GCMS5Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	5Q11056.D	02/17/23	23:32	08:28	(unrelated sample)
S5Q170-CC169	5Q11057.D	02/17/23	23:46	08:42	Continuing cal 4
S5Q170-ICCB	5Q11058.D	02/18/23	00:00	08:56	Continuing Calibration Blank
ZZZZZZ	5Q11060.D	02/18/23	00:28	09:24	(unrelated sample)
ZZZZZZ	5Q11061.D	02/18/23	00:42	09:38	(unrelated sample)
ZZZZZZ	5Q11062.D	02/18/23	00:56	09:52	(unrelated sample)
S5Q170-CC169	5Q11063.D	02/18/23	01:10	10:06	Continuing cal 4
S5Q170-CC169	5Q11064.D	02/18/23	01:24	10:20	Continuing cal 1.0LL
S5Q170-ICCB	5Q11065.D	02/18/23	01:38	10:34	Continuing Calibration Blank
OP95331-BS	5Q11066.D	02/18/23	01:53	10:49	Blank Spike
OP95331-BS1	5Q11067.D	02/18/23	02:07	11:03	Blank Spike
OP95331-BS2	5Q11068.D	02/18/23	02:21	11:17	Blank Spike
OP95331-BS3	5Q11069.D	02/18/23	02:35	11:31	Blank Spike
OP95331-BS4	5Q11070.D	02/18/23	02:49	11:45	Blank Spike
OP95331-LLBS	5Q11071.D	02/18/23	03:03	11:59	Blank Spike
OP95331-MB	5Q11072.D	02/18/23	03:17	12:13	Method Blank
FC2386-1	5Q11073.D	02/18/23	03:31	12:27	(used for QC only; not part of job FC2684)
OP95331-MS	5Q11074.D	02/18/23	03:45	12:41	Matrix Spike
S5Q170-CC169	5Q11075.D	02/18/23	03:59	12:55	Continuing cal 4
S5Q170-CC169	5Q11076.D	02/18/23	04:13	13:09	Continuing cal 1.0LL
S5Q170-ICCB	5Q11077.D	02/18/23	04:27	13:23	Continuing Calibration Blank
S5Q170-ICCB	5Q11077.D	02/18/23	04:27	13:23	Continuing Calibration Blank
OP95323-BS	5Q11078.D	02/18/23	04:41	13:37	Blank Spike
OP95323-LLBS	5Q11079.D	02/18/23	04:56	13:52	Blank Spike
OP95323-MB	5Q11080.D	02/18/23	05:10	14:06	Method Blank
ZZZZZZ	5Q11081.D	02/18/23	05:24	14:20	(unrelated sample)
ZZZZZZ	5Q11082.D	02/18/23	05:38	14:34	(unrelated sample)
S5Q170-ECC169	5Q11083.D	02/18/23	05:52	14:48	Ending cal 4
S5Q170-ICCB	5Q11084.D	02/18/23	06:06	15:02	Continuing Calibration Blank
S5Q170-ICCB	5Q11084.D	02/18/23	06:06	15:02	Continuing Calibration Blank

6.6.2
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Isotope Dilution Standard Recovery Summary

Job Number: FC2684
 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
FC2684-1	5Q11029.D	89	78	90	86	83	86	81	69
FC2684-2	5Q11031.D	84	78	89	85	82	88	74	64
OP95481-BS	5Q11026.D	100	104	99	96	95	91	104	102
OP95481-DUP	5Q11032.D	89	83	91	88	83	88	77	72
OP95481-LLBS	5Q11027.D	102	91	102	97	96	97	102	98
OP95481-MB	5Q11028.D	95	89	101	96	93	95	94	91
OP95481-MS	5Q11030.D	88	83	91	88	88	85	83	76
S5Q170-IBLK	5Q11023.D	95	81	102	101	100	101	106	103

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

6.7.1

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Isotope Dilution Standard Recovery Summary

Job Number: FC2684
 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
FC2684-1	5Q11029.D	63	56	82	88	79	81	66	58
FC2684-2	5Q11031.D	62	68	87	90	76	74	68	66
OP95481-BS	5Q11026.D	92	79	90	93	94	95	85	75
OP95481-DUP	5Q11032.D	63	67	86	91	84	80	64	63
OP95481-LLBS	5Q11027.D	98	81	93	98	92	89	73	75
OP95481-MB	5Q11028.D	88	83	95	98	94	86	82	76
OP95481-MS	5Q11030.D	75	74	94	95	78	79	72	73
S5Q170-IBLK	5Q11023.D	102	93	80	105	102	98		

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%

6.7.1

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Isotope Dilution Standard Recovery Summary

Job Number: FC2684
 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
FC2684-1	5Q11029.D	74	59	57	56	78	78	81	94
FC2684-2	5Q11031.D	67	57	62	61	88	82	76	94
OP95481-BS	5Q11026.D	94	77	73	73	80	75	82	106
OP95481-DUP	5Q11032.D	73	60	62	62	84	87	77	95
OP95481-LLBS	5Q11027.D	87	79	76	75	85	81	92	109
OP95481-MB	5Q11028.D	89	81	84	84	89	90	91	108
OP95481-MS	5Q11030.D	74	63	70	70	85	81	78	97
S5Q170-IBLK	5Q11023.D	97	83			98	92	93	

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

6.7.1

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Initial Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICC169
 Lab FileID: 5Q10944.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_021623_S5Q169.quantmethod.xml	D:\MassHunter\Data\021623_1633_S5Q169\QuantResults\5q169A.batch.bin	2/17/2023 10:12:04 AM	D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d	1	0.4178	0.3302	0.4064	0.3531	0.4247	0.3919	0.4166	0.4263	0.3959	9.022
D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d	D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d	D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d	D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d	D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d	D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d	D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d									
I M4-PFBA	T PFBA														
I M5-PFPeA	T PFMPA														
T 3:3FTCA	T PFPeA														
T PFMBa															
I M5-PFHxA	T NFDHA														
T PFHxA	T PFHxA														
T PFEEsA	T 5:3FTCA														
T 7:3FTCA															
I M4-PFHpA	T PFHpA														
I M8-PFOA	T PFOA														
I M9-PFNA	T PFNA														
I M6-PFDA	T PFDA														
I M7-PFUnDA	T PFUnDA														
I M2-PFDODA															

Initial Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICC169
 Lab FileID: 5Q10944.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.9503	0.8702	0.8651	0.7898	0.8347	0.7862	0.8595	0.8324	0.8485	6.141
T PFTfDA	Avg RF	1.3533	1.0991	1.1231	1.0358	1.0977	1.0532	1.1167	1.0596	1.1173	8.984
I M2-PFTeDA	Avg RF	1.1406	0.9250	0.9729	0.8710	0.9258	0.9418	0.9679	0.9415	0.9608	8.235
T PFTeDA						ISTD					
I M8-FOSA	Avg RF	0.9937	0.8986	0.9075	0.8342	0.9101	0.8812	0.9479	0.9339	0.9134	5.176
T FOSA						ISTD					
I M3-PFBS	Avg RF	0.8321	0.9110	0.8313	0.8774	0.7443	0.8120	0.7109	0.8531	0.8215	8.052
T PFBS						ISTD					
I M3-PFHxS	Avg RF	0.8432	0.7531	0.8272	0.6603	0.6826	0.6987	0.7411	0.6257	0.7290	10.608
T PFPeS	Avg RF	0.8907	0.8617	0.8373	0.7812	0.8246	0.8041	0.9172	0.8360	0.8441	5.273
T PFHxS						ISTD					
I M8-PFOS	Avg RF	0.8510	0.6849	0.6978	0.6449	0.6984	0.6867	0.7268	0.6947	0.7107	8.592
T PFHpS	Avg RF	1.0156	1.0166	1.0402	0.9221	1.0270	0.9821	1.0532	1.0131	1.0087	4.045
T PFOs	Avg RF	0.6715	0.5091	0.5839	0.4938	0.5276	0.5361	0.5618	0.5148	0.5498	10.388
T PFNS	Avg RF	0.6059	0.5499	0.5663	0.5114	0.5366	0.5404	0.5775	0.5272	0.5519	5.480
T PFDS	Avg RF	0.5389	0.4154	0.4269	0.4031	0.4150	0.4247	0.4430	0.4097	0.4346	10.090
T PFDoDS						ISTD					
I M2-4:2FTS	Avg RF	7.3947	6.1284	6.5215	5.6767	6.3917	5.9238	6.3294	5.9749	6.2926	8.326
T 4:2FTS						ISTD					
I M2-6:2FTS	Avg RF	4.4390	4.2634	4.4523	3.8415	4.0740	4.0417	4.3460	3.9583	4.1770	5.503
T 6:2FTS						ISTD					
I M2-8:2FTS	Avg RF	2.6908	1.9131	1.9503	1.8674	1.8351	1.8679	2.0290	2.0220	2.0220	14.932
T 8:2FTS						ISTD					
I M3-MeFOSAA	Avg RF	0.9197	0.7635	0.8396	0.7461	0.8775	0.8463	0.8852	0.8908	0.8461	7.311
T MeFOSAA						ISTD					
I M3-HFO-DA	Avg RF	0.8185	0.8519	0.8877	0.7928	0.7561	0.7357	0.8841	0.8384	0.8206	6.828
T HFPO-DA	Avg RF	2.9027	2.5924	3.0710	2.6125	2.5389	2.3357	2.9958	2.8475	2.7371	9.314
T ADONA	Avg RF	1.2642	1.0669	1.3140	1.1601	1.1244	1.0727	1.3024	1.1051	1.1762	8.700
T 9Cl-PF3ONS	Avg RF	1.1466	0.9971	1.2312	1.0917	1.0556	1.0130	1.2422	1.0277	1.1006	8.759
T 11Cl-PF3OUds						ISTD					
I M5-EFOSAA	Avg RF	0.6203	0.6234	0.6883	0.6185	0.6305	0.6419	0.7169	0.6962	0.6545	6.041
T EFOSAA						ISTD					
I M7-MeFOSE	Avg RF	1.2427	1.0741	1.0702	1.0142	1.0730	1.0224	1.0392	1.0070	1.0679	7.090
T MeFOSE						ISTD					
I M9-EFOSE	Avg RF	1.0491	0.9437	0.9524	0.8819	0.9462	0.8970	0.9077	0.8517	0.9287	6.455
T EFOSE						ISTD					

Generated at 10:12 AM on 2/17/2023

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Initial Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICC169
 Lab FileID: 5Q10944.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA											
T EtFOSA	Avg RF	0.9753	0.9072	0.9669	0.8299	0.8896	0.8344	0.9036	0.9070	0.9017	5.861
I M3-MeFOSA											
T MeFOSA	Avg RF	1.1643	0.9614	1.0054	0.9028	0.9676	0.9074	0.9901	0.9956	0.9868	8.243
I 13C4-PFOS											
S d3-MeFOSAA	Linear	0.5492	0.5672	0.5413	0.5690	0.5630	0.5363	0.5560	0.5468	0.5536	2.193
S 13C8-PFOS	Linear	0.9808	0.9736	0.9631	0.9974	1.0208	0.9579	0.9627	1.0212	0.9847	2.604
S d5-EFOSAA	Linear	0.8622	0.8350	0.8091	0.8724	0.8893	0.7874	0.7143	0.7831	0.8191	7.039
S 13C8-FOSA	Linear	0.9976	0.9571	0.9388	0.9731	1.0031	0.9725	0.9729	1.0301	0.9807	2.919
S d7-MeFOSE	Linear	0.4635	0.4618	0.4511	0.4558	0.4767	0.4575	0.4638	0.4502	0.4601	1.854
S d3-MeFOSA	Linear	0.5089	0.5049	0.4787	0.4982	0.5145	0.5096	0.5126	0.5033	0.5038	2.269
S d9-EFOSE	Linear	0.5666	0.5680	0.5547	0.5683	0.5848	0.5589	0.5618	0.5477	0.5638	1.959
S d5-EFOSA	Linear	0.6708	0.6935	0.6655	0.7099	0.7049	0.7148	0.6969	0.6985	0.6944	2.541
I 13C3-PFBA											
S 13C4-PFBA	Linear	0.9470	0.9392	0.9476	0.9419	0.9457	0.9375	0.9377	0.9494	0.9432	0.504
I 18O2-PFHxS											
S 13C2-4:2FTS	Linear	0.0622	0.0604	0.0600	0.0665	0.0647	0.0603	0.0533	0.0592	0.0608	6.514
S 13C3-PBBS	Linear	1.9829	1.7891	1.9559	1.9839	2.0133	2.0415	1.8026	1.8200	1.9236	5.330
S 13C2-6:2FTS	Linear	0.1509	0.1376	0.1342	0.1421	0.1419	0.1309	0.1207	0.1261	0.1355	7.141
S 13C3-PFHxS	Linear	1.4047	1.3814	1.4054	1.4266	1.4886	1.4459	1.3926	1.4890	1.4293	2.919
S 13C2-8:2FTS	Linear	0.1837	0.1894	0.1934	0.1930	0.2062	0.1880	0.1680	0.1977	0.1899	5.875
I 13C4-PFOA											
S 13C8-PFOA	Linear	0.8617	0.8418	0.8259	0.8680	0.8385	0.8575	0.8283	0.8198	0.8427	2.128
I 13C2-PFDA											
S 13C6-PFDA	Linear	0.6751	0.6525	0.6476	0.6603	0.6265	0.6451	0.6630	0.5963	0.6458	3.810
S 13C7-PFUnDA	Linear	0.7373	0.7251	0.7046	0.7478	0.6804	0.7071	0.6946	0.6497	0.7058	4.496
S 13C2-PFDODA	Linear	0.7532	0.8095	0.7760	0.8022	0.7564	0.8085	0.7533	0.7746	0.7792	3.147
S 13C2-PFTeDA	Linear	0.7427	0.7436	0.7381	0.7632	0.7153	0.7226	0.7166	0.7121	0.7318	2.455
I 13C5-PFNA											
S 13C9-PFNA	Linear	1.0085	1.0399	1.0355	1.0396	1.0338	0.9798	1.0041	1.0325	1.0217	2.139
I 13C2-PFHxA											
S 13C5-PPeA	Linear	0.4512	0.4688	0.4604	0.4501	0.4599	0.4536	0.4482	0.4435	0.4545	1.782
S 13C5-PFHxA	Linear	0.8792	0.8835	0.8813	0.8761	0.8799	0.8729	0.8801	0.8681	0.8776	0.574
S 13C3-HPOO-DA	Linear	0.4699	0.4890	0.4786	0.4766	0.4691	0.4515	0.4372	0.4401	0.4640	4.076
S 13C4-PFHpA	Linear	0.8206	0.8379	0.8510	0.8015	0.8367	0.8260	0.8419	0.8302	0.8307	1.823

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

Initial Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICC169
 Lab FileID: 5Q10944.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PFBA	Linear	$y = 0.943243 * x$	
S 13C5-PFPeA	Linear	$y = 0.454466 * x$	
S 13C2-4:2FTS	Linear	$y = 0.060828 * x$	
S 13C3-PFBS	Linear	$y = 1.923636 * x$	
S 13C5-PFHxA	Linear	$y = 0.877635 * x$	
S 13C3-HFPO-DA	Linear	$y = 0.463992 * x$	
S 13C4-PFHpA	Linear	$y = 0.830714 * x$	
S 13C8-PFOA	Linear	$y = 0.135547 * x$	
S 13C3-PFHxS	Linear	$y = 0.842660 * x$	
S 13C9-PFNA	Linear	$y = 1.429278 * x$	
S 13C2-8:2FTS	Linear	$y = 1.021725 * x$	
S 13C6-PEDA	Linear	$y = 0.189926 * x$	
S d3-MeFOSAA	Linear	$y = 0.645798 * x$	
S 13C8-PFOS	Linear	$y = 0.553604 * x$	
S d5-EFOSAA	Linear	$y = 0.984675 * x$	
S 13C7-PFUInDA	Linear	$y = 0.819098 * x$	
S 13C2-PFDODA	Linear	$y = 0.705837 * x$	
S 13C8-FOSA	Linear	$y = 0.779212 * x$	
S 13C2-PFTeDA	Linear	$y = 0.980653 * x$	
S d7-MeFOSE	Linear	$y = 0.731767 * x$	
S d3-MeFOSA	Linear	$y = 0.460054 * x$	
S d9-EFOSE	Linear	$y = 0.503840 * x$	
S d5-EFOSA	Linear	$y = 0.563845 * x$	
S d5-EFOSA	Linear	$y = 0.694361 * x$	

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

Initial Calibration Verification

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICV169
 Lab FileID: 5Q10950.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q169A.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q10950
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.211	4.2	104.2
13C2-6:2FTS	5.000	5.158	3.2	103.2
13C2-8:2FTS	5.000	5.181	3.6	103.6
13C2-PFDoDA	1.250	1.203	-3.8	96.2
13C2-PFTeDA	1.250	1.268	1.4	101.4
13C3-PFBS	2.500	2.632	5.3	105.3
13C3-PFHxS	2.500	2.565	2.6	102.6
13C4-PFBA	10.000	11.421	14.2	114.2
13C4-PFHpA	2.500	2.494	-0.2	99.8
13C5-PFHxA	2.500	2.469	-1.3	98.7
13C5-PFPeA	5.000	5.044	0.9	100.9
13C6-PFDA	1.250	1.233	-1.3	98.7
13C7-PFUnDA	1.250	1.261	0.9	100.9
13C8-FOSA	2.500	2.521	0.8	100.8
13C8-PFOA	2.500	2.482	-0.7	99.3
13C8-PFOS	2.500	2.567	2.7	102.7
13C9-PFNA	1.250	1.279	2.4	102.4
4:2FTS	9.375	9.756	4.1	104.1
6:2FTS	9.500	10.027	5.6	105.6
8:2FTS	9.600	8.229	-14.3	85.7
d3-MeFOSAA	5.000	5.354	7.1	107.1
EtFOSAA	2.500	2.690	7.6	107.6
FOSA	2.500	2.608	4.3	104.3
MeFOSAA	2.500	2.494	-0.3	99.7
PFBA	10.000	10.428	4.3	104.3
PFBS	2.218	2.350	5.9	105.9
PFDA	2.500	2.501	0.0	100.0
PFDoDA	2.500	2.550	2.0	102.0
PFDS	2.413	2.385	-1.2	98.8
PFHpA	2.500	2.457	-1.7	98.3
PFHpS	2.383	2.425	1.8	101.8
PFHxA	2.500	2.465	-1.4	98.6
PFHxS	2.285	2.150	-5.9	94.1
PFNA	2.500	2.420	-3.2	96.8
PFNS	2.405	2.488	3.4	103.4
PFOA	2.500	2.468	-1.3	98.7
PFOS	2.320	2.457	5.9	105.9

Initial Calibration Verification

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICV169
 Lab FileID: 5Q10950.D

PFPeA	5.000	5.268	5.4	105.4
PFPeS	2.353	2.643	12.3	112.3
PFTeDA	2.500	2.374	-5.0	95.0
PFTrDA	2.500	2.563	2.5	102.5
PFUnDA	2.500	2.414	-3.5	96.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	9.450	8.997	-4.8	95.2
13C3-HFPO-DA	10.000	10.046	0.5	100.5
9C1-PF3ONS	9.350	9.053	-3.2	96.8
ADONA	9.450	9.060	-4.1	95.9
HFPO-DA	10.000	10.455	4.5	104.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	14.319	14.7	114.7
5:3FTCA	62.400	55.267	-11.4	88.6
7:3FTCA	62.400	54.444	-12.7	87.3
d3-MeFOSA	2.500	2.623	4.9	104.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.437	-2.5	97.5
EtFOSE	25.000	25.975	3.9	103.9
MeFOSA	2.500	2.388	-4.5	95.5
MeFOSE	25.000	25.122	0.5	100.5
PFDoDS	2.425	2.438	0.5	100.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.799	16.0	116.0
d7-MeFOSE	25.000	26.109	4.4	104.4
d9-EtFOSE	25.000	25.691	2.8	102.8
d5-EtFOSA	2.500	2.500	0.0	100.0
NFDHA	5.000	5.186	3.7	103.7
PFMBA	5.000	5.983	19.7	119.7
PFMPA	5.000	6.233	24.7	124.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	3.822	-14.1	85.9

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICV169
 Lab FileID: 5Q10951.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q169A.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q10951
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.913	-1.7	98.3
13C2-6:2FTS	5.000	5.404	8.1	108.1
13C2-8:2FTS	5.000	5.075	1.5	101.5
13C2-PFDoDA	1.250	1.152	-7.8	92.2
13C2-PFTeDA	1.250	1.185	-5.2	94.8
13C3-PFBS	2.500	2.352	-5.9	94.1
13C3-PFHxS	2.500	2.508	0.3	100.3
13C4-PFBA	10.000	10.026	0.3	100.3
13C4-PFHpA	2.500	2.505	0.2	100.2
13C5-PFHxA	2.500	2.479	-0.8	99.2
13C5-PFPeA	5.000	5.081	1.6	101.6
13C6-PFDA	1.250	1.152	-7.8	92.2
13C7-PFUnDA	1.250	1.164	-6.9	93.1
13C8-FOSA	2.500	2.320	-7.2	92.8
13C8-PFOA	2.500	2.506	0.2	100.2
13C8-PFOS	2.500	2.422	-3.1	96.9
13C9-PFNA	1.250	1.227	-1.9	98.1
4:2FTS	20.000	24.493	22.5	122.5
6:2FTS	20.000	22.604	13.0	113.0
8:2FTS	20.000	18.734	-6.3	93.7
d3-MeFOSAA	5.000	5.019	0.4	100.4
EtFOSAA	20.000	24.583	22.9	122.9
FOSA	20.000	24.500	22.5	122.5
MeFOSAA	20.000	22.331	11.7	111.7
PFBA	20.000	23.050	15.3	115.3
PFBS	20.000	21.902	9.5	109.5
PFDA	20.000	23.778	18.9	118.9
PFDoDA	20.000	20.669	3.3	103.3
PFDS	20.000	23.072	15.4	115.4
PFHpA	20.000	22.545	12.7	112.7
PFHpS	20.000	22.427	12.1	112.1
PFHxA	20.000	24.123	20.6	120.6
PFHxS	20.000	23.278	16.4	116.4
PFNA	20.000	24.988	24.9	124.9
PFNS	20.000	22.493	12.5	112.5
PFOA	20.000	22.438	12.2	112.2
PFOS	20.000	19.541	-2.3	97.7

Initial Calibration Verification

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-ICV169
 Lab FileID: 5Q10951.D

PFPeA	20.000	24.791	24.0	124.0
PFPeS	20.000	23.029	15.1	115.1
PFTeDA	20.000	23.673	18.4	118.4
PFTTrDA	20.000	20.923	4.6	104.6
PFUnDA	20.000	22.235	11.2	111.2
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	23.619	18.1	118.1
13C3-HFPO-DA	10.000	10.185	1.9	101.9
9C1-PF3ONS	20.000	22.135	10.7	110.7
ADONA	20.000	22.485	12.4	112.4
HFPO-DA	20.000	24.029	20.1	120.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	20.959	4.8	104.8
5:3FTCA	20.000	20.049	0.2	100.2
7:3FTCA	20.000	19.531	-2.3	97.7
d3-MeFOSA	2.500	2.460	-1.6	98.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	22.044	10.2	110.2
EtFOSE	100.000	104.934	4.9	104.9
MeFOSA	20.000	20.867	4.3	104.3
MeFOSE	100.000	97.000	-3.0	97.0
PFDoDS	20.000	20.156	0.8	100.8
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.308	6.2	106.2
d7-MeFOSE	25.000	24.220	-3.1	96.9
d9-EtFOSE	25.000	23.994	-4.0	96.0
d5-EtFOSA	2.500	2.362	-5.5	94.5
NFDHA	20.000	23.964	19.8	119.8
PFMBA	20.000	21.523	7.6	107.6
PFMPA	20.000	21.840	9.2	109.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	17.497	-12.5	87.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q10960.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q169A.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q10960
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.468	9.4	109.4
13C2-6:2FTS	5.000	5.447	8.9	108.9
13C2-8:2FTS	5.000	5.676	13.5	113.5
13C2-PFDoDA	1.250	1.235	-1.2	98.8
13C2-PFTeDA	1.250	1.167	-6.6	93.4
13C3-PFBS	2.500	2.244	-10.2	89.8
13C3-PFHxS	2.500	2.476	-1.0	99.0
13C4-PFBA	10.000	9.850	-1.5	98.5
13C4-PFHpA	2.500	2.488	-0.5	99.5
13C5-PFHxA	2.500	2.470	-1.2	98.8
13C5-PFPeA	5.000	4.292	-14.2	85.8
13C6-PFDA	1.250	1.244	-0.5	99.5
13C7-PFUnDA	1.250	1.242	-0.6	99.4
13C8-FOSA	2.500	2.400	-4.0	96.0
13C8-PFOA	2.500	2.498	-0.1	99.9
13C8-PFOS	2.500	2.497	-0.1	99.9
13C9-PFNA	1.250	1.341	7.3	107.3
4:2FTS	0.750	0.892	18.9	118.9
6:2FTS	0.760	0.882	16.1	116.1
8:2FTS	0.768	0.755	-1.7	98.3
d3-MeFOSAA	5.000	5.019	0.4	100.4
EtFOSAA	0.200	0.259	29.6	129.6
FOSA	0.200	0.228	14.0	114.0
MeFOSAA	0.200	0.251	25.7	125.7
PFBA	0.800	0.949	18.6	118.6
PFBS	0.177	0.213	20.6	120.6
PFDA	0.200	0.241	20.3	120.3
PFDoDA	0.200	0.223	11.4	111.4
PFDS	0.193	0.178	-7.9	92.1
PFHpA	0.200	0.223	11.4	111.4
PFHpS	0.191	0.222	16.5	116.5
PFHxA	0.200	0.230	15.1	115.1
PFHxS	0.183	0.190	3.8	103.8
PFNA	0.200	0.221	10.5	110.5
PFNS	0.192	0.193	0.6	100.6
PFOA	0.200	0.216	8.1	108.1
PFOS	0.186	0.208	11.9	111.9

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q10960.D

PFPeA	0.400	0.465	16.4	116.4
PFPeS	0.188	0.244	29.8	129.8
PFTeDA	0.200	0.252	26.2	126.2
PFTTrDA	0.200	0.225	12.5	112.5
PFUnDA	0.200	0.236	18.2	118.2
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	0.756	0.805	6.5	106.5
13C3-HFPO-DA	10.000	10.053	0.5	100.5
9C1-PF3ONS	0.748	0.818	9.3	109.3
ADONA	0.756	0.799	5.7	105.7
HFPO-DA	0.800	0.929	16.1	116.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.957	-4.1	95.9
5:3FTCA	4.992	4.823	-3.4	96.6
7:3FTCA	4.992	5.286	5.9	105.9
d3-MeFOSA	2.500	2.373	-5.1	94.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.234	17.2	117.2
EtFOSE	2.000	2.398	19.9	119.9
MeFOSA	0.200	0.222	11.2	111.2
MeFOSE	2.000	2.310	15.5	115.5
PFDODS	0.194	0.239	23.4	123.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.218	4.4	104.4
d7-MeFOSE	25.000	24.032	-3.9	96.1
d9-EtFOSE	25.000	23.819	-4.7	95.3
d5-EtFOSA	2.500	2.342	-6.3	93.7
NFDHA	0.400	0.479	19.9	119.9
PFMBA	0.400	0.455	13.8	113.8
PFMPA	0.400	0.517	29.2	129.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.386	8.5	108.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q10972.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q169A.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q10972
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.759	15.2	115.2
13C2-6:2FTS	5.000	5.836	16.7	116.7
13C2-8:2FTS	5.000	5.660	13.2	113.2
13C2-PFDoDA	1.250	1.232	-1.4	98.6
13C2-PFTeDA	1.250	1.239	-0.8	99.2
13C3-PFBS	2.500	2.272	-9.1	90.9
13C3-PFHxS	2.500	2.551	2.0	102.0
13C4-PFBA	10.000	10.014	0.1	100.1
13C4-PFHpA	2.500	2.554	2.2	102.2
13C5-PFHxA	2.500	2.530	1.2	101.2
13C5-PFPeA	5.000	4.252	-15.0	85.0
13C6-PFDA	1.250	1.252	0.2	100.2
13C7-PFUnDA	1.250	1.212	-3.0	97.0
13C8-FOSA	2.500	2.418	-3.3	96.7
13C8-PFOA	2.500	2.479	-0.9	99.1
13C8-PFOS	2.500	2.499	0.0	100.0
13C9-PFNA	1.250	1.224	-2.1	97.9
4:2FTS	9.375	8.887	-5.2	94.8
6:2FTS	9.500	8.947	-5.8	94.2
8:2FTS	9.600	7.430	-22.6	77.4
d3-MeFOSAA	5.000	4.890	-2.2	97.8
EtFOSAA	2.500	2.532	1.3	101.3
FOSA	2.500	2.350	-6.0	94.0
MeFOSAA	2.500	2.486	-0.6	99.4
PFBA	10.000	9.749	-2.5	97.5
PFBS	2.218	2.207	-0.5	99.5
PFDA	2.500	2.242	-10.3	89.7
PFDoDA	2.500	2.307	-7.7	92.3
PFDS	2.413	2.222	-7.9	92.1
PFHpA	2.500	2.330	-6.8	93.2
PFHpS	2.383	2.140	-10.2	89.8
PFHxA	2.500	2.343	-6.3	93.7
PFHxS	2.285	2.142	-6.2	93.8
PFNA	2.500	2.347	-6.1	93.9
PFNS	2.405	2.185	-9.1	90.9
PFOA	2.500	2.269	-9.3	90.7
PFOS	2.320	2.099	-9.5	90.5

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q10972.D

PFPeA	5.000	4.822	-3.6	96.4
PFPeS	2.353	2.273	-3.4	96.6
PFTeDA	2.500	2.309	-7.6	92.4
PFTTrDA	2.500	2.382	-4.7	95.3
PFUnDA	2.500	2.305	-7.8	92.2
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	9.450	8.555	-9.5	90.5
13C3-HFPO-DA	10.000	10.100	1.0	101.0
9C1-PF3ONS	9.350	8.396	-10.2	89.8
ADONA	9.450	8.608	-8.9	91.1
HFPO-DA	10.000	10.053	0.5	100.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	10.359	-17.0	83.0
5:3FTCA	62.400	51.842	-16.9	83.1
7:3FTCA	62.400	50.732	-18.7	81.3
d3-MeFOSA	2.500	2.448	-2.1	97.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.316	-7.4	92.6
EtFOSE	25.000	24.262	-3.0	97.0
MeFOSA	2.500	2.211	-11.5	88.5
MeFOSE	25.000	23.939	-4.2	95.8
PFDoDS	2.425	2.256	-7.0	93.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.262	5.2	105.2
d7-MeFOSE	25.000	24.534	-1.9	98.1
d9-EtFOSE	25.000	23.918	-4.3	95.7
d5-EtFOSA	2.500	2.467	-1.3	98.7
NFDHA	5.000	4.434	-11.3	88.7
PFMBA	5.000	4.638	-7.2	92.8
PFMPA	5.000	4.863	-2.7	97.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	3.792	-14.8	85.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q10990.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q169A.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q10990
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.282	25.6	125.6
13C2-6:2FTS	5.000	5.747	14.9	114.9
13C2-8:2FTS	5.000	5.766	15.3	115.3
13C2-PFDoDA	1.250	1.302	4.2	104.2
13C2-PFTeDA	1.250	1.218	-2.6	97.4
13C3-PFBS	2.500	2.277	-8.9	91.1
13C3-PFHxS	2.500	2.517	0.7	100.7
13C4-PFBA	10.000	9.774	-2.3	97.7
13C4-PFHpA	2.500	2.557	2.3	102.3
13C5-PFHxA	2.500	2.534	1.3	101.3
13C5-PFPeA	5.000	4.418	-11.6	88.4
13C6-PFDA	1.250	1.260	0.8	100.8
13C7-PFUnDA	1.250	1.266	1.3	101.3
13C8-FOSA	2.500	2.559	2.4	102.4
13C8-PFOA	2.500	2.460	-1.6	98.4
13C8-PFOS	2.500	2.619	4.8	104.8
13C9-PFNA	1.250	1.214	-2.9	97.1
4:2FTS	0.750	0.830	10.6	110.6
6:2FTS	0.760	0.930	22.4	122.4
8:2FTS	0.768	0.767	-0.2	99.8
d3-MeFOSAA	5.000	5.047	0.9	100.9
EtFOSAA	0.200	0.236	17.8	117.8
FOSA	0.200	0.230	15.0	115.0
MeFOSAA	0.200	0.244	22.0	122.0
PFBA	0.800	0.954	19.3	119.3
PFBS	0.177	0.186	5.1	105.1
PFDA	0.200	0.221	10.7	110.7
PFDoDA	0.200	0.252	26.2	126.2
PFDS	0.193	0.213	10.3	110.3
PFHpA	0.200	0.213	6.5	106.5
PFHpS	0.191	0.218	14.2	114.2
PFHxA	0.200	0.230	15.2	115.2
PFHxS	0.183	0.219	19.6	119.6
PFNA	0.200	0.215	7.4	107.4
PFNS	0.192	0.242	26.1	126.1
PFOA	0.200	0.258	29.1	129.1
PFOS	0.186	0.200	7.7	107.7

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q10990.D

PFPeA	0.400	0.476	19.0	119.0
PFPeS	0.188	0.202	7.3	107.3
PFTeDA	0.200	0.245	22.3	122.3
PFTTrDA	0.200	0.221	10.4	110.4
PFUnDA	0.200	0.179	-10.4	89.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.756	0.744	-1.5	98.5
13C3-HFPO-DA	10.000	10.518	5.2	105.2
9C1-PF3ONS	0.748	0.761	1.8	101.8
ADONA	0.756	0.807	6.7	106.7
HFPO-DA	0.800	0.968	21.0	121.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.897	-10.1	89.9
5:3FTCA	4.992	4.863	-2.6	97.4
7:3FTCA	4.992	5.184	3.8	103.8
d3-MeFOSA	2.500	2.504	0.2	100.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.231	15.6	115.6
EtFOSE	2.000	2.263	13.1	113.1
MeFOSA	0.200	0.262	# 31.0	131.0
MeFOSE	2.000	2.281	14.0	114.0
PFDODS	0.194	0.225	16.2	116.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.944	-1.1	98.9
d7-MeFOSE	25.000	25.111	0.4	100.4
d9-EtFOSE	25.000	25.518	2.1	102.1
d5-EtFOSA	2.500	2.620	4.8	104.8
NFDHA	0.400	0.405	1.3	101.3
PFMBA	0.400	0.433	8.3	108.3
PFMPA	0.400	0.429	7.3	107.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.338	-4.9	95.1

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q11002.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q169A.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q11002
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.285	5.7	105.7
13C2-6:2FTS	5.000	5.544	10.9	110.9
13C2-8:2FTS	5.000	5.411	8.2	108.2
13C2-PFDoDA	1.250	1.167	-6.6	93.4
13C2-PFTeDA	1.250	1.183	-5.4	94.6
13C3-PFBS	2.500	2.005	-19.8	80.2
13C3-PFHxS	2.500	2.602	4.1	104.1
13C4-PFBA	10.000	10.226	2.3	102.3
13C4-PFHpA	2.500	2.477	-0.9	99.1
13C5-PFHxA	2.500	2.511	0.4	100.4
13C5-PFPeA	5.000	4.155	-16.9	83.1
13C6-PFDA	1.250	1.220	-2.4	97.6
13C7-PFUnDA	1.250	1.167	-6.7	93.3
13C8-FOSA	2.500	2.517	0.7	100.7
13C8-PFOA	2.500	2.450	-2.0	98.0
13C8-PFOS	2.500	2.656	6.3	106.3
13C9-PFNA	1.250	1.261	0.9	100.9
4:2FTS	9.375	9.383	0.1	100.1
6:2FTS	9.500	8.839	-7.0	93.0
8:2FTS	9.600	7.536	-21.5	78.5
d3-MeFOSAA	5.000	5.200	4.0	104.0
EtFOSAA	2.500	2.611	4.5	104.5
FOSA	2.500	2.404	-3.8	96.2
MeFOSAA	2.500	2.303	-7.9	92.1
PFBA	10.000	9.683	-3.2	96.8
PFBS	2.218	2.178	-1.8	98.2
PFDA	2.500	2.278	-8.9	91.1
PFDoDA	2.500	2.359	-5.6	94.4
PFDS	2.413	2.143	-11.2	88.8
PFHpA	2.500	2.306	-7.8	92.2
PFHpS	2.383	2.088	-12.4	87.6
PFHxA	2.500	2.310	-7.6	92.4
PFHxS	2.285	2.036	-10.9	89.1
PFNA	2.500	2.273	-9.1	90.9
PFNS	2.405	2.117	-12.0	88.0
PFOA	2.500	2.257	-9.7	90.3
PFOS	2.320	2.137	-7.9	92.1

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q169-CC169
 Lab FileID: 5Q11002.D

PFPeA	5.000	4.832	-3.4	96.6
PFPeS	2.353	1.948	-17.2	82.8
PFTeDA	2.500	2.346	-6.1	93.9
PFTTrDA	2.500	2.305	-7.8	92.2
PFUnDA	2.500	2.420	-3.2	96.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	9.450	7.742	-18.1	81.9
13C3-HFPO-DA	10.000	10.556	5.6	105.6
9C1-PF3ONS	9.350	7.775	-16.8	83.2
ADONA	9.450	8.306	-12.1	87.9
HFPO-DA	10.000	10.099	1.0	101.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	13.171	5.5	105.5
5:3FTCA	62.400	50.313	-19.4	80.6
7:3FTCA	62.400	50.120	-19.7	80.3
d3-MeFOSA	2.500	2.456	-1.8	98.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.346	-6.2	93.8
EtFOSE	25.000	24.453	-2.2	97.8
MeFOSA	2.500	2.389	-4.5	95.5
MeFOSE	25.000	23.298	-6.8	93.2
PFDoDS	2.425	2.227	-8.2	91.8
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.659	-6.8	93.2
d7-MeFOSE	25.000	25.529	2.1	102.1
d9-EtFOSE	25.000	24.724	-1.1	98.9
d5-EtFOSA	2.500	2.414	-3.4	96.6
NFDHA	5.000	4.845	-3.1	96.9
PFMBA	5.000	4.757	-4.9	95.1
PFMPA	5.000	4.376	-12.5	87.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	3.222	-27.6	72.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11024.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q170.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q11024
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	3.773	-24.5	75.5
13C2-6:2FTS	5.000	4.497	-10.1	89.9
13C2-8:2FTS	5.000	4.679	-6.4	93.6
13C2-PFDoDA	1.250	1.217	-2.6	97.4
13C2-PFTeDA	1.250	1.187	-5.1	94.9
13C3-PFBS	2.500	2.187	-12.5	87.5
13C3-PFHxS	2.500	2.477	-0.9	99.1
13C4-PFBA	10.000	10.566	5.7	105.7
13C4-PFHpA	2.500	2.551	2.0	102.0
13C5-PFHxA	2.500	2.474	-1.0	99.0
13C5-PFPeA	5.000	4.235	-15.3	84.7
13C6-PFDA	1.250	1.272	1.8	101.8
13C7-PFUnDA	1.250	1.249	-0.1	99.9
13C8-FOSA	2.500	2.556	2.2	102.2
13C8-PFOA	2.500	2.472	-1.1	98.9
13C8-PFOS	2.500	2.682	7.3	107.3
13C9-PFNA	1.250	1.250	0.0	100.0
4:2FTS	9.375	9.876	5.3	105.3
6:2FTS	9.500	8.512	-10.4	89.6
8:2FTS	9.600	7.080	-26.2	73.8
d3-MeFOSAA	5.000	5.261	5.2	105.2
EtFOSAA	2.500	2.508	0.3	100.3
FOSA	2.500	2.337	-6.5	93.5
MeFOSAA	2.500	2.538	1.5	101.5
PFBA	10.000	9.391	-6.1	93.9
PFBS	2.218	2.157	-2.7	97.3
PFDA	2.500	2.321	-7.2	92.8
PFDoDA	2.500	2.333	-6.7	93.3
PFDS	2.413	2.231	-7.6	92.4
PFHpA	2.500	2.269	-9.3	90.7
PFHpS	2.383	2.091	-12.2	87.8
PFHxA	2.500	2.355	-5.8	94.2
PFHxS	2.285	2.167	-5.2	94.8
PFNA	2.500	2.313	-7.5	92.5
PFNS	2.405	2.233	-7.2	92.8
PFOA	2.500	2.349	-6.1	93.9
PFOS	2.320	2.169	-6.5	93.5

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11024.D

PFPeA	5.000	4.766	-4.7	95.3
PFPeS	2.353	2.272	-3.5	96.5
PFTeDA	2.500	2.345	-6.2	93.8
PFTTrDA	2.500	2.266	-9.4	90.6
PFUnDA	2.500	2.375	-5.0	95.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	9.450	7.918	-16.2	83.8
13C3-HFPO-DA	10.000	10.699	7.0	107.0
9C1-PF3ONS	9.350	7.986	-14.6	85.4
ADONA	9.450	8.365	-11.5	88.5
HFPO-DA	10.000	9.881	-1.2	98.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.648	1.3	101.3
5:3FTCA	62.400	51.334	-17.7	82.3
7:3FTCA	62.400	50.193	-19.6	80.4
d3-MeFOSA	2.500	2.526	1.0	101.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.144	-14.2	85.8
EtFOSE	25.000	24.895	-0.4	99.6
MeFOSA	2.500	2.442	-2.3	97.7
MeFOSE	25.000	23.323	-6.7	93.3
PFDODS	2.425	2.249	-7.3	92.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.660	-6.8	93.2
d7-MeFOSE	25.000	25.711	2.8	102.8
d9-EtFOSE	25.000	25.174	0.7	100.7
d5-EtFOSA	2.500	2.692	7.7	107.7
NFDHA	5.000	4.959	-0.8	99.2
PFMBA	5.000	4.455	-10.9	89.1
PFMPA	5.000	4.474	-10.5	89.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	3.546	-20.3	79.7

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11025.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q170.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q11025
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.304	-13.9	86.1
13C2-6:2FTS	5.000	4.266	-14.7	85.3
13C2-8:2FTS	5.000	4.235	-15.3	84.7
13C2-PFDoDA	1.250	1.229	-1.7	98.3
13C2-PFTeDA	1.250	1.182	-5.4	94.6
13C3-PFBS	2.500	2.236	-10.5	89.5
13C3-PFHxS	2.500	2.488	-0.5	99.5
13C4-PFBA	10.000	9.937	-0.6	99.4
13C4-PFHpA	2.500	2.515	0.6	100.6
13C5-PFHxA	2.500	2.504	0.2	100.2
13C5-PFPeA	5.000	4.138	-17.2	82.8
13C6-PFDA	1.250	1.347	7.8	107.8
13C7-PFUnDA	1.250	1.282	2.6	102.6
13C8-FOSA	2.500	2.534	1.4	101.4
13C8-PFOA	2.500	2.496	-0.1	99.9
13C8-PFOS	2.500	2.668	6.7	106.7
13C9-PFNA	1.250	1.323	5.8	105.8
4:2FTS	0.750	0.945	26.0	126.0
6:2FTS	0.760	0.915	20.3	120.3
8:2FTS	0.768	0.816	6.2	106.2
d3-MeFOSAA	5.000	5.165	3.3	103.3
EtFOSAA	0.200	0.285	# 42.7	142.7
FOSA	0.200	0.224	12.2	112.2
MeFOSAA	0.200	0.195	-2.7	97.3
PFBA	0.800	0.926	15.7	115.7
PFBS	0.177	0.203	14.6	114.6
PFDA	0.200	0.205	2.3	102.3
PFDoDA	0.200	0.218	9.0	109.0
PFDS	0.193	0.191	-1.3	98.7
PFHpA	0.200	0.231	15.5	115.5
PFHpS	0.191	0.206	7.9	107.9
PFHxA	0.200	0.230	15.2	115.2
PFHxS	0.183	0.194	6.0	106.0
PFNA	0.200	0.231	15.6	115.6
PFNS	0.192	0.211	9.7	109.7
PFOA	0.200	0.238	19.1	119.1
PFOS	0.186	0.175	-5.8	94.2

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11025.D

PFPeA	0.400	0.502	25.5	125.5
PFPeS	0.188	0.159	-15.6	84.4
PFTeDA	0.200	0.254	27.1	127.1
PFTTrDA	0.200	0.238	18.8	118.8
PFUnDA	0.200	0.231	15.6	115.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.756	0.790	4.5	104.5
13C3-HFPO-DA	10.000	10.670	6.7	106.7
9C1-PF3ONS	0.748	0.788	5.3	105.3
ADONA	0.756	0.776	2.7	102.7
HFPO-DA	0.800	0.919	14.9	114.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	1.368	# 37.0	137.0
5:3FTCA	4.992	4.828	-3.3	96.7
7:3FTCA	4.992	5.402	8.2	108.2
d3-MeFOSA	2.500	2.659	6.4	106.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.231	15.7	115.7
EtFOSE	2.000	2.312	15.6	115.6
MeFOSA	0.200	0.211	5.3	105.3
MeFOSE	2.000	2.276	13.8	113.8
PFDODS	0.194	0.212	9.5	109.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.393	-12.1	87.9
d7-MeFOSE	25.000	25.507	2.0	102.0
d9-EtFOSE	25.000	25.055	0.2	100.2
d5-EtFOSA	2.500	2.498	-0.1	99.9
NFDHA	0.400	0.404	0.9	100.9
PFMBA	0.400	0.458	14.6	114.6
PFMPA	0.400	0.462	15.6	115.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.367	3.2	103.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11033.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q170.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q11033
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.682	-6.4	93.6
13C2-6:2FTS	5.000	4.604	-7.9	92.1
13C2-8:2FTS	5.000	4.704	-5.9	94.1
13C2-PFDoDA	1.250	1.275	2.0	102.0
13C2-PFTeDA	1.250	1.244	-0.4	99.6
13C3-PFBS	2.500	2.255	-9.8	90.2
13C3-PFHxS	2.500	2.521	0.9	100.9
13C4-PFBA	10.000	10.212	2.1	102.1
13C4-PFHpA	2.500	2.499	-0.1	99.9
13C5-PFHxA	2.500	2.517	0.7	100.7
13C5-PFPeA	5.000	4.226	-15.5	84.5
13C6-PFDA	1.250	1.292	3.3	103.3
13C7-PFUnDA	1.250	1.273	1.8	101.8
13C8-FOSA	2.500	2.444	-2.2	97.8
13C8-PFOA	2.500	2.429	-2.9	97.1
13C8-PFOS	2.500	2.601	4.1	104.1
13C9-PFNA	1.250	1.276	2.1	102.1
4:2FTS	9.375	9.384	0.1	100.1
6:2FTS	9.500	9.076	-4.5	95.5
8:2FTS	9.600	7.476	-22.1	77.9
d3-MeFOSAA	5.000	5.097	1.9	101.9
EtFOSAA	2.500	2.510	0.4	100.4
FOSA	2.500	2.333	-6.7	93.3
MeFOSAA	2.500	2.285	-8.6	91.4
PFBA	10.000	9.810	-1.9	98.1
PFBS	2.218	2.134	-3.8	96.2
PFDA	2.500	2.246	-10.2	89.8
PFDoDA	2.500	2.268	-9.3	90.7
PFDS	2.413	2.186	-9.4	90.6
PFHpA	2.500	2.298	-8.1	91.9
PFHpS	2.383	2.060	-13.6	86.4
PFHxA	2.500	2.336	-6.6	93.4
PFHxS	2.285	1.993	-12.8	87.2
PFNA	2.500	2.183	-12.7	87.3
PFNS	2.405	2.158	-10.3	89.7
PFOA	2.500	2.305	-7.8	92.2
PFOS	2.320	2.141	-7.7	92.3

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11033.D

PFPeA	5.000	4.654	-6.9	93.1
PFPeS	2.353	2.122	-9.8	90.2
PFTeDA	2.500	2.220	-11.2	88.8
PFTrDA	2.500	2.228	-10.9	89.1
PFUnDA	2.500	2.353	-5.9	94.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	9.450	8.213	-13.1	86.9
13C3-HFPO-DA	10.000	10.264	2.6	102.6
9C1-PF3ONS	9.350	8.388	-10.3	89.7
ADONA	9.450	8.620	-8.8	91.2
HFPO-DA	10.000	10.024	0.2	100.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.700	1.8	101.8
5:3FTCA	62.400	51.070	-18.2	81.8
7:3FTCA	62.400	48.785	-21.8	78.2
d3-MeFOSA	2.500	2.451	-2.0	98.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.301	-8.0	92.0
EtFOSE	25.000	24.209	-3.2	96.8
MeFOSA	2.500	2.206	-11.8	88.2
MeFOSE	25.000	23.197	-7.2	92.8
PFDoDS	2.425	2.193	-9.5	90.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.328	-13.4	86.6
d7-MeFOSE	25.000	25.425	1.7	101.7
d9-EtFOSE	25.000	24.687	-1.3	98.7
d5-EtFOSA	2.500	2.425	-3.0	97.0
NFDHA	5.000	5.060	1.2	101.2
PFMBA	5.000	4.695	-6.1	93.9
PFMPA	5.000	4.674	-6.5	93.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	3.623	-18.6	81.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11034.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\021623_1633_S5Q169\s6q170.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\021623_1633_S5Q169\5Q10941.d
 2:D:\MassHunter\Data\021623_1633_S5Q169\5Q10942.d
 3:D:\MassHunter\Data\021623_1633_S5Q169\5Q10943.d
 4:D:\MassHunter\Data\021623_1633_S5Q169\5Q10944.d
 5:D:\MassHunter\Data\021623_1633_S5Q169\5Q10945.d
 6:D:\MassHunter\Data\021623_1633_S5Q169\5Q10946.d
 7:D:\MassHunter\Data\021623_1633_S5Q169\5Q10947.d
 8:D:\MassHunter\Data\021623_1633_S5Q169\5Q10948.d

Data File: 5Q11034
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.769	-4.6	95.4
13C2-6:2FTS	5.000	5.217	4.3	104.3
13C2-8:2FTS	5.000	5.555	11.1	111.1
13C2-PFDoDA	1.250	1.280	2.4	102.4
13C2-PFTeDA	1.250	1.226	-1.9	98.1
13C3-PFBS	2.500	2.310	-7.6	92.4
13C3-PFHxS	2.500	2.554	2.2	102.2
13C4-PFBA	10.000	9.908	-0.9	99.1
13C4-PFHpA	2.500	2.482	-0.7	99.3
13C5-PFHxA	2.500	2.539	1.5	101.5
13C5-PFPeA	5.000	4.207	-15.9	84.1
13C6-PFDA	1.250	1.311	4.9	104.9
13C7-PFUnDA	1.250	1.337	6.9	106.9
13C8-FOSA	2.500	2.402	-3.9	96.1
13C8-PFOA	2.500	2.572	2.9	102.9
13C8-PFOS	2.500	2.400	-4.0	96.0
13C9-PFNA	1.250	1.237	-1.1	98.9
4:2FTS	0.750	1.007	# 34.2	134.2
6:2FTS	0.760	0.903	18.8	118.8
8:2FTS	0.768	0.616	-19.8	80.2
d3-MeFOSAA	5.000	5.105	2.1	102.1
EtFOSAA	0.200	0.240	19.8	119.8
FOSA	0.200	0.244	22.2	122.2
MeFOSAA	0.200	0.211	5.4	105.4
PFBA	0.800	0.890	11.3	111.3
PFBS	0.177	0.229	29.2	129.2
PFDA	0.200	0.208	4.0	104.0
PFDoDA	0.200	0.233	16.3	116.3
PFDS	0.193	0.253	# 31.1	131.1
PFHpA	0.200	0.217	8.4	108.4
PFHpS	0.191	0.220	15.4	115.4
PFHxA	0.200	0.233	16.6	116.6
PFHxS	0.183	0.227	23.8	123.8
PFNA	0.200	0.225	12.7	112.7
PFNS	0.192	0.215	11.9	111.9
PFOA	0.200	0.226	13.2	113.2
PFOS	0.186	0.215	15.4	115.4

Continuing Calibration Summary

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S5Q170-CC169
 Lab FileID: 5Q11034.D

PFPeA	0.400	0.493	23.4	123.4
PFPeS	0.188	0.189	0.7	100.7
PFTeDA	0.200	0.252	25.9	125.9
PFTTrDA	0.200	0.226	13.0	113.0
PFUnDA	0.200	0.192	-4.2	95.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.756	0.789	4.4	104.4
13C3-HFPO-DA	10.000	10.459	4.6	104.6
9C1-PF3ONS	0.748	0.770	2.9	102.9
ADONA	0.756	0.810	7.1	107.1
HFPO-DA	0.800	0.931	16.4	116.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	1.241	24.3	124.3
5:3FTCA	4.992	4.738	-5.1	94.9
7:3FTCA	4.992	5.307	6.3	106.3
d3-MeFOSA	2.500	2.458	-1.7	98.3
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.228	14.2	114.2
EtFOSE	2.000	2.346	17.3	117.3
MeFOSA	0.200	0.220	10.0	110.0
MeFOSE	2.000	2.292	14.6	114.6
PFDoDS	0.194	0.221	14.2	114.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.207	-15.9	84.1
d7-MeFOSE	25.000	24.833	-0.7	99.3
d9-EtFOSE	25.000	24.454	-2.2	97.8
d5-EtFOSA	2.500	2.511	0.4	100.4
NFDHA	0.400	0.424	6.0	106.0
PFMBA	0.400	0.475	18.8	118.8
PFMPA	0.400	0.457	14.3	114.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.363	1.9	101.9

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S5Q169	Method: EPA DRAFT 1633	Instrument ID: GCMS5Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S5Q169-RT	5Q10938.D	02/16/23 19:49	n/a	Retention Time Marker
S5Q169-RT	5Q10939.D	02/16/23 20:03	n/a	Retention Time Marker
S5Q169-IC169	5Q10940.D	02/16/23 20:17	n/a	Mass Calibration Verification
S5Q169-IC169	5Q10941.D	02/16/23 20:31	n/a	Initial cal 1
S5Q169-IC169	5Q10942.D	02/16/23 20:45	n/a	Initial cal 2
S5Q169-IC169	5Q10943.D	02/16/23 20:59	n/a	Initial cal 3
S5Q169-ICC169	5Q10944.D	02/16/23 21:13	n/a	Initial cal 4
S5Q169-IC169	5Q10945.D	02/16/23 21:27	n/a	Initial cal 5
S5Q169-IC169	5Q10946.D	02/16/23 21:41	n/a	Initial cal 6
S5Q169-IC169	5Q10947.D	02/16/23 21:56	n/a	Initial cal 7
S5Q169-IC169	5Q10948.D	02/16/23 22:10	n/a	Initial cal 8
S5Q169-IBLK	5Q10949.D	02/16/23 22:24	n/a	Instrument Blank
S5Q169-IBLK	5Q10949.D	02/16/23 22:24	n/a	Instrument Blank
S5Q169-ICV169	5Q10950.D	02/16/23 22:38	n/a	Initial cal verification 4
S5Q169-ICV169	5Q10951.D	02/16/23 22:52	n/a	Initial cal verification 4
S5Q169-CC169	5Q10959.D	02/17/23 00:45	n/a	Continuing cal 4
S5Q169-CC169	5Q10960.D	02/17/23 00:59	n/a	Continuing cal 1.0LL
S5Q169-ICCB	5Q10961.D	02/17/23 01:13	n/a	Continuing Calibration Blank
OP95307-BS	5Q10962.D	02/17/23 01:27	OP95307	Blank Spike
OP95307-LLBS	5Q10963.D	02/17/23 01:41	OP95307	Blank Spike
OP95307-MB	5Q10964.D	02/17/23 01:55	OP95307	Method Blank
FC2144-1	5Q10965.D	02/17/23 02:09	OP95307	(used for QC only; not part of job FC2684)
OP95307-MS	5Q10966.D	02/17/23 02:23	OP95307	Matrix Spike
FC2144-2	5Q10967.D	02/17/23 02:37	OP95307	(used for QC only; not part of job FC2684)
OP95307-DUP	5Q10968.D	02/17/23 02:51	OP95307	Duplicate
ZZZZZZ	5Q10969.D	02/17/23 03:06	OP95307	(unrelated sample)
ZZZZZZ	5Q10970.D	02/17/23 03:20	OP95307	(unrelated sample)
ZZZZZZ	5Q10971.D	02/17/23 03:34	OP95307	(unrelated sample)
S5Q169-CC169	5Q10972.D	02/17/23 03:48	n/a	Continuing cal 4
S5Q169-ICCB	5Q10973.D	02/17/23 04:02	n/a	Continuing Calibration Blank
ZZZZZZ	5Q10974.D	02/17/23 04:16	OP95307	(unrelated sample)
ZZZZZZ	5Q10975.D	02/17/23 04:30	OP95307	(unrelated sample)
ZZZZZZ	5Q10976.D	02/17/23 04:44	OP95307	(unrelated sample)
ZZZZZZ	5Q10977.D	02/17/23 04:58	OP95307	(unrelated sample)
ZZZZZZ	5Q10978.D	02/17/23 05:12	OP95307	(unrelated sample)
ZZZZZZ	5Q10979.D	02/17/23 05:27	OP95307	(unrelated sample)
ZZZZZZ	5Q10980.D	02/17/23 05:41	OP95307	(unrelated sample)
ZZZZZZ	5Q10981.D	02/17/23 05:55	OP95307	(unrelated sample)
ZZZZZZ	5Q10982.D	02/17/23 06:09	OP95307	(unrelated sample)
ZZZZZZ	5Q10983.D	02/17/23 06:23	OP95307	(unrelated sample)
S5Q169-CC169	5Q10984.D	02/17/23 06:37	n/a	Continuing cal 4
S5Q169-ICCB	5Q10985.D	02/17/23 06:51	n/a	Continuing Calibration Blank
ZZZZZZ	5Q10986.D	02/17/23 07:05	OP95307	(unrelated sample)
ZZZZZZ	5Q10987.D	02/17/23 07:19	OP95307	(unrelated sample)
ZZZZZZ	5Q10988.D	02/17/23 07:33	OP95307	(unrelated sample)
S5Q169-CC169	5Q10989.D	02/17/23 07:48	n/a	Continuing cal 4

Run Sequence Report

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S5Q169	Method: EPA DRAFT 1633	Instrument ID: GCMS5Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S5Q169-CC169	5Q10990.D	02/17/23 08:02	n/a	Continuing cal 1.0LL
S5Q169-ICCB	5Q10991.D	02/17/23 08:16	n/a	Continuing Calibration Blank
OP95328-BS	5Q10992.D	02/17/23 08:30	OP95328	Blank Spike
OP95328-LLBS	5Q10993.D	02/17/23 08:44	OP95328	Blank Spike
OP95328-MB	5Q10994.D	02/17/23 08:58	OP95328	Method Blank
ZZZZZZ	5Q10995.D	02/17/23 09:12	OP95328	(unrelated sample)
FC2145-2	5Q10996.D	02/17/23 09:26	OP95328	(used for QC only; not part of job FC2684)
OP95328-MS	5Q10997.D	02/17/23 09:40	OP95328	Matrix Spike
OP95328-MSD	5Q10998.D	02/17/23 09:54	OP95328	Matrix Spike Duplicate
ZZZZZZ	5Q10999.D	02/17/23 10:08	OP95328	(unrelated sample)
ZZZZZZ	5Q11000.D	02/17/23 10:23	OP95328	(unrelated sample)
ZZZZZZ	5Q11001.D	02/17/23 10:37	OP95328	(unrelated sample)
S5Q169-CC169	5Q11002.D	02/17/23 10:51	n/a	Continuing cal 4
S5Q169-ICCB	5Q11003.D	02/17/23 11:05	n/a	Continuing Calibration Blank
ZZZZZZ	5Q11004.D	02/17/23 11:19	OP95328	(unrelated sample)
ZZZZZZ	5Q11005.D	02/17/23 11:33	OP95328	(unrelated sample)
ZZZZZZ	5Q11006.D	02/17/23 11:47	OP95328	(unrelated sample)
ZZZZZZ	5Q11007.D	02/17/23 12:01	OP95328	(unrelated sample)
ZZZZZZ	5Q11008.D	02/17/23 12:15	OP95328	(unrelated sample)
ZZZZZZ	5Q11009.D	02/17/23 12:29	OP95328	(unrelated sample)
ZZZZZZ	5Q11010.D	02/17/23 12:43	OP95328	(unrelated sample)
ZZZZZZ	5Q11011.D	02/17/23 12:58	OP95328	(unrelated sample)
ZZZZZZ	5Q11012.D	02/17/23 13:12	OP95328	(unrelated sample)
ZZZZZZ	5Q11013.D	02/17/23 13:26	OP95328	(unrelated sample)
S5Q169-CC169	5Q11014.D	02/17/23 13:40	n/a	Continuing cal 4
S5Q169-ICCB	5Q11015.D	02/17/23 13:54	n/a	Continuing Calibration Blank
ZZZZZZ	5Q11016.D	02/17/23 14:08	OP95328	(unrelated sample)
ZZZZZZ	5Q11017.D	02/17/23 14:22	OP95328	(unrelated sample)
S5Q169-ECC169	5Q11018.D	02/17/23 14:36	n/a	Ending cal 4
S5Q169-ICCB	5Q11019.D	02/17/23 14:50	n/a	Continuing Calibration Blank

Run Sequence Report

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S5Q170	Method: EPA DRAFT 1633	Instrument ID: GCMS5Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S5Q170-RT	5Q11020.D	02/17/23 15:04	n/a	Retention Time Marker
S5Q170-RT	5Q11021.D	02/17/23 15:18	n/a	Retention Time Marker
S5Q170-IBLK	5Q11023.D	02/17/23 15:47	n/a	Instrument Blank
S5Q170-IBLK	5Q11023.D	02/17/23 15:47	n/a	Instrument Blank
S5Q170-CC169	5Q11024.D	02/17/23 16:01	n/a	Continuing cal 4
S5Q170-CC169	5Q11025.D	02/17/23 16:15	n/a	Continuing cal 1.0LL
OP95481-BS	5Q11026.D	02/17/23 16:29	OP95481	Blank Spike
OP95481-LLBS	5Q11027.D	02/17/23 16:43	OP95481	Blank Spike
OP95481-MB	5Q11028.D	02/17/23 16:57	OP95481	Method Blank
FC2684-1	5Q11029.D	02/17/23 17:11	OP95481	AF-RHMW04-WGN01LF-2302W2
OP95481-MS	5Q11030.D	02/17/23 17:25	OP95481	Matrix Spike
FC2684-2	5Q11031.D	02/17/23 17:39	OP95481	AF-RHMW06-WGN01LF-2302W2
OP95481-DUP	5Q11032.D	02/17/23 17:53	OP95481	Duplicate
S5Q170-CC169	5Q11033.D	02/17/23 18:08	n/a	Continuing cal 4
S5Q170-CC169	5Q11034.D	02/17/23 18:22	n/a	Continuing cal 1.0LL
S5Q170-ICCB	5Q11035.D	02/17/23 18:36	n/a	Continuing Calibration Blank
OP95374-BS	5Q11036.D	02/17/23 18:50	OP95374	Blank Spike
OP95374-LLBS	5Q11037.D	02/17/23 19:04	OP95374	Blank Spike
OP95374-MB	5Q11038.D	02/17/23 19:18	OP95374	Method Blank
ZZZZZZ	5Q11039.D	02/17/23 19:32	OP95374	(unrelated sample)
ZZZZZZ	5Q11040.D	02/17/23 19:46	OP95374	(unrelated sample)
ZZZZZZ	5Q11041.D	02/17/23 20:00	OP95374	(unrelated sample)
ZZZZZZ	5Q11042.D	02/17/23 20:14	OP95374	(unrelated sample)
ZZZZZZ	5Q11043.D	02/17/23 20:29	OP95374	(unrelated sample)
ZZZZZZ	5Q11044.D	02/17/23 20:43	OP95374	(unrelated sample)
S5Q170-CC169	5Q11045.D	02/17/23 20:57	n/a	Continuing cal 4
S5Q170-ICCB	5Q11046.D	02/17/23 21:11	n/a	Continuing Calibration Blank
FC2216-7	5Q11047.D	02/17/23 21:25	OP95374	(used for QC only; not part of job FC2684)
OP95374-MS	5Q11048.D	02/17/23 21:39	OP95374	Matrix Spike
OP95374-MSD	5Q11049.D	02/17/23 21:53	OP95374	Matrix Spike Duplicate
ZZZZZZ	5Q11050.D	02/17/23 22:07	OP95374	(unrelated sample)
ZZZZZZ	5Q11051.D	02/17/23 22:21	OP95374	(unrelated sample)
ZZZZZZ	5Q11052.D	02/17/23 22:35	OP95374	(unrelated sample)
ZZZZZZ	5Q11053.D	02/17/23 22:49	OP95374	(unrelated sample)
ZZZZZZ	5Q11054.D	02/17/23 23:04	OP95374	(unrelated sample)
ZZZZZZ	5Q11055.D	02/17/23 23:18	OP95374	(unrelated sample)
ZZZZZZ	5Q11056.D	02/17/23 23:32	OP95374	(unrelated sample)
S5Q170-CC169	5Q11057.D	02/17/23 23:46	n/a	Continuing cal 4
S5Q170-ICCB	5Q11058.D	02/18/23 00:00	n/a	Continuing Calibration Blank
ZZZZZZ	5Q11060.D	02/18/23 00:28	OP95374	(unrelated sample)
ZZZZZZ	5Q11061.D	02/18/23 00:42	OP95374	(unrelated sample)
ZZZZZZ	5Q11062.D	02/18/23 00:56	OP95374	(unrelated sample)
S5Q170-CC169	5Q11063.D	02/18/23 01:10	n/a	Continuing cal 4
S5Q170-CC169	5Q11064.D	02/18/23 01:24	n/a	Continuing cal 1.0LL
S5Q170-ICCB	5Q11065.D	02/18/23 01:38	n/a	Continuing Calibration Blank
OP95331-BS	5Q11066.D	02/18/23 01:53	OP95331	Blank Spike

Run Sequence Report

Job Number: FC2684
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S5Q170	Method: EPA DRAFT 1633	Instrument ID: GCMS5Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
OP95331-BS1	5Q11067.D	02/18/23 02:07	OP95331	Blank Spike
OP95331-BS2	5Q11068.D	02/18/23 02:21	OP95331	Blank Spike
OP95331-BS3	5Q11069.D	02/18/23 02:35	OP95331	Blank Spike
OP95331-BS4	5Q11070.D	02/18/23 02:49	OP95331	Blank Spike
OP95331-LLBS	5Q11071.D	02/18/23 03:03	OP95331	Blank Spike
OP95331-MB	5Q11072.D	02/18/23 03:17	OP95331	Method Blank
FC2386-1	5Q11073.D	02/18/23 03:31	OP95331	(used for QC only; not part of job FC2684)
OP95331-MS	5Q11074.D	02/18/23 03:45	OP95331	Matrix Spike
S5Q170-CC169	5Q11075.D	02/18/23 03:59	n/a	Continuing cal 4
S5Q170-CC169	5Q11076.D	02/18/23 04:13	n/a	Continuing cal 1.0LL
S5Q170-ICCB	5Q11077.D	02/18/23 04:27	n/a	Continuing Calibration Blank
S5Q170-ICCB	5Q11077.D	02/18/23 04:27	n/a	Continuing Calibration Blank
OP95323-BS	5Q11078.D	02/18/23 04:41	OP95323	Blank Spike
OP95323-LLBS	5Q11079.D	02/18/23 04:56	OP95323	Blank Spike
OP95323-MB	5Q11080.D	02/18/23 05:10	OP95323	Method Blank
ZZZZZZ	5Q11081.D	02/18/23 05:24	OP95323	(unrelated sample)
ZZZZZZ	5Q11082.D	02/18/23 05:38	OP95323	(unrelated sample)
S5Q170-ECC169	5Q11083.D	02/18/23 05:52	n/a	Ending cal 4
S5Q170-ICCB	5Q11084.D	02/18/23 06:06	n/a	Continuing Calibration Blank
S5Q170-ICCB	5Q11084.D	02/18/23 06:06	n/a	Continuing Calibration Blank

6.9.2
6

MS Semi-volatiles

Raw Data

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Norman Farmer
 02/22/23 08:09

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11029.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 5:11:43 PM
 Sample Name : fc2684-1
 Vial : P4-A4
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95481,S5Q170,535,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	38343	10.00	µg/L m	0.000
M5-PFPeA	4.137	268.3 -> 223.0	21760	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	24389	2.50	µg/L	-0.025
M4-PFHpA	6.255	367.1 -> 322.0	21931	2.50	µg/L	-0.025
M8-PFOA	6.937	421.1 -> 376.0	25698	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	9383	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	5584	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	5228	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	5295	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	4405	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	5989	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	6185	2.50	µg/L m	-0.025
M3-PFHxS	7.054	402.1 -> 79.9	4891	2.50	µg/L	-0.038
M8-PFOS	8.231	507.1 -> 79.9	5864	2.50	µg/L	-0.025
M2-4:2FTS	4.972	329.1 -> 80.9	371	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	827	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1205	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	6192	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	54025	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	7327	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	19876	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	23895	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	3037	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	2520	2.50	µg/L	0.000
13C4-PFOS	8.231	502.8 -> 79.9	7558	2.50	µg/L	-0.025
13C3-PFBA	2.791	216.0 -> 172.0	22806	5.00	µg/L m	-0.013
18O2-PFHxS	7.052	403.0 -> 83.9	3899	2.50	µg/L	-0.038
13C4-PFOA	6.938	417.1 -> 372.0	36785	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	10717	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	10699	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	30829	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	371	3.91	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 78.2%			
13C2-6:2FTS	6.687	429.1 -> 80.9	827	3.91	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 78.3%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1205	4.07	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.3%			
13C2-PFDoDA	9.016	615.1 -> 570.0	5295	0.79	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 63.4%			
13C2-PFTeDA	9.849	715.2 -> 670.0	4405	0.70	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 56.2%			
13C3-PFBS	5.252	302.1 -> 79.9	6185	2.06	µg/L m	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 82.5%			
13C3-PFHxS	7.054	402.1 -> 79.9	4891	2.19	µg/L	-0.038

7.1.1
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 = 87.8%			
13C4-PFBA	2.799	216.8 -> 171.9	38343	8.91	µg/L	m 0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 89.1%			
13C4-PFHpA	6.255	367.1 -> 322.0	21931	2.14	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.6%			
13C5-PFHxA	5.310	318.0 -> 273.0	24389	2.25	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.1%			
13C5-PFPeA	4.137	268.3 -> 223.0	21760	3.88	µg/L	m -0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 77.7%			
13C6-PFDA	8.042	519.1 -> 474.1	5584	1.01	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.7%			
13C7-PFUnDA	8.548	570.0 -> 525.1	5228	0.86	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.1%			
13C8-FOSA	9.187	506.1 -> 77.8	5989	2.02	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.8%			
13C8-PFOA	6.937	421.1 -> 376.0	25698	2.07	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 82.9%			
13C8-PFOS	8.231	507.1 -> 79.9	5864	1.97	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 78.8%			
13C9-PFNA	7.507	472.1 -> 427.0	9383	1.07	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 85.8%			
d3-MeFOSAA	8.063	573.2 -> 419.0	6192	3.70	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 74.0%			
13C3-HFPO-DA	5.690	286.9 -> 168.9	54025	9.44	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 94.4%			
d3-MeFOSA	10.416	515.0 -> 219.0	2520	1.65	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 66.2%			
d5-EtFOSAA	8.285	589.2 -> 419.0	7327	2.96	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 59.2%			
d7-MeFOSE	10.315	623.2 -> 58.9	19876	14.29	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 57.2%			
d9-EtFOSE	10.623	639.2 -> 58.9	23895	14.02	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 56.1%			
d5-EtFOSA	10.712	531.1 -> 219.0	3037	1.45	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 57.9%			

Target Compounds

QValue

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

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.283	563.1 -> 519.0	0		µg/L	m
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

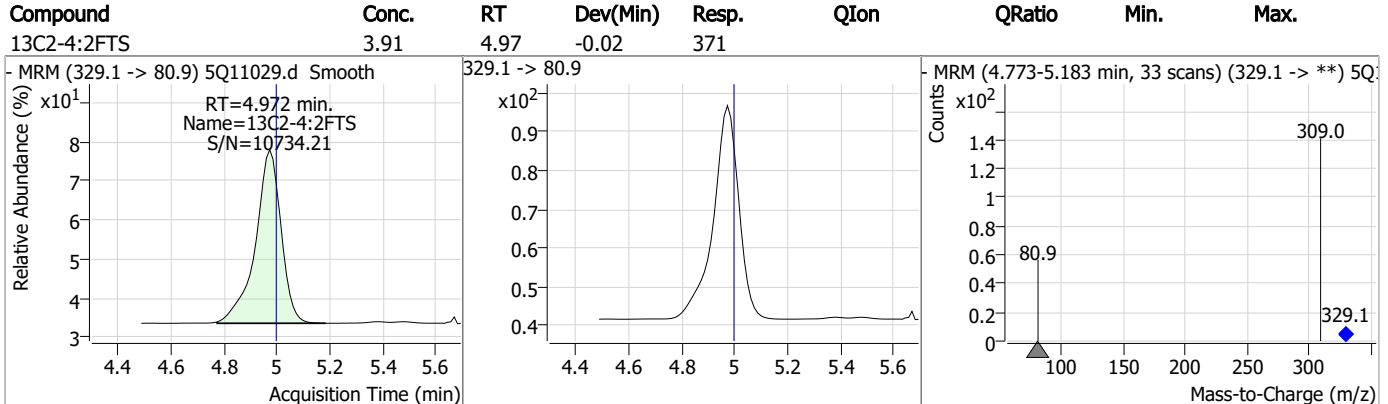
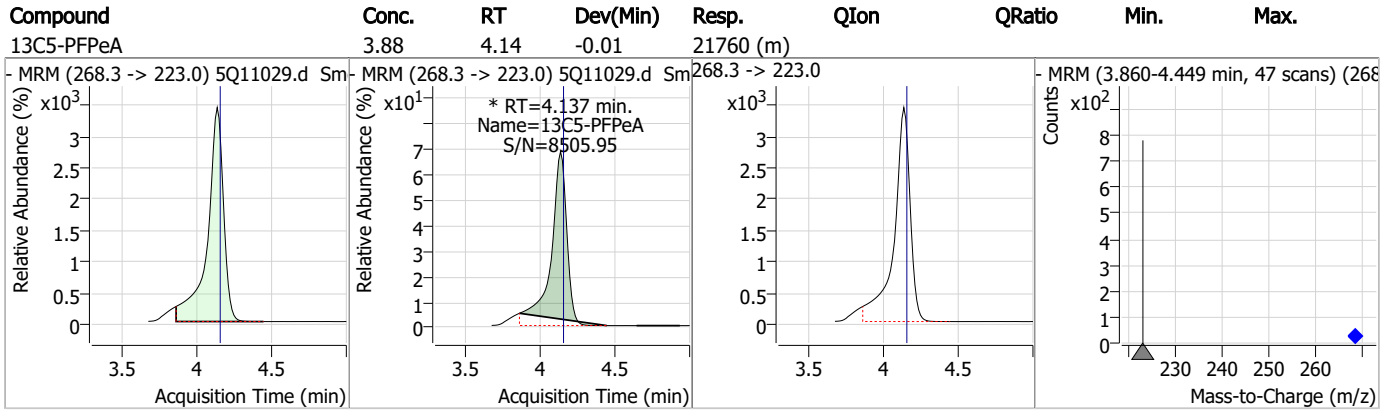
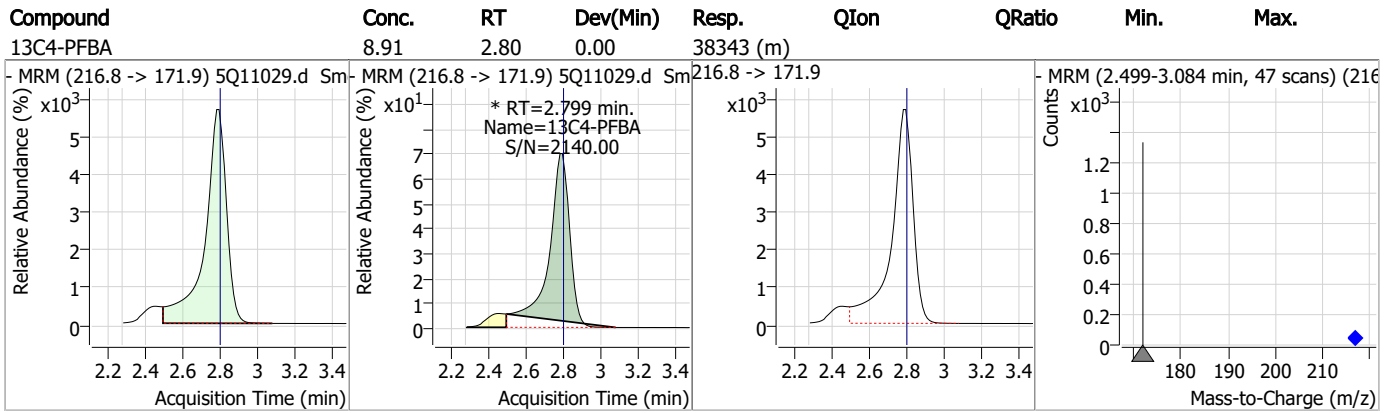
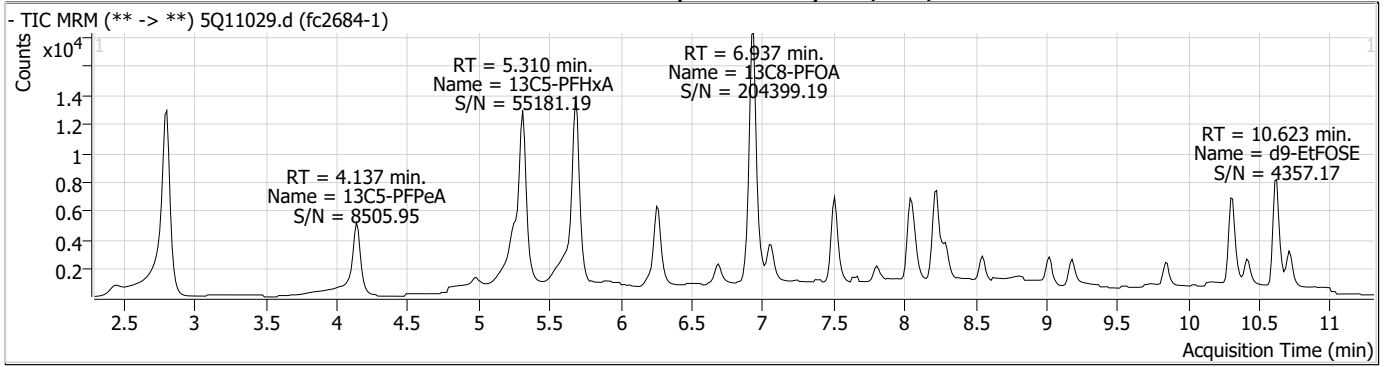
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

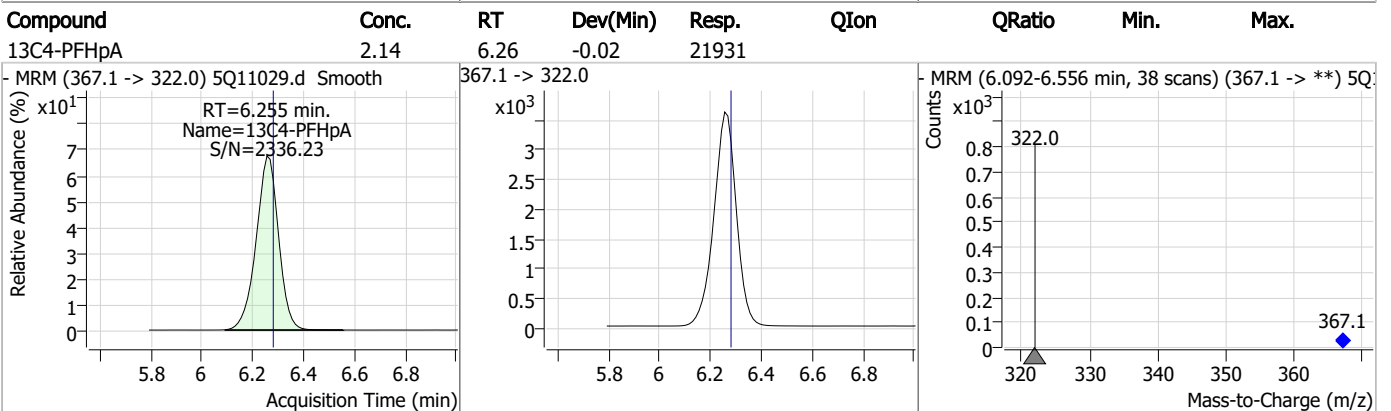
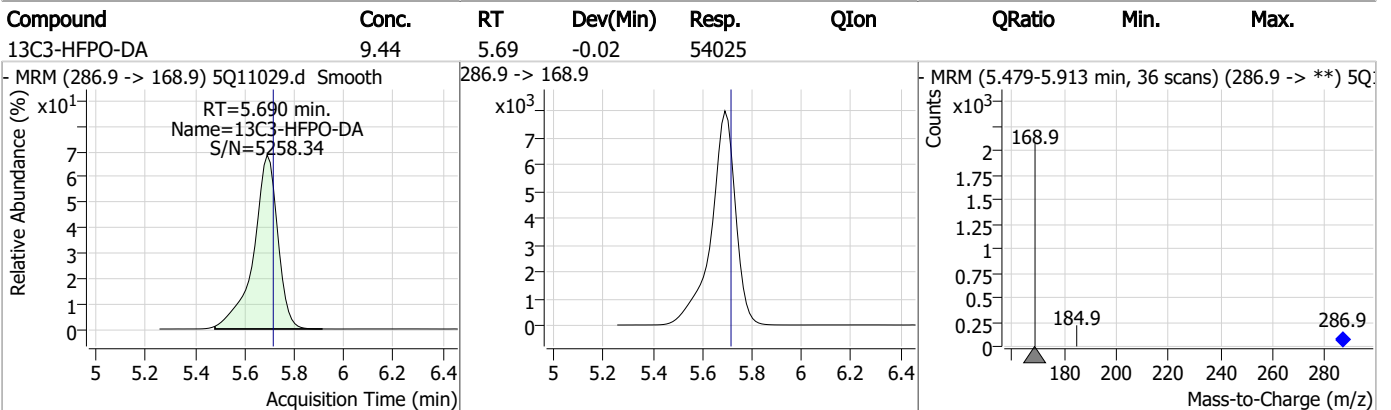
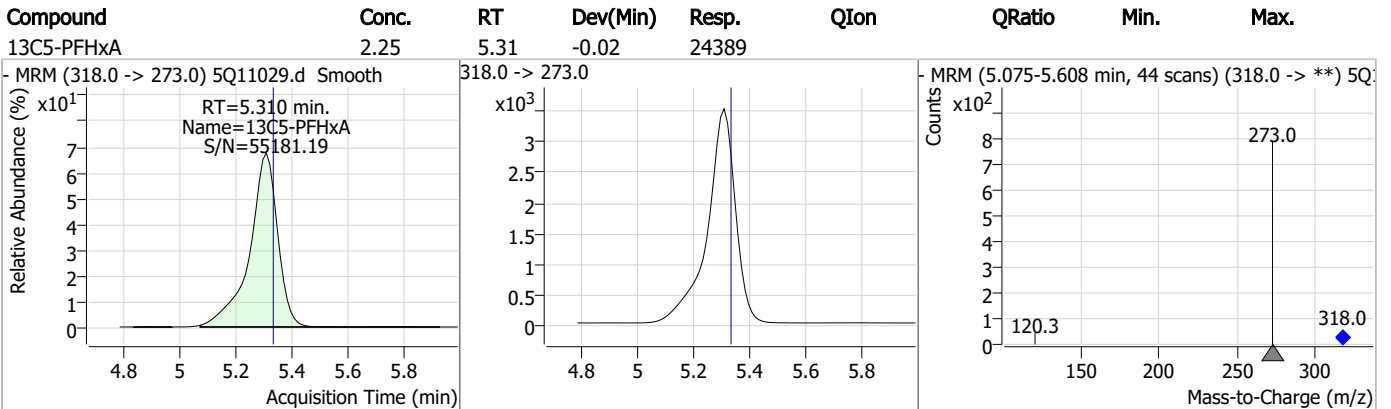
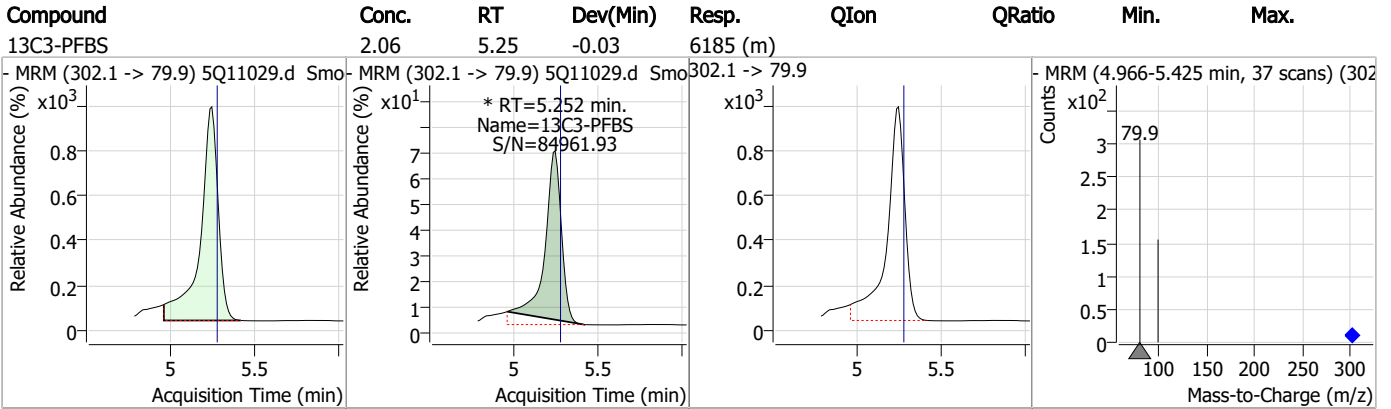
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.1.1
7

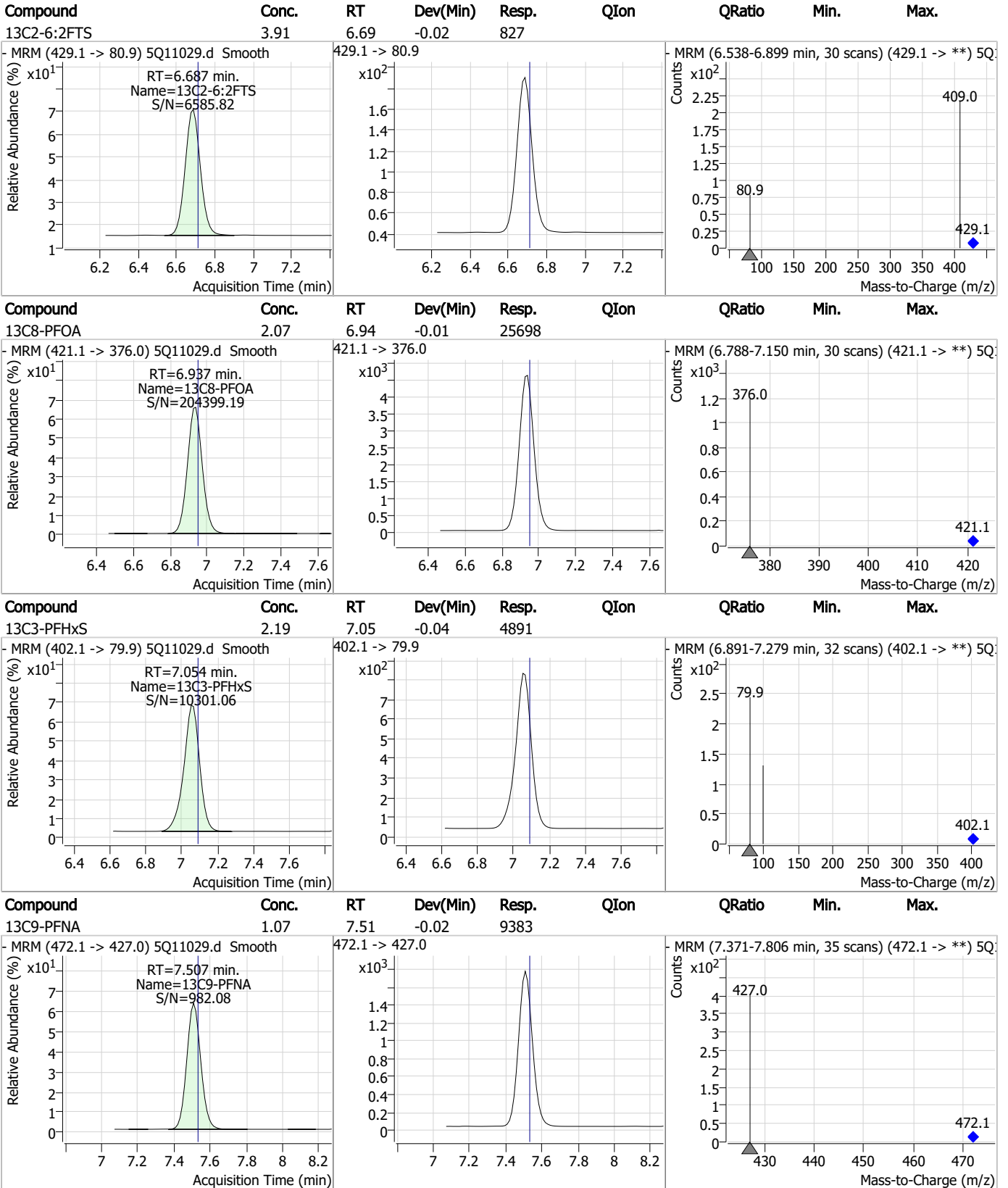
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



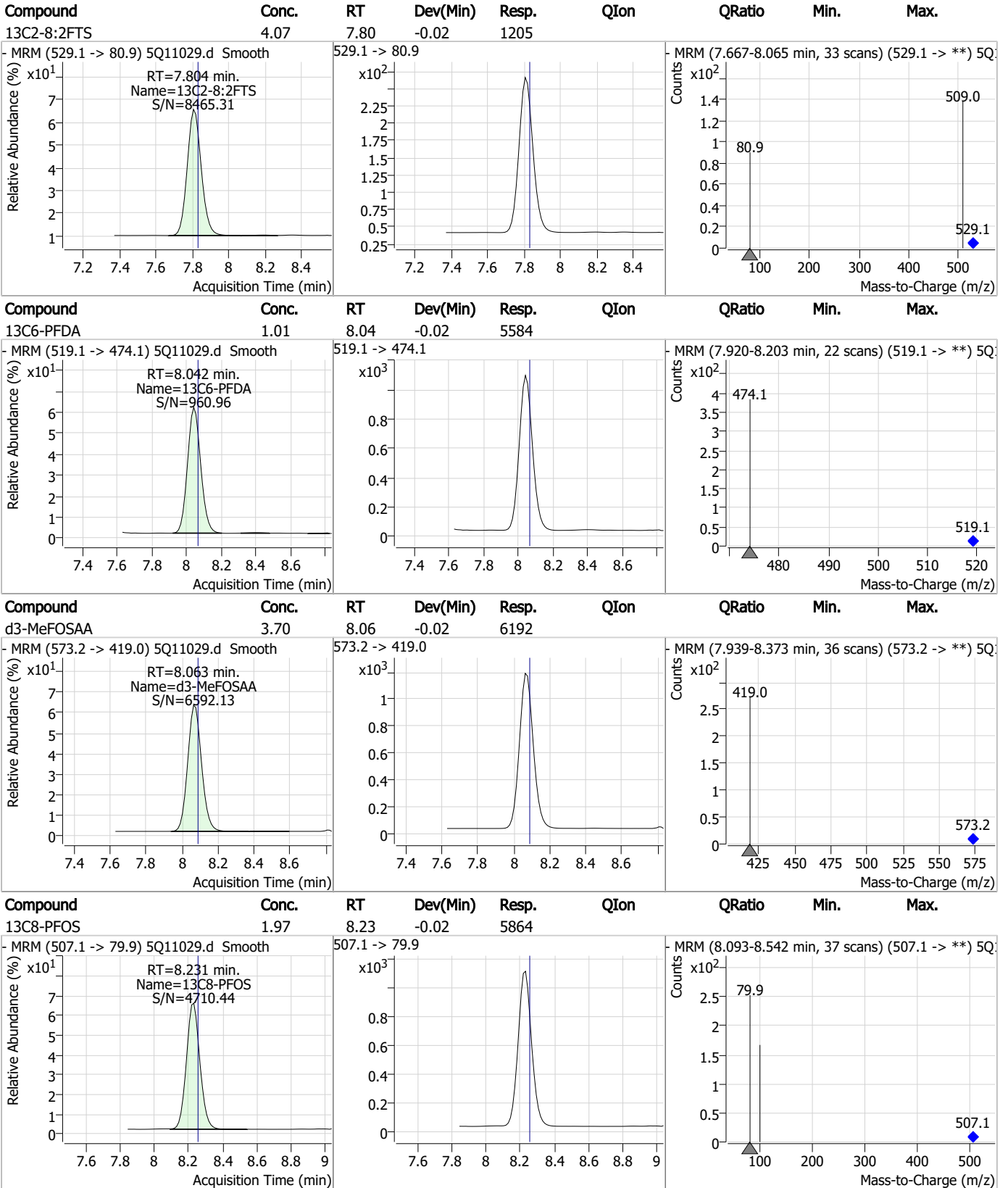
Perfluorinated Compounds by LC/MS/MS



7.1.1

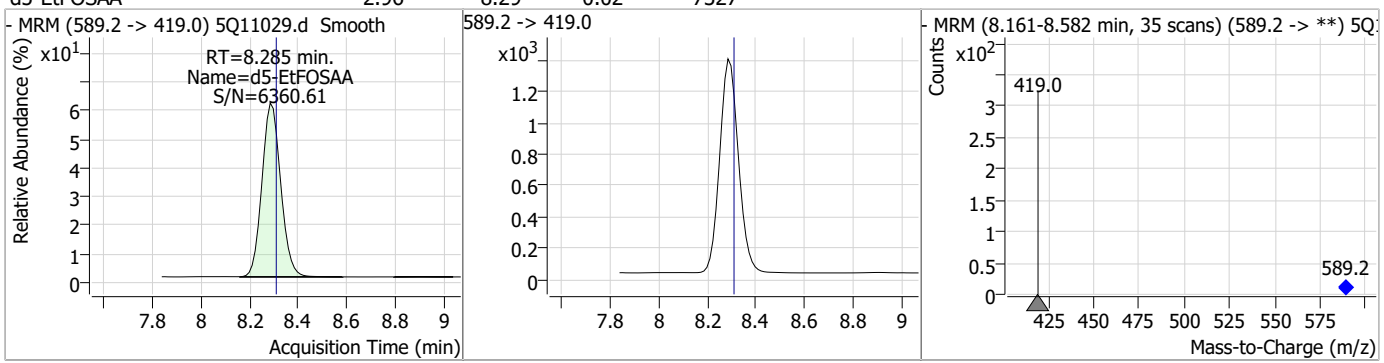
7

Perfluorinated Compounds by LC/MS/MS

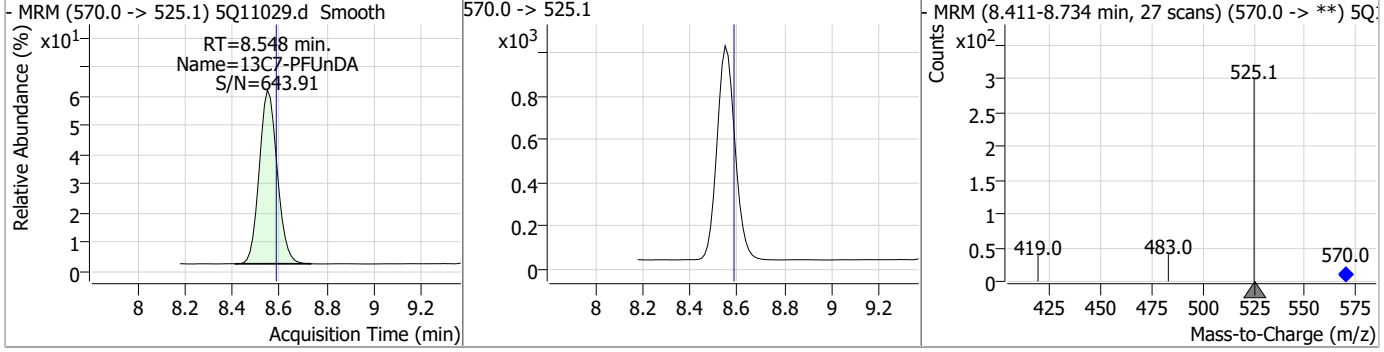


Perfluorinated Compounds by LC/MS/MS

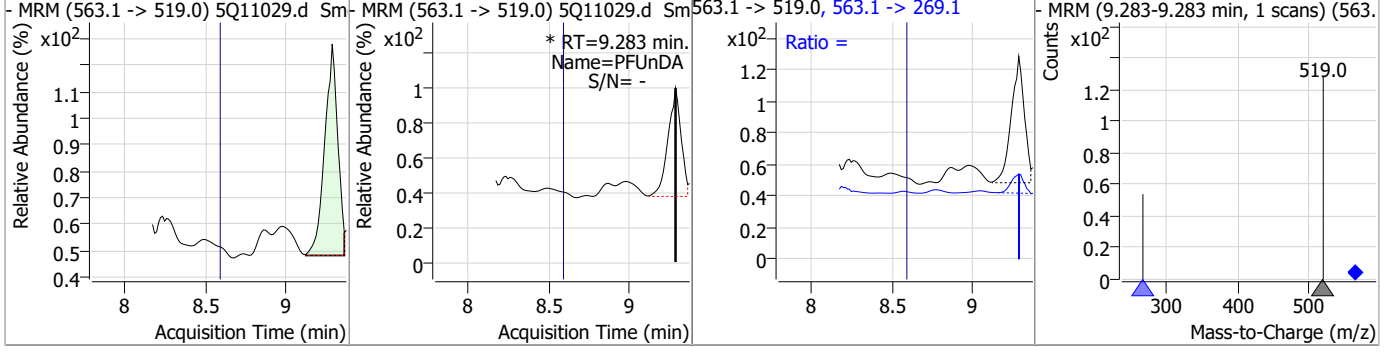
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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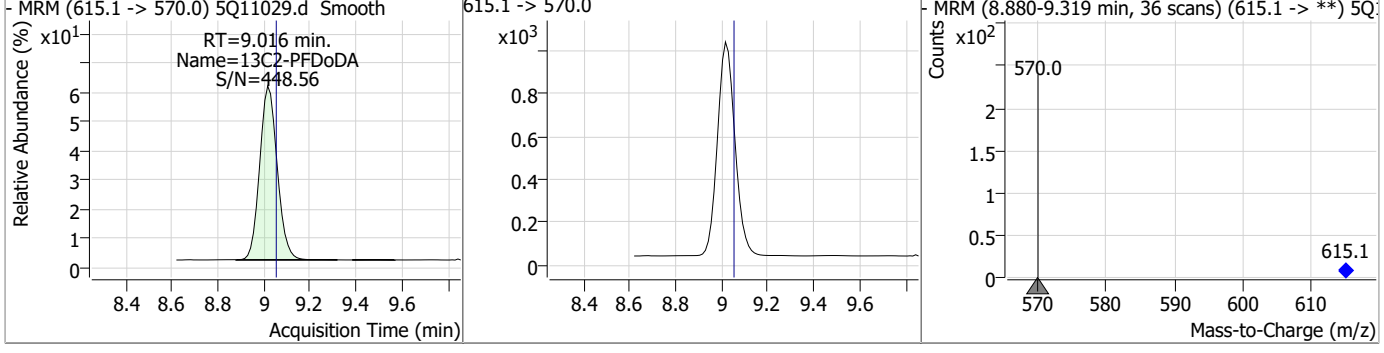
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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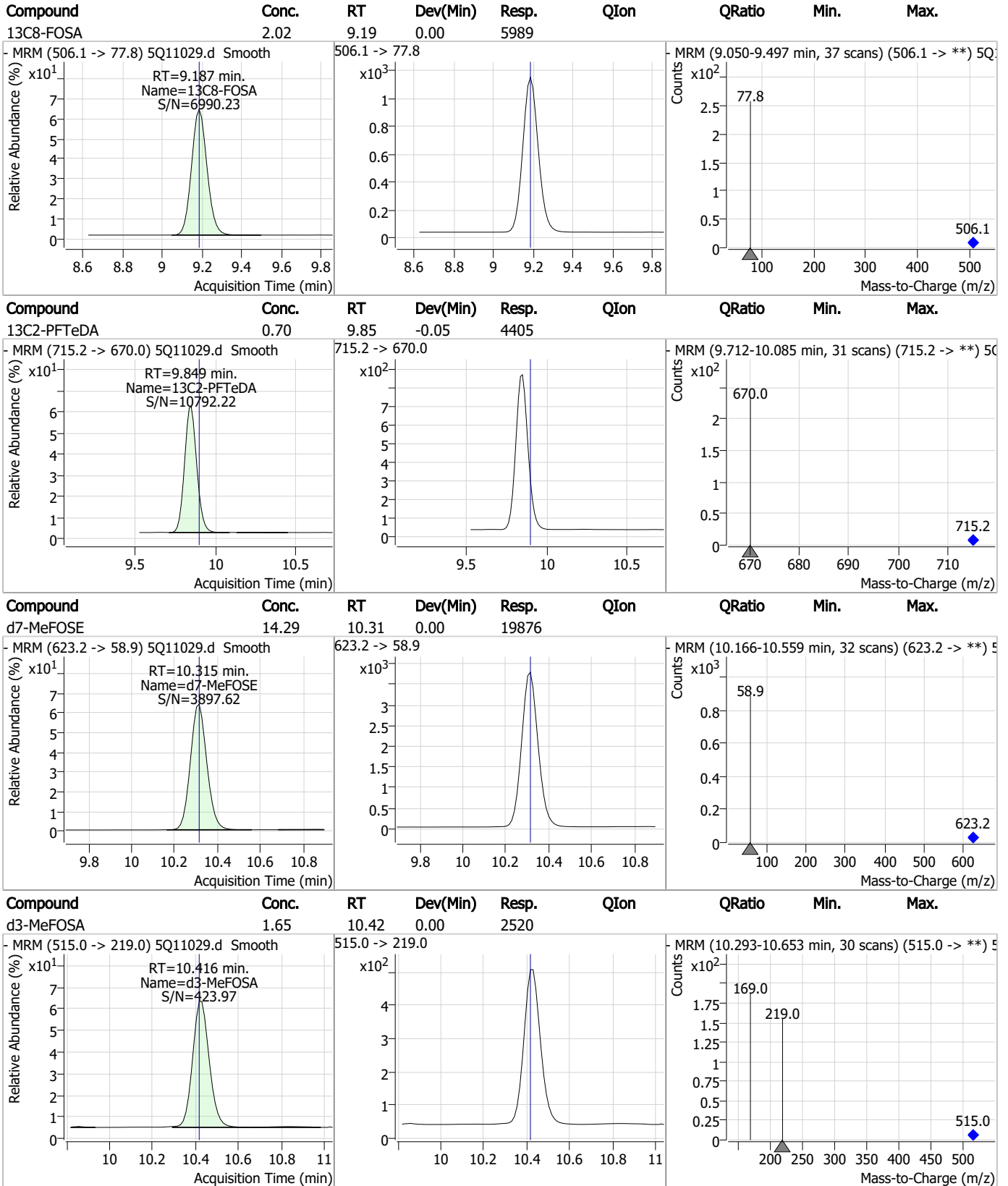
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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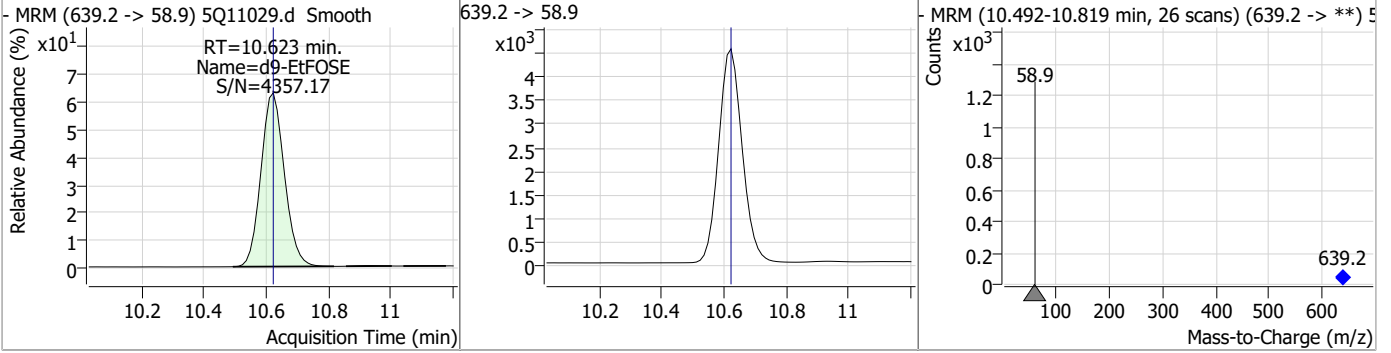


Perfluorinated Compounds by LC/MS/MS

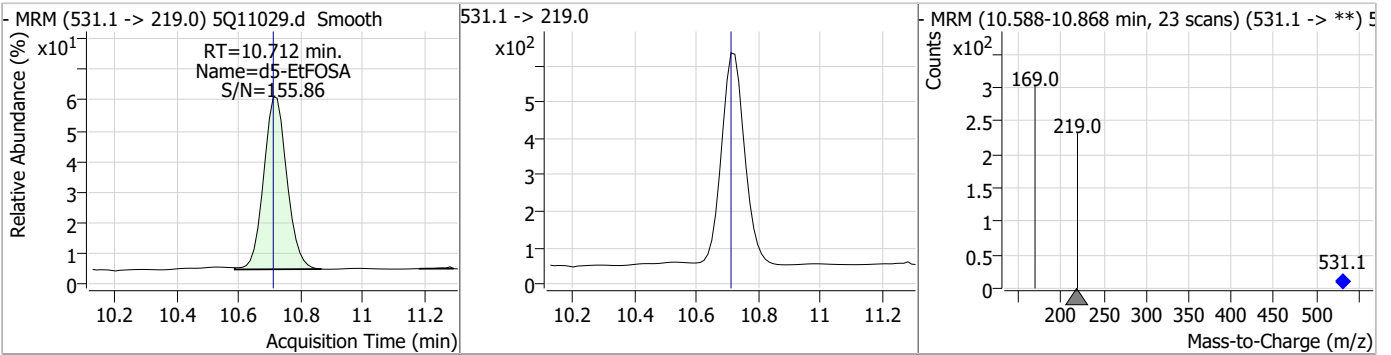


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	14.02	10.62	0.00	23895				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	1.45	10.71	0.00	3037				



7.1.1
7



Manual Integration Approval Summary

Sample Number: FC2684-1 Method: EPA DRAFT 1633
Lab FileID: 5Q11029.D Analyst approved: 02/20/23 14:45 Lindsay Ritner
Injection Time: 02/17/23 17:11 Supervisor approved: 02/22/23 08:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.79	Poor instrument integration
13C4-PFBA			2.80	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
13C3-PFBS			5.25	Poor instrument integration

7.1.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11031.d
Operator : natashag
Acq. Method : 1633.m
Acq. Date-Time : 2/17/2023 5:39:53 PM
Sample Name : fc2684-2
Vial : P4-A6
DA Method File : 1633_021623_S5Q169.quantmethod.xml
Batch Name : s6q170.batch.bin
Sample Information : OP95481,S5Q170,545,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	36936	10.00	µg/L m	-0.012
M5-PFPeA	4.137	268.3 -> 223.0	22445	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	24793	2.50	µg/L	-0.025
M4-PFHpA	6.255	367.1 -> 322.0	22432	2.50	µg/L	-0.025
M8-PFOA	6.937	421.1 -> 376.0	26495	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	9805	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	5135	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	4853	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	5164	1.25	µg/L	-0.037
M2-PFTeDA	9.837	715.2 -> 670.0	5351	1.25	µg/L	-0.062
M8-FOSA	9.187	506.1 -> 77.8	5523	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	6300	2.50	µg/L m	-0.025
M3-PFHxS	7.054	402.1 -> 79.9	4813	2.50	µg/L	-0.038
M8-PFOS	8.231	507.1 -> 79.9	5684	2.50	µg/L	-0.025
M2-4:2FTS	4.972	329.1 -> 80.9	401	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	832	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1081	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	5660	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	55419	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	7114	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	21757	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	26093	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	3506	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	2599	2.50	µg/L	0.000
13C4-PFOS	8.231	502.8 -> 79.9	7603	2.50	µg/L	-0.025
13C3-PFBA	2.791	216.0 -> 172.0	23173	5.00	µg/L m	-0.013
18O2-PFHxS	7.065	403.0 -> 83.9	3751	2.50	µg/L	-0.026
13C4-PFOA	6.938	417.1 -> 372.0	38524	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	10708	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	10854	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	31715	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	401	4.40	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.9%			
13C2-6:2FTS	6.687	429.1 -> 80.9	832	4.09	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.8%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1081	3.79	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 75.9%			
13C2-PFDoDA	9.016	615.1 -> 570.0	5164	0.77	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 61.9%			
13C2-PFTeDA	9.837	715.2 -> 670.0	5351	0.85	µg/L	-0.062
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 68.3%			
13C3-PFBS	5.252	302.1 -> 79.9	6300	2.18	µg/L m	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.3%			
13C3-PFHxS	7.054	402.1 -> 79.9	4813	2.24	µg/L	-0.038

7.12
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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 = 89.8%			
13C4-PFBA	2.786	216.8 -> 171.9	36936	8.45	µg/L m	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 84.5%			
13C4-PFHpA	6.255	367.1 -> 322.0	22432	2.13	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.1%			
13C5-PFHxA	5.310	318.0 -> 273.0	24793	2.23	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.1%			
13C5-PFPeA	4.137	268.3 -> 223.0	22445	3.89	µg/L m	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 77.9%			
13C6-PFDA	8.042	519.1 -> 474.1	5135	0.93	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.3%			
13C7-PFUnDA	8.548	570.0 -> 525.1	4853	0.80	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 64.2%			
13C8-FOSA	9.187	506.1 -> 77.8	5523	1.85	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 74.1%			
13C8-PFOA	6.937	421.1 -> 376.0	26495	2.04	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 81.6%			
13C8-PFOS	8.231	507.1 -> 79.9	5684	1.90	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 75.9%			
13C9-PFNA	7.507	472.1 -> 427.0	9805	1.11	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.4%			
d3-MeFOSAA	8.063	573.2 -> 419.0	5660	3.36	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 67.2%			
13C3-HFPO-DA	5.690	286.9 -> 168.9	55419	9.41	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 94.1%			
d3-MeFOSA	10.416	515.0 -> 219.0	2599	1.70	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 67.9%			
d5-EtFOSAA	8.285	589.2 -> 419.0	7114	2.86	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 57.1%			
d7-MeFOSE	10.315	623.2 -> 58.9	21757	15.55	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 62.2%			
d9-EtFOSE	10.623	639.2 -> 58.9	26093	15.22	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 60.9%			
d5-EtFOSA	10.712	531.1 -> 219.0	3506	1.66	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 66.4%			

Target Compounds

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.			
		327.1 -> 80.9					
6:2FTS	-	427.1 -> 407.0	-	N.D.			
		427.1 -> 80.9					
8:2FTS	-	527.1 -> 507.0	-	N.D.			
		527.1 -> 80.8					
EtFOSAA	-	584.2 -> 419.1	-	N.D.			
		584.2 -> 526.0					
FOSA	-	498.1 -> 77.9	-	N.D.			
		498.1 -> 478.0					
MeFOSAA	-	570.1 -> 419.0	-	N.D.			
		570.1 -> 483.0					
PFBA	-	212.8 -> 168.9	-	N.D.			
PFBS	-	298.7 -> 79.9	-	N.D.			
		298.7 -> 98.8					
PFDA	8.812	512.9 -> 469.0	0		µg/L m	1	
		512.9 -> 219.0	0				
PFDODA	9.732	613.1 -> 569.0	0		µg/L m	1	
		613.1 -> 319.0	0				
PFDS	-	599.0 -> 79.9	-	N.D.			

7.12
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.283	563.1 -> 519.0	0		µg/L	m
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.1.2

7



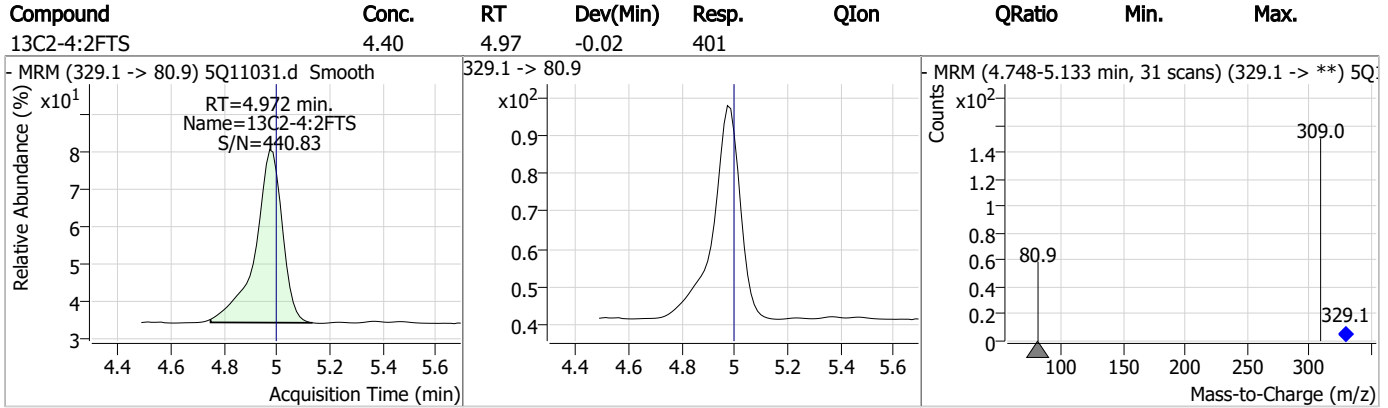
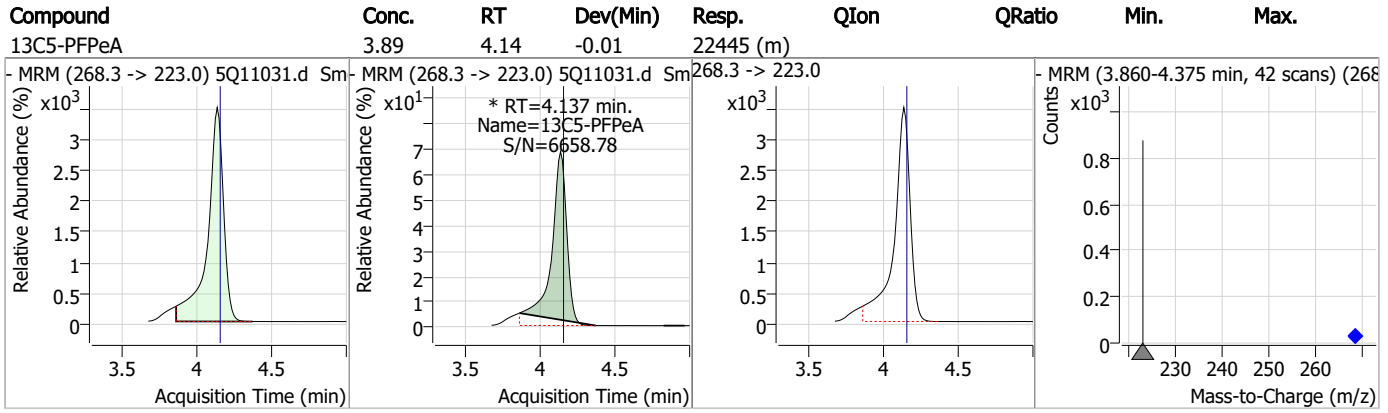
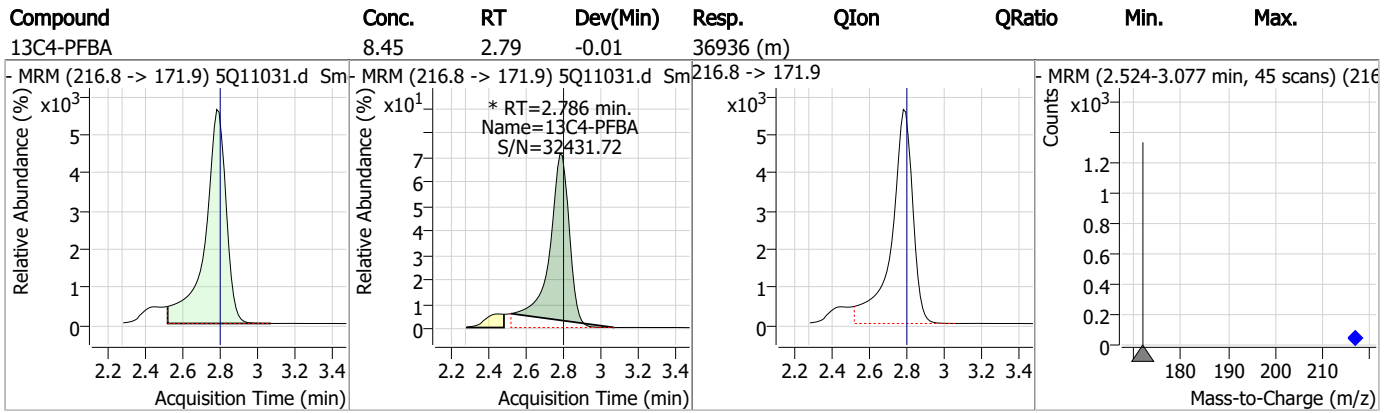
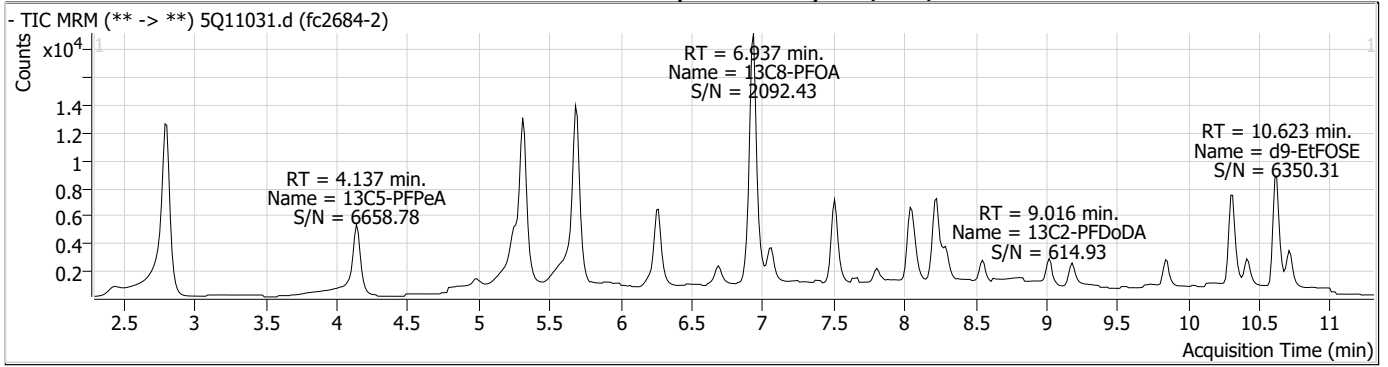
Perfluorinated Compounds by LC/MS/MS

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

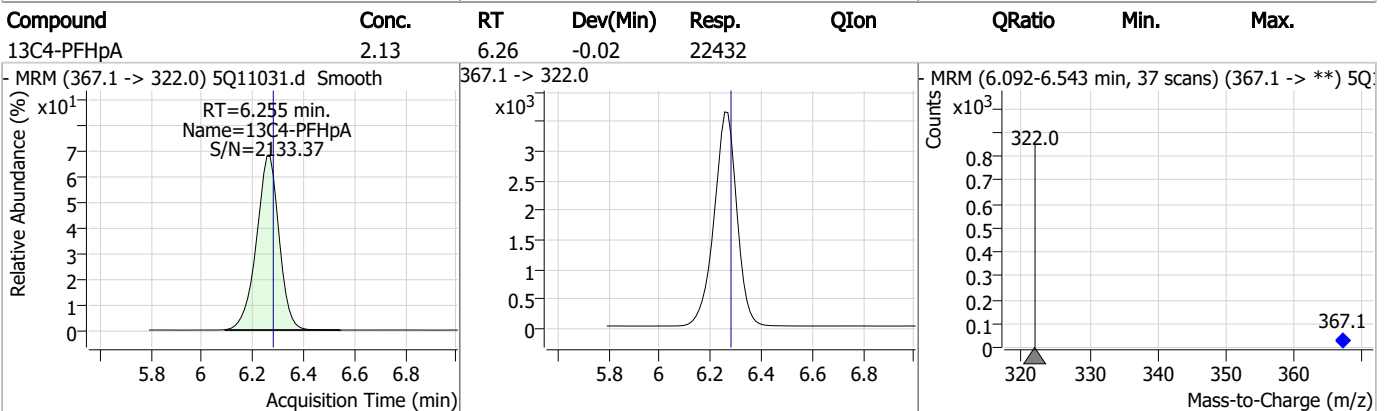
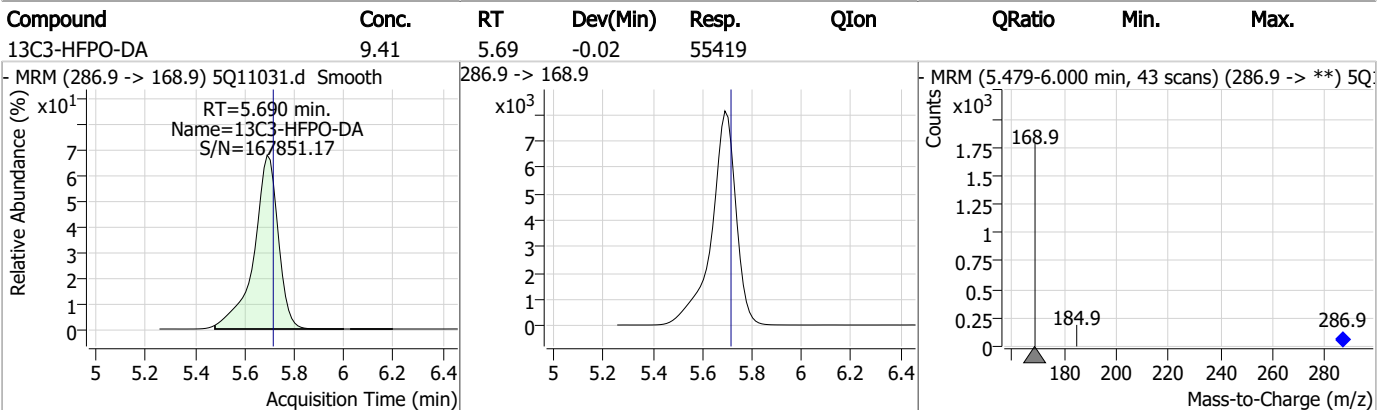
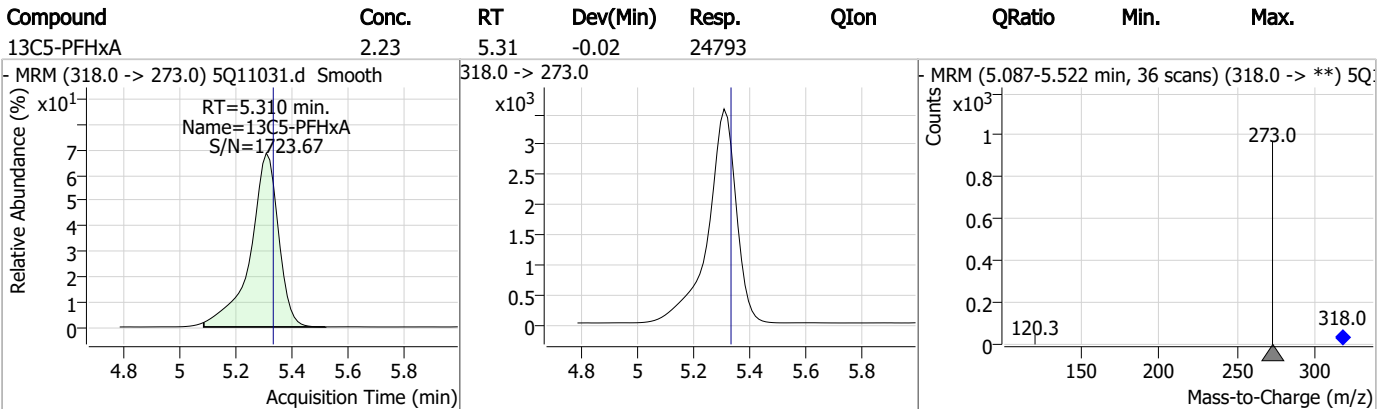
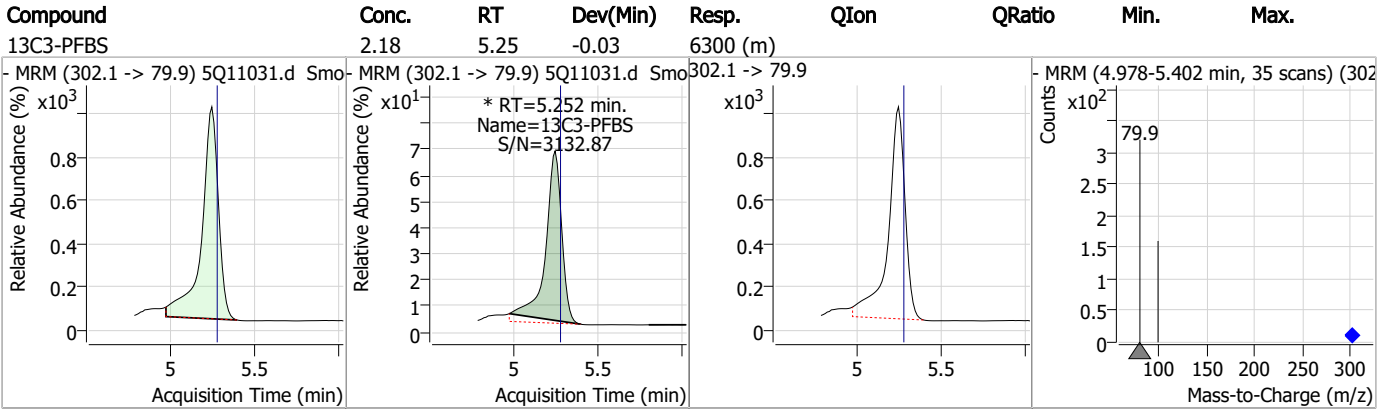
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Perfluorinated Compounds by LC/MS/MS



7.1.2
7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

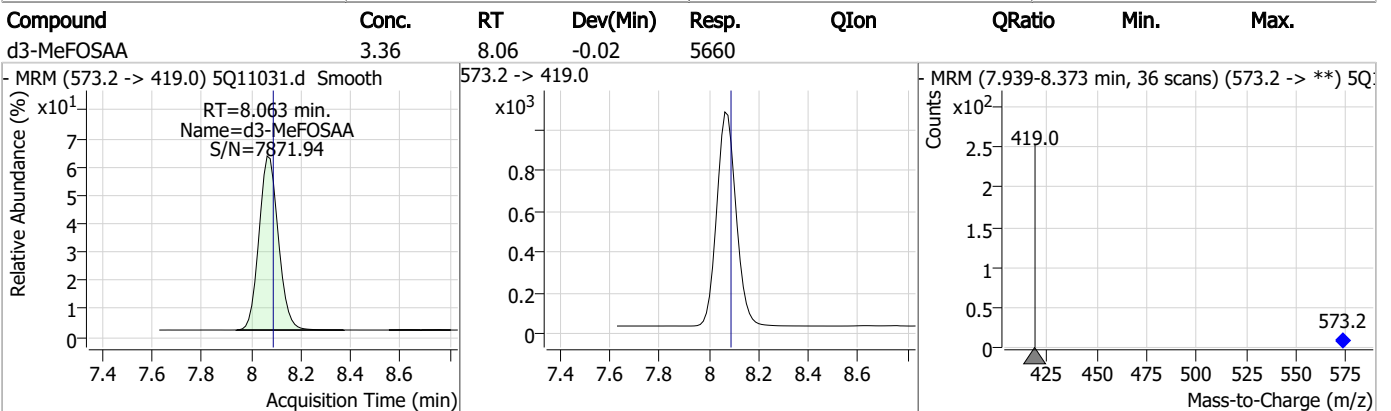
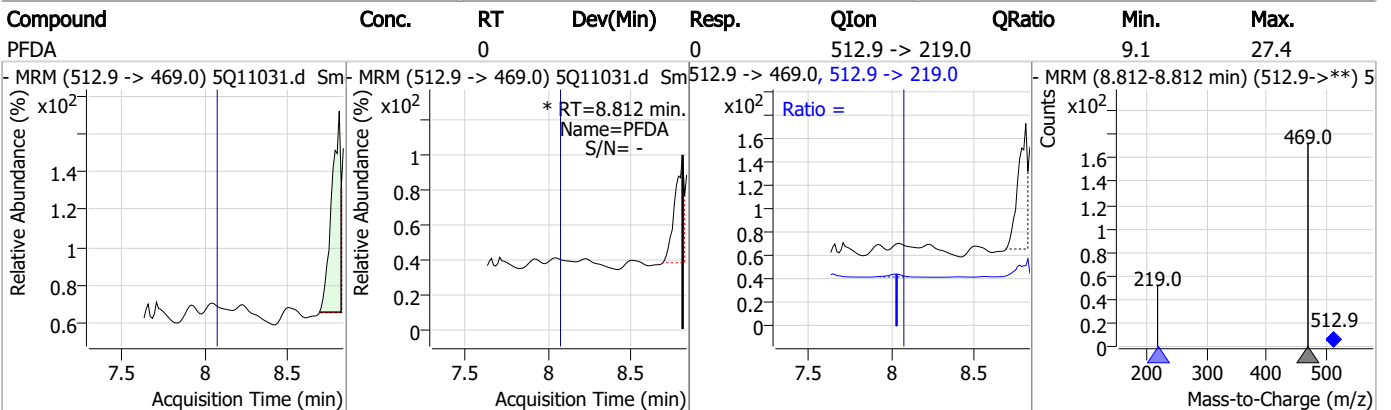
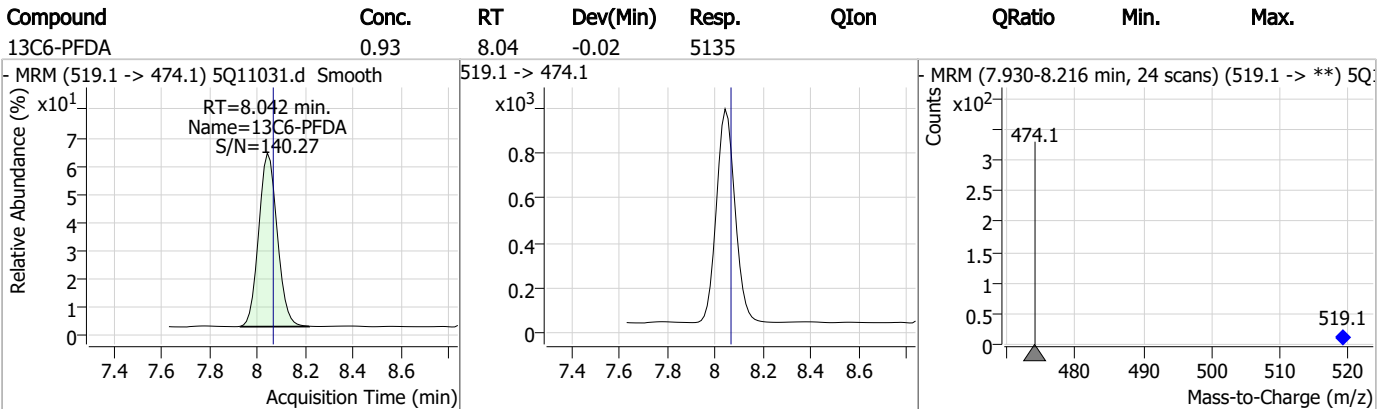
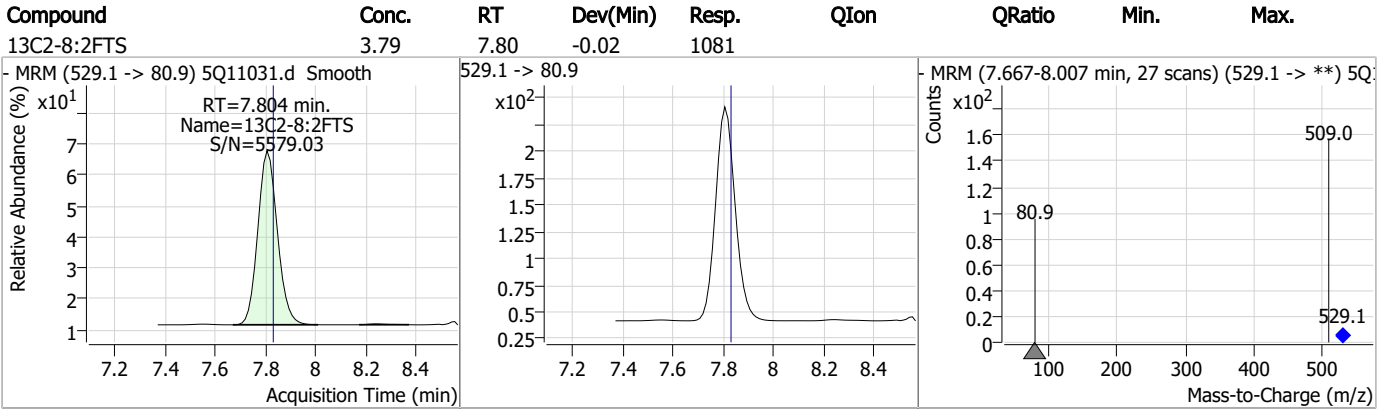
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	4.09	6.69	-0.02	832				
13C8-PFOA	2.04	6.94	-0.01	26495				
13C3-PFHxS	2.24	7.05	-0.04	4813				
13C9-PFNA	1.11	7.51	-0.02	9805				

7.1.2

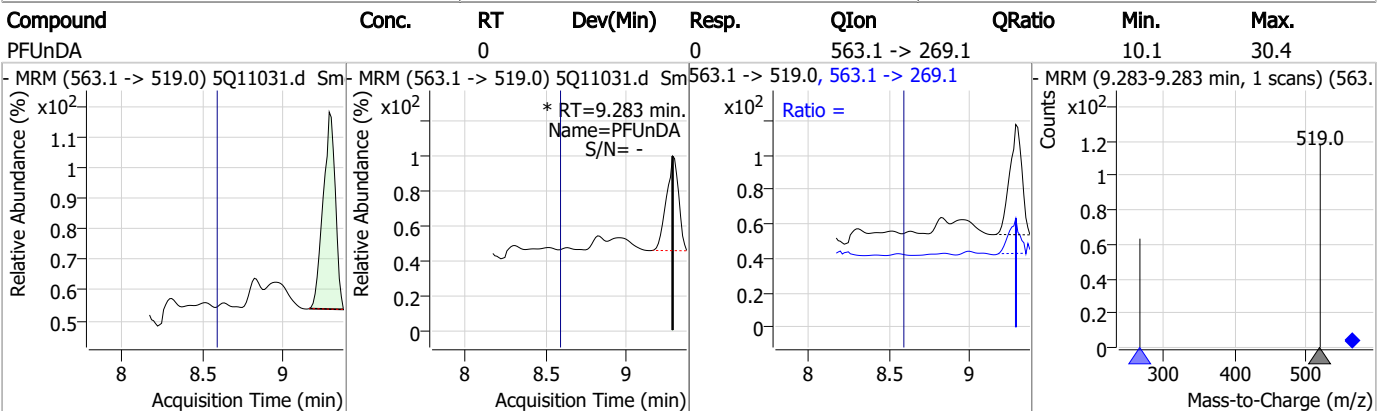
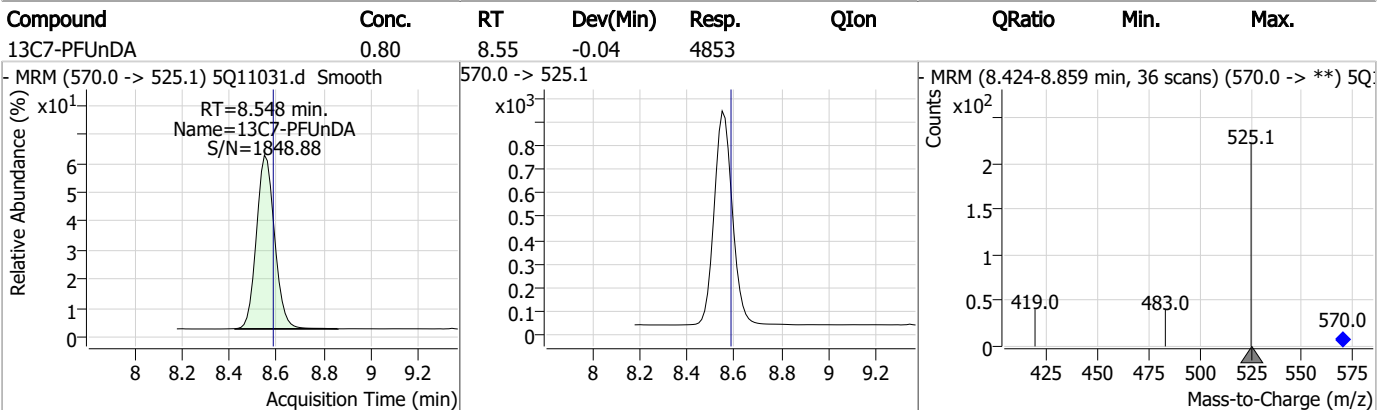
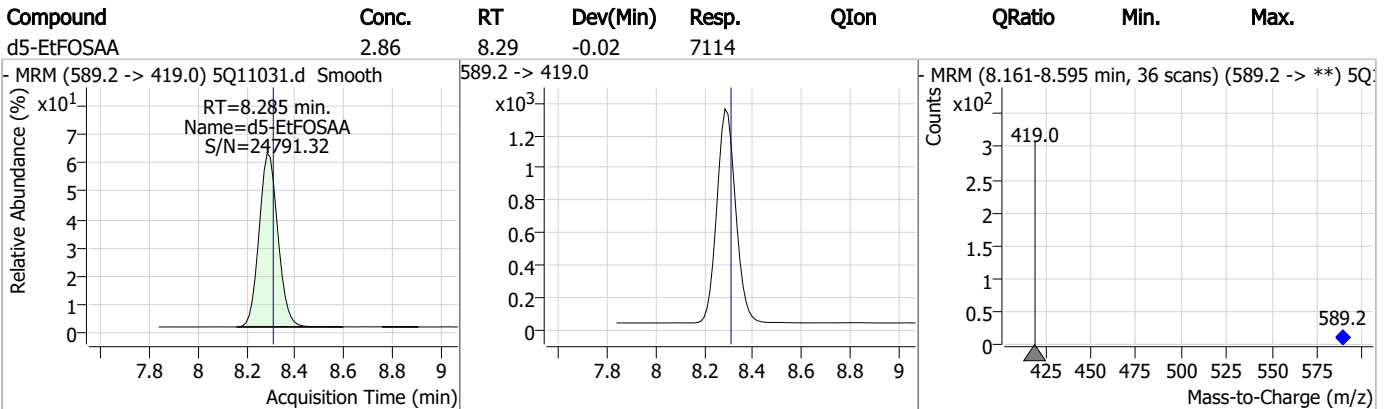
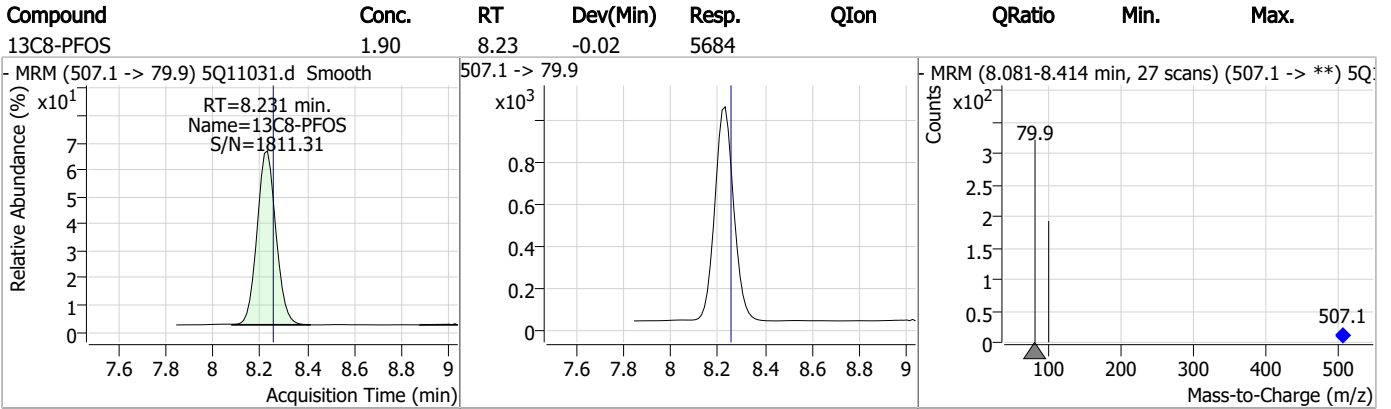
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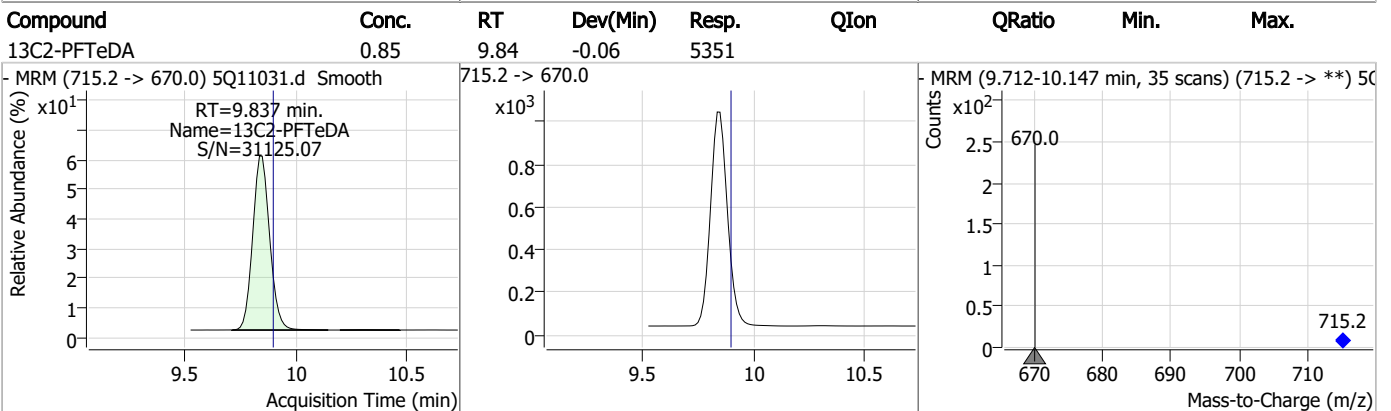
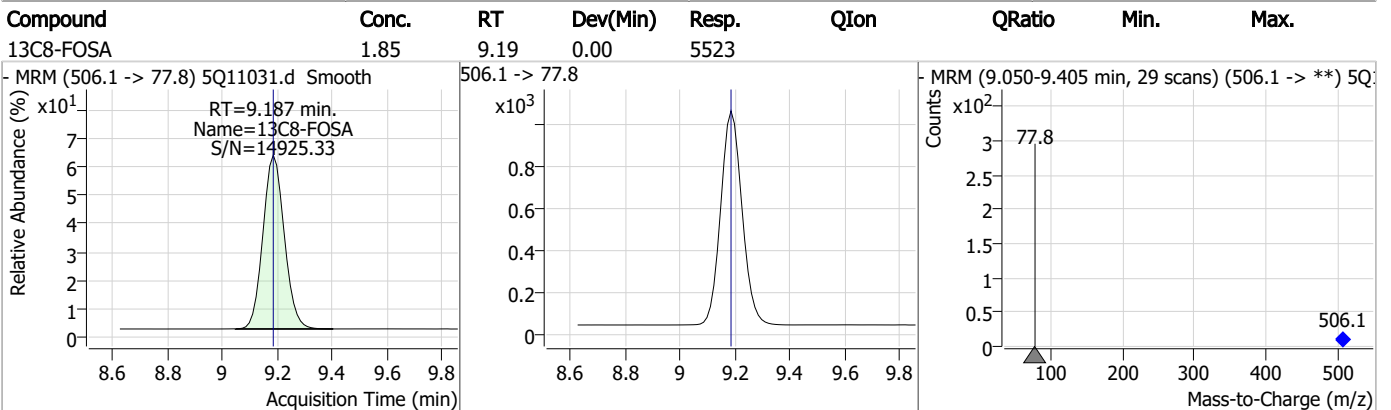
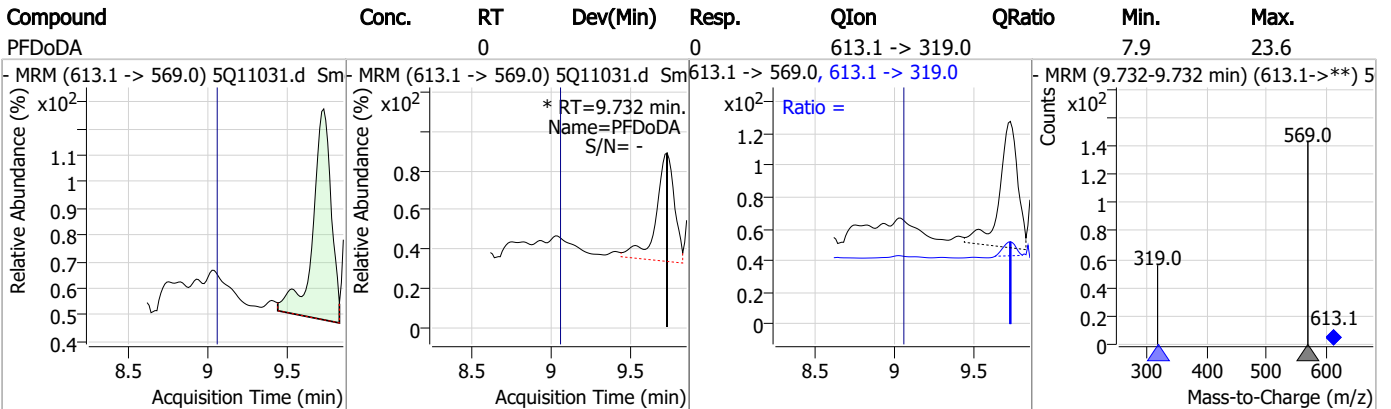
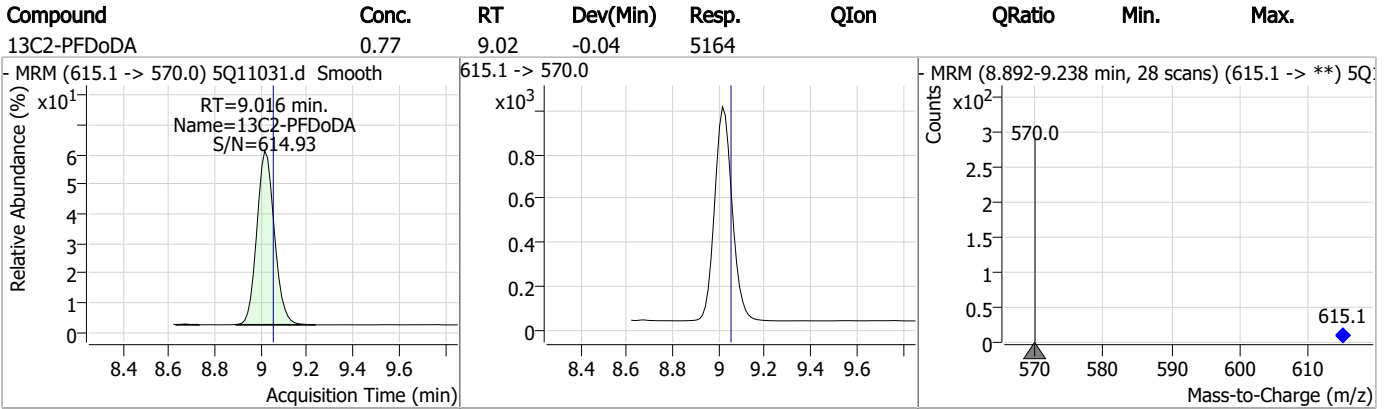
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



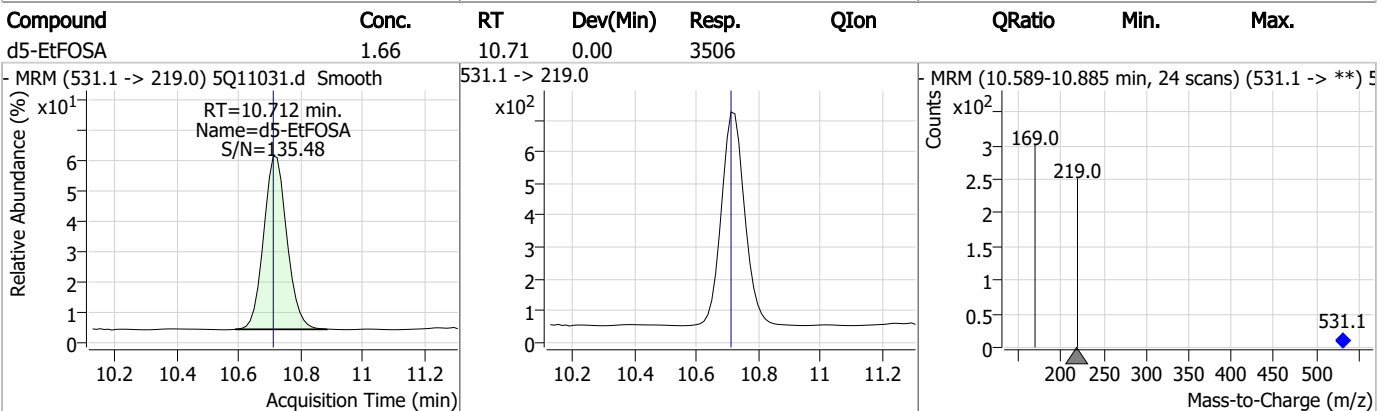
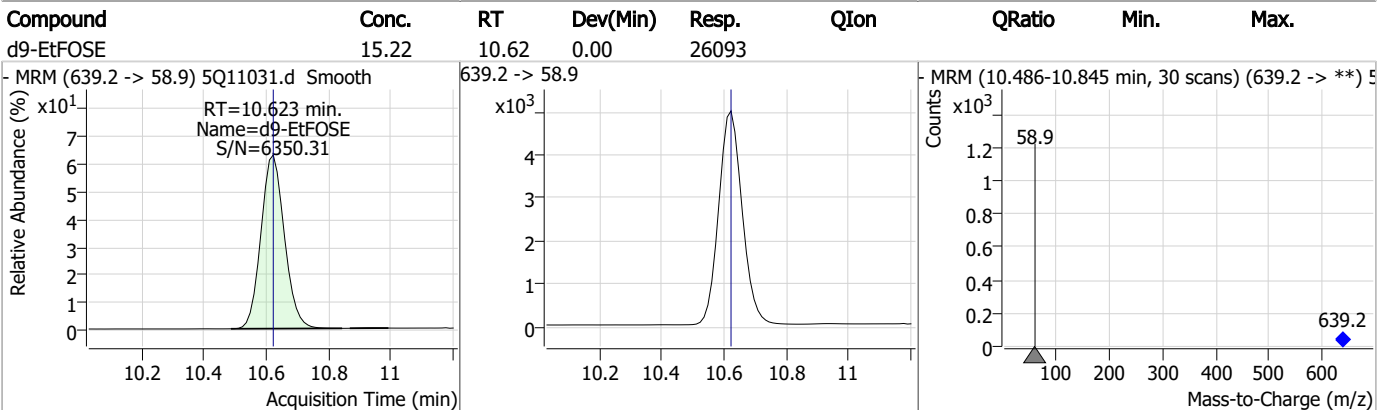
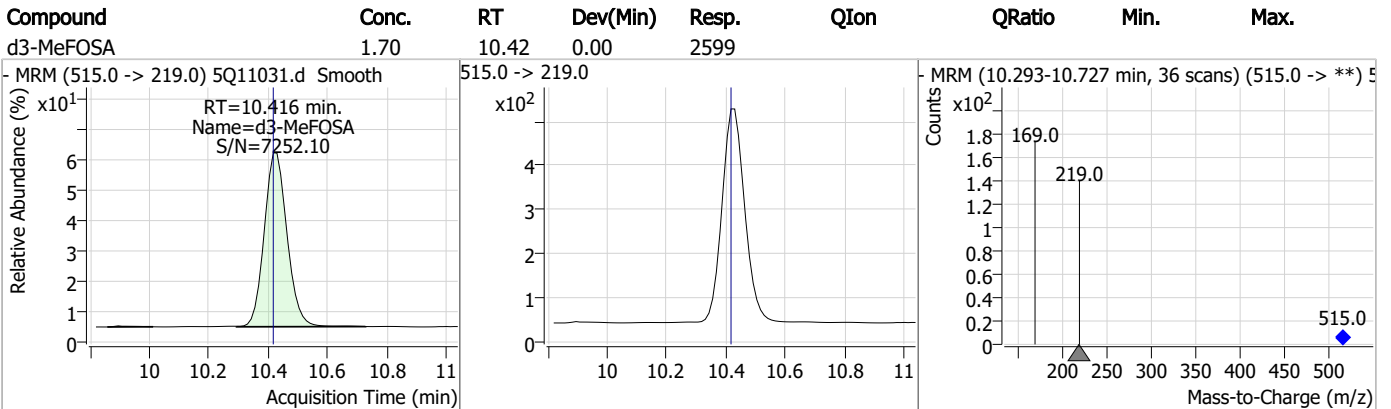
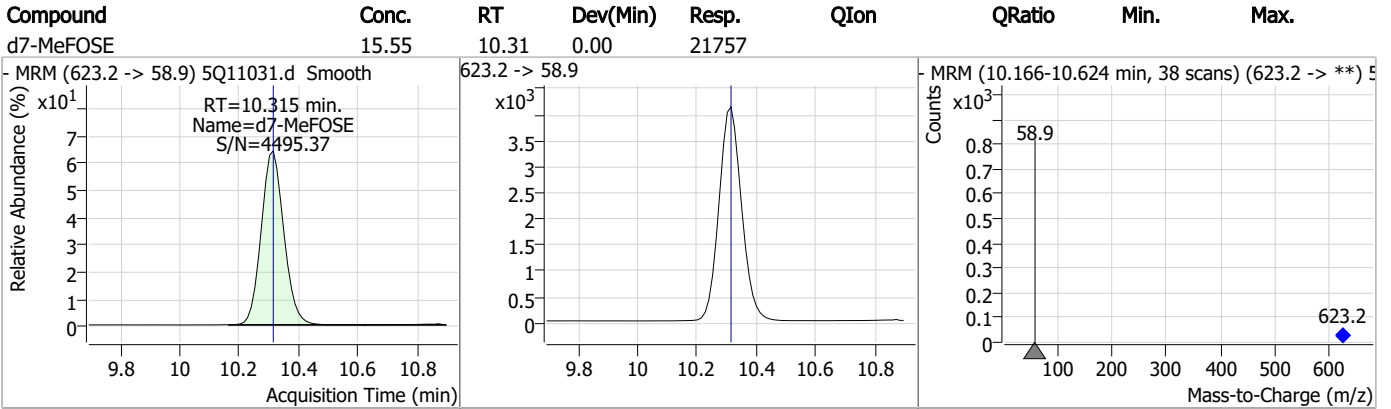
Perfluorinated Compounds by LC/MS/MS



7.1.2
7



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: FC2684-2 Method: EPA DRAFT 1633
Lab FileID: 5Q11031.D Analyst approved: 02/20/23 14:45 Lindsay Ritner
Injection Time: 02/17/23 17:39 Supervisor approved: 02/22/23 08:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C4-PFBA			2.79	Poor instrument integration
13C3-PFBA			2.79	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
13C3-PFBS			5.25	Poor instrument integration

7.1.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11028.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 4:57:35 PM
 Sample Name : op95481-mb
 Vial : P4-A3
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95481,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	38728	10.00	µg/L m	-0.012
M5-PFPeA	4.137	268.3 -> 223.0	25220	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	27585	2.50	µg/L	-0.025
M4-PFHpA	6.255	367.1 -> 322.0	24751	2.50	µg/L	-0.025
M8-PFOA	6.925	421.1 -> 376.0	29468	2.50	µg/L	-0.025
M9-PFNA	7.507	472.1 -> 427.0	10566	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	6667	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	7055	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	7506	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	6647	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	6312	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	6927	2.50	µg/L	-0.025
M3-PFHxS	7.054	402.1 -> 79.9	5316	2.50	µg/L	-0.038
M8-PFOS	8.218	507.1 -> 79.9	6945	2.50	µg/L	-0.038
M2-4:2FTS	4.972	329.1 -> 80.9	410	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	925	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1303	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	7387	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	62688	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	9976	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	29010	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	35597	25.00	µg/L	0.000
M5-EtFOSA	10.725	531.1 -> 219.0	3965	2.50	µg/L	0.012
M3-MeFOSA	10.416	515.0 -> 219.0	3121	2.50	µg/L	0.000
13C4-PFOS	8.219	502.8 -> 79.9	7528	2.50	µg/L	-0.037
13C3-PFBA	2.791	216.0 -> 172.0	21713	5.00	µg/L m	-0.013
18O2-PFHxS	7.052	403.0 -> 83.9	3779	2.50	µg/L	-0.038
13C4-PFOA	6.926	417.1 -> 372.0	37484	2.50	µg/L	-0.025
13C2-PFDA	8.042	515.1 -> 470.1	11005	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	10866	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	31187	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	410	4.46	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.2%			
13C2-6:2FTS	6.687	429.1 -> 80.9	925	4.51	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.3%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1303	4.54	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.8%			
13C2-PFDoDA	9.016	615.1 -> 570.0	7506	1.09	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.5%			
13C2-PFTeDA	9.849	715.2 -> 670.0	6647	1.03	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 82.5%			
13C3-PFBS	5.252	302.1 -> 79.9	6927	2.38	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.3%			
13C3-PFHxS	7.054	402.1 -> 79.9	5316	2.46	µg/L	-0.038

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 = 98.4%		
13C4-PFBA	2.786	216.8 -> 171.9	38728	9.45	µg/L	m
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.5%		
13C4-PFHpA	6.255	367.1 -> 322.0	24751	2.39	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%		
13C5-PFHxA	5.310	318.0 -> 273.0	27585	2.52	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%		
13C5-PFPeA	4.137	268.3 -> 223.0	25220	4.45	µg/L	m
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.0%		
13C6-PFDA	8.042	519.1 -> 474.1	6667	1.17	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.8%		
13C7-PFUnDA	8.548	570.0 -> 525.1	7055	1.14	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.8%		
13C8-FOSA	9.187	506.1 -> 77.8	6312	2.14	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.5%		
13C8-PFOA	6.925	421.1 -> 376.0	29468	2.33	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C8-PFOS	8.218	507.1 -> 79.9	6945	2.34	µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%		
13C9-PFNA	7.507	472.1 -> 427.0	10566	1.19	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%		
d3-MeFOSAA	8.063	573.2 -> 419.0	7387	4.43	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.6%		
13C3-HFPO-DA	5.690	286.9 -> 168.9	62688	10.83	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.3%		
d3-MeFOSA	10.416	515.0 -> 219.0	3121	2.06	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 82.3%		
d5-EtFOSAA	8.285	589.2 -> 419.0	9976	4.04	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 80.9%		
d7-MeFOSE	10.315	623.2 -> 58.9	29010	20.94	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.8%		
d9-EtFOSE	10.623	639.2 -> 58.9	35597	20.97	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.9%		
d5-EtFOSA	10.725	531.1 -> 219.0	3965	1.90	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 75.9%		
Target Compounds						QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.		
		327.1 -> 80.9				
6:2FTS	-	427.1 -> 407.0	-	N.D.		
		427.1 -> 80.9				
8:2FTS	-	527.1 -> 507.0	-	N.D.		
		527.1 -> 80.8				
EtFOSAA	-	584.2 -> 419.1	-	N.D.		
		584.2 -> 526.0				
FOSA	-	498.1 -> 77.9	-	N.D.		
		498.1 -> 478.0				
MeFOSAA	-	570.1 -> 419.0	-	N.D.		
		570.1 -> 483.0				
PFBA	-	212.8 -> 168.9	-	N.D.		
PFBS	-	298.7 -> 79.9	-	N.D.		
		298.7 -> 98.8				
PFDA	-	512.9 -> 469.0	-	N.D.		
		512.9 -> 219.0				
PFDODA	9.732	613.1 -> 569.0	0	µg/L	m	1
		613.1 -> 319.0	0			
PFDS	-	599.0 -> 79.9	-	N.D.		

7.2.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.283	563.1 -> 519.0	0		µg/L	m
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.1
7

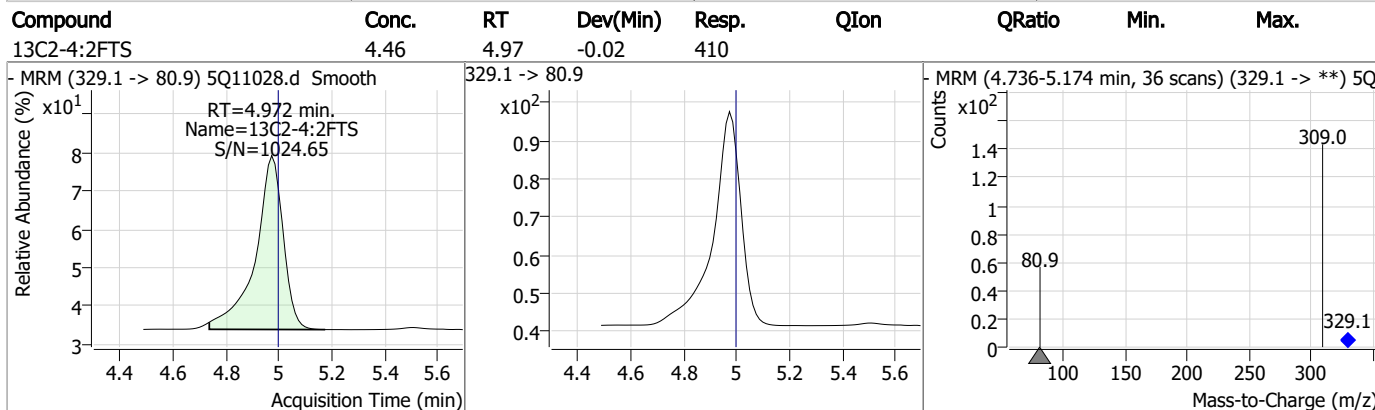
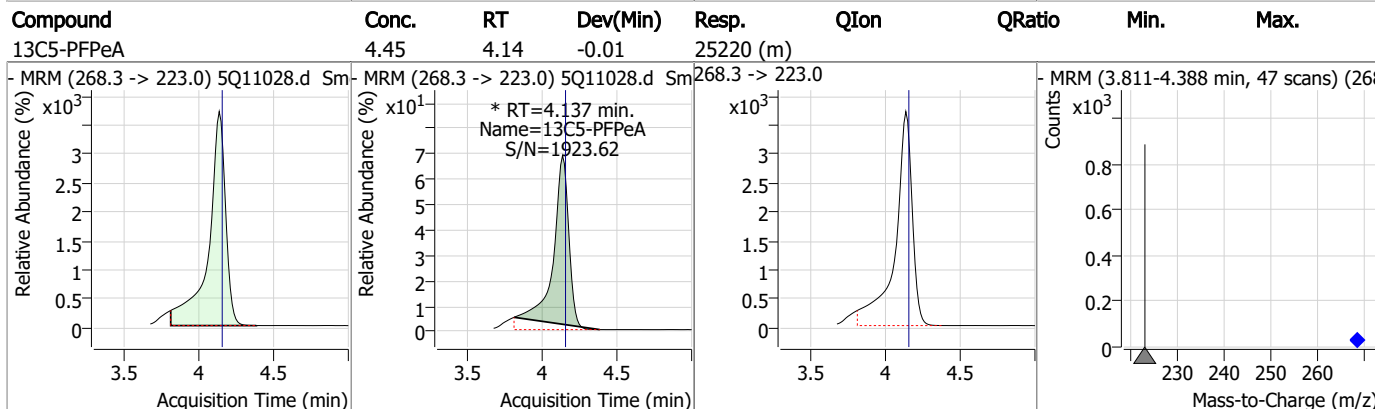
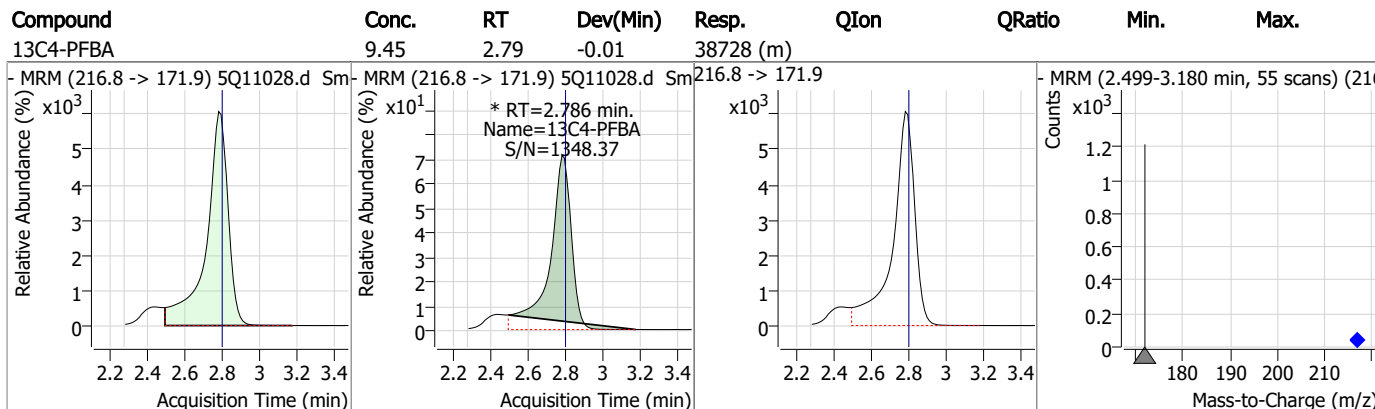
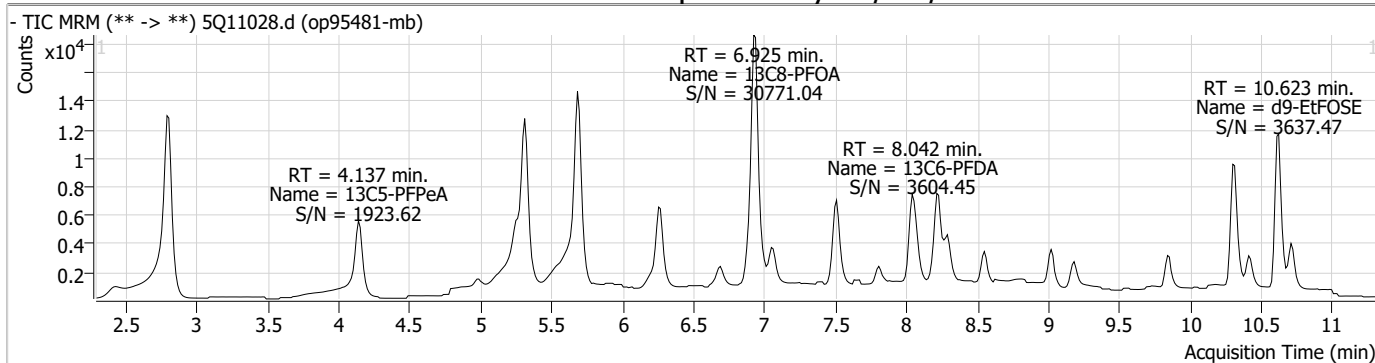
Perfluorinated Compounds by LC/MS/MS

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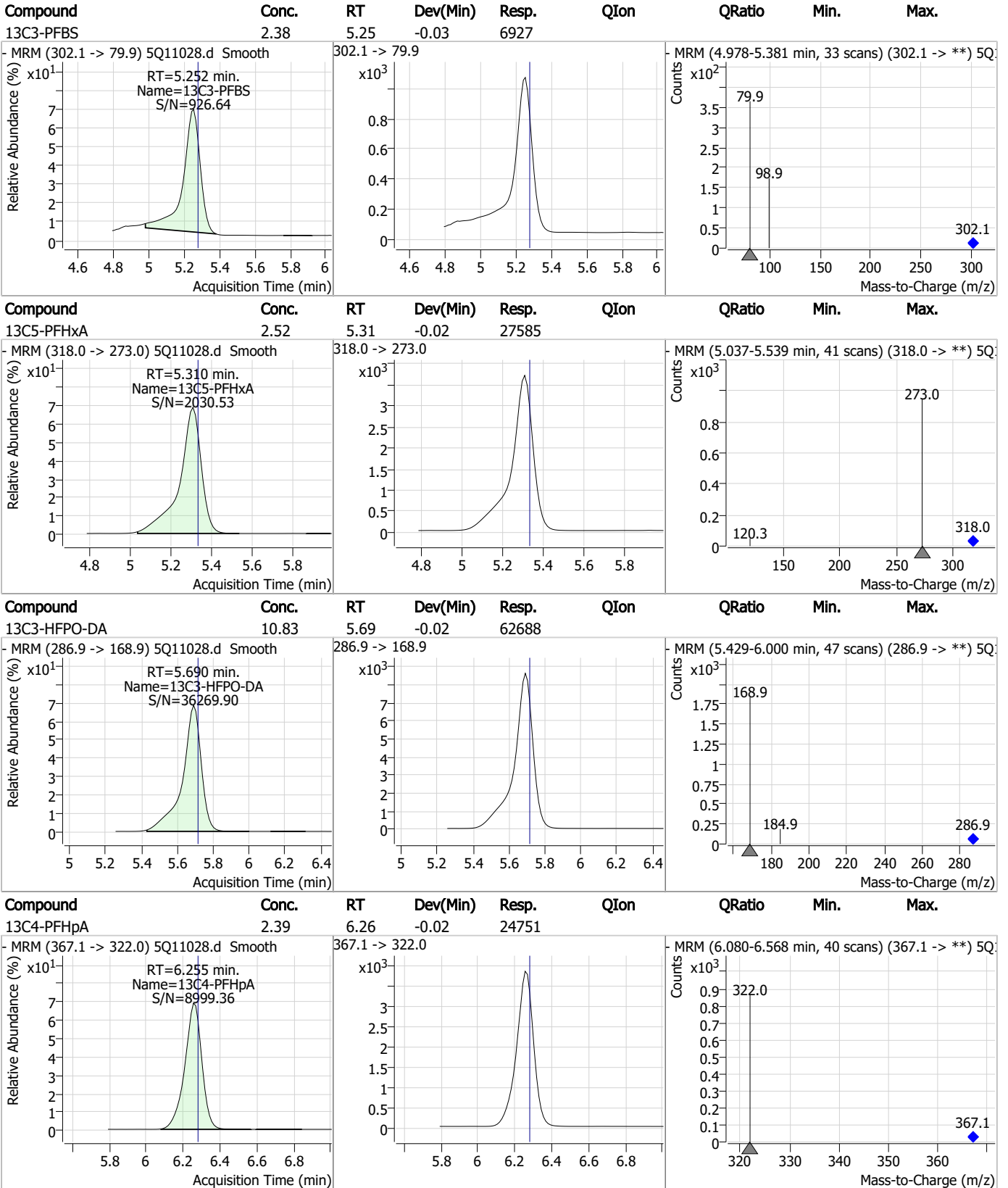
7.2.1

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Perfluorinated Compounds by LC/MS/MS



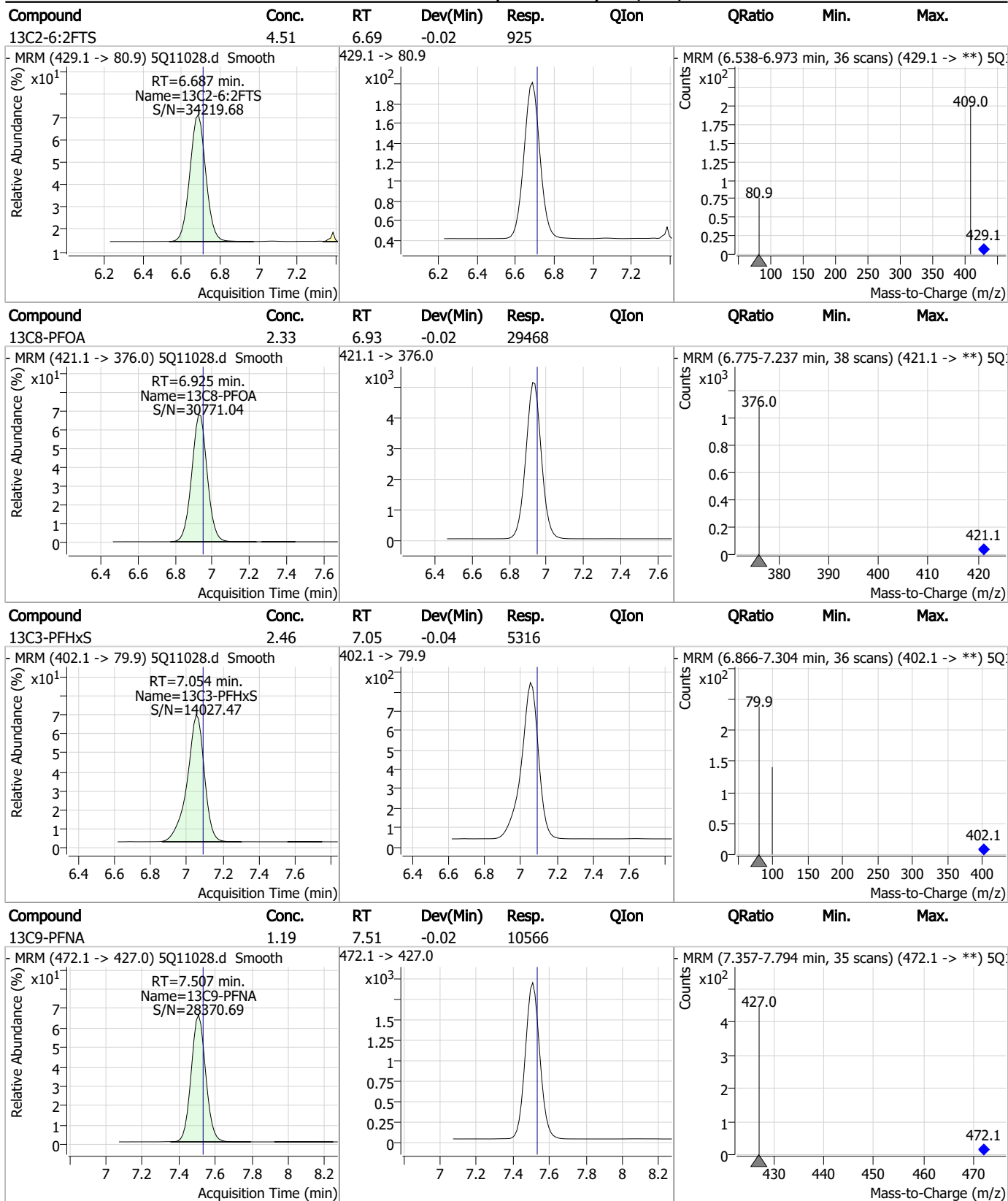
Perfluorinated Compounds by LC/MS/MS



7.2.1

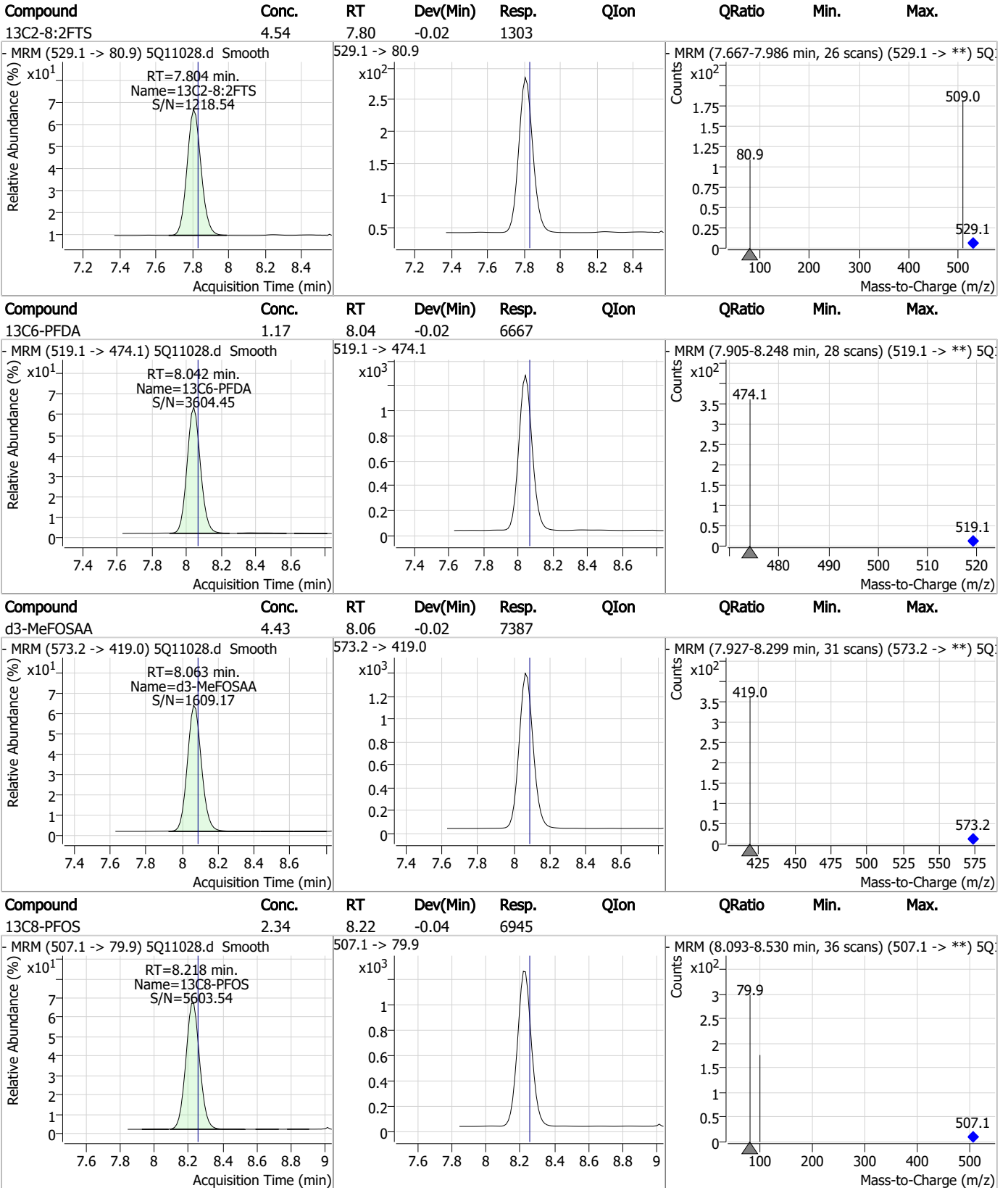
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Perfluorinated Compounds by LC/MS/MS



7.2.1
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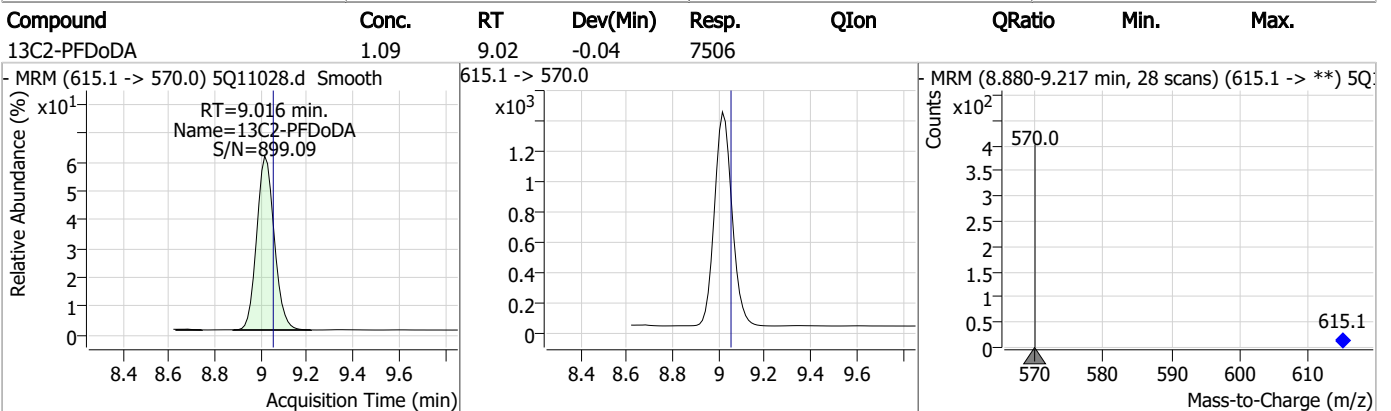
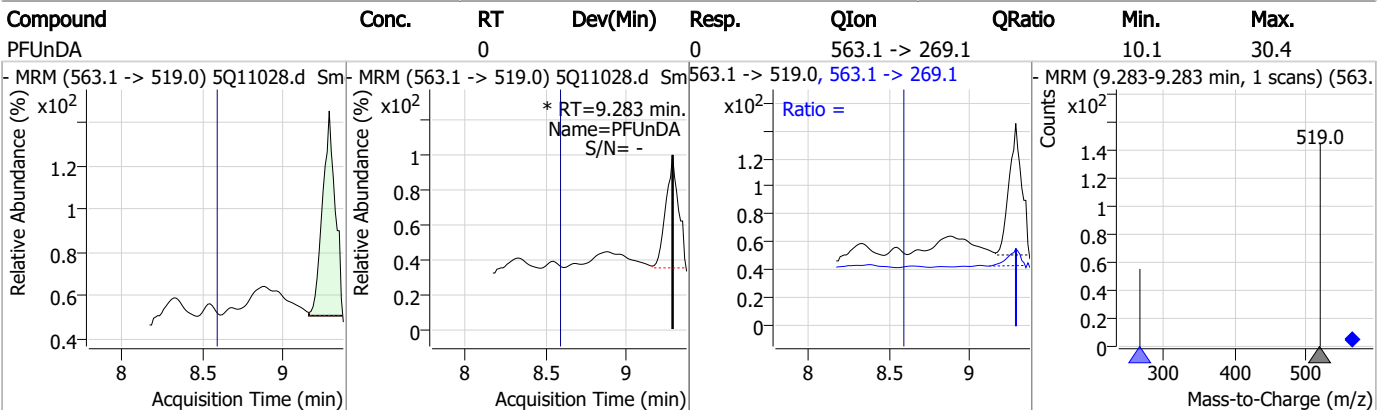
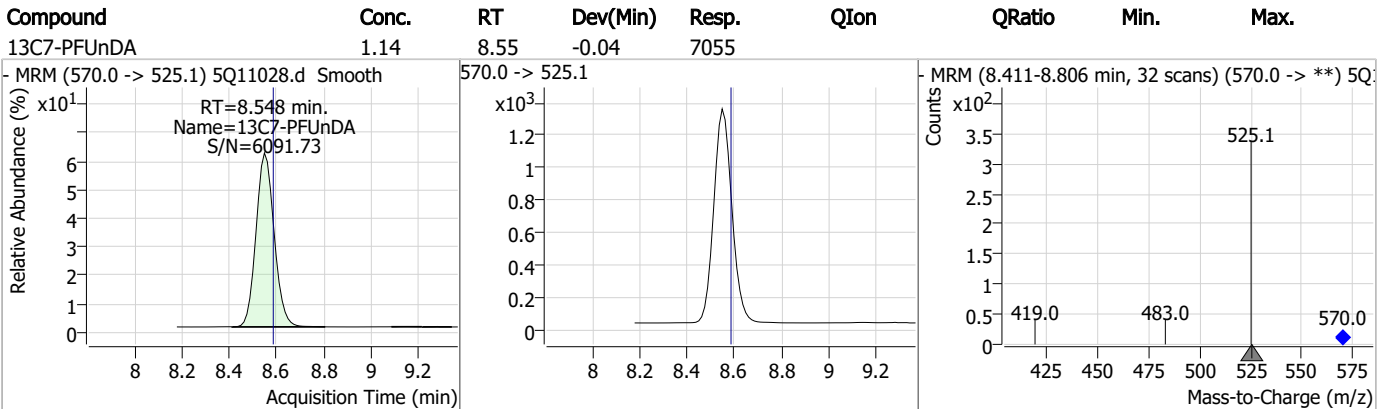
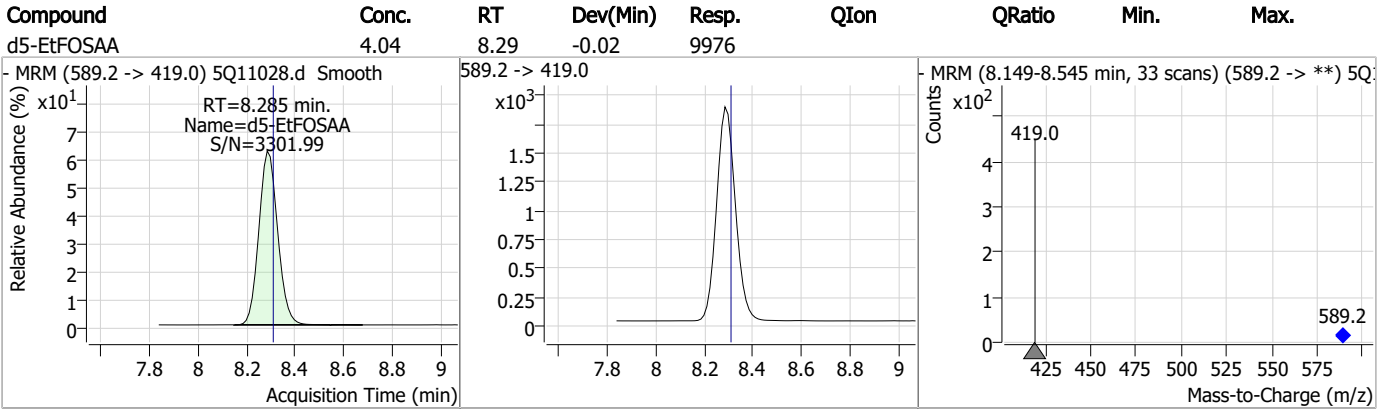
Perfluorinated Compounds by LC/MS/MS



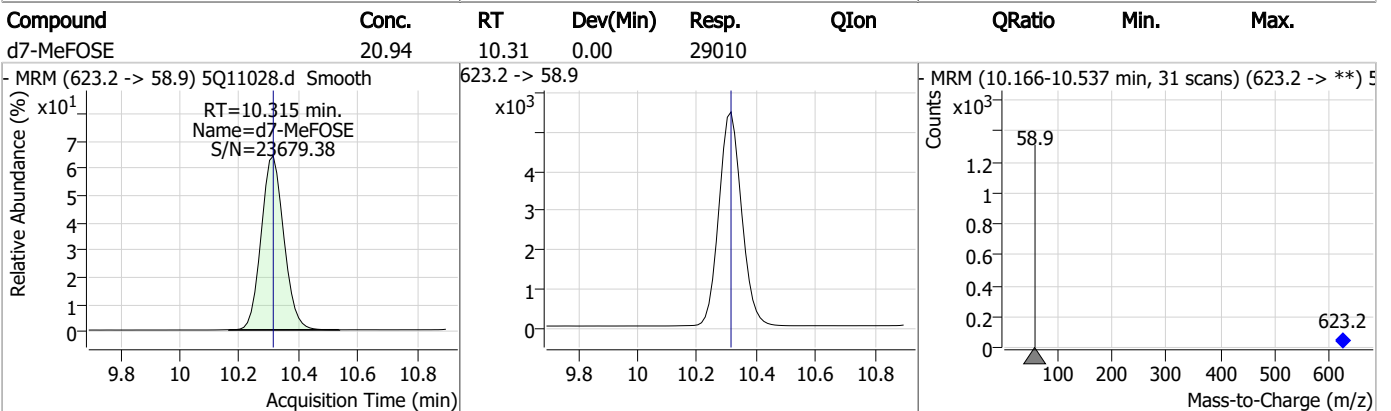
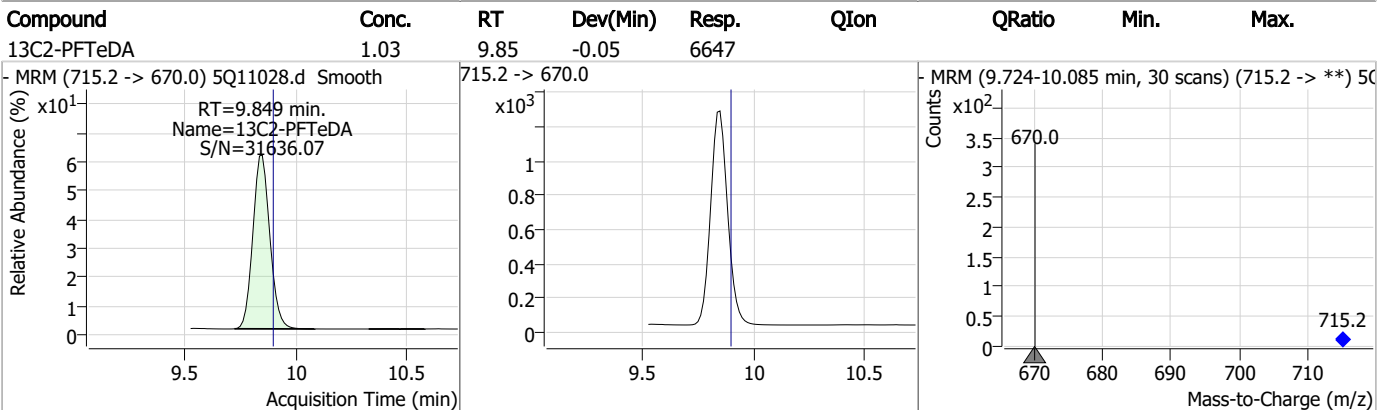
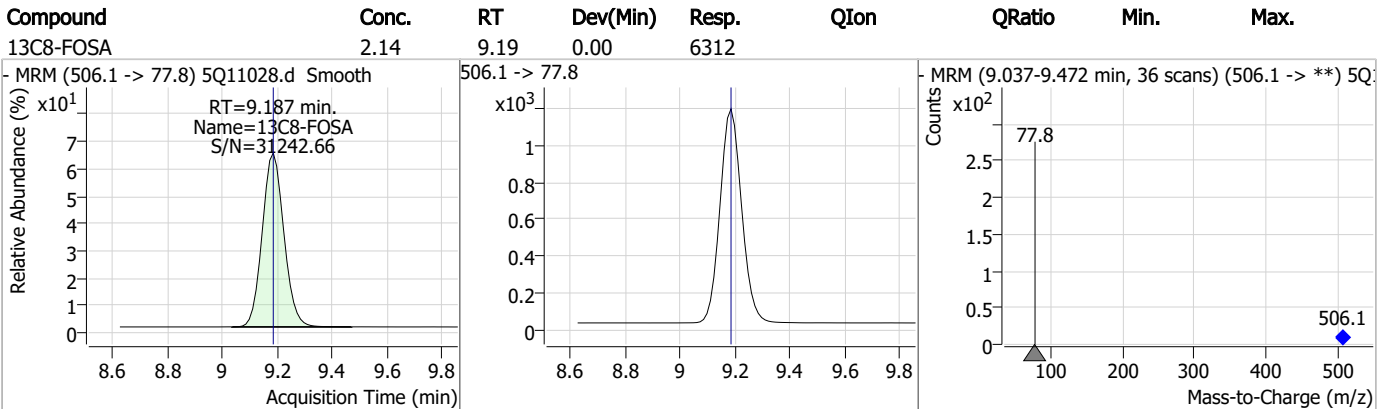
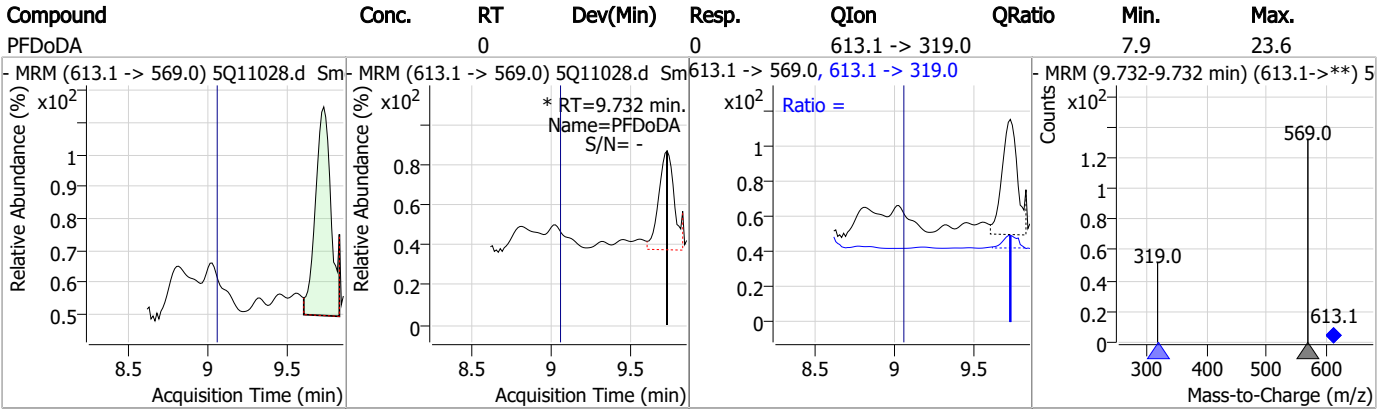
7.2.1

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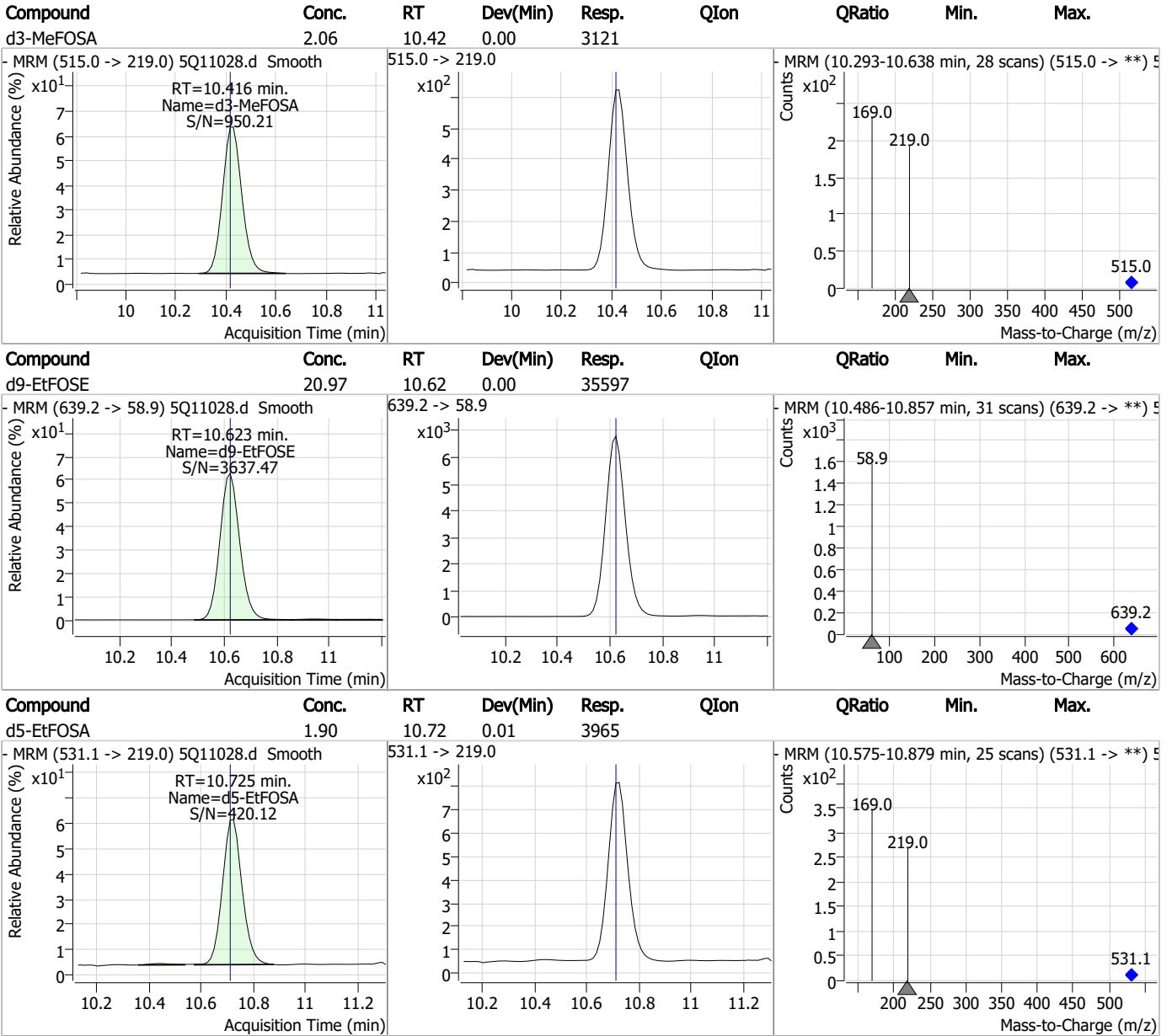
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.1

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Manual Integration Approval Summary

Sample Number: OP95481-MB Method: EPA DRAFT 1633
Lab FileID: 5Q11028.D Analyst approved: 02/20/23 14:34 Lindsay Ritner
Injection Time: 02/17/23 16:57 Supervisor approved: 02/22/23 08:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C4-PFBA			2.79	Poor instrument integration
13C3-PFBA			2.79	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration

7.2.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11023.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 3:47:08 PM
 Sample Name : iblk
 Vial : P3-A1
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95462,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	44125	10.00	µg/L m	-0.012
M5-PFPeA	4.125	268.3 -> 223.0	26851	5.00	µg/L m	-0.025
M5-PFHxA	5.298	318.0 -> 273.0	32820	2.50	µg/L	-0.037
M4-PFHpA	6.255	367.1 -> 322.0	30707	2.50	µg/L	-0.025
M8-PFOA	6.925	421.1 -> 376.0	37451	2.50	µg/L	-0.025
M9-PFNA	7.507	472.1 -> 427.0	13237	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	8690	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	9273	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	10099	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	8704	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	8298	2.50	µg/L	0.000
M3-PFBS	5.241	302.1 -> 79.9	6757	2.50	µg/L m	-0.036
M3-PFHxS	7.054	402.1 -> 79.9	6560	2.50	µg/L	-0.038
M8-PFOS	8.218	507.1 -> 79.9	8670	2.50	µg/L	-0.038
M2-4:2FTS	4.972	329.1 -> 80.9	521	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	1084	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1548	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	9287	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	74710	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	11738	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	38884	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	46931	25.00	µg/L	0.000
M5-EtFOSA	10.725	531.1 -> 219.0	5766	2.50	µg/L	0.012
M3-MeFOSA	10.416	515.0 -> 219.0	4480	2.50	µg/L	0.000
13C4-PFOS	8.219	502.8 -> 79.9	8627	2.50	µg/L	-0.037
13C3-PFBA	2.778	216.0 -> 172.0	24559	5.00	µg/L m	-0.025
18O2-PFHxS	7.052	403.0 -> 83.9	4370	2.50	µg/L	-0.038
13C4-PFOA	6.926	417.1 -> 372.0	44492	2.50	µg/L	-0.025
13C2-PFDA	8.042	515.1 -> 470.1	12753	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	12790	1.25	µg/L	-0.025
13C2-PFHxA	5.299	315.1 -> 270.0	36633	2.50	µg/L	-0.037
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	521	4.90	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%			
13C2-6:2FTS	6.687	429.1 -> 80.9	1084	4.58	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.5%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1548	4.66	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.2%			
13C2-PFDoDA	9.016	615.1 -> 570.0	10099	1.27	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%			
13C2-PFTeDA	9.849	715.2 -> 670.0	8704	1.17	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.3%			
13C3-PFBS	5.241	302.1 -> 79.9	6757	2.01	µg/L m	-0.036
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.4%			
13C3-PFHxS	7.054	402.1 -> 79.9	6560	2.63	µg/L	-0.038

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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 = 105.0%			
13C4-PFBA	2.786	216.8 -> 171.9	44125	9.52	µg/L m	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.2%			
13C4-PFHpA	6.255	367.1 -> 322.0	30707	2.52	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%			
13C5-PFHxA	5.298	318.0 -> 273.0	32820	2.55	µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.1%			
13C5-PFPeA	4.125	268.3 -> 223.0	26851	4.03	µg/L m	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 80.6%			
13C6-PFDA	8.042	519.1 -> 474.1	8690	1.32	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.5%			
13C7-PFUnDA	8.548	570.0 -> 525.1	9273	1.29	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.0%			
13C8-FOSA	9.187	506.1 -> 77.8	8298	2.45	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.1%			
13C8-PFOA	6.925	421.1 -> 376.0	37451	2.50	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%			
13C8-PFOS	8.218	507.1 -> 79.9	8670	2.55	µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.1%			
13C9-PFNA	7.507	472.1 -> 427.0	13237	1.27	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%			
d3-MeFOSAA	8.063	573.2 -> 419.0	9287	4.86	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.2%			
13C3-HFPO-DA	5.690	286.9 -> 168.9	74710	10.99	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 109.9%			
d3-MeFOSA	10.416	515.0 -> 219.0	4480	2.58	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%			
d5-EtFOSAA	8.285	589.2 -> 419.0	11738	4.15	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.1%			
d7-MeFOSE	10.315	623.2 -> 58.9	38884	24.49	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.0%			
d9-EtFOSE	10.623	639.2 -> 58.9	46931	24.12	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.5%			
d5-EtFOSA	10.725	531.1 -> 219.0	5766	2.41	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.2%			

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	9.732	613.1 -> 569.0 613.1 -> 319.0	0 0	µg/L	m	1
PFDS	-	599.0 -> 79.9	-	N.D.		



7.22
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	9.283	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	7.286	441.0 -> 316.9	677	0.85 µg/L	m	70
		441.0 -> 336.9	1150			
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.2
7

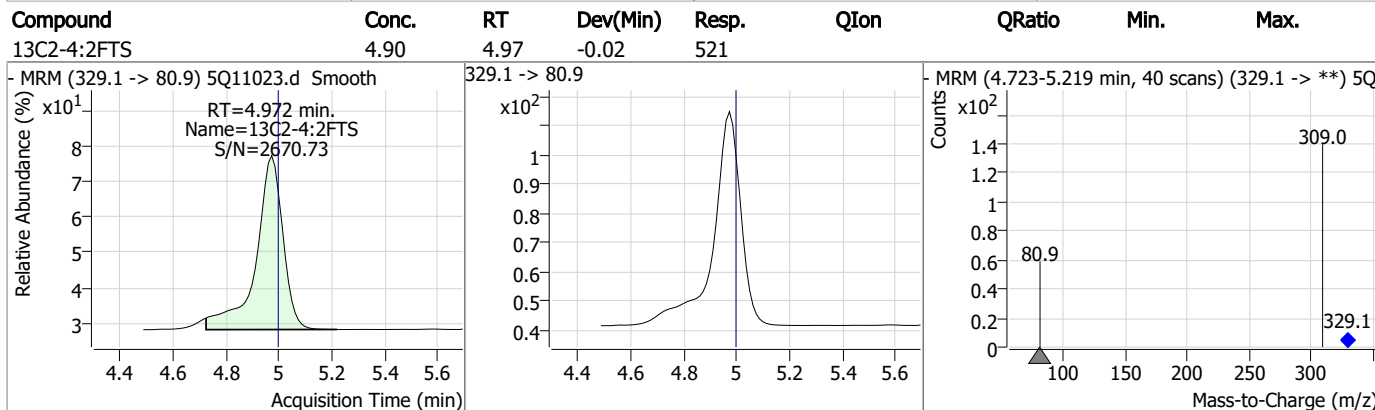
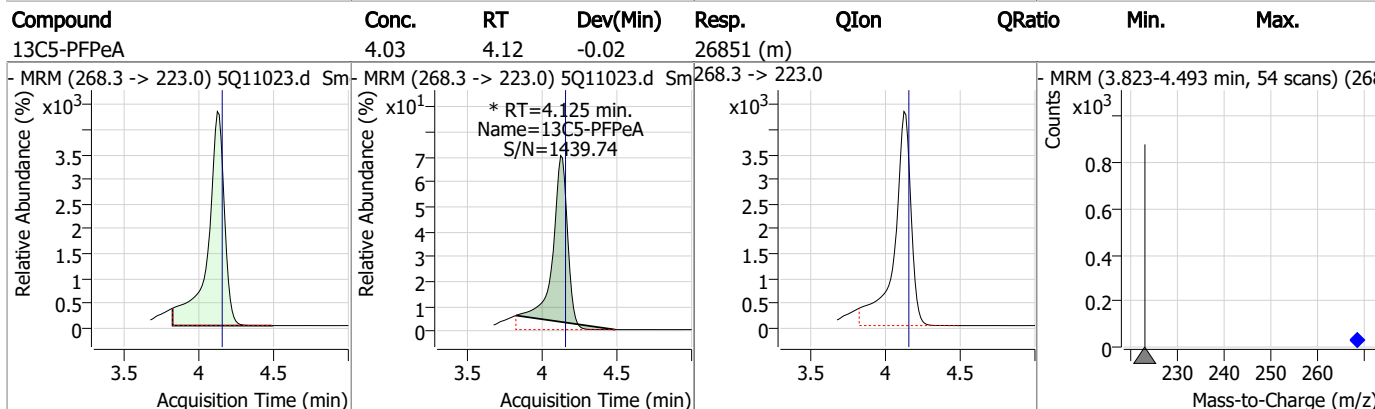
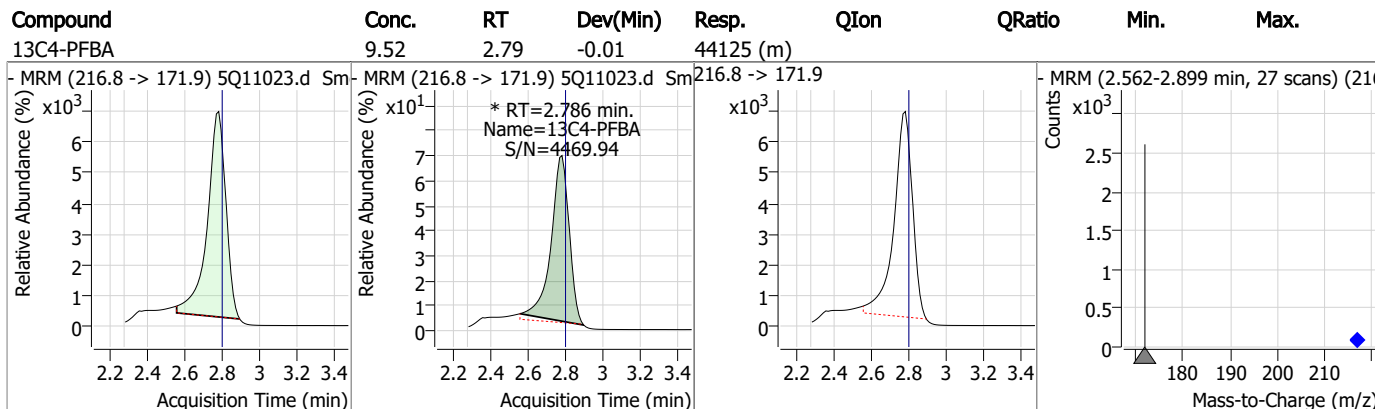
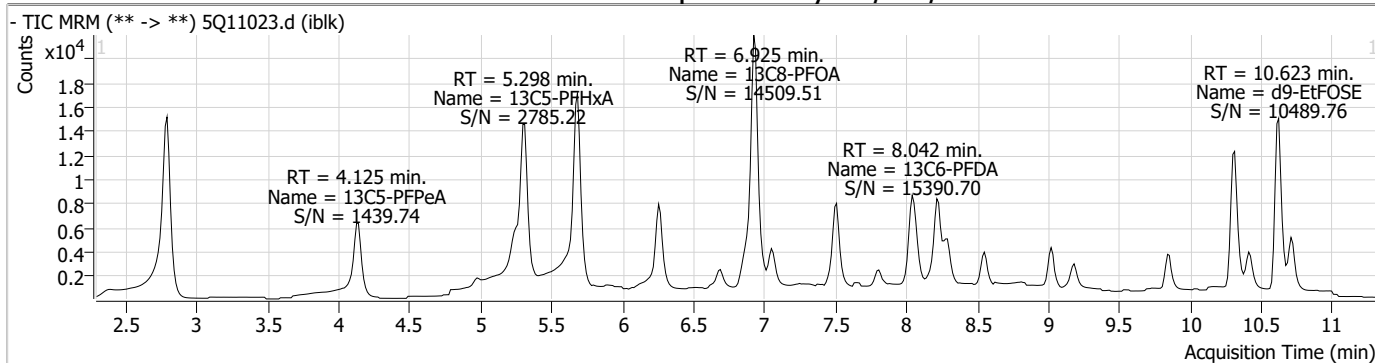
Perfluorinated Compounds by LC/MS/MS

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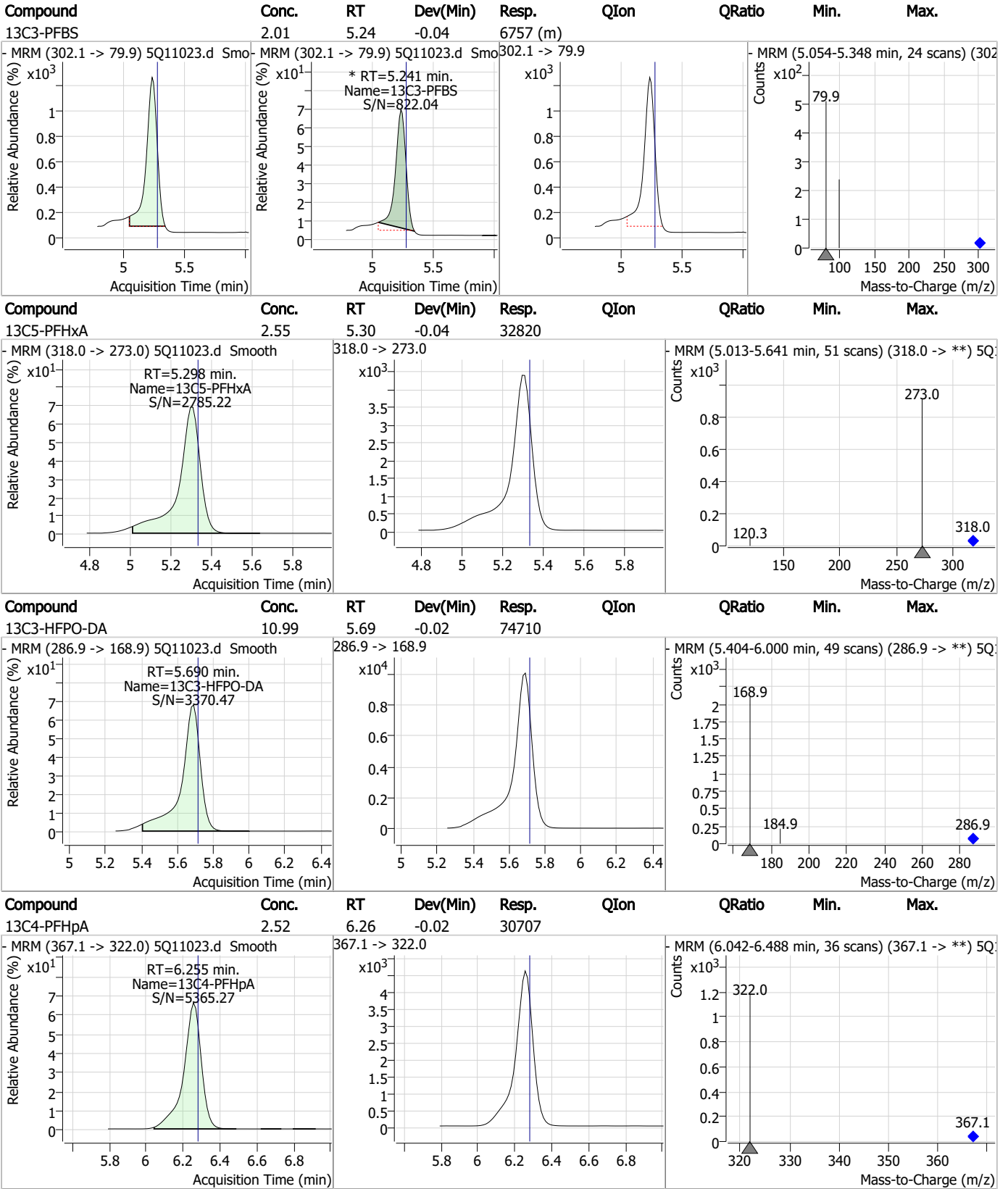
7.2.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

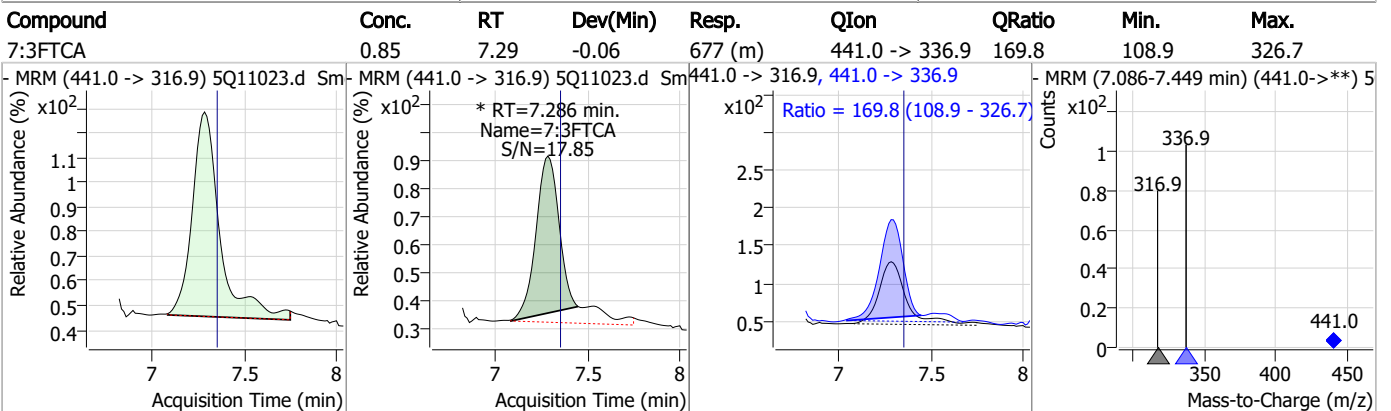
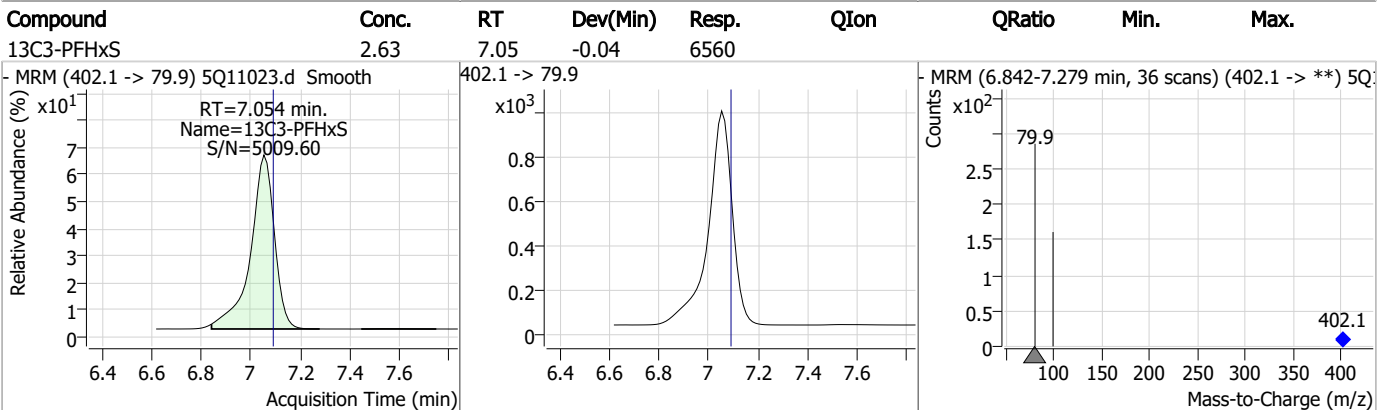
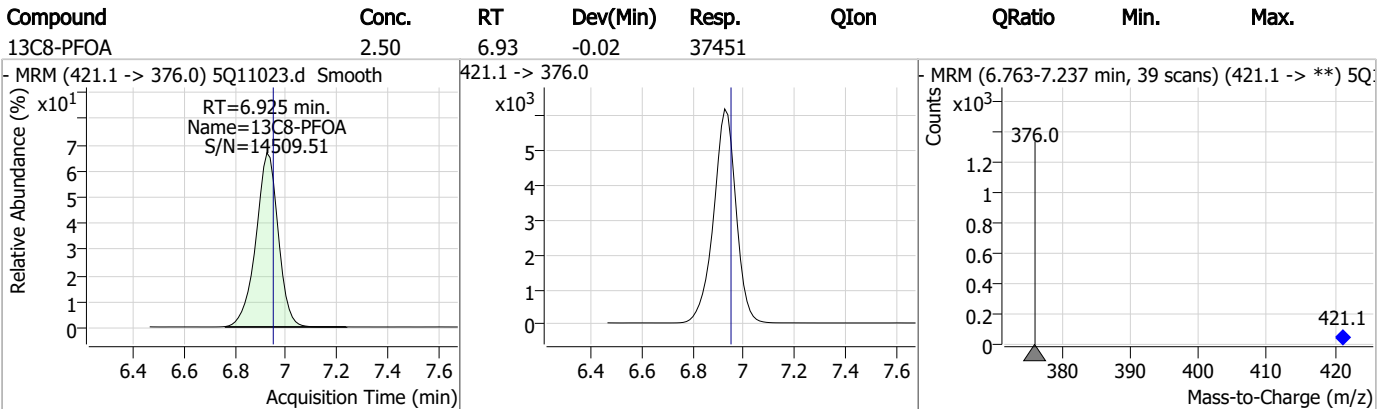
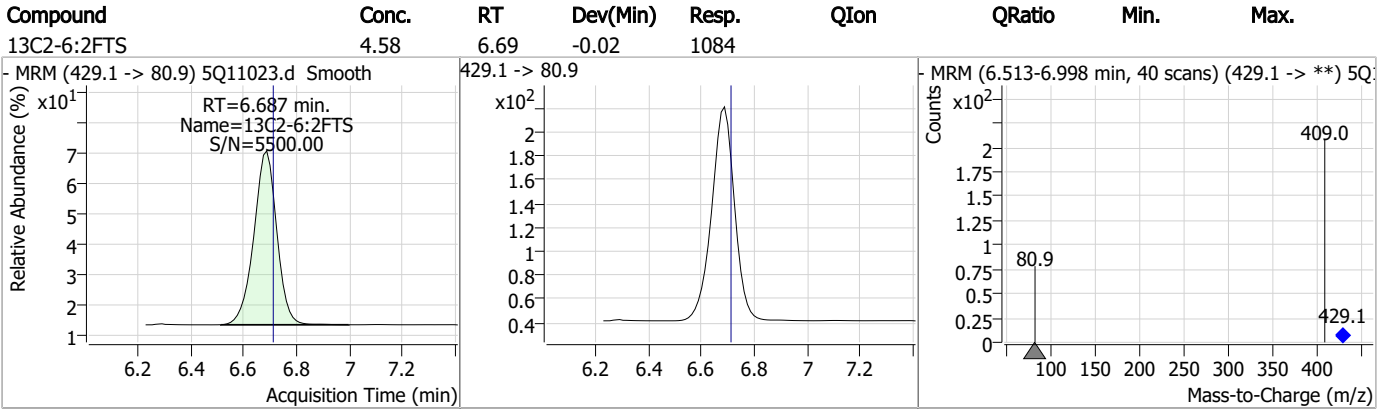


7.2.2

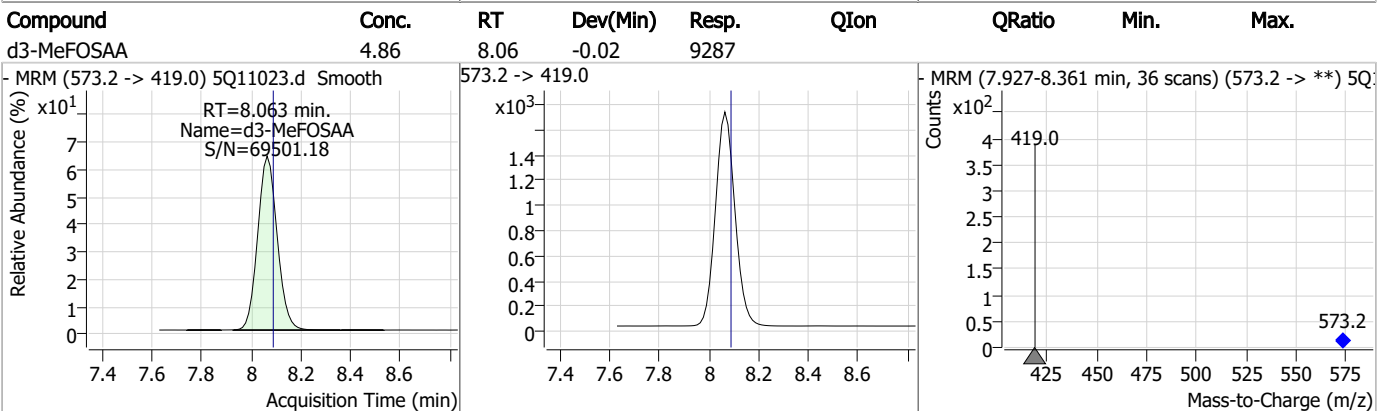
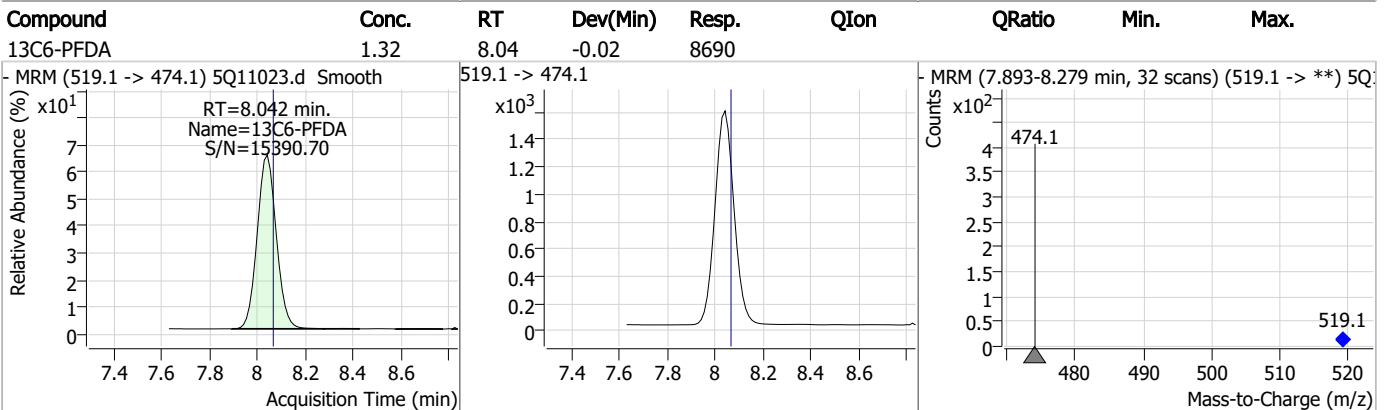
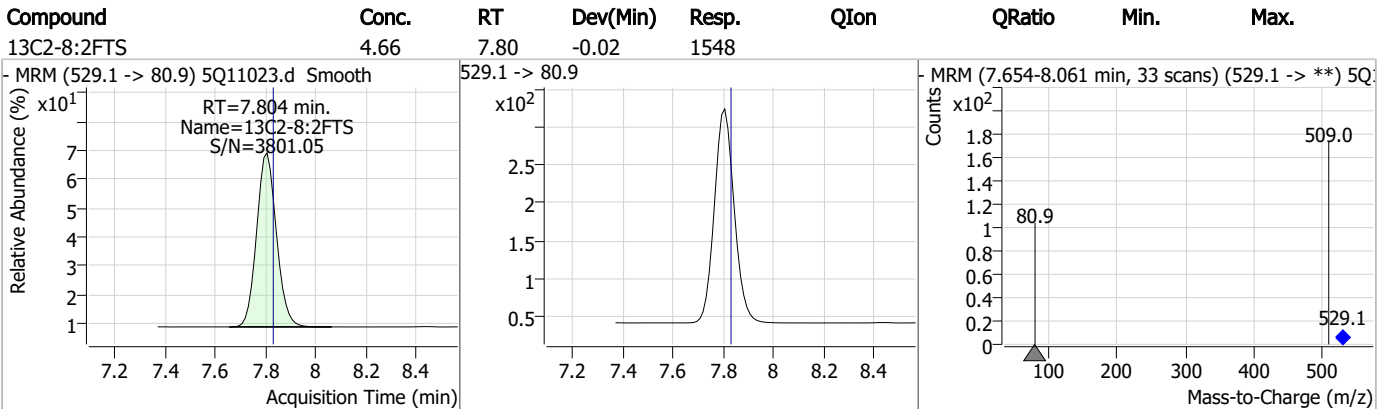
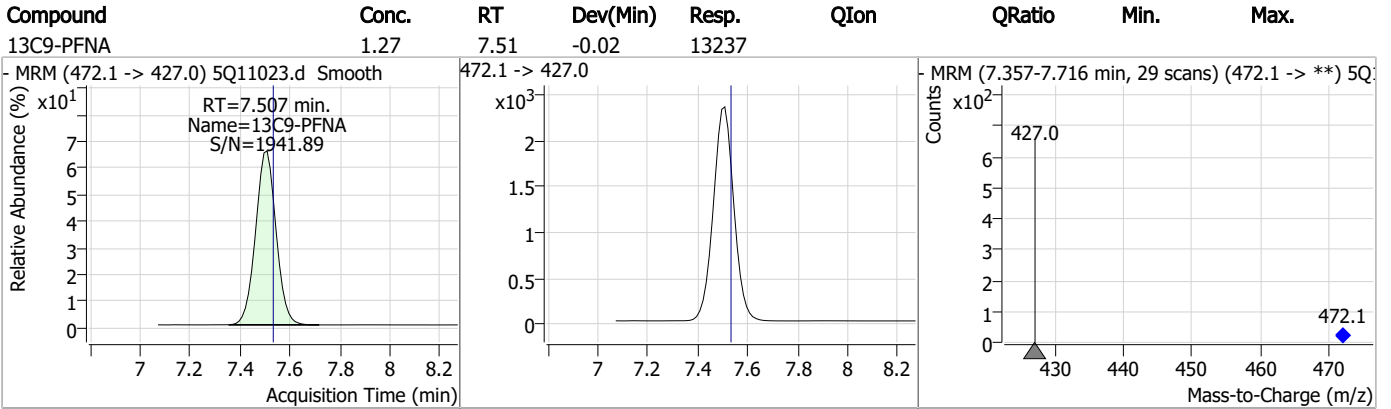
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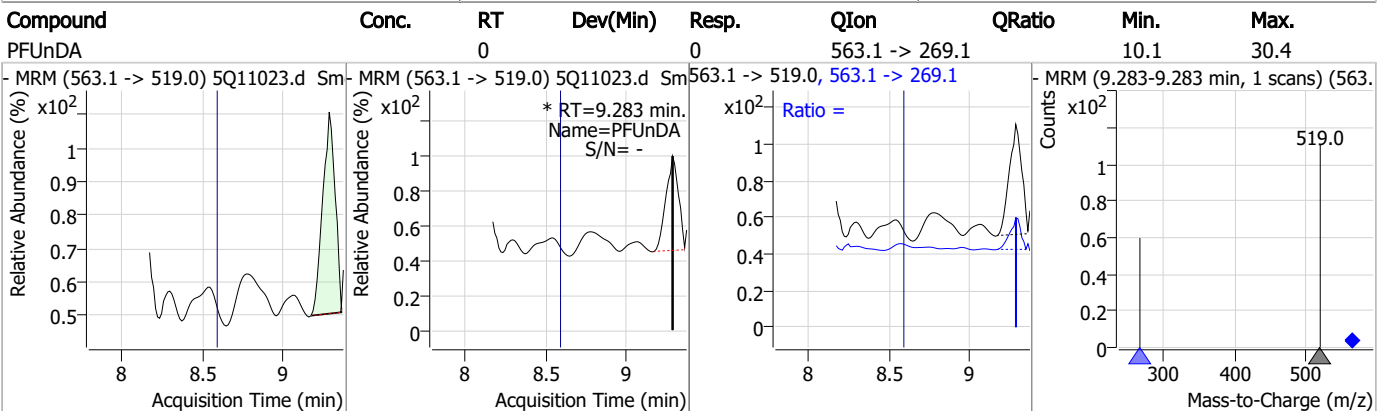
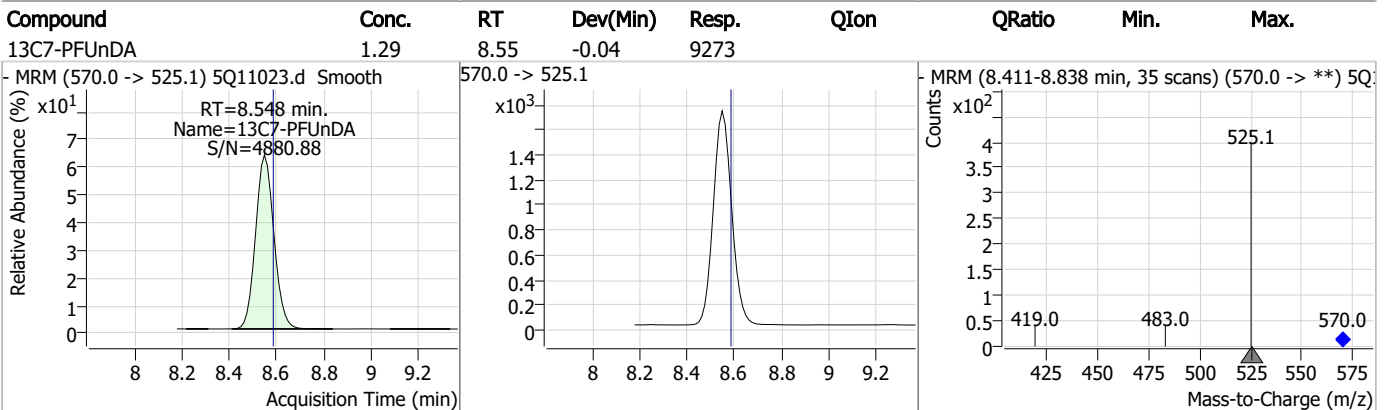
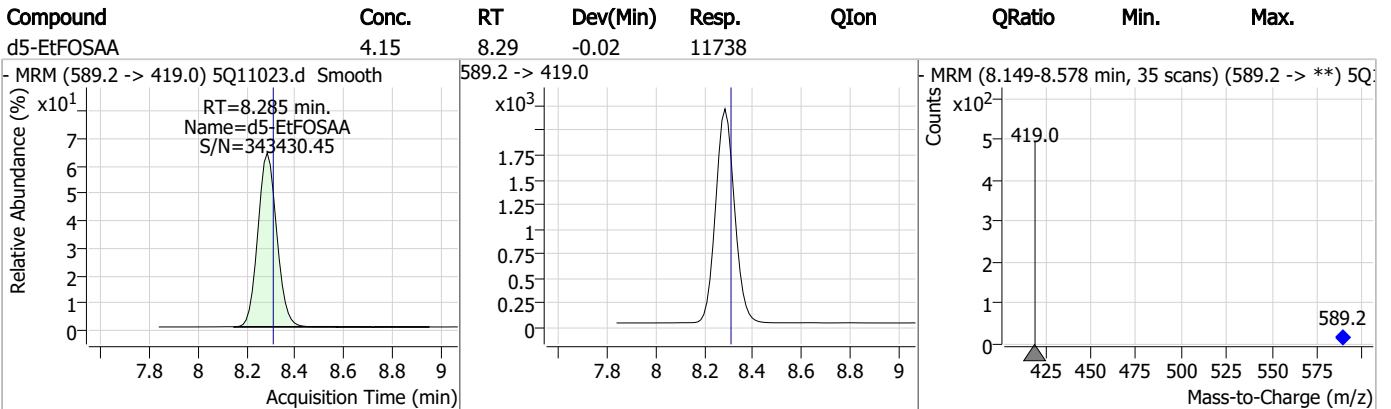
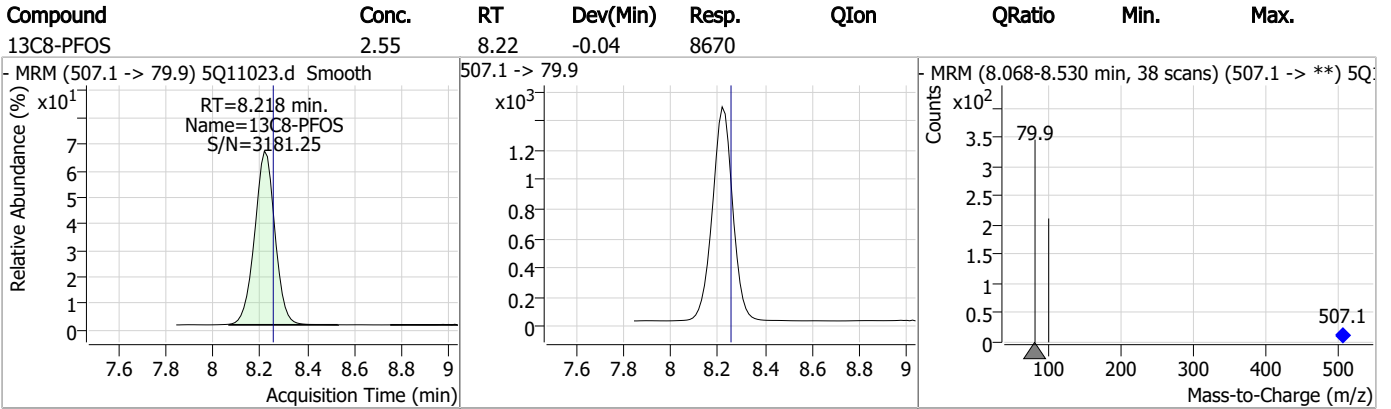
Perfluorinated Compounds by LC/MS/MS



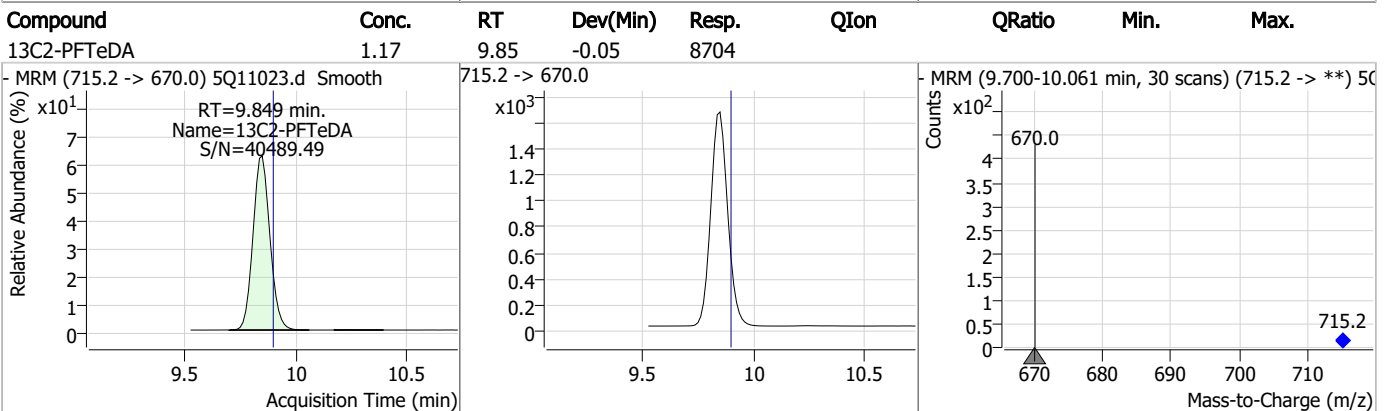
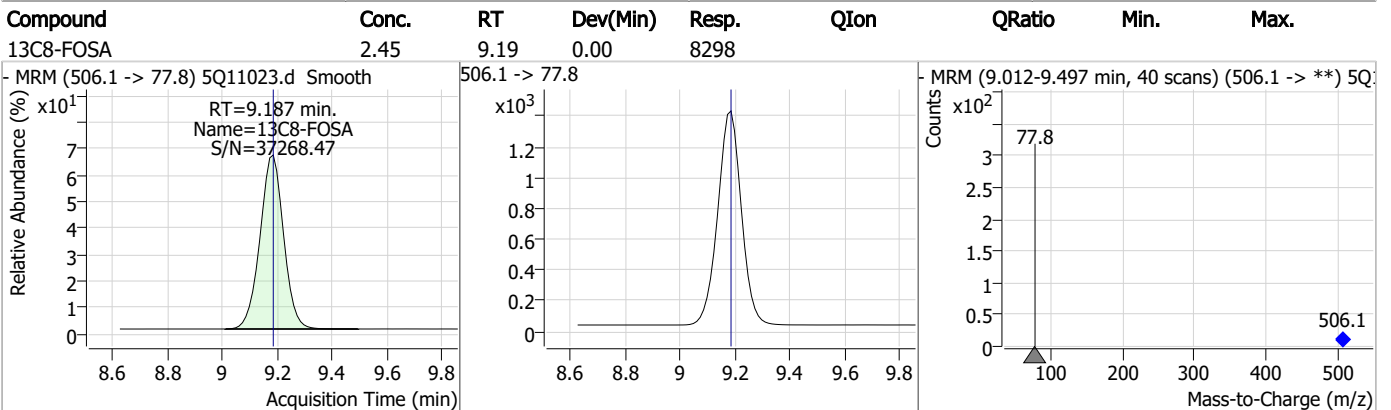
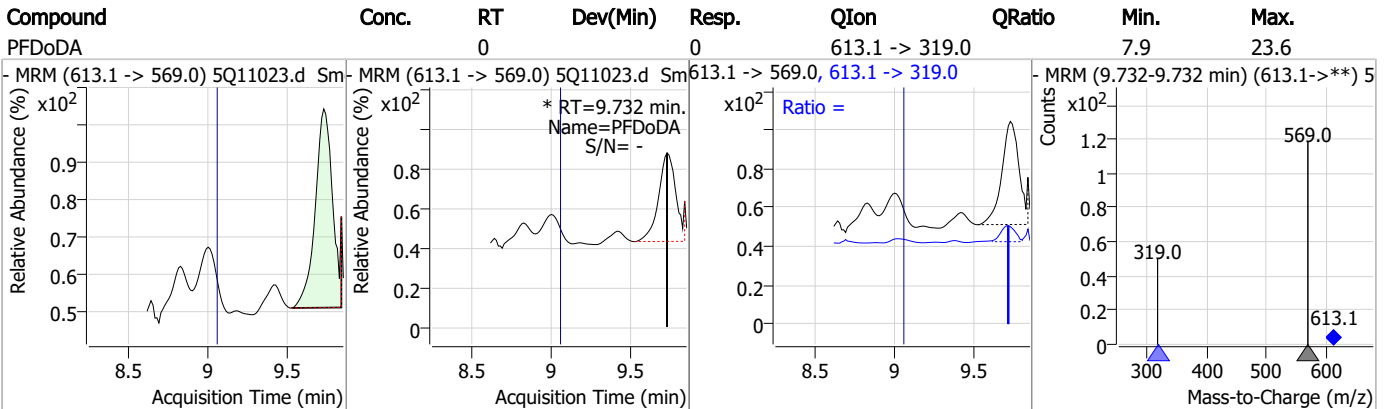
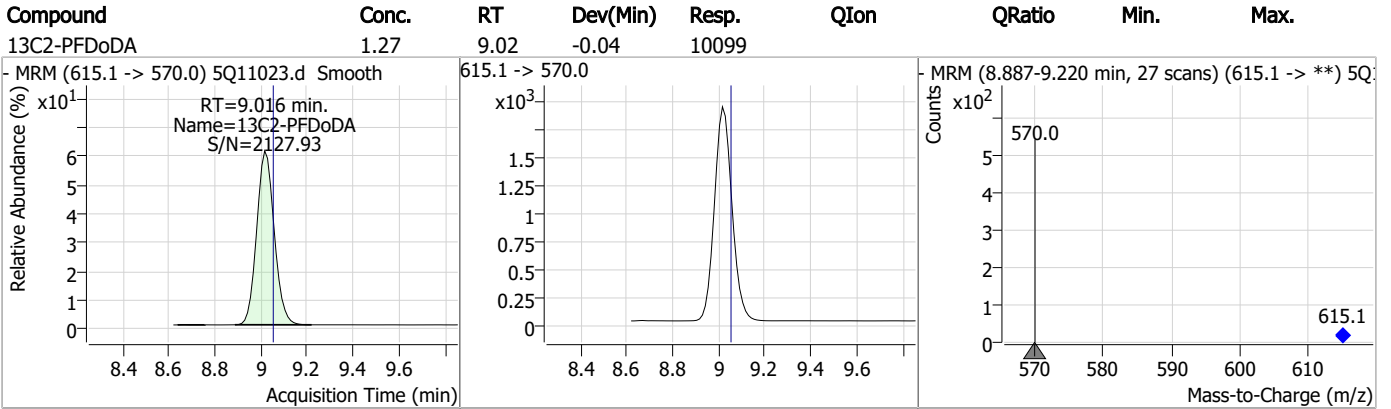
Perfluorinated Compounds by LC/MS/MS



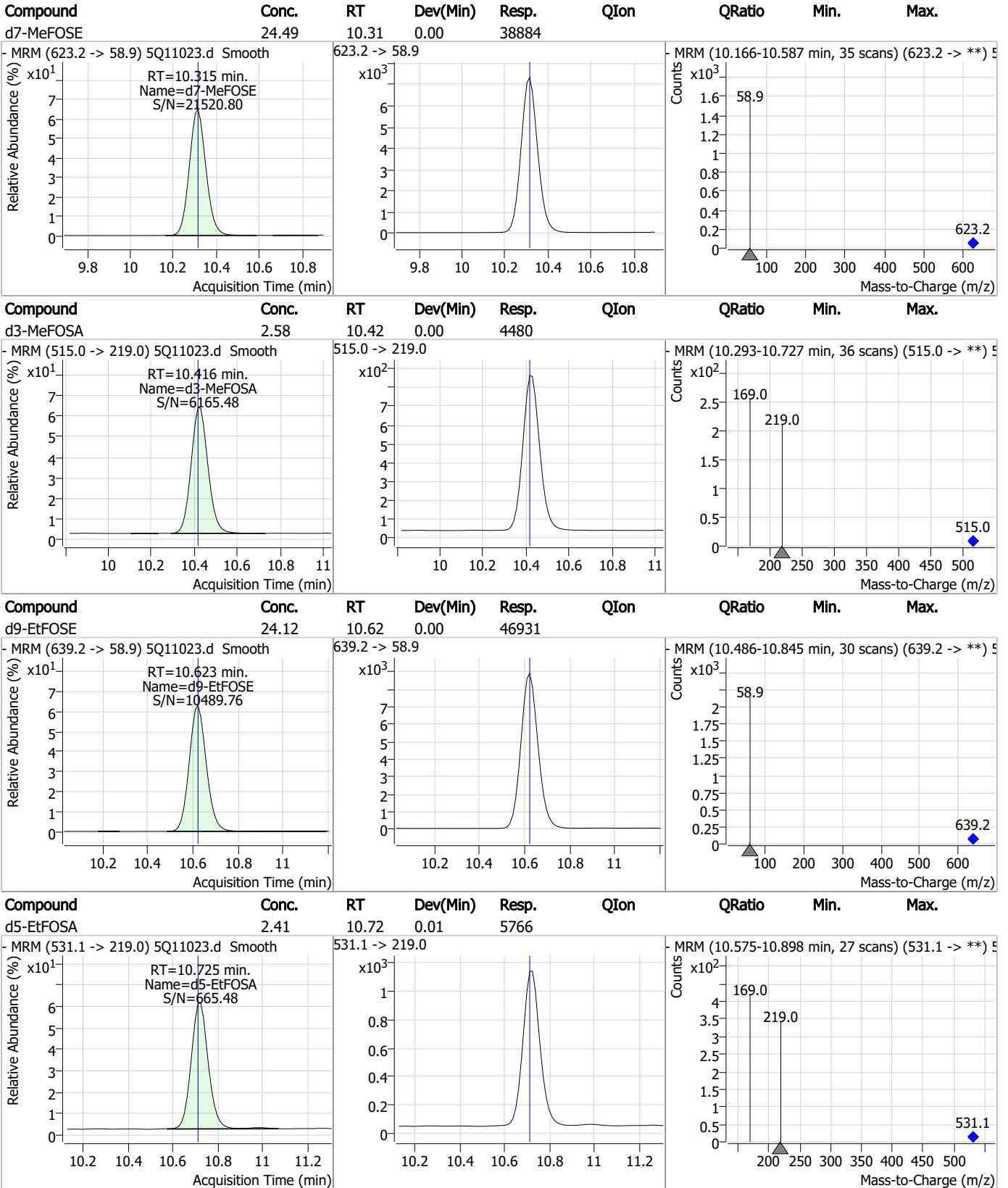
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Manual Integration Approval Summary

Sample Number: S5Q170-IBLK Method: EPA DRAFT 1633
Lab FileID: 5Q11023.D Analyst approved: 02/20/23 14:34 Lindsay Ritner
Injection Time: 02/17/23 15:47 Supervisor approved: 02/21/23 10:33 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.78	Poor instrument integration
13C4-PFBA			2.79	Poor instrument integration
13C5-PFPeA			4.12	Poor instrument integration
13C3-PFBS			5.24	Poor instrument integration
7:3 Fluorotelomer carboxylate	812-70-4		7.29	Poor instrument integration

7.2.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11026.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 4:29:26 PM
 Sample Name : op95481-bs
 Vial : P4-A1
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95481,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	45227	10.00	µg/L m	0.000
M5-PFPeA	4.137	268.3 -> 223.0	25639	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	27489	2.50	µg/L	-0.025
M4-PFHpA	6.268	367.1 -> 322.0	25277	2.50	µg/L	-0.012
M8-PFOA	6.937	421.1 -> 376.0	30025	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	10397	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	6980	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	7479	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	7479	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	6012	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	6921	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	6829	2.50	µg/L m	-0.025
M3-PFHxS	7.054	402.1 -> 79.9	5244	2.50	µg/L	-0.038
M8-PFOS	8.231	507.1 -> 79.9	6896	2.50	µg/L	-0.025
M2-4:2FTS	4.984	329.1 -> 80.9	381	5.00	µg/L	-0.012
M2-6:2FTS	6.687	429.1 -> 80.9	800	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1224	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	7705	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	62613	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	9374	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	24787	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	30514	25.00	µg/L	0.000
M5-EtFOSA	10.725	531.1 -> 219.0	3840	2.50	µg/L	0.012
M3-MeFOSA	10.429	515.0 -> 219.0	3174	2.50	µg/L	0.012
13C4-PFOS	8.231	502.8 -> 79.9	7414	2.50	µg/L	-0.025
13C3-PFBA	2.791	216.0 -> 172.0	23995	5.00	µg/L m	-0.013
18O2-PFHxS	7.065	403.0 -> 83.9	3924	2.50	µg/L	-0.026
13C4-PFOA	6.938	417.1 -> 372.0	37490	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	10401	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	11227	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	31717	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.984	329.1 -> 80.9	381	3.99	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 79.7%			
13C2-6:2FTS	6.687	429.1 -> 80.9	800	3.76	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 75.3%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1224	4.11	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 82.1%			
13C2-PFDoDA	9.016	615.1 -> 570.0	7479	1.15	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.3%			
13C2-PFTeDA	9.849	715.2 -> 670.0	6012	0.99	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.0%			
13C3-PFBS	5.252	302.1 -> 79.9	6829	2.26	µg/L m	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.5%			
13C3-PFHxS	7.054	402.1 -> 79.9	5244	2.34	µg/L	-0.038

7.3.1
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 = 93.5%		
13C4-PFBA	2.799	216.8 -> 171.9	45227	9.99 µg/L m	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C4-PFHpA	6.268	367.1 -> 322.0	25277	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C5-PFHxA	5.310	318.0 -> 273.0	27489	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C5-PFPeA	4.137	268.3 -> 223.0	29953	5.20 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C6-PFDA	8.042	519.1 -> 474.1	6980	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C7-PFUnDA	8.548	570.0 -> 525.1	7479	1.27 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C8-FOSA	9.187	506.1 -> 77.8	6921	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.2%		
13C8-PFOA	6.937	421.1 -> 376.0	30025	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C8-PFOS	8.231	507.1 -> 79.9	6896	2.36 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C9-PFNA	7.507	472.1 -> 427.0	10397	1.13 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.6%		
d3-MeFOSAA	8.063	573.2 -> 419.0	7705	4.69 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C3-HFPO-DA	5.690	286.9 -> 168.9	62613	10.64 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
d3-MeFOSA	10.429	515.0 -> 219.0	3174	2.12 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.0%		
d5-EtFOSAA	8.285	589.2 -> 419.0	9374	3.86 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 77.2%		
d7-MeFOSE	10.315	623.2 -> 58.9	24787	18.17 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 72.7%		
d9-EtFOSE	10.623	639.2 -> 58.9	30514	18.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 73.0%		
d5-EtFOSA	10.725	531.1 -> 219.0	3840	1.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 74.6%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	5923	12.37 µg/L	95
		327.1 -> 80.9	3038		
6:2FTS	6.687	427.1 -> 407.0	8362	12.50 µg/L	99
		427.1 -> 80.9	3456		
8:2FTS	7.804	527.1 -> 507.0	5629	9.71 µg/L	95
		527.1 -> 80.8	3021		
EtFOSAA	8.298	584.2 -> 419.1	4042	3.29 µg/L m	98
		584.2 -> 526.0	1652		
FOSA	9.190	498.1 -> 77.9	7352	2.91 µg/L	99
		498.1 -> 478.0	231		
MeFOSAA	8.077	570.1 -> 419.0	4135	3.17 µg/L m	97
		570.1 -> 483.0	824		
PFBA	2.795	212.8 -> 168.9	22267	12.44 µg/L m	100
PFBS	5.253	298.7 -> 79.9	7131	3.18 µg/L m	96
		298.7 -> 98.8	2814		
PFDA	8.042	512.9 -> 469.0	20553	2.81 µg/L	99
		512.9 -> 219.0	3819		
PFDoDA	9.017	613.1 -> 569.0	15823	3.12 µg/L	100
		613.1 -> 319.0	2529		
PFDS	9.195	599.0 -> 79.9	4286	2.82 µg/L	99

7.31
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2240			
PFHpA	6.268	363.1 -> 319.0	32068	3.00	µg/L	99
		363.1 -> 169.0	7166			
PFHpS	7.673	449.0 -> 79.9	5739	2.93	µg/L	94
		449.0 -> 98.9	3227			
PFHxA	5.312	313.0 -> 269.0	25080	3.11	µg/L	100
		313.0 -> 118.9	1181			
PFHxS	7.055	398.7 -> 79.9	4539	2.56	µg/L	m 90
		398.7 -> 98.9	2906			
PFNA	7.508	463.0 -> 419.0	18312	3.04	µg/L	100
		463.0 -> 219.0	4324			
PFNS	8.736	548.8 -> 79.9	4305	2.84	µg/L	98
		548.8 -> 98.9	2569			
PFOA	6.939	413.0 -> 369.0	34301	2.97	µg/L	98
		413.0 -> 169.0	8205			
PFOS	8.219	498.9 -> 79.9	7617	2.74	µg/L	m 92
		498.9 -> 98.8	4399			
PFPeA	4.139	263.0 -> 219.0	35016	6.25	µg/L	m 100
PFPeS	6.332	349.1 -> 79.9	5258	3.44	µg/L	96
		349.1 -> 98.9	2531			
PFTeDA	9.850	713.1 -> 669.0	13441	2.91	µg/L	98
		713.1 -> 168.9	1787			
PFTrDA	9.451	663.0 -> 619.0	18876	2.82	µg/L	98
		663.0 -> 168.9	3312			
PFUnDA	8.548	563.1 -> 519.0	16513	2.96	µg/L	98
		563.1 -> 269.1	3236			
11CI-PF3OUdS	9.503	630.9 -> 450.9	63058	9.15	µg/L	100
		632.9 -> 452.9	19447			
9CI-PF3ONS	8.601	530.8 -> 351.0	72312	9.82	µg/L	100
		532.8 -> 353.0	22606			
ADONA	6.517	376.9 -> 250.9	180084	10.51	µg/L	100
		376.9 -> 84.8	54089			
HFPO-DA	5.691	284.9 -> 168.9	63981	12.45	µg/L	99
		284.9 -> 184.9	6108			
3:3FTCA	3.603	241.0 -> 177.0	6785	16.41	µg/L	98
		241.0 -> 117.0	828			
5:3FTCA	5.906	341.0 -> 237.1	108029	64.80	µg/L	98
		341.0 -> 217.0	74528			
7:3FTCA	7.335	441.0 -> 316.9	41597	62.32	µg/L	98
		441.0 -> 336.9	91641			
EtFOSA	10.726	526.0 -> 219.0	4028	2.91	µg/L	96
		526.0 -> 169.0	4845			
EtFOSE	10.636	630.0 -> 58.9	33548	29.60	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	3441	2.75	µg/L	96
		511.9 -> 169.0	4526			
MeFOSE	10.327	616.1 -> 58.9	31437	29.69	µg/L	100
PFDoDS	10.001	699.1 -> 79.9	2948	2.46	µg/L	98
		699.1 -> 98.8	1751			
NFDHA	5.193	295.0 -> 201.0	4091	6.44	µg/L	99
		295.0 -> 84.9	1124			
PFMBA	4.541	279.0 -> 85.1	28839	6.99	µg/L	100
PFMPA	3.315	229.0 -> 84.9	19759	6.51	µg/L	m 100
PFEESA	5.796	314.8 -> 134.9	53305	6.29	µg/L	100
		314.8 -> 82.9	1632			

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

7.3.1
7

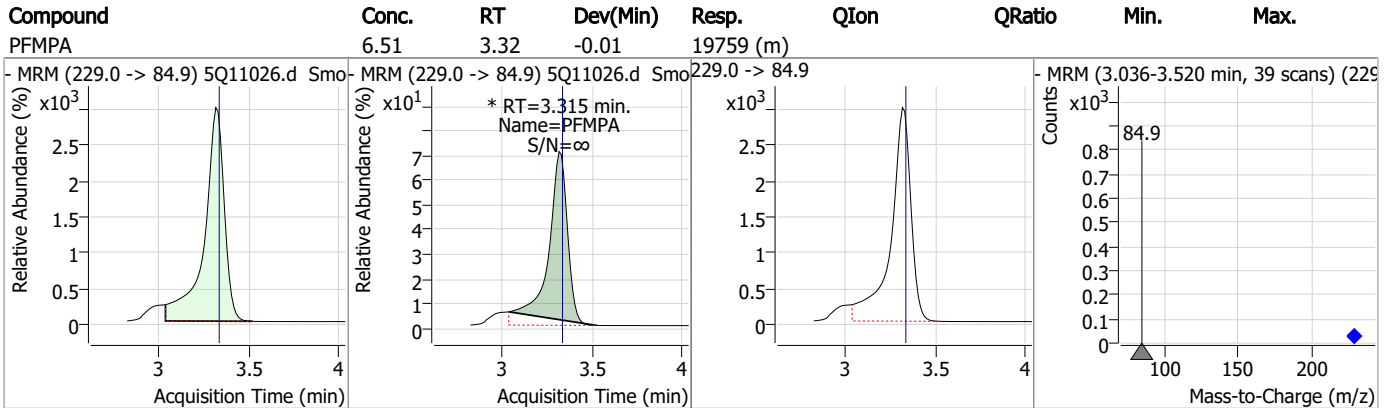
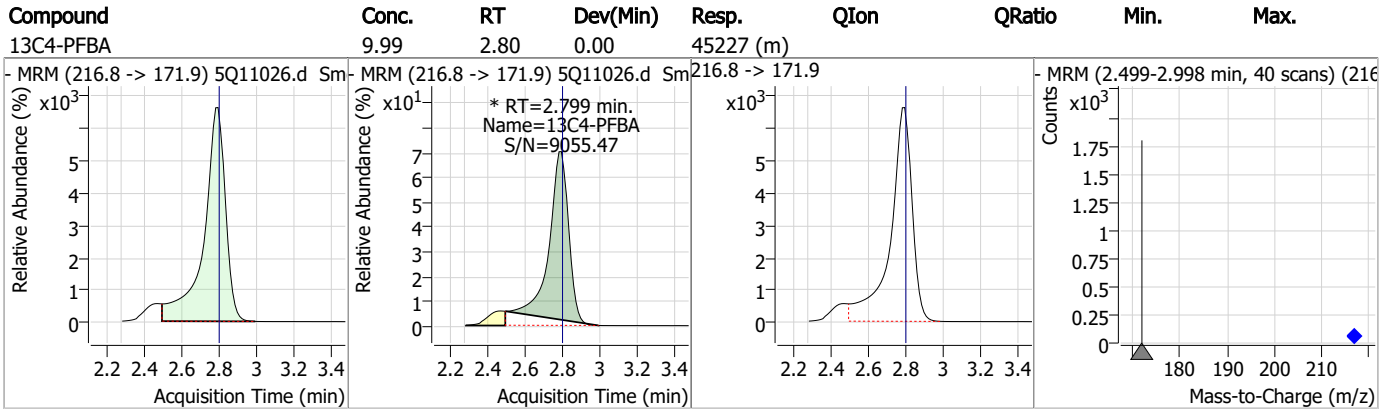
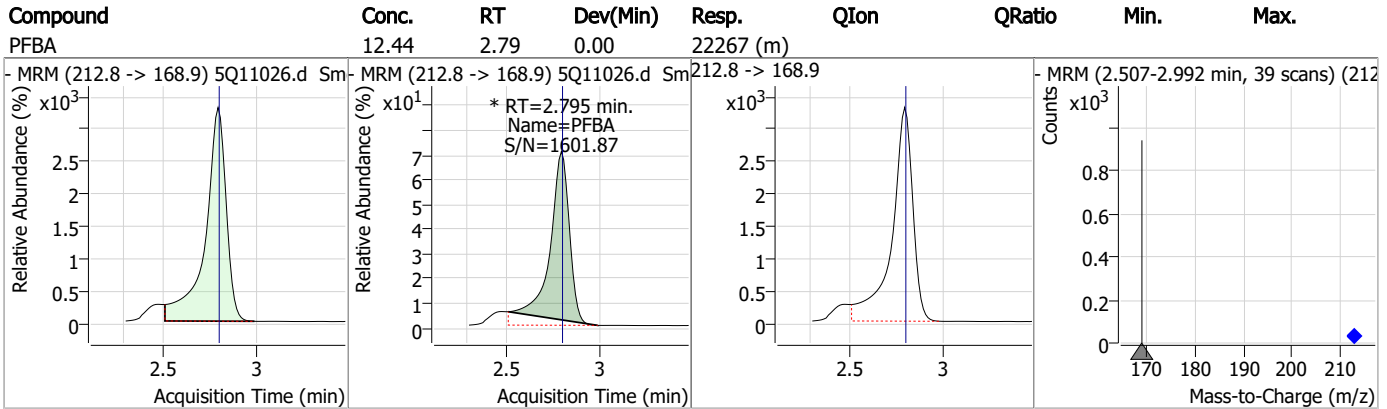
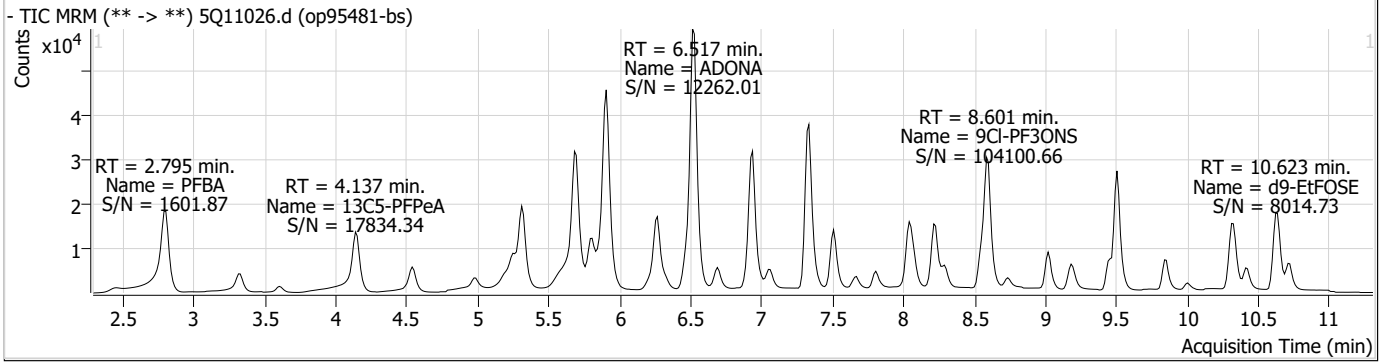
Perfluorinated Compounds by LC/MS/MS

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

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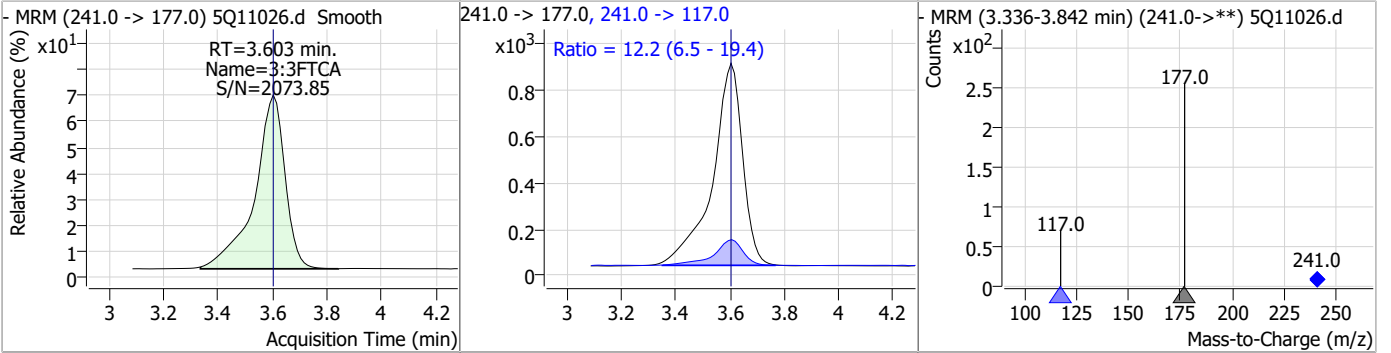
Perfluorinated Compounds by LC/MS/MS



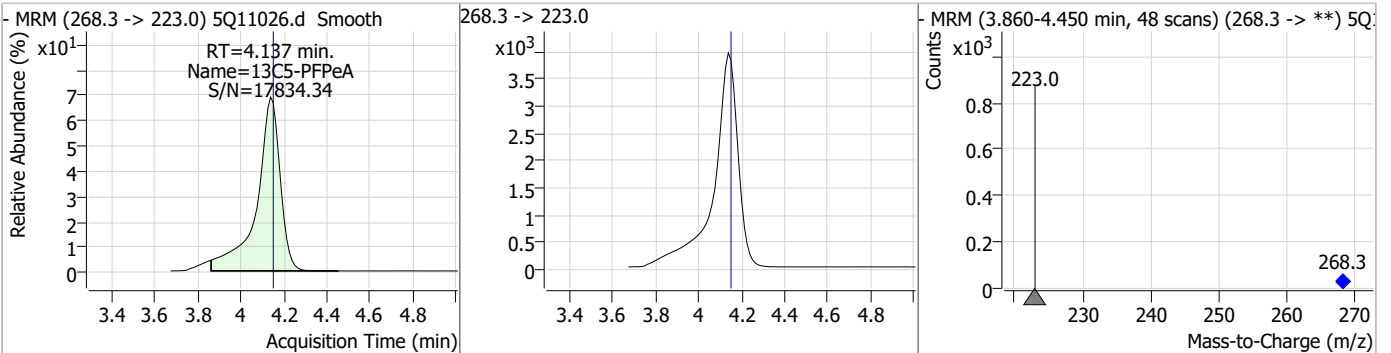
7.3.1
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Perfluorinated Compounds by LC/MS/MS

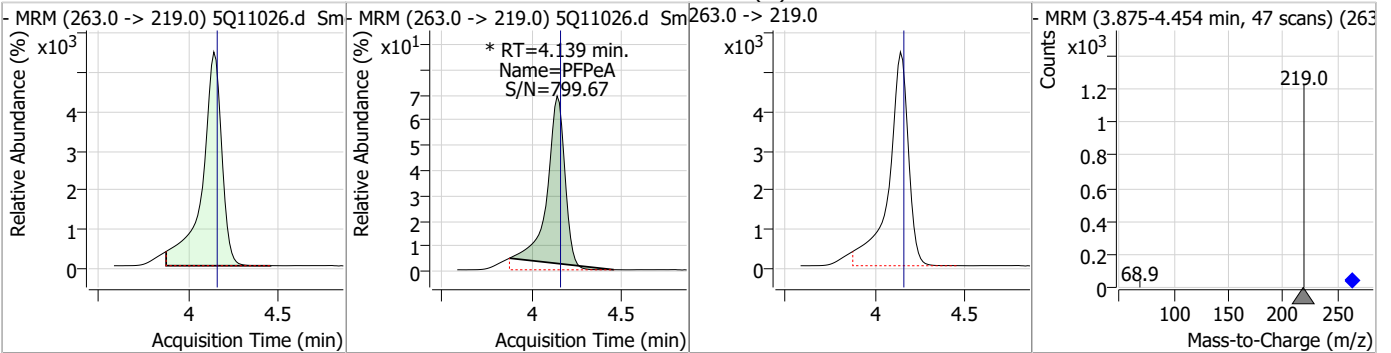
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	16.41	3.60	0.00	6785	241.0 -> 117.0	12.2	6.5	19.4



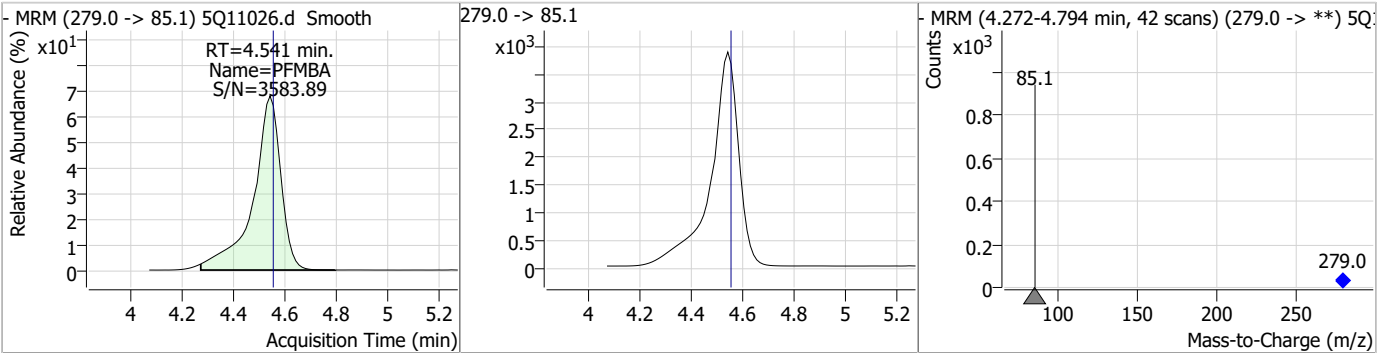
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.20	4.14	-0.01	29953				



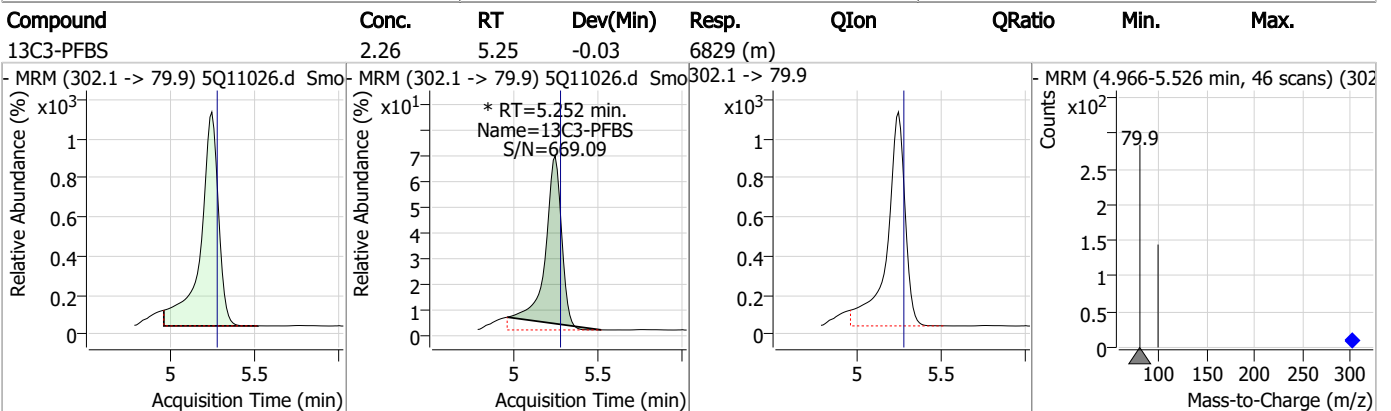
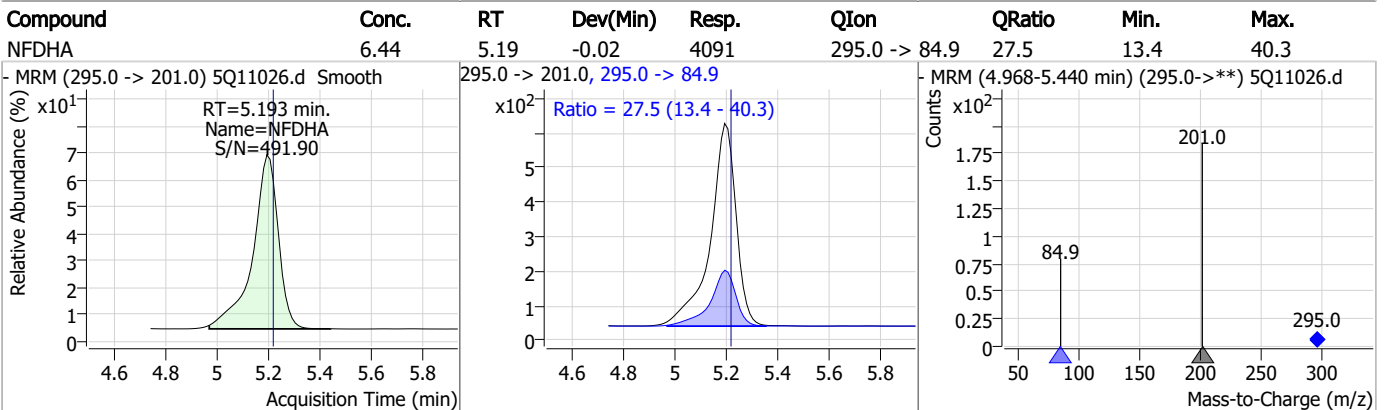
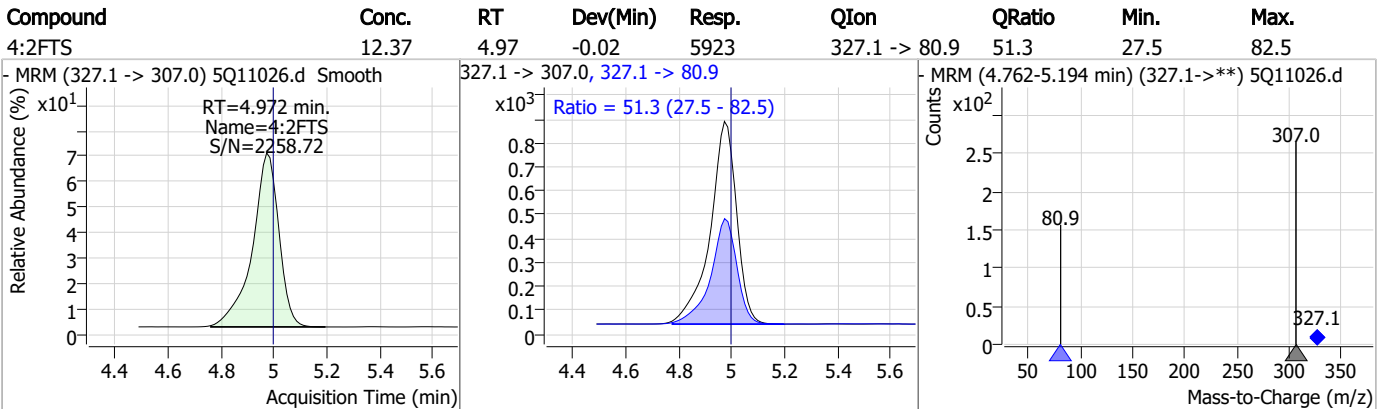
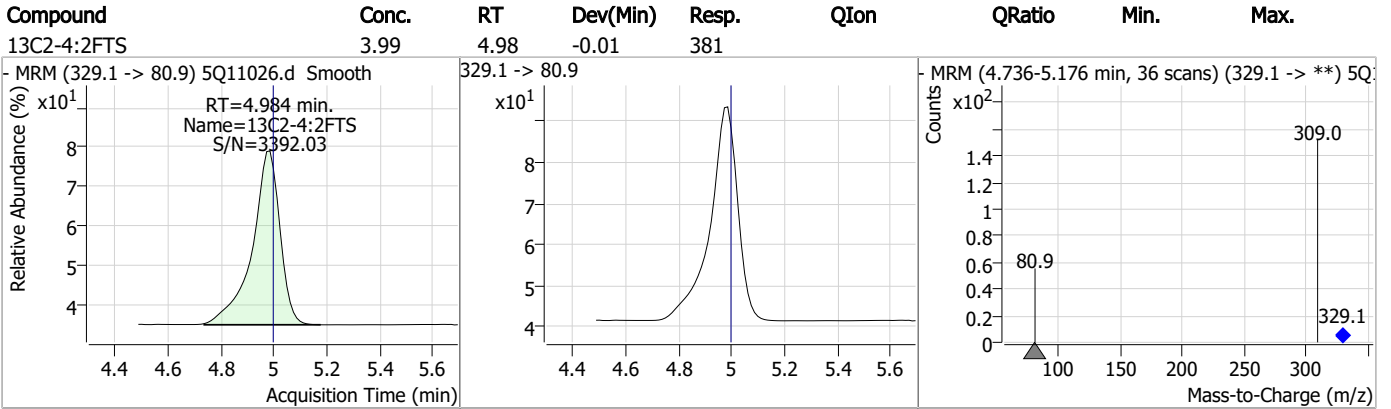
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	6.25	4.14	-0.01	35016 (m)				



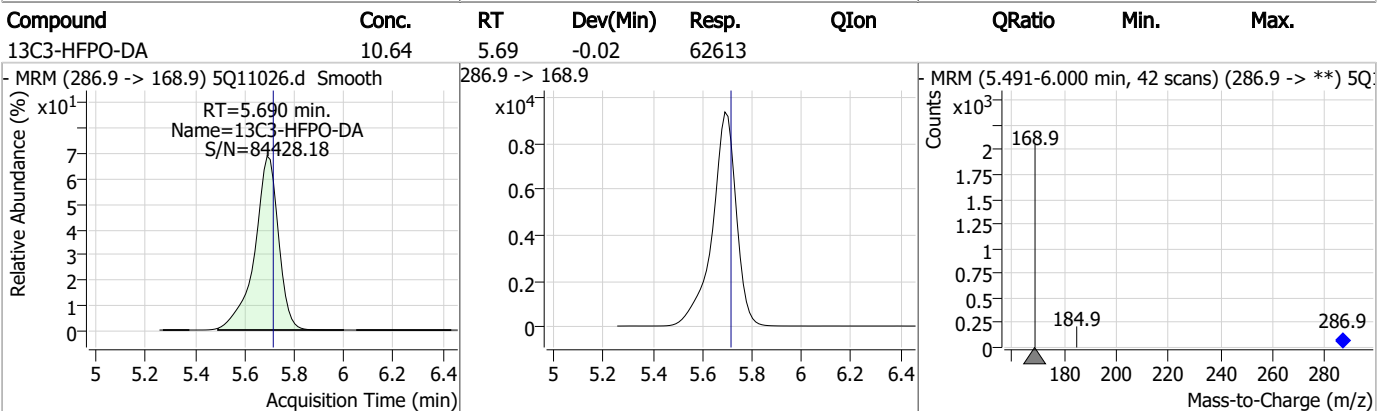
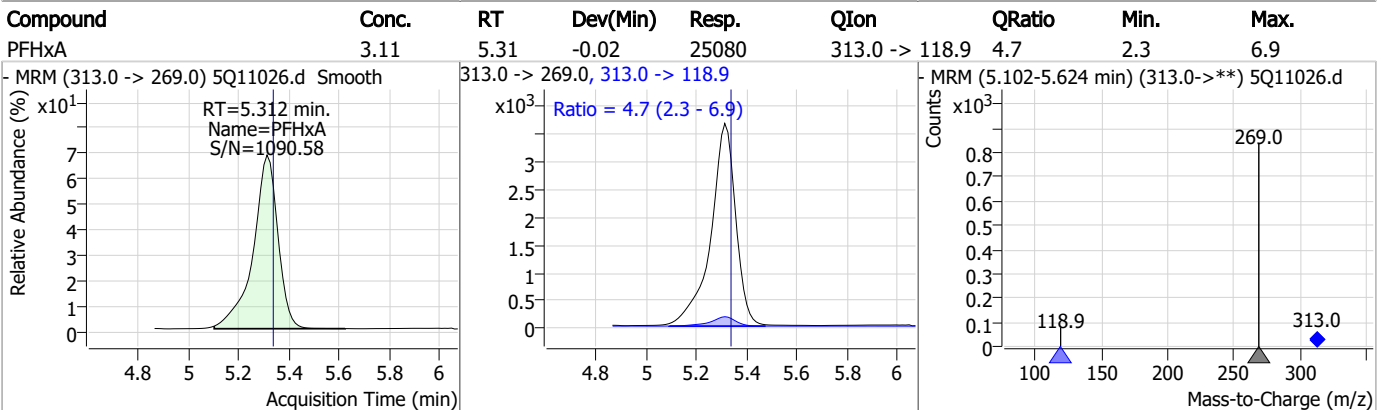
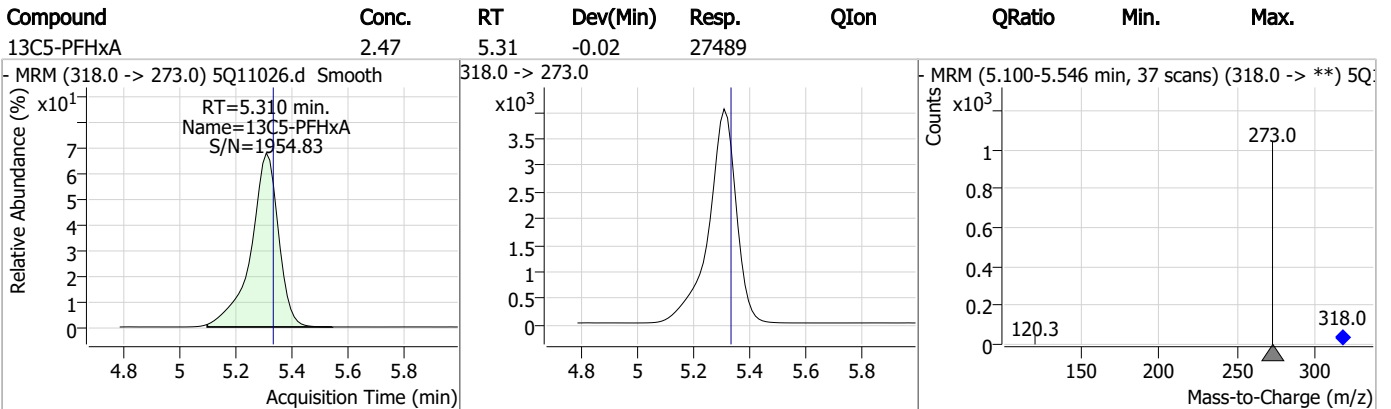
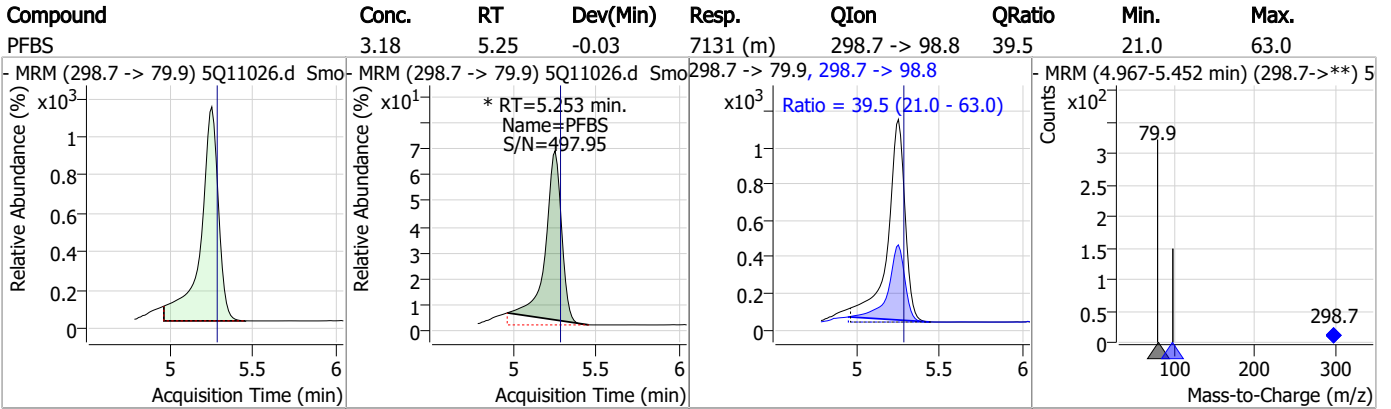
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	6.99	4.54	-0.01	28839				



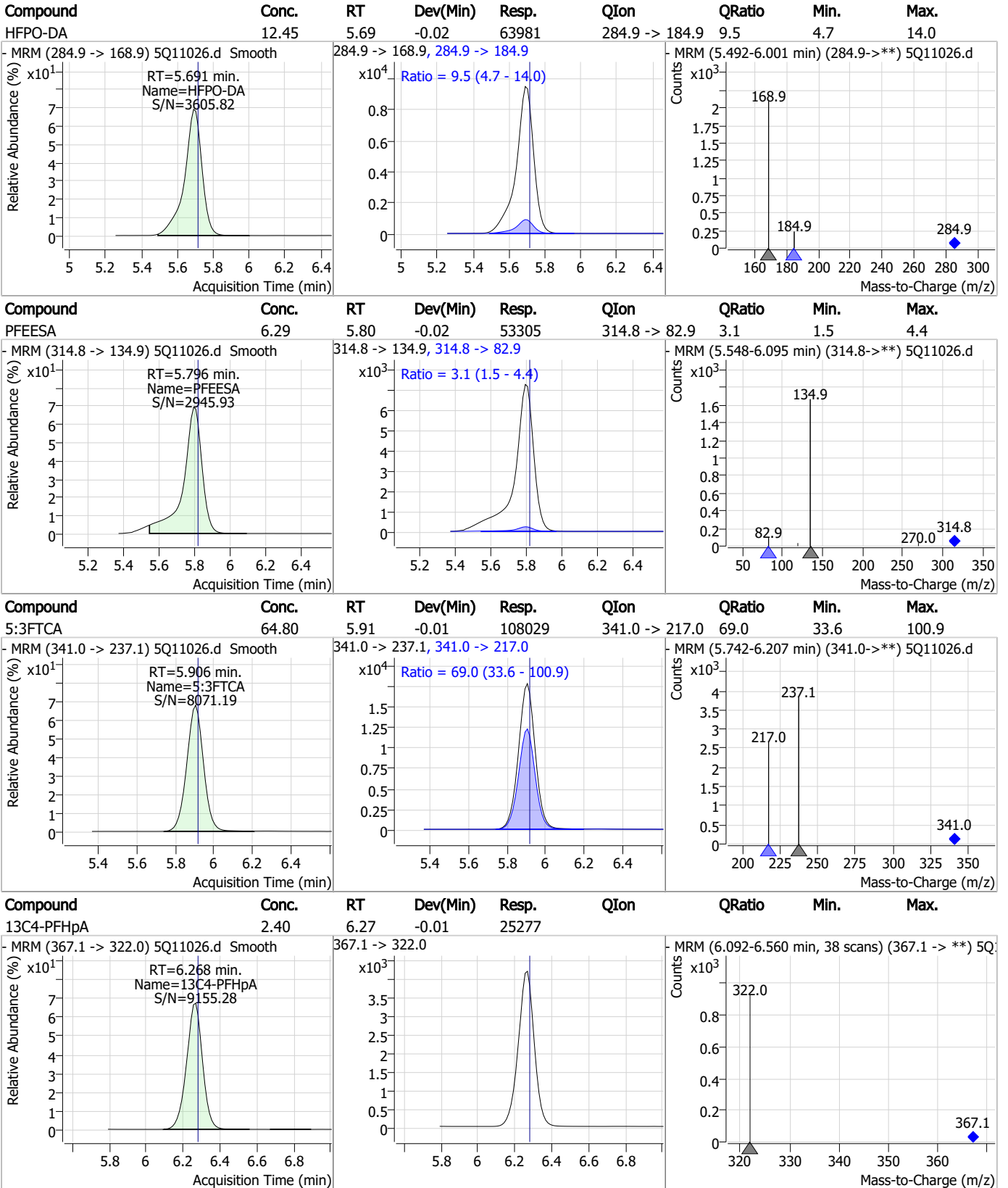
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

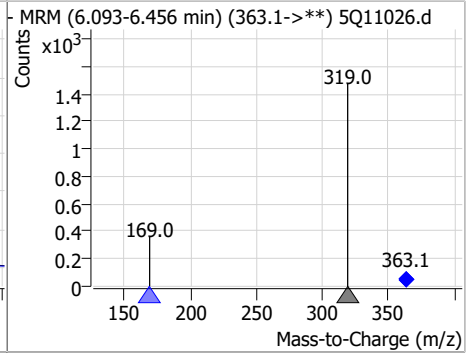
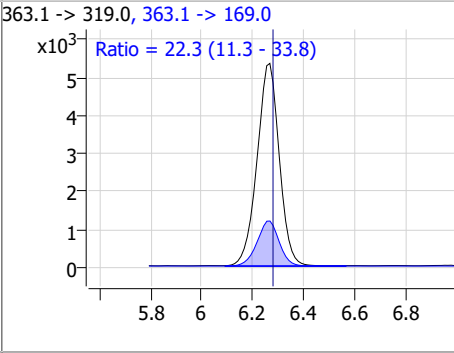
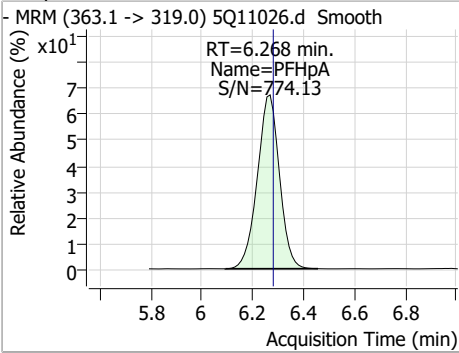


7.3.1

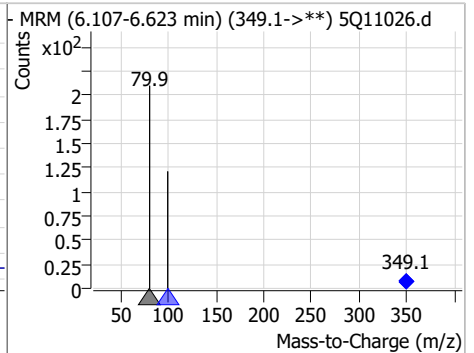
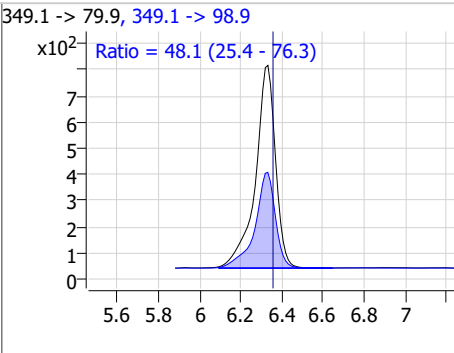
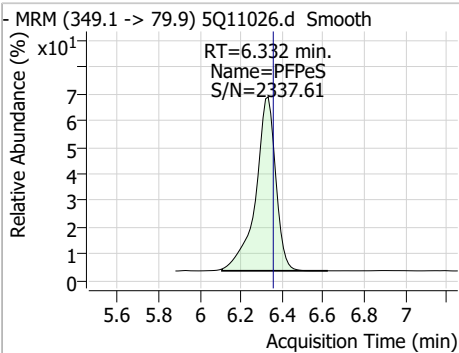
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Perfluorinated Compounds by LC/MS/MS

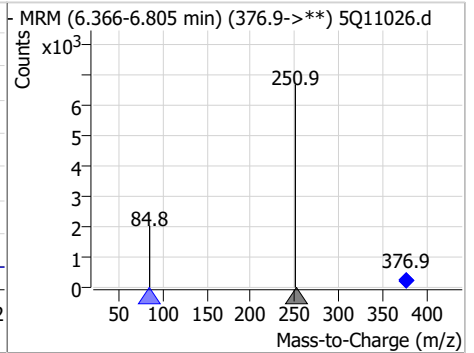
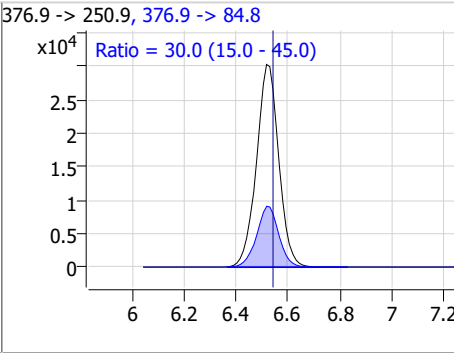
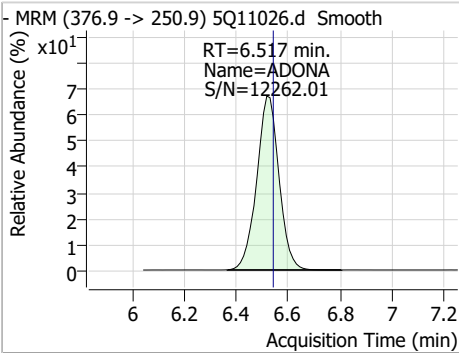
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	3.00	6.27	-0.01	32068	363.1 -> 169.0	22.3	11.3	33.8



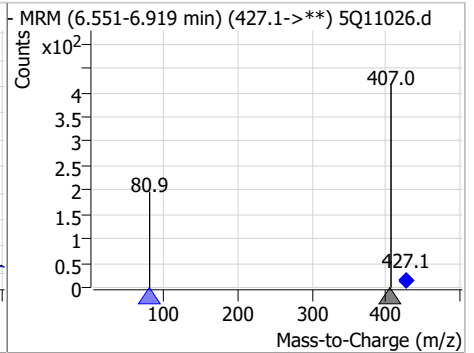
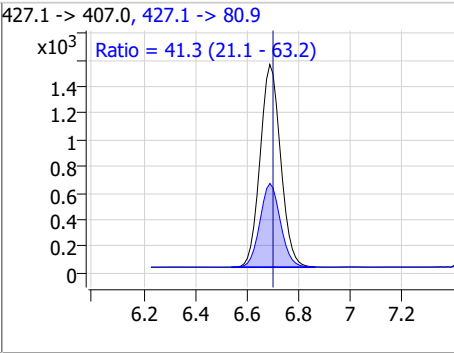
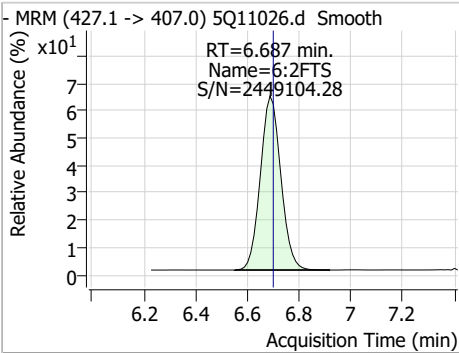
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	3.44	6.33	-0.02	5258	349.1 -> 98.9	48.1	25.4	76.3



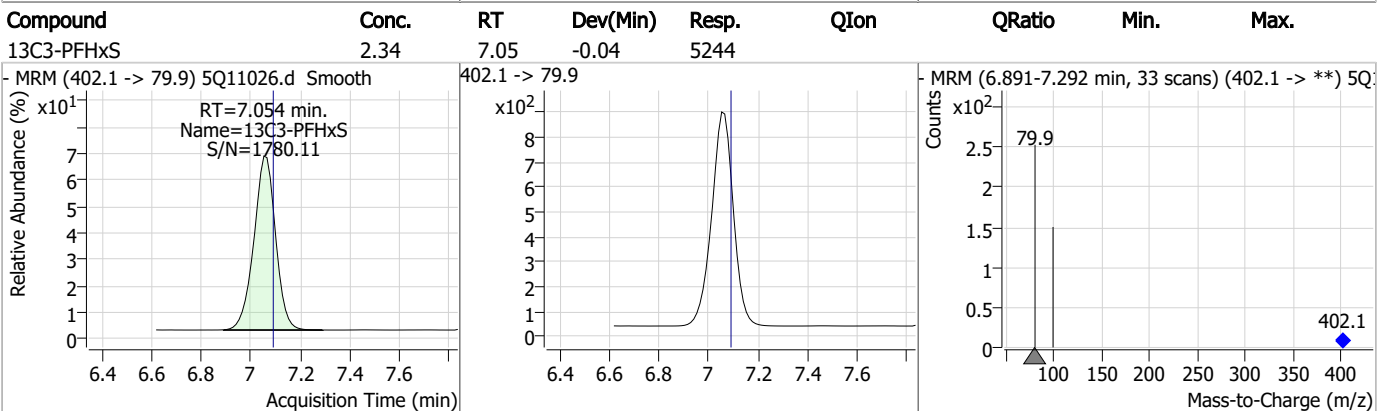
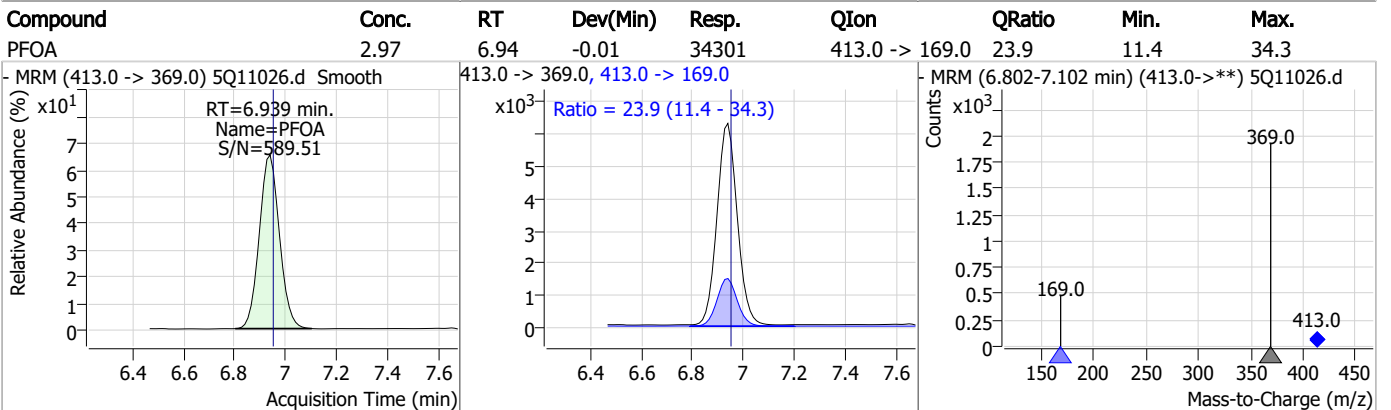
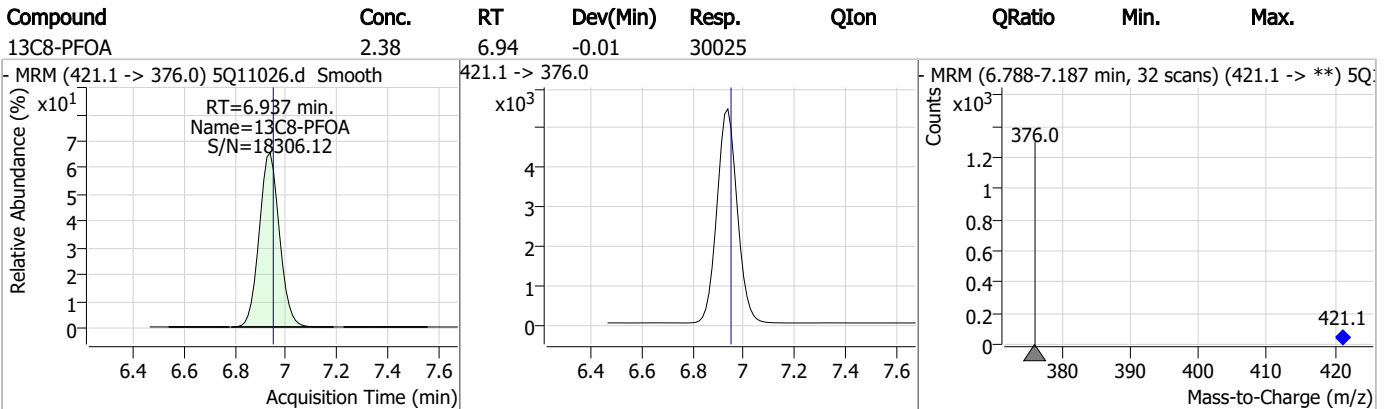
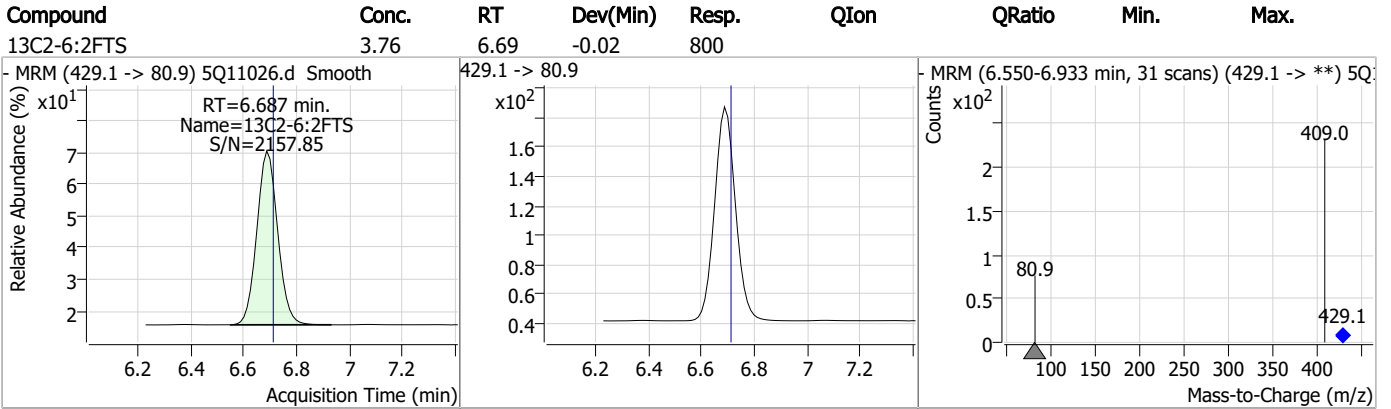
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	10.51	6.52	-0.02	180084	376.9 -> 84.8	30.0	15.0	45.0



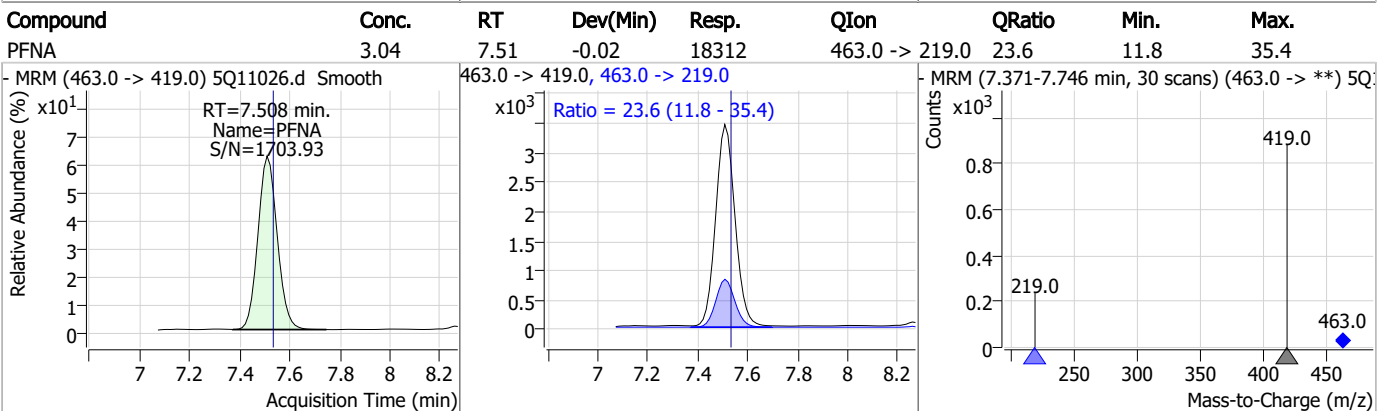
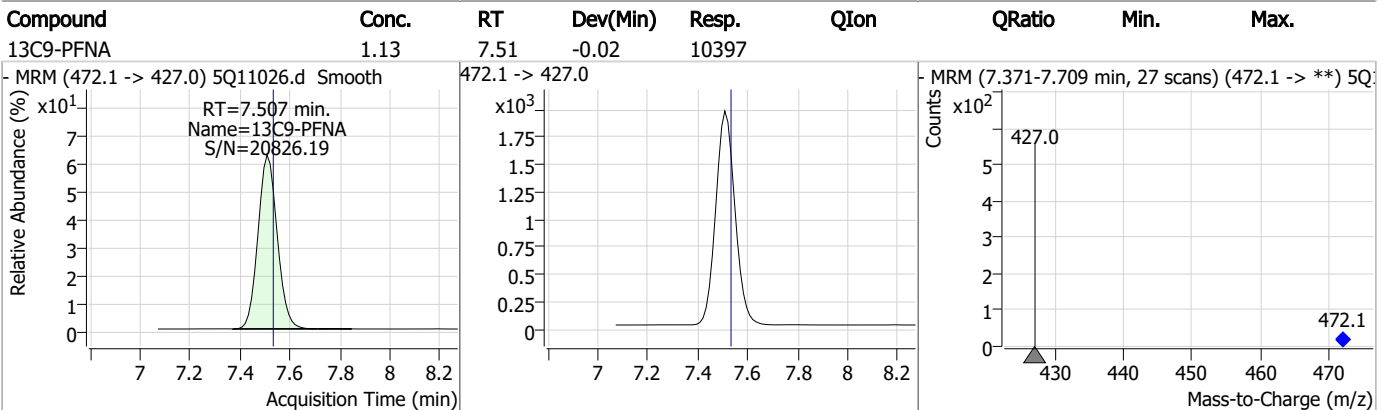
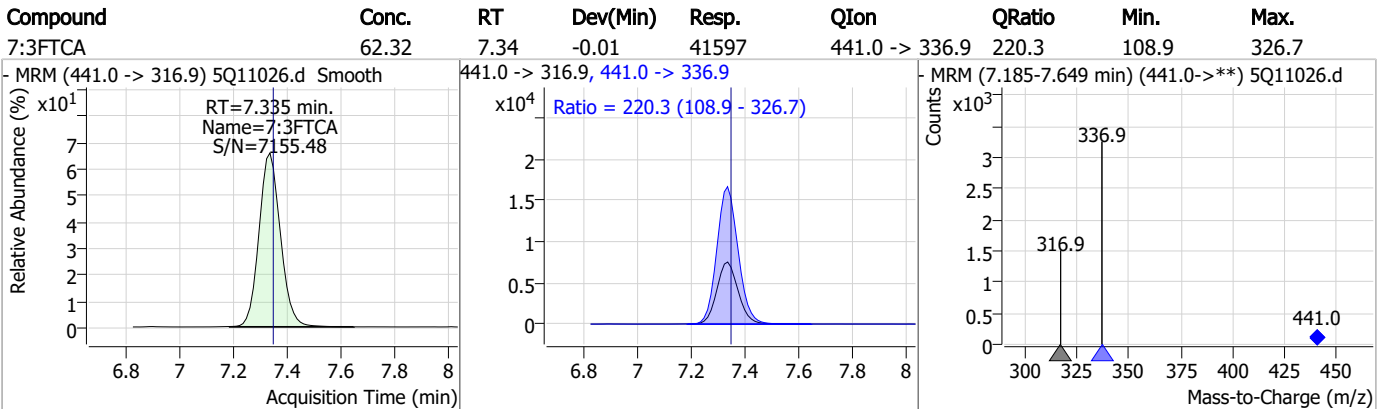
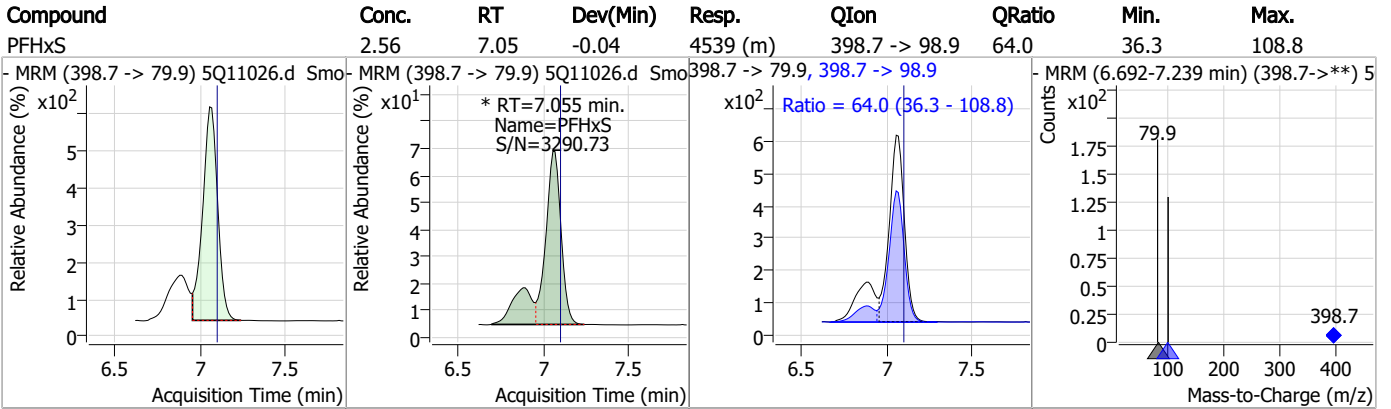
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	12.50	6.69	-0.01	8362	427.1 -> 80.9	41.3	21.1	63.2



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS

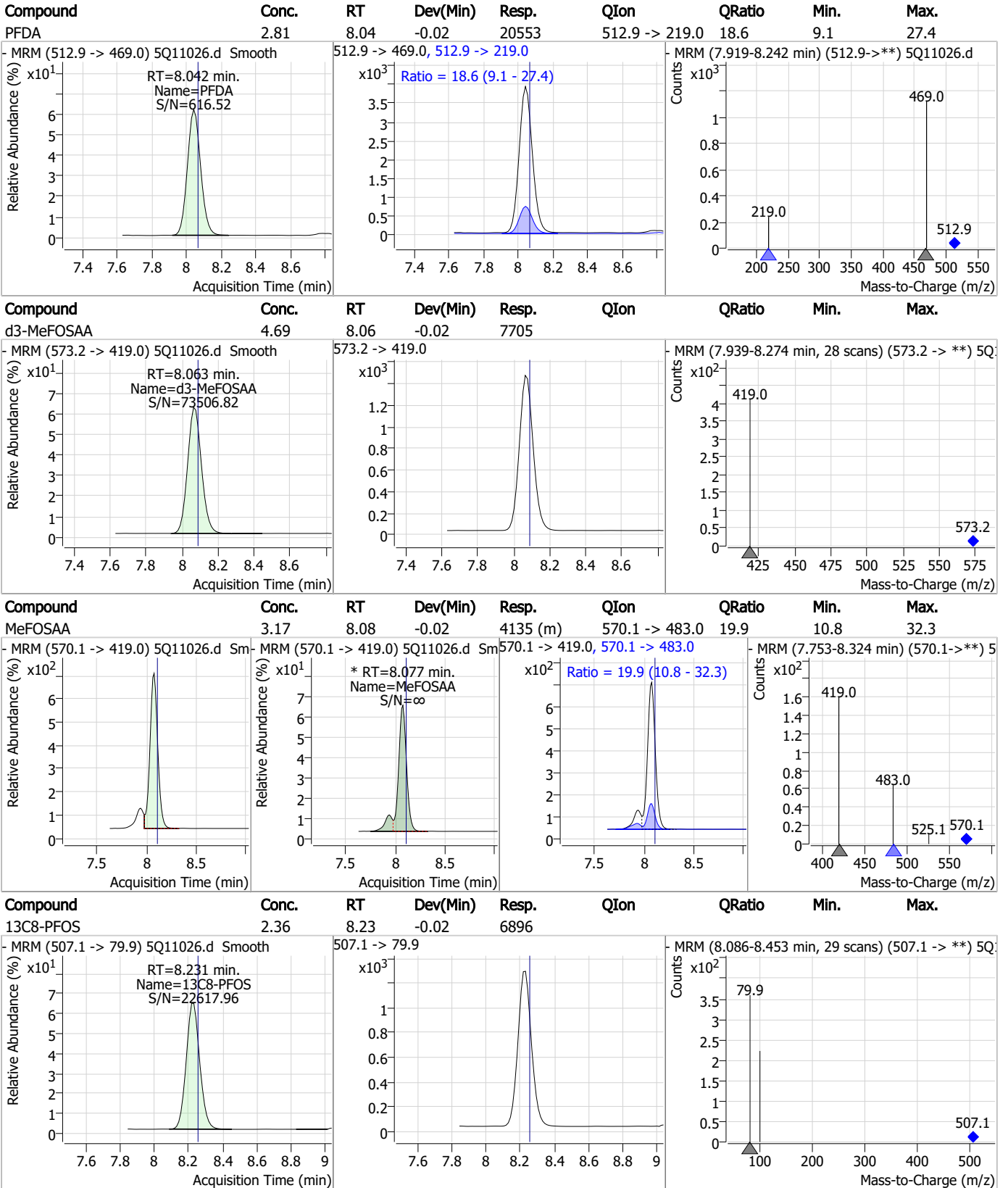
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	2.93	7.67	-0.03	5739	449.0 -> 98.9	56.2	30.2	90.7
13C2-8:2FTS	4.11	7.80	-0.02	1224				
8:2FTS	9.71	7.80	-0.02	5629	527.1 -> 80.8	53.7	25.2	75.5
13C6-PFDA	1.30	8.04	-0.02	6980				

7.3.1

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Perfluorinated Compounds by LC/MS/MS

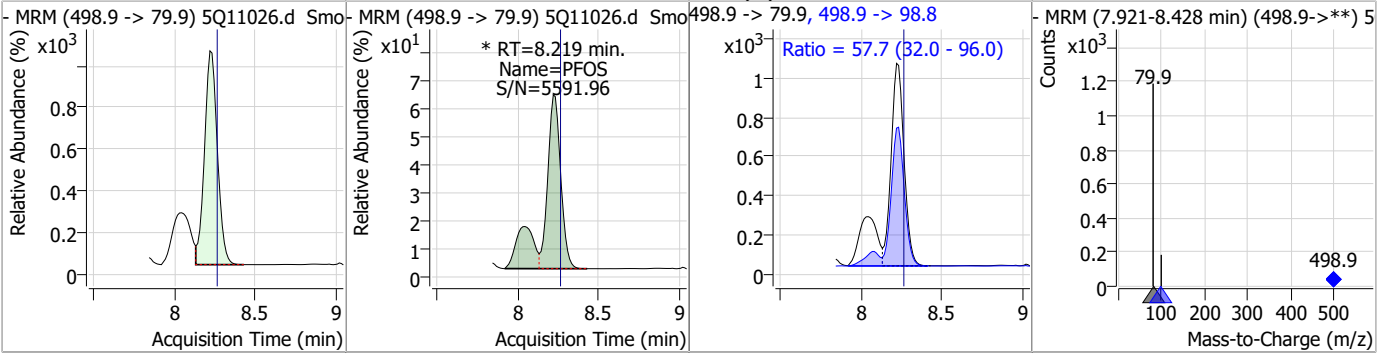


7.3.1

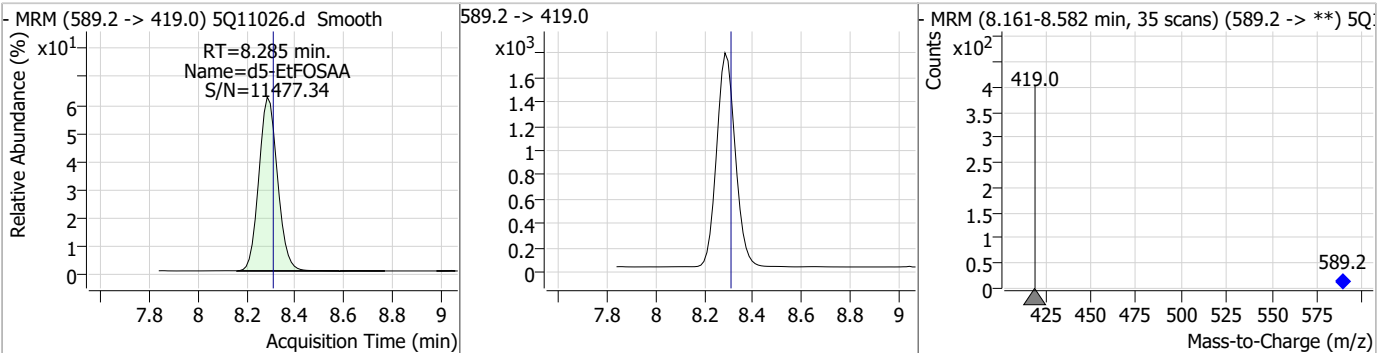
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Perfluorinated Compounds by LC/MS/MS

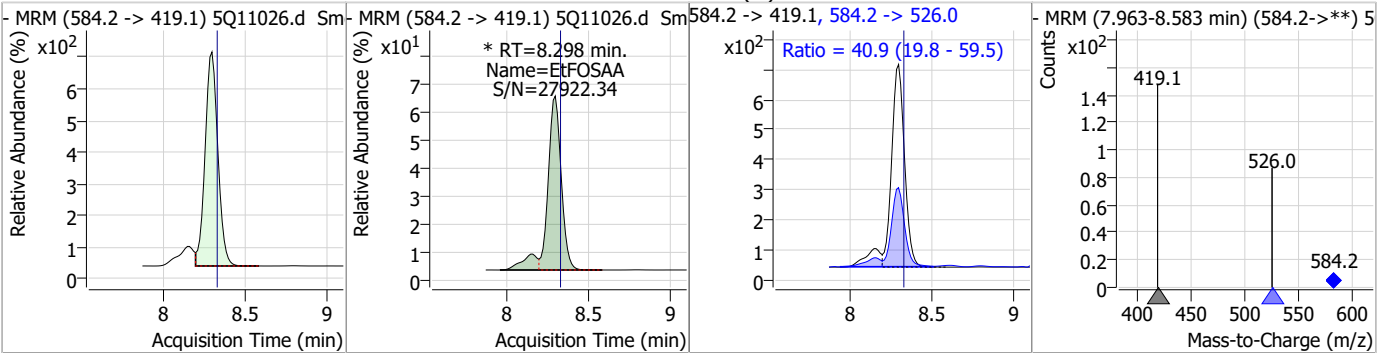
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.74	8.22	-0.04	7617 (m)	498.9 -> 98.8	57.7	32.0	96.0



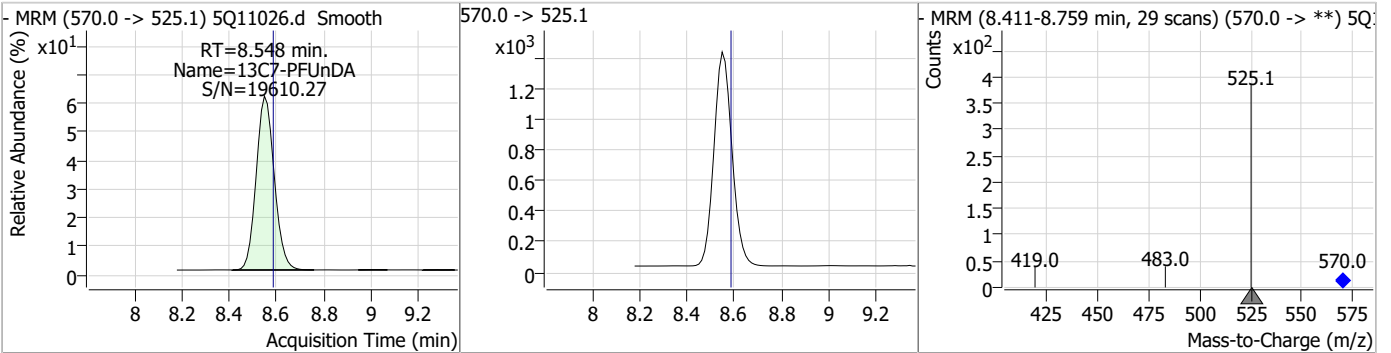
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	3.86	8.29	-0.02	9374				



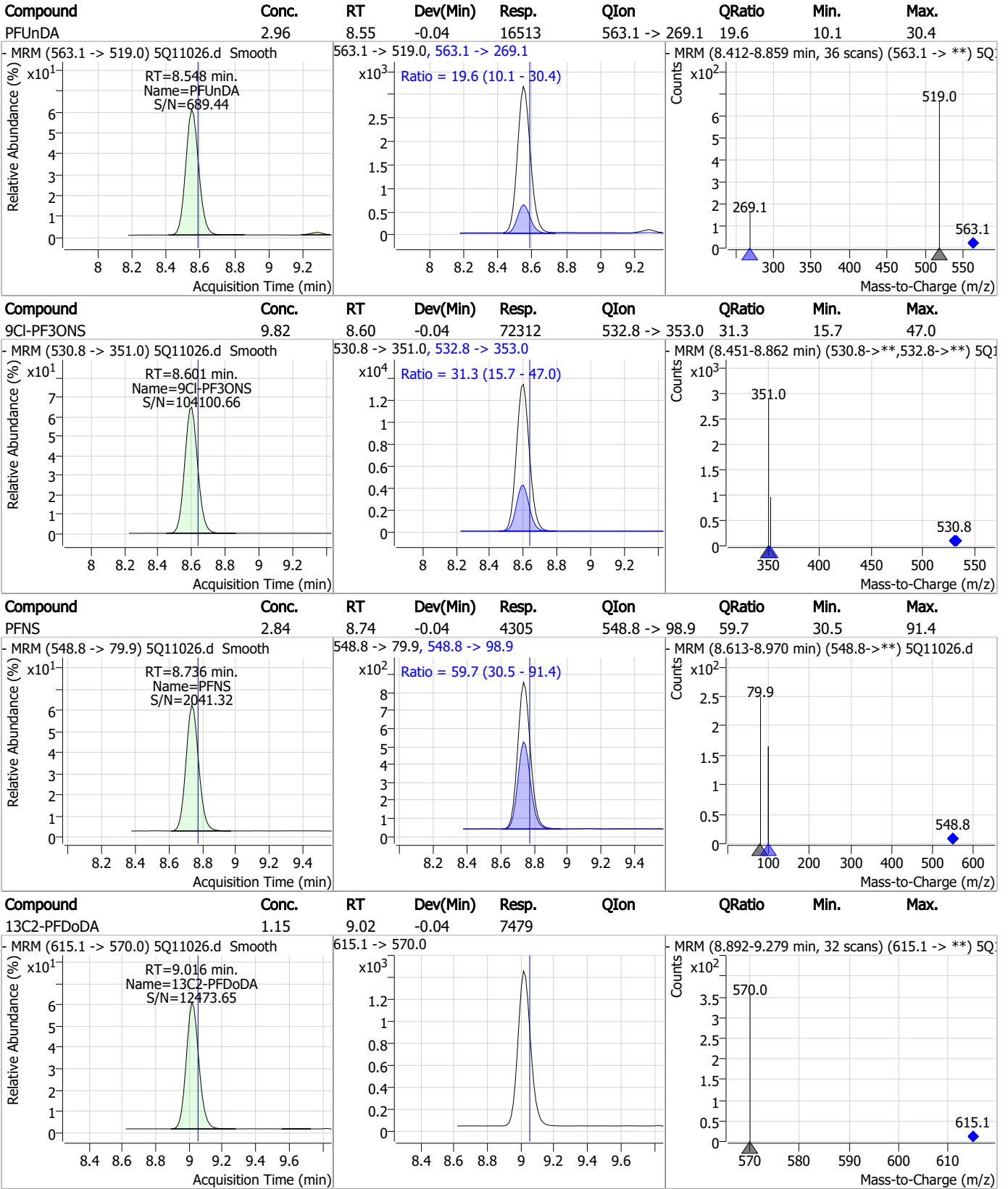
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	3.29	8.30	-0.02	4042 (m)	584.2 -> 526.0	40.9	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.27	8.55	-0.04	7479				



Perfluorinated Compounds by LC/MS/MS

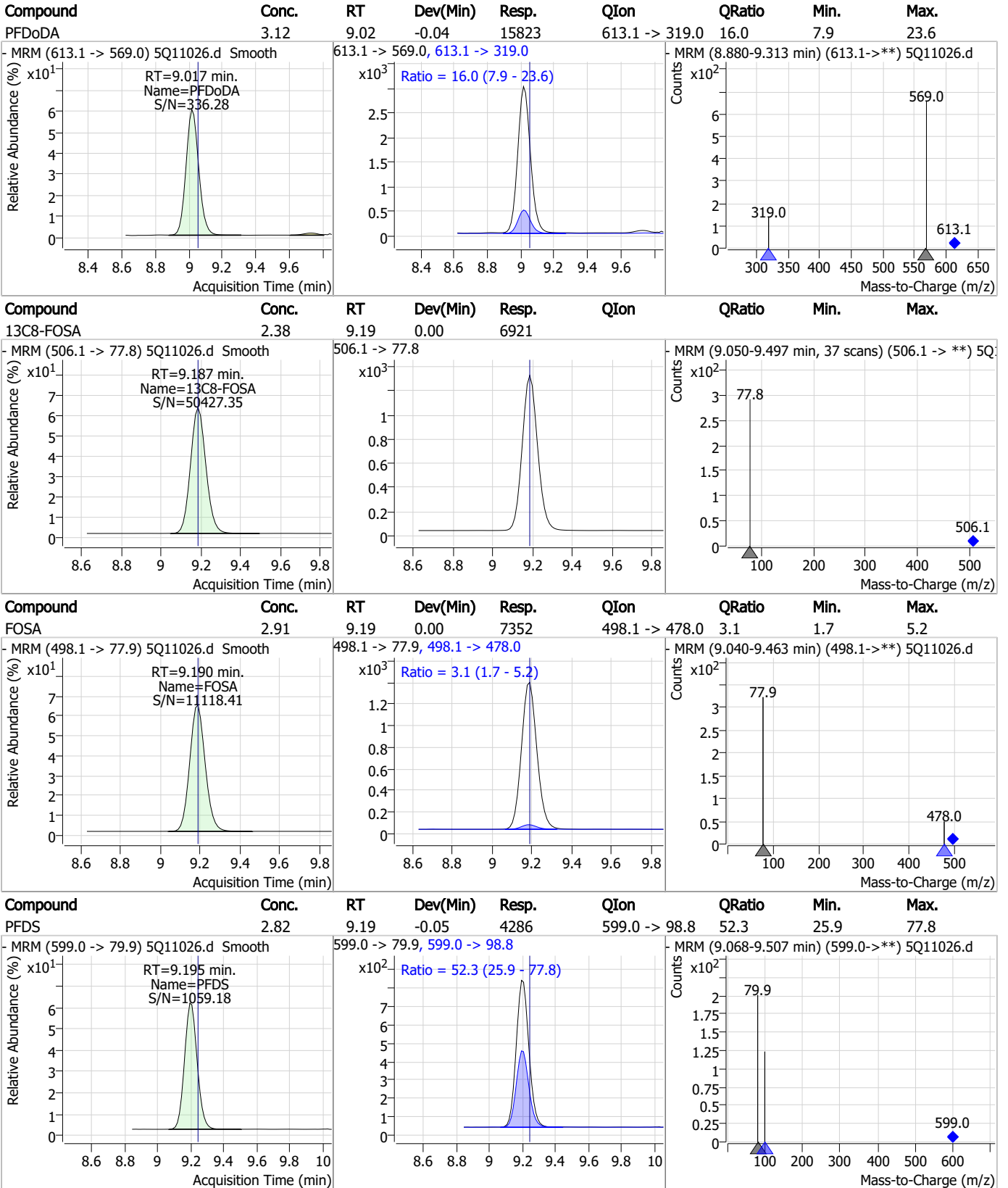


7.3.1

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Perfluorinated Compounds by LC/MS/MS

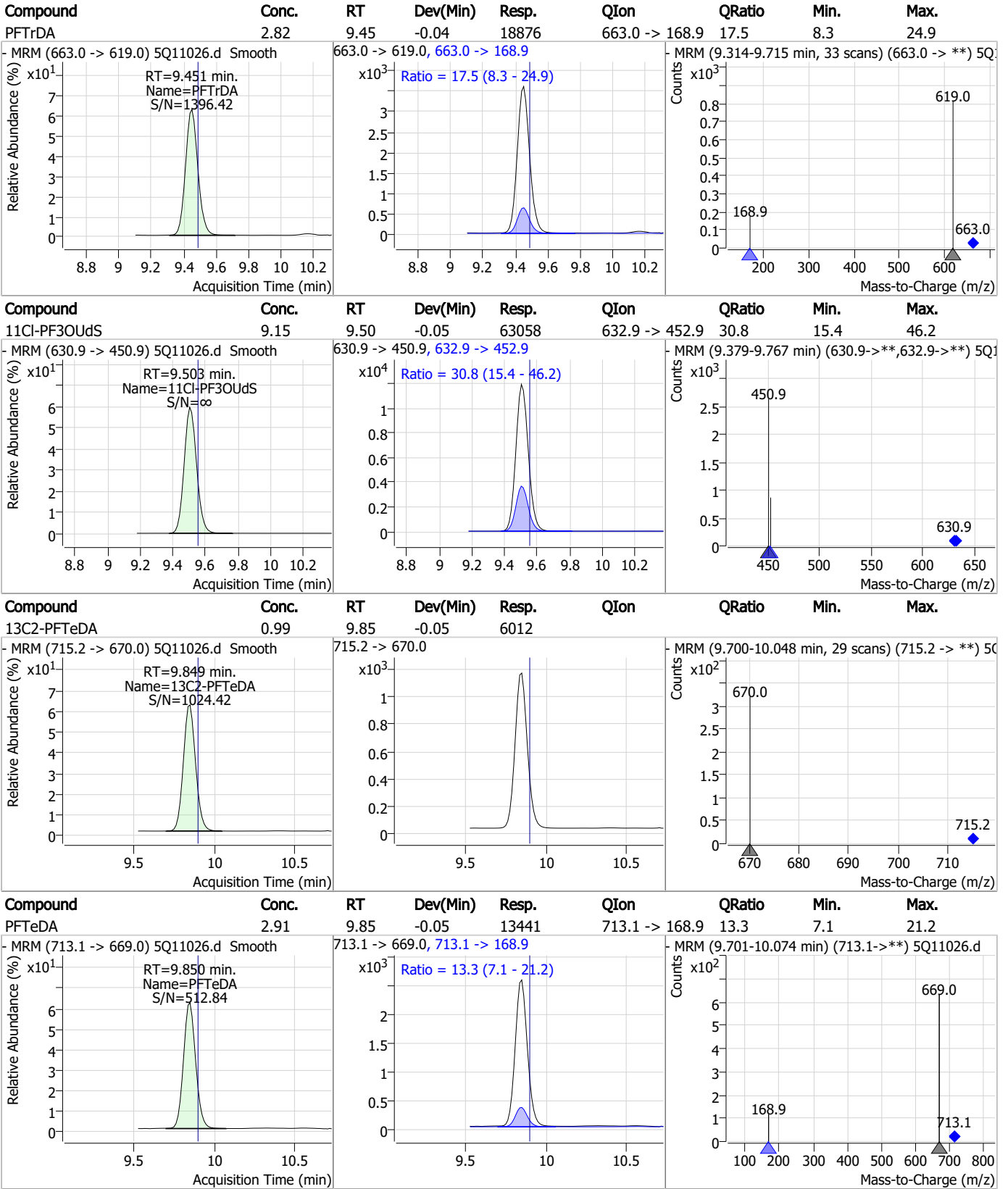


7.3.1

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Perfluorinated Compounds by LC/MS/MS

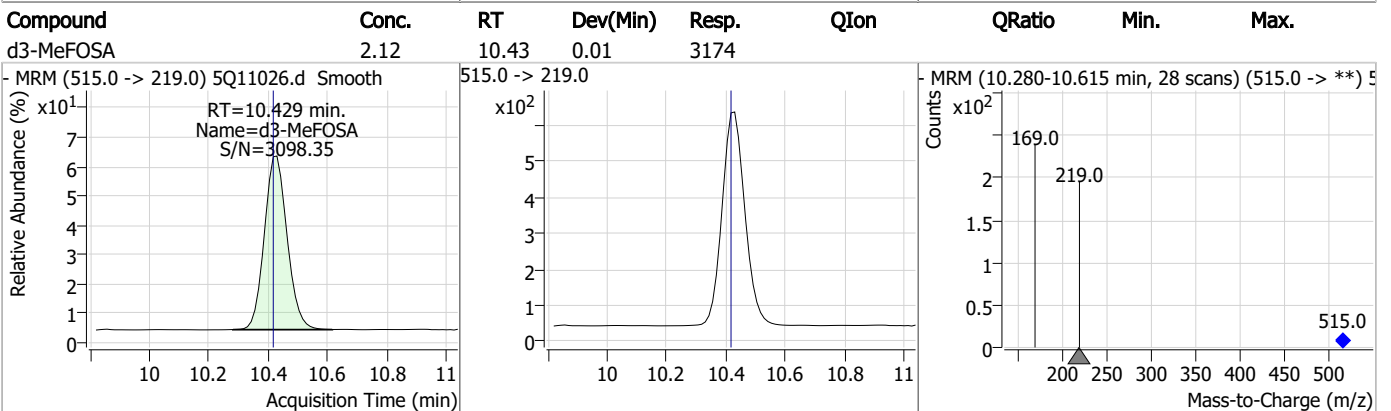
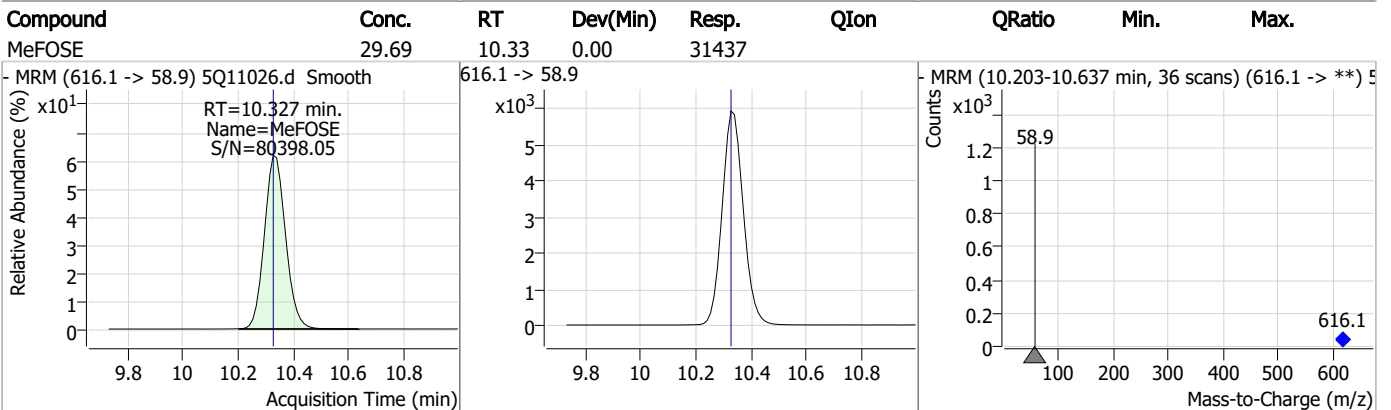
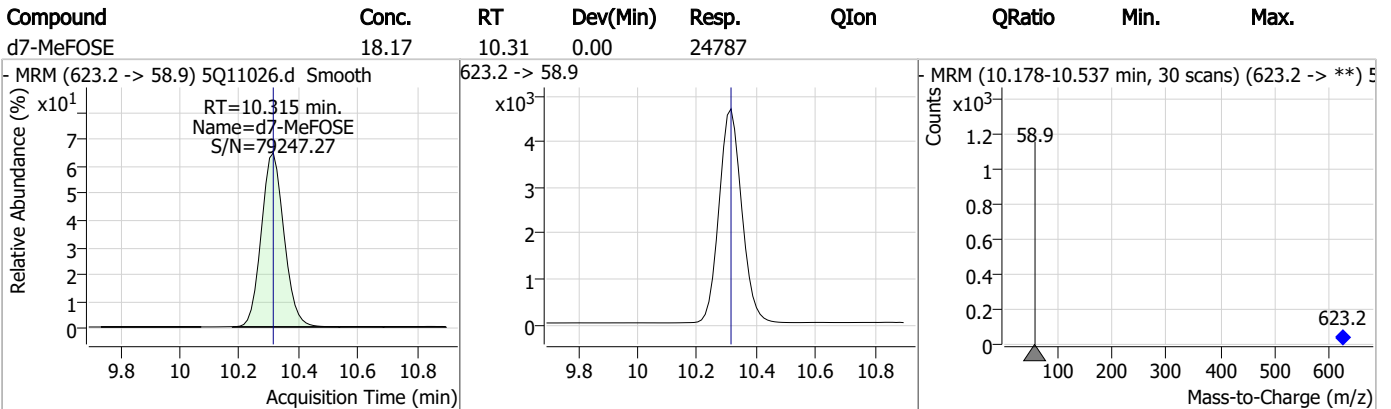
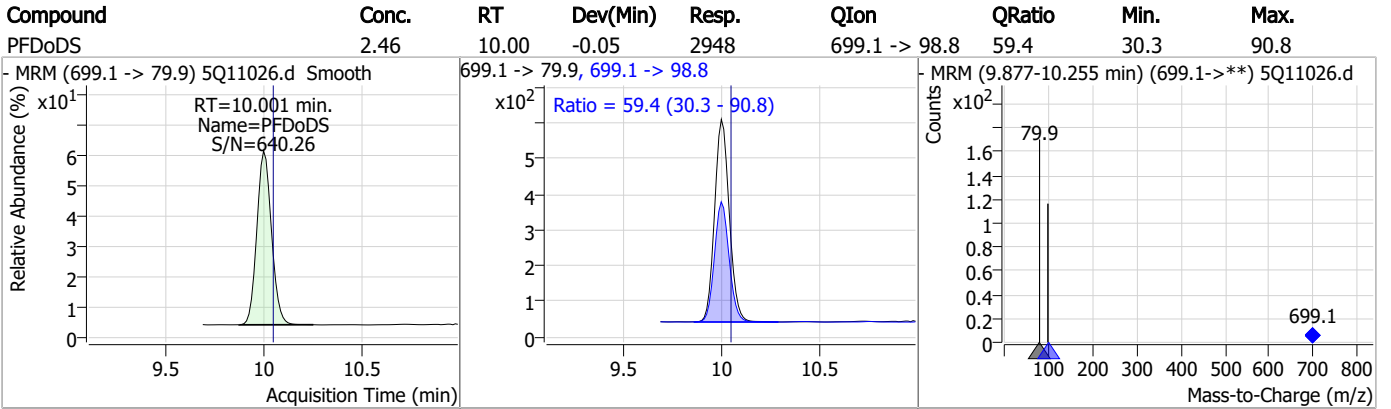


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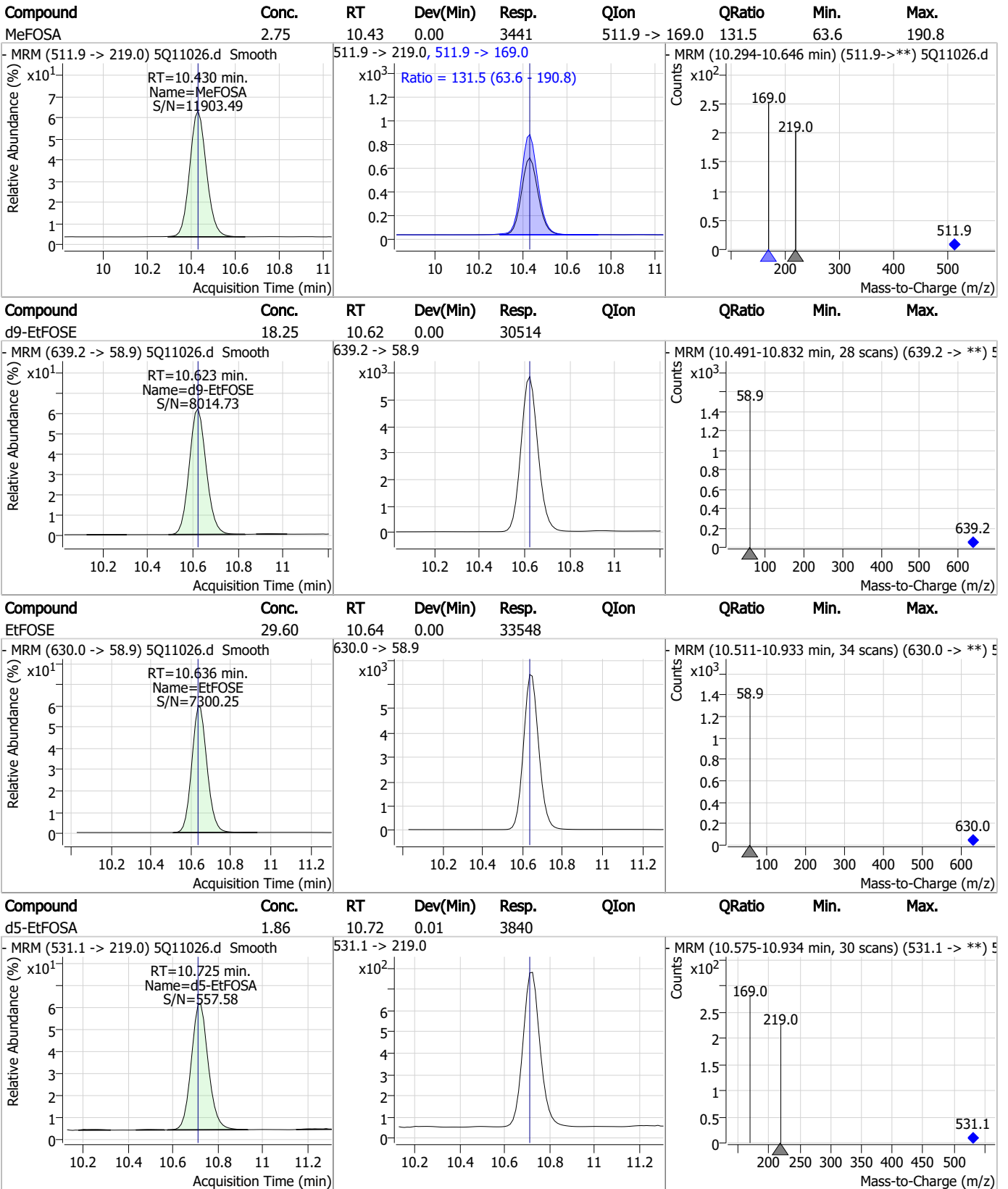
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Perfluorinated Compounds by LC/MS/MS



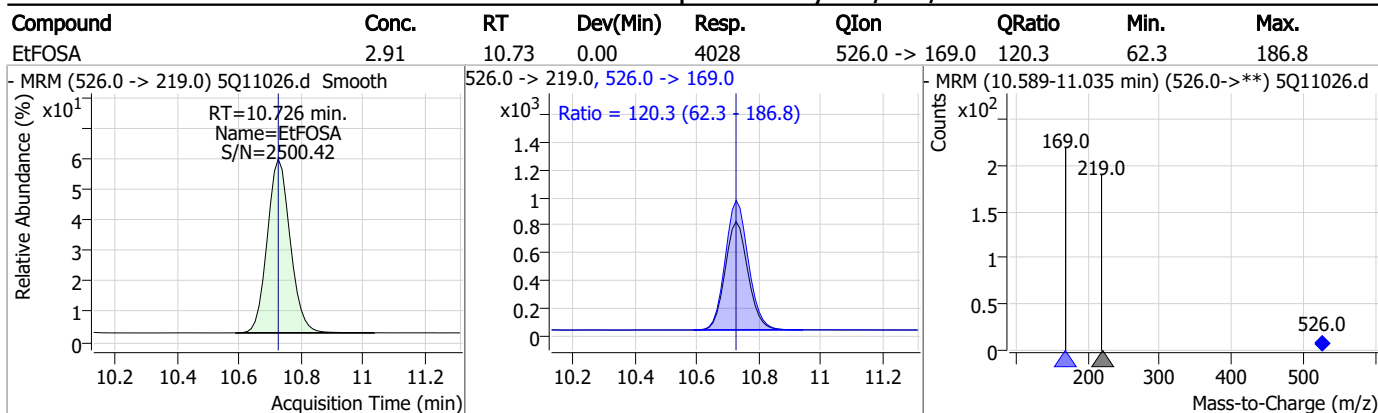
Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Manual Integration Approval Summary

Sample Number: OP95481-BS **Method:** EPA DRAFT 1633
Lab FileID: 5Q11026.D **Analyst approved:** 02/20/23 14:34 Lindsay Ritner
Injection Time: 02/17/23 16:29 **Supervisor approved:** 02/22/23 08:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.79	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
13C4-PFBA			2.80	Poor instrument integration
PFMPA	377-73-1		3.31	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.14	Poor instrument integration
13C3-PFBS			5.25	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.25	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
MeFOSAA	2355-31-9		8.08	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

7.3.1.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11027.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 4:43:31 PM
 Sample Name : op95481-llbs:3
 Vial : P4-A2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95481,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	45140	10.00	µg/L m	0.000
M5-PFPeA	4.137	268.3 -> 223.0	26531	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	28738	2.50	µg/L	-0.025
M4-PFHpA	6.268	367.1 -> 322.0	25920	2.50	µg/L	-0.012
M8-PFOA	6.937	421.1 -> 376.0	30893	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	11221	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	6892	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	7225	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	7986	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	6190	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	6894	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	7001	2.50	µg/L m	-0.025
M3-PFHxS	7.066	402.1 -> 79.9	5512	2.50	µg/L	-0.025
M8-PFOS	8.231	507.1 -> 79.9	7145	2.50	µg/L	-0.025
M2-4:2FTS	4.984	329.1 -> 80.9	405	5.00	µg/L	-0.012
M2-6:2FTS	6.687	429.1 -> 80.9	861	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1368	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	7569	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	65181	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	10190	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	27489	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	33186	25.00	µg/L	0.000
M5-EtFOSA	10.725	531.1 -> 219.0	4112	2.50	µg/L	0.012
M3-MeFOSA	10.429	515.0 -> 219.0	2908	2.50	µg/L	0.012
13C4-PFOS	8.231	502.8 -> 79.9	7871	2.50	µg/L	-0.025
13C3-PFBA	2.791	216.0 -> 172.0	23399	5.00	µg/L m	-0.013
18O2-PFHxS	7.065	403.0 -> 83.9	3918	2.50	µg/L	-0.026
13C4-PFOA	6.938	417.1 -> 372.0	38214	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	10474	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	11284	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	32149	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.984	329.1 -> 80.9	405	4.25	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.0%			
13C2-6:2FTS	6.687	429.1 -> 80.9	861	4.05	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.1%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1368	4.60	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.9%			
13C2-PFDoDA	9.016	615.1 -> 570.0	7986	1.22	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.8%			
13C2-PFTeDA	9.849	715.2 -> 670.0	6190	1.01	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.8%			
13C3-PFBS	5.252	302.1 -> 79.9	7001	2.32	µg/L m	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.9%			
13C3-PFHxS	7.066	402.1 -> 79.9	5512	2.46	µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%			
13C4-PFBA	2.799	216.8 -> 171.9	45140	10.23	µg/L	m	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%			
13C4-PFHpA	6.268	367.1 -> 322.0	25920	2.43	µg/L		-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%			
13C5-PFHxA	5.310	318.0 -> 273.0	28738	2.55	µg/L		-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%			
13C5-PFPeA	4.137	268.3 -> 223.0	26531	4.54	µg/L	m	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.8%			
13C6-PFDA	8.042	519.1 -> 474.1	6892	1.27	µg/L		-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%			
13C7-PFUnDA	8.548	570.0 -> 525.1	7225	1.22	µg/L		-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.7%			
13C8-FOSA	9.187	506.1 -> 77.8	6894	2.23	µg/L		0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.3%			
13C8-PFOA	6.937	421.1 -> 376.0	30893	2.40	µg/L		-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%			
13C8-PFOS	8.231	507.1 -> 79.9	7145	2.30	µg/L		-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%			
13C9-PFNA	7.507	472.1 -> 427.0	11221	1.22	µg/L		-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.3%			
d3-MeFOSAA	8.063	573.2 -> 419.0	7569	4.34	µg/L		-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.8%			
13C3-HFPO-DA	5.690	286.9 -> 168.9	65181	10.92	µg/L		-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.2%			
d3-MeFOSA	10.429	515.0 -> 219.0	2908	1.83	µg/L		0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.3%			
d5-EtFOSAA	8.285	589.2 -> 419.0	10190	3.95	µg/L		-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 79.0%			
d7-MeFOSE	10.315	623.2 -> 58.9	27489	18.98	µg/L		0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 75.9%			
d9-EtFOSE	10.623	639.2 -> 58.9	33186	18.69	µg/L		0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.8%			
d5-EtFOSA	10.725	531.1 -> 219.0	4112	1.88	µg/L		0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 75.2%			
Target Compounds							QValue
4:2FTS	4.972	327.1 -> 307.0	2516	4.94	µg/L		95
		327.1 -> 80.9	1300				
6:2FTS	6.687	427.1 -> 407.0	3591	4.99	µg/L		99
		427.1 -> 80.9	1491				
8:2FTS	7.804	527.1 -> 507.0	2453	3.78	µg/L		98
		527.1 -> 80.8	1277				
EtFOSAA	8.298	584.2 -> 419.1	1677	1.26	µg/L	m	98
		584.2 -> 526.0	650				
FOSA	9.190	498.1 -> 77.9	3053	1.21	µg/L		99
		498.1 -> 478.0	99				
MeFOSAA	8.077	570.1 -> 419.0	1550	1.21	µg/L	m	95
		570.1 -> 483.0	374				
PFBA	2.795	212.8 -> 168.9	9197	5.15	µg/L	m	100
PFBS	5.253	298.7 -> 79.9	2762	1.20	µg/L	m	97
		298.7 -> 98.8	1215				
PFDA	8.042	512.9 -> 469.0	8648	1.20	µg/L		100
		512.9 -> 219.0	1588				
PFDODA	9.017	613.1 -> 569.0	6473	1.19	µg/L		100
		613.1 -> 319.0	1023				
PFDS	9.195	599.0 -> 79.9	1643	1.04	µg/L		98

7.3.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	880			
PFHpA	6.268	363.1 -> 319.0	13286	1.21	µg/L	97
		363.1 -> 169.0	2808			
PFHpS	7.673	449.0 -> 79.9	2233	1.10	µg/L	91
		449.0 -> 98.9	1193			
PFHxA	5.312	313.0 -> 269.0	10335	1.23	µg/L	100
		313.0 -> 118.9	484			
PFHxS	7.067	398.7 -> 79.9	2047	1.10	µg/L	m 83
		398.7 -> 98.9	1201			
PFNA	7.508	463.0 -> 419.0	7347	1.13	µg/L	97
		463.0 -> 219.0	1612			
PFNS	8.736	548.8 -> 79.9	1864	1.19	µg/L	98
		548.8 -> 98.9	1159			
PFOA	6.939	413.0 -> 369.0	14262	1.20	µg/L	96
		413.0 -> 169.0	3510			
PFOS	8.232	498.9 -> 79.9	3219	1.12	µg/L	m 95
		498.9 -> 98.8	1933			
PFPeA	4.139	263.0 -> 219.0	14595	2.52	µg/L	m 100
PFPeS	6.332	349.1 -> 79.9	2142	1.33	µg/L	98
		349.1 -> 98.9	1119			
PFTeDA	9.850	713.1 -> 669.0	5942	1.25	µg/L	95
		713.1 -> 168.9	718			
PFTrDA	9.451	663.0 -> 619.0	7626	1.07	µg/L	99
		663.0 -> 168.9	1309			
PFUnDA	8.548	563.1 -> 519.0	6601	1.23	µg/L	97
		563.1 -> 269.1	1437			
11Cl-PF3OUdS	9.503	630.9 -> 450.9	25237	3.52	µg/L	98
		632.9 -> 452.9	7986			
9Cl-PF3ONS	8.601	530.8 -> 351.0	29559	3.86	µg/L	100
		532.8 -> 353.0	9289			
ADONA	6.530	376.9 -> 250.9	72863	4.08	µg/L	100
		376.9 -> 84.8	21922			
HFPO-DA	5.691	284.9 -> 168.9	26415	4.94	µg/L	100
		284.9 -> 184.9	2483			
3:3FTCA	3.603	241.0 -> 177.0	2693	6.30	µg/L	96
		241.0 -> 117.0	388			
5:3FTCA	5.906	341.0 -> 237.1	44403	25.48	µg/L	98
		341.0 -> 217.0	30502			
7:3FTCA	7.335	441.0 -> 316.9	17504	25.09	µg/L	95
		441.0 -> 336.9	36687			
EtFOSA	10.726	526.0 -> 219.0	1673	1.13	µg/L	97
		526.0 -> 169.0	2030			
EtFOSE	10.636	630.0 -> 58.9	14758	11.97	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	1335	1.16	µg/L	97
		511.9 -> 169.0	1737			
MeFOSE	10.327	616.1 -> 58.9	13371	11.39	µg/L	100
PFDoDS	10.001	699.1 -> 79.9	1248	1.00	µg/L	99
		699.1 -> 98.8	743			
NFDHA	5.193	295.0 -> 201.0	1705	2.57	µg/L	97
		295.0 -> 84.9	432			
PFMBA	4.541	279.0 -> 85.1	11750	2.75	µg/L	100
PFMPA	3.315	229.0 -> 84.9	7893	2.51	µg/L	m 100
PFEESA	5.796	314.8 -> 134.9	21687	2.45	µg/L	99
		314.8 -> 82.9	727			

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

7.3.2
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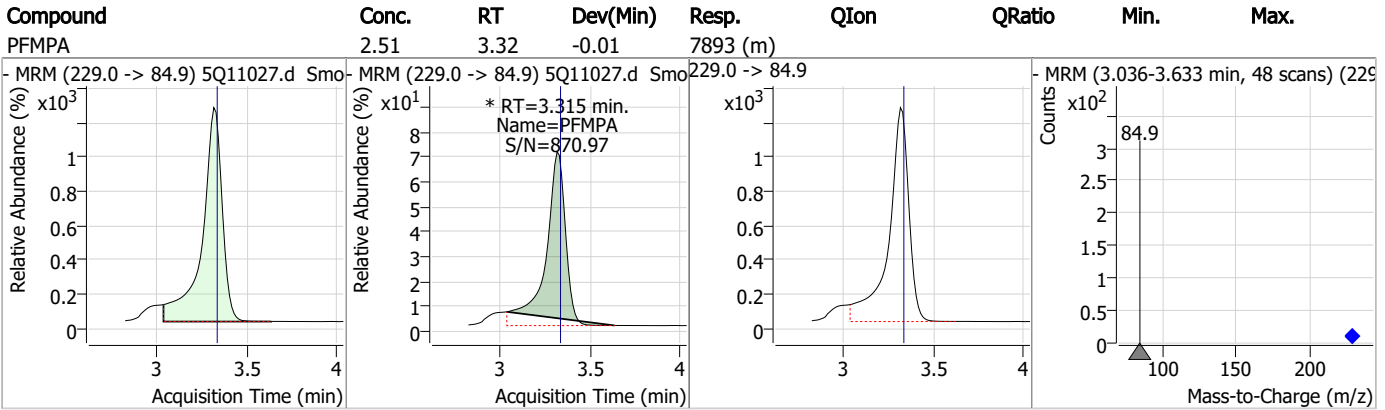
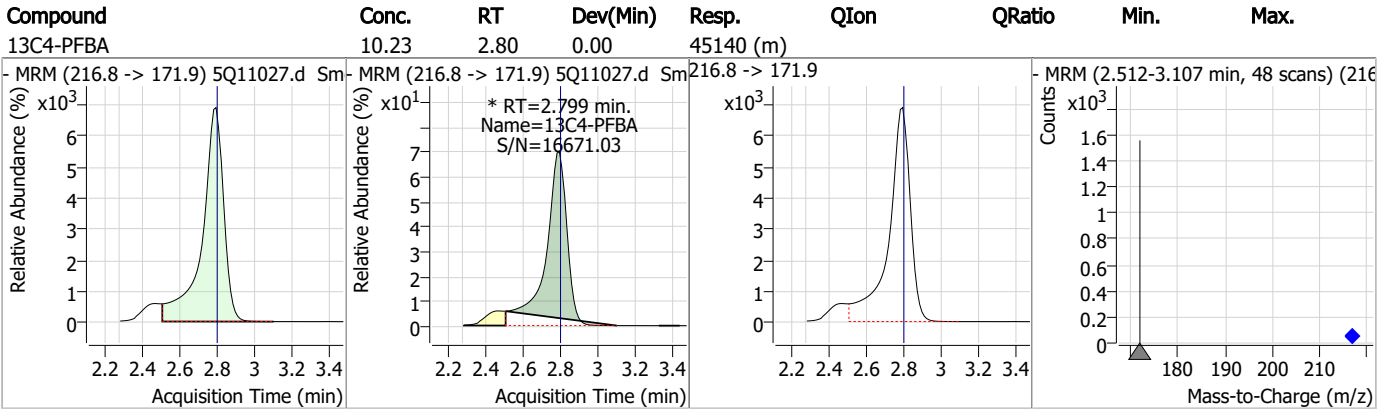
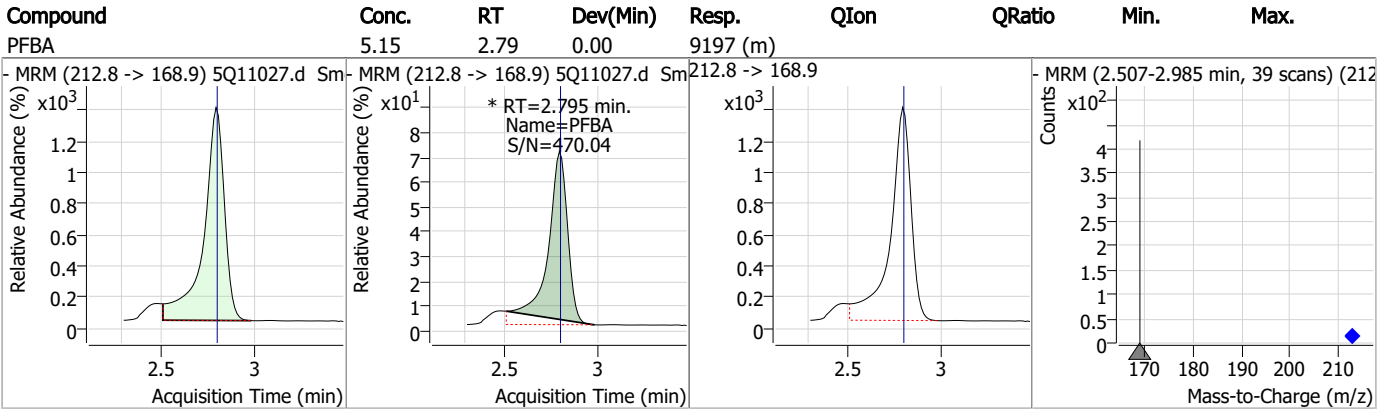
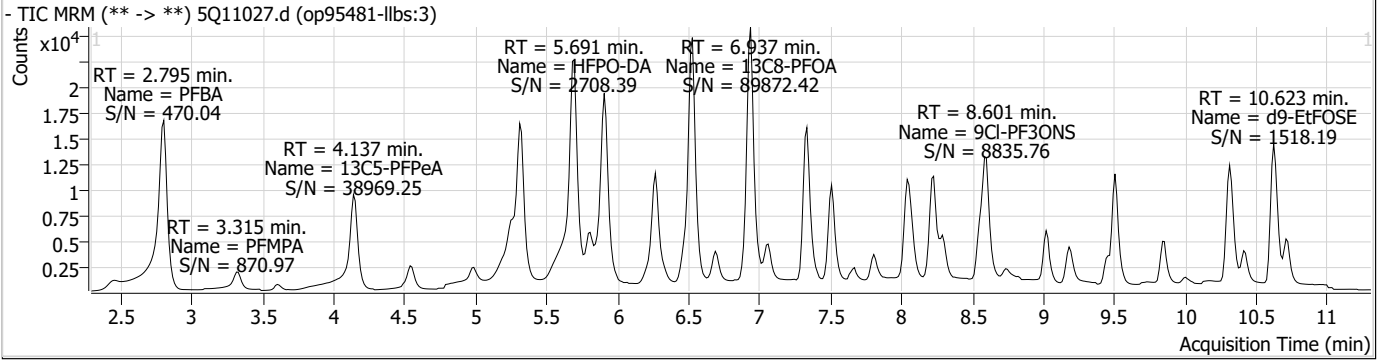
Perfluorinated Compounds by LC/MS/MS

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

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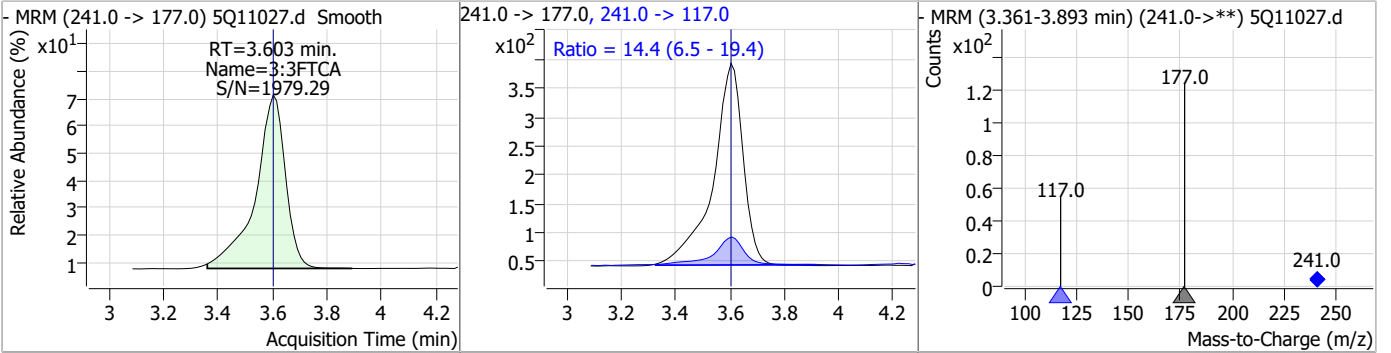
Perfluorinated Compounds by LC/MS/MS



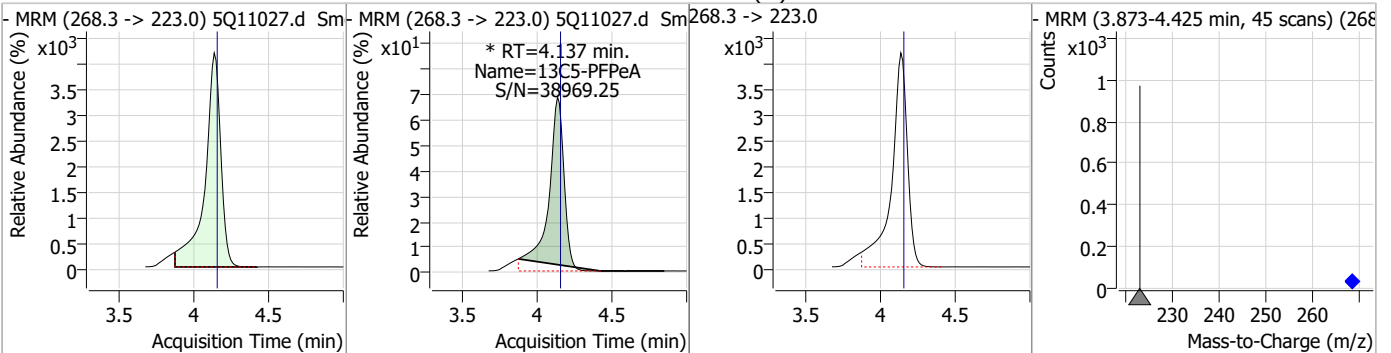
7.3.2
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Perfluorinated Compounds by LC/MS/MS

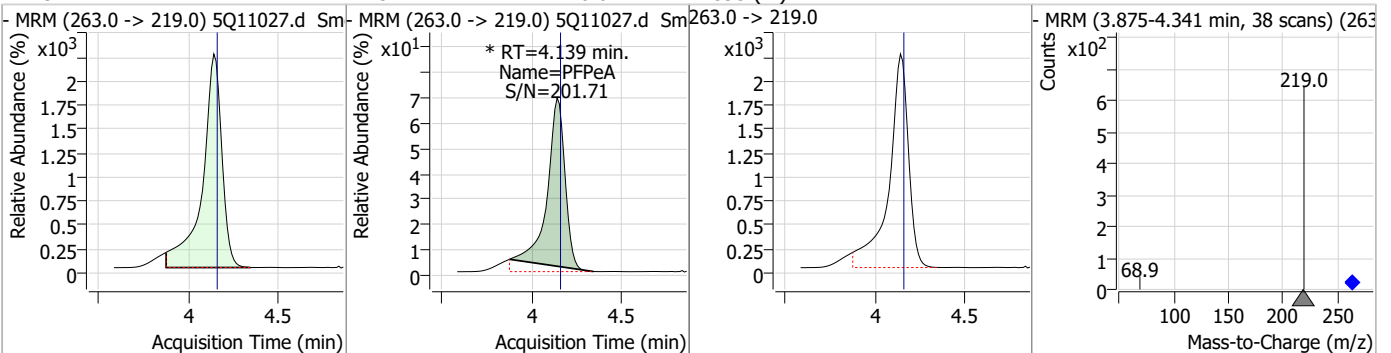
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	6.30	3.60	0.00	2693	241.0 -> 117.0	14.4	6.5	19.4



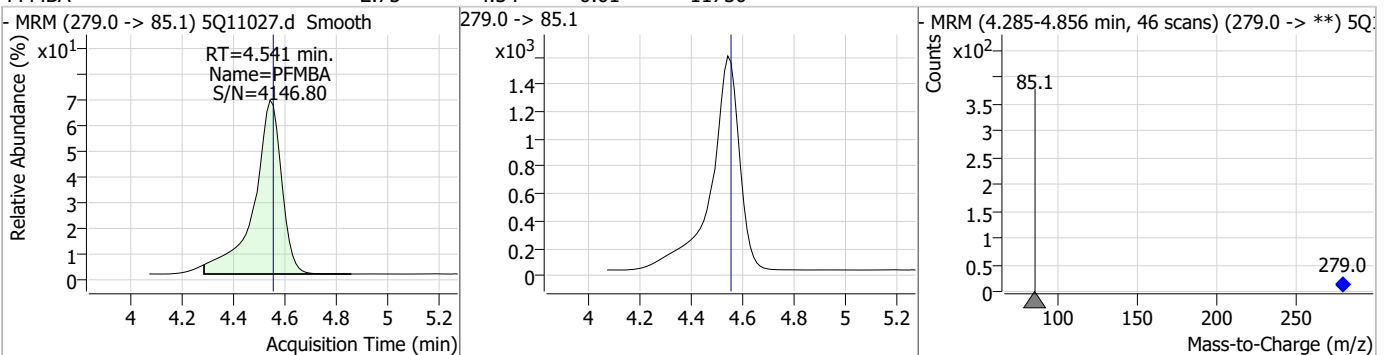
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.54	4.14	-0.01	26531 (m)				



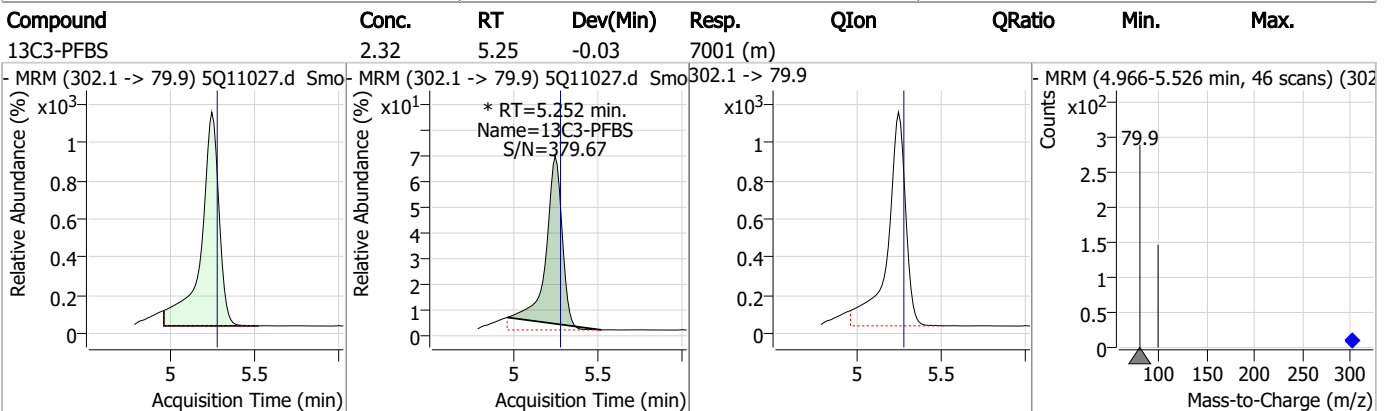
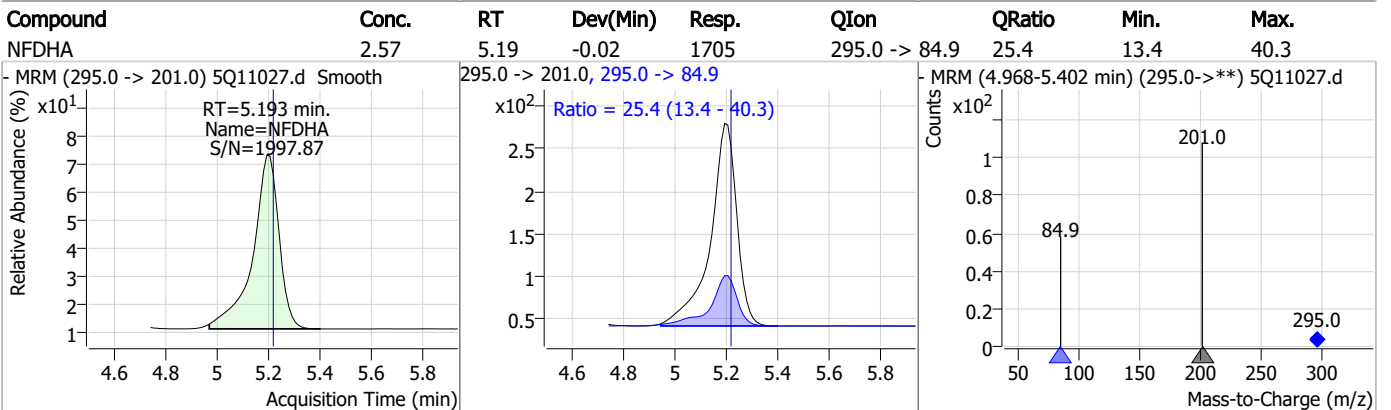
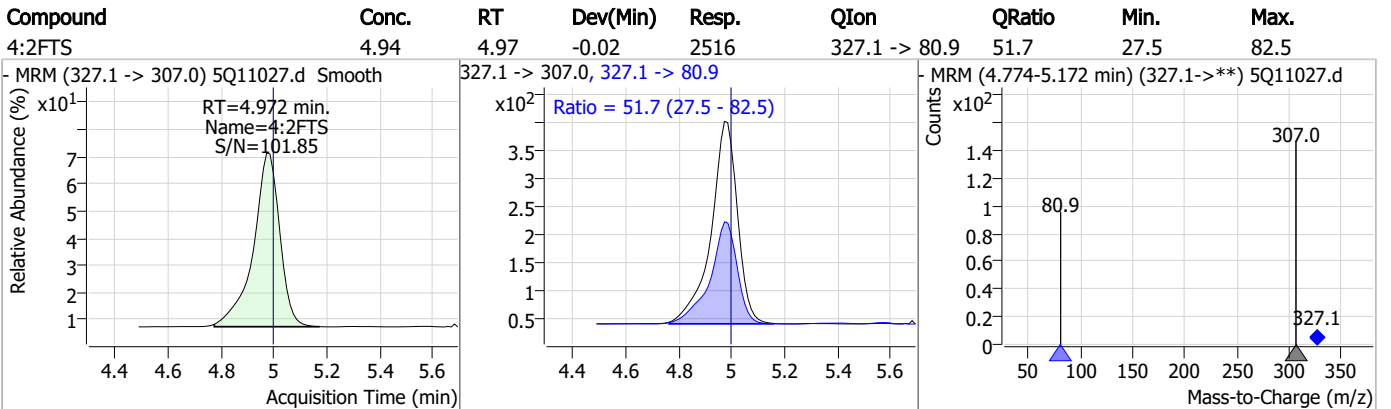
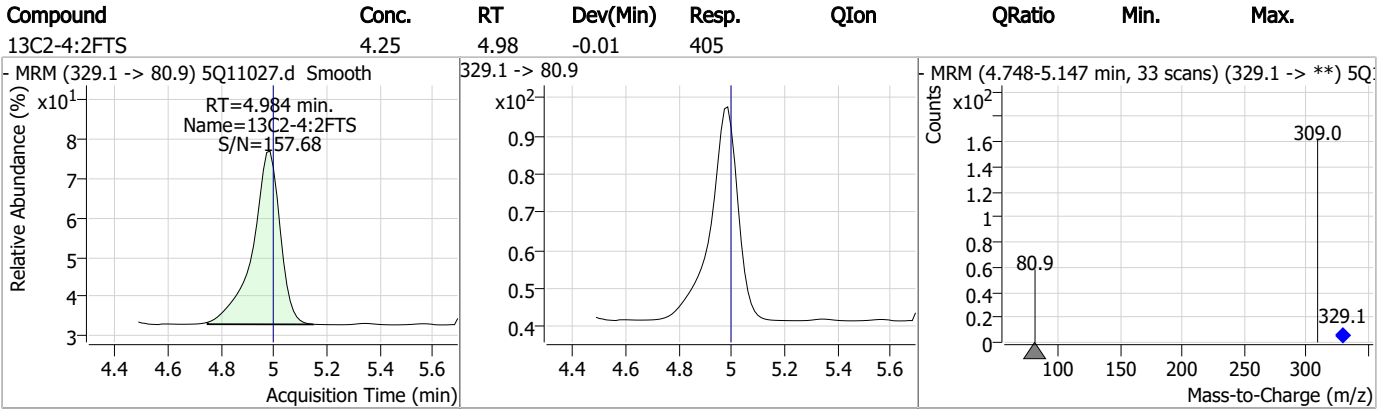
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	2.52	4.14	-0.01	14595 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	2.75	4.54	-0.01	11750				

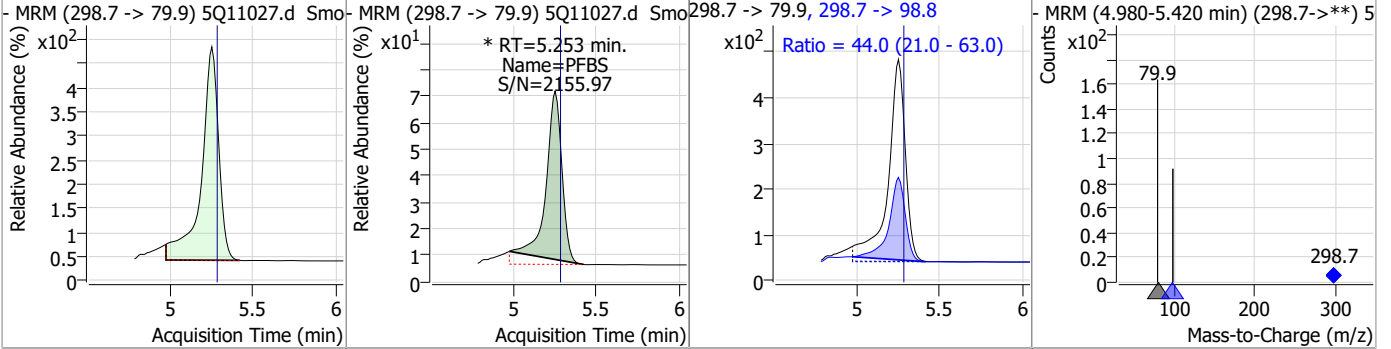


Perfluorinated Compounds by LC/MS/MS

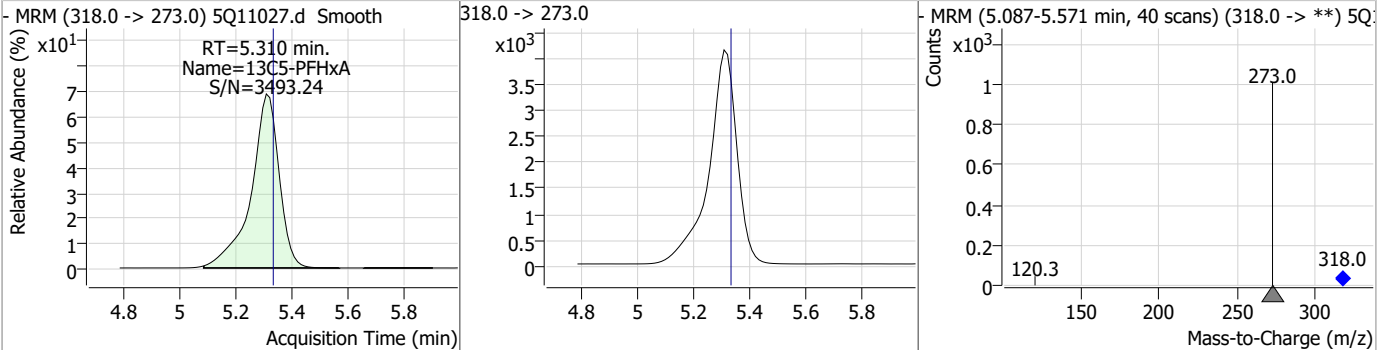


Perfluorinated Compounds by LC/MS/MS

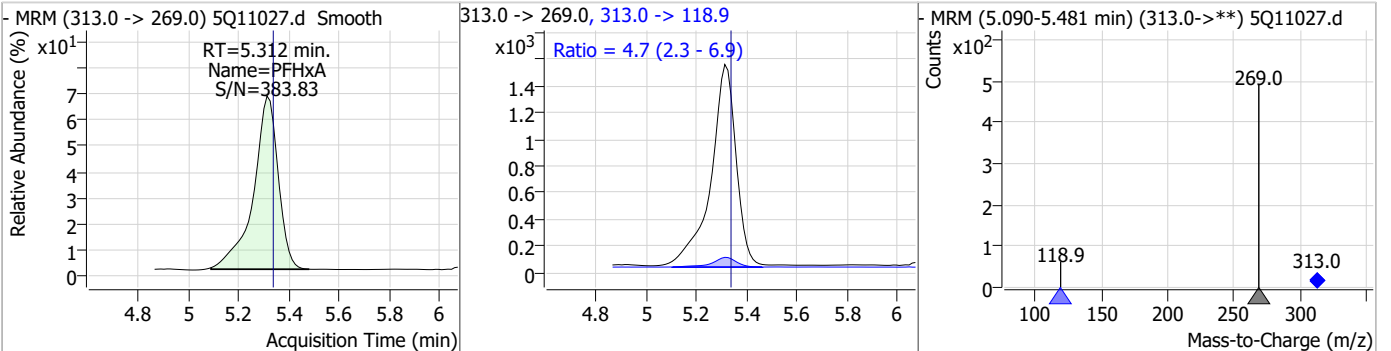
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.20	5.25	-0.03	2762 (m)	298.7 -> 98.8	44.0	21.0	63.0



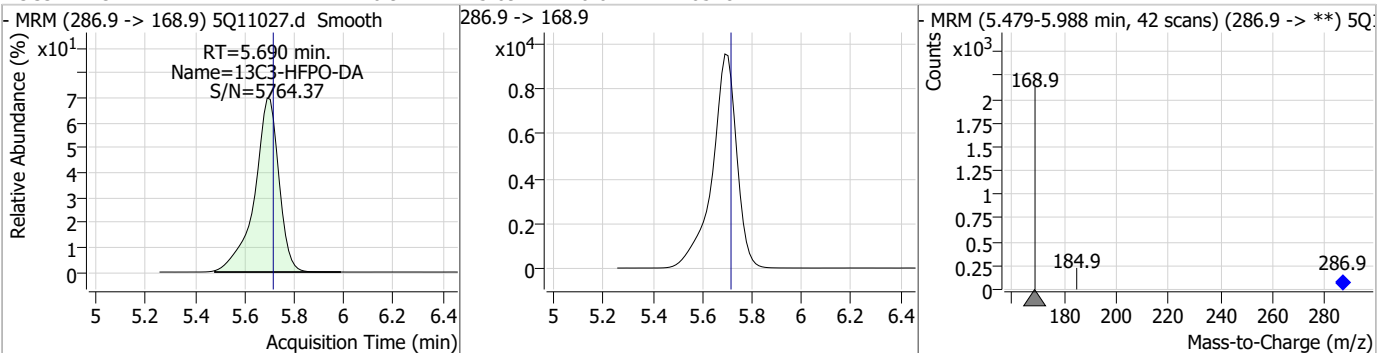
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.31	-0.02	28738				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.23	5.31	-0.02	10335	313.0 -> 118.9	4.7	2.3	6.9

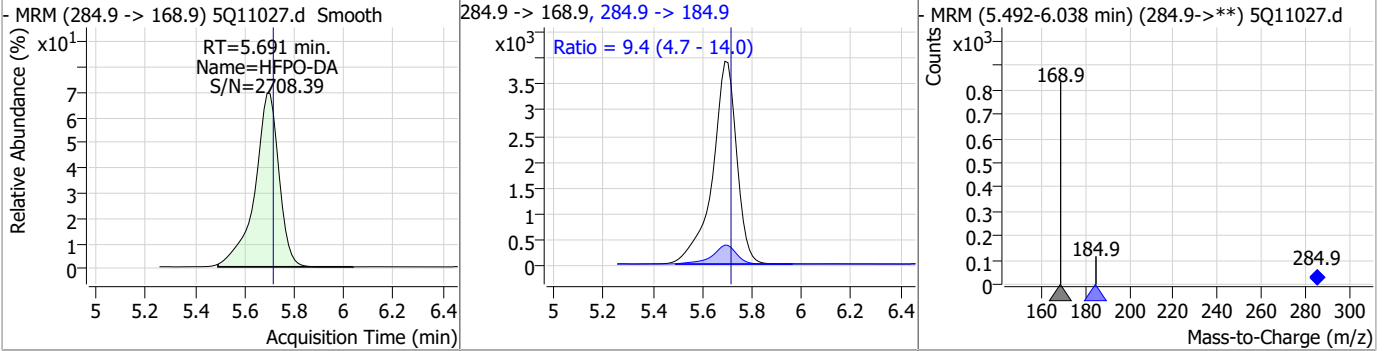


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.92	5.69	-0.02	65181				

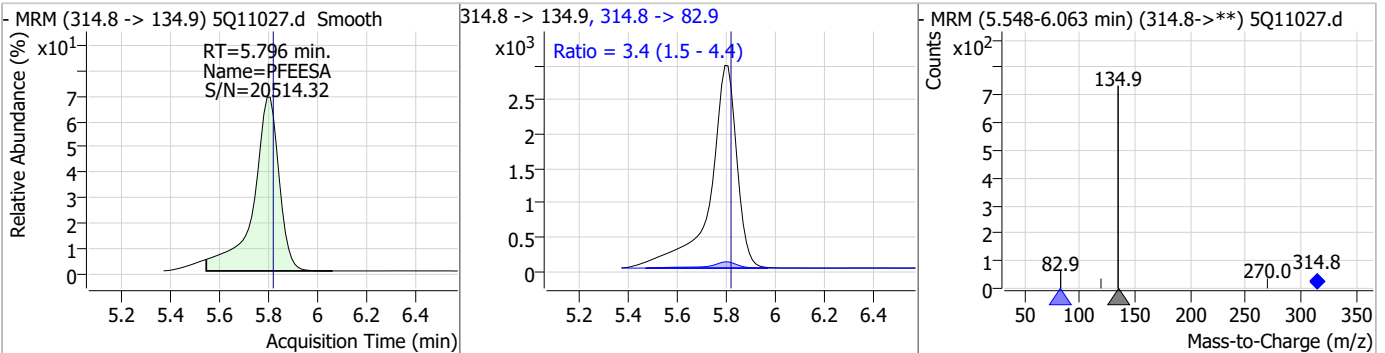


Perfluorinated Compounds by LC/MS/MS

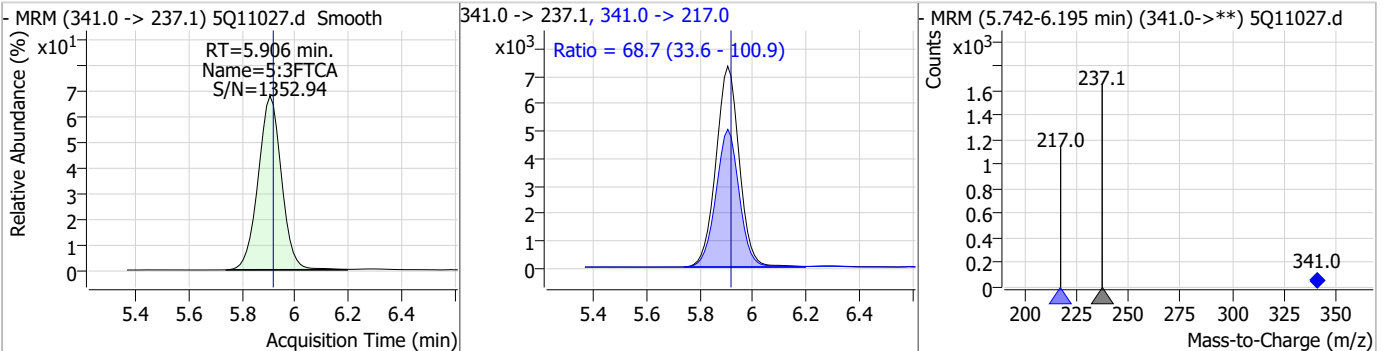
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.94	5.69	-0.02	26415	284.9 -> 184.9	9.4	4.7	14.0



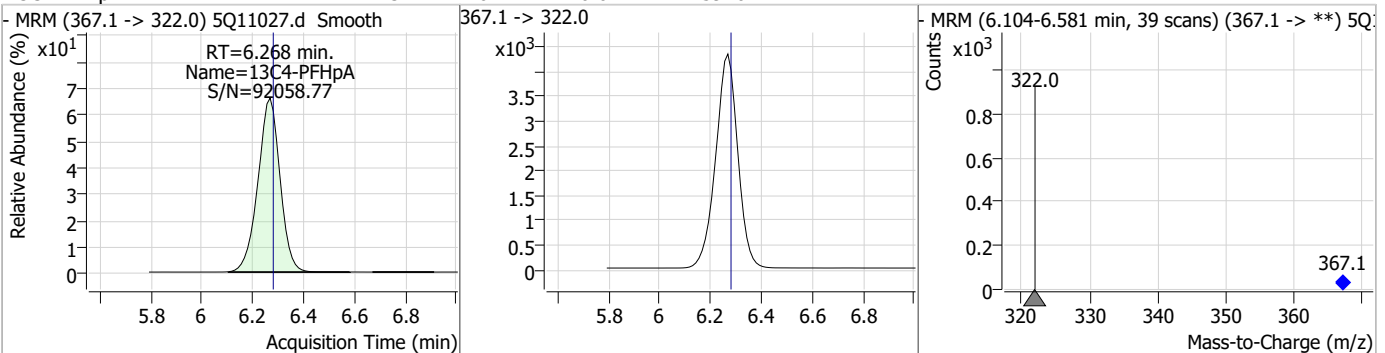
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	2.45	5.80	-0.02	21687	314.8 -> 82.9	3.4	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	25.48	5.91	-0.01	44403	341.0 -> 217.0	68.7	33.6	100.9

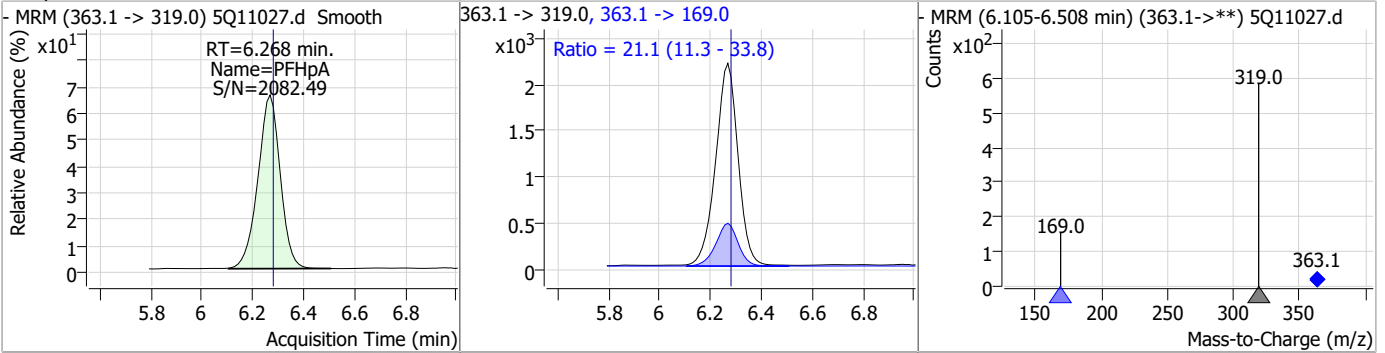


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.43	6.27	-0.01	25920	367.1 -> 322.0	-	-	-

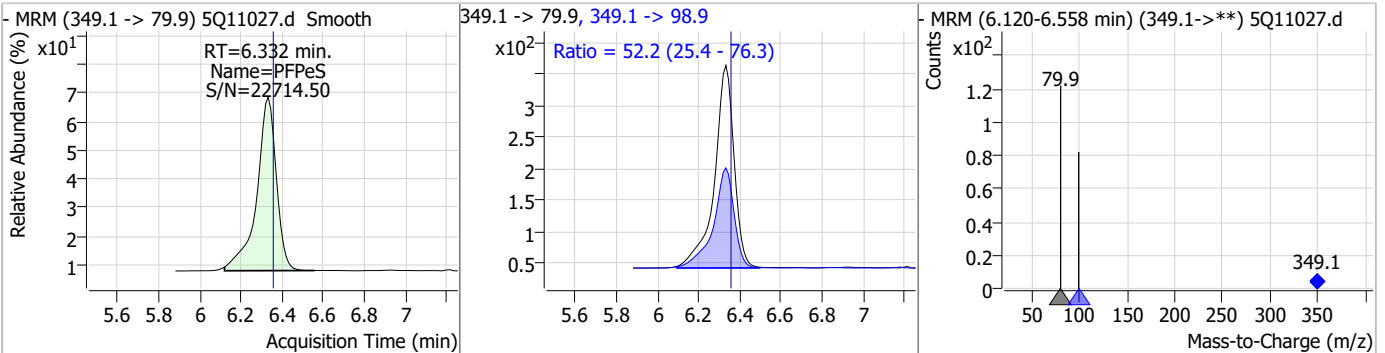


Perfluorinated Compounds by LC/MS/MS

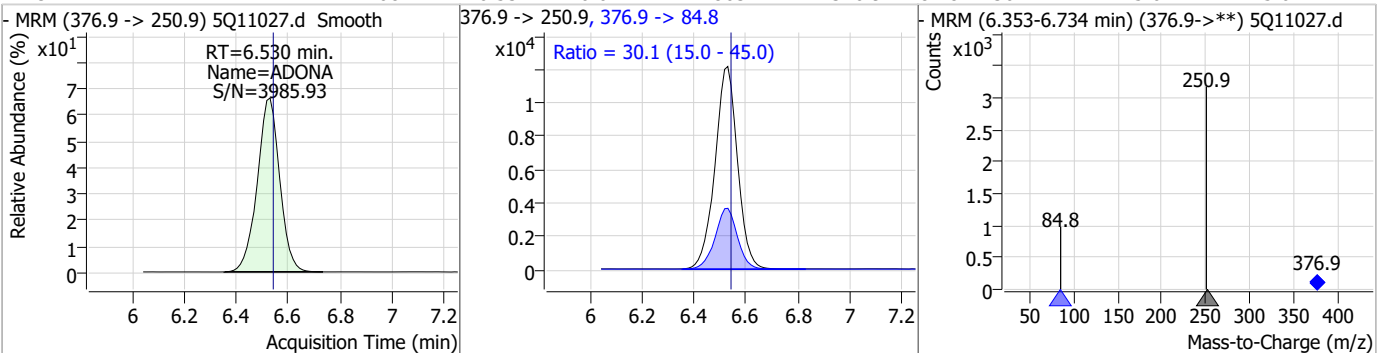
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.21	6.27	-0.01	13286	363.1 -> 169.0	21.1	11.3	33.8



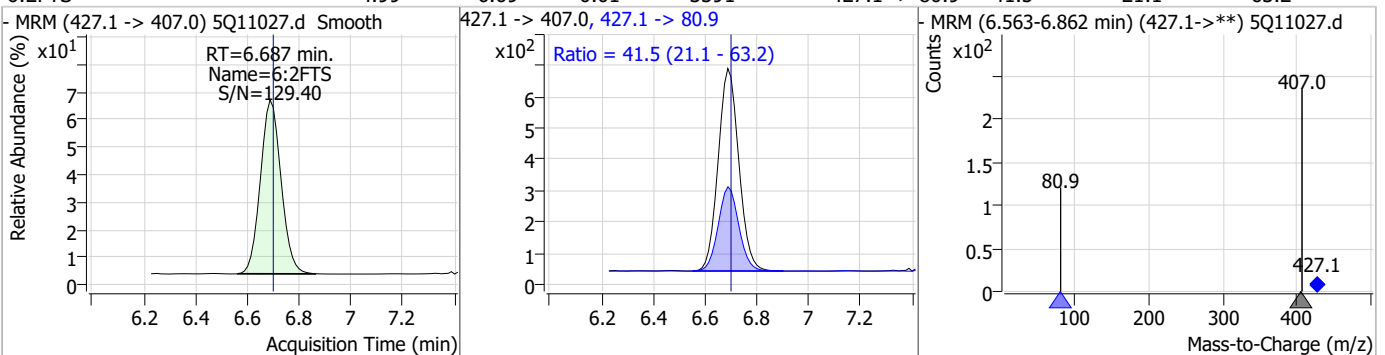
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.33	6.33	-0.02	2142	349.1 -> 98.9	52.2	25.4	76.3



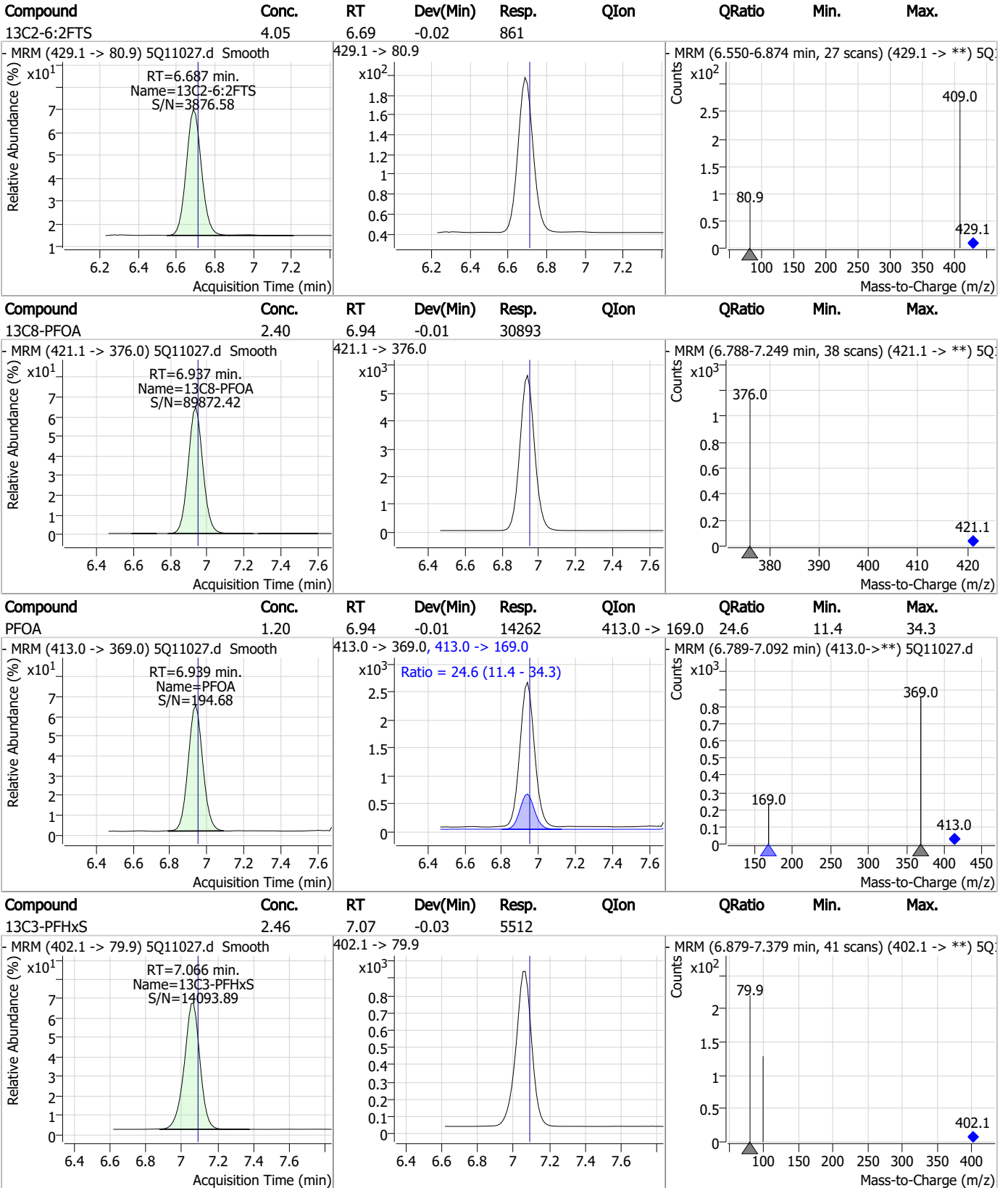
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.08	6.53	-0.01	72863	376.9 -> 84.8	30.1	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	4.99	6.69	-0.01	3591	427.1 -> 80.9	41.5	21.1	63.2



Perfluorinated Compounds by LC/MS/MS



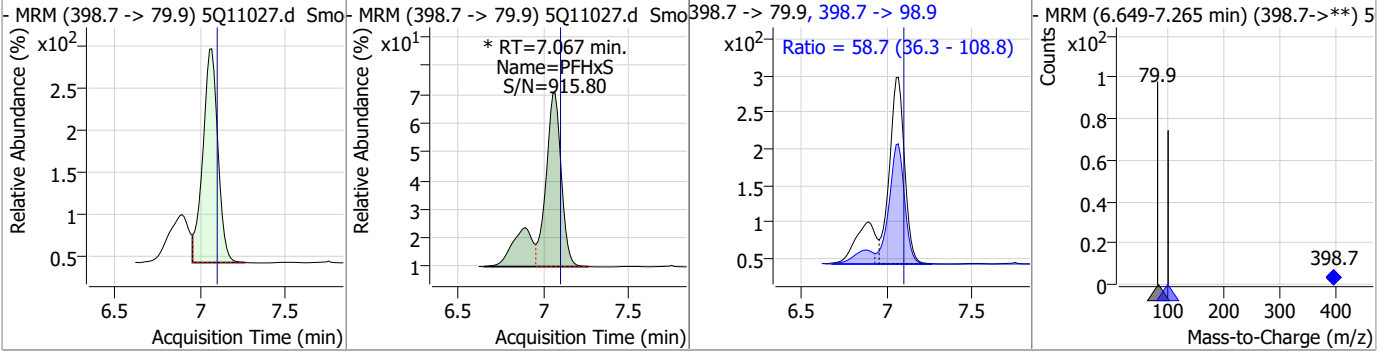
7.3.2

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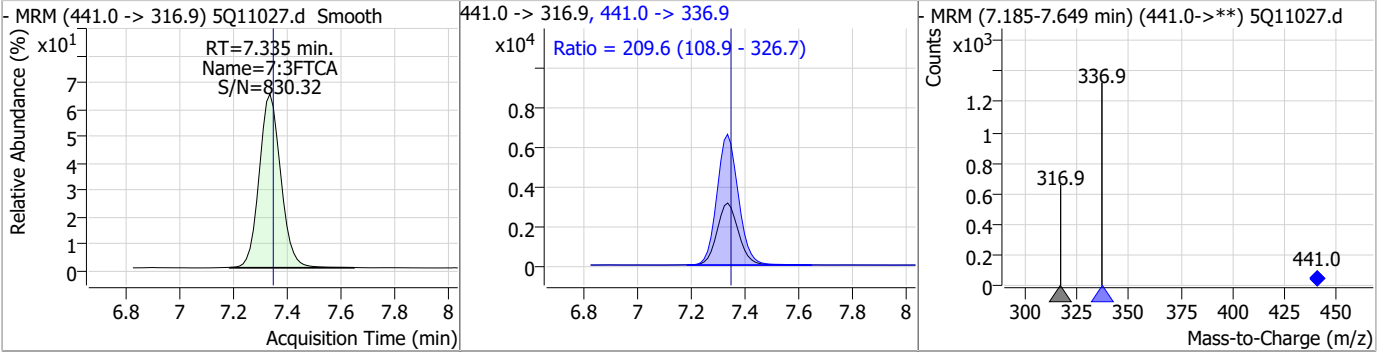


Perfluorinated Compounds by LC/MS/MS

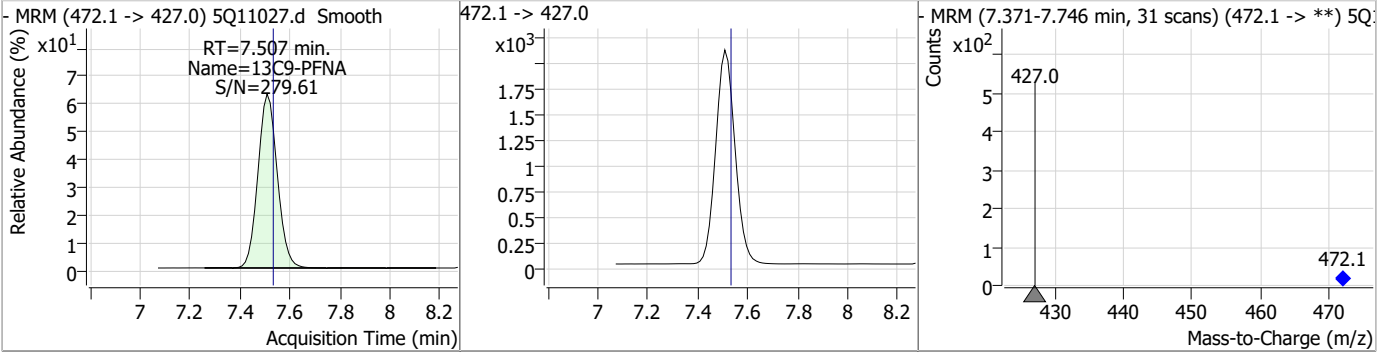
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.10	7.07	-0.03	2047 (m)	398.7 -> 98.9	58.7	36.3	108.8



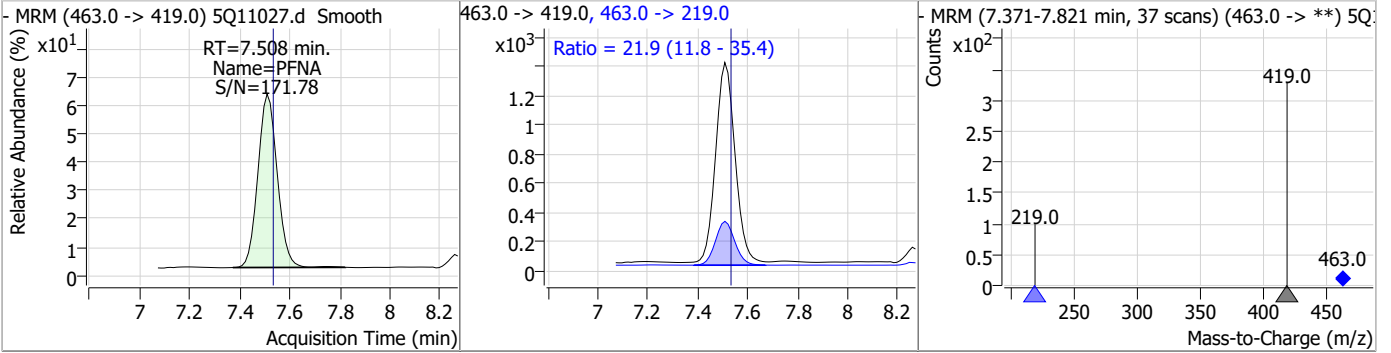
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	25.09	7.34	-0.01	17504	441.0 -> 336.9	209.6	108.9	326.7



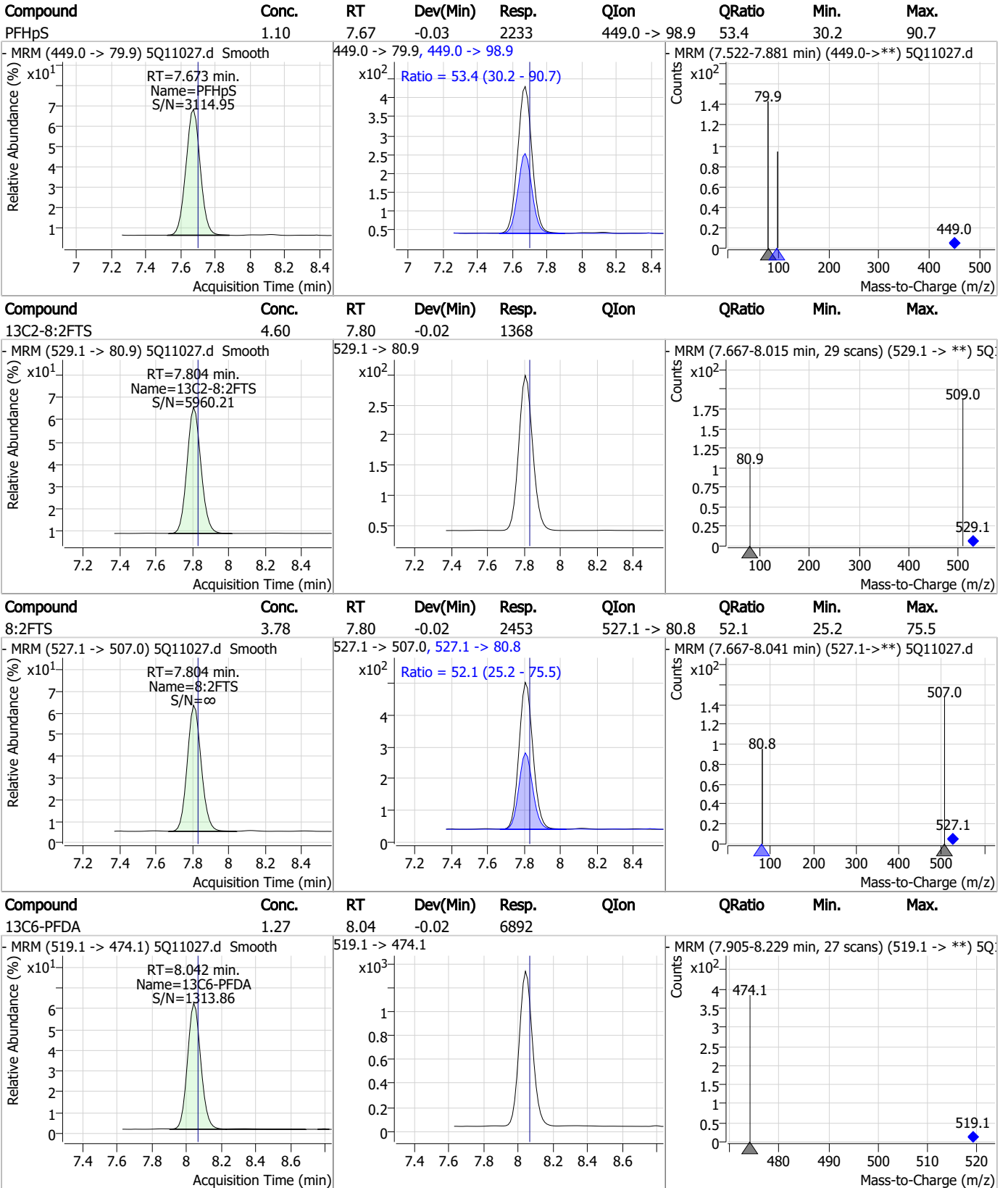
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.22	7.51	-0.02	11221	472.1 -> 427.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.13	7.51	-0.02	7347	463.0 -> 219.0	21.9	11.8	35.4



Perfluorinated Compounds by LC/MS/MS

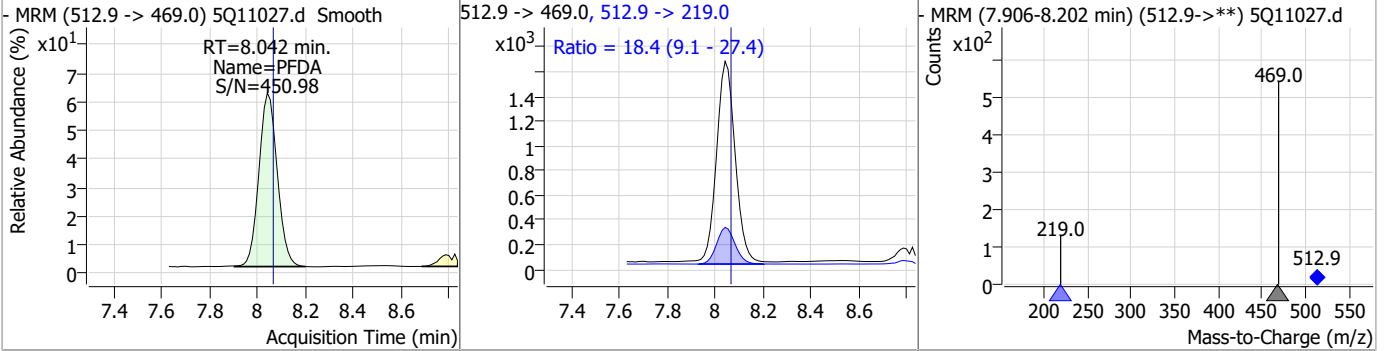


7.3.2

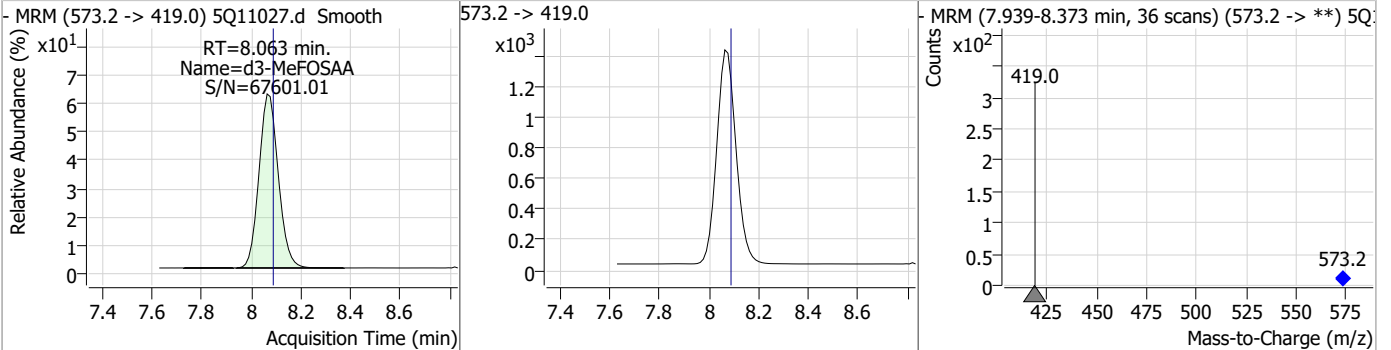


Perfluorinated Compounds by LC/MS/MS

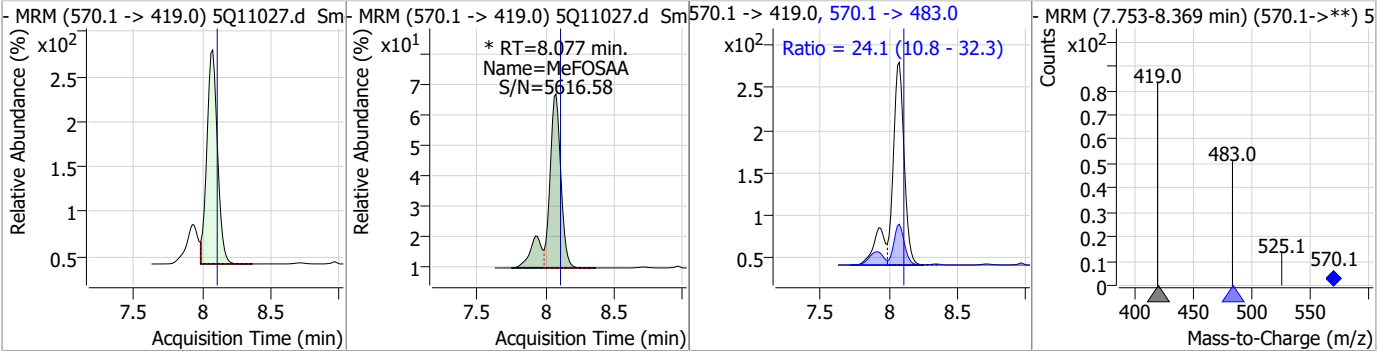
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	1.20	8.04	-0.02	8648	512.9 -> 219.0	18.4	9.1	27.4



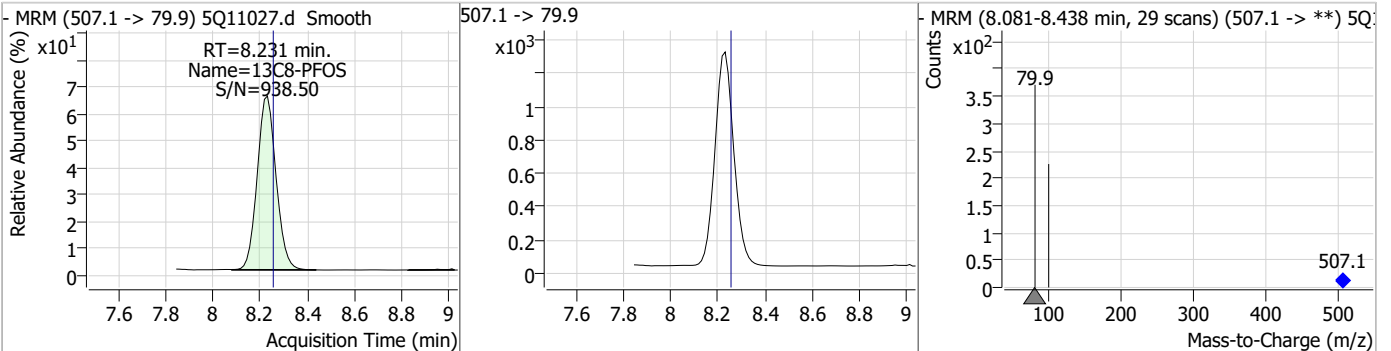
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.34	8.06	-0.02	7569				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.21	8.08	-0.02	1550 (m)	570.1 -> 483.0	24.1	10.8	32.3

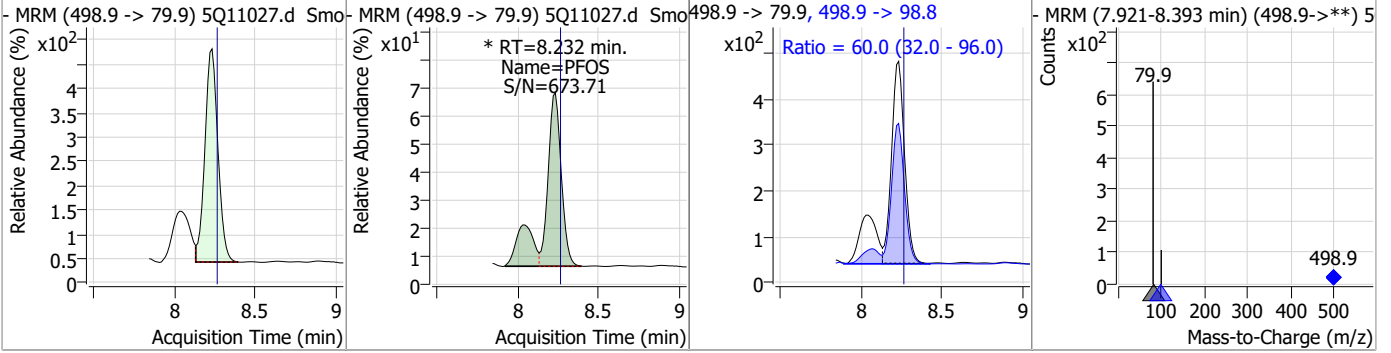


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.30	8.23	-0.02	7145				

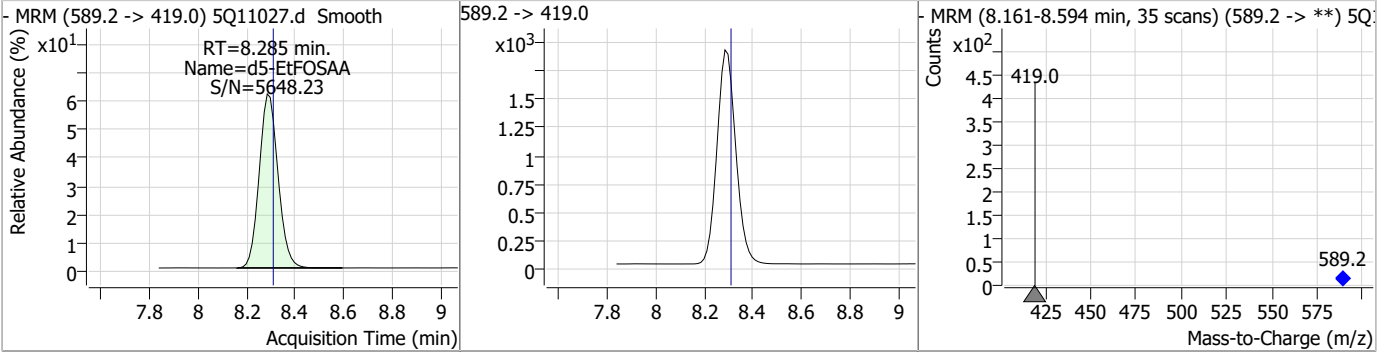


Perfluorinated Compounds by LC/MS/MS

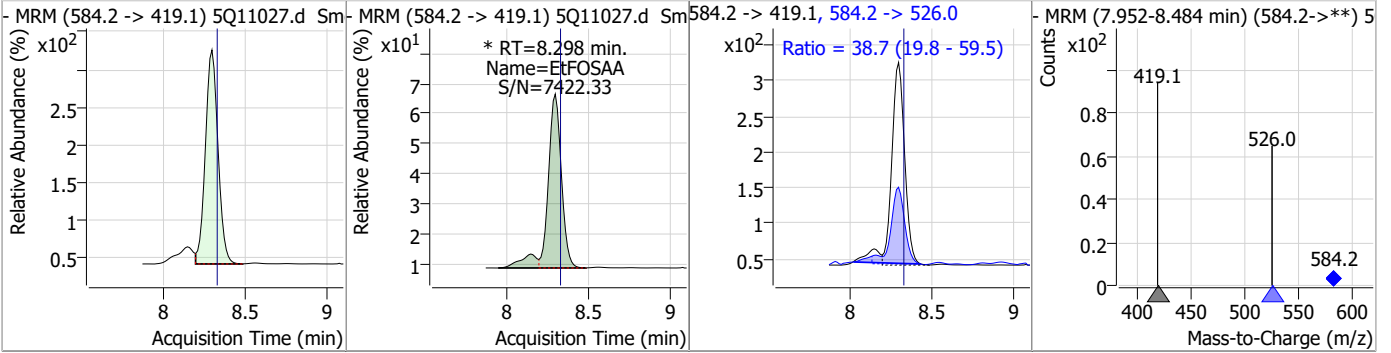
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.12	8.23	-0.02	3219 (m)	498.9 -> 98.8	60.0	32.0	96.0



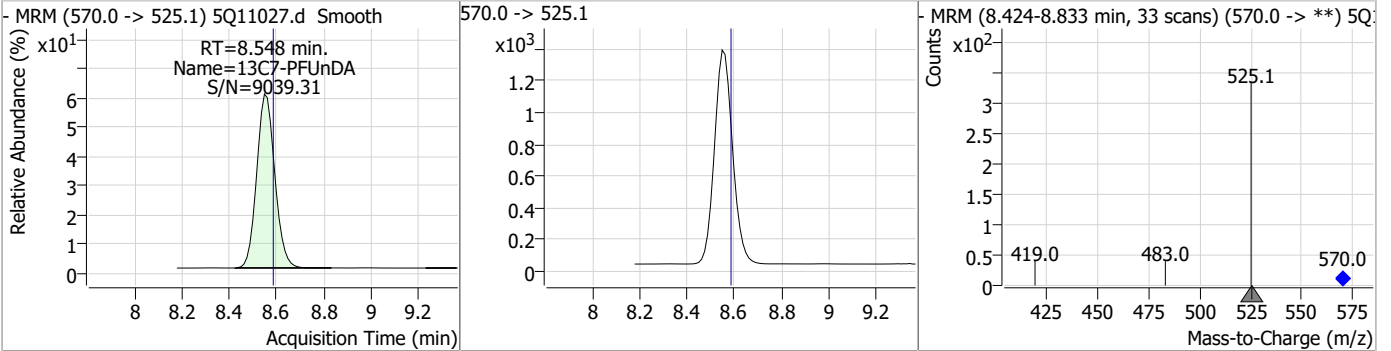
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	3.95	8.29	-0.02	10190				



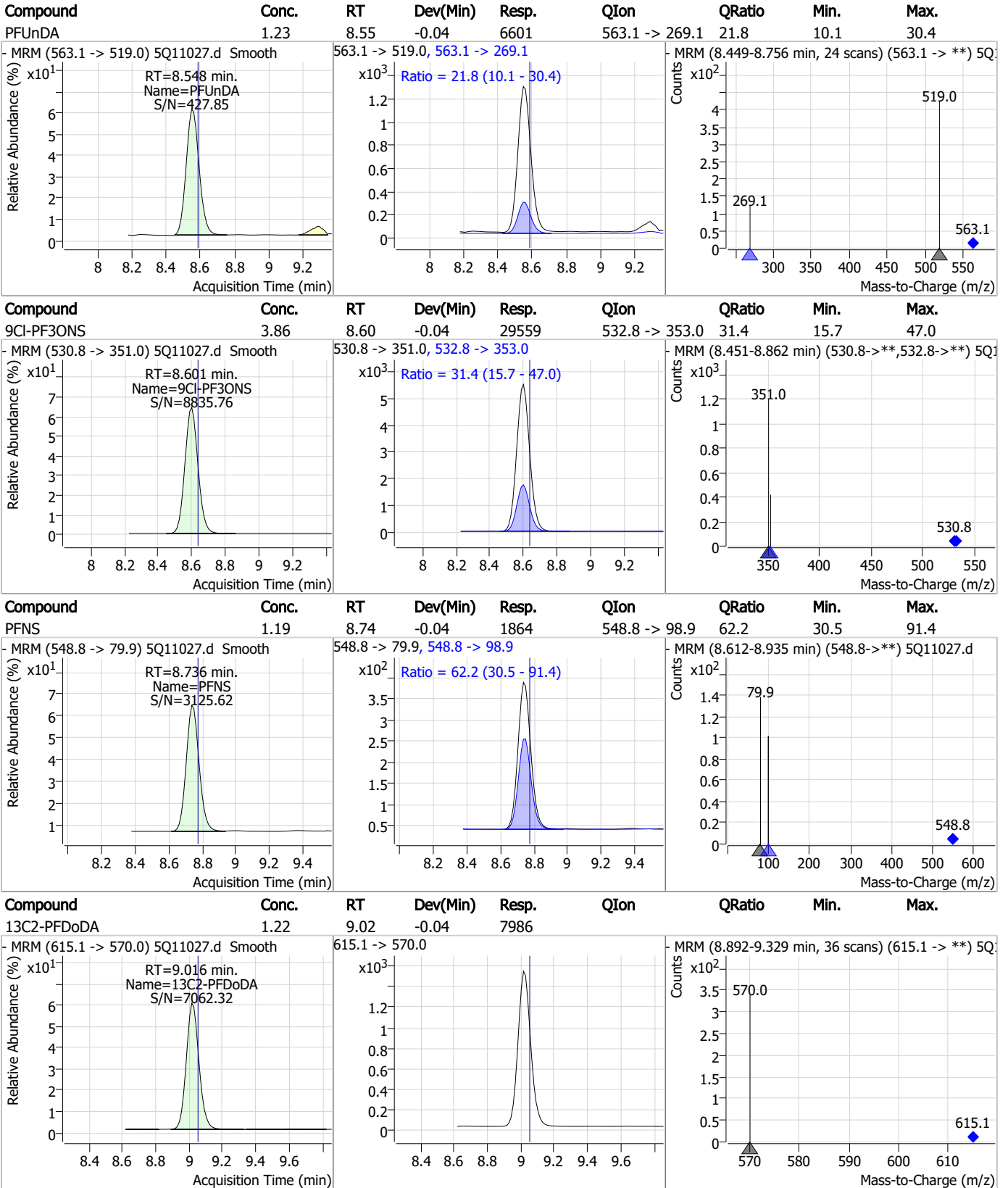
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.26	8.30	-0.02	1677 (m)	584.2 -> 526.0	38.7	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.22	8.55	-0.04	7225				



Perfluorinated Compounds by LC/MS/MS

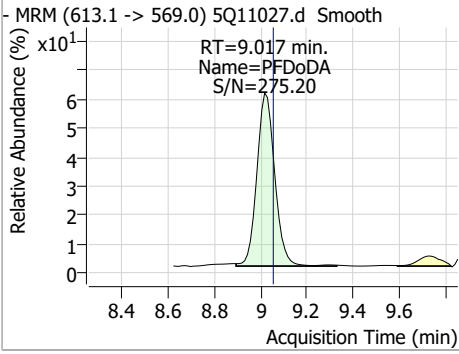
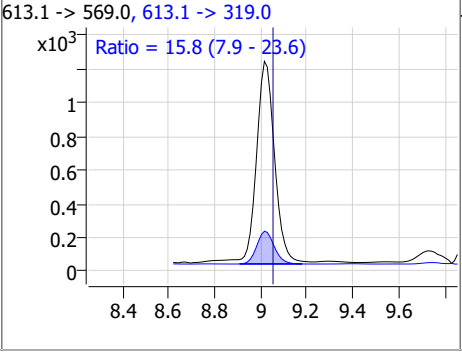
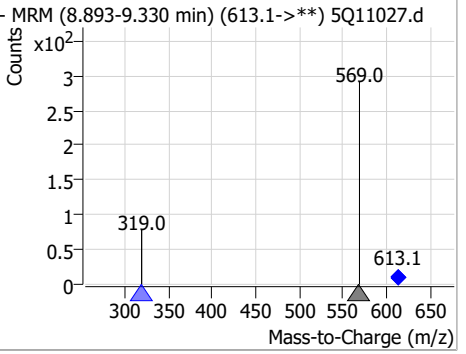
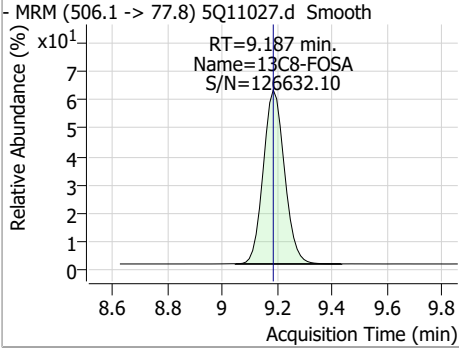
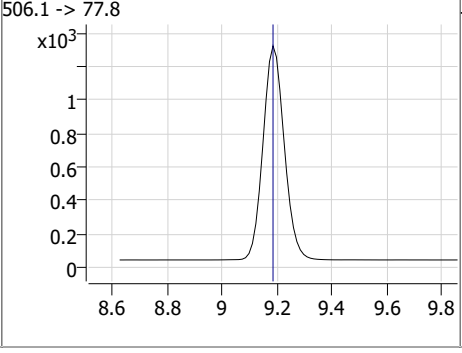
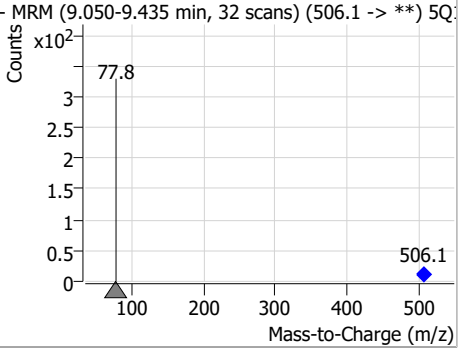
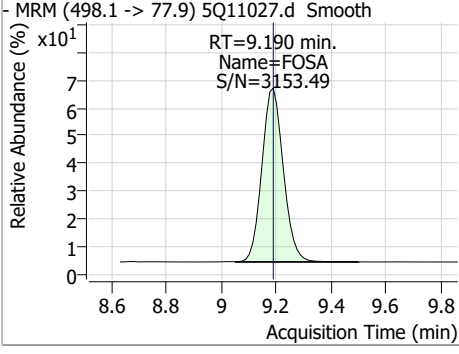
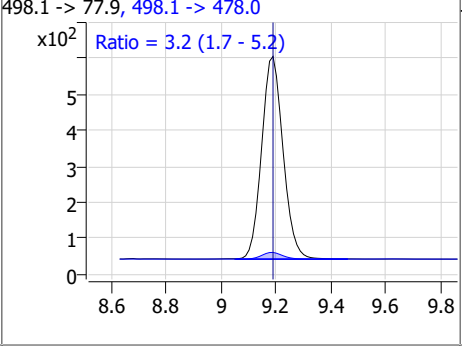
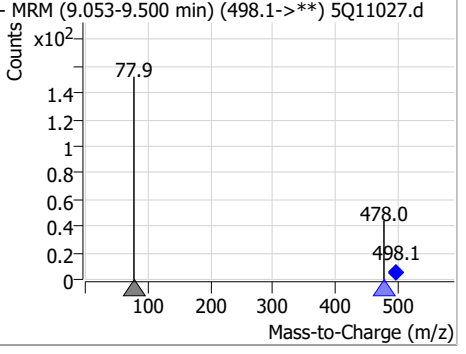
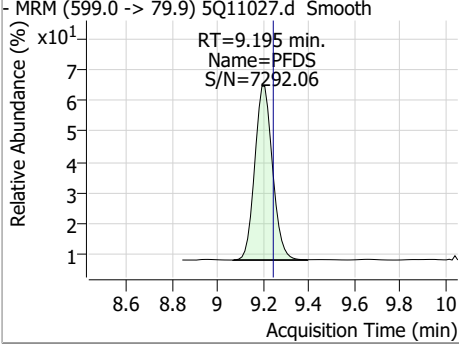
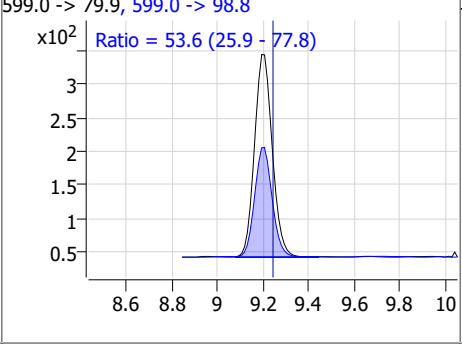
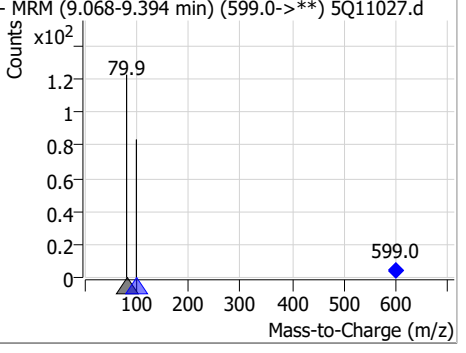


7.3.2

7



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	1.19	9.02	-0.04	6473	613.1 -> 319.0	15.8	7.9	23.6
								
13C8-FOSA	2.23	9.19	0.00	6894	506.1 -> 77.8	3.2	1.7	5.2
								
FOSA	1.21	9.19	0.00	3053	498.1 -> 478.0	3.2	1.7	5.2
								
PFDS	1.04	9.19	-0.05	1643	599.0 -> 98.8	53.6	25.9	77.8
								

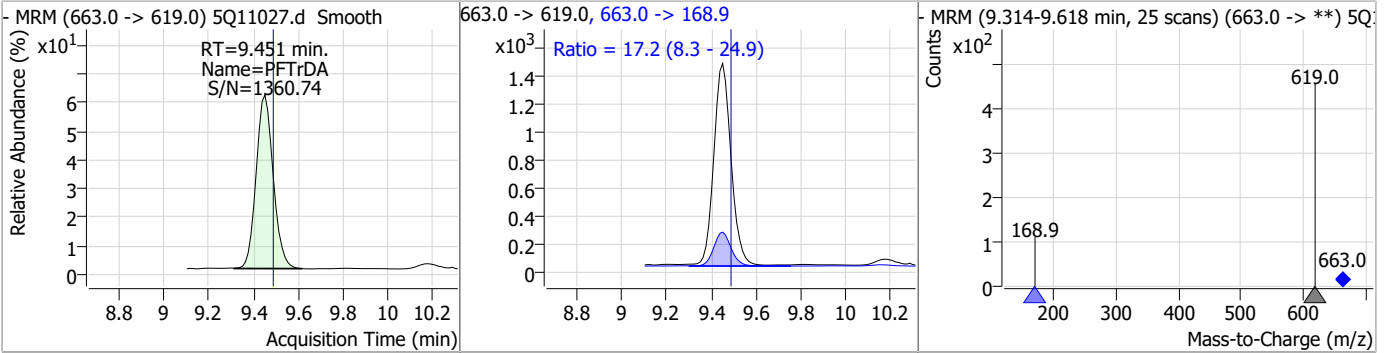
7.3.2

7

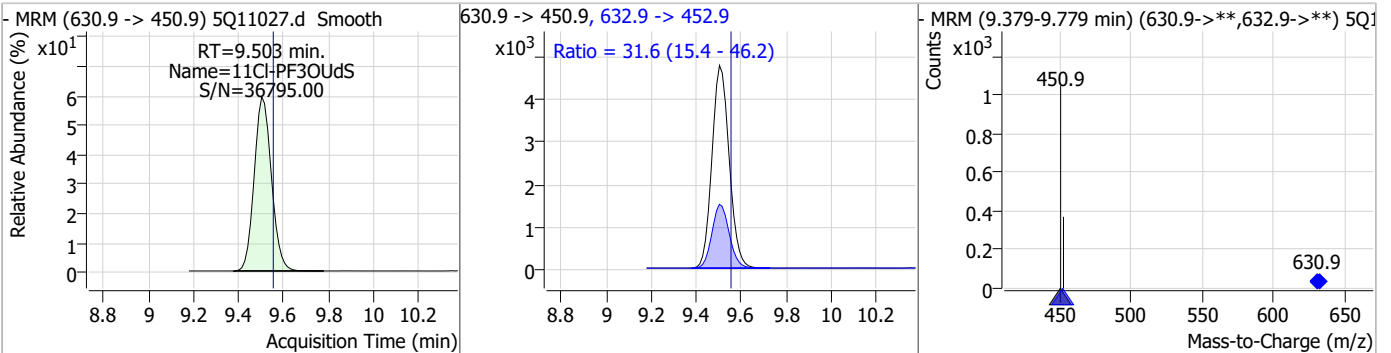


Perfluorinated Compounds by LC/MS/MS

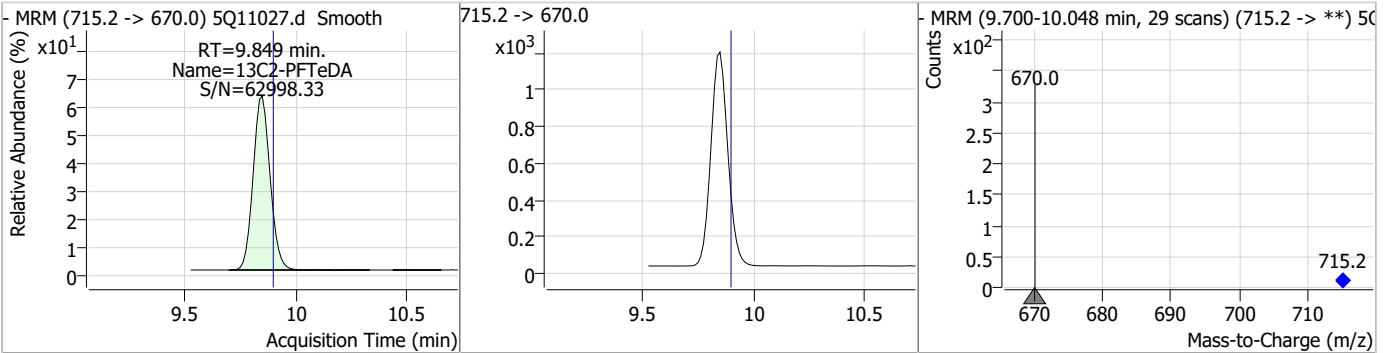
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	1.07	9.45	-0.04	7626	663.0 -> 168.9	17.2	8.3	24.9



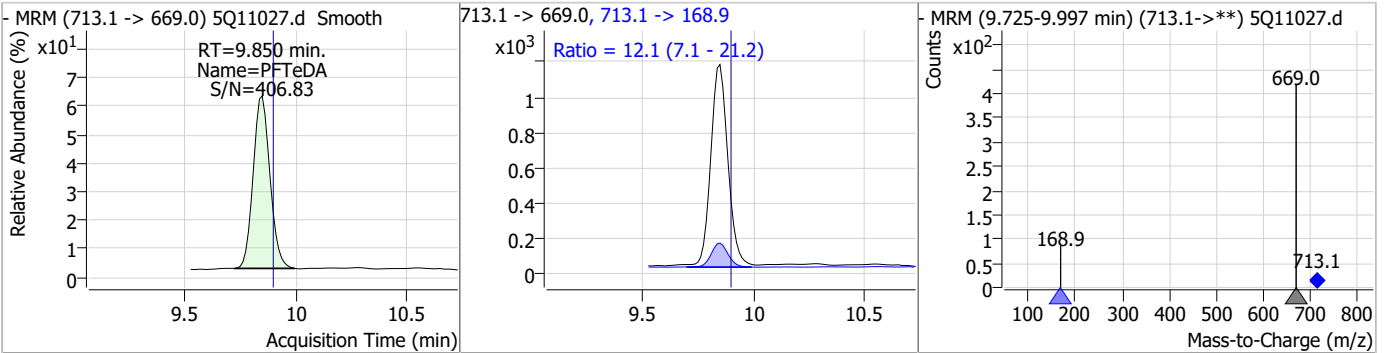
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	3.52	9.50	-0.05	25237	632.9 -> 452.9	31.6	15.4	46.2



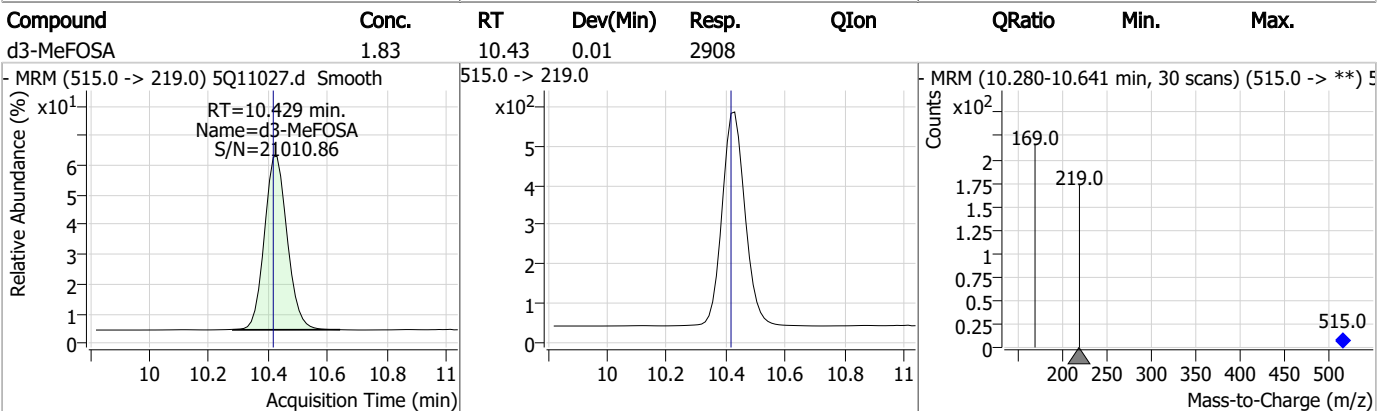
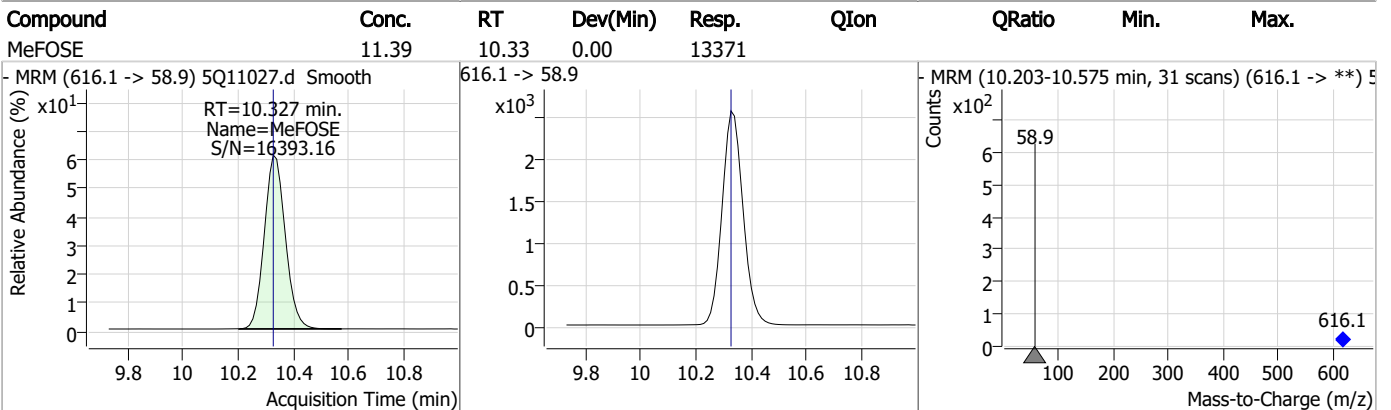
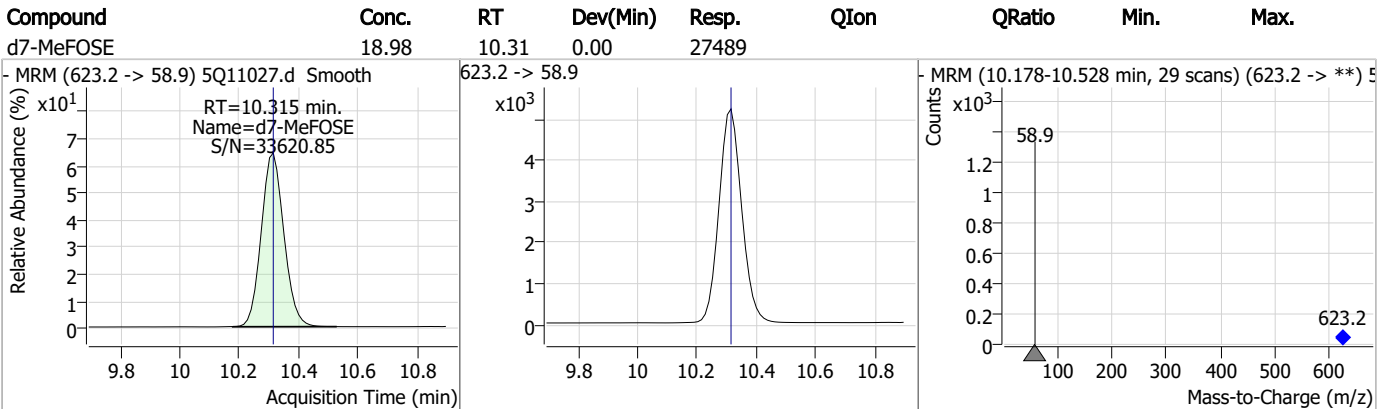
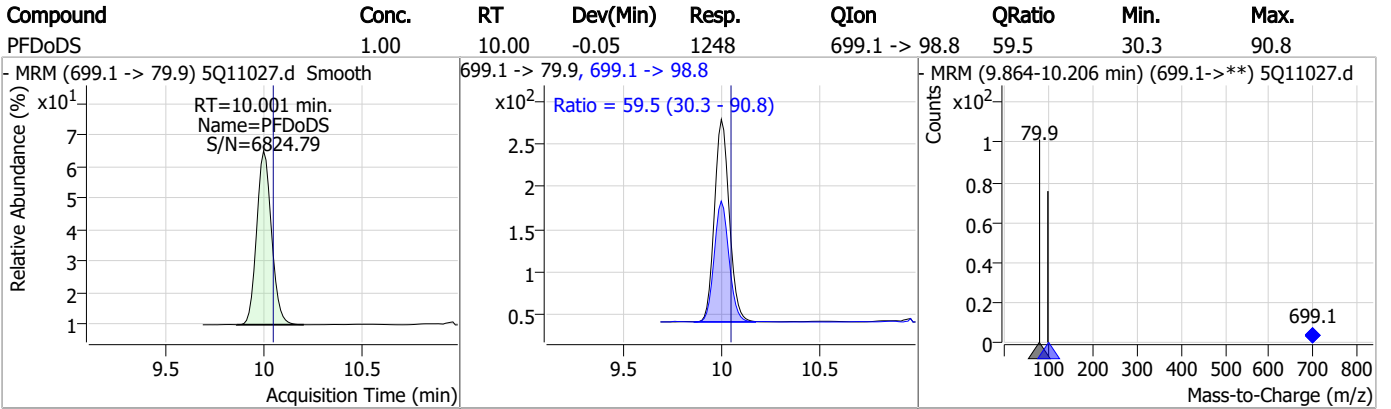
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.01	9.85	-0.05	6190	715.2 -> 670.0			



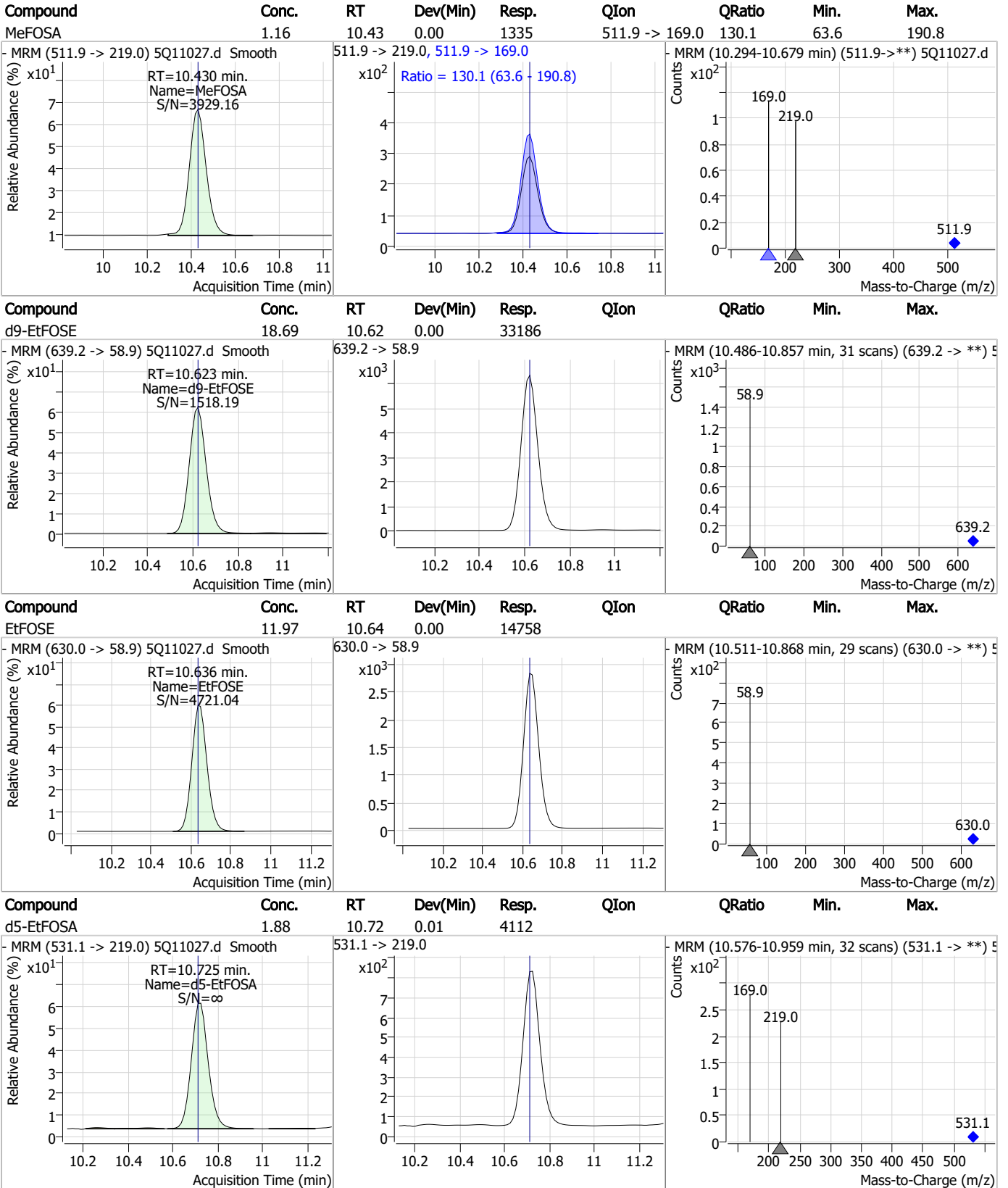
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.25	9.85	-0.05	5942	713.1 -> 168.9	12.1	7.1	21.2



Perfluorinated Compounds by LC/MS/MS



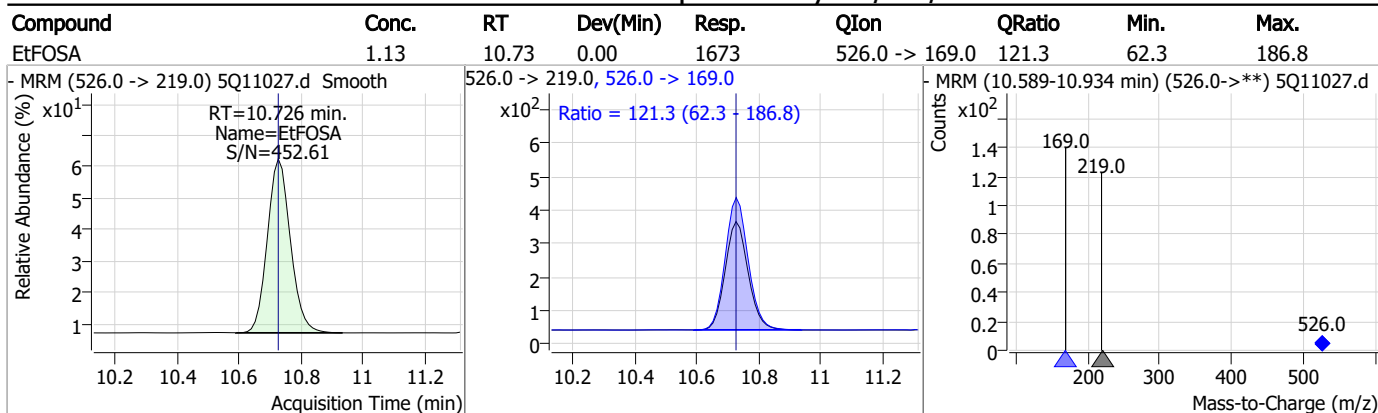
Perfluorinated Compounds by LC/MS/MS



7.3.2
7



Perfluorinated Compounds by LC/MS/MS



7.3.2
7



Manual Integration Approval Summary

Sample Number: OP95481-LLBS **Method:** EPA DRAFT 1633
Lab FileID: 5Q11027.D **Analyst approved:** 02/20/23 14:44 Lindsay Ritner
Injection Time: 02/17/23 16:43 **Supervisor approved:** 02/22/23 08:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.79	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
13C4-PFBA			2.80	Poor instrument integration
PFMPA	377-73-1		3.31	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.14	Poor instrument integration
13C3-PFBS			5.25	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.25	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.07	Split peak
MeFOSAA	2355-31-9		8.08	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

7.3.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11030.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 5:25:48 PM
 Sample Name : op95481-ms
 Vial : P4-A5
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95481,S5Q170,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	39115	10.00	µg/L m	-0.012
M5-PFPeA	4.137	268.3 -> 223.0	23454	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	25047	2.50	µg/L	-0.025
M4-PFHpA	6.268	367.1 -> 322.0	22966	2.50	µg/L	-0.012
M8-PFOA	6.937	421.1 -> 376.0	27815	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	9684	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	5853	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	5876	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	6323	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	5921	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	6028	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	6890	2.50	µg/L m	-0.025
M3-PFHxS	7.054	402.1 -> 79.9	5167	2.50	µg/L	-0.038
M8-PFOS	8.231	507.1 -> 79.9	6011	2.50	µg/L	-0.025
M2-4:2FTS	4.972	329.1 -> 80.9	395	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	835	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1121	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	6372	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	56012	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	8051	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	25078	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	30678	25.00	µg/L	0.000
M5-EtFOSA	10.725	531.1 -> 219.0	3943	2.50	µg/L	0.012
M3-MeFOSA	10.429	515.0 -> 219.0	2835	2.50	µg/L	0.012
13C4-PFOS	8.231	502.8 -> 79.9	7782	2.50	µg/L	-0.025
13C3-PFBA	2.791	216.0 -> 172.0	23608	5.00	µg/L m	-0.013
18O2-PFHxS	7.052	403.0 -> 83.9	3800	2.50	µg/L	-0.038
13C4-PFOA	6.938	417.1 -> 372.0	37715	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	10885	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	11200	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	31259	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	395	4.27	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.4%			
13C2-6:2FTS	6.687	429.1 -> 80.9	835	4.05	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.0%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1121	3.88	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 77.6%			
13C2-PFDoDA	9.016	615.1 -> 570.0	6323	0.93	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.6%			
13C2-PFTeDA	9.849	715.2 -> 670.0	5921	0.93	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.3%			
13C3-PFBS	5.252	302.1 -> 79.9	6890	2.36	µg/L m	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.3%			
13C3-PFHxS	7.054	402.1 -> 79.9	5167	2.38	µg/L	-0.038

7.4.1
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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 = 95.1%		
13C4-PFBA	2.786	216.8 -> 171.9	39115	8.78	µg/L m	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 87.8%		
13C4-PFHpA	6.268	367.1 -> 322.0	22966	2.21	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.4%		
13C5-PFHxA	5.310	318.0 -> 273.0	25047	2.28	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.3%		
13C5-PFPeA	4.137	268.3 -> 223.0	23454	4.13	µg/L m	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 82.5%		
13C6-PFDA	8.042	519.1 -> 474.1	5853	1.04	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 83.3%		
13C7-PFUnDA	8.548	570.0 -> 525.1	5876	0.96	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 76.5%		
13C8-FOSA	9.187	506.1 -> 77.8	6028	1.97	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.0%		
13C8-PFOA	6.937	421.1 -> 376.0	27815	2.19	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.5%		
13C8-PFOS	8.231	507.1 -> 79.9	6011	1.96	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.4%		
13C9-PFNA	7.507	472.1 -> 427.0	9684	1.06	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 84.6%		
d3-MeFOSAA	8.063	573.2 -> 419.0	6372	3.70	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 74.0%		
13C3-HFPO-DA	5.690	286.9 -> 168.9	56012	9.65	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.5%		
d3-MeFOSA	10.429	515.0 -> 219.0	2835	1.81	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.3%		
d5-EtFOSAA	8.285	589.2 -> 419.0	8051	3.16	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 63.2%		
d7-MeFOSE	10.315	623.2 -> 58.9	25078	17.51	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 70.1%		
d9-EtFOSE	10.623	639.2 -> 58.9	30678	17.48	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 69.9%		
d5-EtFOSA	10.725	531.1 -> 219.0	3943	1.82	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.0%		
Target Compounds						QValue
4:2FTS	4.972	327.1 -> 307.0	5820	11.71	µg/L	98
		327.1 -> 80.9	3125			
6:2FTS	6.687	427.1 -> 407.0	8235	11.81	µg/L	98
		427.1 -> 80.9	3378			
8:2FTS	7.804	527.1 -> 507.0	5302	9.99	µg/L	99
		527.1 -> 80.8	2714			
EtFOSAA	8.298	584.2 -> 419.1	3597	3.41	µg/L m	98
		584.2 -> 526.0	1472			
FOSA	9.190	498.1 -> 77.9	6622	3.01	µg/L	99
		498.1 -> 478.0	201			
MeFOSAA	8.077	570.1 -> 419.0	3439	3.19	µg/L m	98
		570.1 -> 483.0	710			
PFBA	2.795	212.8 -> 168.9	20507	13.24	µg/L m	100
PFBS	5.253	298.7 -> 79.9	6687	2.95	µg/L m	97
		298.7 -> 98.8	2696			
PFDA	8.042	512.9 -> 469.0	19138	3.12	µg/L	99
		512.9 -> 219.0	3402			
PFDODA	9.017	613.1 -> 569.0	13119	3.06	µg/L	99
		613.1 -> 319.0	2119			
PFDS	9.195	599.0 -> 79.9	3614	2.72	µg/L	99

7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	1859	3.06	µg/L	98
		363.1 -> 319.0	29703			
PFHpS	7.673	363.1 -> 169.0	6496	3.07	µg/L	96
		449.0 -> 79.9	5250			
PFHxA	5.312	449.0 -> 98.9	3009	3.11	µg/L	100
		313.0 -> 269.0	22837			
PFHxS	7.055	313.0 -> 118.9	1032	2.59	µg/L	86
		398.7 -> 79.9	4512			
PFNA	7.508	398.7 -> 98.9	2726	3.08	µg/L	98
		463.0 -> 419.0	17269			
PFNS	8.736	463.0 -> 219.0	3882	2.82	µg/L	99
		548.8 -> 79.9	3722			
PFOA	6.939	548.8 -> 98.9	2254	3.11	µg/L	96
		413.0 -> 369.0	33277			
PFOS	8.232	413.0 -> 169.0	8204	2.93	µg/L	92
		498.9 -> 79.9	7108			
PFPeA	4.139	498.9 -> 98.8	4123	6.65	µg/L	100
		263.0 -> 219.0	34080			
PFPeS	6.332	349.1 -> 79.9	4791	3.18	µg/L	99
		349.1 -> 98.9	2459			
PFTeDA	9.850	713.1 -> 669.0	13961	3.07	µg/L	98
		713.1 -> 168.9	1829			
PFTrDA	9.451	663.0 -> 619.0	17470	3.09	µg/L	99
		663.0 -> 168.9	2938			
PFUnDA	8.548	563.1 -> 519.0	13189	3.01	µg/L	99
		563.1 -> 269.1	2758			
11CI-PF3OUdS	9.503	630.9 -> 450.9	54251	8.80	µg/L	99
		632.9 -> 452.9	16893			
9CI-PF3ONS	8.601	530.8 -> 351.0	64065	9.72	µg/L	99
		532.8 -> 353.0	19897			
ADONA	6.517	376.9 -> 250.9	165165	10.77	µg/L	99
		376.9 -> 84.8	48588			
HFPO-DA	5.691	284.9 -> 168.9	58867	12.81	µg/L	99
		284.9 -> 184.9	5277			
3:3FTCA	3.603	241.0 -> 177.0	6118	16.18	µg/L	99
		241.0 -> 117.0	756			
5:3FTCA	5.906	341.0 -> 237.1	101051	66.53	µg/L	98
		341.0 -> 217.0	69608			
7:3FTCA	7.335	441.0 -> 316.9	38761	63.74	µg/L	99
		441.0 -> 336.9	83557			
EtFOSA	10.726	526.0 -> 219.0	4028	2.83	µg/L	95
		526.0 -> 169.0	4772			
EtFOSE	10.636	630.0 -> 58.9	34782	30.52	µg/L	100
		511.9 -> 219.0	3298			
MeFOSA	10.430	511.9 -> 169.0	4190	2.95	µg/L	100
		616.1 -> 58.9	32354			
MeFOSE	10.327	699.1 -> 79.9	2830	30.20	µg/L	100
		699.1 -> 98.8	1800			
PFDoDS	10.001	295.0 -> 201.0	4046	2.71	µg/L	96
		295.0 -> 84.9	1117			
NFDHA	5.193	279.0 -> 85.1	26954	6.99	µg/L	99
		229.0 -> 84.9	18287			
PFMBA	4.541	314.8 -> 134.9	50102	7.14	µg/L	100
		314.8 -> 82.9	1583			
PFMPA	3.315			6.59	µg/L	100
PFEESA	5.796			6.48	µg/L	99

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

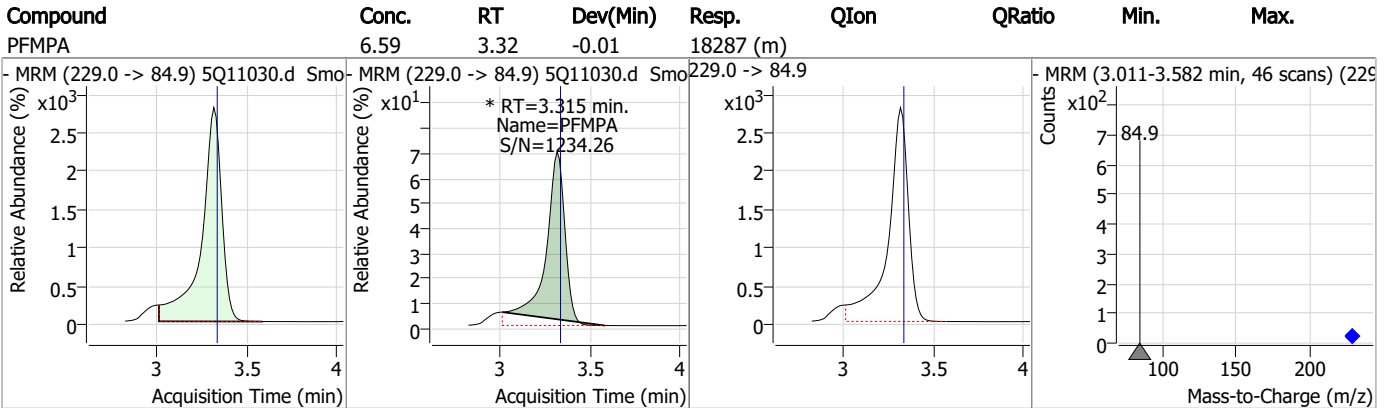
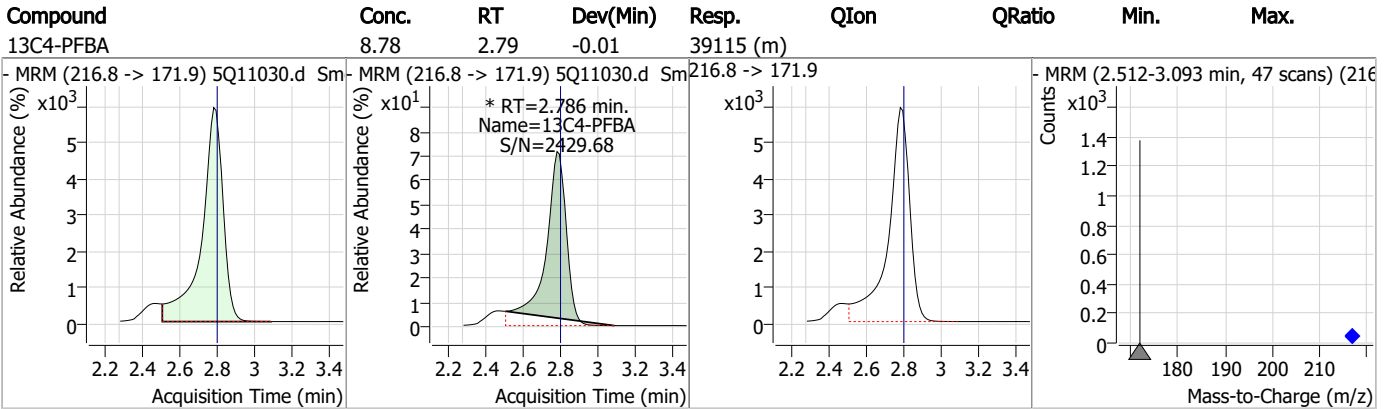
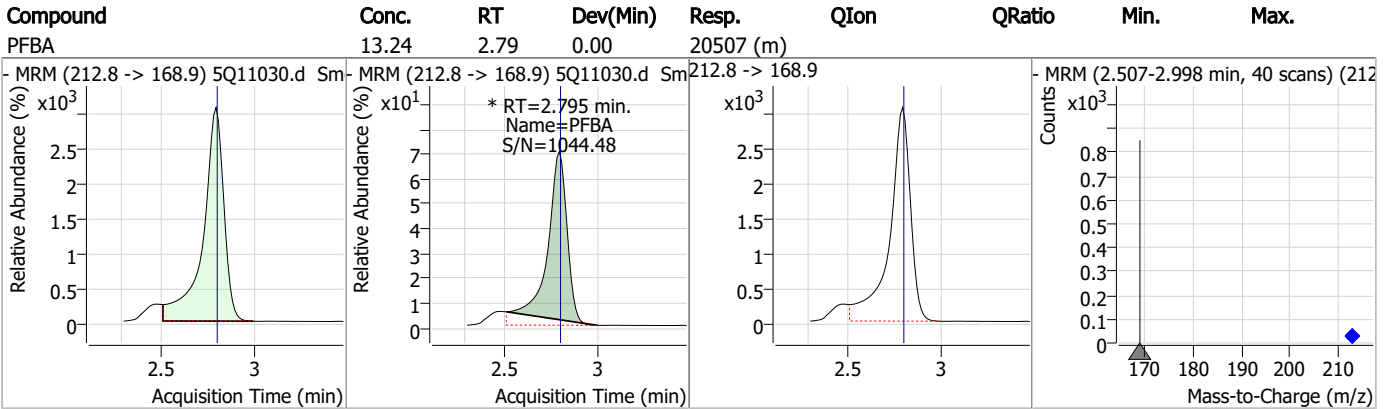
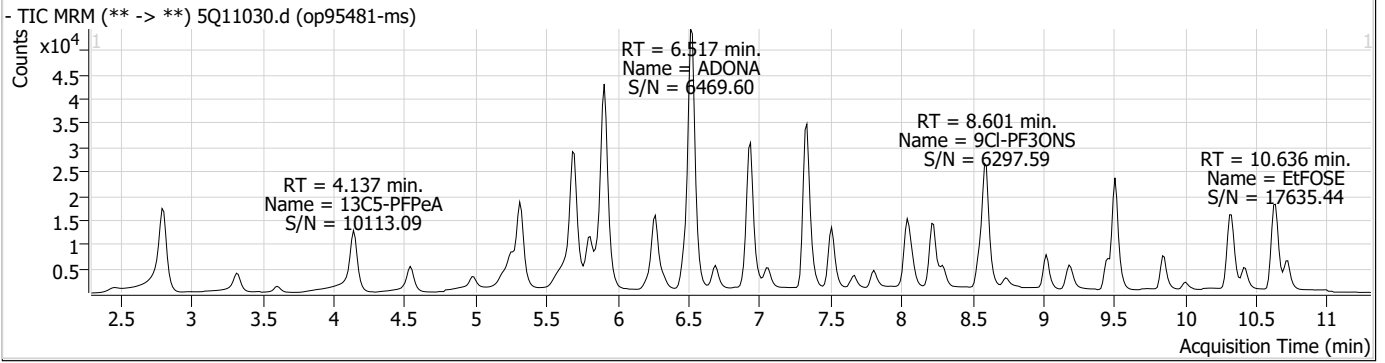
Perfluorinated Compounds by LC/MS/MS

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

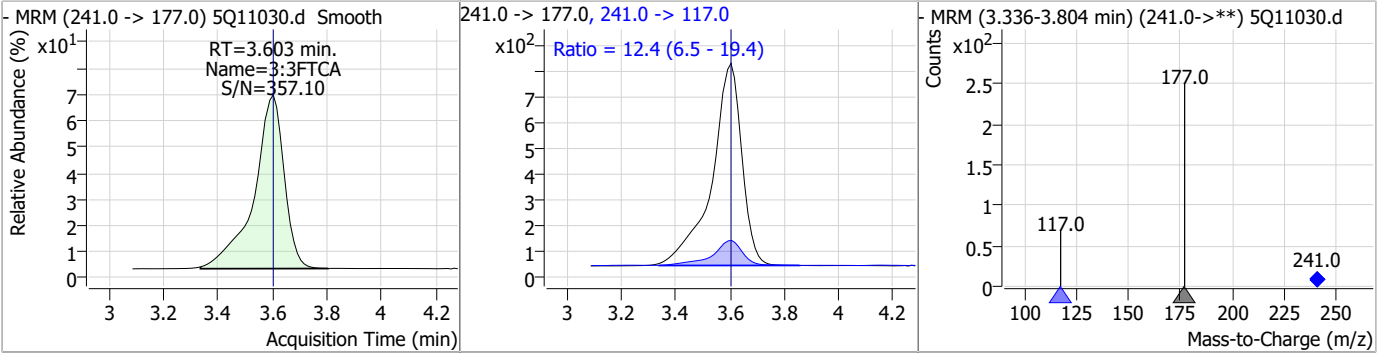
7

Perfluorinated Compounds by LC/MS/MS

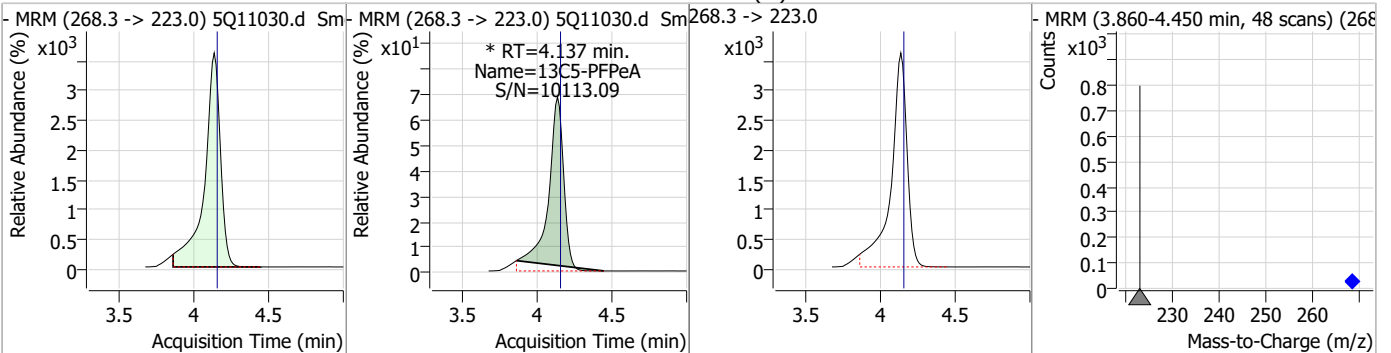


Perfluorinated Compounds by LC/MS/MS

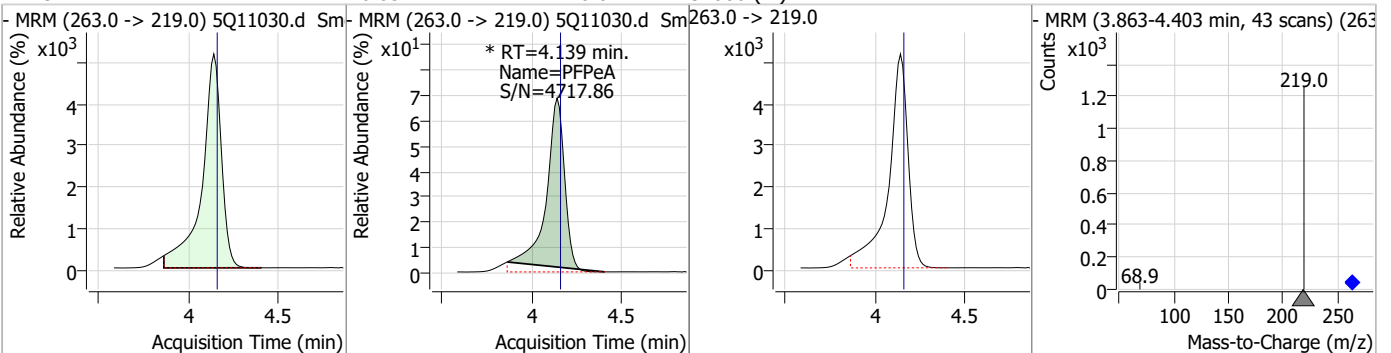
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	16.18	3.60	0.00	6118	241.0 -> 117.0	12.4	6.5	19.4



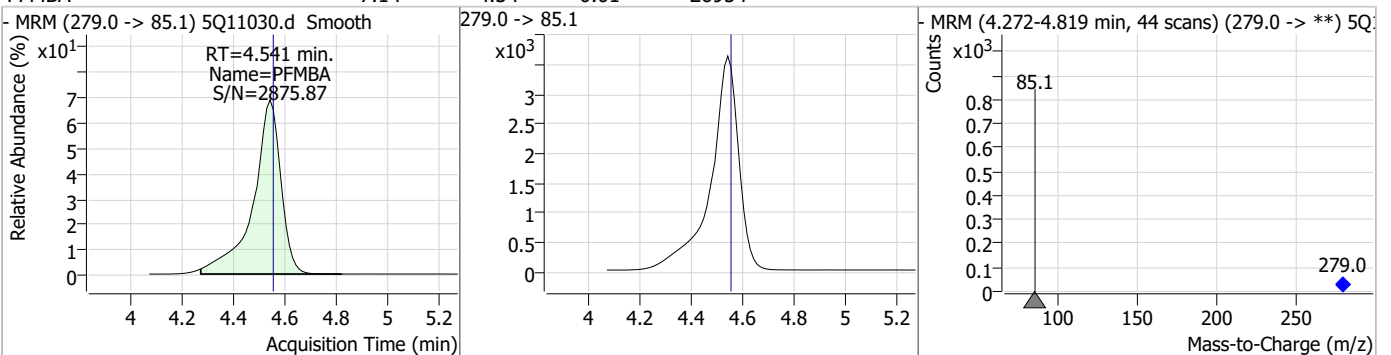
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.13	4.14	-0.01	23454 (m)				



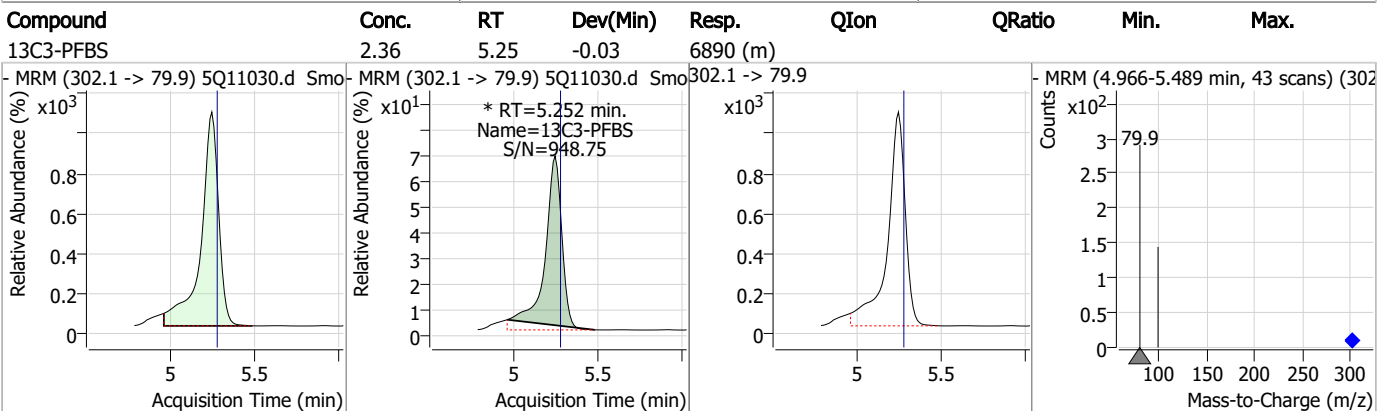
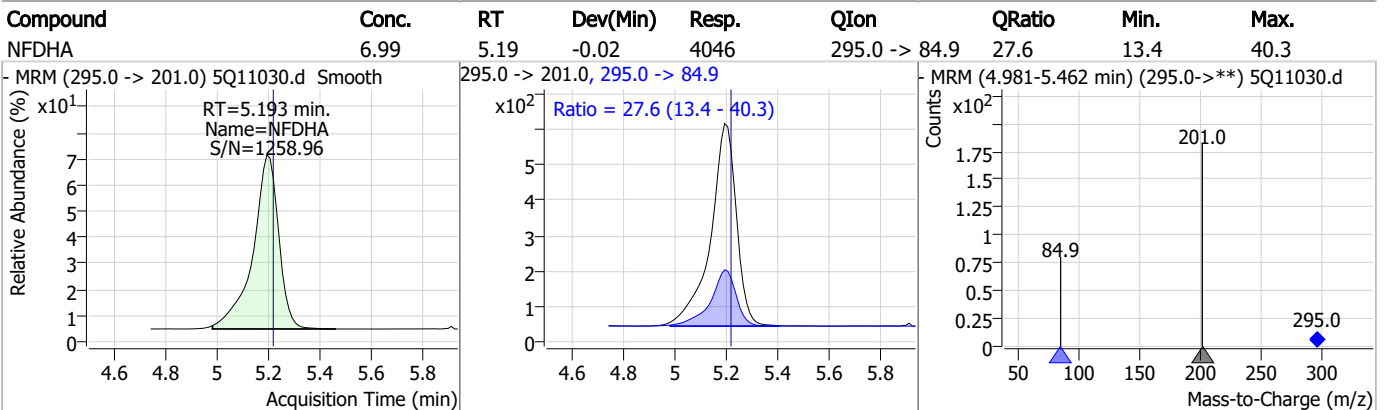
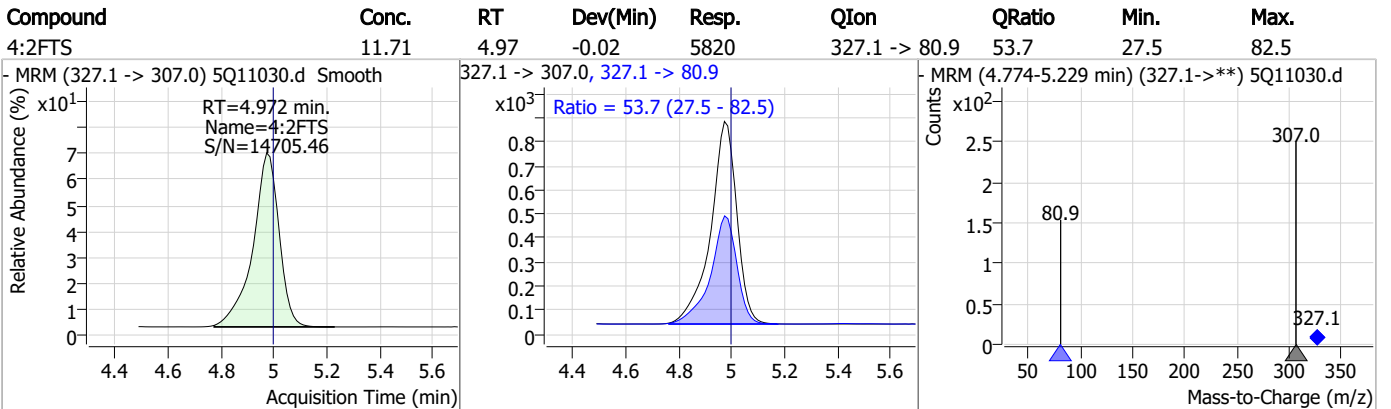
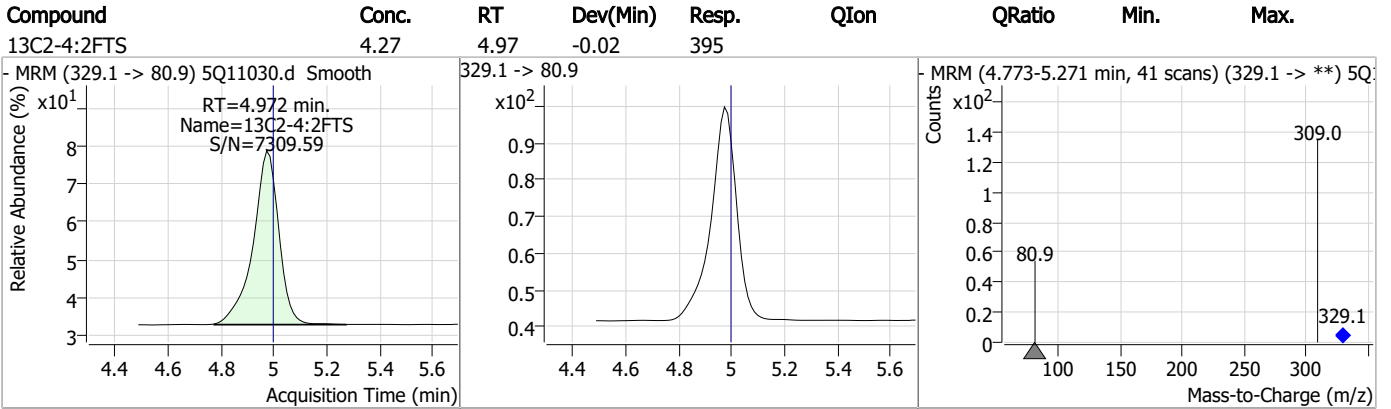
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	6.65	4.14	-0.01	34080 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	7.14	4.54	-0.01	26954				



Perfluorinated Compounds by LC/MS/MS

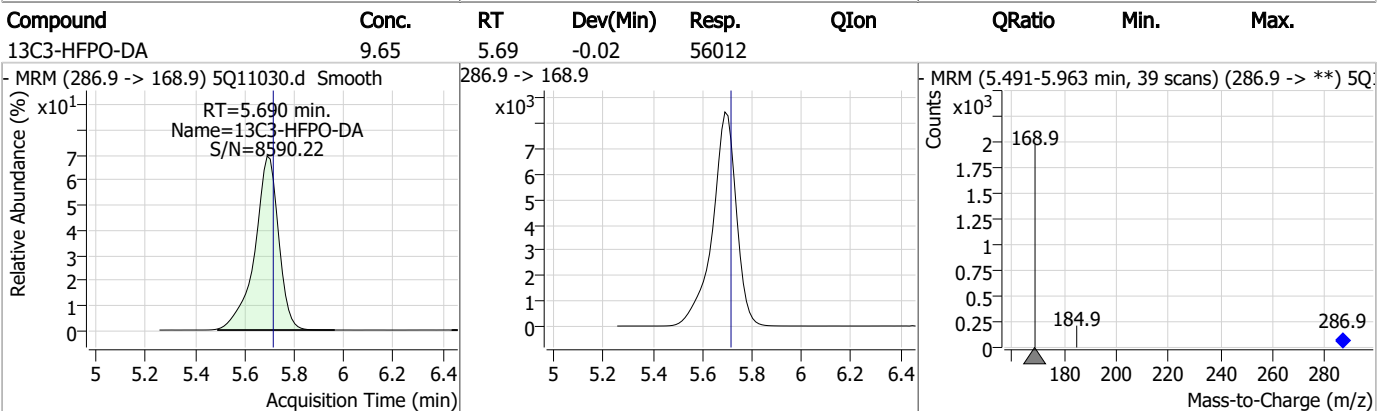
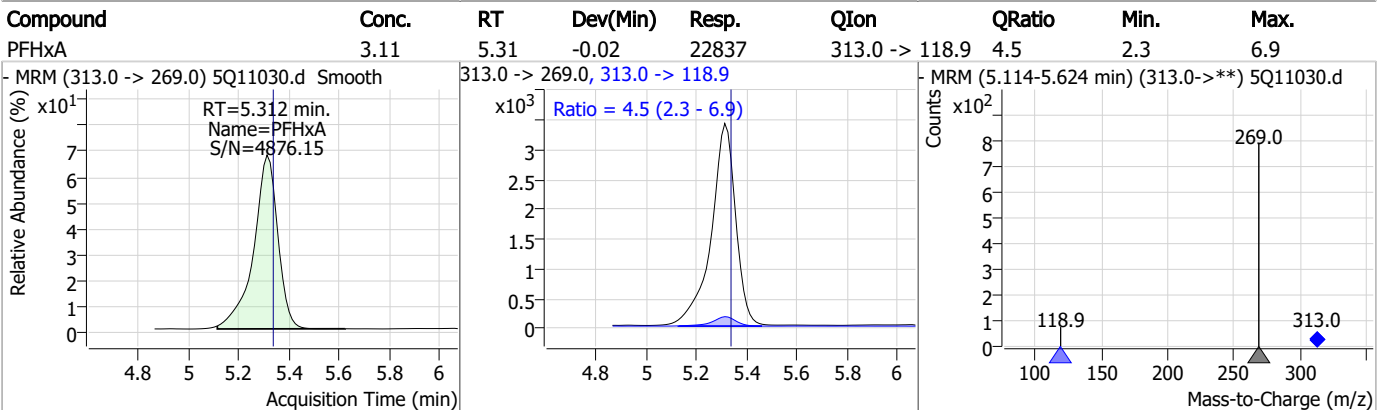
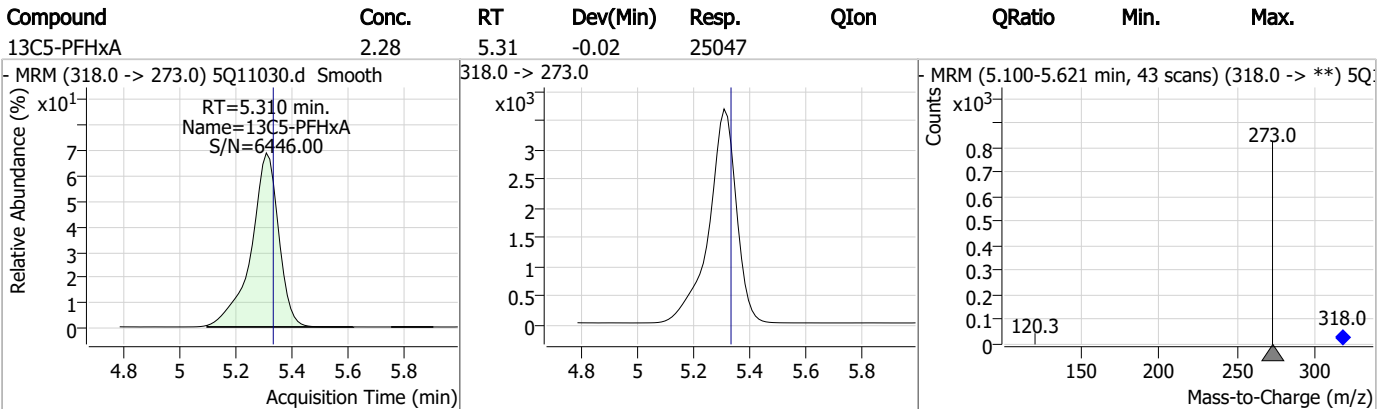
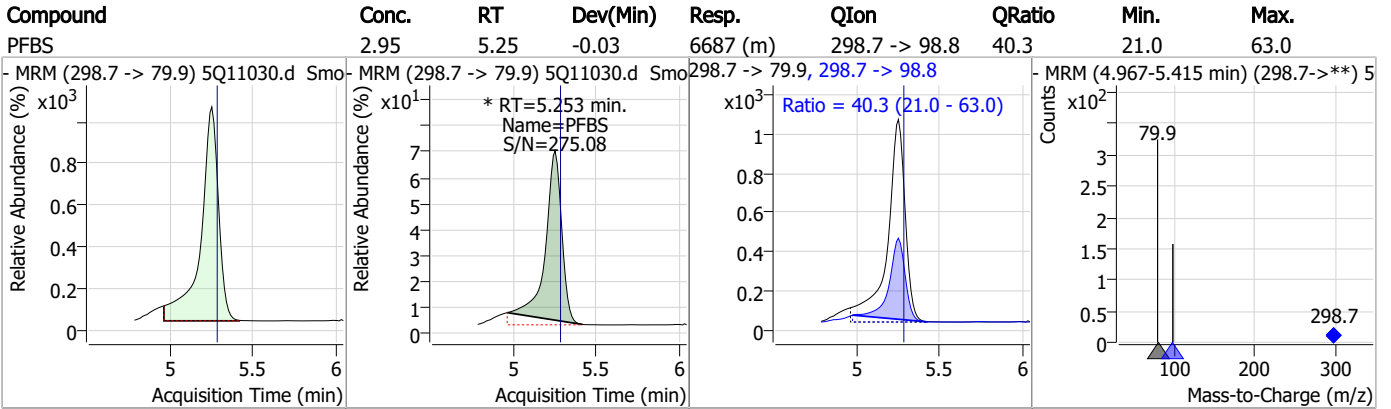


7.4.1

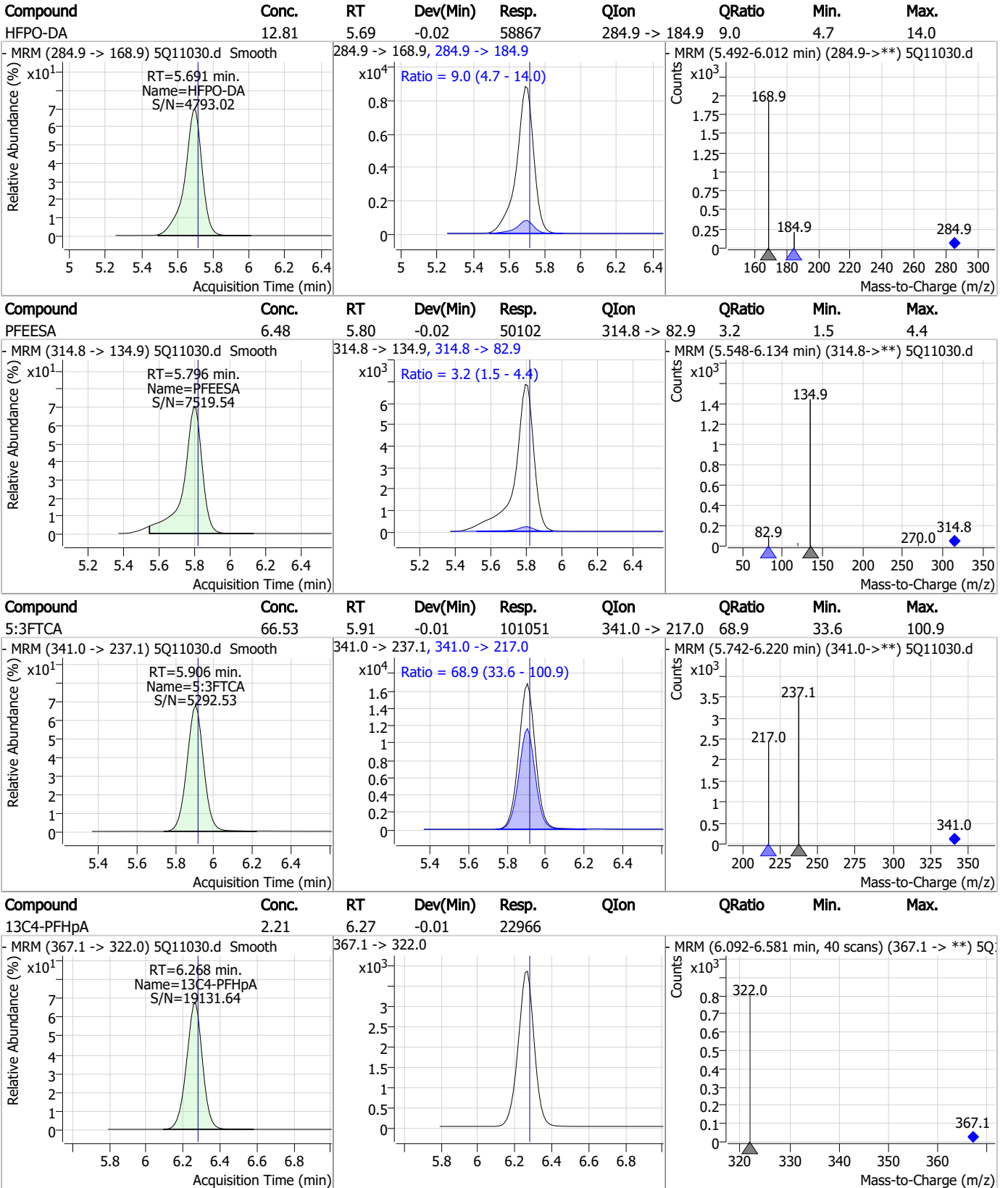
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

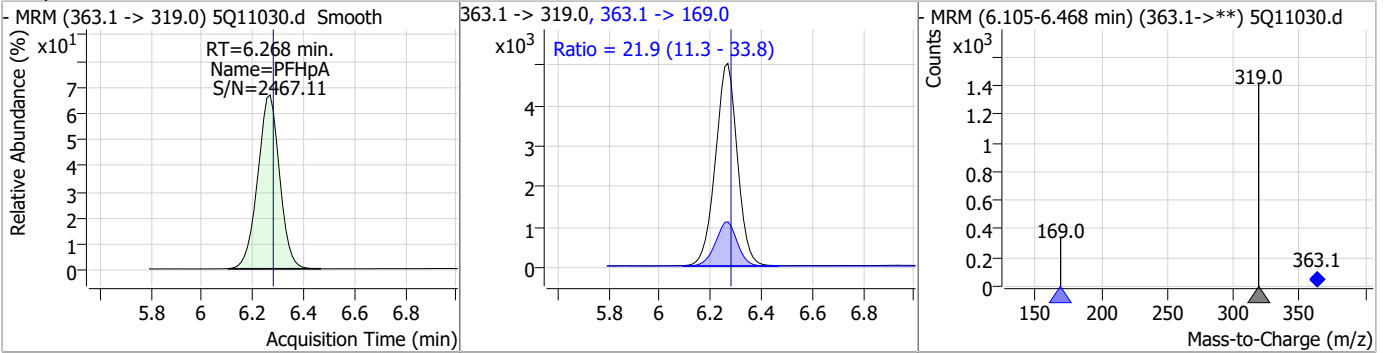


7.4.1

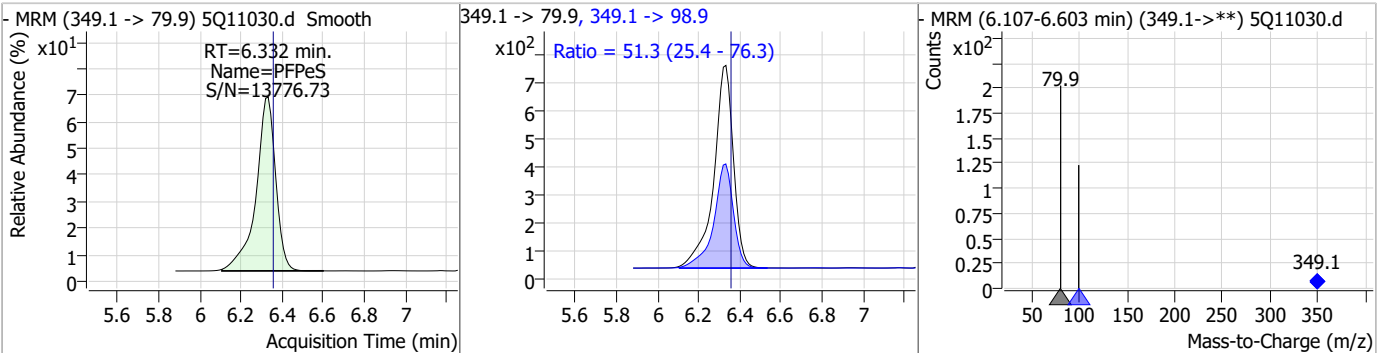
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Perfluorinated Compounds by LC/MS/MS

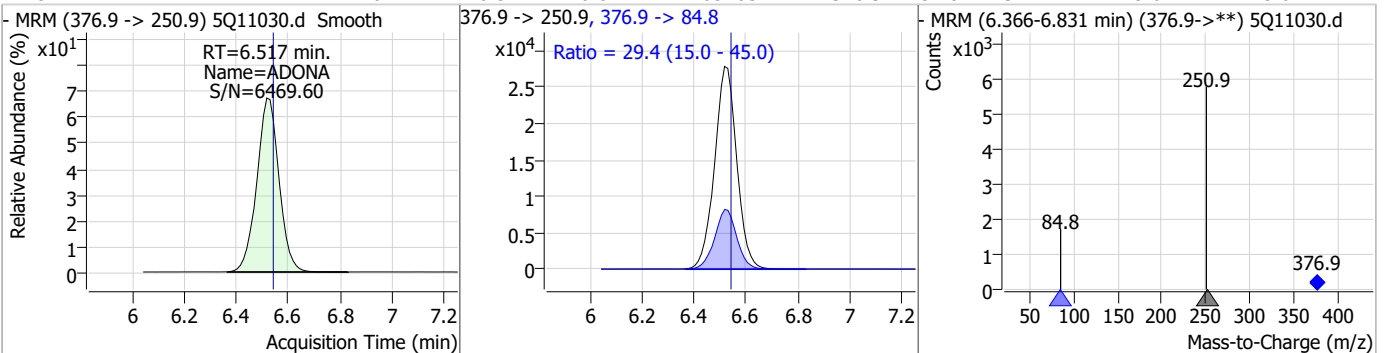
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	3.06	6.27	-0.01	29703	363.1 -> 169.0	21.9	11.3	33.8



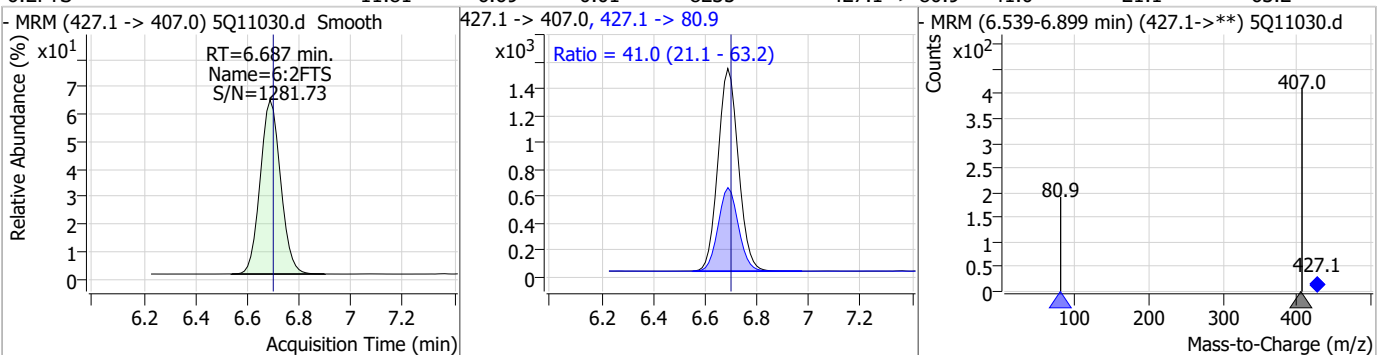
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	3.18	6.33	-0.02	4791	349.1 -> 98.9	51.3	25.4	76.3



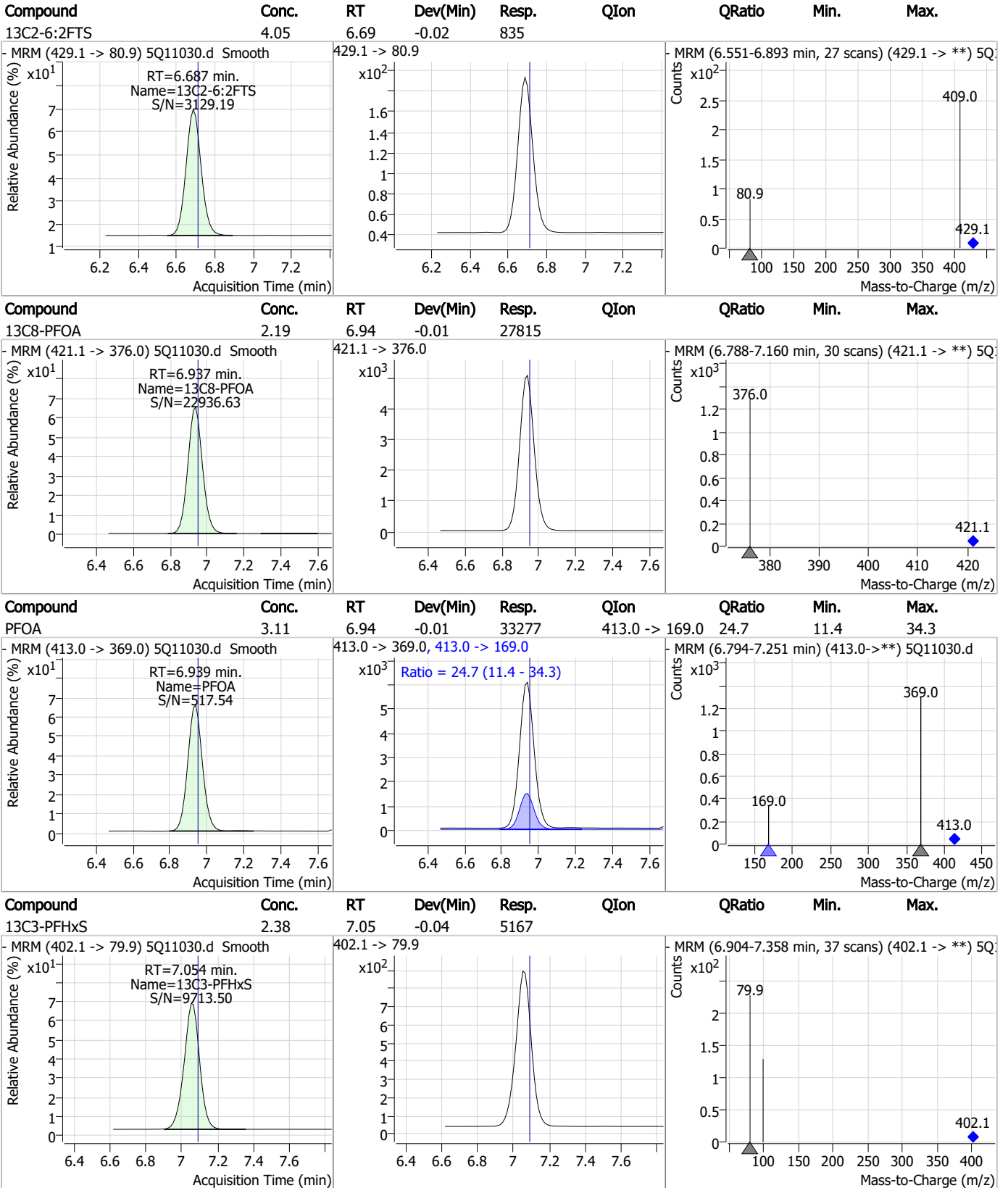
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	10.77	6.52	-0.02	165165	376.9 -> 84.8	29.4	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	11.81	6.69	-0.01	8235	427.1 -> 80.9	41.0	21.1	63.2



Perfluorinated Compounds by LC/MS/MS



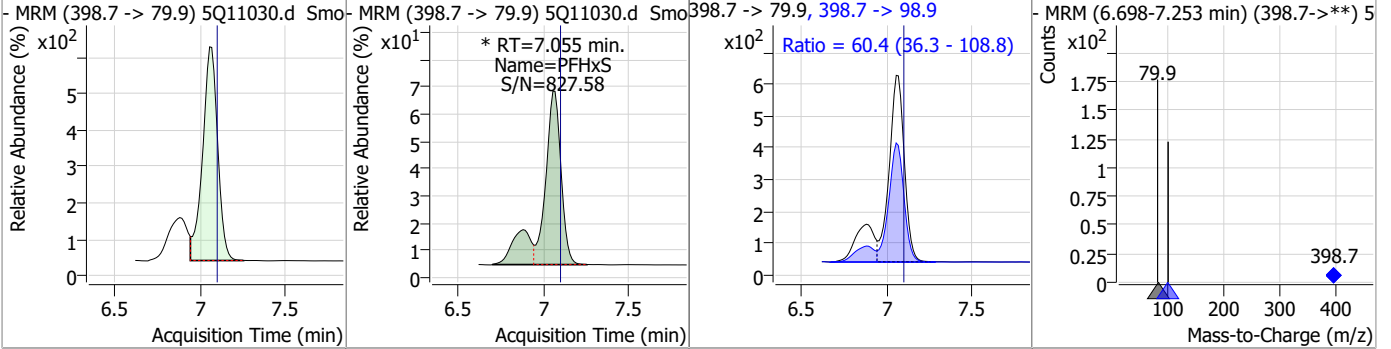
7.4.1

7

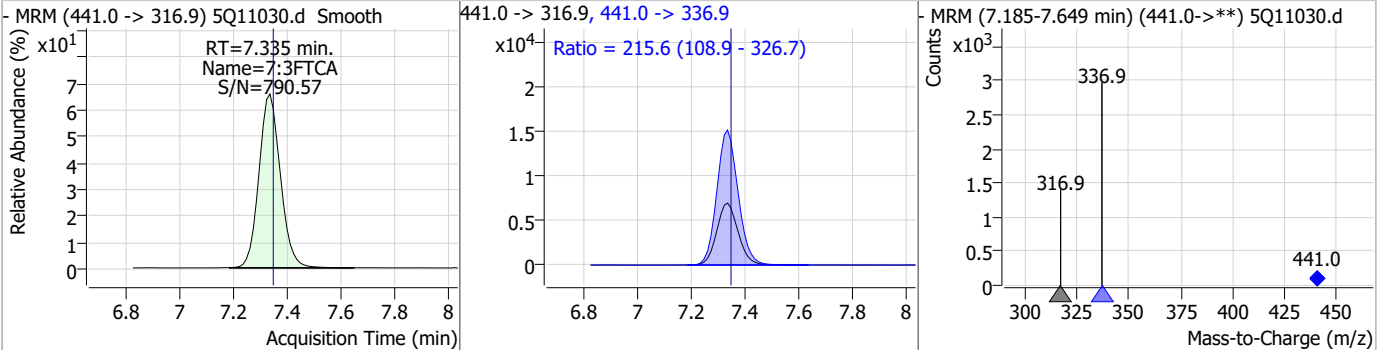


Perfluorinated Compounds by LC/MS/MS

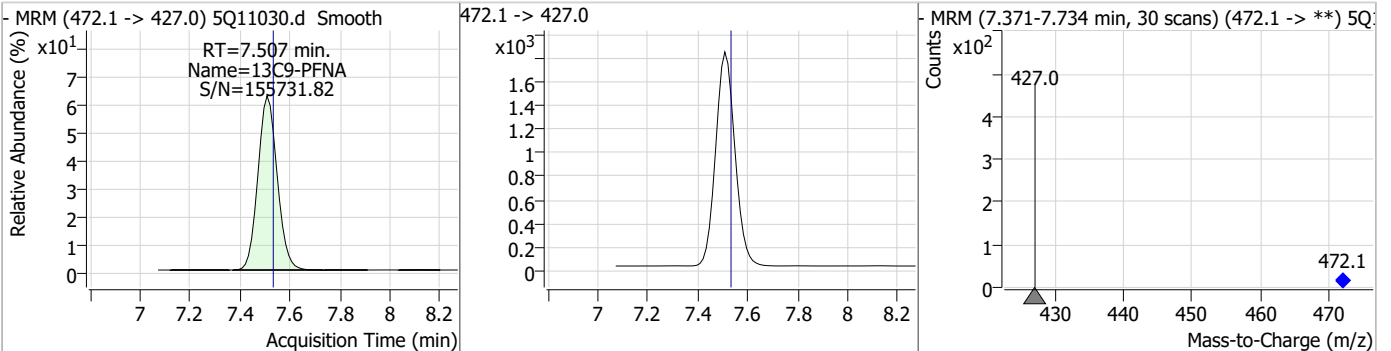
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.59	7.05	-0.04	4512 (m)	398.7 -> 98.9	60.4	36.3	108.8



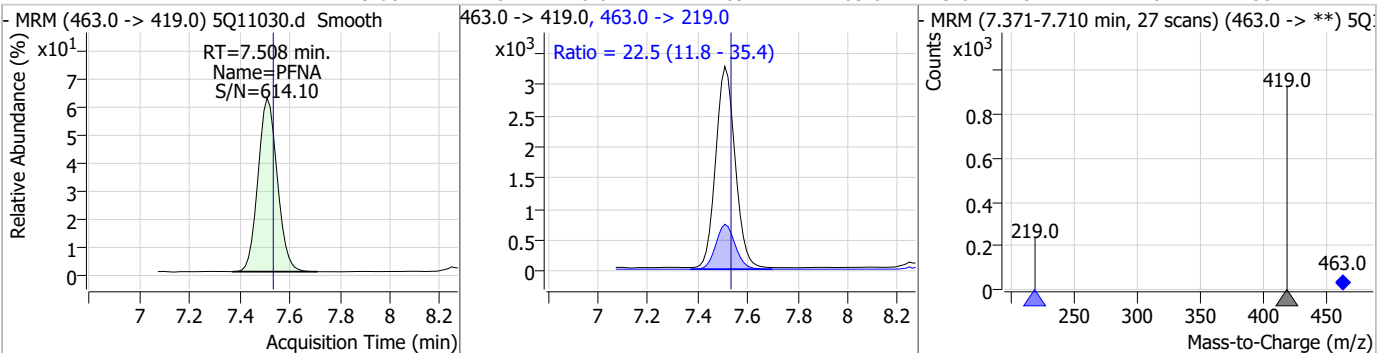
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	63.74	7.34	-0.01	38761	441.0 -> 336.9	215.6	108.9	326.7



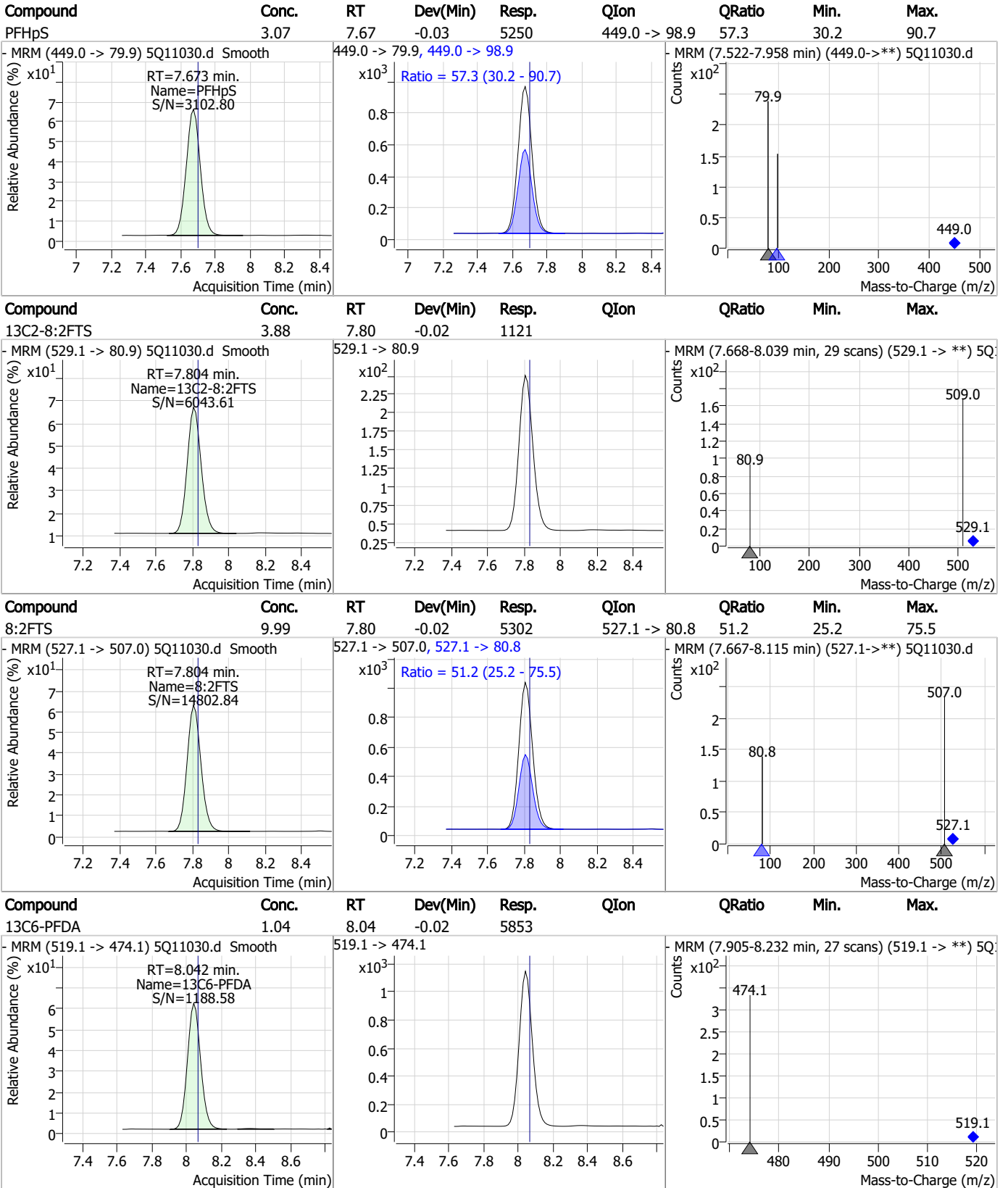
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.06	7.51	-0.02	9684	472.1 -> 427.0	22.5	11.8	35.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	3.08	7.51	-0.02	17269	463.0 -> 219.0	22.5	11.8	35.4



Perfluorinated Compounds by LC/MS/MS

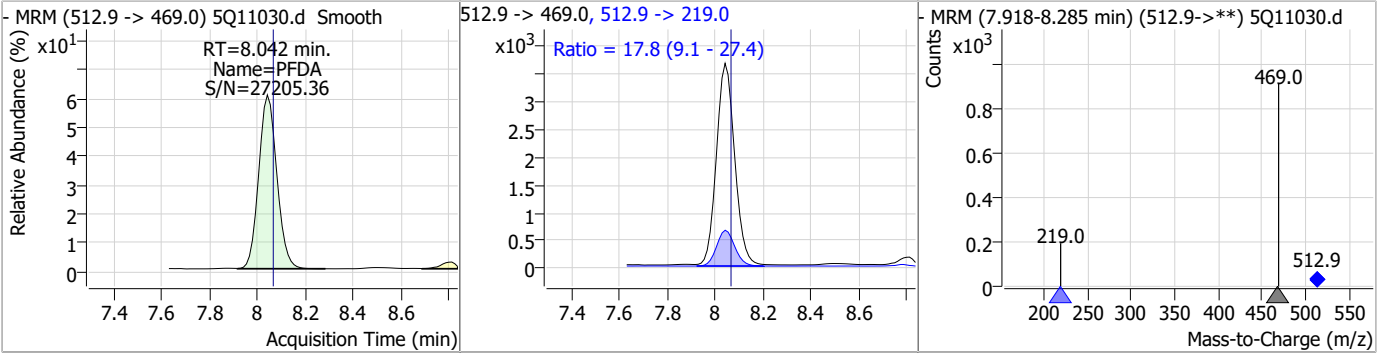


7.4.1

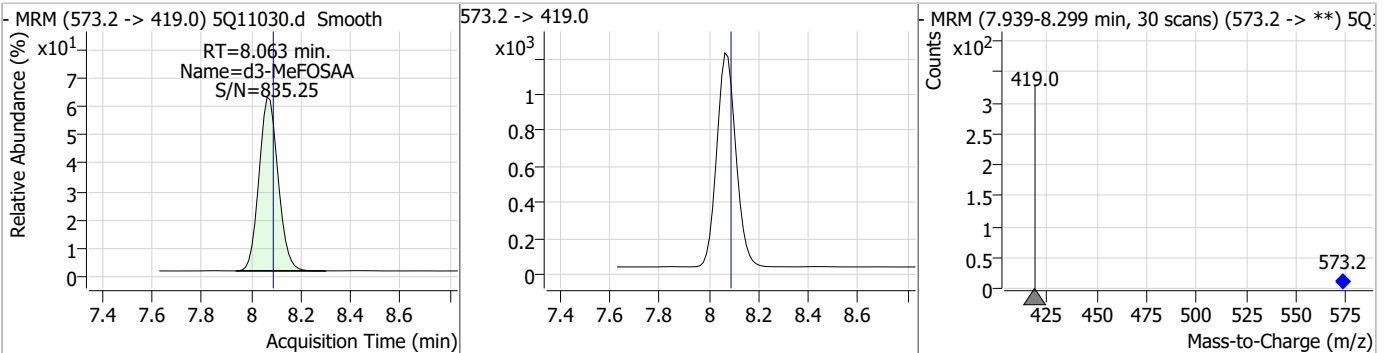
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Perfluorinated Compounds by LC/MS/MS

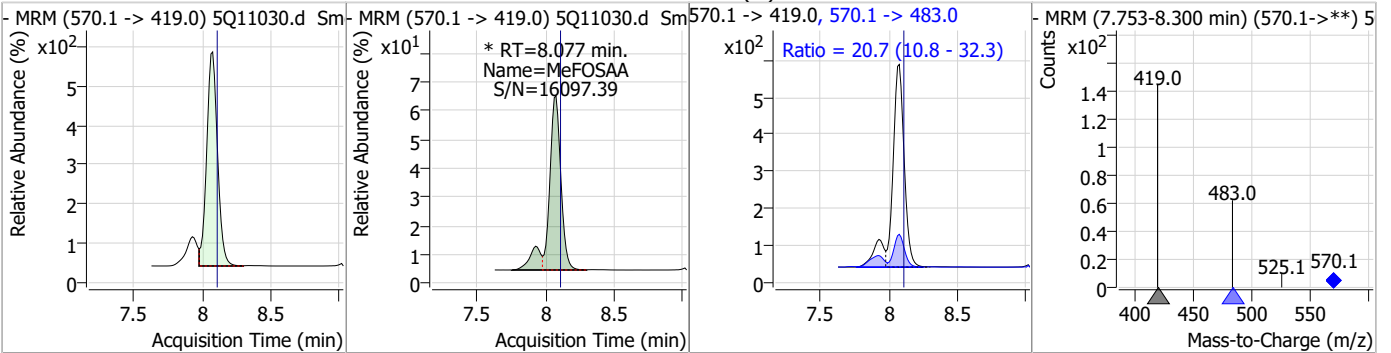
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	3.12	8.04	-0.02	19138	512.9 -> 219.0	17.8	9.1	27.4



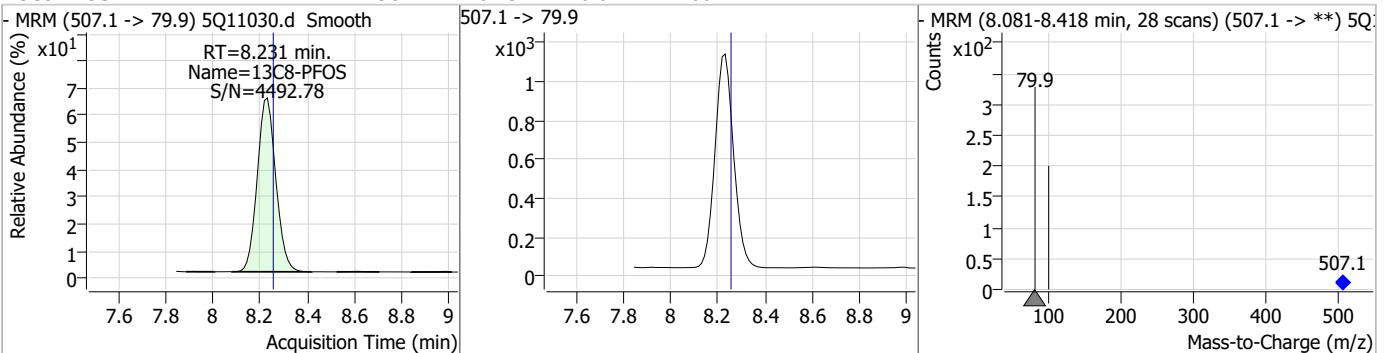
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	3.70	8.06	-0.02	6372				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	3.19	8.08	-0.02	3439 (m)	570.1 -> 483.0	20.7	10.8	32.3

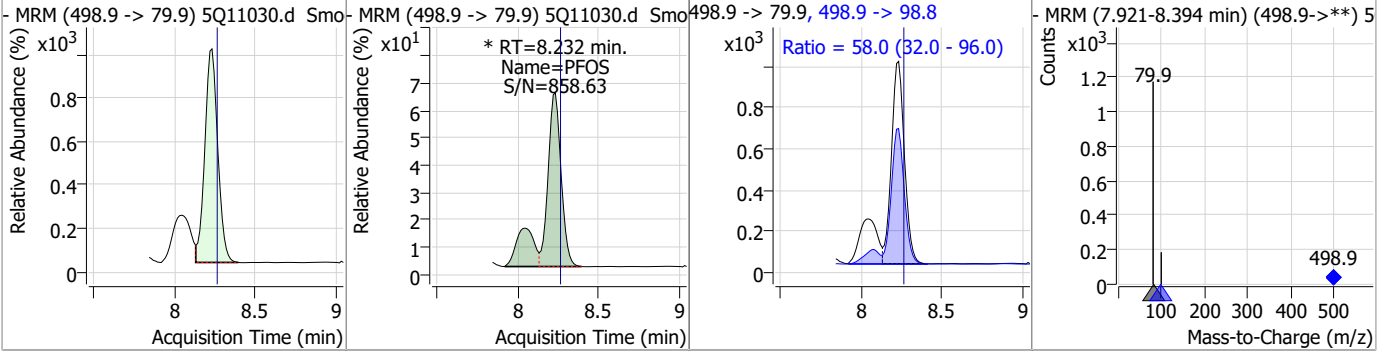


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	1.96	8.23	-0.02	6011				

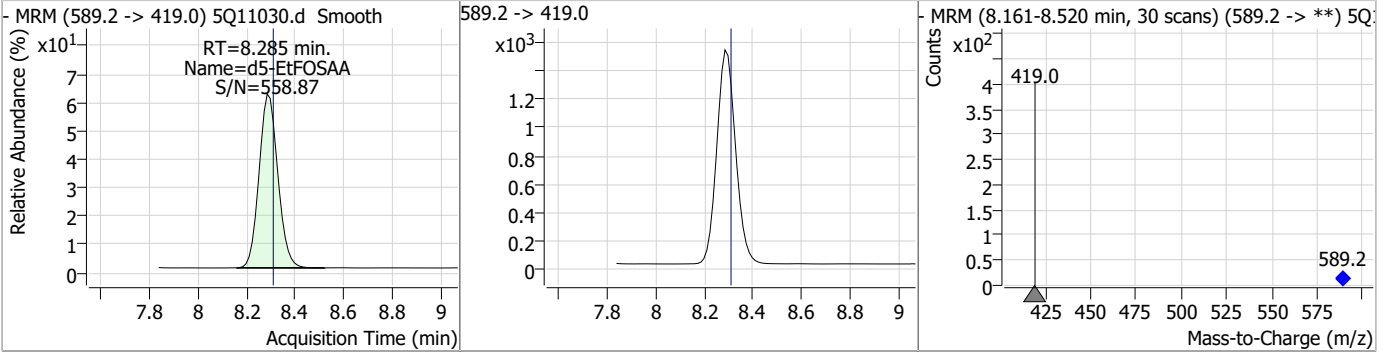


Perfluorinated Compounds by LC/MS/MS

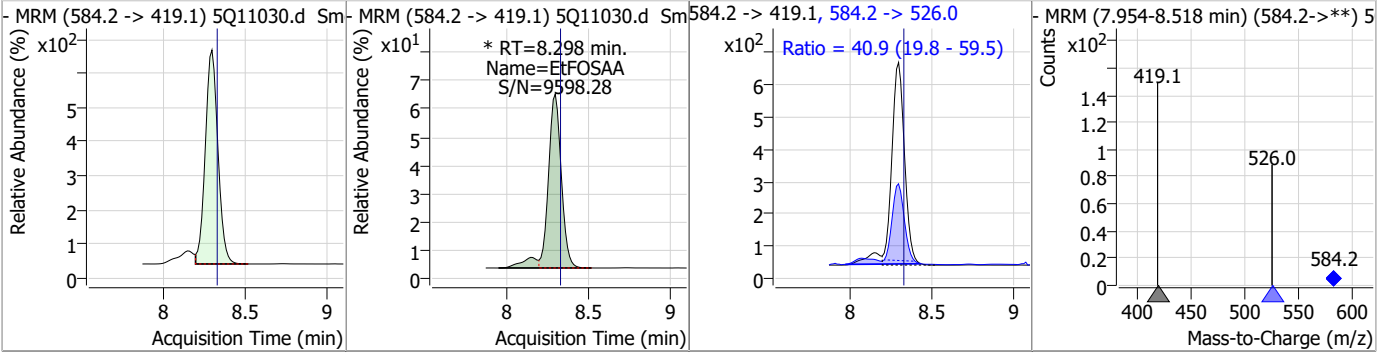
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.93	8.23	-0.02	7108 (m)	498.9 -> 98.8	58.0	32.0	96.0



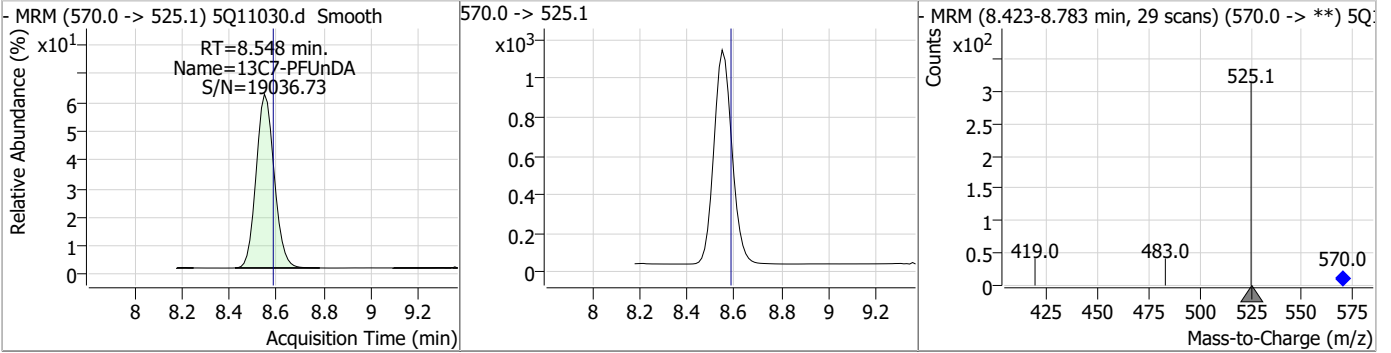
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	3.16	8.29	-0.02	8051	589.2 -> 419.0	58.0	32.0	96.0



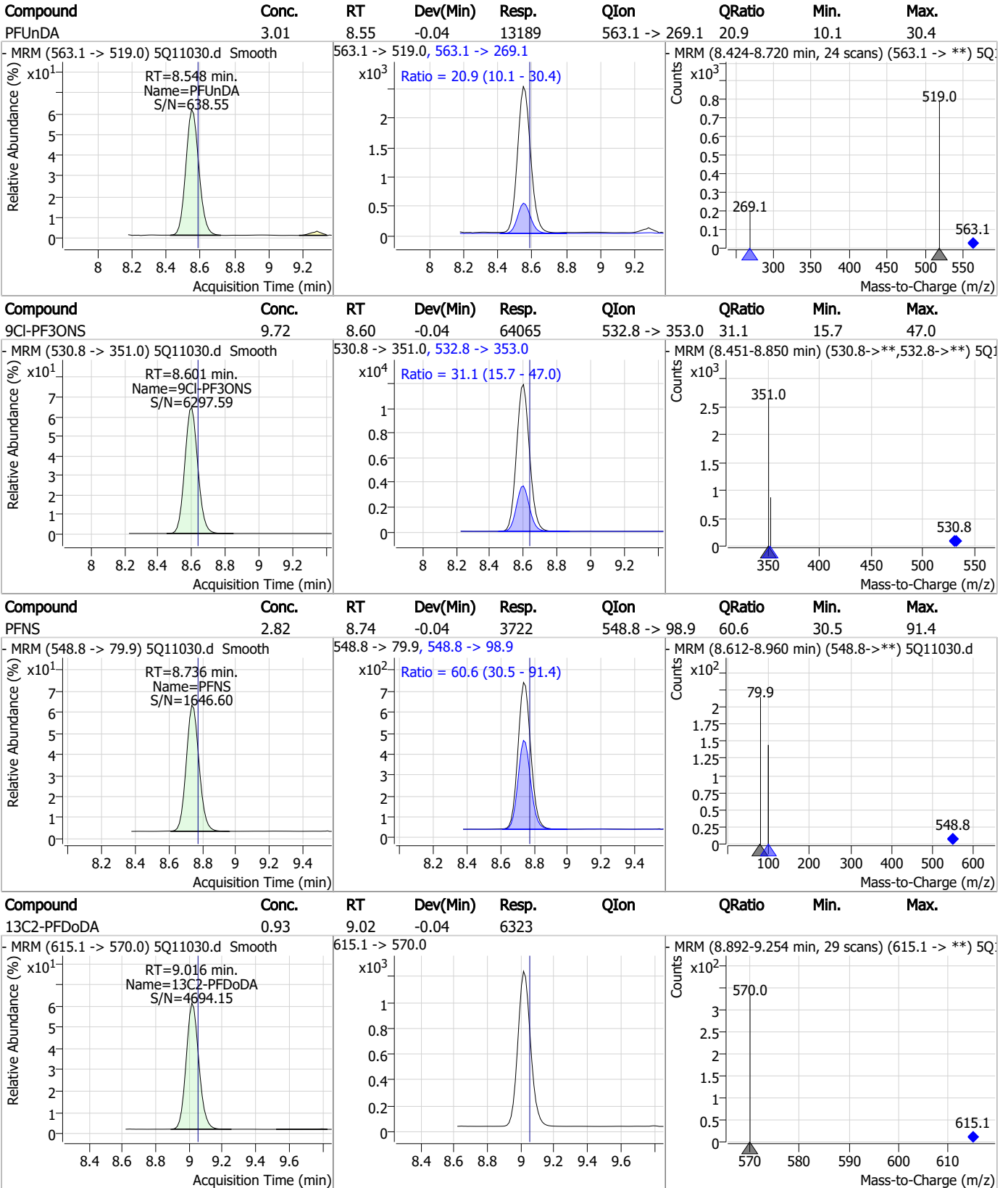
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	3.41	8.30	-0.02	3597 (m)	584.2 -> 526.0	40.9	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	0.96	8.55	-0.04	5876	570.0 -> 525.1	58.0	32.0	96.0



Perfluorinated Compounds by LC/MS/MS

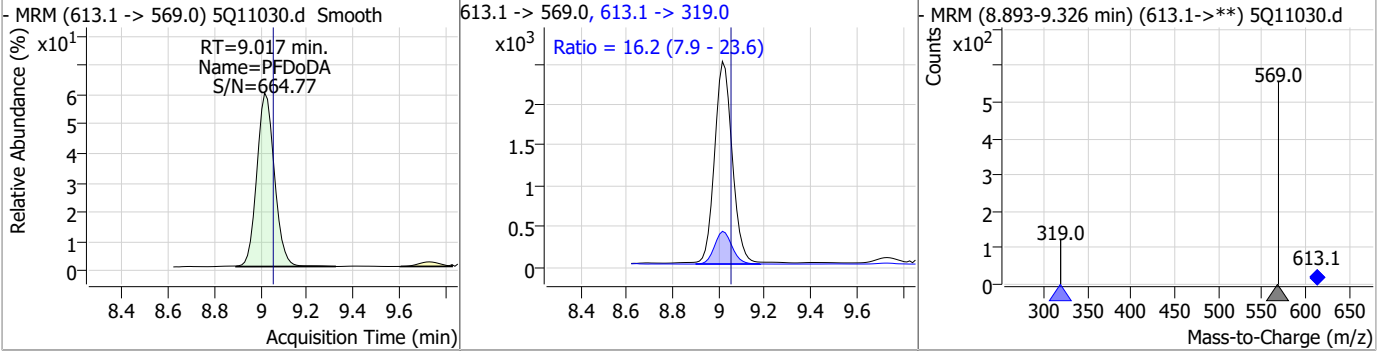


7.4.1

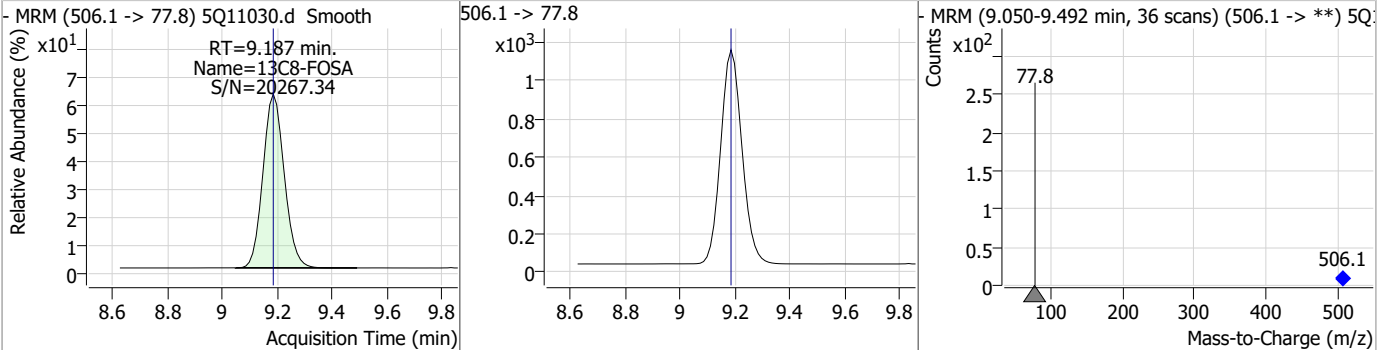
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Perfluorinated Compounds by LC/MS/MS

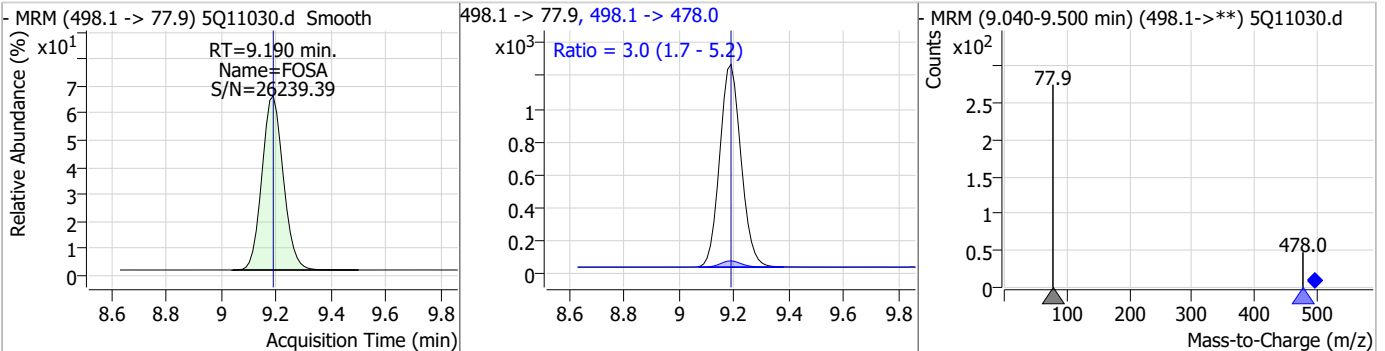
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDODA	3.06	9.02	-0.04	13119	613.1 -> 319.0	16.2	7.9	23.6



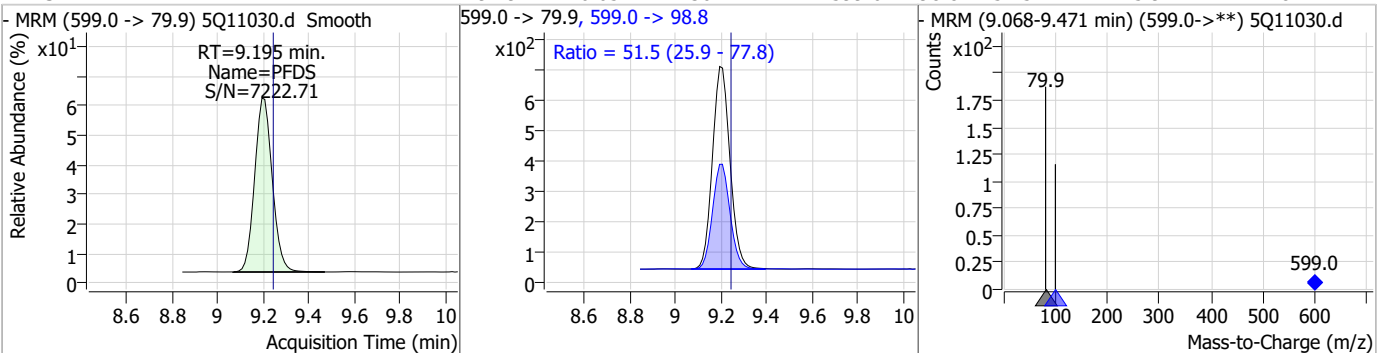
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	1.97	9.19	0.00	6028				



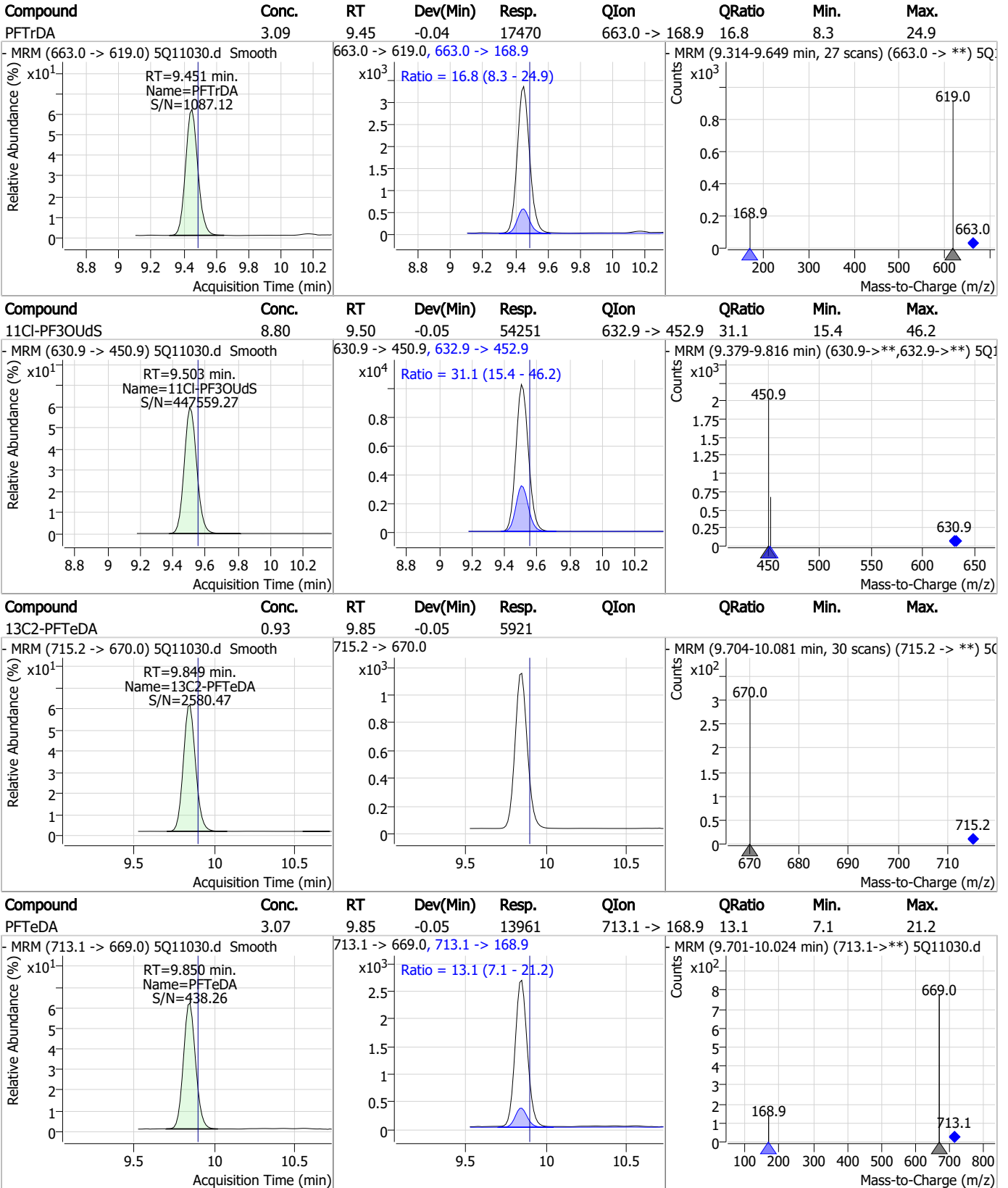
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	3.01	9.19	0.00	6622	498.1 -> 478.0	3.0	1.7	5.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.72	9.19	-0.05	3614	599.0 -> 98.8	51.5	25.9	77.8



Perfluorinated Compounds by LC/MS/MS

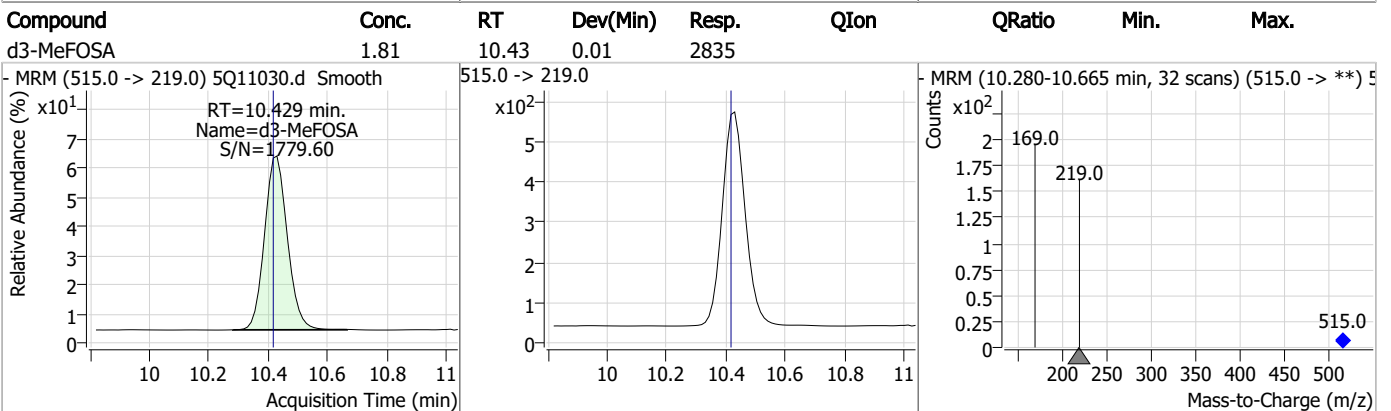
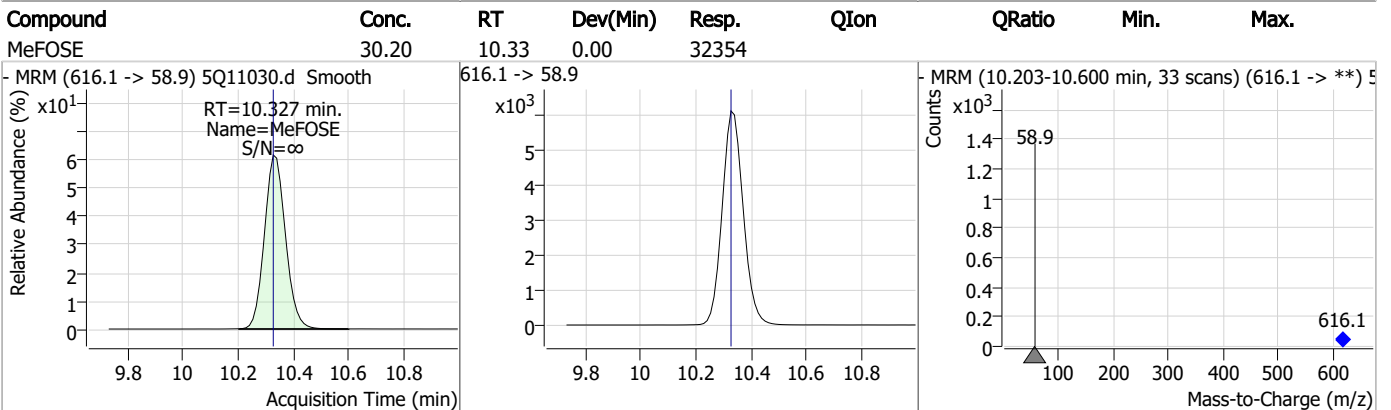
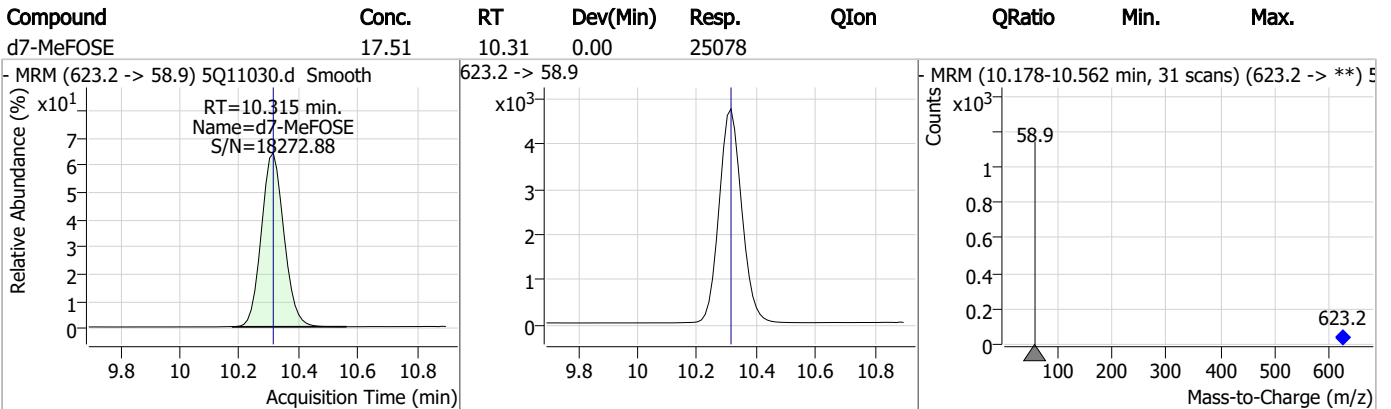
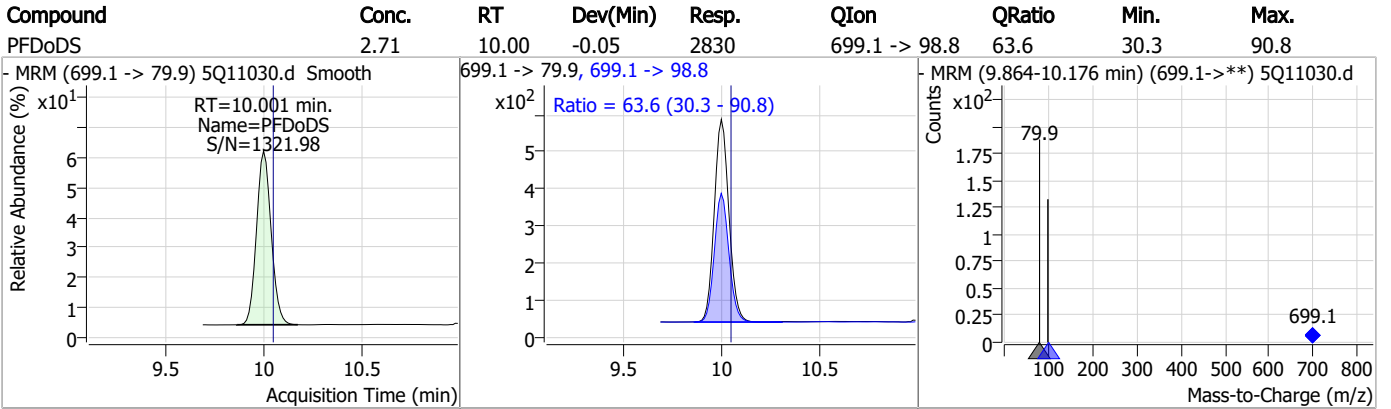


7.4.1

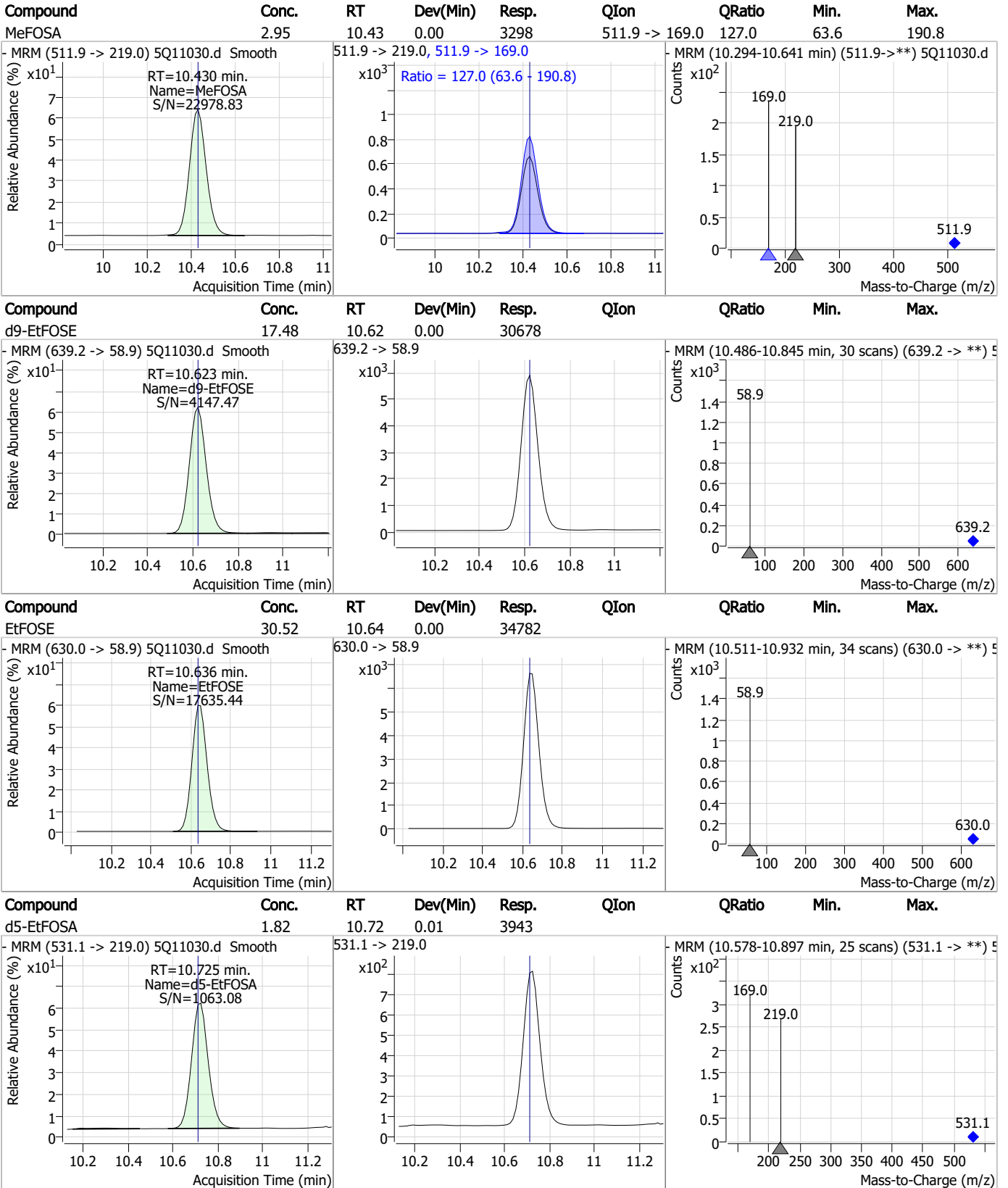
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

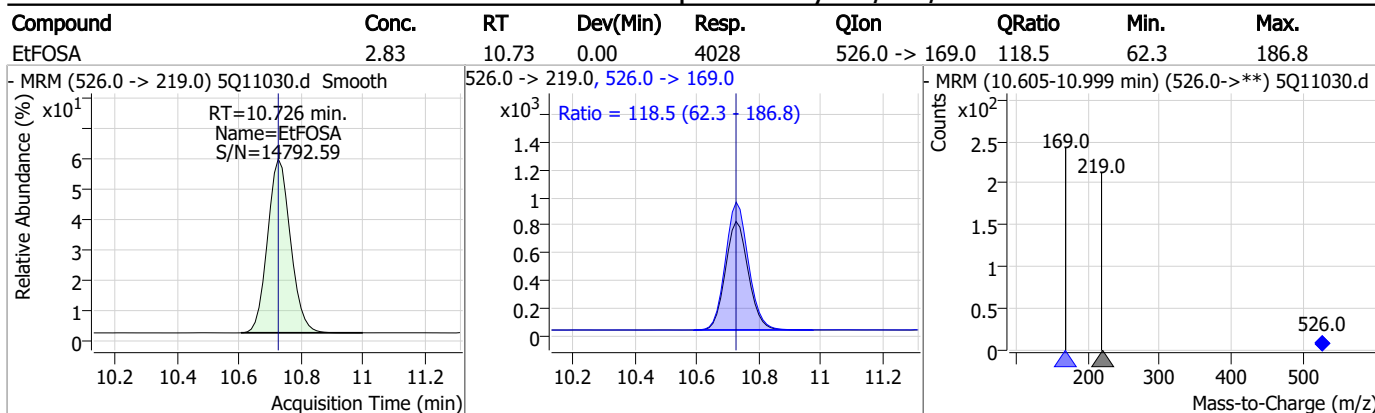


7.4.1

7



Perfluorinated Compounds by LC/MS/MS



7.4.1

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Manual Integration Approval Summary

Sample Number: OP95481-MS **Method:** EPA DRAFT 1633
Lab FileID: 5Q11030.D **Analyst approved:** 02/20/23 14:45 Lindsay Ritner
Injection Time: 02/17/23 17:25 **Supervisor approved:** 02/22/23 17:11 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C4-PFBA			2.79	Poor instrument integration
13C3-PFBA			2.79	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
PFMPA	377-73-1		3.31	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.14	Poor instrument integration
13C3-PFBS			5.25	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.25	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
MeFOSAA	2355-31-9		8.08	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

7.4.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11032.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 5:53:58 PM
 Sample Name : op95481-dup
 Vial : P4-A7
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95481,S5Q170,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	40508	10.00	µg/L m	0.000
M5-PFPeA	4.137	268.3 -> 223.0	24121	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	25448	2.50	µg/L	-0.025
M4-PFHpA	6.268	367.1 -> 322.0	23242	2.50	µg/L	-0.012
M8-PFOA	6.937	421.1 -> 376.0	27501	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	10310	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	5539	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	5678	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	5510	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	5479	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	6010	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	6485	2.50	µg/L m	-0.025
M3-PFHxS	7.066	402.1 -> 79.9	5097	2.50	µg/L	-0.025
M8-PFOS	8.231	507.1 -> 79.9	6345	2.50	µg/L	-0.025
M2-4:2FTS	4.972	329.1 -> 80.9	399	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	919	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1145	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	6230	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	56291	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	7519	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	22042	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	27104	25.00	µg/L	0.000
M5-EtFOSA	10.725	531.1 -> 219.0	3351	2.50	µg/L	0.012
M3-MeFOSA	10.429	515.0 -> 219.0	2494	2.50	µg/L	0.012
13C4-PFOS	8.231	502.8 -> 79.9	7705	2.50	µg/L	-0.025
13C3-PFBA	2.791	216.0 -> 172.0	24135	5.00	µg/L m	-0.013
18O2-PFHxS	7.065	403.0 -> 83.9	3901	2.50	µg/L	-0.026
13C4-PFOA	6.938	417.1 -> 372.0	39407	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	11152	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	11444	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	31936	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	399	4.21	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.2%			
13C2-6:2FTS	6.687	429.1 -> 80.9	919	4.35	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.9%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1145	3.86	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 77.3%			
13C2-PFDoDA	9.016	615.1 -> 570.0	5510	0.79	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 63.4%			
13C2-PFTeDA	9.849	715.2 -> 670.0	5479	0.84	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 67.1%			
13C3-PFBS	5.252	302.1 -> 79.9	6485	2.16	µg/L m	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.4%			
13C3-PFHxS	7.066	402.1 -> 79.9	5097	2.29	µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.4%			
13C4-PFBA	2.799	216.8 -> 171.9	40508	8.90	µg/L	m 0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 89.0%			
13C4-PFHpA	6.268	367.1 -> 322.0	23242	2.19	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.6%			
13C5-PFHxA	5.310	318.0 -> 273.0	25448	2.27	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.8%			
13C5-PFPeA	4.137	268.3 -> 223.0	24121	4.15	µg/L	m -0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.1%			
13C6-PFDA	8.042	519.1 -> 474.1	5539	0.96	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.9%			
13C7-PFUnDA	8.548	570.0 -> 525.1	5678	0.90	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 72.1%			
13C8-FOSA	9.187	506.1 -> 77.8	6010	1.99	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 79.5%			
13C8-PFOA	6.937	421.1 -> 376.0	27501	2.07	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 82.8%			
13C8-PFOS	8.231	507.1 -> 79.9	6345	2.09	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.6%			
13C9-PFNA	7.507	472.1 -> 427.0	10310	1.10	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.2%			
d3-MeFOSAA	8.063	573.2 -> 419.0	6230	3.65	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 73.0%			
13C3-HFPO-DA	5.690	286.9 -> 168.9	56291	9.50	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.0%			
d3-MeFOSA	10.429	515.0 -> 219.0	2494	1.61	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 64.2%			
d5-EtFOSAA	8.285	589.2 -> 419.0	7519	2.98	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 59.6%			
d7-MeFOSE	10.315	623.2 -> 58.9	22042	15.54	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 62.2%			
d9-EtFOSE	10.623	639.2 -> 58.9	27104	15.60	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 62.4%			
d5-EtFOSA	10.725	531.1 -> 219.0	3351	1.57	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 62.6%			

Target Compounds

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.			
		327.1 -> 80.9					
6:2FTS	-	427.1 -> 407.0	-	N.D.			
		427.1 -> 80.9					
8:2FTS	-	527.1 -> 507.0	-	N.D.			
		527.1 -> 80.8					
EtFOSAA	-	584.2 -> 419.1	-	N.D.			
		584.2 -> 526.0					
FOSA	-	498.1 -> 77.9	-	N.D.			
		498.1 -> 478.0					
MeFOSAA	-	570.1 -> 419.0	-	N.D.			
		570.1 -> 483.0					
PFBA	-	212.8 -> 168.9	-	N.D.			
PFBS	-	298.7 -> 79.9	-	N.D.			
		298.7 -> 98.8					
PFDA	8.812	512.9 -> 469.0	0		µg/L	m	1
		512.9 -> 219.0	0				
PFDODA	9.732	613.1 -> 569.0	0		µg/L	m	1
		613.1 -> 319.0	0				
PFDS	-	599.0 -> 79.9	-	N.D.			

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8				
		363.1 -> 319.0	553	0.06	µg/L	99
PFHpS	-	363.1 -> 169.0	122			
		449.0 -> 79.9	-	N.D.		
PFHxA	-	449.0 -> 98.9				
		313.0 -> 269.0	-	N.D.		
PFHxS	-	313.0 -> 118.9				
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	-	498.9 -> 98.8				
		263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9				
		349.1 -> 98.9	-	N.D.		
PFTeDA	-	713.1 -> 669.0				
		713.1 -> 168.9	-	N.D.		
PFTrDA	-	663.0 -> 619.0				
		663.0 -> 168.9	-	N.D.		
PFUnDA	9.283	563.1 -> 519.0	0		µg/L m	1
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9				
		632.9 -> 452.9	-	N.D.		
9Cl-PF3ONS	-	530.8 -> 351.0				
		532.8 -> 353.0	-	N.D.		
ADONA	-	376.9 -> 250.9				
		376.9 -> 84.8	-	N.D.		
HFPO-DA	-	284.9 -> 168.9				
		284.9 -> 184.9	-	N.D.		
3:3FTCA	-	241.0 -> 177.0				
		241.0 -> 117.0	-	N.D.		
5:3FTCA	-	341.0 -> 237.1				
		341.0 -> 217.0	-	N.D.		
7:3FTCA	-	441.0 -> 316.9				
		441.0 -> 336.9	-	N.D.		
EtFOSA	-	526.0 -> 219.0				
		526.0 -> 169.0	-	N.D.		
EtFOSE	-	630.0 -> 58.9				
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9				
		699.1 -> 98.8	-	N.D.		
PFDoDS	-	295.0 -> 201.0				
		295.0 -> 84.9	-	N.D.		
NFDHA	-	279.0 -> 85.1				
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9				
		314.8 -> 82.9	-	N.D.		

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

7.5.1
7

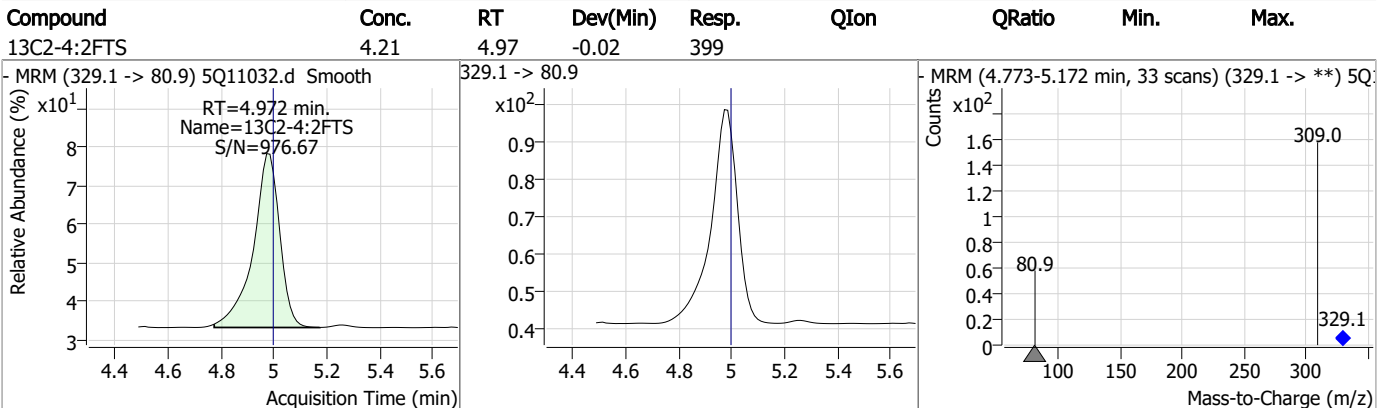
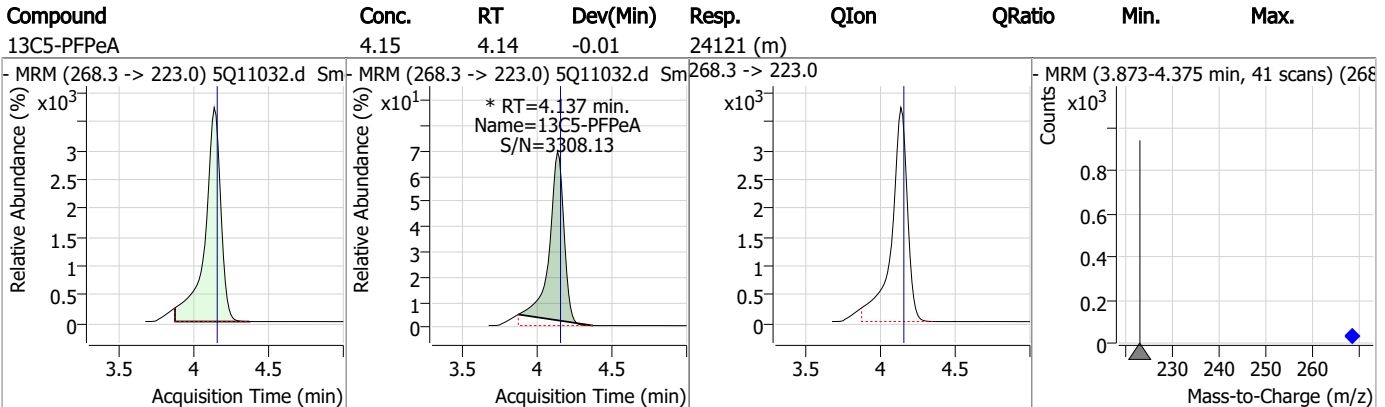
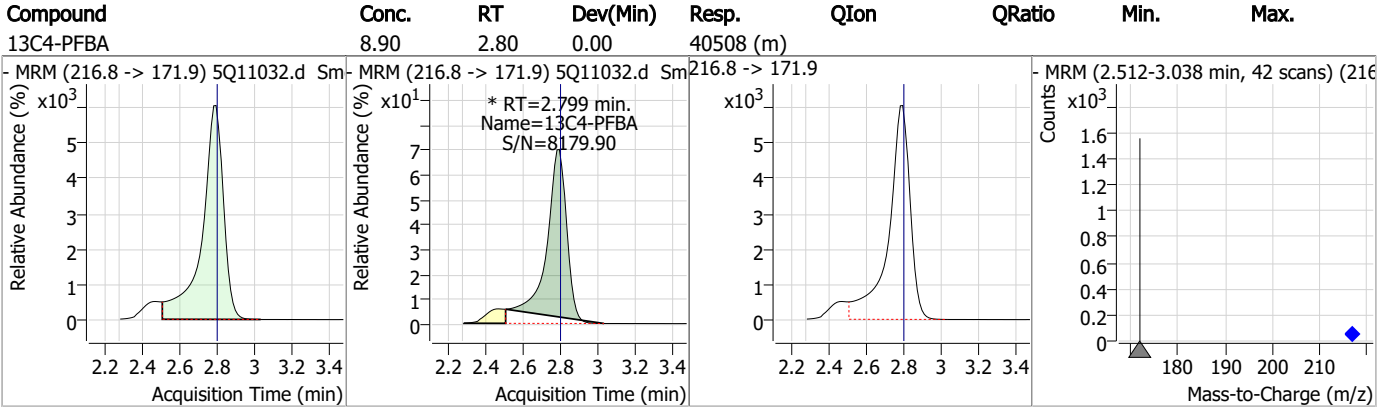
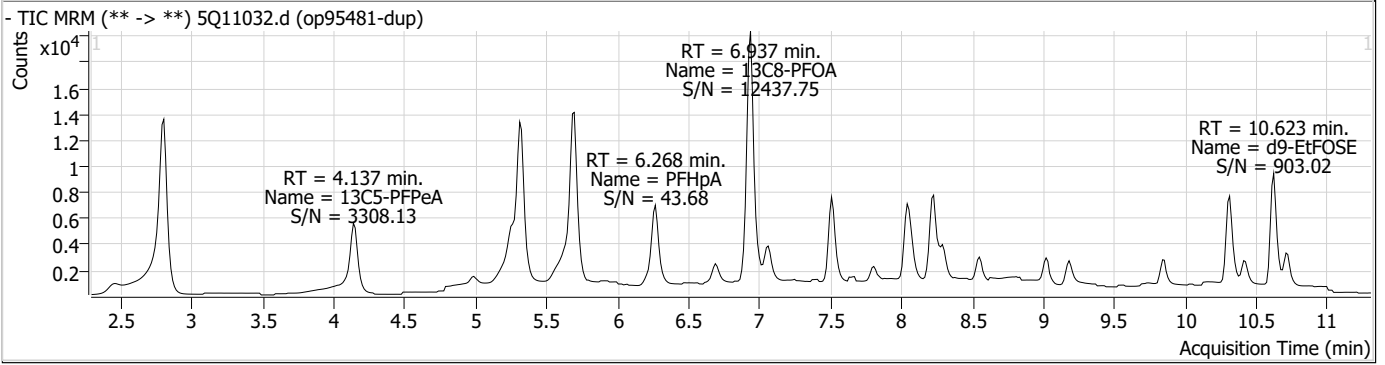
Perfluorinated Compounds by LC/MS/MS

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

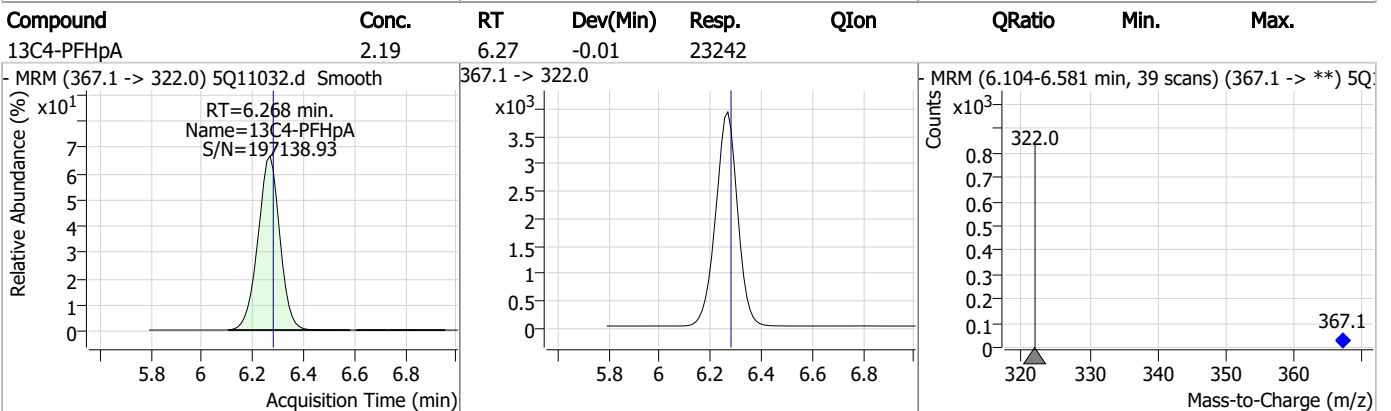
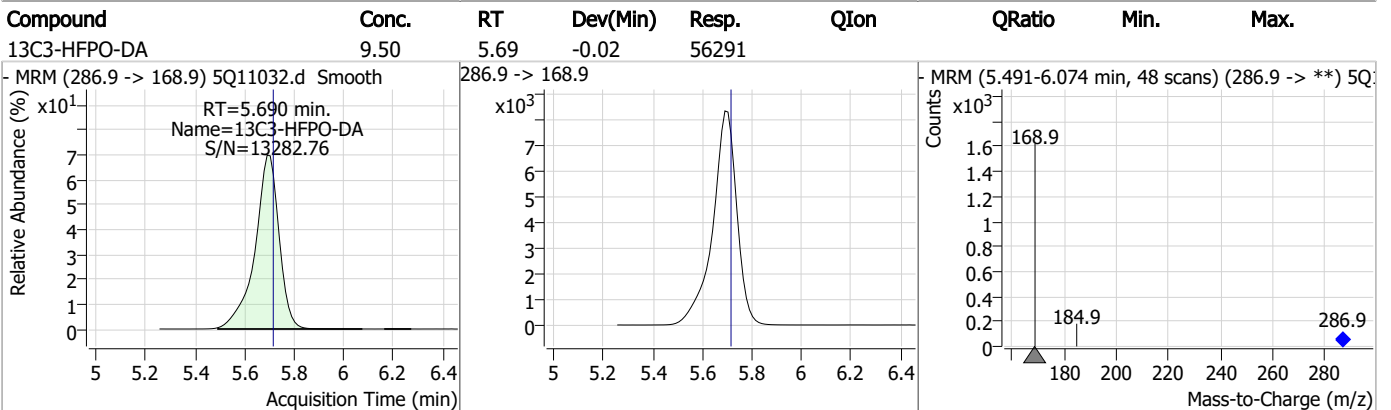
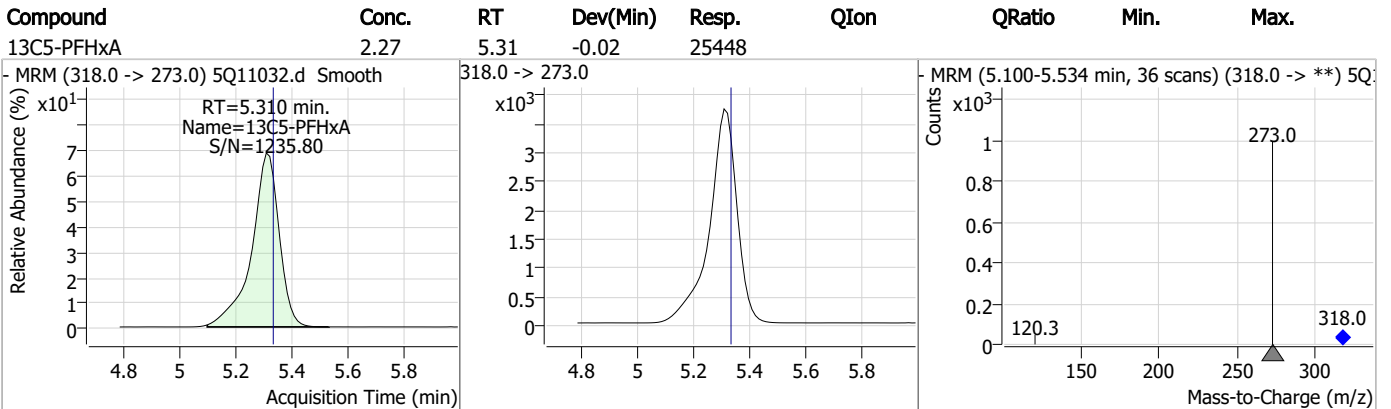
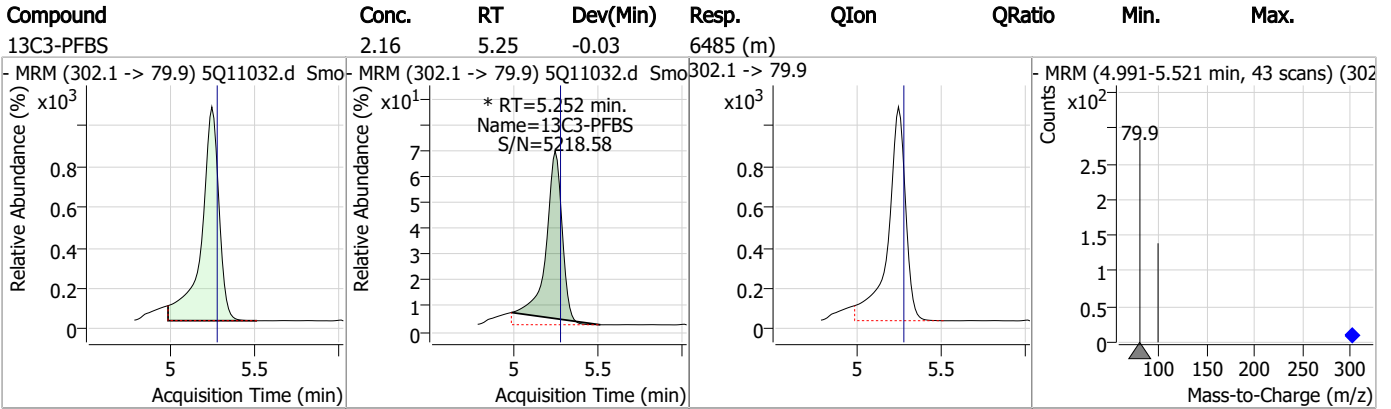
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Perfluorinated Compounds by LC/MS/MS

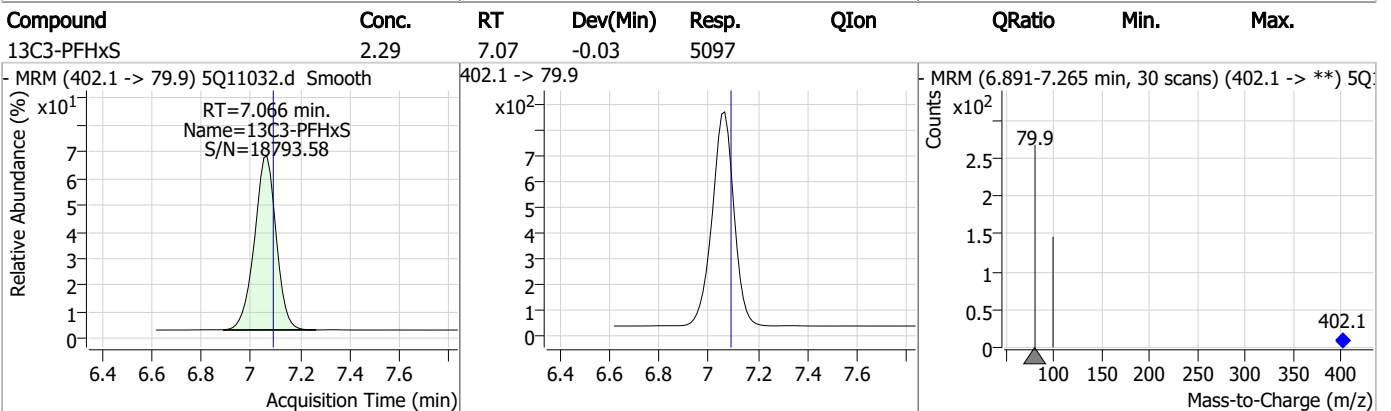
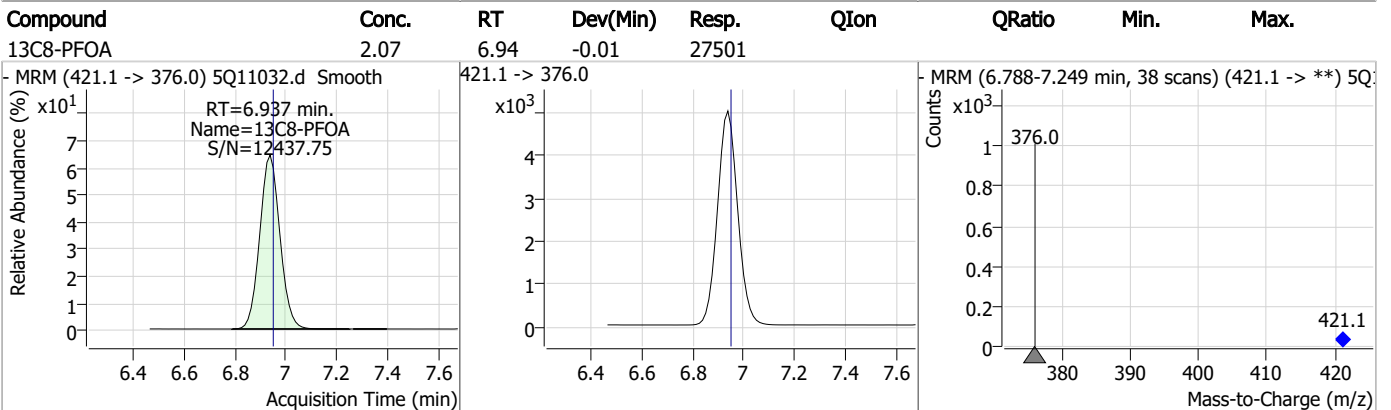
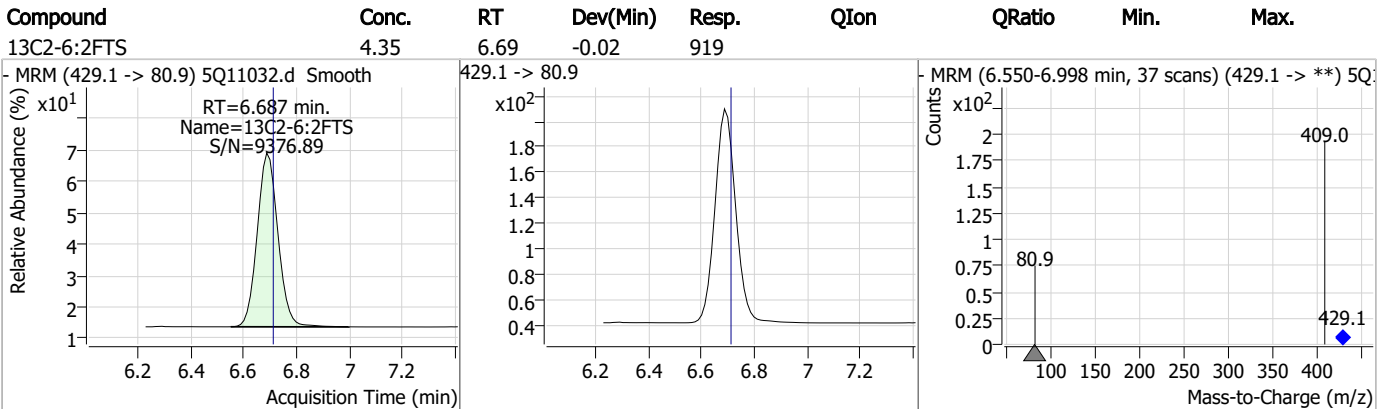
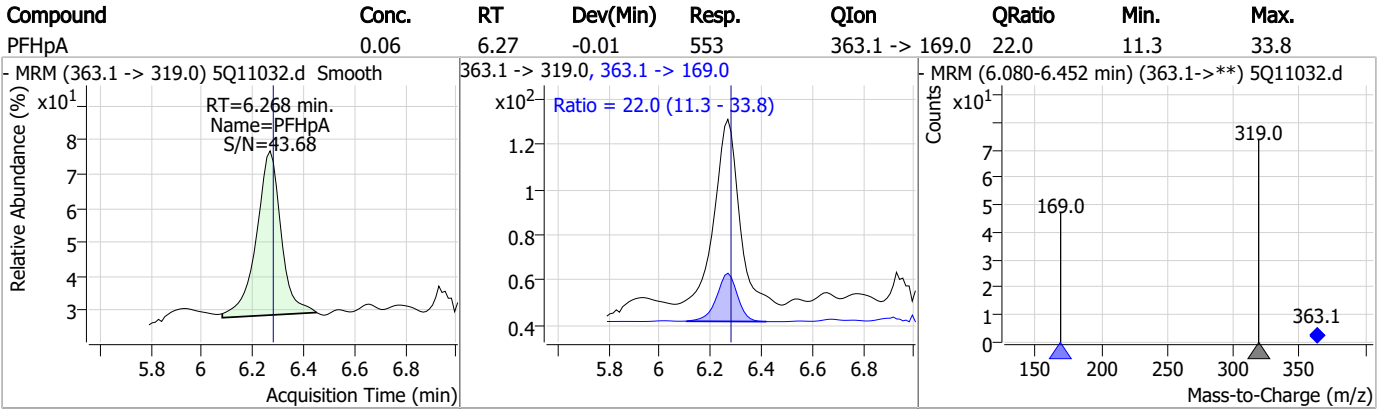


7.5.1
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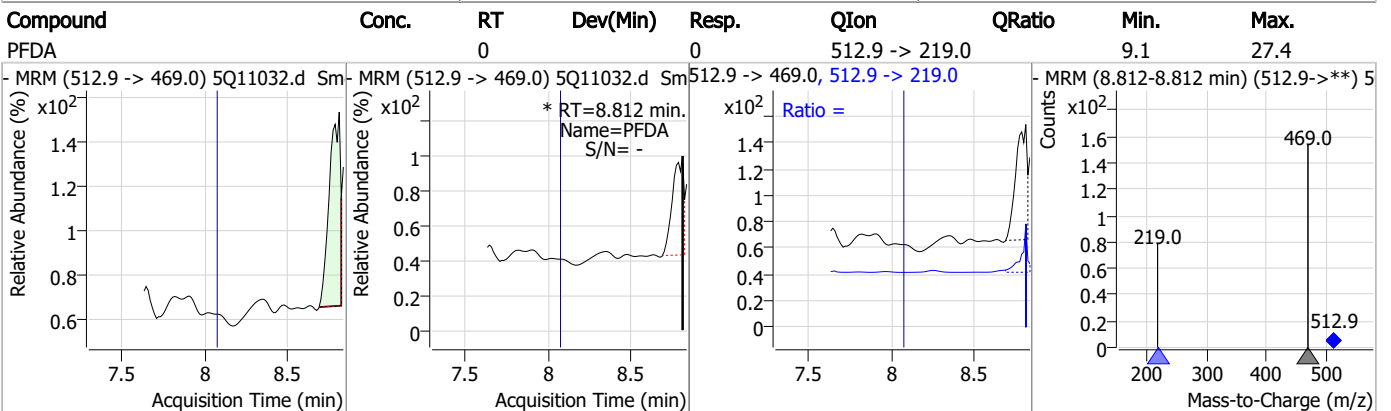
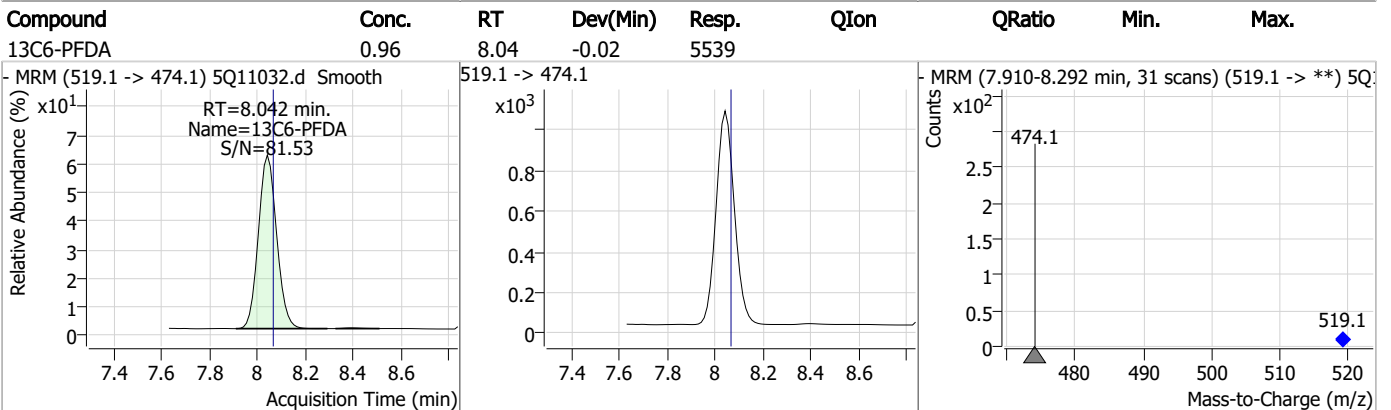
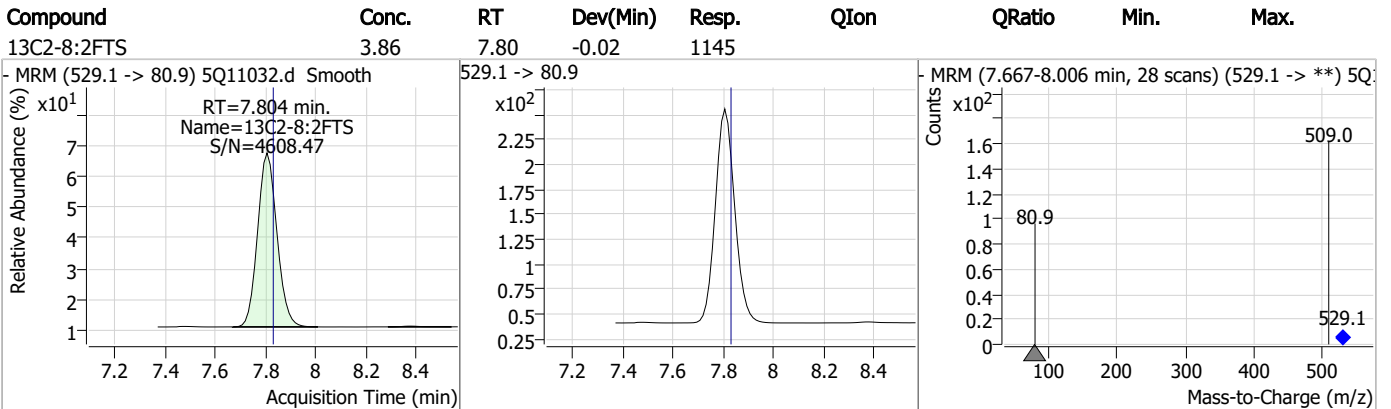
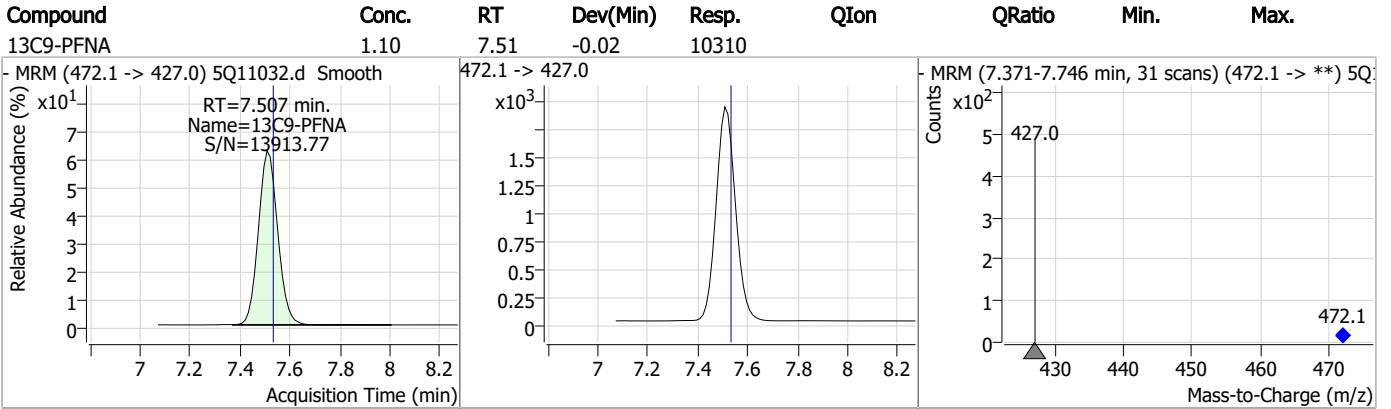
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

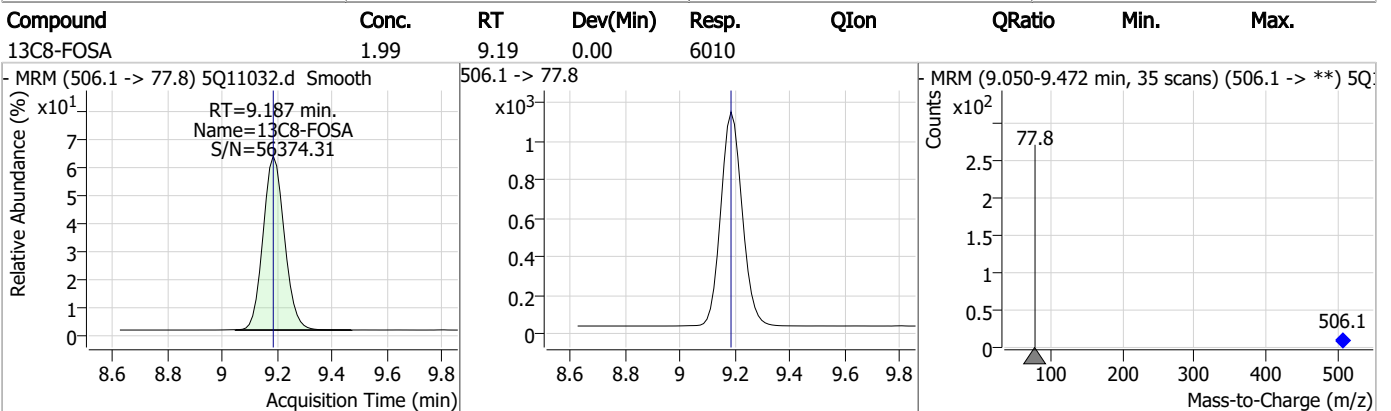
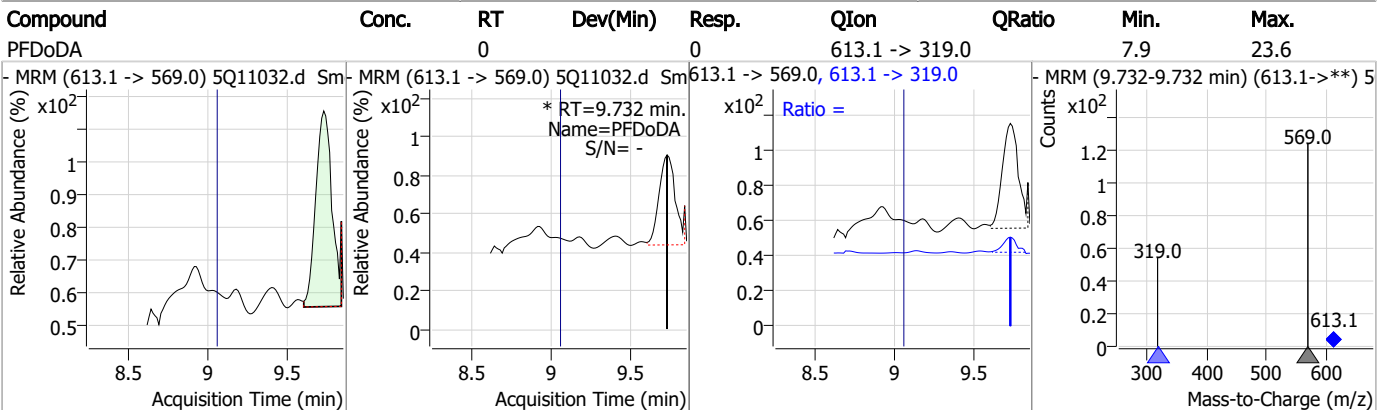
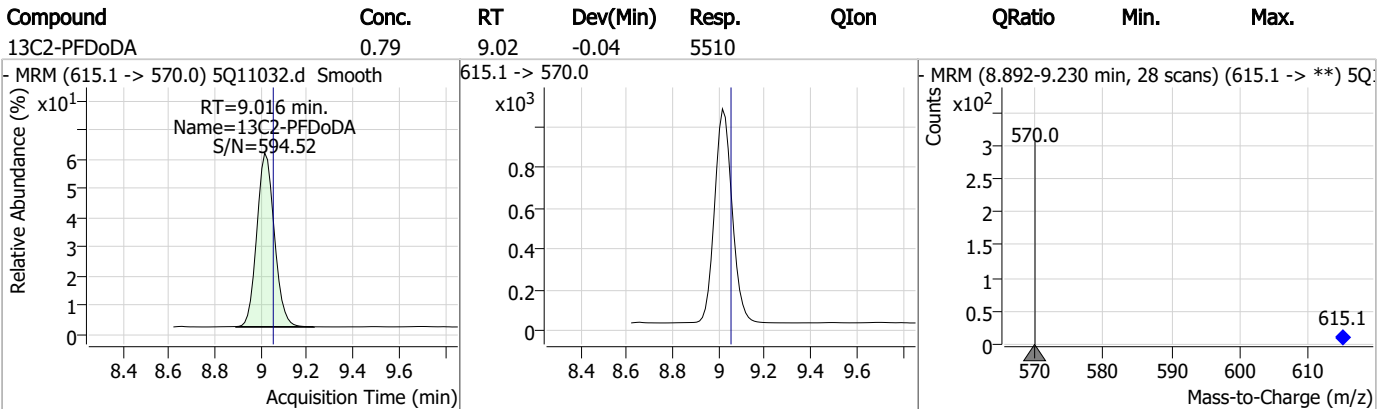
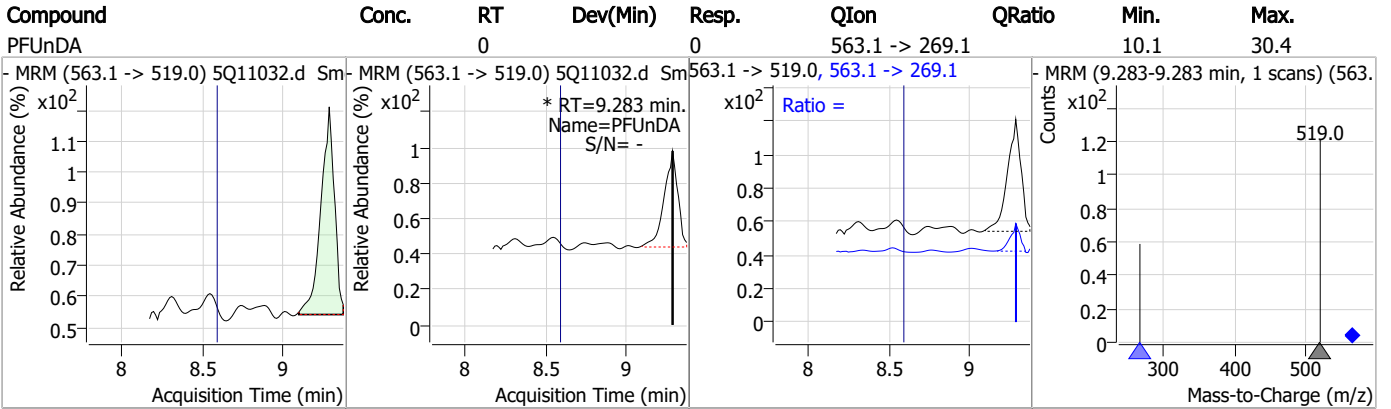


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	3.65	8.06	-0.02	6230				
13C8-PFOS	2.09	8.23	-0.02	6345				
d5-EtFOSAA	2.98	8.29	-0.02	7519				
13C7-PFUnDA	0.90	8.55	-0.04	5678				

7.5.1
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Perfluorinated Compounds by LC/MS/MS



7.5.1

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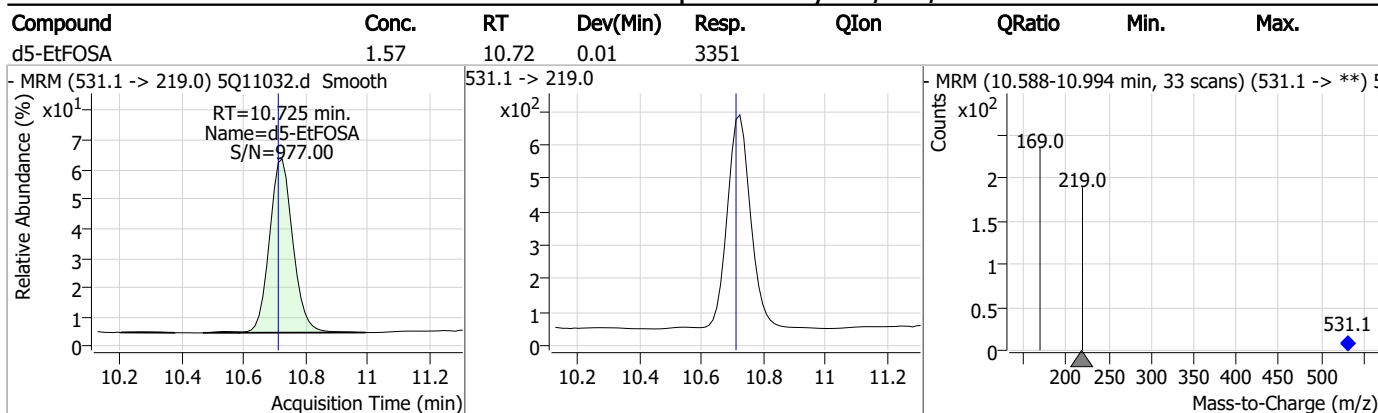
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	0.84	9.85	-0.05	5479				
<p>MRM (715.2 -> 670.0) 5Q11032.d Smooth RT=9.849 min. Name=13C2-PFTeDA S/N=231.30</p>			<p>715.2 -> 670.0</p>			<p>MRM (9.712-10.073 min, 30 scans) (715.2 -> **) 5Q11032.d Smooth 670.0 715.2</p>		
d7-MeFOSE	15.54	10.31	0.00	22042				
<p>MRM (623.2 -> 58.9) 5Q11032.d Smooth RT=10.315 min. Name=d7-MeFOSE S/N=52244.90</p>			<p>623.2 -> 58.9</p>			<p>MRM (10.178-10.594 min, 34 scans) (623.2 -> **) 5Q11032.d Smooth 58.9 623.2</p>		
d3-MeFOSA	1.61	10.43	0.01	2494				
<p>MRM (515.0 -> 219.0) 5Q11032.d Smooth RT=10.429 min. Name=d3-MeFOSA S/N=733.32</p>			<p>515.0 -> 219.0</p>			<p>MRM (10.280-10.603 min, 27 scans) (515.0 -> **) 5Q11032.d Smooth 169.0 219.0 515.0</p>		
d9-EtFOSE	15.60	10.62	0.00	27104				
<p>MRM (639.2 -> 58.9) 5Q11032.d Smooth RT=10.623 min. Name=d9-EtFOSE S/N=903.02</p>			<p>639.2 -> 58.9</p>			<p>MRM (10.486-10.832 min, 29 scans) (639.2 -> **) 5Q11032.d Smooth 58.9 639.2</p>		

7.5.1

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Perfluorinated Compounds by LC/MS/MS



7.5.1
7

Manual Integration Approval Summary

Sample Number: OP95481-DUP Method: EPA DRAFT 1633
Lab FileID: 5Q11032.D Analyst approved: 02/20/23 14:45 Lindsay Ritner
Injection Time: 02/17/23 17:53 Supervisor approved: 02/22/23 17:11 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.79	Poor instrument integration
13C4-PFBA			2.80	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
13C3-PFBS			5.25	Poor instrument integration

7.5.1.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)
 Norman Farmer
 02/21/23 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10938.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 7:49:15 PM
 Sample Name : RT TDCA
 Vial : P3-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s6q169A_TDCA.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M8-PFOS	8.268	507.1 -> 79.9	10990	2.50 µg/L	0.000
13C4-PFOS	8.268	502.8 -> 79.9	10816	2.50 µg/L	0.000
System Monitoring Compounds					
13C8-PFOS	8.268	502.8 -> 79.9	10816	4.84 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 193.7%		
Target Compounds					
PFOS	8.269	498.9 -> 79.9 498.9 -> 98.8	9939 5464	1.75 µg/L m	93
TCDCa	6.461	498.9 -> 79.9	2035	0.36 ng/ml	100
TDCA	6.623	498.9 -> 79.9	2537	0.45 ng/ml	100
TUDCA	5.593	498.9 -> 79.9	2932	0.52 ng/ml	100

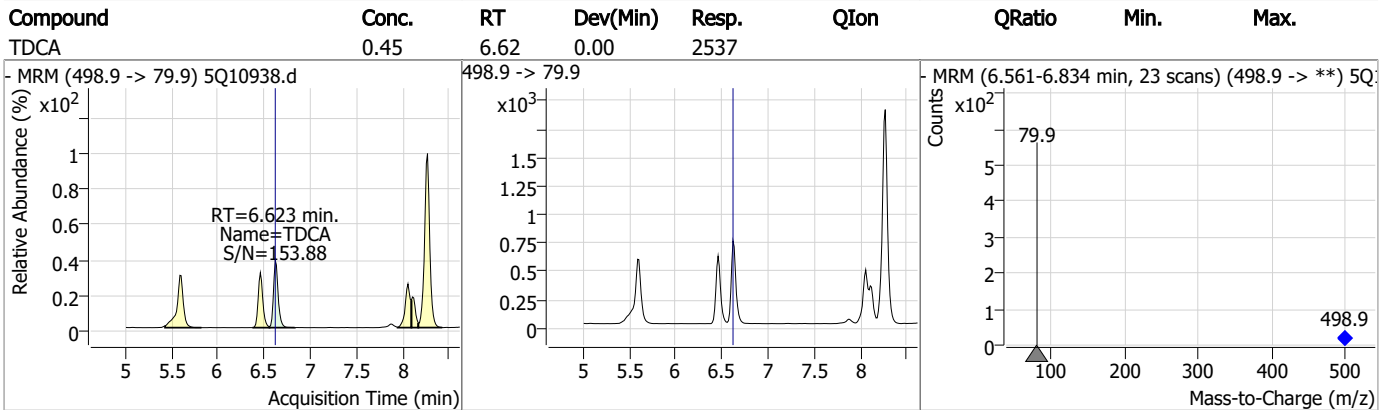
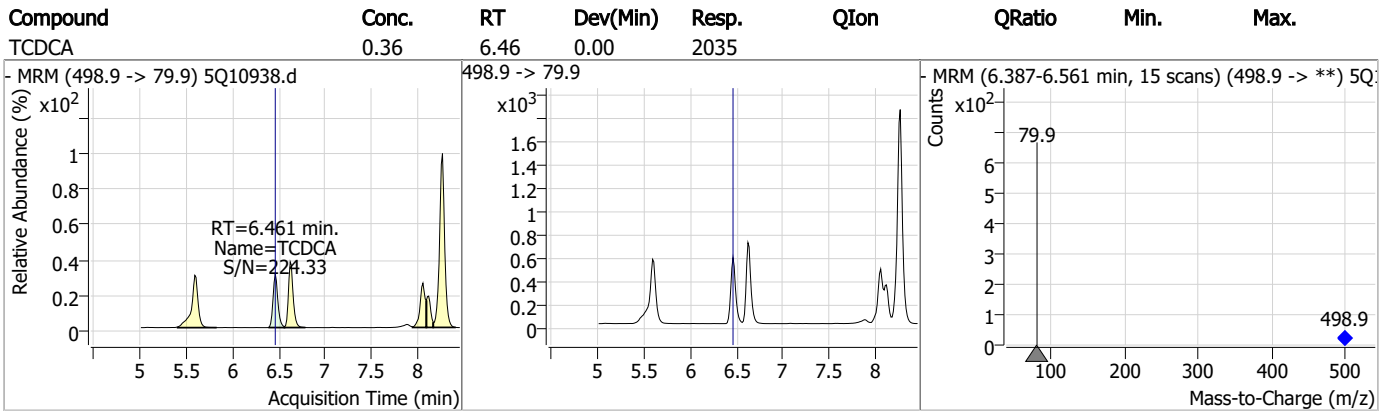
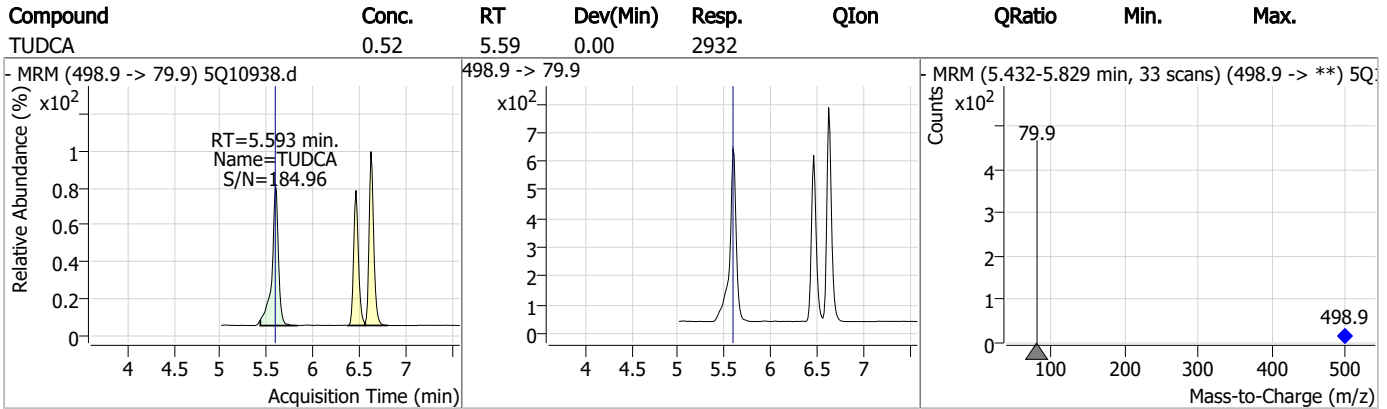
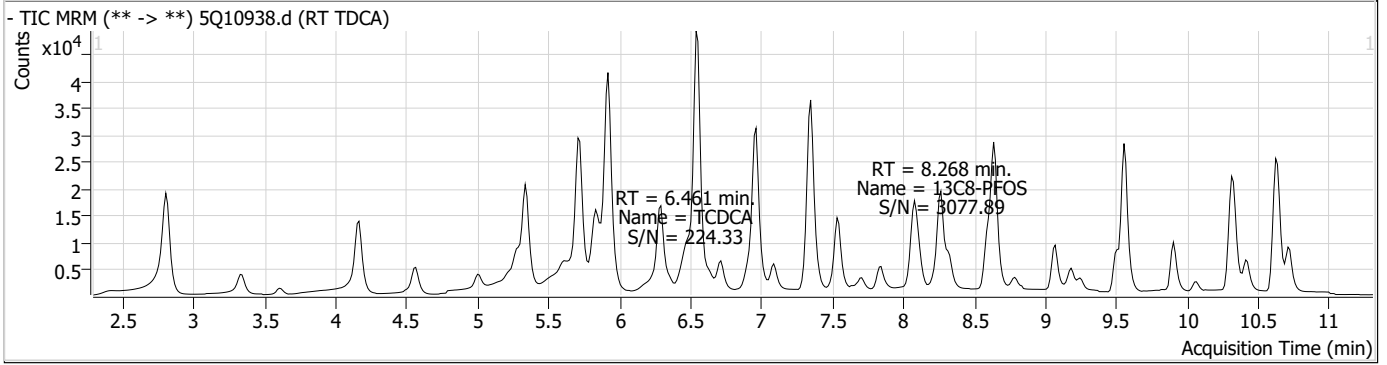
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7.6.1

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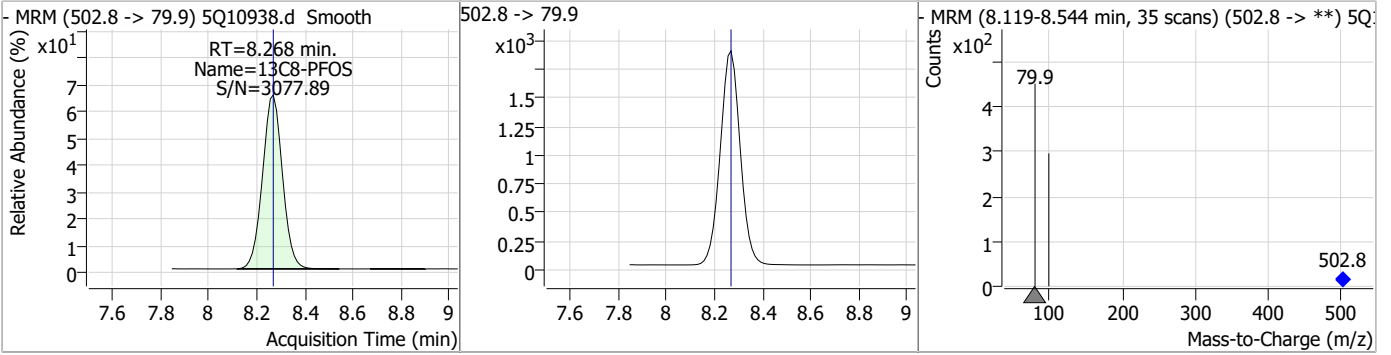


Perfluorinated Compounds by LC/MS/MS

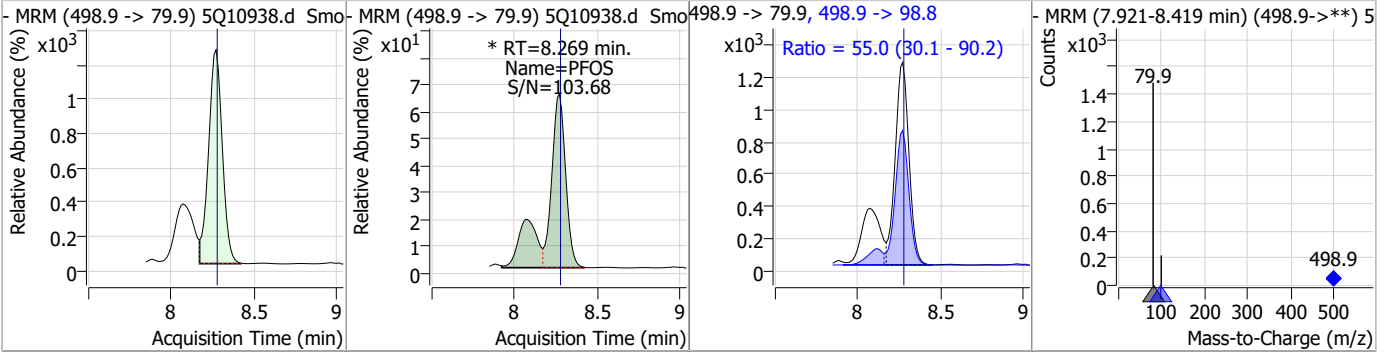


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	4.84	8.27	0.00	10816				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.75	8.27	0.00	9939 (m)	498.9 -> 98.8	55.0	30.1	90.2



7.6.1
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Manual Integration Approval Summary

Sample Number: S5Q169-RT Method: EPA DRAFT 1633
Lab FileID: 5Q10938.D Analyst approved: 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 19:49 Supervisor approved: 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.27	Split peak

7.6.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10939.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 8:03:22 PM
 Sample Name : RT Br-Ln
 Vial : P3-B2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	48554	10.00	µg/L m	0.000
M5-PFPeA	4.162	268.3 -> 223.0	29943	5.00	µg/L m	0.012
M5-PFHxA	5.335	318.0 -> 273.0	32127	2.50	µg/L	0.000
M4-PFHpA	6.293	367.1 -> 322.0	30459	2.50	µg/L	0.012
M8-PFOA	6.962	421.1 -> 376.0	34791	2.50	µg/L	0.012
M9-PFNA	7.532	472.1 -> 427.0	12894	1.25	µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	8100	1.25	µg/L	0.012
M7-PFUnDA	8.585	570.0 -> 525.1	8775	1.25	µg/L	0.000
M2-PFDoDA	9.066	615.1 -> 570.0	9626	1.25	µg/L	0.012
M2-PFTeDA	9.899	715.2 -> 670.0	9611	1.25	µg/L	0.000
M8-FOSA	9.187	506.1 -> 77.8	8377	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	8222	2.50	µg/L m	0.000
M3-PFHxS	7.091	402.1 -> 79.9	6333	2.50	µg/L	0.000
M8-PFOS	8.268	507.1 -> 79.9	8396	2.50	µg/L	0.012
M2-4:2FTS	4.996	329.1 -> 80.9	606	5.00	µg/L	0.000
M2-6:2FTS	6.712	429.1 -> 80.9	1188	5.00	µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1543	5.00	µg/L	0.000
M3-MeFOSAA	8.100	573.2 -> 419.0	9334	5.00	µg/L	0.012
M3-HFPO-DA	5.727	286.9 -> 168.9	69739	10.00	µg/L	0.012
M5-EtFOSAA	8.322	589.2 -> 419.0	12737	5.00	µg/L	0.012
M7-MeFOSE	10.315	623.2 -> 58.9	39160	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	47283	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5816	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4196	2.50	µg/L	0.000
13C4-PFOS	8.268	502.8 -> 79.9	8426	2.50	µg/L	0.012
13C3-PFBA	2.803	216.0 -> 172.0	28177	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4394	2.50	µg/L	0.000
13C4-PFOA	6.963	417.1 -> 372.0	41025	2.50	µg/L	0.012
13C2-PFDA	8.079	515.1 -> 470.1	12965	1.25	µg/L	0.012
13C5-PFNA	7.533	468.0 -> 423.0	12561	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	36413	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	606	5.66	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.3%			
13C2-6:2FTS	6.712	429.1 -> 80.9	1188	4.99	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.8%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1543	4.62	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.4%			
13C2-PFDoDA	9.066	615.1 -> 570.0	9626	1.19	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.3%			
13C2-PFTeDA	9.899	715.2 -> 670.0	9611	1.27	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%			
13C3-PFBS	5.277	302.1 -> 79.9	9088	2.69	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.5%			
13C3-PFHxS	7.091	402.1 -> 79.9	6333	2.52	µg/L	0.000

7.6.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C4-PFBA	2.799	216.8 -> 171.9	54279	10.21 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C4-PFHpA	6.293	367.1 -> 322.0	30459	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFHxA	5.335	318.0 -> 273.0	32127	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C5-PFPeA	4.162	268.3 -> 223.0	33721	5.09 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C6-PFDA	8.079	519.1 -> 474.1	8100	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C7-PFUnDA	8.585	570.0 -> 525.1	8775	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C8-FOSA	9.187	506.1 -> 77.8	8377	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOA	6.962	421.1 -> 376.0	34791	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C8-PFOS	8.268	507.1 -> 79.9	8396	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C9-PFNA	7.532	472.1 -> 427.0	12894	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
d3-MeFOSAA	8.100	573.2 -> 419.0	9334	5.00 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	5.727	286.9 -> 168.9	69739	10.32 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
d3-MeFOSA	10.416	515.0 -> 219.0	4196	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
d5-EtFOSAA	8.322	589.2 -> 419.0	12737	4.61 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.3%	
d7-MeFOSE	10.315	623.2 -> 58.9	39160	25.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d9-EtFOSE	10.623	639.2 -> 58.9	47283	24.88 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
d5-EtFOSA	10.712	531.1 -> 219.0	5816	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	6766	8.88 µg/L	97
		327.1 -> 80.9	3597		
6:2FTS	6.712	427.1 -> 407.0	9598	9.67 µg/L	99
		427.1 -> 80.9	4085		
8:2FTS	7.829	527.1 -> 507.0	6402	8.76 µg/L	94
		527.1 -> 80.8	3499		
EtFOSAA	8.323	584.2 -> 419.1	4276	2.56 µg/L	m 99
		584.2 -> 526.0	1711		
FOSA	9.190	498.1 -> 77.9	56119	18.34 µg/L	m 99
		498.1 -> 478.0	1794		
MeFOSAA	8.101	570.1 -> 419.0	3892	2.46 µg/L	m 99
		570.1 -> 483.0	855		
PFBA	2.807	212.8 -> 168.9	17967	9.35 µg/L	m 100
PFBS	5.278	298.7 -> 79.9	5528	2.05 µg/L	m 92
		298.7 -> 98.8	2613		
PFDA	8.080	512.9 -> 469.0	21228	2.50 µg/L	99
		512.9 -> 219.0	3822		
PFDODA	9.066	613.1 -> 569.0	16310	2.50 µg/L	100
		613.1 -> 319.0	2572		
PFDS	9.244	599.0 -> 79.9	4329	2.34 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.293	599.0 -> 98.8	2324	2.61	µg/L	100
		363.1 -> 319.0	33617			
PFHpS	7.711	363.1 -> 169.0	7558	2.39	µg/L	92
		449.0 -> 79.9	5702			
PFHxA	5.337	449.0 -> 98.9	3108	2.60	µg/L	100
		313.0 -> 269.0	24525			
PFHxS	7.092	313.0 -> 118.9	1092	2.24	µg/L	m
		398.7 -> 79.9	4794			
PFNA	7.396	398.7 -> 98.9	2906	14.20	µg/L	m
		463.0 -> 419.0	106156			
PFNS	8.786	463.0 -> 219.0	26957	2.40	µg/L	95
		548.8 -> 79.9	4434			
PFOA	6.964	548.8 -> 98.9	2550	16.27	µg/L	m
		413.0 -> 369.0	218048			
PFOS	8.269	413.0 -> 169.0	54234	2.36	µg/L	m
		498.9 -> 79.9	8009			
PFPeA	4.164	498.9 -> 98.8	4695	4.40	µg/L	m
		263.0 -> 219.0	28766			
PFPeS	6.357	349.1 -> 79.9	5091	2.76	µg/L	100
		349.1 -> 98.9	2599			
PFTeDA	9.899	713.1 -> 669.0	17121	2.32	µg/L	98
		713.1 -> 168.9	2260			
PFTrDA	9.501	663.0 -> 619.0	21049	2.45	µg/L	98
		663.0 -> 168.9	3680			
PFUnDA	8.586	563.1 -> 519.0	16061	2.45	µg/L	100
		563.1 -> 269.1	3295			
11CI-PF3OUdS	9.554	630.9 -> 450.9	67740	8.83	µg/L	100
		632.9 -> 452.9	20869			
9CI-PF3ONS	8.638	530.8 -> 351.0	70577	8.60	µg/L	100
		532.8 -> 353.0	22239			
ADONA	6.542	376.9 -> 250.9	167659	8.78	µg/L	99
		376.9 -> 84.8	49532			
HFPO-DA	5.728	284.9 -> 168.9	59272	10.36	µg/L	99
		284.9 -> 184.9	5678			
3:3FTCA	3.616	241.0 -> 177.0	5167	10.70	µg/L	m
		241.0 -> 117.0	608			
5:3FTCA	5.918	341.0 -> 237.1	108563	55.72	µg/L	98
		341.0 -> 217.0	74906			
7:3FTCA	7.348	441.0 -> 316.9	42014	53.86	µg/L	99
		441.0 -> 336.9	92205			
EtFOSA	10.726	526.0 -> 219.0	42450	20.24	µg/L	m
		526.0 -> 169.0	61829			
EtFOSE	10.636	630.0 -> 58.9	75395	42.92	µg/L	m
		511.9 -> 219.0	32341			
MeFOSA	10.430	511.9 -> 169.0	51160	19.53	µg/L	m
		616.1 -> 58.9	69345			
MeFOSE	10.327	699.1 -> 79.9	3615	41.46	µg/L	m
		699.1 -> 98.8	2147			
PFDoDS	10.063	295.0 -> 201.0	3449	2.48	µg/L	98
		295.0 -> 84.9	908			
NFDHA	5.218	279.0 -> 85.1	21365	4.65	µg/L	m
		229.0 -> 84.9	17339			
PFMBA	4.566	314.8 -> 134.9	43264	4.43	µg/L	m
		314.8 -> 82.9	1195			
PFMPA	3.328			4.89	µg/L	m
PFEESA	5.833			4.36	µg/L	100

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

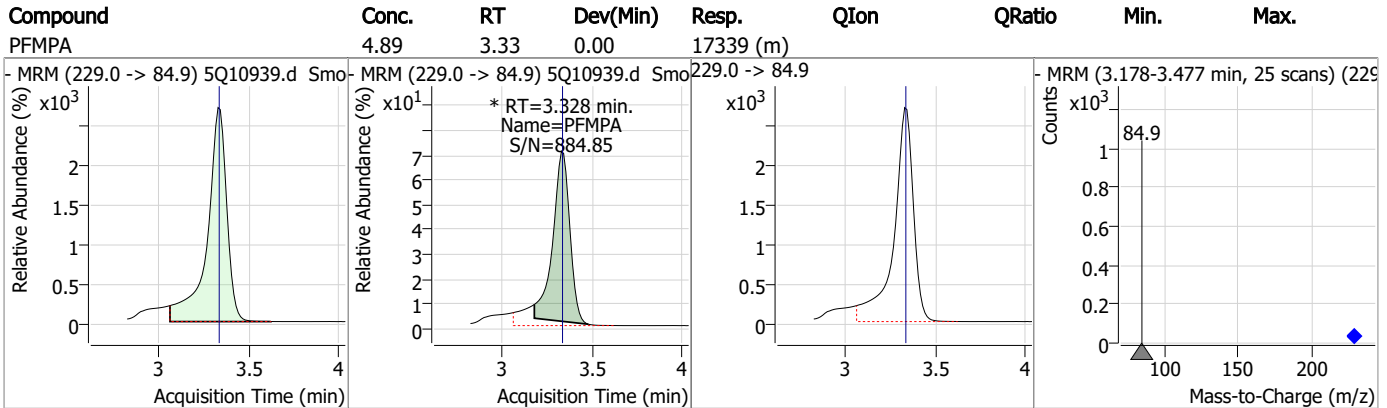
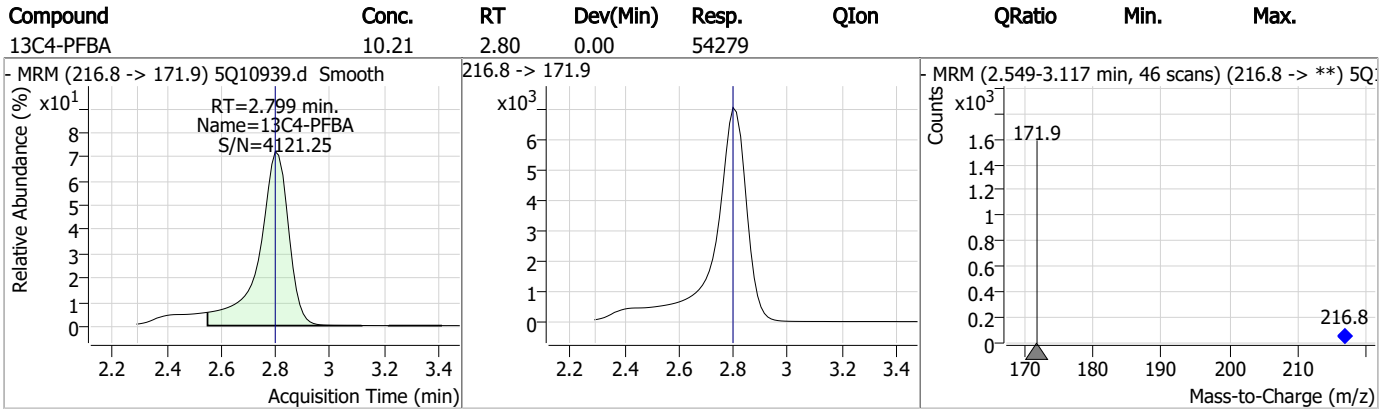
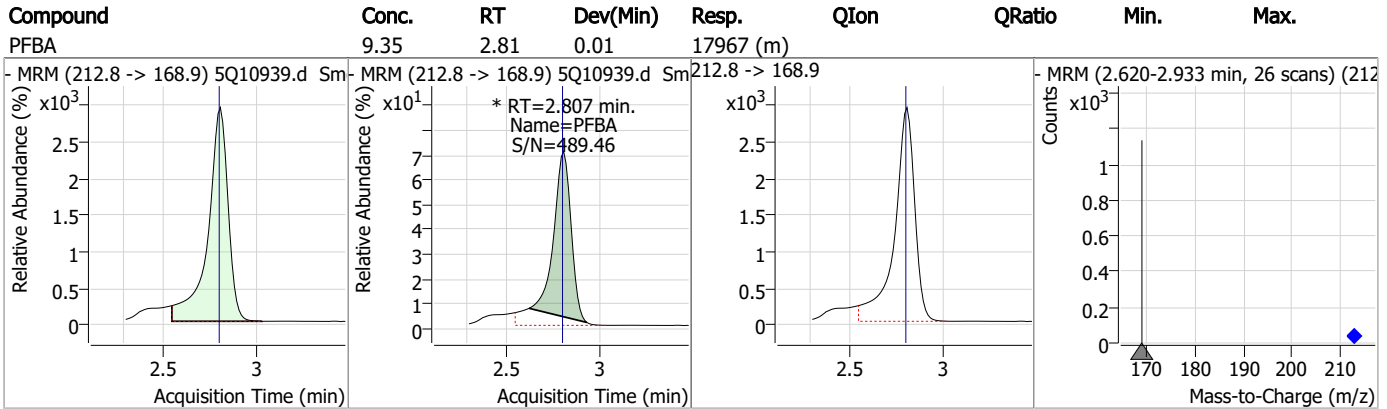
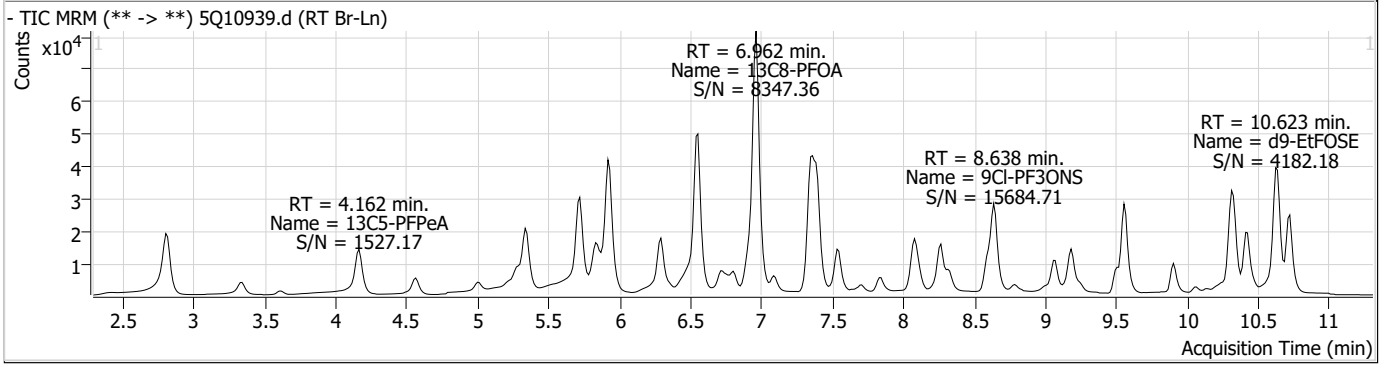
Perfluorinated Compounds by LC/MS/MS

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

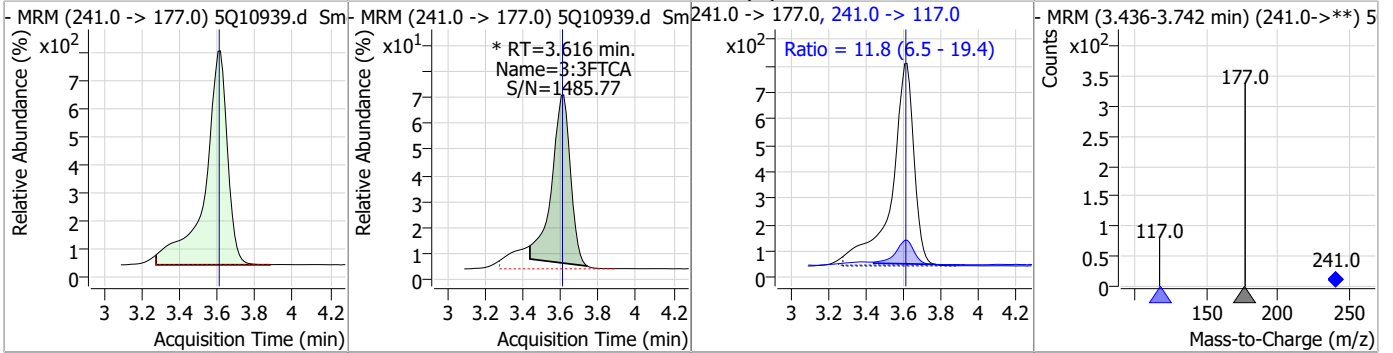
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Perfluorinated Compounds by LC/MS/MS

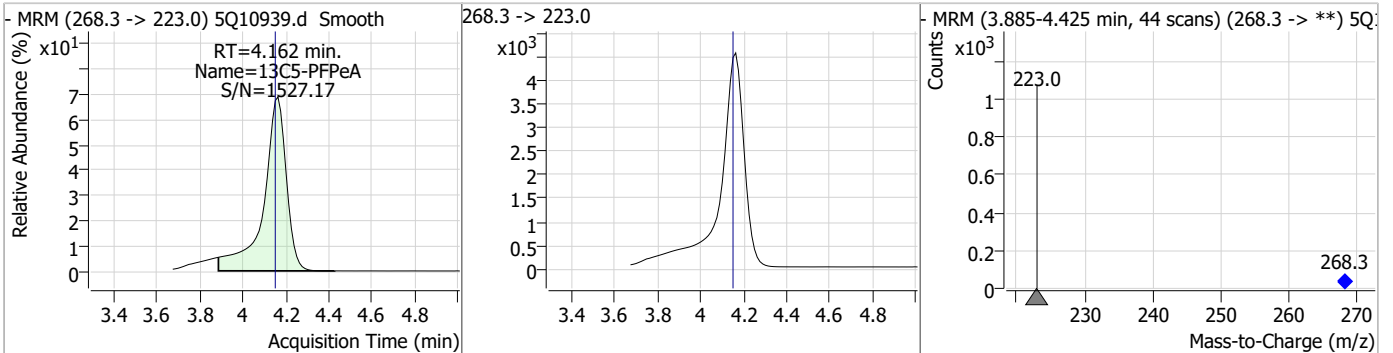


Perfluorinated Compounds by LC/MS/MS

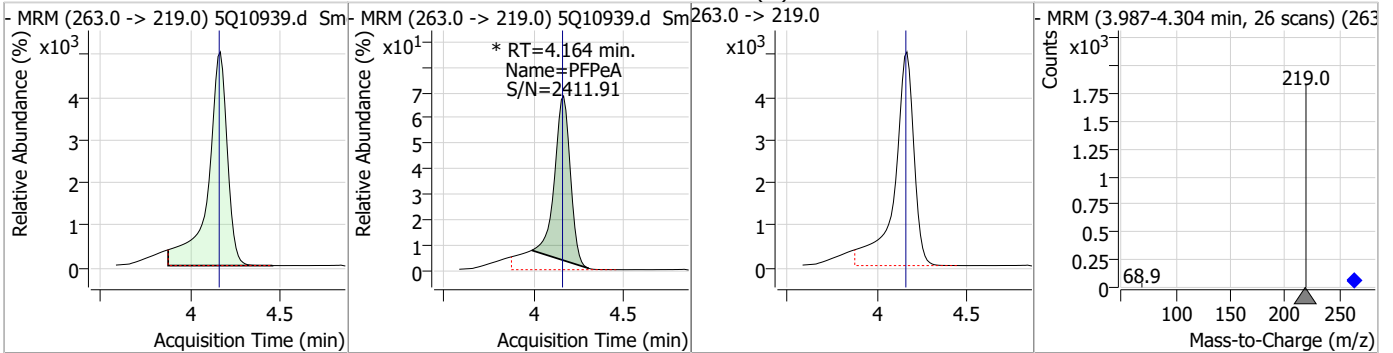
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	10.70	3.62	0.01	5167 (m)	241.0 -> 117.0	11.8	6.5	19.4



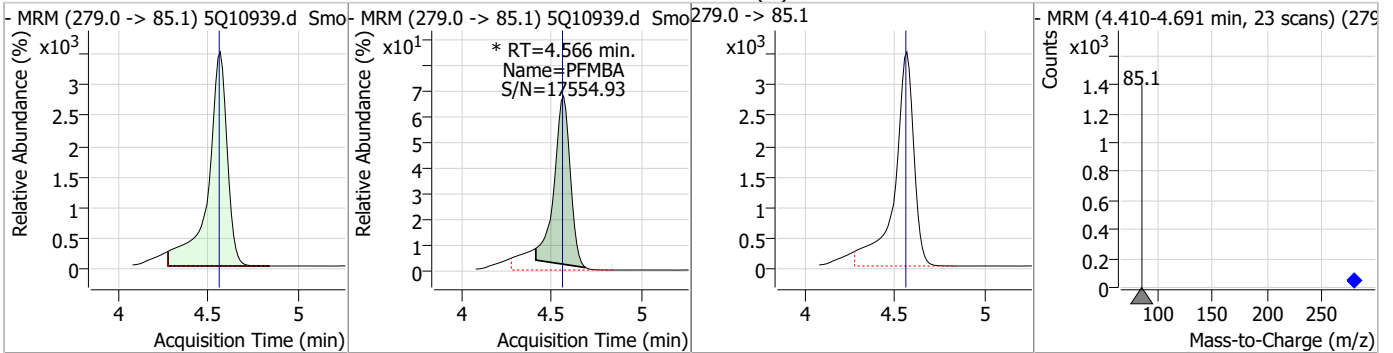
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.09	4.16	0.01	33721				



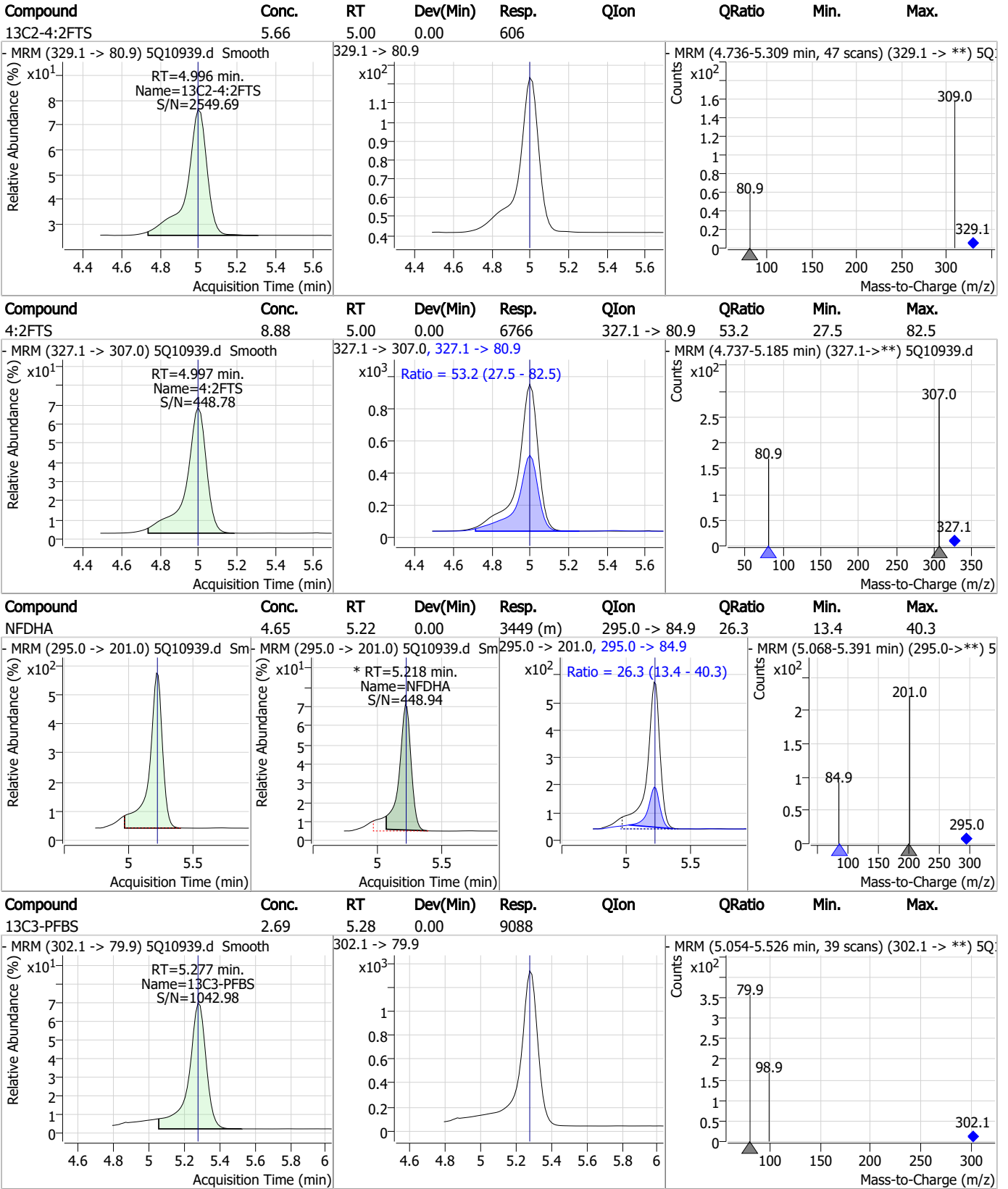
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.40	4.16	0.01	28766 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.43	4.57	0.01	21365 (m)				

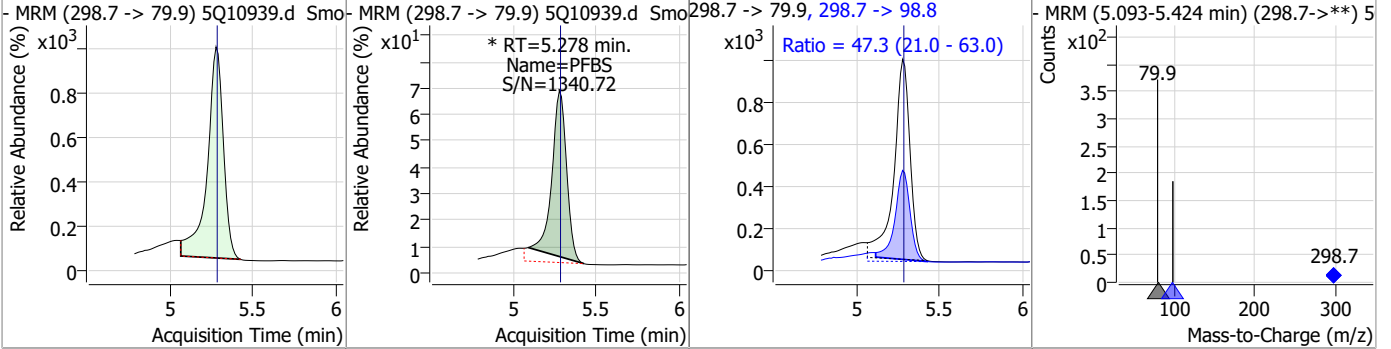


Perfluorinated Compounds by LC/MS/MS

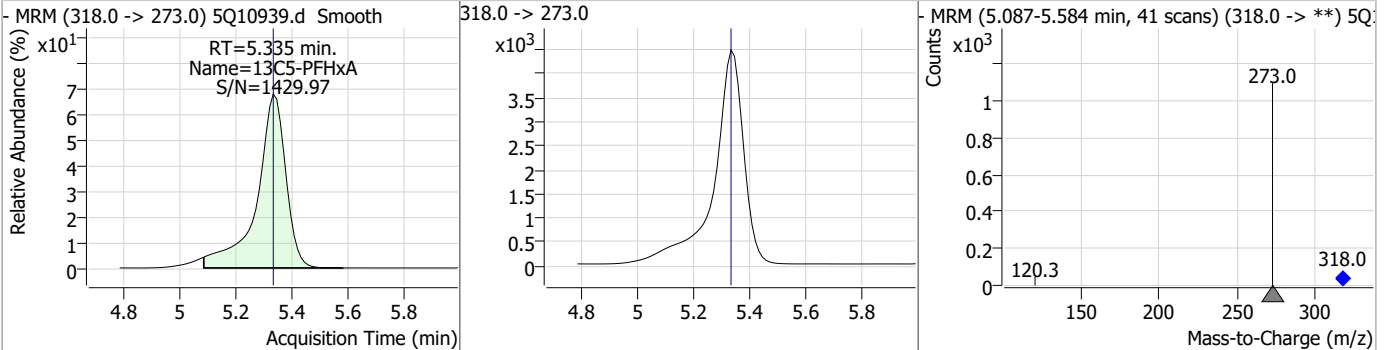


Perfluorinated Compounds by LC/MS/MS

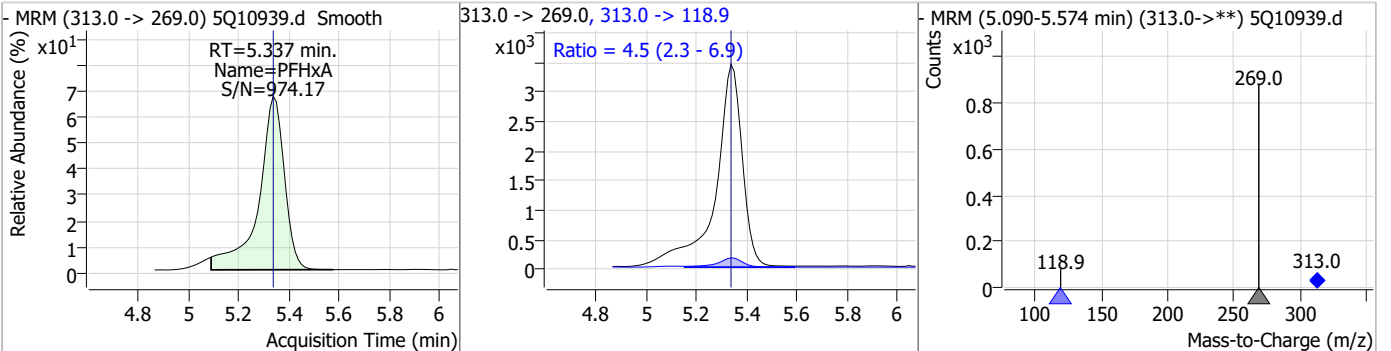
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.05	5.28	0.00	5528 (m)	298.7 -> 98.8	47.3	21.0	63.0



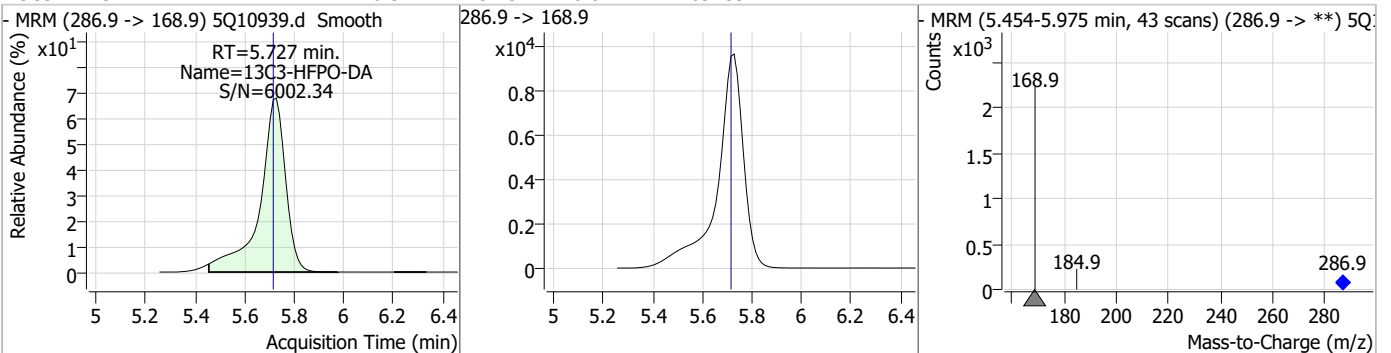
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.34	0.00	32127				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.60	5.34	0.00	24525	313.0 -> 118.9	4.5	2.3	6.9

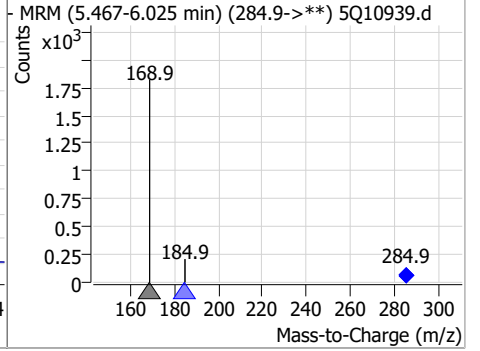
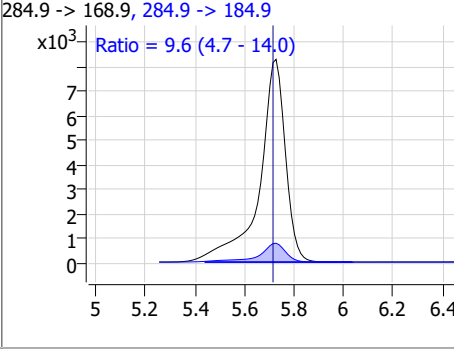
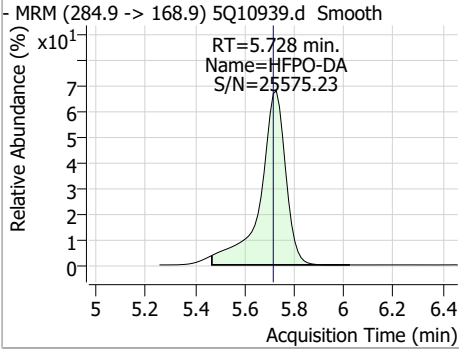


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.32	5.73	0.01	69739				

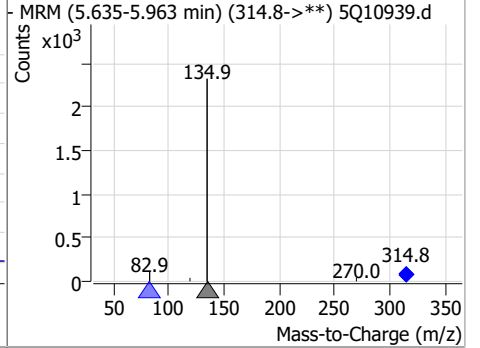
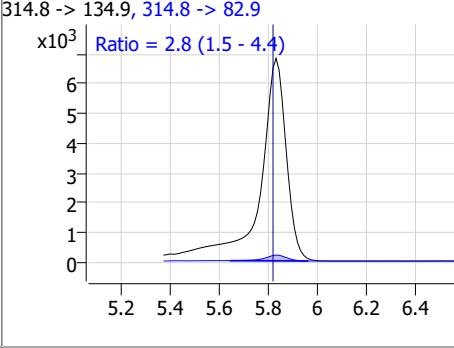
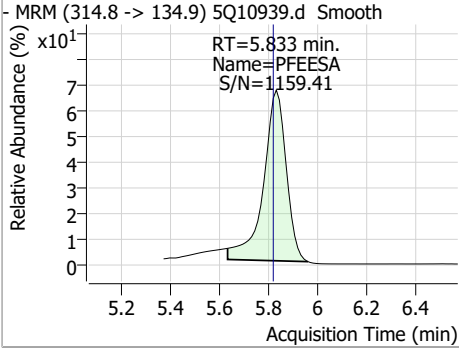


Perfluorinated Compounds by LC/MS/MS

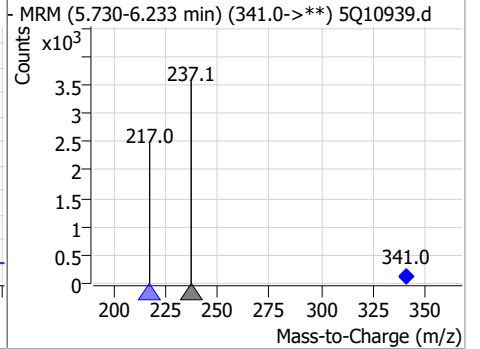
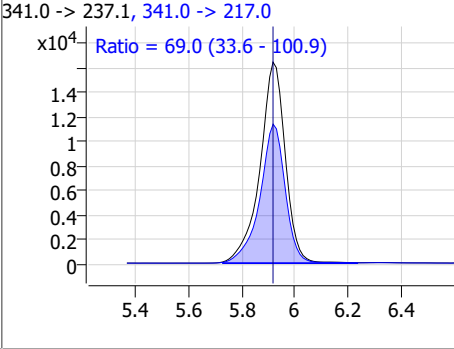
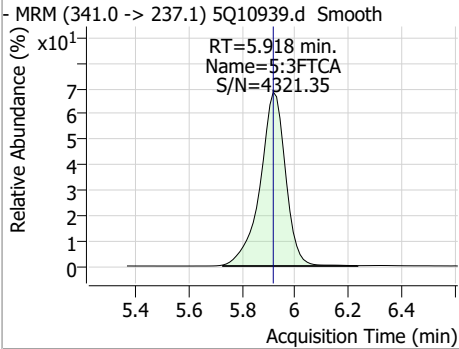
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	10.36	5.73	0.01	59272	284.9 -> 184.9	9.6	4.7	14.0



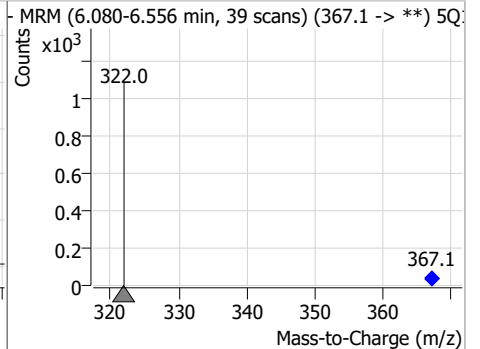
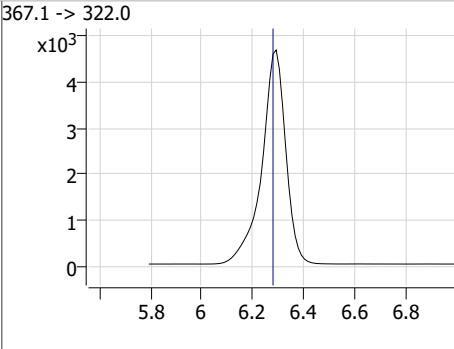
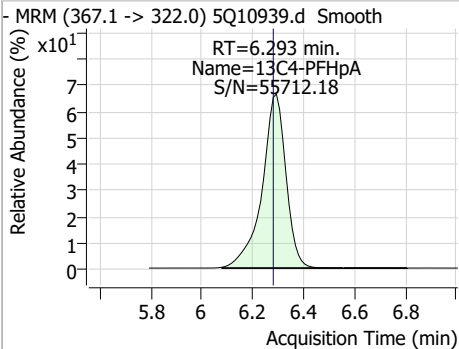
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.36	5.83	0.01	43264	314.8 -> 82.9	2.8	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	55.72	5.92	0.00	108563	341.0 -> 217.0	69.0	33.6	100.9

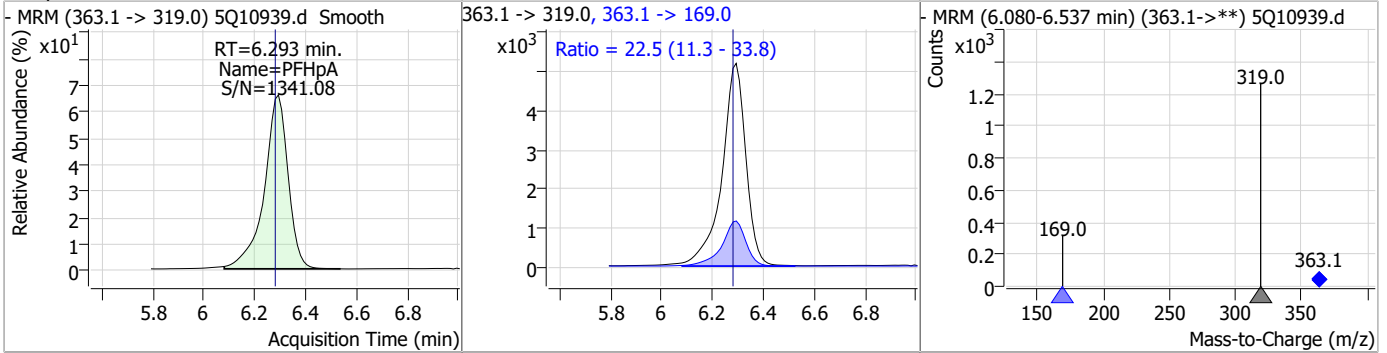


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.52	6.29	0.01	30459	367.1 -> 322.0			

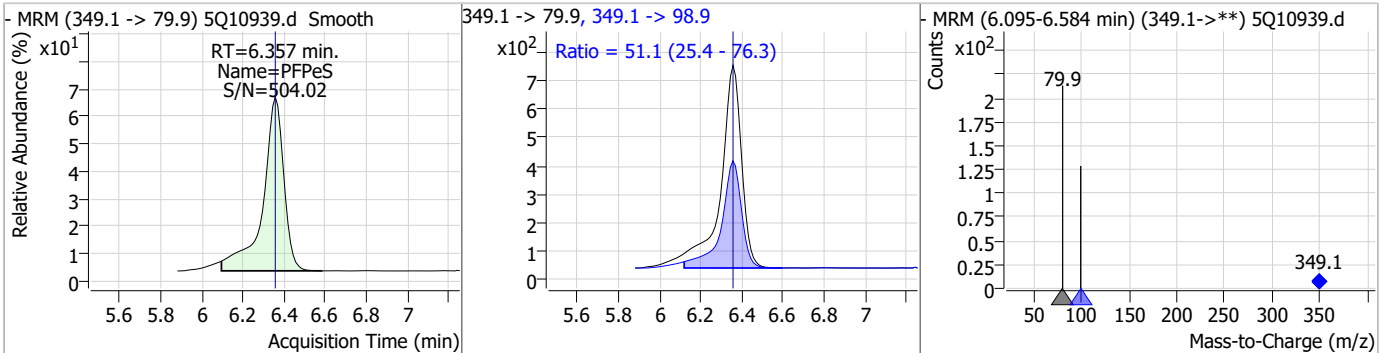


Perfluorinated Compounds by LC/MS/MS

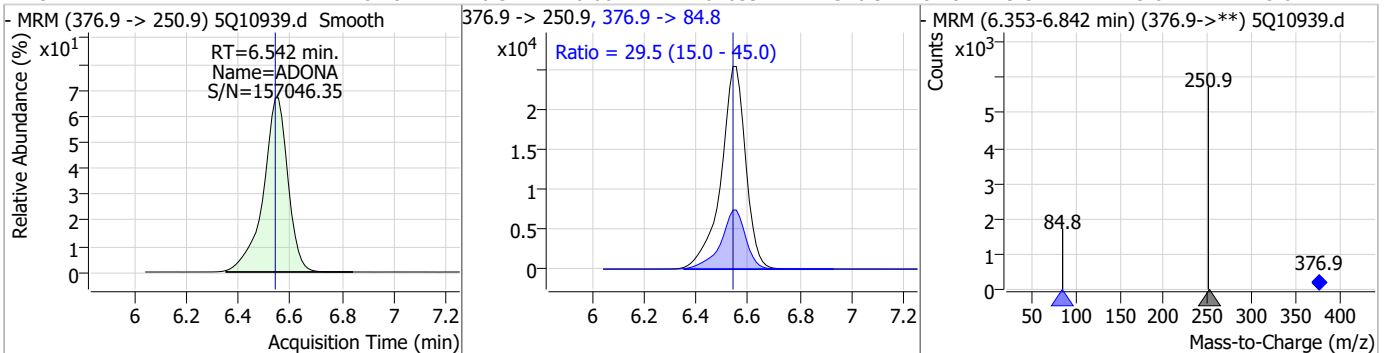
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.61	6.29	0.01	33617	363.1 -> 169.0	22.5	11.3	33.8



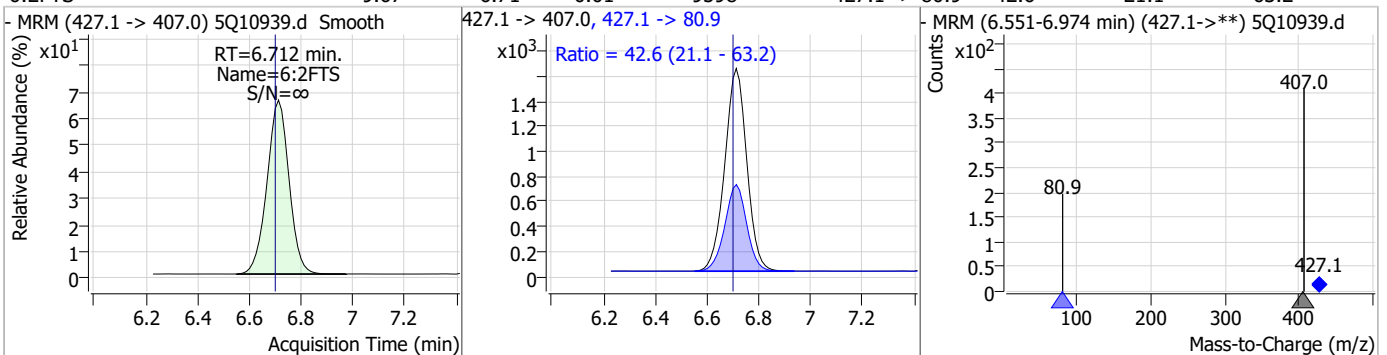
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.76	6.36	0.00	5091	349.1 -> 98.9	51.1	25.4	76.3



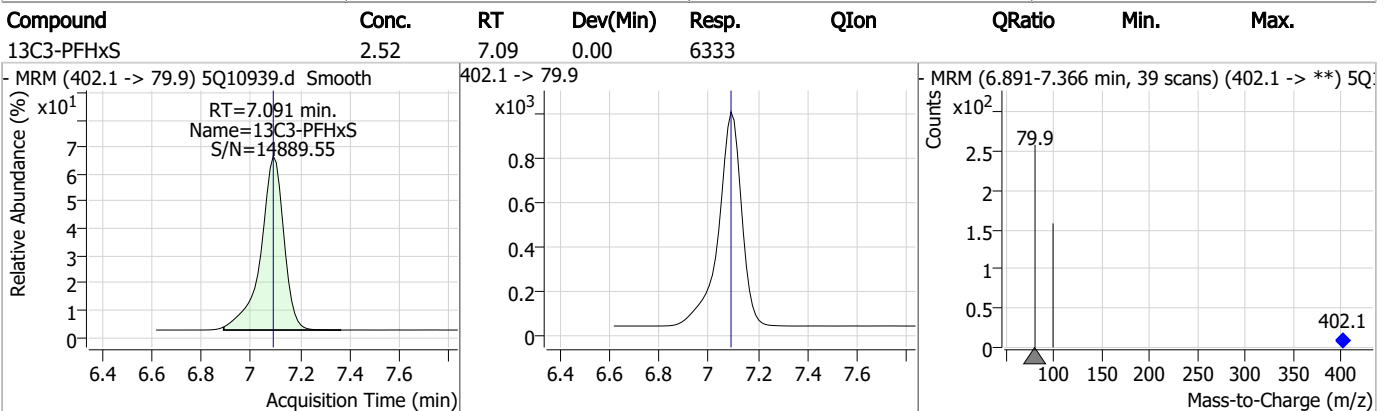
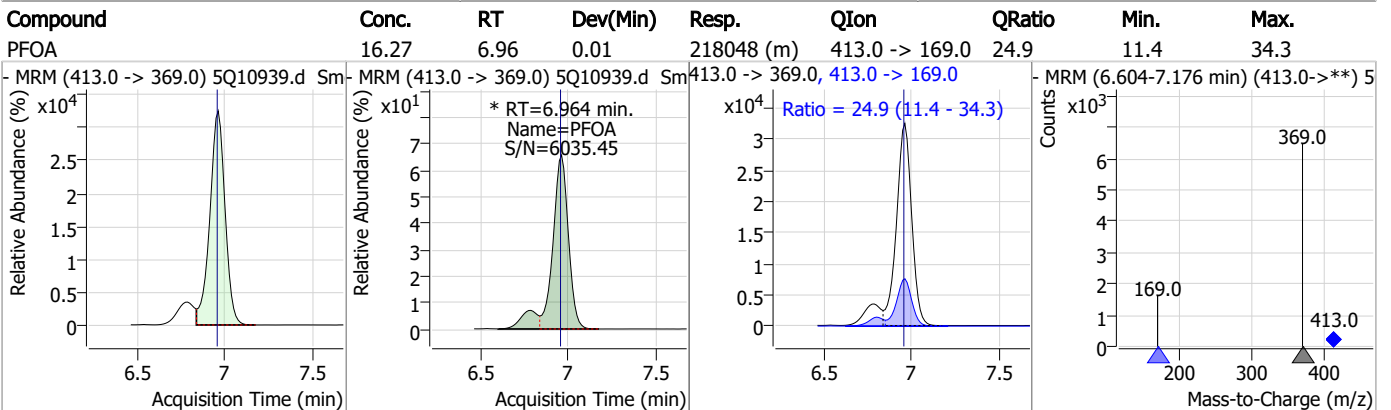
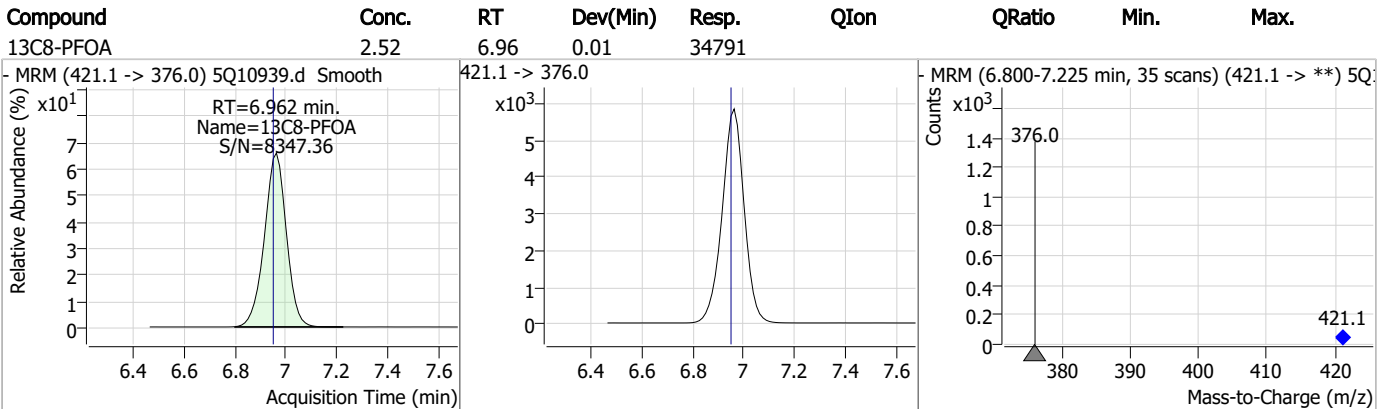
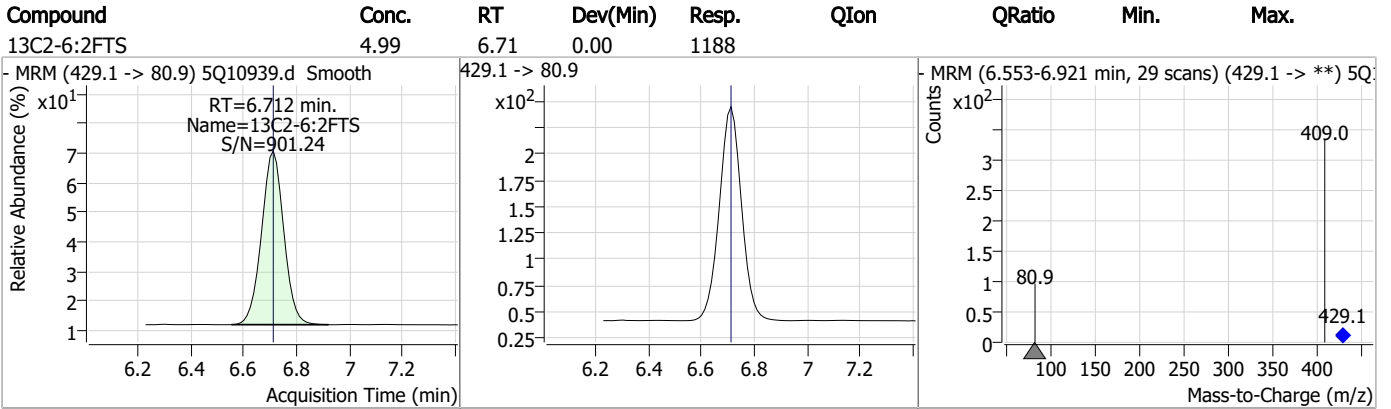
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	8.78	6.54	0.00	167659	376.9 -> 84.8	29.5	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	9.67	6.71	0.01	9598	427.1 -> 80.9	42.6	21.1	63.2

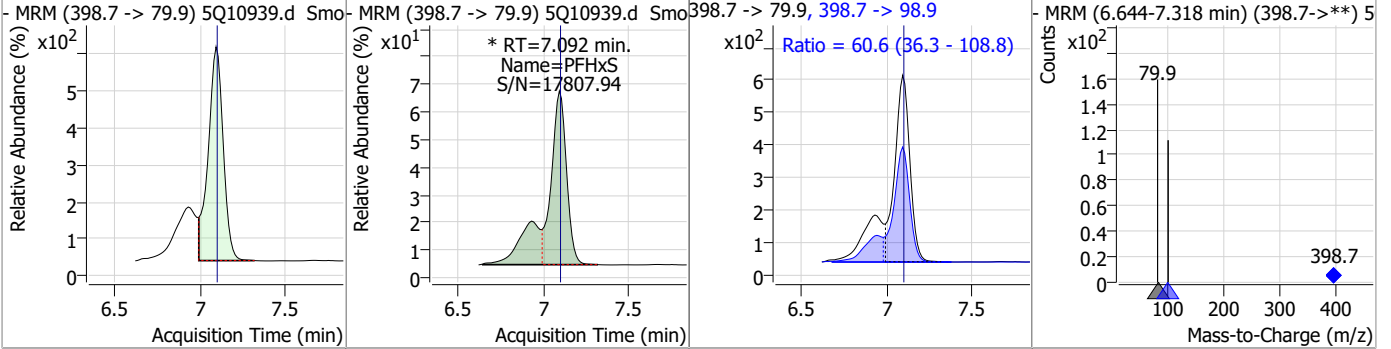


Perfluorinated Compounds by LC/MS/MS

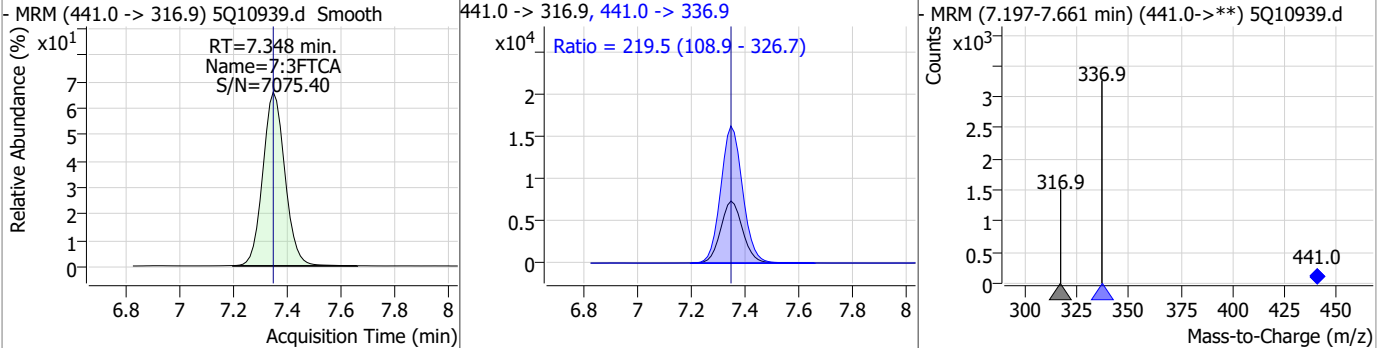


Perfluorinated Compounds by LC/MS/MS

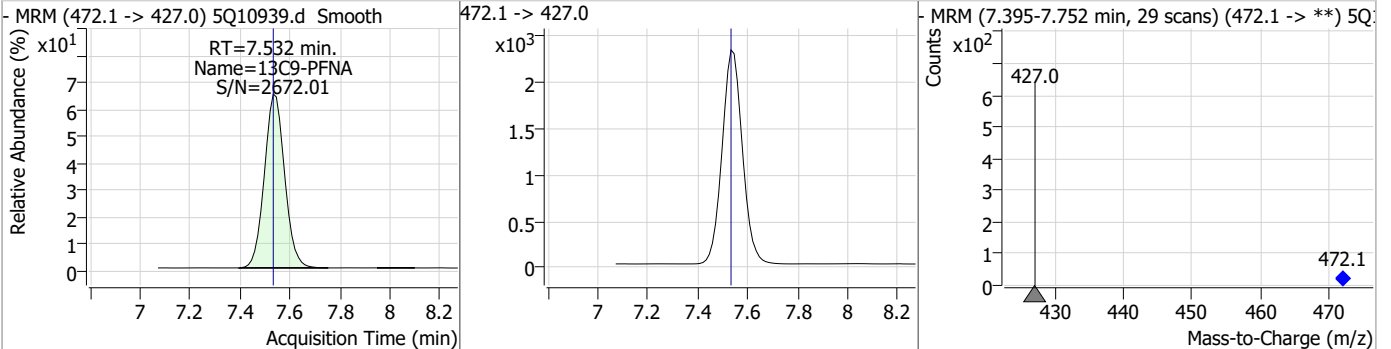
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.24	7.09	0.00	4794 (m)	398.7 -> 98.9	60.6	36.3	108.8



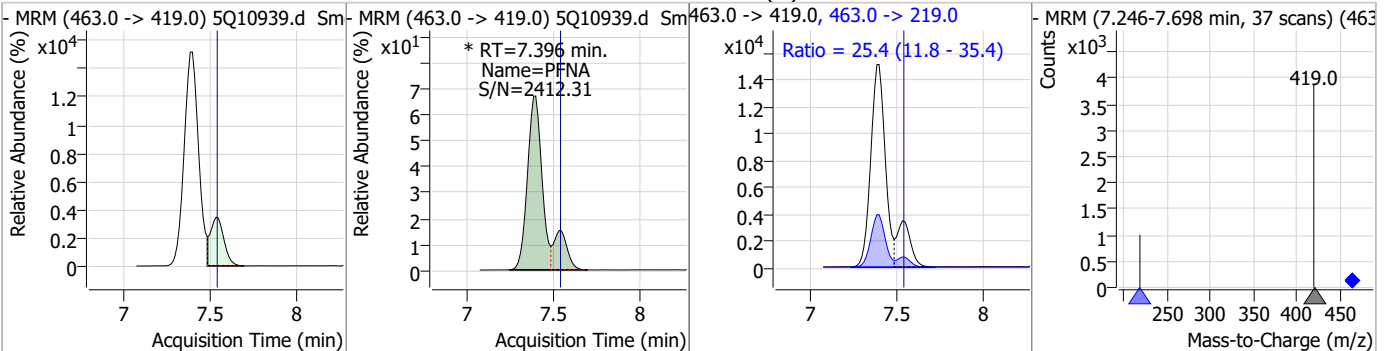
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	53.86	7.35	0.00	42014	441.0 -> 336.9	219.5	108.9	326.7



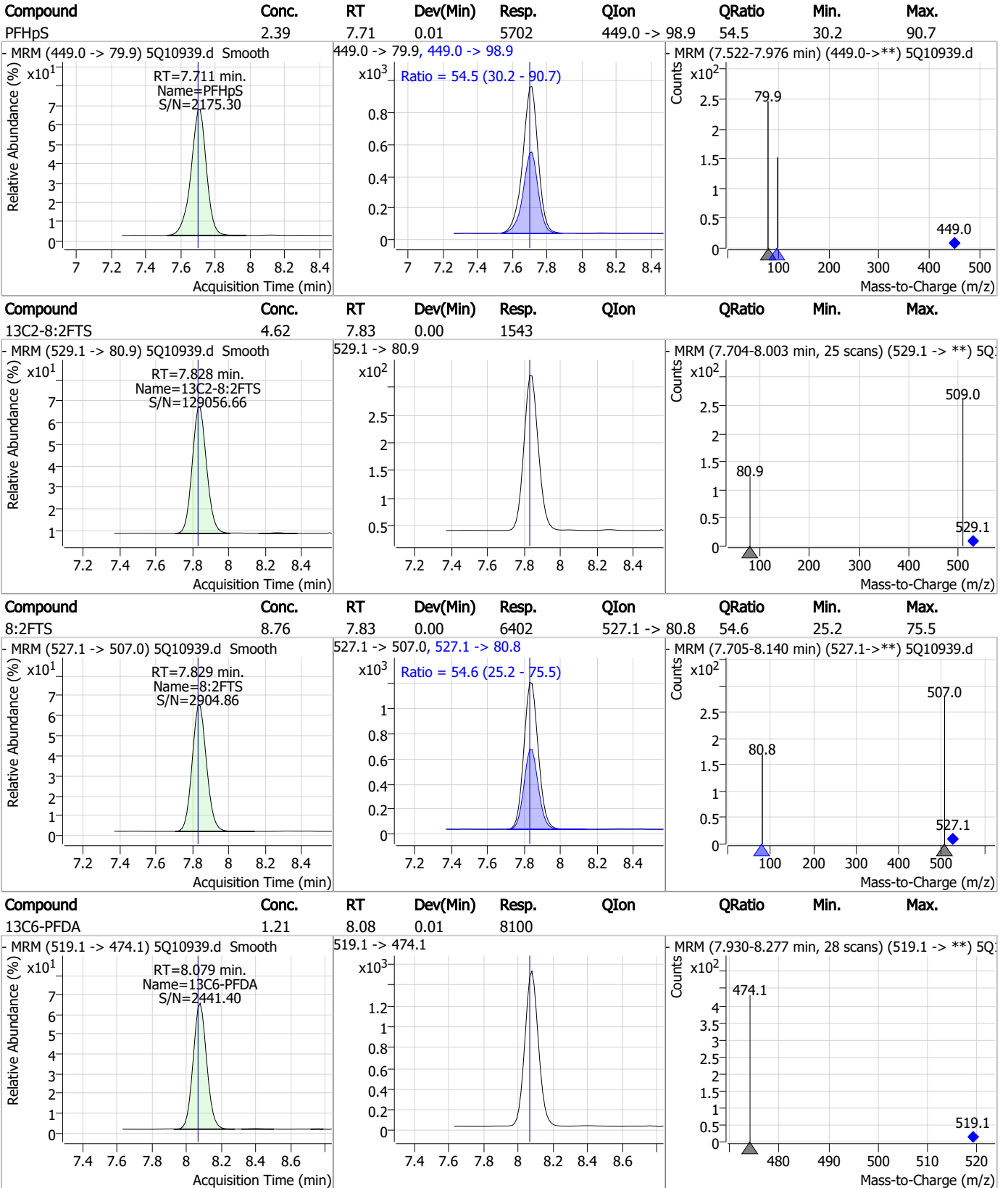
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.26	7.53	0.00	12894				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	14.20	7.40	-0.14	106156 (m)	463.0 -> 219.0	25.4	11.8	35.4

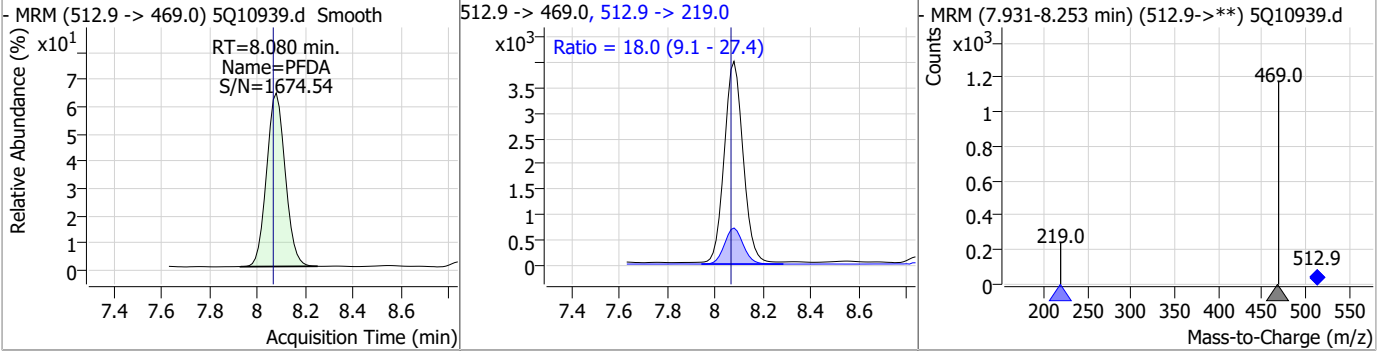


Perfluorinated Compounds by LC/MS/MS

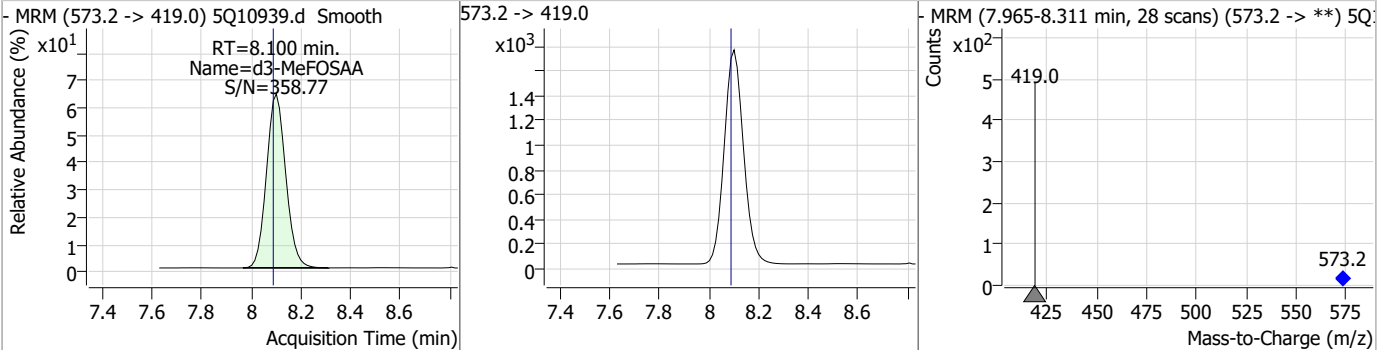


Perfluorinated Compounds by LC/MS/MS

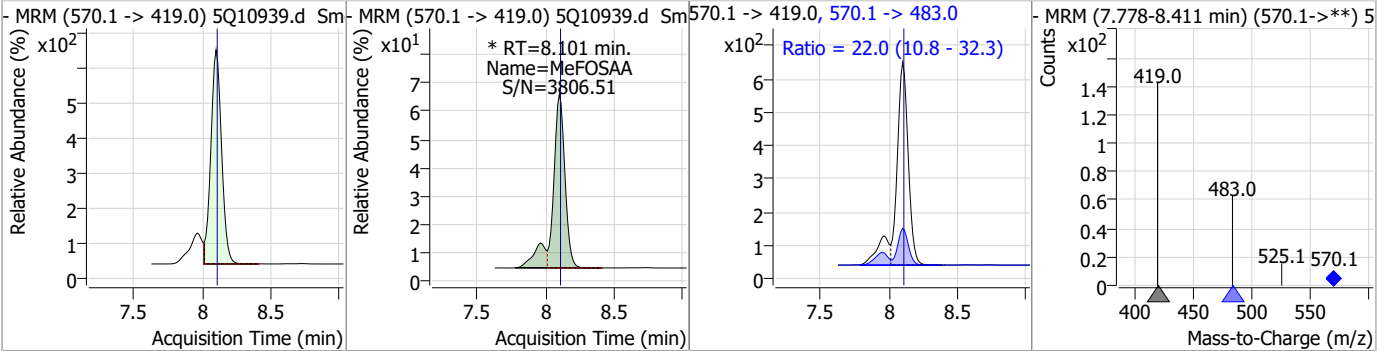
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.50	8.08	0.01	21228	512.9 -> 219.0	18.0	9.1	27.4



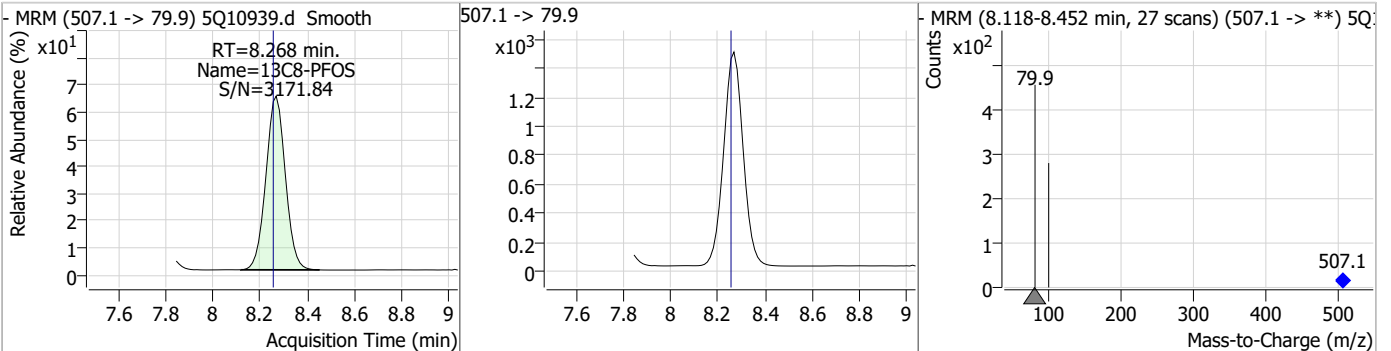
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.00	8.10	0.01	9334				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.46	8.10	0.00	3892 (m)	570.1 -> 483.0	22.0	10.8	32.3

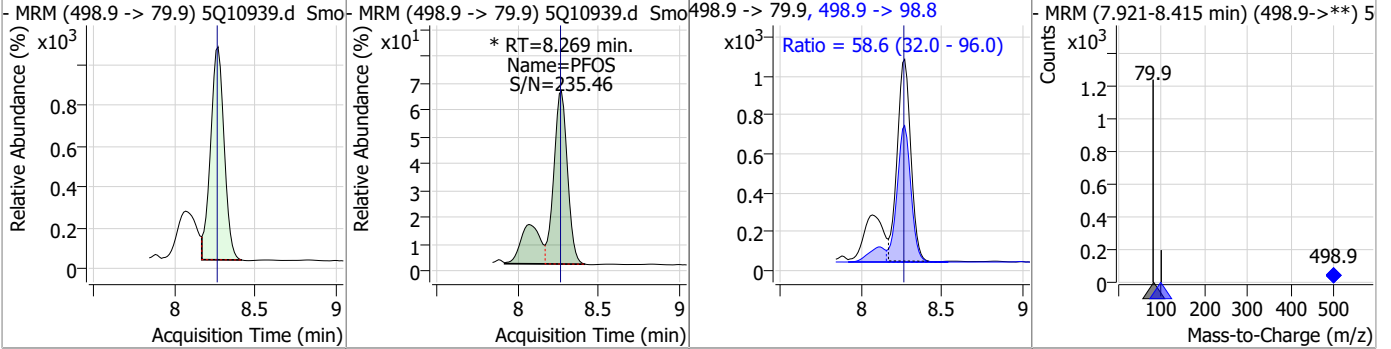


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.53	8.27	0.01	8396				

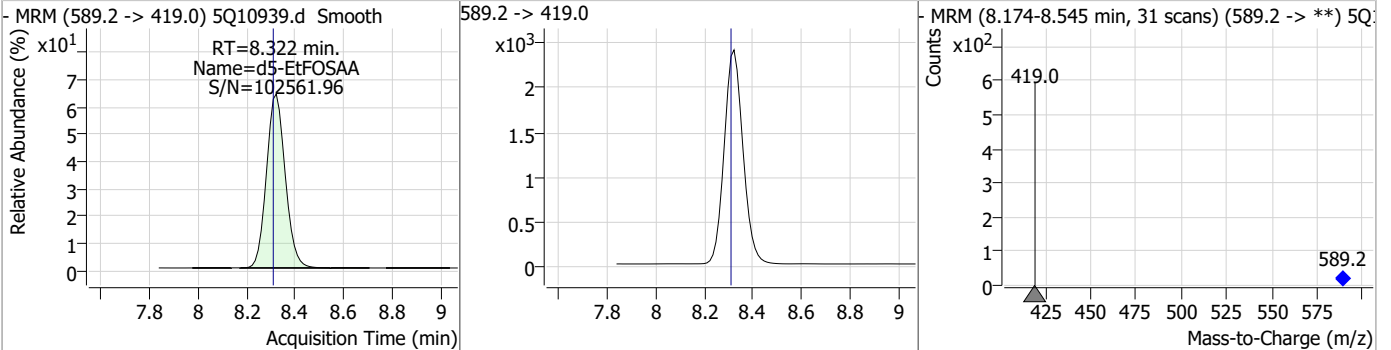


Perfluorinated Compounds by LC/MS/MS

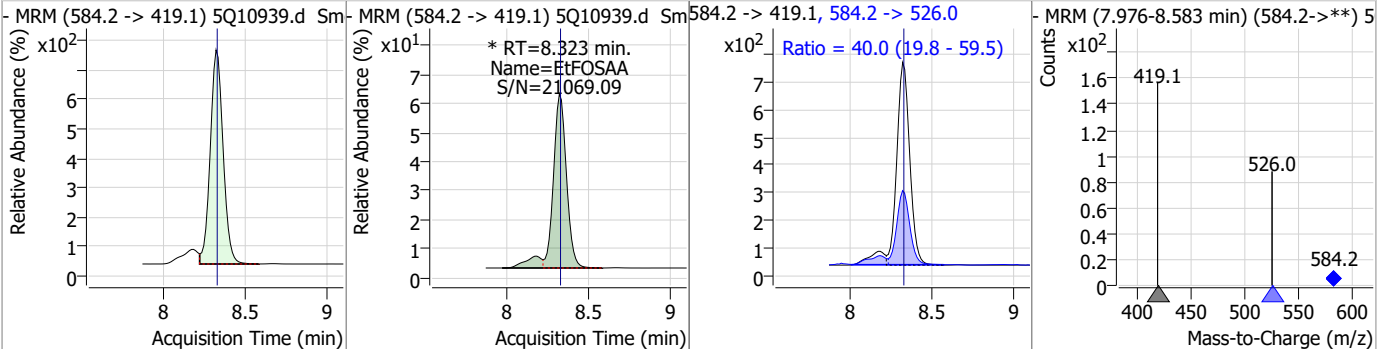
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.36	8.27	0.01	8009 (m)	498.9 -> 98.8	58.6	32.0	96.0



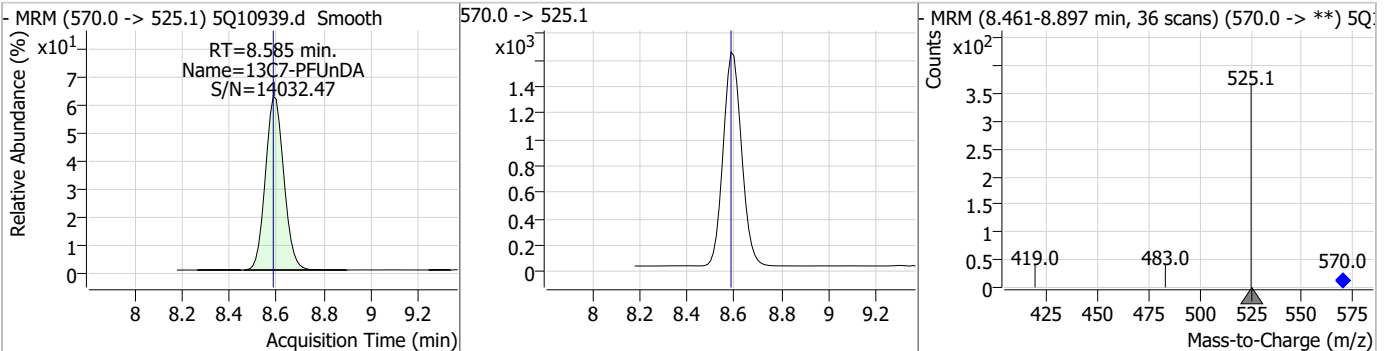
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.61	8.32	0.01	12737				



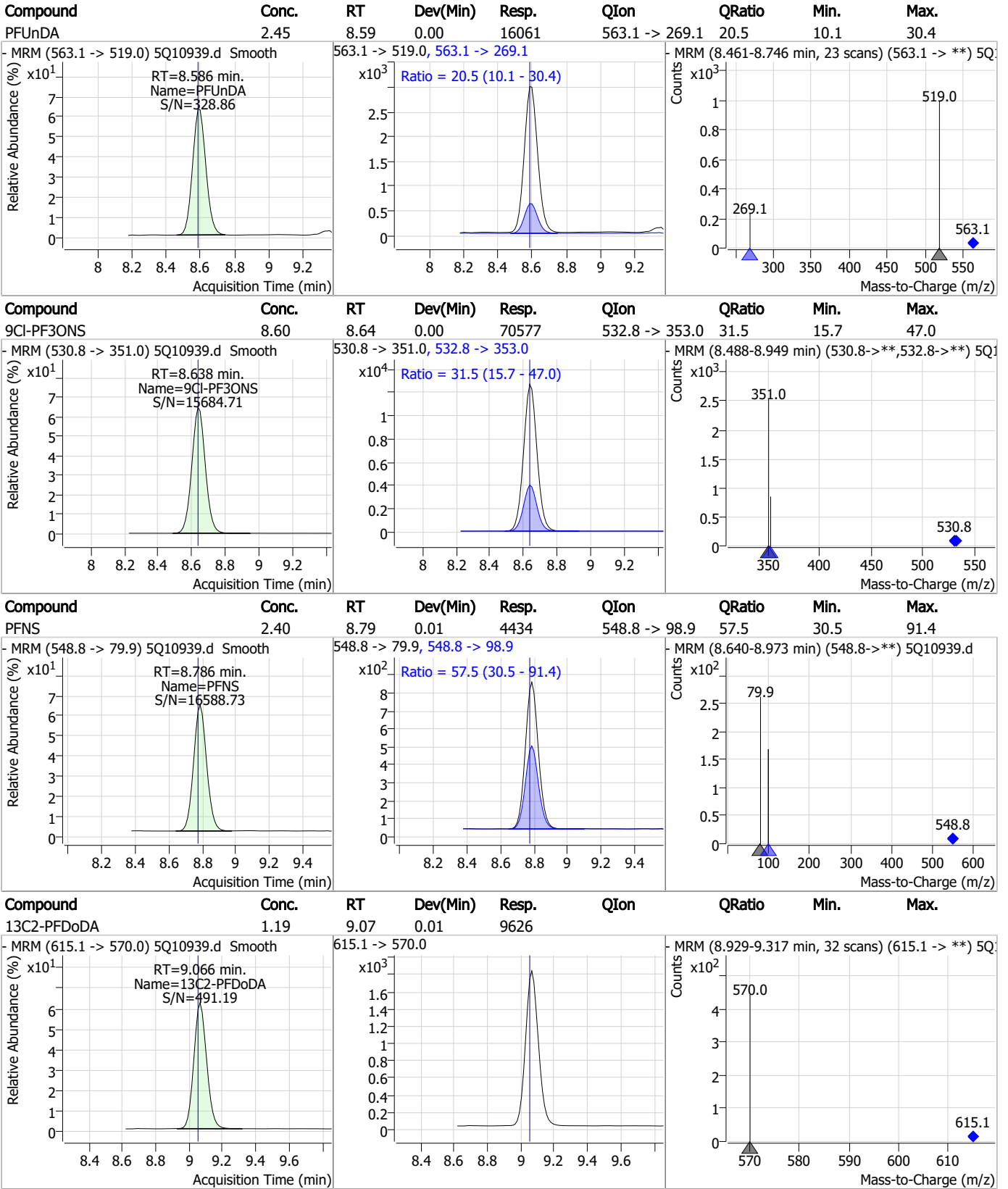
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.56	8.32	0.00	4276 (m)	584.2 -> 526.0	40.0	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.20	8.59	0.00	8775				

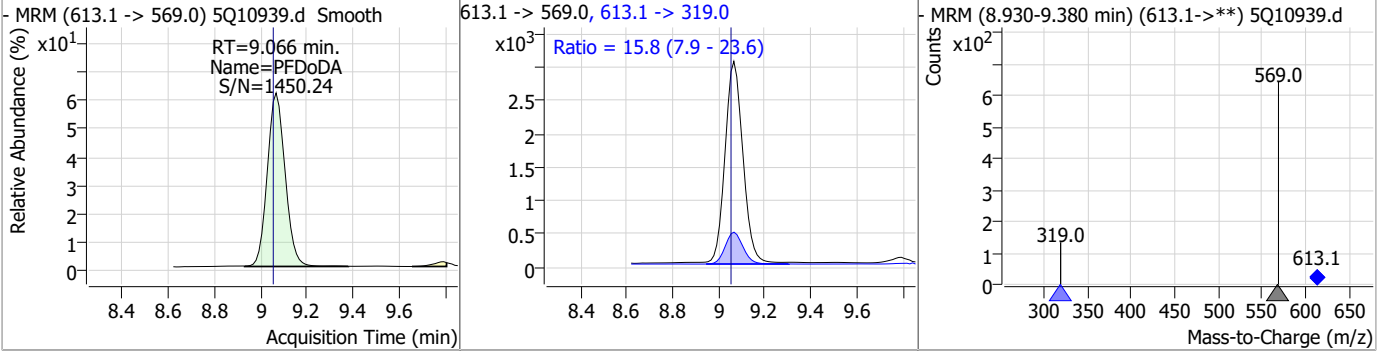


Perfluorinated Compounds by LC/MS/MS

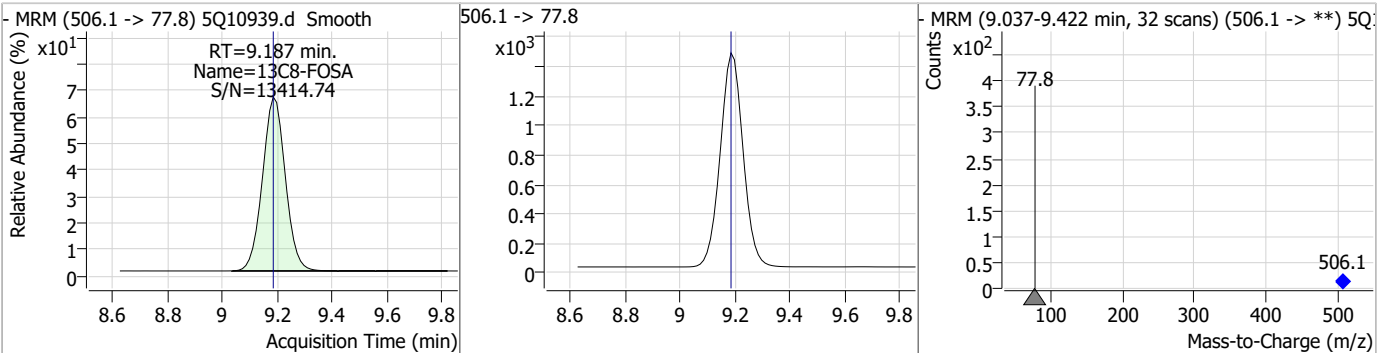


Perfluorinated Compounds by LC/MS/MS

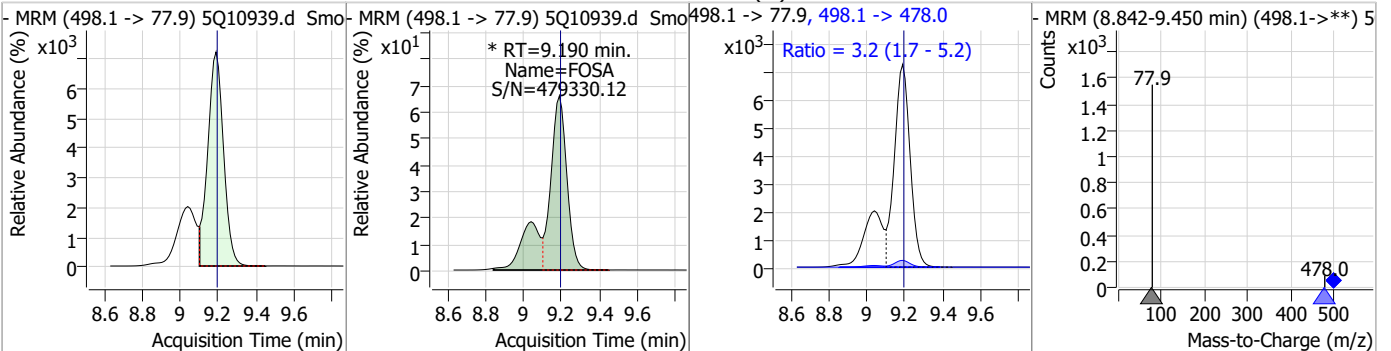
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDA	2.50	9.07	0.01	16310	613.1 -> 319.0	15.8	7.9	23.6



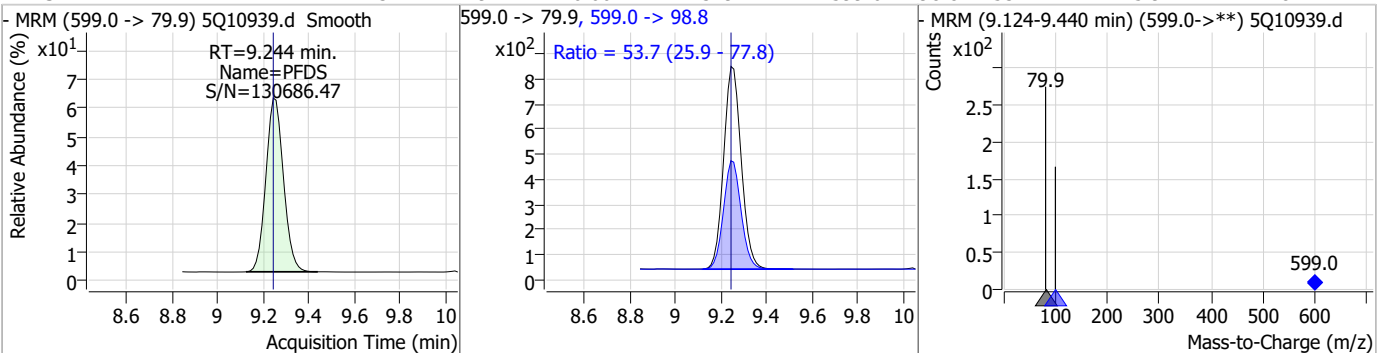
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.53	9.19	0.00	8377				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	18.34	9.19	0.00	56119 (m)	498.1 -> 478.0	3.2	1.7	5.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.34	9.24	0.00	4329	599.0 -> 98.8	53.7	25.9	77.8



Perfluorinated Compounds by LC/MS/MS

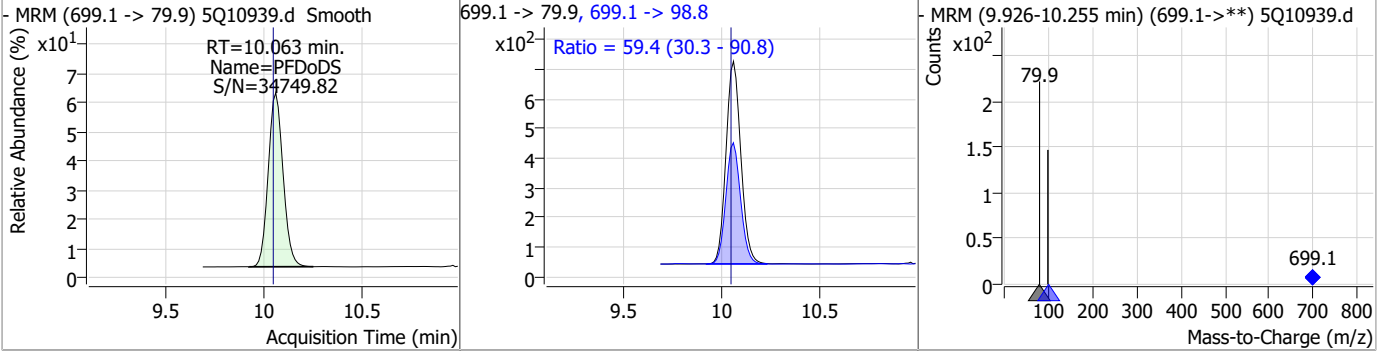
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	2.45	9.50	0.01	21049	663.0 -> 168.9	17.5	8.3	24.9
11Cl-PF3OUdS	8.83	9.55	0.00	67740	632.9 -> 452.9	30.8	15.4	46.2
13C2-PFTeDA	1.27	9.90	0.00	9611	715.2 -> 670.0			
PFTeDA	2.32	9.90	0.00	17121	713.1 -> 168.9	13.2	7.1	21.2

7.6.2
7

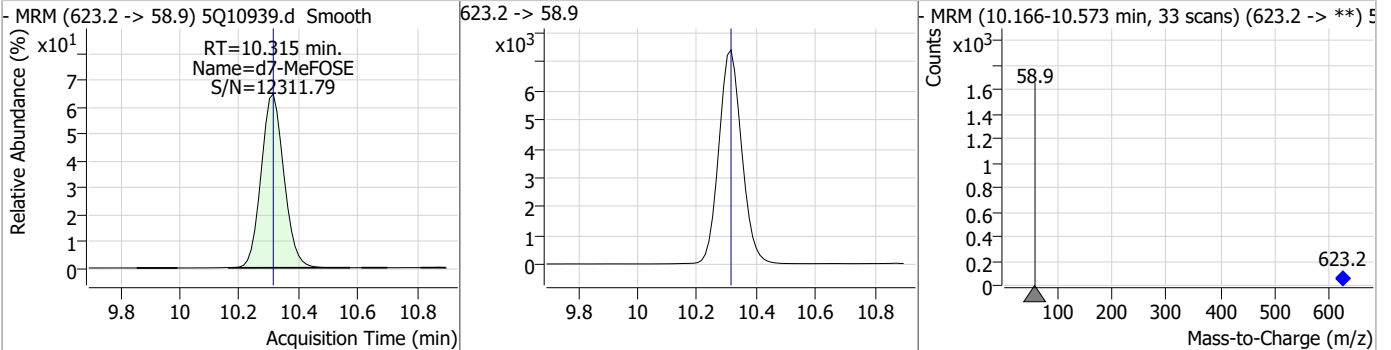


Perfluorinated Compounds by LC/MS/MS

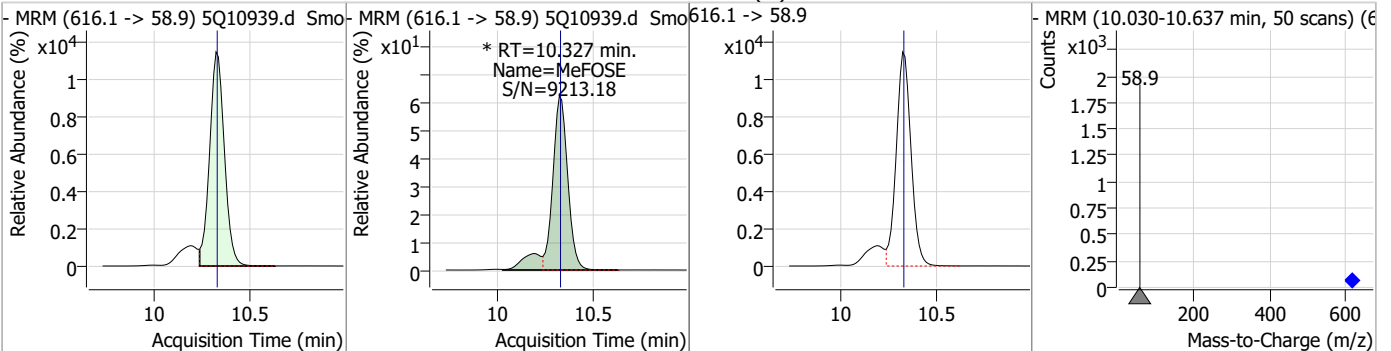
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.48	10.06	0.01	3615	699.1 -> 98.8	59.4	30.3	90.8



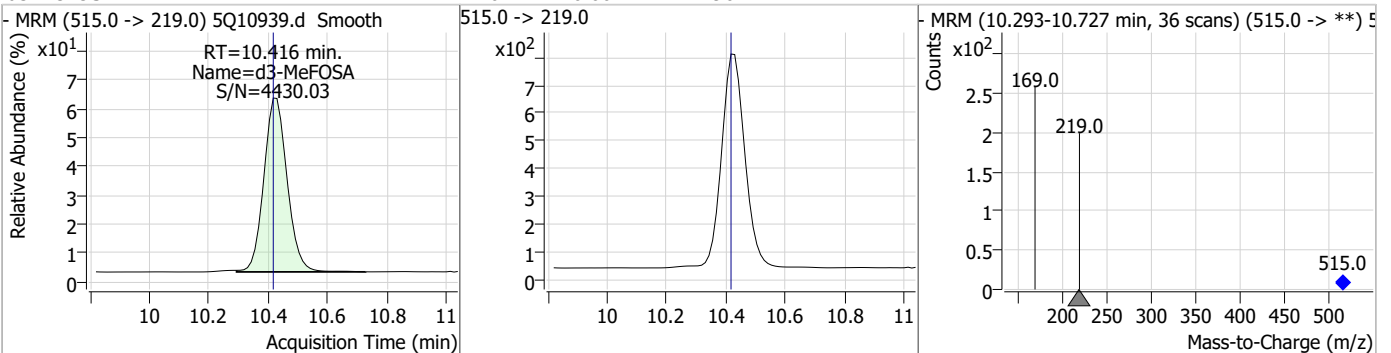
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.26	10.31	0.00	39160				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	41.46	10.33	0.00	69345 (m)				

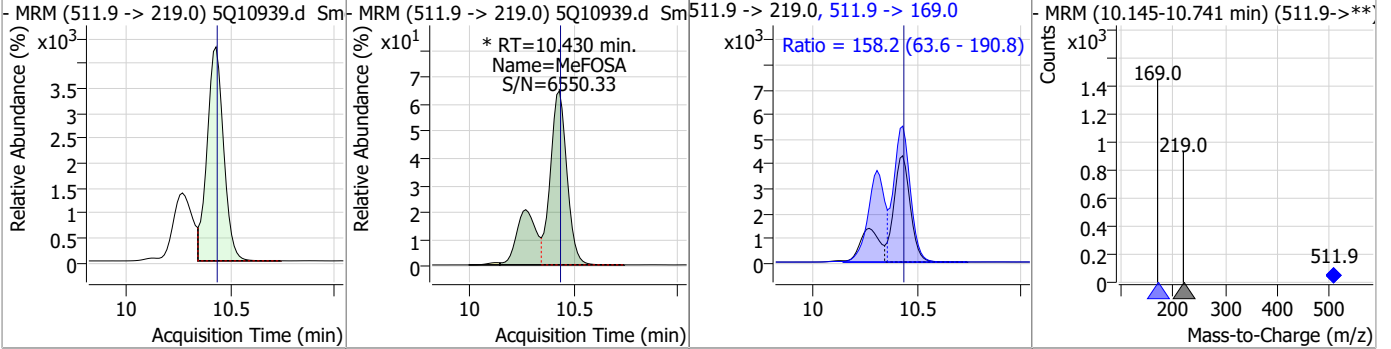


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.47	10.42	0.00	4196				

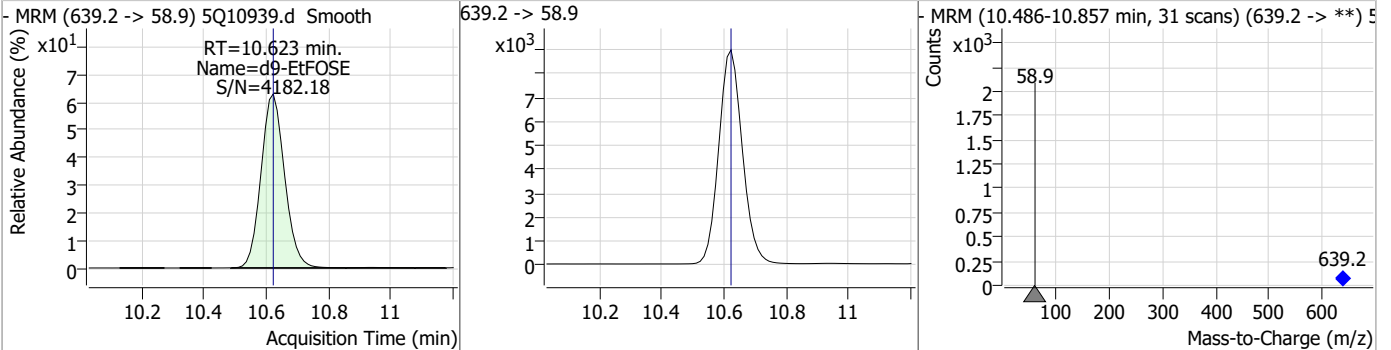


Perfluorinated Compounds by LC/MS/MS

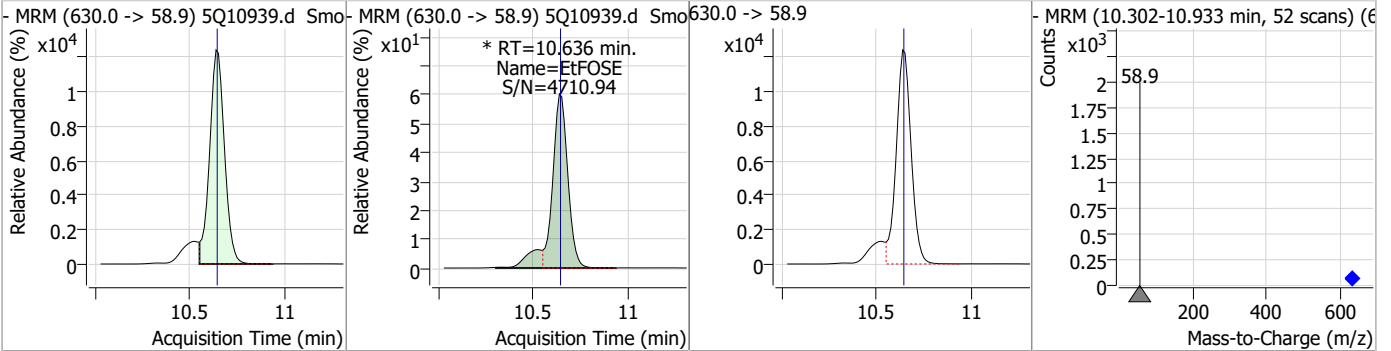
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	19.53	10.43	0.00	32341 (m)	511.9 -> 169.0	158.2	63.6	190.8



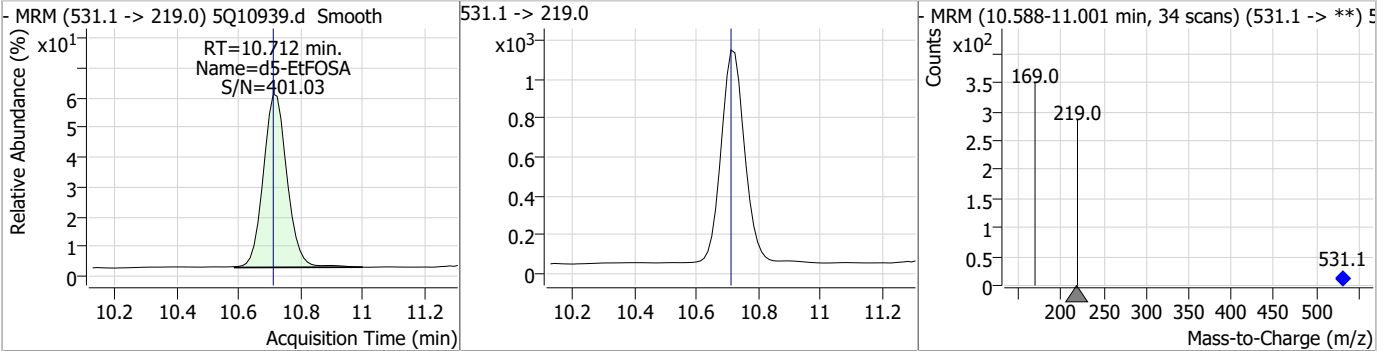
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.88	10.62	0.00	47283				



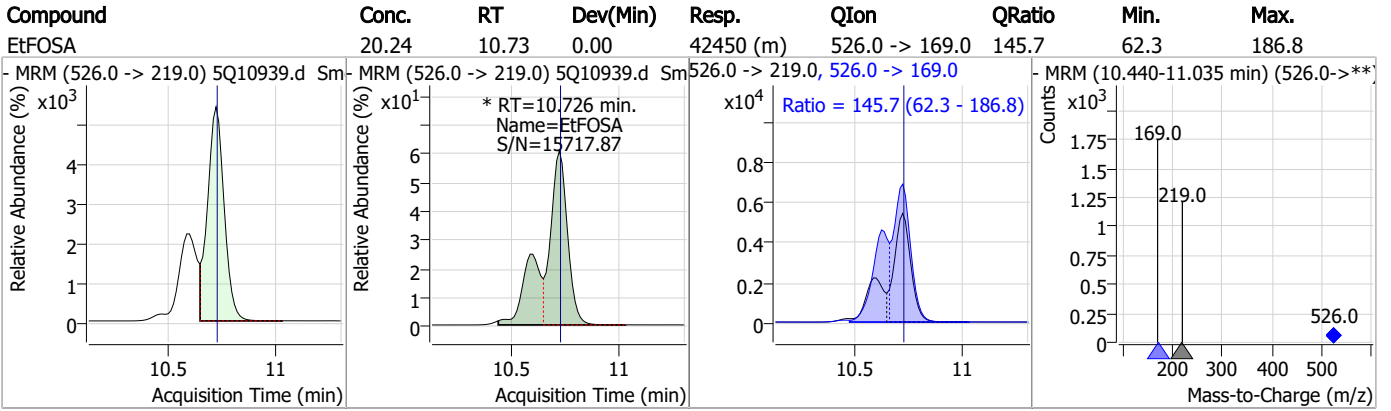
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	42.92	10.64	0.00	75395 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	10.71	0.00	5816				



Perfluorinated Compounds by LC/MS/MS



7.6.2

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Manual Integration Approval Summary

Sample Number: S5Q169-RT **Method:** EPA DRAFT 1633
Lab FileID: 5Q10939.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 20:03 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.62	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.16	Poor instrument integration
PFMBA	863090-89-5		4.57	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorooctanoic acid	335-67-1		6.96	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
Perfluorononanoic acid	375-95-1		7.40	Split peak
MeFOSAA	2355-31-9		8.10	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.27	Split peak
EtFOSAA	2991-50-6		8.32	Split peak
PFOSA	754-91-6		9.19	Split peak
MeFOSE	24448-09-7		10.33	Split peak
MeFOSA	31506-32-8		10.43	Split peak
EtFOSE	1691-99-2		10.64	Split peak
EtFOSA	4151-50-2		10.73	Split peak

7.6.2.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/21/23 10:33

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11020.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 3:04:51 PM
 Sample Name : RT TDCA
 Vial : P3-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s6q170_TDCA.batch.bin
 Sample Information : OP95462,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.218	507.1 -> 79.9	10862	2.50	µg/L	-0.050	
13C4-PFOS	8.219	502.8 -> 79.9	11248	2.50	µg/L	-0.050	
System Monitoring Compounds							
13C8-PFOS	8.219	502.8 -> 79.9	11248	4.84	µg/L	-0.050	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 193.7%				
Target Compounds							
PFOS	8.219	498.9 -> 79.9 498.9 -> 98.8	10368 5682	1.84	µg/L	m	93
TCDCa	6.449	498.9 -> 79.9	1897	0.34	ng/ml		100
TDCA	6.611	498.9 -> 79.9	2590	0.46	ng/ml		100
TUDCA	5.580	498.9 -> 79.9	2694	0.48	ng/ml		100

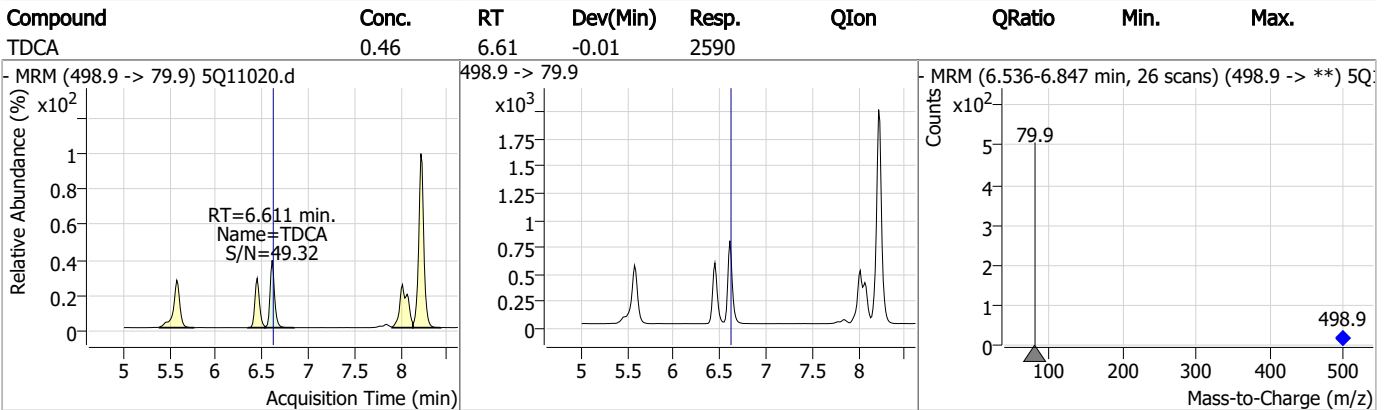
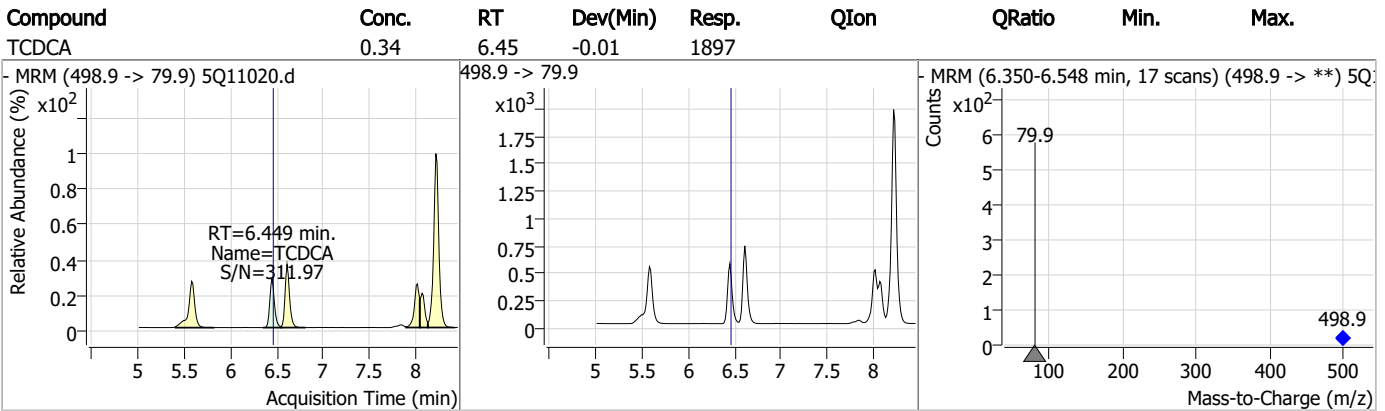
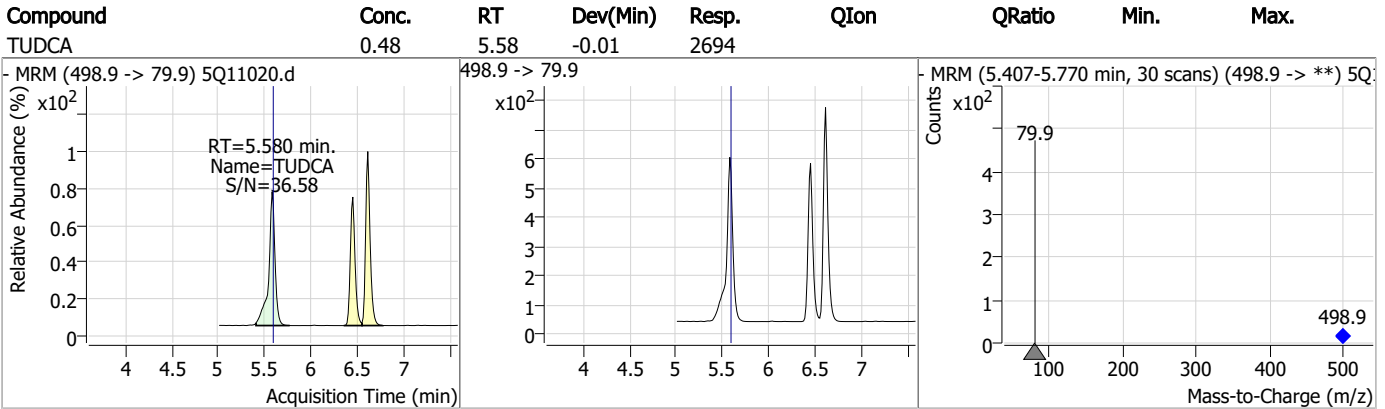
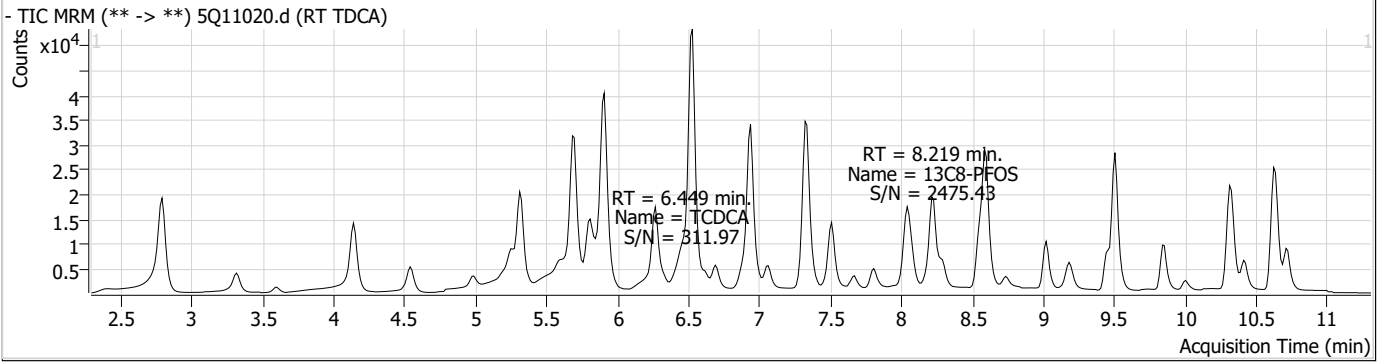
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.3

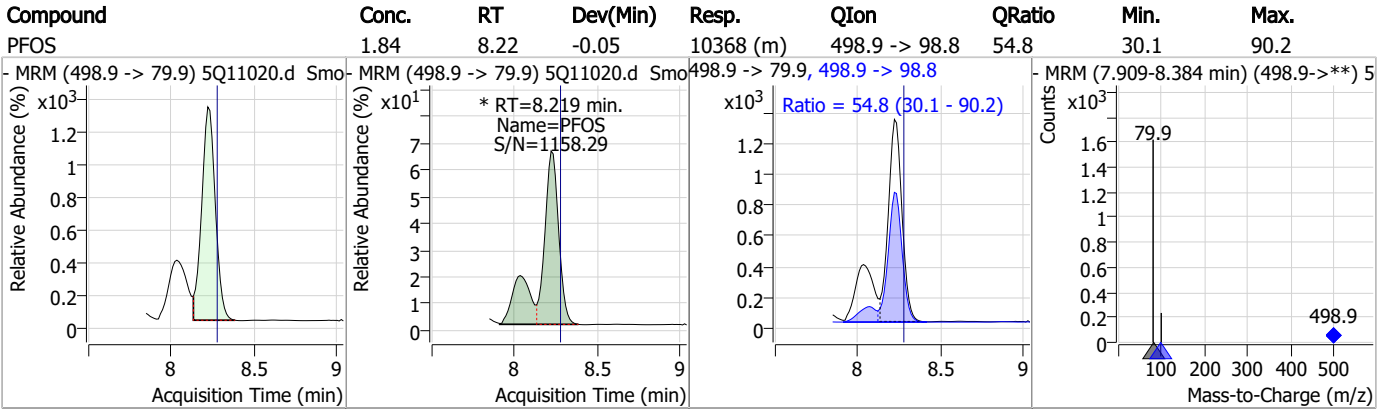
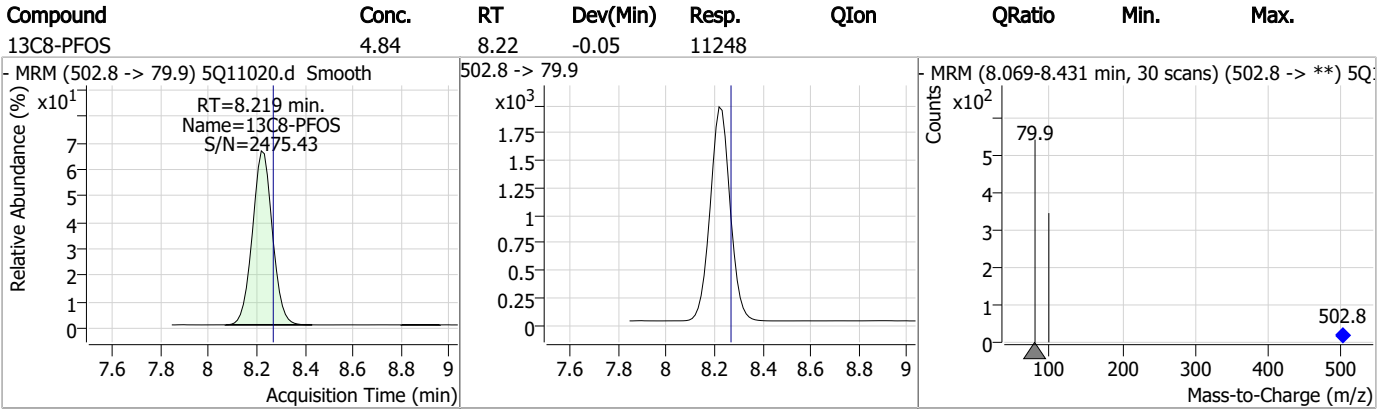
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.3
7



Manual Integration Approval Summary

Sample Number: S5Q170-RT Method: EPA DRAFT 1633
Lab FileID: 5Q11020.D Analyst approved: 02/20/23 14:34 Lindsay Ritner
Injection Time: 02/17/23 15:04 Supervisor approved: 02/21/23 10:33 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak

7.6.3.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11021.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 3:18:57 PM
 Sample Name : RT Br-Ln
 Vial : P3-B2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95462,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	46111	10.00	µg/L m	-0.012
M5-PFPeA	4.137	268.3 -> 223.0	28146	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	31547	2.50	µg/L	-0.025
M4-PFHpA	6.268	367.1 -> 322.0	30769	2.50	µg/L	-0.012
M8-PFOA	6.937	421.1 -> 376.0	36422	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	13269	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	7940	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	8863	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	10169	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	9447	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	8172	2.50	µg/L	0.000
M3-PFBS	5.252	302.1 -> 79.9	7749	2.50	µg/L m	-0.025
M3-PFHxS	7.066	402.1 -> 79.9	6577	2.50	µg/L	-0.025
M8-PFOS	8.218	507.1 -> 79.9	8811	2.50	µg/L	-0.038
M2-4:2FTS	4.972	329.1 -> 80.9	446	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	964	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1508	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	9824	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	72565	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	11586	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	38804	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	47155	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5592	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4213	2.50	µg/L	0.000
13C4-PFOS	8.219	502.8 -> 79.9	8545	2.50	µg/L	-0.037
13C3-PFBA	2.791	216.0 -> 172.0	23787	5.00	µg/L m	-0.013
18O2-PFHxS	7.065	403.0 -> 83.9	4690	2.50	µg/L	-0.026
13C4-PFOA	6.938	417.1 -> 372.0	43625	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	12909	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	13175	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	36242	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	446	3.91	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 78.2%			
13C2-6:2FTS	6.687	429.1 -> 80.9	964	3.79	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 75.8%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1508	4.23	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.7%			
13C2-PFDoDA	9.016	615.1 -> 570.0	10169	1.26	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%			
13C2-PFTeDA	9.849	715.2 -> 670.0	9447	1.25	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%			
13C3-PFBS	5.252	302.1 -> 79.9	7749	2.15	µg/L m	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.9%			
13C3-PFHxS	7.066	402.1 -> 79.9	6577	2.45	µg/L	-0.025

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 = 98.1%		
13C4-PFBA	2.786	216.8 -> 171.9	46111	10.28	µg/L	m -0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
13C4-PFHpA	6.268	367.1 -> 322.0	30769	2.55	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C5-PFHxA	5.310	318.0 -> 273.0	31547	2.48	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%		
13C5-PFPeA	4.137	268.3 -> 223.0	28146	4.27	µg/L	m -0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 85.4%		
13C6-PFDA	8.042	519.1 -> 474.1	7940	1.19	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%		
13C7-PFUnDA	8.548	570.0 -> 525.1	8863	1.22	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.3%		
13C8-FOSA	9.187	506.1 -> 77.8	8172	2.44	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%		
13C8-PFOA	6.937	421.1 -> 376.0	36422	2.48	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C8-PFOS	8.218	507.1 -> 79.9	8811	2.62	µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C9-PFNA	7.507	472.1 -> 427.0	13269	1.23	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%		
d3-MeFOSAA	8.063	573.2 -> 419.0	9824	5.19	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%		
13C3-HFPO-DA	5.690	286.9 -> 168.9	72565	10.79	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.9%		
d3-MeFOSA	10.416	515.0 -> 219.0	4213	2.45	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%		
d5-EtFOSAA	8.285	589.2 -> 419.0	11586	4.14	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 82.8%		
d7-MeFOSE	10.315	623.2 -> 58.9	38804	24.68	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.7%		
d9-EtFOSE	10.623	639.2 -> 58.9	47155	24.47	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.9%		
d5-EtFOSA	10.712	531.1 -> 219.0	5592	2.36	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.2%		
Target Compounds						QValue
4:2FTS	4.972	327.1 -> 307.0	5341	9.51	µg/L	100
		327.1 -> 80.9	2934			
6:2FTS	6.687	427.1 -> 407.0	8224	10.21	µg/L	97
		427.1 -> 80.9	3284			
8:2FTS	7.804	527.1 -> 507.0	5825	8.15	µg/L	100
		527.1 -> 80.8	2949			
EtFOSAA	8.298	584.2 -> 419.1	4090	2.70	µg/L	m 96
		584.2 -> 526.0	1732			
FOSA	9.177	498.1 -> 77.9	56264	18.84	µg/L	m 99
		498.1 -> 478.0	1700			
MeFOSAA	8.064	570.1 -> 419.0	4033	2.43	µg/L	m 96
		570.1 -> 483.0	788			
PFBA	2.782	212.8 -> 168.9	18882	10.34	µg/L	m 100
PFBS	5.253	298.7 -> 79.9	5876	2.31	µg/L	m 98
		298.7 -> 98.8	2536			
PFDA	8.042	512.9 -> 469.0	21715	2.61	µg/L	96
		512.9 -> 219.0	3625			
PFDODA	9.017	613.1 -> 569.0	16596	2.40	µg/L	99
		613.1 -> 319.0	2717			
PFDS	9.195	599.0 -> 79.9	4375	2.25	µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2387			
PFHpA	6.268	363.1 -> 319.0	33545	2.58	µg/L	99
		363.1 -> 169.0	7491			
PFHpS	7.673	449.0 -> 79.9	5603	2.24	µg/L	95
		449.0 -> 98.9	3174			
PFHxA	5.312	313.0 -> 269.0	24144	2.61	µg/L	100
		313.0 -> 118.9	1118			
PFHxS	7.067	398.7 -> 79.9	4588	2.07	µg/L	m 89
		398.7 -> 98.9	2906			
PFNA	7.358	463.0 -> 419.0	103792	13.49	µg/L	m 98
		463.0 -> 219.0	25657			
PFNS	8.736	548.8 -> 79.9	4607	2.38	µg/L	93
		548.8 -> 98.9	2561			
PFOA	6.939	413.0 -> 369.0	228002	16.26	µg/L	m 95
		413.0 -> 169.0	57787			
PFOS	8.219	498.9 -> 79.9	8086	2.27	µg/L	m 87
		498.9 -> 98.8	4371			
PFPeA	4.139	263.0 -> 219.0	31403	5.11	µg/L	m 100
PFPeS	6.332	349.1 -> 79.9	4883	2.55	µg/L	100
		349.1 -> 98.9	2499			
PFTeDA	9.850	713.1 -> 669.0	16941	2.33	µg/L	98
		713.1 -> 168.9	2271			
PFTrDA	9.451	663.0 -> 619.0	21813	2.40	µg/L	99
		663.0 -> 168.9	3489			
PFUnDA	8.548	563.1 -> 519.0	16586	2.51	µg/L	100
		563.1 -> 269.1	3382			
11CI-PF3OUdS	9.503	630.9 -> 450.9	67543	8.46	µg/L	100
		632.9 -> 452.9	20940			
9CI-PF3ONS	8.601	530.8 -> 351.0	72754	8.52	µg/L	100
		532.8 -> 353.0	22891			
ADONA	6.517	376.9 -> 250.9	176349	8.88	µg/L	99
		376.9 -> 84.8	51966			
HFPO-DA	5.691	284.9 -> 168.9	62825	10.55	µg/L	99
		284.9 -> 184.9	5585			
3:3FTCA	3.591	241.0 -> 177.0	5653	12.46	µg/L	m 99
		241.0 -> 117.0	710			
5:3FTCA	5.906	341.0 -> 237.1	106407	55.62	µg/L	97
		341.0 -> 217.0	73821			
7:3FTCA	7.323	441.0 -> 316.9	41117	53.68	µg/L	99
		441.0 -> 336.9	88958			
EtFOSA	10.726	526.0 -> 219.0	41887	20.77	µg/L	m 78
		526.0 -> 169.0	62674			
EtFOSE	10.636	630.0 -> 58.9	71465	40.80	µg/L	m 100
MeFOSA	10.430	511.9 -> 219.0	32440	19.51	µg/L	m 74
		511.9 -> 169.0	50782			
MeFOSE	10.327	616.1 -> 58.9	66194	39.94	µg/L	m 100
PFDoDS	10.001	699.1 -> 79.9	3558	2.32	µg/L	98
		699.1 -> 98.8	2112			
NFDHA	5.193	295.0 -> 201.0	3742	5.13	µg/L	99
		295.0 -> 84.9	978			
PFMBA	4.541	279.0 -> 85.1	22718	5.01	µg/L	m 100
PFMPA	3.315	229.0 -> 84.9	17290	5.19	µg/L	m 100
PFEESA	5.796	314.8 -> 134.9	47509	4.88	µg/L	99
		314.8 -> 82.9	1259			

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

7.6.4
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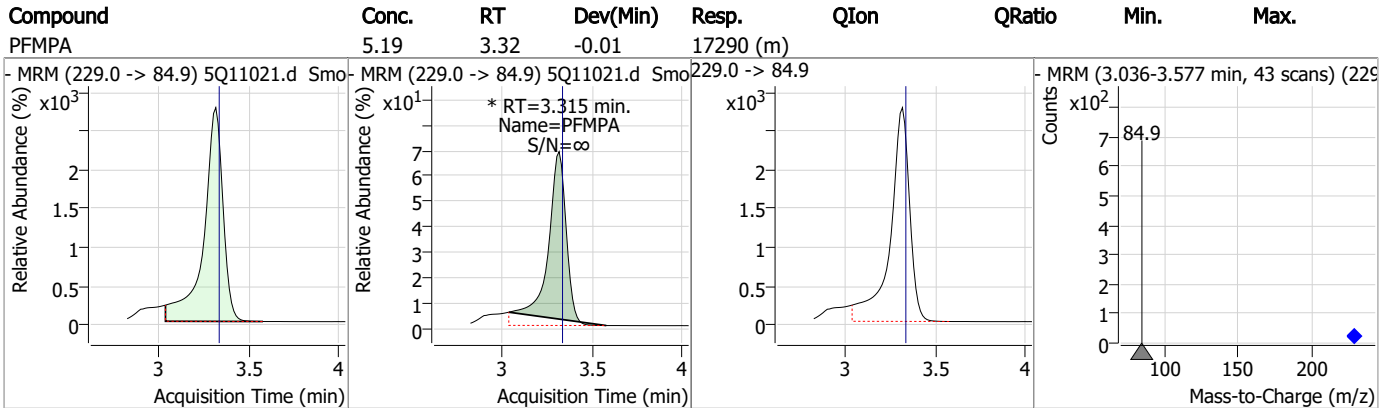
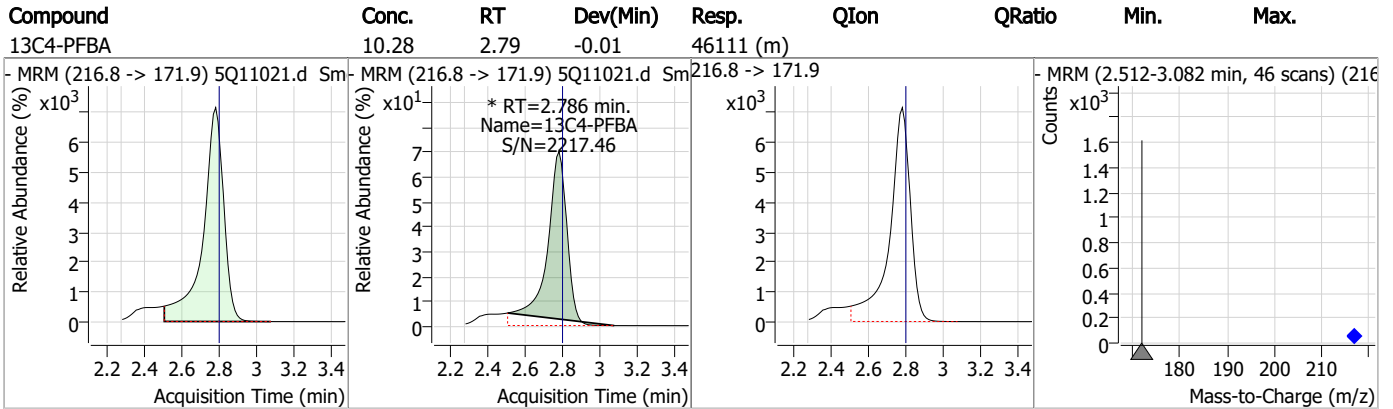
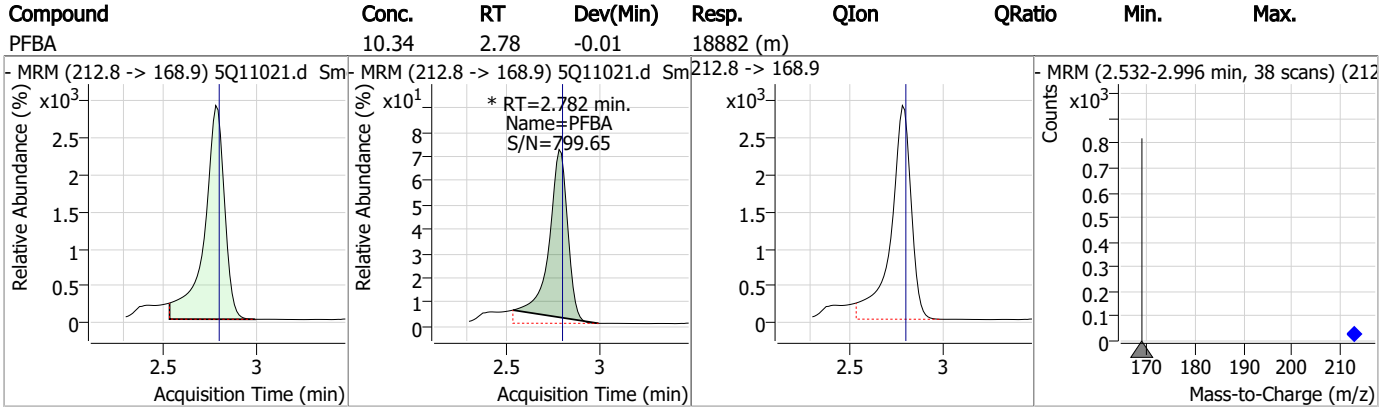
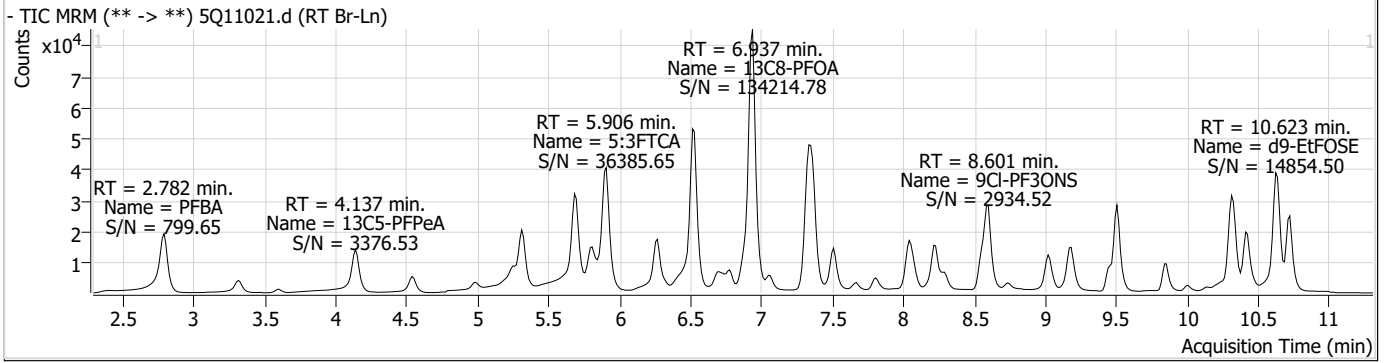
Perfluorinated Compounds by LC/MS/MS

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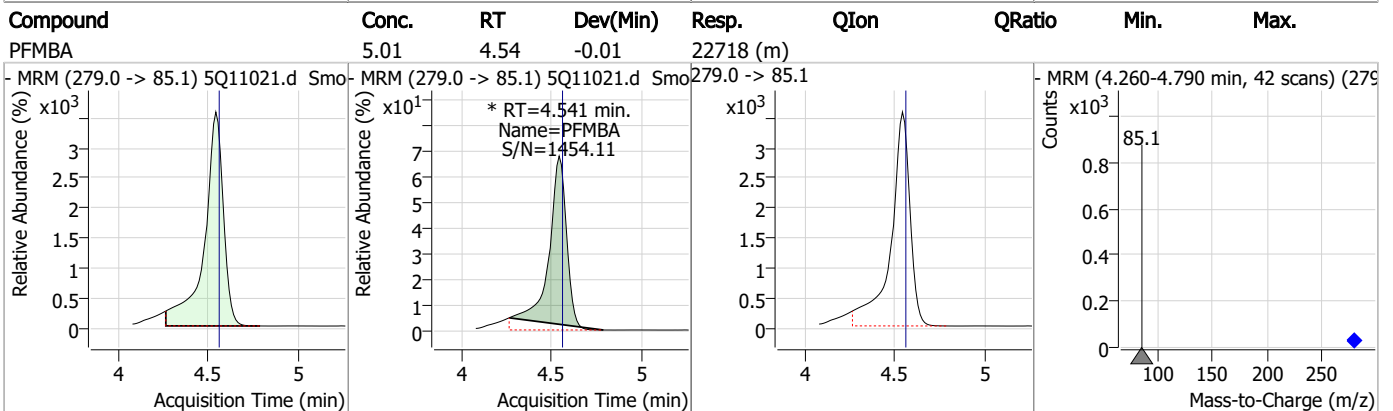
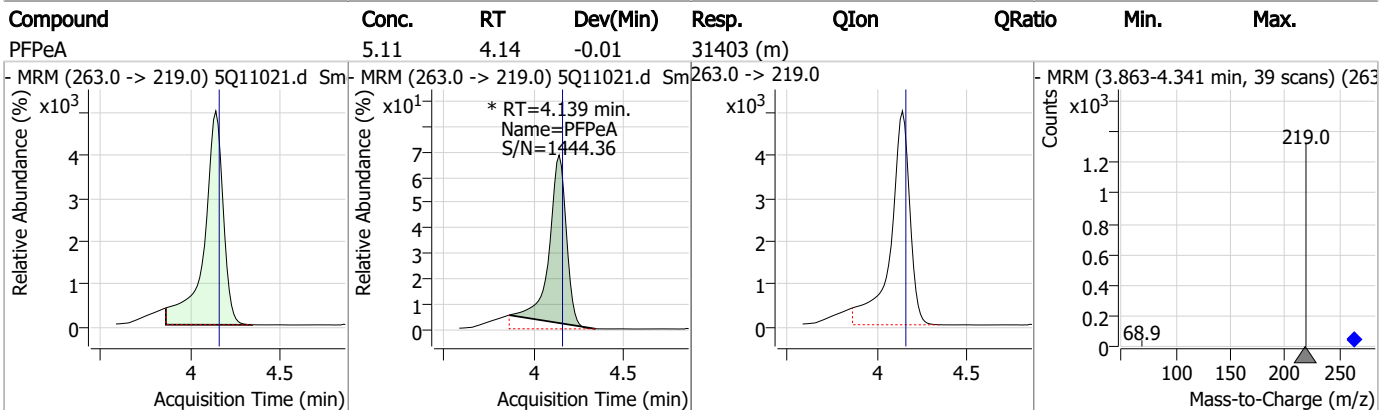
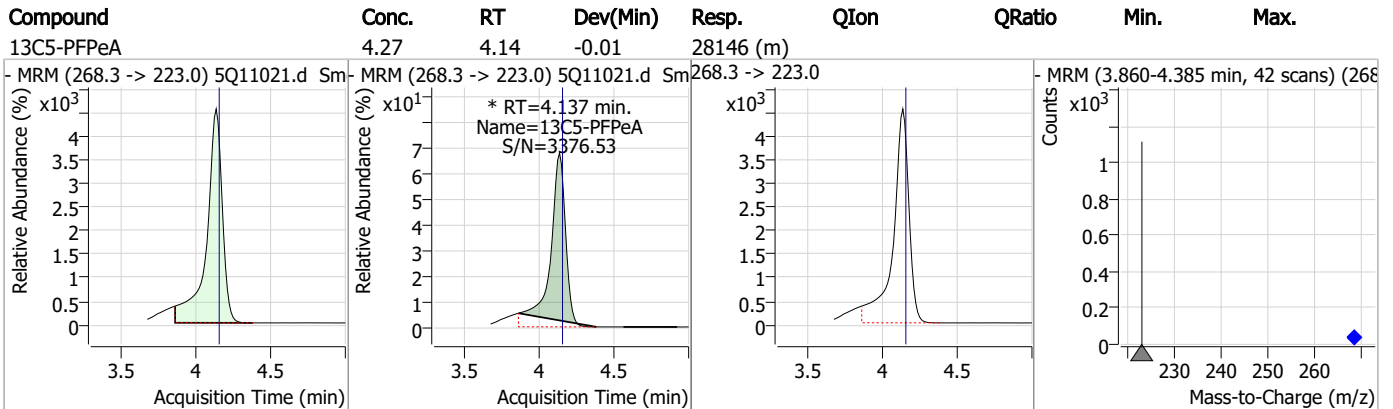
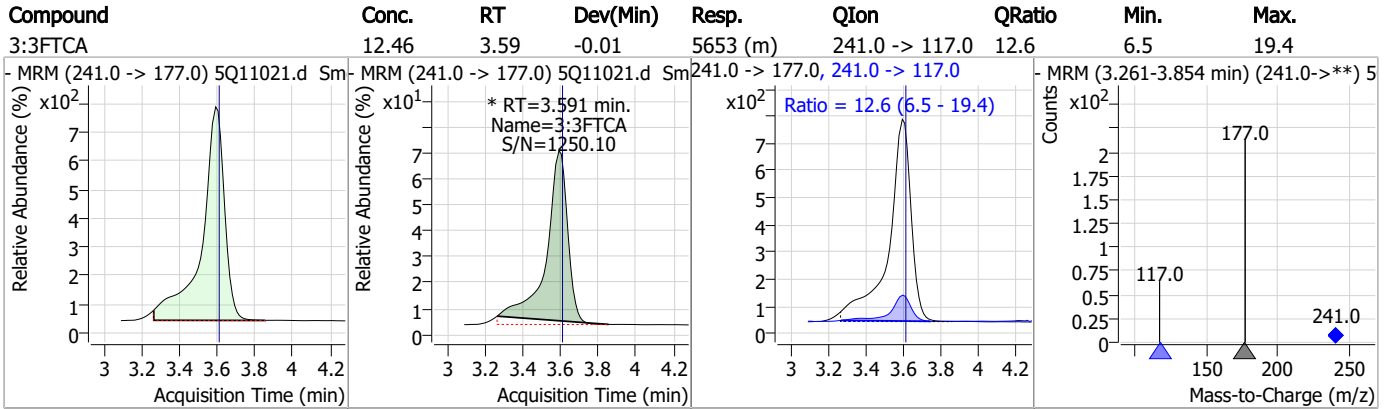
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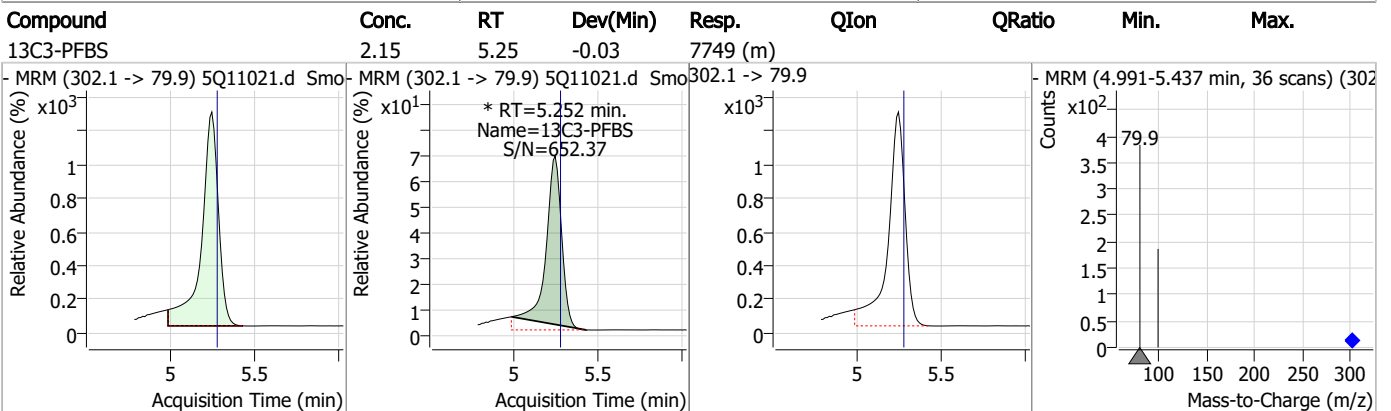
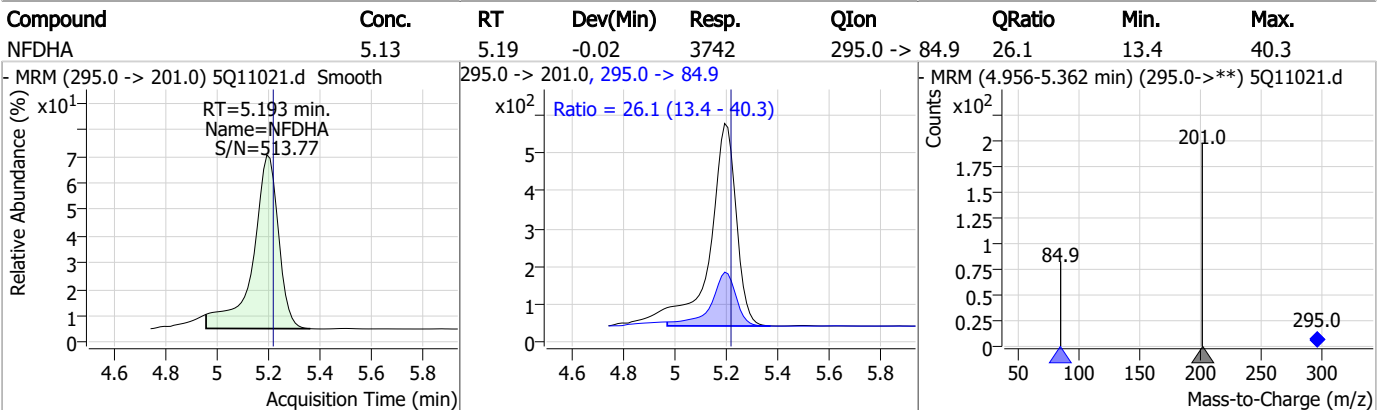
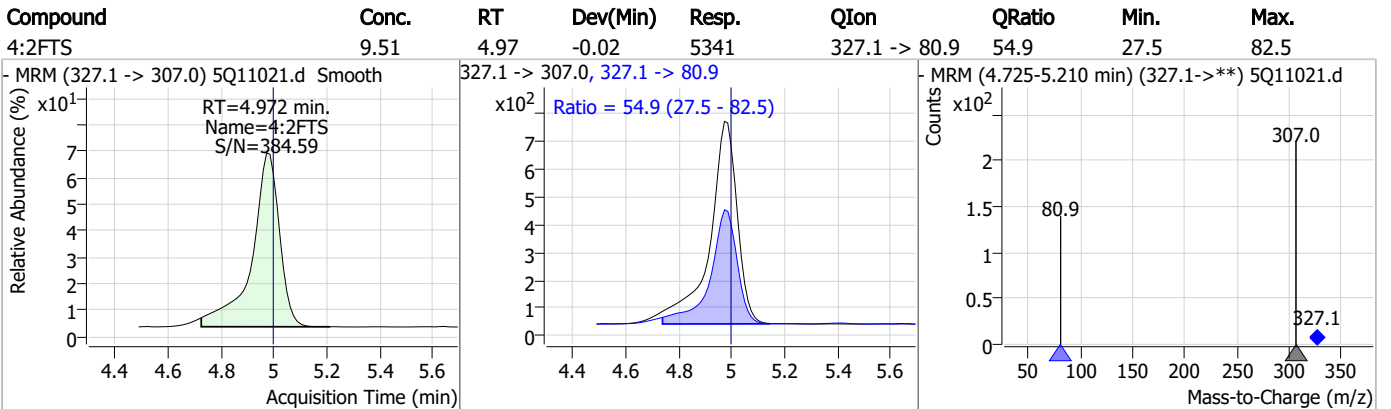
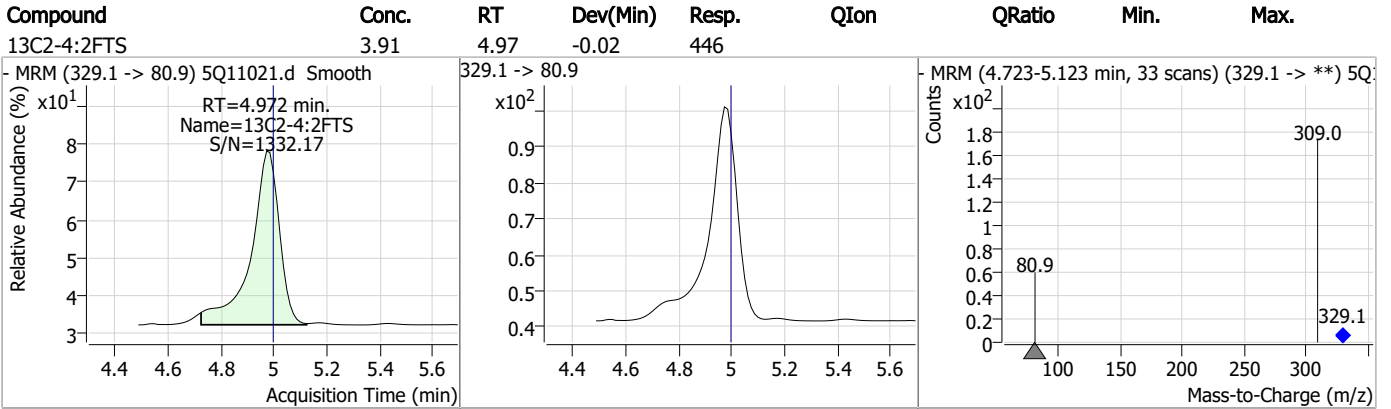
Perfluorinated Compounds by LC/MS/MS



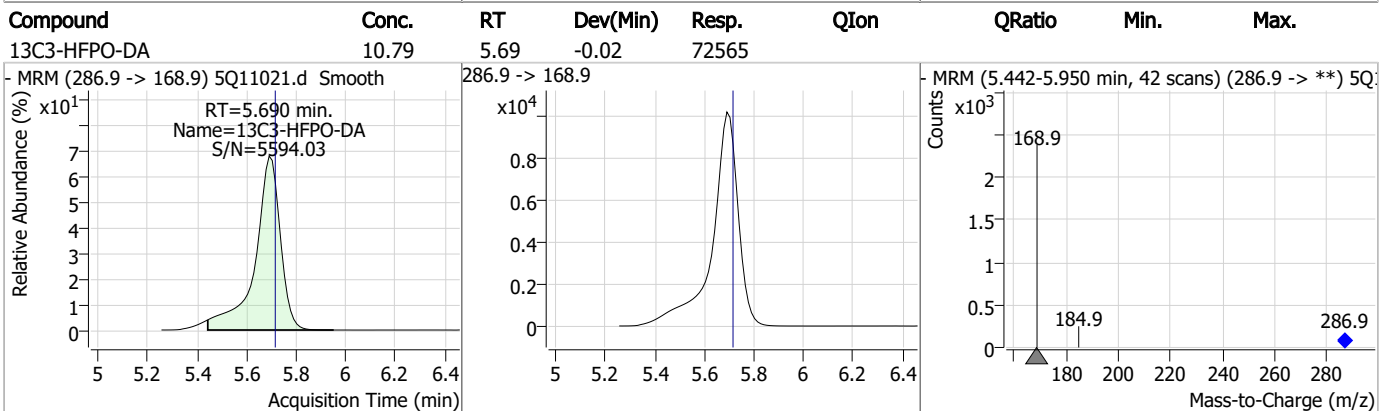
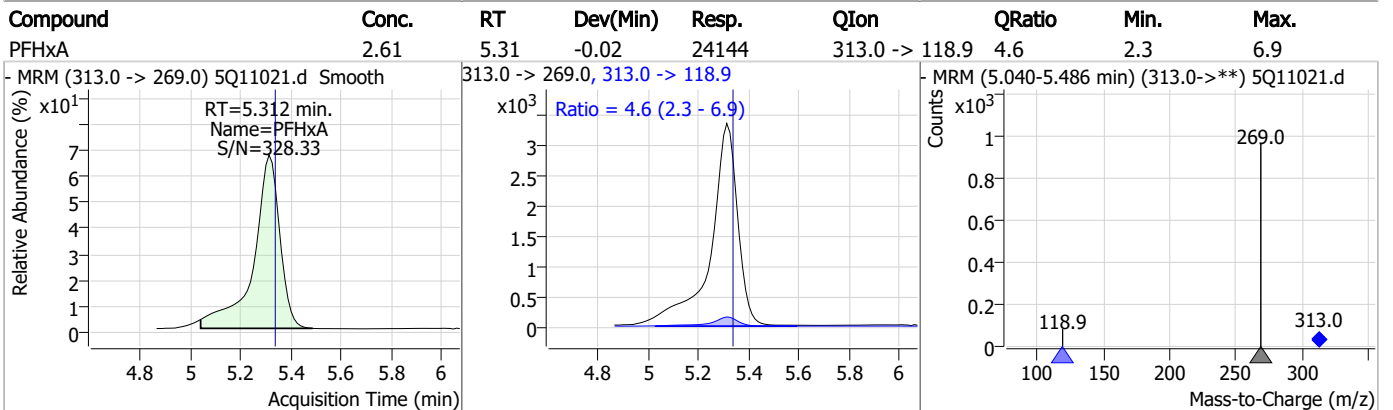
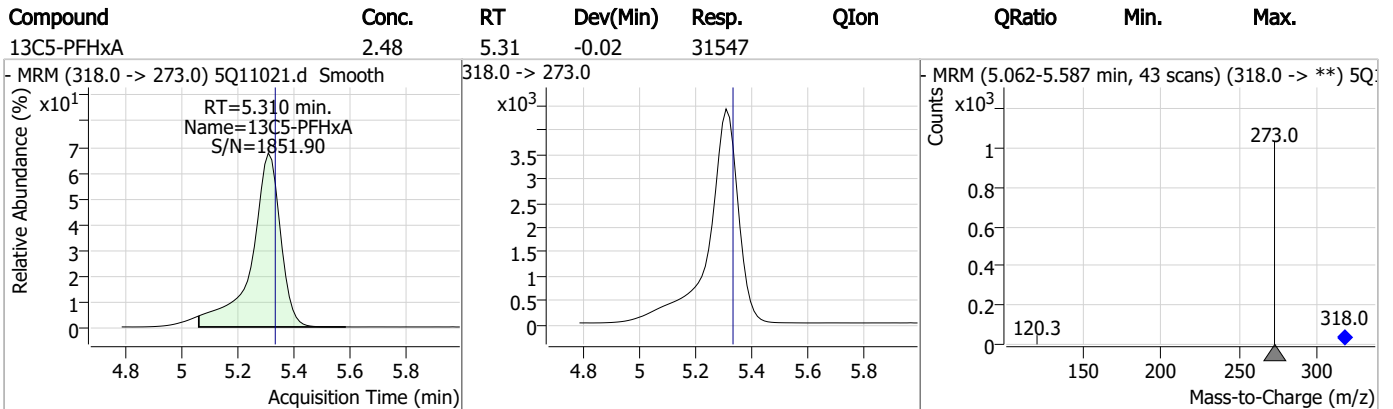
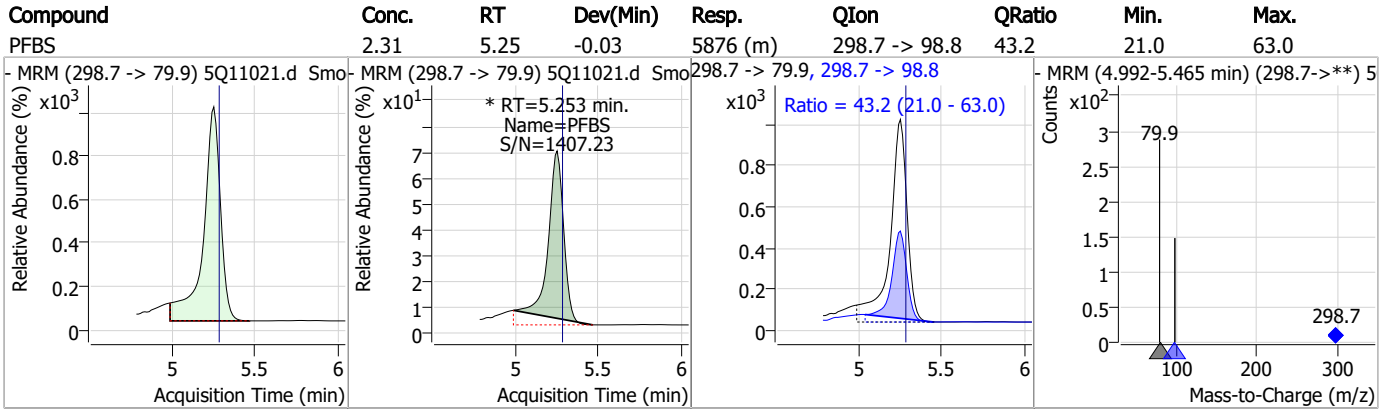
Perfluorinated Compounds by LC/MS/MS



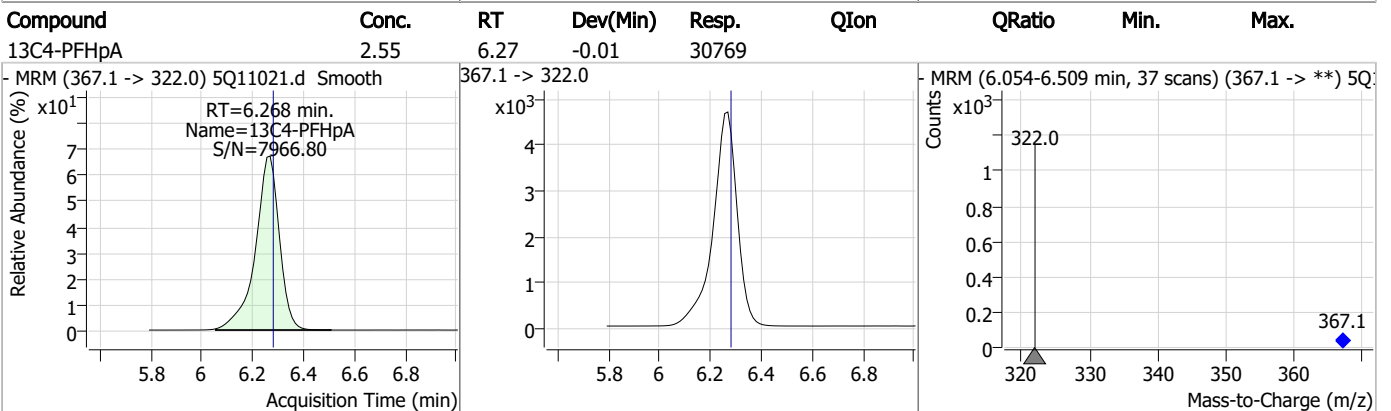
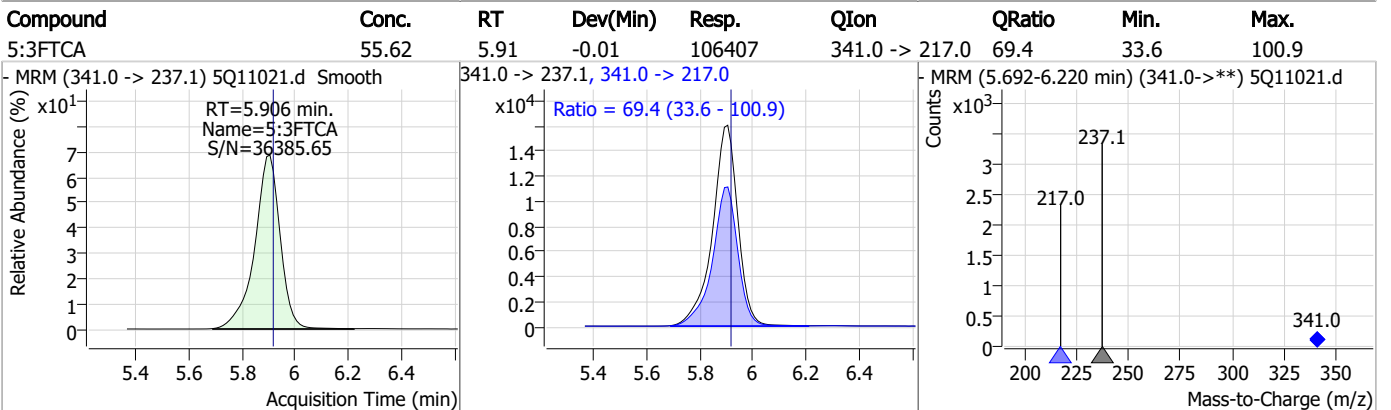
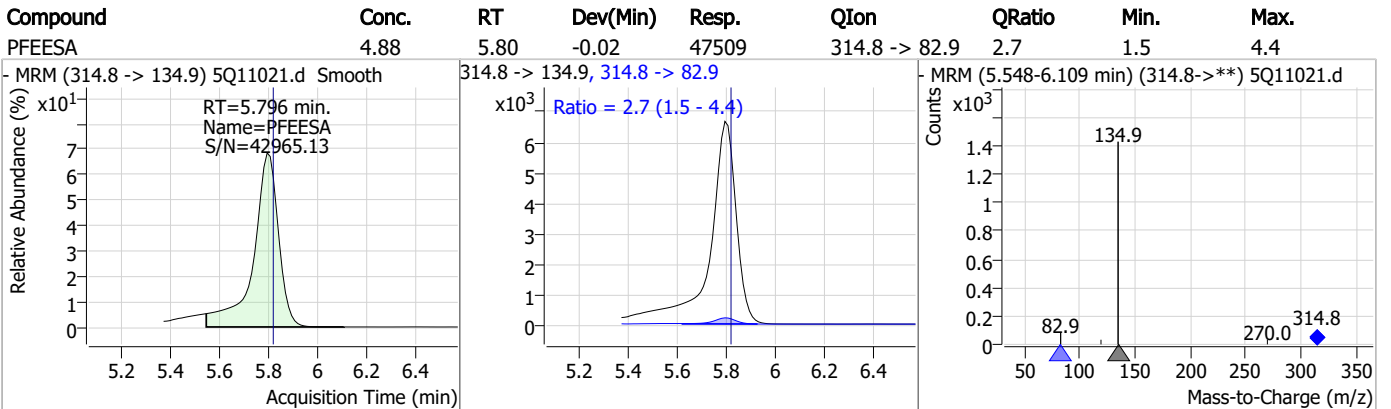
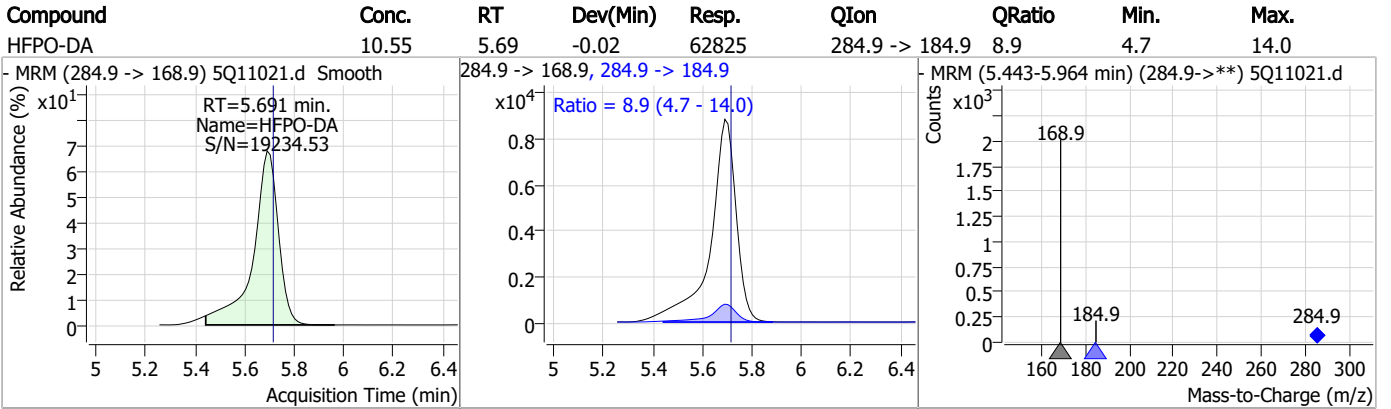
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

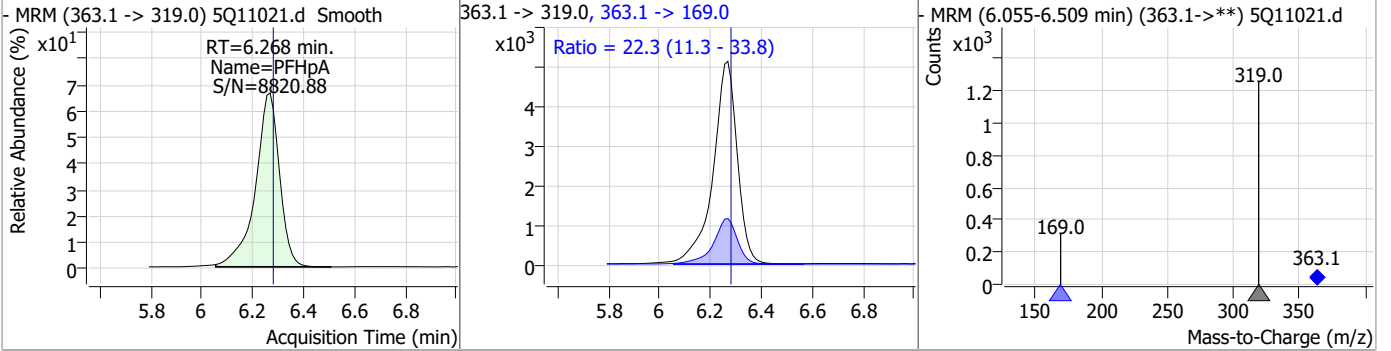


Perfluorinated Compounds by LC/MS/MS

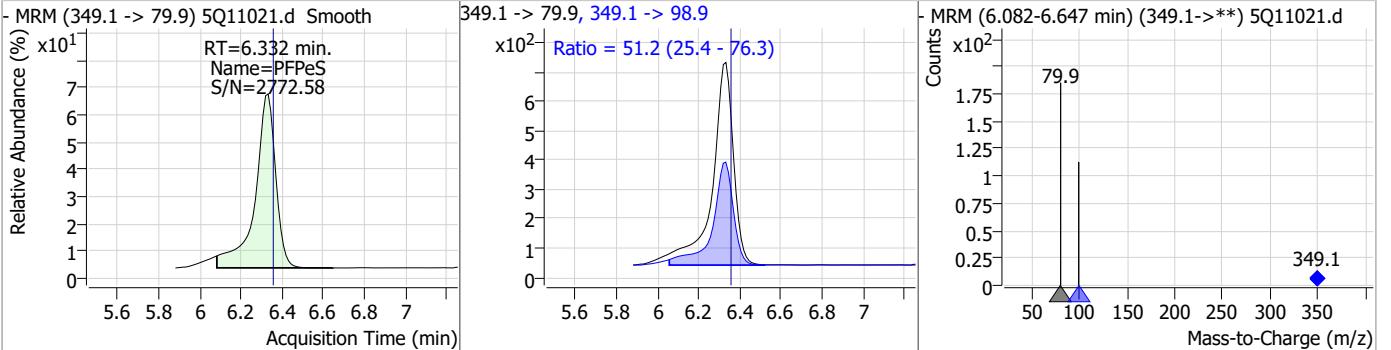


Perfluorinated Compounds by LC/MS/MS

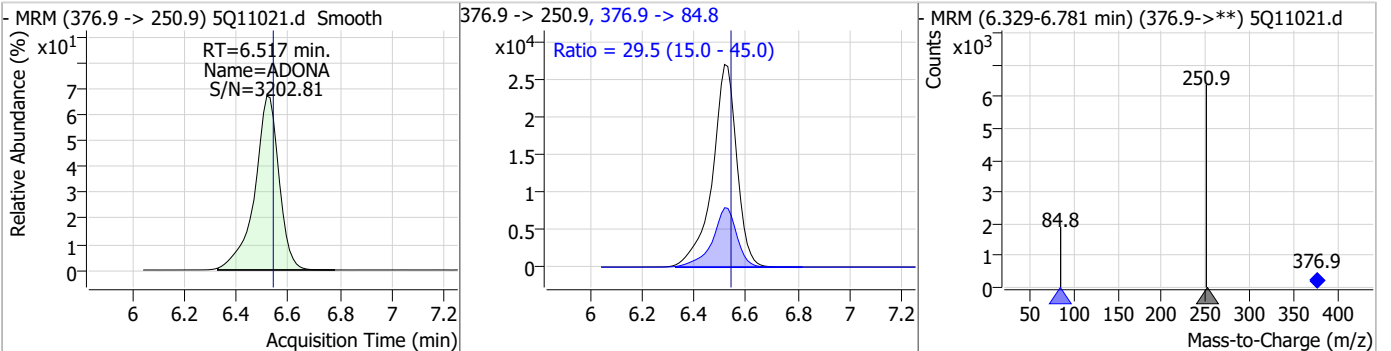
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.58	6.27	-0.01	33545	363.1 -> 169.0	22.3	11.3	33.8



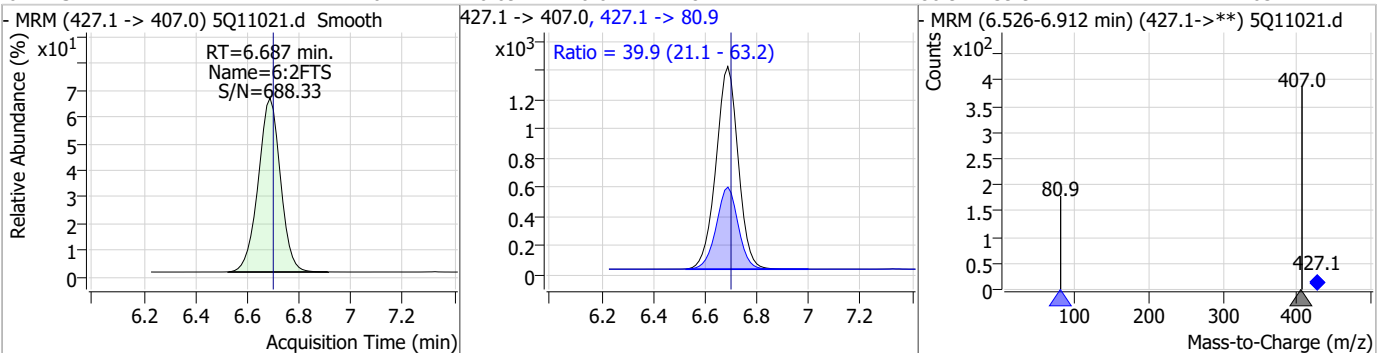
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.55	6.33	-0.02	4883	349.1 -> 98.9	51.2	25.4	76.3



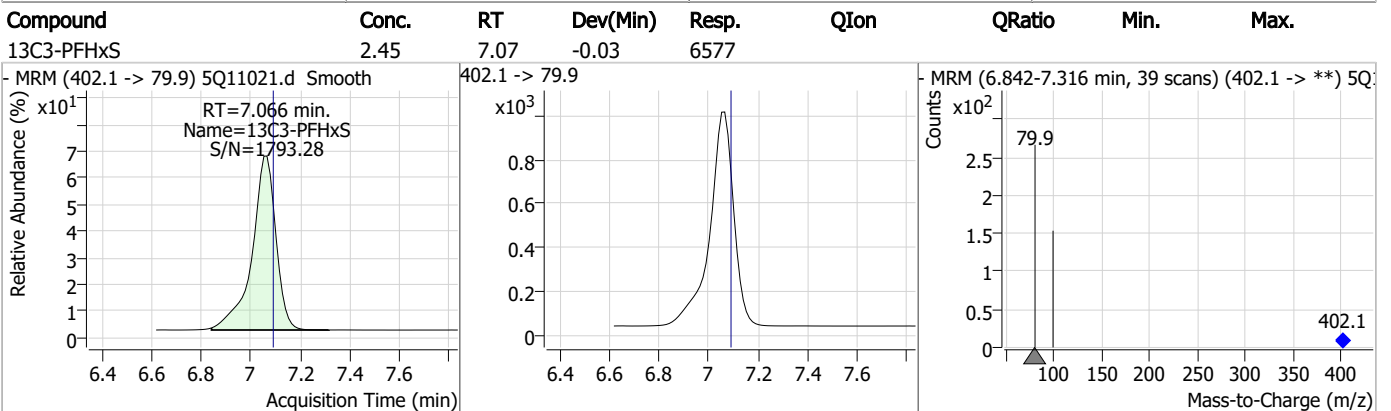
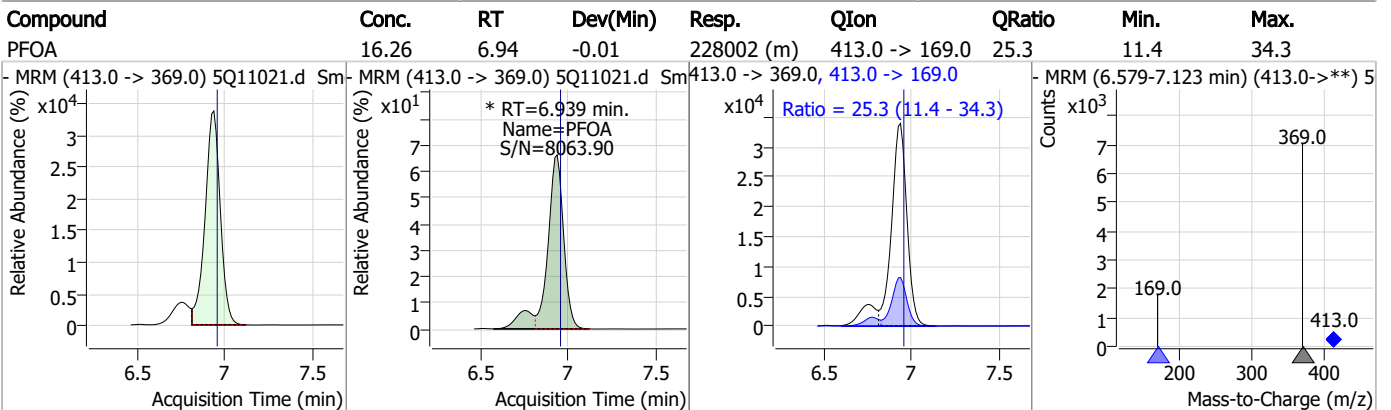
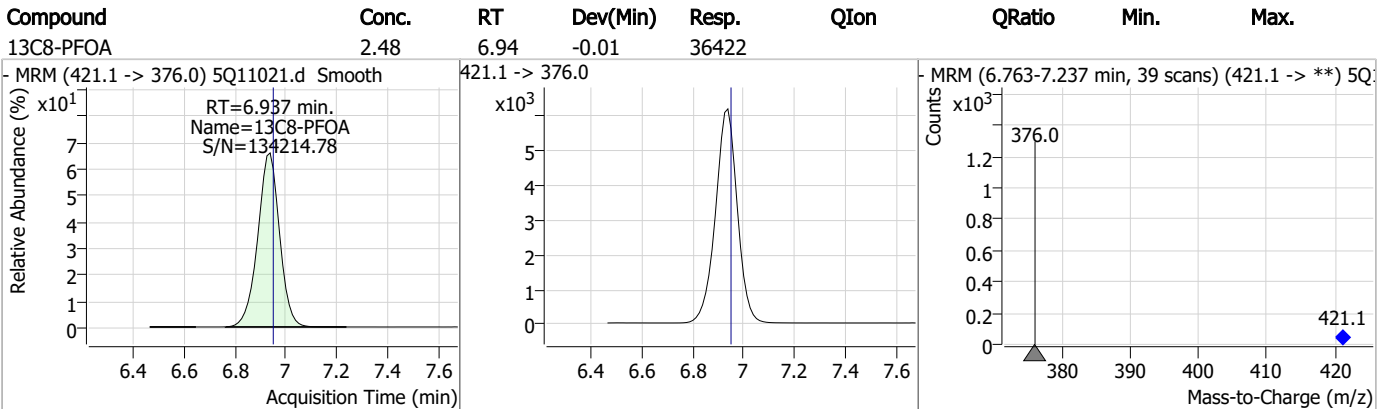
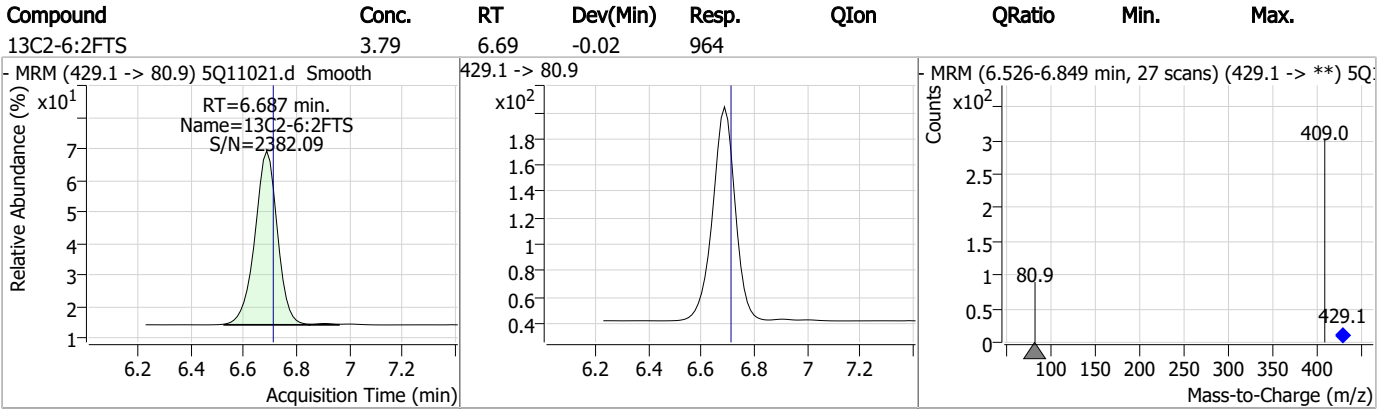
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	8.88	6.52	-0.02	176349	376.9 -> 84.8	29.5	15.0	45.0



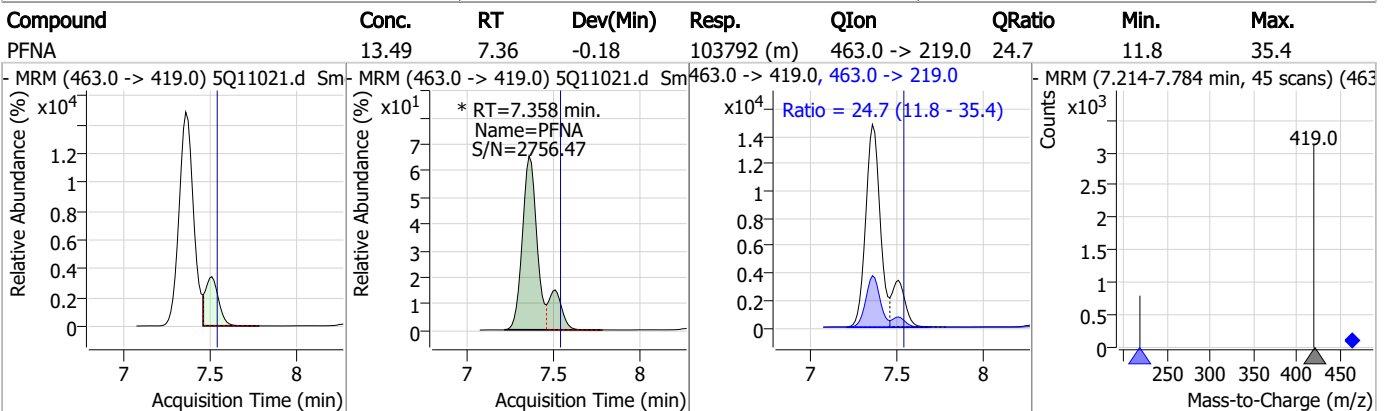
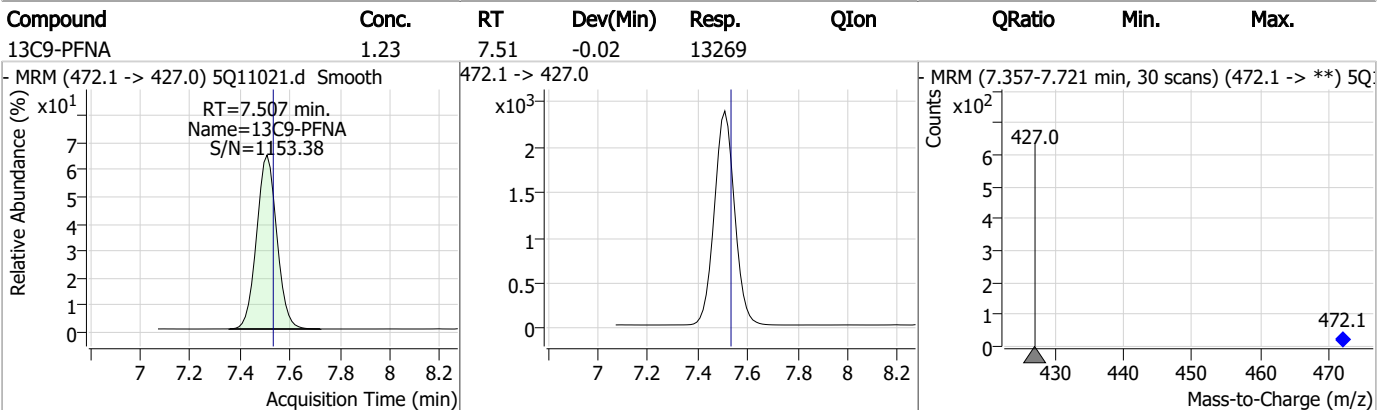
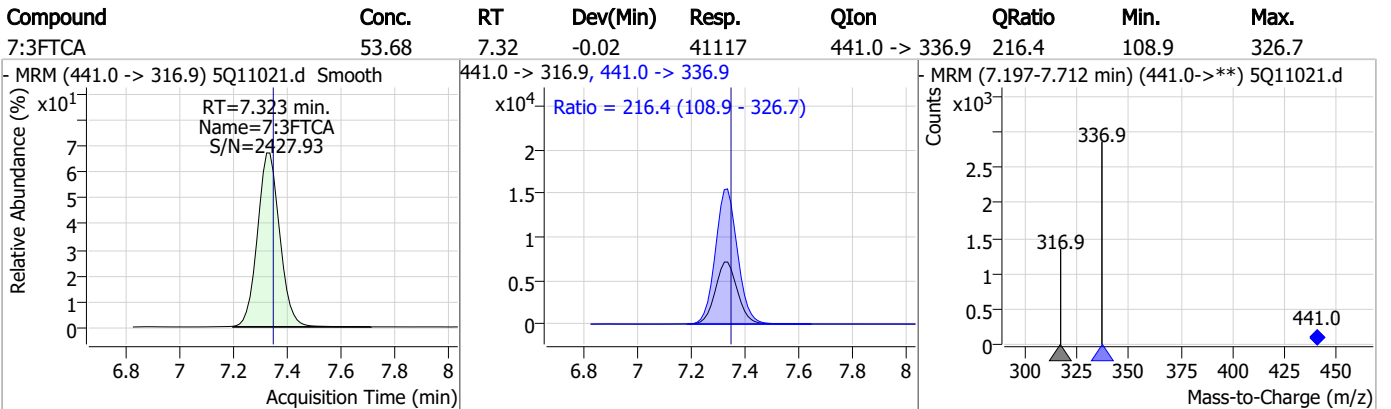
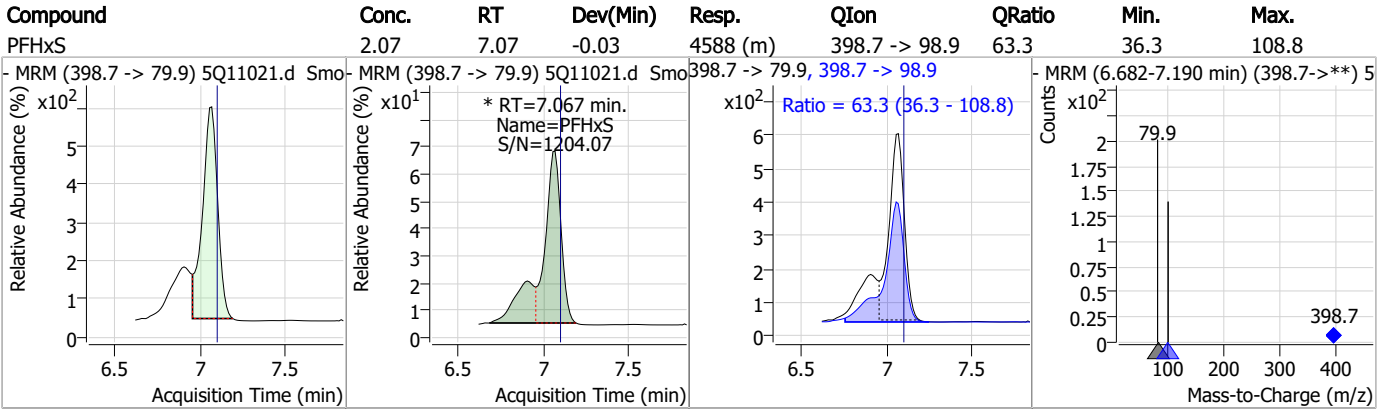
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	10.21	6.69	-0.01	8224	427.1 -> 80.9	39.9	21.1	63.2



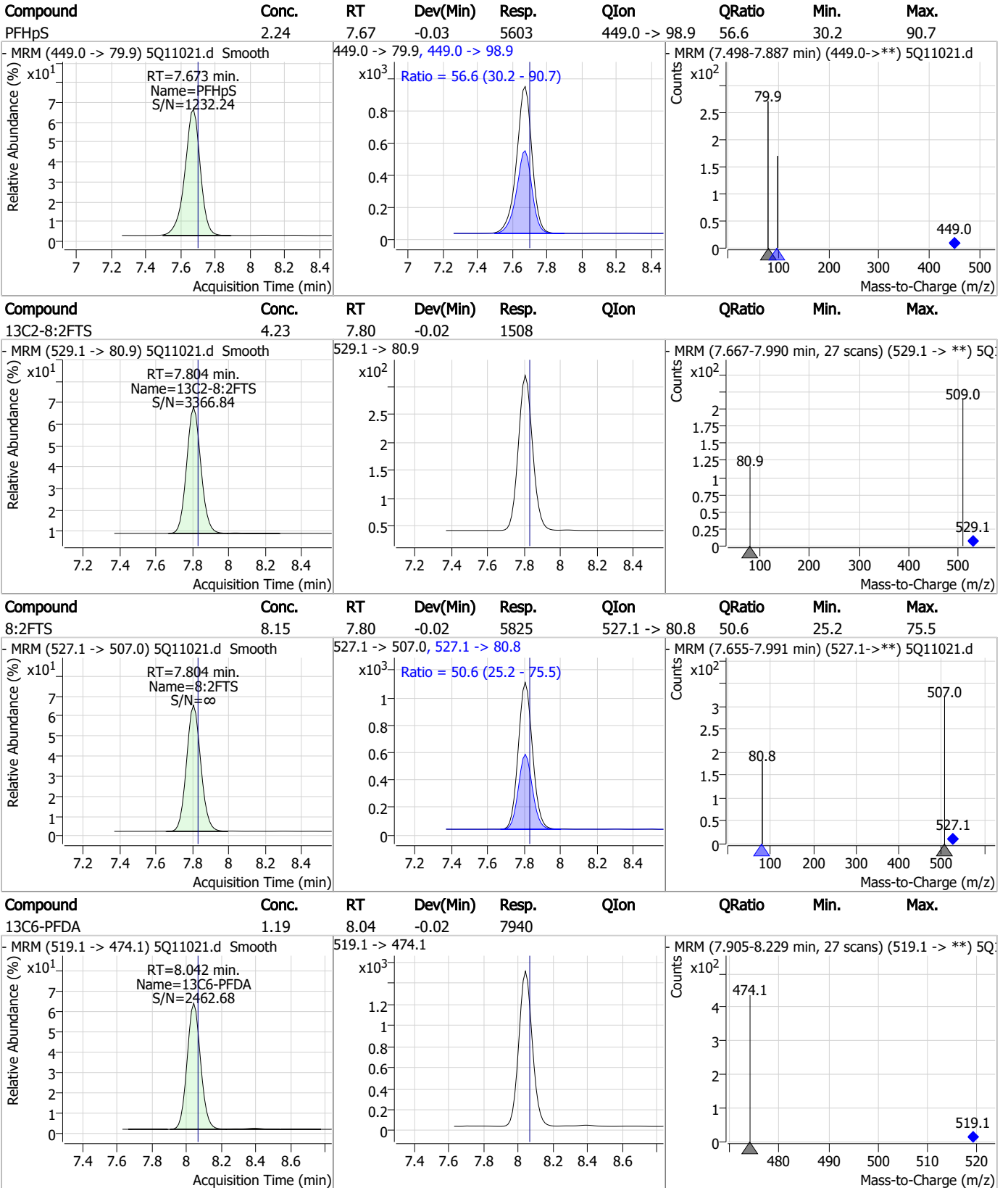
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

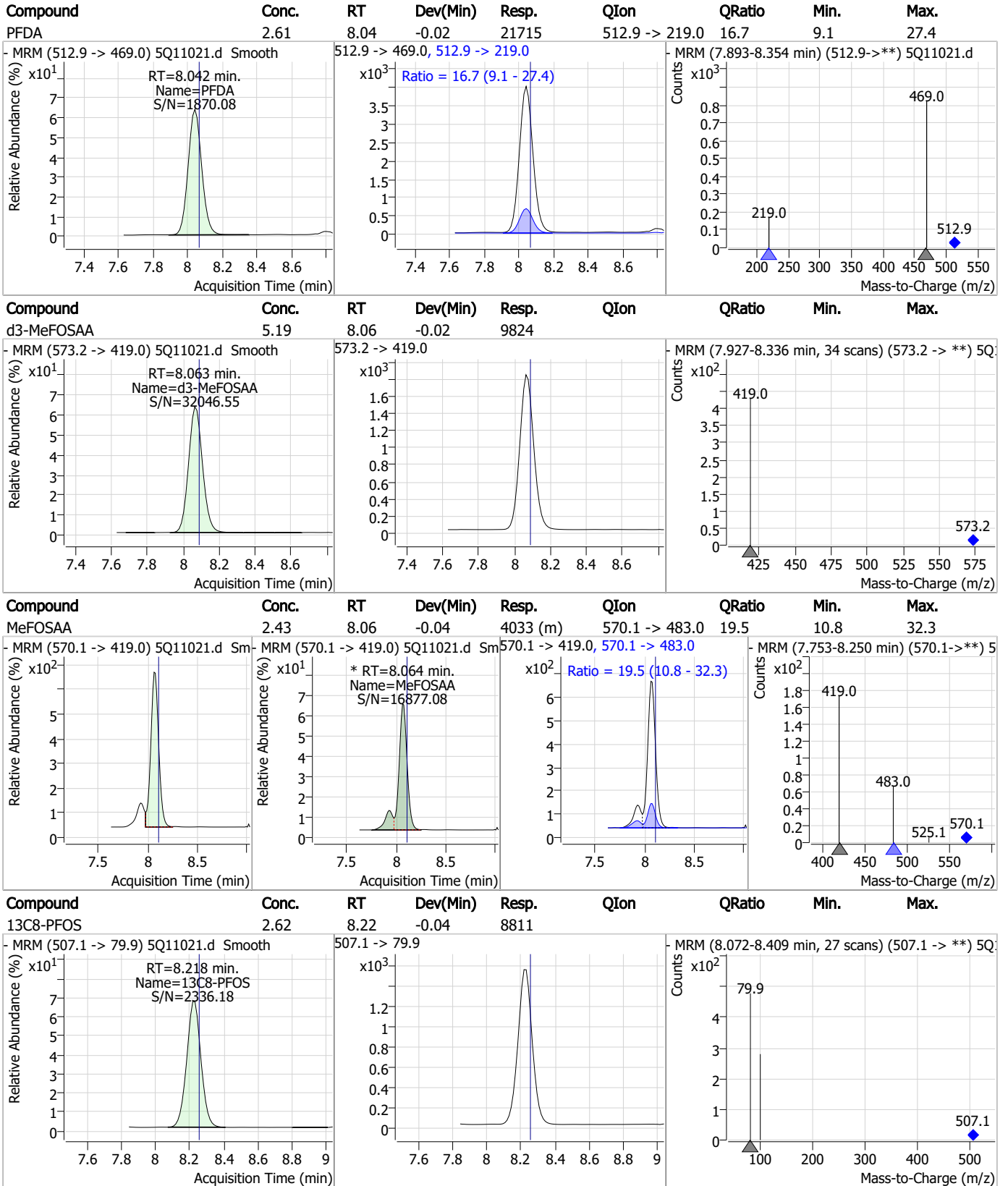


7.6.4

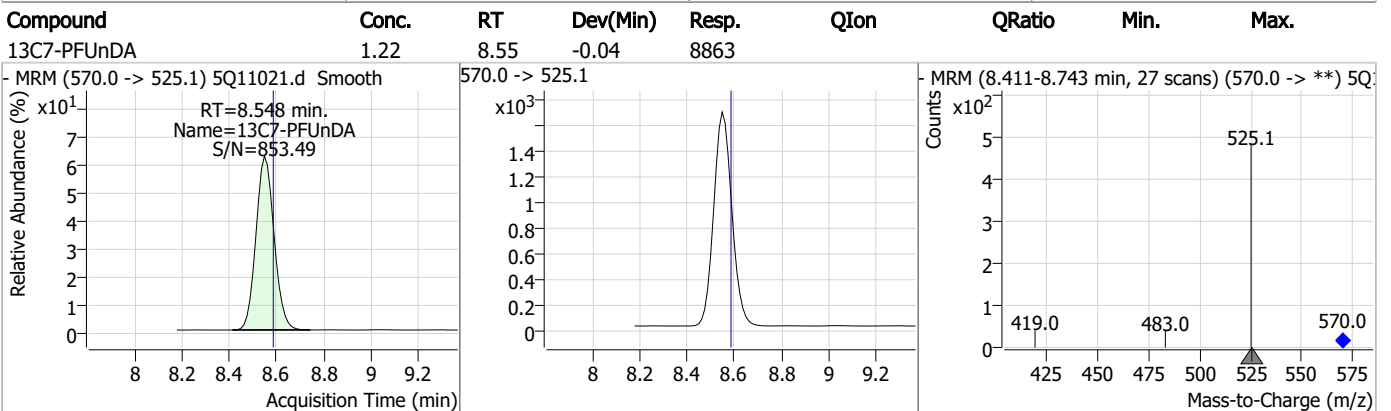
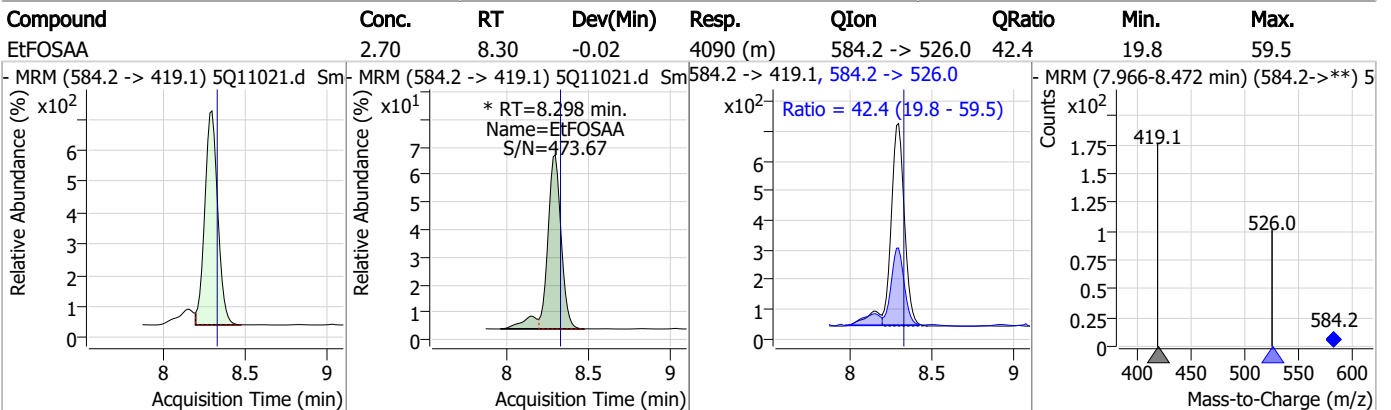
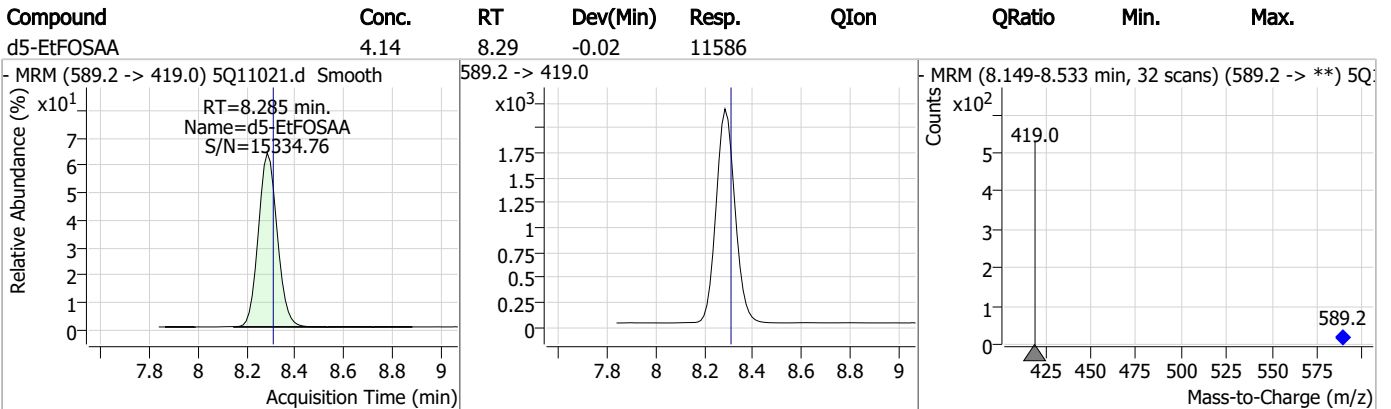
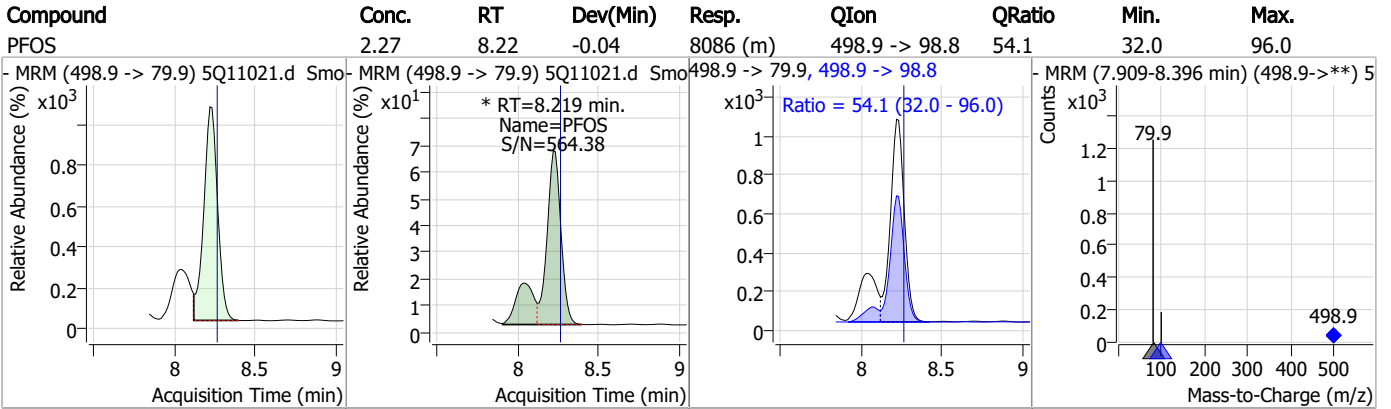
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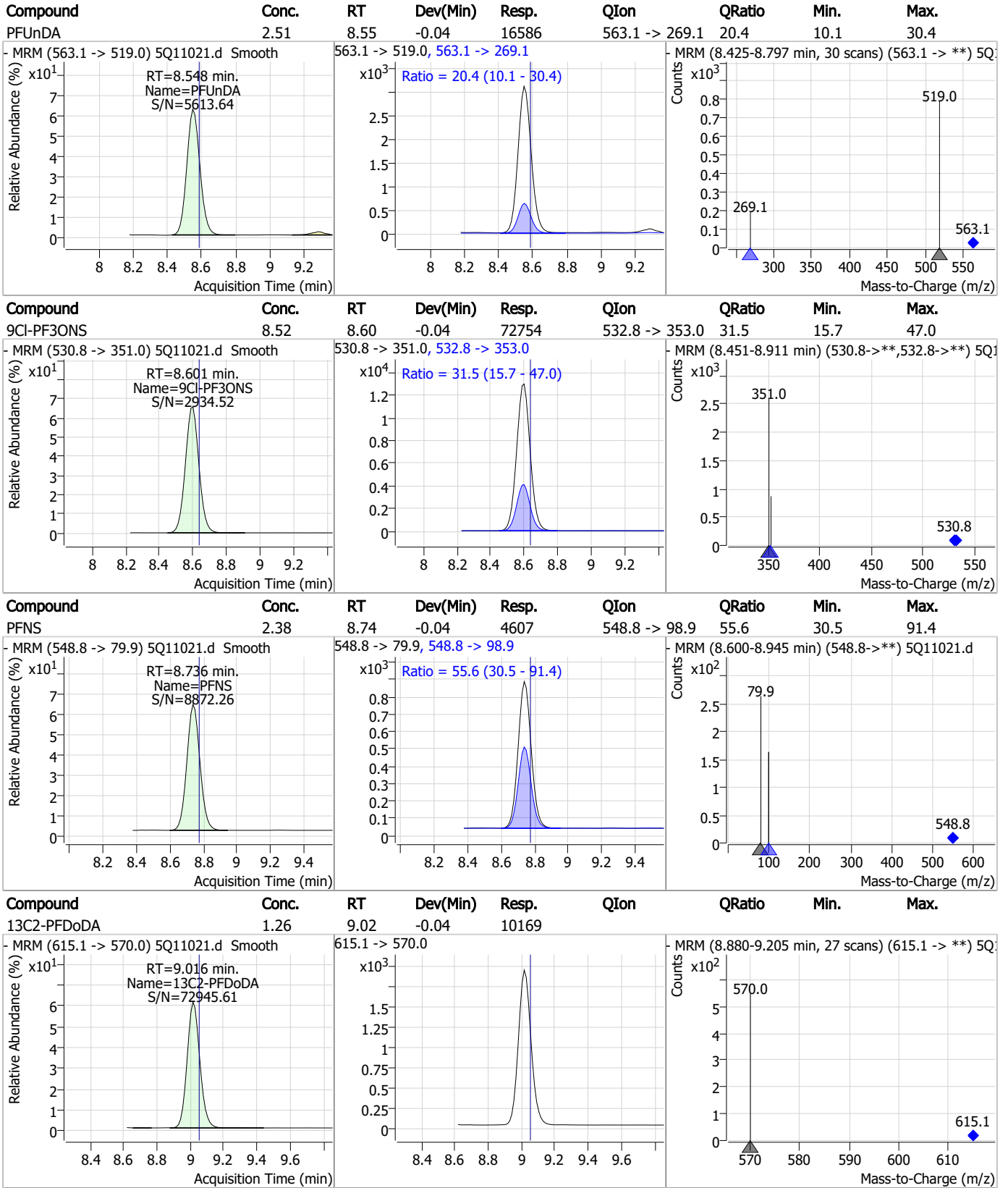
Perfluorinated Compounds by LC/MS/MS



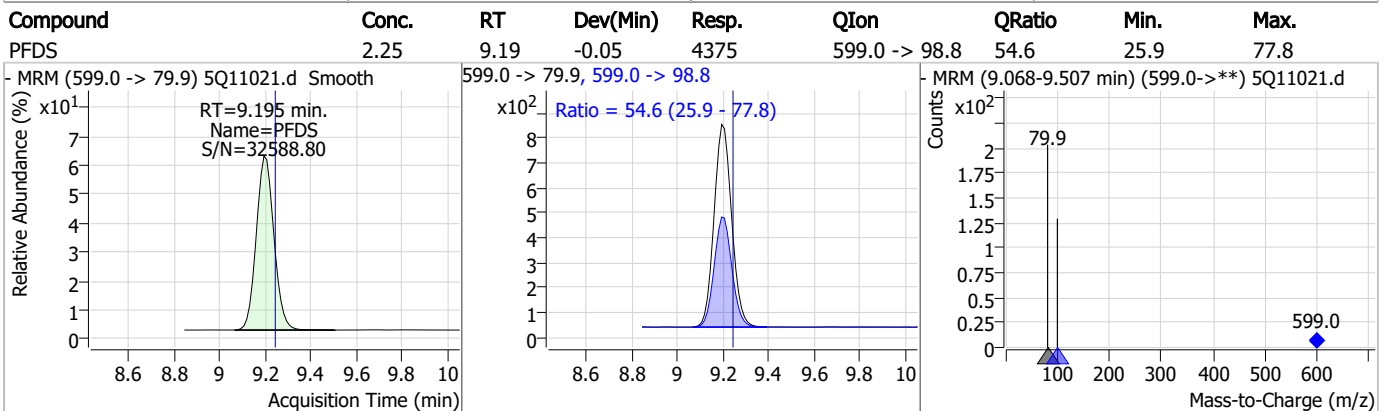
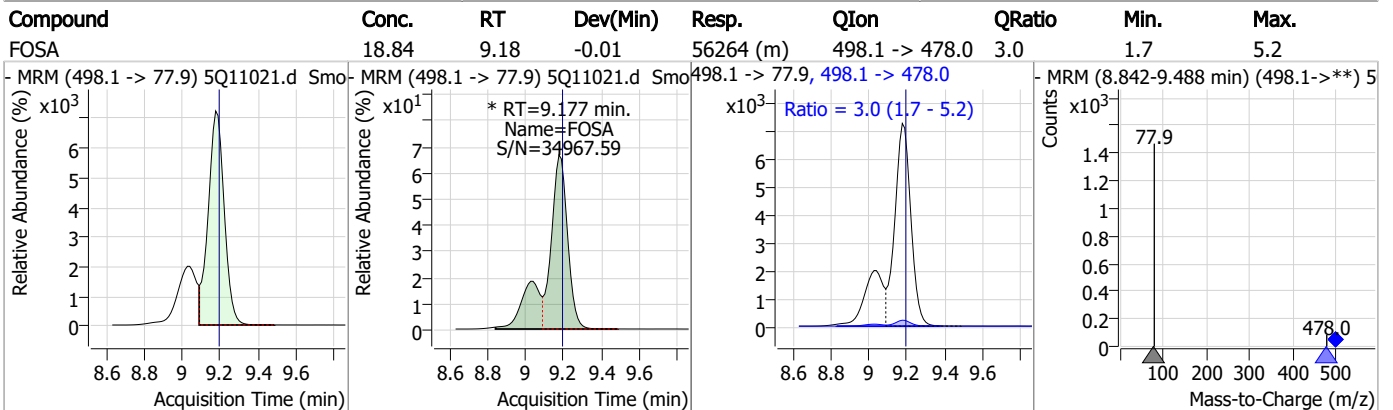
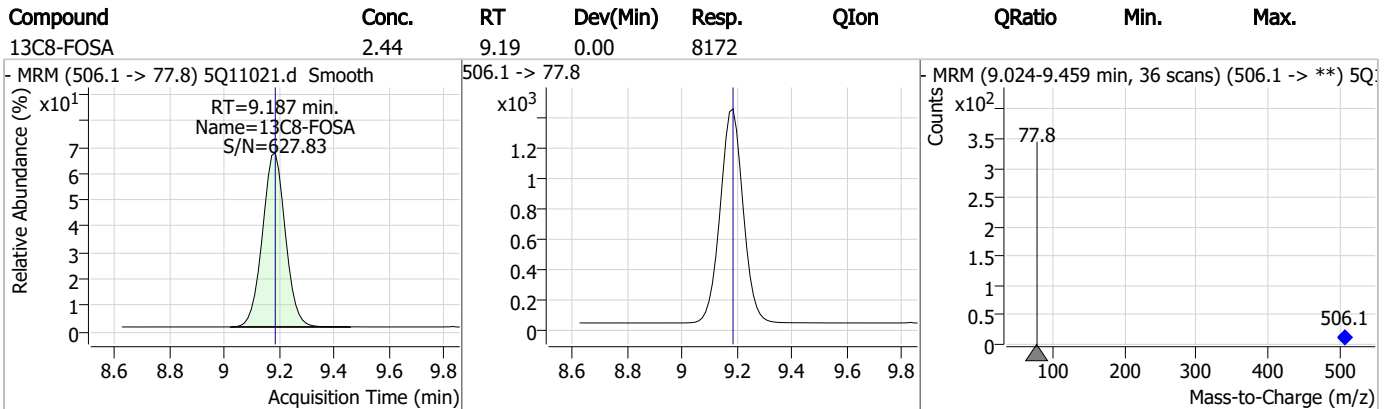
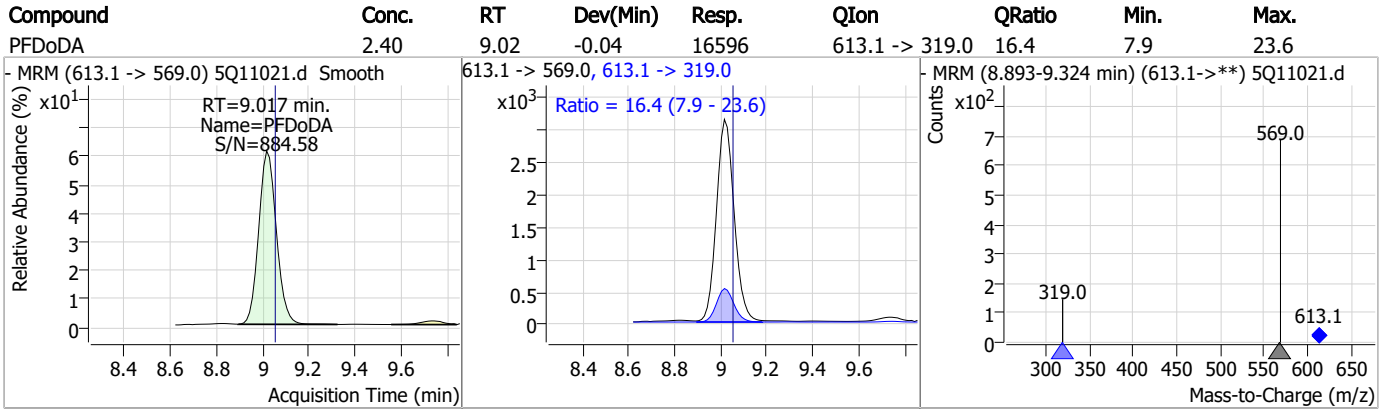
Perfluorinated Compounds by LC/MS/MS



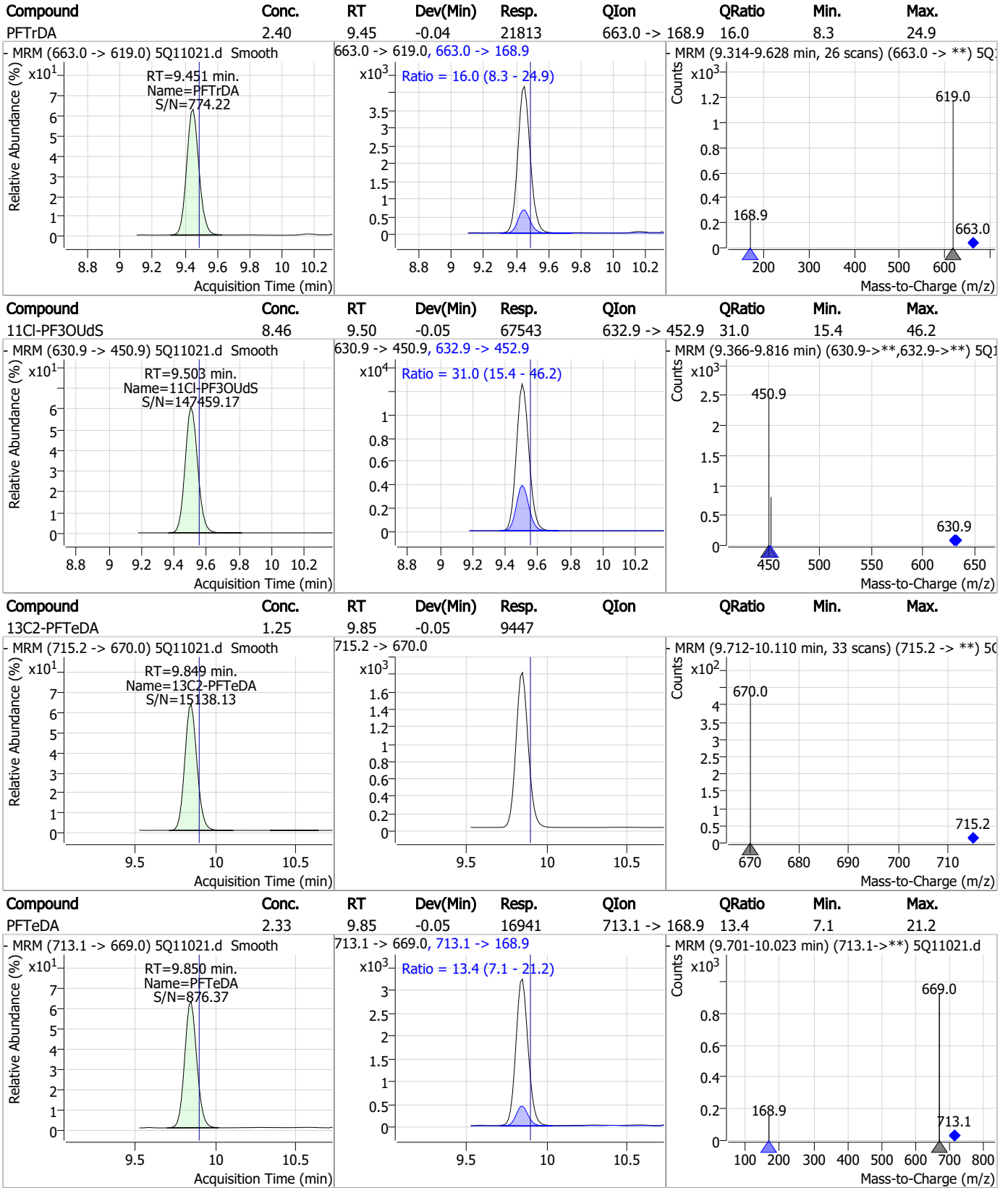
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



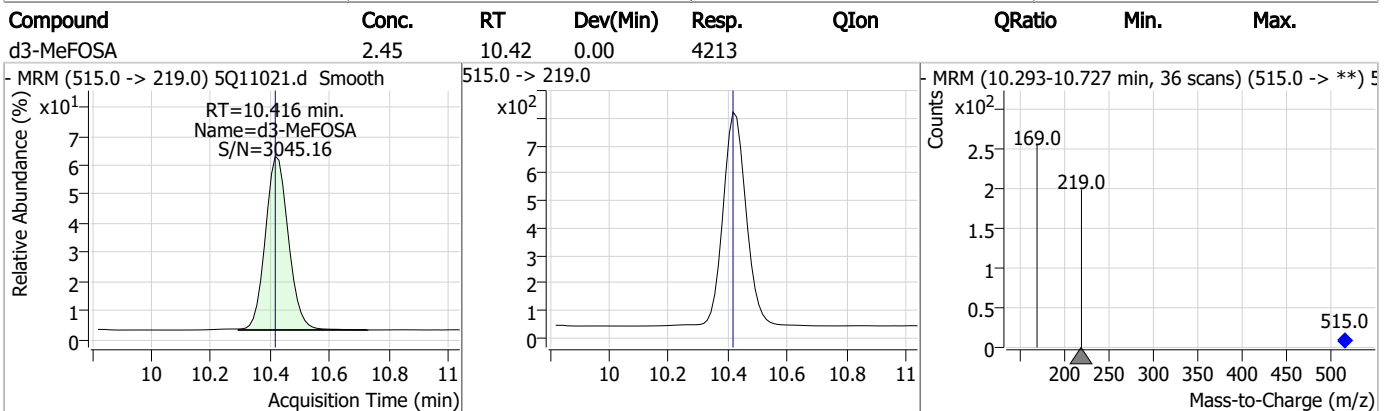
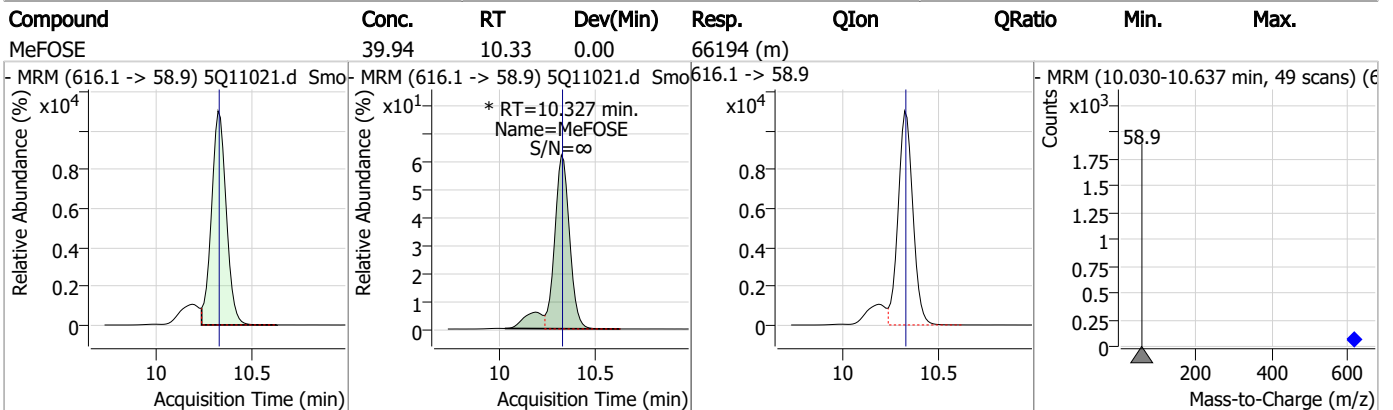
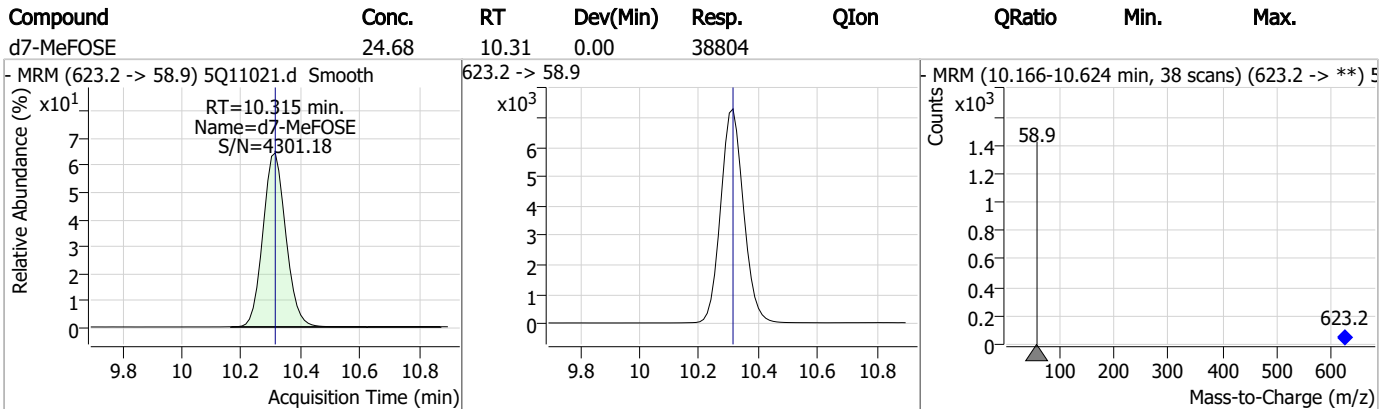
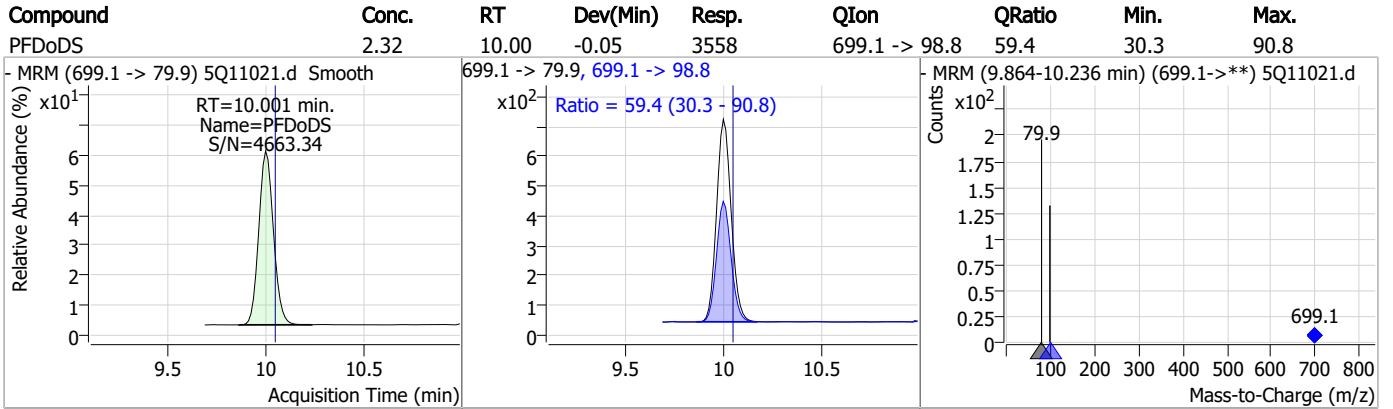
Perfluorinated Compounds by LC/MS/MS



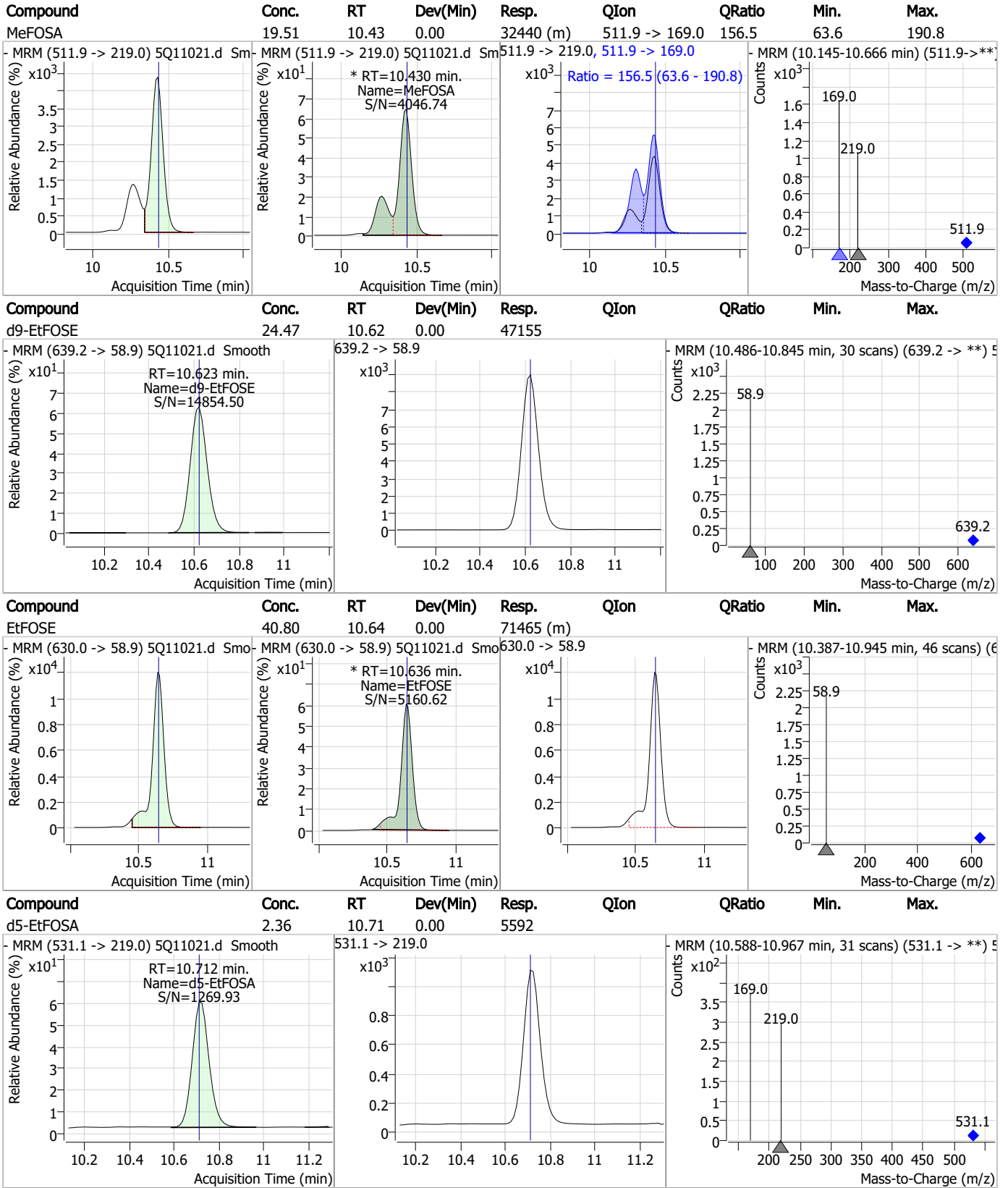
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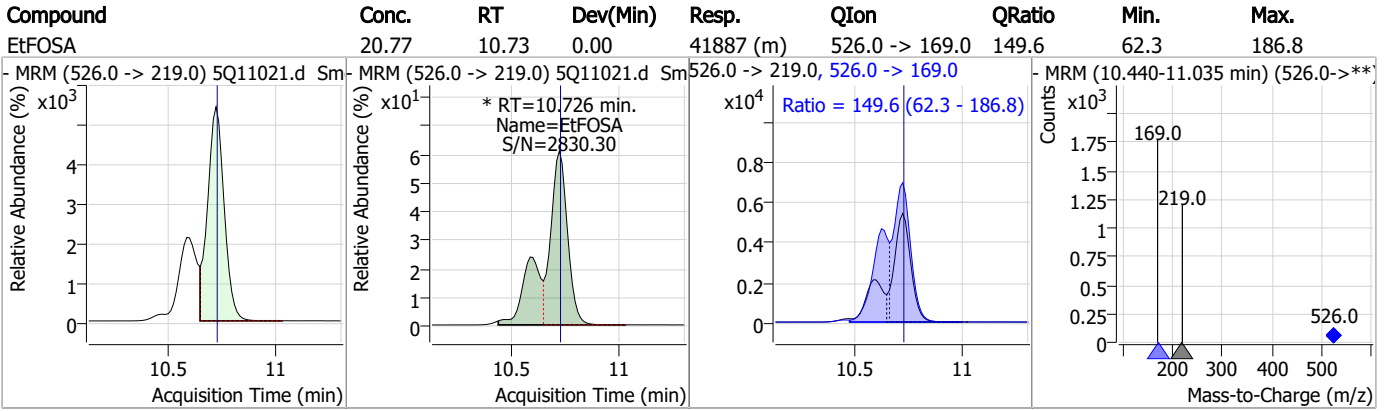
Perfluorinated Compounds by LC/MS/MS



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: S5Q170-RT **Method:** EPA DRAFT 1633
Lab FileID: 5Q11021.D **Analyst approved:** 02/20/23 14:34 Lindsay Ritner
Injection Time: 02/17/23 15:18 **Supervisor approved:** 02/21/23 10:33 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.78	Poor instrument integration
13C4-PFBA			2.79	Poor instrument integration
13C3-PFBA			2.79	Poor instrument integration
PFMPA	377-73-1		3.31	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.59	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.14	Poor instrument integration
PFMBA	863090-89-5		4.54	Poor instrument integration
13C3-PFBS			5.25	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.25	Poor instrument integration
Perfluorooctanoic acid	335-67-1		6.94	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.07	Split peak
Perfluorononanoic acid	375-95-1		7.36	Split peak
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
PFOSA	754-91-6		9.18	Split peak
MeFOSE	24448-09-7		10.33	Split peak
MeFOSA	31506-32-8		10.43	Split peak
EtFOSE	1691-99-2		10.64	Split peak
EtFOSA	4151-50-2		10.73	Split peak

7.6.4.1
7

QQQ Check Tune Report



Instrument Name LCMS5Q
MS Model G6470B
MS Instrument Serial SG2221G211
Software_Firmware Version 10.1.67, FW: A.00.08.112
Tune Date & Time 13 February 2023 12:57:30
File Path D:\MassHunter\Tune\QQQ\G6470B\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.33E+0 [R] (Torr); 4.39E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	3500
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	7

7.7.1

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QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.98	-0.01	Pass	0.70	0.72	0.02	Pass	339449
302.00	301.93	-0.07	Pass	0.70	0.77	0.07	Pass	192018
601.98	601.89	-0.09	Pass	0.70	0.73	0.03	Pass	565303
1033.99	1033.86	-0.13	Pass	0.70	0.72	0.02	Pass	722040
1633.95	1633.73	-0.22	Adjust	0.70	0.72	0.02	Pass	1496967
2233.91	2233.62	-0.29	Pass	0.70	0.74	0.04	Pass	922608

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.07	0.07	Pass	0.70	0.59	-0.11	Pass	59975
112.99	112.98	-0.01	Pass	0.70	0.66	-0.04	Pass	189642
302.00	301.96	-0.04	Pass	0.70	0.72	0.02	Pass	110669
601.98	601.88	-0.10	Pass	0.70	0.75	0.05	Pass	228199
1033.99	1033.85	-0.14	Pass	0.70	0.78	0.08	Pass	230190
1633.95	1633.78	-0.17	Pass	0.70	0.77	0.07	Pass	485234
2233.91	2233.75	-0.16	Pass	0.70	0.74	0.04	Pass	296850

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.96	-0.03	Pass	1.20	1.21	0.01	Pass	401284
302.00	301.91	-0.09	Pass	1.20	1.47	0.27	Pass	238563
601.98	601.85	-0.13	Pass	1.20	1.55	0.35	Pass	814306
1033.99	1033.83	-0.16	Pass	1.20	1.49	0.29	Pass	1337993
1633.95	1633.72	-0.23	Pass	1.20	1.36	0.16	Pass	2967754
2233.91	2233.55	-0.36	Pass	1.20	1.15	-0.05	Pass	1834489

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.06	0.06	Pass	1.20	1.17	-0.03	Pass	80939
112.99	112.96	-0.03	Pass	1.20	1.21	0.01	Pass	298656
302.00	301.95	-0.05	Pass	1.20	1.31	0.11	Pass	170313
601.98	601.87	-0.11	Pass	1.20	1.44	0.24	Pass	455954
1033.99	1033.83	-0.16	Pass	1.20	1.43	0.23	Pass	659855
1633.95	1633.76	-0.19	Pass	1.20	1.43	0.23	Pass	1491837
2233.91	2233.76	-0.15	Pass	1.20	1.33	0.13	Pass	824073

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.97	-0.02	Pass	2.50	2.48	-0.02	Pass	505203
302.00	301.88	-0.12	Pass	2.50	2.73	0.23	Pass	302295
601.98	601.84	-0.14	Pass	2.50	2.90	0.40	Pass	1076274
1033.99	1033.84	-0.15	Pass	2.50	2.85	0.35	Pass	2269324
1633.95	1633.71	-0.24	Pass	2.50	2.82	0.32	Pass	6077605
2233.91	2233.59	-0.32	Pass	2.50	2.69	0.19	Pass	5371659

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.04	0.04	Pass	2.50	2.38	-0.12	Pass	105489
112.99	112.97	-0.02	Pass	2.50	2.50	0.00	Pass	412391
302.00	301.97	-0.03	Pass	2.50	2.51	0.01	Pass	226146
601.98	601.91	-0.07	Pass	2.50	2.63	0.13	Pass	712060
1033.99	1033.84	-0.15	Pass	2.50	2.55	0.05	Pass	1274485
1633.95	1633.79	-0.16	Pass	2.50	2.52	0.02	Pass	3594182
2233.91	2233.65	-0.26	Pass	2.50	2.46	-0.04	Pass	2601491

7.7.1
7



Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10941.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 8:31:32 PM
 Sample Name : ic169-1
 Vial : P3-A2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	41567	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	27358	5.00	µg/L m	0.000
M5-PFHxA	5.335	318.0 -> 273.0	27759	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	26721	2.50	µg/L	0.000
M8-PFOA	6.962	421.1 -> 376.0	31875	2.50	µg/L	0.012
M9-PFNA	7.532	472.1 -> 427.0	11400	1.25	µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	7298	1.25	µg/L	0.012
M7-PFUnDA	8.585	570.0 -> 525.1	7971	1.25	µg/L	0.000
M2-PFDoDA	9.066	615.1 -> 570.0	8142	1.25	µg/L	0.012
M2-PFTeDA	9.899	715.2 -> 670.0	8028	1.25	µg/L	0.000
M8-FOSA	9.187	506.1 -> 77.8	7431	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	7487	2.50	µg/L m	0.000
M3-PFHxS	7.091	402.1 -> 79.9	5558	2.50	µg/L	0.000
M8-PFOS	8.255	507.1 -> 79.9	7306	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	492	5.00	µg/L	0.000
M2-6:2FTS	6.712	429.1 -> 80.9	1194	5.00	µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1454	5.00	µg/L	0.000
M3-MeFOSAA	8.100	573.2 -> 419.0	8182	5.00	µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	61209	10.00	µg/L	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	12845	5.00	µg/L	0.000
M7-MeFOSE	10.315	623.2 -> 58.9	34525	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	42204	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	4997	2.50	µg/L	0.000
M3-MeFOSA	10.429	515.0 -> 219.0	3791	2.50	µg/L	0.012
13C4-PFOS	8.256	502.8 -> 79.9	7449	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	25112	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	3957	2.50	µg/L	0.000
13C4-PFOA	6.963	417.1 -> 372.0	36992	2.50	µg/L	0.012
13C2-PFDA	8.079	515.1 -> 470.1	10810	1.25	µg/L	0.012
13C5-PFNA	7.533	468.0 -> 423.0	11303	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	32564	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	492	5.11	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%			
13C2-6:2FTS	6.712	429.1 -> 80.9	1194	5.57	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.3%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1454	4.84	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%			
13C2-PFDoDA	9.066	615.1 -> 570.0	8142	1.21	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.7%			
13C2-PFTeDA	9.899	715.2 -> 670.0	8028	1.27	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%			
13C3-PFBS	5.277	302.1 -> 79.9	7846	2.58	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%			
13C3-PFHxS	7.091	402.1 -> 79.9	5558	2.46	µg/L	0.000

7.7.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C4-PFBA	2.799	216.8 -> 171.9	47565	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C4-PFHpA	6.280	367.1 -> 322.0	26721	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C5-PFHxA	5.335	318.0 -> 273.0	28631	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C5-PFPeA	4.150	268.3 -> 223.0	29385	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C6-PFDA	8.079	519.1 -> 474.1	7298	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C7-PFUnDA	8.585	570.0 -> 525.1	7971	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C8-FOSA	9.187	506.1 -> 77.8	7431	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C8-PFOA	6.962	421.1 -> 376.0	31875	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C8-PFOS	8.255	507.1 -> 79.9	7306	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C9-PFNA	7.532	472.1 -> 427.0	11400	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
d3-MeFOSAA	8.100	573.2 -> 419.0	8182	4.96 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C3-HFPO-DA	5.714	286.9 -> 168.9	61209	10.13 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
d3-MeFOSA	10.429	515.0 -> 219.0	3791	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%		
d5-EtFOSAA	8.310	589.2 -> 419.0	12845	5.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.3%		
d7-MeFOSE	10.315	623.2 -> 58.9	34525	25.19 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
d9-EtFOSE	10.623	639.2 -> 58.9	42204	25.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d5-EtFOSA	10.712	531.1 -> 219.0	4997	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.6%		
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	546	0.88 µg/L	95
		327.1 -> 80.9	281		
6:2FTS	6.712	427.1 -> 407.0	806	0.81 µg/L	93
		427.1 -> 80.9	303		
8:2FTS	7.829	527.1 -> 507.0	601	0.87 µg/L	98
		527.1 -> 80.8	312		
EtFOSAA	8.323	584.2 -> 419.1	319	0.19 µg/L	m 83
		584.2 -> 526.0	161		
FOSA	9.190	498.1 -> 77.9	591	0.22 µg/L	# 94
		498.1 -> 478.0	10		
MeFOSAA	8.101	570.1 -> 419.0	301	0.22 µg/L	m 81
		570.1 -> 483.0	92		
PFBA	2.807	212.8 -> 168.9	1389	0.84 µg/L	m 100
PFBS	5.278	298.7 -> 79.9	441	0.18 µg/L	74
		298.7 -> 98.8	258		
PFDA	8.080	512.9 -> 469.0	1627	0.21 µg/L	96
		512.9 -> 219.0	330		
PFDODA	9.066	613.1 -> 569.0	1238	0.22 µg/L	96
		613.1 -> 319.0	177		
PFDS	9.244	599.0 -> 79.9	342	0.21 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	182			
PFHpA	6.281	363.1 -> 319.0	2643	0.23	µg/L	94
		363.1 -> 169.0	526			
PFHpS	7.699	449.0 -> 79.9	475	0.23	µg/L	99
		449.0 -> 98.9	291			
PFHxA	5.337	313.0 -> 269.0	1714	0.21	µg/L	m 97
		313.0 -> 118.9	62			
PFHxS	7.092	398.7 -> 79.9	362	0.19	µg/L	m 84
		398.7 -> 98.9	213			
PFNA	7.533	463.0 -> 419.0	1511	0.23	µg/L	91
		463.0 -> 219.0	292			
PFNS	8.786	548.8 -> 79.9	377	0.23	µg/L	99
		548.8 -> 98.9	226			
PFOA	6.964	413.0 -> 369.0	2745	0.22	µg/L	96
		413.0 -> 169.0	675			
PFOS	8.257	498.9 -> 79.9	552	0.19	µg/L	m 72
		498.9 -> 98.8	473			
PFPeA	4.152	263.0 -> 219.0	2188	0.37	µg/L	m 100
PFPeS	6.357	349.1 -> 79.9	352	0.22	µg/L	m 91
		349.1 -> 98.9	202			
PFTeDA	9.899	713.1 -> 669.0	1465	0.24	µg/L	95
		713.1 -> 168.9	178			
PFTrDA	9.501	663.0 -> 619.0	1763	0.24	µg/L	95
		663.0 -> 168.9	330			
PFUnDA	8.586	563.1 -> 519.0	1303	0.22	µg/L	95
		563.1 -> 269.1	297			
11Cl-PF3OUdS	9.555	630.9 -> 450.9	5306	0.79	µg/L	99
		632.9 -> 452.9	1616			
9Cl-PF3ONS	8.638	530.8 -> 351.0	5788	0.80	µg/L	96
		532.8 -> 353.0	1940			
ADONA	6.542	376.9 -> 250.9	13432	0.80	µg/L	99
		376.9 -> 84.8	4096			
HFPO-DA	5.715	284.9 -> 168.9	4008	0.80	µg/L	m 96
		284.9 -> 184.9	432			
3:3FTCA	3.603	241.0 -> 177.0	446	1.01	µg/L	m 91
		241.0 -> 117.0	42			
5:3FTCA	5.918	341.0 -> 237.1	8619	5.12	µg/L	98
		341.0 -> 217.0	5907			
7:3FTCA	7.348	441.0 -> 316.9	3401	5.05	µg/L	m 93
		441.0 -> 336.9	7776			
EtFOSA	10.726	526.0 -> 219.0	390	0.22	µg/L	92
		526.0 -> 169.0	449			
EtFOSE	10.636	630.0 -> 58.9	3542	2.26	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	353	0.24	µg/L	100
		511.9 -> 169.0	448			
MeFOSE	10.327	616.1 -> 58.9	3432	2.33	µg/L	100
PFDoDS	10.063	699.1 -> 79.9	305	0.24	µg/L	88
		699.1 -> 98.8	157			
NFDHA	5.218	295.0 -> 201.0	278	0.43	µg/L	100
		295.0 -> 84.9	75			
PFMBA	4.553	279.0 -> 85.1	1857	0.42	µg/L	m 100
PFMPA	3.328	229.0 -> 84.9	1220	0.38	µg/L	m 100
PFEESA	5.833	314.8 -> 134.9	3343	0.39	µg/L	m 99
		314.8 -> 82.9	108			

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

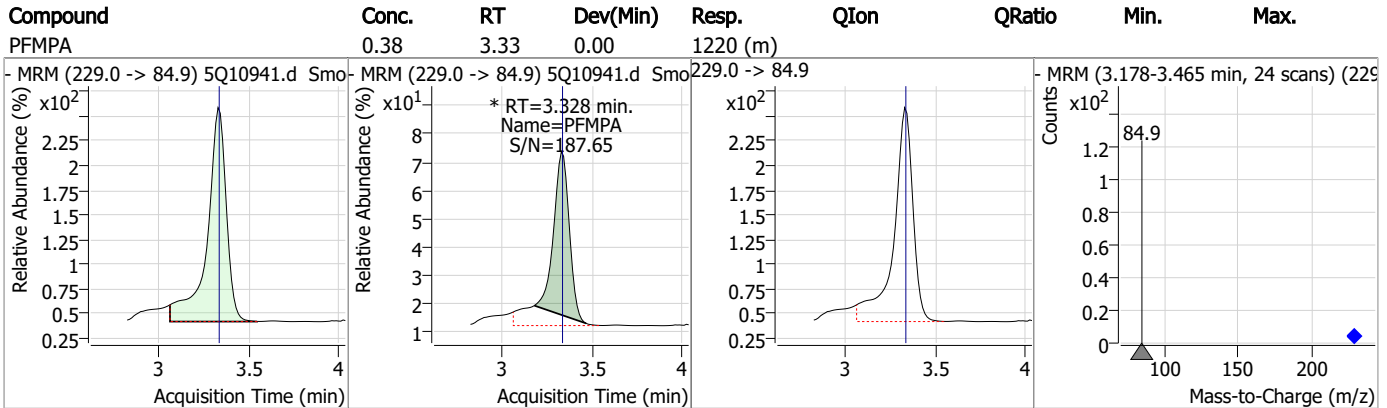
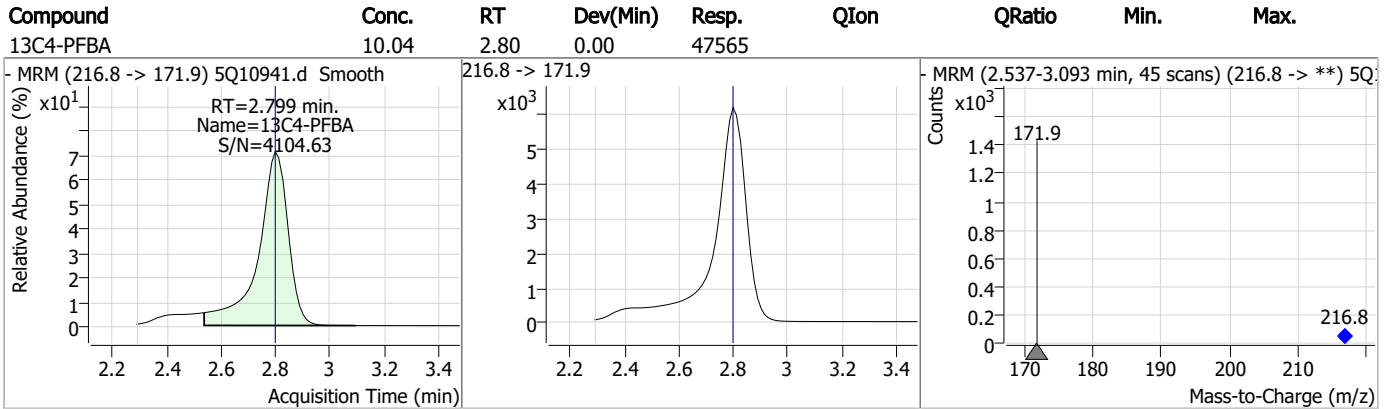
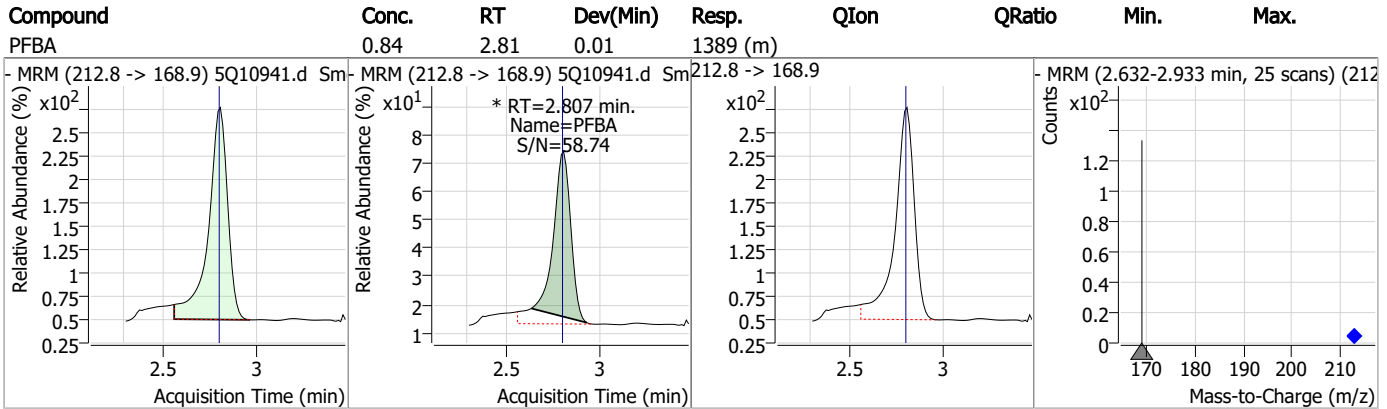
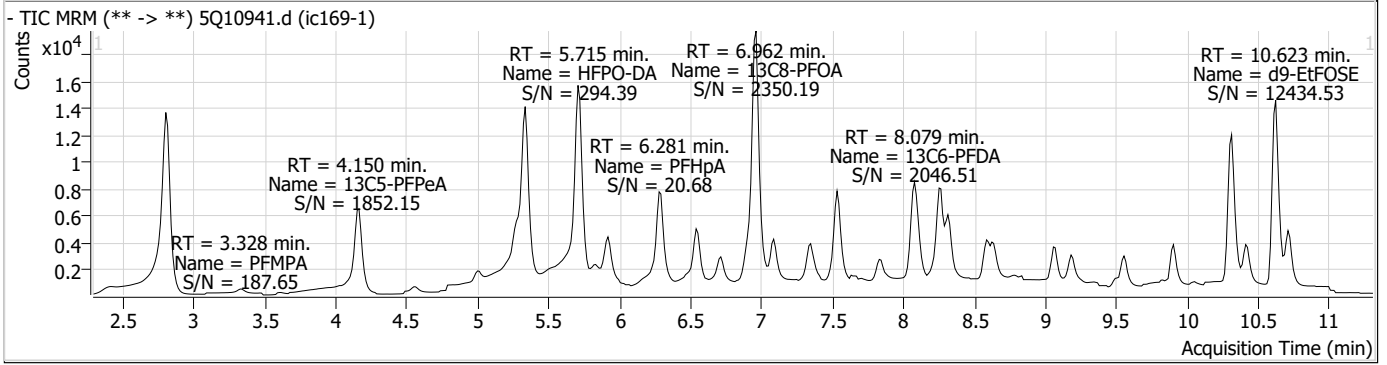
Perfluorinated Compounds by LC/MS/MS

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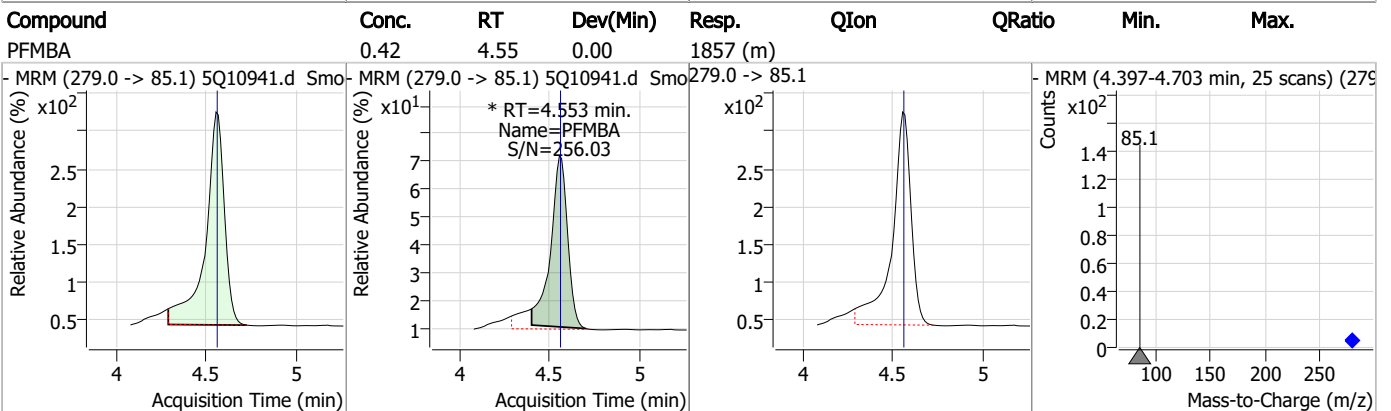
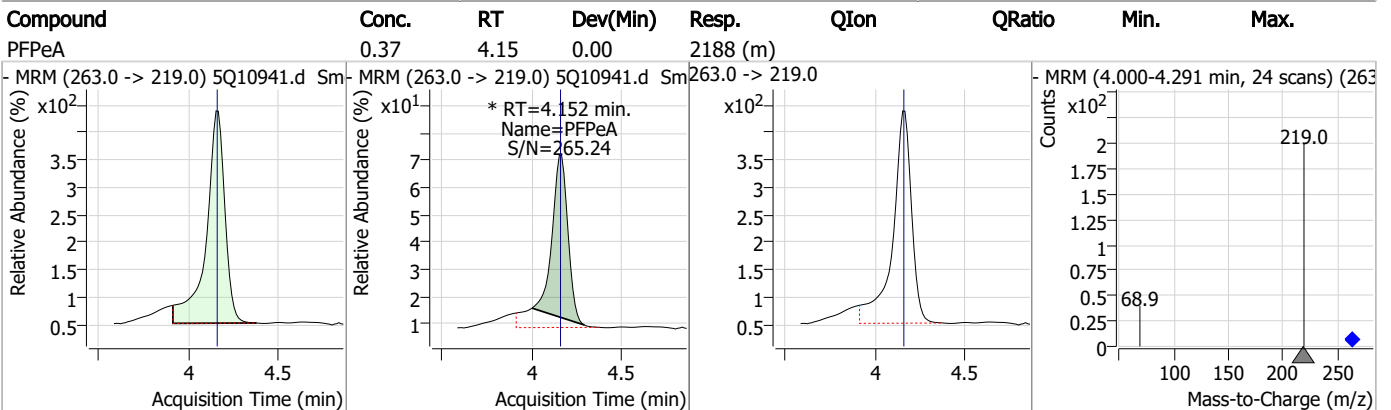
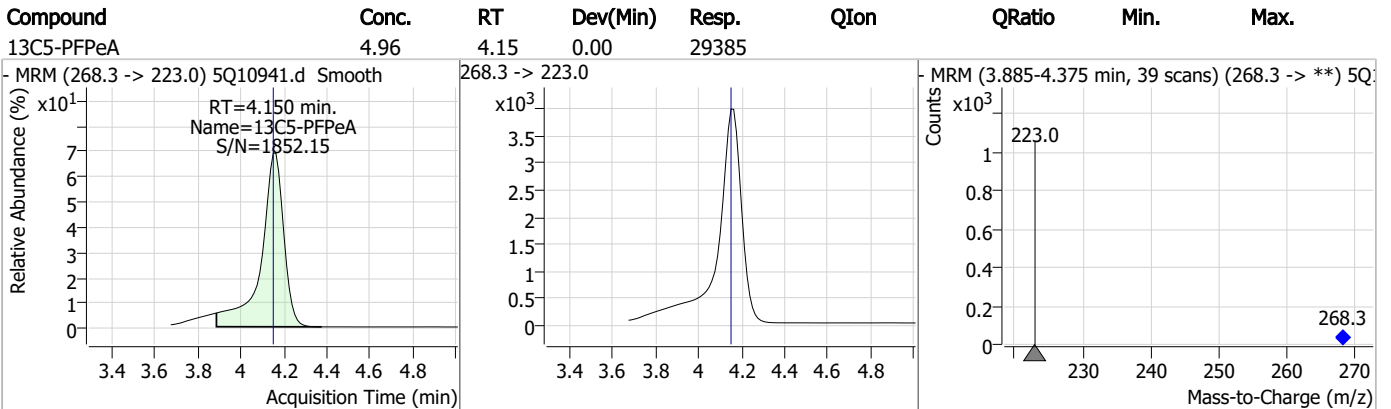
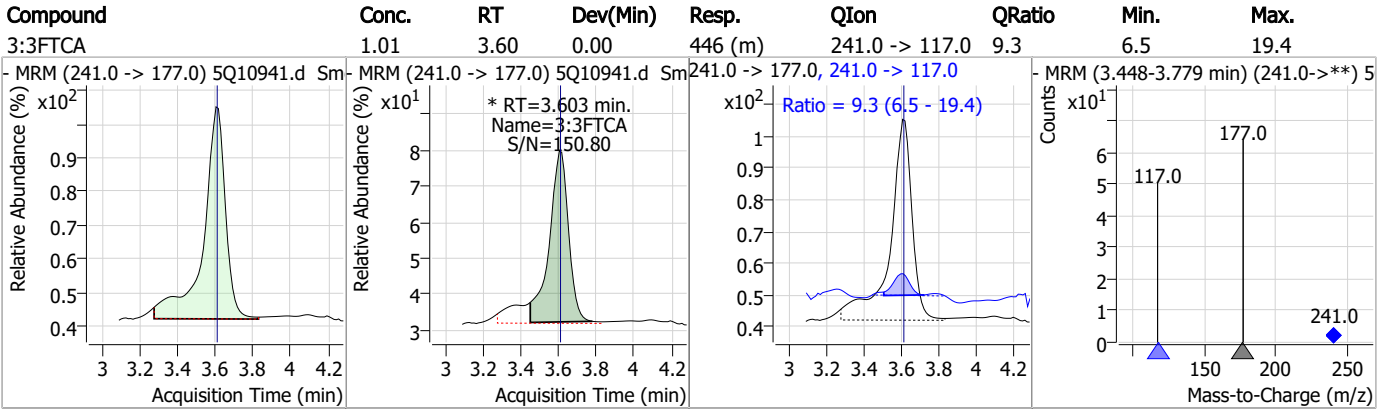
7.7.2
7



Perfluorinated Compounds by LC/MS/MS



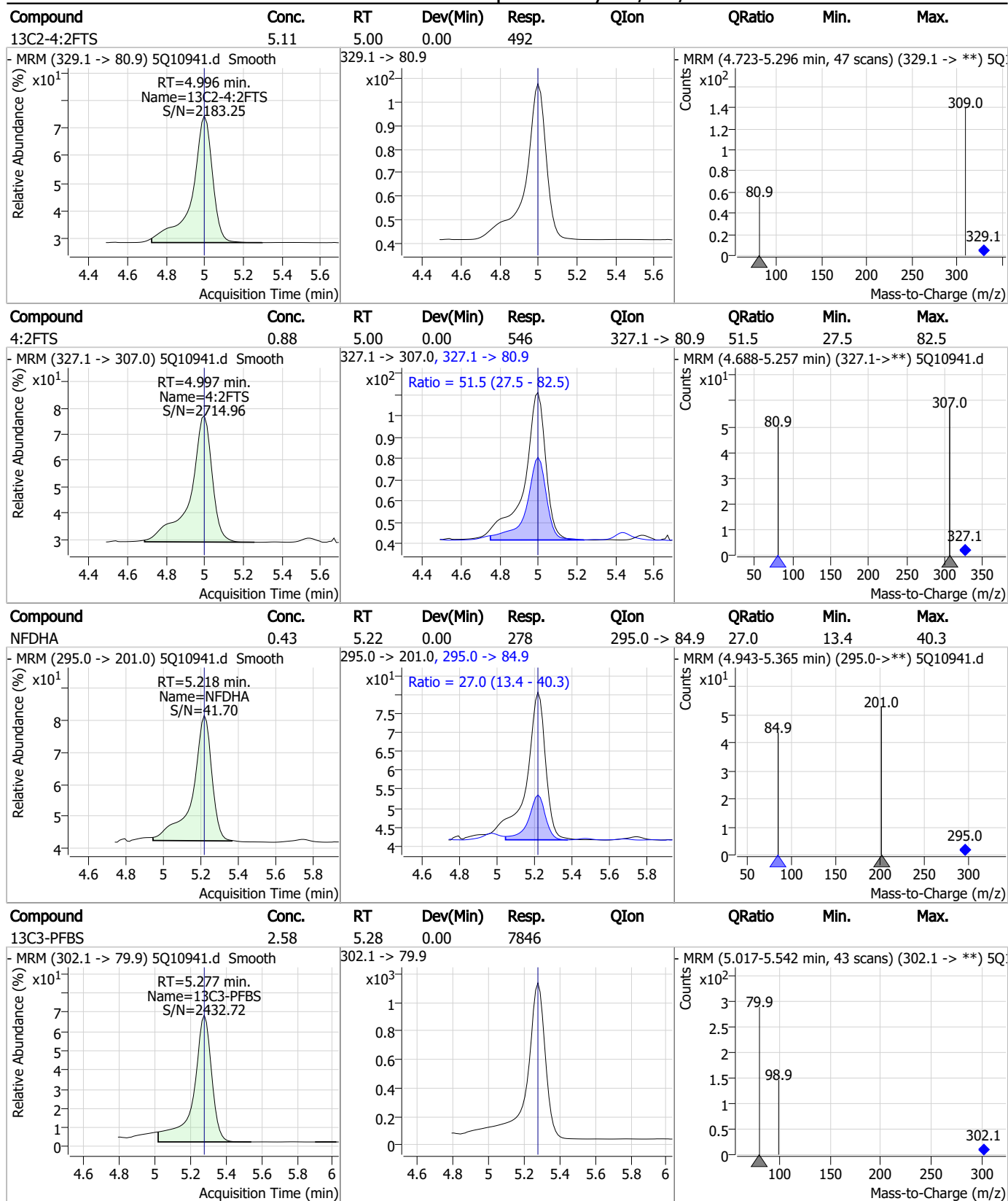
Perfluorinated Compounds by LC/MS/MS



7.7.2

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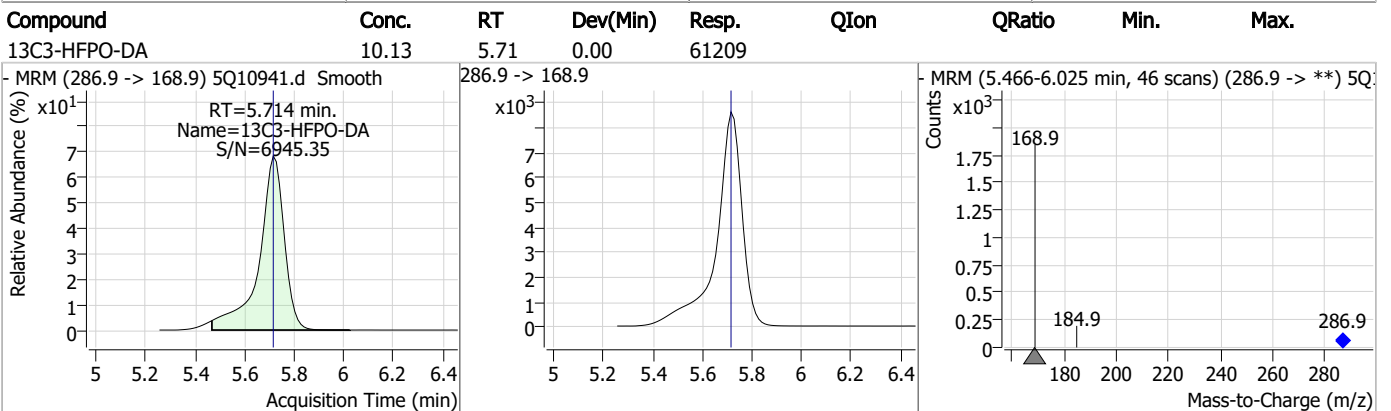
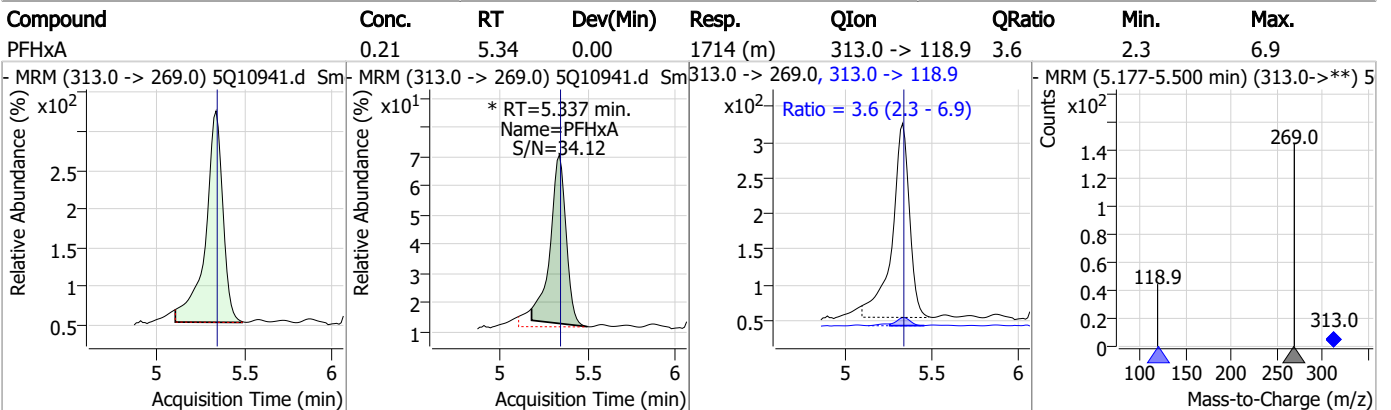
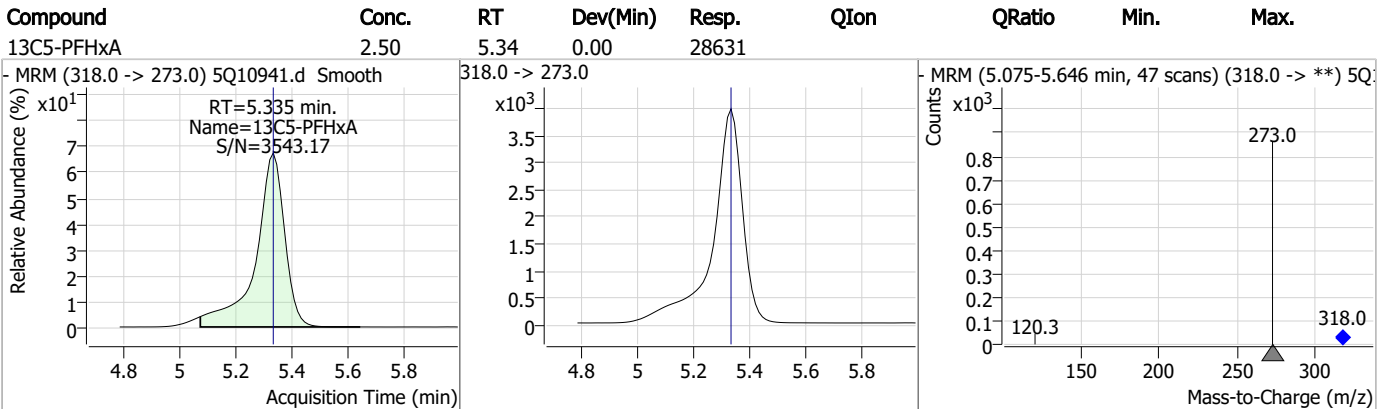
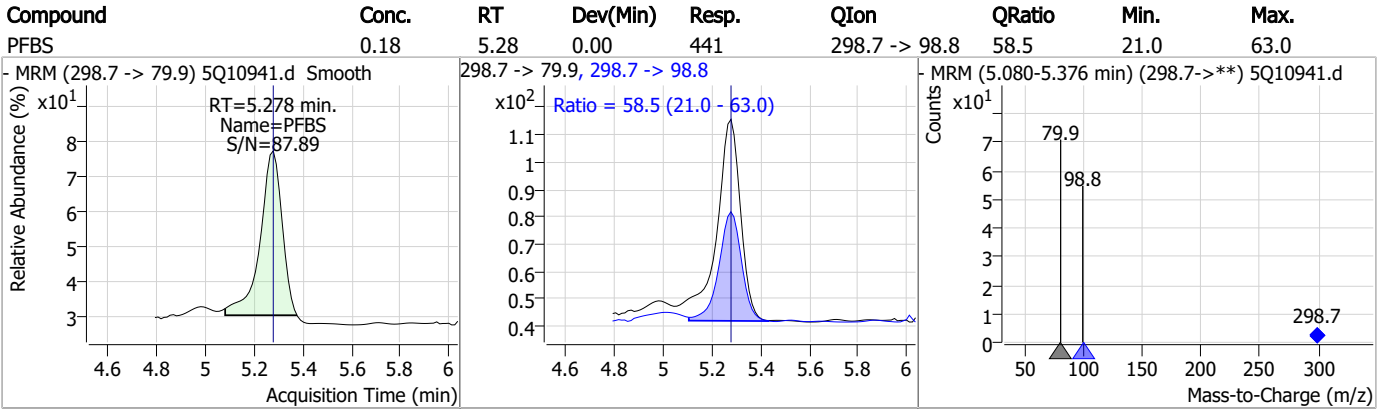
Perfluorinated Compounds by LC/MS/MS



7.7.2

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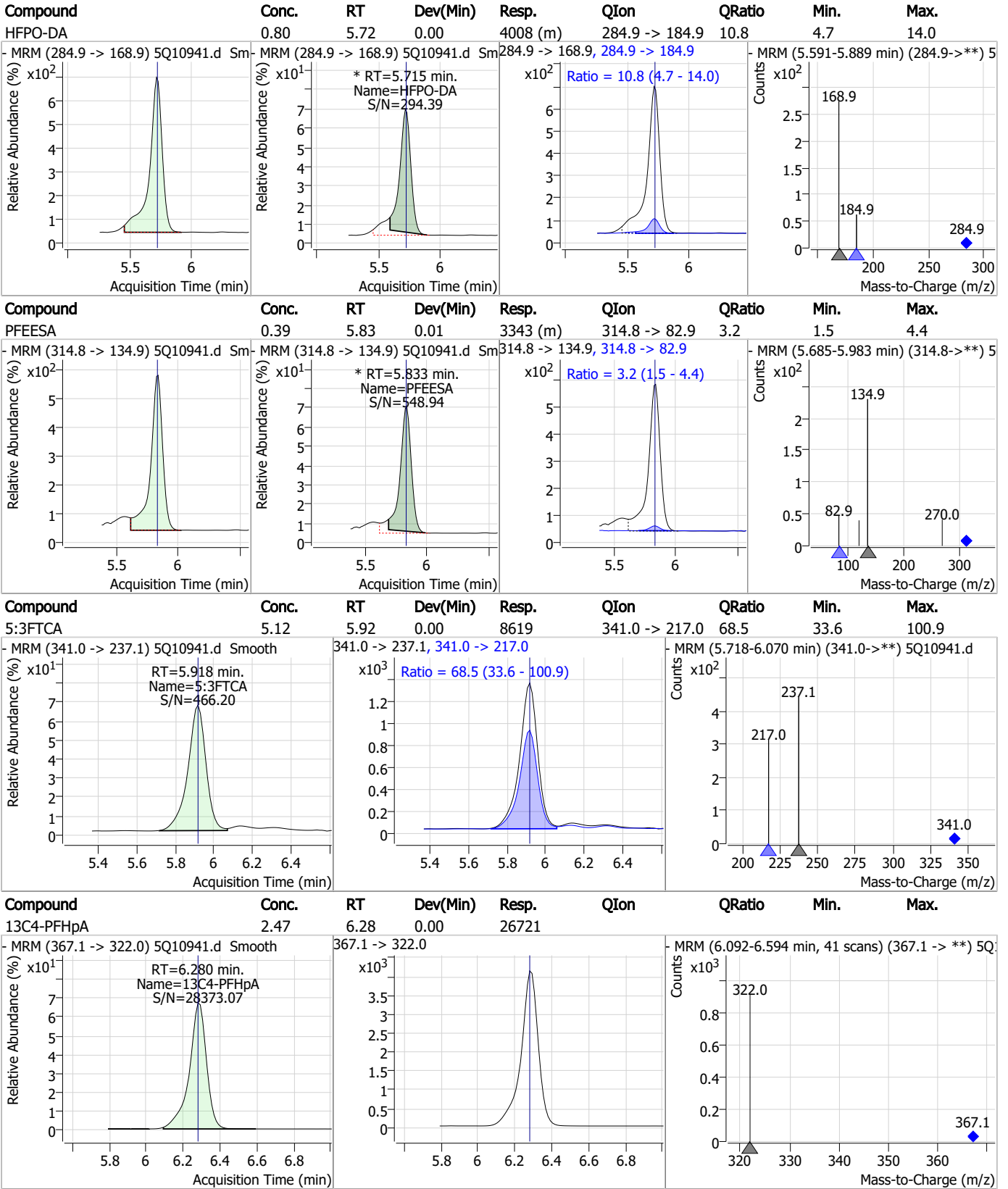
Perfluorinated Compounds by LC/MS/MS



7.7.2

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Perfluorinated Compounds by LC/MS/MS

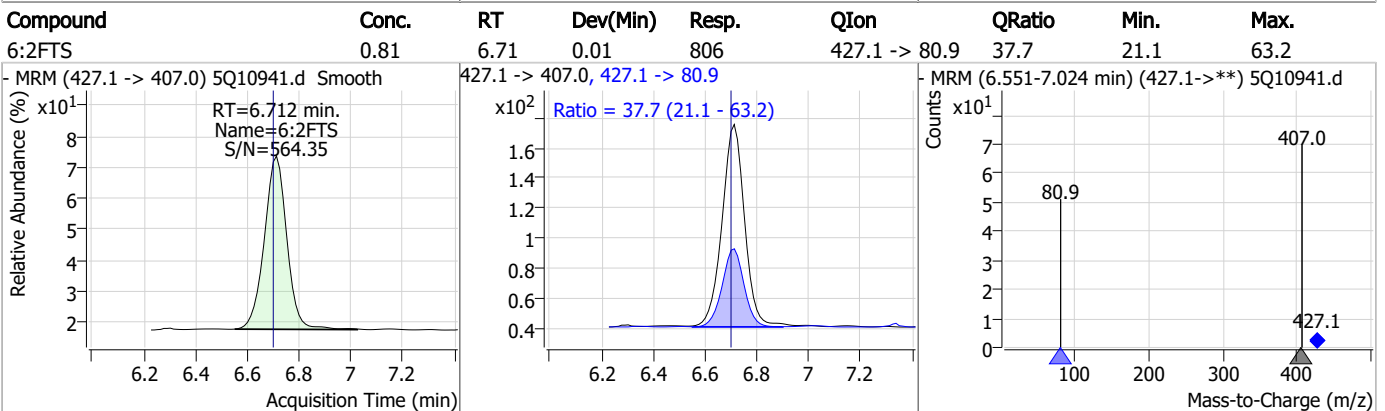
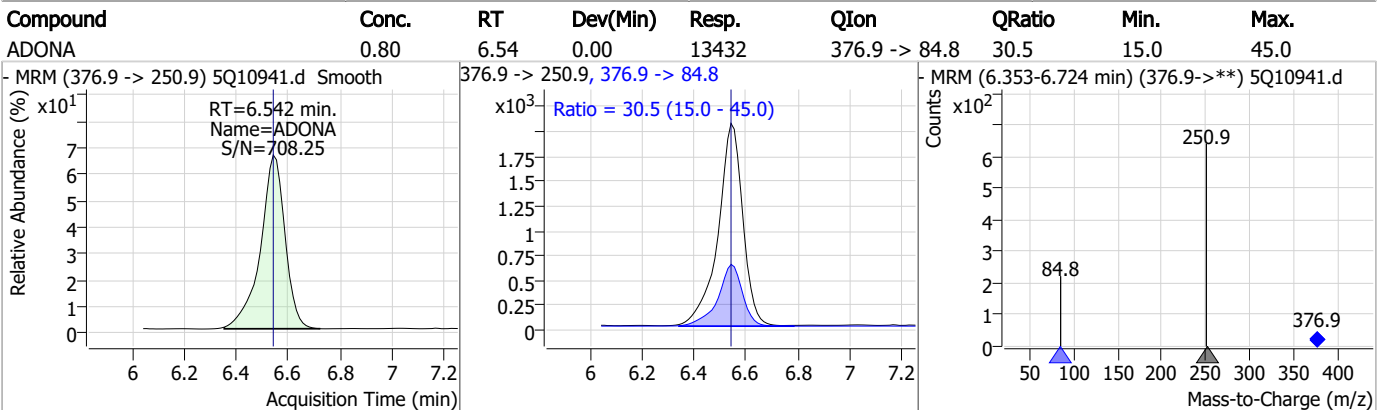
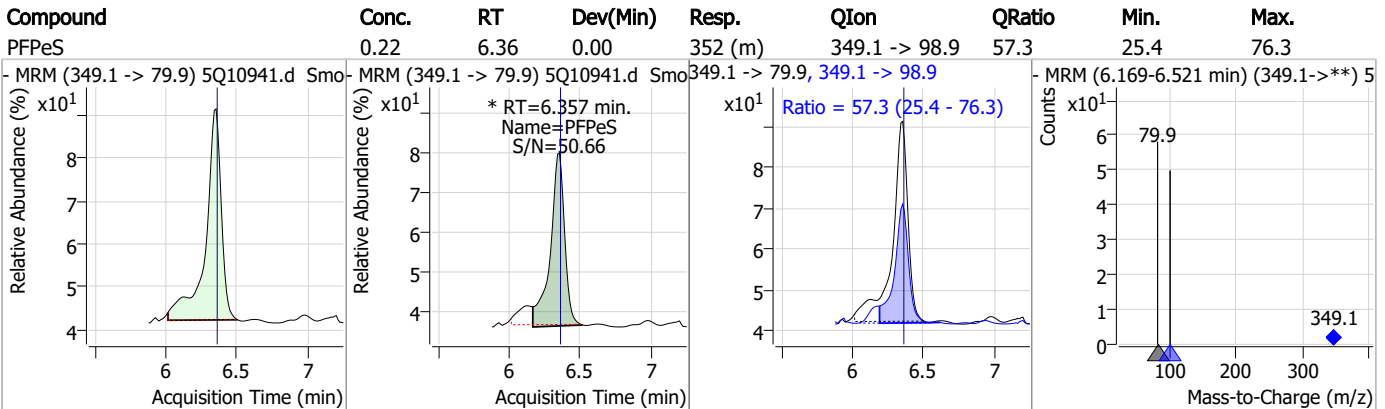
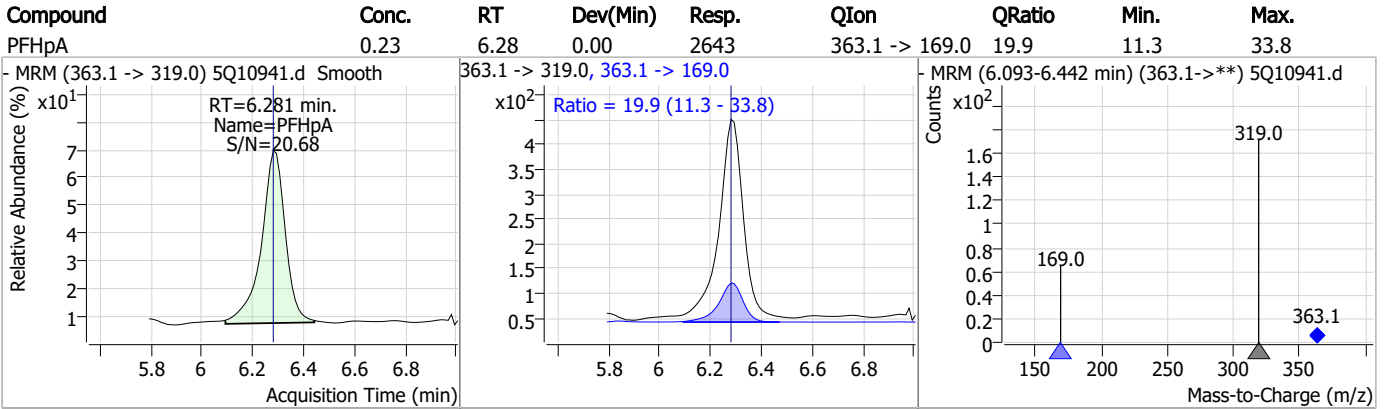


7.7.2

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Perfluorinated Compounds by LC/MS/MS

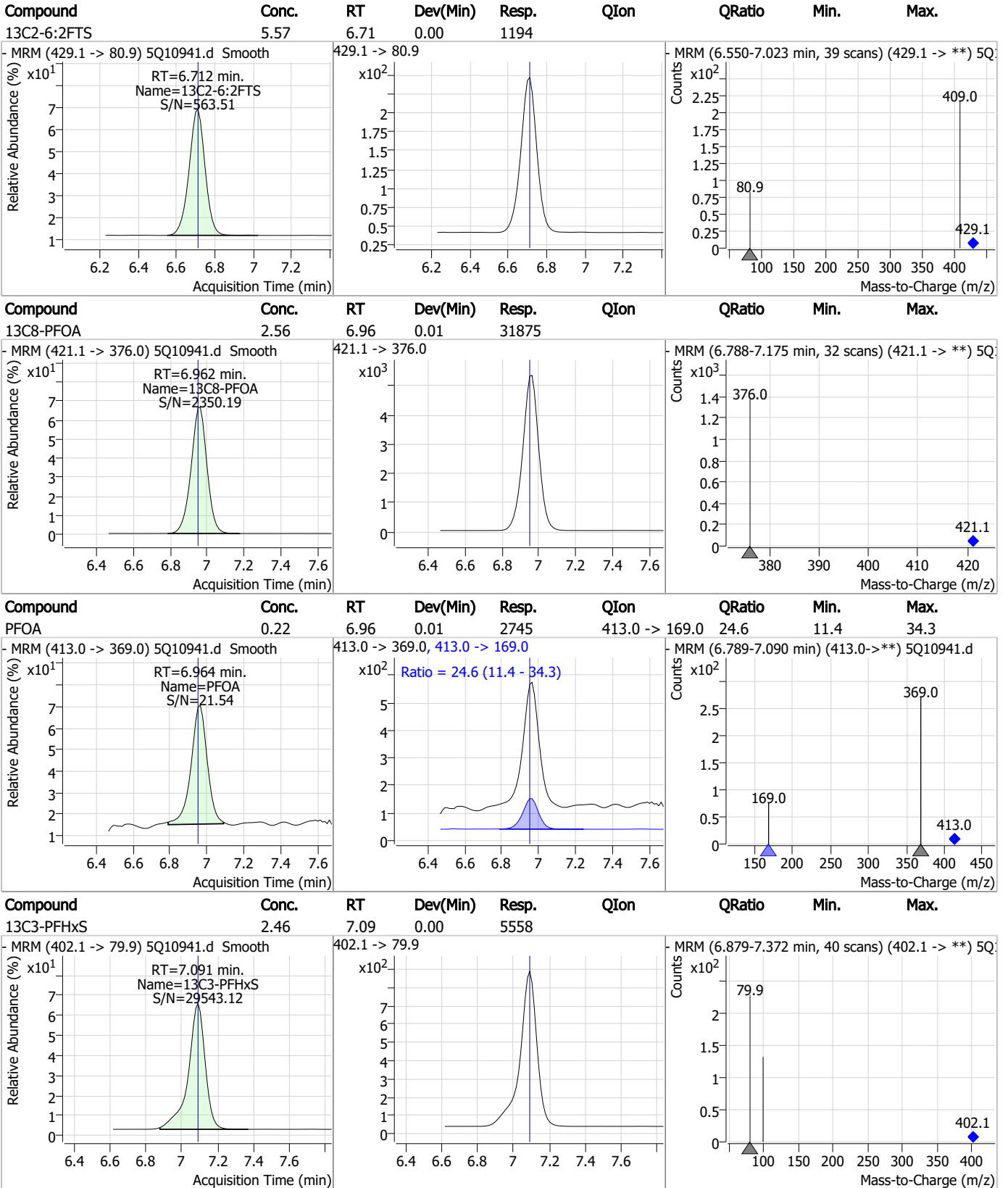


7.7.2

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Perfluorinated Compounds by LC/MS/MS



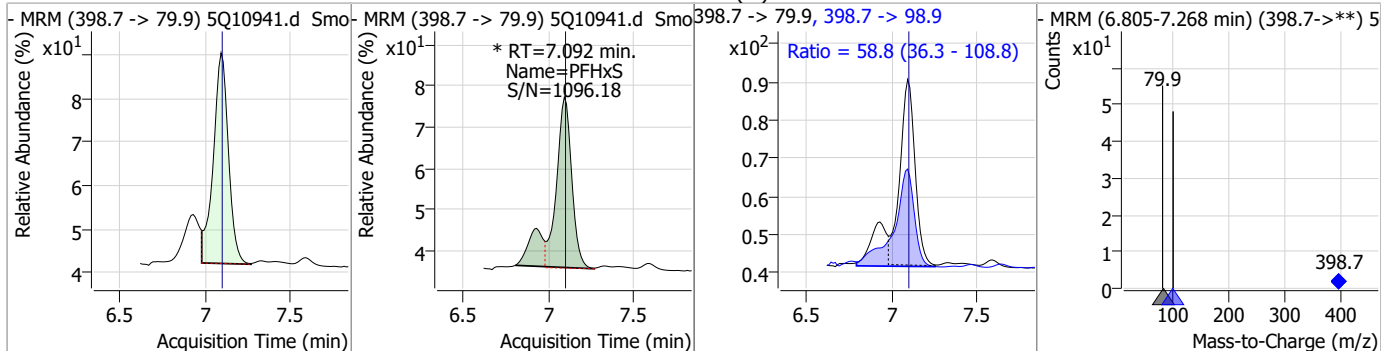
7.7.2

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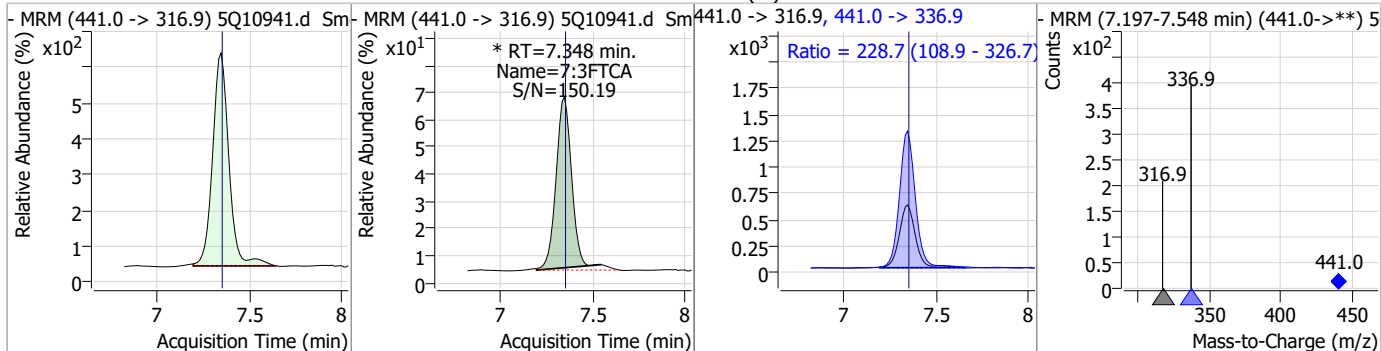


Perfluorinated Compounds by LC/MS/MS

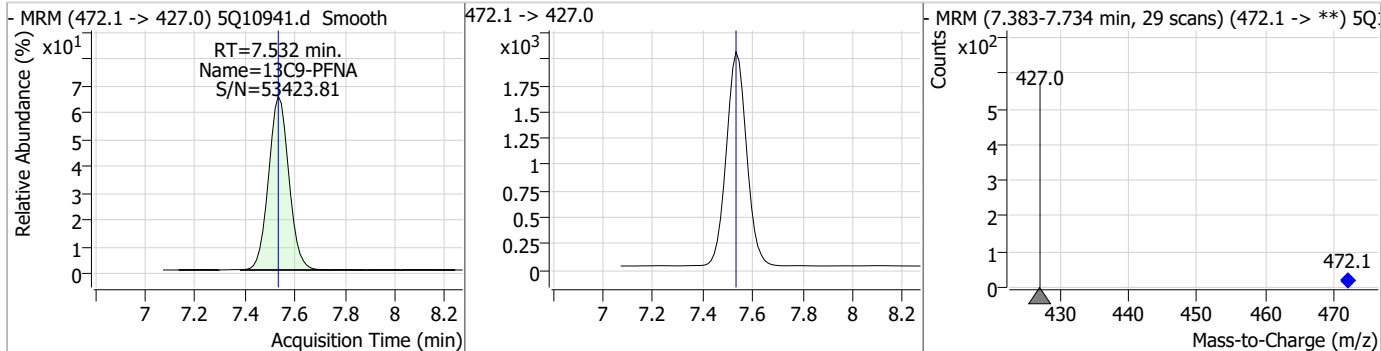
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.19	7.09	0.00	362 (m)	398.7 -> 98.9	58.8	36.3	108.8



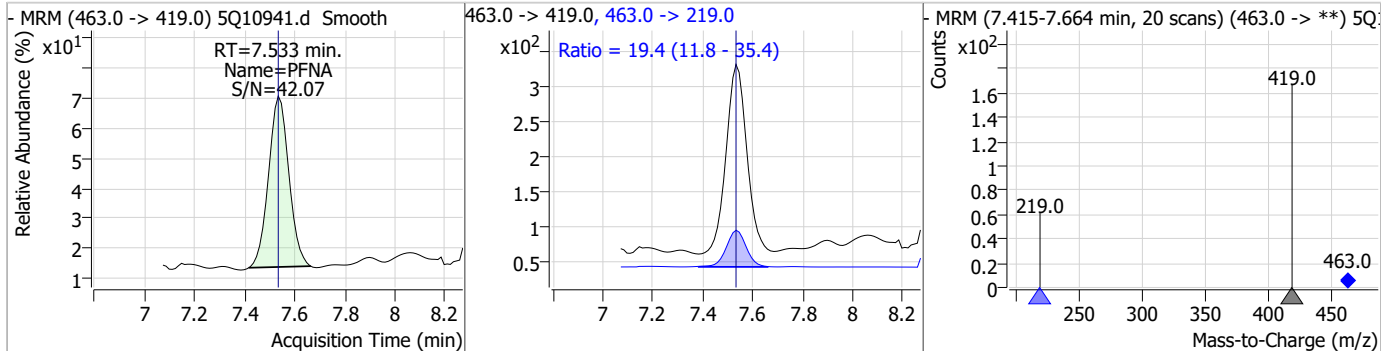
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	5.05	7.35	0.00	3401 (m)	441.0 -> 336.9	228.7	108.9	326.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.23	7.53	0.00	11400				



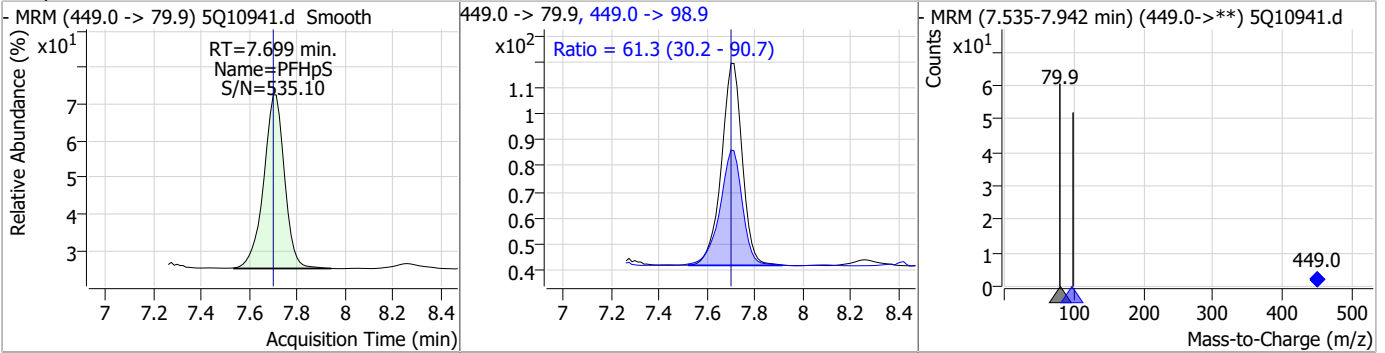
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.23	7.53	0.00	1511	463.0 -> 219.0	19.4	11.8	35.4



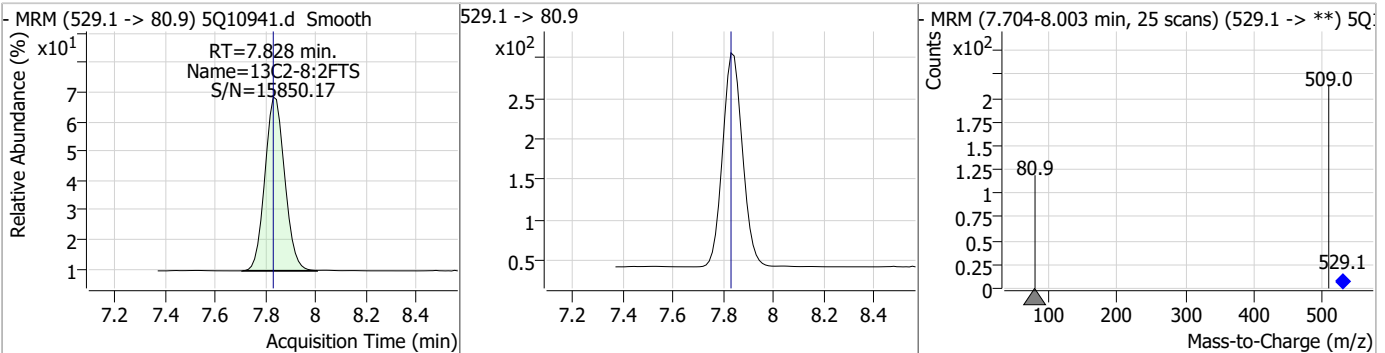
7.7.2
7

Perfluorinated Compounds by LC/MS/MS

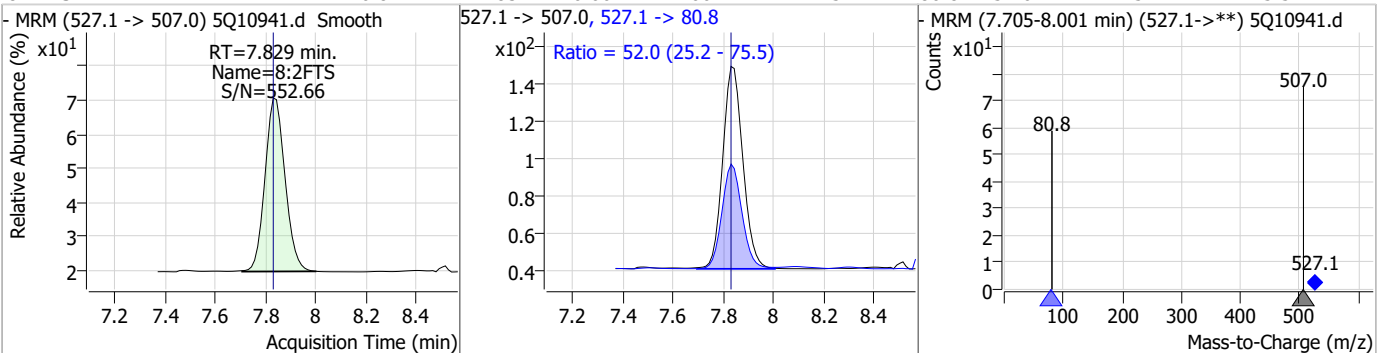
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.23	7.70	0.00	475	449.0 -> 98.9	61.3	30.2	90.7



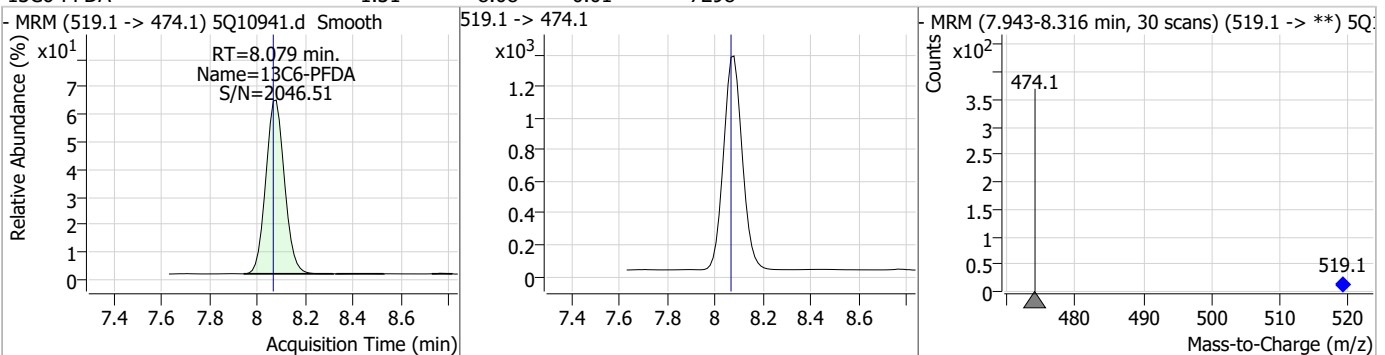
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	4.84	7.83	0.00	1454				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.87	7.83	0.00	601	527.1 -> 80.8	52.0	25.2	75.5

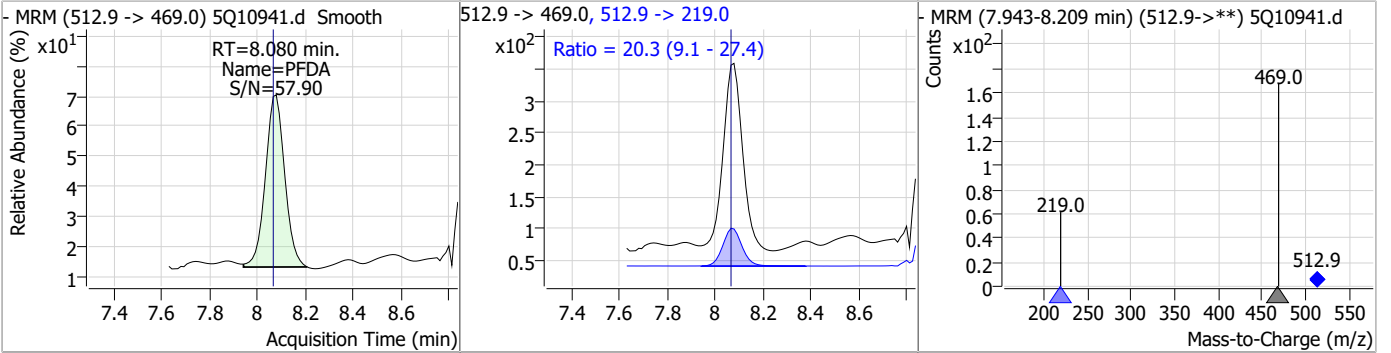


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	1.31	8.08	0.01	7298				

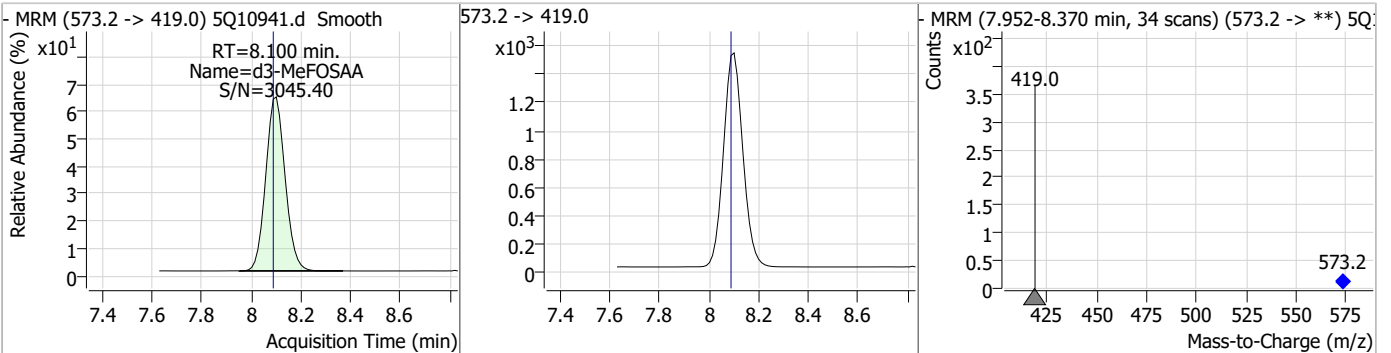


Perfluorinated Compounds by LC/MS/MS

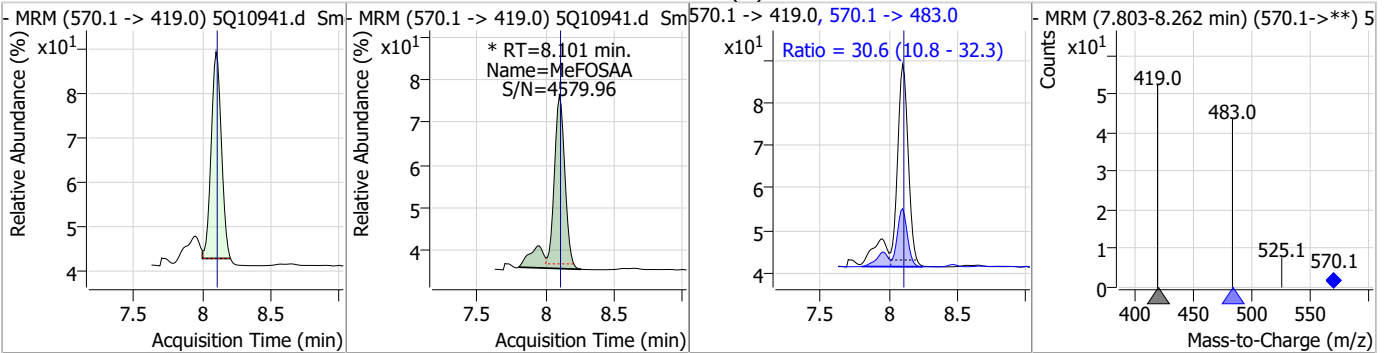
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.21	8.08	0.01	1627	512.9 -> 219.0	20.3	9.1	27.4



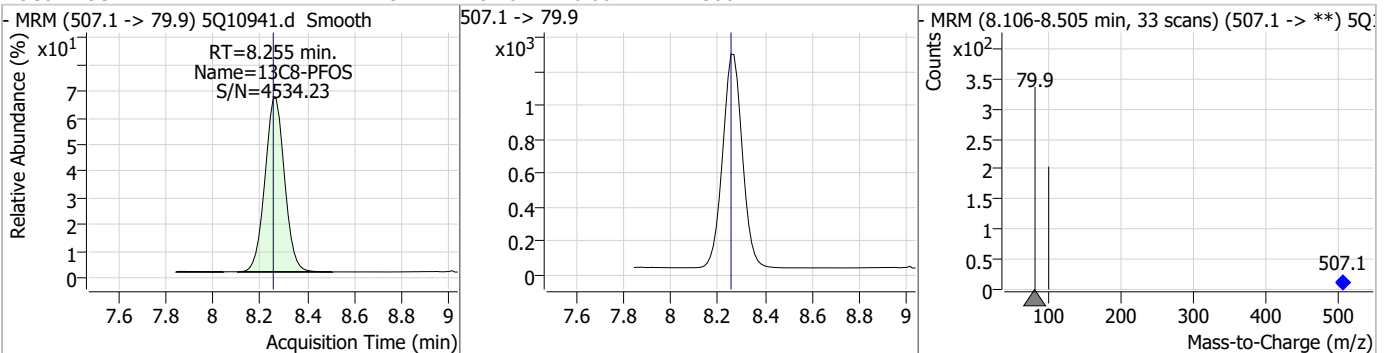
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.96	8.10	0.01	8182				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.22	8.10	0.00	301 (m)	570.1 -> 483.0	30.6	10.8	32.3

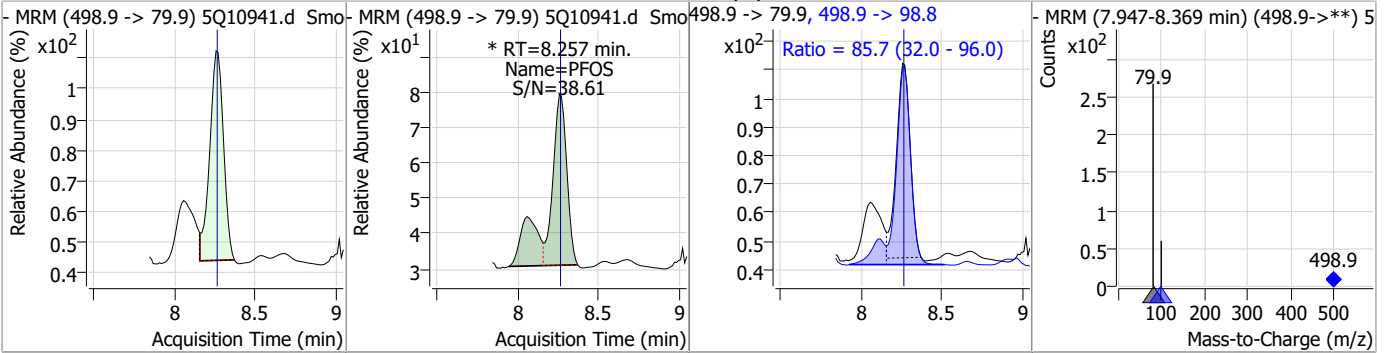


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.49	8.26	0.00	7306				

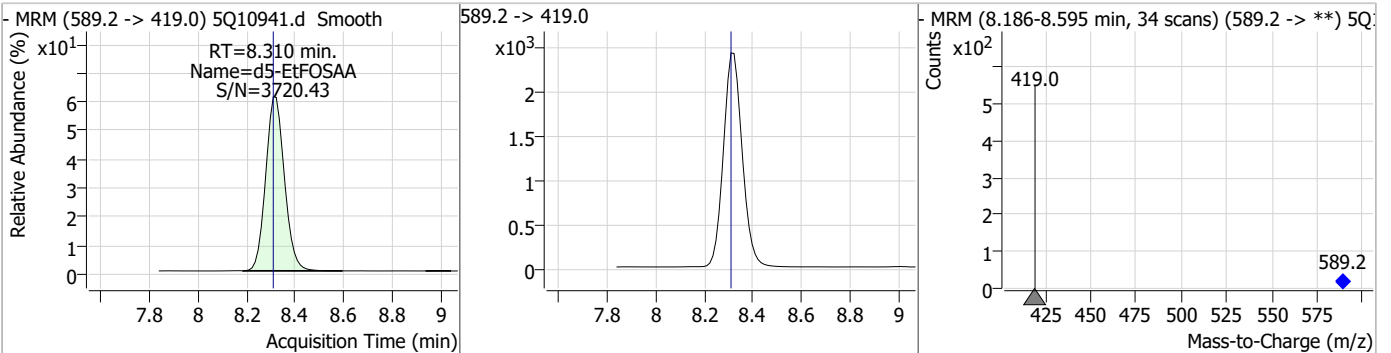


Perfluorinated Compounds by LC/MS/MS

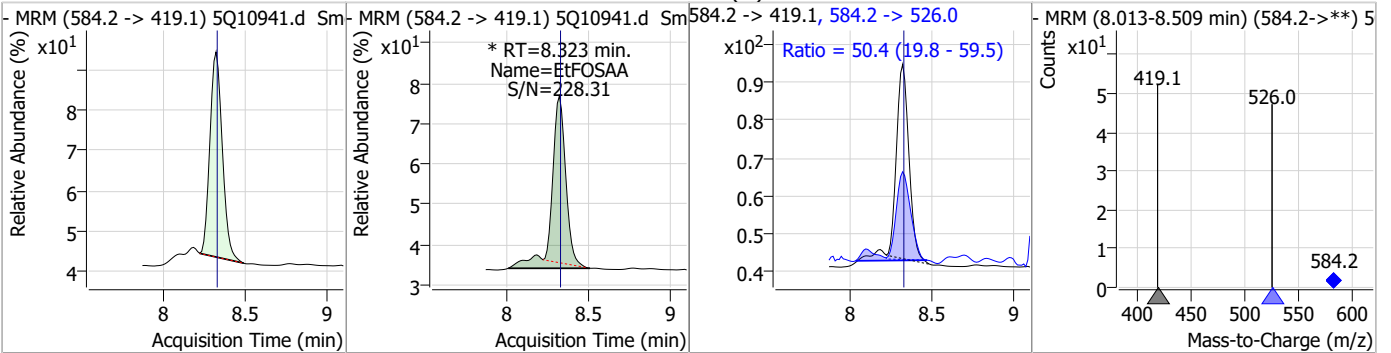
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.19	8.26	0.00	552 (m)	498.9 -> 98.8	85.7	32.0	96.0



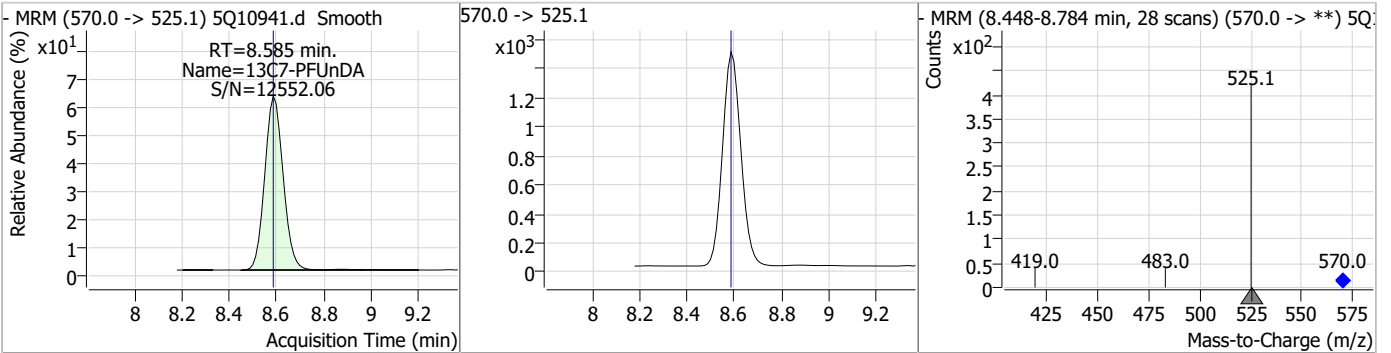
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.26	8.31	0.00	12845				



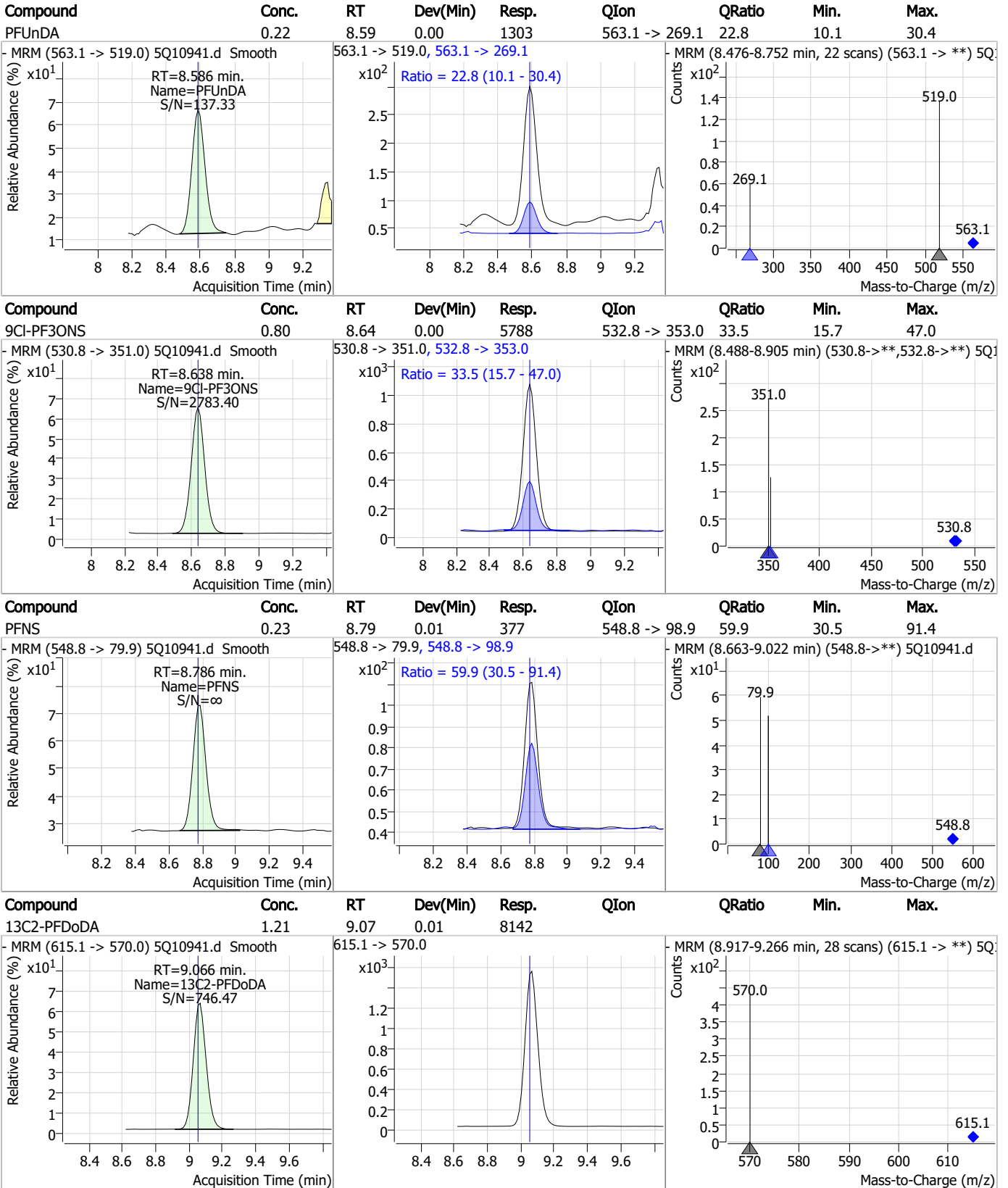
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.19	8.32	0.00	319 (m)	584.2 -> 526.0	50.4	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.31	8.59	0.00	7971				

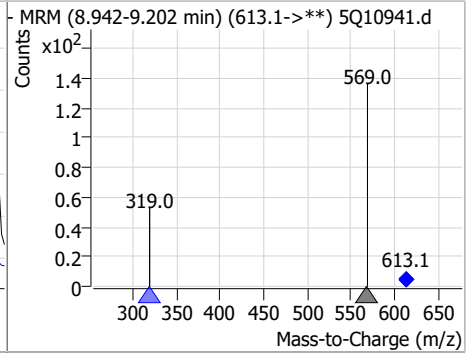
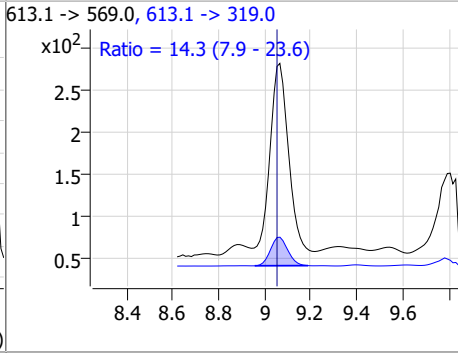
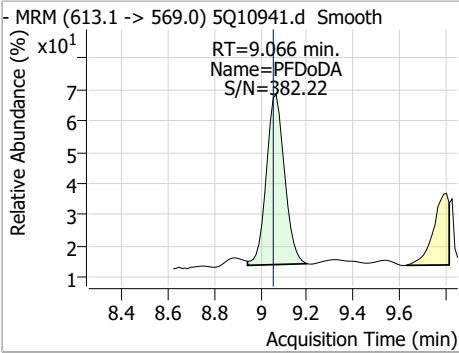


Perfluorinated Compounds by LC/MS/MS

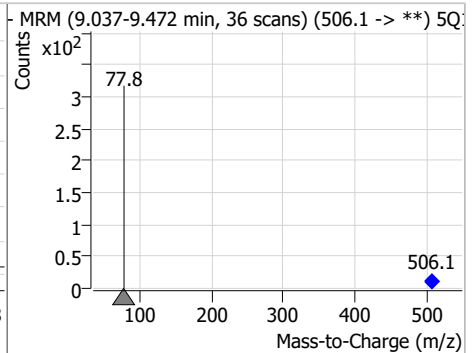
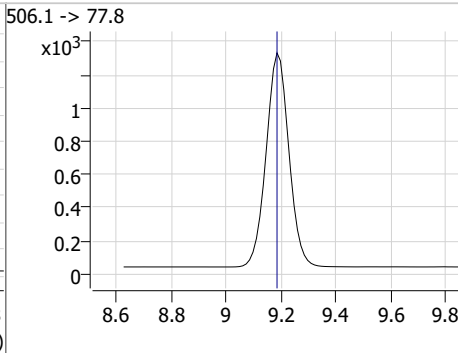
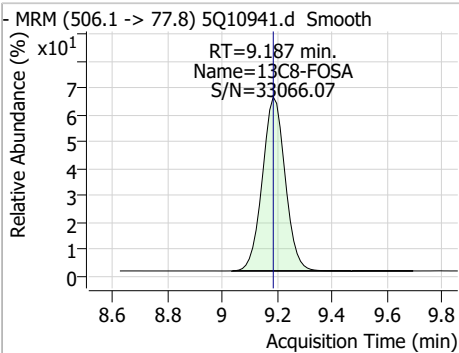


Perfluorinated Compounds by LC/MS/MS

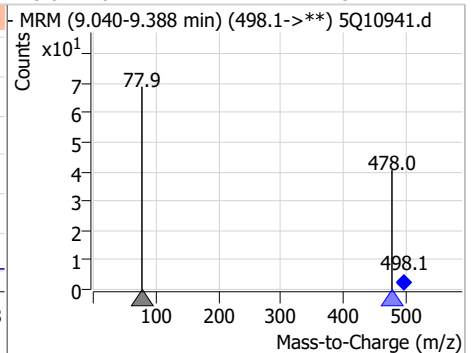
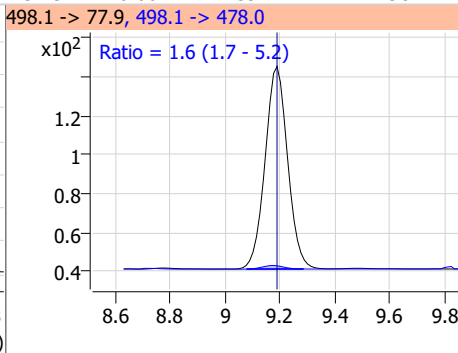
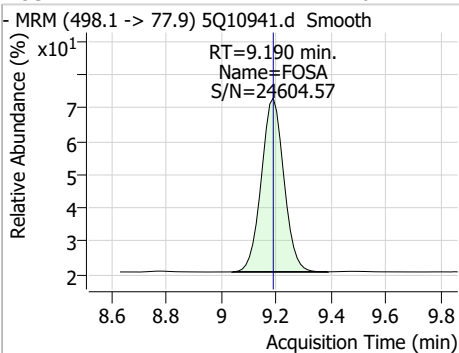
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.22	9.07	0.01	1238	613.1 -> 319.0	14.3	7.9	23.6



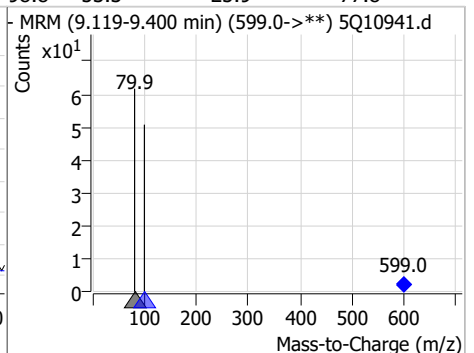
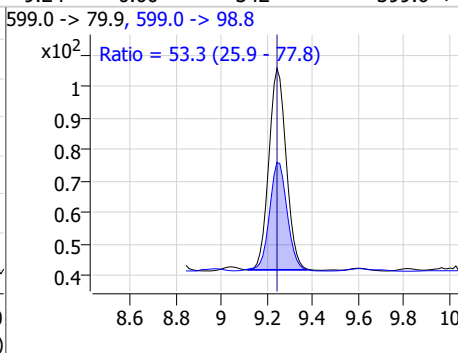
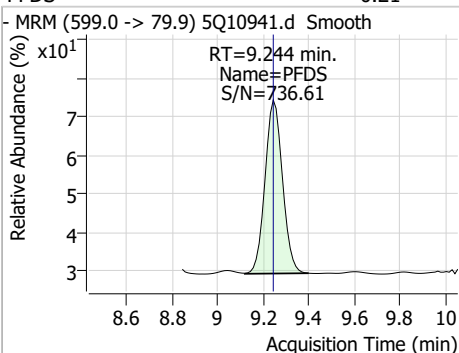
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.54	9.19	0.00	7431				



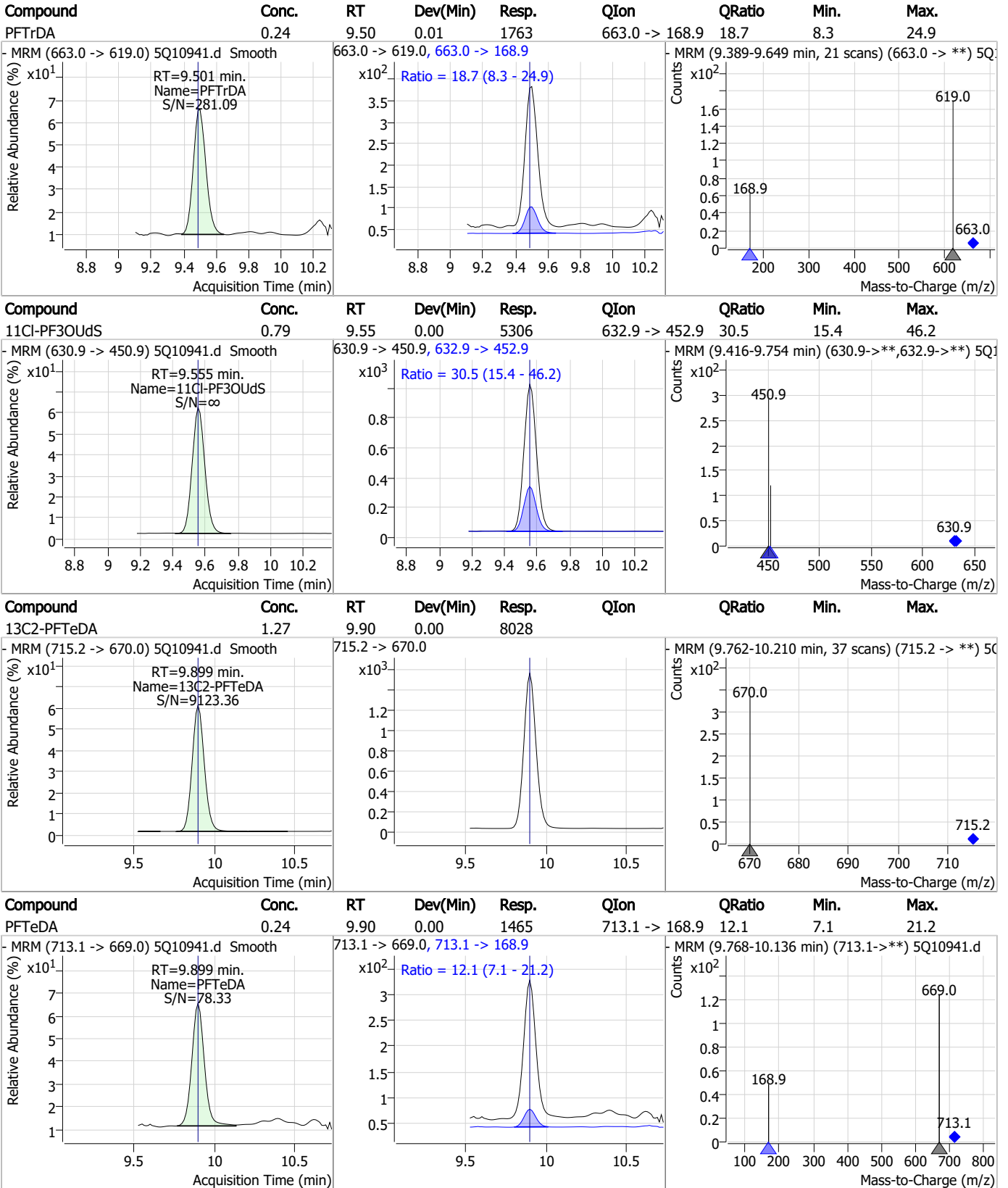
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.22	9.19	0.00	591	498.1 -> 478.0	1.6	1.7	5.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.21	9.24	0.00	342	599.0 -> 98.8	53.3	25.9	77.8



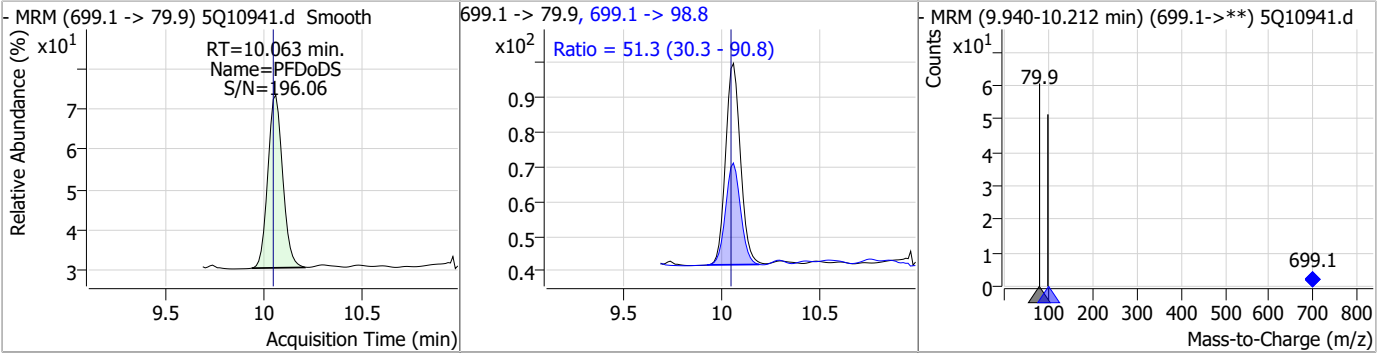
Perfluorinated Compounds by LC/MS/MS



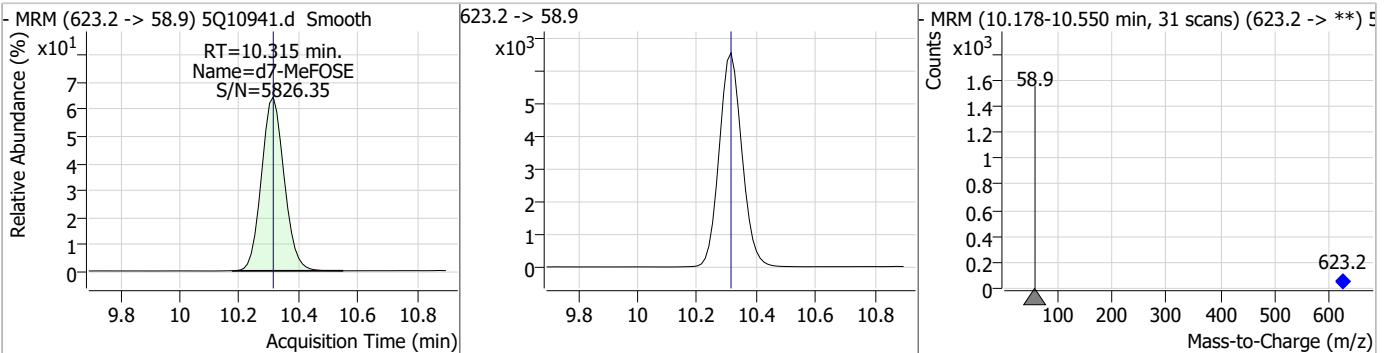
7.7.2
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Perfluorinated Compounds by LC/MS/MS

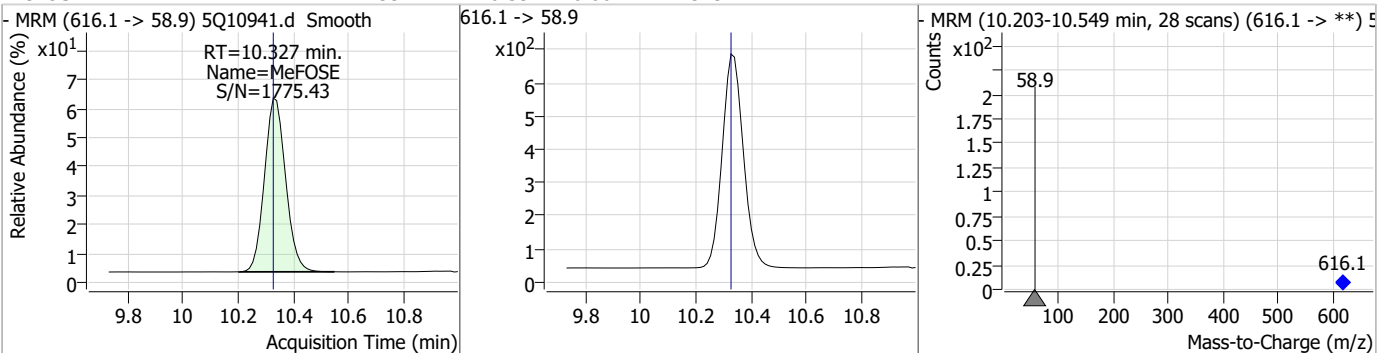
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.24	10.06	0.01	305	699.1 -> 98.8	51.3	30.3	90.8



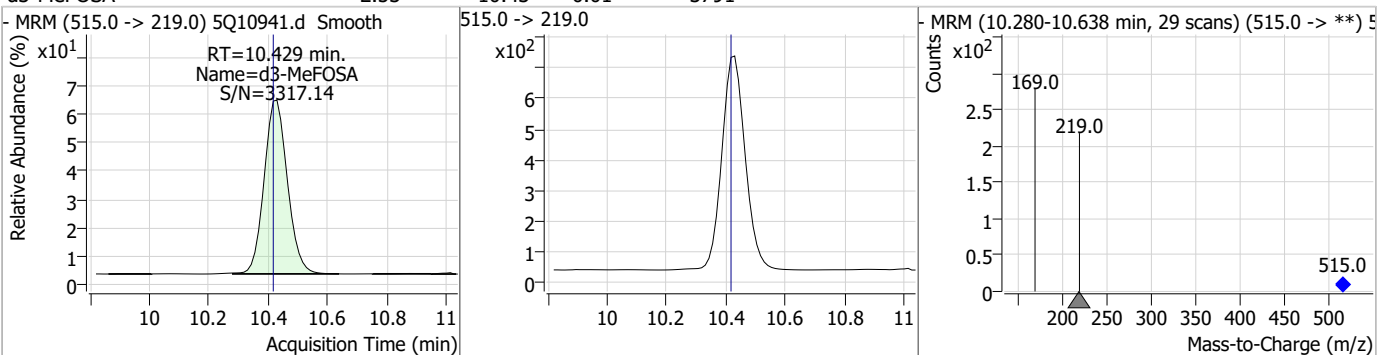
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.19	10.31	0.00	34525				



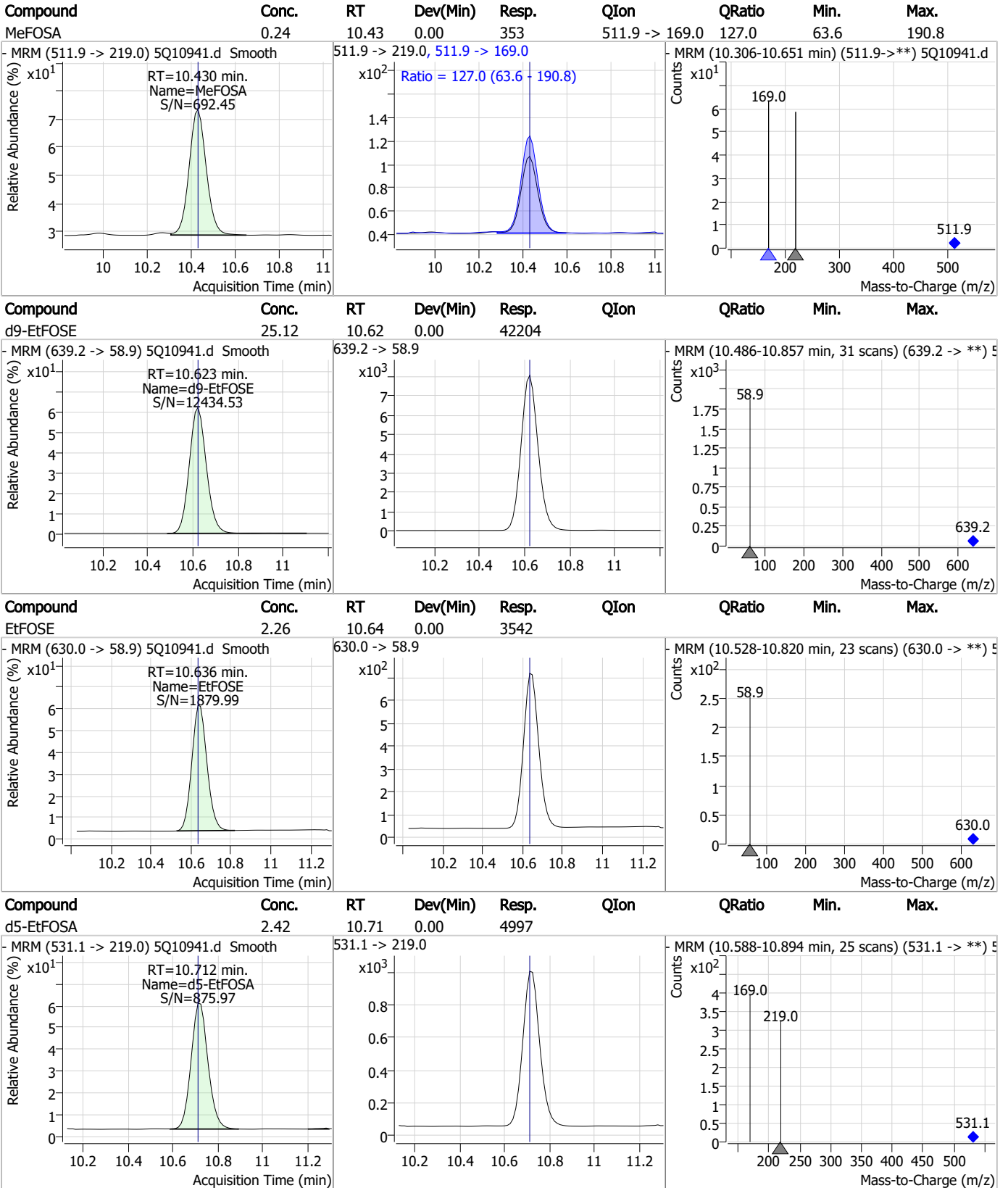
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	2.33	10.33	0.00	3432				



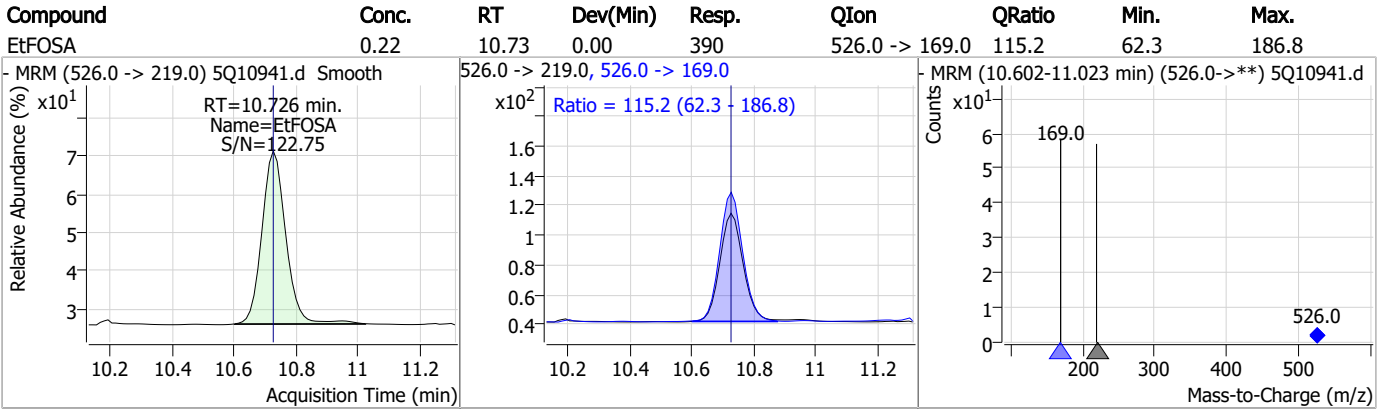
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.53	10.43	0.01	3791				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.2

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Manual Integration Approval Summary

Sample Number: S5Q169-IC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10941.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 20:31 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
HFPO-DA (GenX)	13252-13-6		5.71	Poor instrument integration
PFEESA	113507-82-7		5.83	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
7:3 Fluorotelomer carboxylate	812-70-4		7.35	Poor instrument integration
MeFOSAA	2355-31-9		8.10	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.32	Split peak

7.7.2.1
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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/21/23 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10942.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 8:45:35 PM
 Sample Name : ic169-2
 Vial : P3-A3
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	52352	10.00	µg/L m	0.000
M5-PFPeA	4.162	268.3 -> 223.0	29925	5.00	µg/L m	0.012
M5-PFHxA	5.335	318.0 -> 273.0	28241	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	30444	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	36168	2.50	µg/L	0.000
M9-PFNA	7.532	472.1 -> 427.0	13048	1.25	µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	8055	1.25	µg/L	0.012
M7-PFUnDA	8.585	570.0 -> 525.1	8952	1.25	µg/L	0.000
M2-PFDoDA	9.066	615.1 -> 570.0	9993	1.25	µg/L	0.012
M2-PFTeDA	9.899	715.2 -> 670.0	9180	1.25	µg/L	0.000
M8-FOSA	9.187	506.1 -> 77.8	8204	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	7488	2.50	µg/L m	0.000
M3-PFHxS	7.091	402.1 -> 79.9	6463	2.50	µg/L	0.000
M8-PFOS	8.255	507.1 -> 79.9	8346	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	566	5.00	µg/L	0.000
M2-6:2FTS	6.712	429.1 -> 80.9	1287	5.00	µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1772	5.00	µg/L	0.000
M3-MeFOSAA	8.101	573.2 -> 419.0	9724	5.00	µg/L	0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	71061	10.00	µg/L	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	14316	5.00	µg/L	0.000
M7-MeFOSE	10.315	623.2 -> 58.9	39584	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	48691	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5945	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4328	2.50	µg/L	0.000
13C4-PFOS	8.256	502.8 -> 79.9	8572	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	28945	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4678	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	42966	2.50	µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	12345	1.25	µg/L	0.012
13C5-PFNA	7.533	468.0 -> 423.0	12547	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	36331	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	566	4.97	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.4%			
13C2-6:2FTS	6.712	429.1 -> 80.9	1287	5.07	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.5%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1772	4.99	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.7%			
13C2-PFDoDA	9.066	615.1 -> 570.0	9993	1.30	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.9%			
13C2-PFTeDA	9.899	715.2 -> 670.0	9180	1.27	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%			
13C3-PFBS	5.277	302.1 -> 79.9	8370	2.33	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.0%			
13C3-PFHxS	7.091	402.1 -> 79.9	6463	2.42	µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.6%			
13C4-PFBA	2.799	216.8 -> 171.9	54370	9.96	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.6%			
13C4-PFHpA	6.280	367.1 -> 322.0	30444	2.52	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%			
13C5-PFHxA	5.335	318.0 -> 273.0	32099	2.52	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%			
13C5-PFPeA	4.162	268.3 -> 223.0	34061	5.16	µg/L	0.012	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.1%			
13C6-PFDA	8.079	519.1 -> 474.1	8055	1.26	µg/L	0.012	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%			
13C7-PFUnDA	8.585	570.0 -> 525.1	8952	1.28	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%			
13C8-FOSA	9.187	506.1 -> 77.8	8204	2.44	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%			
13C8-PFOA	6.950	421.1 -> 376.0	36168	2.50	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C8-PFOS	8.255	507.1 -> 79.9	8346	2.47	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%			
13C9-PFNA	7.532	472.1 -> 427.0	13048	1.27	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.8%			
d3-MeFOSAA	8.101	573.2 -> 419.0	9724	5.12	µg/L	0.012	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.5%			
13C3-HFPO-DA	5.714	286.9 -> 168.9	71061	10.54	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.4%			
d3-MeFOSA	10.416	515.0 -> 219.0	4328	2.51	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%			
d5-EtFOSAA	8.310	589.2 -> 419.0	14316	5.10	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.9%			
d7-MeFOSE	10.315	623.2 -> 58.9	39584	25.09	µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.4%			
d9-EtFOSE	10.623	639.2 -> 58.9	48691	25.18	µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.7%			
d5-EtFOSA	10.712	531.1 -> 219.0	5945	2.50	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%			
Target Compounds						QValue	
4:2FTS	4.997	327.1 -> 307.0	1300	1.83	µg/L	m	100
		327.1 -> 80.9	711				
6:2FTS	6.712	427.1 -> 407.0	2085	1.94	µg/L		98
		427.1 -> 80.9	903				
8:2FTS	7.829	527.1 -> 507.0	1302	1.55	µg/L		92
		527.1 -> 80.8	732				
EtFOSAA	8.323	584.2 -> 419.1	892	0.48	µg/L	m	80
		584.2 -> 526.0	466				
FOSA	9.190	498.1 -> 77.9	1474	0.49	µg/L		97
		498.1 -> 478.0	65				
MeFOSAA	8.101	570.1 -> 419.0	742	0.45	µg/L	m	90
		570.1 -> 483.0	194				
PFBA	2.807	212.8 -> 168.9	3458	1.67	µg/L	m	100
PFBS	5.278	298.7 -> 79.9	1212	0.49	µg/L	m	95
		298.7 -> 98.8	548				
PFDA	8.080	512.9 -> 469.0	4175	0.49	µg/L		100
		512.9 -> 219.0	768				
PFDODA	9.066	613.1 -> 569.0	3479	0.51	µg/L		98
		613.1 -> 319.0	521				
PFDS	9.244	599.0 -> 79.9	887	0.48	µg/L		97

7.7.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	476			
PFHpA	6.281	363.1 -> 319.0	6174	0.48	µg/L	99
		363.1 -> 169.0	1433			
PFHpS	7.699	449.0 -> 79.9	1091	0.46	µg/L	93
		449.0 -> 98.9	601			
PFHxA	5.337	313.0 -> 269.0	4310	0.52	µg/L	m 99
		313.0 -> 118.9	186			
PFHxS	7.092	398.7 -> 79.9	1018	0.47	µg/L	m 80
		398.7 -> 98.9	568			
PFNA	7.533	463.0 -> 419.0	3621	0.48	µg/L	97
		463.0 -> 219.0	904			
PFNS	8.773	548.8 -> 79.9	817	0.45	µg/L	97
		548.8 -> 98.9	477			
PFOA	6.951	413.0 -> 369.0	7204	0.52	µg/L	98
		413.0 -> 169.0	1706			
PFOS	8.257	498.9 -> 79.9	1575	0.47	µg/L	m 96
		498.9 -> 98.8	953			
PFPeA	4.164	263.0 -> 219.0	6354	0.97	µg/L	m 100
PFPeS	6.357	349.1 -> 79.9	917	0.49	µg/L	m 98
		349.1 -> 98.9	452			
PFTeDA	9.900	713.1 -> 669.0	3396	0.48	µg/L	98
		713.1 -> 168.9	450			
PFTrDA	9.489	663.0 -> 619.0	4393	0.49	µg/L	99
		663.0 -> 168.9	739			
PFUnDA	8.586	563.1 -> 519.0	3319	0.50	µg/L	96
		563.1 -> 269.1	738			
11Cl-PF3OUdS	9.555	630.9 -> 450.9	13391	1.71	µg/L	99
		632.9 -> 452.9	4220			
9Cl-PF3ONS	8.638	530.8 -> 351.0	14178	1.70	µg/L	94
		532.8 -> 353.0	4911			
ADONA	6.542	376.9 -> 250.9	34817	1.79	µg/L	99
		376.9 -> 84.8	10254			
HFPO-DA	5.715	284.9 -> 168.9	12107	2.08	µg/L	100
		284.9 -> 184.9	1138			
3:3FTCA	3.603	241.0 -> 177.0	1184	2.45	µg/L	m 98
		241.0 -> 117.0	145			
5:3FTCA	5.918	341.0 -> 237.1	21213	12.39	µg/L	98
		341.0 -> 217.0	14627			
7:3FTCA	7.348	441.0 -> 316.9	8561	12.49	µg/L	98
		441.0 -> 336.9	18320			
EtFOSA	10.726	526.0 -> 219.0	1079	0.50	µg/L	96
		526.0 -> 169.0	1290			
EtFOSE	10.636	630.0 -> 58.9	9189	5.08	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	832	0.49	µg/L	95
		511.9 -> 169.0	1109			
MeFOSE	10.327	616.1 -> 58.9	8504	5.03	µg/L	100
PFDoDS	10.063	699.1 -> 79.9	673	0.46	µg/L	99
		699.1 -> 98.8	410			
NFDHA	5.218	295.0 -> 201.0	606	0.93	µg/L	m 100
		295.0 -> 84.9	163			
PFMBA	4.566	279.0 -> 85.1	4476	0.93	µg/L	m 100
PFMPA	3.328	229.0 -> 84.9	3369	0.95	µg/L	m 100
PFEESA	5.833	314.8 -> 134.9	8292	0.95	µg/L	m 99
		314.8 -> 82.9	210			

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

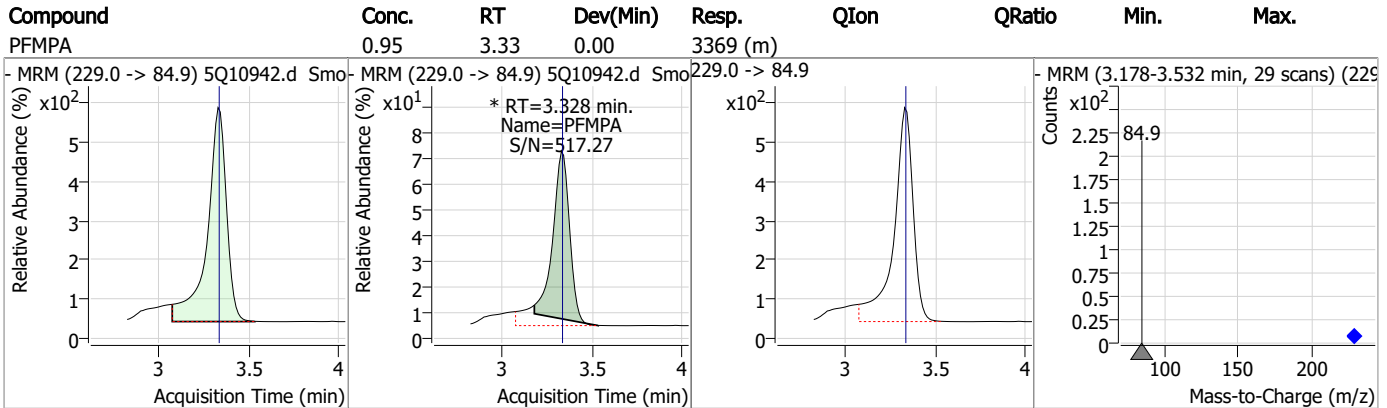
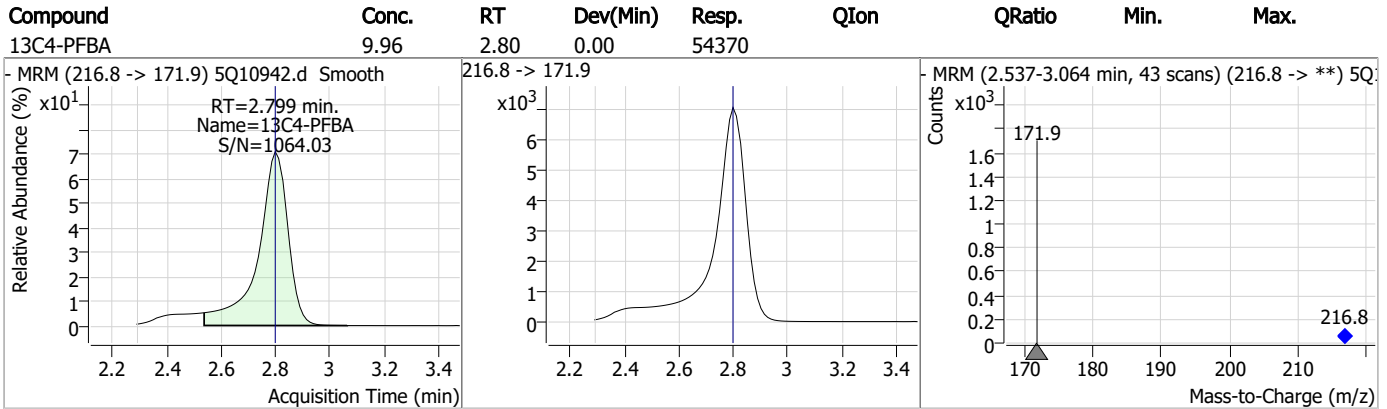
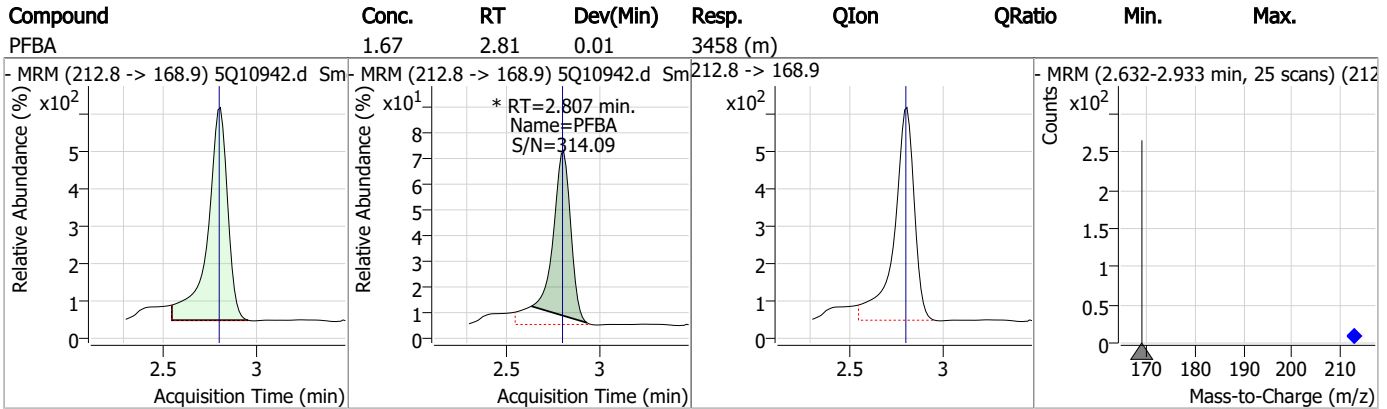
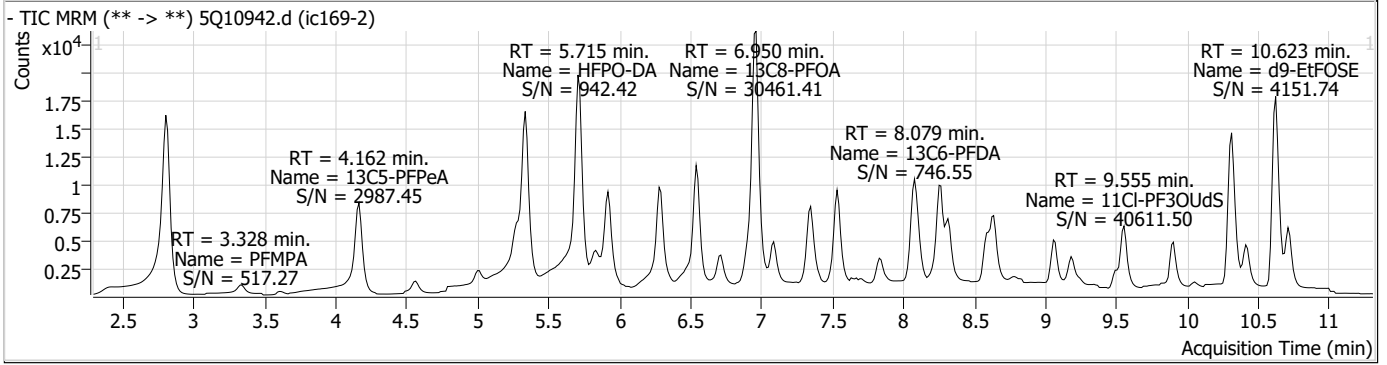
Perfluorinated Compounds by LC/MS/MS

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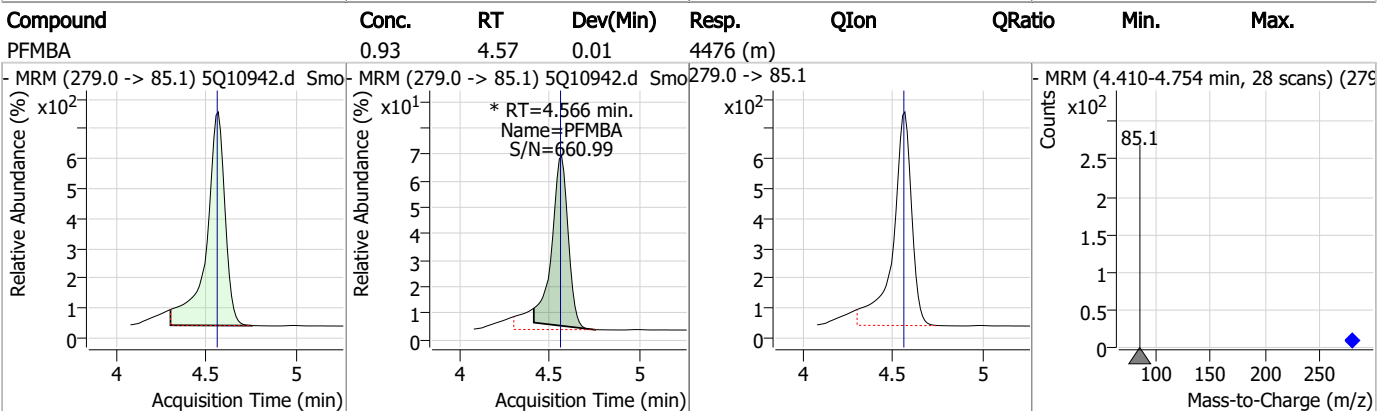
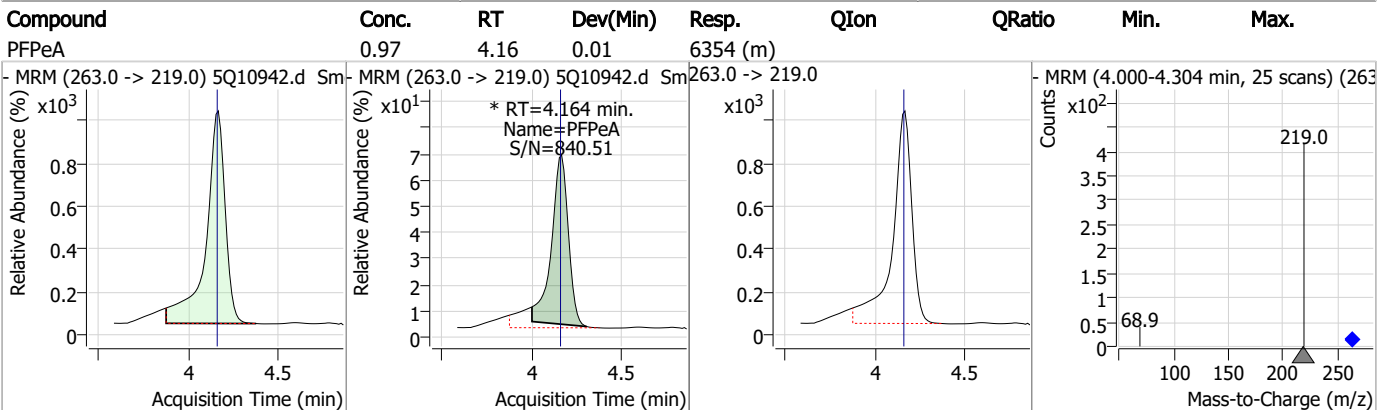
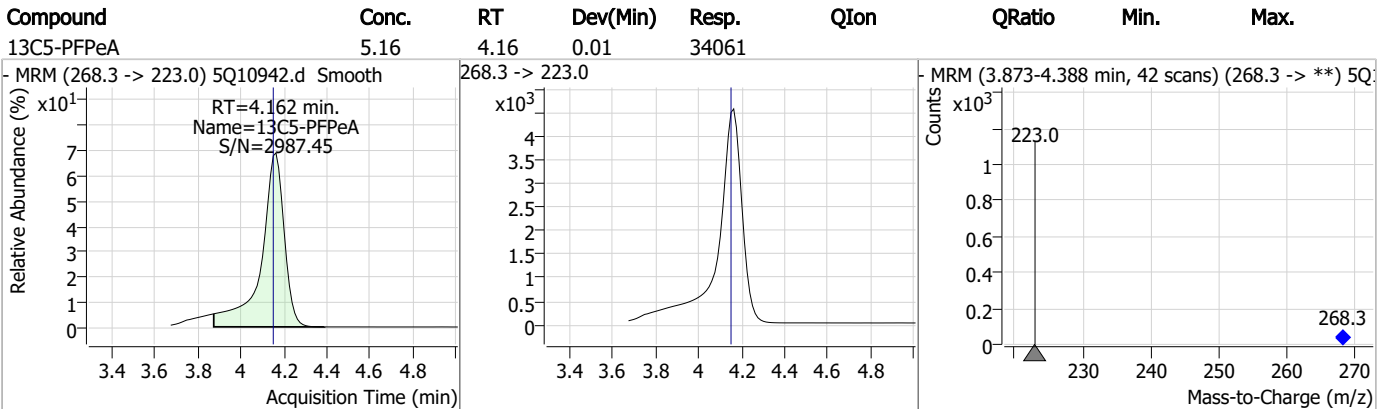
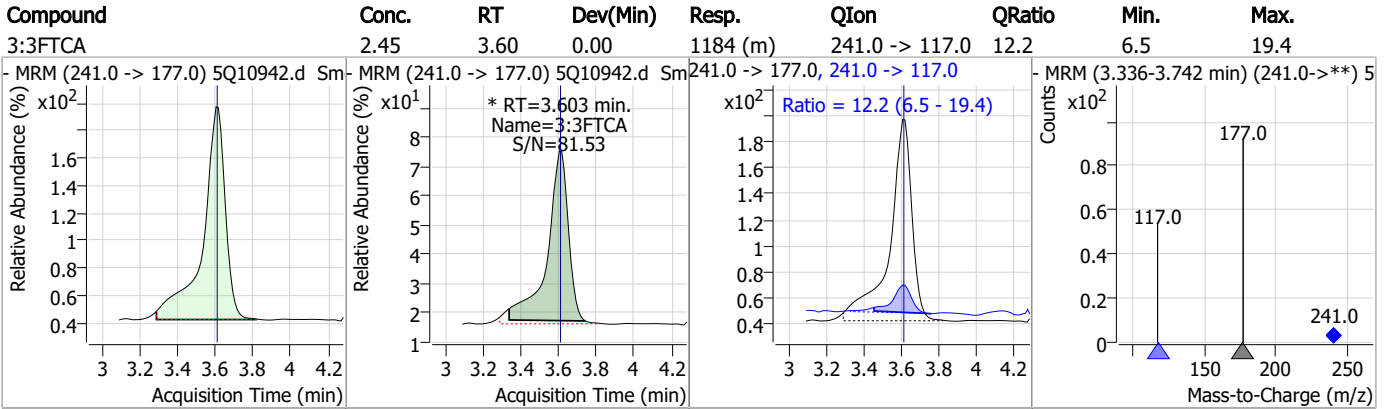
7.7.3

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Perfluorinated Compounds by LC/MS/MS



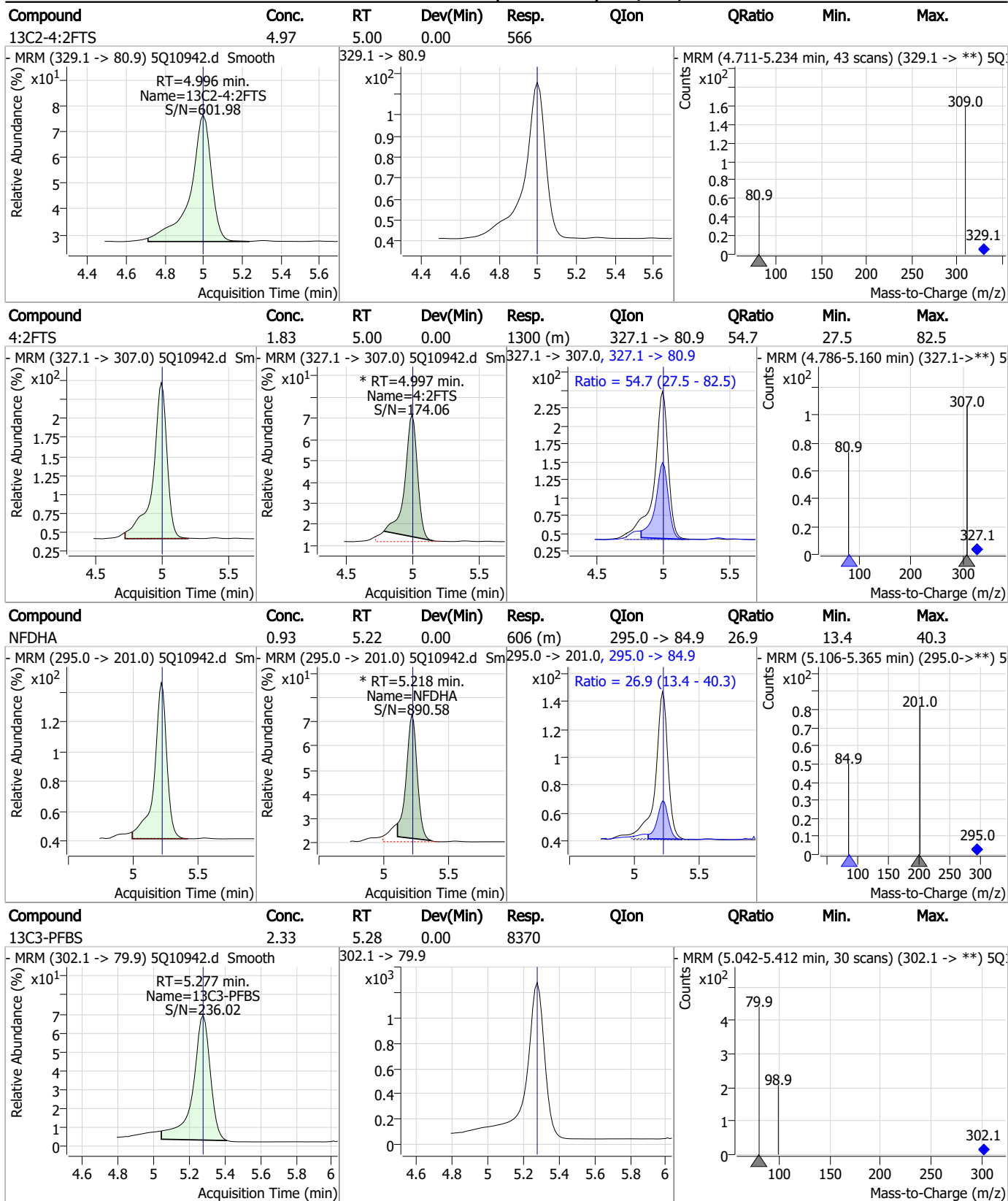
Perfluorinated Compounds by LC/MS/MS



7.7.3

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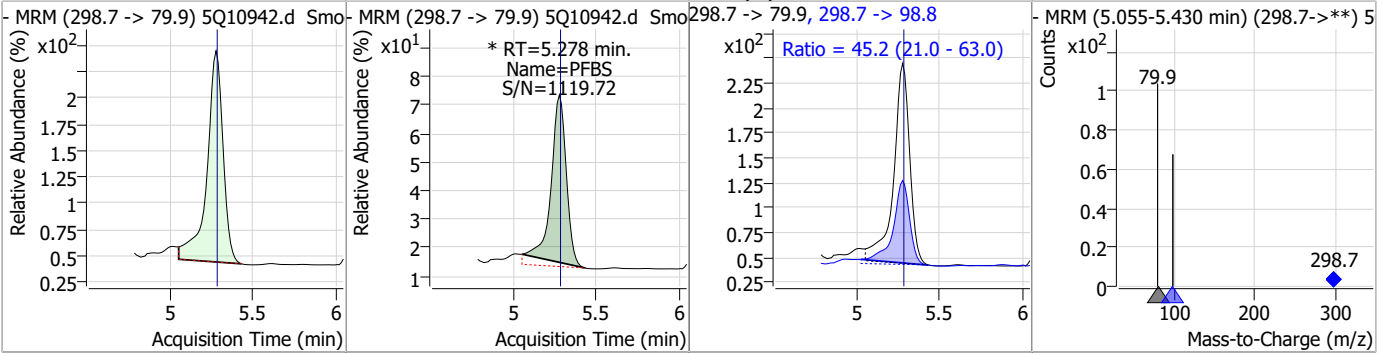
Perfluorinated Compounds by LC/MS/MS



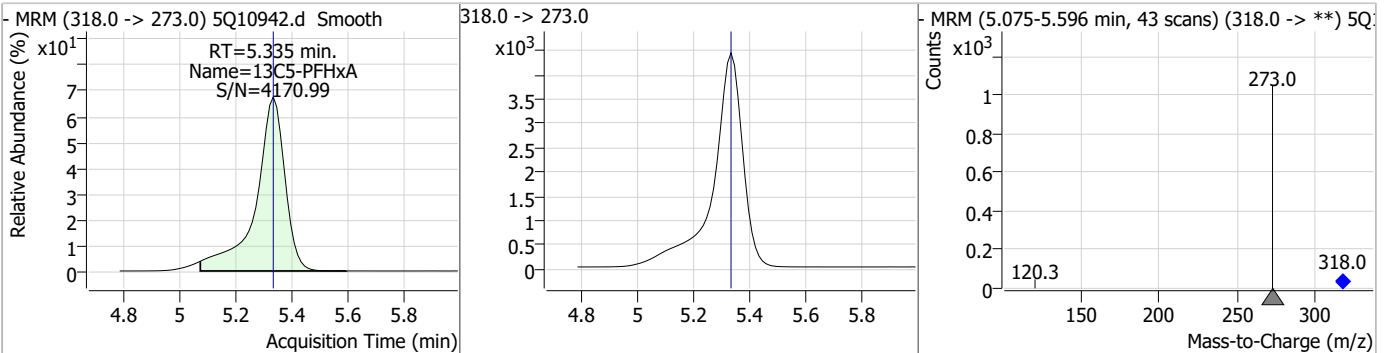
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Perfluorinated Compounds by LC/MS/MS

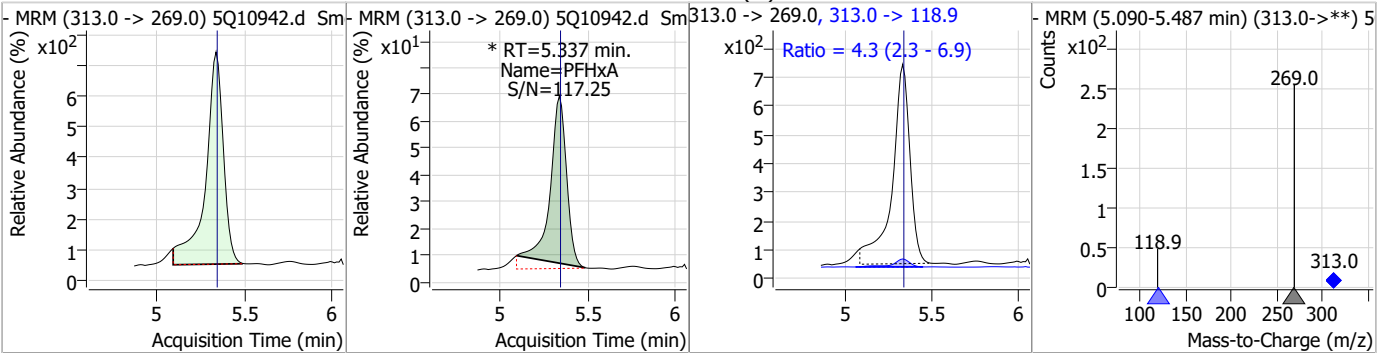
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.49	5.28	0.00	1212 (m)	298.7 -> 98.8	45.2	21.0	63.0



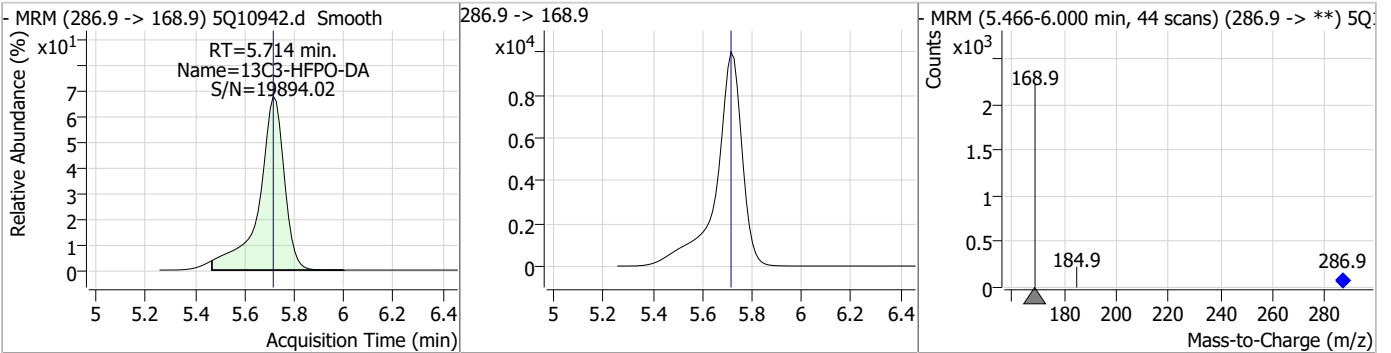
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.52	5.34	0.00	32099				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.52	5.34	0.00	4310 (m)	313.0 -> 118.9	4.3	2.3	6.9

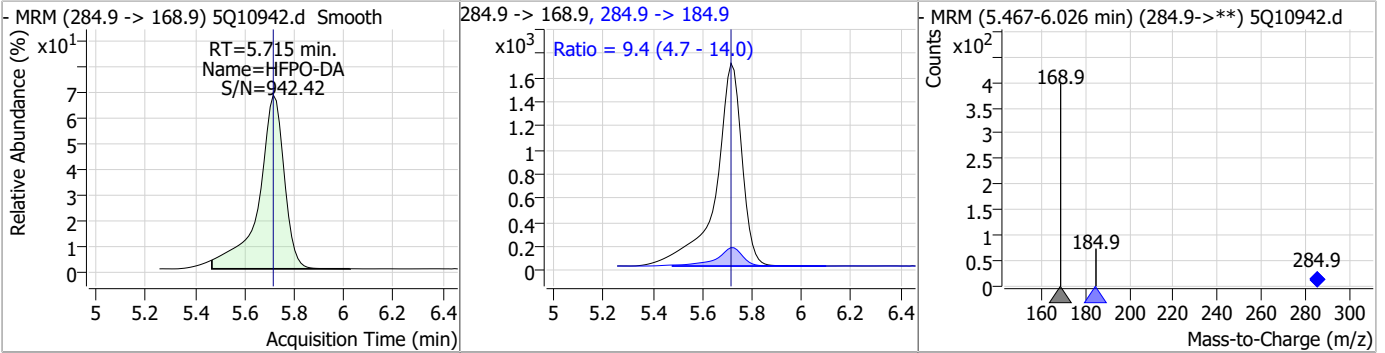


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.54	5.71	0.00	71061				

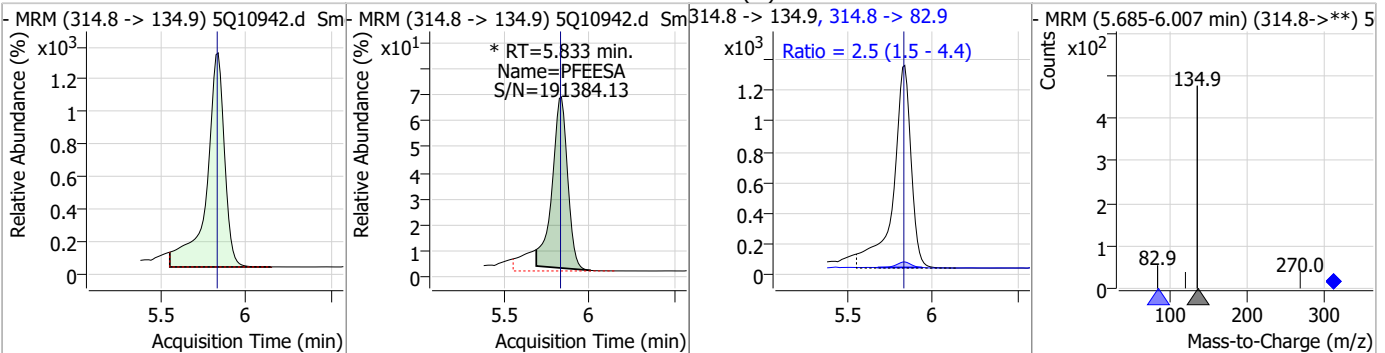


Perfluorinated Compounds by LC/MS/MS

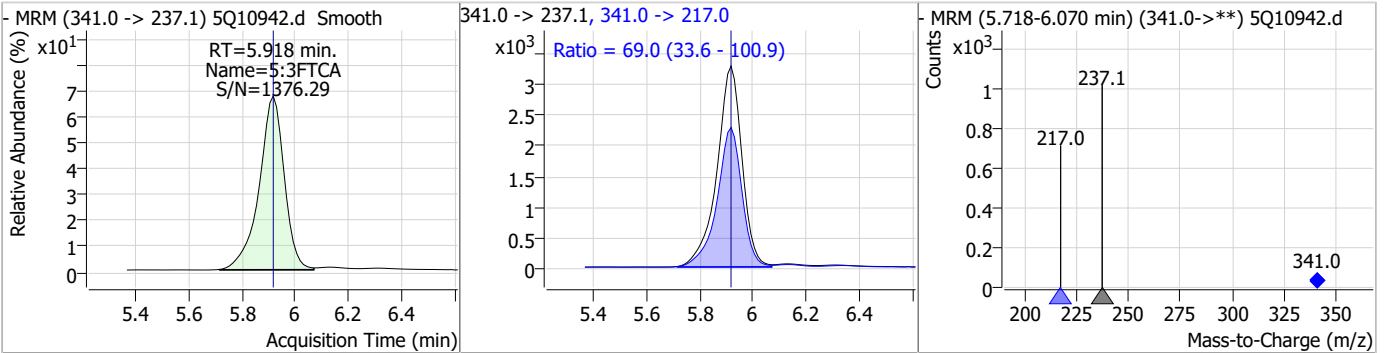
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	2.08	5.72	0.00	12107	284.9 -> 184.9	9.4	4.7	14.0



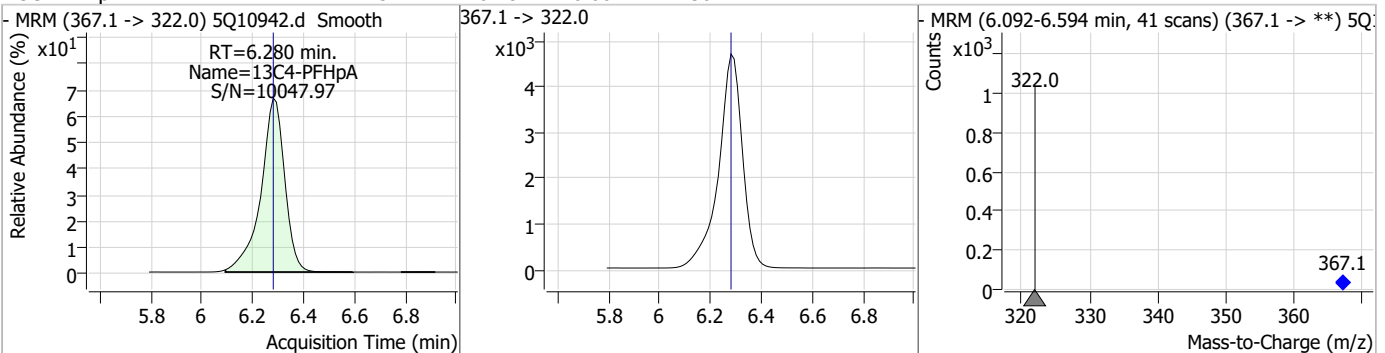
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.95	5.83	0.01	8292 (m)	314.8 -> 82.9	2.5	1.5	4.4



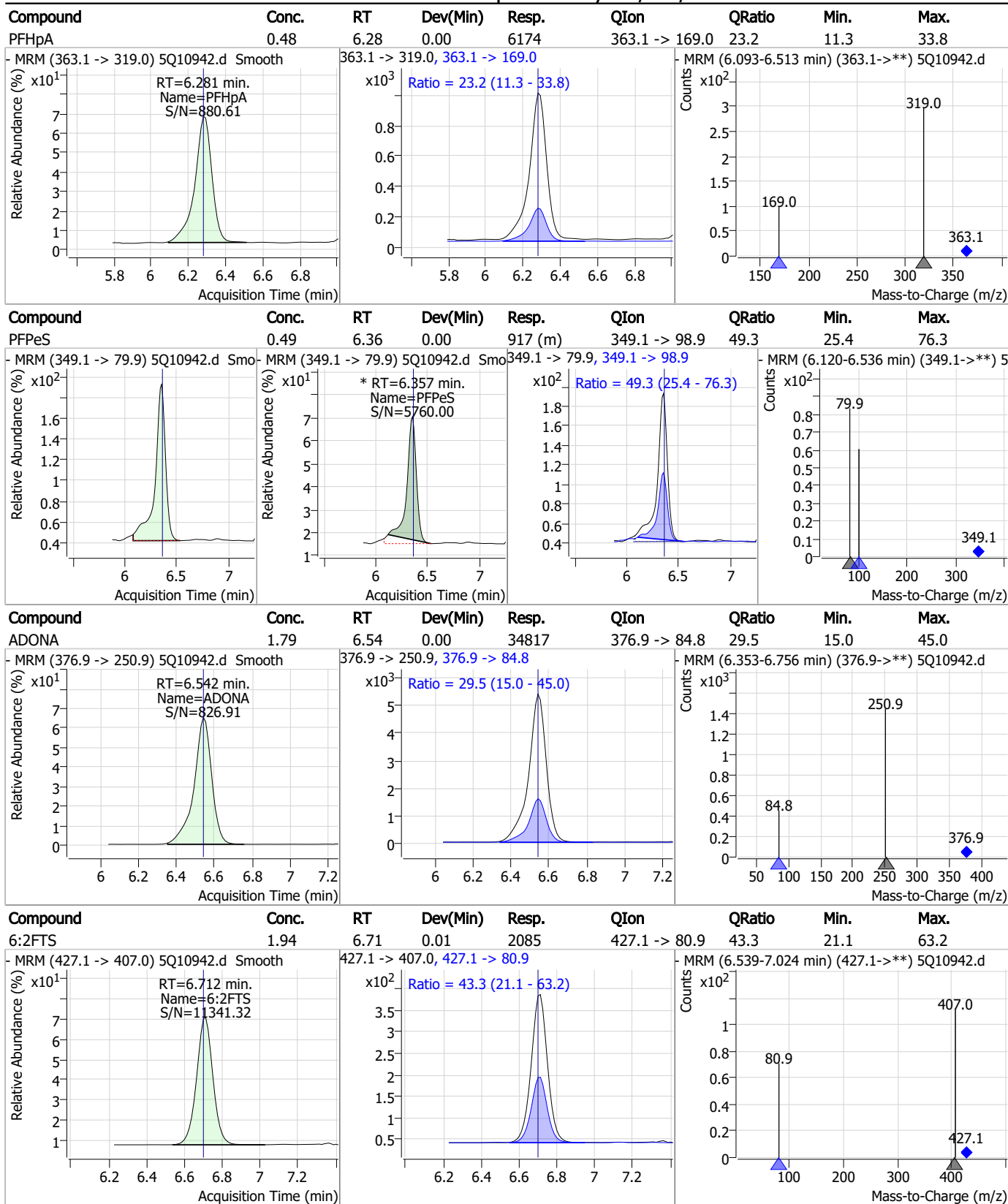
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	12.39	5.92	0.00	21213	341.0 -> 217.0	69.0	33.6	100.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.52	6.28	0.00	30444				



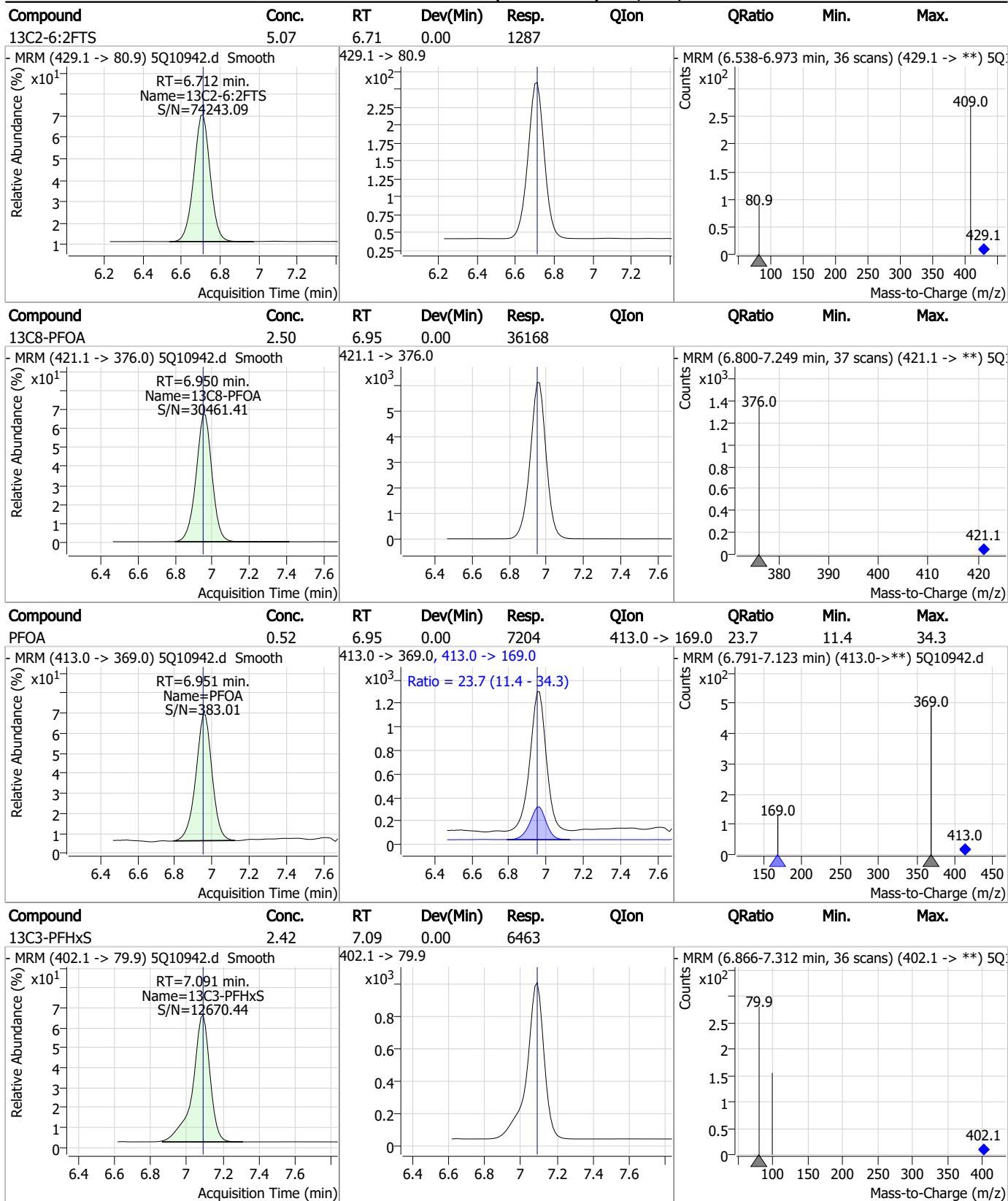
Perfluorinated Compounds by LC/MS/MS



7.7.3

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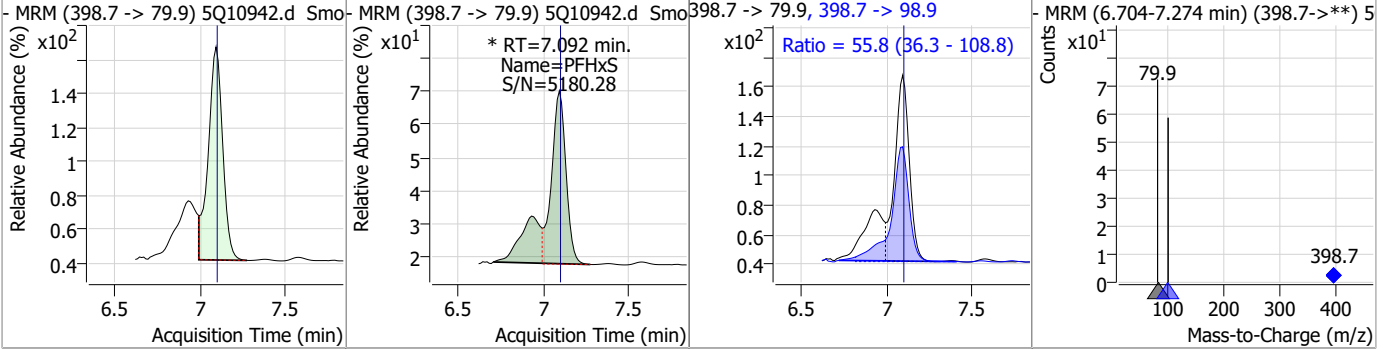
Perfluorinated Compounds by LC/MS/MS



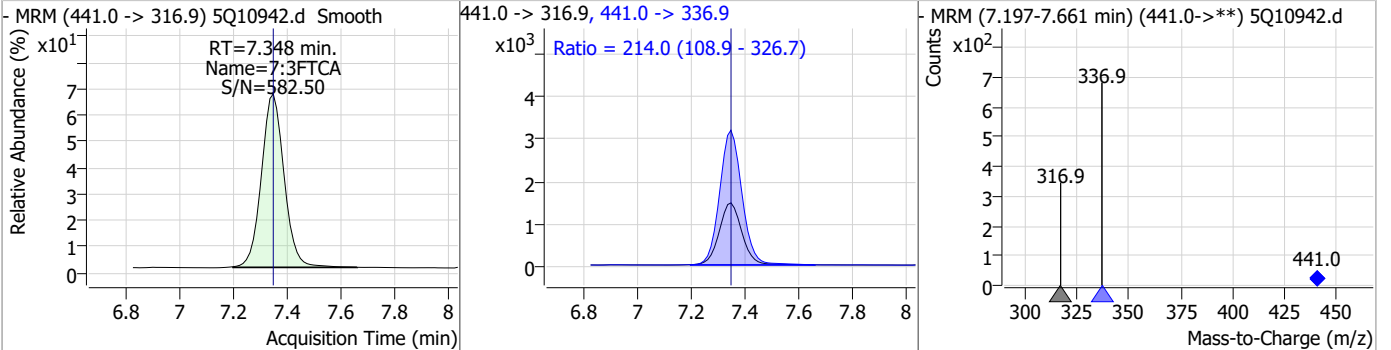
7.7.3
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Perfluorinated Compounds by LC/MS/MS

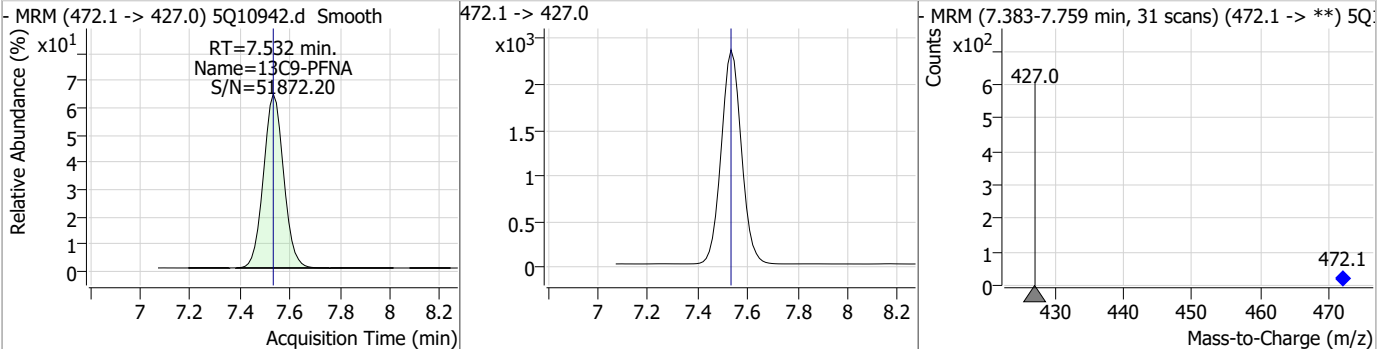
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.47	7.09	0.00	1018 (m)	398.7 -> 98.9	55.8	36.3	108.8



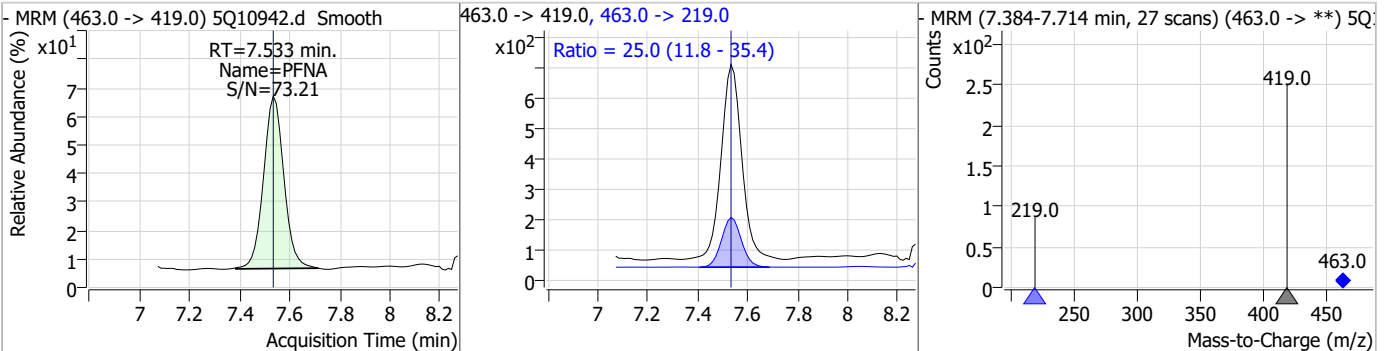
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	12.49	7.35	0.00	8561	441.0 -> 336.9	214.0	108.9	326.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.27	7.53	0.00	13048				



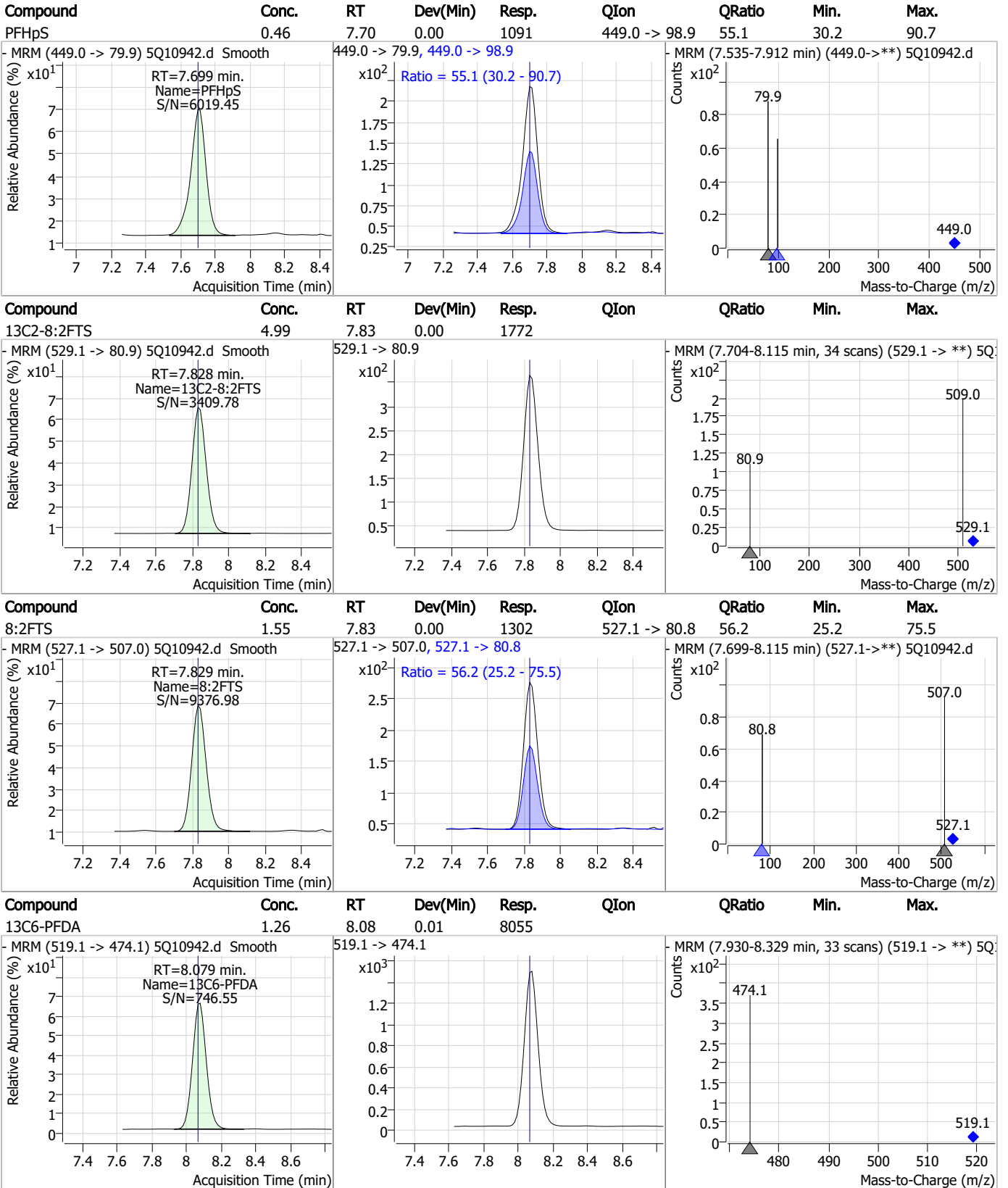
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.48	7.53	0.00	3621	463.0 -> 219.0	25.0	11.8	35.4



7.7.3

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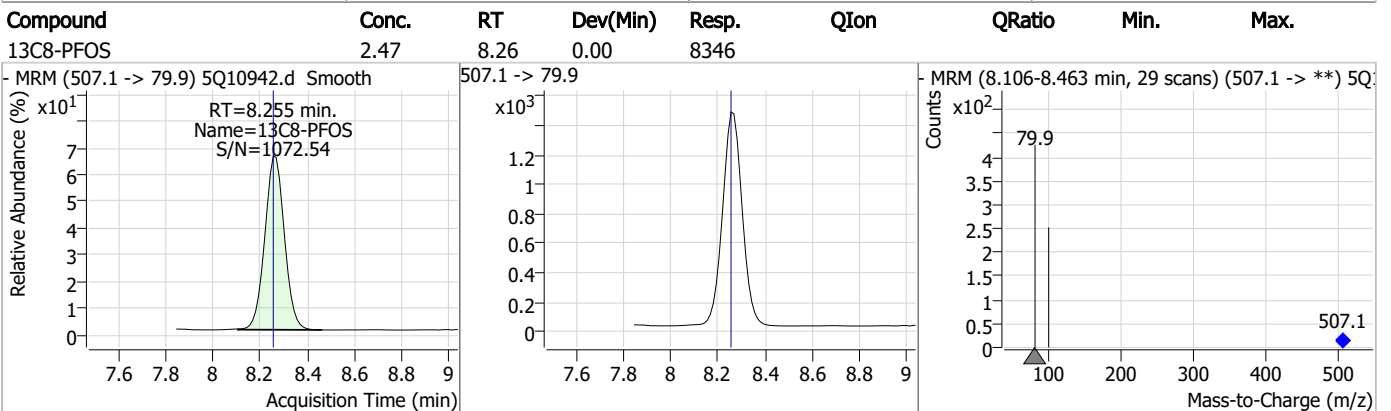
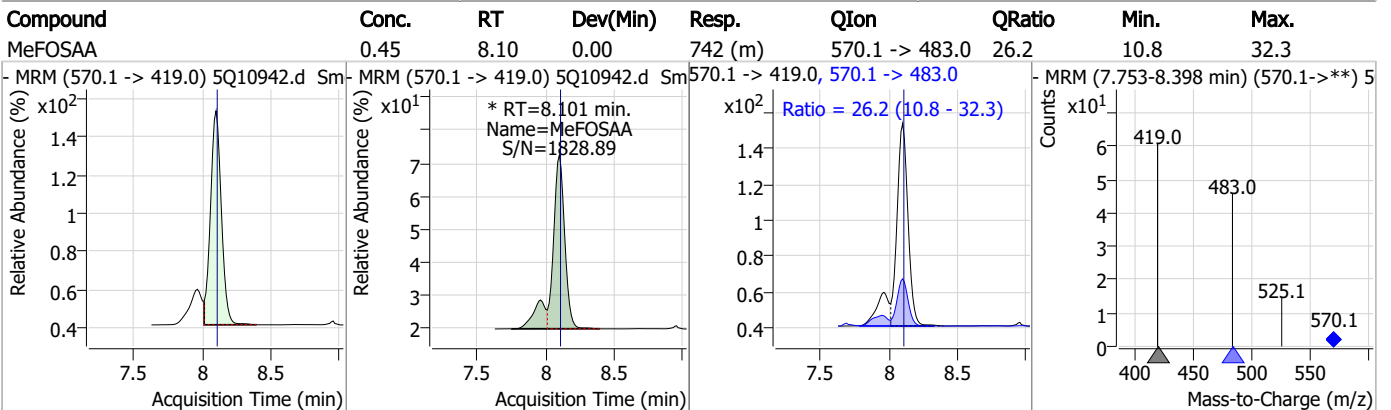
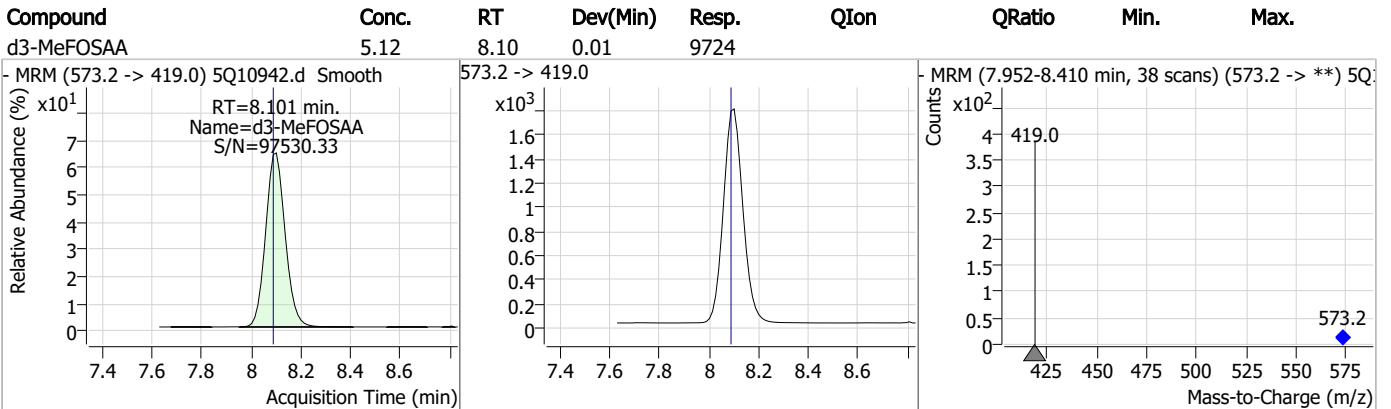
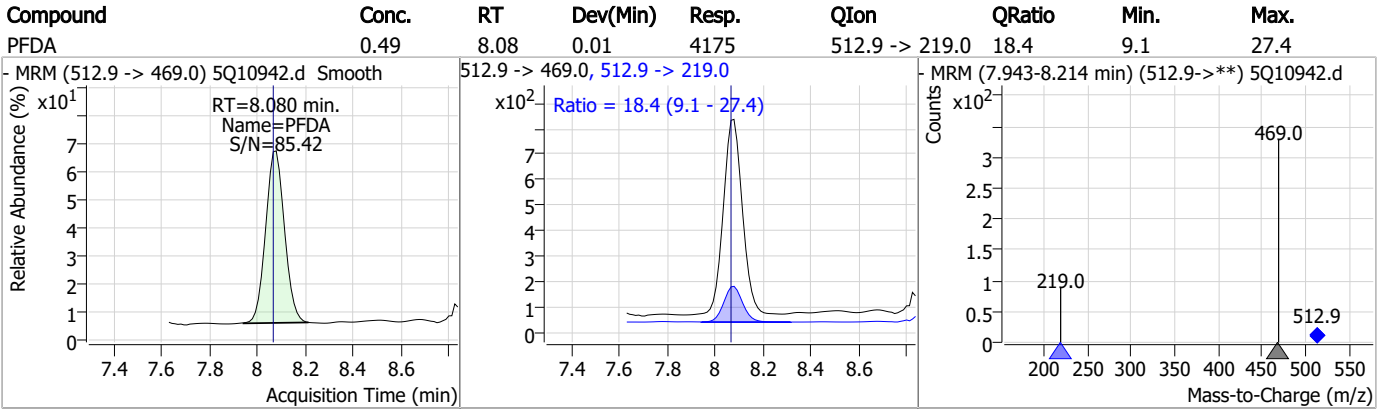
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS

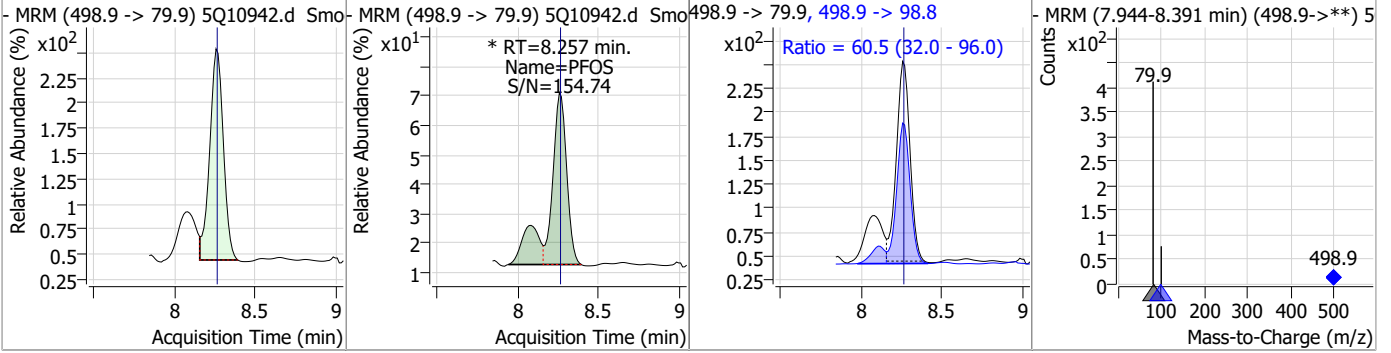


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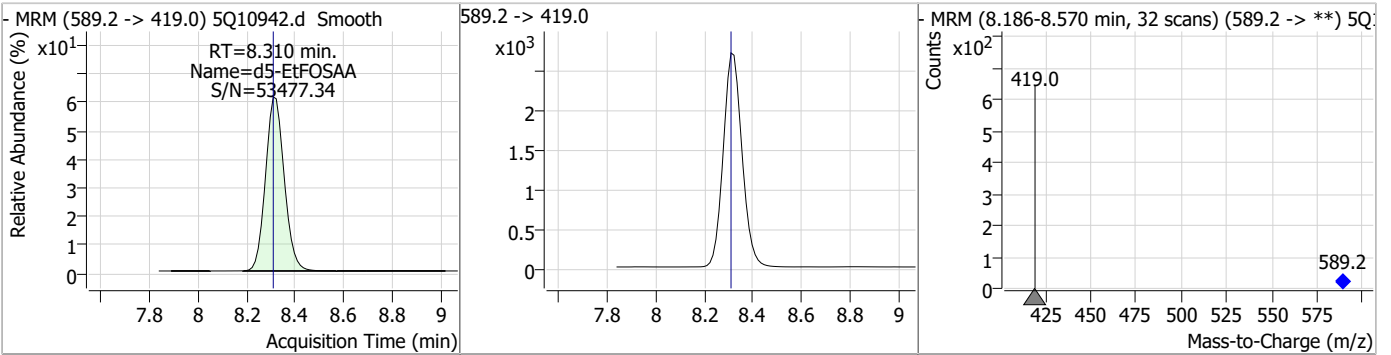
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Perfluorinated Compounds by LC/MS/MS

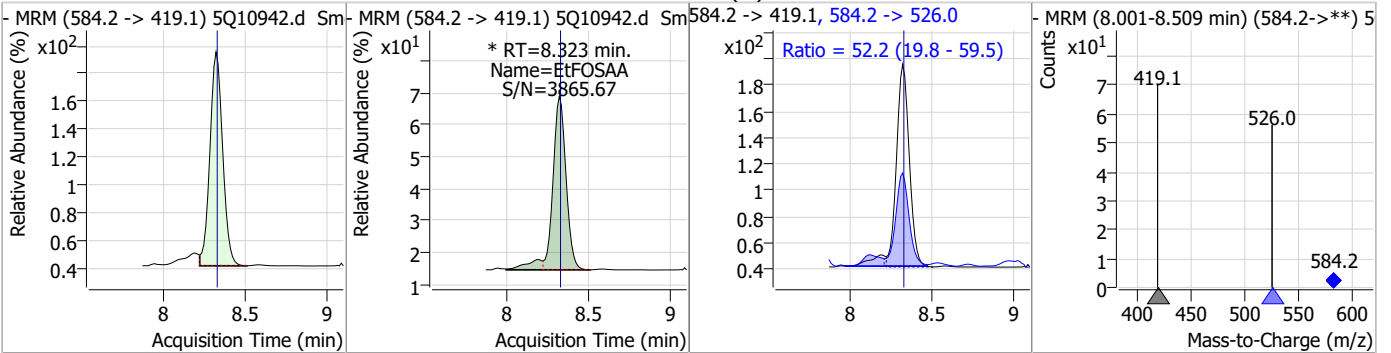
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.47	8.26	0.00	1575 (m)	498.9 -> 98.8	60.5	32.0	96.0



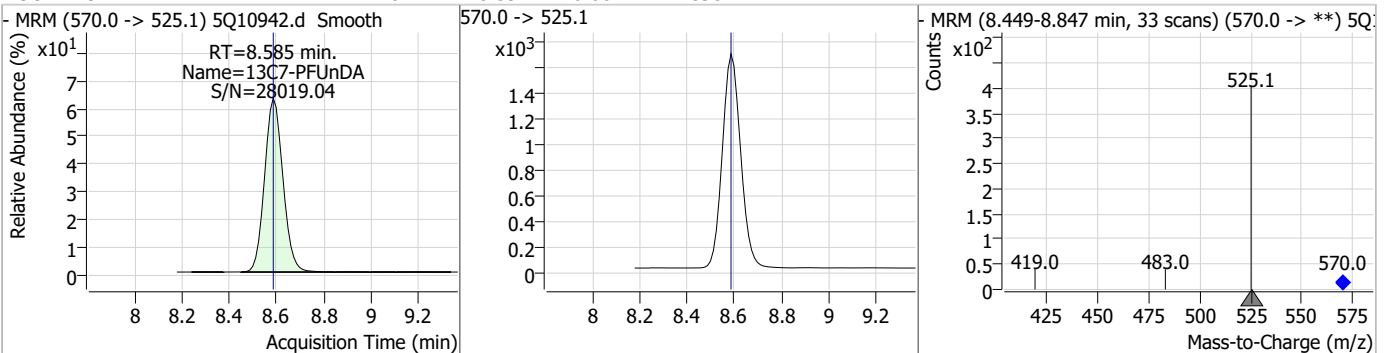
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.10	8.31	0.00	14316				



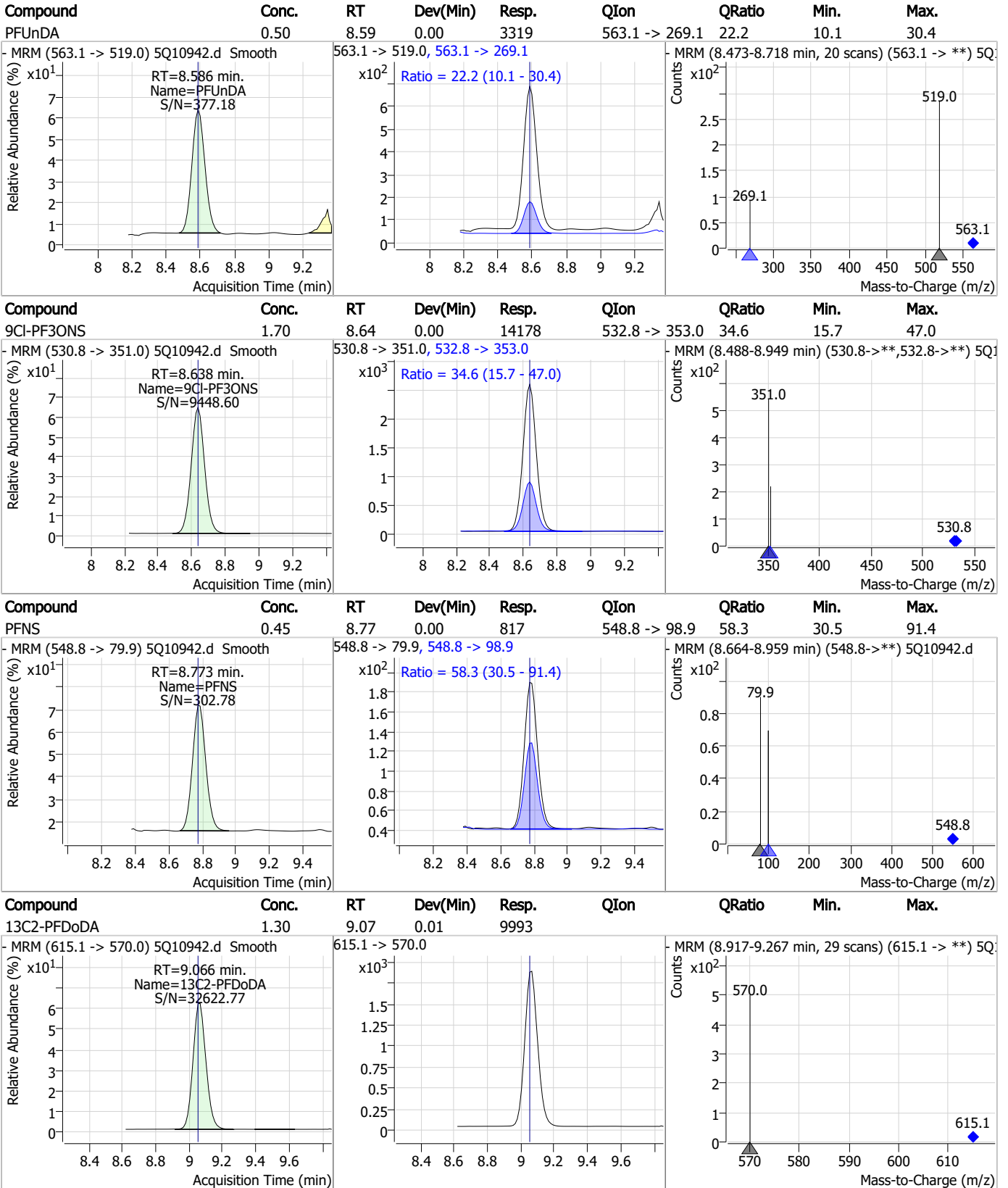
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.48	8.32	0.00	892 (m)	584.2 -> 526.0	52.2	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.28	8.59	0.00	8952				



Perfluorinated Compounds by LC/MS/MS

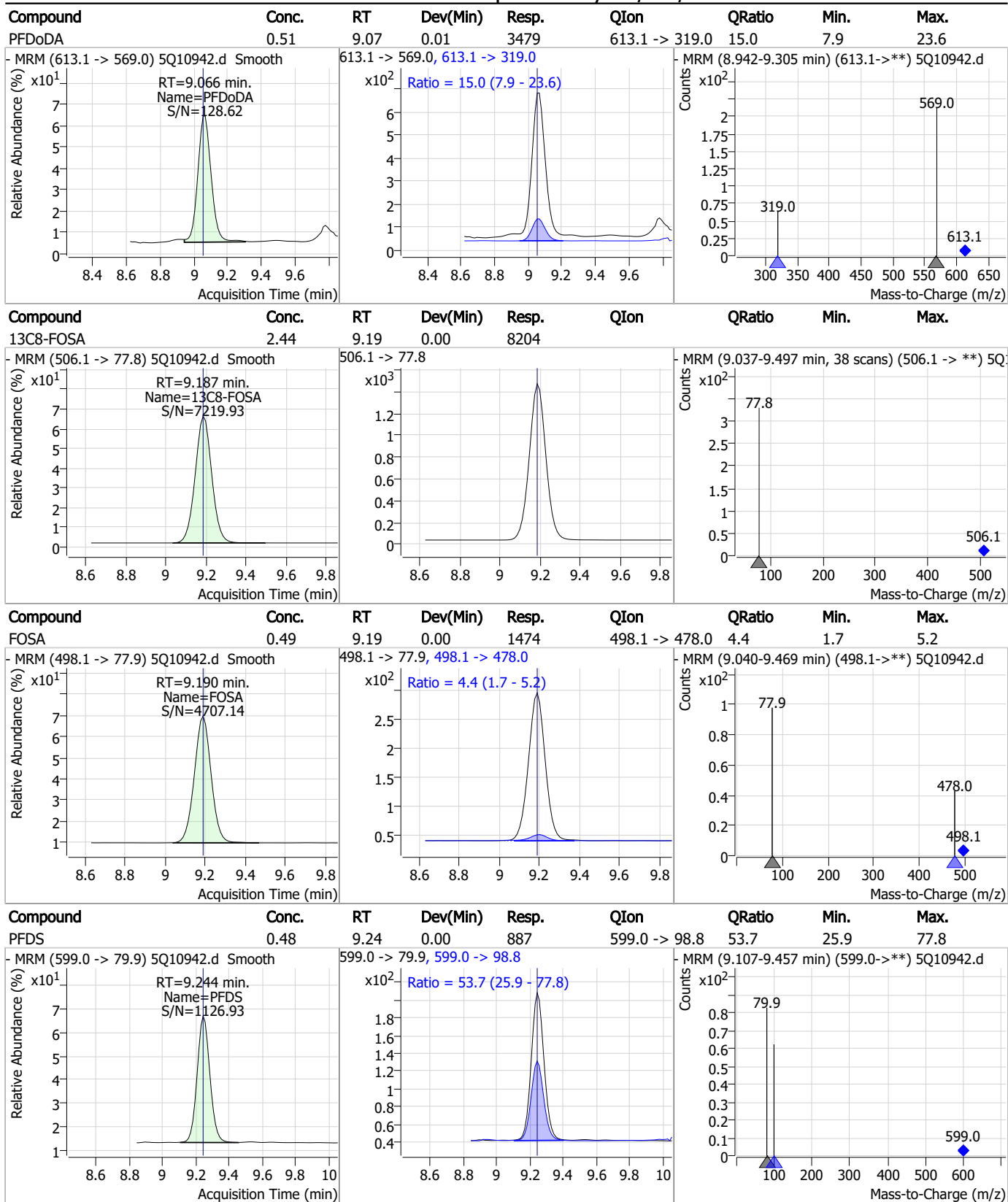


7.7.3

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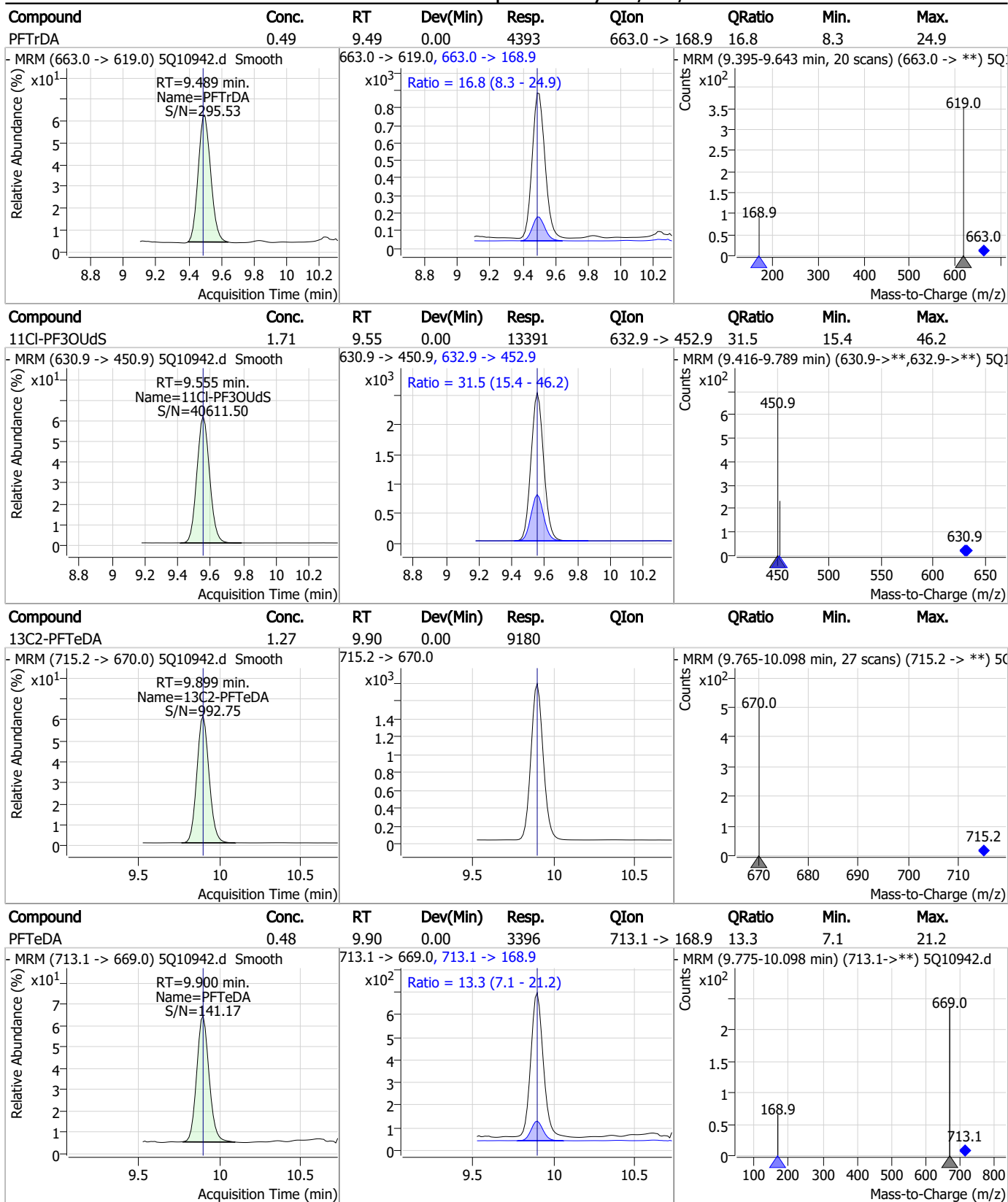
Perfluorinated Compounds by LC/MS/MS



7.7.3

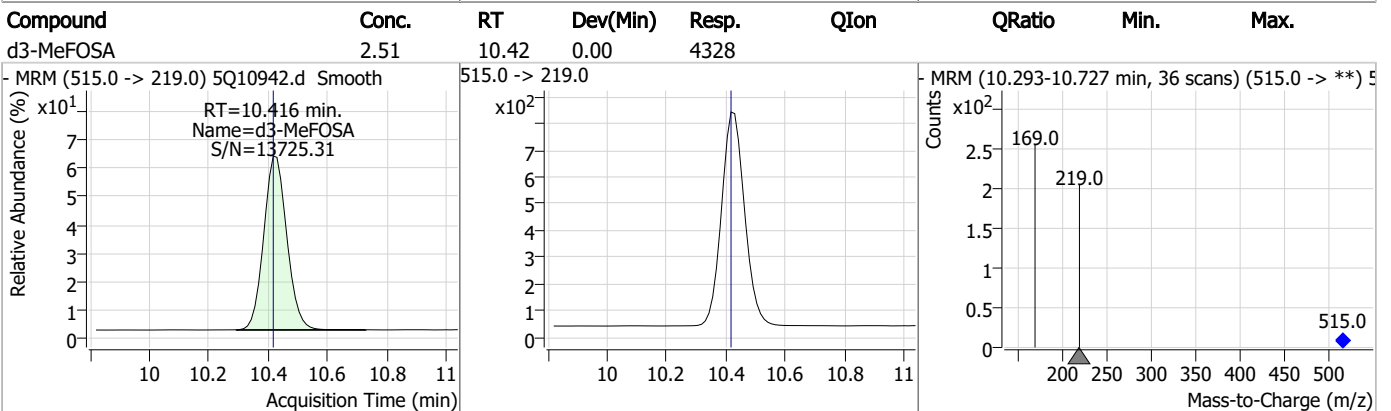
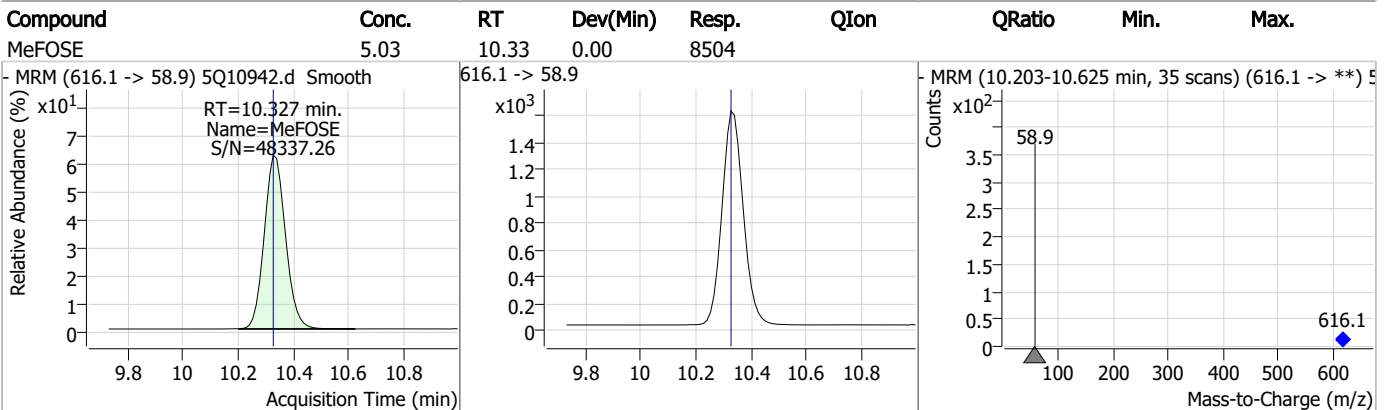
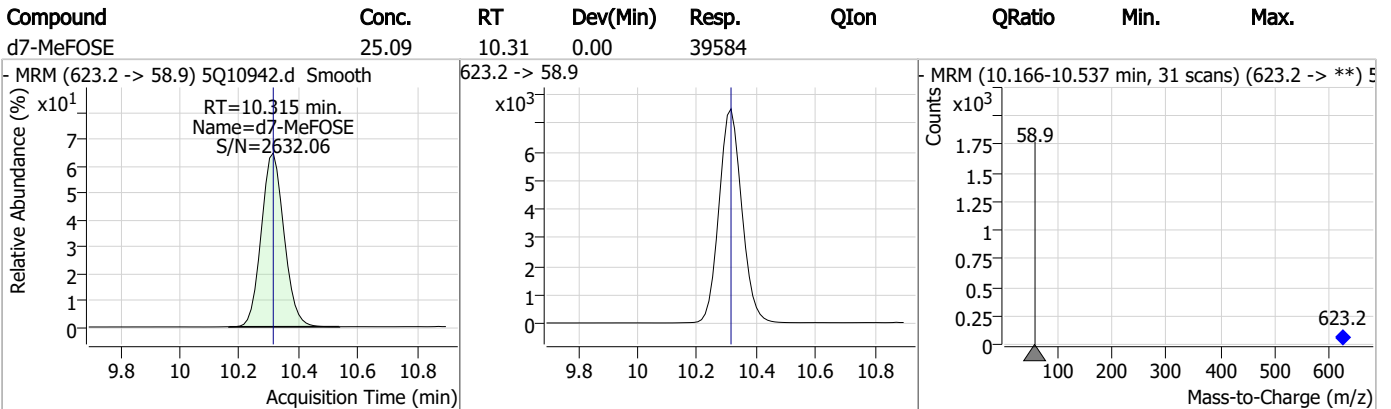
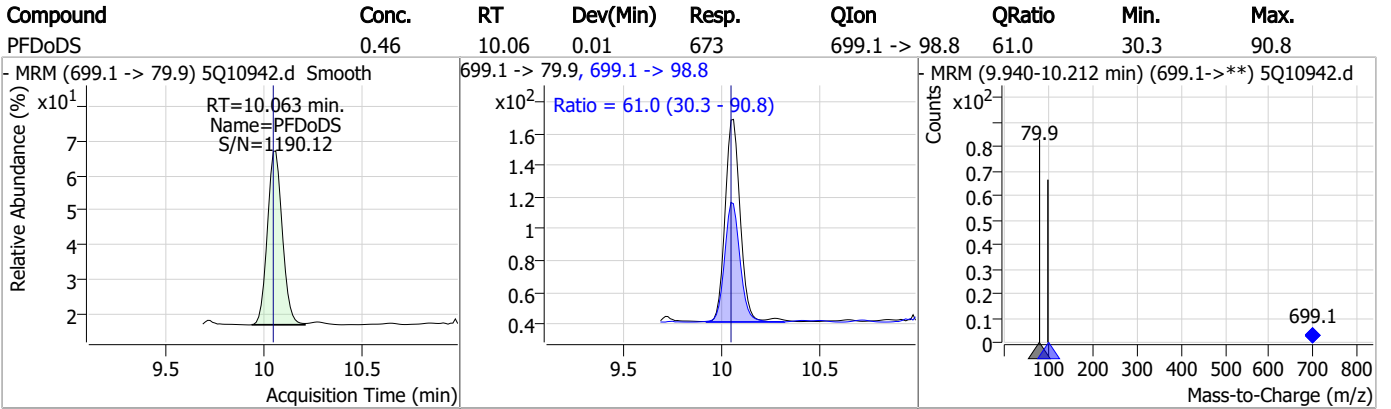
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Perfluorinated Compounds by LC/MS/MS

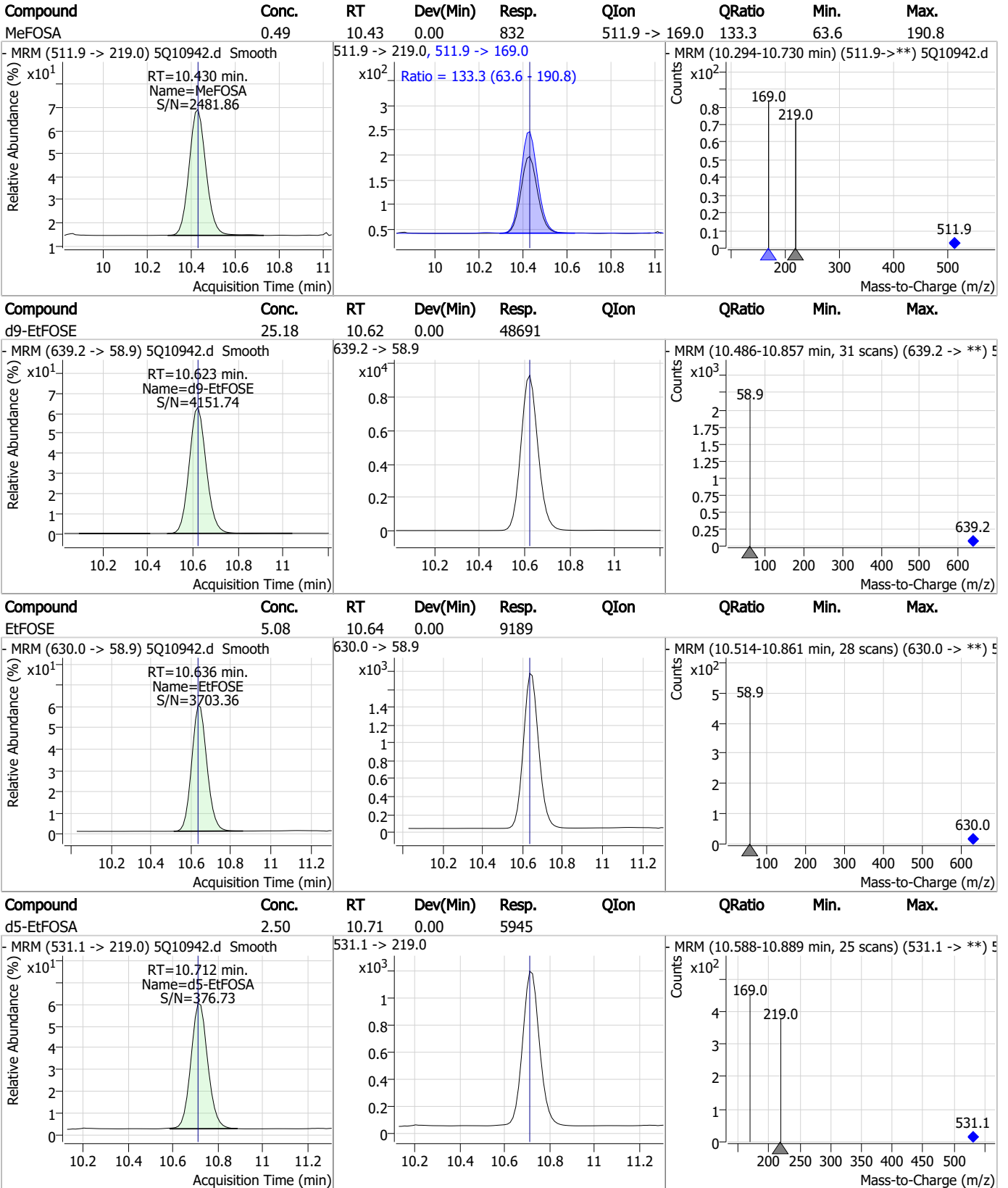


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

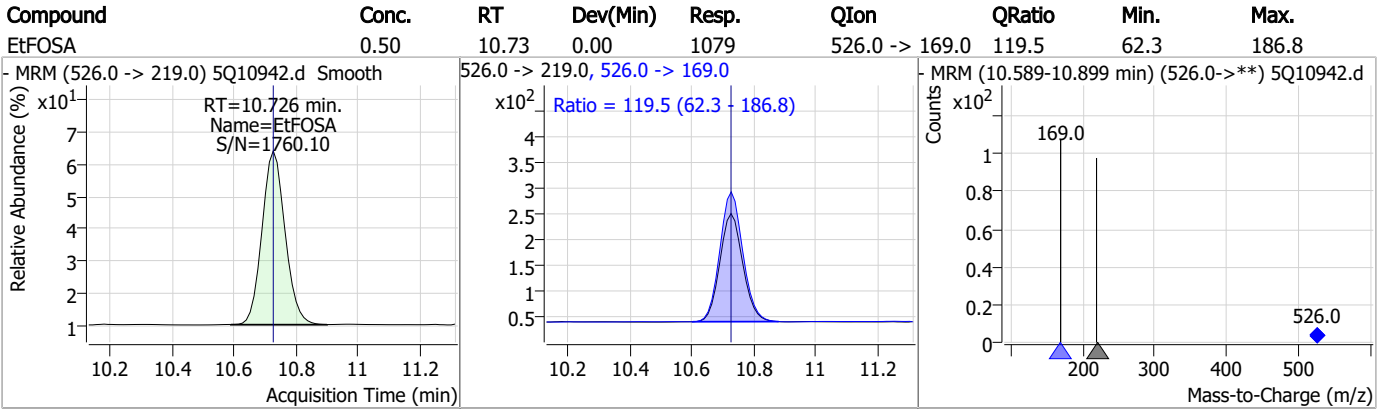


7.7.3

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Perfluorinated Compounds by LC/MS/MS



7.7.3

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Manual Integration Approval Summary

Sample Number: S5Q169-IC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10942.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 20:45 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.16	Poor instrument integration
PFMBA	863090-89-5		4.57	Poor instrument integration
4:2 Fluorotelomer sulfonate	757124-72-4		5.00	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
PFEESA	113507-82-7		5.83	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.10	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.32	Split peak

7.7.3.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10943.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 8:59:41 PM
 Sample Name : ic169-3
 Vial : P3-A4
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	49125	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	27692	5.00	µg/L m	0.000
M5-PFHxA	5.335	318.0 -> 273.0	28932	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	30959	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	36589	2.50	µg/L	0.000
M9-PFNA	7.532	472.1 -> 427.0	13177	1.25	µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	8110	1.25	µg/L	0.000
M7-PFUnDA	8.585	570.0 -> 525.1	8824	1.25	µg/L	0.000
M2-PFDoDA	9.053	615.1 -> 570.0	9718	1.25	µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	9244	1.25	µg/L	0.000
M8-FOSA	9.187	506.1 -> 77.8	8295	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	7908	2.50	µg/L m	0.000
M3-PFHxS	7.091	402.1 -> 79.9	6318	2.50	µg/L	0.000
M8-PFOS	8.255	507.1 -> 79.9	8510	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	539	5.00	µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1206	5.00	µg/L	-0.012
M2-8:2FTS	7.828	529.1 -> 80.9	1739	5.00	µg/L	0.000
M3-MeFOSAA	8.088	573.2 -> 419.0	9566	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	60947	10.00	µg/L m	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	14299	5.00	µg/L	0.000
M7-MeFOSE	10.315	623.2 -> 58.9	39857	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	49013	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5881	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4230	2.50	µg/L	0.000
13C4-PFOS	8.256	502.8 -> 79.9	8836	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	28723	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4495	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	44304	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	12523	1.25	µg/L	0.000
13C5-PFNA	7.533	468.0 -> 423.0	12725	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	36380	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	539	4.93	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%			
13C2-6:2FTS	6.699	429.1 -> 80.9	1206	4.95	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1739	5.09	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.8%			
13C2-PFDoDA	9.053	615.1 -> 570.0	9718	1.24	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.6%			
13C2-PFTeDA	9.899	715.2 -> 670.0	9244	1.26	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%			
13C3-PFBS	5.277	302.1 -> 79.9	8792	2.54	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%			
13C3-PFHxS	7.091	402.1 -> 79.9	6318	2.46	µg/L	0.000

7.7.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%				
13C4-PFBA	2.799	216.8 -> 171.9	54433	10.05	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.5%				
13C4-PFHpA	6.280	367.1 -> 322.0	30959	2.56	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.4%				
13C5-PFHxA	5.335	318.0 -> 273.0	32062	2.51	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%				
13C5-PFPeA	4.150	268.3 -> 223.0	33498	5.07	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.3%				
13C6-PFDA	8.066	519.1 -> 474.1	8110	1.25	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.3%				
13C7-PFUnDA	8.585	570.0 -> 525.1	8824	1.25	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.8%				
13C8-FOSA	9.187	506.1 -> 77.8	8295	2.39	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.7%				
13C8-PFOA	6.950	421.1 -> 376.0	36589	2.45	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%				
13C8-PFOS	8.255	507.1 -> 79.9	8510	2.45	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%				
13C9-PFNA	7.532	472.1 -> 427.0	13177	1.27	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%				
d3-MeFOSAA	8.088	573.2 -> 419.0	9566	4.89	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.8%				
13C3-HFPO-DA	5.714	286.9 -> 168.9	69642	10.31	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 103.1%				
d3-MeFOSA	10.416	515.0 -> 219.0	4230	2.38	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.0%				
d5-EtFOSAA	8.310	589.2 -> 419.0	14299	4.94	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.8%				
d7-MeFOSE	10.315	623.2 -> 58.9	39857	24.51	µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.0%				
d9-EtFOSE	10.623	639.2 -> 58.9	49013	24.59	µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.4%				
d5-EtFOSA	10.712	531.1 -> 219.0	5881	2.40	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.8%				
Target Compounds						QValue	
4:2FTS	4.997	327.1 -> 307.0	3297	4.86	µg/L	m	98
		327.1 -> 80.9	1769				
6:2FTS	6.700	427.1 -> 407.0	5102	5.06	µg/L		98
		427.1 -> 80.9	2089				
8:2FTS	7.829	527.1 -> 507.0	3255	3.95	µg/L		93
		527.1 -> 80.8	1802				
EtFOSAA	8.323	584.2 -> 419.1	2460	1.31	µg/L	m	100
		584.2 -> 526.0	980				
FOSA	9.190	498.1 -> 77.9	3764	1.24	µg/L		100
		498.1 -> 478.0	128				
MeFOSAA	8.101	570.1 -> 419.0	2008	1.24	µg/L	m	85
		570.1 -> 483.0	573				
PFBA	2.807	212.8 -> 168.9	9982	5.13	µg/L	m	100
PFBS	5.278	298.7 -> 79.9	2916	1.12	µg/L	m	95
		298.7 -> 98.8	1315				
PFDA	8.067	512.9 -> 469.0	10750	1.27	µg/L		96
		512.9 -> 219.0	2164				
PFDODA	9.054	613.1 -> 569.0	8407	1.27	µg/L		97
		613.1 -> 319.0	1423				
PFDS	9.244	599.0 -> 79.9	2325	1.24	µg/L		98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1179			
PFHpA	6.281	363.1 -> 319.0	16414	1.25	µg/L	99
		363.1 -> 169.0	3652			
PFHpS	7.699	449.0 -> 79.9	2829	1.17	µg/L	99
		449.0 -> 98.9	1742			
PFHxA	5.337	313.0 -> 269.0	10755	1.27	µg/L	m 99
		313.0 -> 118.9	475			
PFHxS	7.092	398.7 -> 79.9	2418	1.13	µg/L	m 85
		398.7 -> 98.9	1447			
PFNA	7.533	463.0 -> 419.0	9714	1.27	µg/L	97
		463.0 -> 219.0	2149			
PFNS	8.773	548.8 -> 79.9	2391	1.28	µg/L	96
		548.8 -> 98.9	1389			
PFOA	6.951	413.0 -> 369.0	17764	1.26	µg/L	97
		413.0 -> 169.0	4346			
PFOS	8.257	498.9 -> 79.9	4107	1.20	µg/L	m 91
		498.9 -> 98.8	2331			
PFPeA	4.152	263.0 -> 219.0	16023	2.65	µg/L	m 100
PFPeS	6.357	349.1 -> 79.9	2458	1.33	µg/L	m 95
		349.1 -> 98.9	1160			
PFTeDA	9.900	713.1 -> 669.0	8993	1.27	µg/L	100
		713.1 -> 168.9	1252			
PFTrDA	9.489	663.0 -> 619.0	10915	1.26	µg/L	96
		663.0 -> 168.9	1995			
PFUnDA	8.586	563.1 -> 519.0	8174	1.24	µg/L	96
		563.1 -> 269.1	1828			
11CI-PF3OUdS	9.555	630.9 -> 450.9	35456	5.29	µg/L	100
		632.9 -> 452.9	10923			
9CI-PF3ONS	8.638	530.8 -> 351.0	37440	5.22	µg/L	100
		532.8 -> 353.0	11792			
ADONA	6.542	376.9 -> 250.9	88437	5.30	µg/L	99
		376.9 -> 84.8	26218			
HFPO-DA	5.715	284.9 -> 168.9	27052	5.41	µg/L	m 99
		284.9 -> 184.9	2629			
3:3FTCA	3.603	241.0 -> 177.0	2837	6.35	µg/L	m 96
		241.0 -> 117.0	321			
5:3FTCA	5.918	341.0 -> 237.1	56088	31.97	µg/L	99
		341.0 -> 217.0	38188			
7:3FTCA	7.348	441.0 -> 316.9	22509	32.04	µg/L	95
		441.0 -> 336.9	47054			
EtFOSA	10.726	526.0 -> 219.0	2843	1.34	µg/L	98
		526.0 -> 169.0	3485			
EtFOSE	10.636	630.0 -> 58.9	23341	12.82	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	2126	1.27	µg/L	93
		511.9 -> 169.0	2873			
MeFOSE	10.327	616.1 -> 58.9	21327	12.53	µg/L	100
PFDoDS	10.050	699.1 -> 79.9	1763	1.19	µg/L	99
		699.1 -> 98.8	1078			
NFDHA	5.218	295.0 -> 201.0	1745	2.61	µg/L	m 91
		295.0 -> 84.9	555			
PFMBA	4.553	279.0 -> 85.1	11958	2.68	µg/L	m 100
PFMPA	3.328	229.0 -> 84.9	8997	2.75	µg/L	m 100
PFEESA	5.821	314.8 -> 134.9	22272	2.50	µg/L	m 100
		314.8 -> 82.9	644			

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

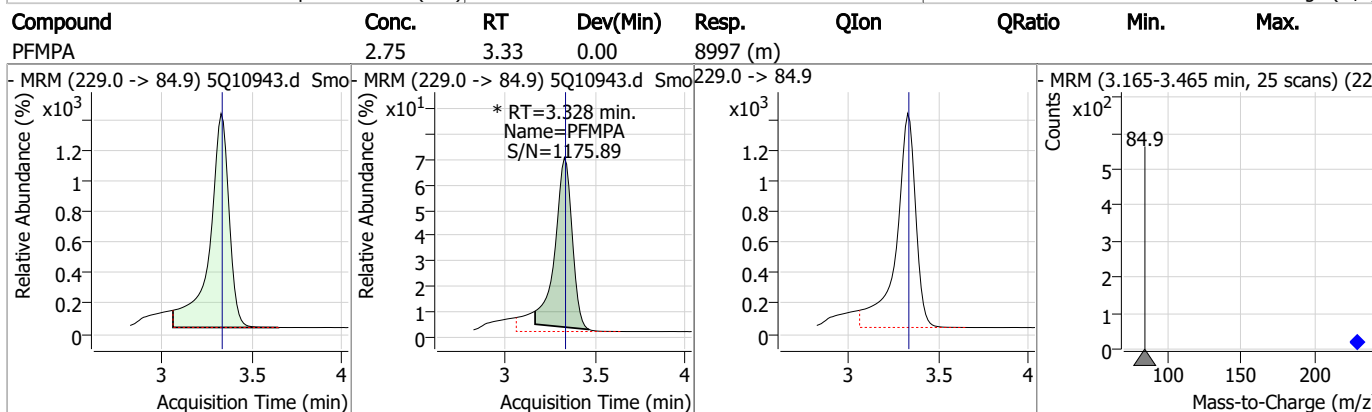
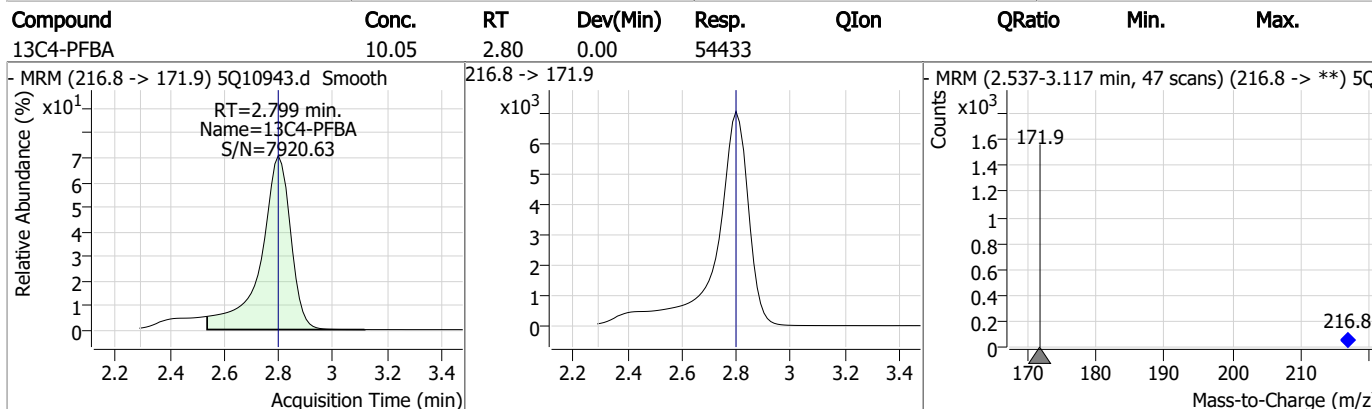
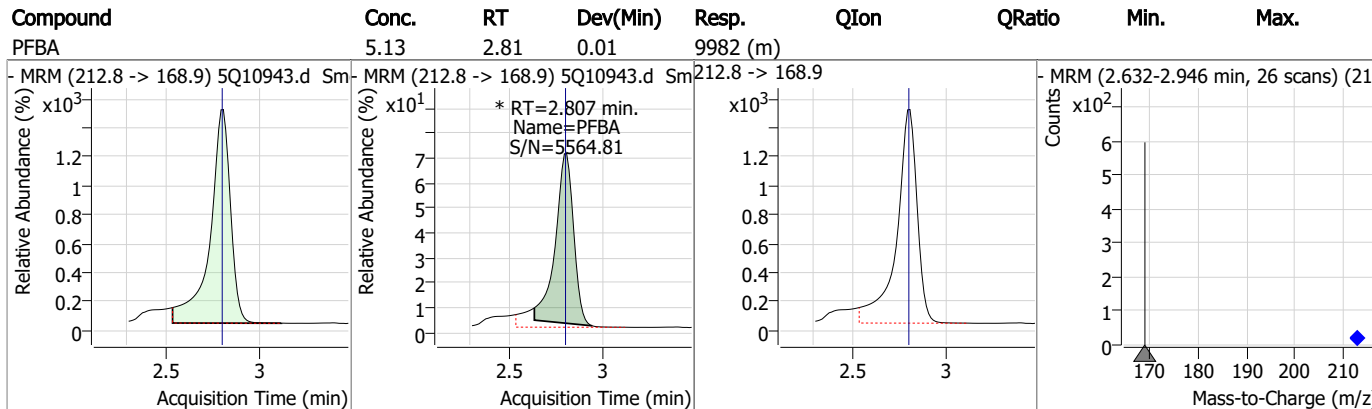
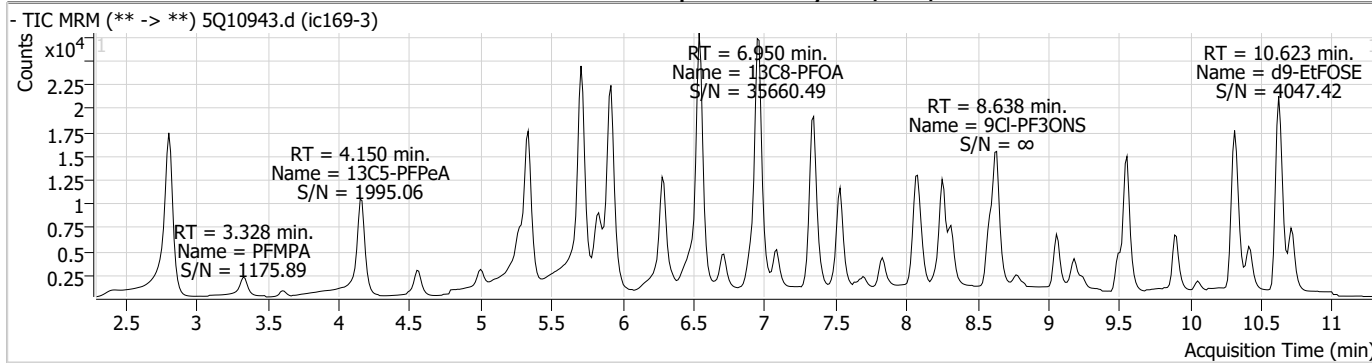
Perfluorinated Compounds by LC/MS/MS

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

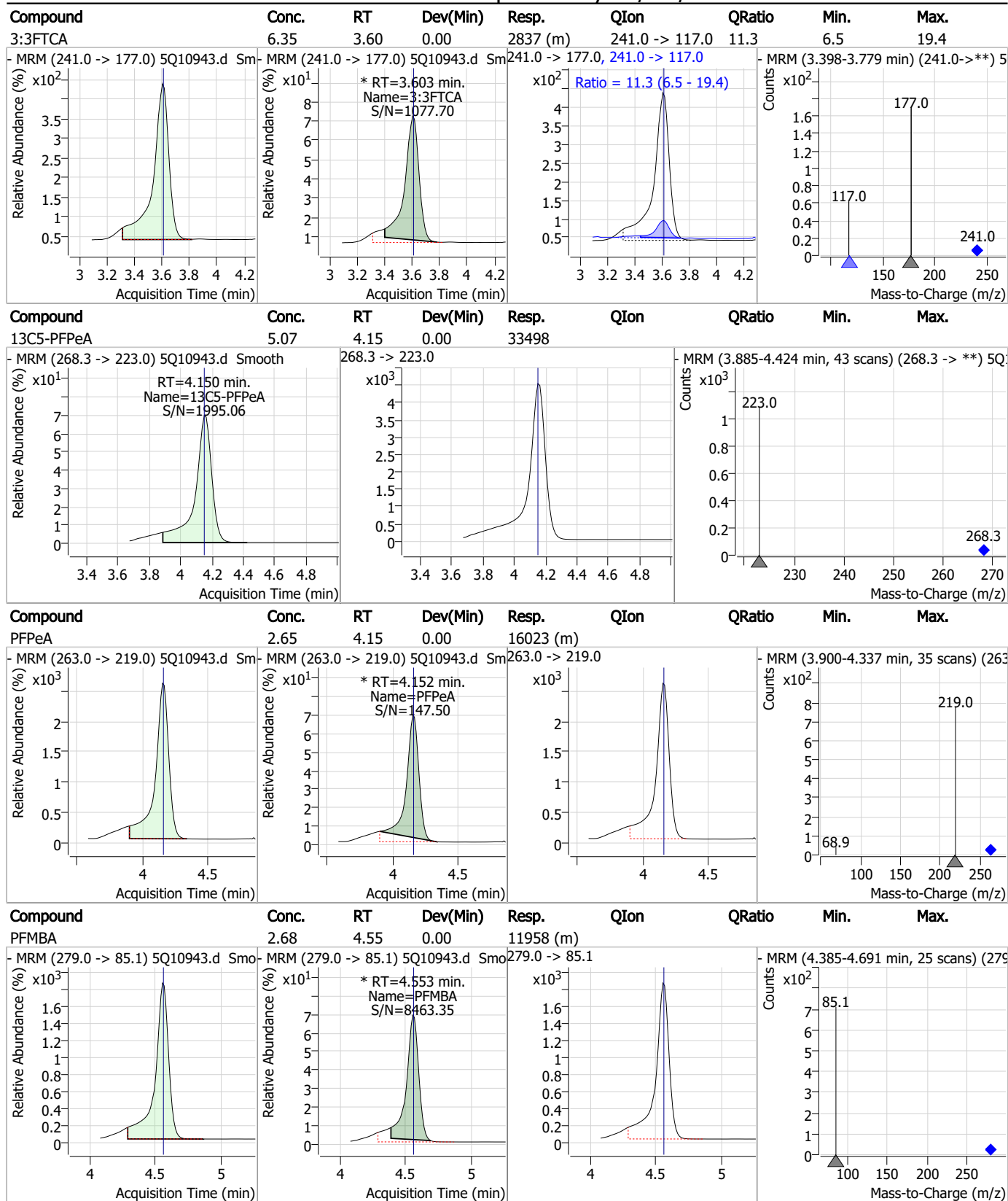
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Perfluorinated Compounds by LC/MS/MS



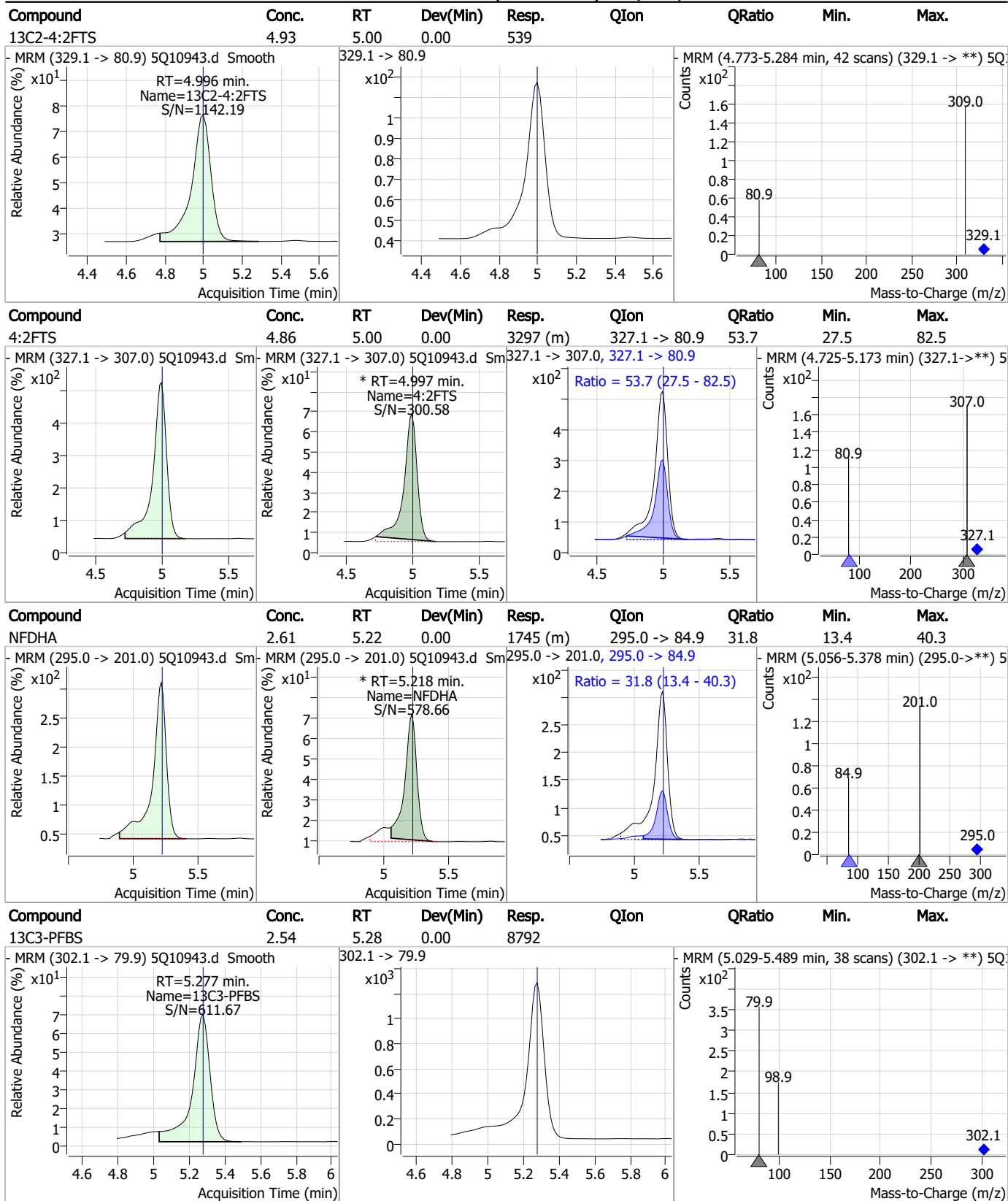
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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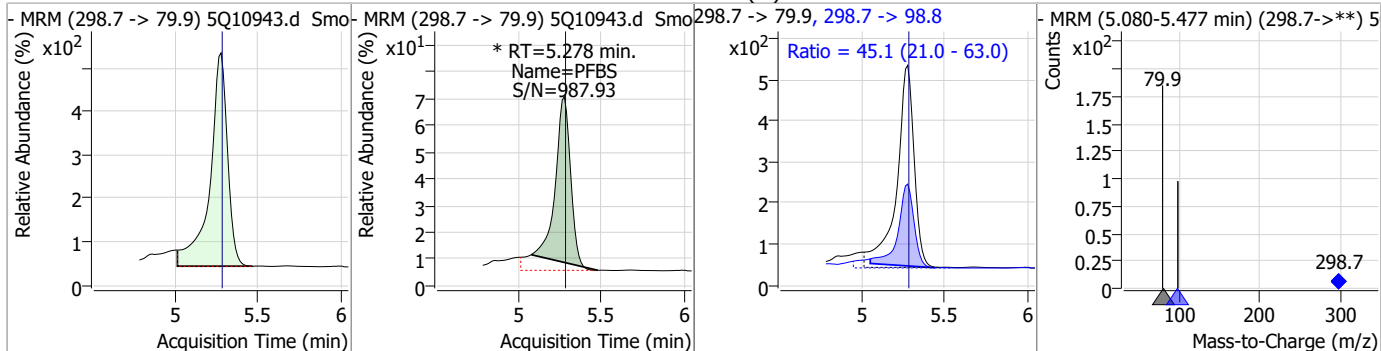
Perfluorinated Compounds by LC/MS/MS



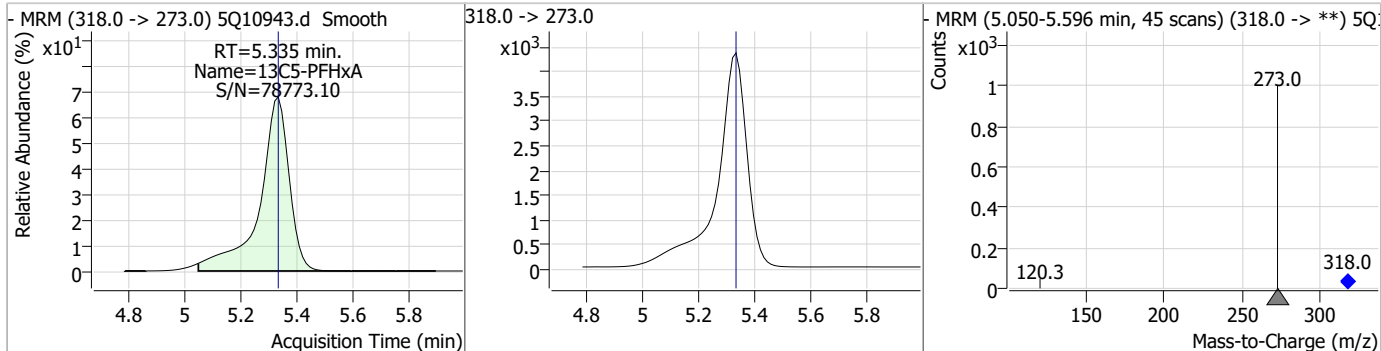
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Perfluorinated Compounds by LC/MS/MS

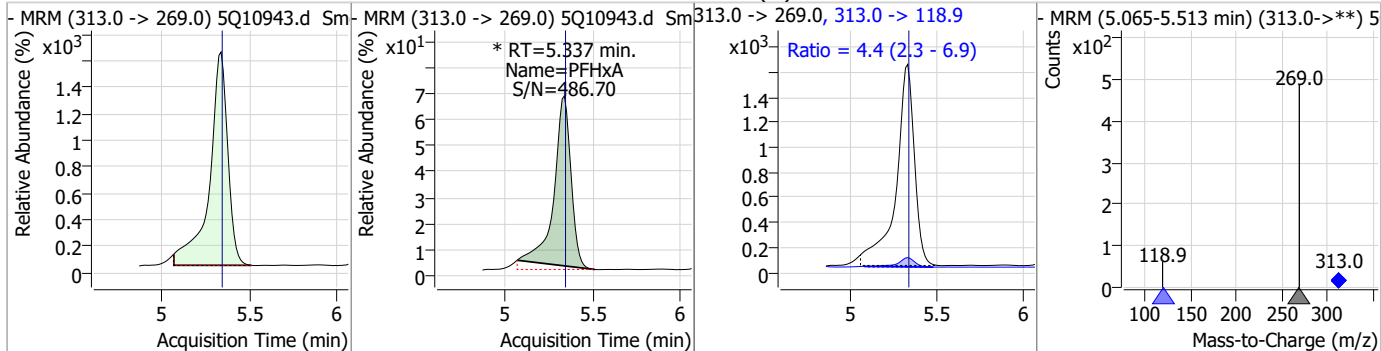
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.12	5.28	0.00	2916 (m)	298.7 -> 98.8	45.1	21.0	63.0



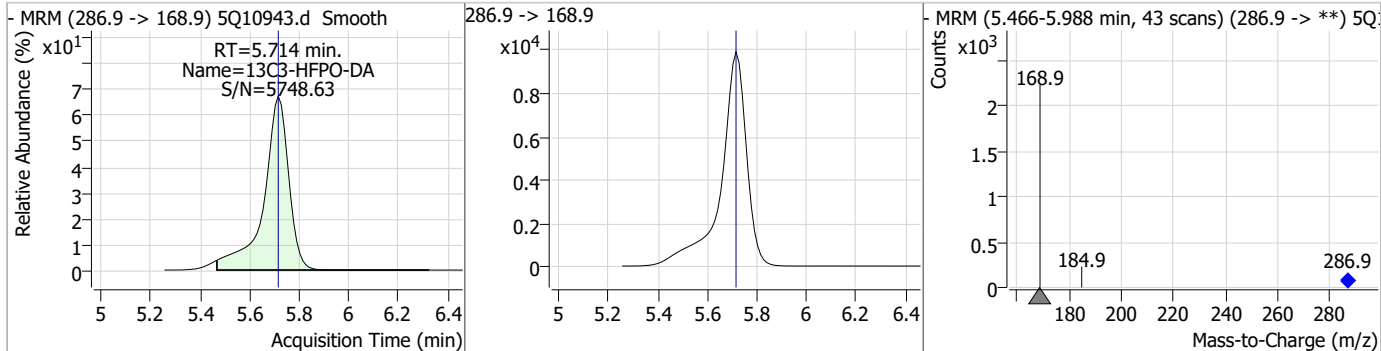
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.34	0.00	32062				



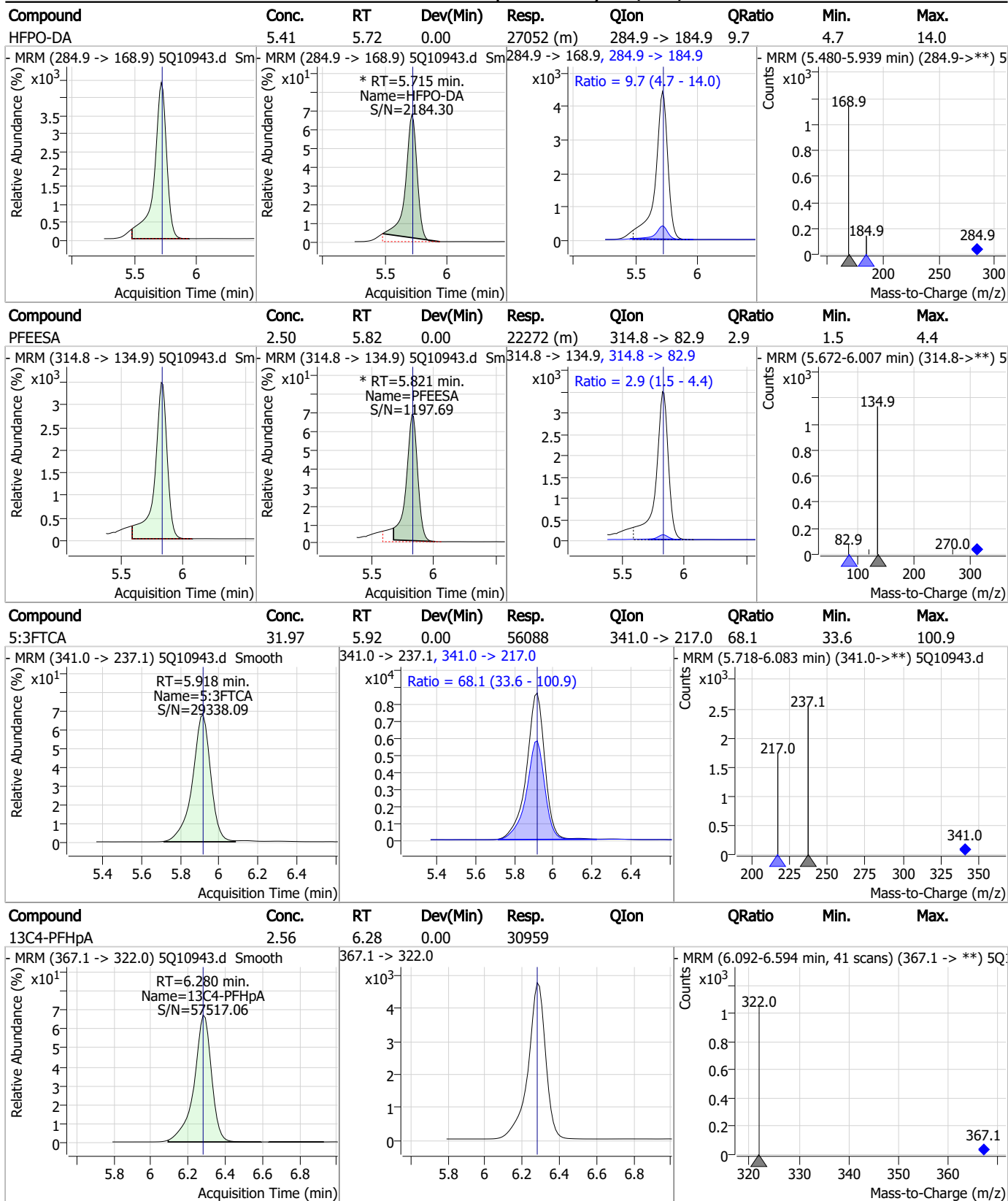
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.27	5.34	0.00	10755 (m)	313.0 -> 118.9	4.4	2.3	6.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.31	5.71	0.00	69642				

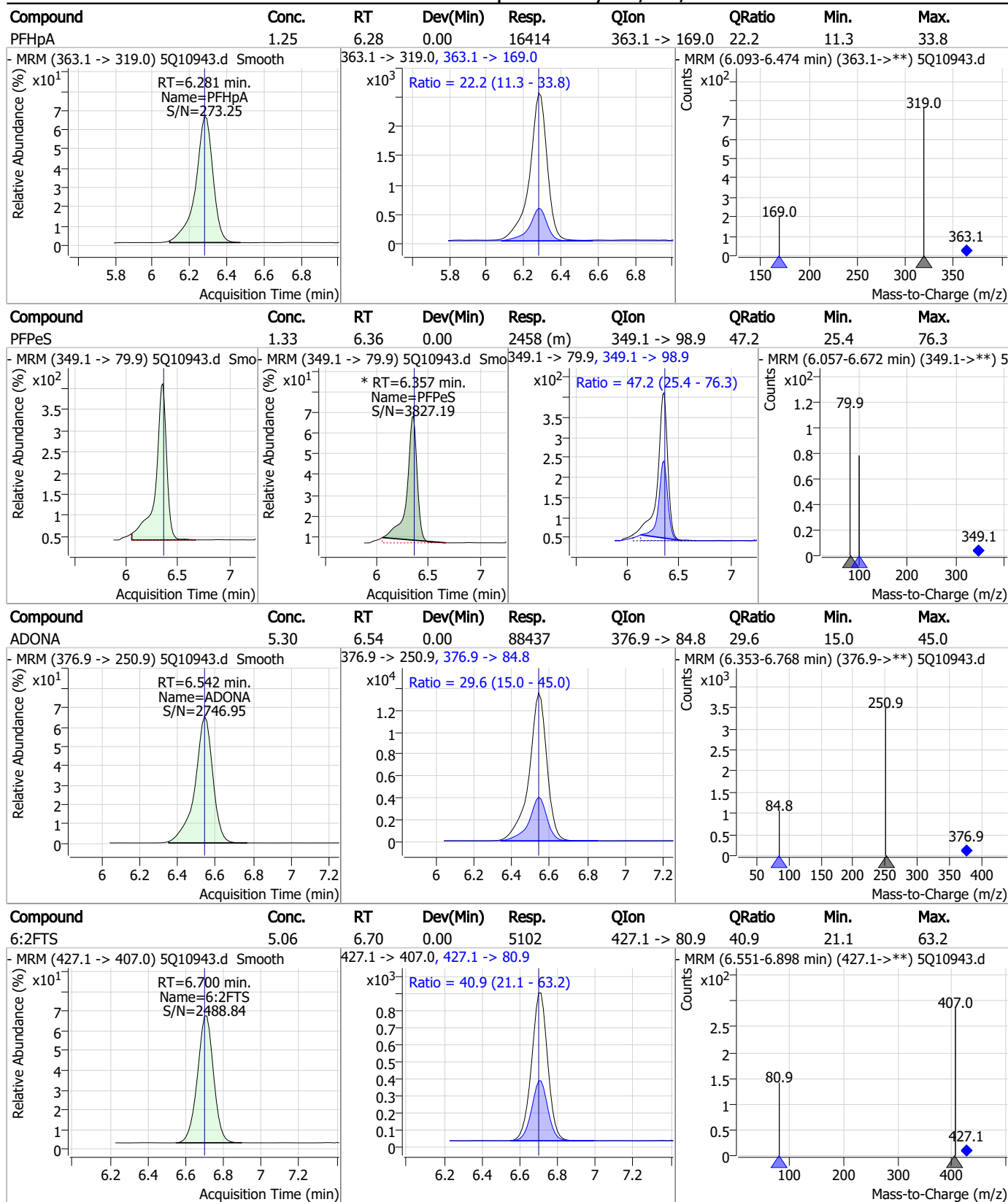


Perfluorinated Compounds by LC/MS/MS



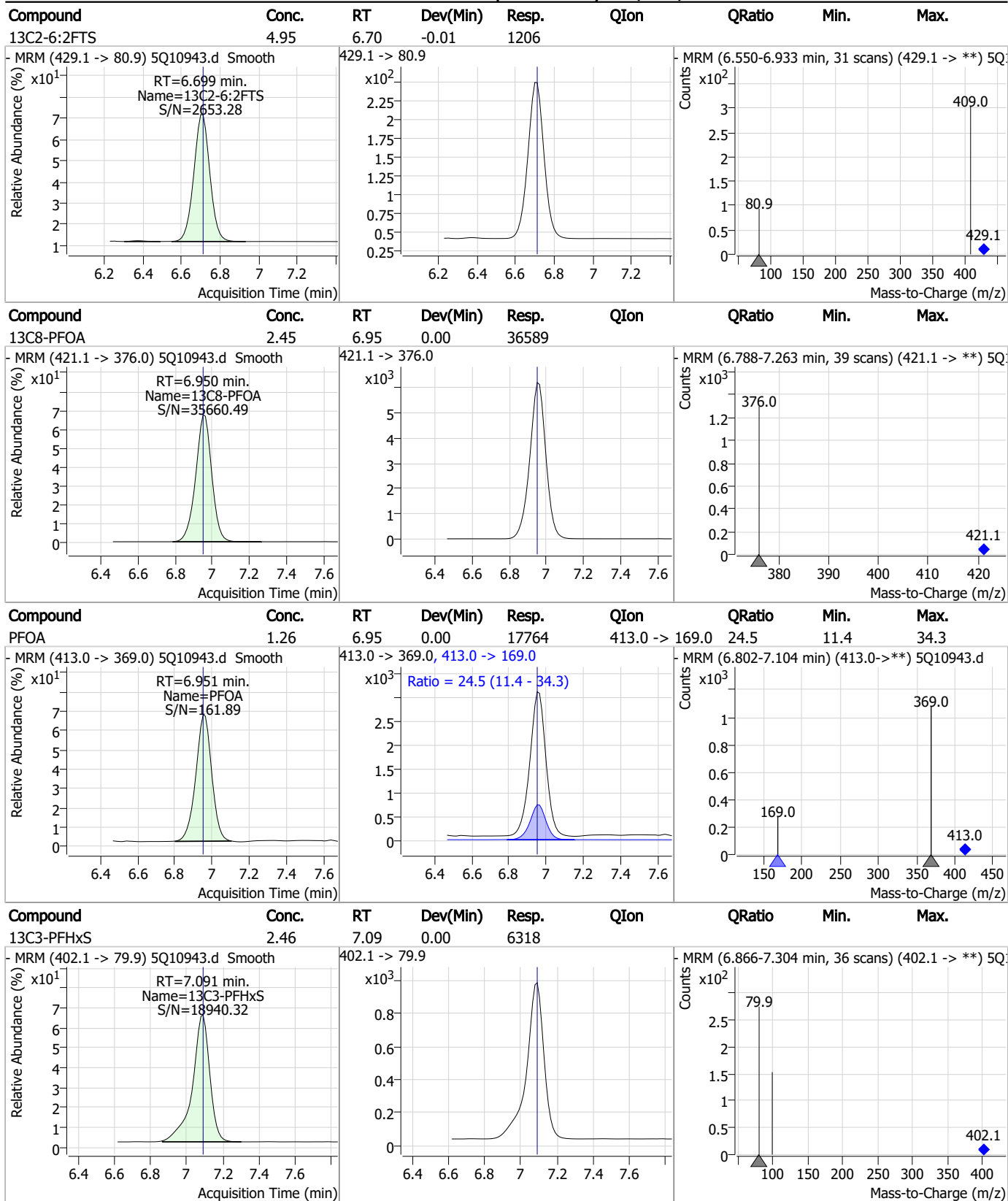
7.7.4
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Perfluorinated Compounds by LC/MS/MS



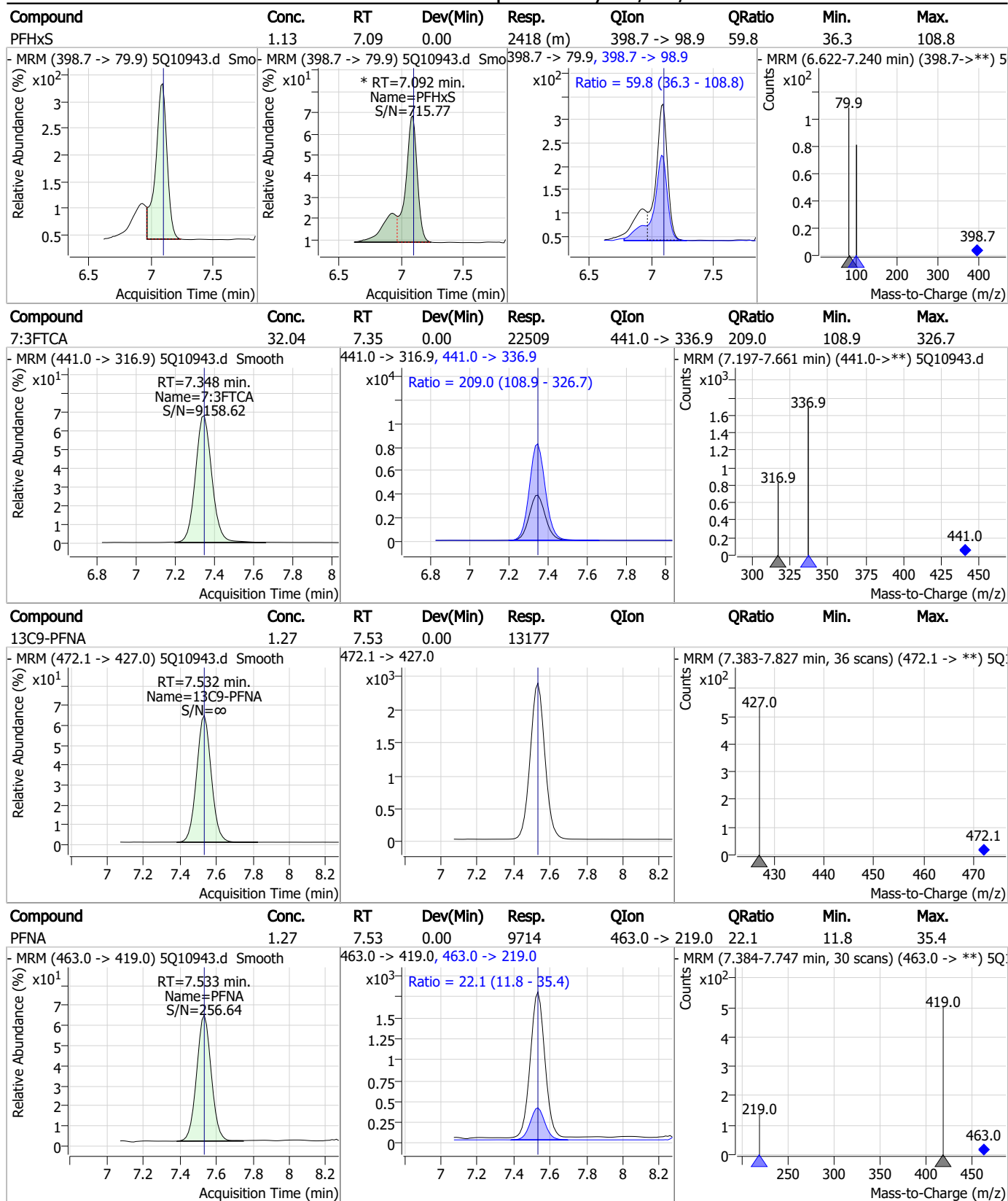
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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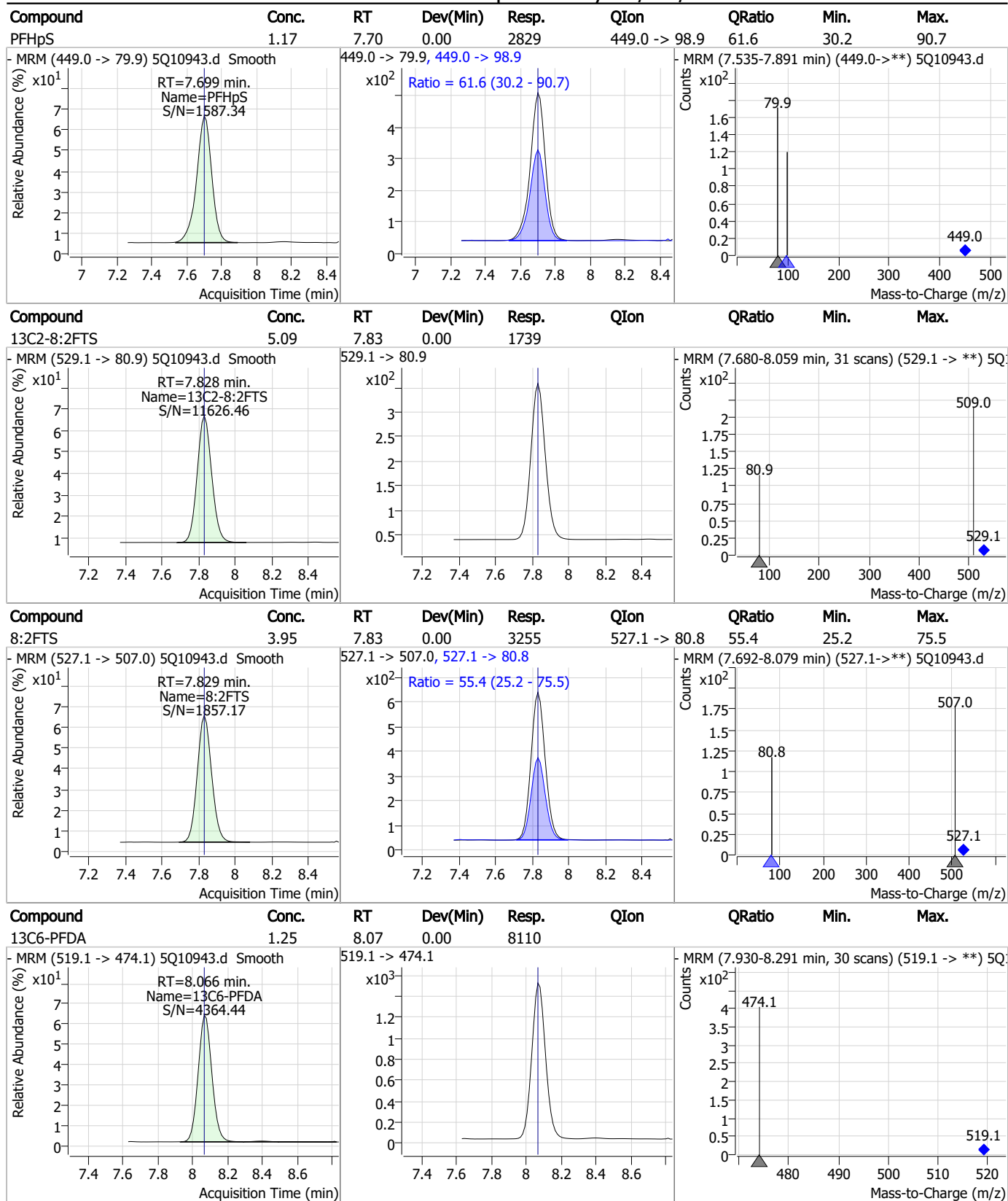
Perfluorinated Compounds by LC/MS/MS



7.7.4
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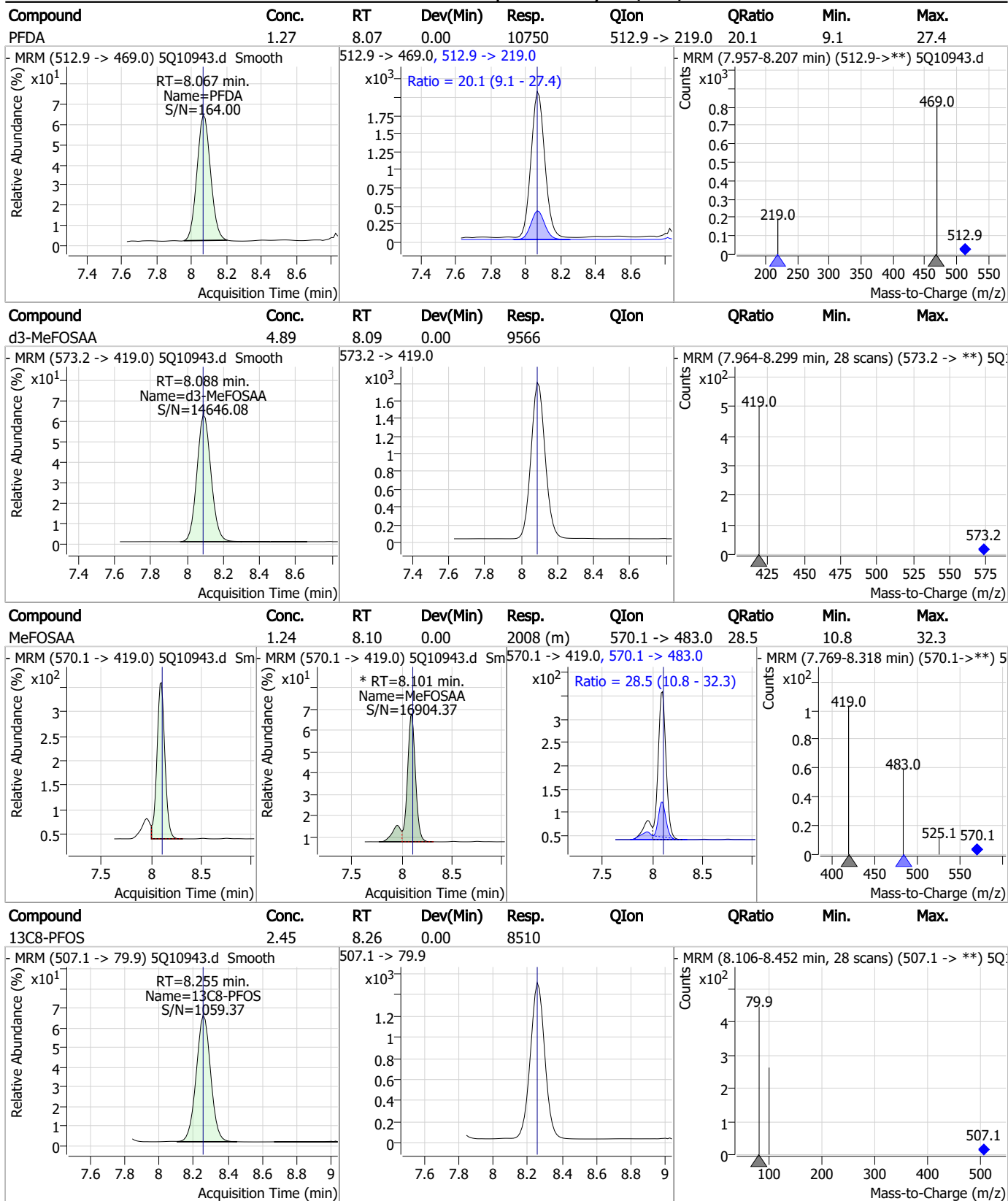
Perfluorinated Compounds by LC/MS/MS



7.7.4

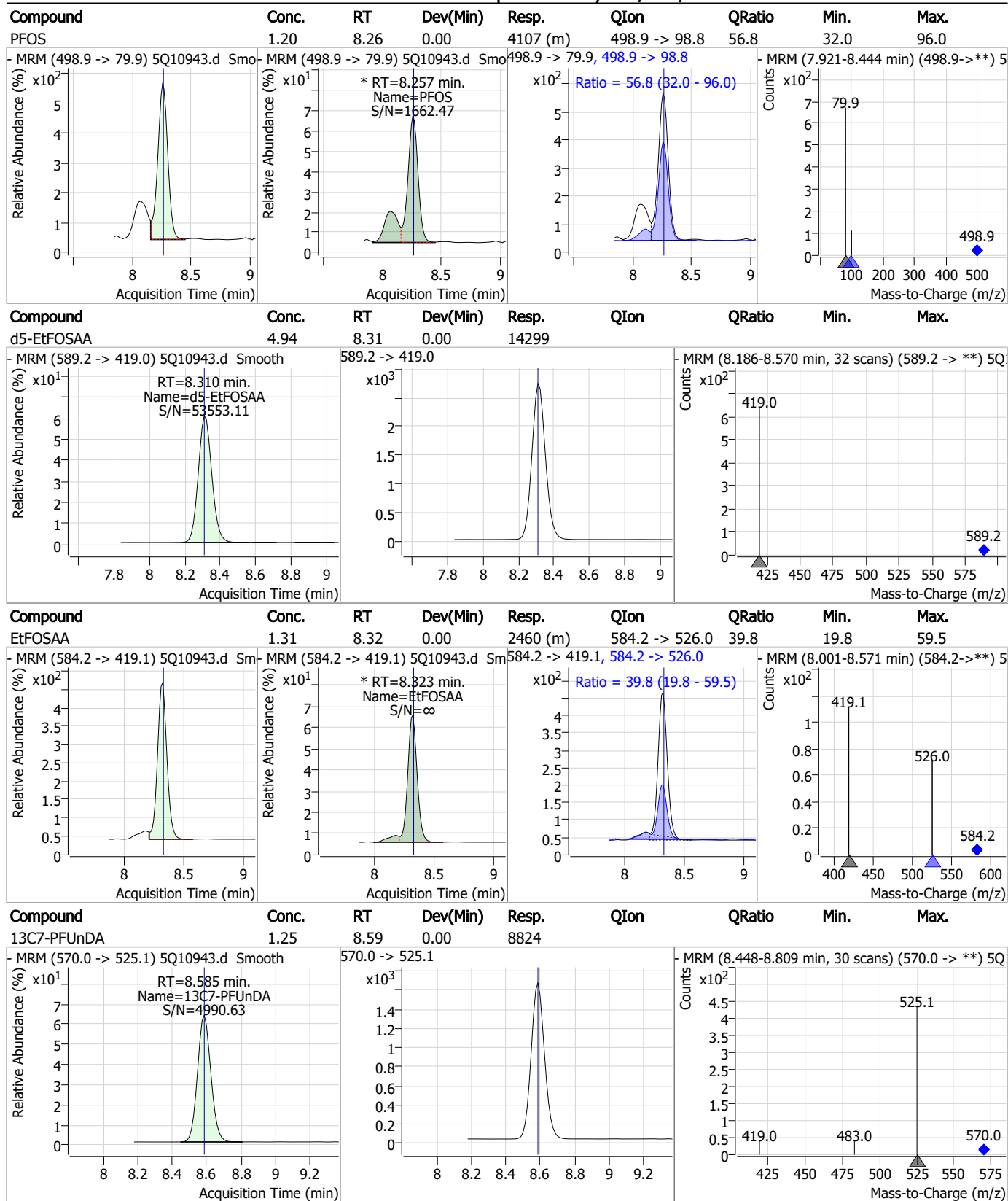


Perfluorinated Compounds by LC/MS/MS



7.7.4
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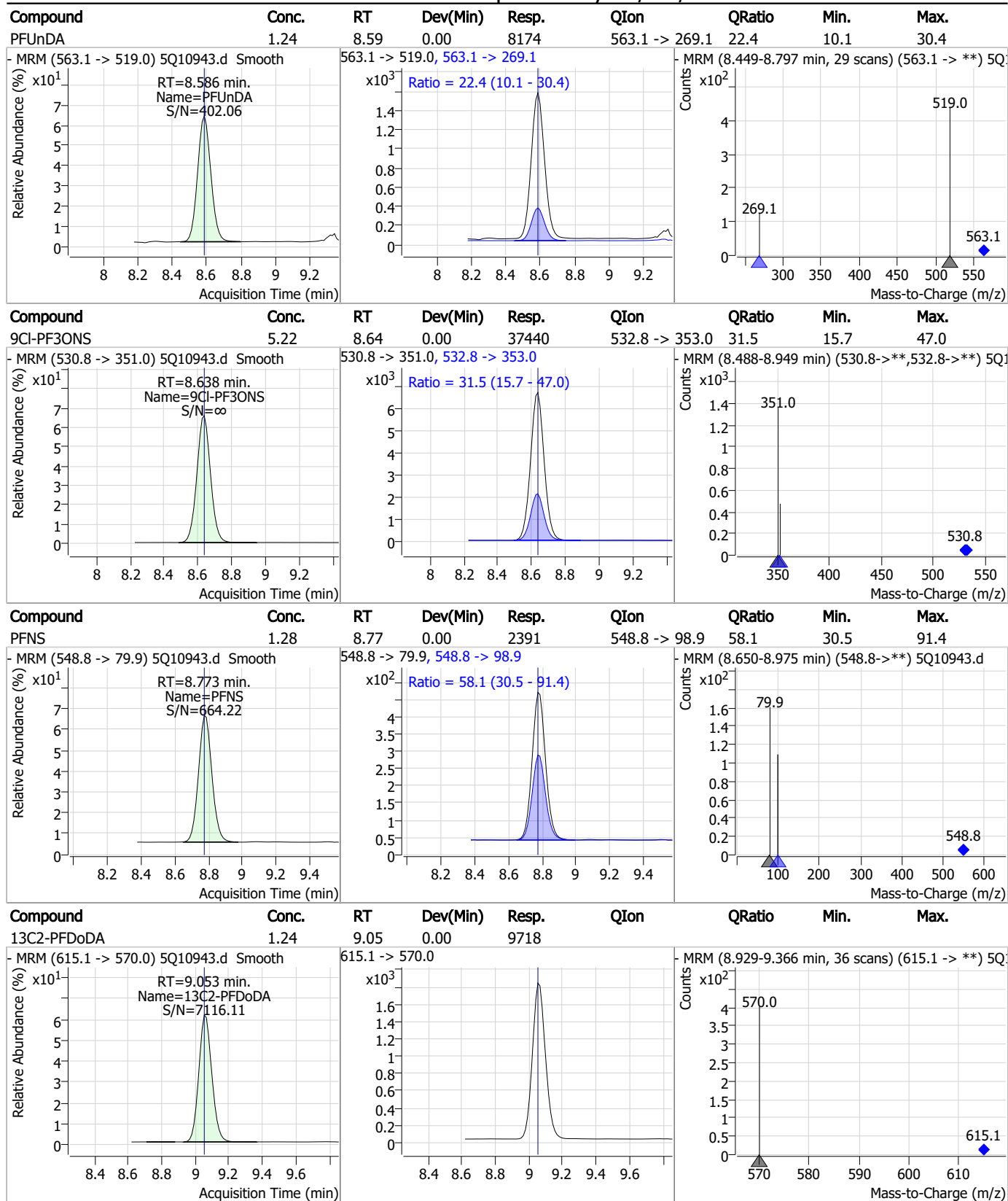
Perfluorinated Compounds by LC/MS/MS



7.7.4

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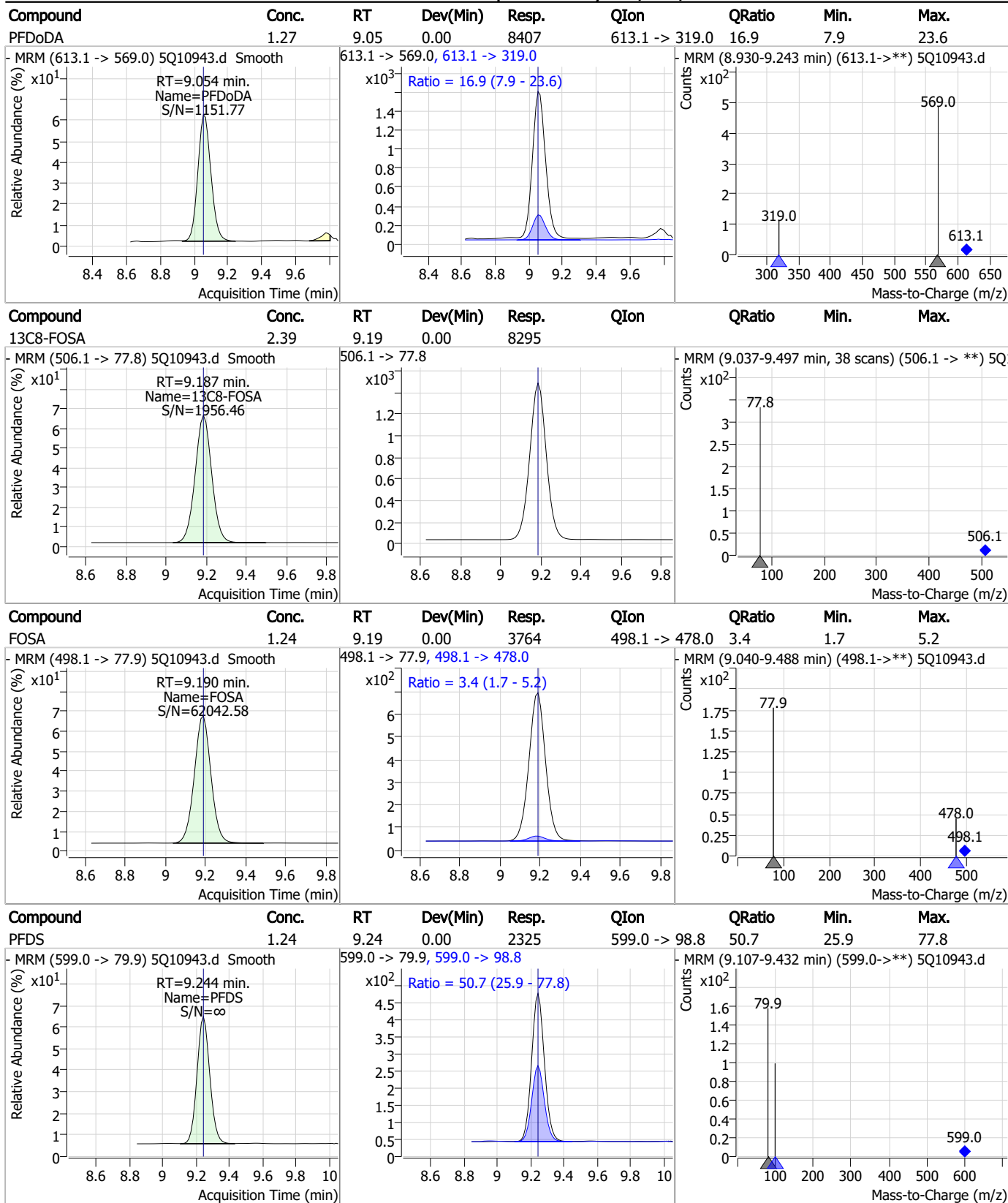
Perfluorinated Compounds by LC/MS/MS



7.7.4

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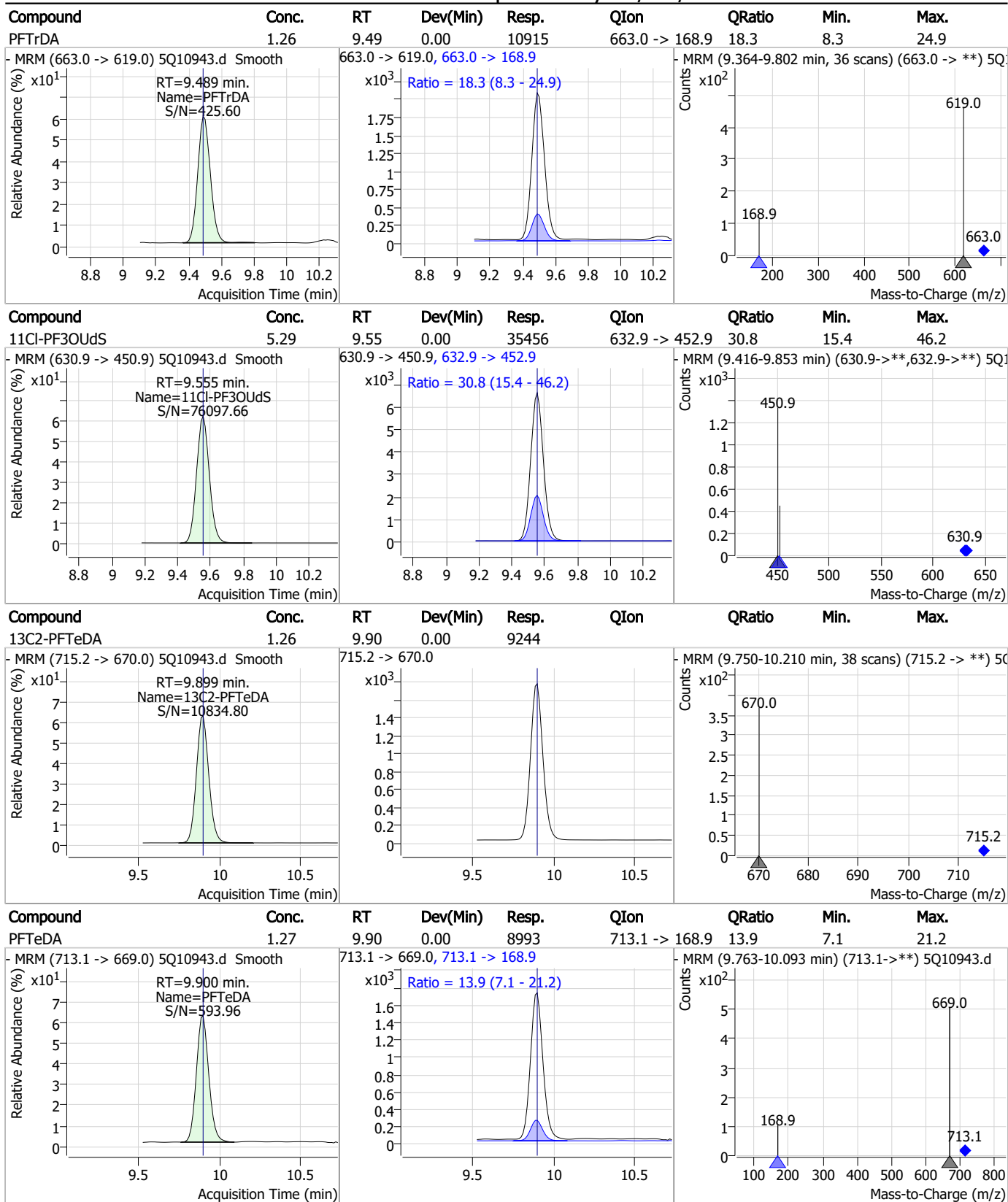
Perfluorinated Compounds by LC/MS/MS



7.7.4

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Perfluorinated Compounds by LC/MS/MS



7.7.4
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Perfluorinated Compounds by LC/MS/MS

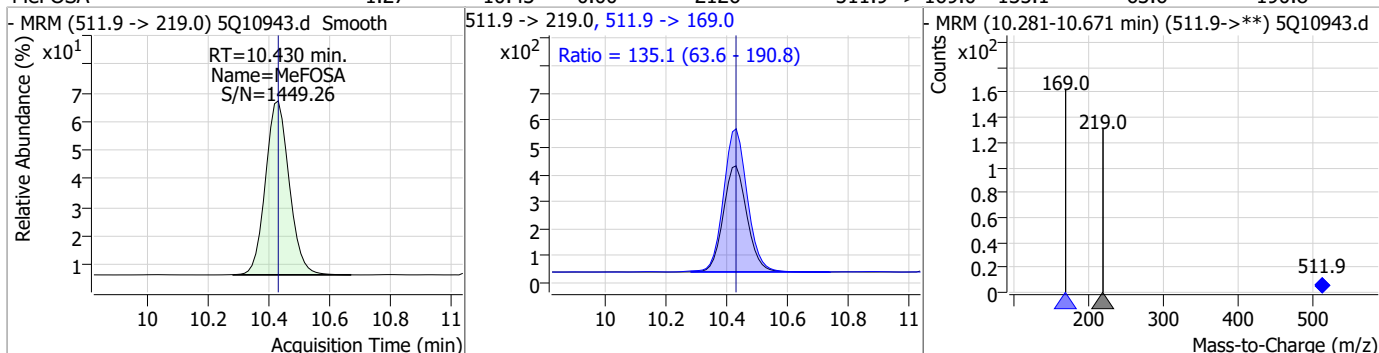
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.19	10.05	0.00	1763	699.1 -> 98.8	61.2	30.3	90.8
d7-MeFOSE	24.51	10.31	0.00	39857	623.2 -> 58.9			
MeFOSE	12.53	10.33	0.00	21327	616.1 -> 58.9			
d3-MeFOSA	2.38	10.42	0.00	4230	515.0 -> 219.0			

7.7.4

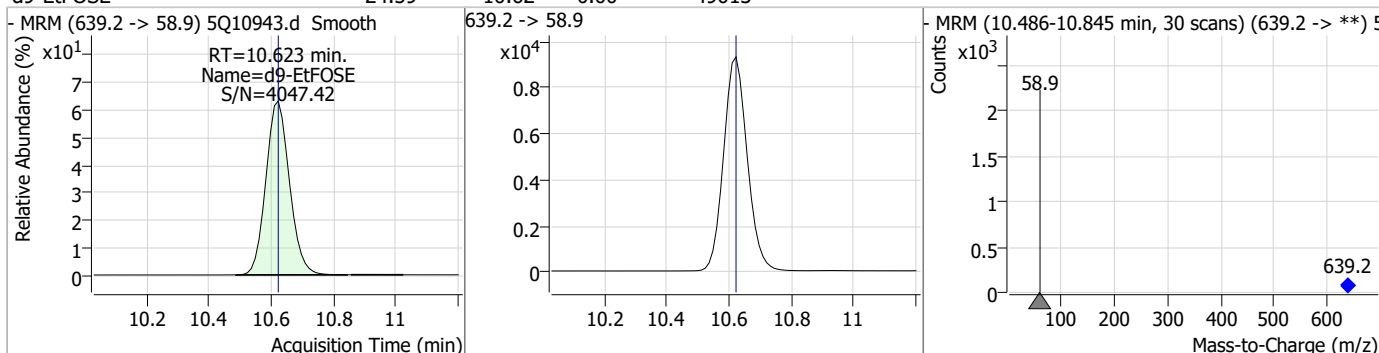
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Perfluorinated Compounds by LC/MS/MS

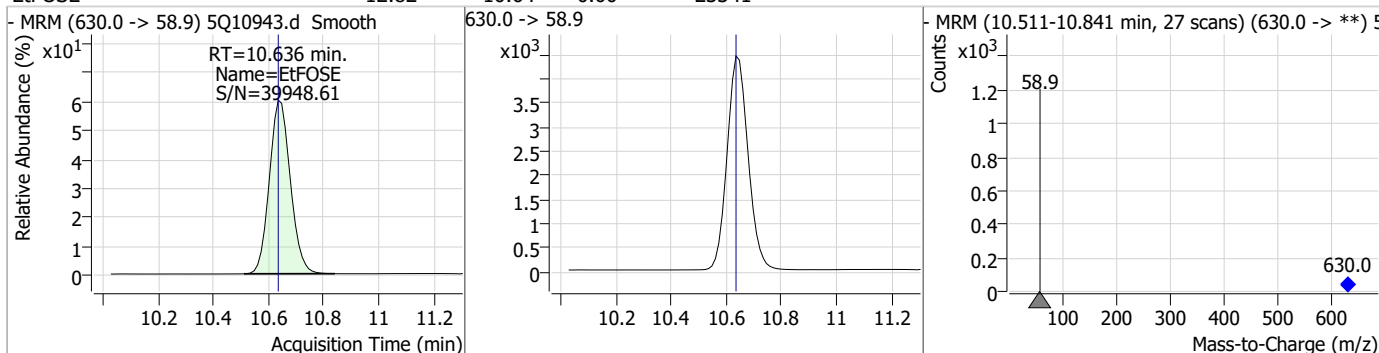
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.27	10.43	0.00	2126	511.9 -> 169.0	135.1	63.6	190.8



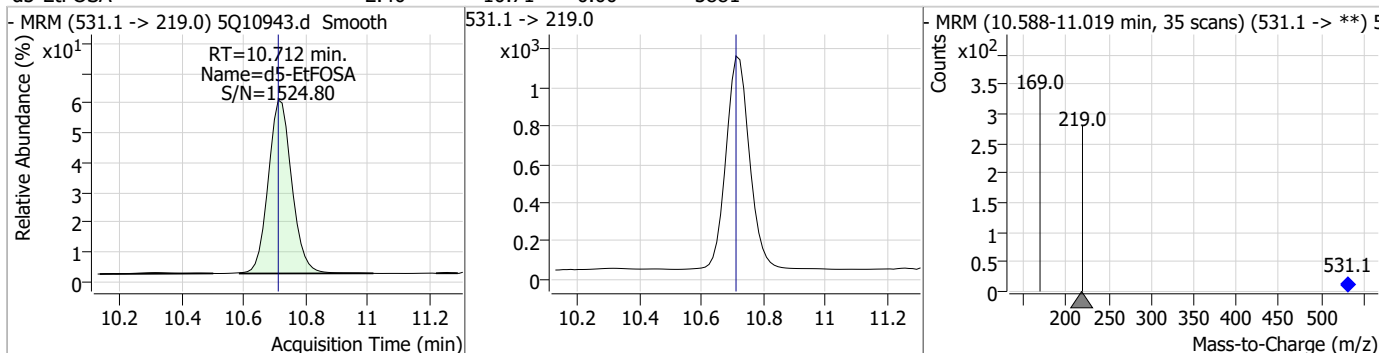
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.59	10.62	0.00	49013				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.82	10.64	0.00	23341				



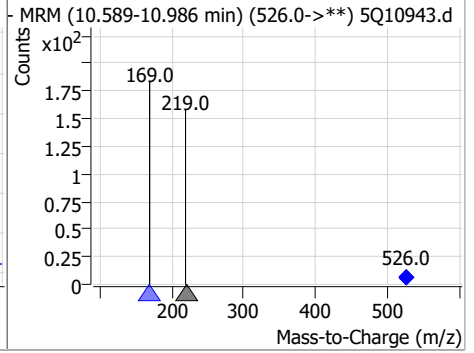
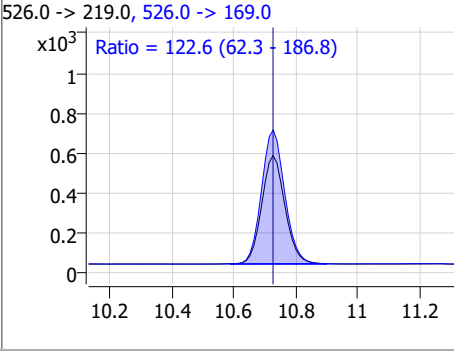
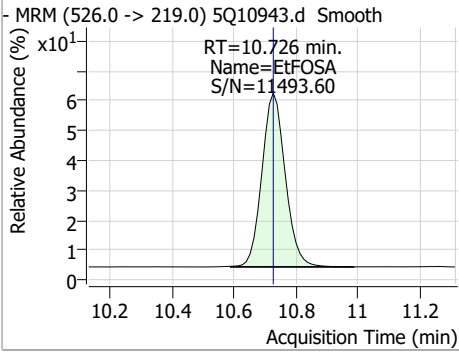
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.40	10.71	0.00	5881				



7.7.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSEA	1.34	10.73	0.00	2843	526.0 -> 169.0	122.6	62.3	186.8



7.7.4
7

Manual Integration Approval Summary

Sample Number: S5Q169-IC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10943.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 20:59 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
4:2 Fluorotelomer sulfonate	757124-72-4		5.00	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
HFPO-DA (GenX)	13252-13-6		5.71	Poor instrument integration
PFEESA	113507-82-7		5.82	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.10	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.32	Split peak

7.7.4.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/21/23 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10944.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 9:13:44 PM
 Sample Name : icc169-4
 Vial : P3-A5
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	49249	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	28951	5.00	µg/L m	0.000
M5-PFHxA	5.335	318.0 -> 273.0	29736	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	30663	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	37430	2.50	µg/L	0.000
M9-PFNA	7.532	472.1 -> 427.0	13460	1.25	µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	8290	1.25	µg/L	0.000
M7-PFUnDA	8.585	570.0 -> 525.1	9388	1.25	µg/L	0.000
M2-PFDoDA	9.053	615.1 -> 570.0	10072	1.25	µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	9582	1.25	µg/L	0.000
M8-FOSA	9.187	506.1 -> 77.8	8592	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	8067	2.50	µg/L m	0.000
M3-PFHxS	7.091	402.1 -> 79.9	6494	2.50	µg/L	0.000
M8-PFOS	8.255	507.1 -> 79.9	8807	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	606	5.00	µg/L	0.000
M2-6:2FTS	6.712	429.1 -> 80.9	1294	5.00	µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1757	5.00	µg/L	0.000
M3-MeFOSAA	8.088	573.2 -> 419.0	10049	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	65252	10.00	µg/L m	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	15407	5.00	µg/L	0.000
M7-MeFOSE	10.315	623.2 -> 58.9	40248	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	50180	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	6268	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4399	2.50	µg/L	0.000
13C4-PFOS	8.256	502.8 -> 79.9	8830	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	29100	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4552	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	43123	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	12555	1.25	µg/L	0.000
13C5-PFNA	7.533	468.0 -> 423.0	12947	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	38259	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	606	5.47	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.4%			
13C2-6:2FTS	6.712	429.1 -> 80.9	1294	5.24	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.9%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1757	5.08	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%			
13C2-PFDoDA	9.053	615.1 -> 570.0	10072	1.29	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%			
13C2-PFTeDA	9.899	715.2 -> 670.0	9582	1.30	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.3%			
13C3-PFBS	5.277	302.1 -> 79.9	9031	2.58	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%			
13C3-PFHxS	7.091	402.1 -> 79.9	6494	2.50	µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFBA	2.799	216.8 -> 171.9	54819	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.280	367.1 -> 322.0	30663	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C5-PFHxA	5.335	318.0 -> 273.0	33519	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFPeA	4.150	268.3 -> 223.0	34444	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C6-PFDA	8.066	519.1 -> 474.1	8290	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C7-PFUnDA	8.585	570.0 -> 525.1	9388	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.9%	
13C8-FOSA	9.187	506.1 -> 77.8	8592	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C8-PFOA	6.950	421.1 -> 376.0	37430	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C8-PFOS	8.255	507.1 -> 79.9	8807	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C9-PFNA	7.532	472.1 -> 427.0	13460	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.7%	
d3-MeFOSAA	8.088	573.2 -> 419.0	10049	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	72938	10.27 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.7%	
d3-MeFOSA	10.416	515.0 -> 219.0	4399	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
d5-EtFOSAA	8.310	589.2 -> 419.0	15407	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.5%	
d7-MeFOSE	10.315	623.2 -> 58.9	40248	24.77 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d9-EtFOSE	10.623	639.2 -> 58.9	50180	25.20 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d5-EtFOSA	10.712	531.1 -> 219.0	6268	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	6446	8.46 µg/L	100
		327.1 -> 80.9	3546		
6:2FTS	6.700	427.1 -> 407.0	9446	8.74 µg/L	100
		427.1 -> 80.9	3977		
8:2FTS	7.829	527.1 -> 507.0	6301	7.57 µg/L	100
		527.1 -> 80.8	3173		
EtFOSAA	8.323	584.2 -> 419.1	4765	2.36 µg/L	m 98
		584.2 -> 526.0	1956		
FOSA	9.190	498.1 -> 77.9	7167	2.28 µg/L	100
		498.1 -> 478.0	250		
MeFOSAA	8.101	570.1 -> 419.0	3749	2.20 µg/L	m 91
		570.1 -> 483.0	966		
PFBA	2.795	212.8 -> 168.9	17388	8.92 µg/L	m 100
PFBS	5.278	298.7 -> 79.9	6279	2.37 µg/L	m 96
		298.7 -> 98.8	2486		
PFDA	8.067	512.9 -> 469.0	20611	2.37 µg/L	100
		512.9 -> 219.0	3769		
PFDODA	9.054	613.1 -> 569.0	15910	2.33 µg/L	100
		613.1 -> 319.0	2507		
PFDS	9.244	599.0 -> 79.9	4347	2.24 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2255			
PFHpA	6.281	363.1 -> 319.0	29979	2.31	µg/L	100
		363.1 -> 169.0	6764			
PFHpS	7.699	449.0 -> 79.9	5413	2.16	µg/L	100
		449.0 -> 98.9	3273			
PFHxA	5.337	313.0 -> 269.0	20197	2.32	µg/L	m 100
		313.0 -> 118.9	903			
PFHxS	7.092	398.7 -> 79.9	4637	2.11	µg/L	m 77
		398.7 -> 98.9	2463			
PFNA	7.533	463.0 -> 419.0	17394	2.23	µg/L	100
		463.0 -> 219.0	4102			
PFNS	8.773	548.8 -> 79.9	4183	2.16	µg/L	100
		548.8 -> 98.9	2550			
PFOA	6.951	413.0 -> 369.0	33288	2.31	µg/L	100
		413.0 -> 169.0	7605			
PFOS	8.257	498.9 -> 79.9	7536	2.12	µg/L	m 88
		498.9 -> 98.8	4142			
PFPeA	4.152	263.0 -> 219.0	29256	4.63	µg/L	m 100
PFPeS	6.357	349.1 -> 79.9	4036	2.13	µg/L	m 95
		349.1 -> 98.9	2183			
PFTeDA	9.899	713.1 -> 669.0	16692	2.27	µg/L	100
		713.1 -> 168.9	2358			
PFTrDA	9.489	663.0 -> 619.0	20865	2.32	µg/L	100
		663.0 -> 168.9	3460			
PFUnDA	8.586	563.1 -> 519.0	15568	2.22	µg/L	100
		563.1 -> 269.1	3159			
11CI-PF3OUdS	9.555	630.9 -> 450.9	67320	9.37	µg/L	100
		632.9 -> 452.9	20731			
9CI-PF3ONS	8.638	530.8 -> 351.0	70781	9.22	µg/L	100
		532.8 -> 353.0	22194			
ADONA	6.542	376.9 -> 250.9	161099	9.02	µg/L	100
		376.9 -> 84.8	48365			
HFPO-DA	5.715	284.9 -> 168.9	51730	9.66	µg/L	m 99
		284.9 -> 184.9	4665			
3:3FTCA	3.603	241.0 -> 177.0	5213	11.17	µg/L	m 98
		241.0 -> 117.0	626			
5:3FTCA	5.918	341.0 -> 237.1	104150	57.75	µg/L	100
		341.0 -> 217.0	70032			
7:3FTCA	7.348	441.0 -> 316.9	40819	56.54	µg/L	100
		441.0 -> 336.9	88902			
EtFOSA	10.726	526.0 -> 219.0	5202	2.30	µg/L	100
		526.0 -> 169.0	6477			
EtFOSE	10.636	630.0 -> 58.9	44254	23.74	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	3972	2.29	µg/L	100
		511.9 -> 169.0	5053			
MeFOSE	10.327	616.1 -> 58.9	40819	23.74	µg/L	100
PFDoDS	10.050	699.1 -> 79.9	3443	2.25	µg/L	100
		699.1 -> 98.8	2085			
NFDHA	5.218	295.0 -> 201.0	3387	4.93	µg/L	m 98
		295.0 -> 84.9	870			
PFMBA	4.553	279.0 -> 85.1	21130	4.53	µg/L	100
PFMPA	3.328	229.0 -> 84.9	17382	5.07	µg/L	100
PFEESA	5.821	314.8 -> 134.9	40388	4.40	µg/L	m 99
		314.8 -> 82.9	1306			

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

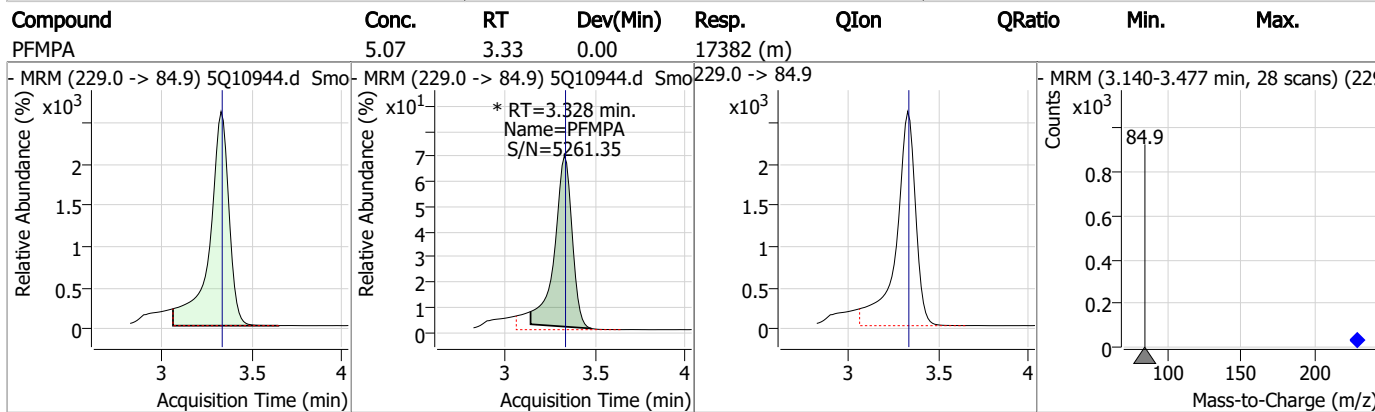
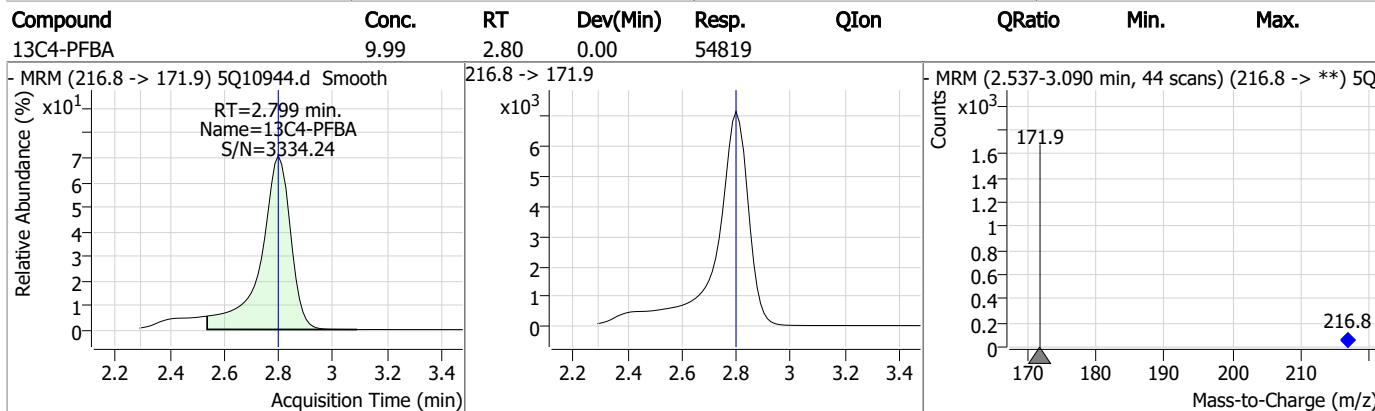
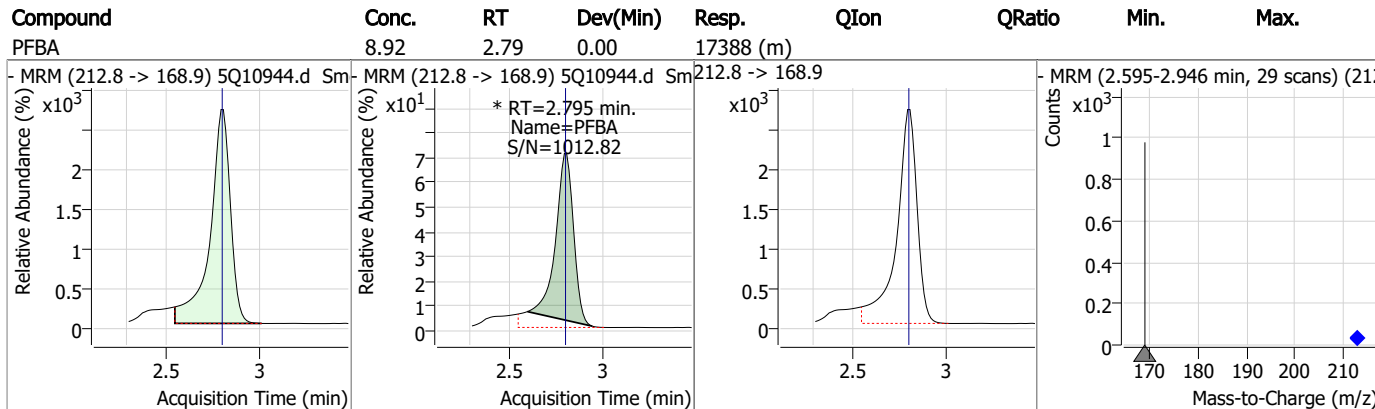
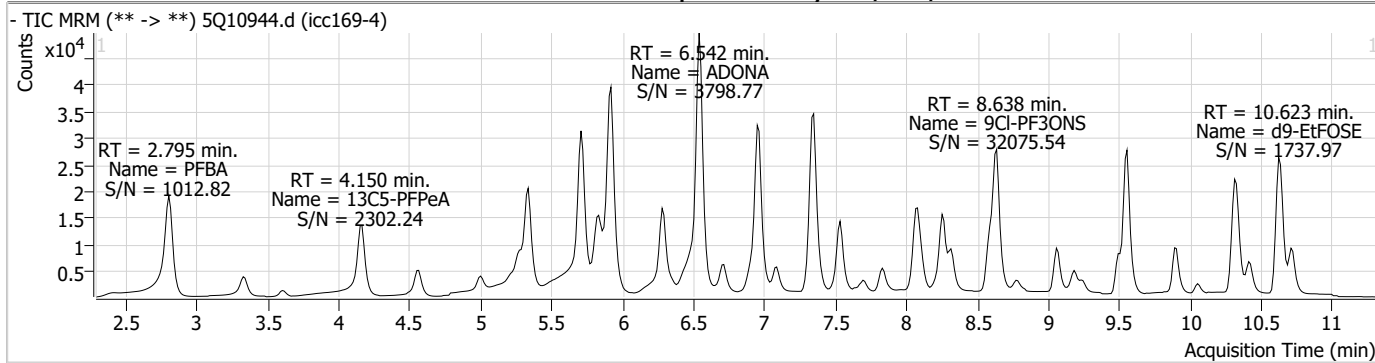
Perfluorinated Compounds by LC/MS/MS

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

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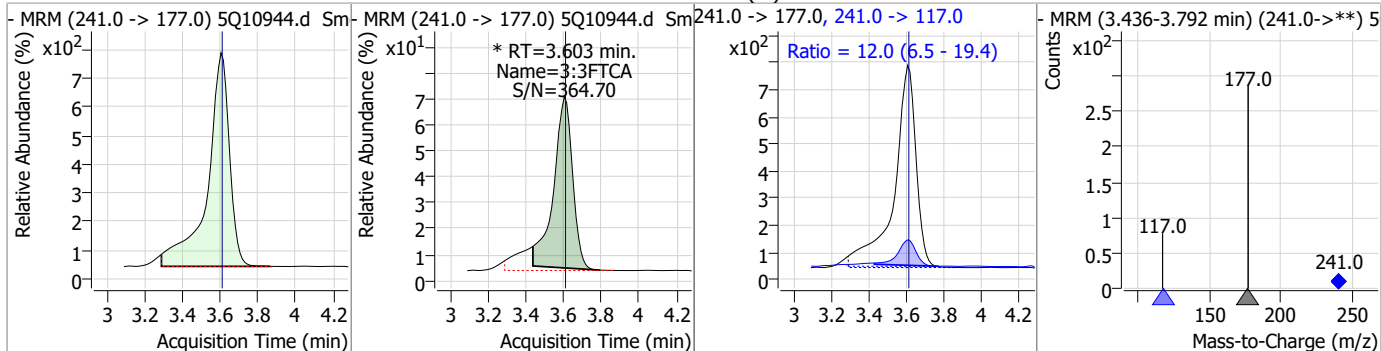
Perfluorinated Compounds by LC/MS/MS



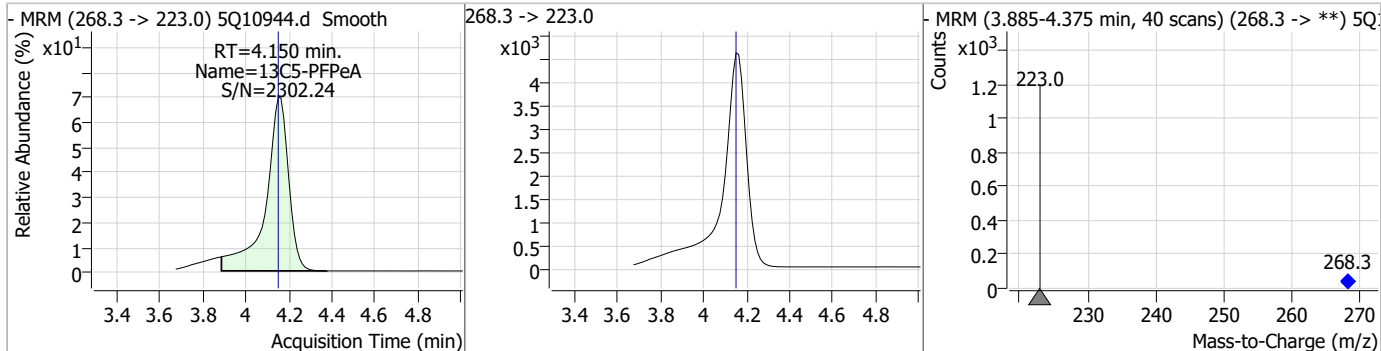
7.7.5
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Perfluorinated Compounds by LC/MS/MS

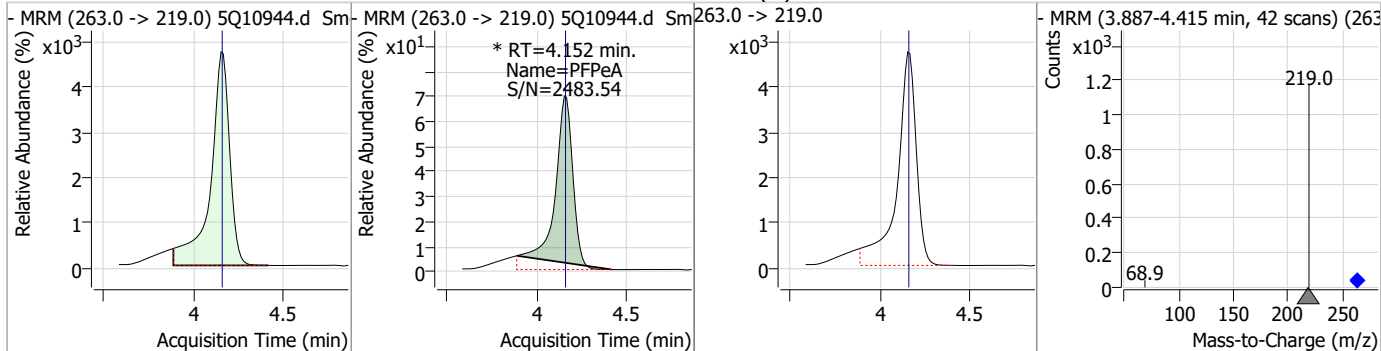
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.17	3.60	0.00	5213 (m)	241.0 -> 117.0	12.0	6.5	19.4



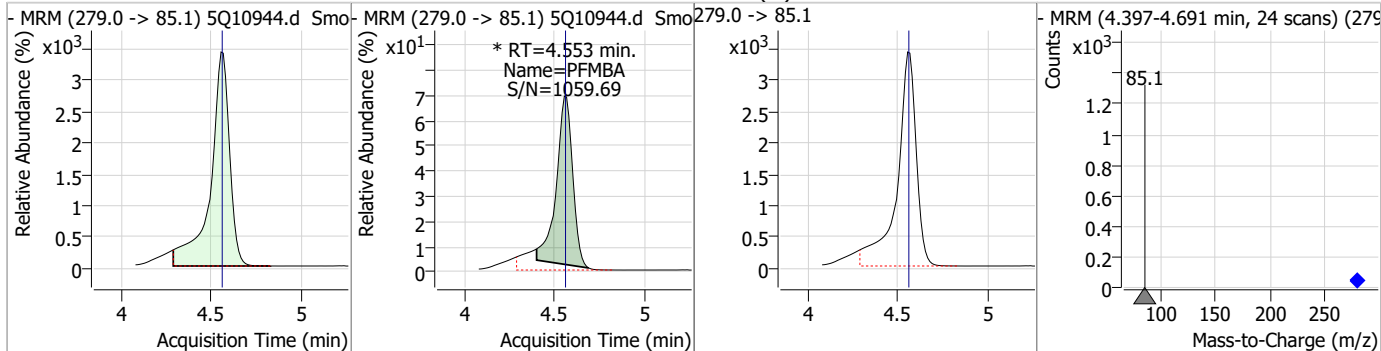
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.95	4.15	0.00	34444				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.63	4.15	0.00	29256 (m)				

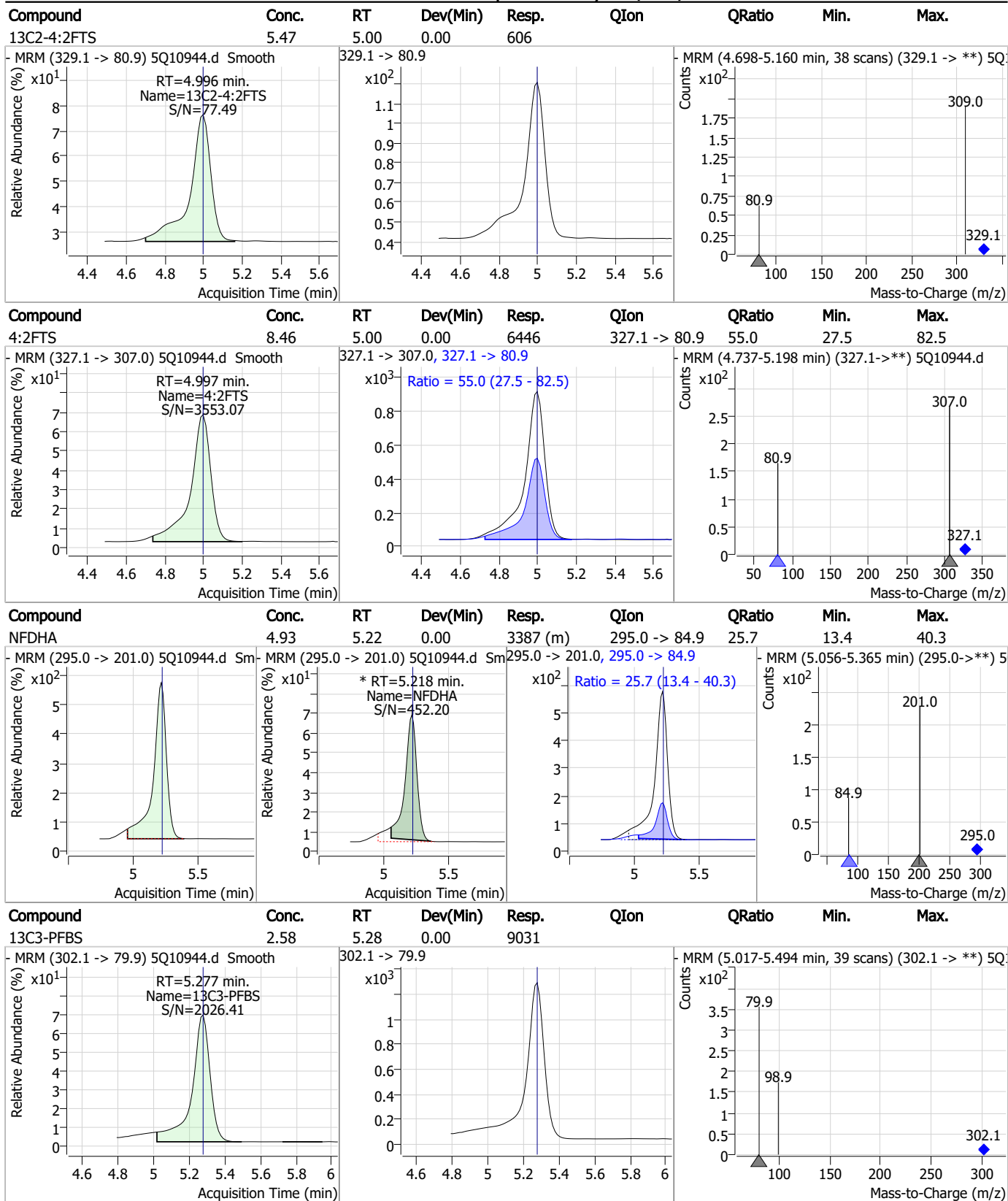


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.53	4.55	0.00	21130 (m)				



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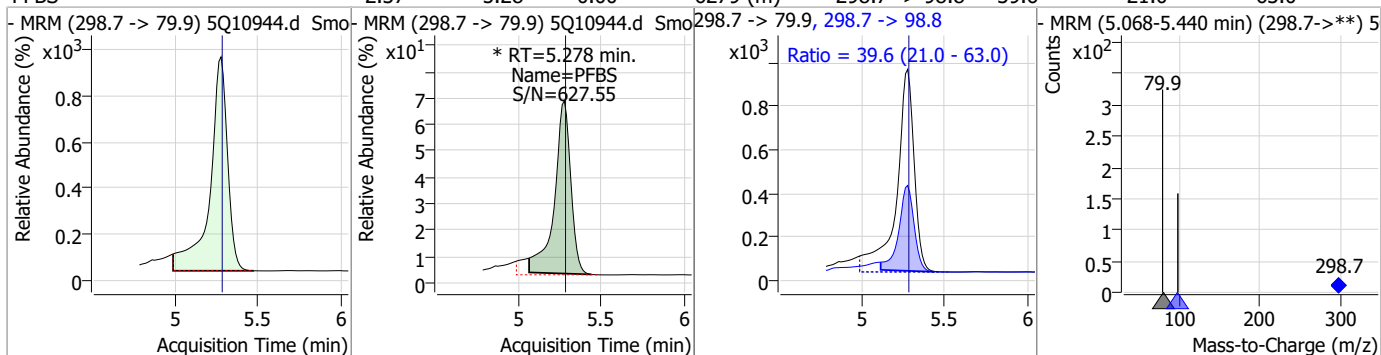
Perfluorinated Compounds by LC/MS/MS



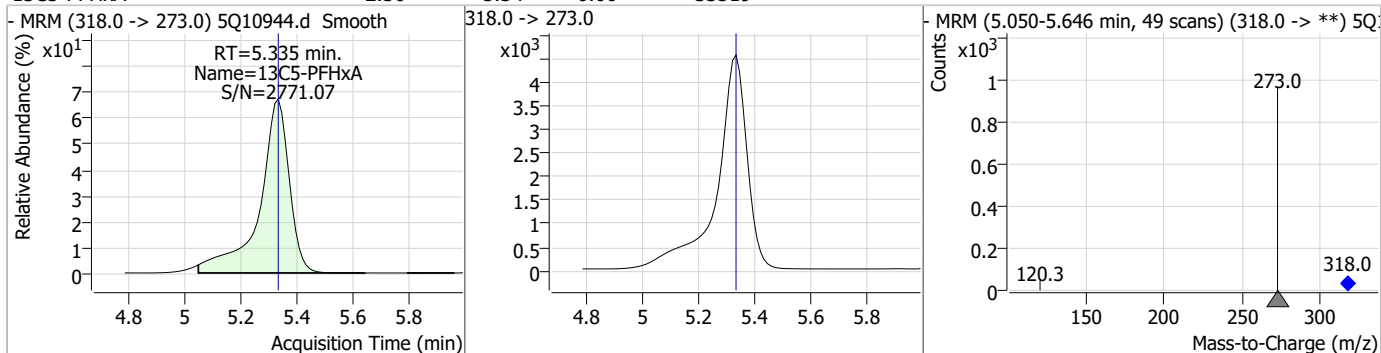
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Perfluorinated Compounds by LC/MS/MS

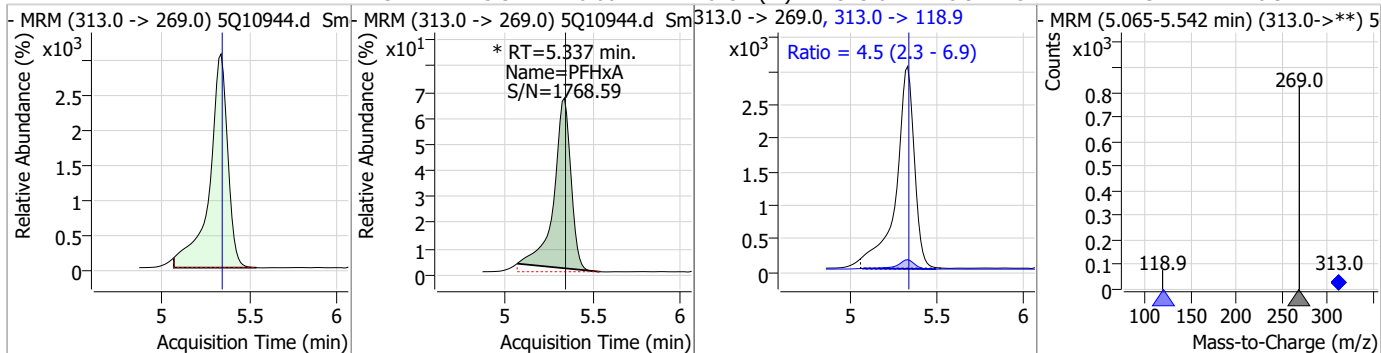
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.37	5.28	0.00	6279 (m)	298.7 -> 98.8	39.6	21.0	63.0



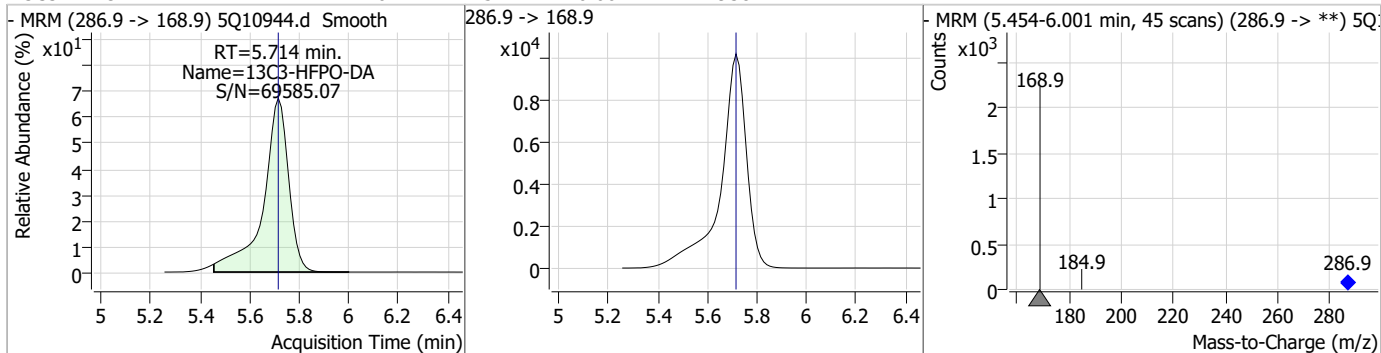
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.50	5.34	0.00	33519				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.32	5.34	0.00	20197 (m)	313.0 -> 118.9	4.5	2.3	6.9



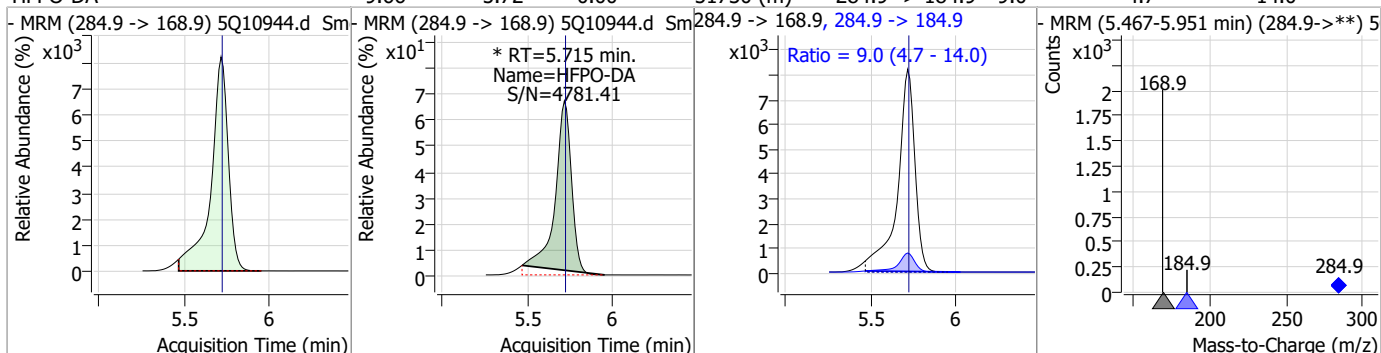
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.27	5.71	0.00	72938				



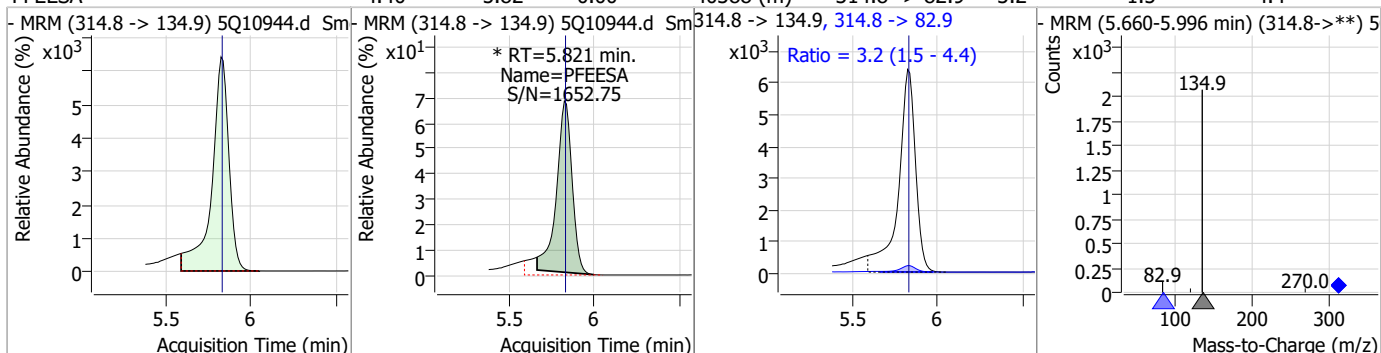
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Perfluorinated Compounds by LC/MS/MS

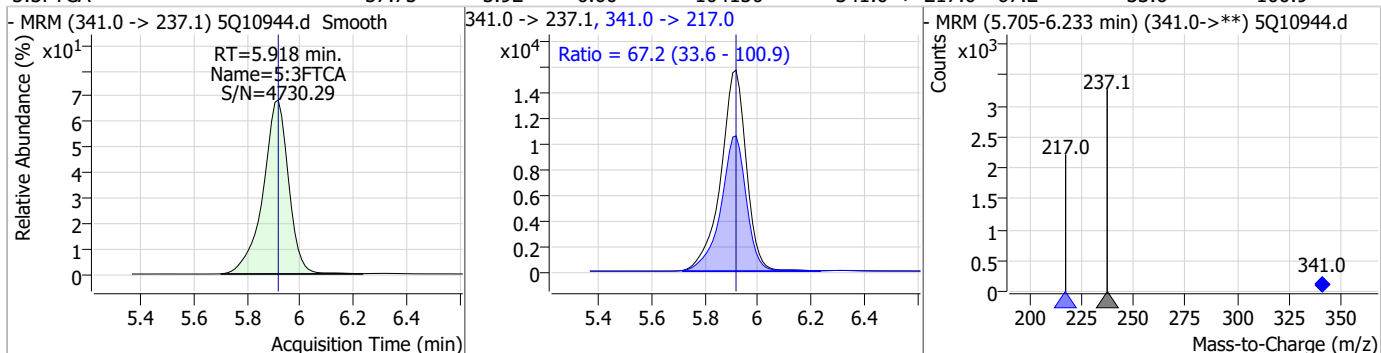
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.66	5.72	0.00	51730 (m)	284.9 -> 184.9	9.0	4.7	14.0



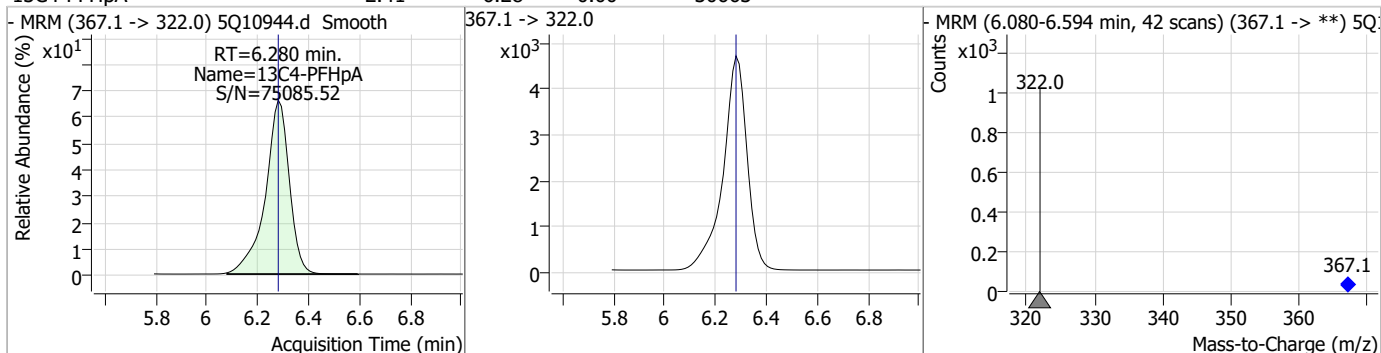
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.40	5.82	0.00	40388 (m)	314.8 -> 82.9	3.2	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	57.75	5.92	0.00	104150	341.0 -> 217.0	67.2	33.6	100.9

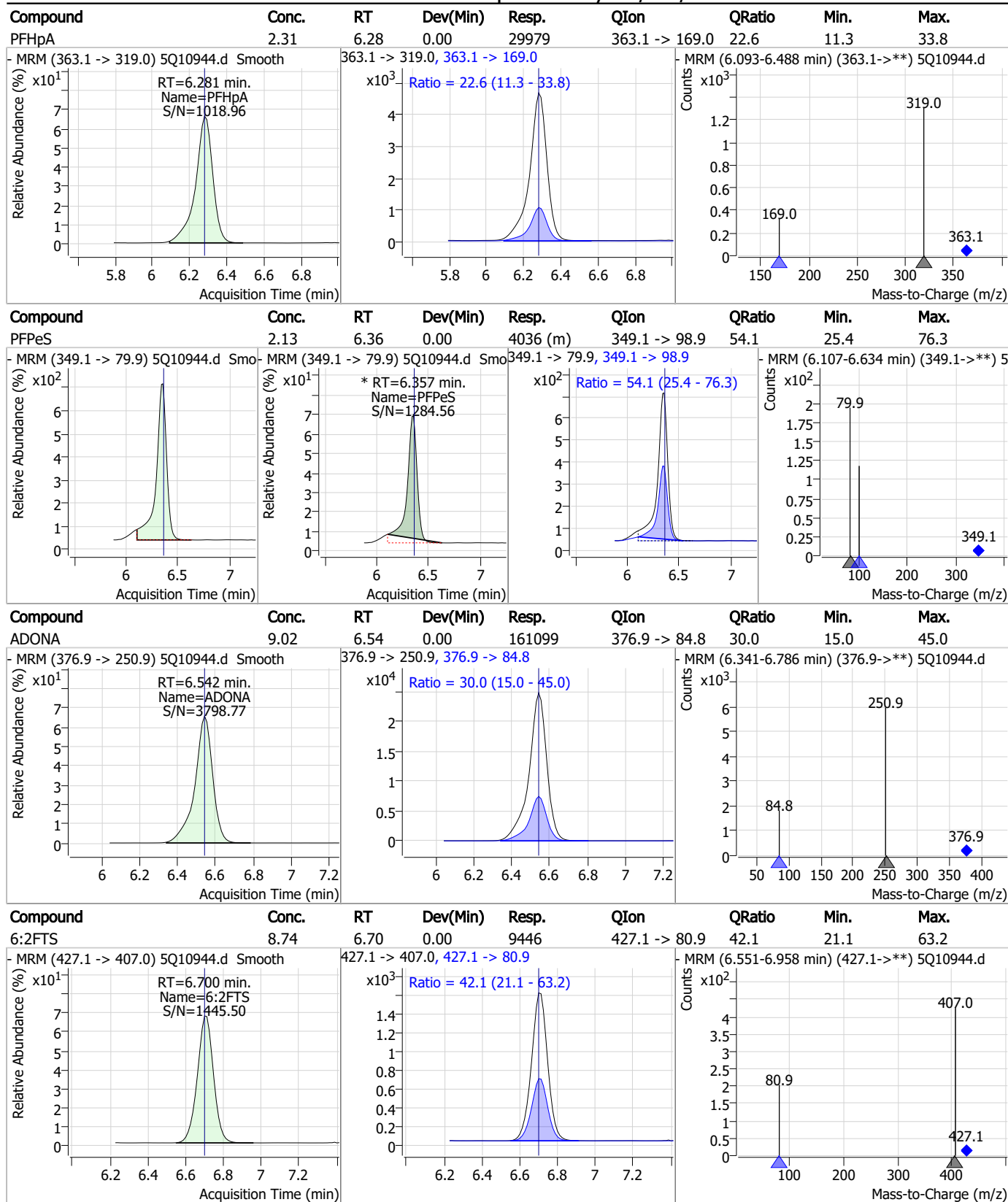


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.41	6.28	0.00	30663				



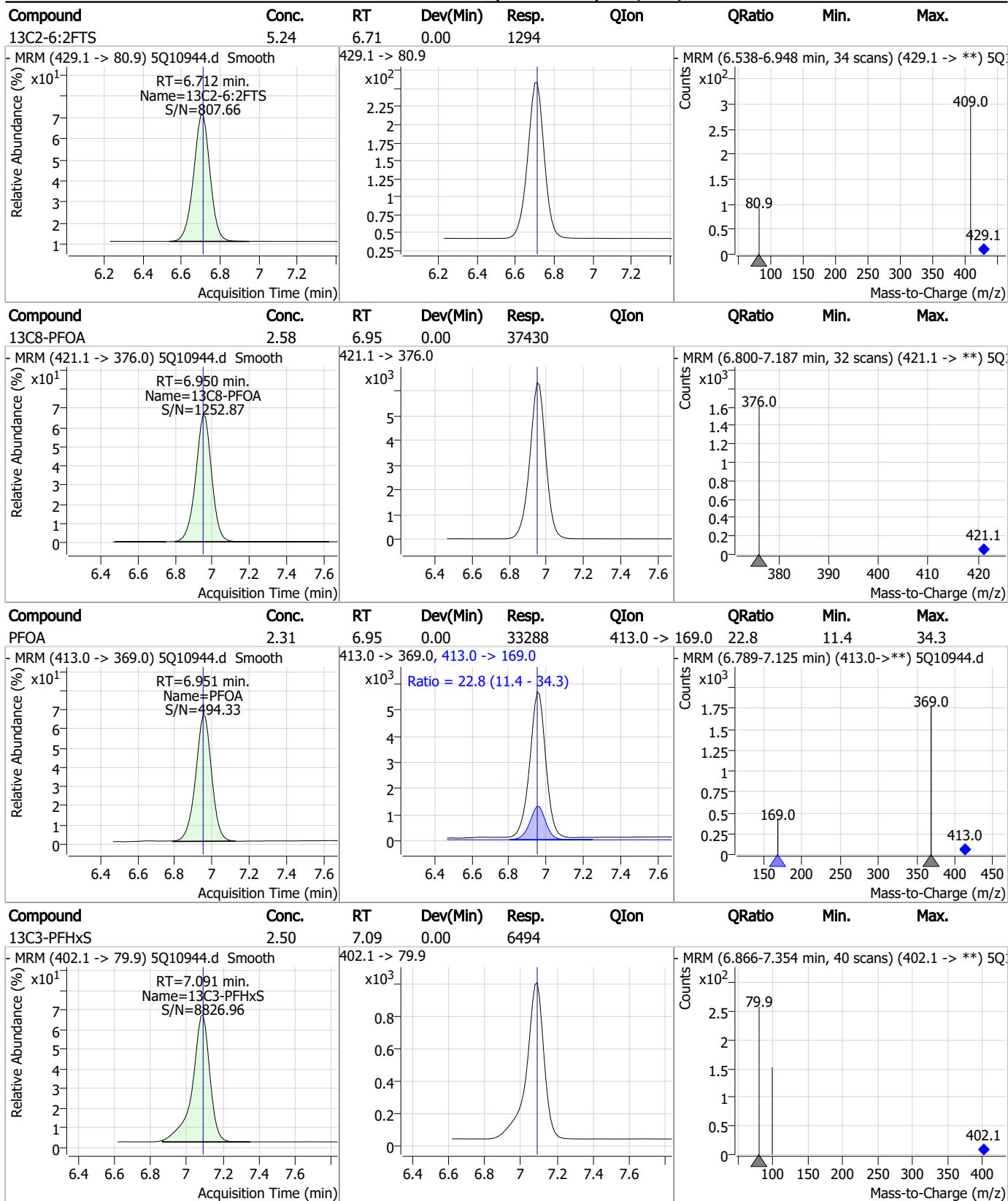
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Perfluorinated Compounds by LC/MS/MS



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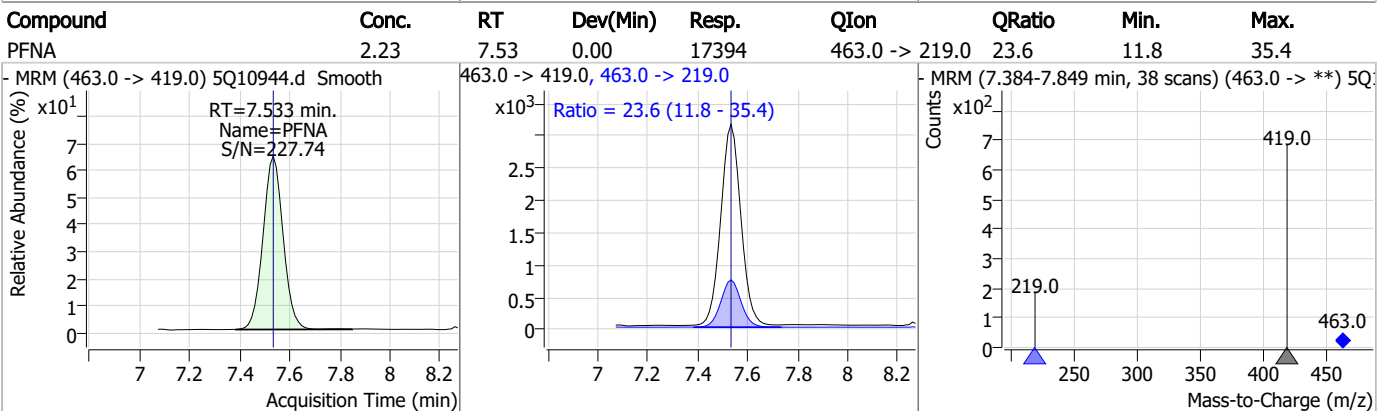
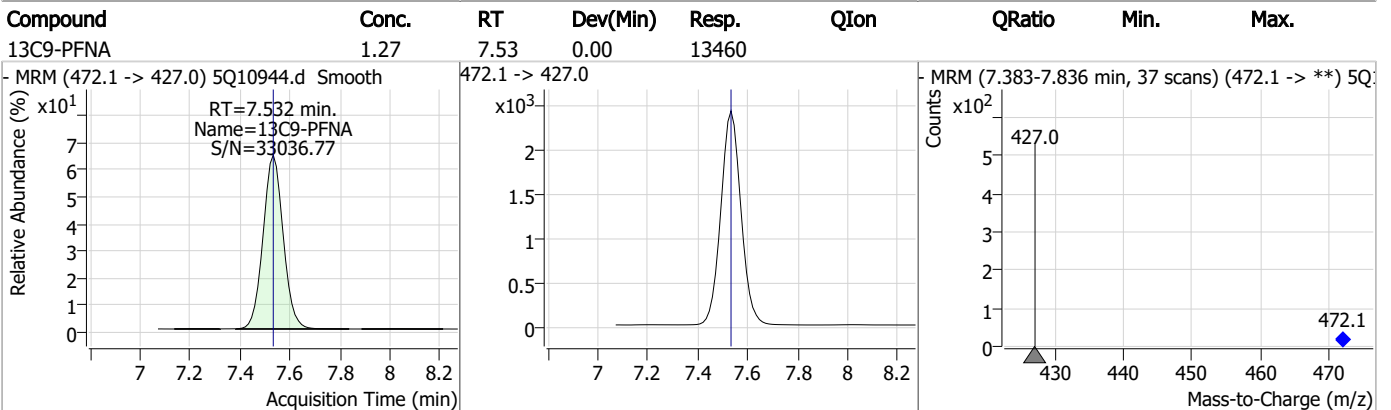
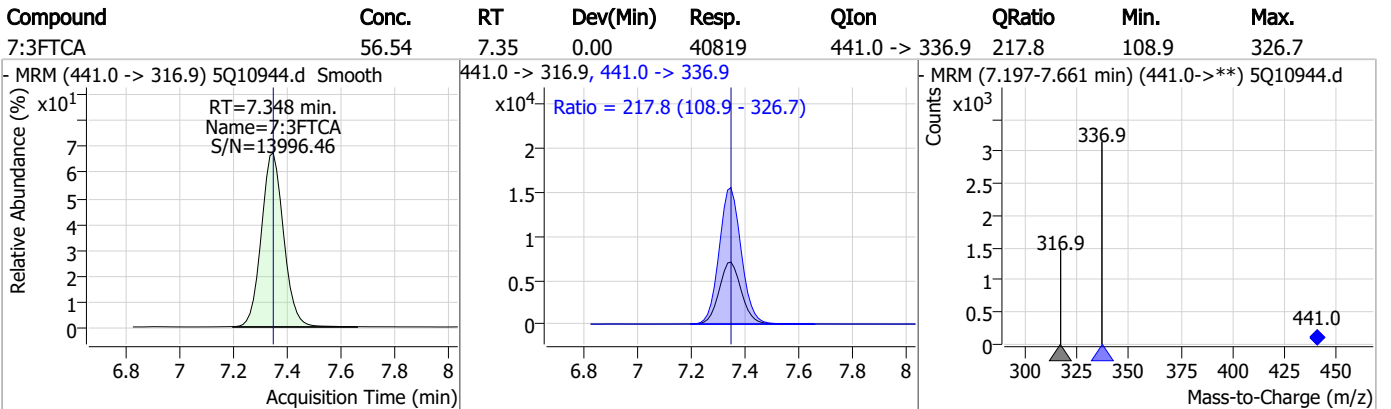
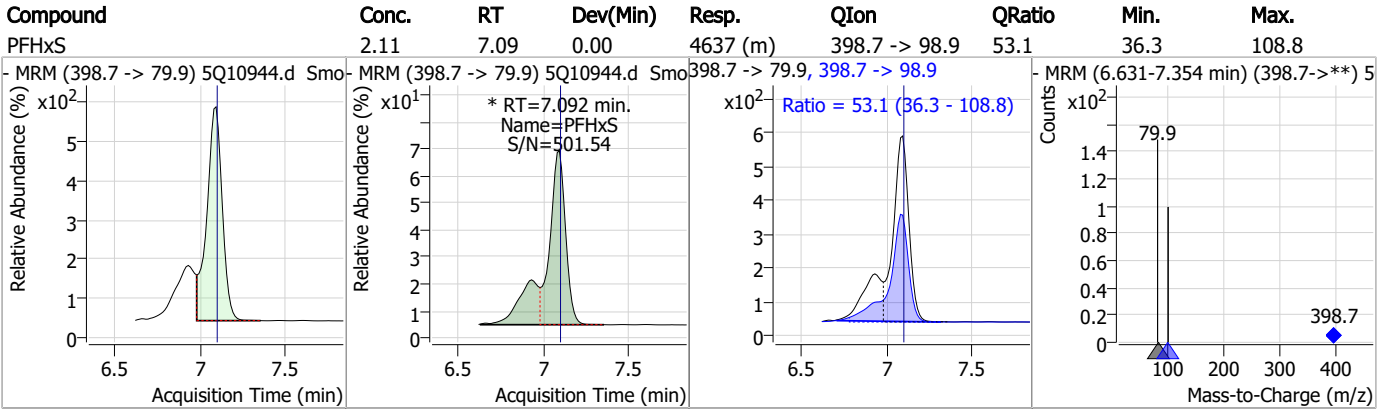
Perfluorinated Compounds by LC/MS/MS



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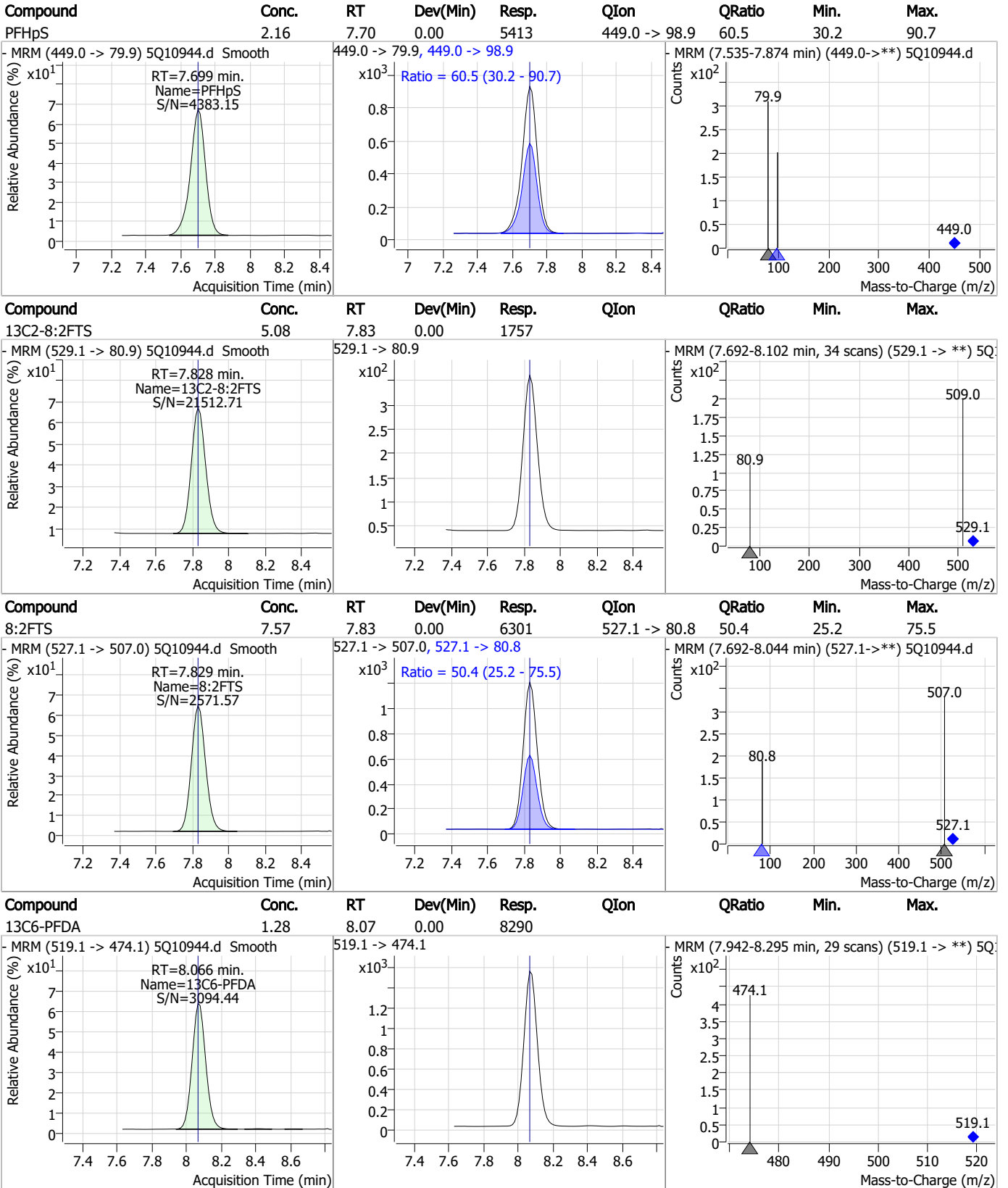
Perfluorinated Compounds by LC/MS/MS



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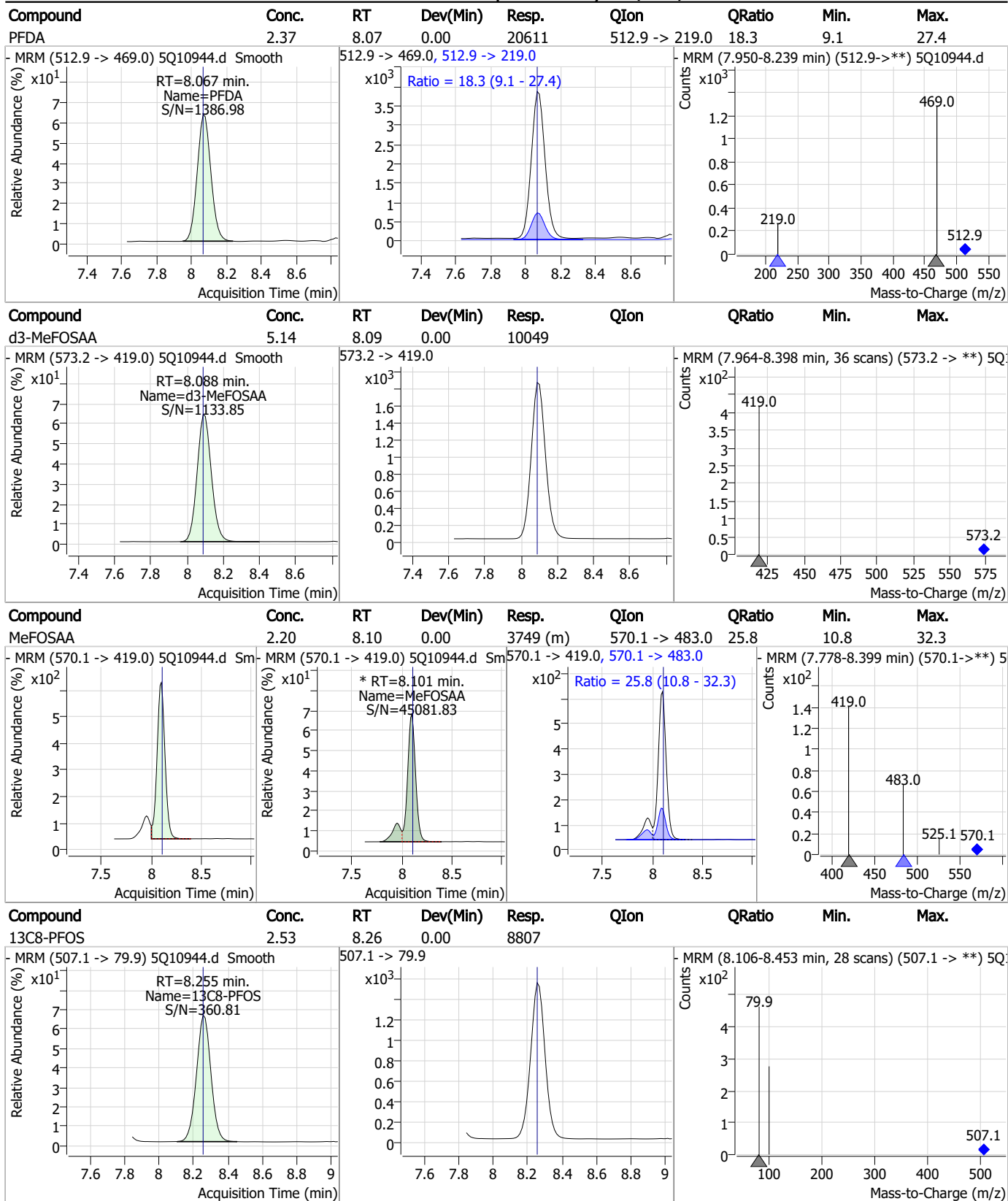
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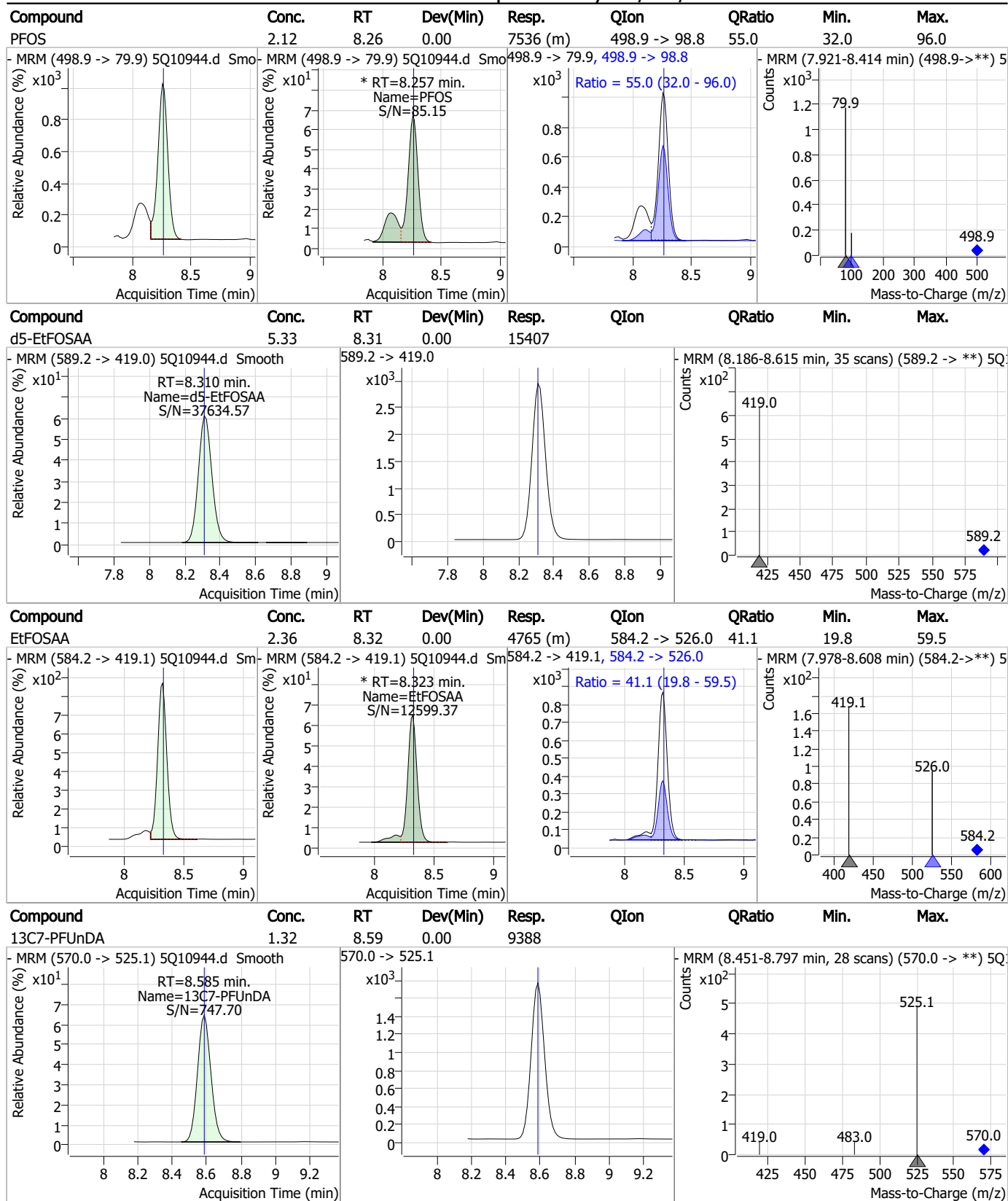
Perfluorinated Compounds by LC/MS/MS



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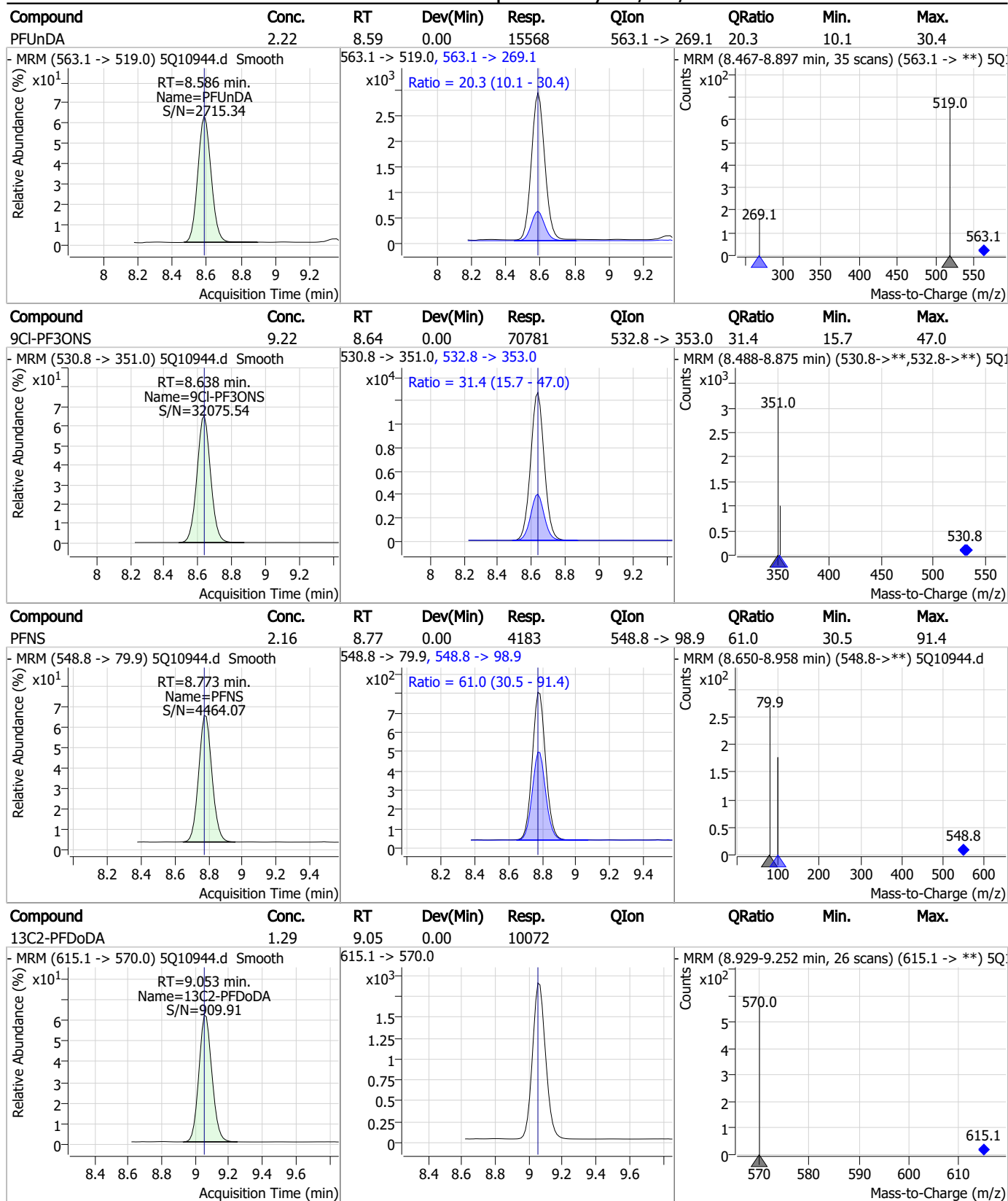
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Perfluorinated Compounds by LC/MS/MS



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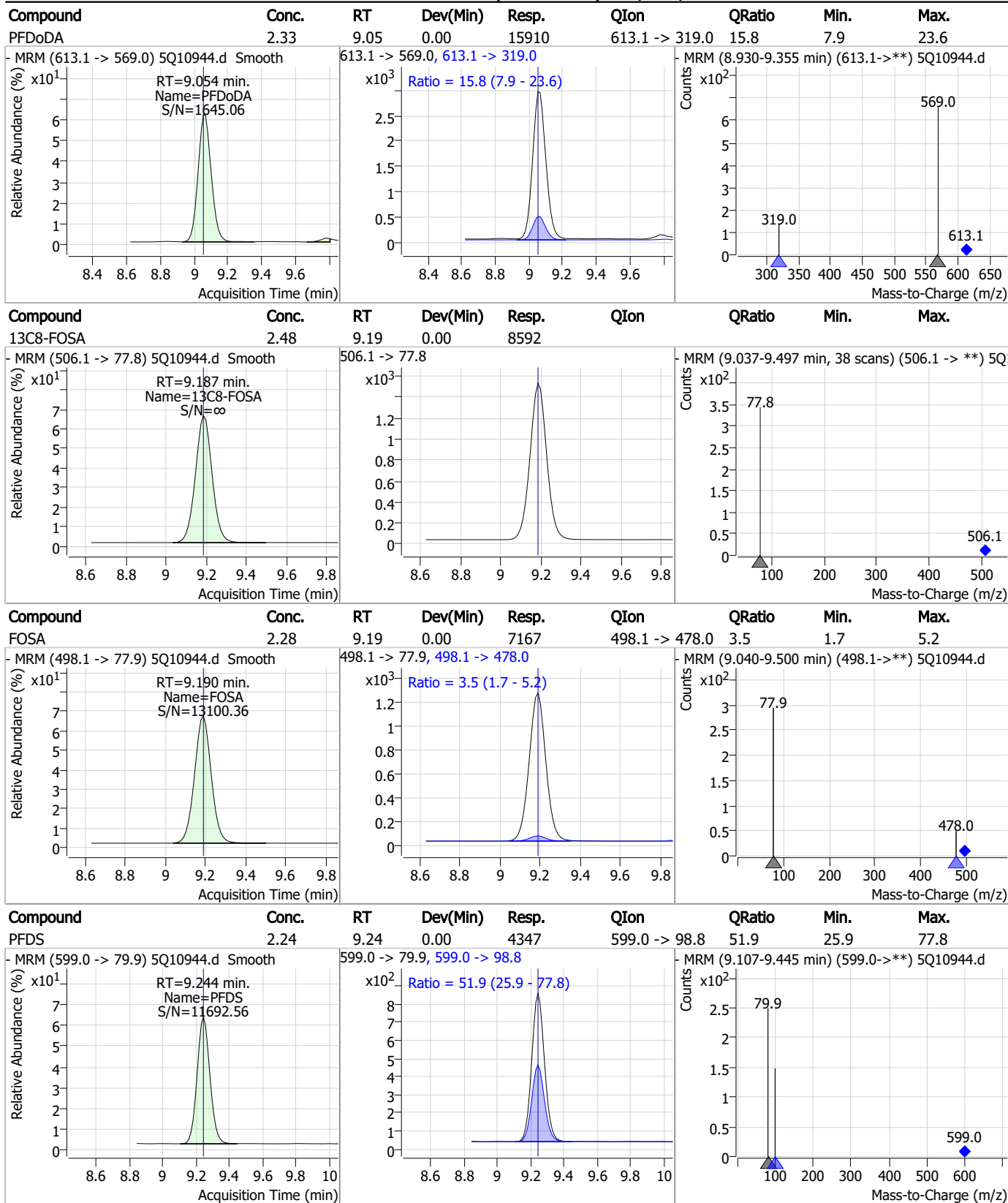
Perfluorinated Compounds by LC/MS/MS



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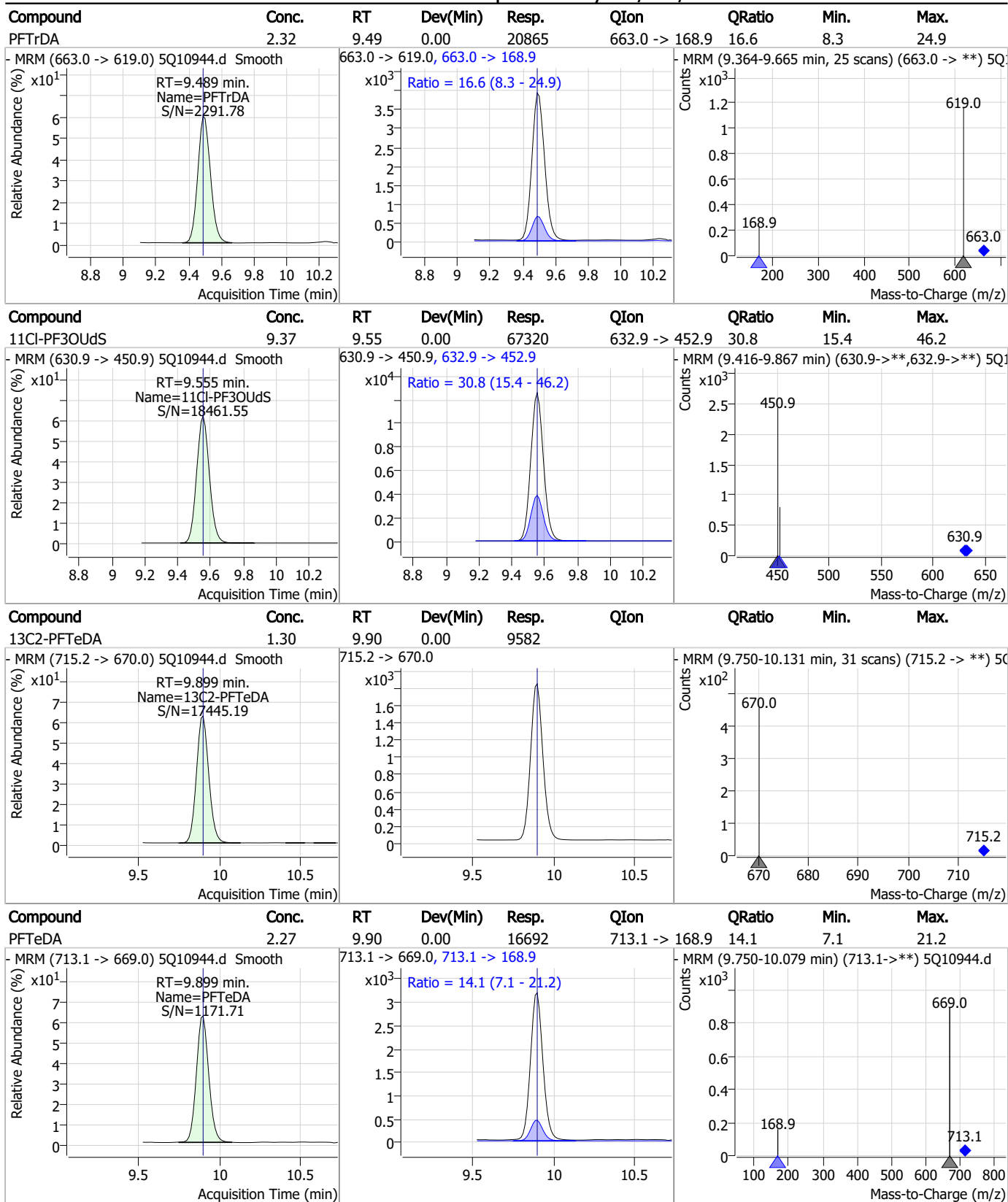
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Perfluorinated Compounds by LC/MS/MS



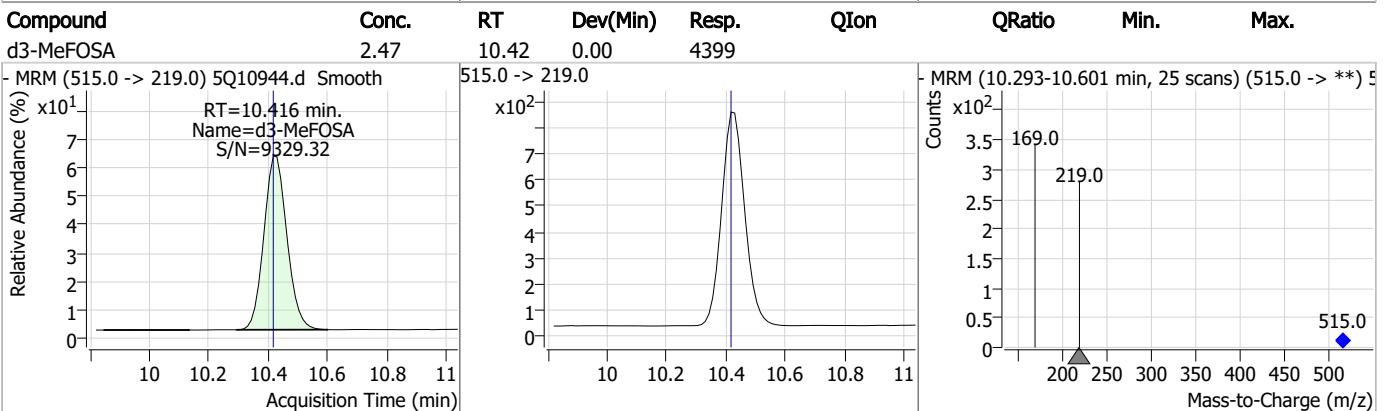
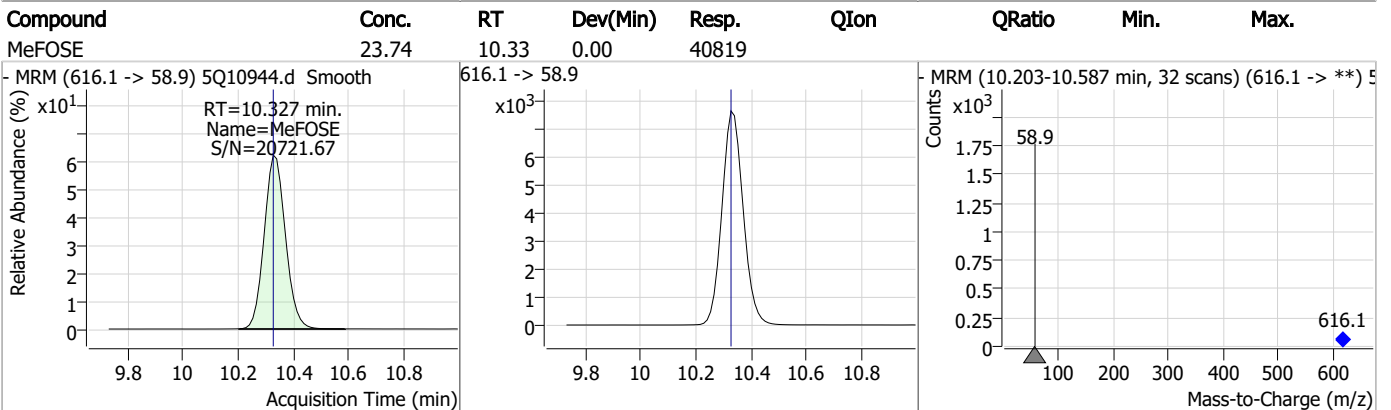
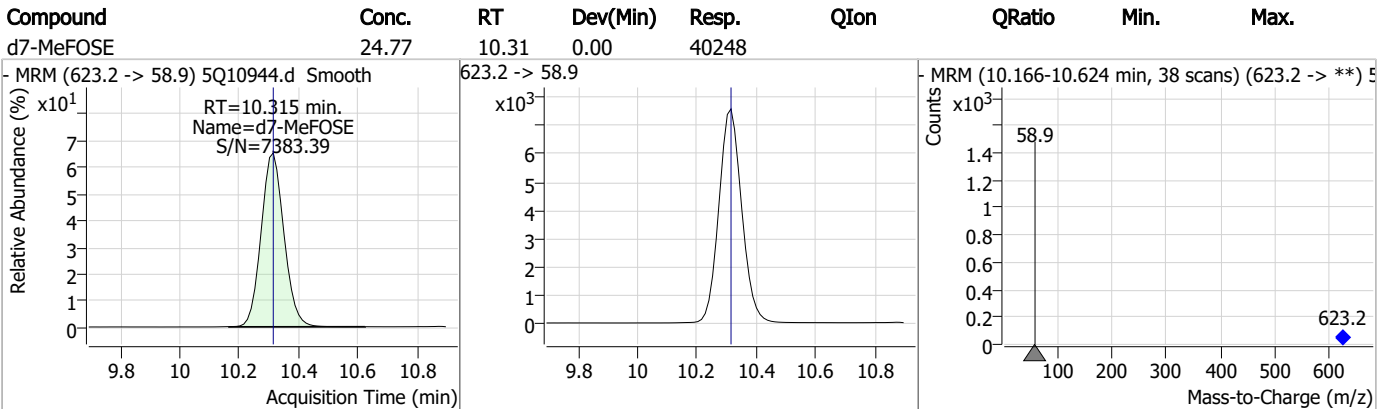
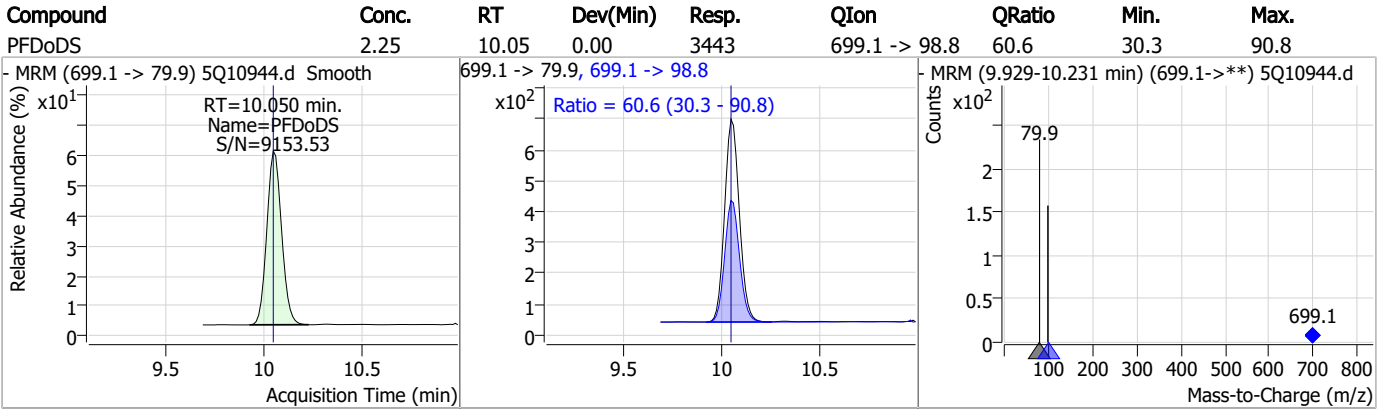
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Perfluorinated Compounds by LC/MS/MS

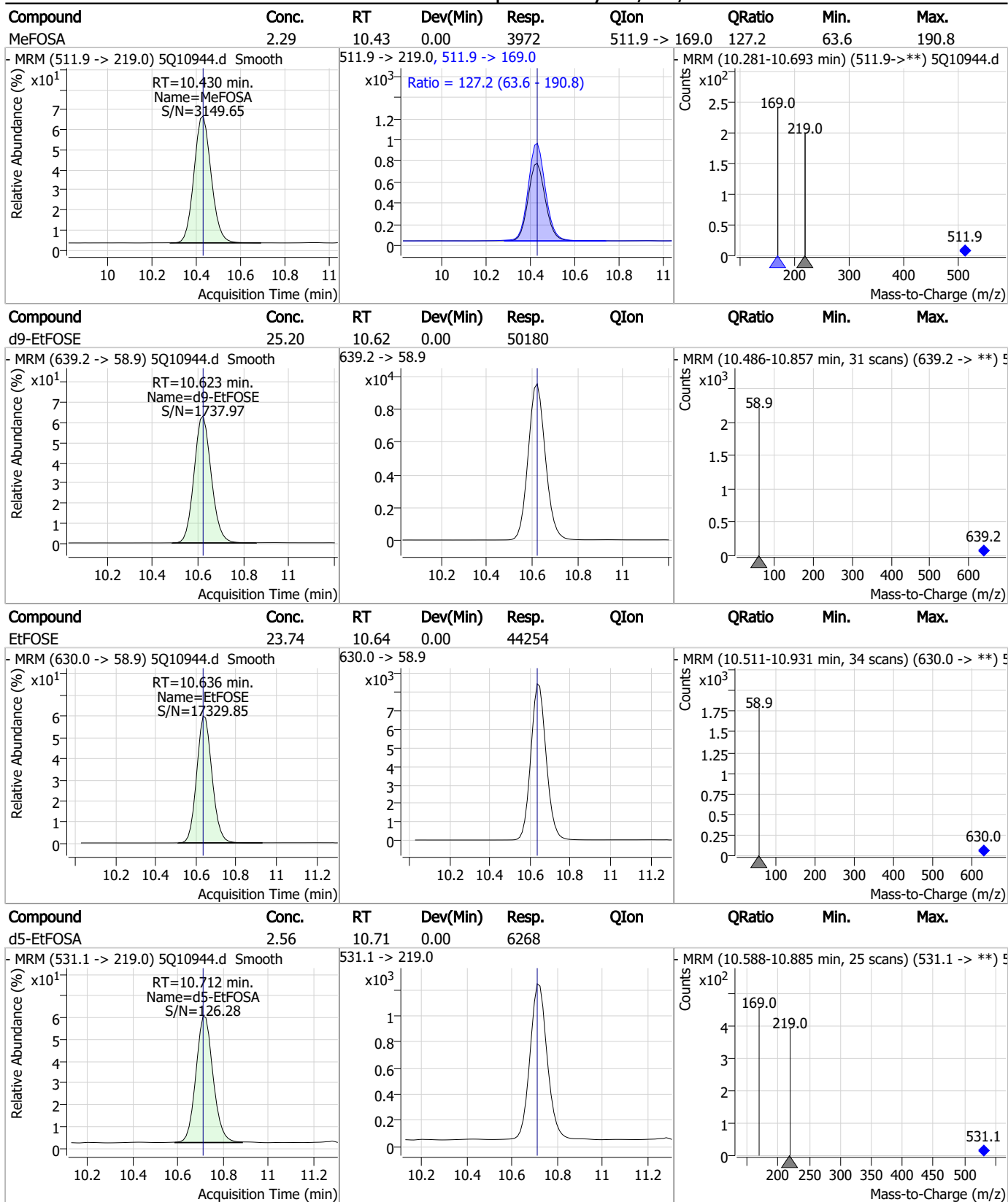


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Perfluorinated Compounds by LC/MS/MS

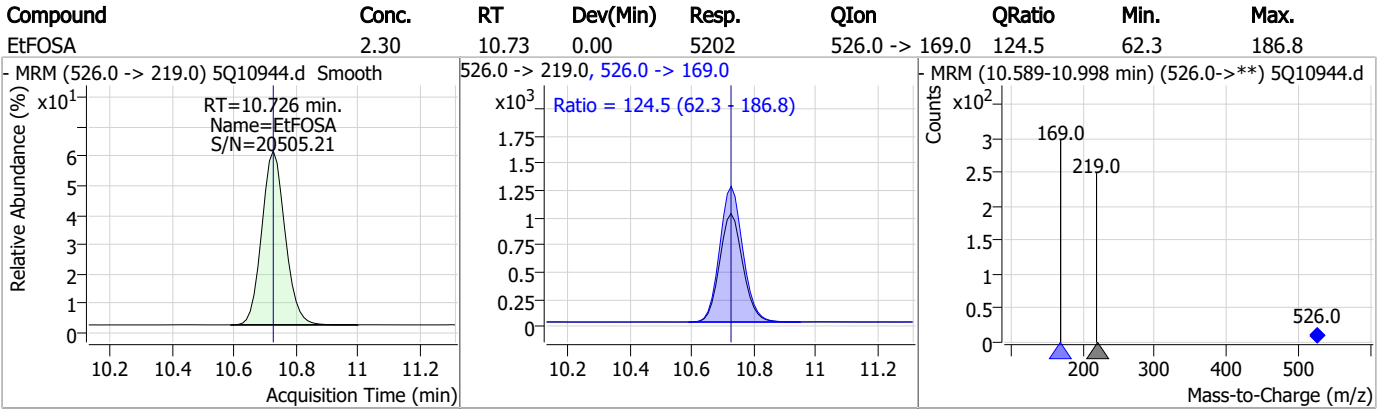


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S5Q169-ICC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10944.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 21:13 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
HFPO-DA (GenX)	13252-13-6		5.71	Poor instrument integration
PFEESA	113507-82-7		5.82	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.10	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.32	Split peak

7.7.5.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/21/23 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10945.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 9:27:50 PM
 Sample Name : ic169-5
 Vial : P3-A6
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	46663	10.00	µg/L m	0.000
M5-PFPeA	4.162	268.3 -> 223.0	29141	5.00	µg/L m	0.012
M5-PFHxA	5.335	318.0 -> 273.0	28715	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	31512	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	37772	2.50	µg/L	0.000
M9-PFNA	7.532	472.1 -> 427.0	13544	1.25	µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	8375	1.25	µg/L	0.000
M7-PFUnDA	8.585	570.0 -> 525.1	9096	1.25	µg/L	0.000
M2-PFDoDA	9.053	615.1 -> 570.0	10112	1.25	µg/L	0.000
M2-PFTeDA	9.886	715.2 -> 670.0	9562	1.25	µg/L	-0.012
M8-FOSA	9.187	506.1 -> 77.8	8584	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	9025	2.50	µg/L	0.000
M3-PFHxS	7.091	402.1 -> 79.9	6673	2.50	µg/L	0.000
M8-PFOS	8.255	507.1 -> 79.9	8735	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	580	5.00	µg/L	0.000
M2-6:2FTS	6.712	429.1 -> 80.9	1272	5.00	µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1848	5.00	µg/L	0.000
M3-MeFOSAA	8.088	573.2 -> 419.0	9634	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	70671	10.00	µg/L	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	15219	5.00	µg/L	0.000
M7-MeFOSE	10.315	623.2 -> 58.9	40793	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	50037	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	6032	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4403	2.50	µg/L	0.000
13C4-PFOS	8.256	502.8 -> 79.9	8557	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	29136	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4483	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	45050	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	13368	1.25	µg/L	0.000
13C5-PFNA	7.533	468.0 -> 423.0	13101	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	37662	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	580	5.32	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.4%			
13C2-6:2FTS	6.712	429.1 -> 80.9	1272	5.23	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.7%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1848	5.43	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.5%			
13C2-PFDoDA	9.053	615.1 -> 570.0	10112	1.21	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%			
13C2-PFTeDA	9.886	715.2 -> 670.0	9562	1.22	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%			
13C3-PFBS	5.277	302.1 -> 79.9	9025	2.62	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.7%			
13C3-PFHxS	7.091	402.1 -> 79.9	6673	2.60	µg/L	0.000

7.7.6
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C4-PFBA	2.799	216.8 -> 171.9	55105	10.03 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFHpA	6.280	367.1 -> 322.0	31512	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFHxA	5.335	318.0 -> 273.0	33138	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.162	268.3 -> 223.0	34644	5.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C6-PFDA	8.066	519.1 -> 474.1	8375	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C7-PFUnDA	8.585	570.0 -> 525.1	9096	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C8-FOSA	9.187	506.1 -> 77.8	8584	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C8-PFOA	6.950	421.1 -> 376.0	37772	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOS	8.255	507.1 -> 79.9	8735	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C9-PFNA	7.532	472.1 -> 427.0	13544	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
d3-MeFOSAA	8.088	573.2 -> 419.0	9634	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	70671	10.11 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d3-MeFOSA	10.416	515.0 -> 219.0	4403	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
d5-EtFOSAA	8.310	589.2 -> 419.0	15219	5.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.6%	
d7-MeFOSE	10.315	623.2 -> 58.9	40793	25.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d9-EtFOSE	10.623	639.2 -> 58.9	50037	25.93 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
d5-EtFOSA	10.712	531.1 -> 219.0	6032	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	13913	19.05 µg/L	99
		327.1 -> 80.9	7558		
6:2FTS	6.712	427.1 -> 407.0	19693	18.53 µg/L	98
		427.1 -> 80.9	7980		
8:2FTS	7.829	527.1 -> 507.0	13024	14.87 µg/L	96
		527.1 -> 80.8	6921		
EtFOSAA	8.323	584.2 -> 419.1	9595	4.82 µg/L	m 95
		584.2 -> 526.0	4087		
FOSA	9.190	498.1 -> 77.9	15625	4.98 µg/L	98
		498.1 -> 478.0	470		
MeFOSAA	8.101	570.1 -> 419.0	8454	5.19 µg/L	m 94
		570.1 -> 483.0	2067		
PFBA	2.807	212.8 -> 168.9	39631	21.45 µg/L	m 100
PFBS	5.278	298.7 -> 79.9	11917	4.02 µg/L	m 96
		298.7 -> 98.8	5300		
PFDA	8.067	512.9 -> 469.0	43475	4.96 µg/L	99
		512.9 -> 219.0	7747		
PFDODA	9.054	613.1 -> 569.0	33761	4.92 µg/L	100
		613.1 -> 319.0	5328		
PFDS	9.244	599.0 -> 79.9	9046	4.69 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	4686			
PFHpA	6.281	363.1 -> 319.0	64797	4.86	µg/L	100
		363.1 -> 169.0	14558			
PFHpS	7.699	449.0 -> 79.9	11628	4.68	µg/L	96
		449.0 -> 98.9	6722			
PFHxA	5.337	313.0 -> 269.0	43060	5.11	µg/L	m 99
		313.0 -> 118.9	1883			
PFHxS	7.092	398.7 -> 79.9	10059	4.46	µg/L	m 82
		398.7 -> 98.9	5816			
PFNA	7.533	463.0 -> 419.0	38020	4.84	µg/L	98
		463.0 -> 219.0	8512			
PFNS	8.773	548.8 -> 79.9	8867	4.62	µg/L	98
		548.8 -> 98.9	5245			
PFOA	6.951	413.0 -> 369.0	70195	4.83	µg/L	98
		413.0 -> 169.0	16780			
PFOS	8.257	498.9 -> 79.9	16650	4.72	µg/L	m 87
		498.9 -> 98.8	9022			
PFPeA	4.164	263.0 -> 219.0	63635	9.99	µg/L	m 100
PFPeS	6.357	349.1 -> 79.9	8572	4.41	µg/L	m 100
		349.1 -> 98.9	4379			
PFTeDA	9.887	713.1 -> 669.0	35410	4.82	µg/L	99
		713.1 -> 168.9	4818			
PFTrDA	9.489	663.0 -> 619.0	44399	4.91	µg/L	99
		663.0 -> 168.9	7554			
PFUnDA	8.586	563.1 -> 519.0	34232	5.05	µg/L	100
		563.1 -> 269.1	6990			
11CI-PF3OUdS	9.555	630.9 -> 450.9	140989	18.13	µg/L	98
		632.9 -> 452.9	44782			
9CI-PF3ONS	8.638	530.8 -> 351.0	148592	17.88	µg/L	100
		532.8 -> 353.0	46389			
ADONA	6.542	376.9 -> 250.9	339114	17.53	µg/L	99
		376.9 -> 84.8	100464			
HFPO-DA	5.715	284.9 -> 168.9	106864	18.43	µg/L	m 99
		284.9 -> 184.9	10223			
3:3FTCA	3.603	241.0 -> 177.0	11339	24.13	µg/L	m 97
		241.0 -> 117.0	1329			
5:3FTCA	5.918	341.0 -> 237.1	221819	127.38	µg/L	98
		341.0 -> 217.0	152700			
7:3FTCA	7.348	441.0 -> 316.9	87465	125.45	µg/L	99
		441.0 -> 336.9	189503			
EtFOSA	10.726	526.0 -> 219.0	10732	4.93	µg/L	96
		526.0 -> 169.0	13857			
EtFOSE	10.636	630.0 -> 58.9	94695	50.94	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	8520	4.90	µg/L	99
		511.9 -> 169.0	10961			
MeFOSE	10.327	616.1 -> 58.9	87544	50.24	µg/L	100
PFDoDS	10.050	699.1 -> 79.9	7033	4.63	µg/L	96
		699.1 -> 98.8	4498			
NFDHA	5.218	295.0 -> 201.0	6839	10.31	µg/L	m 99
		295.0 -> 84.9	1789			
PFMBA	4.566	279.0 -> 85.1	43162	9.20	µg/L	m 100
PFMPA	3.328	229.0 -> 84.9	33143	9.61	µg/L	m 100
PFEESA	5.833	314.8 -> 134.9	76288	8.61	µg/L	m 99
		314.8 -> 82.9	2555			

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

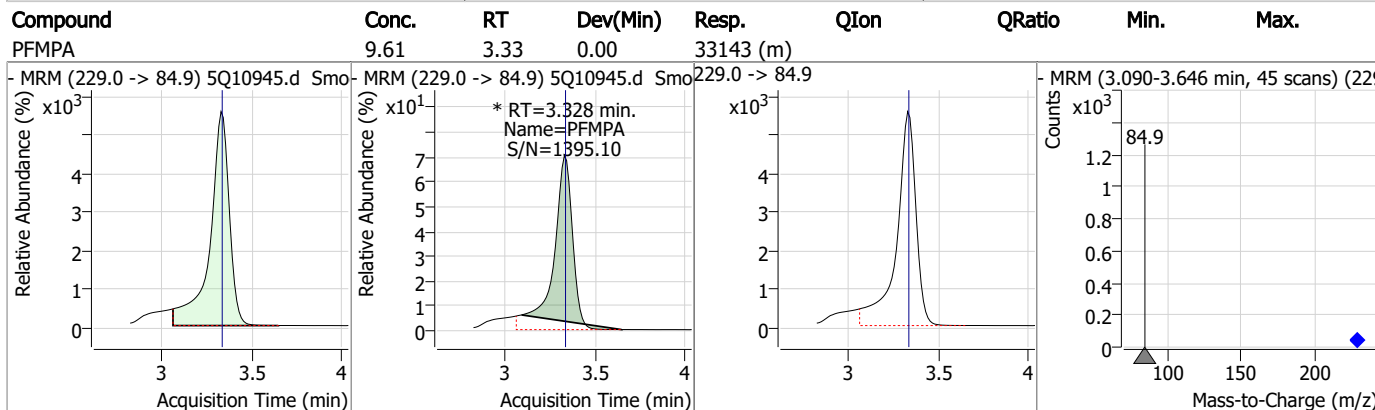
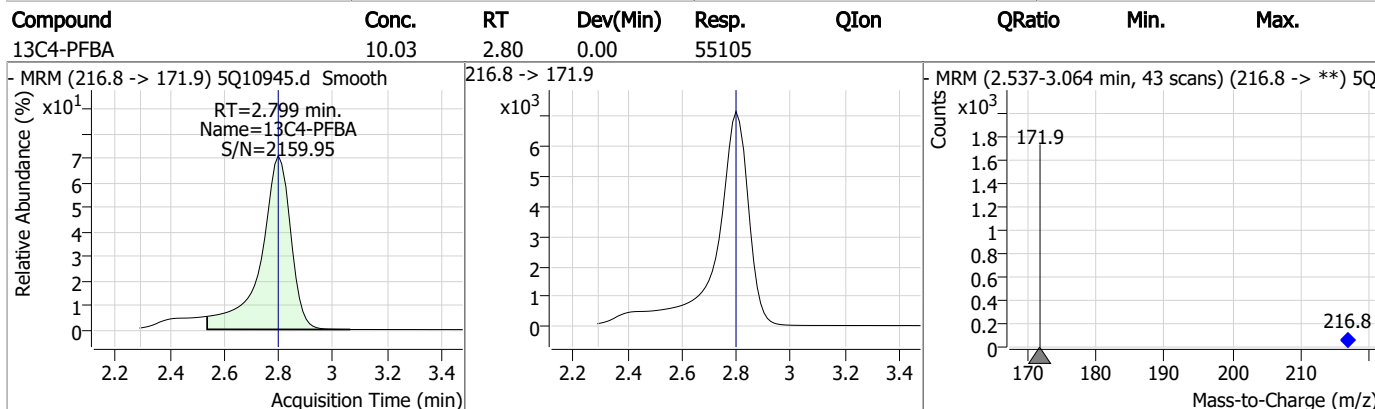
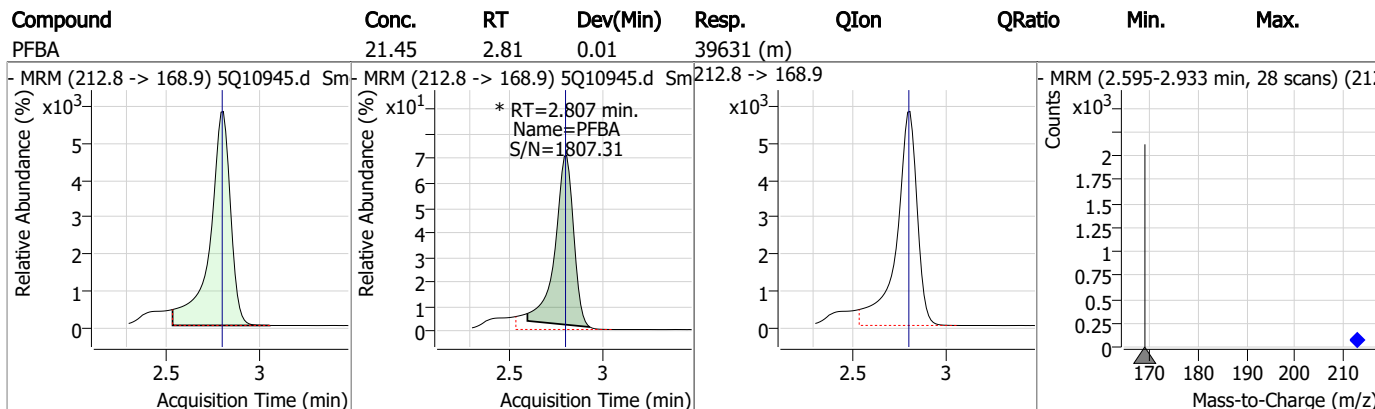
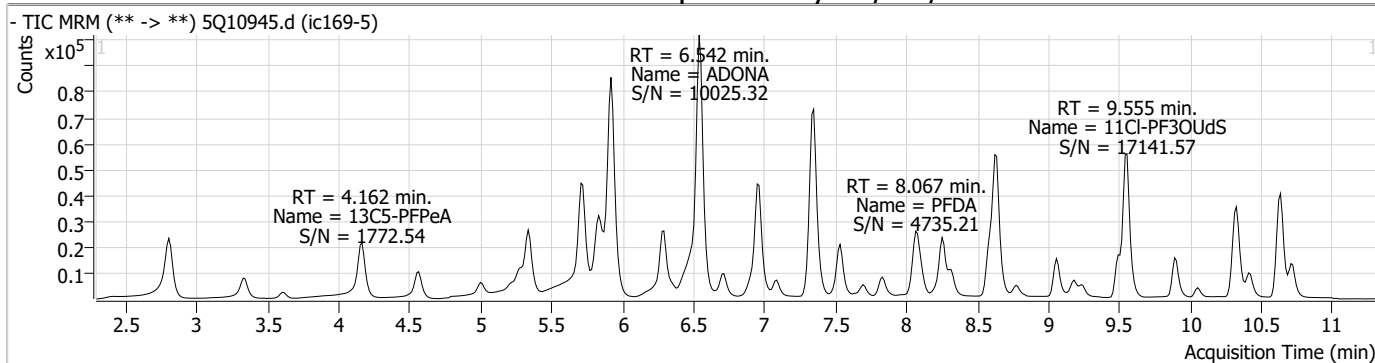
Perfluorinated Compounds by LC/MS/MS

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

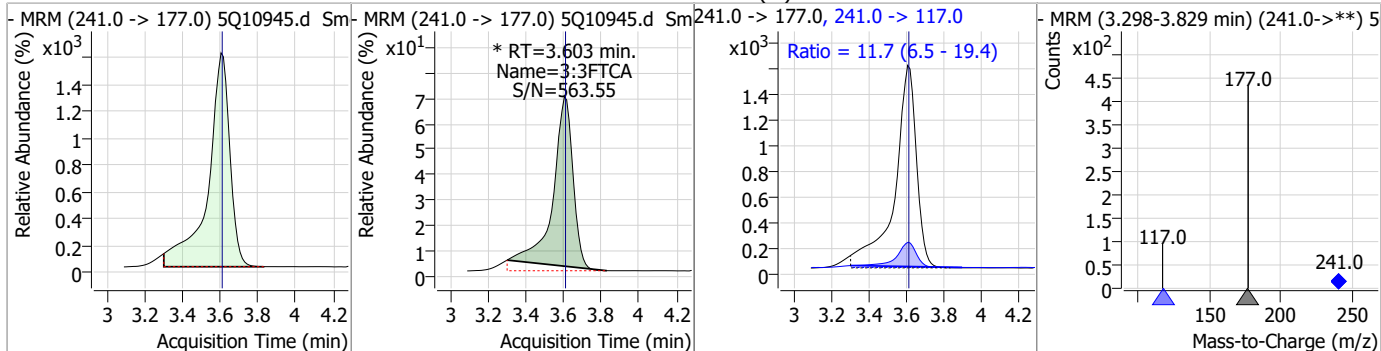
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Perfluorinated Compounds by LC/MS/MS

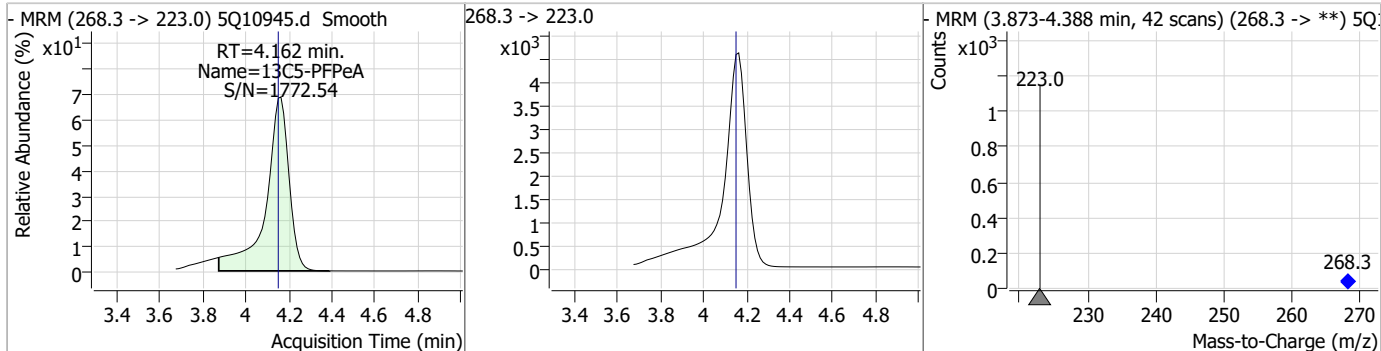


Perfluorinated Compounds by LC/MS/MS

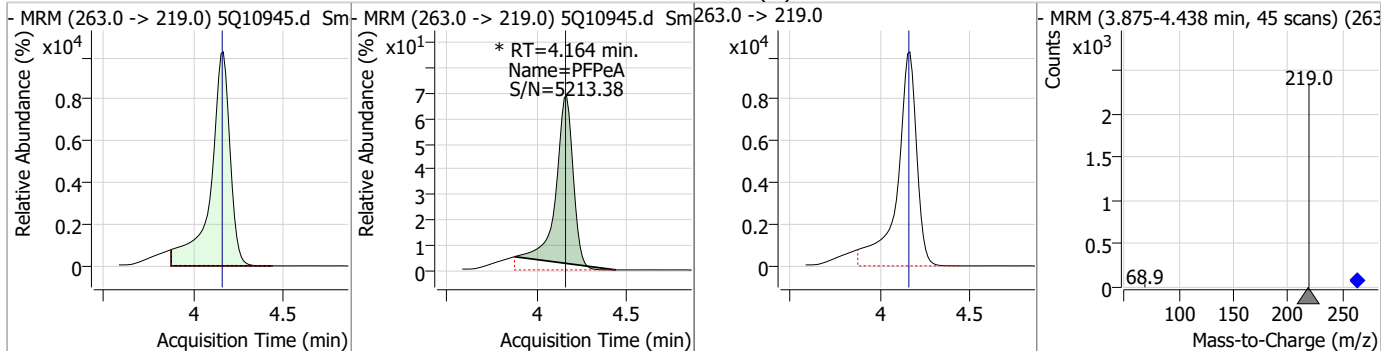
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	24.13	3.60	0.00	11339 (m)	241.0 -> 117.0	11.7	6.5	19.4



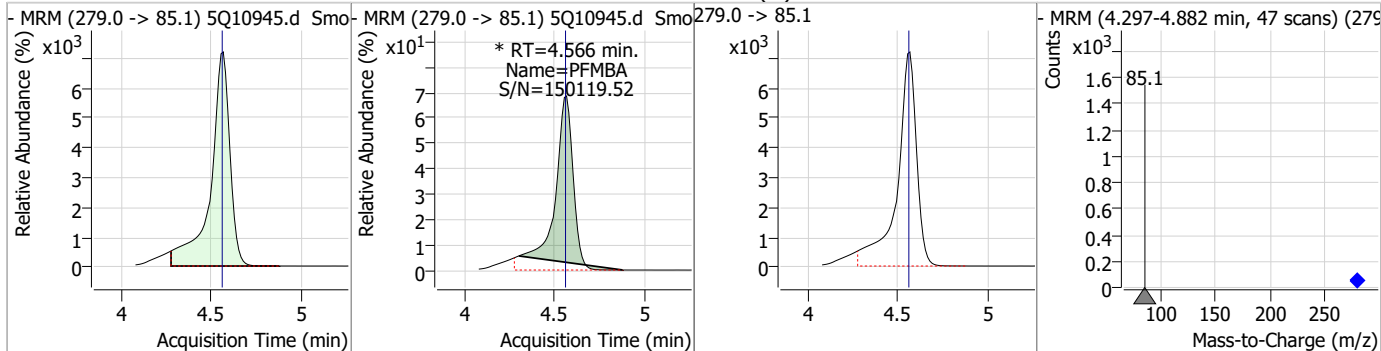
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.06	4.16	0.01	34644				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	9.99	4.16	0.01	63635 (m)				

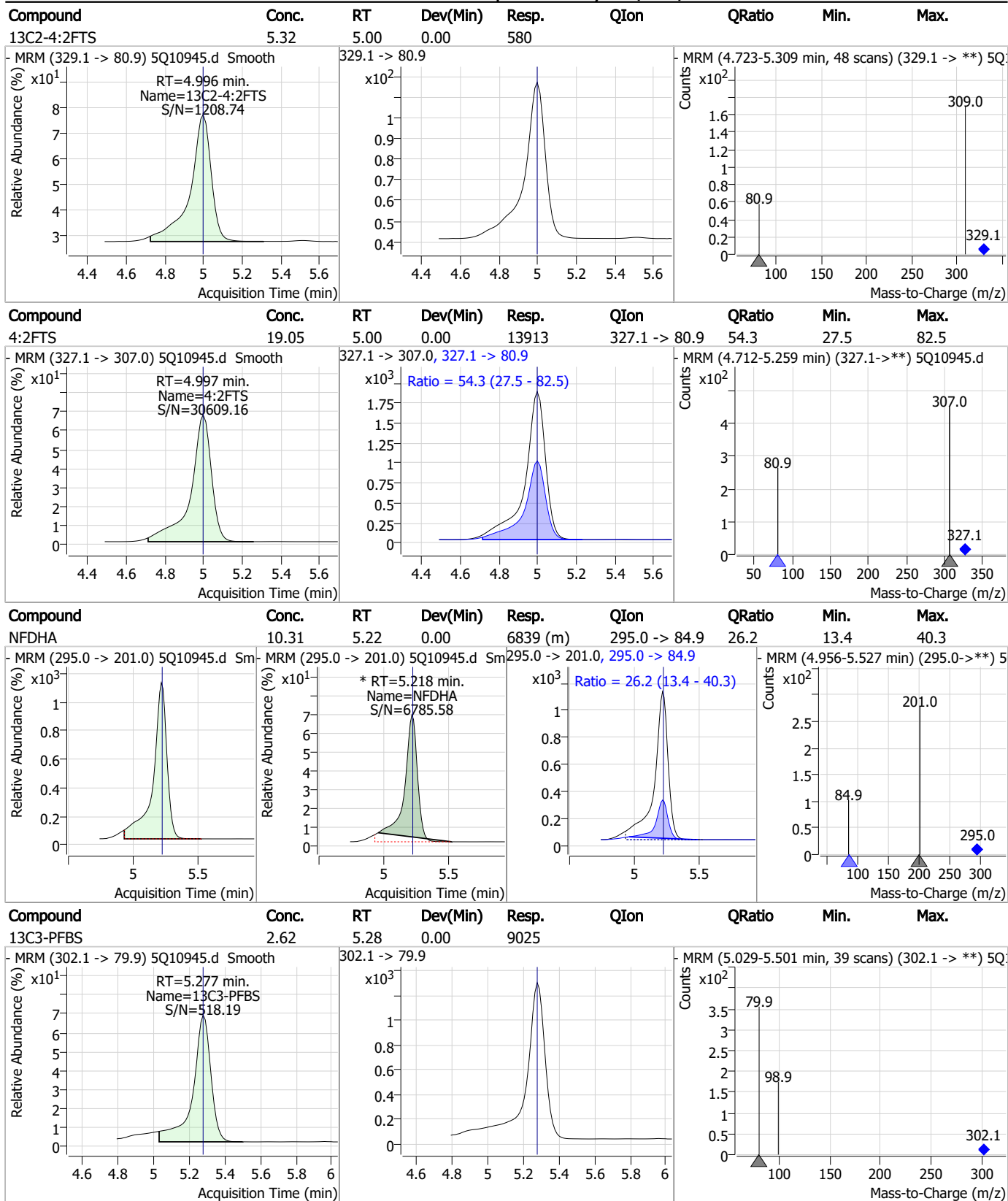


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	9.20	4.57	0.01	43162 (m)				



7.7.6
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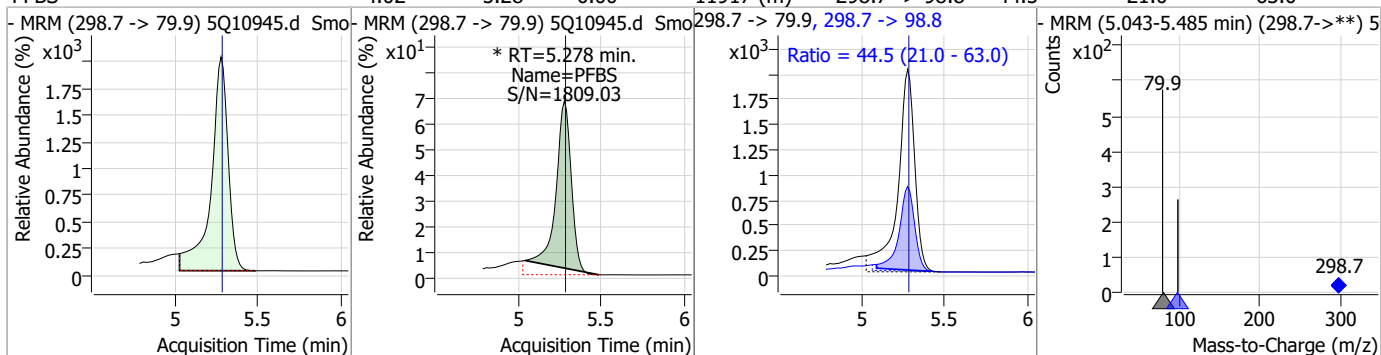
Perfluorinated Compounds by LC/MS/MS



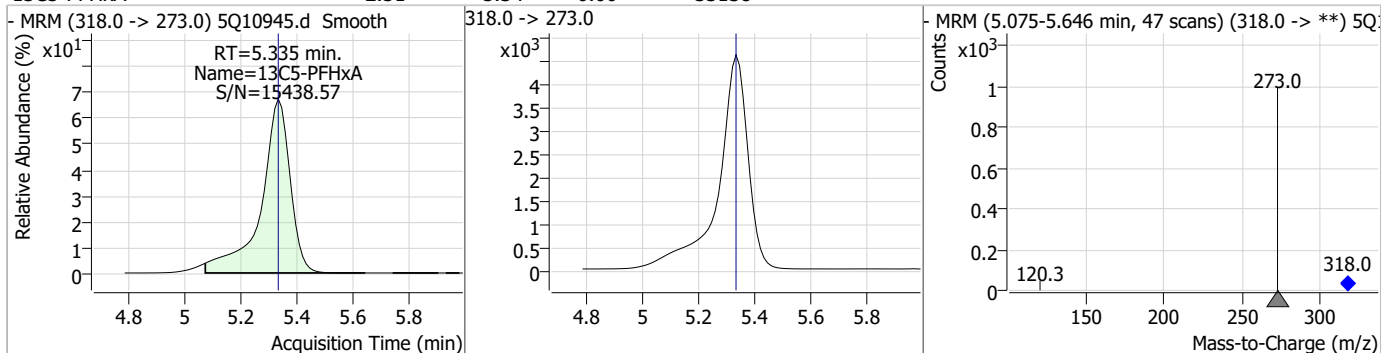
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Perfluorinated Compounds by LC/MS/MS

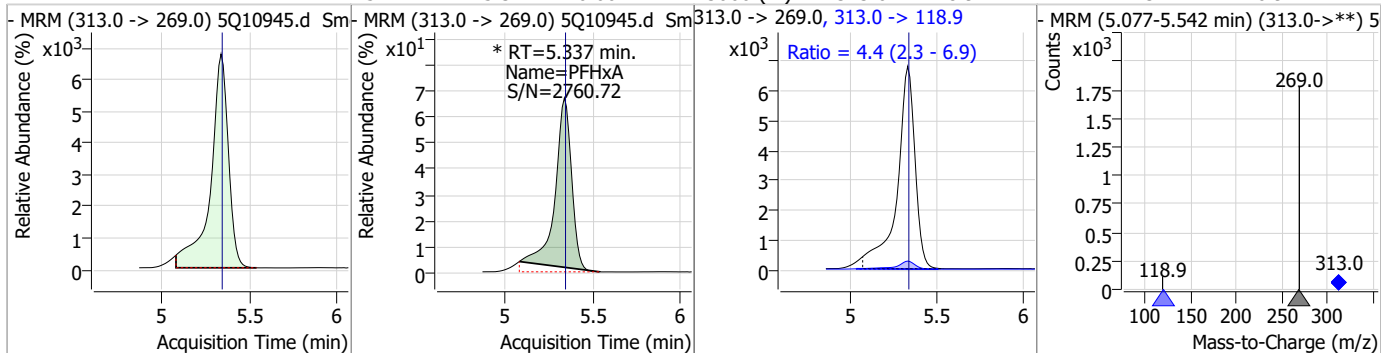
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.02	5.28	0.00	11917 (m)	298.7 -> 98.8	44.5	21.0	63.0



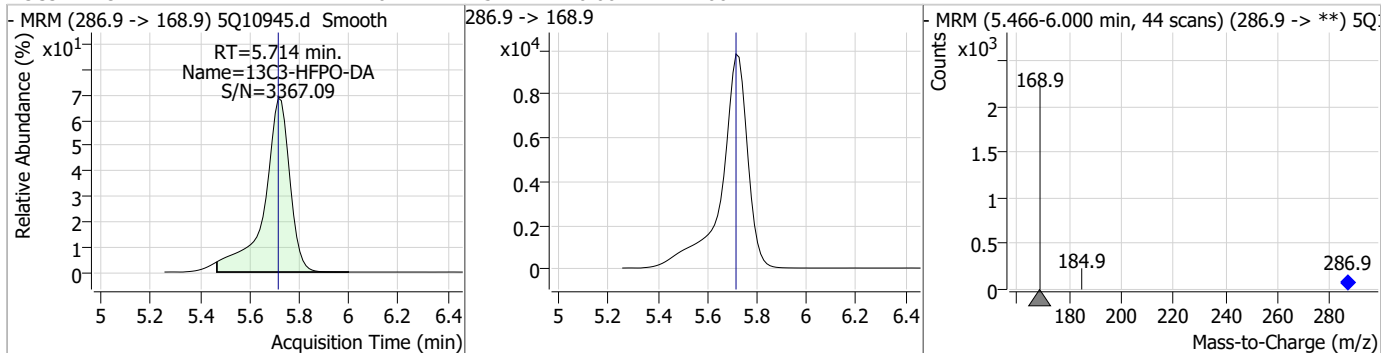
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.34	0.00	33138				



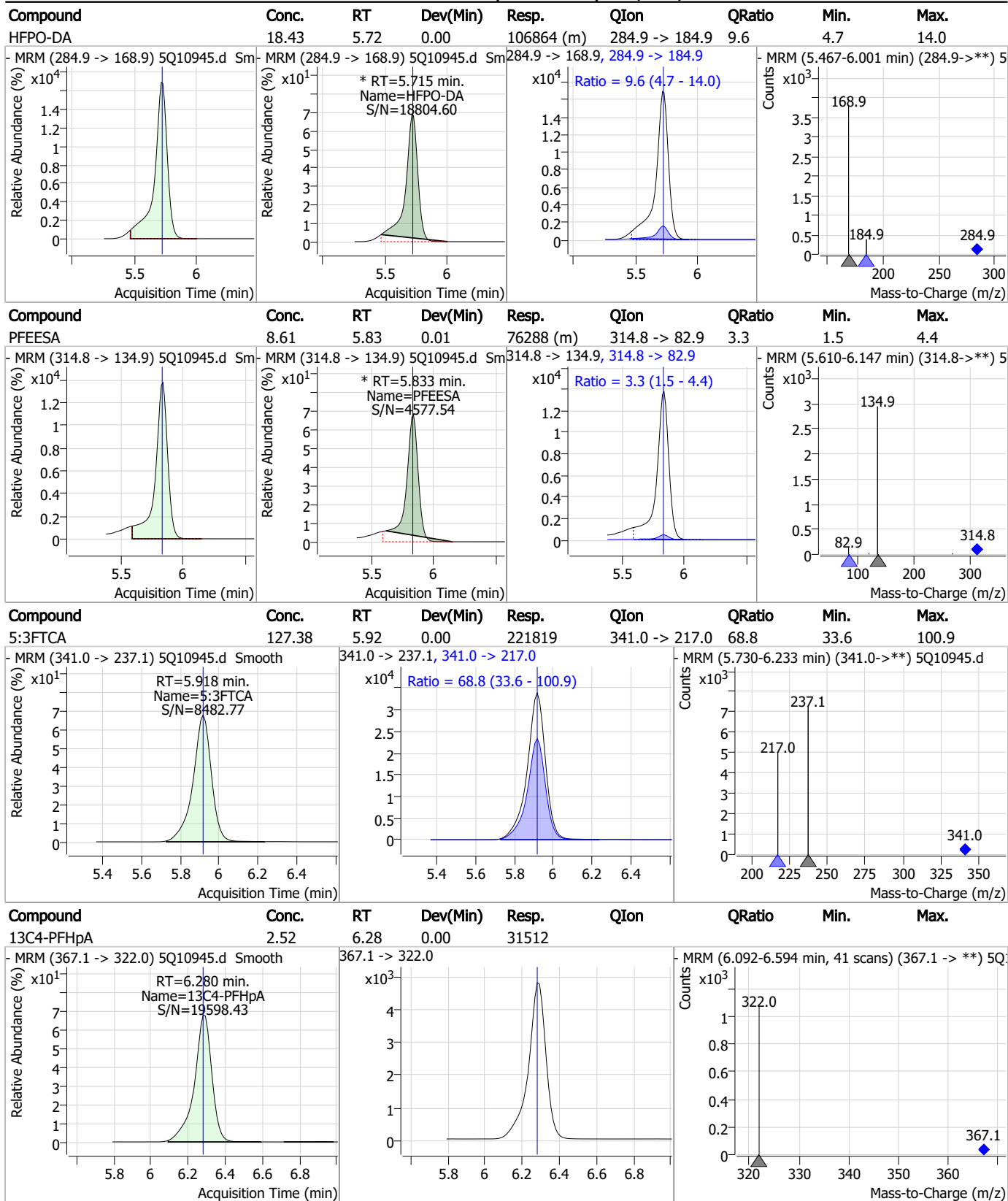
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	5.11	5.34	0.00	43060 (m)	313.0 -> 118.9	4.4	2.3	6.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.11	5.71	0.00	70671				

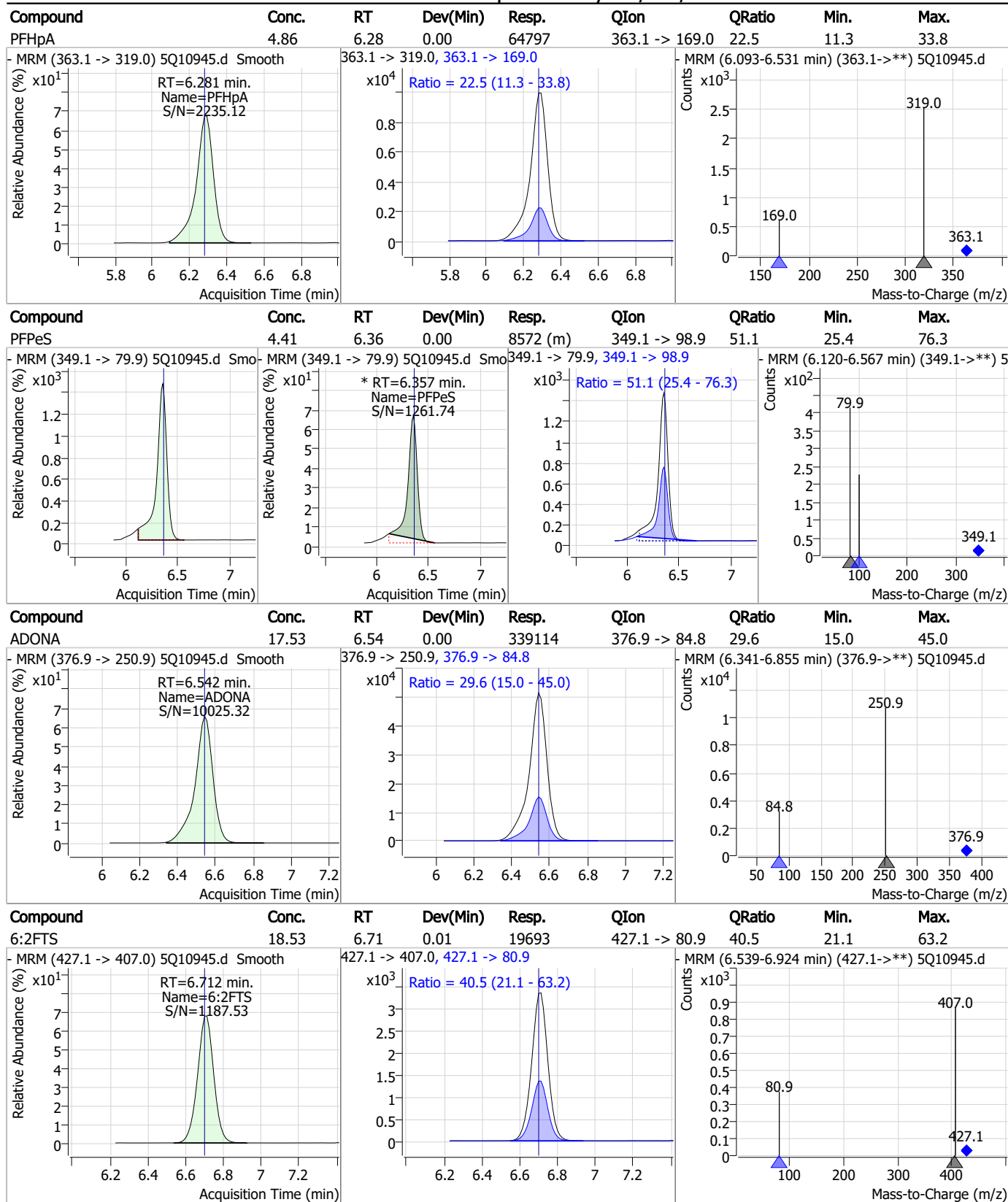


Perfluorinated Compounds by LC/MS/MS



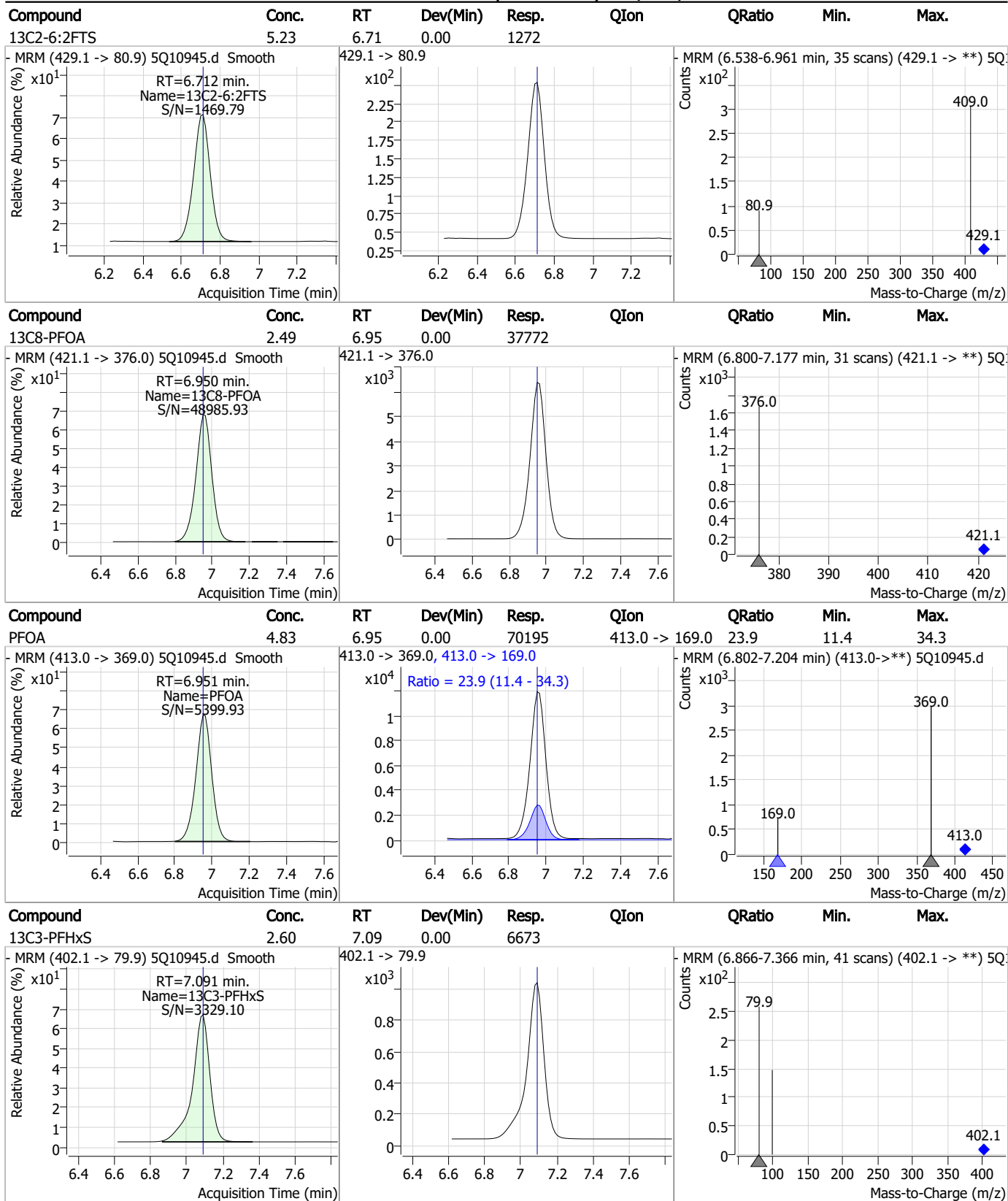
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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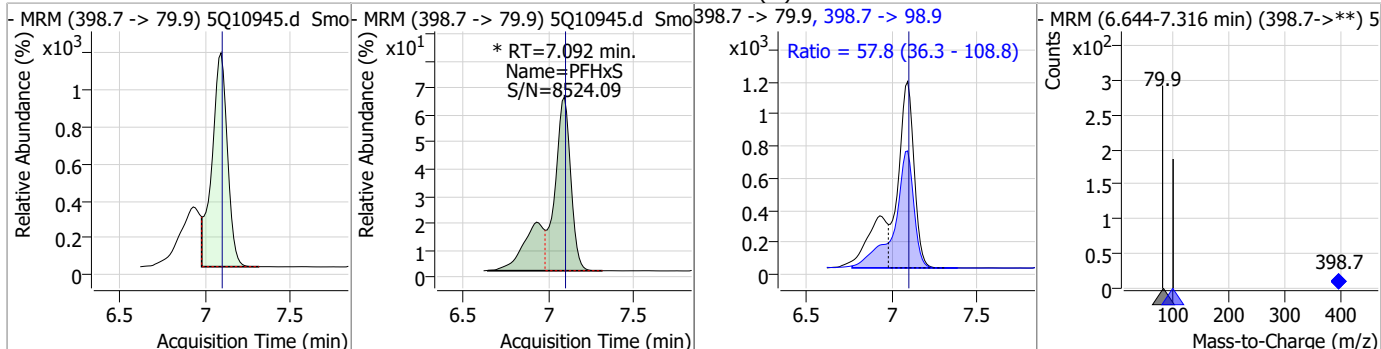
Perfluorinated Compounds by LC/MS/MS



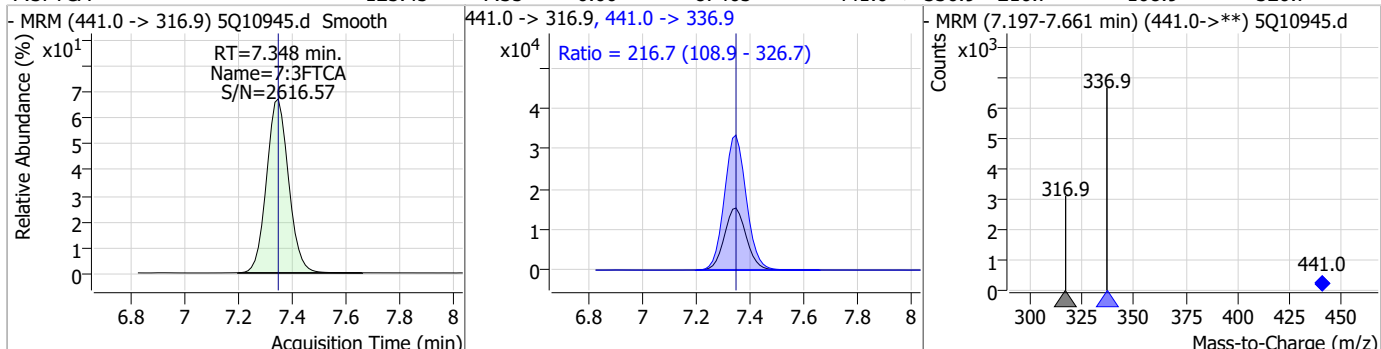
7.7.6
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Perfluorinated Compounds by LC/MS/MS

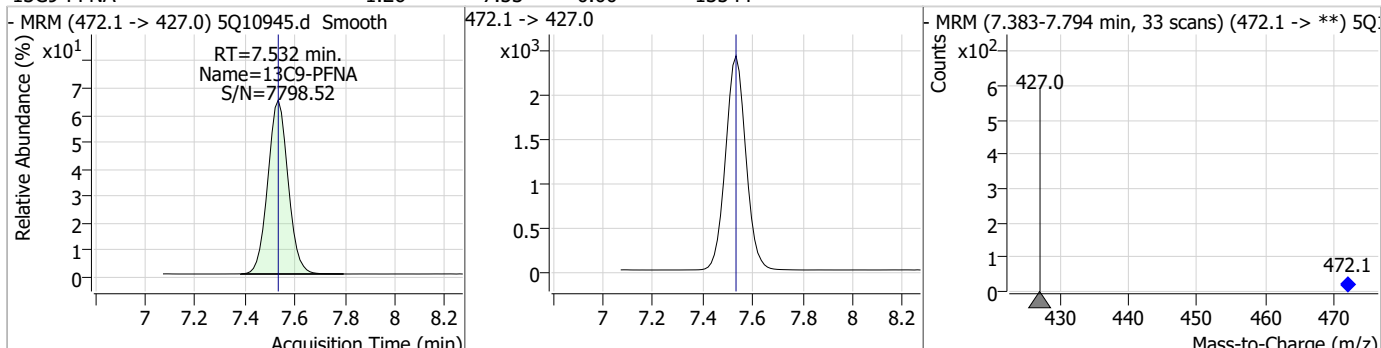
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	4.46	7.09	0.00	10059 (m)	398.7 -> 98.9	57.8	36.3	108.8



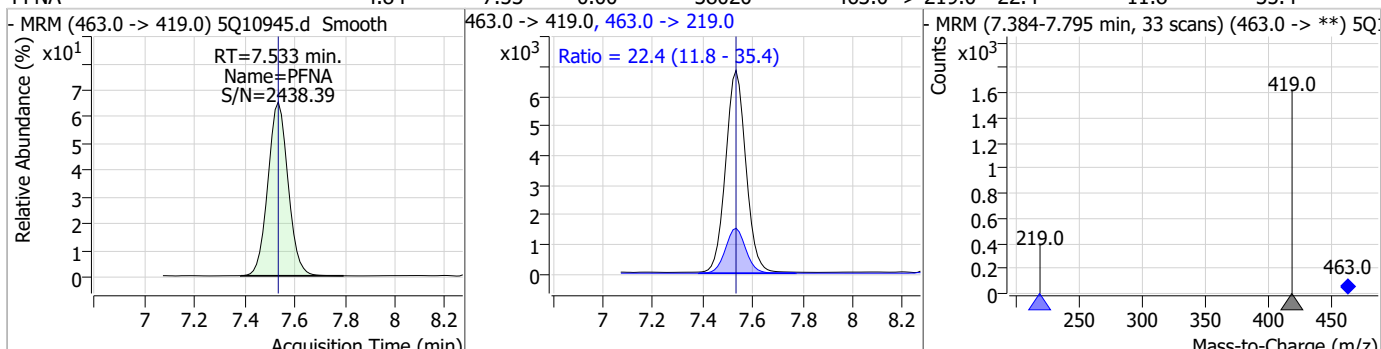
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	125.45	7.35	0.00	87465	441.0 -> 336.9	216.7	108.9	326.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.26	7.53	0.00	13544	472.1 -> 427.0	219.0	11.8	35.4

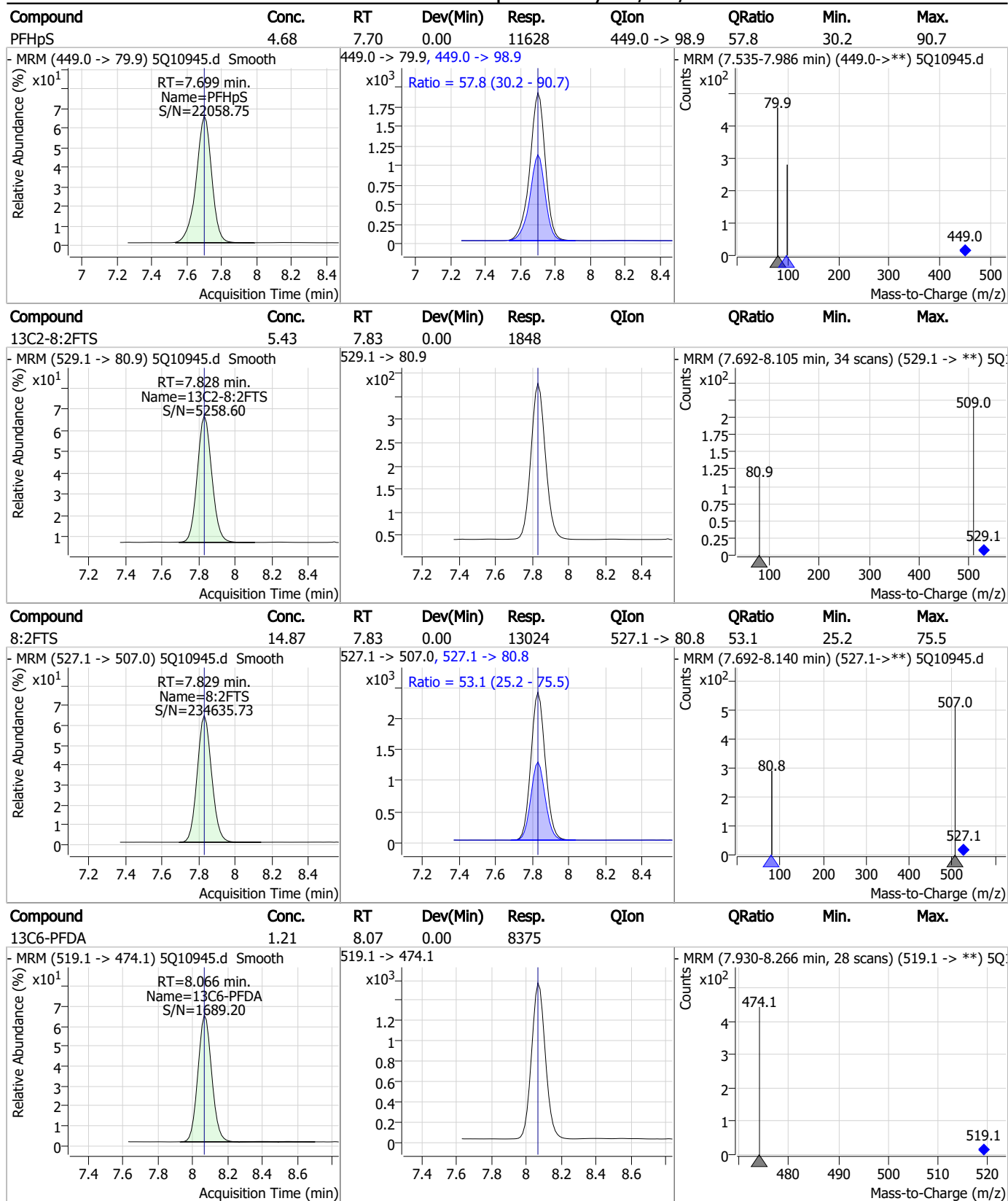


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	4.84	7.53	0.00	38020	463.0 -> 219.0	22.4	11.8	35.4



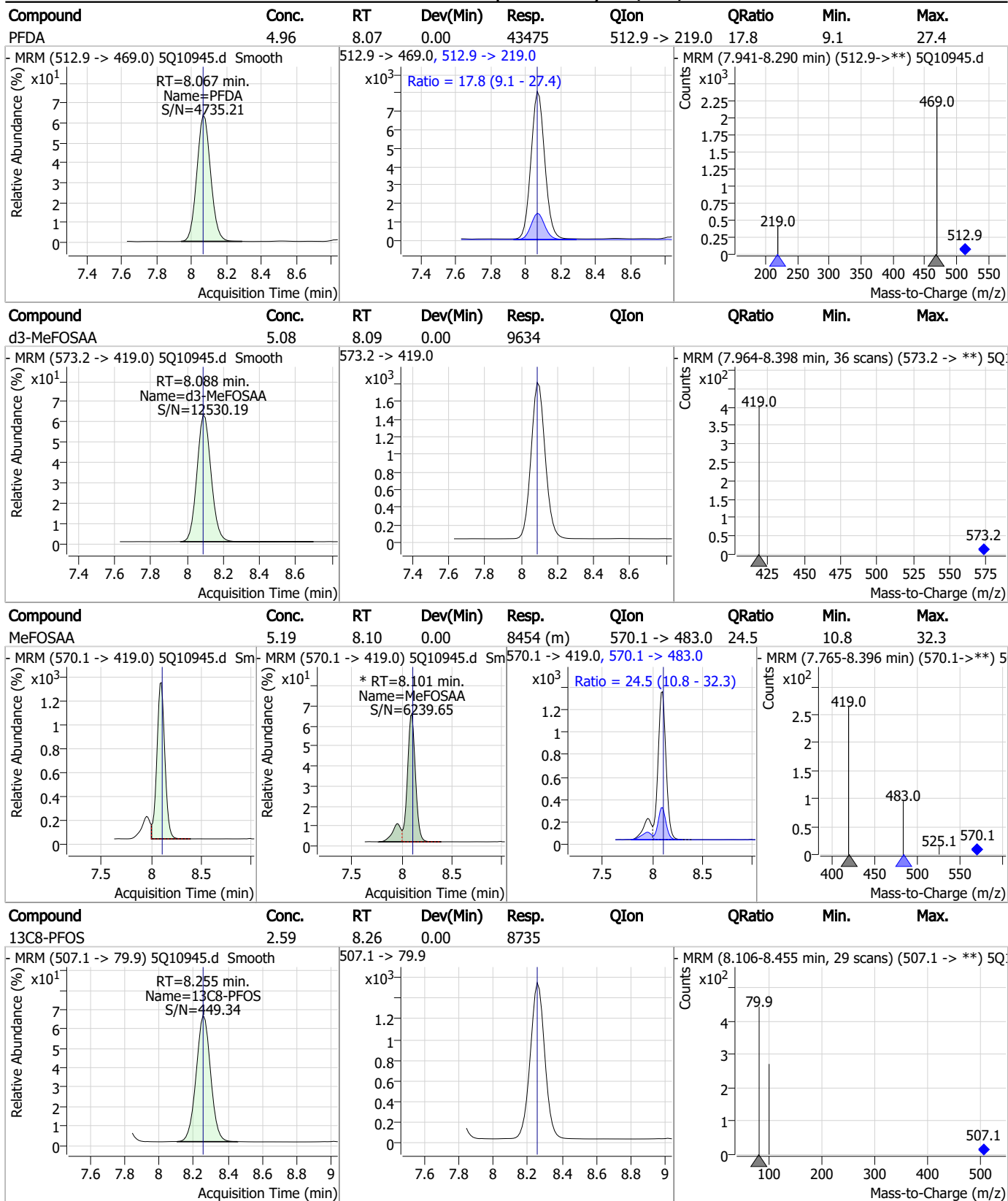
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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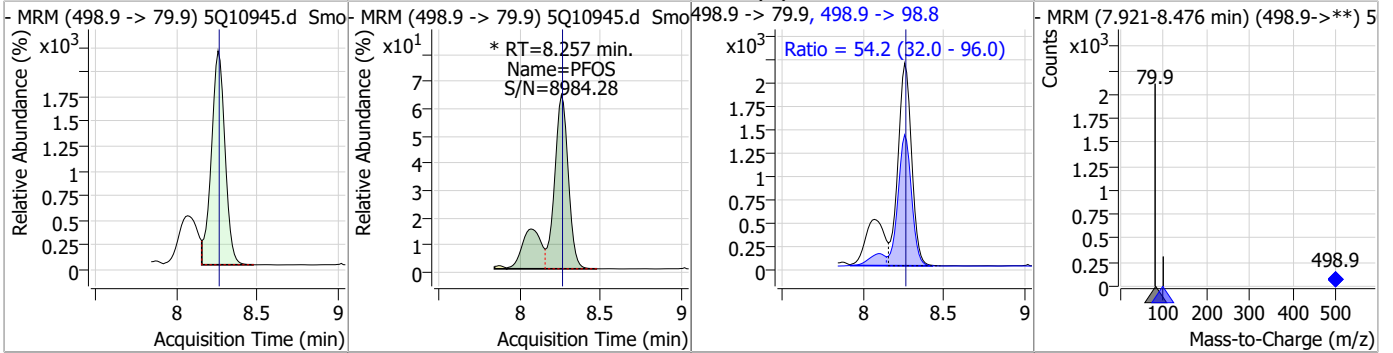
Perfluorinated Compounds by LC/MS/MS



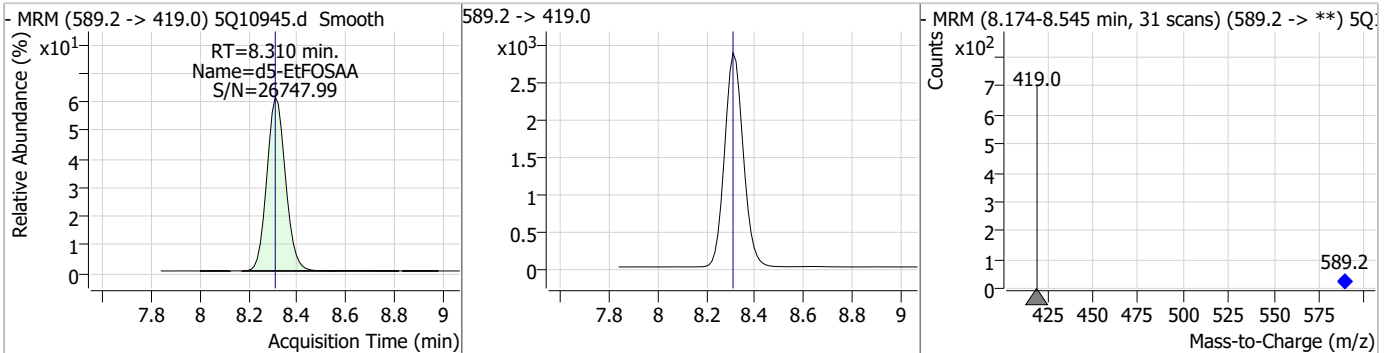
7.7.6
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Perfluorinated Compounds by LC/MS/MS

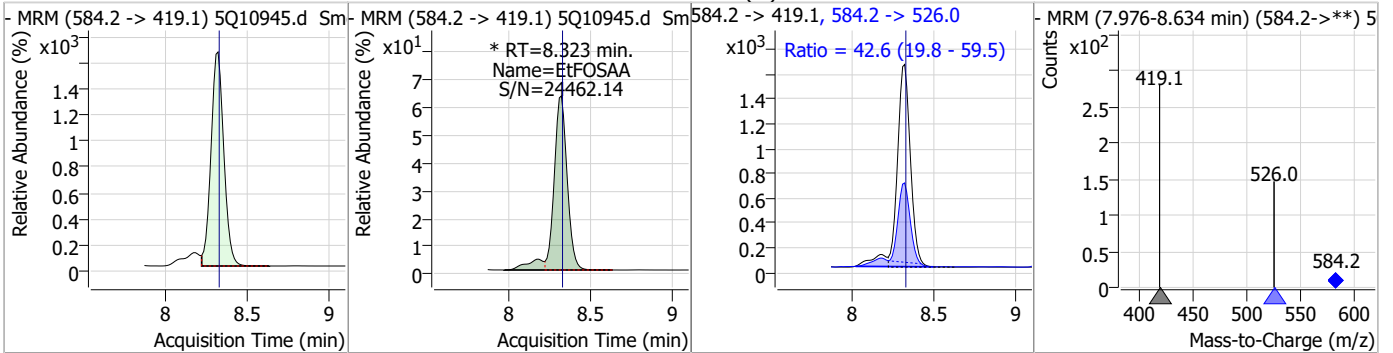
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	4.72	8.26	0.00	16650 (m)	498.9 -> 98.8	54.2	32.0	96.0



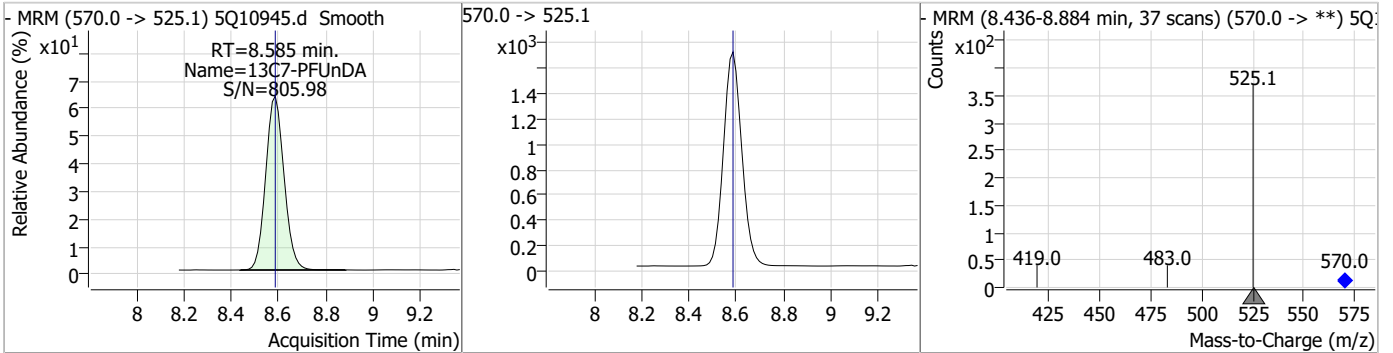
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.43	8.31	0.00	15219				



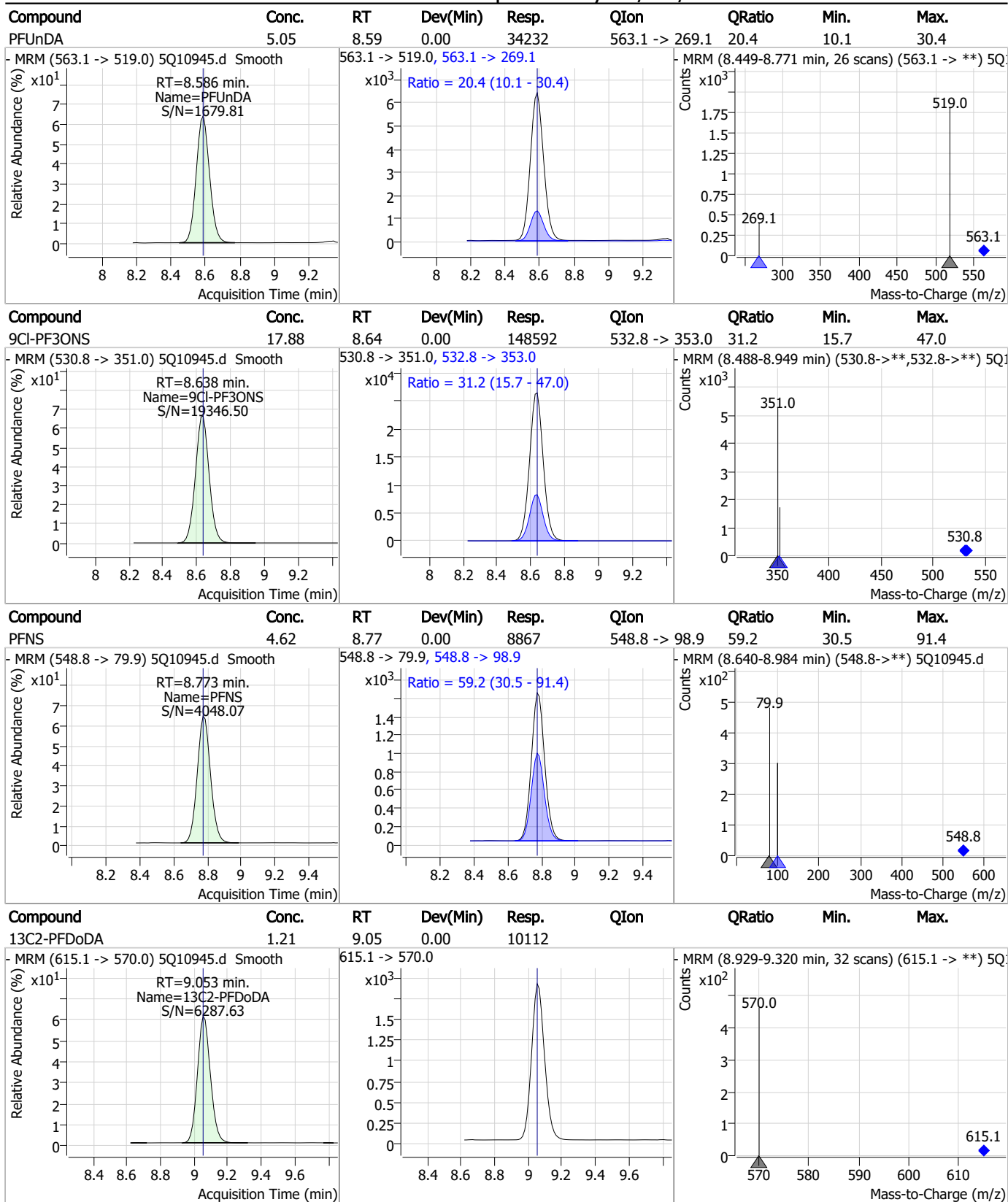
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	4.82	8.32	0.00	9595 (m)	584.2 -> 526.0	42.6	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUUnDA	1.20	8.59	0.00	9096				



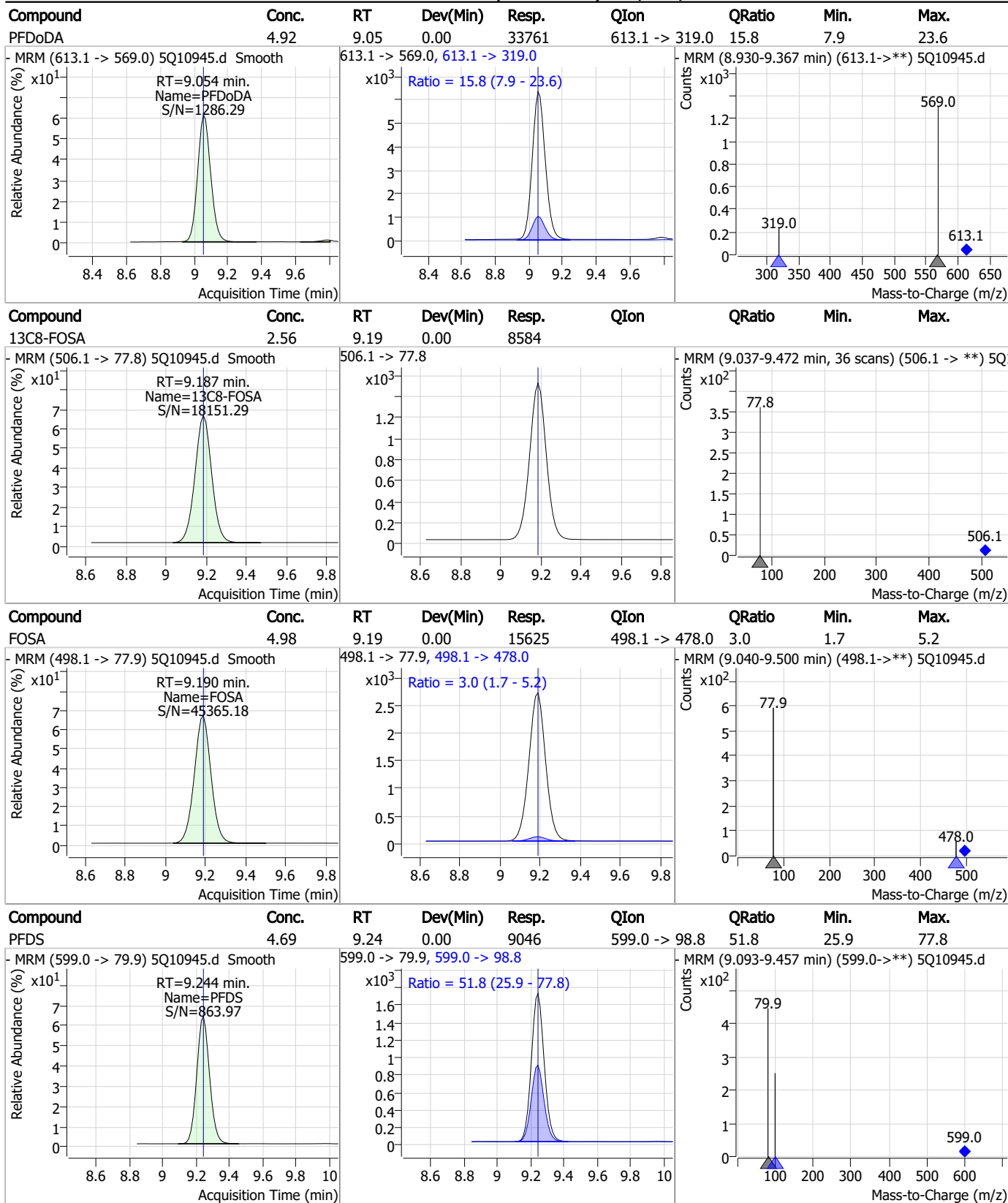
Perfluorinated Compounds by LC/MS/MS



7.7.6
7

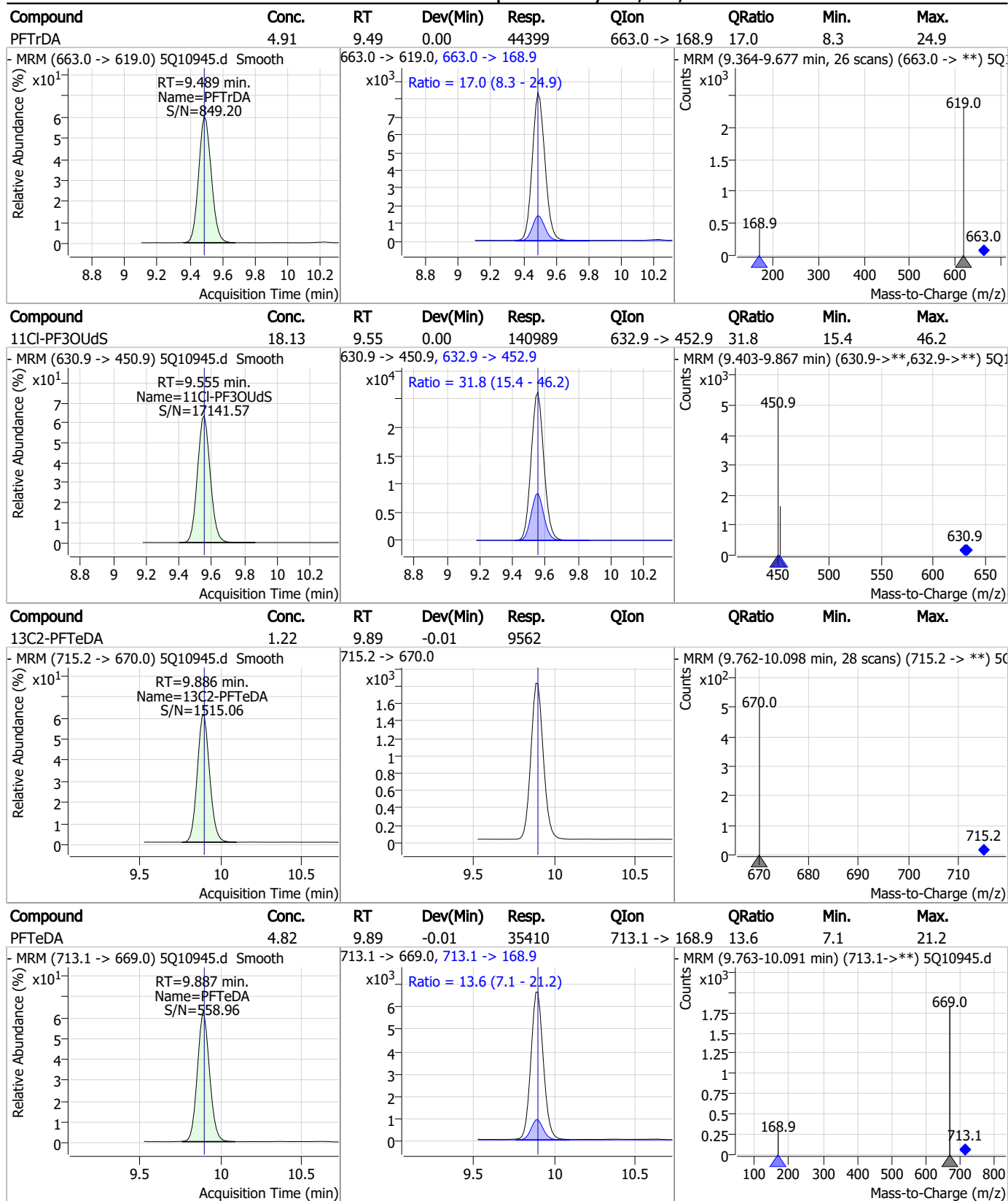


Perfluorinated Compounds by LC/MS/MS



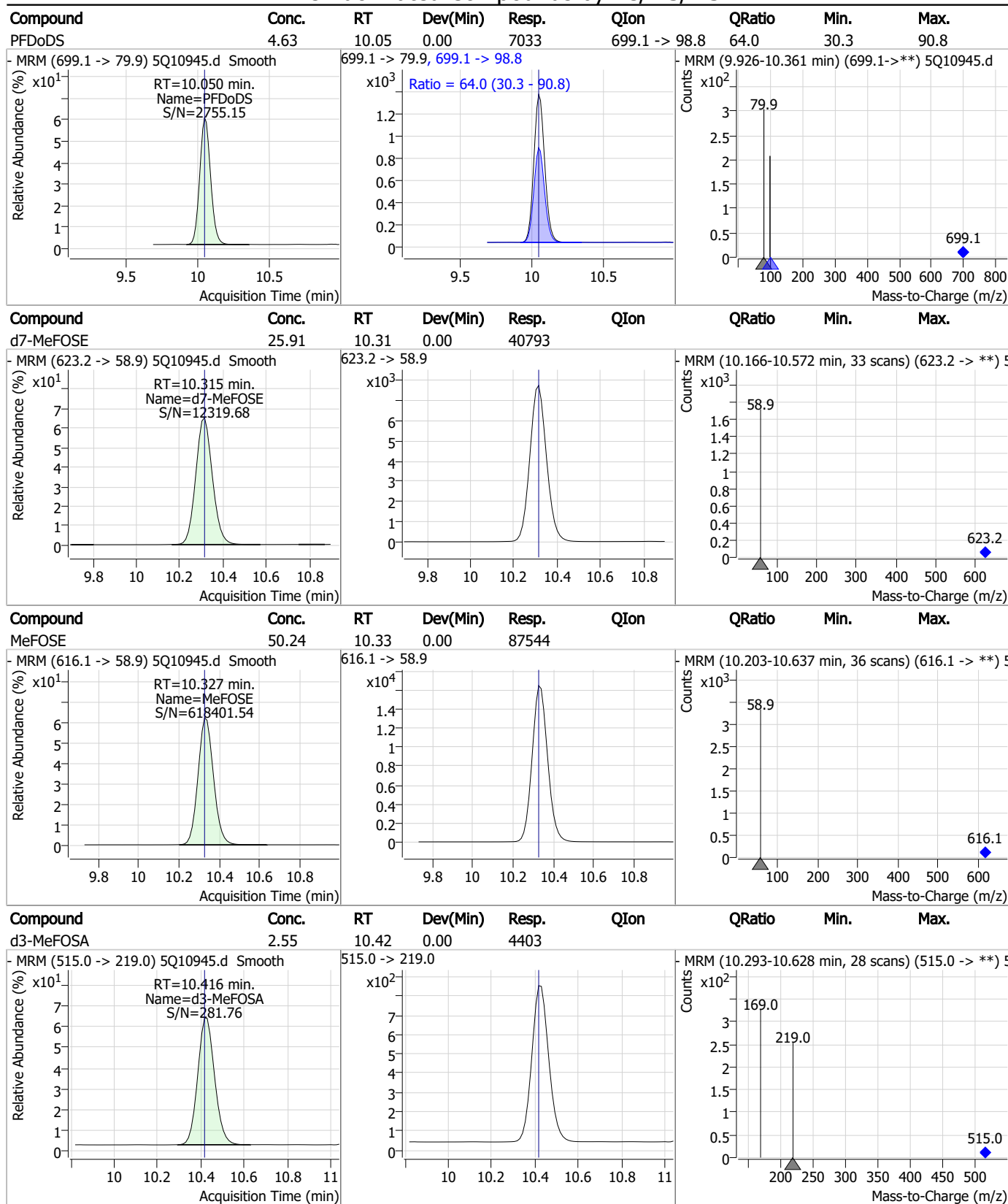
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Perfluorinated Compounds by LC/MS/MS



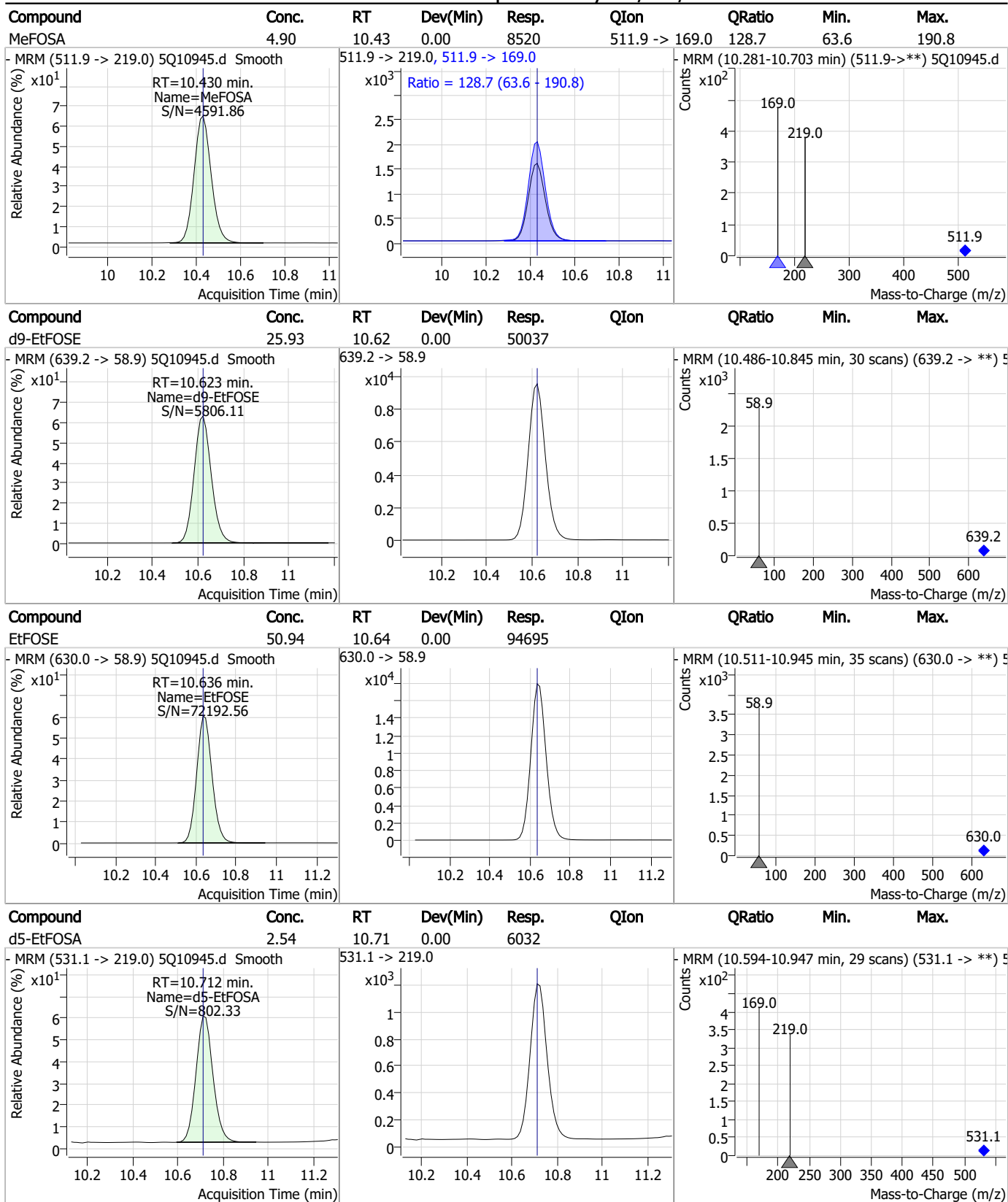
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
7

Perfluorinated Compounds by LC/MS/MS

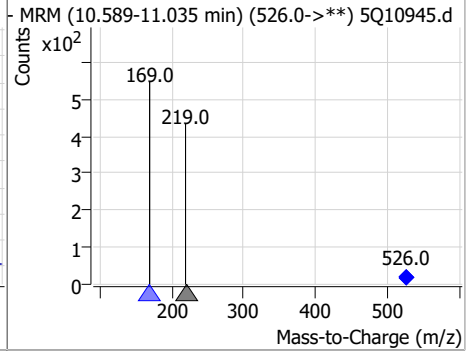
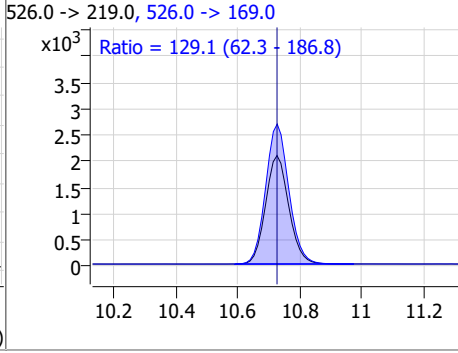
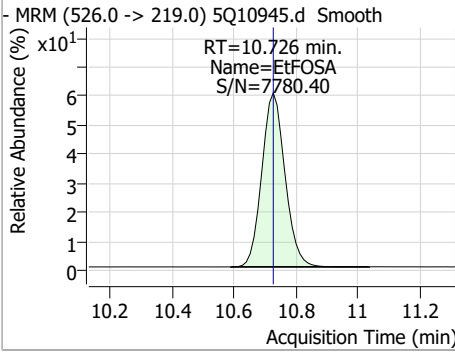


7.7.6

7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.93	10.73	0.00	10732	526.0 -> 169.0	129.1	62.3	186.8



7.7.6

7

Manual Integration Approval Summary

Sample Number: S5Q169-IC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10945.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 21:27 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.16	Poor instrument integration
PFMBA	863090-89-5		4.57	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
HFPO-DA (GenX)	13252-13-6		5.71	Poor instrument integration
PFEESA	113507-82-7		5.83	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.10	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.32	Split peak

7.7.6.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/21/23 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10946.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 9:41:55 PM
 Sample Name : ic169-6
 Vial : P3-A7
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	45230	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	27161	5.00	µg/L m	0.000
M5-PFHxA	5.335	318.0 -> 273.0	29634	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	31456	2.50	µg/L	0.000
M8-PFOA	6.962	421.1 -> 376.0	38041	2.50	µg/L	0.012
M9-PFNA	7.532	472.1 -> 427.0	13114	1.25	µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	8265	1.25	µg/L	0.000
M7-PFUnDA	8.585	570.0 -> 525.1	9060	1.25	µg/L	0.000
M2-PFDoDA	9.053	615.1 -> 570.0	10359	1.25	µg/L	0.000
M2-PFTeDA	9.886	715.2 -> 670.0	9258	1.25	µg/L	-0.012
M8-FOSA	9.187	506.1 -> 77.8	8594	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	7875	2.50	µg/L m	0.000
M3-PFHxS	7.091	402.1 -> 79.9	6568	2.50	µg/L	0.000
M8-PFOS	8.255	507.1 -> 79.9	8464	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	547	5.00	µg/L	0.000
M2-6:2FTS	6.712	429.1 -> 80.9	1189	5.00	µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1708	5.00	µg/L	0.000
M3-MeFOSAA	8.088	573.2 -> 419.0	9478	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	68777	10.00	µg/L	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	13917	5.00	µg/L	0.000
M7-MeFOSE	10.315	623.2 -> 58.9	40430	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	49385	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	6317	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4503	2.50	µg/L	0.000
13C4-PFOS	8.256	502.8 -> 79.9	8837	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	28832	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4543	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	44365	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	12812	1.25	µg/L	0.000
13C5-PFNA	7.533	468.0 -> 423.0	13384	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	38083	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	547	4.95	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.1%			
13C2-6:2FTS	6.712	429.1 -> 80.9	1189	4.83	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.5%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1708	4.95	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%			
13C2-PFDoDA	9.053	615.1 -> 570.0	10359	1.30	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%			
13C2-PFTeDA	9.886	715.2 -> 670.0	9258	1.23	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%			
13C3-PFBS	5.277	302.1 -> 79.9	9273	2.65	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.1%			
13C3-PFHxS	7.091	402.1 -> 79.9	6568	2.53	µg/L	0.000

7.7.7
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%			
13C4-PFBA	2.799	216.8 -> 171.9	54058	9.94	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%			
13C4-PFHpA	6.280	367.1 -> 322.0	31456	2.49	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%			
13C5-PFHxA	5.335	318.0 -> 273.0	33243	2.49	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%			
13C5-PFPeA	4.150	268.3 -> 223.0	34551	4.99	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.8%			
13C6-PFDA	8.066	519.1 -> 474.1	8265	1.25	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C7-PFUnDA	8.585	570.0 -> 525.1	9060	1.25	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%			
13C8-FOSA	9.187	506.1 -> 77.8	8594	2.48	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%			
13C8-PFOA	6.962	421.1 -> 376.0	38041	2.54	µg/L	0.012	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%			
13C8-PFOS	8.255	507.1 -> 79.9	8464	2.43	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%			
13C9-PFNA	7.532	472.1 -> 427.0	13114	1.20	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.9%			
d3-MeFOSAA	8.088	573.2 -> 419.0	9478	4.84	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.9%			
13C3-HFPO-DA	5.714	286.9 -> 168.9	68777	9.73	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.3%			
d3-MeFOSA	10.416	515.0 -> 219.0	4503	2.53	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%			
d5-EtFOSAA	8.310	589.2 -> 419.0	13917	4.81	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.1%			
d7-MeFOSE	10.315	623.2 -> 58.9	40430	24.86	µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.5%			
d9-EtFOSE	10.623	639.2 -> 58.9	49385	24.78	µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.1%			
d5-EtFOSA	10.712	531.1 -> 219.0	6317	2.57	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%			
Target Compounds						QValue	
4:2FTS	4.997	327.1 -> 307.0	30402	44.13	µg/L	m	96
		327.1 -> 80.9	15828				
6:2FTS	6.712	427.1 -> 407.0	45650	45.96	µg/L		98
		427.1 -> 80.9	18655				
8:2FTS	7.829	527.1 -> 507.0	30632	37.85	µg/L		100
		527.1 -> 80.8	15514				
EtFOSAA	8.323	584.2 -> 419.1	22331	12.26	µg/L	m	97
		584.2 -> 526.0	9261				
FOSA	9.190	498.1 -> 77.9	37865	12.06	µg/L		98
		498.1 -> 478.0	1070				
MeFOSAA	8.101	570.1 -> 419.0	20053	12.50	µg/L	m	99
		570.1 -> 483.0	4397				
PFBA	2.795	212.8 -> 168.9	88639	49.50	µg/L	m	100
PFBS	5.278	298.7 -> 79.9	28361	10.96	µg/L	m	99
		298.7 -> 98.8	12069				
PFDA	8.067	512.9 -> 469.0	105515	12.19	µg/L		99
		512.9 -> 219.0	19034				
PFDoDA	9.054	613.1 -> 569.0	81443	11.58	µg/L		99
		613.1 -> 319.0	13135				
PFDS	9.244	599.0 -> 79.9	22072	11.81	µg/L		97

7.7.7
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	11913			
PFHpA	6.293	363.1 -> 319.0	155772	11.71	µg/L	99
		363.1 -> 169.0	34473			
PFHpS	7.699	449.0 -> 79.9	27698	11.51	µg/L	94
		449.0 -> 98.9	15416			
PFHxA	5.337	313.0 -> 269.0	101252	11.65	µg/L	m 100
		313.0 -> 118.9	4813			
PFHxS	7.092	398.7 -> 79.9	24137	10.88	µg/L	m 80
		398.7 -> 98.9	13447			
PFNA	7.533	463.0 -> 419.0	93240	12.26	µg/L	96
		463.0 -> 219.0	20240			
PFNS	8.773	548.8 -> 79.9	21825	11.72	µg/L	95
		548.8 -> 98.9	12465			
PFOA	6.951	413.0 -> 369.0	173202	11.82	µg/L	98
		413.0 -> 169.0	40947			
PFOS	8.257	498.9 -> 79.9	38572	11.29	µg/L	m 91
		498.9 -> 98.8	22076			
PFPeA	4.152	263.0 -> 219.0	152500	25.70	µg/L	m 100
PFPeS	6.357	349.1 -> 79.9	21594	11.27	µg/L	m 95
		349.1 -> 98.9	10182			
PFTeDA	9.887	713.1 -> 669.0	87191	12.25	µg/L	98
		713.1 -> 168.9	11476			
PFTrDA	9.489	663.0 -> 619.0	109096	11.78	µg/L	99
		663.0 -> 168.9	17734			
PFUnDA	8.586	563.1 -> 519.0	81693	12.09	µg/L	100
		563.1 -> 269.1	16537			
11CI-PF3OUdS	9.555	630.9 -> 450.9	329180	43.49	µg/L	98
		632.9 -> 452.9	104601			
9CI-PF3ONS	8.638	530.8 -> 351.0	344913	42.64	µg/L	100
		532.8 -> 353.0	109090			
ADONA	6.542	376.9 -> 250.9	759020	40.32	µg/L	100
		376.9 -> 84.8	226267			
HFPO-DA	5.715	284.9 -> 168.9	252994	44.82	µg/L	m 99
		284.9 -> 184.9	23043			
3:3FTCA	3.603	241.0 -> 177.0	25360	57.91	µg/L	m 99
		241.0 -> 117.0	3125			
5:3FTCA	5.918	341.0 -> 237.1	536672	298.63	µg/L	98
		341.0 -> 217.0	367589			
7:3FTCA	7.348	441.0 -> 316.9	211261	293.62	µg/L	100
		441.0 -> 336.9	458577			
EtFOSA	10.726	526.0 -> 219.0	26355	11.57	µg/L	100
		526.0 -> 169.0	32739			
EtFOSE	10.636	630.0 -> 58.9	221489	120.73	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	20430	11.49	µg/L	98
		511.9 -> 169.0	26375			
MeFOSE	10.327	616.1 -> 58.9	206678	119.68	µg/L	100
PFDoDS	10.050	699.1 -> 79.9	17437	11.85	µg/L	98
		699.1 -> 98.8	10331			
NFDHA	5.218	295.0 -> 201.0	16779	24.51	µg/L	m 96
		295.0 -> 84.9	4881			
PFMBA	4.553	279.0 -> 85.1	114848	26.26	µg/L	m 100
PFMPA	3.328	229.0 -> 84.9	81668	25.40	µg/L	m 100
PFEESA	5.833	314.8 -> 134.9	191347	20.93	µg/L	m 99
		314.8 -> 82.9	6070			

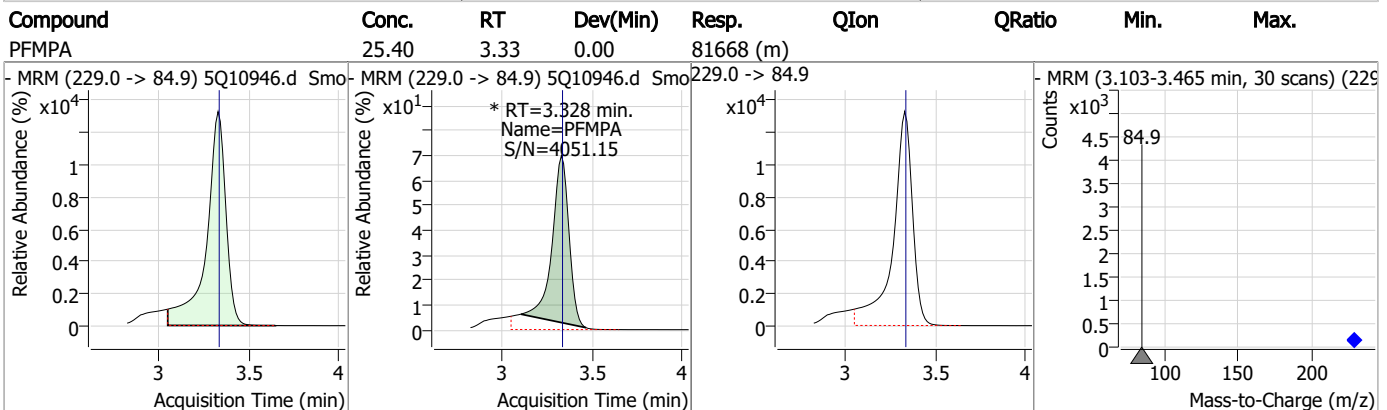
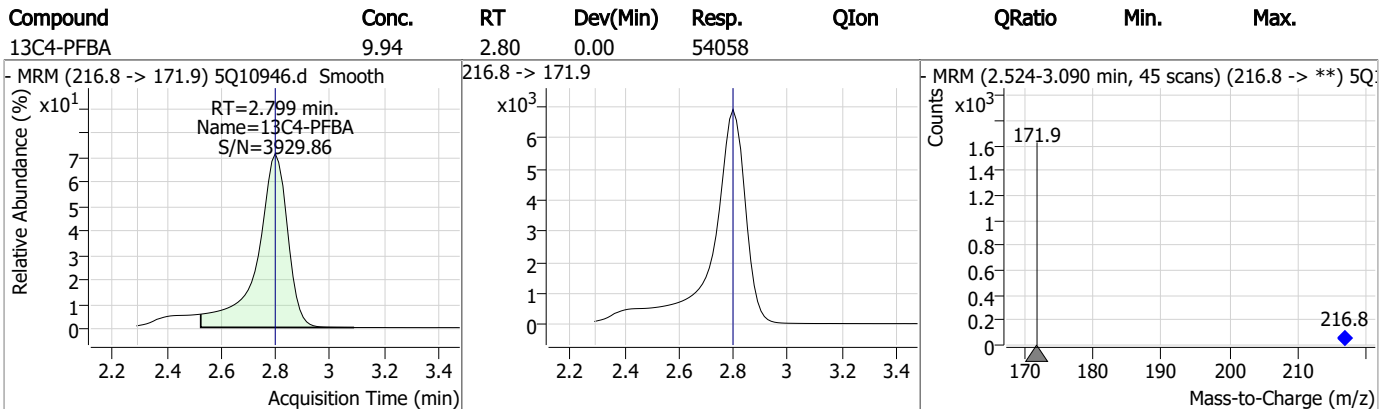
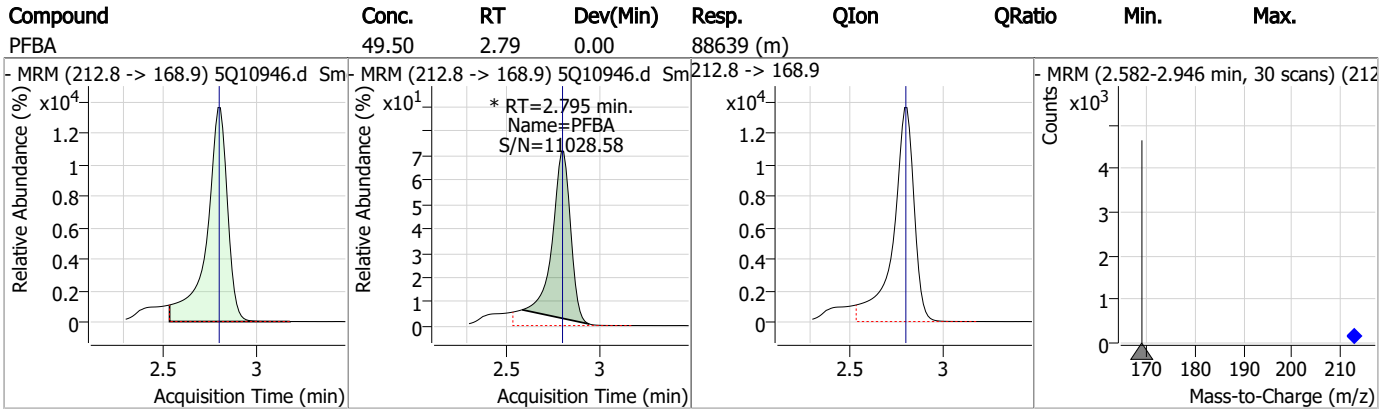
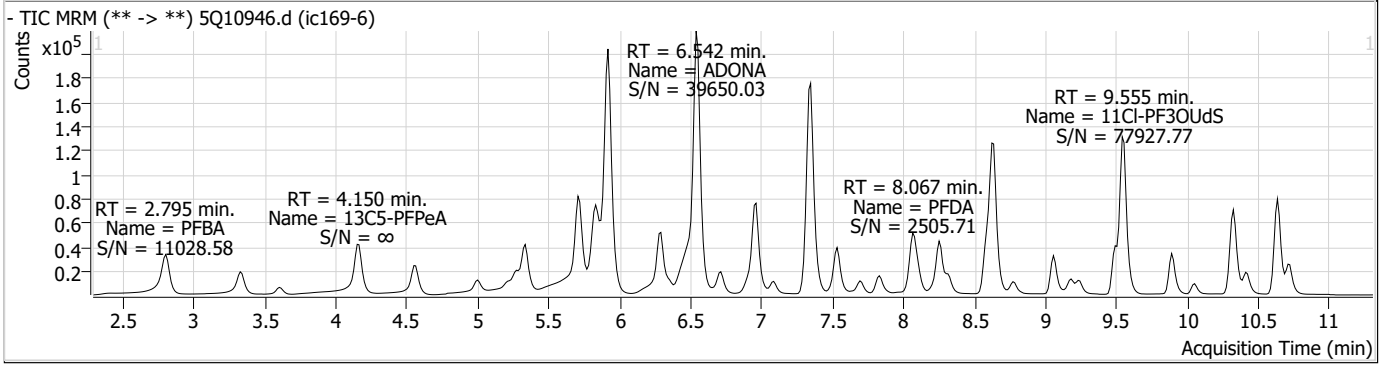
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

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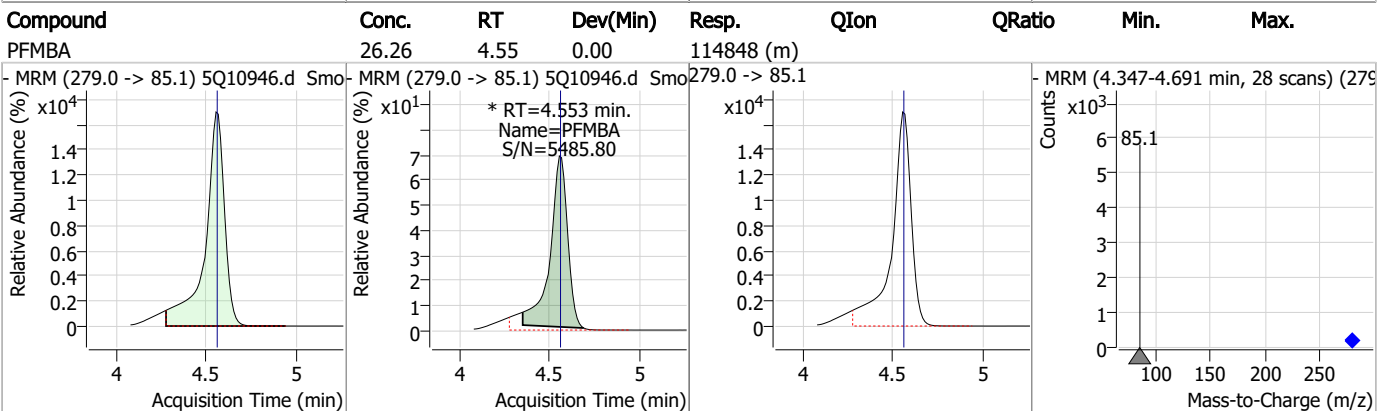
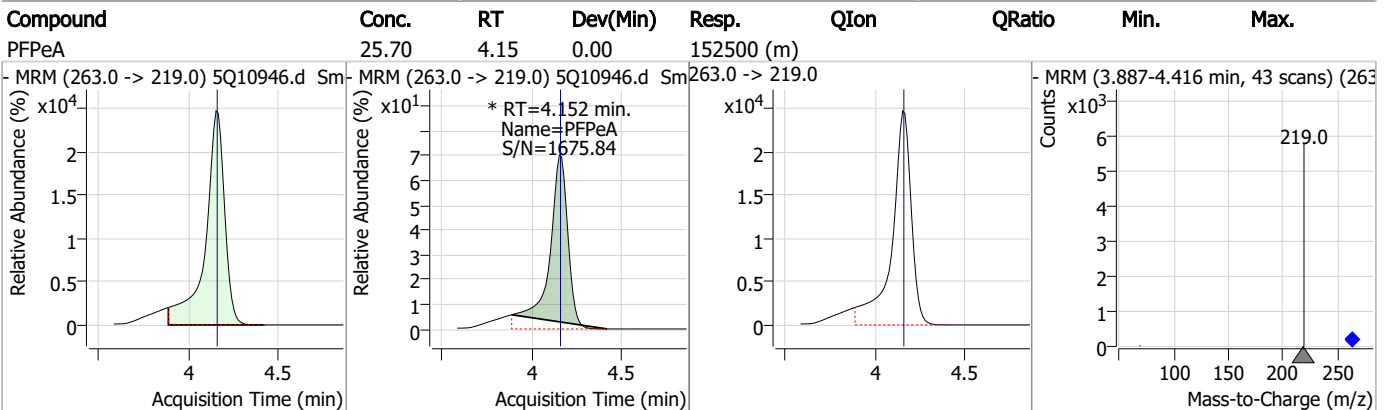
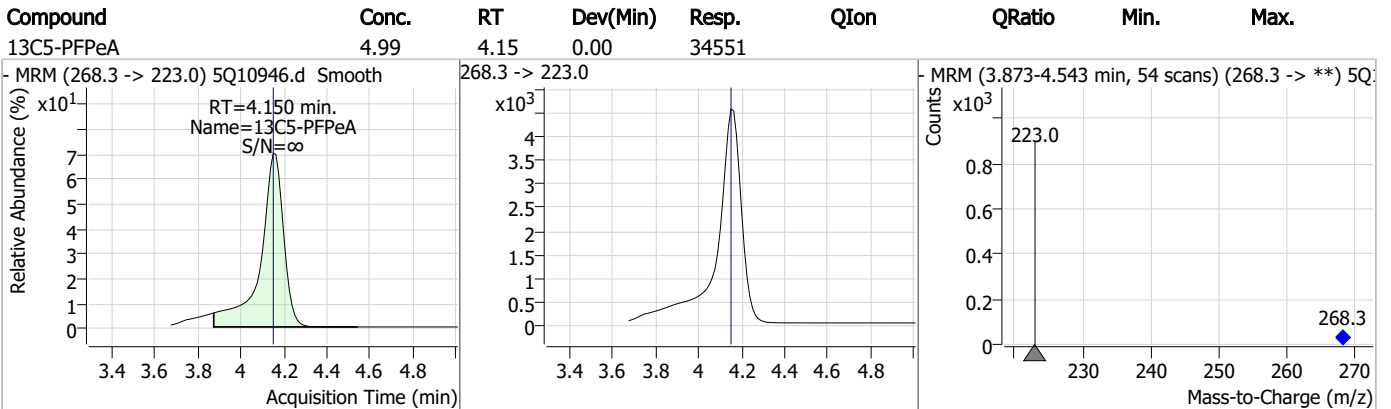
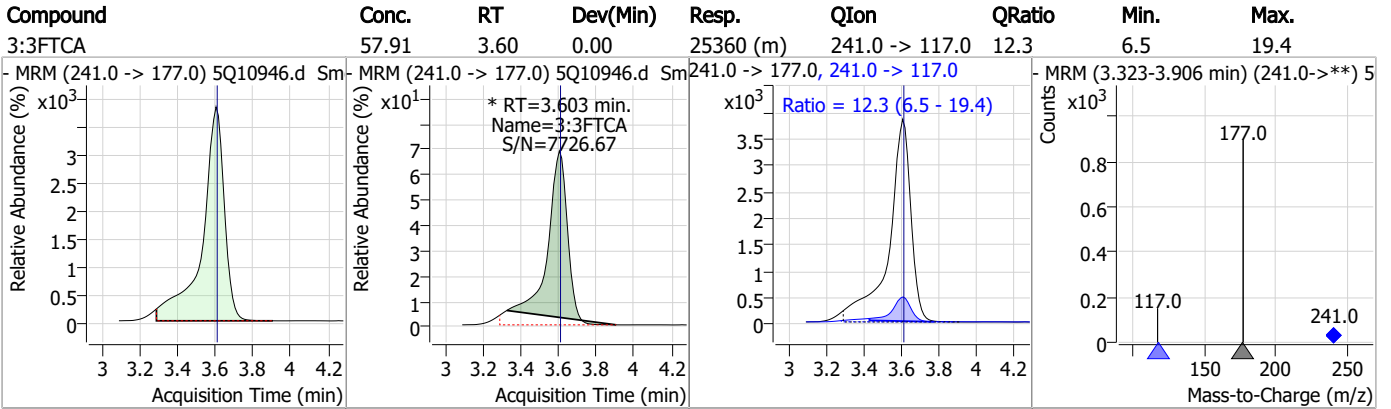
7.7.7
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Perfluorinated Compounds by LC/MS/MS

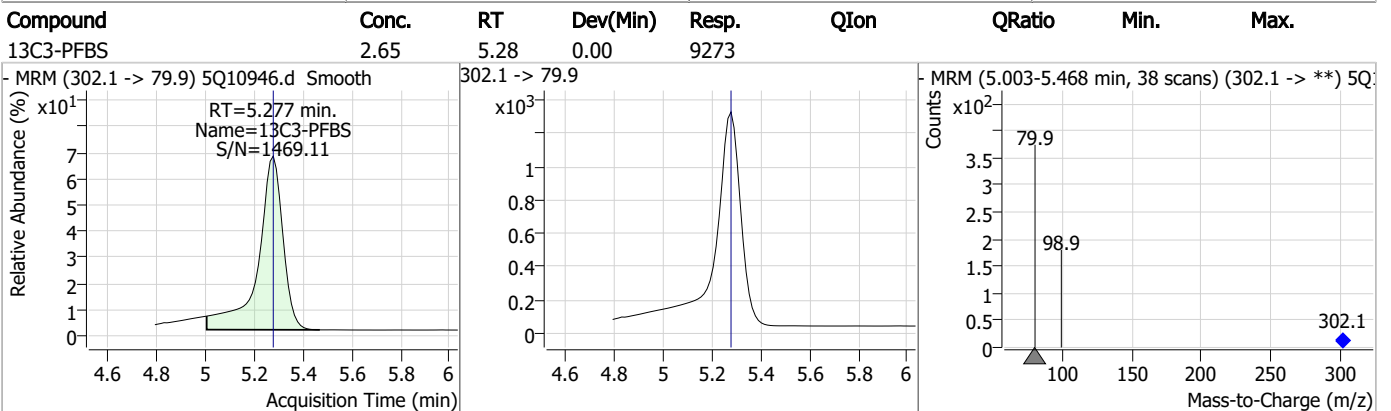
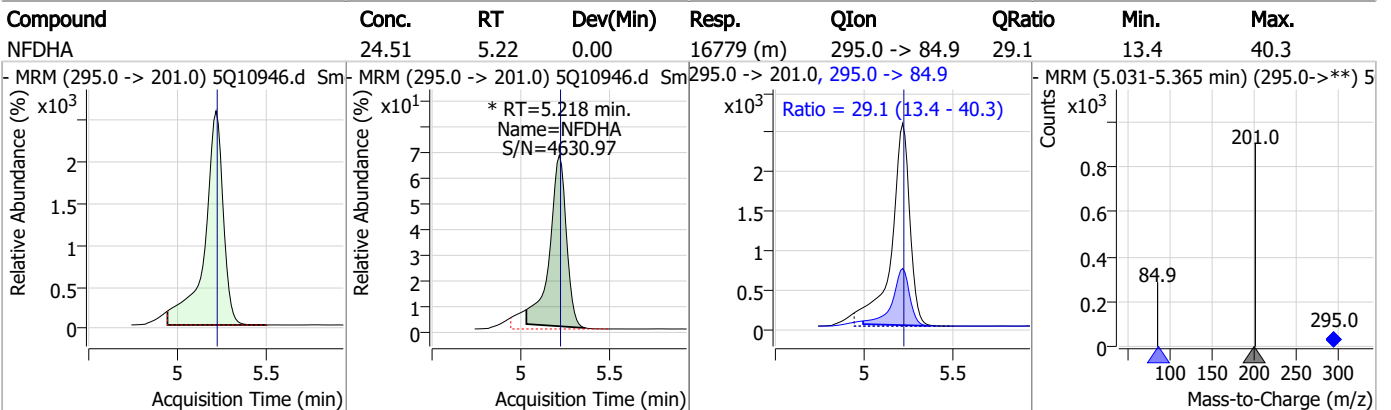
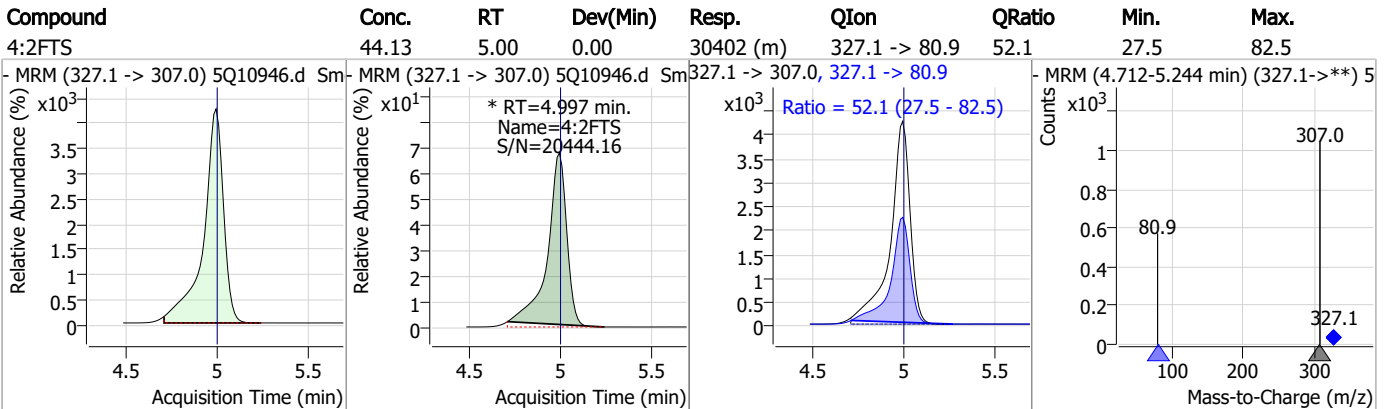
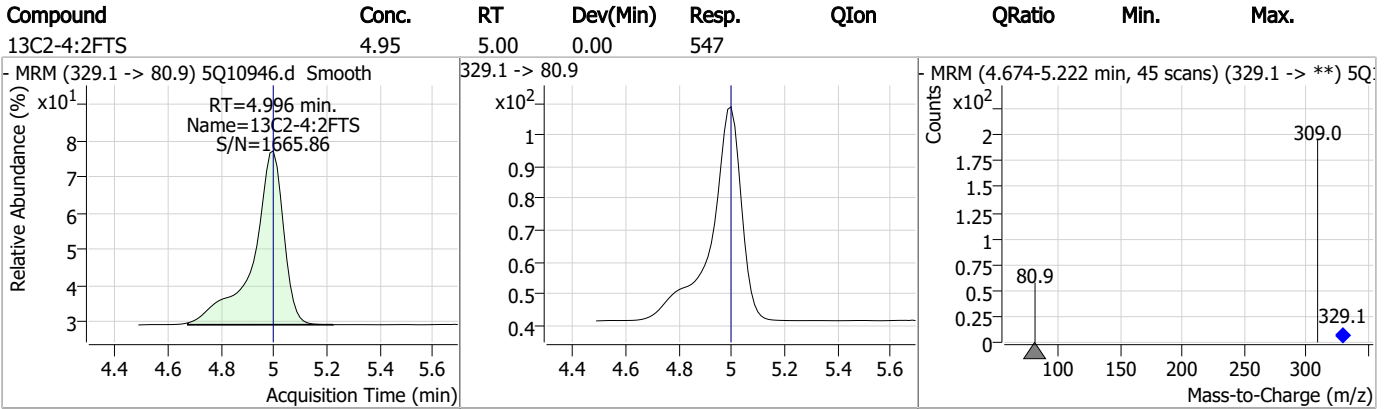


7.7.7
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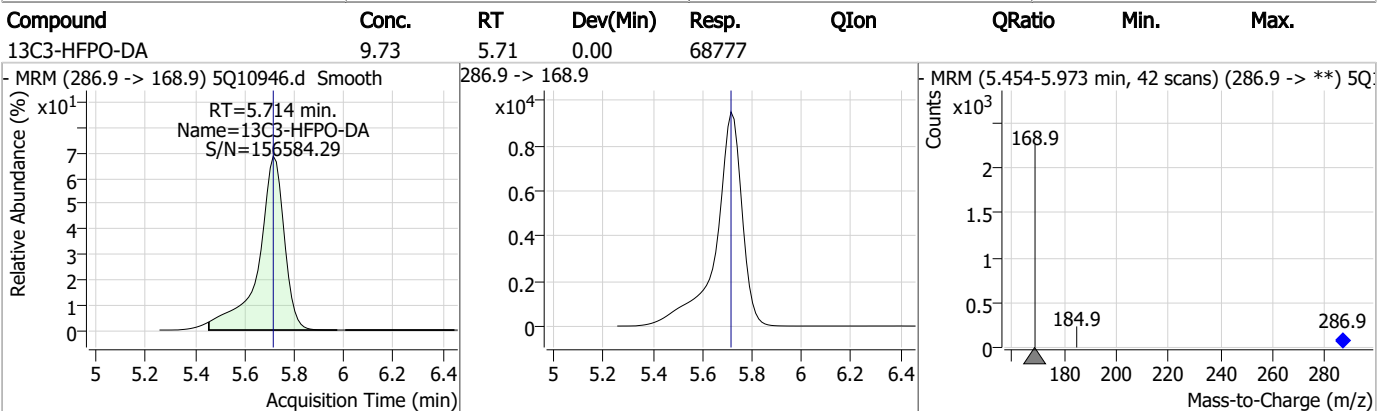
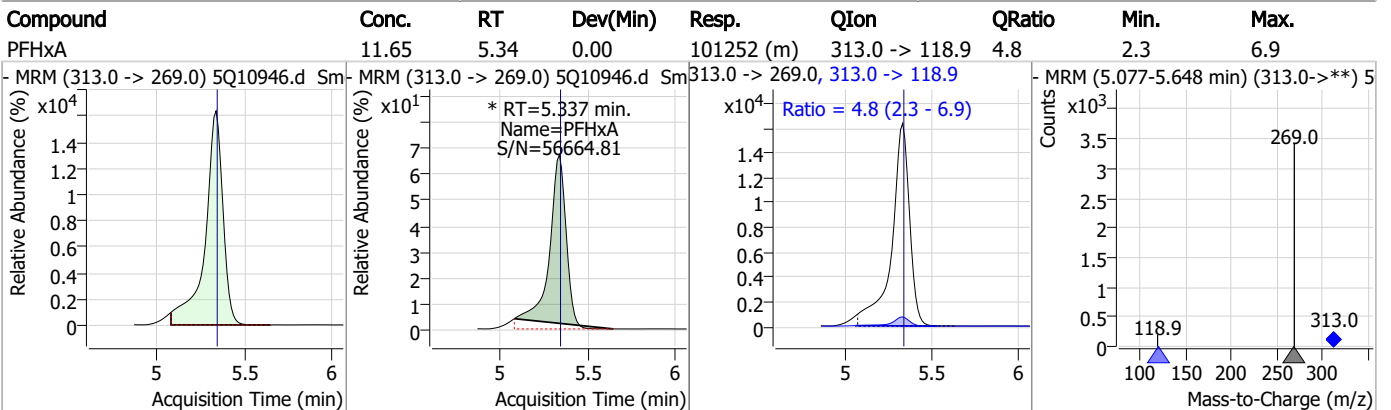
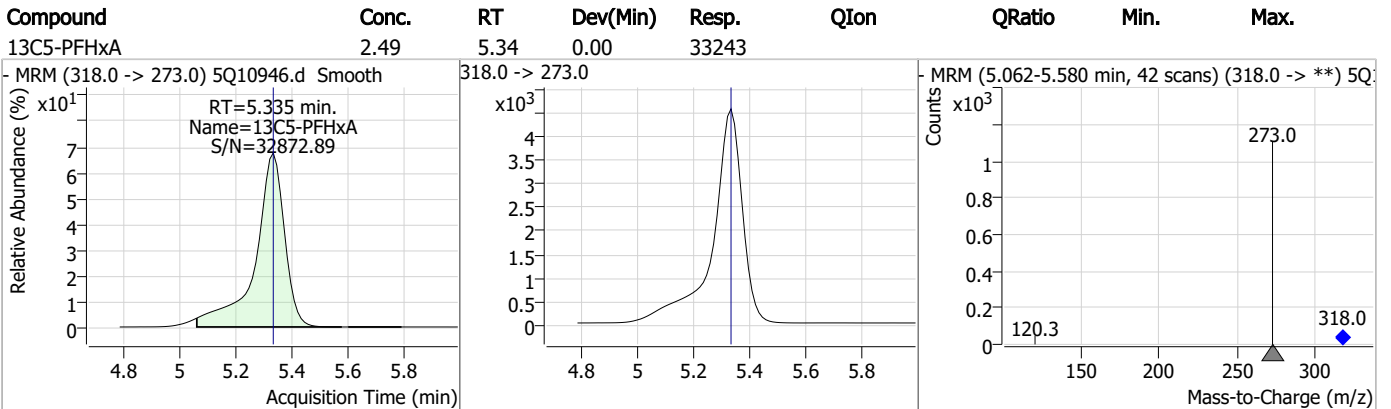
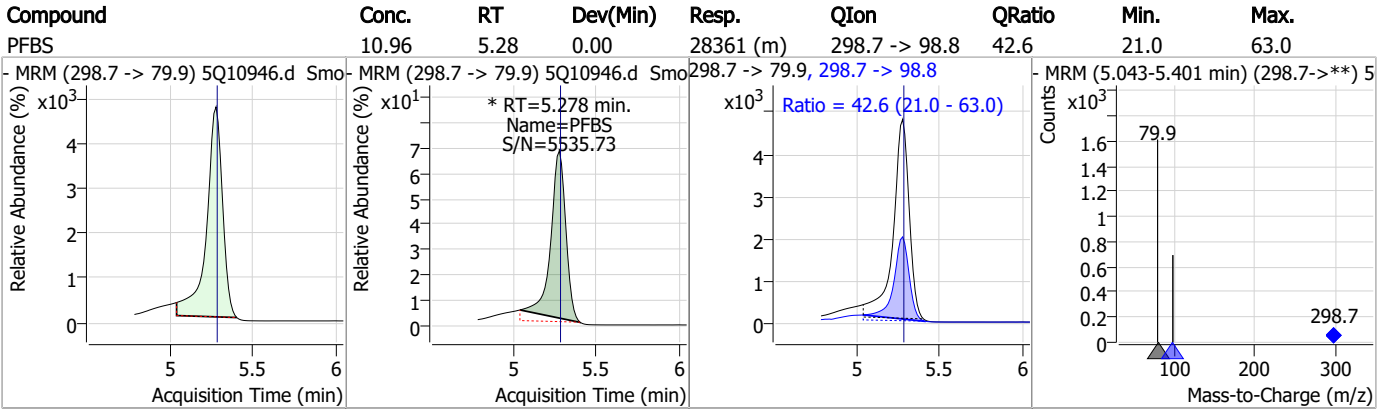
Perfluorinated Compounds by LC/MS/MS



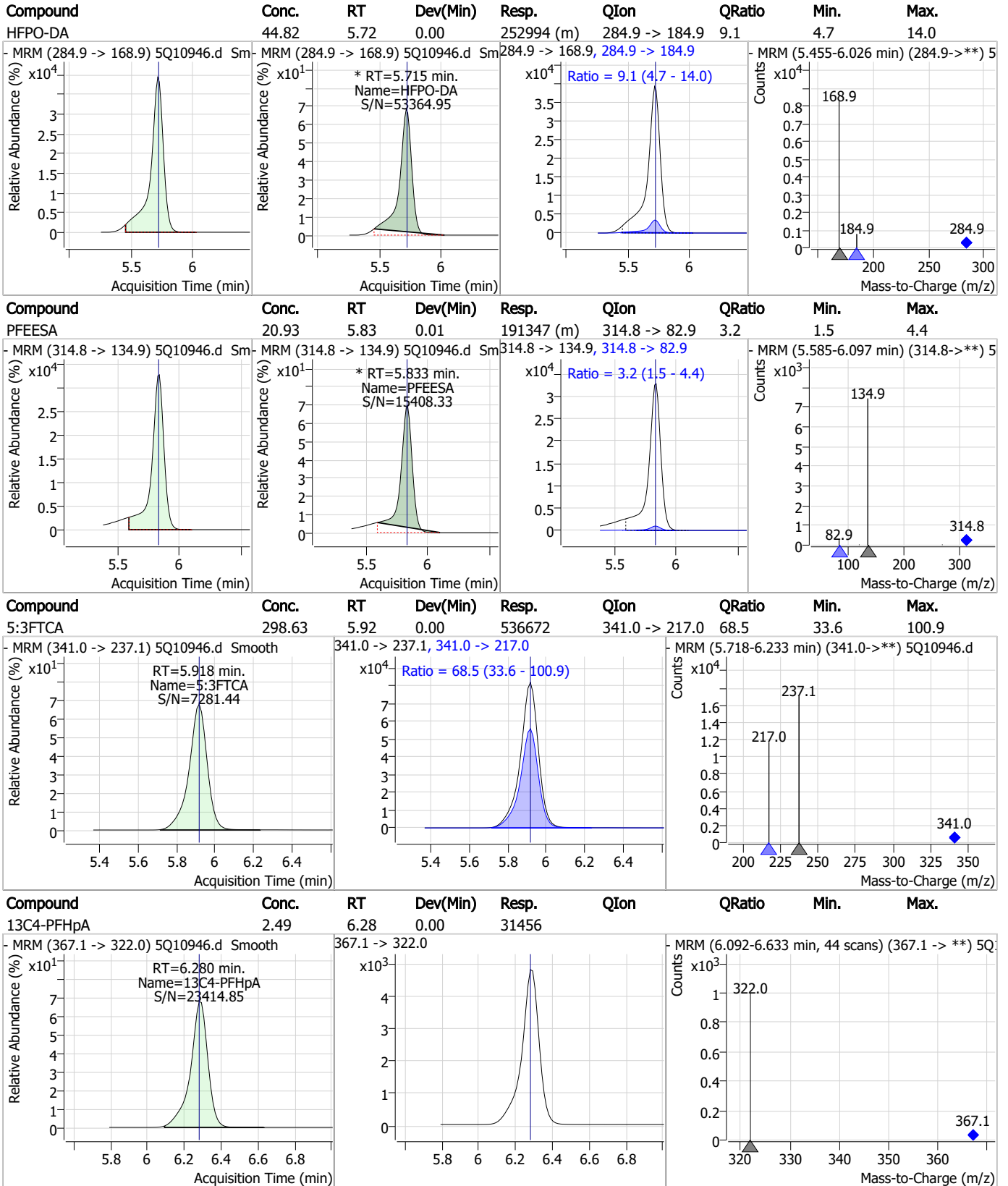
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



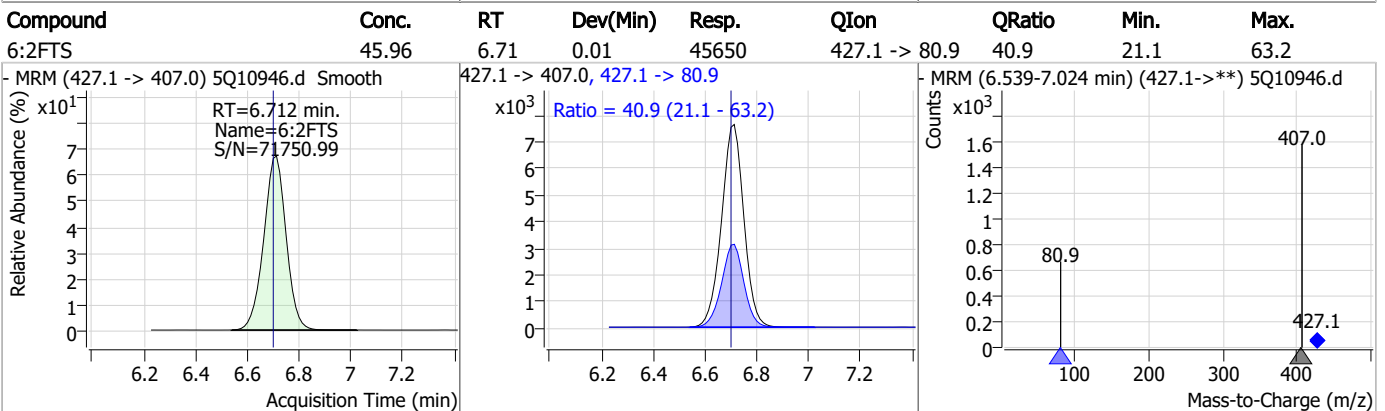
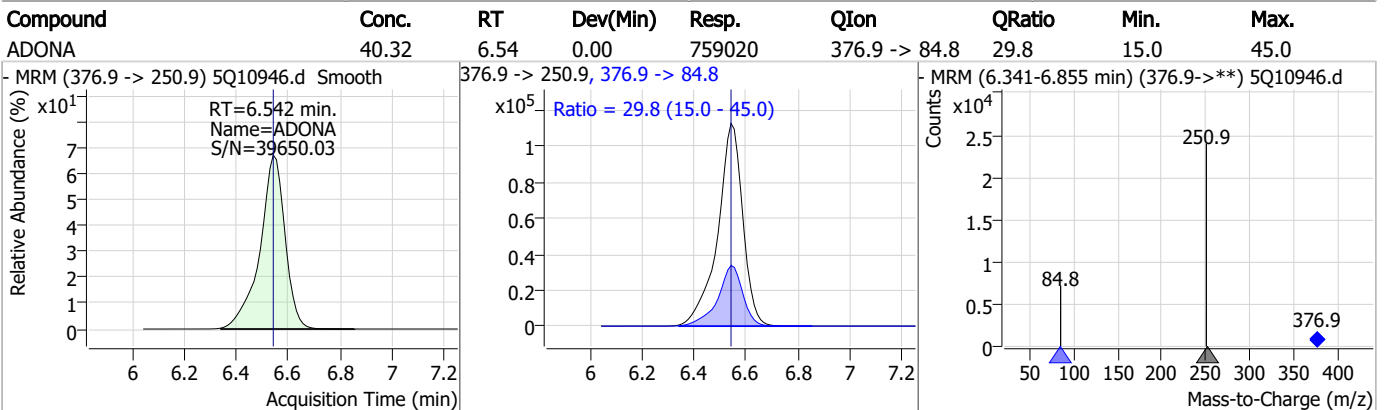
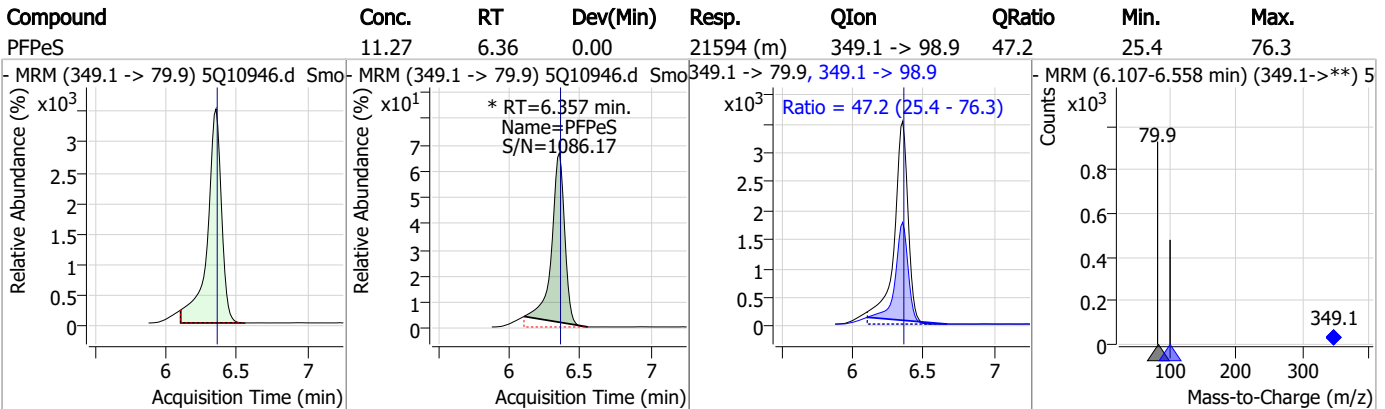
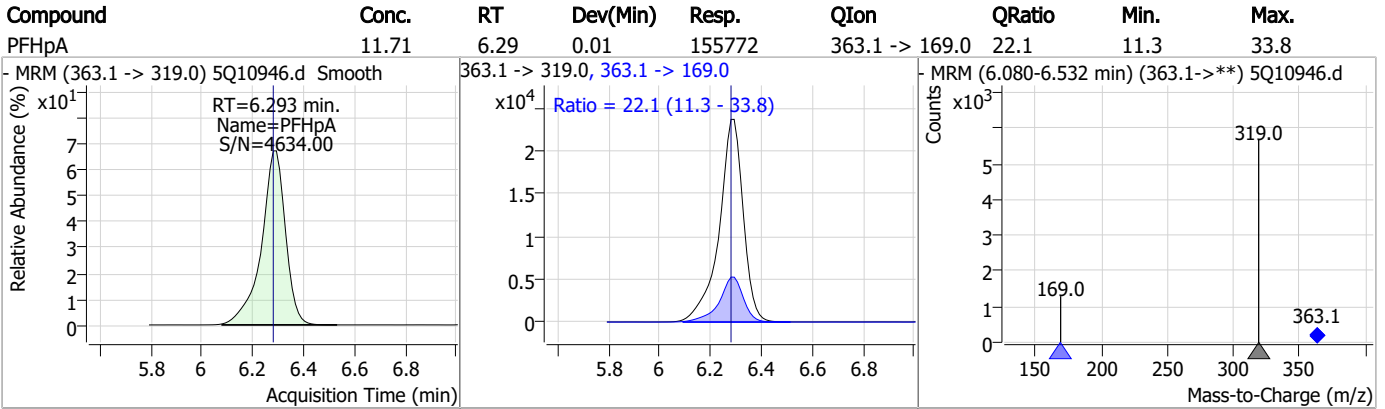
Perfluorinated Compounds by LC/MS/MS



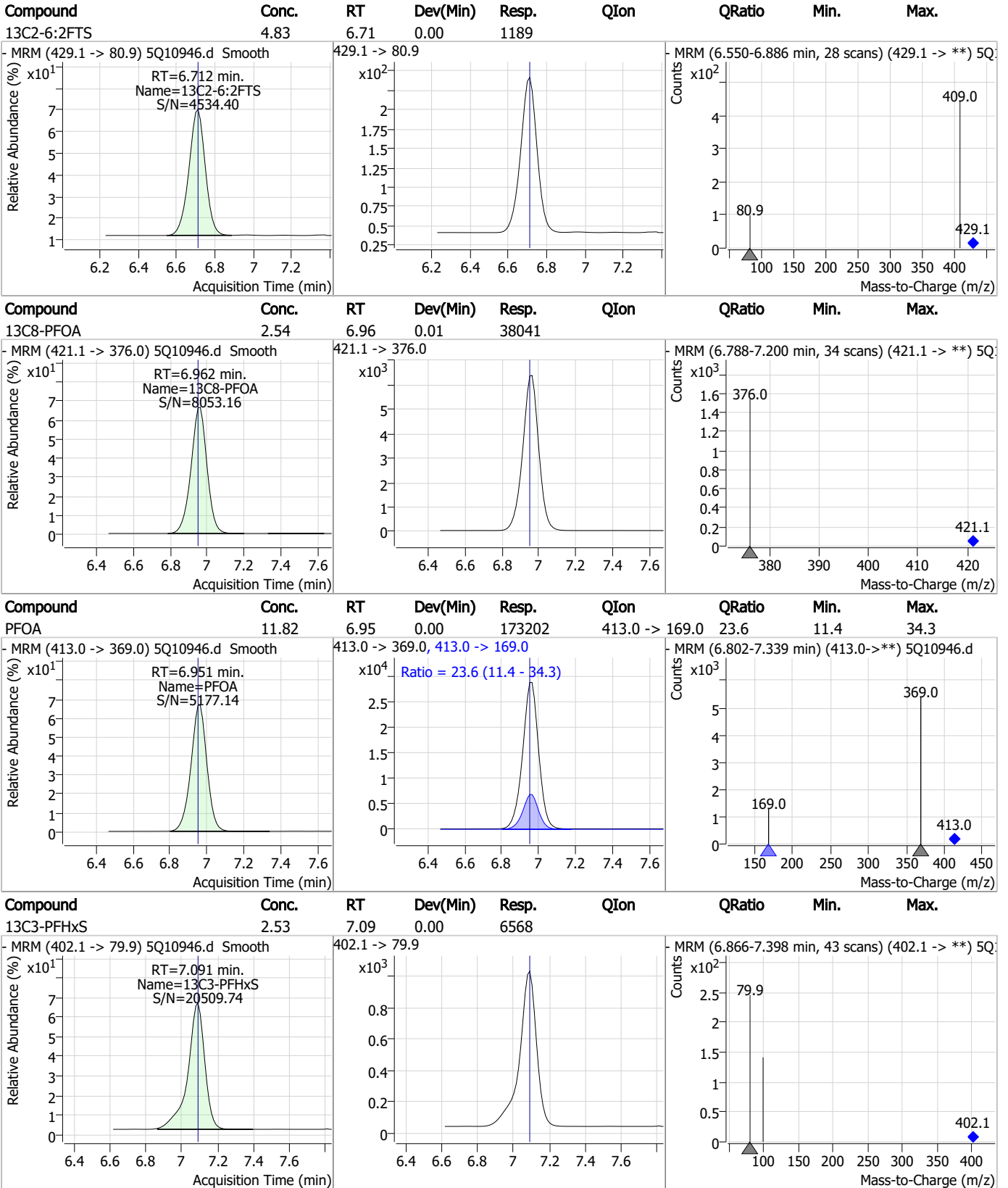
7.7.7
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Perfluorinated Compounds by LC/MS/MS



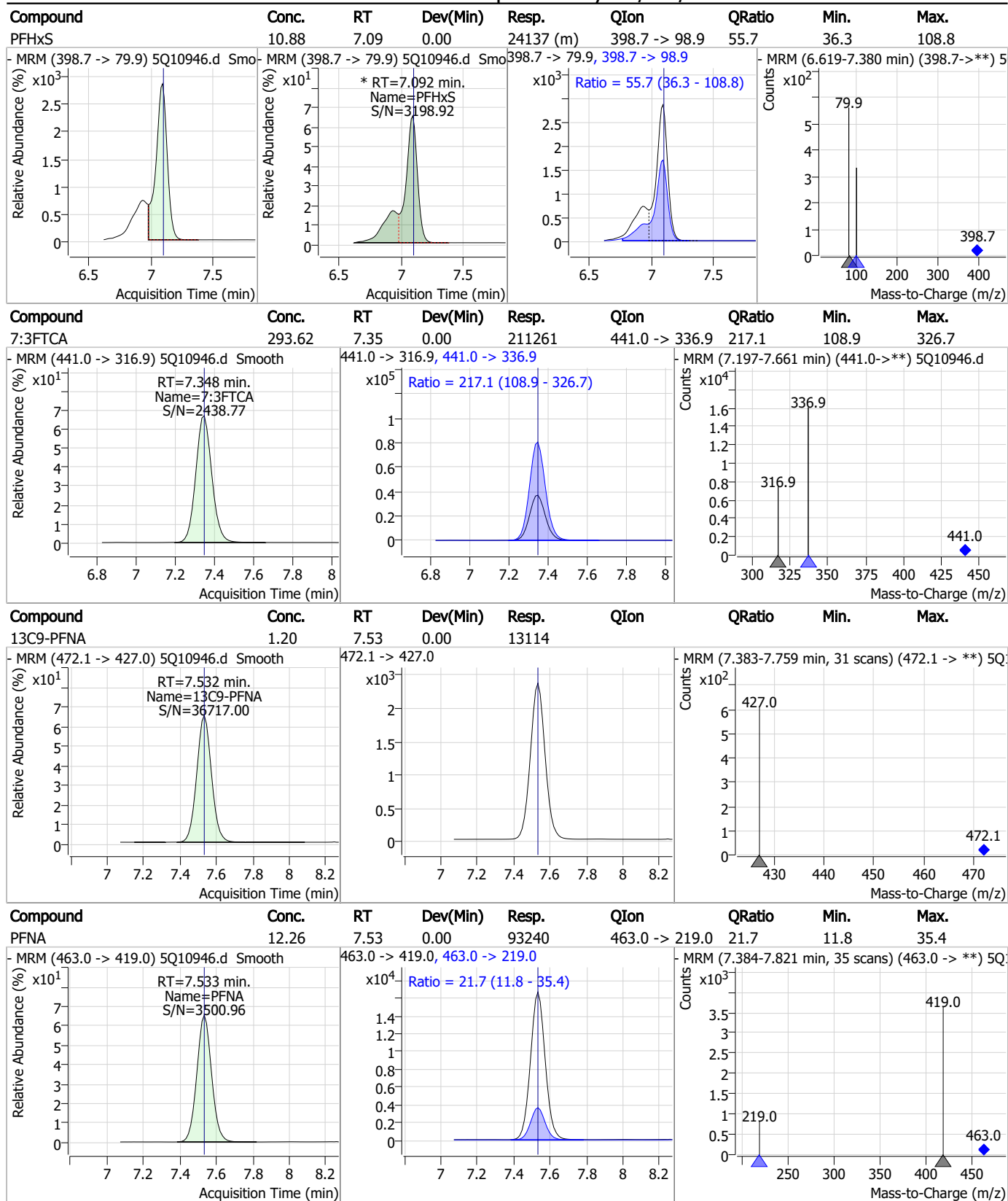
Perfluorinated Compounds by LC/MS/MS



7.7.7

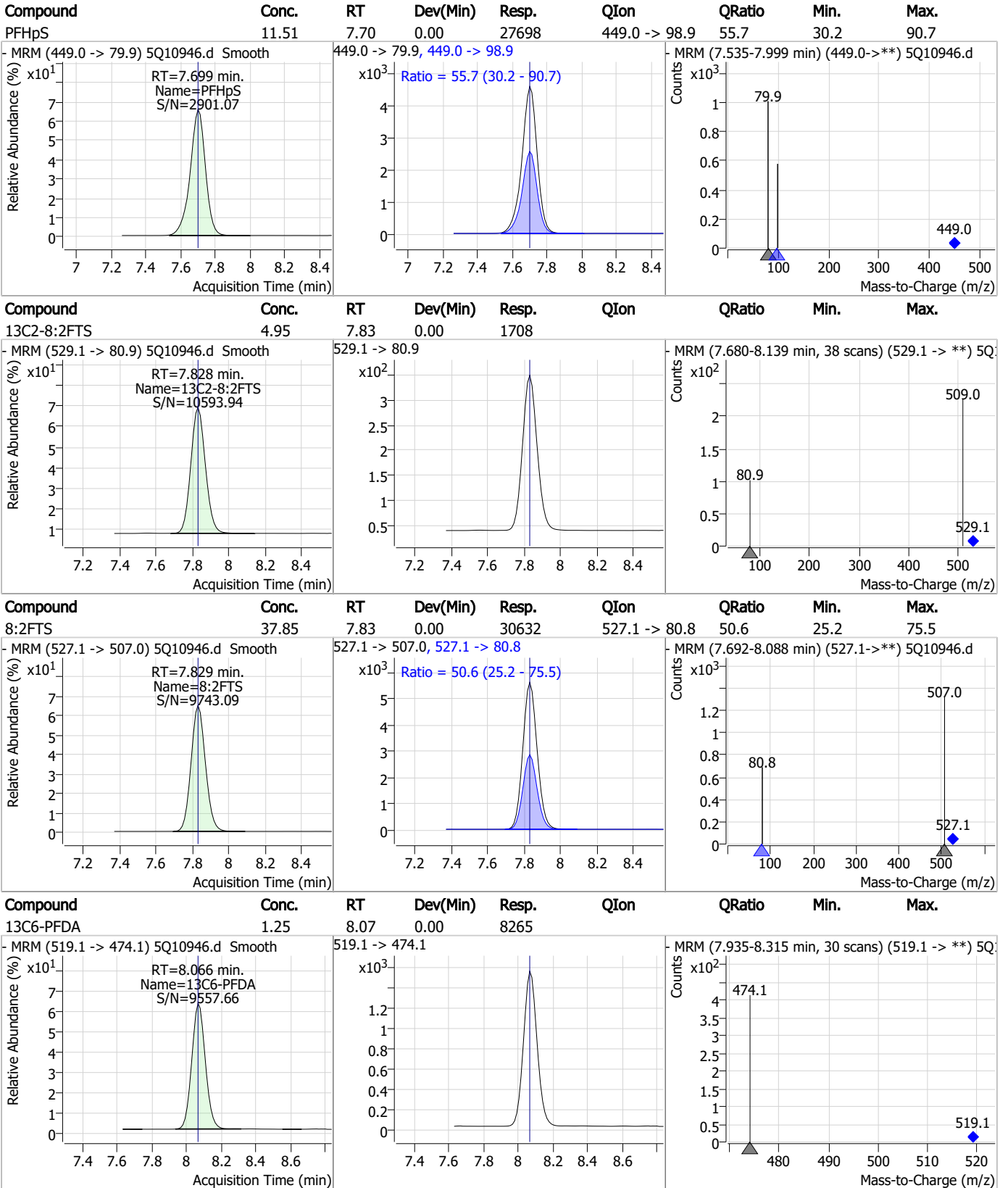
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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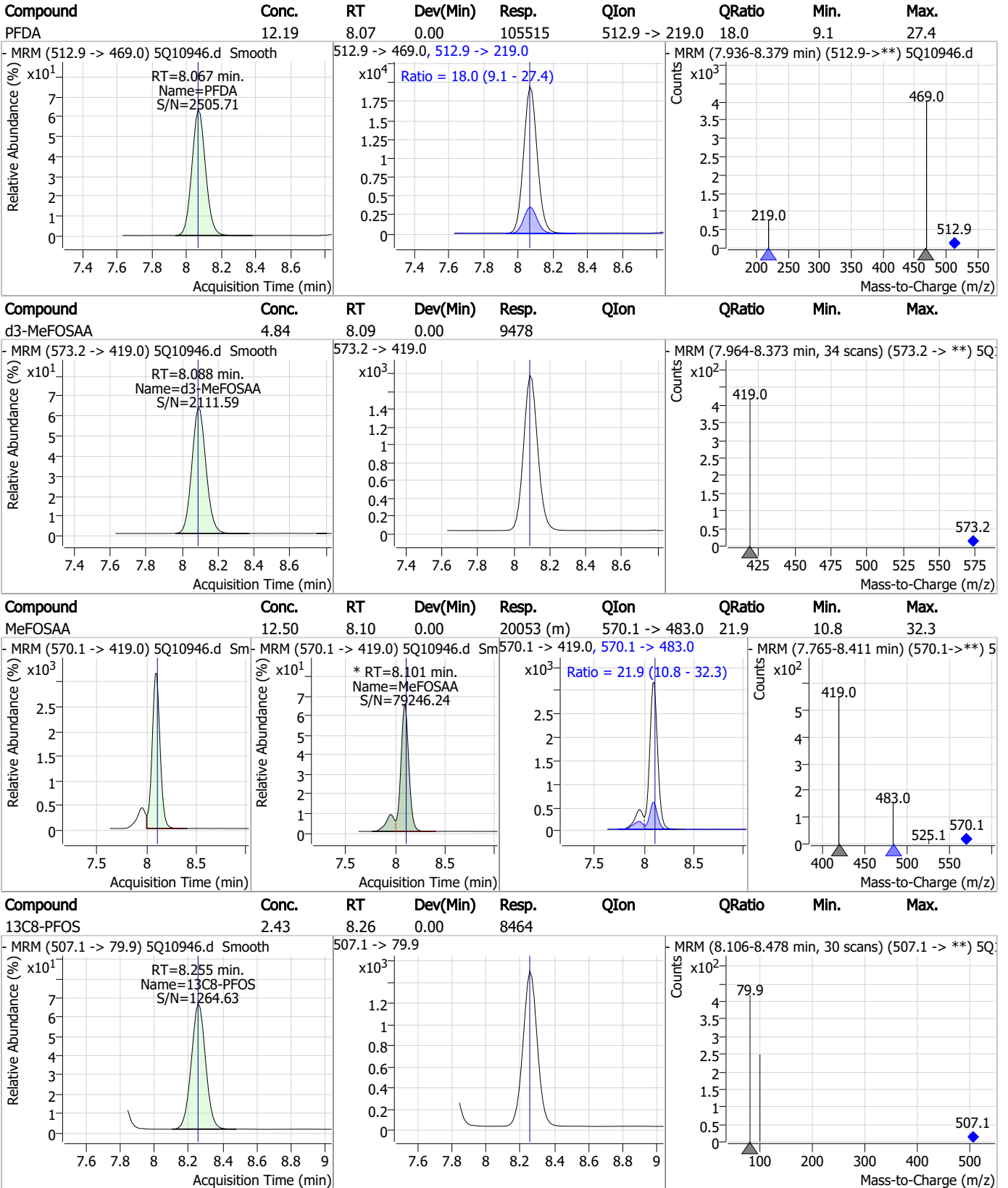
Perfluorinated Compounds by LC/MS/MS



7.7.7

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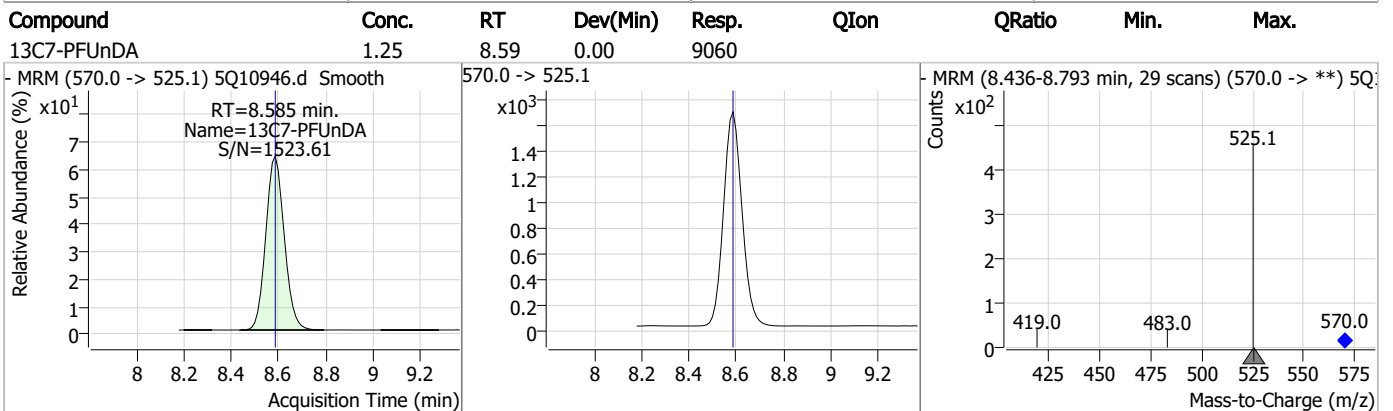
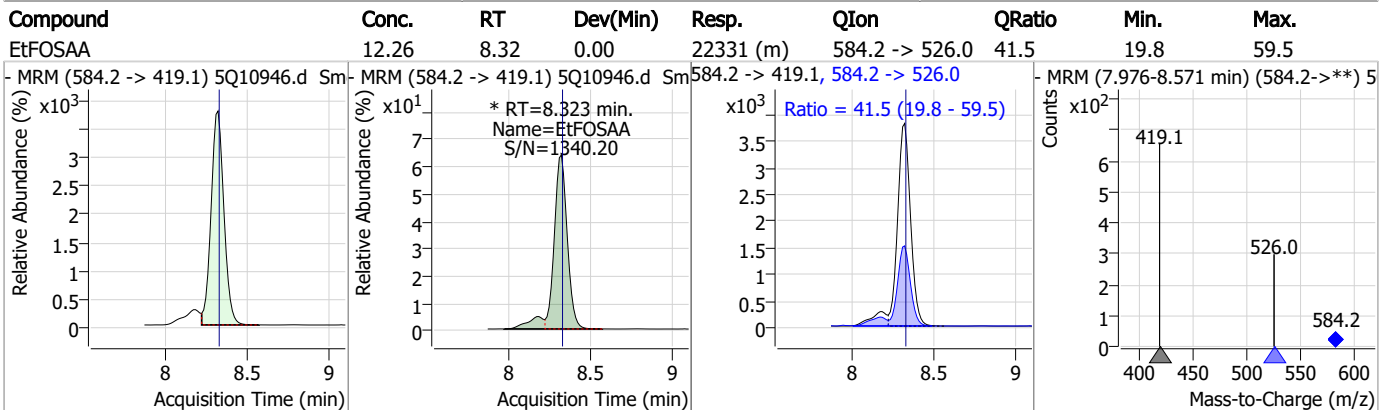
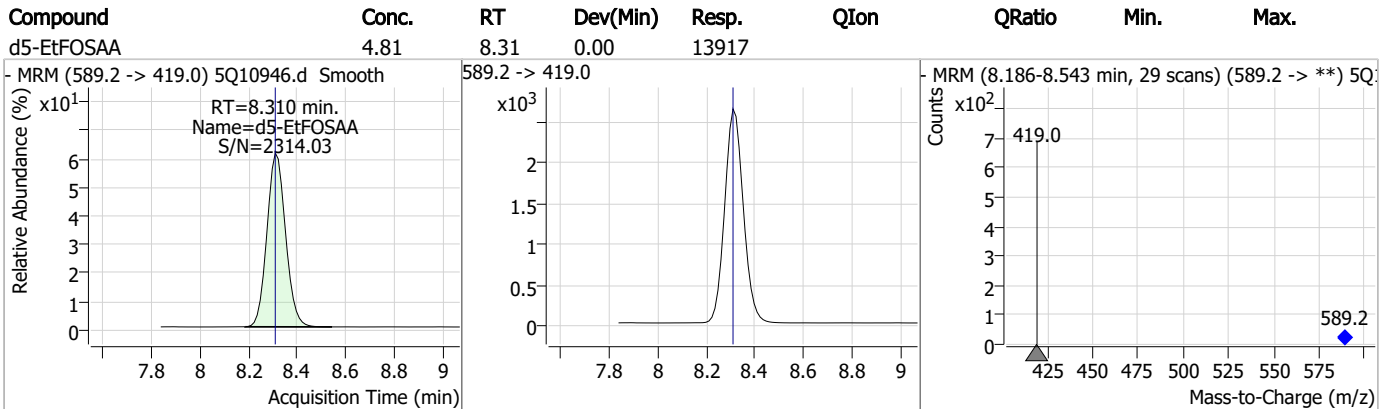
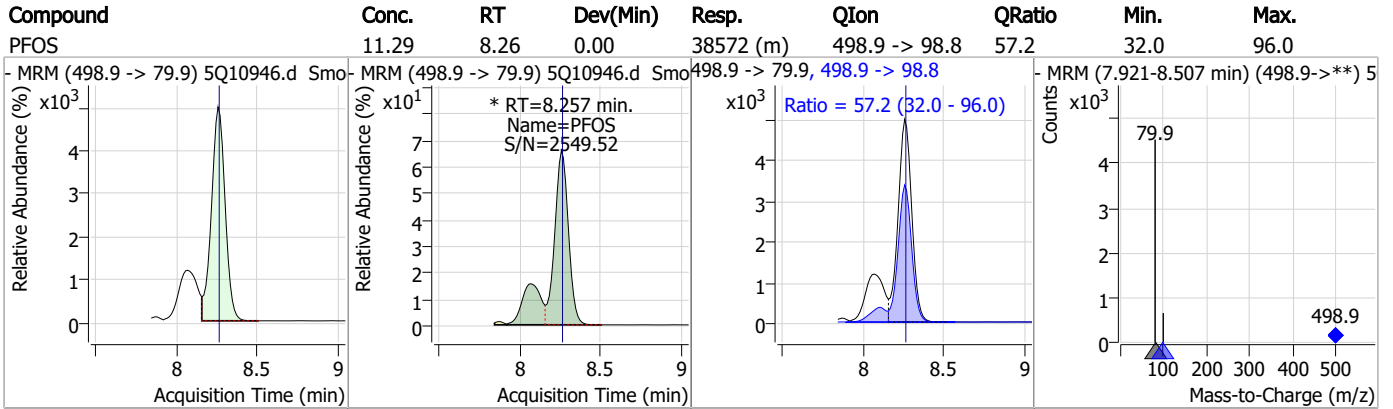
Perfluorinated Compounds by LC/MS/MS



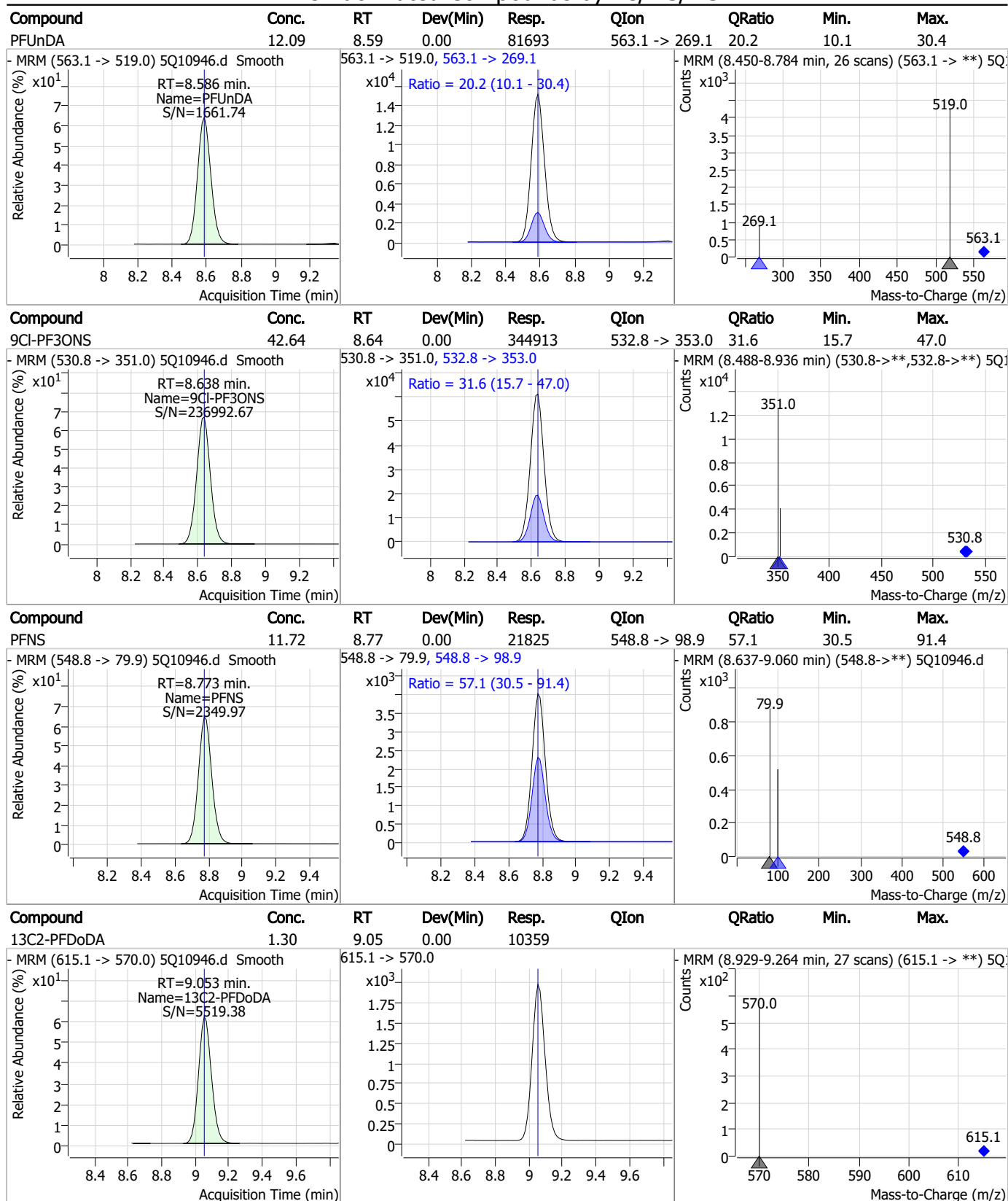
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Perfluorinated Compounds by LC/MS/MS



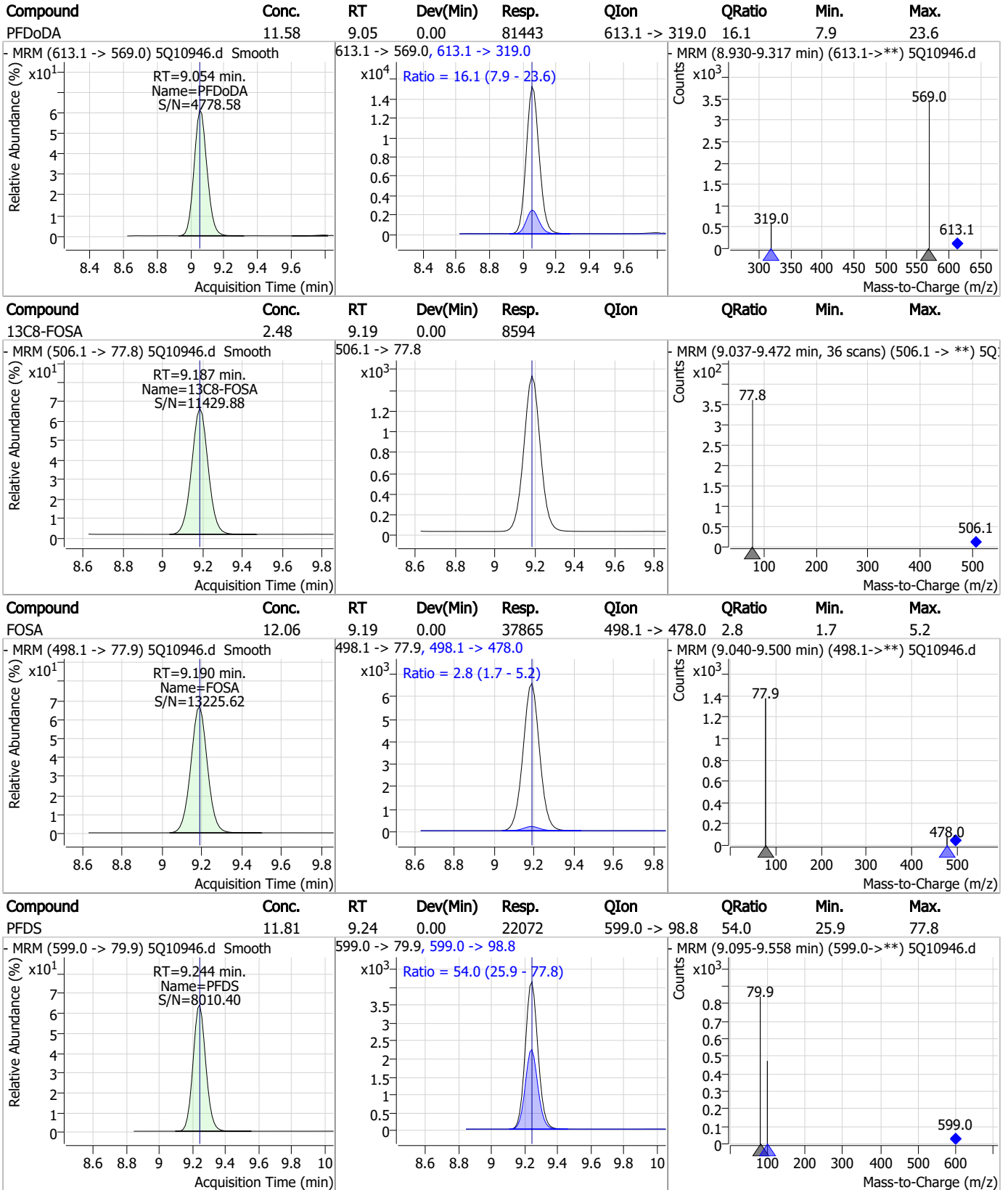
Perfluorinated Compounds by LC/MS/MS



7.7.7
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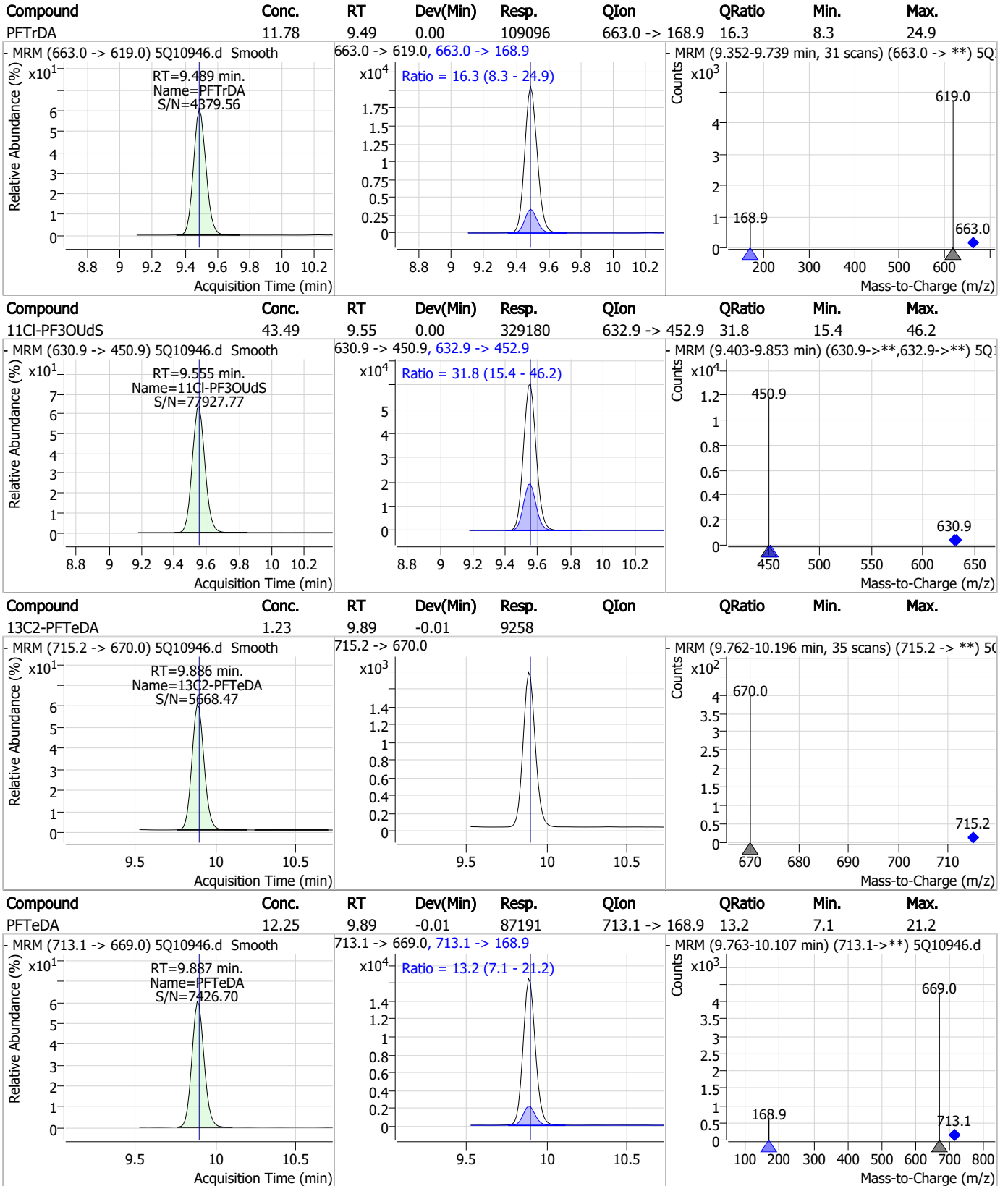
Perfluorinated Compounds by LC/MS/MS



7.7.7

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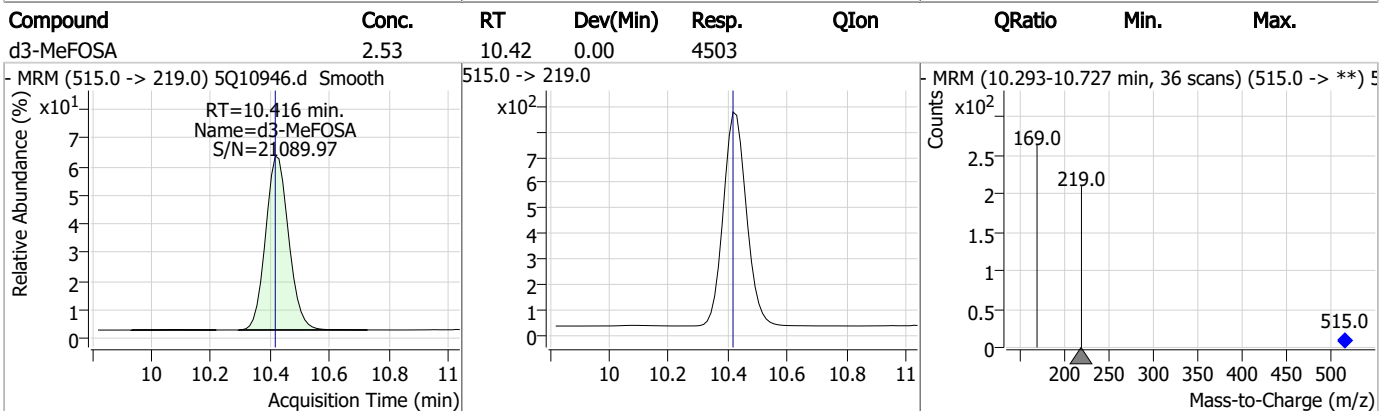
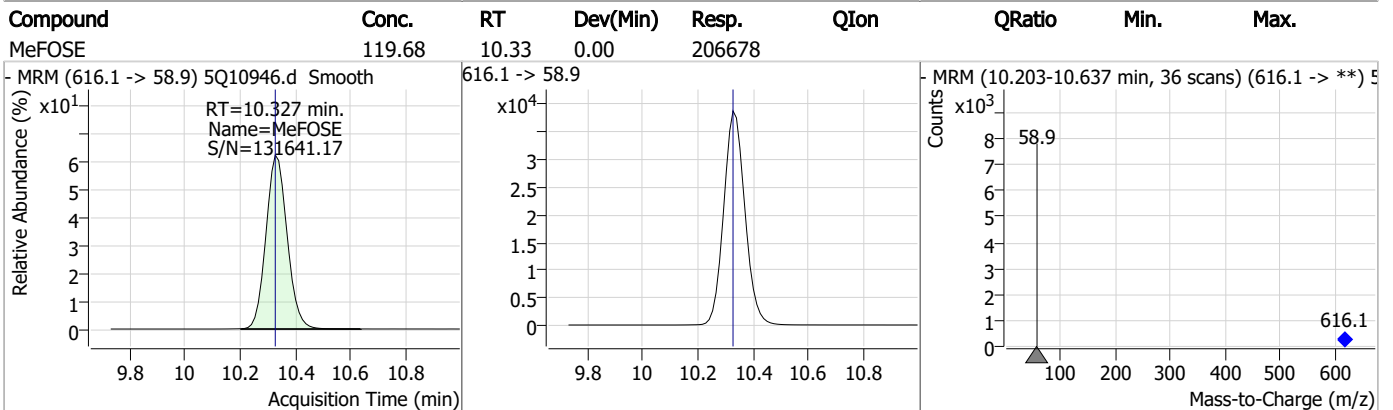
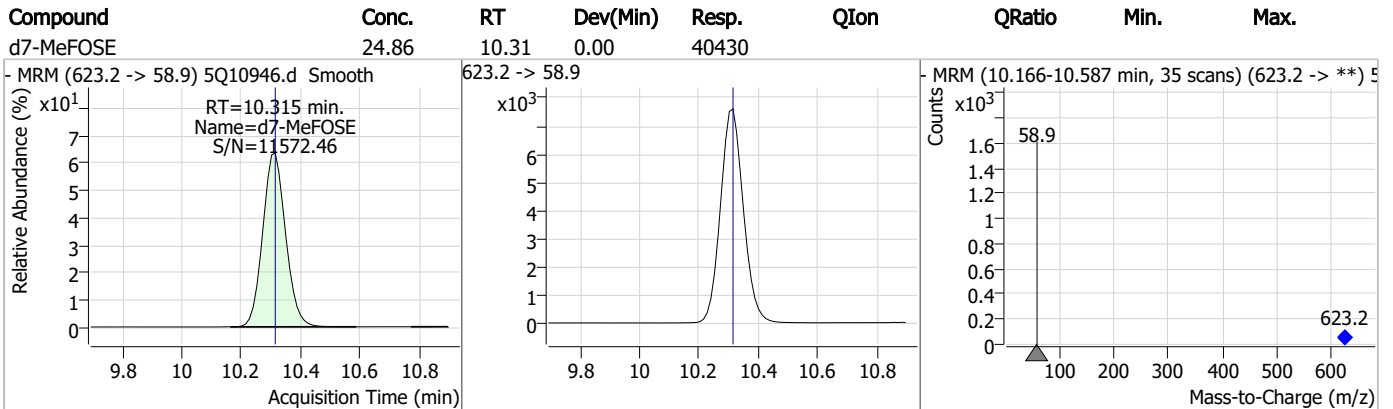
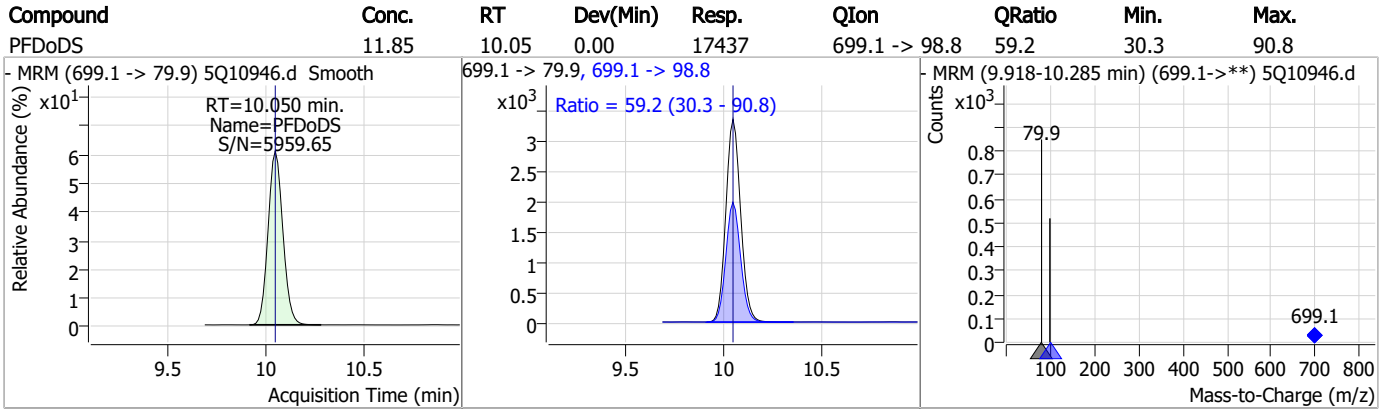
Perfluorinated Compounds by LC/MS/MS



7.7.7

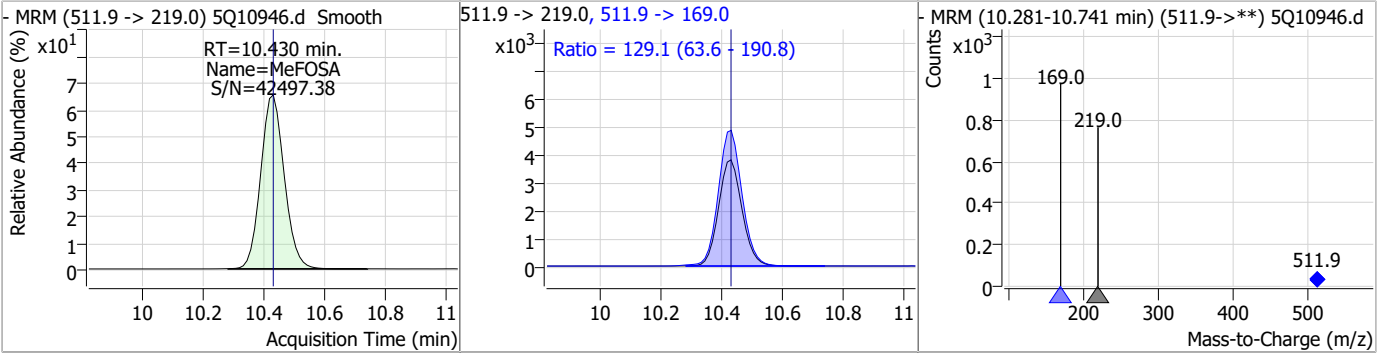
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Perfluorinated Compounds by LC/MS/MS

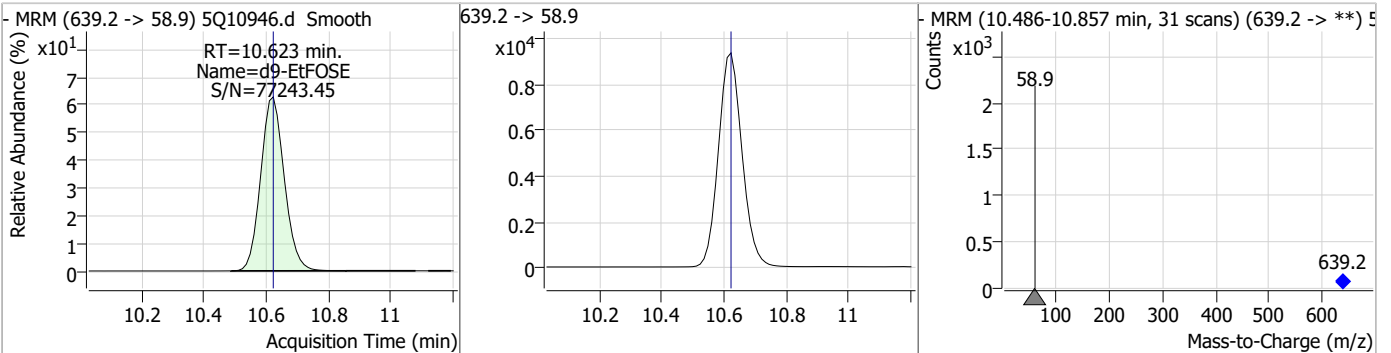


Perfluorinated Compounds by LC/MS/MS

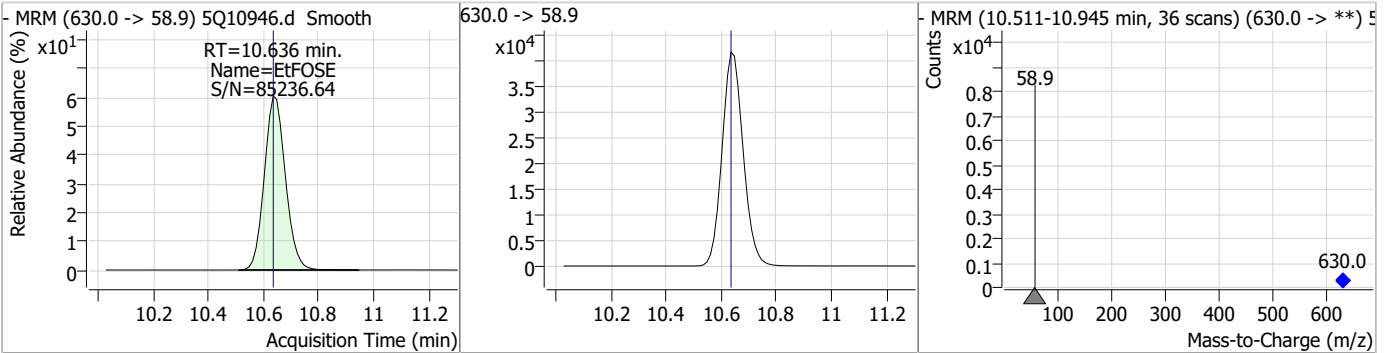
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	11.49	10.43	0.00	20430	511.9 -> 169.0	129.1	63.6	190.8



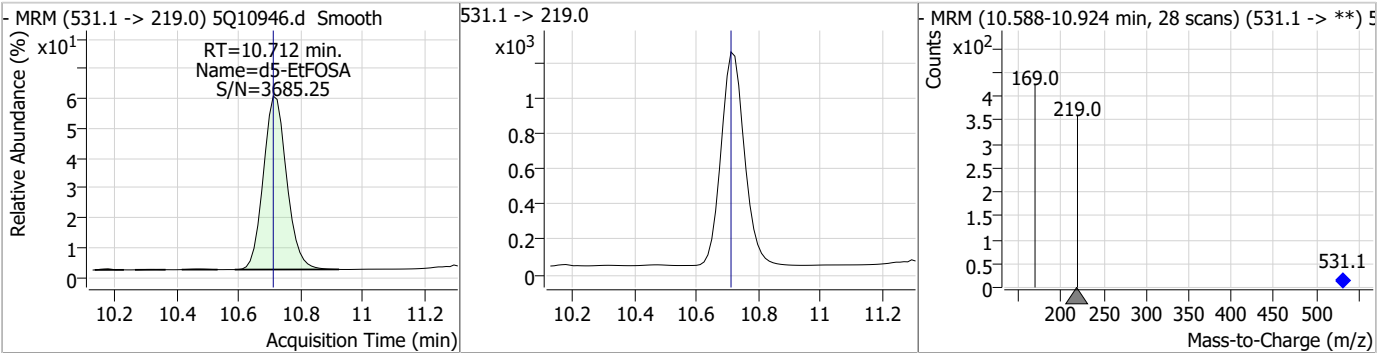
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.78	10.62	0.00	49385				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	120.73	10.64	0.00	221489				

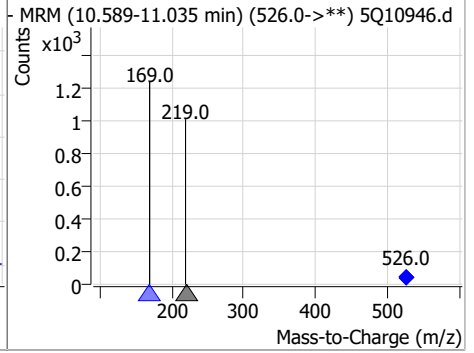
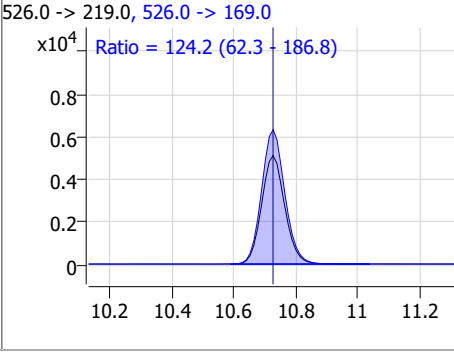
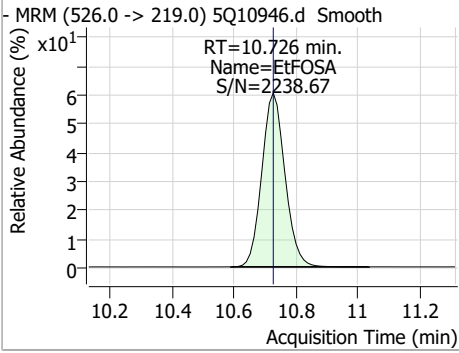


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.57	10.71	0.00	6317				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	11.57	10.73	0.00	26355	526.0 -> 169.0	124.2	62.3	186.8



7.7.7
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Manual Integration Approval Summary

Sample Number: S5Q169-IC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10946.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 21:41 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
4:2 Fluorotelomer sulfonate	757124-72-4		5.00	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
HFPO-DA (GenX)	13252-13-6		5.71	Poor instrument integration
PFEESA	113507-82-7		5.83	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.10	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.32	Split peak

7.7.7.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/21/23 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10947.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 9:56:00 PM
 Sample Name : ic169-7
 Vial : P3-A8
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	38891	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	25484	5.00	µg/L m	0.000
M5-PFHxA	5.335	318.0 -> 273.0	28069	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	29939	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	36326	2.50	µg/L	0.000
M9-PFNA	7.532	472.1 -> 427.0	12631	1.25	µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	8373	1.25	µg/L	0.000
M7-PFUnDA	8.573	570.0 -> 525.1	8771	1.25	µg/L	-0.012
M2-PFDoDA	9.053	615.1 -> 570.0	9513	1.25	µg/L	0.000
M2-PFTeDA	9.886	715.2 -> 670.0	9050	1.25	µg/L	-0.012
M8-FOSA	9.187	506.1 -> 77.8	8167	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	8303	2.50	µg/L	0.000
M3-PFHxS	7.091	402.1 -> 79.9	6018	2.50	µg/L m	0.000
M8-PFOS	8.255	507.1 -> 79.9	8082	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	491	5.00	µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1112	5.00	µg/L	-0.012
M2-8:2FTS	7.828	529.1 -> 80.9	1547	5.00	µg/L	0.000
M3-MeFOSAA	8.088	573.2 -> 419.0	9335	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	54271	10.00	µg/L m	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	11992	5.00	µg/L	0.000
M7-MeFOSE	10.302	623.2 -> 58.9	38936	25.00	µg/L	-0.012
M9-EtFOSE	10.623	639.2 -> 58.9	47161	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5850	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4303	2.50	µg/L	0.000
13C4-PFOS	8.256	502.8 -> 79.9	8395	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	25527	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4606	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	43859	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	12629	1.25	µg/L	0.000
13C5-PFNA	7.533	468.0 -> 423.0	12578	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	35562	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	491	4.38	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.7%			
13C2-6:2FTS	6.699	429.1 -> 80.9	1112	4.45	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.1%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1547	4.42	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.4%			
13C2-PFDoDA	9.053	615.1 -> 570.0	9513	1.21	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.7%			
13C2-PFTeDA	9.886	715.2 -> 670.0	9050	1.22	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%			
13C3-PFBS	5.277	302.1 -> 79.9	8303	2.34	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.7%			
13C3-PFHxS	7.091	402.1 -> 79.9	6415	2.44	µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%			
13C4-PFBA	2.799	216.8 -> 171.9	47876	9.94	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%			
13C4-PFHpA	6.280	367.1 -> 322.0	29939	2.53	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%			
13C5-PFHxA	5.335	318.0 -> 273.0	31298	2.51	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%			
13C5-PFPeA	4.150	268.3 -> 223.0	31879	4.93	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%			
13C6-PFDA	8.066	519.1 -> 474.1	8373	1.28	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%			
13C7-PFUnDA	8.573	570.0 -> 525.1	8771	1.23	µg/L	-0.012	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.4%			
13C8-FOSA	9.187	506.1 -> 77.8	8167	2.48	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%			
13C8-PFOA	6.950	421.1 -> 376.0	36326	2.46	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%			
13C8-PFOS	8.255	507.1 -> 79.9	8082	2.44	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%			
13C9-PFNA	7.532	472.1 -> 427.0	12631	1.23	µg/L	0.000	
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.3%			
d3-MeFOSAA	8.088	573.2 -> 419.0	9335	5.02	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%			
13C3-HFPO-DA	5.714	286.9 -> 168.9	62189	9.42	µg/L	0.000	
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.2%			
d3-MeFOSA	10.416	515.0 -> 219.0	4303	2.54	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%			
d5-EtFOSAA	8.310	589.2 -> 419.0	11992	4.36	µg/L	0.000	
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.2%			
d7-MeFOSE	10.302	623.2 -> 58.9	38936	25.20	µg/L	-0.012	
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.8%			
d9-EtFOSE	10.623	639.2 -> 58.9	47161	24.91	µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.6%			
d5-EtFOSA	10.712	531.1 -> 219.0	5850	2.51	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%			
Target Compounds						QValue	
4:2FTS	4.997	327.1 -> 307.0	58301	94.30	µg/L	m	97
		327.1 -> 80.9	30664				
6:2FTS	6.700	427.1 -> 407.0	91829	98.84	µg/L		97
		427.1 -> 80.9	36906				
8:2FTS	7.829	527.1 -> 507.0	60278	82.22	µg/L		99
		527.1 -> 80.8	30080				
EtFOSAA	8.311	584.2 -> 419.1	42987	27.39	µg/L	m	99
		584.2 -> 526.0	17278				
FOSA	9.190	498.1 -> 77.9	77417	25.95	µg/L		98
		498.1 -> 478.0	2304				
MeFOSAA	8.089	570.1 -> 419.0	41317	26.16	µg/L	m	99
		570.1 -> 483.0	9125				
PFBA	2.807	212.8 -> 168.9	162011	105.23	µg/L	m	100
PFBS	5.278	298.7 -> 79.9	52356	19.19	µg/L	m	99
		298.7 -> 98.8	21696				
PFDA	8.067	512.9 -> 469.0	213017	24.29	µg/L		98
		512.9 -> 219.0	37470				
PFDODA	9.054	613.1 -> 569.0	163531	25.32	µg/L		99
		613.1 -> 319.0	26826				
PFDS	9.232	599.0 -> 79.9	45043	25.25	µg/L		100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	23379			
PFHpA	6.281	363.1 -> 319.0	320595	25.32	µg/L	99
		363.1 -> 169.0	71385			
PFHpS	7.699	449.0 -> 79.9	55979	24.37	µg/L	94
		449.0 -> 98.9	31461			
PFHxA	5.337	313.0 -> 269.0	205561	24.98	µg/L	m 100
		313.0 -> 118.9	9285			
PFHxS	7.092	398.7 -> 79.9	50447	24.83	µg/L	m 83
		398.7 -> 98.9	29230			
PFNA	7.533	463.0 -> 419.0	187537	25.61	µg/L	97
		463.0 -> 219.0	41478			
PFNS	8.773	548.8 -> 79.9	43680	24.57	µg/L	95
		548.8 -> 98.9	25079			
PFOA	6.951	413.0 -> 369.0	350523	25.06	µg/L	97
		413.0 -> 169.0	84399			
PFOS	8.257	498.9 -> 79.9	78987	24.22	µg/L	m 90
		498.9 -> 98.8	44193			
PFPeA	4.152	263.0 -> 219.0	297397	53.41	µg/L	m 100
PFPeS	6.357	349.1 -> 79.9	41964	23.92	µg/L	m 99
		349.1 -> 98.9	21735			
PFTeDA	9.887	713.1 -> 669.0	175174	25.18	µg/L	98
		713.1 -> 168.9	23201			
PFTrDA	9.489	663.0 -> 619.0	212456	24.99	µg/L	100
		663.0 -> 168.9	35272			
PFUnDA	8.573	563.1 -> 519.0	165523	25.31	µg/L	100
		563.1 -> 269.1	33953			
11Cl-PF3OUdS	9.542	630.9 -> 450.9	637071	106.66	µg/L	99
		632.9 -> 452.9	200323			
9Cl-PF3ONS	8.626	530.8 -> 351.0	660856	103.53	µg/L	99
		532.8 -> 353.0	209925			
ADONA	6.542	376.9 -> 250.9	1536400	103.43	µg/L	100
		376.9 -> 84.8	458793			
HFPO-DA	5.715	284.9 -> 168.9	479781	107.73	µg/L	m 100
		284.9 -> 184.9	43998			
3:3FTCA	3.603	241.0 -> 177.0	56666	137.91	µg/L	m 98
		241.0 -> 117.0	6839			
5:3FTCA	5.918	341.0 -> 237.1	1080305	634.63	µg/L	98
		341.0 -> 217.0	744638			
7:3FTCA	7.335	441.0 -> 316.9	435960	639.69	µg/L	99
		441.0 -> 336.9	942093			
EtFOSA	10.726	526.0 -> 219.0	52857	25.05	µg/L	98
		526.0 -> 169.0	67046			
EtFOSE	10.636	630.0 -> 58.9	428094	244.35	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	42603	25.08	µg/L	99
		511.9 -> 169.0	54926			
MeFOSE	10.327	616.1 -> 58.9	404620	243.29	µg/L	100
PFDoDS	10.050	699.1 -> 79.9	34729	24.72	µg/L	99
		699.1 -> 98.8	20660			
NFDHA	5.218	295.0 -> 201.0	32241	49.72	µg/L	m 97
		295.0 -> 84.9	9244			
PFMBA	4.553	279.0 -> 85.1	210067	51.20	µg/L	m 100
PFMPA	3.328	229.0 -> 84.9	151595	50.26	µg/L	m 100
PFEESA	5.821	314.8 -> 134.9	344341	39.76	µg/L	m 100
		314.8 -> 82.9	10516			

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

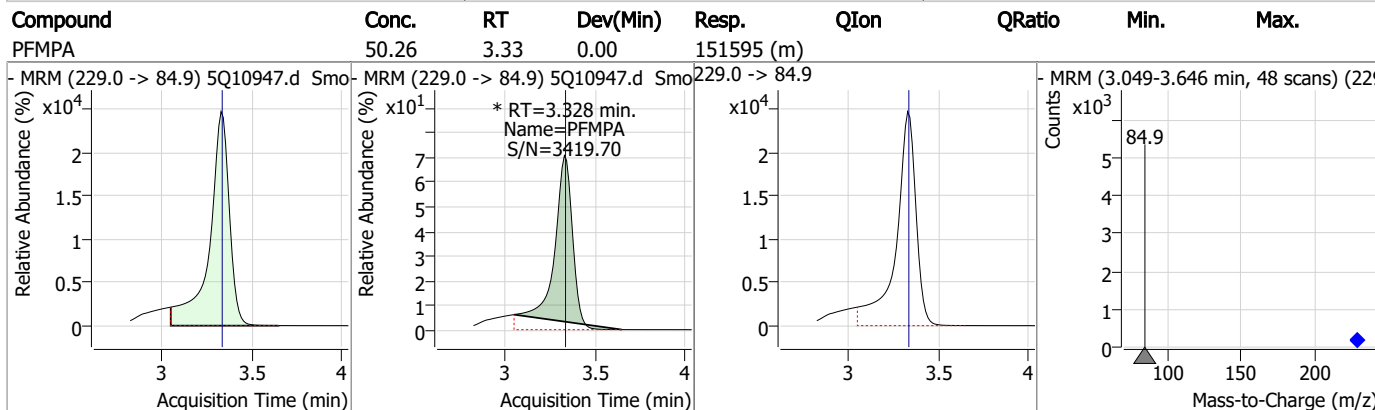
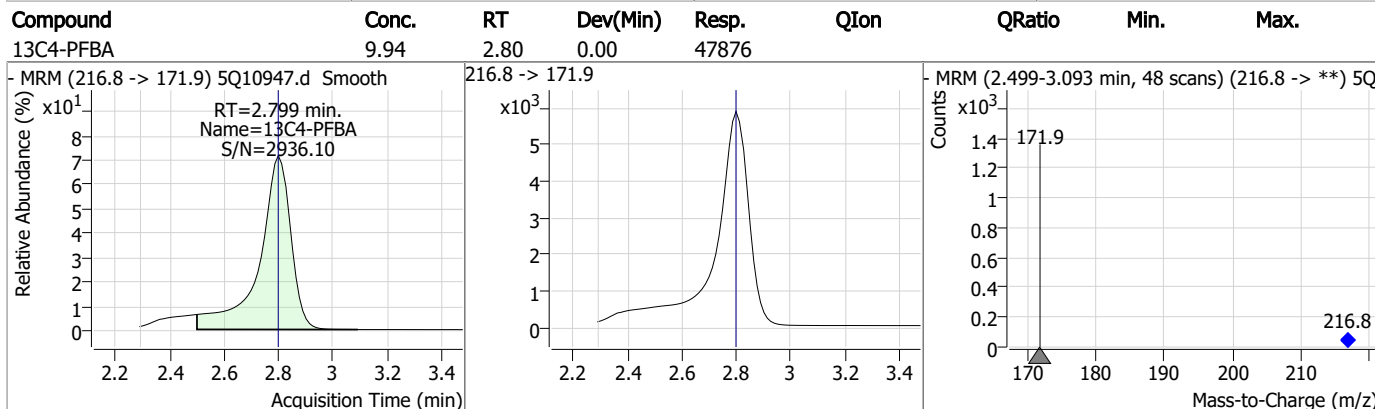
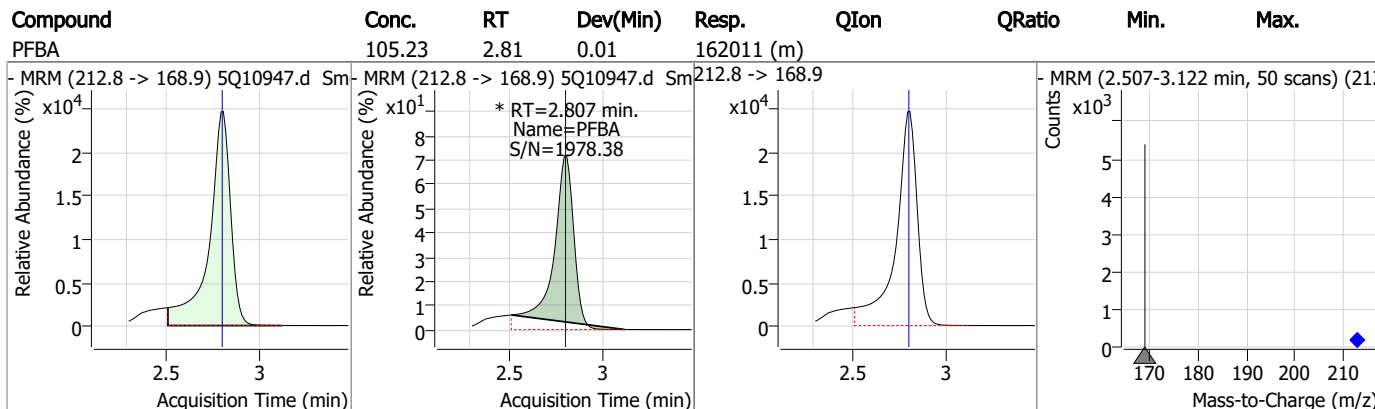
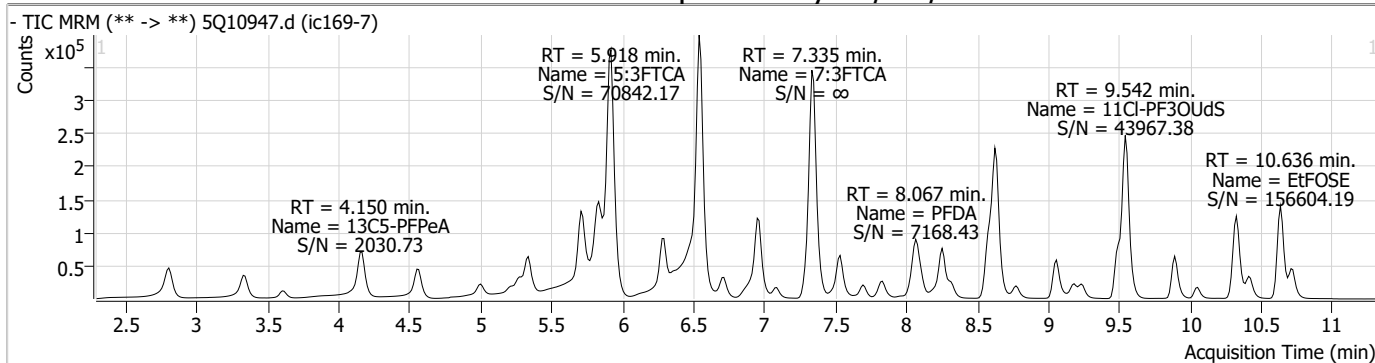
Perfluorinated Compounds by LC/MS/MS

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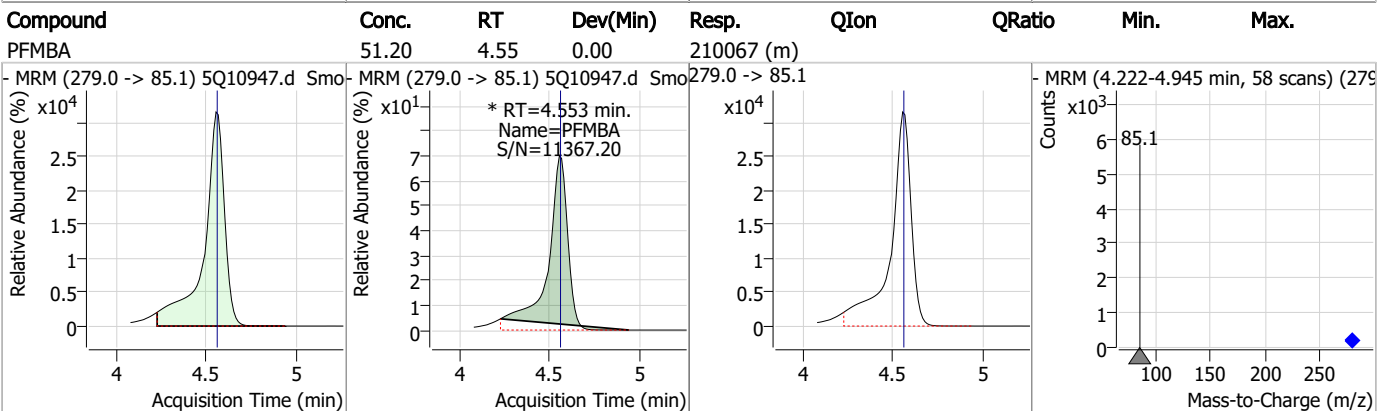
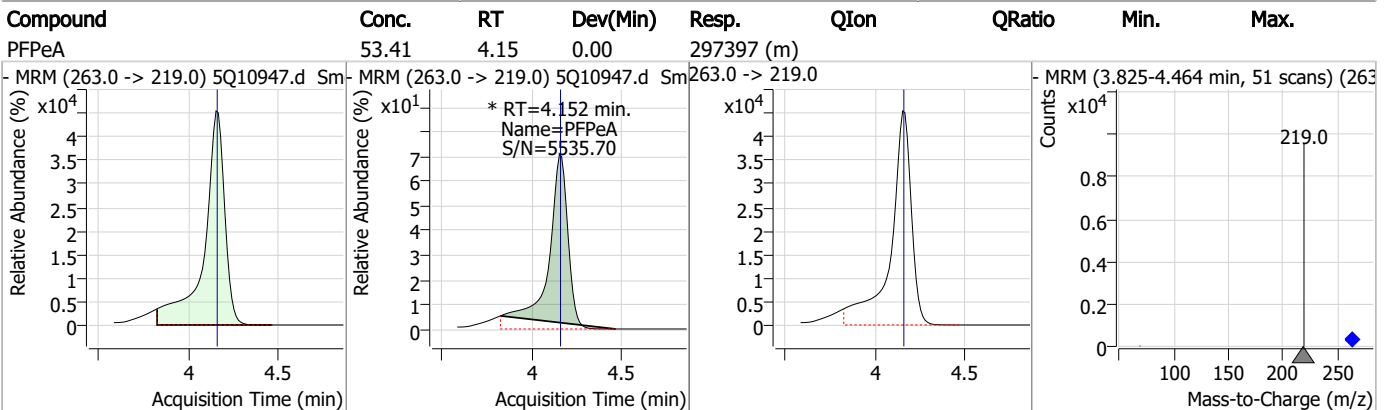
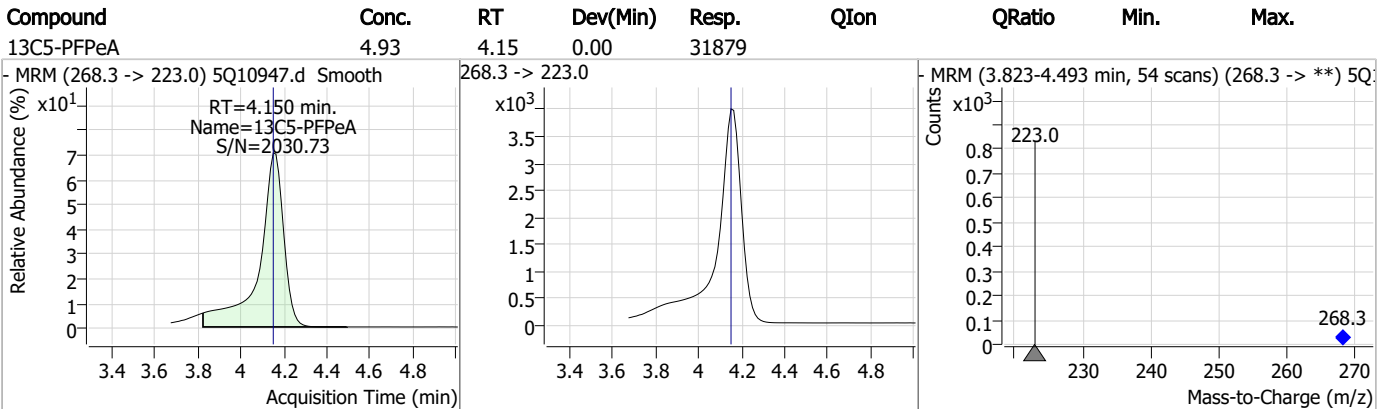
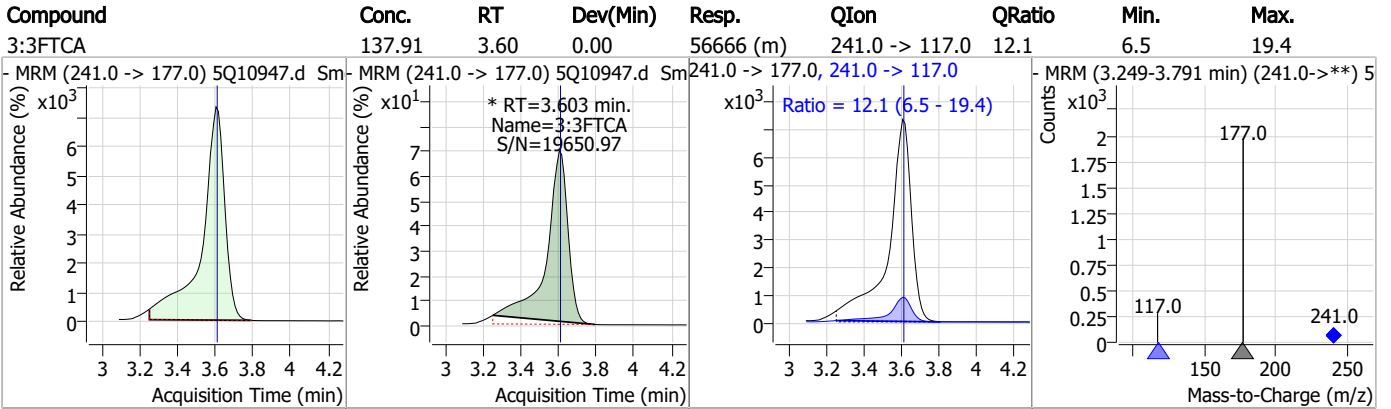


Perfluorinated Compounds by LC/MS/MS

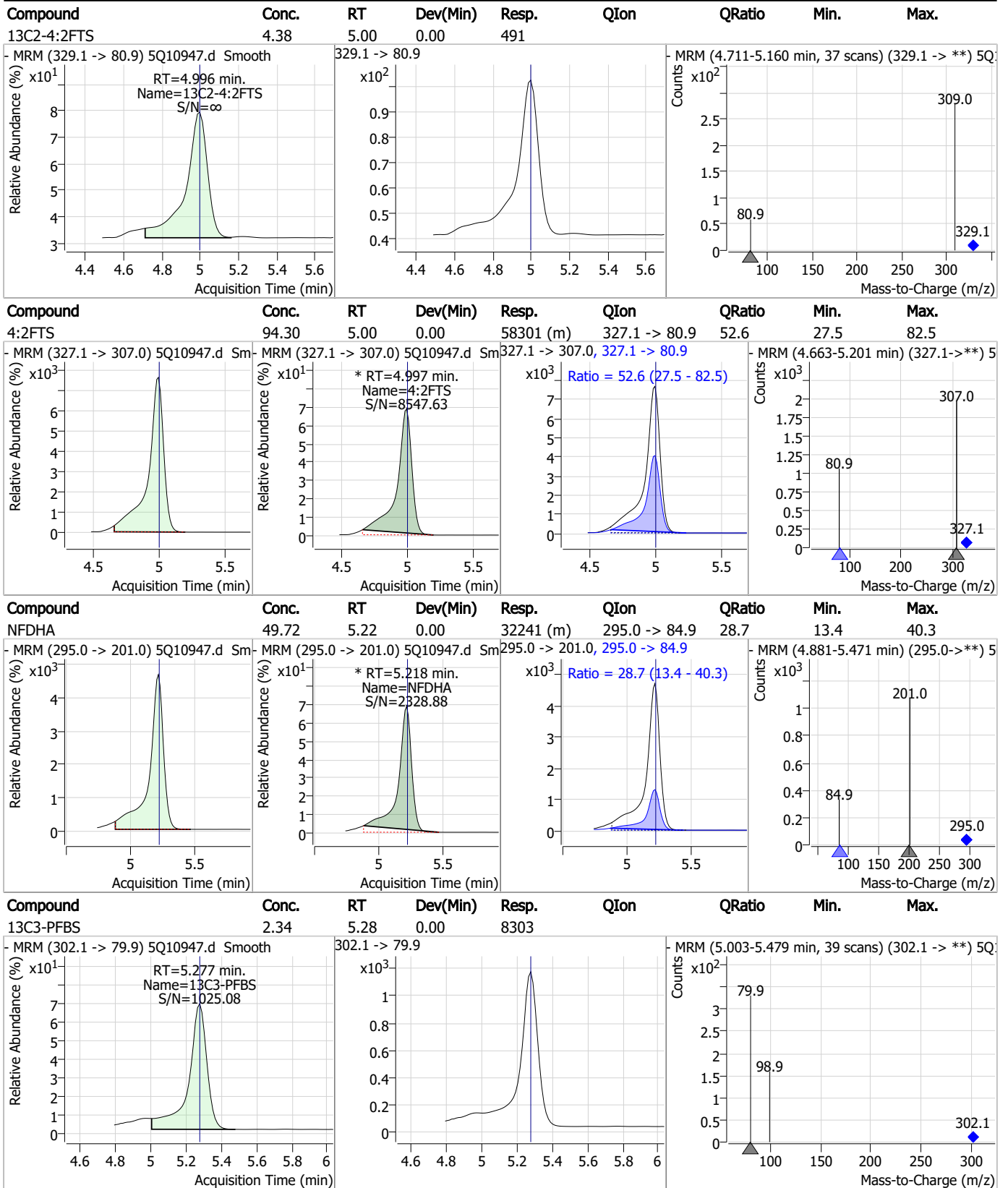


7.7.8
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

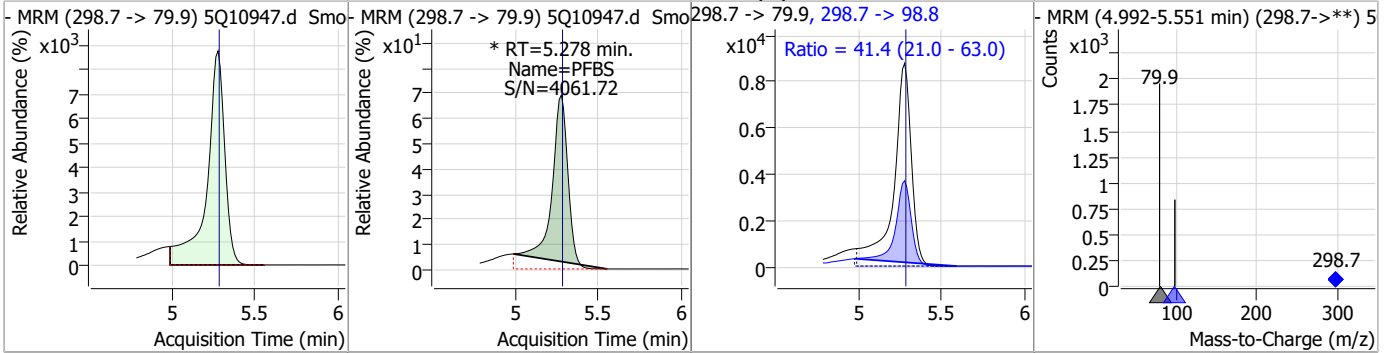


7.7.8
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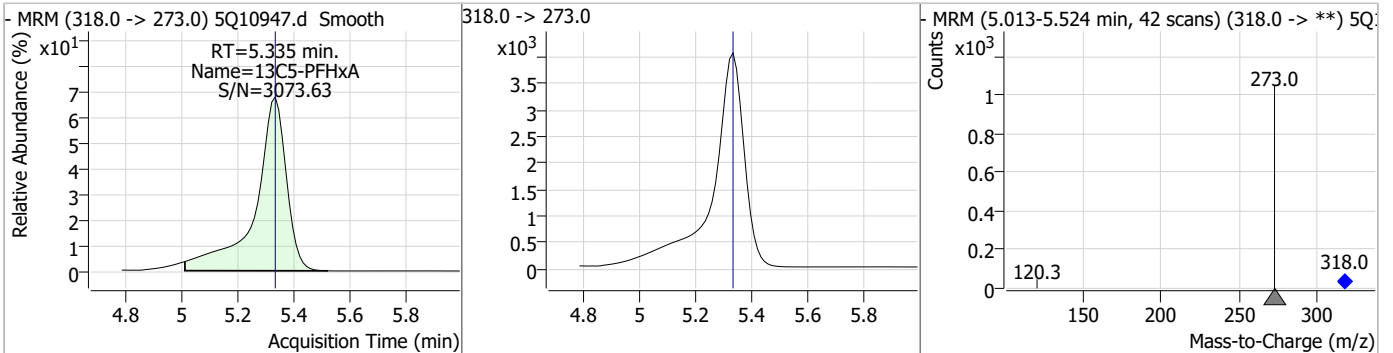


Perfluorinated Compounds by LC/MS/MS

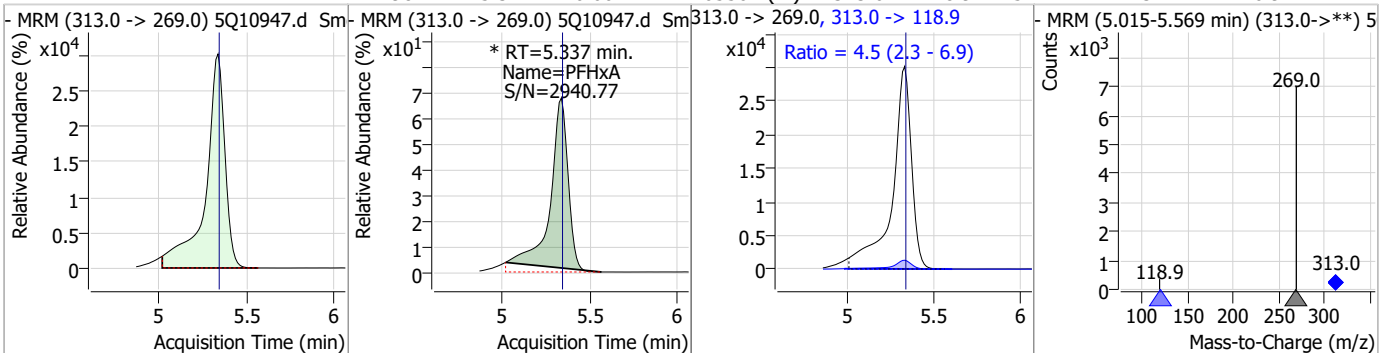
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.19	5.28	0.00	52356 (m)	298.7 -> 98.8	41.4	21.0	63.0



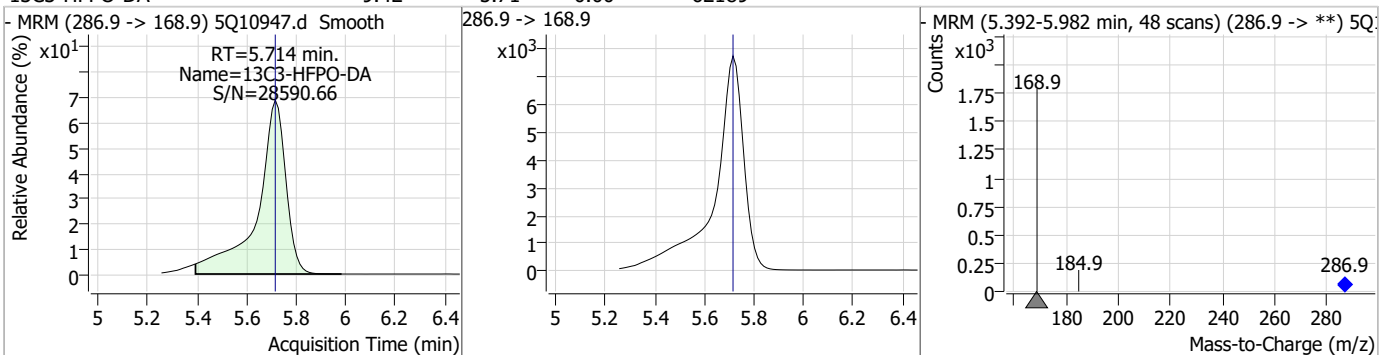
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.34	0.00	31298				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	24.98	5.34	0.00	205561 (m)	313.0 -> 118.9	4.5	2.3	6.9

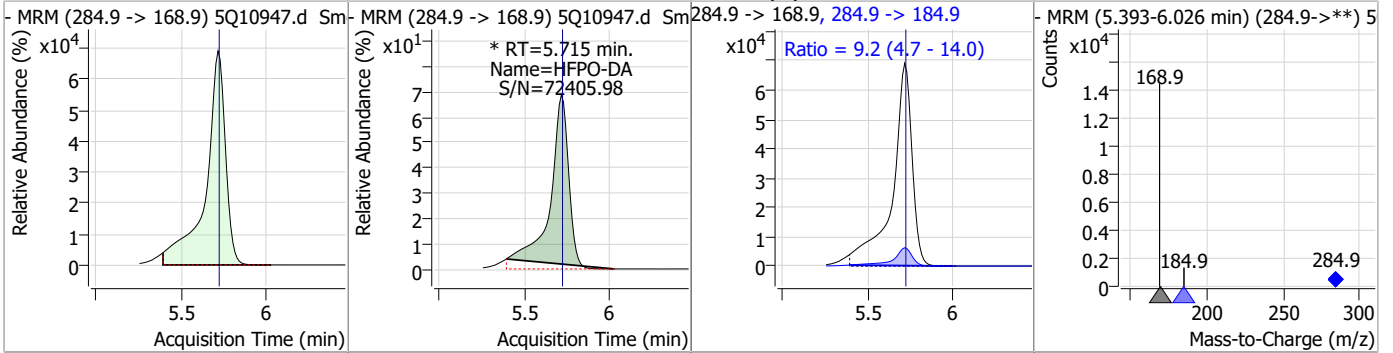


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.42	5.71	0.00	62189				

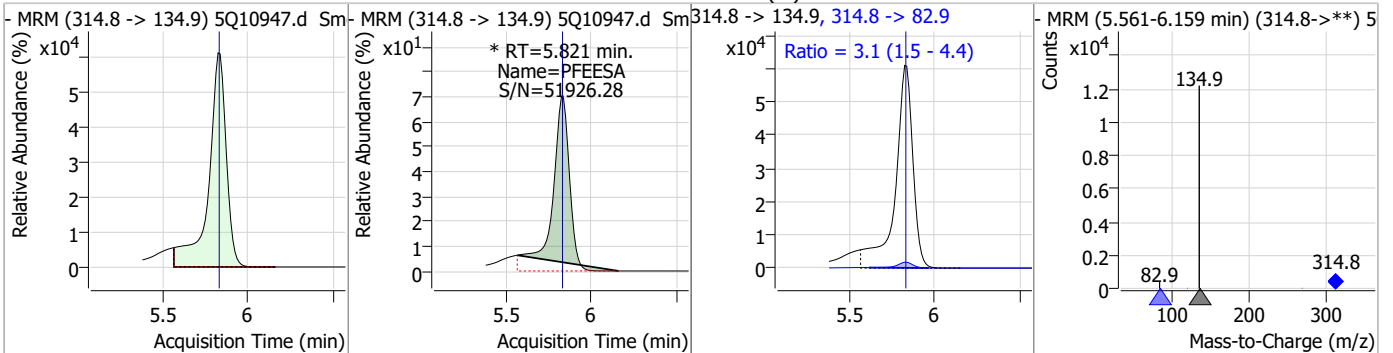


Perfluorinated Compounds by LC/MS/MS

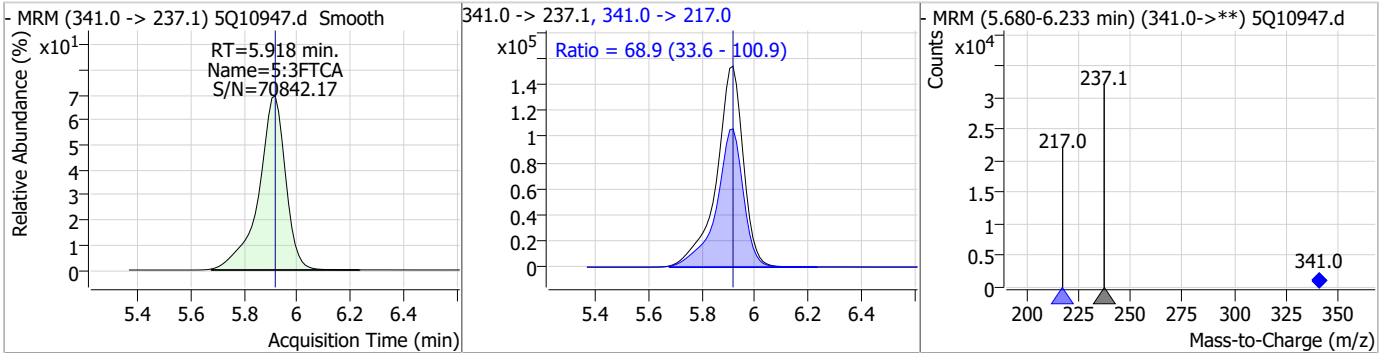
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	107.73	5.72	0.00	479781 (m)	284.9 -> 184.9	9.2	4.7	14.0



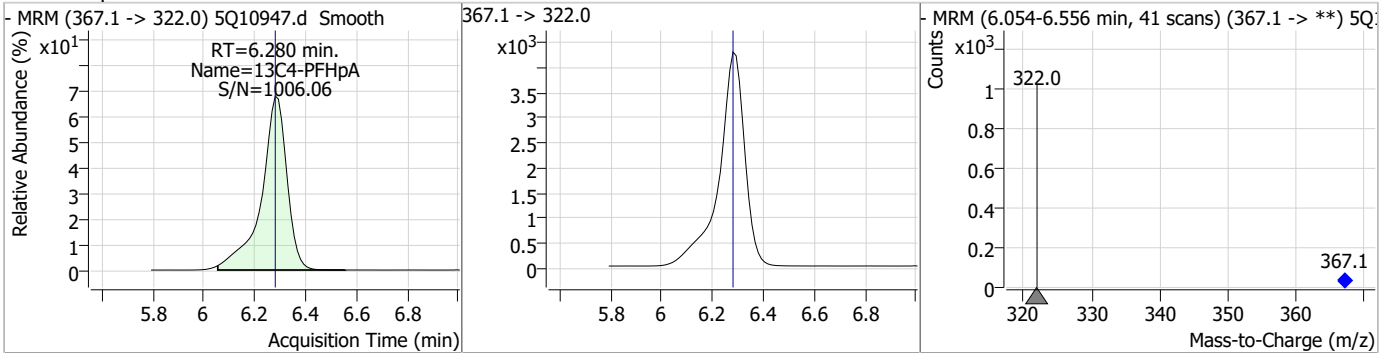
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	39.76	5.82	0.00	344341 (m)	314.8 -> 82.9	3.1	1.5	4.4



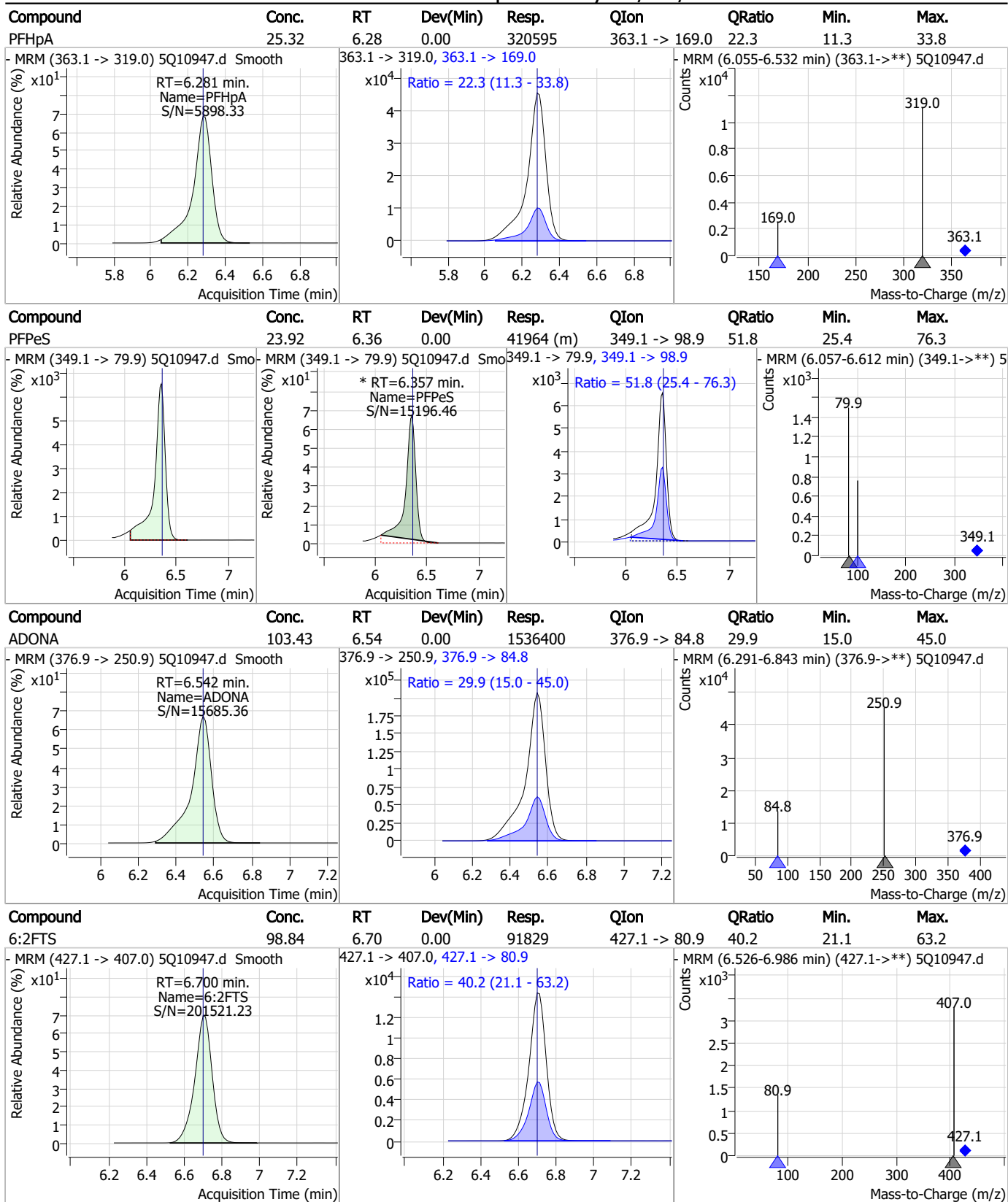
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	634.63	5.92	0.00	1080305	341.0 -> 217.0	68.9	33.6	100.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.53	6.28	0.00	29939				

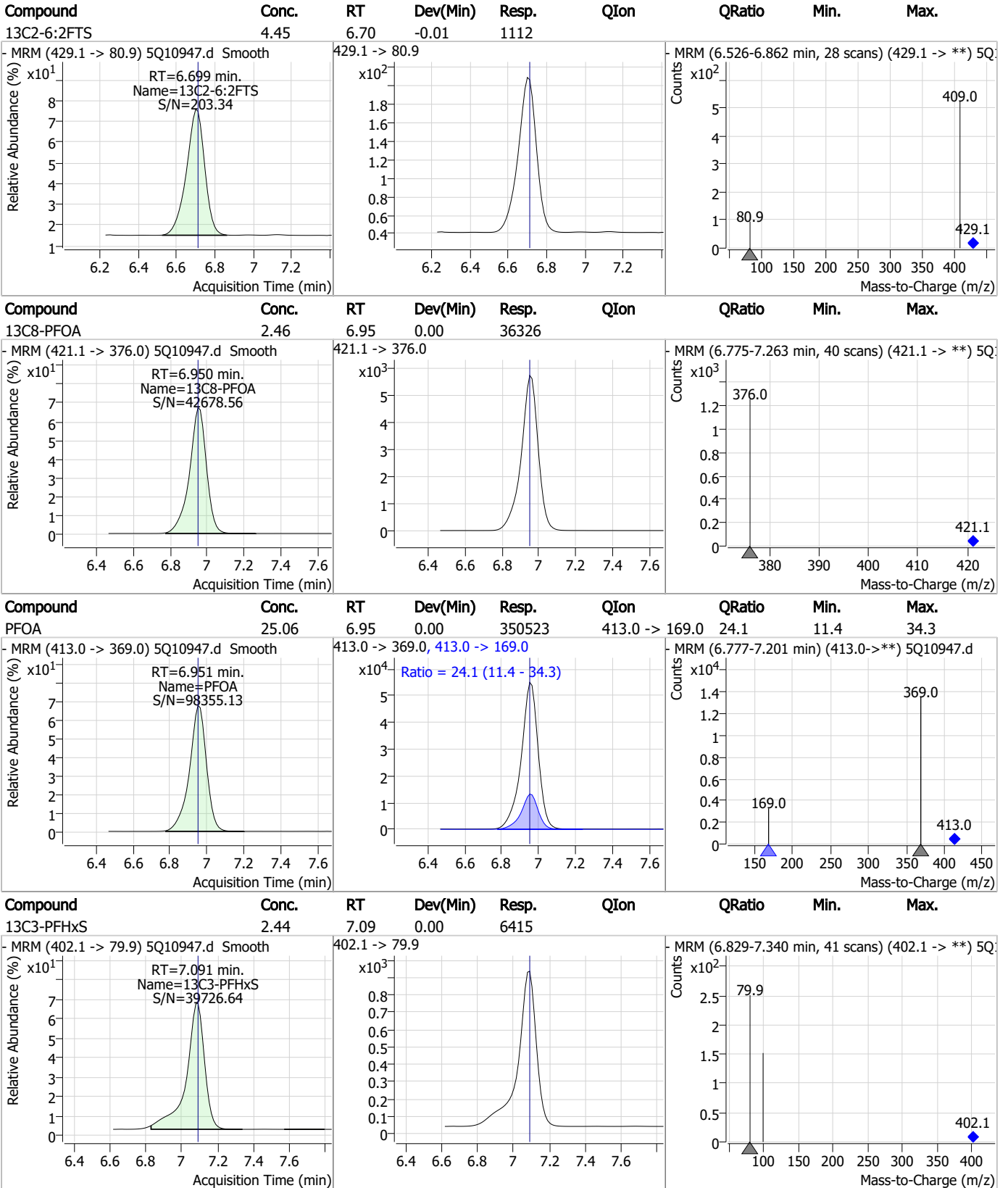


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

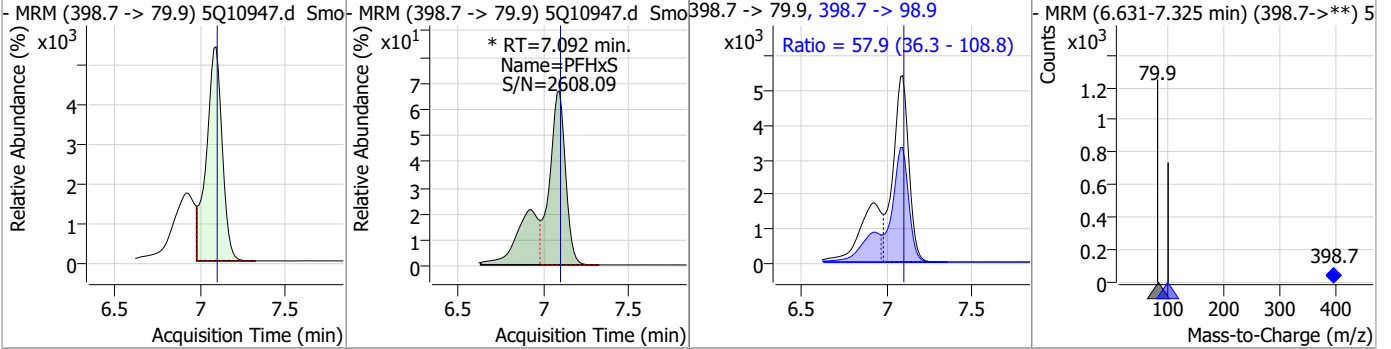


7.7.8

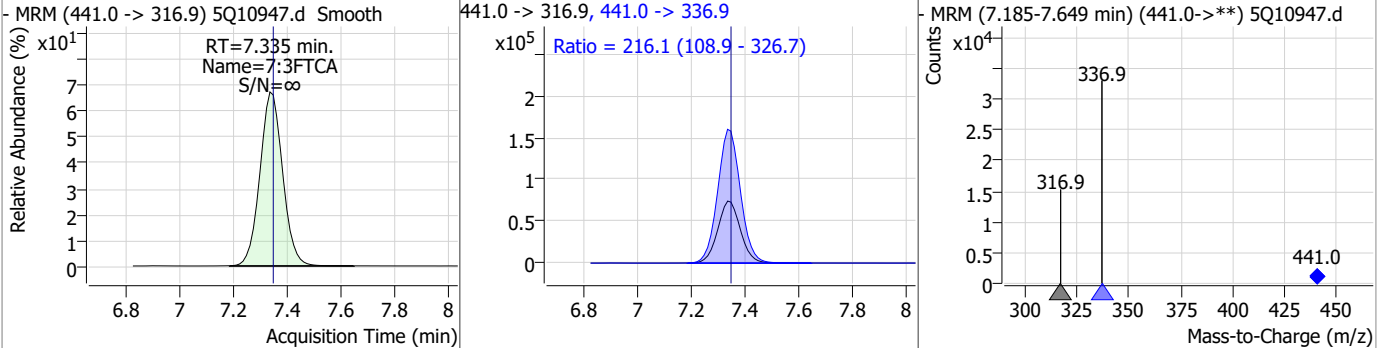
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Perfluorinated Compounds by LC/MS/MS

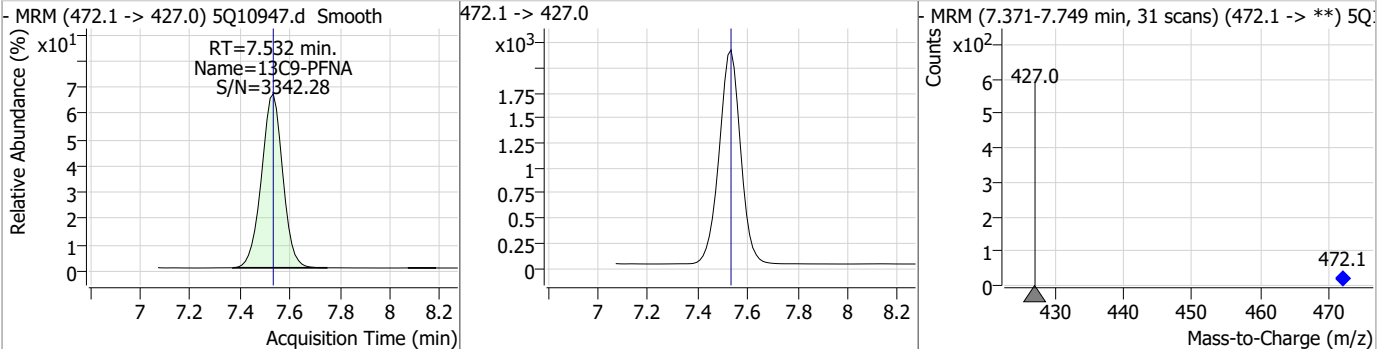
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	24.83	7.09	0.00	50447 (m)	398.7 -> 98.9	57.9	36.3	108.8



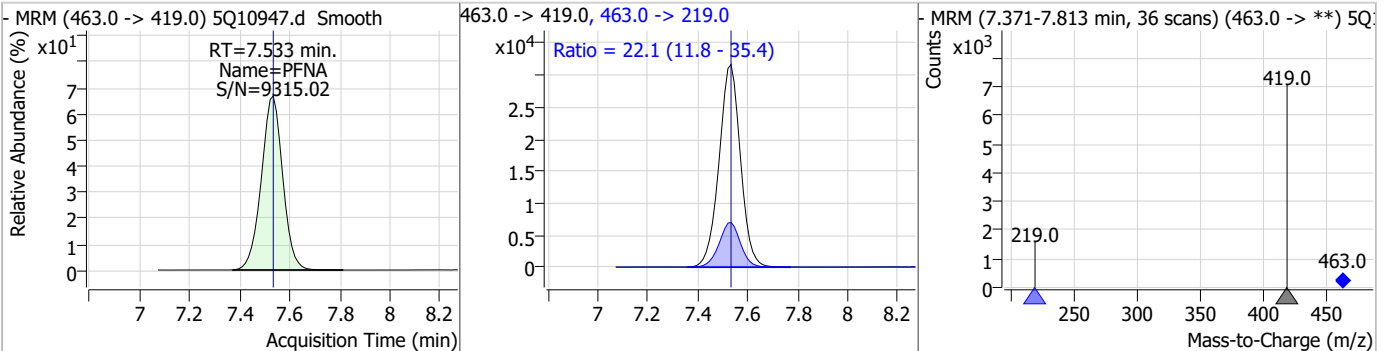
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	639.69	7.34	-0.01	435960	441.0 -> 336.9	216.1	108.9	326.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.23	7.53	0.00	12631				

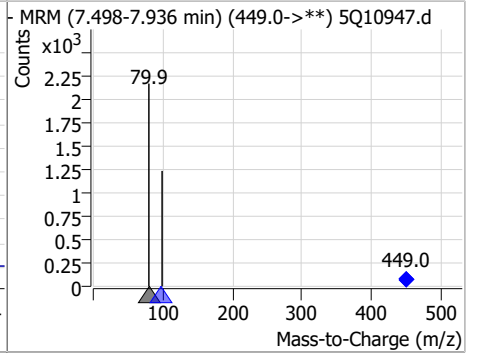
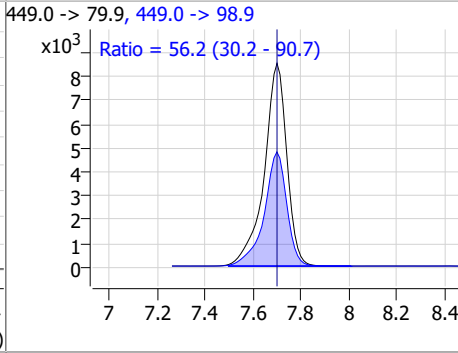
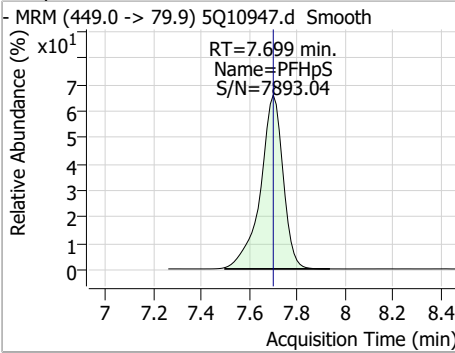


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	25.61	7.53	0.00	187537	463.0 -> 219.0	22.1	11.8	35.4

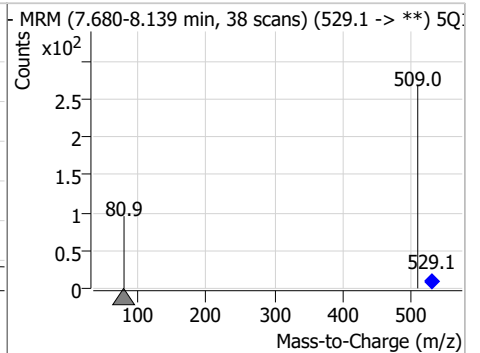
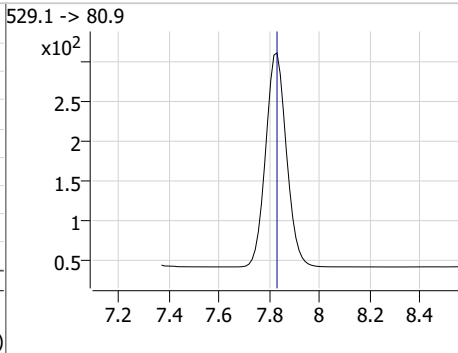
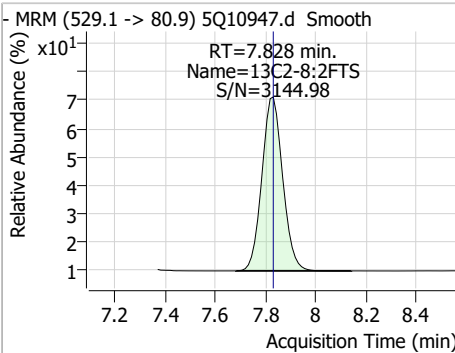


Perfluorinated Compounds by LC/MS/MS

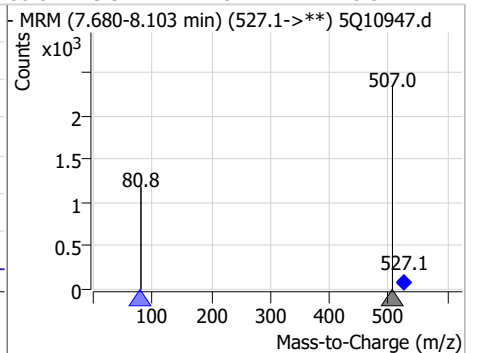
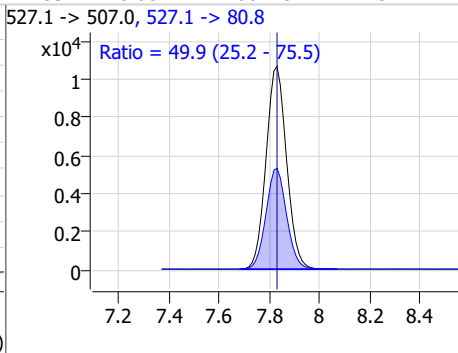
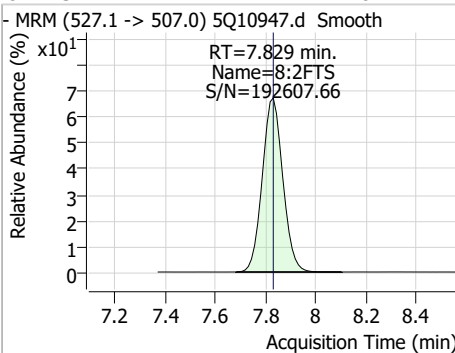
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	24.37	7.70	0.00	55979	449.0 -> 98.9	56.2	30.2	90.7



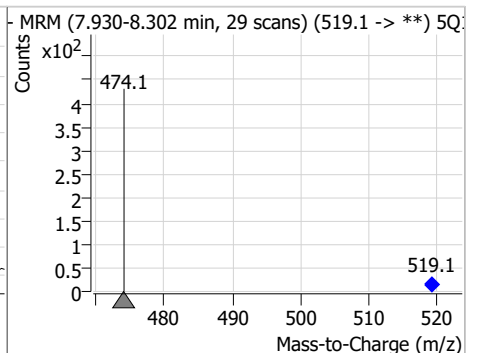
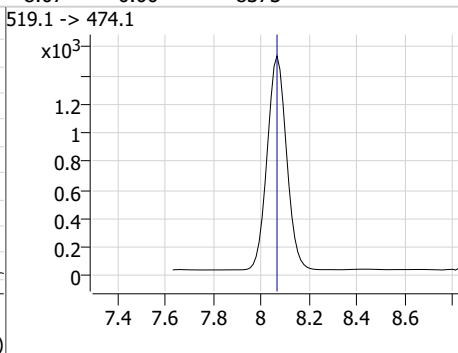
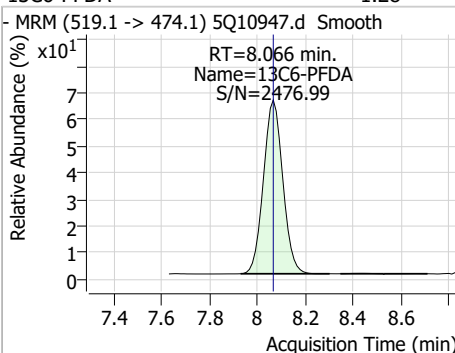
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	4.42	7.83	0.00	1547	529.1 -> 80.9	49.9	25.2	75.5



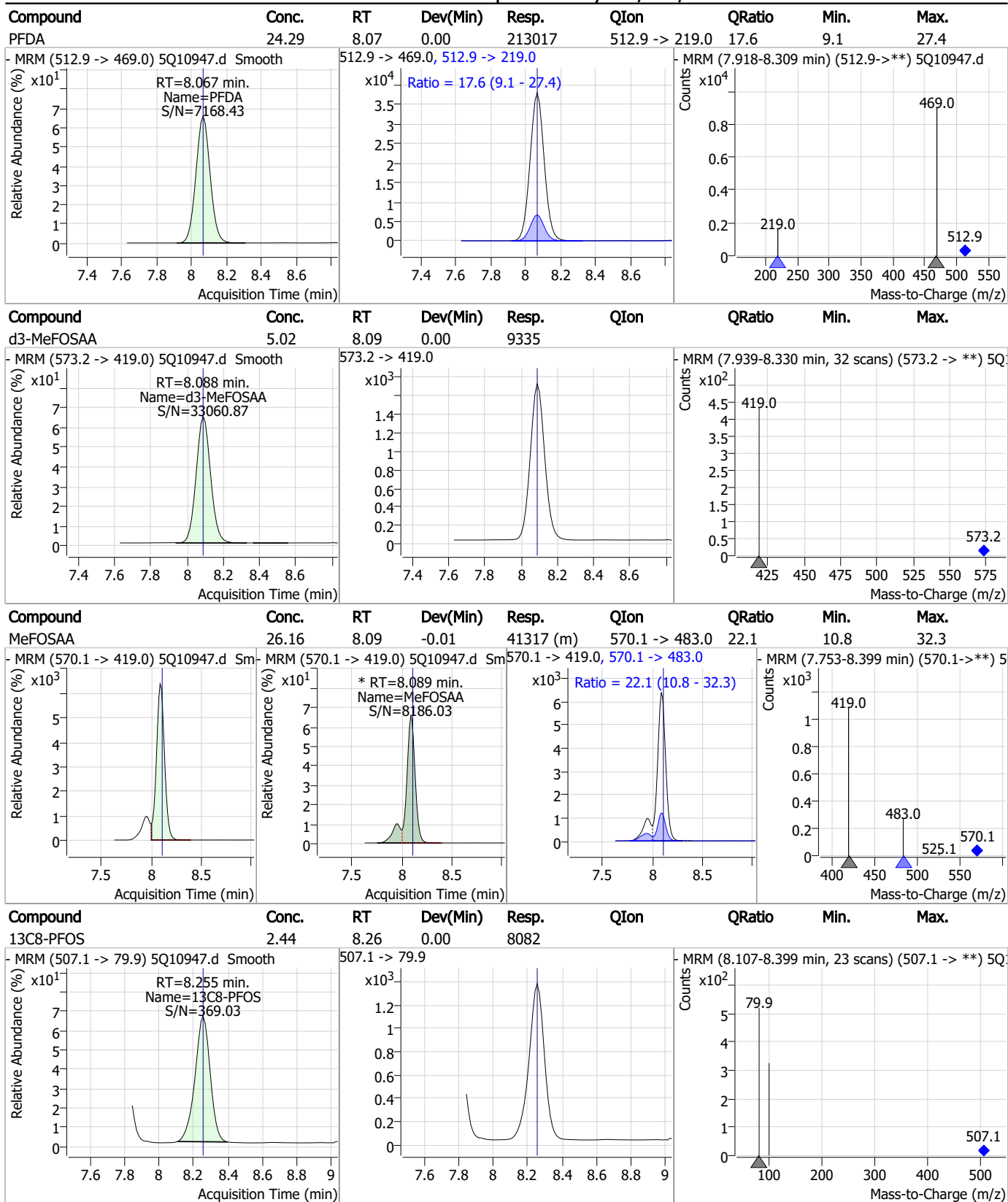
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	82.22	7.83	0.00	60278	527.1 -> 80.8	49.9	25.2	75.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	1.28	8.07	0.00	8373	519.1 -> 474.1	49.9	25.2	75.5

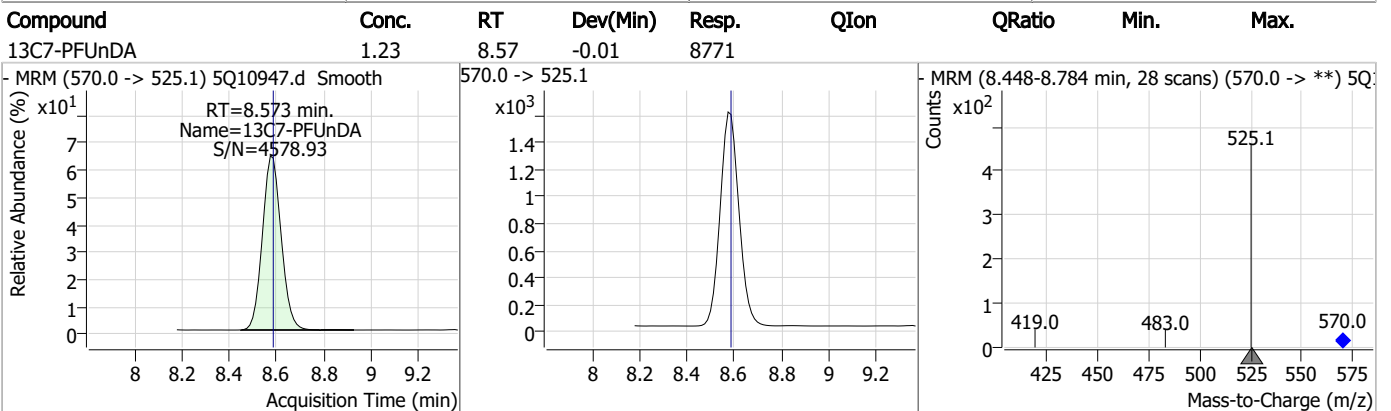
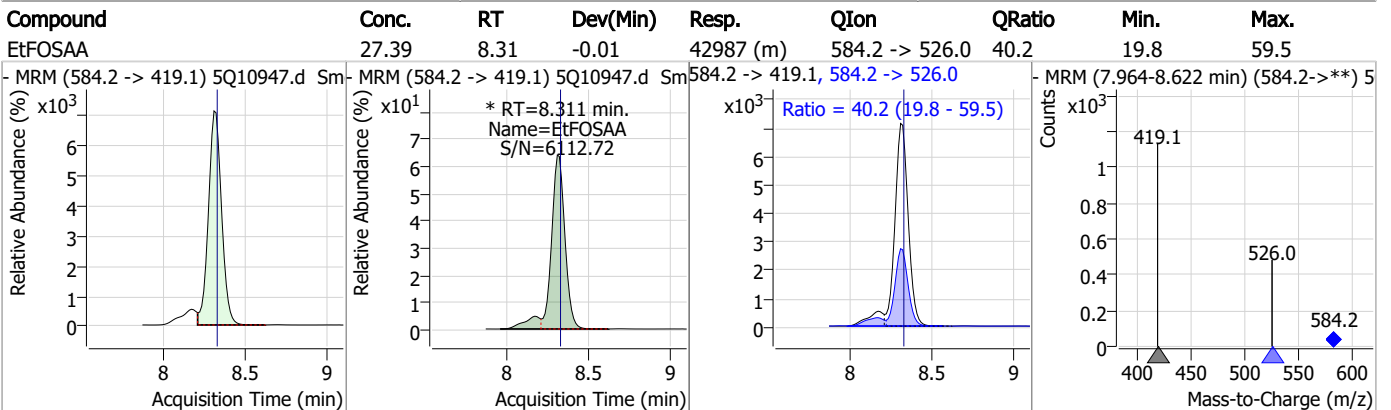
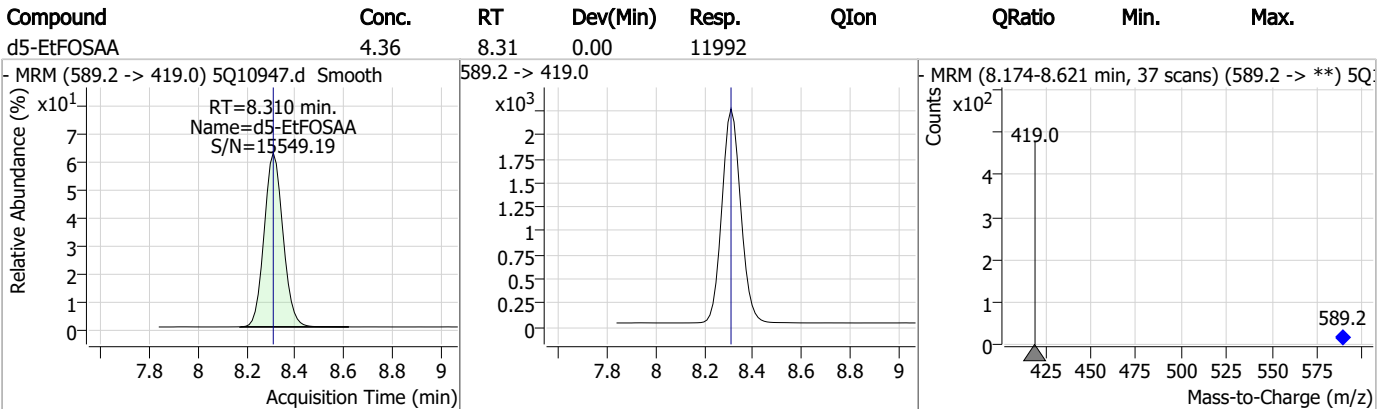
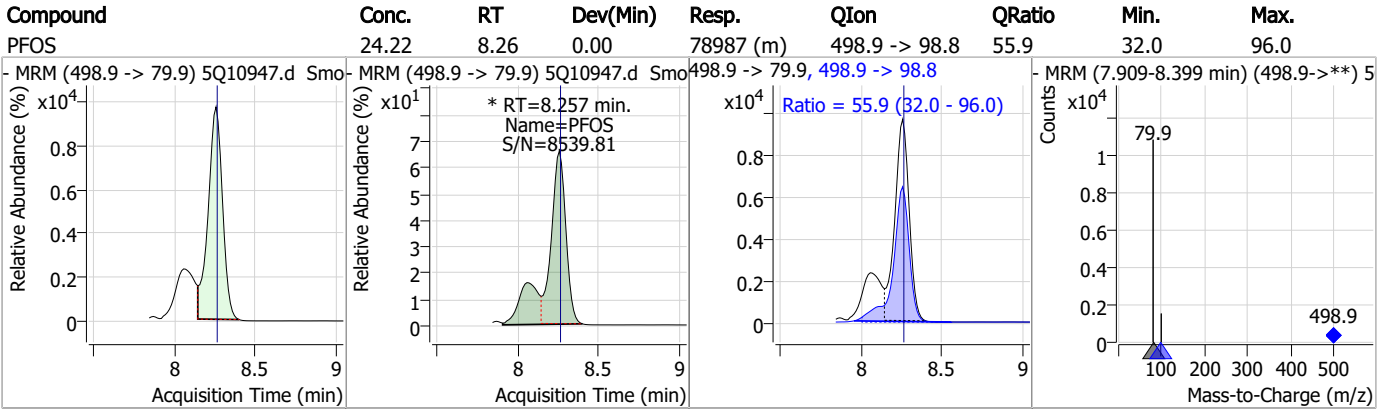


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



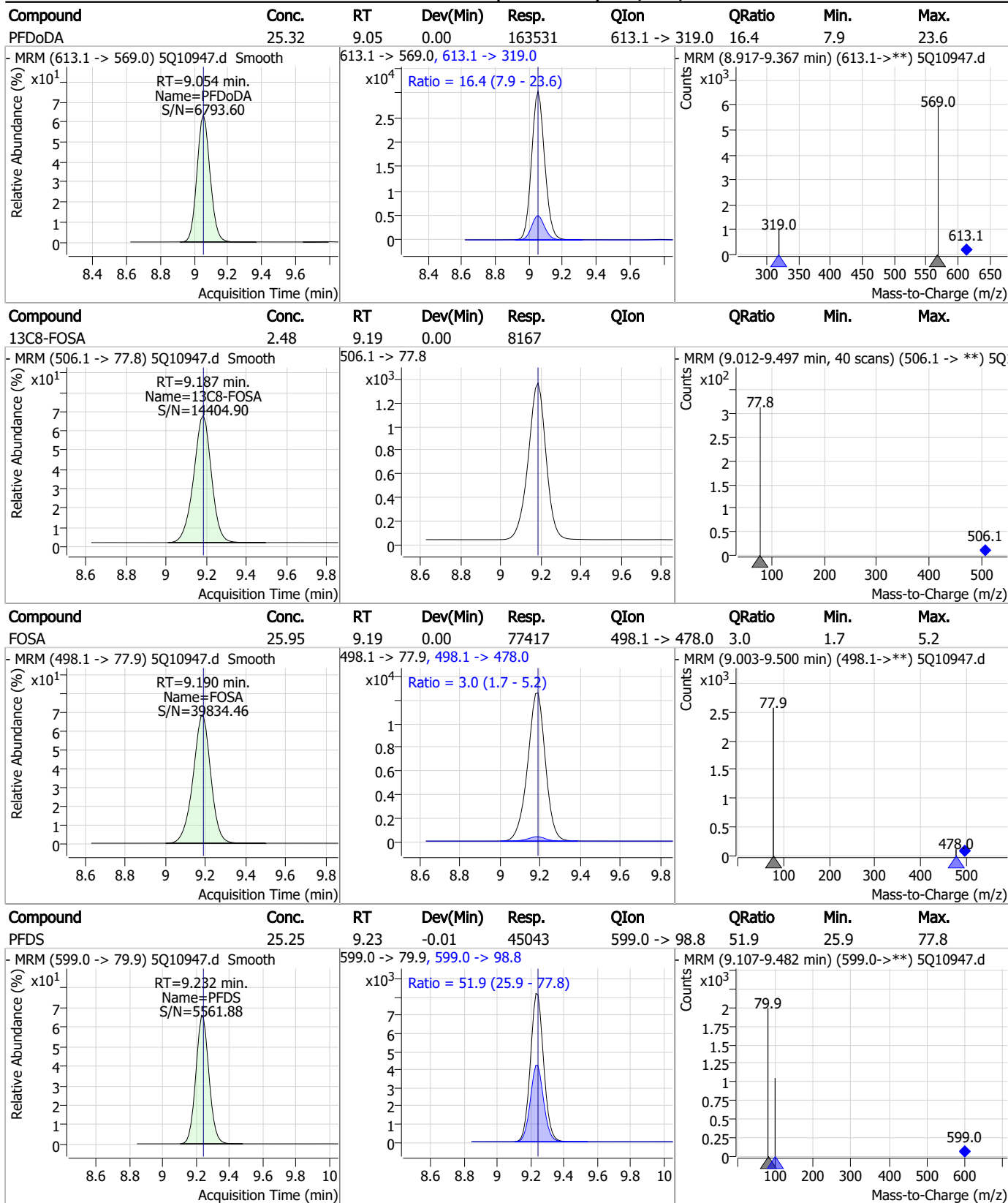
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	25.31	8.57	-0.01	165523	563.1 -> 269.1	20.5	10.1	30.4
9CI-PF3ONS	103.53	8.63	-0.01	660856	532.8 -> 353.0	31.8	15.7	47.0
PFNS	24.57	8.77	0.00	43680	548.8 -> 98.9	57.4	30.5	91.4
13C2-PFDoDA	1.21	9.05	0.00	9513	615.1 -> 570.0			

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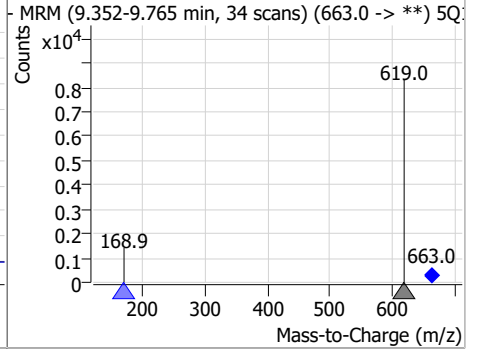
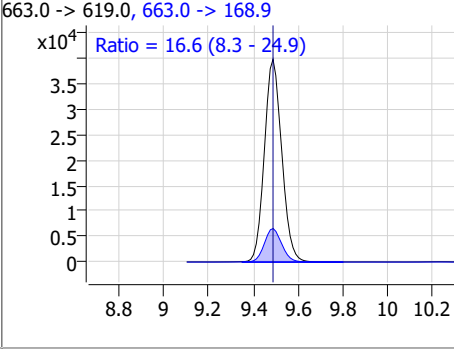
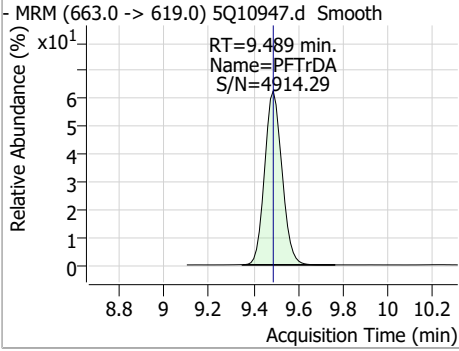
Perfluorinated Compounds by LC/MS/MS



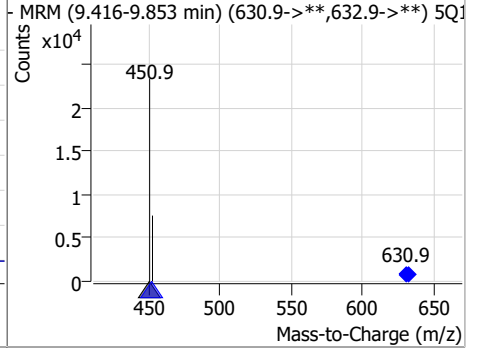
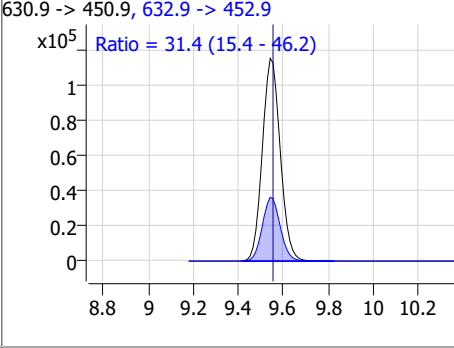
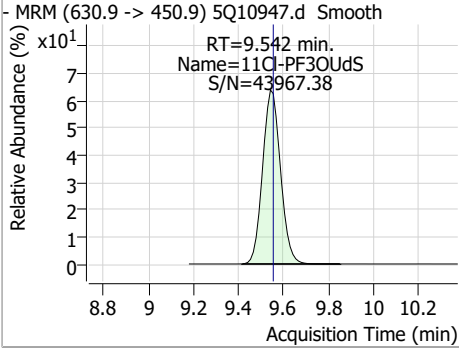
7.7.8
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Perfluorinated Compounds by LC/MS/MS

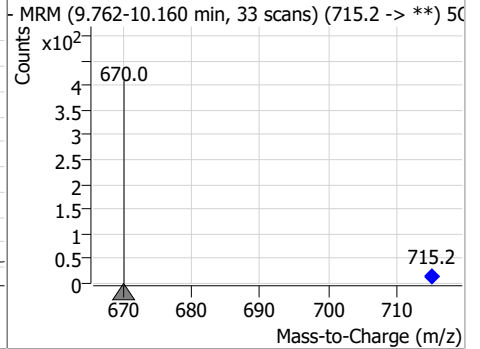
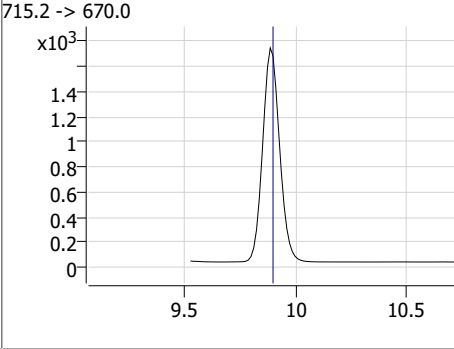
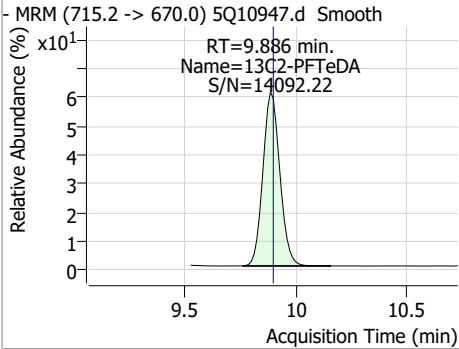
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	24.99	9.49	0.00	212456	663.0 -> 168.9	16.6	8.3	24.9



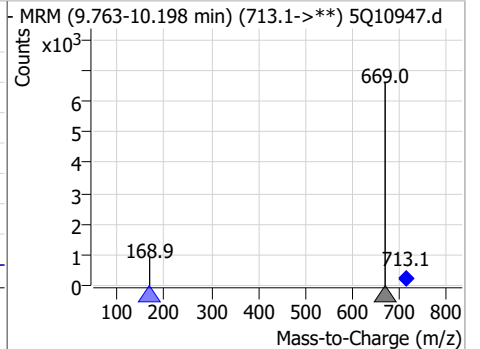
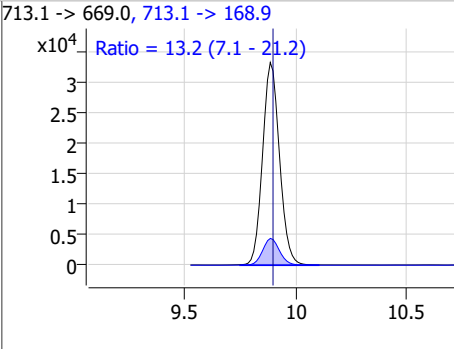
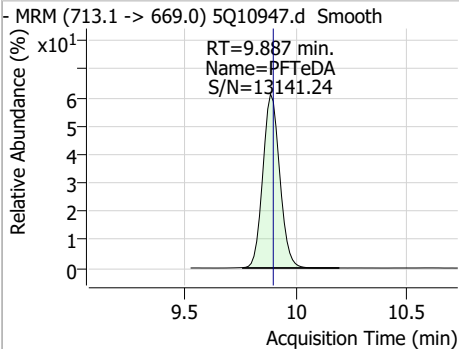
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	106.66	9.54	-0.01	637071	632.9 -> 452.9	31.4	15.4	46.2



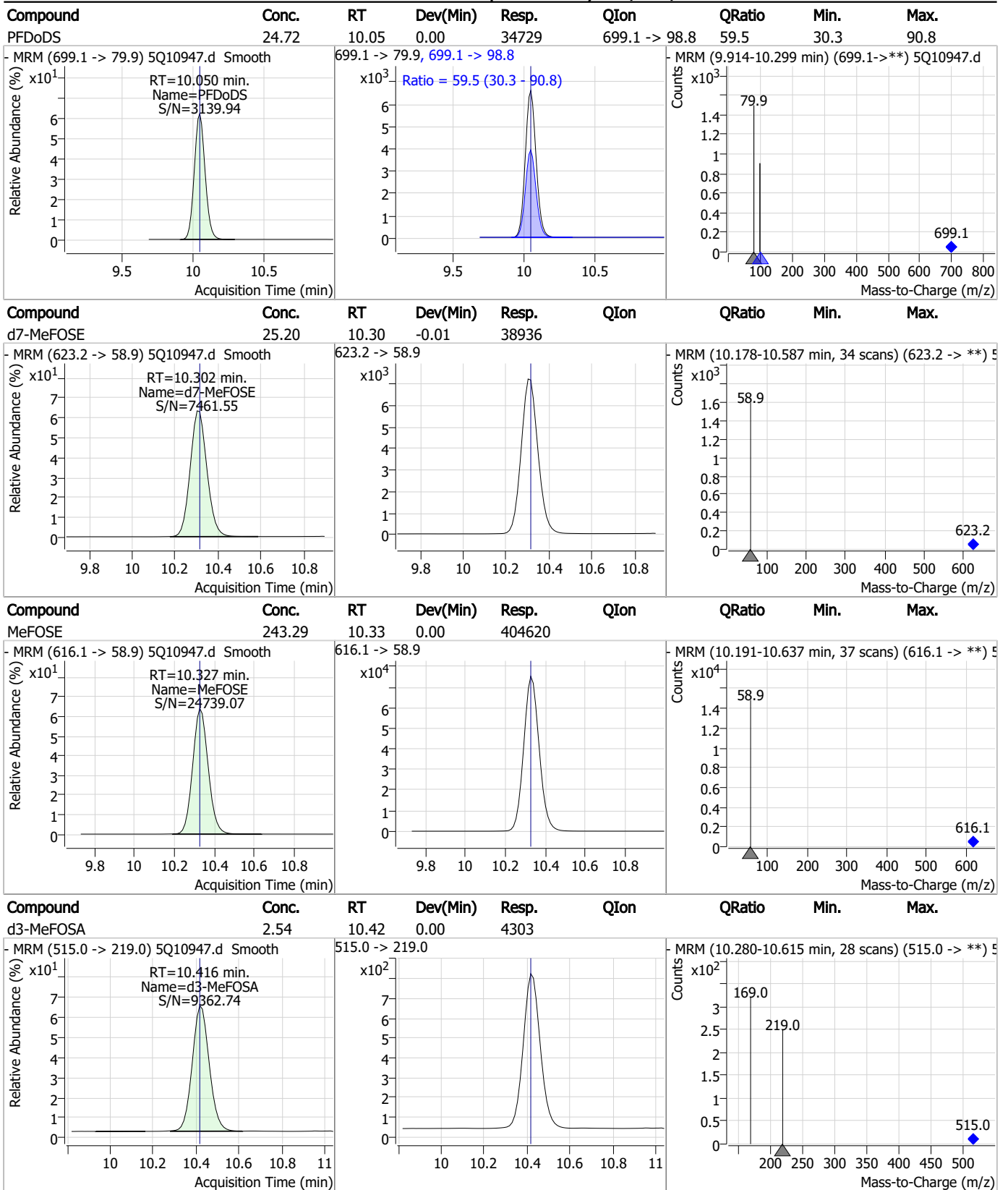
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.22	9.89	-0.01	9050	715.2 -> 670.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	25.18	9.89	-0.01	175174	713.1 -> 168.9	13.2	7.1	21.2



Perfluorinated Compounds by LC/MS/MS



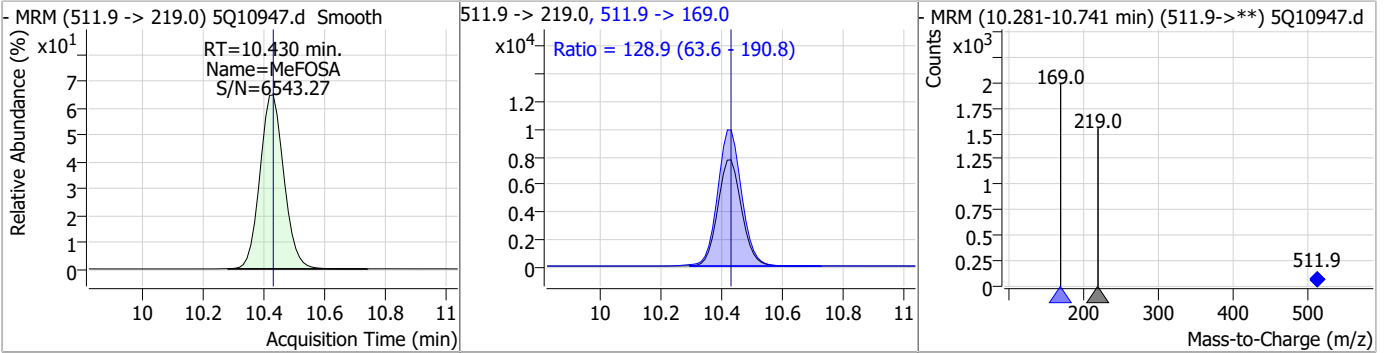
7.7.8

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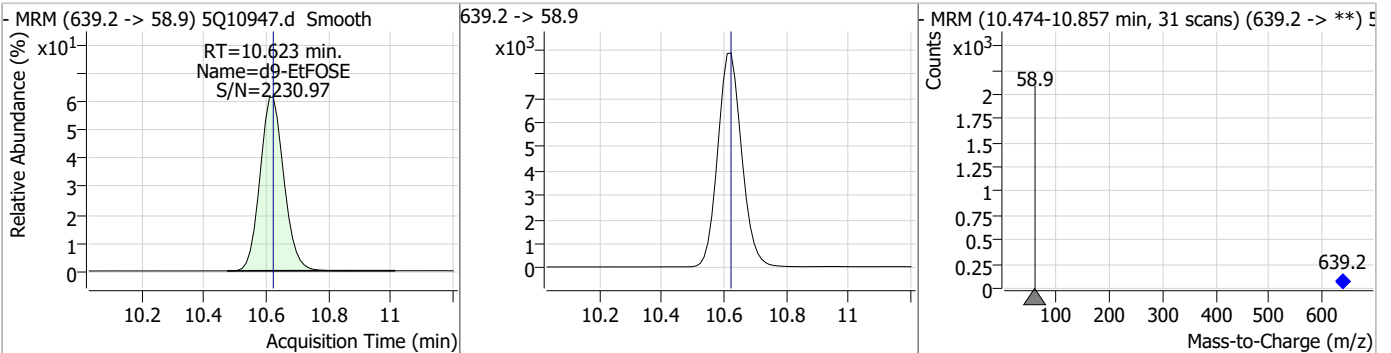


Perfluorinated Compounds by LC/MS/MS

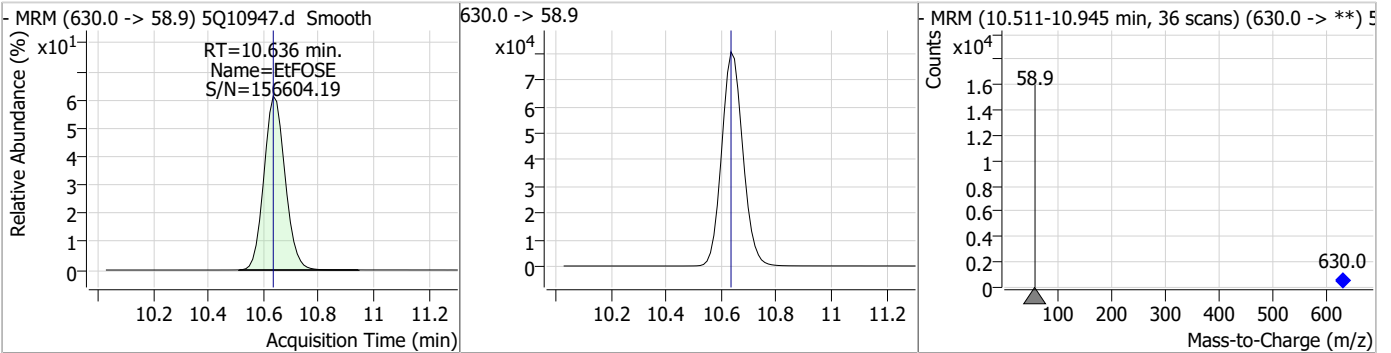
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	25.08	10.43	0.00	42603	511.9 -> 169.0	128.9	63.6	190.8



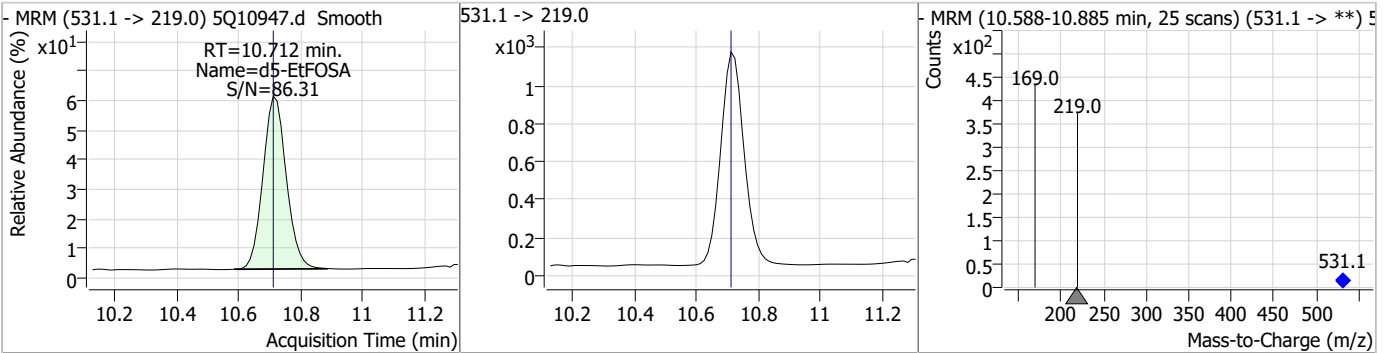
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.91	10.62	0.00	47161				



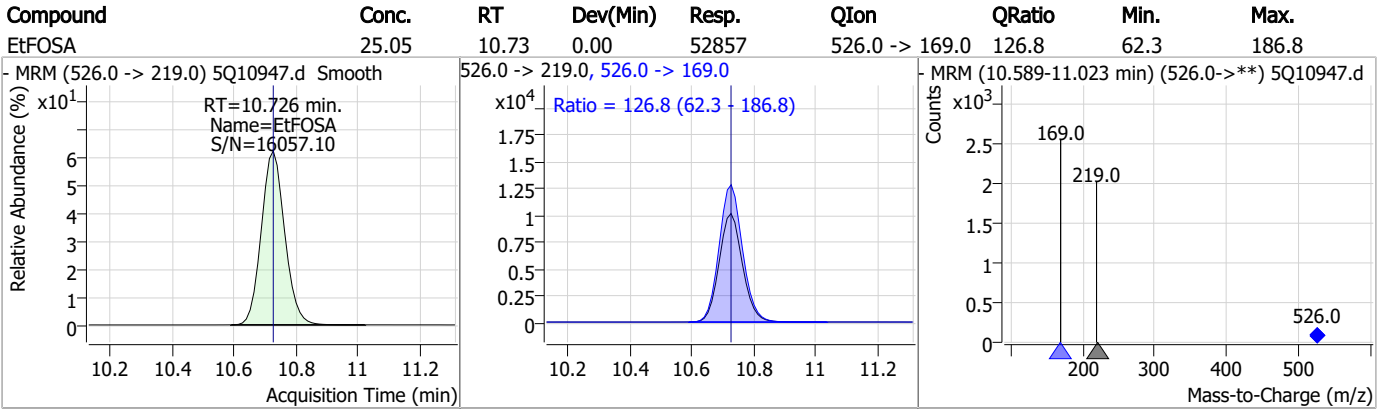
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	244.35	10.64	0.00	428094				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.51	10.71	0.00	5850				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S5Q169-IC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10947.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 21:56 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
4:2 Fluorotelomer sulfonate	757124-72-4		5.00	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
HFPO-DA (GenX)	13252-13-6		5.71	Poor instrument integration
PFEESA	113507-82-7		5.82	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.09	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.31	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10948.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 10:10:06 PM
 Sample Name : ic169-8
 Vial : P3-A9
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	36981	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	24481	5.00	µg/L m	0.000
M5-PFHxA	5.335	318.0 -> 273.0	25914	2.50	µg/L m	0.000
M4-PFHpA	6.280	367.1 -> 322.0	28396	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	34967	2.50	µg/L	0.000
M9-PFNA	7.532	472.1 -> 427.0	12319	1.25	µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	7282	1.25	µg/L	0.000
M7-PFUnDA	8.573	570.0 -> 525.1	7935	1.25	µg/L	-0.012
M2-PFDoDA	9.053	615.1 -> 570.0	9459	1.25	µg/L	0.000
M2-PFTeDA	9.886	715.2 -> 670.0	8696	1.25	µg/L	-0.012
M8-FOSA	9.187	506.1 -> 77.8	8261	2.50	µg/L	0.000
M3-PFBS	5.277	302.1 -> 79.9	6886	2.50	µg/L m	0.000
M3-PFHxS	7.079	402.1 -> 79.9	6573	2.50	µg/L	-0.012
M8-PFOS	8.255	507.1 -> 79.9	8190	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	482	5.00	µg/L m	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1113	5.00	µg/L	-0.012
M2-8:2FTS	7.828	529.1 -> 80.9	1746	5.00	µg/L	0.000
M3-MeFOSAA	8.088	573.2 -> 419.0	8770	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	54527	10.00	µg/L m	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	12560	5.00	µg/L	0.000
M7-MeFOSE	10.302	623.2 -> 58.9	36106	25.00	µg/L	-0.012
M9-EtFOSE	10.623	639.2 -> 58.9	43927	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5602	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4036	2.50	µg/L	0.000
13C4-PFOS	8.256	502.8 -> 79.9	8020	2.50	µg/L	0.000
13C3-PFBA	2.803	216.0 -> 172.0	24166	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	4414	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	42652	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	12212	1.25	µg/L	0.000
13C5-PFNA	7.533	468.0 -> 423.0	11931	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	34205	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	522	4.86	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.2%			
13C2-6:2FTS	6.699	429.1 -> 80.9	1113	4.65	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.0%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1746	5.21	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.1%			
13C2-PFDoDA	9.053	615.1 -> 570.0	9459	1.24	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%			
13C2-PFTeDA	9.886	715.2 -> 670.0	8696	1.22	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%			
13C3-PFBS	5.277	302.1 -> 79.9	8034	2.37	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.6%			
13C3-PFHxS	7.079	402.1 -> 79.9	6573	2.60	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 = 104.2%	
13C4-PFBA	2.799	216.8 -> 171.9	45884	10.06 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.280	367.1 -> 322.0	28396	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFHxA	5.335	318.0 -> 273.0	29693	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C5-PFPeA	4.150	268.3 -> 223.0	30339	4.88 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C6-PFDA	8.066	519.1 -> 474.1	7282	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C7-PFUnDA	8.573	570.0 -> 525.1	7935	1.15 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C8-FOSA	9.187	506.1 -> 77.8	8261	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C8-PFOA	6.950	421.1 -> 376.0	34967	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C8-PFOS	8.255	507.1 -> 79.9	8190	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C9-PFNA	7.532	472.1 -> 427.0	12319	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
d3-MeFOSAA	8.088	573.2 -> 419.0	8770	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	60213	9.48 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.8%	
d3-MeFOSA	10.416	515.0 -> 219.0	4036	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
d5-EtFOSAA	8.310	589.2 -> 419.0	12560	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
d7-MeFOSE	10.302	623.2 -> 58.9	36106	24.47 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.9%	
d9-EtFOSE	10.623	639.2 -> 58.9	43927	24.29 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d5-EtFOSA	10.712	531.1 -> 219.0	5602	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	135086	222.54 µg/L	m 97
		327.1 -> 80.9	71667		
6:2FTS	6.700	427.1 -> 407.0	209344	225.06 µg/L	97
		427.1 -> 80.9	83739		
8:2FTS	7.829	527.1 -> 507.0	136638	165.19 µg/L	99
		527.1 -> 80.8	67777		
EtFOSAA	8.311	584.2 -> 419.1	109303	66.48 µg/L	m 99
		584.2 -> 526.0	44336		
FOSA	9.190	498.1 -> 77.9	192888	63.90 µg/L	99
		498.1 -> 478.0	5914		
MeFOSAA	8.089	570.1 -> 419.0	97654	65.80 µg/L	m 96
		570.1 -> 483.0	22632		
PFBA	2.807	212.8 -> 168.9	394100	269.20 µg/L	m 100
PFBS	5.278	298.7 -> 79.9	130274	57.57 µg/L	m 100
		298.7 -> 98.8	54846		
PFDA	8.067	512.9 -> 469.0	498725	65.39 µg/L	99
		512.9 -> 219.0	89761		
PFDoDA	9.054	613.1 -> 569.0	393689	61.31 µg/L	99
		613.1 -> 319.0	64499		
PFDS	9.232	599.0 -> 79.9	104166	57.62 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.281	599.0 -> 98.8	54658	63.79	µg/L	100
		363.1 -> 319.0	766001			
PFHpS	7.699	363.1 -> 169.0	171765	58.23	µg/L	94
		449.0 -> 79.9	135551			
PFHxA	5.337	449.0 -> 98.9	75711	63.21	µg/L	m
		313.0 -> 269.0	480280			
PFHxS	7.080	313.0 -> 118.9	21424	56.58	µg/L	m
		398.7 -> 79.9	125557			
PFNA	7.533	398.7 -> 98.9	72422	63.61	µg/L	98
		463.0 -> 419.0	454306			
PFNS	8.773	463.0 -> 219.0	101885	56.30	µg/L	96
		548.8 -> 79.9	101401			
PFOA	6.951	548.8 -> 98.9	58937	62.62	µg/L	98
		413.0 -> 369.0	843225			
PFOS	8.257	413.0 -> 169.0	200817	58.25	µg/L	m
		498.9 -> 79.9	192490			
PFPeA	4.152	498.9 -> 98.8	109427	129.09	µg/L	m
		263.0 -> 219.0	690433			
PFPeS	6.344	349.1 -> 79.9	96753	50.48	µg/L	m
		349.1 -> 98.9	49523			
PFTeDA	9.887	713.1 -> 669.0	409379	61.24	µg/L	98
		713.1 -> 168.9	53995			
PFTrDA	9.489	663.0 -> 619.0	501157	59.27	µg/L	100
		663.0 -> 168.9	83134			
PFUnDA	8.573	563.1 -> 519.0	383325	64.79	µg/L	100
		563.1 -> 269.1	78016			
11Cl-PF3OUdS	9.542	630.9 -> 450.9	1323929	220.60	µg/L	99
		632.9 -> 452.9	413548			
9Cl-PF3ONS	8.626	530.8 -> 351.0	1408515	219.61	µg/L	99
		532.8 -> 353.0	448683			
ADONA	6.542	376.9 -> 250.9	3668159	245.78	µg/L	100
		376.9 -> 84.8	1092723			
HFPO-DA	5.715	284.9 -> 168.9	1142946	255.42	µg/L	m
		284.9 -> 184.9	104494			
3:3FTCA	3.603	241.0 -> 177.0	134223	340.05	µg/L	m
		241.0 -> 117.0	16082			
5:3FTCA	5.906	341.0 -> 237.1	2542190	1617.65	µg/L	97
		341.0 -> 217.0	1767742			
7:3FTCA	7.335	441.0 -> 316.9	1064212	1691.43	µg/L	98
		441.0 -> 336.9	2289752			
EtFOSA	10.726	526.0 -> 219.0	127025	62.86	µg/L	98
		526.0 -> 169.0	161425			
EtFOSE	10.636	630.0 -> 58.9	935321	573.17	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	100469	63.06	µg/L	98
		511.9 -> 169.0	130535			
MeFOSE	10.327	616.1 -> 58.9	908946	589.37	µg/L	100
PFDoDS	10.050	699.1 -> 79.9	81357	57.15	µg/L	100
		699.1 -> 98.8	49161			
NFDHA	5.218	295.0 -> 201.0	71277	119.06	µg/L	m
		295.0 -> 84.9	19941			
PFMBA	4.553	279.0 -> 85.1	514104	130.43	µg/L	100
PFMPA	3.328	229.0 -> 84.9	366581	126.52	µg/L	100
PFEESA	5.821	314.8 -> 134.9	820007	102.57	µg/L	100
		314.8 -> 82.9	24788			

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

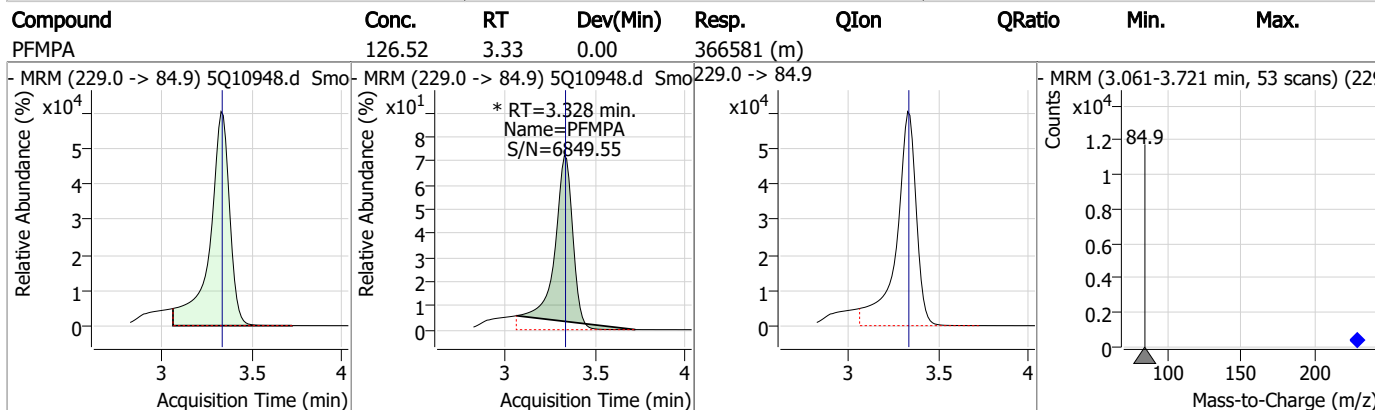
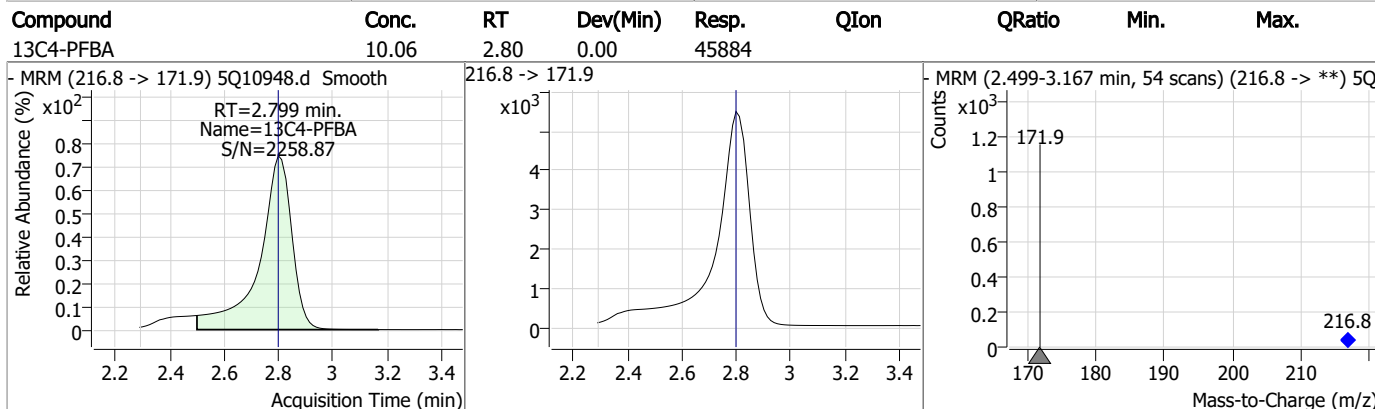
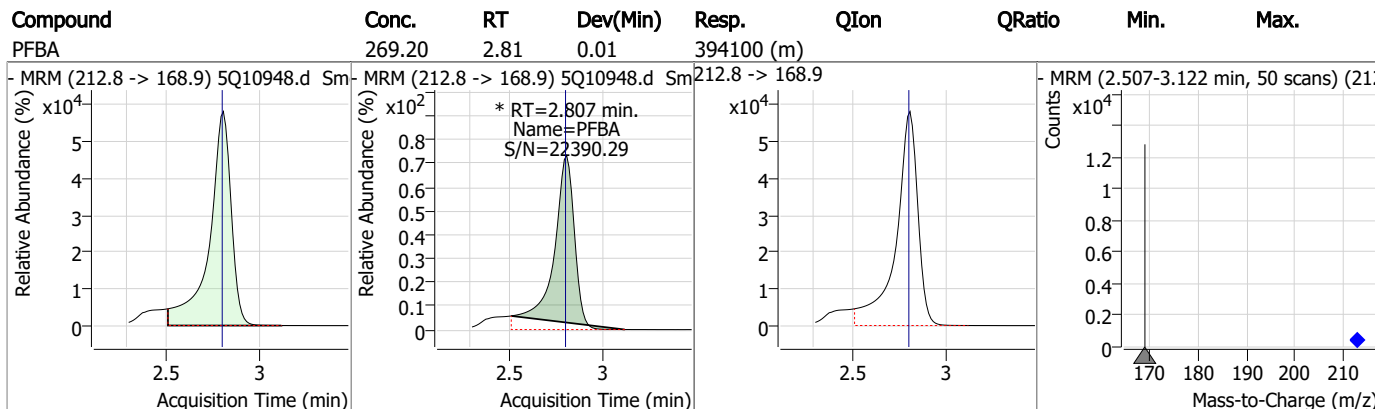
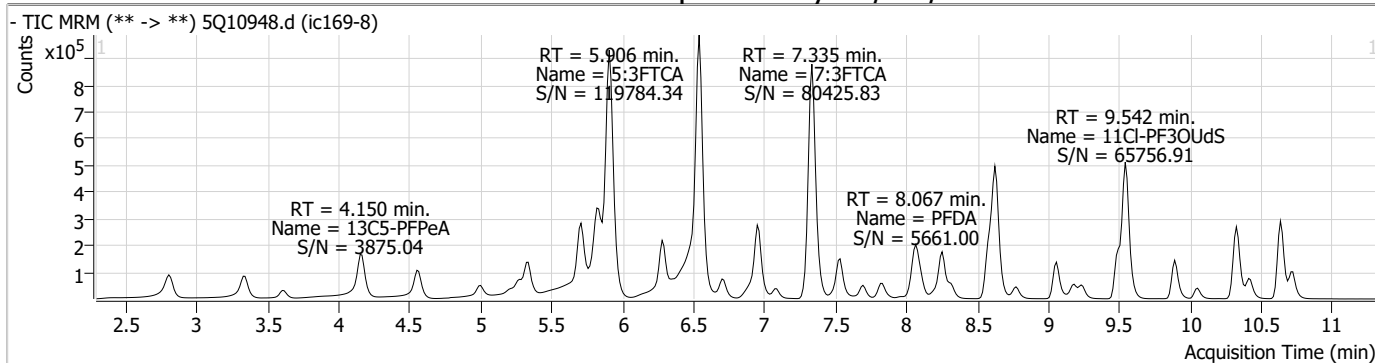
Perfluorinated Compounds by LC/MS/MS

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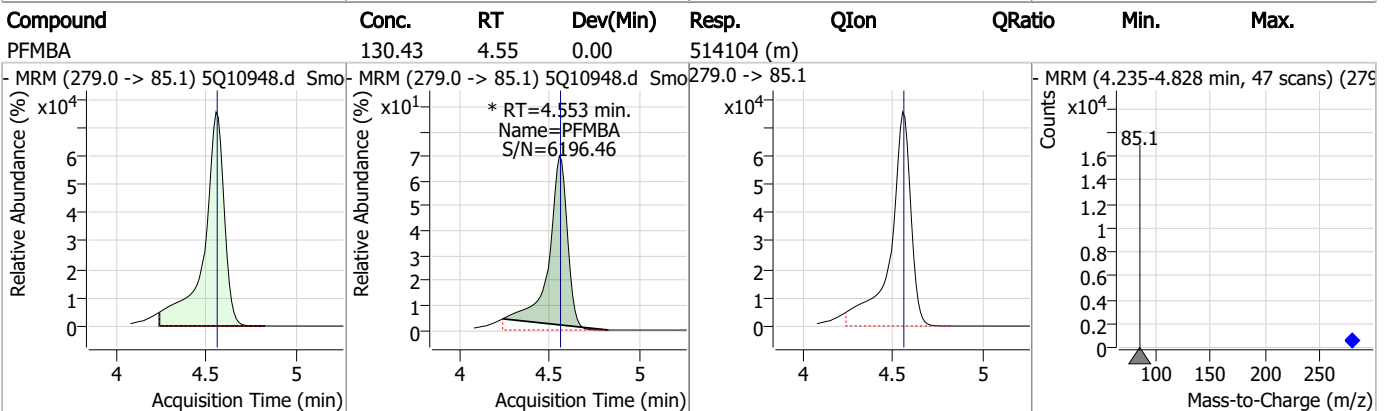
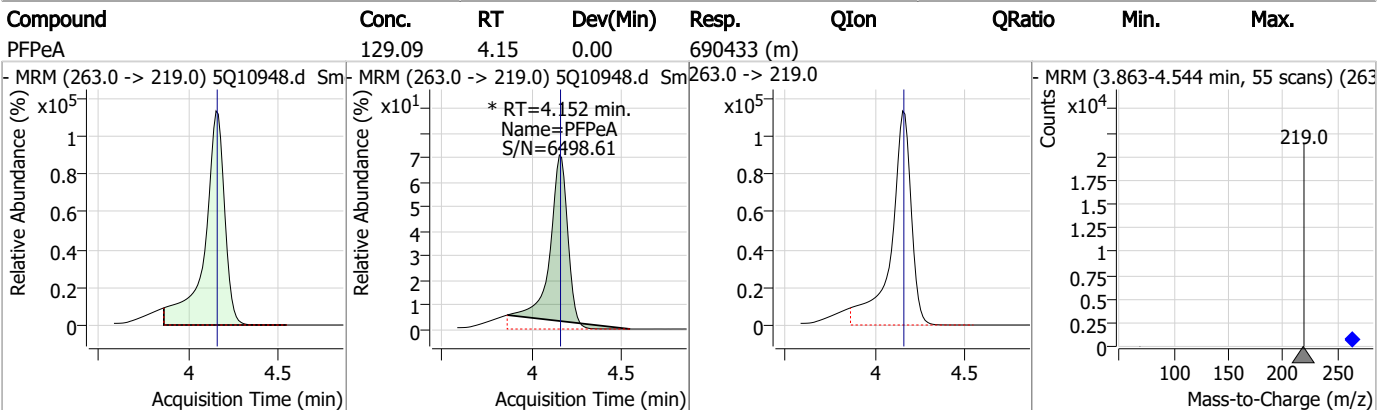
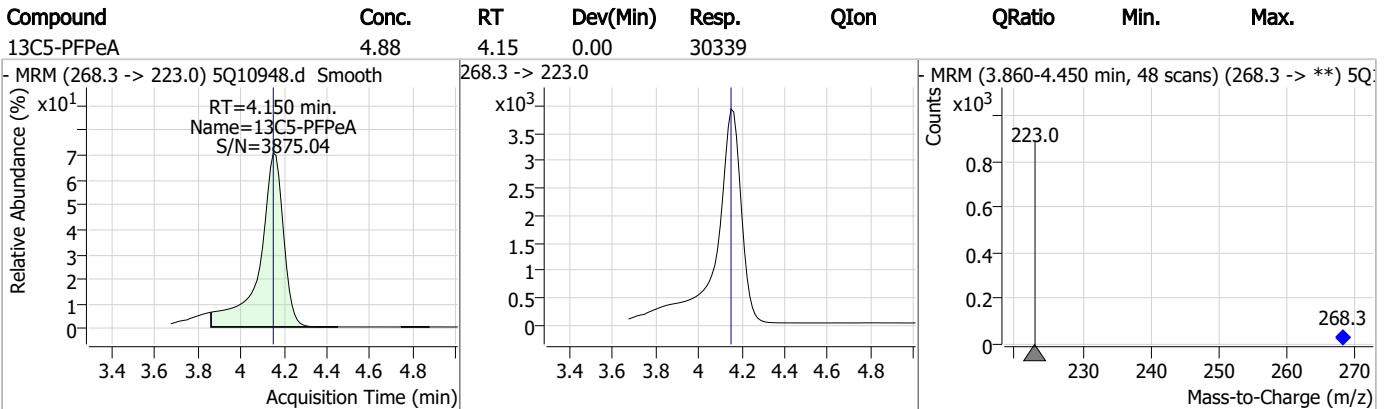
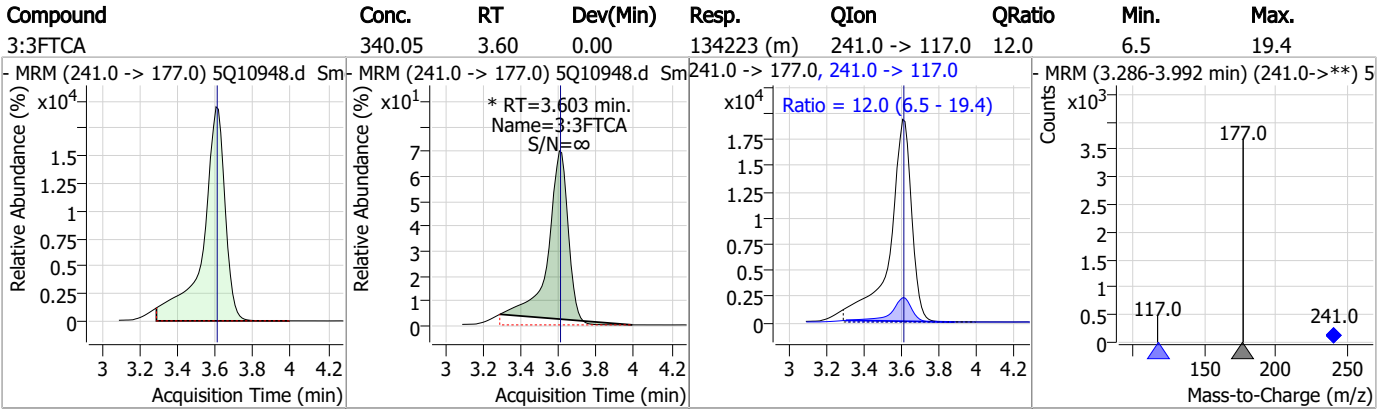
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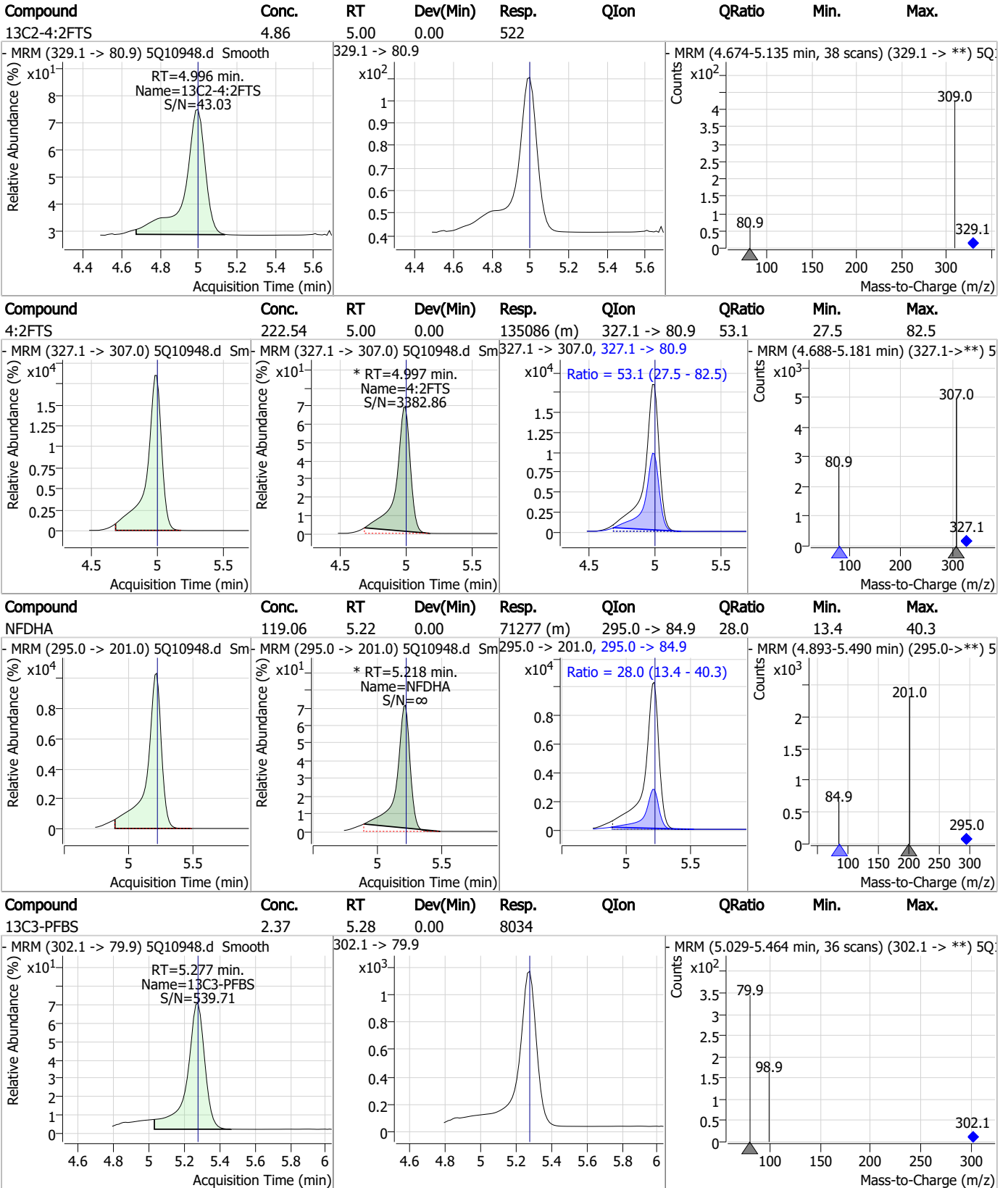
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



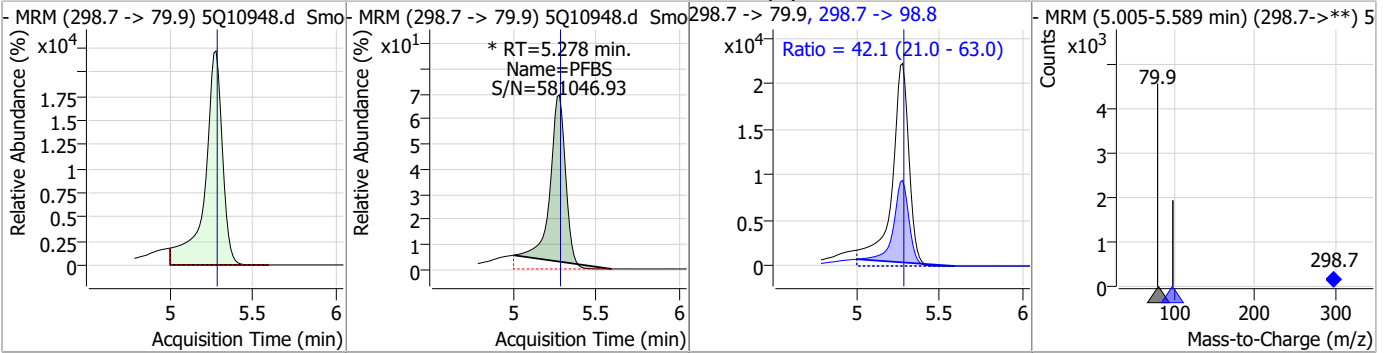
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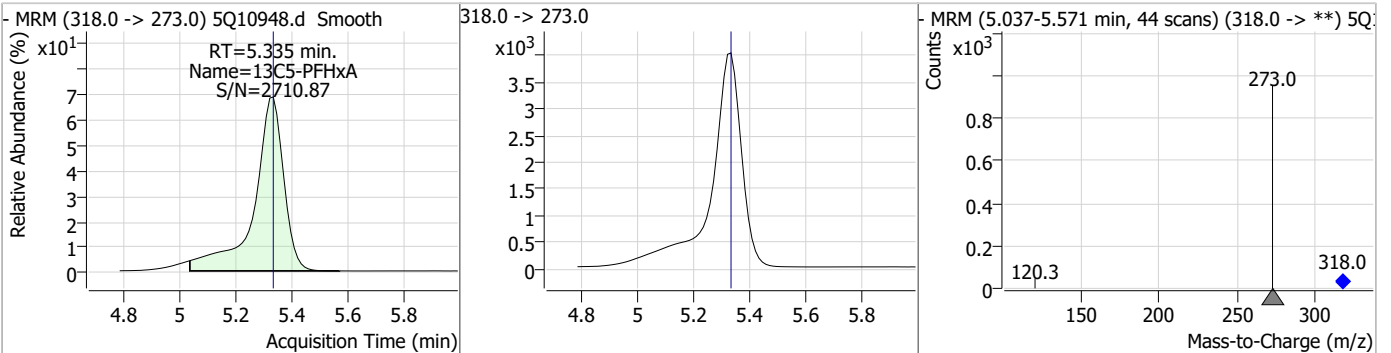


Perfluorinated Compounds by LC/MS/MS

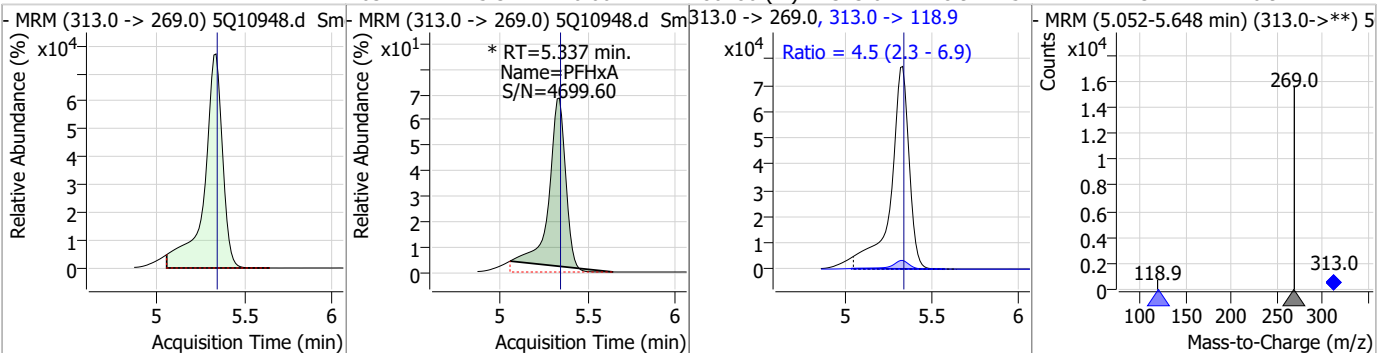
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	57.57	5.28	0.00	130274 (m)	298.7 -> 98.8	42.1	21.0	63.0



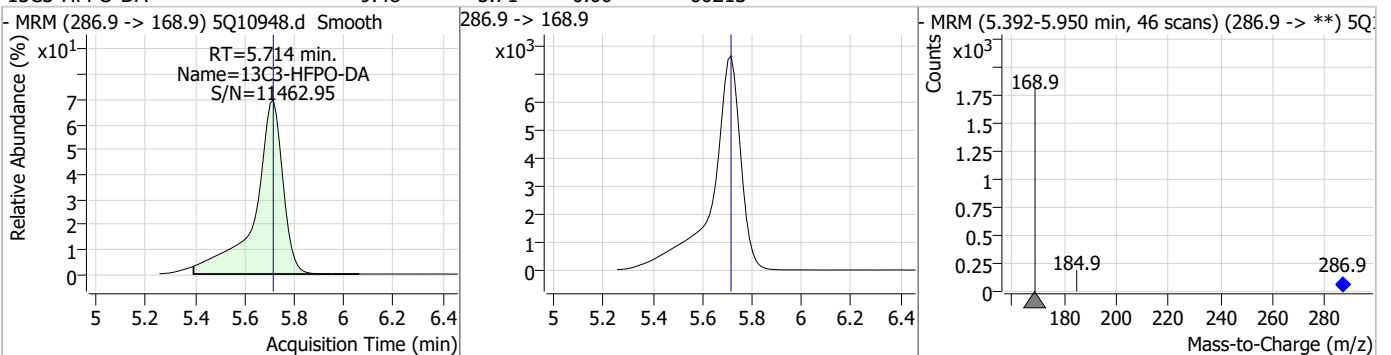
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.47	5.34	0.00	29693				



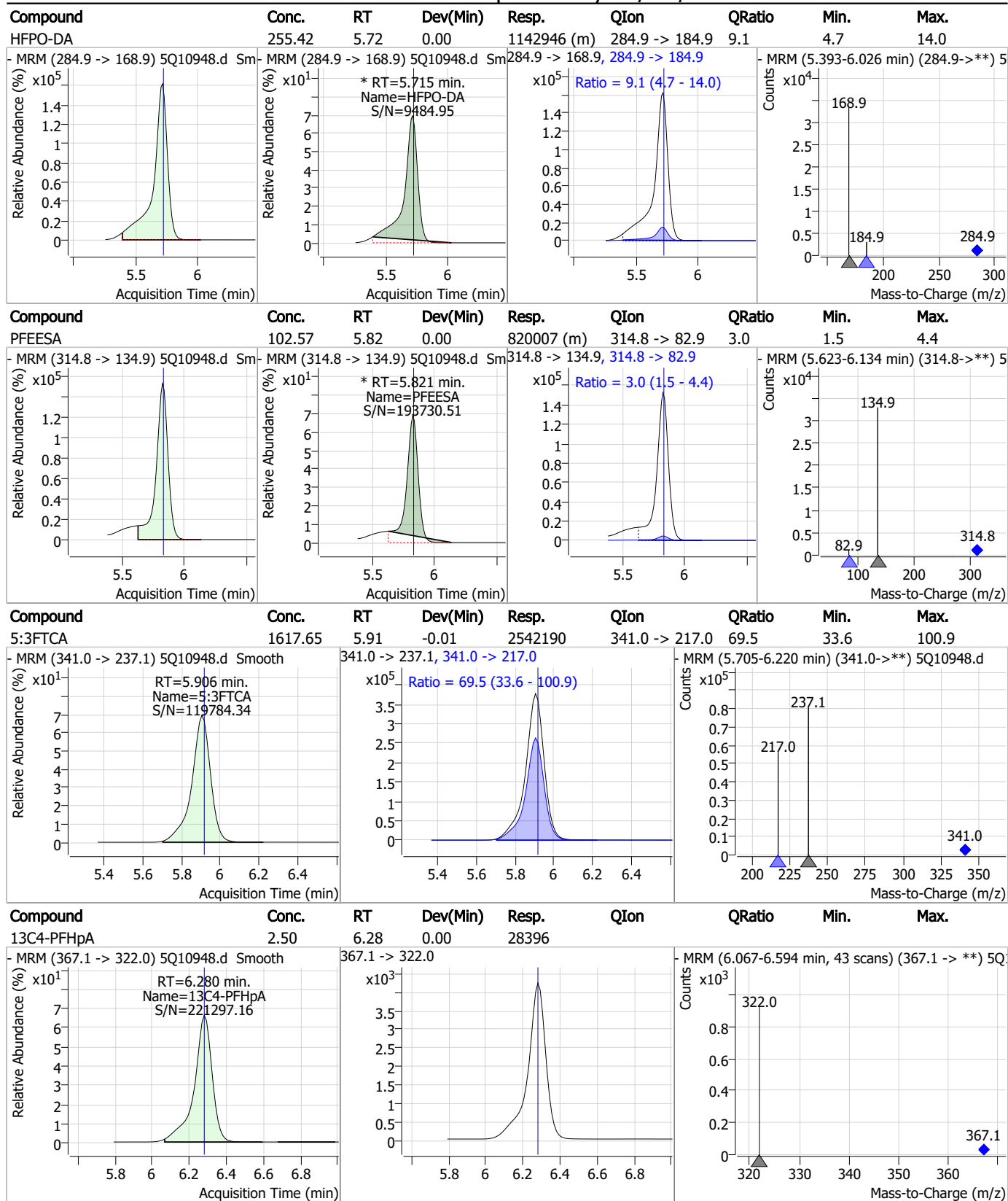
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	63.21	5.34	0.00	480280 (m)	313.0 -> 118.9	4.5	2.3	6.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.48	5.71	0.00	60213				



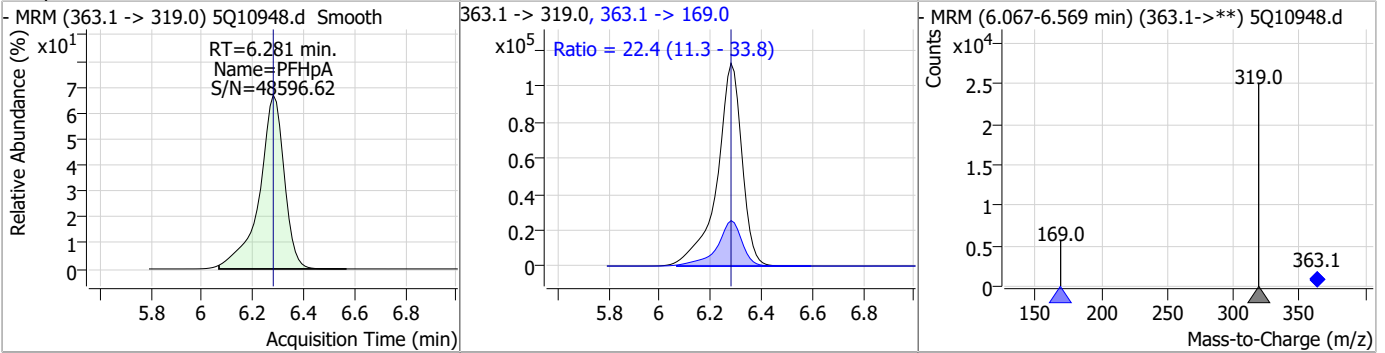
Perfluorinated Compounds by LC/MS/MS



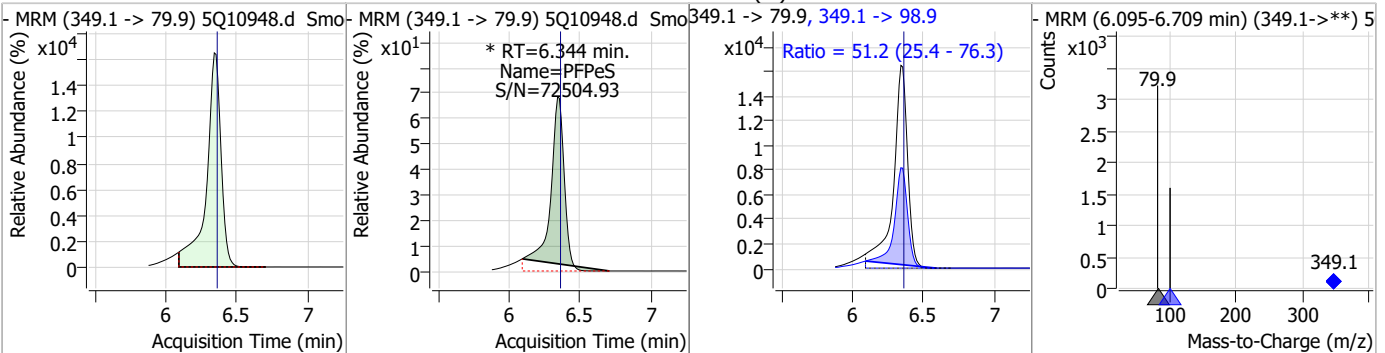
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Perfluorinated Compounds by LC/MS/MS

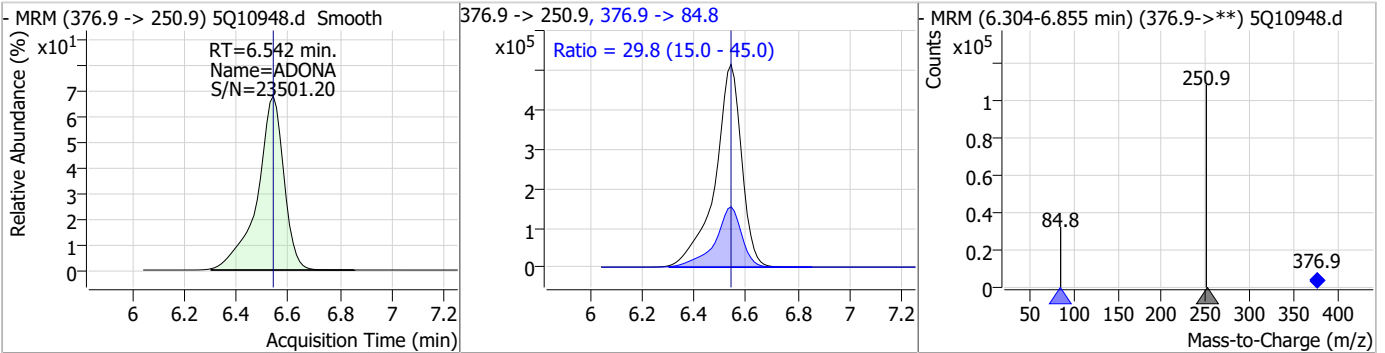
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	63.79	6.28	0.00	766001	363.1 -> 169.0	22.4	11.3	33.8



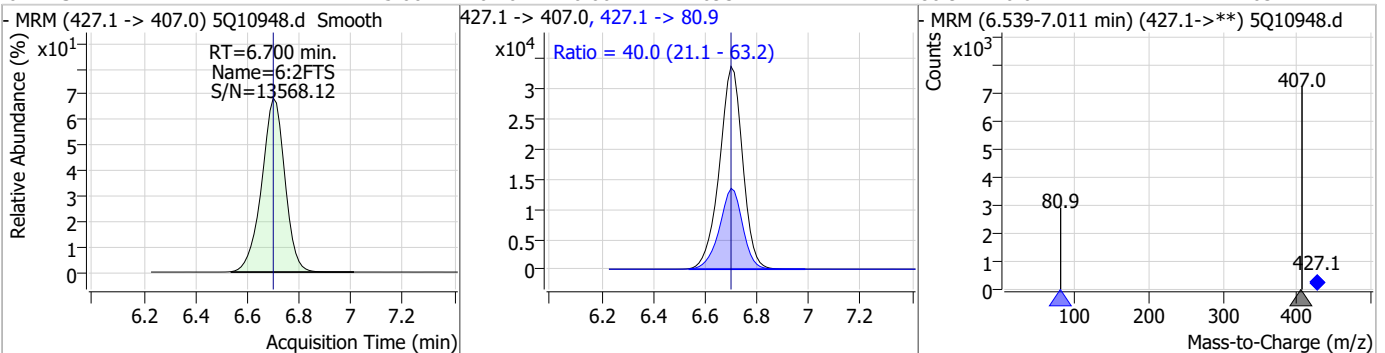
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	50.48	6.34	-0.01	96753 (m)	349.1 -> 98.9	51.2	25.4	76.3



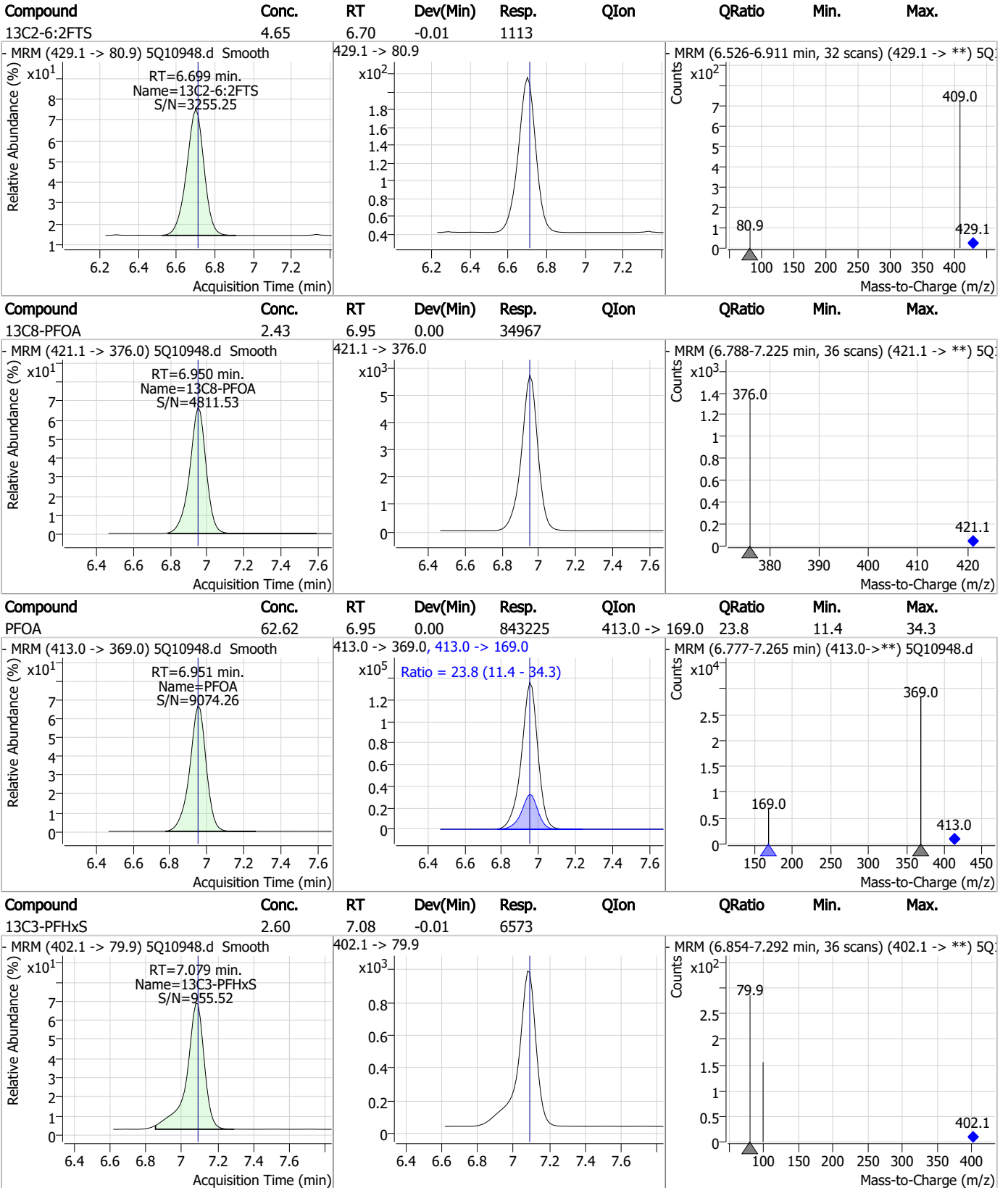
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	245.78	6.54	0.00	3668159	376.9 -> 84.8	29.8	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	225.06	6.70	0.00	209344	427.1 -> 80.9	40.0	21.1	63.2



Perfluorinated Compounds by LC/MS/MS

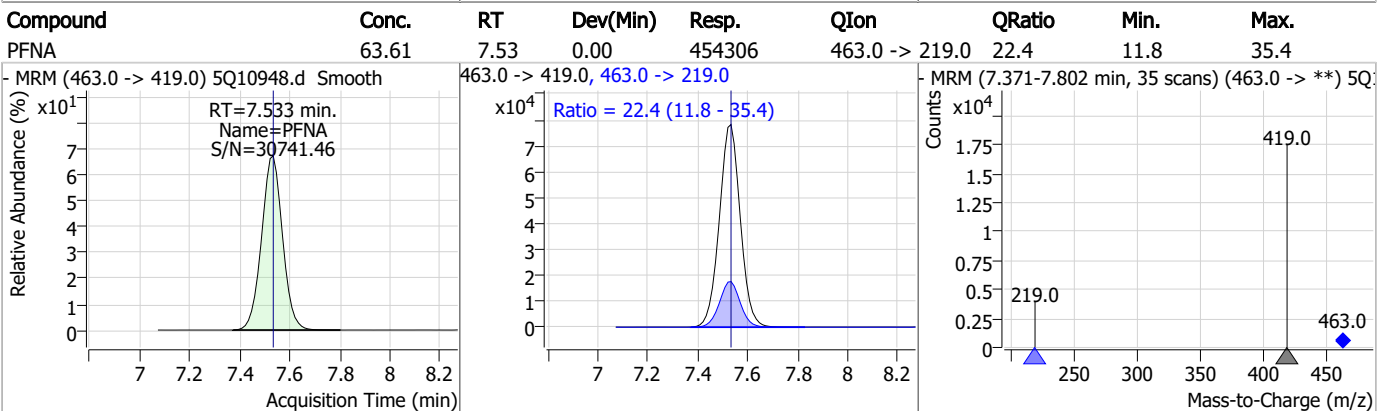
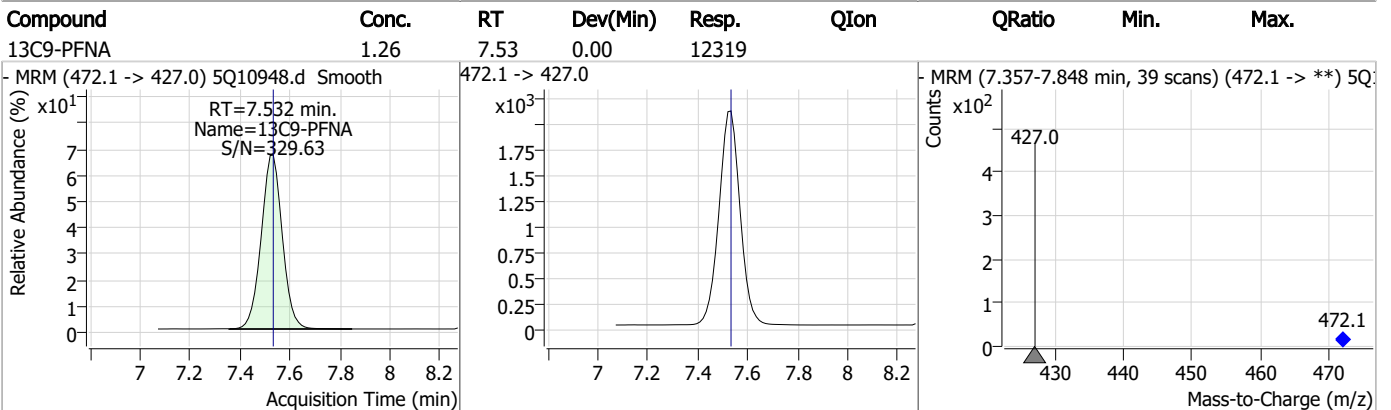
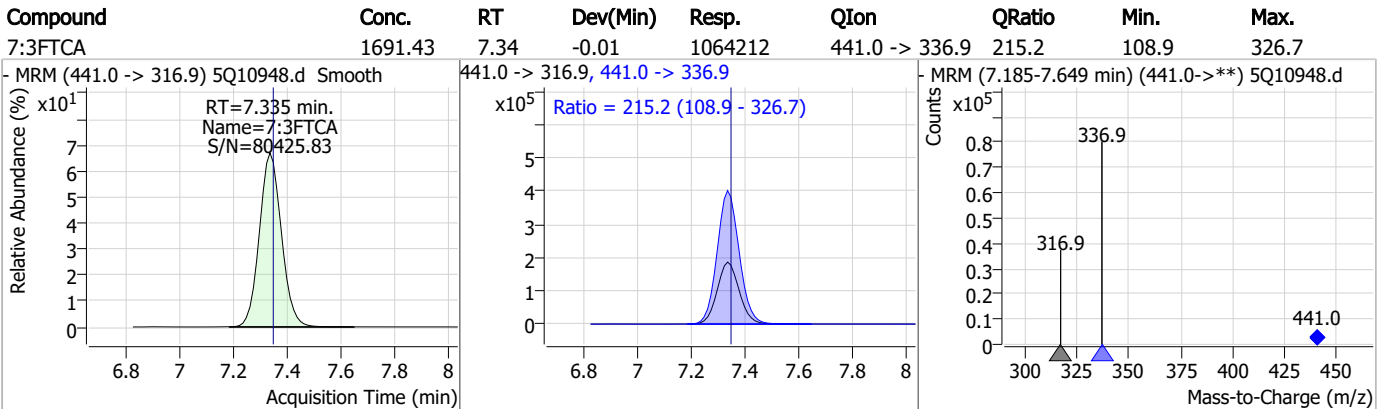
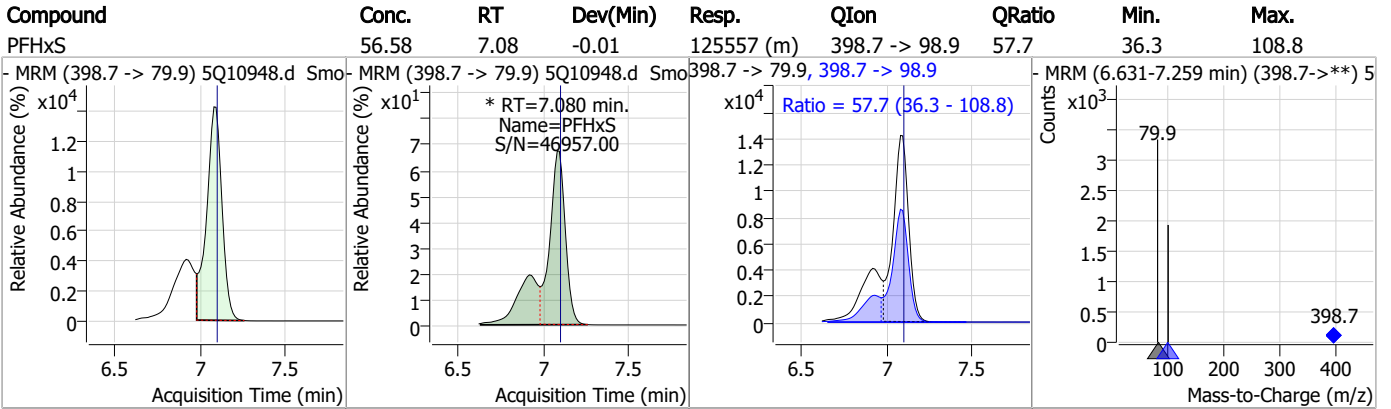


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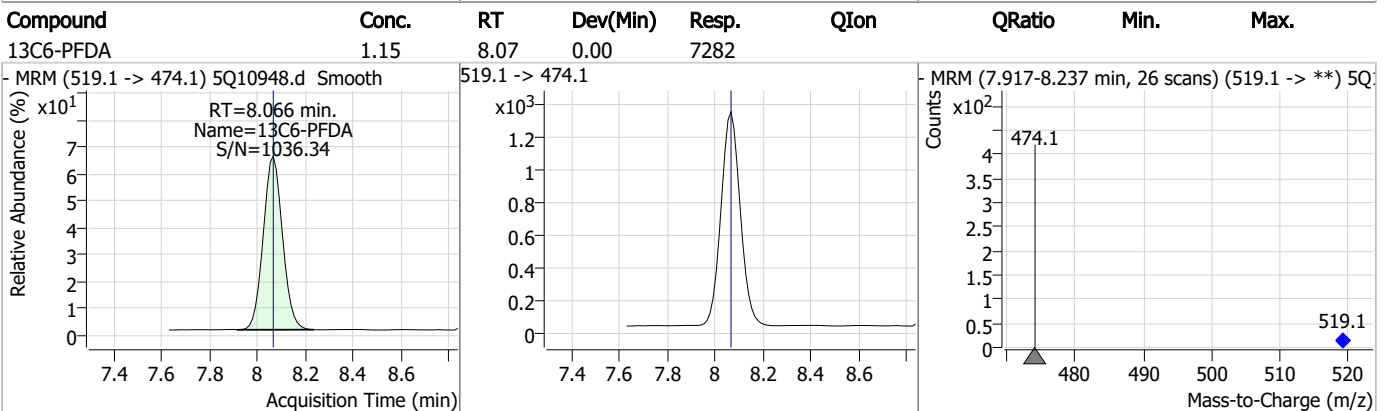
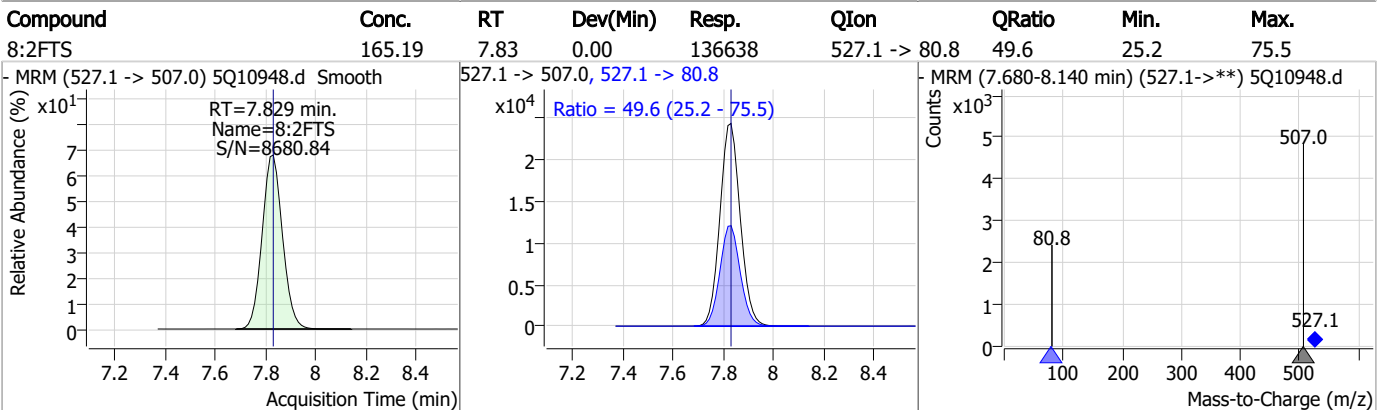
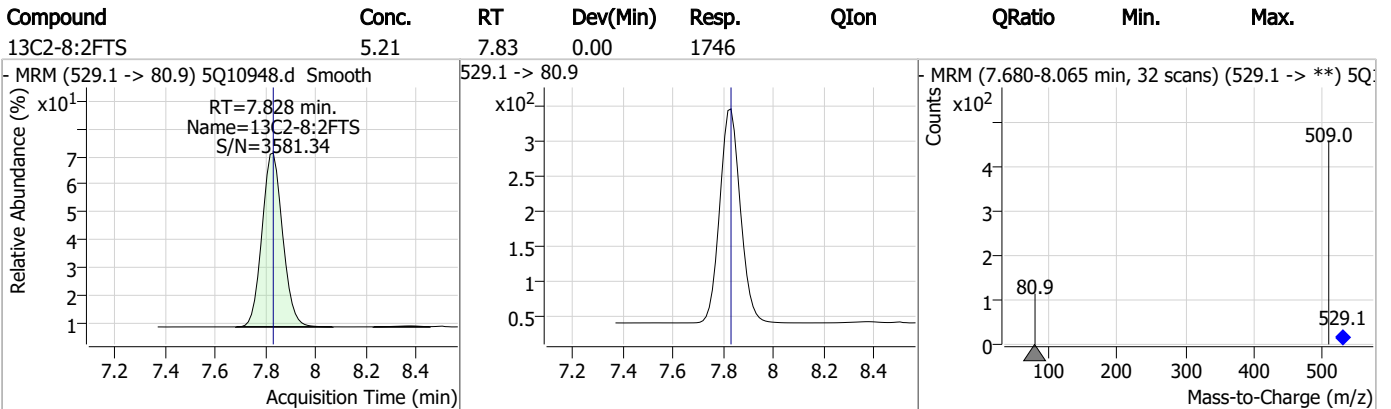
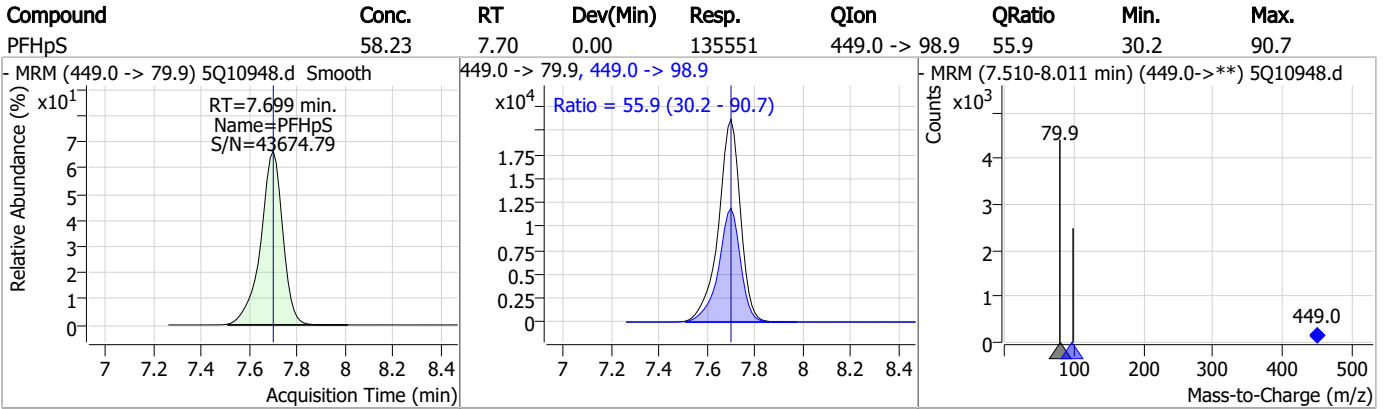
Perfluorinated Compounds by LC/MS/MS



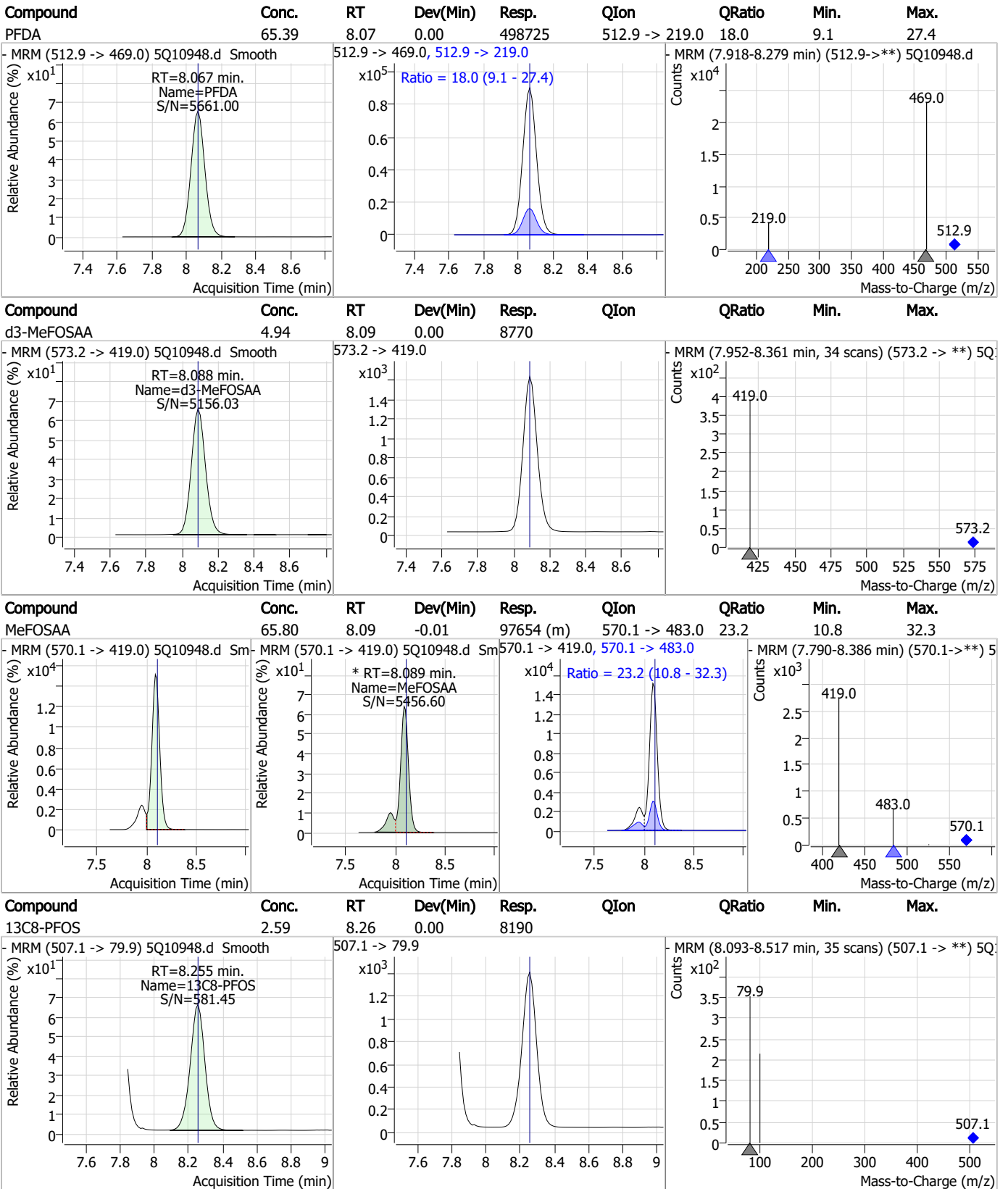
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

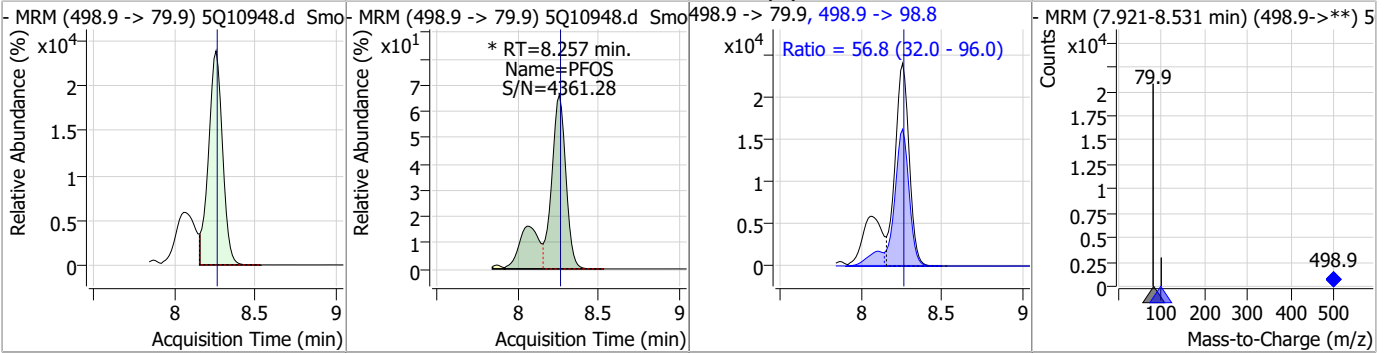


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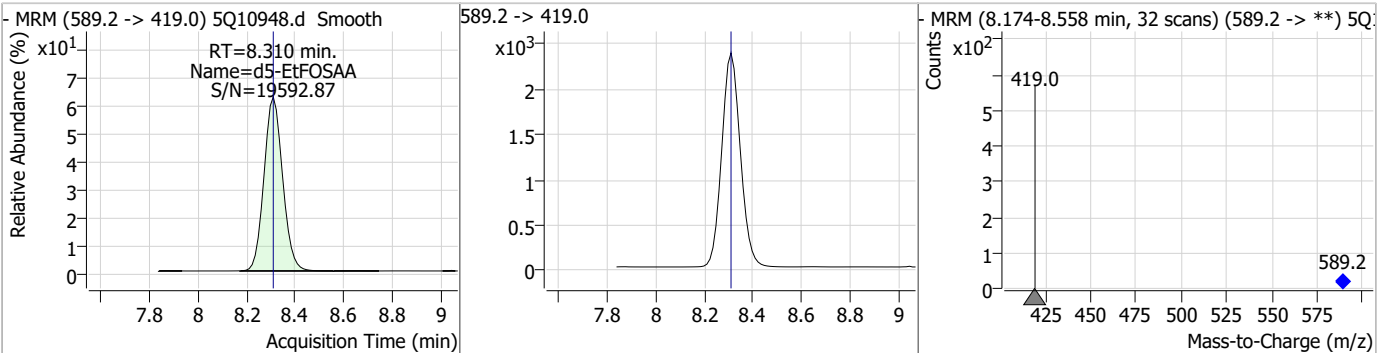
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Perfluorinated Compounds by LC/MS/MS

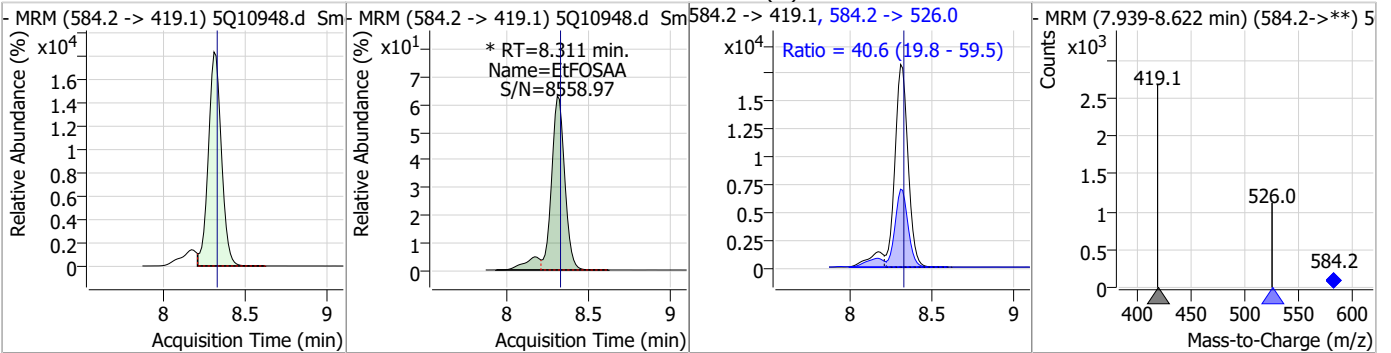
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	58.25	8.26	0.00	192490 (m)	498.9 -> 98.8	56.8	32.0	96.0



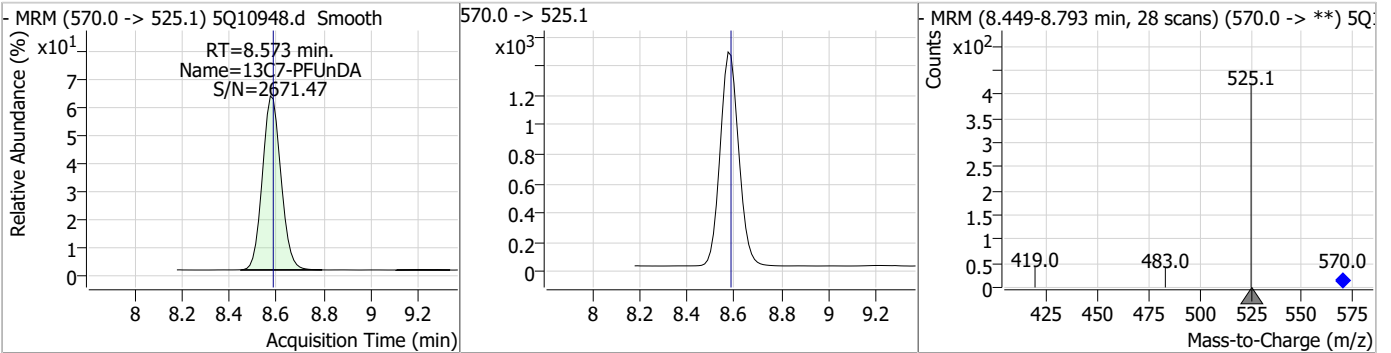
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.78	8.31	0.00	12560				



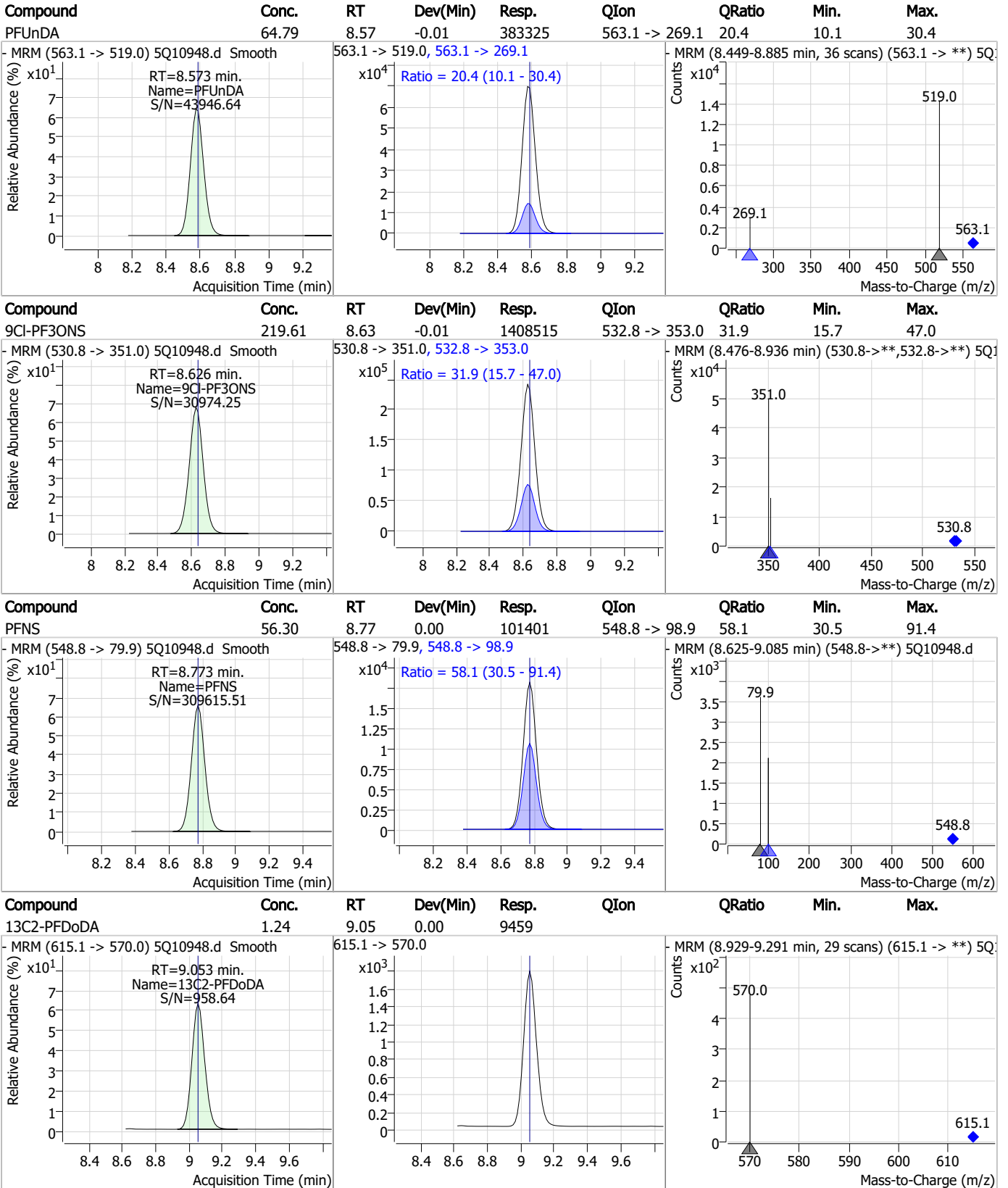
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	66.48	8.31	-0.01	109303 (m)	584.2 -> 526.0	40.6	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.15	8.57	-0.01	7935				



Perfluorinated Compounds by LC/MS/MS

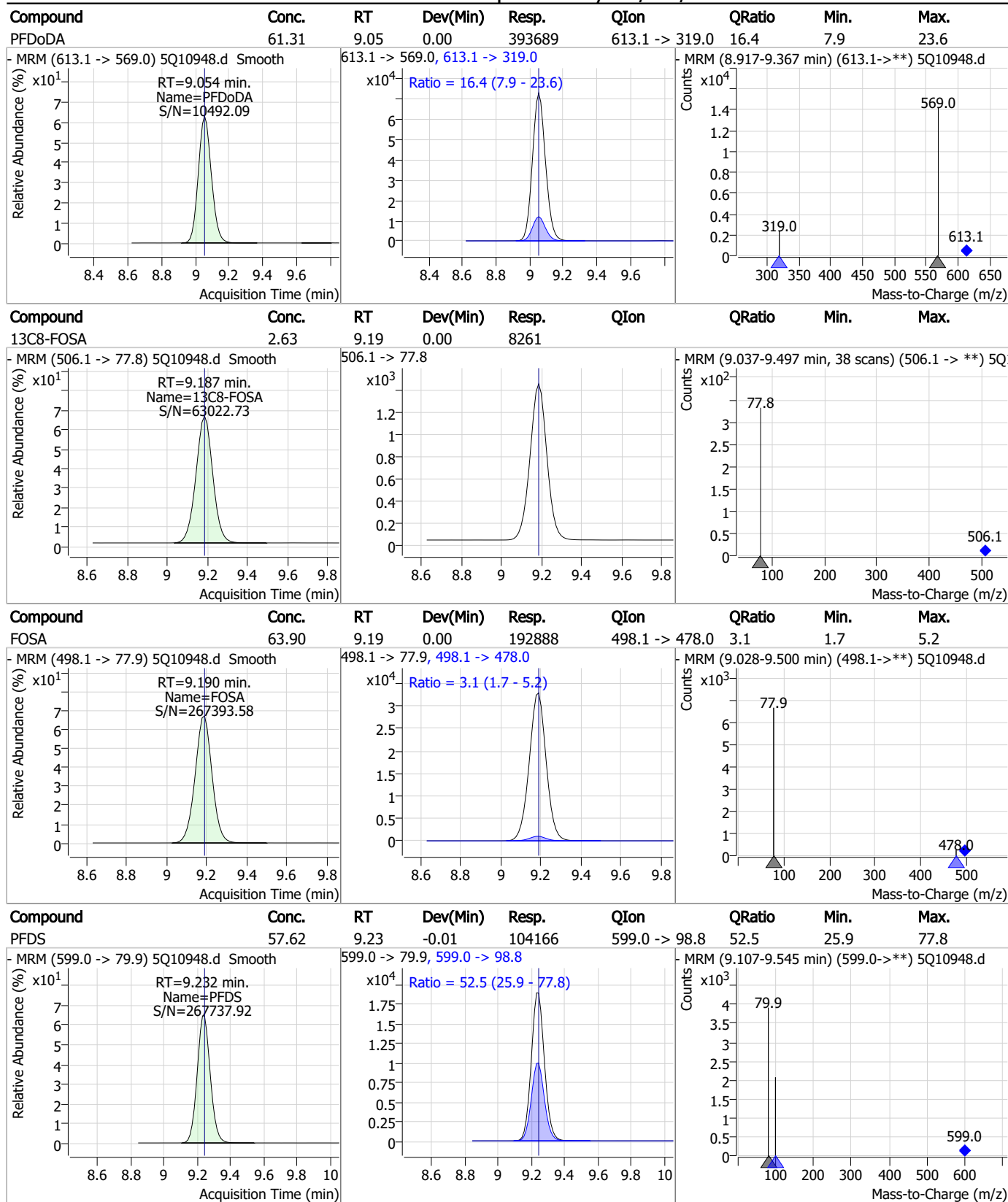


7.7.9

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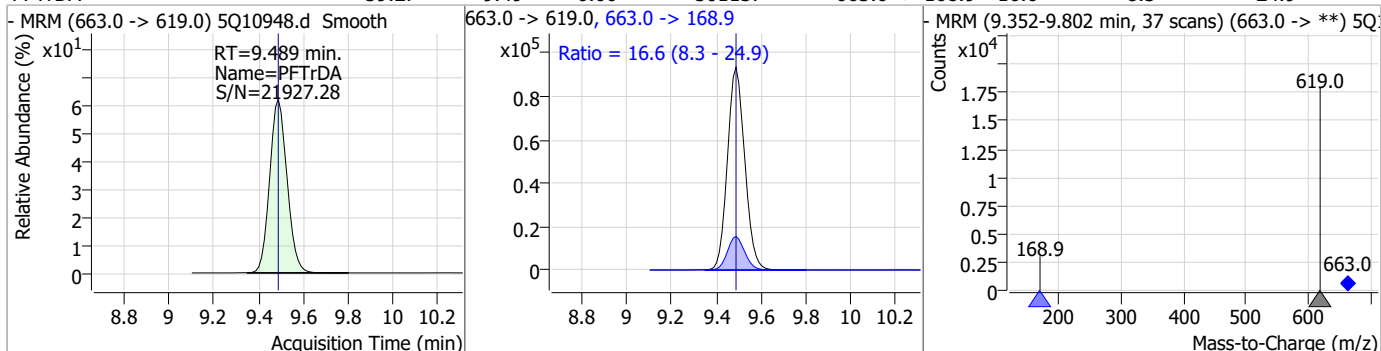
Perfluorinated Compounds by LC/MS/MS



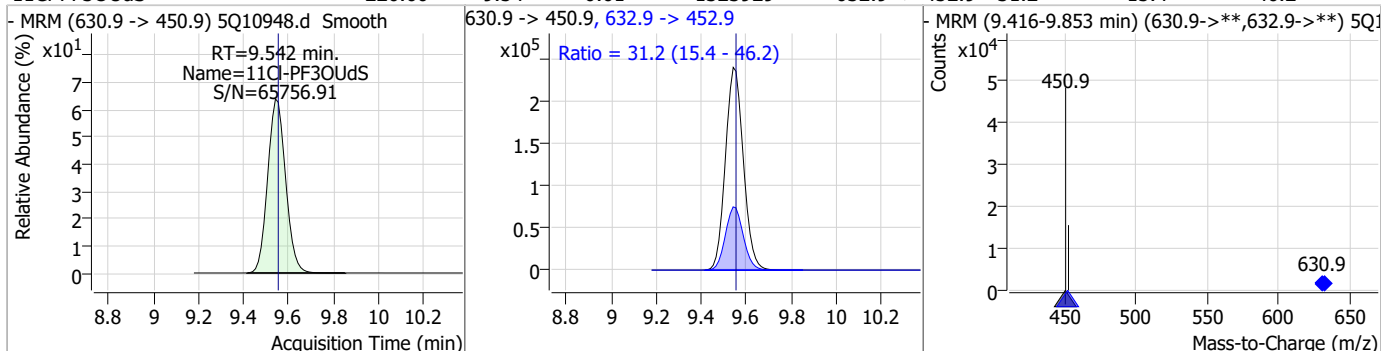
7.7.9
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Perfluorinated Compounds by LC/MS/MS

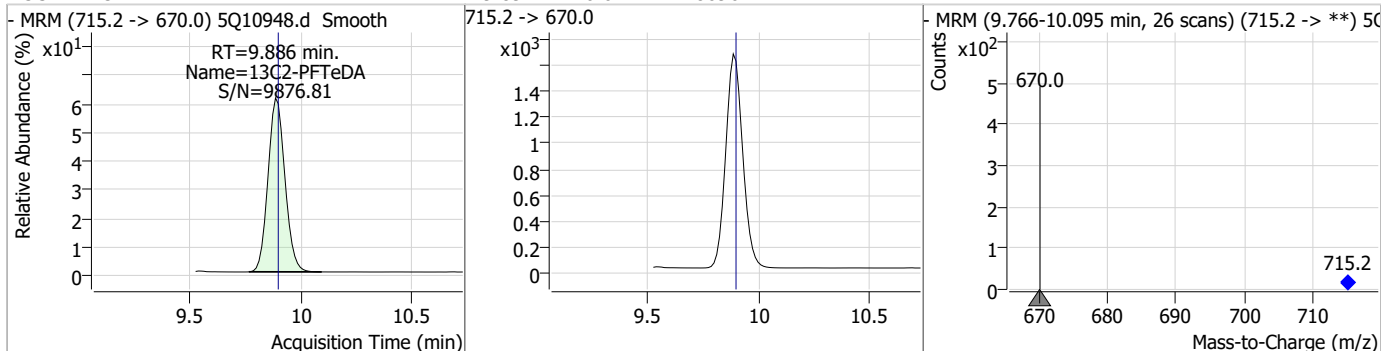
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	59.27	9.49	0.00	501157	663.0 -> 168.9	16.6	8.3	24.9



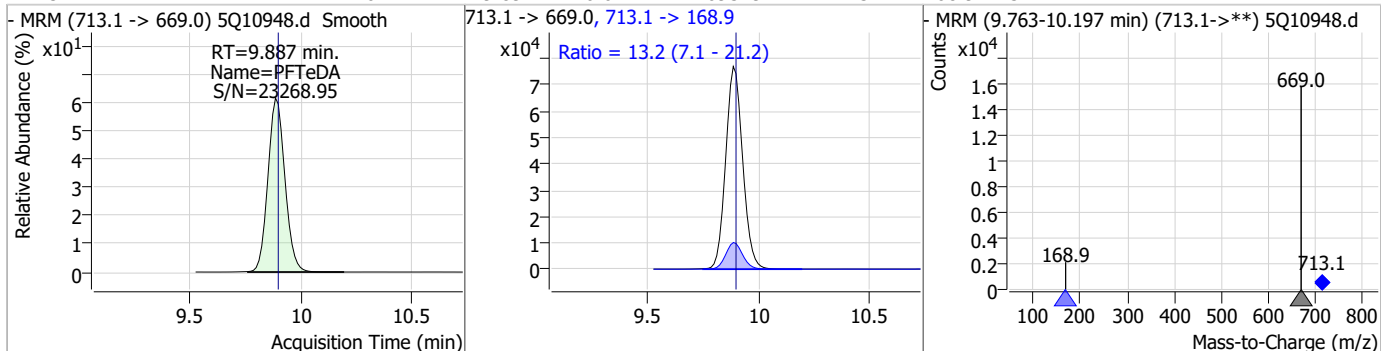
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	220.60	9.54	-0.01	1323929	632.9 -> 452.9	31.2	15.4	46.2



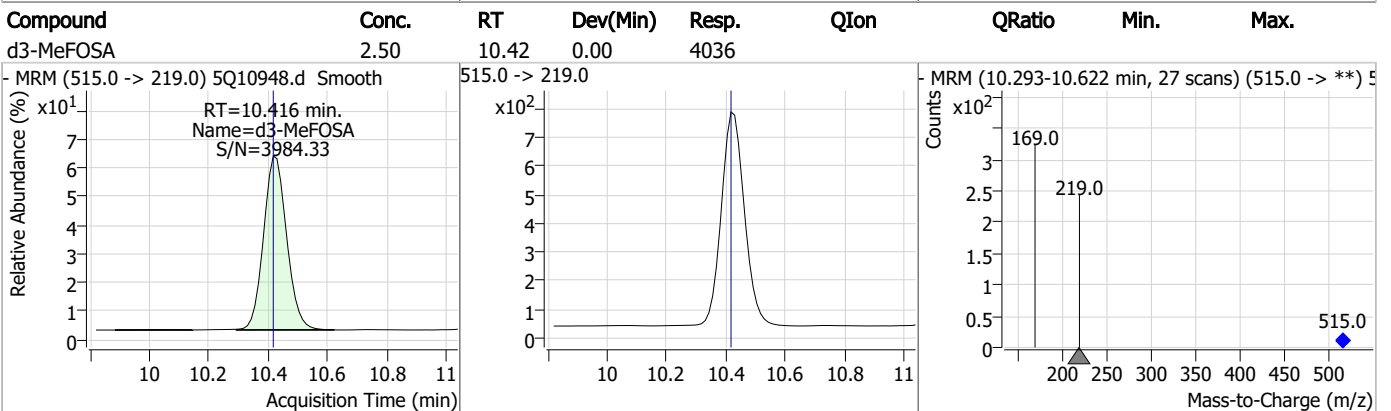
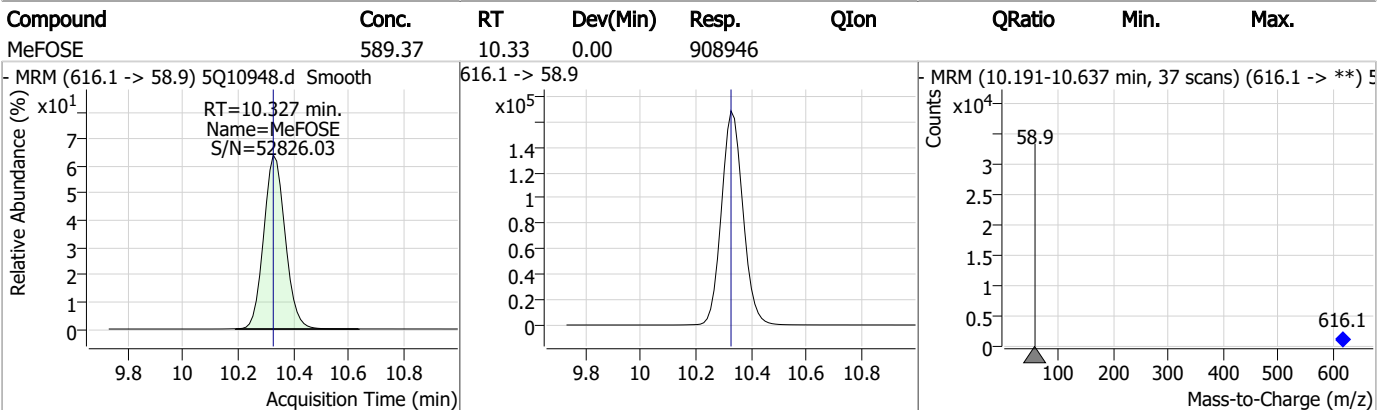
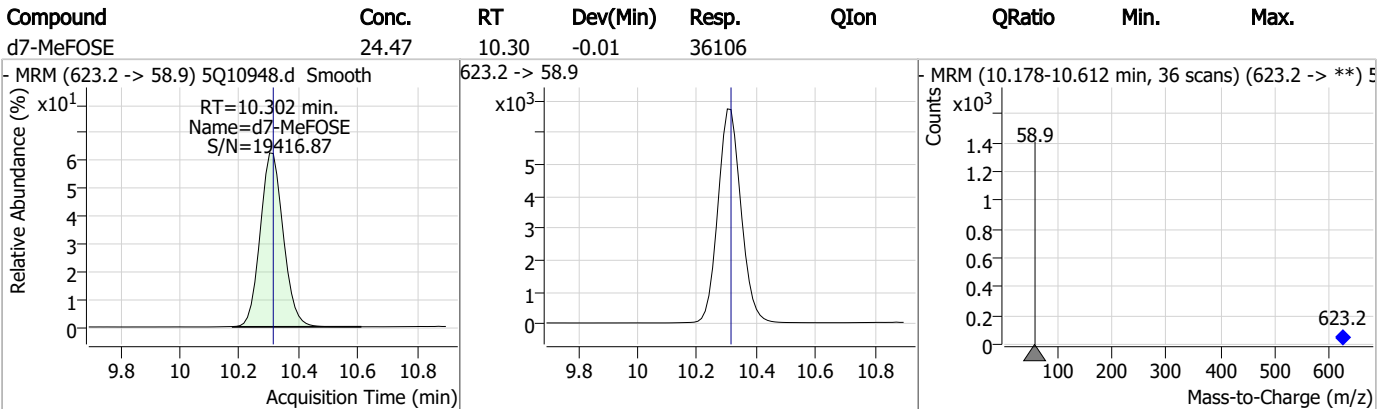
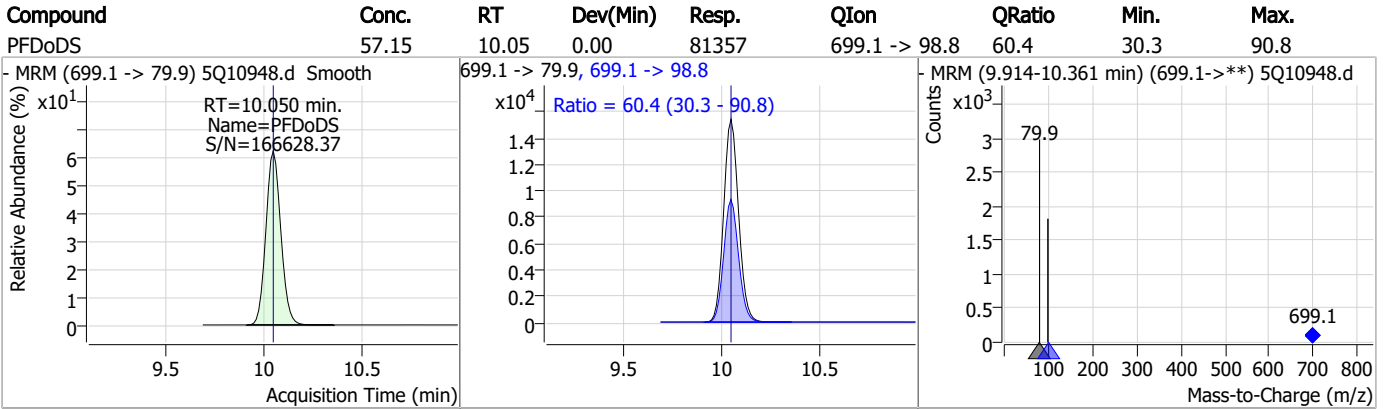
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.22	9.89	-0.01	8696	715.2 -> 670.0			



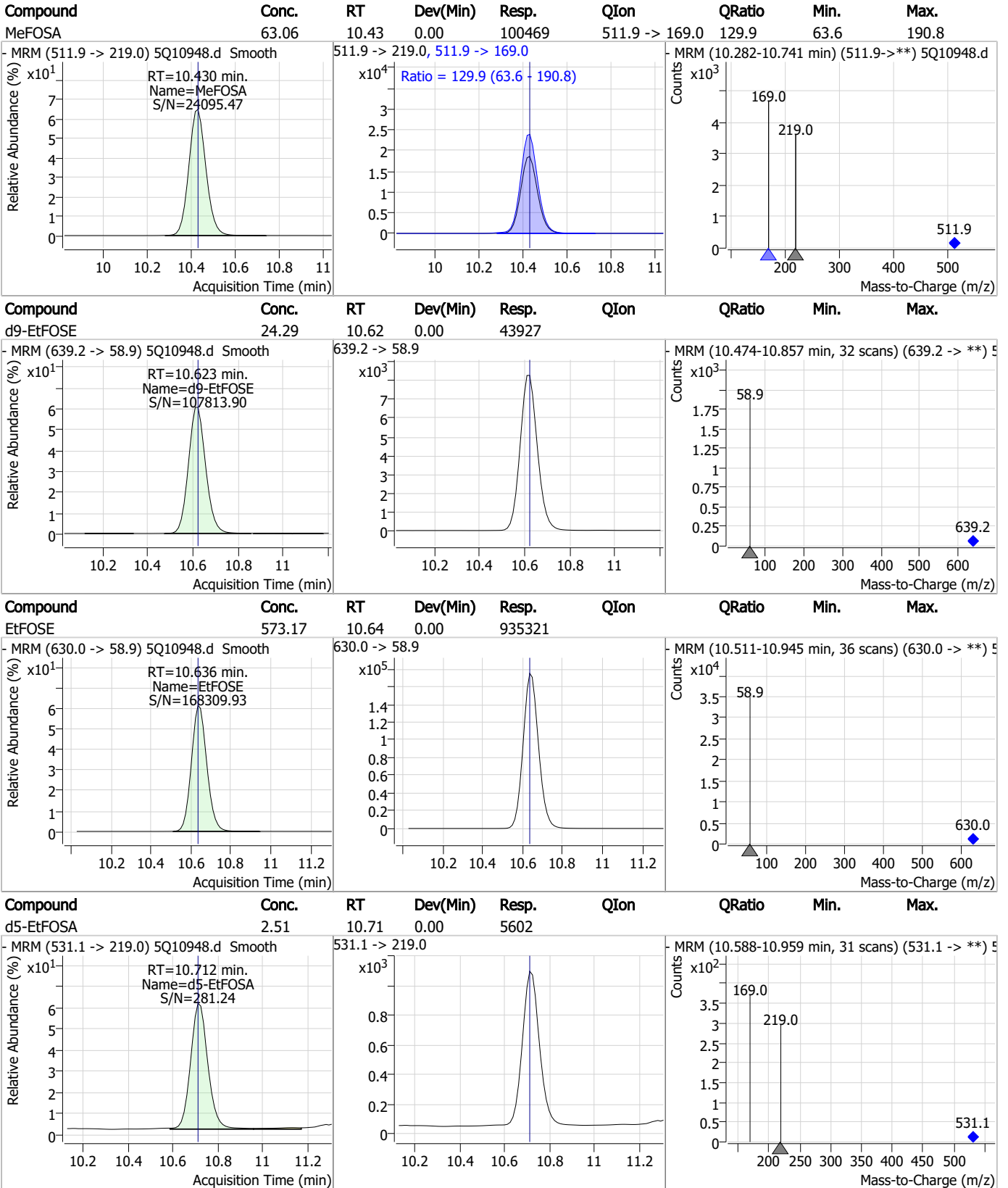
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	61.24	9.89	-0.01	409379	713.1 -> 168.9	13.2	7.1	21.2



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

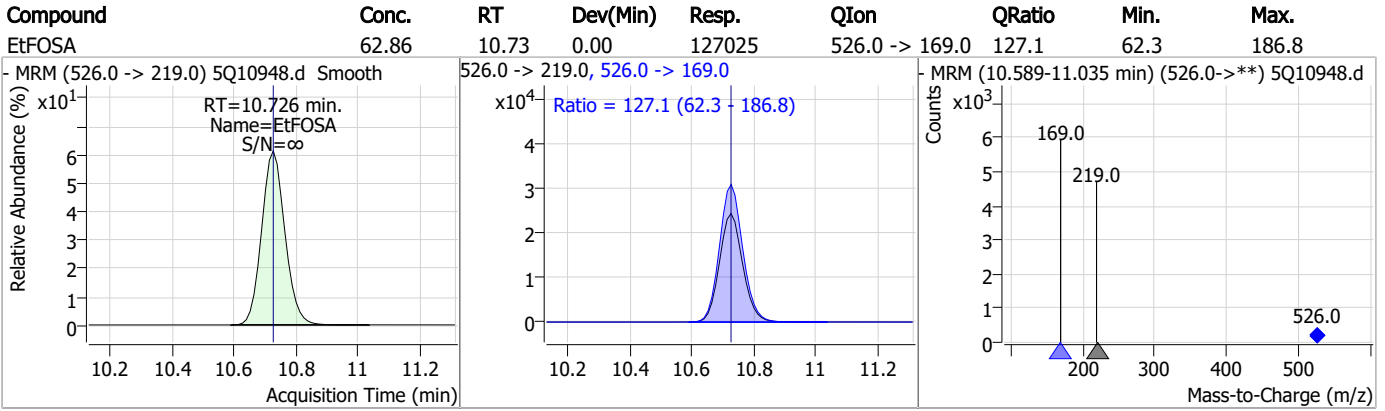


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Perfluorinated Compounds by LC/MS/MS



7.7.9

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Manual Integration Approval Summary

Sample Number: S5Q169-IC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10948.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 22:10 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
4:2 Fluorotelomer sulfonate	757124-72-4		5.00	Poor instrument integration
NFDHA	151772-58-6		5.22	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.34	Poor instrument integration
HFPO-DA (GenX)	13252-13-6		5.71	Poor instrument integration
PFEESA	113507-82-7		5.82	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.34	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.08	Split peak
MeFOSAA	2355-31-9		8.09	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.26	Split peak
EtFOSAA	2991-50-6		8.31	Split peak

7.7.9.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10950.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 10:38:20 PM
 Sample Name : icv169-4
 Vial : P3-B3
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	47336	10.00	µg/L m	0.000
M5-PFPeA	4.162	268.3 -> 223.0	28291	5.00	µg/L m	0.012
M5-PFHxA	5.335	318.0 -> 273.0	32877	2.50	µg/L	0.000
M4-PFHpA	6.280	367.1 -> 322.0	31444	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	38619	2.50	µg/L	0.000
M9-PFNA	7.520	472.1 -> 427.0	13507	1.25	µg/L	-0.012
M6-PFDA	8.066	519.1 -> 474.1	8364	1.25	µg/L	0.000
M7-PFUnDA	8.573	570.0 -> 525.1	9346	1.25	µg/L	-0.012
M2-PFDoDA	9.041	615.1 -> 570.0	9841	1.25	µg/L	-0.012
M2-PFTeDA	9.886	715.2 -> 670.0	9744	1.25	µg/L	-0.012
M8-FOSA	9.174	506.1 -> 77.8	8412	2.50	µg/L	-0.013
M3-PFBS	5.277	302.1 -> 79.9	9271	2.50	µg/L	0.000
M3-PFHxS	7.079	402.1 -> 79.9	6715	2.50	µg/L	-0.012
M8-PFOS	8.243	507.1 -> 79.9	8600	2.50	µg/L	-0.012
M2-4:2FTS	4.996	329.1 -> 80.9	580	5.00	µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1280	5.00	µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	1802	5.00	µg/L	-0.012
M3-MeFOSAA	8.088	573.2 -> 419.0	10086	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	70736	10.00	µg/L	0.000
M5-EtFOSAA	8.298	589.2 -> 419.0	16165	5.00	µg/L	-0.012
M7-MeFOSE	10.302	623.2 -> 58.9	40877	25.00	µg/L	-0.012
M9-EtFOSE	10.623	639.2 -> 58.9	49295	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5907	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4498	2.50	µg/L	0.000
13C4-PFOS	8.244	502.8 -> 79.9	8508	2.50	µg/L	-0.012
13C3-PFBA	2.803	216.0 -> 172.0	25978	5.00	µg/L	0.000
18O2-PFHxS	7.078	403.0 -> 83.9	4578	2.50	µg/L	-0.012
13C4-PFOA	6.950	417.1 -> 372.0	46162	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	13126	1.25	µg/L	0.000
13C5-PFNA	7.520	468.0 -> 423.0	12915	1.25	µg/L	-0.012
13C2-PFHxA	5.336	315.1 -> 270.0	37937	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	580	5.21	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%			
13C2-6:2FTS	6.699	429.1 -> 80.9	1280	5.16	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.2%			
13C2-8:2FTS	7.816	529.1 -> 80.9	1802	5.18	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.6%			
13C2-PFDoDA	9.041	615.1 -> 570.0	9841	1.20	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%			
13C2-PFTeDA	9.886	715.2 -> 670.0	9744	1.27	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%			
13C3-PFBS	5.277	302.1 -> 79.9	9271	2.63	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.3%			
13C3-PFHxS	7.079	402.1 -> 79.9	6715	2.57	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 = 102.6%	
13C4-PFBA	2.799	216.8 -> 171.9	55972	11.42 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 114.2%	
13C4-PFHpA	6.280	367.1 -> 322.0	31444	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFHxA	5.335	318.0 -> 273.0	32877	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C5-PFPeA	4.162	268.3 -> 223.0	34789	5.04 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C6-PFDA	8.066	519.1 -> 474.1	8364	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C7-PFUnDA	8.573	570.0 -> 525.1	9346	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-FOSA	9.174	506.1 -> 77.8	8412	2.52 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-PFOA	6.950	421.1 -> 376.0	38619	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-PFOS	8.243	507.1 -> 79.9	8600	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C9-PFNA	7.520	472.1 -> 427.0	13507	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
d3-MeFOSAA	8.088	573.2 -> 419.0	10086	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C3-HFPO-DA	5.714	286.9 -> 168.9	70736	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
d3-MeFOSA	10.416	515.0 -> 219.0	4498	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
d5-EtFOSAA	8.298	589.2 -> 419.0	16165	5.80 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.0%	
d7-MeFOSE	10.302	623.2 -> 58.9	40877	26.11 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.4%	
d9-EtFOSE	10.623	639.2 -> 58.9	49295	25.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d5-EtFOSA	10.712	531.1 -> 219.0	5907	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	7127	9.76 µg/L	98
		327.1 -> 80.9	3839		
6:2FTS	6.700	427.1 -> 407.0	10725	10.03 µg/L	99
		427.1 -> 80.9	4430		
8:2FTS	7.816	527.1 -> 507.0	7027	8.23 µg/L	99
		527.1 -> 80.8	3489		
EtFOSAA	8.311	584.2 -> 419.1	5691	2.69 µg/L	m 98
		584.2 -> 526.0	2341		
FOSA	9.177	498.1 -> 77.9	8016	2.61 µg/L	98
		498.1 -> 478.0	216		
MeFOSAA	8.089	570.1 -> 419.0	4256	2.49 µg/L	m 92
		570.1 -> 483.0	1082		
PFBA	2.807	212.8 -> 168.9	19542	10.43 µg/L	100
PFBS	5.278	298.7 -> 79.9	7157	2.35 µg/L	96
		298.7 -> 98.8	3183		
PFDA	8.067	512.9 -> 469.0	21910	2.50 µg/L	100
		512.9 -> 219.0	4034		
PFDODA	9.042	613.1 -> 569.0	17033	2.55 µg/L	100
		613.1 -> 319.0	2702		
PFDS	9.232	599.0 -> 79.9	4528	2.38 µg/L	93

7.7.10
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.281	599.0 -> 98.8	2557	2.46	µg/L	97
		363.1 -> 319.0	32668			
PFHpS	7.699	363.1 -> 169.0	6979	2.42	µg/L	95
		449.0 -> 79.9	5928			
PFHxA	5.337	449.0 -> 98.9	3347	2.46	µg/L	99
		313.0 -> 269.0	23759			
PFHxS	7.080	313.0 -> 118.9	1201	2.15	µg/L	82
		398.7 -> 79.9	4876			
PFNA	7.521	398.7 -> 98.9	2795	2.42	µg/L	98
		463.0 -> 419.0	18955			
PFNS	8.761	463.0 -> 219.0	4303	2.49	µg/L	92
		548.8 -> 79.9	4706			
PFOA	6.951	548.8 -> 98.9	2591	2.47	µg/L	97
		413.0 -> 369.0	36699			
PFOS	8.244	413.0 -> 169.0	8896	2.46	µg/L	88
		498.9 -> 79.9	8524			
PFPeA	4.164	498.9 -> 98.8	4689	5.27	µg/L	100
		263.0 -> 219.0	32560			
PFPeS	6.357	349.1 -> 79.9	5176	2.64	µg/L	96
		349.1 -> 98.9	2480			
PFTeDA	9.887	713.1 -> 669.0	17784	2.37	µg/L	98
		713.1 -> 168.9	2363			
PFTrDA	9.476	663.0 -> 619.0	22545	2.56	µg/L	99
		663.0 -> 168.9	3792			
PFUnDA	8.573	563.1 -> 519.0	16819	2.41	µg/L	98
		563.1 -> 269.1	3533			
11CI-PF3OUdS	9.542	630.9 -> 450.9	70047	9.00	µg/L	99
		632.9 -> 452.9	21896			
9CI-PF3ONS	8.626	530.8 -> 351.0	75324	9.05	µg/L	100
		532.8 -> 353.0	23856			
ADONA	6.542	376.9 -> 250.9	175406	9.06	µg/L	99
		376.9 -> 84.8	51392			
HFPO-DA	5.715	284.9 -> 168.9	60689	10.45	µg/L	100
		284.9 -> 184.9	5560			
3:3FTCA	3.603	241.0 -> 177.0	6531	14.32	µg/L	96
		241.0 -> 117.0	741			
5:3FTCA	5.918	341.0 -> 237.1	110191	55.27	µg/L	98
		341.0 -> 217.0	75818			
7:3FTCA	7.335	441.0 -> 316.9	43460	54.44	µg/L	100
		441.0 -> 336.9	94433			
EtFOSA	10.726	526.0 -> 219.0	5192	2.44	µg/L	98
		526.0 -> 169.0	6578			
EtFOSE	10.636	630.0 -> 58.9	47566	25.97	µg/L	100
		511.9 -> 219.0	4240			
MeFOSA	10.418	511.9 -> 169.0	5441	2.39	µg/L	99
		616.1 -> 58.9	43863			
MeFOSE	10.327	699.1 -> 79.9	3645	25.12	µg/L	100
		699.1 -> 98.8	2078			
PFDoDS	10.038	295.0 -> 201.0	3939	2.44	µg/L	95
		295.0 -> 84.9	1160			
NFDHA	5.218	279.0 -> 85.1	27252	5.19	µg/L	95
		229.0 -> 84.9	20872			
PFMBA	4.566	314.8 -> 134.9	38770	5.98	µg/L	100
		314.8 -> 82.9	1327			
PFMPA	3.328			6.23	µg/L	100
PFEESA	5.821			3.82	µg/L	98

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



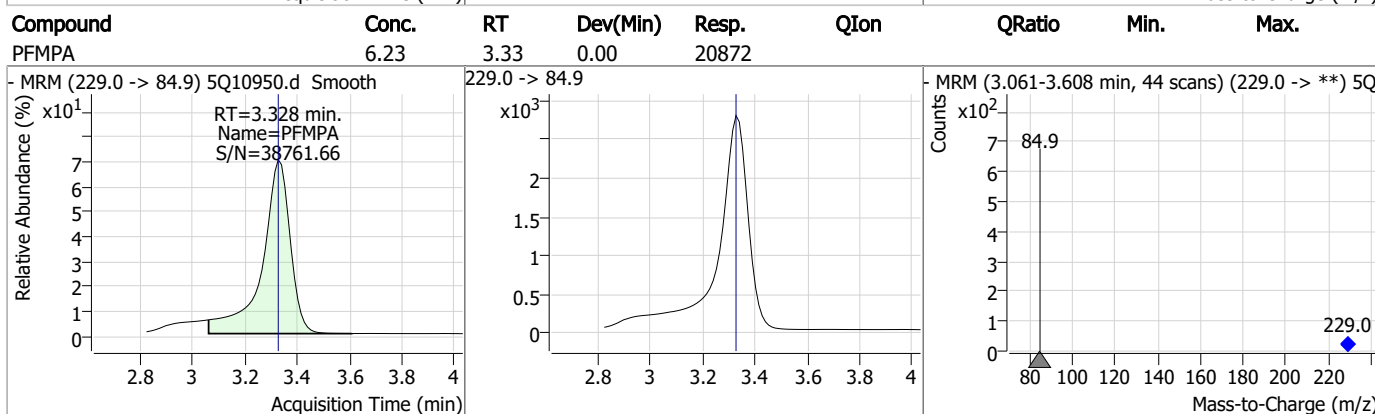
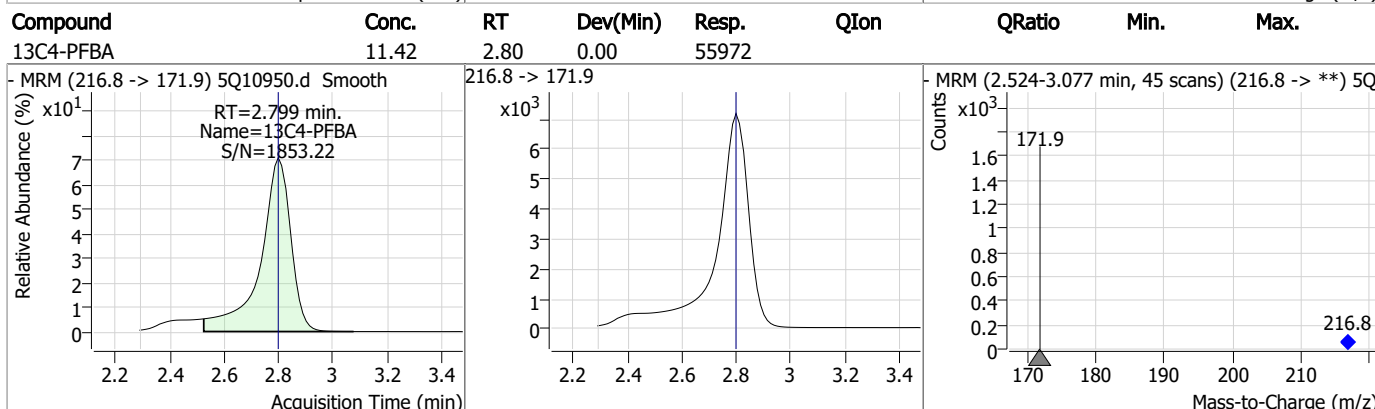
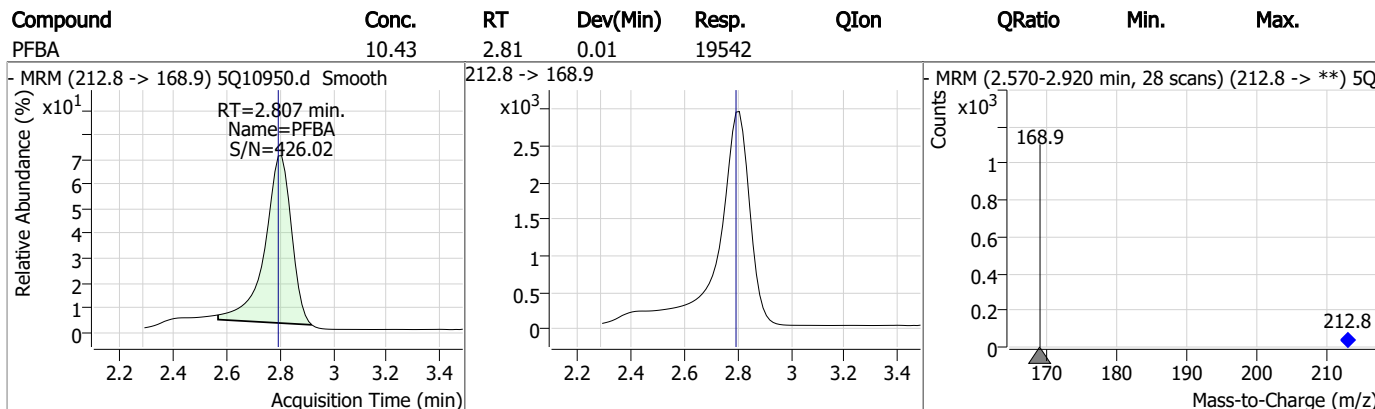
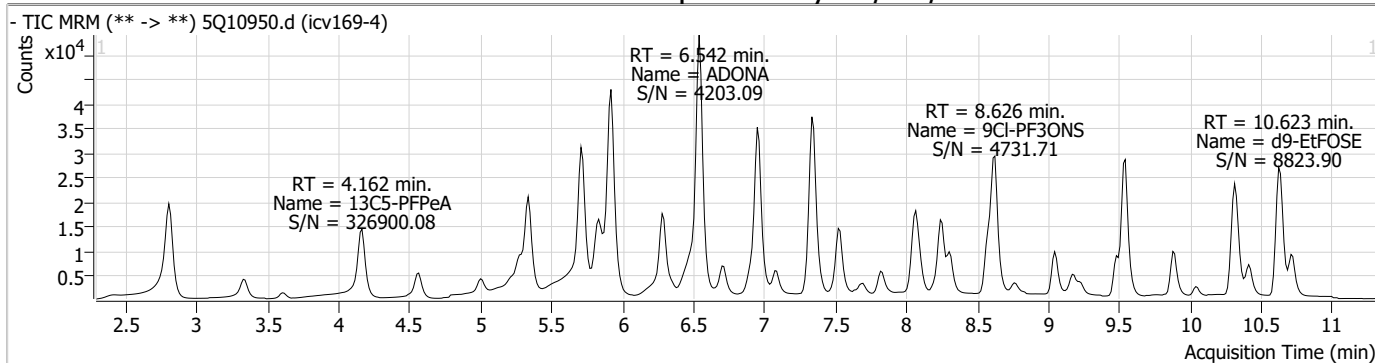
Perfluorinated Compounds by LC/MS/MS

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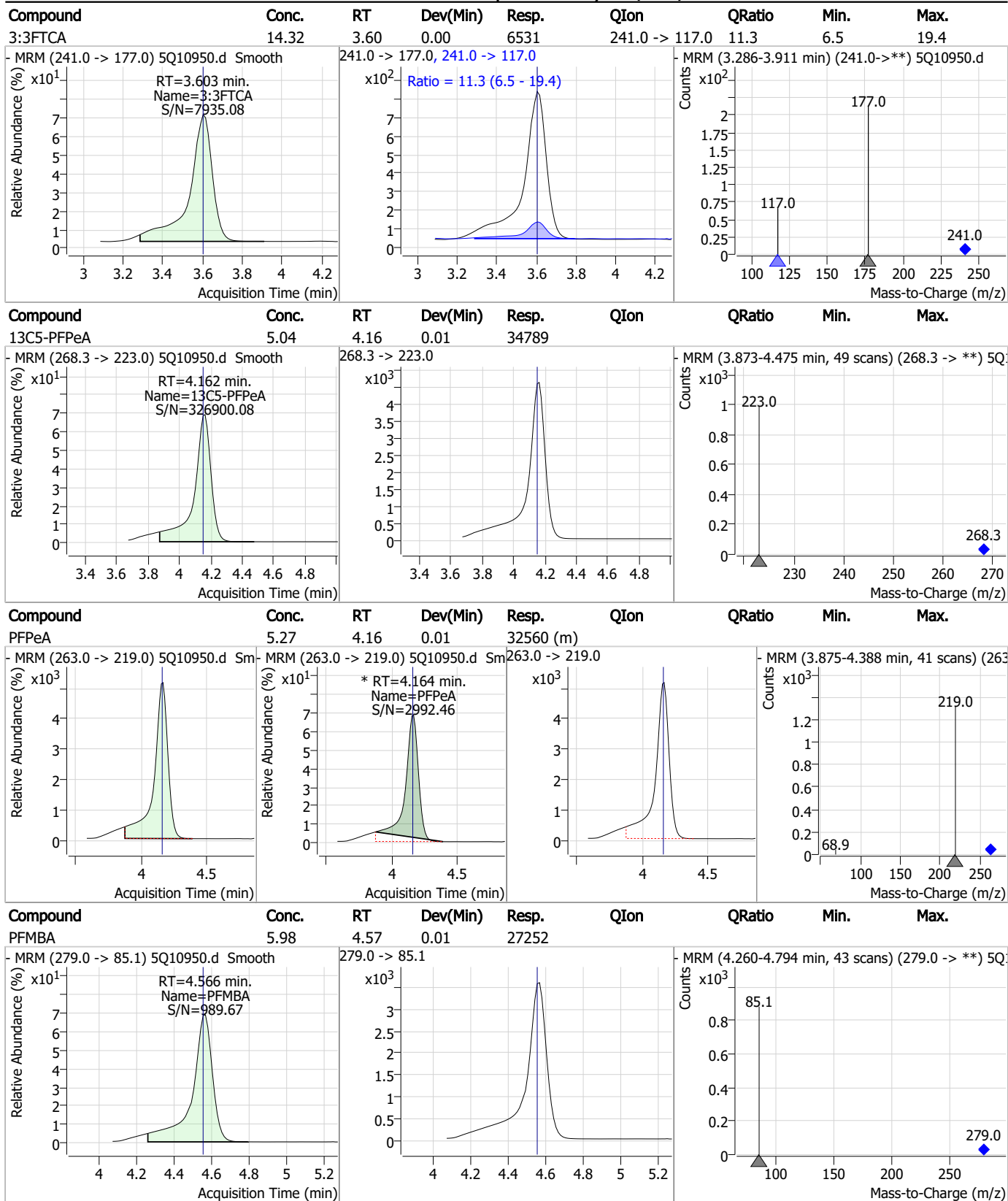
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Perfluorinated Compounds by LC/MS/MS



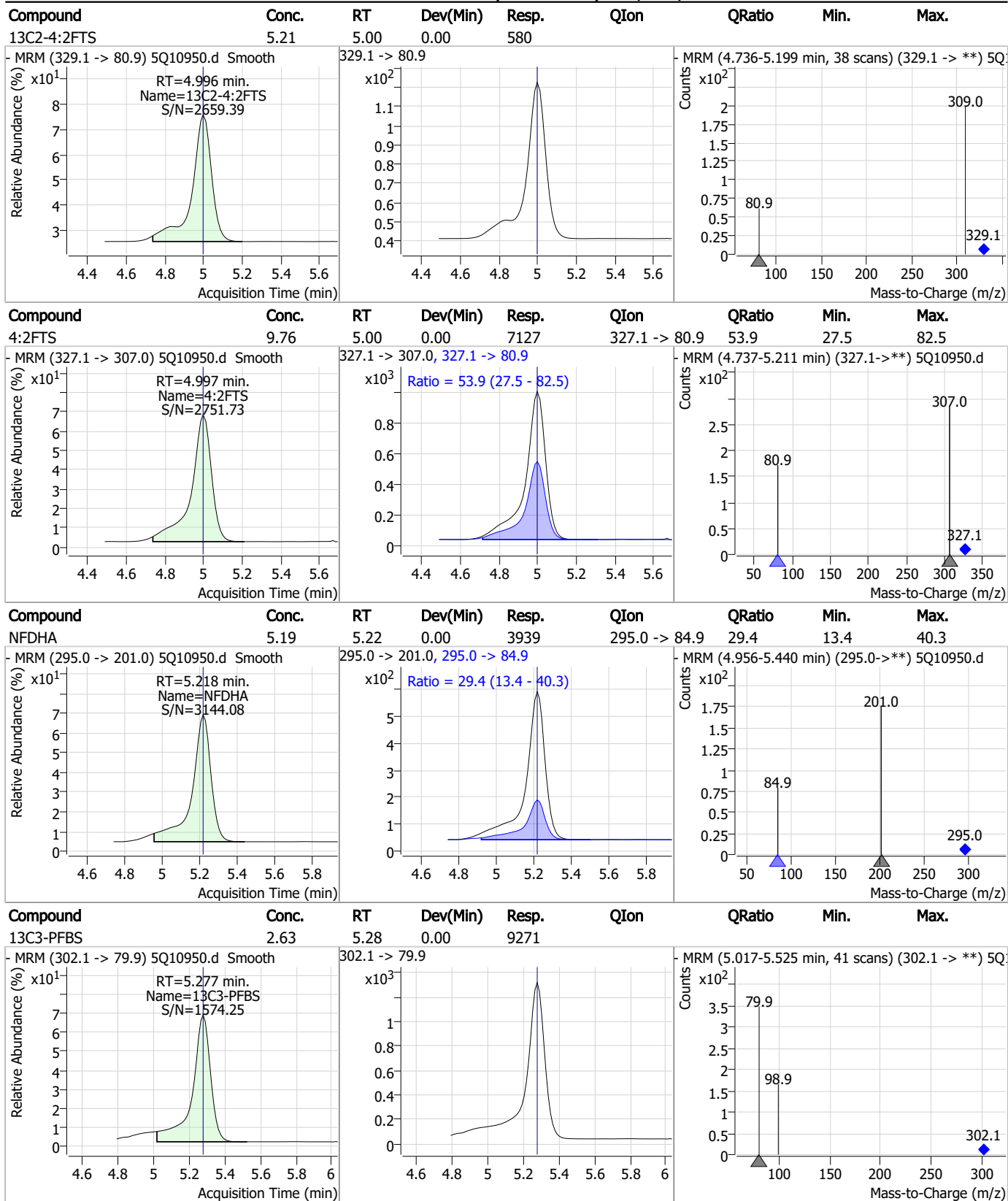
7.7.10
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Perfluorinated Compounds by LC/MS/MS



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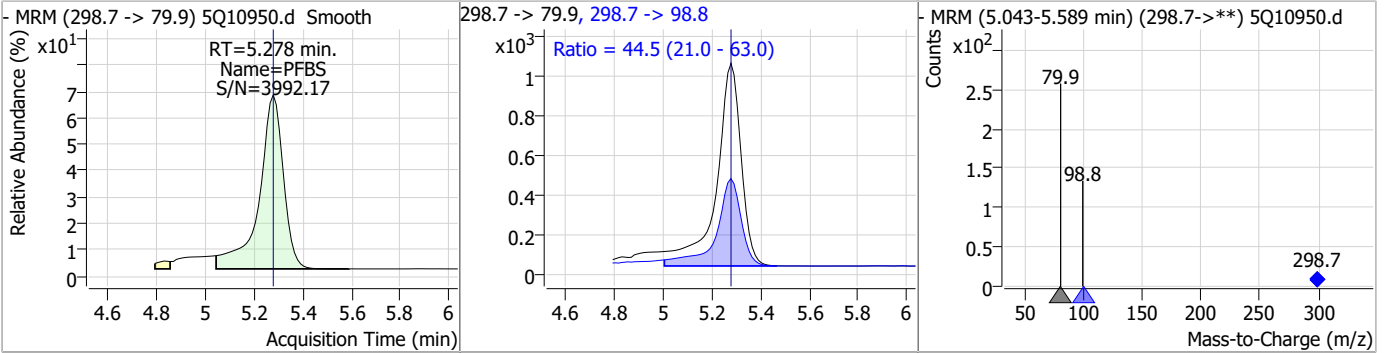
Perfluorinated Compounds by LC/MS/MS



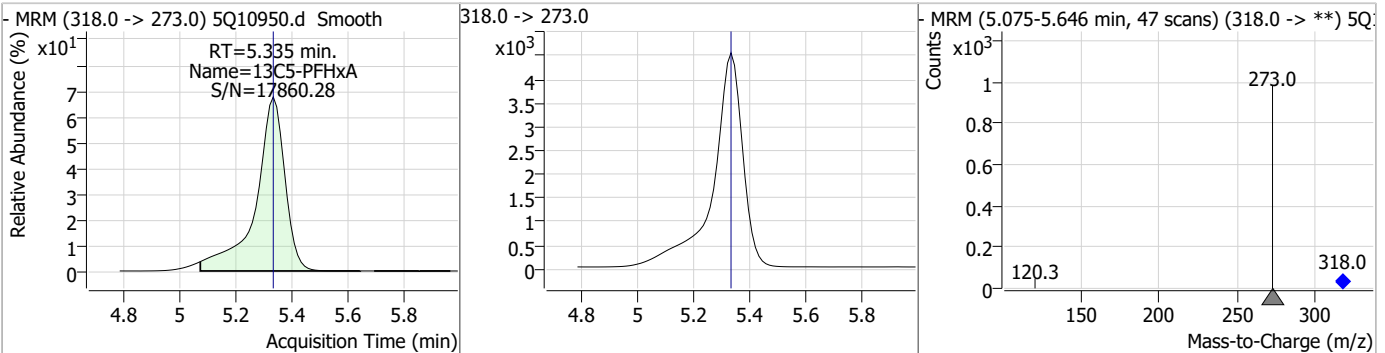
7.7.10
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Perfluorinated Compounds by LC/MS/MS

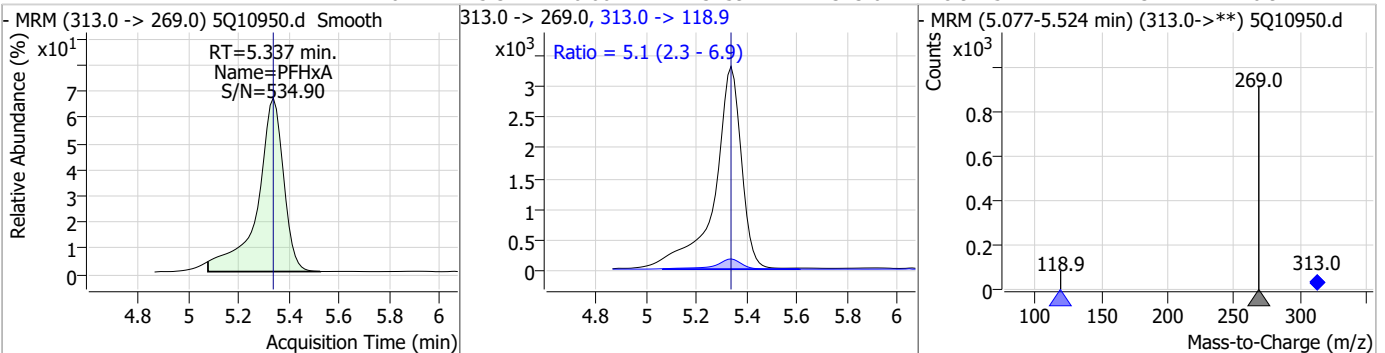
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.35	5.28	0.00	7157	298.7 -> 98.8	44.5	21.0	63.0



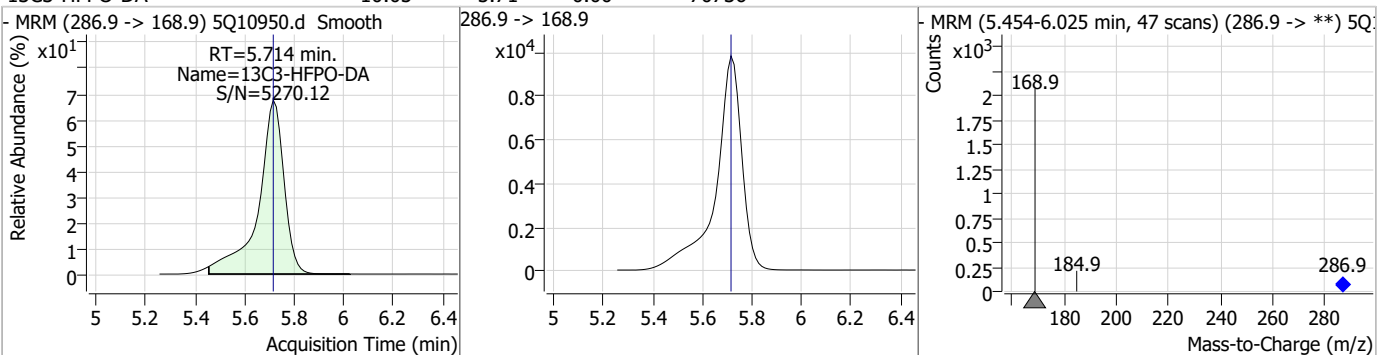
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.47	5.34	0.00	32877				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.46	5.34	0.00	23759	313.0 -> 118.9	5.1	2.3	6.9



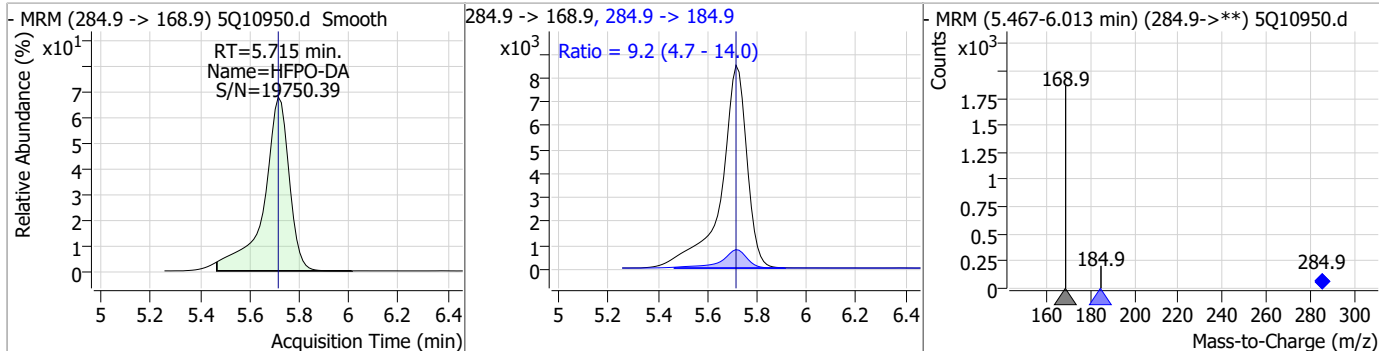
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.05	5.71	0.00	70736				



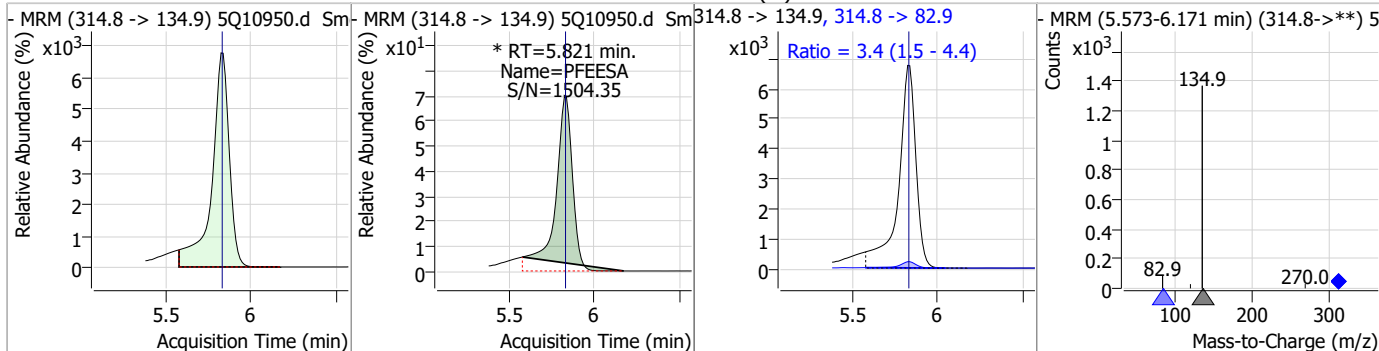
7.7.10
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Perfluorinated Compounds by LC/MS/MS

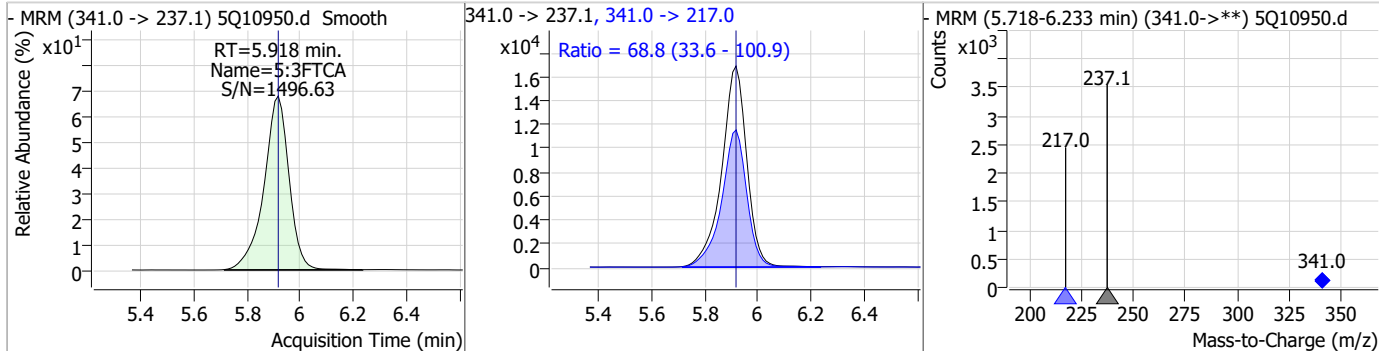
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	10.45	5.72	0.00	60689	284.9 -> 184.9	9.2	4.7	14.0



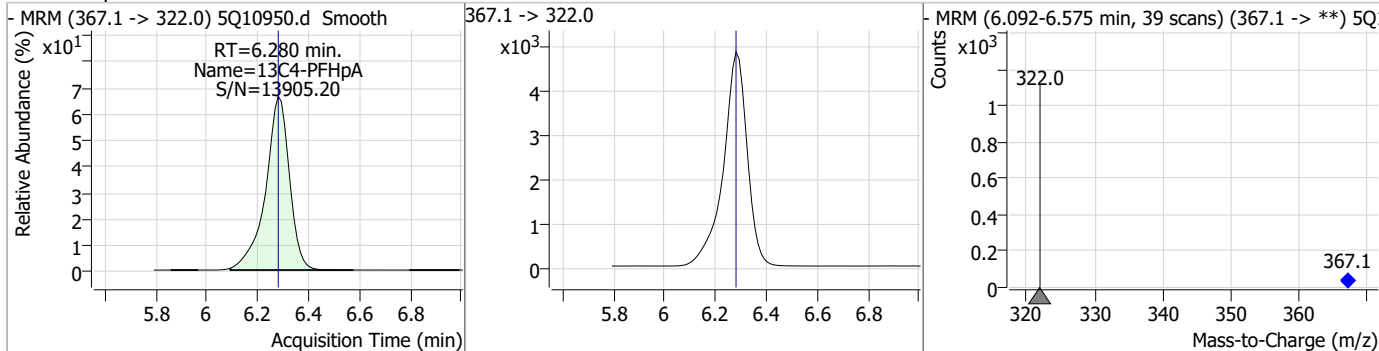
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	3.82	5.82	0.00	38770 (m)	314.8 -> 82.9	3.4	1.5	4.4



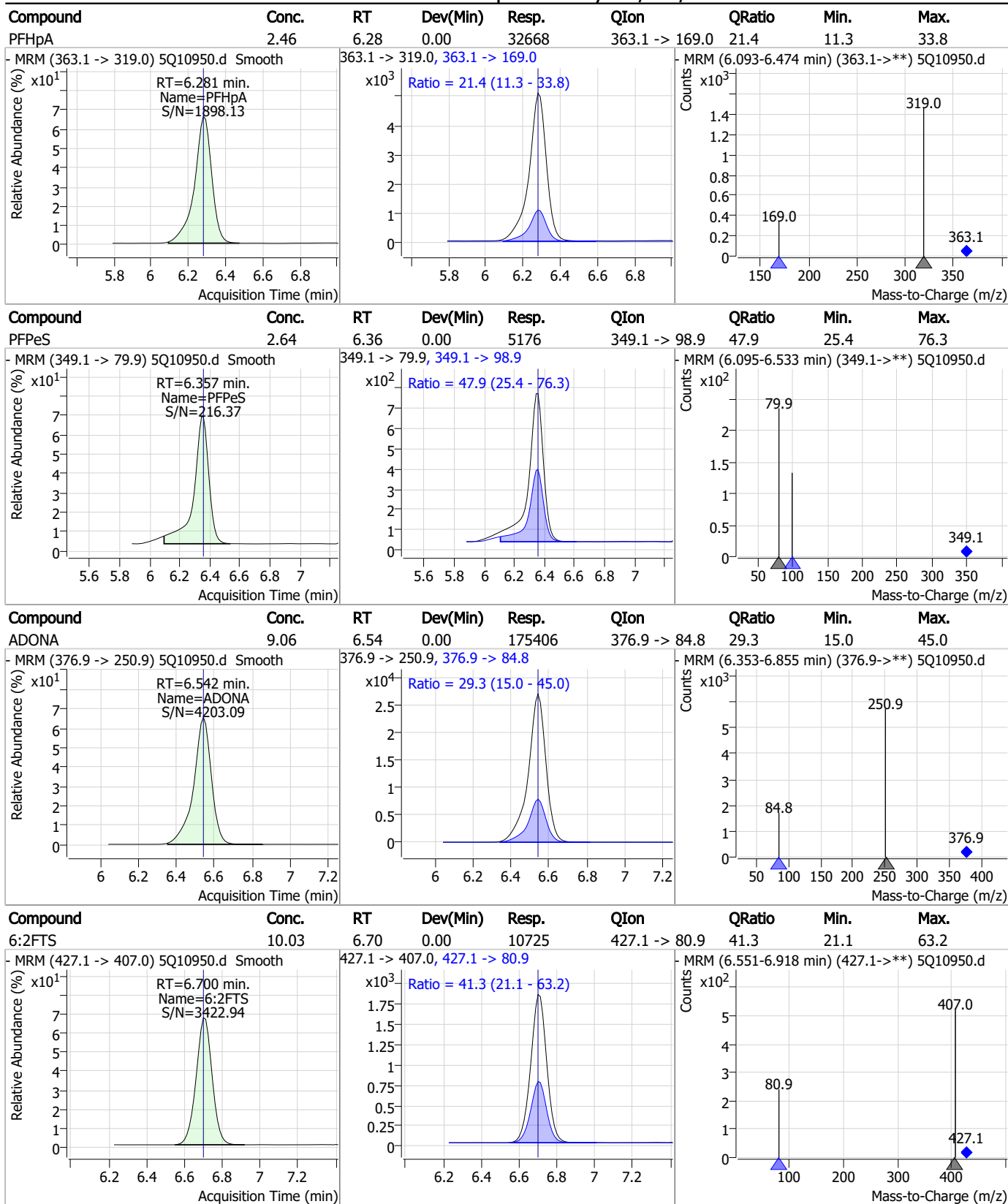
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	55.27	5.92	0.00	110191	341.0 -> 217.0	68.8	33.6	100.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.49	6.28	0.00	31444	367.1 -> 322.0	-	-	-

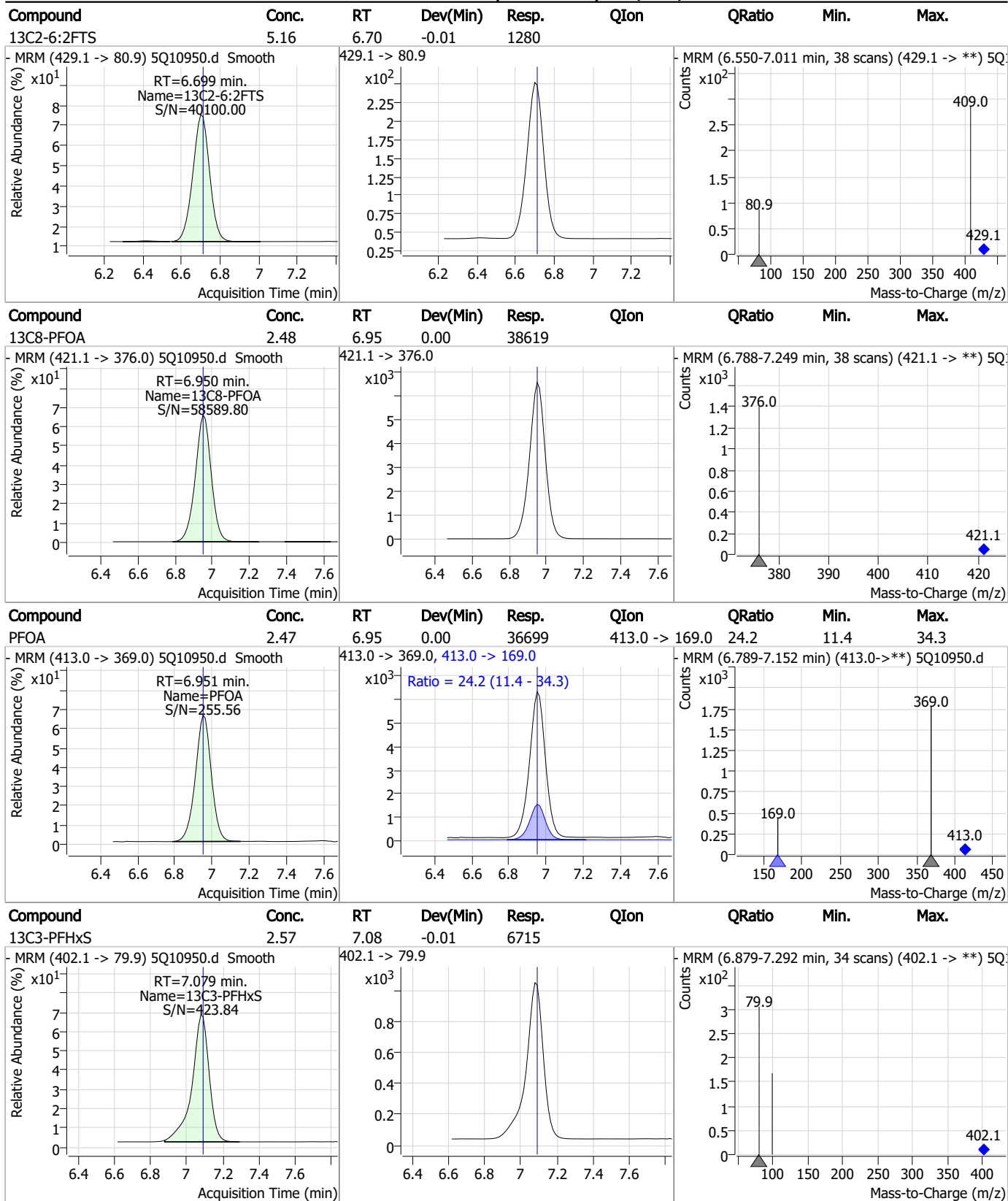


Perfluorinated Compounds by LC/MS/MS



7.7.10
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Perfluorinated Compounds by LC/MS/MS

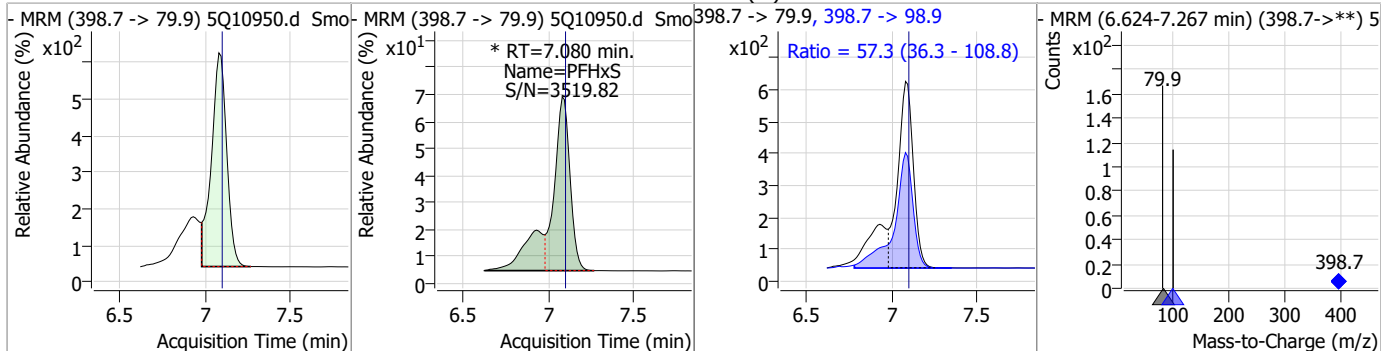


7.7.10
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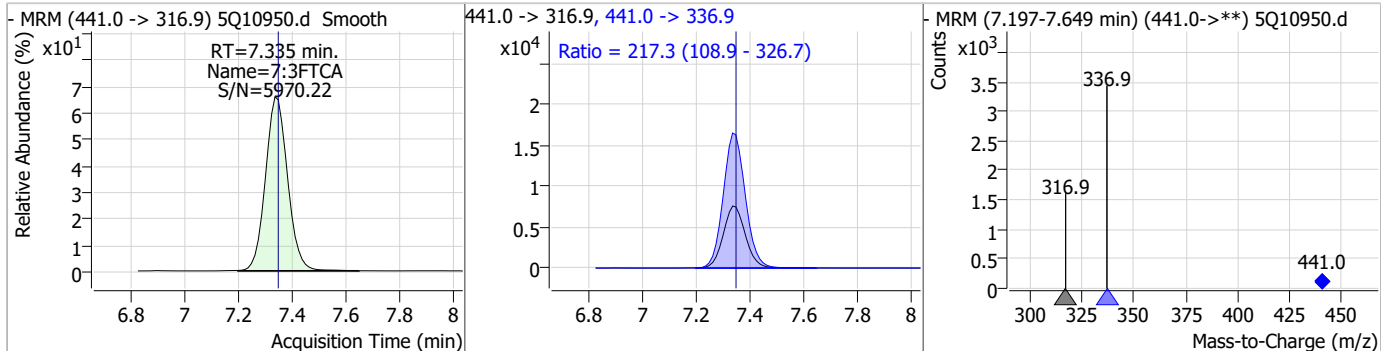


Perfluorinated Compounds by LC/MS/MS

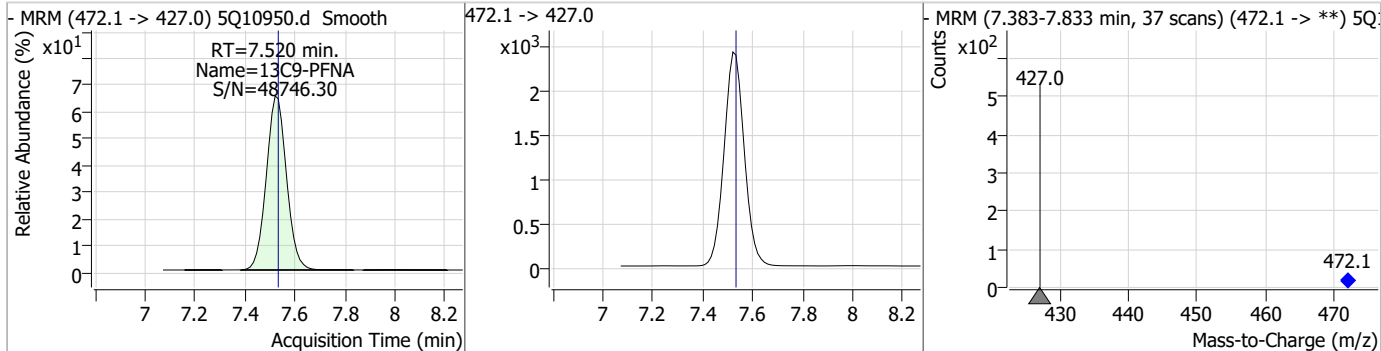
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.15	7.08	-0.01	4876 (m)	398.7 -> 98.9	57.3	36.3	108.8



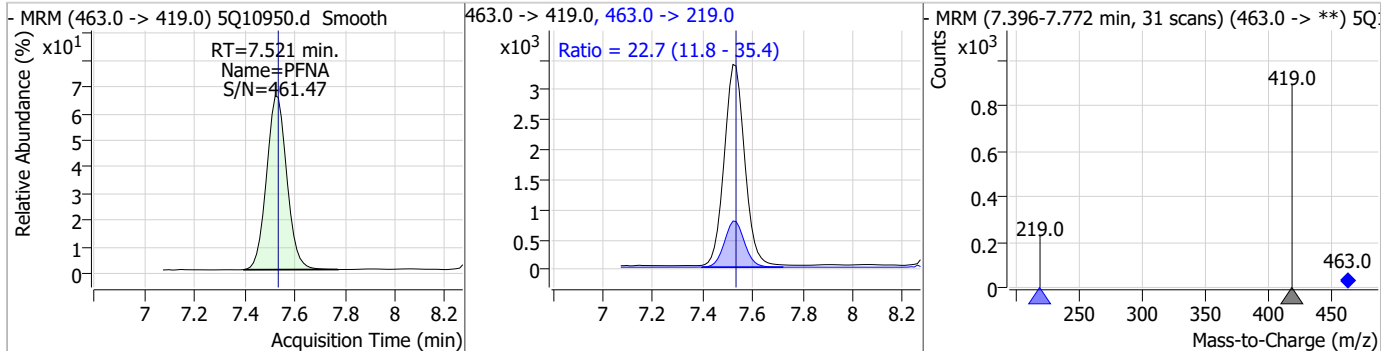
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	54.44	7.34	-0.01	43460	441.0 -> 336.9	217.3	108.9	326.7



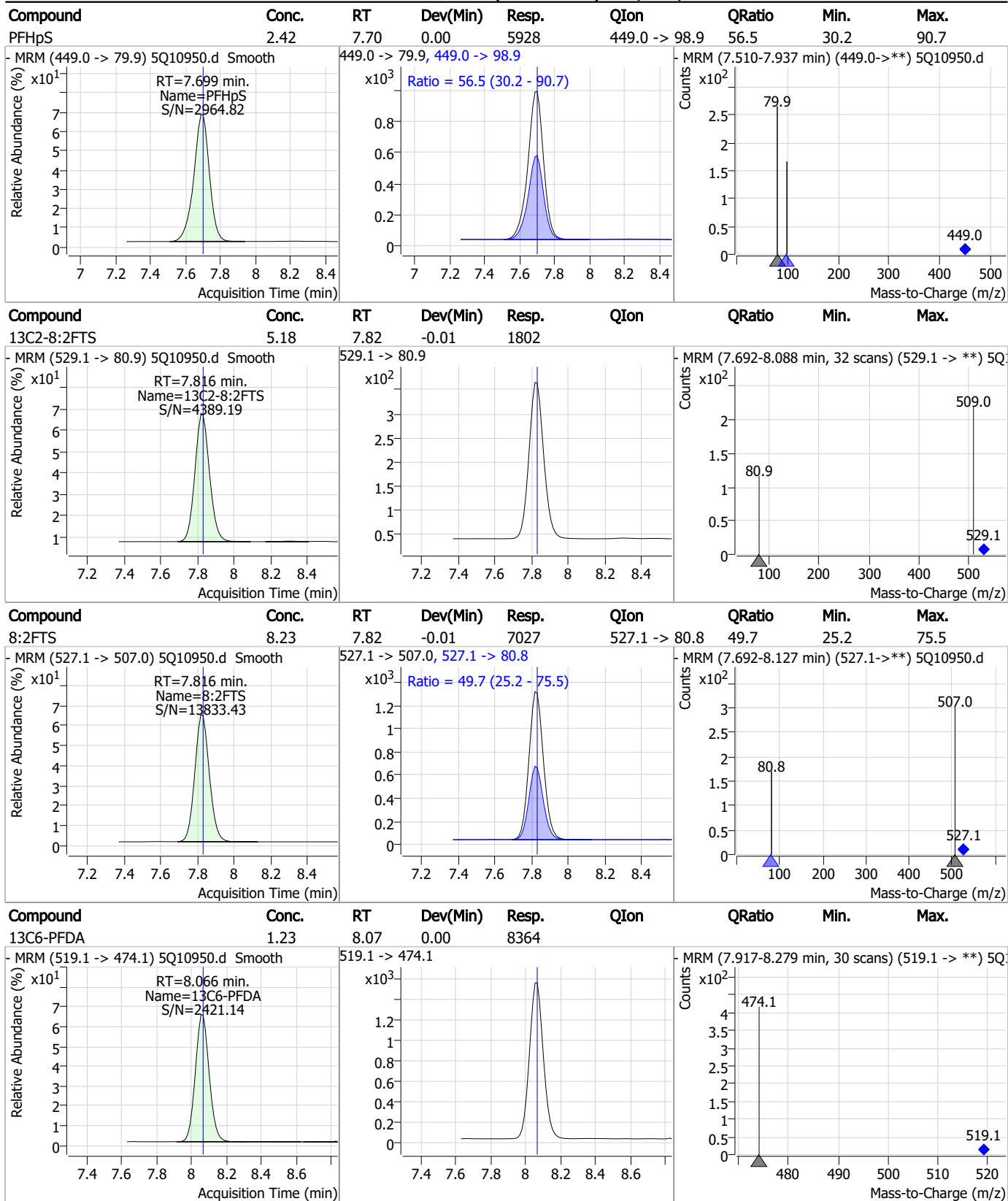
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.28	7.52	-0.01	13507	472.1 -> 427.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.42	7.52	-0.01	18955	463.0 -> 219.0	22.7	11.8	35.4

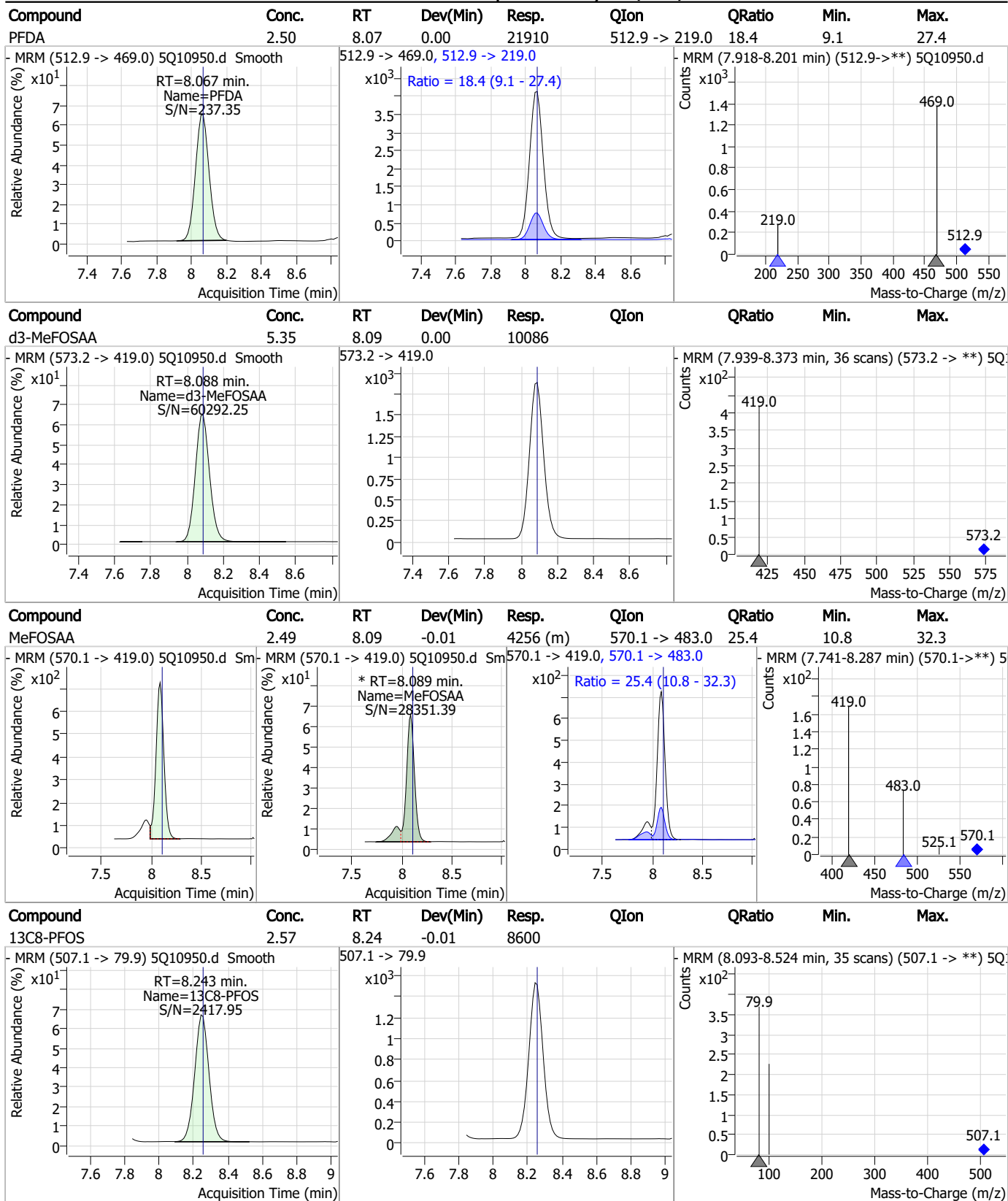


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

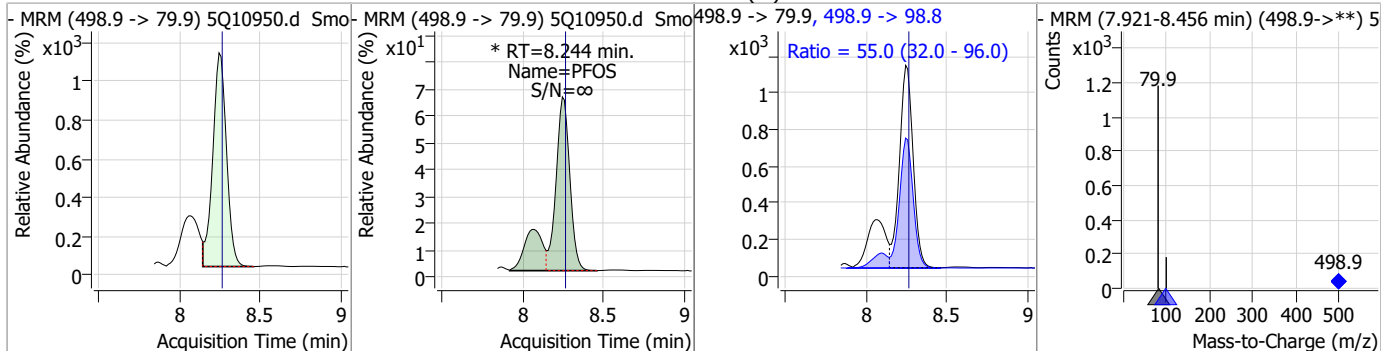


7.7.10
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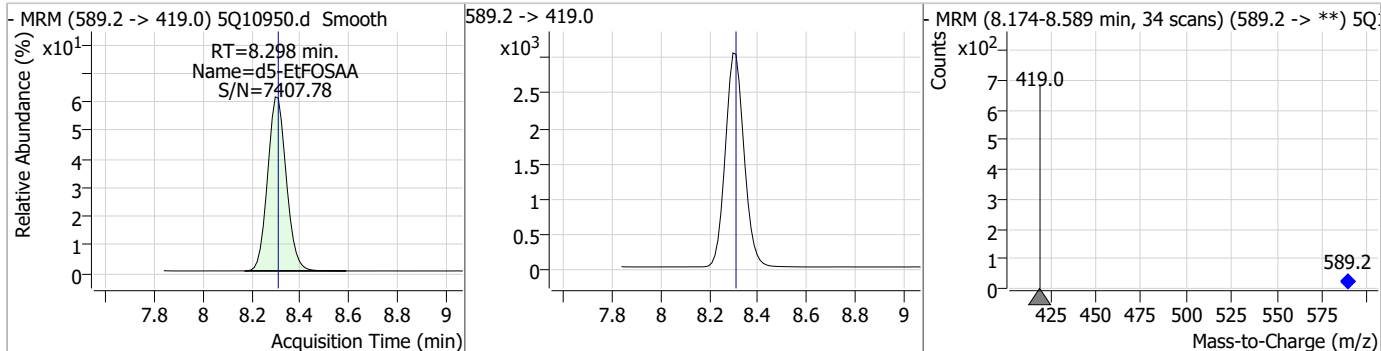


Perfluorinated Compounds by LC/MS/MS

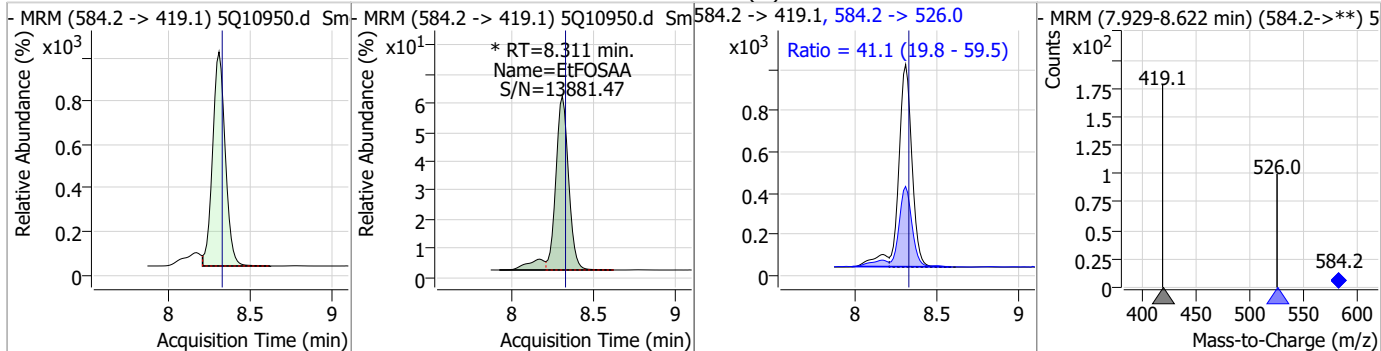
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.46	8.24	-0.01	8524 (m)	498.9 -> 98.8	55.0	32.0	96.0



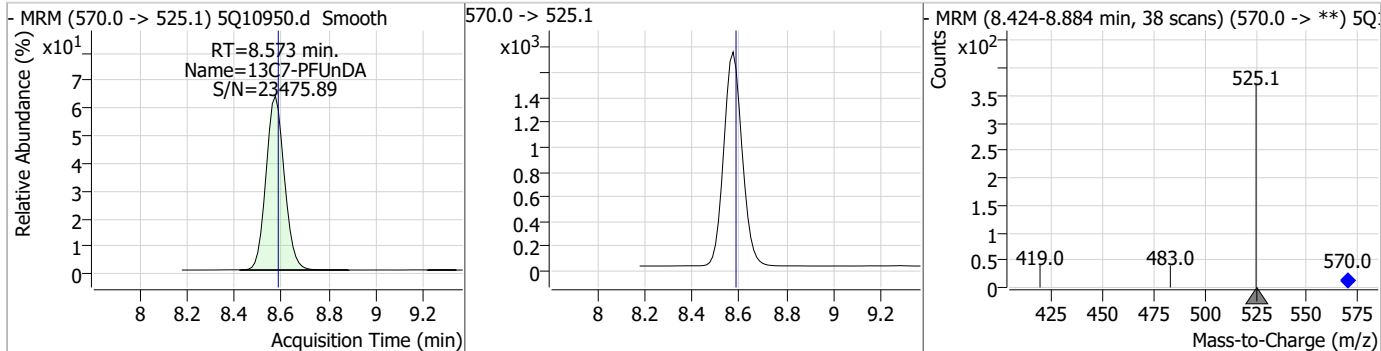
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.80	8.30	-0.01	16165				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.69	8.31	-0.01	5691 (m)	584.2 -> 526.0	41.1	19.8	59.5

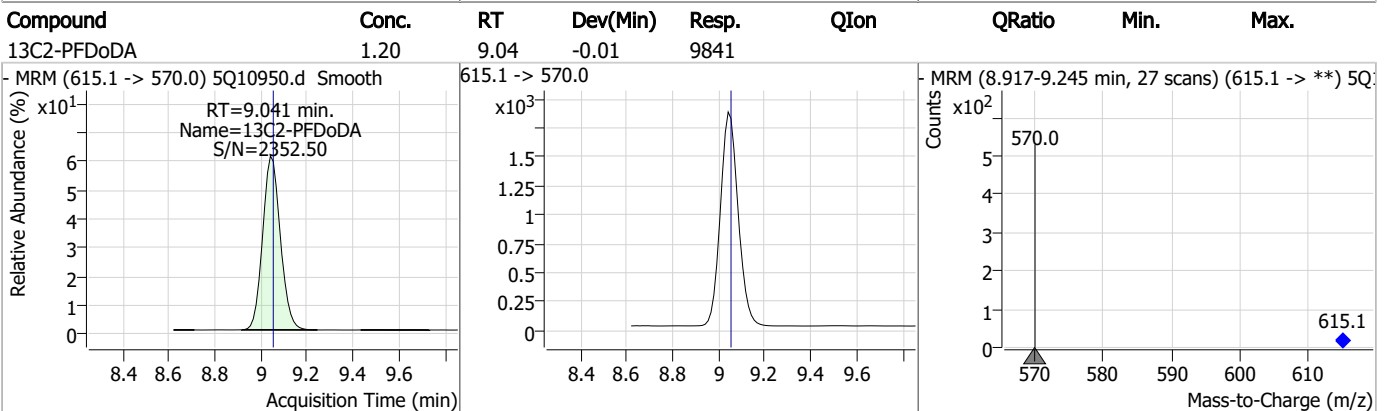
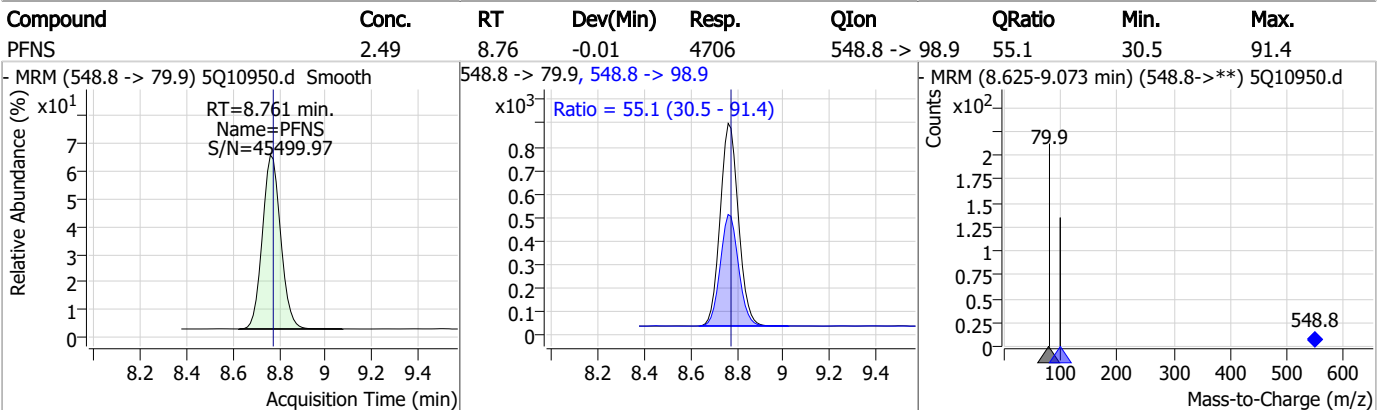
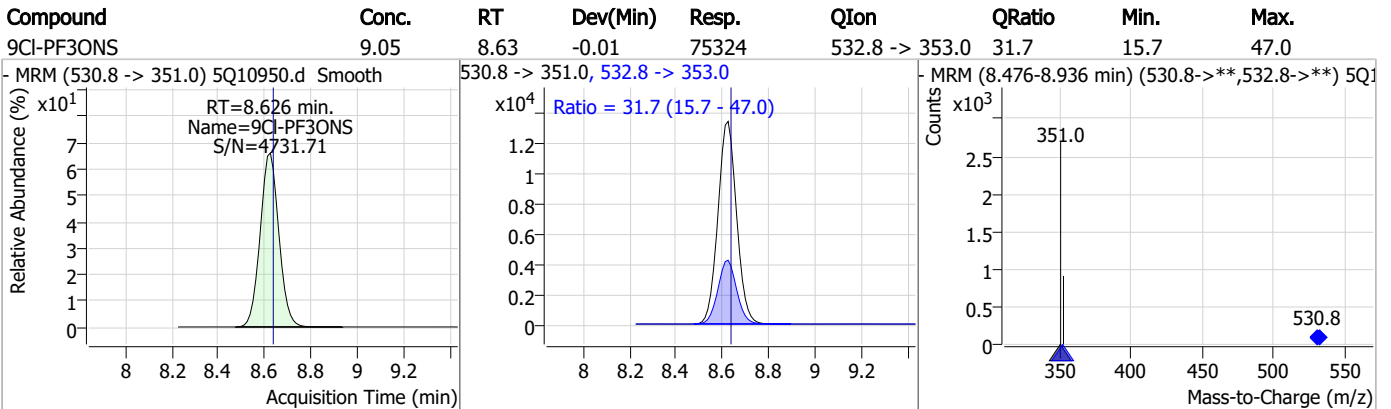
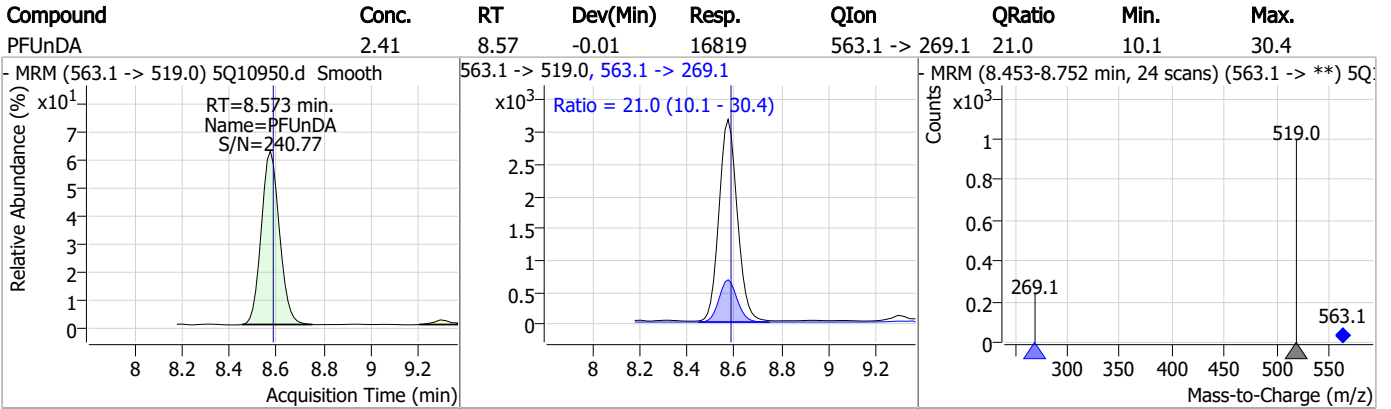


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.26	8.57	-0.01	9346				

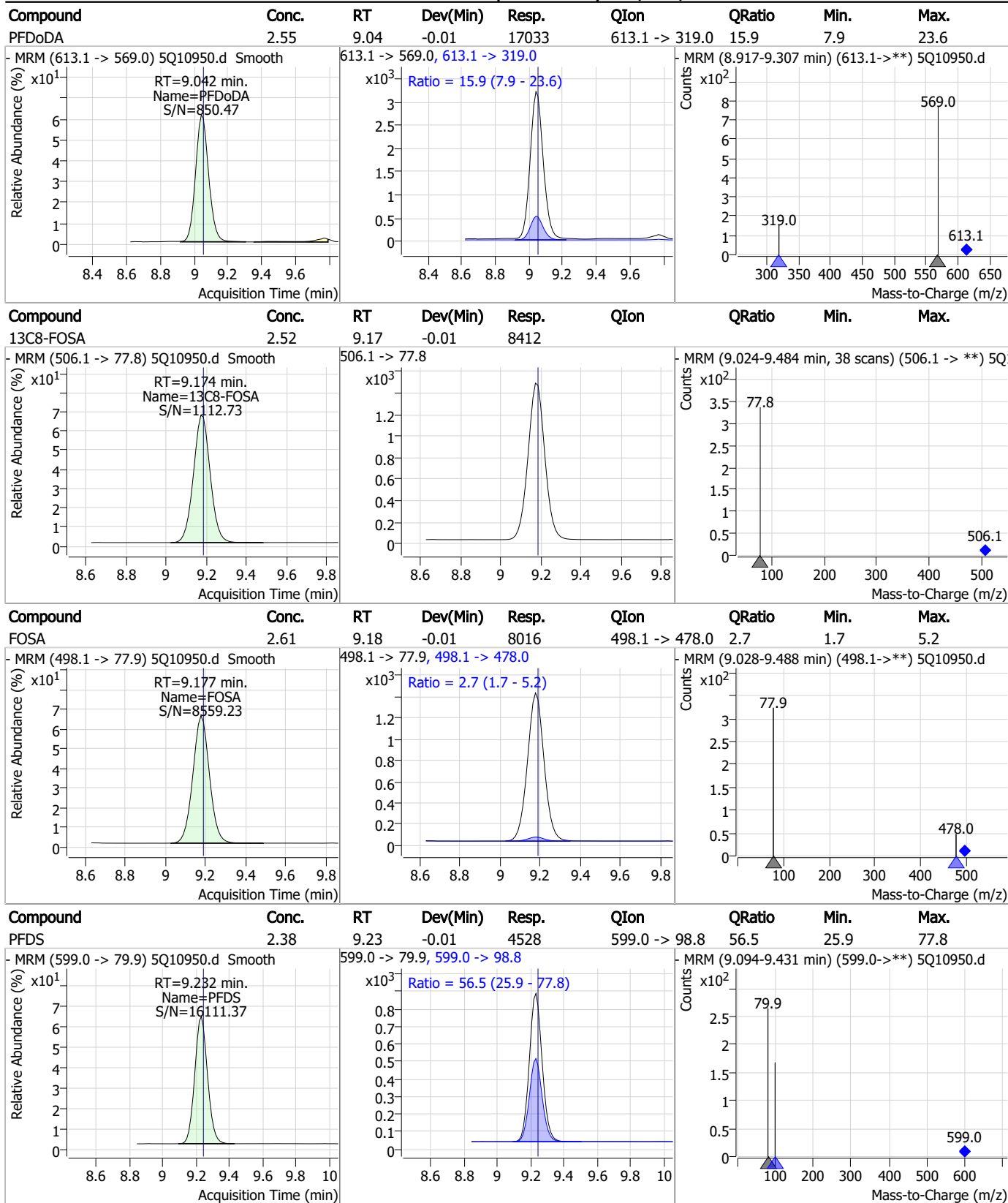


7.7.10
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Perfluorinated Compounds by LC/MS/MS

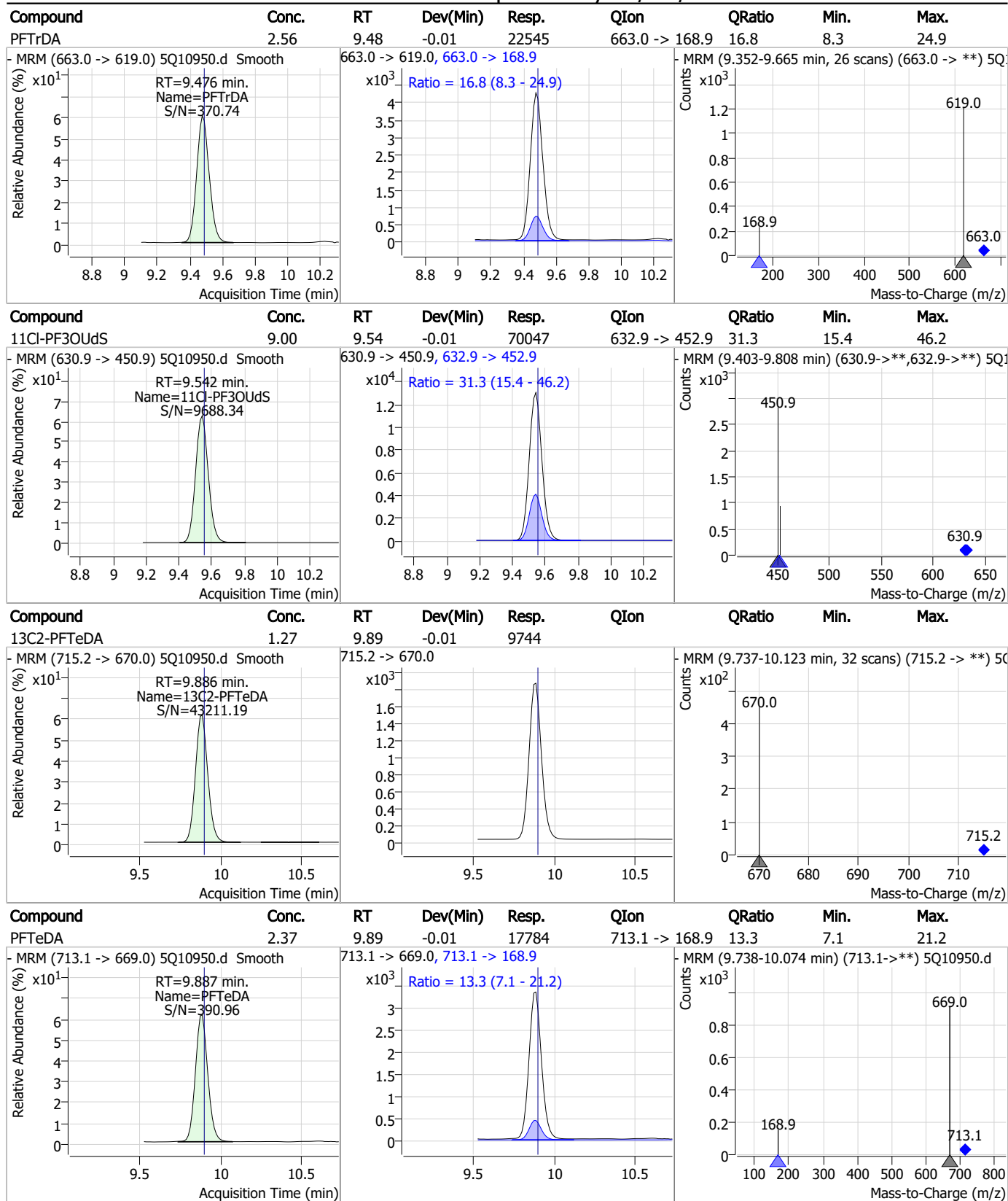


Perfluorinated Compounds by LC/MS/MS



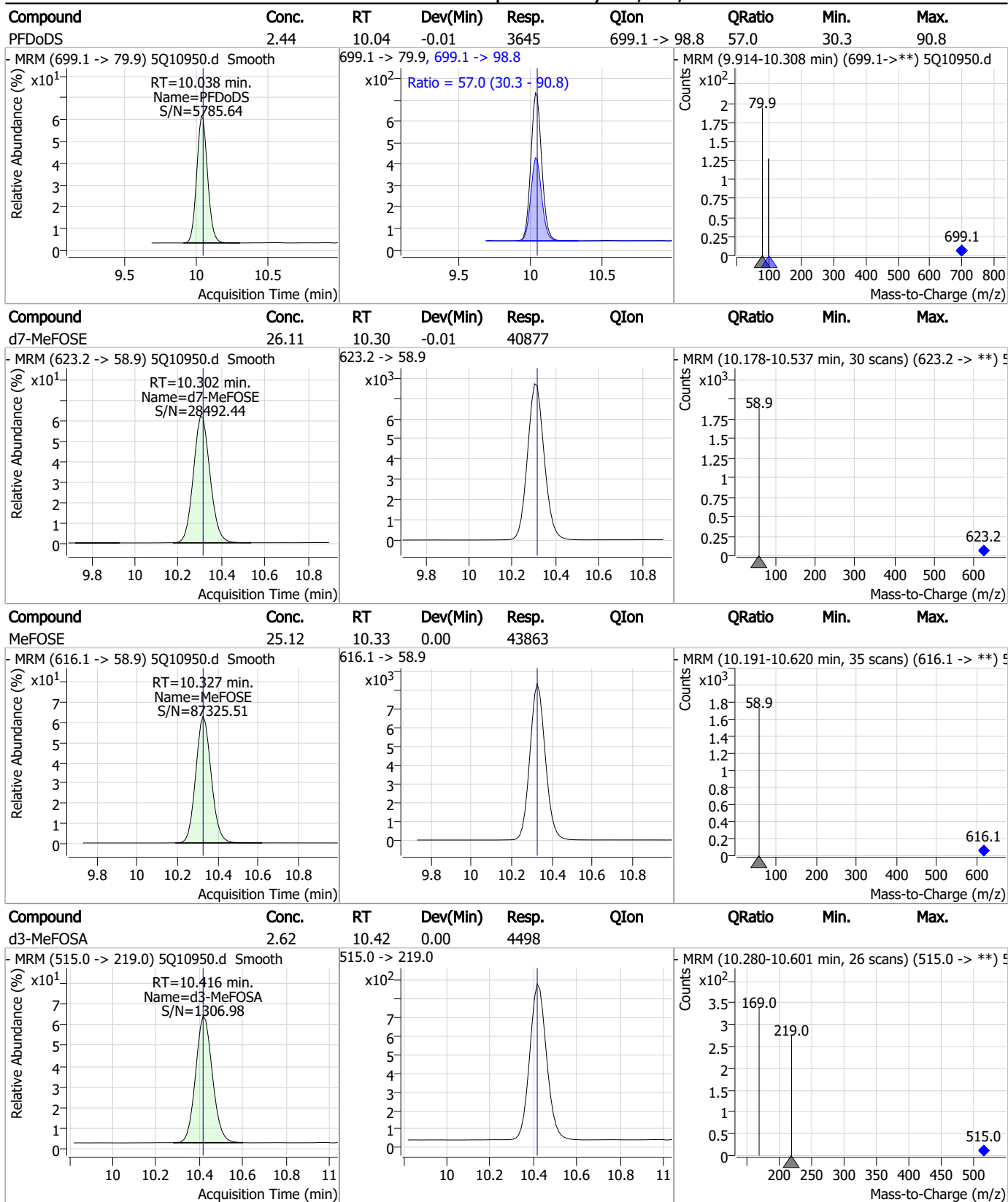
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



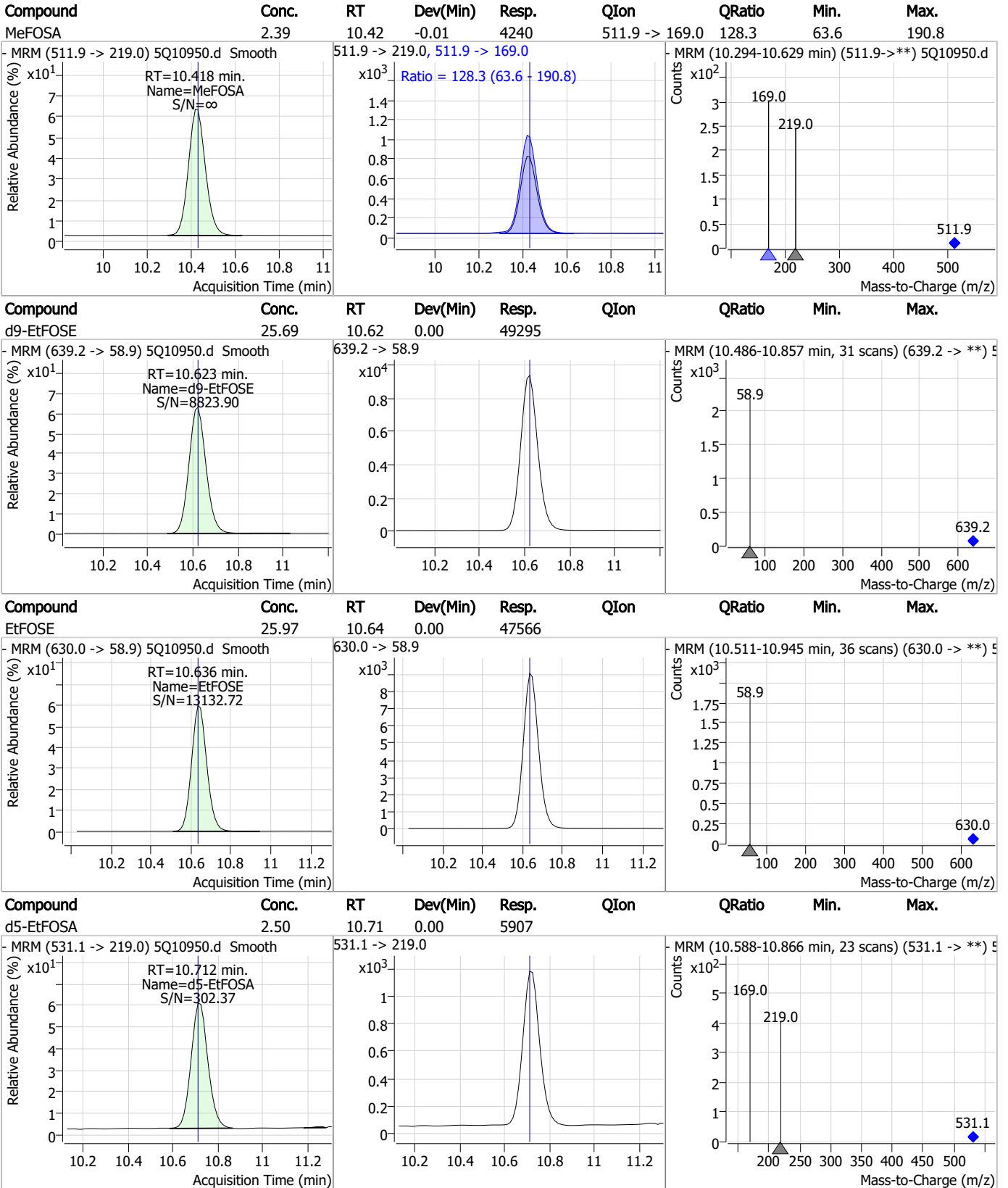
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



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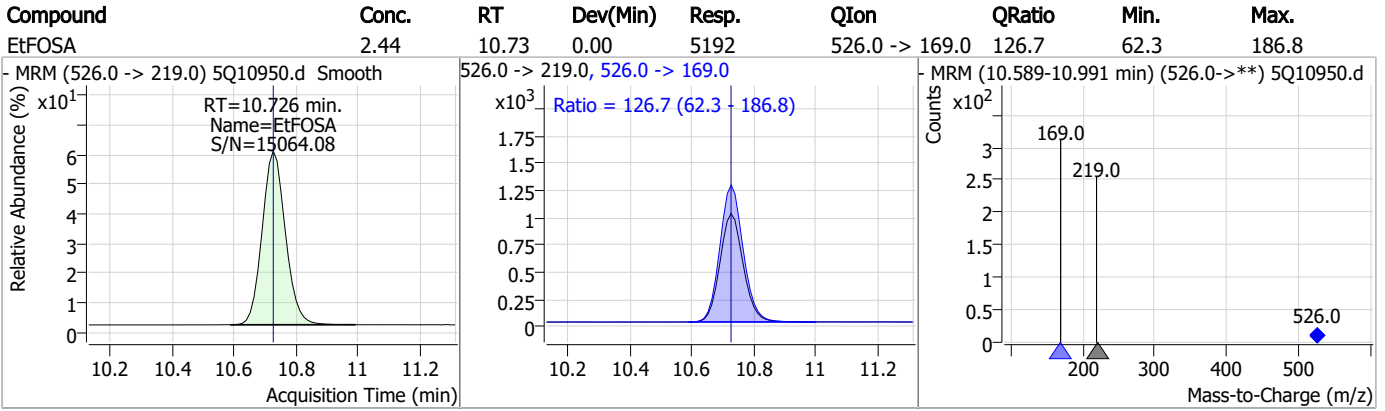
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



Perfluorinated Compounds by LC/MS/MS



7.7.10
7



Manual Integration Approval Summary

Sample Number: S5Q169-ICV169 Method: EPA DRAFT 1633
Lab FileID: 5Q10950.D Analyst approved: 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 22:38 Supervisor approved: 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanoic acid	2706-90-3		4.16	Poor instrument integration
PFEESA	113507-82-7		5.82	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.08	Split peak
MeFOSAA	2355-31-9		8.09	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.31	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10951.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/16/2023 10:52:24 PM
 Sample Name : icv169-4
 Vial : P3-B4
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	46975	10.00	µg/L	0.000
M5-PFPeA	4.150	268.3 -> 223.0	29097	5.00	µg/L	0.000
M5-PFHxA	5.335	318.0 -> 273.0	27418	2.50	µg/L	0.000
M4-PFHpA	6.280	367.1 -> 322.0	26227	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	32177	2.50	µg/L	0.000
M9-PFNA	7.532	472.1 -> 427.0	11016	1.25	µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	6846	1.25	µg/L	0.000
M7-PFUnDA	8.573	570.0 -> 525.1	7559	1.25	µg/L	-0.012
M2-PFDoDA	9.041	615.1 -> 570.0	8261	1.25	µg/L	-0.012
M2-PFTeDA	9.886	715.2 -> 670.0	7979	1.25	µg/L	-0.012
M8-FOSA	9.174	506.1 -> 77.8	6954	2.50	µg/L	-0.013
M3-PFBS	5.277	302.1 -> 79.9	7241	2.50	µg/L m	0.000
M3-PFHxS	7.079	402.1 -> 79.9	5603	2.50	µg/L	-0.012
M8-PFOS	8.255	507.1 -> 79.9	7291	2.50	µg/L	0.000
M2-4:2FTS	4.996	329.1 -> 80.9	467	5.00	µg/L	0.000
M2-6:2FTS	6.712	429.1 -> 80.9	1145	5.00	µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1507	5.00	µg/L	0.000
M3-MeFOSAA	8.088	573.2 -> 419.0	8495	5.00	µg/L	0.000
M3-HFPO-DA	5.714	286.9 -> 168.9	59549	10.00	µg/L	0.000
M5-EtFOSAA	8.310	589.2 -> 419.0	13292	5.00	µg/L	0.000
M7-MeFOSE	10.315	623.2 -> 58.9	34065	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	41361	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5014	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	3790	2.50	µg/L	0.000
13C4-PFOS	8.244	502.8 -> 79.9	7643	2.50	µg/L	-0.012
13C3-PFBA	2.803	216.0 -> 172.0	24835	5.00	µg/L	0.000
18O2-PFHxS	7.090	403.0 -> 83.9	3908	2.50	µg/L	0.000
13C4-PFOA	6.950	417.1 -> 372.0	38091	2.50	µg/L	0.000
13C2-PFDA	8.067	515.1 -> 470.1	11504	1.25	µg/L	0.000
13C5-PFNA	7.533	468.0 -> 423.0	10987	1.25	µg/L	0.000
13C2-PFHxA	5.336	315.1 -> 270.0	31502	2.50	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.996	329.1 -> 80.9	467	4.91	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%			
13C2-6:2FTS	6.712	429.1 -> 80.9	1145	5.40	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%			
13C2-8:2FTS	7.828	529.1 -> 80.9	1507	5.07	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.5%			
13C2-PFDoDA	9.041	615.1 -> 570.0	8261	1.15	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.2%			
13C2-PFTeDA	9.886	715.2 -> 670.0	7979	1.18	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.8%			
13C3-PFBS	5.277	302.1 -> 79.9	7074	2.35	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%			
13C3-PFHxS	7.079	402.1 -> 79.9	5603	2.51	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 = 100.3%		
13C4-PFBA	2.799	216.8 -> 171.9	46975	10.03	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%		
13C4-PFHpA	6.280	367.1 -> 322.0	26227	2.51	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C5-PFHxA	5.335	318.0 -> 273.0	27418	2.48	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%		
13C5-PFPeA	4.150	268.3 -> 223.0	29097	5.08	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C6-PFDA	8.066	519.1 -> 474.1	6846	1.15	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.2%		
13C7-PFUnDA	8.573	570.0 -> 525.1	7559	1.16	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.1%		
13C8-FOSA	9.174	506.1 -> 77.8	6954	2.32	µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%		
13C8-PFOA	6.950	421.1 -> 376.0	32177	2.51	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C8-PFOS	8.255	507.1 -> 79.9	7291	2.42	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%		
13C9-PFNA	7.532	472.1 -> 427.0	11016	1.23	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.1%		
d3-MeFOSAA	8.088	573.2 -> 419.0	8495	5.02	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C3-HFPO-DA	5.714	286.9 -> 168.9	59549	10.19	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.9%		
d3-MeFOSA	10.416	515.0 -> 219.0	3790	2.46	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%		
d5-EtFOSAA	8.310	589.2 -> 419.0	13292	5.31	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%		
d7-MeFOSE	10.315	623.2 -> 58.9	34065	24.22	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.9%		
d9-EtFOSE	10.623	639.2 -> 58.9	41361	23.99	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.0%		
d5-EtFOSA	10.712	531.1 -> 219.0	5014	2.36	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%		

Target Compounds	RT	Transition	Response	Conc.	Units	QValue
4:2FTS	4.997	327.1 -> 307.0	14400	24.49	µg/L	97
		327.1 -> 80.9	7559			
6:2FTS	6.700	427.1 -> 407.0	21624	22.60	µg/L	97
		427.1 -> 80.9	8751			
8:2FTS	7.829	527.1 -> 507.0	13374	18.73	µg/L	95
		527.1 -> 80.8	7191			
EtFOSAA	8.311	584.2 -> 419.1	42771	24.58	µg/L	99
		584.2 -> 526.0	17318			
FOSA	9.177	498.1 -> 77.9	62250	24.50	µg/L	98
		498.1 -> 478.0	1815			
MeFOSAA	8.089	570.1 -> 419.0	32102	22.33	µg/L	97
		570.1 -> 483.0	7389			
PFBA	2.807	212.8 -> 168.9	42864	23.05	µg/L	100
PFBS	5.278	298.7 -> 79.9	52112	21.90	µg/L	99
		298.7 -> 98.8	21686			
PFDA	8.067	512.9 -> 469.0	170508	23.78	µg/L	99
		512.9 -> 219.0	30271			
PFDODA	9.042	613.1 -> 569.0	115903	20.67	µg/L	99
		613.1 -> 319.0	18625			
PFDS	9.232	599.0 -> 79.9	37134	23.07	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	18966			
PFHpA	6.281	363.1 -> 319.0	250027	22.55	µg/L	99
		363.1 -> 169.0	55245			
PFHpS	7.699	449.0 -> 79.9	46478	22.43	µg/L	94
		449.0 -> 98.9	26081			
PFHxA	5.337	313.0 -> 269.0	193940	24.12	µg/L	100
		313.0 -> 118.9	8979			
PFHxS	7.092	398.7 -> 79.9	44042	23.28	µg/L	m 81
		398.7 -> 98.9	24979			
PFNA	7.533	463.0 -> 419.0	159595	24.99	µg/L	97
		463.0 -> 219.0	35338			
PFNS	8.761	548.8 -> 79.9	36066	22.49	µg/L	98
		548.8 -> 98.9	21519			
PFOA	6.951	413.0 -> 369.0	278036	22.44	µg/L	98
		413.0 -> 169.0	66169			
PFOS	8.244	498.9 -> 79.9	57485	19.54	µg/L	m 87
		498.9 -> 98.8	30786			
PFPeA	4.152	263.0 -> 219.0	157594	24.79	µg/L	100
PFPeS	6.357	349.1 -> 79.9	37627	23.03	µg/L	m 100
		349.1 -> 98.9	19116			
PFTeDA	9.887	713.1 -> 669.0	145191	23.67	µg/L	97
		713.1 -> 168.9	18953			
PFTrDA	9.476	663.0 -> 619.0	154491	20.92	µg/L	100
		663.0 -> 168.9	25915			
PFUnDA	8.573	563.1 -> 519.0	125319	22.23	µg/L	99
		563.1 -> 269.1	26053			
11CI-PF3OUdS	9.542	630.9 -> 450.9	154804	23.62	µg/L	100
		632.9 -> 452.9	47874			
9CI-PF3ONS	8.626	530.8 -> 351.0	155043	22.14	µg/L	100
		532.8 -> 353.0	48468			
ADONA	6.542	376.9 -> 250.9	366479	22.48	µg/L	99
		376.9 -> 84.8	107849			
HFPO-DA	5.715	284.9 -> 168.9	117427	24.03	µg/L	99
		284.9 -> 184.9	10453			
3:3FTCA	3.603	241.0 -> 177.0	9833	20.96	µg/L	97
		241.0 -> 117.0	1132			
5:3FTCA	5.918	341.0 -> 237.1	33336	20.05	µg/L	99
		341.0 -> 217.0	22543			
7:3FTCA	7.348	441.0 -> 316.9	13002	19.53	µg/L	96
		441.0 -> 336.9	27480			
EtFOSA	10.726	526.0 -> 219.0	39867	22.04	µg/L	98
		526.0 -> 169.0	50506			
EtFOSE	10.636	630.0 -> 58.9	161234	104.93	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	31214	20.87	µg/L	98
		511.9 -> 169.0	40406			
MeFOSE	10.327	616.1 -> 58.9	141141	97.00	µg/L	100
PFDoDS	10.038	699.1 -> 79.9	25546	20.16	µg/L	99
		699.1 -> 98.8	15266			
NFDHA	5.218	295.0 -> 201.0	15179	23.96	µg/L	99
		295.0 -> 84.9	4174			
PFMBA	4.553	279.0 -> 85.1	100832	21.52	µg/L	100
PFMPA	3.328	229.0 -> 84.9	75214	21.84	µg/L	100
PFEESA	5.821	314.8 -> 134.9	148004	17.50	µg/L	m 99
		314.8 -> 82.9	4609			

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

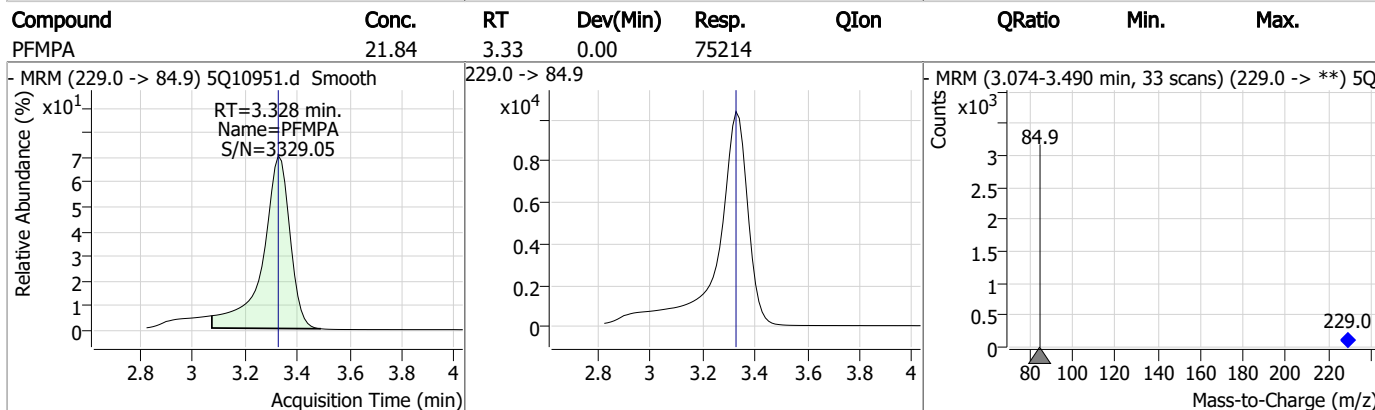
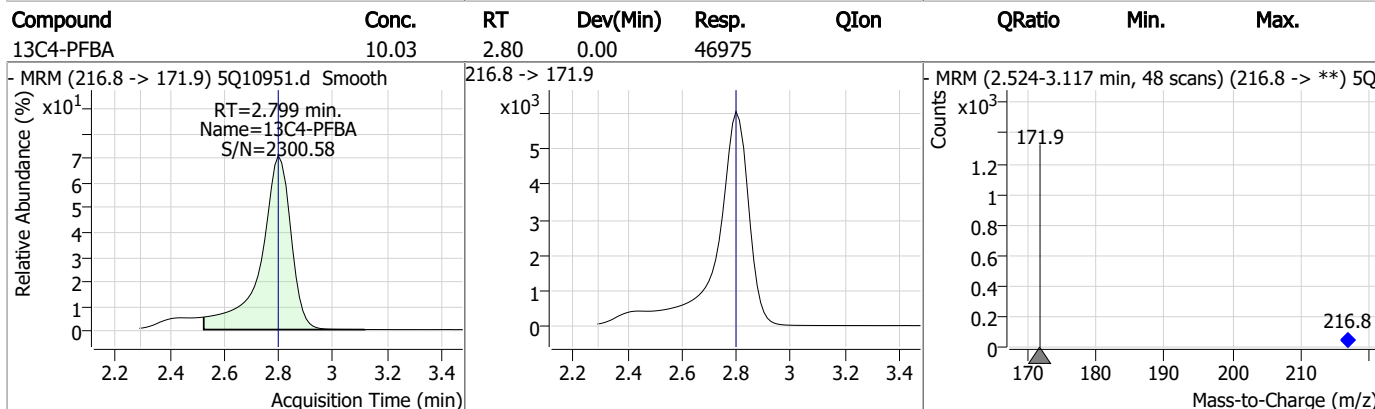
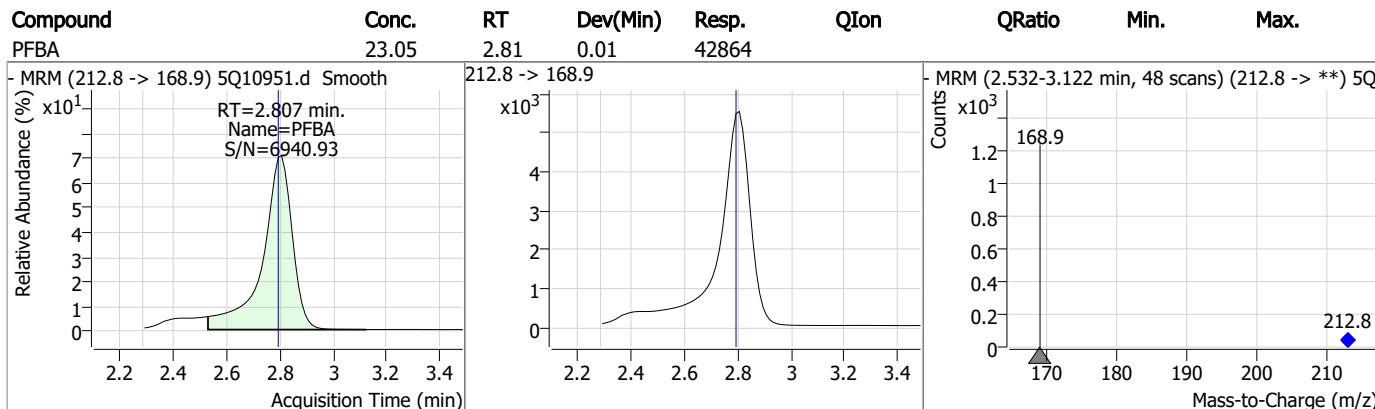
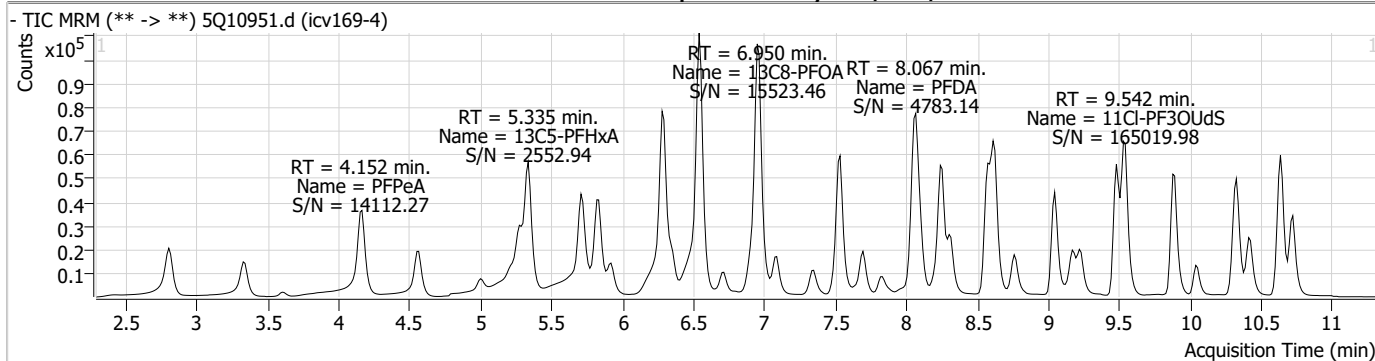
Perfluorinated Compounds by LC/MS/MS

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

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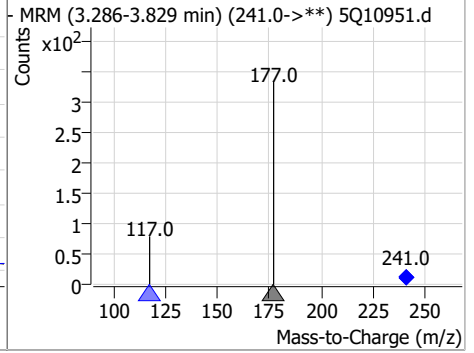
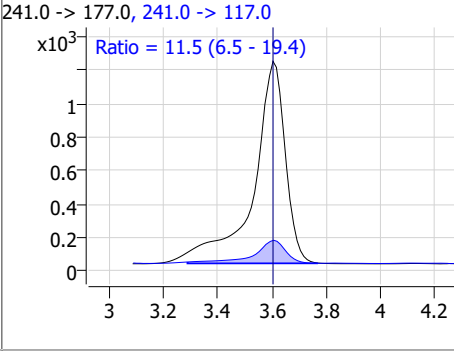
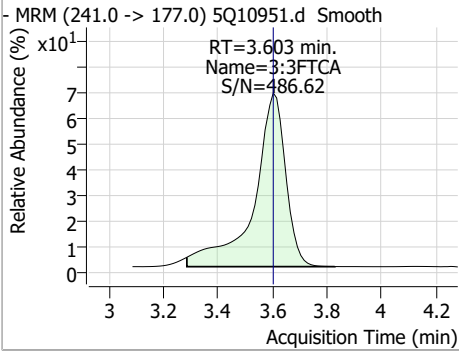
Perfluorinated Compounds by LC/MS/MS



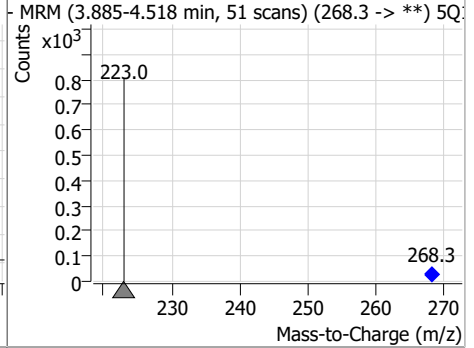
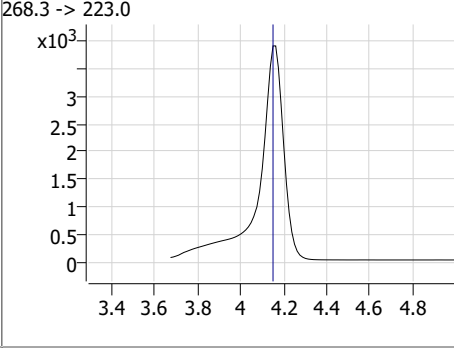
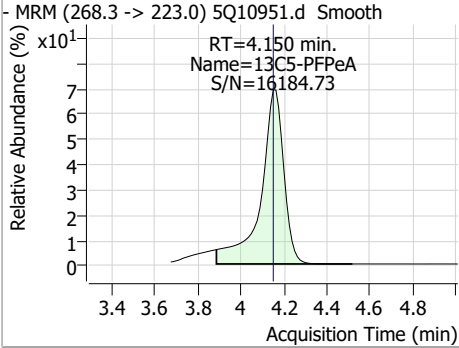
7.7.11
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Perfluorinated Compounds by LC/MS/MS

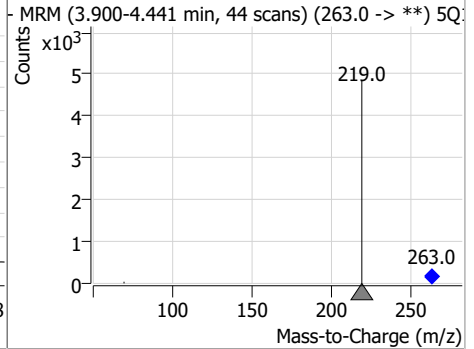
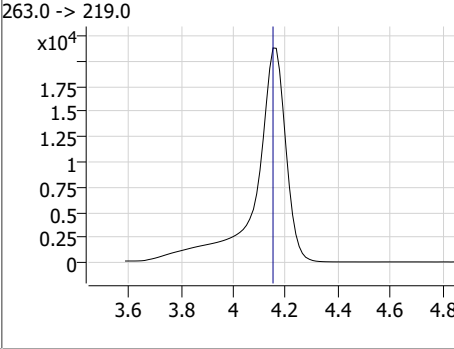
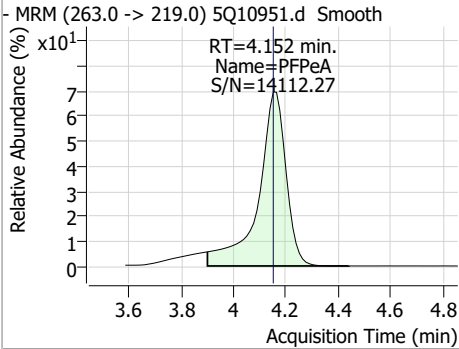
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	20.96	3.60	0.00	9833	241.0 -> 117.0	11.5	6.5	19.4



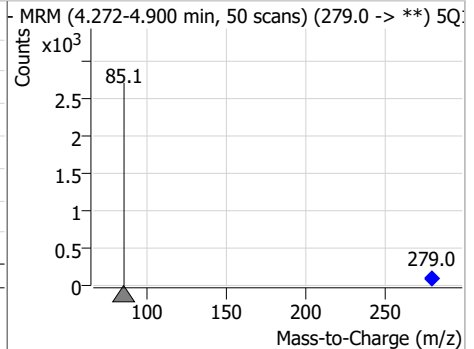
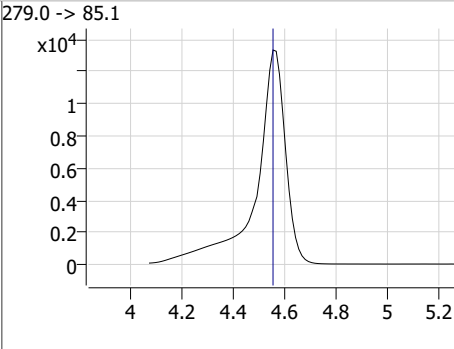
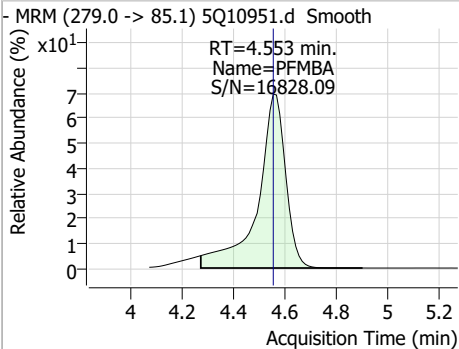
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.08	4.15	0.00	29097				



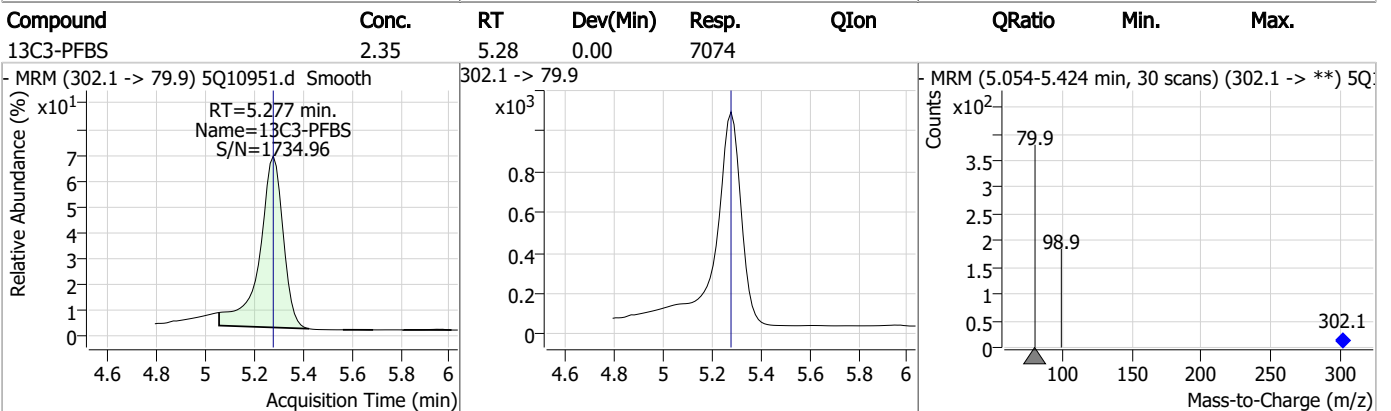
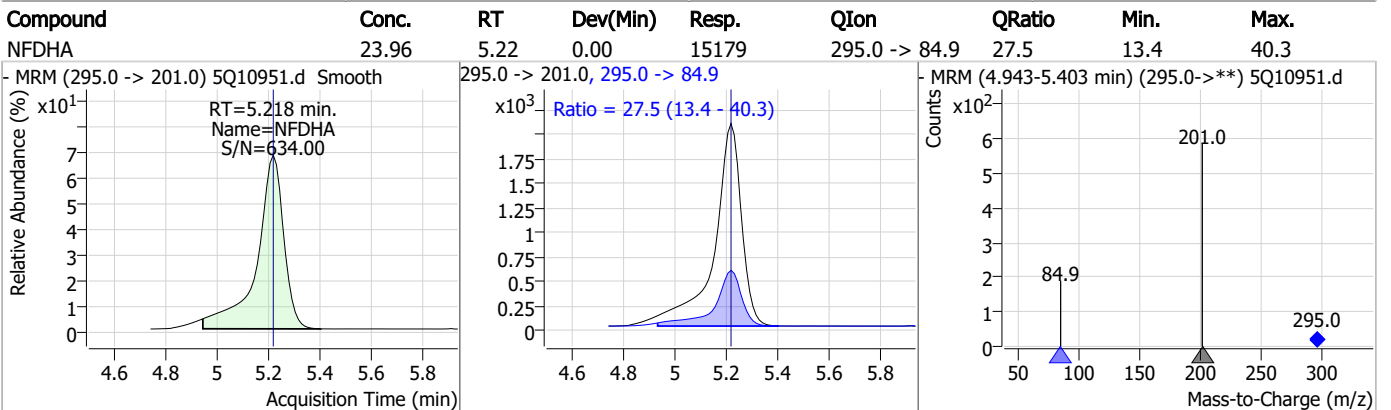
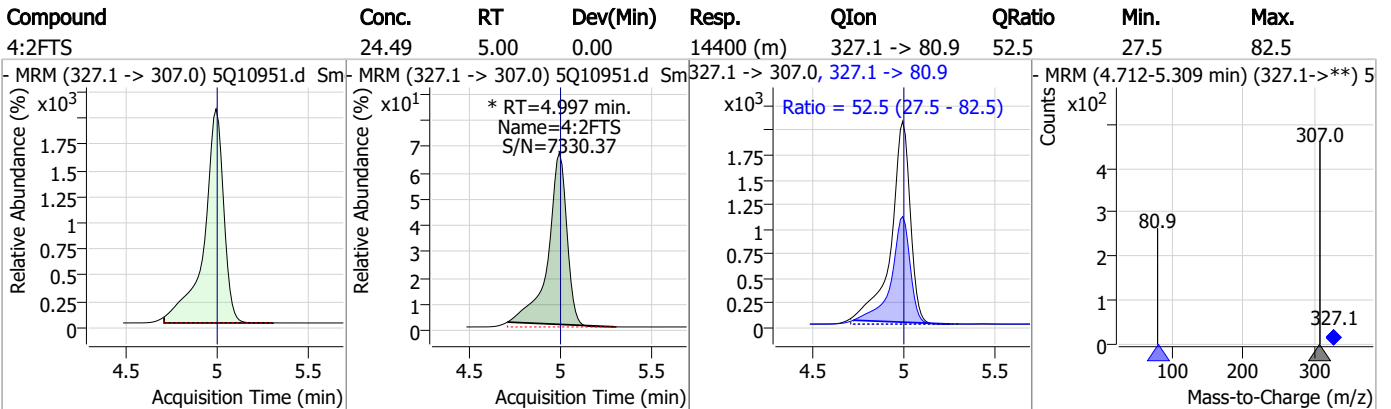
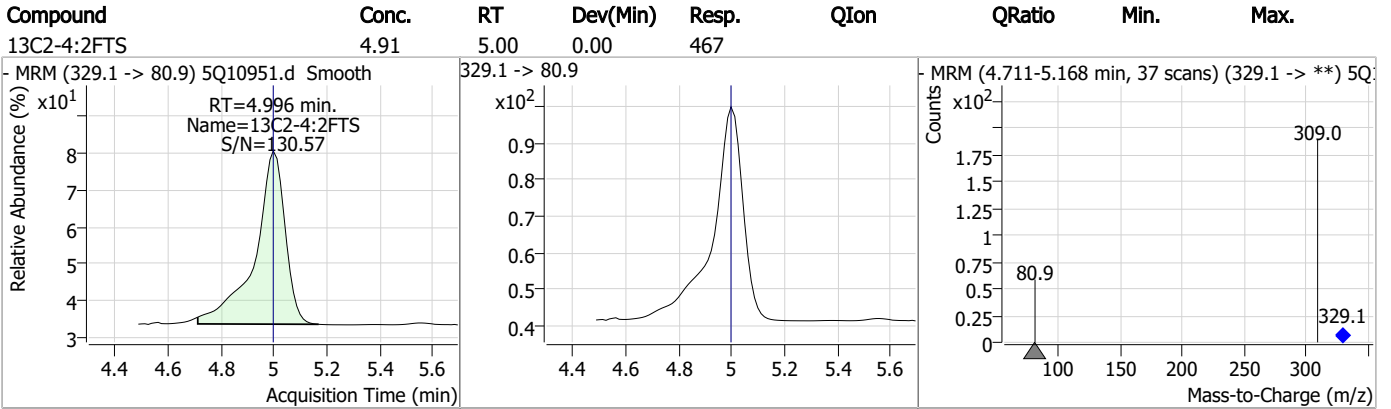
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	24.79	4.15	0.00	157594				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	21.52	4.55	0.00	100832				

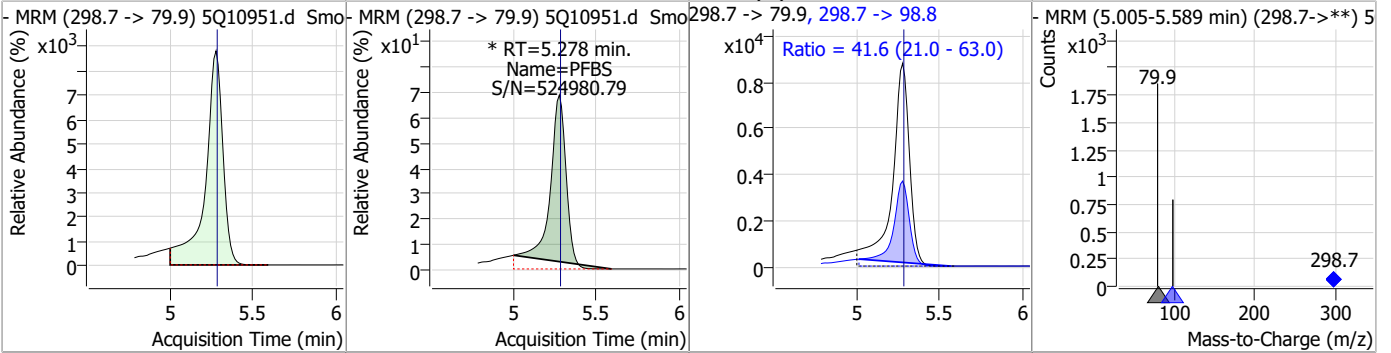


Perfluorinated Compounds by LC/MS/MS

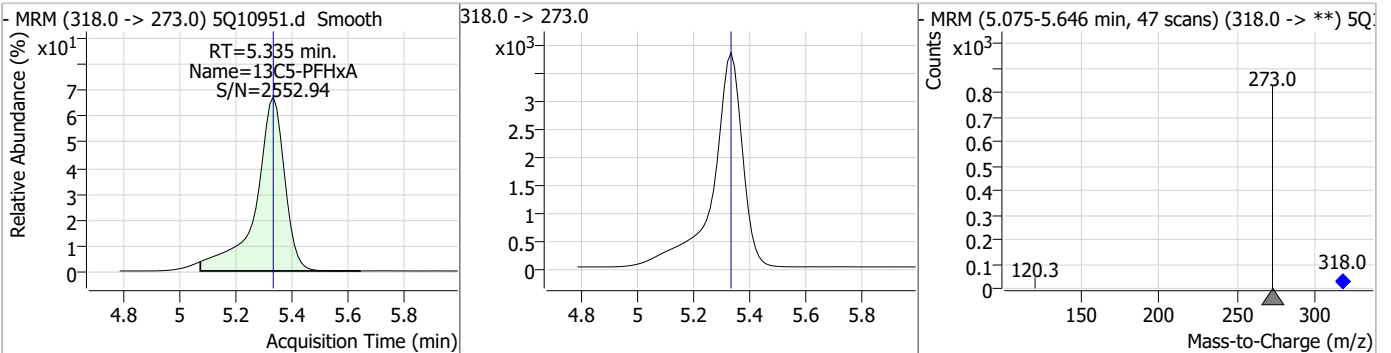


Perfluorinated Compounds by LC/MS/MS

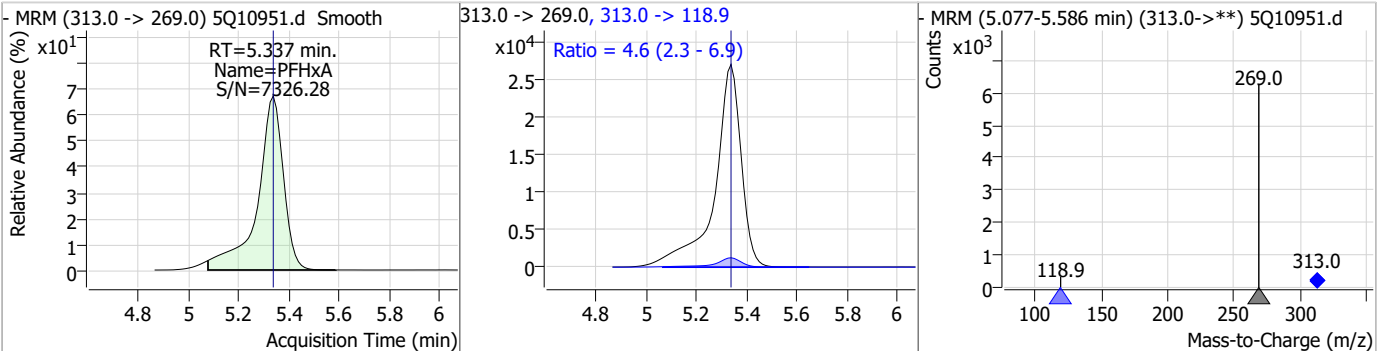
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	21.90	5.28	0.00	52112 (m)	298.7 -> 98.8	41.6	21.0	63.0



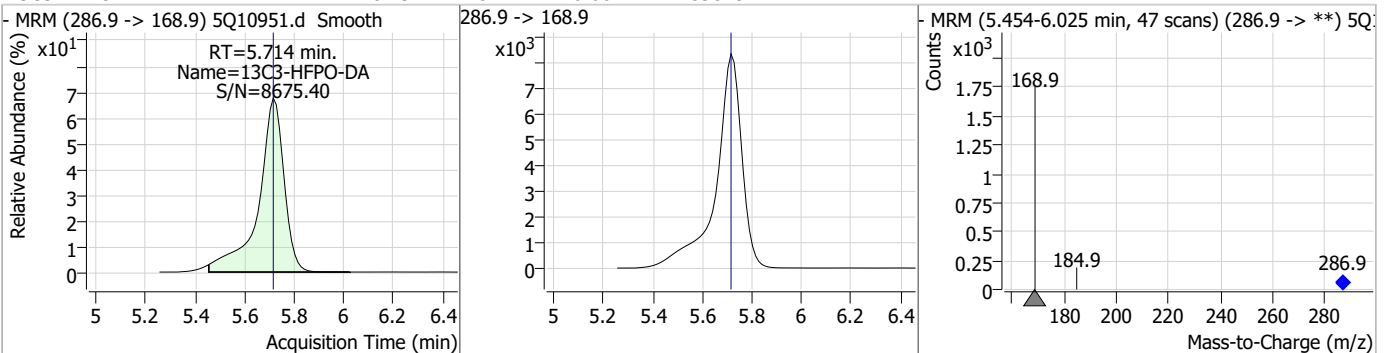
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.48	5.34	0.00	27418				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	24.12	5.34	0.00	193940	313.0 -> 118.9	4.6	2.3	6.9

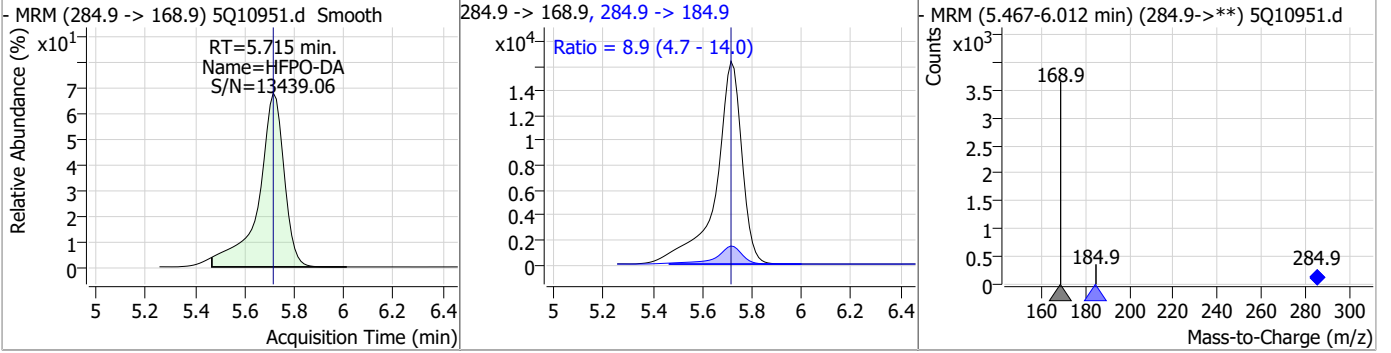


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.19	5.71	0.00	59549				

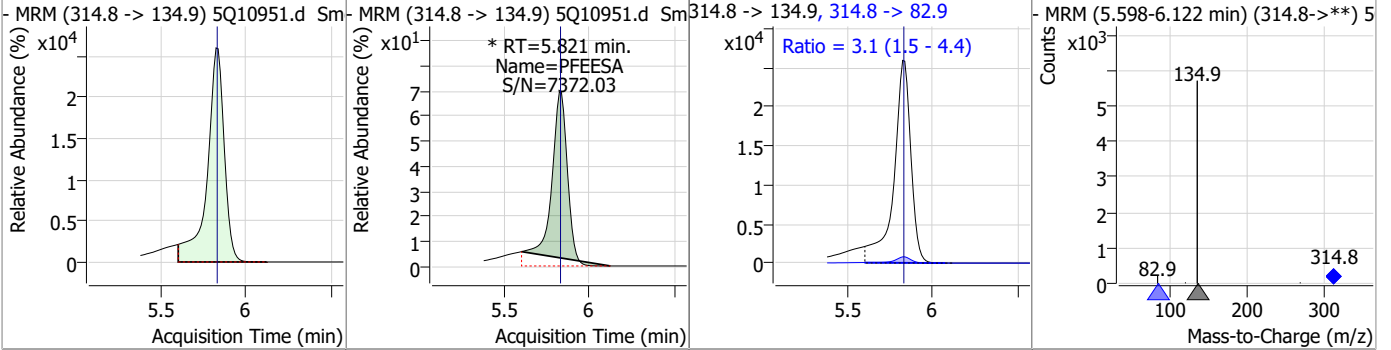


Perfluorinated Compounds by LC/MS/MS

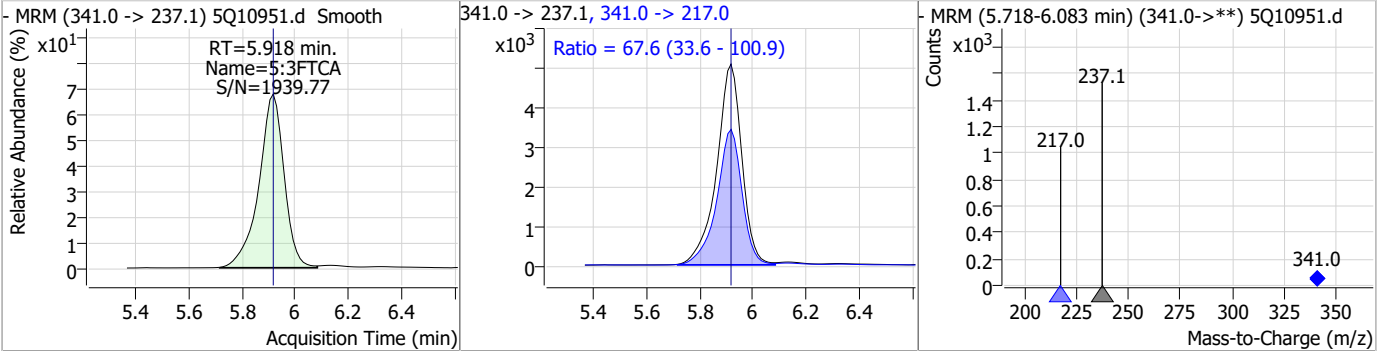
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	24.03	5.72	0.00	117427	284.9 -> 184.9	8.9	4.7	14.0



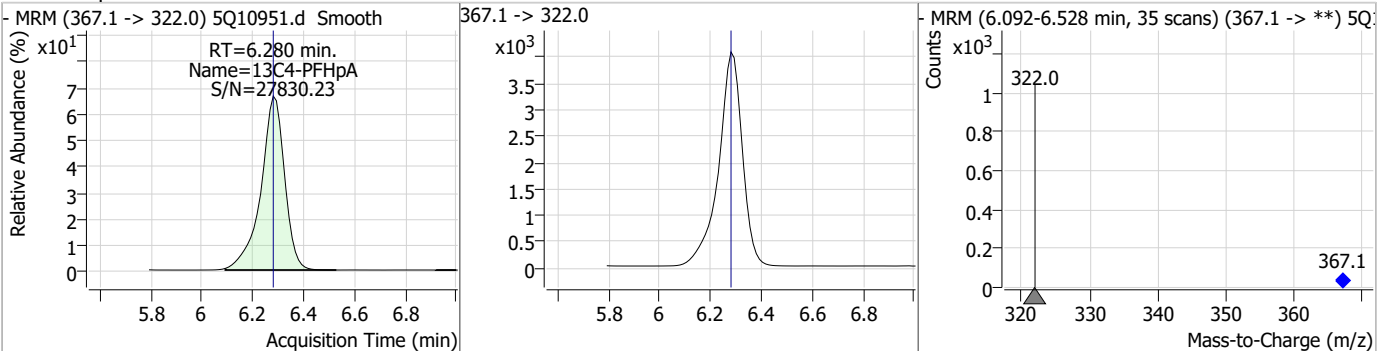
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	17.50	5.82	0.00	148004 (m)	314.8 -> 82.9	3.1	1.5	4.4



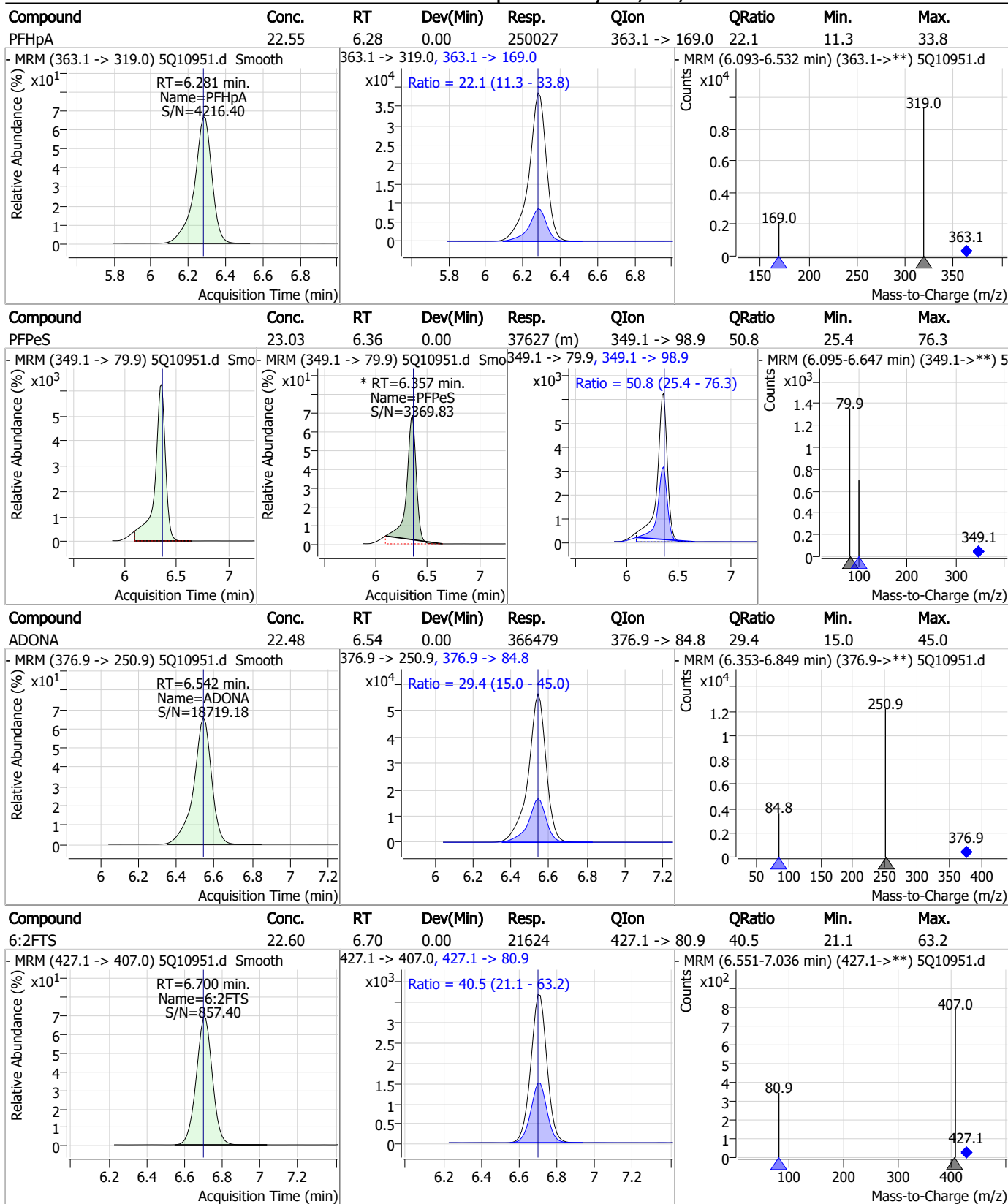
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	20.05	5.92	0.00	33336	341.0 -> 217.0	67.6	33.6	100.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.51	6.28	0.00	26227				

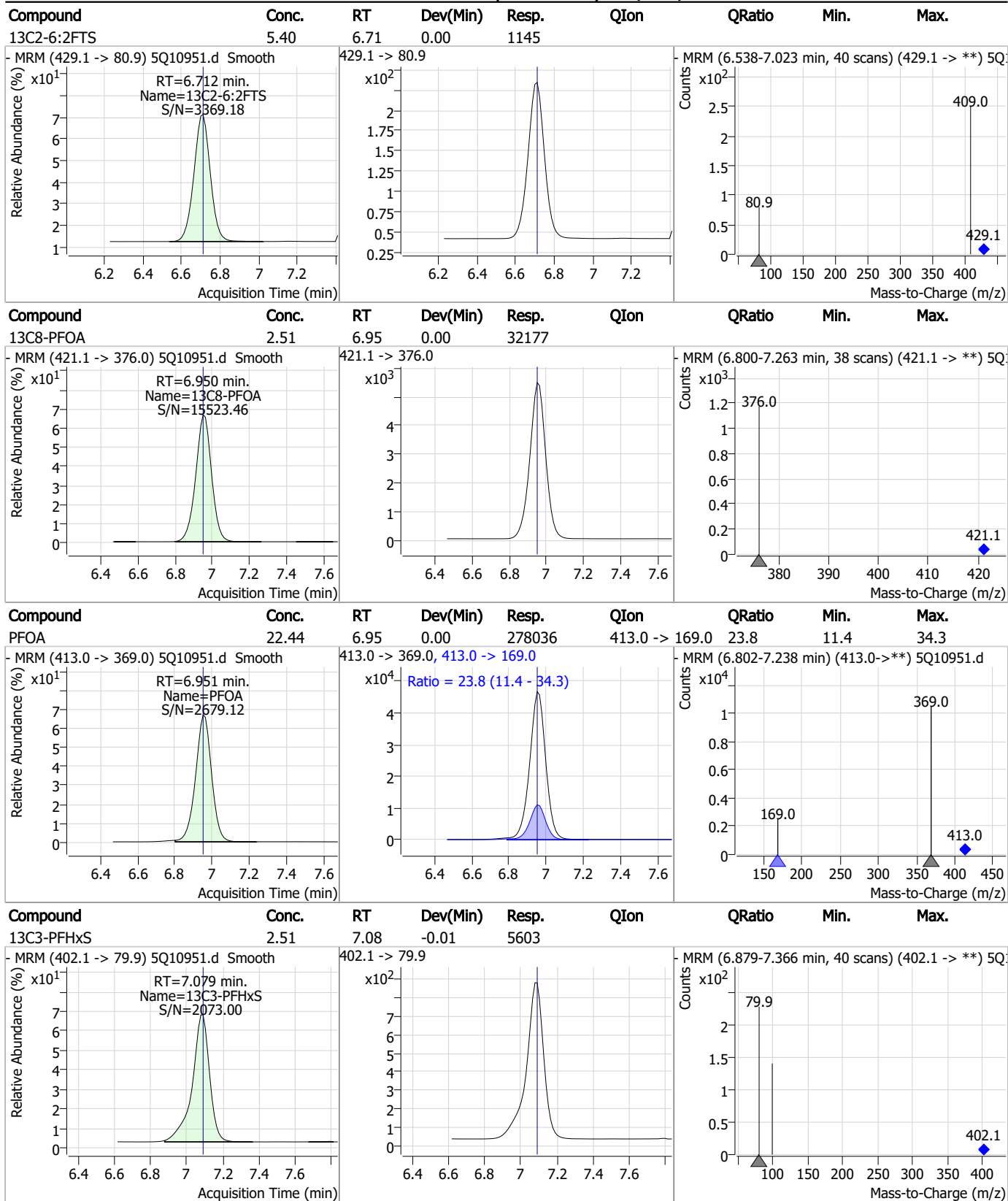


Perfluorinated Compounds by LC/MS/MS



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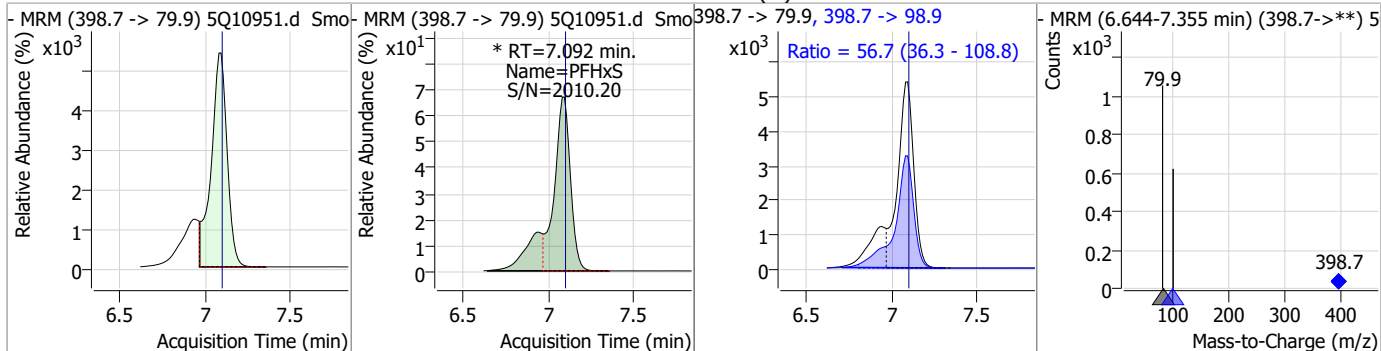
Perfluorinated Compounds by LC/MS/MS



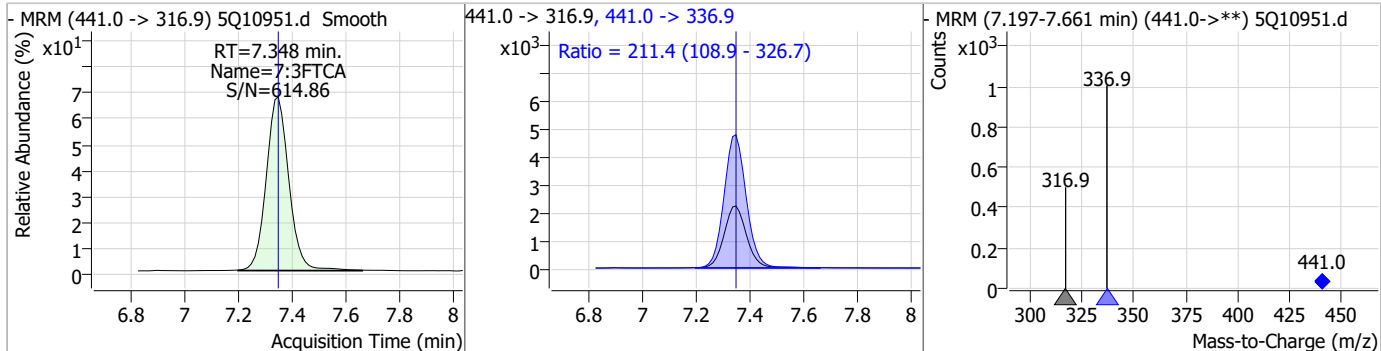
7.7.11
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Perfluorinated Compounds by LC/MS/MS

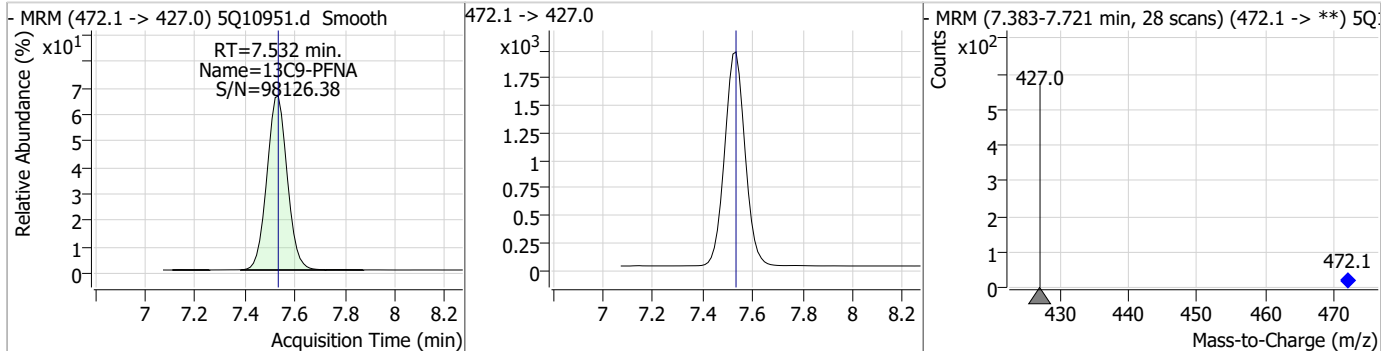
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	23.28	7.09	0.00	44042 (m)	398.7 -> 98.9	56.7	36.3	108.8



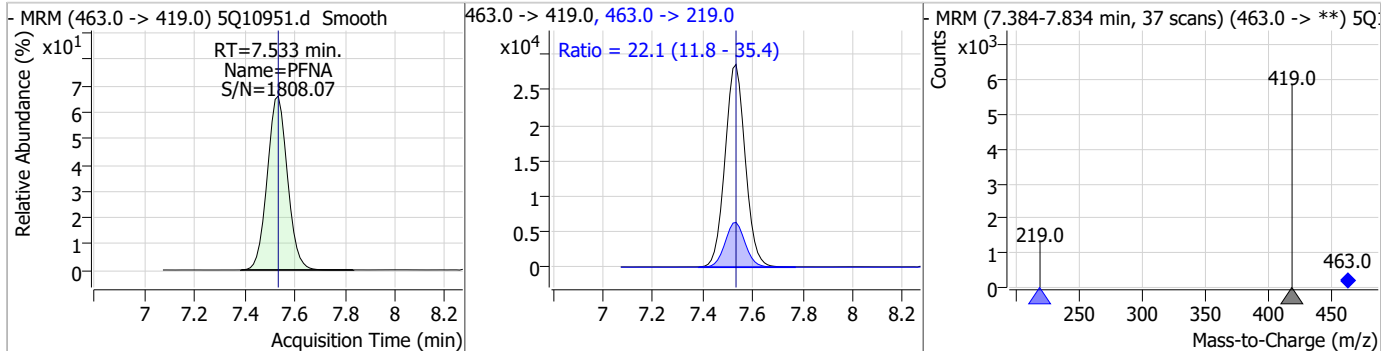
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	19.53	7.35	0.00	13002	441.0 -> 336.9	211.4	108.9	326.7



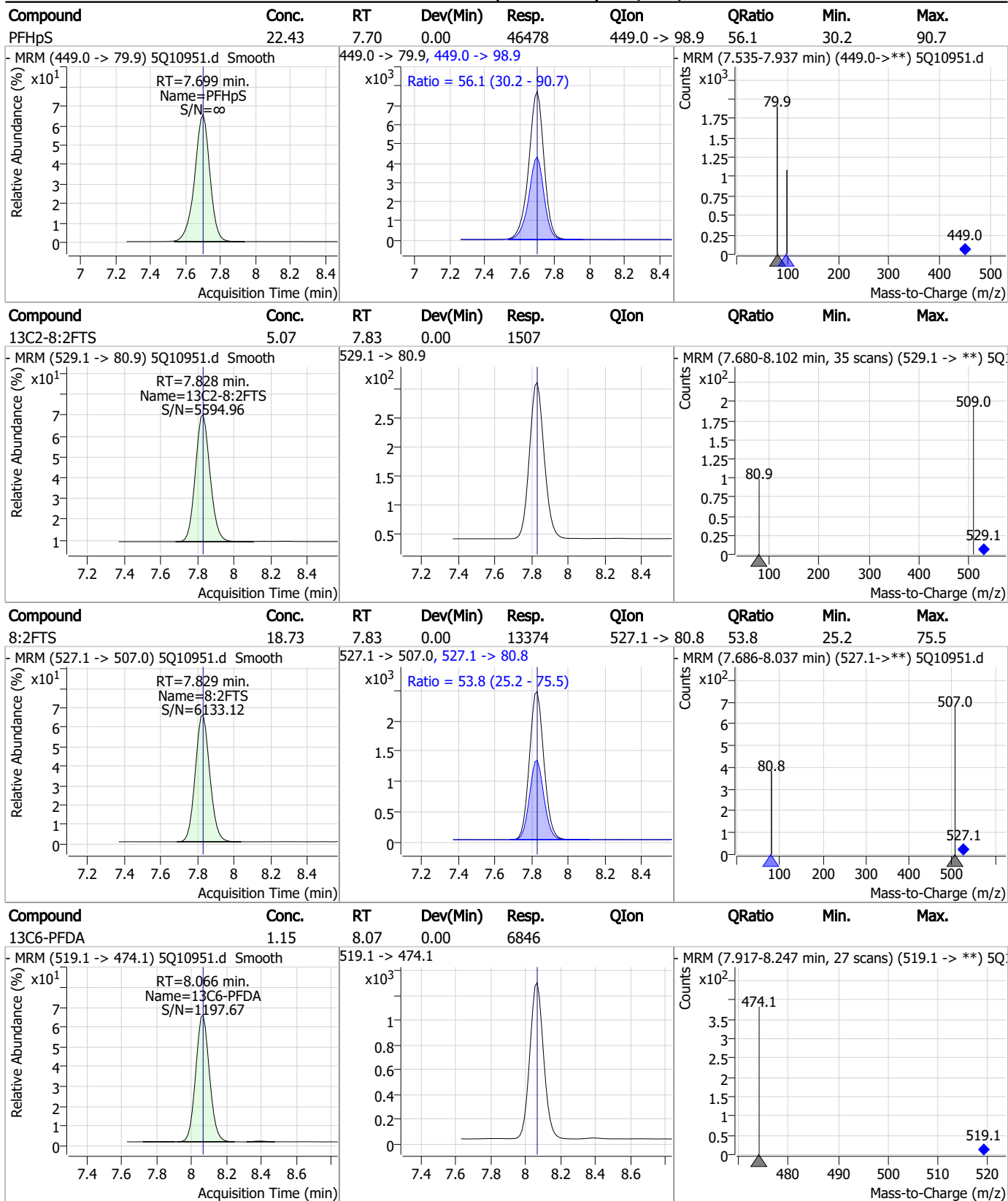
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.23	7.53	0.00	11016	472.1 -> 427.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	24.99	7.53	0.00	159595	463.0 -> 219.0	22.1	11.8	35.4



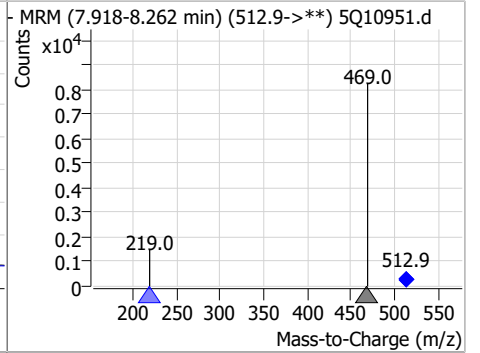
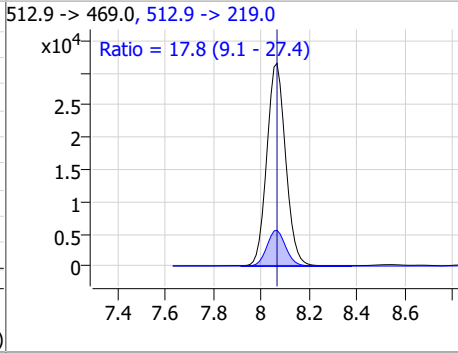
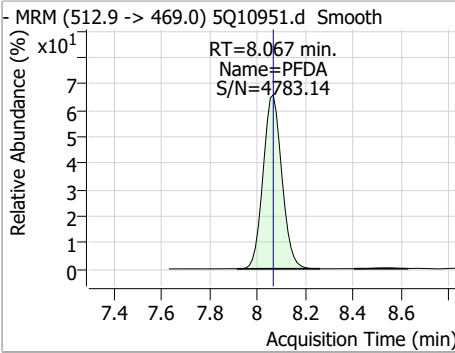
Perfluorinated Compounds by LC/MS/MS



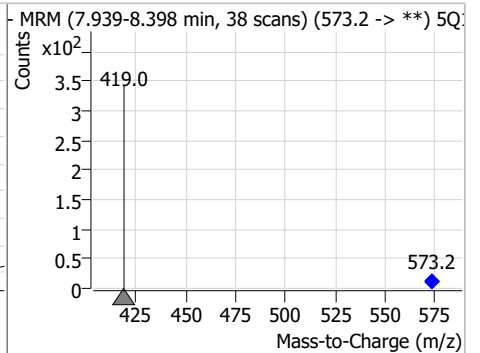
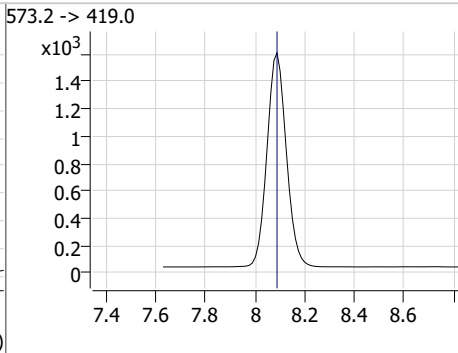
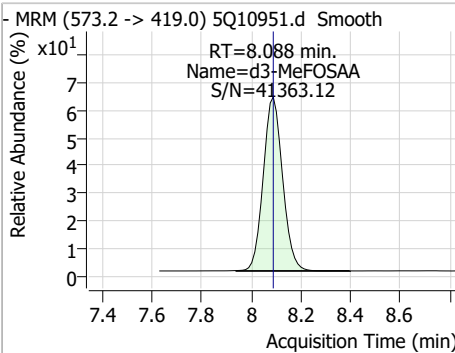
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Perfluorinated Compounds by LC/MS/MS

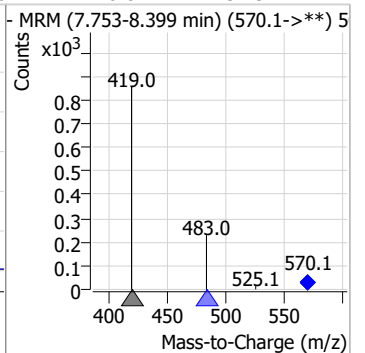
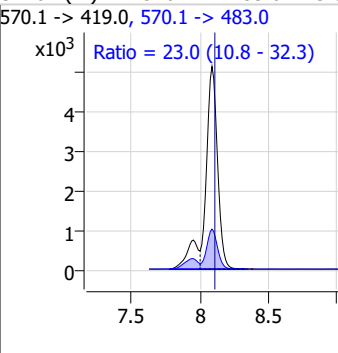
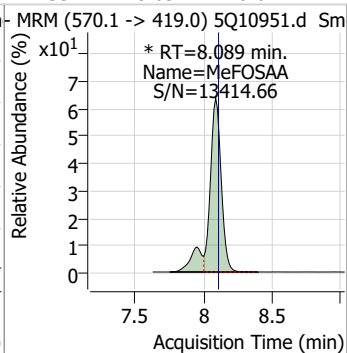
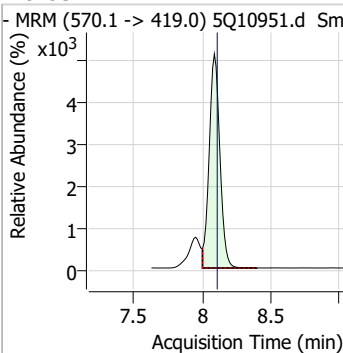
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	23.78	8.07	0.00	170508	512.9 -> 219.0	17.8	9.1	27.4



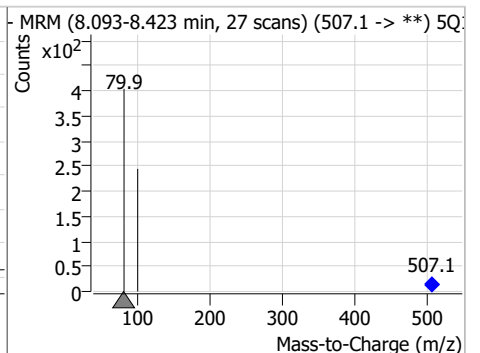
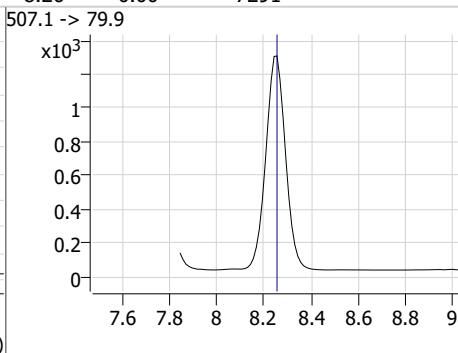
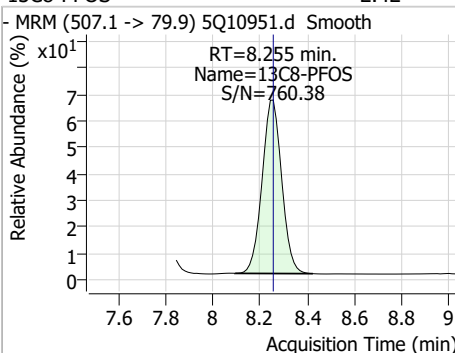
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.02	8.09	0.00	8495				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	22.33	8.09	-0.01	32102 (m)	570.1 -> 483.0	23.0	10.8	32.3

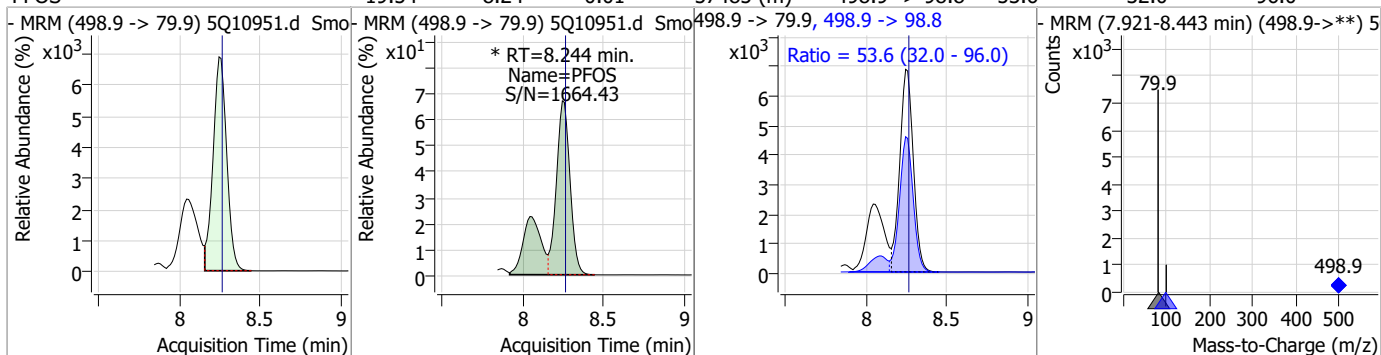


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.42	8.26	0.00	7291				

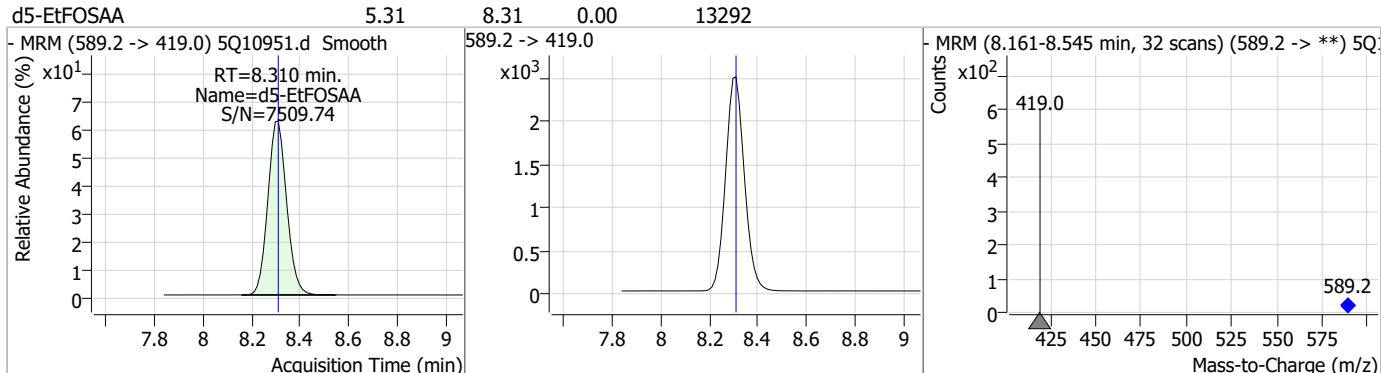


Perfluorinated Compounds by LC/MS/MS

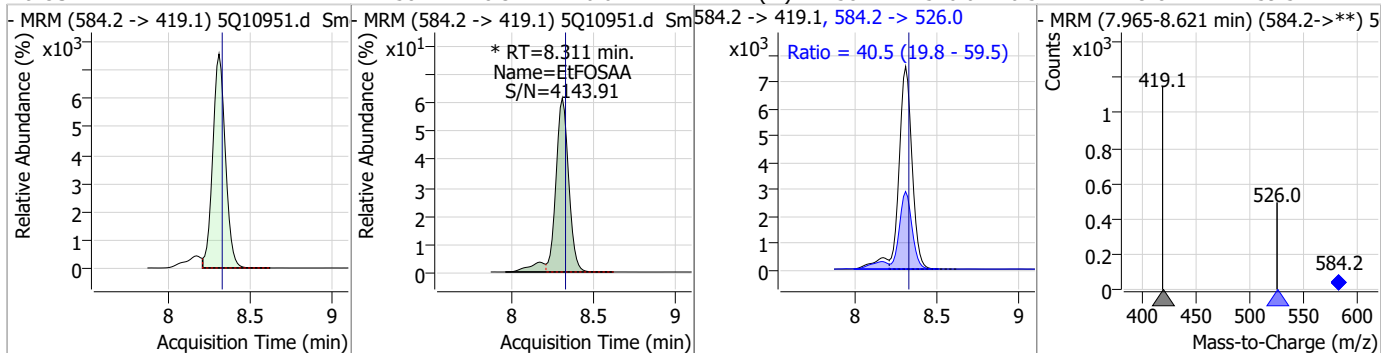
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.54	8.24	-0.01	57485 (m)	498.9 -> 98.8	53.6	32.0	96.0



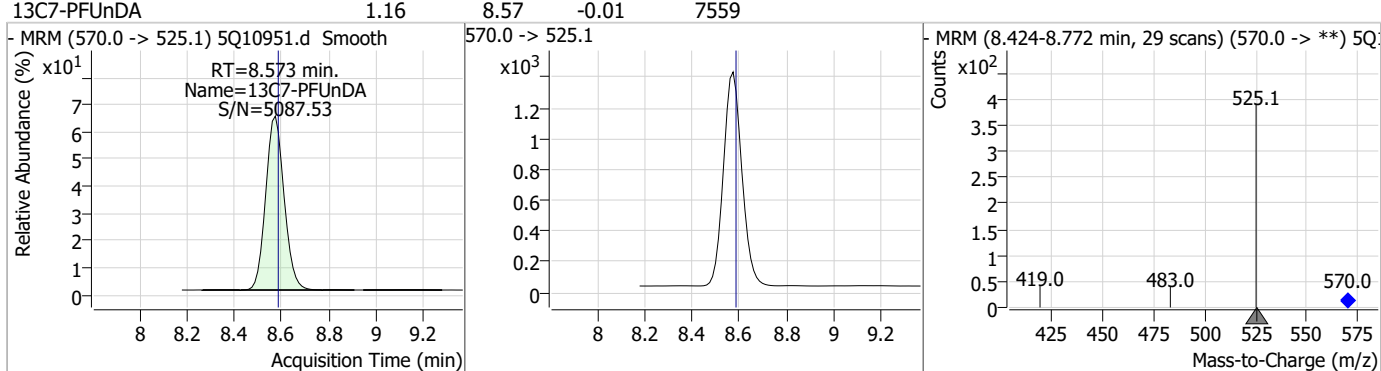
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.31	8.31	0.00	13292				



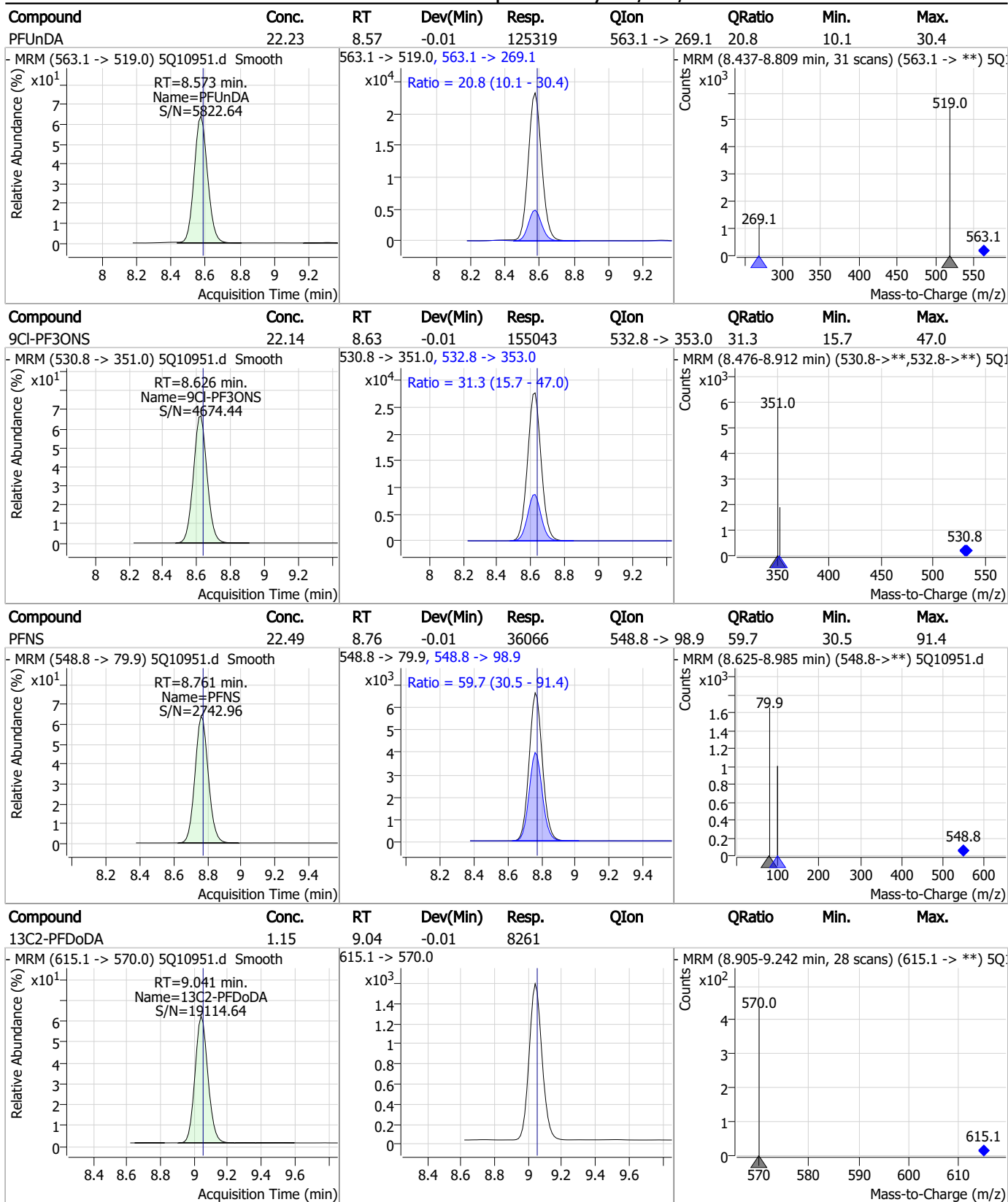
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	24.58	8.31	-0.01	42771 (m)	584.2 -> 526.0	40.5	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.16	8.57	-0.01	7559				



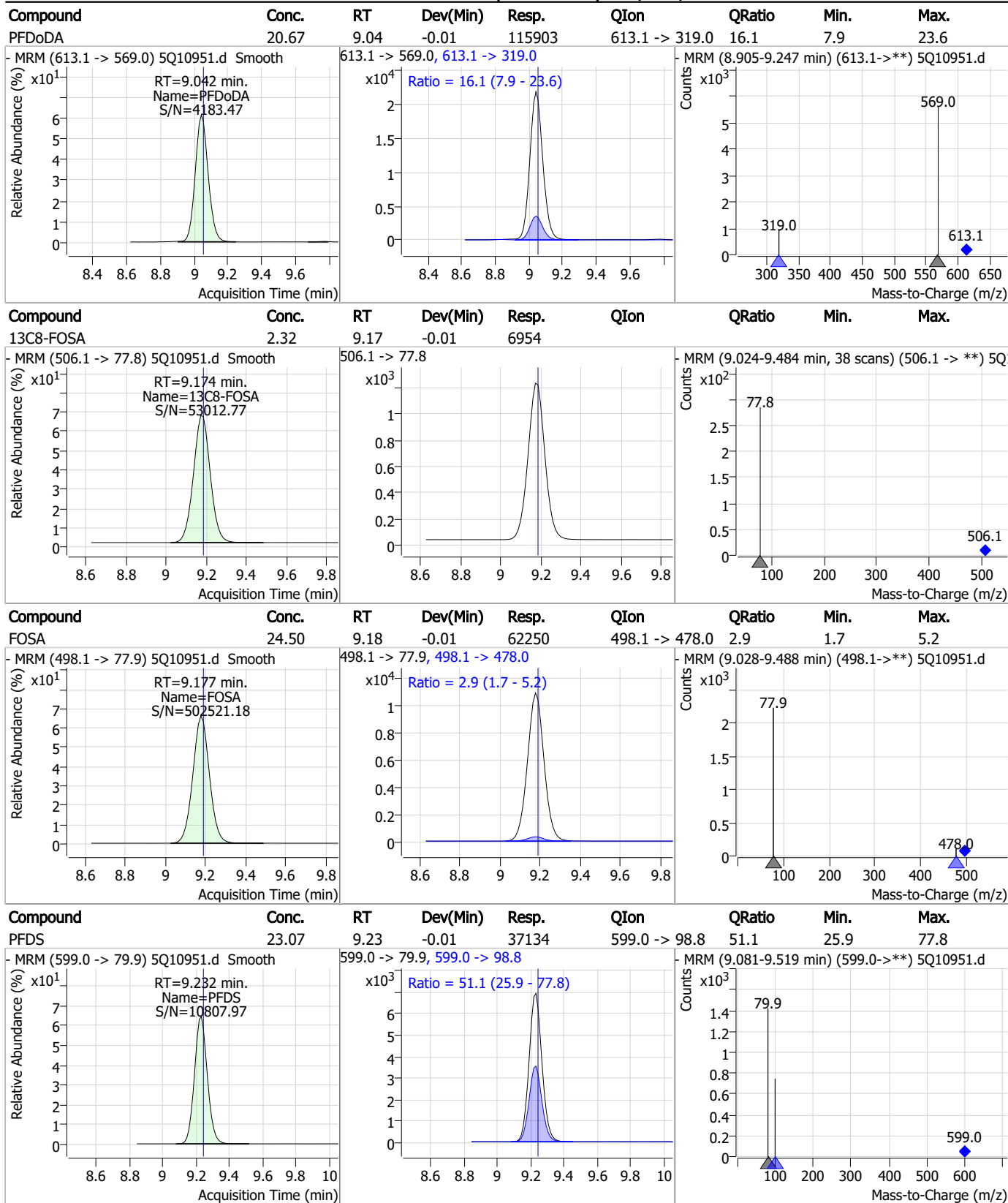
Perfluorinated Compounds by LC/MS/MS



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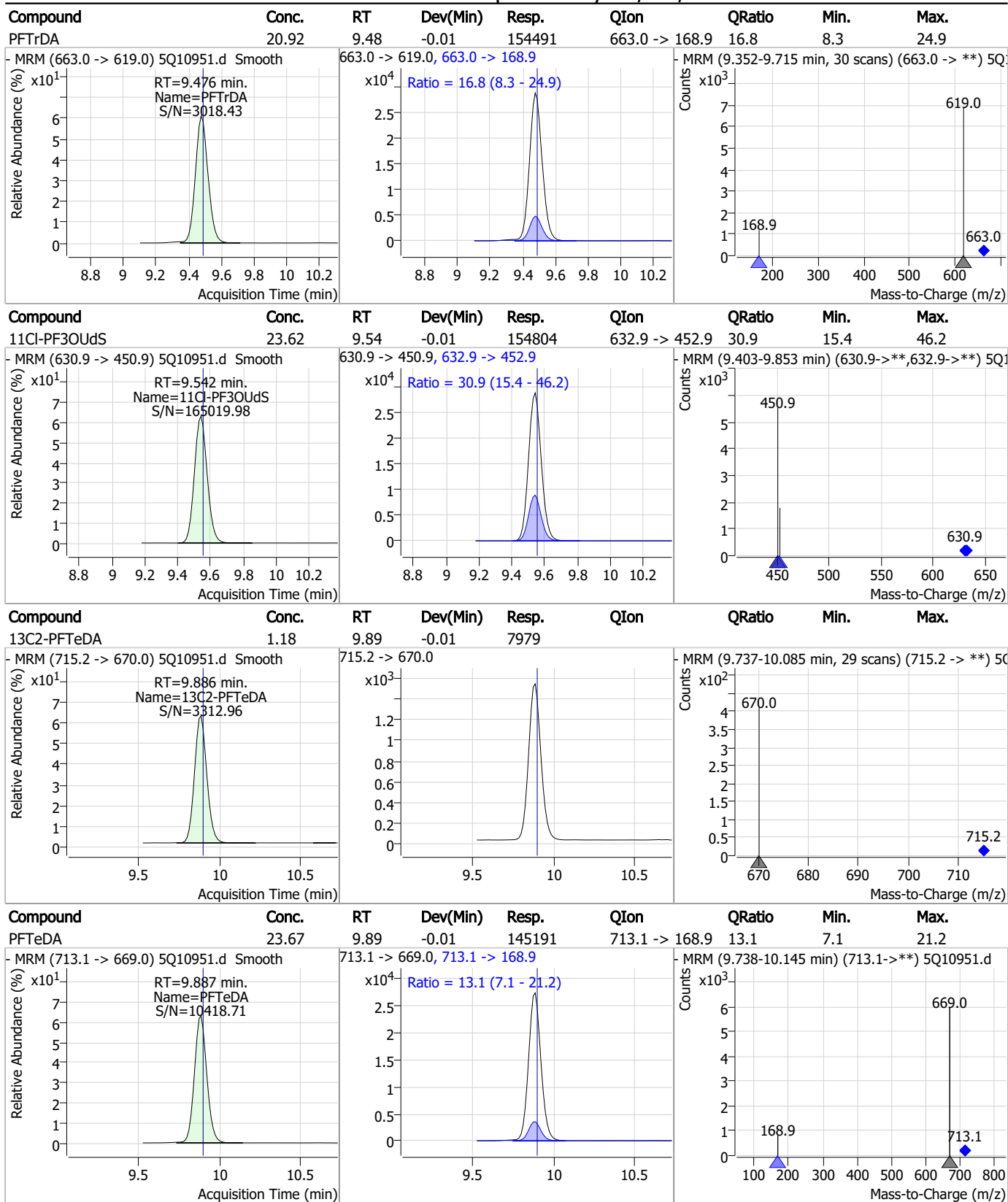
Perfluorinated Compounds by LC/MS/MS



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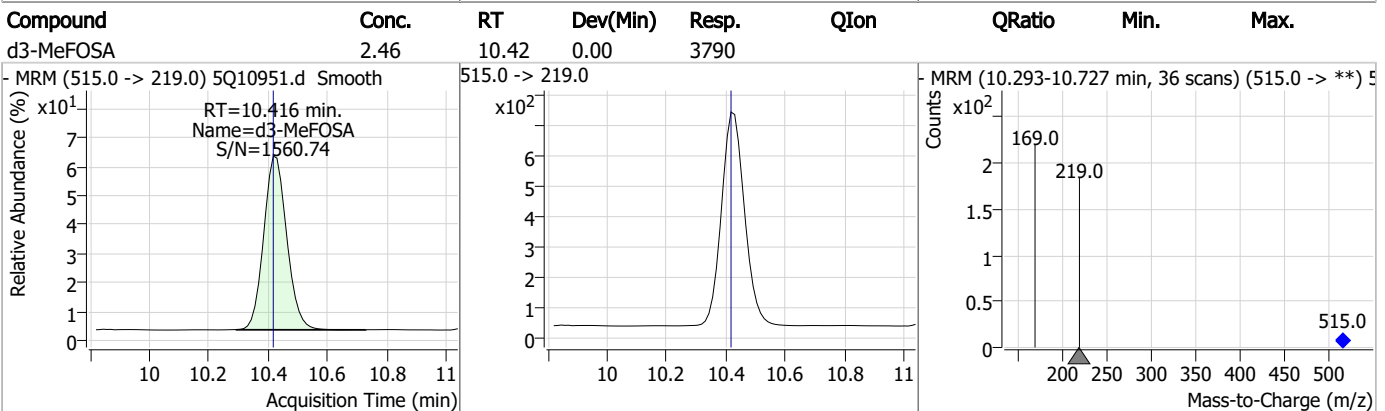
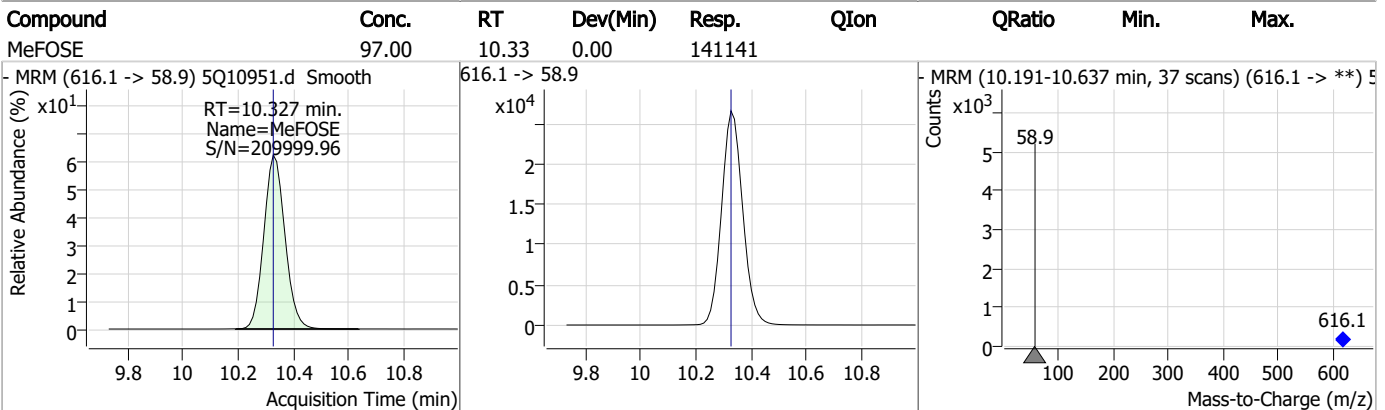
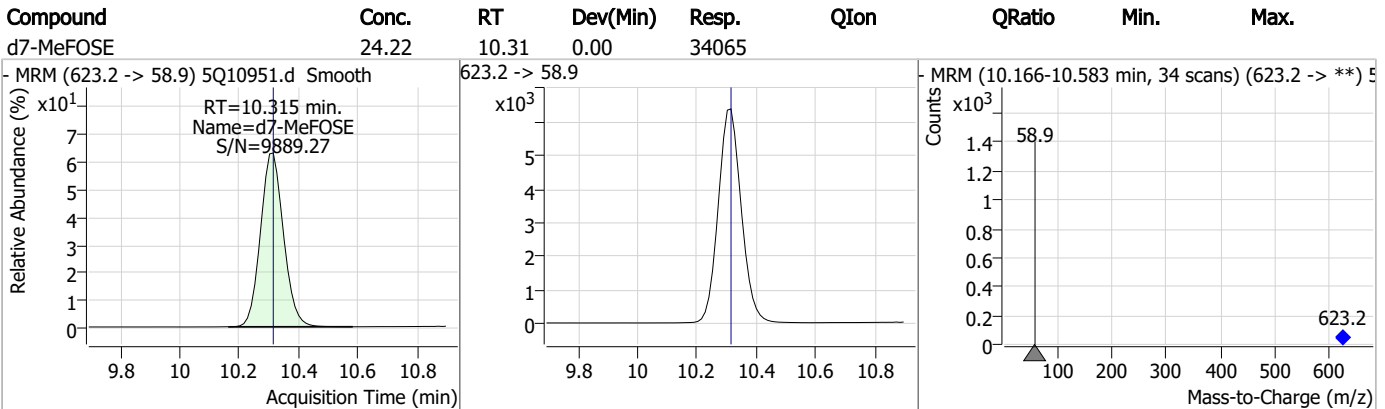
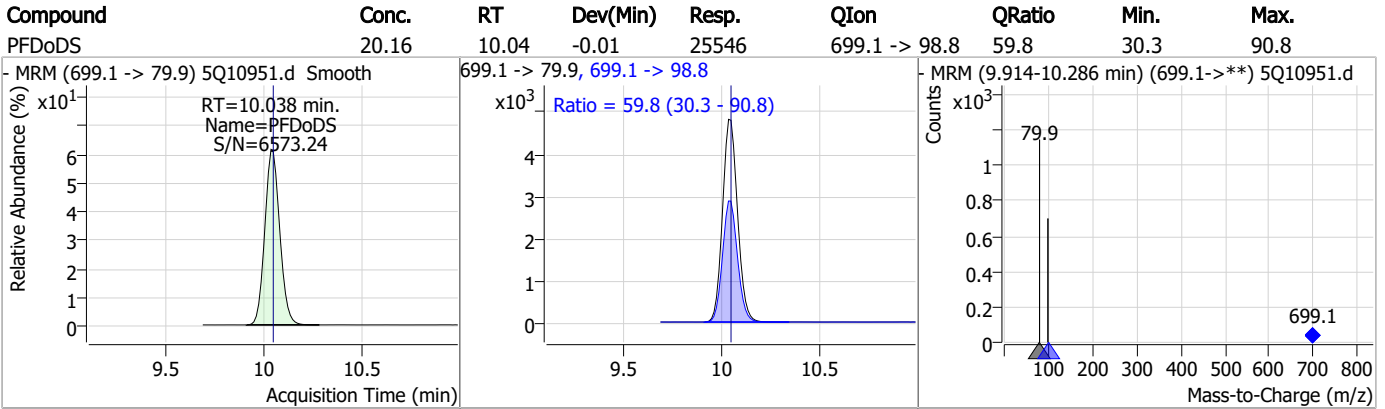
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Perfluorinated Compounds by LC/MS/MS

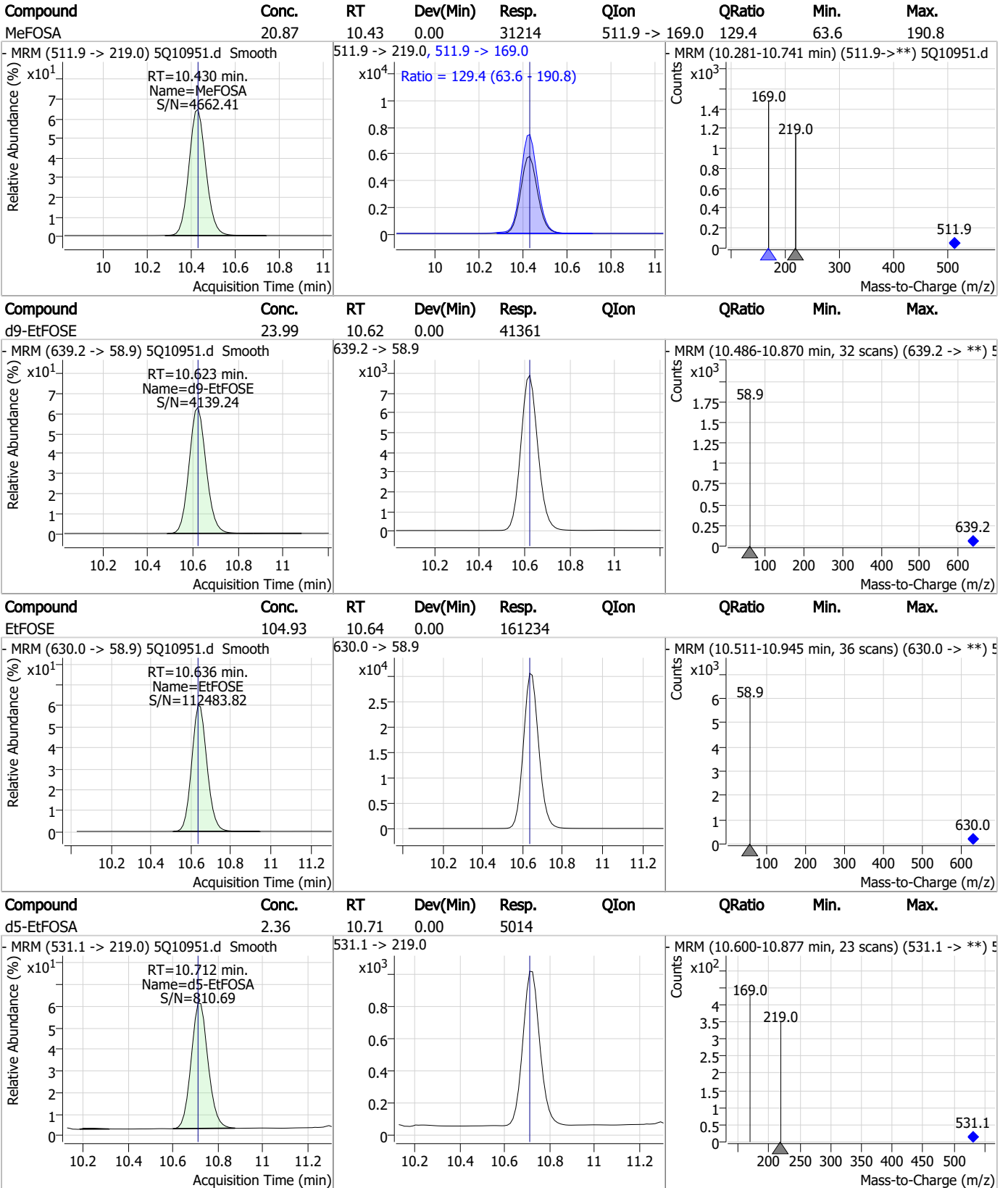


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

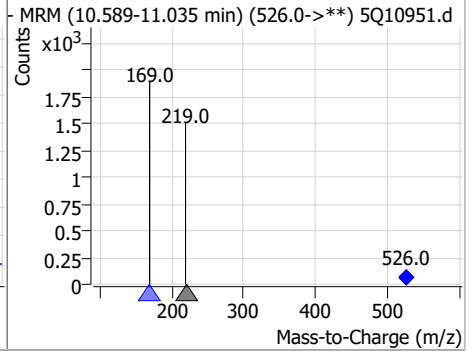
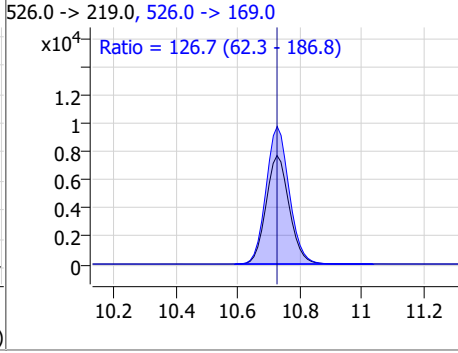
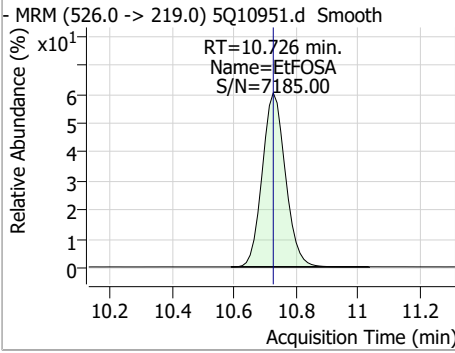


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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	22.04	10.73	0.00	39867	526.0 -> 169.0	126.7	62.3	186.8



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Manual Integration Approval Summary

Sample Number: S5Q169-ICV169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10951.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/16/23 22:52 **Supervisor approved:** 02/21/23 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
4:2 Fluorotelomer sulfonate	757124-72-4		5.00	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.28	Poor instrument integration
PFEESA	113507-82-7		5.82	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.36	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.09	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.31	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10960.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 12:59:15 AM
 Sample Name : cc169-1.0LL
 Vial : P3-A2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	40072	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	25417	5.00	µg/L m	0.000
M5-PFHxA	5.323	318.0 -> 273.0	28242	2.50	µg/L	-0.012
M4-PFHpA	6.280	367.1 -> 322.0	26931	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	33651	2.50	µg/L	0.000
M9-PFNA	7.520	472.1 -> 427.0	11841	1.25	µg/L	-0.012
M6-PFDA	8.054	519.1 -> 474.1	7303	1.25	µg/L	-0.012
M7-PFUnDA	8.573	570.0 -> 525.1	7972	1.25	µg/L	-0.012
M2-PFDoDA	9.041	615.1 -> 570.0	8748	1.25	µg/L	-0.012
M2-PFTeDA	9.874	715.2 -> 670.0	7765	1.25	µg/L	-0.025
M8-FOSA	9.187	506.1 -> 77.8	7250	2.50	µg/L	0.000
M3-PFBS	5.264	302.1 -> 79.9	6869	2.50	µg/L m	-0.013
M3-PFHxS	7.079	402.1 -> 79.9	5630	2.50	µg/L	-0.012
M8-PFOS	8.243	507.1 -> 79.9	7573	2.50	µg/L	-0.012
M2-4:2FTS	4.984	329.1 -> 80.9	529	5.00	µg/L	-0.012
M2-6:2FTS	6.699	429.1 -> 80.9	1175	5.00	µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	1715	5.00	µg/L	-0.012
M3-MeFOSAA	8.076	573.2 -> 419.0	8558	5.00	µg/L	-0.012
M3-HFPO-DA	5.702	286.9 -> 168.9	60777	10.00	µg/L	-0.012
M5-EtFOSAA	8.298	589.2 -> 419.0	13163	5.00	µg/L	-0.012
M7-MeFOSE	10.315	623.2 -> 58.9	34049	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	41362	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5009	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	3682	2.50	µg/L	0.000
13C4-PFOS	8.244	502.8 -> 79.9	7699	2.50	µg/L	-0.012
13C3-PFBA	2.803	216.0 -> 172.0	21566	5.00	µg/L m	0.000
18O2-PFHxS	7.078	403.0 -> 83.9	3977	2.50	µg/L	-0.012
13C4-PFOA	6.950	417.1 -> 372.0	39972	2.50	µg/L	0.000
13C2-PFDA	8.054	515.1 -> 470.1	11363	1.25	µg/L	-0.012
13C5-PFNA	7.520	468.0 -> 423.0	10802	1.25	µg/L	-0.012
13C2-PFHxA	5.324	315.1 -> 270.0	32575	2.50	µg/L	-0.012
System Monitoring Compounds						
13C2-4:2FTS	4.984	329.1 -> 80.9	529	5.47	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.4%			
13C2-6:2FTS	6.699	429.1 -> 80.9	1175	5.45	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.9%			
13C2-8:2FTS	7.816	529.1 -> 80.9	1715	5.68	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.5%			
13C2-PFDoDA	9.041	615.1 -> 570.0	8748	1.24	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%			
13C2-PFTeDA	9.874	715.2 -> 670.0	7765	1.17	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.4%			
13C3-PFBS	5.264	302.1 -> 79.9	6869	2.24	µg/L m	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.8%			
13C3-PFHxS	7.079	402.1 -> 79.9	5630	2.48	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 = 99.0%			
13C4-PFBA	2.799	216.8 -> 171.9	40072	9.85	µg/L	m 0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.5%			
13C4-PFHpA	6.280	367.1 -> 322.0	26931	2.49	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%			
13C5-PFHxA	5.323	318.0 -> 273.0	28242	2.47	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%			
13C5-PFPeA	4.150	268.3 -> 223.0	25417	4.29	µg/L	m 0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.8%			
13C6-PFDA	8.054	519.1 -> 474.1	7303	1.24	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%			
13C7-PFUnDA	8.573	570.0 -> 525.1	7972	1.24	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%			
13C8-FOSA	9.187	506.1 -> 77.8	7250	2.40	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.0%			
13C8-PFOA	6.950	421.1 -> 376.0	33651	2.50	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%			
13C8-PFOS	8.243	507.1 -> 79.9	7573	2.50	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%			
13C9-PFNA	7.520	472.1 -> 427.0	11841	1.34	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.3%			
d3-MeFOSAA	8.076	573.2 -> 419.0	8558	5.02	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.4%			
13C3-HFPO-DA	5.702	286.9 -> 168.9	60777	10.05	µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.5%			
d3-MeFOSA	10.416	515.0 -> 219.0	3682	2.37	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%			
d5-EtFOSAA	8.298	589.2 -> 419.0	13163	5.22	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.4%			
d7-MeFOSE	10.315	623.2 -> 58.9	34049	24.03	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.1%			
d9-EtFOSE	10.623	639.2 -> 58.9	41362	23.82	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.3%			
d5-EtFOSA	10.712	531.1 -> 219.0	5009	2.34	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.7%			

Target Compounds	RT	Transition	Response	Conc.	Units	QValue
4:2FTS	4.985	327.1 -> 307.0	594	0.89	µg/L	97
		327.1 -> 80.9	341			
6:2FTS	6.700	427.1 -> 407.0	866	0.88	µg/L	98
		427.1 -> 80.9	373			
8:2FTS	7.816	527.1 -> 507.0	614	0.75	µg/L	89
		527.1 -> 80.8	357			
EtFOSAA	8.311	584.2 -> 419.1	447	0.26	µg/L	m 92
		584.2 -> 526.0	199			
FOSA	9.177	498.1 -> 77.9	604	0.23	µg/L	95
		498.1 -> 478.0	31			
MeFOSAA	8.077	570.1 -> 419.0	364	0.25	µg/L	m 94
		570.1 -> 483.0	68			
PFBA	2.807	212.8 -> 168.9	1505	0.95	µg/L	m 100
PFBS	5.265	298.7 -> 79.9	482	0.21	µg/L	95
		298.7 -> 98.8	216			
PFDA	8.055	512.9 -> 469.0	1841	0.24	µg/L	95
		512.9 -> 219.0	299			
PFDODA	9.042	613.1 -> 569.0	1323	0.22	µg/L	98
		613.1 -> 319.0	198			
PFDS	9.232	599.0 -> 79.9	297	0.18	µg/L	78

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.281	599.0 -> 98.8	200	0.22	µg/L	98
		363.1 -> 319.0	2538			
PFHpS	7.686	363.1 -> 169.0	549	0.22	µg/L	85
		449.0 -> 79.9	479			
PFHxA	5.325	449.0 -> 98.9	237	0.23	µg/L	96
		313.0 -> 269.0	1906			
PFHxS	7.080	313.0 -> 118.9	112	0.19	µg/L	91
		398.7 -> 79.9	361			
PFNA	7.521	398.7 -> 98.9	234	0.22	µg/L	94
		463.0 -> 419.0	1517			
PFNS	8.761	463.0 -> 219.0	316	0.19	µg/L	96
		548.8 -> 79.9	322			
PFOA	6.951	548.8 -> 98.9	205	0.22	µg/L	88
		413.0 -> 369.0	2801			
PFOS	8.244	413.0 -> 169.0	795	0.21	µg/L	99
		498.9 -> 79.9	636			
PFPeA	4.152	498.9 -> 98.8	404	0.47	µg/L	100
		263.0 -> 219.0	2585			
PFPeS	6.344	349.1 -> 79.9	401	0.24	µg/L	80
		349.1 -> 98.9	148			
PFTeDA	9.875	713.1 -> 669.0	1507	0.25	µg/L	98
		713.1 -> 168.9	197			
PFTrDA	9.476	663.0 -> 619.0	1760	0.23	µg/L	100
		663.0 -> 168.9	294			
PFUnDA	8.573	563.1 -> 519.0	1406	0.24	µg/L	92
		563.1 -> 269.1	338			
11Cl-PF3OUdS	9.542	630.9 -> 450.9	5388	0.81	µg/L	98
		632.9 -> 452.9	1609			
9Cl-PF3ONS	8.613	530.8 -> 351.0	5846	0.82	µg/L	98
		532.8 -> 353.0	1763			
ADONA	6.530	376.9 -> 250.9	13288	0.80	µg/L	99
		376.9 -> 84.8	4073			
HFPO-DA	5.703	284.9 -> 168.9	4633	0.93	µg/L	100
		284.9 -> 184.9	431			
3:3FTCA	3.603	241.0 -> 177.0	392	0.96	µg/L	96
		241.0 -> 117.0	56			
5:3FTCA	5.906	341.0 -> 237.1	8261	4.82	µg/L	100
		341.0 -> 217.0	5564			
7:3FTCA	7.335	441.0 -> 316.9	3625	5.29	µg/L	93
		441.0 -> 336.9	7465			
EtFOSA	10.726	526.0 -> 219.0	424	0.23	µg/L	86
		526.0 -> 169.0	460			
EtFOSE	10.636	630.0 -> 58.9	3685	2.40	µg/L	100
		511.9 -> 219.0	323			
MeFOSA	10.418	511.9 -> 169.0	489	0.22	µg/L	79
		616.1 -> 58.9	3360			
MeFOSE	10.327	699.1 -> 79.9	315	2.31	µg/L	100
		699.1 -> 98.8	161			
PFDoDS	10.038	295.0 -> 201.0	313	0.24	µg/L	88
		295.0 -> 84.9	101			
NFDHA	5.205	279.0 -> 85.1	1862	0.48	µg/L	90
		229.0 -> 84.9	1555			
PFMBA	4.553	314.8 -> 134.9	3364	0.39	µg/L	100
		314.8 -> 82.9	101			

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

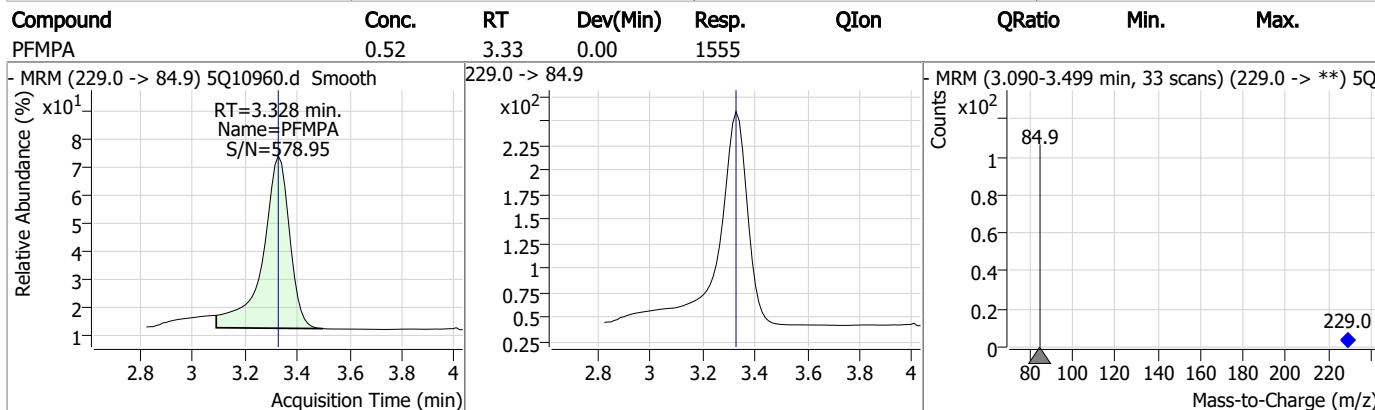
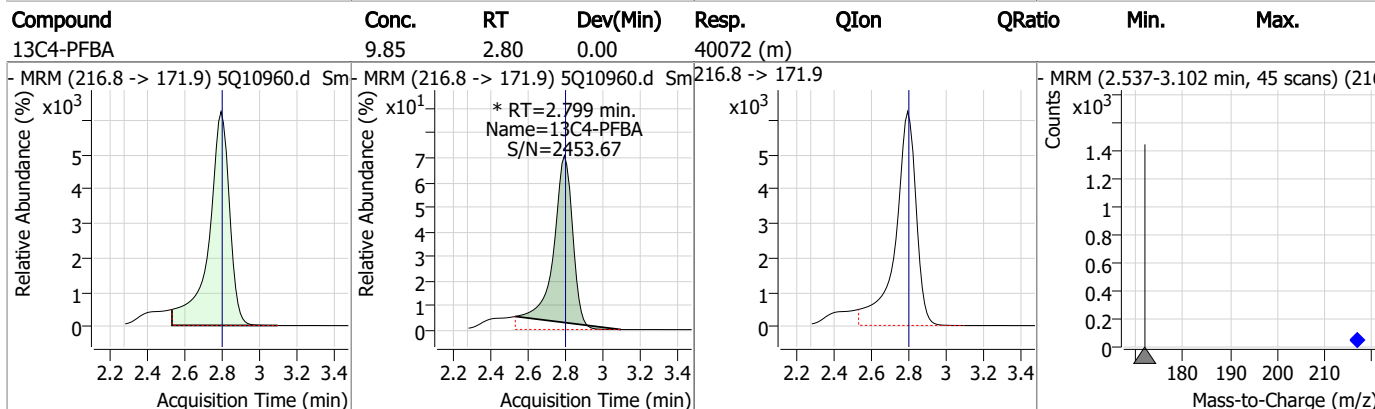
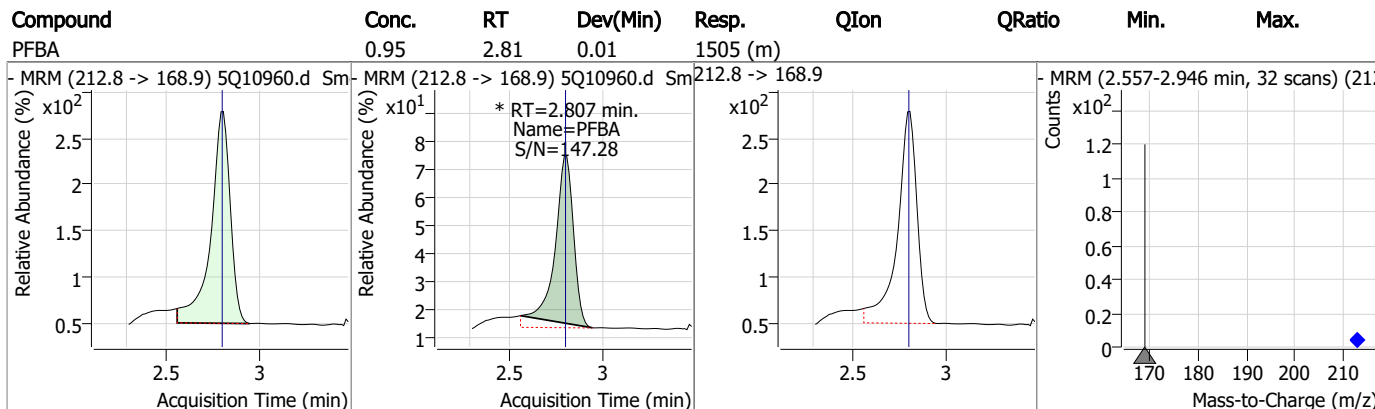
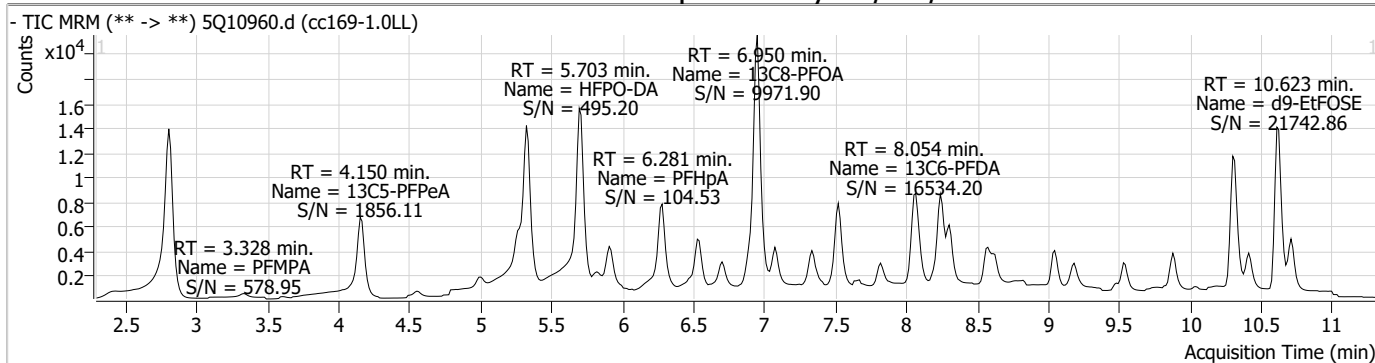
Perfluorinated Compounds by LC/MS/MS

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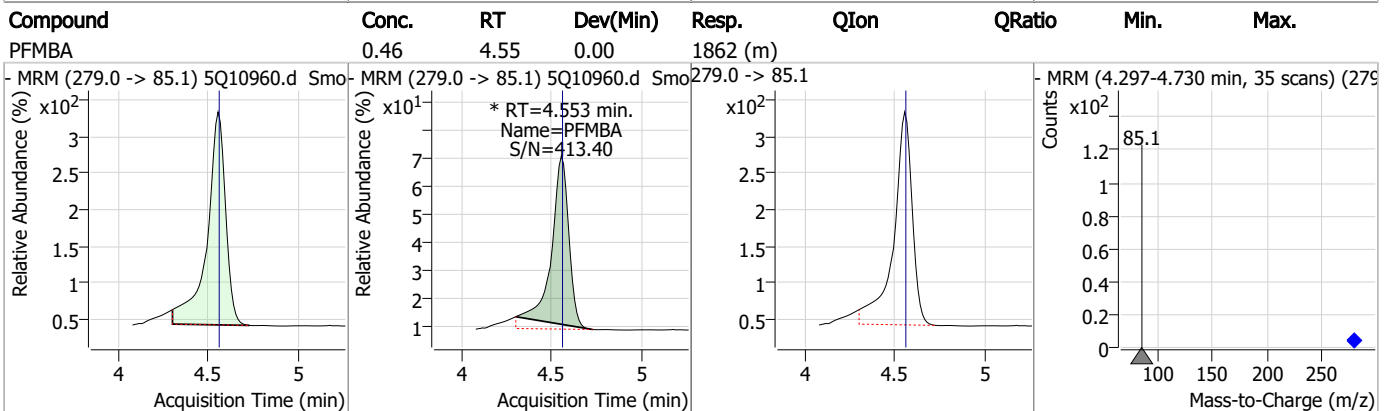
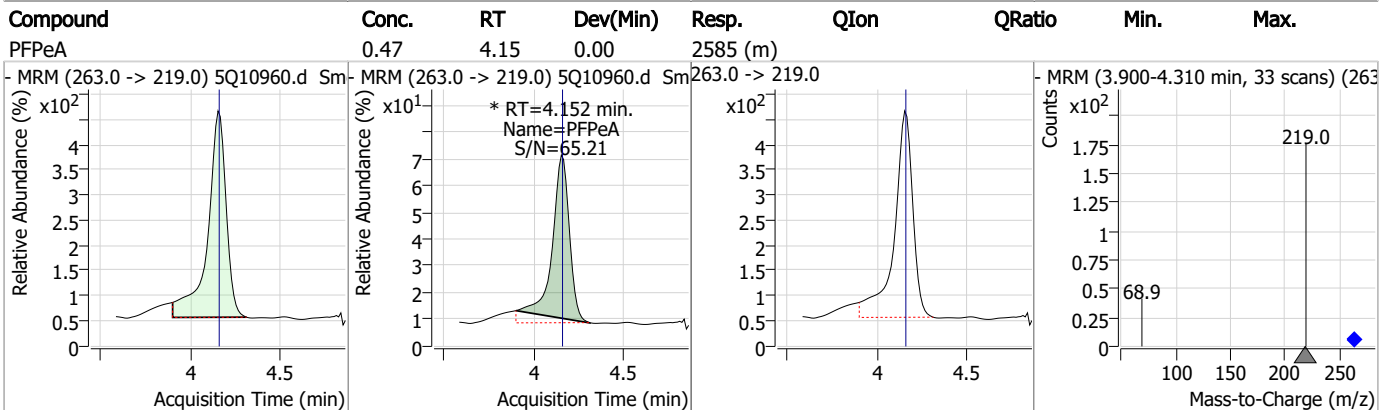
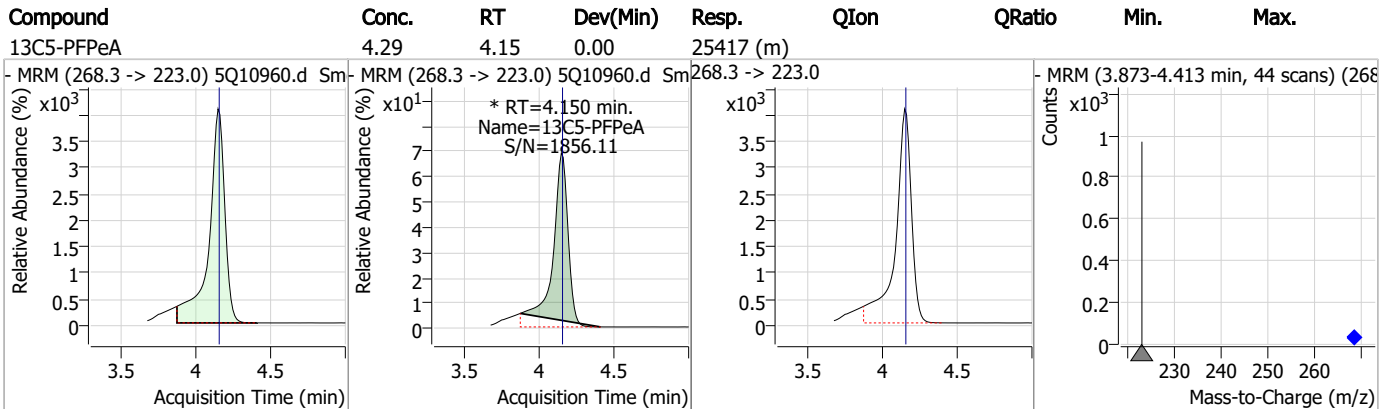
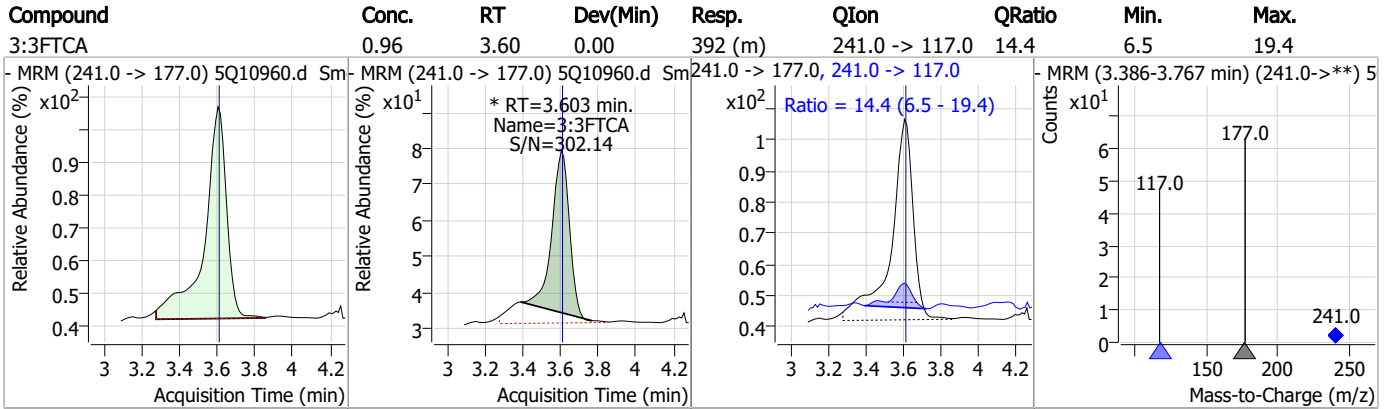
7.7.12

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Perfluorinated Compounds by LC/MS/MS



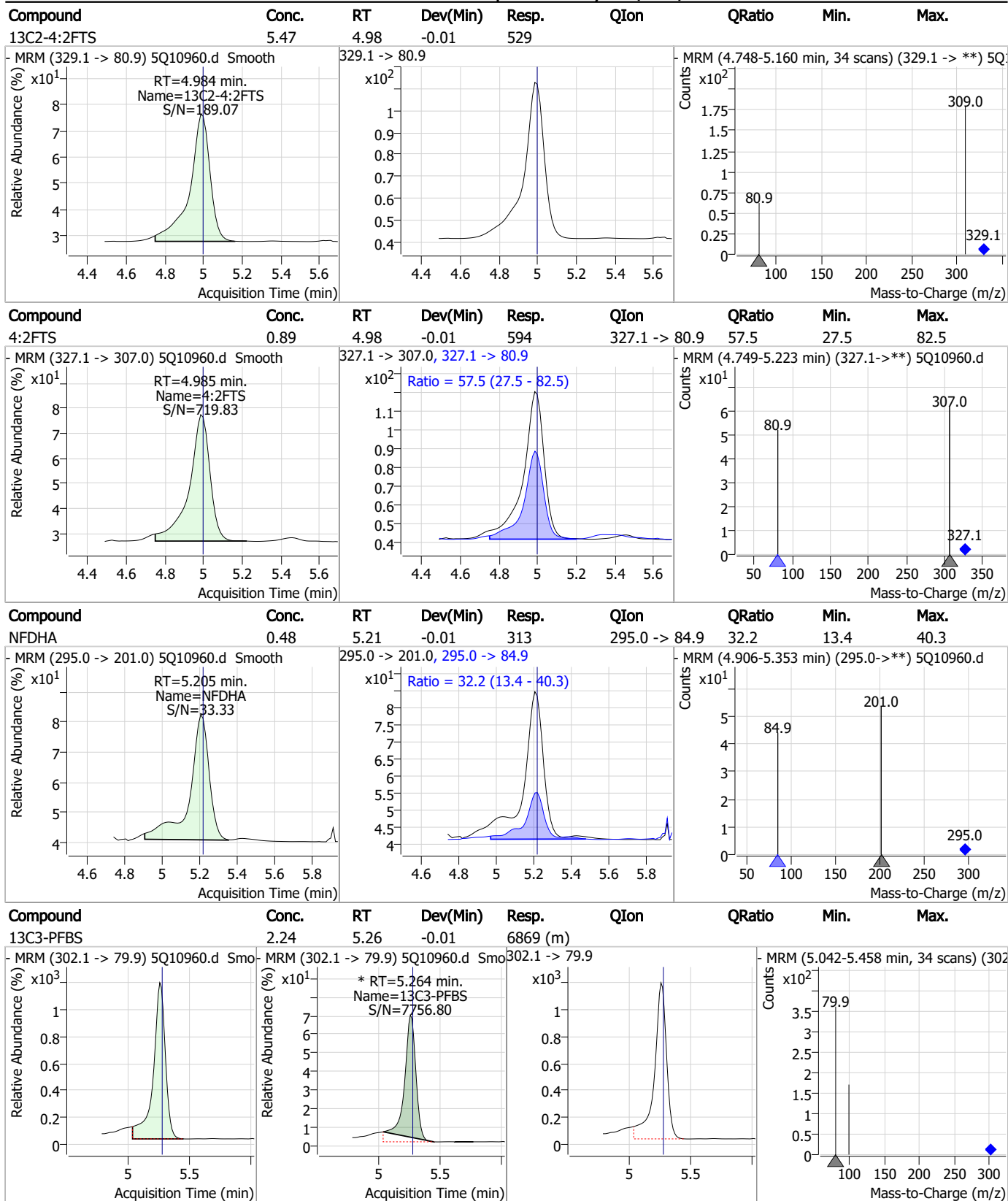
Perfluorinated Compounds by LC/MS/MS



7.7.12
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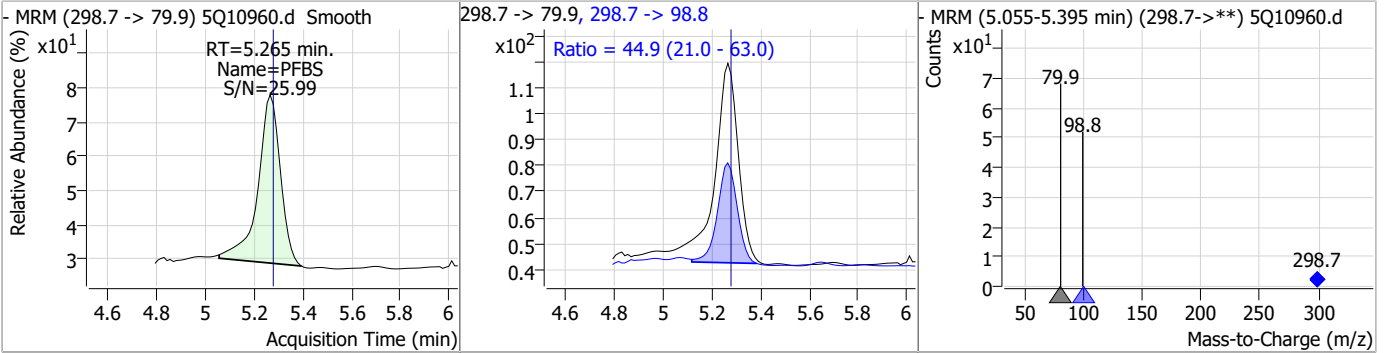
Perfluorinated Compounds by LC/MS/MS



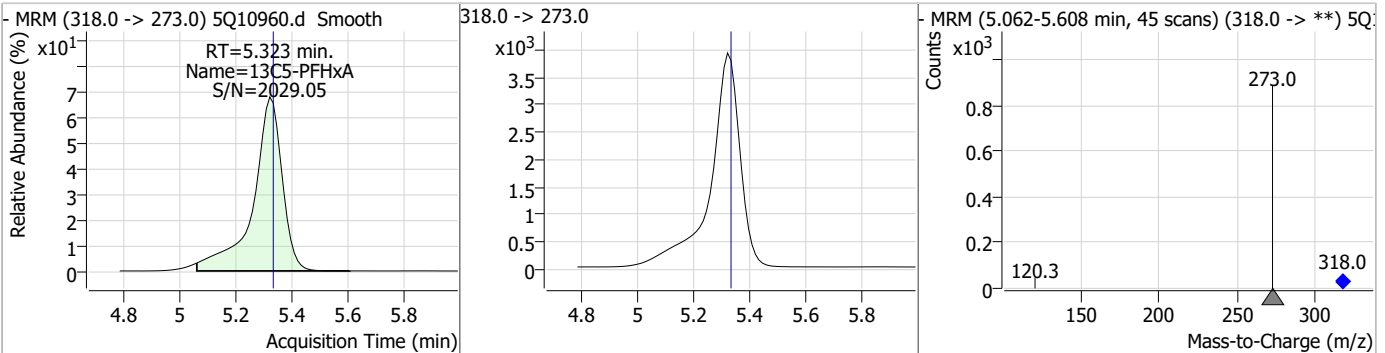
7.7.12
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Perfluorinated Compounds by LC/MS/MS

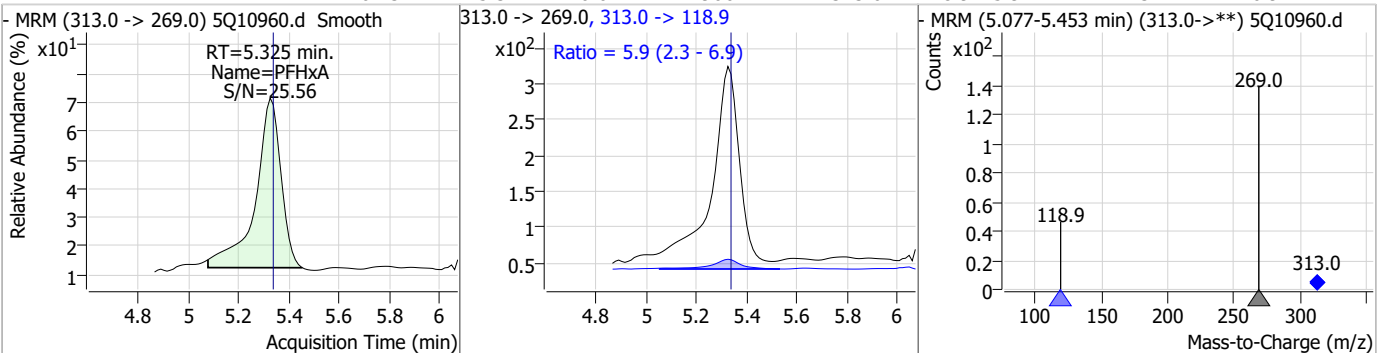
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.21	5.27	-0.01	482	298.7 -> 98.8	44.9	21.0	63.0



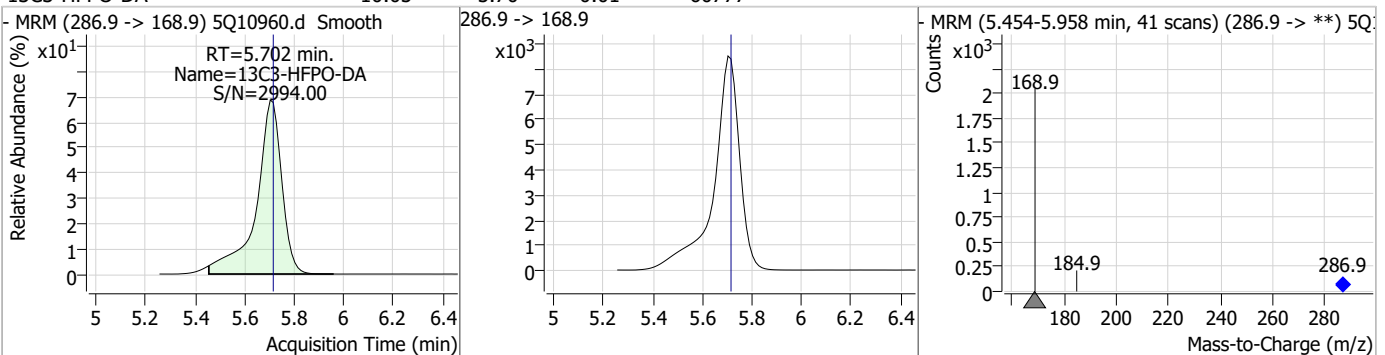
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.47	5.32	-0.01	28242				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.23	5.32	-0.01	1906	313.0 -> 118.9	5.9	2.3	6.9

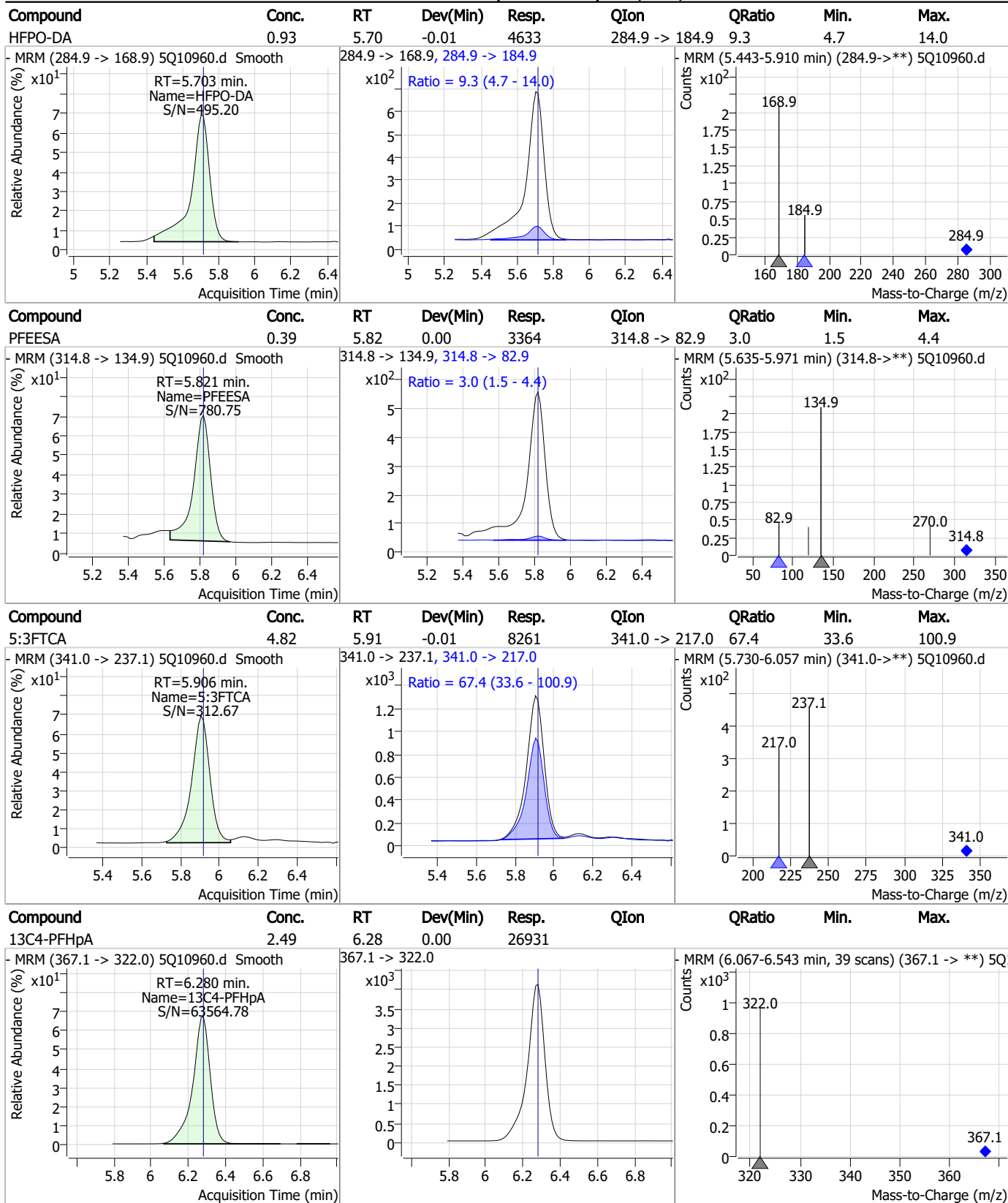


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.05	5.70	-0.01	60777				



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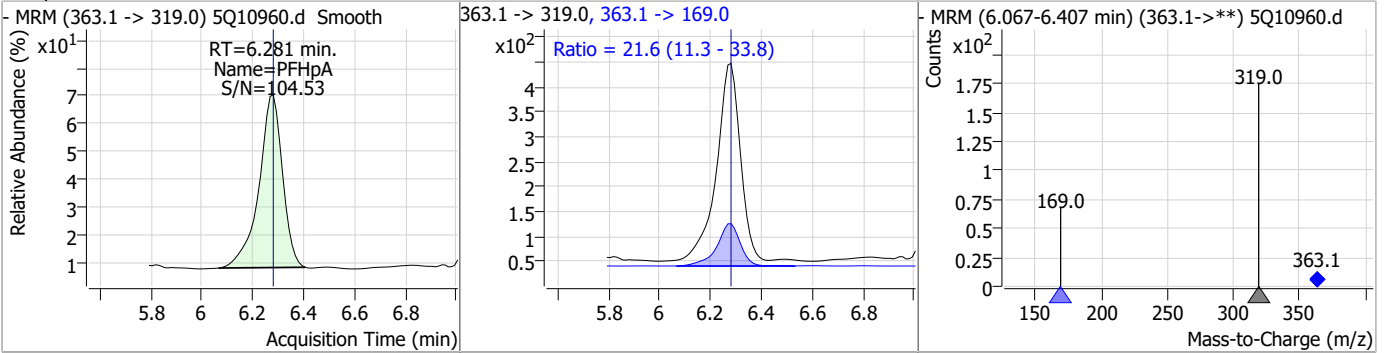
Perfluorinated Compounds by LC/MS/MS



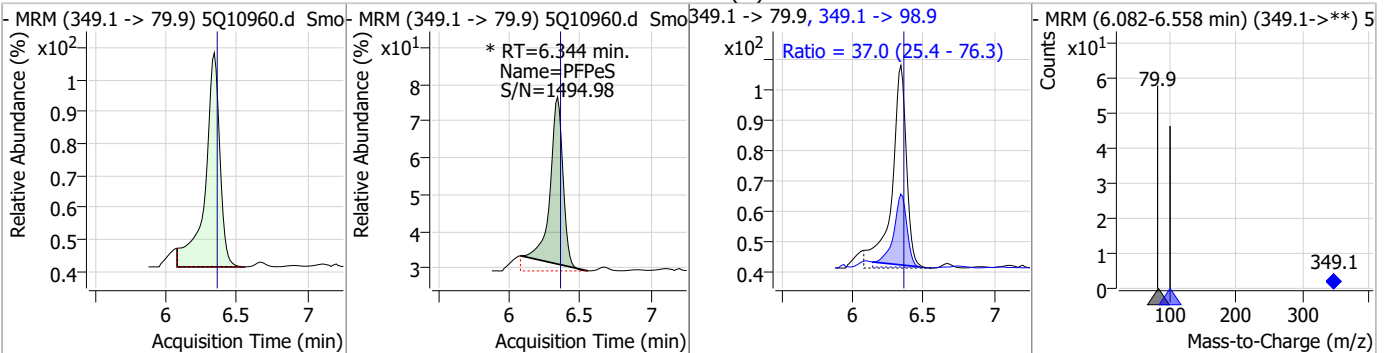
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Perfluorinated Compounds by LC/MS/MS

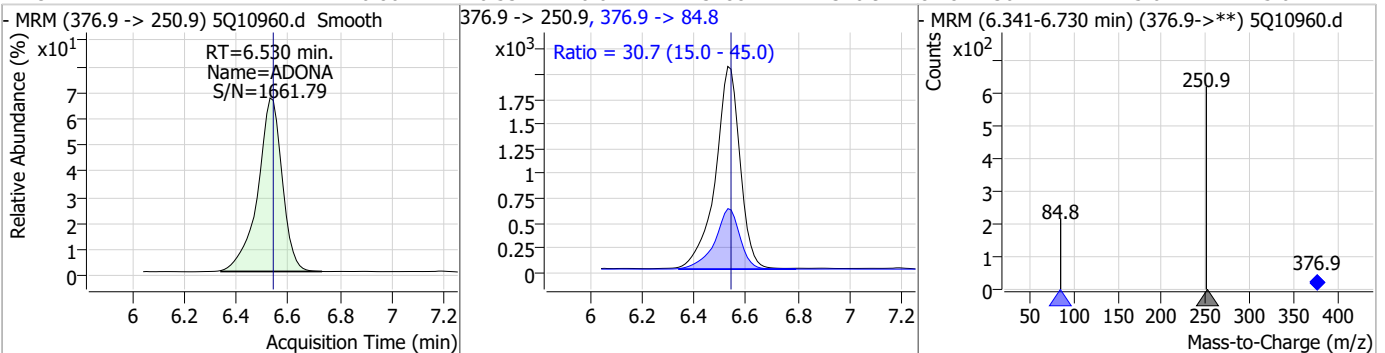
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.22	6.28	0.00	2538	363.1 -> 169.0	21.6	11.3	33.8



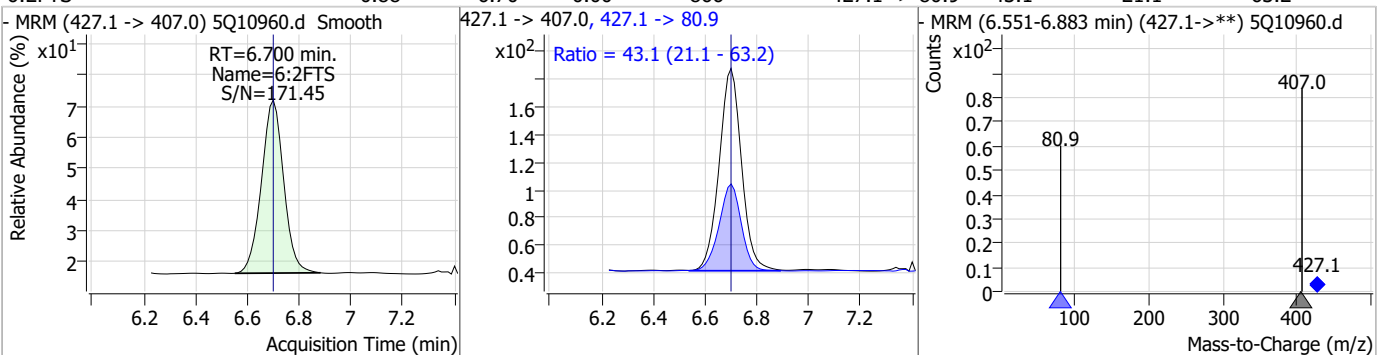
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.24	6.34	-0.01	401 (m)	349.1 -> 98.9	37.0	25.4	76.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.80	6.53	-0.01	13288	376.9 -> 84.8	30.7	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.88	6.70	0.00	866	427.1 -> 80.9	43.1	21.1	63.2



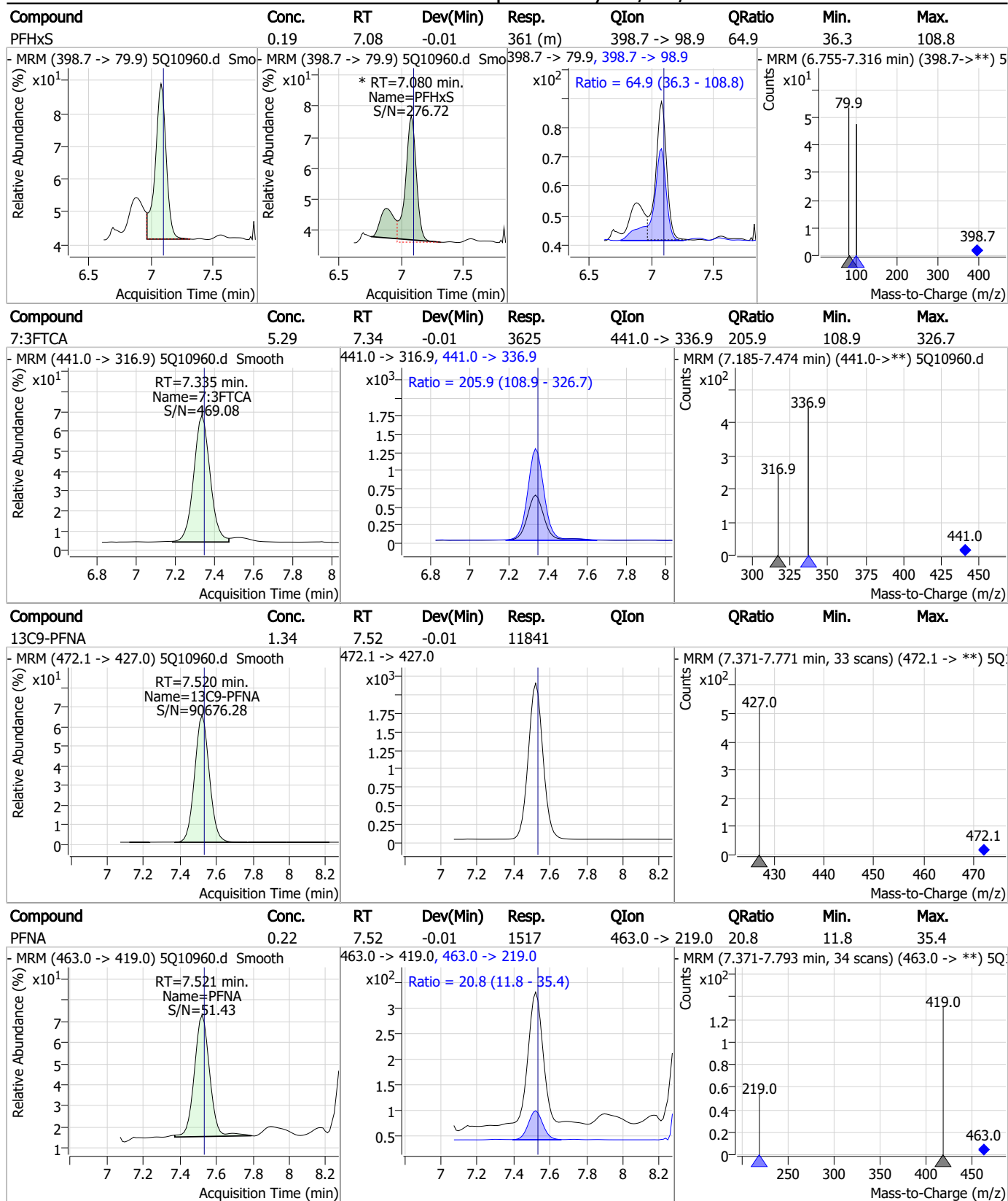
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.45	6.70	-0.01	1175				
<p>MRM (429.1 -> 80.9) 5Q10960.d Smooth RT=6.699 min. Name=13C2-6:2FTS S/N=3067.90</p>			<p>429.1 -> 80.9</p>		<p>MRM (6.538-6.919 min, 31 scans) (429.1 -> **) 5Q10960.d</p>			
13C8-PFOA	2.50	6.95	0.00	33651				
<p>MRM (421.1 -> 376.0) 5Q10960.d Smooth RT=6.950 min. Name=13C8-PFOA S/N=9971.90</p>			<p>421.1 -> 376.0</p>		<p>MRM (6.788-7.263 min, 39 scans) (421.1 -> **) 5Q10960.d</p>			
PFOA	0.22	6.95	0.00	2801	413.0 -> 169.0	28.4	11.4	34.3
<p>MRM (413.0 -> 369.0) 5Q10960.d Smooth RT=6.951 min. Name=PFOA S/N=54.57</p>			<p>413.0 -> 369.0, 413.0 -> 169.0 Ratio = 28.4 (11.4 - 34.3)</p>		<p>MRM (6.777-7.076 min) (413.0->**) 5Q10960.d</p>			
13C3-PFHxS	2.48	7.08	-0.01	5630				
<p>MRM (402.1 -> 79.9) 5Q10960.d Smooth RT=7.079 min. Name=13C3-PFHxS S/N=1241.77</p>			<p>402.1 -> 79.9</p>		<p>MRM (6.879-7.354 min, 39 scans) (402.1 -> **) 5Q10960.d</p>			

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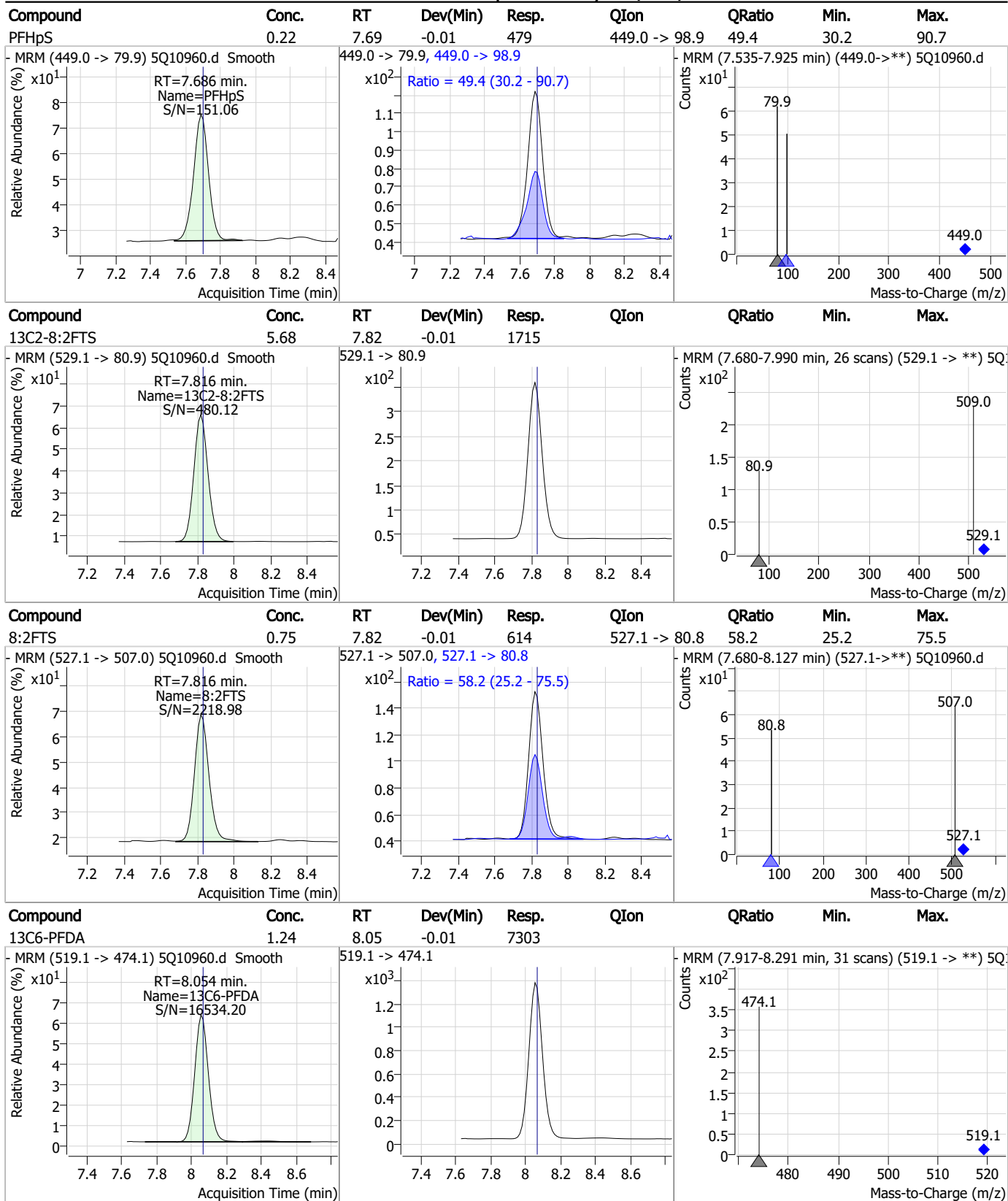


Perfluorinated Compounds by LC/MS/MS



7.7.12
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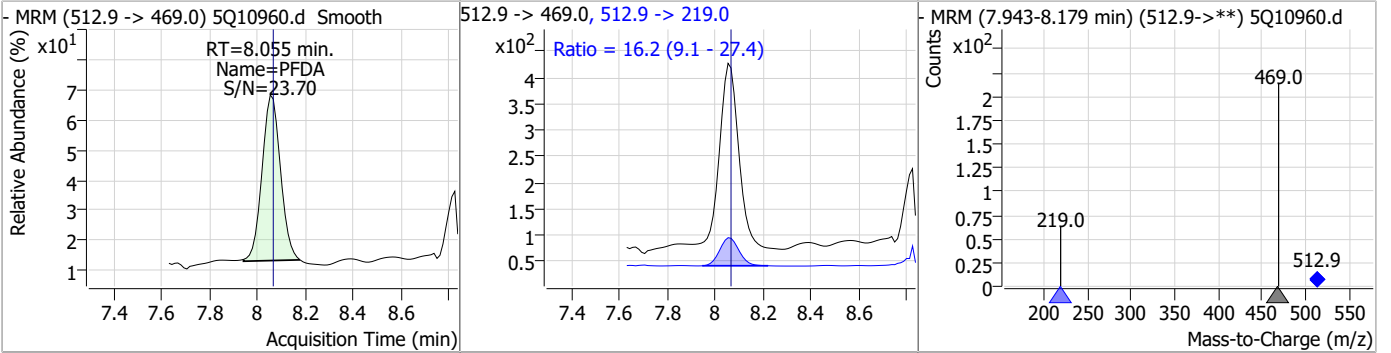
Perfluorinated Compounds by LC/MS/MS



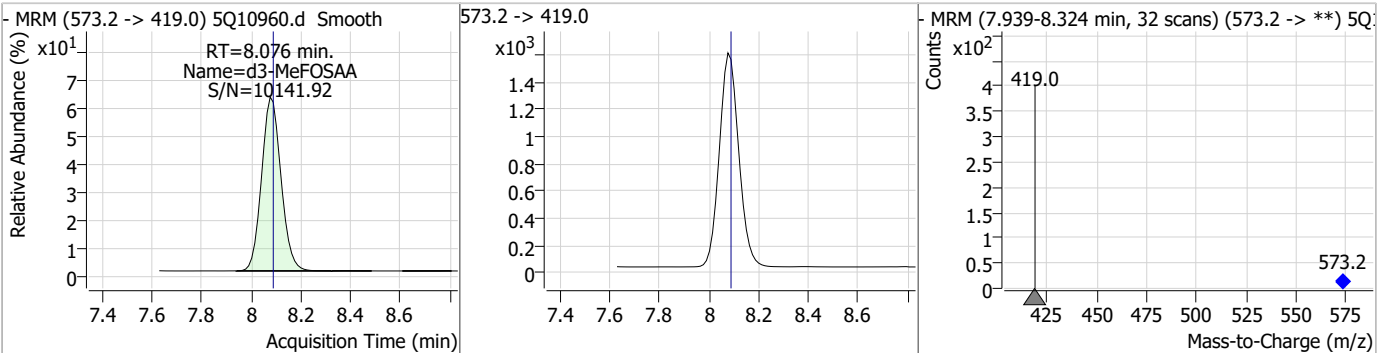
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Perfluorinated Compounds by LC/MS/MS

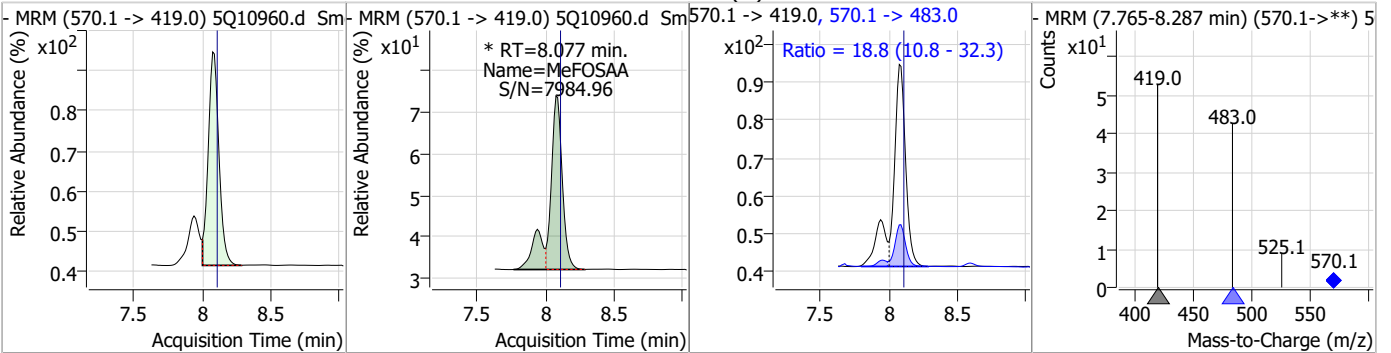
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.24	8.05	-0.01	1841	512.9 -> 219.0	16.2	9.1	27.4



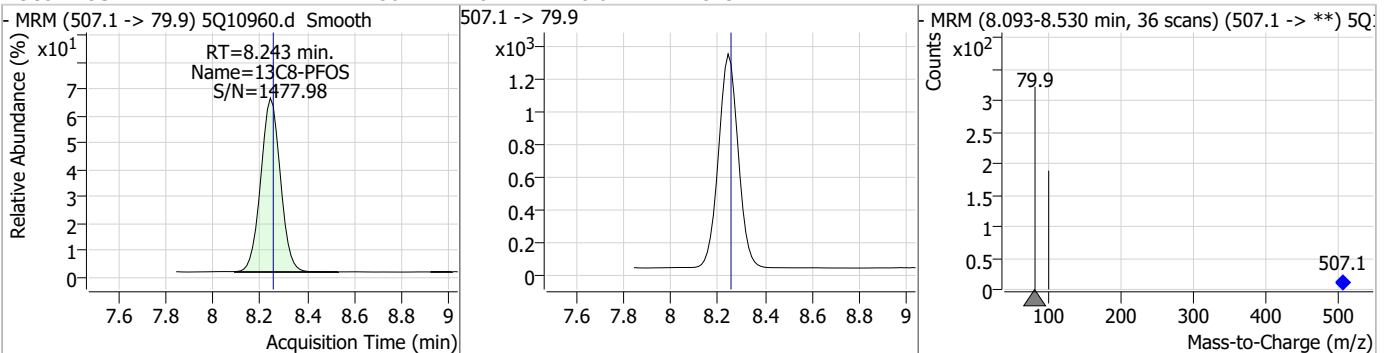
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.02	8.08	-0.01	8558				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.25	8.08	-0.02	364 (m)	570.1 -> 483.0	18.8	10.8	32.3

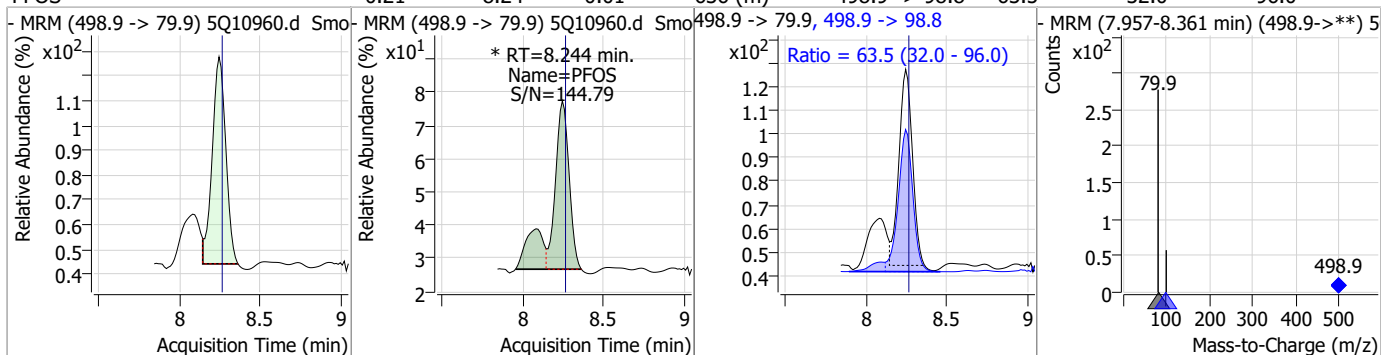


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.50	8.24	-0.01	7573				

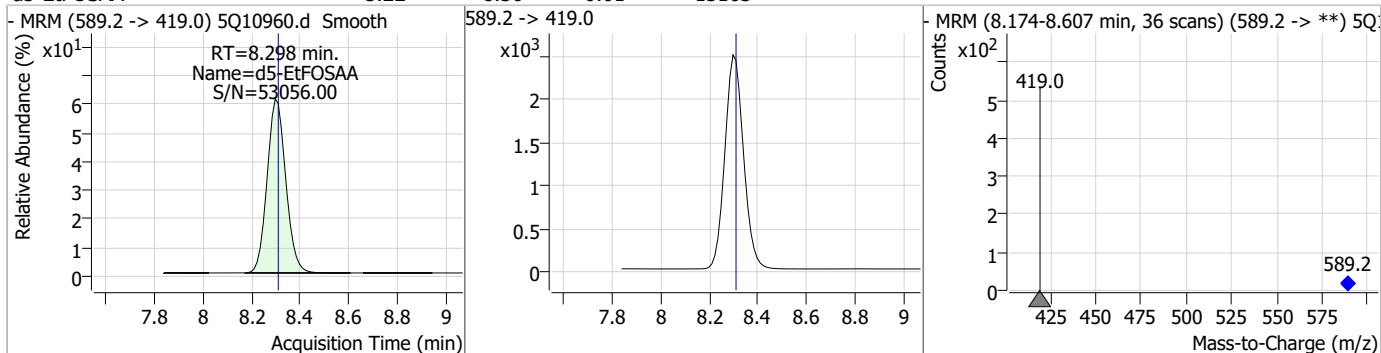


Perfluorinated Compounds by LC/MS/MS

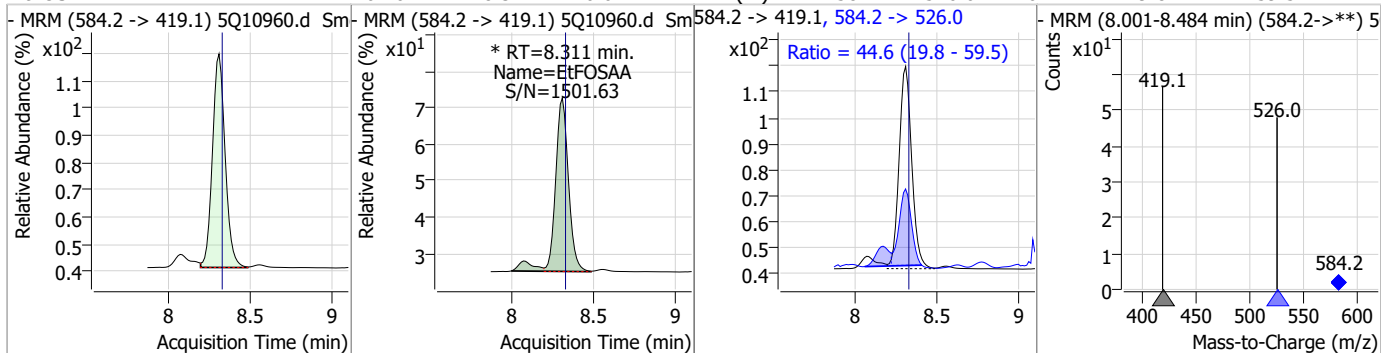
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.21	8.24	-0.01	636 (m)	498.9 -> 98.8	63.5	32.0	96.0



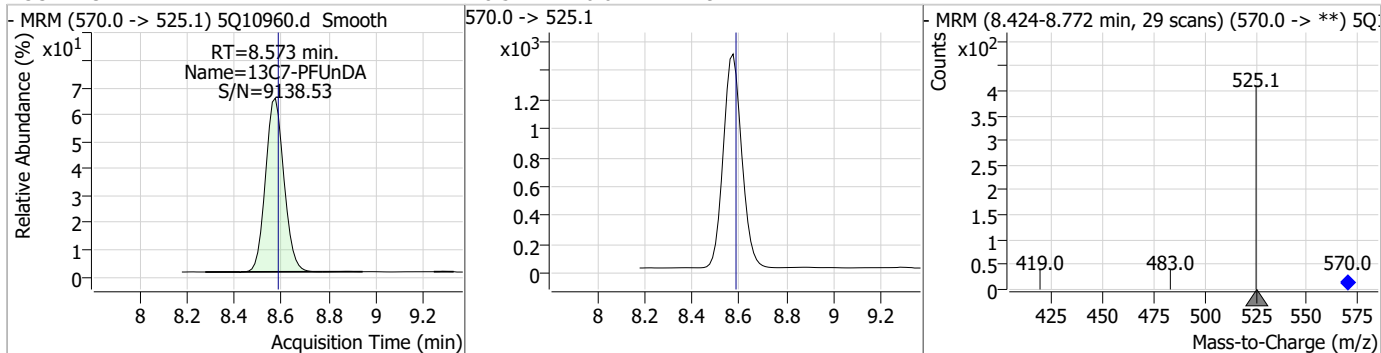
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.22	8.30	-0.01	13163				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.26	8.31	-0.01	447 (m)	584.2 -> 526.0	44.6	19.8	59.5

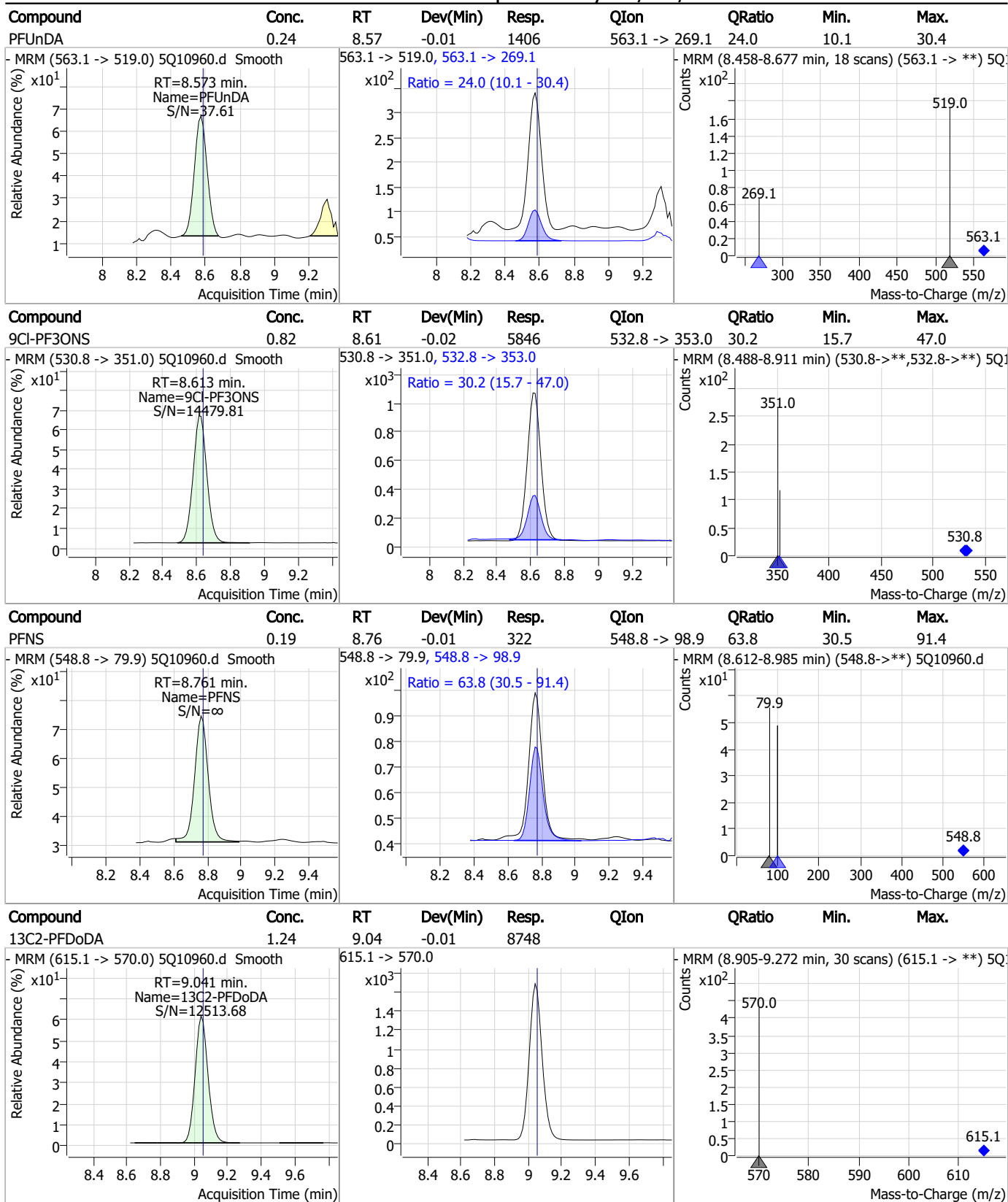


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.24	8.57	-0.01	7972				



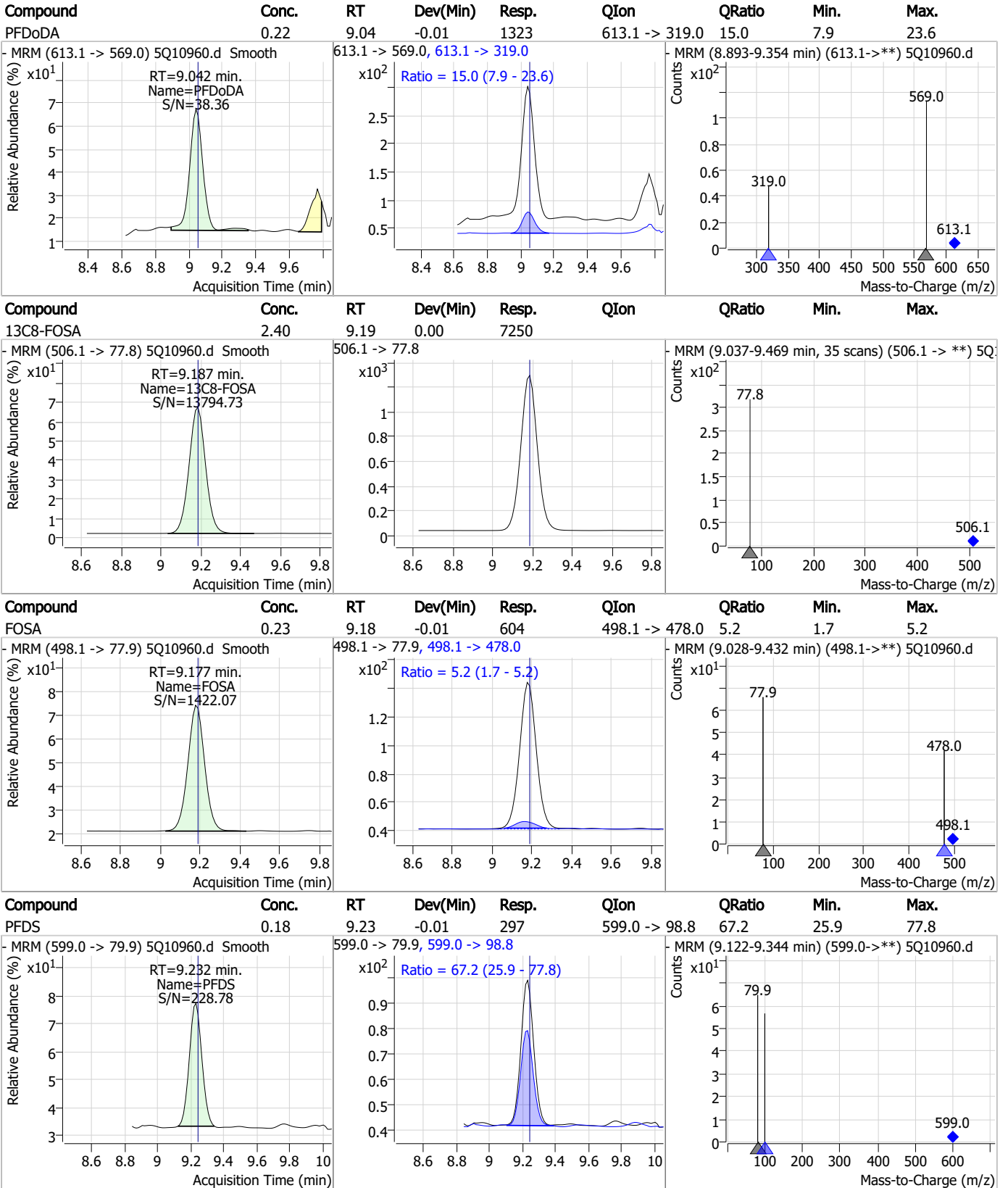
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

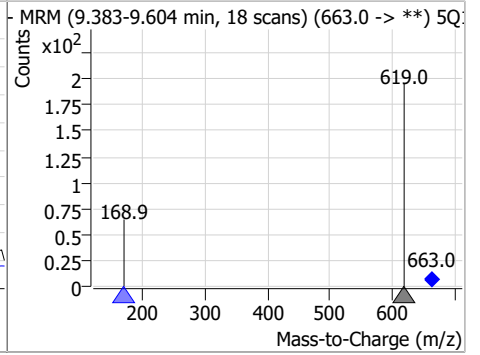
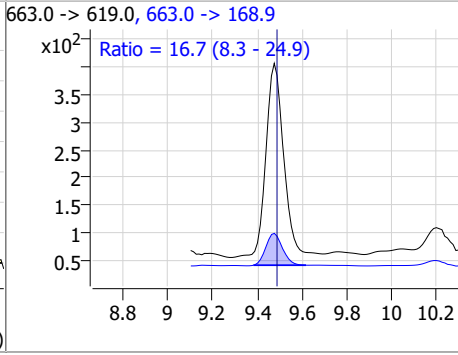
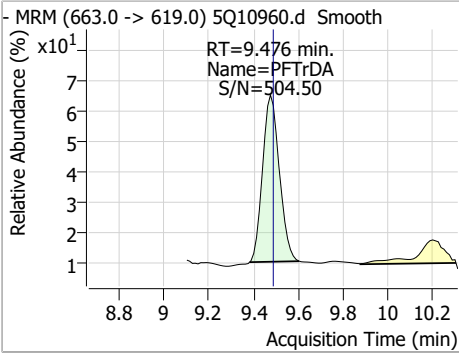


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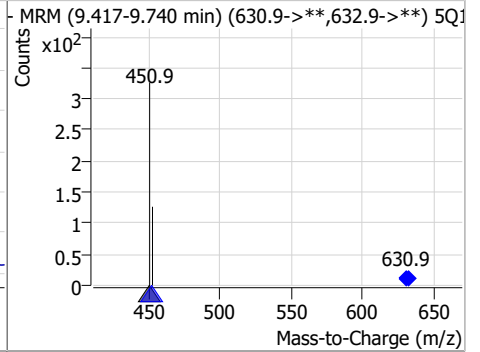
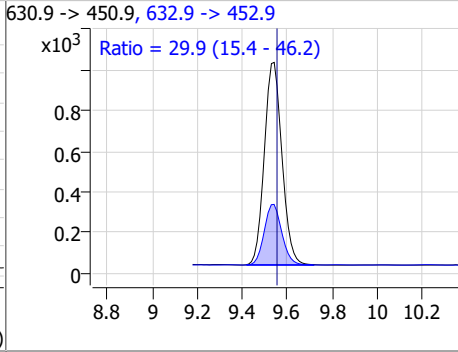
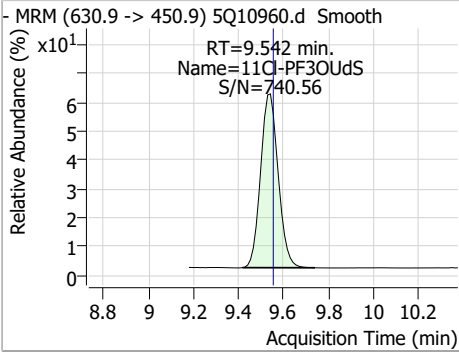
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Perfluorinated Compounds by LC/MS/MS

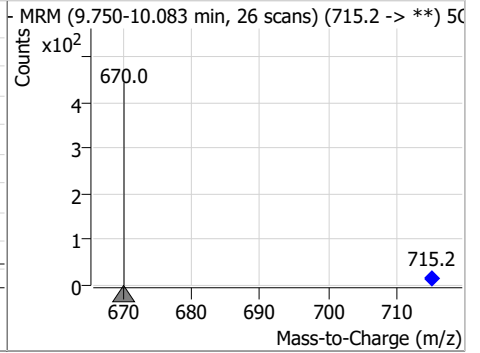
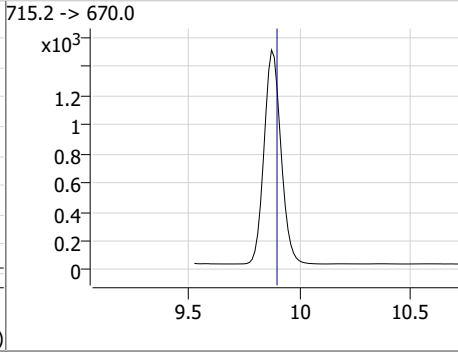
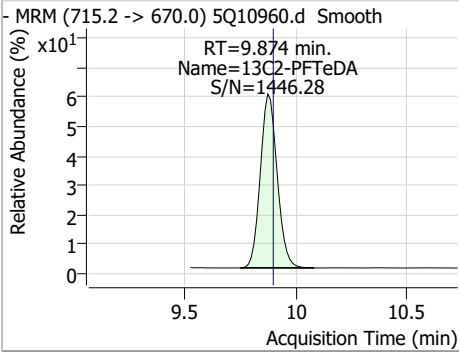
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.23	9.48	-0.01	1760	663.0 -> 168.9	16.7	8.3	24.9



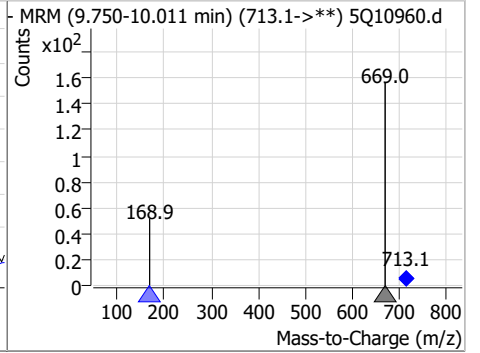
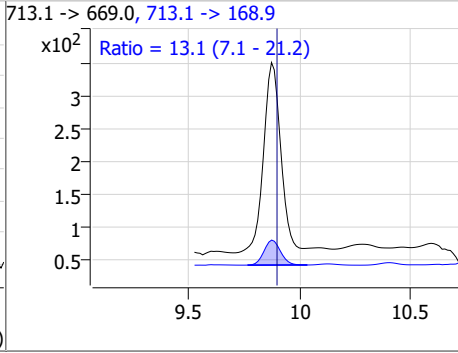
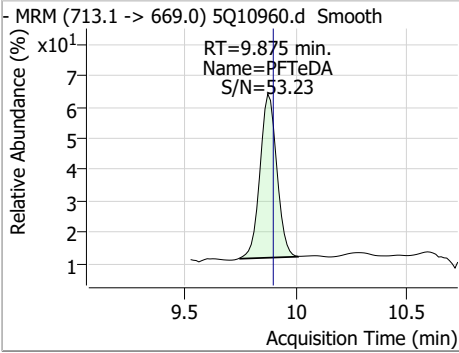
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.81	9.54	-0.01	5388	632.9 -> 452.9	29.9	15.4	46.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.17	9.87	-0.02	7765	715.2 -> 670.0			

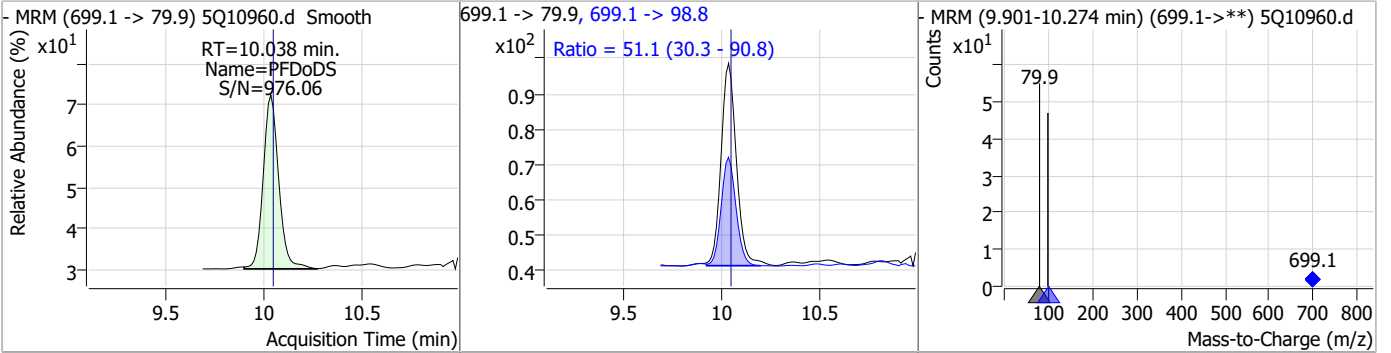


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.25	9.87	-0.02	1507	713.1 -> 168.9	13.1	7.1	21.2

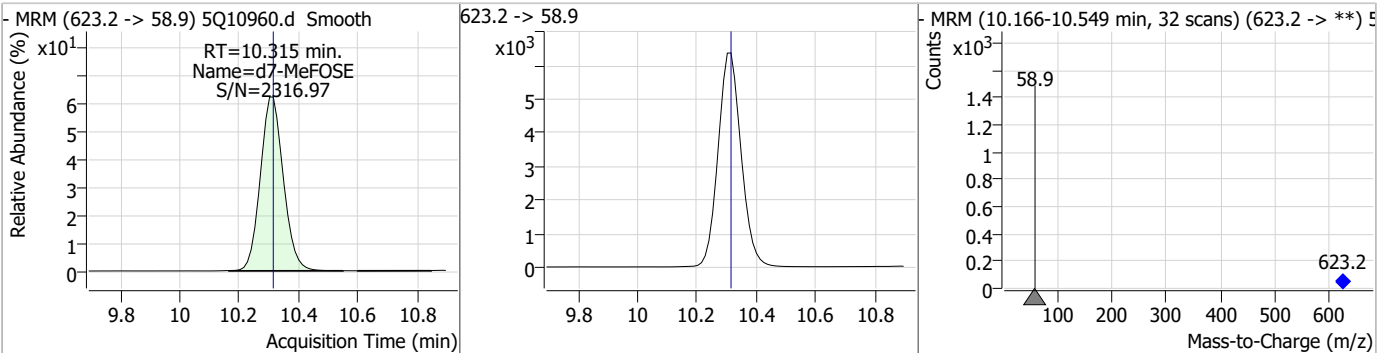


Perfluorinated Compounds by LC/MS/MS

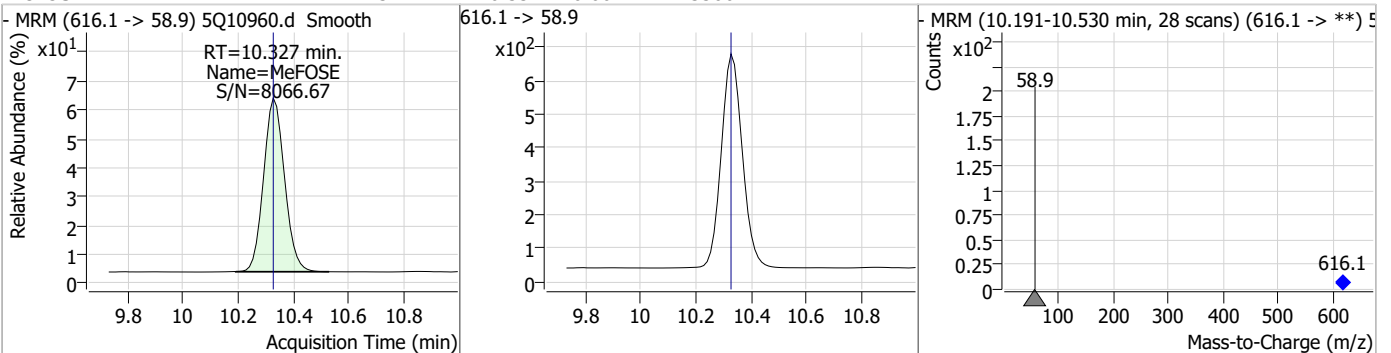
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.24	10.04	-0.01	315	699.1 -> 98.8	51.1	30.3	90.8



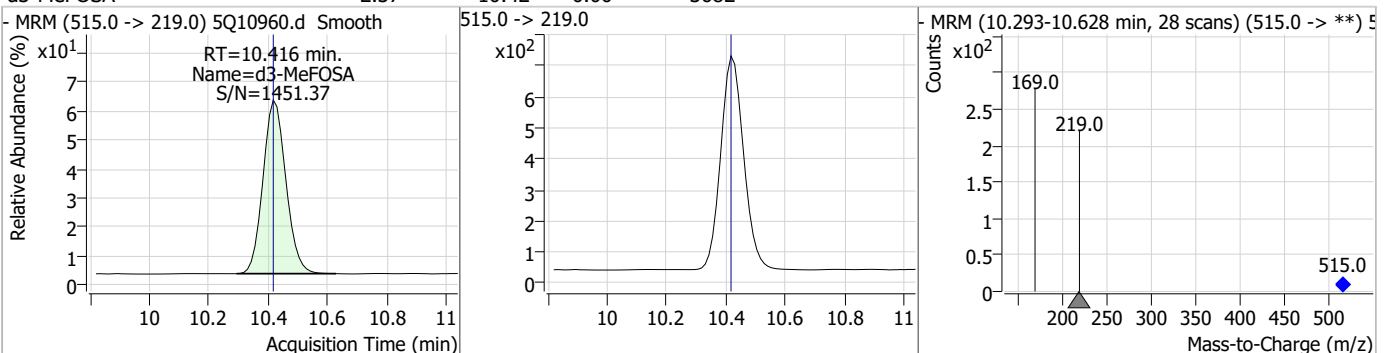
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.03	10.31	0.00	34049				



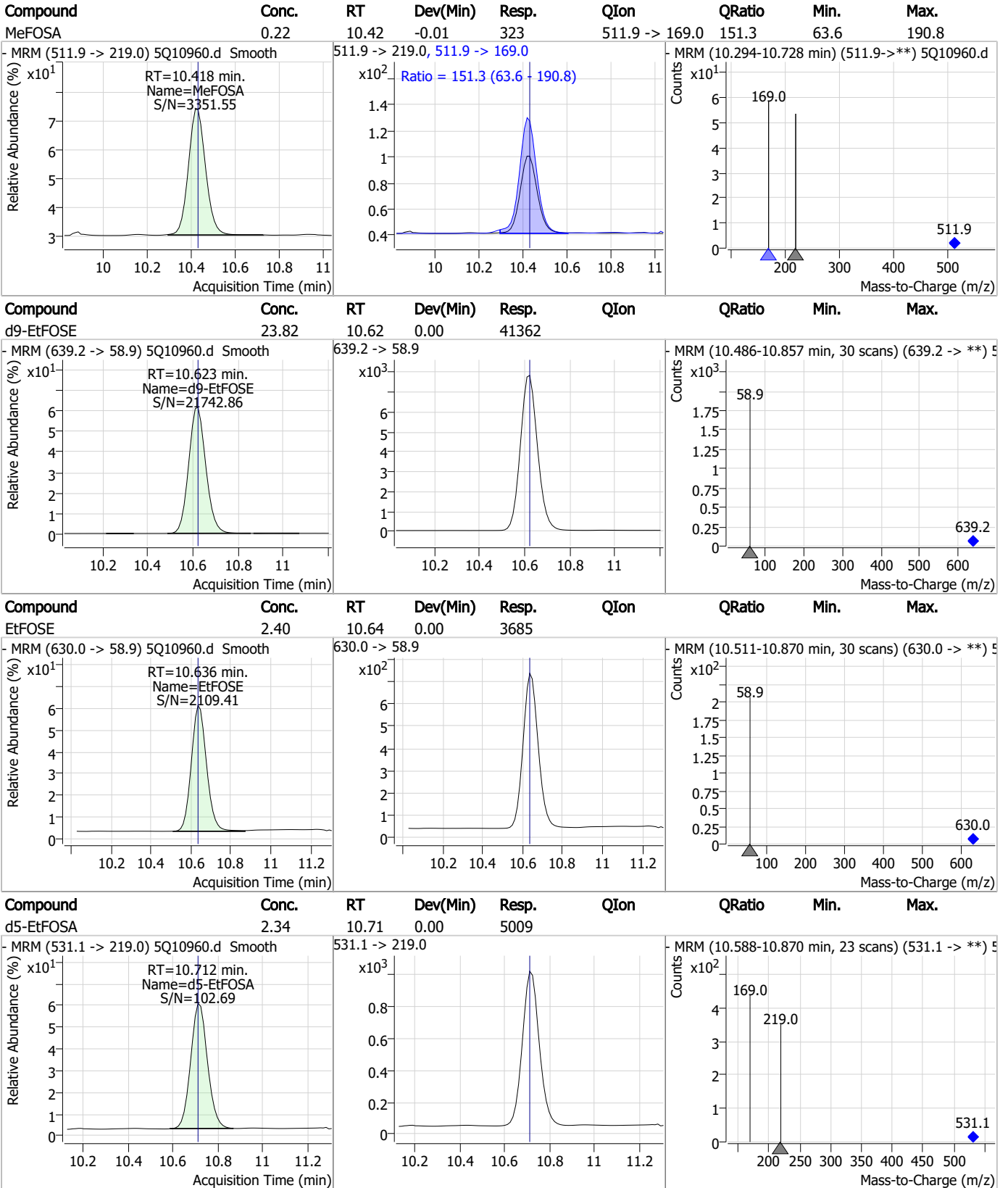
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	2.31	10.33	0.00	3360				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.37	10.42	0.00	3682				



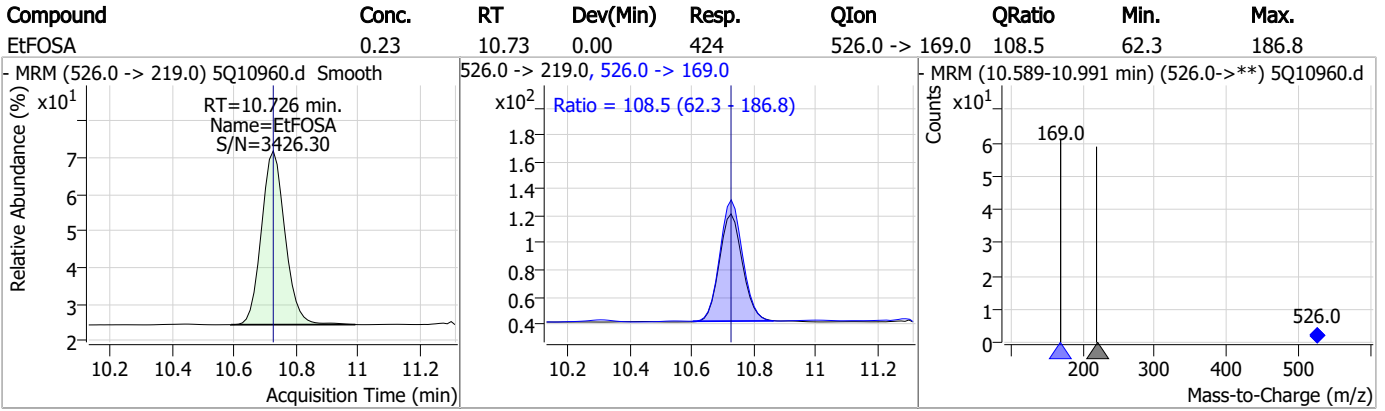
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S5Q169-CC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10960.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/17/23 00:59 **Supervisor approved:** 02/21/23 09:33 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C4-PFBA			2.80	Poor instrument integration
13C3-PFBA			2.80	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.81	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
13C5-PFPeA			4.15	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
13C3-PFBS			5.26	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.34	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.08	Split peak
MeFOSAA	2355-31-9		8.08	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.31	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10972.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 3:48:20 AM
 Sample Name : cc169-4
 Vial : P3-A5
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	46783	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	28783	5.00	µg/L m	0.000
M5-PFHxA	5.323	318.0 -> 273.0	33076	2.50	µg/L	-0.012
M4-PFHpA	6.280	367.1 -> 322.0	31609	2.50	µg/L	0.000
M8-PFOA	6.950	421.1 -> 376.0	40475	2.50	µg/L	0.000
M9-PFNA	7.520	472.1 -> 427.0	13252	1.25	µg/L	-0.012
M6-PFDA	8.054	519.1 -> 474.1	8532	1.25	µg/L	-0.012
M7-PFUnDA	8.560	570.0 -> 525.1	9023	1.25	µg/L	-0.025
M2-PFDoDA	9.029	615.1 -> 570.0	10127	1.25	µg/L	-0.025
M2-PFTeDA	9.862	715.2 -> 670.0	9568	1.25	µg/L	-0.037
M8-FOSA	9.187	506.1 -> 77.8	8429	2.50	µg/L	0.000
M3-PFBS	5.264	302.1 -> 79.9	7950	2.50	µg/L m	-0.013
M3-PFHxS	7.079	402.1 -> 79.9	6631	2.50	µg/L	-0.012
M8-PFOS	8.243	507.1 -> 79.9	8748	2.50	µg/L	-0.012
M2-4:2FTS	4.984	329.1 -> 80.9	637	5.00	µg/L	-0.012
M2-6:2FTS	6.699	429.1 -> 80.9	1439	5.00	µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	1955	5.00	µg/L	-0.012
M3-MeFOSAA	8.076	573.2 -> 419.0	9623	5.00	µg/L	-0.012
M3-HFPO-DA	5.714	286.9 -> 168.9	69806	10.00	µg/L	0.000
M5-EtFOSAA	8.298	589.2 -> 419.0	15322	5.00	µg/L	-0.012
M7-MeFOSE	10.302	623.2 -> 58.9	40122	25.00	µg/L	-0.012
M9-EtFOSE	10.610	639.2 -> 58.9	47940	25.00	µg/L	-0.012
M5-EtFOSA	10.712	531.1 -> 219.0	6090	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4385	2.50	µg/L	0.000
13C4-PFOS	8.231	502.8 -> 79.9	8887	2.50	µg/L	-0.025
13C3-PFBA	2.803	216.0 -> 172.0	24765	5.00	µg/L m	0.000
18O2-PFHxS	7.078	403.0 -> 83.9	4547	2.50	µg/L	-0.012
13C4-PFOA	6.950	417.1 -> 372.0	48448	2.50	µg/L	0.000
13C2-PFDA	8.054	515.1 -> 470.1	13186	1.25	µg/L	-0.012
13C5-PFNA	7.520	468.0 -> 423.0	13246	1.25	µg/L	-0.012
13C2-PFHxA	5.324	315.1 -> 270.0	37240	2.50	µg/L	-0.012
System Monitoring Compounds						
13C2-4:2FTS	4.984	329.1 -> 80.9	637	5.76	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.2%			
13C2-6:2FTS	6.699	429.1 -> 80.9	1439	5.84	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.7%			
13C2-8:2FTS	7.816	529.1 -> 80.9	1955	5.66	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.2%			
13C2-PFDoDA	9.029	615.1 -> 570.0	10127	1.23	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%			
13C2-PFTeDA	9.862	715.2 -> 670.0	9568	1.24	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.2%			
13C3-PFBS	5.264	302.1 -> 79.9	7950	2.27	µg/L m	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.9%			
13C3-PFHxS	7.079	402.1 -> 79.9	6631	2.55	µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%			
13C4-PFBA	2.799	216.8 -> 171.9	46783	10.01	µg/L	m 0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.1%			
13C4-PFHpA	6.280	367.1 -> 322.0	31609	2.55	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%			
13C5-PFHxA	5.323	318.0 -> 273.0	33076	2.53	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%			
13C5-PFPeA	4.150	268.3 -> 223.0	28783	4.25	µg/L	m 0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.0%			
13C6-PFDA	8.054	519.1 -> 474.1	8532	1.25	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%			
13C7-PFUnDA	8.560	570.0 -> 525.1	9023	1.21	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.0%			
13C8-FOSA	9.187	506.1 -> 77.8	8429	2.42	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%			
13C8-PFOA	6.950	421.1 -> 376.0	40475	2.48	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%			
13C8-PFOS	8.243	507.1 -> 79.9	8748	2.50	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%			
13C9-PFNA	7.520	472.1 -> 427.0	13252	1.22	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%			
d3-MeFOSAA	8.076	573.2 -> 419.0	9623	4.89	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.8%			
13C3-HFPO-DA	5.714	286.9 -> 168.9	69806	10.10	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.0%			
d3-MeFOSA	10.416	515.0 -> 219.0	4385	2.45	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%			
d5-EtFOSAA	8.298	589.2 -> 419.0	15322	5.26	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.2%			
d7-MeFOSE	10.302	623.2 -> 58.9	40122	24.53	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.1%			
d9-EtFOSE	10.610	639.2 -> 58.9	47940	23.92	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.7%			
d5-EtFOSA	10.712	531.1 -> 219.0	6090	2.47	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%			
Target Compounds						QValue
4:2FTS	4.985	327.1 -> 307.0	7126	8.89	µg/L	99
		327.1 -> 80.9	3971			
6:2FTS	6.700	427.1 -> 407.0	10754	8.95	µg/L	99
		427.1 -> 80.9	4582			
8:2FTS	7.816	527.1 -> 507.0	6883	7.43	µg/L	95
		527.1 -> 80.8	3704			
EtFOSAA	8.298	584.2 -> 419.1	5078	2.53	µg/L	m 95
		584.2 -> 526.0	1850			
FOSA	9.177	498.1 -> 77.9	7236	2.35	µg/L	99
		498.1 -> 478.0	237			
MeFOSAA	8.077	570.1 -> 419.0	4048	2.49	µg/L	m 96
		570.1 -> 483.0	947			
PFBA	2.795	212.8 -> 168.9	18055	9.75	µg/L	m 100
PFBS	5.265	298.7 -> 79.9	5765	2.21	µg/L	m 98
		298.7 -> 98.8	2354			
PFDA	8.055	512.9 -> 469.0	20033	2.24	µg/L	99
		512.9 -> 219.0	3751			
PFDODA	9.029	613.1 -> 569.0	15862	2.31	µg/L	98
		613.1 -> 319.0	2629			
PFDS	9.220	599.0 -> 79.9	4290	2.22	µg/L	96

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.281	599.0 -> 98.8	2356	2.33	µg/L	99
		363.1 -> 319.0	31144			
PFHpS	7.686	363.1 -> 169.0	6857	2.14	µg/L	96
		449.0 -> 79.9	5321			
PFHxA	5.325	449.0 -> 98.9	3044	2.34	µg/L	100
		313.0 -> 269.0	22728			
PFHxS	7.080	313.0 -> 118.9	1021	2.14	µg/L	m
		398.7 -> 79.9	4797			
PFNA	7.521	398.7 -> 98.9	2649	2.35	µg/L	95
		463.0 -> 419.0	18031			
PFNS	8.761	463.0 -> 219.0	3820	2.19	µg/L	98
		548.8 -> 79.9	4204			
PFOA	6.951	548.8 -> 98.9	2614	2.27	µg/L	98
		413.0 -> 369.0	35362			
PFOS	8.244	413.0 -> 169.0	8319	2.10	µg/L	m
		498.9 -> 79.9	7407			
PFPeA	4.152	498.9 -> 98.8	4642	4.82	µg/L	m
		263.0 -> 219.0	30321			
PFPeS	6.344	349.1 -> 79.9	4396	2.27	µg/L	m
		349.1 -> 98.9	2258			
PFTeDA	9.862	713.1 -> 669.0	16982	2.31	µg/L	97
		713.1 -> 168.9	2207			
PFTrDA	9.464	663.0 -> 619.0	21559	2.38	µg/L	99
		663.0 -> 168.9	3448			
PFUnDA	8.561	563.1 -> 519.0	15505	2.30	µg/L	99
		563.1 -> 269.1	3055			
11CI-PF3OUdS	9.530	630.9 -> 450.9	65726	8.55	µg/L	100
		632.9 -> 452.9	20089			
9CI-PF3ONS	8.613	530.8 -> 351.0	68937	8.40	µg/L	99
		532.8 -> 353.0	21858			
ADONA	6.542	376.9 -> 250.9	164473	8.61	µg/L	99
		376.9 -> 84.8	48600			
HFPO-DA	5.715	284.9 -> 168.9	57588	10.05	µg/L	99
		284.9 -> 184.9	5153			
3:3FTCA	3.603	241.0 -> 177.0	4807	10.36	µg/L	m
		241.0 -> 117.0	581			
5:3FTCA	5.918	341.0 -> 237.1	103990	51.84	µg/L	100
		341.0 -> 217.0	69837			
7:3FTCA	7.335	441.0 -> 316.9	40743	50.73	µg/L	99
		441.0 -> 336.9	87866			
EtFOSA	10.726	526.0 -> 219.0	5087	2.32	µg/L	100
		526.0 -> 169.0	6357			
EtFOSE	10.636	630.0 -> 58.9	43208	24.26	µg/L	100
		511.9 -> 219.0	3828			
MeFOSA	10.418	511.9 -> 169.0	5157	2.21	µg/L	93
		616.1 -> 58.9	41026			
MeFOSE	10.327	699.1 -> 79.9	3430	23.94	µg/L	100
		699.1 -> 98.8	2011			
PFDoDS	10.025	295.0 -> 201.0	3388	2.26	µg/L	97
		295.0 -> 84.9	983			
NFDHA	5.205	279.0 -> 85.1	21493	4.43	µg/L	m
		279.0 -> 85.1	983			
PFMBA	4.553	229.0 -> 84.9	16565	4.64	µg/L	m
		229.0 -> 84.9	16565			
PFMPA	3.328	314.8 -> 134.9	38701	4.86	µg/L	m
		314.8 -> 82.9	1346			
PFEESA	5.821			3.79	µg/L	m

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

7.7.13
7

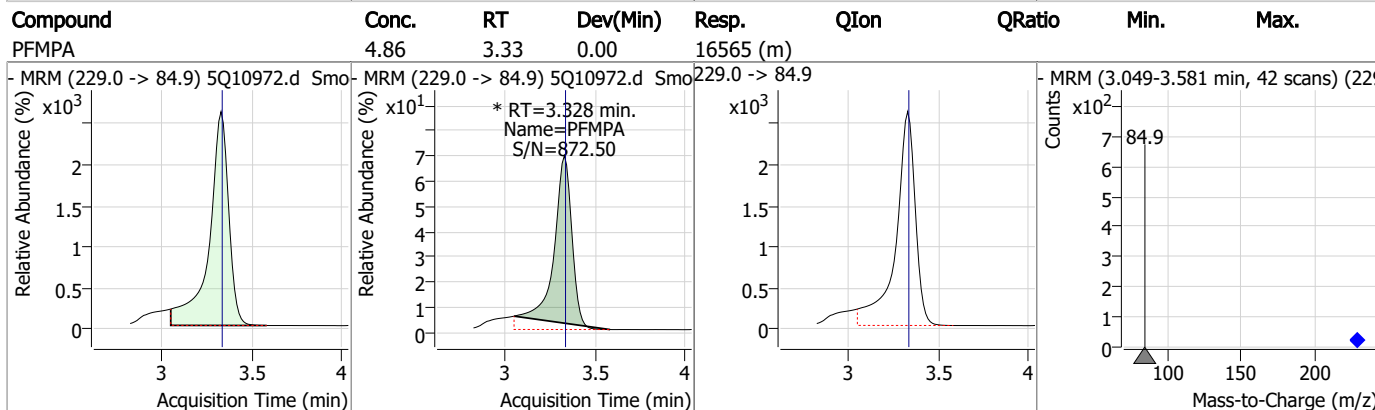
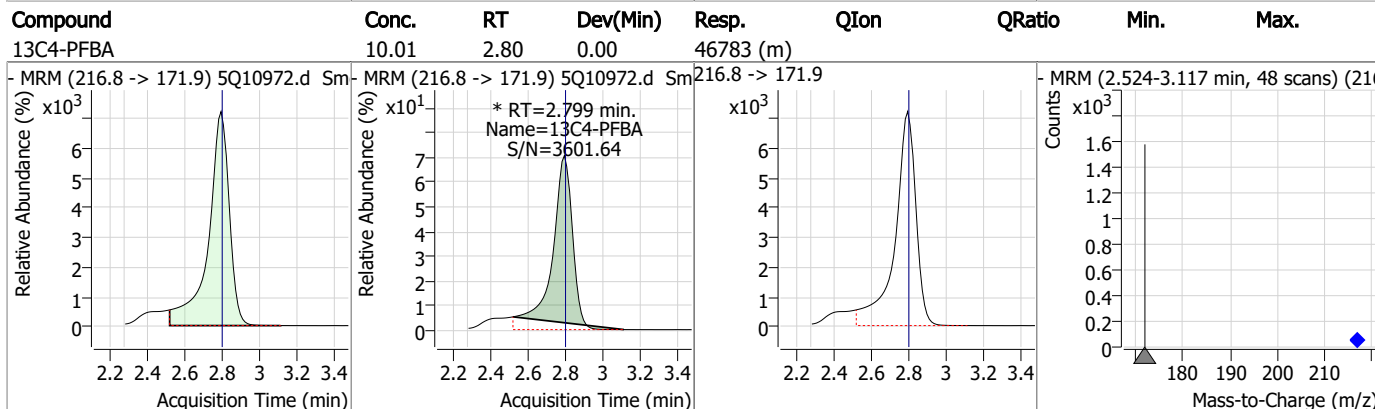
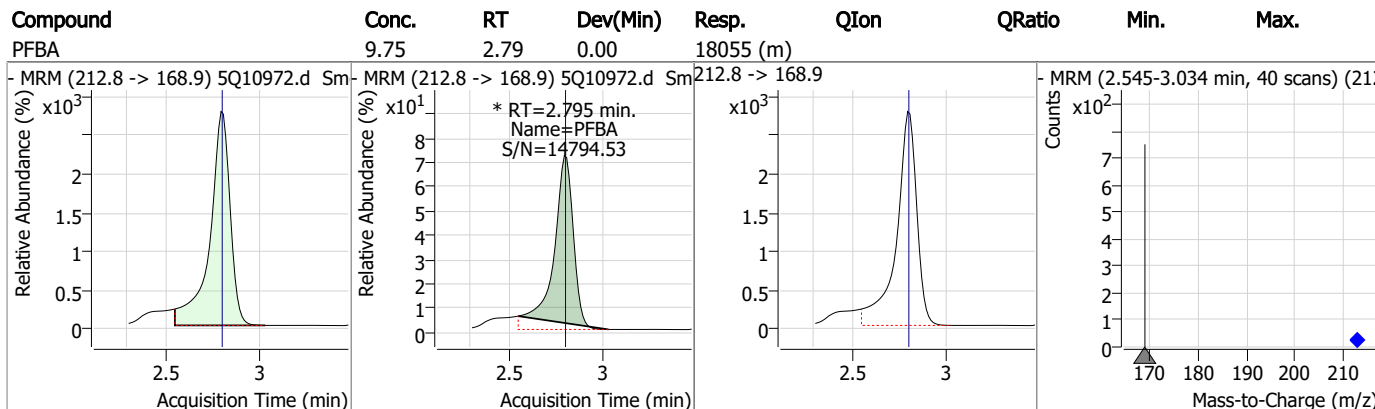
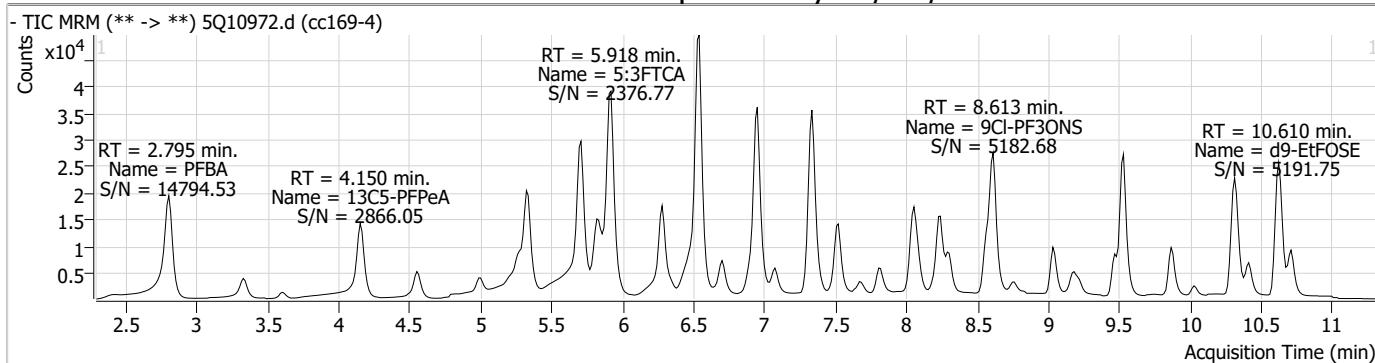
Perfluorinated Compounds by LC/MS/MS

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

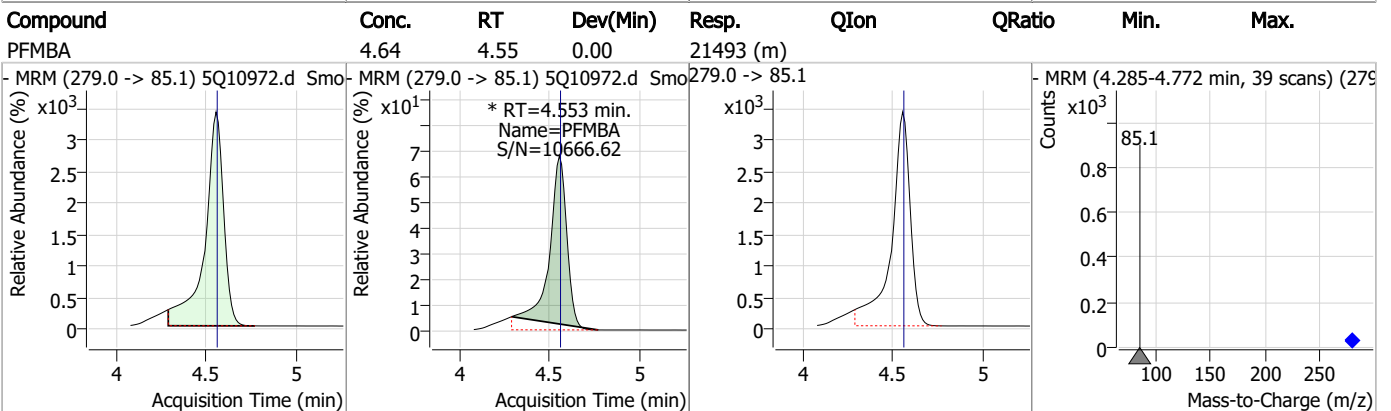
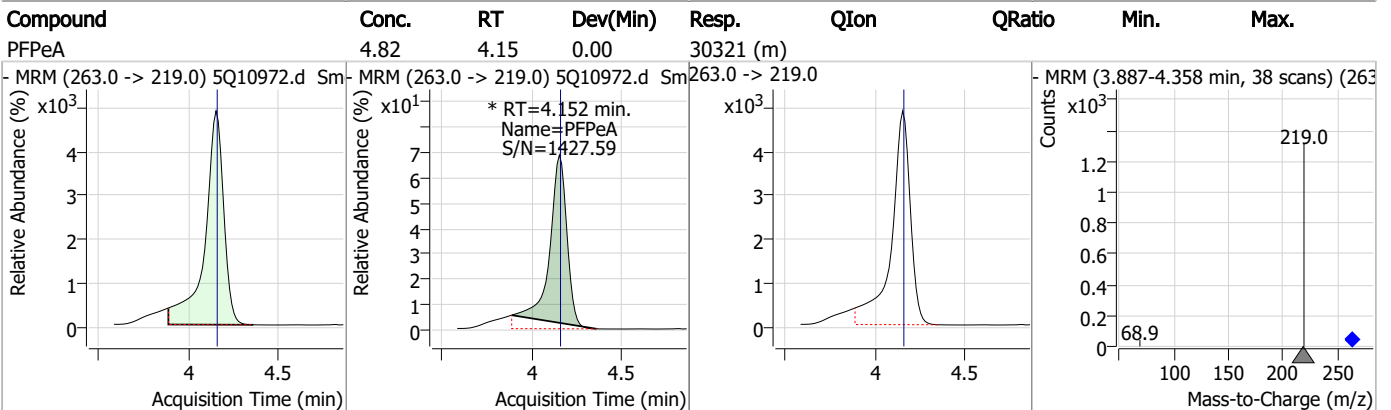
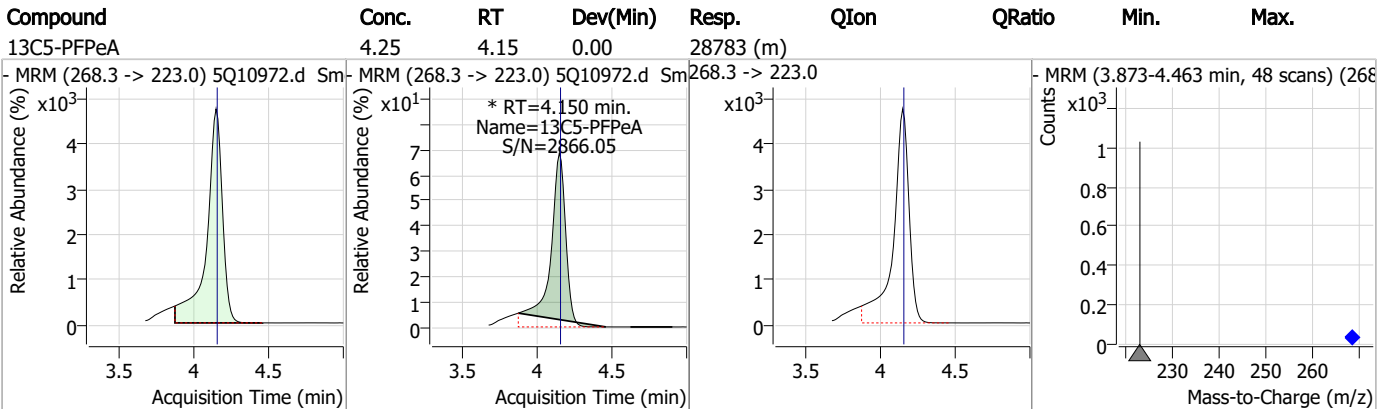
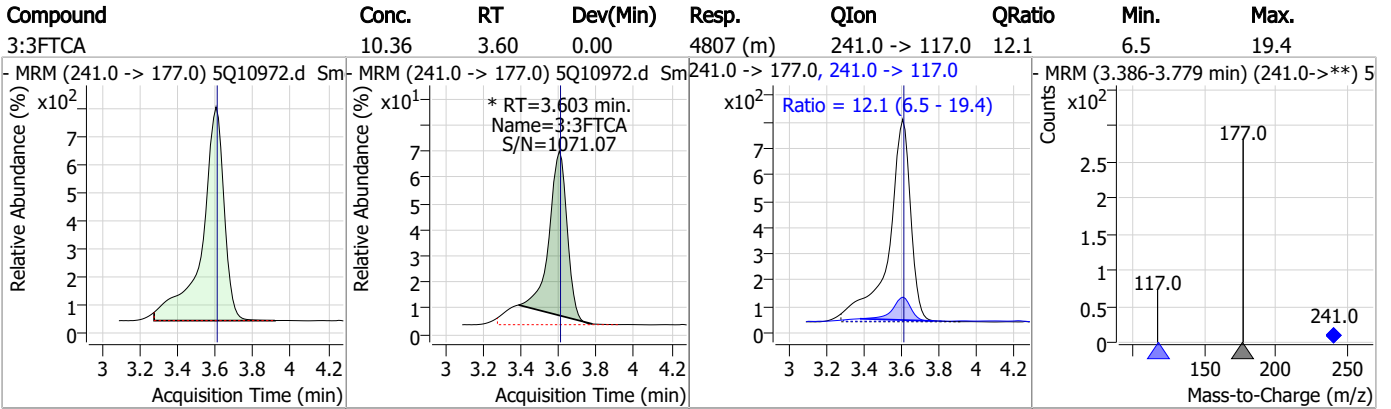
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Perfluorinated Compounds by LC/MS/MS



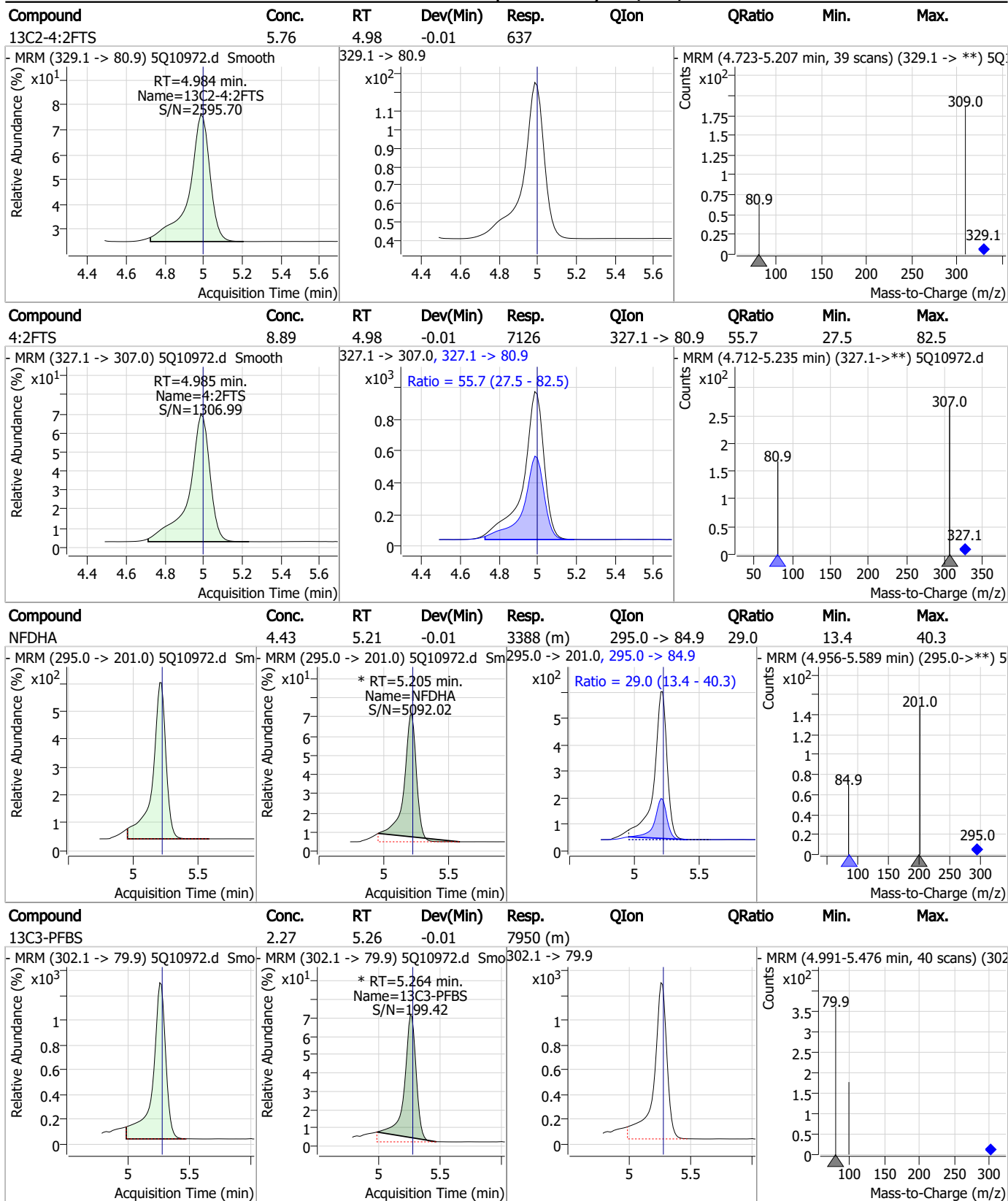
7.7.13
7

Perfluorinated Compounds by LC/MS/MS



7.7.13 7

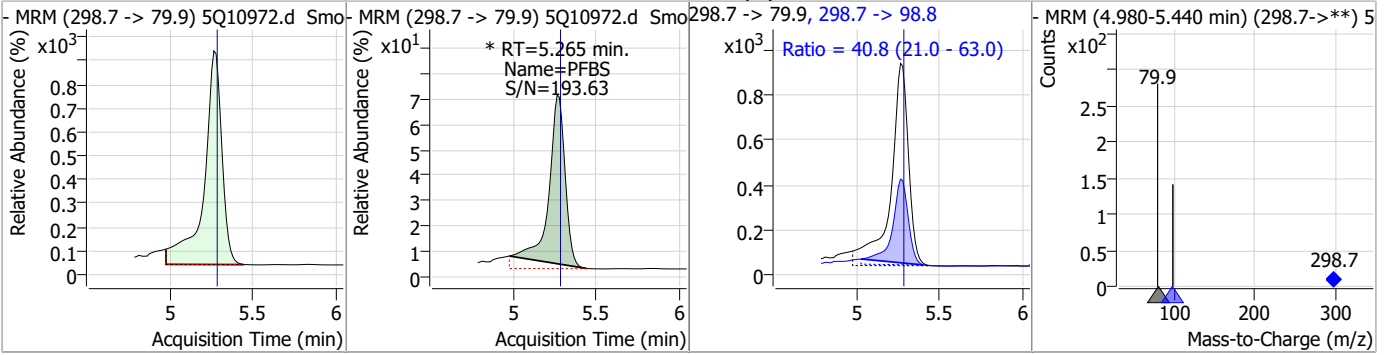
Perfluorinated Compounds by LC/MS/MS



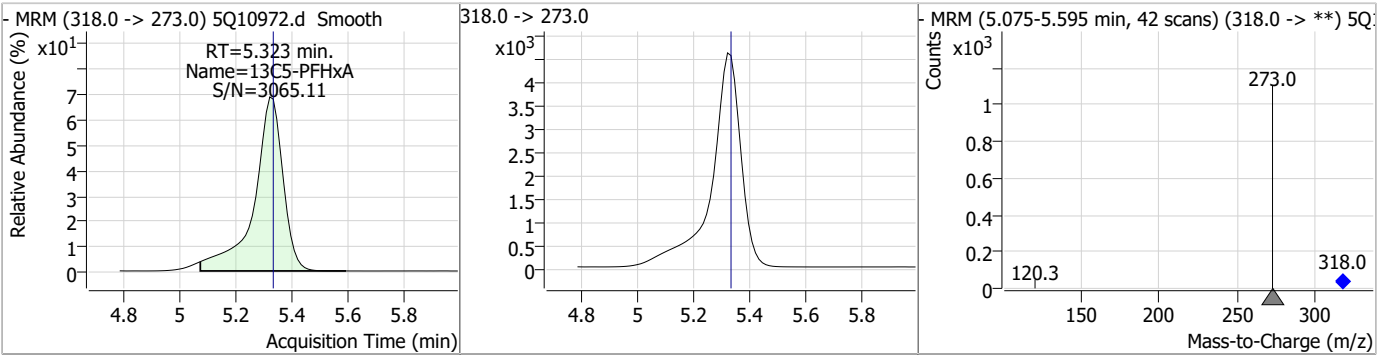
7.7.13
7

Perfluorinated Compounds by LC/MS/MS

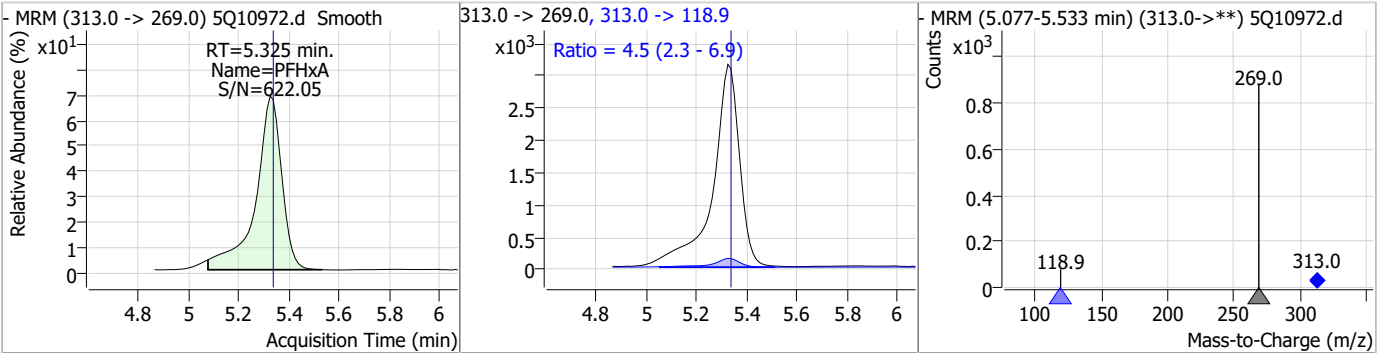
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.21	5.27	-0.01	5765 (m)	298.7 -> 98.8	40.8	21.0	63.0



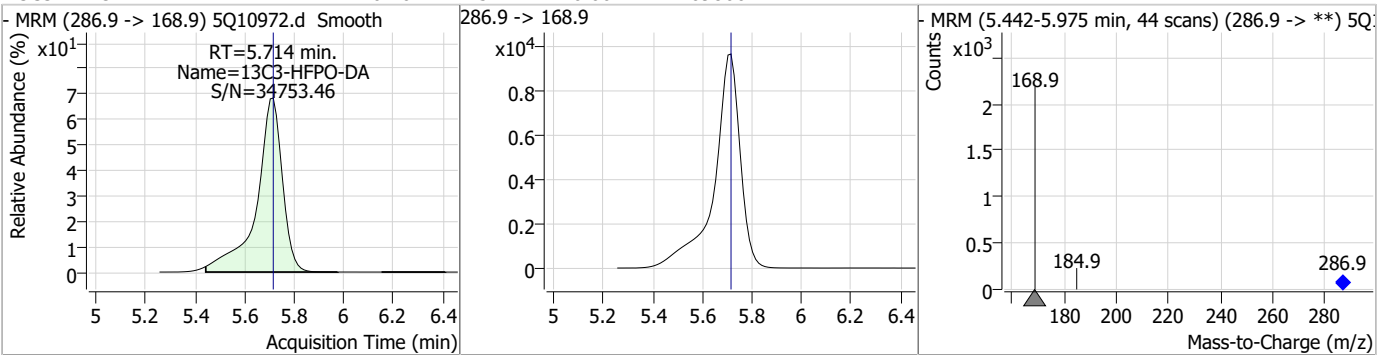
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.53	5.32	-0.01	33076				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.34	5.32	-0.01	22728	313.0 -> 118.9	4.5	2.3	6.9

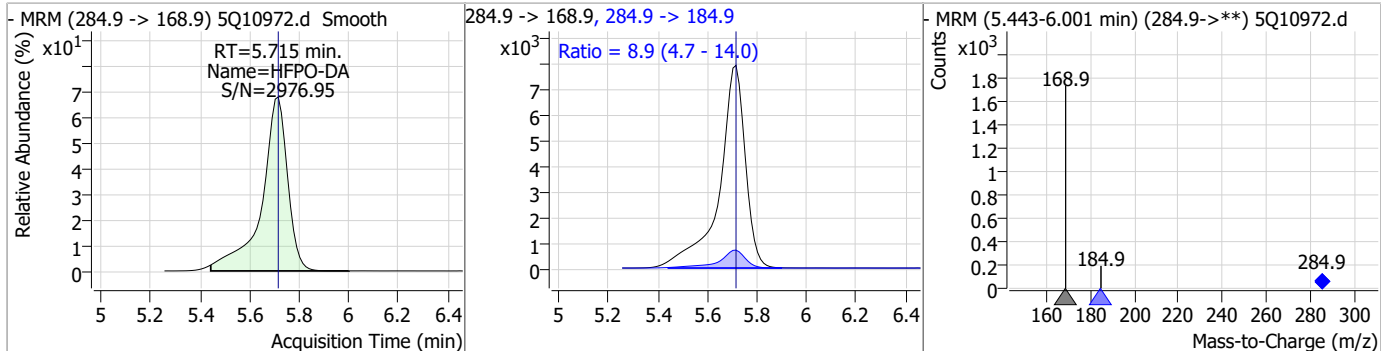


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.10	5.71	0.00	69806				

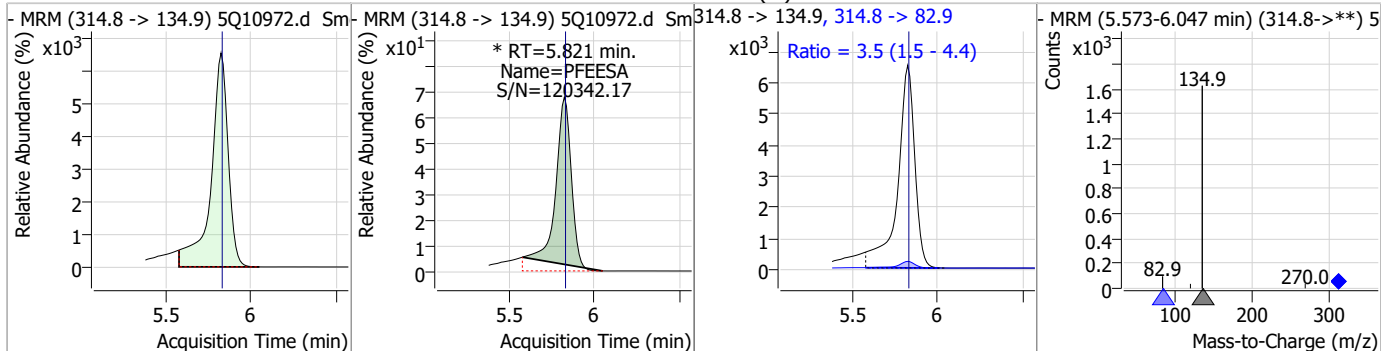


Perfluorinated Compounds by LC/MS/MS

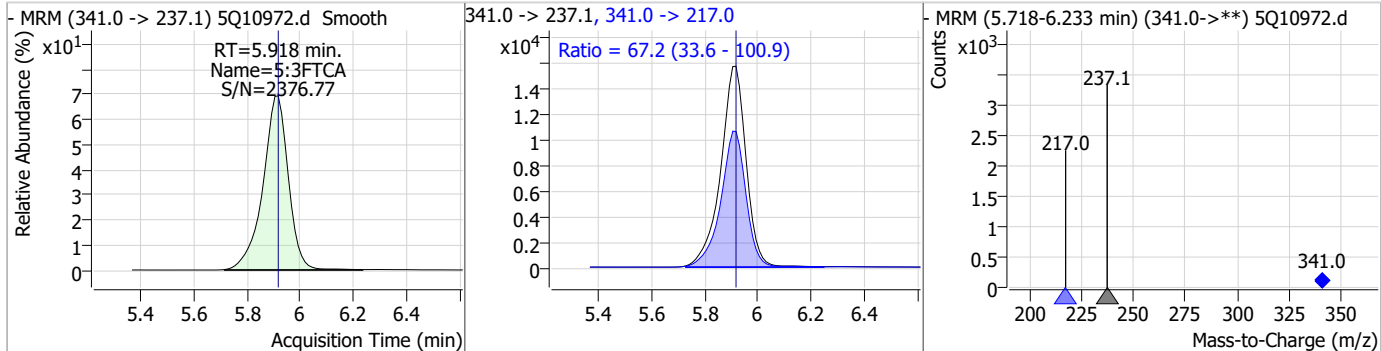
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	10.05	5.72	0.00	57588	284.9 -> 184.9	8.9	4.7	14.0



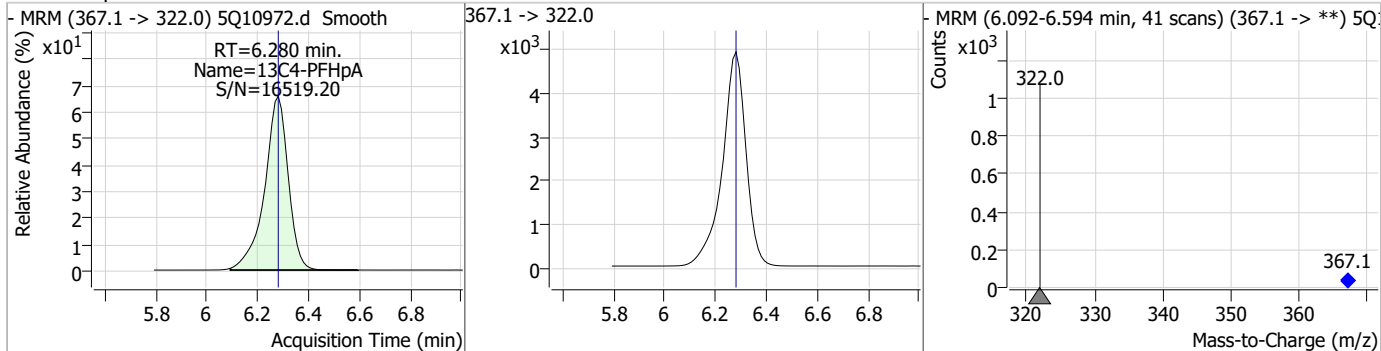
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	3.79	5.82	0.00	38701 (m)	314.8 -> 82.9	3.5	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	51.84	5.92	0.00	103990	341.0 -> 217.0	67.2	33.6	100.9



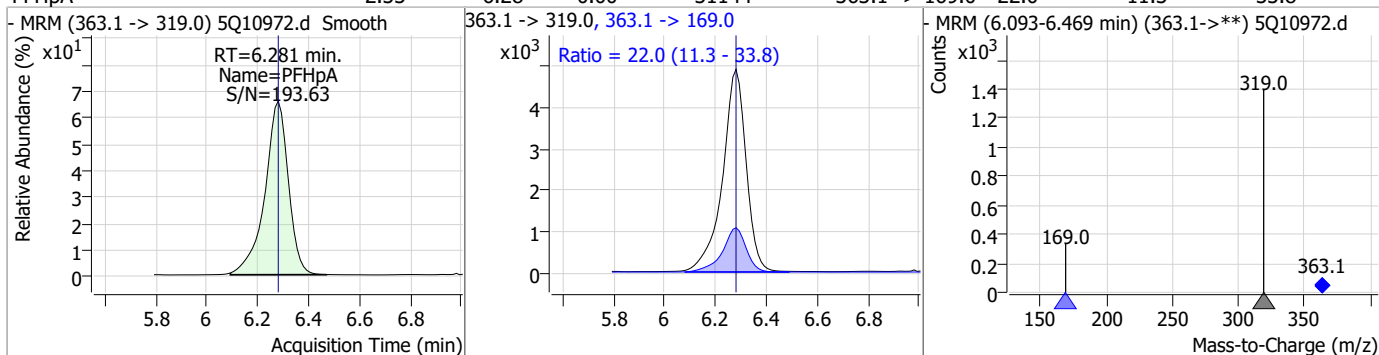
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.55	6.28	0.00	31609	367.1 -> 322.0			



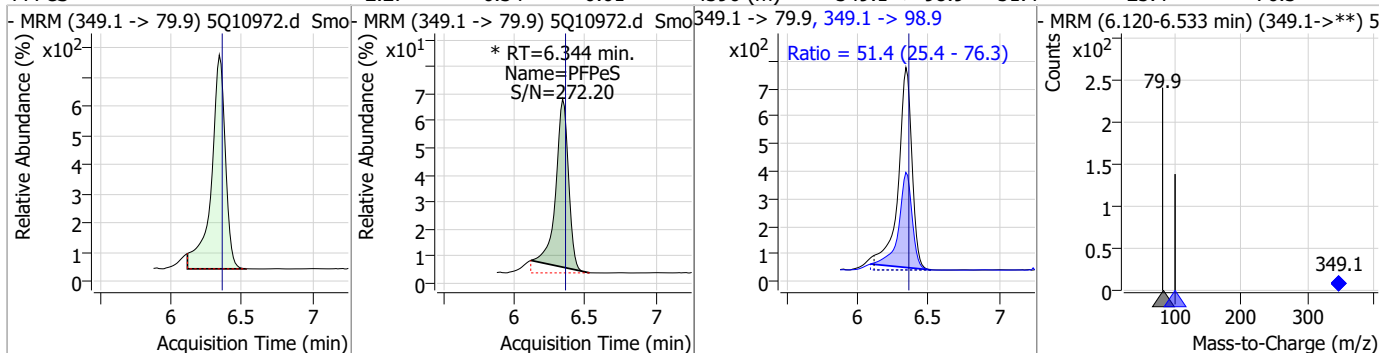
7.7.13
7

Perfluorinated Compounds by LC/MS/MS

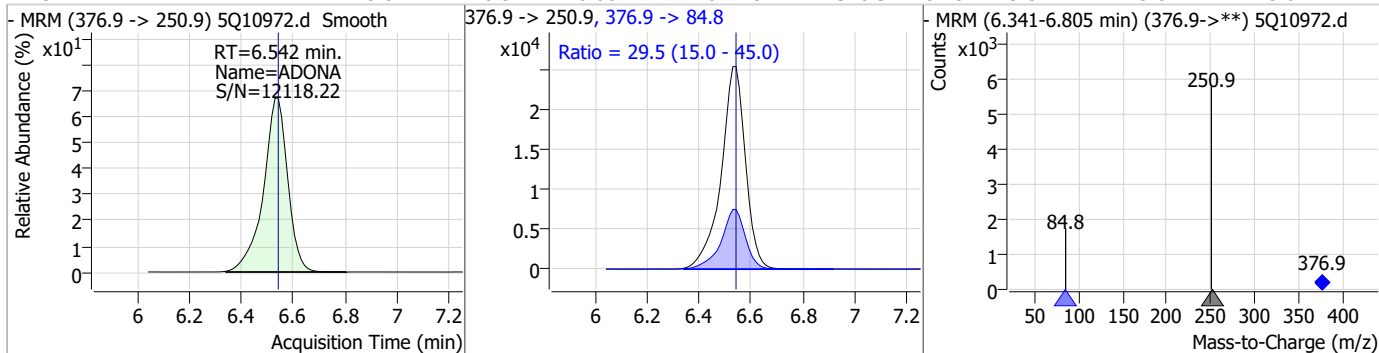
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.33	6.28	0.00	31144	363.1 -> 169.0	22.0	11.3	33.8



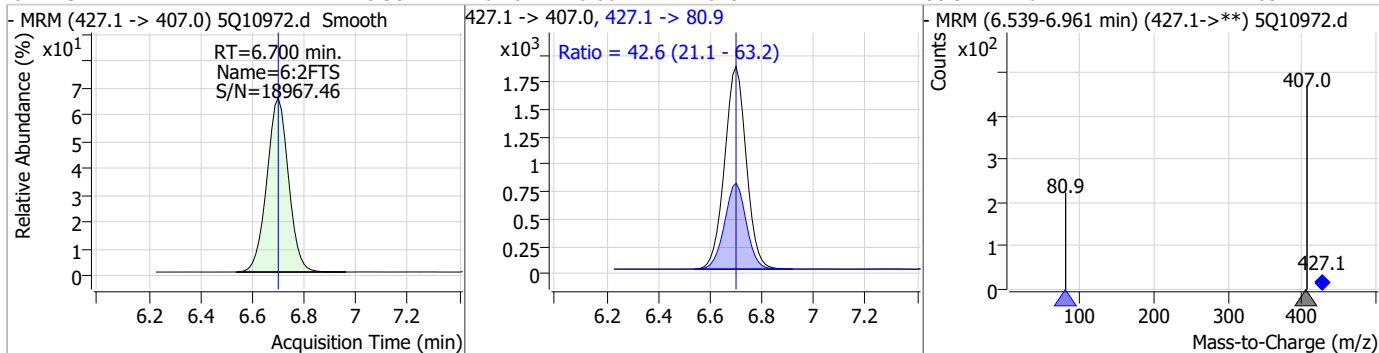
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.27	6.34	-0.01	4396 (m)	349.1 -> 98.9	51.4	25.4	76.3



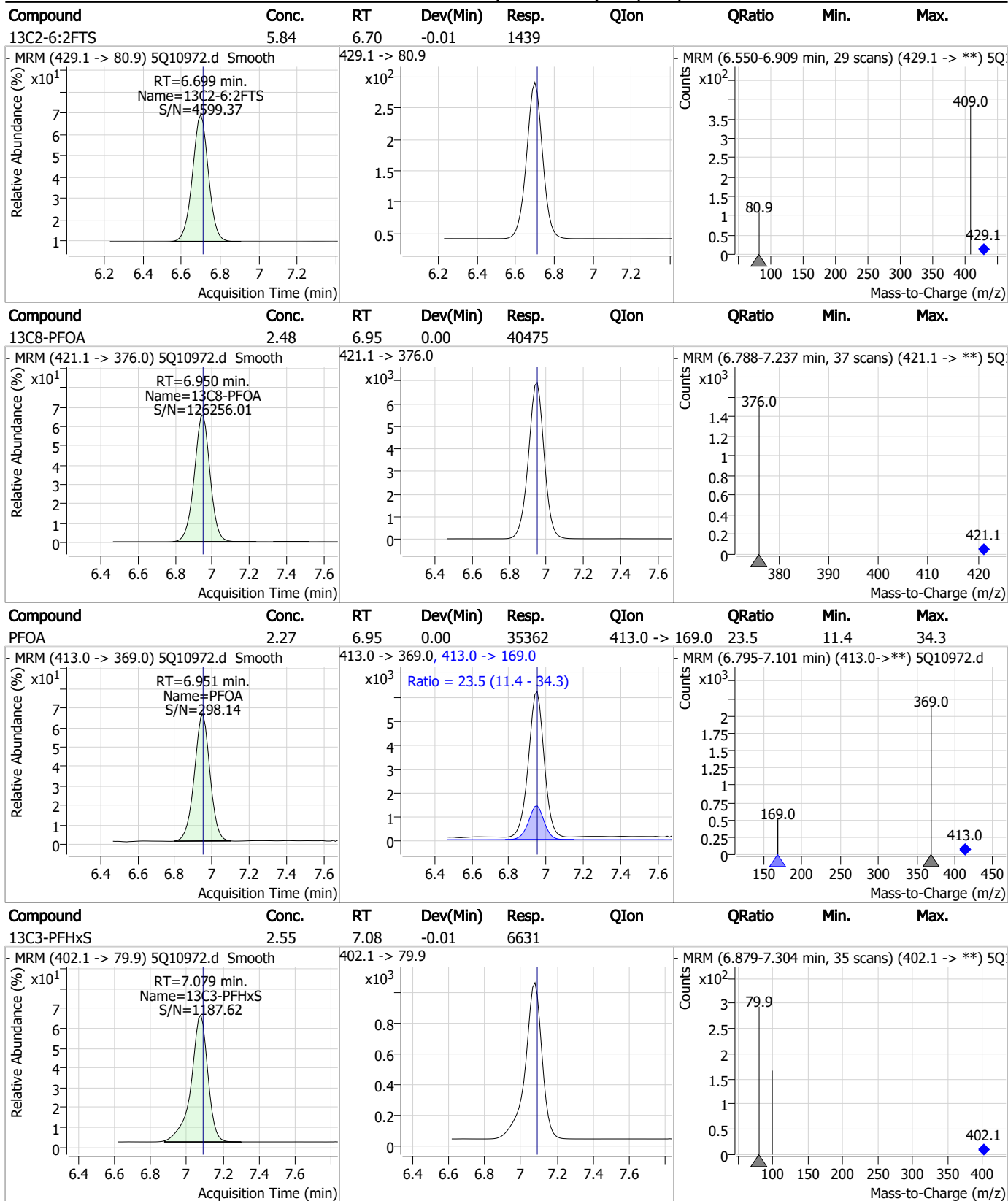
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	8.61	6.54	0.00	164473	376.9 -> 84.8	29.5	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	8.95	6.70	0.00	10754	427.1 -> 80.9	42.6	21.1	63.2



Perfluorinated Compounds by LC/MS/MS

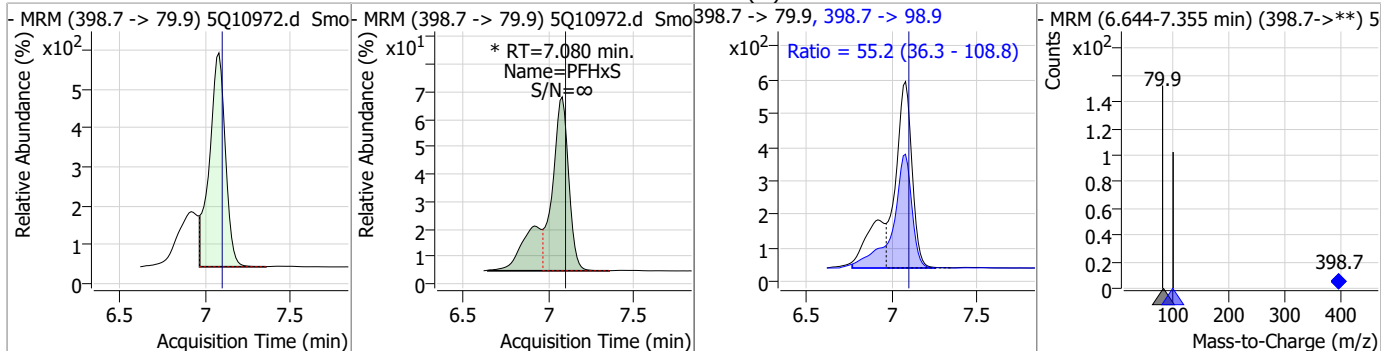


7.7.13
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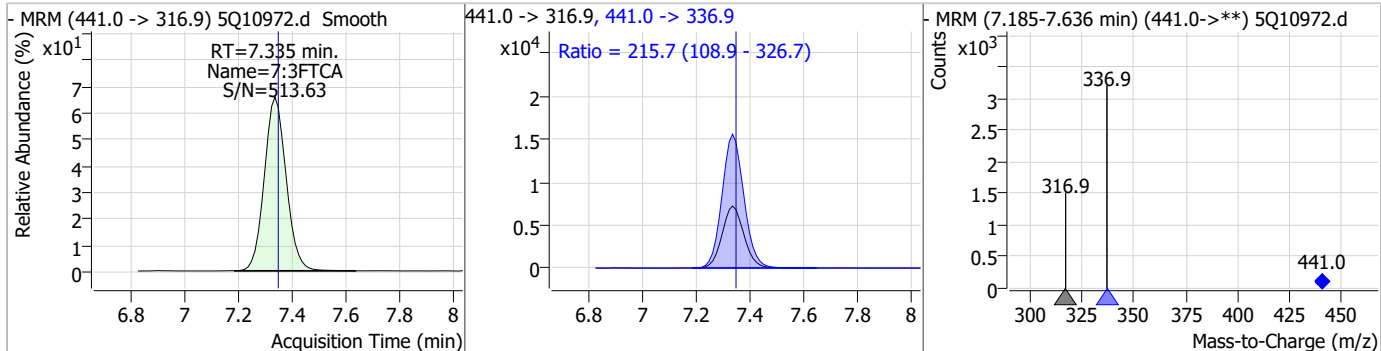


Perfluorinated Compounds by LC/MS/MS

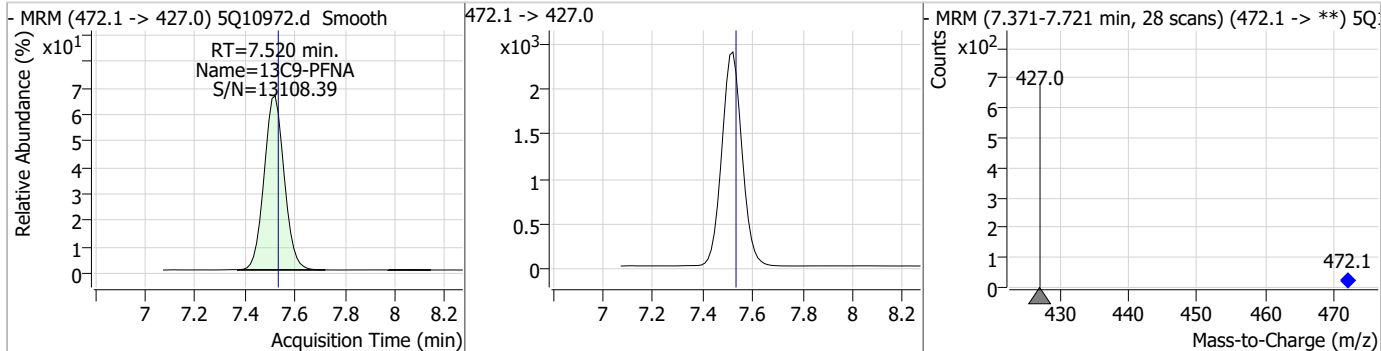
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.14	7.08	-0.01	4797 (m)	398.7 -> 98.9	55.2	36.3	108.8



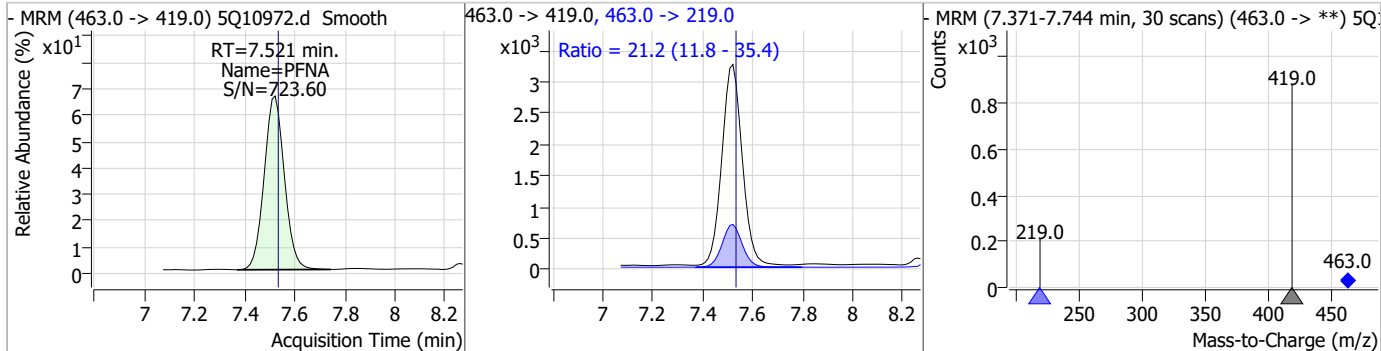
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	50.73	7.34	-0.01	40743	441.0 -> 336.9	215.7	108.9	326.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.22	7.52	-0.01	13252				

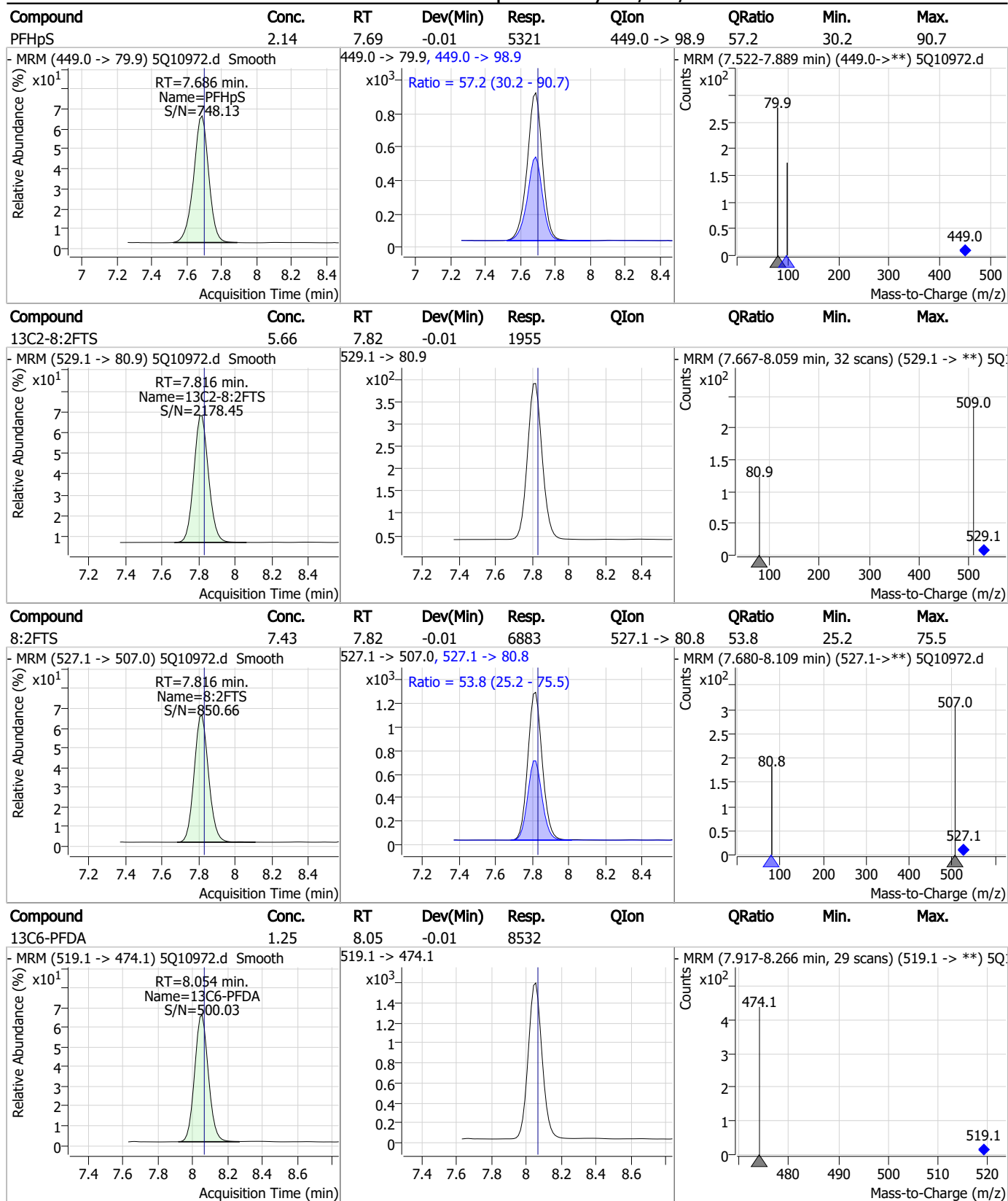


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.35	7.52	-0.01	18031	463.0 -> 219.0	21.2	11.8	35.4



7.7.13
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Perfluorinated Compounds by LC/MS/MS

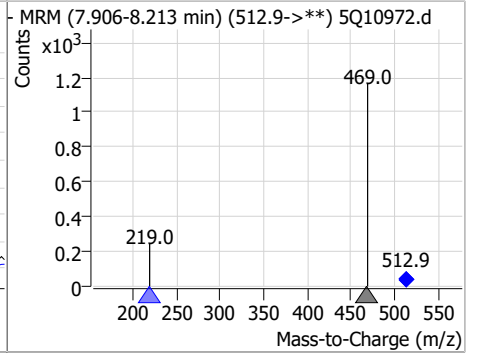
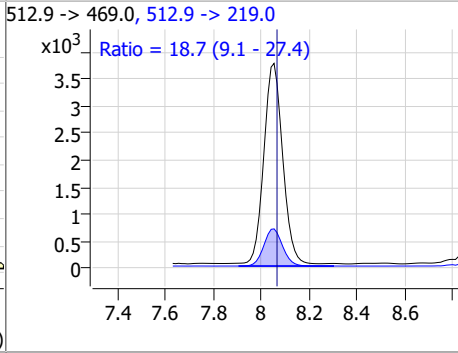
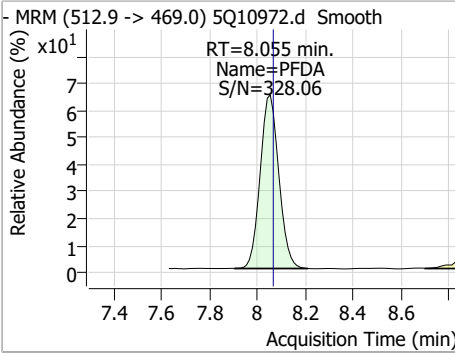


7.7.13
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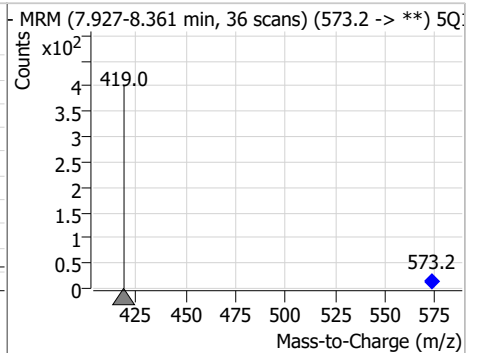
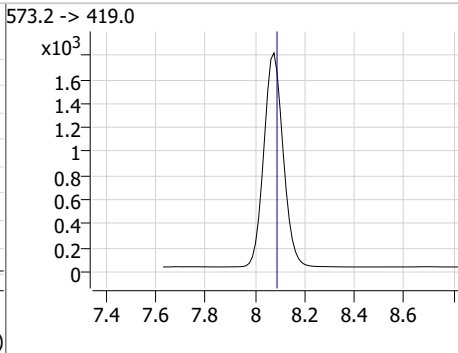
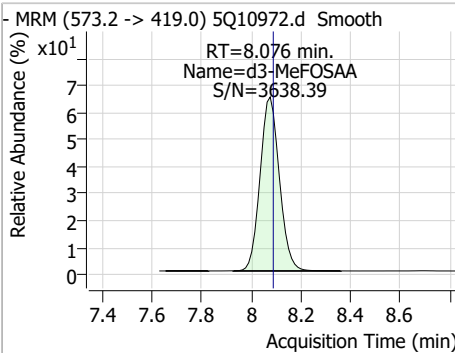


Perfluorinated Compounds by LC/MS/MS

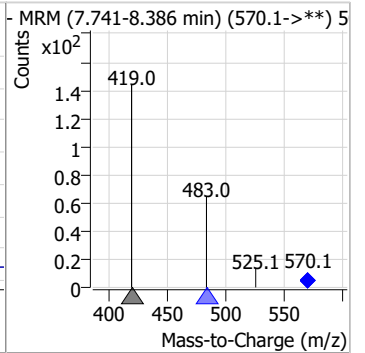
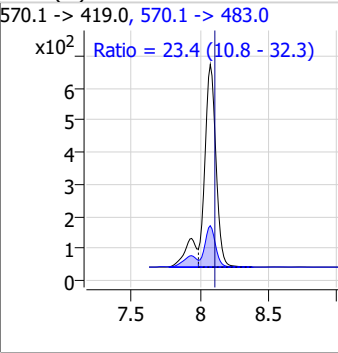
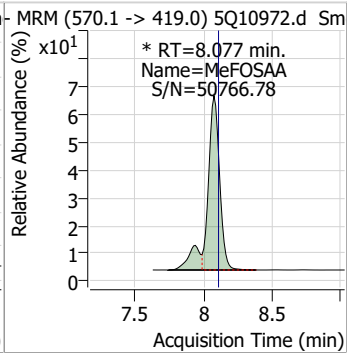
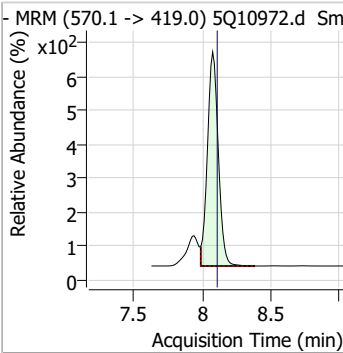
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.24	8.05	-0.01	20033	512.9 -> 219.0	18.7	9.1	27.4



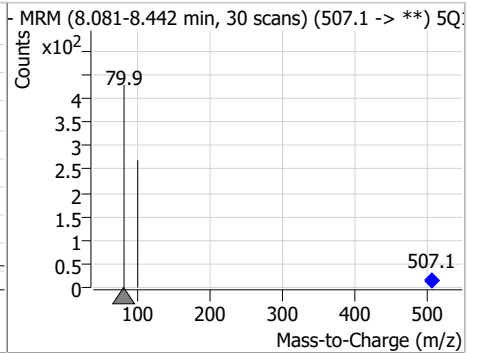
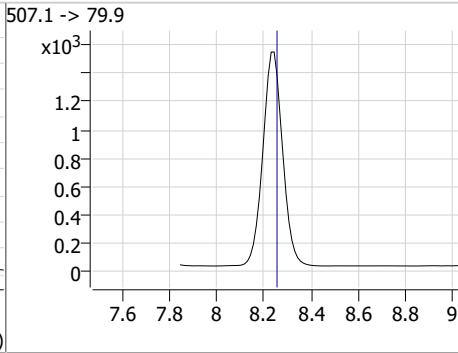
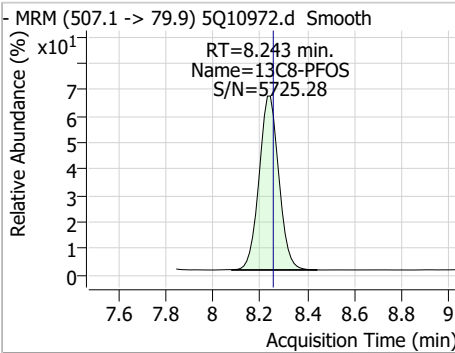
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.89	8.08	-0.01	9623				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.49	8.08	-0.02	4048 (m)	570.1 -> 483.0	23.4	10.8	32.3



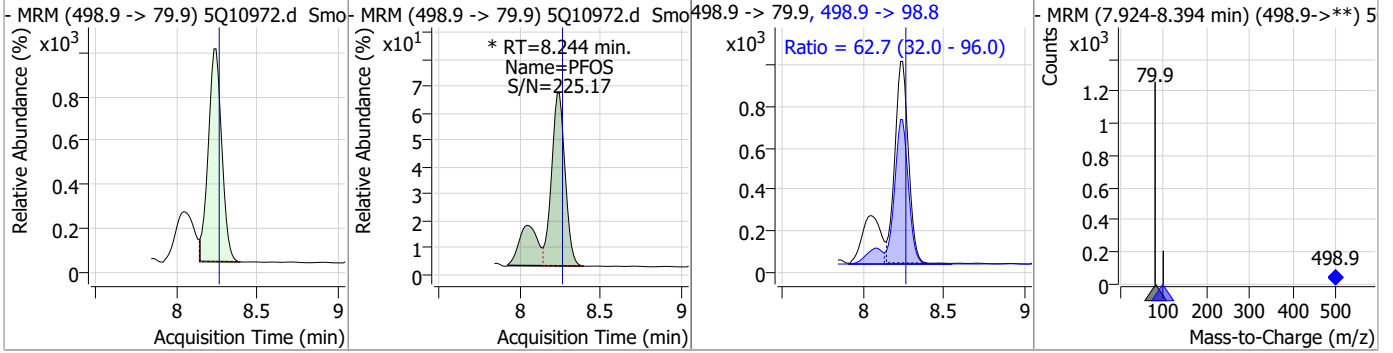
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.50	8.24	-0.01	8748				



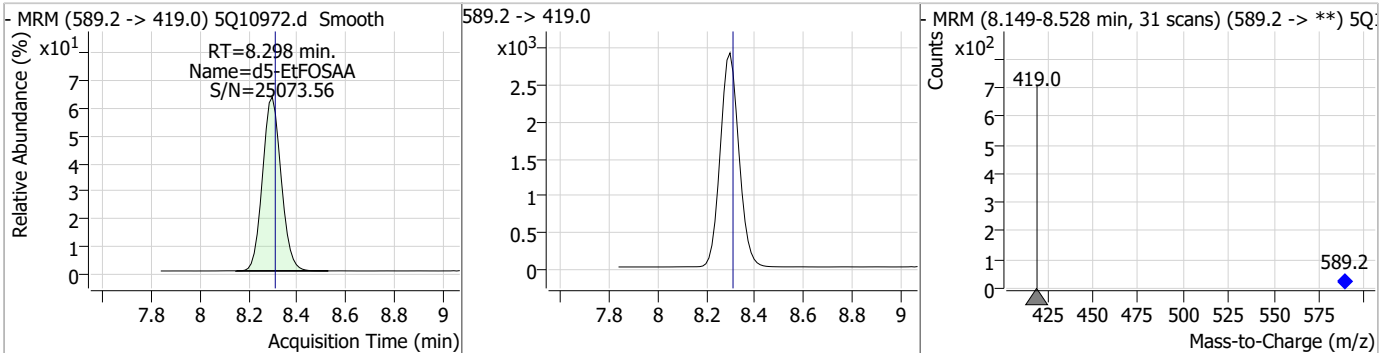
7.7.13 7

Perfluorinated Compounds by LC/MS/MS

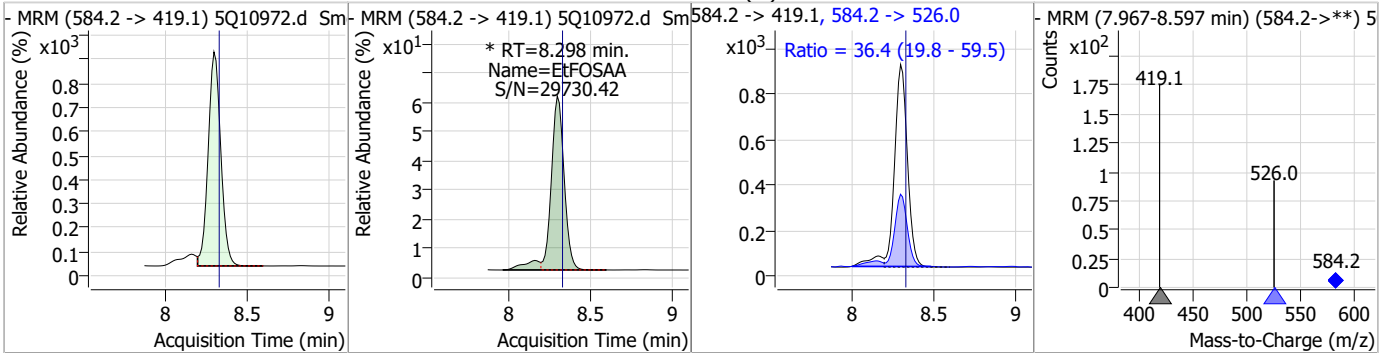
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.10	8.24	-0.01	7407 (m)	498.9 -> 98.8	62.7	32.0	96.0



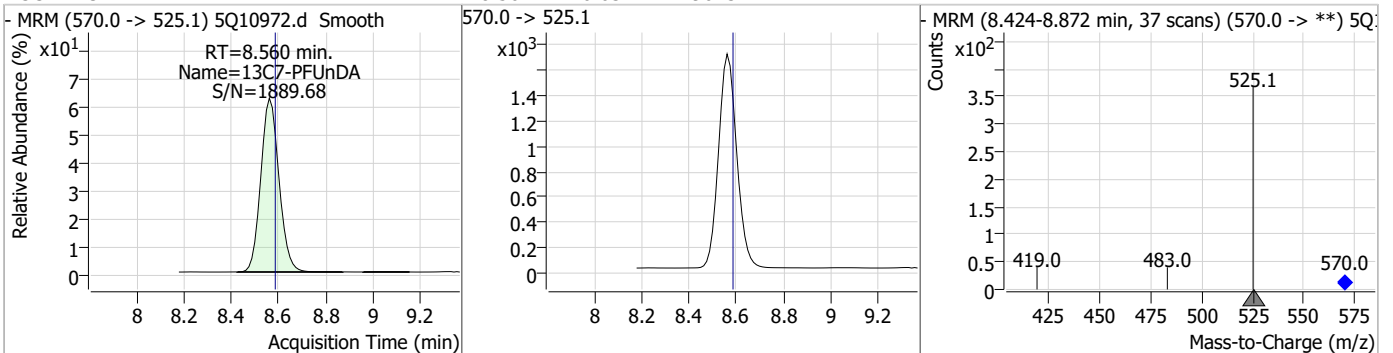
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.26	8.30	-0.01	15322				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.53	8.30	-0.02	5078 (m)	584.2 -> 526.0	36.4	19.8	59.5

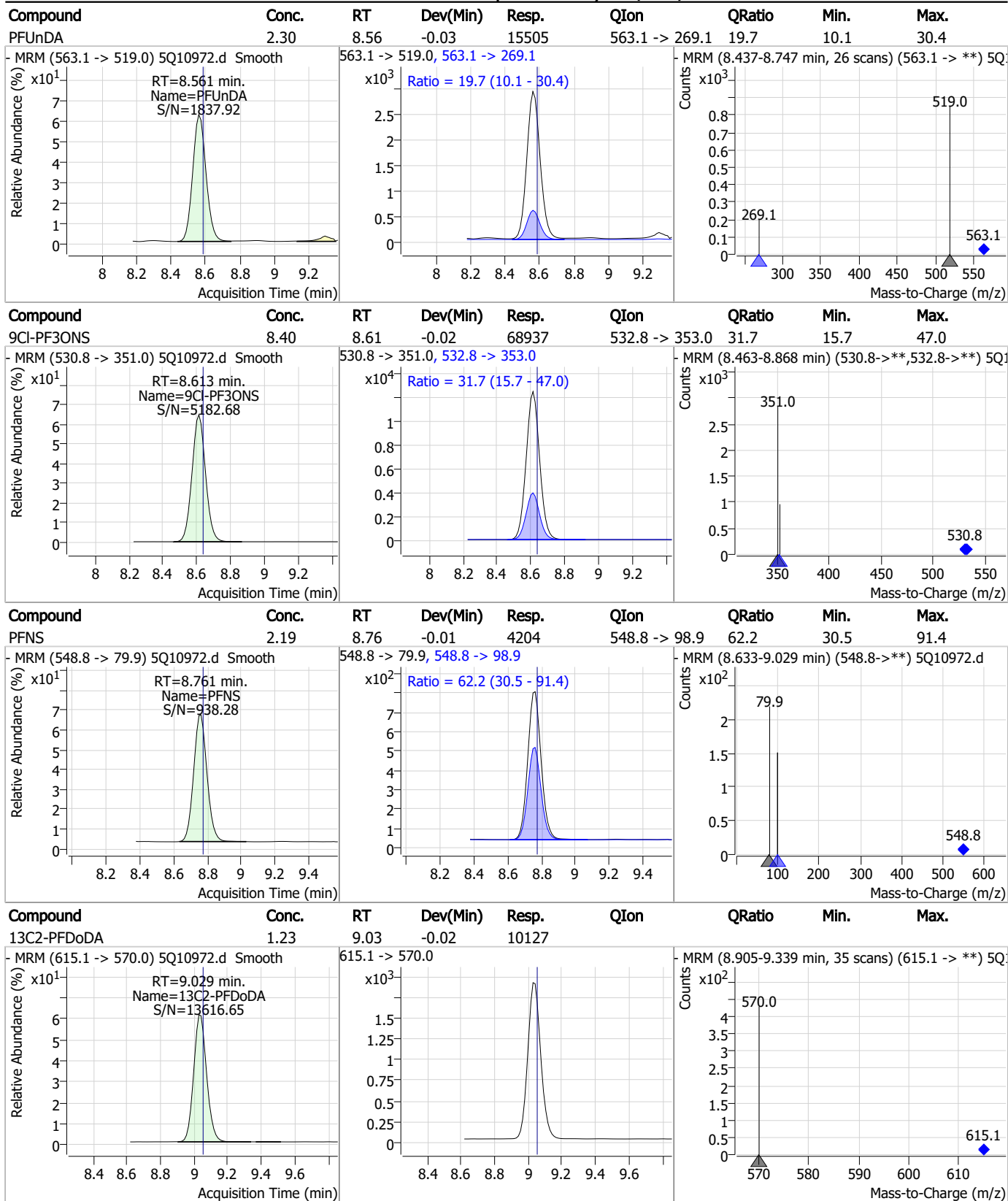


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.21	8.56	-0.03	9023				



7.7.13
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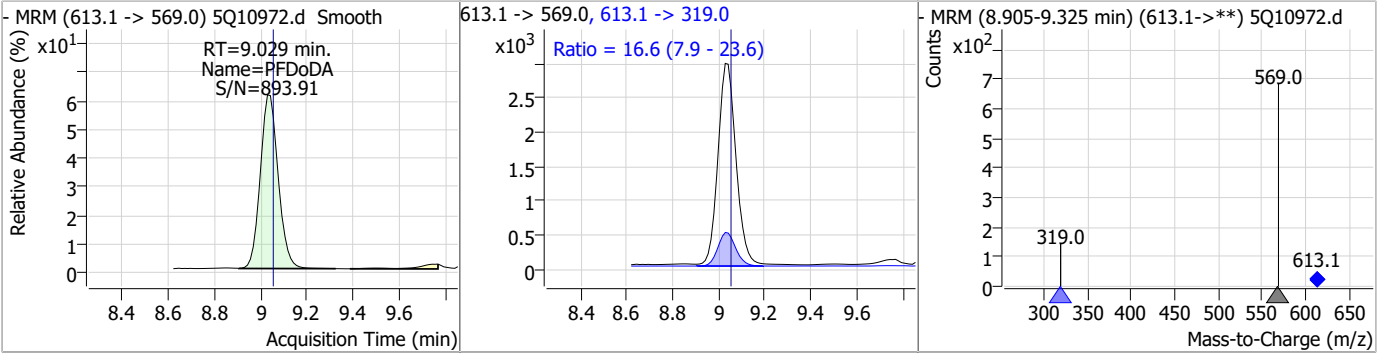
Perfluorinated Compounds by LC/MS/MS



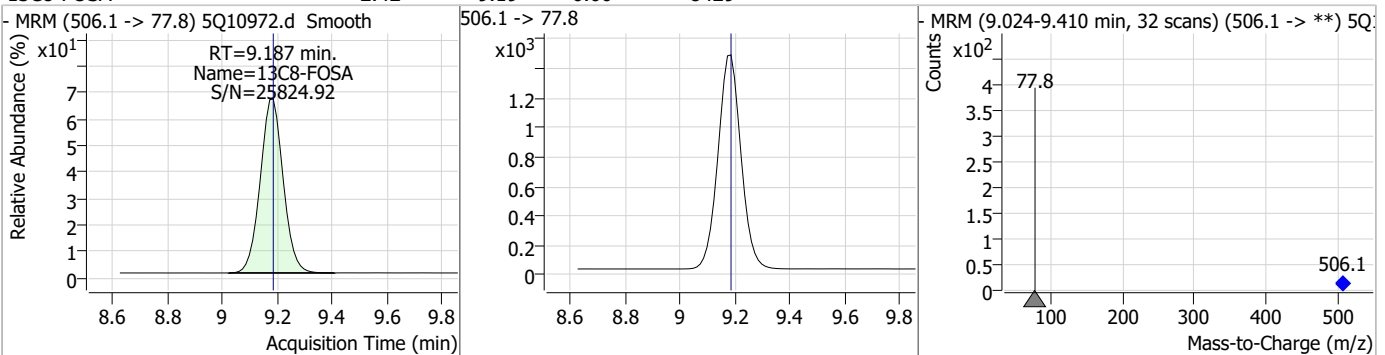
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Perfluorinated Compounds by LC/MS/MS

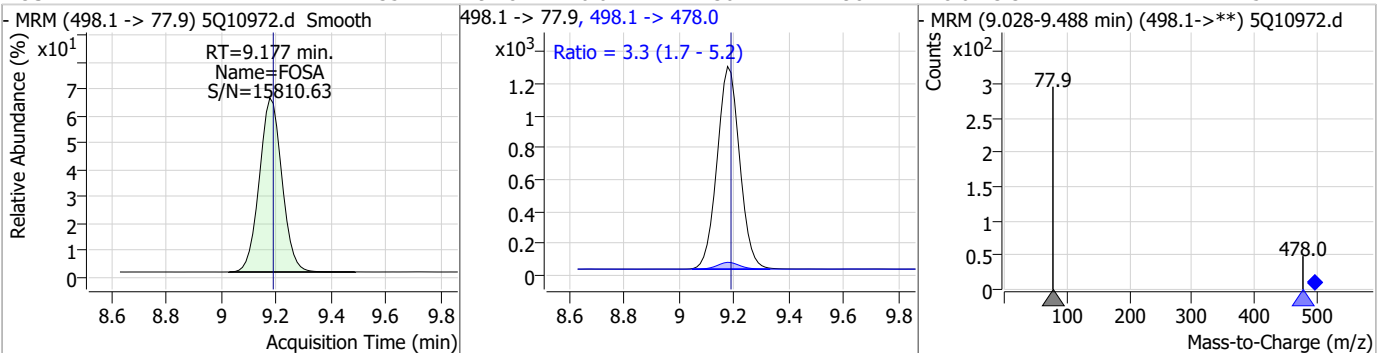
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.31	9.03	-0.03	15862	613.1 -> 319.0	16.6	7.9	23.6



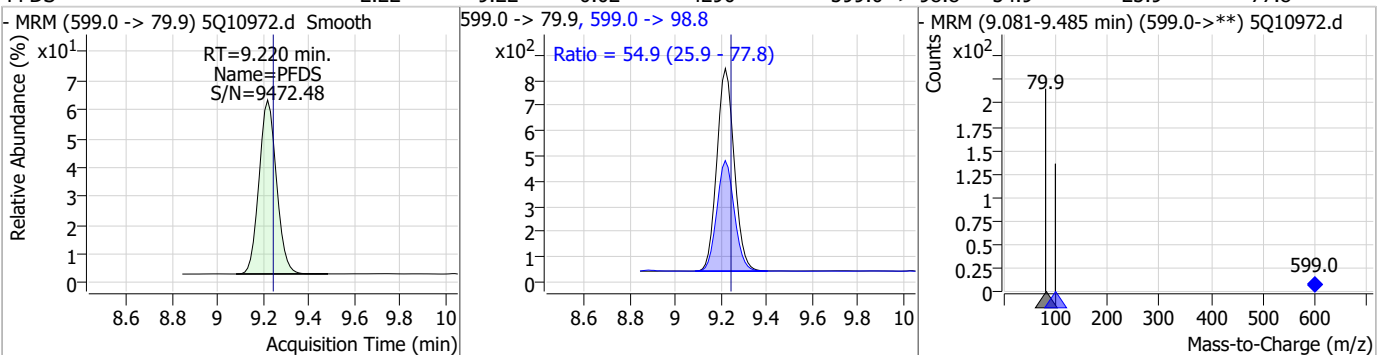
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.42	9.19	0.00	8429				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.35	9.18	-0.01	7236	498.1 -> 478.0	3.3	1.7	5.2

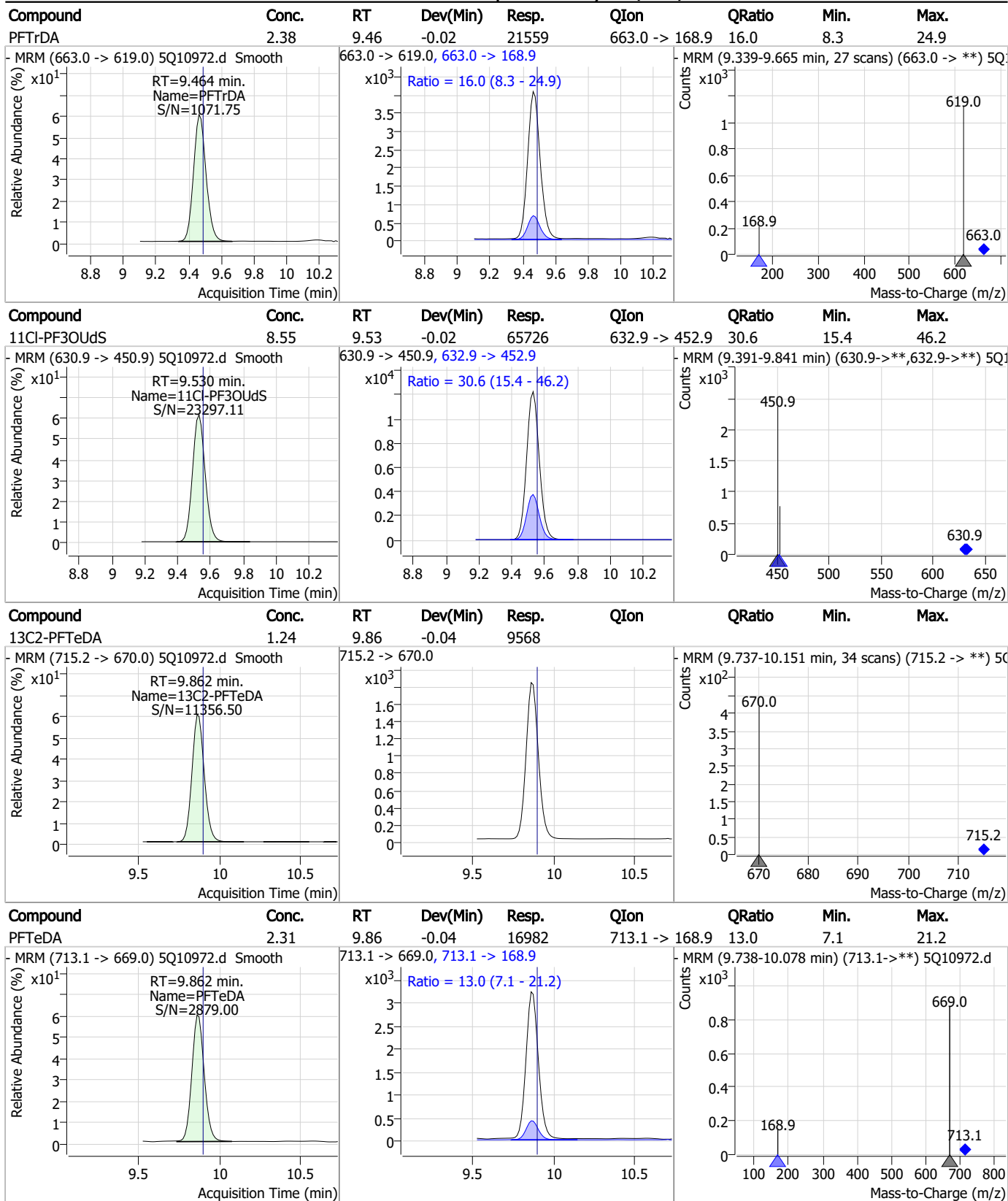


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.22	9.22	-0.02	4290	599.0 -> 98.8	54.9	25.9	77.8



7.7.13
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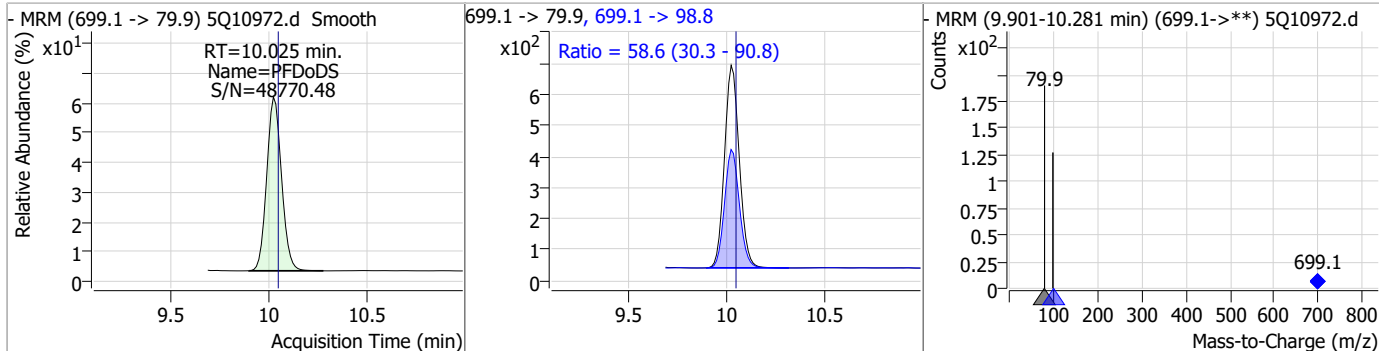
Perfluorinated Compounds by LC/MS/MS



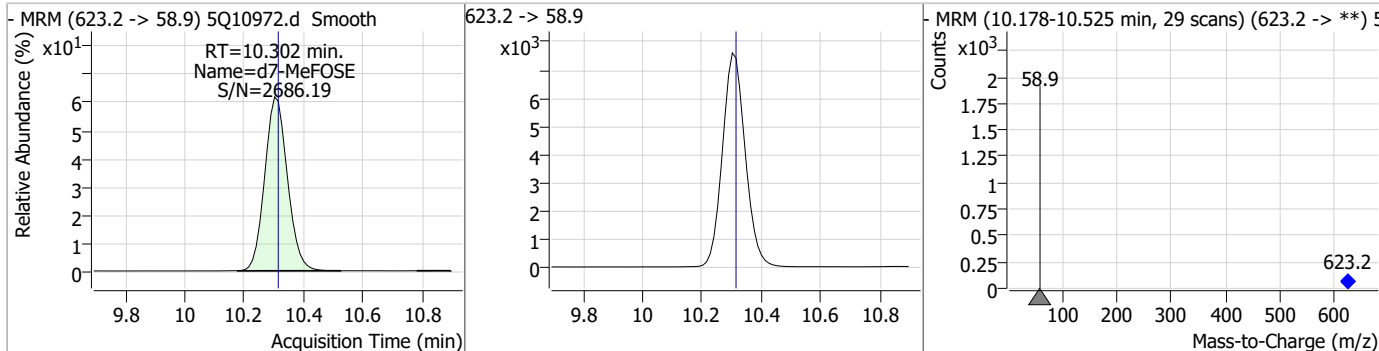
7.7.13
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Perfluorinated Compounds by LC/MS/MS

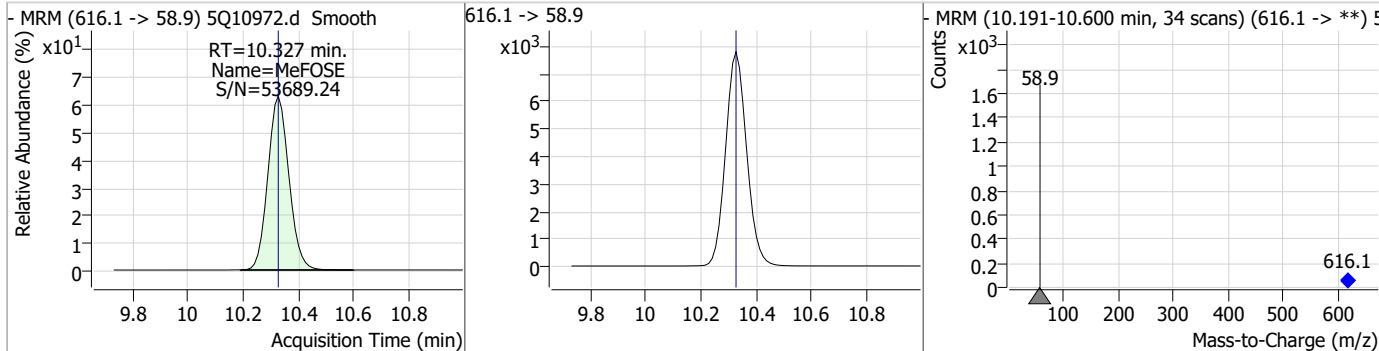
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.26	10.03	-0.02	3430	699.1 -> 98.8	58.6	30.3	90.8



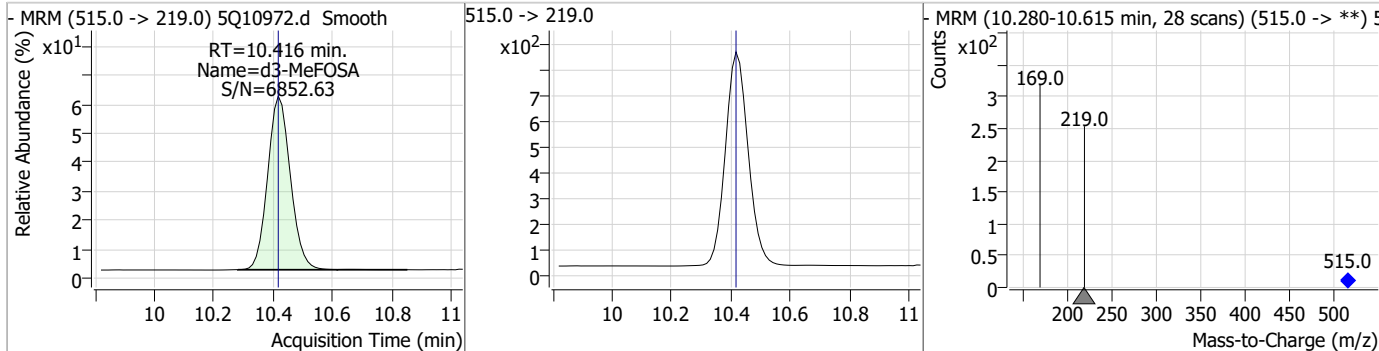
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.53	10.30	-0.01	40122				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.94	10.33	0.00	41026				

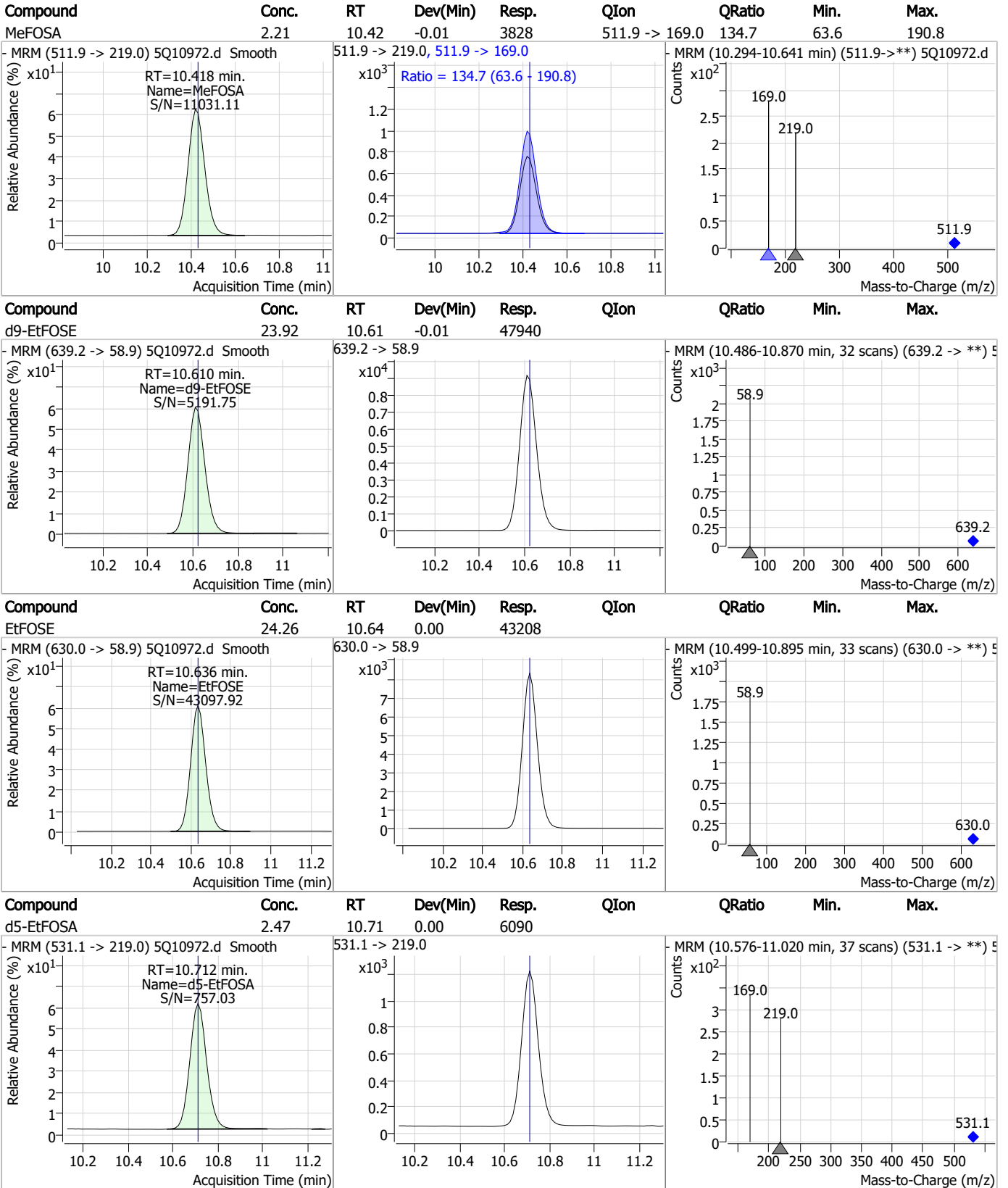


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.45	10.42	0.00	4385				



7.7.13
7

Perfluorinated Compounds by LC/MS/MS

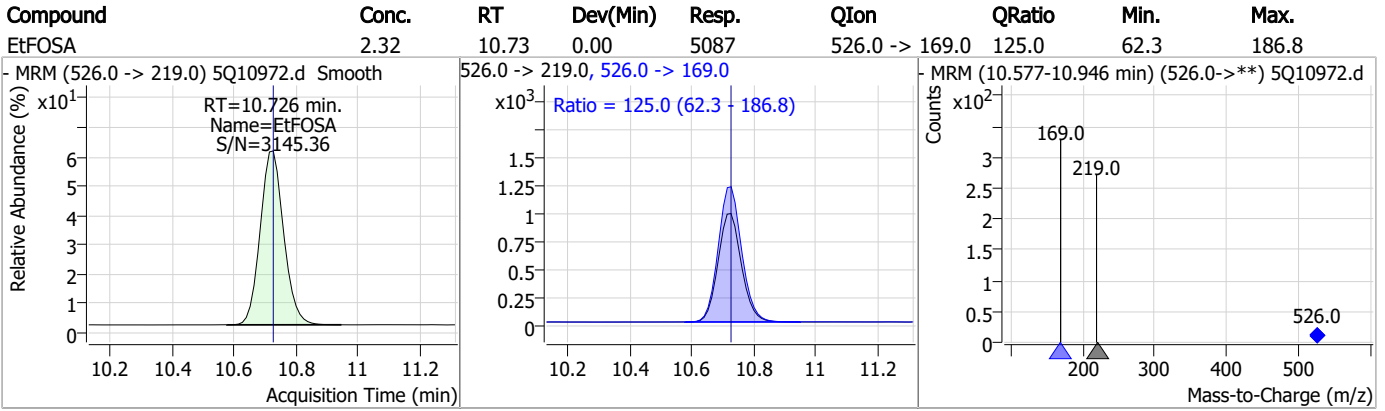


7.7.13

7



Perfluorinated Compounds by LC/MS/MS



7.7.13
7



Manual Integration Approval Summary

Sample Number: S5Q169-CC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10972.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/17/23 03:48 **Supervisor approved:** 02/21/23 09:33 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
13C4-PFBA			2.80	Poor instrument integration
13C3-PFBA			2.80	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
13C5-PFPeA			4.15	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
NFDHA	151772-58-6		5.21	Poor instrument integration
13C3-PFBS			5.26	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.26	Poor instrument integration
PFEESA	113507-82-7		5.82	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.34	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.08	Split peak
MeFOSAA	2355-31-9		8.08	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

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7

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q10990.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 8:02:04 AM
 Sample Name : cc169-1.0LL
 Vial : P3-A2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.799	216.8 -> 171.9	40175	10.00	µg/L m	0.000
M5-PFPeA	4.150	268.3 -> 223.0	26151	5.00	µg/L m	0.000
M5-PFHxA	5.323	318.0 -> 273.0	28960	2.50	µg/L	-0.012
M4-PFHpA	6.268	367.1 -> 322.0	27670	2.50	µg/L	-0.012
M8-PFOA	6.937	421.1 -> 376.0	34993	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	11405	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	7441	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	8169	1.25	µg/L	-0.038
M2-PFDoDA	9.029	615.1 -> 570.0	9279	1.25	µg/L	-0.025
M2-PFTeDA	9.849	715.2 -> 670.0	8147	1.25	µg/L	-0.050
M8-FOSA	9.187	506.1 -> 77.8	7395	2.50	µg/L	0.000
M3-PFBS	5.264	302.1 -> 79.9	6803	2.50	µg/L m	-0.013
M3-PFHxS	7.066	402.1 -> 79.9	5589	2.50	µg/L	-0.025
M8-PFOS	8.231	507.1 -> 79.9	7599	2.50	µg/L	-0.025
M2-4:2FTS	4.984	329.1 -> 80.9	594	5.00	µg/L	-0.012
M2-6:2FTS	6.687	429.1 -> 80.9	1210	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1701	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	8233	5.00	µg/L	-0.025
M3-HFPO-DA	5.702	286.9 -> 168.9	63561	10.00	µg/L	-0.012
M5-EtFOSAA	8.285	589.2 -> 419.0	11933	5.00	µg/L	-0.025
M7-MeFOSE	10.302	623.2 -> 58.9	34041	25.00	µg/L	-0.012
M9-EtFOSE	10.610	639.2 -> 58.9	42397	25.00	µg/L	-0.012
M5-EtFOSA	10.712	531.1 -> 219.0	5360	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	3718	2.50	µg/L	0.000
13C4-PFOS	8.231	502.8 -> 79.9	7367	2.50	µg/L	-0.025
13C3-PFBA	2.791	216.0 -> 172.0	21789	5.00	µg/L m	-0.012
18O2-PFHxS	7.065	403.0 -> 83.9	3884	2.50	µg/L	-0.026
13C4-PFOA	6.938	417.1 -> 372.0	42200	2.50	µg/L	-0.012
13C2-PFDA	8.042	515.1 -> 470.1	11430	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	11498	1.25	µg/L	-0.025
13C2-PFHxA	5.324	315.1 -> 270.0	32560	2.50	µg/L	-0.012
System Monitoring Compounds						
13C2-4:2FTS	4.984	329.1 -> 80.9	594	6.28	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.6%			
13C2-6:2FTS	6.687	429.1 -> 80.9	1210	5.75	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.9%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1701	5.77	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.3%			
13C2-PFDoDA	9.029	615.1 -> 570.0	9279	1.30	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.2%			
13C2-PFTeDA	9.849	715.2 -> 670.0	8147	1.22	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%			
13C3-PFBS	5.264	302.1 -> 79.9	6803	2.28	µg/L m	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.1%			
13C3-PFHxS	7.066	402.1 -> 79.9	5589	2.52	µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%			
13C4-PFBA	2.799	216.8 -> 171.9	40175	9.77	µg/L	m 0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.7%			
13C4-PFHpA	6.268	367.1 -> 322.0	27670	2.56	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%			
13C5-PFHxA	5.323	318.0 -> 273.0	28960	2.53	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%			
13C5-PFPeA	4.150	268.3 -> 223.0	26151	4.42	µg/L	m 0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.4%			
13C6-PFDA	8.042	519.1 -> 474.1	7441	1.26	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.8%			
13C7-PFUnDA	8.548	570.0 -> 525.1	8169	1.27	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%			
13C8-FOSA	9.187	506.1 -> 77.8	7395	2.56	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.4%			
13C8-PFOA	6.937	421.1 -> 376.0	34993	2.46	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%			
13C8-PFOS	8.231	507.1 -> 79.9	7599	2.62	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.8%			
13C9-PFNA	7.507	472.1 -> 427.0	11405	1.21	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%			
d3-MeFOSAA	8.063	573.2 -> 419.0	8233	5.05	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.9%			
13C3-HFPO-DA	5.702	286.9 -> 168.9	63561	10.52	µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 105.2%			
d3-MeFOSA	10.416	515.0 -> 219.0	3718	2.50	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%			
d5-EtFOSAA	8.285	589.2 -> 419.0	11933	4.94	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%			
d7-MeFOSE	10.302	623.2 -> 58.9	34041	25.11	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.4%			
d9-EtFOSE	10.610	639.2 -> 58.9	42397	25.52	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.1%			
d5-EtFOSA	10.712	531.1 -> 219.0	5360	2.62	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.8%			
Target Compounds						QValue
4:2FTS	4.985	327.1 -> 307.0	620	0.83	µg/L	98
		327.1 -> 80.9	334			
6:2FTS	6.687	427.1 -> 407.0	941	0.93	µg/L	98
		427.1 -> 80.9	383			
8:2FTS	7.804	527.1 -> 507.0	618	0.77	µg/L	95
		527.1 -> 80.8	335			
EtFOSAA	8.298	584.2 -> 419.1	368	0.24	µg/L	87
		584.2 -> 526.0	116			
FOSA	9.177	498.1 -> 77.9	621	0.23	µg/L	98
		498.1 -> 478.0	17			
MeFOSAA	8.064	570.1 -> 419.0	340	0.24	µg/L	m 89
		570.1 -> 483.0	55			
PFBA	2.795	212.8 -> 168.9	1518	0.95	µg/L	m 100
PFBS	5.253	298.7 -> 79.9	416	0.19	µg/L	m 84
		298.7 -> 98.8	217			
PFDA	8.042	512.9 -> 469.0	1726	0.22	µg/L	95
		512.9 -> 219.0	277			
PFDODA	9.029	613.1 -> 569.0	1590	0.25	µg/L	98
		613.1 -> 319.0	263			
PFDS	9.207	599.0 -> 79.9	357	0.21	µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	178	0.21	µg/L	100
		363.1 -> 319.0	2492			
PFHpS	7.673	363.1 -> 169.0	560	0.22	µg/L	78
		449.0 -> 79.9	471			
PFHxA	5.325	449.0 -> 98.9	206	0.23	µg/L	99
		313.0 -> 269.0	1957			
PFHxS	7.067	313.0 -> 118.9	83	0.22	µg/L	82
		398.7 -> 79.9	413			
PFNA	7.508	398.7 -> 98.9	237	0.21	µg/L	99
		463.0 -> 419.0	1420			
PFNS	8.749	463.0 -> 219.0	328	0.24	µg/L	91
		548.8 -> 79.9	405			
PFOA	6.939	548.8 -> 98.9	220	0.26	µg/L	95
		413.0 -> 369.0	3479			
PFOS	8.232	413.0 -> 169.0	702	0.20	µg/L	95
		498.9 -> 79.9	614			
PFPeA	4.152	498.9 -> 98.8	415	0.48	µg/L	100
		263.0 -> 219.0	2720			
PFPeS	6.332	349.1 -> 79.9	329	0.20	µg/L	89
		349.1 -> 98.9	142			
PFTeDA	9.850	713.1 -> 669.0	1532	0.24	µg/L	97
		713.1 -> 168.9	195			
PFTrDA	9.451	663.0 -> 619.0	1832	0.22	µg/L	99
		663.0 -> 168.9	294			
PFUnDA	8.561	563.1 -> 519.0	1091	0.18	µg/L	80
		563.1 -> 269.1	324			
11CI-PF3OUdS	9.516	630.9 -> 450.9	5208	0.74	µg/L	96
		632.9 -> 452.9	1725			
9CI-PF3ONS	8.601	530.8 -> 351.0	5692	0.76	µg/L	99
		532.8 -> 353.0	1823			
ADONA	6.530	376.9 -> 250.9	14038	0.81	µg/L	100
		376.9 -> 84.8	4224			
HFPO-DA	5.703	284.9 -> 168.9	5050	0.97	µg/L	97
		284.9 -> 184.9	423			
3:3FTCA	3.603	241.0 -> 177.0	378	0.90	µg/L	98
		241.0 -> 117.0	51			
5:3FTCA	5.906	341.0 -> 237.1	8541	4.86	µg/L	96
		341.0 -> 217.0	5459			
7:3FTCA	7.335	441.0 -> 316.9	3645	5.18	µg/L	96
		441.0 -> 336.9	7677			
EtFOSA	10.713	526.0 -> 219.0	447	0.23	µg/L	97
		526.0 -> 169.0	541			
EtFOSE	10.636	630.0 -> 58.9	3564	2.26	µg/L	100
		511.9 -> 219.0	385			
MeFOSA	10.418	511.9 -> 169.0	461	0.26	µg/L	94
		616.1 -> 58.9	3317			
MeFOSE	10.327	699.1 -> 79.9	298	2.28	µg/L	100
		699.1 -> 98.8	170			
PFDoDS	10.013	295.0 -> 201.0	271	0.23	µg/L	95
		295.0 -> 84.9	61			
NFDHA	5.205	279.0 -> 85.1	1824	0.41	µg/L	92
		279.0 -> 84.9	61			
PFMBA	4.541	229.0 -> 84.9	1328	0.43	µg/L	100
		314.8 -> 134.9	3024			
PFMPA	3.328	314.8 -> 82.9	98	0.43	µg/L	100
		314.8 -> 82.9	98			
PFEESA	5.809			0.34	µg/L	99

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



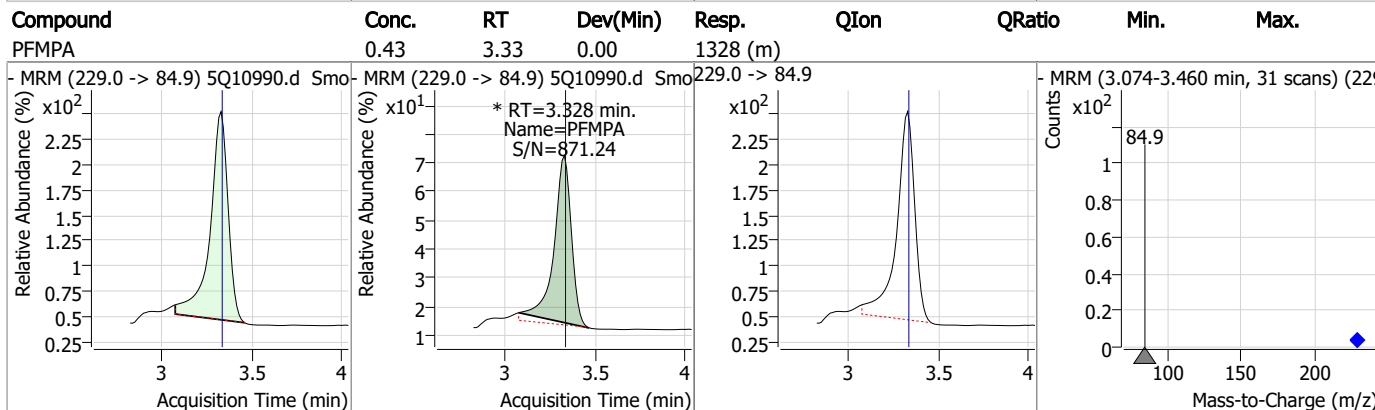
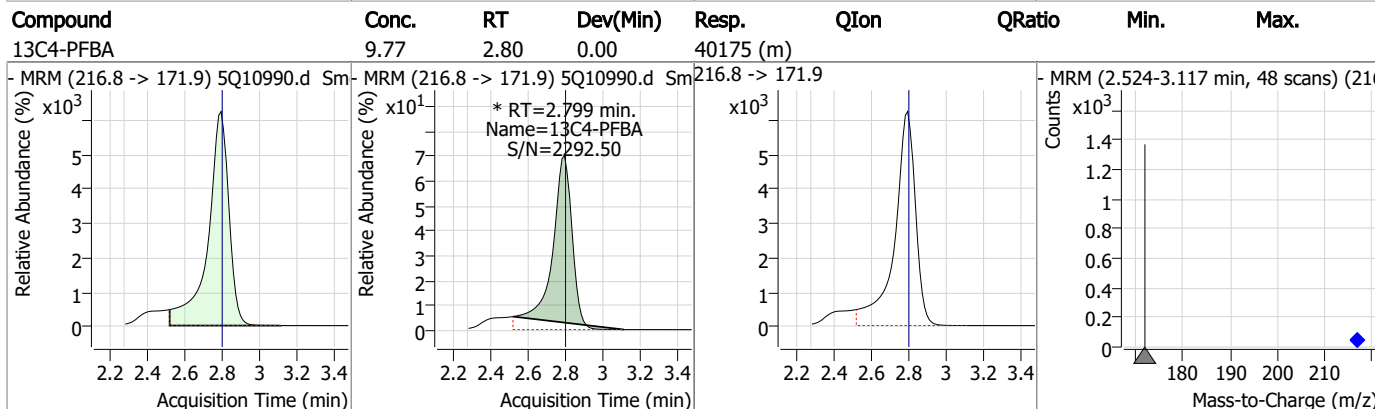
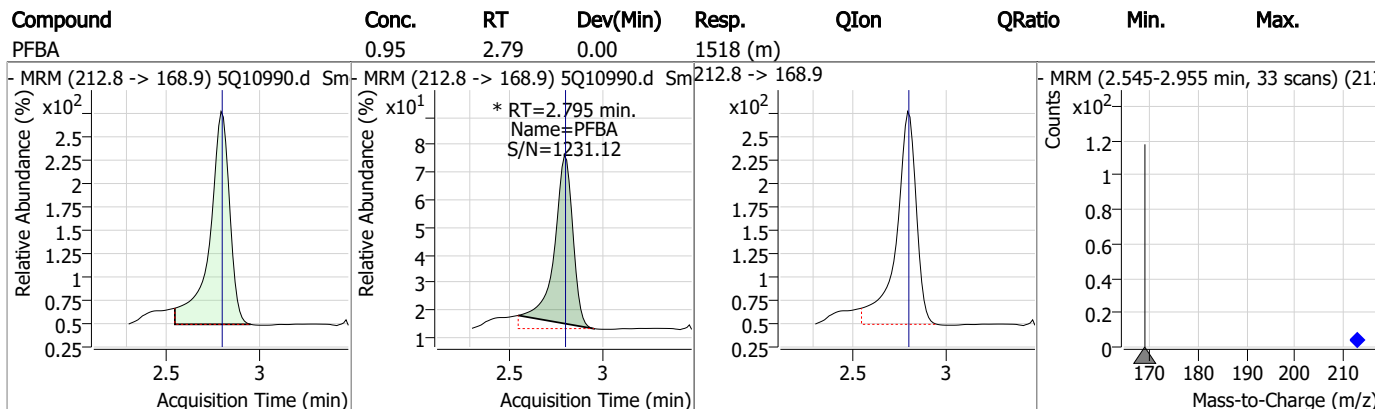
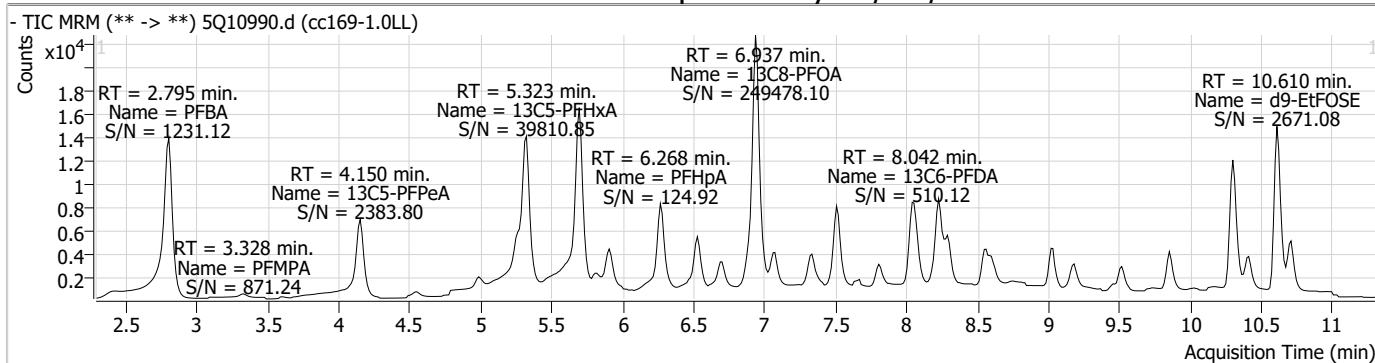
Perfluorinated Compounds by LC/MS/MS

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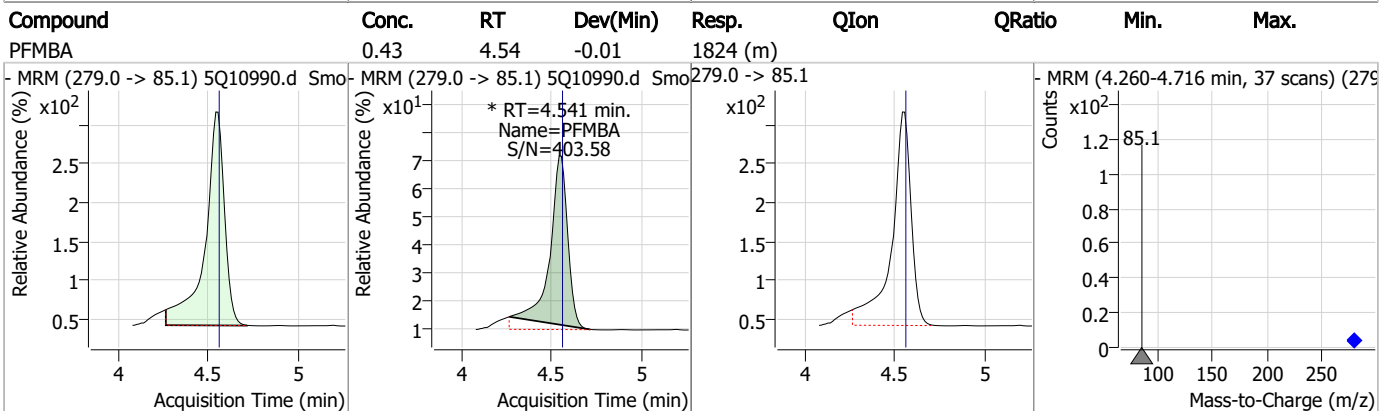
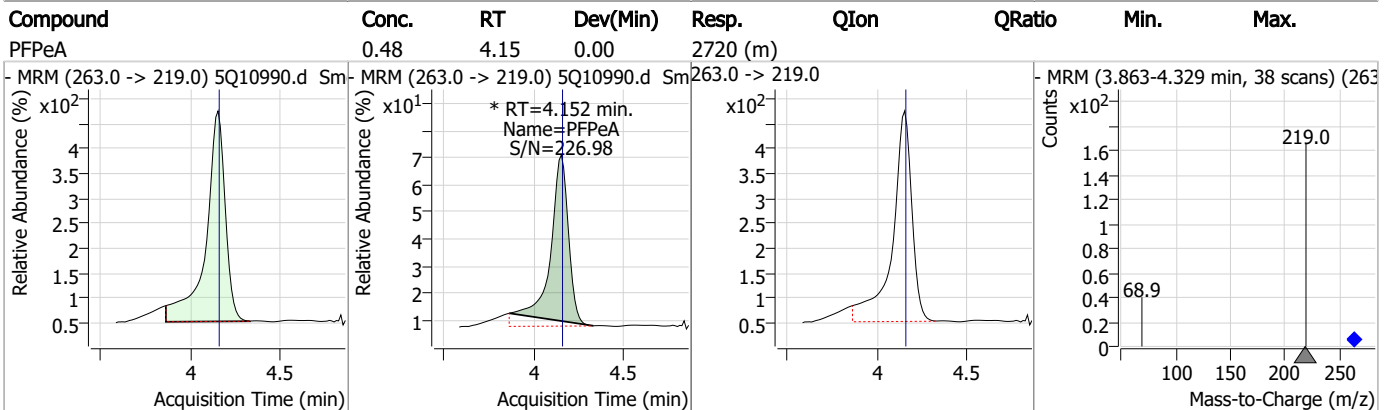
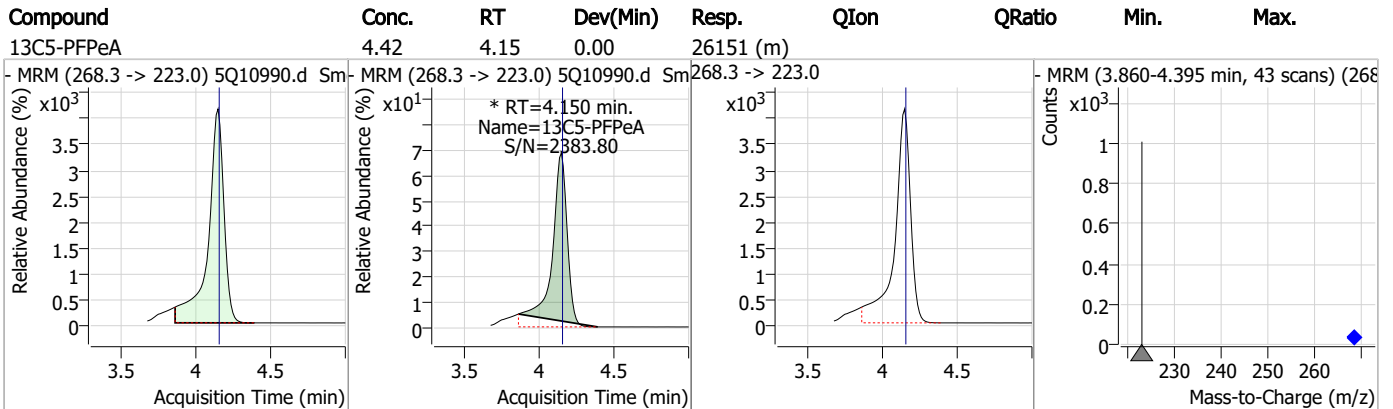
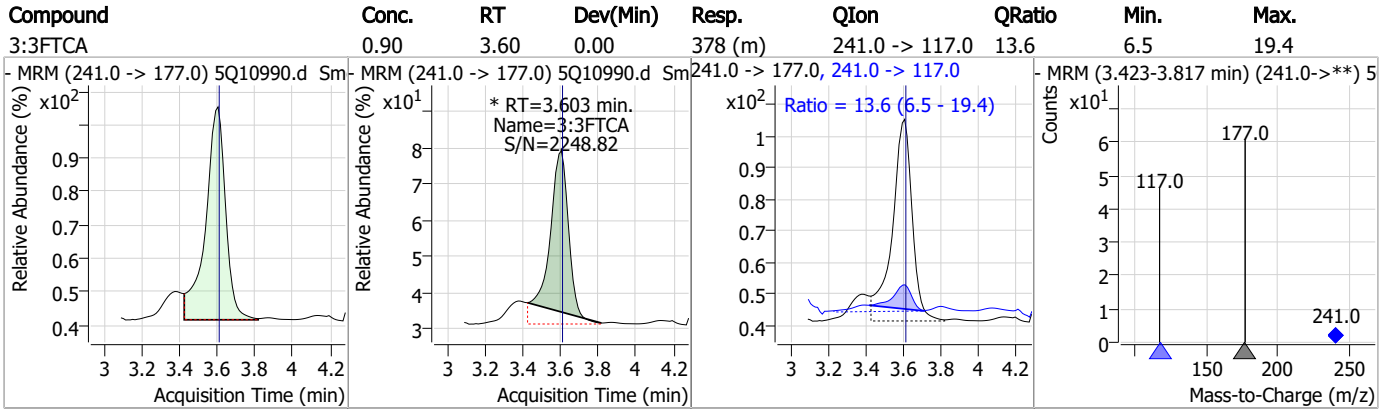
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Perfluorinated Compounds by LC/MS/MS



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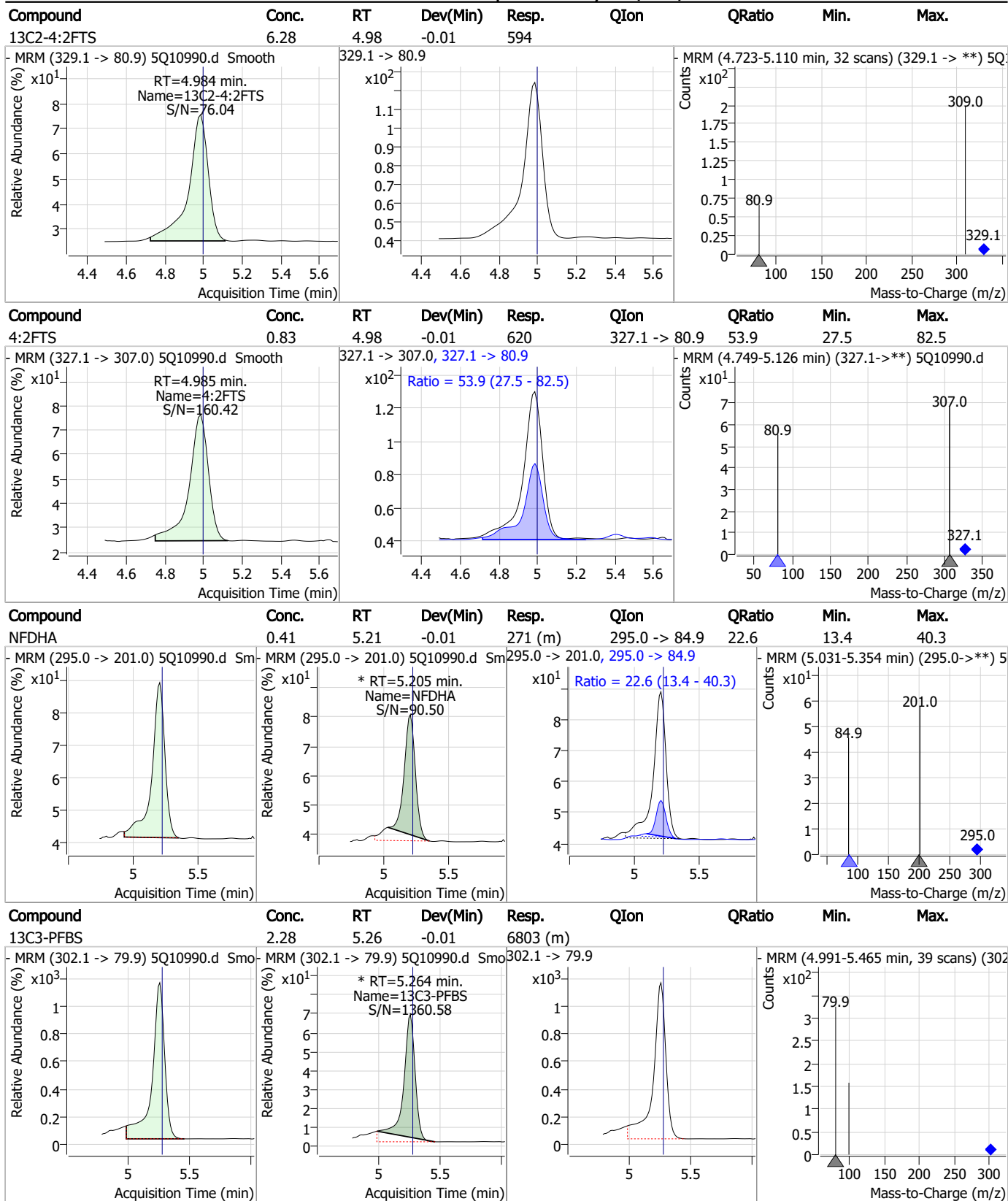
Perfluorinated Compounds by LC/MS/MS



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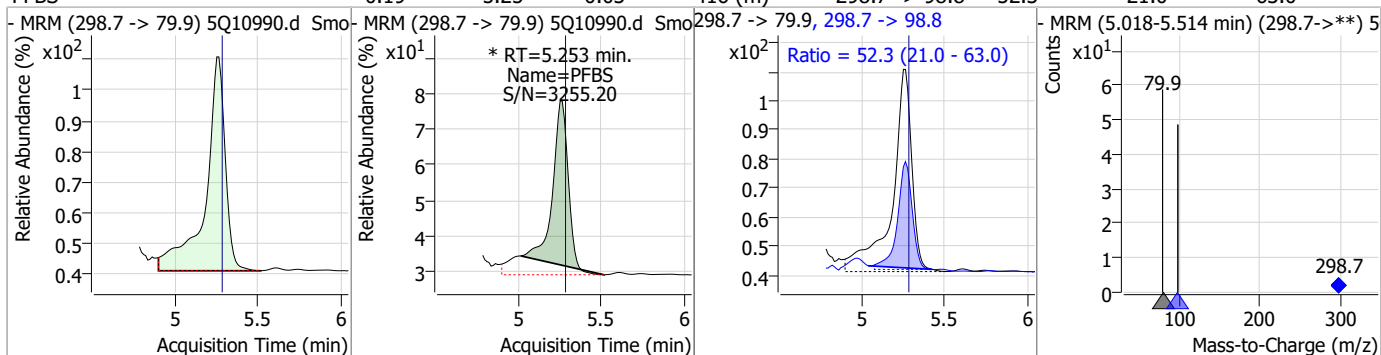
Perfluorinated Compounds by LC/MS/MS



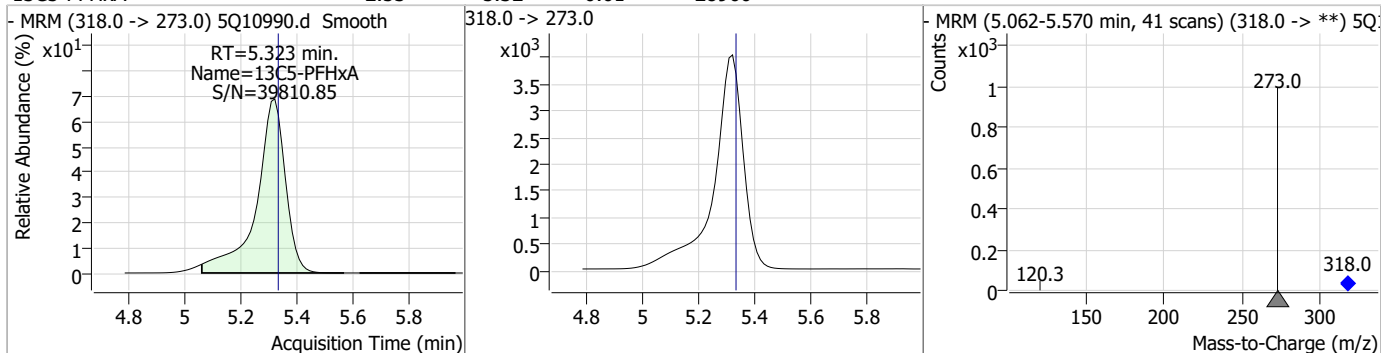
7.7.14
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Perfluorinated Compounds by LC/MS/MS

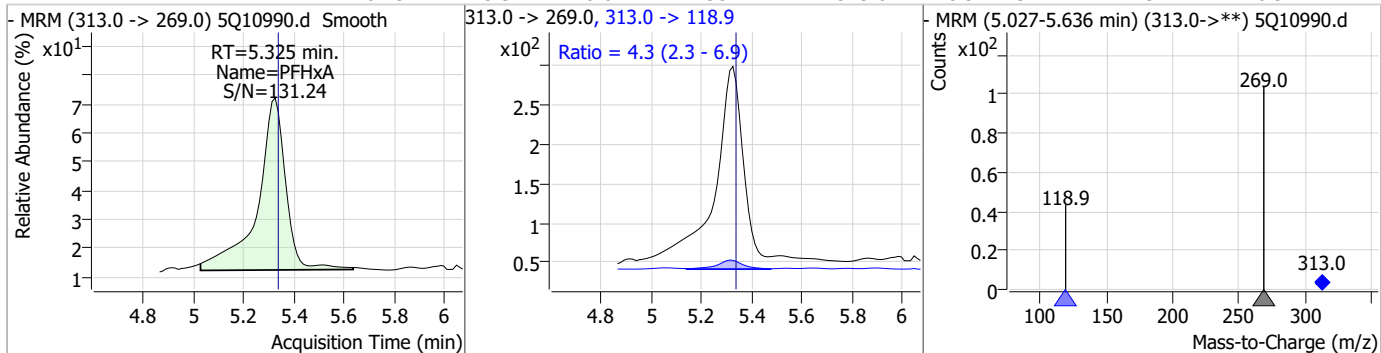
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.19	5.25	-0.03	416 (m)	298.7 -> 98.8	52.3	21.0	63.0



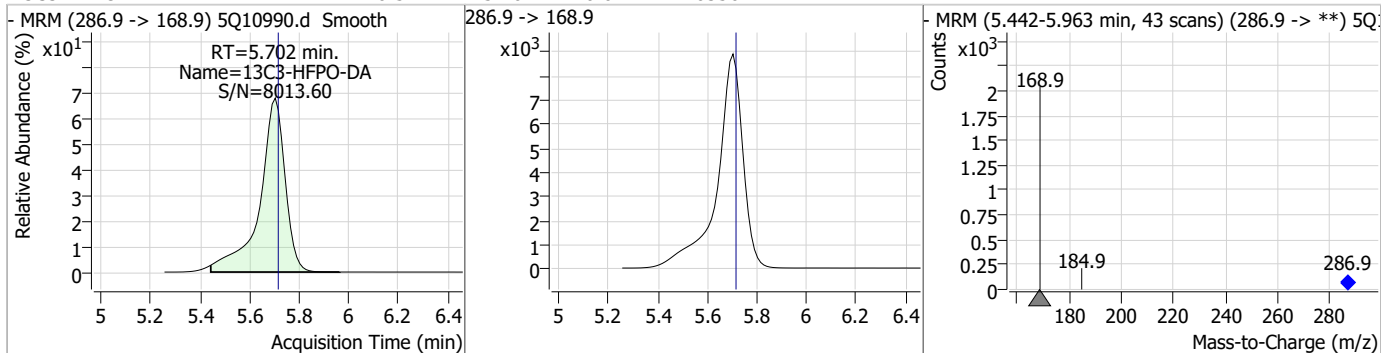
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13C5-PFHxA	2.53	5.32	-0.01	28960				



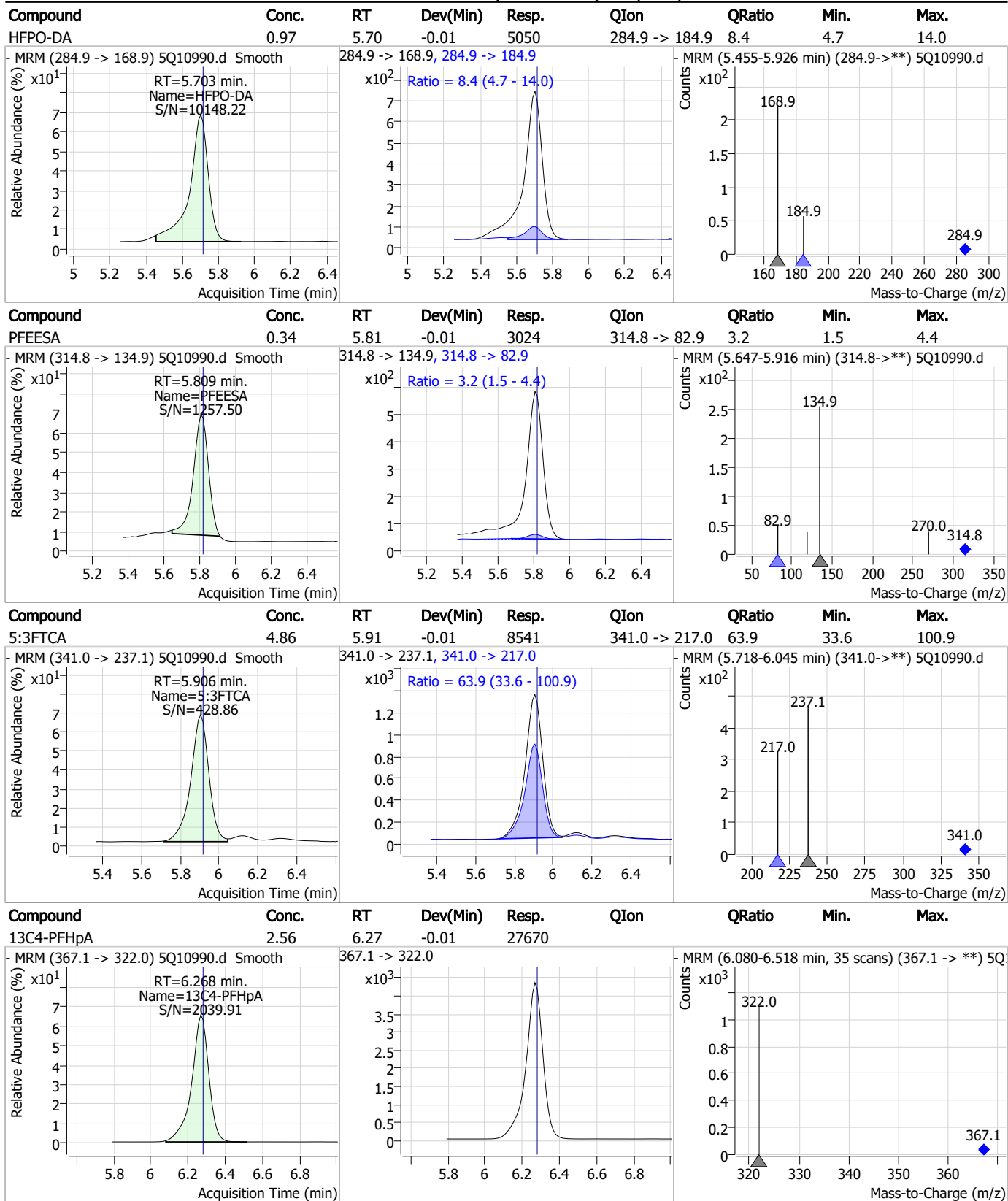
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.23	5.32	-0.01	1957	313.0 -> 118.9	4.3	2.3	6.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.52	5.70	-0.01	63561				



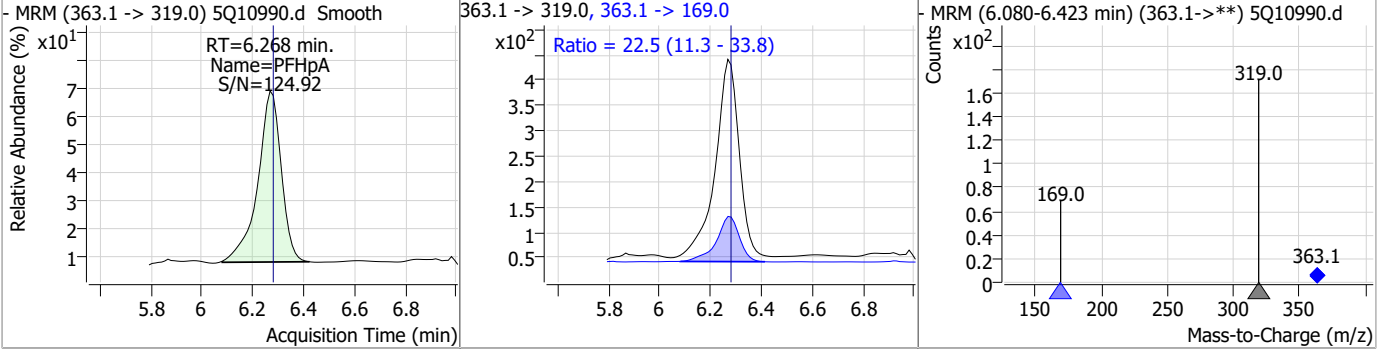
Perfluorinated Compounds by LC/MS/MS



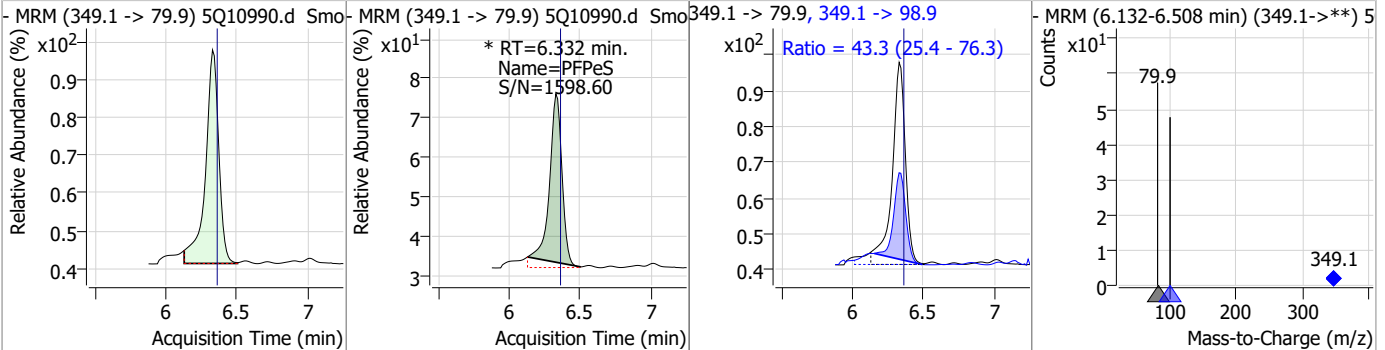
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Perfluorinated Compounds by LC/MS/MS

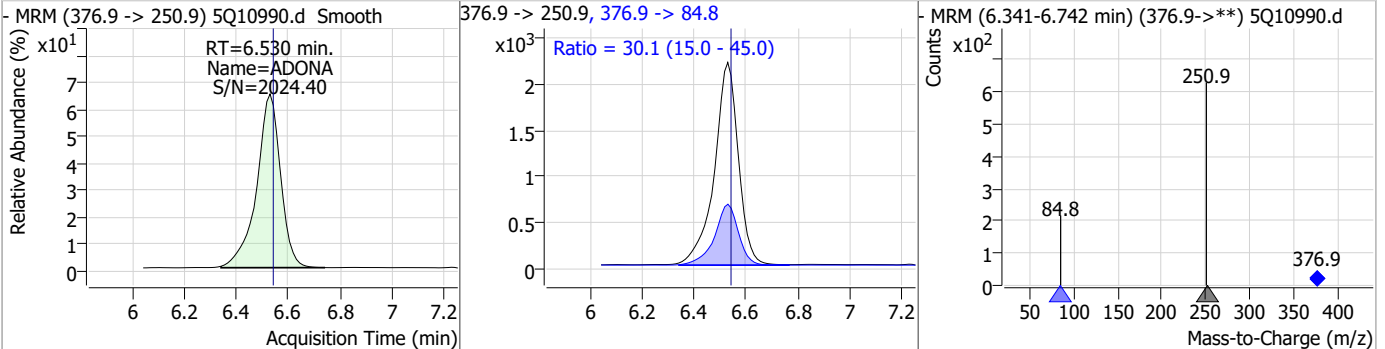
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.21	6.27	-0.01	2492	363.1 -> 169.0	22.5	11.3	33.8



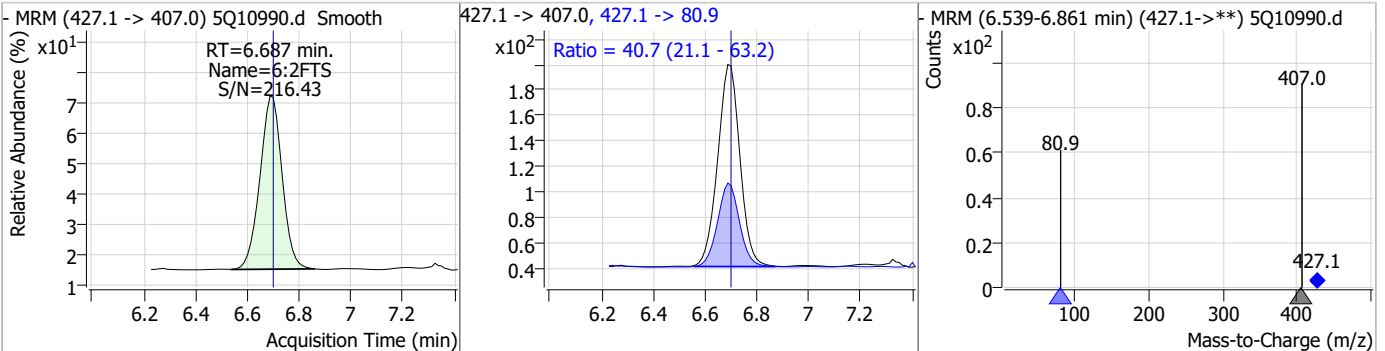
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.20	6.33	-0.02	329 (m)	349.1 -> 98.9	43.3	25.4	76.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.81	6.53	-0.01	14038	376.9 -> 84.8	30.1	15.0	45.0

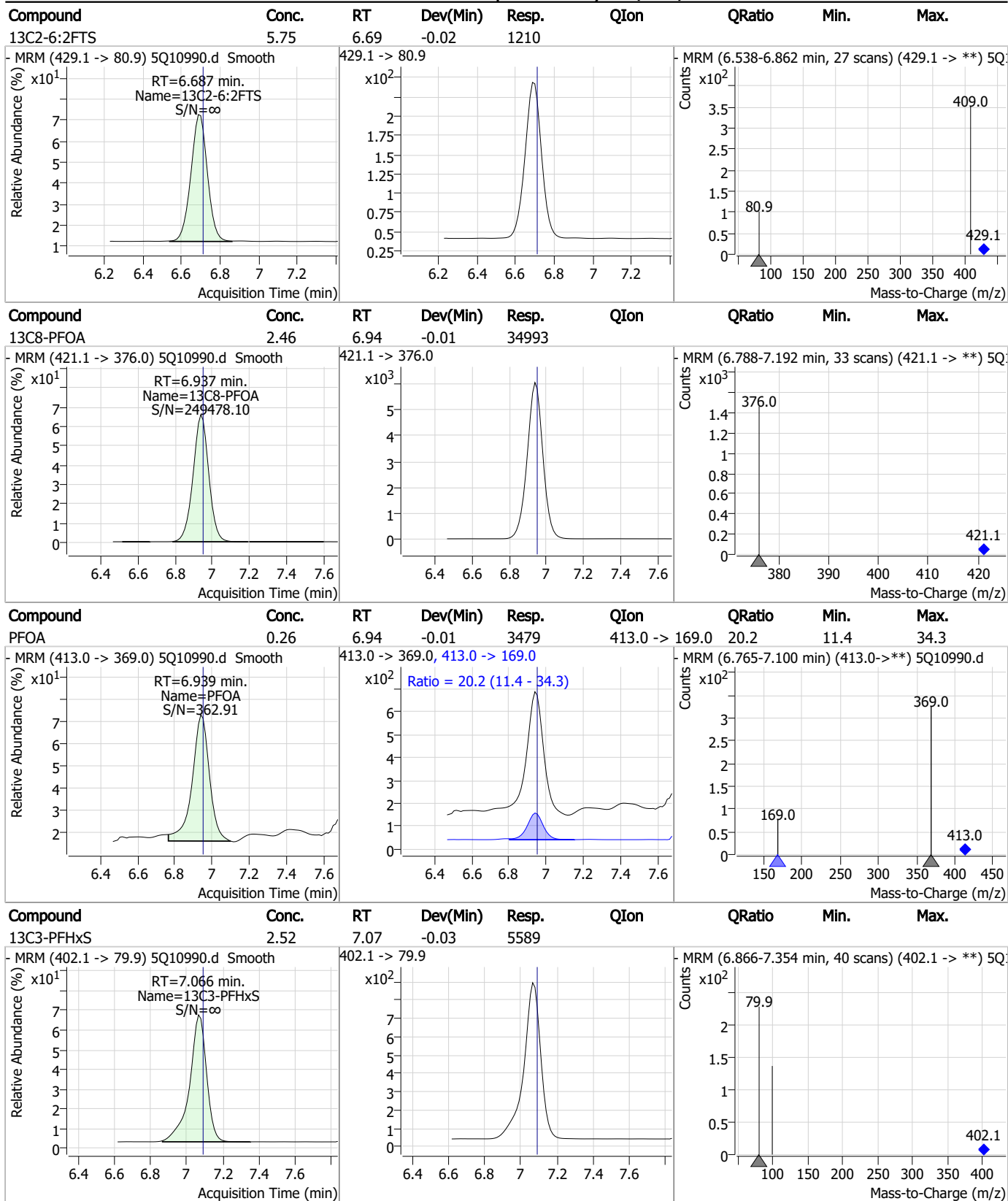


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.93	6.69	-0.01	941	427.1 -> 80.9	40.7	21.1	63.2



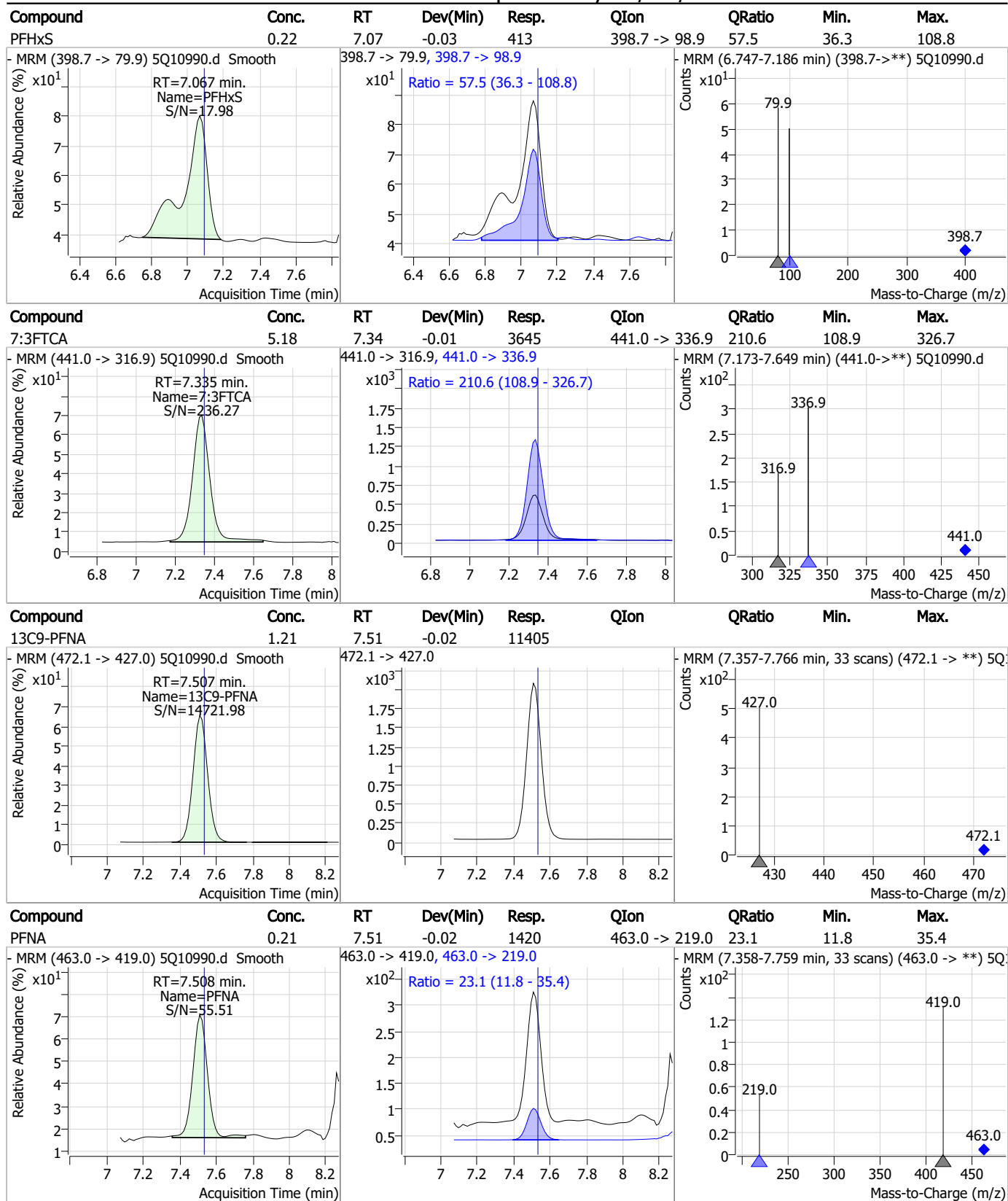
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Perfluorinated Compounds by LC/MS/MS



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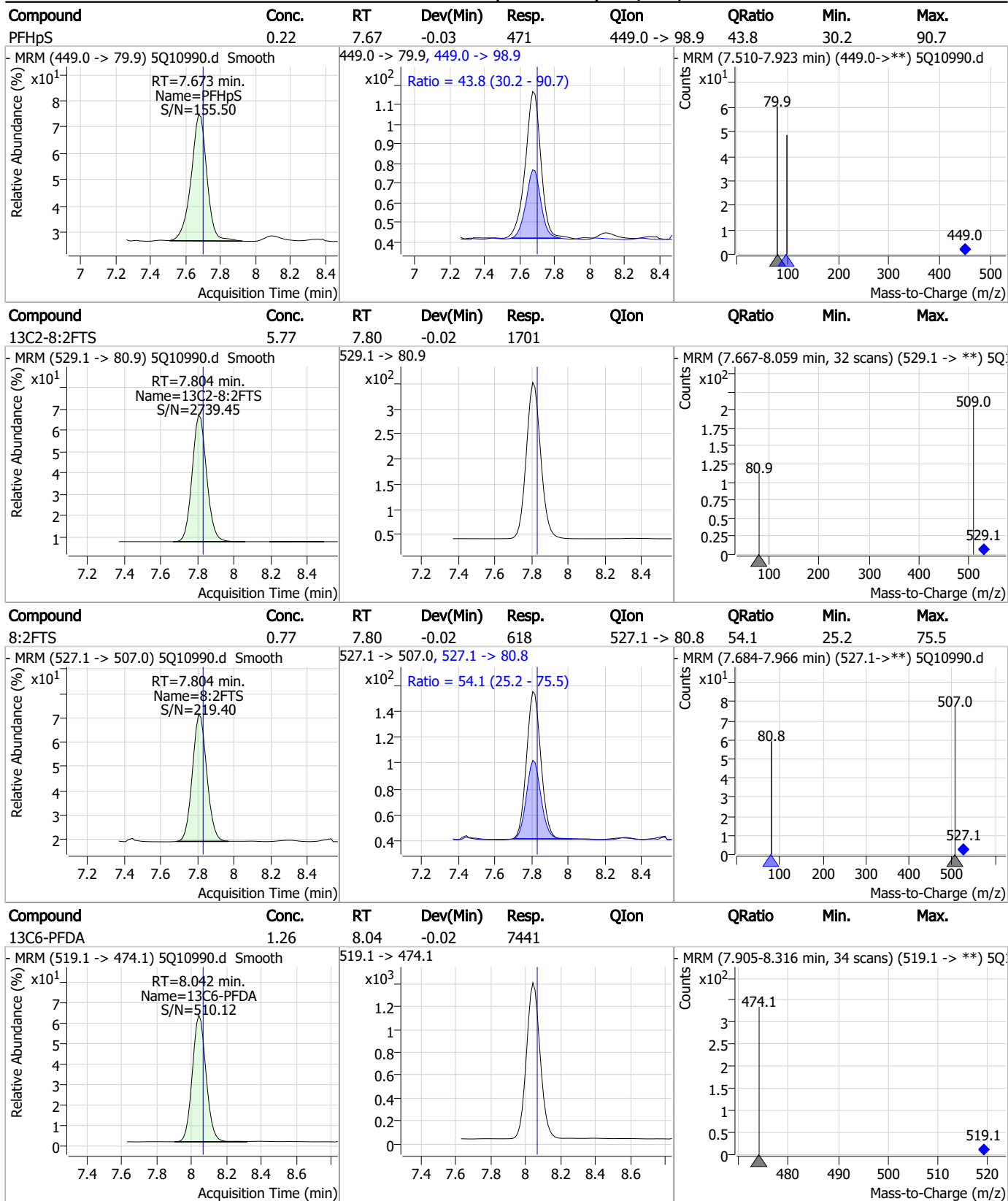
Perfluorinated Compounds by LC/MS/MS



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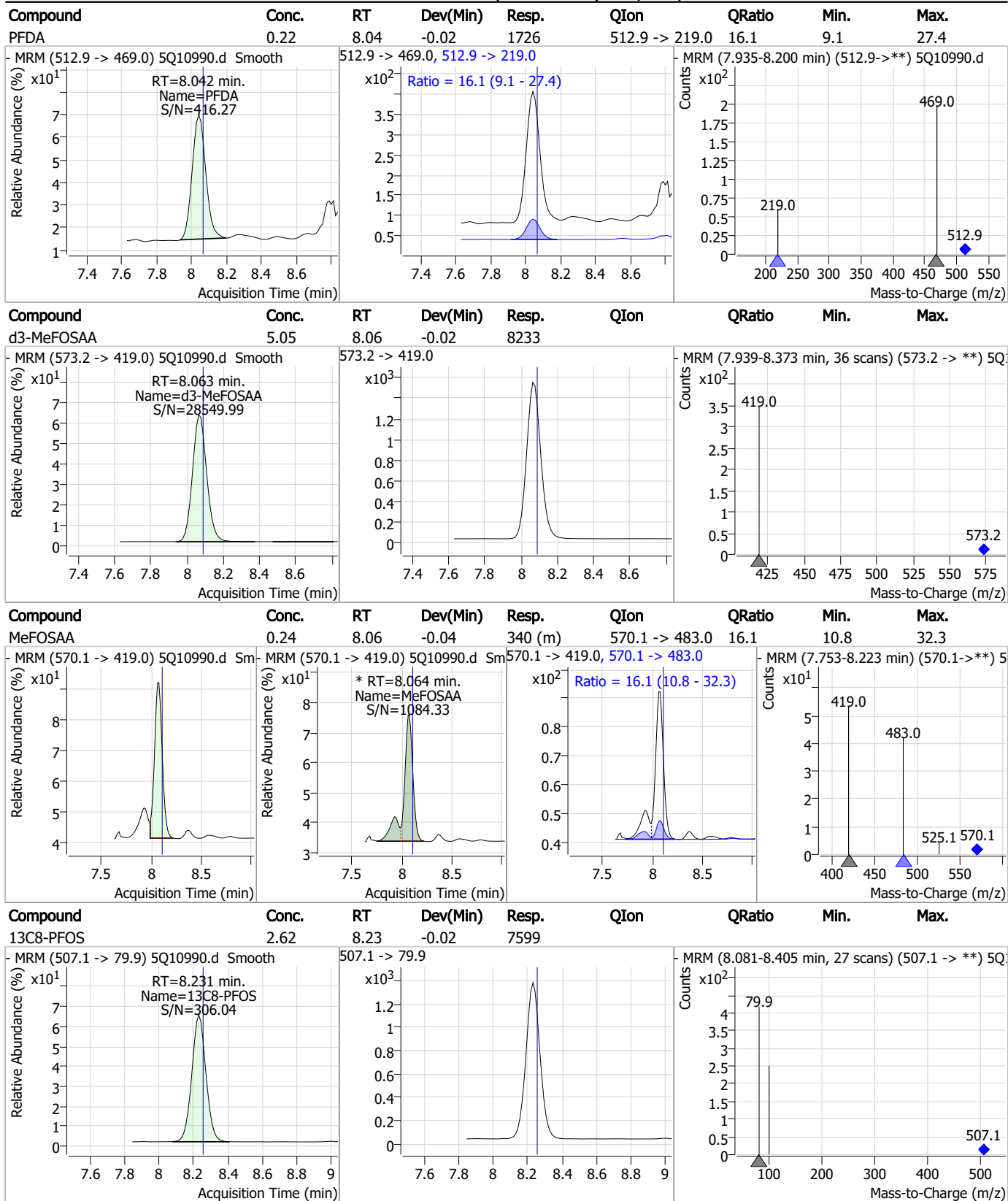
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

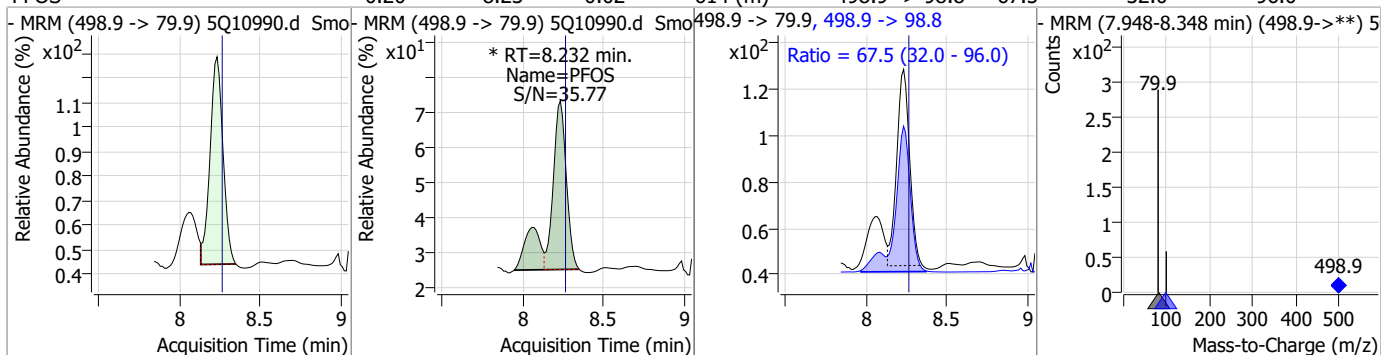


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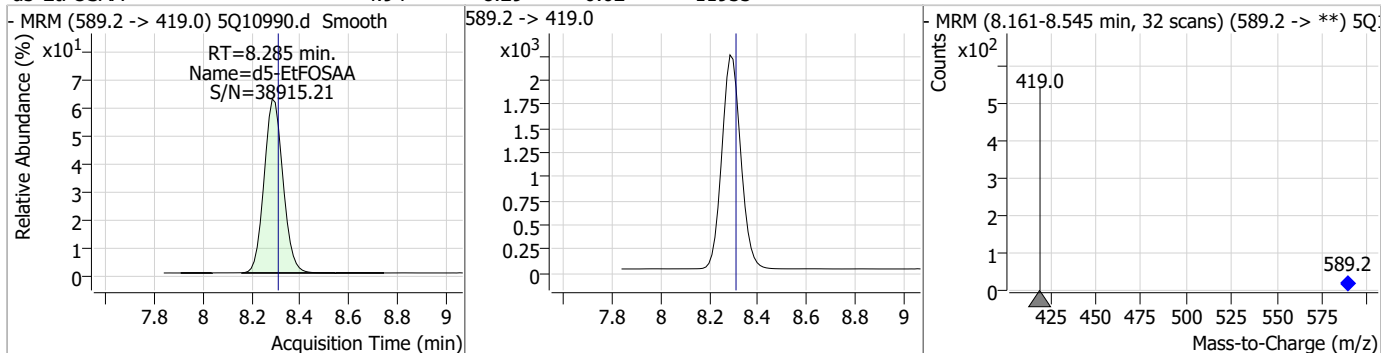


Perfluorinated Compounds by LC/MS/MS

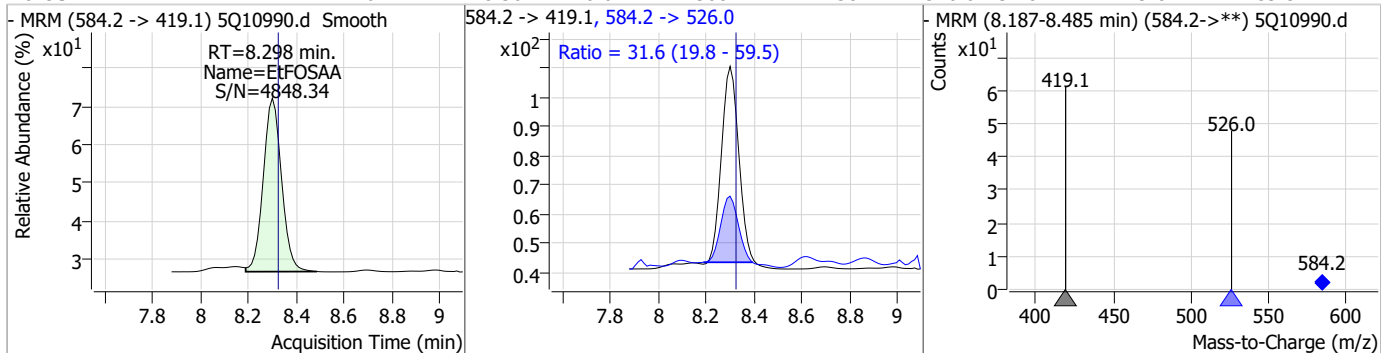
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.20	8.23	-0.02	614 (m)	498.9 -> 98.8	67.5	32.0	96.0



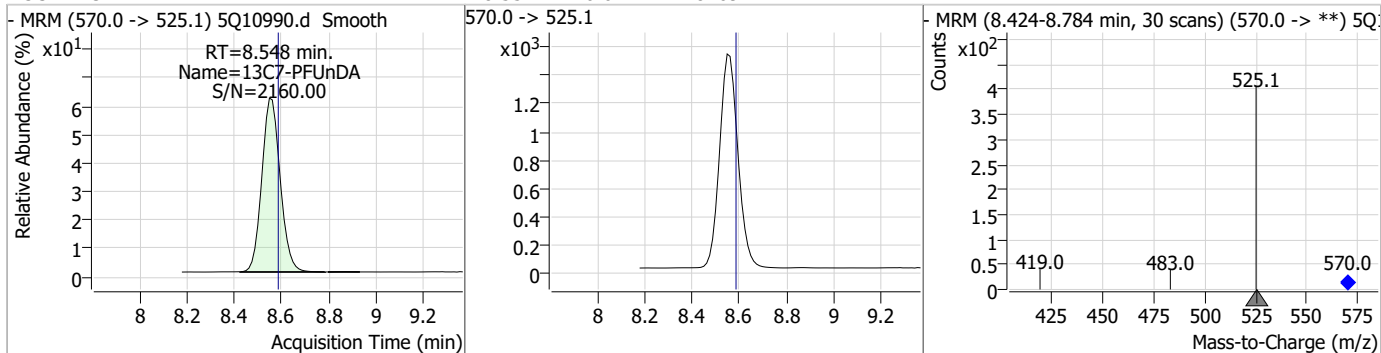
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.94	8.29	-0.02	11933				



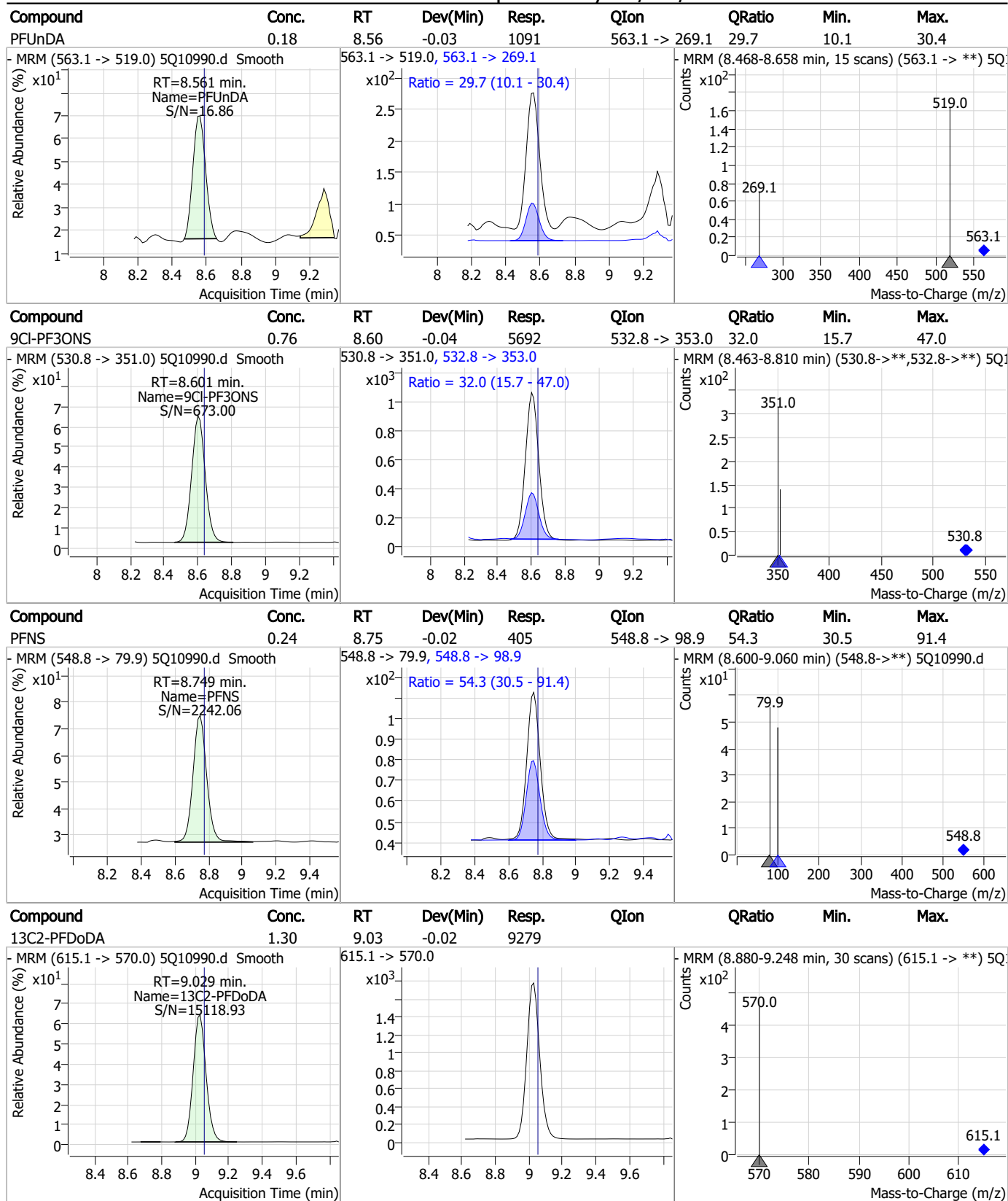
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.24	8.30	-0.02	368	584.2 -> 526.0	31.6	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.27	8.55	-0.04	8169				



Perfluorinated Compounds by LC/MS/MS

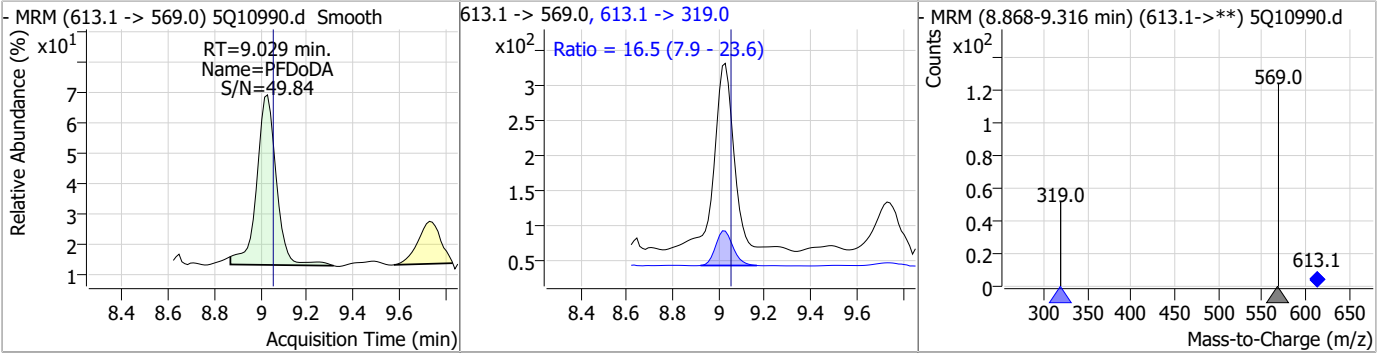


7.7.14

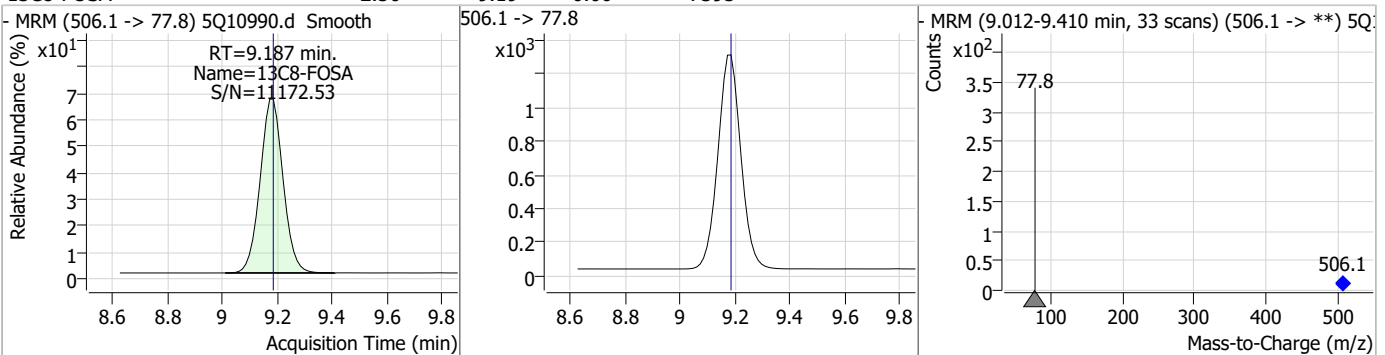
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Perfluorinated Compounds by LC/MS/MS

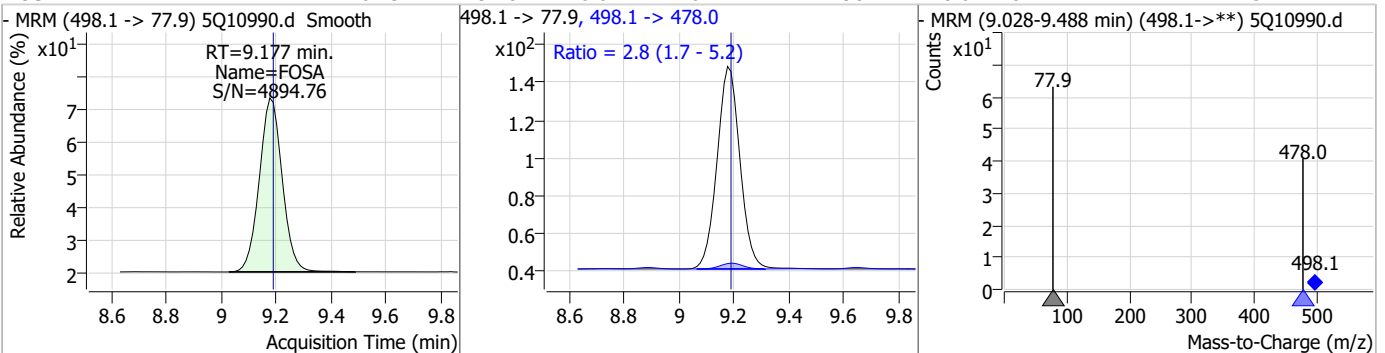
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDODA	0.25	9.03	-0.03	1590	613.1 -> 319.0	16.5	7.9	23.6



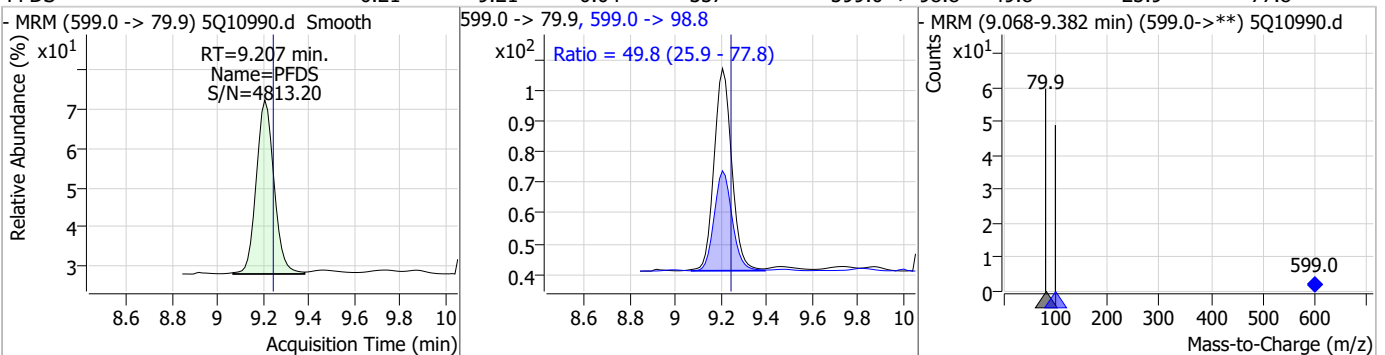
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.56	9.19	0.00	7395				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.23	9.18	-0.01	621	498.1 -> 478.0	2.8	1.7	5.2

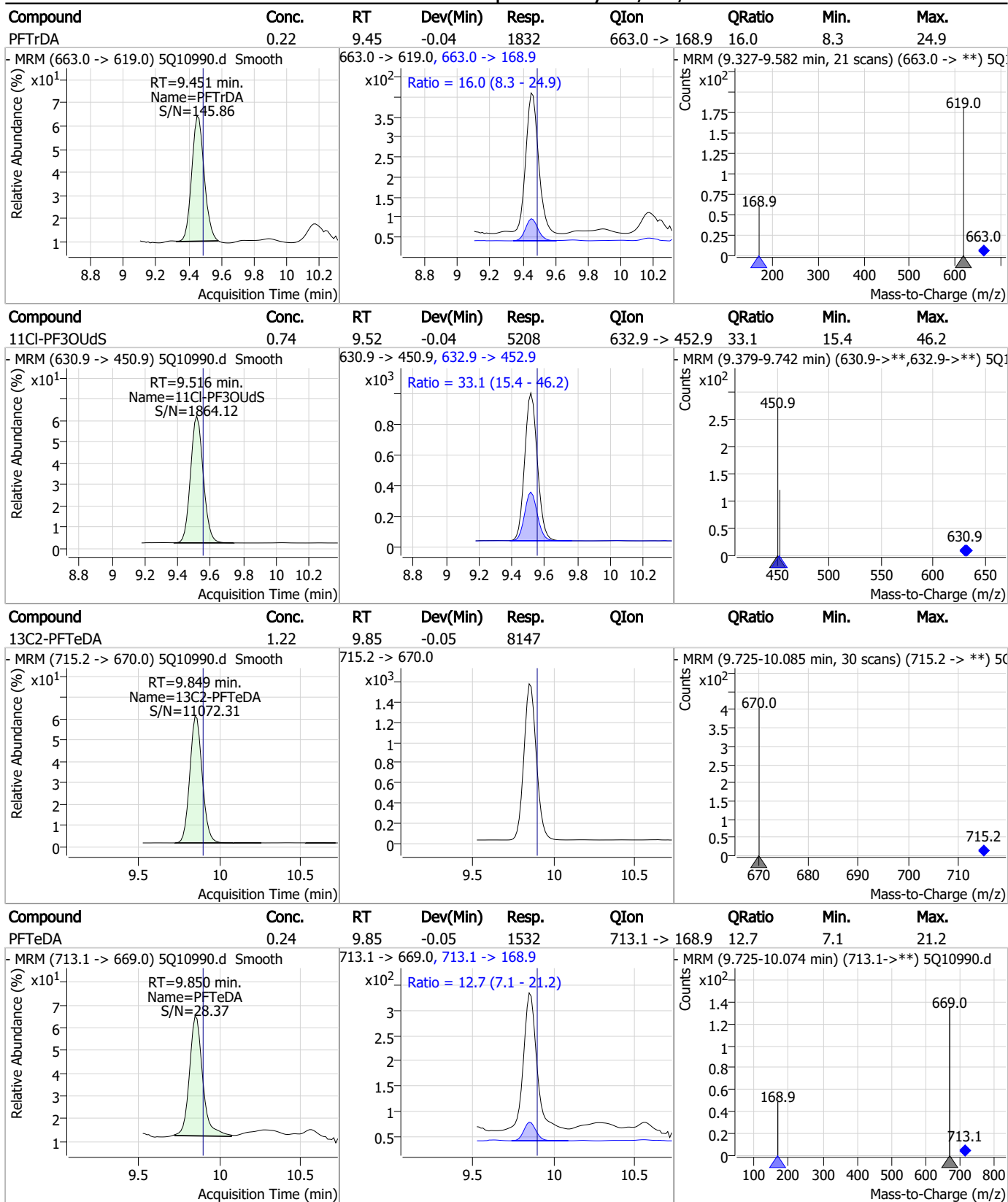


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.21	9.21	-0.04	357	599.0 -> 98.8	49.8	25.9	77.8



7.7.14
7

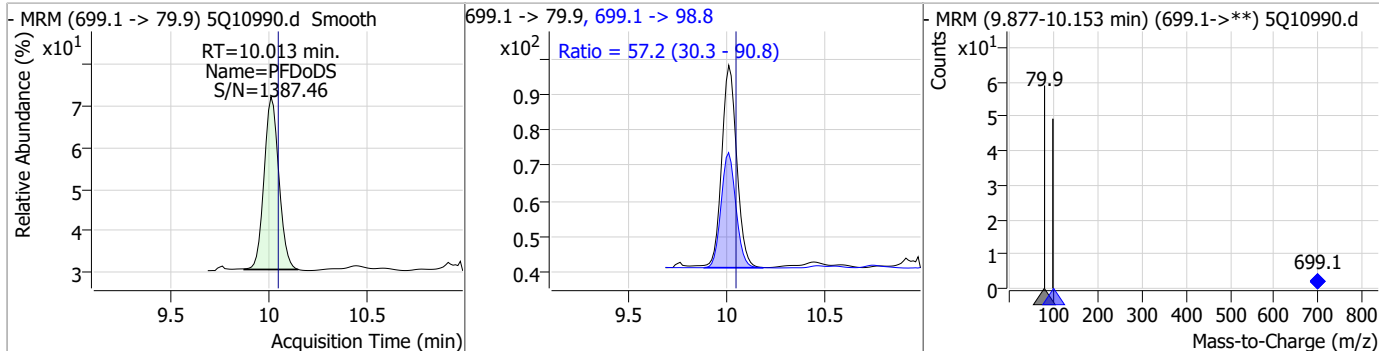
Perfluorinated Compounds by LC/MS/MS



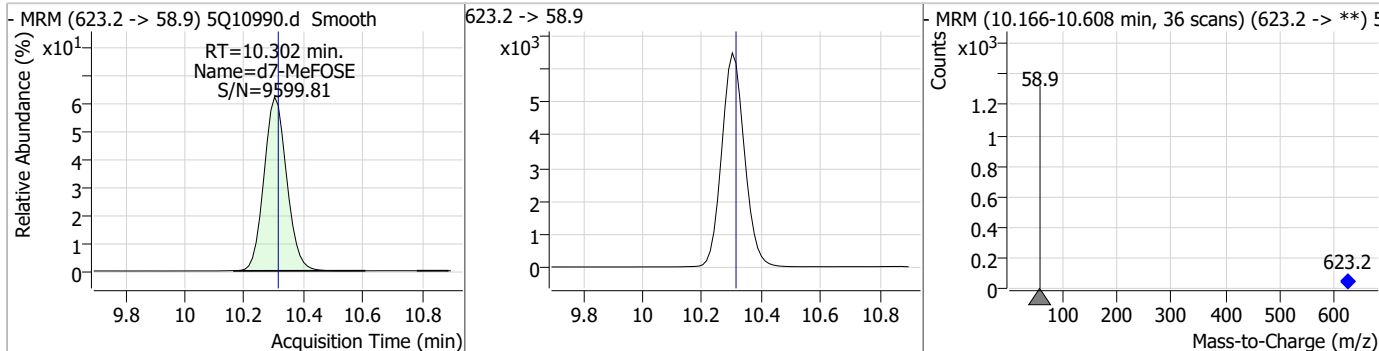
7.7.14
7

Perfluorinated Compounds by LC/MS/MS

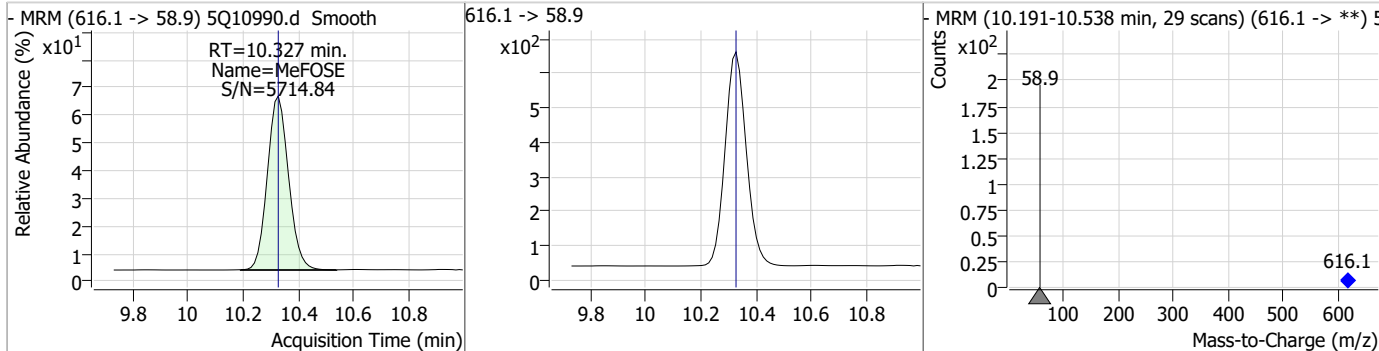
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.23	10.01	-0.04	298	699.1 -> 98.8	57.2	30.3	90.8



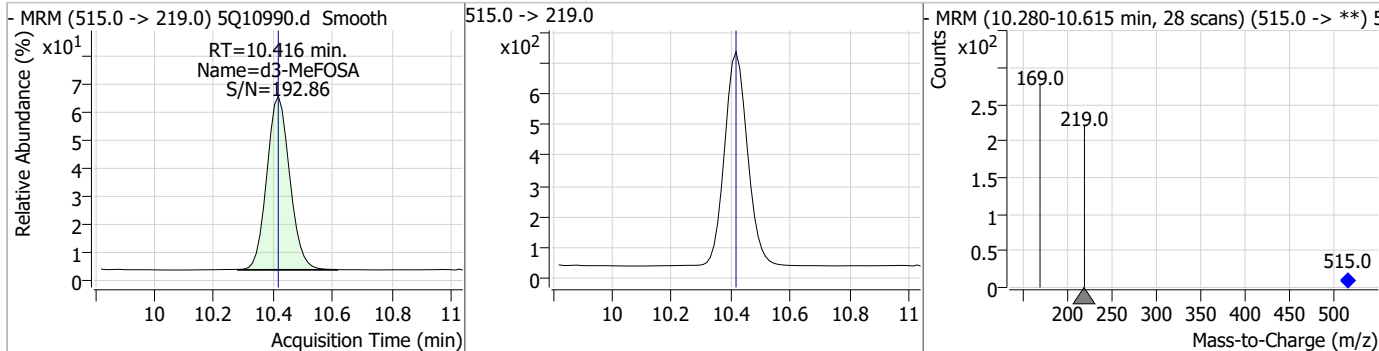
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.11	10.30	-0.01	34041				



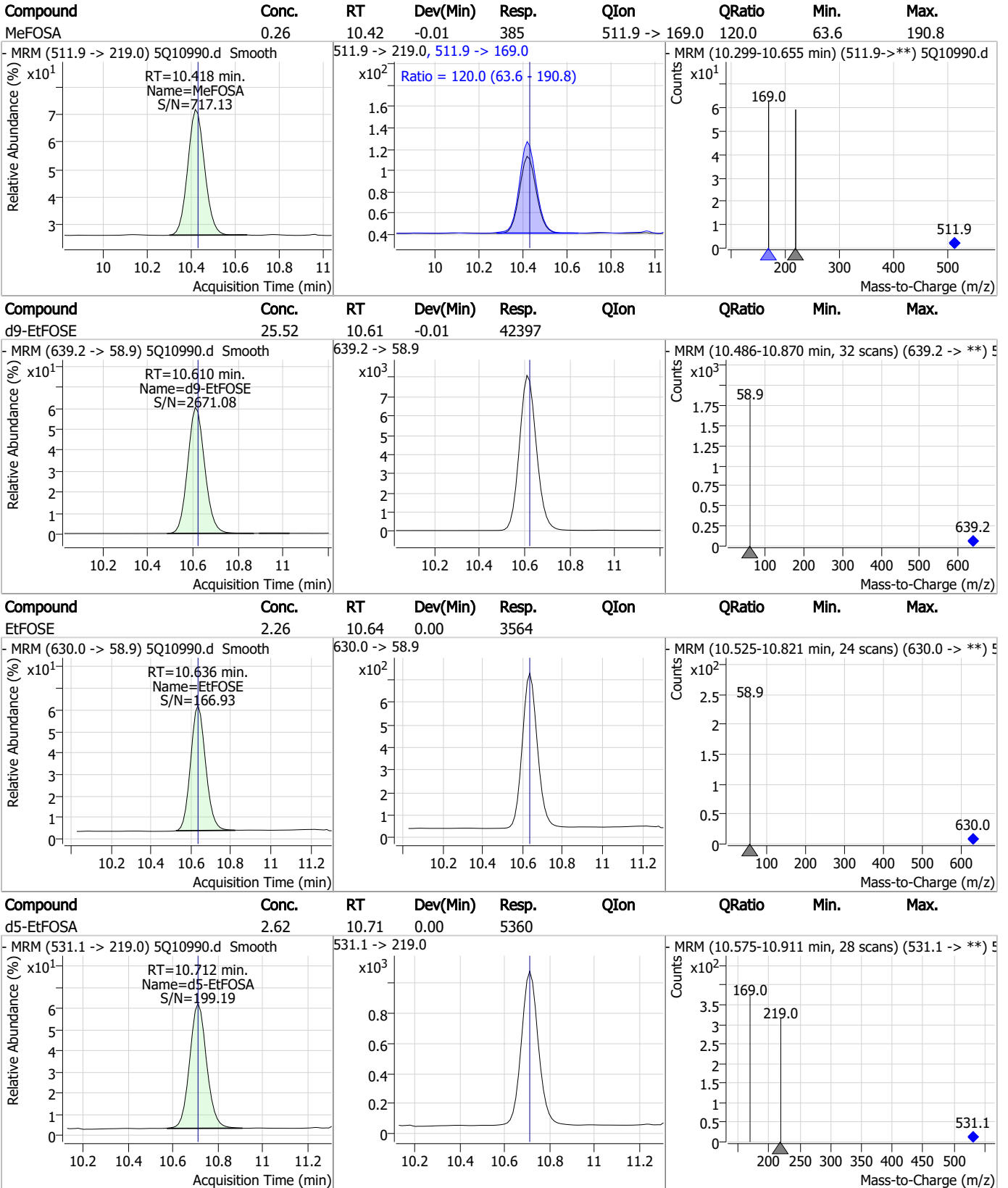
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	2.28	10.33	0.00	3317				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.50	10.42	0.00	3718				



Perfluorinated Compounds by LC/MS/MS

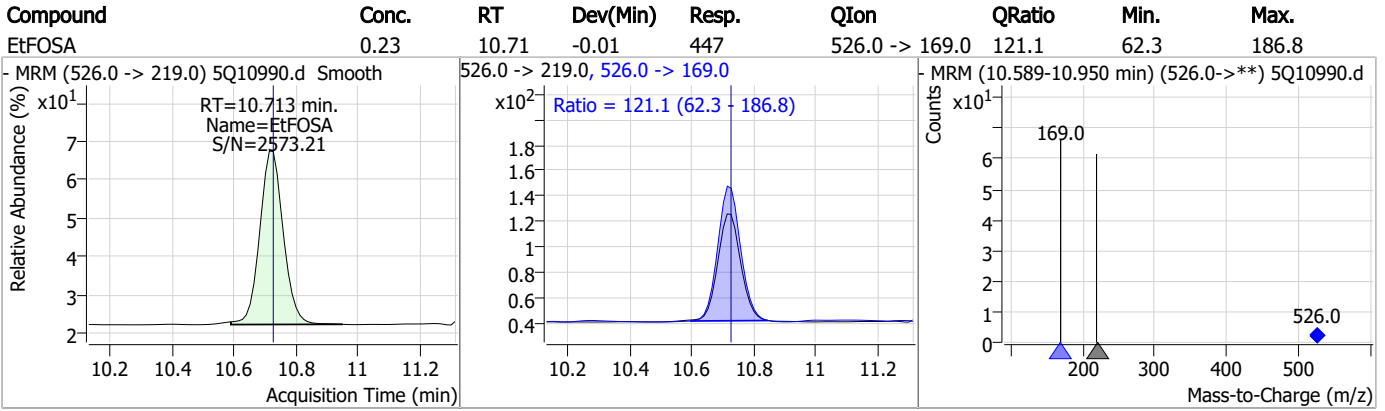


7.7.14

7



Perfluorinated Compounds by LC/MS/MS



7.7.14
7



Manual Integration Approval Summary

Sample Number: S5Q169-CC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q10990.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/17/23 08:02 **Supervisor approved:** 02/21/23 09:43 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.79	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
13C4-PFBA			2.80	Poor instrument integration
PFMPA	377-73-1		3.33	Poor instrument integration
3:3 Fluorotelomer carboxylate	356-02-5		3.60	Poor instrument integration
13C5-PFPeA			4.15	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.54	Poor instrument integration
NFDHA	151772-58-6		5.21	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.25	Poor instrument integration
13C3-PFBS			5.26	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.33	Poor instrument integration
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak

7.7.14.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11002.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 10:51:10 AM
 Sample Name : cc169-4
 Vial : P3-A5
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q169A.batch.bin
 Sample Information : OP95462,S5Q169,500,,,5.0,,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	44375	10.00	µg/L m	-0.012
M5-PFPeA	4.150	268.3 -> 223.0	29103	5.00	µg/L m	0.000
M5-PFHxA	5.323	318.0 -> 273.0	33967	2.50	µg/L	-0.012
M4-PFHpA	6.268	367.1 -> 322.0	31710	2.50	µg/L	-0.012
M8-PFOA	6.937	421.1 -> 376.0	39670	2.50	µg/L	-0.012
M9-PFNA	7.507	472.1 -> 427.0	13675	1.25	µg/L	-0.025
M6-PFDA	8.029	519.1 -> 474.1	8655	1.25	µg/L	-0.038
M7-PFUnDA	8.548	570.0 -> 525.1	9044	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	9987	1.25	µg/L	-0.037
M2-PFTeDA	9.849	715.2 -> 670.0	9503	1.25	µg/L	-0.050
M8-FOSA	9.174	506.1 -> 77.8	8608	2.50	µg/L	-0.013
M3-PFBS	5.264	302.1 -> 79.9	7323	2.50	µg/L m	-0.013
M3-PFHxS	7.066	402.1 -> 79.9	7060	2.50	µg/L	-0.025
M8-PFOS	8.218	507.1 -> 79.9	9121	2.50	µg/L	-0.038
M2-4:2FTS	4.984	329.1 -> 80.9	610	5.00	µg/L	-0.012
M2-6:2FTS	6.687	429.1 -> 80.9	1427	5.00	µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	1951	5.00	µg/L	-0.037
M3-MeFOSAA	8.063	573.2 -> 419.0	10038	5.00	µg/L	-0.025
M3-HFPO-DA	5.702	286.9 -> 168.9	75492	10.00	µg/L	-0.012
M5-EtFOSAA	8.285	589.2 -> 419.0	13308	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	40956	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	48613	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5845	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4315	2.50	µg/L	0.000
13C4-PFOS	8.219	502.8 -> 79.9	8718	2.50	µg/L	-0.037
13C3-PFBA	2.791	216.0 -> 172.0	23002	5.00	µg/L m	-0.013
18O2-PFHxS	7.065	403.0 -> 83.9	4746	2.50	µg/L	-0.026
13C4-PFOA	6.938	417.1 -> 372.0	48048	2.50	µg/L	-0.012
13C2-PFDA	8.029	515.1 -> 470.1	13726	1.25	µg/L	-0.038
13C5-PFNA	7.496	468.0 -> 423.0	13263	1.25	µg/L	-0.037
13C2-PFHxA	5.324	315.1 -> 270.0	38531	2.50	µg/L	-0.012
System Monitoring Compounds						
13C2-4:2FTS	4.984	329.1 -> 80.9	610	5.28	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.7%			
13C2-6:2FTS	6.687	429.1 -> 80.9	1427	5.54	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.9%			
13C2-8:2FTS	7.791	529.1 -> 80.9	1951	5.41	µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.2%			
13C2-PFDoDA	9.016	615.1 -> 570.0	9987	1.17	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.4%			
13C2-PFTeDA	9.849	715.2 -> 670.0	9503	1.18	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%			
13C3-PFBS	5.264	302.1 -> 79.9	7323	2.01	µg/L m	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.2%			
13C3-PFHxS	7.066	402.1 -> 79.9	7060	2.60	µg/L	-0.025

7.7.15
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C4-PFBA	2.786	216.8 -> 171.9	44375	10.23	µg/L	m -0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%		
13C4-PFHpA	6.268	367.1 -> 322.0	31710	2.48	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C5-PFHxA	5.323	318.0 -> 273.0	33967	2.51	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C5-PFPeA	4.150	268.3 -> 223.0	29103	4.15	µg/L	m 0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 83.1%		
13C6-PFDA	8.029	519.1 -> 474.1	8655	1.22	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.6%		
13C7-PFUnDA	8.548	570.0 -> 525.1	9044	1.17	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C8-FOSA	9.174	506.1 -> 77.8	8608	2.52	µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%		
13C8-PFOA	6.937	421.1 -> 376.0	39670	2.45	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%		
13C8-PFOS	8.218	507.1 -> 79.9	9121	2.66	µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.3%		
13C9-PFNA	7.507	472.1 -> 427.0	13675	1.26	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.9%		
d3-MeFOSAA	8.063	573.2 -> 419.0	10038	5.20	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
13C3-HFPO-DA	5.702	286.9 -> 168.9	75492	10.56	µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.6%		
d3-MeFOSA	10.416	515.0 -> 219.0	4315	2.46	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%		
d5-EtFOSAA	8.285	589.2 -> 419.0	13308	4.66	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.2%		
d7-MeFOSE	10.315	623.2 -> 58.9	40956	25.53	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
d9-EtFOSE	10.623	639.2 -> 58.9	48613	24.72	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.9%		
d5-EtFOSA	10.712	531.1 -> 219.0	5845	2.41	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.6%		
Target Compounds						QValue
4:2FTS	4.985	327.1 -> 307.0	7206	9.38	µg/L	99
		327.1 -> 80.9	4033			
6:2FTS	6.687	427.1 -> 407.0	10534	8.84	µg/L	100
		427.1 -> 80.9	4423			
8:2FTS	7.792	527.1 -> 507.0	6967	7.54	µg/L	97
		527.1 -> 80.8	3678			
EtFOSAA	8.286	584.2 -> 419.1	4549	2.61	µg/L	m 95
		584.2 -> 526.0	1941			
FOSA	9.177	498.1 -> 77.9	7561	2.40	µg/L	99
		498.1 -> 478.0	282			
MeFOSAA	8.064	570.1 -> 419.0	3912	2.30	µg/L	m 88
		570.1 -> 483.0	1065			
PFBA	2.795	212.8 -> 168.9	17010	9.68	µg/L	m 100
PFBS	5.265	298.7 -> 79.9	5241	2.18	µg/L	m 99
		298.7 -> 98.8	2184			
PFDA	8.030	512.9 -> 469.0	20647	2.28	µg/L	99
		512.9 -> 219.0	3646			
PFDODA	9.017	613.1 -> 569.0	15992	2.36	µg/L	99
		613.1 -> 319.0	2478			
PFDS	9.207	599.0 -> 79.9	4315	2.14	µg/L	97

7.7.15
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2324			
PFHpA	6.268	363.1 -> 319.0	30915	2.31	µg/L	99
		363.1 -> 169.0	6905			
PFHpS	7.660	449.0 -> 79.9	5414	2.09	µg/L	92
		449.0 -> 98.9	2934			
PFHxA	5.325	313.0 -> 269.0	23003	2.31	µg/L	100
		313.0 -> 118.9	1057			
PFHxS	7.067	398.7 -> 79.9	4853	2.04	µg/L	m 78
		398.7 -> 98.9	2624			
PFNA	7.508	463.0 -> 419.0	18019	2.27	µg/L	98
		463.0 -> 219.0	4063			
PFNS	8.736	548.8 -> 79.9	4247	2.12	µg/L	99
		548.8 -> 98.9	2616			
PFOA	6.939	413.0 -> 369.0	34483	2.26	µg/L	96
		413.0 -> 169.0	8533			
PFOS	8.219	498.9 -> 79.9	7865	2.14	µg/L	m 88
		498.9 -> 98.8	4319			
PFPeA	4.152	263.0 -> 219.0	30723	4.83	µg/L	m 100
PFPeS	6.332	349.1 -> 79.9	4011	1.95	µg/L	m 94
		349.1 -> 98.9	2198			
PFTeDA	9.850	713.1 -> 669.0	17137	2.35	µg/L	99
		713.1 -> 168.9	2363			
PFTrDA	9.451	663.0 -> 619.0	20576	2.30	µg/L	98
		663.0 -> 168.9	3621			
PFUnDA	8.548	563.1 -> 519.0	16316	2.42	µg/L	100
		563.1 -> 269.1	3321			
11CI-PF3OUdS	9.516	630.9 -> 450.9	64328	7.74	µg/L	99
		632.9 -> 452.9	20235			
9CI-PF3ONS	8.588	530.8 -> 351.0	69040	7.78	µg/L	99
		532.8 -> 353.0	22156			
ADONA	6.530	376.9 -> 250.9	171627	8.31	µg/L	99
		376.9 -> 84.8	50511			
HFPO-DA	5.703	284.9 -> 168.9	62568	10.10	µg/L	98
		284.9 -> 184.9	5389			
3:3FTCA	3.603	241.0 -> 177.0	6180	13.17	µg/L	99
		241.0 -> 117.0	777			
5:3FTCA	5.906	341.0 -> 237.1	103639	50.31	µg/L	98
		341.0 -> 217.0	71543			
7:3FTCA	7.323	441.0 -> 316.9	41334	50.12	µg/L	99
		441.0 -> 336.9	89470			
EtFOSA	10.726	526.0 -> 219.0	4945	2.35	µg/L	99
		526.0 -> 169.0	6217			
EtFOSE	10.636	630.0 -> 58.9	44160	24.45	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	4068	2.39	µg/L	99
		511.9 -> 169.0	5237			
MeFOSE	10.327	616.1 -> 58.9	40758	23.30	µg/L	100
PFDoDS	10.013	699.1 -> 79.9	3531	2.23	µg/L	97
		699.1 -> 98.8	2068			
NFDHA	5.205	295.0 -> 201.0	3802	4.84	µg/L	95
		295.0 -> 84.9	1125			
PFMBA	4.553	279.0 -> 85.1	22292	4.76	µg/L	m 100
PFMPA	3.315	229.0 -> 84.9	15074	4.38	µg/L	m 100
PFEESA	5.809	314.8 -> 134.9	33768	3.22	µg/L	m 100
		314.8 -> 82.9	967			

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

7.7.15
7

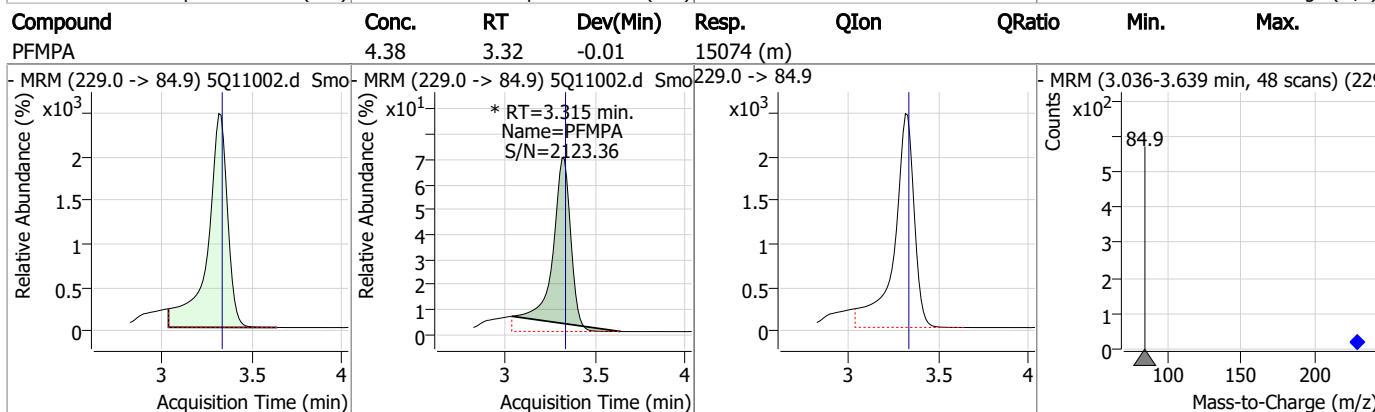
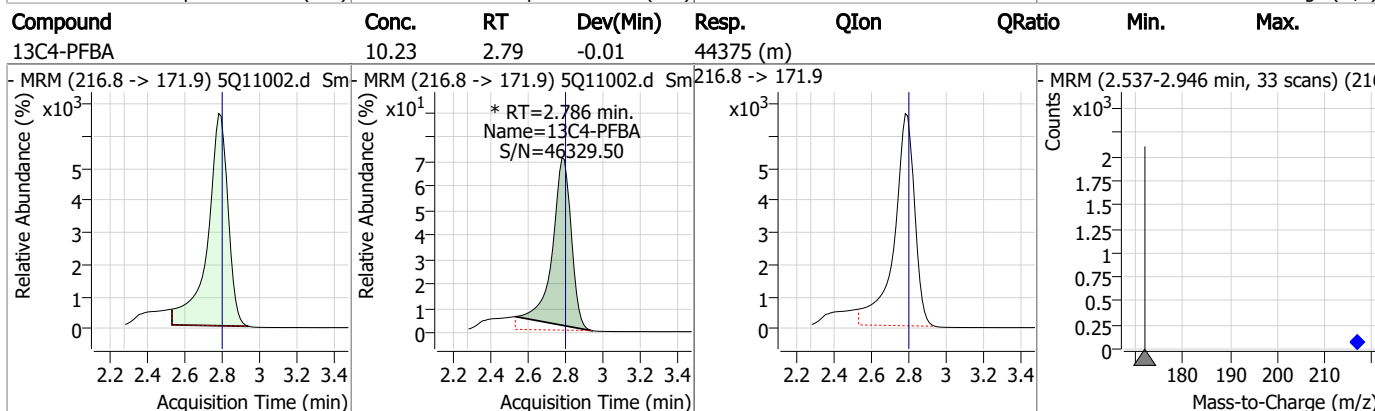
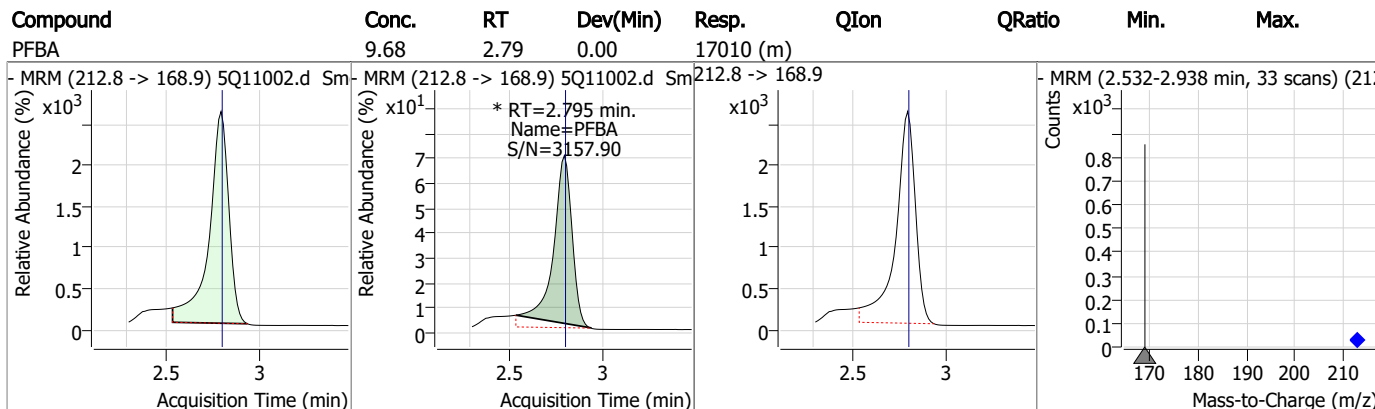
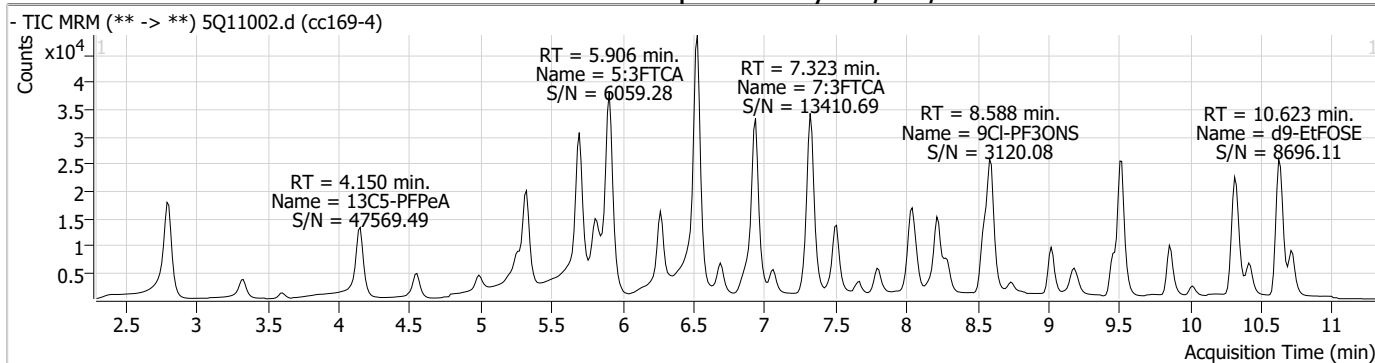
Perfluorinated Compounds by LC/MS/MS

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

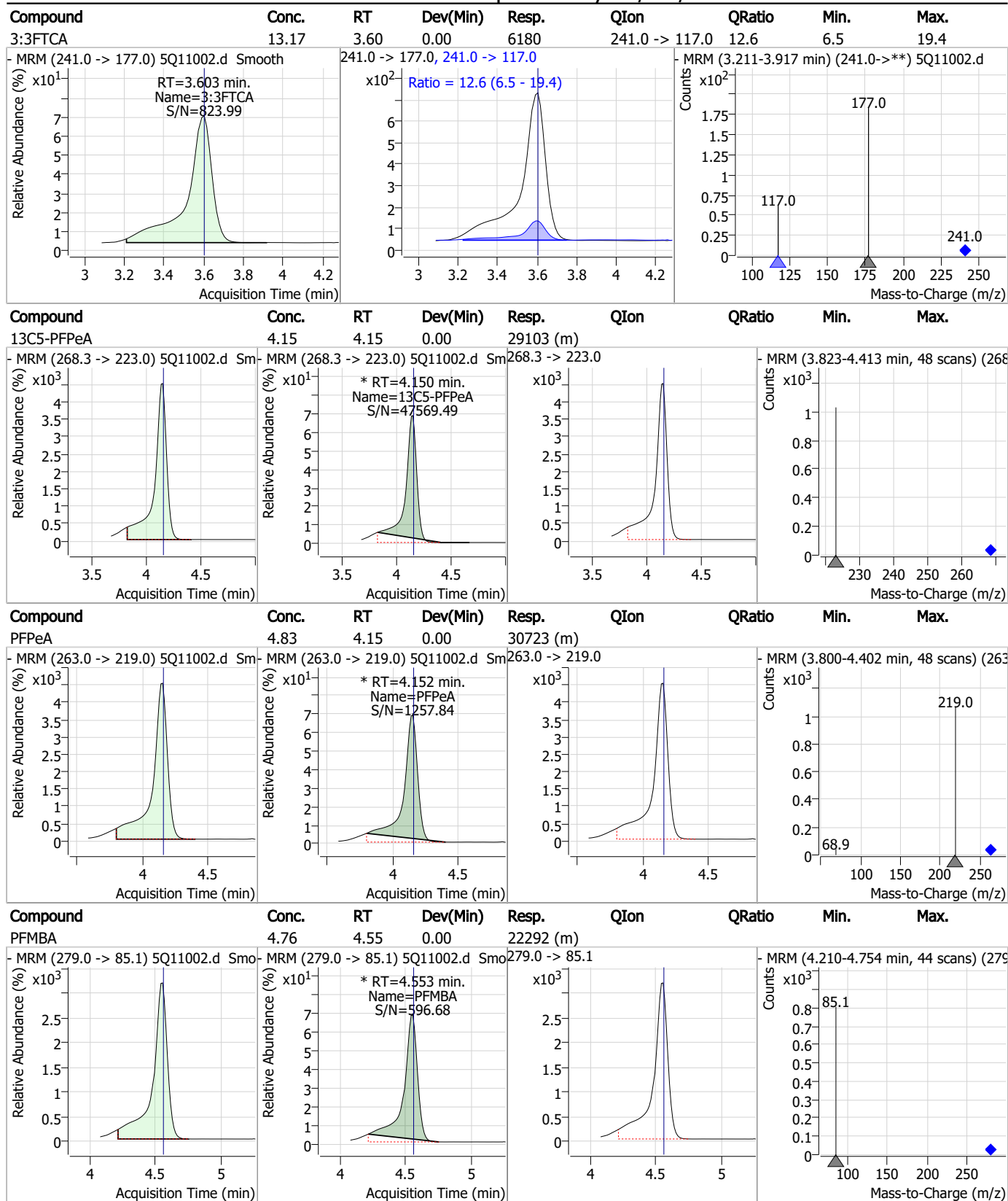
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Perfluorinated Compounds by LC/MS/MS



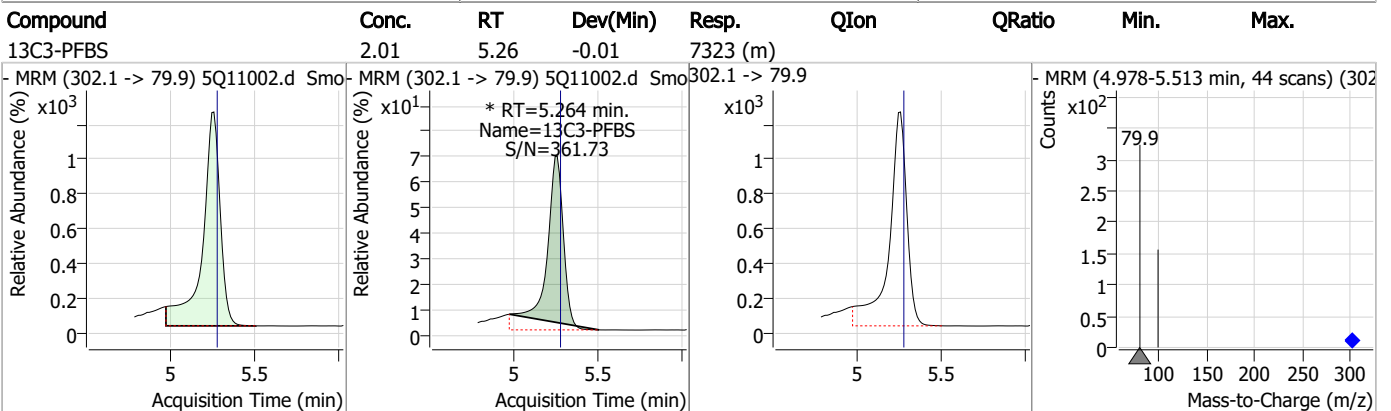
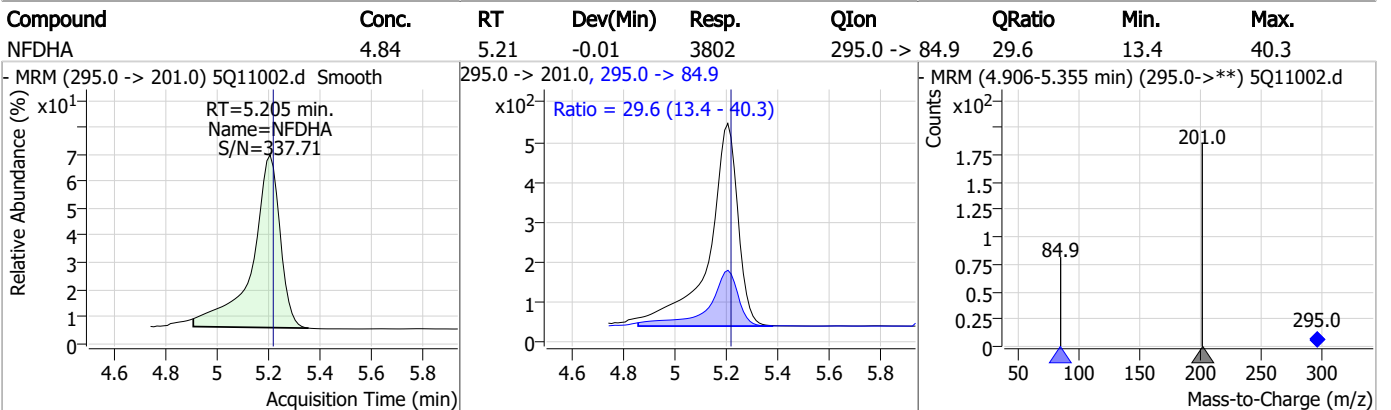
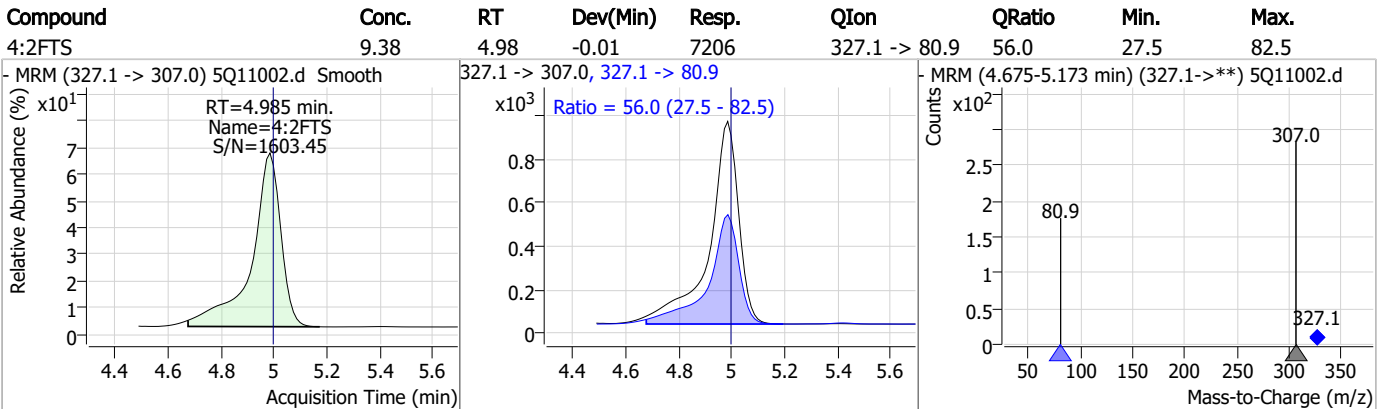
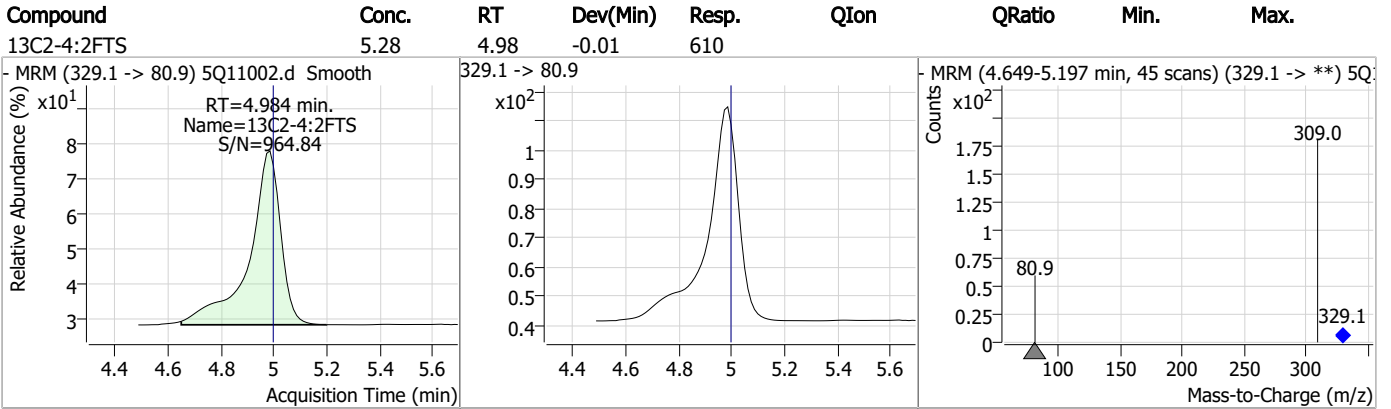
7.7.15
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Perfluorinated Compounds by LC/MS/MS



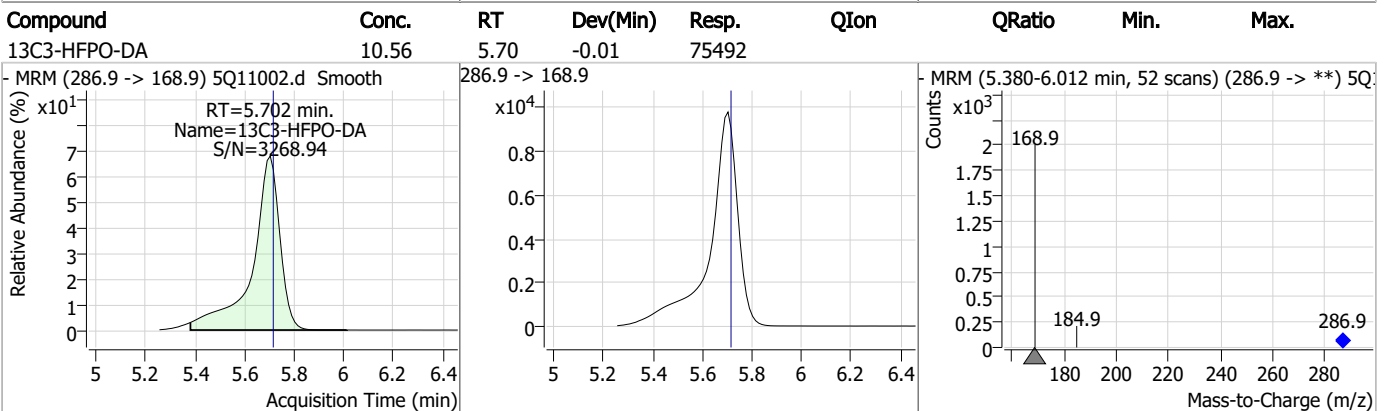
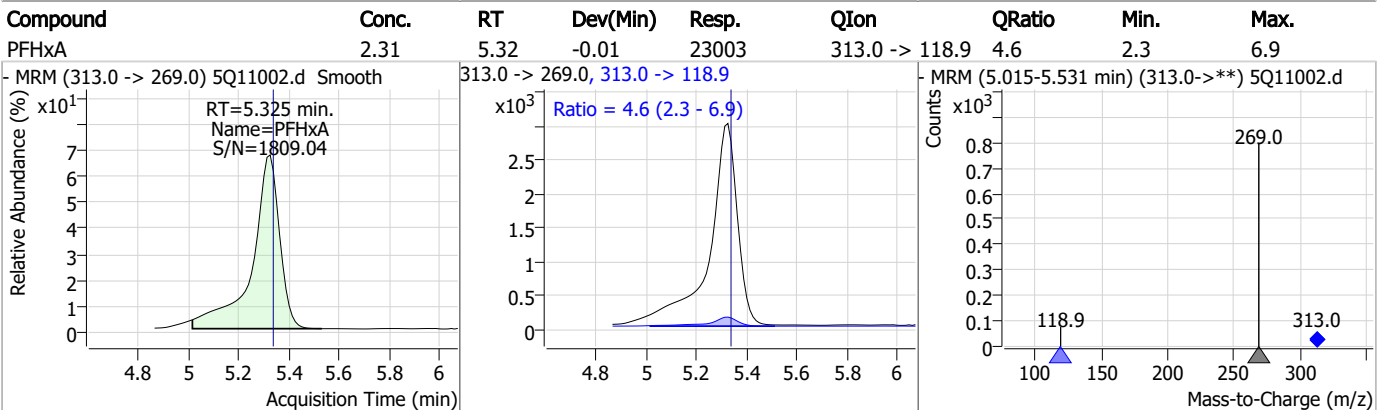
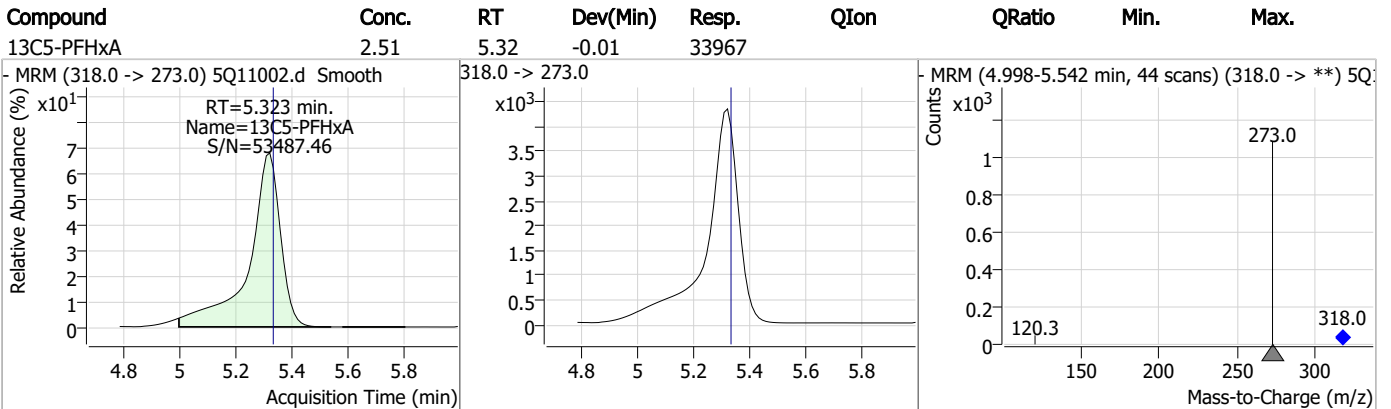
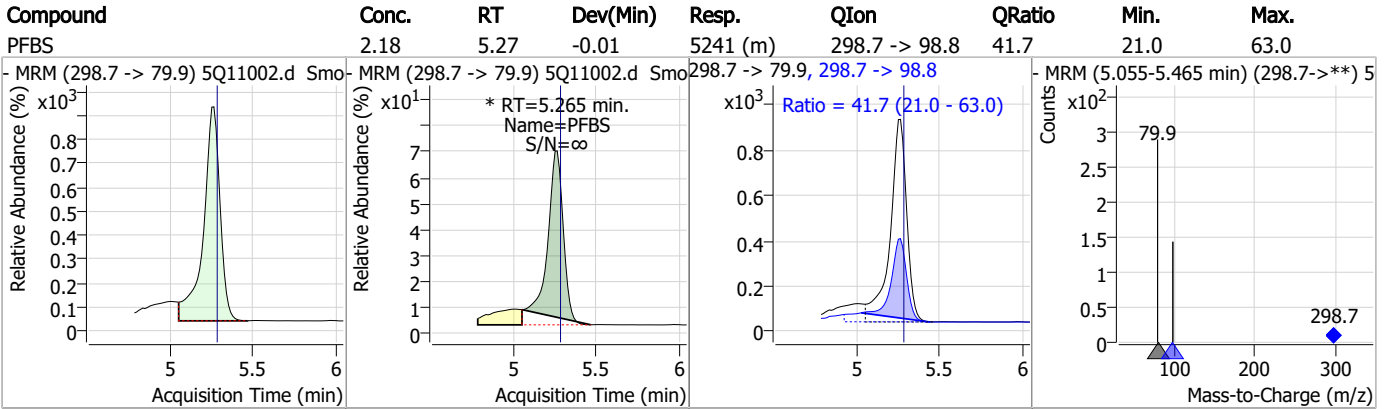
7.7.15

Perfluorinated Compounds by LC/MS/MS



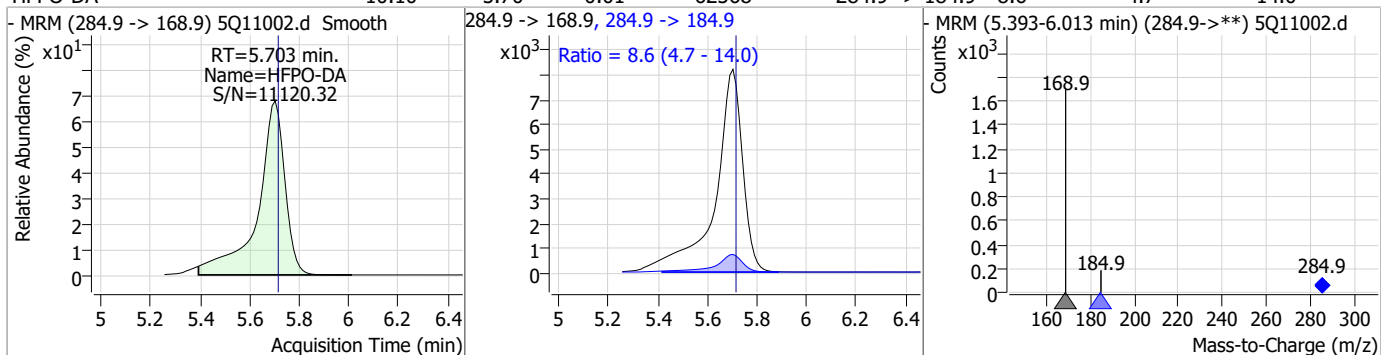
7.7.15
7

Perfluorinated Compounds by LC/MS/MS

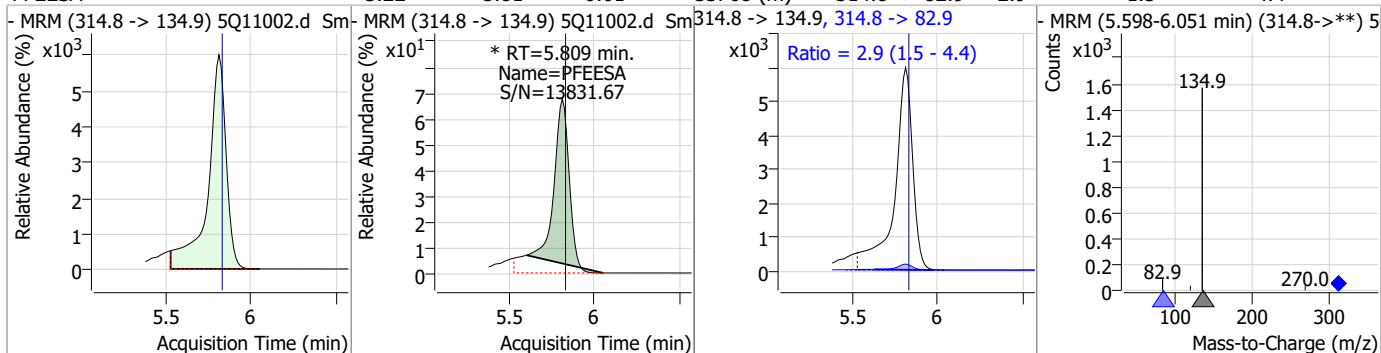


Perfluorinated Compounds by LC/MS/MS

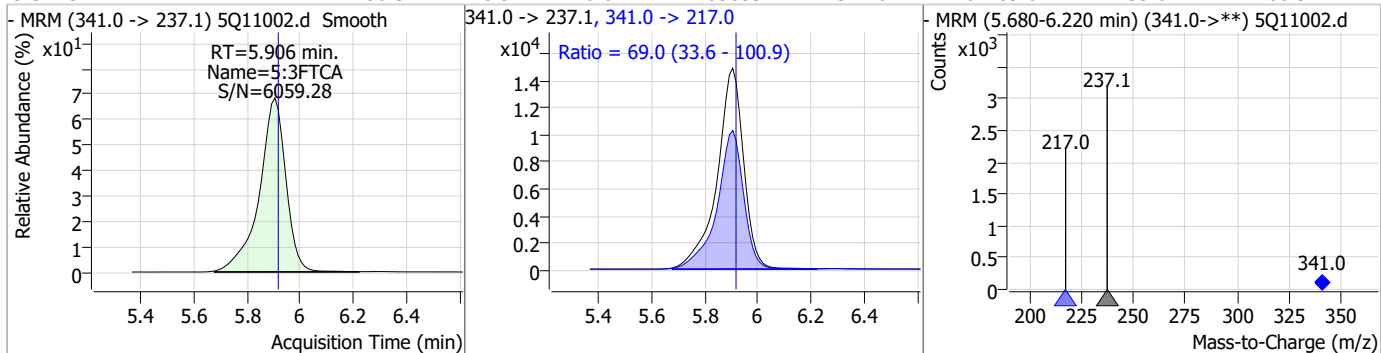
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	10.10	5.70	-0.01	62568	284.9 -> 184.9	8.6	4.7	14.0



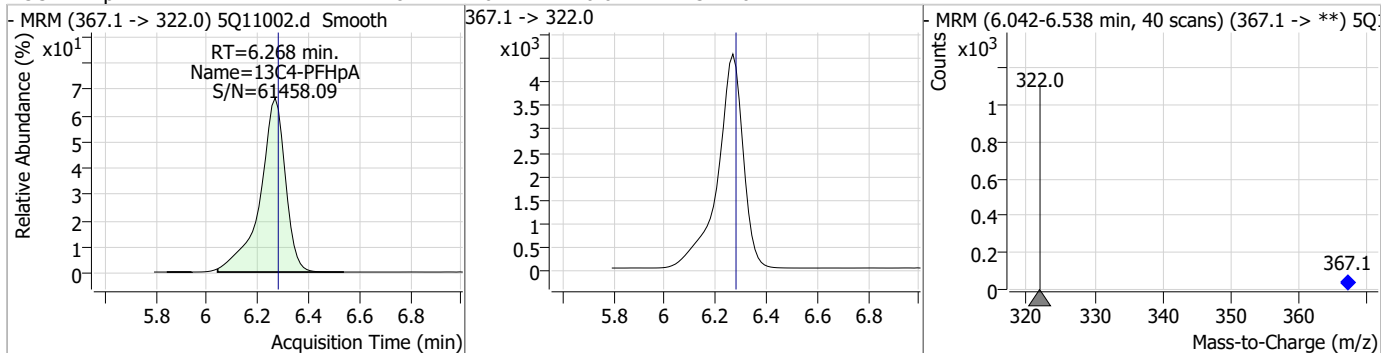
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	3.22	5.81	-0.01	33768 (m)	314.8 -> 82.9	2.9	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	50.31	5.91	-0.01	103639	341.0 -> 217.0	69.0	33.6	100.9

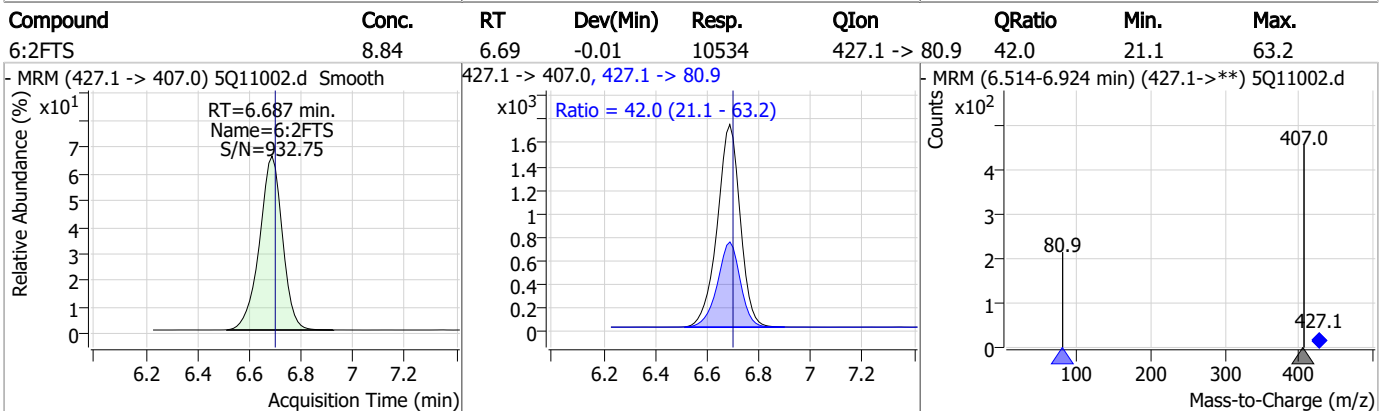
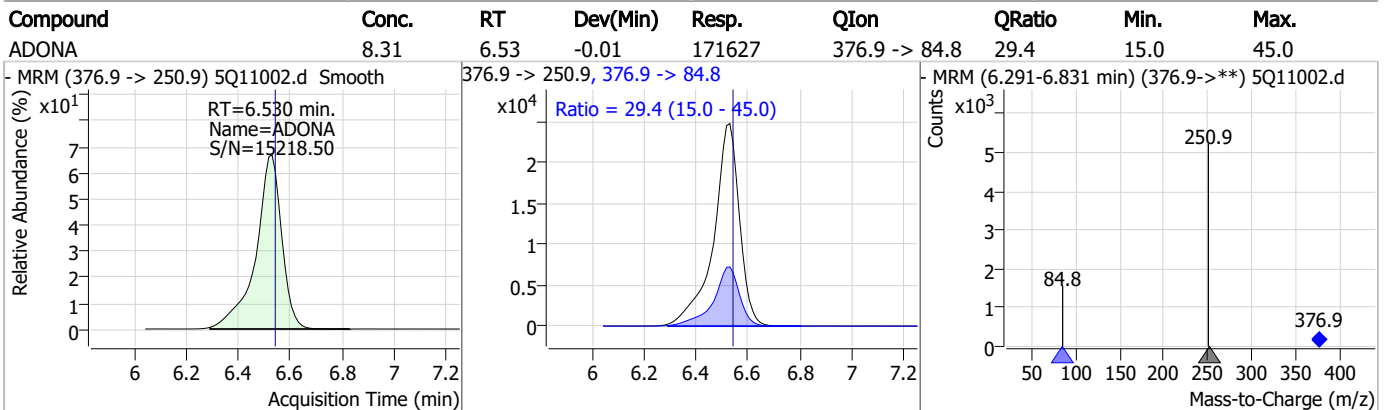
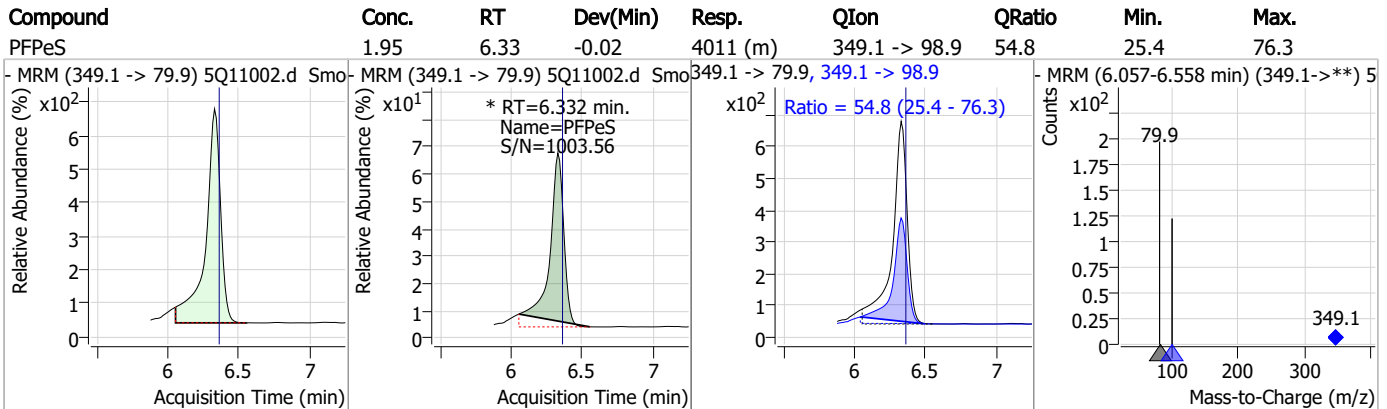
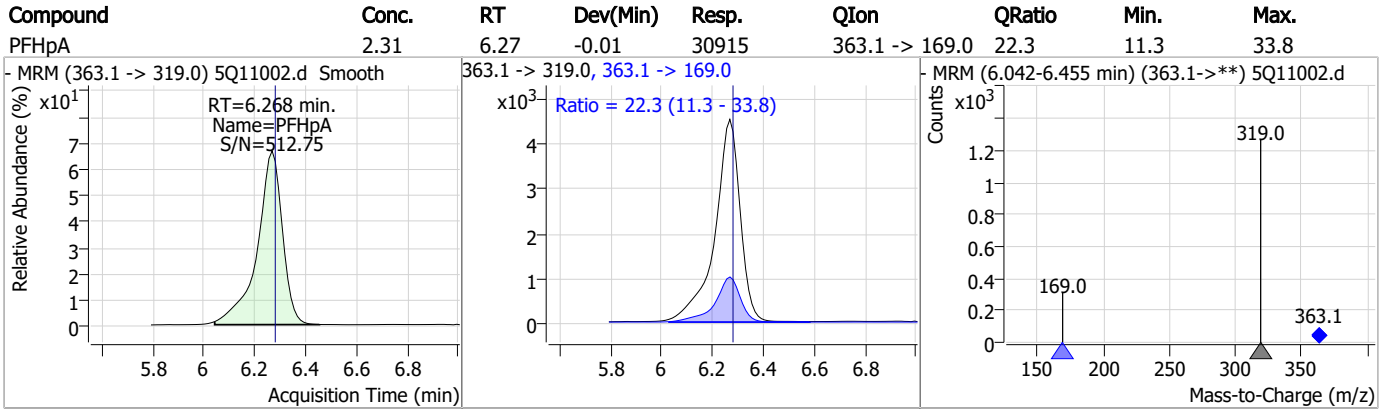


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.48	6.27	-0.01	31710				

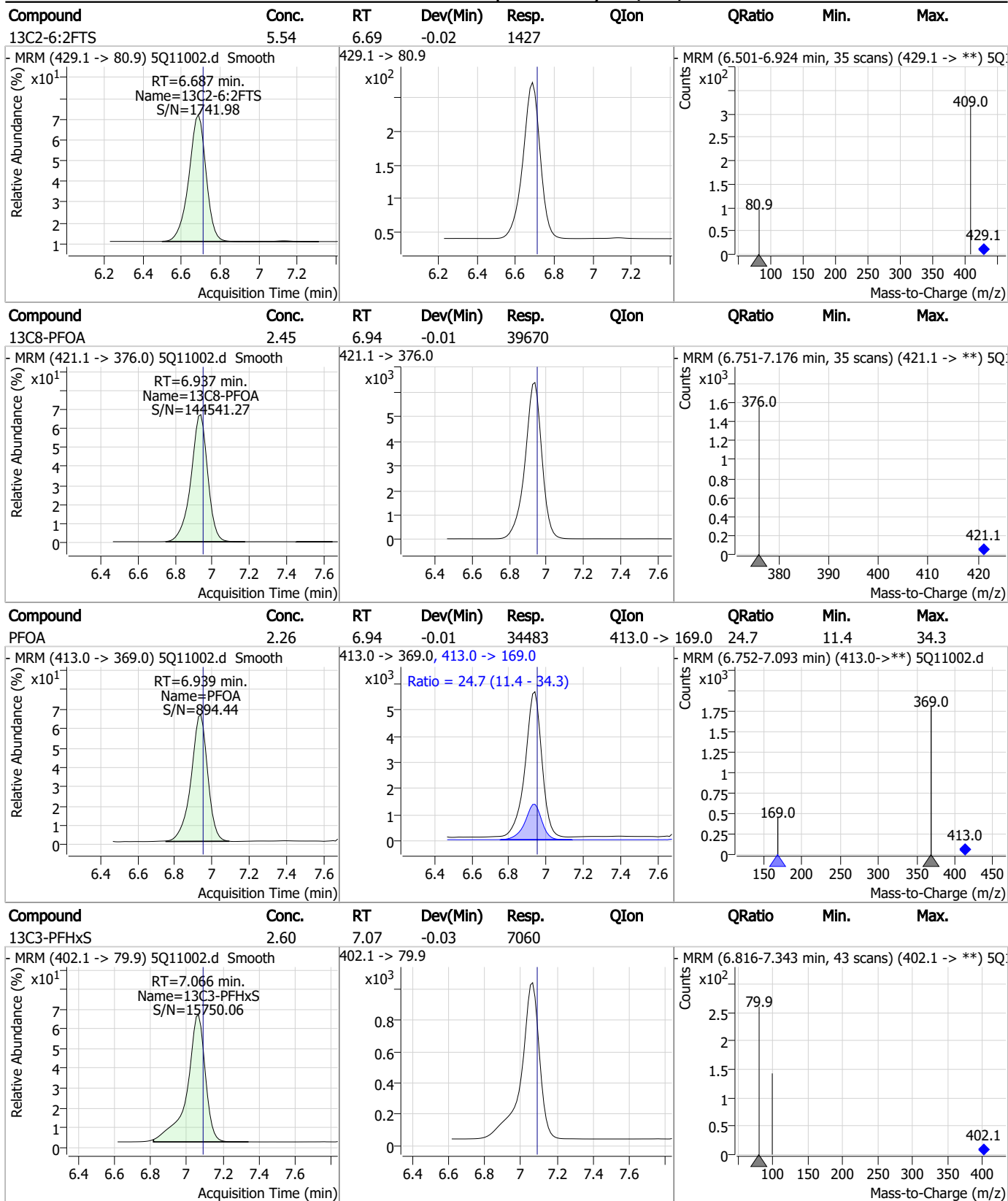


7.7.15
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Perfluorinated Compounds by LC/MS/MS



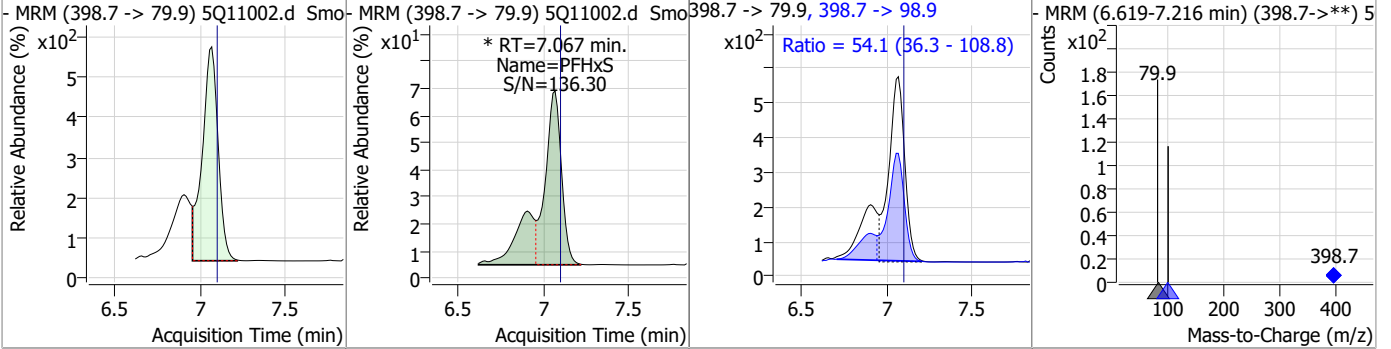
Perfluorinated Compounds by LC/MS/MS



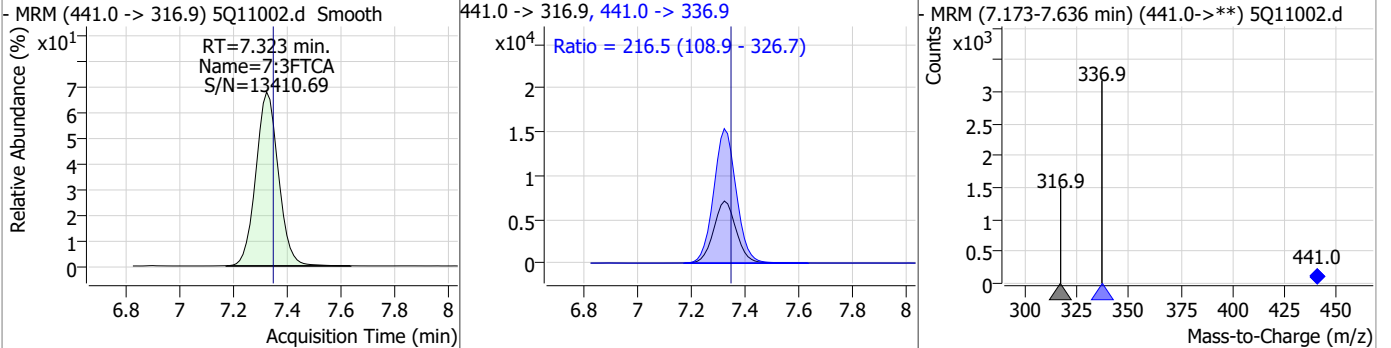
7.7.15
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Perfluorinated Compounds by LC/MS/MS

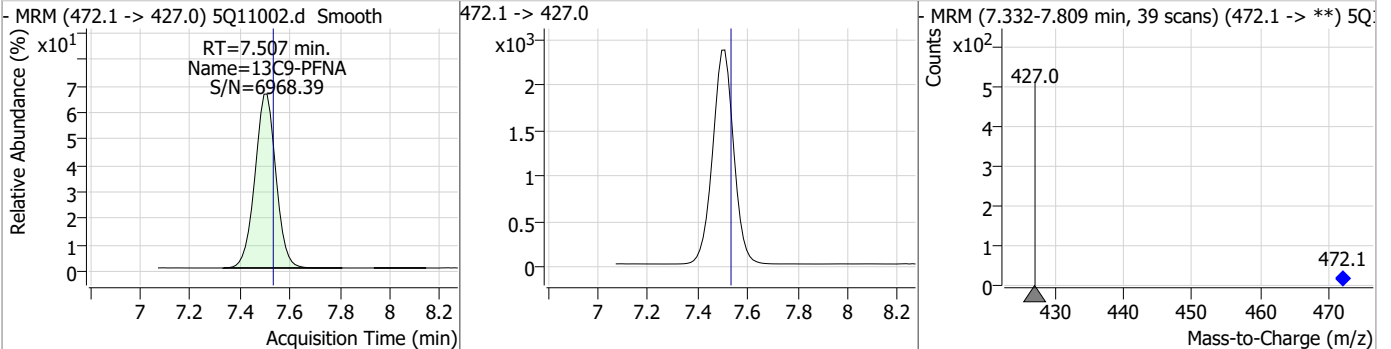
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.04	7.07	-0.03	4853 (m)	398.7 -> 98.9	54.1	36.3	108.8



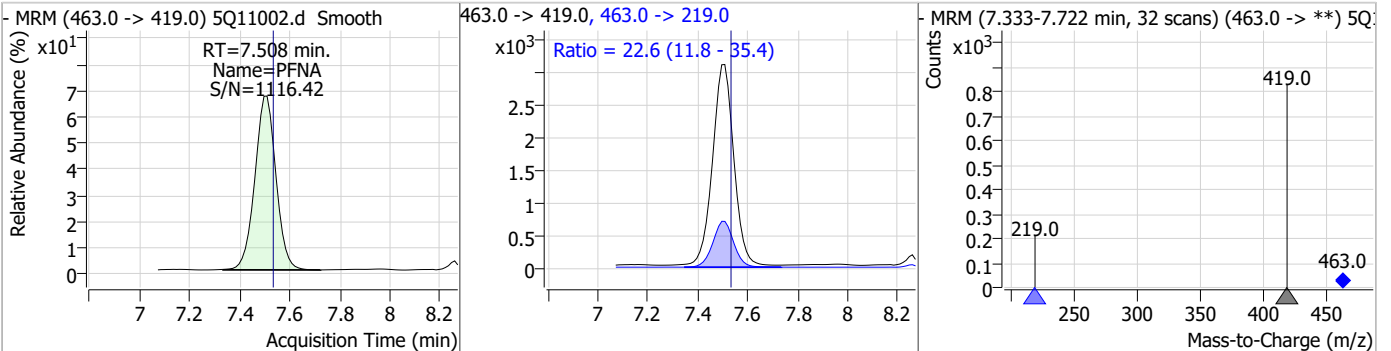
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	50.12	7.32	-0.02	41334	441.0 -> 336.9	216.5	108.9	326.7



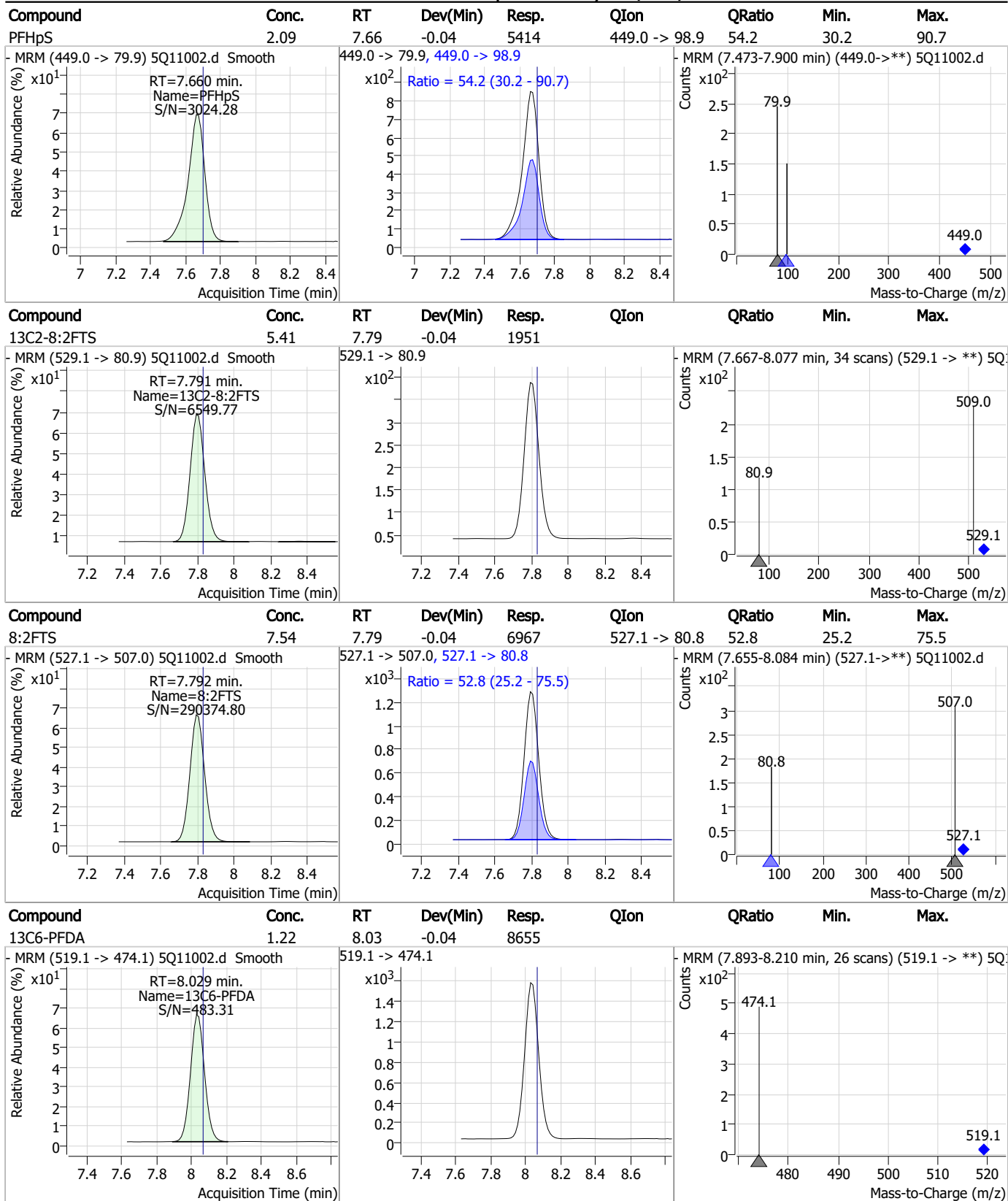
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.26	7.51	-0.02	13675	472.1 -> 427.0	22.6	11.8	35.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.27	7.51	-0.02	18019	463.0 -> 219.0	22.6	11.8	35.4

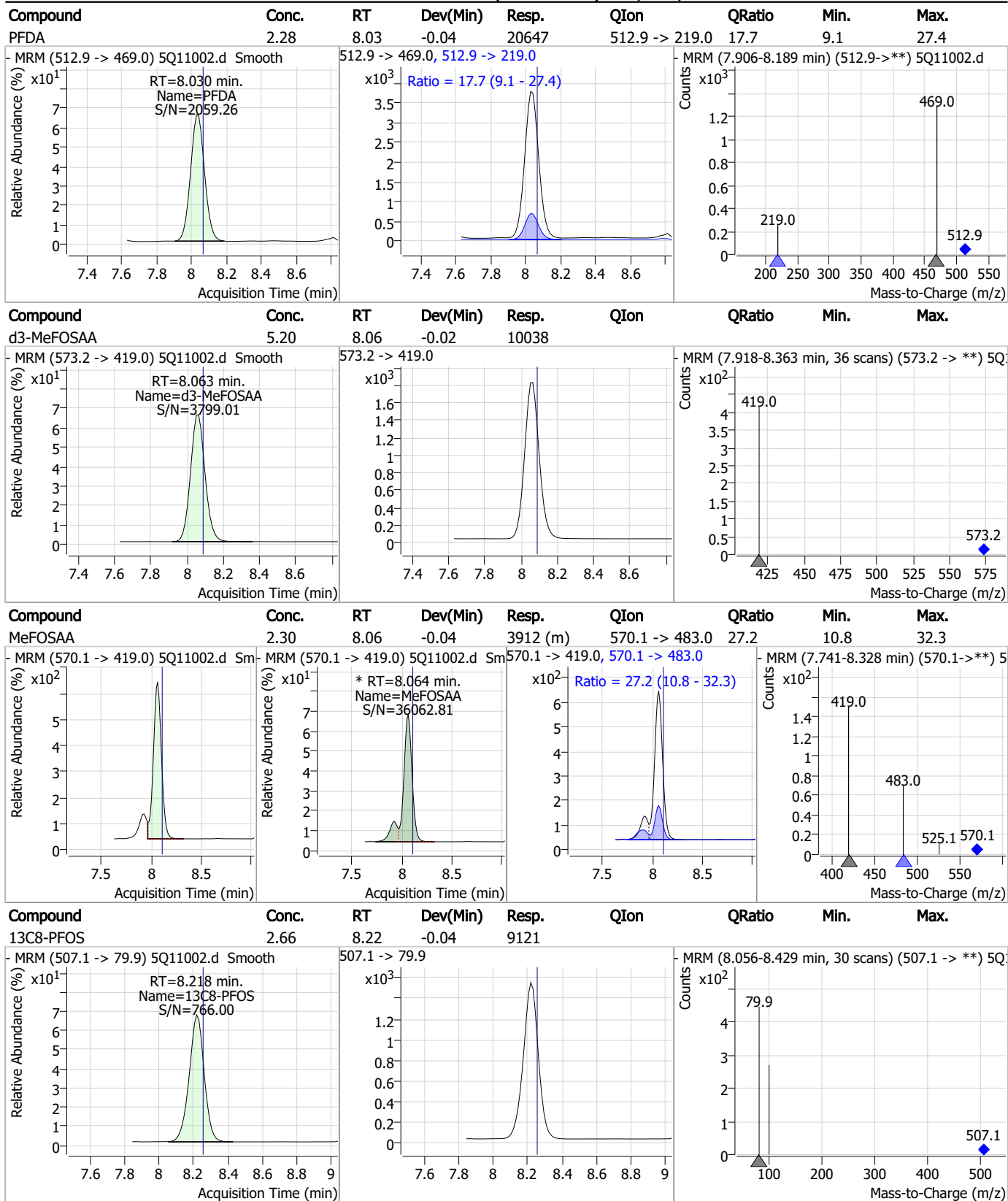


Perfluorinated Compounds by LC/MS/MS



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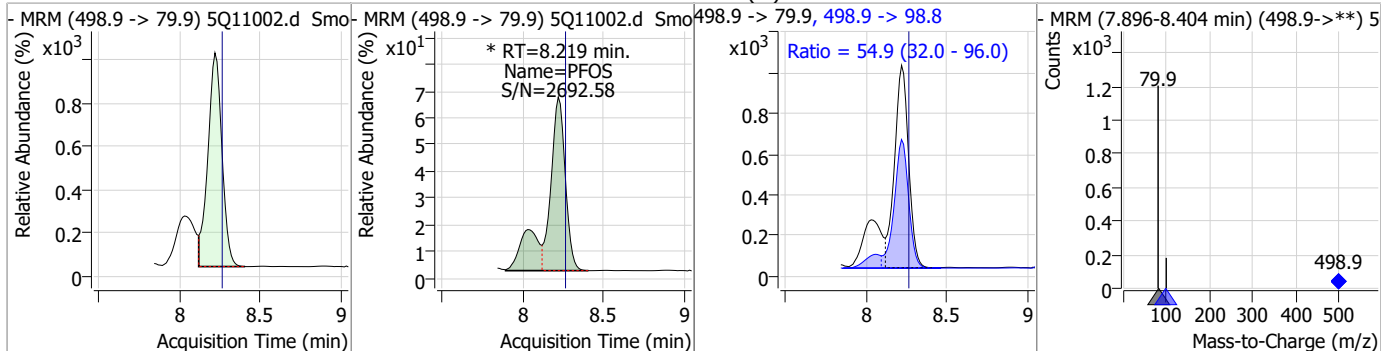
Perfluorinated Compounds by LC/MS/MS



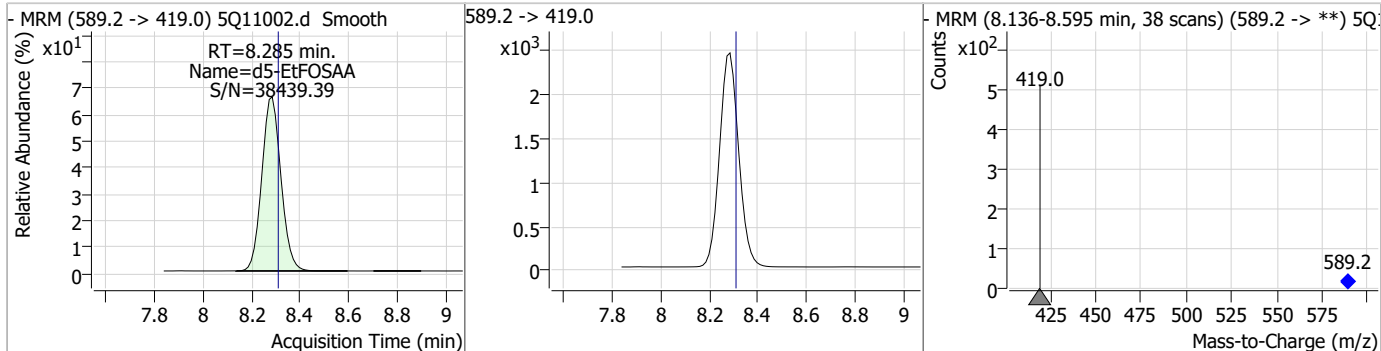
7.7.15
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Perfluorinated Compounds by LC/MS/MS

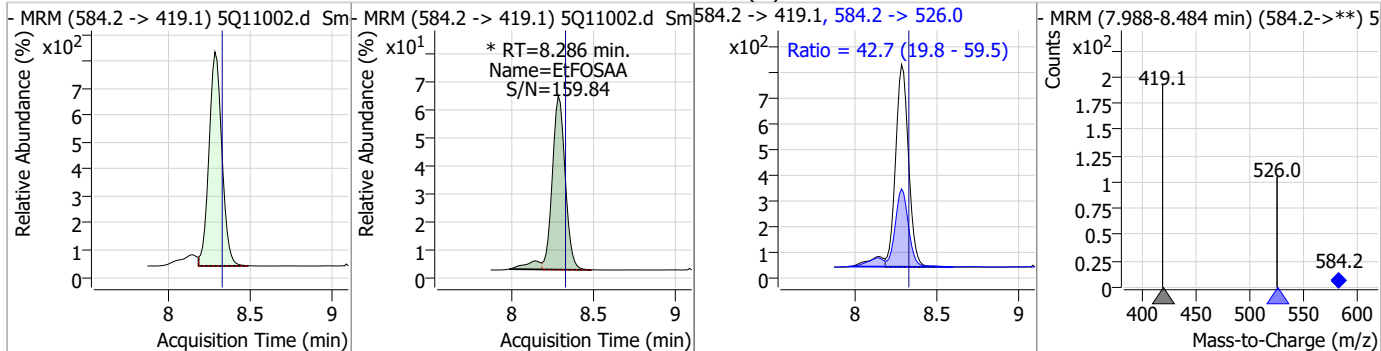
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.14	8.22	-0.04	7865 (m)	498.9 -> 98.8	54.9	32.0	96.0



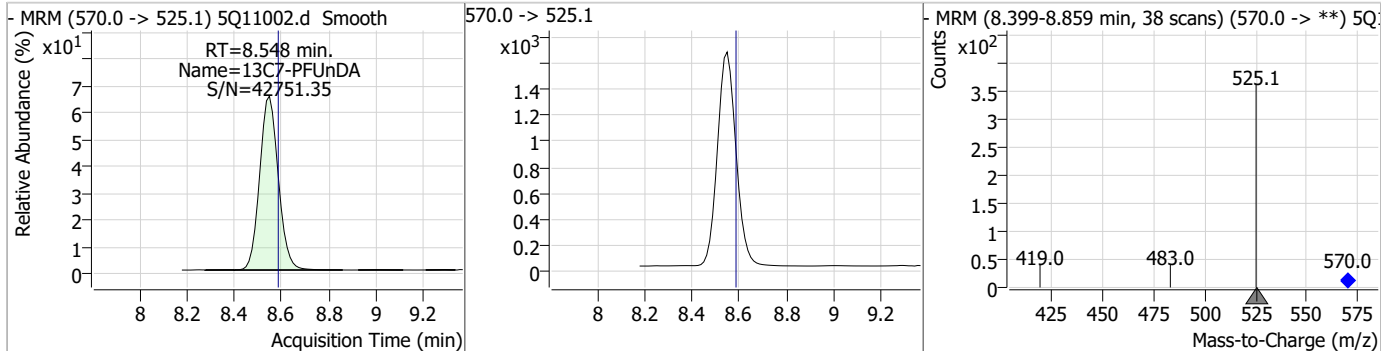
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.66	8.29	-0.02	13308				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.61	8.29	-0.04	4549 (m)	584.2 -> 526.0	42.7	19.8	59.5

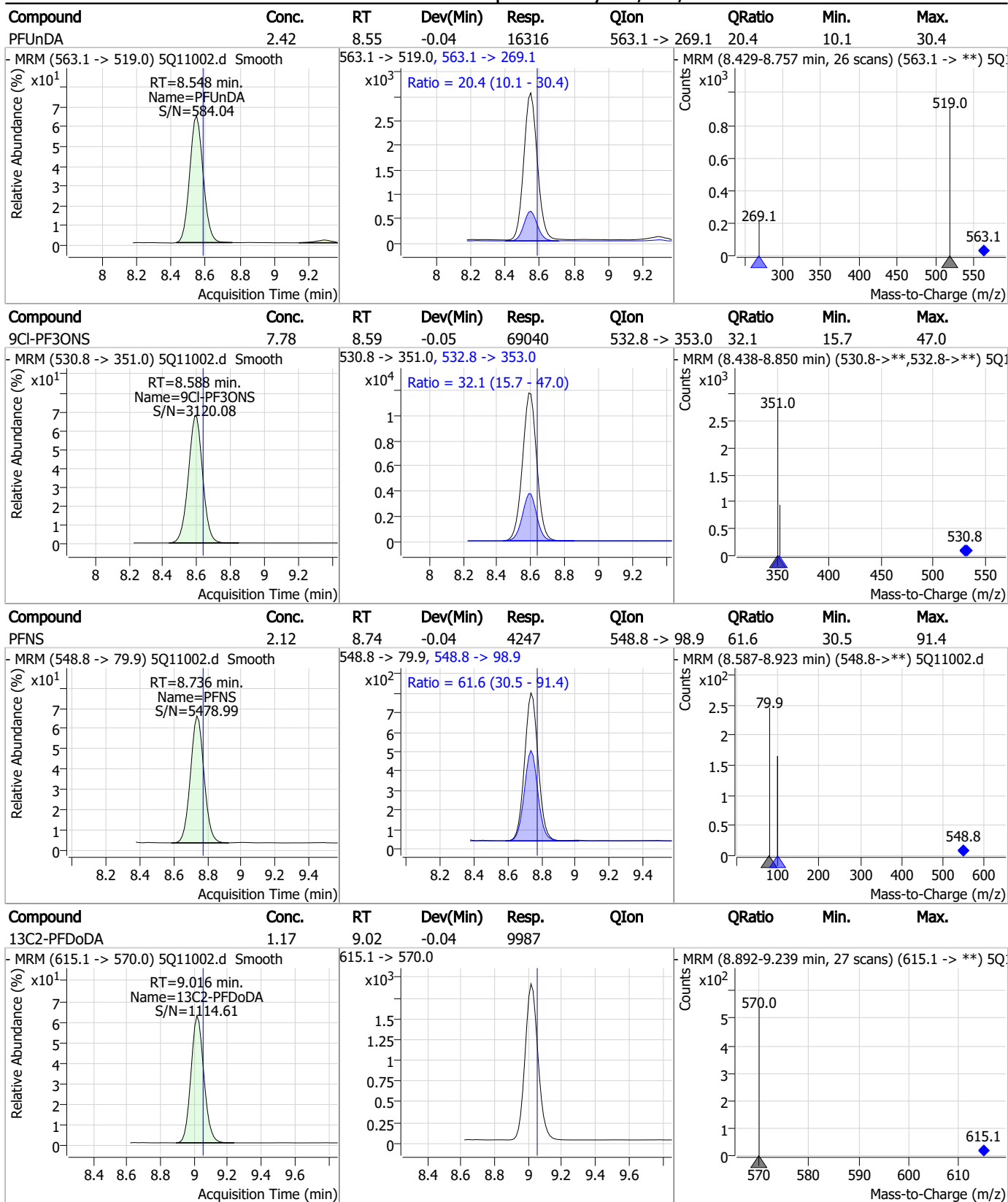


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.17	8.55	-0.04	9044				



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Perfluorinated Compounds by LC/MS/MS



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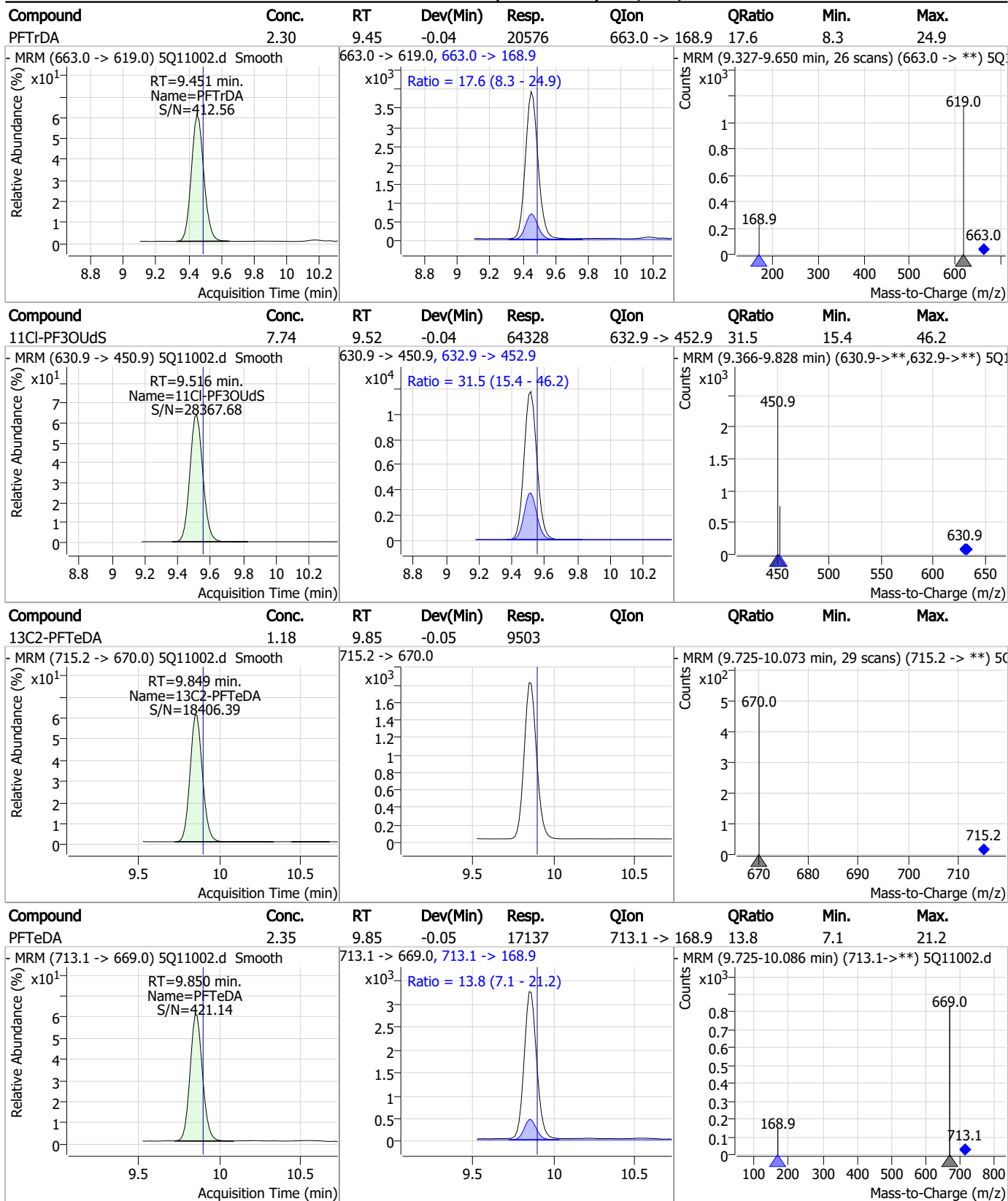
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDODA	2.36	9.02	-0.04	15992	613.1 -> 319.0	15.5	7.9	23.6
13C8-FOSA	2.52	9.17	-0.01	8608	506.1 -> 77.8	3.7	1.7	5.2
FOSA	2.40	9.18	-0.01	7561	498.1 -> 77.9	3.7	1.7	5.2
PFDS	2.14	9.21	-0.04	4315	599.0 -> 98.8	53.9	25.9	77.8

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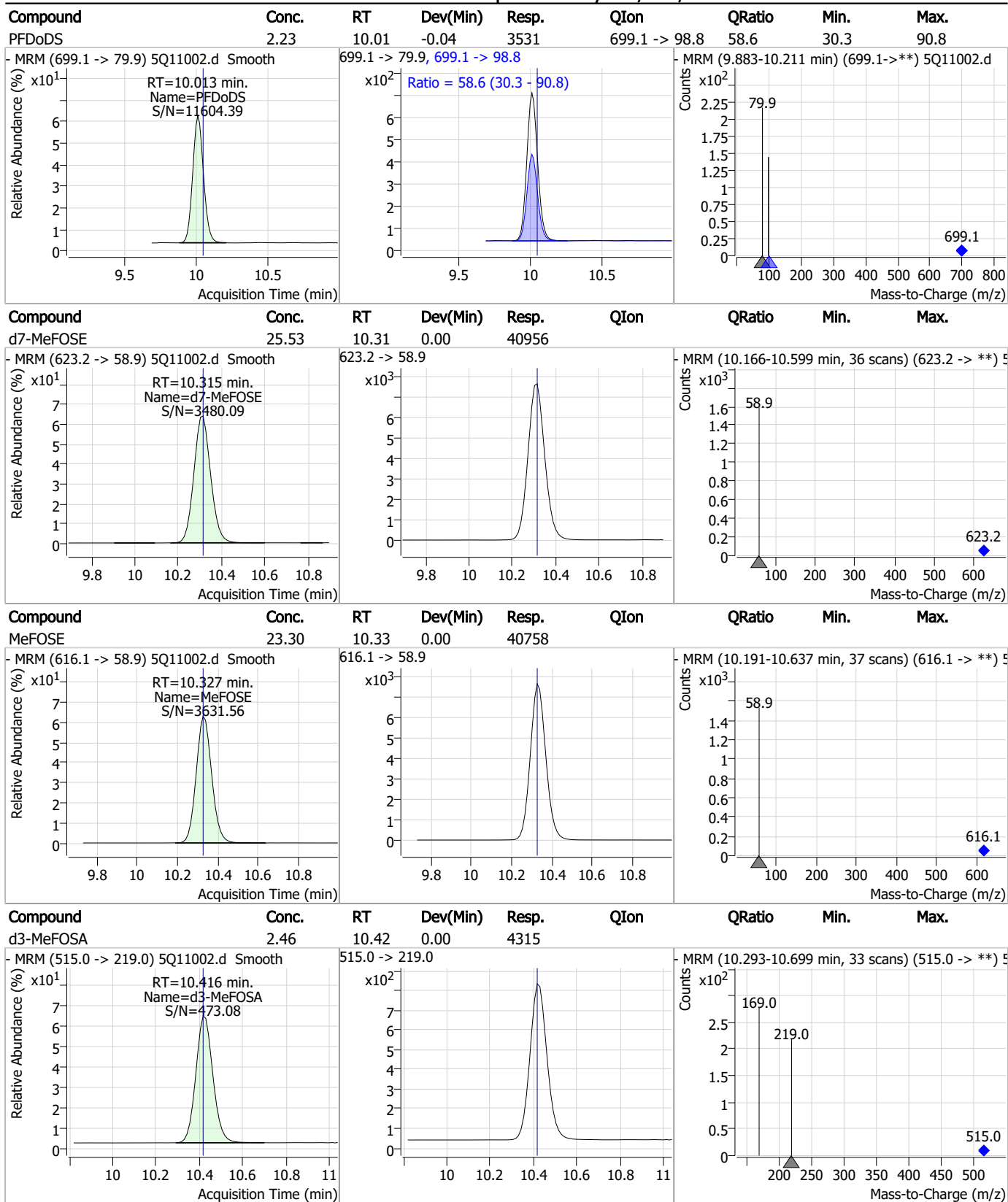
Perfluorinated Compounds by LC/MS/MS



7.7.15

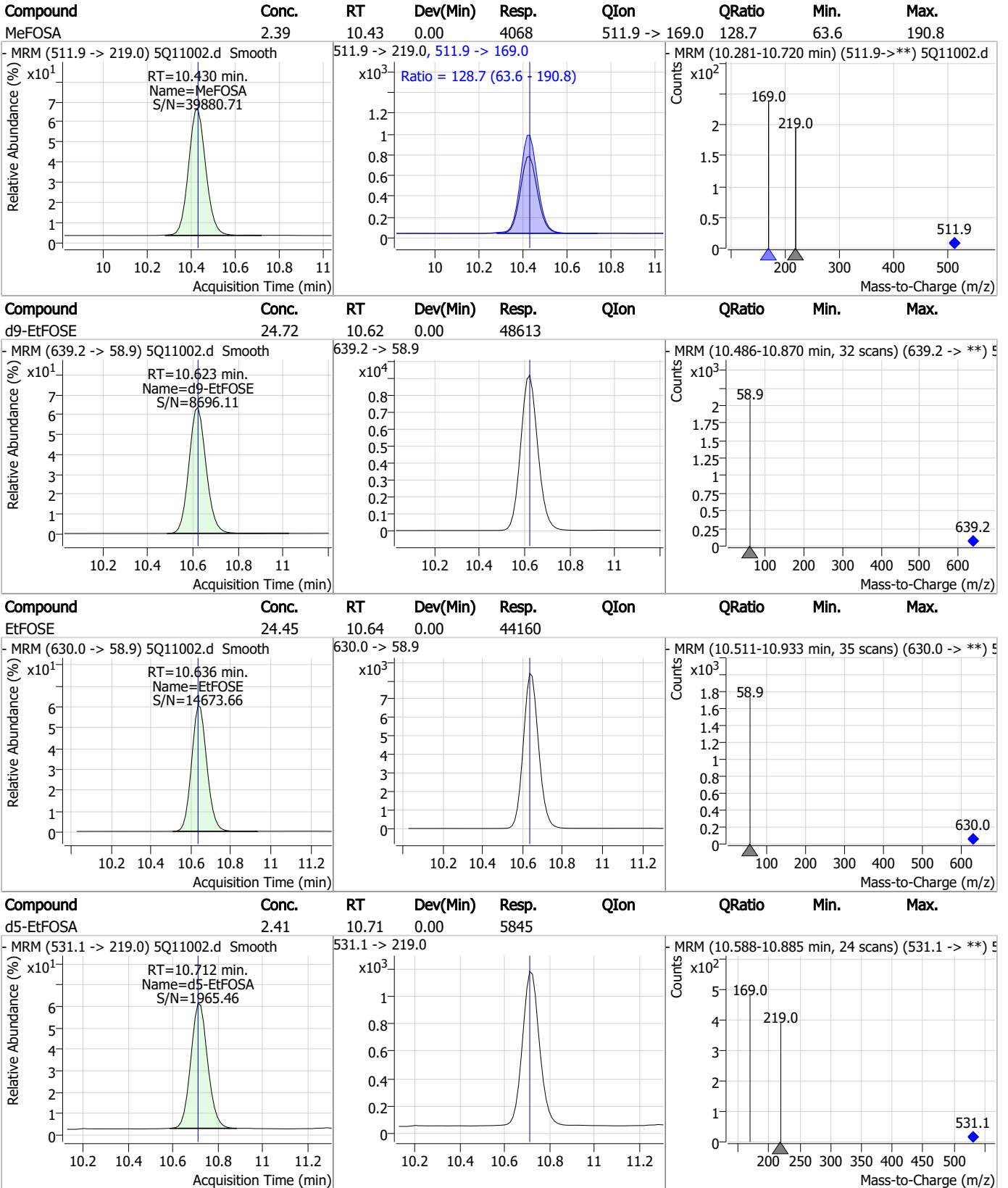


Perfluorinated Compounds by LC/MS/MS



7.7.15
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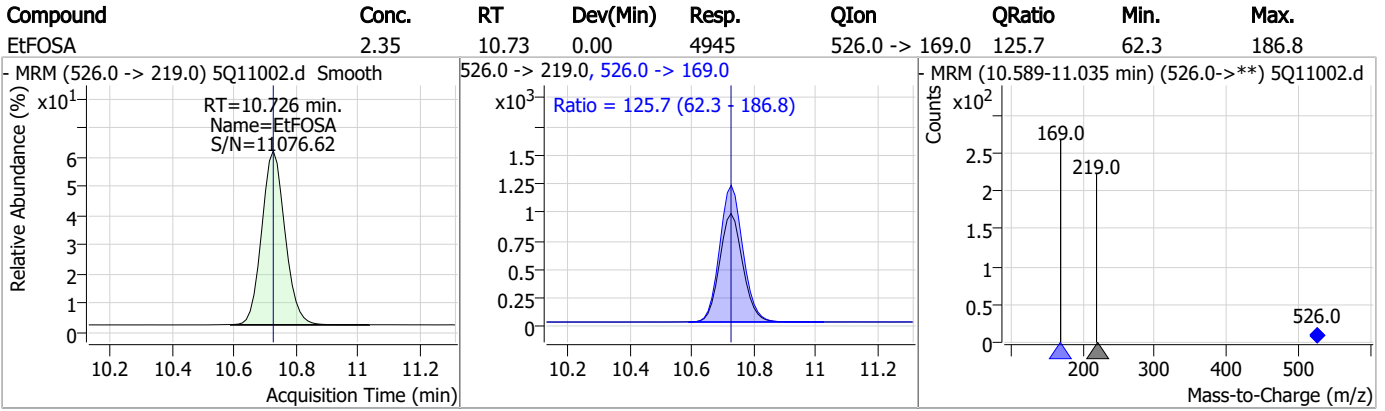
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S5Q169-CC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q11002.D **Analyst approved:** 02/20/23 13:33 Lindsay Ritner
Injection Time: 02/17/23 10:51 **Supervisor approved:** 02/21/23 09:50 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C4-PFBA			2.79	Poor instrument integration
13C3-PFBA			2.79	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.79	Poor instrument integration
PFMPA	377-73-1		3.31	Poor instrument integration
13C5-PFPeA			4.15	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.15	Poor instrument integration
PFMBA	863090-89-5		4.55	Poor instrument integration
13C3-PFBS			5.26	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.26	Poor instrument integration
PFEESA	113507-82-7		5.81	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.33	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.07	Split peak
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.29	Split peak

7.7.15.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11024.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 4:01:13 PM
 Sample Name : cc169-4
 Vial : P3-A5
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95462,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	45189	10.00	µg/L m	-0.012
M5-PFPeA	4.137	268.3 -> 223.0	28961	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	32678	2.50	µg/L	-0.025
M4-PFHpA	6.255	367.1 -> 322.0	31888	2.50	µg/L	-0.025
M8-PFOA	6.925	421.1 -> 376.0	37682	2.50	µg/L	-0.025
M9-PFNA	7.495	472.1 -> 427.0	13368	1.25	µg/L	-0.037
M6-PFDA	8.042	519.1 -> 474.1	8550	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	9177	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	9870	1.25	µg/L	-0.037
M2-PFTeDA	9.837	715.2 -> 670.0	9036	1.25	µg/L	-0.062
M8-FOSA	9.174	506.1 -> 77.8	8402	2.50	µg/L	-0.013
M3-PFBS	5.241	302.1 -> 79.9	7777	2.50	µg/L m	-0.036
M3-PFHxS	7.054	402.1 -> 79.9	6546	2.50	µg/L	-0.038
M8-PFOS	8.218	507.1 -> 79.9	8854	2.50	µg/L	-0.038
M2-4:2FTS	4.972	329.1 -> 80.9	424	5.00	µg/L	-0.025
M2-6:2FTS	6.675	429.1 -> 80.9	1127	5.00	µg/L	-0.037
M2-8:2FTS	7.804	529.1 -> 80.9	1643	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	9765	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	74705	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	12796	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	39655	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	47587	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	6267	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4267	2.50	µg/L	0.000
13C4-PFOS	8.219	502.8 -> 79.9	8381	2.50	µg/L	-0.037
13C3-PFBA	2.778	216.0 -> 172.0	22672	5.00	µg/L m	-0.025
18O2-PFHxS	7.052	403.0 -> 83.9	4622	2.50	µg/L	-0.038
13C4-PFOA	6.925	417.1 -> 372.0	45233	2.50	µg/L	-0.025
13C2-PFDA	8.042	515.1 -> 470.1	13008	1.25	µg/L	-0.025
13C5-PFNA	7.496	468.0 -> 423.0	13088	1.25	µg/L	-0.037
13C2-PFHxA	5.311	315.1 -> 270.0	37622	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	424	3.77	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 75.5%			
13C2-6:2FTS	6.675	429.1 -> 80.9	1127	4.50	µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.9%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1643	4.68	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.6%			
13C2-PFDoDA	9.016	615.1 -> 570.0	9870	1.22	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%			
13C2-PFTeDA	9.837	715.2 -> 670.0	9036	1.19	µg/L	-0.062
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.9%			
13C3-PFBS	5.241	302.1 -> 79.9	7777	2.19	µg/L m	-0.036
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.5%			
13C3-PFHxS	7.054	402.1 -> 79.9	6546	2.48	µg/L	-0.038

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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 = 99.1%		
13C4-PFBA	2.786	216.8 -> 171.9	45189	10.57	µg/L m	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.7%		
13C4-PFHpA	6.255	367.1 -> 322.0	31888	2.55	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C5-PFHxA	5.310	318.0 -> 273.0	32678	2.47	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%		
13C5-PFPeA	4.137	268.3 -> 223.0	28961	4.23	µg/L m	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 84.7%		
13C6-PFDA	8.042	519.1 -> 474.1	8550	1.27	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.8%		
13C7-PFUnDA	8.548	570.0 -> 525.1	9177	1.25	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%		
13C8-FOSA	9.174	506.1 -> 77.8	8402	2.56	µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C8-PFOA	6.925	421.1 -> 376.0	37682	2.47	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%		
13C8-PFOS	8.218	507.1 -> 79.9	8854	2.68	µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.3%		
13C9-PFNA	7.495	472.1 -> 427.0	13368	1.25	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.0%		
d3-MeFOSAA	8.063	573.2 -> 419.0	9765	5.26	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C3-HFPO-DA	5.690	286.9 -> 168.9	74705	10.70	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.0%		
d3-MeFOSA	10.416	515.0 -> 219.0	4267	2.53	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%		
d5-EtFOSAA	8.285	589.2 -> 419.0	12796	4.66	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.2%		
d7-MeFOSE	10.315	623.2 -> 58.9	39655	25.71	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
d9-EtFOSE	10.623	639.2 -> 58.9	47587	25.17	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.7%		
d5-EtFOSA	10.712	531.1 -> 219.0	6267	2.69	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%		
Target Compounds						QValue
4:2FTS	4.972	327.1 -> 307.0	5275	9.88	µg/L	99
		327.1 -> 80.9	2933			
6:2FTS	6.675	427.1 -> 407.0	8014	8.51	µg/L	98
		427.1 -> 80.9	3249			
8:2FTS	7.804	527.1 -> 507.0	5513	7.08	µg/L	98
		527.1 -> 80.8	2841			
EtFOSAA	8.286	584.2 -> 419.1	4201	2.51	µg/L m	100
		584.2 -> 526.0	1667			
FOSA	9.177	498.1 -> 77.9	7173	2.34	µg/L	99
		498.1 -> 478.0	222			
MeFOSAA	8.064	570.1 -> 419.0	4194	2.54	µg/L m	92
		570.1 -> 483.0	738			
PFBA	2.782	212.8 -> 168.9	16800	9.39	µg/L m	100
PFBS	5.242	298.7 -> 79.9	5513	2.16	µg/L m	98
		298.7 -> 98.8	2375			
PFDA	8.042	512.9 -> 469.0	20784	2.32	µg/L	99
		512.9 -> 219.0	3709			
PFDODA	9.017	613.1 -> 569.0	15628	2.33	µg/L	98
		613.1 -> 319.0	2634			
PFDS	9.195	599.0 -> 79.9	4360	2.23	µg/L	100

7.7.16
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.256	599.0 -> 98.8	2264	2.27	µg/L	100
		363.1 -> 319.0	30590			
PFHpS	7.660	363.1 -> 169.0	6939	2.09	µg/L	98
		449.0 -> 79.9	5263			
PFHxA	5.300	449.0 -> 98.9	3110	2.35	µg/L	99
		313.0 -> 269.0	22564			
PFHxS	7.055	313.0 -> 118.9	983	2.17	µg/L	m
		398.7 -> 79.9	4790			
PFNA	7.496	398.7 -> 98.9	2456	2.31	µg/L	94
		463.0 -> 419.0	17928			
PFNS	8.736	463.0 -> 219.0	3744	2.23	µg/L	98
		548.8 -> 79.9	4348			
PFOA	6.926	548.8 -> 98.9	2601	2.35	µg/L	99
		413.0 -> 369.0	34082			
PFOS	8.219	413.0 -> 169.0	7895	2.17	µg/L	m
		498.9 -> 79.9	7749			
PFPeA	4.127	498.9 -> 98.8	4439	4.77	µg/L	m
		263.0 -> 219.0	30154			
PFPeS	6.320	349.1 -> 79.9	4336	2.27	µg/L	m
		349.1 -> 98.9	1970			
PFTeDA	9.837	713.1 -> 669.0	16289	2.35	µg/L	97
		713.1 -> 168.9	2110			
PFTrDA	9.451	663.0 -> 619.0	19991	2.27	µg/L	97
		663.0 -> 168.9	3569			
PFUnDA	8.548	563.1 -> 519.0	16253	2.38	µg/L	98
		563.1 -> 269.1	3416			
11Cl-PF3OUdS	9.503	630.9 -> 450.9	65102	7.92	µg/L	99
		632.9 -> 452.9	20449			
9Cl-PF3ONS	8.588	530.8 -> 351.0	70171	7.99	µg/L	99
		532.8 -> 353.0	22352			
ADONA	6.517	376.9 -> 250.9	171034	8.36	µg/L	99
		376.9 -> 84.8	51930			
HFPO-DA	5.691	284.9 -> 168.9	60574	9.88	µg/L	99
		284.9 -> 184.9	5336			
3:3FTCA	3.591	241.0 -> 177.0	5906	12.65	µg/L	100
		241.0 -> 117.0	756			
5:3FTCA	5.893	341.0 -> 237.1	101729	51.33	µg/L	99
		341.0 -> 217.0	69169			
7:3FTCA	7.323	441.0 -> 316.9	39824	50.19	µg/L	99
		441.0 -> 336.9	85897			
EtFOSA	10.726	526.0 -> 219.0	4847	2.14	µg/L	96
		526.0 -> 169.0	6256			
EtFOSE	10.636	630.0 -> 58.9	44011	24.90	µg/L	100
		511.9 -> 219.0	4112			
MeFOSA	10.430	511.9 -> 169.0	5137	2.44	µg/L	98
		616.1 -> 58.9	39506			
MeFOSE	10.327	699.1 -> 79.9	3461	23.32	µg/L	100
		699.1 -> 98.8	2098			
PFDoDS	10.001	295.0 -> 201.0	3744	2.25	µg/L	100
		295.0 -> 84.9	984			
NFDHA	5.193	279.0 -> 85.1	20772	4.96	µg/L	99
		279.0 -> 85.1	20772			
PFMBA	4.528	229.0 -> 84.9	15337	4.45	µg/L	m
		229.0 -> 84.9	15337			
PFMPA	3.315	314.8 -> 134.9	35745	4.47	µg/L	m
		314.8 -> 82.9	1053			
PFEESA	5.796	314.8 -> 134.9	35745	3.55	µg/L	m
		314.8 -> 82.9	1053			

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



7.7.16
7

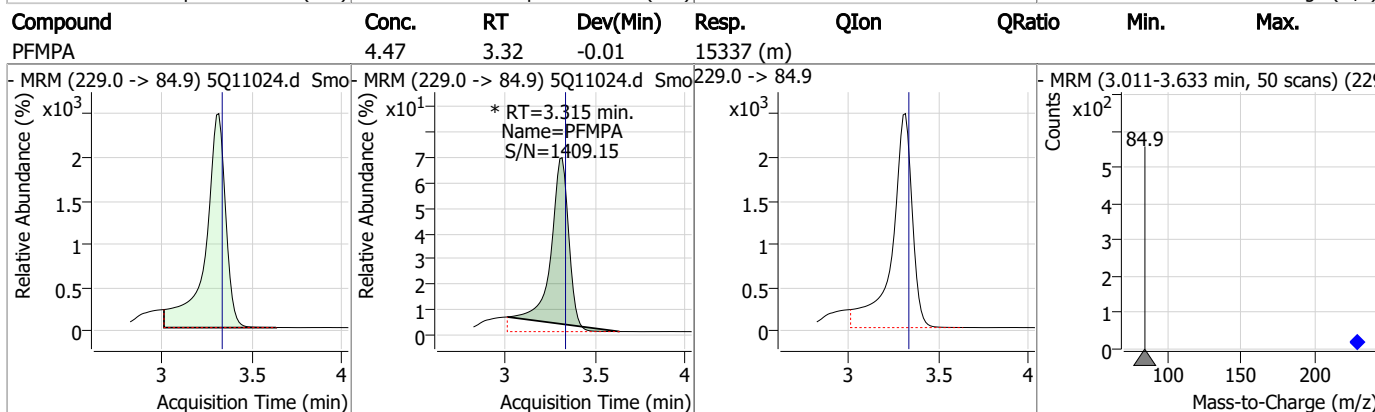
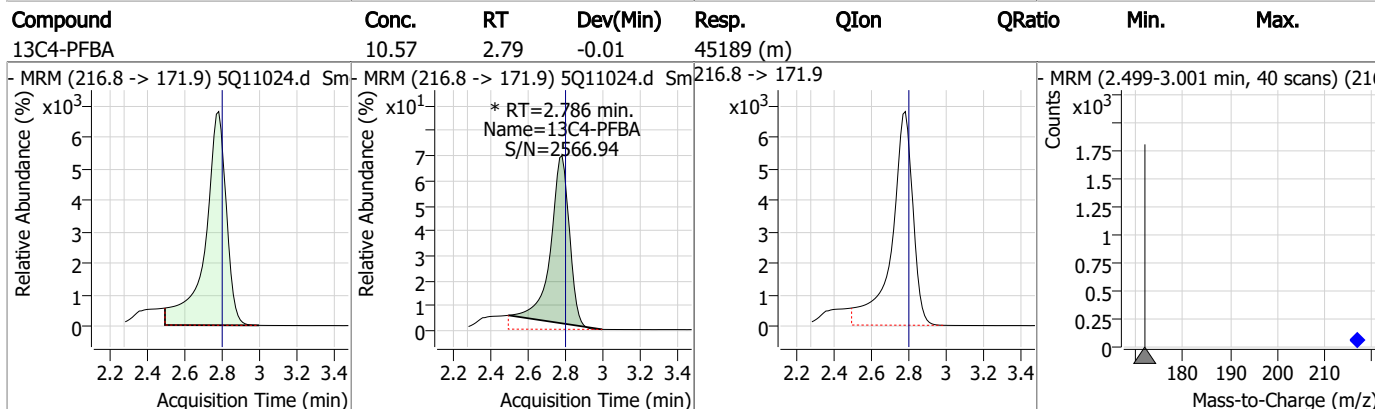
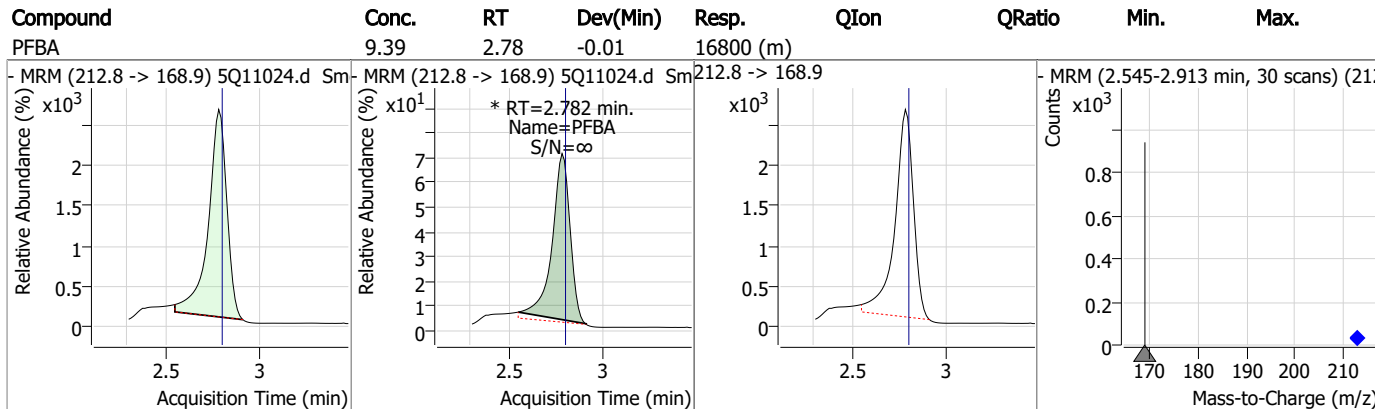
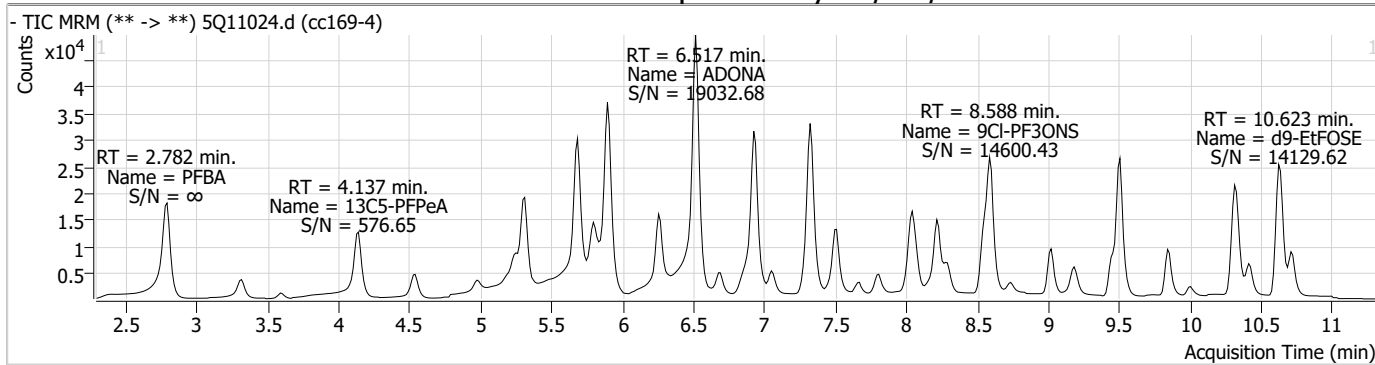
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.16

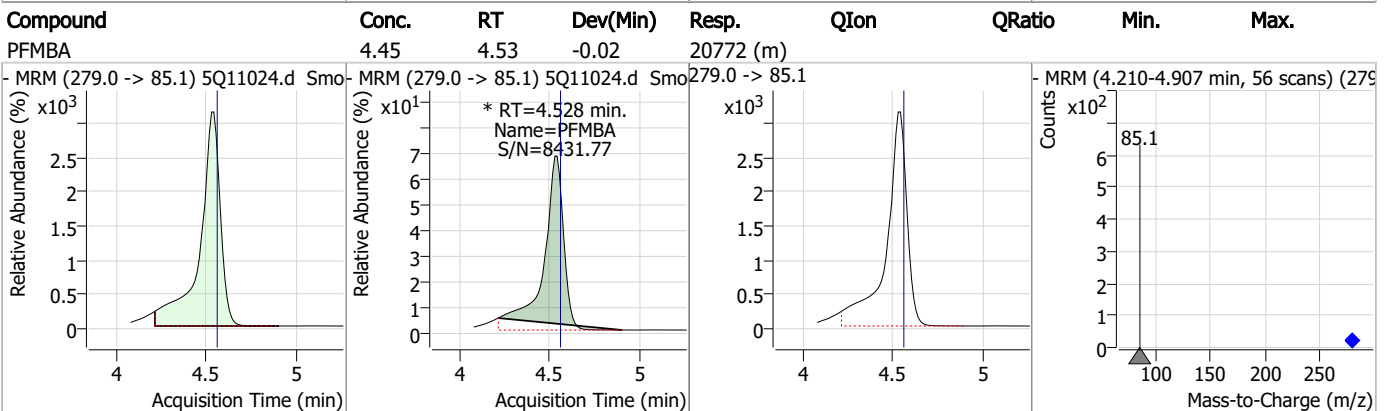
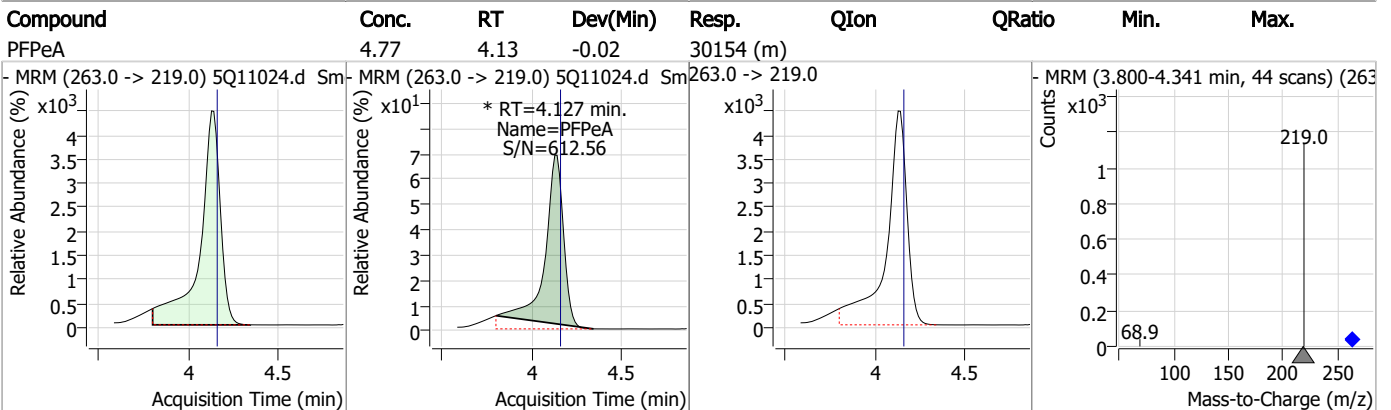
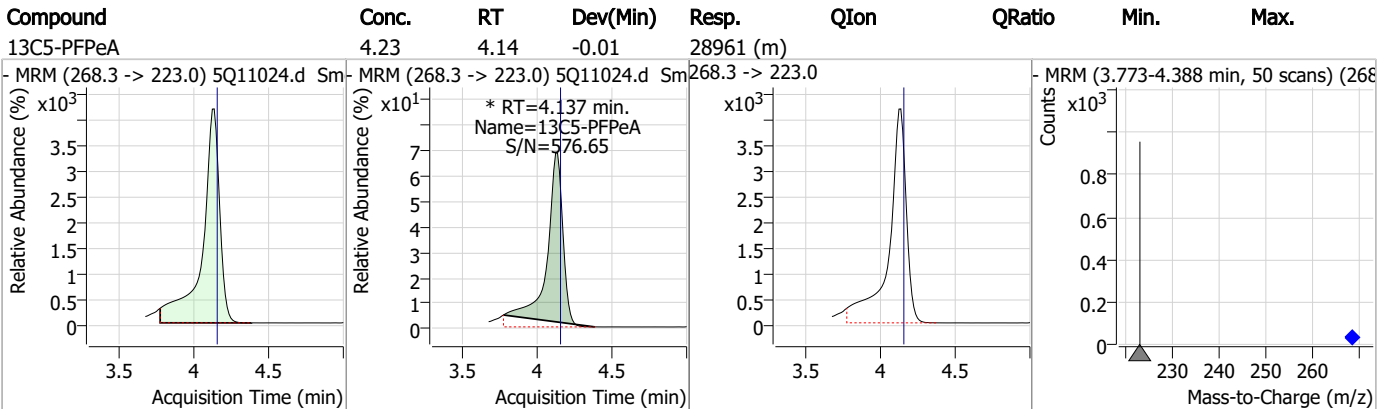
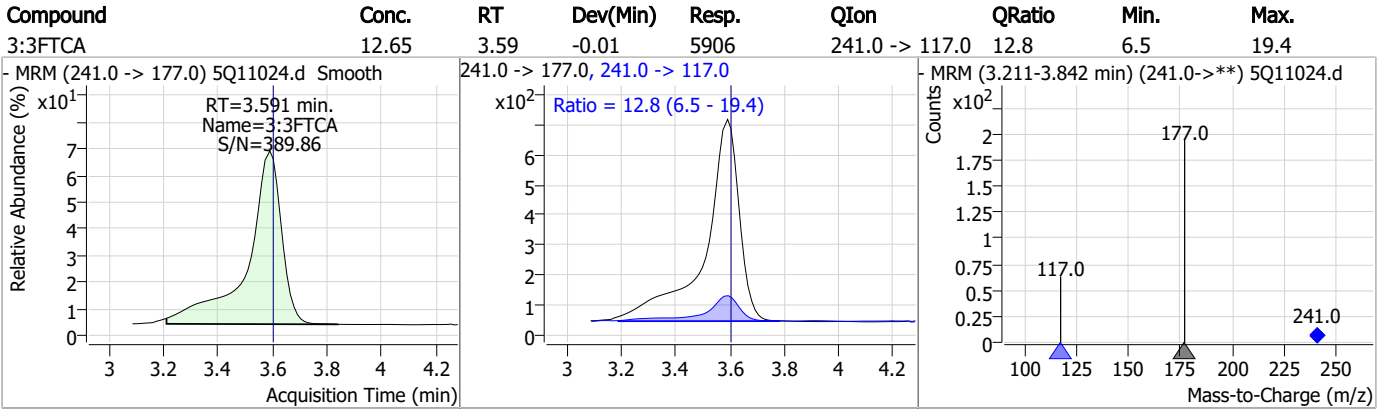
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Perfluorinated Compounds by LC/MS/MS



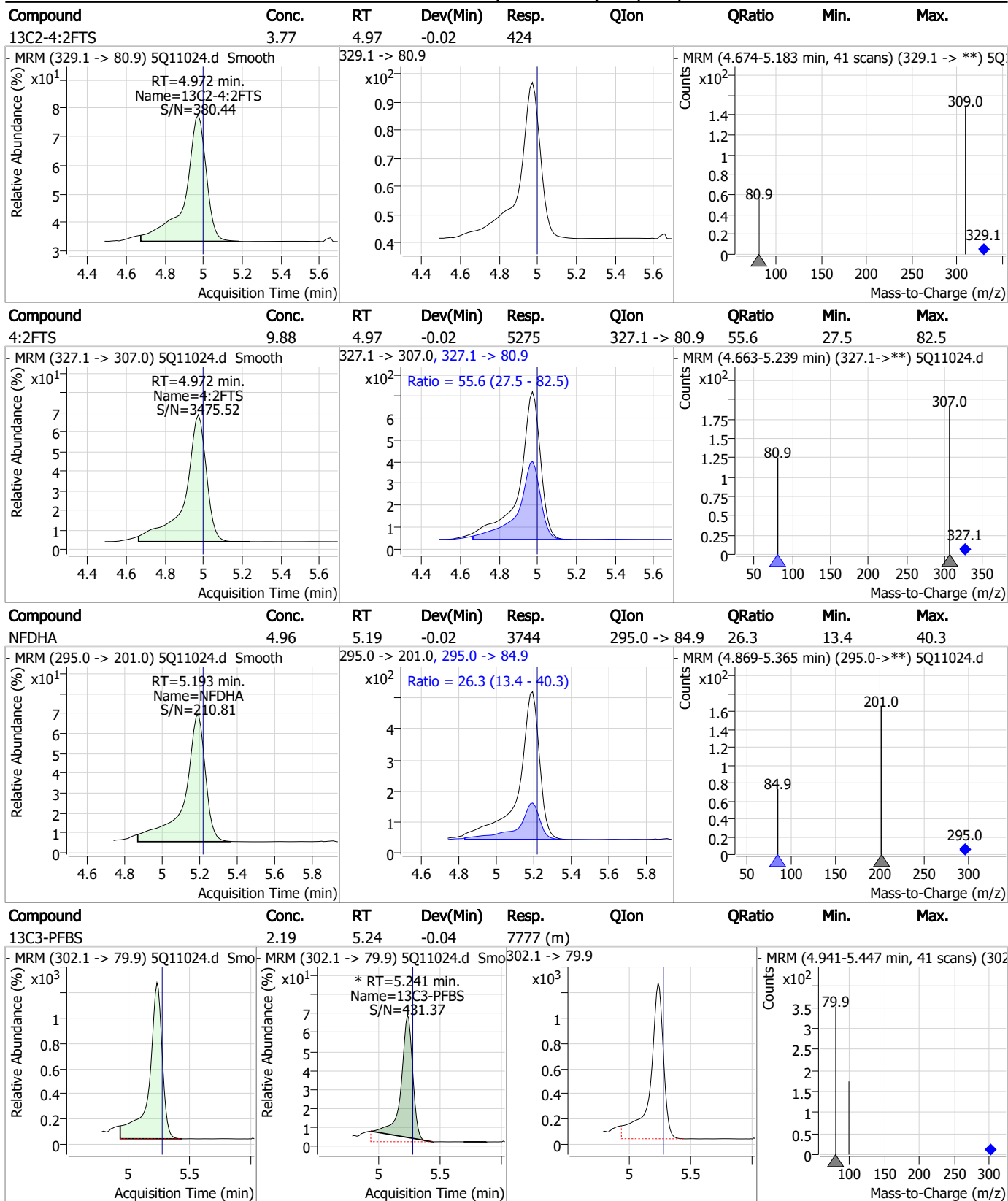
7.7.16
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Perfluorinated Compounds by LC/MS/MS



7.7.16
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Perfluorinated Compounds by LC/MS/MS

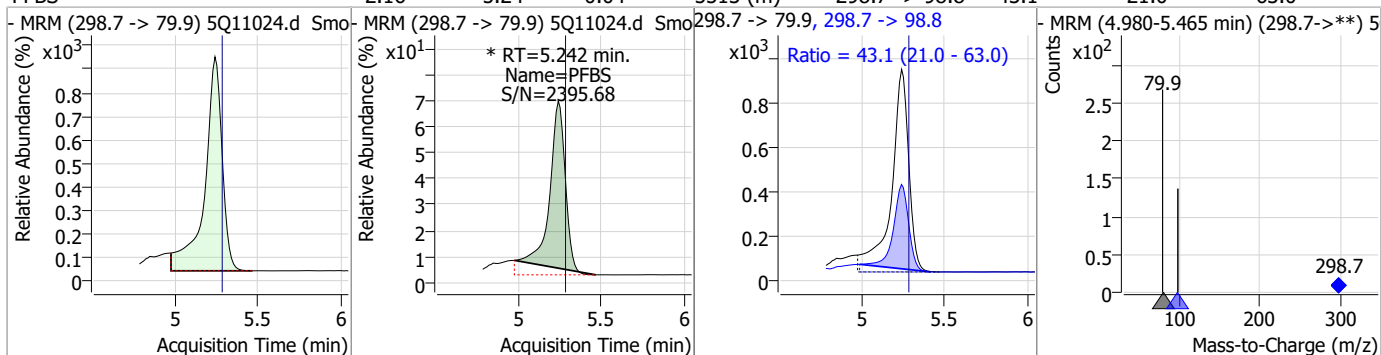


7.7.16

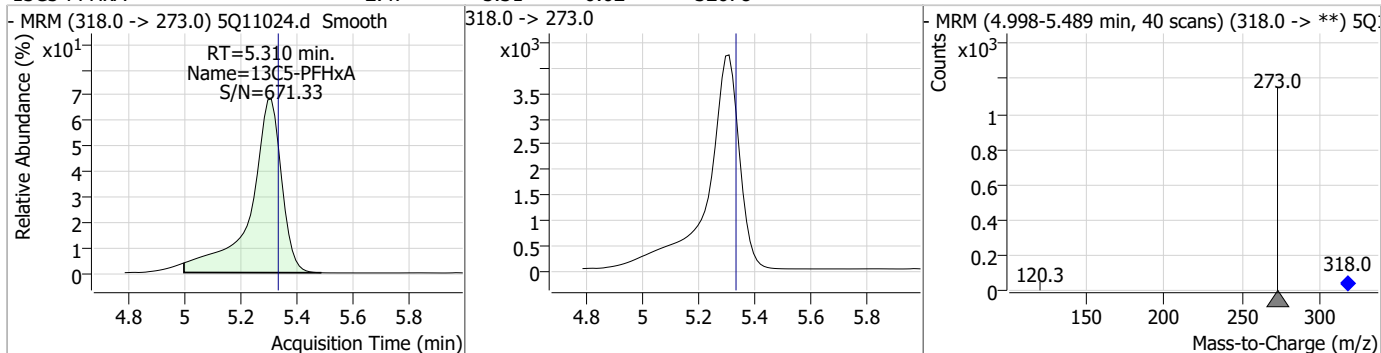
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Perfluorinated Compounds by LC/MS/MS

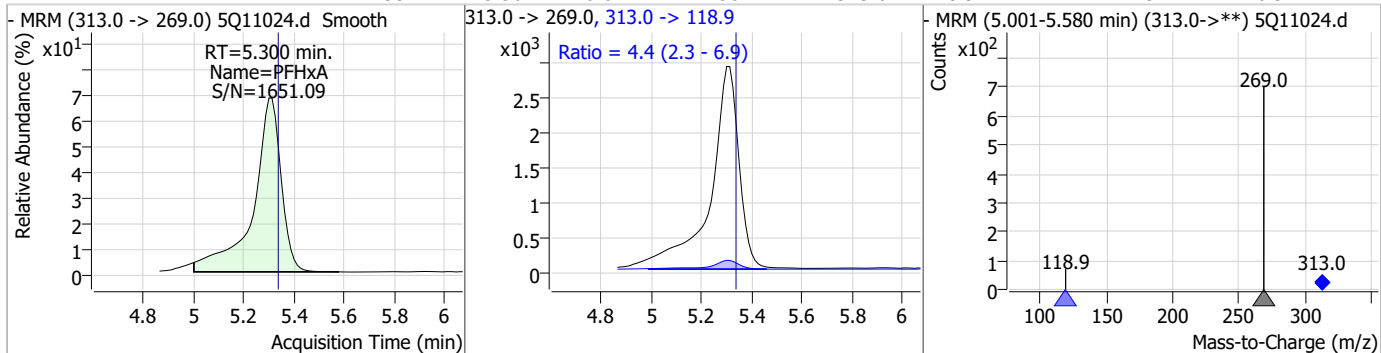
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.16	5.24	-0.04	5513 (m)	298.7 -> 98.8	43.1	21.0	63.0



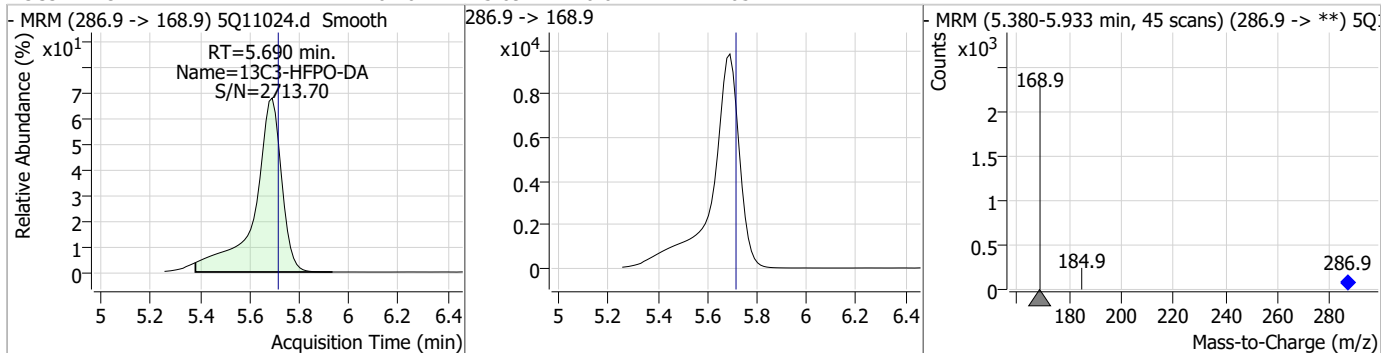
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.47	5.31	-0.02	32678				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.35	5.30	-0.04	22564	313.0 -> 118.9	4.4	2.3	6.9

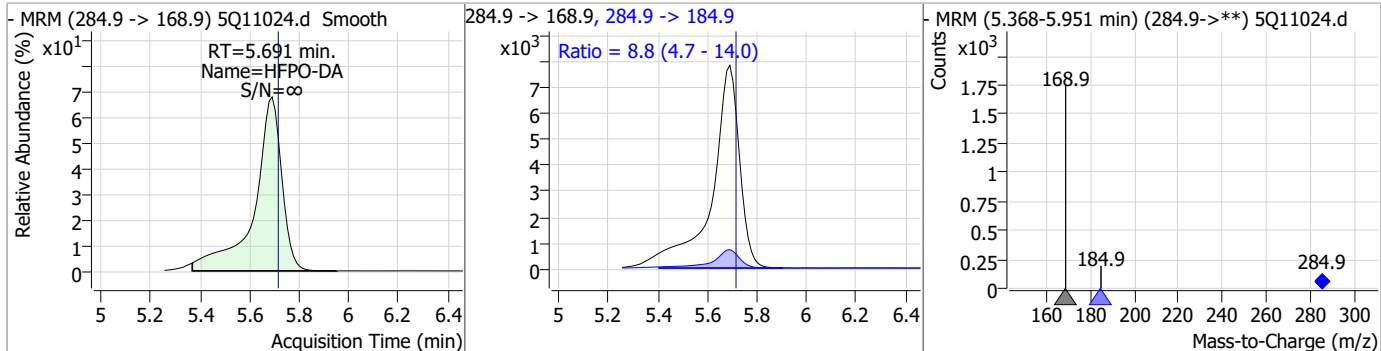


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.70	5.69	-0.02	74705				

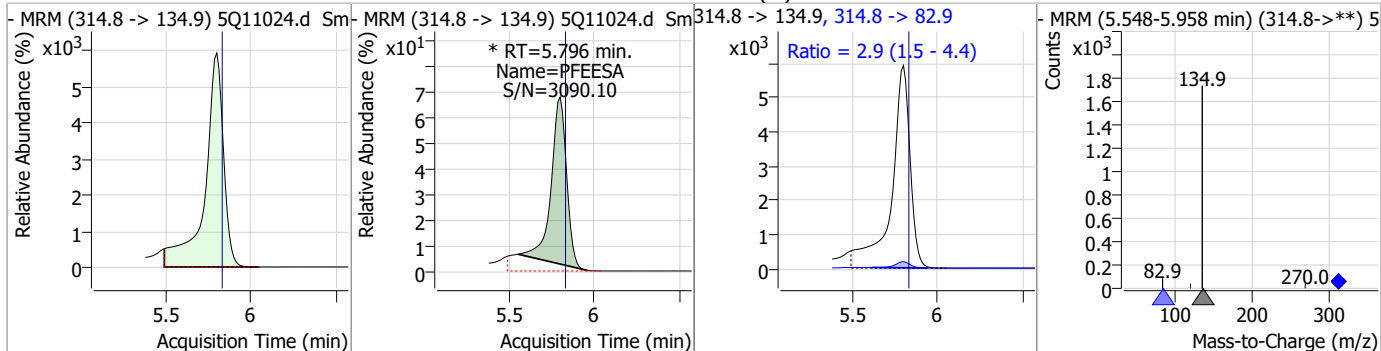


Perfluorinated Compounds by LC/MS/MS

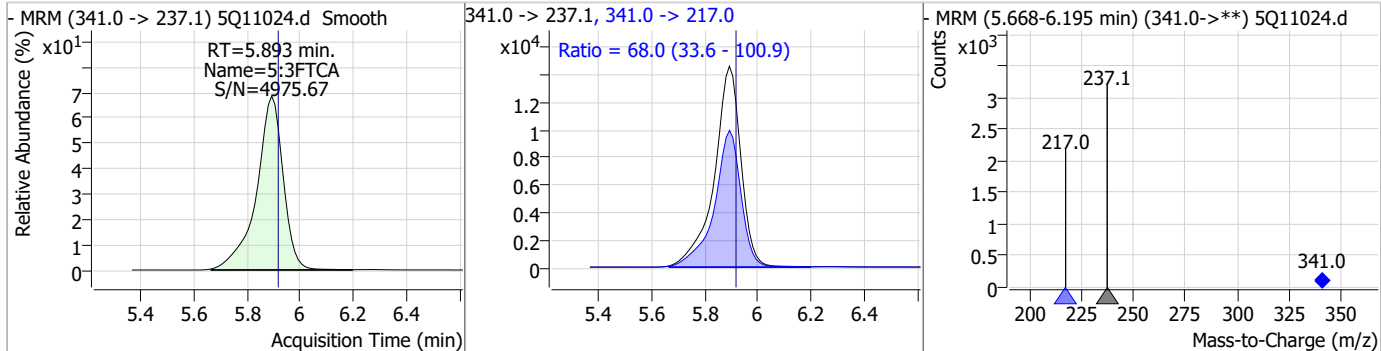
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.88	5.69	-0.02	60574	284.9 -> 184.9	8.8	4.7	14.0



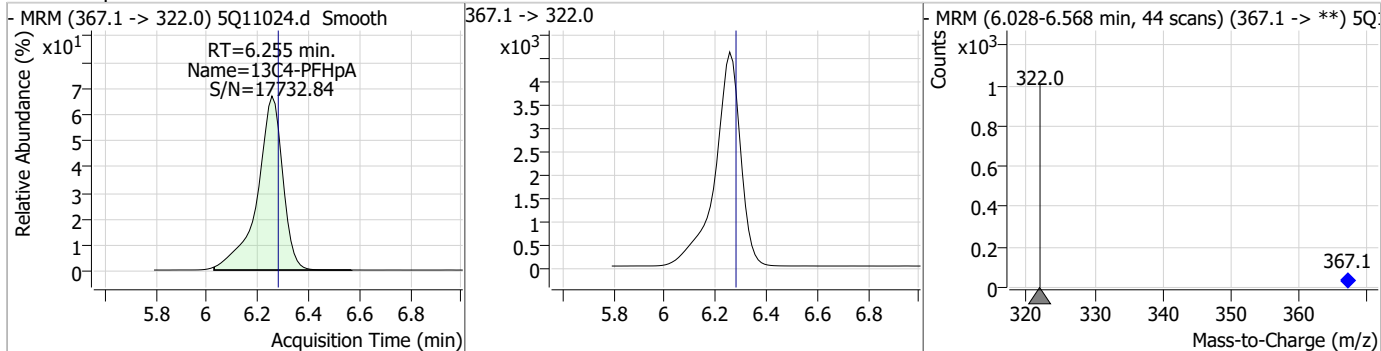
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	3.55	5.80	-0.02	35745 (m)	314.8 -> 82.9	2.9	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	51.33	5.89	-0.02	101729	341.0 -> 217.0	68.0	33.6	100.9



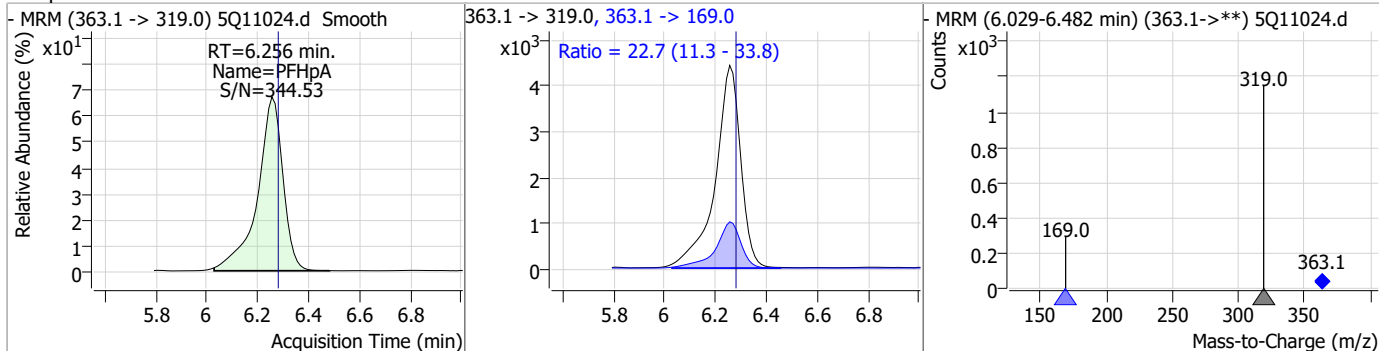
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.55	6.26	-0.02	31888	367.1 -> 322.0	-	-	-



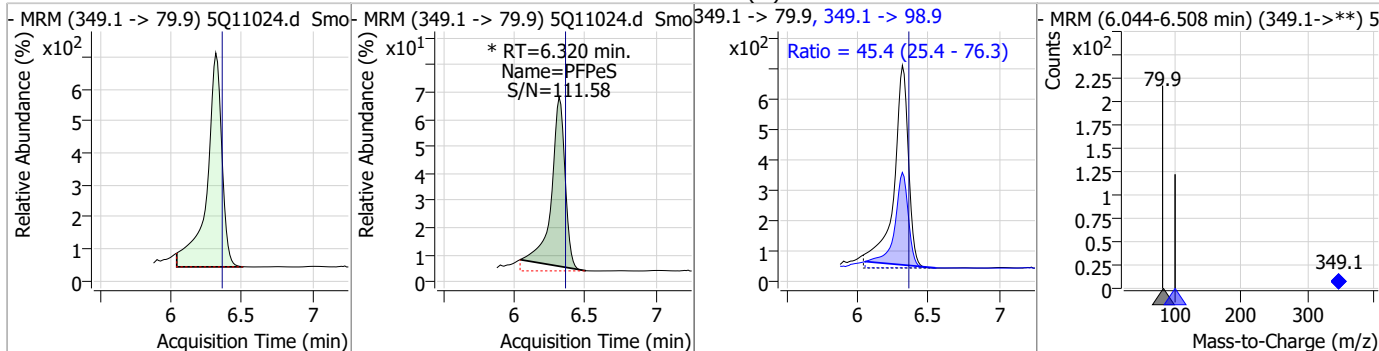
7.7.16
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Perfluorinated Compounds by LC/MS/MS

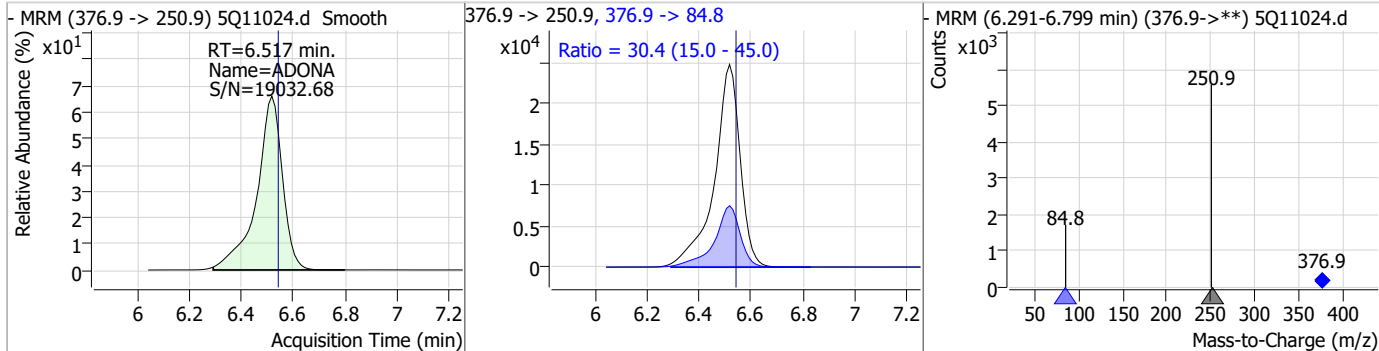
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.27	6.26	-0.02	30590	363.1 -> 169.0	22.7	11.3	33.8



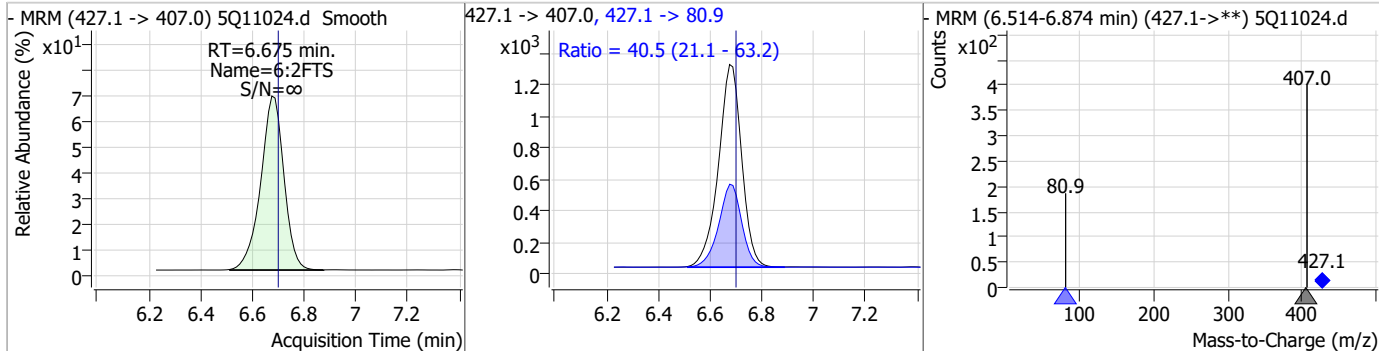
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.27	6.32	-0.04	4336 (m)	349.1 -> 98.9	45.4	25.4	76.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	8.36	6.52	-0.02	171034	376.9 -> 84.8	30.4	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	8.51	6.68	-0.02	8014	427.1 -> 80.9	40.5	21.1	63.2



Perfluorinated Compounds by LC/MS/MS

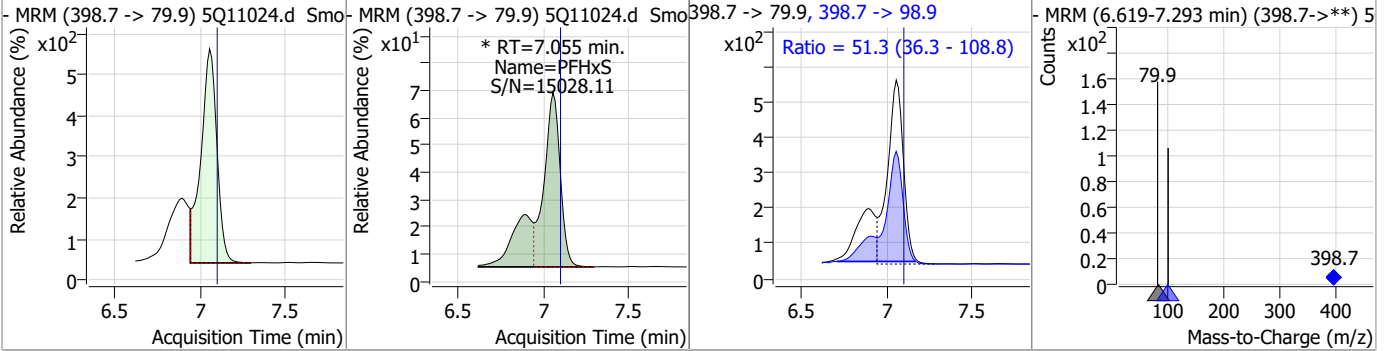
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	4.50	6.67	-0.04	1127				
13C8-PFOA	2.47	6.93	-0.02	37682				
PFOA	2.35	6.93	-0.02	34082	413.0 -> 169.0	23.2	11.4	34.3
13C3-PFHxS	2.48	7.05	-0.04	6546				

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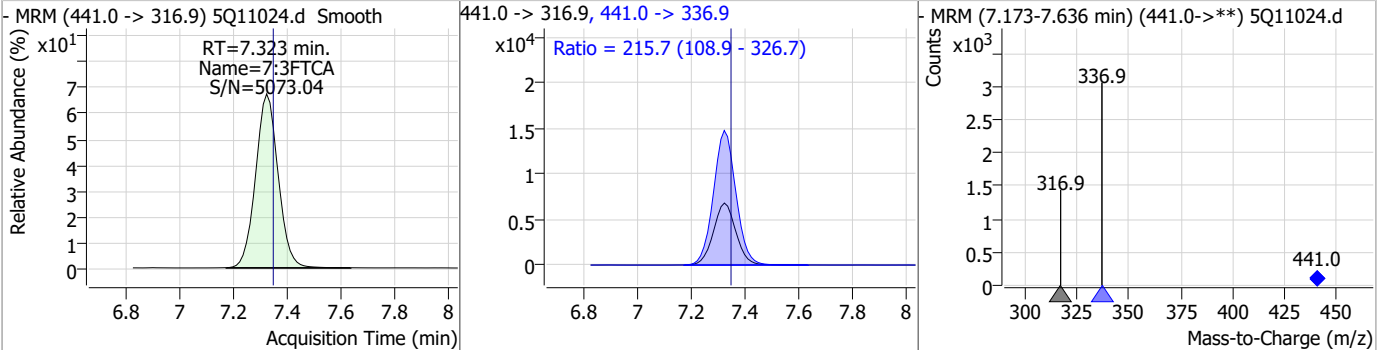


Perfluorinated Compounds by LC/MS/MS

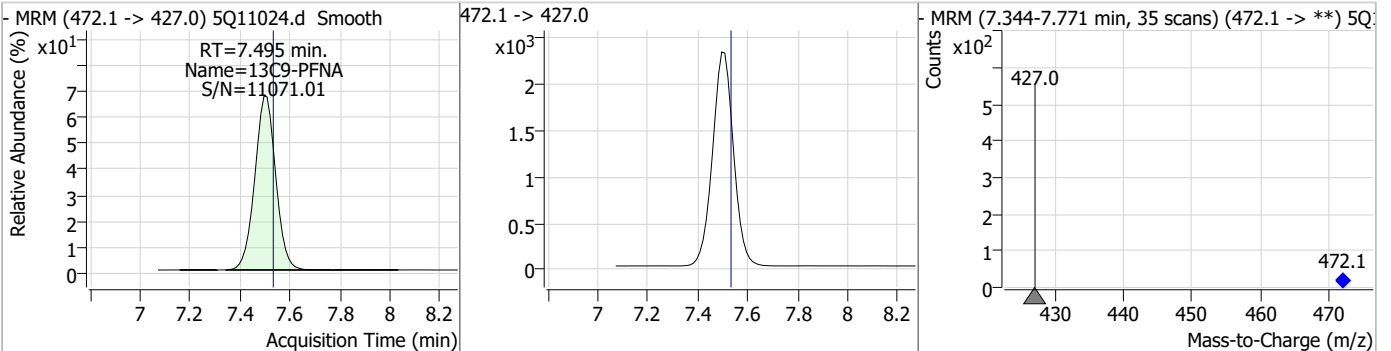
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.17	7.05	-0.04	4790 (m)	398.7 -> 98.9	51.3	36.3	108.8



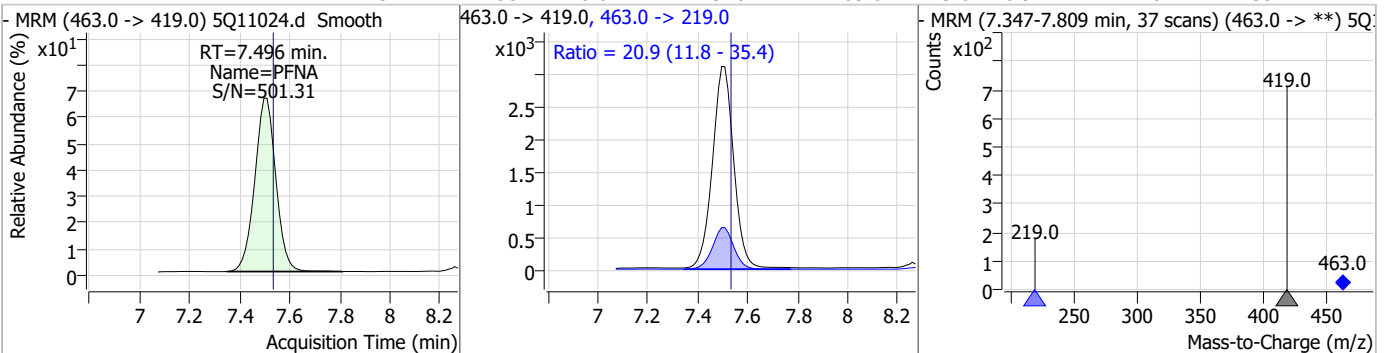
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	50.19	7.32	-0.02	39824	441.0 -> 336.9	215.7	108.9	326.7



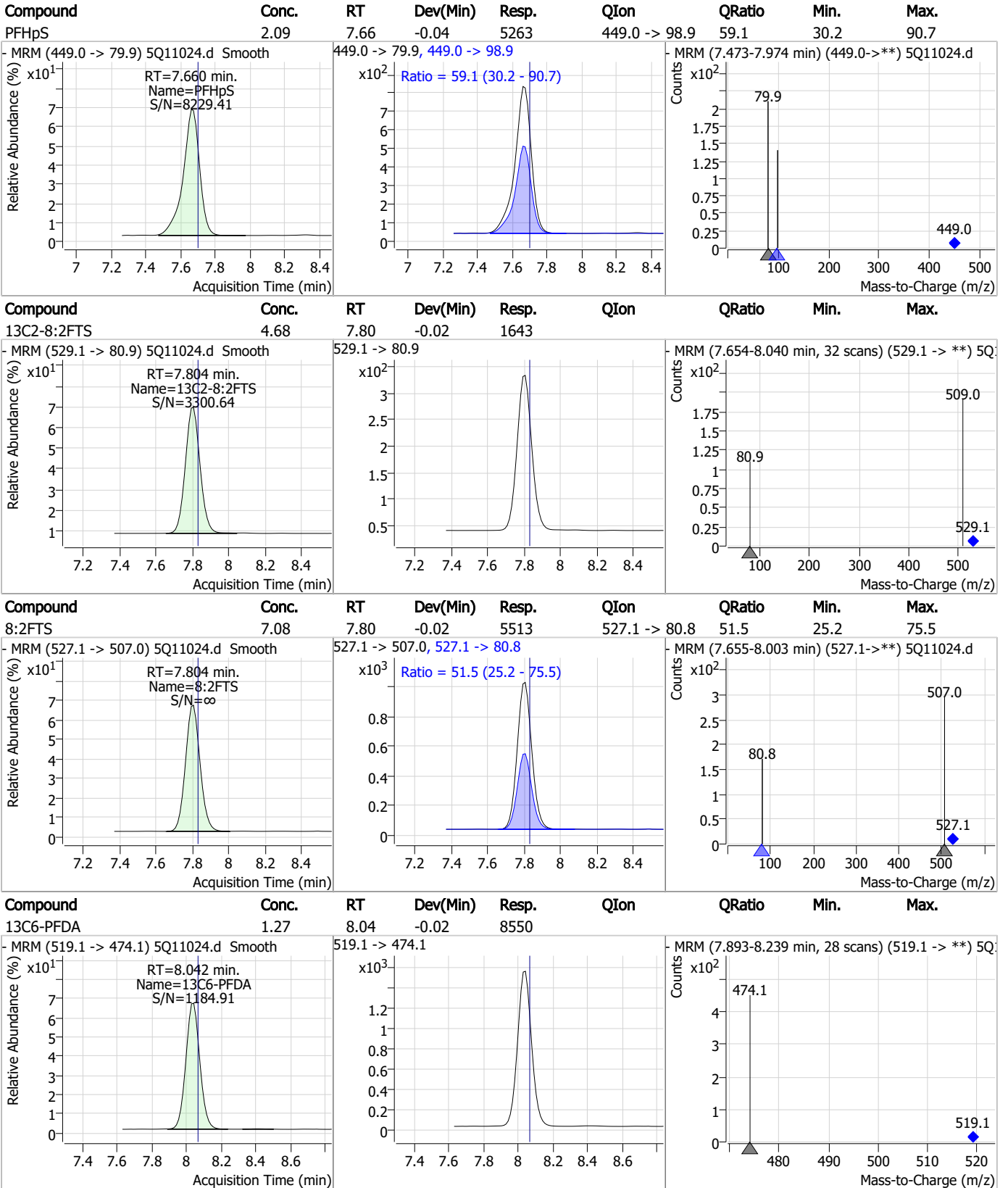
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.25	7.50	-0.04	13368				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.31	7.50	-0.04	17928	463.0 -> 219.0	20.9	11.8	35.4



Perfluorinated Compounds by LC/MS/MS

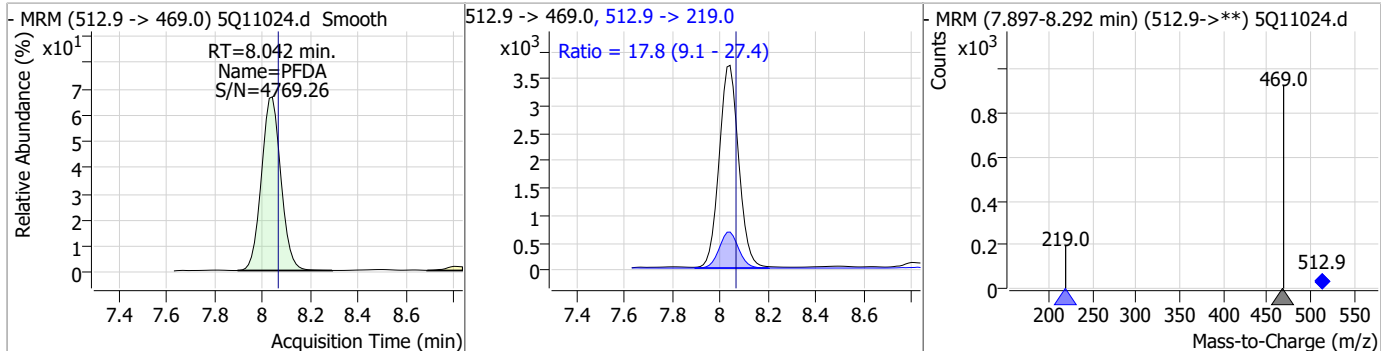


7.7.16
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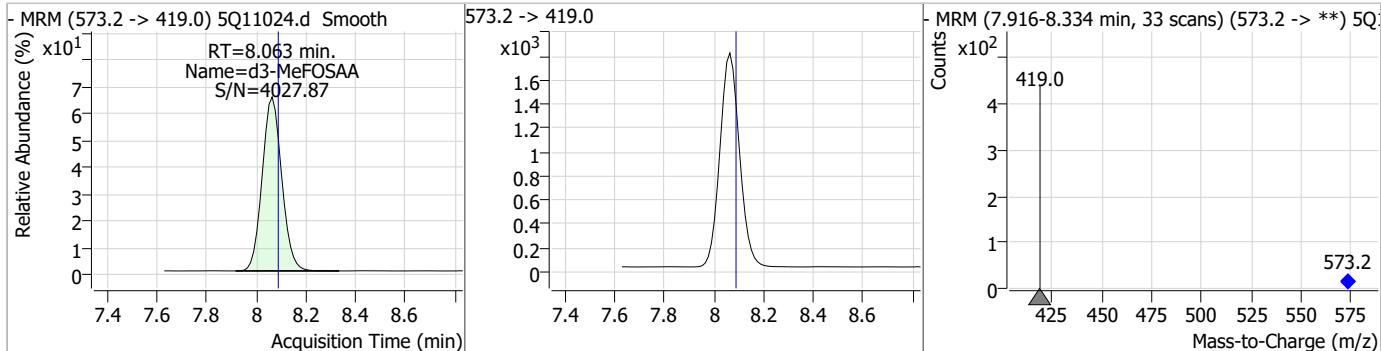


Perfluorinated Compounds by LC/MS/MS

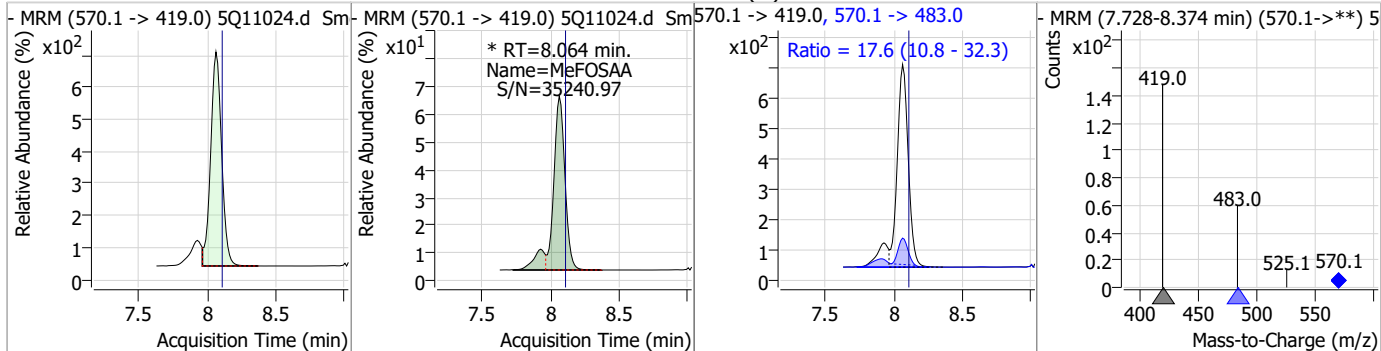
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.32	8.04	-0.02	20784	512.9 -> 219.0	17.8	9.1	27.4



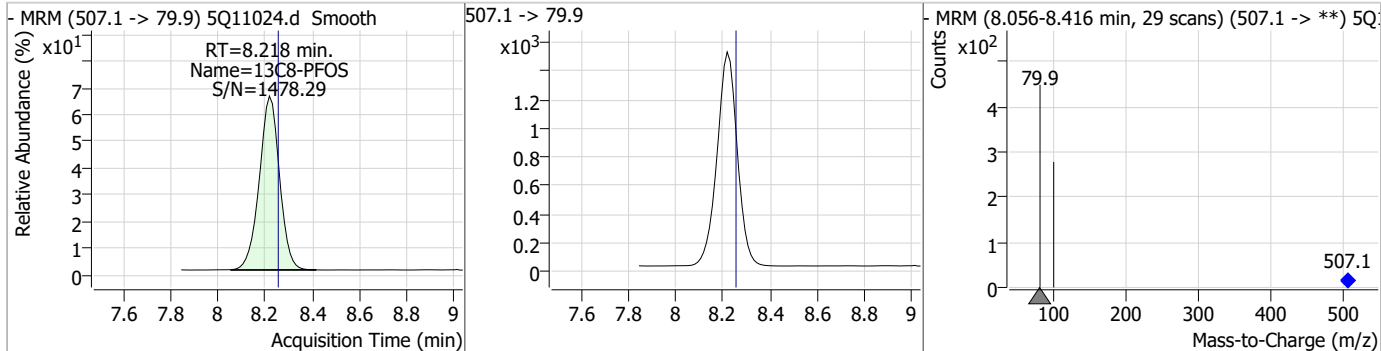
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.26	8.06	-0.02	9765				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.54	8.06	-0.04	4194 (m)	570.1 -> 483.0	17.6	10.8	32.3



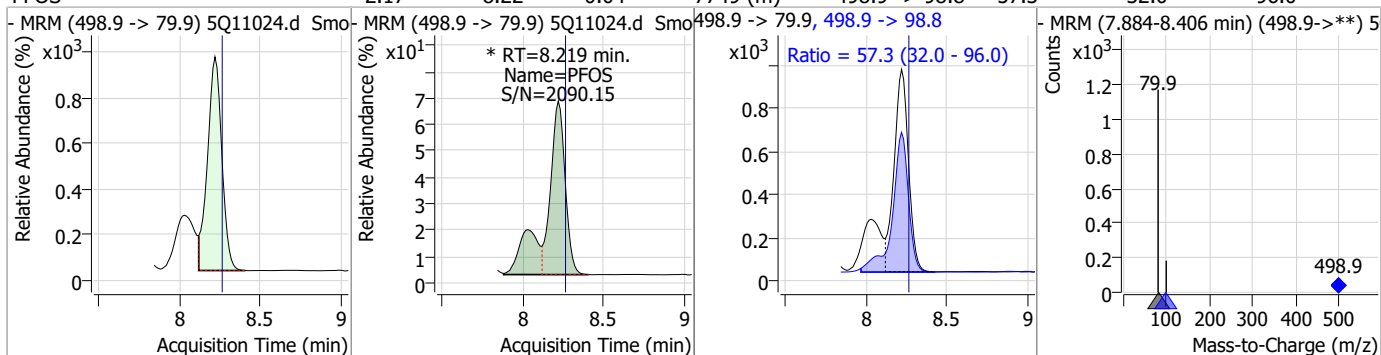
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.68	8.22	-0.04	8854				



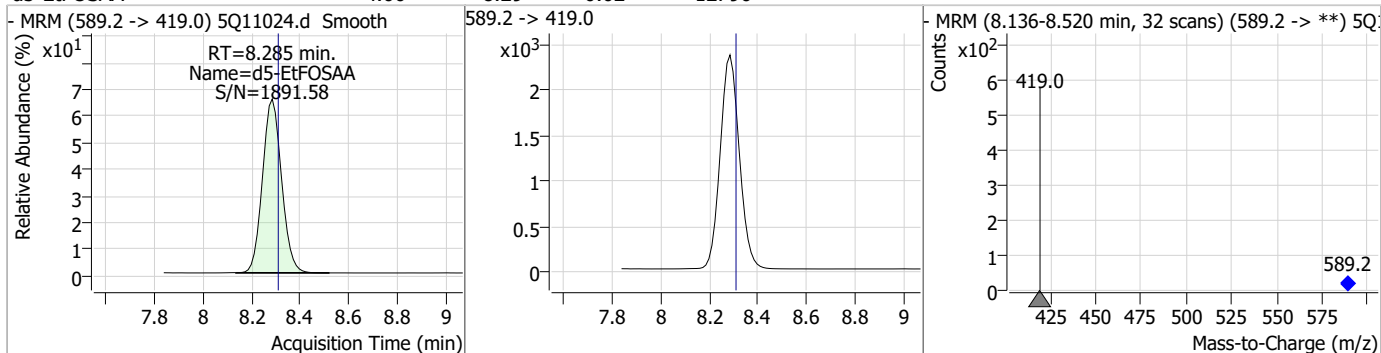
7.7.16
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Perfluorinated Compounds by LC/MS/MS

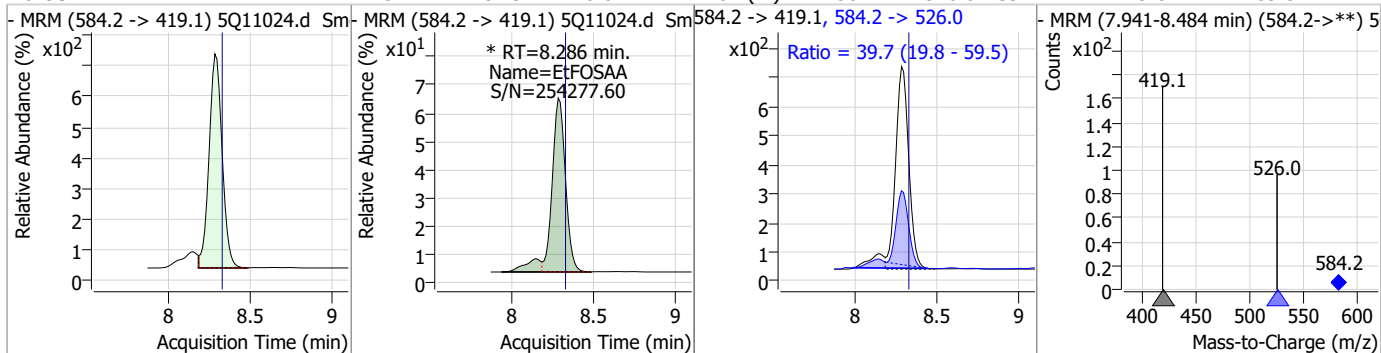
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.17	8.22	-0.04	7749 (m)	498.9 -> 98.8	57.3	32.0	96.0



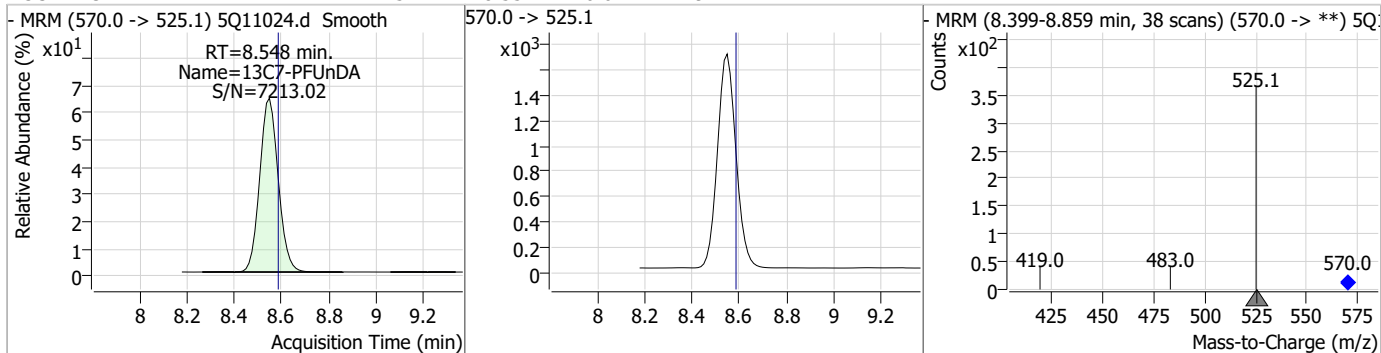
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.66	8.29	-0.02	12796				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.51	8.29	-0.04	4201 (m)	584.2 -> 526.0	39.7	19.8	59.5

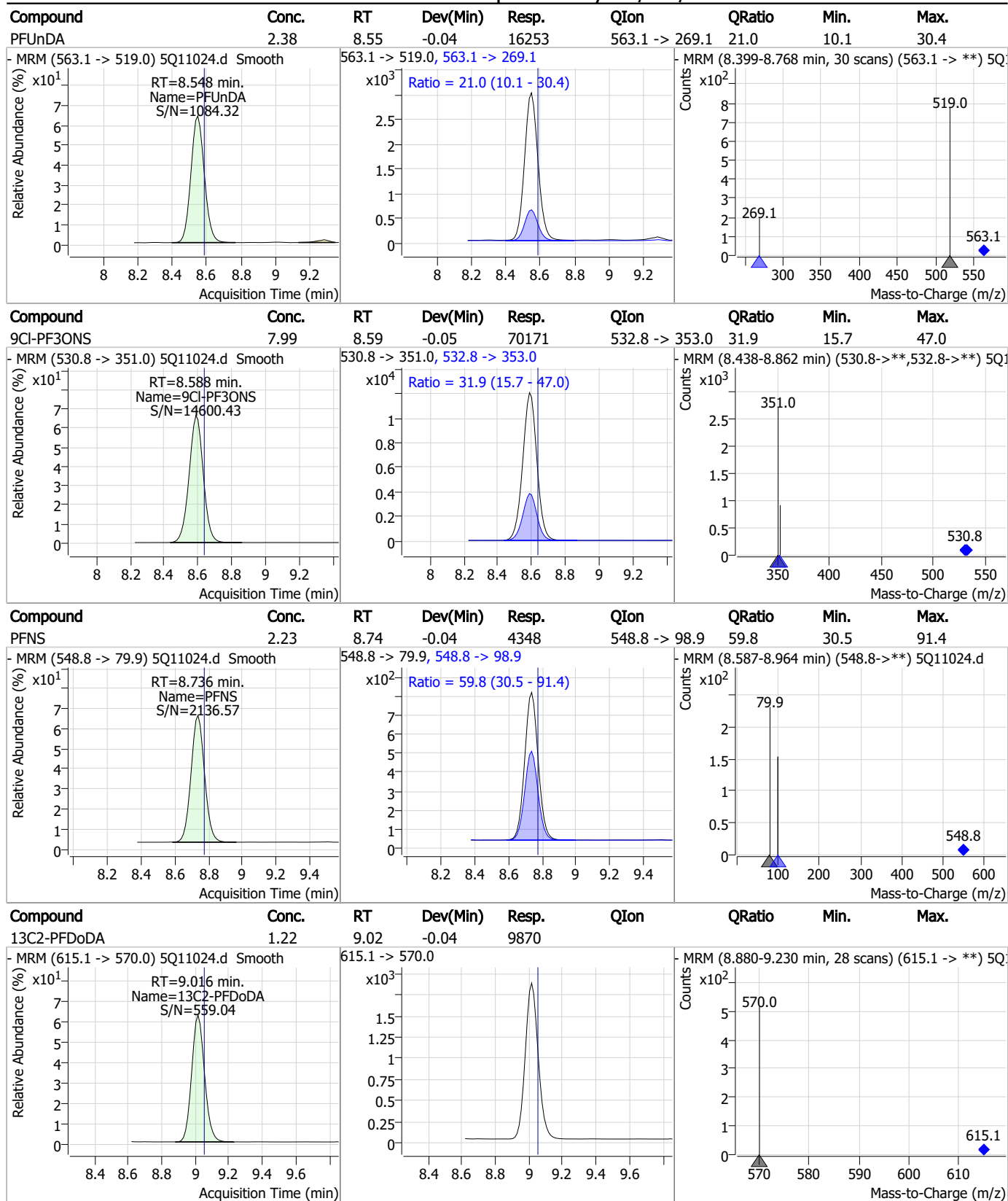


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.25	8.55	-0.04	9177				



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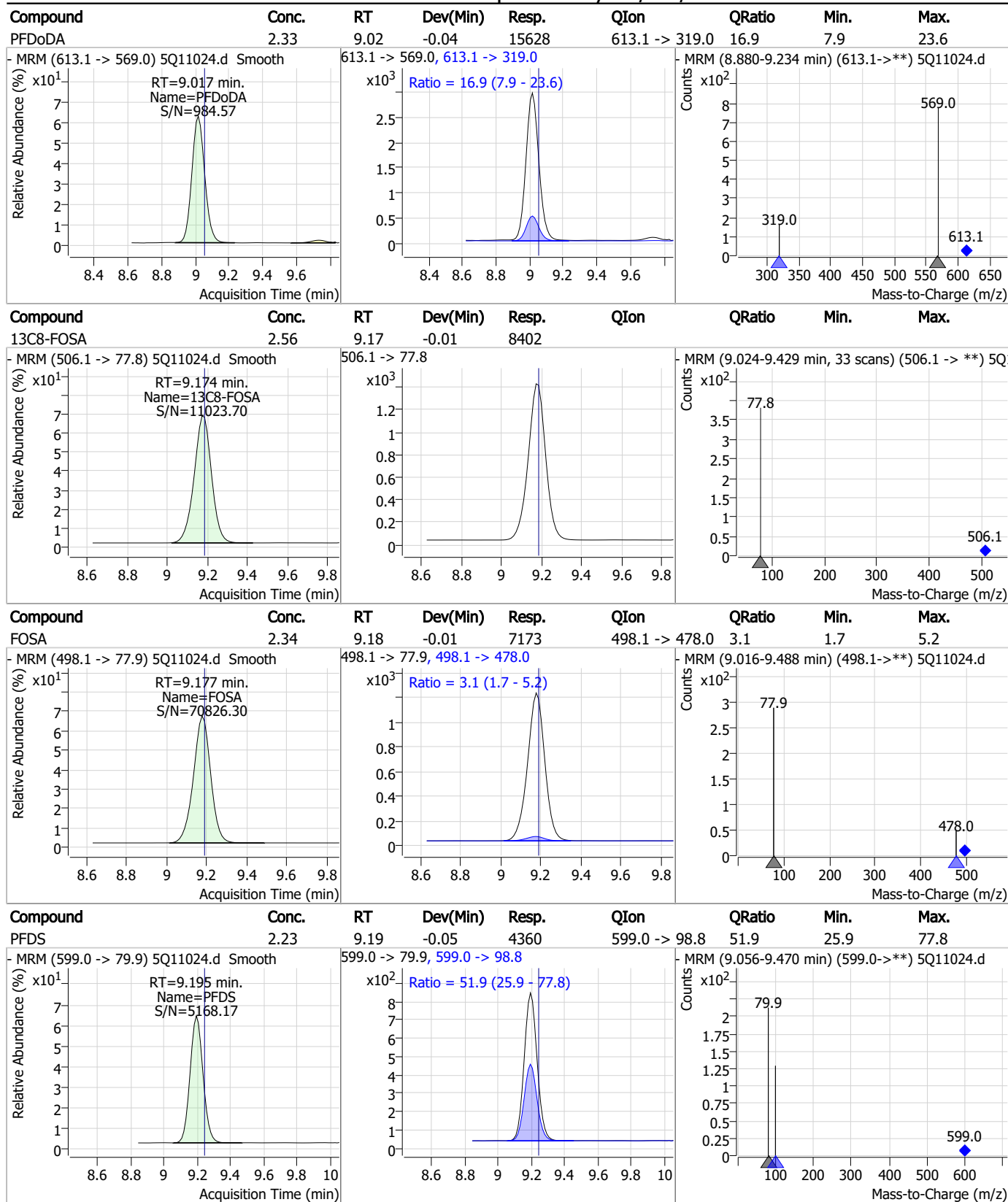
Perfluorinated Compounds by LC/MS/MS



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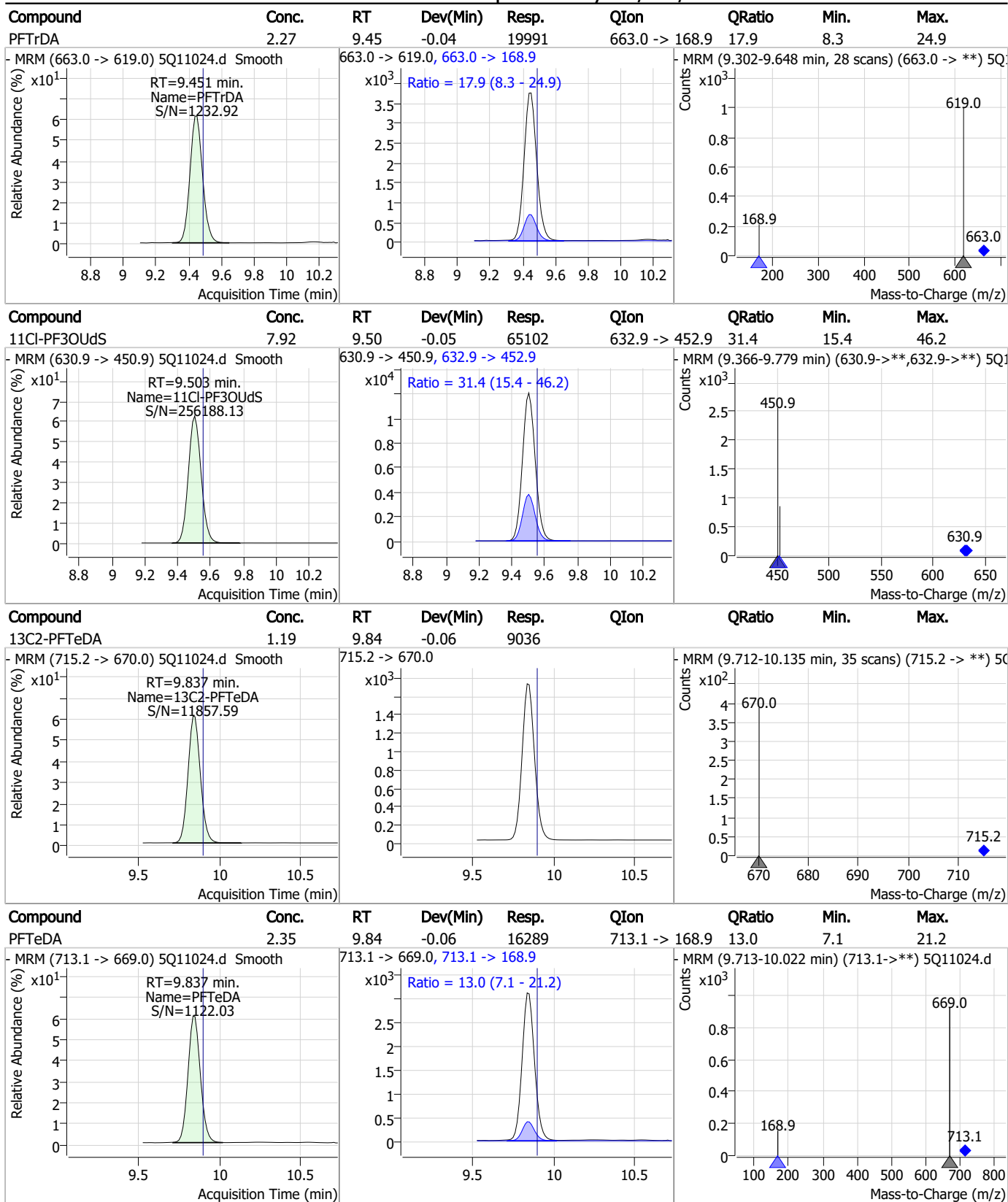
Perfluorinated Compounds by LC/MS/MS



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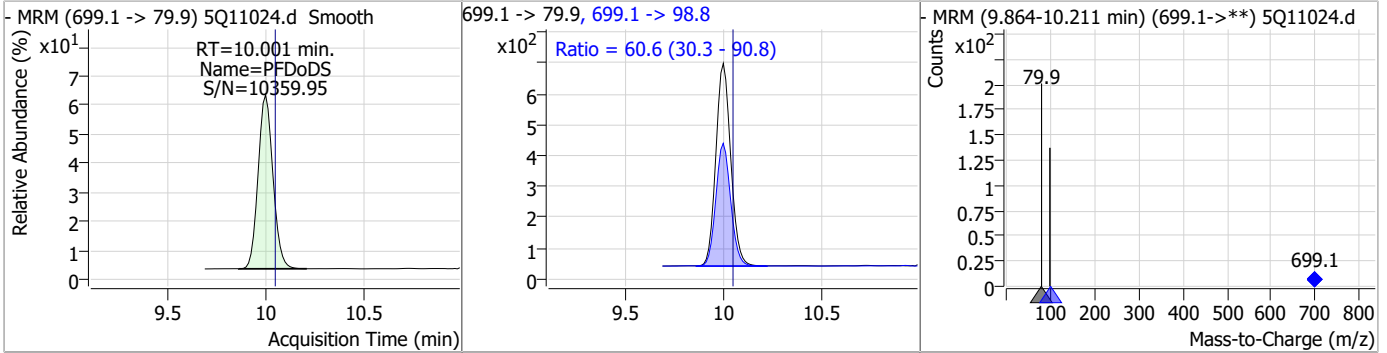
Perfluorinated Compounds by LC/MS/MS



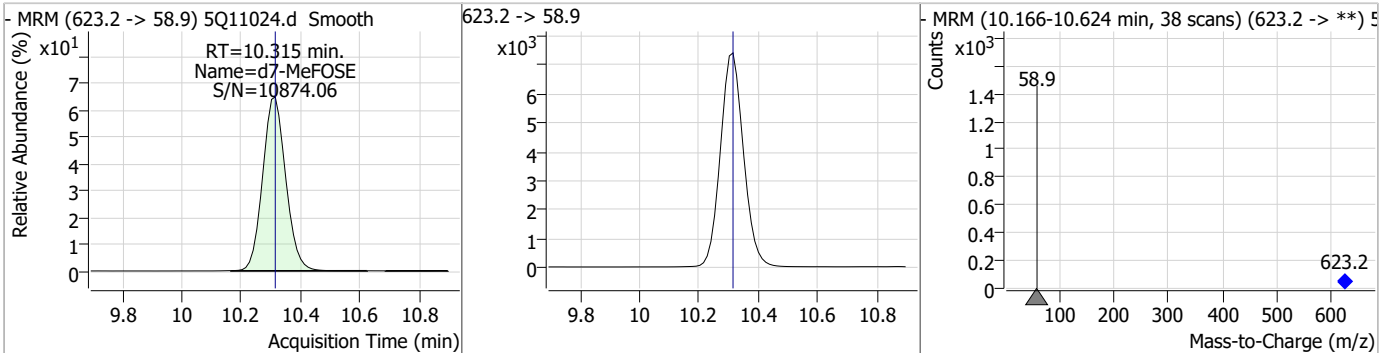
7.7.16
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Perfluorinated Compounds by LC/MS/MS

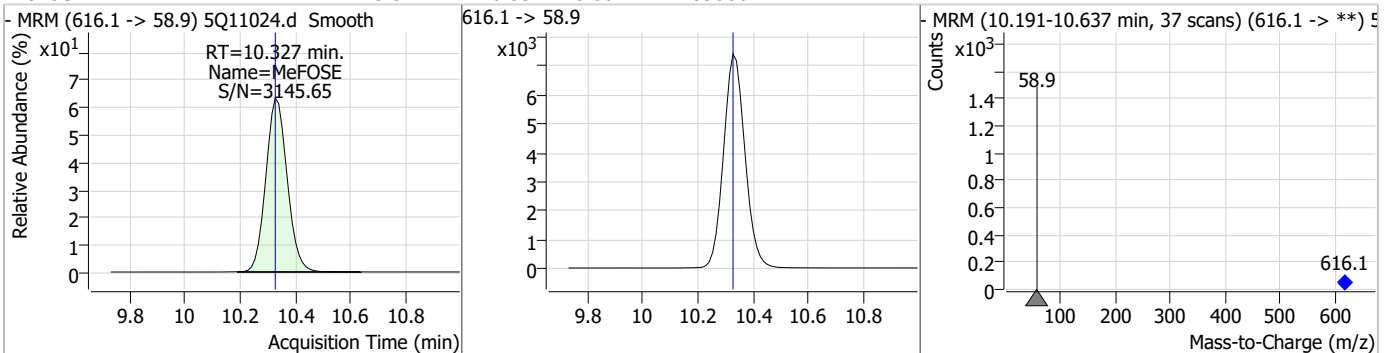
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.25	10.00	-0.05	3461	699.1 -> 98.8	60.6	30.3	90.8



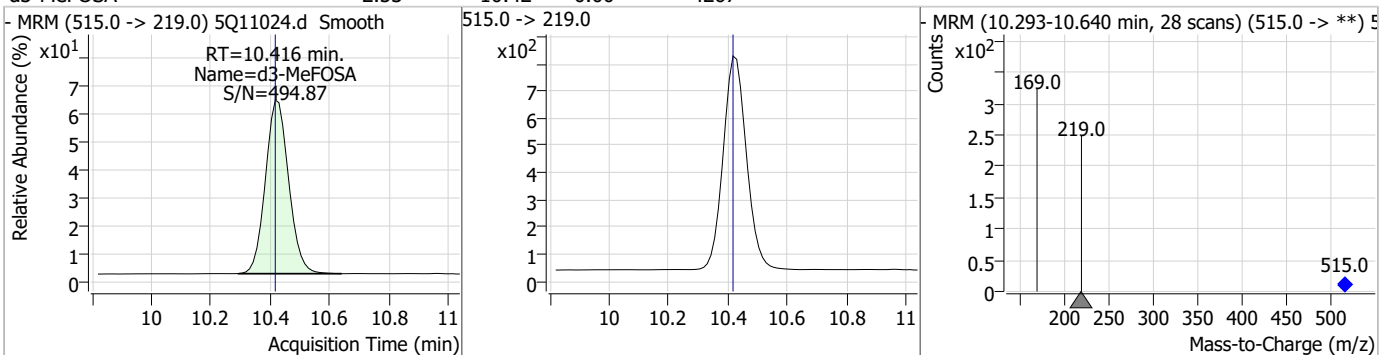
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.71	10.31	0.00	39655				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.32	10.33	0.00	39506				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.53	10.42	0.00	4267				



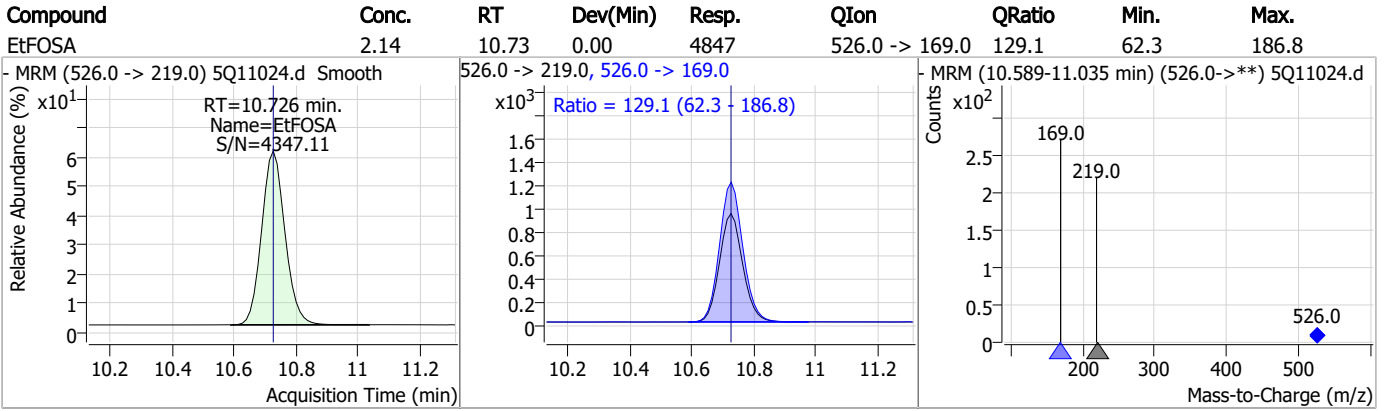
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.44	10.43	0.00	4112	511.9 -> 169.0	124.9	63.6	190.8
<p>RT=10.430 min. Name=MeFOSA S/N=12974.11</p>			<p>Ratio = 124.9 (63.6 - 190.8)</p>			<p>MRM (10.281-10.654 min) (511.9->**) 5Q11024.d</p>		
d9-EtFOSE	25.17	10.62	0.00	47587				
<p>RT=10.623 min. Name=d9-EtFOSE S/N=14129.62</p>						<p>MRM (10.492-10.845 min, 29 scans) (639.2 -> **) 5</p>		
EtFOSE	24.90	10.64	0.00	44011				
<p>RT=10.636 min. Name=EtFOSE S/N=20474.13</p>						<p>MRM (10.511-10.945 min, 36 scans) (630.0 -> **) 5</p>		
d5-EtFOSA	2.69	10.71	0.00	6267				
<p>RT=10.712 min. Name=d5-EtFOSA S/N=375.66</p>						<p>MRM (10.588-10.897 min, 25 scans) (531.1 -> **) 5</p>		

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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S5Q170-CC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q11024.D **Analyst approved:** 02/22/23 08:01 Norman Farmer
Injection Time: 02/17/23 16:01 **Supervisor approved:** 02/22/23 17:11 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.78	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.78	Poor instrument integration
13C4-PFBA			2.79	Poor instrument integration
PFMPA	377-73-1		3.31	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.13	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
PFMBA	863090-89-5		4.53	Poor instrument integration
13C3-PFBS			5.24	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.24	Poor instrument integration
PFEESA	113507-82-7		5.80	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.32	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.29	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11025.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 4:15:18 PM
 Sample Name : cc169-1.0LL
 Vial : P3-A2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95462,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	40831	10.00	µg/L m	-0.012
M5-PFPeA	4.125	268.3 -> 223.0	24004	5.00	µg/L m	-0.025
M5-PFHxA	5.310	318.0 -> 273.0	28050	2.50	µg/L	-0.025
M4-PFHpA	6.255	367.1 -> 322.0	26668	2.50	µg/L	-0.025
M8-PFOA	6.925	421.1 -> 376.0	32873	2.50	µg/L	-0.025
M9-PFNA	7.507	472.1 -> 427.0	11634	1.25	µg/L	-0.025
M6-PFDA	8.042	519.1 -> 474.1	7523	1.25	µg/L	-0.025
M7-PFUnDA	8.548	570.0 -> 525.1	7823	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	8281	1.25	µg/L	-0.037
M2-PFTeDA	9.837	715.2 -> 670.0	7480	1.25	µg/L	-0.062
M8-FOSA	9.187	506.1 -> 77.8	7202	2.50	µg/L	0.000
M3-PFBS	5.241	302.1 -> 79.9	6822	2.50	µg/L m	-0.036
M3-PFHxS	7.054	402.1 -> 79.9	5639	2.50	µg/L	-0.038
M8-PFOS	8.218	507.1 -> 79.9	7615	2.50	µg/L	-0.037
M2-4:2FTS	4.972	329.1 -> 80.9	415	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	917	5.00	µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1276	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	8287	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	63192	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	10430	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	34010	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	40945	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	5027	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	3883	2.50	µg/L	0.000
13C4-PFOS	8.219	502.8 -> 79.9	7246	2.50	µg/L	-0.037
13C3-PFBA	2.778	216.0 -> 172.0	21782	5.00	µg/L m	-0.025
18O2-PFHxS	7.052	403.0 -> 83.9	3965	2.50	µg/L	-0.038
13C4-PFOA	6.926	417.1 -> 372.0	39066	2.50	µg/L	-0.025
13C2-PFDA	8.042	515.1 -> 470.1	10806	1.25	µg/L	-0.025
13C5-PFNA	7.508	468.0 -> 423.0	10759	1.25	µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	31911	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	415	4.30	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.1%			
13C2-6:2FTS	6.687	429.1 -> 80.9	917	4.27	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.3%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1276	4.24	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.7%			
13C2-PFDoDA	9.016	615.1 -> 570.0	8281	1.23	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%			
13C2-PFTeDA	9.837	715.2 -> 670.0	7480	1.18	µg/L	-0.062
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%			
13C3-PFBS	5.241	302.1 -> 79.9	6822	2.24	µg/L m	-0.036
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.5%			
13C3-PFHxS	7.054	402.1 -> 79.9	5639	2.49	µg/L	-0.038

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%			
13C4-PFBA	2.786	216.8 -> 171.9	40831	9.94	µg/L	m -0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.4%			
13C4-PFHpA	6.255	367.1 -> 322.0	26668	2.51	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%			
13C5-PFHxA	5.310	318.0 -> 273.0	28050	2.50	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%			
13C5-PFPeA	4.125	268.3 -> 223.0	24004	4.14	µg/L	m -0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 82.8%			
13C6-PFDA	8.042	519.1 -> 474.1	7523	1.35	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.8%			
13C7-PFUnDA	8.548	570.0 -> 525.1	7823	1.28	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%			
13C8-FOSA	9.187	506.1 -> 77.8	7202	2.53	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%			
13C8-PFOA	6.925	421.1 -> 376.0	32873	2.50	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%			
13C8-PFOS	8.218	507.1 -> 79.9	7615	2.67	µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.7%			
13C9-PFNA	7.507	472.1 -> 427.0	11634	1.32	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.8%			
d3-MeFOSAA	8.063	573.2 -> 419.0	8287	5.16	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%			
13C3-HFPO-DA	5.690	286.9 -> 168.9	63192	10.67	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 106.7%			
d3-MeFOSA	10.416	515.0 -> 219.0	3883	2.66	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.4%			
d5-EtFOSAA	8.285	589.2 -> 419.0	10430	4.39	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.9%			
d7-MeFOSE	10.315	623.2 -> 58.9	34010	25.51	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.0%			
d9-EtFOSE	10.623	639.2 -> 58.9	40945	25.06	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.2%			
d5-EtFOSA	10.712	531.1 -> 219.0	5027	2.50	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%			
Target Compounds						QValue
4:2FTS	4.972	327.1 -> 307.0	494	0.94	µg/L	84
		327.1 -> 80.9	215			
6:2FTS	6.675	427.1 -> 407.0	701	0.91	µg/L	99
		427.1 -> 80.9	290			
8:2FTS	7.804	527.1 -> 507.0	493	0.82	µg/L	97
		527.1 -> 80.8	257			
EtFOSAA	8.298	584.2 -> 419.1	390	0.29	µg/L	m 86
		584.2 -> 526.0	122			
FOSA	9.177	498.1 -> 77.9	591	0.22	µg/L	98
		498.1 -> 478.0	16			
MeFOSAA	8.064	570.1 -> 419.0	273	0.19	µg/L	#m 62
		570.1 -> 483.0	108			
PFBA	2.782	212.8 -> 168.9	1496	0.93	µg/L	m 100
PFBS	5.242	298.7 -> 79.9	455	0.20	µg/L	m 95
		298.7 -> 98.8	177			
PFDA	8.042	512.9 -> 469.0	1612	0.20	µg/L	100
		512.9 -> 219.0	293			
PFDODA	9.017	613.1 -> 569.0	1225	0.22	µg/L	99
		613.1 -> 319.0	196			
PFDS	9.195	599.0 -> 79.9	320	0.19	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	168			
PFHpA	6.256	363.1 -> 319.0	2605	0.23	µg/L	97
		363.1 -> 169.0	545			
PFHpS	7.660	449.0 -> 79.9	446	0.21	µg/L	92
		449.0 -> 98.9	244			
PFHxA	5.312	313.0 -> 269.0	1895	0.23	µg/L	99
		313.0 -> 118.9	93			
PFHxS	7.055	398.7 -> 79.9	369	0.19	µg/L	m 80
		398.7 -> 98.9	207			
PFNA	7.508	463.0 -> 419.0	1560	0.23	µg/L	97
		463.0 -> 219.0	395			
PFNS	8.736	548.8 -> 79.9	353	0.21	µg/L	94
		548.8 -> 98.9	200			
PFOA	6.926	413.0 -> 369.0	3015	0.24	µg/L	99
		413.0 -> 169.0	667			
PFOS	8.219	498.9 -> 79.9	538	0.18	µg/L	m 99
		498.9 -> 98.8	342			
PFPeA	4.127	263.0 -> 219.0	2632	0.50	µg/L	m 100
PFPeS	6.320	349.1 -> 79.9	261	0.16	µg/L	68
		349.1 -> 98.9	191			
PFTeDA	9.837	713.1 -> 669.0	1461	0.25	µg/L	93
		713.1 -> 168.9	165			
PFTrDA	9.451	663.0 -> 619.0	1759	0.24	µg/L	98
		663.0 -> 168.9	306			
PFUnDA	8.548	563.1 -> 519.0	1349	0.23	µg/L	95
		563.1 -> 269.1	308			
11CI-PF3OUdS	9.503	630.9 -> 450.9	5494	0.79	µg/L	99
		632.9 -> 452.9	1660			
9CI-PF3ONS	8.588	530.8 -> 351.0	5856	0.79	µg/L	98
		532.8 -> 353.0	1908			
ADONA	6.517	376.9 -> 250.9	13428	0.78	µg/L	98
		376.9 -> 84.8	4176			
HFPO-DA	5.691	284.9 -> 168.9	4767	0.92	µg/L	99
		284.9 -> 184.9	418			
3:3FTCA	3.591	241.0 -> 177.0	529	1.37	µg/L	96
		241.0 -> 117.0	60			
5:3FTCA	5.893	341.0 -> 237.1	8213	4.83	µg/L	93
		341.0 -> 217.0	5963			
7:3FTCA	7.323	441.0 -> 316.9	3679	5.40	µg/L	86
		441.0 -> 336.9	7185			
EtFOSA	10.726	526.0 -> 219.0	420	0.23	µg/L	97
		526.0 -> 169.0	507			
EtFOSE	10.636	630.0 -> 58.9	3516	2.31	µg/L	100
MeFOSA	10.430	511.9 -> 219.0	323	0.21	µg/L	88
		511.9 -> 169.0	454			
MeFOSE	10.327	616.1 -> 58.9	3306	2.28	µg/L	100
PFDoDS	10.001	699.1 -> 79.9	281	0.21	µg/L	76
		699.1 -> 98.8	119			
NFDHA	5.193	295.0 -> 201.0	262	0.40	µg/L	99
		295.0 -> 84.9	72			
PFMBA	4.528	279.0 -> 85.1	1771	0.46	µg/L	m 100
PFMPA	3.303	229.0 -> 84.9	1314	0.46	µg/L	m 100
PFEESA	5.796	314.8 -> 134.9	3179	0.37	µg/L	m 98
		314.8 -> 82.9	116			

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



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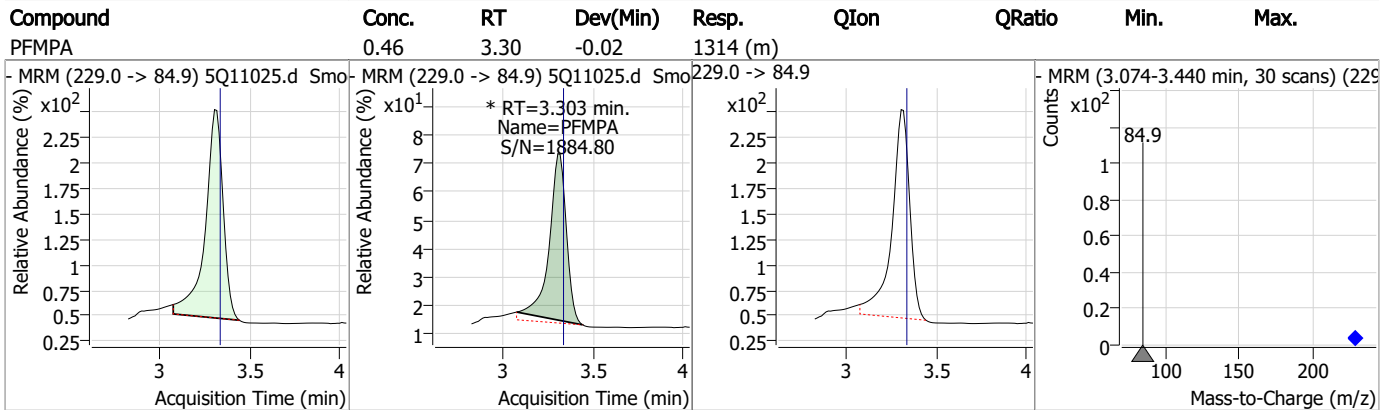
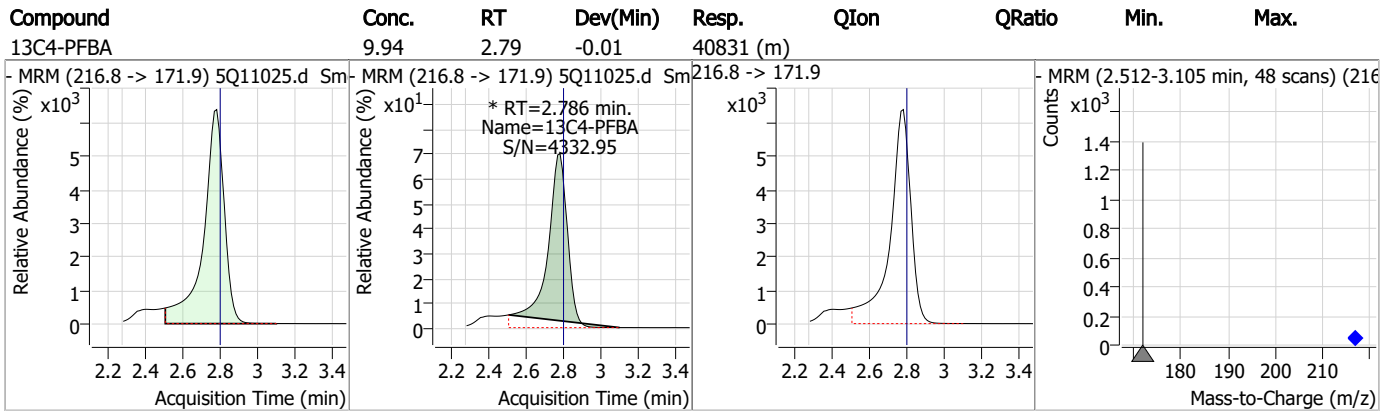
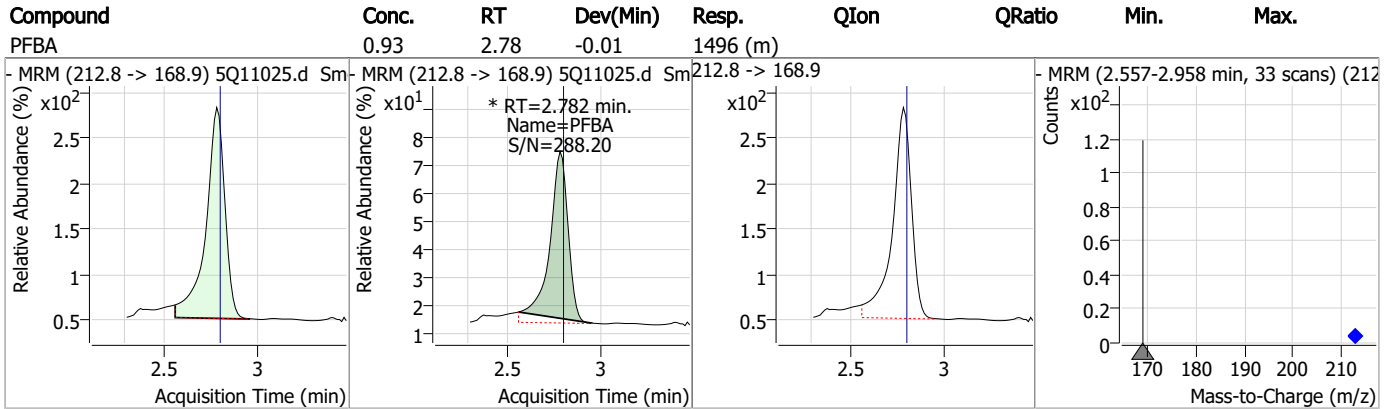
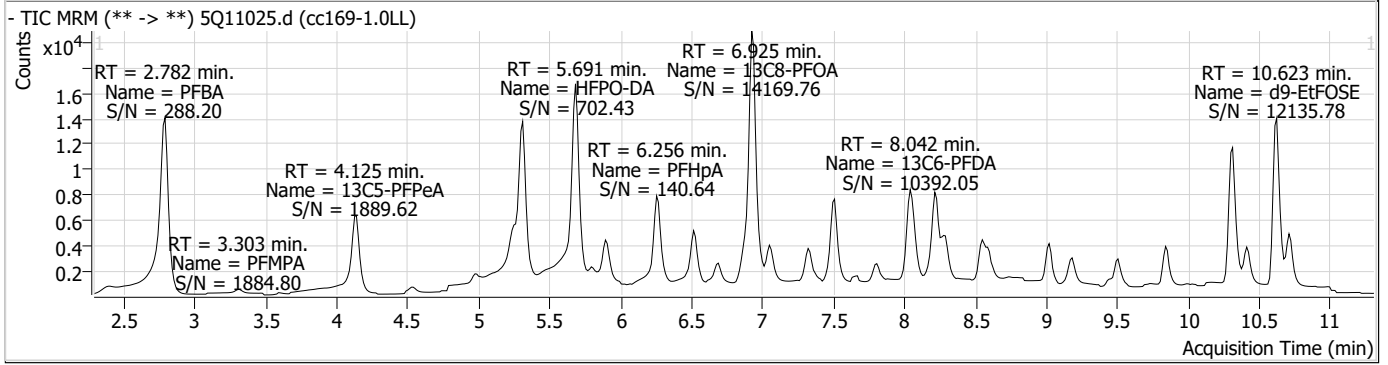
Perfluorinated Compounds by LC/MS/MS

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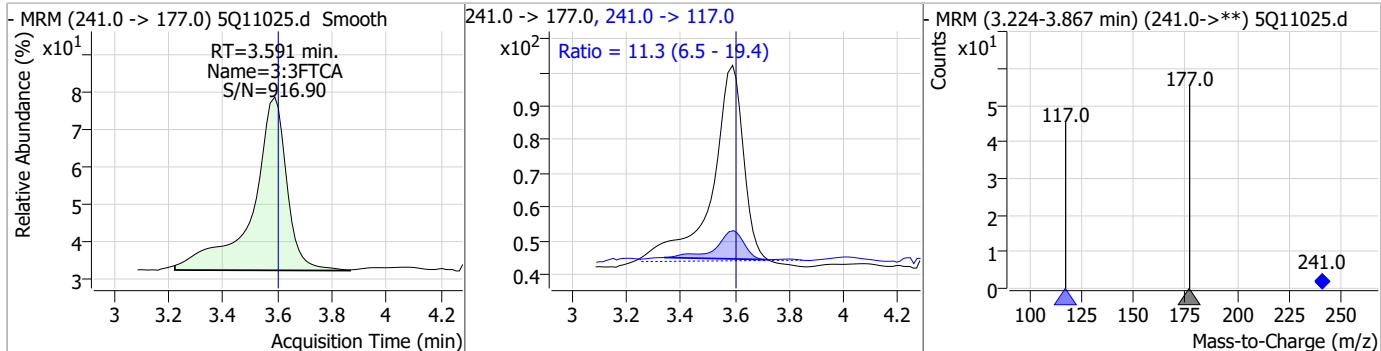
Perfluorinated Compounds by LC/MS/MS



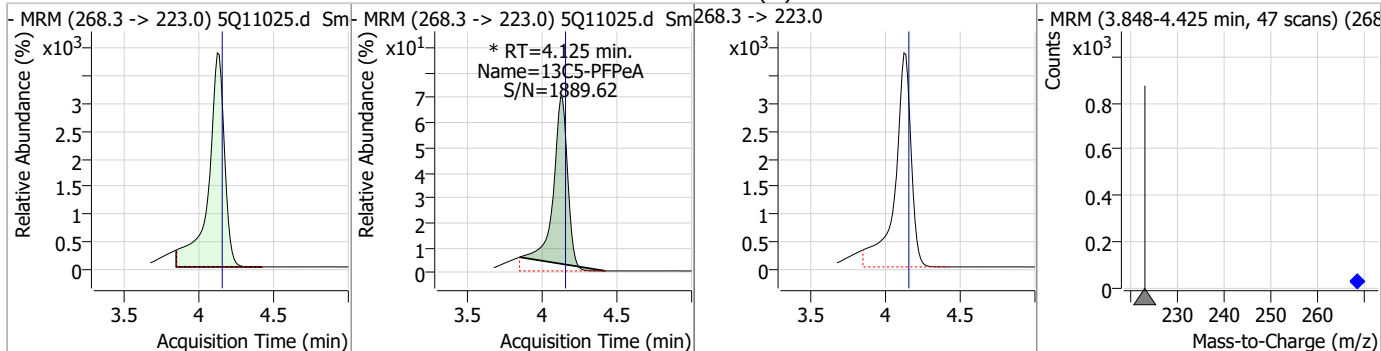
7.7.17
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Perfluorinated Compounds by LC/MS/MS

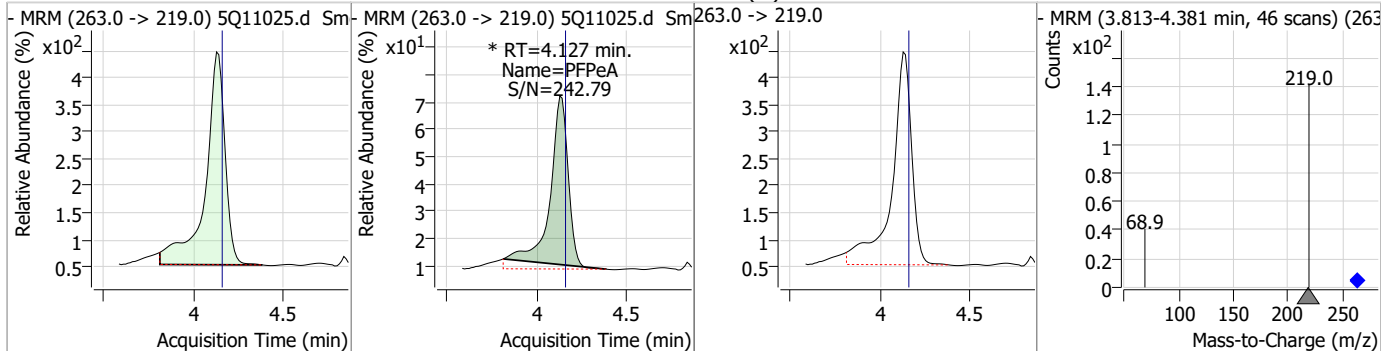
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	1.37	3.59	-0.01	529	241.0 -> 117.0	11.3	6.5	19.4



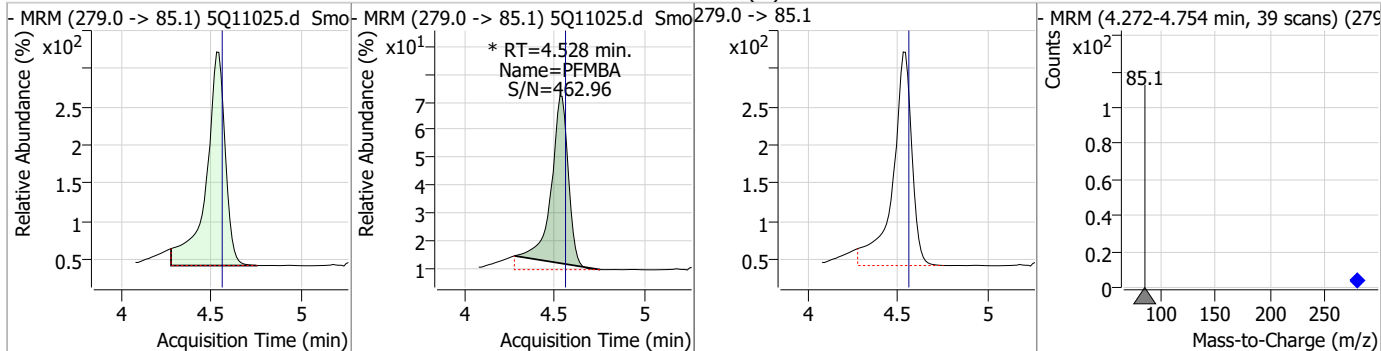
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.14	4.12	-0.02	24004 (m)				



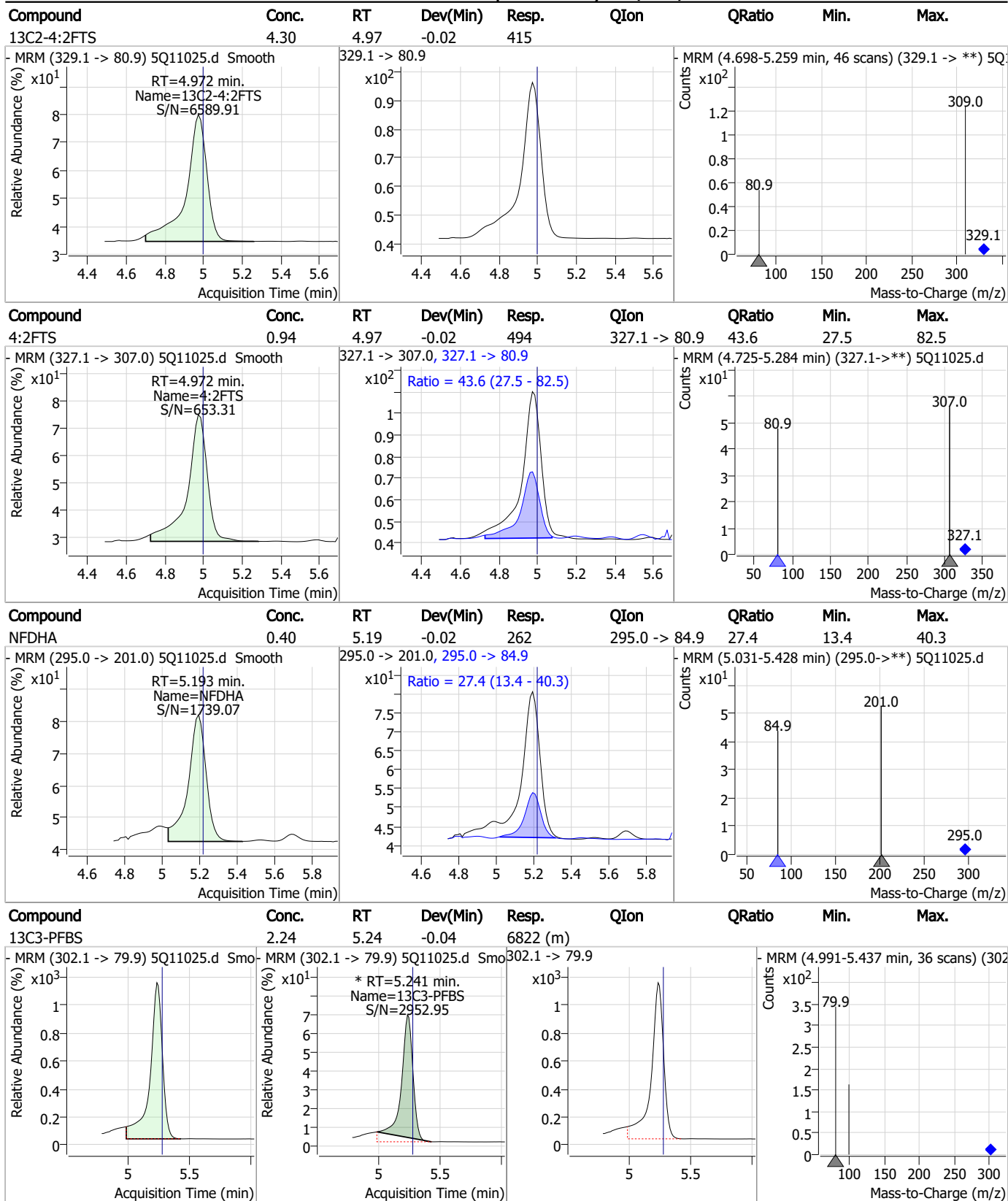
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.50	4.13	-0.02	2632 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	0.46	4.53	-0.02	1771 (m)				

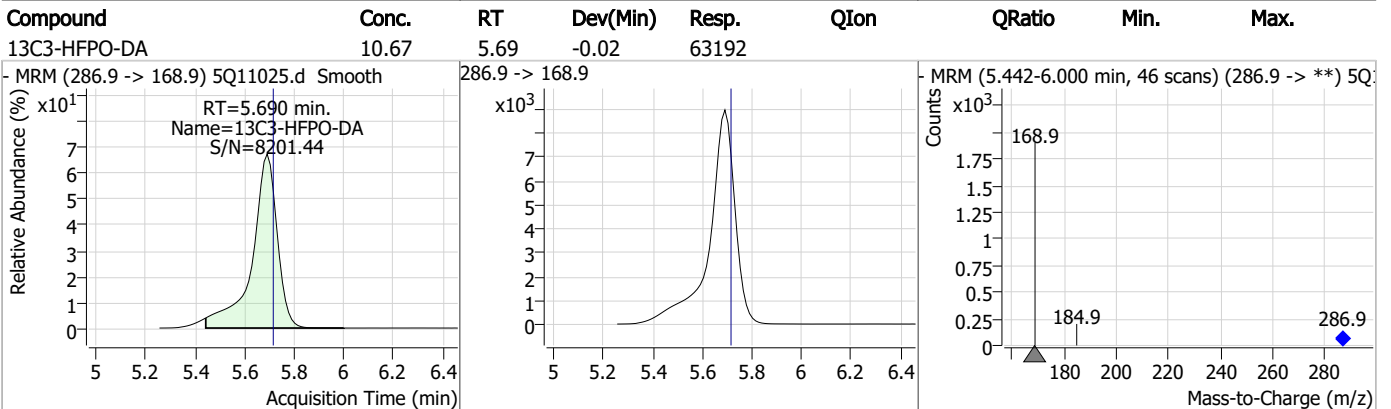
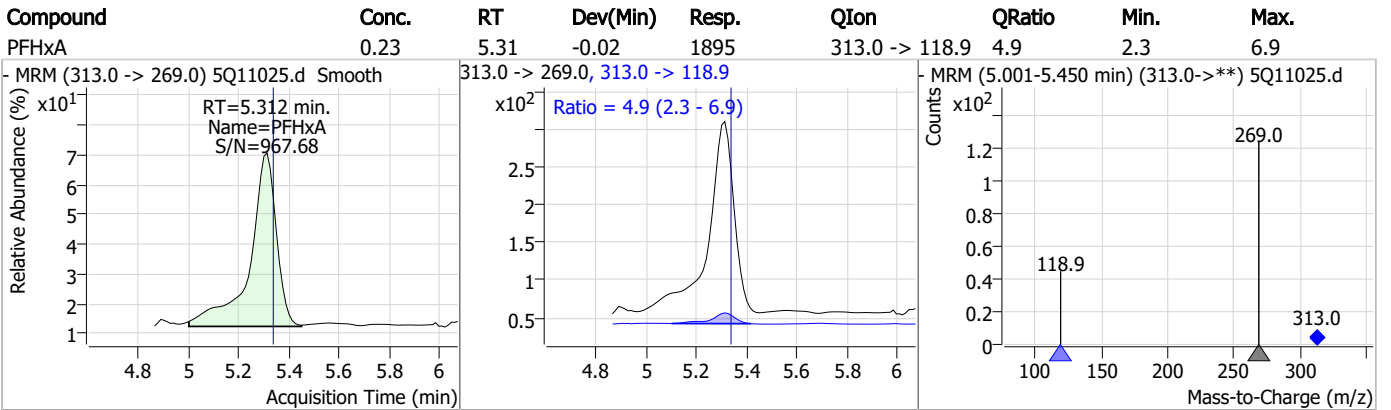
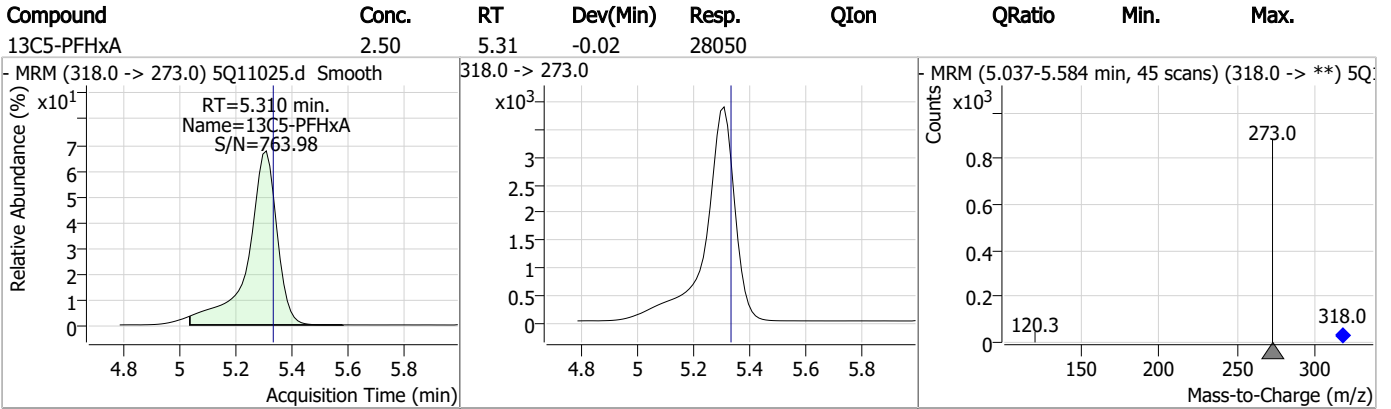
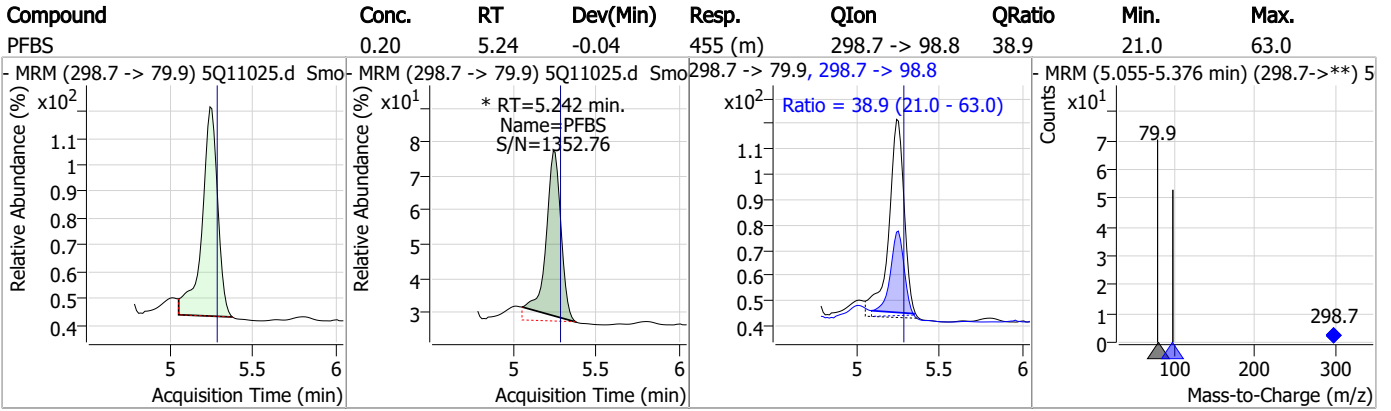


Perfluorinated Compounds by LC/MS/MS



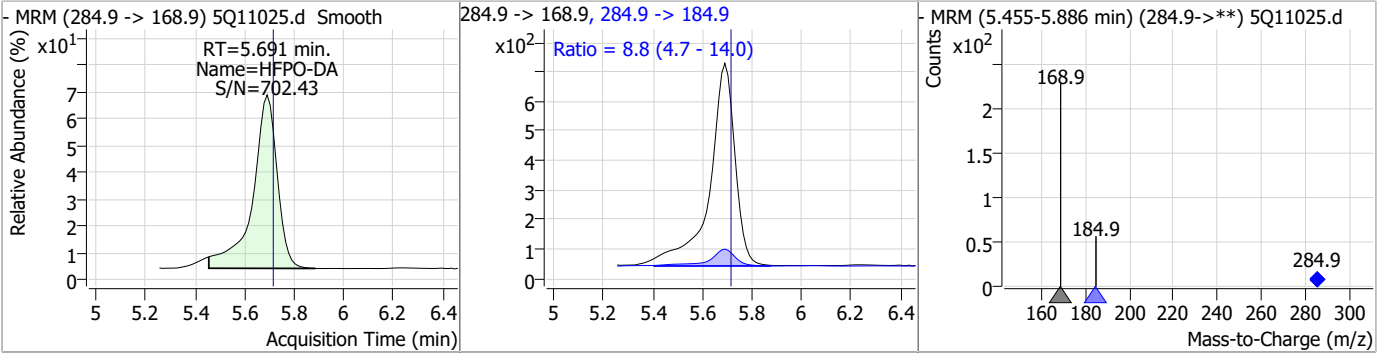
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Perfluorinated Compounds by LC/MS/MS

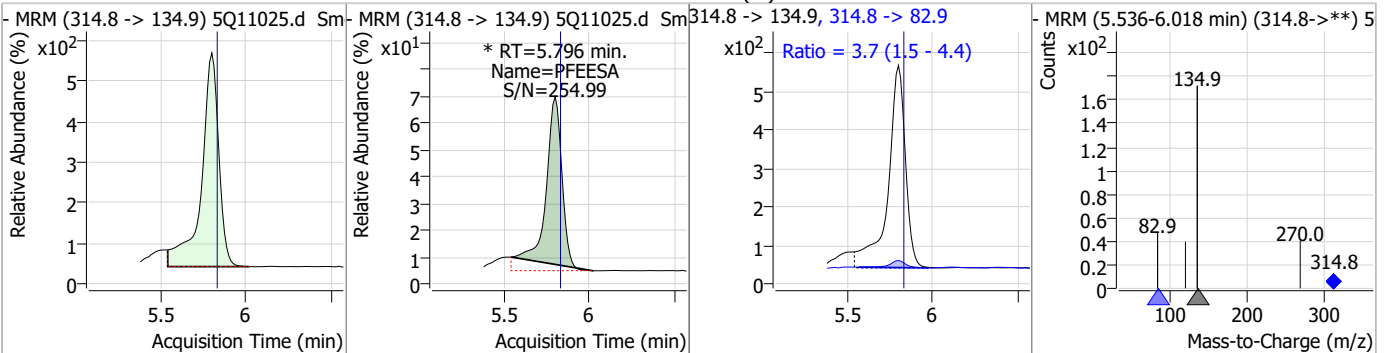


Perfluorinated Compounds by LC/MS/MS

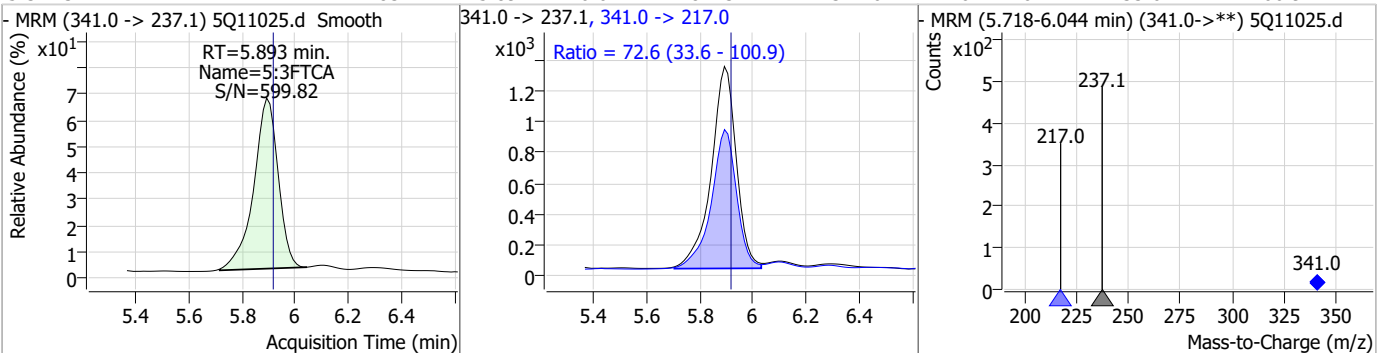
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.92	5.69	-0.02	4767	284.9 -> 184.9	8.8	4.7	14.0



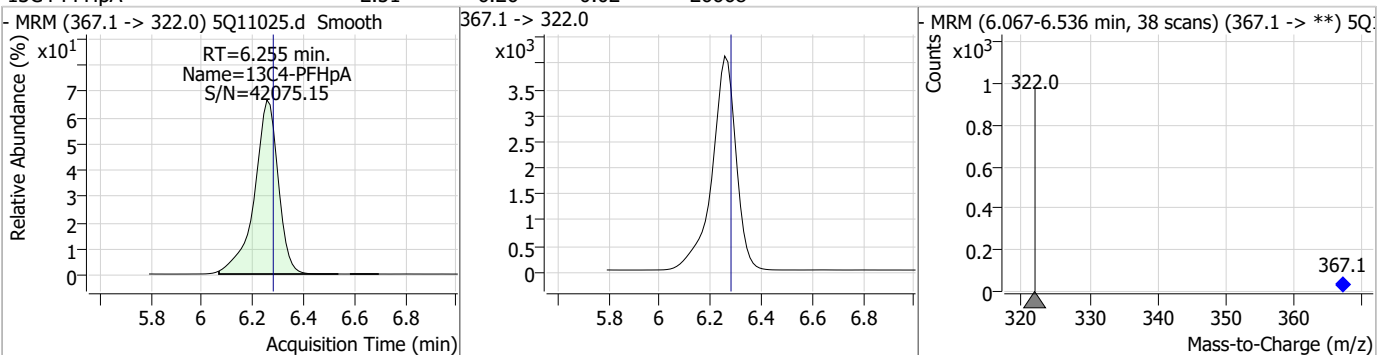
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.37	5.80	-0.02	3179 (m)	314.8 -> 82.9	3.7	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.83	5.89	-0.02	8213	341.0 -> 217.0	72.6	33.6	100.9

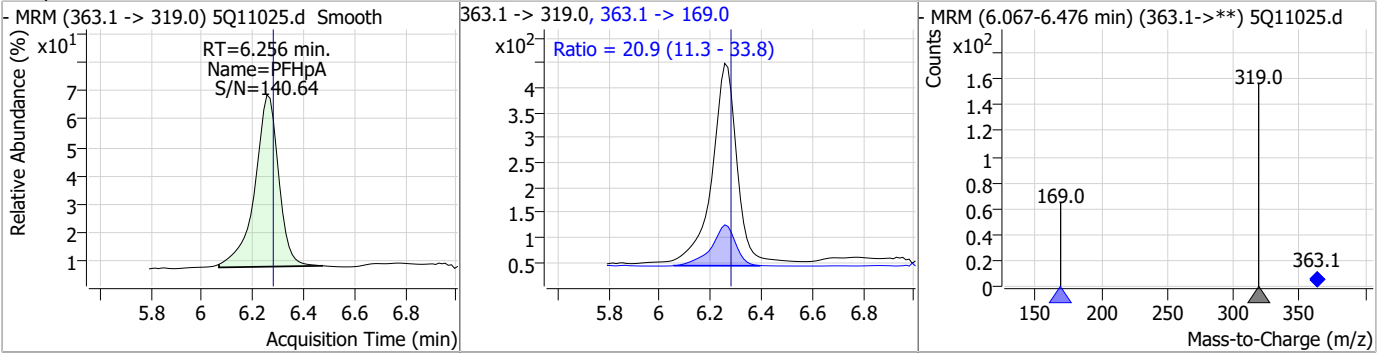


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.51	6.26	-0.02	26668	367.1 -> 322.0	-	-	-

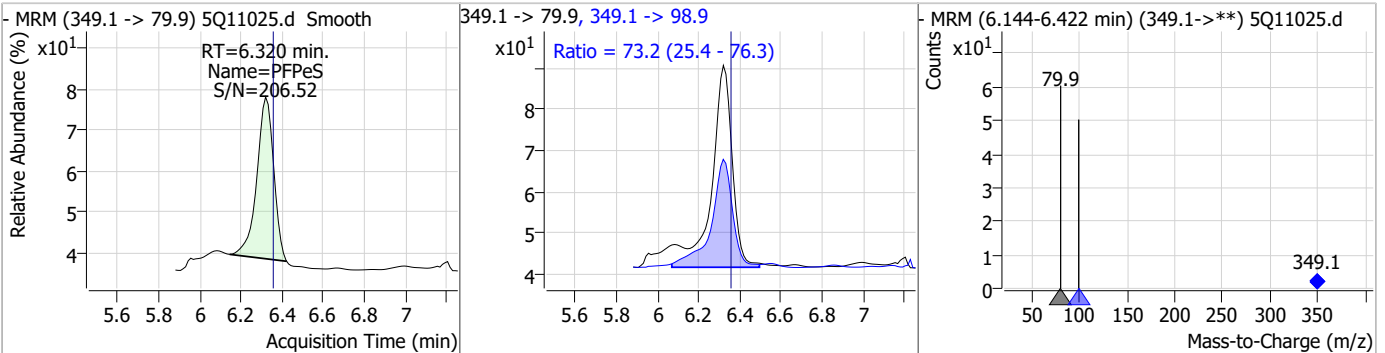


Perfluorinated Compounds by LC/MS/MS

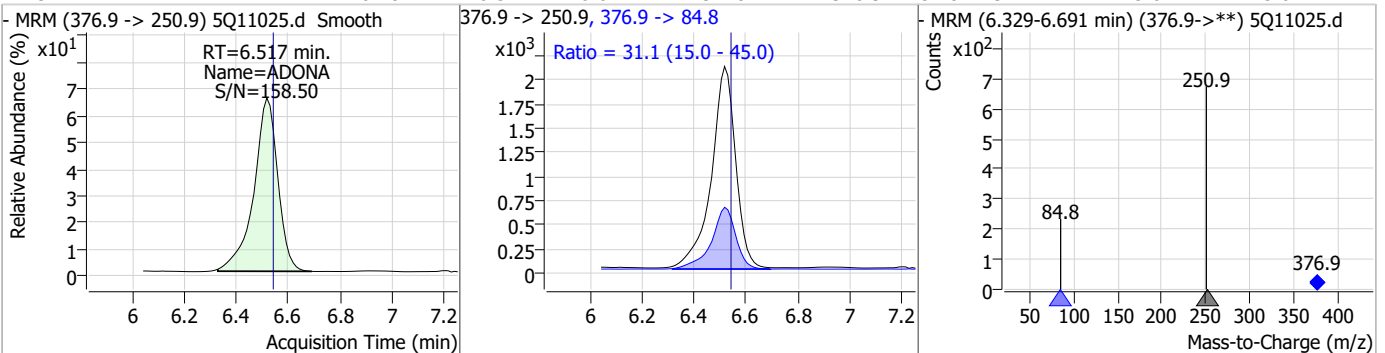
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.23	6.26	-0.02	2605	363.1 -> 169.0	20.9	11.3	33.8



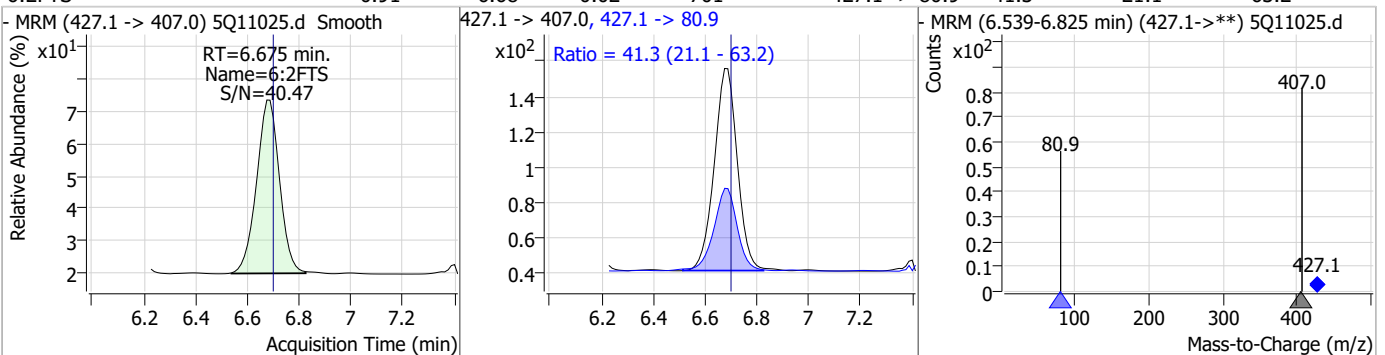
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.16	6.32	-0.04	261	349.1 -> 98.9	73.2	25.4	76.3



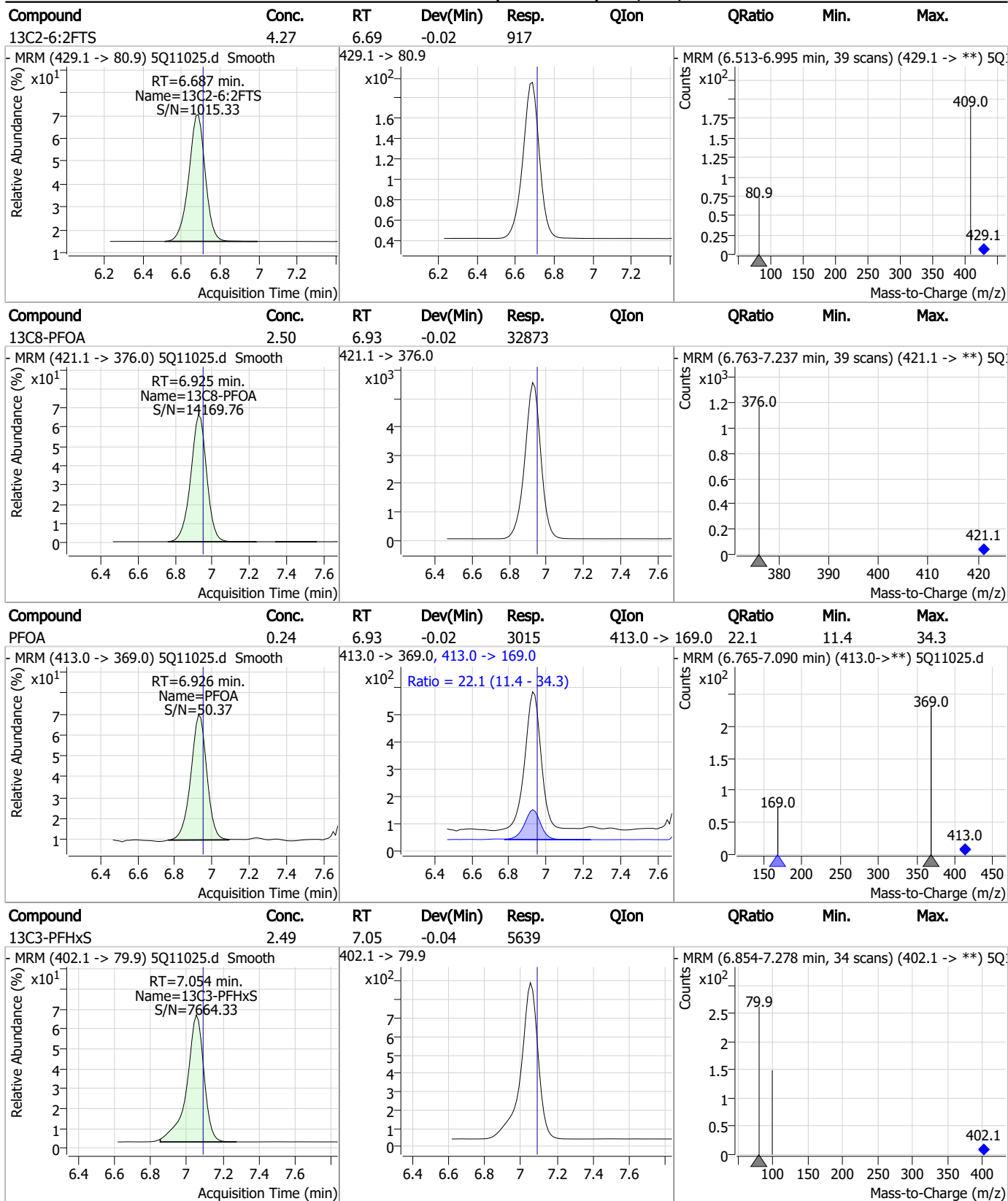
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.78	6.52	-0.02	13428	376.9 -> 84.8	31.1	15.0	45.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2F7S	0.91	6.68	-0.02	701	427.1 -> 80.9	41.3	21.1	63.2

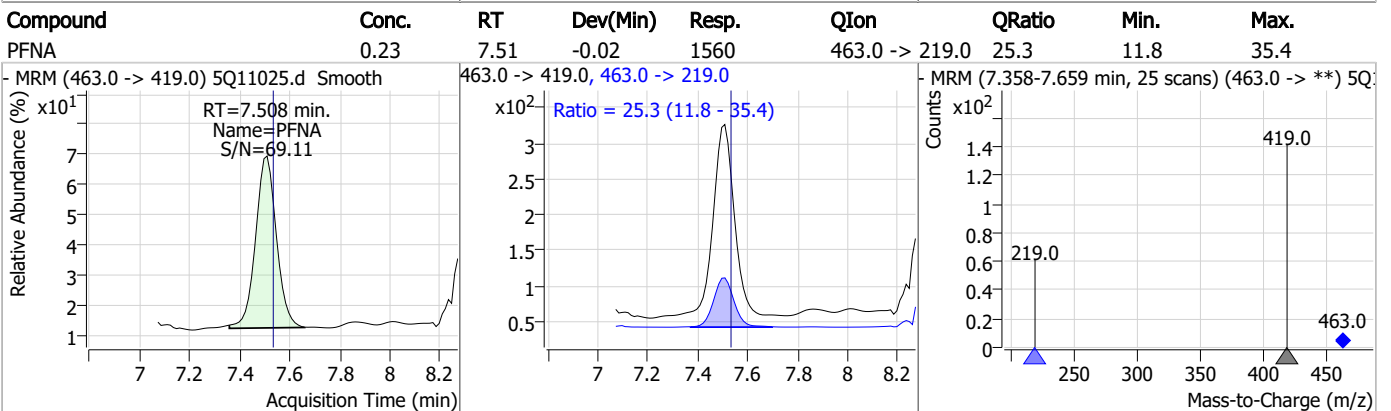
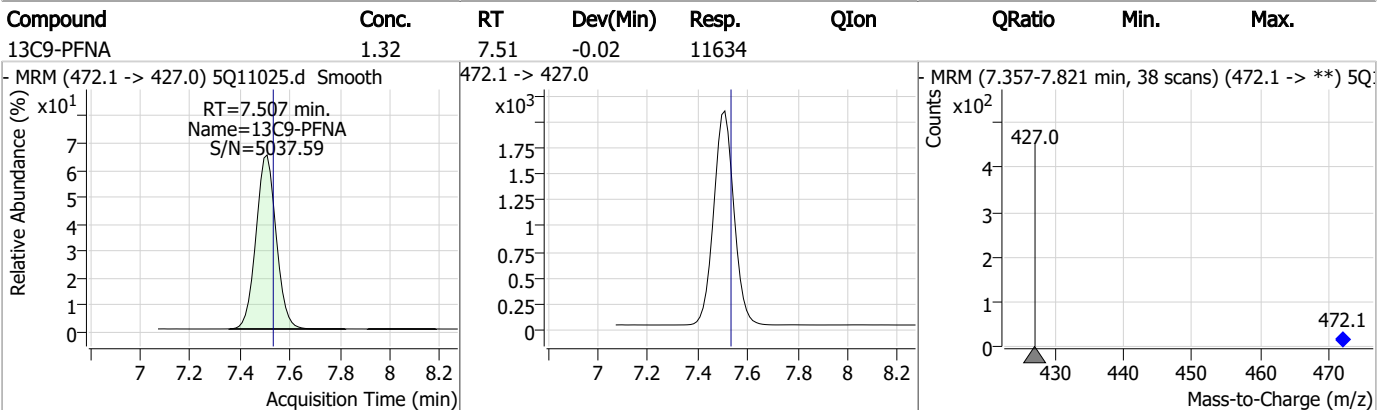
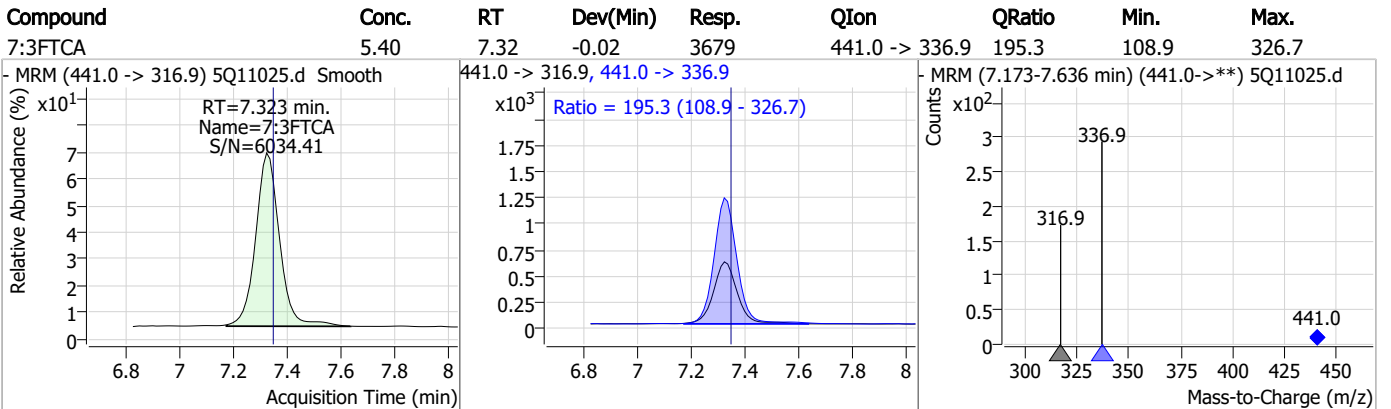
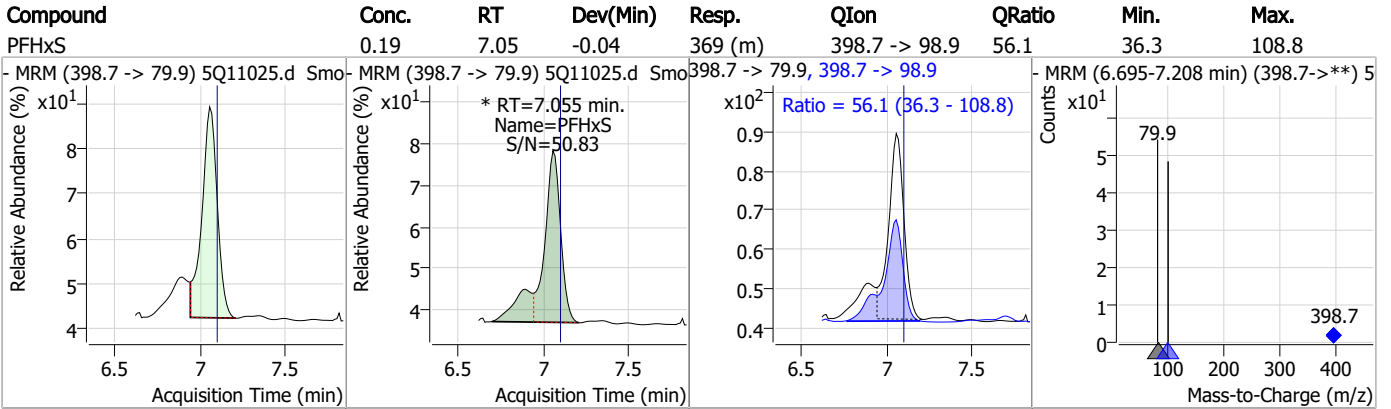


Perfluorinated Compounds by LC/MS/MS

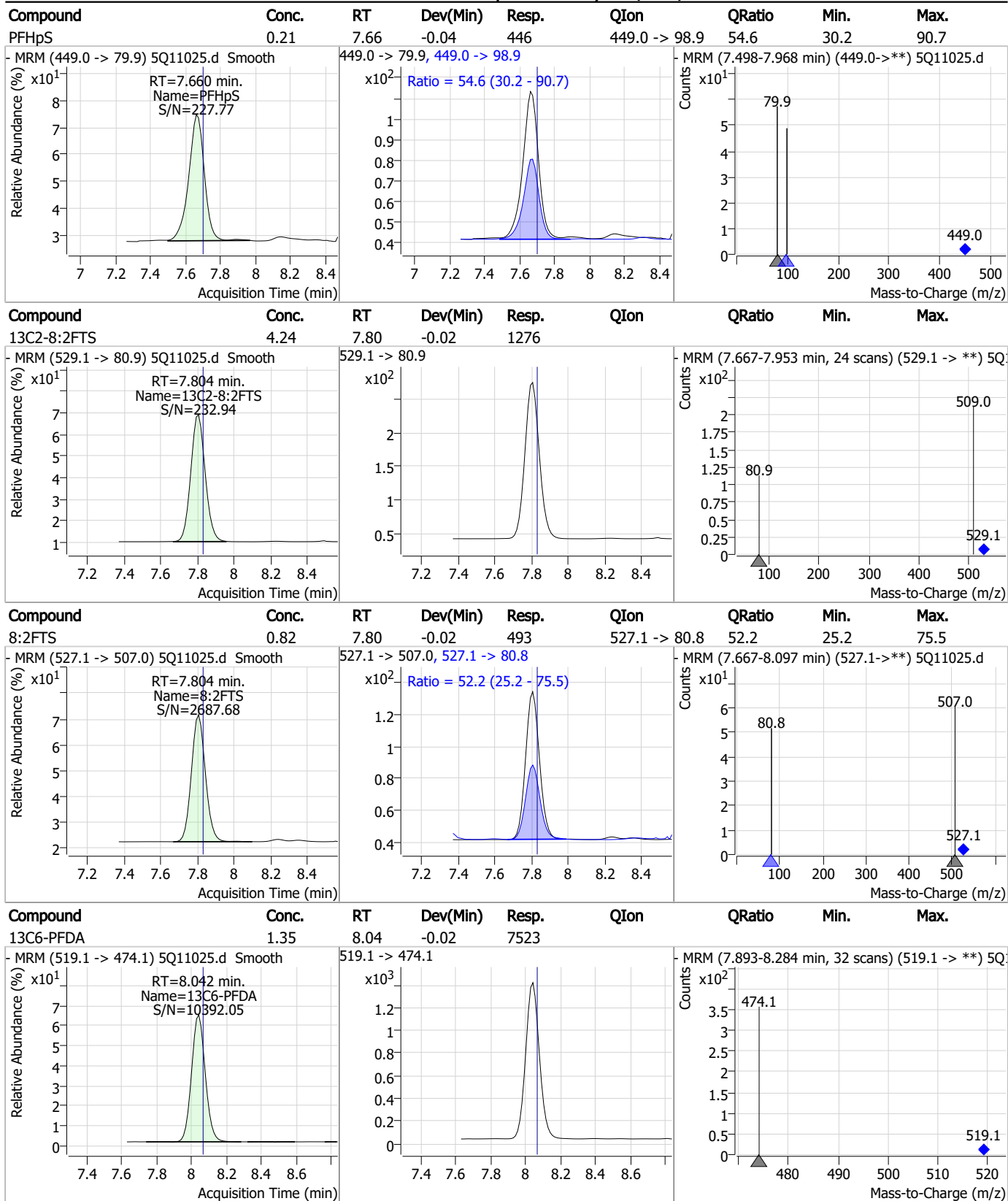


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Perfluorinated Compounds by LC/MS/MS



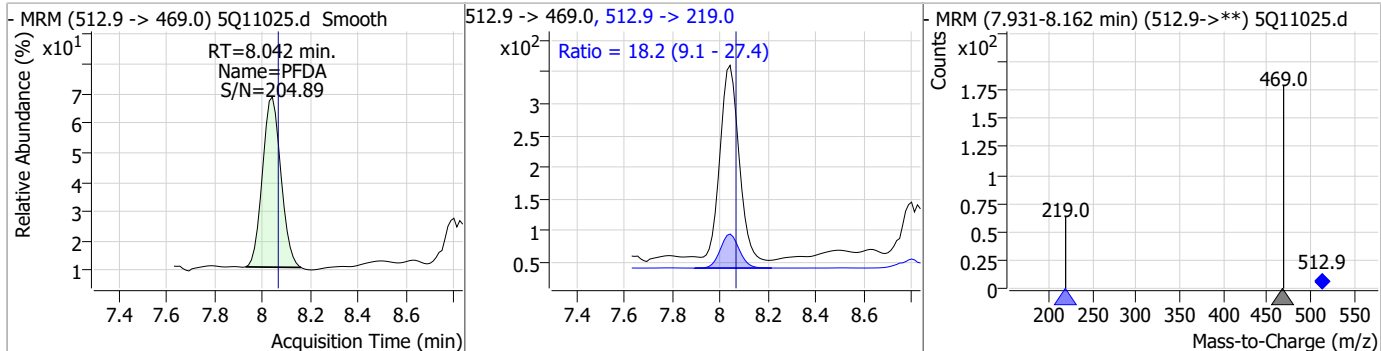
Perfluorinated Compounds by LC/MS/MS



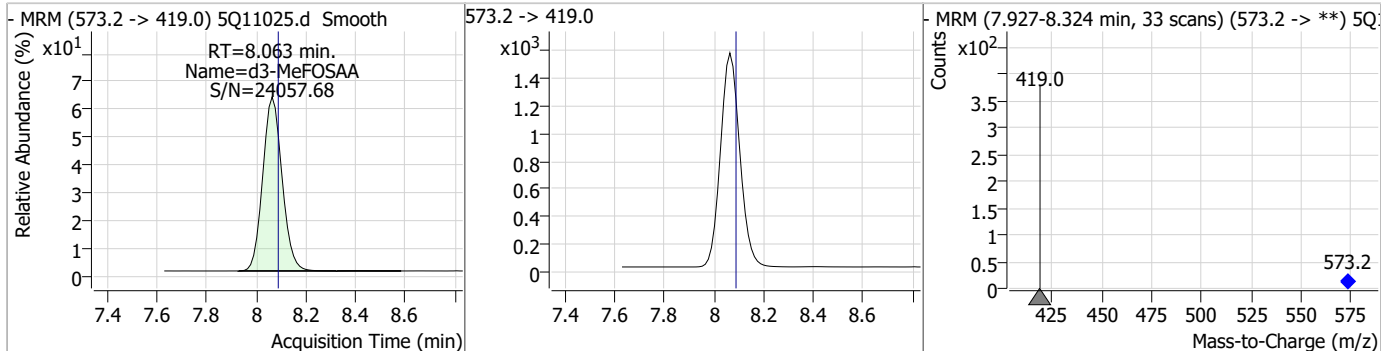
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Perfluorinated Compounds by LC/MS/MS

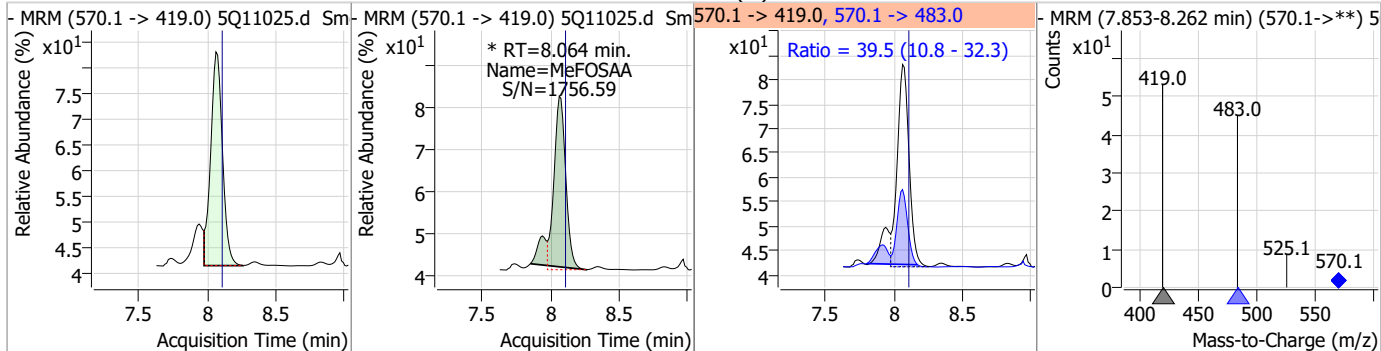
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.20	8.04	-0.02	1612	512.9 -> 219.0	18.2	9.1	27.4



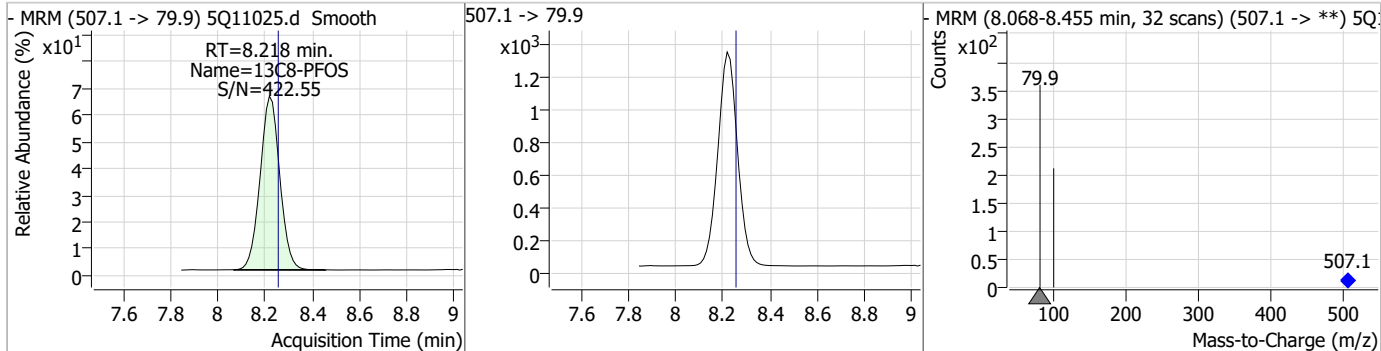
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.16	8.06	-0.02	8287				



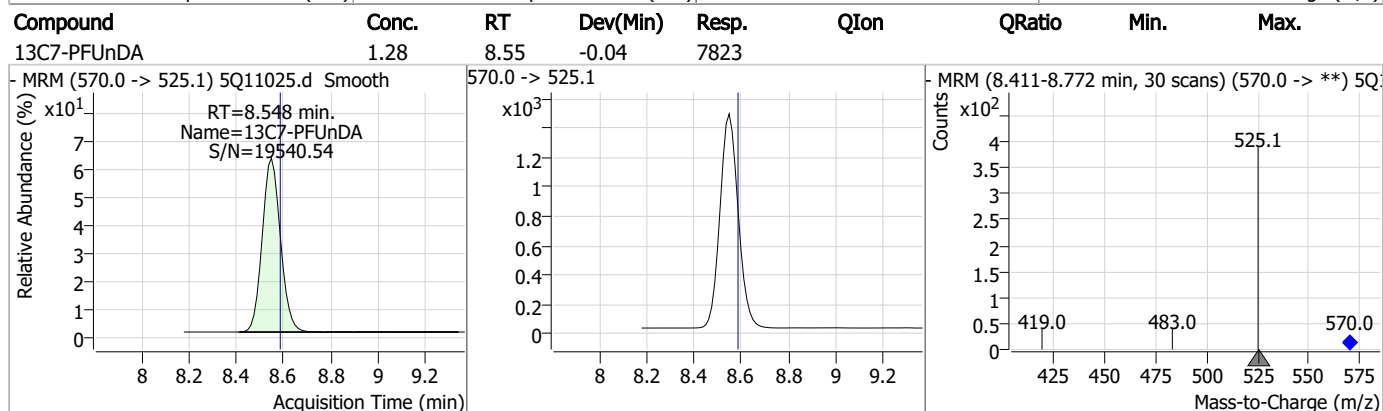
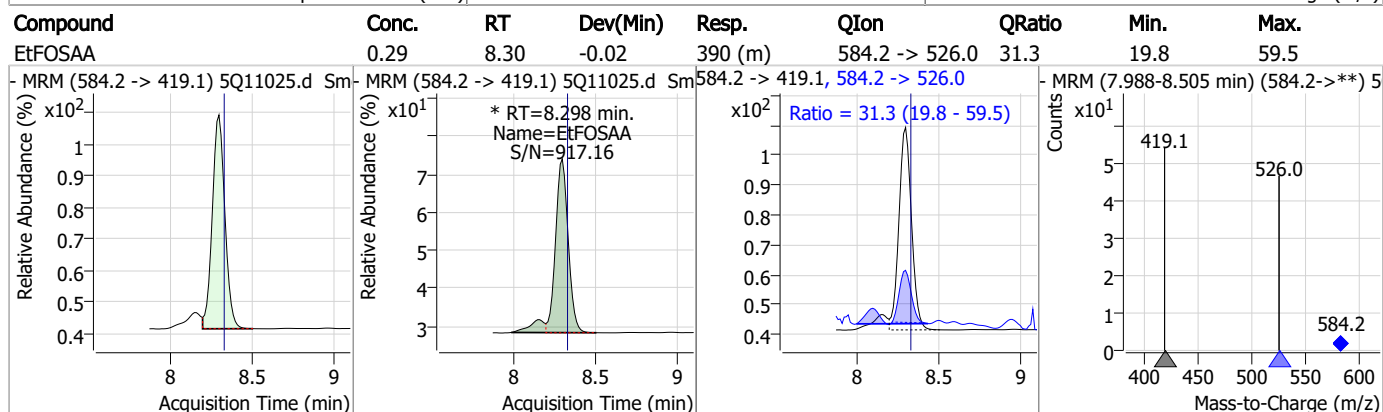
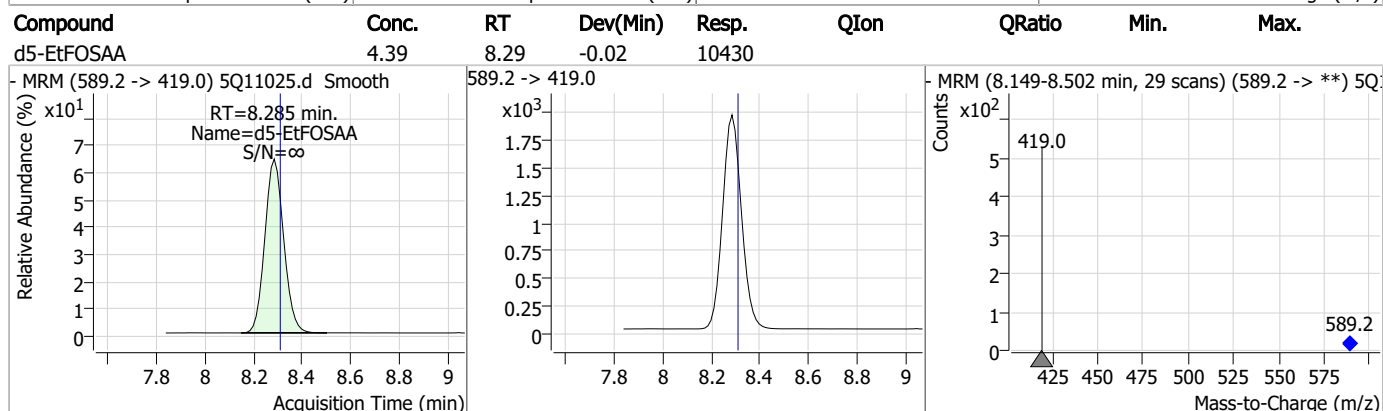
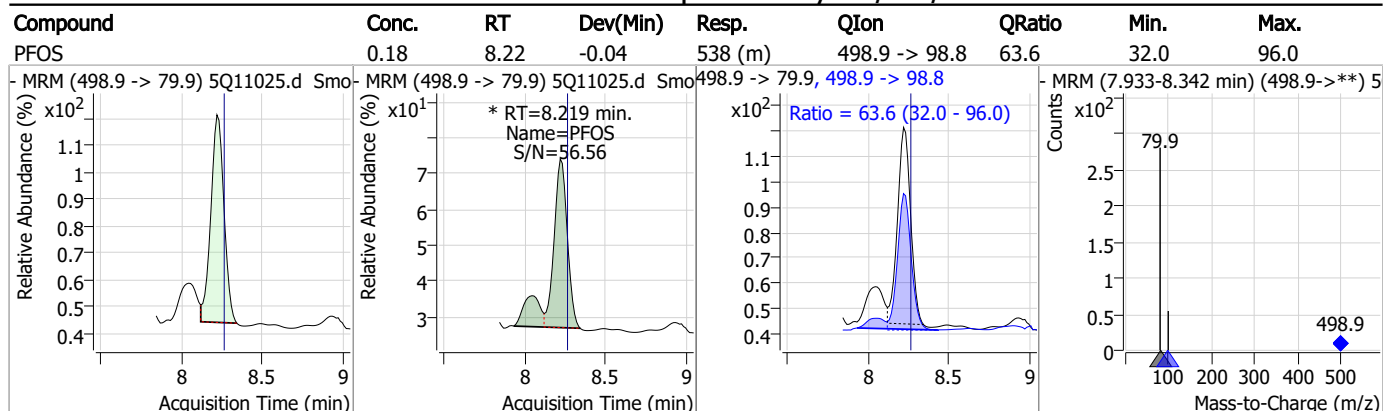
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.19	8.06	-0.04	273 (m)	570.1 -> 483.0	39.5	10.8	32.3



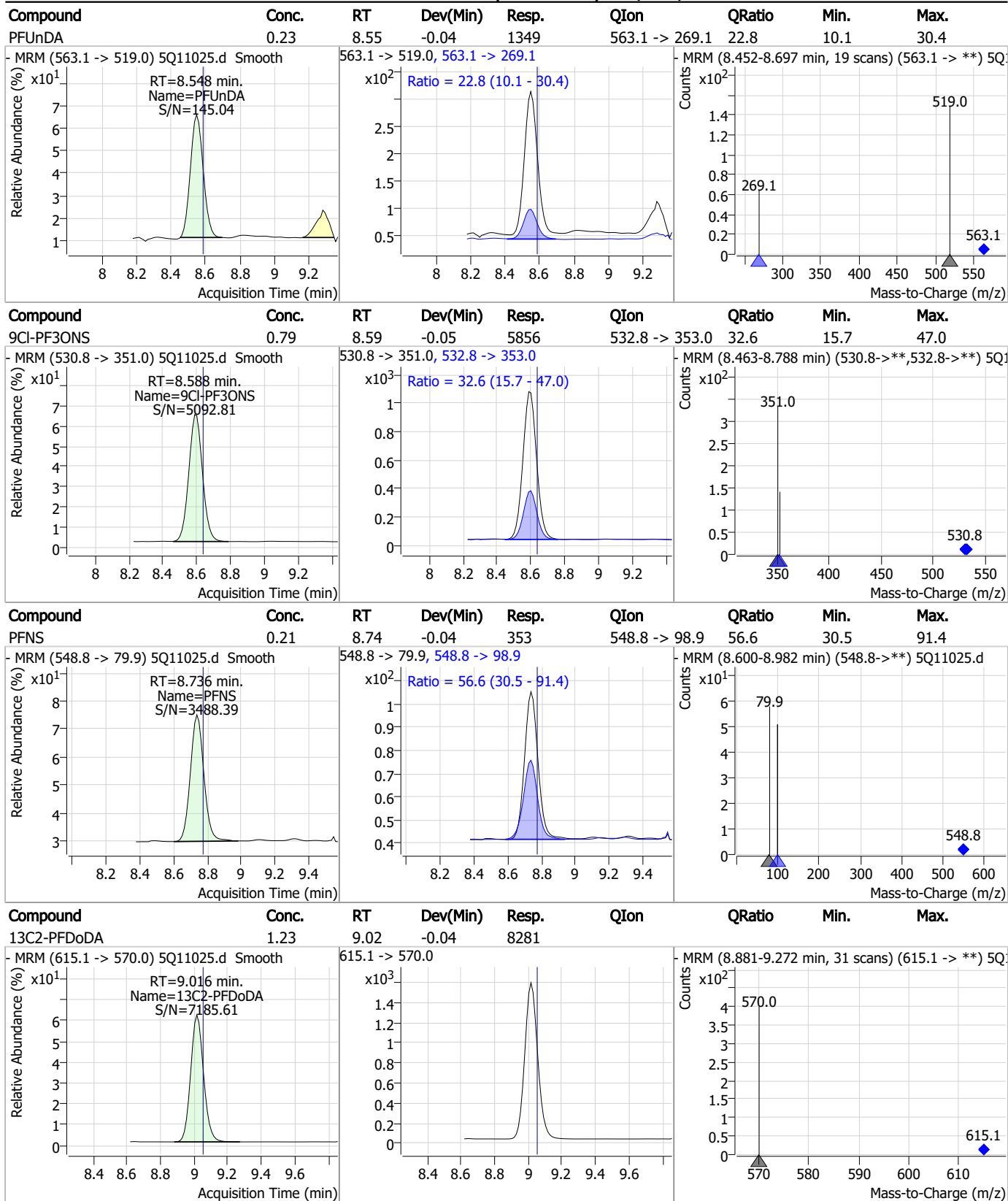
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.67	8.22	-0.04	7615				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

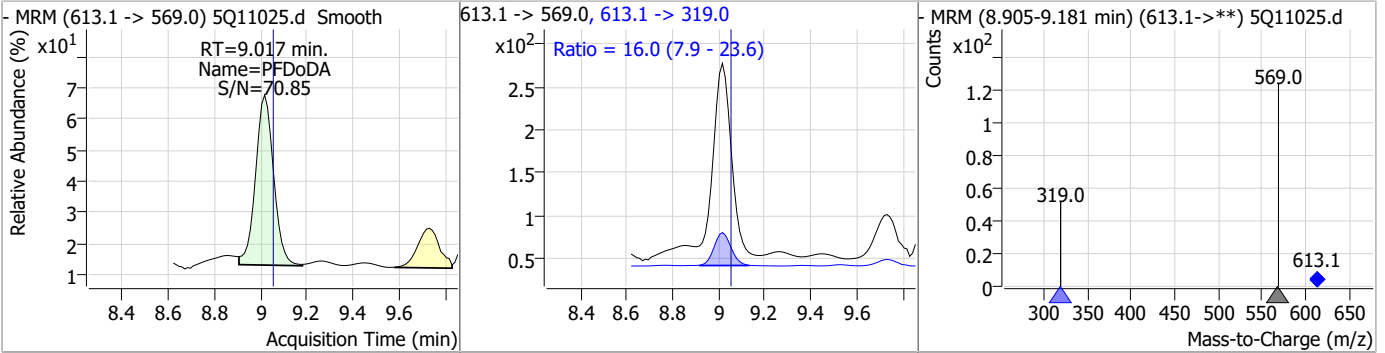


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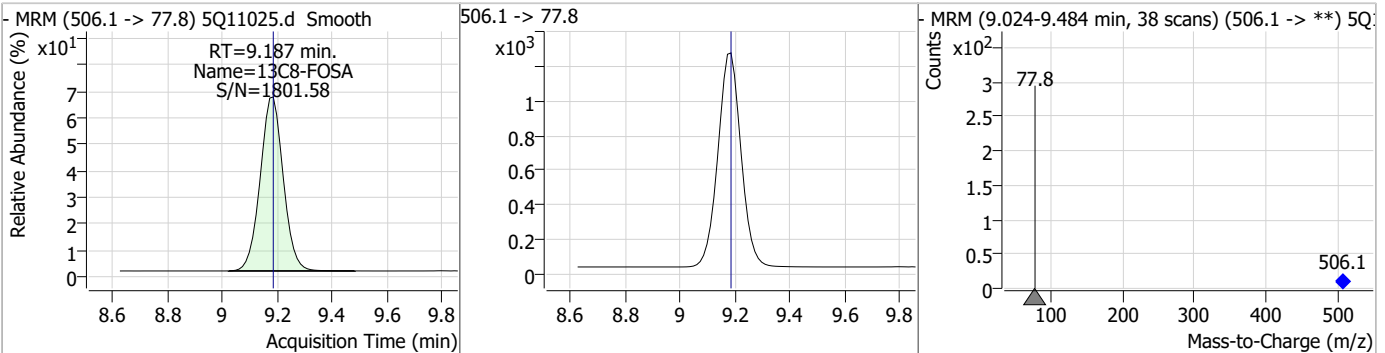


Perfluorinated Compounds by LC/MS/MS

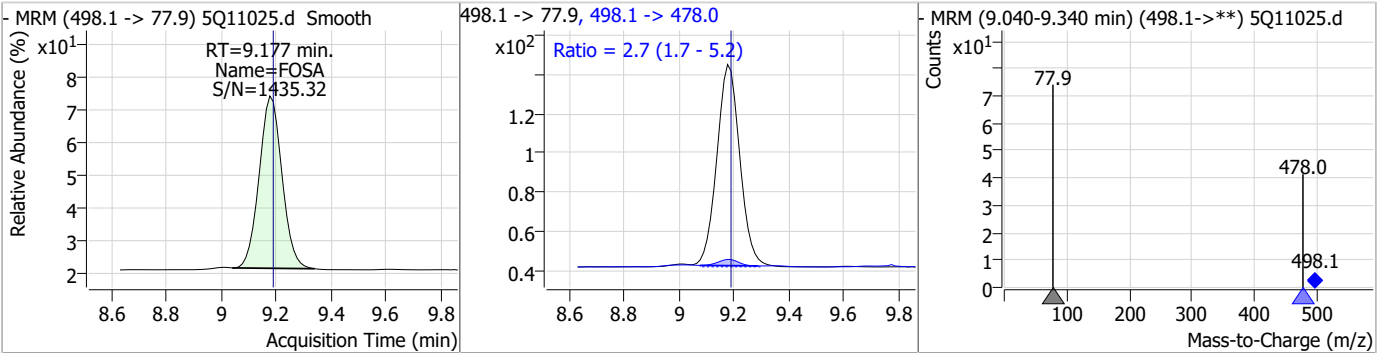
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDODA	0.22	9.02	-0.04	1225	613.1 -> 319.0	16.0	7.9	23.6



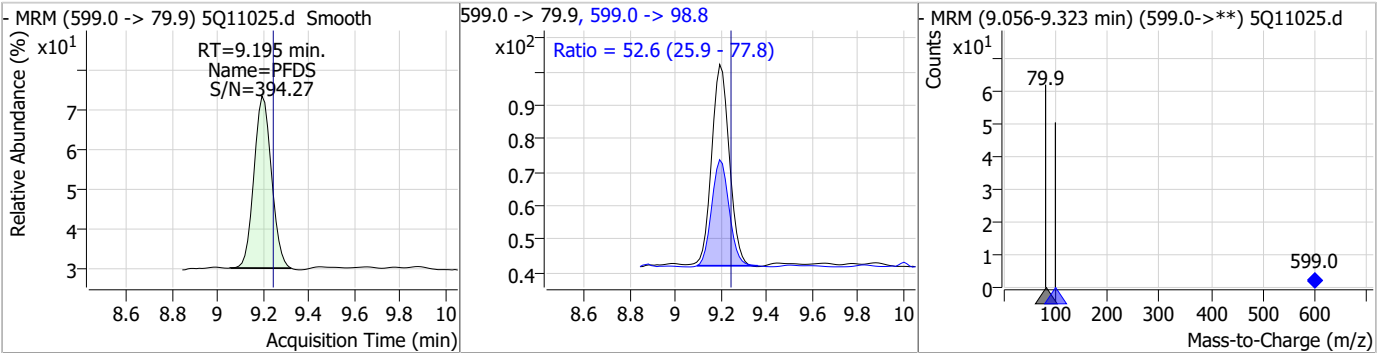
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.53	9.19	0.00	7202				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.22	9.18	-0.01	591	498.1 -> 478.0	2.7	1.7	5.2

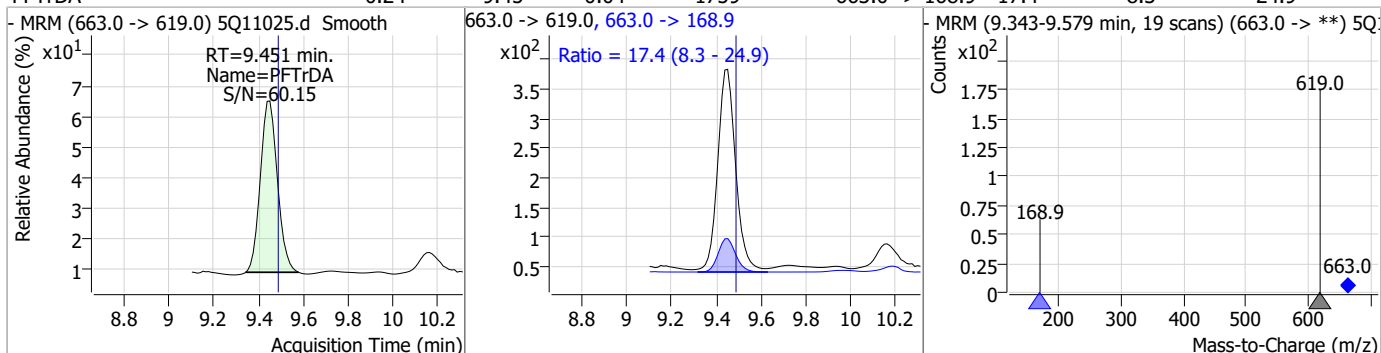


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.19	9.19	-0.05	320	599.0 -> 98.8	52.6	25.9	77.8

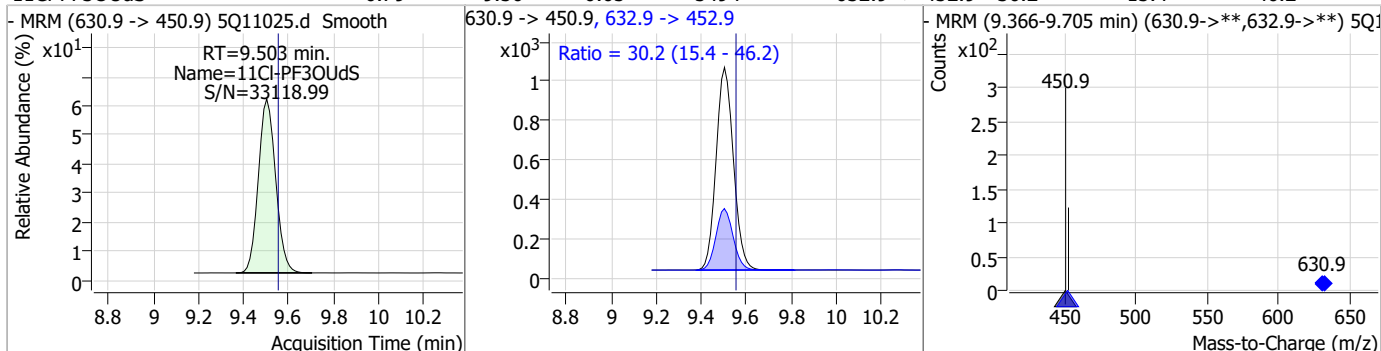


Perfluorinated Compounds by LC/MS/MS

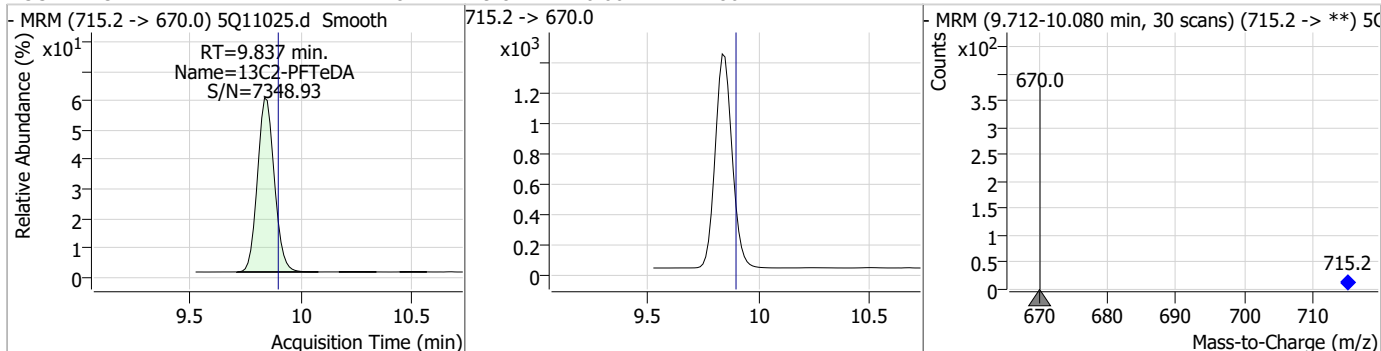
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.24	9.45	-0.04	1759	663.0 -> 168.9	17.4	8.3	24.9



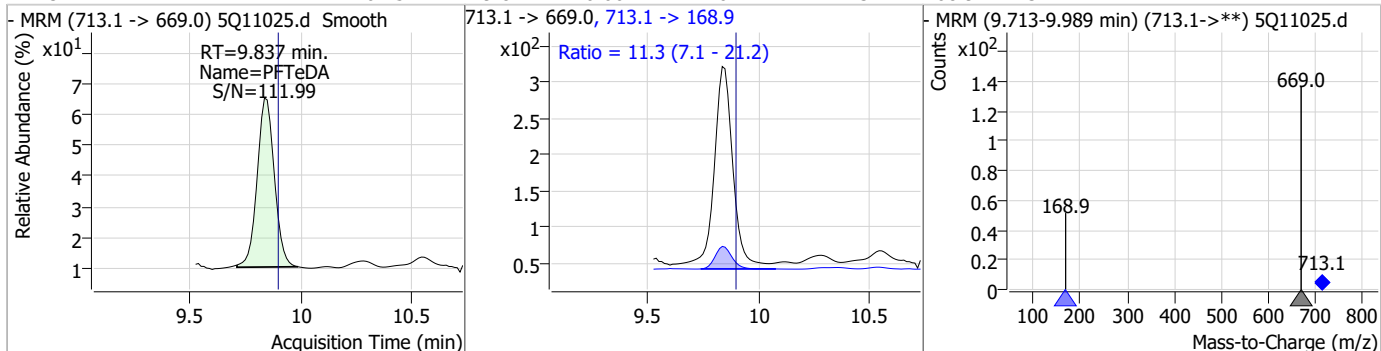
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.79	9.50	-0.05	5494	632.9 -> 452.9	30.2	15.4	46.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.18	9.84	-0.06	7480	715.2 -> 670.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.25	9.84	-0.06	1461	713.1 -> 168.9	11.3	7.1	21.2

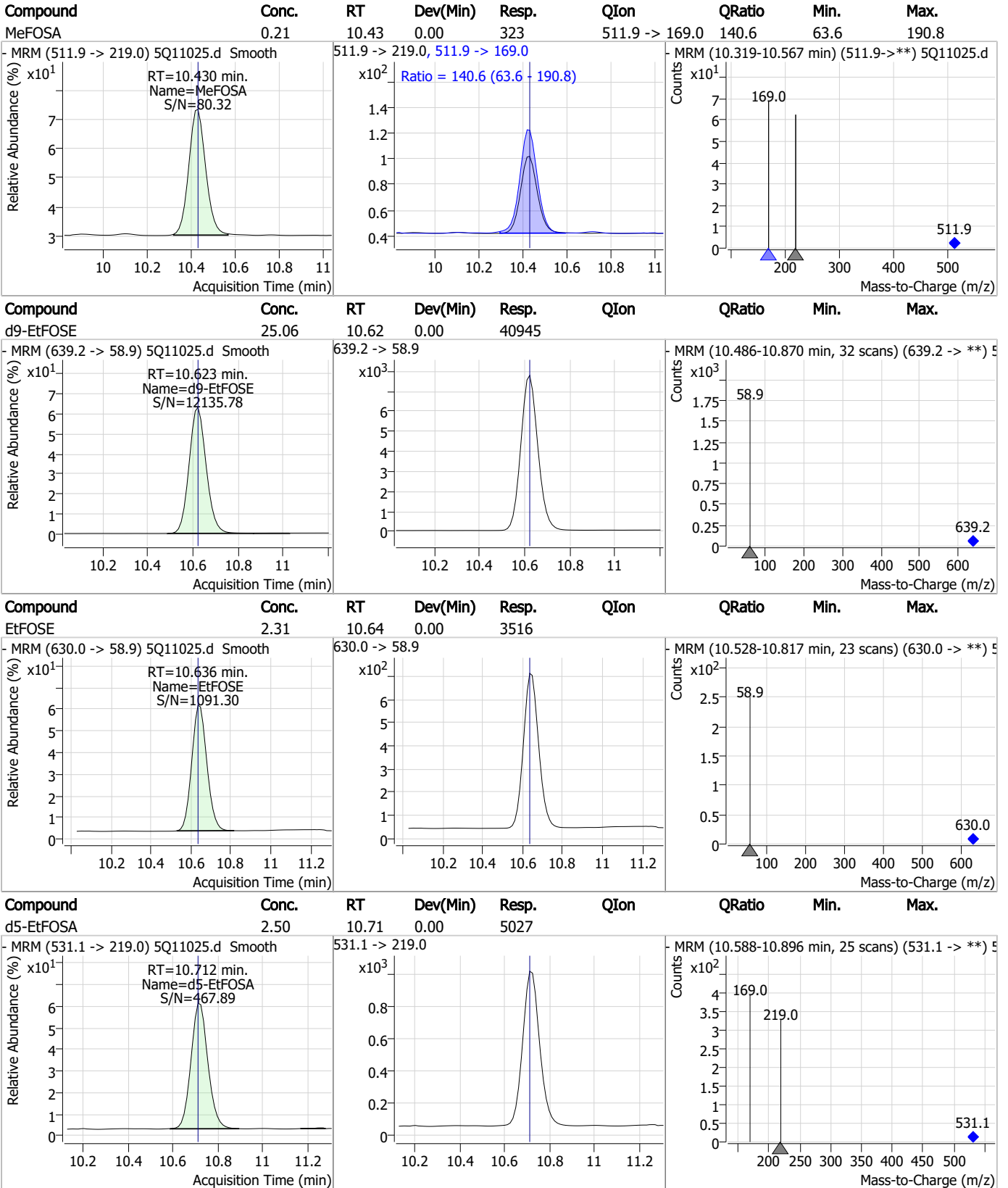


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD0DS	0.21	10.00	-0.05	281	699.1 -> 98.8	42.4	30.3	90.8
d7-MeFOSE	25.51	10.31	0.00	34010	623.2 -> 58.9			
MeFOSE	2.28	10.33	0.00	3306	616.1 -> 58.9			
d3-MeFOSA	2.66	10.42	0.00	3883	515.0 -> 219.0			

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Perfluorinated Compounds by LC/MS/MS

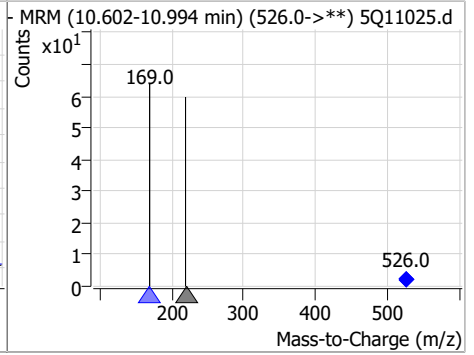
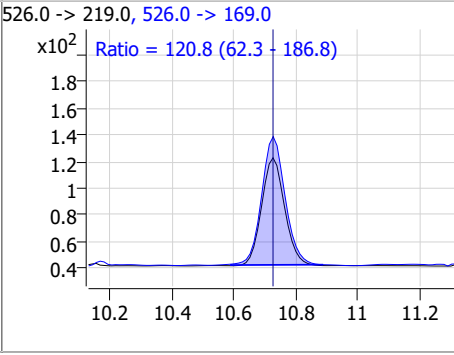
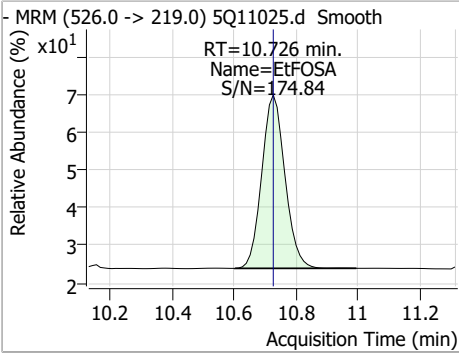


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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.23	10.73	0.00	420	526.0 -> 169.0	120.8	62.3	186.8



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Manual Integration Approval Summary

Sample Number: S5Q170-CC169
Lab FileID: 5Q11025.D
Injection Time: 02/17/23 16:15

Method: EPA DRAFT 1633
Analyst approved: 02/22/23 08:01 Norman Farmer
Supervisor approved: 02/22/23 17:11 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.78	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.78	Poor instrument integration
13C4-PFBA			2.79	Poor instrument integration
PFMPA	377-73-1		3.30	Poor instrument integration
13C5-PFPeA			4.12	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.13	Poor instrument integration
PFMBA	863090-89-5		4.53	Poor instrument integration
13C3-PFBS			5.24	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.24	Poor instrument integration
PFEESA	113507-82-7		5.80	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.30	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11033.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 6:08:02 PM
 Sample Name : cc169-4
 Vial : P3-A5
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95462,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	48702	10.00	µg/L m	-0.012
M5-PFPeA	4.125	268.3 -> 223.0	29905	5.00	µg/L m	-0.025
M5-PFHxA	5.310	318.0 -> 273.0	34400	2.50	µg/L	-0.025
M4-PFHpA	6.255	367.1 -> 322.0	32322	2.50	µg/L	-0.025
M8-PFOA	6.925	421.1 -> 376.0	39871	2.50	µg/L	-0.025
M9-PFNA	7.495	472.1 -> 427.0	14335	1.25	µg/L	-0.037
M6-PFDA	8.029	519.1 -> 474.1	8920	1.25	µg/L	-0.038
M7-PFUnDA	8.548	570.0 -> 525.1	9605	1.25	µg/L	-0.038
M2-PFDoDA	9.016	615.1 -> 570.0	10619	1.25	µg/L	-0.037
M2-PFTeDA	9.837	715.2 -> 670.0	9737	1.25	µg/L	-0.062
M8-FOSA	9.187	506.1 -> 77.8	8590	2.50	µg/L	0.000
M3-PFBS	5.241	302.1 -> 79.9	8261	2.50	µg/L m	-0.036
M3-PFHxS	7.054	402.1 -> 79.9	6862	2.50	µg/L	-0.038
M8-PFOS	8.218	507.1 -> 79.9	9179	2.50	µg/L	-0.037
M2-4:2FTS	4.972	329.1 -> 80.9	542	5.00	µg/L	-0.025
M2-6:2FTS	6.675	429.1 -> 80.9	1188	5.00	µg/L	-0.037
M2-8:2FTS	7.804	529.1 -> 80.9	1701	5.00	µg/L	-0.025
M3-MeFOSAA	8.063	573.2 -> 419.0	10111	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	74166	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	12703	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	41914	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	49879	25.00	µg/L	0.000
M5-EtFOSA	10.712	531.1 -> 219.0	6035	2.50	µg/L	0.000
M3-MeFOSA	10.416	515.0 -> 219.0	4424	2.50	µg/L	0.000
13C4-PFOS	8.219	502.8 -> 79.9	8959	2.50	µg/L	-0.037
13C3-PFBA	2.778	216.0 -> 172.0	25281	5.00	µg/L m	-0.025
18O2-PFHxS	7.052	403.0 -> 83.9	4761	2.50	µg/L	-0.038
13C4-PFOA	6.926	417.1 -> 372.0	48704	2.50	µg/L	-0.025
13C2-PFDA	8.029	515.1 -> 470.1	13365	1.25	µg/L	-0.038
13C5-PFNA	7.496	468.0 -> 423.0	13740	1.25	µg/L	-0.037
13C2-PFHxA	5.311	315.1 -> 270.0	38932	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	542	4.68	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.6%			
13C2-6:2FTS	6.675	429.1 -> 80.9	1188	4.60	µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.1%			
13C2-8:2FTS	7.804	529.1 -> 80.9	1701	4.70	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.1%			
13C2-PFDoDA	9.016	615.1 -> 570.0	10619	1.27	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%			
13C2-PFTeDA	9.837	715.2 -> 670.0	9737	1.24	µg/L	-0.062
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.6%			
13C3-PFBS	5.241	302.1 -> 79.9	8261	2.26	µg/L m	-0.036
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.2%			
13C3-PFHxS	7.054	402.1 -> 79.9	6862	2.52	µg/L	-0.038

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%			
13C4-PFBA	2.786	216.8 -> 171.9	48702	10.21	µg/L	m -0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.1%			
13C4-PFHpA	6.255	367.1 -> 322.0	32322	2.50	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%			
13C5-PFHxA	5.310	318.0 -> 273.0	34400	2.52	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%			
13C5-PFPeA	4.125	268.3 -> 223.0	29905	4.23	µg/L	m -0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.5%			
13C6-PFDA	8.029	519.1 -> 474.1	8920	1.29	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.3%			
13C7-PFUnDA	8.548	570.0 -> 525.1	9605	1.27	µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%			
13C8-FOSA	9.187	506.1 -> 77.8	8590	2.44	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%			
13C8-PFOA	6.925	421.1 -> 376.0	39871	2.43	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%			
13C8-PFOS	8.218	507.1 -> 79.9	9179	2.60	µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.1%			
13C9-PFNA	7.495	472.1 -> 427.0	14335	1.28	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.1%			
d3-MeFOSAA	8.063	573.2 -> 419.0	10111	5.10	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%			
13C3-HFPO-DA	5.690	286.9 -> 168.9	74166	10.26	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.6%			
d3-MeFOSA	10.416	515.0 -> 219.0	4424	2.45	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%			
d5-EtFOSAA	8.285	589.2 -> 419.0	12703	4.33	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.6%			
d7-MeFOSE	10.315	623.2 -> 58.9	41914	25.42	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 101.7%			
d9-EtFOSE	10.623	639.2 -> 58.9	49879	24.69	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.7%			
d5-EtFOSA	10.712	531.1 -> 219.0	6035	2.43	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%			
Target Compounds						QValue
4:2FTS	4.972	327.1 -> 307.0	6405	9.38	µg/L	97
		327.1 -> 80.9	3389			
6:2FTS	6.687	427.1 -> 407.0	9010	9.08	µg/L	98
		427.1 -> 80.9	3683			
8:2FTS	7.792	527.1 -> 507.0	6027	7.48	µg/L	96
		527.1 -> 80.8	3204			
EtFOSAA	8.286	584.2 -> 419.1	4174	2.51	µg/L	m 94
		584.2 -> 526.0	1824			
FOSA	9.177	498.1 -> 77.9	7323	2.33	µg/L	100
		498.1 -> 478.0	263			
MeFOSAA	8.064	570.1 -> 419.0	3909	2.28	µg/L	m 96
		570.1 -> 483.0	910			
PFBA	2.782	212.8 -> 168.9	18914	9.81	µg/L	m 100
PFBS	5.242	298.7 -> 79.9	5793	2.13	µg/L	m 99
		298.7 -> 98.8	2475			
PFDA	8.030	512.9 -> 469.0	20981	2.25	µg/L	100
		512.9 -> 219.0	3857			
PFDODA	9.017	613.1 -> 569.0	16346	2.27	µg/L	98
		613.1 -> 319.0	2696			
PFDS	9.195	599.0 -> 79.9	4430	2.19	µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.256	599.0 -> 98.8	2340	2.30	µg/L	99
		363.1 -> 319.0	31404			
PFHpS	7.660	363.1 -> 169.0	7197	2.06	µg/L	96
		449.0 -> 79.9	5374			
PFHxA	5.312	449.0 -> 98.9	3103	2.34	µg/L	100
		313.0 -> 269.0	23564			
PFHxS	7.055	313.0 -> 118.9	1092	1.99	µg/L	m
		398.7 -> 79.9	4617			
PFNA	7.508	398.7 -> 98.9	2785	2.18	µg/L	97
		463.0 -> 419.0	18143			
PFNS	8.736	463.0 -> 219.0	4054	2.16	µg/L	93
		548.8 -> 79.9	4356			
PFOA	6.926	548.8 -> 98.9	2416	2.31	µg/L	100
		413.0 -> 369.0	35395			
PFOS	8.219	413.0 -> 169.0	8109	2.14	µg/L	m
		498.9 -> 79.9	7928			
PFPeA	4.127	498.9 -> 98.8	4518	4.65	µg/L	m
		263.0 -> 219.0	30409			
PFPeS	6.320	349.1 -> 79.9	4247	2.12	µg/L	m
		349.1 -> 98.9	2159			
PFTeDA	9.837	713.1 -> 669.0	16613	2.22	µg/L	98
		713.1 -> 168.9	2473			
PFTrDA	9.439	663.0 -> 619.0	21149	2.23	µg/L	100
		663.0 -> 168.9	3487			
PFUnDA	8.548	563.1 -> 519.0	16853	2.35	µg/L	100
		563.1 -> 269.1	3413			
11Cl-PF3OUdS	9.503	630.9 -> 450.9	67042	8.21	µg/L	98
		632.9 -> 452.9	21370			
9Cl-PF3ONS	8.588	530.8 -> 351.0	73177	8.39	µg/L	99
		532.8 -> 353.0	22617			
ADONA	6.517	376.9 -> 250.9	174988	8.62	µg/L	99
		376.9 -> 84.8	51432			
HFPO-DA	5.691	284.9 -> 168.9	61010	10.02	µg/L	99
		284.9 -> 184.9	5510			
3:3FTCA	3.591	241.0 -> 177.0	6124	12.70	µg/L	97
		241.0 -> 117.0	857			
5:3FTCA	5.893	341.0 -> 237.1	106540	51.07	µg/L	100
		341.0 -> 217.0	71733			
7:3FTCA	7.323	441.0 -> 316.9	40746	48.79	µg/L	98
		441.0 -> 336.9	90245			
EtFOSA	10.726	526.0 -> 219.0	5009	2.30	µg/L	95
		526.0 -> 169.0	6498			
EtFOSE	10.636	630.0 -> 58.9	44857	24.21	µg/L	100
		511.9 -> 219.0	3853			
MeFOSA	10.430	511.9 -> 169.0	5321	2.21	µg/L	91
		616.1 -> 58.9	41531			
MeFOSE	10.327	699.1 -> 79.9	3500	23.20	µg/L	100
		699.1 -> 98.8	2147			
PFDoDS	9.988	295.0 -> 201.0	4021	2.19	µg/L	99
		295.0 -> 84.9	1112			
NFDHA	5.193	279.0 -> 85.1	22604	5.06	µg/L	99
		229.0 -> 84.9	16544			
PFMBA	4.528	314.8 -> 134.9	38450	4.69	µg/L	m
		314.8 -> 82.9	1174			
PFMPA	3.315			4.67	µg/L	m
PFEESA	5.796			3.62	µg/L	m

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

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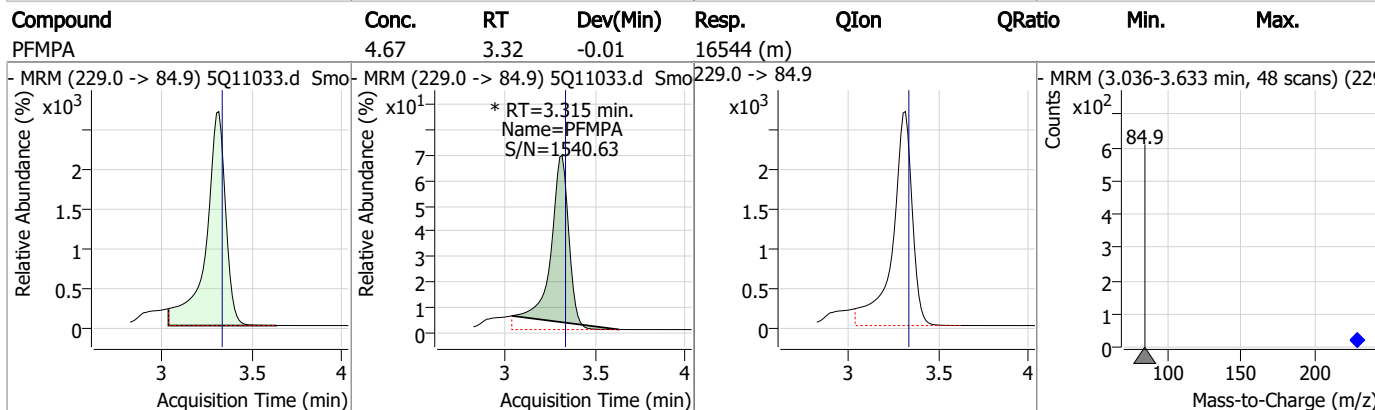
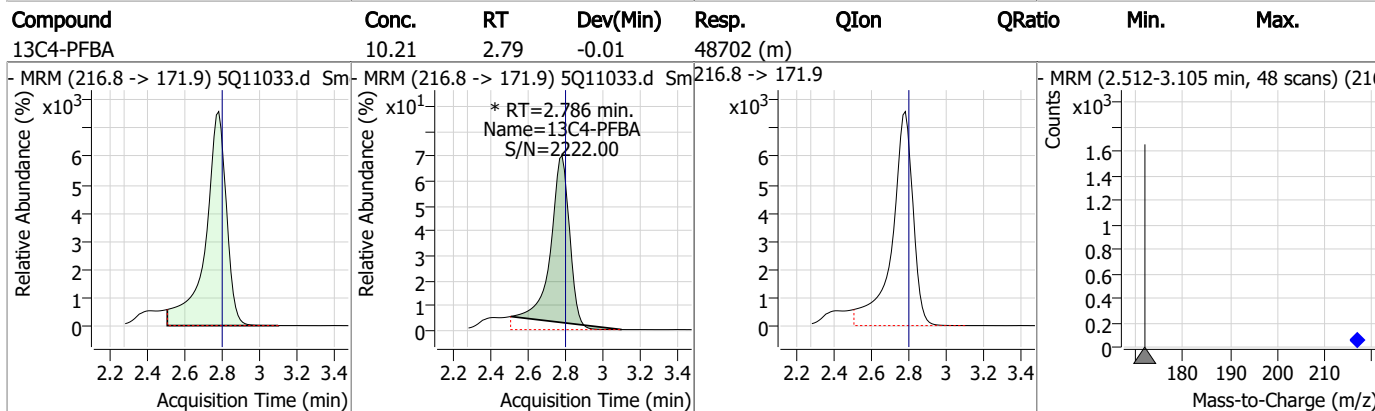
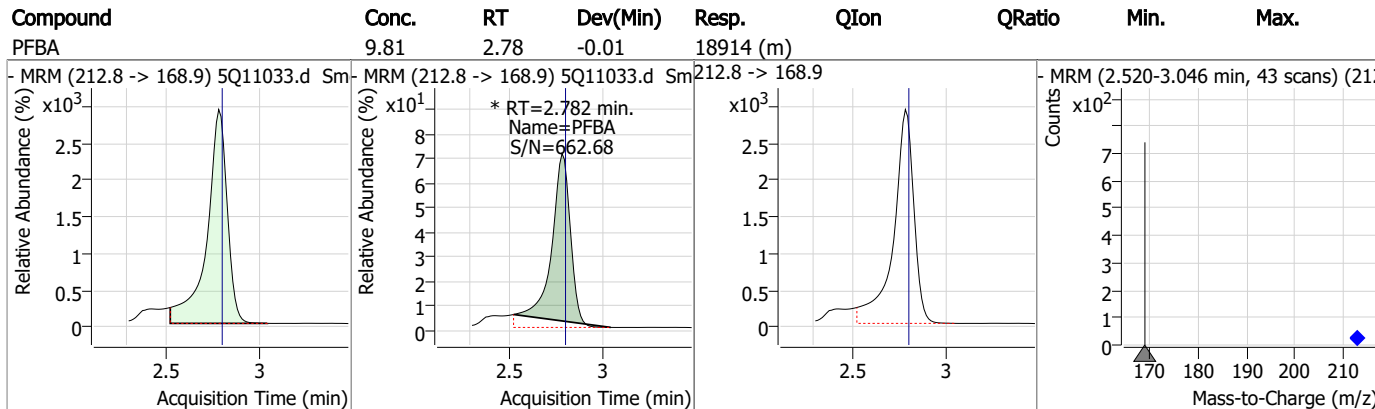
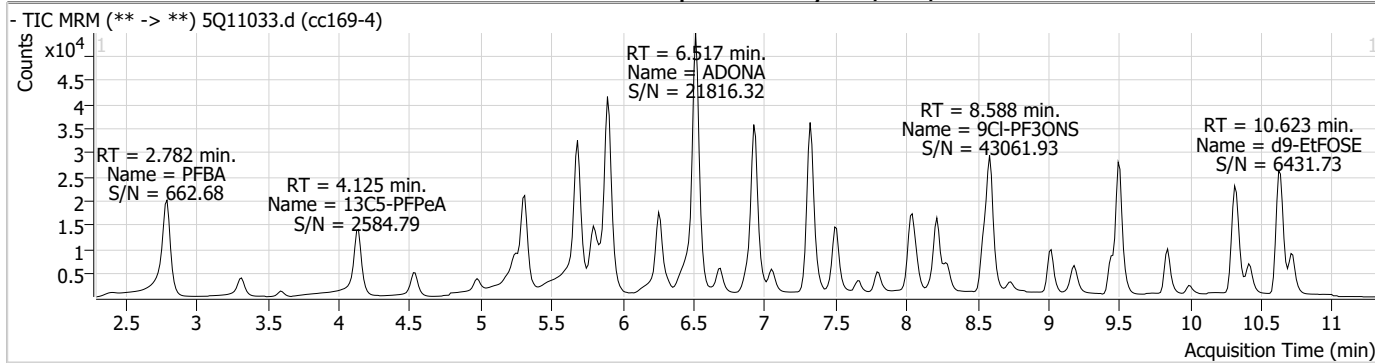
Perfluorinated Compounds by LC/MS/MS

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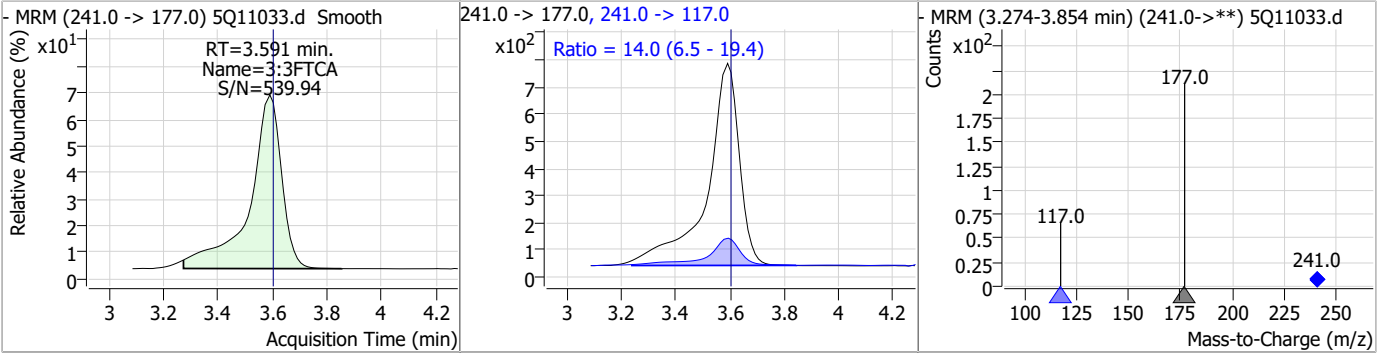
Perfluorinated Compounds by LC/MS/MS



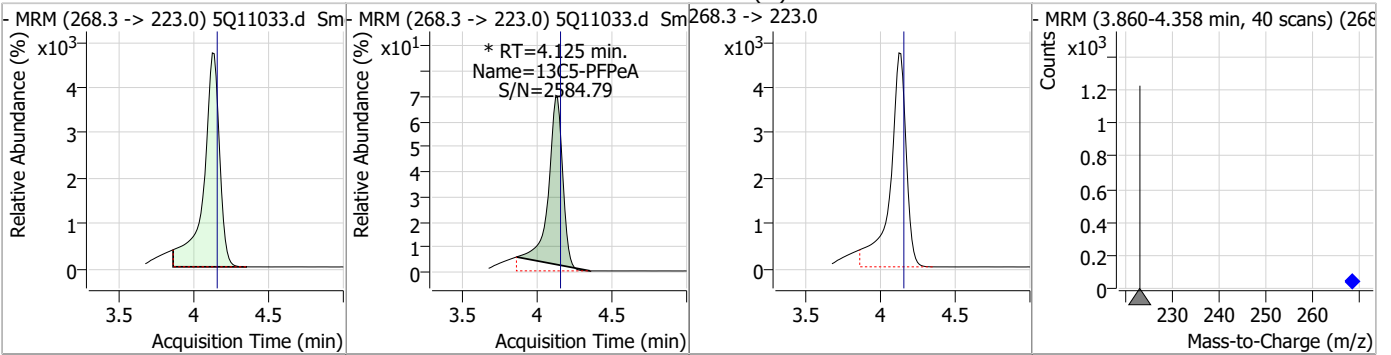
7.7.18
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Perfluorinated Compounds by LC/MS/MS

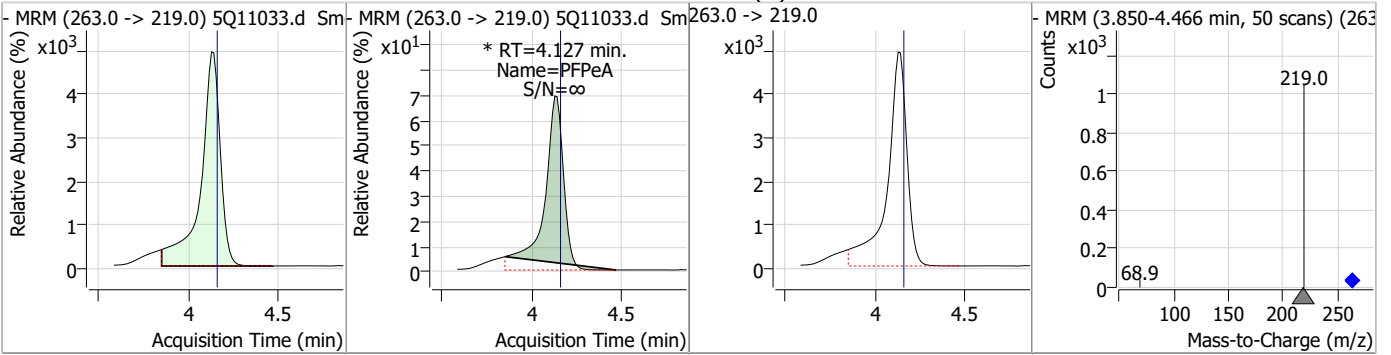
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	12.70	3.59	-0.01	6124	241.0 -> 117.0	14.0	6.5	19.4



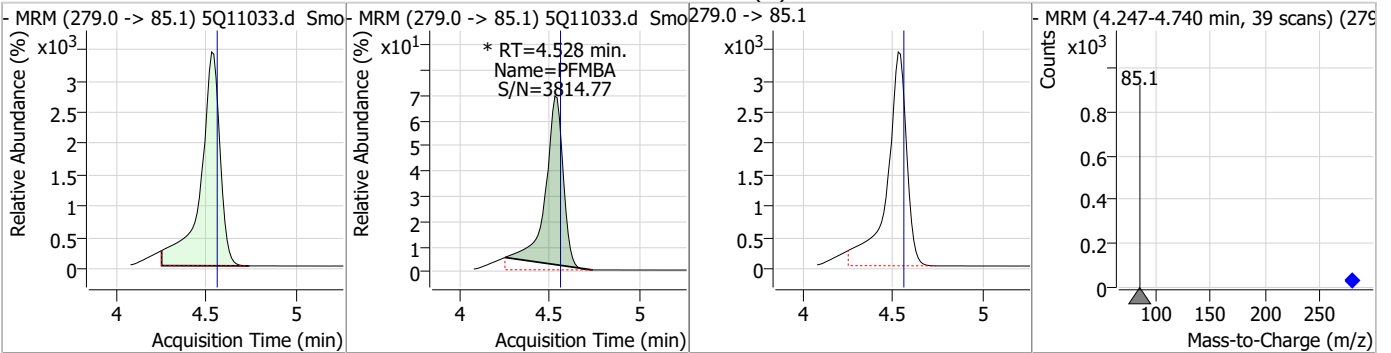
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.23	4.12	-0.02	29905 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.65	4.13	-0.02	30409 (m)				

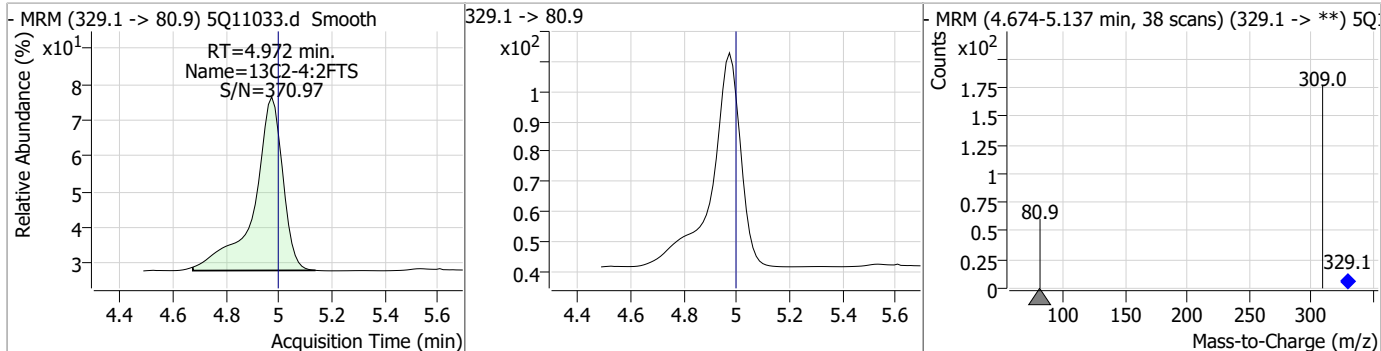


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.69	4.53	-0.02	22604 (m)				

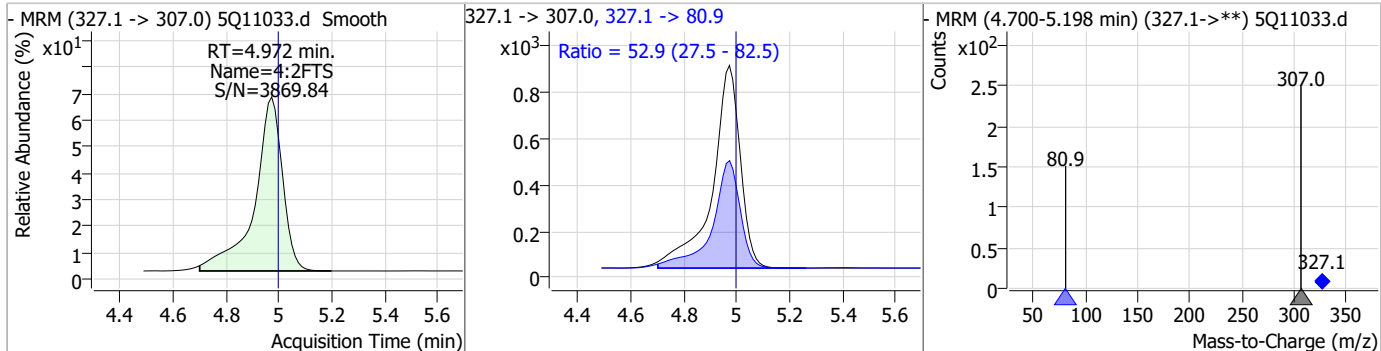


Perfluorinated Compounds by LC/MS/MS

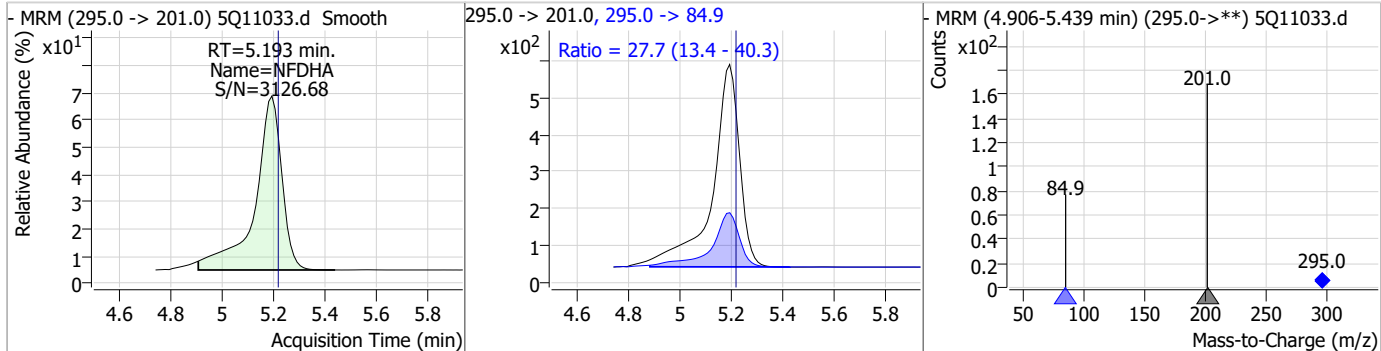
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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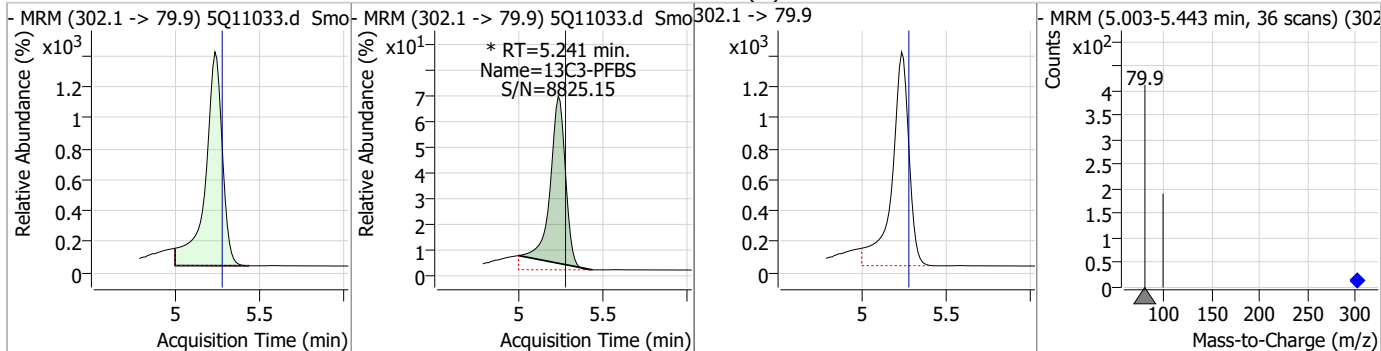
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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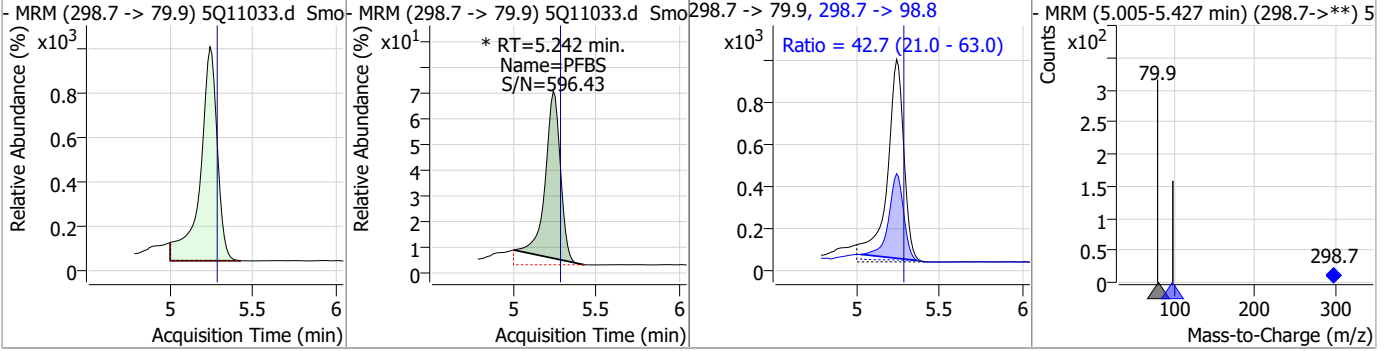
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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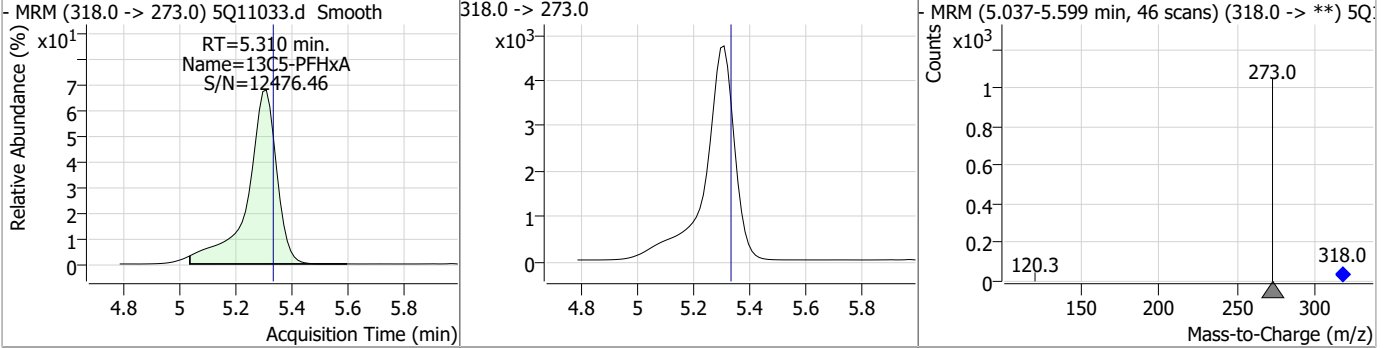
7.7.18 7

Perfluorinated Compounds by LC/MS/MS

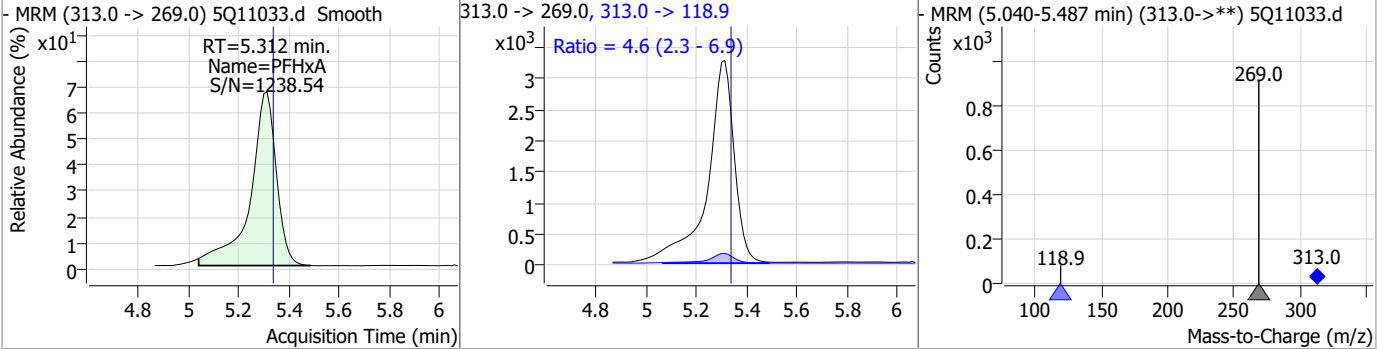
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.13	5.24	-0.04	5793 (m)	298.7 -> 98.8	42.7	21.0	63.0



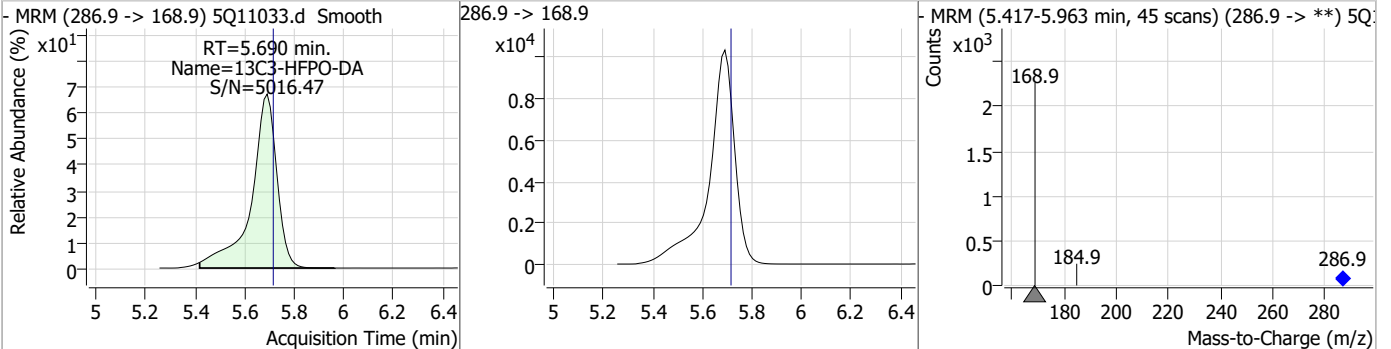
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.52	5.31	-0.02	34400				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.34	5.31	-0.02	23564	313.0 -> 118.9	4.6	2.3	6.9



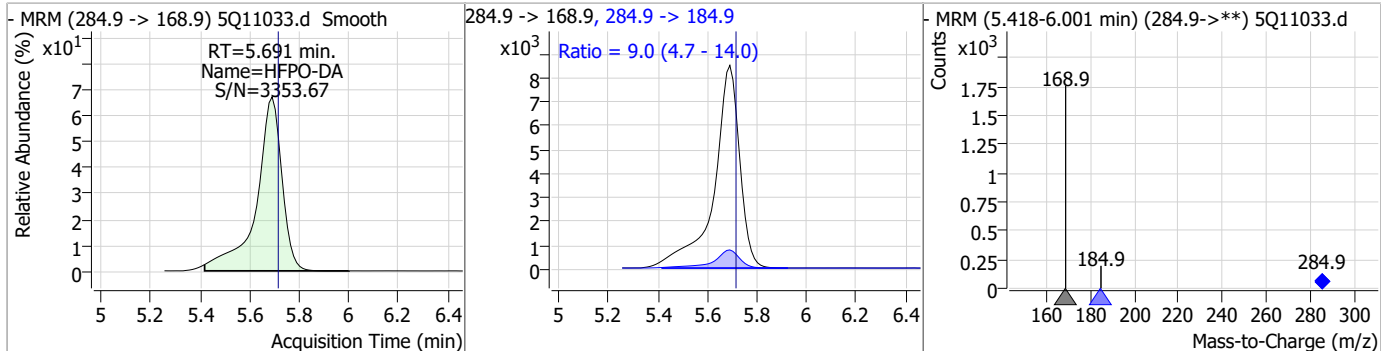
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.26	5.69	-0.02	74166				



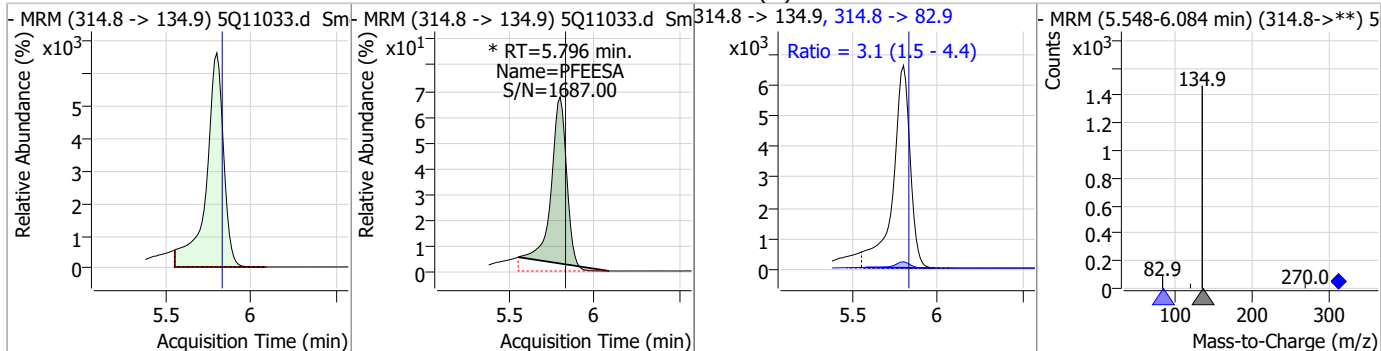
7.7.18
7

Perfluorinated Compounds by LC/MS/MS

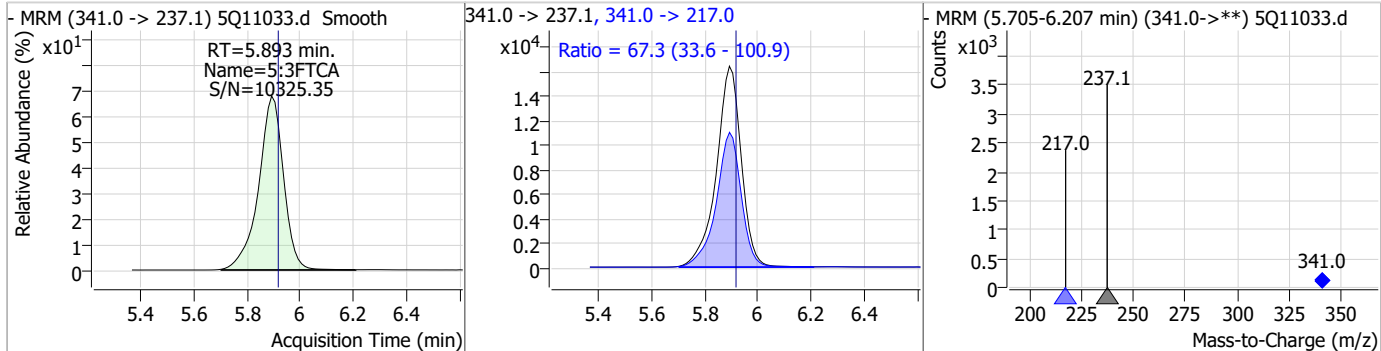
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	10.02	5.69	-0.02	61010	284.9 -> 184.9	9.0	4.7	14.0



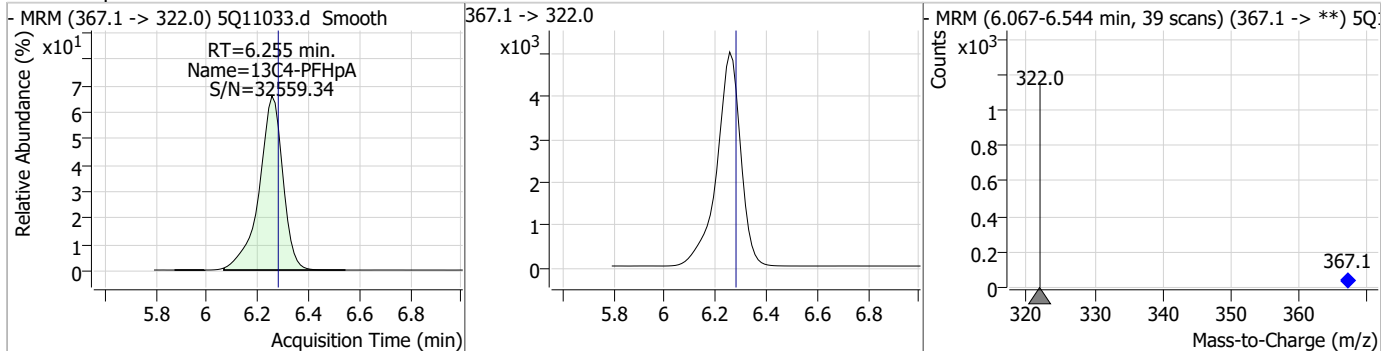
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	3.62	5.80	-0.02	38450 (m)	314.8 -> 82.9	3.1	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	51.07	5.89	-0.02	106540	341.0 -> 217.0	67.3	33.6	100.9



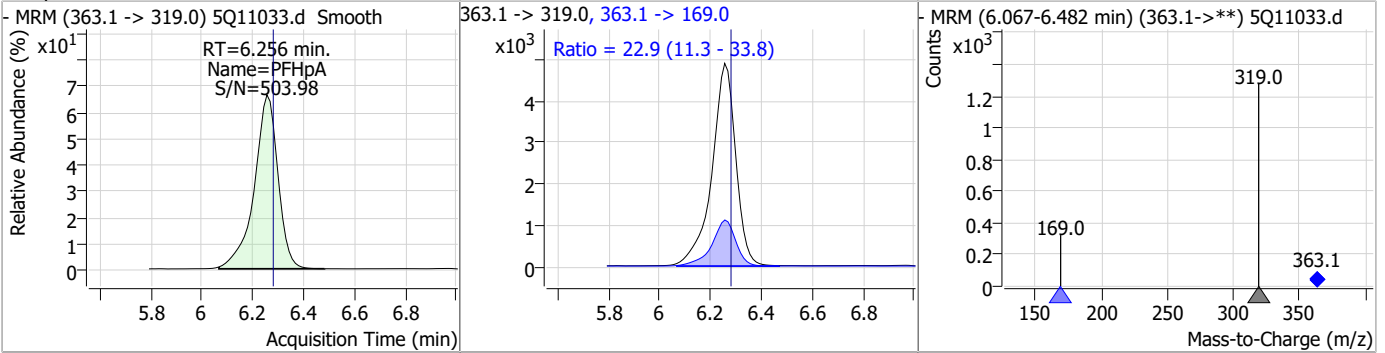
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.50	6.26	-0.02	32322	367.1 -> 322.0			



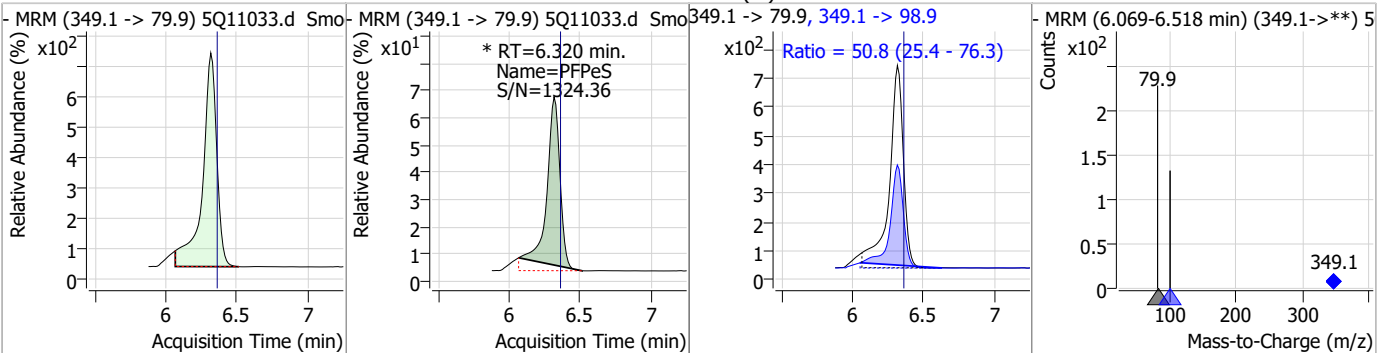
7.7.18
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Perfluorinated Compounds by LC/MS/MS

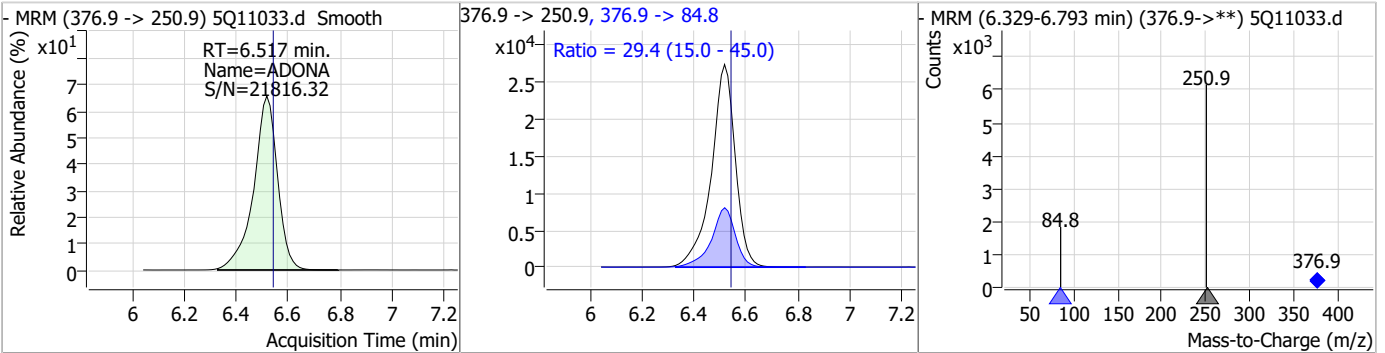
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.30	6.26	-0.02	31404	363.1 -> 169.0	22.9	11.3	33.8



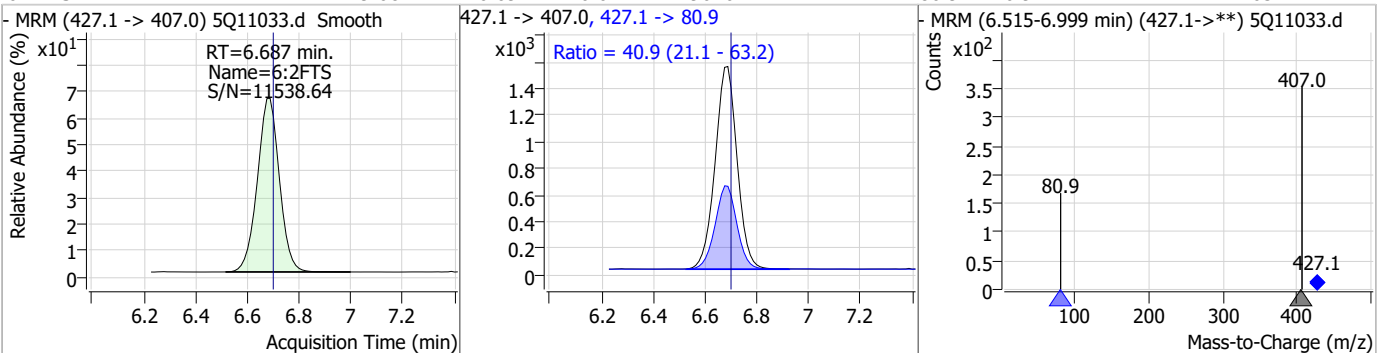
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.12	6.32	-0.04	4247 (m)	349.1 -> 98.9	50.8	25.4	76.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	8.62	6.52	-0.02	174988	376.9 -> 84.8	29.4	15.0	45.0

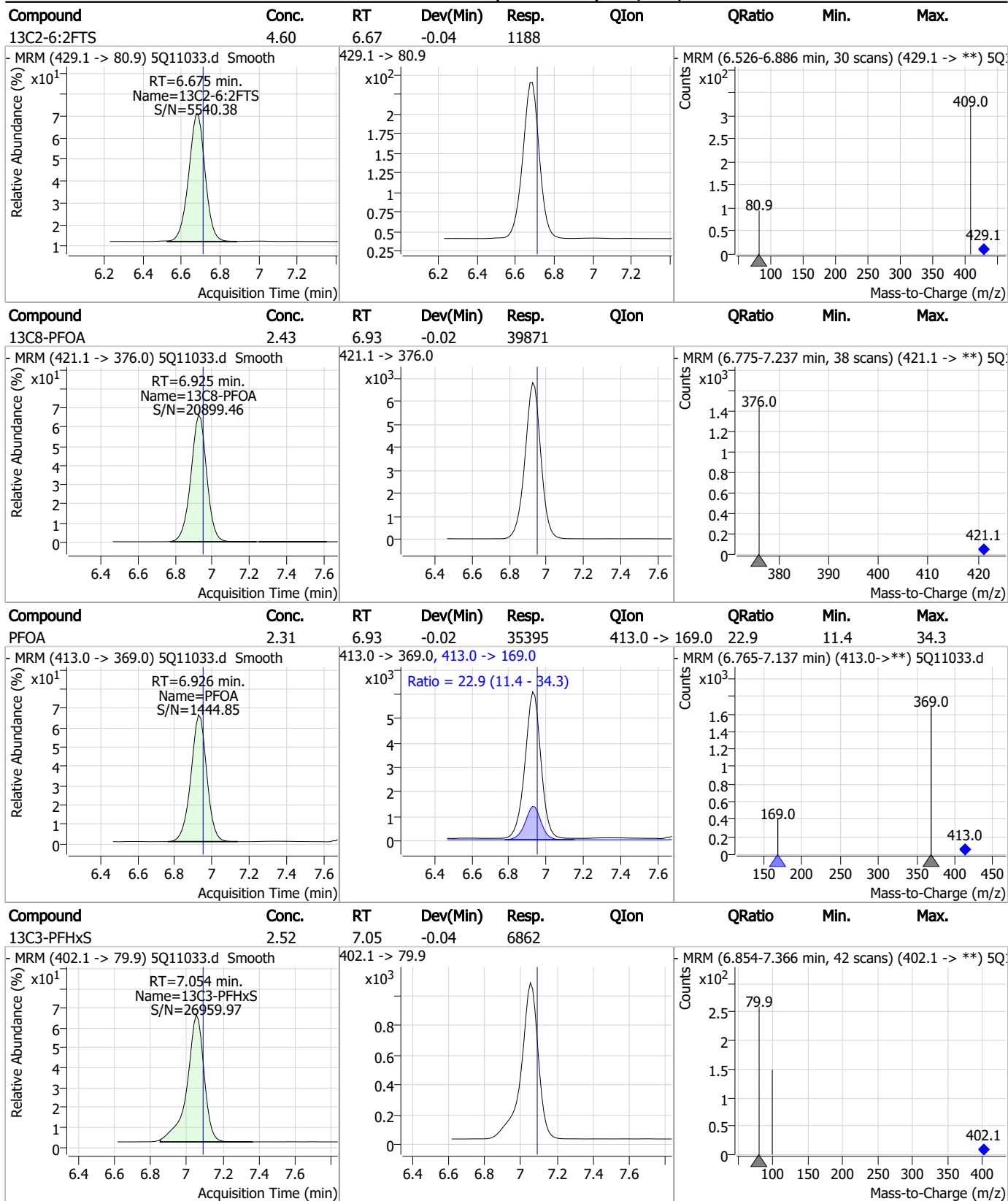


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	9.08	6.69	-0.01	9010	427.1 -> 80.9	40.9	21.1	63.2



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Perfluorinated Compounds by LC/MS/MS

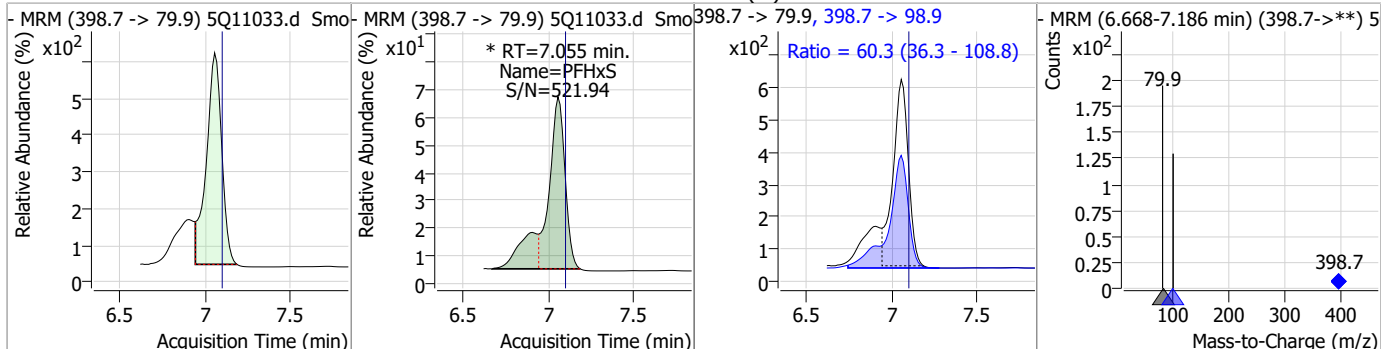


7.7.18

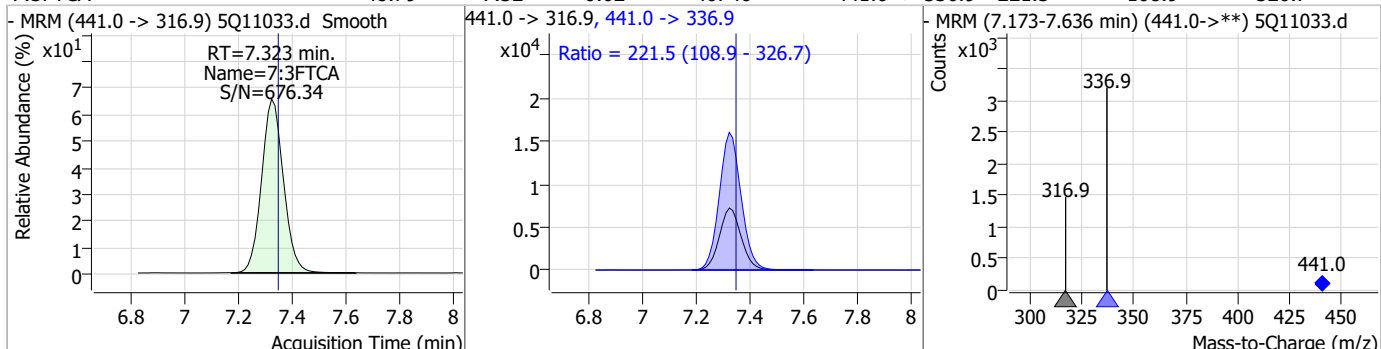


Perfluorinated Compounds by LC/MS/MS

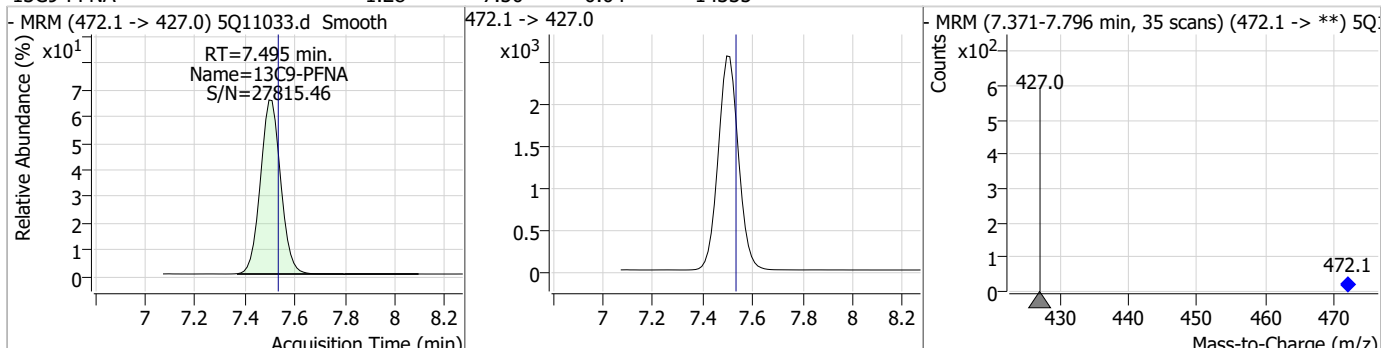
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.99	7.05	-0.04	4617 (m)	398.7 -> 98.9	60.3	36.3	108.8



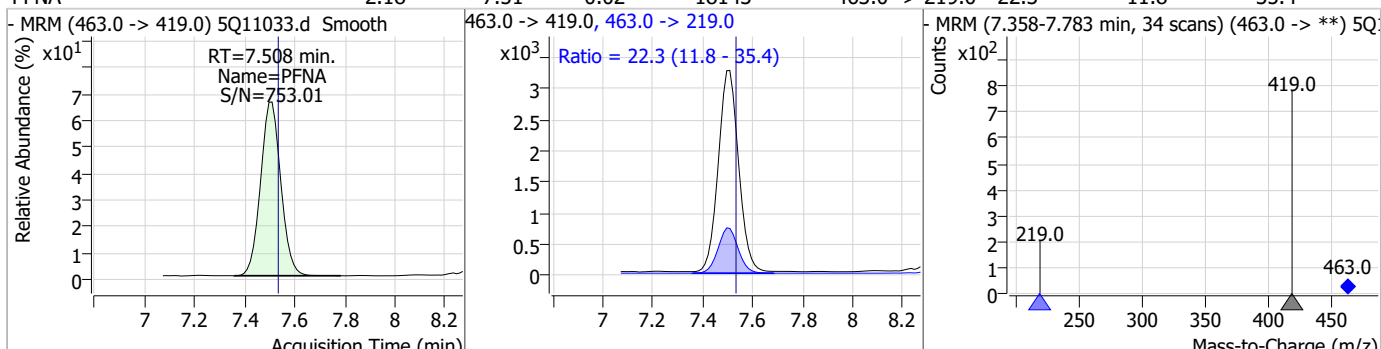
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	48.79	7.32	-0.02	40746	441.0 -> 336.9	221.5	108.9	326.7



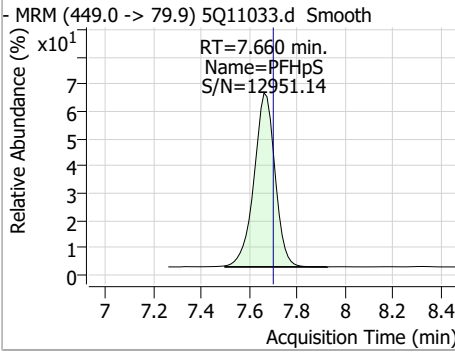
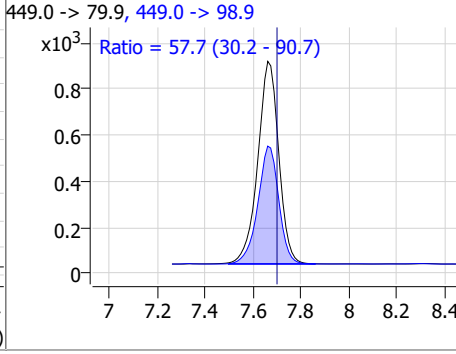
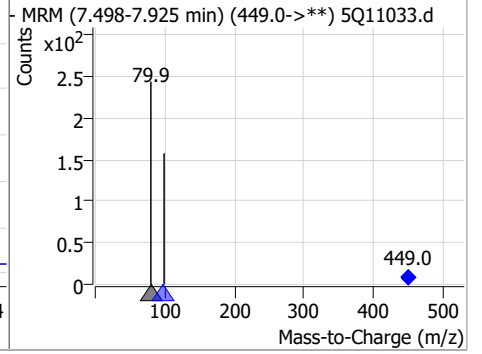
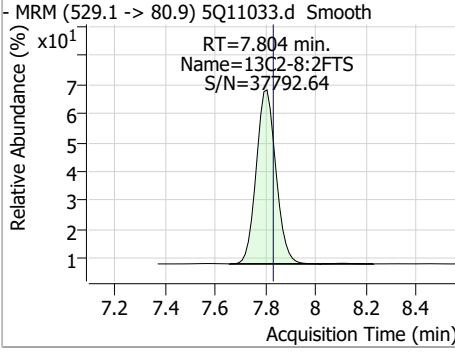
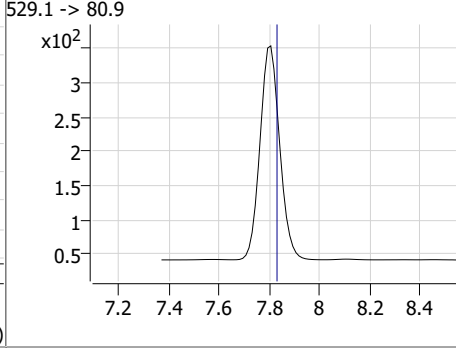
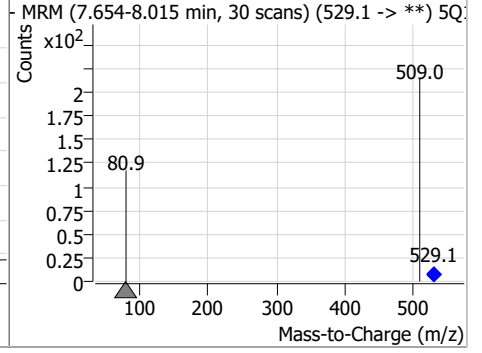
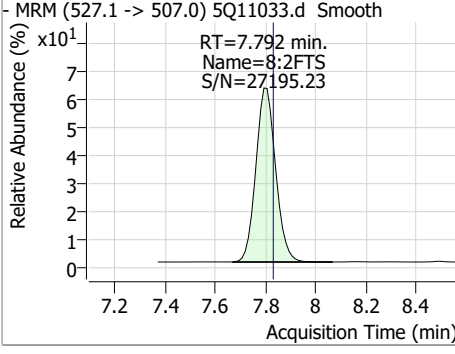
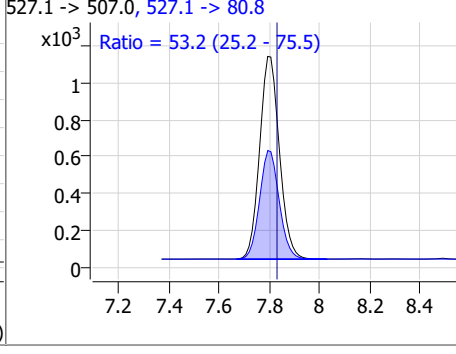
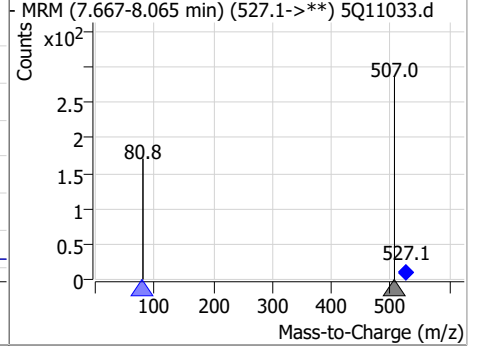
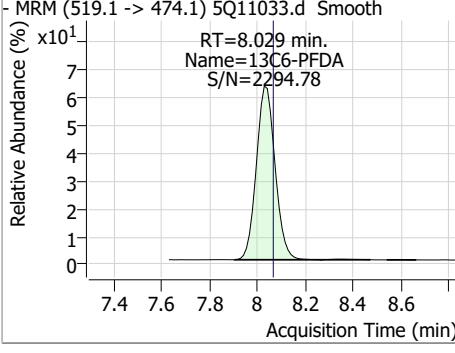
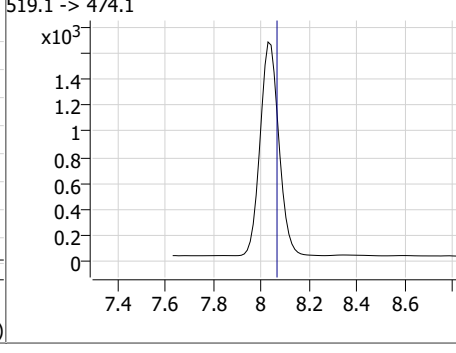
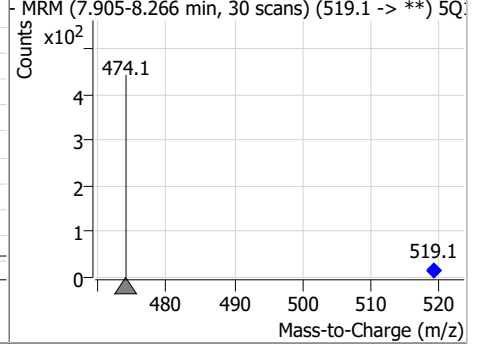
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.28	7.50	-0.04	14335				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.18	7.51	-0.02	18143	463.0 -> 219.0	22.3	11.8	35.4



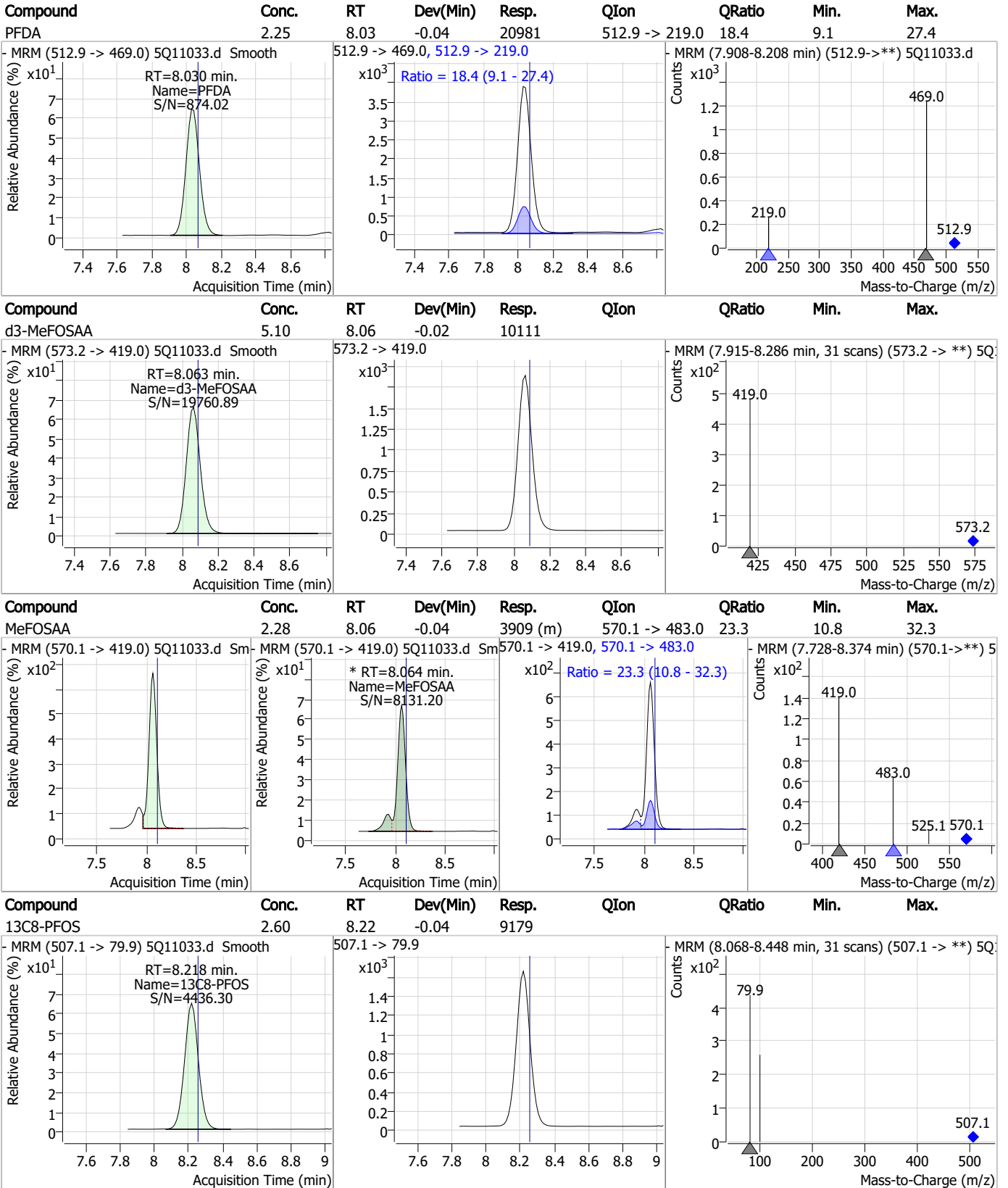
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	2.06	7.66	-0.04	5374	449.0 -> 98.9	57.7	30.2	90.7
								
13C2-8:2FTS	4.70	7.80	-0.02	1701	529.1 -> 80.9	53.2	25.2	75.5
								
8:2FTS	7.48	7.79	-0.04	6027	527.1 -> 80.8	53.2	25.2	75.5
								
13C6-PFDA	1.29	8.03	-0.04	8920	519.1 -> 474.1	53.2	25.2	75.5
								

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Perfluorinated Compounds by LC/MS/MS



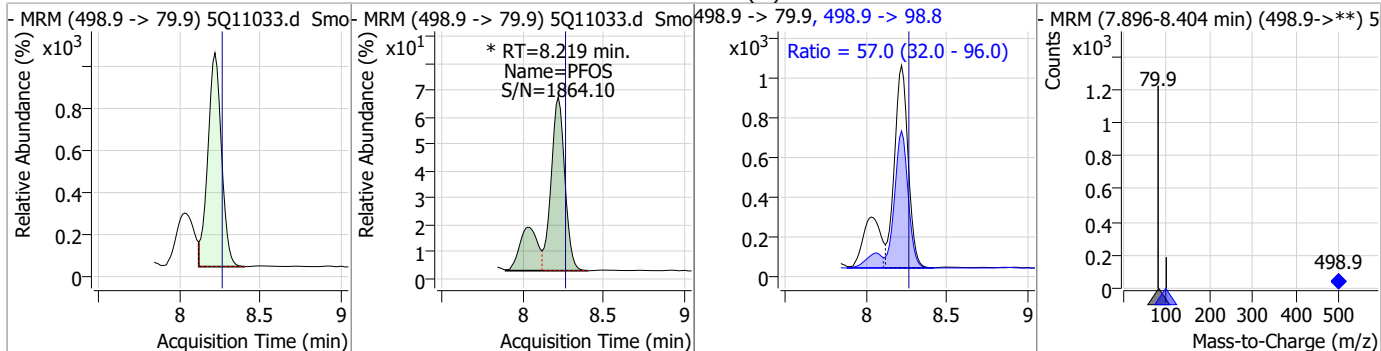
7.7.18

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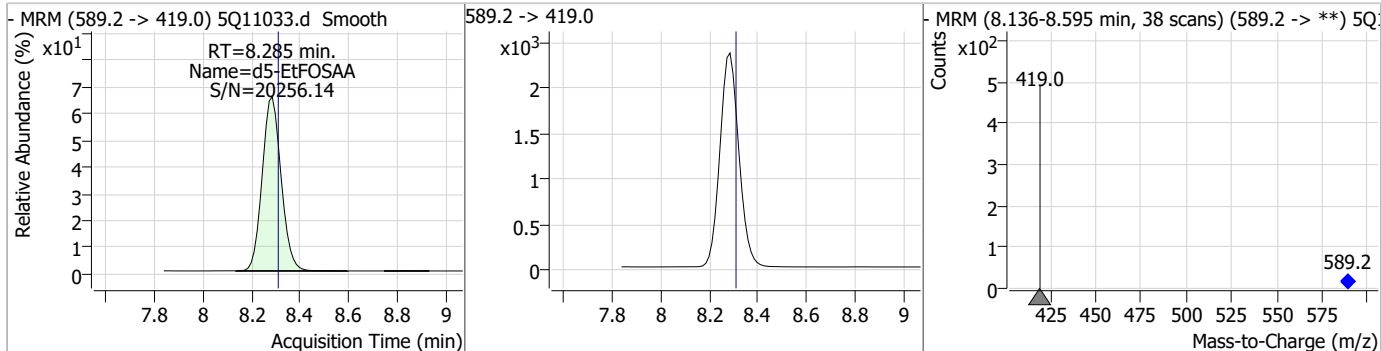


Perfluorinated Compounds by LC/MS/MS

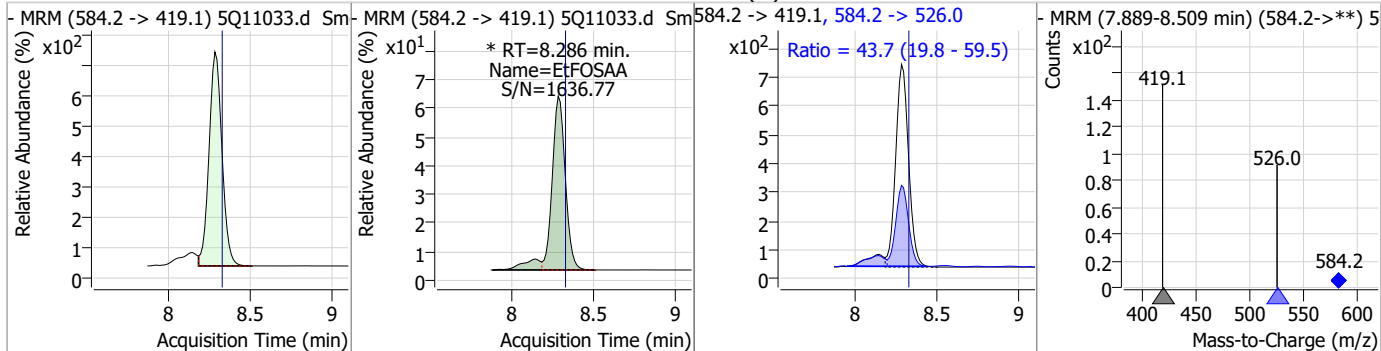
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.14	8.22	-0.04	7928 (m)	498.9 -> 98.8	57.0	32.0	96.0



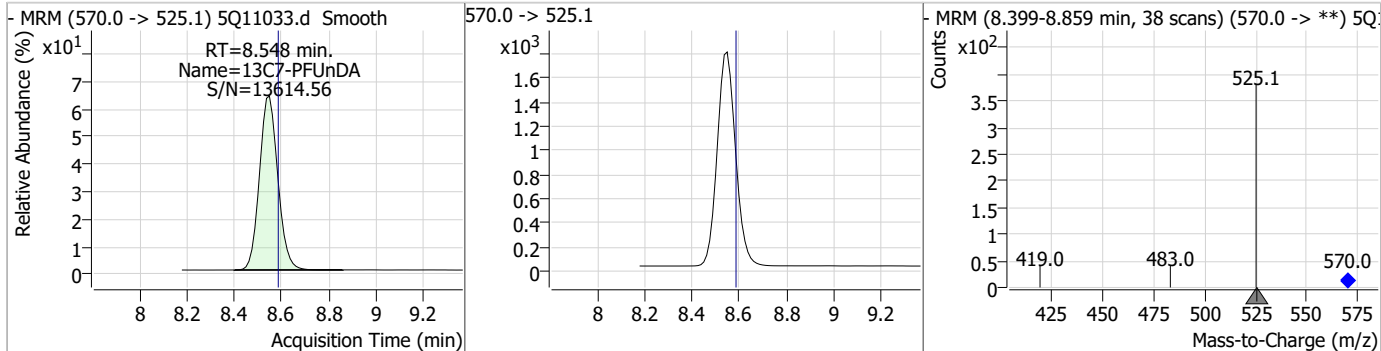
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.33	8.29	-0.02	12703				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.51	8.29	-0.04	4174 (m)	584.2 -> 526.0	43.7	19.8	59.5

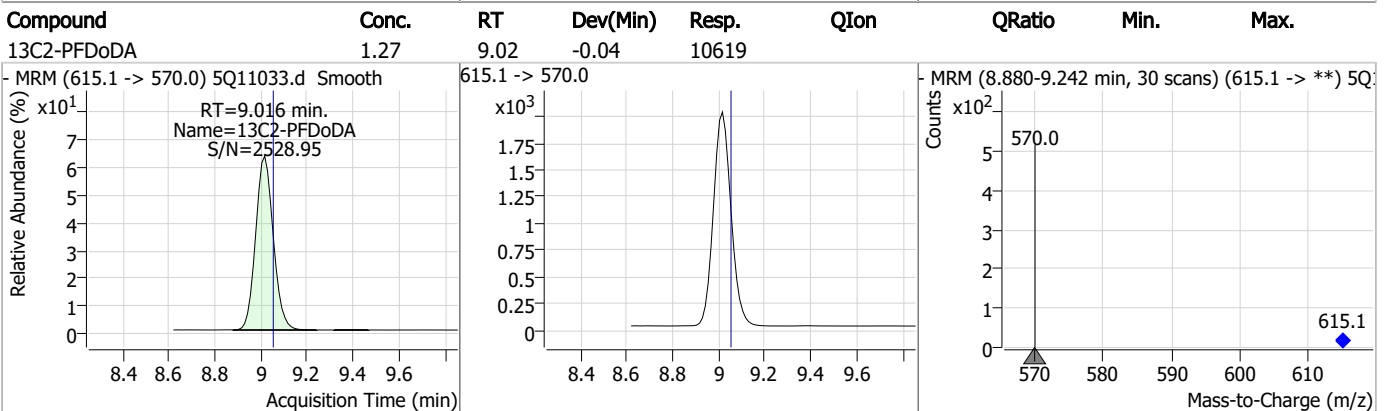
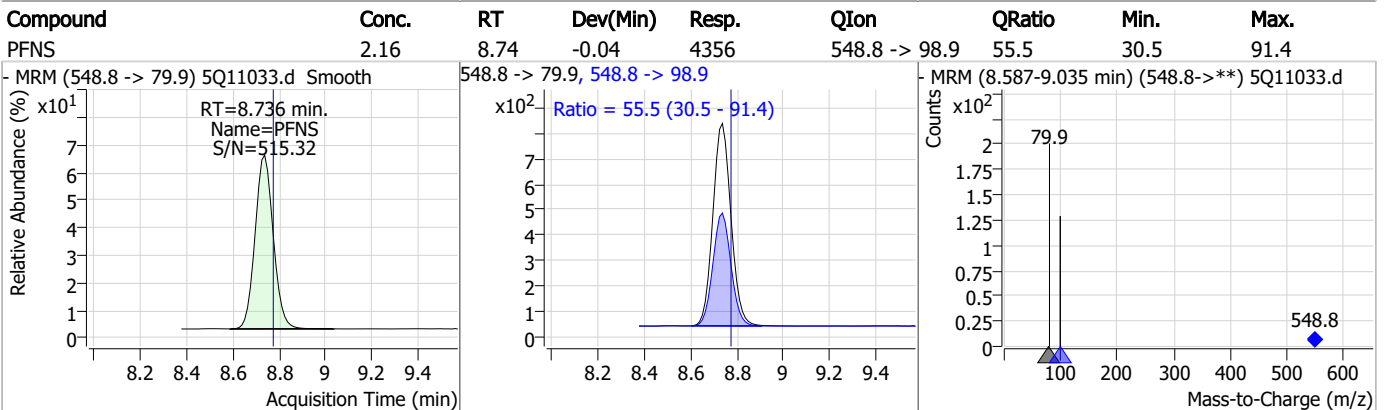
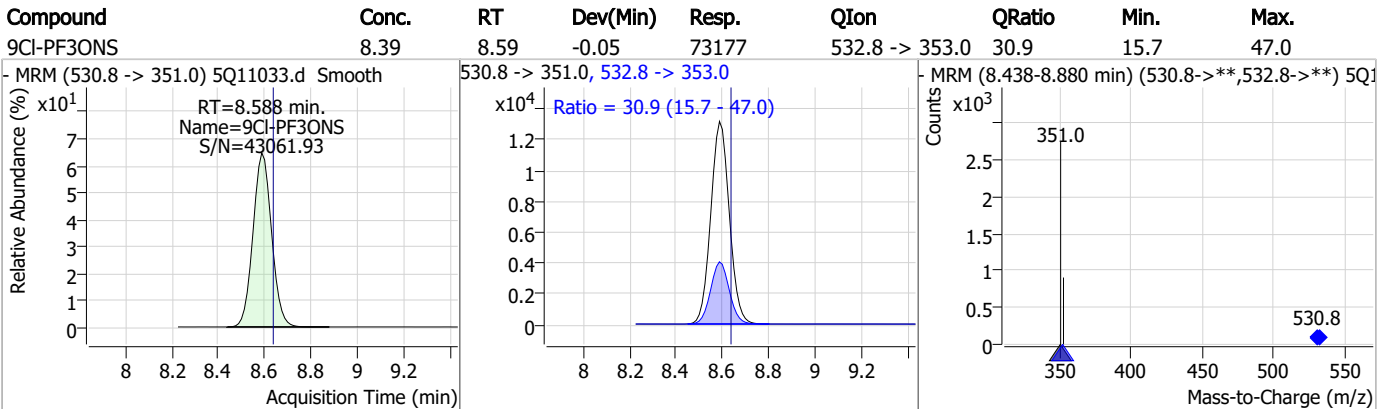
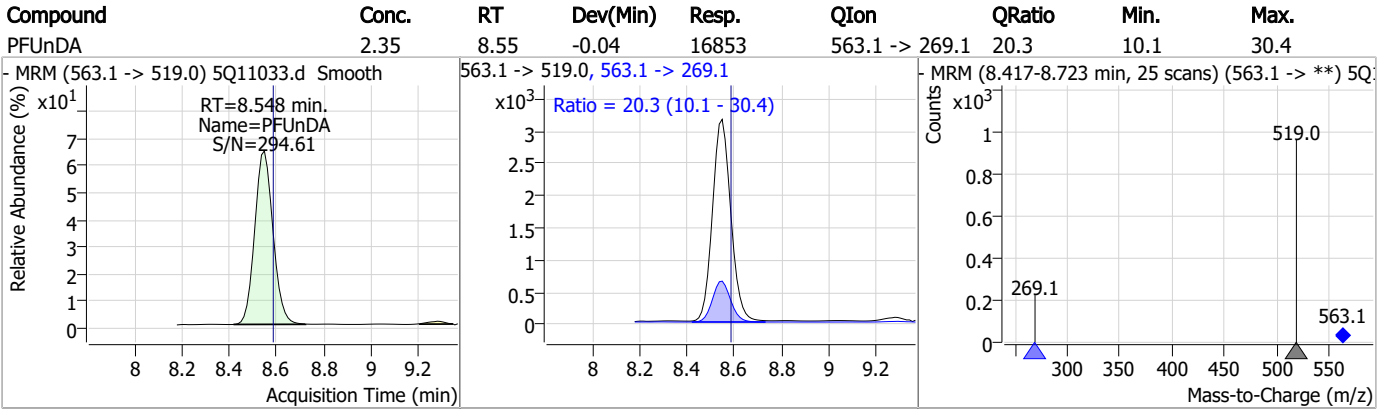


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.27	8.55	-0.04	9605				



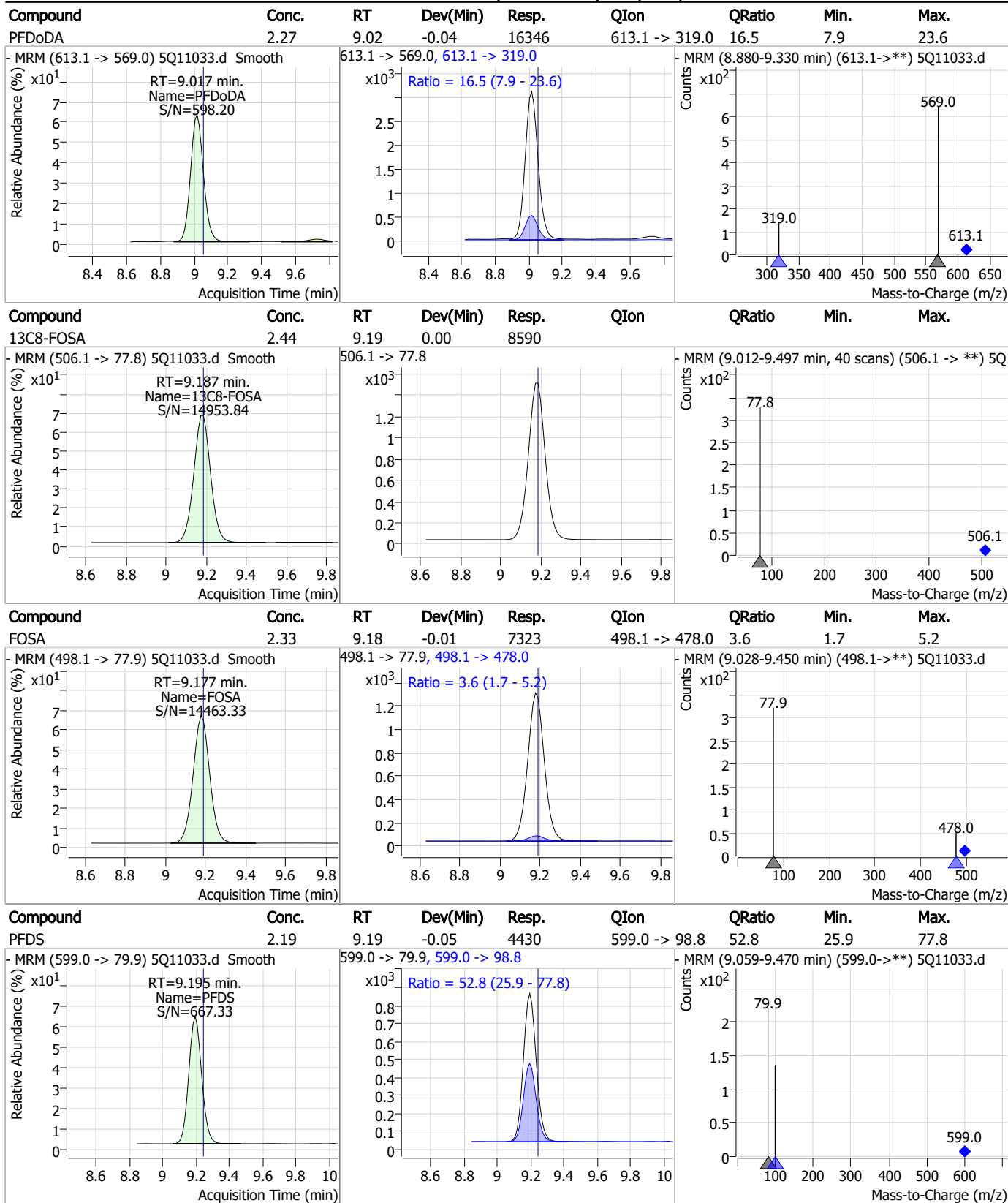
7.7.18
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Perfluorinated Compounds by LC/MS/MS



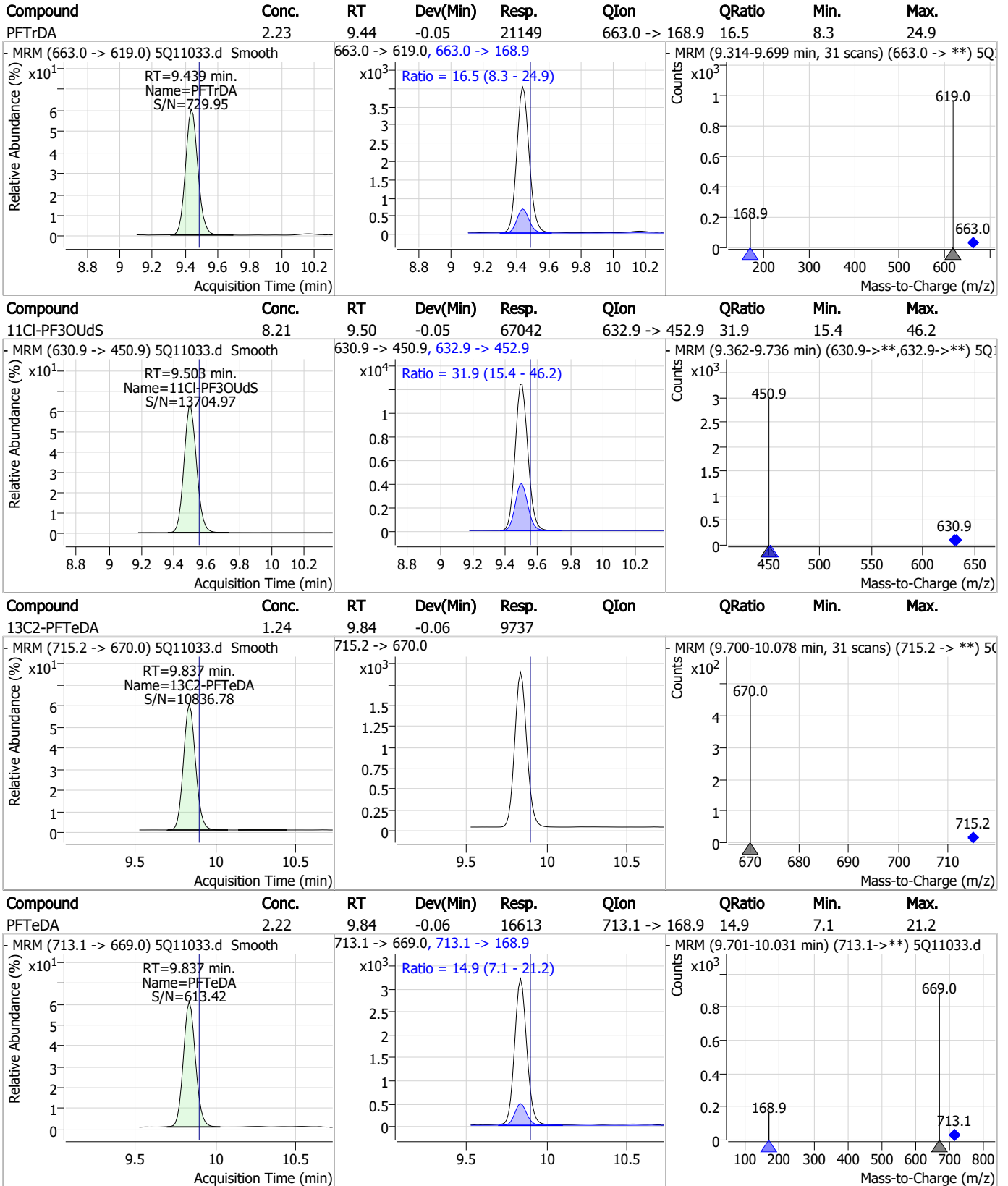
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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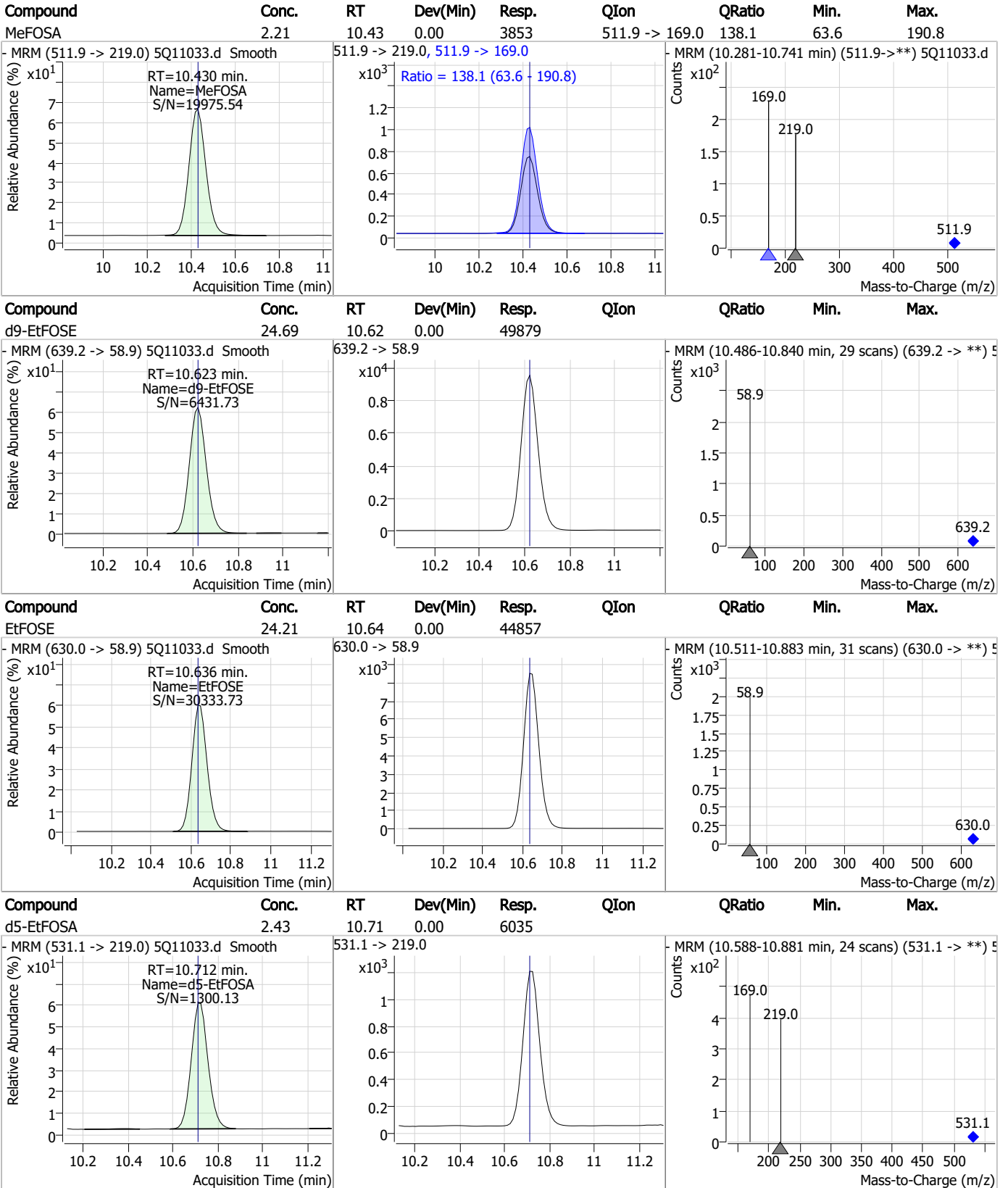


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.19	9.99	-0.06	3500	699.1 -> 98.8	61.4	30.3	90.8
d7-MeFOSE	25.42	10.31	0.00	41914				
MeFOSE	23.20	10.33	0.00	41531				
d3-MeFOSA	2.45	10.42	0.00	4424				

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Perfluorinated Compounds by LC/MS/MS

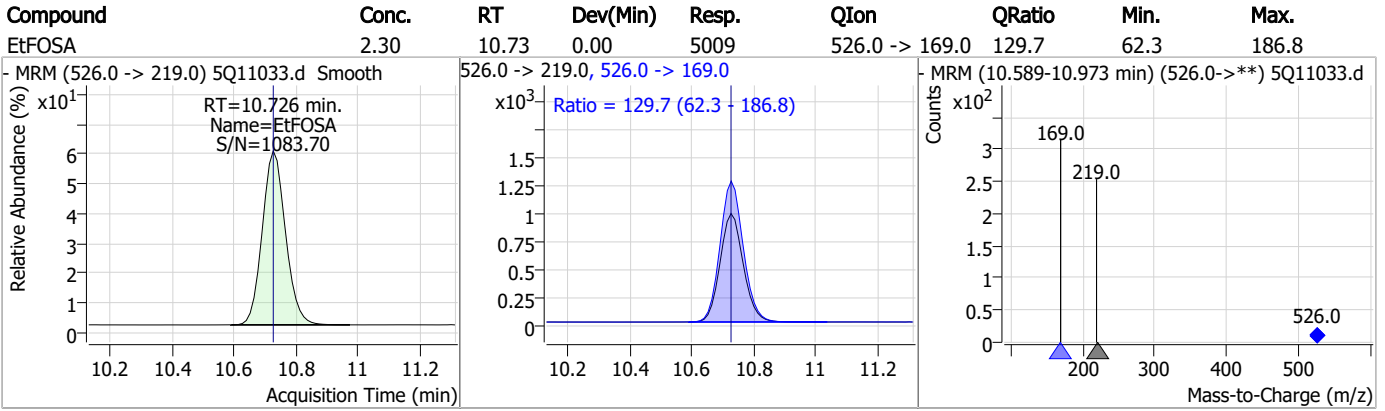


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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S5Q170-CC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q11033.D **Analyst approved:** 02/22/23 08:01 Norman Farmer
Injection Time: 02/17/23 18:08 **Supervisor approved:** 02/22/23 17:11 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.78	Poor instrument integration
Perfluorobutanoic acid	375-22-4		2.78	Poor instrument integration
13C4-PFBA			2.79	Poor instrument integration
PFMPA	377-73-1		3.31	Poor instrument integration
13C5-PFPeA			4.12	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.13	Poor instrument integration
PFMBA	863090-89-5		4.53	Poor instrument integration
13C3-PFBS			5.24	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.24	Poor instrument integration
PFEESA	113507-82-7		5.80	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.32	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.29	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 5Q11034.d
 Operator : natashag
 Acq. Method : 1633.m
 Acq. Date-Time : 2/17/2023 6:22:07 PM
 Sample Name : cc169-1.0LL
 Vial : P3-A2
 DA Method File : 1633_021623_S5Q169.quantmethod.xml
 Batch Name : s6q170.batch.bin
 Sample Information : OP95462,S5Q170,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	2.786	216.8 -> 171.9	41062	10.00	µg/L m	-0.012
M5-PFPeA	4.137	268.3 -> 223.0	24760	5.00	µg/L m	-0.012
M5-PFHxA	5.310	318.0 -> 273.0	28852	2.50	µg/L	-0.025
M4-PFHpA	6.255	367.1 -> 322.0	26699	2.50	µg/L	-0.025
M8-PFOA	6.925	421.1 -> 376.0	34447	2.50	µg/L	-0.025
M9-PFNA	7.495	472.1 -> 427.0	11433	1.25	µg/L	-0.037
M6-PFDA	8.029	519.1 -> 474.1	7413	1.25	µg/L	-0.037
M7-PFUnDA	8.535	570.0 -> 525.1	8262	1.25	µg/L	-0.050
M2-PFDoDA	9.004	615.1 -> 570.0	8733	1.25	µg/L	-0.050
M2-PFTeDA	9.837	715.2 -> 670.0	7859	1.25	µg/L	-0.062
M8-FOSA	9.174	506.1 -> 77.8	7134	2.50	µg/L	-0.013
M3-PFBS	5.241	302.1 -> 79.9	6911	2.50	µg/L m	-0.036
M3-PFHxS	7.054	402.1 -> 79.9	5678	2.50	µg/L	-0.038
M8-PFOS	8.218	507.1 -> 79.9	7157	2.50	µg/L	-0.037
M2-4:2FTS	4.972	329.1 -> 80.9	451	5.00	µg/L	-0.025
M2-6:2FTS	6.687	429.1 -> 80.9	1100	5.00	µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	1641	5.00	µg/L	-0.037
M3-MeFOSAA	8.063	573.2 -> 419.0	8559	5.00	µg/L	-0.025
M3-HFPO-DA	5.690	286.9 -> 168.9	62843	10.00	µg/L	-0.025
M5-EtFOSAA	8.285	589.2 -> 419.0	10436	5.00	µg/L	-0.025
M7-MeFOSE	10.315	623.2 -> 58.9	34600	25.00	µg/L	0.000
M9-EtFOSE	10.623	639.2 -> 58.9	41759	25.00	µg/L	0.000
M5-EtFOSA	10.725	531.1 -> 219.0	5281	2.50	µg/L	0.012
M3-MeFOSA	10.429	515.0 -> 219.0	3751	2.50	µg/L	0.012
13C4-PFOS	8.219	502.8 -> 79.9	7572	2.50	µg/L	-0.037
13C3-PFBA	2.778	216.0 -> 172.0	21969	5.00	µg/L m	-0.025
18O2-PFHxS	7.052	403.0 -> 83.9	3888	2.50	µg/L	-0.038
13C4-PFOA	6.926	417.1 -> 372.0	39735	2.50	µg/L	-0.025
13C2-PFDA	8.029	515.1 -> 470.1	10946	1.25	µg/L	-0.038
13C5-PFNA	7.496	468.0 -> 423.0	11309	1.25	µg/L	-0.037
13C2-PFHxA	5.311	315.1 -> 270.0	32376	2.50	µg/L	-0.025
System Monitoring Compounds						
13C2-4:2FTS	4.972	329.1 -> 80.9	451	4.77	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.4%			
13C2-6:2FTS	6.687	429.1 -> 80.9	1100	5.22	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%			
13C2-8:2FTS	7.791	529.1 -> 80.9	1641	5.56	µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.1%			
13C2-PFDoDA	9.004	615.1 -> 570.0	8733	1.28	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.4%			
13C2-PFTeDA	9.837	715.2 -> 670.0	7859	1.23	µg/L	-0.062
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.1%			
13C3-PFBS	5.241	302.1 -> 79.9	6911	2.31	µg/L m	-0.036
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.4%			
13C3-PFHxS	7.054	402.1 -> 79.9	5678	2.55	µg/L	-0.038

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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 = 102.2%		
13C4-PFBA	2.786	216.8 -> 171.9	41062	9.91	µg/L m	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C4-PFHpA	6.255	367.1 -> 322.0	26699	2.48	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%		
13C5-PFHxA	5.310	318.0 -> 273.0	28852	2.54	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C5-PFPeA	4.137	268.3 -> 223.0	24760	4.21	µg/L m	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 84.1%		
13C6-PFDA	8.029	519.1 -> 474.1	7413	1.31	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.9%		
13C7-PFUnDA	8.535	570.0 -> 525.1	8262	1.34	µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.9%		
13C8-FOSA	9.174	506.1 -> 77.8	7134	2.40	µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%		
13C8-PFOA	6.925	421.1 -> 376.0	34447	2.57	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%		
13C8-PFOS	8.218	507.1 -> 79.9	7157	2.40	µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.0%		
13C9-PFNA	7.495	472.1 -> 427.0	11433	1.24	µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%		
d3-MeFOSAA	8.063	573.2 -> 419.0	8559	5.10	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
13C3-HFPO-DA	5.690	286.9 -> 168.9	62843	10.46	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
d3-MeFOSA	10.429	515.0 -> 219.0	3751	2.46	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%		
d5-EtFOSAA	8.285	589.2 -> 419.0	10436	4.21	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 84.1%		
d7-MeFOSE	10.315	623.2 -> 58.9	34600	24.83	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.3%		
d9-EtFOSE	10.623	639.2 -> 58.9	41759	24.45	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.8%		
d5-EtFOSA	10.725	531.1 -> 219.0	5281	2.51	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%		
Target Compounds						QValue
4:2FTS	4.972	327.1 -> 307.0	572	1.01	µg/L	77
		327.1 -> 80.9	221			
6:2FTS	6.687	427.1 -> 407.0	830	0.90	µg/L	98
		427.1 -> 80.9	341			
8:2FTS	7.792	527.1 -> 507.0	479	0.62	µg/L	80
		527.1 -> 80.8	306			
EtFOSAA	8.286	584.2 -> 419.1	327	0.24	µg/L m	77
		584.2 -> 526.0	176			
FOSA	9.177	498.1 -> 77.9	637	0.24	µg/L #	93
		498.1 -> 478.0	7			
MeFOSAA	8.064	570.1 -> 419.0	305	0.21	µg/L m	89
		570.1 -> 483.0	82			
PFBA	2.782	212.8 -> 168.9	1447	0.89	µg/L	100
PFBS	5.242	298.7 -> 79.9	519	0.23	µg/L m	96
		298.7 -> 98.8	233			
PFDA	8.030	512.9 -> 469.0	1615	0.21	µg/L	93
		512.9 -> 219.0	244			
PFDODA	9.004	613.1 -> 569.0	1379	0.23	µg/L	98
		613.1 -> 319.0	228			
PFDS	9.195	599.0 -> 79.9	400	0.25	µg/L	87

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.256	599.0 -> 98.8	170	0.22	µg/L	91
		363.1 -> 319.0	2447			
PFHpS	7.660	363.1 -> 169.0	655	0.22	µg/L	93
		449.0 -> 79.9	448			
PFHxA	5.312	449.0 -> 98.9	247	0.23	µg/L	98
		313.0 -> 269.0	1972			
PFHxS	7.055	313.0 -> 118.9	103	0.23	µg/L	85
		398.7 -> 79.9	434			
PFNA	7.496	398.7 -> 98.9	260	0.23	µg/L	94
		463.0 -> 419.0	1495			
PFNS	8.736	463.0 -> 219.0	308	0.21	µg/L	92
		548.8 -> 79.9	338			
PFOA	6.926	548.8 -> 98.9	227	0.23	µg/L	95
		413.0 -> 369.0	3004			
PFOS	8.219	413.0 -> 169.0	757	0.21	µg/L	97
		498.9 -> 79.9	620			
PFPeA	4.139	498.9 -> 98.8	381	0.49	µg/L	100
		263.0 -> 219.0	2670			
PFPeS	6.320	349.1 -> 79.9	313	0.19	µg/L	91
		349.1 -> 98.9	139			
PFTeDA	9.837	713.1 -> 669.0	1521	0.25	µg/L	96
		713.1 -> 168.9	191			
PFTrDA	9.439	663.0 -> 619.0	1764	0.23	µg/L	100
		663.0 -> 168.9	292			
PFUnDA	8.548	563.1 -> 519.0	1180	0.19	µg/L	83
		563.1 -> 269.1	331			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	5460	0.79	µg/L	99
		632.9 -> 452.9	1651			
9Cl-PF3ONS	8.588	530.8 -> 351.0	5688	0.77	µg/L	99
		532.8 -> 353.0	1761			
ADONA	6.517	376.9 -> 250.9	13926	0.81	µg/L	99
		376.9 -> 84.8	4080			
HFPO-DA	5.691	284.9 -> 168.9	4802	0.93	µg/L	99
		284.9 -> 184.9	471			
3:3FTCA	3.591	241.0 -> 177.0	496	1.24	µg/L	100
		241.0 -> 117.0	63			
5:3FTCA	5.893	341.0 -> 237.1	8290	4.74	µg/L	96
		341.0 -> 217.0	5327			
7:3FTCA	7.323	441.0 -> 316.9	3717	5.31	µg/L	85
		441.0 -> 336.9	7224			
EtFOSA	10.726	526.0 -> 219.0	435	0.23	µg/L	95
		526.0 -> 169.0	519			
EtFOSE	10.648	630.0 -> 58.9	3639	2.35	µg/L	100
		511.9 -> 219.0	326			
MeFOSA	10.430	511.9 -> 169.0	475	0.22	µg/L	84
		616.1 -> 58.9	3388			
MeFOSE	10.327	699.1 -> 79.9	276	2.29	µg/L	100
		699.1 -> 98.8	171			
PFDoDS	10.001	295.0 -> 201.0	283	0.22	µg/L	98
		295.0 -> 84.9	65			
NFDHA	5.193	279.0 -> 85.1	1895	0.48	µg/L	100
		229.0 -> 84.9	1340			
PFMBA	3.315	314.8 -> 134.9	3230	0.46	µg/L	100
		314.8 -> 82.9	124			
PFEESA	5.796			0.36	µg/L	97

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

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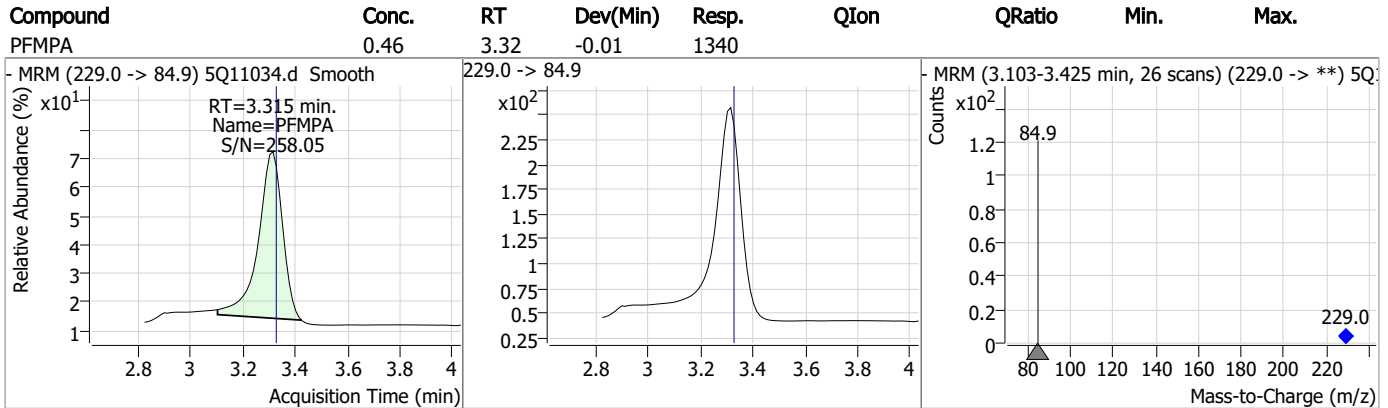
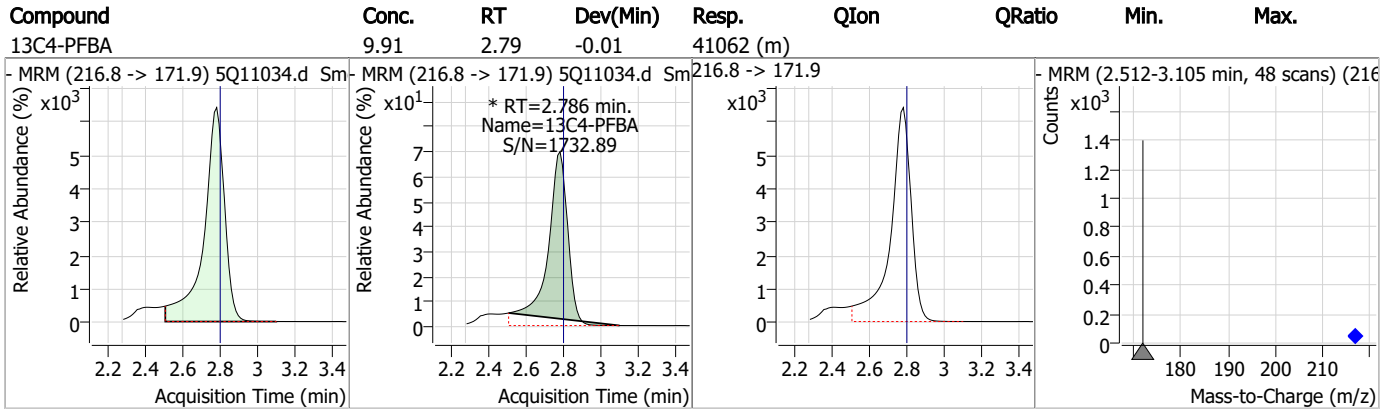
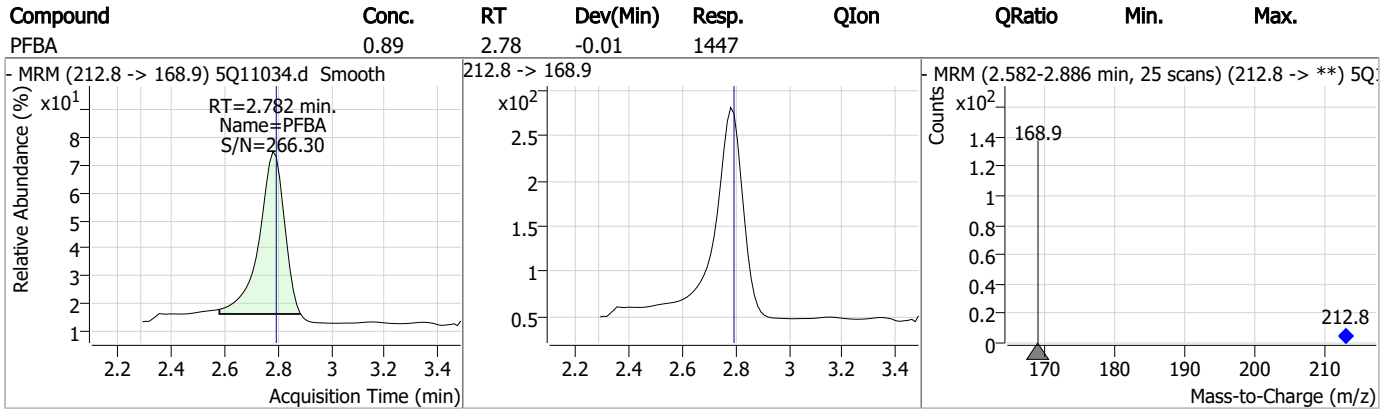
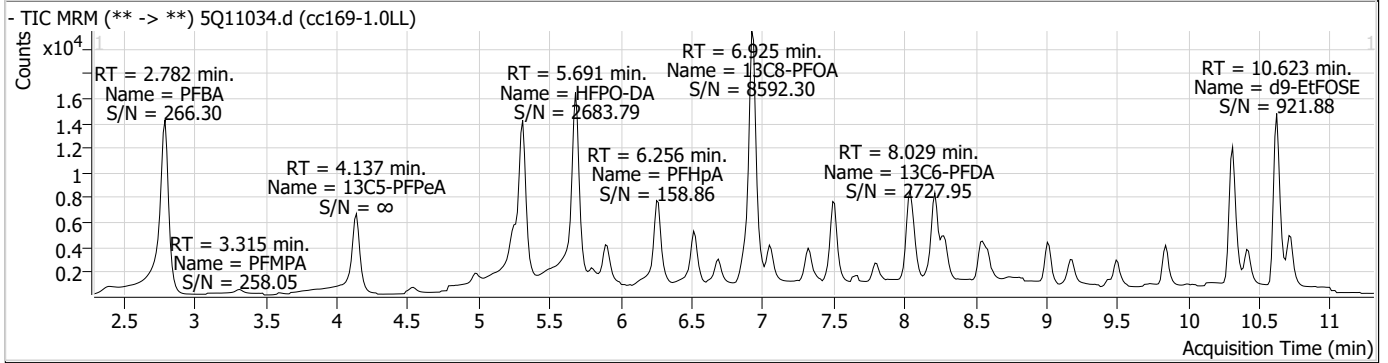
Perfluorinated Compounds by LC/MS/MS

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

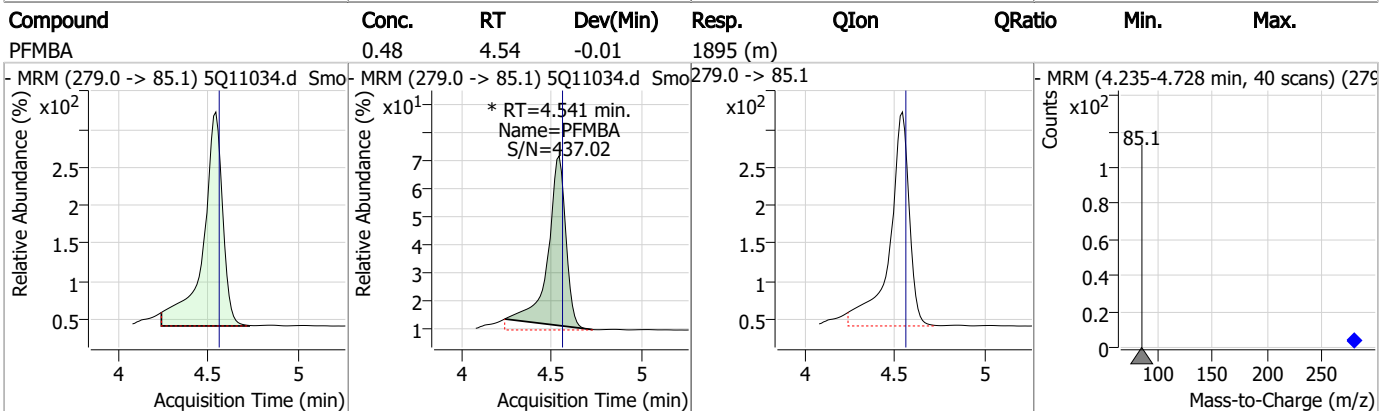
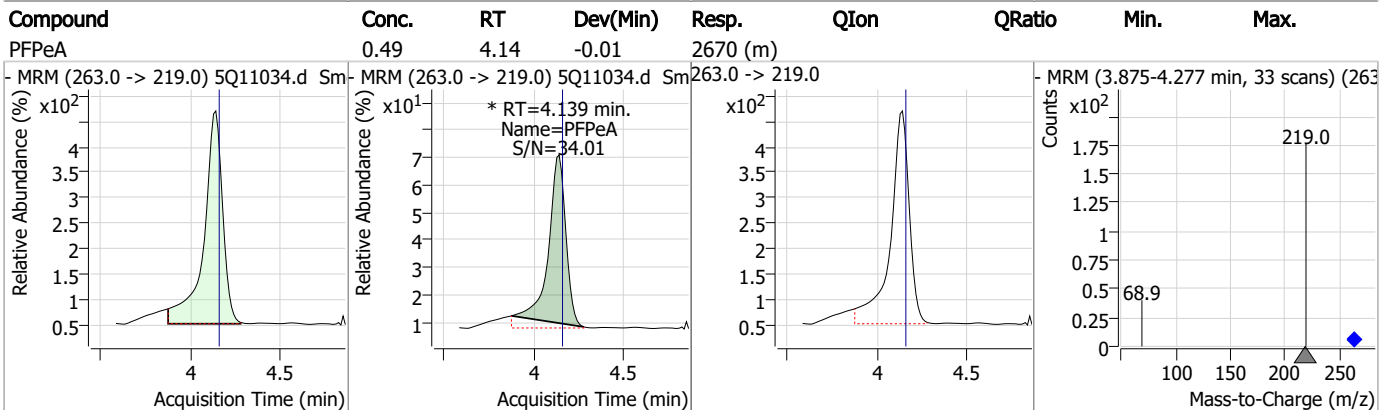
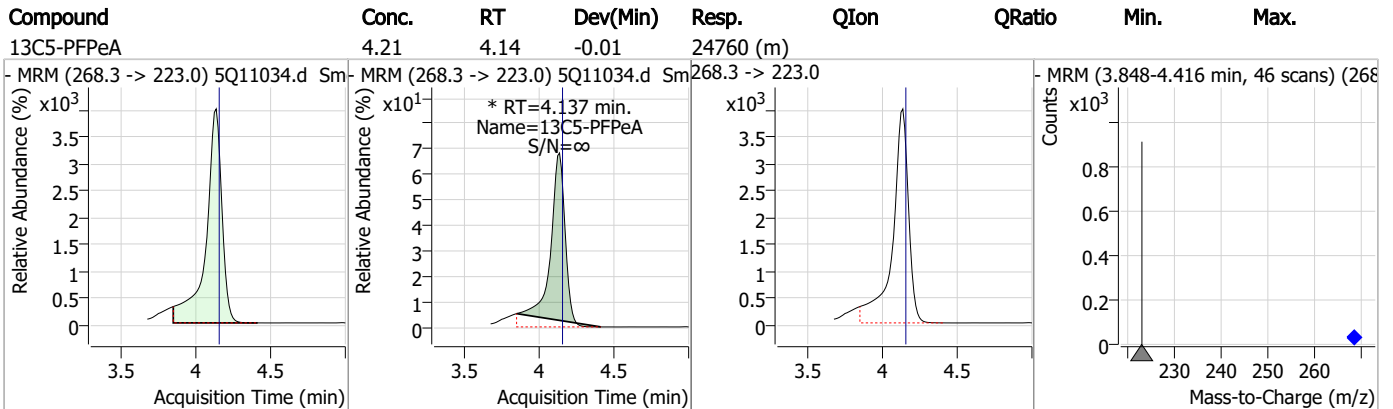
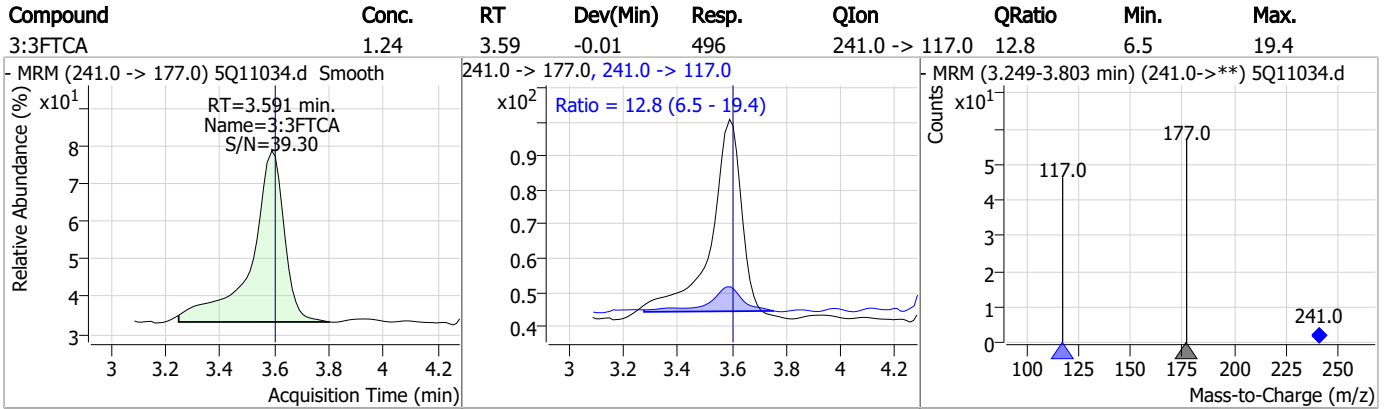


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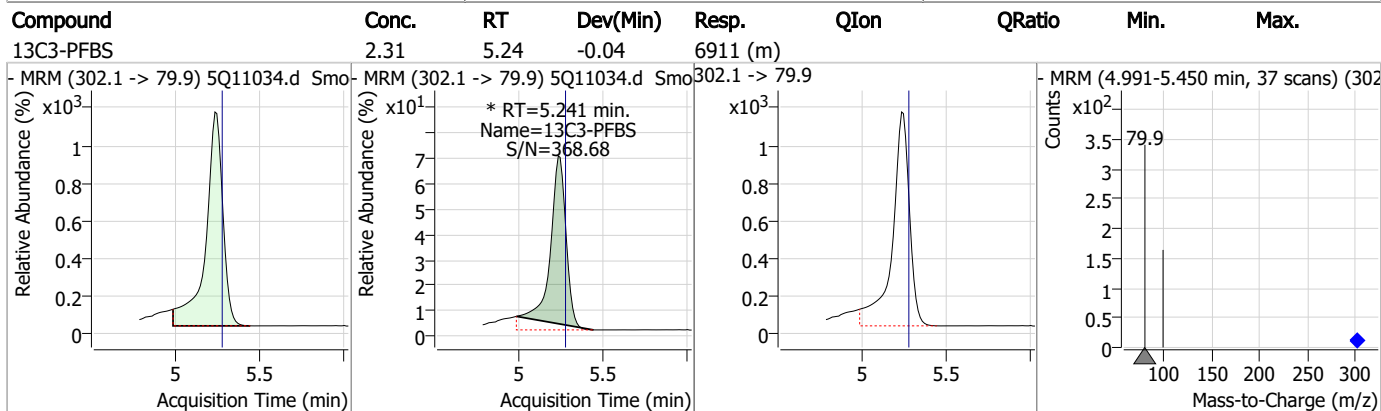
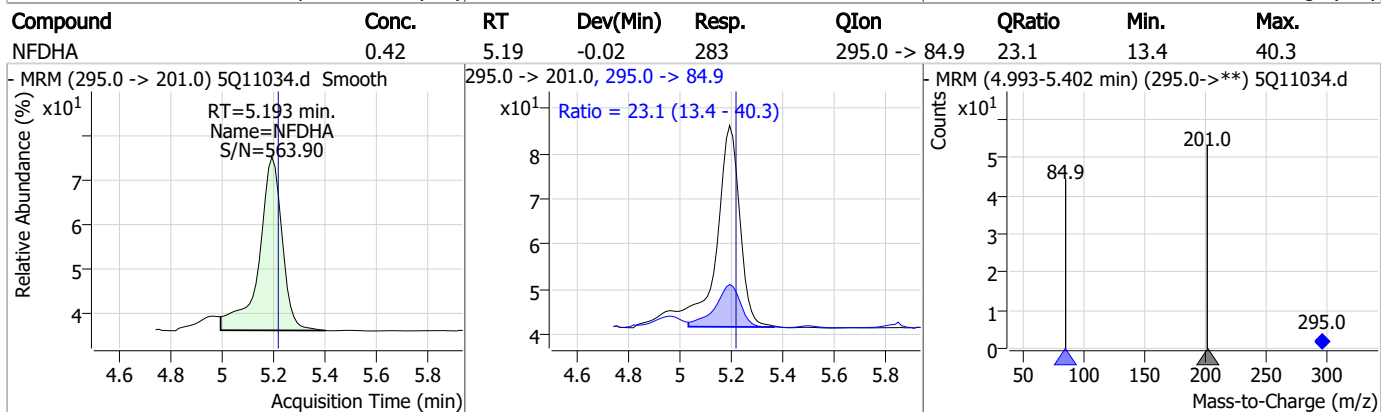
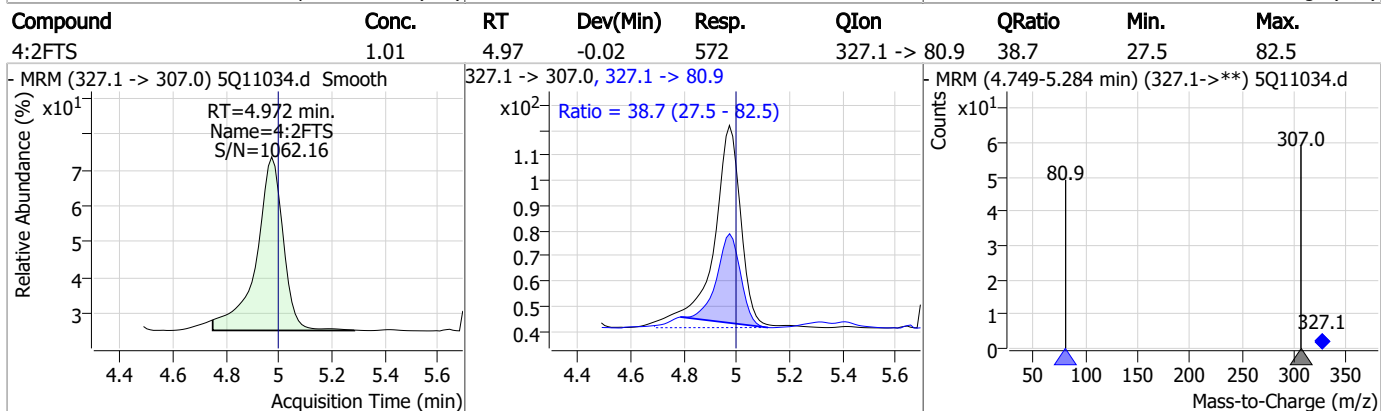
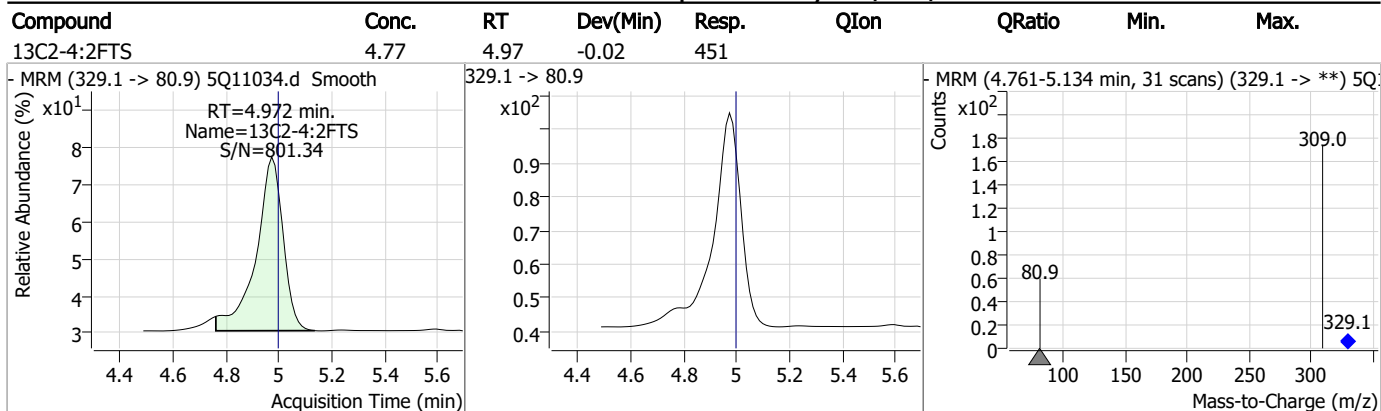


Perfluorinated Compounds by LC/MS/MS



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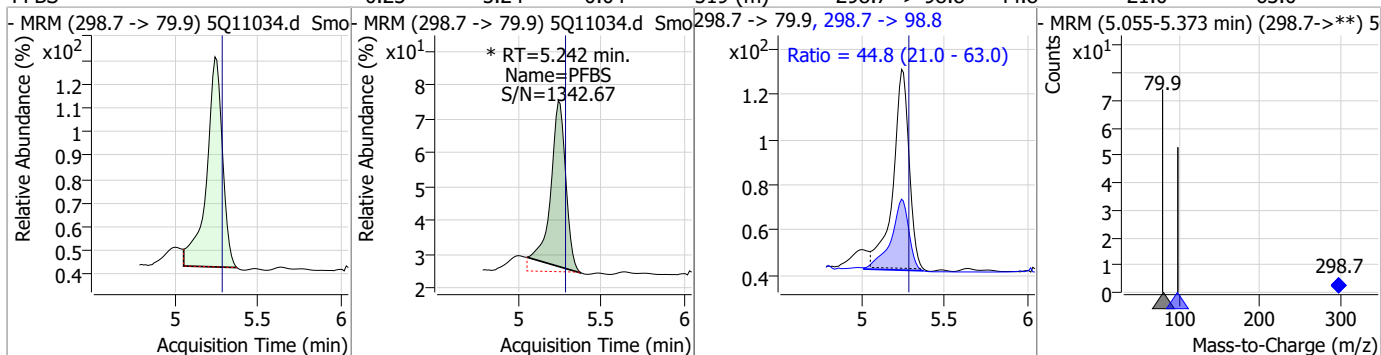
Perfluorinated Compounds by LC/MS/MS



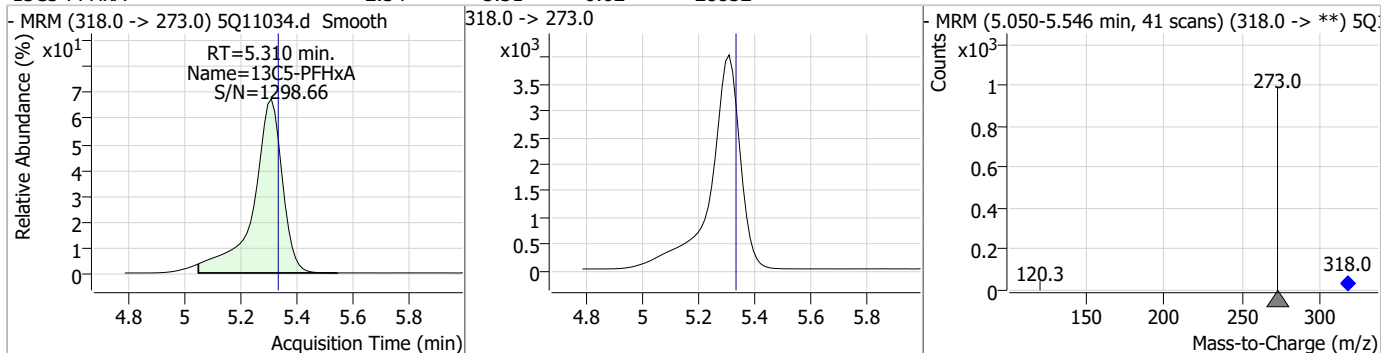
7.7.19
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Perfluorinated Compounds by LC/MS/MS

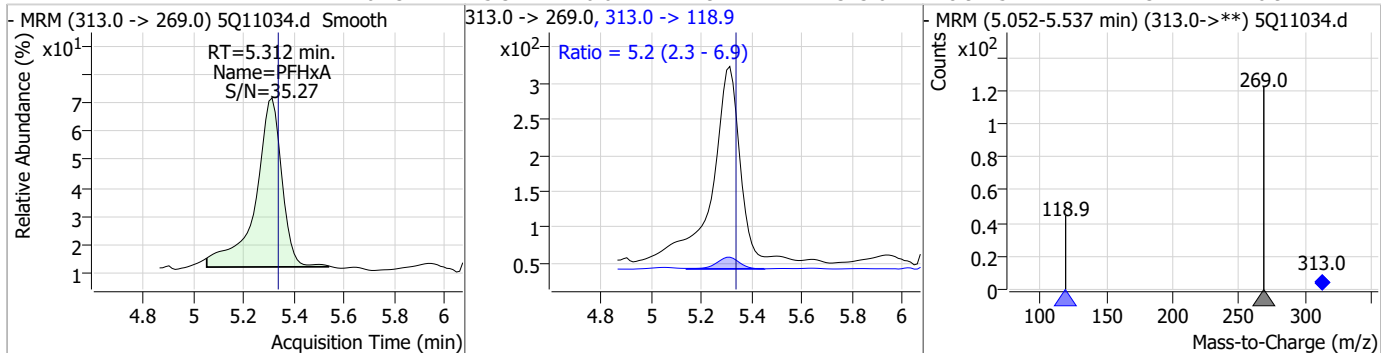
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.23	5.24	-0.04	519 (m)	298.7 -> 98.8	44.8	21.0	63.0



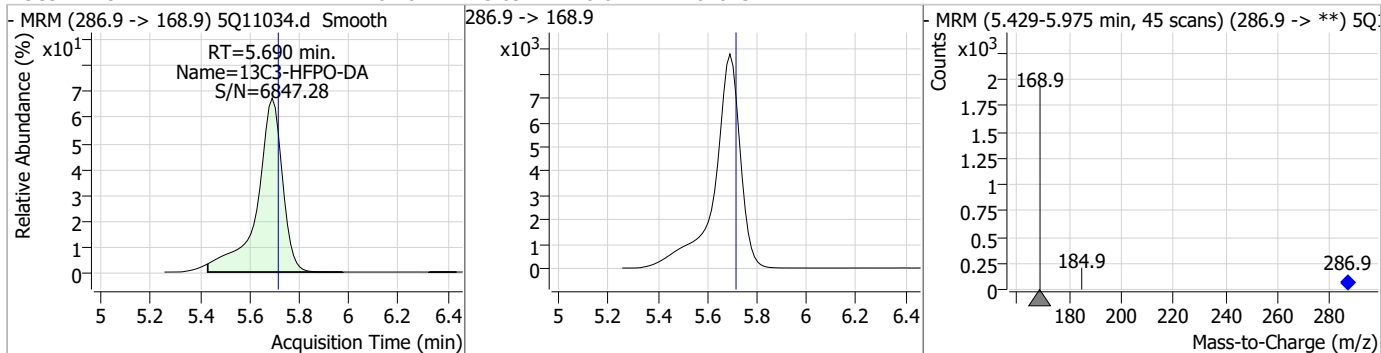
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.54	5.31	-0.02	28852				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.23	5.31	-0.02	1972	313.0 -> 118.9	5.2	2.3	6.9

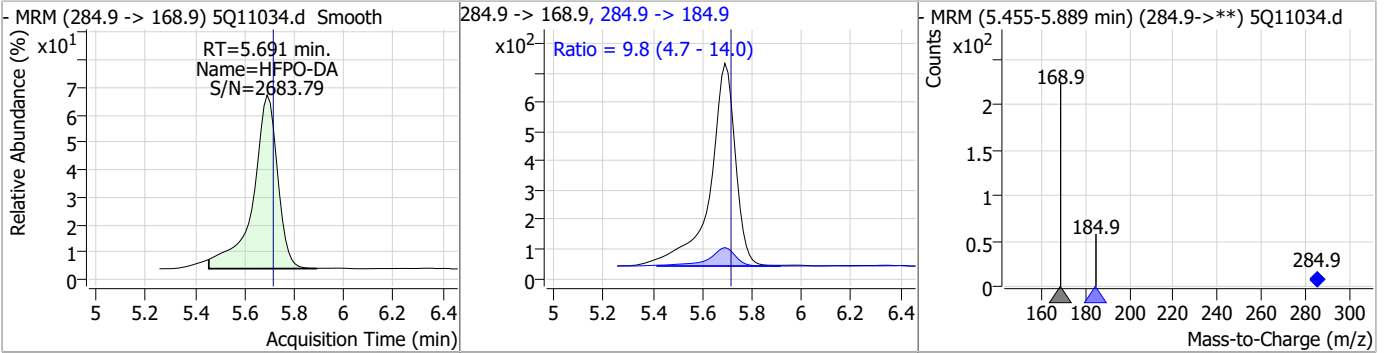


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.46	5.69	-0.02	62843				

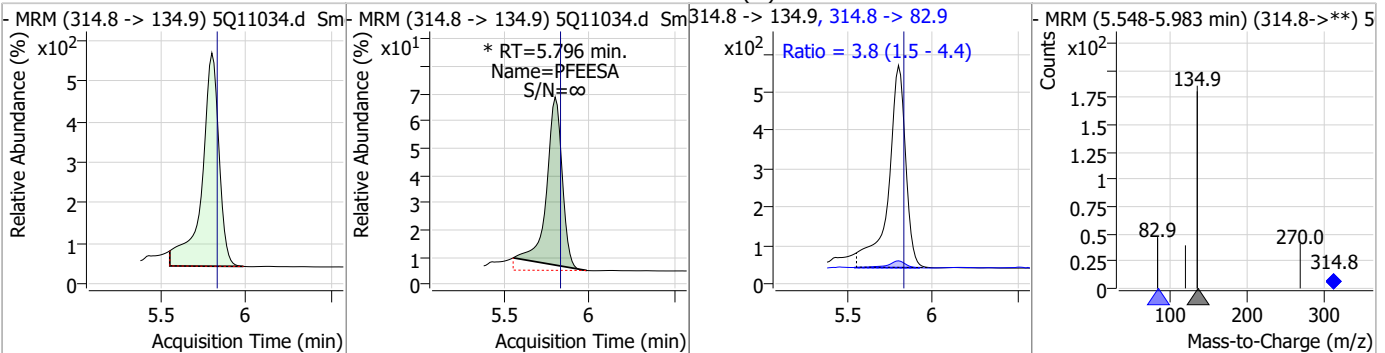


Perfluorinated Compounds by LC/MS/MS

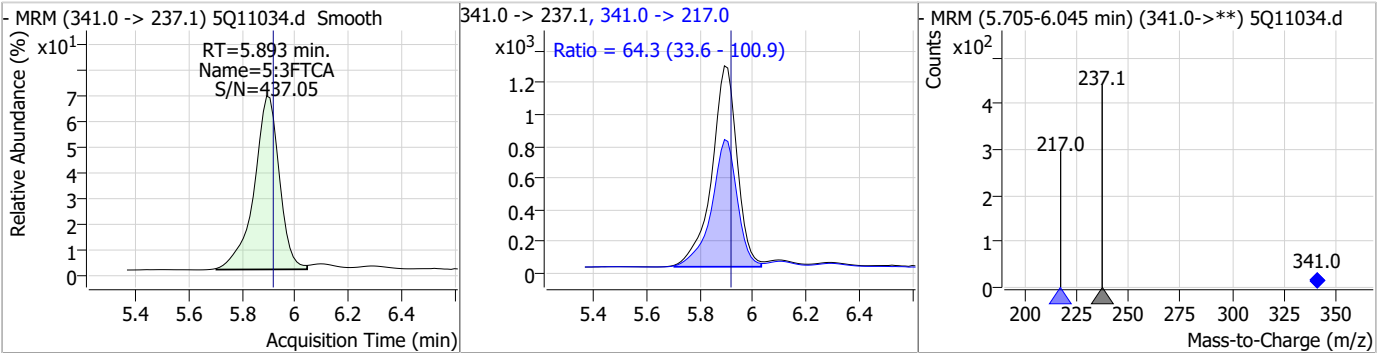
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.93	5.69	-0.02	4802	284.9 -> 184.9	9.8	4.7	14.0



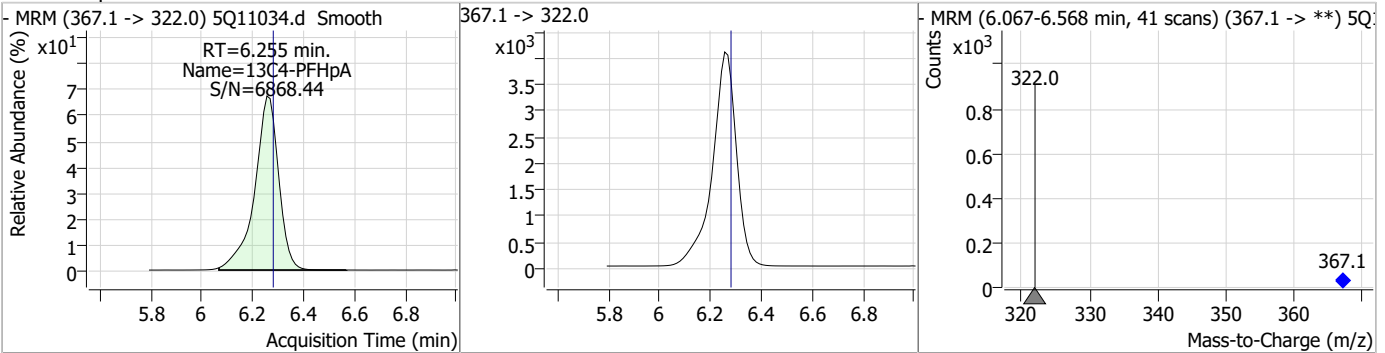
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.36	5.80	-0.02	3230 (m)	314.8 -> 82.9	3.8	1.5	4.4



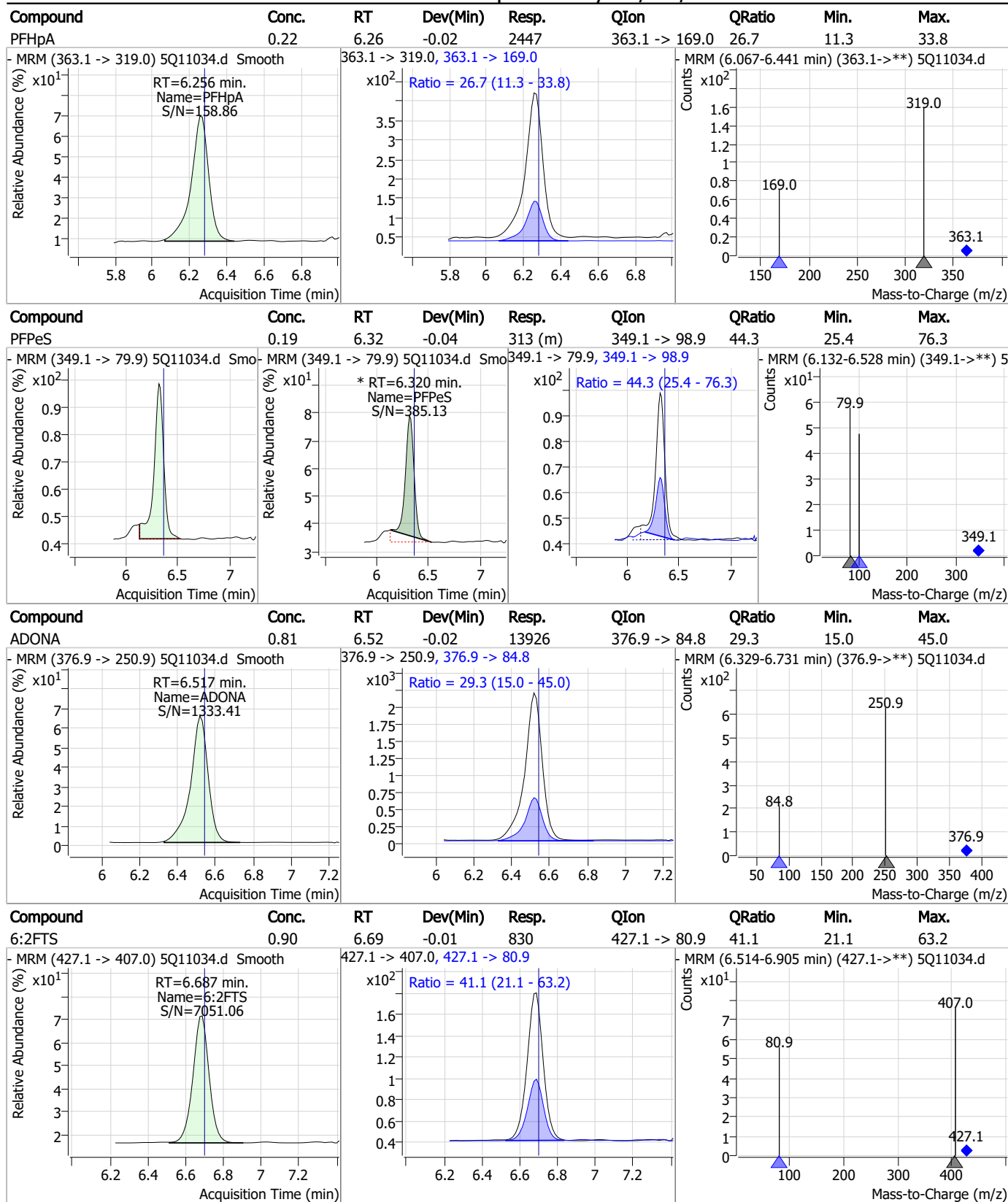
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.74	5.89	-0.02	8290	341.0 -> 217.0	64.3	33.6	100.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.48	6.26	-0.02	26699	367.1 -> 322.0			

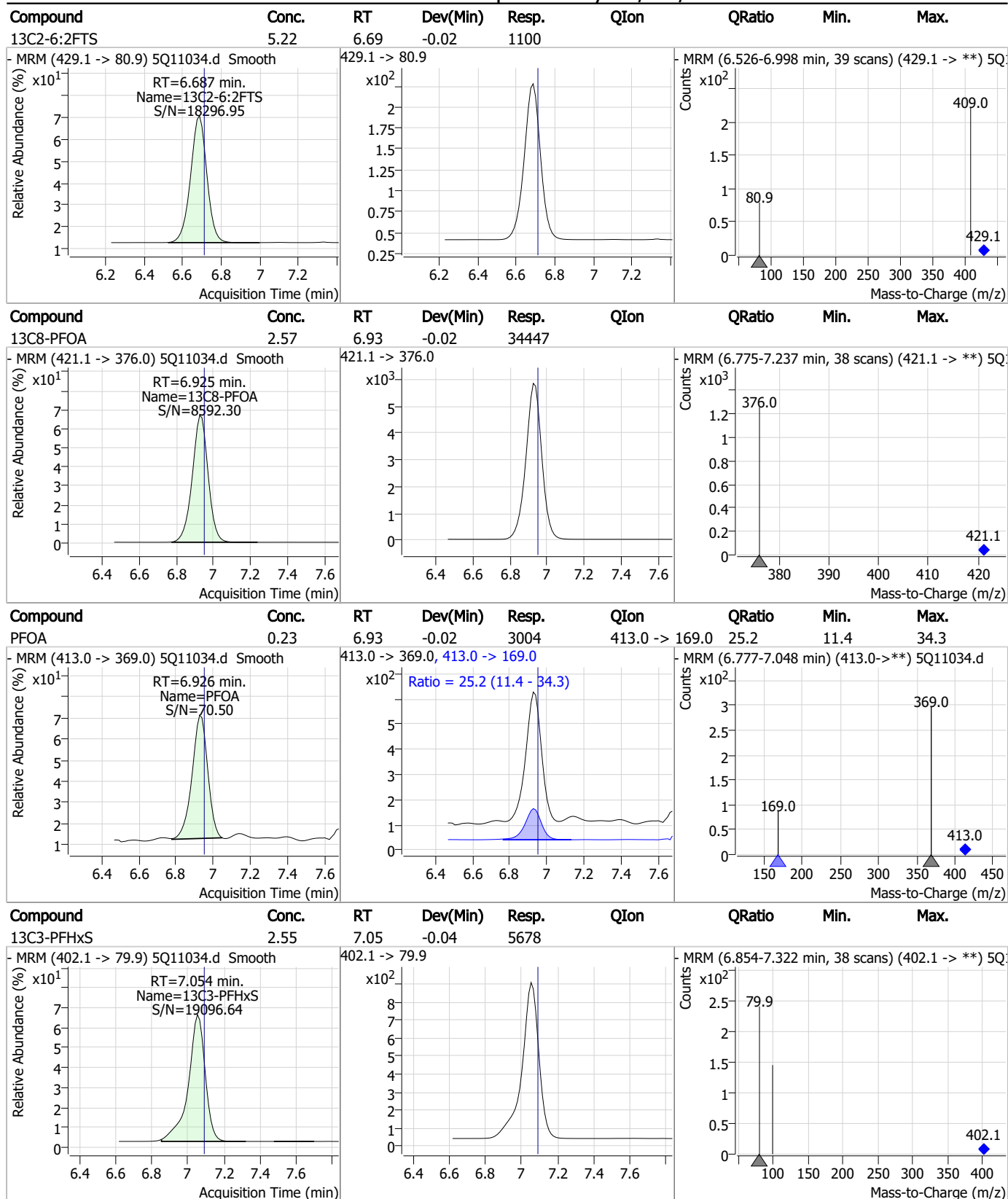


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

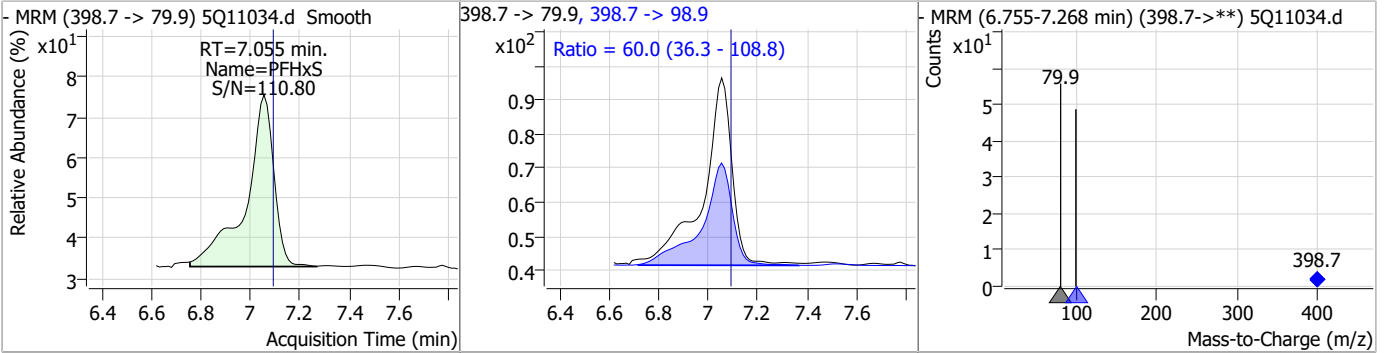


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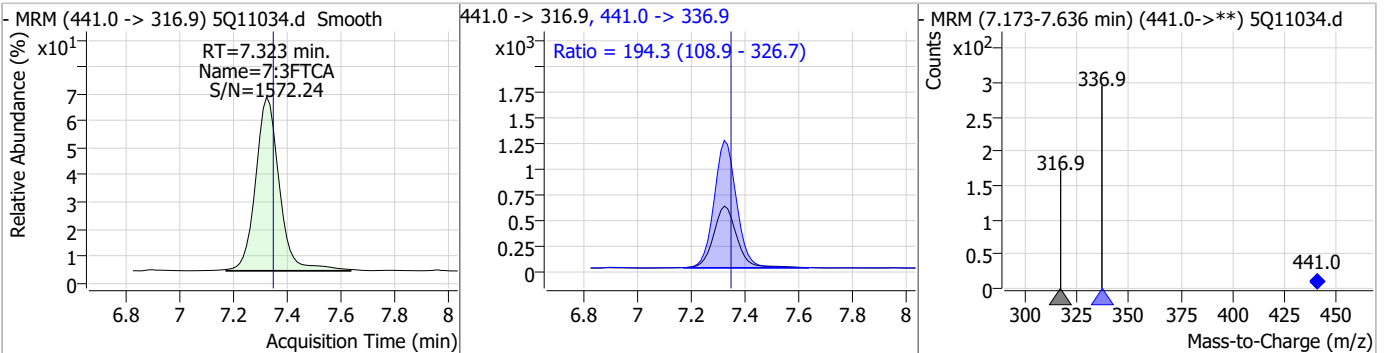


Perfluorinated Compounds by LC/MS/MS

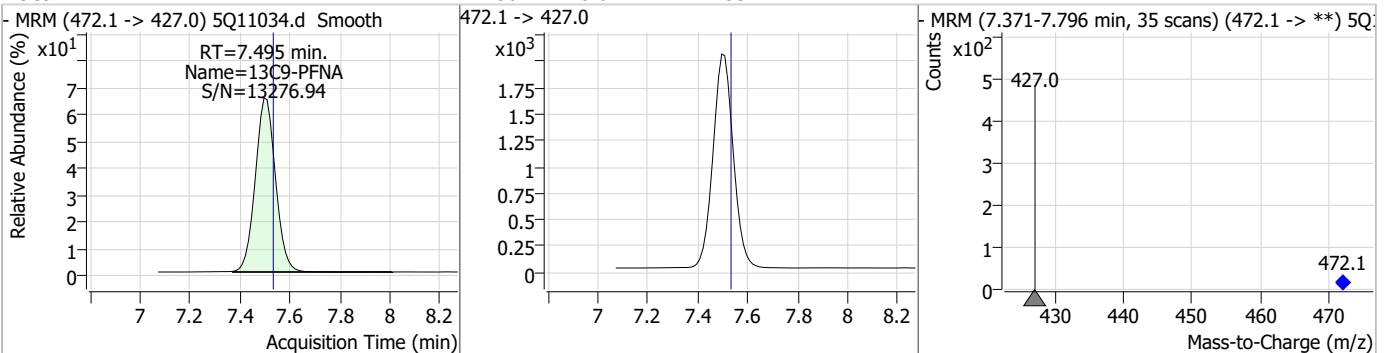
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.23	7.05	-0.04	434	398.7 -> 98.9	60.0	36.3	108.8



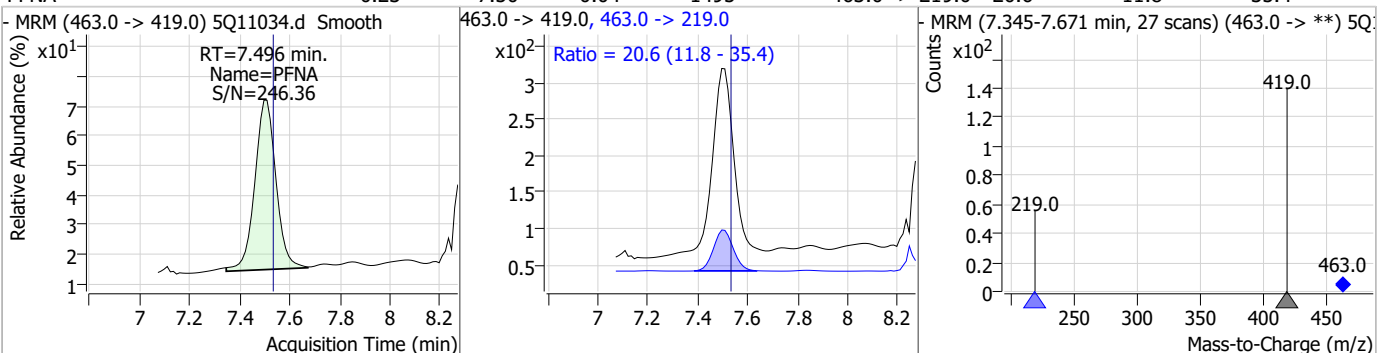
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	5.31	7.32	-0.02	3717	441.0 -> 336.9	194.3	108.9	326.7



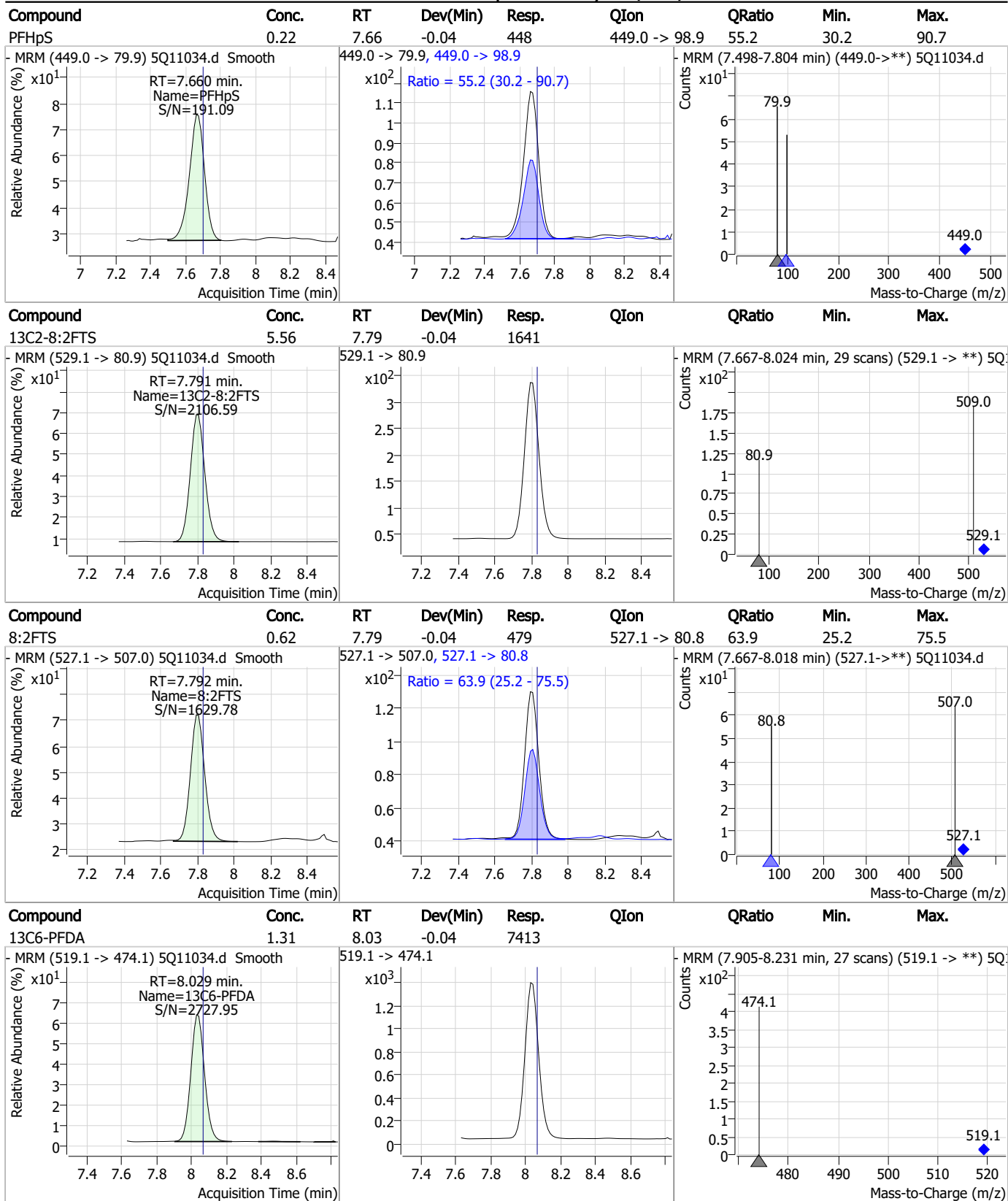
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.24	7.50	-0.04	11433				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.23	7.50	-0.04	1495	463.0 -> 219.0	20.6	11.8	35.4



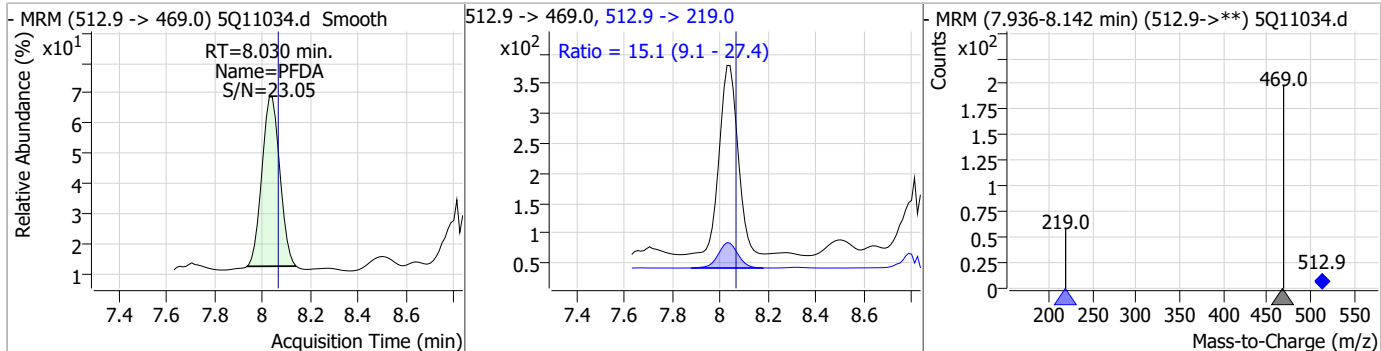
Perfluorinated Compounds by LC/MS/MS



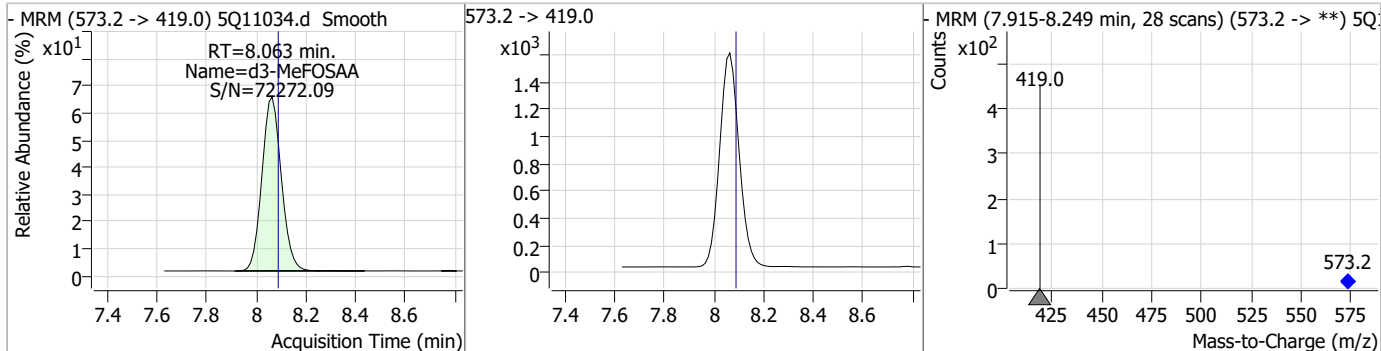
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Perfluorinated Compounds by LC/MS/MS

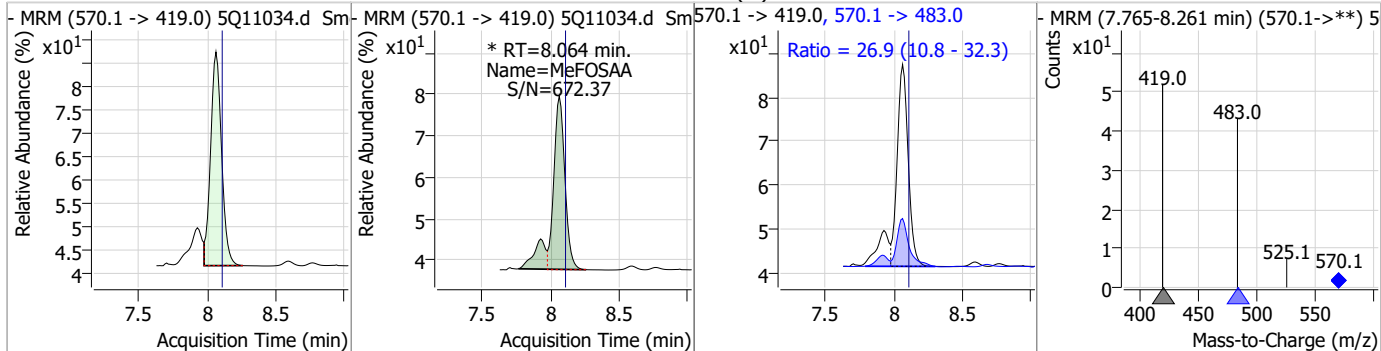
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.21	8.03	-0.04	1615	512.9 -> 219.0	15.1	9.1	27.4



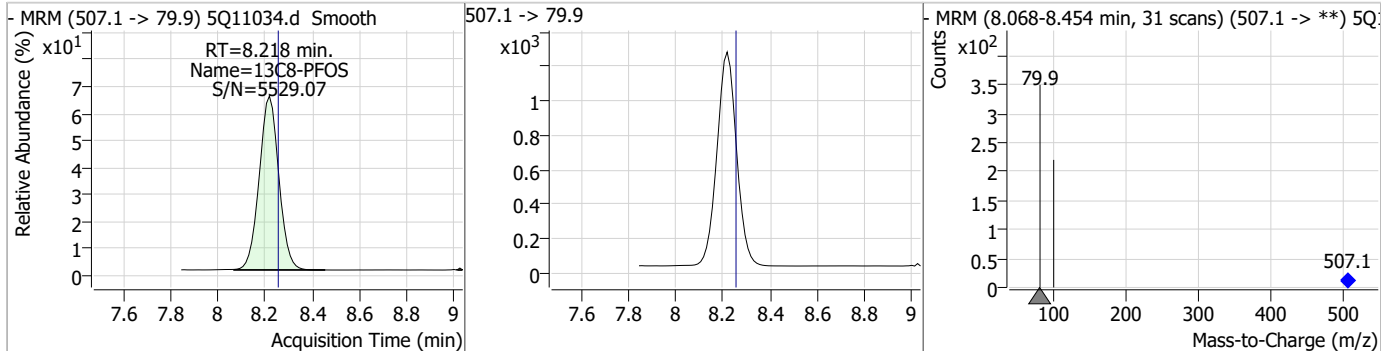
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.10	8.06	-0.02	8559				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.21	8.06	-0.04	305 (m)	570.1 -> 483.0	26.9	10.8	32.3

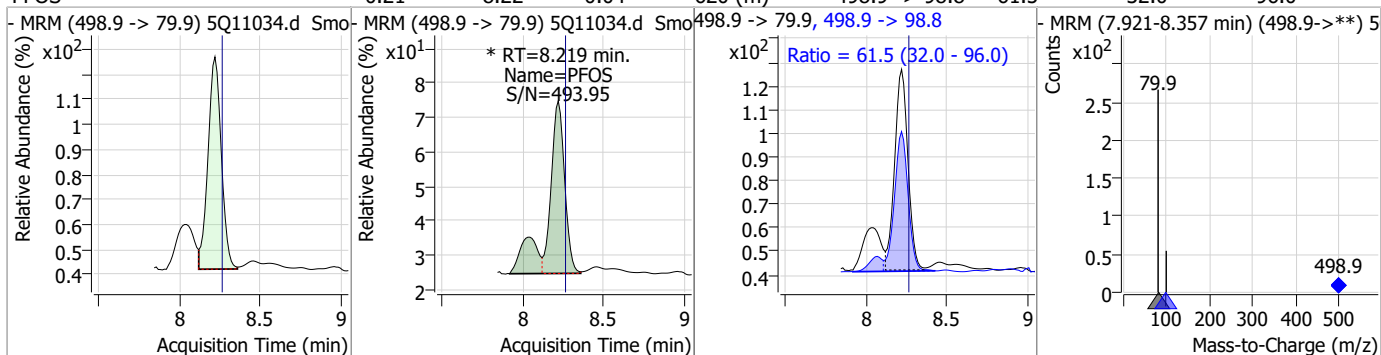


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.40	8.22	-0.04	7157				

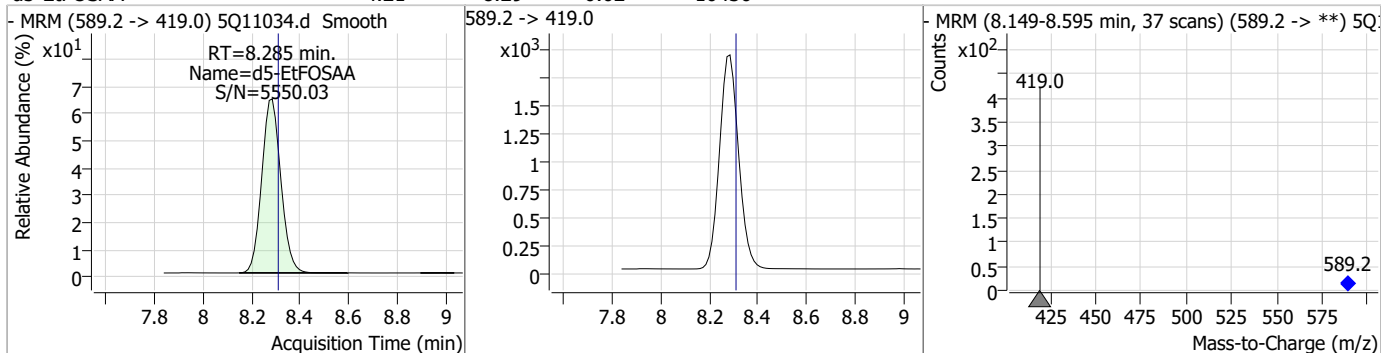


Perfluorinated Compounds by LC/MS/MS

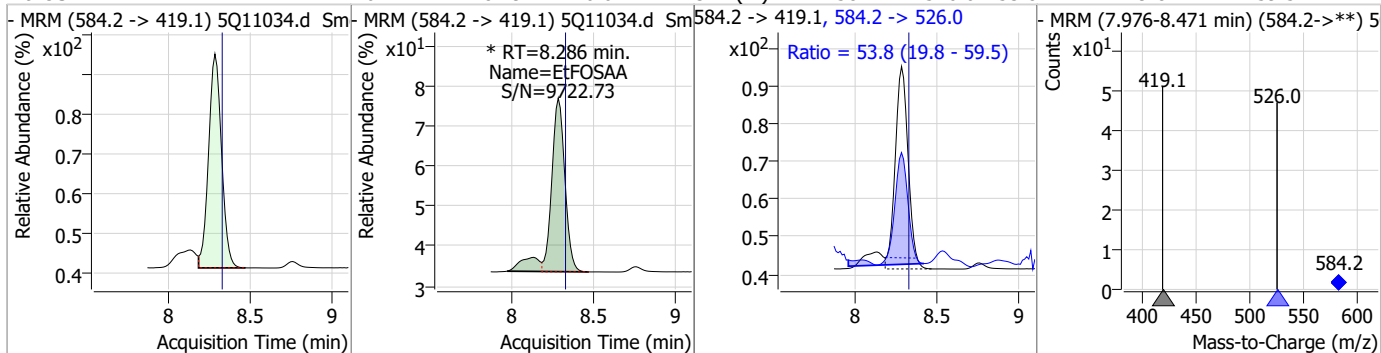
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.21	8.22	-0.04	620 (m)	498.9 -> 98.8	61.5	32.0	96.0



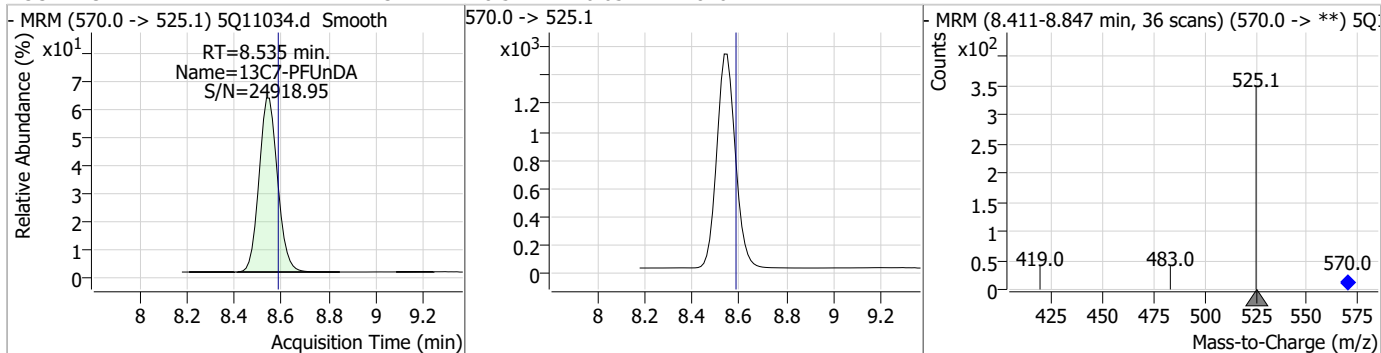
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.21	8.29	-0.02	10436				



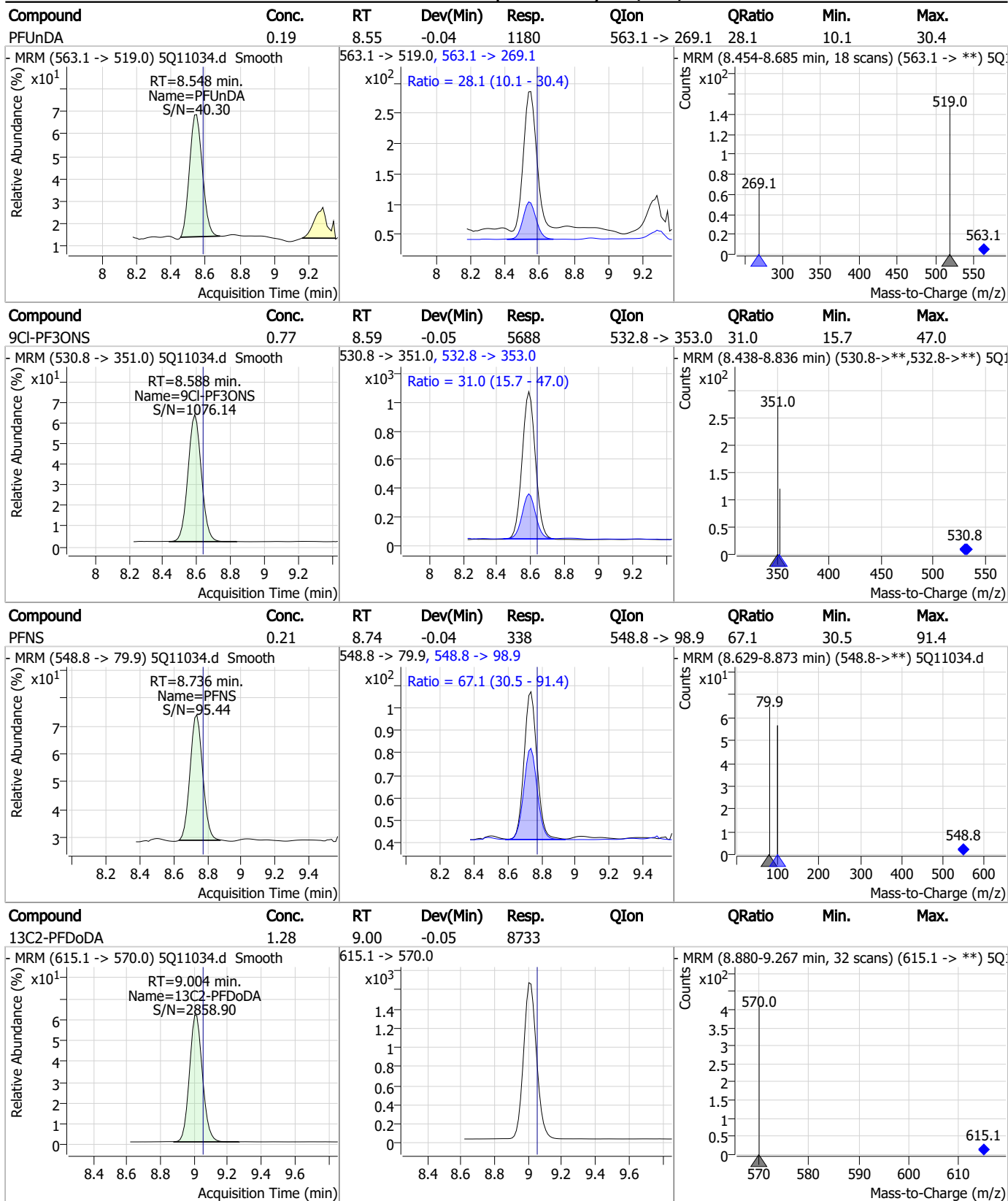
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.24	8.29	-0.04	327 (m)	584.2 -> 526.0	53.8	19.8	59.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.34	8.54	-0.05	8262				



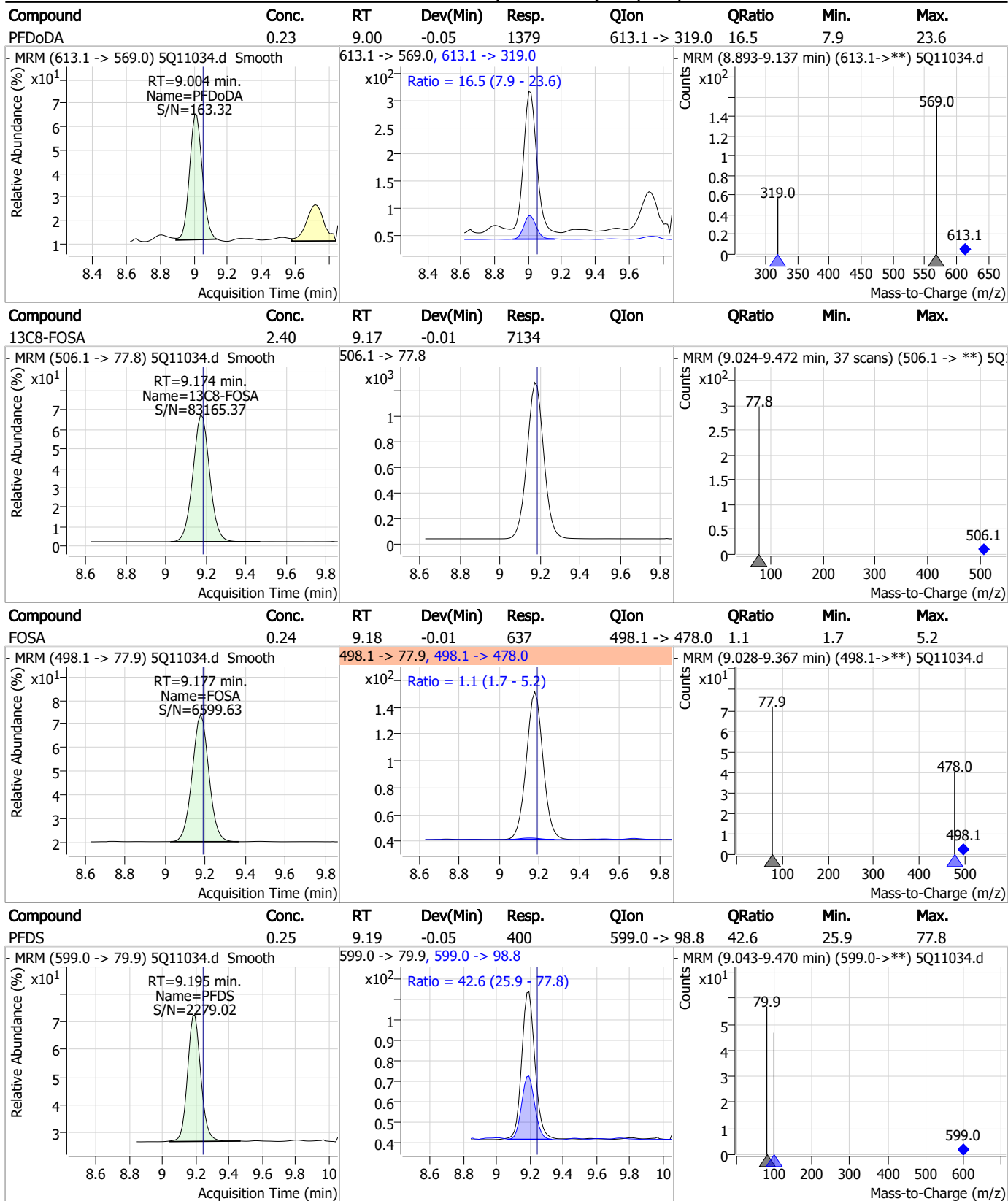
Perfluorinated Compounds by LC/MS/MS



7.7.19

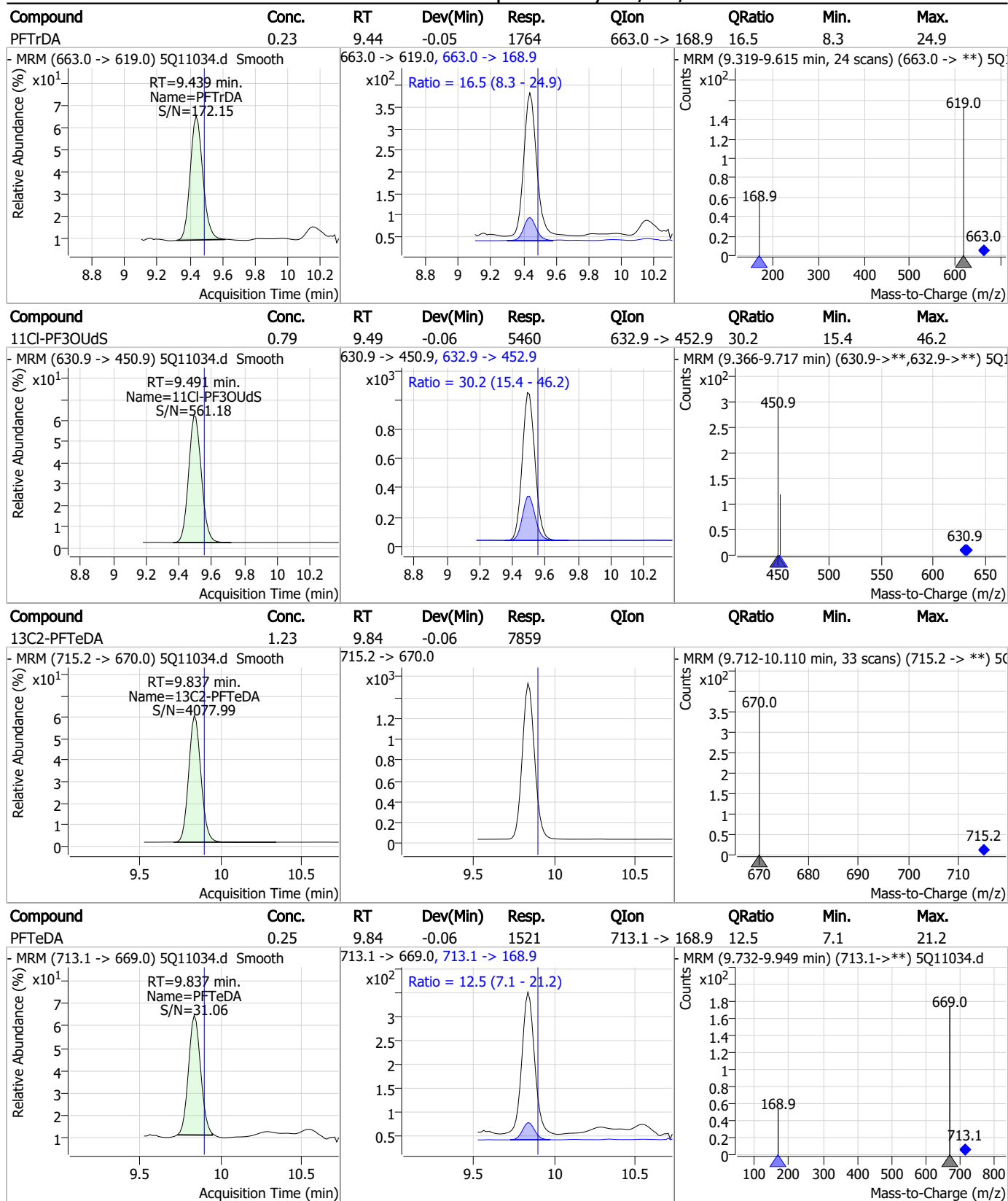
7

Perfluorinated Compounds by LC/MS/MS



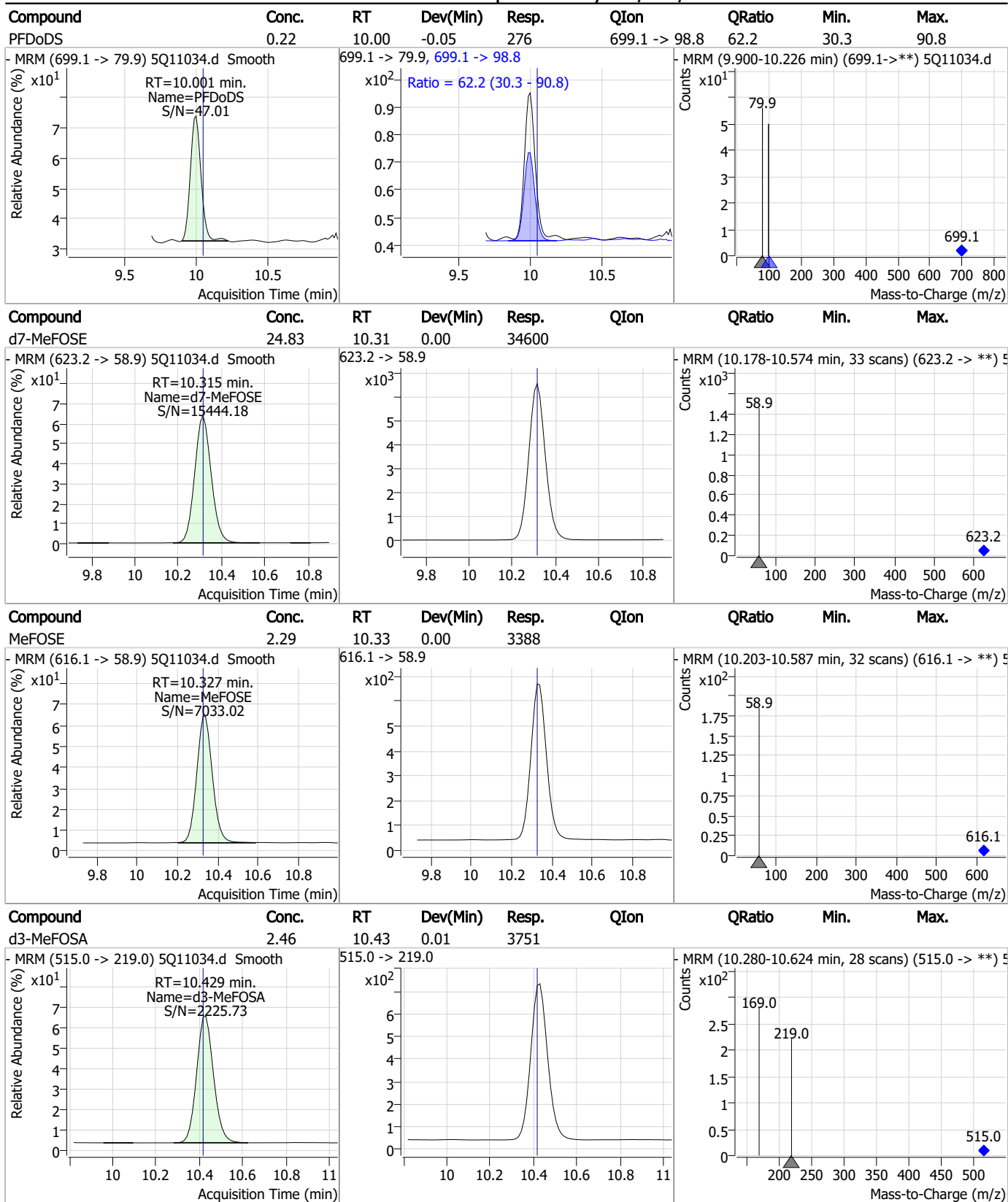
7.7.19

Perfluorinated Compounds by LC/MS/MS



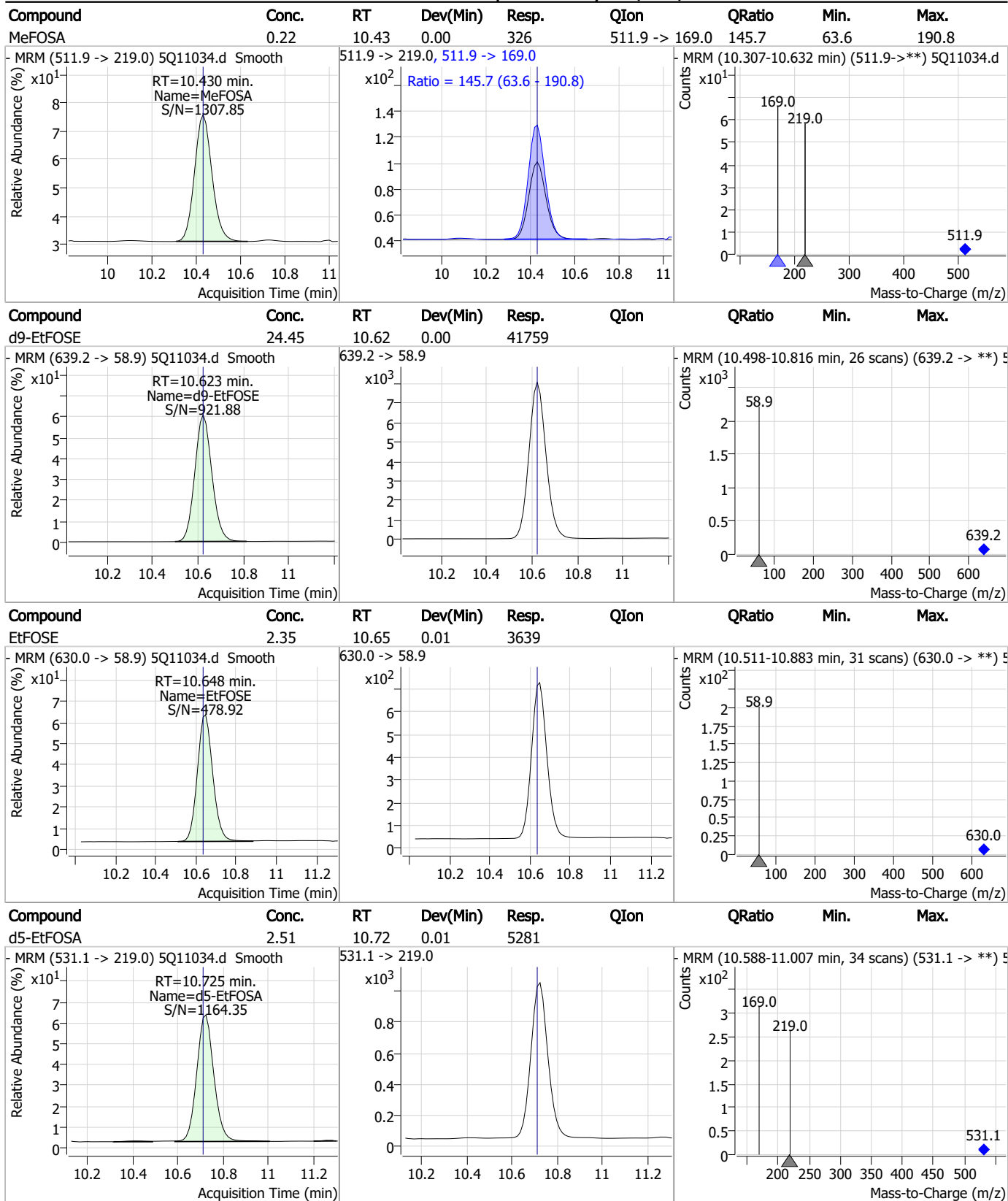
7.7.19

Perfluorinated Compounds by LC/MS/MS



7.7.19

Perfluorinated Compounds by LC/MS/MS

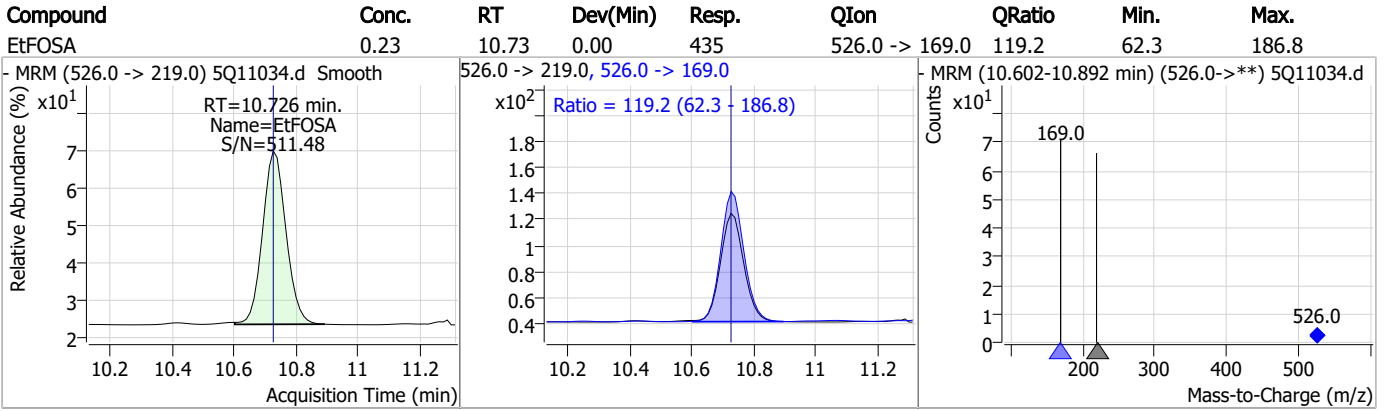


7.7.19

7



Perfluorinated Compounds by LC/MS/MS



7.7.19
7

Manual Integration Approval Summary

Sample Number: S5Q170-CC169 **Method:** EPA DRAFT 1633
Lab FileID: 5Q11034.D **Analyst approved:** 02/22/23 08:01 Norman Farmer
Injection Time: 02/17/23 18:22 **Supervisor approved:** 02/22/23 08:09 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C3-PFBA			2.78	Poor instrument integration
13C4-PFBA			2.79	Poor instrument integration
13C5-PFPeA			4.14	Poor instrument integration
Perfluoropentanoic acid	2706-90-3		4.14	Poor instrument integration
PFMBA	863090-89-5		4.54	Poor instrument integration
13C3-PFBS			5.24	Poor instrument integration
Perfluorobutanesulfonic acid	375-73-5		5.24	Poor instrument integration
PFEESA	113507-82-7		5.80	Poor instrument integration
Perfluoropentanesulfonic acid	2706-91-4		6.32	Poor instrument integration
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.29	Split peak

7.7.19.1
7

SGS ORLANDO

DATE:	02/16/22
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS5-5Q

LCMS2-2Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_021623_S5Q169
CAL DATE:	02/16/23
ANALYST:	LR
RUN BATCH:	S5Q169

ELUENT A LOT #:	224853 w5/%ACN 214785 2ml/MAC.11387
ELUENT B LOT #:	ACN 214785
IC/CC STD LOT #:	LCMS2055
ICV STD LOT #:	LCMS2055/2026
ISTD/ID STD LOT #:	11384/11383

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
33	5Q10936.d	P3-A1	ccb	1633.m	Sample		OP95462,S5Q169,500,,,5.0,,water	nd
34	5Q10937.d	P3-A1	ccb	1633.m	Sample		OP95462,S5Q169,500,,,5.0,,water	nd
35	5Q10938.d	P3-B1	RT TDCA	1633.m	Sample		OP95462,S5Q169,500,,,5.0,,water	pass
36	5Q10939.d	P3-B2	RT Br-Ln	1633.m	Sample		OP95462,S5Q169,500,,,5.0,,water	pass
37	5Q10940.d	P3-A1	ic169-0	1633.m	Sample	1.6/500	OP95462,S5Q169,500,,,5.0,,water	check tune file
38	5Q10941.d	P3-A2	ic169-1	1633.m	Calibration		OP95462,S5Q169,500,,,5.0,,water	pass
39	5Q10942.d	P3-A3	ic169-2	1633.m	Calibration	4/500	OP95462,S5Q169,500,,,5.0,,water	pass
40	5Q10943.d	P3-A4	ic169-3	1633.m	Calibration	10/500	OP95462,S5Q169,500,,,5.0,,water	pass
41	5Q10944.d	P3-A5	icc169-4	1633.m	Calibration	20/500	OP95462,S5Q169,500,,,5.0,,water	pass
42	5Q10945.d	P3-A6	ic169-5	1633.m	Calibration	40/500	OP95462,S5Q169,500,,,5.0,,water	pass
43	5Q10946.d	P3-A7	ic169-6	1633.m	Calibration	100/500	OP95462,S5Q169,500,,,5.0,,water	pass
44	5Q10947.d	P3-A8	ic169-7	1633.m	Calibration	200/500	OP95462,S5Q169,500,,,5.0,,water	pass
45	5Q10948.d	P3-A9	ic169-8	1633.m	Calibration	1x	OP95462,S5Q169,500,,,5.0,,water	pass
46	5Q10949.d	P3-A1	iblk	1633.m	Sample		OP95462,S5Q169,500,,,5.0,,water	pass
47	5Q10950.d	P3-B3	icv169-4	1633.m	QC	20/500	OP95462,S5Q169,500,,,5.0,,water	pass
48	5Q10951.d	P3-B4	icv169-4	1633.m	QC	100/500	OP95462,S5Q169,500,,,5.0,,water	pass
49	5Q10952.d	P3-A5	cc169-4	1633.m	QC	20/500	OP95462,S5Q169,500,,,5.0,,water	pass
50	5Q10953.d	P3-A2	cc169-1.0LL	1633.m	QC	1.5/500	OP95462,S5Q169,500,,,5.0,,water	pass
51	5Q10954.d	P2-A1	op95307-bs	1633.m	Sample		OP95307,S5Q169,500,,,5.0,1,,water	xNot used, restarted
52	5Q10955.d	P2-A2	op95307-llbs:3	1633.m	Sample		OP95307,S5Q169,500,,,5.0,1,,water	xNot used, restarted
53	5Q10956.d	P2-A3	op95307-mb	1633.m	Sample		OP95307,S5Q169,500,,,5.0,1,,water	xNot used, restarted
54	5Q10957.d	P2-A4	fc2144-1	1633.m	Sample		OP95307,S5Q169,565,,,5.0,1,,water	xNot used, restarted
55	5Q10958.d	P2-A5	op95307-ms	1633.m	Sample		OP95307,S5Q169,565,,,5.0,1,,water	xNot used, restarted
56	5Q10959.d	P3-A5	cc169-4	1633.m	QC	20/500	OP95462,S5Q169,500,,,5.0,,water	pass
57	5Q10960.d	P3-A2	cc169-1.0LL	1633.m	QC	1.6/500	OP95462,S5Q169,500,,,5.0,,water	pass
58	5Q10961.d	P3-A1	iccb	1633.m	Sample		OP95462,S5Q169,500,,,5.0,,water	nd
59	5Q10962.d	P2-A1	op95307-bs	1633.m	Sample		OP95307,S5Q169,500,,,5.0,1,,water	✓
60	5Q10963.d	P2-A2	op95307-llbs:3	1633.m	Sample		OP95307,S5Q169,500,,,5.0,1,,water	✓
61	5Q10964.d	P2-A3	op95307-mb	1633.m	Sample		OP95307,S5Q169,500,,,5.0,1,,water	✓
62	5Q10965.d	P2-A4	fc2144-1	1633.m	Sample		OP95307,S5Q169,565,,,5.0,1,,water	r11x, confirm hit (eff)
63	5Q10966.d	P2-A5	op95307-ms	1633.m	Sample		OP95307,S5Q169,565,,,5.0,1,,water	✓
64	5Q10967.d	P2-A6	fc2144-2	1633.m	Sample		OP95307,S5Q169,565,,,5.0,1,,water	✓
65	5Q10968.d	P2-A7	op95307-dup	1633.m	Sample		OP95307,S5Q169,565,,,5.0,1,,water	✓
66	5Q10969.d	P2-A8	fc2144-3	1633.m	Sample		OP95307,S5Q169,565,,,5.0,1,,water	✓
67	5Q10970.d	P2-A9	fc2144-4	1633.m	Sample		OP95307,S5Q169,535,,,5.0,1,,water	✓

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LCMS2-2Q ANALYSIS LOG

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68	5Q10971.d	P2-B1	fc2144-5	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
69	5Q10972.d	P3-A5	cc169-4	1633.m	QC	OP95462,S5Q169,500,,,5.0,,water	pass
70	5Q10973.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q169,500,,,5.0,,water	nd
71	5Q10974.d	P2-B2	fc2144-6	1633.m	Sample	OP95307,S5Q169,535,,,5.0,1,water	rr1x, confirm hit (eff)
72	5Q10975.d	P2-B3	fc2144-7	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
73	5Q10976.d	P2-B4	fc2144-8	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
74	5Q10977.d	P2-B5	fc2144-9	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
75	5Q10978.d	P2-B6	fc2144-10	1633.m	Sample	OP95307,S5Q169,535,,,5.0,1,water	rr1x, confirm hit (eff)
76	5Q10979.d	P2-B7	fc2144-11	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
77	5Q10980.d	P2-B8	fc2144-12	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
78	5Q10981.d	P2-B9	fc2144-13	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
79	5Q10982.d	P2-C1	fc2144-14	1633.m	Sample	OP95307,S5Q169,535,,,5.0,1,water	✓
80	5Q10983.d	P2-C2	fc2144-15	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	rr1x, confirm hit (eff)
81	5Q10984.d	P3-A5	cc169-4	1633.m	QC	OP95462,S5Q169,500,,,5.0,,water	pass
82	5Q10985.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q169,500,,,5.0,,water	nd
83	5Q10986.d	P2-C3	fc2144-16	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
84	5Q10987.d	P2-C4	fc2144-17	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
85	5Q10988.d	P2-C5	fc2144-18	1633.m	Sample	OP95307,S5Q169,565,,,5.0,1,water	✓
86	5Q10989.d	P3-A5	cc169-4	1633.m	QC	OP95462,S5Q169,500,,,5.0,,water	pass
87	5Q10990.d	P3-A2	cc169-1.0LL	1633.m	QC	OP95462,S5Q169,500,,,5.0,,water	pass
88	5Q10991.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q169,500,,,5.0,,water	nd
89	5Q10992.d	P2-D1	op95328-bs	1633.m	Sample	OP95328,S5Q169,500,,,5.0,1,water	✓
90	5Q10993.d	P2-D2	op95328-llbs:3	1633.m	Sample	OP95328,S5Q169,500,,,5.0,1,water	✓
91	5Q10994.d	P2-D3	op95328-mb	1633.m	Sample	OP95328,S5Q169,500,,,5.0,1,water	✓
92	5Q10995.d	P2-D4	fc2145-1	1633.m	Sample	OP95328,S5Q169,560,,,5.0,1,water	rr1x, confirm hit (eff)
93	5Q10996.d	P2-D5	fc2145-2	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
94	5Q10997.d	P2-D6	op95328-ms	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
95	5Q10998.d	P2-D7	op95328-msd	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
96	5Q10999.d	P2-D8	fc2145-3	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
97	5Q11000.d	P2-D9	fc2145-4	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
98	5Q11001.d	P2-E1	fc2145-5	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
99	5Q11002.d	P3-A5	cc169-4	1633.m	QC	OP95462,S5Q169,500,,,5.0,,water	pass
100	5Q11003.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q169,500,,,5.0,,water	nd
101	5Q11004.d	P2-E2	fc2145-6	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
102	5Q11005.d	P2-E3	fc2145-7	1633.m	Sample	OP95328,S5Q169,540,,,5.0,1,water	✓
103	5Q11006.d	P2-E4	fc2145-8	1633.m	Sample	OP95328,S5Q169,550,,,5.0,1,water	✓
104	5Q11007.d	P2-E5	fc2145-9	1633.m	Sample	OP95328,S5Q169,540,,,5.0,1,water	✓
105	5Q11008.d	P2-E6	fc2145-10	1633.m	Sample	OP95328,S5Q169,525,,,5.0,1,water	✓
106	5Q11009.d	P2-E7	fc2145-11	1633.m	Sample	OP95328,S5Q169,540,,,5.0,1,water	✓
107	5Q11010.d	P2-E8	fc2145-12	1633.m	Sample	OP95328,S5Q169,525,,,5.0,1,water	✓
108	5Q11011.d	P2-E9	fc2145-13	1633.m	Sample	OP95328,S5Q169,565,,,5.0,1,water	✓
109	5Q11012.d	P2-F1	fc2145-14	1633.m	Sample	OP95328,S5Q169,560,,,5.0,1,water	✓
110	5Q11013.d	P2-F2	fc2145-15	1633.m	Sample	OP95328,S5Q169,550,,,5.0,1,water	✓

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111	5Q11014.d	P3-A5	cc169-4	1633.m	QC	20/500	OP95462,S5Q169,500,,5.0,,water	pass
112	5Q11015.d	P3-A1	iccb	1633.m	Sample		OP95462,S5Q169,500,,5.0,,water	nd
113	5Q11016.d	P2-F3	fc2145-16	1633.m	Sample		OP95328,S5Q169,565,,5.0,1,,water	✓
114	5Q11017.d	P2-F4	fc2145-17	1633.m	Sample		OP95328,S5Q169,565,,5.0,1,,water	✓
115	5Q11018.d	P3-A5	ecc169-4	1633.m	QC	20/500	OP95462,S5Q169,500,,5.0,1,,water	pass
116	5Q11019.d	P3-A1	iccb	1633.m	Sample		OP95462,S5Q169,500,,5.0,1,,water	nd

SGS ORLANDO

DATE:	02/17/22
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS5-5Q

LCMS2-2Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_021623_S5Q169
CAL DATE:	02/16/23
ANALYST:	LR
RUN BATCH:	S5Q170

ELUENT A LOT #:	224853 w5%ACN 214785 2ml/MAC.11387
ELUENT B LOT #:	ACN 214785
IC/CC STD LOT #:	LCMS2055
ICV STD LOT #:	LCMS2055/2026
ISTD/ID STD LOT #:	11384/11383

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
116	5Q11019.d	P3-A1	iccb	1633.m	Sample		OP95462,S5Q169,500,,,5.0,1,water	nd
117	5Q11020.d	P3-B1	RT TDCA	1633.m	Sample		OP95462,S5Q170,500,,,5.0,1,water	pass
118	5Q11021.d	P3-B2	RT Br-Ln	1633.m	Sample		OP95462,S5Q170,500,,,5.0,1,water	pass
119	5Q11022.d	P3-A9	high standard	1633.m	Sample		OP95462,S5Q170,500,,,5.0,1,water	pass
120	5Q11023.d	P3-A1	iblk	1633.m	Sample		OP95462,S5Q170,500,,,5.0,1,water	pass
121	5Q11024.d	P3-A5	cc169-4	1633.m	QC	20/500	OP95462,S5Q170,500,,,5.0,1,water	pass
122	5Q11025.d	P3-A2	cc169-1.0LL	1633.m	QC	1.6/500	OP95462,S5Q170,500,,,5.0,1,water	pass
123	5Q11026.d	P4-A1	op95481-bs	1633.m	Sample		OP95481,S5Q170,500,,,5.0,1,water	✓
124	5Q11027.d	P4-A2	op95481-llbs	1633.m	Sample		OP95481,S5Q170,500,,,5.0,1,water	✓
125	5Q11028.d	P4-A3	op95481-imb	1633.m	Sample		OP95481,S5Q170,500,,,5.0,1,water	✓
126	5Q11029.d	P4-A4	fc2684-1	1633.m	Sample		OP95481,S5Q170,535,,,5.0,1,water	✓
127	5Q11030.d	P4-A5	op95481-ms	1633.m	Sample		OP95481,S5Q170,560,,,5.0,1,water	✓
128	5Q11031.d	P4-A6	fc2684-2	1633.m	Sample		OP95481,S5Q170,545,,,5.0,1,water	✓
129	5Q11032.d	P4-A7	op95481-dup	1633.m	Sample		OP95481,S5Q170,570,,,5.0,1,water	✓
130	5Q11033.d	P3-A5	cc169-4	1633.m	QC	20/500	OP95462,S5Q170,500,,,5.0,1,water	pass
131	5Q11034.d	P3-A2	cc169-1.0LL	1633.m	QC	1.6/500	OP95462,S5Q170,500,,,5.0,1,water	pass
132	5Q11035.d	P3-A1	iccb	1633.m	Sample		OP95462,S5Q170,500,,,5.0,1,water	✓
133	5Q11036.d	P4-B1	op95374-bs	1633.m	Sample		OP95374,S5Q170,500,,,5.0,1,water	✓
134	5Q11037.d	P4-B2	op95374-llbs	1633.m	Sample		OP95374,S5Q170,500,,,5.0,1,water	✓
135	5Q11038.d	P4-B3	op95374-mb	1633.m	Sample		OP95374,S5Q170,500,,,5.0,1,water	✓
136	5Q11039.d	P4-B4	fc2216-1	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
137	5Q11040.d	P4-B5	fc2216-2	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
138	5Q11041.d	P4-B6	fc2216-3	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
139	5Q11042.d	P4-B7	fc2216-4	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
140	5Q11043.d	P4-B8	fc2216-5	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
141	5Q11044.d	P4-B9	fc2216-6	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
142	5Q11045.d	P3-A5	cc169-4	1633.m	QC	20/500	OP95462,S5Q170,500,,,5.0,1,water	pass
143	5Q11046.d	P3-A1	iccb	1633.m	Sample		OP95462,S5Q170,500,,,5.0,1,water	nd
144	5Q11047.d	P4-C1	fc2216-7	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
145	5Q11048.d	P4-C2	op95374-ms	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
146	5Q11049.d	P4-C3	op95374-msd	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
147	5Q11050.d	P4-C4	fc2216-8	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
148	5Q11051.d	P4-C5	fc2216-9	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
149	5Q11052.d	P4-C6	fc2216-10	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓
150	5Q11053.d	P4-C7	fc2216-11	1633.m	Sample		OP95374,S5Q170,565,,,5.0,1,water	✓

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LCMS2-2Q ANALYSIS LOG

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151	5Q11054.d	P4-C8	fc2216-12	1633.m	Sample	OP95374,S5Q170.565,,,5.0,1.,water	✓
152	5Q11055.d	P4-C9	fc2216-13	1633.m	Sample	OP95374,S5Q170.565,,,5.0,1.,water	✓
153	5Q11056.d	P4-D1	fc2216-14	1633.m	Sample	OP95374,S5Q170.565,,,5.0,1.,water	rr1x, confirm hit (eff)
154	5Q11057.d	P3-A5	cc169-4	1633.m	QC	OP95462,S5Q170.500,,,5.0,1.,water	pass
155	5Q11058.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q170.500,,,5.0,1.,water	nd
156	5Q11059.d	P4-D2	fc2216-15	1633.m	Sample	OP95374,S5Q170.565,,,5.0,1.,water	✓
157	5Q11060.d	P4-D3	fc2216-16	1633.m	Sample	OP95374,S5Q170.565,,,5.0,1.,water	✓
158	5Q11061.d	P4-D4	fc2216-17	1633.m	Sample	OP95374,S5Q170.565,,,5.0,1.,water	✓
159	5Q11062.d	P4-D5	fc2216-18	1633.m	Sample	OP95374,S5Q170.565,,,5.0,1.,water	✓
160	5Q11063.d	P3-A5	cc169-4	1633.m	QC	OP95462,S5Q170.500,,,5.0,1.,water	pass
161	5Q11064.d	P3-A2	cc169-1,0LL	1633.m	QC	OP95462,S5Q170.500,,,5.0,1.,water	pass
162	5Q11065.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q170.500,,,5.0,1.,water	nd
163	5Q11066.d	P4-E1	op95331-bs	1633.m	Sample	OP95331,S5Q170.500,,,5.0,1.,water	✓
164	5Q11067.d	P4-E2	op95331-bs1	1633.m	Sample	OP95331,S5Q170.500,,,5.0,1.,water	IDOC - AG ✓
165	5Q11068.d	P4-E3	op95331-bs2	1633.m	Sample	OP95331,S5Q170.500,,,5.0,1.,water	IDOC - AG ✓
166	5Q11069.d	P4-E4	op95331-bs3	1633.m	Sample	OP95331,S5Q170.500,,,5.0,1.,water	IDOC - AG ✓
167	5Q11070.d	P4-E5	op95331-bs4	1633.m	Sample	OP95331,S5Q170.500,,,5.0,1.,water	IDOC - AG; double spike?
168	5Q11071.d	P4-E6	op95331-lbs	1633.m	Sample	OP95331,S5Q170.500,,,5.0,1.,water	6:2, NFDHA, PFEESA ↑
169	5Q11072.d	P4-E7	op95331-mb	1633.m	Sample	OP95331,S5Q170.500,,,5.0,1.,water	PFHXA hit (J-val)
170	5Q11073.d	P4-E8	fc2386-1	1633.m	Sample	OP95331,S5Q170.465,,,5.0,1.,water	rr10x, FTSS ↑
171	5Q11074.d	P4-E9	op95331-ms	1633.m	Sample	OP95331,S5Q170.465,,,5.0,1.,water	rr10x, FTSS ↑
172	5Q11075.d	P3-A5	cc169-4	1633.m	QC	OP95462,S5Q170.500,,,5.0,1.,water	pass
173	5Q11076.d	P3-A2	cc169-1,0LL	1633.m	QC	OP95462,S5Q170.500,,,5.0,1.,water	pass
174	5Q11077.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q170.500,,,5.0,1.,water	nd
175	5Q11078.d	P4-F1	op95323-bs	1633.m	Sample	OP95323,S5Q170.500,,,5.0,1.,soil	✓
176	5Q11079.d	P4-F2	op95323-lbs	1633.m	Sample	OP95323,S5Q170.500,,,5.0,1.,soil	✓
177	5Q11080.d	P4-F3	op95323-mb	1633.m	Sample	OP95323,S5Q170.500,,,5.0,1.,soil	✓
178	5Q11081.d	P4-F4	jd59391-4a	1633.m	Sample	OP95323,S5Q170.505,,,5.0,1.,soil	✓
179	5Q11082.d	P4-F5	jd59391-5a	1633.m	Sample	OP95323,S5Q170.502,,,5.0,1.,soil	✓
180	5Q11083.d	P3-A5	ecc169-4	1633.m	QC	OP95462,S5Q170.500,,,5.0,1.,water	pass
181	5Q11084.d	P3-A1	iccb	1633.m	Sample	OP95462,S5Q170.500,,,5.0,1.,water	nd

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2052	1633 prep mix	221044	MeOH	Fisher	—	1/4/24	99.9%	92mL	100mL	92%	N/A	1/19/23	2/19/23	NV
		Lot: 219481	NH4OH		—	9/19/23	100%	3.3mL		1%				
		Lot: 224863	H2O		—	1/17/24	100%	1.7mL		4%				
		Lot: 224297	Acetic Acid		—	6/24	99.7%	0.625mL		0.625%				
LCMS 2053	(Spike) Full 1st std	11568	PF0A DOP 28. sample	SGS standards	11/9/27	1/10/24	1.0ppm	400uL	4.0mL	100ppb	95% MeOH 5% H2O	12/23	3/21/23	NV
		LCMS 1987	40 1st Addon #1		—	3/21/23	1.0ppm	400uL						
		LCMS 1986	40 1st Addon #2		—	4/8/23	1.0ppm	400uL						
		LCMS 2052	F0SE std.		—	7/24/23	5.0ppm	400uL		500ppb				
LCMS 2054	F0SE std.	11336	N-Et-F0SE	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% formic 5% H2O	12/23	7/24/23	NV
		11338	N-Me F0SE		5/13/27	9/19/23	50ppm	200uL						
LCMS 2055	1633 Cal std.	10855	PFAC-MxH	Wellington	9/14/26	1/17/24	1-4 ppm	250uL	4mL	0.2-5 ppm	1633 mix	1/24/23	7/24/23	NV
		10853T	PFAC-MxI		9/14/26	1/11/24	1-10 ppm	250uL		0.2-5 ppm				
		10853T	PFAC-MxI		9/14/26	1/24/24	ppm	250uL		0.2-5 ppm				
		11579B	PFAC-MxP		1/11/25	1/11/24	2ppm	500uL		250ppb				
		11617A	PFAC-MxG		3/4/25	1/24/24	2ppm	250uL		125ppb				
		10854T	PFAC-MxG		9/14/26	1/11/24	4-20 ppm	312uL		312/100 ppb				
		11492	PFAC-MxJ		9/14/26	1/24/24	ppm							
		11603												

* 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 2025	List 40 (Surr) ADD-DN ISOTOPE MIX	11333	d7-N- MeFosc	Wellington Labs	01/27/27	10/12/23	50ppm	200uL	2.0mL	1/5ppm	95% MeOH 5% H2O	12/17/22	6/7/23	MSJ
		11460	D9-N- EtFosc		01/27/27	12/07/23		200uL						
		11339	H2- EtFosc		01/27/27	10/12/23		200uL						
		11115	H2- PFHXDA		11/23/28	08/23/23		40uL						
		10836	D-N ETOSA		12/30/25	08/23/23		40uL						
LCMS 2026	(SPIKE) Full list std.	11447	PROA- DOLAS	Absolute Labs	08/16/27	11/29/23	1.0ppm	40uL	4.0mL	100ppb	95% MeOH 5% H2O	12/18/22	12/18/22	MS
		1987	40 List ADDDU#1			02/21/23	1.0ppm	40uL		100ppb				MS
		1986	40 List ADDDU#2			04/18/23	1.0ppm	40uL		100ppb				MS
		2012	FOSE Std.			05/11/23	5.0ppm	40uL		500ppb				MS
LCMS 2027	(SPIKE) CAL Std.	10855F	PFAC- MxH	Wellington Labs	09/14/26	11/04/23	1-4 ppm	250uL	4mL	625/1250 ppb	1633 MIX	12/12/22	05/16/23	MS
		10853F	PFAC- MXT		09/14/26	11/22/23	1-10 ppm	250uL		625/1250 ppb				MS
		11443A	PFAC- MxT		05/24/23	11/29/23	2 ppm	500uL		250ppb				MS
		10854F	PFAC- MxG		03/04/25	11/22/23	2 ppm	250uL		125ppb				MS
		10857E	PFAC- MxS		10/16/23	11/22/23	4-20 ppm	32uL		32uL				MS
LCMS 2028	537.1 DU Std.	11447	PROA-DOLAS ORCOMP	Absolute Labs	08/16/27	11/29/23	1.0ppm	40uL	4mL	100ppb	95% MeOH 5% H2O	12/18/22	12/18/22	MS
		1950	537.1 DU SURT			02/21/23	10/20 ppm	40uL		100/200 ppb				MS

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MS continue next page 12/15/22



Organic Standards Preparation Log

SGS - Orlando Std #	Name Description	Parent Std #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 1987	40 List Std ADD-ON #1	10726A	10:2 PFS	Wallington Labs	03/03/25	03/01/23	50ppm	80uL	4.0mL	1ppm	AS/1/1011 S/1/1120	10/18/22	03/21/23	NS
		10840	PFS DOS		07/01/26	10/18/23								
		10829	N-HEXOSA		08/03/26	08/23/23								
		10837	N-HEXOSA		08/03/26	05/12/23								
		10842	PFS HADA		03/01/26	10/18/23								
		10841	PFS DA		05/01/26	10/18/23								
		* 10844	3:3 FTCA PFS PPA		11/12/25	03/01/23								
		10685A	5:3 FTCA PFS PPA		11/11/25	08/23/23								
		10683A	7:3 FTCA FHO PA		11/12/25	03/01/23								
		11117	PFS CHS		10/14/26	06/02/23								
		10762B	PFS ESA		05/13/25	10/18/23								
		10763B	PFS SUKA		03/01/25	10/18/23								
		10764A	PFS NPA		03/01/25	03/01/23								
		10765B	PFS NPA 3:6 OFF HQA		03/01/25	10/18/23								

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 1985A B	List 40 ASD-ON ASD-ON	11333	D1-N-NEFOSA	Wellington Labs	01/21/27	10/12/23	50ppm	200uL	2.0mL	1.5ppm	95/MCOH	10/18/22	01/18/23	NS
↓	↓	11339	D4-N-NEFOSA	↓	01/21/27	10/12/23	↓	200uL	↓	↓	↓	↓	↓	NS
↓	↓	11115	NA-PHENOL	↓	11/23/28	08/12/22	↓	40uL	↓	↓	↓	↓	↓	NS
↓	↓	10636	D-N-NEFOSA	↓	12/29/25	08/12/23	↓	40uL	↓	↓	↓	↓	↓	NS
LCMS 1986	40 List Std. ADD-ON #2	11224	FBSA-1	Wellington Labs	11/10/26	06/12/22	50ppm	80uL	4.0mL	1ppm	95/Inert S/1720	10/18/22	01/18/23	NS
↓	↓	11225	FBSA-1	↓	12/29/25	06/12/23	50ppm	80uL	↓	↓	↓	↓	↓	NS
↓	↓	11140	L-PPRS	↓	01/21/26	05/26/23	50ppm	80uL	↓	↓	↓	↓	↓	NS
NS 01/18/22														

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Organic Standards Preparation Log

SGS - Orlando Std #	Name Description	Parent Std #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS A 2009 &	PFC SPIKE	11483	PROADDO (88sums)	Wellington Labs	08/05/17	11/08/13	1.0ppm	2mL	5mL	400ppb	951MEOH 5/1:HzO	11/08/12	05/05/13	NS
		10839	N-Me-FOSA-M		08/23/16	09/12/13	50ppm	40uL						NS
		11294	FESA-1		11/10/16	06/12/13								NS
		11249	FIXSA-1		12/22/16	11/03/13								NS
		11332	PTECHS		03/28/17	10/18/13								NS
LCMS A-B 2010	(SPIKE) 1033 CAL. Std.	10855F	PFAC-MX4	Wellington Labs	09/14/16	11/04/13	1-H ppm	250uL	4mL	42.5/125/150 ppb	1033	11/09/12	05/10/13	NS
		10853E	PFAC-MXI		09/14/16	11/04/13	1-H ppm	250uL		125/125 ppb				NS
		10856I	PFAC-MXF		05/10/13	05/10/13	2ppm	500uL		250ppb				NS
		10854E	PFAC-MXG		03/10/15	11/04/13	2ppm	250uL		125ppb				NS
		10857D	PFAC-MXJ		10/12/13	11/02/13	4-30 ppm	312uL		24/1160 ppb				NS
LCMS 2011	(SPIKE) Full List Std.	11410	PROA-DONOR		Absolute	08/05/17	1.0ppm	400uL	4mL	100ppb	951MEOH 5/1:HzO	11/11/12	04/12/13	NS
		1085	NO List ADD-Q11			03/21/13	1.0ppm	400uL		100ppb				NS
		1087	NO List ADD-Q11			03/21/13	1.0ppm	400uL		100ppb				NS
		1086	NO List ADD-Q11			01/18/13	1.0ppm	400uL		100ppb				NS
		2012	FOSA Std.			05/11/13	50ppm	400uL		500ppb				NS
LCMS 2012	FOSA Std.	11336	N-Et-FOSA	Wellington Labs	05/13/17	09/19/13	50ppm	200uL	2.0mL	5ppm	951MEOH 5/1:HzO	11/11/12	05/11/13	NS
		11338	N-Me-FOSA		05/13/17	10/19/13	50ppm	200uL						NS

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10853



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXI

**Native Perfluorooctanesulfonamide
and Perfluorooctanesulfonamidoethanol
Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXI
<u>LOT NUMBER:</u>	PFACMXI0921
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/08/2021
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/14/2021
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	09/14/2026
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXI is a solution/mixture of two native perfluorooctanesulfonamides (FOSAs) and two native perfluorooctanesulfonamidoethanols (FOSEs). The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Figure 1: LC/MS Data (SIR)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

**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#: 3, Revised 2020-12-23


PFACMXI0921 (1 of 5)
rev0

7.9.1

7

Table A: PFAC-MXI; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)	Peak Assignment in Figure 1
N-methylperfluoro-1-octanesulfonamide	N-MeFOSA	1.00	B
N-ethylperfluoro-1-octanesulfonamide	N-EtFOSA	1.00	D
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	N-MeFOSE	10.0	A
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	N-EtFOSE	10.0	C

Certified By: 
 B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

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

PFACMXI0921 (3 of 5)
 rev0

7.9.1
 7

10854



**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>	PFACMXG1219
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	12/03/2019
<u>LAST TESTED:</u> (mm/dd/yyyy)	05/04/2020
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	05/04/2025
<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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

**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

PFACMXG1219 (1 of 5)
rev2

7.9.1

7

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) is designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).




For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxahexanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 07/30/2021
(mm/dd/yyyy)

10899



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXH

**Native Per- and Poly-fluoroalkyl Substance
Solution/Mixture**

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0921
SOLVENT(S): Methanol / Isopropanol (2%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 09/09/2021
LAST TESTED: (mm/dd/yyyy) 09/14/2021
EXPIRY DATE: (mm/dd/yyyy) 09/14/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of eleven native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₈ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide (FOSA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Table B: Isomeric Components and Percent Composition of br-NMeFOSAA
 Table C: Isomeric Components and Percent Composition of br-NEtFOSAA
 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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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

PFACMXH0921 (1 of 11)
 rev0

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: PFAC-MXH; Components and Concentrations
($\mu\text{g/mL}$, $\pm 5\%$ in methanol / isopropanol (2%) / water (<1%))

Compound	Acronym	Concentration* ($\mu\text{g/mL}$)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4.00		1
Perfluoro-n-pentanoic acid	PFPeA	2.00		2
Perfluoro-n-hexanoic acid	PFHxA	1.00		5
Perfluoro-n-heptanoic acid	PFHpA	1.00		7
Perfluoro-n-octanoic acid	PFOA	1.00		11
Perfluoro-n-nonanoic acid	PFNA	1.00		14
Perfluoro-n-decanoic acid	PFDA	1.00		18
Perfluoro-n-undecanoic acid	PFUdA	1.00		23
Perfluoro-n-dodecanoic acid	PFDoA	1.00		26
Perfluoro-n-tridecanoic acid	PFTrDA	1.00		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1.00		29
Perfluoro-1-octanesulfonamide	FOSA	1.00		25
N-methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	0.760		20
	N-MeFOSAA: Σ branched isomers	0.240		17
N-ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	0.775		22
	N-EtFOSAA: Σ branched isomers	0.225		21
Compound	Acronym	Concentration* ($\mu\text{g/mL}$)		Peak Assignment in Figure 1
Potassium perfluoro-1-butanesulfonate	L-PFBS	1.00	0.887	
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1.00	0.941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	0.811	0.741	9
	PFHxSK: Σ branched isomers	0.189	0.173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1.00	0.953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	0.788	0.732	15
	PFOSK: Σ branched isomers	0.211	0.196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1.00	0.962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1.00	0.965	24
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1.00	0.970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4.00	3.75	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4.00	3.80	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4.00	3.84	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: 09/23/2021
(mm/dd/yyyy)

rec'd 10/31/22 11492



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PFAC-MXJ

**Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture**

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

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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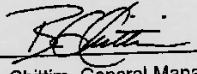
Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0921 (1 of 5)
rev1

7.9.1
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Table A: PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
 B.G. Chittim, General Manager

Date: 10/02/2021
(mm/dd/yyyy)

11579 A-B
rec'd 12/27/22



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXF
<u>LOT NUMBER:</u>	PFACMXF0122
<u>SOLVENT(S):</u>	Methanol / Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	01/10/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	01/11/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	01/11/2025
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

The individual native components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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

PFACMXF0122 (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: 
B.G. Chittim, General Manager

Date: 01/12/2022
(mm/dd/yyyy)

11603
rec'd: 01/10/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

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

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

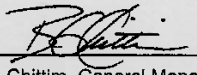
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7.9.1
7

Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 10/02/2021
(mm/dd/yyyy)

11617 A-B rec'd 01/19/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0122
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 01/10/2022
LAST TESTED: (mm/dd/yyyy) 01/11/2022
EXPIRY DATE: (mm/dd/yyyy) 01/11/2025
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUdS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

The individual native components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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

PFACMXF0122 (1 of 5)
revD

7.9.1

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Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 01/12/2022
(mm/dd/yyyy)

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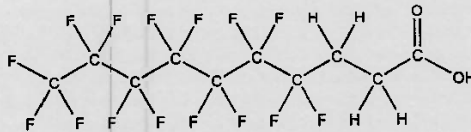
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FHpPA
COMPOUND: 3-Perfluoroheptyl propanoic acid

LOT NUMBER: FHpPA1020

STRUCTURE:

CAS #: 812-70-4



MOLECULAR FORMULA: C₁₀H₉F₁₅O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/12/2020
EXPIRY DATE: (mm/dd/yyyy) 11/12/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 442.12
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

Date: 11/27/2020
(mm/dd/yyyy)

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

FHpPA1020 (1 of 4)
rev0

7.9.1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPrPA

LOT NUMBER:

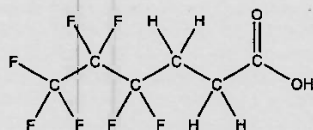
FPrPA1020

COMPOUND:

3-Perfluoropropyl propanoic acid

STRUCTURE:**CAS #:**

356-02-5

**MOLECULAR FORMULA:** $C_6H_5F_7O_2$ **MOLECULAR WEIGHT:**

242.09

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid ($C_8H_5F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

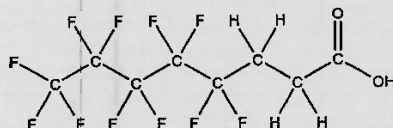
FPePA1120

COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:**CAS #:**

914637-49-3

**MOLECULAR FORMULA:** $C_8H_5F_{11}O_2$ **MOLECULAR WEIGHT:**

342.11

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/11/2020

EXPIRY DATE: (mm/dd/yyyy)

11/11/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

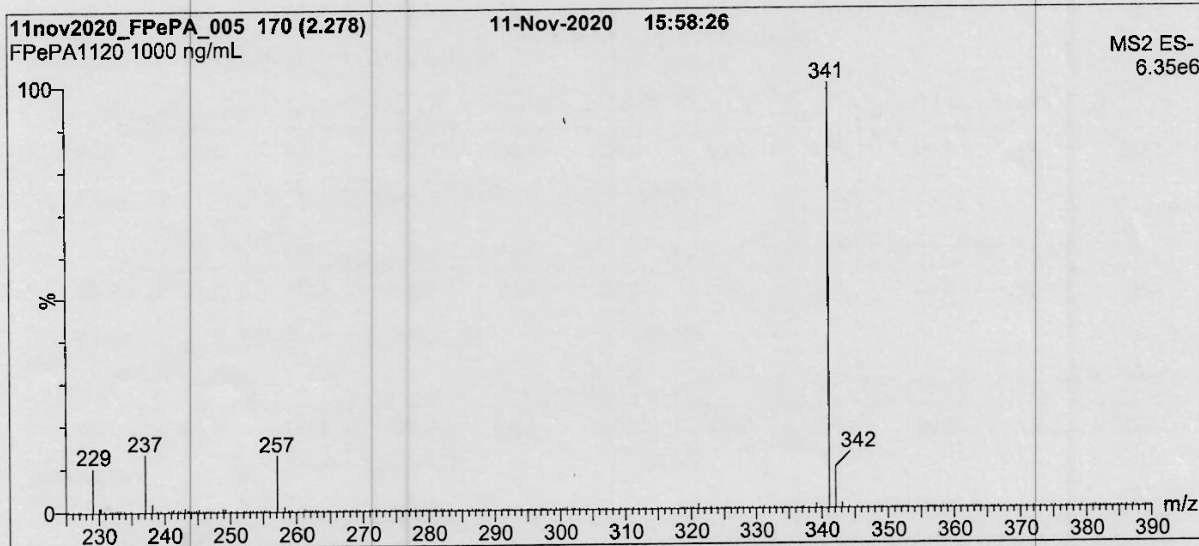
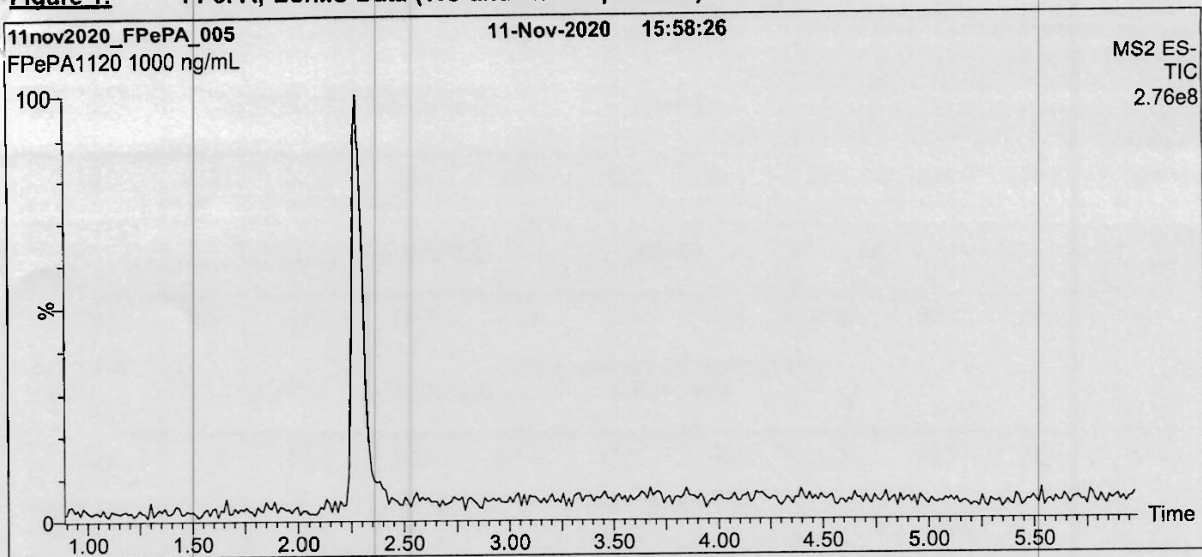
B.G. Chittim, General Manager

Date: 11/27/2020

(mm/dd/yyyy)

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



Conditions for Figure 1:

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

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{1a}
1.7 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

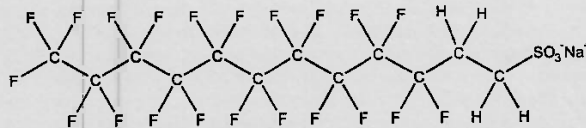


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS0221
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
48.3 ± 2.4 µg/mL (10:2FTS acid)
48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/03/2021
EXPIRY DATE: (mm/dd/yyyy) 03/03/2026
RECOMMENDED STORAGE: Refrigerate ampoule

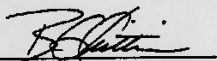
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

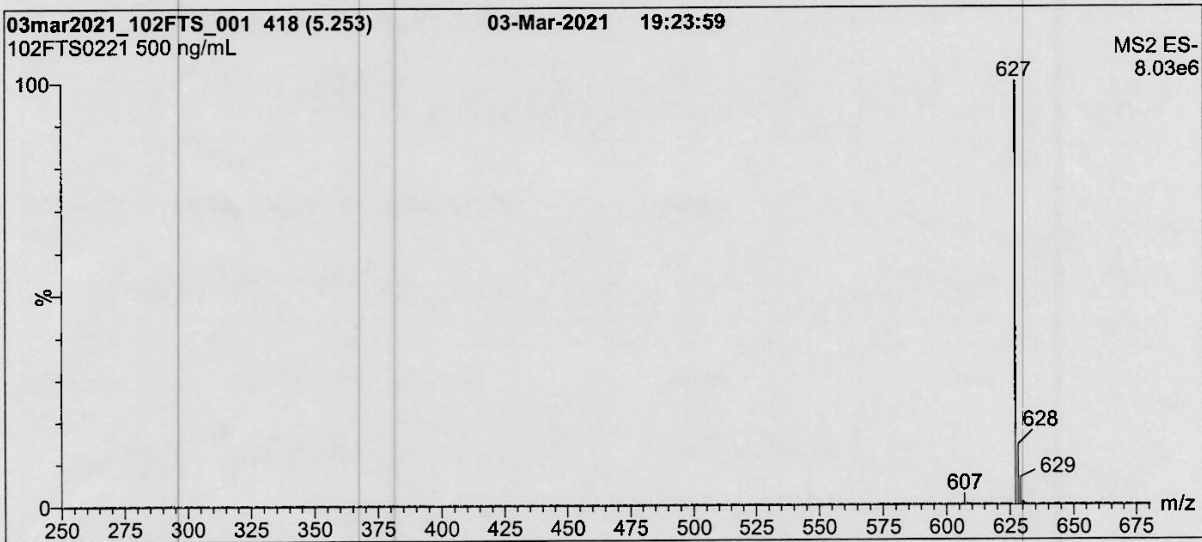
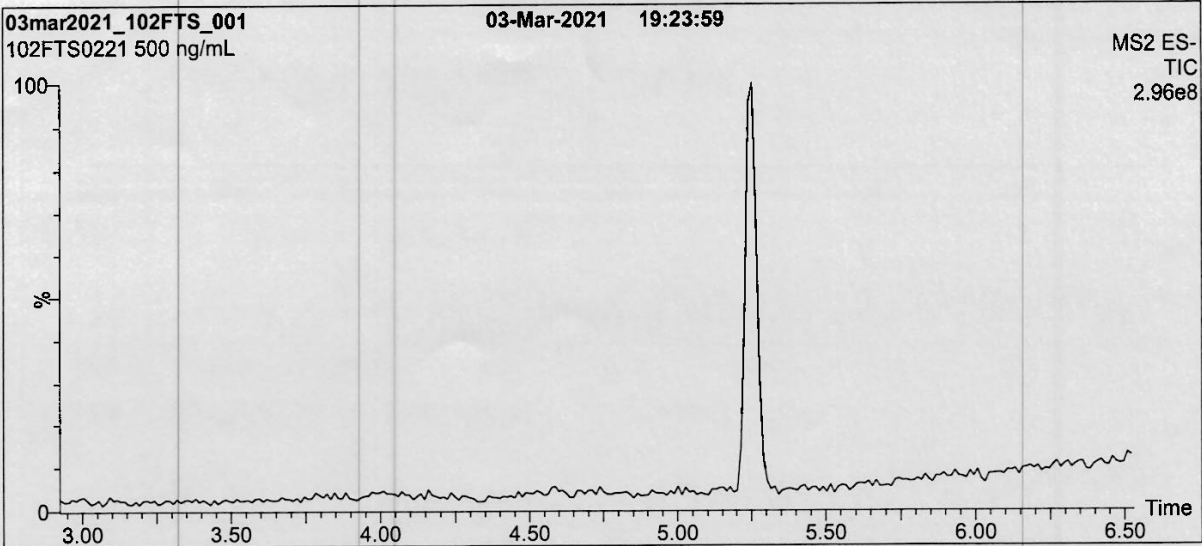
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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

7.9.1

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Figure 1: 10:2FTS; LC/MS Data (Full Scan and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions:

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

Mobile phase: Gradient
Start: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

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

10762 A-B



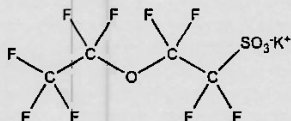
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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Potassium perfluoro(2-ethoxyethane)sulfonate

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



MOLECULAR FORMULA: C₄F₈SO₄K **MOLECULAR WEIGHT:** 354.19

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

44.6 ± 2.2 µg/ml (PFEESA acid)

44.5 ± 2.2 µg/ml (PFEESA anion)

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

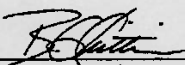
Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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Revision#:7, Revised 2020-01-09

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10763 A-B



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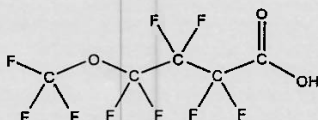
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

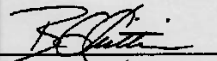
DOCUMENTATION/ DATA ATTACHED:

- 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)

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Revision#: 8, Revised 2020-09-10

PF5OHxA0320 (1 of 4)
rev1

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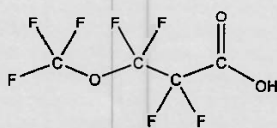
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

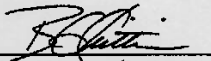
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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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

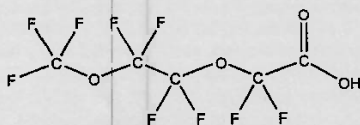
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆HF₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager

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

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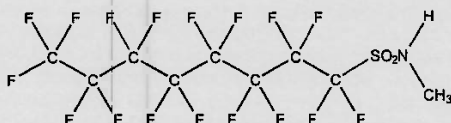
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPA
10/5/21

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

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

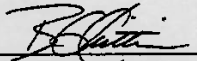
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

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

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Revision#:9, Revised 2020-12-23

NMeFOSA0721M (1 of 4)
rev0

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PRODUCT CODE:

N-EtFOSA-M

10837

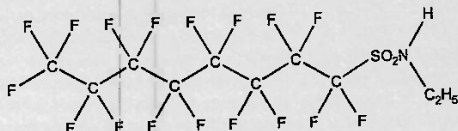
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

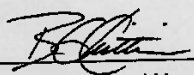
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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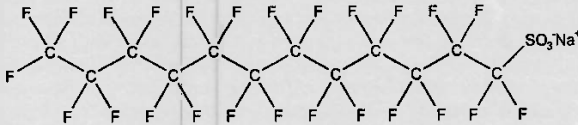
10840

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

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/09/2021
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager
Date: 07/16/2021
(mm/dd/yyyy)

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10847 NS 01/18/23

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0821

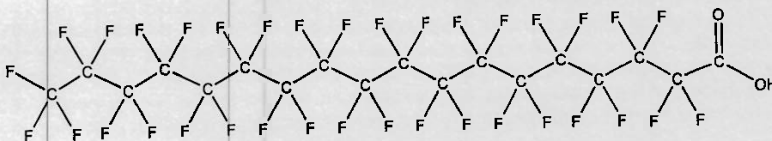
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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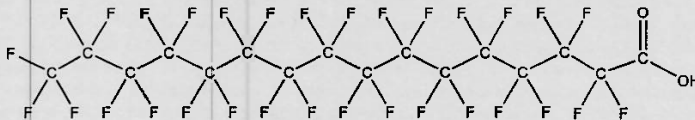
CERTIFICATE OF ANALYSIS
DOCUMENTATION

10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



MOLECULAR FORMULA: C₁₆HF₃₁O₂ **MOLECULAR WEIGHT:** 814.13

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

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 05/07/2021

EXPIRY DATE: (mm/dd/yyyy) 05/07/2026

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

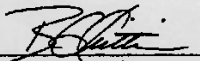
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: 
B.G. Chittim, General Manager

Date: 05/25/2021
(mm/dd/yyyy)

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PRODUCT CODE:

PFECHS

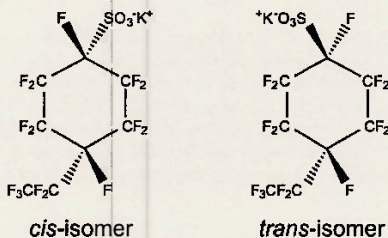
LOT NUMBER:

PFECHS1021

COMPOUND:

Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE:



CAS #:

335-24-0

MOLECULAR FORMULA:

C₈F₁₆SO₃K

MOLECULAR WEIGHT:

500.22

CONCENTRATION:

50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/14/2021

EXPIRY DATE: (mm/dd/yyyy)

10/14/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager

Date: 10/15/2021

(mm/dd/yyyy)

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11140



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

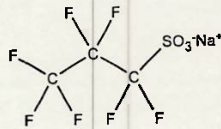
COMPOUND:

Sodium perfluoro-1-propanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₃F₇SO₃Na

MOLECULAR WEIGHT:

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)

46.0 ± 2.3 µg/mL (PFPrS acid)

45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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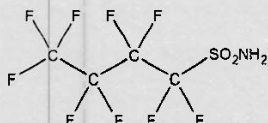
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FBSA-I
COMPOUND: Perfluoro-1-butanesulfonamide

LOT NUMBER: FBSA11211

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA: C₄H₂F₉NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/10/2021
EXPIRY DATE: (mm/dd/yyyy) 11/10/2026
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 299.11
SOLVENT(S): Isopropanol

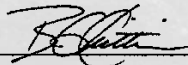
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 11/10/2021
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

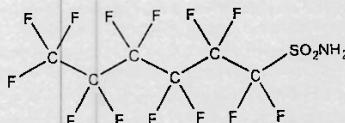
LOT NUMBER: FHxSA12211

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA: C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION: 50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 12/29/2021

EXPIRY DATE: (mm/dd/yyyy) 12/29/2026

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com



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CERTIFICATE OF ANALYSIS DOCUMENTATION

11336

PRODUCT CODE:

N-EtFOSE-M

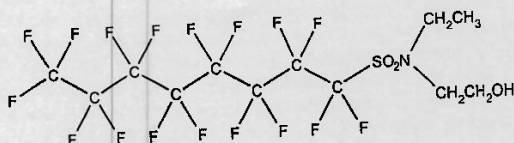
LOT NUMBER: NEtFOSE0622M

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.

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Certified By:

B.G. Chittim, General Manager

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

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NEtFOSE0622M (1 of 5)
rev0

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

11338



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

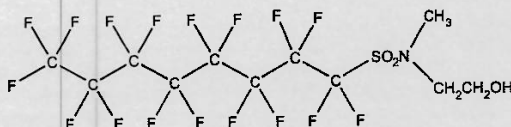
NMeFOSE0522M

COMPOUND:

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

STRUCTURE:**CAS #:**

24448-09-7

**MOLECULAR FORMULA:**C₁₁H₈F₁₇NO₃S**MOLECULAR WEIGHT:**

557.22

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS Data (Full Scan and Mass Spectrum)

Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager
Date: 06/14/2022
(mm/dd/yyyy)

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11383 A-J



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

MPFAC-HIF-ES

**Mass-Labelled PFAS Extraction
Standard Solution/Mixture**

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES0822
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/20/2022
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2025
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) perfluorooctanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ¹³C-labelled components all have chemical purities >98% and isotopic purities of ≥99%. The individual ²H-labelled components all have chemical purities >98% and isotopic purities of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

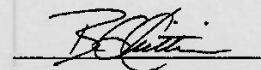
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Table A: MPFAC-HIF-ES; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

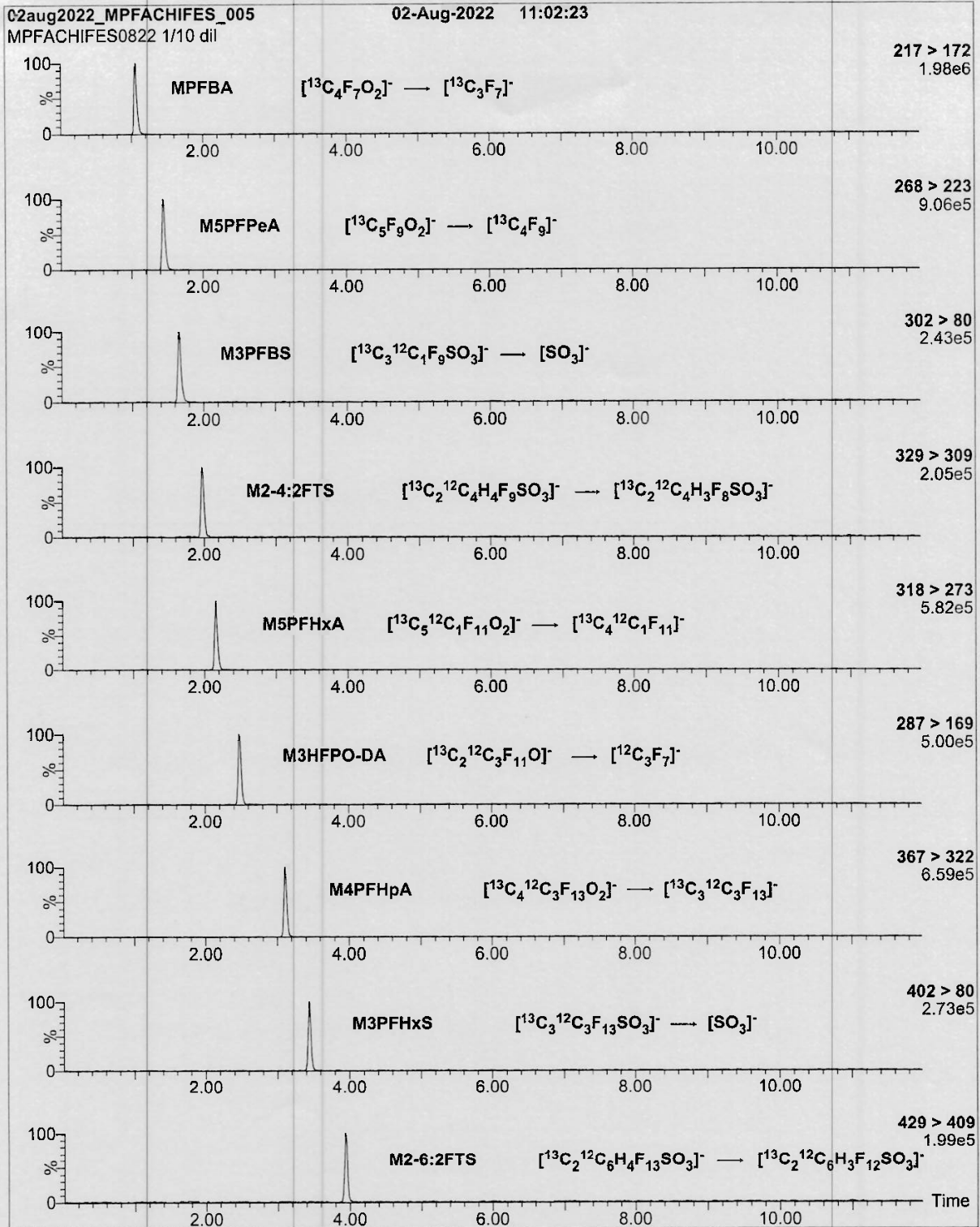
Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₆)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₇)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-(¹³ C ₈)octanoic acid	M8PFOA	500		10
Perfluoro-n-(¹³ C ₉)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- ¹³ C ₁₀)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₁₁)undecanoic acid	M7PFUdA	250		17
Perfluoro-n-(1,2- ¹³ C ₁₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₁₄)tetradecanoic acid	M2PFTeDA	250		23
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		18
N-methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		24
N-methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-ethyl-d ₅ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		16
2-(N-methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₃ -ol	d7-N-MeFOSE	5000		20
2-(N-ethyl-d ₅ -perfluoro-1-octanesulfonamido)ethan-d ₅ -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 08/02/2022
(mm/dd/yyyy)

Figure 2: MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)



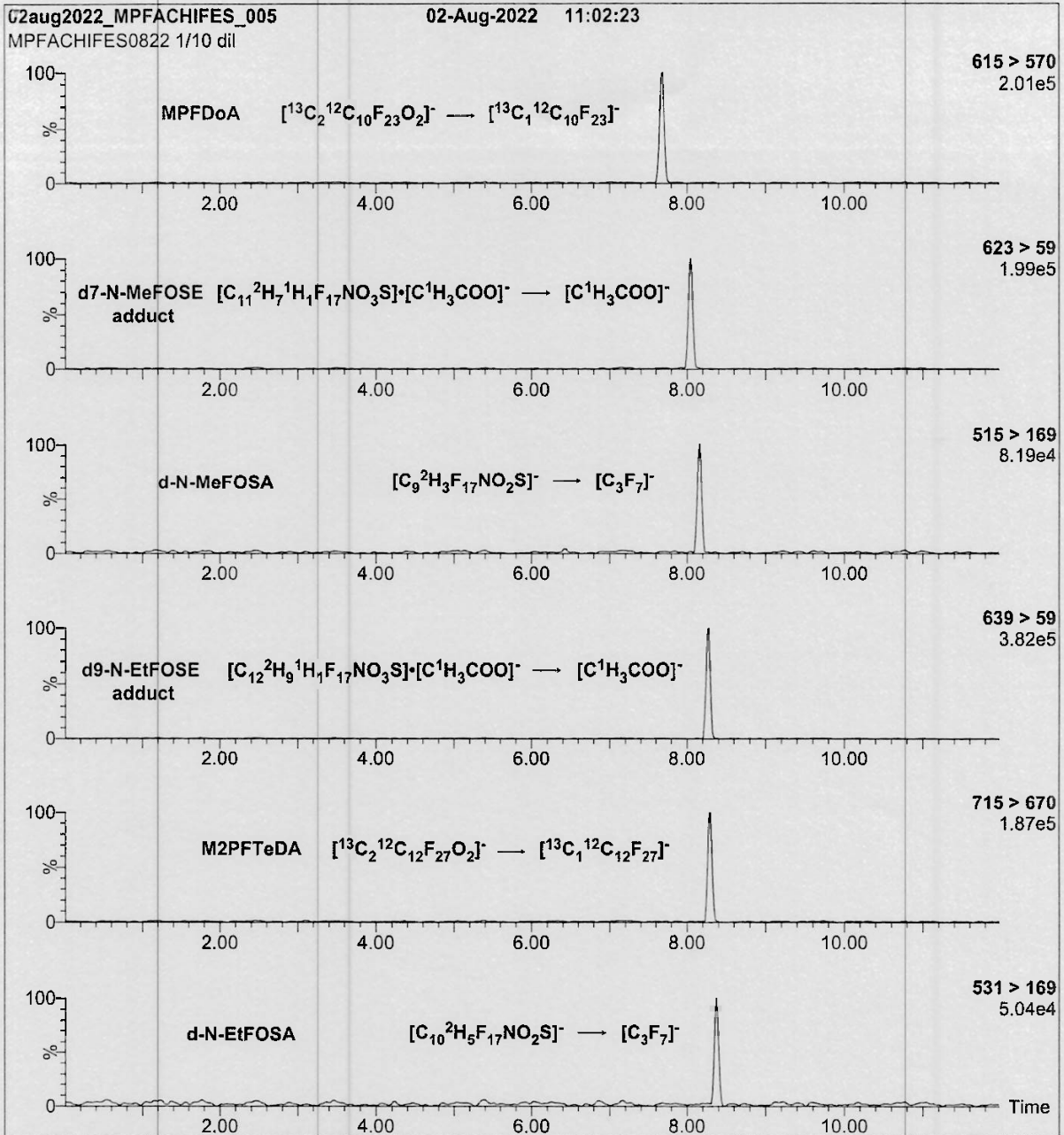
Form# 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFES0822 (5 of 7)
rev0

7.9.1

7

Figure 2: MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-ES)
 Mobile phase: Same as Figure 1
 Flow: 300 $\mu\text{L}/\text{min}$

MS Parameters:

Collision Gas (mbar) = 3.24e-3
 Collision Energy (eV) = 4-64 (variable)

11384 A-J



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CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

**Mass-Labelled Perfluoroalkyl Substance
Injection Standard Solution/Mixture**

<u>PRODUCT CODE:</u>	MPFAC-HIF-IS
<u>LOT NUMBER:</u>	MPFACHIFIS0921
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/07/2021
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/07/2021
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	09/07/2026
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₈ and C₉). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and mass-labelled perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ¹³C or >94% per ¹⁸O.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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

MPFACHIFIS0921 (1 of 5)
rev1


7.9.1

7

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

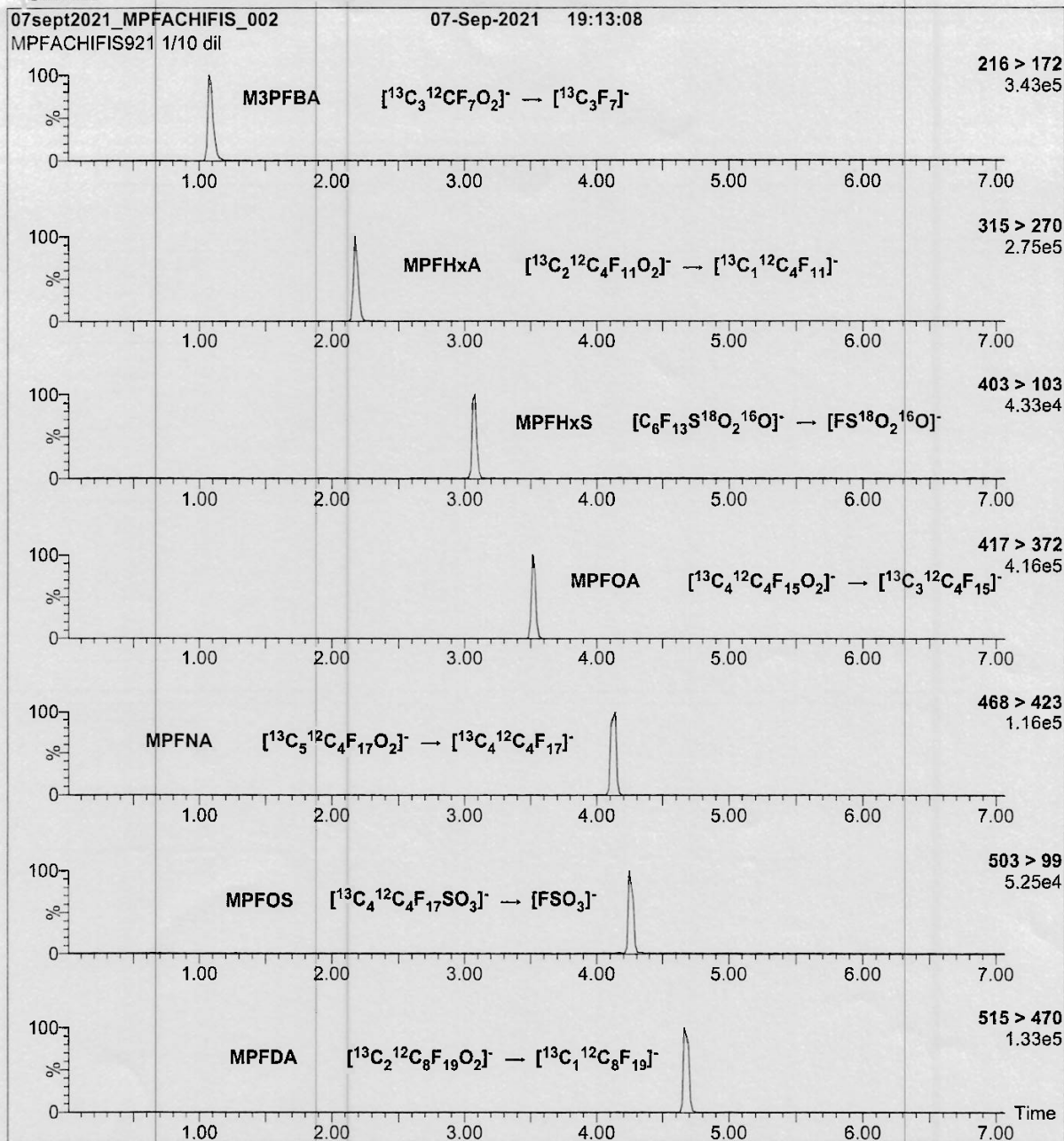
Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 10/13/2021
(mm/dd/yyyy)

Figure 2: MPFAC-HIF-IS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-IS)
 Mobile phase: Same as Figure 1
 Flow: 300 $\mu\text{L}/\text{min}$

MS Parameters:

Collision Gas (mbar) = 3.18e-3
 Collision Energy (eV) = 4-64 (variable)

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 02/15/23 10:25
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (QSM)

Date/Time: 02/16/23 16:00
Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP95481 Ext. By: CM

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 9548 MB		500	7	N/A	25		S	G	
OP 9548 BS		500				200			
OP 9548 LLBS		500				80			
FC 2684-1	2	535							
-2	2	545	7	N/A	25		S	G	
<p><i>CM 2/15/23</i></p>									
OPFC2684-1 MS	3	560	7	N/A	25	200	S	G	
OP MSD									
OPFC2684-2 DUP	3	570	7	N/A	25		S	G	

Comments:

CM 2/15/23

EIS (SURR) ID: 11630-H-J Conc: 250-5000 Exp. Date: 02/13/24 Inj. By: CM Ver. By: AG
 SPIKE.1 ID: LCMS2062-A Conc: Varied Exp. Date: 08/07/23 Inj. By: CM Ver. By: AG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11631-F-H Conc: 250-1000 ng/mL Exp. Date: 02/15/24 Inj. By: LR Ver. By: JL

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

Methanol Lot # 224267 1% NH4OH MeOH PF236 SPE Lot # 6699150-01
 Water Lot# OP95448 0.3M Formic Acid PF269 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF275 5% Formic Acid _____ Carbon Lot# 160898

Relinquished By: [Signature]
 Accepted By: [Signature]

Date: 02/15/23

Date: 02/16/23