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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC5316

Sampling Date: 04/17/23



Report to:

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Total number of pages in report: 592



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),
AL, AK, AR, CT, IA, KY, MA, MI, MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC5316

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC5316-1	04/17/23	12:40	EMAG04/18/23	AQ	Ground Water	AF-RHMW03-WGN01LF-2304W3
FC5316-2	04/17/23	10:50	EMAG04/18/23	AQ	Ground Water	AF-RHMW02-WGN01LF-2304W3

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC5316

Site: N6274223F0104 RH Fire Suppression System

Report Date: 4/25/2023 2:45:30 PM

On 04/18/2023, 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 3.7 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5316 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: OP96472

Sample(s) FC5316-1MS, FC5316-2DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for ADONA, Perfluoropentanoic acid are outside control limits. Probable cause is due to matrix interference.

RPD(s) for Duplicate for Perfluorooctanoic acid are outside control limits for sample OP96472-DUP. Probable cause is due to sample non-homogeneity.

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: FC5316
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 04/17/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC5316-1 AF-RHMW03-WGN01LF-2304W3

Perfluorohexanoic acid	2.0 J	4.5	0.89	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.89 J	4.5	0.89	ng/l	EPA DRAFT 1633
PFOSA	1.2 J	4.5	1.8	ng/l	EPA DRAFT 1633

FC5316-2 AF-RHMW02-WGN01LF-2304W3

Perfluoropentanoic acid	2.7 J	8.9	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	1.7 J	4.5	0.89	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	1.1 J	4.5	0.89	ng/l	EPA DRAFT 1633
6:2 Fluorotelomer sulfonate	5.5 J	18	7.1	ng/l	EPA DRAFT 1633

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW03-WGN01LF-2304W3		
Lab Sample ID:	FC5316-1	Date Sampled:	04/17/23
Matrix:	AQ - Ground Water	Date Received:	04/18/23
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	4Q43446.D	1	04/21/23 20:09	MV	04/19/23 10:00	OP96472	S4Q627
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.6 U	18	3.6	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	8.9	1.8	0.84	ng/l	
307-24-4	Perfluorohexanoic acid	2.0	4.5	0.89	0.45	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.89	4.5	0.89	0.45	ng/l	J
335-67-1	Perfluorooctanoic acid	0.89 U	4.5	0.89	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	4.5	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	0.89 U	4.5	0.89	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	4.5	1.8	0.54	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	4.5	1.8	0.54	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	4.5	1.8	0.75	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.89 U	4.5	0.89	0.45	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.89 U	4.5	0.89	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	4.5	1.8	0.62	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.89 U	4.5	0.89	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	4.5	1.8	0.48	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	4.5	1.8	0.51	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	4.5	1.8	0.57	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.1 U	18	7.1	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.1	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.7	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.2	4.5	1.8	0.60	ng/l	J
31506-32-8	MeFOSA	1.8 U	4.5	1.8	0.89	ng/l	
4151-50-2	EtFOSA	1.8 U	4.5	1.8	0.89	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2304W3	
Lab Sample ID:	FC5316-1	Date Sampled: 04/17/23
Matrix:	AQ - Ground Water	Date Received: 04/18/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

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

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	8.9 U	45	8.9	3.9	ng/l	
1691-99-2	EtFOSE	18 U	45	18	6.6	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.6 U	18	3.6	0.89	ng/l	
919005-14-4	ADONA	3.6 U	18	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	8.9	1.8	0.89	ng/l	
863090-89-5	PFMBA	3.6 U	8.9	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	8.9	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	18	3.6	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	18	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	8.9	1.8	0.70	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.9 U	22	8.9	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	110	18	7.8	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	110	18	7.0	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	72%		20-150%
	13C5-PFPeA	86%		20-150%
	13C5-PFHxA	105%		20-150%
	13C4-PFHpA	107%		20-150%
	13C8-PFOA	101%		20-150%
	13C9-PFNA	106%		20-150%
	13C6-PFDA	109%		20-150%
	13C7-PFUnDA	103%		20-150%
	13C2-PFDoDA	93%		20-150%
	13C2-PFTeDA	77%		20-150%
	13C3-PFBS	112%		20-150%
	13C3-PFHxS	112%		20-150%

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

Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2304W3	
Lab Sample ID:	FC5316-1	Date Sampled: 04/17/23
Matrix:	AQ - Ground Water	Date Received: 04/18/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	99%		20-150%
	13C8-FOSA	90%		20-150%
	d3-MeFOSA	82%		20-150%
	d5-EtFOSA	89%		20-150%
	d3-MeFOSAA	109%		20-150%
	d5-EtFOSAA	103%		20-150%
	d7-MeFOSE	83%		20-150%
	d9-EtFOSE	90%		20-150%
	13C2-4:2FTS	111%		20-150%
	13C2-6:2FTS	94%		20-150%
	13C2-8:2FTS	88%		20-150%
	13C3-HFPO-DA	76%		20-150%

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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW02-WGN01LF-2304W3		
Lab Sample ID:	FC5316-2	Date Sampled:	04/17/23
Matrix:	AQ - Ground Water	Date Received:	04/18/23
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	4Q43448.D	1	04/21/23 20:37	MV	04/19/23 10:00	OP96472	S4Q627
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.6 U	18	3.6	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	2.7	8.9	1.8	0.84	ng/l	J
307-24-4	Perfluorohexanoic acid	1.7	4.5	0.89	0.45	ng/l	J
375-85-9	Perfluoroheptanoic acid	1.1	4.5	0.89	0.45	ng/l	J
335-67-1	Perfluorooctanoic acid	0.89 U	4.5	0.89	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	4.5	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	0.89 U	4.5	0.89	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	4.5	1.8	0.54	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	4.5	1.8	0.54	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	4.5	1.8	0.75	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.89 U	4.5	0.89	0.45	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.89 U	4.5	0.89	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	4.5	1.8	0.62	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.89 U	4.5	0.89	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	4.5	1.8	0.48	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	4.5	1.8	0.51	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	4.5	1.8	0.57	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.1 U	18	7.1	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	5.5	18	7.1	3.1	ng/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.7	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	4.5	1.8	0.60	ng/l	
31506-32-8	MeFOSA	1.8 U	4.5	1.8	0.89	ng/l	
4151-50-2	EtFOSA	1.8 U	4.5	1.8	0.89	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2304W3		Date Sampled:	04/17/23
Lab Sample ID:	FC5316-2	Date Received:	04/18/23	
Matrix:	AQ - Ground Water	Percent Solids:	n/a	
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
Project:	N6274223F0104 RH Fire Suppression System			

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

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	8.9 U	45	8.9	3.9	ng/l	
1691-99-2	EtFOSE	18 U	45	18	6.6	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.6 U	18	3.6	0.89	ng/l	
919005-14-4	ADONA	3.6 U	18	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	8.9	1.8	0.89	ng/l	
863090-89-5	PFMBA	3.6 U	8.9	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	8.9	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	18	3.6	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	18	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	8.9	1.8	0.70	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.9 U	22	8.9	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	110	18	7.8	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	110	18	7.0	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	90%		20-150%
	13C5-PFPeA	104%		20-150%
	13C5-PFHxA	109%		20-150%
	13C4-PFHpA	109%		20-150%
	13C8-PFOA	103%		20-150%
	13C9-PFNA	102%		20-150%
	13C6-PFDA	100%		20-150%
	13C7-PFUnDA	88%		20-150%
	13C2-PFDoDA	75%		20-150%
	13C2-PFTeDA	54%		20-150%
	13C3-PFBS	118%		20-150%
	13C3-PFHxS	110%		20-150%

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

4.2
4

Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2304W3		Date Sampled:	04/17/23
Lab Sample ID:	FC5316-2		Date Received:	04/18/23
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	96%		20-150%
	13C8-FOSA	70%		20-150%
	d3-MeFOSA	71%		20-150%
	d5-EtFOSA	77%		20-150%
	d3-MeFOSAA	95%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	65%		20-150%
	d9-EtFOSE	72%		20-150%
	13C2-4:2FTS	95%		20-150%
	13C2-6:2FTS	89%		20-150%
	13C2-8:2FTS	83%		20-150%
	13C3-HFPO-DA	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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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



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

FC5316
SGS - ORLANDO JOB # :

COC # 2304W3AFSG02
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Client / Reporting Information		Project Information										Analytical Information										Matrix Codes								
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System										<div style="border: 1px solid black; padding: 5px;"> <p>EM 04/17/23</p> </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 Manager: Watson Tanji Email: watson.tanji@aecom.com		Project # 60697810																												
Phone #: 303-796-4624 / 808-954-4512		Fax #										PFAS EPA Draft 1633 X																		
Sampler(s) Name(s) (Printed) Sampler 1: Ben Swkr Sampler 2: Angelo Combi		Client Purchase Order #																												
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION				CONTAINER INFORMATION											LAB USE ONLY													
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	PCl	NaOH	HClO4	HNO3	H2SO4	NaOH-ZnAc	DI WATER	MICH														
1	AF-RHMW03-WGN01LF-2304W3	4/17/23	1240	BSA/EM	GW	3		X																						
<div style="border: 1px solid black; border-radius: 50%; width: 80%; margin: 0 auto; padding: 10px;"> <p style="text-align: center;">EM 04/17/23</p> </div>																														
										INITIAL ASSESSMENT LABEL VERIFICATION																				
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										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 91766684										
Rush T/A Data Available VIA Email or LabLink																														
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation				Date Time:		Relinquished By/Affiliation		Date Time:		Received By/Affiliation		Date Time:		Received By/Affiliation		Date Time:										
1 Eli Motta / AECOM		04/17/23 1420		2 Alex Edwards / AECOM				4/17/23 1456		3 Alex Edwards / AECOM		4/17/23 1456		4 Alex Edwards / AECOM		4/17/23 1500		5 Alex Edwards / AECOM		4/17/23 1500										
5				6						7				8				9												
Lab Use Only: Cooler Temperature (s) Celsius (corrected): 3.825																				http://www.sgs.com/en/terms-and-conditions										

PFAS_COCs_ALL.xls Rev 031318





SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-5700 FAX: 407-425-0707
www.sgs.com

FC5316

SGS - ORLANDO JOB # :

COC #: 2304W3AFSG01

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="position: absolute; top: 10px; left: 10px; border: 1px solid black; padding: 2px;"> EM 4/17/23 </div>													DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge 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 Project Manager: Watson Tanji Phone #: 303-796-4624 / 806-954-4512			Email: katie.abbott@aecom.com Email: watson.tanji@aecom.com																	Project # 60697810			Fax #		
Sampler(s) Name(s) (Printed) Sampler 1: Ben Swides Sampler 2: Angelo Gembre			Client Purchase Order #																						
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NIH	PC	NOH	INOS	PEBQ	NOCHZAC	DI WATER	MICH	PFAS EPA Draft 1633	LAB USE ONLY								
2	AF-RHMW02-WGN01LF-2304W3	4/17/23	1050	BS, AEGM	GW	3		X								X									
Turnaround Time (Business days)			Data Deliverable Information			Comments / Remarks																			
10 Day (Business) 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other _____ Rush T/A Data Available VIA Email or Lablink			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 #013 016-9176684																			
Sample Custody must be documented below each time samples change possession, including courier delivery.																									
Relinquished by Sampler/Affiliation		Date Time:	Received By/Affiliation			Relinquished By/Affiliation		Date Time:	Received By/Affiliation																
1 Eli Motta/AECOM		04/17/23 1440	2 Alex Edmunds/AECOM			3 Alex Edmunds/AECOM		4/17/23 1455	4 [Signature] 4/18/23 1500																
5 Relinquished by/Affiliation		Date Time:	6 Received By/Affiliation			7 Relinquished By/Affiliation		Date Time:	8 Received By/Affiliation																

5.1
5



SGS Sample Receipt Summary

Job Number: FC5316

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 4/18/2023 3:00:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-91766684

Therm ID: IR 1;

Therm CF: -0.1;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.7);

Cooler Information

Y or N

- | | | |
|-----------------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Temp criteria achieved | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Cooler temp verification | IR Gun | |
| 5. Cooler media | Ice (Bag) | |

Trip Blank Information

Y or N

N/A

- | | | | |
|--------------------------------|--------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | <u>W or S</u> | <u>N/A</u> | |
| 3. Type Of TB Received | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Information

Y or N

N/A

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

Misc. Information

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

Number of 5035 Field Kits: _____

Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 _____ 230320 _____

pH 10-12 _____ 25BDH07 _____

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

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS

Date: 4/18/2023 3:00:00 PM

Reviewer: CD

Date: 4/20/2023

FC5316: Chain of Custody

Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5316
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 04/17/23

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 FC5316

5.2
5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Instrument Blank

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q627-IBLK	4Q43427.D	1	04/21/23	MV	n/a	n/a	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

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: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q627-IBLK	4Q43427.D	1	04/21/23	MV	n/a	n/a	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

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	100% 20-150%
	13C5-PFPeA	99% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	105% 20-150%
	13C7-PFUnDA	98% 20-150%
	13C2-PFDoDA	100% 20-150%
	13C2-PFTeDA	95% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	94% 20-150%
	13C8-FOSA	91% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	99% 20-150%
	13C2-4:2FTS	117% 20-150%
	13C2-6:2FTS	104% 20-150%
	13C2-8:2FTS	108% 20-150%

6.1.1
6

Continuing Calibration Blank

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q627-ICCB	4Q43441.D	1	04/21/23	MV	n/a	n/a	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

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	

Continuing Calibration Blank

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q627-ICCB	4Q43441.D	1	04/21/23	MV	n/a	n/a	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

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	101% 20-150%
	13C5-PFPeA	96% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	96% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	99% 20-150%
	13C6-PFDA	92% 20-150%
	13C7-PFUnDA	102% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	95% 20-150%
	13C3-PFBS	102% 20-150%
	13C3-PFHxS	101% 20-150%
	13C8-PFOS	83% 20-150%
	13C8-FOSA	89% 20-150%
	d3-MeFOSAA	100% 20-150%
	d5-EtFOSAA	101% 20-150%
	13C2-4:2FTS	116% 20-150%
	13C2-6:2FTS	131% 20-150%
	13C2-8:2FTS	113% 20-150%

6.1.2

6

Method Blank Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-MB	4Q43445.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

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: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-MB	4Q43445.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

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	112% 20-150%
	13C5-PFPeA	106% 20-150%
	13C5-PFHxA	109% 20-150%
	13C4-PFHpA	110% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	108% 20-150%
	13C6-PFDA	111% 20-150%
	13C7-PFUnDA	101% 20-150%
	13C2-PFDoDA	93% 20-150%
	13C2-PFTeDA	82% 20-150%
	13C3-PFBS	112% 20-150%
	13C3-PFHxS	109% 20-150%
	13C8-PFOS	110% 20-150%
	13C8-FOSA	72% 20-150%
	d3-MeFOSA	73% 20-150%
	d5-EtFOSA	81% 20-150%
	d3-MeFOSAA	118% 20-150%
	d5-EtFOSAA	104% 20-150%
	d7-MeFOSE	60% 20-150%
	d9-EtFOSE	74% 20-150%
	13C2-4:2FTS	133% 20-150%
	13C2-6:2FTS	133% 20-150%
	13C2-8:2FTS	131% 20-150%
	13C3-HFPO-DA	91% 20-150%

6.1.3
6

Blank Spike Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-LLBS	4Q43444.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0329	110	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0175	117	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0084	112	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0084	112	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0090	120	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0092	123	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0082	109	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0090	120	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0085	113	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0094	125	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0089	119	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0078	117	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0088	125	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0079	115	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0078	109	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0080	115	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0069	96	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0077	106	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0072	99	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0392	139	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0326	114	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0340	118	40-150
754-91-6	PFOSA	0.0075	0.0093	124	40-150
31506-32-8	MeFOSA	0.015	0.0174	116	40-150
4151-50-2	EtFOSA	0.015	0.0176	117	40-150
2355-31-9	MeFOSAA	0.0075	0.0082	109	40-150
2991-50-6	EtFOSAA	0.0075	0.0100	133	40-150
24448-09-7	MeFOSE	0.0375	0.0368	98	40-150
1691-99-2	EtFOSE	0.0375	0.0415	111	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0166	111	40-150
919005-14-4	ADONA	0.0142	0.0192	135	40-150
377-73-1	PFMPA	0.015	0.0175	117	40-150
863090-89-5	PFMBA	0.015	0.0177	118	40-150
151772-58-6	NFDHA	0.015	0.0208	139	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0184	131	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0189	133	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-LLBS	4Q43444.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0147	110	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0336	90	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.203	108	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.196	105	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	109%	20-150%
	13C5-PFPeA	101%	20-150%
	13C5-PFHxA	105%	20-150%
	13C4-PFHpA	105%	20-150%
	13C8-PFOA	105%	20-150%
	13C9-PFNA	107%	20-150%
	13C6-PFDA	100%	20-150%
	13C7-PFUnDA	103%	20-150%
	13C2-PFDoDA	100%	20-150%
	13C2-PFTeDA	90%	20-150%
	13C3-PFBS	112%	20-150%
	13C3-PFHxS	107%	20-150%
	13C8-PFOS	103%	20-150%
	13C8-FOSA	73%	20-150%
	d3-MeFOSA	76%	20-150%
	d5-EtFOSA	79%	20-150%
	d3-MeFOSAA	111%	20-150%
	d5-EtFOSAA	108%	20-150%
	d7-MeFOSE	65%	20-150%
	d9-EtFOSE	75%	20-150%
	13C2-4:2FTS	121%	20-150%
	13C2-6:2FTS	132%	20-150%
	13C2-8:2FTS	126%	20-150%
	13C3-HFPO-DA	88%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-BS	4Q43443.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.111	111	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0590	118	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0262	105	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0271	108	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0303	121	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0270	108	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0276	110	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0290	116	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0292	117	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0293	117	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0273	109	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0241	109	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0270	115	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0256	112	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0272	114	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0270	116	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0258	107	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0268	111	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0251	104	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.107	114	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.108	114	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.110	115	40-150
754-91-6	PFOSA	0.025	0.0270	108	40-150
31506-32-8	MeFOSA	0.05	0.0571	114	40-150
4151-50-2	EtFOSA	0.05	0.0571	114	40-150
2355-31-9	MeFOSAA	0.025	0.0273	109	40-150
2991-50-6	EtFOSAA	0.025	0.0305	122	40-150
24448-09-7	MeFOSE	0.125	0.139	111	40-150
1691-99-2	EtFOSE	0.125	0.145	116	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0564	113	40-150
919005-14-4	ADONA	0.0473	0.0640	135	40-150
377-73-1	PFMPA	0.05	0.0247	49	40-150
863090-89-5	PFMBA	0.05	0.0624	125	40-150
151772-58-6	NFDHA	0.05	0.0621	124	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0608	130	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0616	130	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-BS	4Q43443.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0483	109	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0519	42	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.639	102	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.641	103	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	24%	20-150%
	13C5-PFPeA	96%	20-150%
	13C5-PFHxA	114%	20-150%
	13C4-PFHpA	111%	20-150%
	13C8-PFOA	113%	20-150%
	13C9-PFNA	113%	20-150%
	13C6-PFDA	114%	20-150%
	13C7-PFUnDA	107%	20-150%
	13C2-PFDoDA	104%	20-150%
	13C2-PFTeDA	97%	20-150%
	13C3-PFBS	117%	20-150%
	13C3-PFHxS	115%	20-150%
	13C8-PFOS	109%	20-150%
	13C8-FOSA	84%	20-150%
	d3-MeFOSA	86%	20-150%
	d5-EtFOSA	89%	20-150%
	d3-MeFOSAA	119%	20-150%
	d5-EtFOSAA	121%	20-150%
	d7-MeFOSE	65%	20-150%
	d9-EtFOSE	76%	20-150%
	13C2-4:2FTS	137%	20-150%
	13C2-6:2FTS	129%	20-150%
	13C2-8:2FTS	129%	20-150%
	13C3-HFPO-DA	94%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-MS	4Q43447.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627
FC5316-1	4Q43446.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	FC5316-1 ug/l	Spike Q	MS ug/l	MS %	Limits	
375-22-4	Perfluorobutanoic acid	0.018 U		0.0893	0.105	118	40-150
2706-90-3	Perfluoropentanoic acid	0.0089 U		0.0446	0.0754	169*	40-150
307-24-4	Perfluorohexanoic acid	0.0020 J		0.0223	0.0267	111	40-150
375-85-9	Perfluoroheptanoic acid	0.00089 J		0.0223	0.0268	116	40-150
335-67-1	Perfluorooctanoic acid	0.0045 U		0.0223	0.0290	130	40-150
375-95-1	Perfluorononanoic acid	0.0045 U		0.0223	0.0265	119	40-150
335-76-2	Perfluorodecanoic acid	0.0045 U		0.0223	0.0245	110	40-150
2058-94-8	Perfluoroundecanoic acid	0.0045 U		0.0223	0.0283	127	40-150
307-55-1	Perfluorododecanoic acid	0.0045 U		0.0223	0.0273	122	40-150
72629-94-8	Perfluorotridecanoic acid	0.0045 U		0.0223	0.0267	120	40-150
376-06-7	Perfluorotetradecanoic acid	0.0045 U		0.0223	0.0259	116	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0045 U		0.0198	0.0221	112	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U		0.021	0.0259	123	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0045 U		0.0204	0.0255	125	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U		0.0213	0.0280	132	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0045 U		0.0207	0.0292	141	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0045 U		0.0215	0.0280	130	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0045 U		0.0215	0.0287	133	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U		0.0217	0.0226	104	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.018 U		0.0837	0.0958	114	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U		0.0848	0.0991	117	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U		0.0857	0.116	135	40-150
754-91-6	PFOSA	0.0012 J		0.0223	0.0271	116	40-150
31506-32-8	MeFOSA	0.0045 U		0.0446	0.0528	118	40-150
4151-50-2	EtFOSA	0.0045 U		0.0446	0.0527	118	40-150
2355-31-9	MeFOSAA	0.0045 U		0.0223	0.0284	127	40-150
2991-50-6	EtFOSAA	0.0045 U		0.0223	0.0282	126	40-150
24448-09-7	MeFOSE	0.045 U		0.112	0.136	122	40-150
1691-99-2	EtFOSE	0.045 U		0.112	0.133	119	40-150
13252-13-6	HFPO-DA (GenX)	0.018 U		0.0446	0.0560	125	40-150
919005-14-4	ADONA	0.018 U		0.0422	0.0729	173*	40-150
377-73-1	PFMPA	0.0089 U		0.0446	0.0443	99	40-150
863090-89-5	PFMBA	0.0089 U		0.0446	0.0594	133	40-150
151772-58-6	NFDHA	0.0089 U		0.0446	0.0353	79	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.018 U		0.0417	0.0623	149	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.018 U		0.0422	0.0559	133	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-MS	4Q43447.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627
FC5316-1	4Q43446.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	FC5316-1 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0089 U	0.0397	0.0436	110	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.022 U	0.112	0.0873	78	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.11 U	0.558	0.712	128	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.11 U	0.558	0.697	125	40-150

CAS No.	ID Standard Recoveries	MS	FC5316-1	Limits
	13C4-PFBA	77%	72%	20-150%
	13C5-PFPeA	87%	86%	20-150%
	13C5-PFHxA	110%	105%	20-150%
	13C4-PFHpA	113%	107%	20-150%
	13C8-PFOA	104%	101%	20-150%
	13C9-PFNA	102%	106%	20-150%
	13C6-PFDA	105%	109%	20-150%
	13C7-PFUnDA	97%	103%	20-150%
	13C2-PFDoDA	90%	93%	20-150%
	13C2-PFTeDA	75%	77%	20-150%
	13C3-PFBS	108%	112%	20-150%
	13C3-PFHxS	107%	112%	20-150%
	13C8-PFOS	93%	99%	20-150%
	13C8-FOSA	96%	90%	20-150%
	d3-MeFOSA	90%	82%	20-150%
	d5-EtFOSA	94%	89%	20-150%
	d3-MeFOSAA	102%	109%	20-150%
	d5-EtFOSAA	102%	103%	20-150%
	d7-MeFOSE	83%	83%	20-150%
	d9-EtFOSE	88%	90%	20-150%
	13C2-4:2FTS	140%	111%	20-150%
	13C2-6:2FTS	108%	94%	20-150%
	13C2-8:2FTS	91%	88%	20-150%
	13C3-HFPO-DA	77%	76%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-DUP	4Q43449.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627
FC5316-2	4Q43448.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	FC5316-2		DUP		Q	RPD	Limits
		ug/l	Q	ug/l	Q			
375-22-4	Perfluorobutanoic acid	0.018 U		ND			nc	30
2706-90-3	Perfluoropentanoic acid	0.0027 J		0.0023 J		J	16	30
307-24-4	Perfluorohexanoic acid	0.0017 J		0.0019 J		J	11	30
375-85-9	Perfluoroheptanoic acid	0.0011 J		0.0011 J		J	0	30
335-67-1	Perfluorooctanoic acid	0.0045 U		0.00080 J		J	200*	30
375-95-1	Perfluorononanoic acid	0.0045 U		ND			nc	30
335-76-2	Perfluorodecanoic acid	0.0045 U		ND			nc	30
2058-94-8	Perfluoroundecanoic acid	0.0045 U		ND			nc	30
307-55-1	Perfluorododecanoic acid	0.0045 U		ND			nc	30
72629-94-8	Perfluorotridecanoic acid	0.0045 U		ND			nc	30
376-06-7	Perfluorotetradecanoic acid	0.0045 U		ND			nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0045 U		ND			nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U		ND			nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0045 U		ND			nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0045 U		ND			nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0045 U		ND			nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0045 U		ND			nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0045 U		ND			nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U		ND			nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.018 U		ND			nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0055 J		0.0052 J		J	6	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U		ND			nc	30
754-91-6	PFOSA	0.0045 U		ND			nc	30
31506-32-8	MeFOSA	0.0045 U		ND			nc	30
4151-50-2	EtFOSA	0.0045 U		ND			nc	30
2355-31-9	MeFOSAA	0.0045 U		ND			nc	30
2991-50-6	EtFOSAA	0.0045 U		ND			nc	30
24448-09-7	MeFOSE	0.045 U		ND			nc	30
1691-99-2	EtFOSE	0.045 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	0.0089 U		ND			nc	30
863090-89-5	PFMBA	0.0089 U		ND			nc	30
151772-58-6	NFDHA	0.0089 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: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96472-DUP	4Q43449.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627
FC5316-2	4Q43448.D	1	04/21/23	MV	04/19/23	OP96472	S4Q627

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5316-1, FC5316-2

CAS No.	Compound	FC5316-2 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7PFEESA		0.0089 U	ND			nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.022 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	FC5316-2	Limits
	13C4-PFBA	96%	90%	20-150%
	13C5-PFPeA	101%	104%	20-150%
	13C5-PFHxA	105%	109%	20-150%
	13C4-PFHpA	108%	109%	20-150%
	13C8-PFOA	98%	103%	20-150%
	13C9-PFNA	108%	102%	20-150%
	13C6-PFDA	92%	100%	20-150%
	13C7-PFUnDA	83%	88%	20-150%
	13C2-PFDoDA	71%	75%	20-150%
	13C2-PFTeDA	53%	54%	20-150%
	13C3-PFBS	112%	118%	20-150%
	13C3-PFHxS	105%	110%	20-150%
	13C8-PFOS	100%	96%	20-150%
	13C8-FOSA	81%	70%	20-150%
	d3-MeFOSA	83%	71%	20-150%
	d5-EtFOSA	89%	77%	20-150%
	d3-MeFOSAA	106%	95%	20-150%
	d5-EtFOSAA	102%	98%	20-150%
	d7-MeFOSE	75%	65%	20-150%
	d9-EtFOSE	83%	72%	20-150%
	13C2-4:2FTS	104%	95%	20-150%
	13C2-6:2FTS	86%	89%	20-150%
	13C2-8:2FTS	72%	83%	20-150%
	13C3-HFPO-DA	83%	88%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q627-CC625	Injection Date:	04/21/23
Lab File ID:	4Q43440.D	Injection Time:	18:45
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	64502	2.94	46252	5.58	47306	7.19	24417	7.73	19244	8.24
Check Std ^c	72520	2.93	51411	5.61	52710	7.20	27046	7.76	22570	8.27
Upper Limit ^d	129004	3.33	92504	6.01	94612	7.60	48834	8.16	38488	8.67
Lower Limit ^e	19351	2.53	13876	5.21	14192	6.80	7325	7.36	5773	7.87

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
S4Q627-ICCB	67281	2.94	46431	5.61	48331	7.20	24788	7.76	19261	8.27	1
OP96472-BS	56371	2.97	38281	5.61	38625	7.21	19969	7.76	15731	8.27	1
OP96472-LLBS	56663	2.98	38070	5.61	39482	7.19	19721	7.75	15296	8.25	1
OP96472-MB	53803	2.99	35408	5.60	36598	7.18	18977	7.73	14668	8.23	1
FC5316-1	41837	2.99	39178	5.58	40369	7.18	19516	7.73	15798	8.24	1
OP96472-MS	38354	2.99	37641	5.60	39955	7.19	19919	7.73	15463	8.25	1
FC5316-2	53948	2.99	38195	5.60	38972	7.19	19911	7.73	16184	8.24	1
OP96472-DUP	52350	2.99	37484	5.60	39124	7.18	18419	7.73	16054	8.24	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: S4Q625-ICC625 4Q43245.D 04/19/23 12:37. 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: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q627-CC625	Injection Date:	04/21/23
Lab File ID:	4Q43440.D	Injection Time:	18:45
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5092	7.29	10833	8.40
Check Std ^c	5213	7.30	12142	8.42
Upper Limit ^d	10184	7.70	21666	8.82
Lower Limit ^e	1528	6.90	3250	8.02

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q627-ICCB	4839	7.30	11285	8.42	1
OP96472-BS	3874	7.30	8699	8.42	1
OP96472-LLBS	3825	7.29	8940	8.40	1
OP96472-MB	3662	7.28	7960	8.39	1
FC5316-1	3893	7.28	8342	8.39	1
OP96472-MS	3793	7.29	8064	8.40	1
FC5316-2	3966	7.28	8945	8.39	1
OP96472-DUP	3982	7.28	7829	8.39	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q625-ICC625 4Q43245.D 04/19/23 12:37. 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.

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TDCA Retention Time Check

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q625-RT	Injection Date:	04/19/23
Lab File ID:	4Q43239.D	Injection Time:	11:12
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.406	--	--
TDCA	6.909	1.497	1.000
TCDCA	6.748	1.658	1.000
TUDCA	5.917	2.489	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
S4Q625-IC625	4Q43241.D	04/19/23	11:40	00:28	Mass Calibration Verification
S4Q625-IC625	4Q43242.D	04/19/23	11:54	00:42	Initial cal 1
S4Q625-IC625	4Q43243.D	04/19/23	12:08	00:56	Initial cal 2
S4Q625-IC625	4Q43244.D	04/19/23	12:22	01:10	Initial cal 3
S4Q625-ICC625	4Q43245.D	04/19/23	12:37	01:25	Initial cal 4
S4Q625-IC625	4Q43246.D	04/19/23	12:51	01:39	Initial cal 5
S4Q625-IC625	4Q43247.D	04/19/23	13:05	01:53	Initial cal 6
S4Q625-IC625	4Q43248.D	04/19/23	13:19	02:07	Initial cal 7
S4Q625-IC625	4Q43249.D	04/19/23	13:33	02:21	Initial cal 8
S4Q625-IBLK	4Q43250.D	04/19/23	13:47	02:35	Instrument Blank
S4Q625-IBLK	4Q43250.D	04/19/23	13:47	02:35	Instrument Blank
S4Q625-ICV625	4Q43251.D	04/19/23	14:01	02:49	Initial cal verification 4
S4Q625-ICV625	4Q43252.D	04/19/23	14:15	03:03	Initial cal verification 20
S4Q625-CC625	4Q43253.D	04/19/23	14:29	03:17	Continuing cal 4
S4Q625-CC625	4Q43254.D	04/19/23	14:43	03:31	Continuing cal 1.0LL
OP96455-BS	4Q43255.D	04/19/23	15:00	03:48	Blank Spike
OP96455-LLBS	4Q43256.D	04/19/23	15:14	04:02	Blank Spike
OP96455-MB	4Q43257.D	04/19/23	15:29	04:17	Method Blank
ZZZZZZ	4Q43258.D	04/19/23	15:43	04:31	(unrelated sample)
ZZZZZZ	4Q43259.D	04/19/23	15:57	04:45	(unrelated sample)
ZZZZZZ	4Q43261.D	04/19/23	16:25	05:13	(unrelated sample)
ZZZZZZ	4Q43262.D	04/19/23	16:39	05:27	(unrelated sample)
ZZZZZZ	4Q43263.D	04/19/23	16:53	05:41	(unrelated sample)
S4Q625-CC625	4Q43264.D	04/19/23	17:08	05:56	Continuing cal 4
S4Q625-ICCB	4Q43265.D	04/19/23	17:22	06:10	Continuing Calibration Blank
OP96452-BS	4Q43266.D	04/19/23	17:36	06:24	Blank Spike
OP96452-LLBS	4Q43267.D	04/19/23	17:50	06:38	Blank Spike
OP96452-MB	4Q43268.D	04/19/23	18:04	06:52	Method Blank
ZZZZZZ	4Q43269.D	04/19/23	18:18	07:06	(unrelated sample)
ZZZZZZ	4Q43270.D	04/19/23	18:32	07:20	(unrelated sample)
ZZZZZZ	4Q43271.D	04/19/23	18:46	07:34	(unrelated sample)
ZZZZZZ	4Q43273.D	04/19/23	19:14	08:02	(unrelated sample)
ZZZZZZ	4Q43274.D	04/19/23	19:28	08:16	(unrelated sample)
ZZZZZZ	4Q43275.D	04/19/23	19:42	08:30	(unrelated sample)

TDCA Retention Time Check

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q625-RT	Injection Date:	04/19/23
Lab File ID:	4Q43239.D	Injection Time:	11:12
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q625-CC625	4Q43276.D	04/19/23	19:56	08:44	Continuing cal 4
S4Q625-ICCB	4Q43277.D	04/19/23	20:10	08:58	Continuing Calibration Blank
ZZZZZZ	4Q43278.D	04/19/23	20:24	09:12	(unrelated sample)
ZZZZZZ	4Q43279.D	04/19/23	20:38	09:26	(unrelated sample)
ZZZZZZ	4Q43280.D	04/19/23	20:52	09:40	(unrelated sample)
ZZZZZZ	4Q43281.D	04/19/23	21:06	09:54	(unrelated sample)
S4Q625-CC625	4Q43282.D	04/19/23	21:21	10:09	Continuing cal 4
S4Q625-CC625	4Q43283.D	04/19/23	21:35	10:23	Continuing cal 1.0LL
S4Q625-ICCB	4Q43284.D	04/19/23	21:49	10:37	Continuing Calibration Blank
OP96429-BS	4Q43285.D	04/19/23	22:03	10:51	Blank Spike
OP96429-LLBS	4Q43286.D	04/19/23	22:17	11:05	Blank Spike
OP96429-MB	4Q43287.D	04/19/23	22:31	11:19	Method Blank
JD63290-1A	4Q43288.D	04/19/23	22:45	11:33	(used for QC only; not part of job FC5316)
OP96429-MS	4Q43289.D	04/19/23	22:59	11:47	Matrix Spike
JD63290-2A	4Q43290.D	04/19/23	23:13	12:01	(used for QC only; not part of job FC5316)
OP96429-DUP	4Q43291.D	04/19/23	23:27	12:15	Duplicate
ZZZZZZ	4Q43292.D	04/19/23	23:41	12:29	(unrelated sample)
ZZZZZZ	4Q43293.D	04/19/23	23:55	12:43	(unrelated sample)
S4Q625-CC625	4Q43294.D	04/20/23	00:09	12:57	Continuing cal 4
S4Q625-ICCB	4Q43295.D	04/20/23	00:23	13:11	Continuing Calibration Blank
OP96382-BS	4Q43296.D	04/20/23	00:37	13:25	Blank Spike
OP96382-LLBS	4Q43297.D	04/20/23	00:51	13:39	Blank Spike
OP96382-MB	4Q43298.D	04/20/23	01:05	13:53	Method Blank
ZZZZZZ	4Q43299.D	04/20/23	01:20	14:08	(unrelated sample)
ZZZZZZ	4Q43300.D	04/20/23	01:34	14:22	(unrelated sample)
ZZZZZZ	4Q43301.D	04/20/23	01:48	14:36	(unrelated sample)
ZZZZZZ	4Q43302.D	04/20/23	02:02	14:50	(unrelated sample)
ZZZZZZ	4Q43303.D	04/20/23	02:16	15:04	(unrelated sample)
ZZZZZZ	4Q43304.D	04/20/23	02:30	15:18	(unrelated sample)
ZZZZZZ	4Q43305.D	04/20/23	02:44	15:32	(unrelated sample)
S4Q625-CC625	4Q43306.D	04/20/23	02:58	15:46	Continuing cal 4
S4Q625-ICCB	4Q43307.D	04/20/23	03:12	16:00	Continuing Calibration Blank
ZZZZZZ	4Q43308.D	04/20/23	03:26	16:14	(unrelated sample)
ZZZZZZ	4Q43309.D	04/20/23	03:40	16:28	(unrelated sample)
ZZZZZZ	4Q43310.D	04/20/23	03:54	16:42	(unrelated sample)
ZZZZZZ	4Q43311.D	04/20/23	04:08	16:56	(unrelated sample)
ZZZZZZ	4Q43312.D	04/20/23	04:22	17:10	(unrelated sample)
ZZZZZZ	4Q43313.D	04/20/23	04:36	17:24	(unrelated sample)
ZZZZZZ	4Q43314.D	04/20/23	04:50	17:38	(unrelated sample)
FC3817-15	4Q43315.D	04/20/23	05:04	17:52	(used for QC only; not part of job FC5316)
OP96382-MS	4Q43316.D	04/20/23	05:18	18:06	Matrix Spike
OP96382-MSD	4Q43317.D	04/20/23	05:33	18:21	Matrix Spike Duplicate
S4Q625-CC625	4Q43318.D	04/20/23	05:47	18:35	Continuing cal 4
S4Q625-ICCB	4Q43319.D	04/20/23	06:01	18:49	Continuing Calibration Blank

6.6.1
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TDCA Retention Time Check

Job Number: FC5316
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-RT	Injection Date: 04/19/23
Lab File ID: 4Q43239.D	Injection Time: 11:12
Instrument ID: GCMS4Q	

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q43320.D	04/20/23	06:15	19:03	(unrelated sample)
ZZZZZZ	4Q43321.D	04/20/23	06:29	19:17	(unrelated sample)
S4Q625-ECC625	4Q43322.D	04/20/23	06:43	19:31	Ending cal 4
S4Q625-ICCB	4Q43323.D	04/20/23	06:57	19:45	Continuing Calibration Blank

6.6.1

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TDCA Retention Time Check

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q627-RT	Injection Date:	04/21/23
Lab File ID:	4Q43424.D	Injection Time:	14:58
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.406	--	--
TDCA	6.909	1.497	1.000
TCDCA	6.760	1.646	1.000
TUDCA	5.917	2.489	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
S4Q627-IBLK	4Q43427.D	04/21/23	15:41	00:43	Instrument Blank
S4Q627-IBLK	4Q43427.D	04/21/23	15:41	00:43	Instrument Blank
S4Q627-CC625	4Q43428.D	04/21/23	15:55	00:57	Continuing cal 4
S4Q627-CC625	4Q43429.D	04/21/23	16:09	01:11	Continuing cal 1.0LL
ZZZZZZ	4Q43430.D	04/21/23	16:25	01:27	(unrelated sample)
ZZZZZZ	4Q43431.D	04/21/23	16:39	01:41	(unrelated sample)
ZZZZZZ	4Q43432.D	04/21/23	16:53	01:55	(unrelated sample)
ZZZZZZ	4Q43433.D	04/21/23	17:07	02:09	(unrelated sample)
ZZZZZZ	4Q43434.D	04/21/23	17:21	02:23	(unrelated sample)
ZZZZZZ	4Q43435.D	04/21/23	17:35	02:37	(unrelated sample)
ZZZZZZ	4Q43436.D	04/21/23	17:49	02:51	(unrelated sample)
ZZZZZZ	4Q43437.D	04/21/23	18:03	03:05	(unrelated sample)
ZZZZZZ	4Q43438.D	04/21/23	18:17	03:19	(unrelated sample)
ZZZZZZ	4Q43439.D	04/21/23	18:31	03:33	(unrelated sample)
S4Q627-CC625	4Q43440.D	04/21/23	18:45	03:47	Continuing cal 4
S4Q627-ICCB	4Q43441.D	04/21/23	18:59	04:01	Continuing Calibration Blank
OP96472-BS	4Q43443.D	04/21/23	19:27	04:29	Blank Spike
OP96472-LLBS	4Q43444.D	04/21/23	19:41	04:43	Blank Spike
OP96472-MB	4Q43445.D	04/21/23	19:55	04:57	Method Blank
FC5316-1	4Q43446.D	04/21/23	20:09	05:11	AF-RHMW03-WGN01LF-2304W3
OP96472-MS	4Q43447.D	04/21/23	20:23	05:25	Matrix Spike
FC5316-2	4Q43448.D	04/21/23	20:37	05:39	AF-RHMW02-WGN01LF-2304W3
OP96472-DUP	4Q43449.D	04/21/23	20:51	05:53	Duplicate
S4Q627-CC625	4Q43450.D	04/21/23	21:05	06:07	Continuing cal 4
S4Q627-ICCB	4Q43451.D	04/21/23	21:20	06:22	Continuing Calibration Blank
OP96492-BS	4Q43452.D	04/21/23	21:34	06:36	Blank Spike
OP96492-LLBS	4Q43453.D	04/21/23	21:48	06:50	Blank Spike
OP96492-MB	4Q43454.D	04/21/23	22:02	07:04	Method Blank
FC5352-1	4Q43455.D	04/21/23	22:16	07:18	(used for QC only; not part of job FC5316)
OP96492-MS	4Q43456.D	04/21/23	22:30	07:32	Matrix Spike
FC5352-2	4Q43457.D	04/21/23	22:44	07:46	(used for QC only; not part of job FC5316)
OP96492-DUP	4Q43458.D	04/21/23	22:58	08:00	Duplicate
S4Q627-ECC625	4Q43459.D	04/21/23	23:12	08:14	Ending cal 4
S4Q627-ICCB	4Q43461.D	04/21/23	23:40	08:42	Continuing Calibration Blank

Ion Ratio Summary

Job Number: FC5316
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q627	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios				
		PFPeA	PFHxA	PFHpA	6:2FTS	FOSA
S4Q625-ICC625	4Q43245.D	0	3.2	17.4	44.5	2.9
FC5316-1	4Q43446.D		1.9	36.6		5.8
FC5316-2	4Q43448.D	0	3.4	19.2	41.6	

6.7.1

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Isotope Dilution Standard Recovery Summary

Job Number: FC5316
 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
FC5316-1	4Q43446.D	72	86	105	107	101	106	109	103
FC5316-2	4Q43448.D	90	104	109	109	103	102	100	88
OP96472-BS	4Q43443.D	24	96	114	111	113	113	114	107
OP96472-DUP	4Q43449.D	96	101	105	108	98	108	92	83
OP96472-LLBS	4Q43444.D	109	101	105	105	105	107	100	103
OP96472-MB	4Q43445.D	112	106	109	110	104	108	111	101
OP96472-MS	4Q43447.D	77	87	110	113	104	102	105	97
S4Q627-IBLK	4Q43427.D	100	99	99	100	102	96	105	98
S4Q627-ICCB	4Q43441.D	101	96	99	96	101	99	92	102

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

6.8.1

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Isotope Dilution Standard Recovery Summary

Job Number: FC5316
 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
FC5316-1	4Q43446.D	93	77	112	112	99	90	82	89
FC5316-2	4Q43448.D	75	54	118	110	96	70	71	77
OP96472-BS	4Q43443.D	104	97	117	115	109	84	86	89
OP96472-DUP	4Q43449.D	71	53	112	105	100	81	83	89
OP96472-LLBS	4Q43444.D	100	90	112	107	103	73	76	79
OP96472-MB	4Q43445.D	93	82	112	109	110	72	73	81
OP96472-MS	4Q43447.D	90	75	108	107	93	96	90	94
S4Q627-IBLK	4Q43427.D	100	95	100	102	94	91		
S4Q627-ICCB	4Q43441.D	97	95	102	101	83	89		

Isotope Dilution Standards **Recovery Limits**

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

6.8.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC5316
 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
FC5316-1	4Q43446.D	109	103	83	90	111	94	88	76
FC5316-2	4Q43448.D	95	98	65	72	95	89	83	88
OP96472-BS	4Q43443.D	119	121	65	76	137	129	129	94
OP96472-DUP	4Q43449.D	106	102	75	83	104	86	72	83
OP96472-LLBS	4Q43444.D	111	108	65	75	121	132	126	88
OP96472-MB	4Q43445.D	118	104	60	74	133	133	131	91
OP96472-MS	4Q43447.D	102	102	83	88	140	108	91	77
S4Q627-IBLK	4Q43427.D	105	99			117	104	108	
S4Q627-ICCB	4Q43441.D	100	101			116	131	113	

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%

6.8.1

6

Initial Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICC625
 Lab FileID: 4Q43245.D

Initial Calibration Report

Method Path	Method File	Batch Name	Last Calib Update	Calibration Files	Level Name	1	2	3	4	5	6	7	8	Avg RF	%RSD
D:\MassHunter\methods	1633_041923_S4Q625.quantmethod.xml	D:\MassHunter\Data\041923_1633_S4Q625	4/20/2023 11:59:07 AM	D:\MassHunter\Data\041923_1633_S4Q625\4Q43242.d	1	0.1876	0.2079	0.2270	0.2327	0.2427	0.2502	0.2524	0.2556	0.2320	10.299
D:\MassHunter\Data\041923_1633_S4Q625	4Q43243.d	D:\MassHunter\Data\041923_1633_S4Q625	4/19/2023 11:54:48 AM	D:\MassHunter\Data\041923_1633_S4Q625\4Q43244.d	2	0.4177	0.4465	0.4875	0.5056	0.5317	0.5605	0.5529	0.5520	0.5068	10.447
D:\MassHunter\Data\041923_1633_S4Q625	4Q43244.d	D:\MassHunter\Data\041923_1633_S4Q625	4/19/2023 12:08:50 PM	D:\MassHunter\Data\041923_1633_S4Q625\4Q43245.d	3	0.0370	0.0437	0.0457	0.0470	0.0484	0.0519	0.0519	0.0546	0.0475	11.728
D:\MassHunter\Data\041923_1633_S4Q625	4Q43245.d	D:\MassHunter\Data\041923_1633_S4Q625	4/19/2023 12:22:56 PM	D:\MassHunter\Data\041923_1633_S4Q625\4Q43246.d	4	0.7829	0.8841	0.9663	1.0144	1.0658	1.1150	1.0900	1.0710	0.9987	11.515
D:\MassHunter\Data\041923_1633_S4Q625	4Q43246.d	D:\MassHunter\Data\041923_1633_S4Q625	4/19/2023 12:37:00 PM	D:\MassHunter\Data\041923_1633_S4Q625\4Q43247.d	5	0.4674	0.5035	0.5600	0.5749	0.6013	0.6282	0.6173	0.6098	0.5703	10.107
D:\MassHunter\Data\041923_1633_S4Q625	4Q43247.d	D:\MassHunter\Data\041923_1633_S4Q625	4/19/2023 1:05:07 PM	D:\MassHunter\Data\041923_1633_S4Q625\4Q43248.d	6	0.0343	0.0457	0.0423	0.0459	0.0443	0.0468	0.0433	0.0387	0.0427	9.893
D:\MassHunter\Data\041923_1633_S4Q625	4Q43248.d	D:\MassHunter\Data\041923_1633_S4Q625	4/19/2023 1:19:10 PM	D:\MassHunter\Data\041923_1633_S4Q625\4Q43249.d	7	0.6323	0.7155	0.7508	0.7901	0.8339	0.8472	0.8603	0.8695	0.7875	10.557
D:\MassHunter\Data\041923_1633_S4Q625	4Q43249.d	D:\MassHunter\Data\041923_1633_S4Q625	4/19/2023 1:33:14 PM		8	0.5339	0.5969	0.6236	0.6450	0.6740	0.6877	0.7084	0.6997	0.6462	9.206
I M4-PFBA	T PFBA					0.1157	0.1074	0.1157	0.1196	0.1243	0.1267	0.1275	0.1248	0.1174	10.087
I M5-PFPeA	T PFPeA					0.0565	0.0534	0.0565	0.0594	0.0614	0.0620	0.0611	0.0584	0.0573	9.379
I M5-PFHxA	T NFdHA					1.2313	1.1538	1.2313	1.3039	1.3801	1.4556	1.4388	1.4696	1.3142	11.187
I M8-PFOA	T PFOA					1.0489	0.8817	1.0489	1.1648	1.2073	1.2522	1.3005	1.2413	1.1137	16.294
I M9-PFNA	T PFNA					0.6562	0.6356	0.6562	0.7314	0.7698	0.7664	0.7842	0.7639	0.7119	10.490
I M6-PFDA	T PFDA					0.7193	0.6832	0.7193	0.8087	0.8128	0.8575	0.8545	0.8418	0.7670	13.790
I M7-PFUnDA	T PFUnDA					0.6929	0.6195	0.6929	0.6801	0.6981	0.7614	0.7760	0.7885	0.7072	8.842
I M2-PFDdA															

Generated at 11:59 AM on 4/20/2023

Page 1 of 4

Initial Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICC625
 Lab FileID: 4Q43245.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.6965	0.7386	0.8026	0.8691	0.8862	0.8781	0.8670	0.8431	0.8226	8.599
T PFTfDA	Avg RF	0.8869	0.9211	1.0384	1.0980	1.1265	1.1101	1.0487	0.9606	1.0238	8.862
I M2-PFTeDA	Avg RF	0.8140	0.9338	1.0070	1.0336	1.0618	1.1173	1.0958	1.0614	1.0156	9.757
T PFTeDA	Avg RF	0.7607	0.7323	0.8435	0.8492	0.8647	0.8828	0.9180	0.9126	0.8455	7.939
I M8-FOSA	Avg RF	0.8445	0.9216	0.9534	0.9438	1.0020	1.1052	1.0972	1.0437	0.9889	9.133
T FOSA	Avg RF	0.6181	0.6755	0.7689	0.7924	0.8568	0.8570	0.8882	0.8696	0.7908	12.468
I M3-PFBS	Avg RF	0.7298	0.8922	0.9146	0.8430	0.9560	0.9605	1.0001	1.0292	0.9157	10.444
T PFBS	Avg RF	0.6337	0.6707	0.6609	0.7243	0.7393	0.7534	0.7423	0.8290	0.7192	8.675
I M3-PFHxS	Avg RF	0.7512	0.8710	0.9339	0.9564	1.0481	0.9898	0.9927	1.0869	0.9587	11.105
T PFHxS	Avg RF	0.4264	0.3385	0.4053	0.4535	0.4480	0.4549	0.4708	0.5454	0.4428	13.267
I M8-PFOS	Avg RF	0.4245	0.5558	0.5832	0.6138	0.6202	0.6078	0.6067	0.6616	0.5842	12.196
T PFOS	Avg RF	0.4234	0.4690	0.5260	0.5534	0.5605	0.5415	0.5594	0.6127	0.5307	11.124
I M2-4:2FTS	Avg RF	4.8050	6.0101	6.3455	6.6000	6.7863	6.6323	7.3290	6.6674	6.3970	11.633
T 4:2FTS	Avg RF	3.1171	3.4667	3.8907	3.8589	3.9086	3.9607	4.2175	4.1553	3.8219	9.503
I M2-6:2FTS	Avg RF	1.7317	2.2800	2.6072	2.7986	2.7866	2.6121	2.6996	2.2006	2.4646	14.976
T 6:2FTS	Avg RF	0.5042	0.6117	0.7488	0.7191	0.7918	0.7684	0.7866	0.7768	0.7134	14.405
I M3-MeFOSAA	Avg RF	0.6203	0.6707	0.8248	0.8410	0.8304	0.8426	0.8445	0.8454	0.7900	11.451
T MeFOSAA	Avg RF	5.8909	6.5329	7.1120	7.4309	7.7802	7.8381	7.4852	7.4299	7.1875	9.254
I M3-HFO-DA	Avg RF	2.6924	2.7230	2.9916	3.1704	3.2920	3.3680	3.3079	3.2083	3.0942	8.536
T HFO-DA	Avg RF	2.4347	2.6524	2.9073	3.0603	3.1883	3.1218	2.9163	2.7663	2.8809	8.812
I M5-EFOSAA	Avg RF	0.4999	0.6390	0.6985	0.7225	0.7804	0.8045	0.8532	0.7140	0.7140	16.547
T EFOSAA	Avg RF	0.6884	0.8302	0.8675	0.9171	0.9377	0.9647	0.9763	0.9302	0.8890	10.617
I M7-MeFOSE	Avg RF	0.6124	0.7324	0.7964	0.8048	0.8676	0.8737	0.8451	0.8448	0.7972	10.998
T MeFOSE	Avg RF	0.6124	0.7324	0.7964	0.8048	0.8676	0.8737	0.8451	0.8448	0.7972	10.998

Initial Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICC625
 Lab FileID: 4Q43245.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	0.7616	0.8541	0.8784	0.8884	1.0137	1.0312	1.0137	1.0217	0.9329	10.804
I M3-MeFOSA											
T MeFOSA	Avg RF	0.6505	0.7960	0.8194	0.8726	0.8937	0.9136	0.9162	0.8262	0.8360	10.456
I 13C4-PFOS											
S d3-MeFOSAA	Linear	0.8406	0.8313	0.8297	0.8364	0.8245	0.8292	0.8077	0.7685	0.8210	2.845
S 13C8-PFOS	Linear	1.0071	0.9476	0.9980	1.0128	1.0105	1.0477	1.0371	0.9272	0.9985	4.147
S d5-EFOSAA	Linear	0.7005	0.6724	0.7053	0.7183	0.7082	0.7136	0.6645	0.6354	0.6898	4.235
S 13C8-FOSA	Linear	1.7751	1.7323	1.8073	1.8260	1.8085	1.8457	1.8325	1.8748	1.8128	2.417
S d7-MeFOSE	Linear	0.7745	0.7893	0.7808	0.7780	0.7872	0.7681	0.7523	0.7051	0.7669	3.593
S d3-MeFOSA	Linear	0.9181	0.8895	0.9102	0.9390	0.9374	0.9440	0.9368	1.0189	0.9367	4.054
S d9-EFOSE	Linear	0.9962	0.9875	0.9912	1.0103	1.0152	0.9744	0.9708	0.9121	0.9822	3.287
S d5-EFOSA	Linear	1.0098	0.9670	0.9890	1.0323	0.9824	0.9943	1.0056	0.9827	0.9954	2.029
I 13C3-PFBA											
S 13C4-PFBA	Linear	0.9047	0.9066	0.8962	0.9048	0.9053	0.9040	0.8958	0.8891	0.9008	0.698
I 1802-PFHxS											
S 13C2-4:2FTS	Linear	0.1643	0.1503	0.1634	0.1533	0.1529	0.1518	0.1202	0.1177	0.1467	12.238
S 13C3-PBBS	Linear	2.4920	2.3166	2.3072	2.3751	2.3381	2.2668	2.1915	2.2368	2.3155	3.972
S 13C2-6:2FTS	Linear	0.2798	0.2497	0.2441	0.2497	0.2486	0.2336	0.1857	0.1570	0.2310	17.235
S 13C3-PFHxS	Linear	1.4862	1.3806	1.3608	1.4915	1.3958	1.4821	1.3834	1.4397	1.4275	3.769
S 13C2-8:2FTS	Linear	0.4932	0.4389	0.4483	0.4162	0.4044	0.4298	0.3569	0.3626	0.4188	10.728
I 13C4-PFOA											
S 13C8-PFOA	Linear	0.8624	0.8231	0.8554	0.8279	0.8344	0.8430	0.8023	0.8275	0.8345	2.284
I 13C2-PFDA											
S 13C6-PFDA	Linear	1.1056	1.0942	1.0924	1.0385	1.1698	1.0847	1.0495	1.0180	1.0816	4.362
S 13C7-PFUnDA	Linear	1.2215	1.1947	1.2110	1.2223	1.3510	1.1960	1.1271	1.0639	1.1984	6.893
S 13C2-PFDODA	Linear	1.4797	1.4568	1.4908	1.4735	1.6054	1.5117	1.4986	1.5562	1.5091	3.248
S 13C2-PFTEdA	Linear	1.1801	1.1907	1.1885	1.1736	1.3205	1.1880	1.1687	1.1978	1.2010	4.099
I 13C5-PFNA											
S 13C9-PFNA	Linear	0.8652	0.8626	0.8707	0.8611	0.8388	0.8999	0.8892	0.8978	0.8731	2.405
I 13C2-PFHxA											
S 13C5-PPeA	Linear	0.7802	0.7677	0.7778	0.7735	0.7448	0.7515	0.7755	0.7461	0.7646	1.936
S 13C5-PFHxA	Linear	1.1787	1.1517	1.1915	1.1805	1.1493	1.1863	1.1999	1.1612	1.1749	1.595
S 13C3-HPO-D-A	Linear	0.1893	0.1912	0.1884	0.1850	0.1806	0.1903	0.1996	0.1929	0.1897	2.928
S 13C4-PFHpA	Linear	0.6384	0.6359	0.6460	0.6374	0.6141	0.6154	0.6283	0.5956	0.6264	2.674

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

Initial Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICC625
 Lab FileID: 4Q43245.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PBBA	Linear	y = 0.900814 * x	
S 13C5-PFPeA	Linear	y = 0.764631 * x	
S 13C2-4:2FTS	Linear	y = 0.146741 * x	
S 13C3-PFBS	Linear	y = 2.315520 * x	
S 13C5-PFHxA	Linear	y = 1.174903 * x	
S 13C3-HFPO-DA	Linear	y = 0.189657 * x	
S 13C4-PFHpA	Linear	y = 0.626400 * x	
S 13C2-6:2FTS	Linear	y = 0.231011 * x	
S 13C8-PFOA	Linear	y = 0.834503 * x	
S 13C3-PFHxS	Linear	y = 1.427529 * x	
S 13C9-PFNA	Linear	y = 0.873147 * x	
S 13C2-8:2FTS	Linear	y = 0.418786 * x	
S 13C6-PEDA	Linear	y = 1.081593 * x	
S d3-MeFOSAA	Linear	y = 0.820993 * x	
S 13C8-PFOS	Linear	y = 0.998507 * x	
S d5-EFOSAA	Linear	y = 0.689777 * x	
S 13C7-PFUInDA	Linear	y = 1.198429 * x	
S 13C2-PFDODA	Linear	y = 1.509094 * x	
S 13C8-FOSA	Linear	y = 1.812771 * x	
S 13C2-PFTeDA	Linear	y = 1.201004 * x	
S d7-MeFOSE	Linear	y = 0.766910 * x	
S d3-MeFOSA	Linear	y = 0.936732 * x	
S d9-EFOSE	Linear	y = 0.982205 * x	
S d5-EFOSA	Linear	y = 0.995397 * x	

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

Initial Calibration Verification

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICV625
 Lab FileID: 4Q43251.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\041923_1633_S4Q625\s6q625.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\041923_1633_S4Q625\4Q43242.d
 2:D:\MassHunter\Data\041923_1633_S4Q625\4Q43243.d
 3:D:\MassHunter\Data\041923_1633_S4Q625\4Q43244.d
 4:D:\MassHunter\Data\041923_1633_S4Q625\4Q43245.d
 5:D:\MassHunter\Data\041923_1633_S4Q625\4Q43246.d
 6:D:\MassHunter\Data\041923_1633_S4Q625\4Q43247.d
 7:D:\MassHunter\Data\041923_1633_S4Q625\4Q43248.d
 8:D:\MassHunter\Data\041923_1633_S4Q625\4Q43249.d

Data File: 4Q43251
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.724	14.5	114.5
13C2-6:2FTS	5.000	6.022	20.4	120.4
13C2-8:2FTS	5.000	5.405	8.1	108.1
13C2-PFDoDA	1.250	1.207	-3.4	96.6
13C2-PFTeDA	1.250	1.193	-4.6	95.4
13C3-PFBS	2.500	2.540	1.6	101.6
13C3-PFHxS	2.500	2.597	3.9	103.9
13C4-PFBA	10.000	9.907	-0.9	99.1
13C4-PFHpA	2.500	2.488	-0.5	99.5
13C5-PFHxA	2.500	2.499	0.0	100.0
13C5-PFPeA	5.000	5.156	3.1	103.1
13C6-PFDA	1.250	1.284	2.7	102.7
13C7-PFUnDA	1.250	1.231	-1.5	98.5
13C8-FOSA	2.500	2.578	3.1	103.1
13C8-PFOA	2.500	2.502	0.1	100.1
13C8-PFOS	2.500	2.561	2.5	102.5
13C9-PFNA	1.250	1.304	4.3	104.3
4:2FTS	9.375	9.592	2.3	102.3
6:2FTS	9.500	9.207	-3.1	96.9
8:2FTS	9.600	10.225	6.5	106.5
d3-MeFOSAA	5.000	5.349	7.0	107.0
EtFOSAA	2.500	2.662	6.5	106.5
FOSA	2.500	2.506	0.2	100.2
MeFOSAA	2.500	2.332	-6.7	93.3
PFBA	10.000	10.254	2.5	102.5
PFBS	2.218	2.301	3.7	103.7
PFDA	2.500	2.320	-7.2	92.8
PFDoDA	2.500	2.581	3.2	103.2
PFDS	2.413	2.346	-2.8	97.2
PFHpA	2.500	2.637	5.5	105.5
PFHpS	2.383	2.295	-3.7	96.3
PFHxA	2.500	2.562	2.5	102.5
PFHxS	2.285	2.325	1.7	101.7
PFNA	2.500	2.477	-0.9	99.1
PFNS	2.405	2.365	-1.7	98.3
PFOA	2.500	2.582	3.3	103.3
PFOS	2.320	2.381	2.6	102.6

Initial Calibration Verification

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICV625
 Lab FileID: 4Q43251.D

PFPeA	5.000	5.080	1.6	101.6
PFPeS	2.353	2.402	2.1	102.1
PFTeDA	2.500	2.594	3.8	103.8
PFTTrDA	2.500	2.631	5.2	105.2
PFUnDA	2.500	2.471	-1.2	98.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.902	3.7	103.7
13C3-HFPO-DA	10.000	10.072	0.7	100.7
9C1-PF3ONS	4.675	4.655	-0.4	99.6
ADONA	4.725	4.934	4.4	104.4
HFPO-DA	5.000	5.208	4.2	104.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.238	-1.9	98.1
5:3FTCA	62.400	65.711	5.3	105.3
7:3FTCA	62.400	65.367	4.8	104.8
d3-MeFOSA	2.500	2.445	-2.2	97.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.932	-1.4	98.6
EtFOSE	12.500	12.685	1.5	101.5
MeFOSA	5.000	5.209	4.2	104.2
MeFOSE	12.500	12.755	2.0	102.0
PFDoDS	2.425	2.470	1.8	101.8
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.299	6.0	106.0
d7-MeFOSE	25.000	25.544	2.2	102.2
d9-EtFOSE	25.000	25.559	2.2	102.2
d5-EtFOSA	2.500	2.630	5.2	105.2
NFDHA	5.000	5.764	15.3	115.3
PFMBA	5.000	5.001	0.0	100.0
PFMPA	5.000	4.954	-0.9	99.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.578	2.9	102.9

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICV625
 Lab FileID: 4Q43252.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\041923_1633_S4Q625\s6q625.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\041923_1633_S4Q625\4Q43242.d
 2:D:\MassHunter\Data\041923_1633_S4Q625\4Q43243.d
 3:D:\MassHunter\Data\041923_1633_S4Q625\4Q43244.d
 4:D:\MassHunter\Data\041923_1633_S4Q625\4Q43245.d
 5:D:\MassHunter\Data\041923_1633_S4Q625\4Q43246.d
 6:D:\MassHunter\Data\041923_1633_S4Q625\4Q43247.d
 7:D:\MassHunter\Data\041923_1633_S4Q625\4Q43248.d
 8:D:\MassHunter\Data\041923_1633_S4Q625\4Q43249.d

Data File: 4Q43252
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.423	8.5	108.5
13C2-6:2FTS	5.000	5.970	19.4	119.4
13C2-8:2FTS	5.000	5.667	13.3	113.3
13C2-PFDoDA	1.250	1.154	-7.7	92.3
13C2-PFTeDA	1.250	1.155	-7.6	92.4
13C3-PFBS	2.500	2.620	4.8	104.8
13C3-PFHxS	2.500	2.682	7.3	107.3
13C4-PFBA	10.000	9.949	-0.5	99.5
13C4-PFHpA	2.500	2.379	-4.9	95.1
13C5-PFHxA	2.500	2.424	-3.0	97.0
13C5-PFPeA	5.000	4.991	-0.2	99.8
13C6-PFDA	1.250	1.141	-8.8	91.2
13C7-PFUnDA	1.250	1.193	-4.6	95.4
13C8-FOSA	2.500	2.503	0.1	100.1
13C8-PFOA	2.500	2.533	1.3	101.3
13C8-PFOS	2.500	2.432	-2.7	97.3
13C9-PFNA	1.250	1.290	3.2	103.2
4:2FTS	20.000	22.731	13.7	113.7
6:2FTS	20.000	19.495	-2.5	97.5
8:2FTS	20.000	20.364	1.8	101.8
d3-MeFOSAA	5.000	4.820	-3.6	96.4
EtFOSAA	20.000	22.496	12.5	112.5
FOSA	20.000	20.942	4.7	104.7
MeFOSAA	20.000	19.794	-1.0	99.0
PFBA	20.000	19.854	-0.7	99.3
PFBS	20.000	22.051	10.3	110.3
PFDA	20.000	22.524	12.6	112.6
PFDoDA	20.000	18.538	-7.3	92.7
PFDS	20.000	20.788	3.9	103.9
PFHpA	20.000	21.059	5.3	105.3
PFHpS	20.000	20.851	4.3	104.3
PFHxA	20.000	22.090	10.5	110.5
PFHxS	20.000	21.608	8.0	108.0
PFNA	20.000	21.902	9.5	109.5
PFNS	20.000	20.914	4.6	104.6
PFOA	20.000	21.688	8.4	108.4
PFOS	20.000	18.422	-7.9	92.1

Initial Calibration Verification

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q625-ICV625
 Lab FileID: 4Q43252.D

PFPeA	20.000	22.194	11.0	111.0
PFPeS	20.000	22.306	11.5	111.5
PFTeDA	20.000	22.252	11.3	111.3
PFTTrDA	20.000	18.969	-5.2	94.8
PFUnDA	20.000	19.483	-2.6	97.4
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	21.562	7.8	107.8
13C3-HFPO-DA	10.000	9.742	-2.6	97.4
9C1-PF3ONS	20.000	20.620	3.1	103.1
ADONA	20.000	21.159	5.8	105.8
HFPO-DA	20.000	20.006	0.0	100.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	20.060	0.3	100.3
5:3FTCA	20.000	21.867	9.3	109.3
7:3FTCA	20.000	21.680	8.4	108.4
d3-MeFOSA	2.500	2.467	-1.3	98.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	20.709	3.5	103.5
EtFOSE	100.000	110.317	10.3	110.3
MeFOSA	20.000	20.550	2.8	102.8
MeFOSE	100.000	108.102	8.1	108.1
PFDoDS	20.000	19.990	0.0	100.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.807	-3.9	96.1
d7-MeFOSE	25.000	24.388	-2.4	97.6
d9-EtFOSE	25.000	23.831	-4.7	95.3
d5-EtFOSA	2.500	2.464	-1.4	98.6
NFDHA	20.000	21.835	9.2	109.2
PFMBA	20.000	21.163	5.8	105.8
PFMPA	20.000	21.123	5.6	105.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	20.000	18.814	-5.9	94.1

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q627-CC625
 Lab FileID: 4Q43429.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042123_1633_S4Q627\s4q627.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\041923_1633_S4Q625\4Q43242.d
 2:D:\MassHunter\Data\041923_1633_S4Q625\4Q43243.d
 3:D:\MassHunter\Data\041923_1633_S4Q625\4Q43244.d
 4:D:\MassHunter\Data\041923_1633_S4Q625\4Q43245.d
 5:D:\MassHunter\Data\041923_1633_S4Q625\4Q43246.d
 6:D:\MassHunter\Data\041923_1633_S4Q625\4Q43247.d
 7:D:\MassHunter\Data\041923_1633_S4Q625\4Q43248.d
 8:D:\MassHunter\Data\041923_1633_S4Q625\4Q43249.d

Data File: 4Q43429
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.875	17.5	117.5
13C2-6:2FTS	5.000	6.152	23.0	123.0
13C2-8:2FTS	5.000	5.215	4.3	104.3
13C2-PFDoDA	1.250	1.213	-3.0	97.0
13C2-PFTeDA	1.250	1.150	-8.0	92.0
13C3-PFBS	2.500	2.570	2.8	102.8
13C3-PFHxS	2.500	2.444	-2.2	97.8
13C4-PFBA	10.000	10.003	0.0	100.0
13C4-PFHpA	2.500	2.455	-1.8	98.2
13C5-PFHxA	2.500	2.467	-1.3	98.7
13C5-PFPeA	5.000	4.903	-1.9	98.1
13C6-PFDA	1.250	1.224	-2.1	97.9
13C7-PFUnDA	1.250	1.165	-6.8	93.2
13C8-FOSA	2.500	2.472	-1.1	98.9
13C8-PFOA	2.500	2.505	0.2	100.2
13C8-PFOS	2.500	2.364	-5.4	94.6
13C9-PFNA	1.250	1.273	1.9	101.9
4:2FTS	0.750	0.590	-21.4	78.6
6:2FTS	0.760	0.612	-19.5	80.5
8:2FTS	0.768	0.698	-9.2	90.8
d3-MeFOSAA	5.000	5.387	7.7	107.7
EtFOSAA	0.200	0.159	-20.3	79.7
FOSA	0.200	0.155	-22.6	77.4
MeFOSAA	0.200	0.176	-12.2	87.8
PFBA	0.800	0.668	-16.5	83.5
PFBS	0.177	0.151	-14.6	85.4
PFDA	0.200	0.152	-24.1	75.9
PFDoDA	0.200	0.151	-24.6	75.4
PFDS	0.193	0.150	-22.2	77.8
PFHpA	0.200	0.157	-21.3	78.7
PFHpS	0.191	0.150	-21.5	78.5
PFHxA	0.200	0.148	-25.9	74.1
PFHxS	0.183	0.160	-12.3	87.7
PFNA	0.200	0.151	-24.5	75.5
PFNS	0.192	0.179	-7.0	93.0
PFOA	0.200	0.168	-16.0	84.0
PFOS	0.186	0.149	-20.1	79.9

Continuing Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q627-CC625
 Lab FileID: 4Q43429.D

PFPeA	0.400	0.318	-20.4	79.6
PFPeS	0.188	0.175	-6.8	93.2
PFTeDA	0.200	0.153	-23.6	76.4
PFTrDA	0.200	0.156	-22.0	78.0
PFUnDA	0.200	0.147	-26.4	73.6
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	0.378	0.328	-13.2	86.8
13C3-HFPO-DA	10.000	8.570	-14.3	85.7
9C1-PF3ONS	0.367	0.313	-14.7	85.3
ADONA	0.378	0.326	-13.8	86.2
HFPO-DA	0.400	0.293	-26.7	73.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.707	-29.1	70.9
5:3FTCA	4.992	3.641	-27.1	72.9
7:3FTCA	4.992	3.566	-28.6	71.4
d3-MeFOSA	2.500	2.455	-1.8	98.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.341	-14.7	85.3
EtFOSE	1.000	0.828	-17.2	82.8
MeFOSA	0.400	0.328	-18.1	81.9
MeFOSE	1.000	0.707	-29.3	70.7
PFDoDS	0.194	0.151	-22.4	77.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.387	7.7	107.7
d7-MeFOSE	25.000	23.793	-4.8	95.2
d9-EtFOSE	25.000	24.712	-1.2	98.8
d5-EtFOSA	2.500	2.496	-0.2	99.8
NFDHA	0.400	0.305	-23.7	76.3
PFMBA	0.400	0.310	-22.6	77.4
PFMPA	0.400	0.311	-22.3	77.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.276	-22.6	77.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q627-CC625
 Lab FileID: 4Q43440.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042123_1633_S4Q627\s4q627.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\041923_1633_S4Q625\4Q43242.d
 2:D:\MassHunter\Data\041923_1633_S4Q625\4Q43243.d
 3:D:\MassHunter\Data\041923_1633_S4Q625\4Q43244.d
 4:D:\MassHunter\Data\041923_1633_S4Q625\4Q43245.d
 5:D:\MassHunter\Data\041923_1633_S4Q625\4Q43246.d
 6:D:\MassHunter\Data\041923_1633_S4Q625\4Q43247.d
 7:D:\MassHunter\Data\041923_1633_S4Q625\4Q43248.d
 8:D:\MassHunter\Data\041923_1633_S4Q625\4Q43249.d

Data File: 4Q43440
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.519	10.4	110.4
13C2-6:2FTS	5.000	5.747	14.9	114.9
13C2-8:2FTS	5.000	5.650	13.0	113.0
13C2-PFDoDA	1.250	1.172	-6.2	93.8
13C2-PFTeDA	1.250	1.115	-10.8	89.2
13C3-PFBS	2.500	2.507	0.3	100.3
13C3-PFHxS	2.500	2.489	-0.5	99.5
13C4-PFBA	10.000	10.197	2.0	102.0
13C4-PFHpA	2.500	2.440	-2.4	97.6
13C5-PFHxA	2.500	2.516	0.6	100.6
13C5-PFPeA	5.000	4.812	-3.8	96.2
13C6-PFDA	1.250	1.181	-5.5	94.5
13C7-PFUnDA	1.250	1.107	-11.4	88.6
13C8-FOSA	2.500	2.284	-8.6	91.4
13C8-PFOA	2.500	2.497	-0.1	99.9
13C8-PFOS	2.500	2.266	-9.4	90.6
13C9-PFNA	1.250	1.243	-0.6	99.4
4:2FTS	9.375	10.410	11.0	111.0
6:2FTS	9.500	9.514	0.1	100.1
8:2FTS	9.600	9.796	2.0	102.0
d3-MeFOSAA	5.000	5.119	2.4	102.4
EtFOSAA	2.500	2.781	11.2	111.2
FOSA	2.500	2.484	-0.6	99.4
MeFOSAA	2.500	2.260	-9.6	90.4
PFBA	10.000	9.881	-1.2	98.8
PFBS	2.218	2.276	2.6	102.6
PFDA	2.500	2.426	-3.0	97.0
PFDoDA	2.500	2.529	1.2	101.2
PFDS	2.413	2.586	7.2	107.2
PFHpA	2.500	2.529	1.2	101.2
PFHpS	2.383	2.456	3.1	103.1
PFHxA	2.500	2.345	-6.2	93.8
PFHxS	2.285	2.422	6.0	106.0
PFNA	2.500	2.465	-1.4	98.6
PFNS	2.405	2.330	-3.1	96.9
PFOA	2.500	2.634	5.4	105.4
PFOS	2.320	2.470	6.5	106.5

Continuing Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q627-CC625
 Lab FileID: 4Q43440.D

PFPeA	5.000	5.090	1.8	101.8
PFPeS	2.353	2.493	5.9	105.9
PFTeDA	2.500	2.494	-0.2	99.8
PFTTrDA	2.500	2.617	4.7	104.7
PFUnDA	2.500	2.402	-3.9	96.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.648	19.5	119.5
13C3-HFPO-DA	10.000	8.181	-18.2	81.8
9C1-PF3ONS	4.675	5.476	17.1	117.1
ADONA	4.725	5.766	22.0	122.0
HFPO-DA	5.000	5.262	5.2	105.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.866	-4.9	95.1
5:3FTCA	62.400	61.108	-2.1	97.9
7:3FTCA	62.400	59.250	-5.0	95.0
d3-MeFOSA	2.500	2.270	-9.2	90.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.276	5.5	105.5
EtFOSE	12.500	12.959	3.7	103.7
MeFOSA	5.000	5.101	2.0	102.0
MeFOSE	12.500	11.950	-4.4	95.6
PFDODS	2.425	2.488	2.6	102.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.107	2.1	102.1
d7-MeFOSE	25.000	21.408	-14.4	85.6
d9-EtFOSE	25.000	21.957	-12.2	87.8
d5-EtFOSA	2.500	2.301	-7.9	92.1
NFDHA	5.000	5.477	9.5	109.5
PFMBA	5.000	4.986	-0.3	99.7
PFMPA	5.000	4.987	-0.3	99.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.311	-3.1	96.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q627-CC625
 Lab FileID: 4Q43450.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\042123_1633_S4Q627\s4q627.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\041923_1633_S4Q625\4Q43242.d
 2:D:\MassHunter\Data\041923_1633_S4Q625\4Q43243.d
 3:D:\MassHunter\Data\041923_1633_S4Q625\4Q43244.d
 4:D:\MassHunter\Data\041923_1633_S4Q625\4Q43245.d
 5:D:\MassHunter\Data\041923_1633_S4Q625\4Q43246.d
 6:D:\MassHunter\Data\041923_1633_S4Q625\4Q43247.d
 7:D:\MassHunter\Data\041923_1633_S4Q625\4Q43248.d
 8:D:\MassHunter\Data\041923_1633_S4Q625\4Q43249.d

Data File: 4Q43450
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.552	11.0	111.0
13C2-6:2FTS	5.000	5.200	4.0	104.0
13C2-8:2FTS	5.000	5.408	8.2	108.2
13C2-PFDoDA	1.250	1.201	-3.9	96.1
13C2-PFTeDA	1.250	1.169	-6.5	93.5
13C3-PFBS	2.500	2.431	-2.8	97.2
13C3-PFHxS	2.500	2.378	-4.9	95.1
13C4-PFBA	10.000	10.035	0.4	100.4
13C4-PFHpA	2.500	2.523	0.9	100.9
13C5-PFHxA	2.500	2.589	3.6	103.6
13C5-PFPeA	5.000	5.053	1.1	101.1
13C6-PFDA	1.250	1.185	-5.2	94.8
13C7-PFUnDA	1.250	1.283	2.6	102.6
13C8-FOSA	2.500	2.348	-6.1	93.9
13C8-PFOA	2.500	2.579	3.1	103.1
13C8-PFOS	2.500	2.470	-1.2	98.8
13C9-PFNA	1.250	1.275	2.0	102.0
4:2FTS	9.375	9.595	2.3	102.3
6:2FTS	9.500	10.125	6.6	106.6
8:2FTS	9.600	10.167	5.9	105.9
d3-MeFOSAA	5.000	5.595	11.9	111.9
EtFOSAA	2.500	2.635	5.4	105.4
FOSA	2.500	2.557	2.3	102.3
MeFOSAA	2.500	2.449	-2.0	98.0
PFBA	10.000	9.991	-0.1	99.9
PFBS	2.218	2.254	1.6	101.6
PFDA	2.500	2.522	0.9	100.9
PFDoDA	2.500	2.614	4.6	104.6
PFDS	2.413	2.237	-7.3	92.7
PFHpA	2.500	2.449	-2.0	98.0
PFHpS	2.383	2.410	1.1	101.1
PFHxA	2.500	2.361	-5.5	94.5
PFHxS	2.285	2.443	6.9	106.9
PFNA	2.500	2.385	-4.6	95.4
PFNS	2.405	2.194	-8.8	91.2
PFOA	2.500	2.618	4.7	104.7
PFOS	2.320	2.355	1.5	101.5

Continuing Calibration Summary

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q627-CC625
 Lab FileID: 4Q43450.D

PFPeA	5.000	5.066	1.3	101.3
PFPeS	2.353	2.565	9.0	109.0
PFTeDA	2.500	2.535	1.4	101.4
PFTTrDA	2.500	2.692	7.7	107.7
PFUnDA	2.500	2.454	-1.9	98.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.571	17.9	117.9
13C3-HFPO-DA	10.000	8.497	-15.0	85.0
9C1-PF3ONS	4.675	5.374	15.0	115.0
ADONA	4.725	5.731	21.3	121.3
HFPO-DA	5.000	5.027	0.5	100.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.909	-4.6	95.4
5:3FTCA	62.400	60.988	-2.3	97.7
7:3FTCA	62.400	60.243	-3.5	96.5
d3-MeFOSA	2.500	2.433	-2.7	97.3
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.513	10.3	110.3
EtFOSE	12.500	13.096	4.8	104.8
MeFOSA	5.000	5.053	1.1	101.1
MeFOSE	12.500	12.340	-1.3	98.7
PFDODS	2.425	2.328	-4.0	96.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.360	7.2	107.2
d7-MeFOSE	25.000	22.731	-9.1	90.9
d9-EtFOSE	25.000	22.861	-8.6	91.4
d5-EtFOSA	2.500	2.333	-6.7	93.3
NFDHA	5.000	5.544	10.9	110.9
PFMBA	5.000	4.936	-1.3	98.7
PFMPA	5.000	4.912	-1.8	98.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.325	-2.8	97.2

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q625	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q625-RT	4Q43239.D	04/19/23 11:12	n/a	Retention Time Marker
S4Q625-RT	4Q43240.D	04/19/23 11:26	n/a	Retention Time Marker
S4Q625-IC625	4Q43241.D	04/19/23 11:40	n/a	Mass Calibration Verification
S4Q625-IC625	4Q43242.D	04/19/23 11:54	n/a	Initial cal 1
S4Q625-IC625	4Q43243.D	04/19/23 12:08	n/a	Initial cal 2
S4Q625-IC625	4Q43244.D	04/19/23 12:22	n/a	Initial cal 3
S4Q625-ICC625	4Q43245.D	04/19/23 12:37	n/a	Initial cal 4
S4Q625-IC625	4Q43246.D	04/19/23 12:51	n/a	Initial cal 5
S4Q625-IC625	4Q43247.D	04/19/23 13:05	n/a	Initial cal 6
S4Q625-IC625	4Q43248.D	04/19/23 13:19	n/a	Initial cal 7
S4Q625-IC625	4Q43249.D	04/19/23 13:33	n/a	Initial cal 8
S4Q625-IBLK	4Q43250.D	04/19/23 13:47	n/a	Instrument Blank
S4Q625-IBLK	4Q43250.D	04/19/23 13:47	n/a	Instrument Blank
S4Q625-ICV625	4Q43251.D	04/19/23 14:01	n/a	Initial cal verification 4
S4Q625-ICV625	4Q43252.D	04/19/23 14:15	n/a	Initial cal verification 20
S4Q625-CC625	4Q43253.D	04/19/23 14:29	n/a	Continuing cal 4
S4Q625-CC625	4Q43254.D	04/19/23 14:43	n/a	Continuing cal 1.0LL
OP96455-BS	4Q43255.D	04/19/23 15:00	OP96455	Blank Spike
OP96455-LLBS	4Q43256.D	04/19/23 15:14	OP96455	Blank Spike
OP96455-MB	4Q43257.D	04/19/23 15:29	OP96455	Method Blank
ZZZZZZ	4Q43258.D	04/19/23 15:43	OP96455	(unrelated sample)
ZZZZZZ	4Q43259.D	04/19/23 15:57	OP96455	(unrelated sample)
ZZZZZZ	4Q43261.D	04/19/23 16:25	OP96455	(unrelated sample)
ZZZZZZ	4Q43262.D	04/19/23 16:39	OP96455	(unrelated sample)
ZZZZZZ	4Q43263.D	04/19/23 16:53	OP96455	(unrelated sample)
S4Q625-CC625	4Q43264.D	04/19/23 17:08	n/a	Continuing cal 4
S4Q625-ICCB	4Q43265.D	04/19/23 17:22	n/a	Continuing Calibration Blank
OP96452-BS	4Q43266.D	04/19/23 17:36	OP96452	Blank Spike
OP96452-LLBS	4Q43267.D	04/19/23 17:50	OP96452	Blank Spike
OP96452-MB	4Q43268.D	04/19/23 18:04	OP96452	Method Blank
ZZZZZZ	4Q43269.D	04/19/23 18:18	OP96452	(unrelated sample)
ZZZZZZ	4Q43270.D	04/19/23 18:32	OP96322	(unrelated sample)
ZZZZZZ	4Q43271.D	04/19/23 18:46	OP96322	(unrelated sample)
ZZZZZZ	4Q43273.D	04/19/23 19:14	OP96386	(unrelated sample)
ZZZZZZ	4Q43274.D	04/19/23 19:28	OP96386	(unrelated sample)
ZZZZZZ	4Q43275.D	04/19/23 19:42	OP96386	(unrelated sample)
S4Q625-CC625	4Q43276.D	04/19/23 19:56	n/a	Continuing cal 4
S4Q625-ICCB	4Q43277.D	04/19/23 20:10	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43278.D	04/19/23 20:24	OP96386	(unrelated sample)
ZZZZZZ	4Q43279.D	04/19/23 20:38	OP96386	(unrelated sample)
ZZZZZZ	4Q43280.D	04/19/23 20:52	OP96386	(unrelated sample)
ZZZZZZ	4Q43281.D	04/19/23 21:06	OP96386	(unrelated sample)
S4Q625-CC625	4Q43282.D	04/19/23 21:21	n/a	Continuing cal 4
S4Q625-CC625	4Q43283.D	04/19/23 21:35	n/a	Continuing cal 1.0LL
S4Q625-ICCB	4Q43284.D	04/19/23 21:49	n/a	Continuing Calibration Blank
OP96429-BS	4Q43285.D	04/19/23 22:03	OP96429	Blank Spike

Run Sequence Report

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q625	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
OP96429-LLBS	4Q43286.D	04/19/23 22:17	OP96429	Blank Spike
OP96429-MB	4Q43287.D	04/19/23 22:31	OP96429	Method Blank
JD63290-1A	4Q43288.D	04/19/23 22:45	OP96429	(used for QC only; not part of job FC5316)
OP96429-MS	4Q43289.D	04/19/23 22:59	OP96429	Matrix Spike
JD63290-2A	4Q43290.D	04/19/23 23:13	OP96429	(used for QC only; not part of job FC5316)
OP96429-DUP	4Q43291.D	04/19/23 23:27	OP96429	Duplicate
ZZZZZZ	4Q43292.D	04/19/23 23:41	OP96429	(unrelated sample)
ZZZZZZ	4Q43293.D	04/19/23 23:55	OP96429	(unrelated sample)
S4Q625-CC625	4Q43294.D	04/20/23 00:09	n/a	Continuing cal 4
S4Q625-ICCB	4Q43295.D	04/20/23 00:23	n/a	Continuing Calibration Blank
OP96382-BS	4Q43296.D	04/20/23 00:37	OP96382	Blank Spike
OP96382-LLBS	4Q43297.D	04/20/23 00:51	OP96382	Blank Spike
OP96382-MB	4Q43298.D	04/20/23 01:05	OP96382	Method Blank
ZZZZZZ	4Q43299.D	04/20/23 01:20	OP96382	(unrelated sample)
ZZZZZZ	4Q43300.D	04/20/23 01:34	OP96382	(unrelated sample)
ZZZZZZ	4Q43301.D	04/20/23 01:48	OP96382	(unrelated sample)
ZZZZZZ	4Q43302.D	04/20/23 02:02	OP96382	(unrelated sample)
ZZZZZZ	4Q43303.D	04/20/23 02:16	OP96382	(unrelated sample)
ZZZZZZ	4Q43304.D	04/20/23 02:30	OP96382	(unrelated sample)
ZZZZZZ	4Q43305.D	04/20/23 02:44	OP96382	(unrelated sample)
S4Q625-CC625	4Q43306.D	04/20/23 02:58	n/a	Continuing cal 4
S4Q625-ICCB	4Q43307.D	04/20/23 03:12	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43308.D	04/20/23 03:26	OP96382	(unrelated sample)
ZZZZZZ	4Q43309.D	04/20/23 03:40	OP96382	(unrelated sample)
ZZZZZZ	4Q43310.D	04/20/23 03:54	OP96382	(unrelated sample)
ZZZZZZ	4Q43311.D	04/20/23 04:08	OP96382	(unrelated sample)
ZZZZZZ	4Q43312.D	04/20/23 04:22	OP96382	(unrelated sample)
ZZZZZZ	4Q43313.D	04/20/23 04:36	OP96382	(unrelated sample)
ZZZZZZ	4Q43314.D	04/20/23 04:50	OP96382	(unrelated sample)
FC3817-15	4Q43315.D	04/20/23 05:04	OP96382	(used for QC only; not part of job FC5316)
OP96382-MS	4Q43316.D	04/20/23 05:18	OP96382	Matrix Spike
OP96382-MSD	4Q43317.D	04/20/23 05:33	OP96382	Matrix Spike Duplicate
S4Q625-CC625	4Q43318.D	04/20/23 05:47	n/a	Continuing cal 4
S4Q625-ICCB	4Q43319.D	04/20/23 06:01	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43320.D	04/20/23 06:15	OP96382	(unrelated sample)
ZZZZZZ	4Q43321.D	04/20/23 06:29	OP96382	(unrelated sample)
S4Q625-ECC625	4Q43322.D	04/20/23 06:43	n/a	Ending cal 4
S4Q625-ICCB	4Q43323.D	04/20/23 06:57	n/a	Continuing Calibration Blank

6-10-1
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Run Sequence Report

Job Number: FC5316
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q627	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q627-RT	4Q43424.D	04/21/23 14:58	n/a	Retention Time Marker
S4Q627-RT	4Q43425.D	04/21/23 15:12	n/a	Retention Time Marker
S4Q627-IBLK	4Q43427.D	04/21/23 15:41	n/a	Instrument Blank
S4Q627-IBLK	4Q43427.D	04/21/23 15:41	n/a	Instrument Blank
S4Q627-CC625	4Q43428.D	04/21/23 15:55	n/a	Continuing cal 4
S4Q627-CC625	4Q43429.D	04/21/23 16:09	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q43430.D	04/21/23 16:25	OP96296	(unrelated sample)
ZZZZZZ	4Q43431.D	04/21/23 16:39	OP96383	(unrelated sample)
ZZZZZZ	4Q43432.D	04/21/23 16:53	OP96383	(unrelated sample)
ZZZZZZ	4Q43433.D	04/21/23 17:07	OP96383	(unrelated sample)
ZZZZZZ	4Q43434.D	04/21/23 17:21	OP96426	(unrelated sample)
ZZZZZZ	4Q43435.D	04/21/23 17:35	OP96426	(unrelated sample)
ZZZZZZ	4Q43436.D	04/21/23 17:49	OP96426	(unrelated sample)
ZZZZZZ	4Q43437.D	04/21/23 18:03	OP96426	(unrelated sample)
ZZZZZZ	4Q43438.D	04/21/23 18:17	OP96426	(unrelated sample)
ZZZZZZ	4Q43439.D	04/21/23 18:31	OP96426	(unrelated sample)
S4Q627-CC625	4Q43440.D	04/21/23 18:45	n/a	Continuing cal 4
S4Q627-ICCB	4Q43441.D	04/21/23 18:59	n/a	Continuing Calibration Blank
OP96472-BS	4Q43443.D	04/21/23 19:27	OP96472	Blank Spike
OP96472-LLBS	4Q43444.D	04/21/23 19:41	OP96472	Blank Spike
OP96472-MB	4Q43445.D	04/21/23 19:55	OP96472	Method Blank
FC5316-1	4Q43446.D	04/21/23 20:09	OP96472	AF-RHMW03-WGN01LF-2304W3
OP96472-MS	4Q43447.D	04/21/23 20:23	OP96472	Matrix Spike
FC5316-2	4Q43448.D	04/21/23 20:37	OP96472	AF-RHMW02-WGN01LF-2304W3
OP96472-DUP	4Q43449.D	04/21/23 20:51	OP96472	Duplicate
S4Q627-CC625	4Q43450.D	04/21/23 21:05	n/a	Continuing cal 4
S4Q627-ICCB	4Q43451.D	04/21/23 21:20	n/a	Continuing Calibration Blank
OP96492-BS	4Q43452.D	04/21/23 21:34	OP96492	Blank Spike
OP96492-LLBS	4Q43453.D	04/21/23 21:48	OP96492	Blank Spike
OP96492-MB	4Q43454.D	04/21/23 22:02	OP96492	Method Blank
FC5352-1	4Q43455.D	04/21/23 22:16	OP96492	(used for QC only; not part of job FC5316)
OP96492-MS	4Q43456.D	04/21/23 22:30	OP96492	Matrix Spike
FC5352-2	4Q43457.D	04/21/23 22:44	OP96492	(used for QC only; not part of job FC5316)
OP96492-DUP	4Q43458.D	04/21/23 22:58	OP96492	Duplicate
S4Q627-ECC625	4Q43459.D	04/21/23 23:12	n/a	Ending cal 4
S4Q627-ICCB	4Q43461.D	04/21/23 23:40	n/a	Continuing Calibration Blank

MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43446.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 8:09:52 PM
 Sample Name : fc5316-1
 Vial : P4-D4
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96472,S4q627,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.990	216.8 -> 171.9	54598	10.00 µg/L	0.066
M5-PFPeA	4.424	268.3 -> 223.0	51567	5.00 µg/L	0.012
M5-PFHxA	5.584	318.0 -> 273.0	48544	2.50 µg/L	-0.012
M4-PFHpA	6.517	367.1 -> 322.0	26149	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	34040	2.50 µg/L	-0.026
M9-PFNA	7.733	472.1 -> 427.0	18121	1.25 µg/L	-0.013
M6-PFDA	8.240	519.1 -> 474.1	18561	1.25 µg/L	-0.012
M7-PFUnDA	8.710	570.0 -> 525.1	19589	1.25 µg/L	-0.025
M2-PFDoDA	9.168	615.1 -> 570.0	22282	1.25 µg/L	-0.012
M2-PFTeDA	9.961	715.2 -> 670.0	14597	1.25 µg/L	-0.025
M8-FOSA	9.783	506.1 -> 77.8	13625	2.50 µg/L	-0.012
M3-PFBS	5.490	302.1 -> 79.9	10086	2.50 µg/L	-0.012
M3-PFHxS	7.279	402.1 -> 79.9	6199	2.50 µg/L	-0.012
M8-PFOS	8.392	507.1 -> 79.9	8215	2.50 µg/L	-0.012
M2-4:2FTS	5.273	329.1 -> 80.9	1269	5.00 µg/L	-0.012
M2-6:2FTS	6.948	429.1 -> 80.9	1686	5.00 µg/L	-0.012
M2-8:2FTS	8.027	529.1 -> 80.9	2878	5.00 µg/L	-0.012
M3-MeFOSAA	8.298	573.2 -> 419.0	14936	5.00 µg/L	-0.012
M3-HFPO-DA	5.939	286.9 -> 168.9	22518	10.00 µg/L	-0.025
M5-EtFOSAA	8.507	589.2 -> 419.0	11820	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	52999	25.00 µg/L	-0.025
M9-EtFOSE	11.256	639.2 -> 58.9	73564	25.00 µg/L	-0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7365	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	6379	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	8342	2.50 µg/L	-0.012
13C3-PFBA	2.993	216.0 -> 172.0	41837	5.00 µg/L	0.065
18O2-PFHxS	7.278	403.0 -> 83.9	3893	2.50 µg/L	-0.012
13C4-PFOA	7.176	417.1 -> 372.0	40369	2.50 µg/L	-0.026
13C2-PFDA	8.241	515.1 -> 470.1	15798	1.25 µg/L	-0.012
13C5-PFNA	7.734	468.0 -> 423.0	19516	1.25 µg/L	-0.013
13C2-PFHxA	5.585	315.1 -> 270.0	39178	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1269	5.55 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.1%		
13C2-6:2FTS	6.948	429.1 -> 80.9	1686	4.69 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.7%		
13C2-8:2FTS	8.027	529.1 -> 80.9	2878	4.41 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.3%		
13C2-PFDoDA	9.168	615.1 -> 570.0	22282	1.17 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.5%		
13C2-PFTeDA	9.961	715.2 -> 670.0	14597	0.96 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.9%		
13C3-PFBS	5.490	302.1 -> 79.9	10086	2.80 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.9%		
13C3-PFHxS	7.279	402.1 -> 79.9	6199	2.79 µg/L	-0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.5%		
13C4-PFBA	2.990	216.8 -> 171.9	54598	7.24	µg/L	0.066
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 72.4%		
13C4-PFHpA	6.517	367.1 -> 322.0	26149	2.66	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.6%		
13C5-PFHxA	5.584	318.0 -> 273.0	48544	2.64	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.5%		
13C5-PFPeA	4.424	268.3 -> 223.0	51567	4.30	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.1%		
13C6-PFDA	8.240	519.1 -> 474.1	18561	1.36	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.6%		
13C7-PFUnDA	8.710	570.0 -> 525.1	19589	1.29	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C8-FOSA	9.783	506.1 -> 77.8	13625	2.25	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.1%		
13C8-PFOA	7.175	421.1 -> 376.0	34040	2.53	µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%		
13C8-PFOS	8.392	507.1 -> 79.9	8215	2.47	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C9-PFNA	7.733	472.1 -> 427.0	18121	1.33	µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.3%		
d3-MeFOSAA	8.298	573.2 -> 419.0	14936	5.45	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.0%		
13C3-HFPO-DA	5.939	286.9 -> 168.9	22518	7.58	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 75.8%		
d3-MeFOSA	11.064	515.0 -> 219.0	6379	2.04	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.6%		
d5-EtFOSAA	8.507	589.2 -> 419.0	11820	5.14	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
d7-MeFOSE	10.947	623.2 -> 58.9	52999	20.71	µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.8%		
d9-EtFOSE	11.256	639.2 -> 58.9	73564	22.45	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.8%		
d5-EtFOSA	11.360	531.1 -> 219.0	7365	2.22	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.7%		

Target Compounds	RT	Transition	Response	Conc.	Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.		
		327.1 -> 80.9				
6:2FTS	6.949	427.1 -> 407.0	384	0.30	µg/L	89
		427.1 -> 80.9	193			
8:2FTS	-	527.1 -> 507.0	-	N.D.		
		527.1 -> 80.8				
EtFOSAA	-	584.2 -> 419.1	-	N.D.		
		584.2 -> 526.0				
FOSA	9.774	498.1 -> 77.9	634	0.14	µg/L	# 90
		498.1 -> 478.0	37			
MeFOSAA	-	570.1 -> 419.0	-	N.D.		
		570.1 -> 483.0				
PFBA	3.221	212.8 -> 168.9	0	µg/L	m	1
PFBS	5.602	298.7 -> 79.9	0	µg/L	m	1
		298.7 -> 98.8	0			
PFDA	8.590	512.9 -> 469.0	0	µg/L	m	1
		512.9 -> 219.0	0			
PFDODA	9.169	613.1 -> 569.0	0	µg/L	m	1
		613.1 -> 319.0	0			
PFDS	-	599.0 -> 79.9	-	N.D.		

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.517	599.0 -> 98.8				
		363.1 -> 319.0	1378	0.10	µg/L #m	56
PFHpS	-	363.1 -> 169.0	504			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.587	449.0 -> 98.9				
		313.0 -> 269.0	3345	0.22	µg/L	96
PFHxS	-	313.0 -> 118.9	65			
		398.7 -> 79.9	-	N.D.		
PFNA	7.685	398.7 -> 98.9				
		463.0 -> 419.0	0		µg/L m	1
PFNS	-	463.0 -> 219.0	0			
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.464	498.9 -> 98.8				
		263.0 -> 219.0	0		µg/L m	1
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.909	563.1 -> 519.0	0		µg/L m	1
		563.1 -> 269.1	0			
11CI-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9CI-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	3.611	241.0 -> 177.0	0		µg/L m	1
		241.0 -> 117.0	0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEESA	-					

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

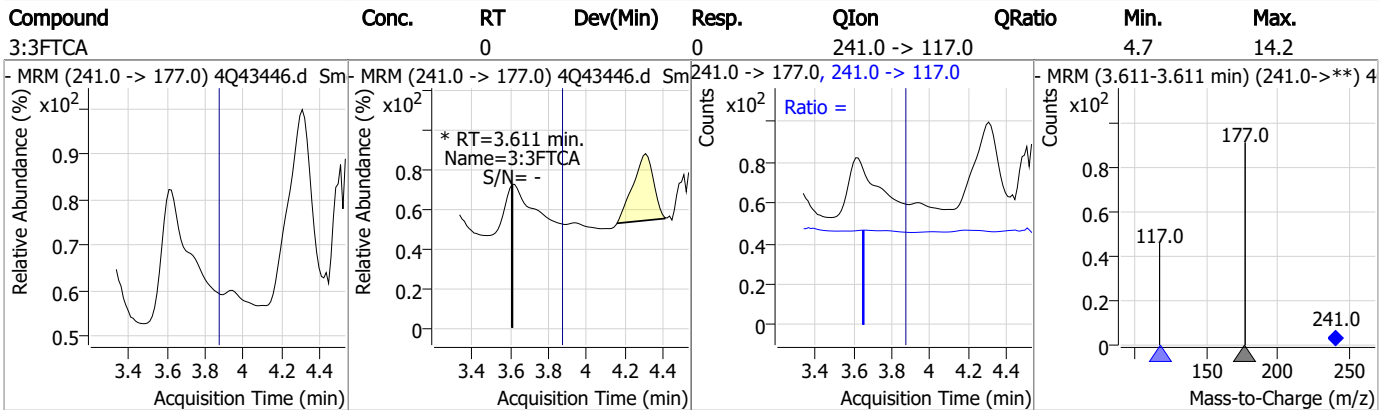
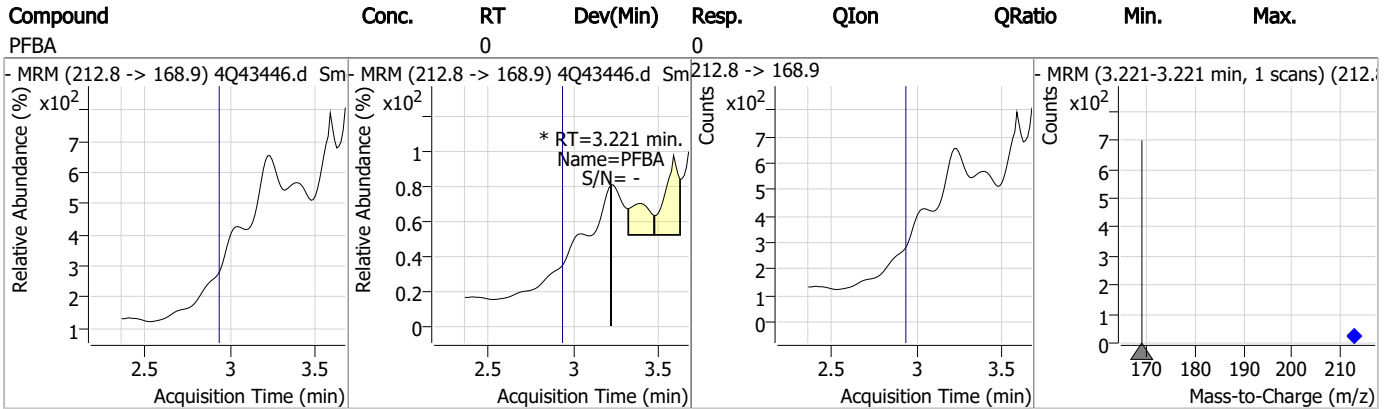
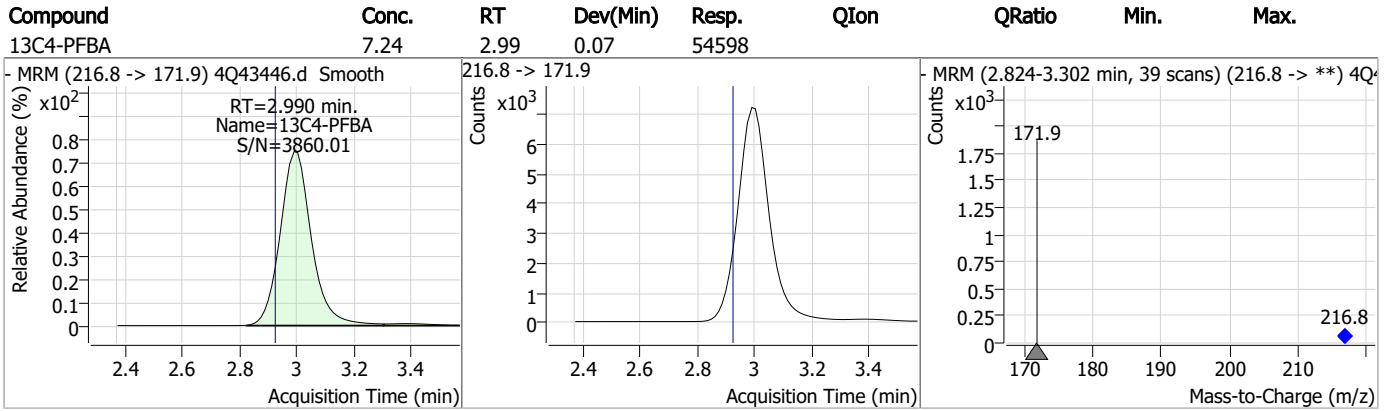
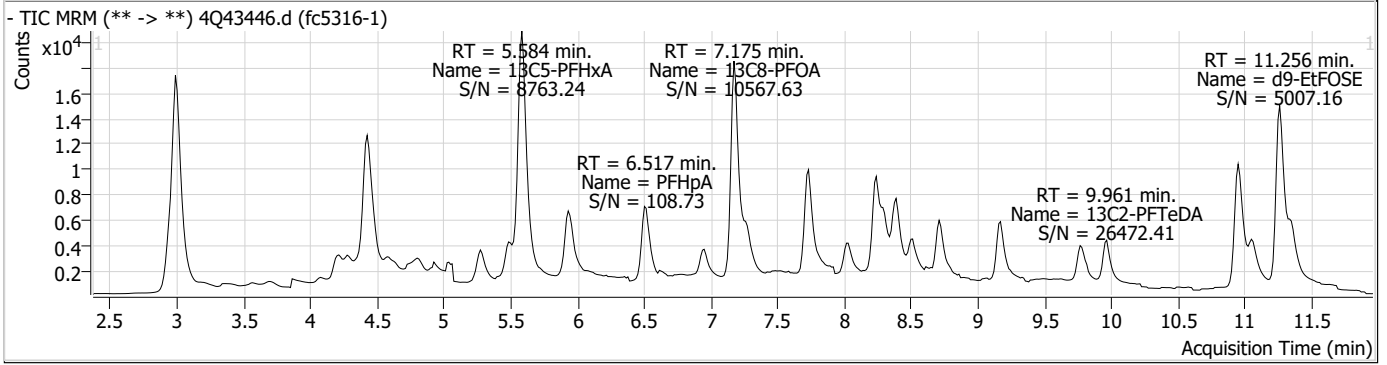
Perfluorinated Compounds by LC/MS/MS

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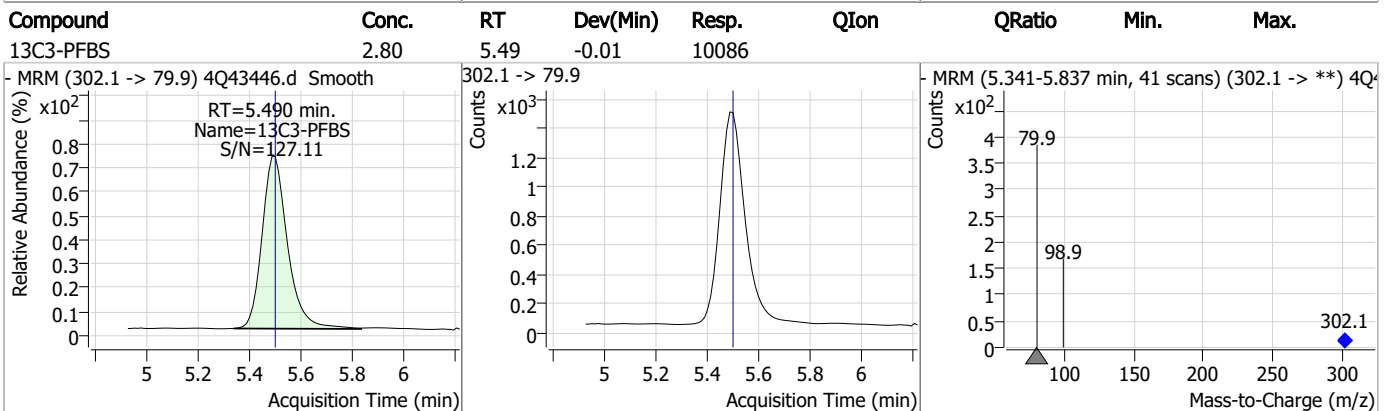
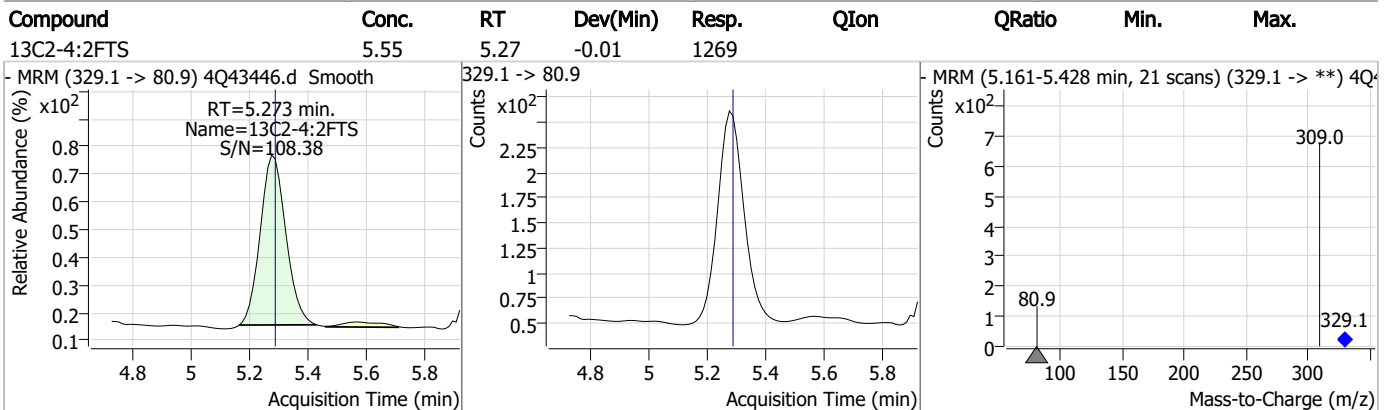
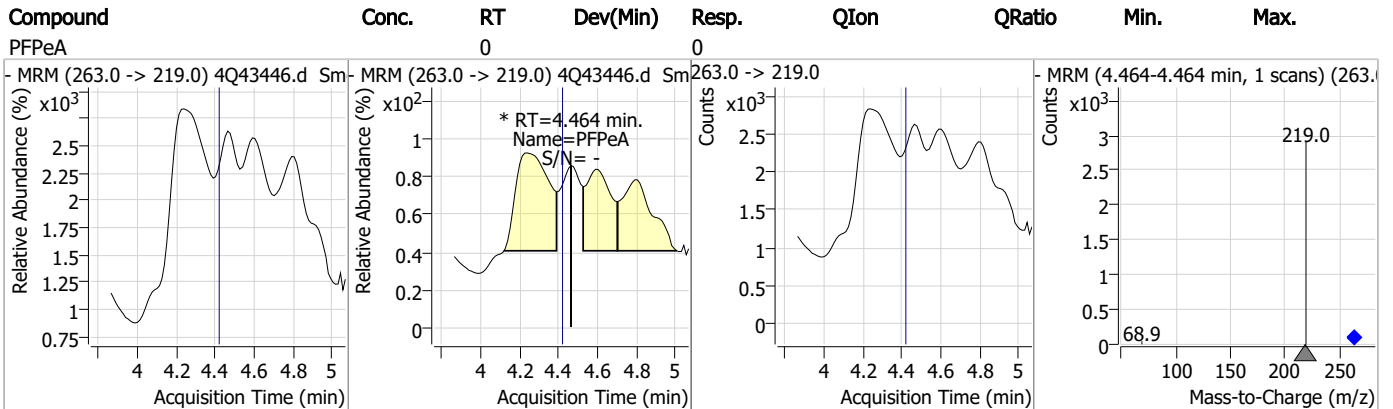
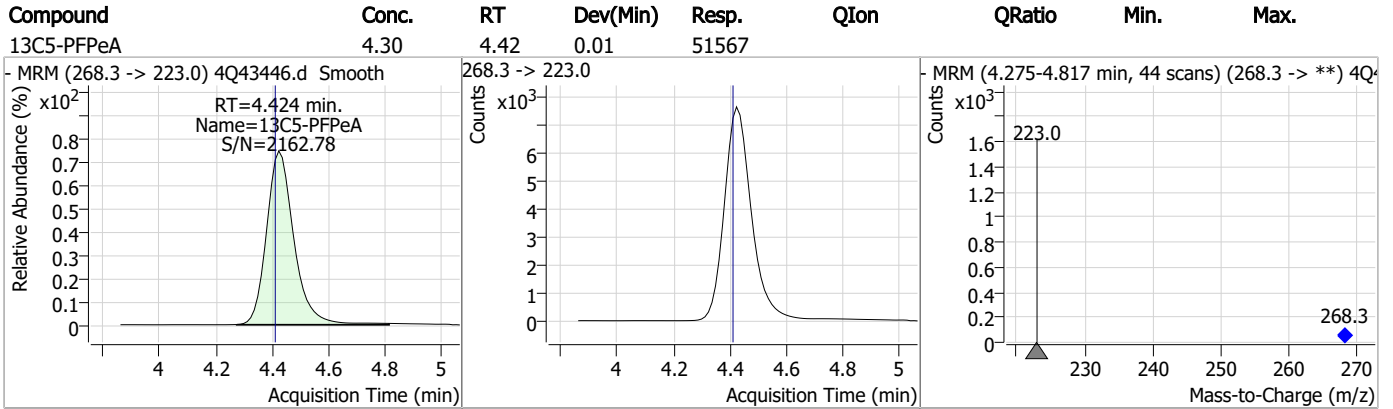
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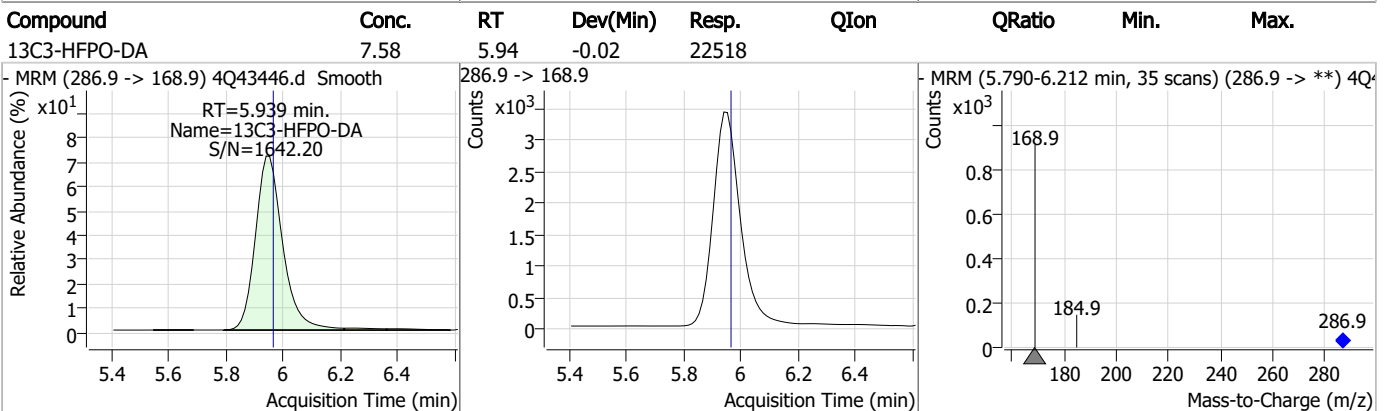
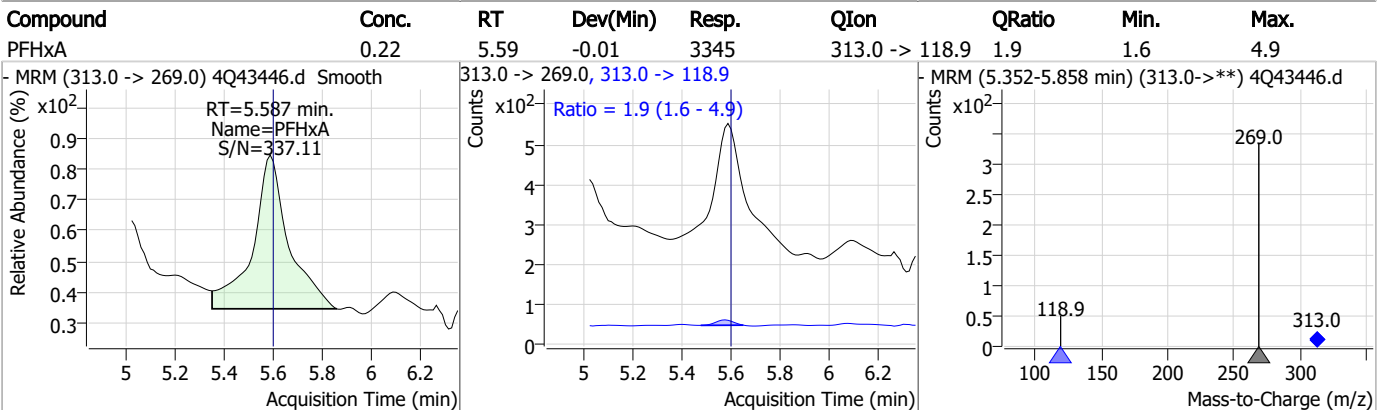
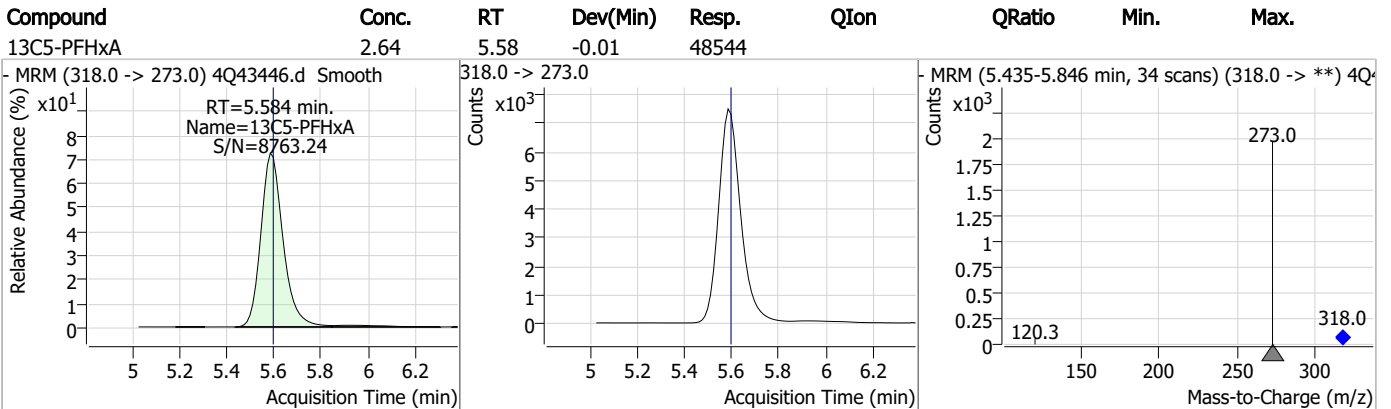
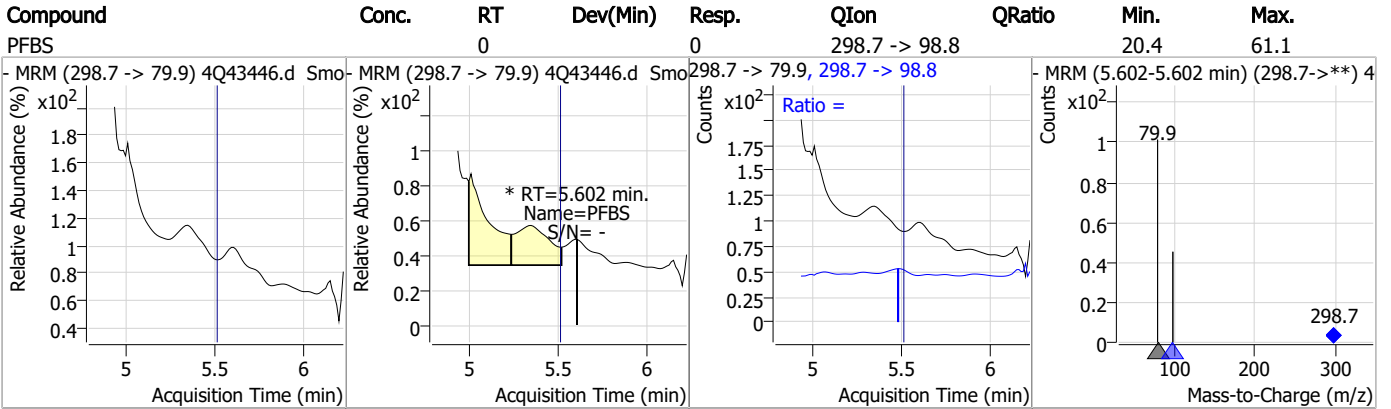
Perfluorinated Compounds by LC/MS/MS



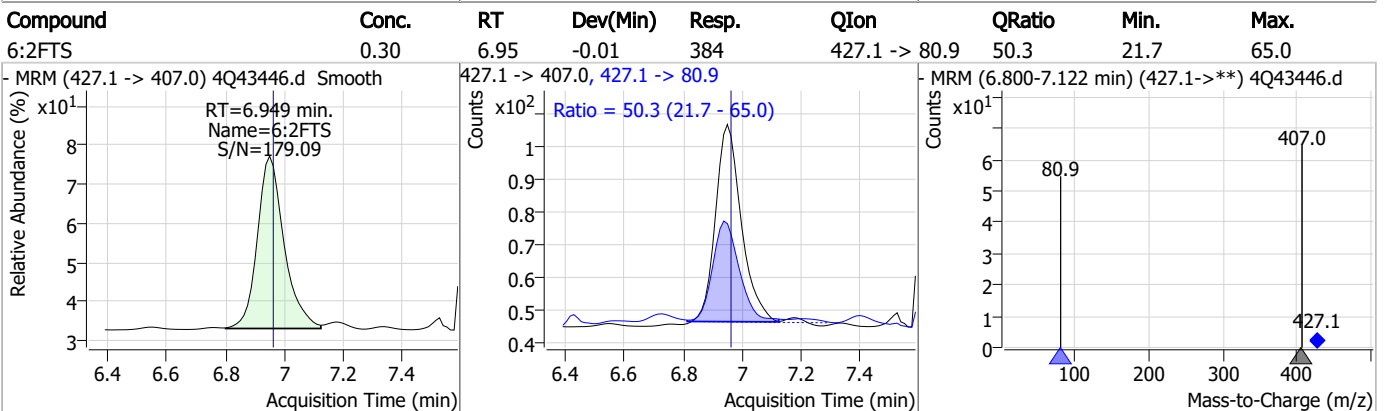
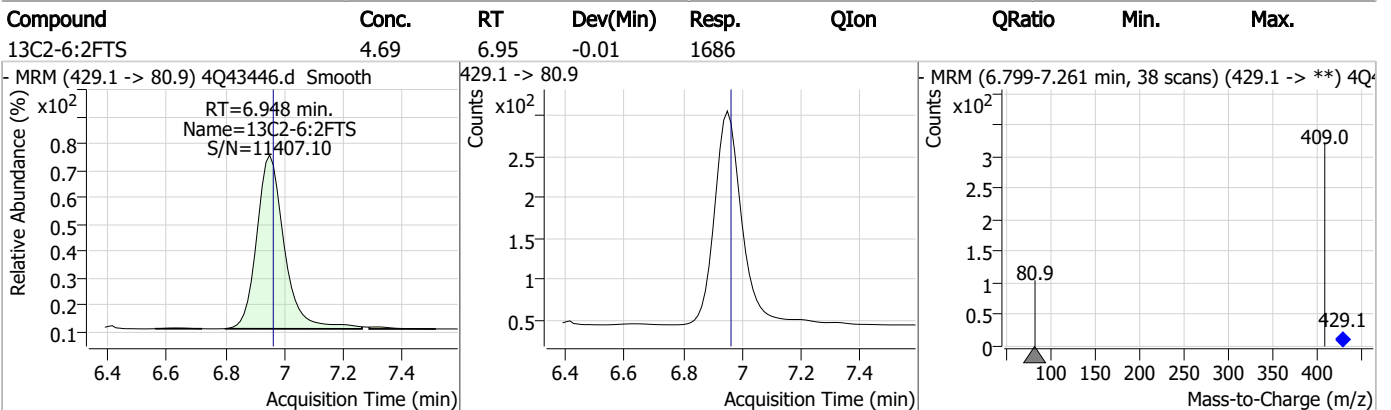
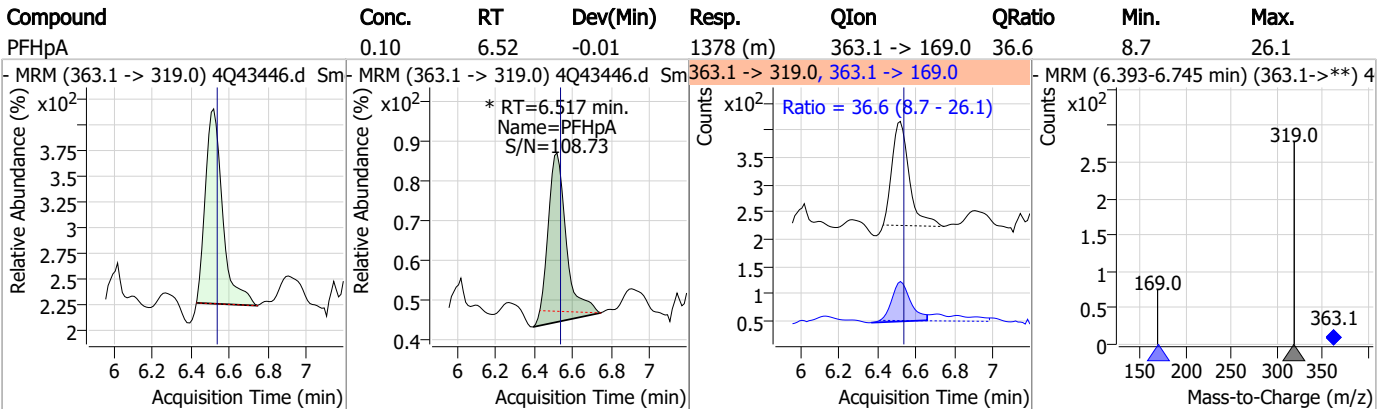
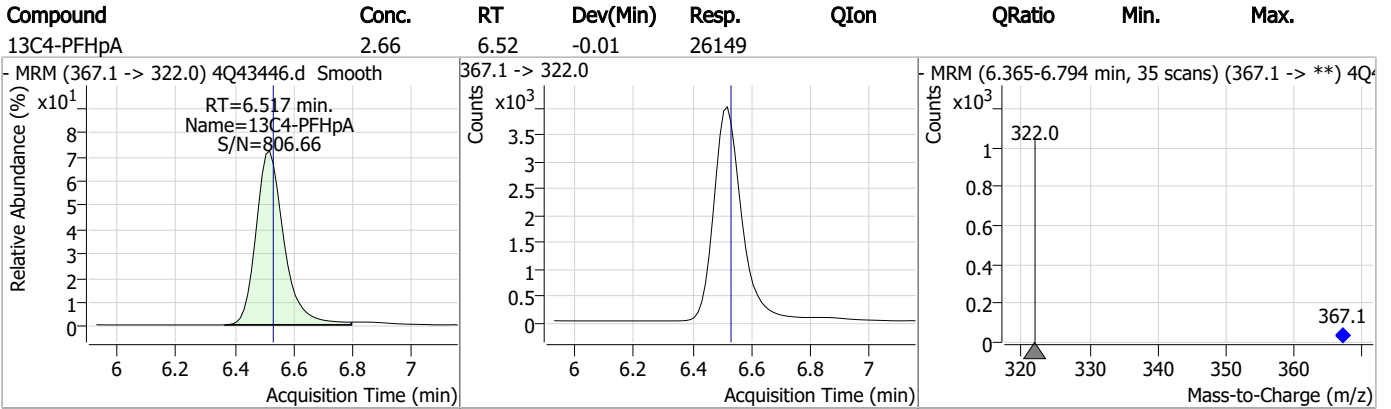
Perfluorinated Compounds by LC/MS/MS



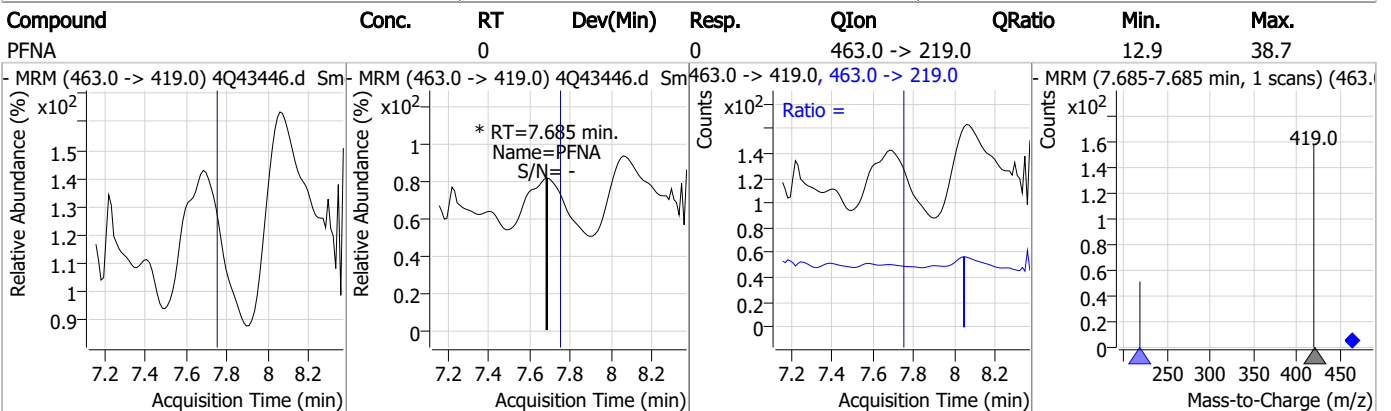
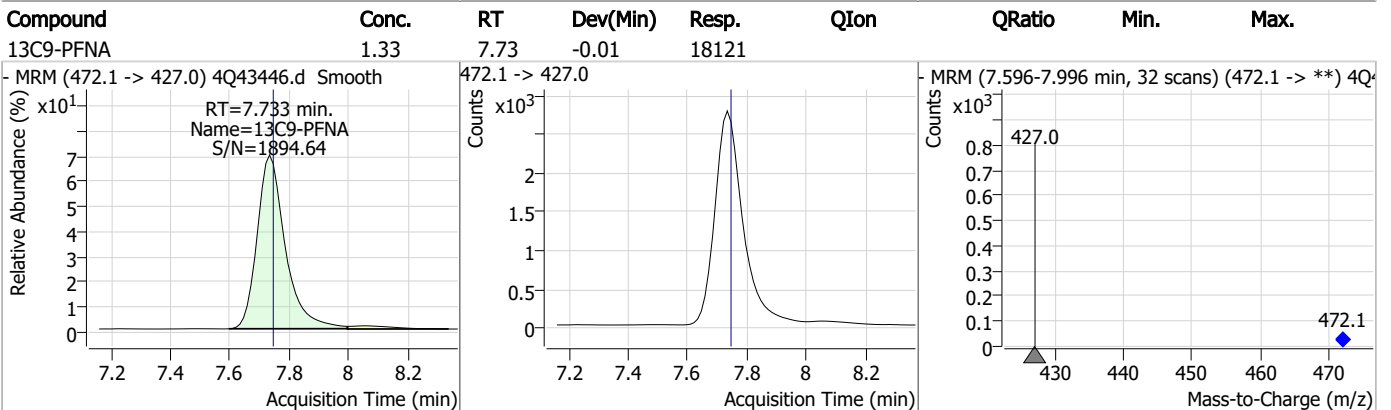
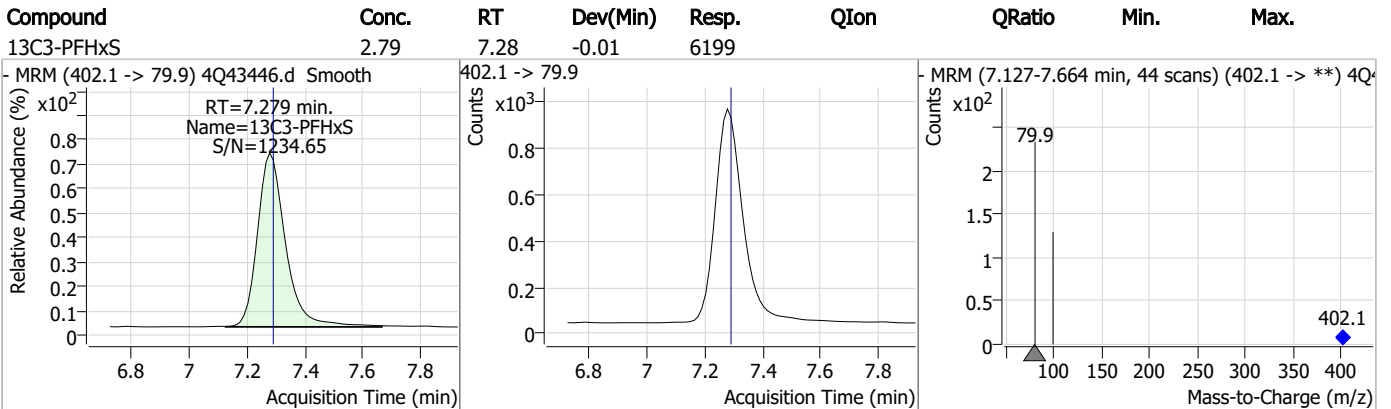
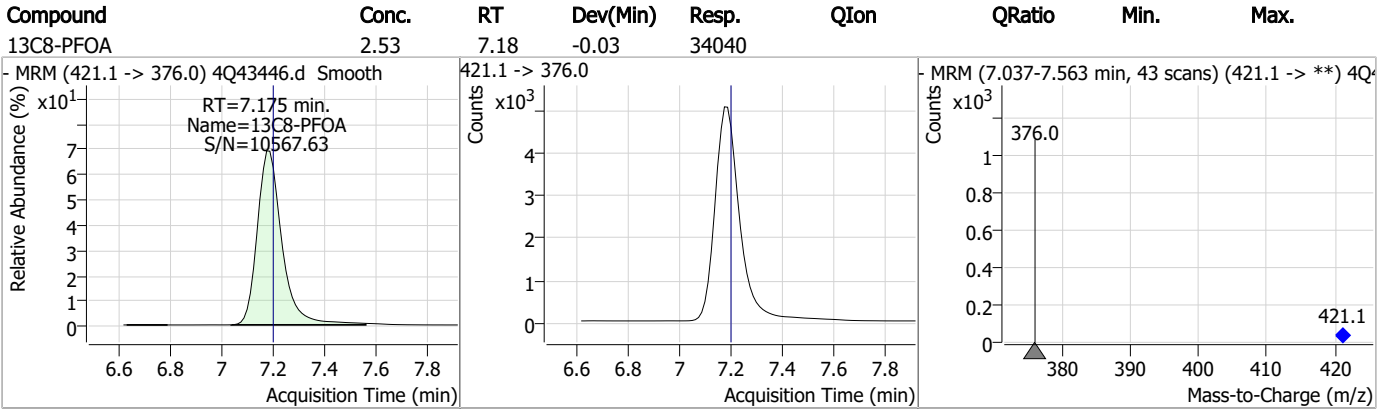
Perfluorinated Compounds by LC/MS/MS



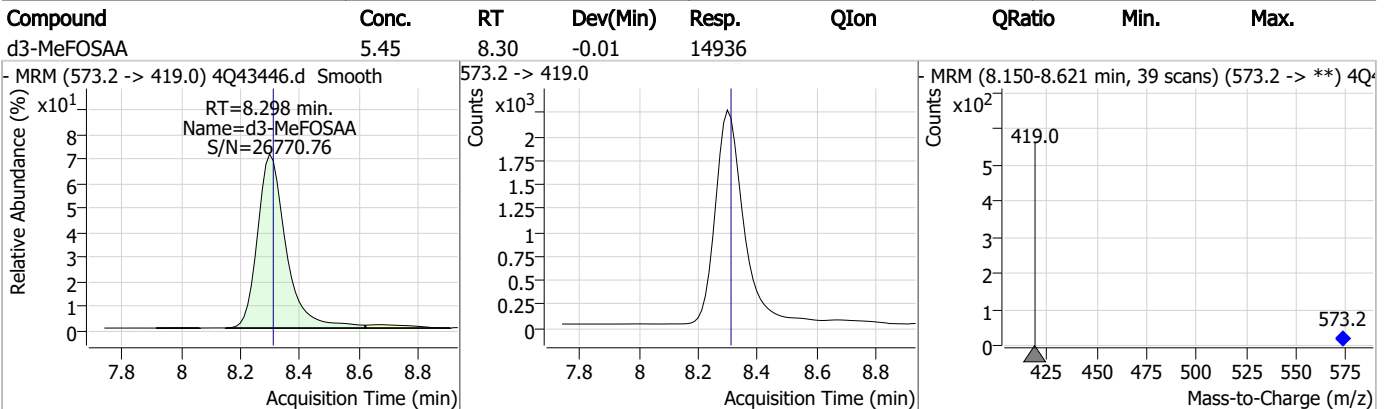
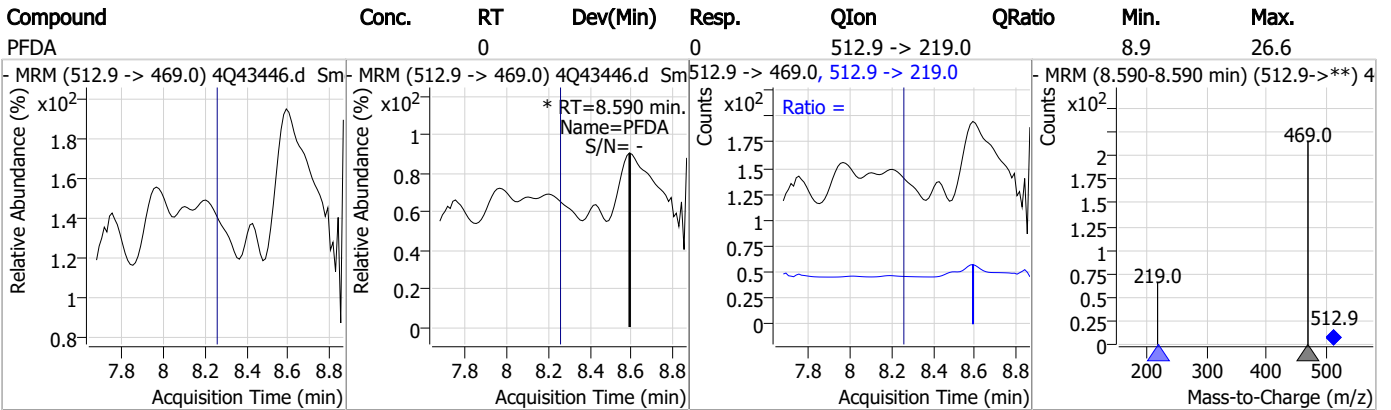
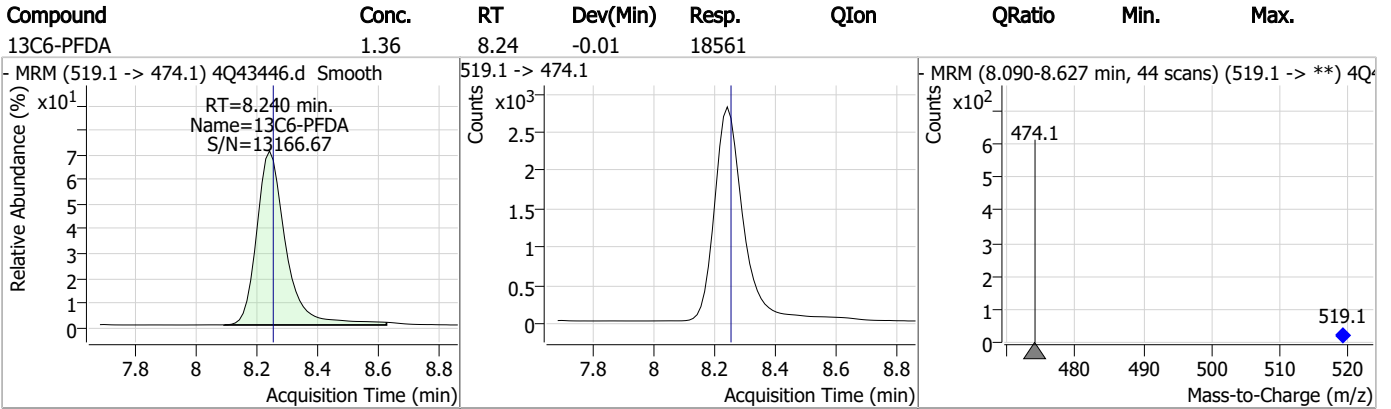
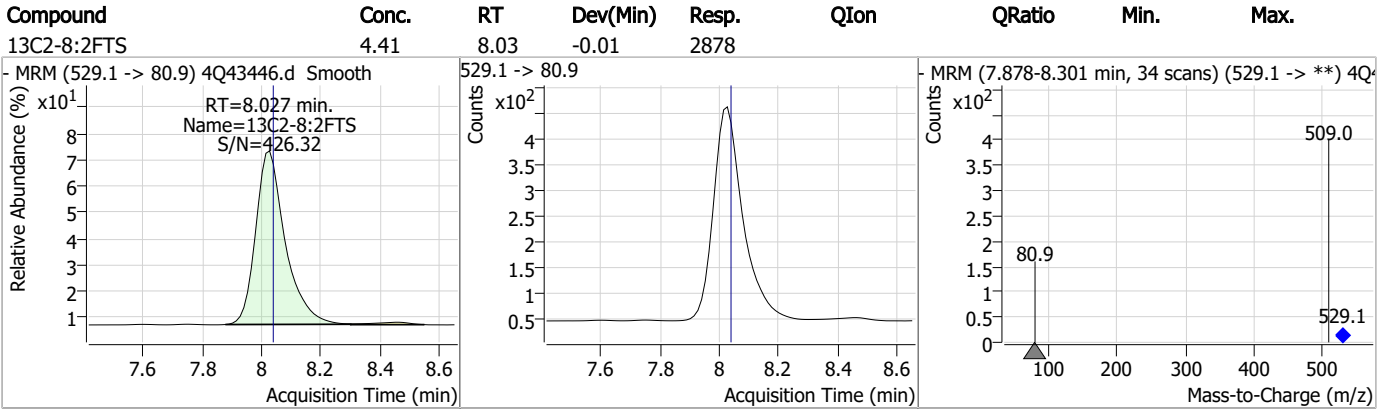
Perfluorinated Compounds by LC/MS/MS



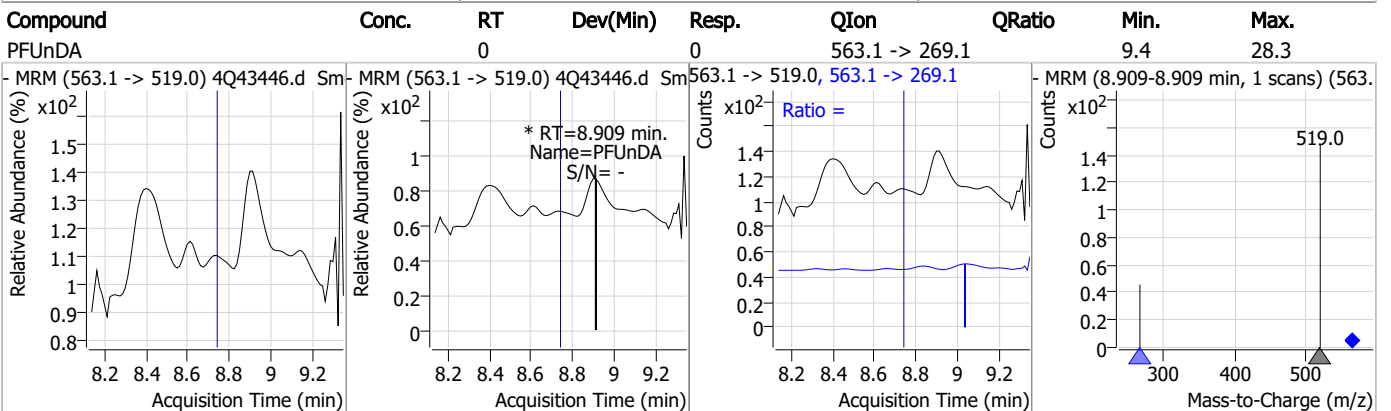
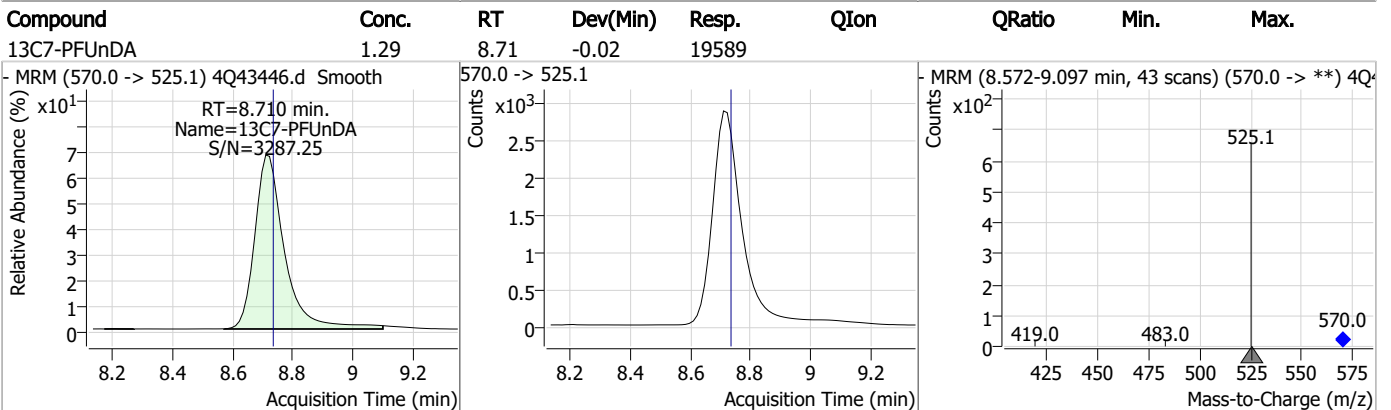
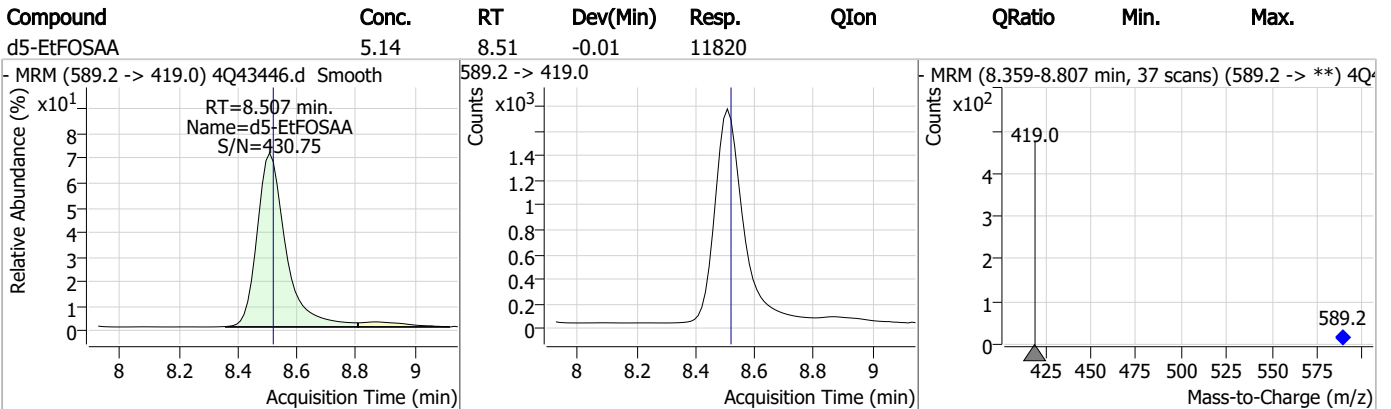
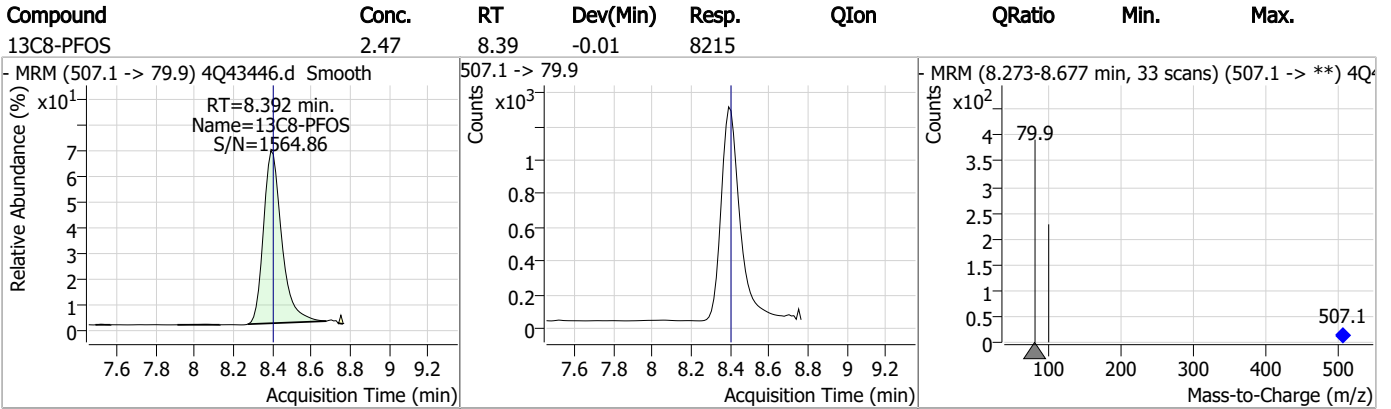
Perfluorinated Compounds by LC/MS/MS



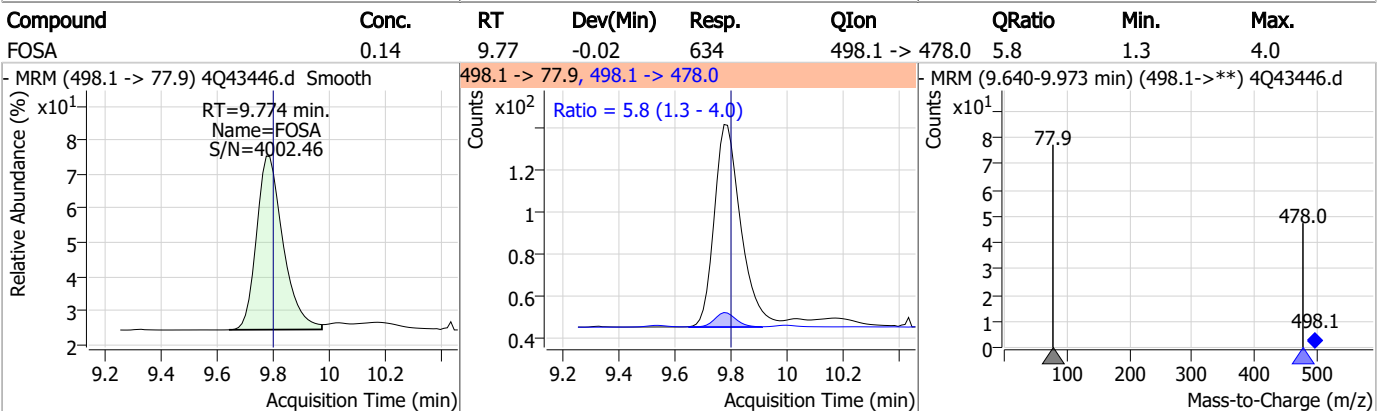
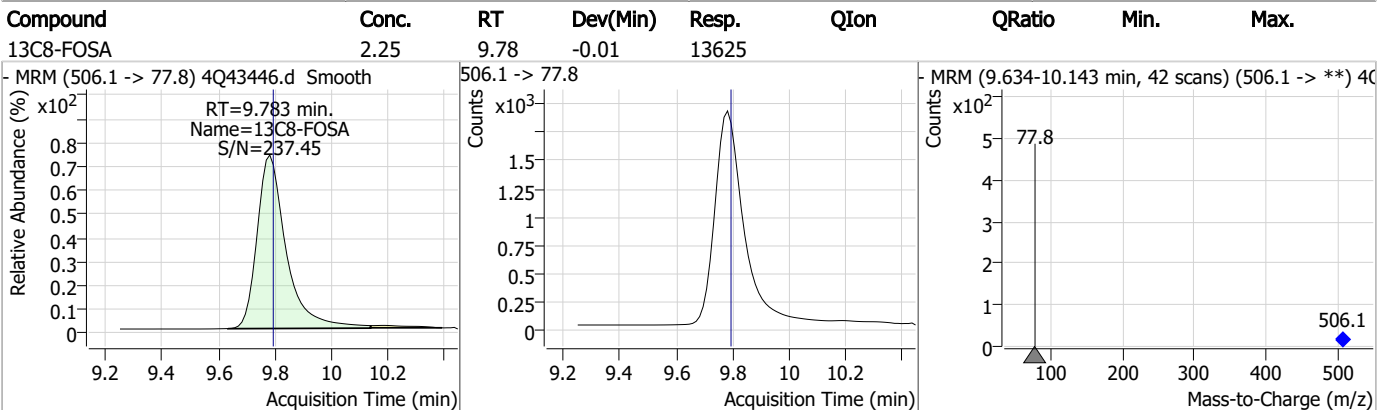
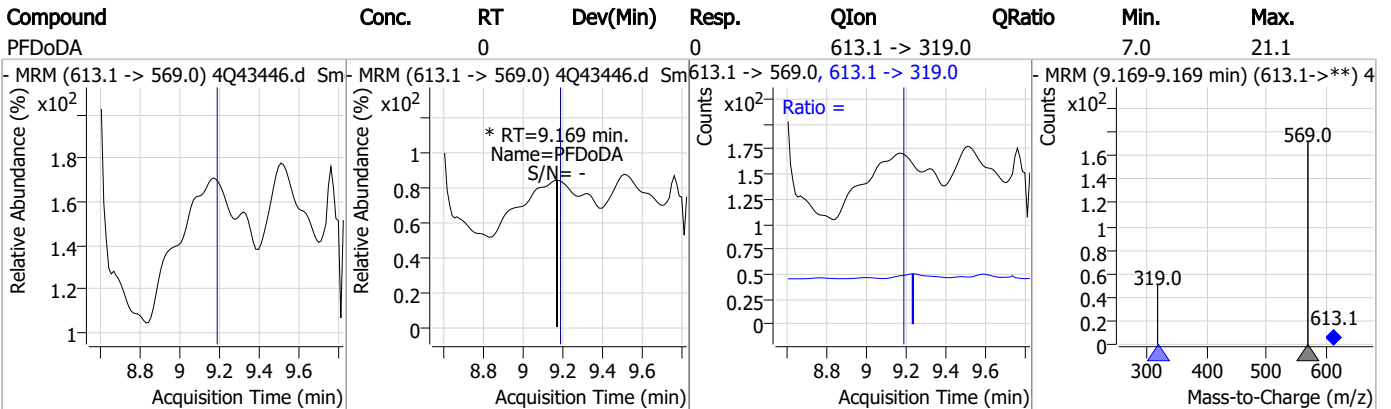
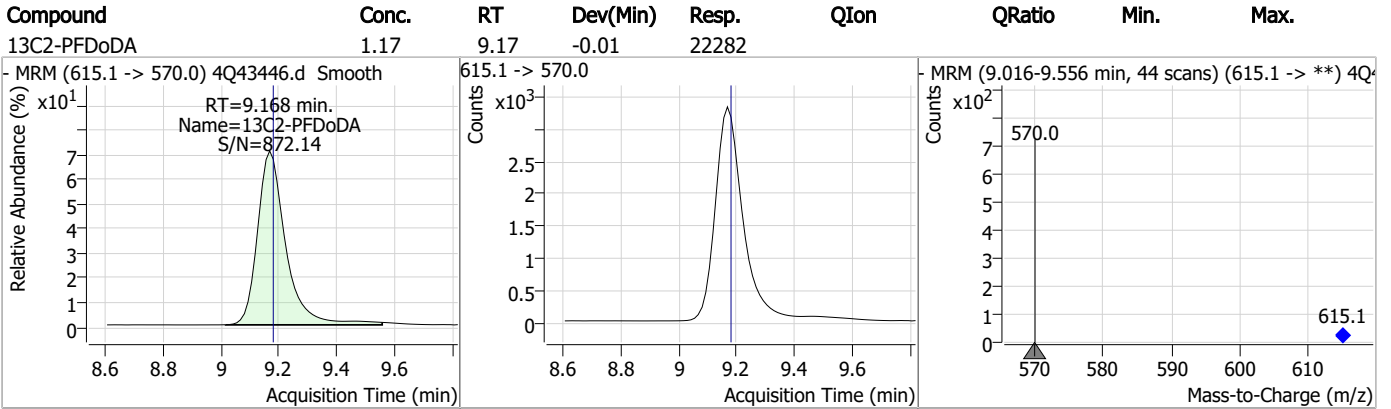
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

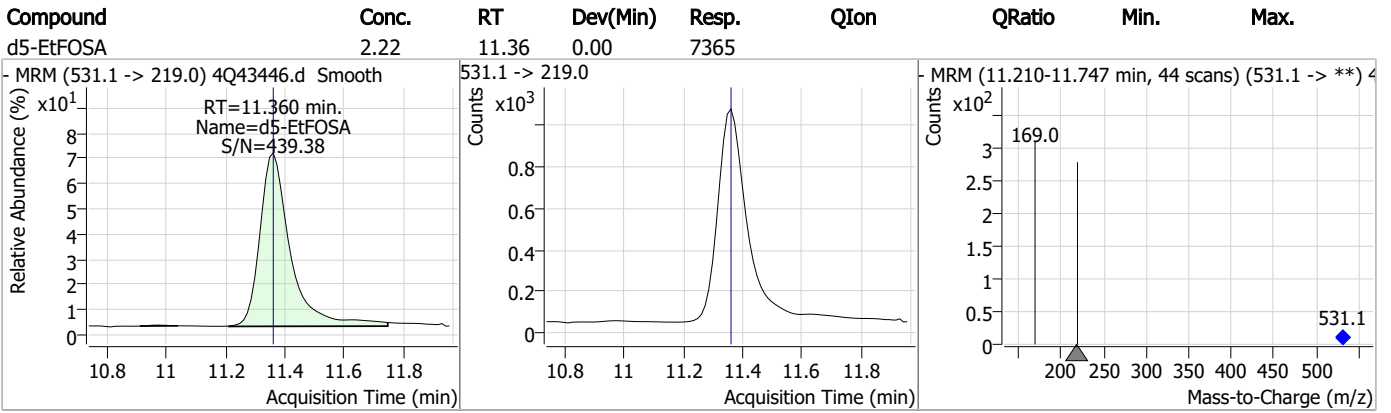


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	0.96	9.96	-0.02	14597				
d7-MeFOSE	20.71	10.95	-0.02	52999				
d3-MeFOSA	2.04	11.06	-0.01	6379				
d9-EtFOSE	22.45	11.26	-0.01	73564				

7.1.1
7

Perfluorinated Compounds by LC/MS/MS



7.1.1
7

Manual Integration Approval Summary

Sample Number: FC5316-1 Method: EPA DRAFT 1633
Lab FileID: 4Q43446.D Analyst approved: 04/24/23 15:19 Martha Valls
Injection Time: 04/21/23 20:09 Supervisor approved: 04/25/23 14:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.52	Split peak

7.1.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43448.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 8:37:55 PM
 Sample Name : fc5316-2
 Vial : P4-D6
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96472,S4q627,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.990	216.8 -> 171.9	87400	10.00 µg/L	0.066
M5-PFPeA	4.437	268.3 -> 223.0	60915	5.00 µg/L	0.025
M5-PFHxA	5.597	318.0 -> 273.0	48850	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	26060	2.50 µg/L	-0.012
M8-PFOA	7.188	421.1 -> 376.0	33434	2.50 µg/L	-0.013
M9-PFNA	7.733	472.1 -> 427.0	17813	1.25 µg/L	-0.013
M6-PFDA	8.240	519.1 -> 474.1	17527	1.25 µg/L	-0.012
M7-PFUnDA	8.722	570.0 -> 525.1	17027	1.25 µg/L	-0.012
M2-PFDoDA	9.168	615.1 -> 570.0	18219	1.25 µg/L	-0.012
M2-PFTeDA	9.961	715.2 -> 670.0	10530	1.25 µg/L	-0.025
M8-FOSA	9.783	506.1 -> 77.8	11310	2.50 µg/L	-0.012
M3-PFBS	5.502	302.1 -> 79.9	10875	2.50 µg/L	0.000
M3-PFHxS	7.279	402.1 -> 79.9	6209	2.50 µg/L	-0.012
M8-PFOS	8.392	507.1 -> 79.9	8575	2.50 µg/L	-0.012
M2-4:2FTS	5.285	329.1 -> 80.9	1103	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	1627	5.00 µg/L	-0.012
M2-8:2FTS	8.027	529.1 -> 80.9	2774	5.00 µg/L	-0.012
M3-MeFOSAA	8.298	573.2 -> 419.0	13965	5.00 µg/L	-0.012
M3-HFPO-DA	5.952	286.9 -> 168.9	25597	10.00 µg/L	-0.013
M5-EtFOSAA	8.507	589.2 -> 419.0	12136	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	44745	25.00 µg/L	-0.025
M9-EtFOSE	11.256	639.2 -> 58.9	63475	25.00 µg/L	-0.012
M5-EtFOSA	11.360	531.1 -> 219.0	6832	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	5959	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	8945	2.50 µg/L	-0.012
13C3-PFBA	2.993	216.0 -> 172.0	53948	5.00 µg/L	0.065
18O2-PFHxS	7.278	403.0 -> 83.9	3966	2.50 µg/L	-0.012
13C4-PFOA	7.188	417.1 -> 372.0	38972	2.50 µg/L	-0.013
13C2-PFDA	8.241	515.1 -> 470.1	16184	1.25 µg/L	-0.012
13C5-PFNA	7.734	468.0 -> 423.0	19911	1.25 µg/L	-0.013
13C2-PFHxA	5.598	315.1 -> 270.0	38195	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	1103	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C2-6:2FTS	6.948	429.1 -> 80.9	1627	4.44 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.8%		
13C2-8:2FTS	8.027	529.1 -> 80.9	2774	4.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.5%		
13C2-PFDoDA	9.168	615.1 -> 570.0	18219	0.93 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.6%		
13C2-PFTeDA	9.961	715.2 -> 670.0	10530	0.68 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 54.2%		
13C3-PFBS	5.502	302.1 -> 79.9	10875	2.96 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 118.4%		
13C3-PFHxS	7.279	402.1 -> 79.9	6209	2.74 µg/L	-0.012

7.12
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.7%		
13C4-PFBA	2.990	216.8 -> 171.9	87400	8.99 µg/L	0.066
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 89.9%		
13C4-PFHpA	6.517	367.1 -> 322.0	26060	2.72 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C5-PFHxA	5.597	318.0 -> 273.0	48850	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C5-PFPeA	4.437	268.3 -> 223.0	60915	5.21 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C6-PFDA	8.240	519.1 -> 474.1	17527	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C7-PFUnDA	8.722	570.0 -> 525.1	17027	1.10 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.8%		
13C8-FOSA	9.783	506.1 -> 77.8	11310	1.74 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 69.7%		
13C8-PFOA	7.188	421.1 -> 376.0	33434	2.57 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C8-PFOS	8.392	507.1 -> 79.9	8575	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C9-PFNA	7.733	472.1 -> 427.0	17813	1.28 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
d3-MeFOSAA	8.298	573.2 -> 419.0	13965	4.75 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C3-HFPO-DA	5.952	286.9 -> 168.9	25597	8.83 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 88.3%		
d3-MeFOSA	11.064	515.0 -> 219.0	5959	1.78 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 71.1%		
d5-EtFOSAA	8.507	589.2 -> 419.0	12136	4.92 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
d7-MeFOSE	10.947	623.2 -> 58.9	44745	16.31 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 65.2%		
d9-EtFOSE	11.256	639.2 -> 58.9	63475	18.06 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 72.2%		
d5-EtFOSA	11.360	531.1 -> 219.0	6832	1.92 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 76.7%		

Target Compounds

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	6.961	427.1 -> 407.0 427.1 -> 80.9	766 319	0.62 µg/L	97
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	5.318	298.7 -> 79.9 298.7 -> 98.8	0 0	µg/L m	1
PFDA	8.565	512.9 -> 469.0 512.9 -> 219.0	0 0	µg/L m	1
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	-	599.0 -> 79.9	-	N.D.	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.517	599.0 -> 98.8				
		363.1 -> 319.0	1658	0.12	µg/L	96
PFHpS	-	363.1 -> 169.0	319			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.587	449.0 -> 98.9				
		313.0 -> 269.0	2917	0.19	µg/L	99
PFHxS	-	313.0 -> 118.9	99			
		398.7 -> 79.9	-	N.D.		
PFNA	8.133	398.7 -> 98.9				
		463.0 -> 419.0	0		µg/L	m
PFNS	-	463.0 -> 219.0	0			
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.439	498.9 -> 98.8				
		263.0 -> 219.0	3704	0.30	µg/L	m
PFPeS	6.544	263.0 -> 219.0				
		349.1 -> 79.9	0		µg/L	m
PFTeDA	9.589	349.1 -> 98.9	0			
		713.1 -> 669.0	0		µg/L	m
PFTrDA	-	713.1 -> 168.9	0			
		663.0 -> 619.0	-	N.D.		
PFUnDA	-	663.0 -> 168.9				
		563.1 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	563.1 -> 269.1				
		630.9 -> 450.9	-	N.D.		
9Cl-PF3ONS	-	632.9 -> 452.9				
		530.8 -> 351.0	-	N.D.		
ADONA	-	532.8 -> 353.0				
		376.9 -> 250.9	-	N.D.		
HFPO-DA	-	376.9 -> 84.8				
		284.9 -> 168.9	-	N.D.		
3:3FTCA	-	284.9 -> 168.9				
		241.0 -> 177.0	-	N.D.		
5:3FTCA	-	241.0 -> 117.0				
		341.0 -> 237.1	-	N.D.		
7:3FTCA	-	341.0 -> 217.0				
		441.0 -> 316.9	-	N.D.		
EtFOSA	-	441.0 -> 336.9				
		526.0 -> 219.0	-	N.D.		
EtFOSE	11.644	526.0 -> 169.0				
		630.0 -> 58.9	0		µg/L	m
MeFOSA	-	630.0 -> 58.9				
		511.9 -> 219.0	-	N.D.		
MeFOSE	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.1.2
7



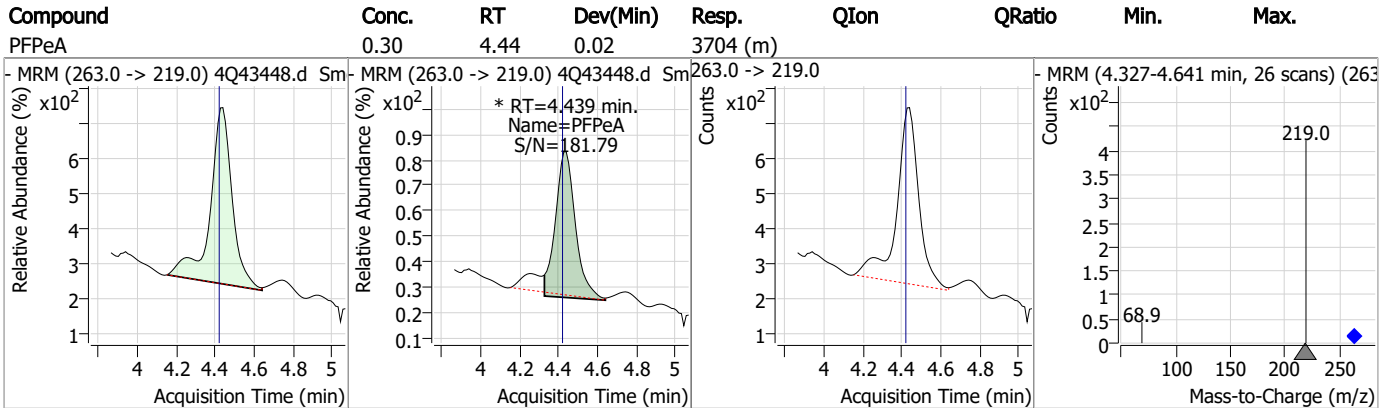
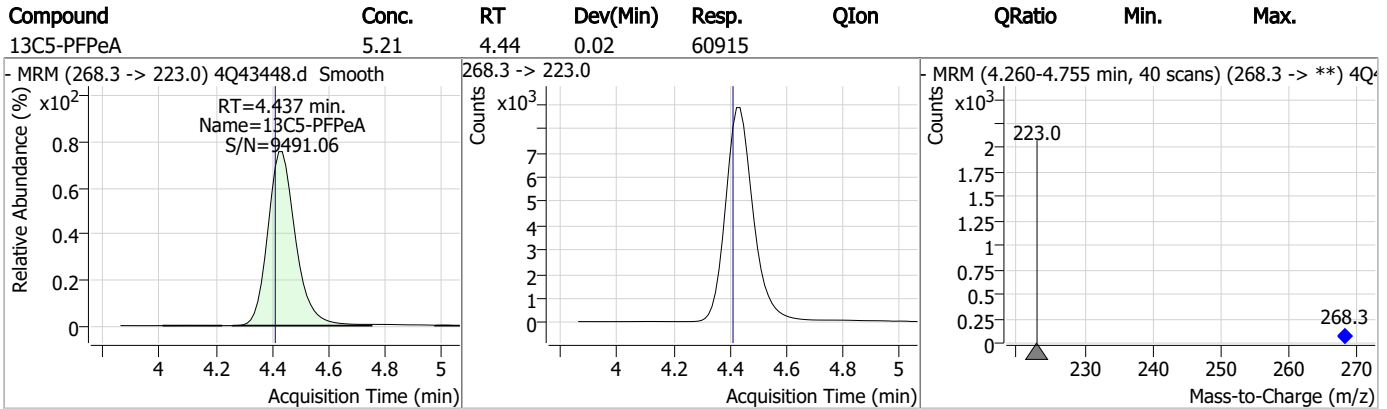
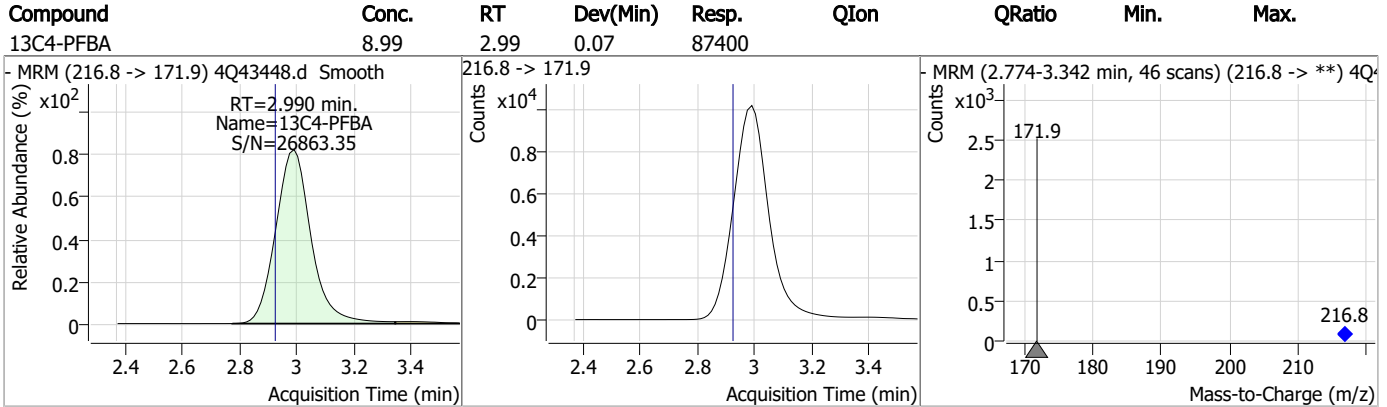
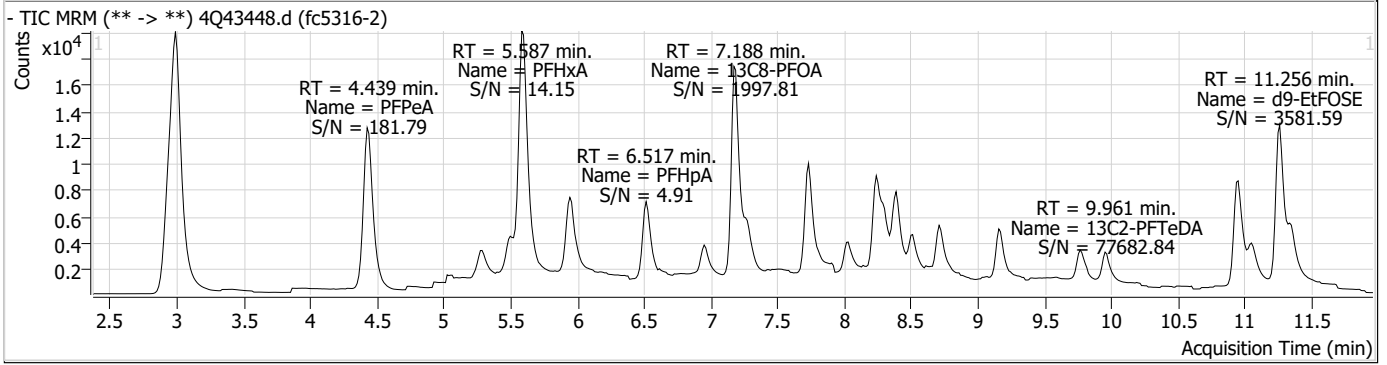
Perfluorinated Compounds by LC/MS/MS

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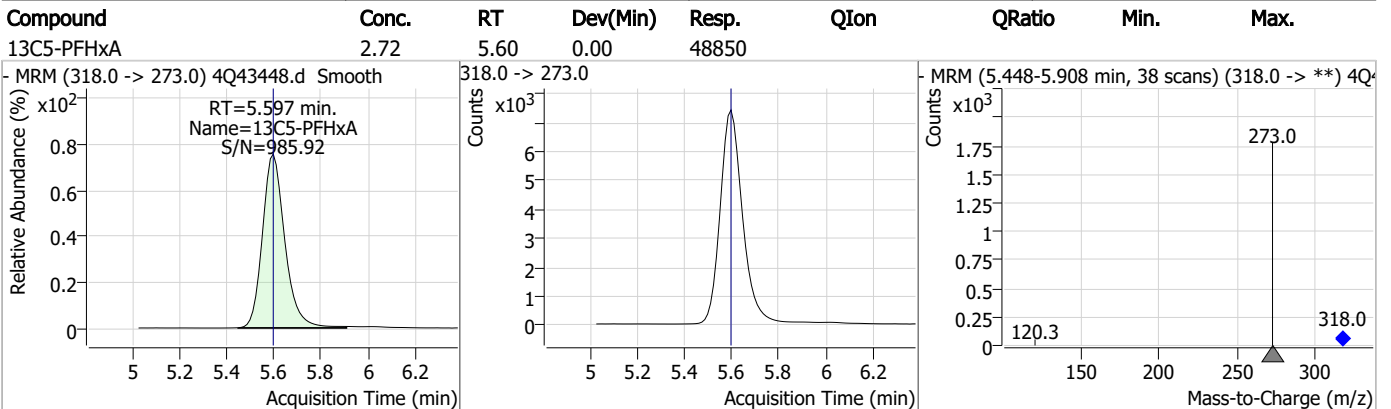
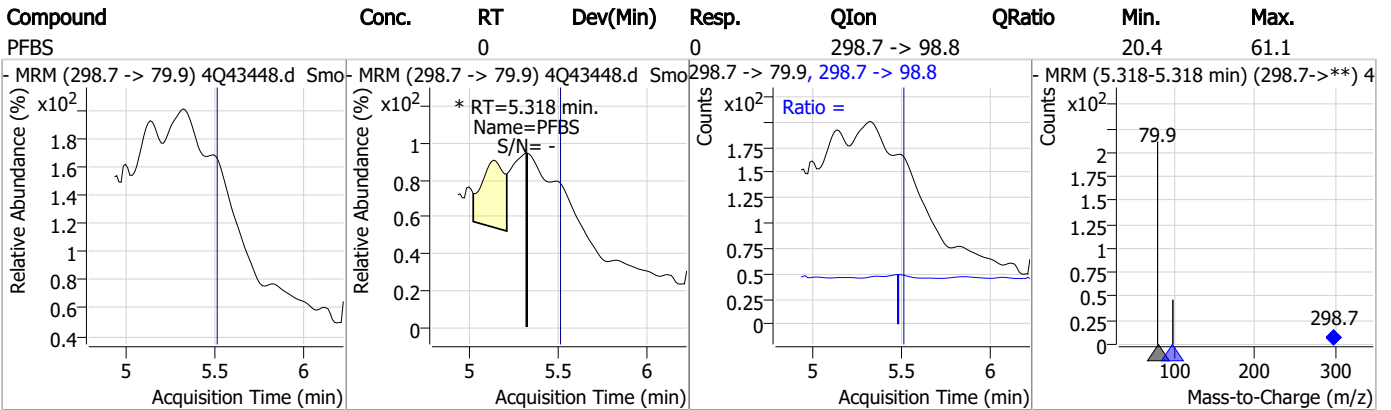
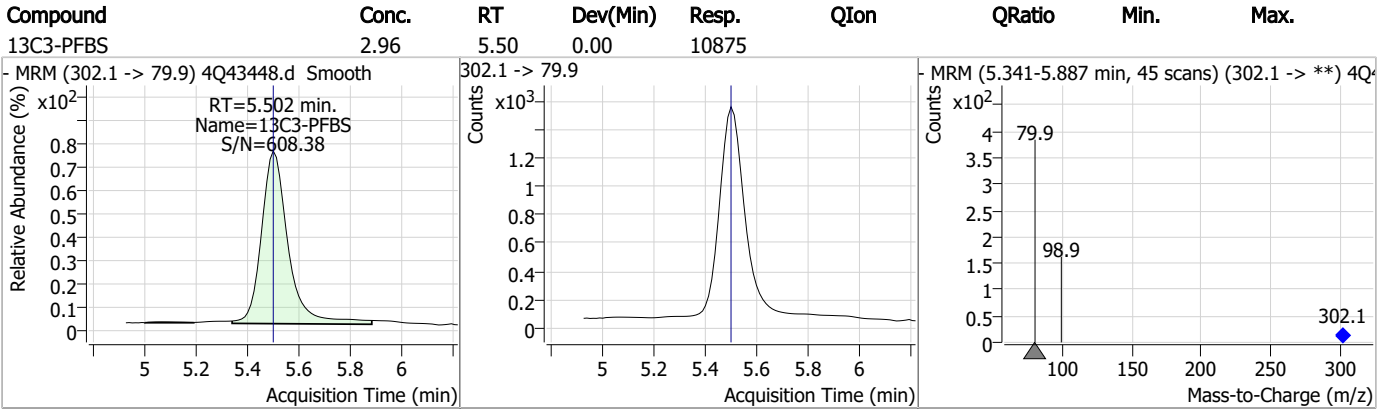
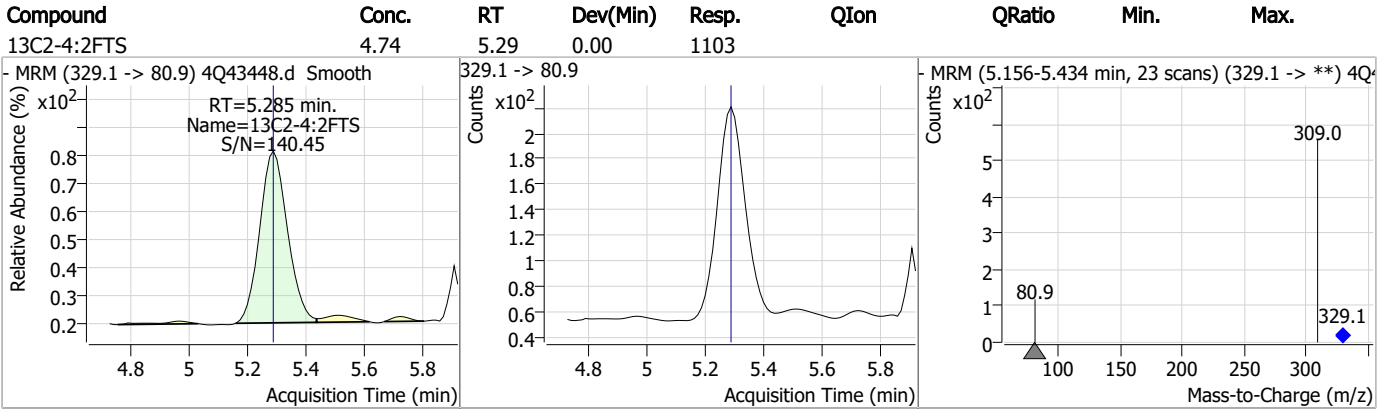
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Perfluorinated Compounds by LC/MS/MS

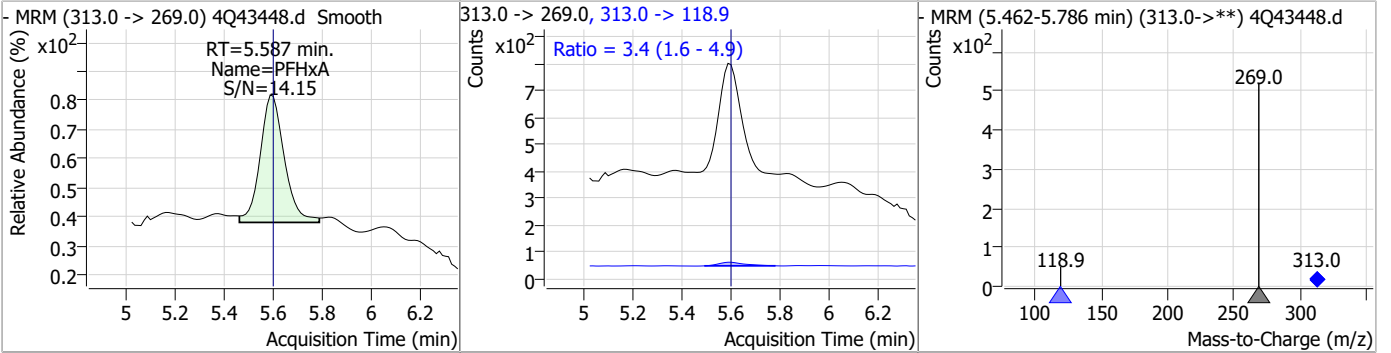


Perfluorinated Compounds by LC/MS/MS

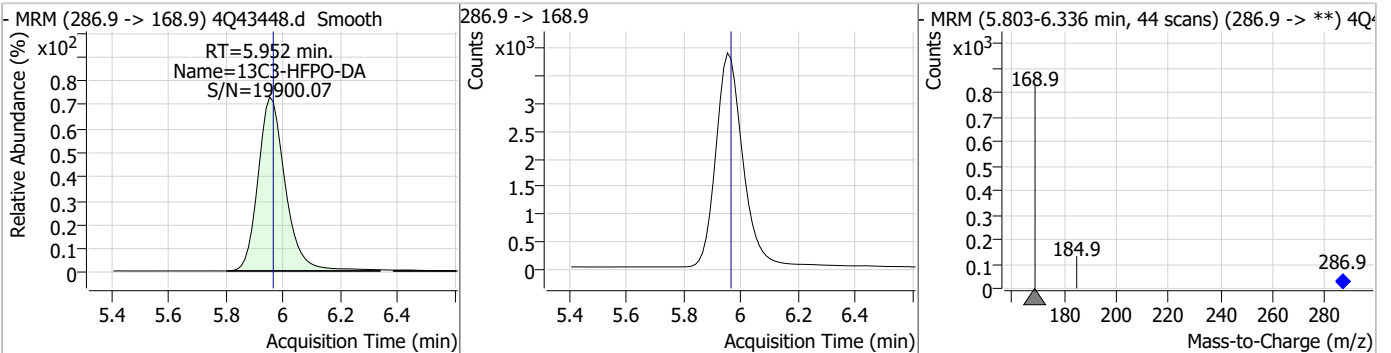


Perfluorinated Compounds by LC/MS/MS

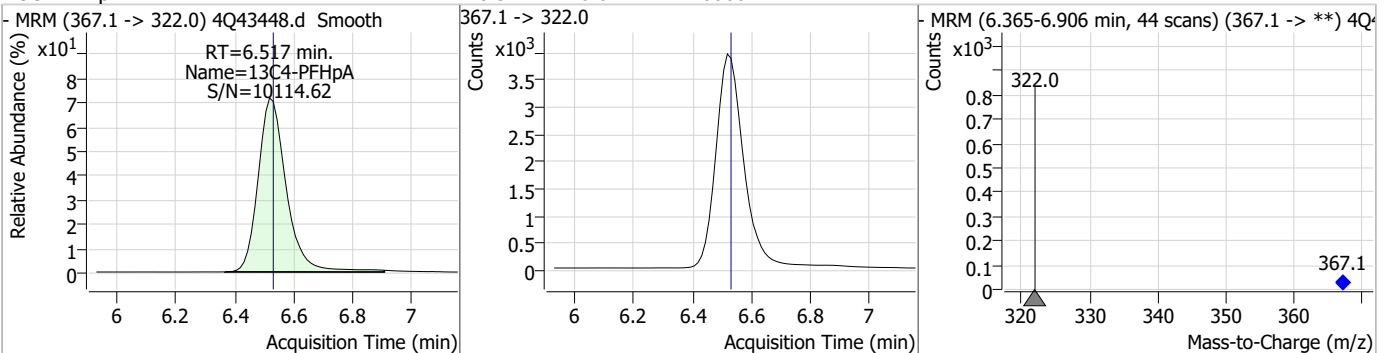
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.19	5.59	-0.01	2917	313.0 -> 118.9	3.4	1.6	4.9



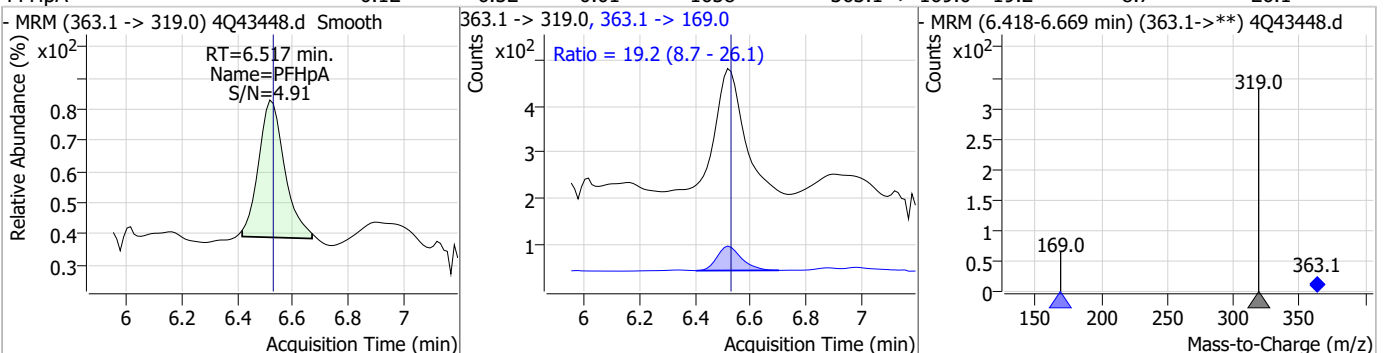
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.83	5.95	-0.01	25597				



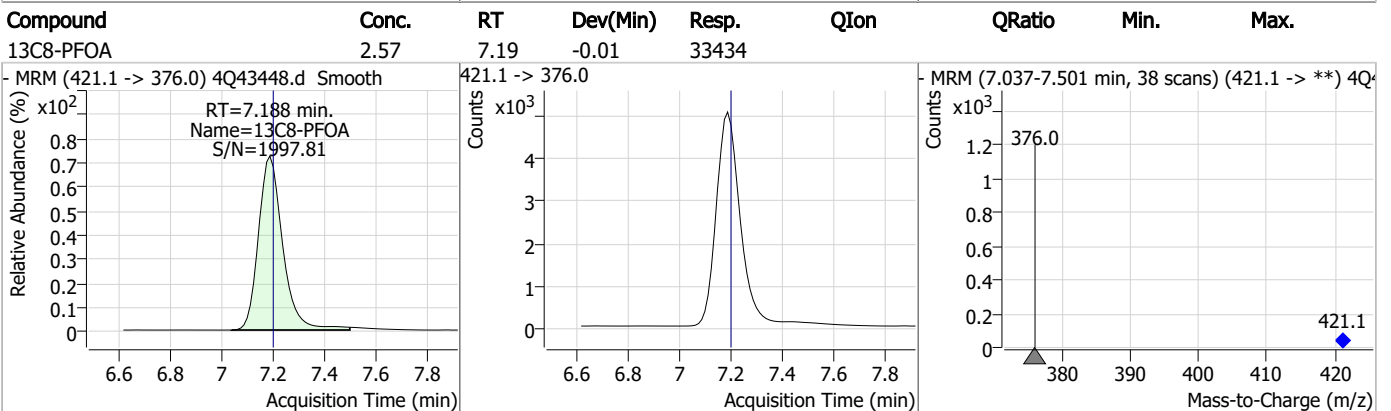
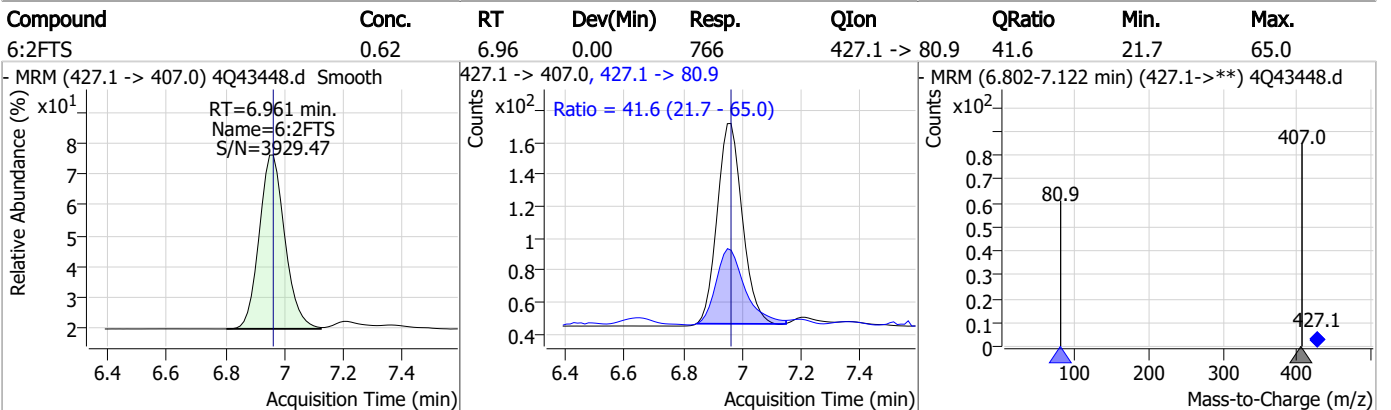
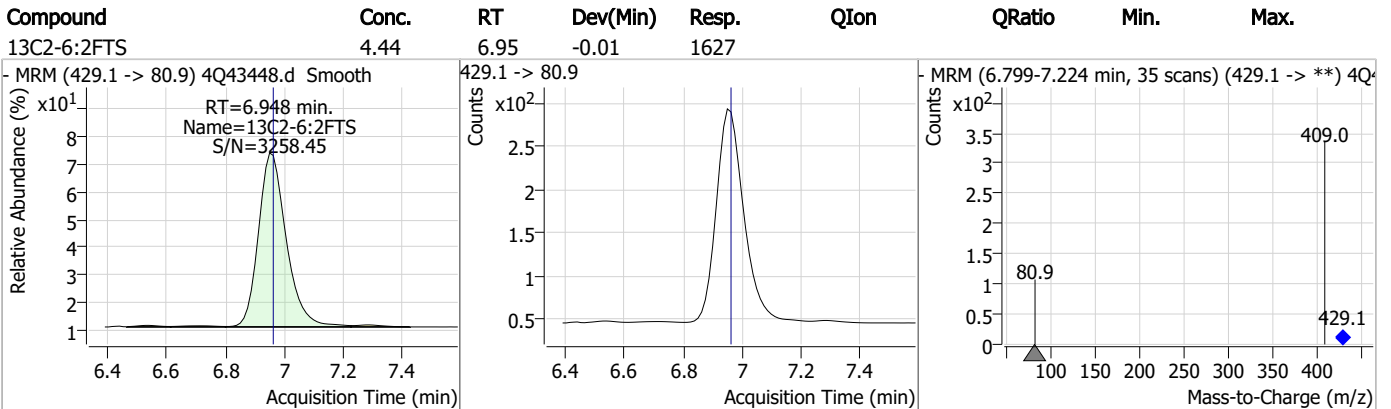
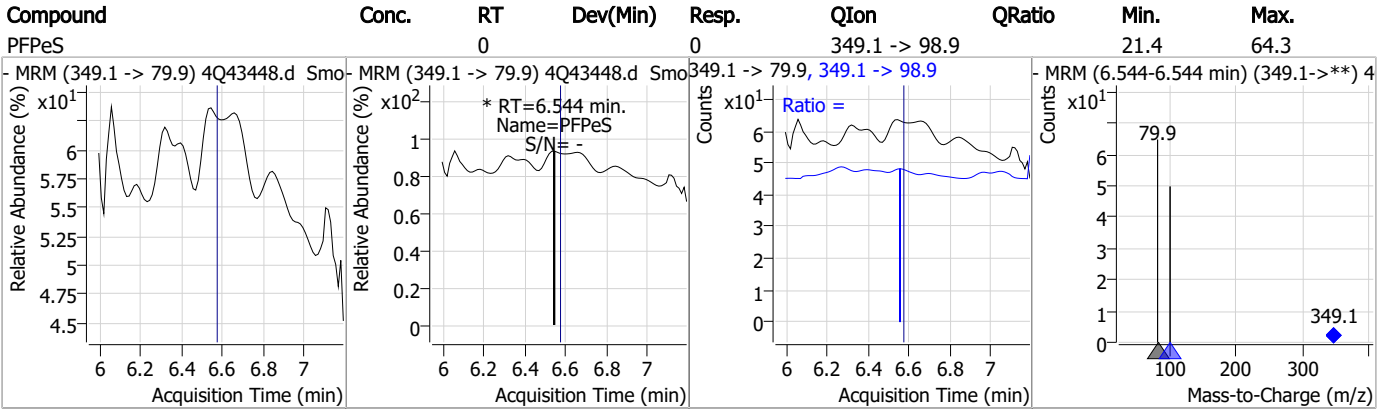
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.72	6.52	-0.01	26060				



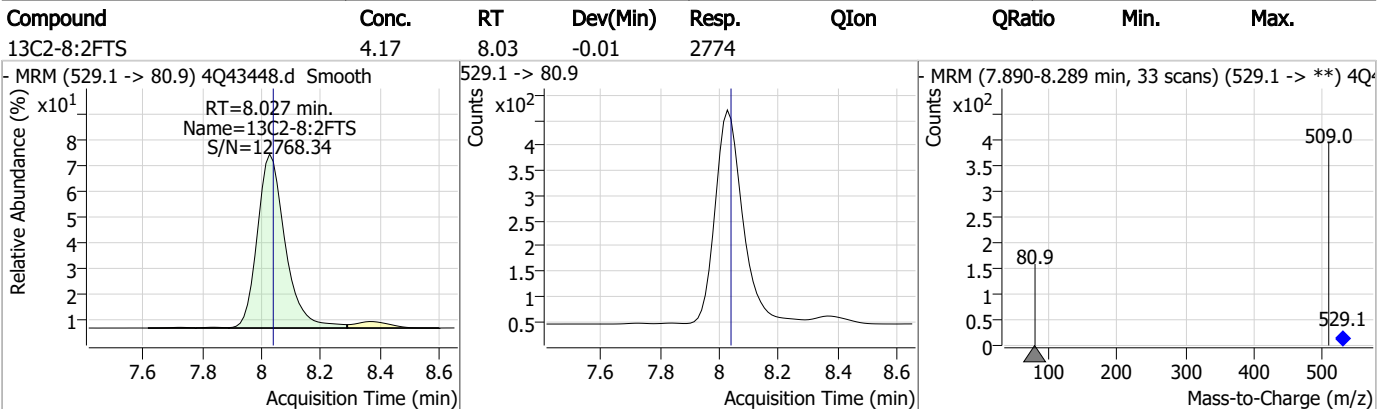
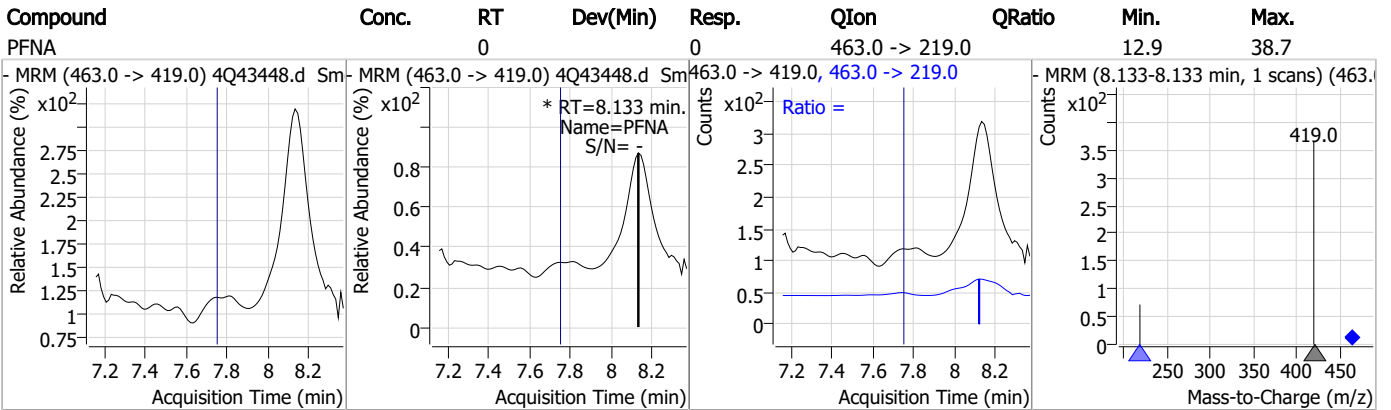
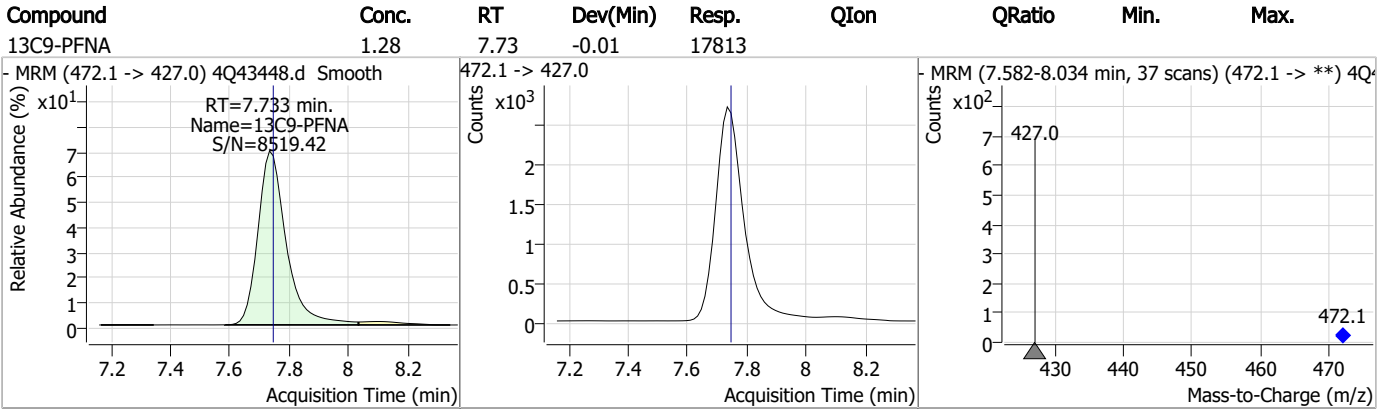
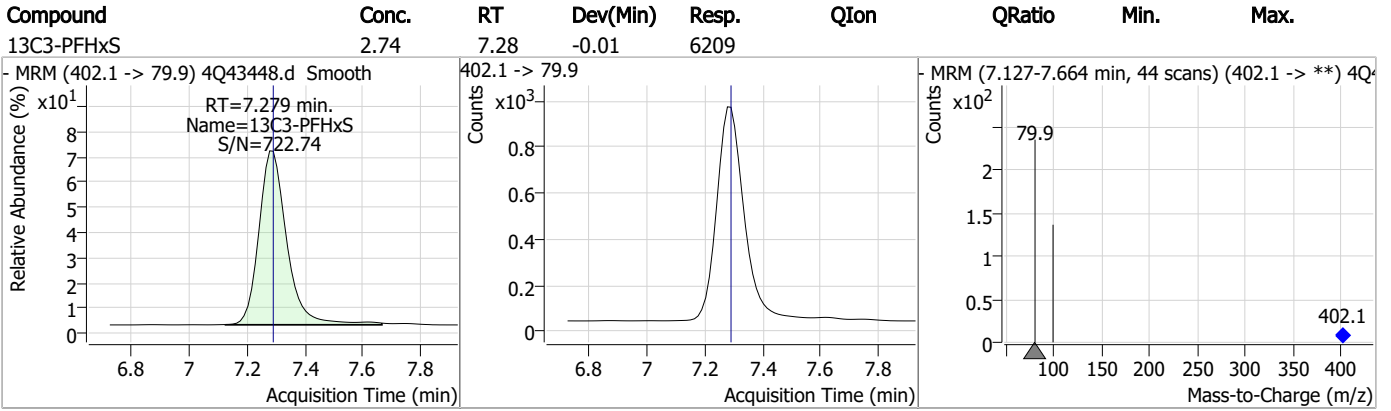
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.12	6.52	-0.01	1658	363.1 -> 169.0	19.2	8.7	26.1



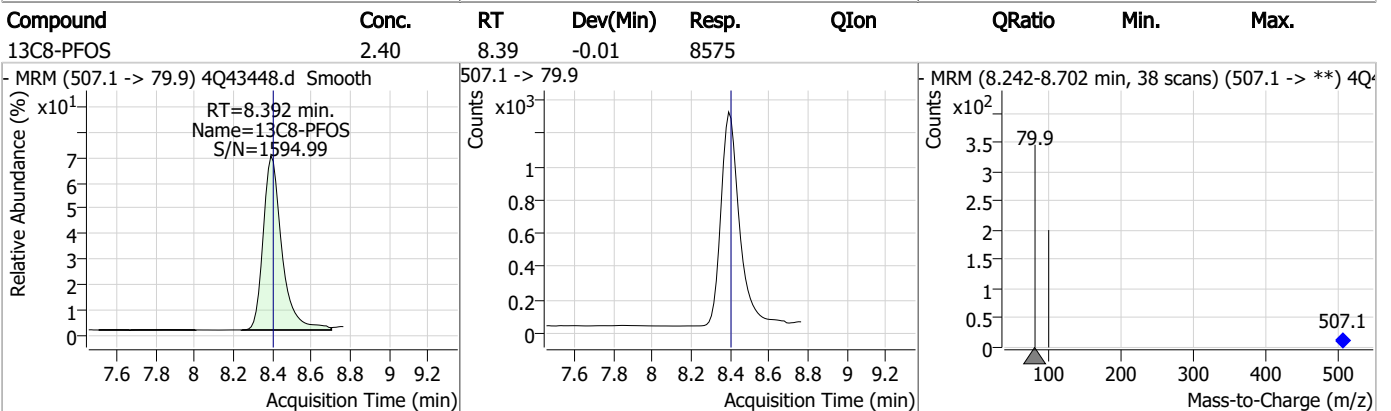
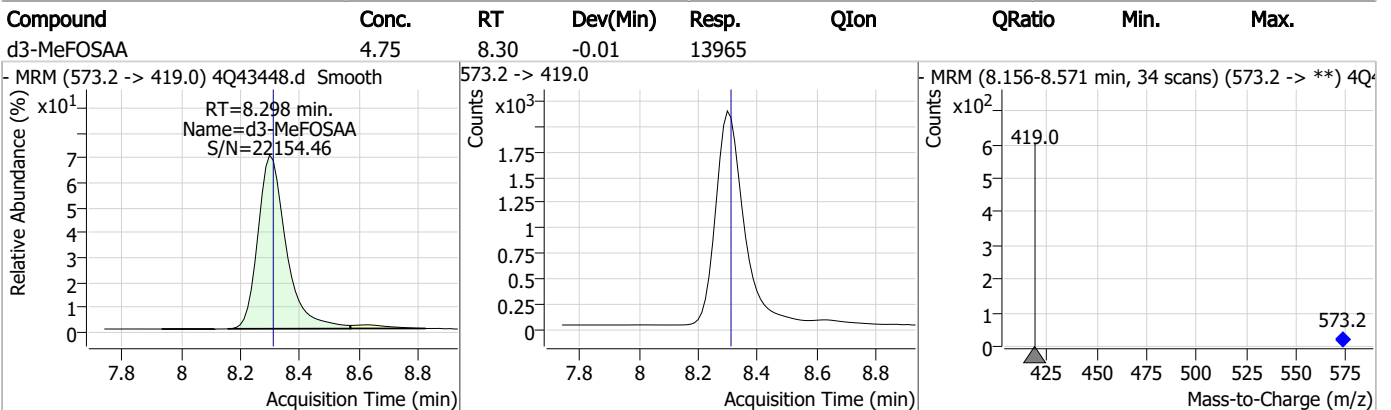
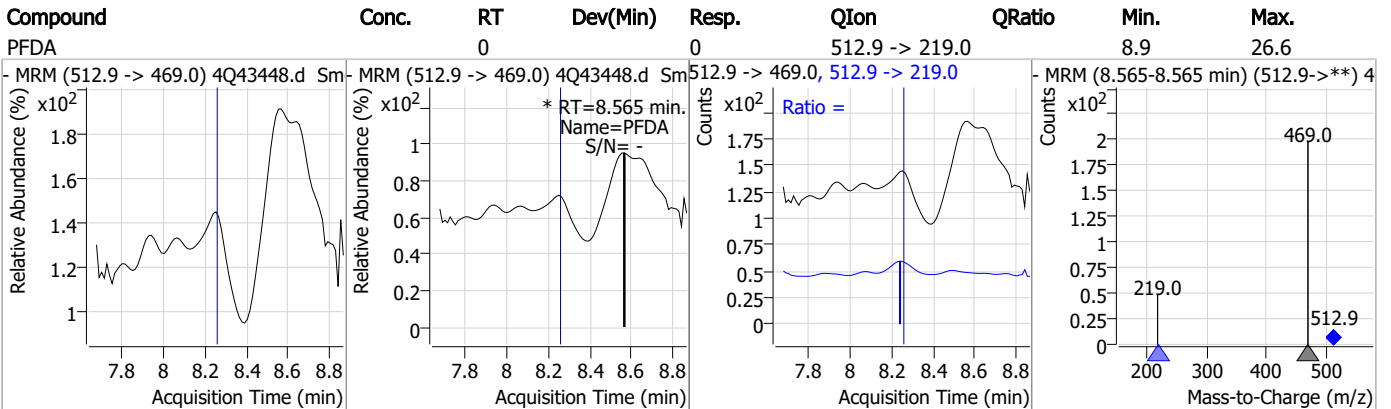
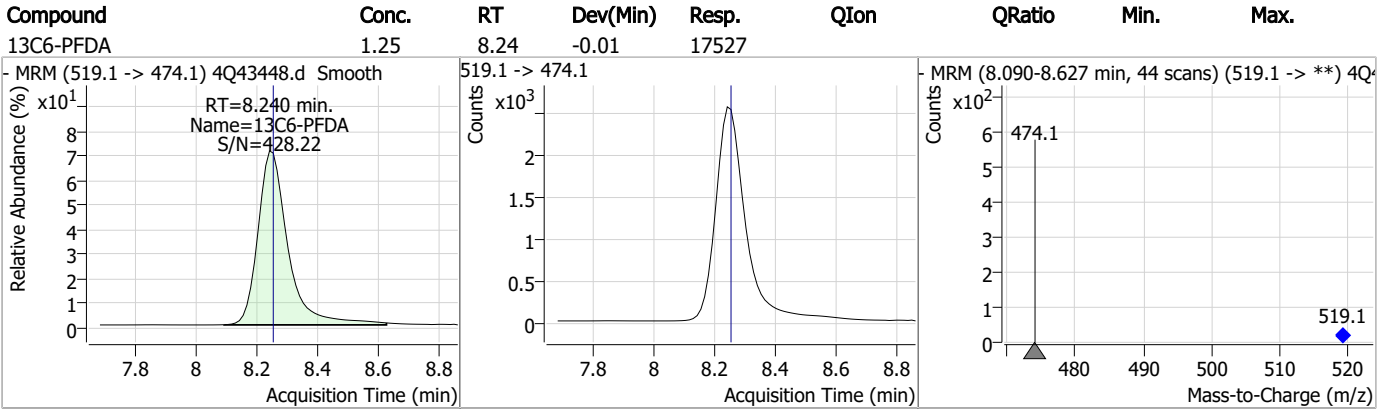
Perfluorinated Compounds by LC/MS/MS



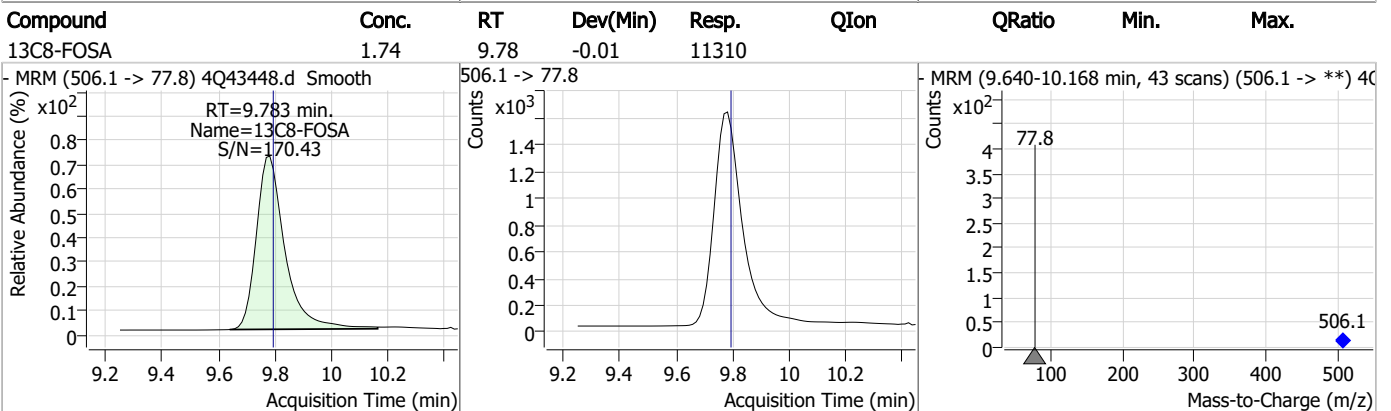
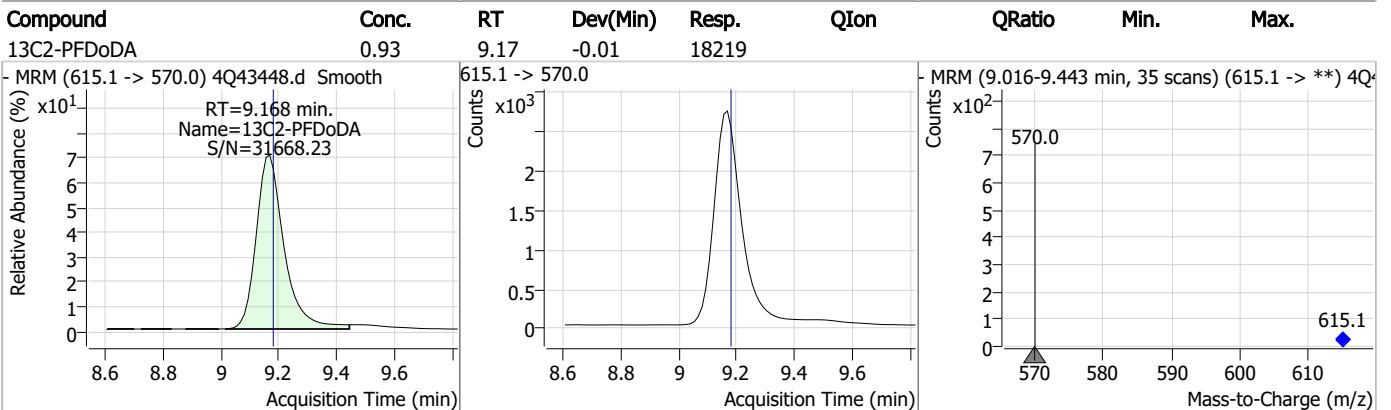
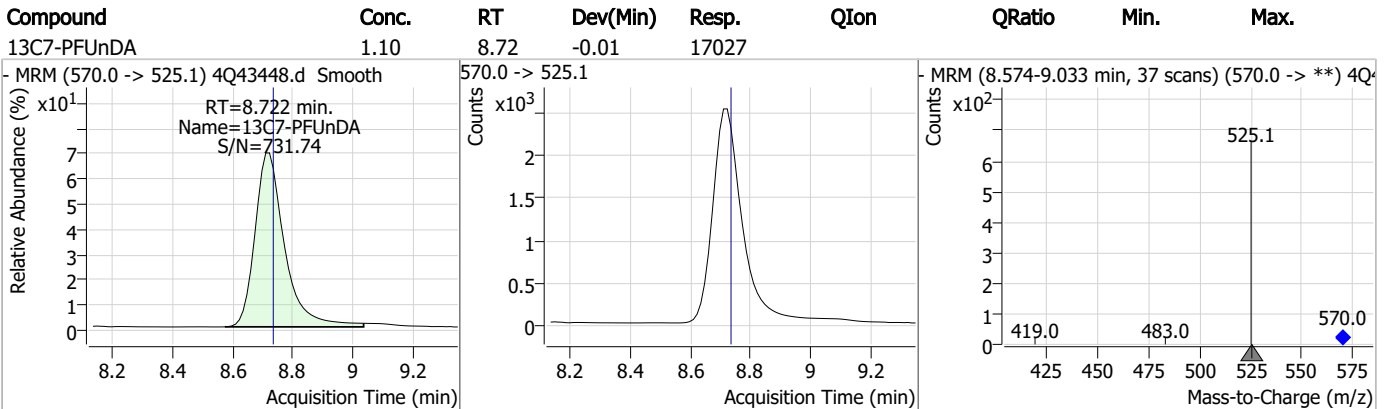
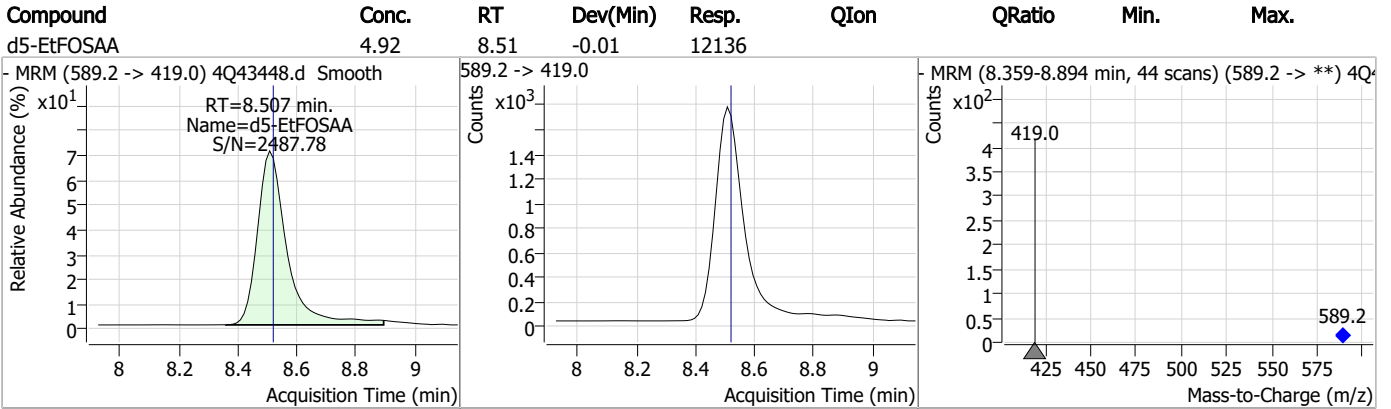
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



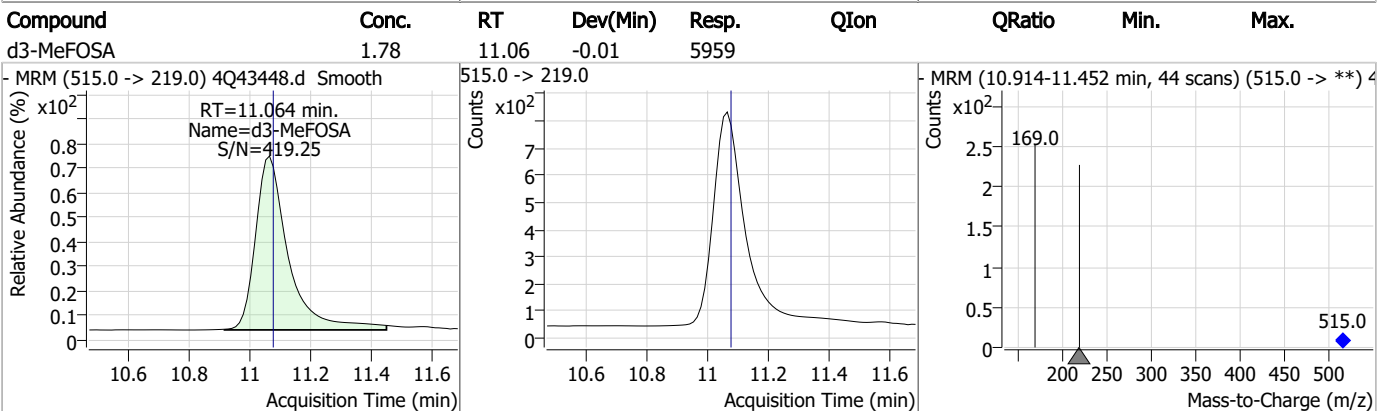
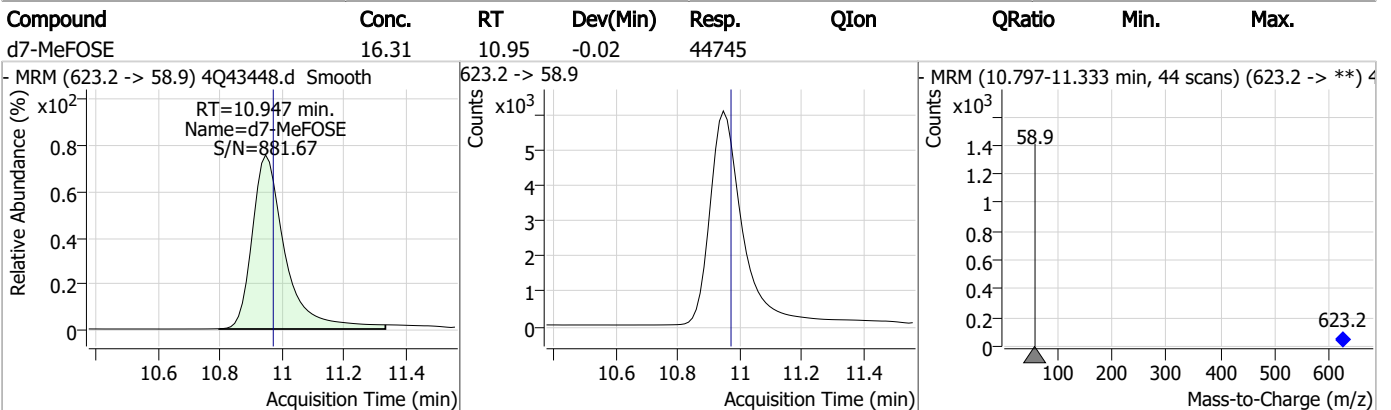
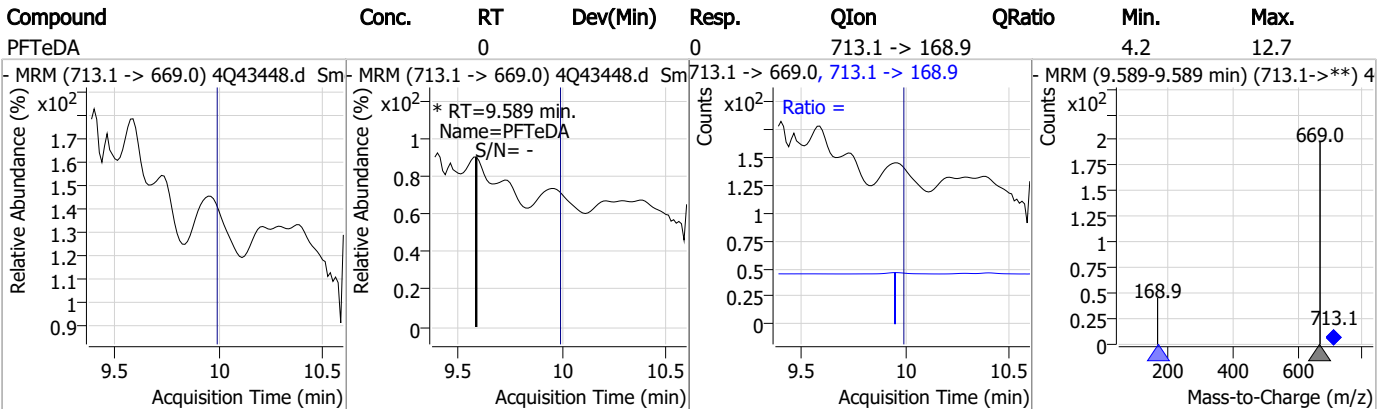
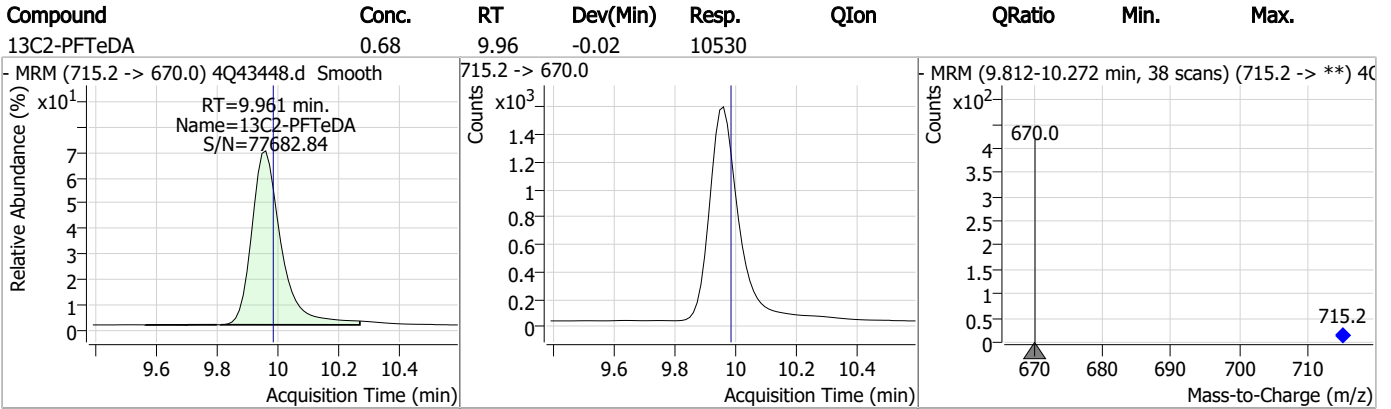
Perfluorinated Compounds by LC/MS/MS



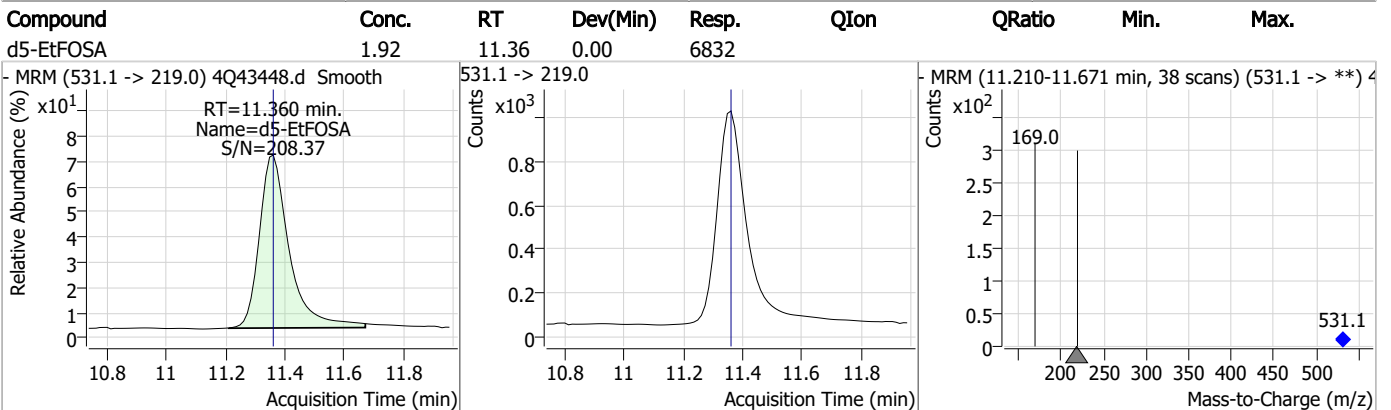
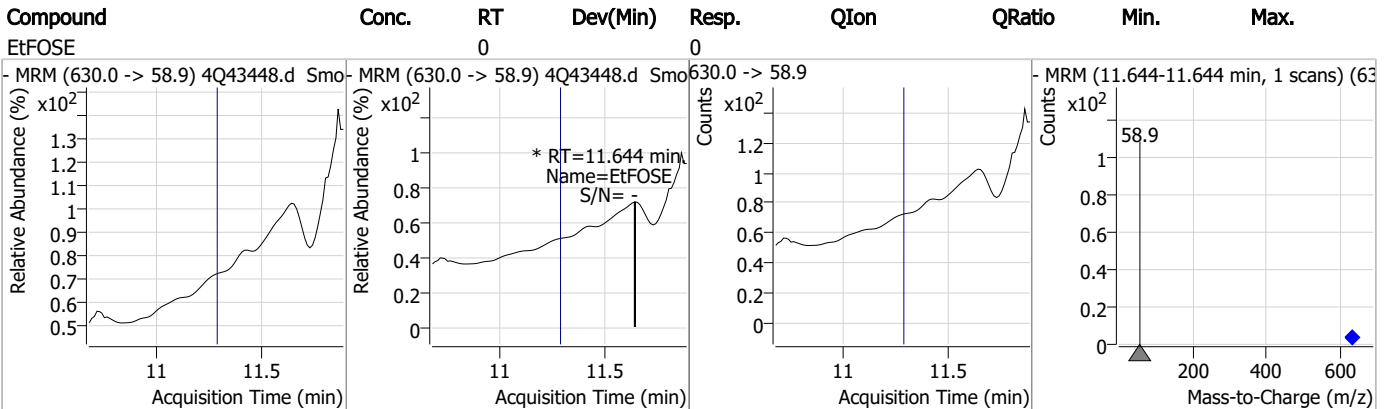
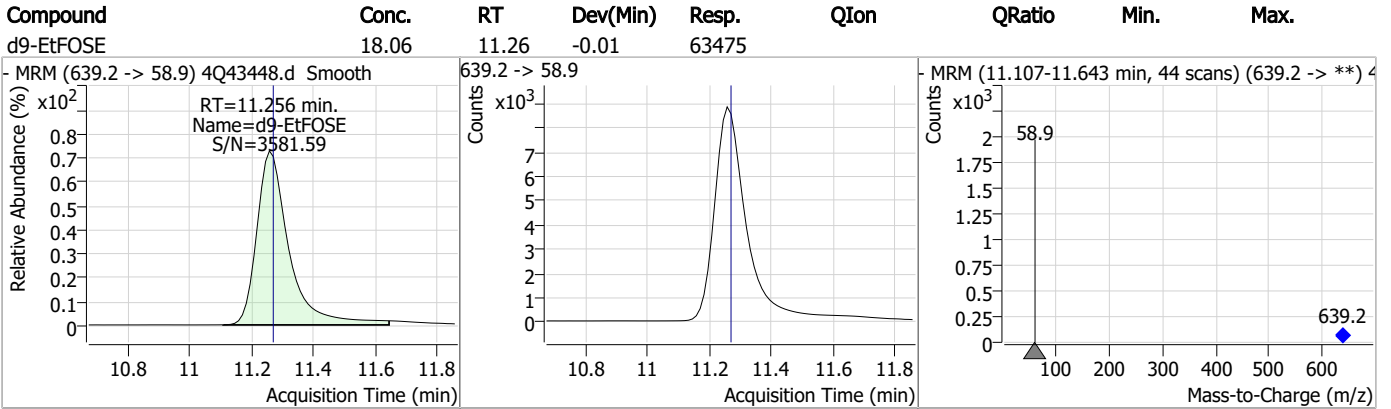
7.1.2

7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.1.2

7

Manual Integration Approval Summary

Sample Number: FC5316-2 Method: EPA DRAFT 1633
Lab FileID: 4Q43448.D Analyst approved: 04/24/23 15:19 Martha Valls
Injection Time: 04/21/23 20:37 Supervisor approved: 04/25/23 14:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanoic acid	2706-90-3		4.44	Poorly defined baseline

7.1.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43445.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 7:55:50 PM
 Sample Name : op96472-mb
 Vial : P4-D3
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96472,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.002	216.8 -> 171.9	108670	10.00 µg/L	0.078
M5-PFPeA	4.437	268.3 -> 223.0	57230	5.00 µg/L	0.025
M5-PFHxA	5.597	318.0 -> 273.0	45266	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	24292	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	31903	2.50 µg/L	-0.026
M9-PFNA	7.733	472.1 -> 427.0	17831	1.25 µg/L	-0.013
M6-PFDA	8.240	519.1 -> 474.1	17597	1.25 µg/L	-0.012
M7-PFUnDA	8.710	570.0 -> 525.1	17667	1.25 µg/L	-0.025
M2-PFDoDA	9.155	615.1 -> 570.0	20661	1.25 µg/L	-0.025
M2-PFTeDA	9.949	715.2 -> 670.0	14430	1.25 µg/L	-0.037
M8-FOSA	9.771	506.1 -> 77.8	10368	2.50 µg/L	-0.025
M3-PFBS	5.502	302.1 -> 79.9	9530	2.50 µg/L	0.000
M3-PFHxS	7.279	402.1 -> 79.9	5676	2.50 µg/L	-0.012
M8-PFOS	8.392	507.1 -> 79.9	8723	2.50 µg/L	-0.012
M2-4:2FTS	5.285	329.1 -> 80.9	1425	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2258	5.00 µg/L	-0.012
M2-8:2FTS	8.015	529.1 -> 80.9	4026	5.00 µg/L	-0.025
M3-MeFOSAA	8.286	573.2 -> 419.0	15409	5.00 µg/L	-0.025
M3-HFPO-DA	5.952	286.9 -> 168.9	24477	10.00 µg/L	-0.013
M5-EtFOSAA	8.495	589.2 -> 419.0	11405	5.00 µg/L	-0.025
M7-MeFOSE	10.947	623.2 -> 58.9	36850	25.00 µg/L	-0.025
M9-EtFOSE	11.256	639.2 -> 58.9	57837	25.00 µg/L	-0.012
M5-EtFOSA	11.348	531.1 -> 219.0	6424	2.50 µg/L	-0.012
M3-MeFOSA	11.051	515.0 -> 219.0	5465	2.50 µg/L	-0.025
13C4-PFOS	8.393	502.8 -> 79.9	7960	2.50 µg/L	-0.012
13C3-PFBA	2.993	216.0 -> 172.0	53803	5.00 µg/L	0.065
18O2-PFHxS	7.278	403.0 -> 83.9	3662	2.50 µg/L	-0.012
13C4-PFOA	7.176	417.1 -> 372.0	36598	2.50 µg/L	-0.026
13C2-PFDA	8.228	515.1 -> 470.1	14668	1.25 µg/L	-0.025
13C5-PFNA	7.734	468.0 -> 423.0	18977	1.25 µg/L	-0.013
13C2-PFHxA	5.598	315.1 -> 270.0	35408	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	1425	6.63 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.6%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2258	6.67 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.5%		
13C2-8:2FTS	8.015	529.1 -> 80.9	4026	6.56 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 131.3%		
13C2-PFDoDA	9.155	615.1 -> 570.0	20661	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.3%		
13C2-PFTeDA	9.949	715.2 -> 670.0	14430	1.02 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.9%		
13C3-PFBS	5.502	302.1 -> 79.9	9530	2.81 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C3-PFHxS	7.279	402.1 -> 79.9	5676	2.71 µg/L	-0.012

7.2.1
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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 = 108.6%	
13C4-PFBA	3.002	216.8 -> 171.9	108670	11.21 µg/L	0.078
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C4-PFHpA	6.517	367.1 -> 322.0	24292	2.74 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C5-PFHxA	5.597	318.0 -> 273.0	45266	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.8%	
13C5-PFPeA	4.437	268.3 -> 223.0	57230	5.28 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C6-PFDA	8.240	519.1 -> 474.1	17597	1.39 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.9%	
13C7-PFUnDA	8.710	570.0 -> 525.1	17667	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C8-FOSA	9.771	506.1 -> 77.8	10368	1.80 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 71.9%	
13C8-PFOA	7.175	421.1 -> 376.0	31903	2.61 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C8-PFOS	8.392	507.1 -> 79.9	8723	2.74 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.7%	
13C9-PFNA	7.733	472.1 -> 427.0	17831	1.35 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.6%	
d3-MeFOSAA	8.286	573.2 -> 419.0	15409	5.89 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.9%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	24477	9.11 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.1%	
d3-MeFOSA	11.051	515.0 -> 219.0	5465	1.83 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.3%	
d5-EtFOSAA	8.495	589.2 -> 419.0	11405	5.19 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d7-MeFOSE	10.947	623.2 -> 58.9	36850	15.09 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 60.4%	
d9-EtFOSE	11.256	639.2 -> 58.9	57837	18.49 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.0%	
d5-EtFOSA	11.348	531.1 -> 219.0	6424	2.03 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.1%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.565	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.2.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8				
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	-	449.0 -> 79.9	-	N.D.		
		449.0 -> 98.9				
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	7.564	413.0 -> 369.0	0	µg/L	m	1
		413.0 -> 169.0	0			
PFOS	-	498.9 -> 79.9	-	N.D.		
		498.9 -> 98.8				
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.1
7

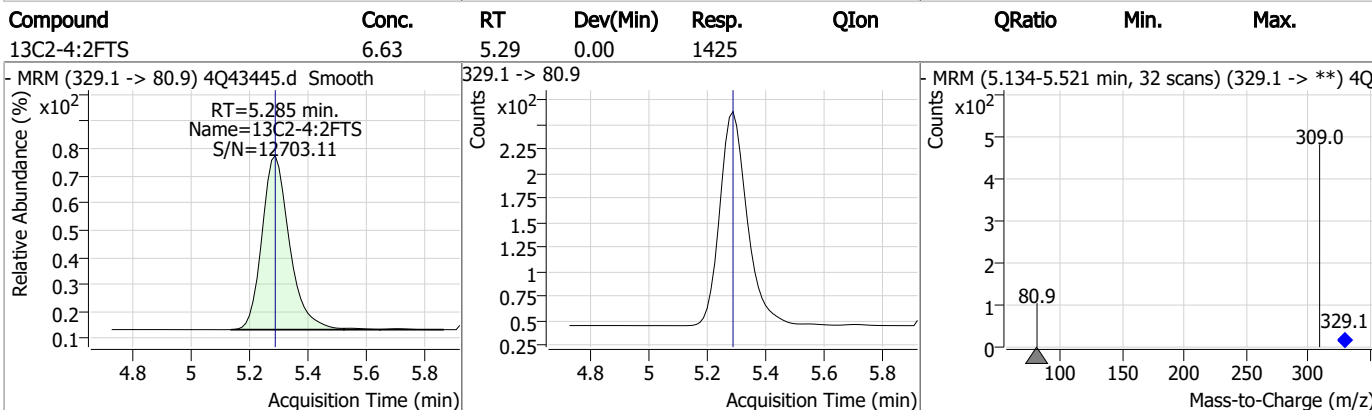
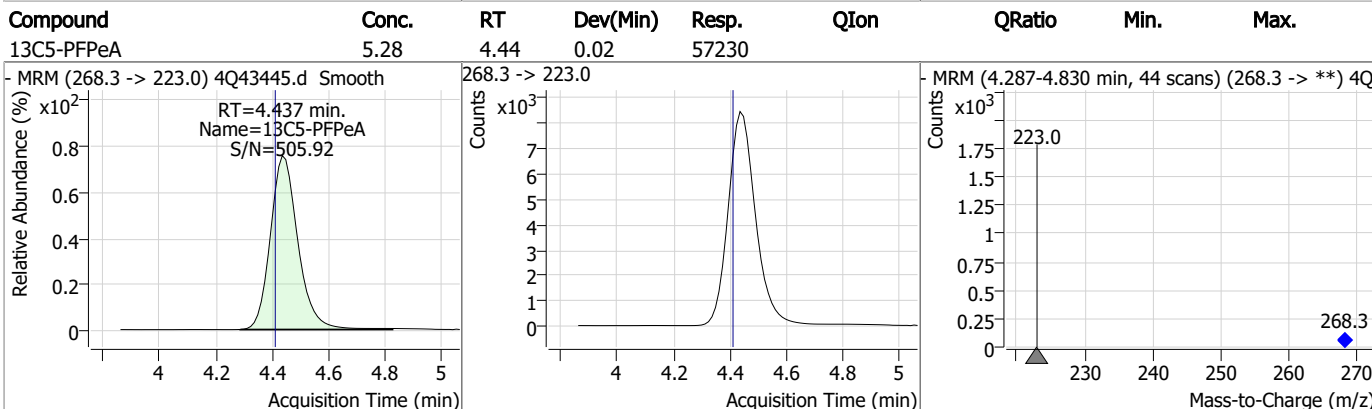
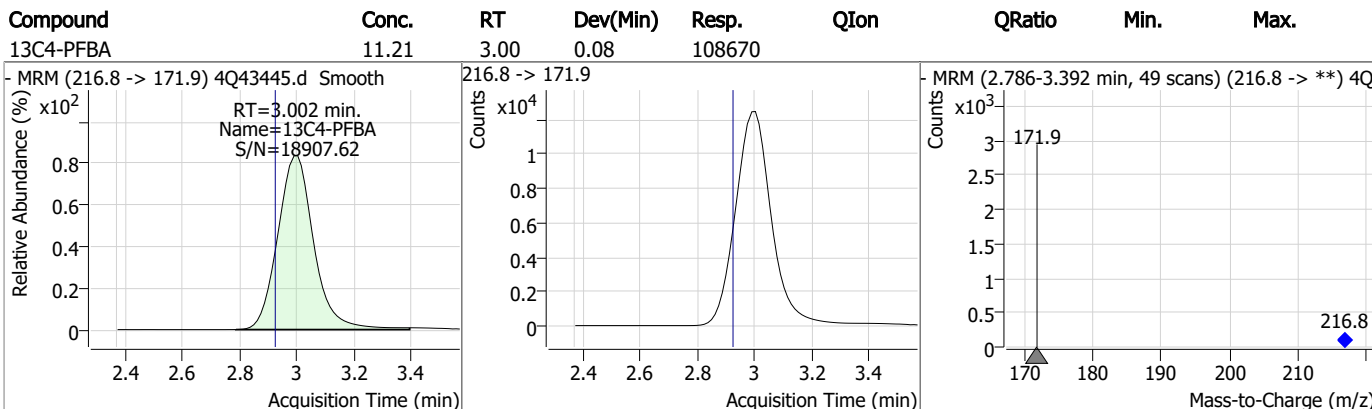
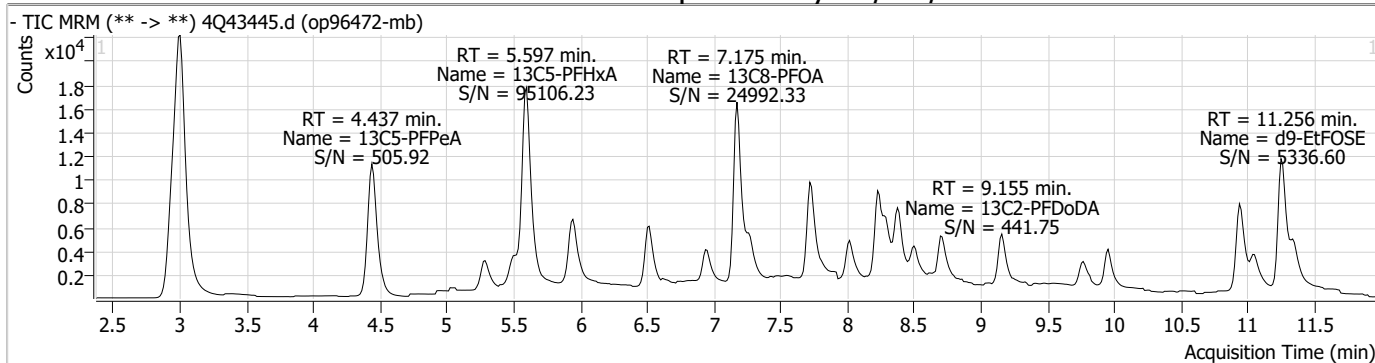
Perfluorinated Compounds by LC/MS/MS

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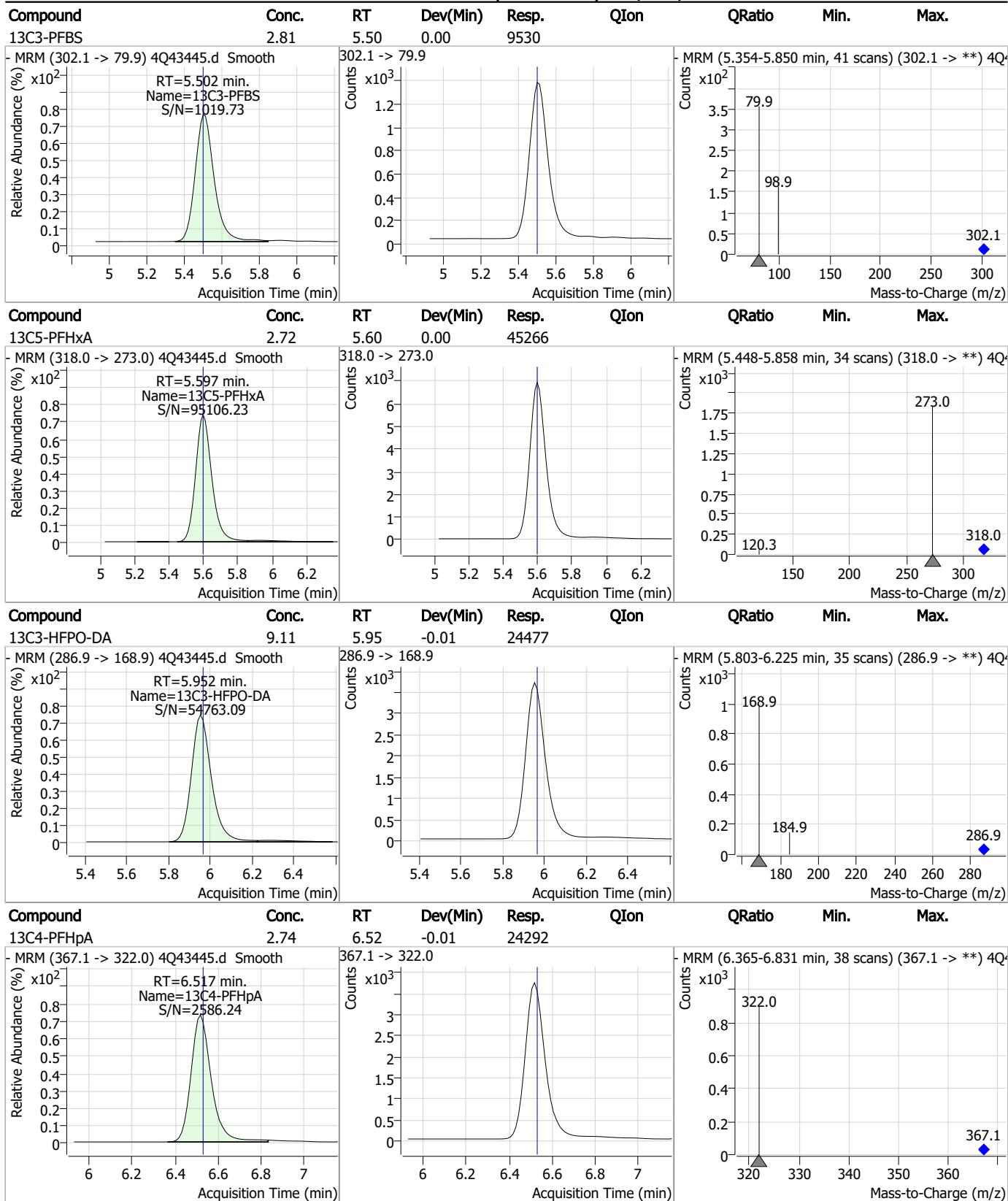
7.2.1

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Perfluorinated Compounds by LC/MS/MS

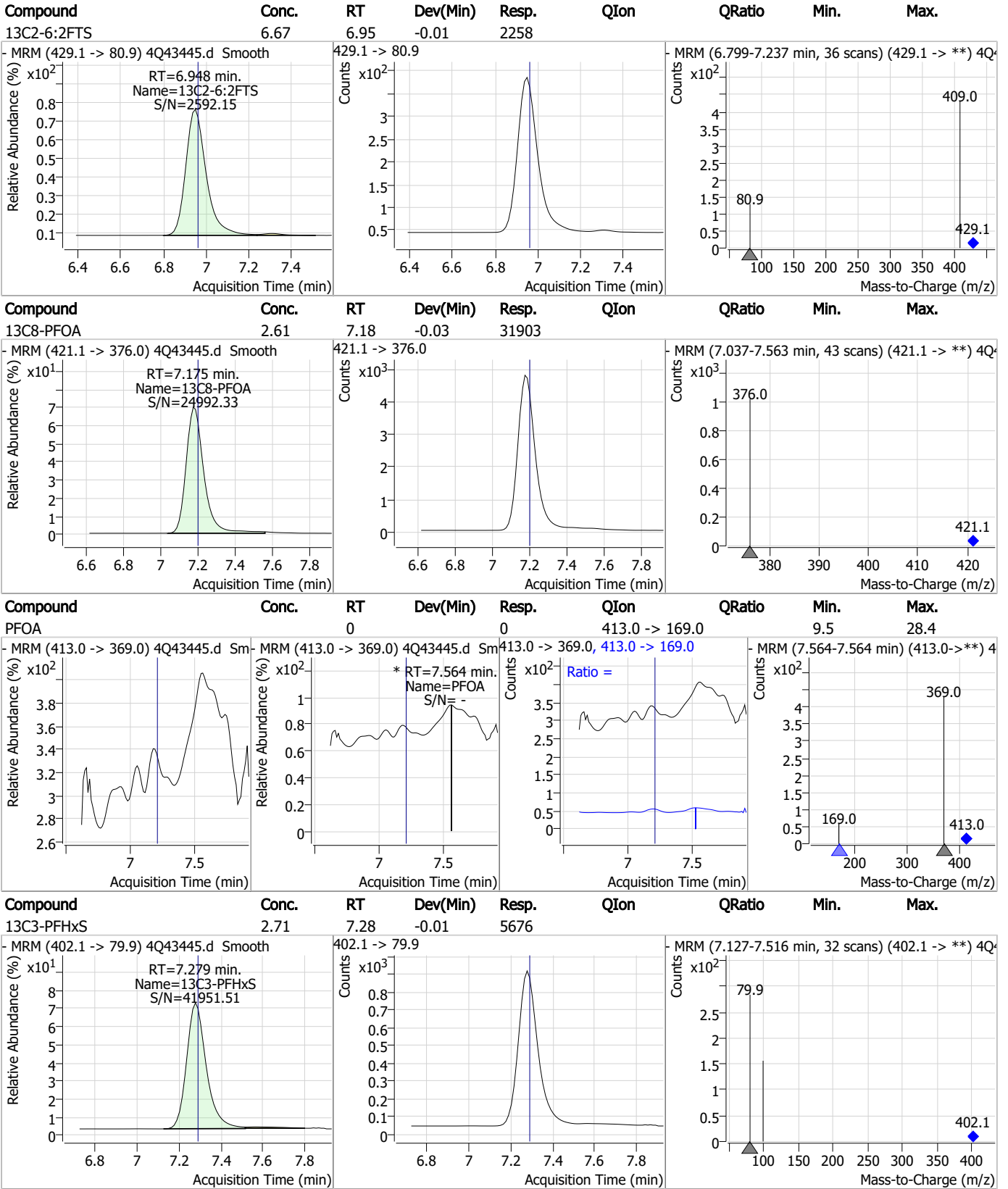


Perfluorinated Compounds by LC/MS/MS



7.2.1
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Perfluorinated Compounds by LC/MS/MS

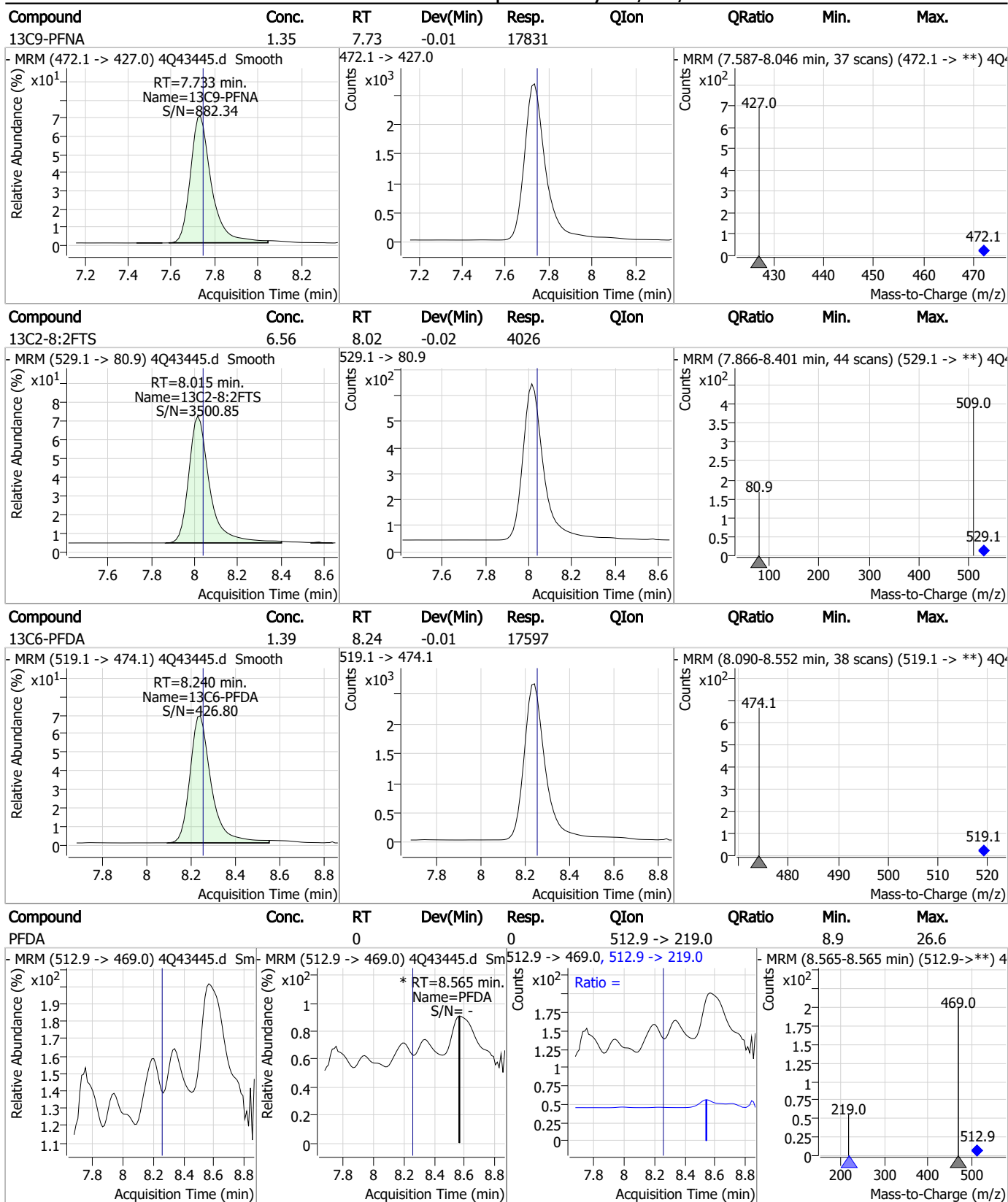


7.2.1

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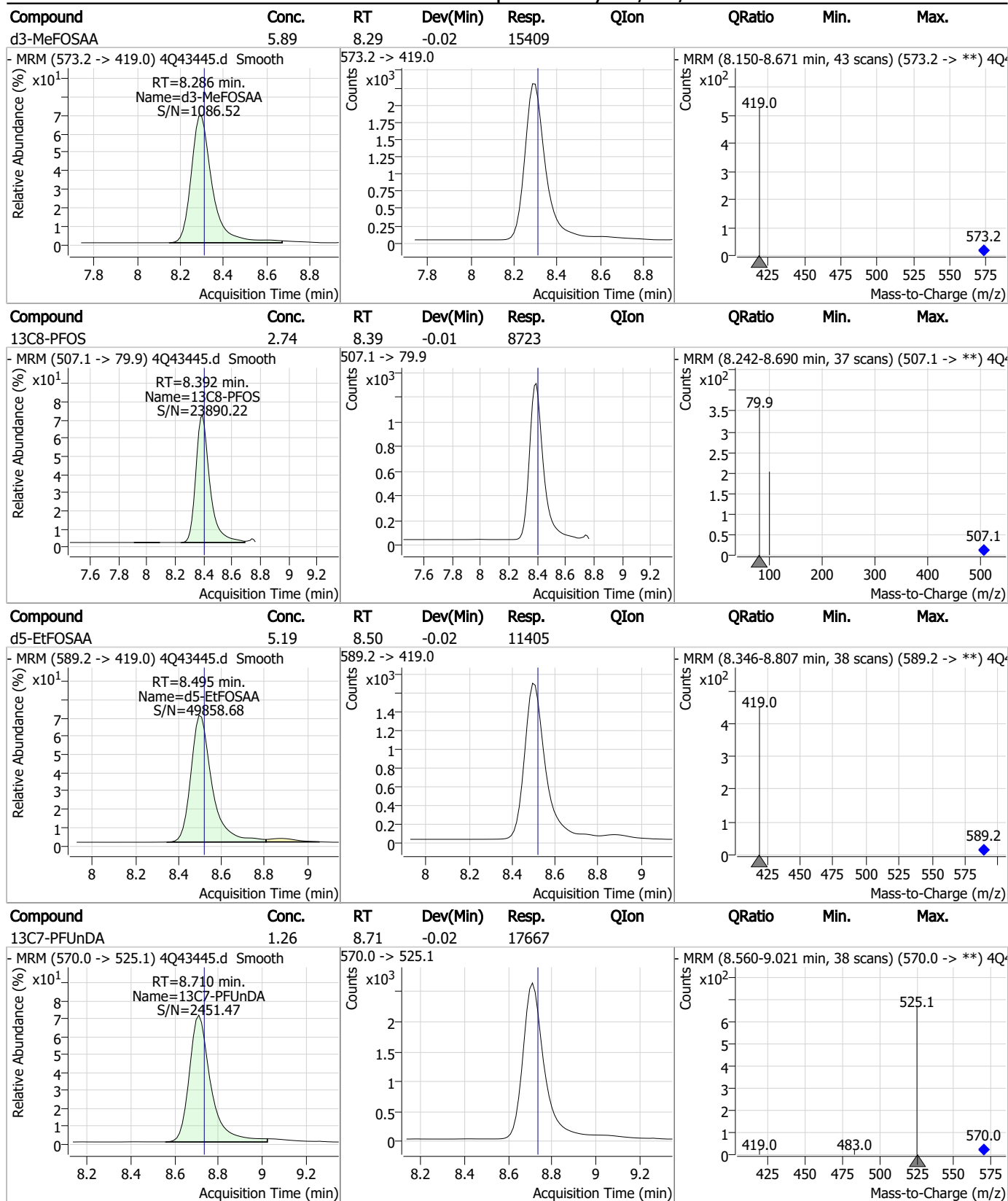
Perfluorinated Compounds by LC/MS/MS



7.2.1
7

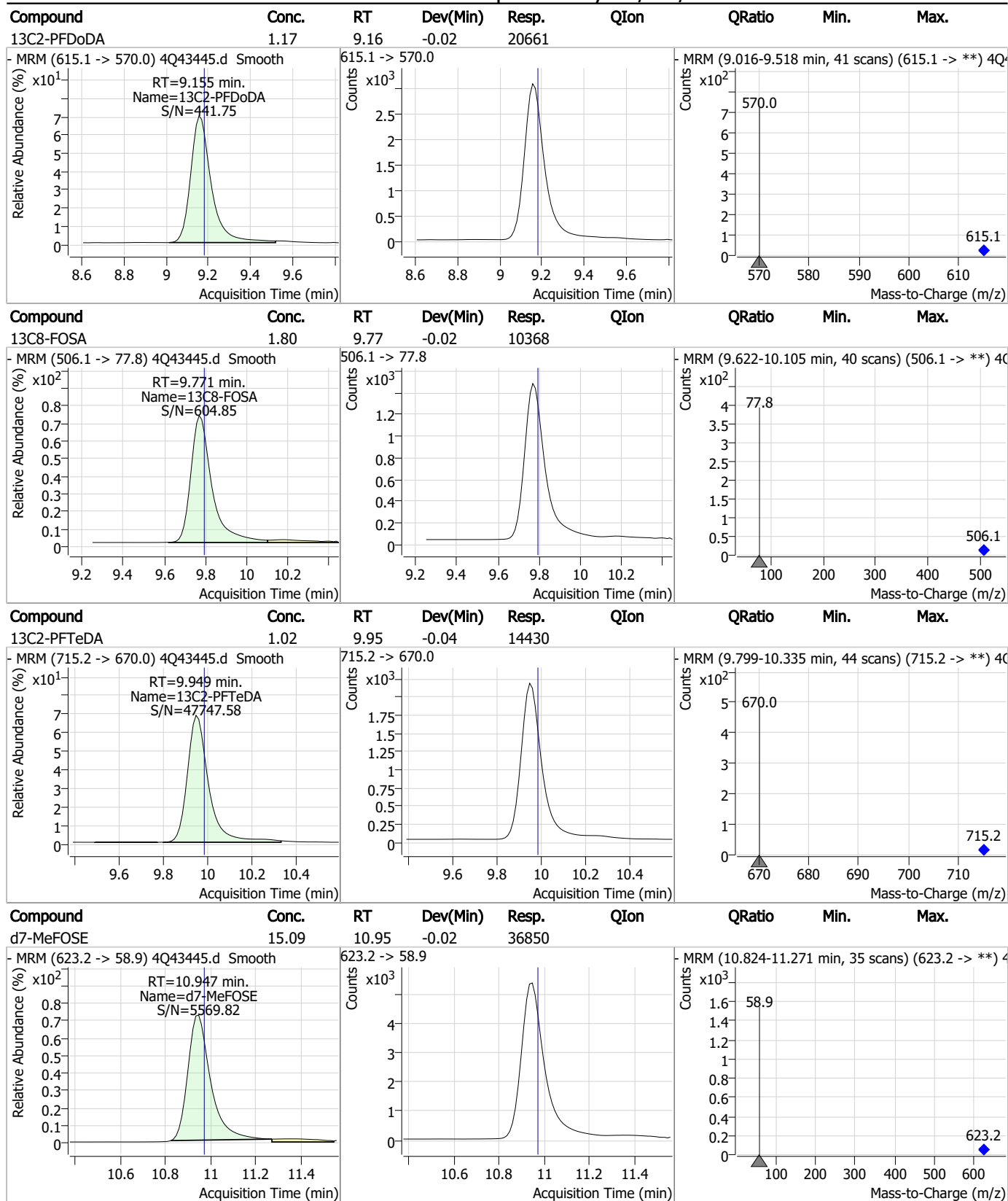


Perfluorinated Compounds by LC/MS/MS



7.2.1
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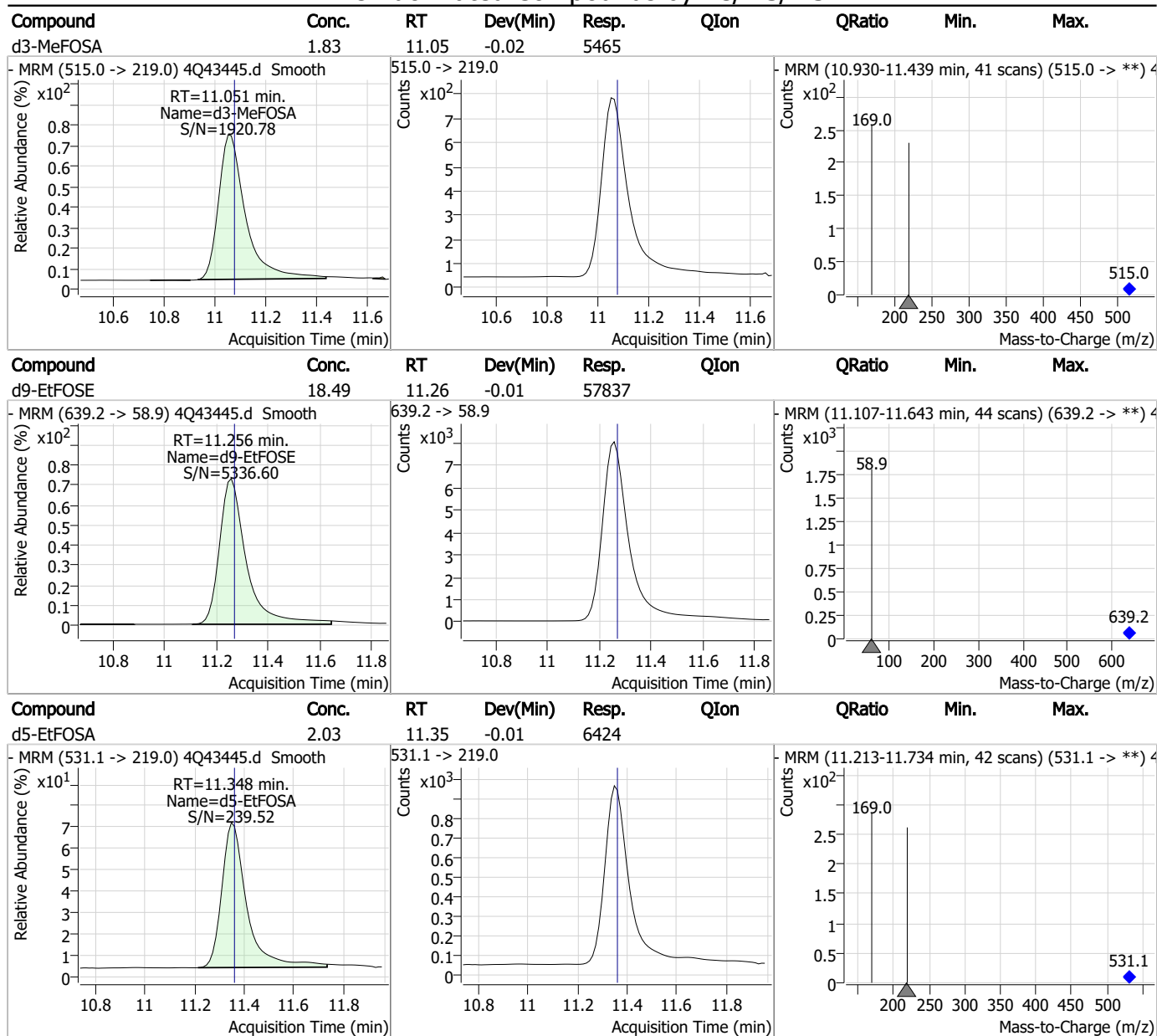
Perfluorinated Compounds by LC/MS/MS



7.2.1
7



Perfluorinated Compounds by LC/MS/MS



7.2.1
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43427.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 3:41:05 PM
 Sample Name : IBLK
 Vial : P1-A1
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96301,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	117537	10.00 µg/L	0.013
M5-PFPeA	4.412	268.3 -> 223.0	68969	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	52818	2.50 µg/L	0.000
M4-PFHpA	6.529	367.1 -> 322.0	28540	2.50 µg/L	0.000
M8-PFOA	7.201	421.1 -> 376.0	39681	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	20705	1.25 µg/L	0.000
M6-PFDA	8.253	519.1 -> 474.1	20884	1.25 µg/L	0.000
M7-PFUnDA	8.734	570.0 -> 525.1	21413	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	27564	1.25 µg/L	0.000
M2-PFTeDA	9.986	715.2 -> 670.0	20823	1.25 µg/L	0.000
M8-FOSA	9.796	506.1 -> 77.8	17931	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	11420	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	7129	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	10238	2.50 µg/L	0.000
M2-4:2FTS	5.285	329.1 -> 80.9	1687	5.00 µg/L	0.000
M2-6:2FTS	6.961	429.1 -> 80.9	2363	5.00 µg/L	0.000
M2-8:2FTS	8.040	529.1 -> 80.9	4453	5.00 µg/L	0.000
M3-MeFOSAA	8.310	573.2 -> 419.0	18706	5.00 µg/L	0.000
M3-HFPO-DA	5.964	286.9 -> 168.9	30386	10.00 µg/L	0.000
M5-EtFOSAA	8.520	589.2 -> 419.0	14908	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	78422	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	97115	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	10053	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	9077	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	10893	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	65192	5.00 µg/L	0.012
18O2-PFHxS	7.290	403.0 -> 83.9	4913	2.50 µg/L	0.000
13C4-PFOA	7.201	417.1 -> 372.0	46822	2.50 µg/L	0.000
13C2-PFDA	8.253	515.1 -> 470.1	18303	1.25 µg/L	0.000
13C5-PFNA	7.746	468.0 -> 423.0	24620	1.25 µg/L	0.000
13C2-PFHxA	5.598	315.1 -> 270.0	45365	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	1687	5.85 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.0%		
13C2-6:2FTS	6.961	429.1 -> 80.9	2363	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C2-8:2FTS	8.040	529.1 -> 80.9	4453	5.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C2-PFDoDA	9.180	615.1 -> 570.0	27564	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C2-PFTeDA	9.986	715.2 -> 670.0	20823	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C3-PFBS	5.502	302.1 -> 79.9	11420	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C3-PFHxS	7.291	402.1 -> 79.9	7129	2.54 µg/L	0.000

7.2.2
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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 = 101.6%	
13C4-PFBA	2.936	216.8 -> 171.9	117537	10.01 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.529	367.1 -> 322.0	28540	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFHxA	5.597	318.0 -> 273.0	52818	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFPeA	4.412	268.3 -> 223.0	68969	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C6-PFDA	8.253	519.1 -> 474.1	20884	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C7-PFUnDA	8.734	570.0 -> 525.1	21413	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C8-FOSA	9.796	506.1 -> 77.8	17931	2.27 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.8%	
13C8-PFOA	7.201	421.1 -> 376.0	39681	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C8-PFOS	8.405	507.1 -> 79.9	10238	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C9-PFNA	7.746	472.1 -> 427.0	20705	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.3%	
d3-MeFOSAA	8.310	573.2 -> 419.0	18706	5.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C3-HFPO-DA	5.964	286.9 -> 168.9	30386	8.83 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.3%	
d3-MeFOSA	11.076	515.0 -> 219.0	9077	2.22 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.0%	
d5-EtFOSAA	8.520	589.2 -> 419.0	14908	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d7-MeFOSE	10.972	623.2 -> 58.9	78422	23.47 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.9%	
d9-EtFOSE	11.269	639.2 -> 58.9	97115	22.69 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.8%	
d5-EtFOSA	11.373	531.1 -> 219.0	10053	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.7%	
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	9.582	613.1 -> 569.0	0	µg/L m	1
		613.1 -> 319.0	0		
PFDS	-	599.0 -> 79.9	-	N.D.	

7.2.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.527	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.922	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1				
11CI-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9CI-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.2
7

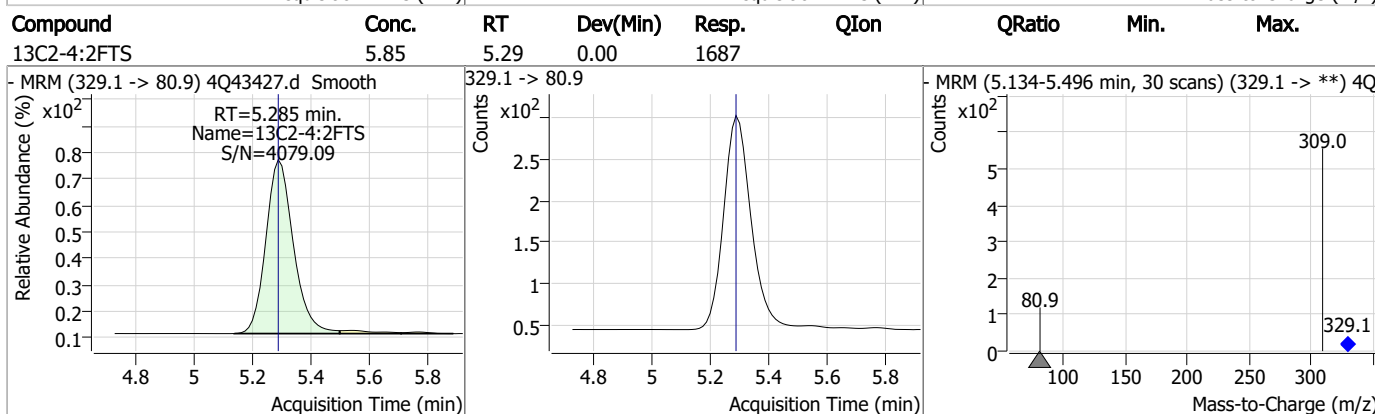
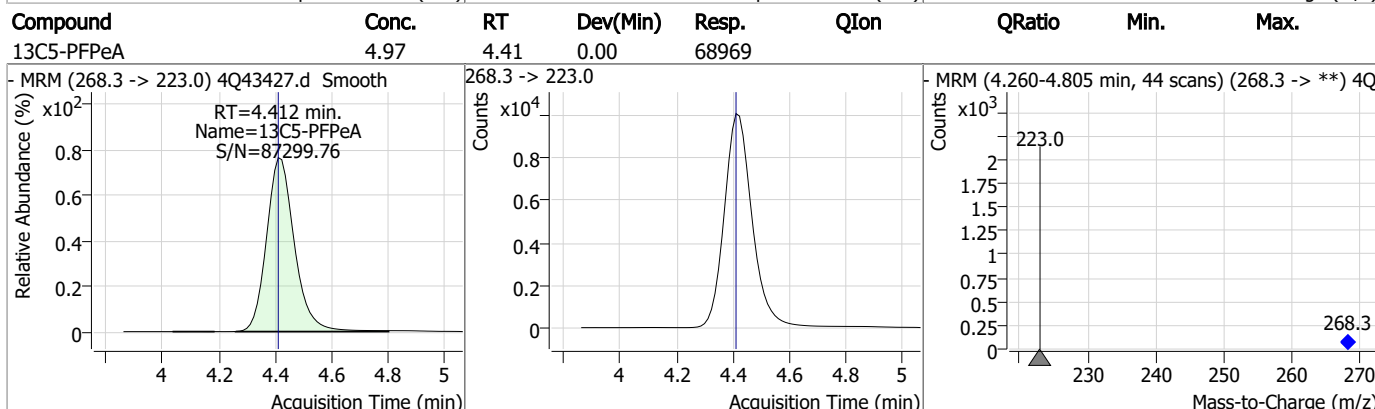
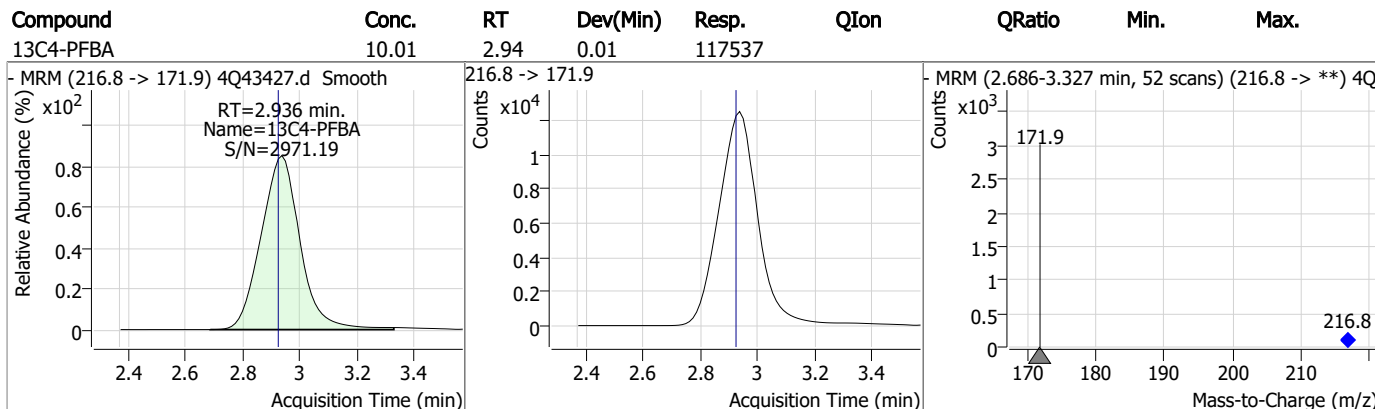
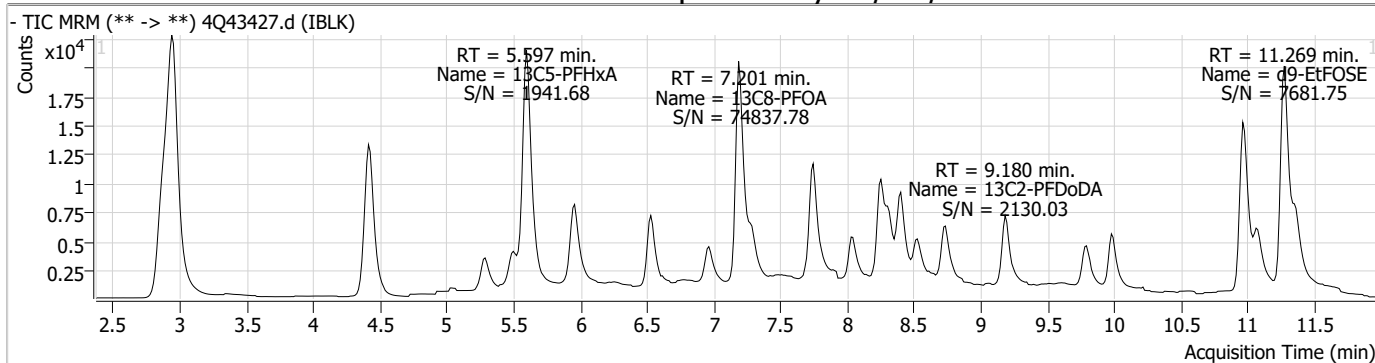
Perfluorinated Compounds by LC/MS/MS

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

7

Perfluorinated Compounds by LC/MS/MS



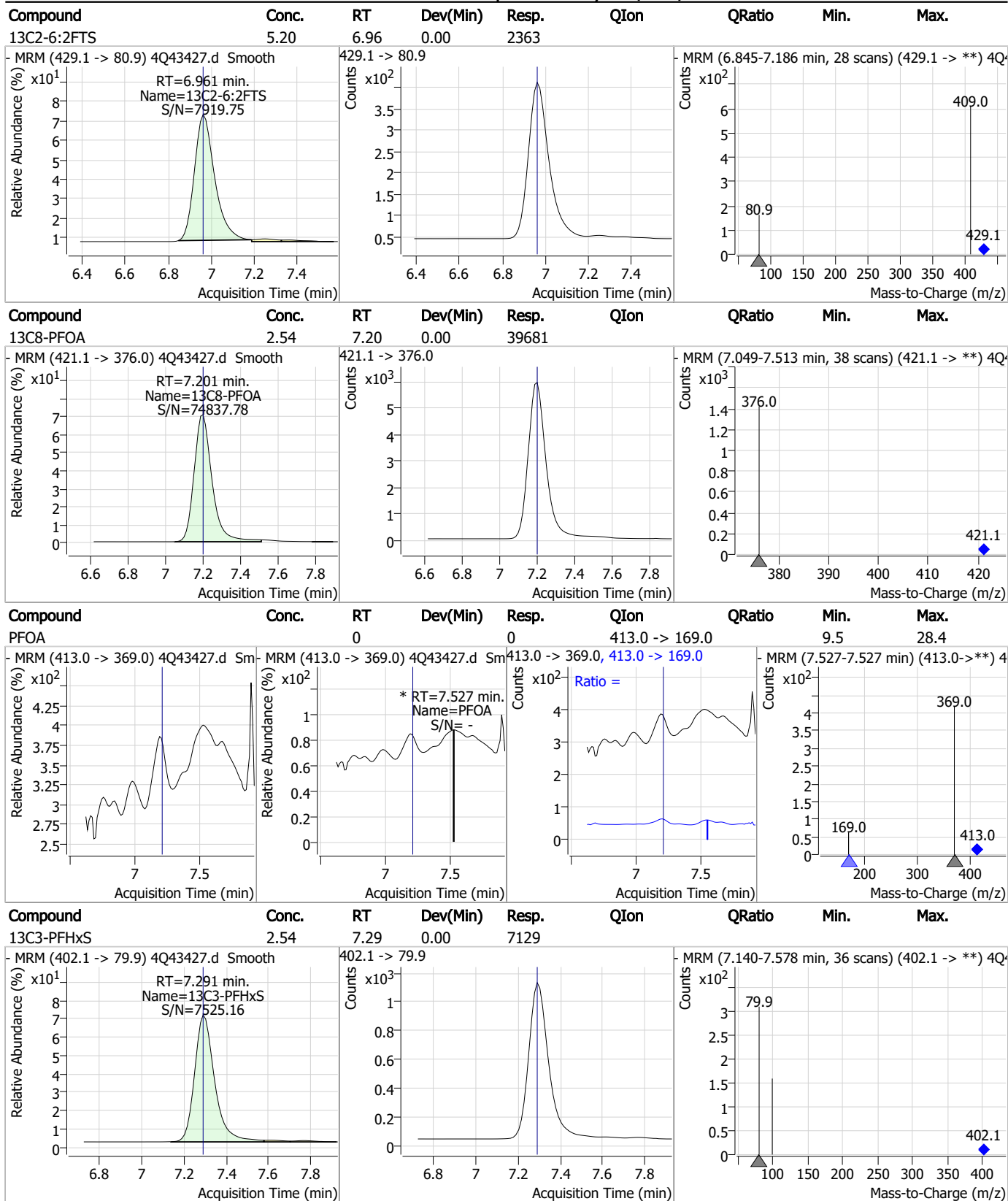
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.51	5.50	0.00	11420				
<p>MRM (302.1 -> 79.9) 4Q43427.d Smooth RT=5.502 min. Name=13C3-PFBS S/N=69170.92</p>			<p>302.1 -> 79.9</p>			<p>MRM (5.341-5.887 min, 45 scans) (302.1 -> **) 4Q</p>		
13C5-PFHxA	2.48	5.60	0.00	52818				
<p>MRM (318.0 -> 273.0) 4Q43427.d Smooth RT=5.597 min. Name=13C5-PFHxA S/N=1941.68</p>			<p>318.0 -> 273.0</p>			<p>MRM (5.448-5.931 min, 40 scans) (318.0 -> **) 4Q</p>		
13C3-HFPO-DA	8.83	5.96	0.00	30386				
<p>MRM (286.9 -> 168.9) 4Q43427.d Smooth RT=5.964 min. Name=13C3-HFPO-DA S/N=3476.95</p>			<p>286.9 -> 168.9</p>			<p>MRM (5.815-6.225 min, 34 scans) (286.9 -> **) 4Q</p>		
13C4-PFHpA	2.51	6.53	0.00	28540				
<p>MRM (367.1 -> 322.0) 4Q43427.d Smooth RT=6.529 min. Name=13C4-PFHpA S/N=48352.57</p>			<p>367.1 -> 322.0</p>			<p>MRM (6.378-6.918 min, 44 scans) (367.1 -> **) 4Q</p>		

7.2.2
7

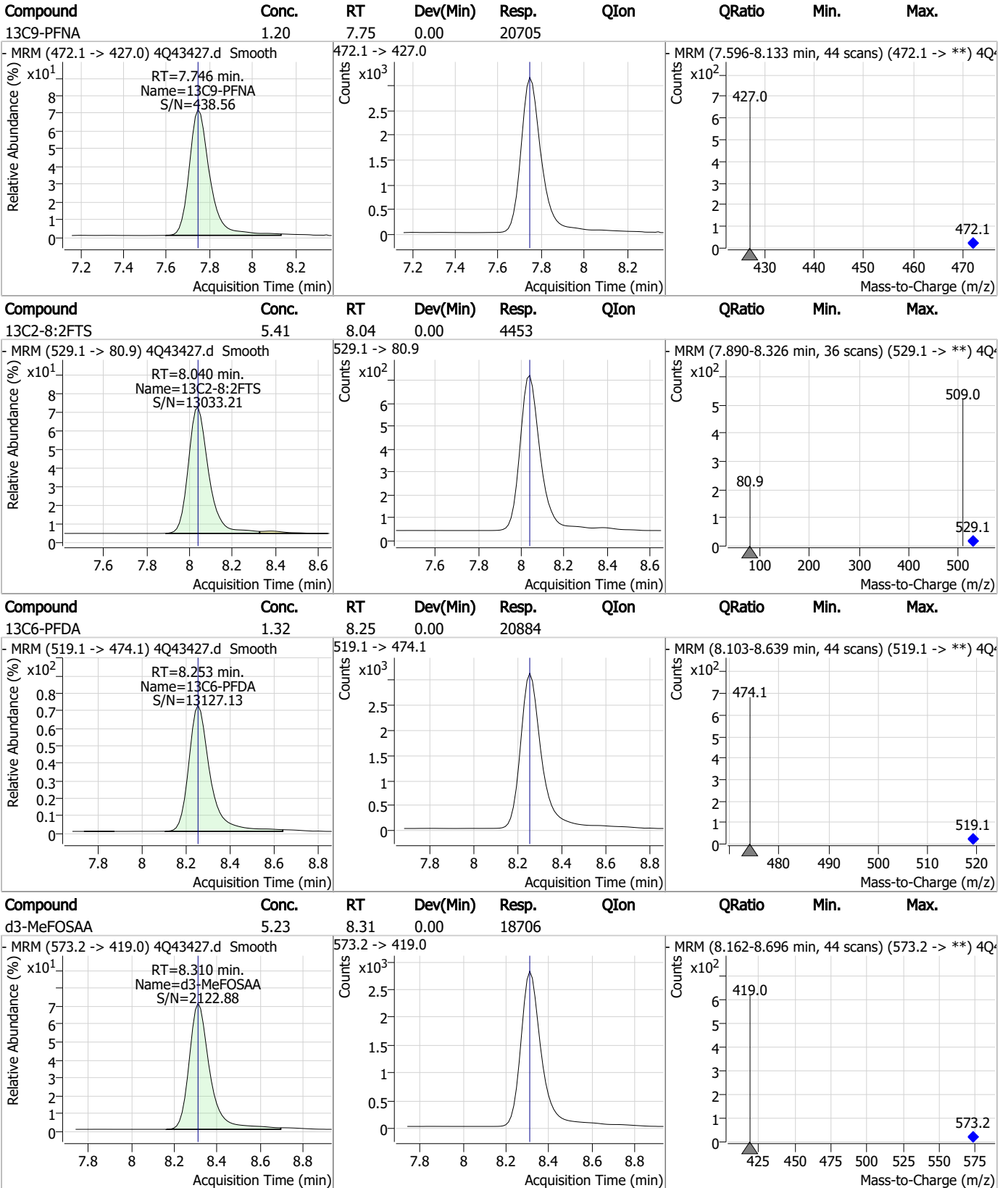


Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS

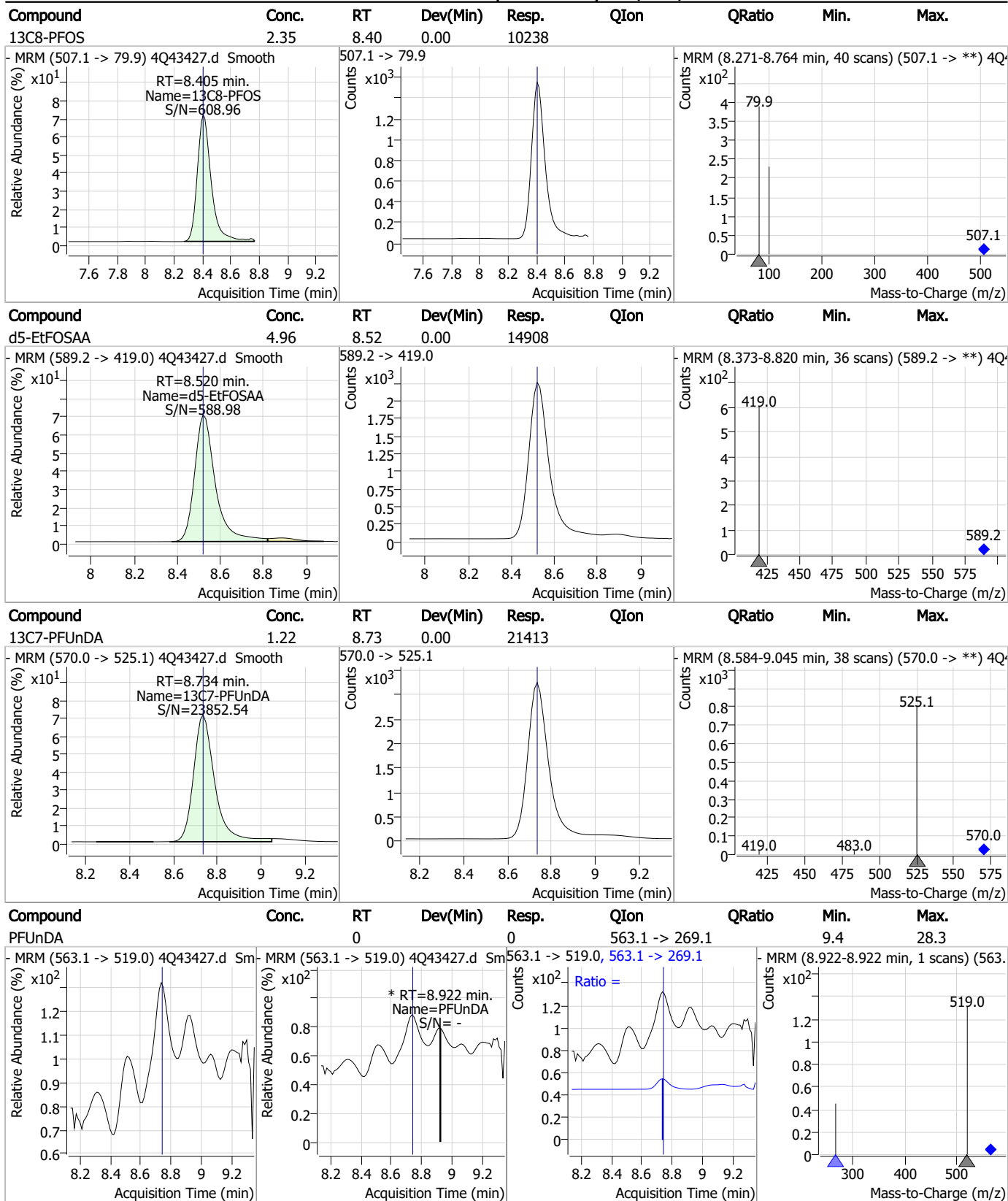


7.2.2

7

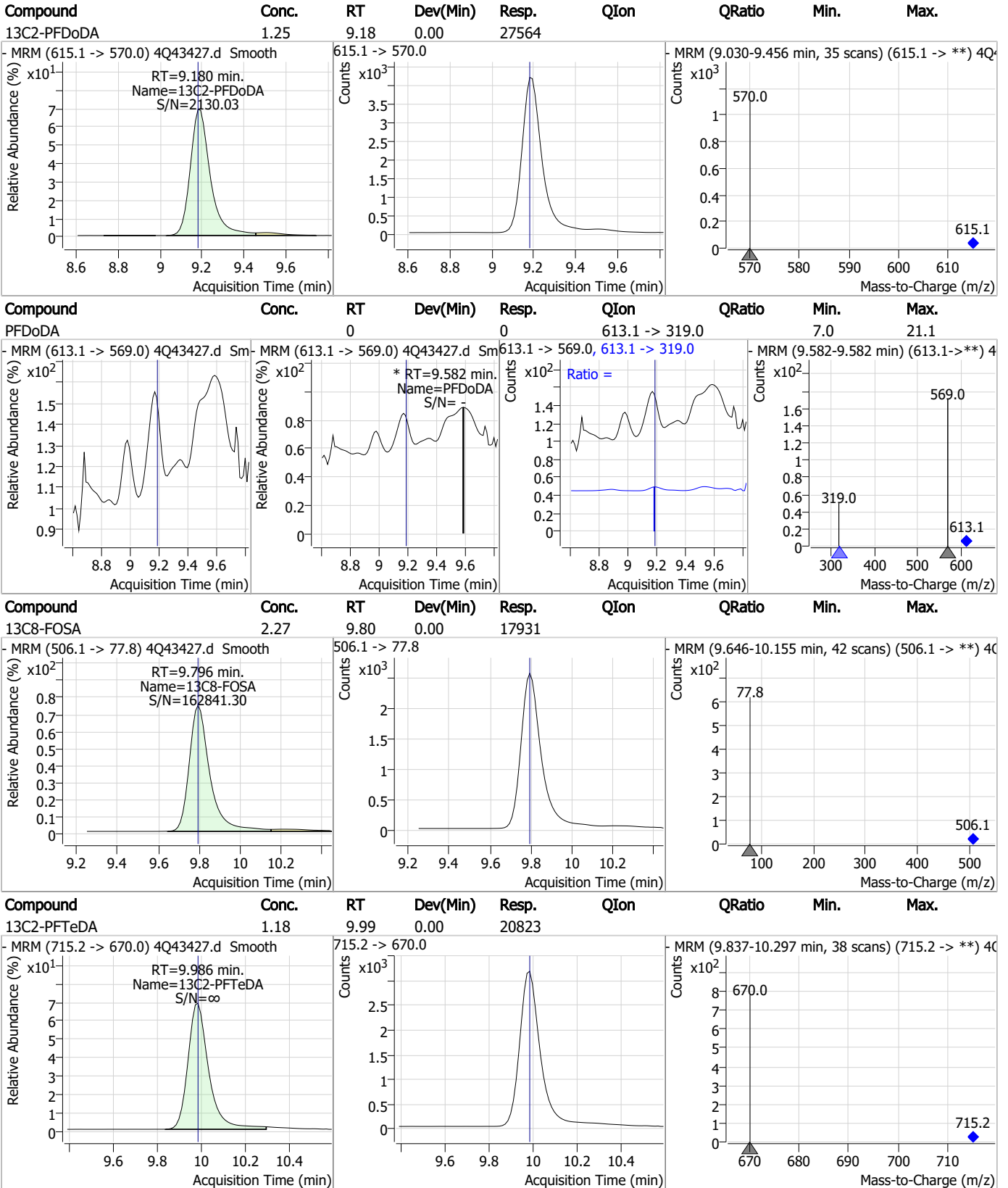


Perfluorinated Compounds by LC/MS/MS



7.22
7

Perfluorinated Compounds by LC/MS/MS

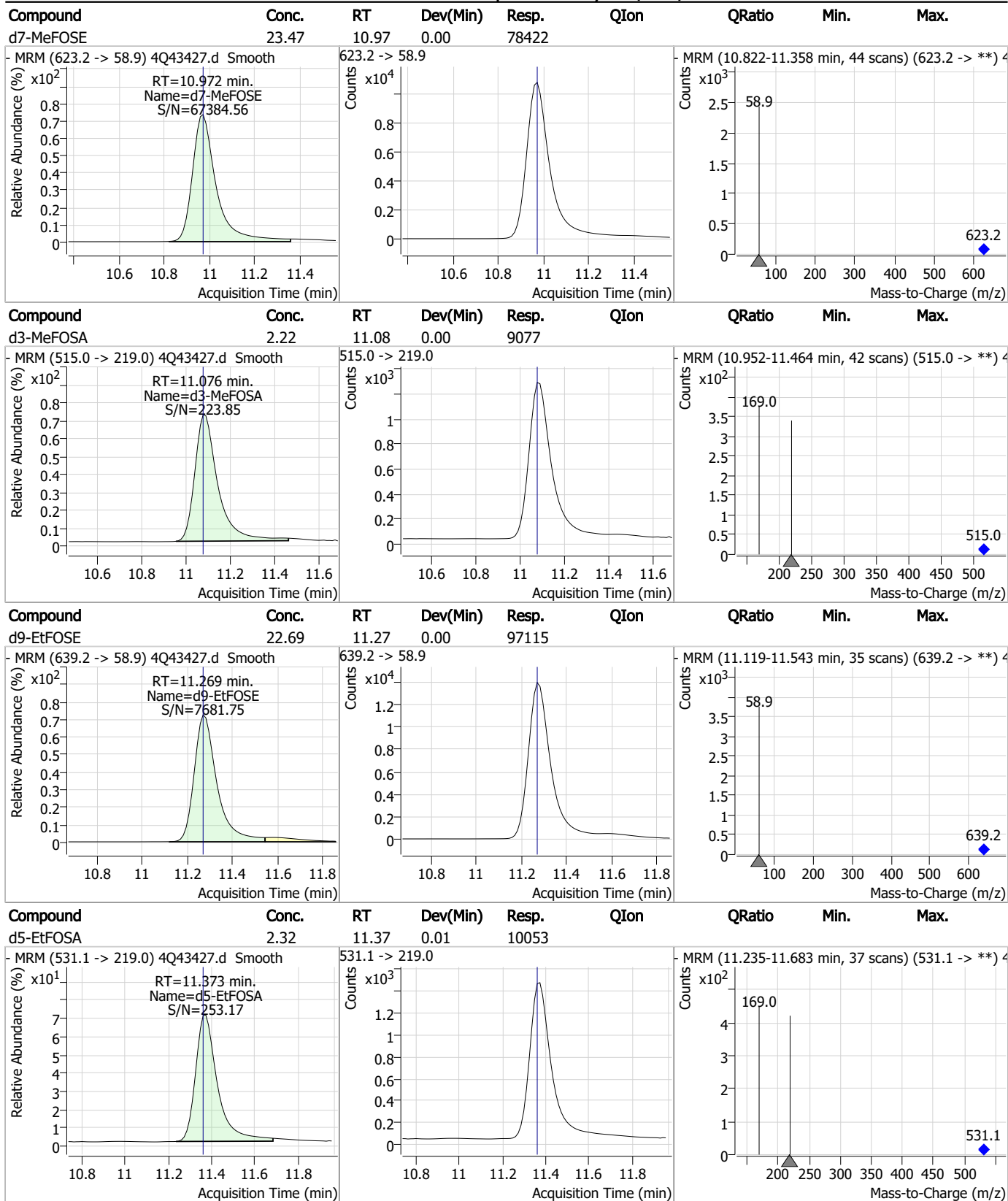


7.2.2

7



Perfluorinated Compounds by LC/MS/MS



7.2.2
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43441.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 6:59:36 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96301,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	122134	10.00 µg/L	0.013
M5-PFPeA	4.424	268.3 -> 223.0	68415	5.00 µg/L	0.012
M5-PFHxA	5.609	318.0 -> 273.0	54275	2.50 µg/L	0.012
M4-PFHpA	6.542	367.1 -> 322.0	28031	2.50 µg/L	0.013
M8-PFOA	7.201	421.1 -> 376.0	40889	2.50 µg/L	0.000
M9-PFNA	7.758	472.1 -> 427.0	21445	1.25 µg/L	0.012
M6-PFDA	8.265	519.1 -> 474.1	19089	1.25 µg/L	0.012
M7-PFUnDA	8.747	570.0 -> 525.1	23524	1.25 µg/L	0.012
M2-PFDoDA	9.193	615.1 -> 570.0	28050	1.25 µg/L	0.012
M2-PFTeDA	9.986	715.2 -> 670.0	22059	1.25 µg/L	0.000
M8-FOSA	9.808	506.1 -> 77.8	18161	2.50 µg/L	0.012
M3-PFBS	5.502	302.1 -> 79.9	11456	2.50 µg/L	0.000
M3-PFHxS	7.304	402.1 -> 79.9	6977	2.50 µg/L	0.012
M8-PFOS	8.417	507.1 -> 79.9	9348	2.50 µg/L	0.012
M2-4:2FTS	5.298	329.1 -> 80.9	1648	5.00 µg/L	0.012
M2-6:2FTS	6.973	429.1 -> 80.9	2924	5.00 µg/L	0.012
M2-8:2FTS	8.052	529.1 -> 80.9	4566	5.00 µg/L	0.012
M3-MeFOSAA	8.323	573.2 -> 419.0	18600	5.00 µg/L	0.012
M3-HFPO-DA	5.976	286.9 -> 168.9	29072	10.00 µg/L	0.012
M5-EtFOSAA	8.532	589.2 -> 419.0	15773	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	78253	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	99197	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	10355	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	9502	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	11285	2.50 µg/L	0.012
13C3-PFBA	2.941	216.0 -> 172.0	67281	5.00 µg/L	0.012
18O2-PFHxS	7.303	403.0 -> 83.9	4839	2.50 µg/L	0.012
13C4-PFOA	7.201	417.1 -> 372.0	48331	2.50 µg/L	0.000
13C2-PFDA	8.265	515.1 -> 470.1	19261	1.25 µg/L	0.012
13C5-PFNA	7.759	468.0 -> 423.0	24788	1.25 µg/L	0.012
13C2-PFHxA	5.610	315.1 -> 270.0	46431	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.298	329.1 -> 80.9	1648	5.80 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.0%		
13C2-6:2FTS	6.973	429.1 -> 80.9	2924	6.54 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.8%		
13C2-8:2FTS	8.052	529.1 -> 80.9	4566	5.63 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.7%		
13C2-PFDoDA	9.193	615.1 -> 570.0	28050	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C2-PFTeDA	9.986	715.2 -> 670.0	22059	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C3-PFBS	5.502	302.1 -> 79.9	11456	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFHxS	7.304	402.1 -> 79.9	6977	2.53 µg/L	0.012

7.2.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFBA	2.936	216.8 -> 171.9	122134	10.08 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C4-PFHpA	6.542	367.1 -> 322.0	28031	2.41 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C5-PFHxA	5.609	318.0 -> 273.0	54275	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	4.424	268.3 -> 223.0	68415	4.82 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C6-PFDA	8.265	519.1 -> 474.1	19089	1.15 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.6%	
13C7-PFUnDA	8.747	570.0 -> 525.1	23524	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-FOSA	9.808	506.1 -> 77.8	18161	2.22 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.8%	
13C8-PFOA	7.201	421.1 -> 376.0	40889	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOS	8.417	507.1 -> 79.9	9348	2.07 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.0%	
13C9-PFNA	7.758	472.1 -> 427.0	21445	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSAA	8.323	573.2 -> 419.0	18600	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C3-HFPO-DA	5.976	286.9 -> 168.9	29072	8.25 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 82.5%	
d3-MeFOSA	11.076	515.0 -> 219.0	9502	2.25 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.9%	
d5-EtFOSAA	8.532	589.2 -> 419.0	15773	5.07 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
d7-MeFOSE	10.972	623.2 -> 58.9	78253	22.61 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.4%	
d9-EtFOSE	11.269	639.2 -> 58.9	99197	22.37 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.5%	
d5-EtFOSA	11.373	531.1 -> 219.0	10355	2.30 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%	

Target Compounds

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.640	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

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

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



7.2.3
7

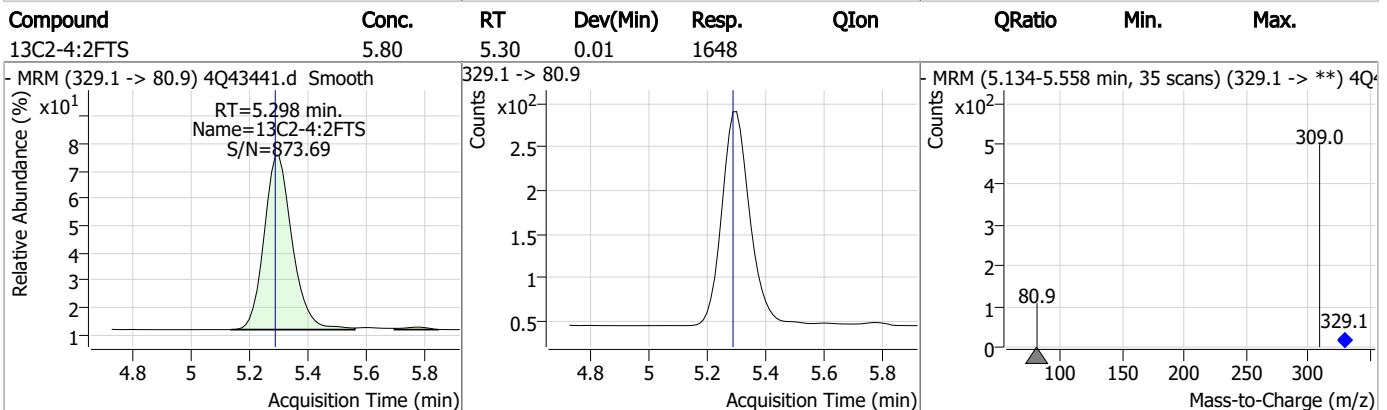
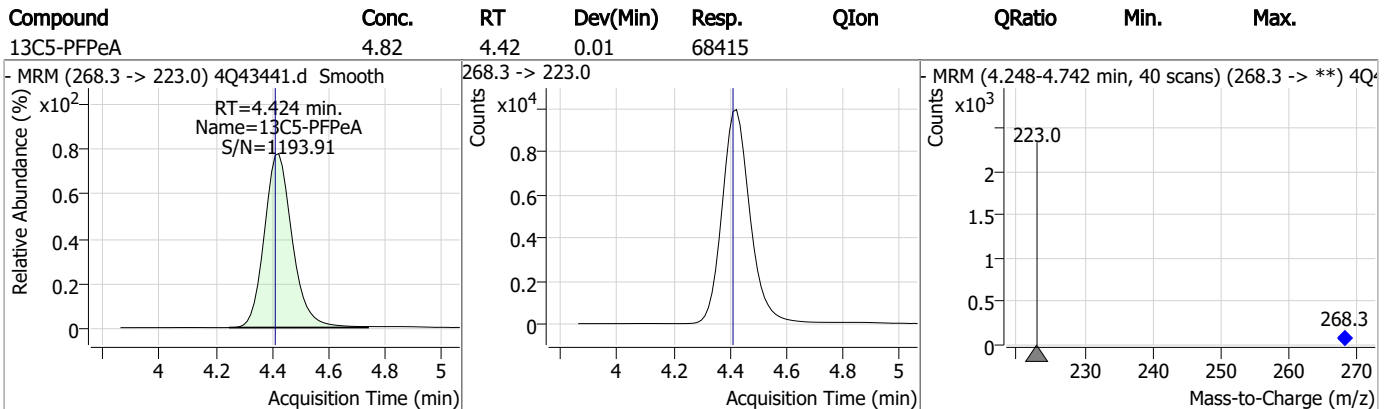
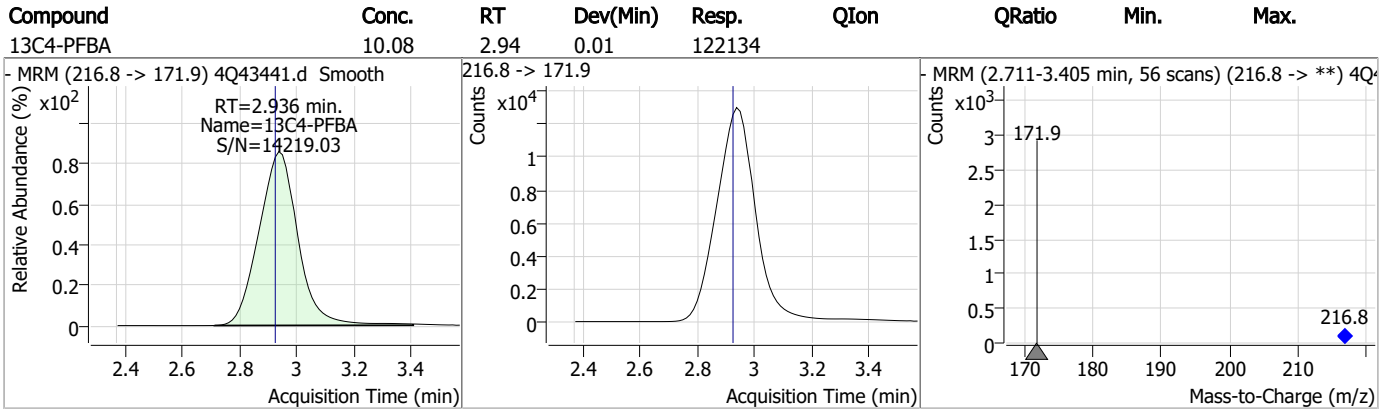
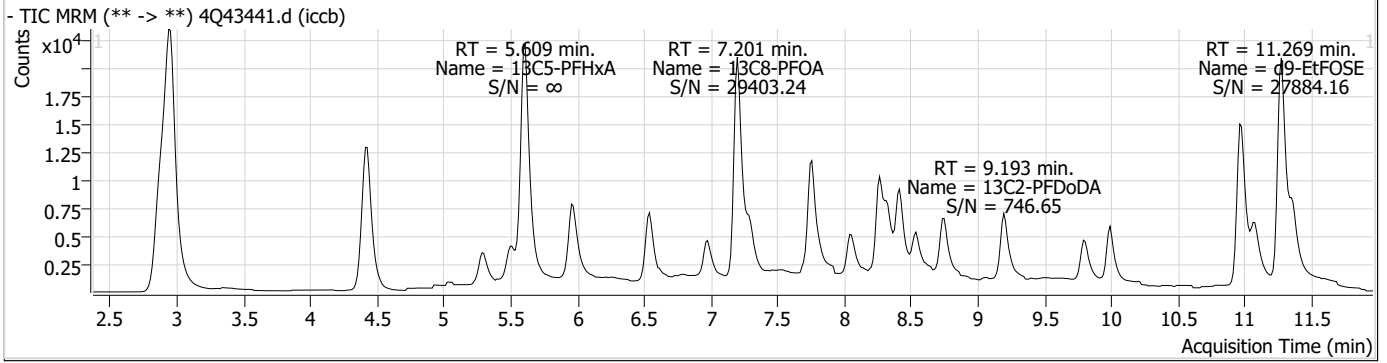
Perfluorinated Compounds by LC/MS/MS

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

7

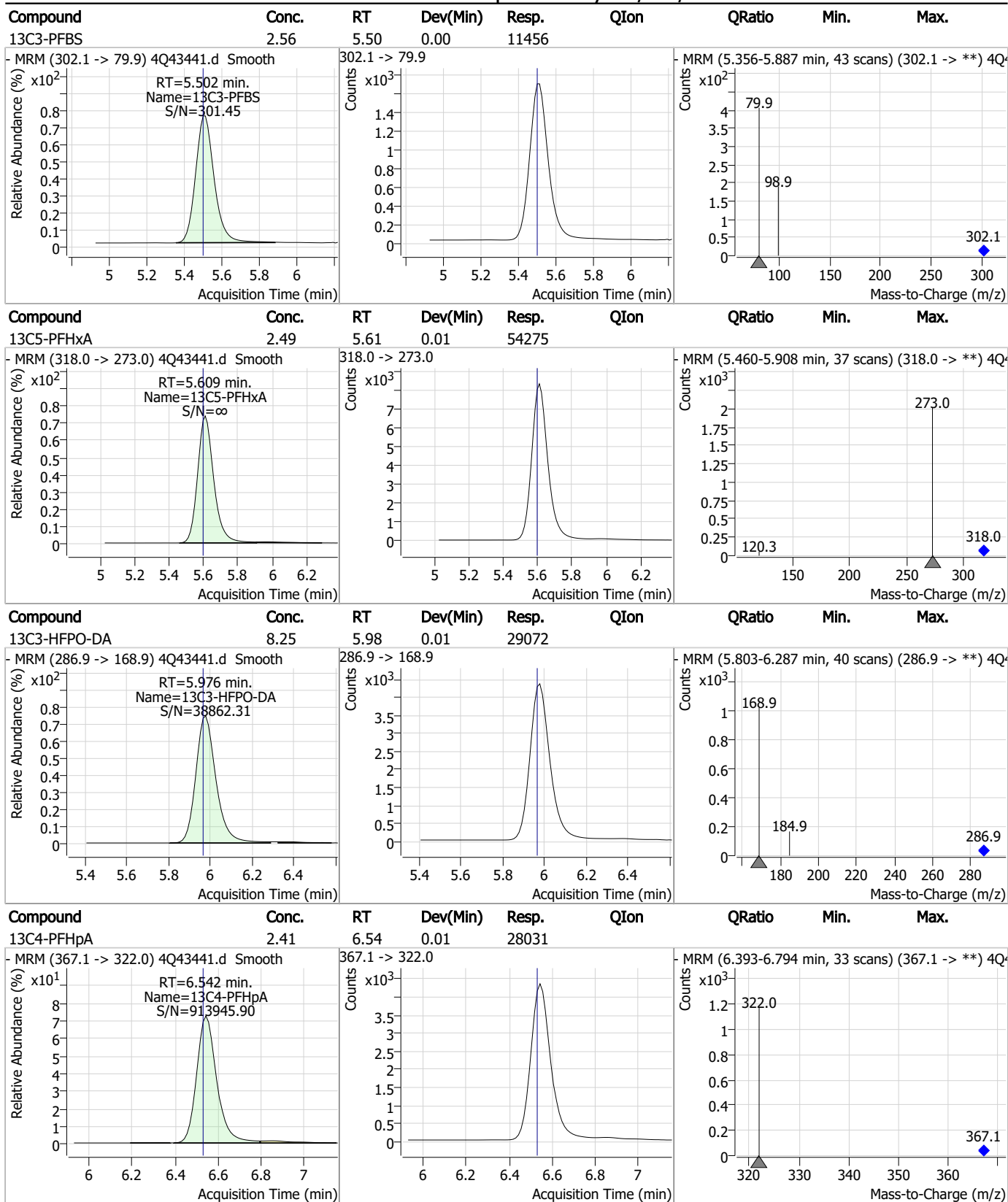
Perfluorinated Compounds by LC/MS/MS



7.2.3

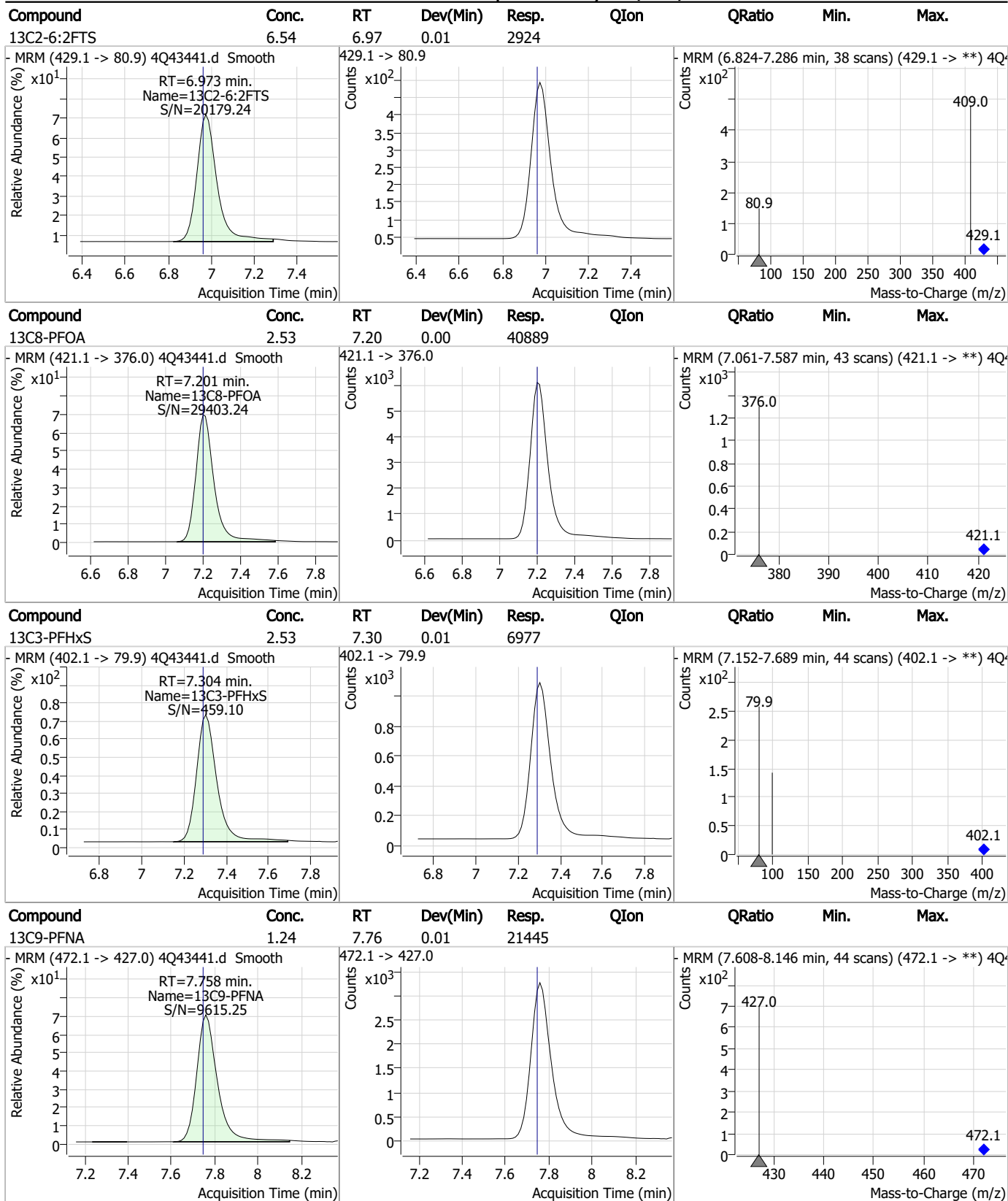
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Perfluorinated Compounds by LC/MS/MS



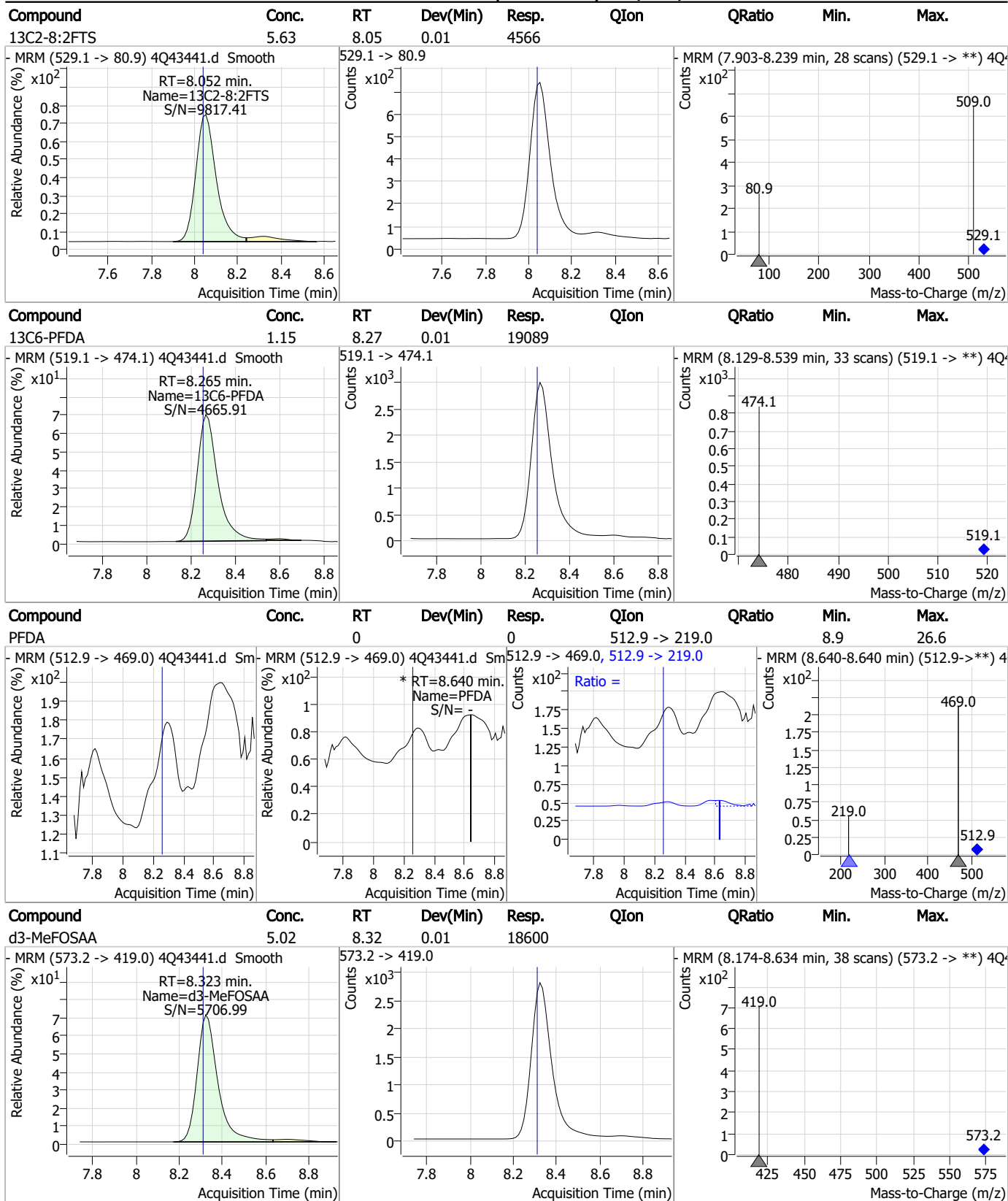
7.2.3
7

Perfluorinated Compounds by LC/MS/MS



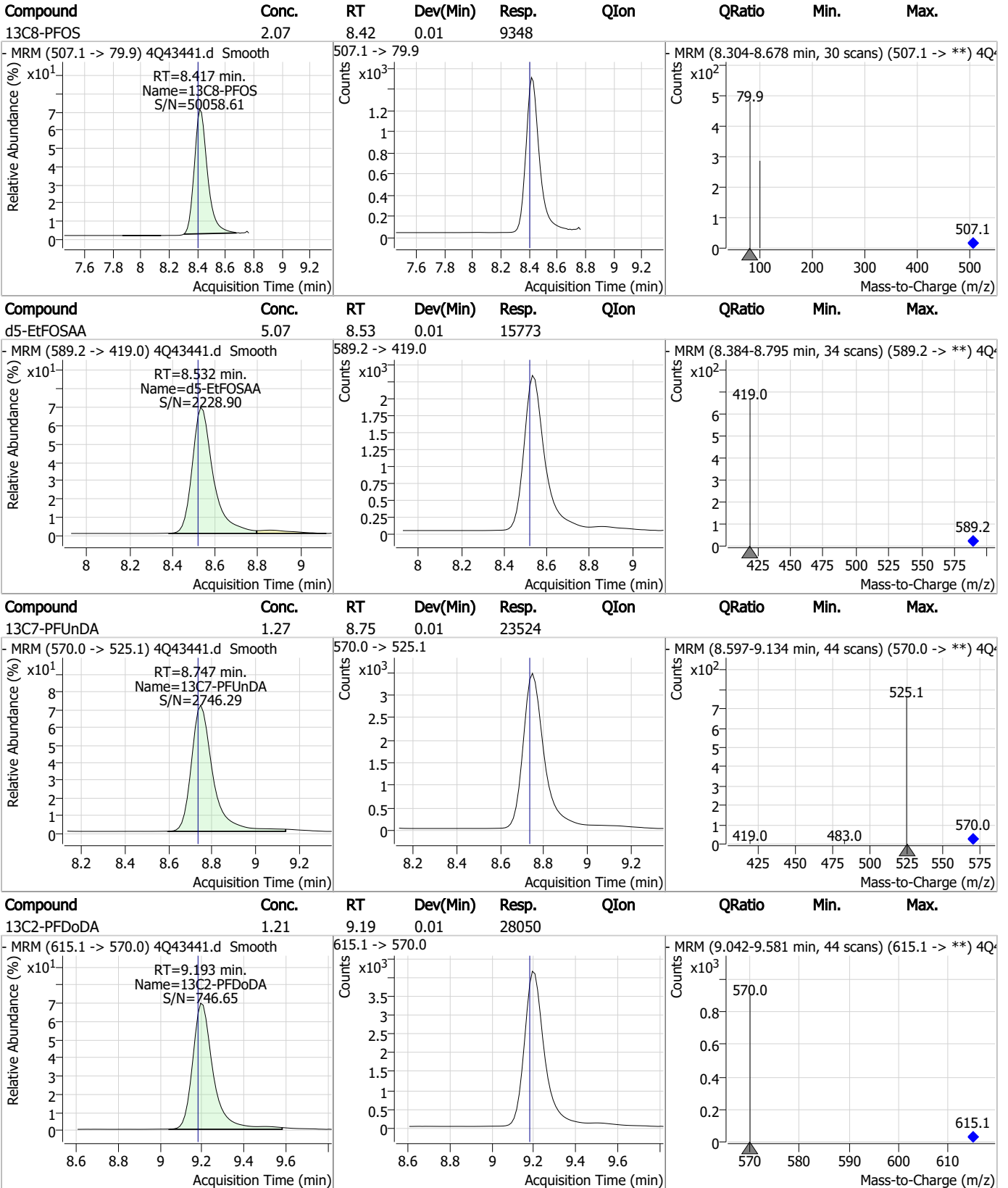
7.2.3
7

Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

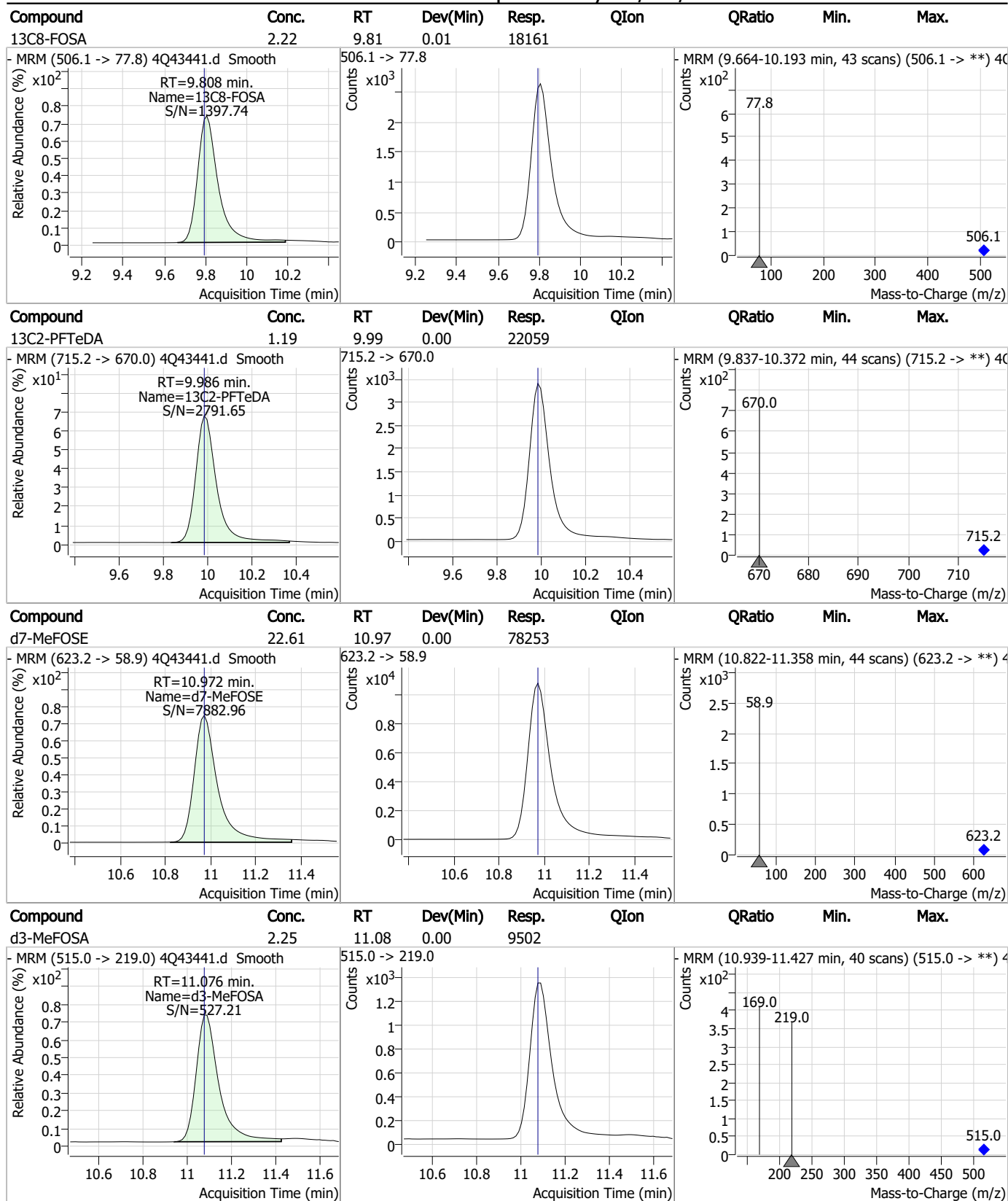


7.2.3

7



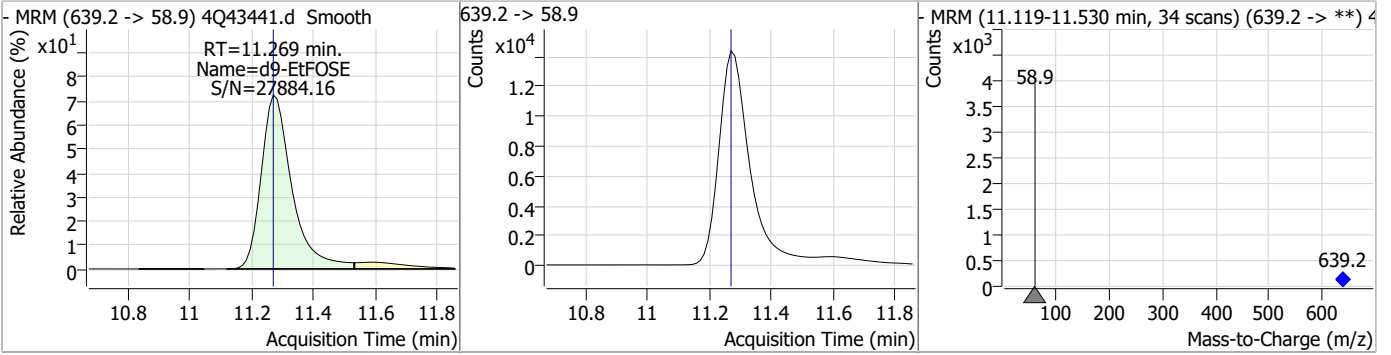
Perfluorinated Compounds by LC/MS/MS



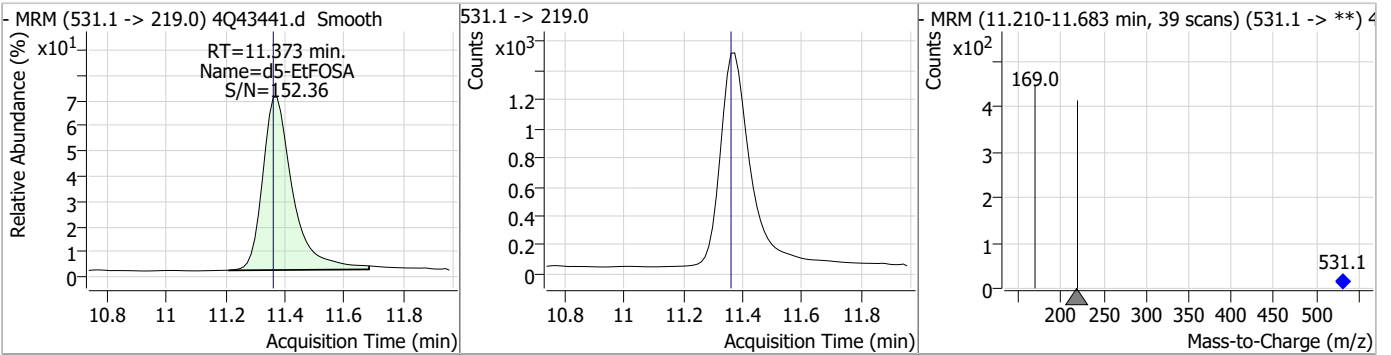
7.2.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.37	11.27	0.00	99197				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.30	11.37	0.01	10355				



7.2.3

7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43443.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 7:27:44 PM
 Sample Name : op96472-bs
 Vial : P4-D1
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96472,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.961	216.8 -> 171.9	24355	10.00 µg/L	0.037
M5-PFPeA	4.437	268.3 -> 223.0	56132	5.00 µg/L	0.025
M5-PFHxA	5.609	318.0 -> 273.0	51370	2.50 µg/L	0.012
M4-PFHpA	6.542	367.1 -> 322.0	26689	2.50 µg/L	0.013
M8-PFOA	7.213	421.1 -> 376.0	36266	2.50 µg/L	0.012
M9-PFNA	7.758	472.1 -> 427.0	19759	1.25 µg/L	0.012
M6-PFDA	8.265	519.1 -> 474.1	19411	1.25 µg/L	0.012
M7-PFUnDA	8.747	570.0 -> 525.1	20091	1.25 µg/L	0.012
M2-PFDoDA	9.193	615.1 -> 570.0	24676	1.25 µg/L	0.012
M2-PFTeDA	9.986	715.2 -> 670.0	18416	1.25 µg/L	0.000
M8-FOSA	9.808	506.1 -> 77.8	13179	2.50 µg/L	0.012
M3-PFBS	5.514	302.1 -> 79.9	10522	2.50 µg/L	0.012
M3-PFHxS	7.304	402.1 -> 79.9	6366	2.50 µg/L	0.012
M8-PFOS	8.417	507.1 -> 79.9	9481	2.50 µg/L	0.012
M2-4:2FTS	5.298	329.1 -> 80.9	1559	5.00 µg/L	0.012
M2-6:2FTS	6.973	429.1 -> 80.9	2303	5.00 µg/L	0.012
M2-8:2FTS	8.052	529.1 -> 80.9	4185	5.00 µg/L	0.012
M3-MeFOSAA	8.323	573.2 -> 419.0	17022	5.00 µg/L	0.012
M3-HFPO-DA	5.976	286.9 -> 168.9	27329	10.00 µg/L	0.012
M5-EtFOSAA	8.532	589.2 -> 419.0	14569	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	43595	25.00 µg/L	0.000
M9-EtFOSE	11.281	639.2 -> 58.9	64645	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	7742	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	6995	2.50 µg/L	0.012
13C4-PFOS	8.418	502.8 -> 79.9	8699	2.50 µg/L	0.012
13C3-PFBA	2.966	216.0 -> 172.0	56371	5.00 µg/L	0.037
18O2-PFHxS	7.303	403.0 -> 83.9	3874	2.50 µg/L	0.012
13C4-PFOA	7.214	417.1 -> 372.0	38625	2.50 µg/L	0.012
13C2-PFDA	8.265	515.1 -> 470.1	15731	1.25 µg/L	0.012
13C5-PFNA	7.759	468.0 -> 423.0	19969	1.25 µg/L	0.012
13C2-PFHxA	5.610	315.1 -> 270.0	38281	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.298	329.1 -> 80.9	1559	6.86 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 137.1%		
13C2-6:2FTS	6.973	429.1 -> 80.9	2303	6.43 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.7%		
13C2-8:2FTS	8.052	529.1 -> 80.9	4185	6.45 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.0%		
13C2-PFDoDA	9.193	615.1 -> 570.0	24676	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C2-PFTeDA	9.986	715.2 -> 670.0	18416	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C3-PFBS	5.514	302.1 -> 79.9	10522	2.93 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 117.3%		
13C3-PFHxS	7.304	402.1 -> 79.9	6366	2.88 µg/L	0.012

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7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.1%		
13C4-PFBA	2.961	216.8 -> 171.9	24355	2.40 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 24.0%		
13C4-PFHpA	6.542	367.1 -> 322.0	26689	2.78 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.3%		
13C5-PFHxA	5.609	318.0 -> 273.0	51370	2.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.2%		
13C5-PFPeA	4.437	268.3 -> 223.0	56132	4.79 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C6-PFDA	8.265	519.1 -> 474.1	19411	1.43 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 114.1%		
13C7-PFUnDA	8.747	570.0 -> 525.1	20091	1.33 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.6%		
13C8-FOSA	9.808	506.1 -> 77.8	13179	2.09 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.6%		
13C8-PFOA	7.213	421.1 -> 376.0	36266	2.81 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.5%		
13C8-PFOS	8.417	507.1 -> 79.9	9481	2.73 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.1%		
13C9-PFNA	7.758	472.1 -> 427.0	19759	1.42 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.3%		
d3-MeFOSAA	8.323	573.2 -> 419.0	17022	5.96 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.2%		
13C3-HFPO-DA	5.976	286.9 -> 168.9	27329	9.41 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 94.1%		
d3-MeFOSA	11.089	515.0 -> 219.0	6995	2.15 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.8%		
d5-EtFOSAA	8.532	589.2 -> 419.0	14569	6.07 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.4%		
d7-MeFOSE	10.972	623.2 -> 58.9	43595	16.34 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 65.3%		
d9-EtFOSE	11.281	639.2 -> 58.9	64645	18.91 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 75.7%		
d5-EtFOSA	11.373	531.1 -> 219.0	7742	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.4%		
Target Compounds					QValue
4:2FTS	5.298	327.1 -> 307.0	21339	10.70 µg/L	97
		327.1 -> 80.9	9178		
6:2FTS	6.974	427.1 -> 407.0	18959	10.77 µg/L	98
		427.1 -> 80.9	8496		
8:2FTS	8.053	527.1 -> 507.0	22645	10.98 µg/L	97
		527.1 -> 80.8	8922		
EtFOSAA	8.545	584.2 -> 419.1	6345	3.05 µg/L	m 92
		584.2 -> 526.0	3134		
FOSA	9.811	498.1 -> 77.9	12019	2.70 µg/L	99
		498.1 -> 478.0	352		
MeFOSAA	8.323	570.1 -> 419.0	6620	2.73 µg/L	94
		570.1 -> 483.0	1292		
PFBA	2.970	212.8 -> 168.9	6249	11.06 µg/L	100
PFBS	5.515	298.7 -> 79.9	10051	2.41 µg/L	100
		298.7 -> 98.8	4075		
PFDA	8.266	512.9 -> 469.0	32921	2.76 µg/L	98
		512.9 -> 219.0	6208		
PFDoDA	9.193	613.1 -> 569.0	47405	2.92 µg/L	99
		613.1 -> 319.0	6452		
PFDS	9.357	599.0 -> 79.9	5930	2.68 µg/L	98

7.3.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3191			
PFHpA	6.543	363.1 -> 319.0	38022	2.71	µg/L	99
		363.1 -> 169.0	6794			
PFHpS	7.897	449.0 -> 79.9	7421	2.72	µg/L	100
		449.0 -> 98.9	4161			
PFHxA	5.612	313.0 -> 269.0	42332	2.62	µg/L	99
		313.0 -> 118.9	1442			
PFHxS	7.305	398.7 -> 79.9	5968	2.56	µg/L	m 96
		398.7 -> 98.9	3144			
PFNA	7.759	463.0 -> 419.0	30370	2.70	µg/L	100
		463.0 -> 219.0	7883			
PFNS	8.911	548.8 -> 79.9	4328	2.58	µg/L	97
		548.8 -> 98.9	2295			
PFOA	7.202	413.0 -> 369.0	49002	3.03	µg/L	98
		413.0 -> 169.0	9736			
PFOS	8.418	498.9 -> 79.9	9810	2.70	µg/L	m 98
		498.9 -> 98.8	4924			
PFPeA	4.427	263.0 -> 219.0	66125	5.90	µg/L	100
PFPeS	6.582	349.1 -> 79.9	5443	2.70	µg/L	94
		349.1 -> 98.9	2552			
PFTeDA	9.987	713.1 -> 669.0	40835	2.73	µg/L	100
		713.1 -> 168.9	3477			
PFTrDA	9.616	663.0 -> 619.0	59295	2.93	µg/L	99
		663.0 -> 168.9	5918			
PFUnDA	8.747	563.1 -> 519.0	32979	2.90	µg/L	100
		563.1 -> 269.1	6173			
11CI-PF3OUdS	9.655	630.9 -> 450.9	48495	6.16	µg/L	100
		632.9 -> 452.9	15180			
9CI-PF3ONS	8.775	530.8 -> 351.0	51374	6.08	µg/L	97
		532.8 -> 353.0	14716			
ADONA	6.805	376.9 -> 250.9	125672	6.40	µg/L	99
		376.9 -> 84.8	33261			
HFPO-DA	5.977	284.9 -> 168.9	12174	5.64	µg/L	98
		284.9 -> 184.9	1469			
3:3FTCA	3.904	241.0 -> 177.0	2771	5.19	µg/L	94
		241.0 -> 117.0	321			
5:3FTCA	6.268	341.0 -> 237.1	154130	63.89	µg/L	99
		341.0 -> 217.0	109969			
7:3FTCA	7.724	441.0 -> 316.9	75440	64.09	µg/L	94
		441.0 -> 336.9	173301			
EtFOSA	11.375	526.0 -> 219.0	16492	5.71	µg/L	98
		526.0 -> 169.0	22257			
EtFOSE	11.295	630.0 -> 58.9	29877	14.49	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	13355	5.71	µg/L	m 94
		511.9 -> 169.0	19181			
MeFOSE	10.997	616.1 -> 58.9	21560	13.91	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	5060	2.51	µg/L	87
		699.1 -> 98.8	2647			
NFDHA	5.491	295.0 -> 201.0	5440	6.21	µg/L	99
		295.0 -> 84.9	1427			
PFMBA	4.841	279.0 -> 85.1	39981	6.24	µg/L	100
PFMPA	3.578	229.0 -> 84.9	14070	2.47	µg/L	100
PFEESA	6.046	314.8 -> 134.9	64188	4.83	µg/L	100
		314.8 -> 82.9	2127			

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

7.3.1
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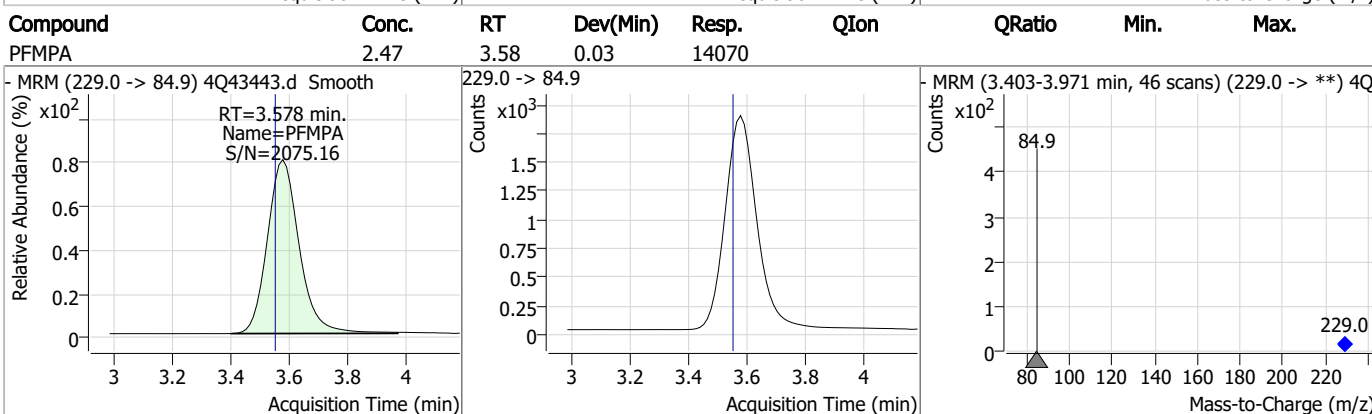
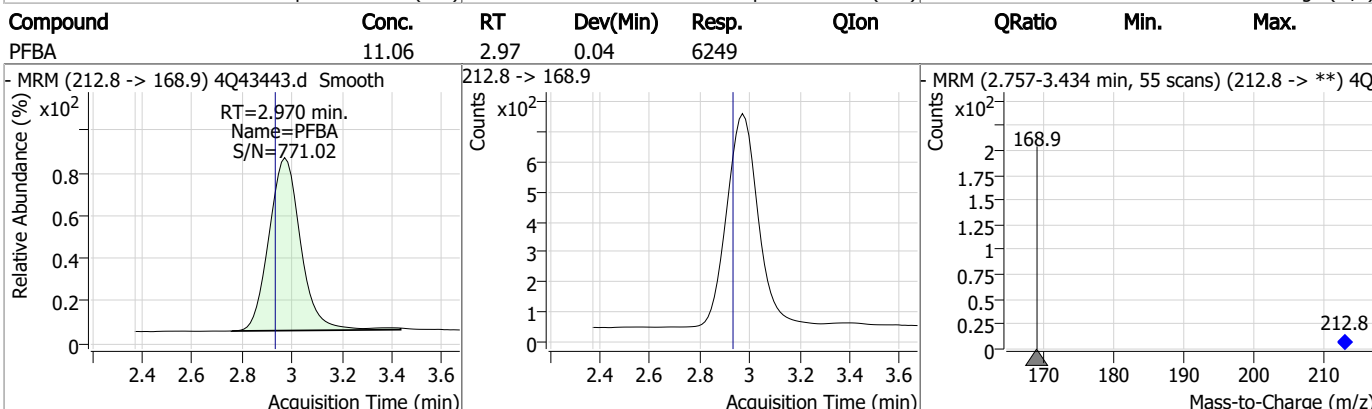
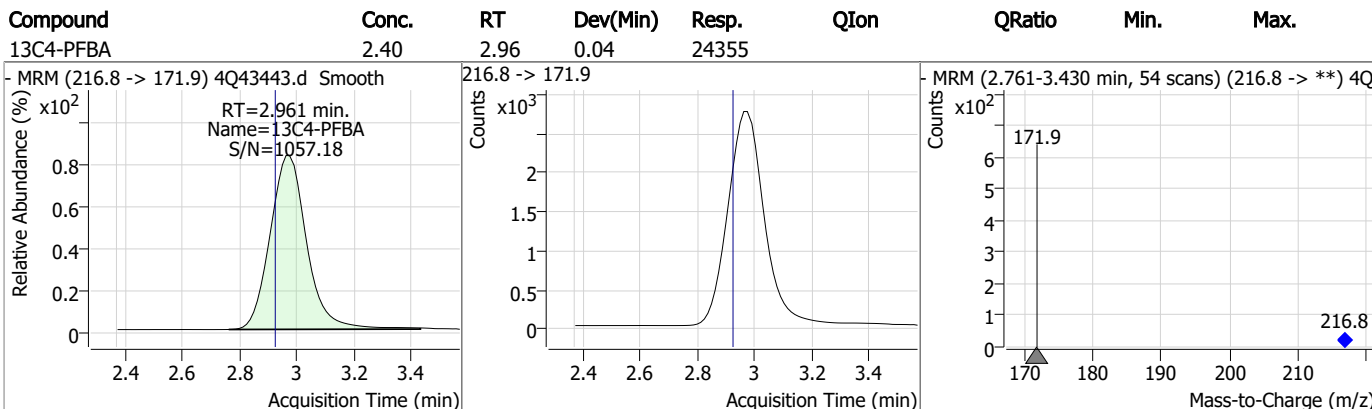
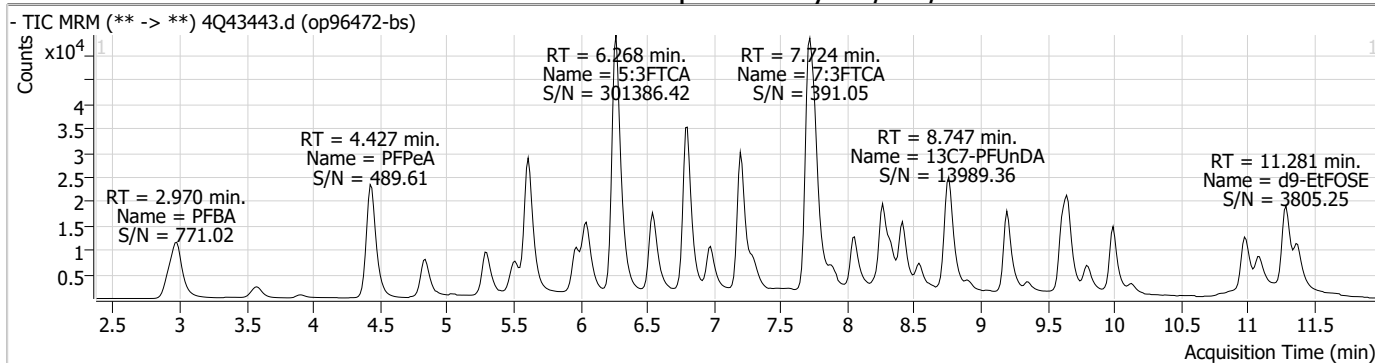
Perfluorinated Compounds by LC/MS/MS

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

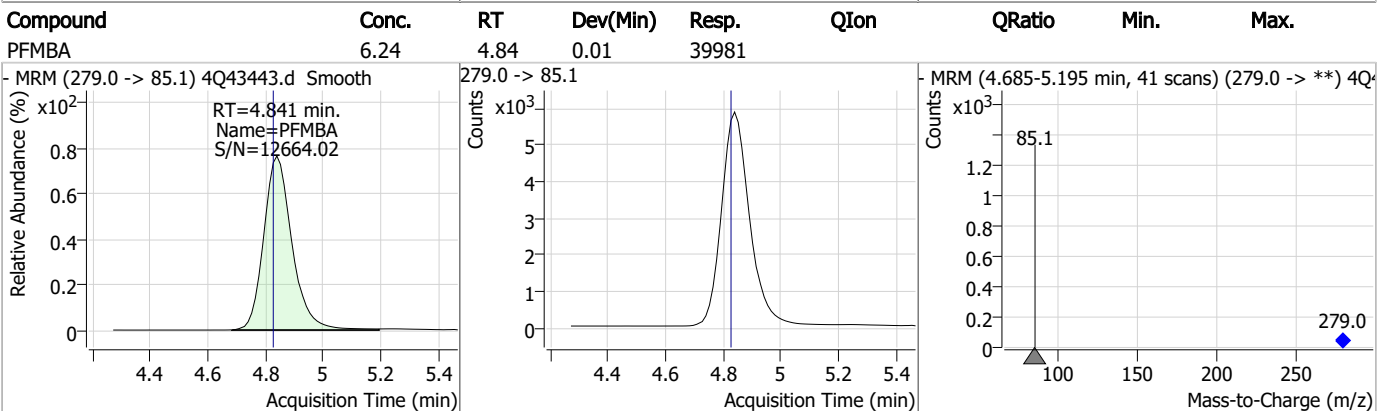
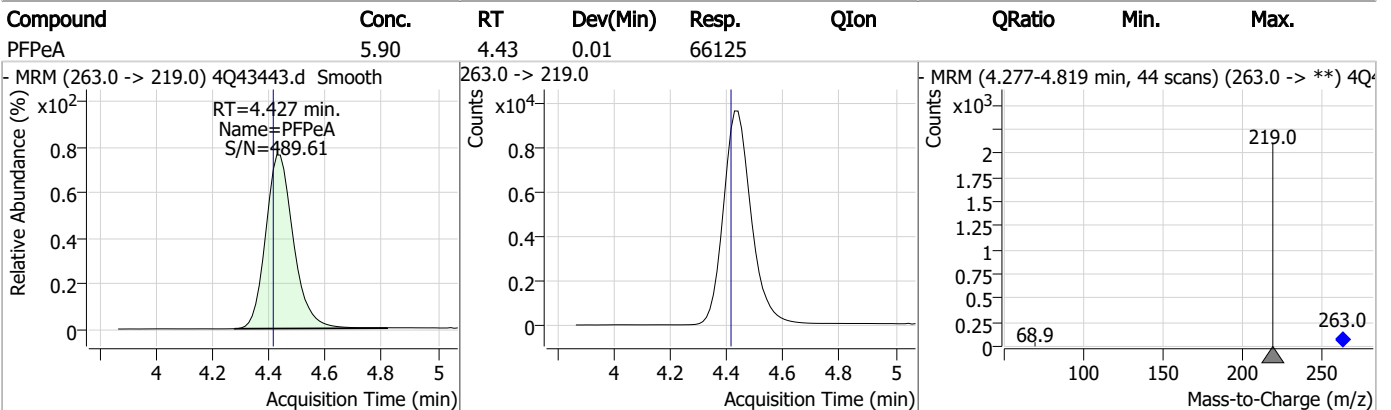
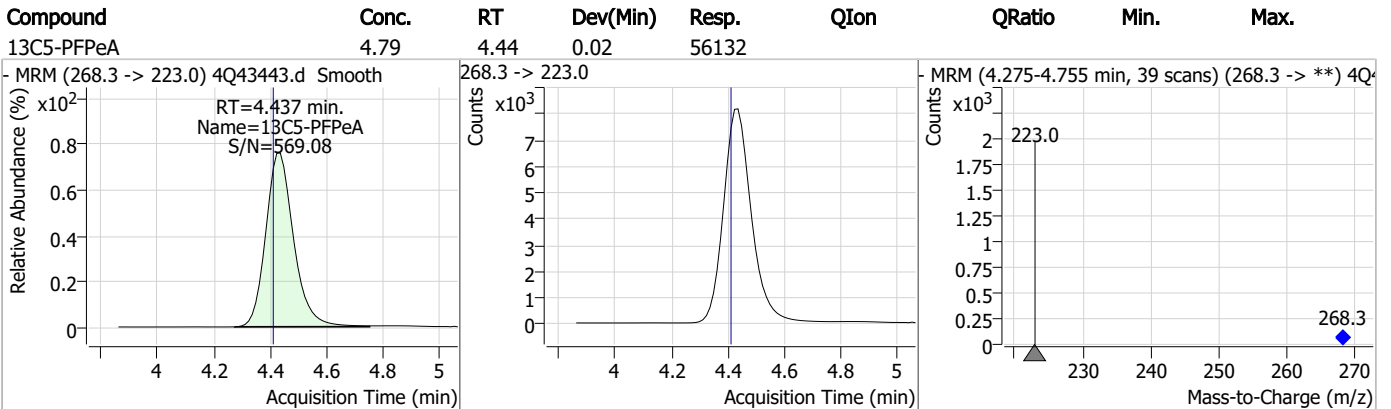
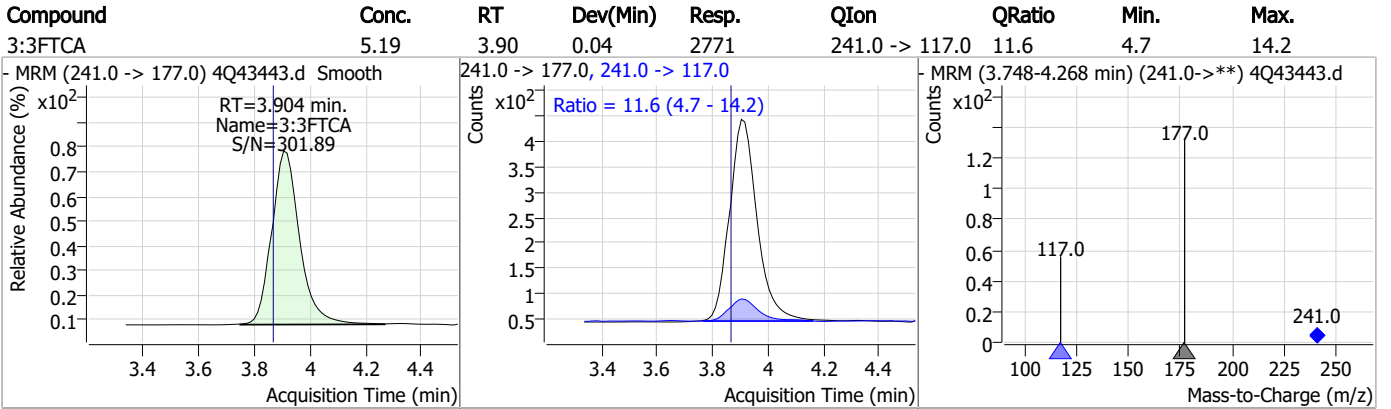
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Perfluorinated Compounds by LC/MS/MS



7.3.1
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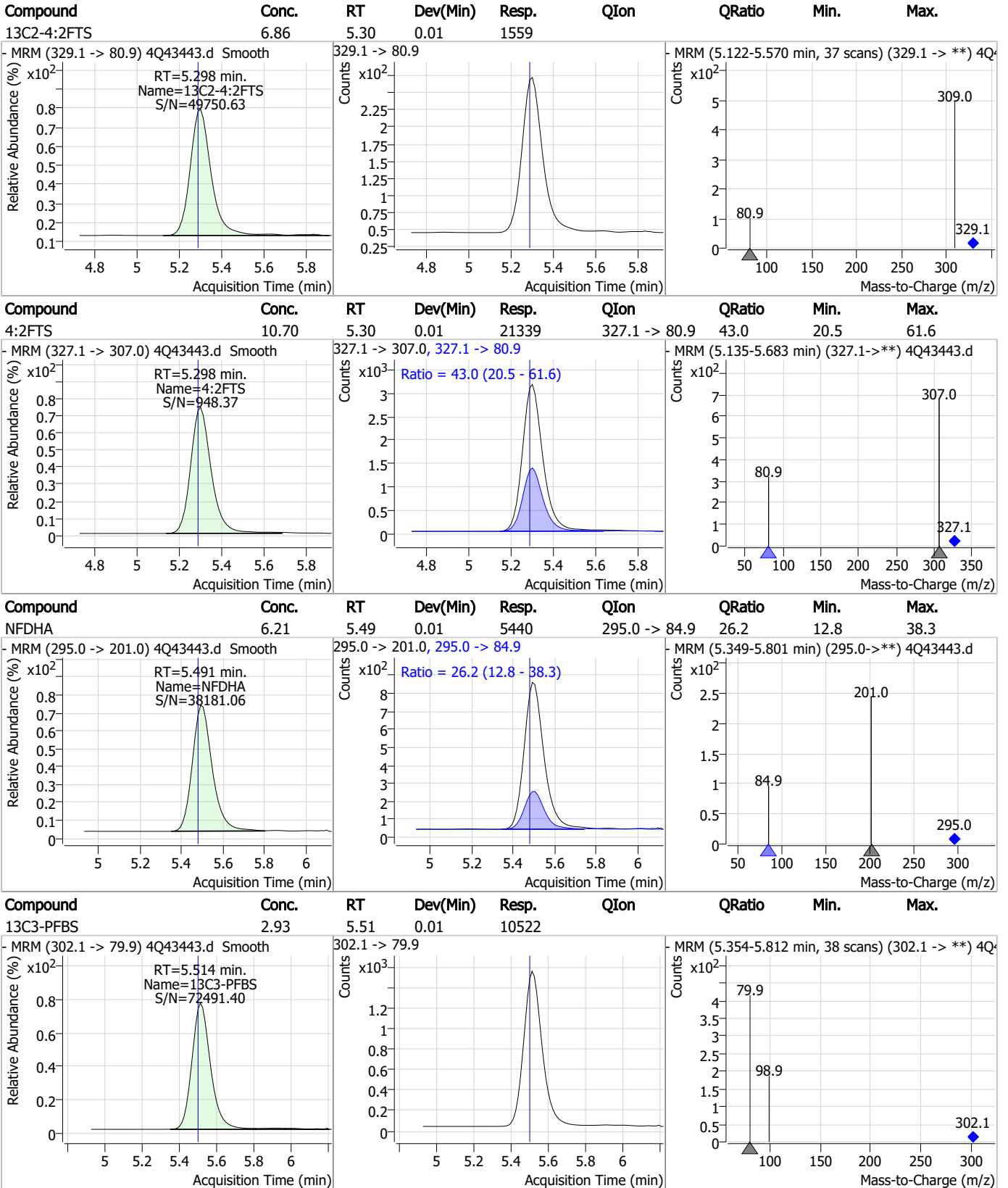
Perfluorinated Compounds by LC/MS/MS



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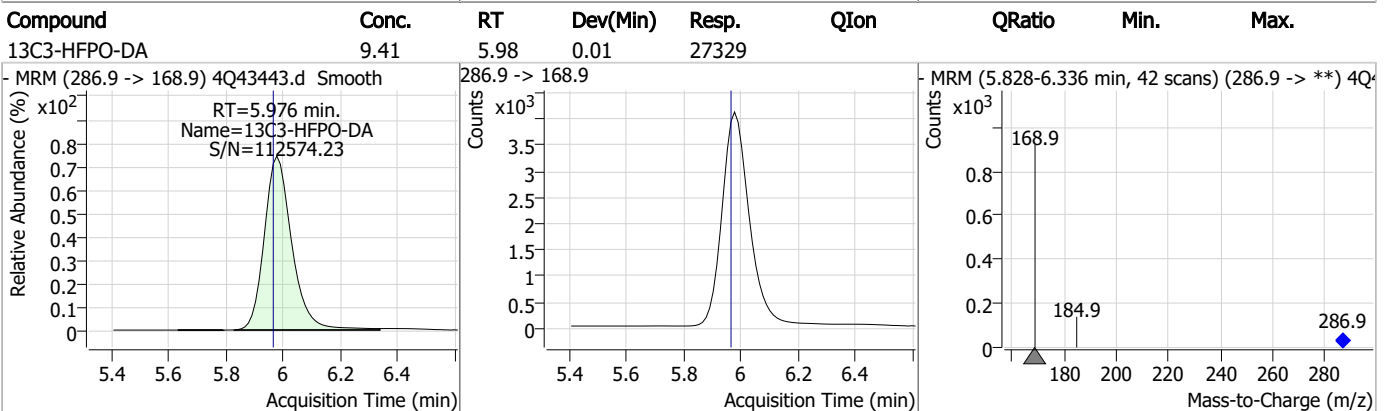
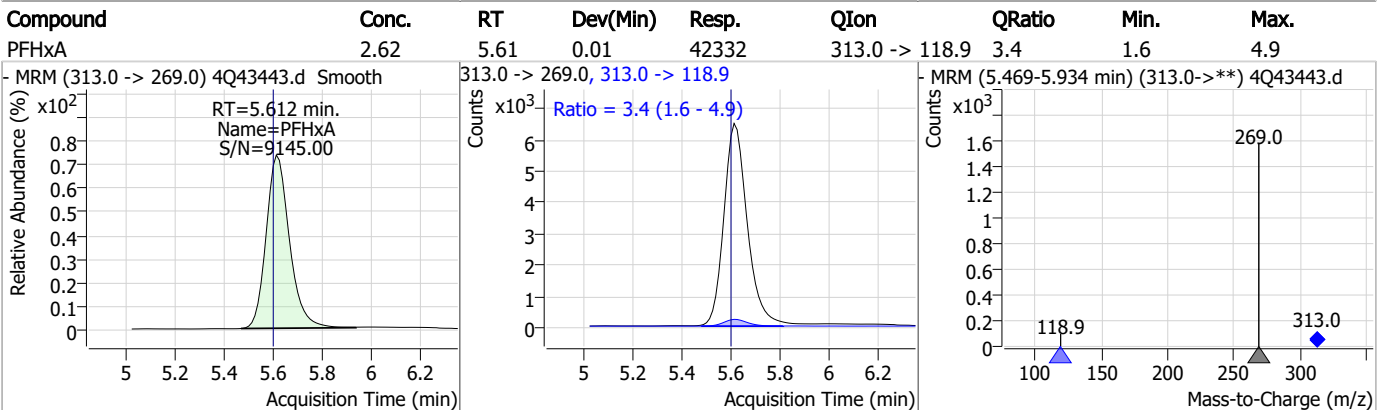
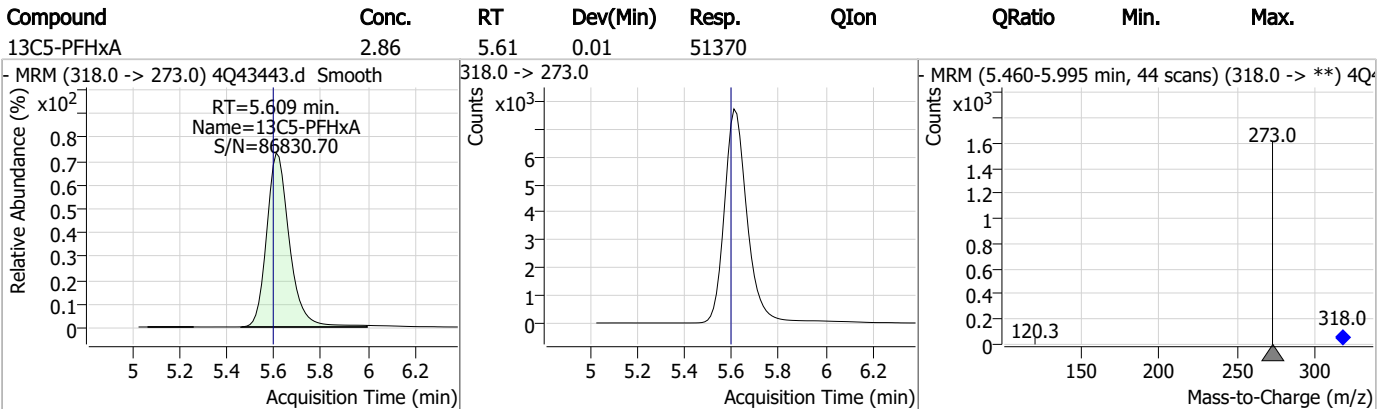
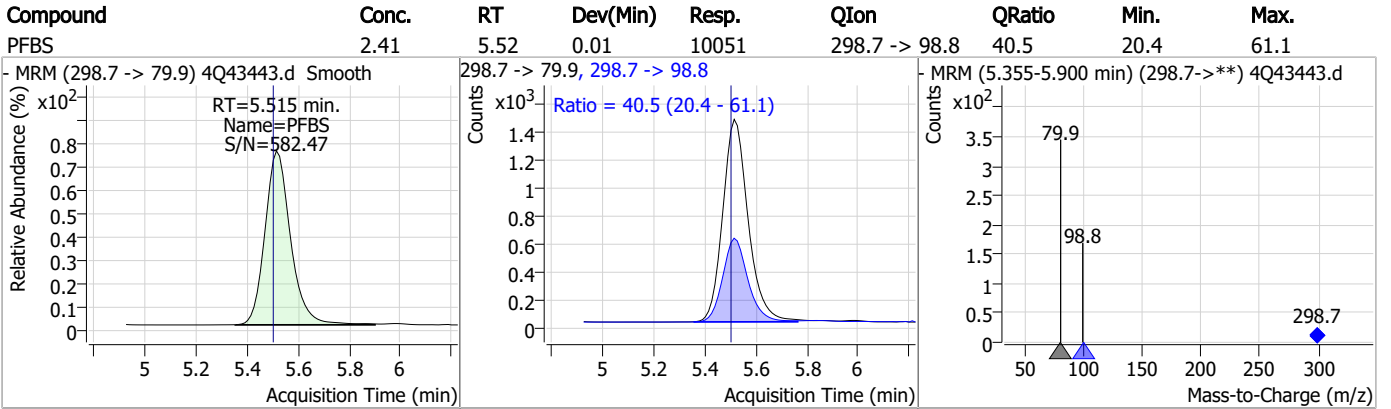
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

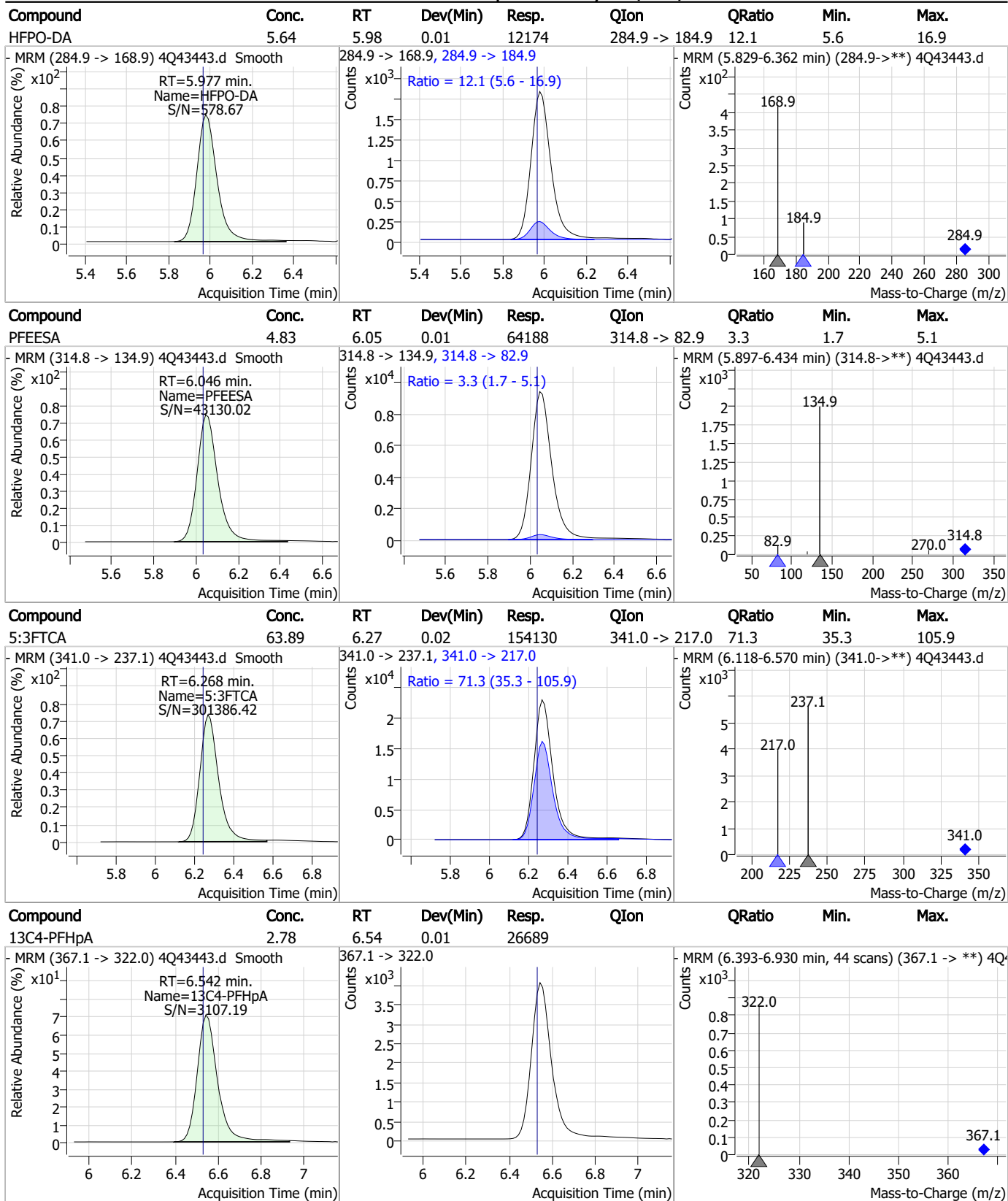


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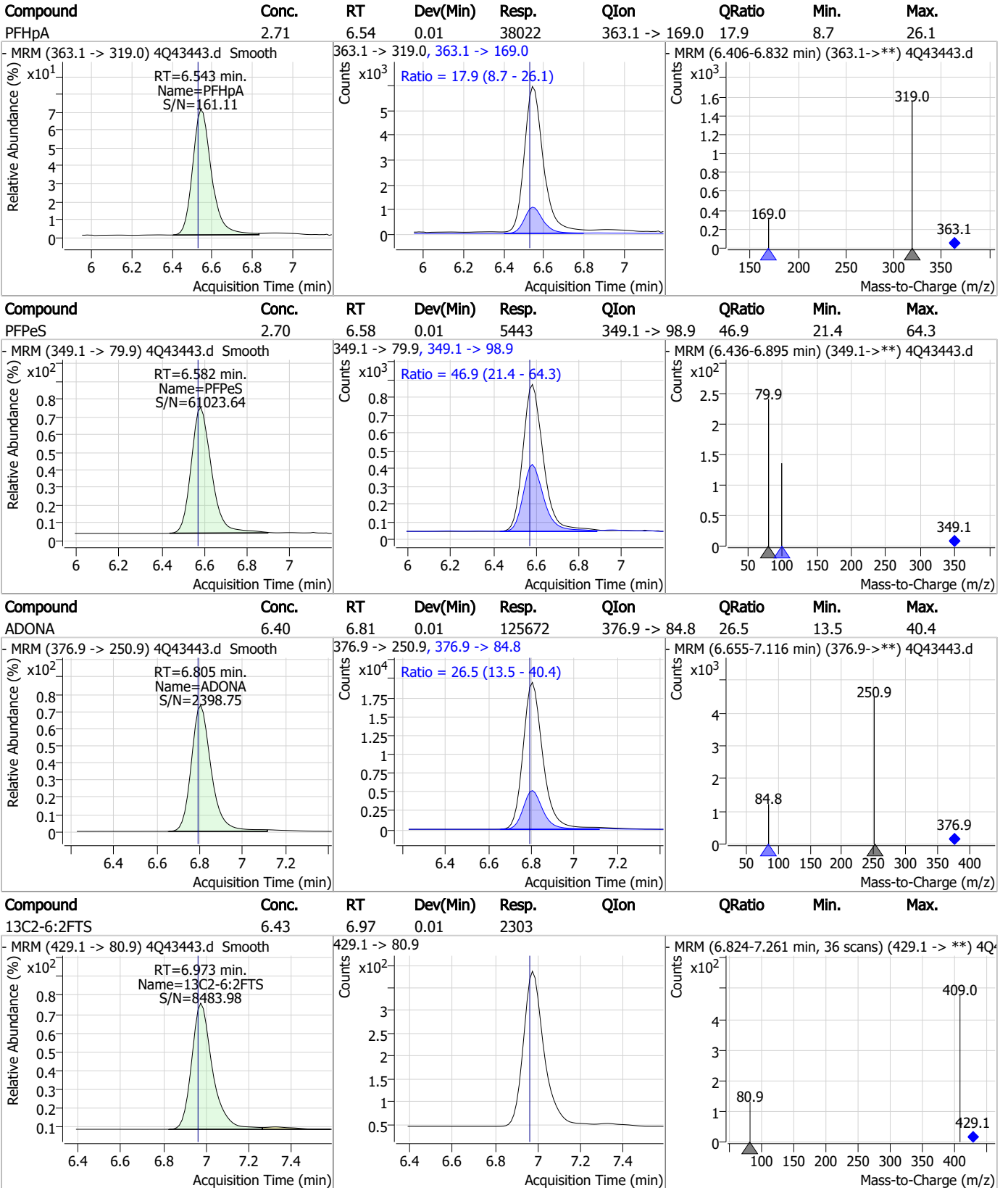


Perfluorinated Compounds by LC/MS/MS



7.3.1
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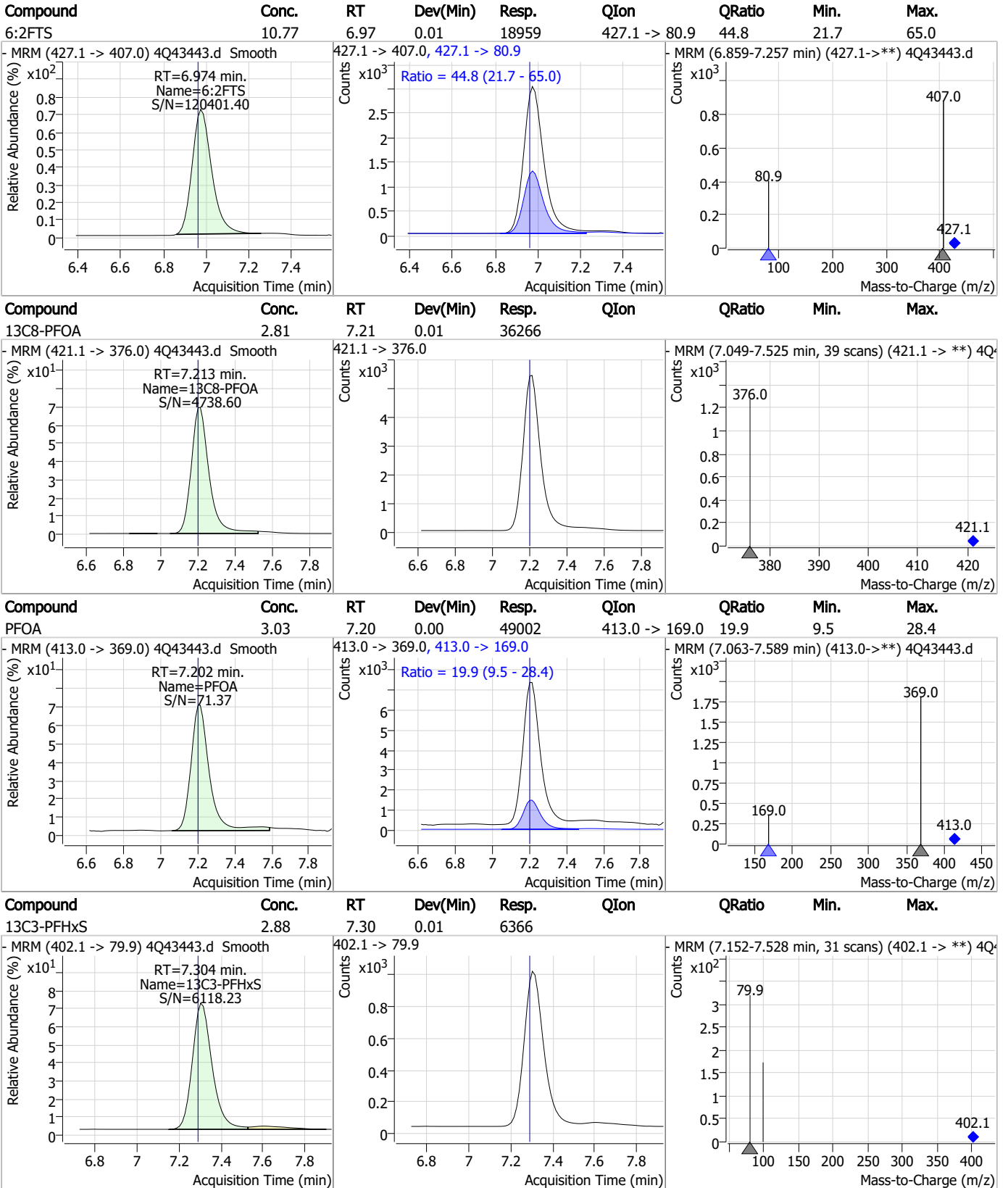
Perfluorinated Compounds by LC/MS/MS



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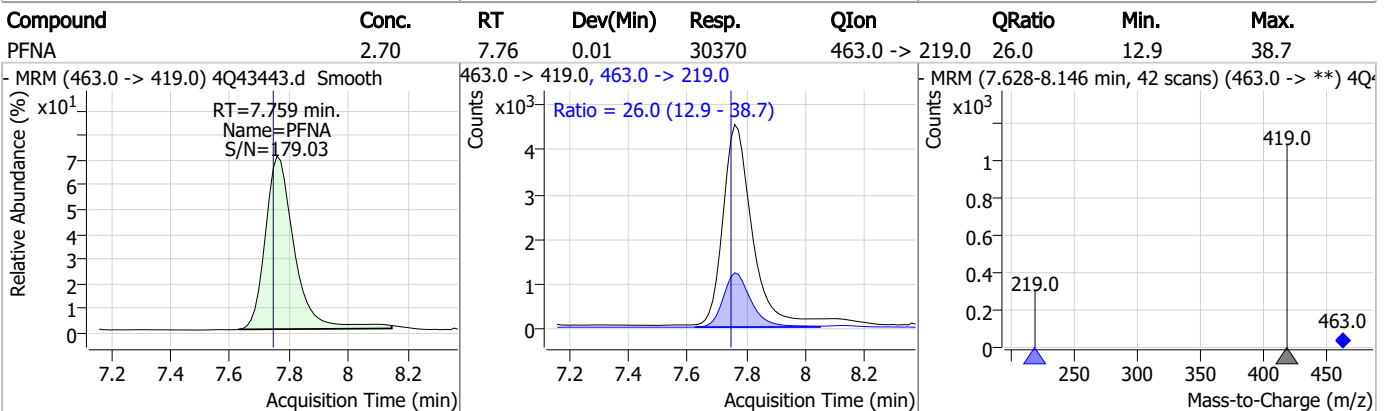
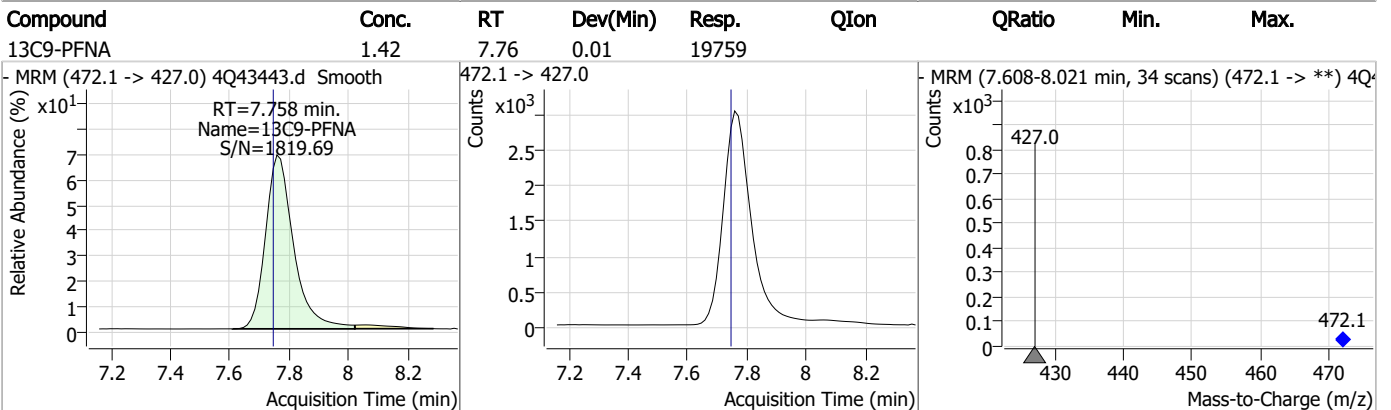
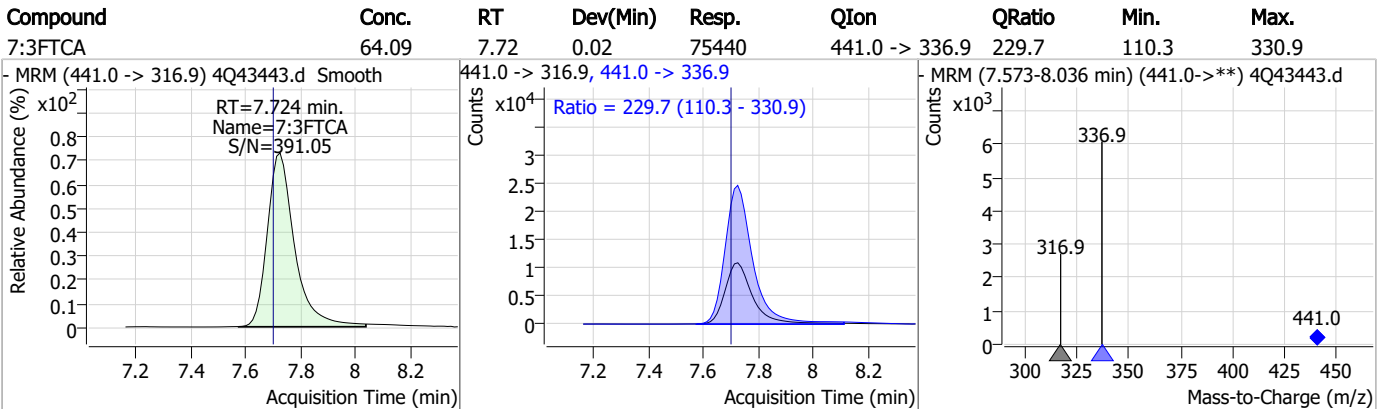
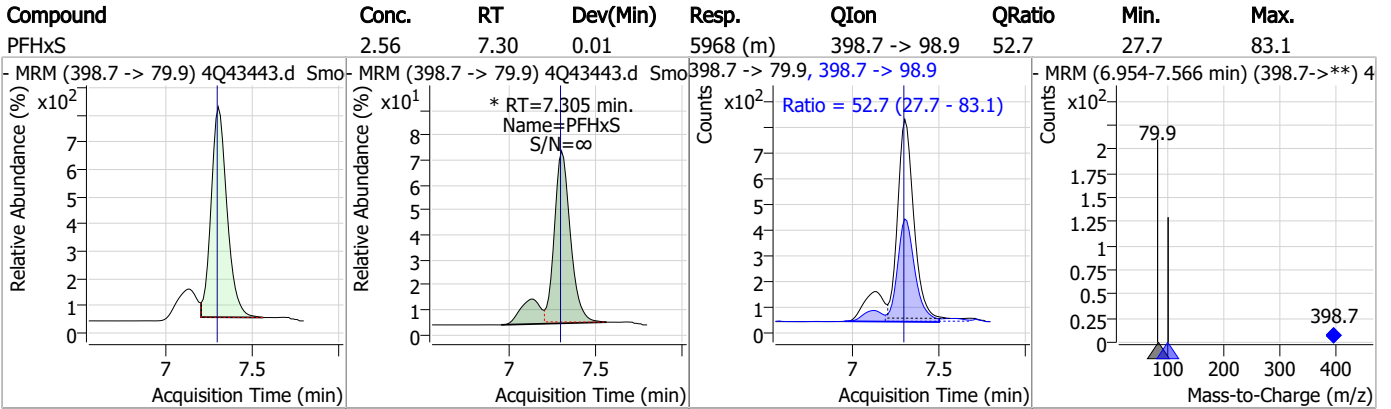
Perfluorinated Compounds by LC/MS/MS



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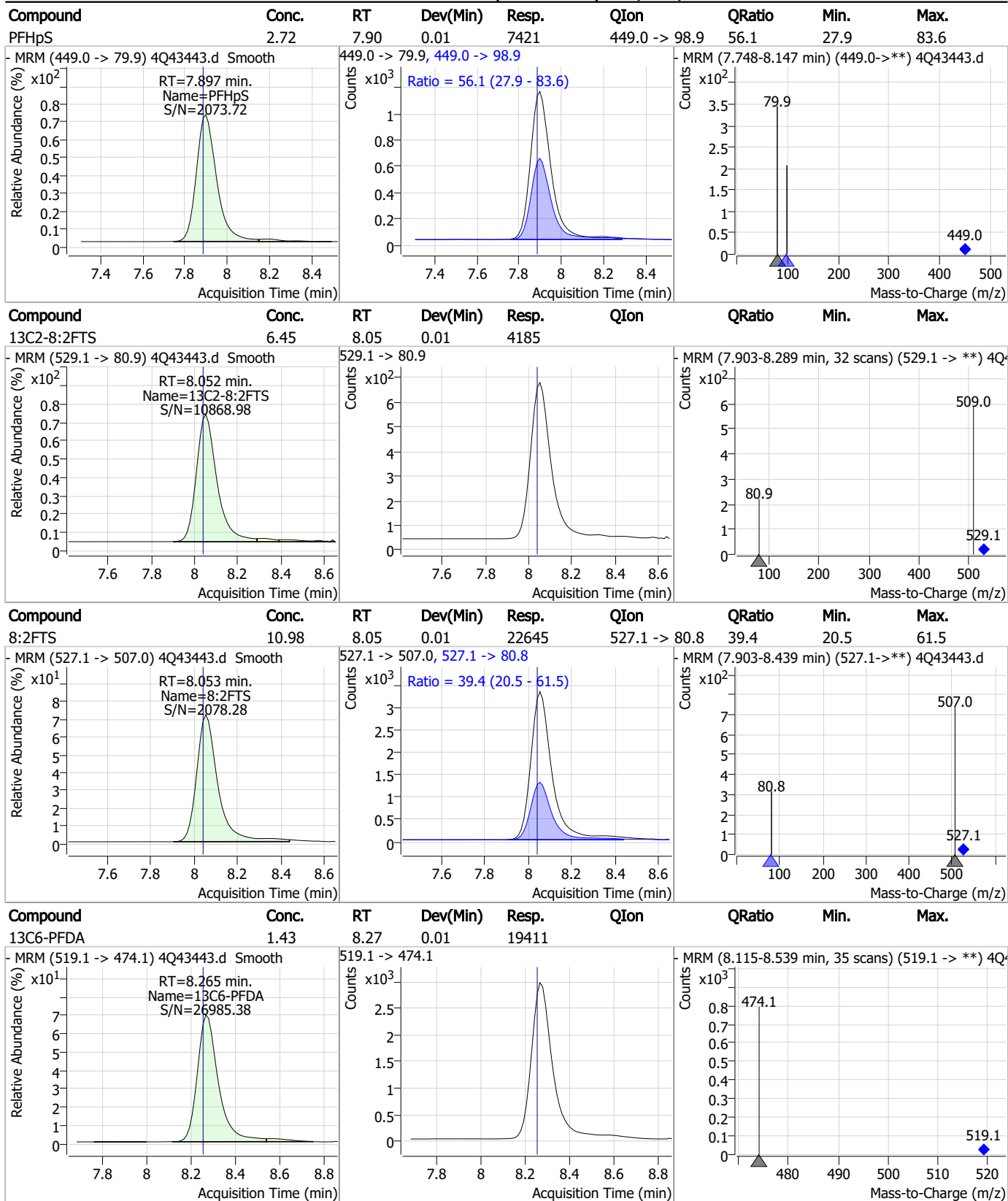
Perfluorinated Compounds by LC/MS/MS



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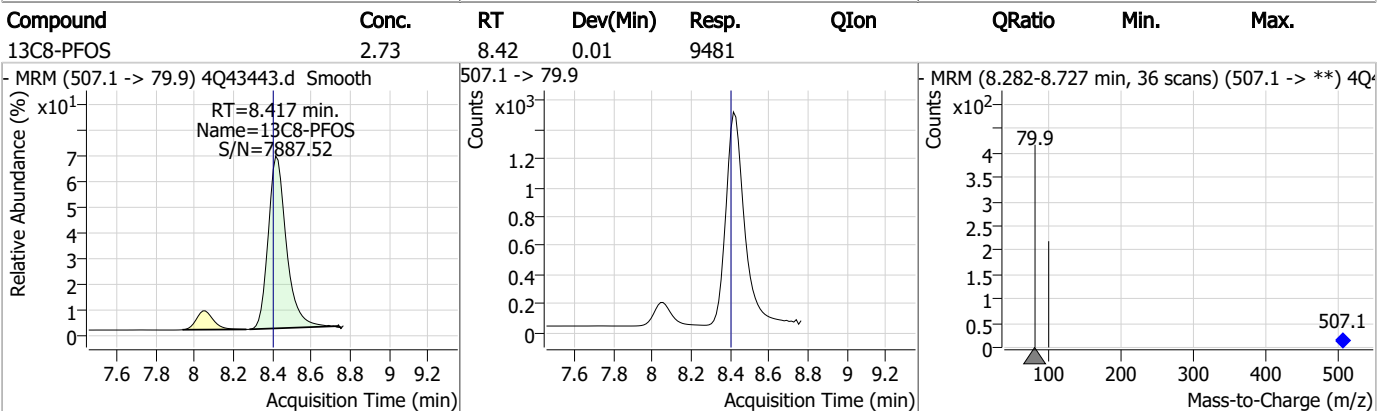
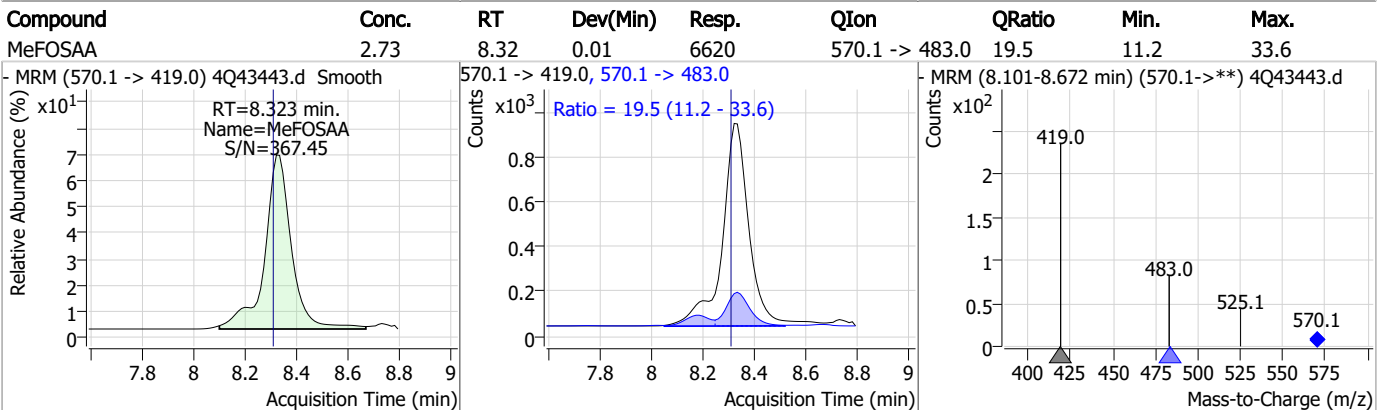
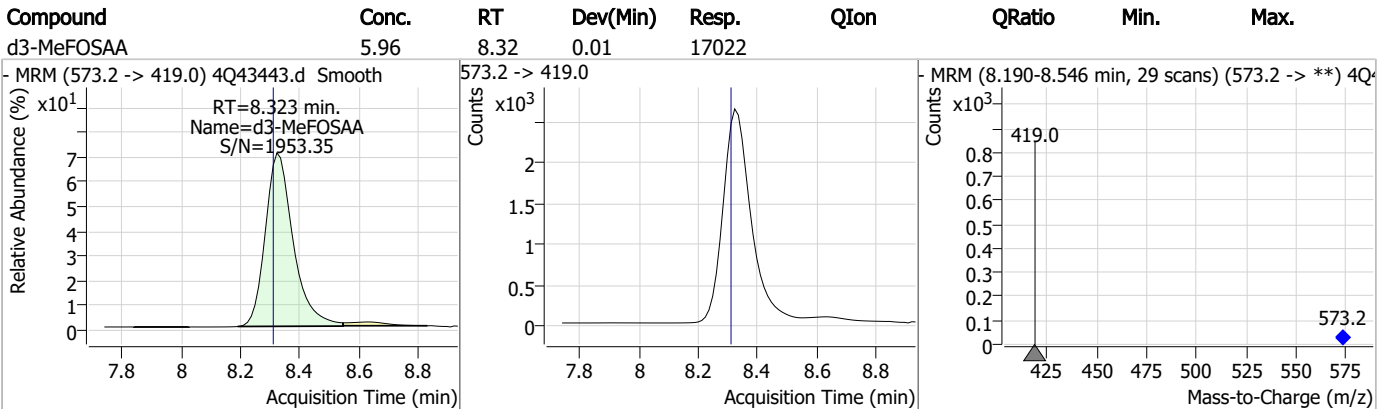
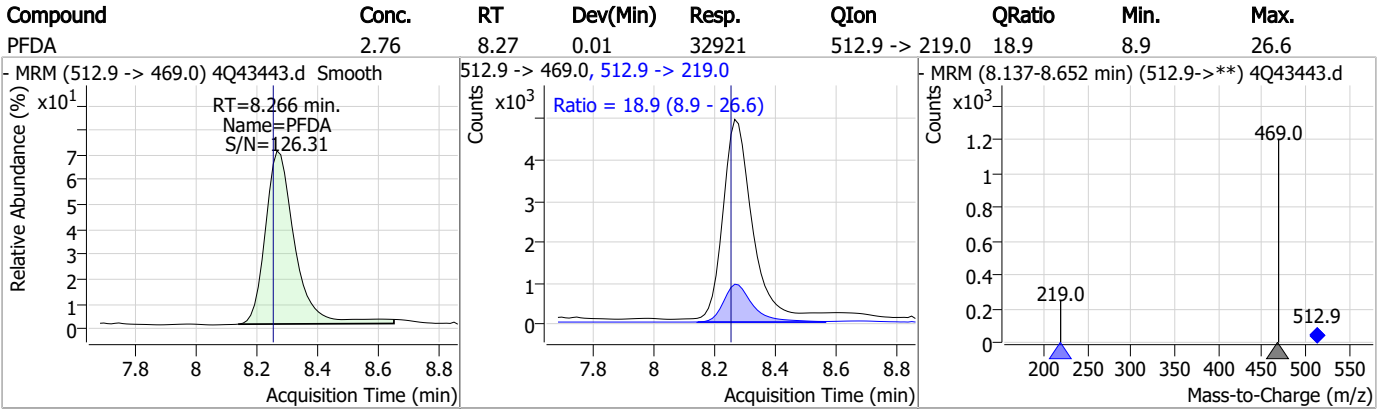
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Perfluorinated Compounds by LC/MS/MS



7.3.1
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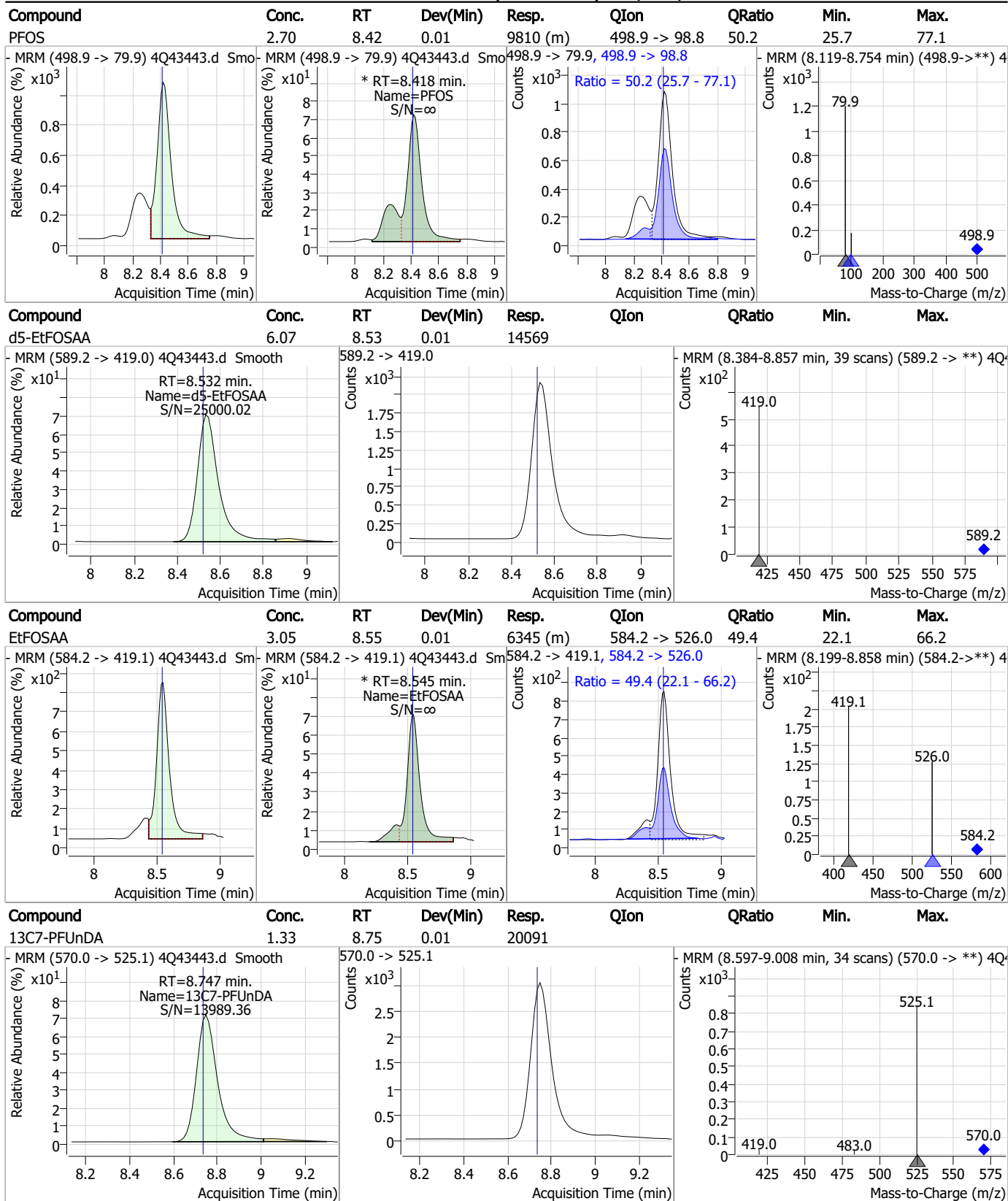
Perfluorinated Compounds by LC/MS/MS



7.3.1

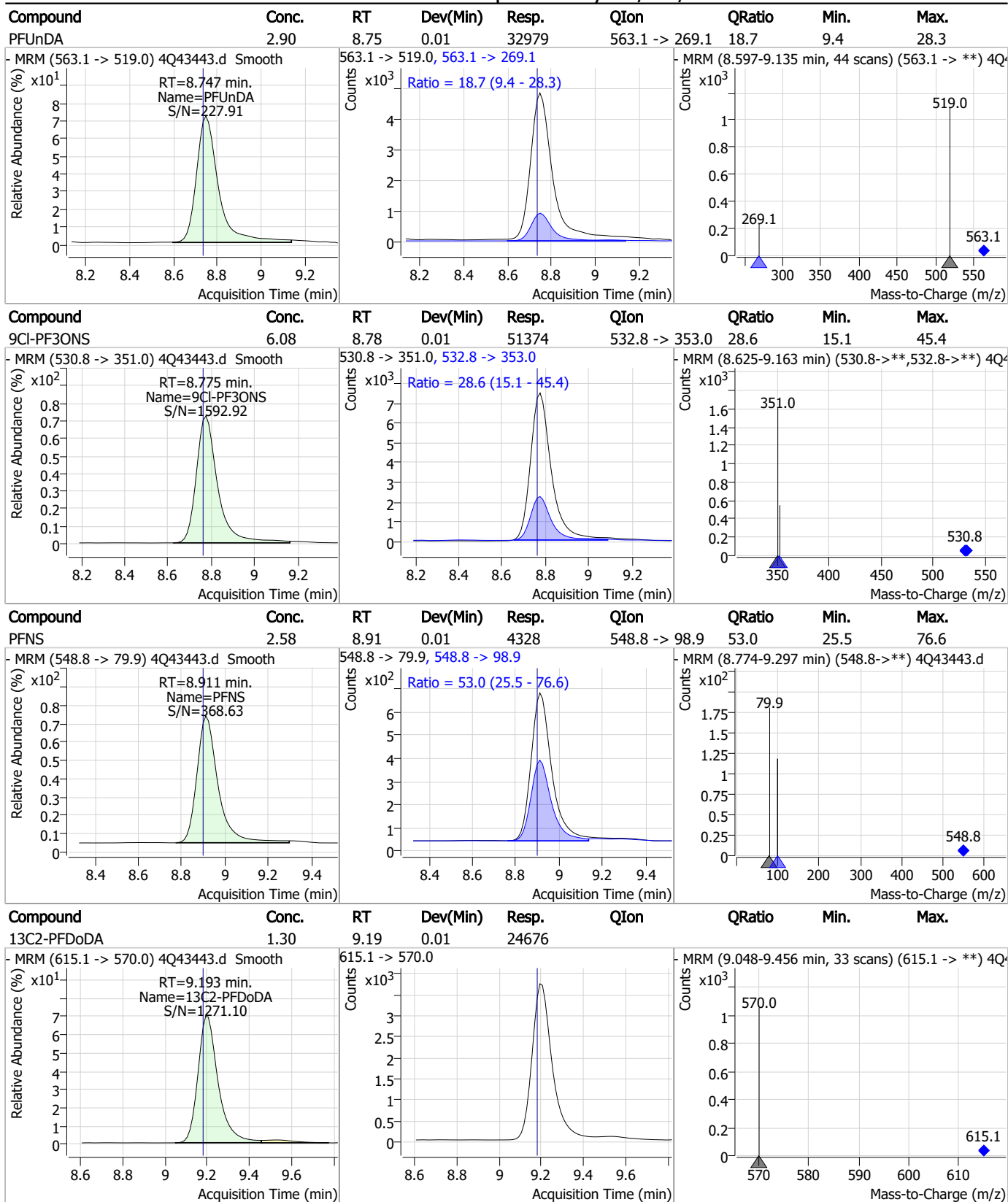
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Perfluorinated Compounds by LC/MS/MS



7.3.1
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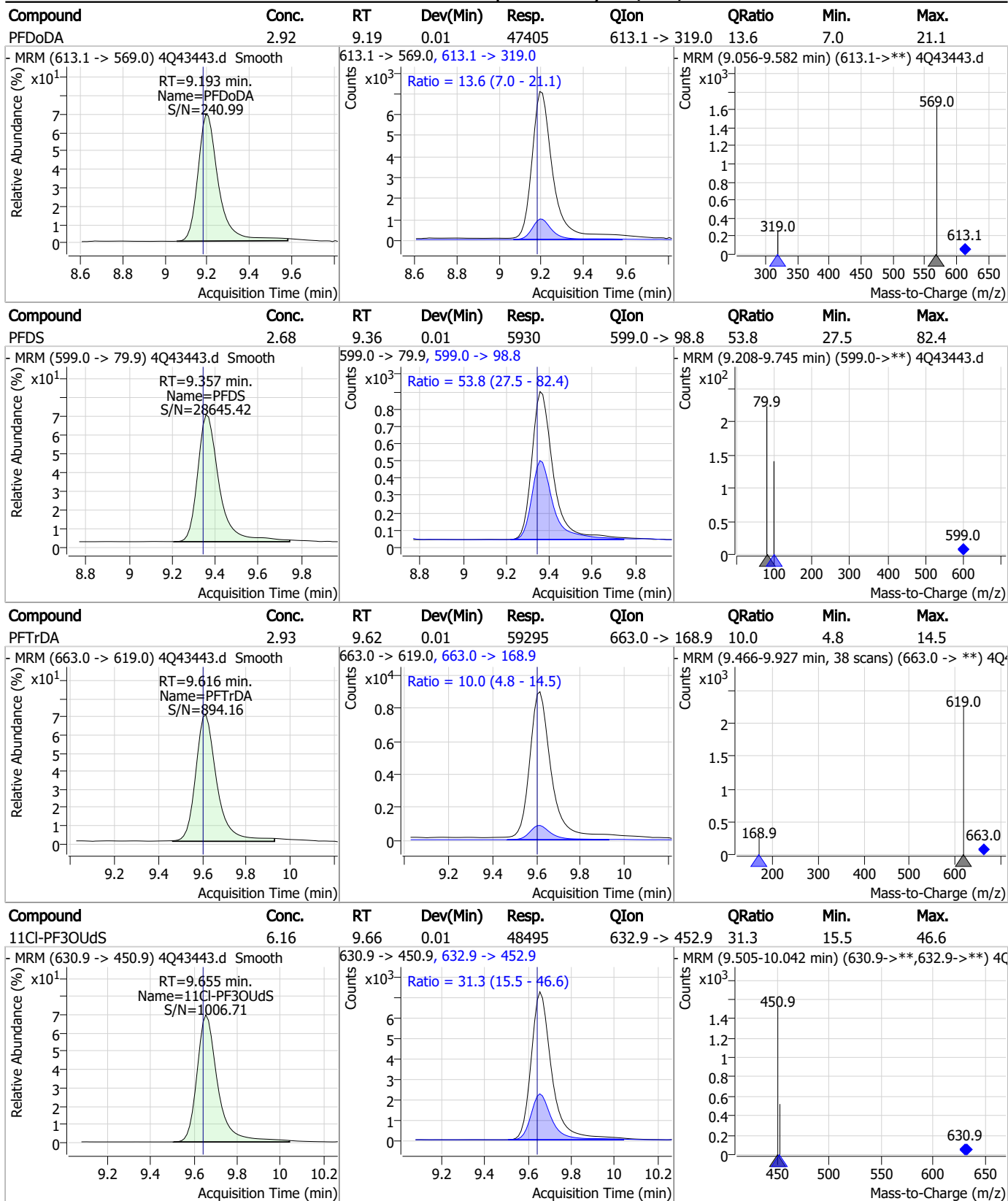
Perfluorinated Compounds by LC/MS/MS



7.3.1
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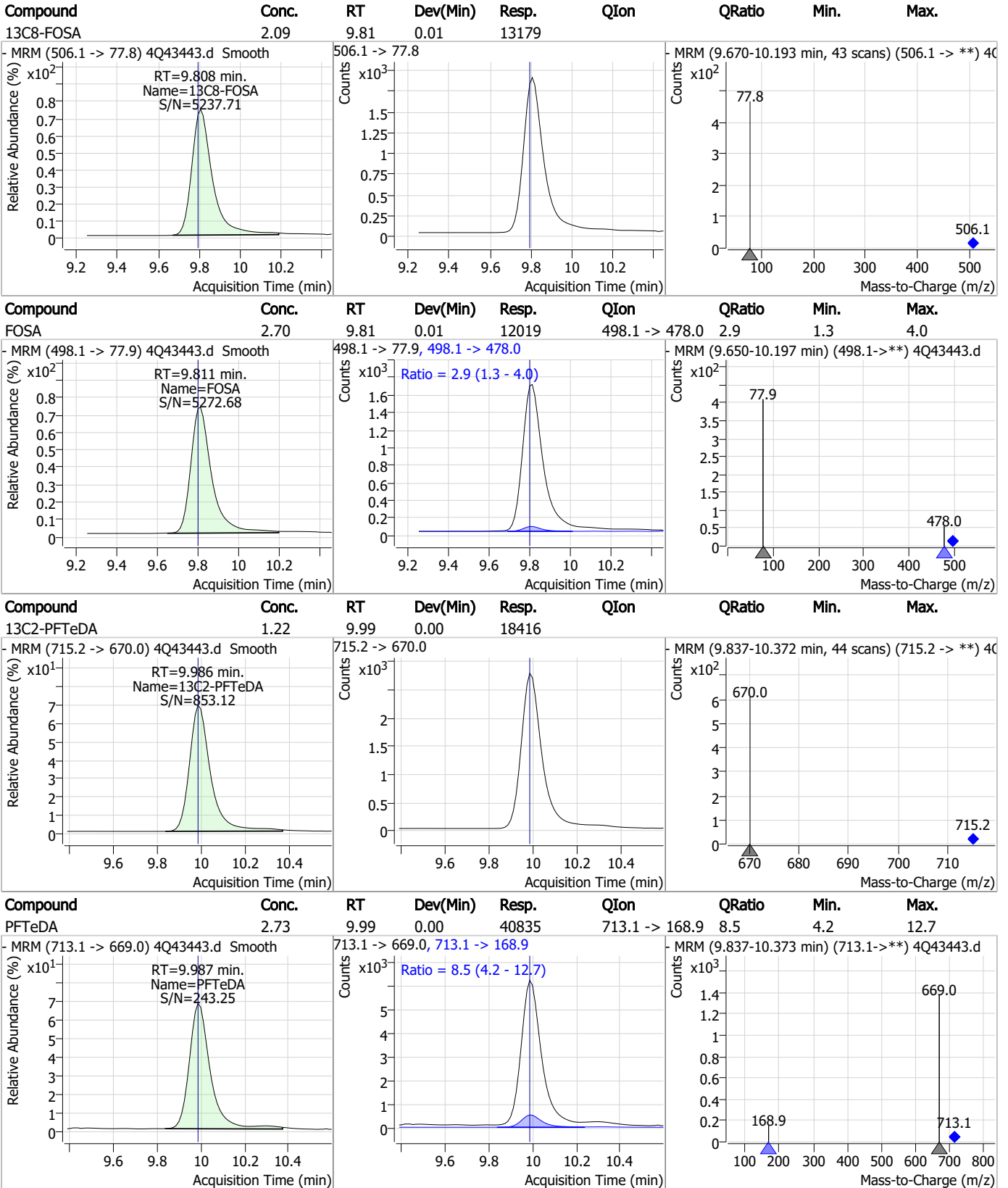


Perfluorinated Compounds by LC/MS/MS



7.3.1
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Perfluorinated Compounds by LC/MS/MS

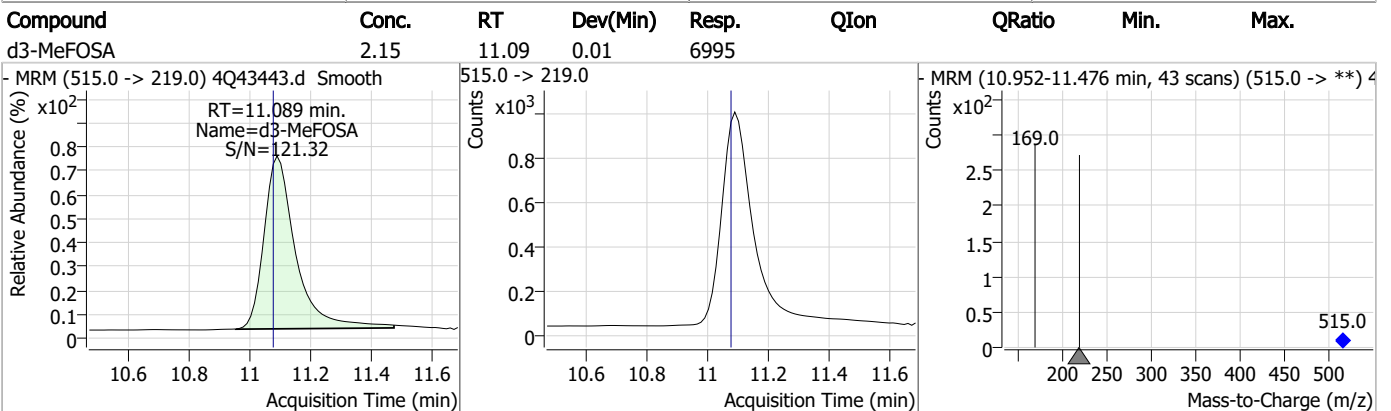
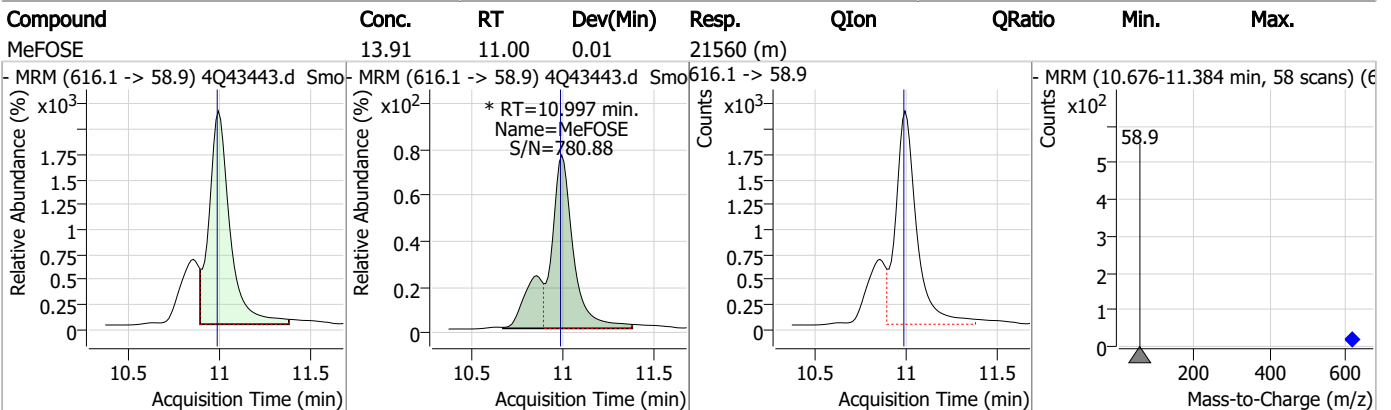
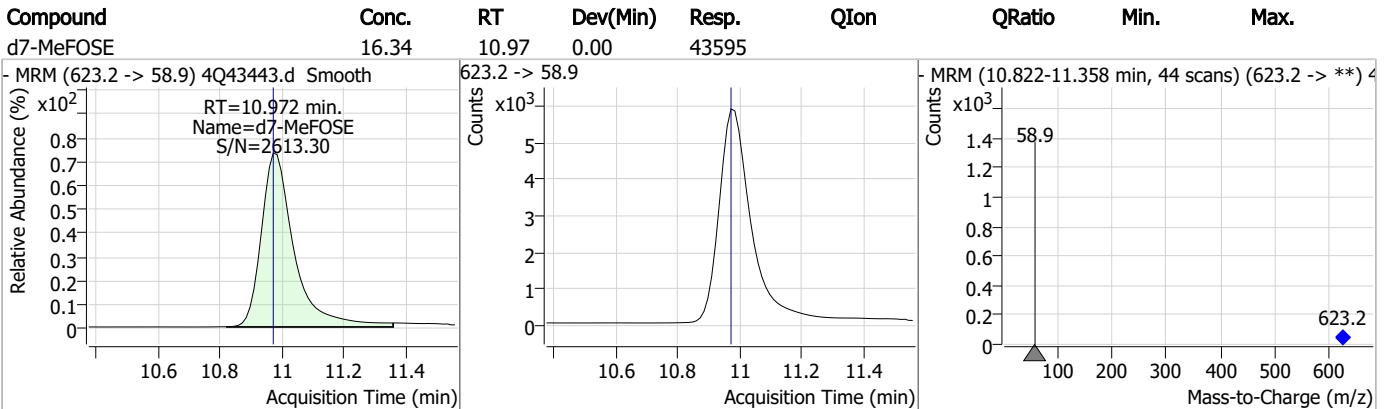
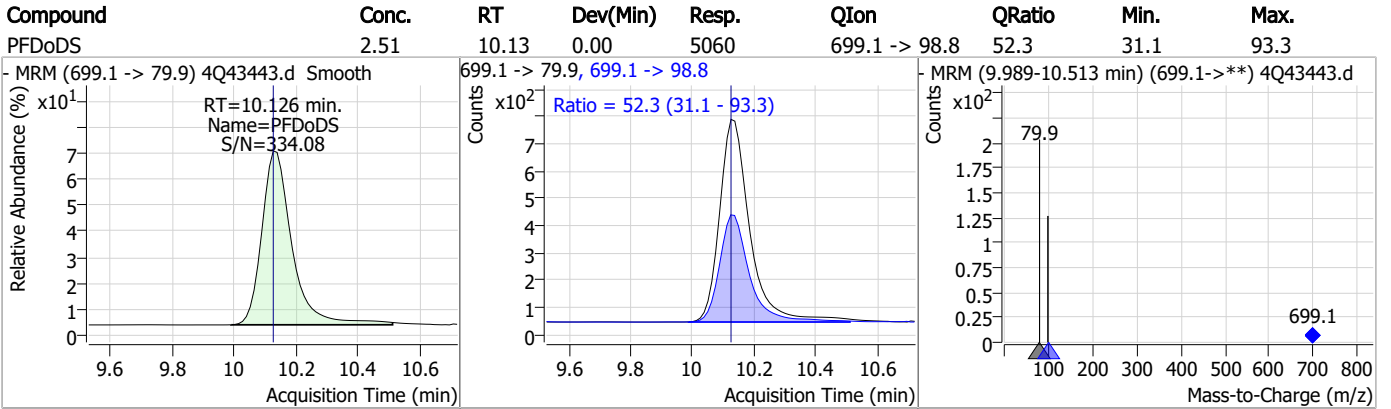


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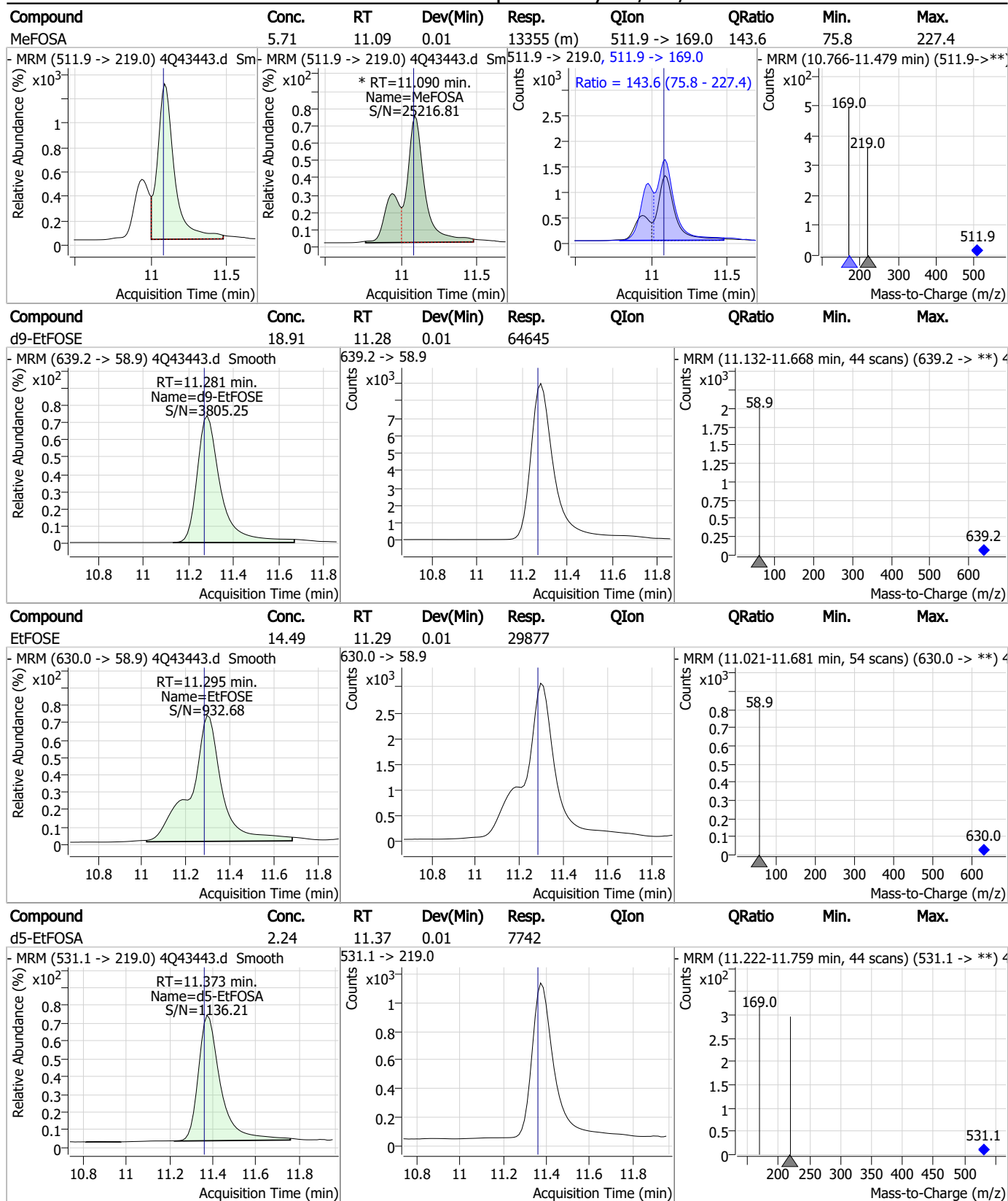
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Perfluorinated Compounds by LC/MS/MS



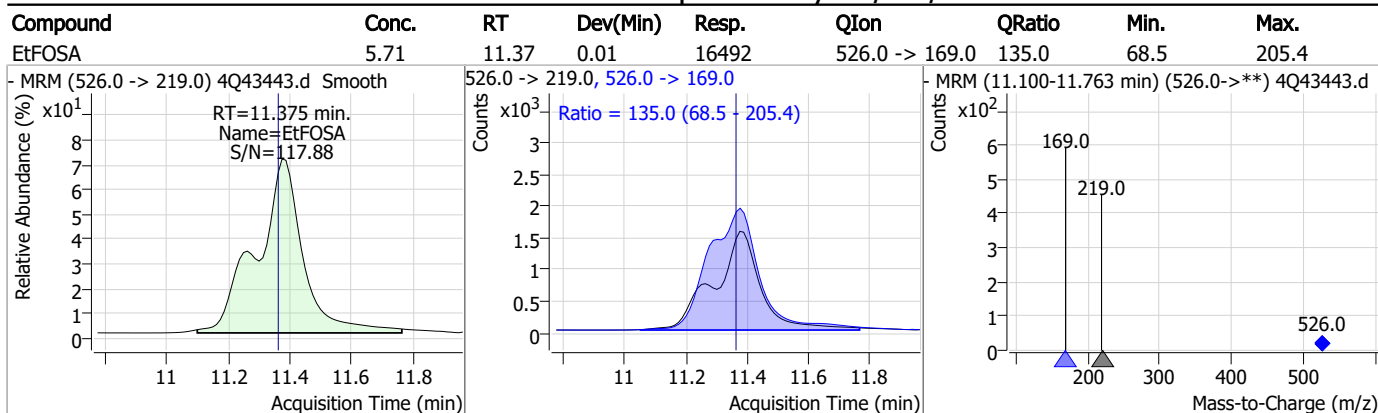
Perfluorinated Compounds by LC/MS/MS



7.3.1
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Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Manual Integration Approval Summary

Sample Number: OP96472-BS Method: EPA DRAFT 1633
Lab FileID: 4Q43443.D Analyst approved: 04/24/23 15:01 Martha Valls
Injection Time: 04/21/23 19:27 Supervisor approved: 04/25/23 14:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.54	Split peak
MeFOSE	24448-09-7		11.00	Split peak
MeFOSA	31506-32-8		11.09	Split peak

7.3.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43444.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 7:41:48 PM
 Sample Name : op96472-llbs:3
 Vial : P4-D2
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96472,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.990	216.8 -> 171.9	111033	10.00 µg/L	0.066
M5-PFPeA	4.437	268.3 -> 223.0	58849	5.00 µg/L	0.025
M5-PFHxA	5.609	318.0 -> 273.0	46887	2.50 µg/L	0.012
M4-PFHpA	6.529	367.1 -> 322.0	24970	2.50 µg/L	0.000
M8-PFOA	7.188	421.1 -> 376.0	34685	2.50 µg/L	-0.013
M9-PFNA	7.746	472.1 -> 427.0	18385	1.25 µg/L	0.000
M6-PFDA	8.253	519.1 -> 474.1	16549	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	18947	1.25 µg/L	-0.012
M2-PFDoDA	9.168	615.1 -> 570.0	23044	1.25 µg/L	-0.012
M2-PFTeDA	9.961	715.2 -> 670.0	16473	1.25 µg/L	-0.025
M8-FOSA	9.783	506.1 -> 77.8	11835	2.50 µg/L	-0.012
M3-PFBS	5.514	302.1 -> 79.9	9904	2.50 µg/L	0.012
M3-PFHxS	7.291	402.1 -> 79.9	5825	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	9194	2.50 µg/L	0.000
M2-4:2FTS	5.298	329.1 -> 80.9	1360	5.00 µg/L	0.012
M2-6:2FTS	6.961	429.1 -> 80.9	2331	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	4021	5.00 µg/L	-0.012
M3-MeFOSAA	8.310	573.2 -> 419.0	16307	5.00 µg/L	0.000
M3-HFPO-DA	5.964	286.9 -> 168.9	25450	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	13334	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	44880	25.00 µg/L	-0.025
M9-EtFOSE	11.256	639.2 -> 58.9	65958	25.00 µg/L	-0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7004	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	6400	2.50 µg/L	-0.012
13C4-PFOS	8.405	502.8 -> 79.9	8940	2.50 µg/L	0.000
13C3-PFBA	2.978	216.0 -> 172.0	56663	5.00 µg/L	0.050
18O2-PFHxS	7.290	403.0 -> 83.9	3825	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	39482	2.50 µg/L	-0.013
13C2-PFDA	8.253	515.1 -> 470.1	15296	1.25 µg/L	0.000
13C5-PFNA	7.746	468.0 -> 423.0	19721	1.25 µg/L	0.000
13C2-PFHxA	5.610	315.1 -> 270.0	38070	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.298	329.1 -> 80.9	1360	6.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.2%		
13C2-6:2FTS	6.961	429.1 -> 80.9	2331	6.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 131.9%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4021	6.28 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.5%		
13C2-PFDoDA	9.168	615.1 -> 570.0	23044	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C2-PFTeDA	9.961	715.2 -> 670.0	16473	1.12 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.7%		
13C3-PFBS	5.514	302.1 -> 79.9	9904	2.80 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.8%		
13C3-PFHxS	7.291	402.1 -> 79.9	5825	2.67 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 = 106.7%	
13C4-PFBA	2.990	216.8 -> 171.9	111033	10.88 µg/L	0.066
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
13C4-PFHpA	6.529	367.1 -> 322.0	24970	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C5-PFHxA	5.609	318.0 -> 273.0	46887	2.62 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C5-PFPeA	4.437	268.3 -> 223.0	58849	5.05 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C6-PFDA	8.253	519.1 -> 474.1	16549	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C7-PFUnDA	8.722	570.0 -> 525.1	18947	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C8-FOSA	9.783	506.1 -> 77.8	11835	1.83 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.0%	
13C8-PFOA	7.188	421.1 -> 376.0	34685	2.63 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C8-PFOS	8.405	507.1 -> 79.9	9194	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C9-PFNA	7.746	472.1 -> 427.0	18385	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.8%	
d3-MeFOSAA	8.310	573.2 -> 419.0	16307	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.1%	
13C3-HFPO-DA	5.964	286.9 -> 168.9	25450	8.81 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.1%	
d3-MeFOSA	11.064	515.0 -> 219.0	6400	1.91 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 76.4%	
d5-EtFOSAA	8.507	589.2 -> 419.0	13334	5.41 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.1%	
d7-MeFOSE	10.947	623.2 -> 58.9	44880	16.37 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 65.5%	
d9-EtFOSE	11.256	639.2 -> 58.9	65958	18.78 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 75.1%	
d5-EtFOSA	11.360	531.1 -> 219.0	7004	1.97 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.7%	
Target Compounds					QValue
4:2FTS	5.298	327.1 -> 307.0	6828	3.92 µg/L	98
		327.1 -> 80.9	2703		
6:2FTS	6.961	427.1 -> 407.0	5812	3.26 µg/L	98
		427.1 -> 80.9	2460		
8:2FTS	8.028	527.1 -> 507.0	6744	3.40 µg/L	95
		527.1 -> 80.8	2542		
EtFOSAA	8.521	584.2 -> 419.1	1912	1.00 µg/L	m 98
		584.2 -> 526.0	873		
FOSA	9.774	498.1 -> 77.9	3707	0.93 µg/L	100
		498.1 -> 478.0	94		
MeFOSAA	8.311	570.1 -> 419.0	1911	0.82 µg/L	m 96
		570.1 -> 483.0	392		
PFBA	2.982	212.8 -> 168.9	8476	3.29 µg/L	100
PFBS	5.515	298.7 -> 79.9	3062	0.78 µg/L	98
		298.7 -> 98.8	1216		
PFDA	8.253	512.9 -> 469.0	8295	0.82 µg/L	94
		512.9 -> 219.0	1690		
PFDODA	9.169	613.1 -> 569.0	12919	0.85 µg/L	99
		613.1 -> 319.0	1776		
PFDS	9.331	599.0 -> 79.9	1649	0.77 µg/L	92

7.3.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.530	599.0 -> 98.8	1006	0.83	µg/L	96
		363.1 -> 319.0	10961			
PFHpS	7.873	363.1 -> 169.0	2123	0.78	µg/L	91
		449.0 -> 79.9	2058			
PFHxA	5.612	449.0 -> 98.9	1008	0.84	µg/L	100
		313.0 -> 269.0	12378			
PFHxS	7.292	313.0 -> 118.9	383	0.79	µg/L	m
		398.7 -> 79.9	1693			
PFNA	7.747	398.7 -> 98.9	905	0.92	µg/L	96
		463.0 -> 419.0	9589			
PFNS	8.886	463.0 -> 219.0	2301	0.69	µg/L	97
		548.8 -> 79.9	1117			
PFOA	7.189	548.8 -> 98.9	592	0.90	µg/L	96
		413.0 -> 369.0	13956			
PFOS	8.406	413.0 -> 169.0	2908	0.80	µg/L	m
		498.9 -> 79.9	2806			
PFPeA	4.439	498.9 -> 98.8	1594	1.75	µg/L	100
		263.0 -> 219.0	20570			
PFPeS	6.569	349.1 -> 79.9	1620	0.88	µg/L	89
		349.1 -> 98.9	810			
PFTeDA	9.949	713.1 -> 669.0	11977	0.89	µg/L	98
		713.1 -> 168.9	932			
PFTrDA	9.579	663.0 -> 619.0	17789	0.94	µg/L	95
		663.0 -> 168.9	1424			
PFUnDA	8.722	563.1 -> 519.0	9603	0.90	µg/L	98
		563.1 -> 269.1	1904			
11CI-PF3OUdS	9.618	630.9 -> 450.9	13873	1.89	µg/L	99
		632.9 -> 452.9	4222			
9CI-PF3ONS	8.749	530.8 -> 351.0	14504	1.84	µg/L	94
		532.8 -> 353.0	3955			
ADONA	6.793	376.9 -> 250.9	35171	1.92	µg/L	98
		376.9 -> 84.8	9751			
HFPO-DA	5.965	284.9 -> 168.9	3346	1.66	µg/L	97
		284.9 -> 184.9	413			
3:3FTCA	3.917	241.0 -> 177.0	1880	3.36	µg/L	97
		241.0 -> 117.0	200			
5:3FTCA	6.256	341.0 -> 237.1	44732	20.32	µg/L	99
		341.0 -> 217.0	31057			
7:3FTCA	7.699	441.0 -> 316.9	21062	19.60	µg/L	93
		441.0 -> 336.9	48679			
EtFOSA	11.362	526.0 -> 219.0	4605	1.76	µg/L	m
		526.0 -> 169.0	6096			
EtFOSE	11.282	630.0 -> 58.9	8722	4.15	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	3734	1.74	µg/L	m
		511.9 -> 169.0	5103			
MeFOSE	10.973	616.1 -> 58.9	5878	3.68	µg/L	m
PFDoDS	10.101	699.1 -> 79.9	1403	0.72	µg/L	93
		699.1 -> 98.8	792			
NFDHA	5.491	295.0 -> 201.0	1667	2.08	µg/L	92
		295.0 -> 84.9	360			
PFMBA	4.841	279.0 -> 85.1	11866	1.77	µg/L	100
PFMPA	3.591	229.0 -> 84.9	10439	1.75	µg/L	100
PFEESA	6.034	314.8 -> 134.9	17807	1.47	µg/L	99
		314.8 -> 82.9	669			

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

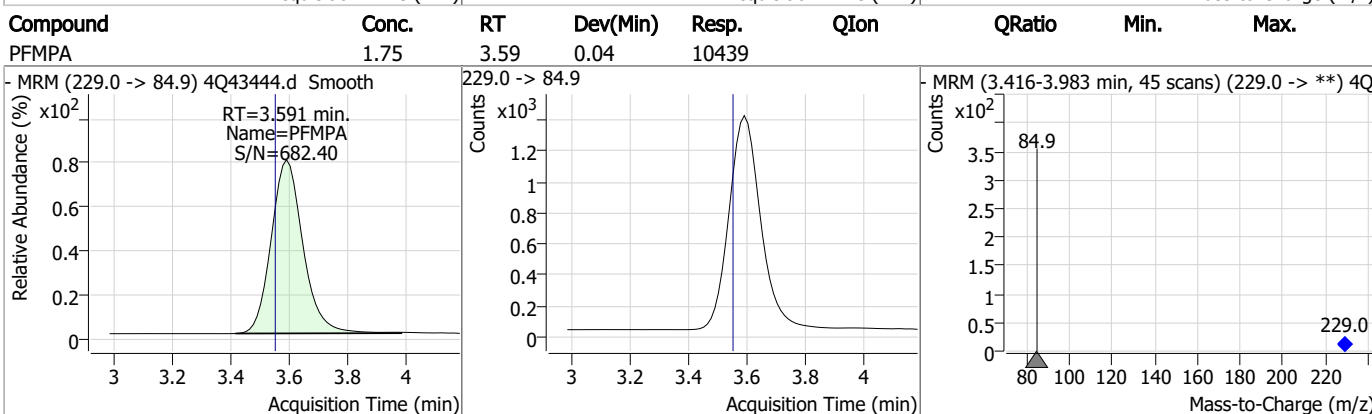
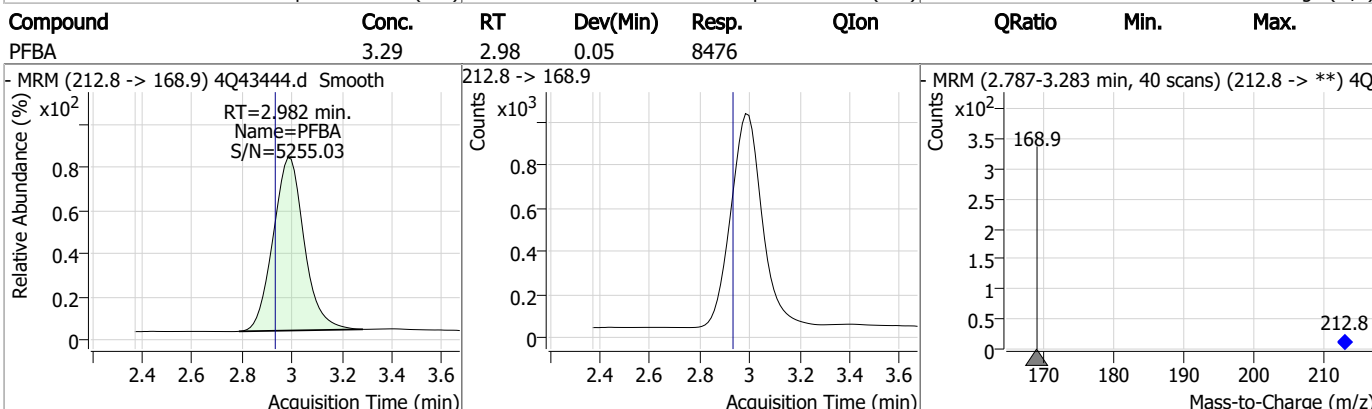
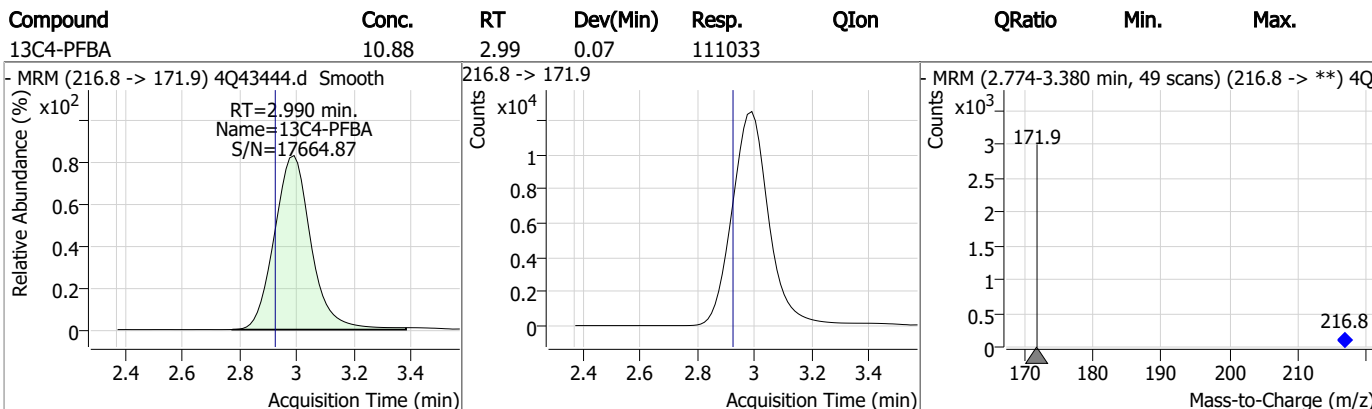
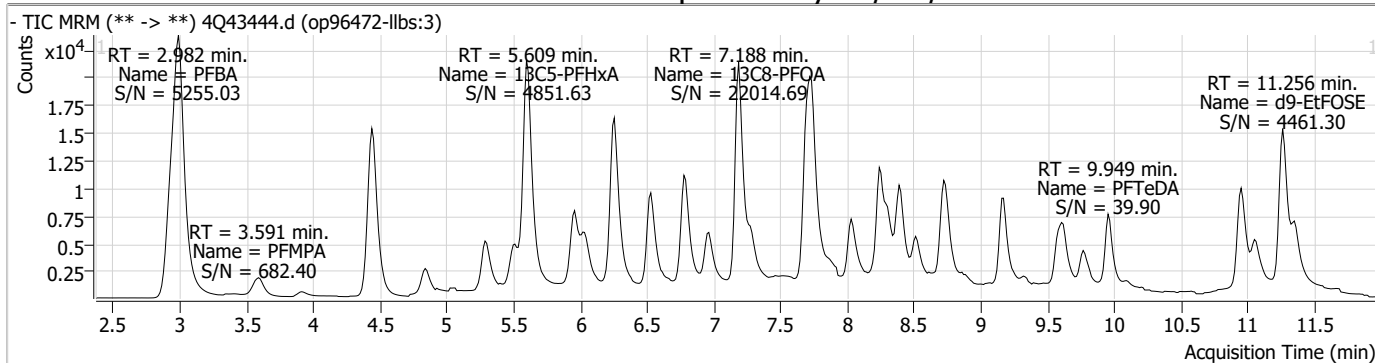
Perfluorinated Compounds by LC/MS/MS

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

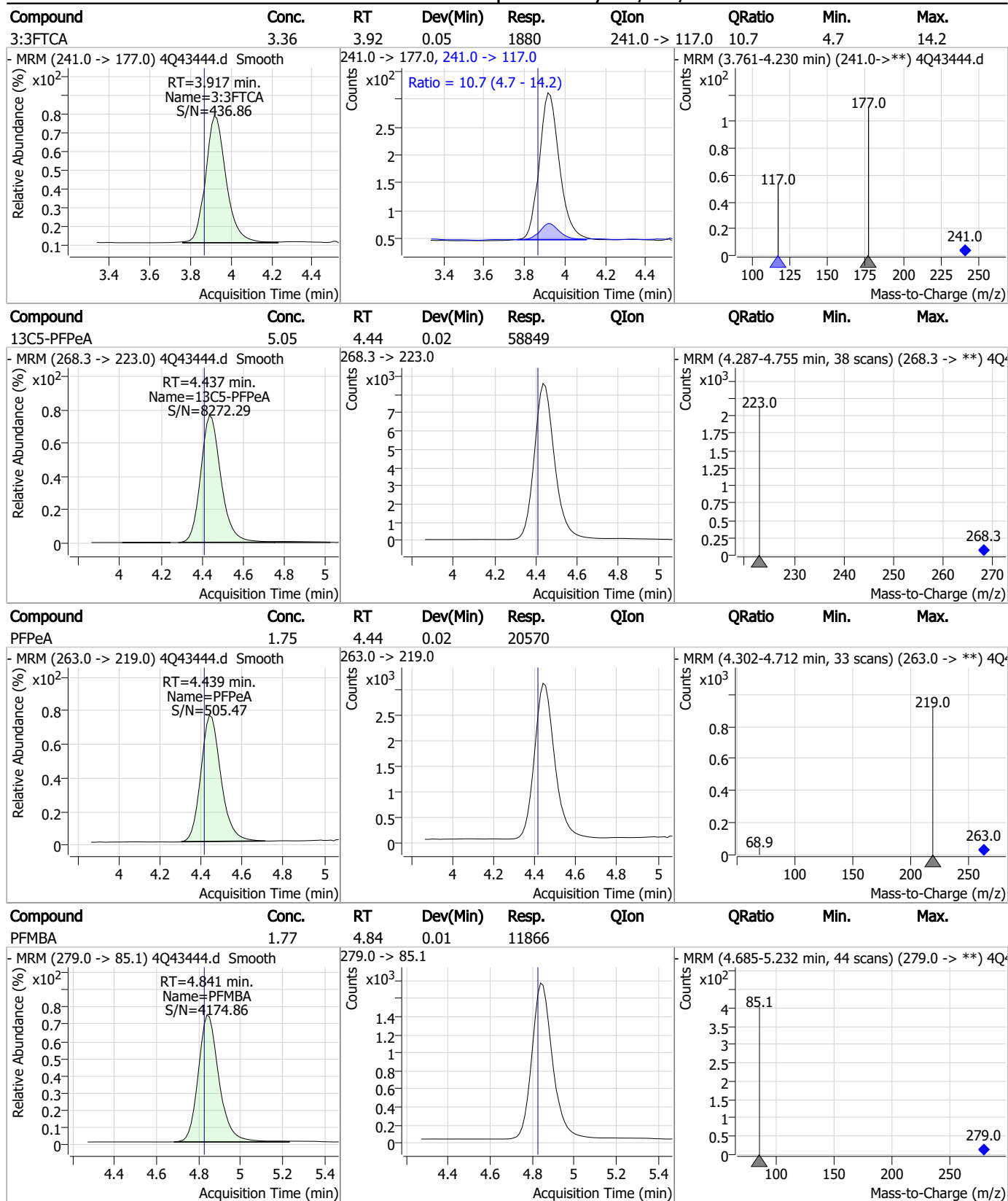
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Perfluorinated Compounds by LC/MS/MS



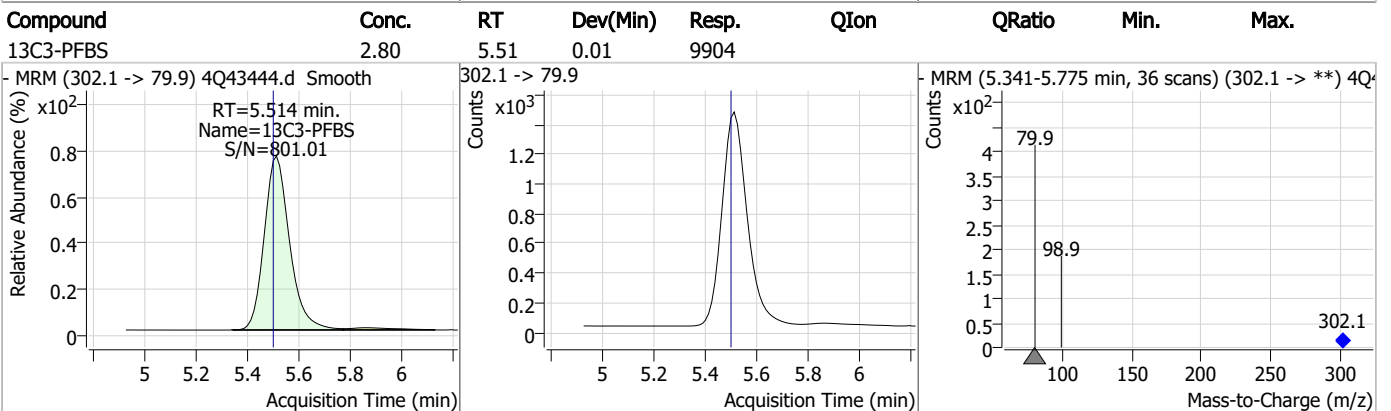
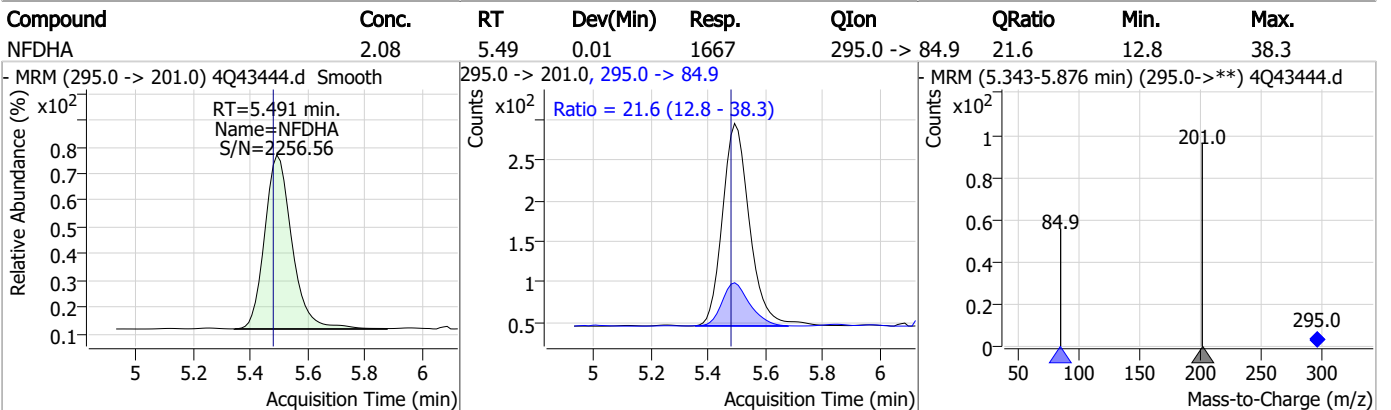
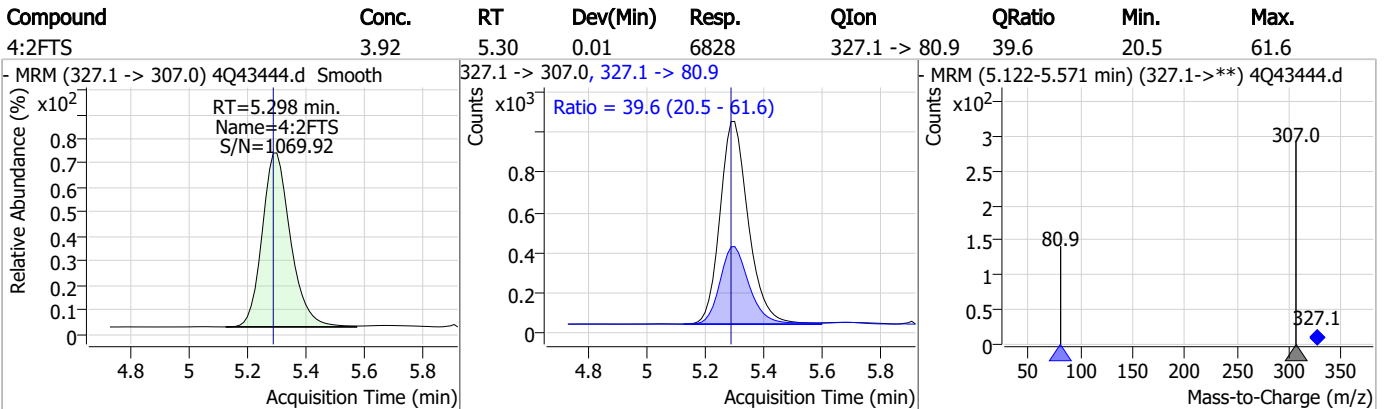
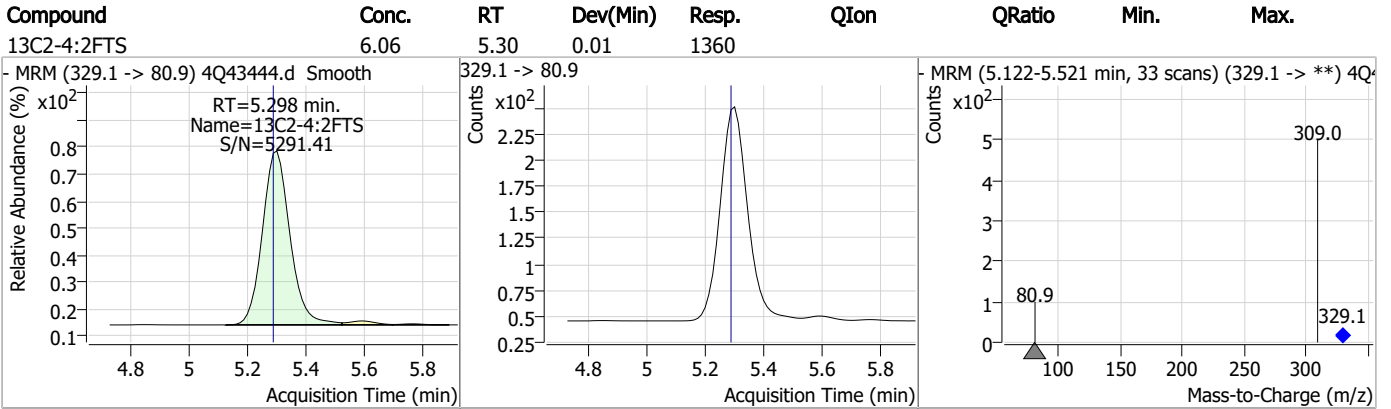
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Perfluorinated Compounds by LC/MS/MS



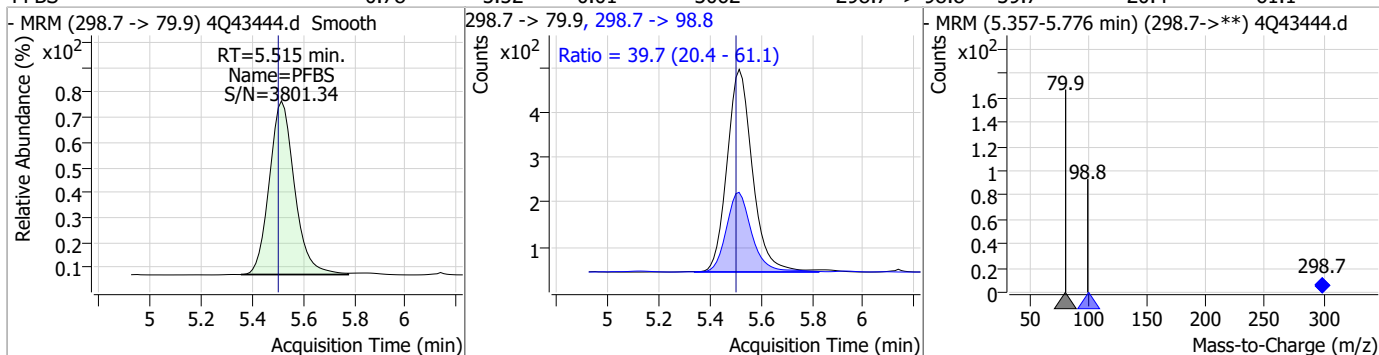
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Perfluorinated Compounds by LC/MS/MS

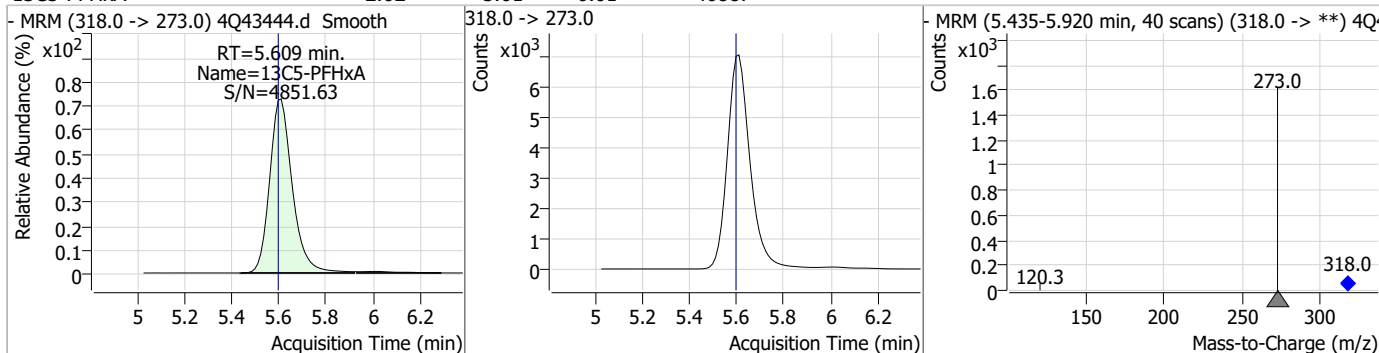


Perfluorinated Compounds by LC/MS/MS

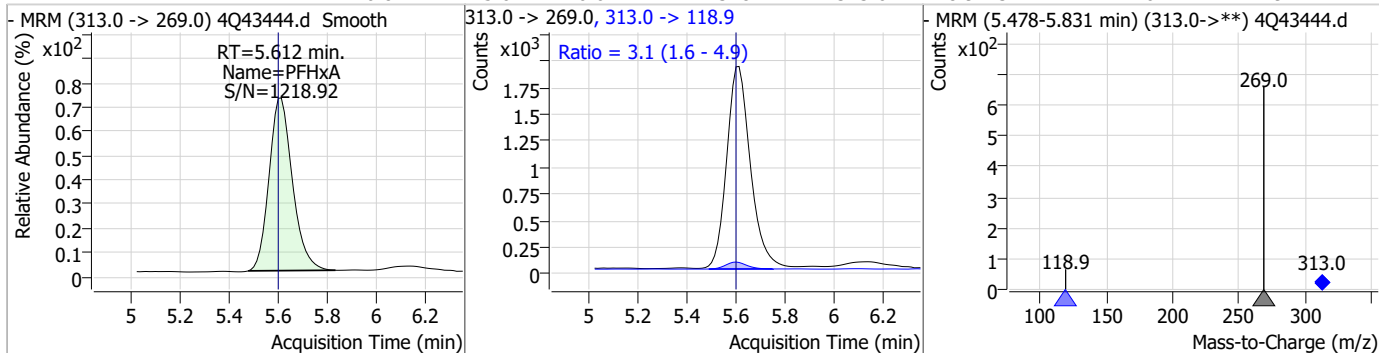
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.78	5.52	0.01	3062	298.7 -> 98.8	39.7	20.4	61.1



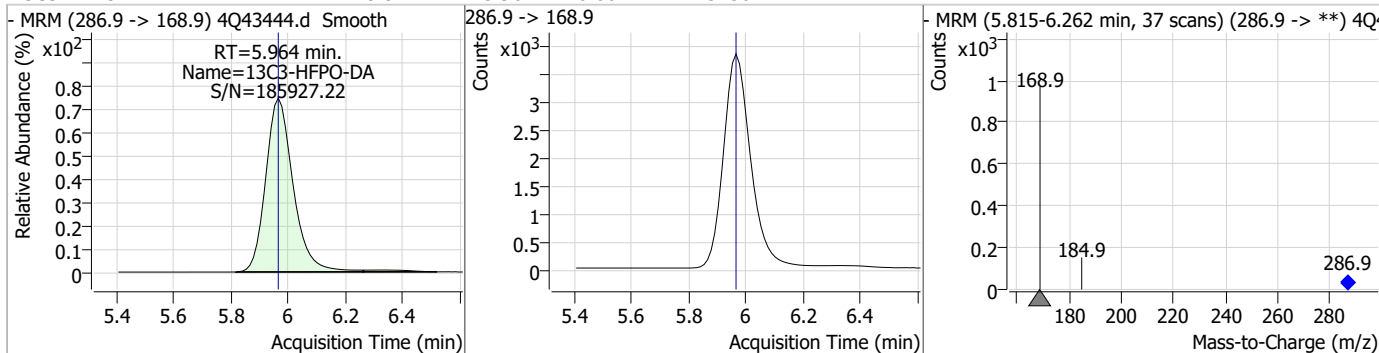
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.62	5.61	0.01	46887				



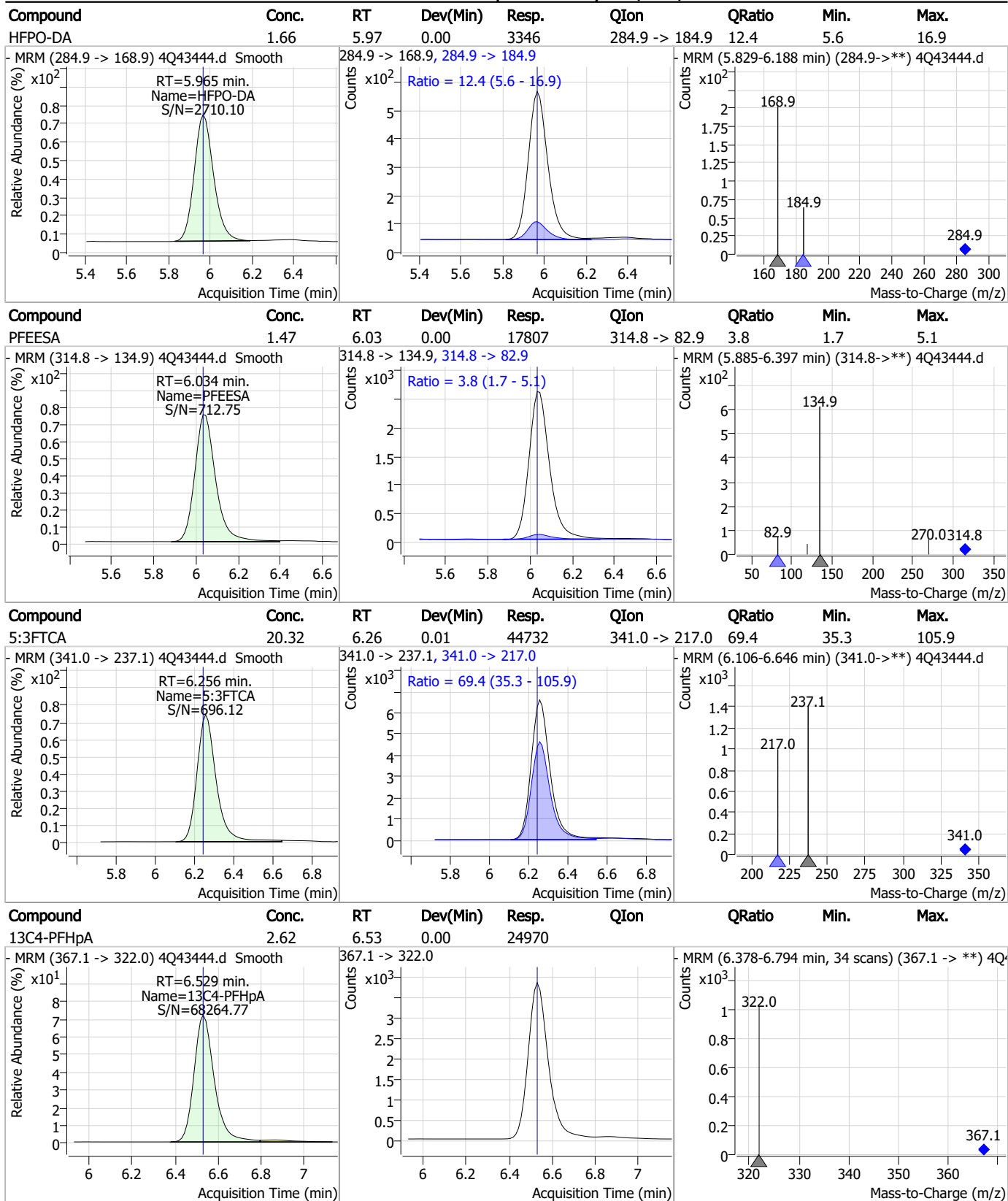
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.84	5.61	0.01	12378	313.0 -> 118.9	3.1	1.6	4.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.81	5.96	0.00	25450				

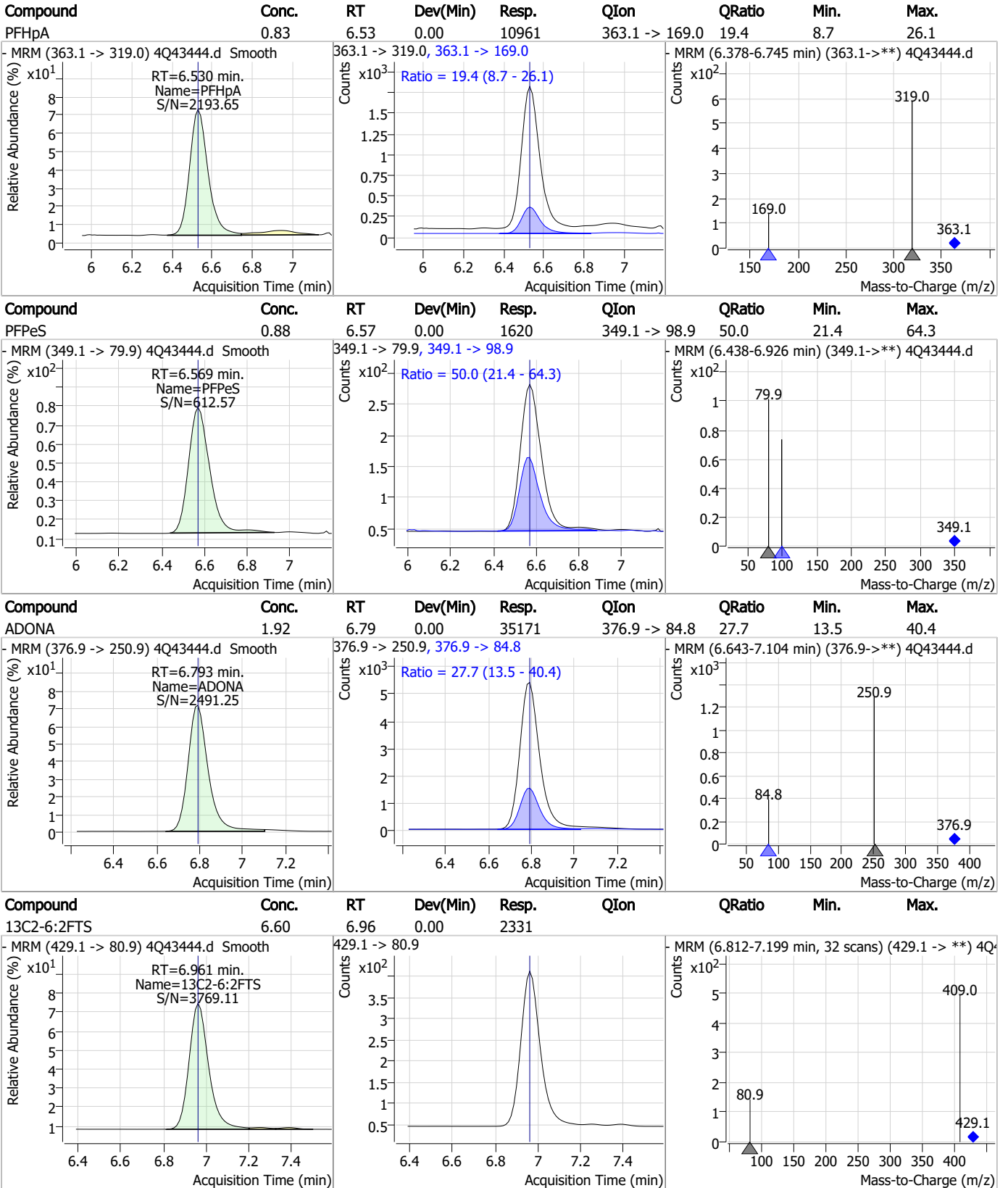


Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

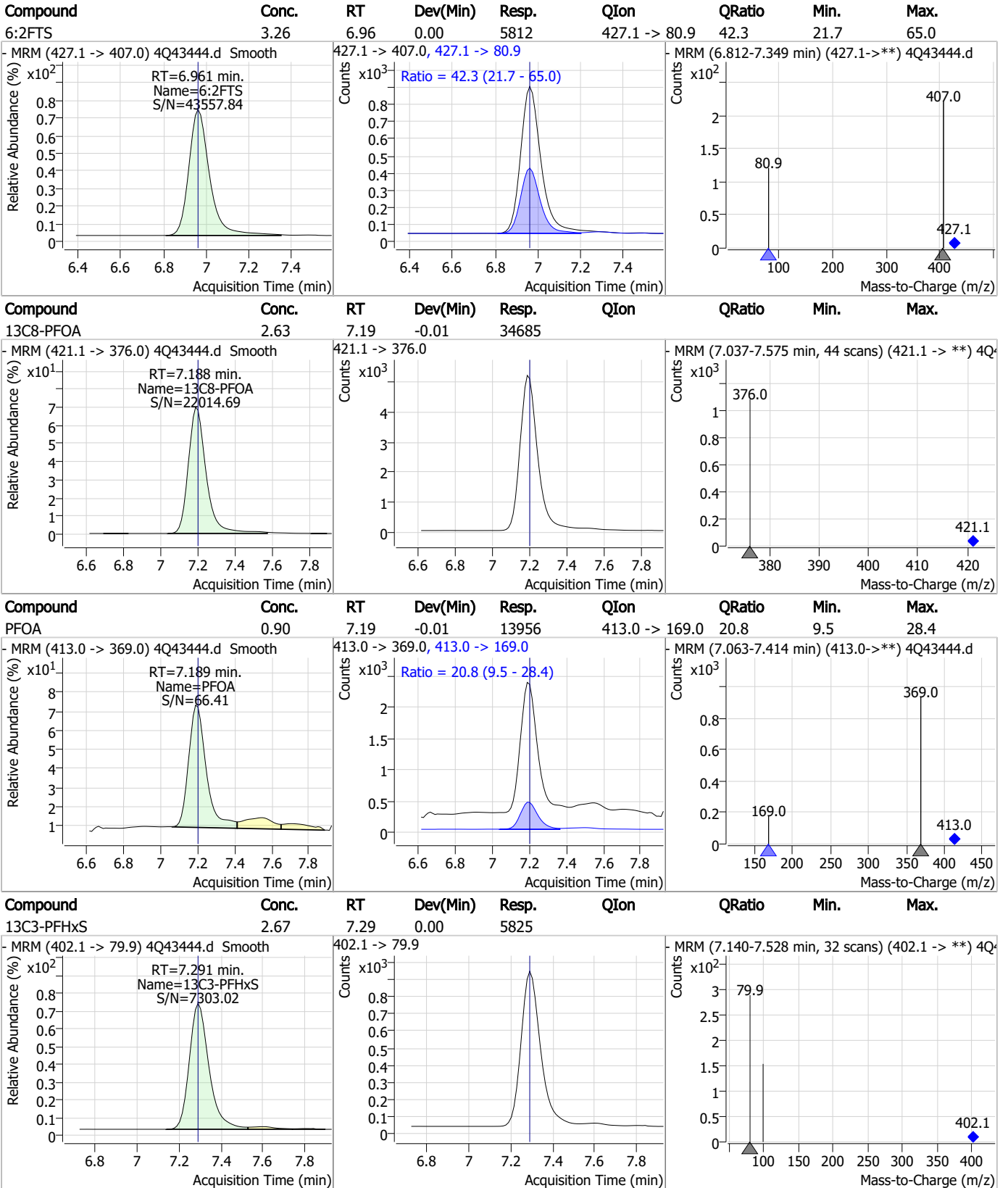


7.3.2

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Perfluorinated Compounds by LC/MS/MS

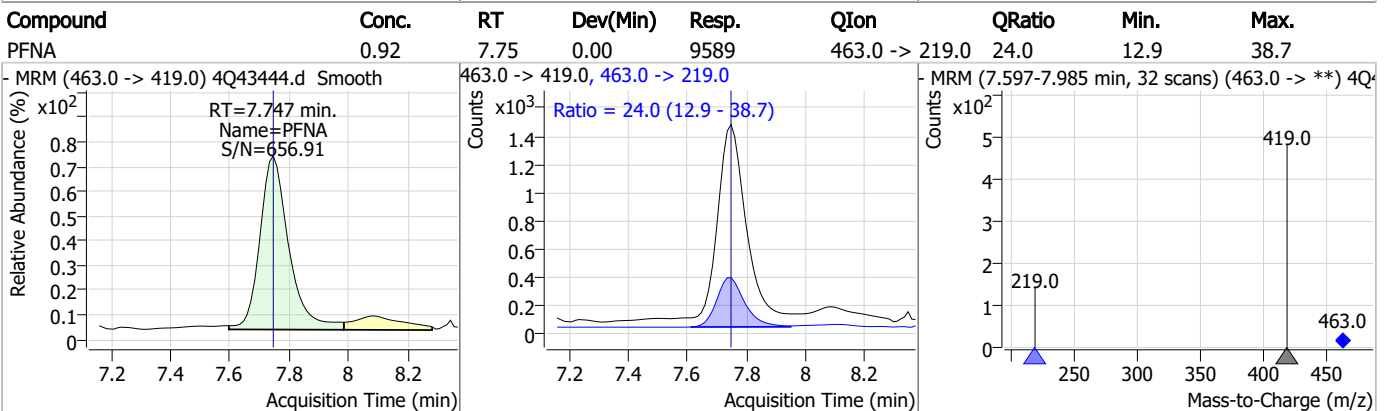
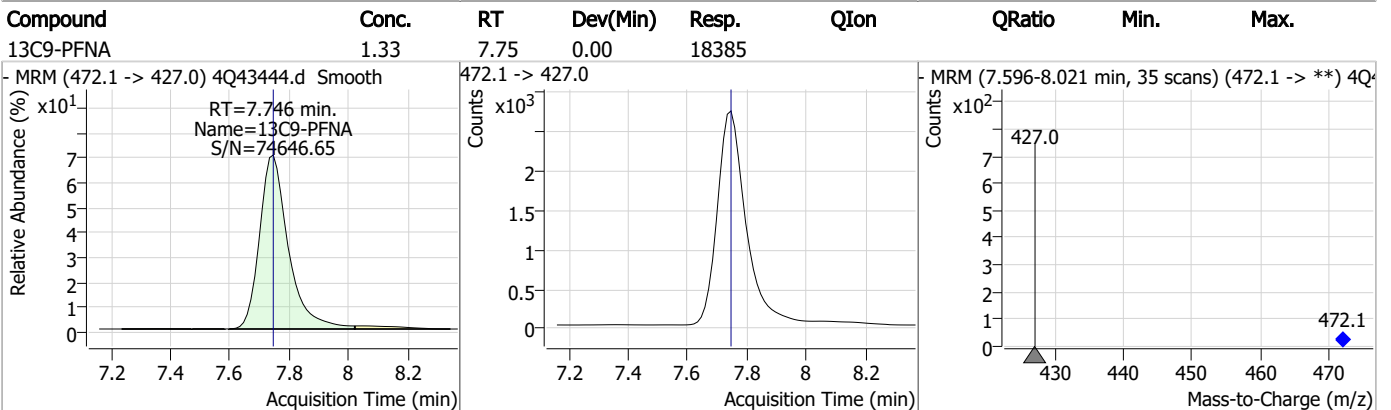
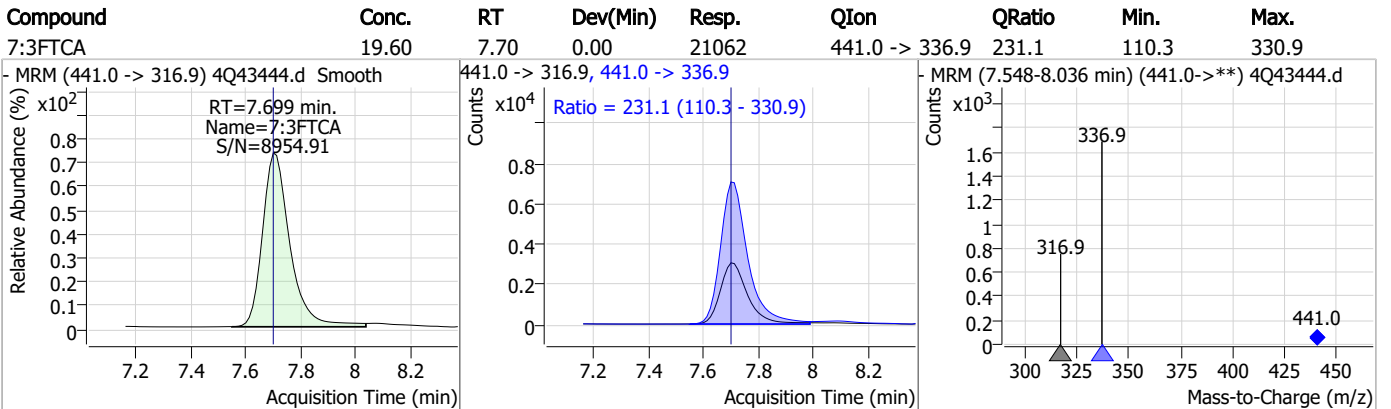
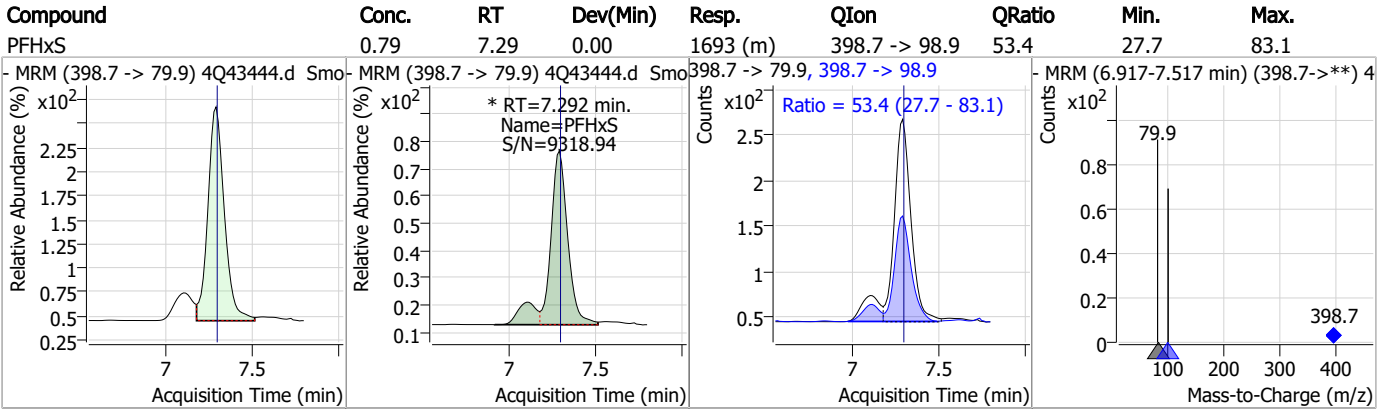


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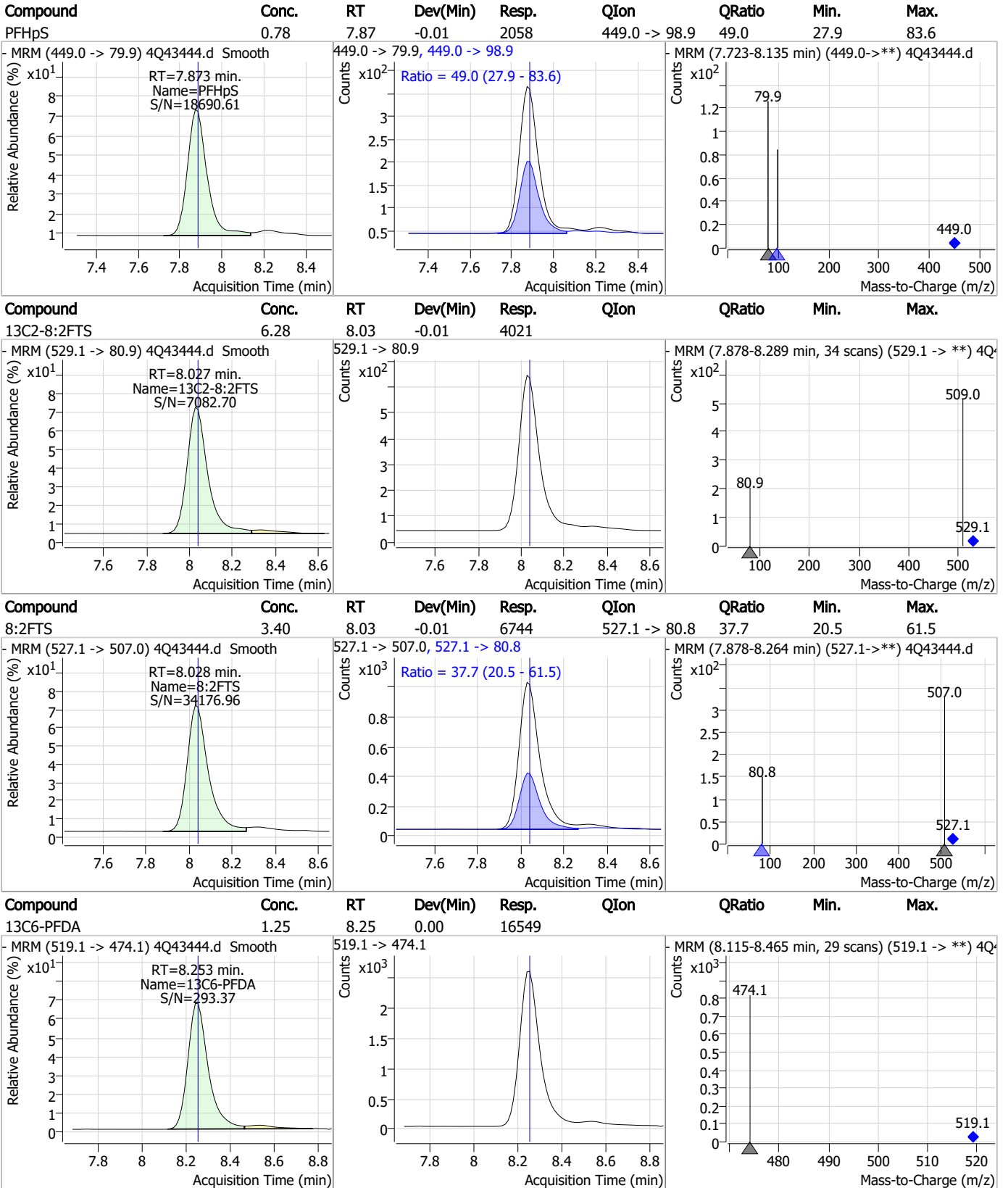
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Perfluorinated Compounds by LC/MS/MS



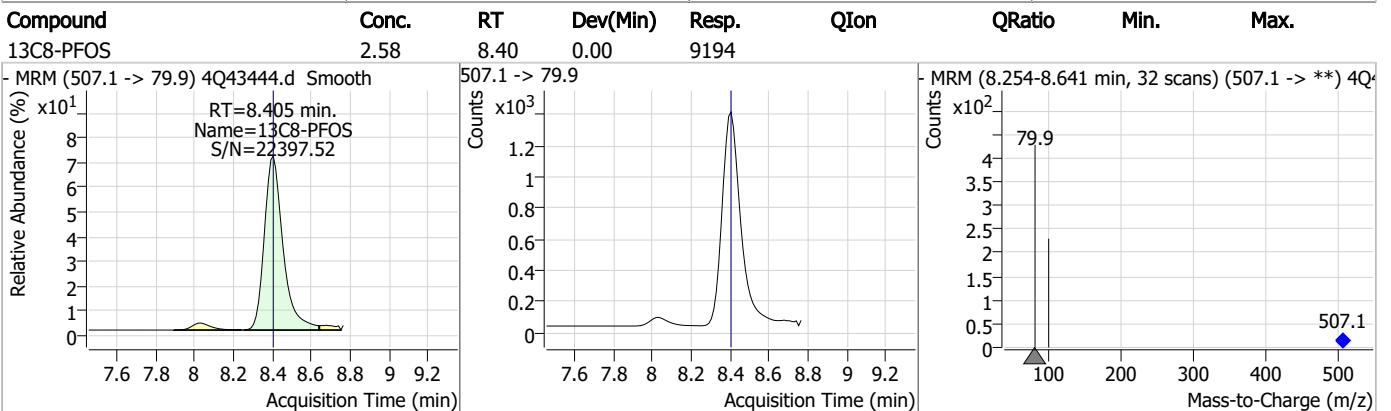
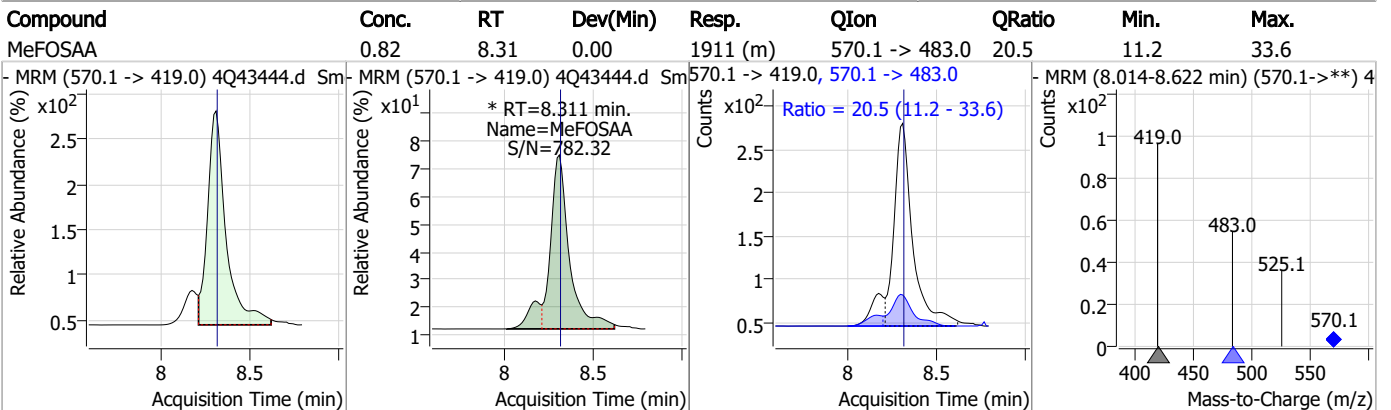
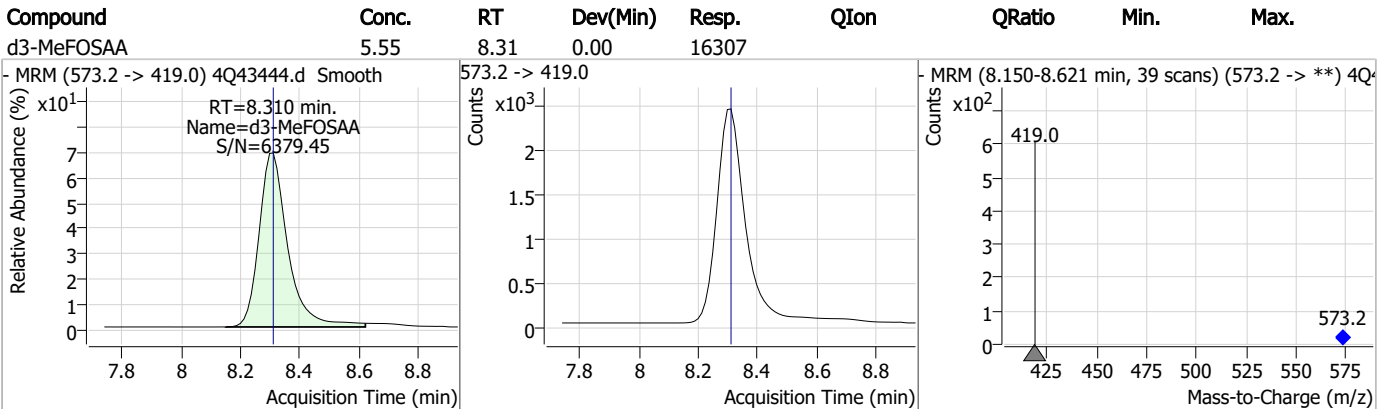
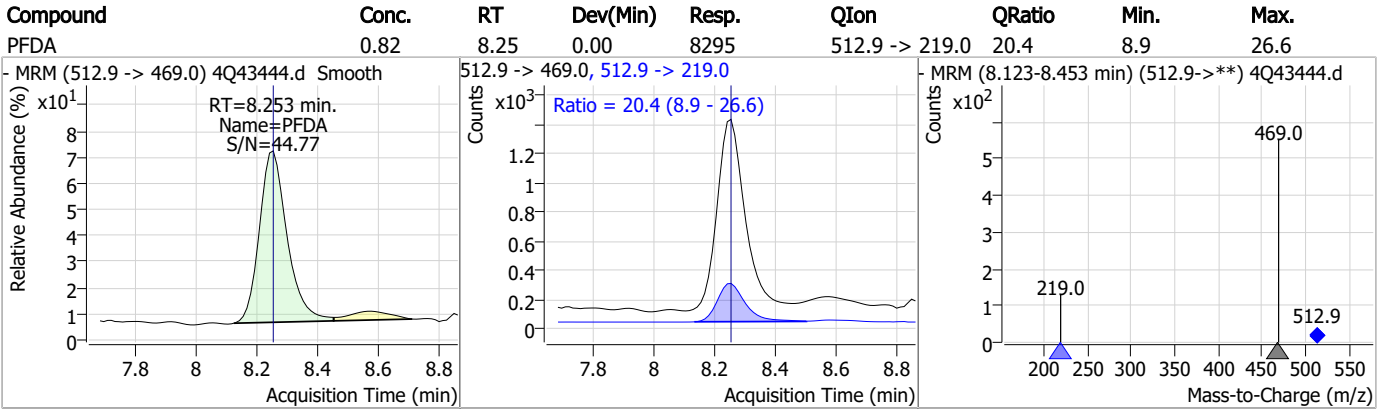
Perfluorinated Compounds by LC/MS/MS



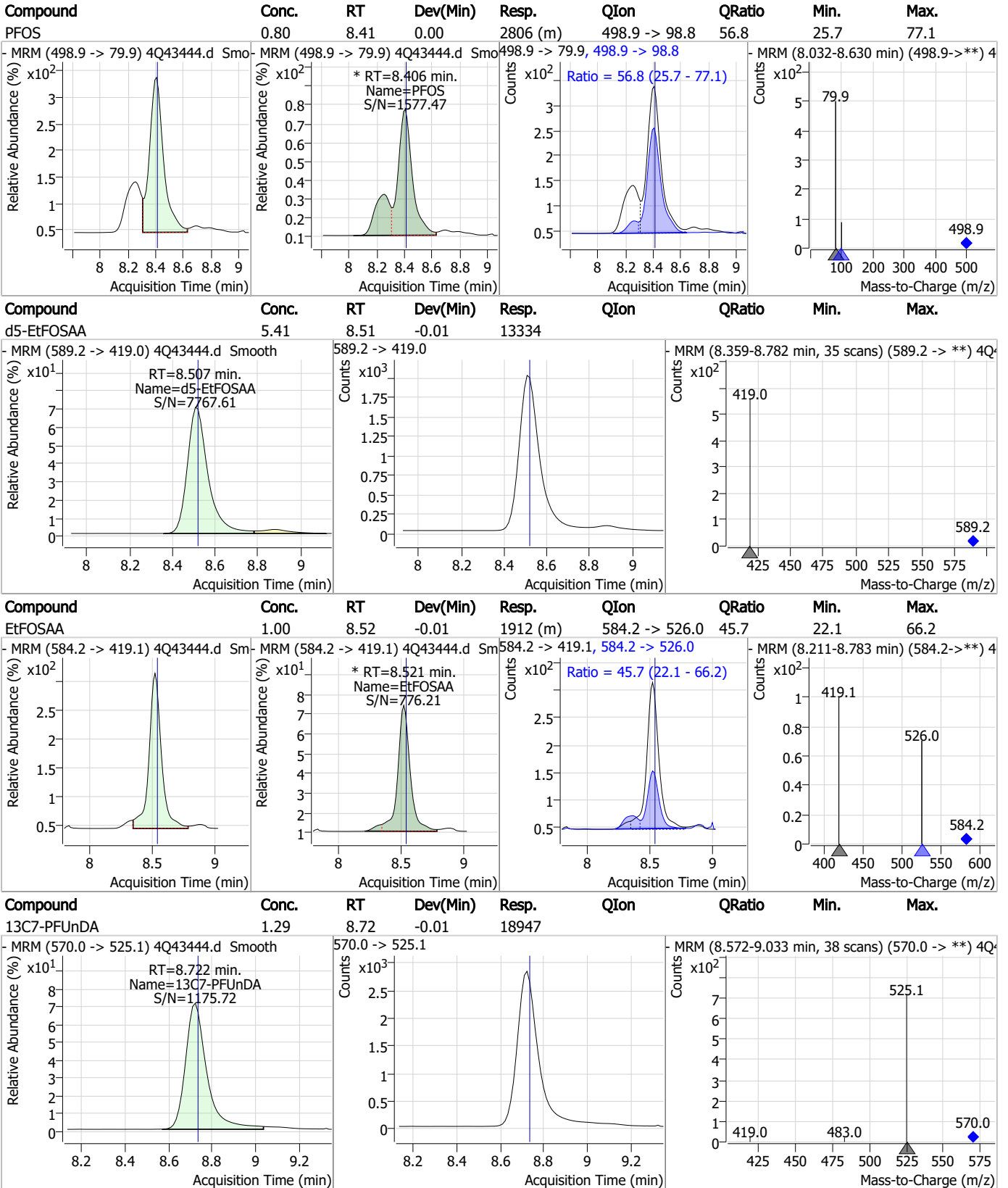
7.3.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



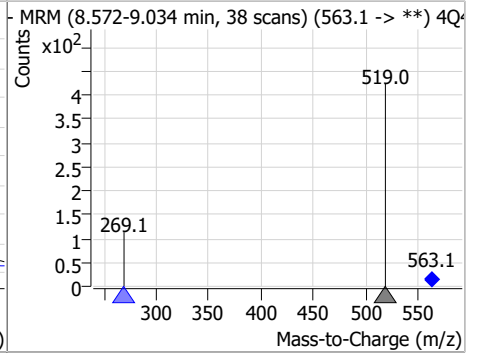
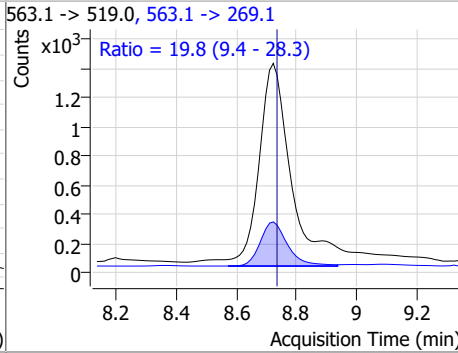
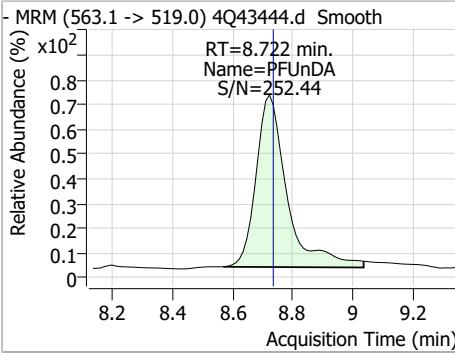
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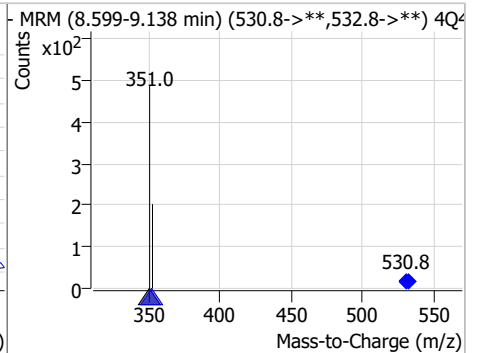
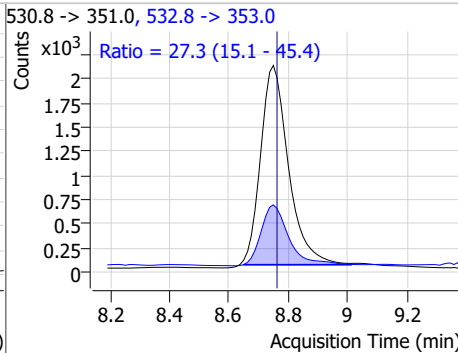
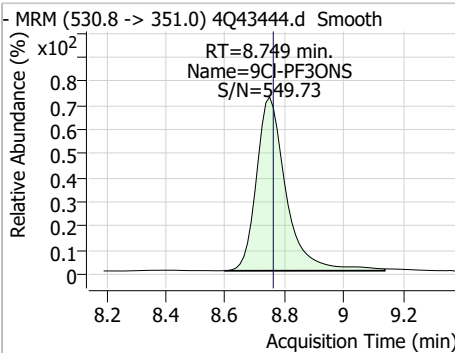


Perfluorinated Compounds by LC/MS/MS

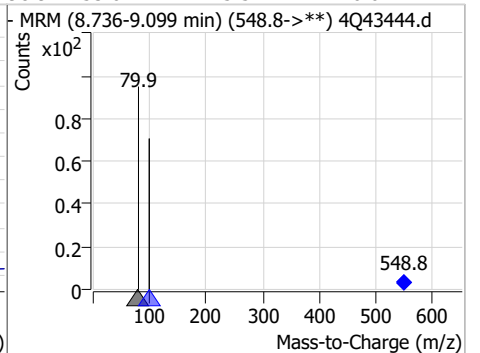
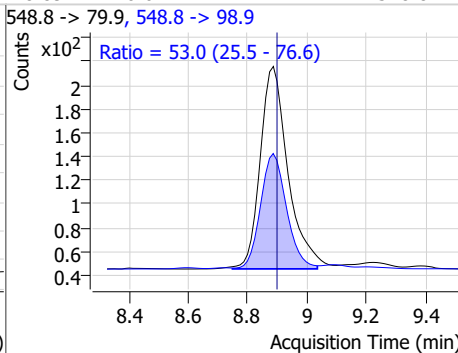
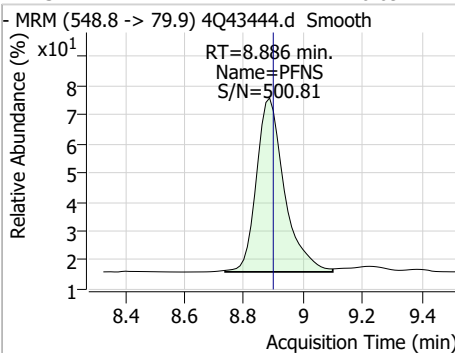
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.90	8.72	-0.01	9603	563.1 -> 269.1	19.8	9.4	28.3



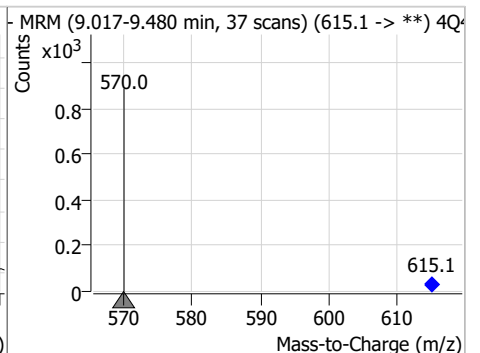
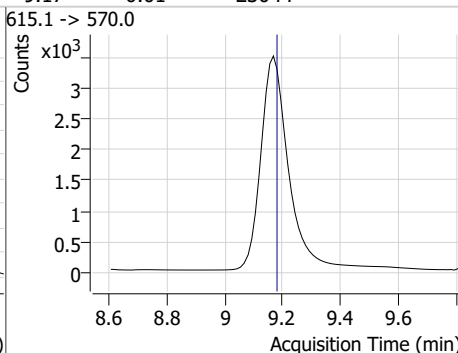
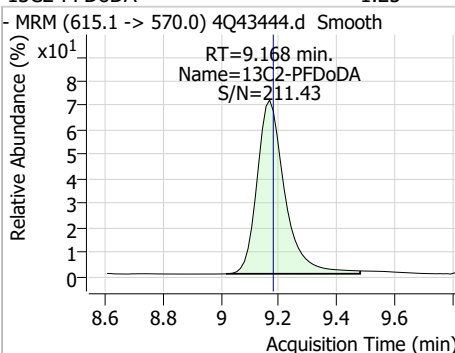
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.84	8.75	-0.01	14504	532.8 -> 353.0	27.3	15.1	45.4



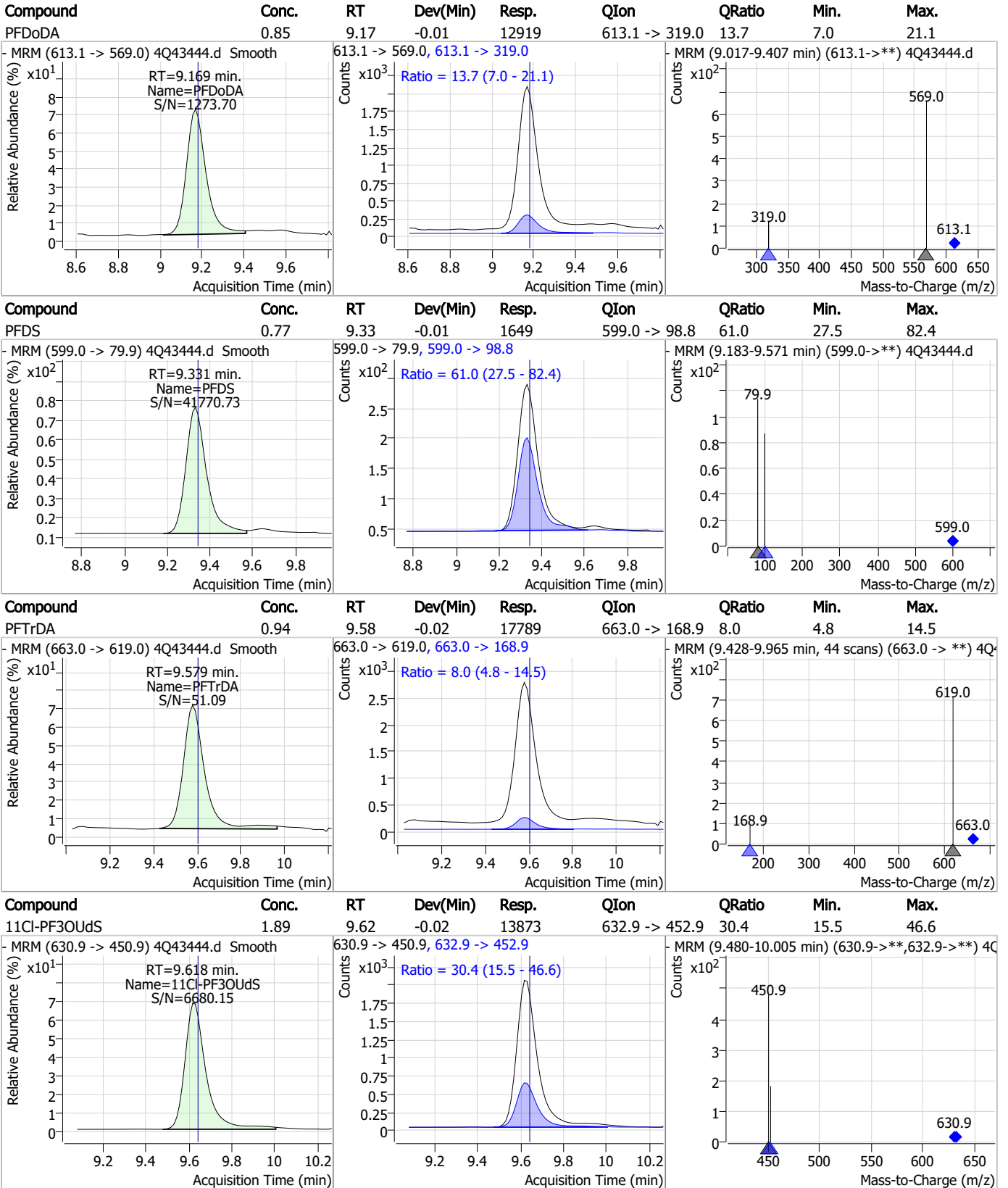
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.69	8.89	-0.01	1117	548.8 -> 98.9	53.0	25.5	76.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.25	9.17	-0.01	23044	615.1 -> 570.0			



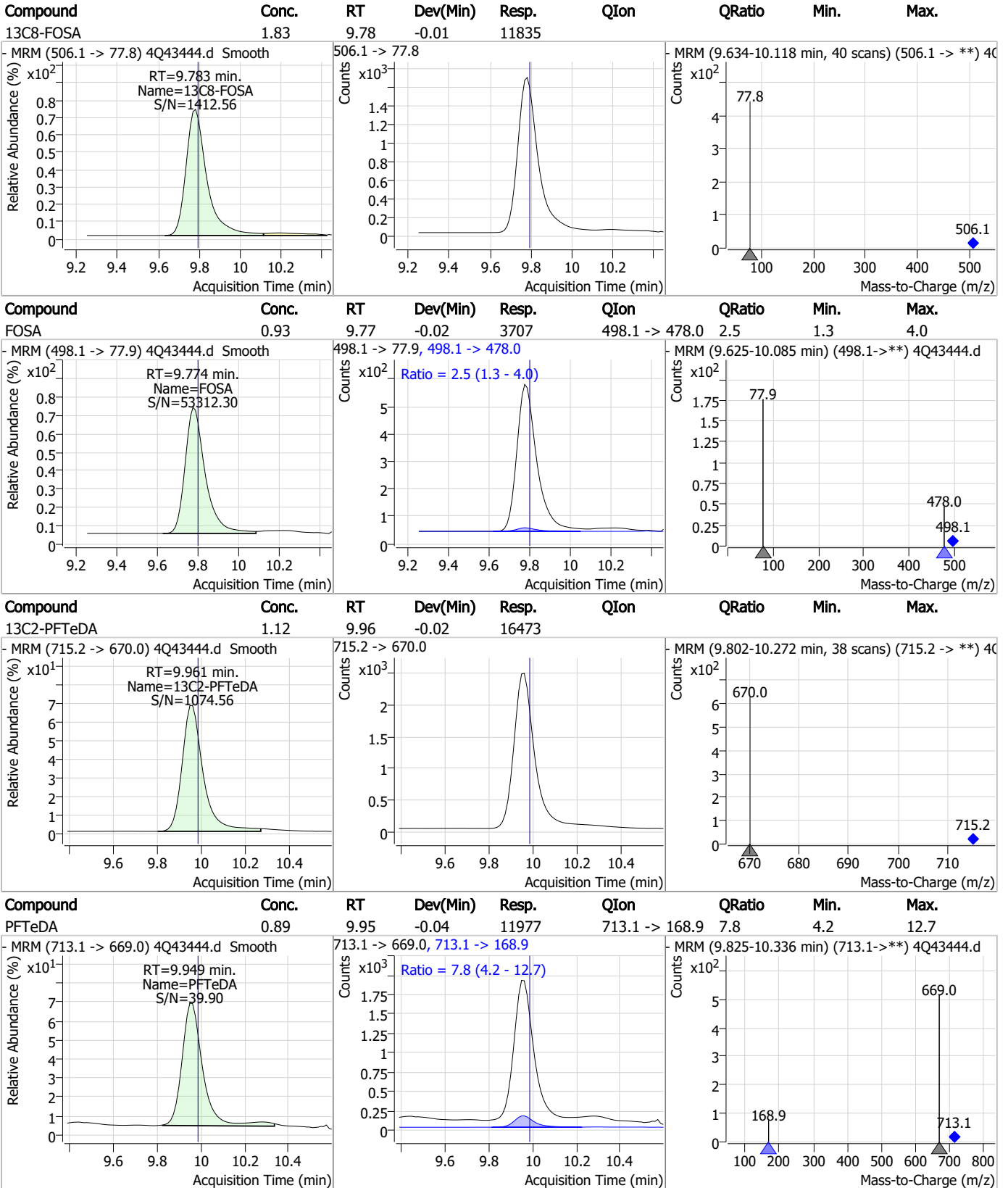
Perfluorinated Compounds by LC/MS/MS



7.3.2
7



Perfluorinated Compounds by LC/MS/MS

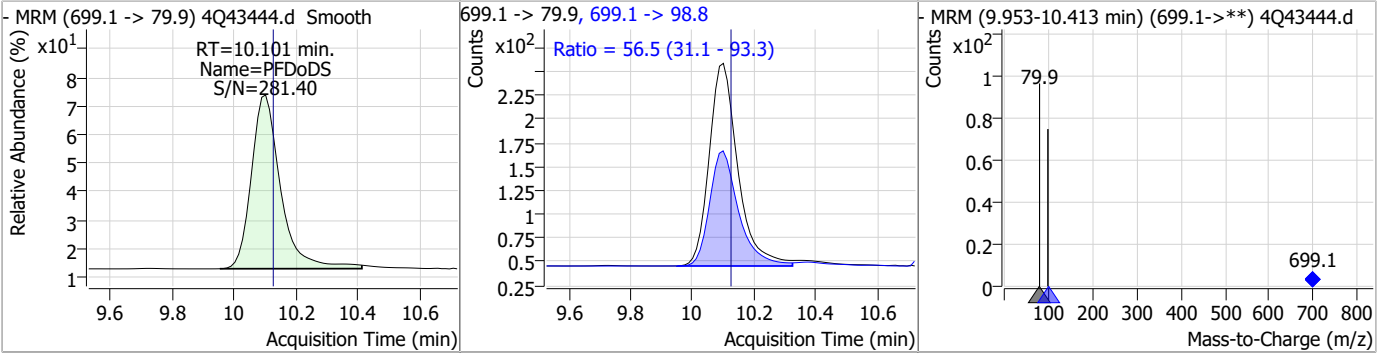


7.3.2

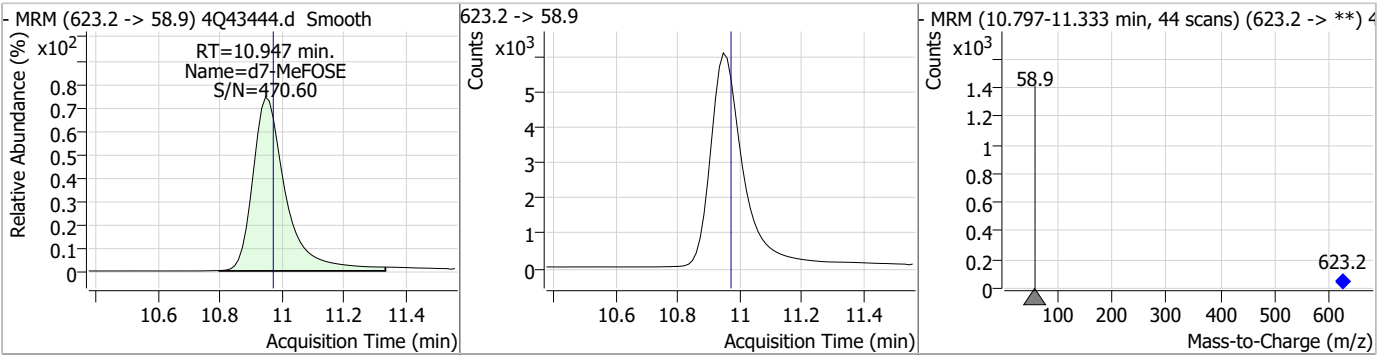
7

Perfluorinated Compounds by LC/MS/MS

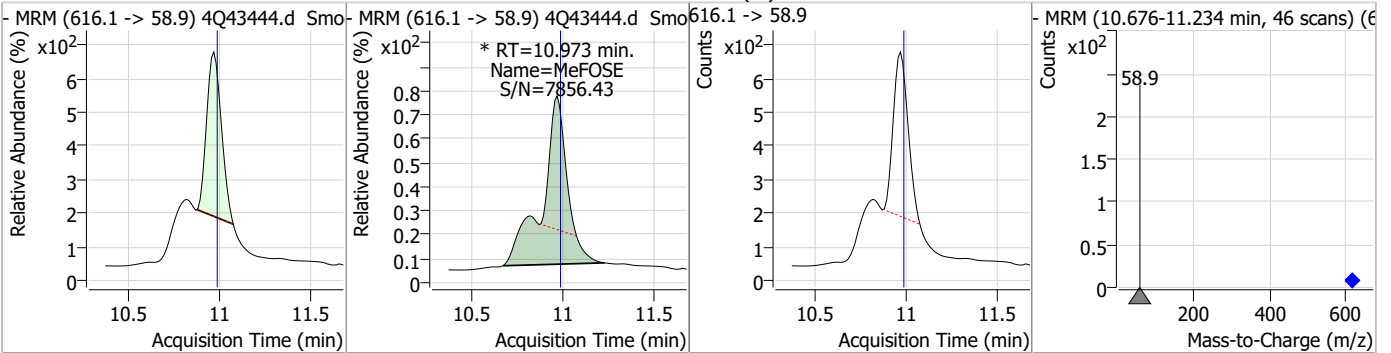
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.72	10.10	-0.02	1403	699.1 -> 98.8	56.5	31.1	93.3



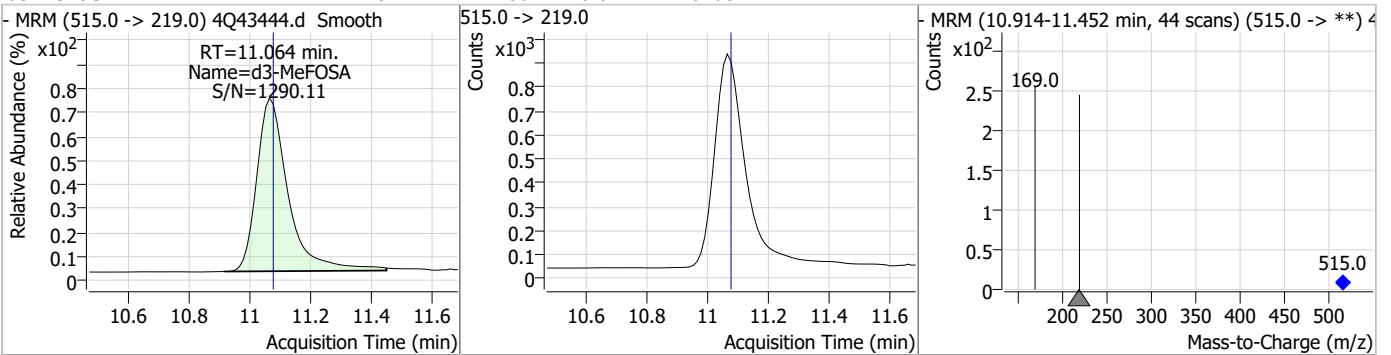
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	16.37	10.95	-0.02	44880				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.68	10.97	-0.01	5878 (m)				

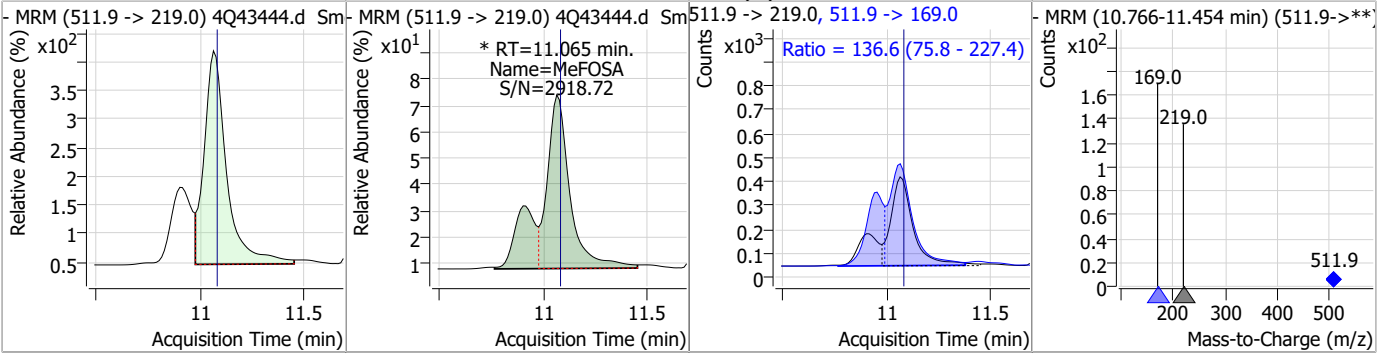


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.91	11.06	-0.01	6400				

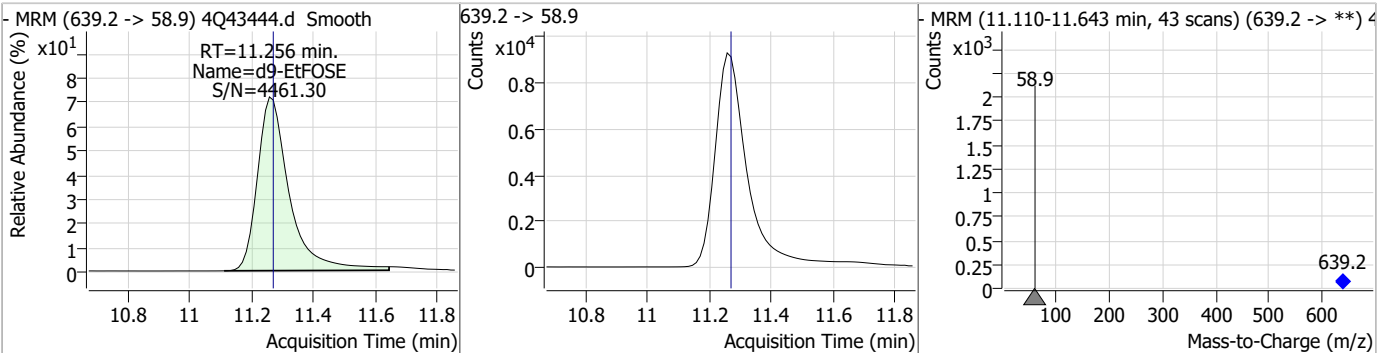


Perfluorinated Compounds by LC/MS/MS

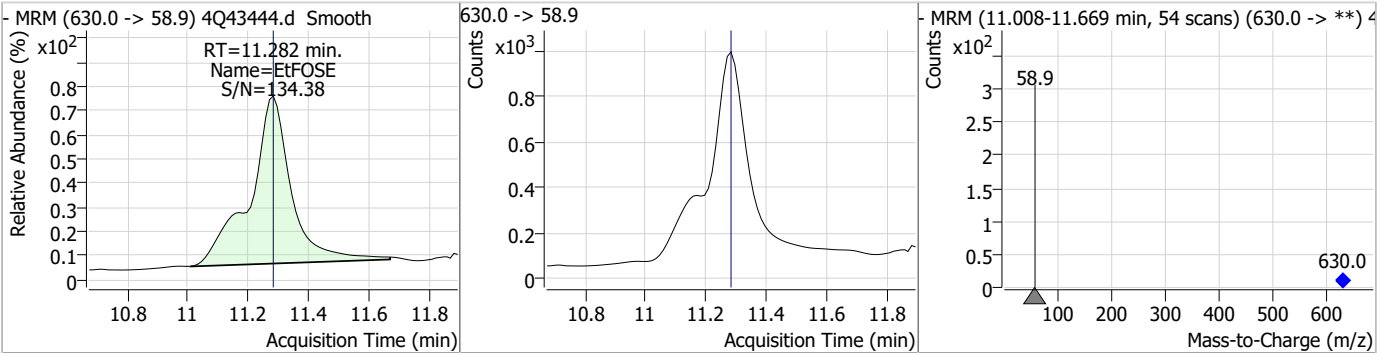
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.74	11.07	-0.01	3734 (m)	511.9 -> 169.0	136.6	75.8	227.4



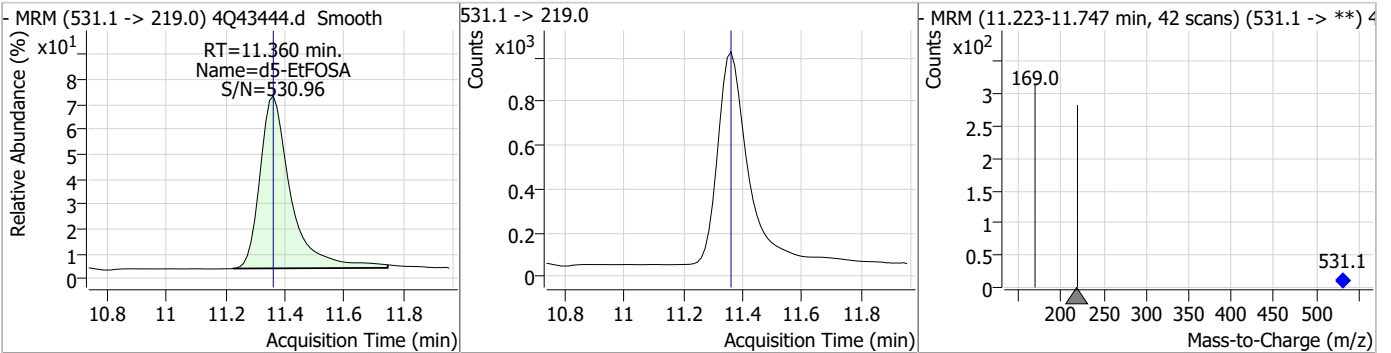
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	18.78	11.26	-0.01	65958				



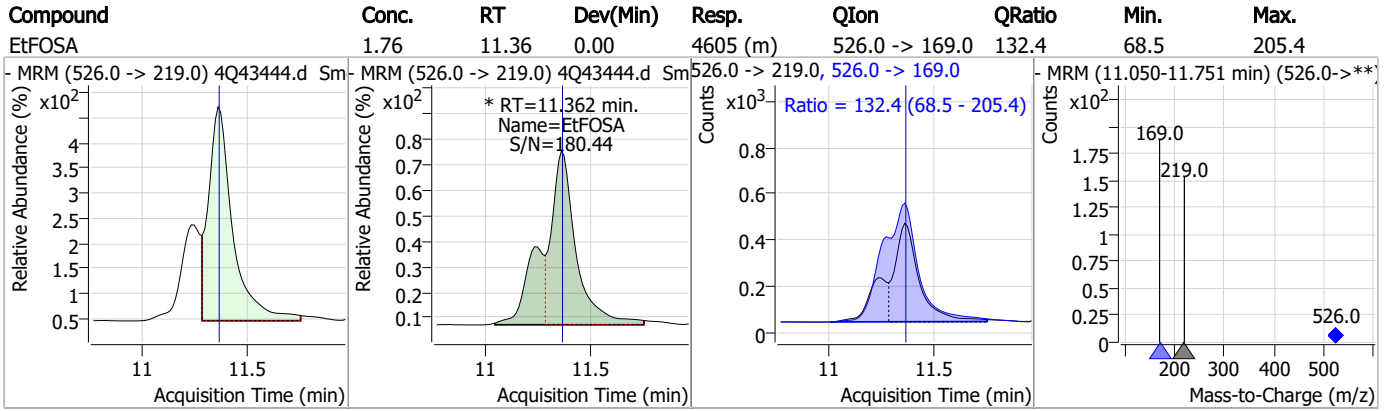
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	4.15	11.28	0.00	8722				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.97	11.36	0.00	7004				



Perfluorinated Compounds by LC/MS/MS



7.3.2

7

Manual Integration Approval Summary

Sample Number: OP96472-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q43444.D Analyst approved: 04/24/23 15:01 Martha Valls
Injection Time: 04/21/23 19:41 Supervisor approved: 04/25/23 14:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.3.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43447.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 8:23:54 PM
 Sample Name : op96472-ms
 Vial : P4-D5
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96472,S4q627,560,,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.990	216.8 -> 171.9	53066	10.00 µg/L	0.066
M5-PFPeA	4.424	268.3 -> 223.0	50207	5.00 µg/L	0.012
M5-PFHxA	5.597	318.0 -> 273.0	48745	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	26739	2.50 µg/L	-0.012
M8-PFOA	7.188	421.1 -> 376.0	34738	2.50 µg/L	-0.013
M9-PFNA	7.746	472.1 -> 427.0	17662	1.25 µg/L	0.000
M6-PFDA	8.253	519.1 -> 474.1	17504	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	17948	1.25 µg/L	-0.012
M2-PFDoDA	9.168	615.1 -> 570.0	20916	1.25 µg/L	-0.012
M2-PFTeDA	9.961	715.2 -> 670.0	13911	1.25 µg/L	-0.025
M8-FOSA	9.783	506.1 -> 77.8	14039	2.50 µg/L	-0.012
M3-PFBS	5.502	302.1 -> 79.9	9494	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	5820	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	7468	2.50 µg/L	0.000
M2-4:2FTS	5.273	329.1 -> 80.9	1557	5.00 µg/L	-0.012
M2-6:2FTS	6.961	429.1 -> 80.9	1885	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	2899	5.00 µg/L	-0.012
M3-MeFOSAA	8.310	573.2 -> 419.0	13460	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	21958	10.00 µg/L	-0.013
M5-EtFOSAA	8.507	589.2 -> 419.0	11392	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	51229	25.00 µg/L	-0.025
M9-EtFOSE	11.256	639.2 -> 58.9	69925	25.00 µg/L	-0.012
M5-EtFOSA	11.360	531.1 -> 219.0	7580	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	6788	2.50 µg/L	-0.012
13C4-PFOS	8.405	502.8 -> 79.9	8064	2.50 µg/L	0.000
13C3-PFBA	2.993	216.0 -> 172.0	38354	5.00 µg/L	0.065
18O2-PFHxS	7.290	403.0 -> 83.9	3793	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	39955	2.50 µg/L	-0.013
13C2-PFDA	8.253	515.1 -> 470.1	15463	1.25 µg/L	0.000
13C5-PFNA	7.734	468.0 -> 423.0	19919	1.25 µg/L	-0.013
13C2-PFHxA	5.598	315.1 -> 270.0	37641	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1557	7.00 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.9%		
13C2-6:2FTS	6.961	429.1 -> 80.9	1885	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C2-8:2FTS	8.027	529.1 -> 80.9	2899	4.56 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.3%		
13C2-PFDoDA	9.168	615.1 -> 570.0	20916	1.12 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.6%		
13C2-PFTeDA	9.961	715.2 -> 670.0	13911	0.94 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.9%		
13C3-PFBS	5.502	302.1 -> 79.9	9494	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C3-PFHxS	7.291	402.1 -> 79.9	5820	2.69 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C4-PFBA	2.990	216.8 -> 171.9	53066	7.68 µg/L	0.066
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 76.8%	
13C4-PFHpA	6.517	367.1 -> 322.0	26739	2.84 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.4%	
13C5-PFHxA	5.597	318.0 -> 273.0	48745	2.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.2%	
13C5-PFPeA	4.424	268.3 -> 223.0	50207	4.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.2%	
13C6-PFDA	8.253	519.1 -> 474.1	17504	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C7-PFUnDA	8.722	570.0 -> 525.1	17948	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C8-FOSA	9.783	506.1 -> 77.8	14039	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C8-PFOA	7.188	421.1 -> 376.0	34738	2.60 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C8-PFOS	8.405	507.1 -> 79.9	7468	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C9-PFNA	7.746	472.1 -> 427.0	17662	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
d3-MeFOSAA	8.310	573.2 -> 419.0	13460	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	21958	7.69 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 76.9%	
d3-MeFOSA	11.064	515.0 -> 219.0	6788	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.9%	
d5-EtFOSAA	8.507	589.2 -> 419.0	11392	5.12 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d7-MeFOSE	10.947	623.2 -> 58.9	51229	20.71 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.8%	
d9-EtFOSE	11.256	639.2 -> 58.9	69925	22.07 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.3%	
d5-EtFOSA	11.360	531.1 -> 219.0	7580	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	21367	10.72 µg/L	99
		327.1 -> 80.9	8851		
6:2FTS	6.949	427.1 -> 407.0	15994	11.10 µg/L	94
		427.1 -> 80.9	6268		
8:2FTS	8.028	527.1 -> 507.0	18578	13.00 µg/L	92
		527.1 -> 80.8	6739		
EtFOSAA	8.521	584.2 -> 419.1	5140	3.16 µg/L	m 72
		584.2 -> 526.0	3183		
FOSA	9.786	498.1 -> 77.9	14420	3.04 µg/L	96
		498.1 -> 478.0	563		
MeFOSAA	8.311	570.1 -> 419.0	6116	3.18 µg/L	m 96
		570.1 -> 483.0	1241		
PFBA	2.996	212.8 -> 168.9	14495	11.77 µg/L	100
PFBS	5.503	298.7 -> 79.9	9282	2.47 µg/L	99
		298.7 -> 98.8	3835		
PFDA	8.253	512.9 -> 469.0	29439	2.74 µg/L	87
		512.9 -> 219.0	6869		
PFDODA	9.169	613.1 -> 569.0	42119	3.06 µg/L	99
		613.1 -> 319.0	6089		
PFDS	9.331	599.0 -> 79.9	5612	3.22 µg/L	88

7.4.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2589			
PFHpA	6.517	363.1 -> 319.0	42203	3.00	µg/L	96
		363.1 -> 169.0	8026			
PFHpS	7.873	449.0 -> 79.9	6726	3.13	µg/L	100
		449.0 -> 98.9	3744			
PFHxA	5.587	313.0 -> 269.0	45907	2.99	µg/L	100
		313.0 -> 118.9	1481			
PFHxS	7.292	398.7 -> 79.9	6096	2.86	µg/L	m 91
		398.7 -> 98.9	2989			
PFNA	7.747	463.0 -> 419.0	29863	2.97	µg/L	95
		463.0 -> 219.0	6988			
PFNS	8.886	548.8 -> 79.9	4142	3.13	µg/L	98
		548.8 -> 98.9	2051			
PFOA	7.189	413.0 -> 369.0	50329	3.25	µg/L	96
		413.0 -> 169.0	10411			
PFOS	8.406	498.9 -> 79.9	9383	3.28	µg/L	m 93
		498.9 -> 98.8	4366			
PFPeA	4.427	263.0 -> 219.0	84681	8.44	µg/L	100
PFPeS	6.557	349.1 -> 79.9	5349	2.91	µg/L	94
		349.1 -> 98.9	2088			
PFTeDA	9.962	713.1 -> 669.0	32822	2.90	µg/L	98
		713.1 -> 168.9	2561			
PFTrDA	9.579	663.0 -> 619.0	51246	2.99	µg/L	99
		663.0 -> 168.9	4857			
PFUnDA	8.722	563.1 -> 519.0	32131	3.16	µg/L	99
		563.1 -> 269.1	6186			
11CI-PF3OUdS	9.630	630.9 -> 450.9	39640	6.27	µg/L	98
		632.9 -> 452.9	12830			
9CI-PF3ONS	8.749	530.8 -> 351.0	47393	6.98	µg/L	99
		532.8 -> 353.0	13999			
ADONA	6.781	376.9 -> 250.9	128826	8.16	µg/L	98
		376.9 -> 84.8	33069			
HFPO-DA	5.953	284.9 -> 168.9	10884	6.27	µg/L	97
		284.9 -> 184.9	1345			
3:3FTCA	3.904	241.0 -> 177.0	4669	9.78	µg/L	99
		241.0 -> 117.0	428			
5:3FTCA	6.244	341.0 -> 237.1	182421	79.69	µg/L	99
		341.0 -> 217.0	126906			
7:3FTCA	7.699	441.0 -> 316.9	87235	78.10	µg/L	96
		441.0 -> 336.9	197639			
EtFOSA	11.362	526.0 -> 219.0	16687	5.90	µg/L	m 98
		526.0 -> 169.0	22407			
EtFOSE	11.282	630.0 -> 58.9	33222	14.90	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	13434	5.92	µg/L	m 93
		511.9 -> 169.0	19128			
MeFOSE	10.973	616.1 -> 58.9	27680	15.19	µg/L	m 100
PFDoDS	10.101	699.1 -> 79.9	4017	2.53	µg/L	90
		699.1 -> 98.8	2193			
NFDHA	5.479	295.0 -> 201.0	3285	3.95	µg/L	99
		295.0 -> 84.9	861			
PFMBA	4.828	279.0 -> 85.1	38126	6.66	µg/L	100
PFMPA	3.591	229.0 -> 84.9	25260	4.96	µg/L	100
PFEESA	6.021	314.8 -> 134.9	61474	4.88	µg/L	98
		314.8 -> 82.9	1782			

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

7.4.1
7

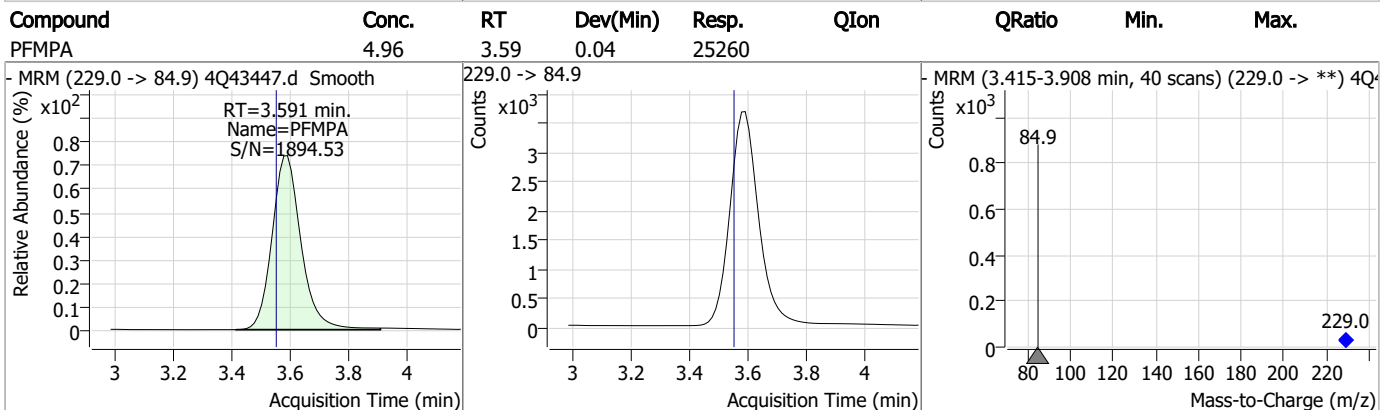
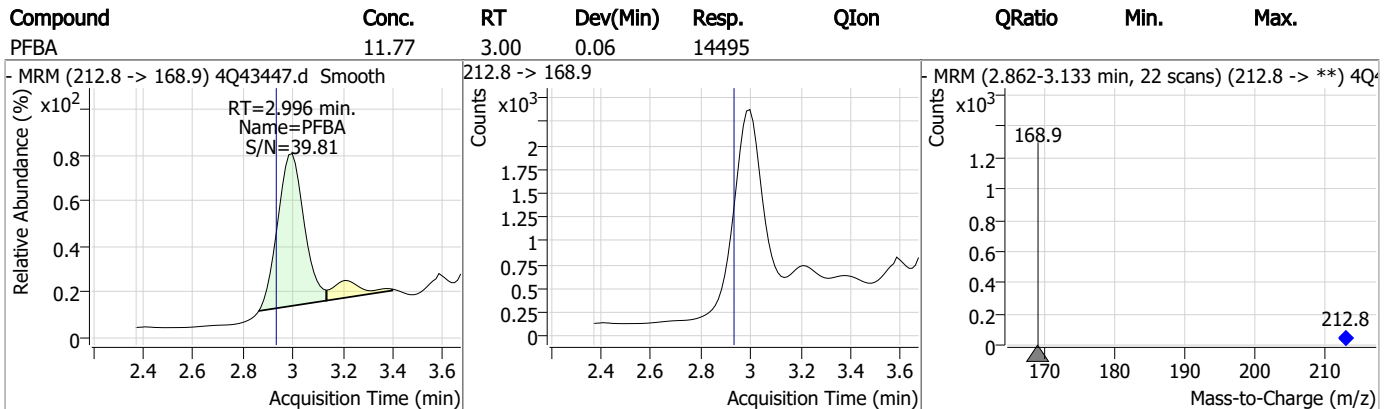
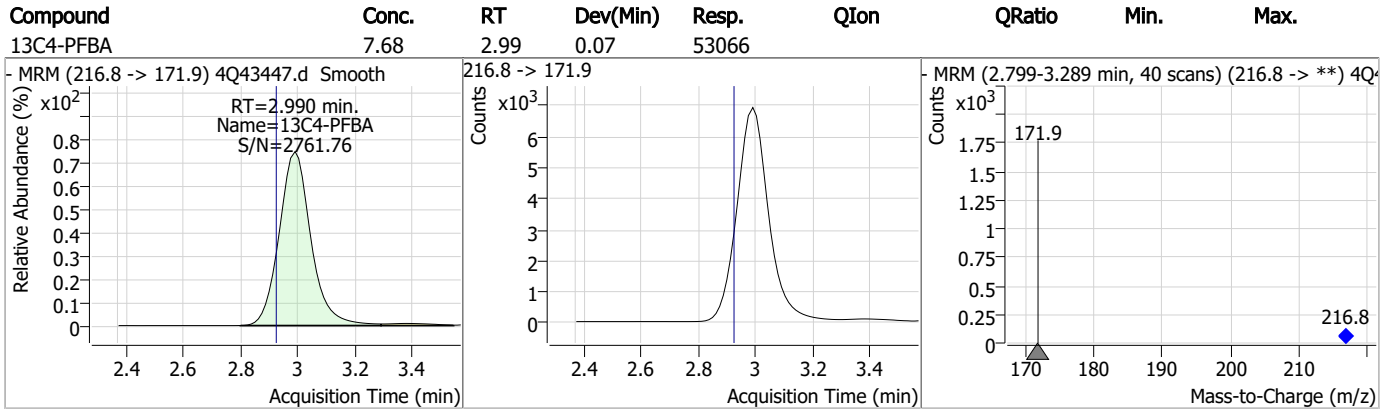
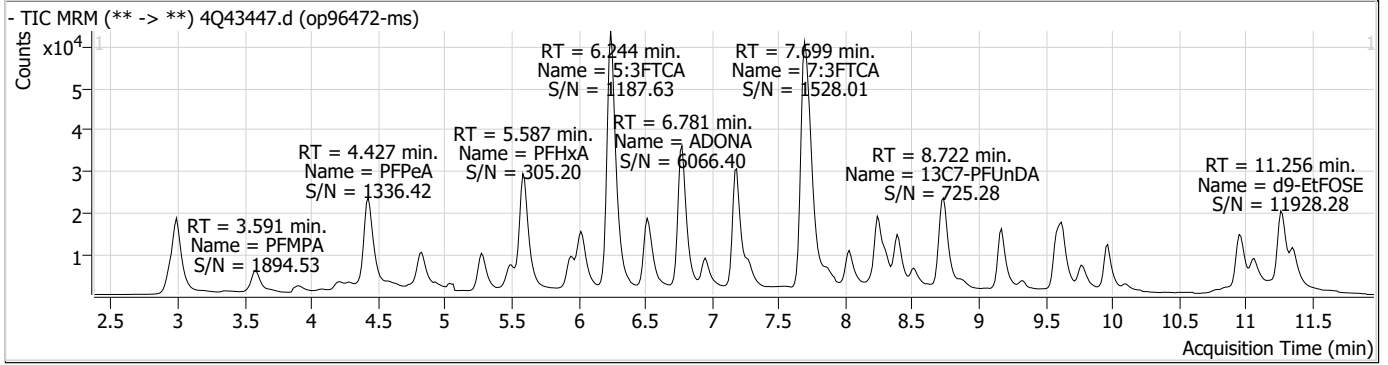
Perfluorinated Compounds by LC/MS/MS

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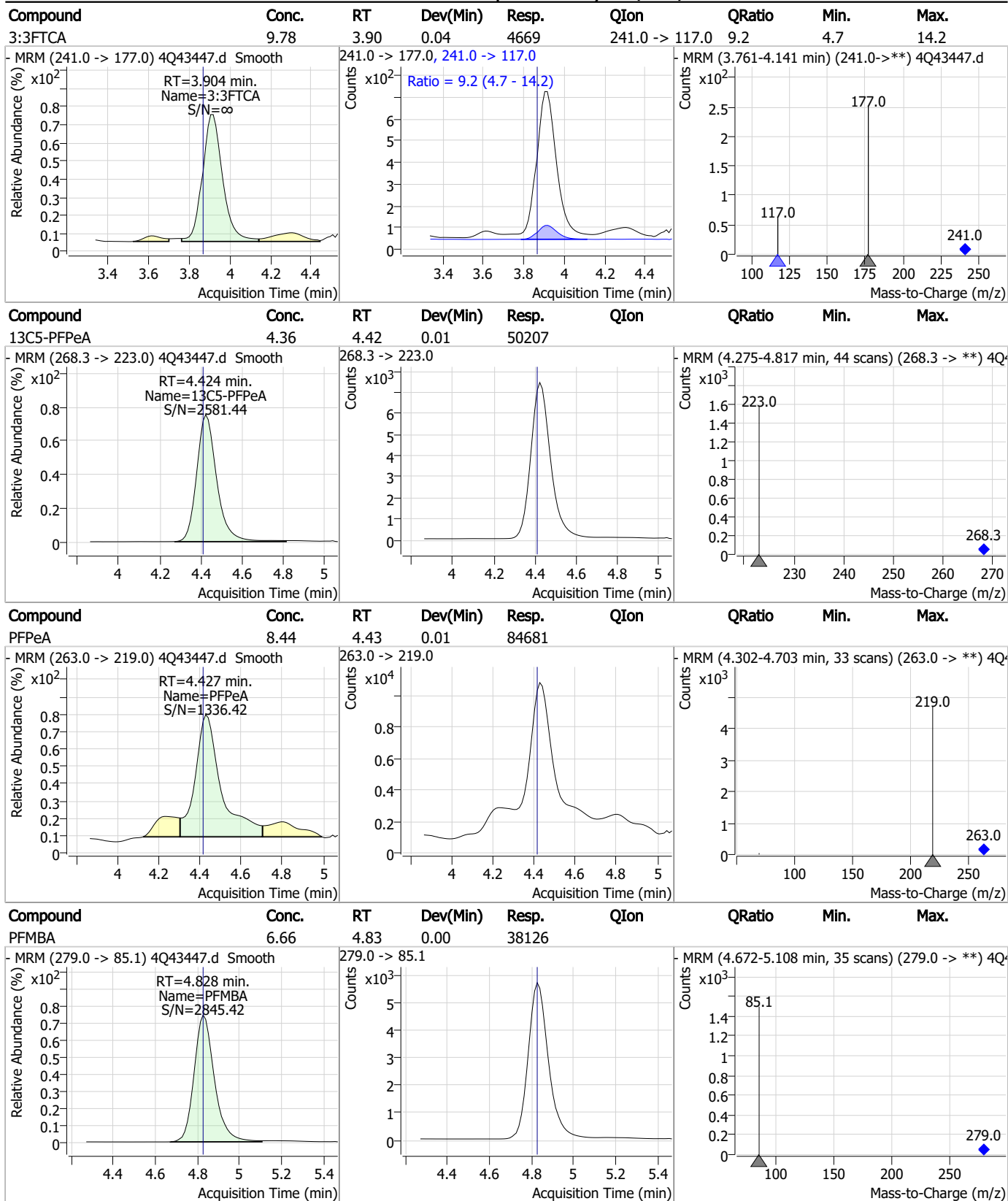
7.4.1

7

Perfluorinated Compounds by LC/MS/MS

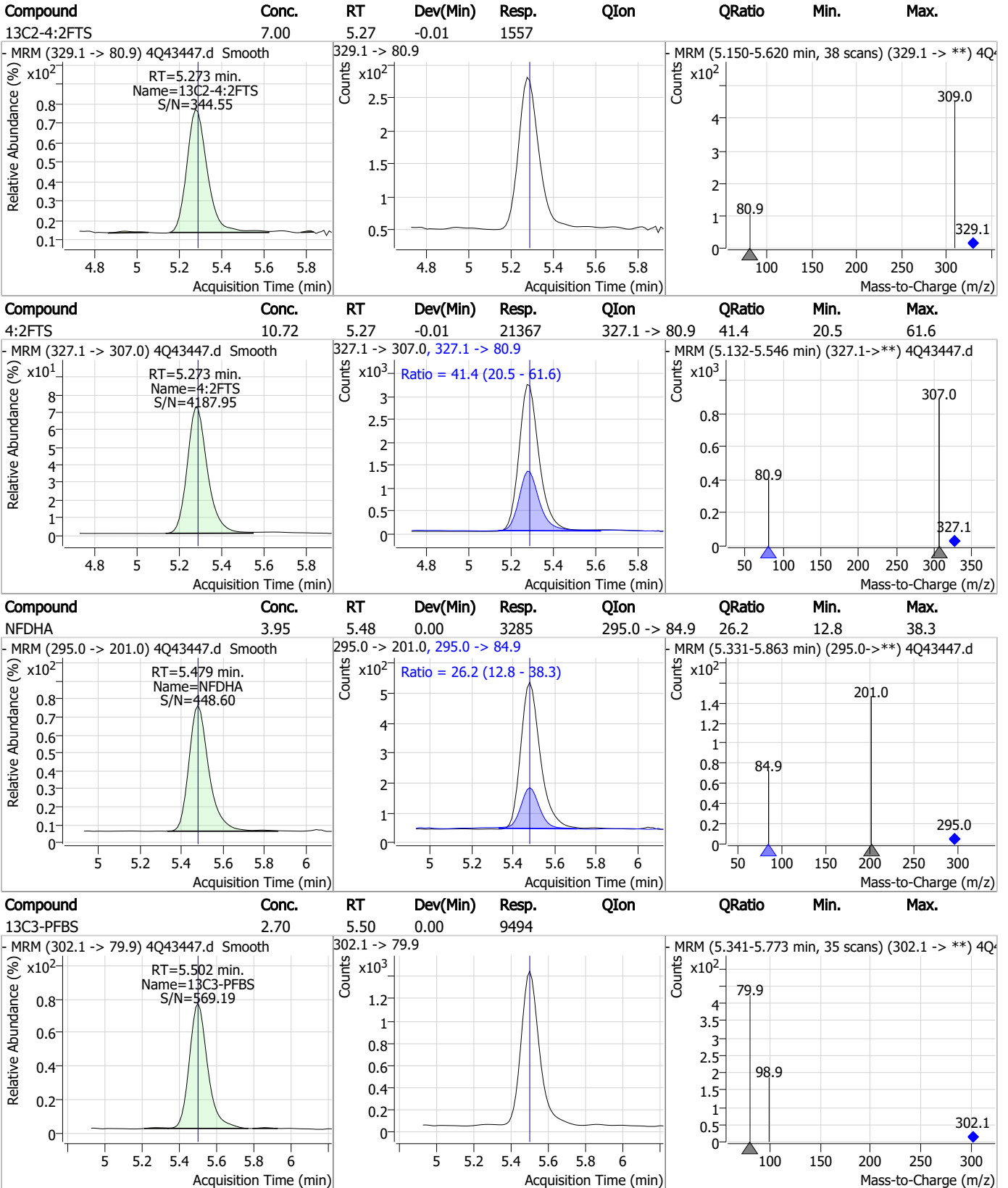


Perfluorinated Compounds by LC/MS/MS



7.4.1
7

Perfluorinated Compounds by LC/MS/MS



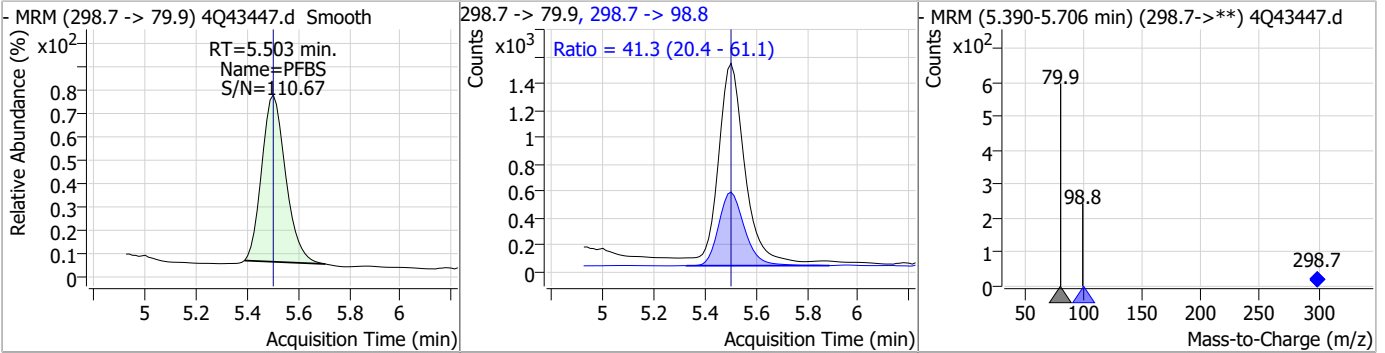
7.4.1

7

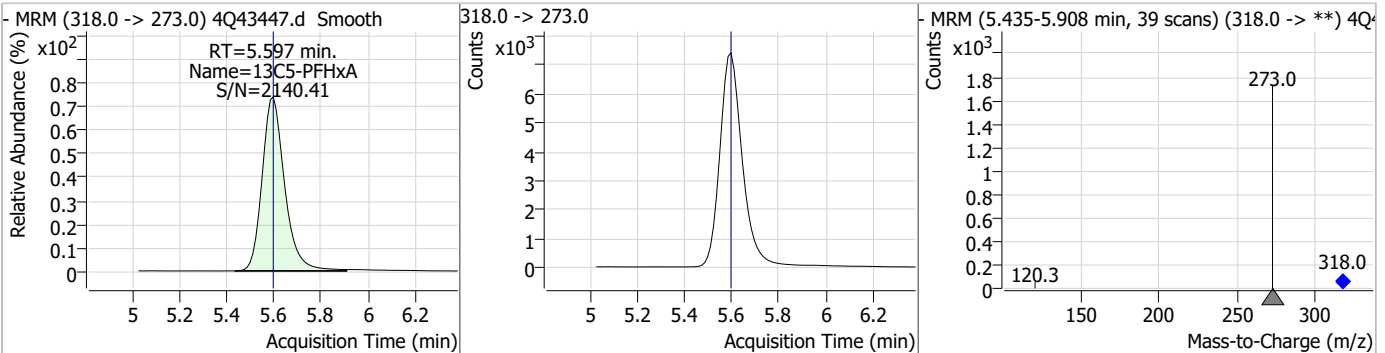


Perfluorinated Compounds by LC/MS/MS

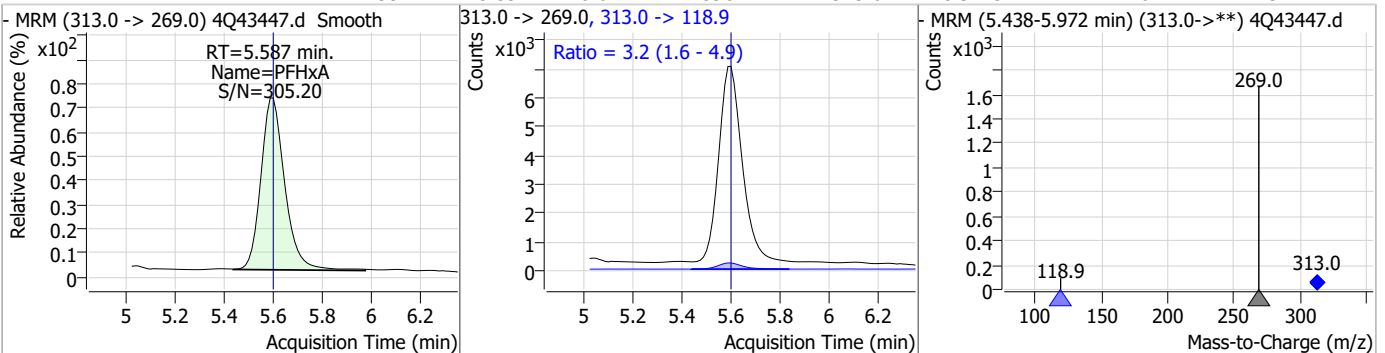
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.47	5.50	0.00	9282	298.7 -> 98.8	41.3	20.4	61.1



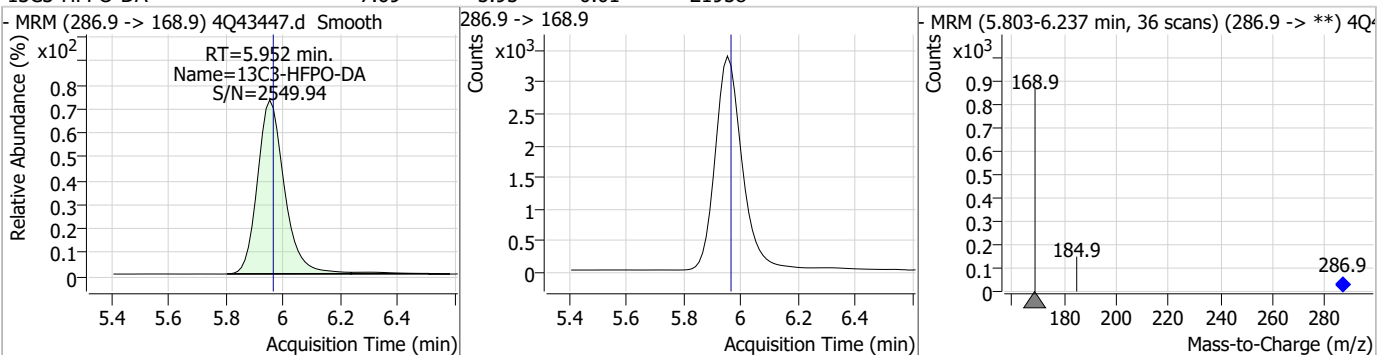
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.76	5.60	0.00	48745				



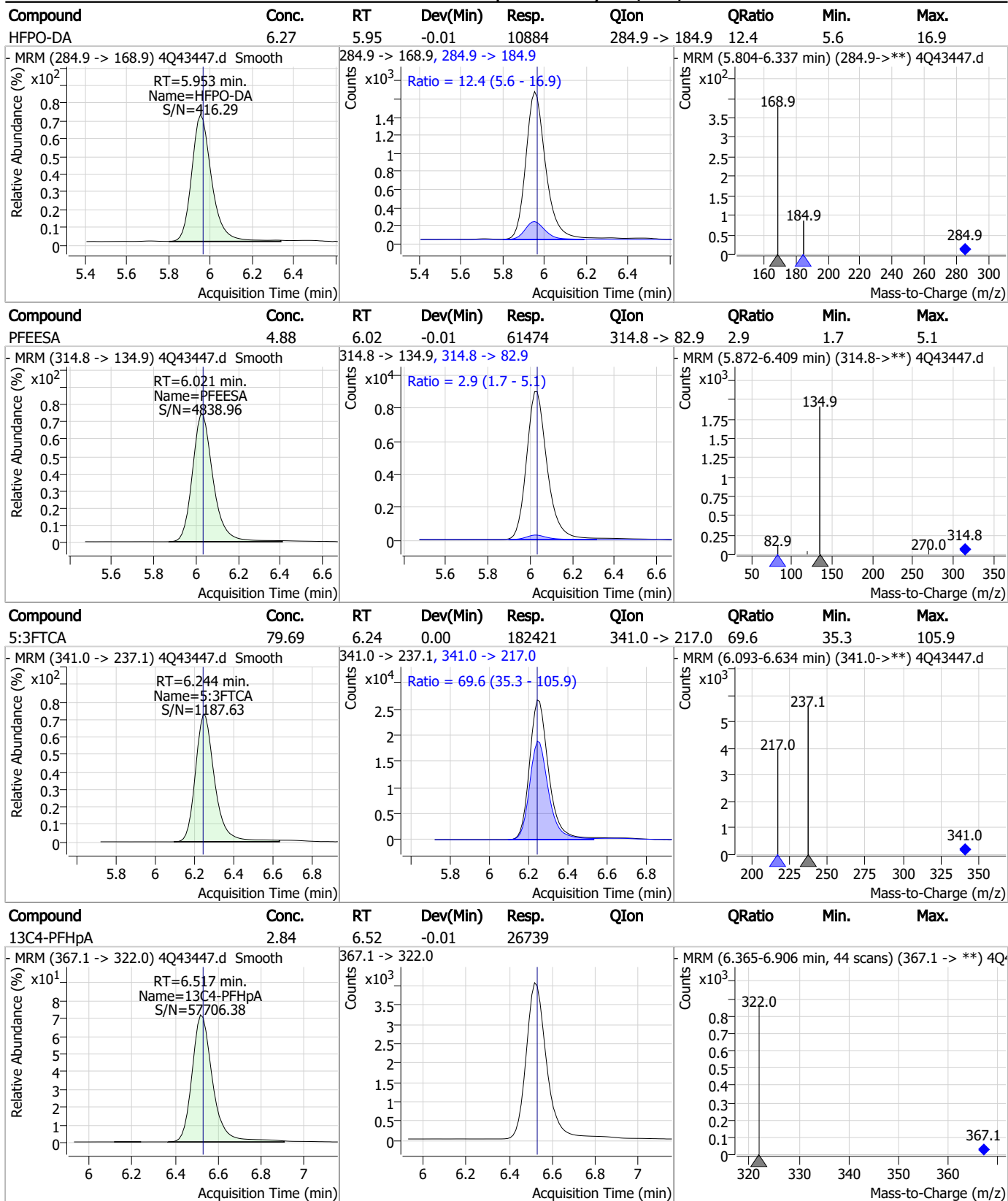
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.99	5.59	-0.01	45907	313.0 -> 118.9	3.2	1.6	4.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	7.69	5.95	-0.01	21958				

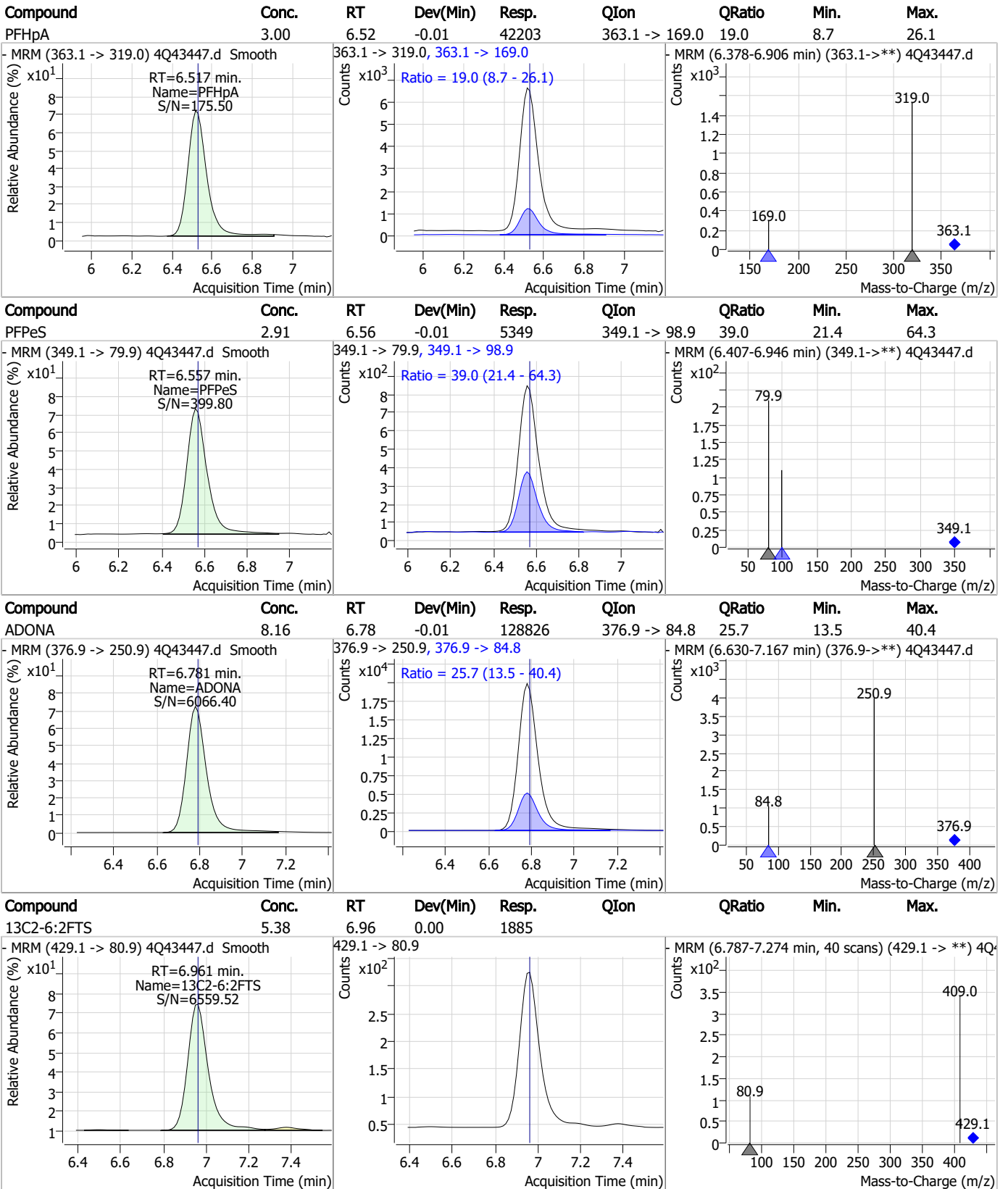


Perfluorinated Compounds by LC/MS/MS



7.4.1
7

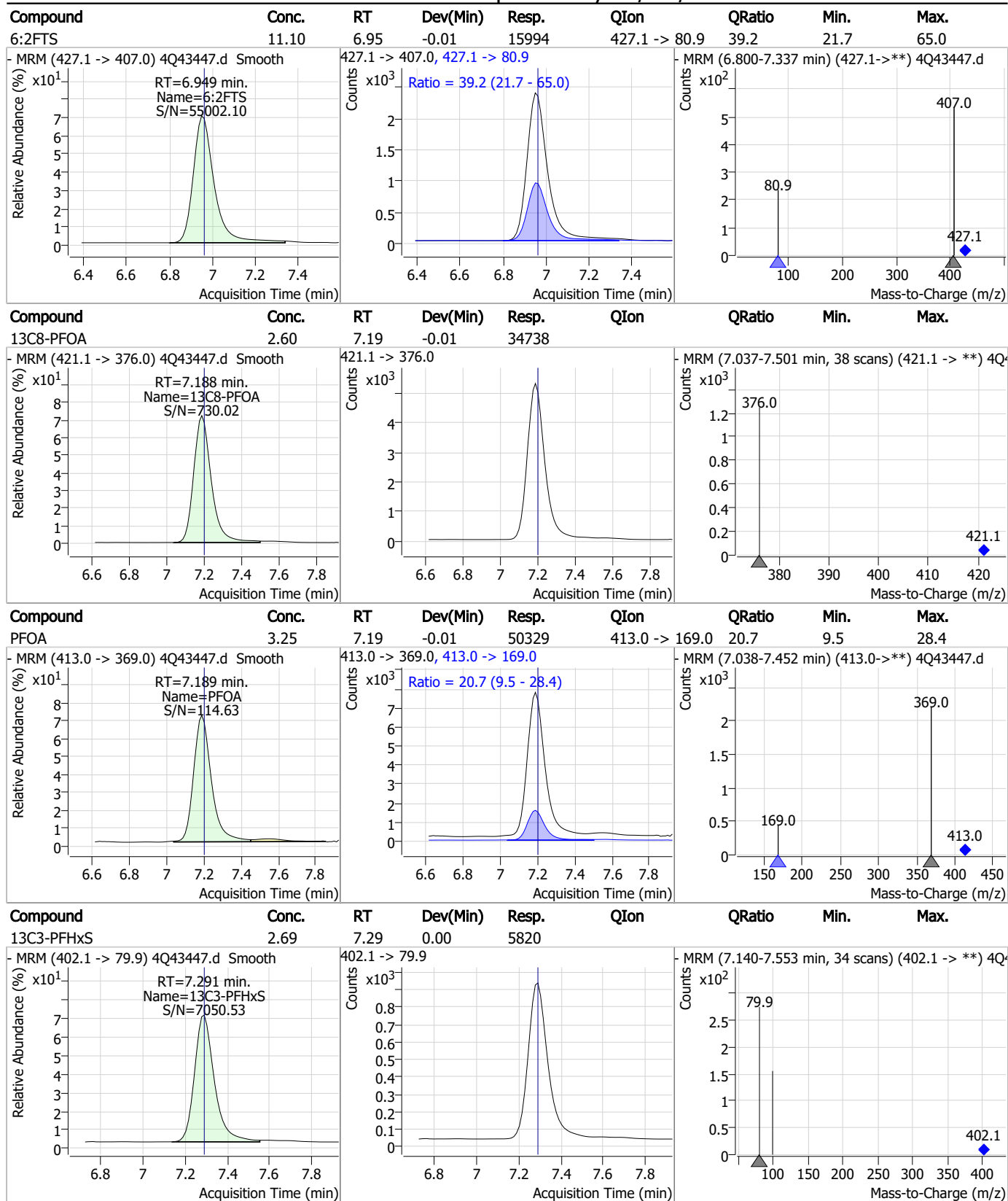
Perfluorinated Compounds by LC/MS/MS



7.4.1

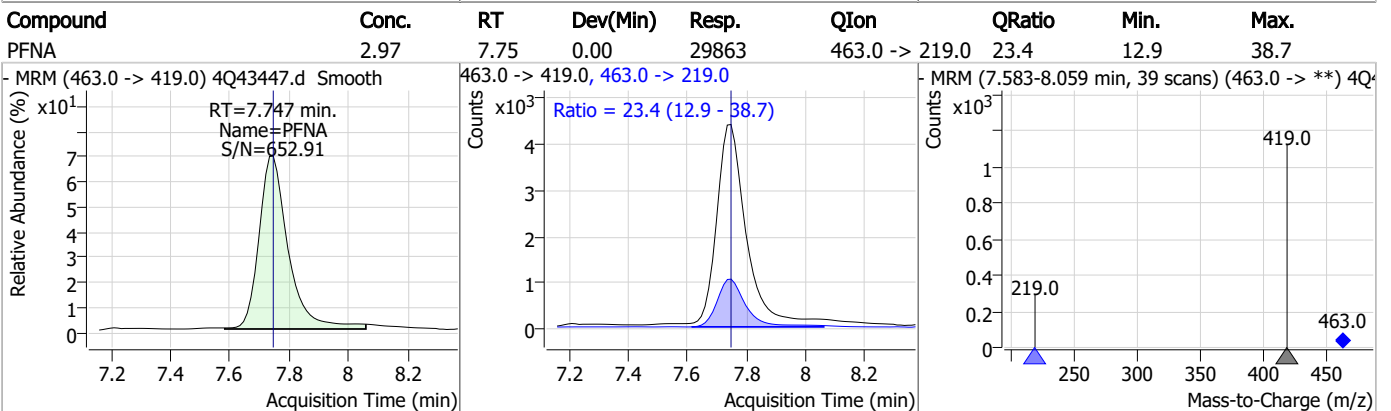
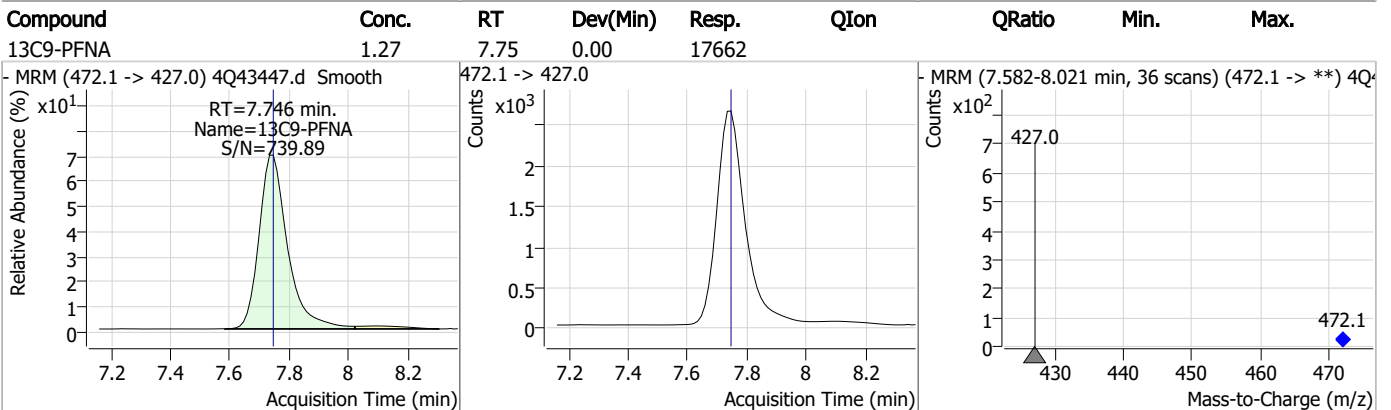
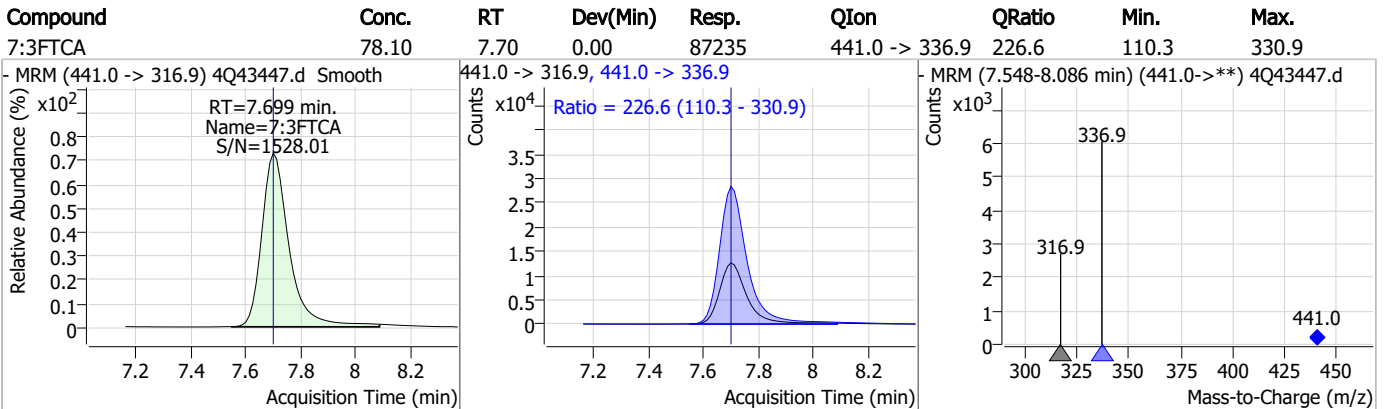
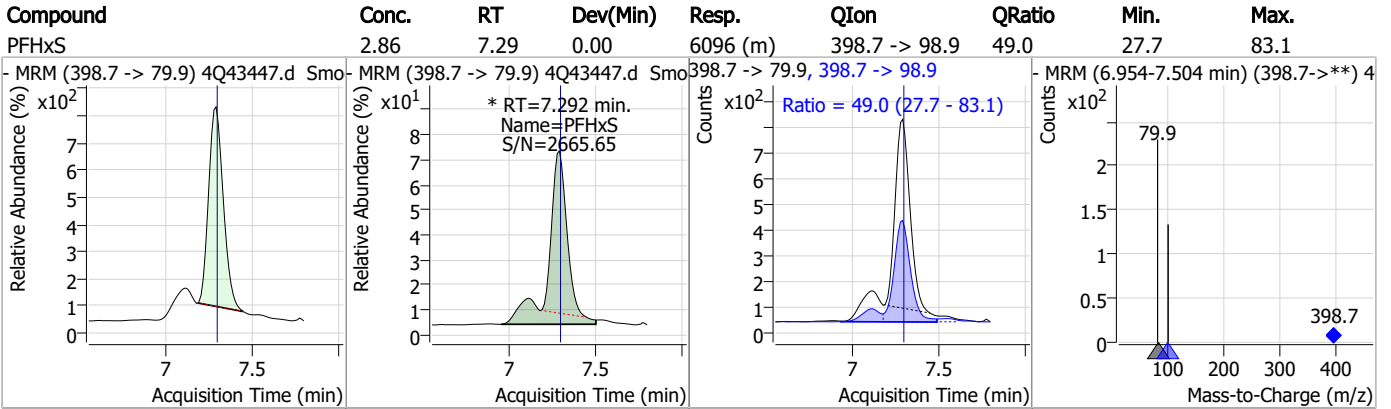
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Perfluorinated Compounds by LC/MS/MS

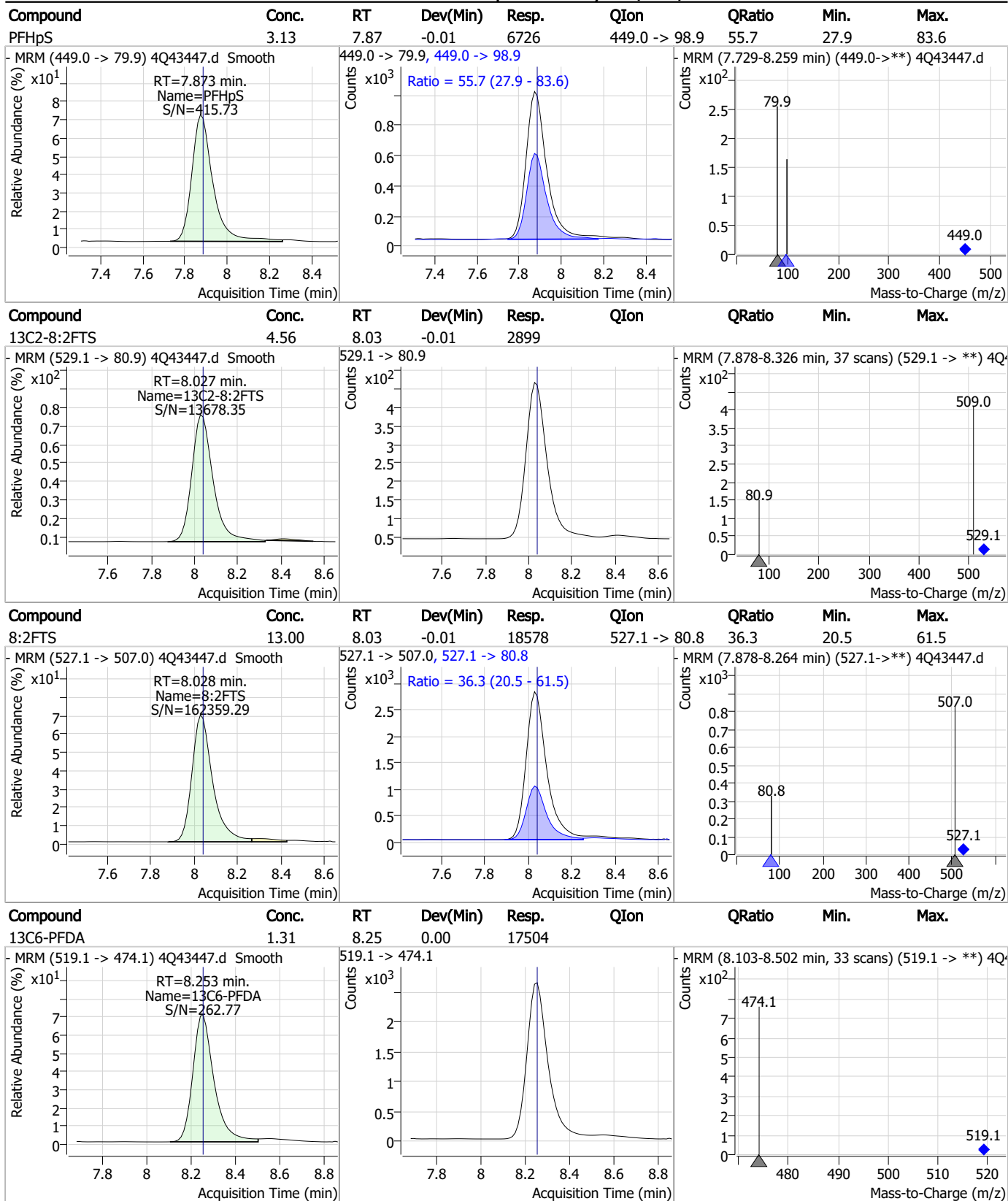


7.4.1
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Perfluorinated Compounds by LC/MS/MS

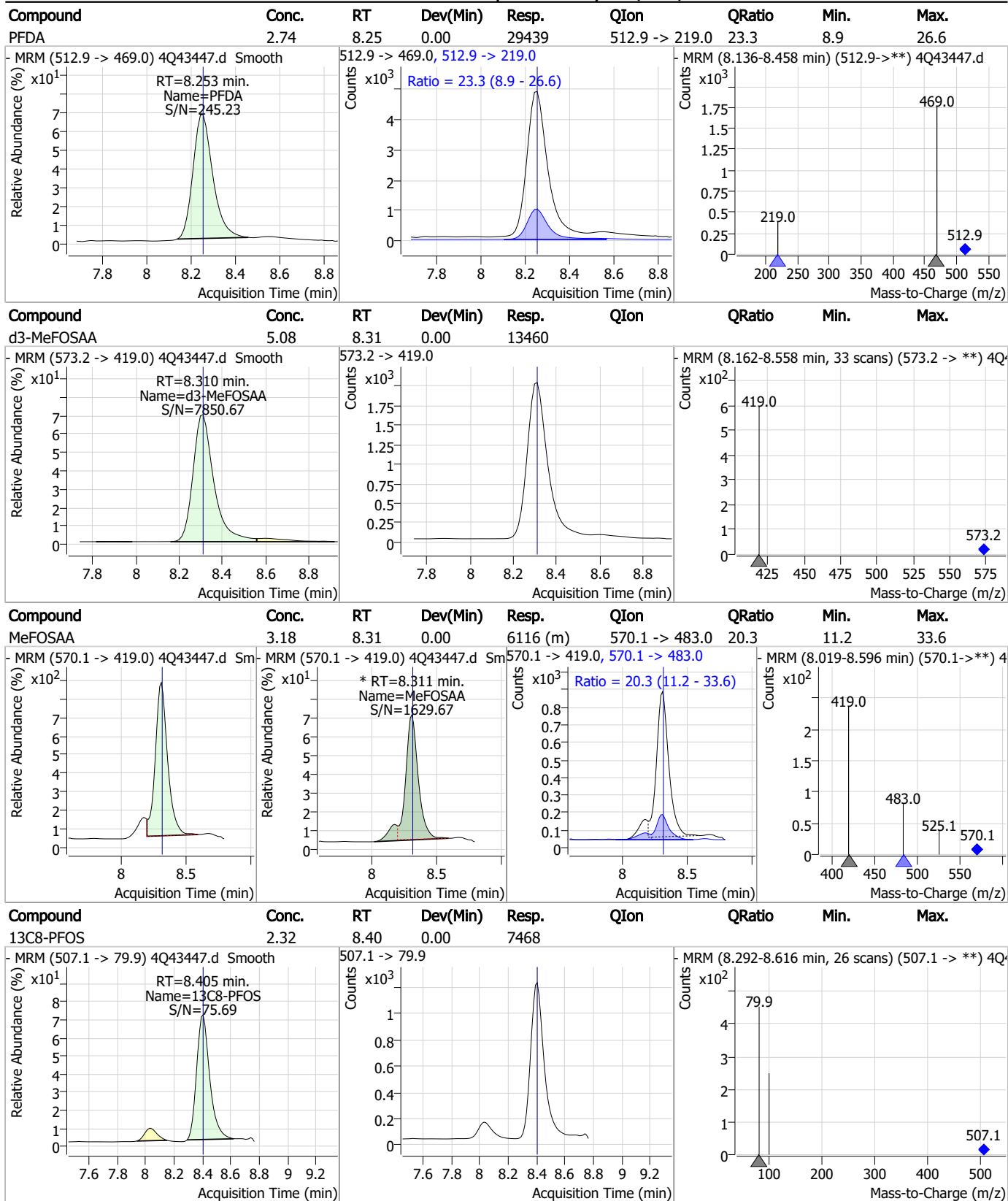


Perfluorinated Compounds by LC/MS/MS



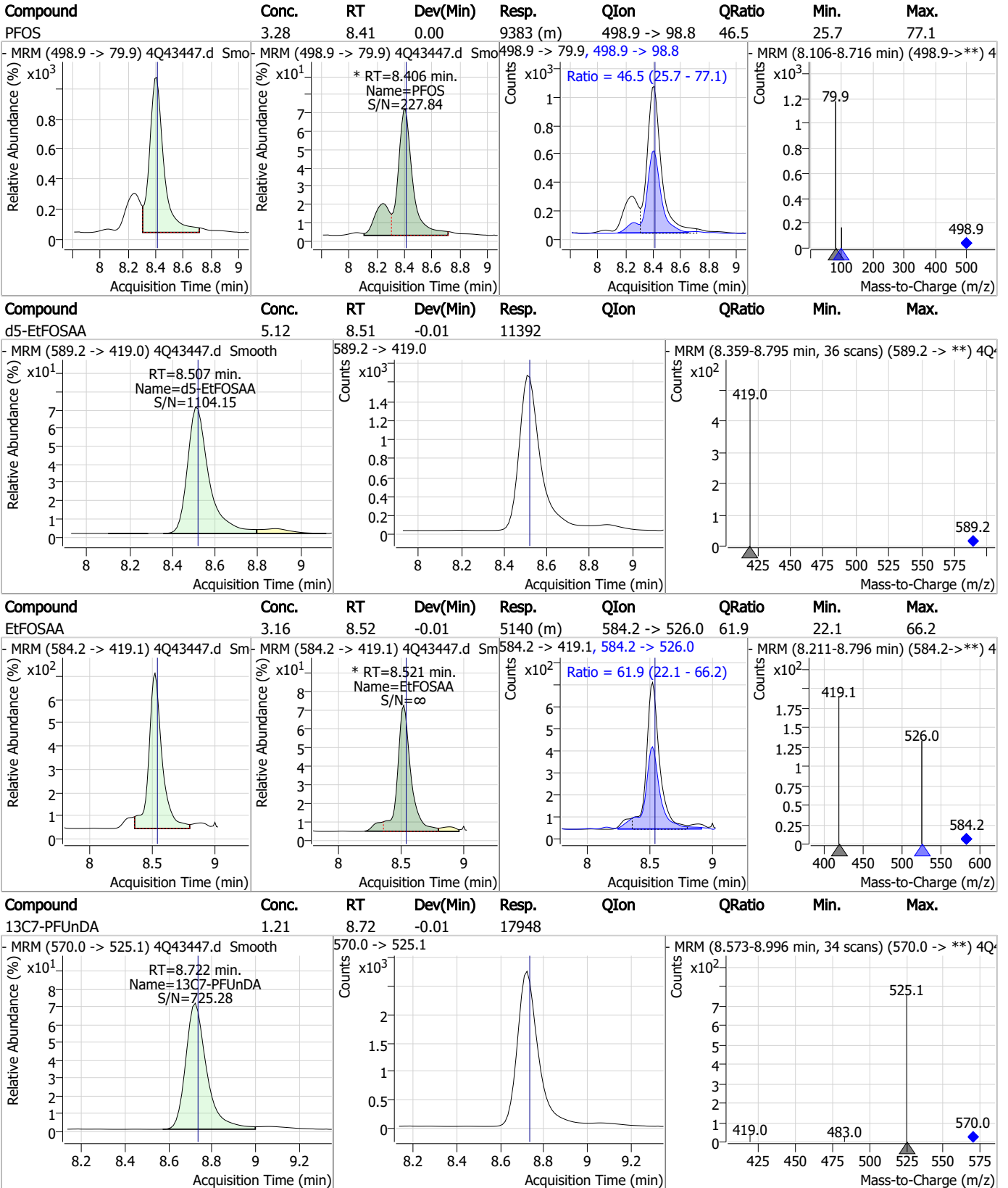
7.4.1
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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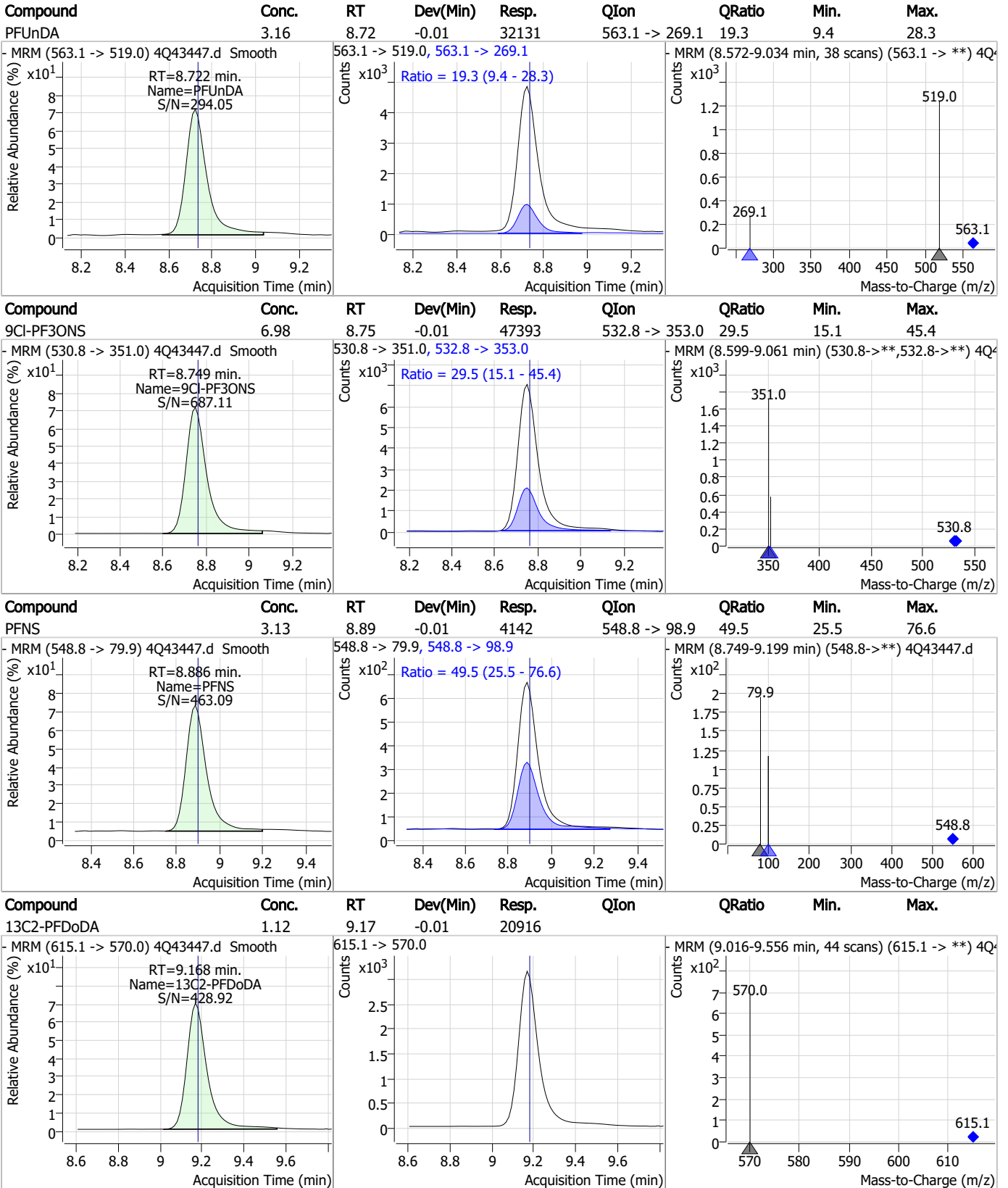
Perfluorinated Compounds by LC/MS/MS



7.4.1

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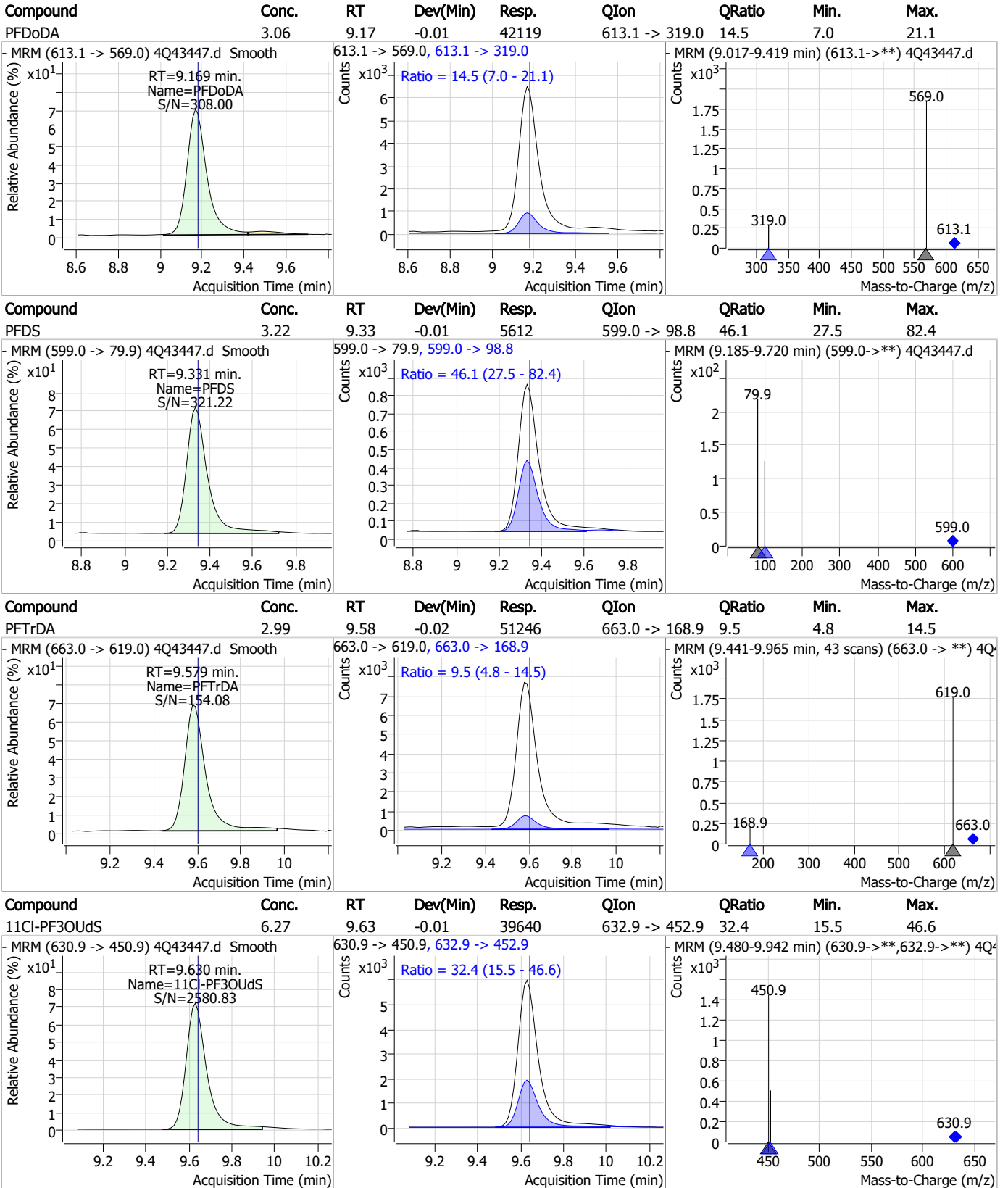
Perfluorinated Compounds by LC/MS/MS



7.4.1

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Perfluorinated Compounds by LC/MS/MS

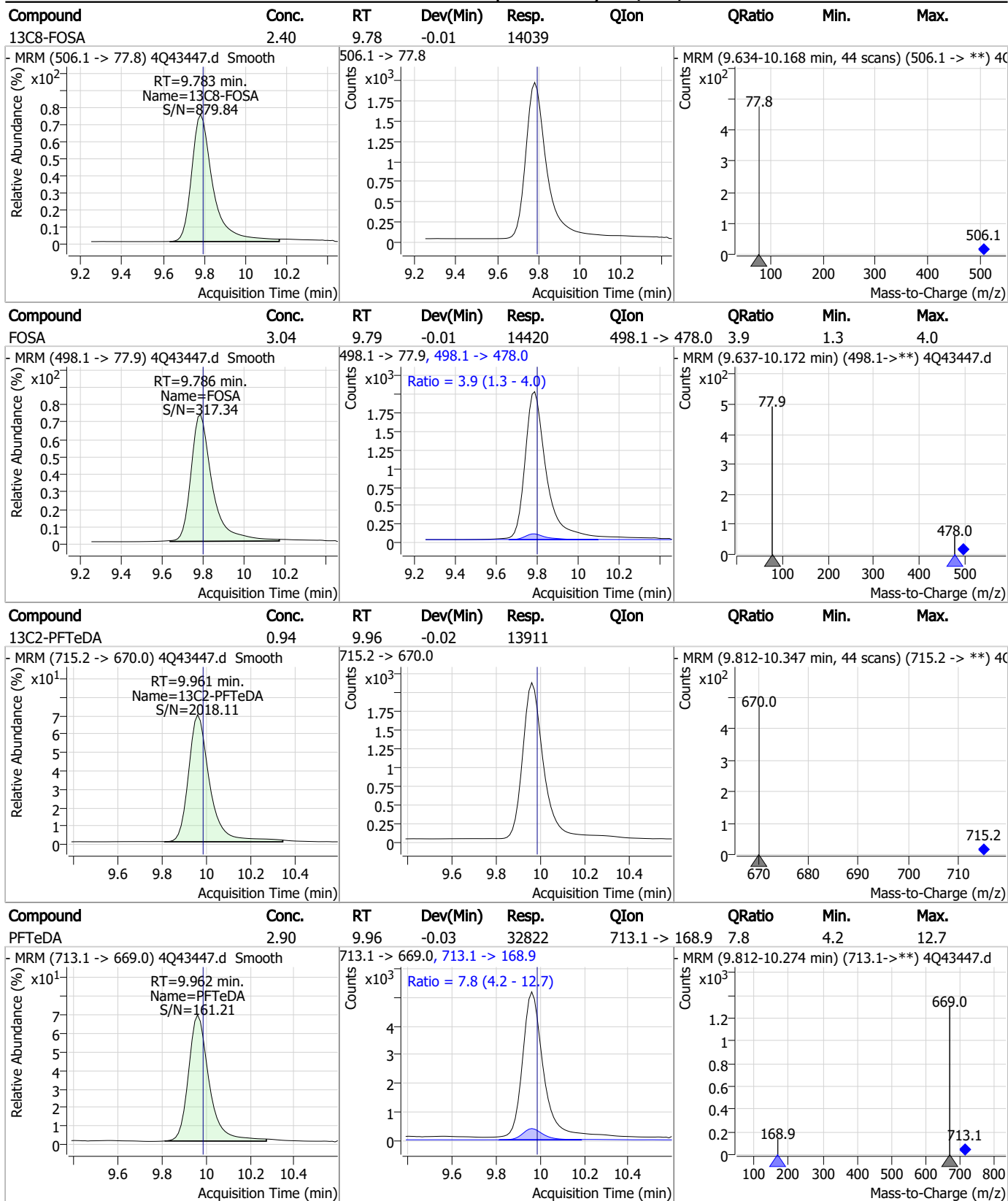


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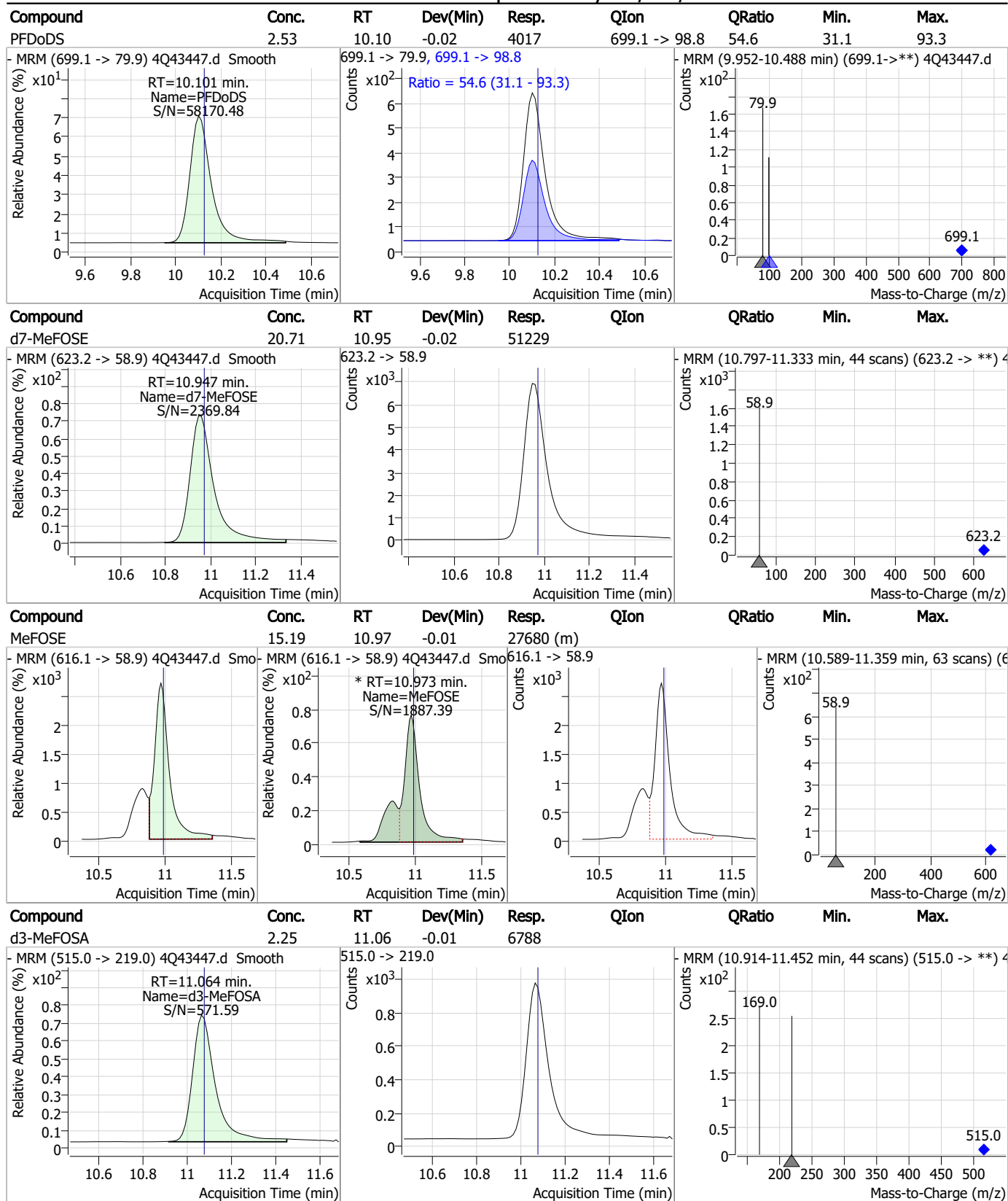


Perfluorinated Compounds by LC/MS/MS



7.4.1
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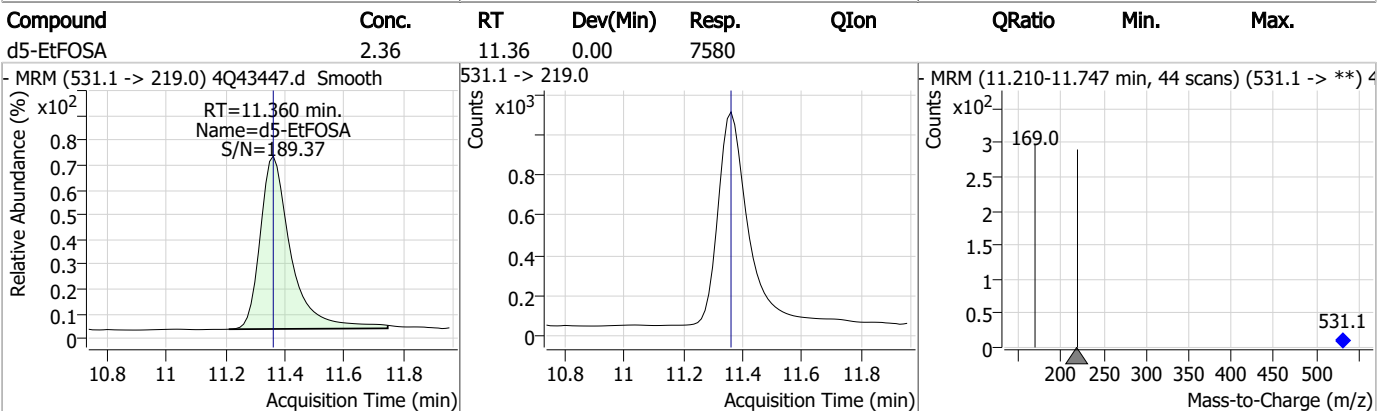
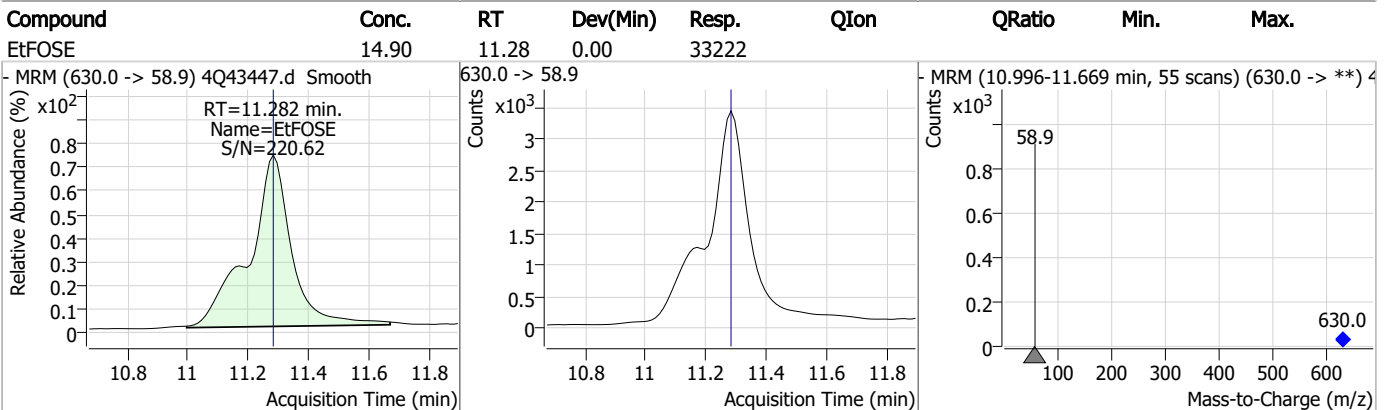
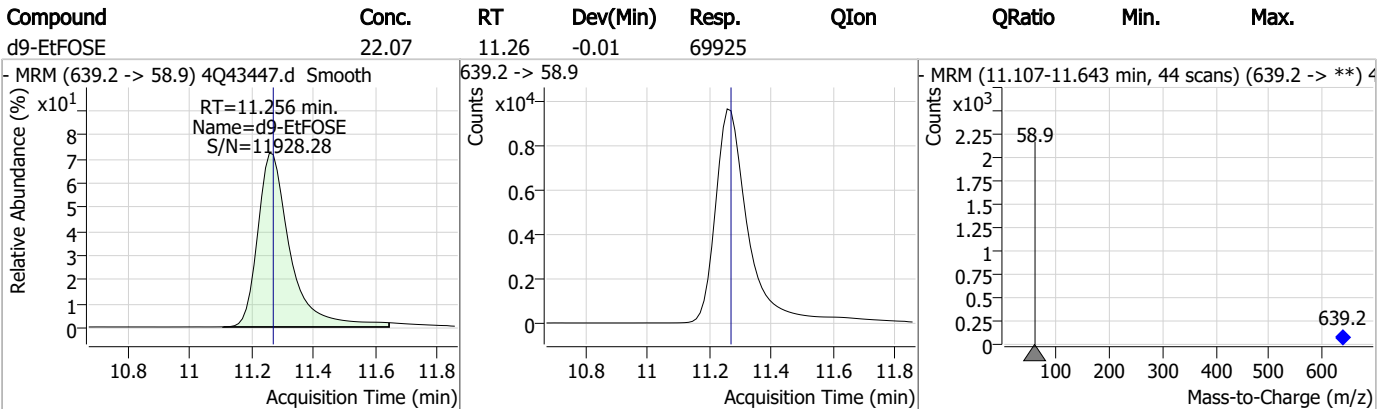
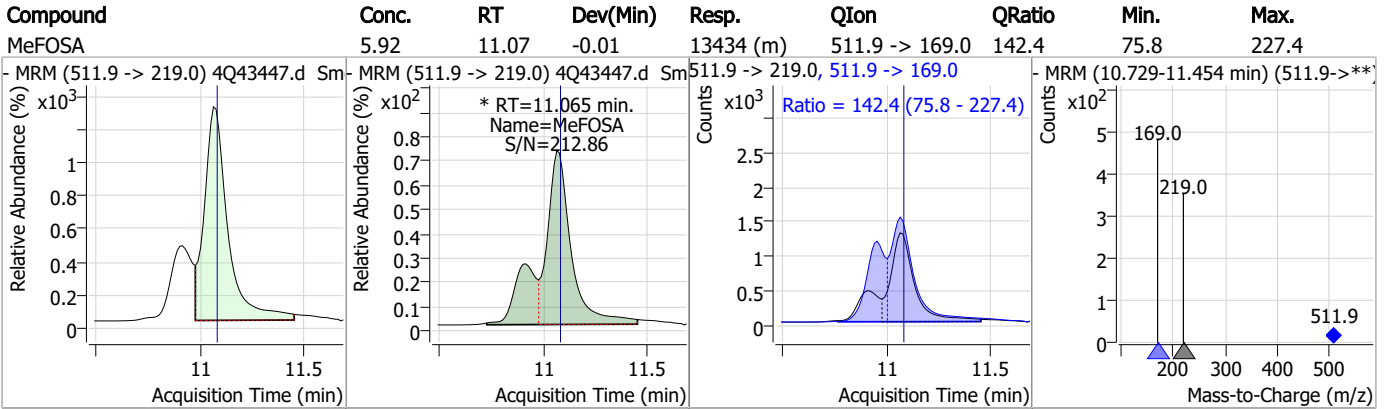
Perfluorinated Compounds by LC/MS/MS



7.4.1
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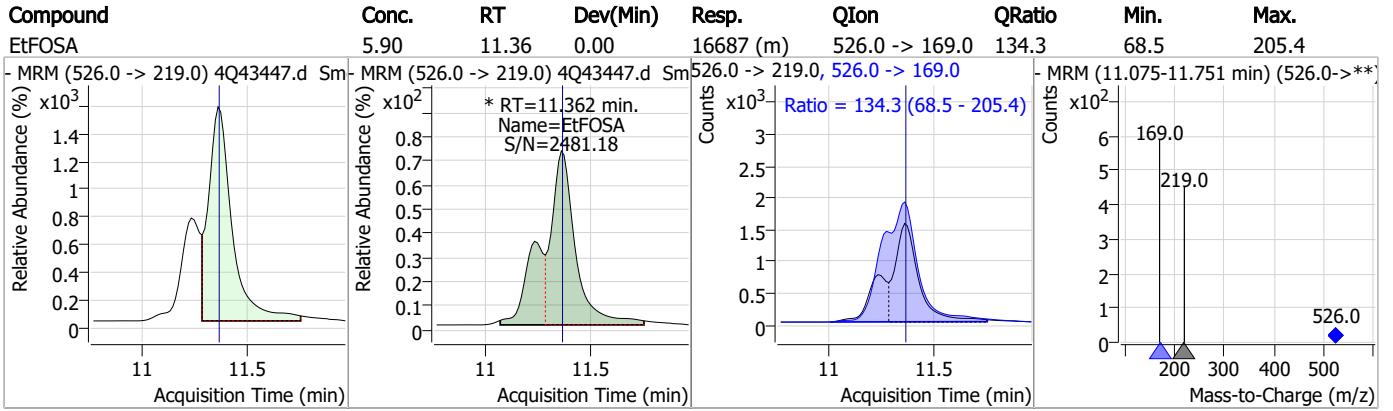
Perfluorinated Compounds by LC/MS/MS



7.4.1

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Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP96472-MS Method: EPA DRAFT 1633
Lab FileID: 4Q43447.D Analyst approved: 04/24/23 15:19 Martha Valls
Injection Time: 04/21/23 20:23 Supervisor approved: 04/25/23 14:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.4.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43449.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 8:51:57 PM
 Sample Name : op96472-dup
 Vial : P4-D7
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96472,S4q627,550,,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.990	216.8 -> 171.9	90295	10.00 µg/L	0.066
M5-PFPeA	4.437	268.3 -> 223.0	57866	5.00 µg/L	0.025
M5-PFHxA	5.597	318.0 -> 273.0	46176	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	25276	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	32090	2.50 µg/L	-0.026
M9-PFNA	7.733	472.1 -> 427.0	17305	1.25 µg/L	-0.013
M6-PFDA	8.240	519.1 -> 474.1	15925	1.25 µg/L	-0.012
M7-PFUnDA	8.710	570.0 -> 525.1	16053	1.25 µg/L	-0.025
M2-PFDoDA	9.155	615.1 -> 570.0	17108	1.25 µg/L	-0.025
M2-PFTeDA	9.949	715.2 -> 670.0	10134	1.25 µg/L	-0.037
M8-FOSA	9.771	506.1 -> 77.8	11508	2.50 µg/L	-0.025
M3-PFBS	5.502	302.1 -> 79.9	10287	2.50 µg/L	0.000
M3-PFHxS	7.279	402.1 -> 79.9	5963	2.50 µg/L	-0.012
M8-PFOS	8.392	507.1 -> 79.9	7849	2.50 µg/L	-0.012
M2-4:2FTS	5.285	329.1 -> 80.9	1213	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	1579	5.00 µg/L	-0.012
M2-8:2FTS	8.027	529.1 -> 80.9	2388	5.00 µg/L	-0.012
M3-MeFOSAA	8.298	573.2 -> 419.0	13615	5.00 µg/L	-0.012
M3-HFPO-DA	5.952	286.9 -> 168.9	23669	10.00 µg/L	-0.013
M5-EtFOSAA	8.507	589.2 -> 419.0	11054	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	45248	25.00 µg/L	-0.025
M9-EtFOSE	11.256	639.2 -> 58.9	64120	25.00 µg/L	-0.012
M5-EtFOSA	11.348	531.1 -> 219.0	6933	2.50 µg/L	-0.012
M3-MeFOSA	11.064	515.0 -> 219.0	6093	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	7829	2.50 µg/L	-0.012
13C3-PFBA	2.993	216.0 -> 172.0	52350	5.00 µg/L	0.065
18O2-PFHxS	7.278	403.0 -> 83.9	3982	2.50 µg/L	-0.012
13C4-PFOA	7.176	417.1 -> 372.0	39124	2.50 µg/L	-0.026
13C2-PFDA	8.241	515.1 -> 470.1	16054	1.25 µg/L	-0.012
13C5-PFNA	7.734	468.0 -> 423.0	18419	1.25 µg/L	-0.013
13C2-PFHxA	5.598	315.1 -> 270.0	37484	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	1213	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C2-6:2FTS	6.948	429.1 -> 80.9	1579	4.29 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.8%		
13C2-8:2FTS	8.027	529.1 -> 80.9	2388	3.58 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 71.6%		
13C2-PFDoDA	9.155	615.1 -> 570.0	17108	0.88 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 70.6%		
13C2-PFTeDA	9.949	715.2 -> 670.0	10134	0.66 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 52.6%		
13C3-PFBS	5.502	302.1 -> 79.9	10287	2.79 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.6%		
13C3-PFHxS	7.279	402.1 -> 79.9	5963	2.62 µg/L	-0.012

7.5.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C4-PFBA	2.990	216.8 -> 171.9	90295	9.57 µg/L	0.066
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C4-PFHpA	6.517	367.1 -> 322.0	25276	2.69 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C5-PFHxA	5.597	318.0 -> 273.0	46176	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C5-PFPeA	4.437	268.3 -> 223.0	57866	5.05 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C6-PFDA	8.240	519.1 -> 474.1	15925	1.15 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.7%		
13C7-PFUnDA	8.710	570.0 -> 525.1	16053	1.04 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.4%		
13C8-FOSA	9.771	506.1 -> 77.8	11508	2.03 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 81.1%		
13C8-PFOA	7.175	421.1 -> 376.0	32090	2.46 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C8-PFOS	8.392	507.1 -> 79.9	7849	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C9-PFNA	7.733	472.1 -> 427.0	17305	1.34 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.6%		
d3-MeFOSAA	8.298	573.2 -> 419.0	13615	5.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C3-HFPO-DA	5.952	286.9 -> 168.9	23669	8.32 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 83.2%		
d3-MeFOSA	11.064	515.0 -> 219.0	6093	2.08 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.1%		
d5-EtFOSAA	8.507	589.2 -> 419.0	11054	5.12 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
d7-MeFOSE	10.947	623.2 -> 58.9	45248	18.84 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 75.4%		
d9-EtFOSE	11.256	639.2 -> 58.9	64120	20.84 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 83.4%		
d5-EtFOSA	11.348	531.1 -> 219.0	6933	2.22 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.0%		

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	6.949	427.1 -> 407.0	684	0.57 µg/L	95
		427.1 -> 80.9	273		
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	5.305	298.7 -> 79.9	0	µg/L m	1
		298.7 -> 98.8	0		
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.517	599.0 -> 98.8				
		363.1 -> 319.0	1594	0.12	µg/L	92
PFHpS	-	363.1 -> 169.0	332			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.600	449.0 -> 98.9				
		313.0 -> 269.0	3073	0.21	µg/L	m 97
PFHxS	-	313.0 -> 118.9	70			
		398.7 -> 79.9	-	N.D.		
PFNA	8.121	398.7 -> 98.9				
		463.0 -> 419.0	0		µg/L	m 1
PFNS	-	463.0 -> 219.0	0			
		548.8 -> 79.9	-	N.D.		
PFOA	7.189	548.8 -> 98.9				
		413.0 -> 369.0	1258	0.09	µg/L	85
PFOS	-	413.0 -> 169.0	151			
		498.9 -> 79.9	-	N.D.		
PFPeA	4.439	498.9 -> 98.8				
		263.0 -> 219.0	2895	0.25	µg/L	100
PFPeS	6.759	349.1 -> 79.9	0		µg/L	m 1
		349.1 -> 98.9	0			
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.897	563.1 -> 519.0	0		µg/L	m 1
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFMBA	-					
PFMPA	-					
PFEESA	-					

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

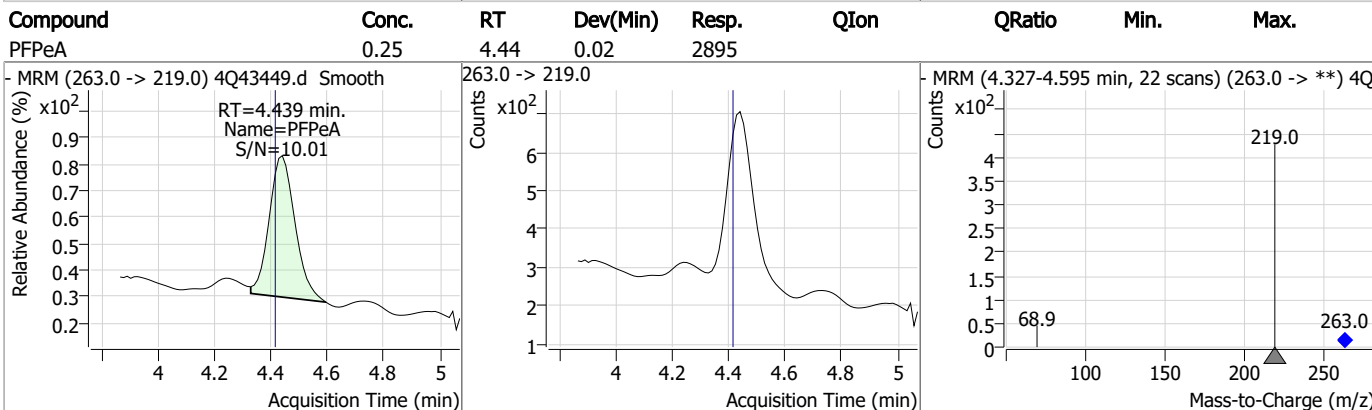
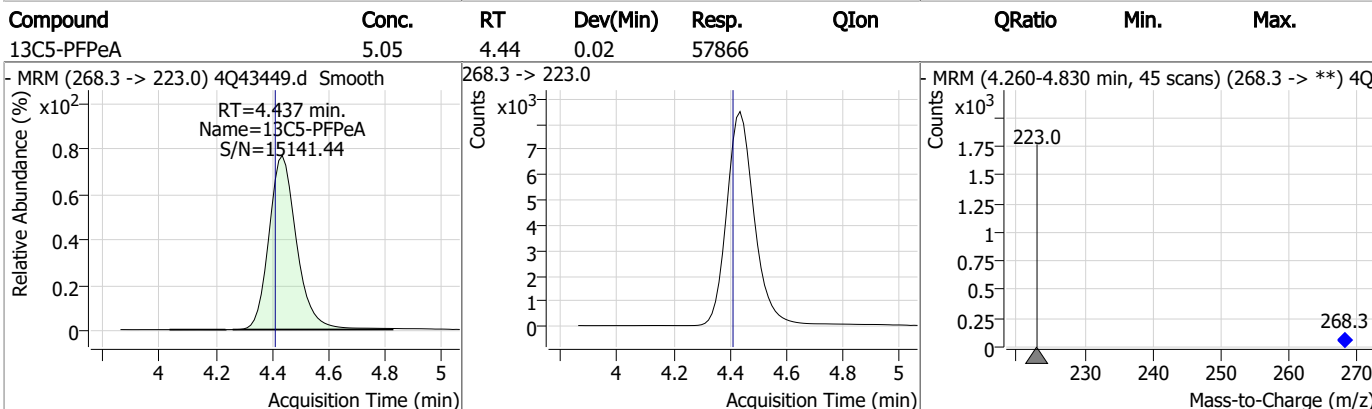
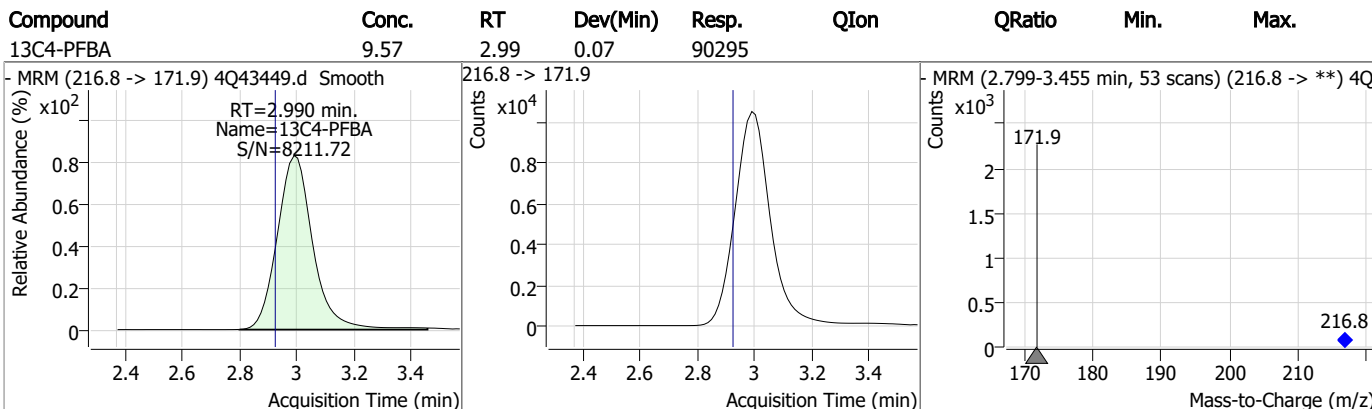
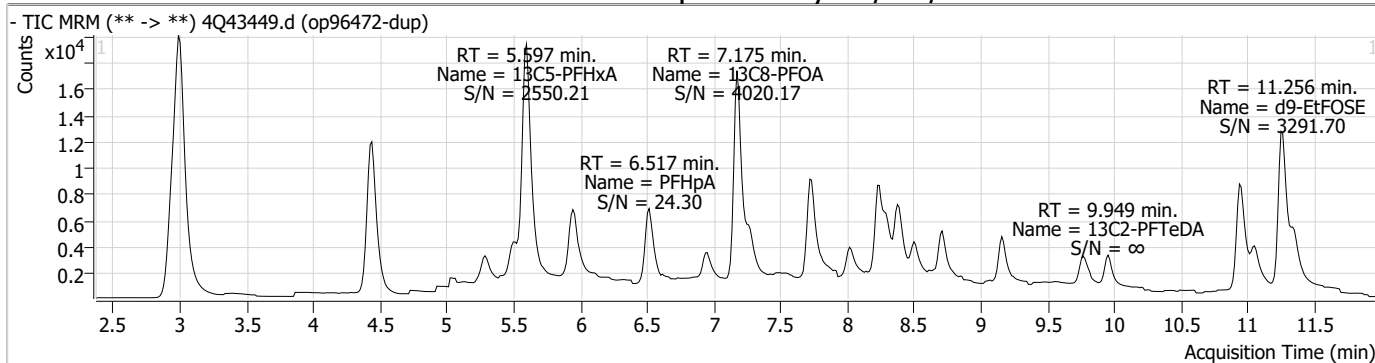
Perfluorinated Compounds by LC/MS/MS

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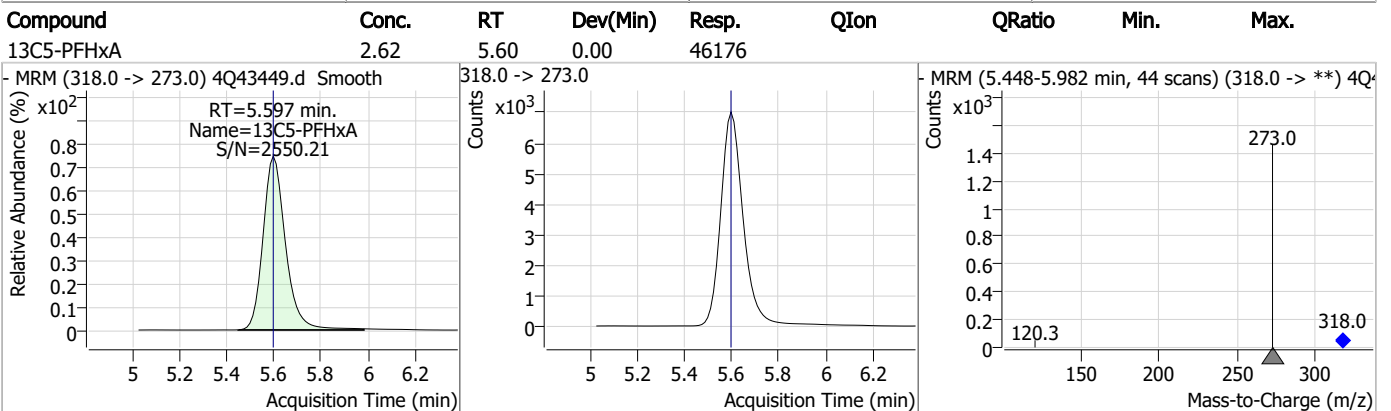
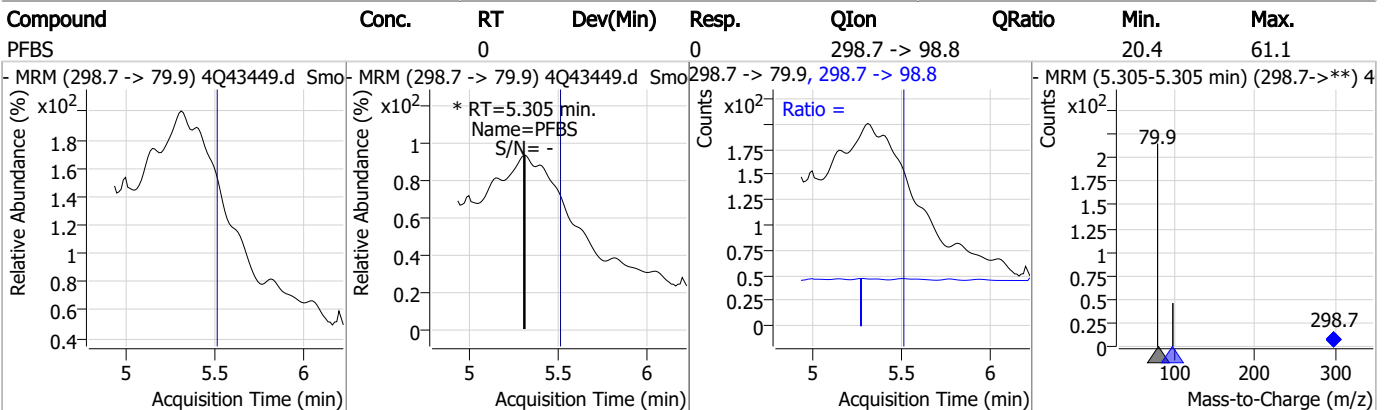
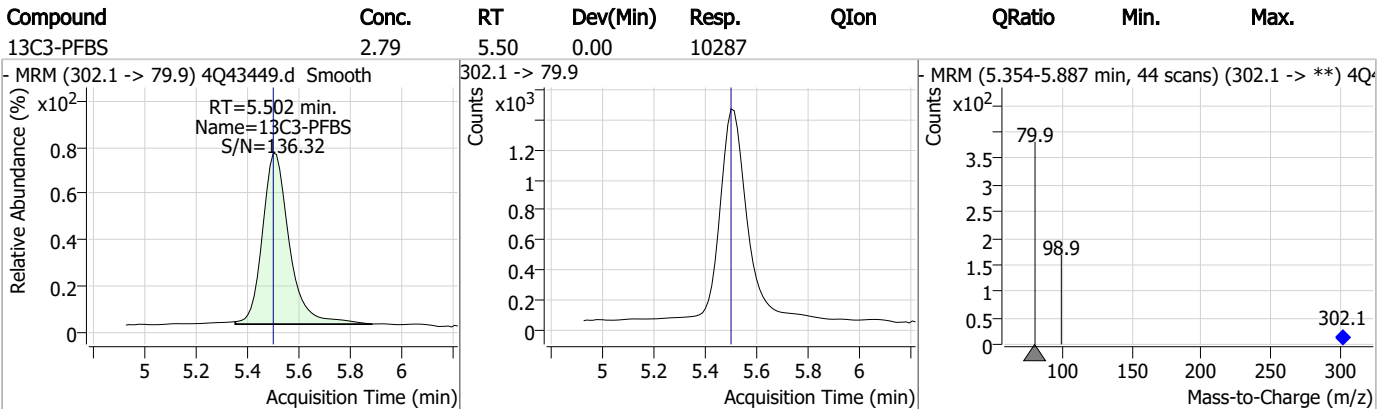
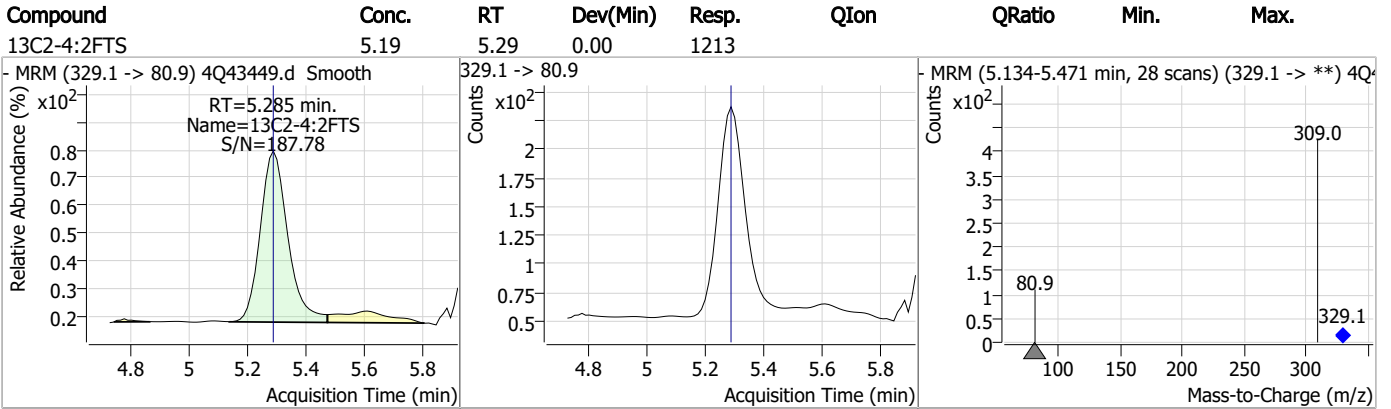
7.5.1

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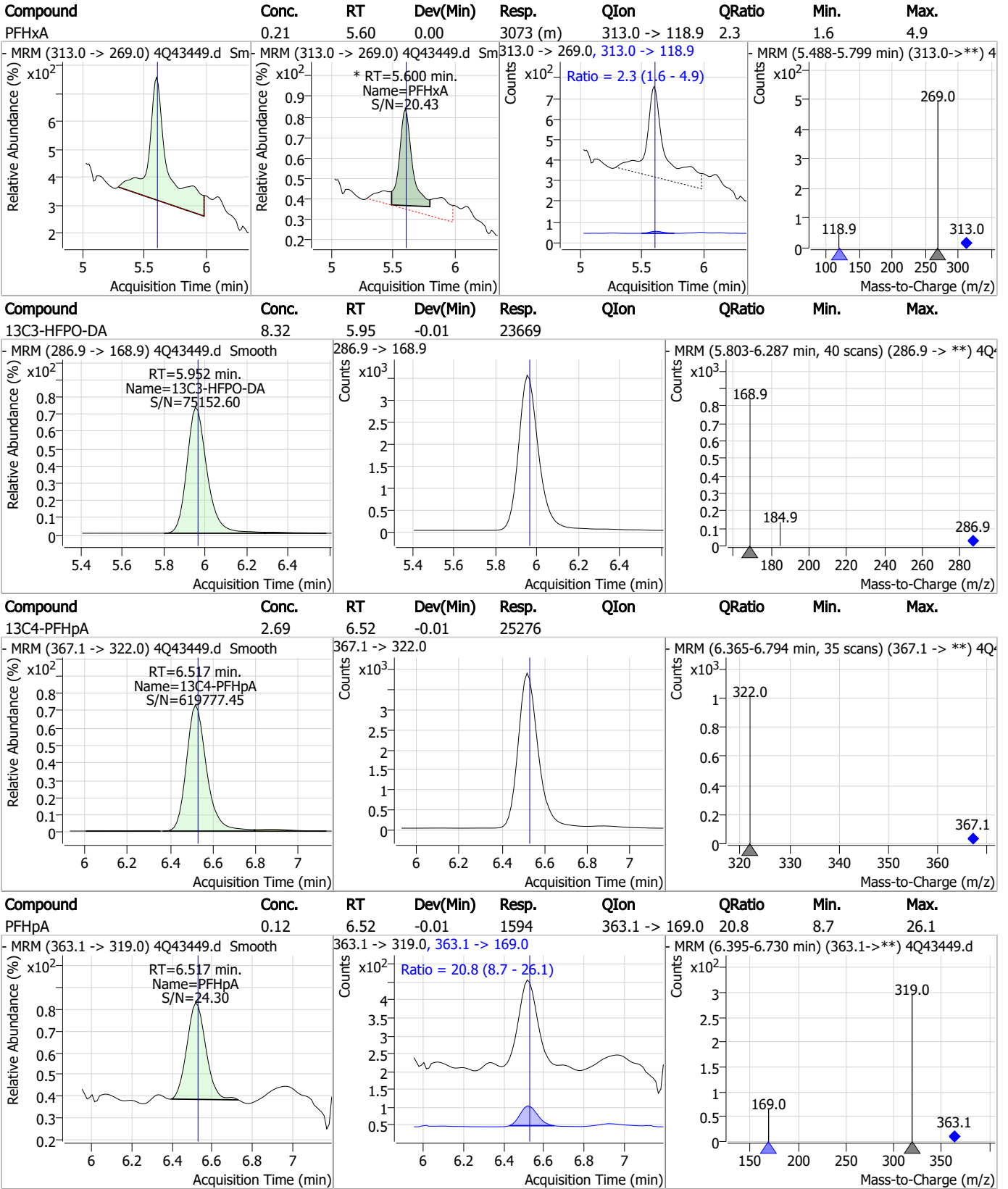
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



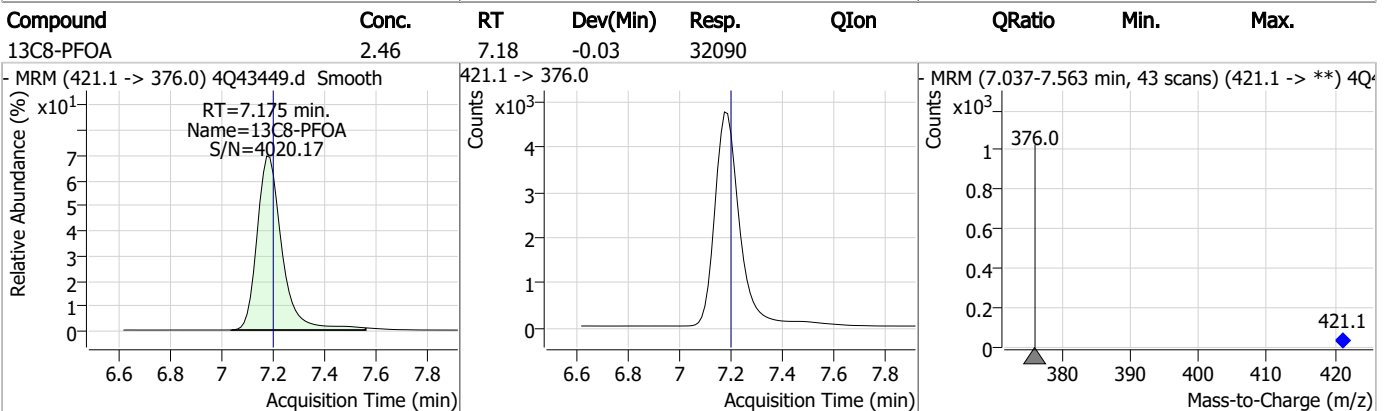
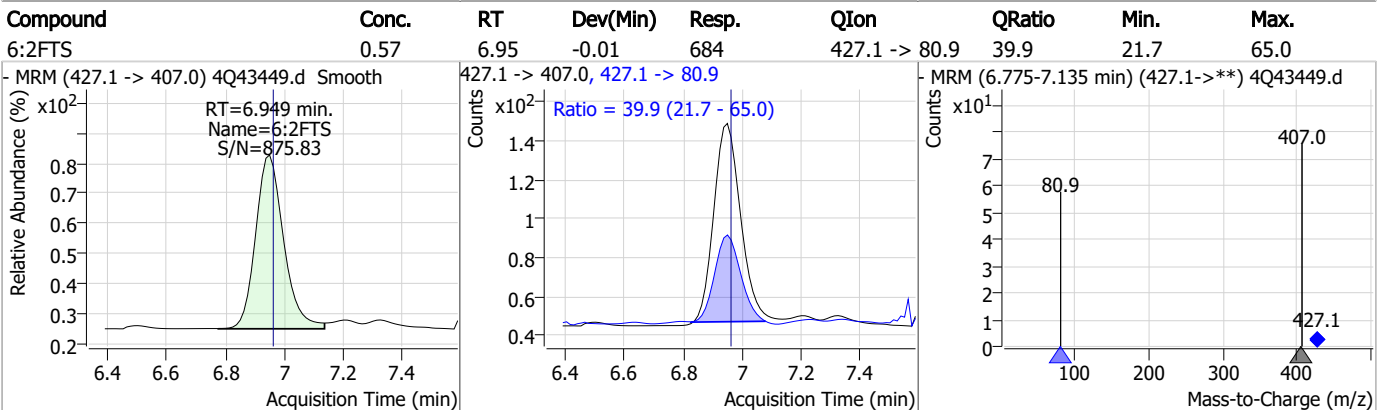
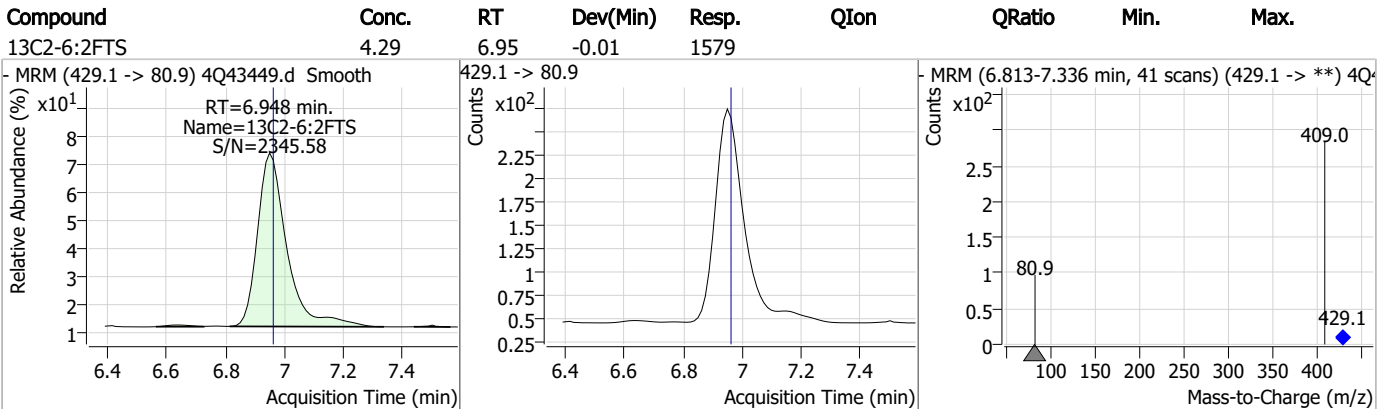
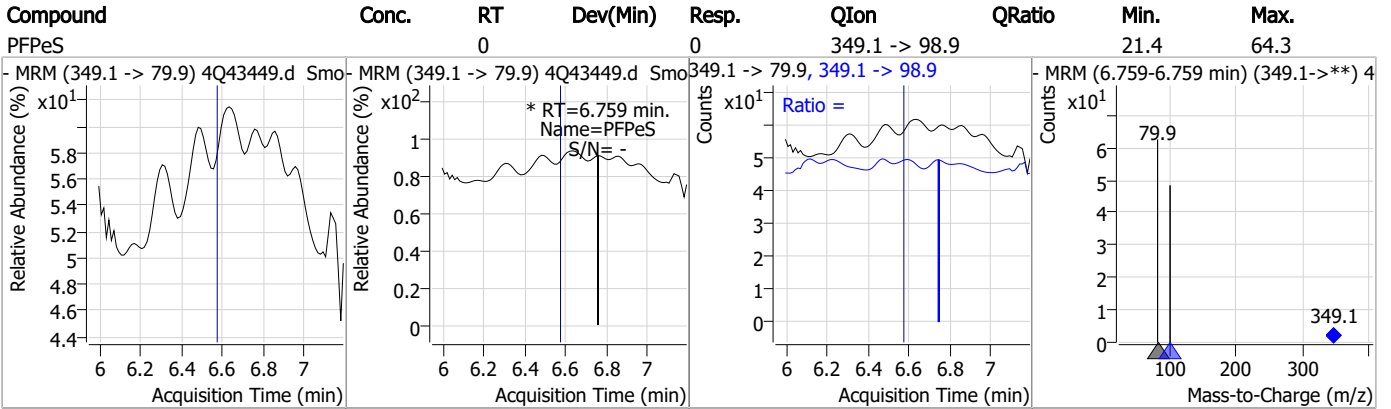
Perfluorinated Compounds by LC/MS/MS



7.5.1

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Perfluorinated Compounds by LC/MS/MS



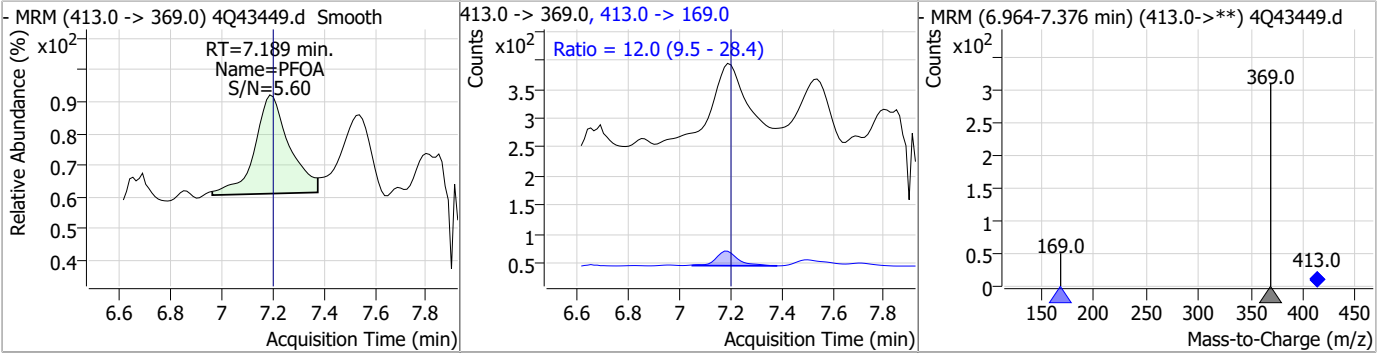
7.5.1

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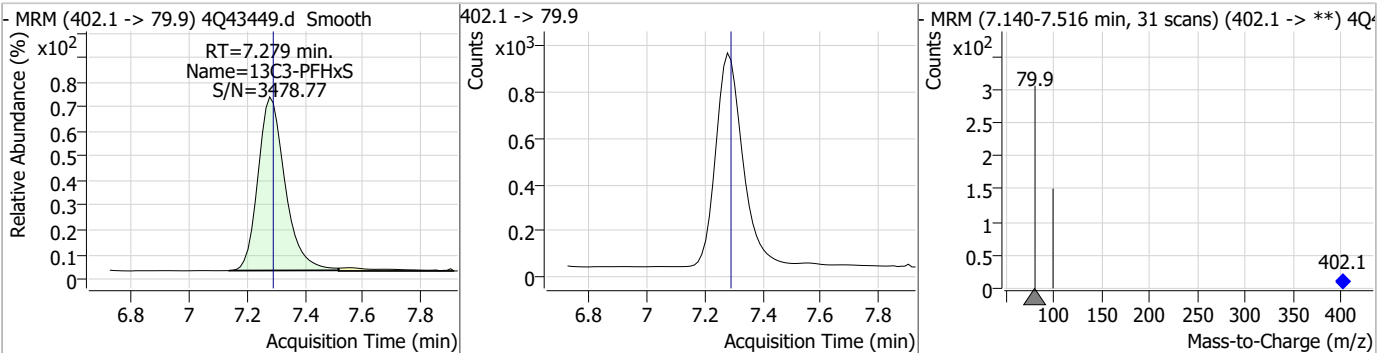


Perfluorinated Compounds by LC/MS/MS

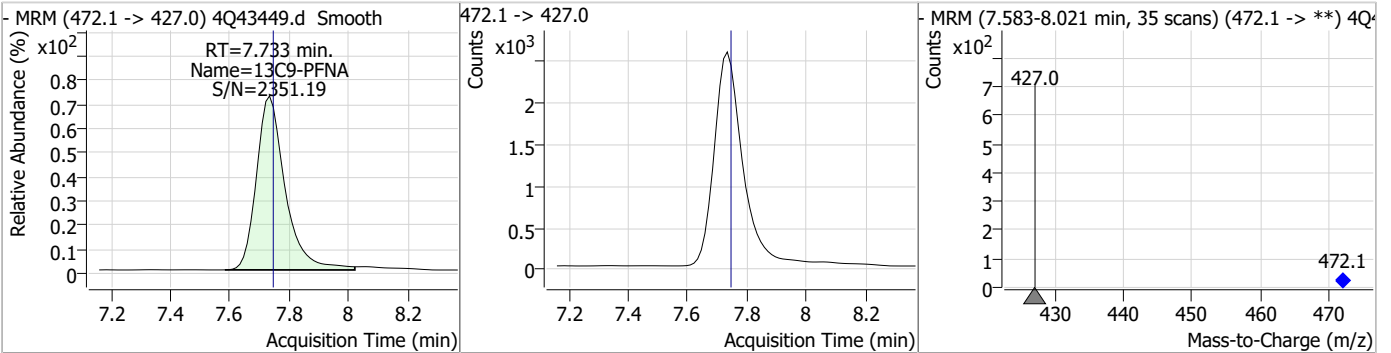
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.09	7.19	-0.01	1258	413.0 -> 169.0	12.0	9.5	28.4



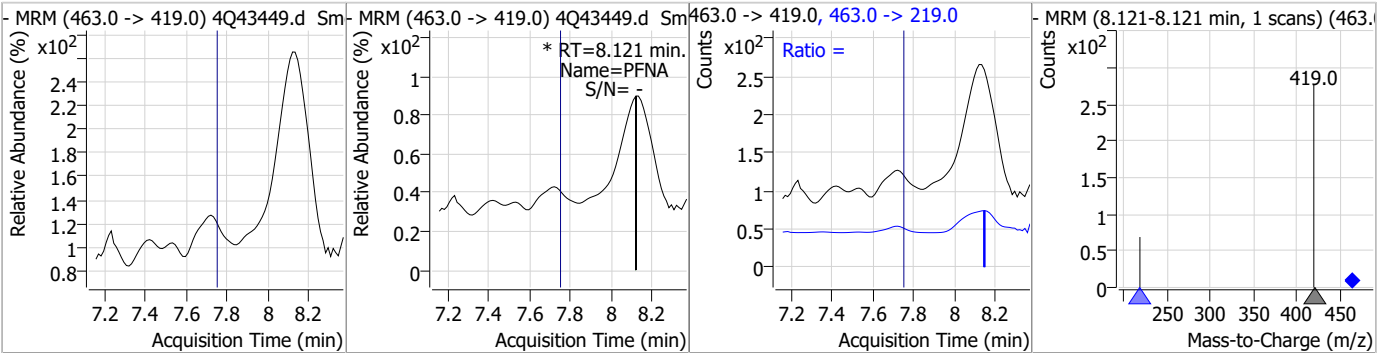
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.62	7.28	-0.01	5963				



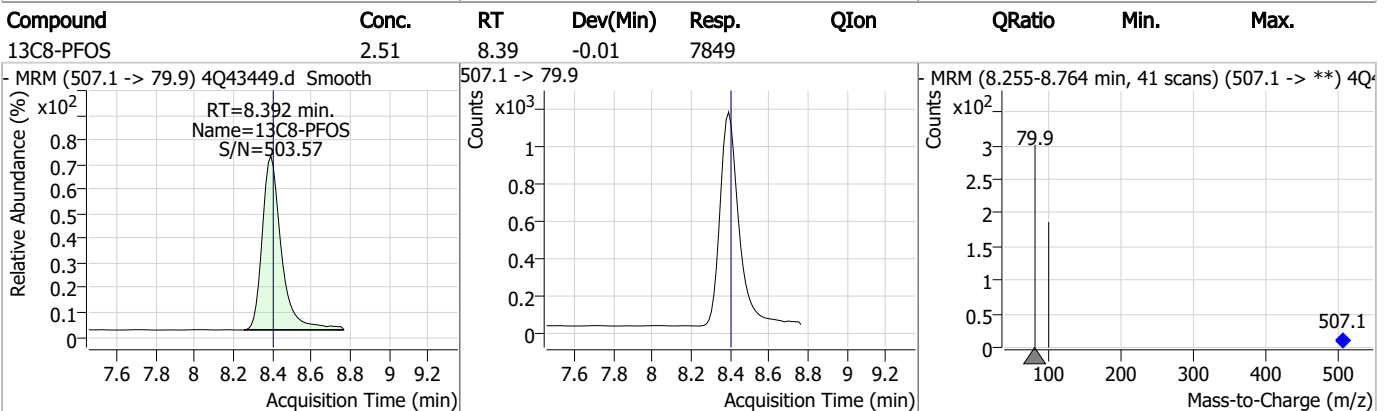
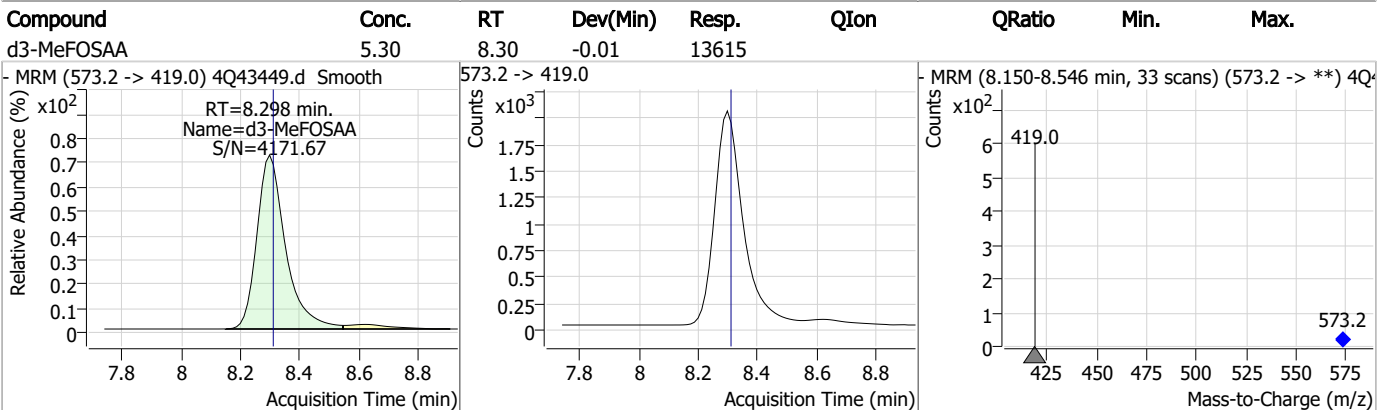
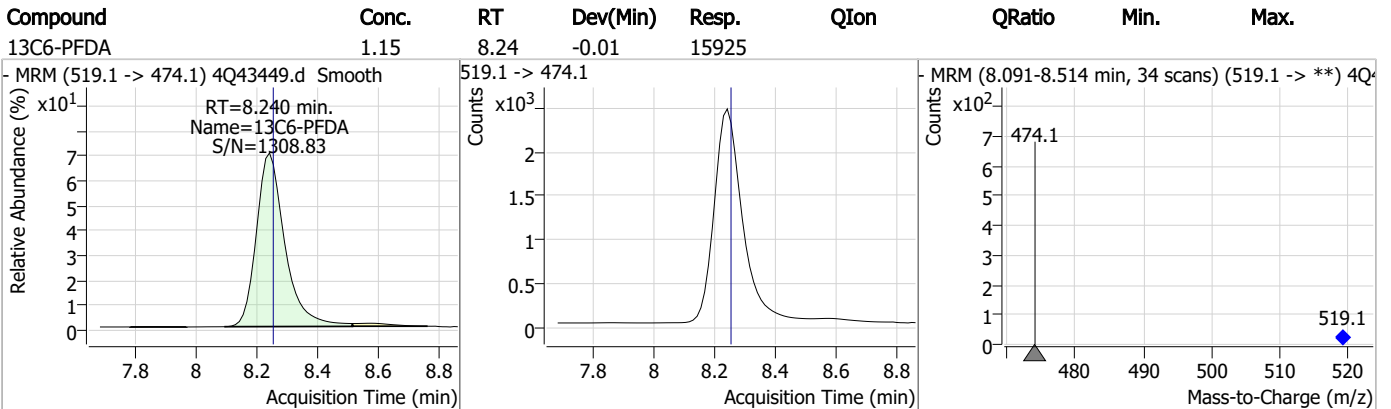
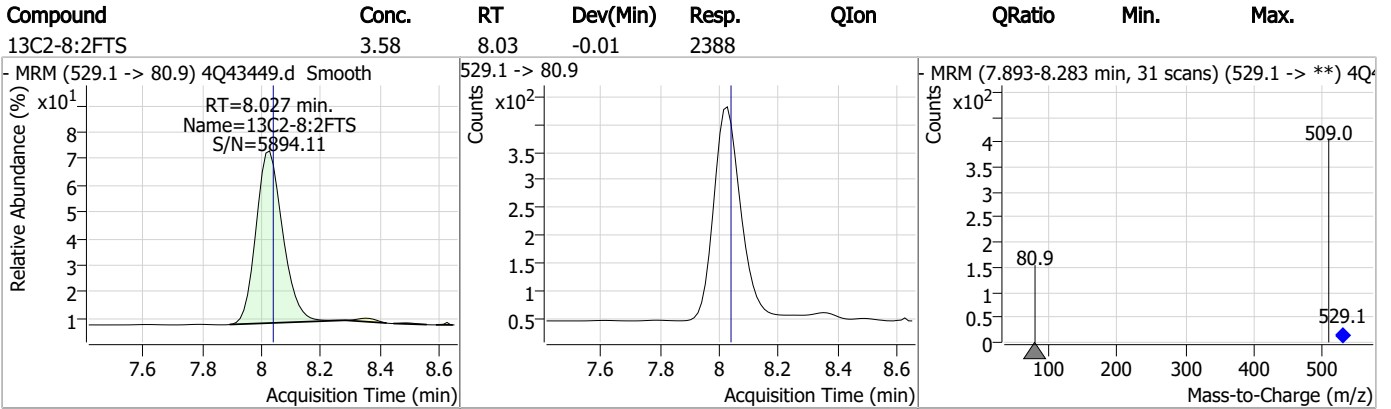
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.34	7.73	-0.01	17305				



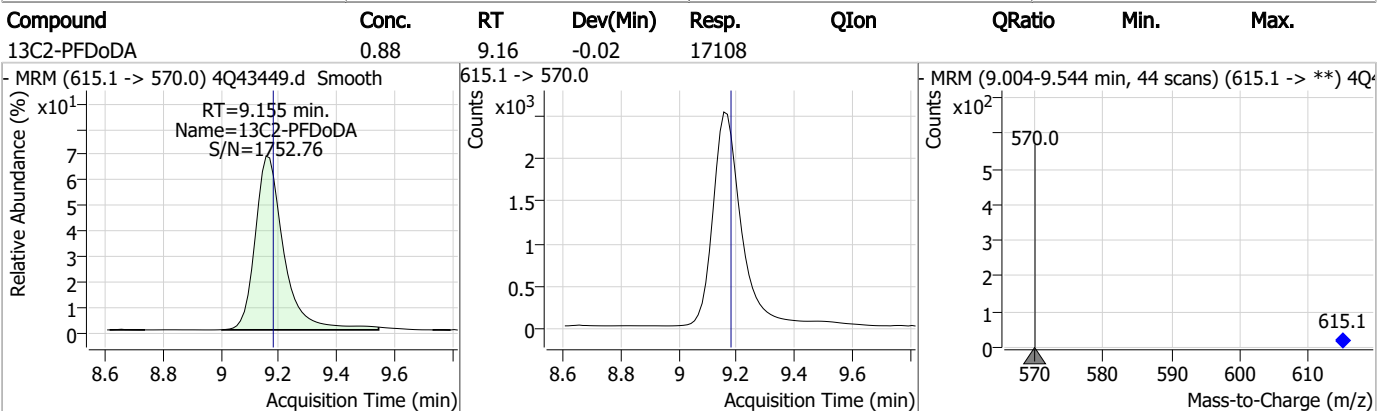
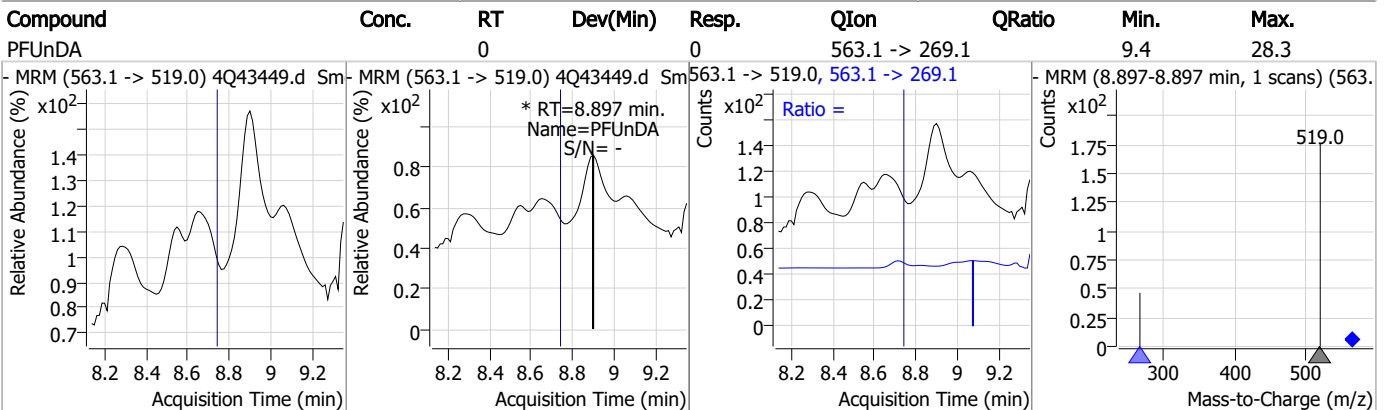
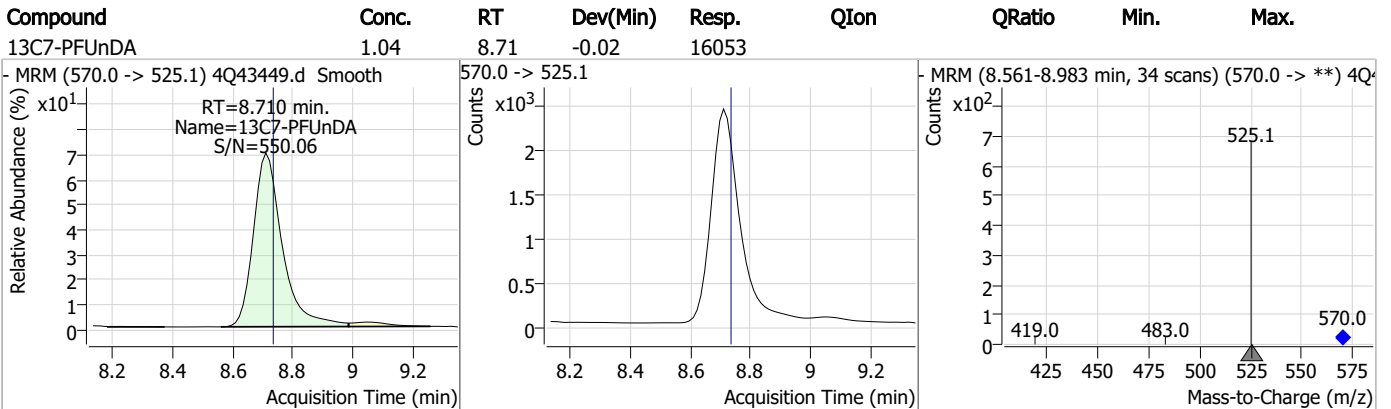
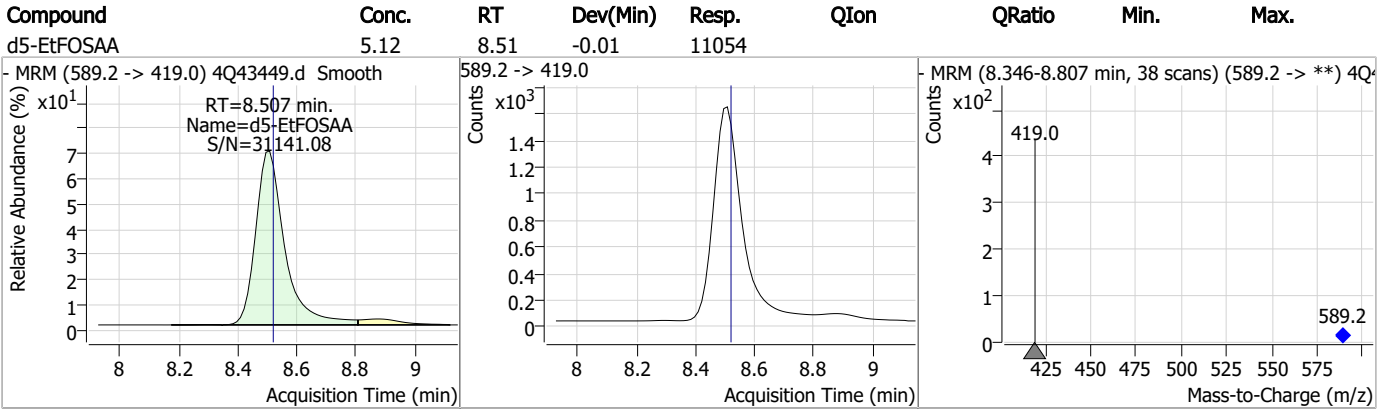
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0	0	0	0	463.0 -> 219.0		12.9	38.7



Perfluorinated Compounds by LC/MS/MS



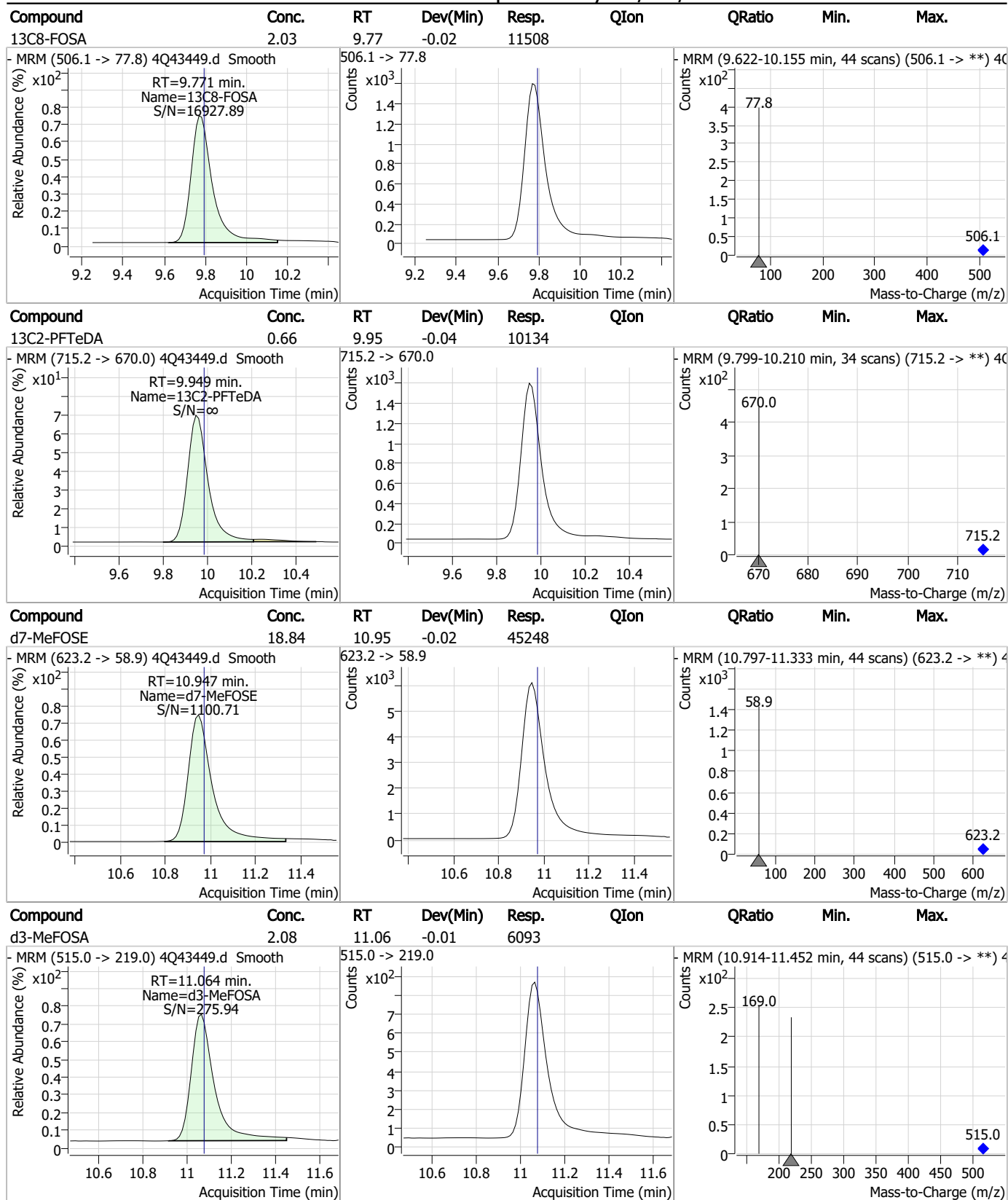
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Perfluorinated Compounds by LC/MS/MS

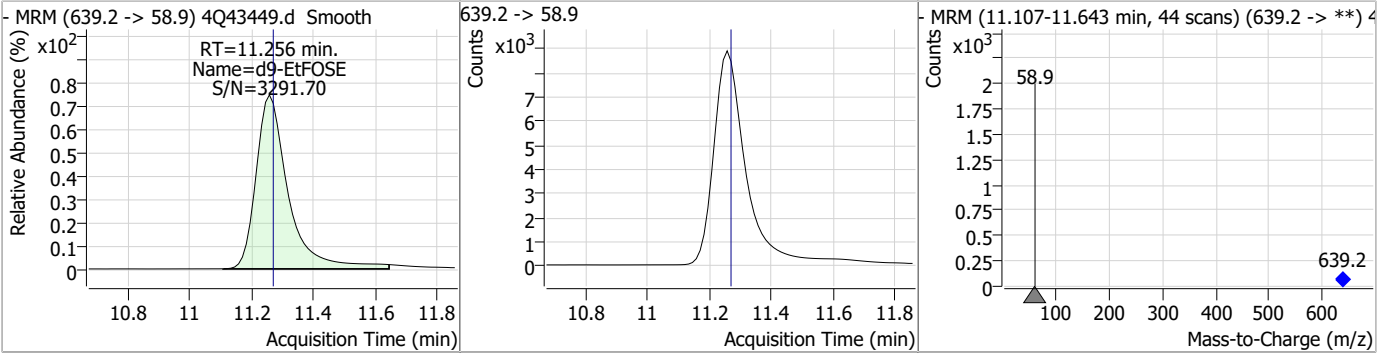


7.5.1
7

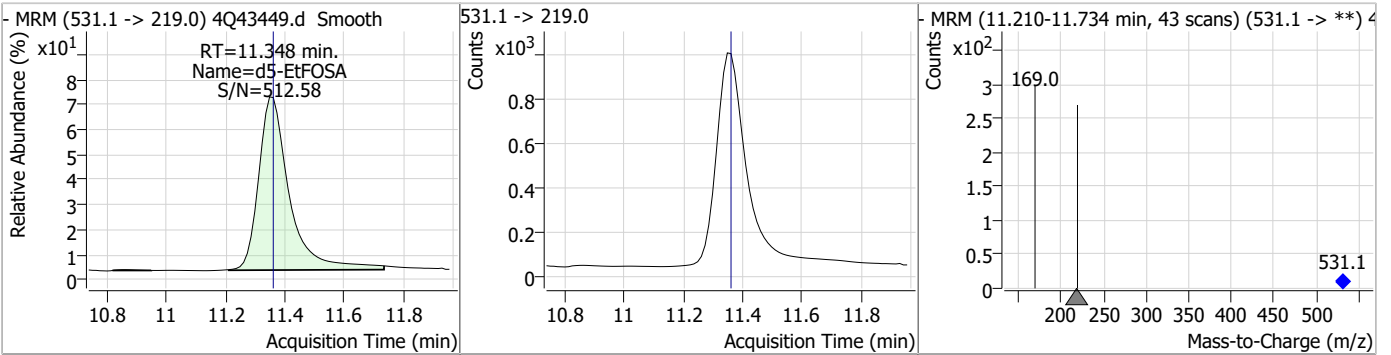


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.84	11.26	-0.01	64120				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.22	11.35	-0.01	6933				



7.5.1

7

Manual Integration Approval Summary

Sample Number: OP96472-DUP Method: EPA DRAFT 1633
Lab FileID: 4Q43449.D Analyst approved: 04/24/23 15:19 Martha Valls
Injection Time: 04/21/23 20:51 Supervisor approved: 04/25/23 14:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanoic acid	307-24-4		5.60	Poorly defined baseline

7.5.1.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 04/21/23 12:28

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43239.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 11:12:35 AM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q625_TDCA.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

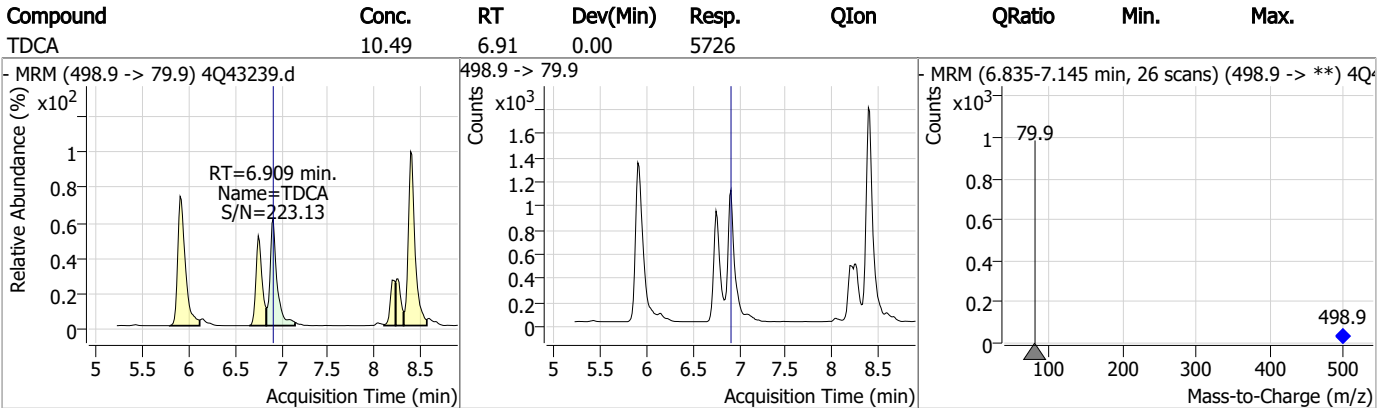
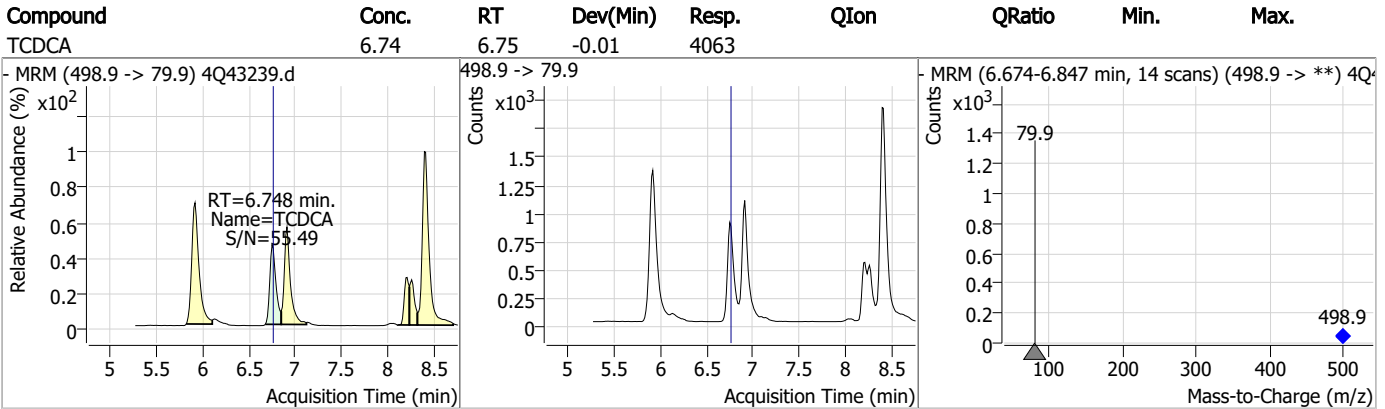
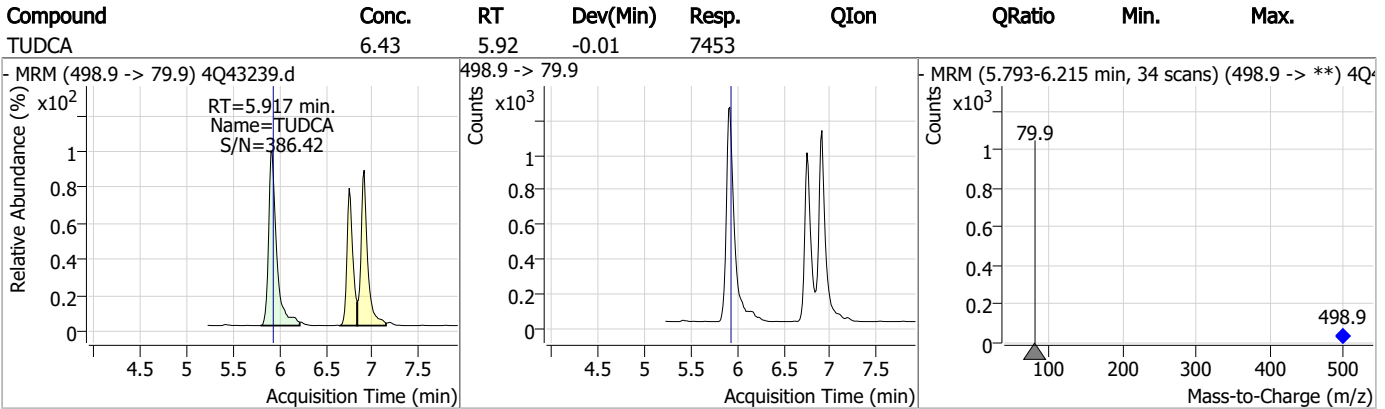
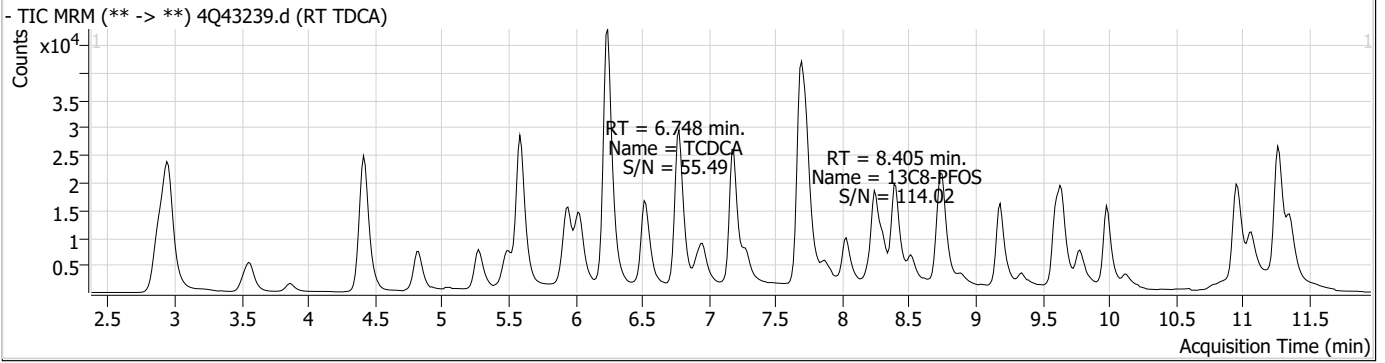
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M8-PFOS	8.405	507.1 -> 79.9	13065	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	14581	2.50 µg/L	0.000
System Monitoring Compounds					
13C8-PFOS	8.405	507.1 -> 79.9	13065	2.27 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.9%		
Target Compounds					
PFOS	8.406	498.9 -> 79.9	12967	2.90 µg/L m	QValue 84
		498.9 -> 98.8	6132		
TCDCa	6.748	498.9 -> 79.9	4063	6.74 ng/ml	100
TDCA	6.909	498.9 -> 79.9	5726	10.49 ng/ml	100
TUDCA	5.917	498.9 -> 79.9	7453	6.43 ng/ml	100

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

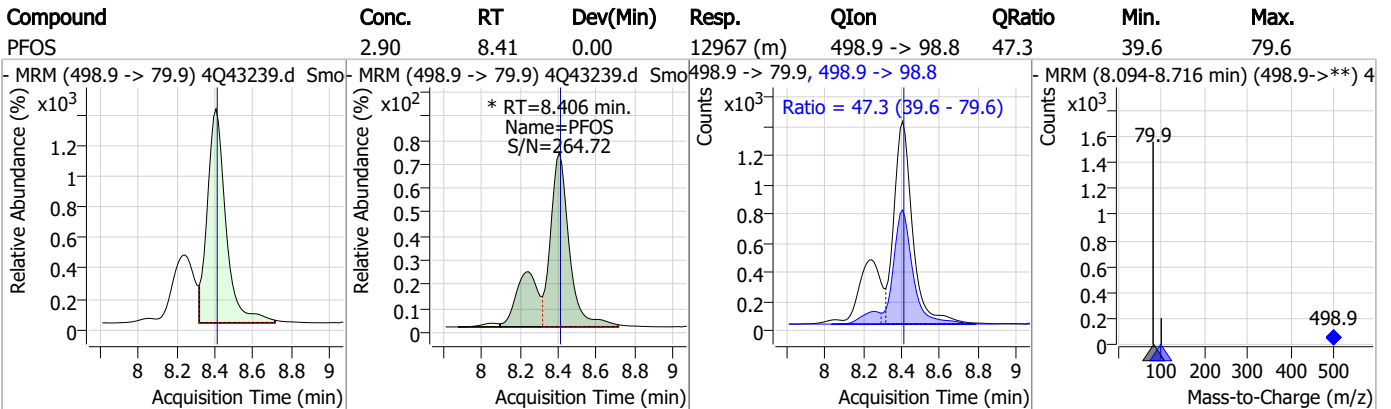
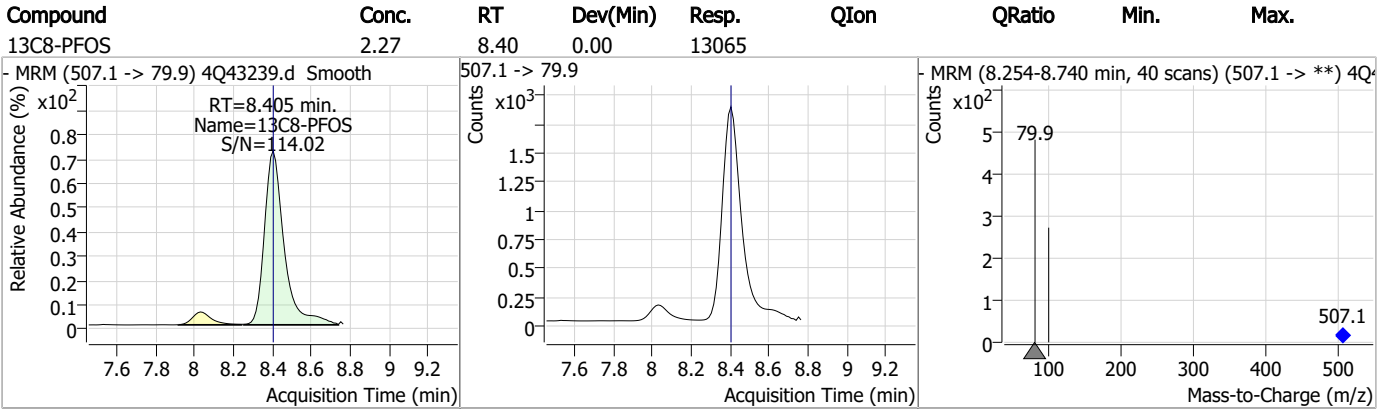
7.6.1
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1

7



Manual Integration Approval Summary

Sample Number: S4Q625-RT Method: EPA DRAFT 1633
Lab FileID: 4Q43239.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 11:12 Supervisor approved: 04/21/23 12:28 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43240.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 11:26:40 AM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.949	216.8 -> 171.9	108830	10.00 µg/L	0.012
M5-PFPeA	4.412	268.3 -> 223.0	65892	5.00 µg/L	0.000
M5-PFHxA	5.584	318.0 -> 273.0	49874	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	26553	2.50 µg/L	0.000
M8-PFOA	7.188	421.1 -> 376.0	35217	2.50 µg/L	0.000
M9-PFNA	7.733	472.1 -> 427.0	20555	1.25 µg/L	0.000
M6-PFDA	8.240	519.1 -> 474.1	19239	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	21930	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	26103	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	22373	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	17700	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	11360	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	6637	2.50 µg/L	0.000
M8-PFOS	8.392	507.1 -> 79.9	10181	2.50 µg/L	0.000
M2-4:2FTS	5.273	329.1 -> 80.9	1281	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	1994	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	3330	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	16870	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	34042	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	13267	5.00 µg/L	0.000
M7-MeFOSE	10.947	623.2 -> 58.9	73693	25.00 µg/L	-0.012
M9-EtFOSE	11.256	639.2 -> 58.9	94990	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	9936	2.50 µg/L	-0.012
M3-MeFOSA	11.064	515.0 -> 219.0	9471	2.50 µg/L	0.000
13C4-PFOS	8.393	502.8 -> 79.9	10164	2.50 µg/L	-0.012
13C3-PFBA	2.941	216.0 -> 172.0	60414	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	4813	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	42888	2.50 µg/L	0.000
13C2-PFDA	8.241	515.1 -> 470.1	18107	1.25 µg/L	0.000
13C5-PFNA	7.734	468.0 -> 423.0	24047	1.25 µg/L	0.000
13C2-PFHxA	5.585	315.1 -> 270.0	43382	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1281	4.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.7%		
13C2-6:2FTS	6.948	429.1 -> 80.9	1994	4.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.7%		
13C2-8:2FTS	8.027	529.1 -> 80.9	3330	4.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 82.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	26103	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C2-PFTeDA	9.974	715.2 -> 670.0	22373	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.502	302.1 -> 79.9	11360	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C3-PFHxS	7.291	402.1 -> 79.9	6637	2.42 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 = 96.6%	
13C4-PFBA	2.949	216.8 -> 171.9	108830	10.00 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFHpA	6.517	367.1 -> 322.0	26553	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C5-PFHxA	5.584	318.0 -> 273.0	49874	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C5-PFPeA	4.412	268.3 -> 223.0	65892	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C6-PFDA	8.240	519.1 -> 474.1	19239	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C7-PFUnDA	8.722	570.0 -> 525.1	21930	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-FOSA	9.783	506.1 -> 77.8	17700	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C8-PFOA	7.188	421.1 -> 376.0	35217	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C8-PFOS	8.392	507.1 -> 79.9	10181	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C9-PFNA	7.733	472.1 -> 427.0	20555	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
d3-MeFOSAA	8.298	573.2 -> 419.0	16870	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	34042	10.34 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
d3-MeFOSA	11.064	515.0 -> 219.0	9471	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
d5-EtFOSAA	8.507	589.2 -> 419.0	13267	4.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.6%	
d7-MeFOSE	10.947	623.2 -> 58.9	73693	23.64 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
d9-EtFOSE	11.256	639.2 -> 58.9	94990	23.79 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d5-EtFOSA	11.348	531.1 -> 219.0	9936	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	95398	58.21 µg/L	96
		327.1 -> 80.9	39983		
6:2FTS	6.949	427.1 -> 407.0	87073	57.12 µg/L	96
		427.1 -> 80.9	36423		
8:2FTS	8.028	527.1 -> 507.0	106962	65.16 µg/L	96
		527.1 -> 80.8	41240		
EtFOSAA	8.508	584.2 -> 419.1	31011	16.37 µg/L	m 94
		584.2 -> 526.0	15060		
FOSA	9.774	498.1 -> 77.9	202735	33.87 µg/L	m 100
		498.1 -> 478.0	5652		
MeFOSAA	8.299	570.1 -> 419.0	34500	14.33 µg/L	m 96
		570.1 -> 483.0	7225		
PFBA	2.945	212.8 -> 168.9	152804	60.52 µg/L	100
PFBS	5.490	298.7 -> 79.9	58020	12.91 µg/L	97
		298.7 -> 98.8	22190		
PFDA	8.241	512.9 -> 469.0	186177	15.77 µg/L	99
		512.9 -> 219.0	36797		
PFDoDA	9.181	613.1 -> 569.0	263185	15.32 µg/L	98
		613.1 -> 319.0	38267		
PFDS	9.344	599.0 -> 79.9	34553	14.52 µg/L	98

7.6.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	17065			
PFHpA	6.517	363.1 -> 319.0	217083	15.55	µg/L	100
		363.1 -> 169.0	37559			
PFHpS	7.873	449.0 -> 79.9	40692	13.89	µg/L	98
		449.0 -> 98.9	21076			
PFHxA	5.587	313.0 -> 269.0	244480	15.56	µg/L	100
		313.0 -> 118.9	7889			
PFHxS	7.280	398.7 -> 79.9	33730	13.87	µg/L	m 95
		398.7 -> 98.9	17114			
PFNA	7.734	463.0 -> 419.0	327276	27.96	µg/L	m 98
		463.0 -> 219.0	87913			
PFNS	8.886	548.8 -> 79.9	25703	14.25	µg/L	93
		548.8 -> 98.9	13215			
PFOA	7.189	413.0 -> 369.0	504779	32.18	µg/L	m 99
		413.0 -> 169.0	108009			
PFOS	8.394	498.9 -> 79.9	54372	13.93	µg/L	m 99
		498.9 -> 98.8	27363			
PFPeA	4.414	263.0 -> 219.0	403270	30.64	µg/L	100
PFPeS	6.557	349.1 -> 79.9	31636	15.07	µg/L	97
		349.1 -> 98.9	13618			
PFTeDA	9.974	713.1 -> 669.0	270788	14.90	µg/L	99
		713.1 -> 168.9	21972			
PFTrDA	9.591	663.0 -> 619.0	339019	15.86	µg/L	99
		663.0 -> 168.9	32951			
PFUnDA	8.722	563.1 -> 519.0	178201	14.36	µg/L	98
		563.1 -> 269.1	35155			
11CI-PF3OUdS	9.643	630.9 -> 450.9	275249	28.07	µg/L	99
		632.9 -> 452.9	84165			
9CI-PF3ONS	8.749	530.8 -> 351.0	296507	28.15	µg/L	98
		532.8 -> 353.0	90882			
ADONA	6.781	376.9 -> 250.9	670429	27.40	µg/L	97
		376.9 -> 84.8	184311			
HFPO-DA	5.953	284.9 -> 168.9	81916	30.46	µg/L	97
		284.9 -> 184.9	9989			
3:3FTCA	3.867	241.0 -> 177.0	47009	75.02	µg/L	100
		241.0 -> 117.0	4352			
5:3FTCA	6.231	341.0 -> 237.1	899689	384.13	µg/L	100
		341.0 -> 217.0	643983			
7:3FTCA	7.686	441.0 -> 316.9	440886	385.77	µg/L	99
		441.0 -> 336.9	977716			
EtFOSA	11.362	526.0 -> 219.0	181897	49.06	µg/L	m 96
		526.0 -> 169.0	247539			
EtFOSE	11.270	630.0 -> 58.9	284233	93.84	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	152907	48.28	µg/L	m 98
		511.9 -> 169.0	225148			
MeFOSE	10.973	616.1 -> 58.9	254519	97.12	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	31232	14.45	µg/L	97
		699.1 -> 98.8	17404			
NFDHA	5.465	295.0 -> 201.0	26182	30.77	µg/L	95
		295.0 -> 84.9	6669			
PFMBA	4.816	279.0 -> 85.1	229201	30.50	µg/L	100
PFMPA	3.553	229.0 -> 84.9	204863	30.67	µg/L	100
PFEESA	6.034	314.8 -> 134.9	351885	27.30	µg/L	99
		314.8 -> 82.9	11578			

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

7.6.2
7

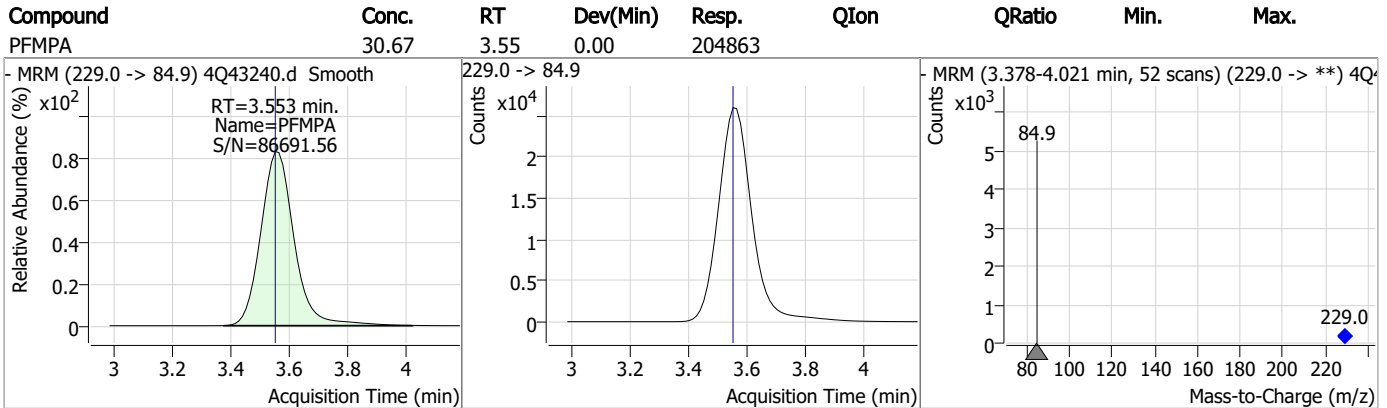
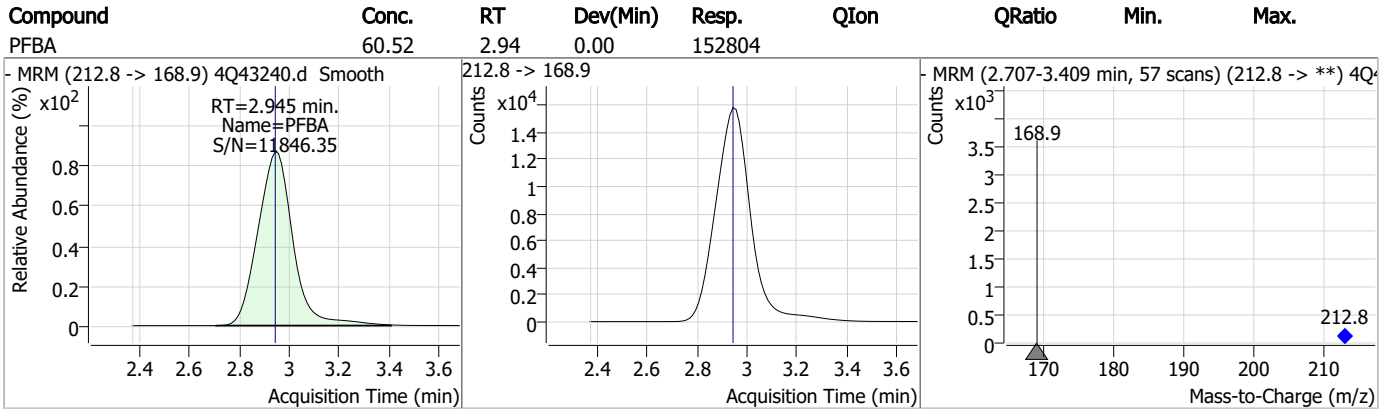
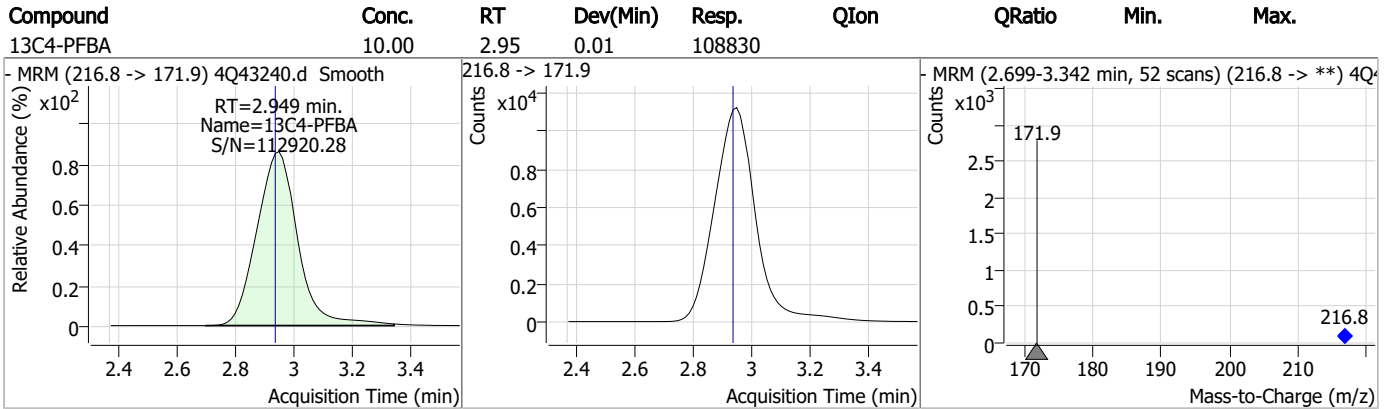
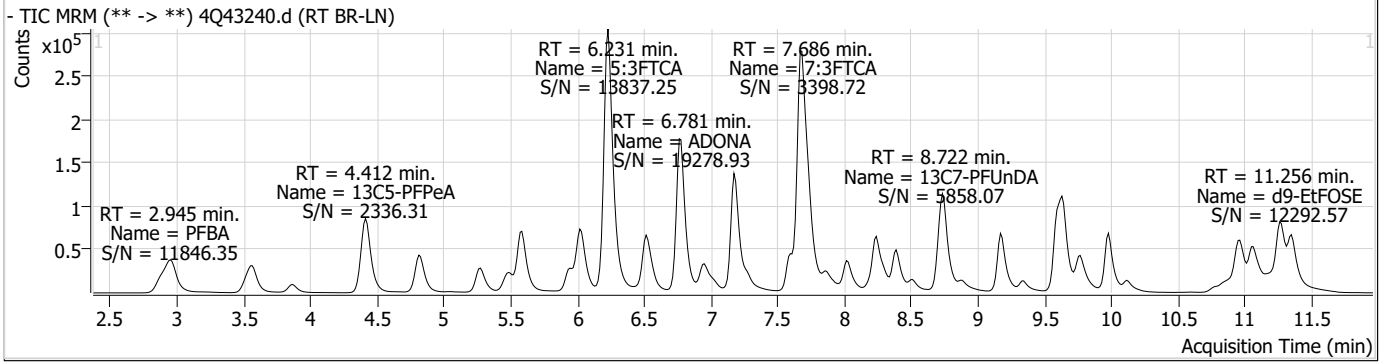
Perfluorinated Compounds by LC/MS/MS

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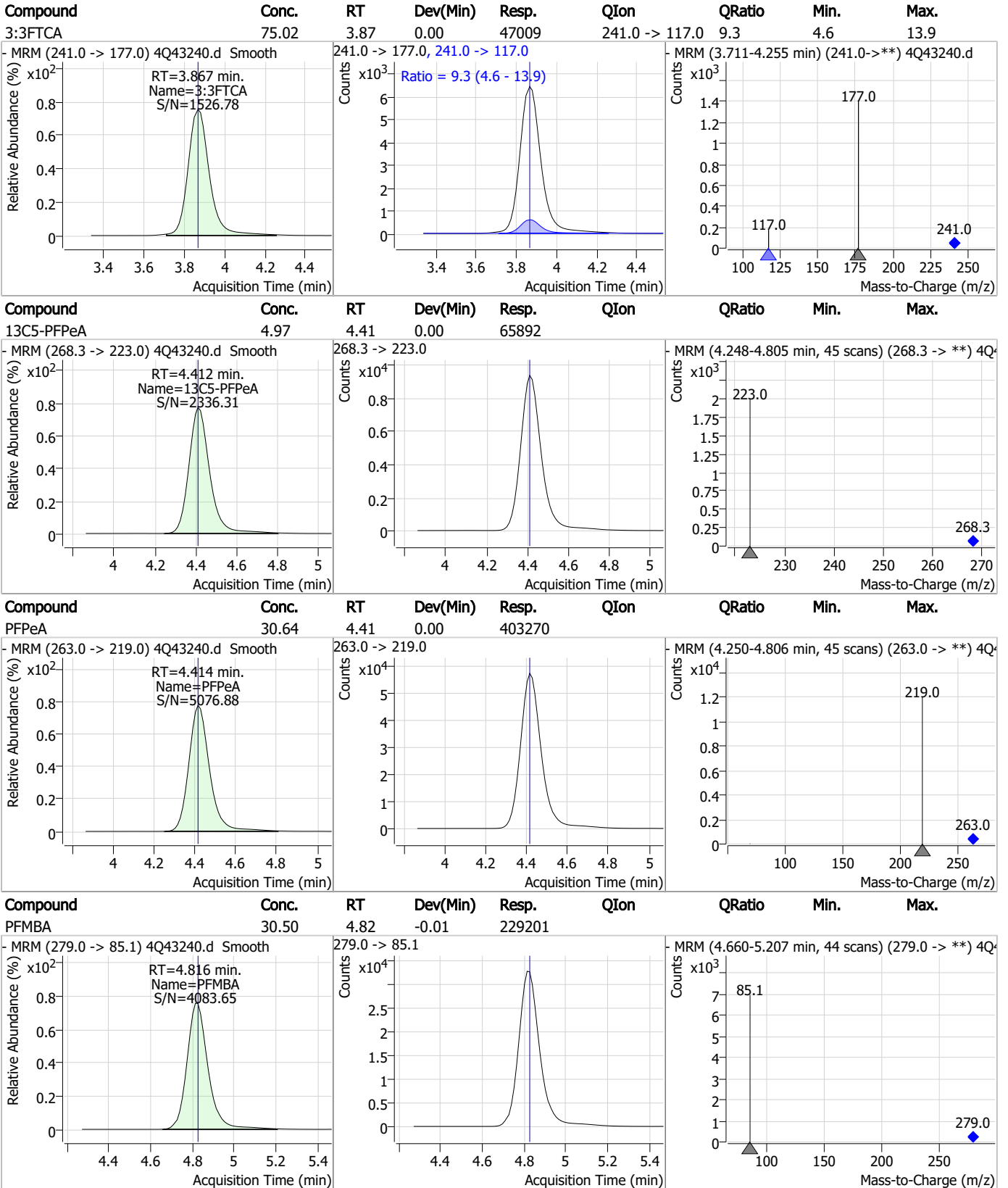
7.6.2

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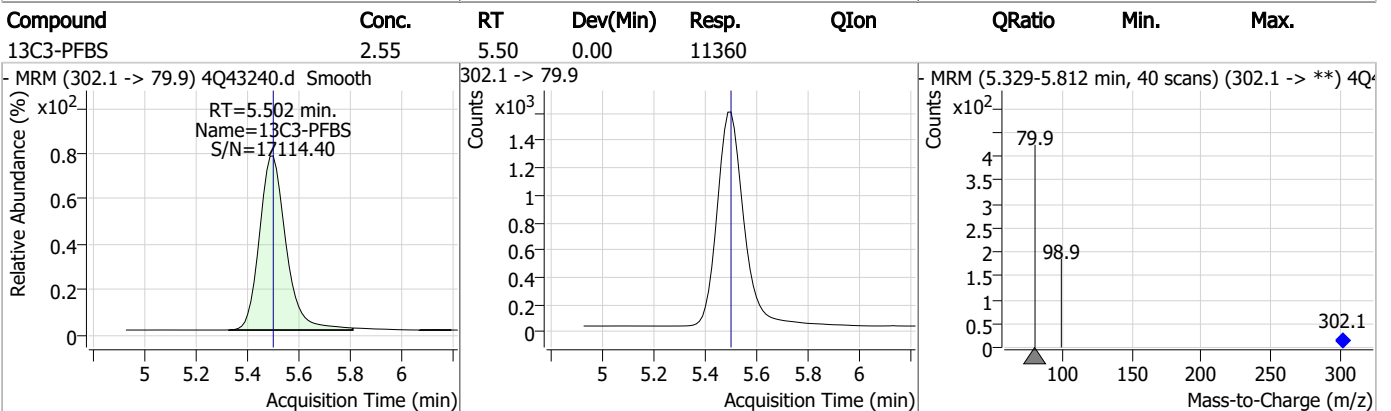
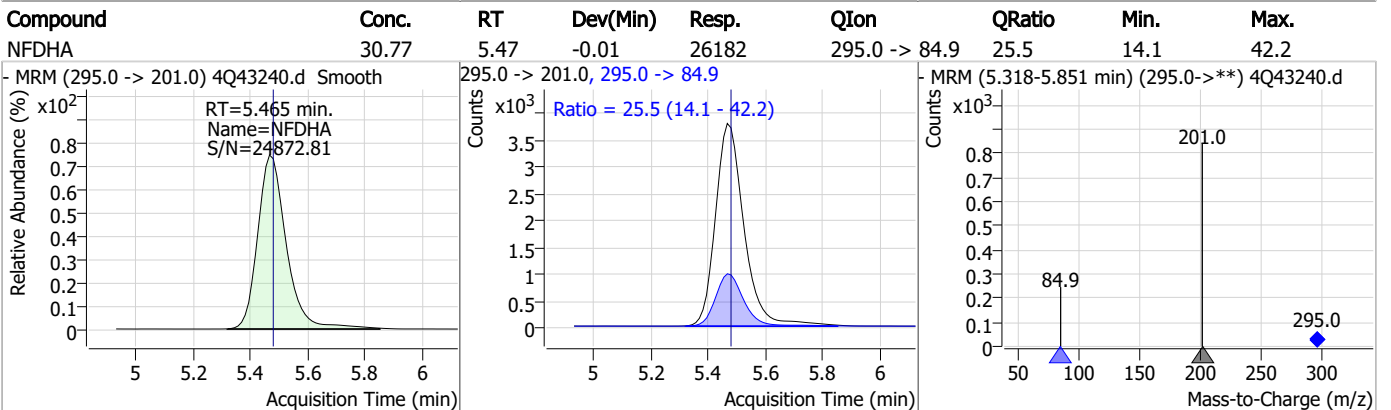
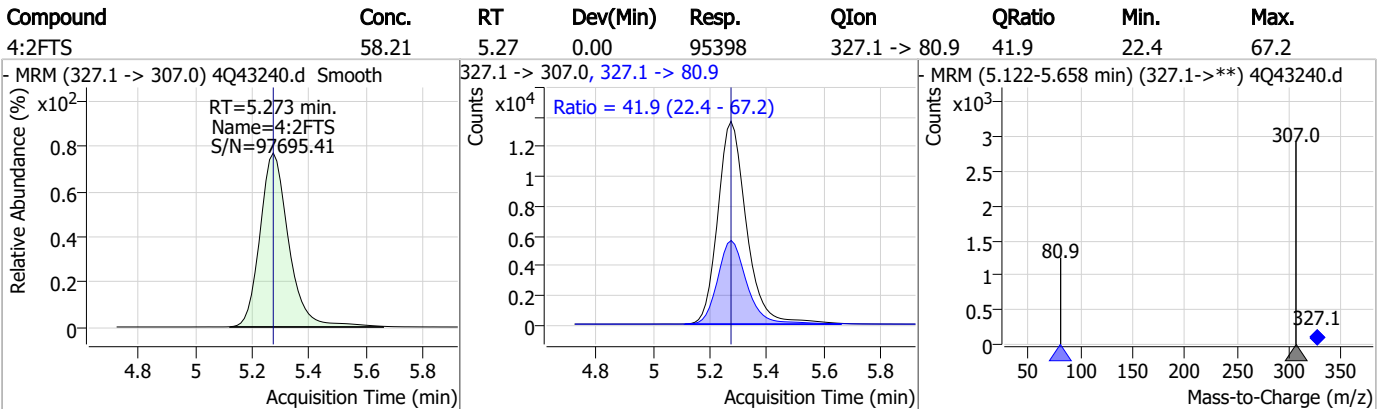
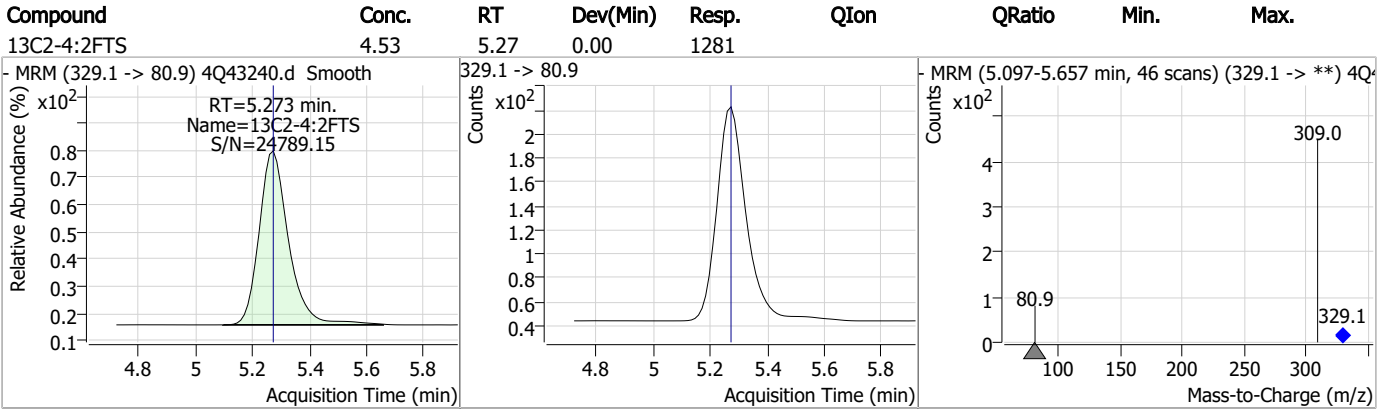
Perfluorinated Compounds by LC/MS/MS



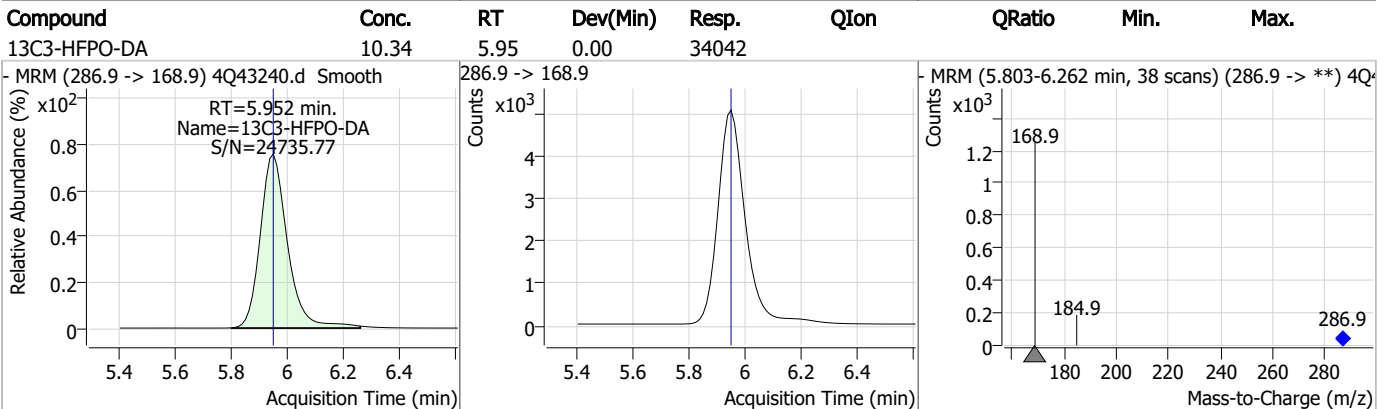
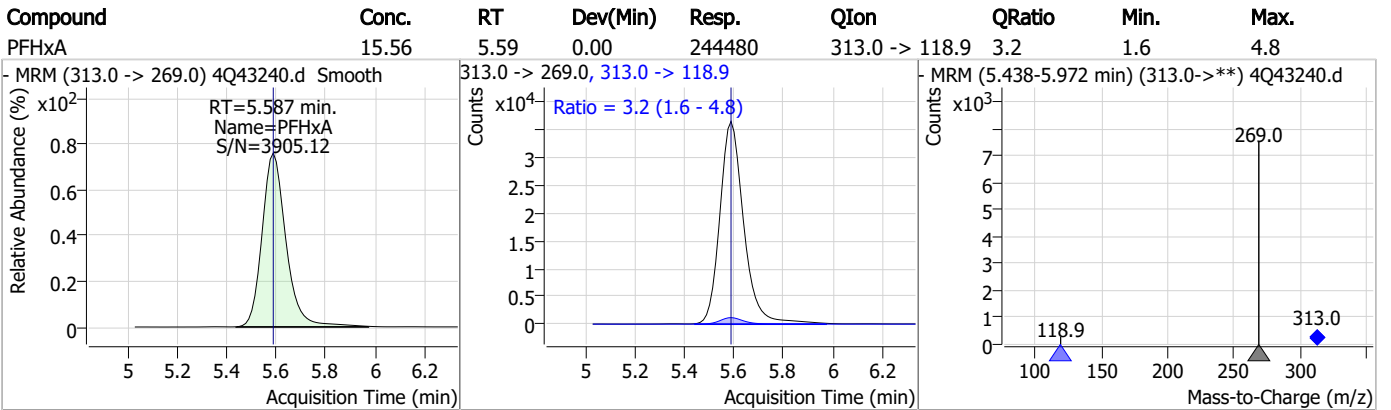
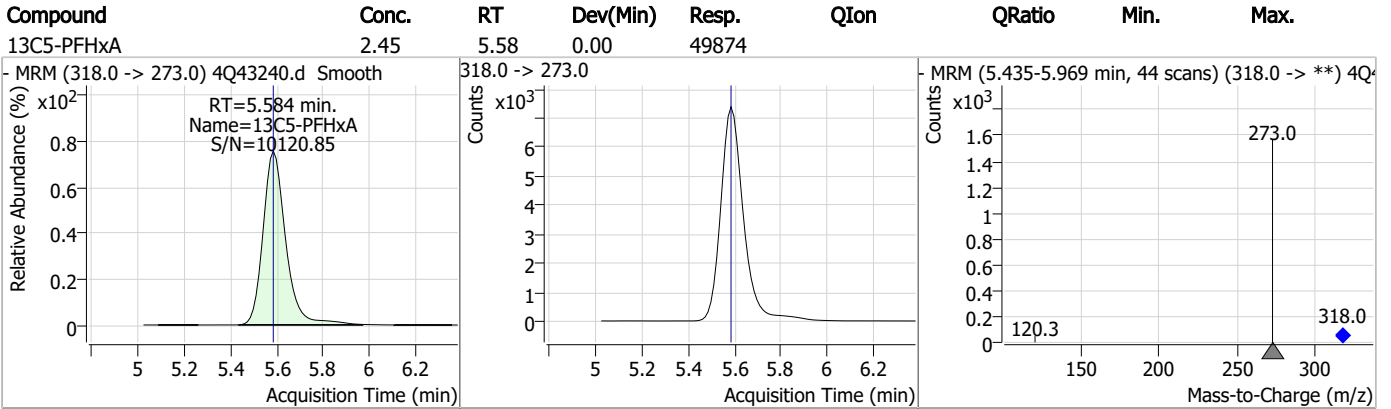
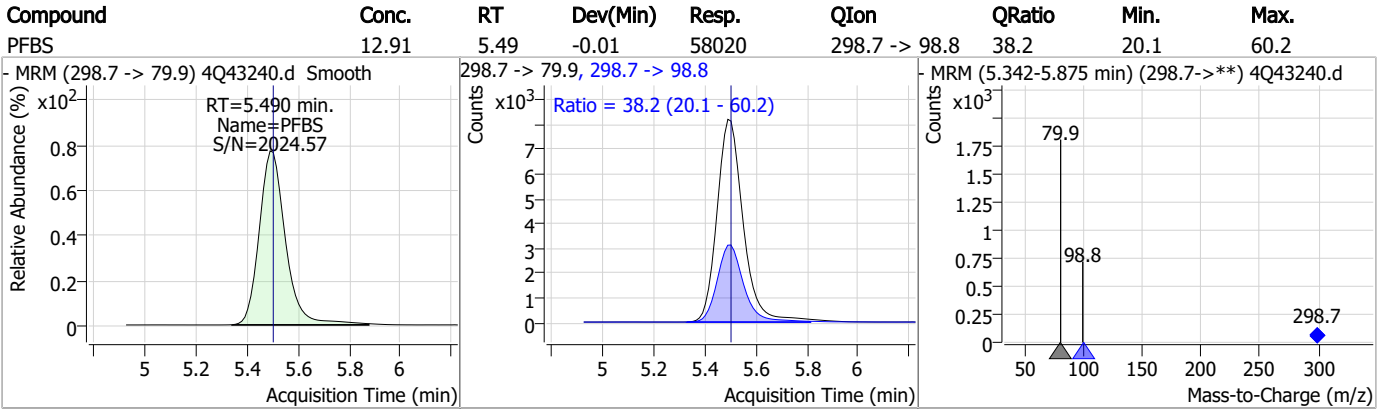
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

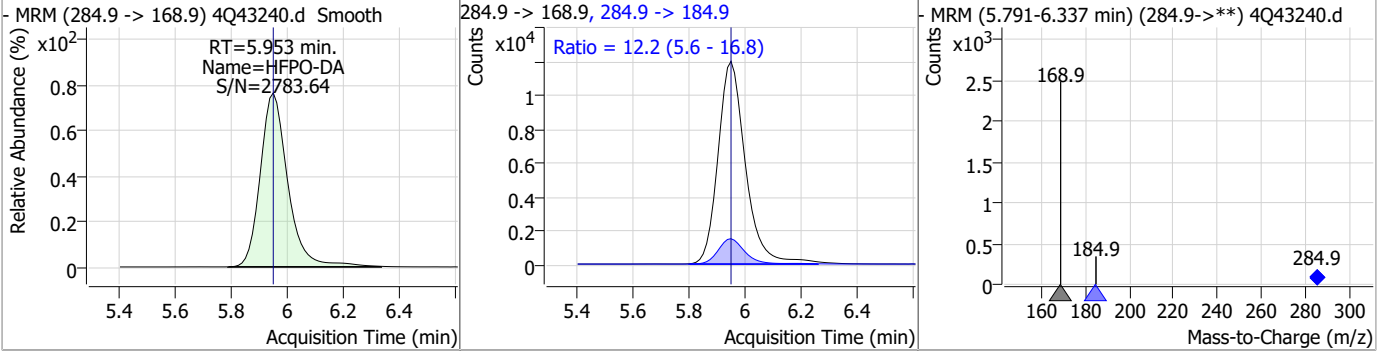


Perfluorinated Compounds by LC/MS/MS

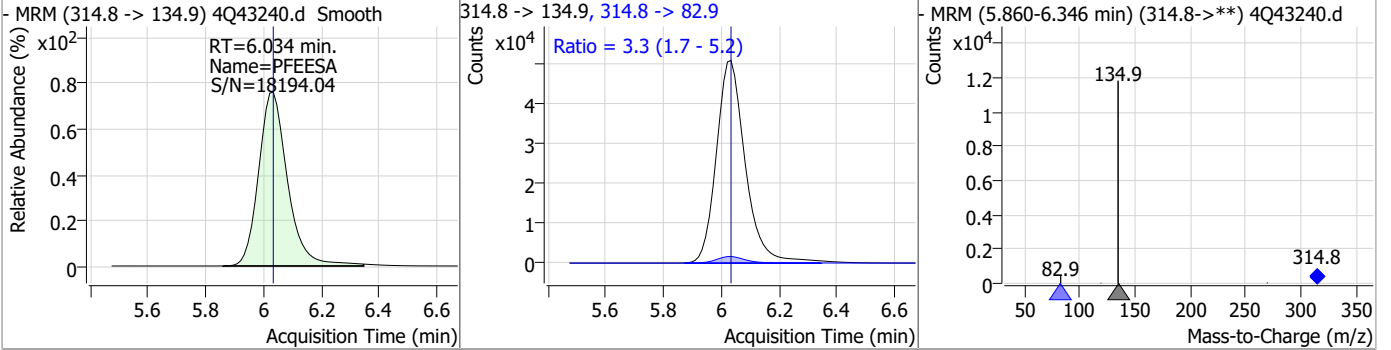


Perfluorinated Compounds by LC/MS/MS

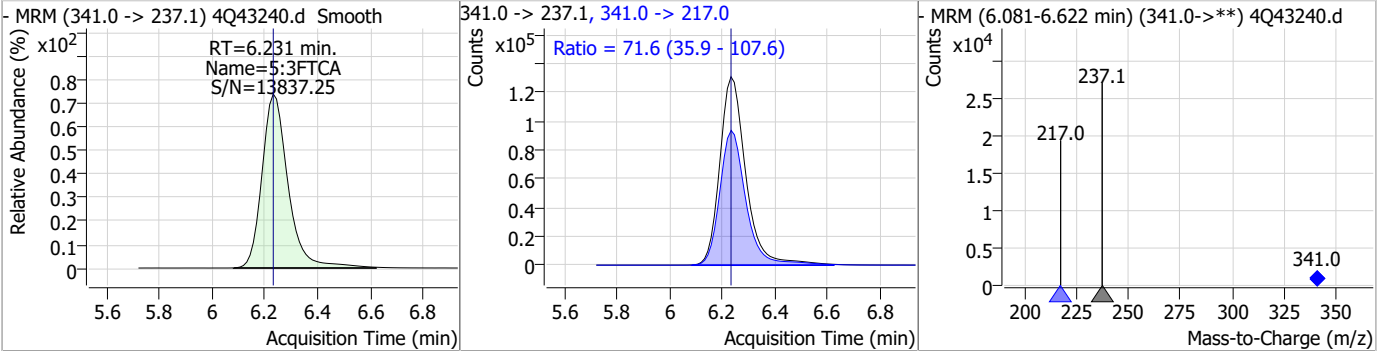
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	30.46	5.95	0.00	81916	284.9 -> 184.9	12.2	5.6	16.8



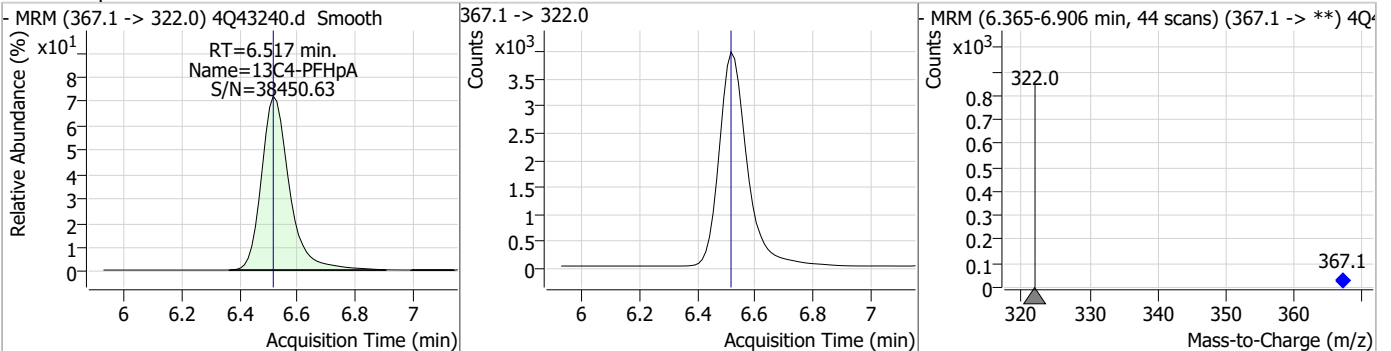
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	27.30	6.03	0.00	351885	314.8 -> 82.9	3.3	1.7	5.2



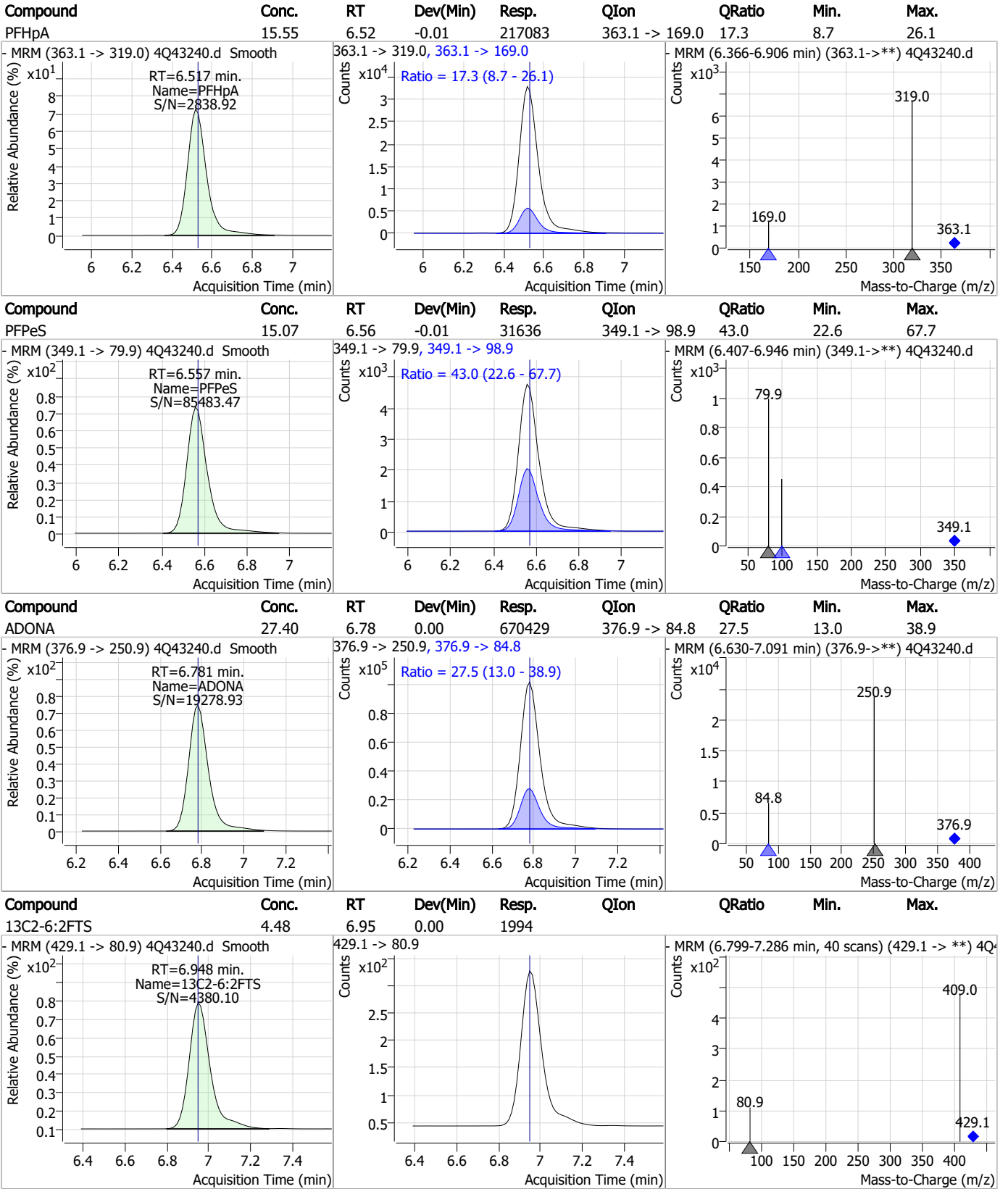
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	384.13	6.23	0.00	899689	341.0 -> 217.0	71.6	35.9	107.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.44	6.52	0.00	26553				



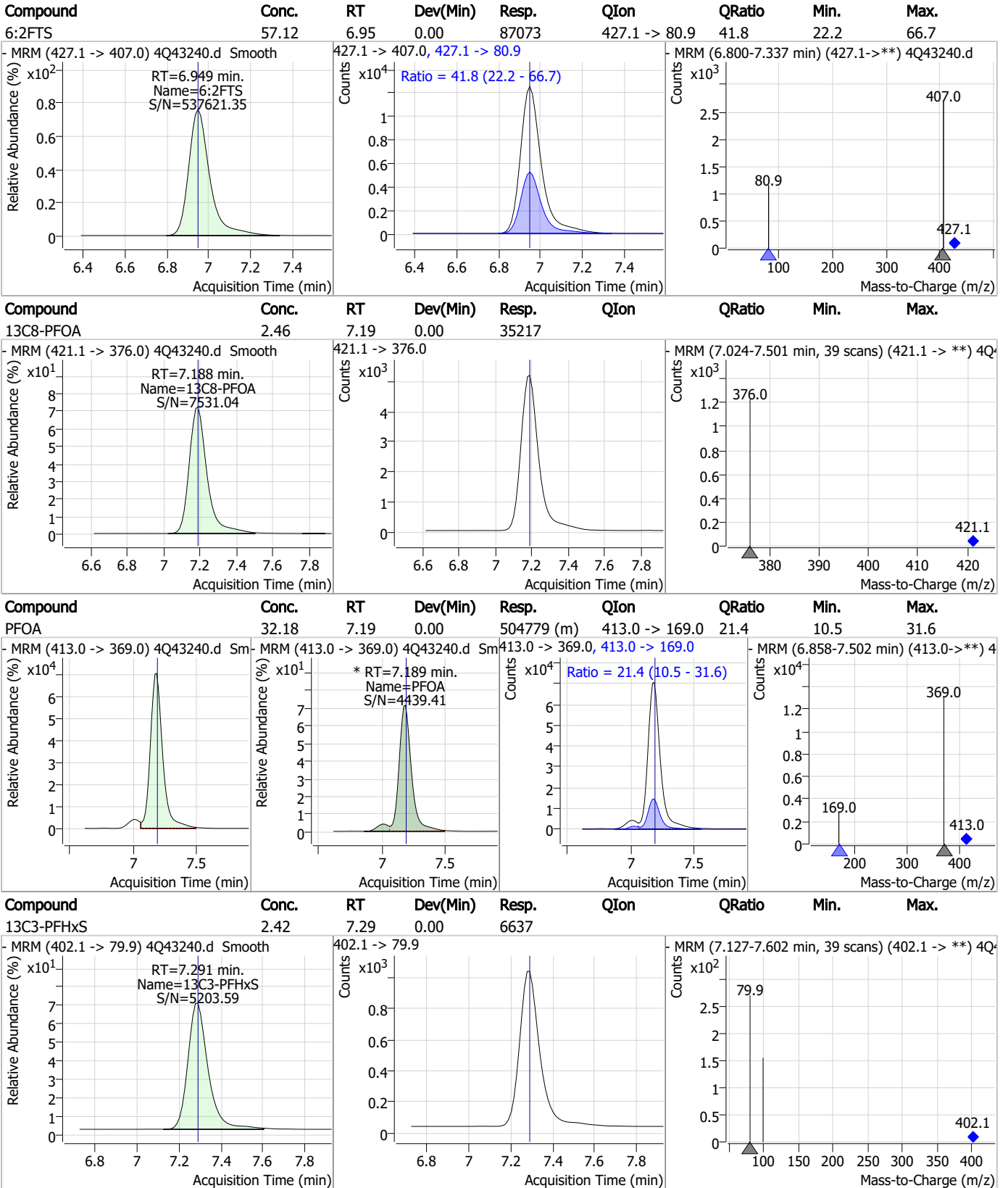
Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Perfluorinated Compounds by LC/MS/MS

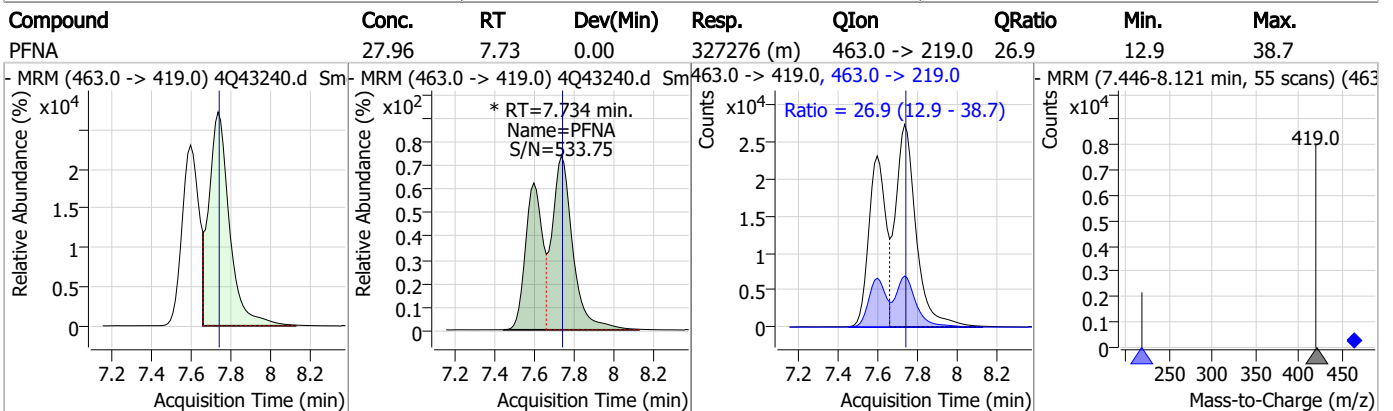
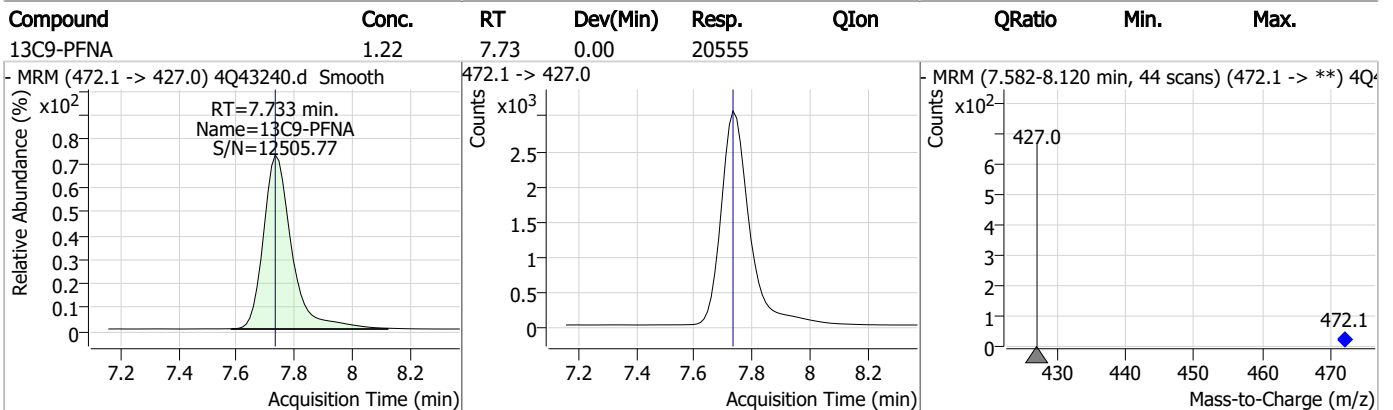
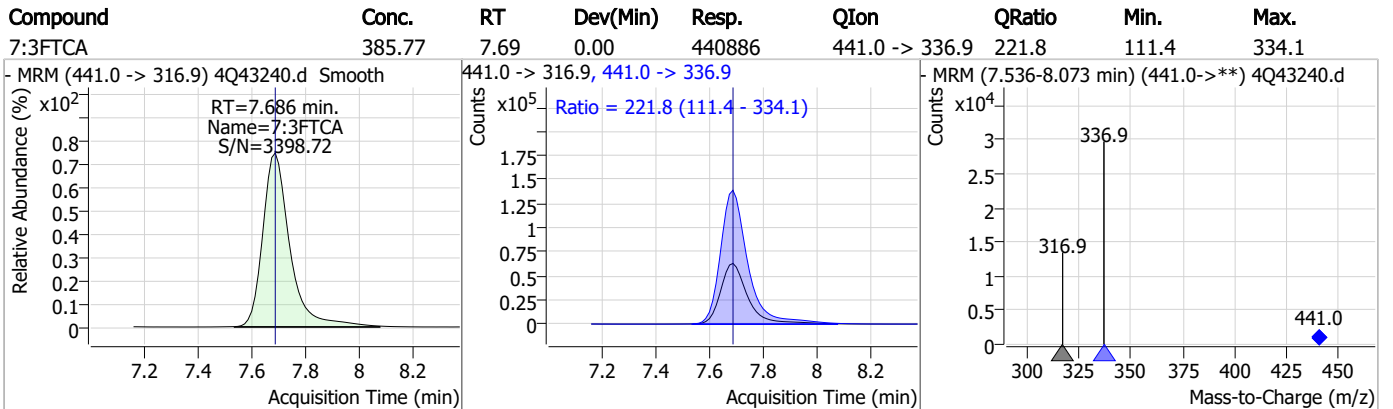
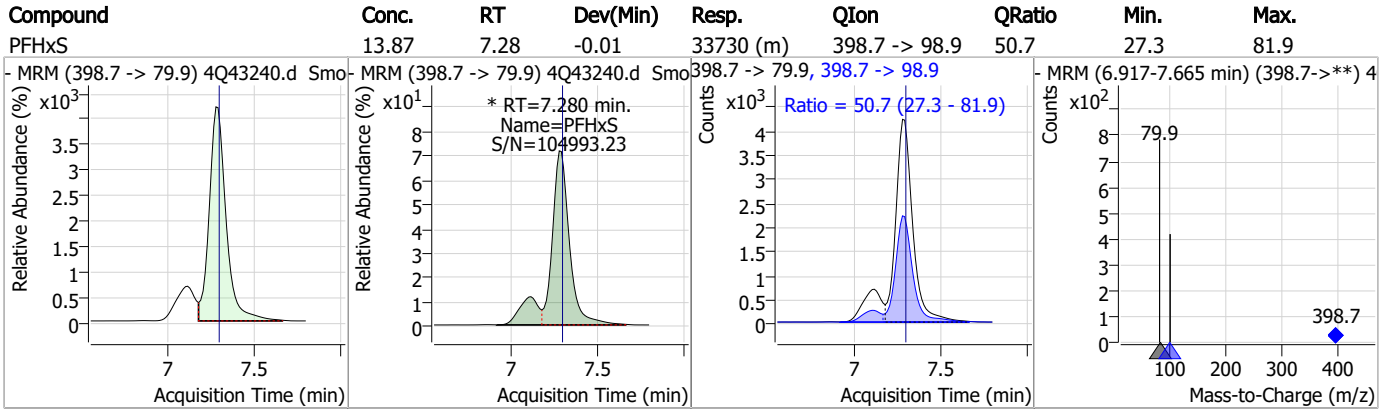


7.6.2

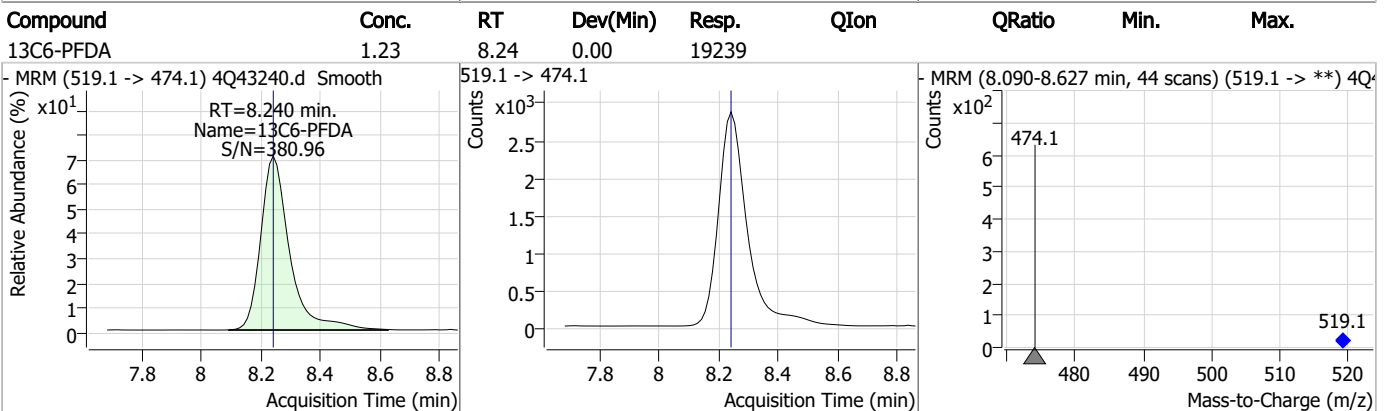
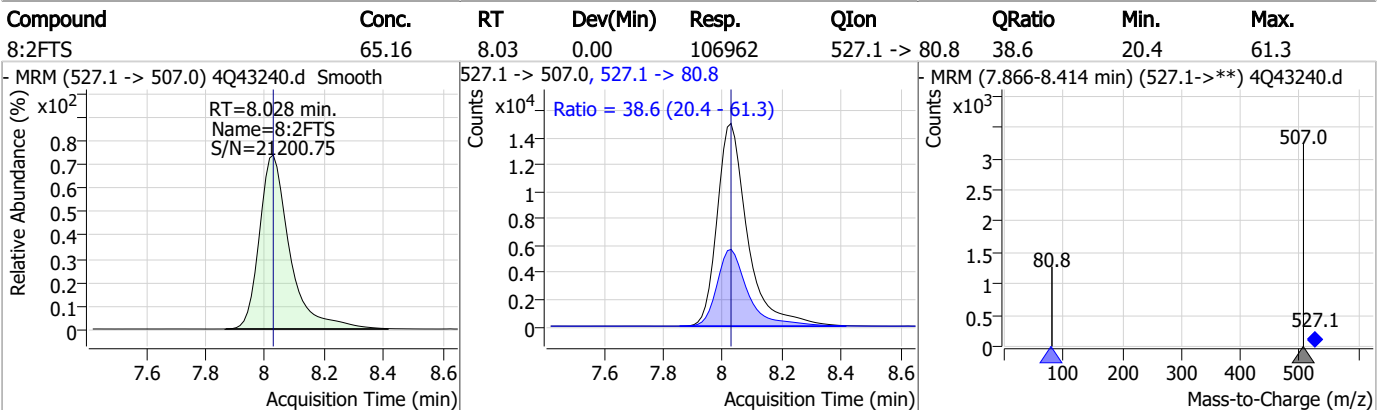
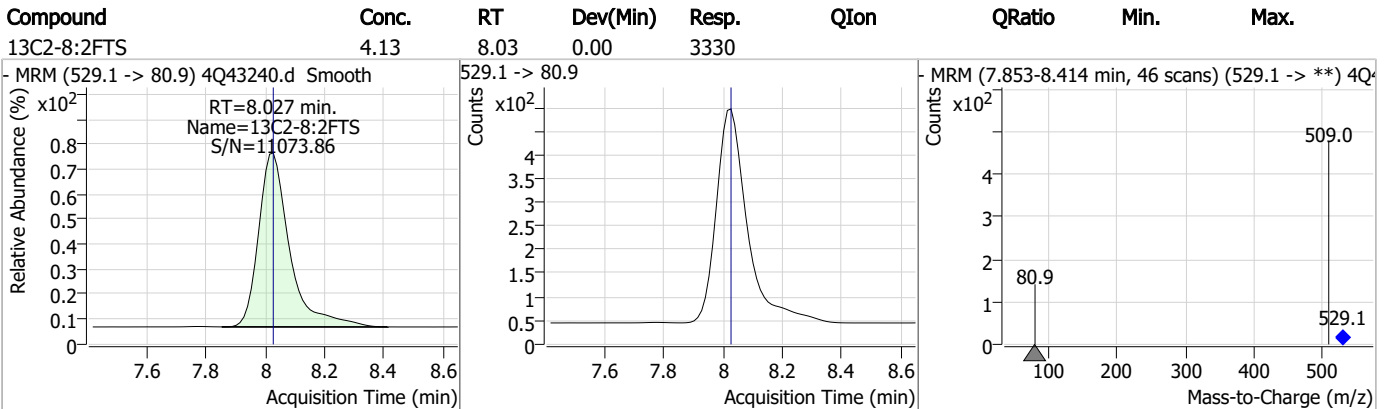
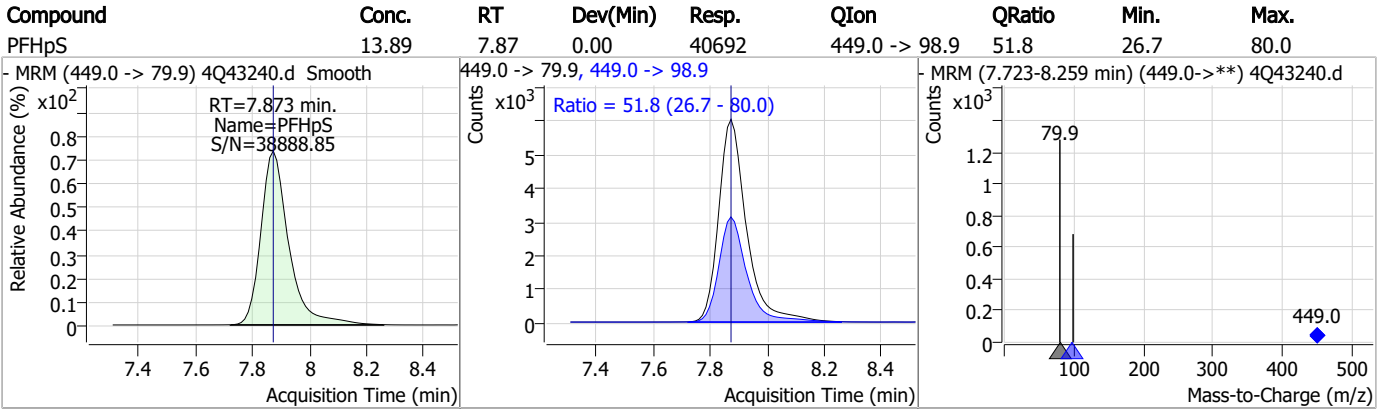
7



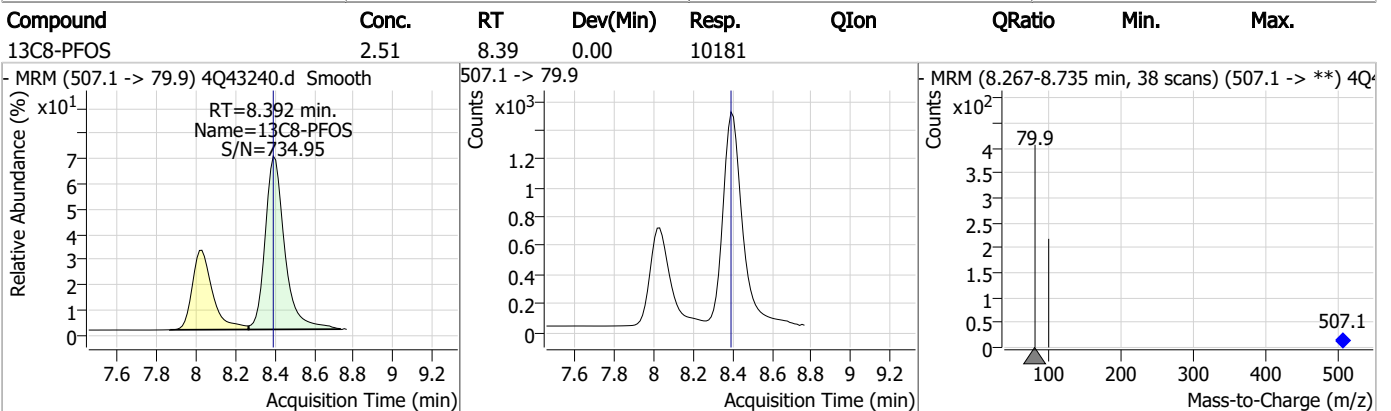
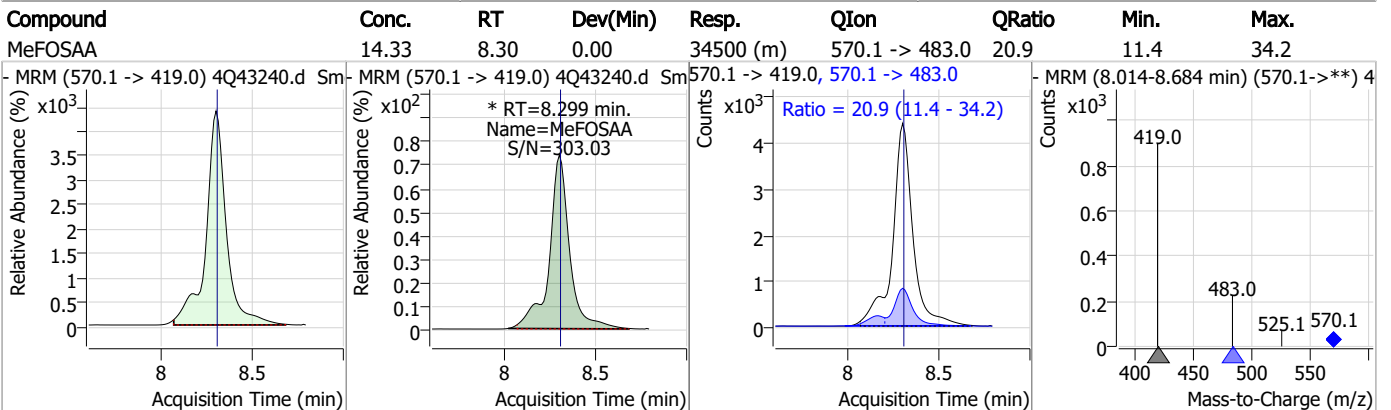
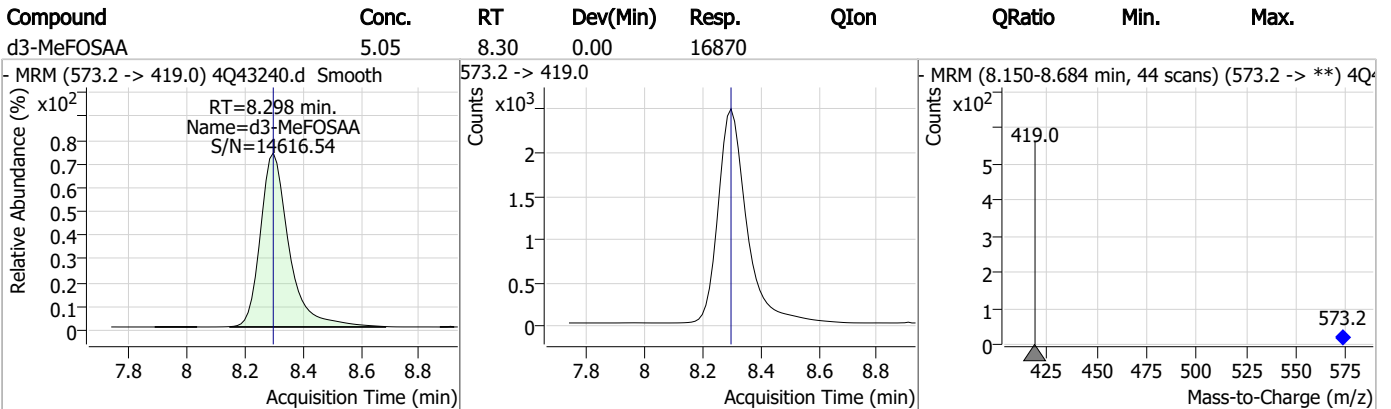
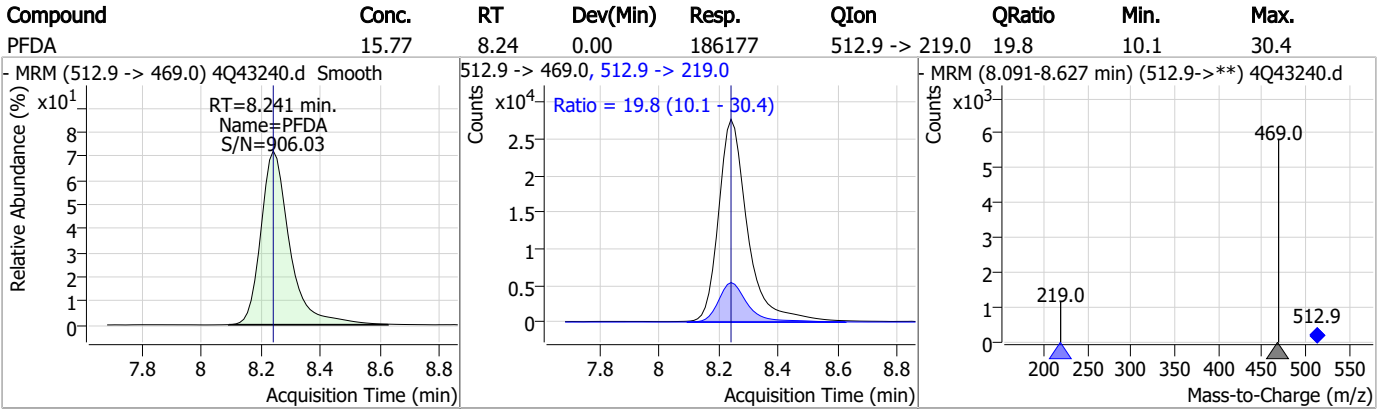
Perfluorinated Compounds by LC/MS/MS



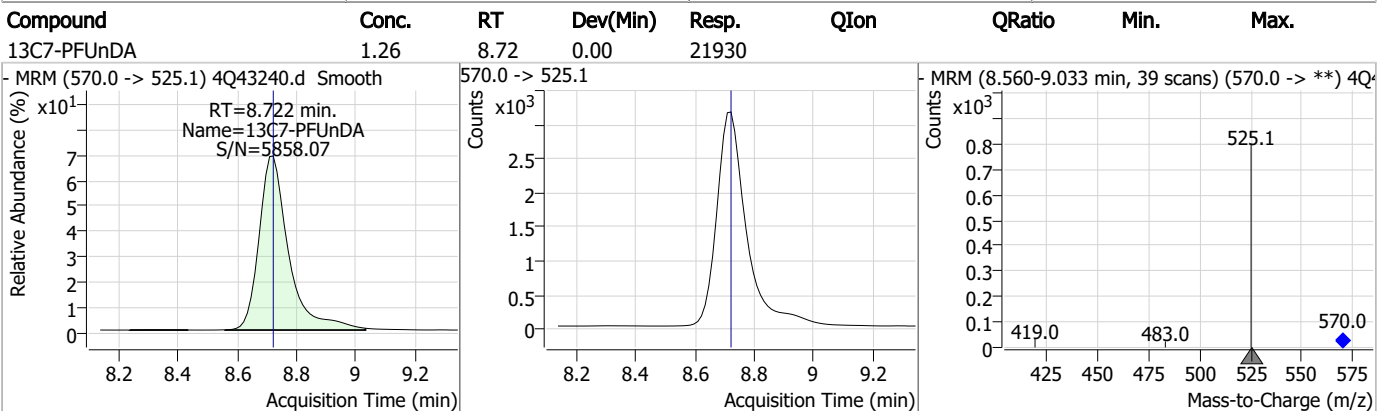
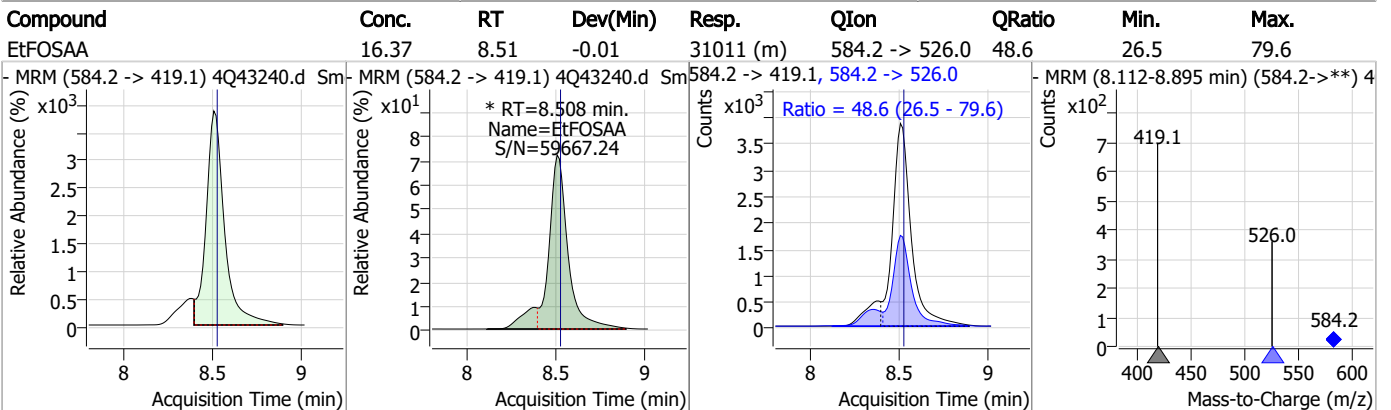
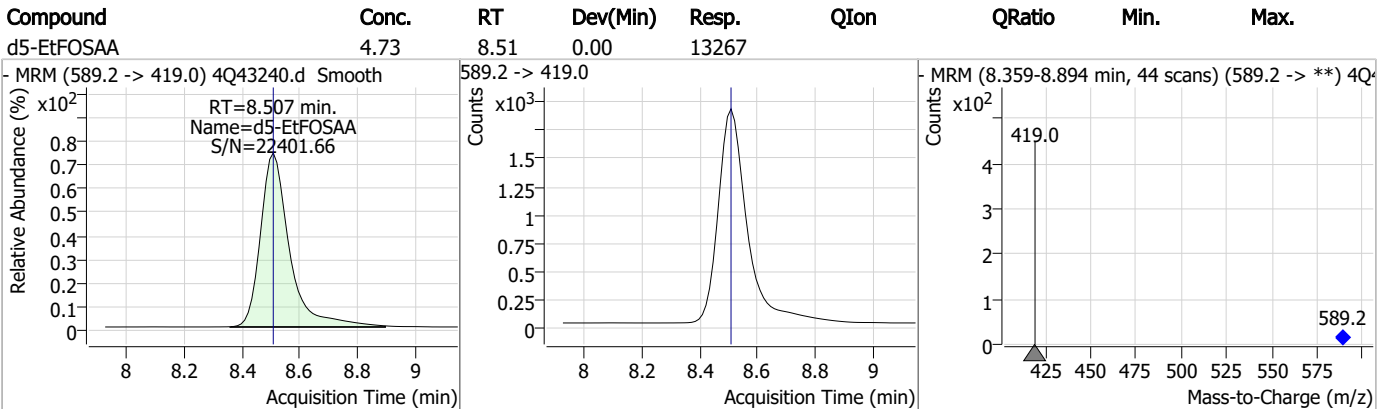
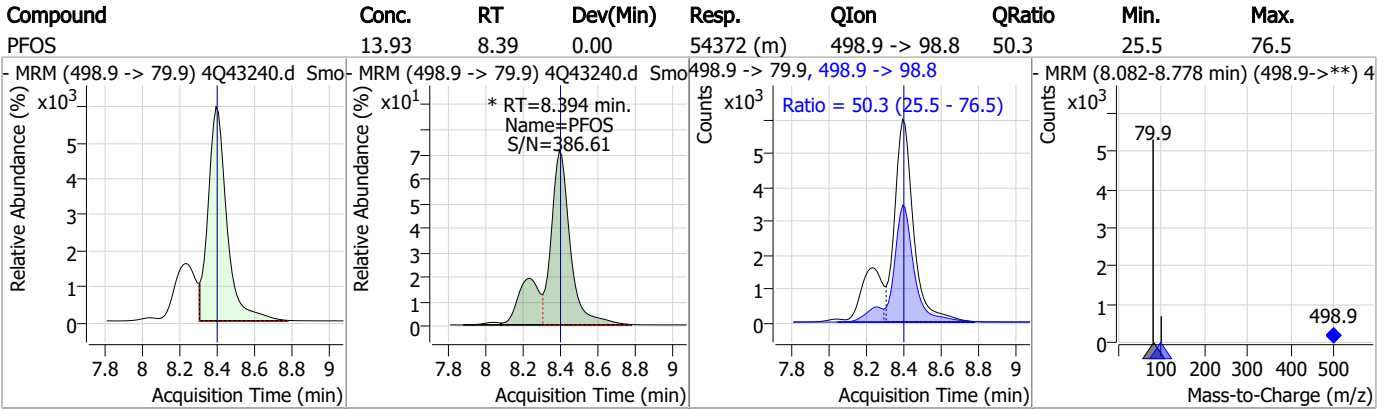
Perfluorinated Compounds by LC/MS/MS



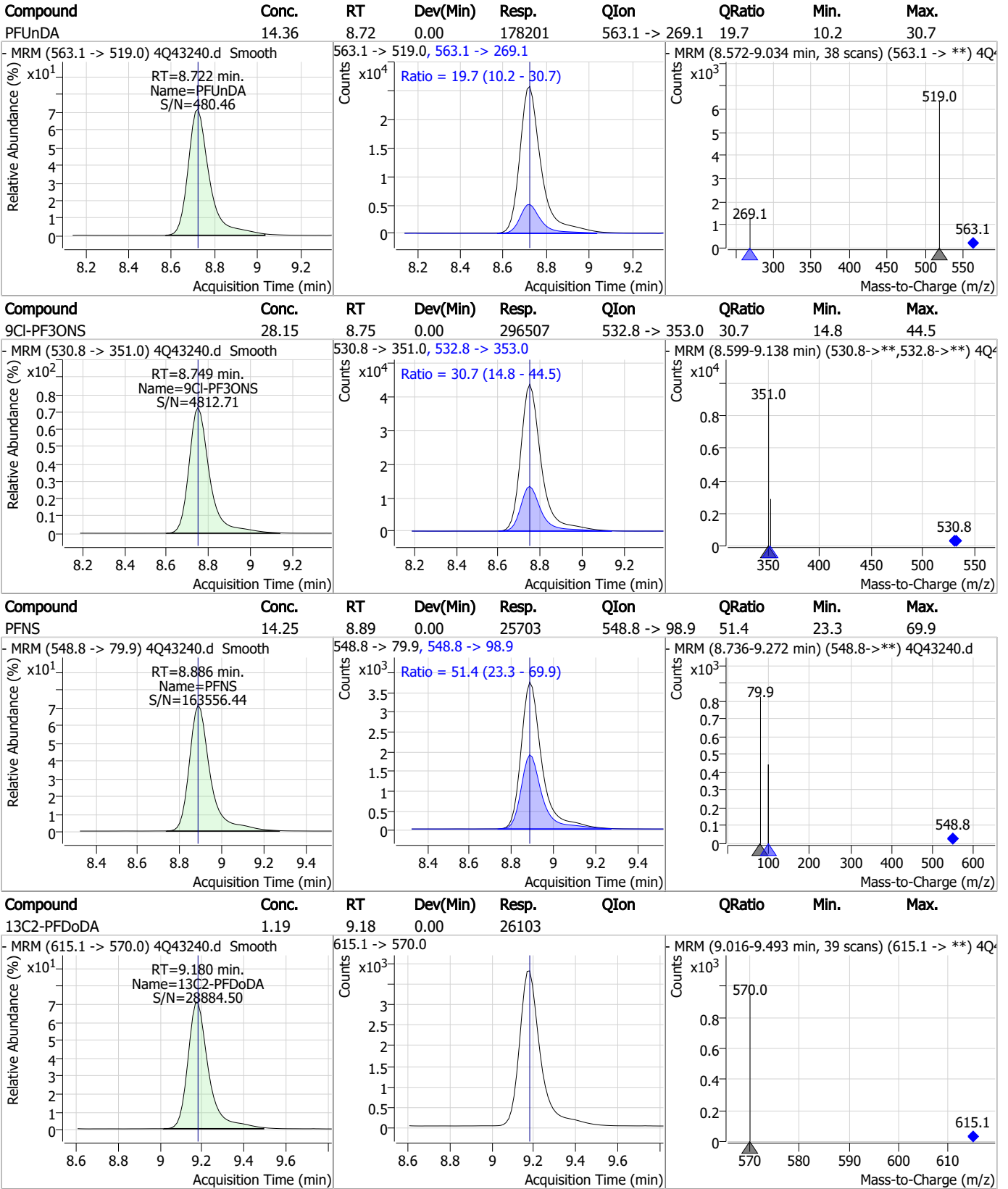
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



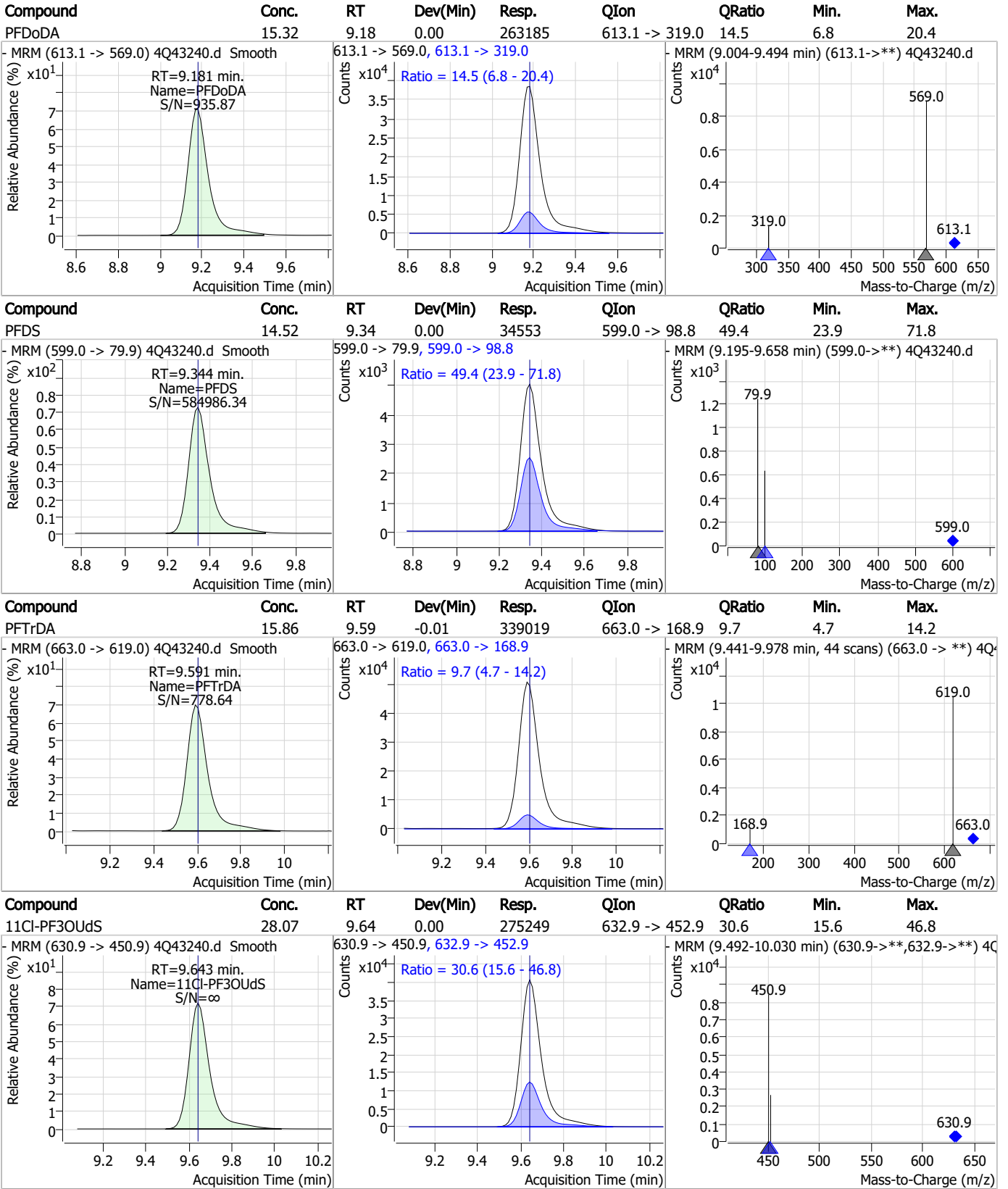
Perfluorinated Compounds by LC/MS/MS



7.6.2
7

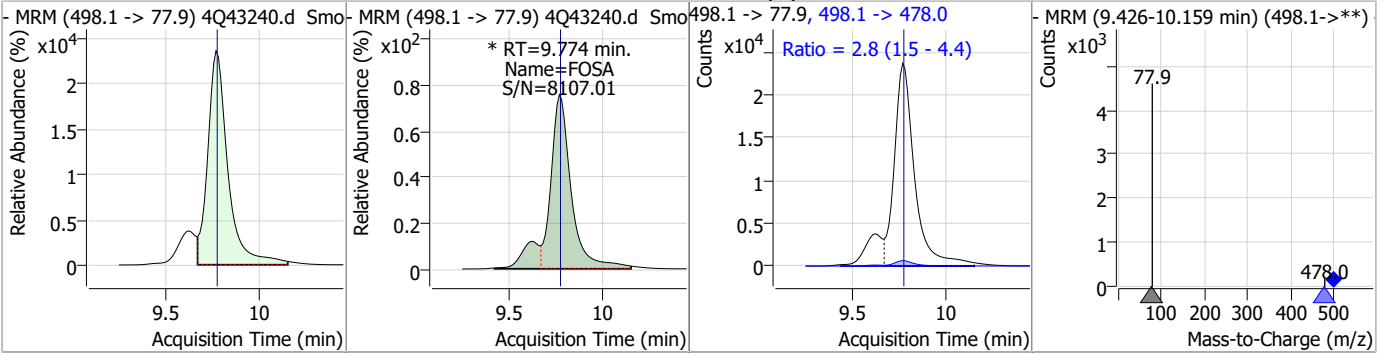


Perfluorinated Compounds by LC/MS/MS

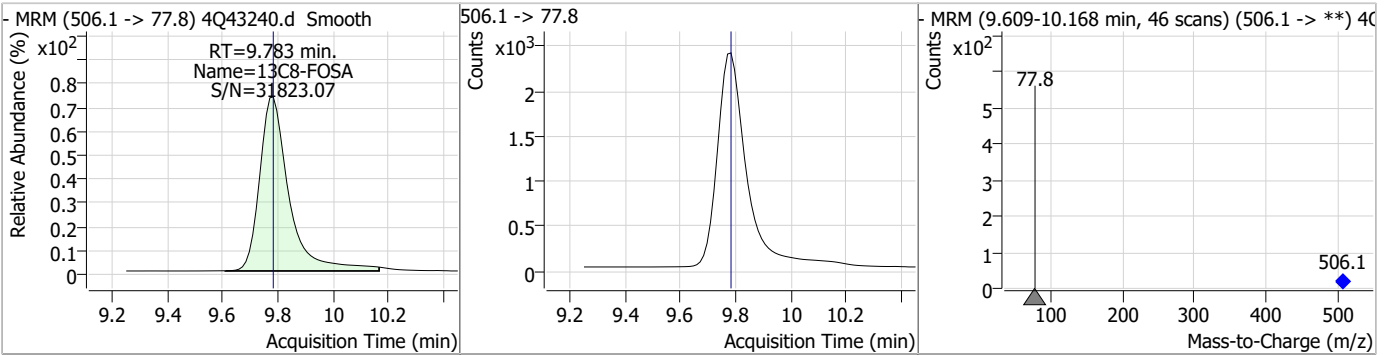


Perfluorinated Compounds by LC/MS/MS

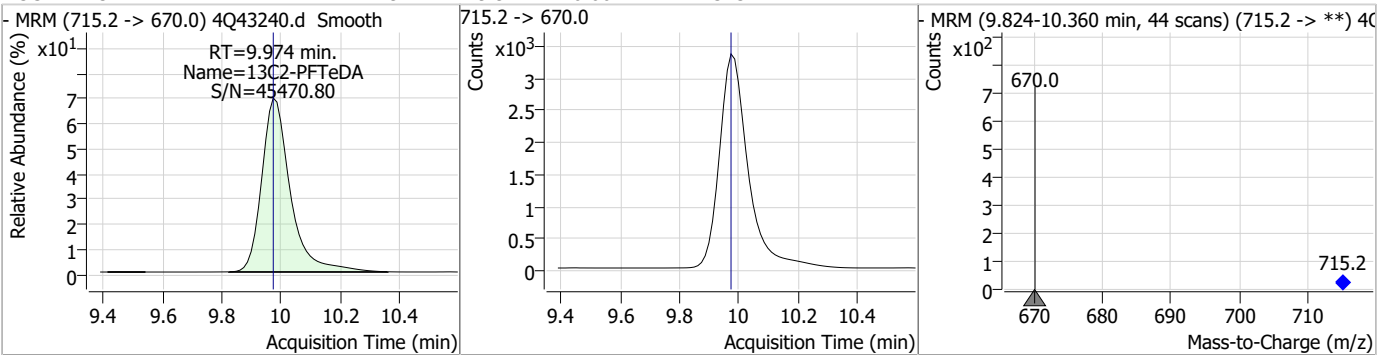
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	33.87	9.77	0.00	202735 (m)	498.1 -> 478.0	2.8	1.5	4.4



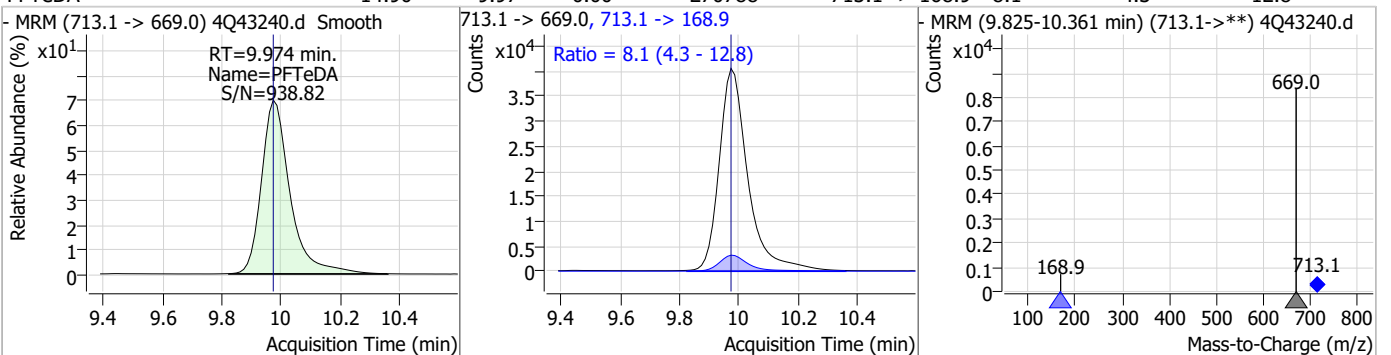
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
¹³ C8-FOSA	2.40	9.78	0.00	17700				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
¹³ C2-PFTeDA	1.29	9.97	0.00	22373				

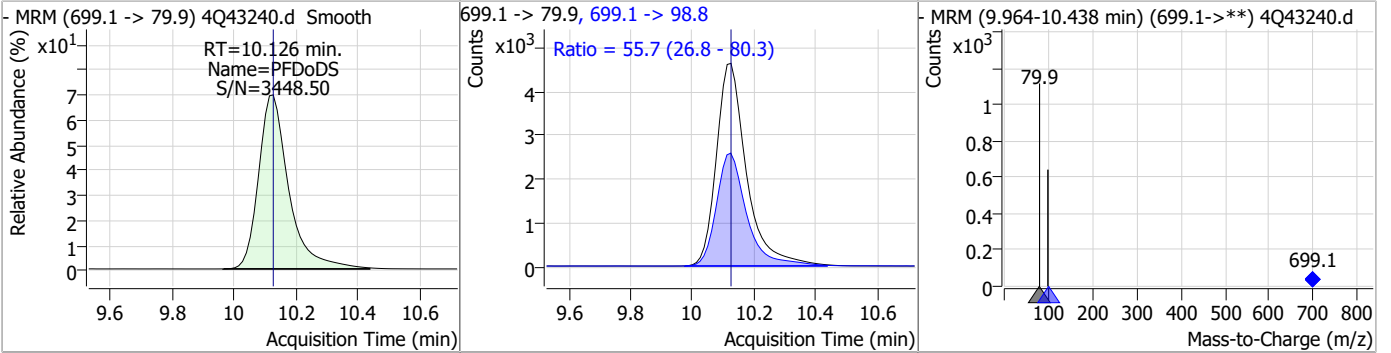


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	14.90	9.97	0.00	270788	713.1 -> 168.9	8.1	4.3	12.8

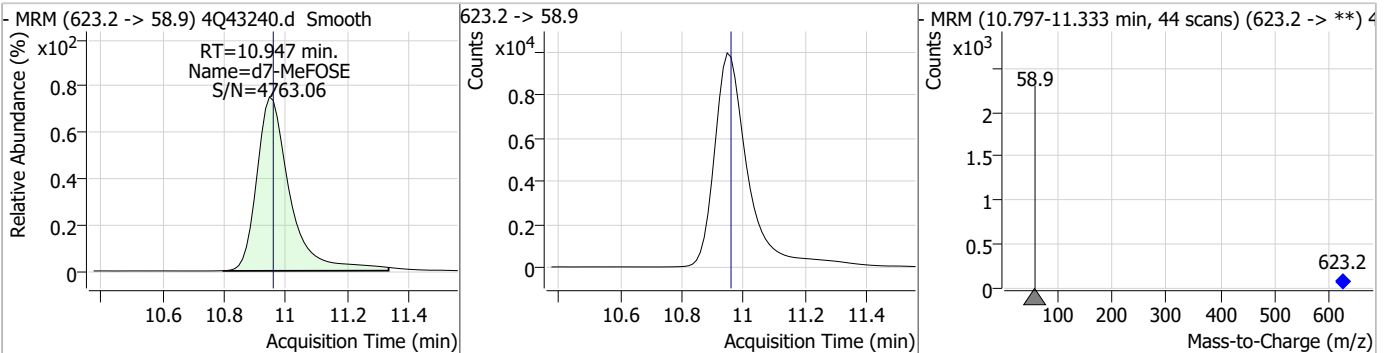


Perfluorinated Compounds by LC/MS/MS

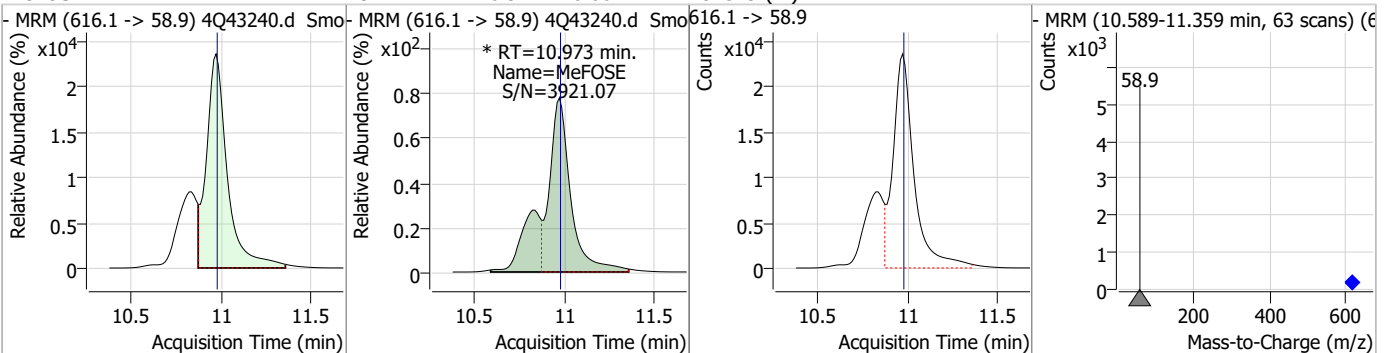
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	14.45	10.13	0.00	31232	699.1 -> 98.8	55.7	26.8	80.3



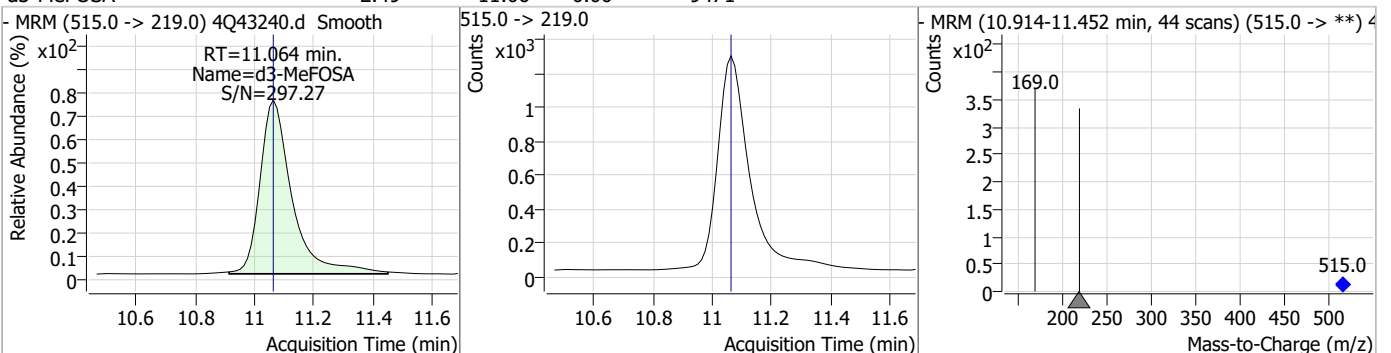
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.64	10.95	-0.01	73693				



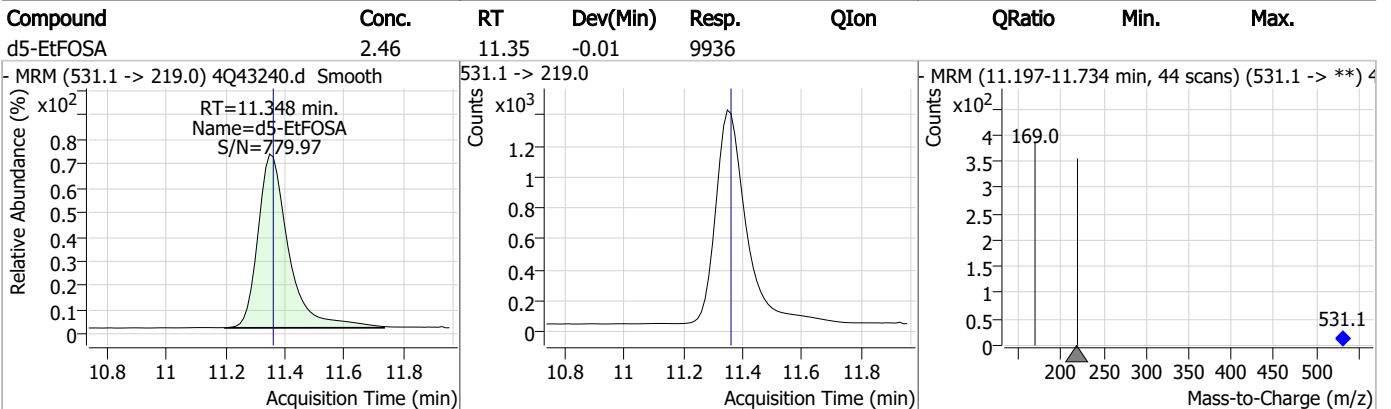
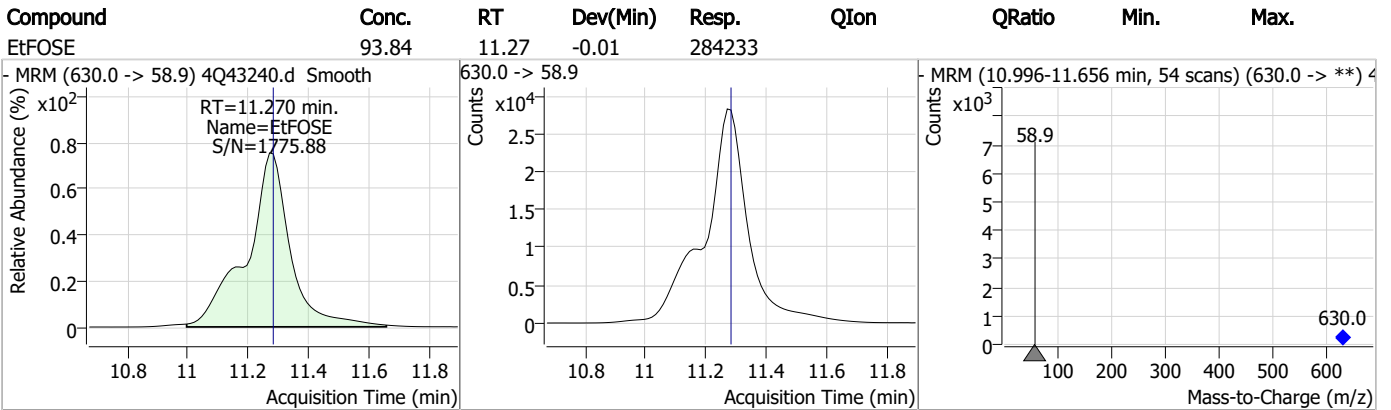
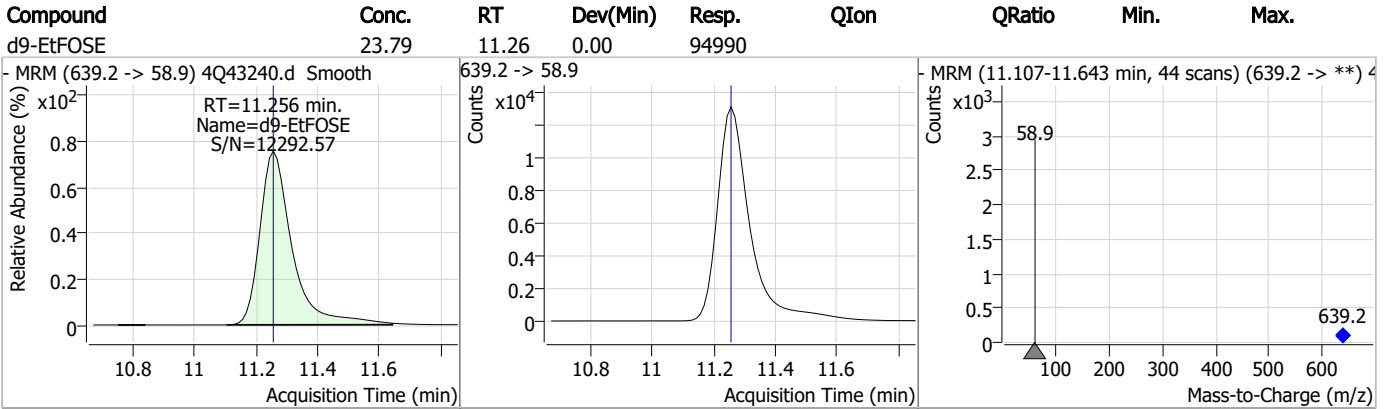
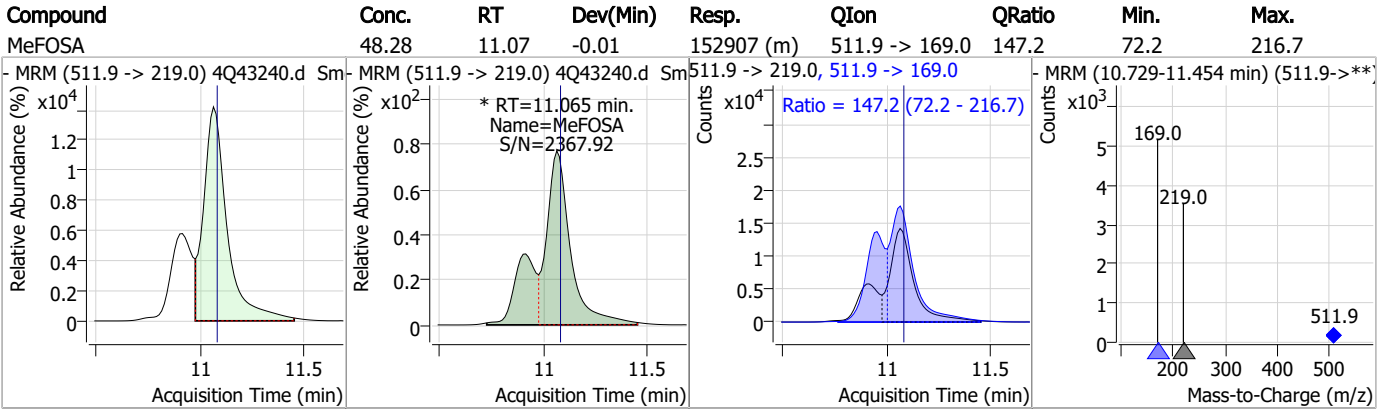
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	97.12	10.97	0.00	254519 (m)				



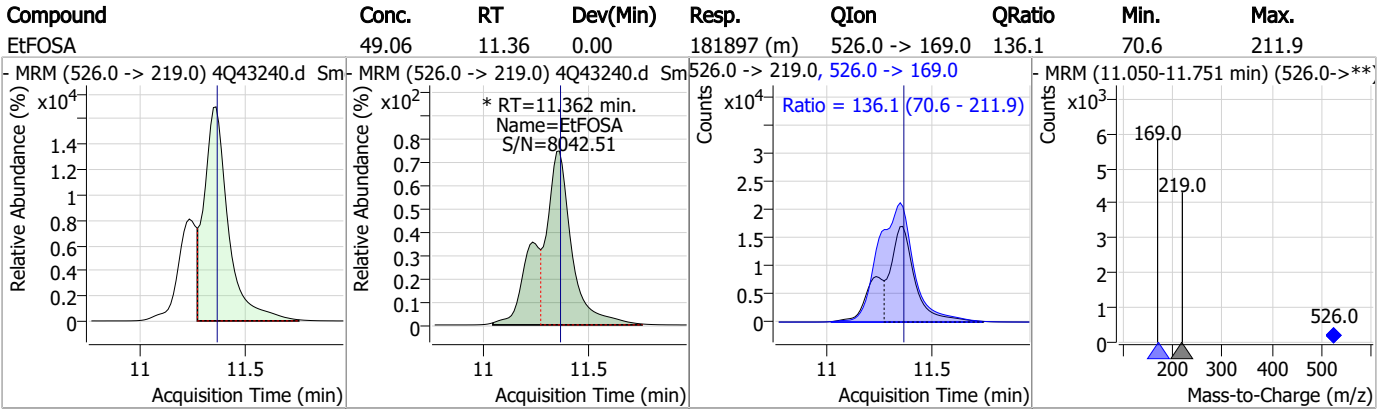
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.49	11.06	0.00	9471				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

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Manual Integration Approval Summary

Sample Number: S4Q625-RT
Lab FileID: 4Q43240.D
Injection Time: 04/19/23 11:26

Method: EPA DRAFT 1633
Analyst approved: 04/20/23 14:17 Natasha Gumtie
Supervisor approved: 04/21/23 12:28 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.19	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.28	Split peak
Perfluorononanoic acid	375-95-1		7.73	Split peak
MeFOSAA	2355-31-9		8.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.51	Split peak
PFOSA	754-91-6		9.77	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.6.2.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 04/25/23 14:29

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43424.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 2:58:55 PM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q627_TDCA.batch.bin
 Sample Information : OP96301,S4q627,500,,,5.0,1,water

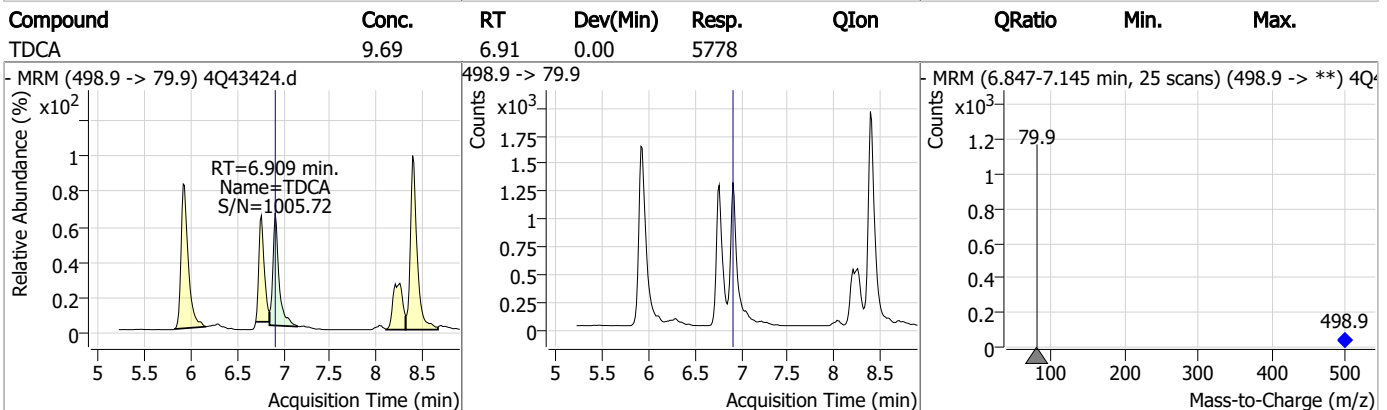
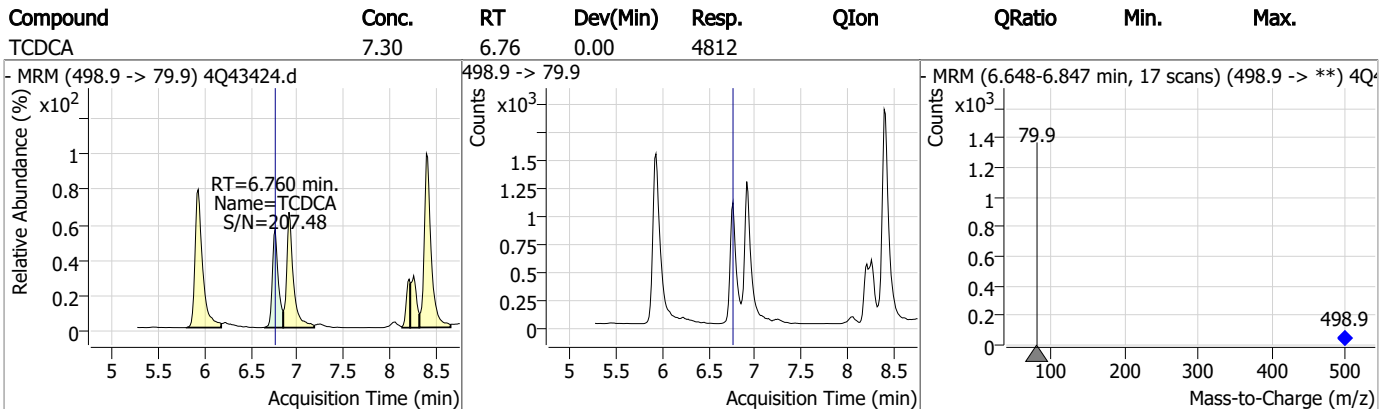
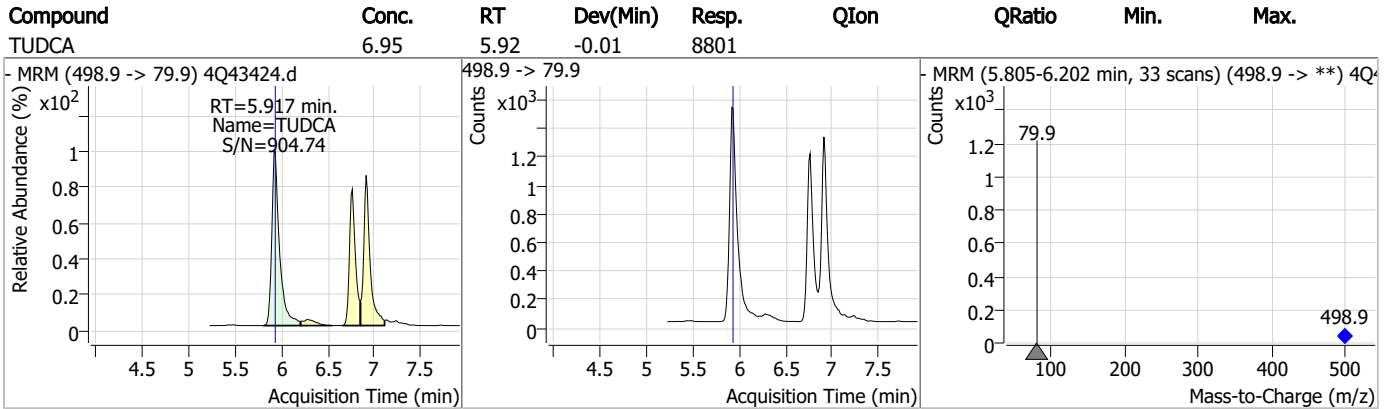
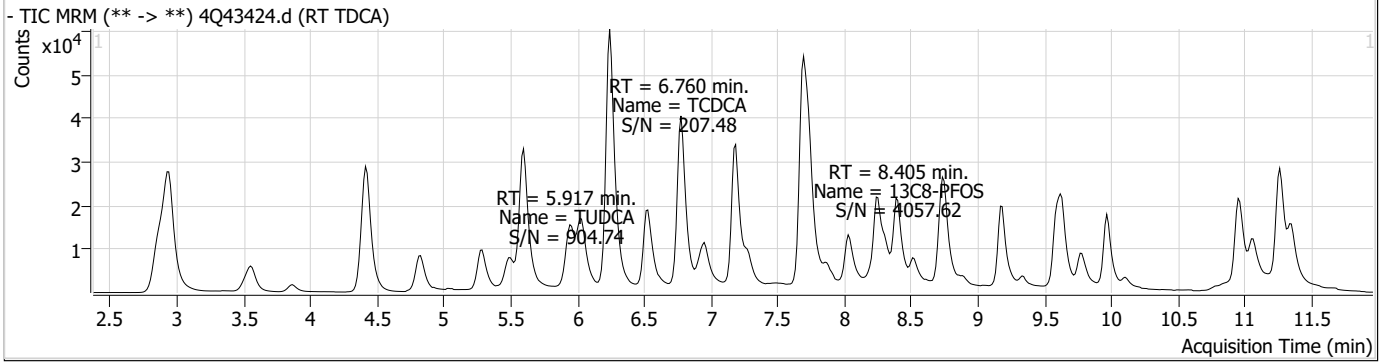
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.405	507.1 -> 79.9	14277	2.50	µg/L	0.000	
13C4-PFOS	8.405	502.8 -> 79.9	15381	2.50	µg/L	0.000	
System Monitoring Compounds							
13C8-PFOS	8.405	507.1 -> 79.9	14277	2.35	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.2%				
Target Compounds							
PFOS	8.406	498.9 -> 79.9 498.9 -> 98.8	12875 6561	2.64	µg/L	m	89
TCDCa	6.760	498.9 -> 79.9	4812	7.30	ng/ml		100
TDCA	6.909	498.9 -> 79.9	5778	9.69	ng/ml		100
TUDCA	5.917	498.9 -> 79.9	8801	6.95	ng/ml		100

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

7.6.3

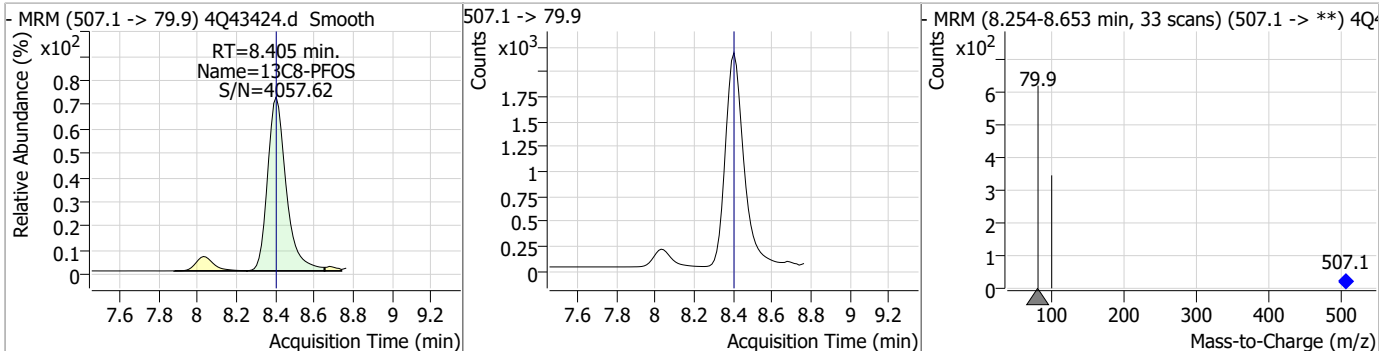
7

Perfluorinated Compounds by LC/MS/MS

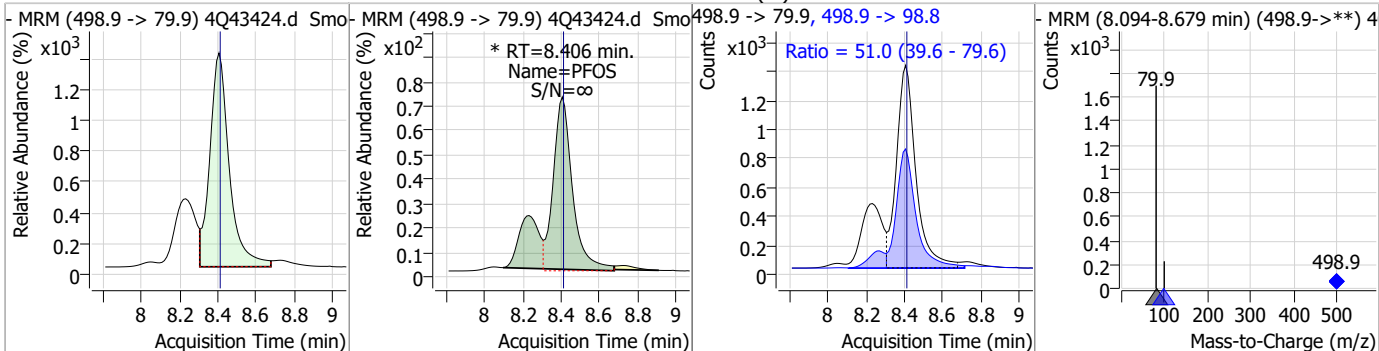


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.35	8.40	0.00	14277				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.64	8.41	0.00	12875 (m)	498.9 -> 98.8	51.0	39.6	79.6



7.6.3
7



Manual Integration Approval Summary

Sample Number: S4Q627-RT Method: EPA DRAFT 1633
Lab FileID: 4Q43424.D Analyst approved: 04/24/23 15:01 Martha Valls
Injection Time: 04/21/23 14:58 Supervisor approved: 04/25/23 14:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43425.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 3:12:59 PM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96301,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	119070	10.00 µg/L	0.013
M5-PFPeA	4.412	268.3 -> 223.0	71701	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	56066	2.50 µg/L	0.000
M4-PFHpA	6.529	367.1 -> 322.0	29984	2.50 µg/L	0.000
M8-PFOA	7.201	421.1 -> 376.0	37699	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	21611	1.25 µg/L	0.000
M6-PFDA	8.253	519.1 -> 474.1	20098	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	21311	1.25 µg/L	-0.012
M2-PFDoDA	9.168	615.1 -> 570.0	29002	1.25 µg/L	-0.012
M2-PFTeDA	9.974	715.2 -> 670.0	22317	1.25 µg/L	-0.012
M8-FOSA	9.783	506.1 -> 77.8	18894	2.50 µg/L	-0.012
M3-PFBS	5.502	302.1 -> 79.9	12145	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	6774	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	10031	2.50 µg/L	0.000
M2-4:2FTS	5.273	329.1 -> 80.9	1410	5.00 µg/L	-0.012
M2-6:2FTS	6.961	429.1 -> 80.9	2278	5.00 µg/L	0.000
M2-8:2FTS	8.040	529.1 -> 80.9	3662	5.00 µg/L	0.000
M3-MeFOSAA	8.310	573.2 -> 419.0	17587	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	32838	10.00 µg/L	-0.013
M5-EtFOSAA	8.520	589.2 -> 419.0	15263	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	73187	25.00 µg/L	-0.012
M9-EtFOSE	11.256	639.2 -> 58.9	94942	25.00 µg/L	-0.012
M5-EtFOSA	11.348	531.1 -> 219.0	10278	2.50 µg/L	-0.012
M3-MeFOSA	11.064	515.0 -> 219.0	9873	2.50 µg/L	-0.012
13C4-PFOS	8.405	502.8 -> 79.9	10256	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	65518	5.00 µg/L	0.012
18O2-PFHxS	7.290	403.0 -> 83.9	4929	2.50 µg/L	0.000
13C4-PFOA	7.201	417.1 -> 372.0	46602	2.50 µg/L	0.000
13C2-PFDA	8.253	515.1 -> 470.1	19803	1.25 µg/L	0.000
13C5-PFNA	7.746	468.0 -> 423.0	25106	1.25 µg/L	0.000
13C2-PFHxA	5.598	315.1 -> 270.0	47538	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1410	4.87 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C2-6:2FTS	6.961	429.1 -> 80.9	2278	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C2-8:2FTS	8.040	529.1 -> 80.9	3662	4.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.7%		
13C2-PFDoDA	9.168	615.1 -> 570.0	29002	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C2-PFTeDA	9.974	715.2 -> 670.0	22317	1.17 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C3-PFBS	5.502	302.1 -> 79.9	12145	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C3-PFHxS	7.291	402.1 -> 79.9	6774	2.41 µg/L	0.000

7.64
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C4-PFBA	2.936	216.8 -> 171.9	119070	10.09 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.529	367.1 -> 322.0	29984	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFHxA	5.597	318.0 -> 273.0	56066	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFPeA	4.412	268.3 -> 223.0	71701	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C6-PFDA	8.253	519.1 -> 474.1	20098	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.8%	
13C7-PFUnDA	8.722	570.0 -> 525.1	21311	1.12 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.8%	
13C8-FOSA	9.783	506.1 -> 77.8	18894	2.54 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C8-PFOA	7.201	421.1 -> 376.0	37699	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C8-PFOS	8.405	507.1 -> 79.9	10031	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C9-PFNA	7.746	472.1 -> 427.0	21611	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSAA	8.310	573.2 -> 419.0	17587	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	32838	9.11 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.1%	
d3-MeFOSA	11.064	515.0 -> 219.0	9873	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
d5-EtFOSAA	8.520	589.2 -> 419.0	15263	5.39 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.9%	
d7-MeFOSE	10.959	623.2 -> 58.9	73187	23.26 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
d9-EtFOSE	11.256	639.2 -> 58.9	94942	23.56 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.3%	
d5-EtFOSA	11.348	531.1 -> 219.0	10278	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	104168	57.75 µg/L	99
		327.1 -> 80.9	43729		
6:2FTS	6.961	427.1 -> 407.0	93644	53.77 µg/L	97
		427.1 -> 80.9	38463		
8:2FTS	8.040	527.1 -> 507.0	112801	62.48 µg/L	97
		527.1 -> 80.8	44063		
EtFOSAA	8.521	584.2 -> 419.1	33166	15.22 µg/L	m 92
		584.2 -> 526.0	16294		
FOSA	9.786	498.1 -> 77.9	190696	29.84 µg/L	m 98
		498.1 -> 478.0	6087		
MeFOSAA	8.311	570.1 -> 419.0	38583	15.38 µg/L	m 99
		570.1 -> 483.0	8419		
PFBA	2.932	212.8 -> 168.9	166297	60.20 µg/L	100
PFBS	5.503	298.7 -> 79.9	59982	12.49 µg/L	98
		298.7 -> 98.8	23771		
PFDA	8.253	512.9 -> 469.0	190653	15.46 µg/L	96
		512.9 -> 219.0	37230		
PFDoDA	9.181	613.1 -> 569.0	289061	15.14 µg/L	100
		613.1 -> 319.0	40771		
PFDS	9.331	599.0 -> 79.9	35483	15.14 µg/L	93

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.530	599.0 -> 98.8	17581	15.05	µg/L	100
		363.1 -> 319.0	237292			
PFHpS	7.885	363.1 -> 169.0	41289	14.64	µg/L	98
		449.0 -> 79.9	42241			
PFHxA	5.600	449.0 -> 98.9	23024	14.52	µg/L	100
		313.0 -> 269.0	256378			
PFHxS	7.292	313.0 -> 118.9	8266	14.33	µg/L	m
		398.7 -> 79.9	35553			
PFNA	7.747	398.7 -> 98.9	18078	27.93	µg/L	m
		463.0 -> 419.0	343705			
PFNS	8.886	463.0 -> 219.0	91678	14.77	µg/L	99
		548.8 -> 79.9	26241			
PFOA	7.202	548.8 -> 98.9	13245	33.18	µg/L	m
		413.0 -> 369.0	557130			
PFOS	8.406	413.0 -> 169.0	118750	14.63	µg/L	m
		498.9 -> 79.9	56291			
PFPeA	4.414	498.9 -> 98.8	29025	30.28	µg/L	100
		263.0 -> 219.0	433698			
PFPeS	6.569	349.1 -> 79.9	32405	15.12	µg/L	98
		349.1 -> 98.9	14341			
PFTeDA	9.974	713.1 -> 669.0	272732	15.04	µg/L	98
		713.1 -> 168.9	21566			
PFTrDA	9.591	663.0 -> 619.0	360270	15.17	µg/L	99
		663.0 -> 168.9	34119			
PFUnDA	8.722	563.1 -> 519.0	193925	16.08	µg/L	100
		563.1 -> 269.1	36677			
11CI-PF3OUdS	9.630	630.9 -> 450.9	282334	29.84	µg/L	98
		632.9 -> 452.9	84602			
9CI-PF3ONS	8.749	530.8 -> 351.0	304923	30.01	µg/L	99
		532.8 -> 353.0	90790			
ADONA	6.793	376.9 -> 250.9	726210	30.77	µg/L	100
		376.9 -> 84.8	194238			
HFPO-DA	5.953	284.9 -> 168.9	79343	30.59	µg/L	98
		284.9 -> 184.9	9428			
3:3FTCA	3.867	241.0 -> 177.0	47514	69.68	µg/L	100
		241.0 -> 117.0	4541			
5:3FTCA	6.244	341.0 -> 237.1	945389	359.06	µg/L	100
		341.0 -> 217.0	668836			
7:3FTCA	7.699	441.0 -> 316.9	450679	350.78	µg/L	99
		441.0 -> 336.9	985529			
EtFOSA	11.362	526.0 -> 219.0	192777	50.27	µg/L	m
		526.0 -> 169.0	266895			
EtFOSE	11.282	630.0 -> 58.9	283139	93.53	µg/L	m
MeFOSA	11.065	511.9 -> 219.0	161863	49.03	µg/L	m
		511.9 -> 169.0	235709			
MeFOSE	10.973	616.1 -> 58.9	250049	96.08	µg/L	m
PFDoDS	10.114	699.1 -> 79.9	31670	14.87	µg/L	93
		699.1 -> 98.8	18024			
NFDHA	5.479	295.0 -> 201.0	31175	32.59	µg/L	100
		295.0 -> 84.9	8015			
PFMBA	4.828	279.0 -> 85.1	240892	29.46	µg/L	100
PFMPA	3.553	229.0 -> 84.9	213666	29.40	µg/L	100
PFEESA	6.034	314.8 -> 134.9	379907	26.22	µg/L	100
		314.8 -> 82.9	12782			

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

7.6.4
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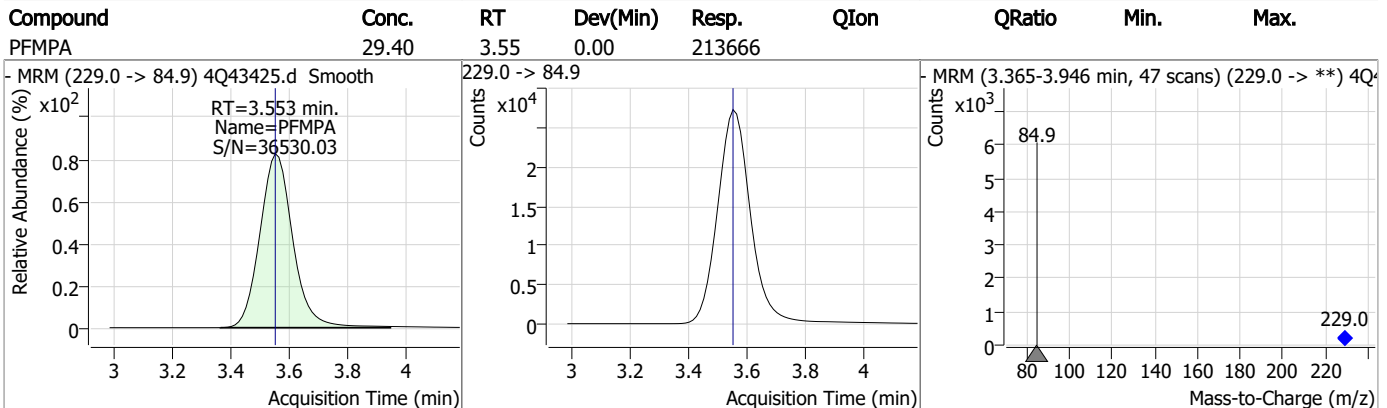
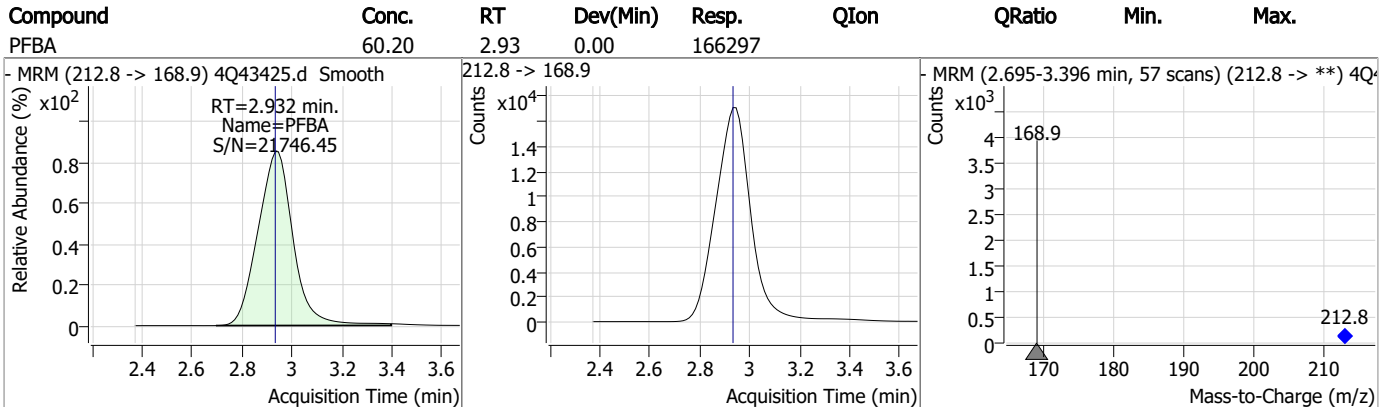
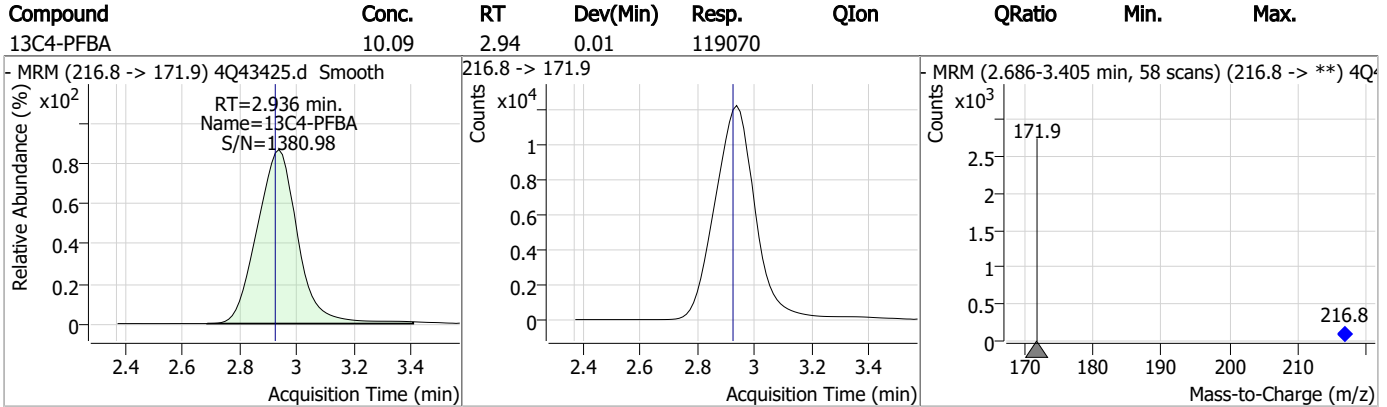
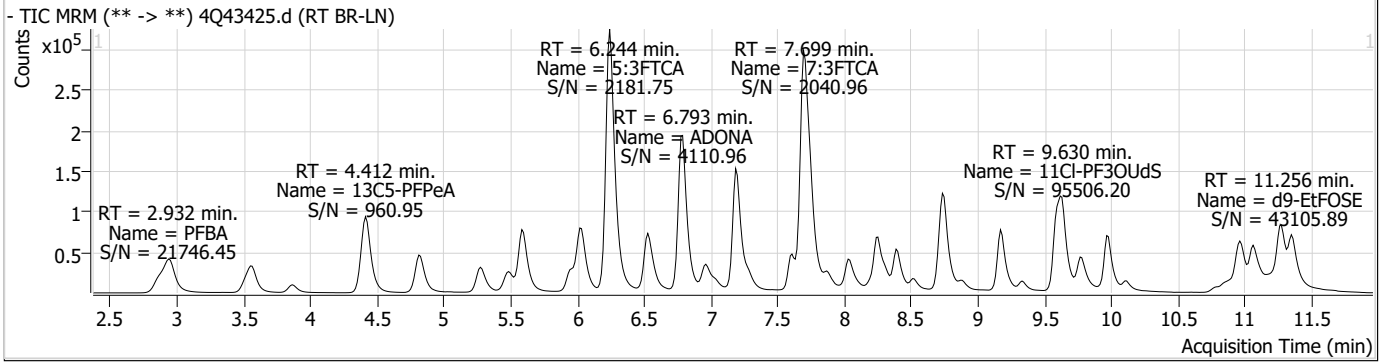
Perfluorinated Compounds by LC/MS/MS

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

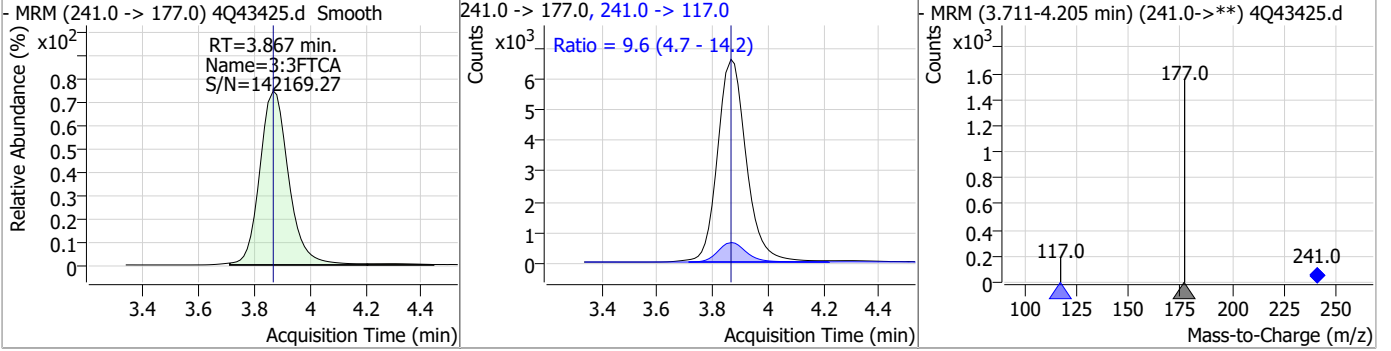
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Perfluorinated Compounds by LC/MS/MS

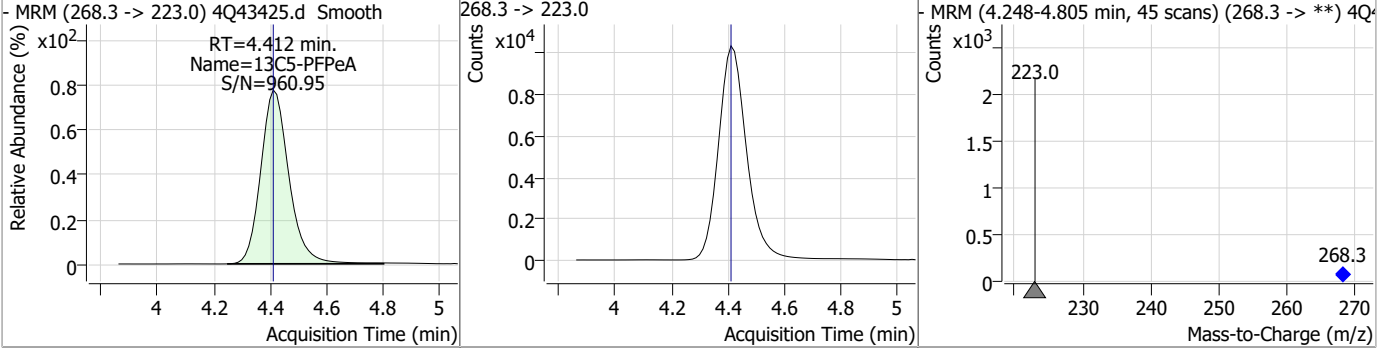


Perfluorinated Compounds by LC/MS/MS

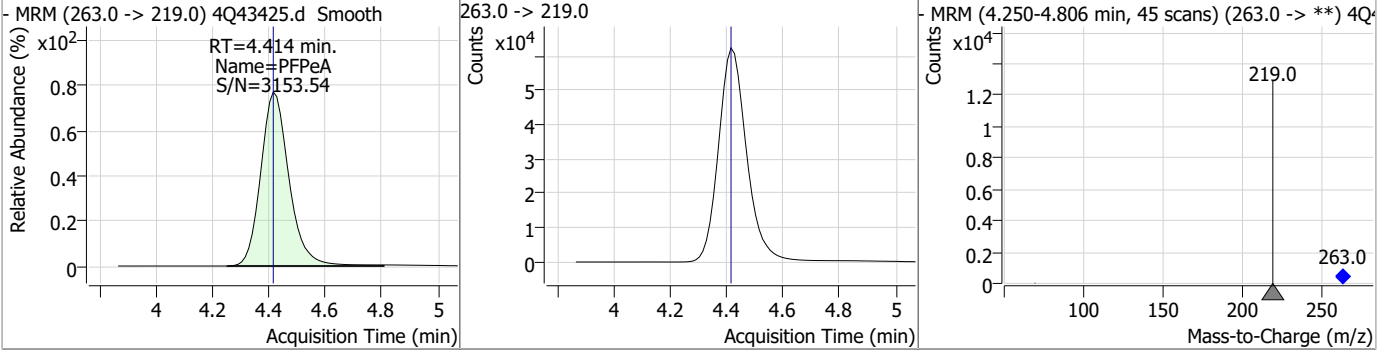
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	69.68	3.87	0.00	47514	241.0 -> 117.0	9.6	4.7	14.2



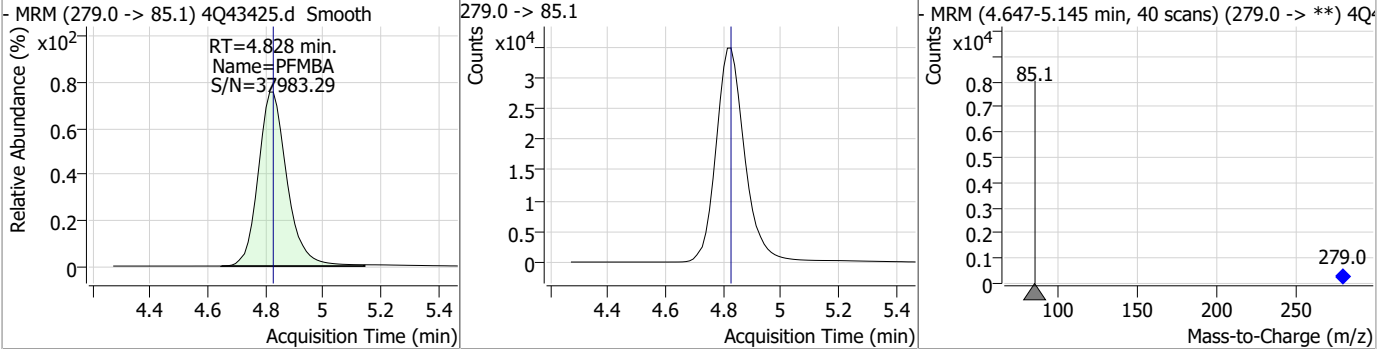
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.93	4.41	0.00	71701				



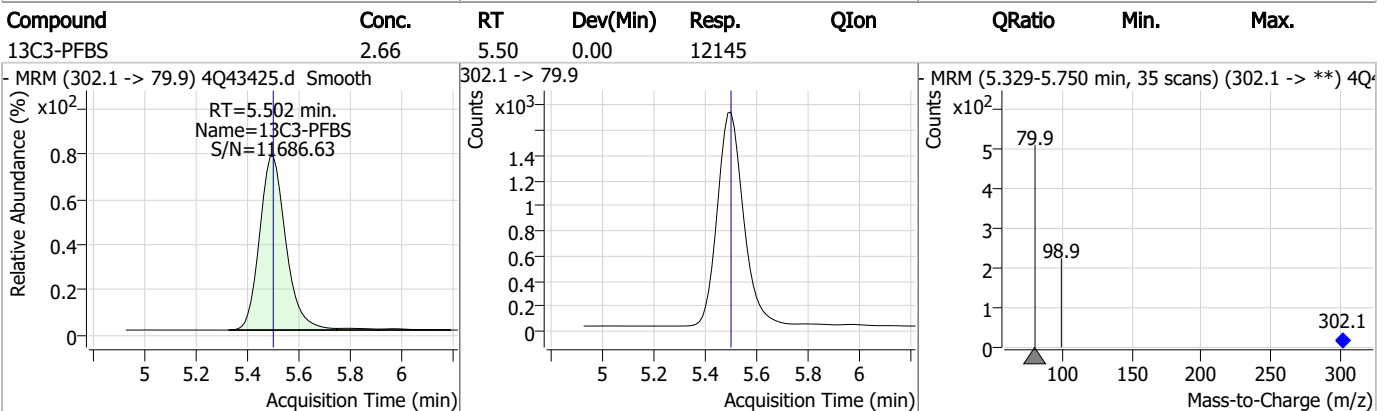
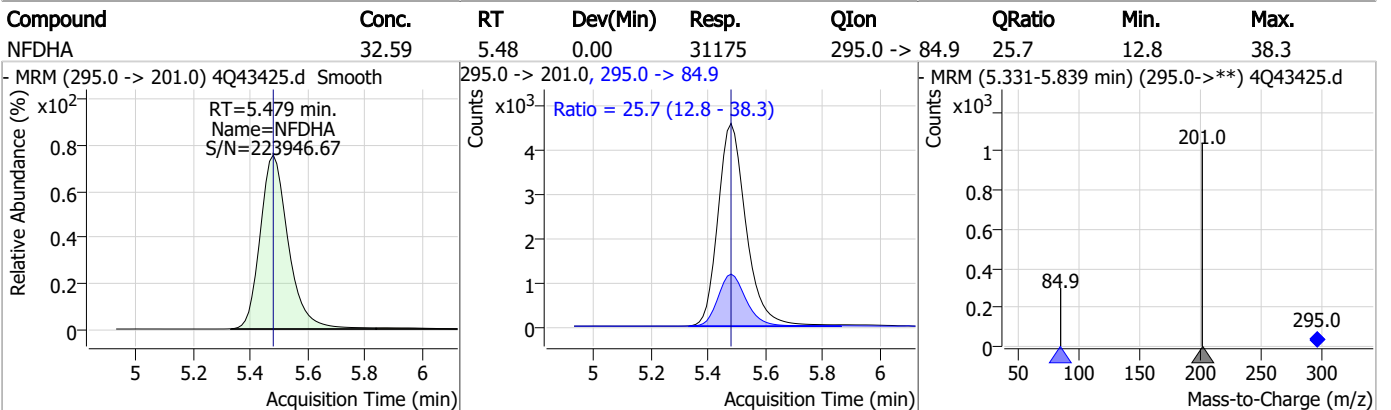
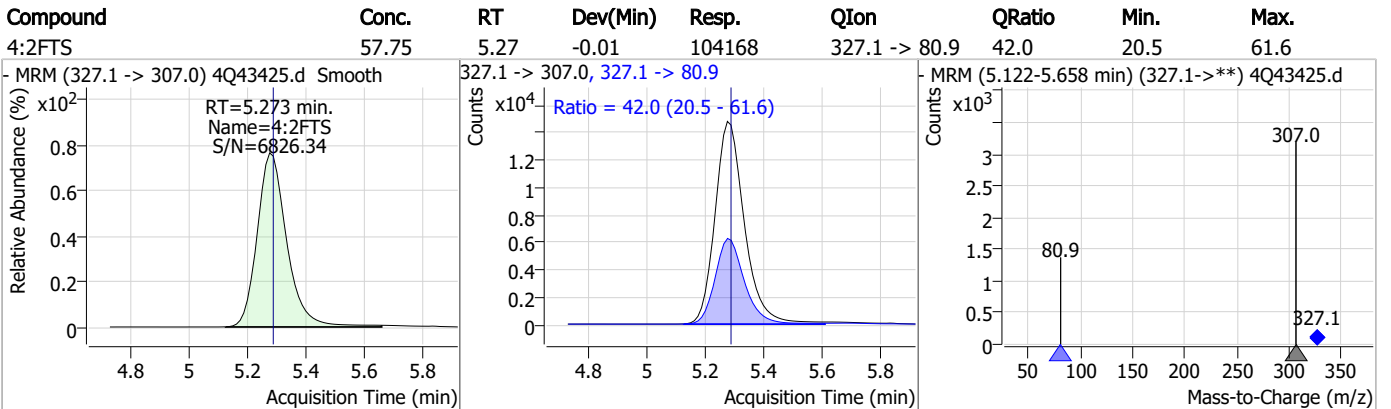
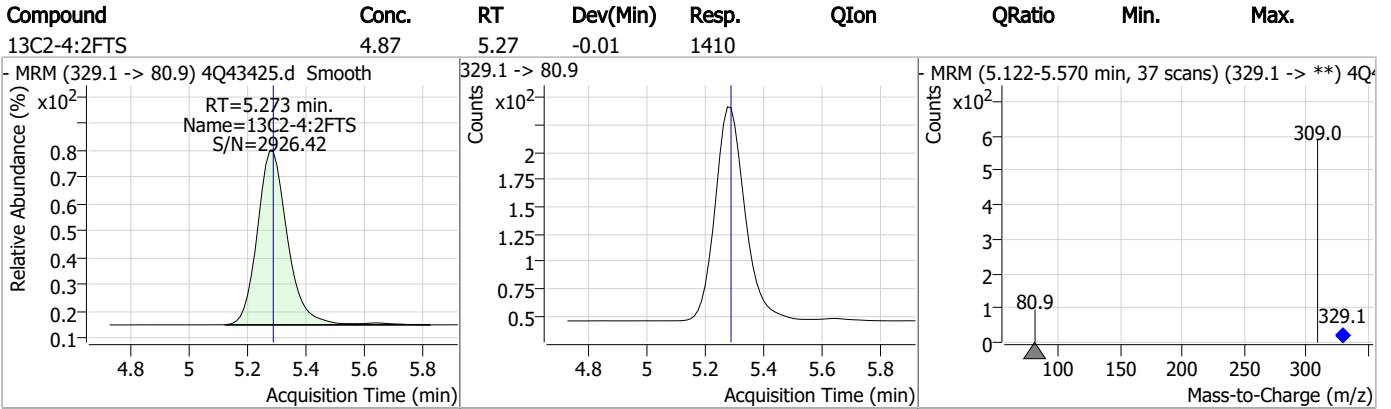
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	30.28	4.41	0.00	433698				



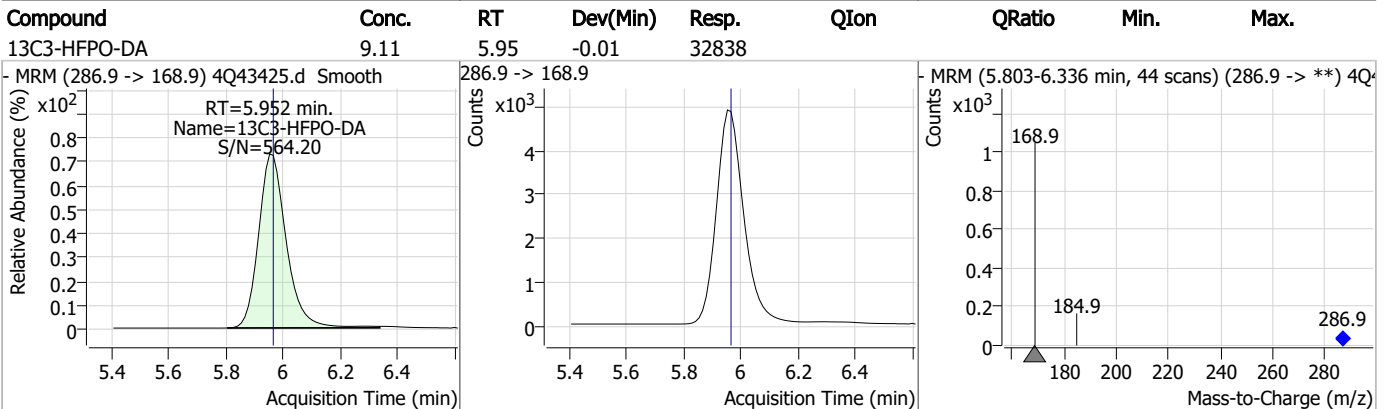
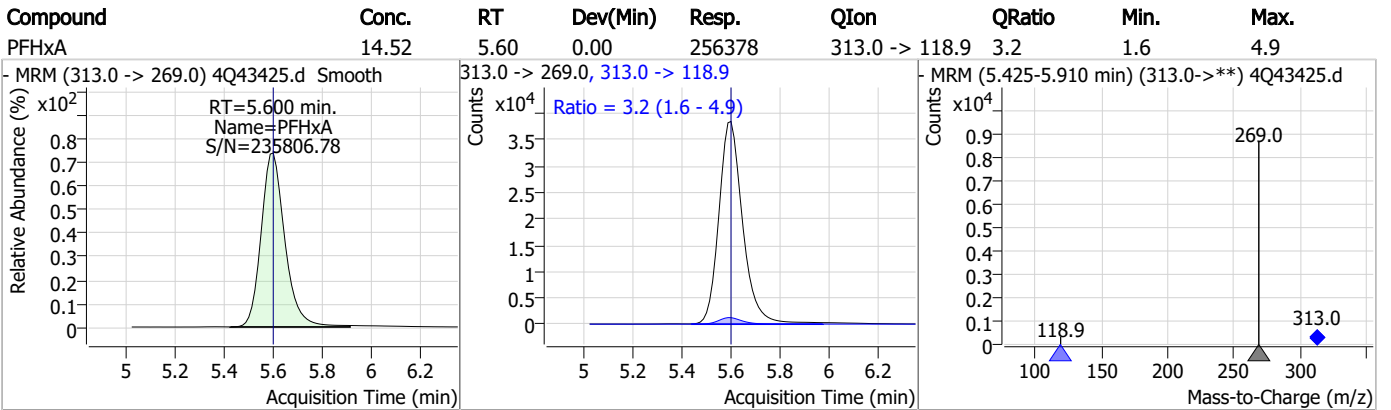
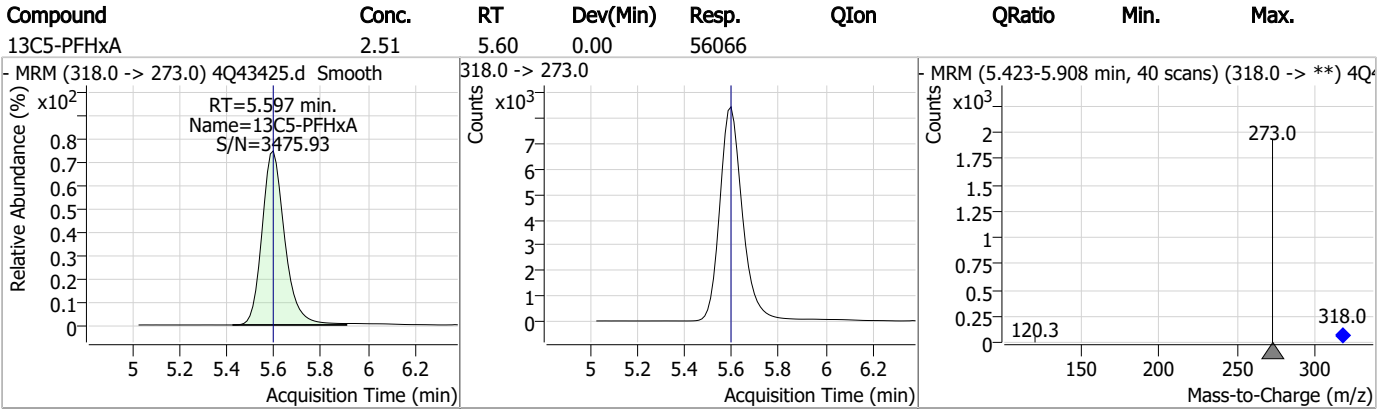
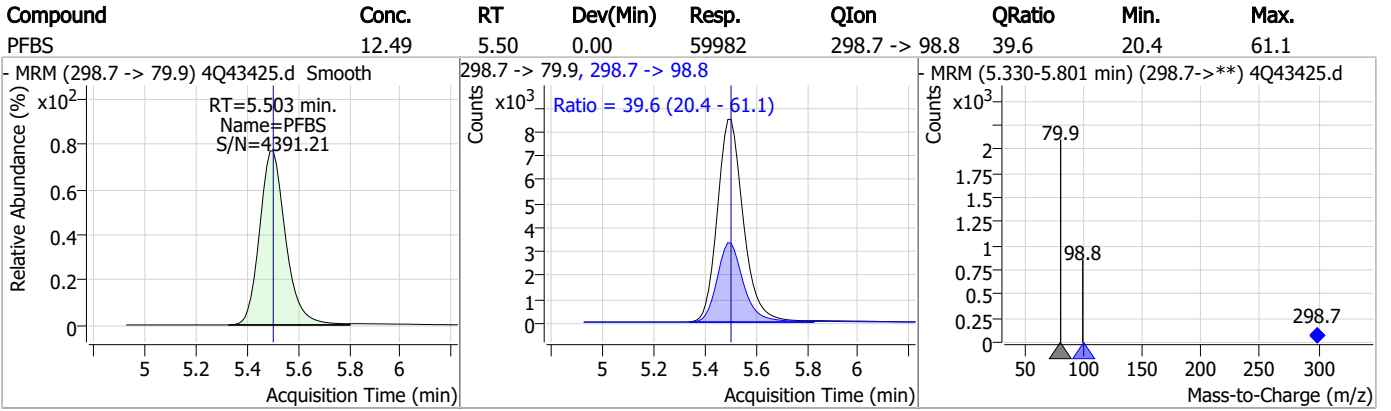
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	29.46	4.83	0.00	240892				



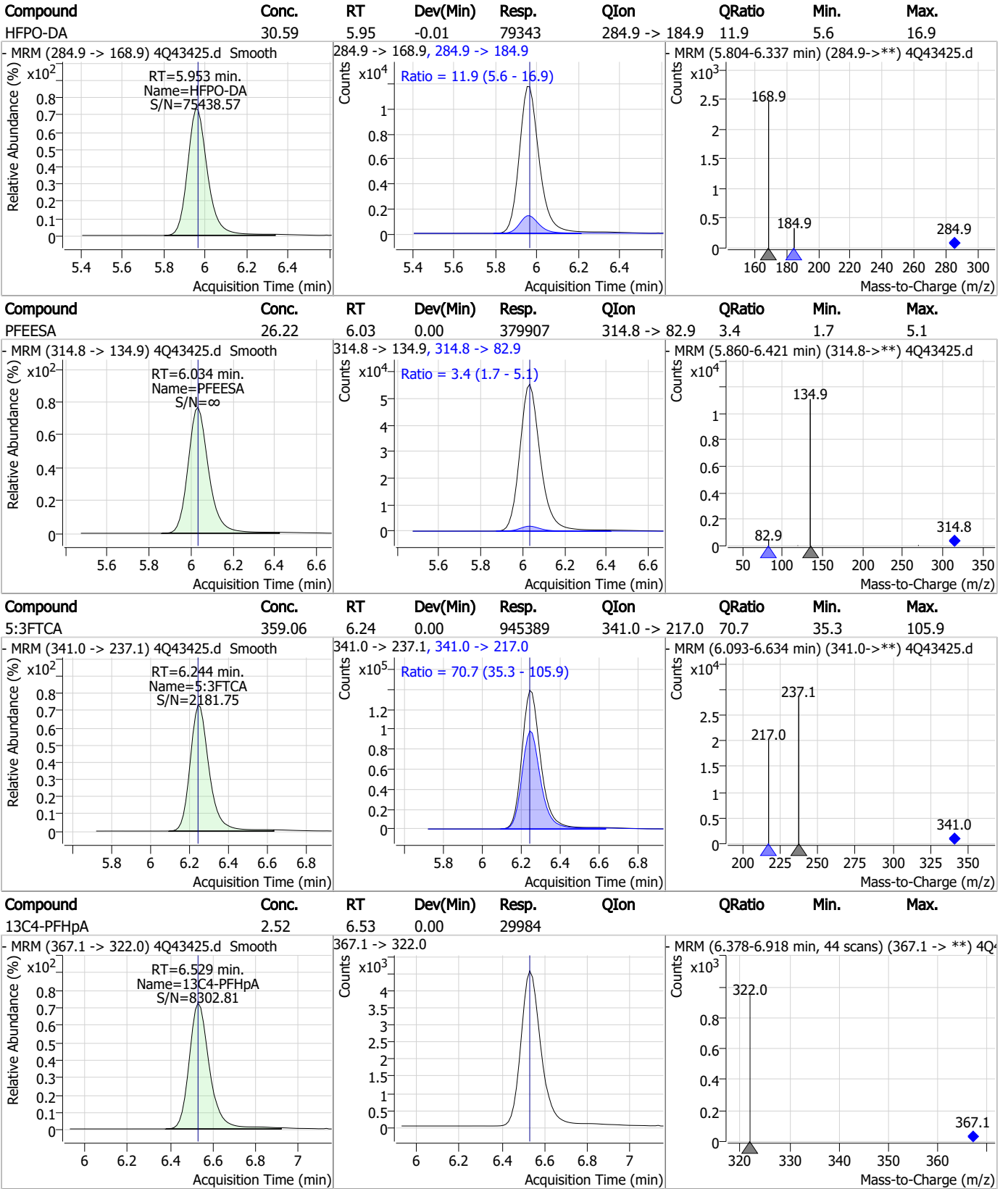
Perfluorinated Compounds by LC/MS/MS



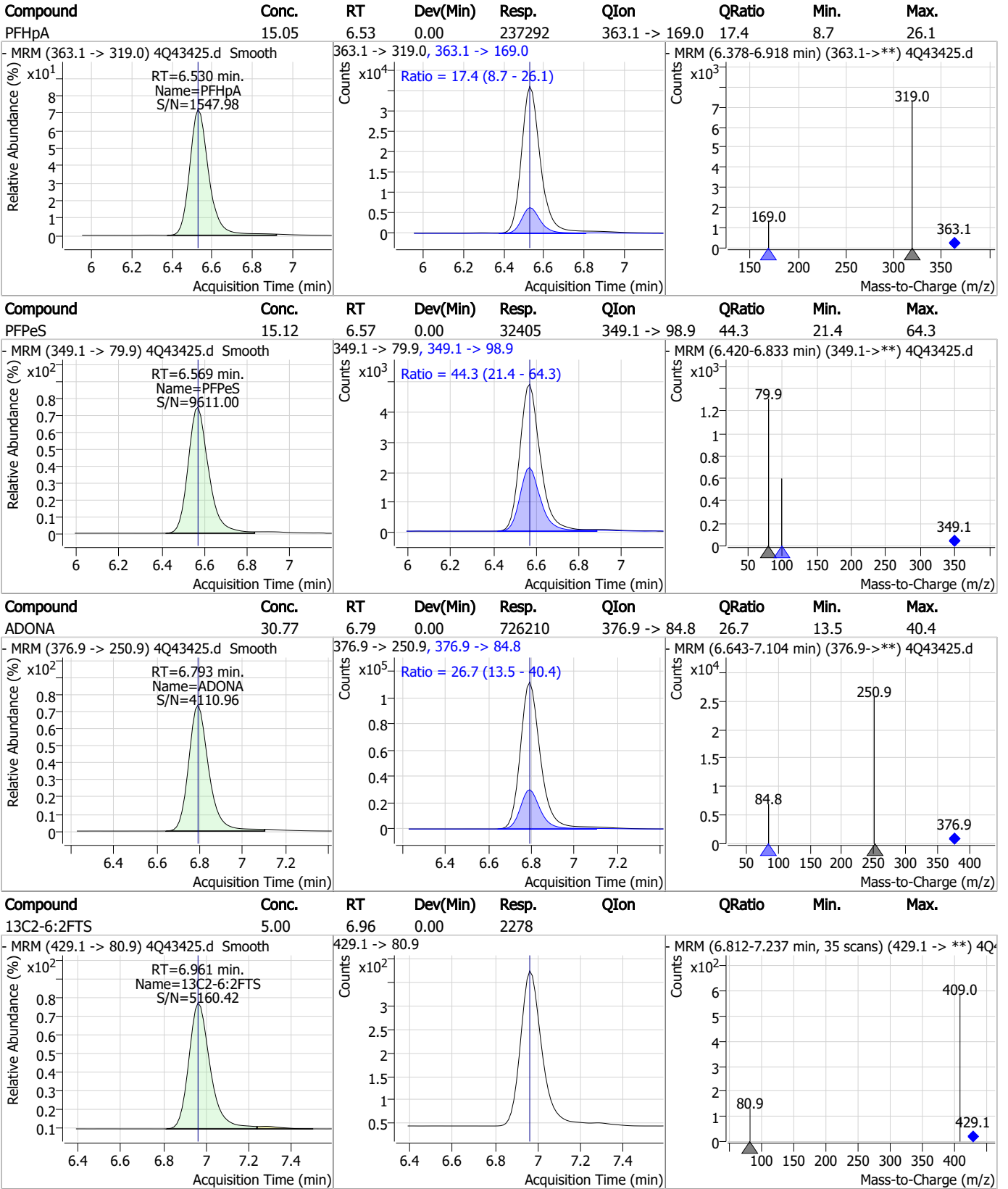
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



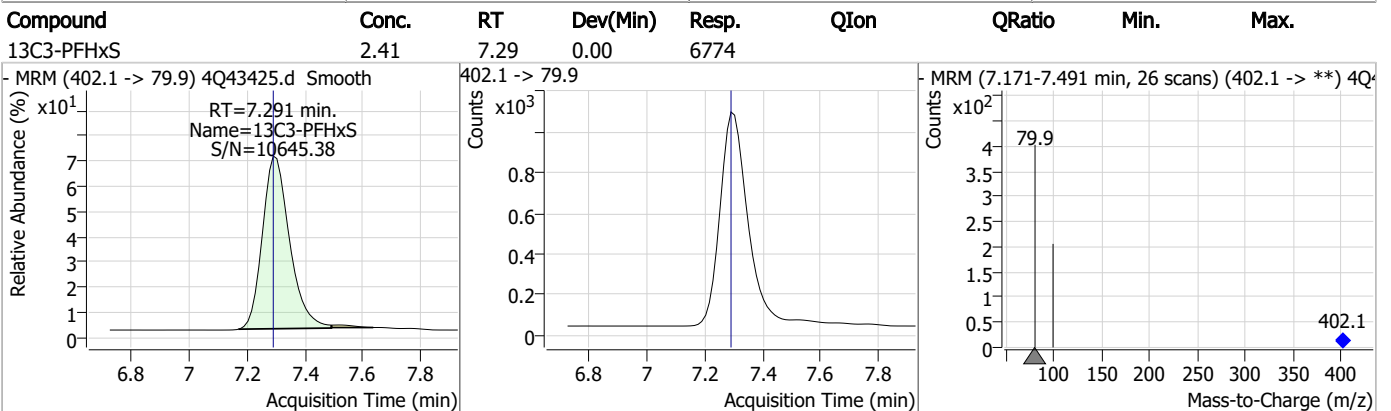
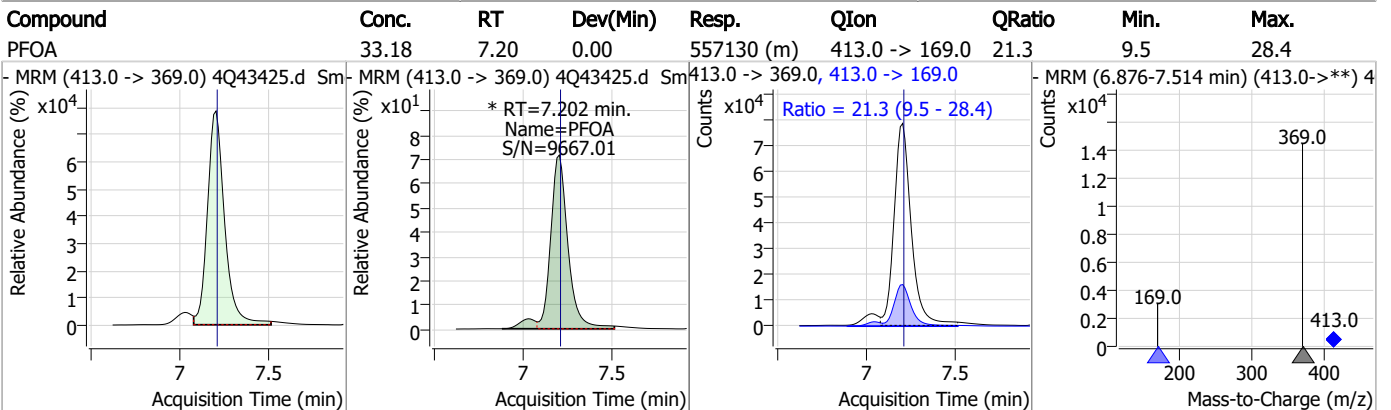
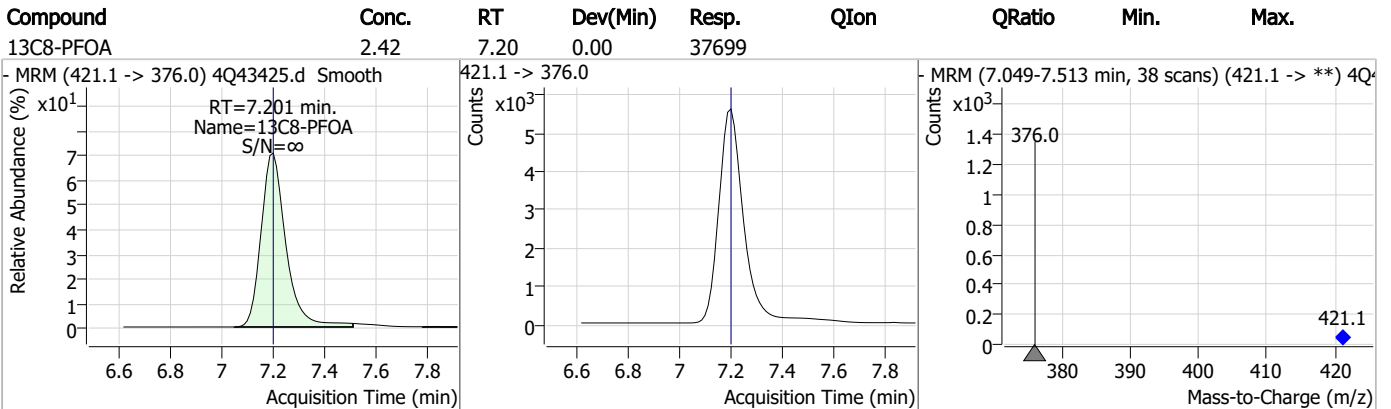
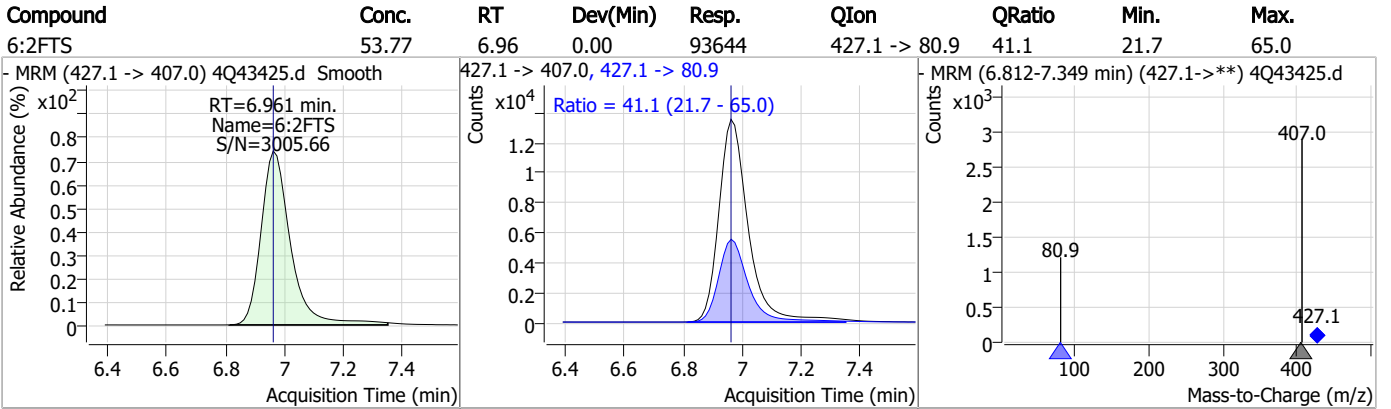
Perfluorinated Compounds by LC/MS/MS



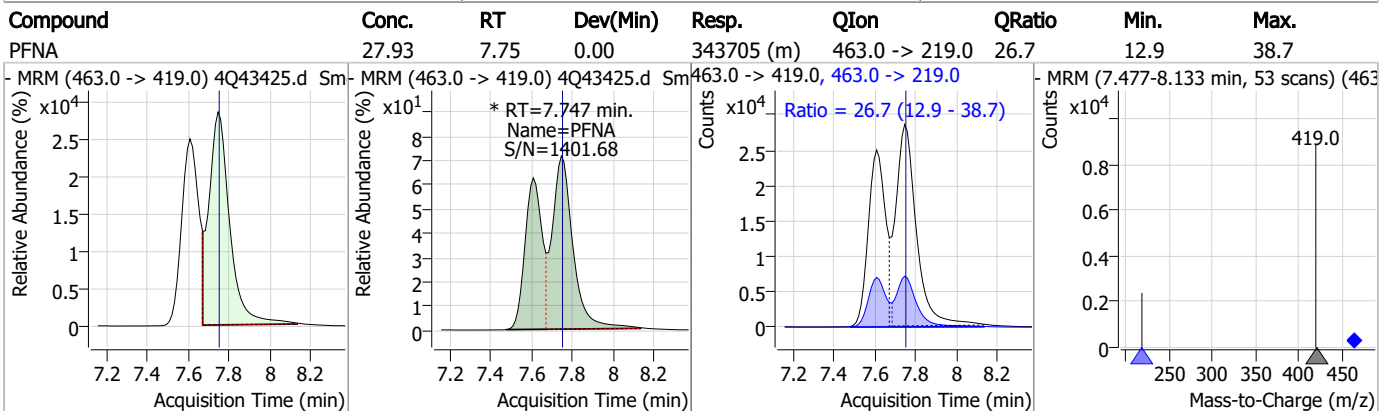
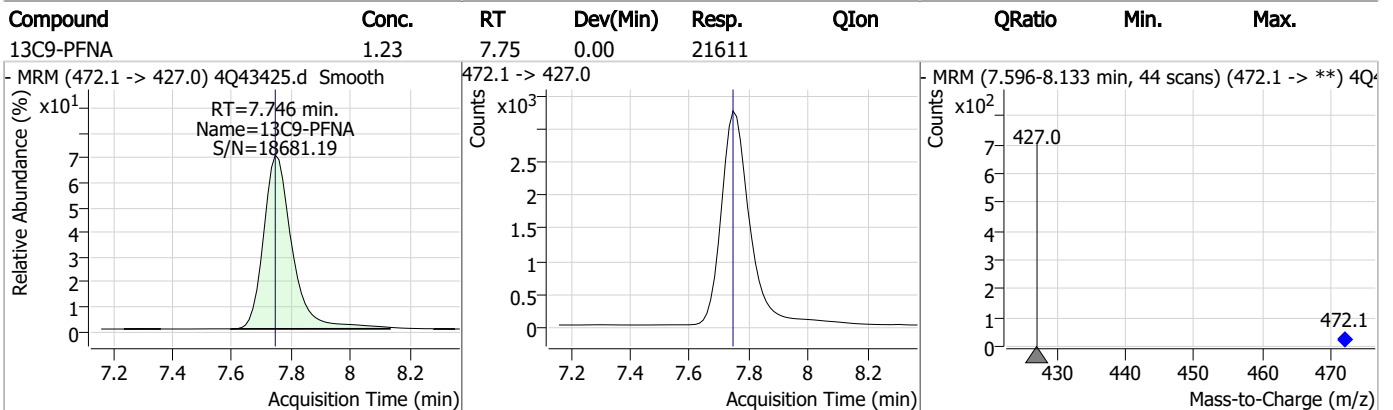
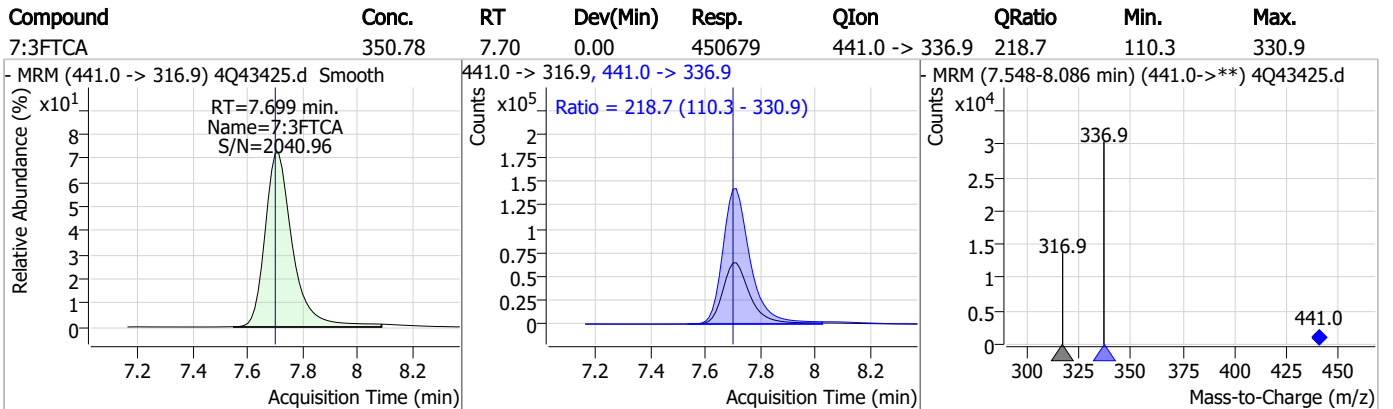
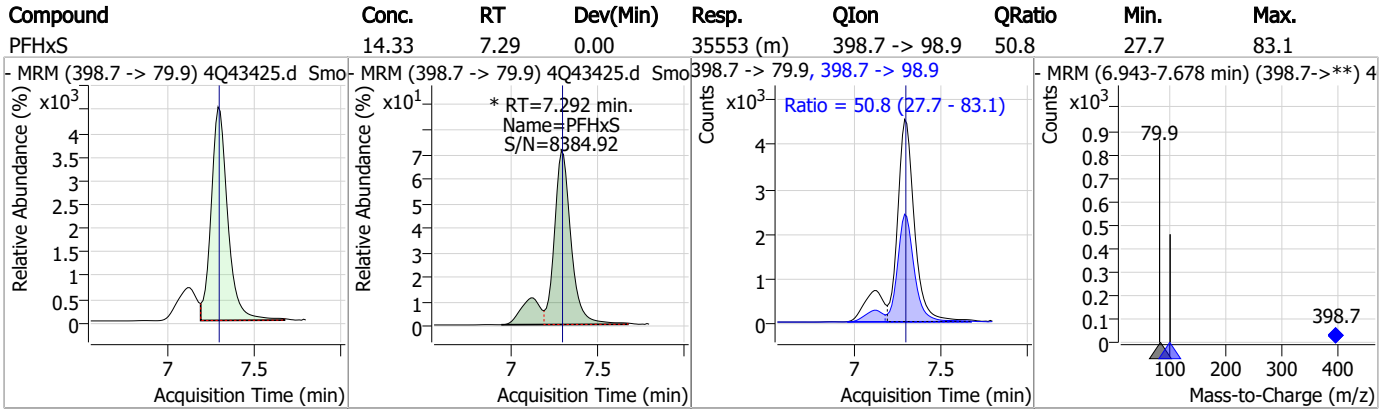
7.6.4

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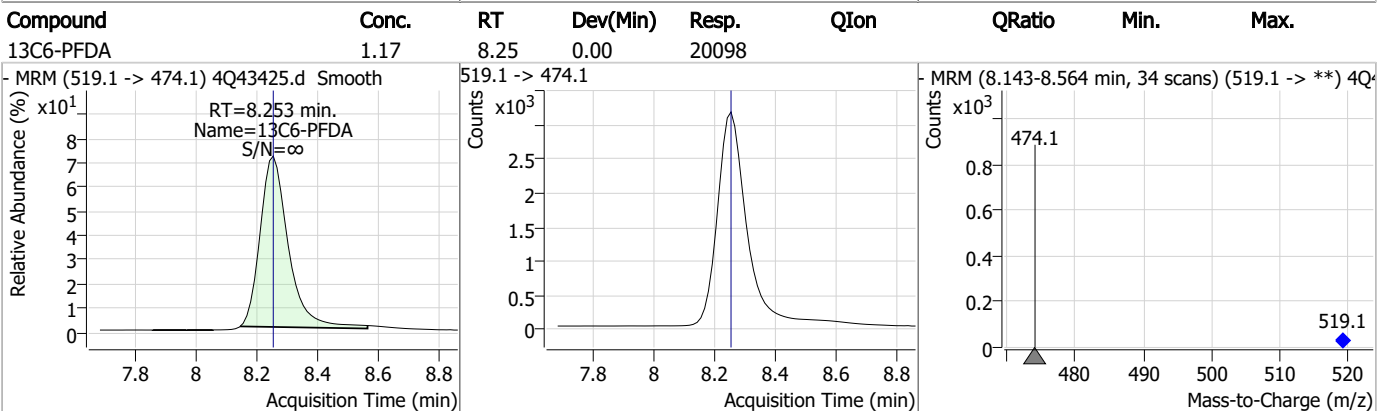
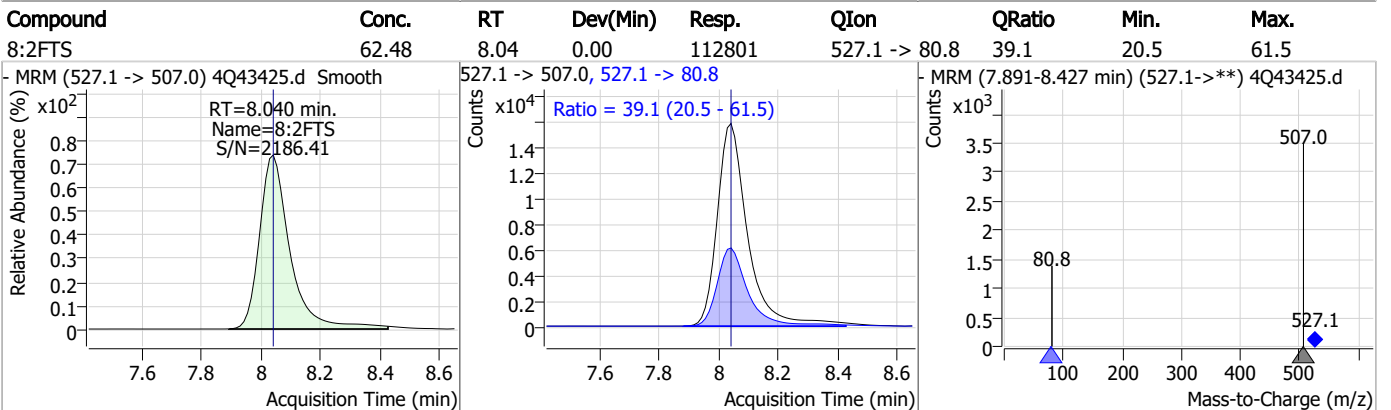
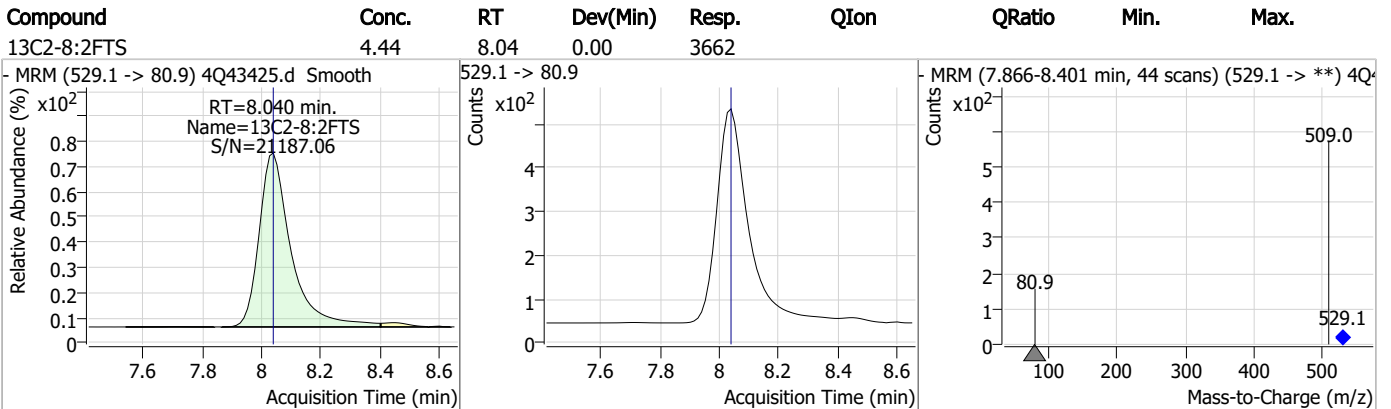
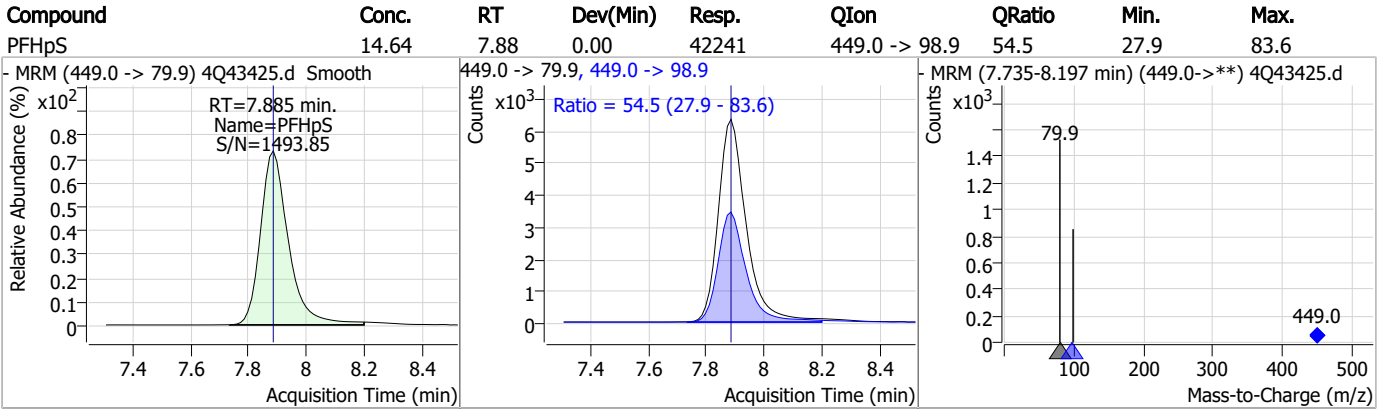
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

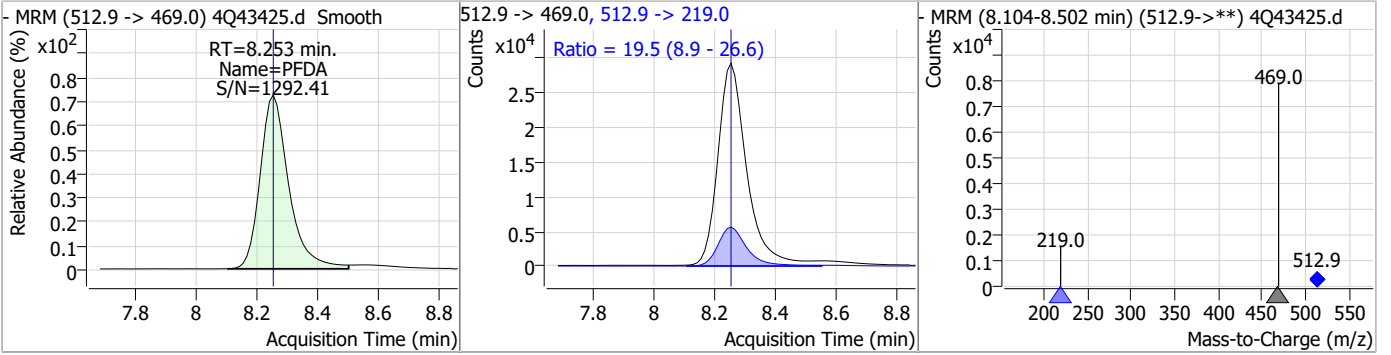


Perfluorinated Compounds by LC/MS/MS

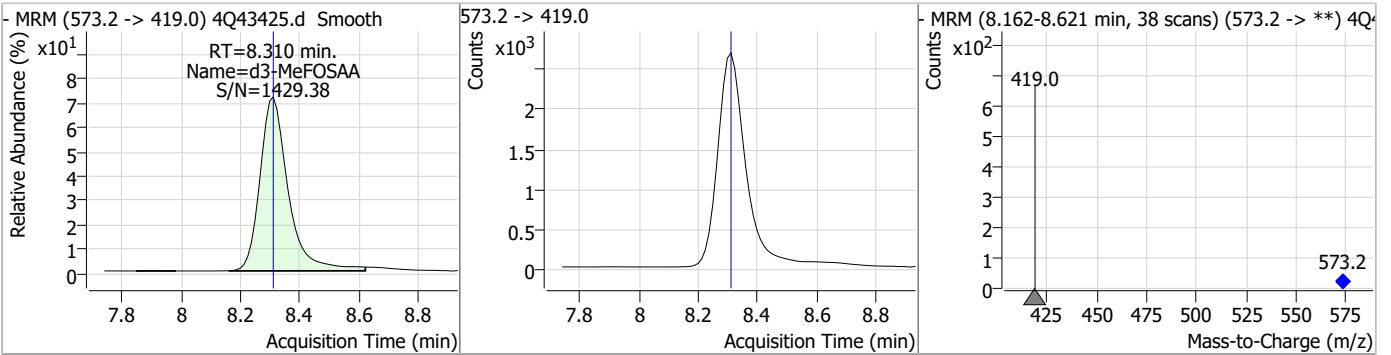


Perfluorinated Compounds by LC/MS/MS

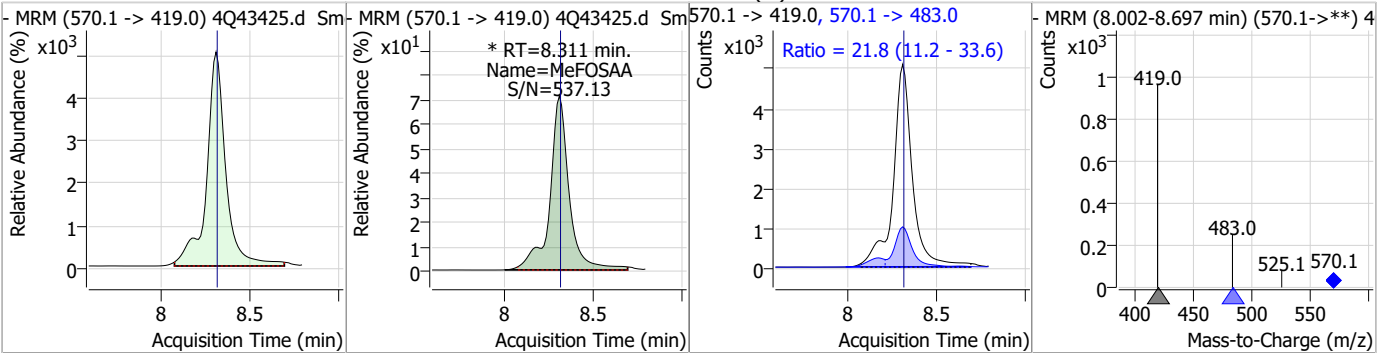
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	15.46	8.25	0.00	190653	512.9 -> 219.0	19.5	8.9	26.6



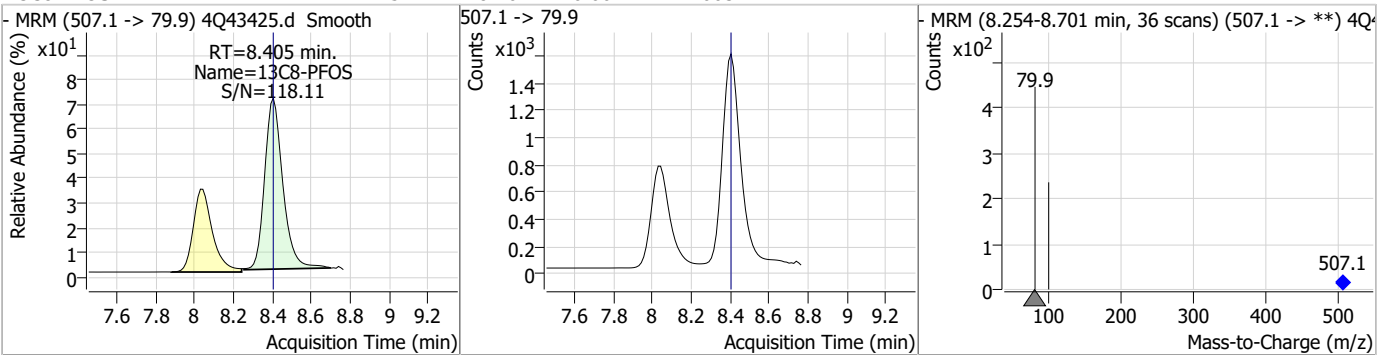
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.22	8.31	0.00	17587				



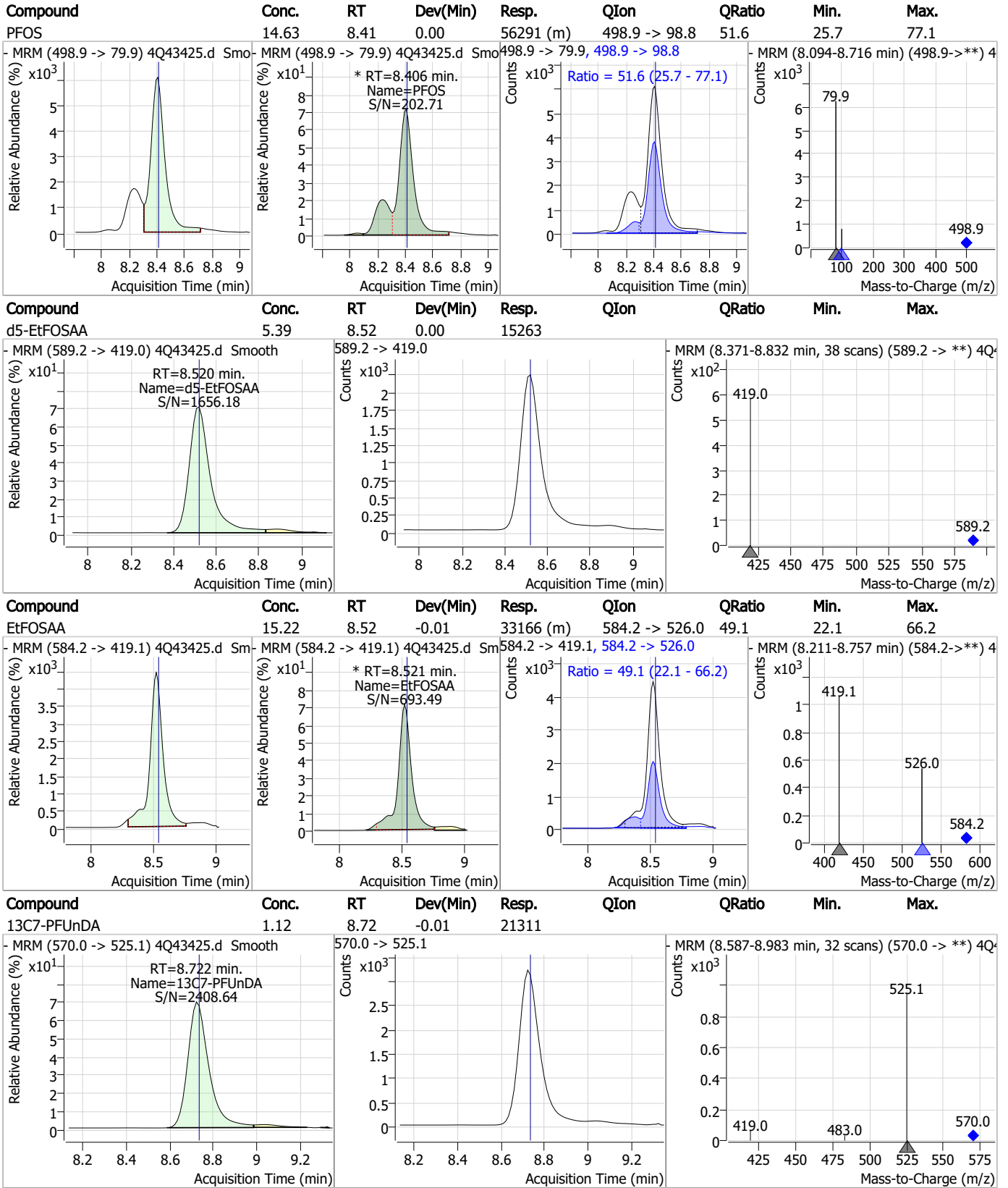
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	15.38	8.31	0.00	38583 (m)	570.1 -> 483.0	21.8	11.2	33.6



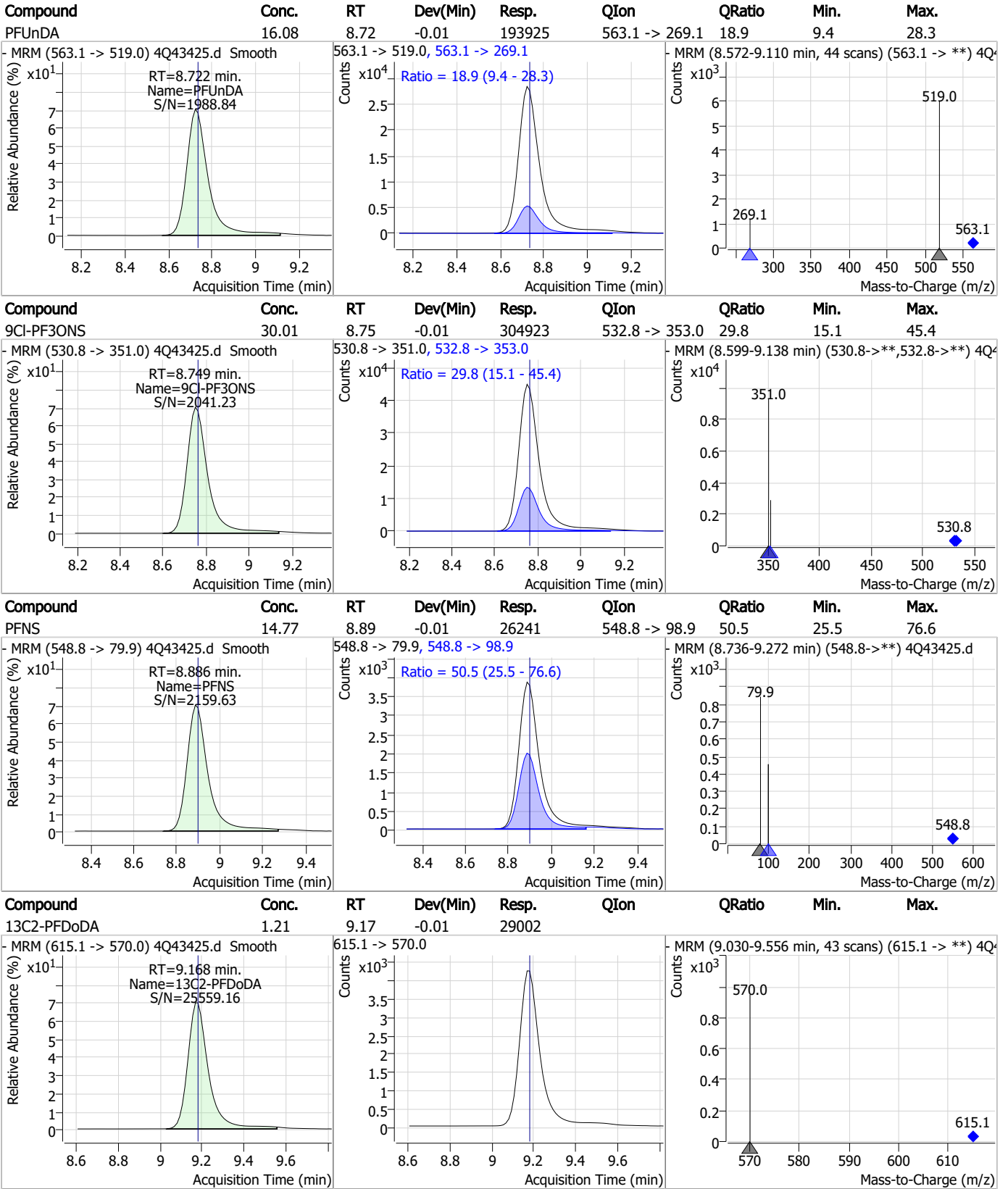
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.45	8.40	0.00	10031				



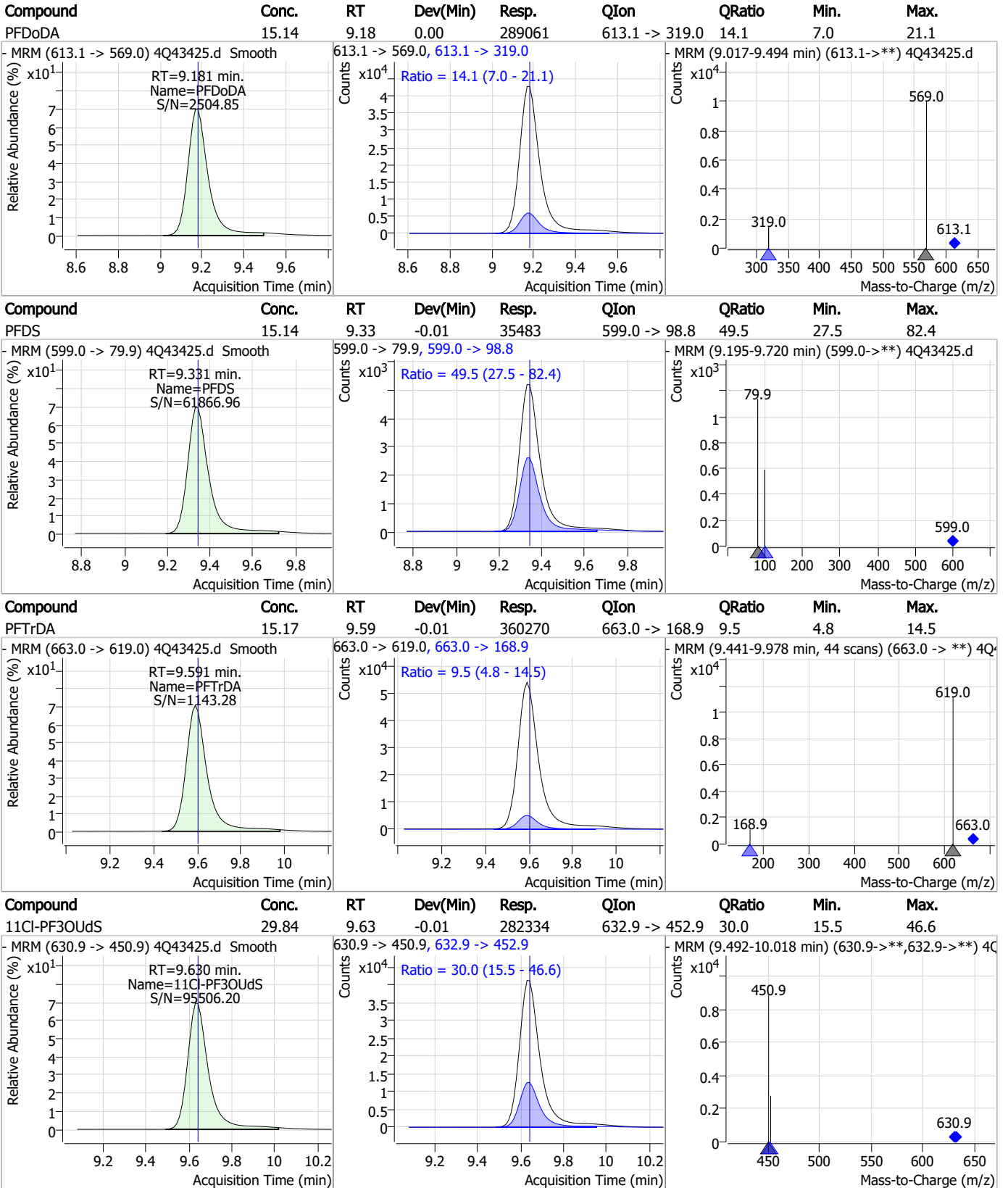
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

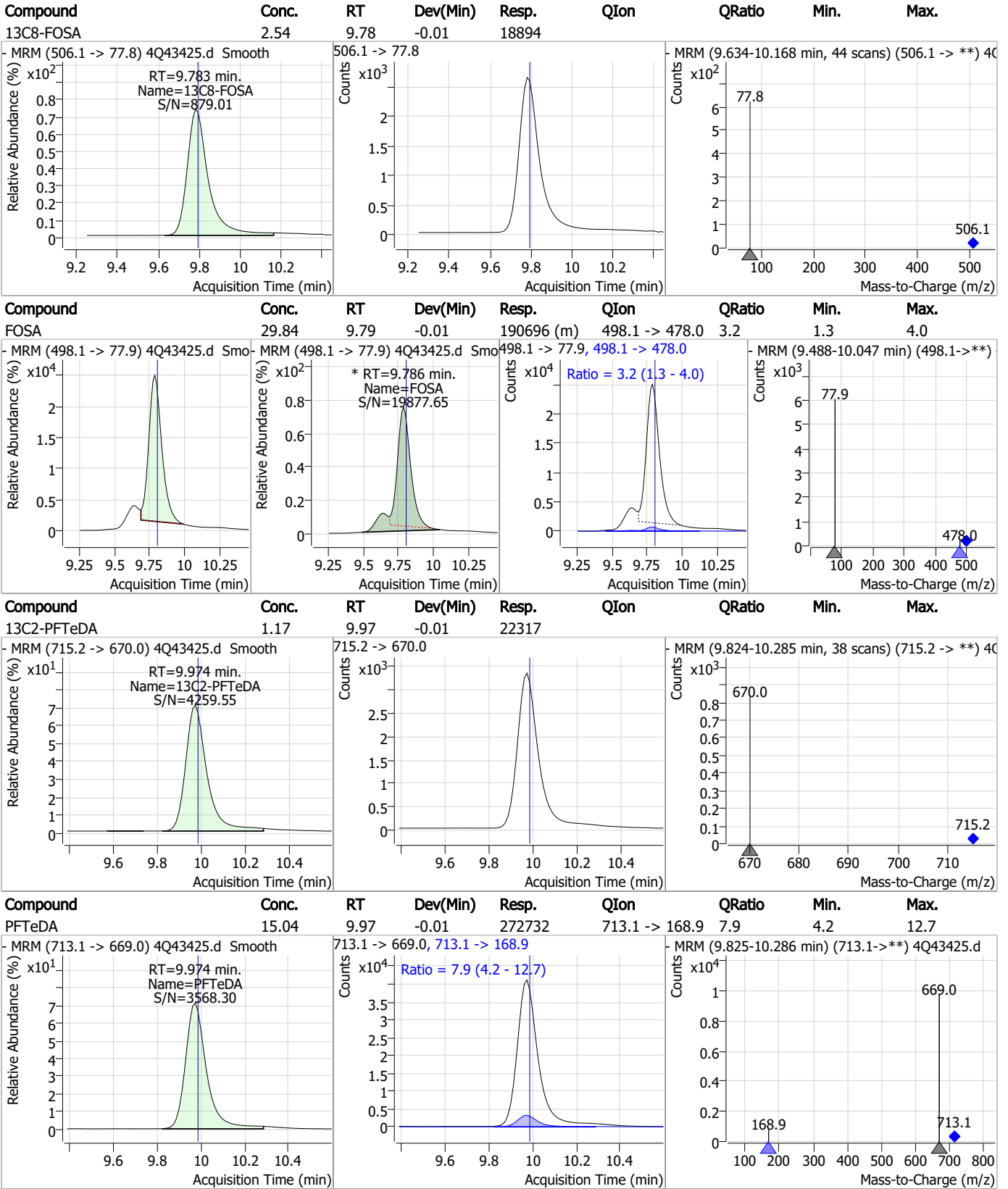


7.6.4

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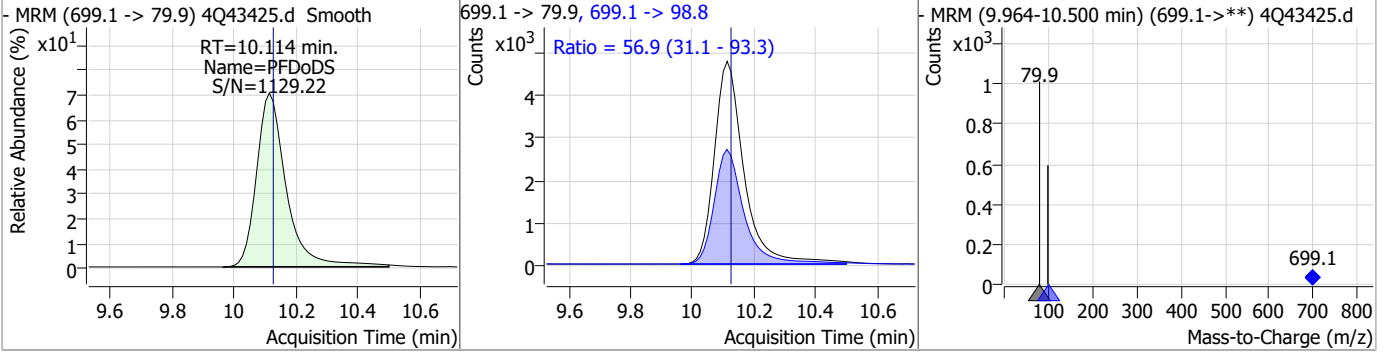


Perfluorinated Compounds by LC/MS/MS

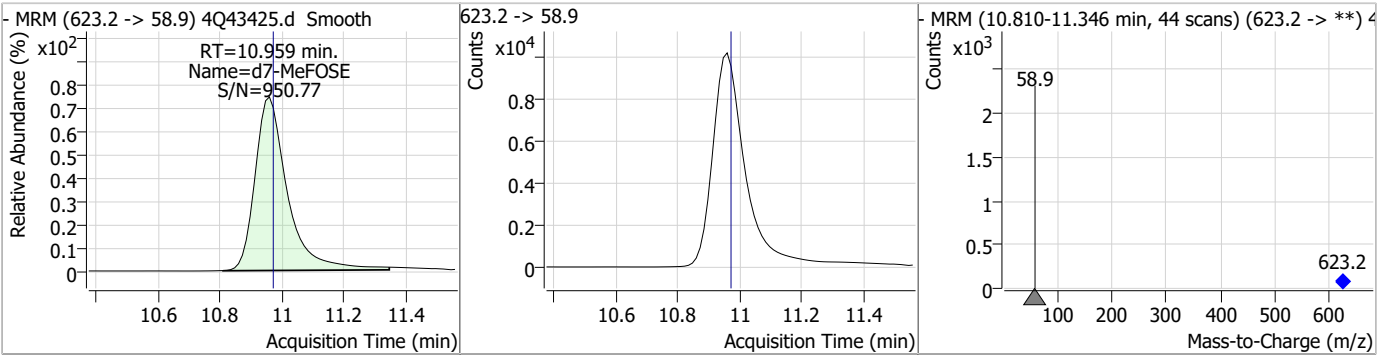


Perfluorinated Compounds by LC/MS/MS

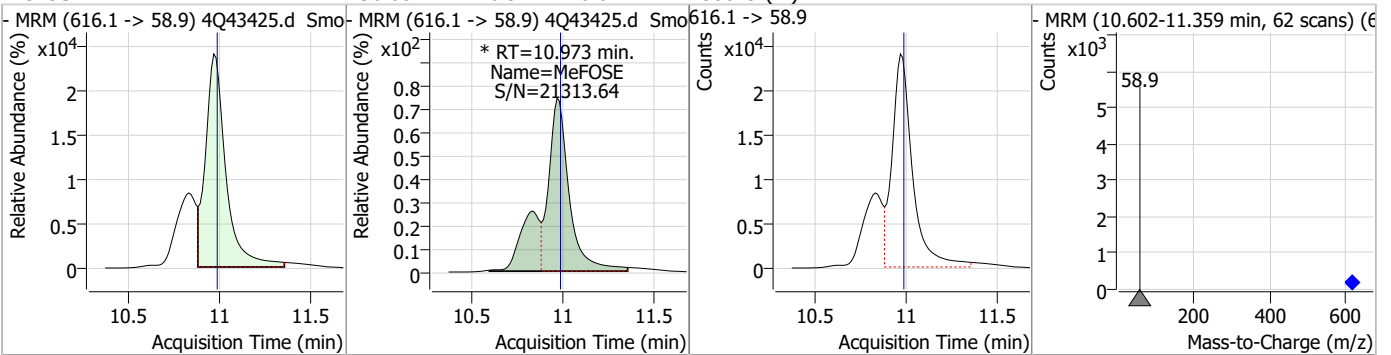
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDS	14.87	10.11	-0.01	31670	699.1 -> 98.8	56.9	31.1	93.3



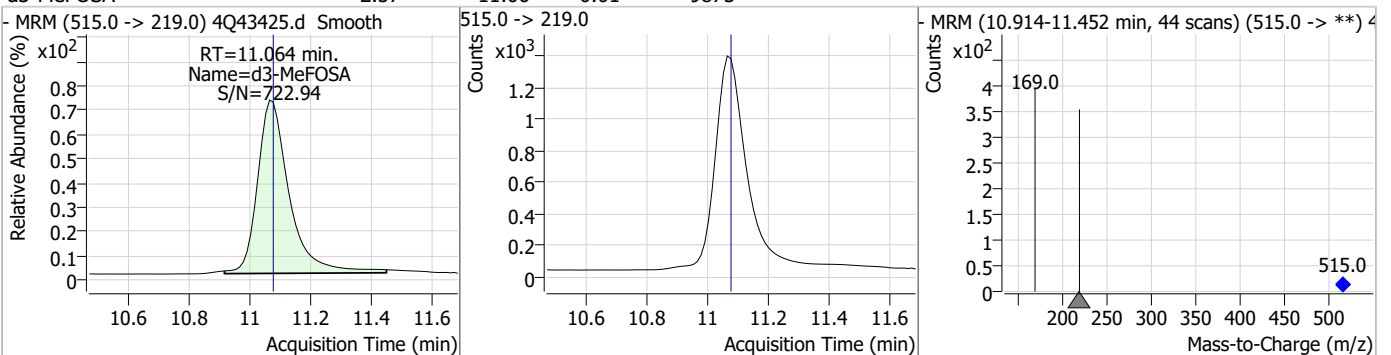
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.26	10.96	-0.01	73187				



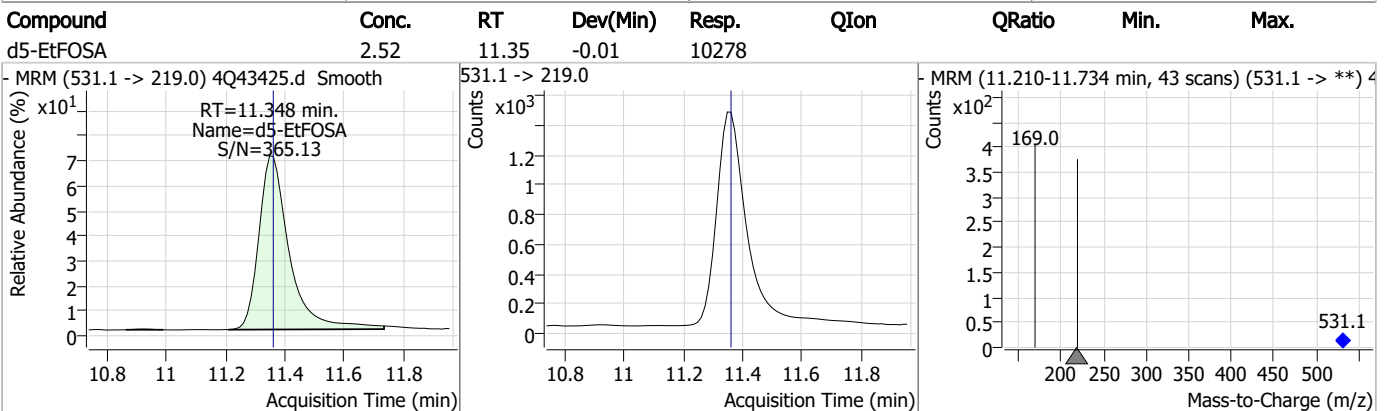
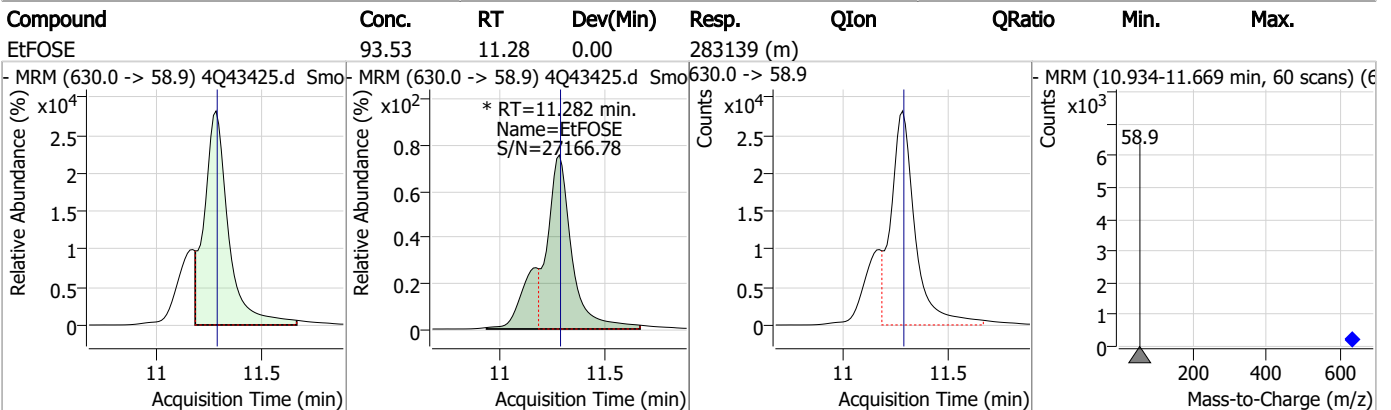
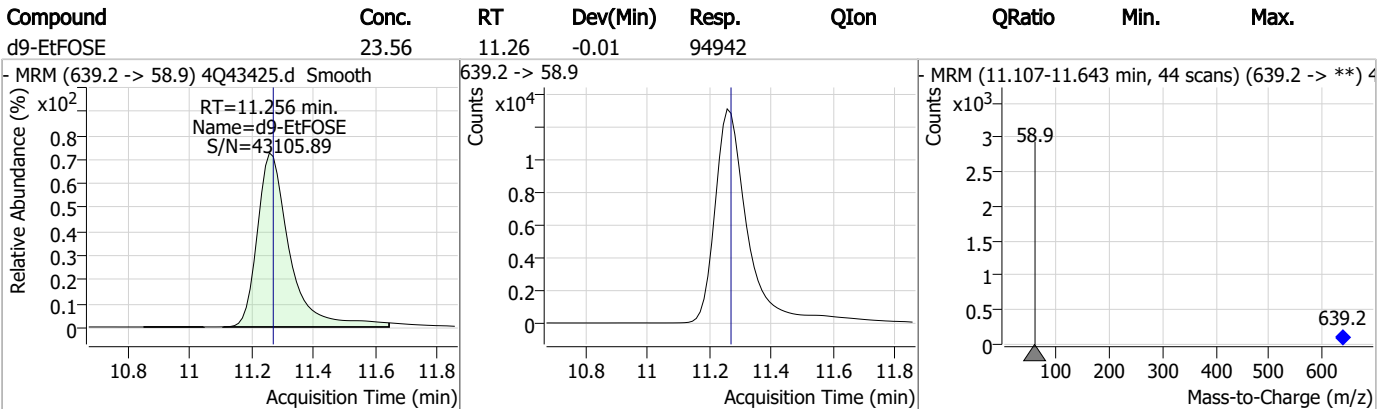
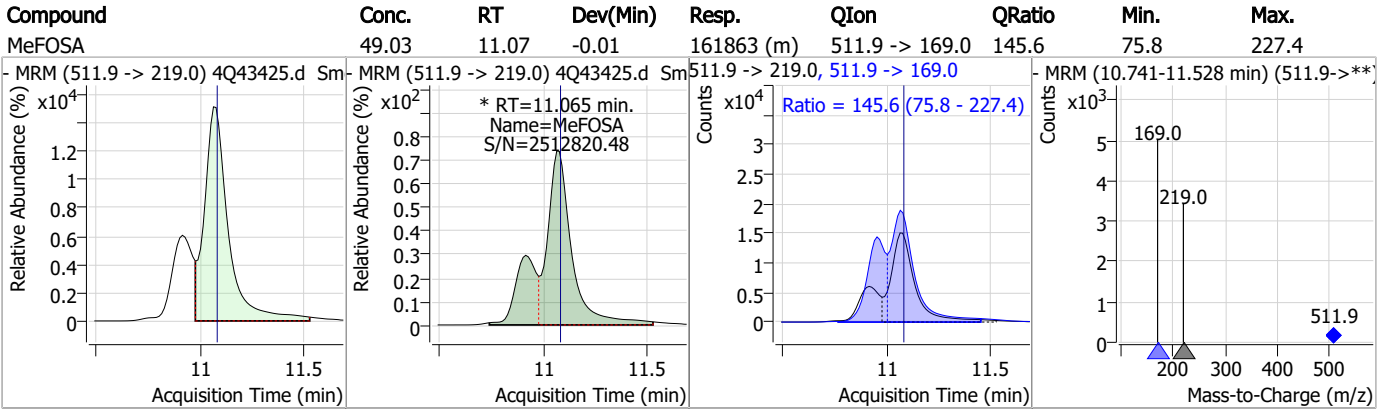
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	96.08	10.97	-0.01	250049 (m)				



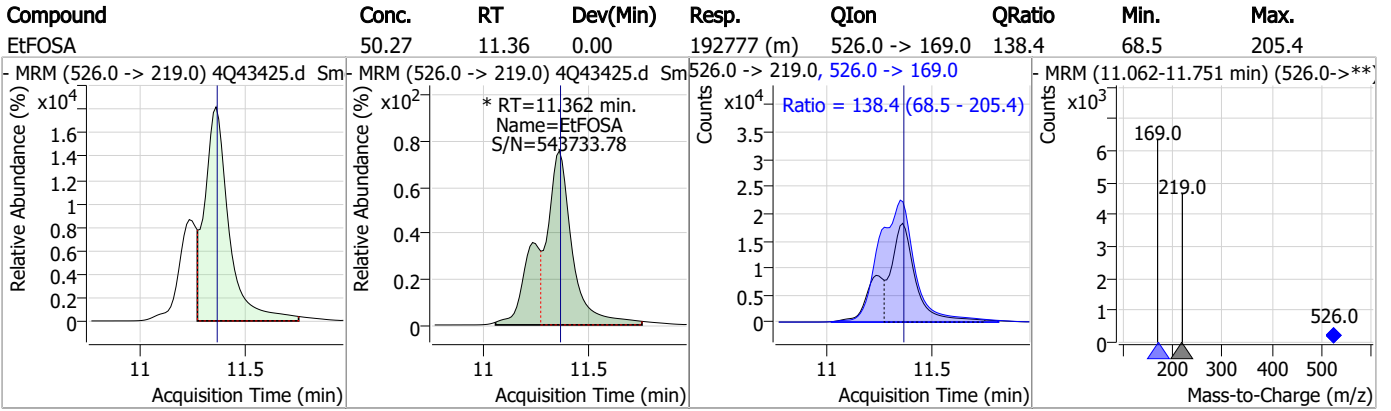
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.57	11.06	-0.01	9873				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q627-RT **Method:** EPA DRAFT 1633
Lab FileID: 4Q43425.D **Analyst approved:** 04/24/23 15:01 Martha Valls
Injection Time: 04/21/23 15:12 **Supervisor approved:** 04/25/23 14:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.20	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorononanoic acid	375-95-1		7.75	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
PFOSA	754-91-6		9.79	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSE	1691-99-2		11.28	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.6.4.1
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QQQ Check Tune Report



Instrument Name LCMS4-Q
MS Model G6470A
MS Instrument Serial SG2004G105
Software_Firmware Version 10.0.142, FW: A.00.08.100
Tune Date & Time 19 April 2023 09:52:03
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.62E+0 [R] (Torr); 3.50E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	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	0.67	-0.03	Pass	150810
302.00	302.01	0.01	Pass	0.70	0.67	-0.03	Pass	200891
601.98	602.01	0.03	Pass	0.70	0.70	0.00	Pass	569904
1033.99	1034.03	0.04	Pass	0.70	0.68	-0.02	Pass	626614
1633.95	1633.96	0.01	Pass	0.70	0.68	-0.02	Pass	1117803
2233.91	2233.91	0.00	Pass	0.70	0.73	0.03	Pass	666171

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	0.70	0.60	-0.10	Pass	36984
112.99	112.98	-0.01	Pass	0.70	0.70	0.00	Pass	119793
302.00	301.99	-0.01	Pass	0.70	0.68	-0.02	Pass	155976
601.98	601.93	-0.05	Pass	0.70	0.70	0.00	Pass	293971
1033.99	1033.88	-0.11	Pass	0.70	0.72	0.02	Pass	90988
1633.95	1633.75	-0.20	Pass	0.70	0.76	0.06	Pass	99954
2233.91	2233.61	-0.30	Pass	0.70	0.75	0.05	Pass	49738

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	1.20	1.20	0.00	Pass	198469
302.00	301.98	-0.02	Pass	1.20	1.43	0.23	Pass	267202
601.98	601.98	0.00	Pass	1.20	1.49	0.29	Pass	930405
1033.99	1034.01	0.02	Pass	1.20	1.51	0.31	Pass	1261743
1633.95	1633.94	-0.01	Pass	1.20	1.33	0.13	Pass	2970020
2233.91	2233.88	-0.03	Pass	1.20	1.21	0.01	Pass	1526338

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.09	0.09	Pass	1.20	1.11	-0.09	Pass	49432
112.99	112.96	-0.03	Pass	1.20	1.19	-0.01	Pass	168011
302.00	302.00	0.00	Pass	1.20	1.44	0.24	Pass	230824
601.98	601.96	-0.02	Pass	1.20	1.54	0.34	Pass	548057
1033.99	1033.85	-0.14	Pass	1.20	1.60	0.40	Pass	183313
1633.95	1633.65	-0.30	Pass	1.20	1.62	0.42	Pass	259781
2233.91	2233.69	-0.22	Pass	1.20	1.52	0.32	Pass	165955

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.91	-0.08	Pass	2.50	2.55	0.05	Pass	258071
302.00	301.98	-0.02	Pass	2.50	2.76	0.26	Pass	334280
601.98	602.02	0.04	Pass	2.50	2.76	0.26	Pass	1252102
1033.99	1034.00	0.01	Pass	2.50	2.79	0.29	Pass	1937896
1633.95	1633.93	-0.02	Pass	2.50	2.60	0.10	Pass	5695926
2233.91	2233.80	-0.11	Pass	2.50	2.42	-0.08	Pass	3951295

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	2.40	-0.10	Pass	61646
112.99	112.97	-0.02	Pass	2.50	2.47	-0.03	Pass	209832
302.00	301.99	-0.01	Pass	2.50	2.66	0.16	Pass	299364
601.98	601.96	-0.02	Pass	2.50	2.82	0.32	Pass	753280
1033.99	1033.87	-0.12	Pass	2.50	2.87	0.37	Pass	264423
1633.95	1633.74	-0.21	Pass	2.50	2.75	0.25	Pass	455973
2233.91	2233.71	-0.20	Pass	2.50	2.43	-0.07	Pass	400220

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43242.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 11:54:48 AM
 Sample Name : ic625-1
 Vial : P1-A2
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	130824	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	78147	5.00 µg/L	0.000
M5-PFHxA	5.584	318.0 -> 273.0	59029	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	31971	2.50 µg/L	0.000
M8-PFOA	7.188	421.1 -> 376.0	44538	2.50 µg/L	0.000
M9-PFNA	7.733	472.1 -> 427.0	23774	1.25 µg/L	0.000
M6-PFDA	8.240	519.1 -> 474.1	23696	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	26179	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	31714	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	25293	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	21321	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	13333	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	7952	2.50 µg/L	0.000
M8-PFOS	8.392	507.1 -> 79.9	12096	2.50 µg/L	0.000
M2-4:2FTS	5.273	329.1 -> 80.9	1759	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2994	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	5278	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	20194	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	37917	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	16827	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	93022	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	119656	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	12129	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	11027	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	12011	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	72305	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	5351	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	51646	2.50 µg/L	0.000
13C2-PFDA	8.241	515.1 -> 470.1	21433	1.25 µg/L	0.000
13C5-PFNA	7.734	468.0 -> 423.0	27480	1.25 µg/L	0.000
13C2-PFHxA	5.585	315.1 -> 270.0	50079	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1759	5.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.0%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2994	6.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.1%		
13C2-8:2FTS	8.027	529.1 -> 80.9	5278	5.89 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.8%		
13C2-PFDoDA	9.180	615.1 -> 570.0	31714	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C2-PFTeDA	9.974	715.2 -> 670.0	25293	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFBS	5.502	302.1 -> 79.9	13333	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C3-PFHxS	7.291	402.1 -> 79.9	7952	2.60 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 = 104.1%	
13C4-PFBA	2.936	216.8 -> 171.9	130824	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.517	367.1 -> 322.0	31971	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	5.584	318.0 -> 273.0	59029	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.412	268.3 -> 223.0	78147	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C6-PFDA	8.240	519.1 -> 474.1	23696	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C7-PFUnDA	8.722	570.0 -> 525.1	26179	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-FOSA	9.783	506.1 -> 77.8	21321	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C8-PFOA	7.188	421.1 -> 376.0	44538	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C8-PFOS	8.392	507.1 -> 79.9	12096	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C9-PFNA	7.733	472.1 -> 427.0	23774	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSAA	8.298	573.2 -> 419.0	20194	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	37917	9.98 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
d3-MeFOSA	11.064	515.0 -> 219.0	11027	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
d5-EtFOSAA	8.507	589.2 -> 419.0	16827	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d7-MeFOSE	10.959	623.2 -> 58.9	93022	25.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d9-EtFOSE	11.256	639.2 -> 58.9	119656	25.36 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
d5-EtFOSA	11.360	531.1 -> 219.0	12129	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	1268	0.56 µg/L	93
		327.1 -> 80.9	628		
6:2FTS	6.949	427.1 -> 407.0	1419	0.62 µg/L	95
		427.1 -> 80.9	676		
8:2FTS	8.028	527.1 -> 507.0	1404	0.54 µg/L	83
		527.1 -> 80.8	726		
EtFOSAA	8.508	584.2 -> 419.1	336	0.14 µg/L	91
		584.2 -> 526.0	201		
FOSA	9.774	498.1 -> 77.9	1297	0.18 µg/L	96
		498.1 -> 478.0	22		
MeFOSAA	8.299	570.1 -> 419.0	407	0.14 µg/L	90
		570.1 -> 483.0	72		
PFBA	2.945	212.8 -> 168.9	1964	0.65 µg/L	100
PFBS	5.503	298.7 -> 79.9	797	0.15 µg/L	95
		298.7 -> 98.8	343		
PFDA	8.241	512.9 -> 469.0	2115	0.15 µg/L	99
		512.9 -> 219.0	418		
PFDODA	9.181	613.1 -> 569.0	3534	0.17 µg/L	95
		613.1 -> 319.0	409		
PFDS	9.344	599.0 -> 79.9	396	0.14 µg/L	77

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	252			
PFHpA	6.530	363.1 -> 319.0	2764	0.16	µg/L	99
		363.1 -> 169.0	470			
PFHpS	7.873	449.0 -> 79.9	586	0.17	µg/L	67
		449.0 -> 98.9	176			
PFHxA	5.587	313.0 -> 269.0	2986	0.16	µg/L	96
		313.0 -> 118.9	131			
PFHxS	7.280	398.7 -> 79.9	425	0.15	µg/L	m 97
		398.7 -> 98.9	224			
PFNA	7.734	463.0 -> 419.0	2235	0.17	µg/L	93
		463.0 -> 219.0	501			
PFNS	8.886	548.8 -> 79.9	396	0.18	µg/L	93
		548.8 -> 98.9	202			
PFOA	7.176	413.0 -> 369.0	2895	0.15	µg/L	m 96
		413.0 -> 169.0	661			
PFOS	8.394	498.9 -> 79.9	676	0.15	µg/L	m 94
		498.9 -> 98.8	374			
PFPeA	4.414	263.0 -> 219.0	4895	0.31	µg/L	100
PFPeS	6.557	349.1 -> 79.9	370	0.15	µg/L	99
		349.1 -> 98.9	164			
PFTeDA	9.974	713.1 -> 669.0	3294	0.16	µg/L	99
		713.1 -> 168.9	294			
PFTrDA	9.591	663.0 -> 619.0	4500	0.17	µg/L	m 97
		663.0 -> 168.9	379			
PFUnDA	8.722	563.1 -> 519.0	2685	0.18	µg/L	96
		563.1 -> 269.1	499			
11Cl-PF3OUdS	9.643	630.9 -> 450.9	3490	0.32	µg/L	99
		632.9 -> 452.9	1067			
9Cl-PF3ONS	8.749	530.8 -> 351.0	3751	0.32	µg/L	91
		532.8 -> 353.0	934			
ADONA	6.781	376.9 -> 250.9	8443	0.31	µg/L	99
		376.9 -> 84.8	2173			
HFPO-DA	5.953	284.9 -> 168.9	941	0.31	µg/L	97
		284.9 -> 184.9	95			
3:3FTCA	3.867	241.0 -> 177.0	578	0.78	µg/L	91
		241.0 -> 117.0	72			
5:3FTCA	6.231	341.0 -> 237.1	10990	3.96	µg/L	100
		341.0 -> 217.0	7909			
7:3FTCA	7.686	441.0 -> 316.9	5425	4.01	µg/L	97
		441.0 -> 336.9	12389			
EtFOSA	11.362	526.0 -> 219.0	1478	0.33	µg/L	m 100
		526.0 -> 169.0	2094			
EtFOSE	11.282	630.0 -> 58.9	2931	0.77	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	1148	0.31	µg/L	m 92
		511.9 -> 169.0	1768			
MeFOSE	10.973	616.1 -> 58.9	2562	0.77	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	397	0.15	µg/L	93
		699.1 -> 98.8	234			
NFDHA	5.479	295.0 -> 201.0	324	0.32	µg/L	100
		295.0 -> 84.9	92			
PFMBA	4.828	279.0 -> 85.1	2922	0.33	µg/L	100
PFMPA	3.553	229.0 -> 84.9	2611	0.33	µg/L	100
PFEESA	6.034	314.8 -> 134.9	4488	0.29	µg/L	97
		314.8 -> 82.9	111			

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

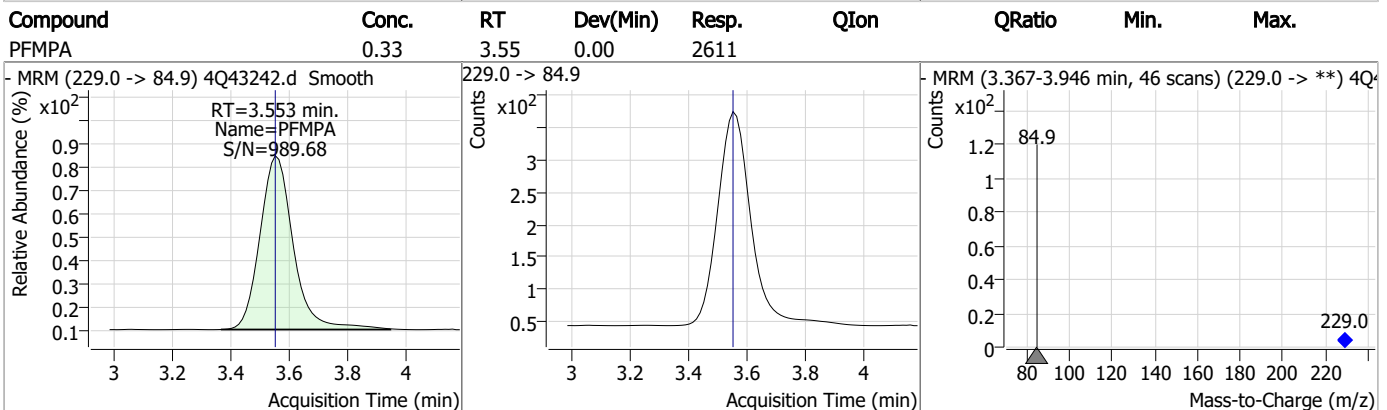
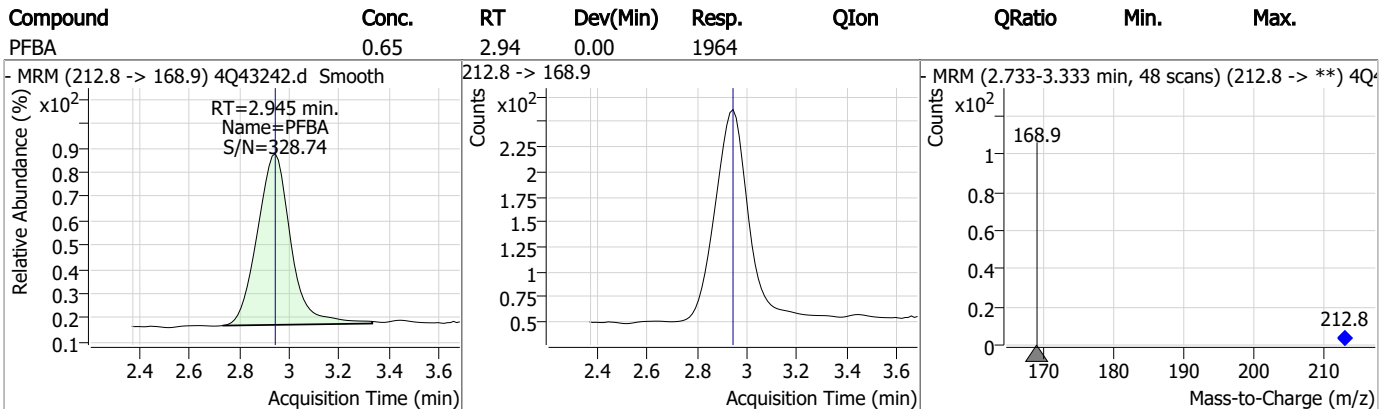
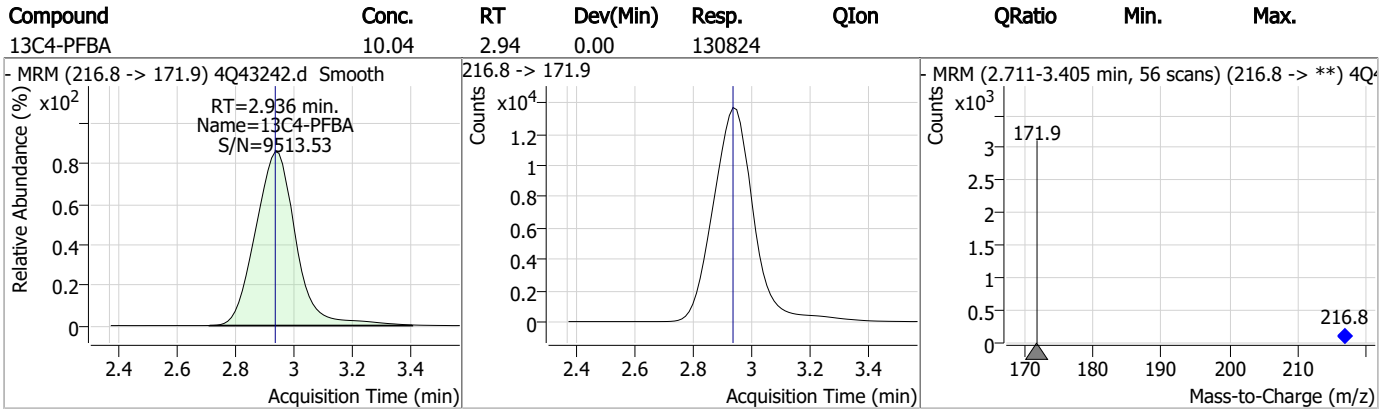
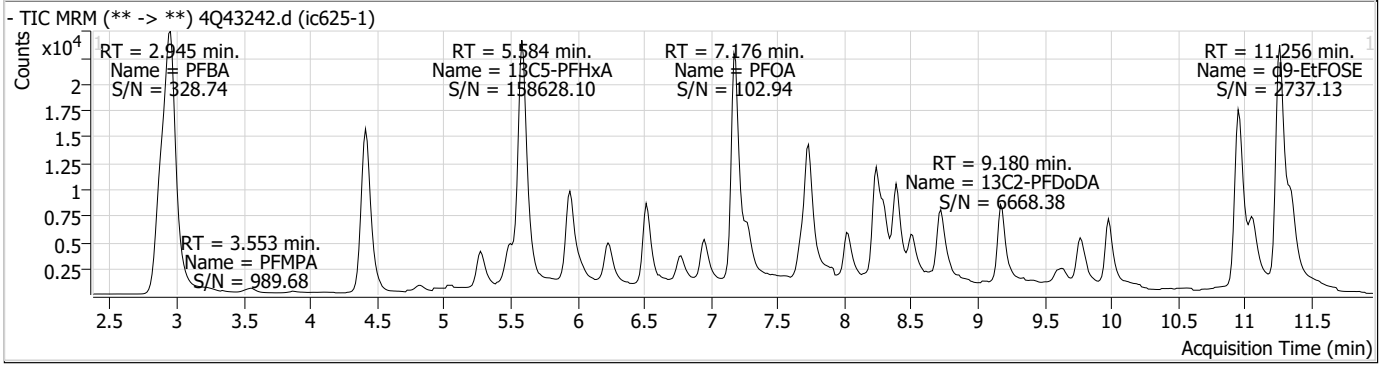
Perfluorinated Compounds by LC/MS/MS

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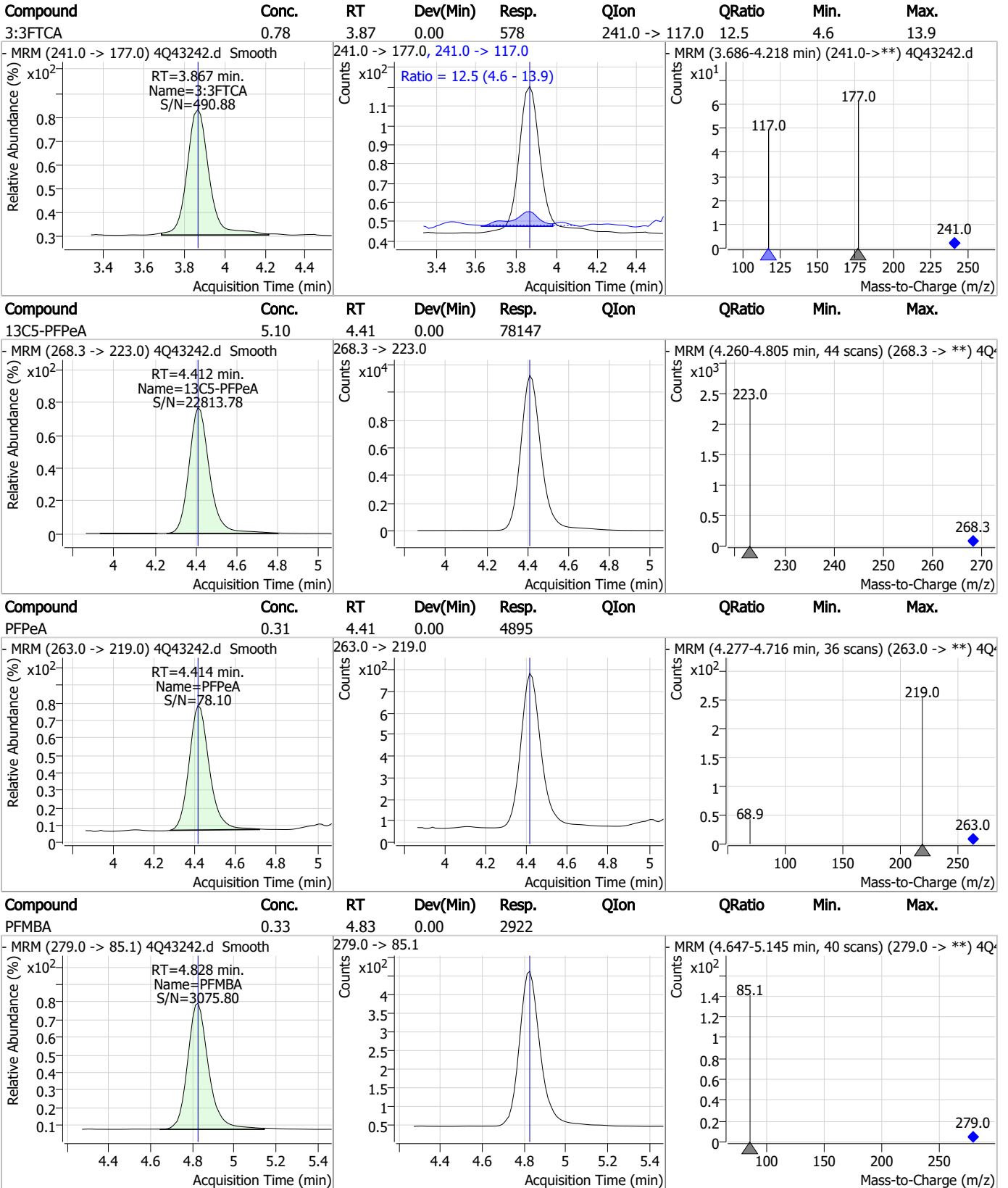
7.7.2
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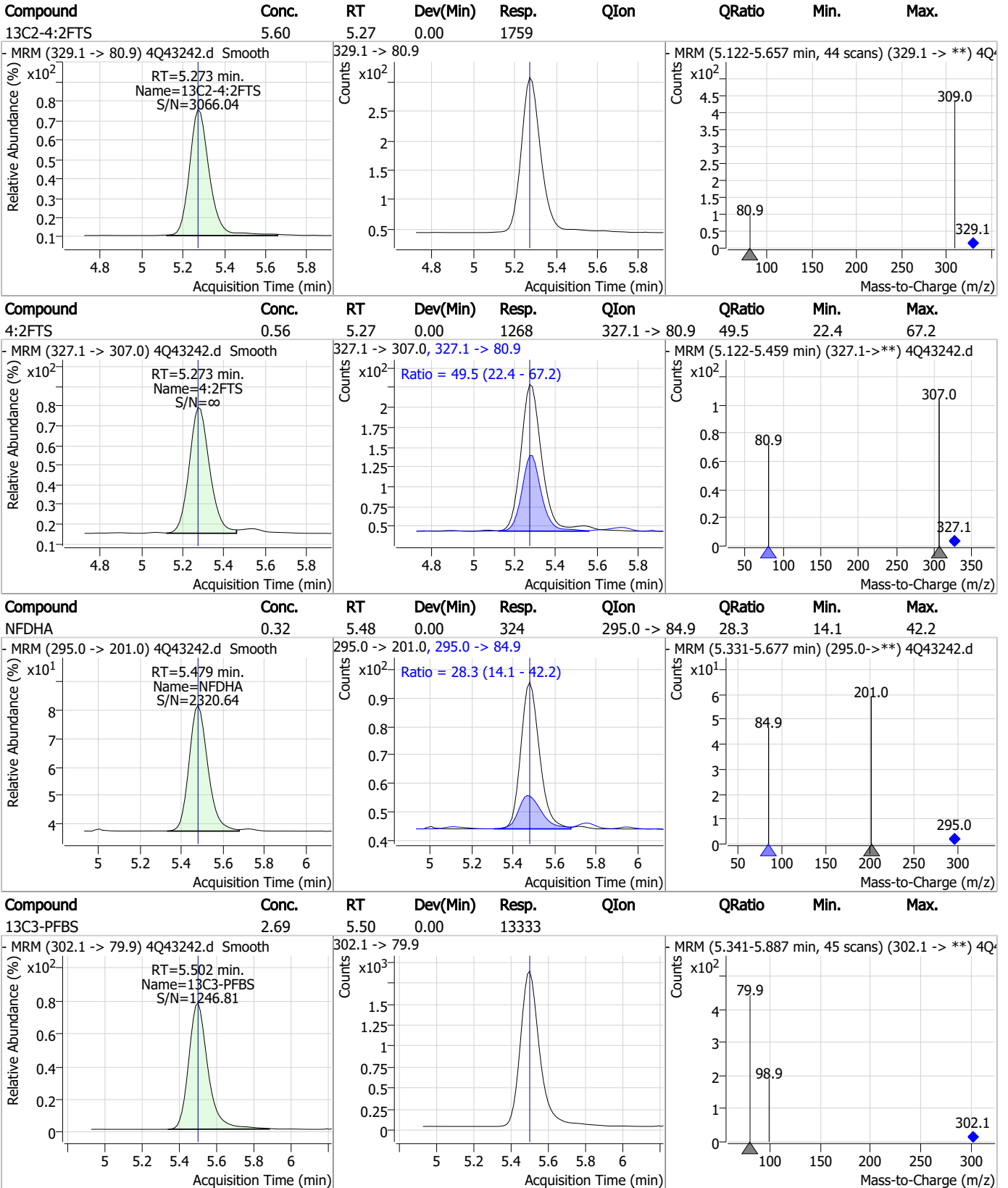
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

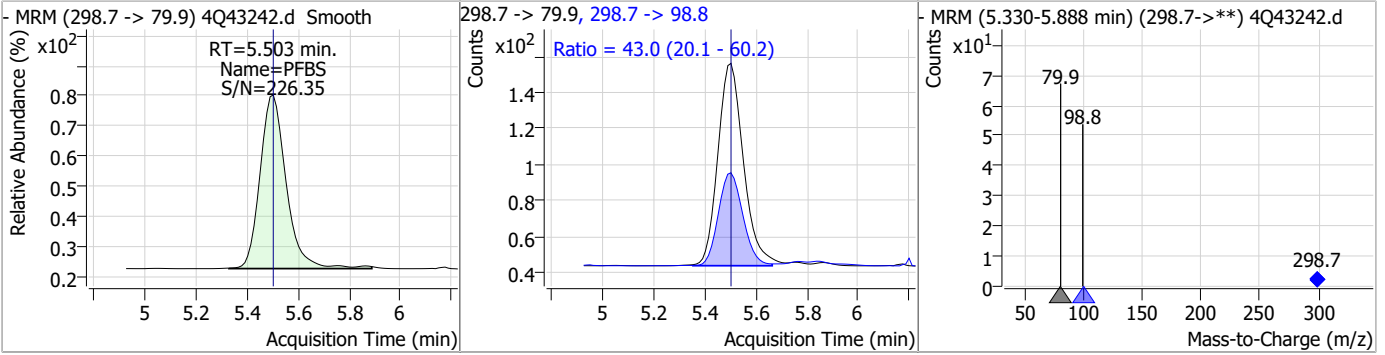


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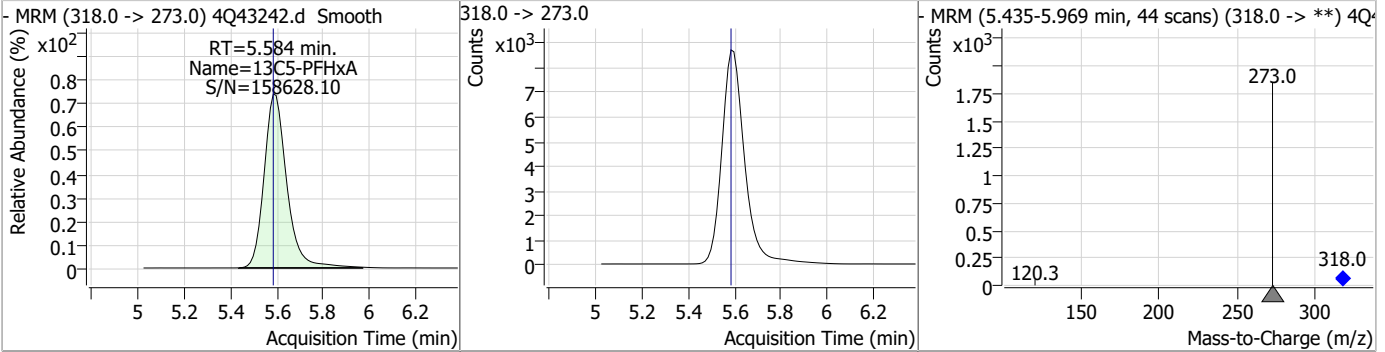
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Perfluorinated Compounds by LC/MS/MS

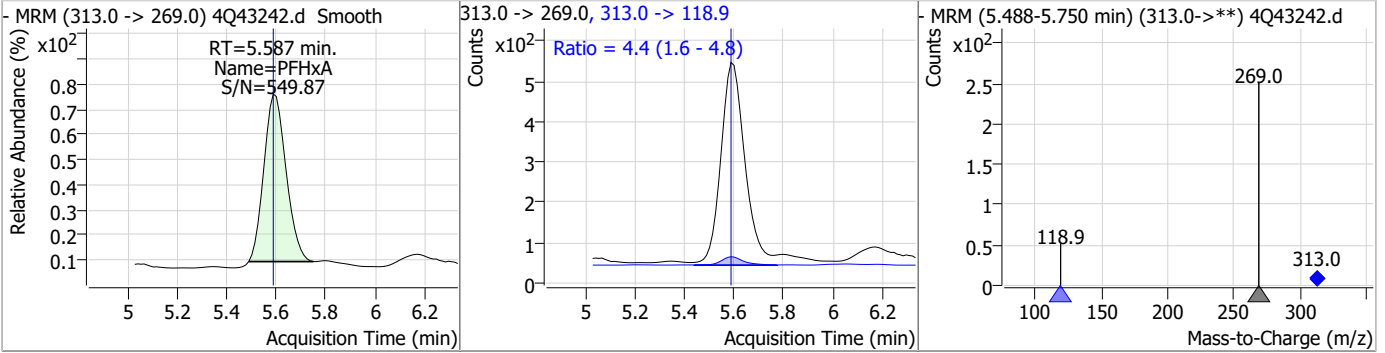
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.15	5.50	0.00	797	298.7 -> 98.8	43.0	20.1	60.2



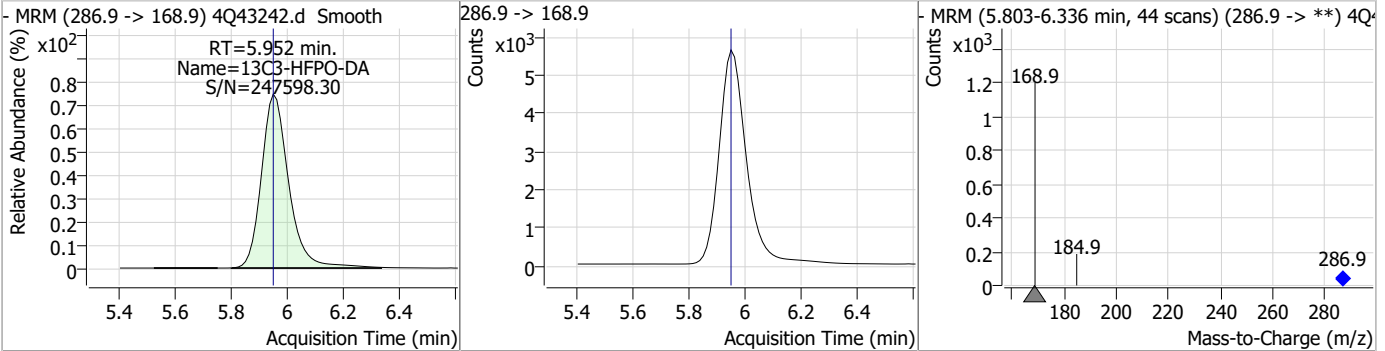
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.58	0.00	59029				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.16	5.59	0.00	2986	313.0 -> 118.9	4.4	1.6	4.8

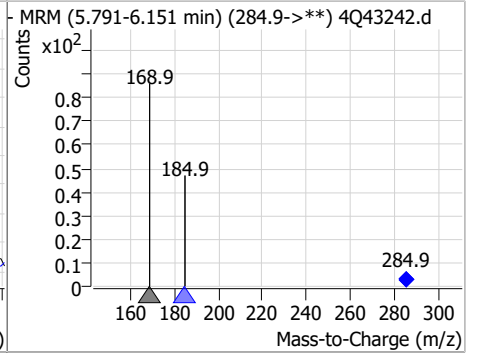
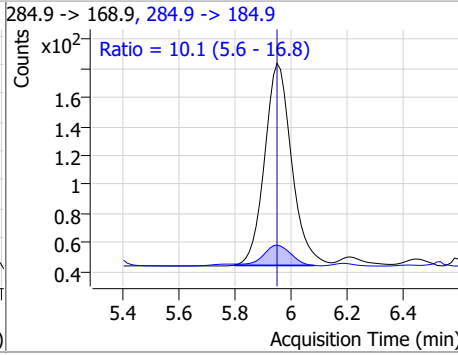
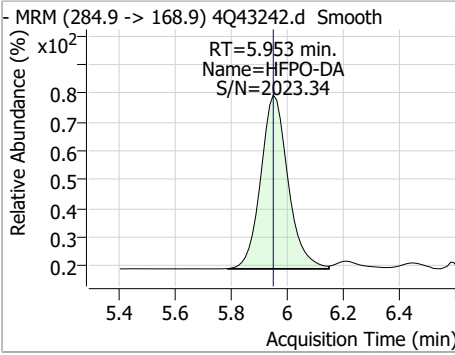


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.98	5.95	0.00	37917				

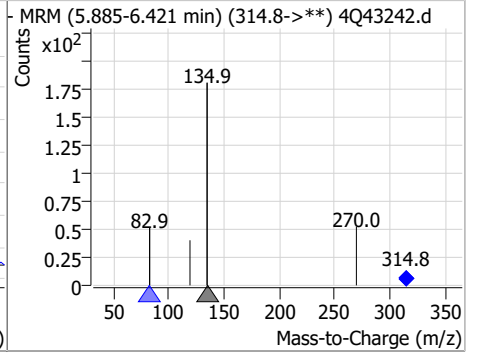
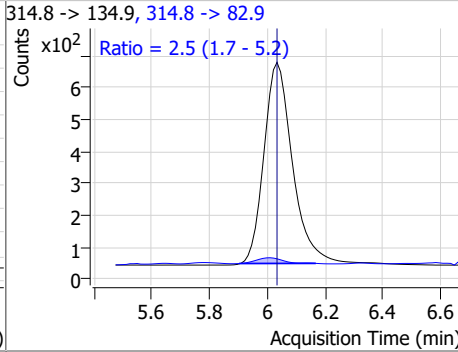
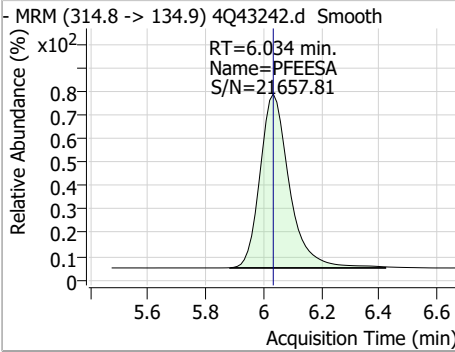


Perfluorinated Compounds by LC/MS/MS

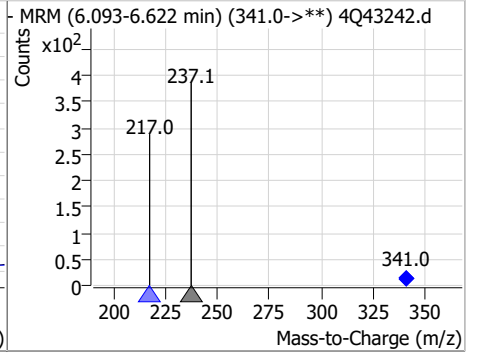
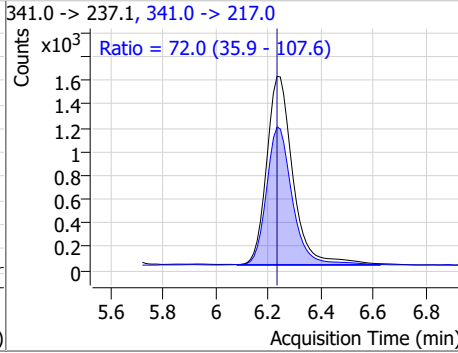
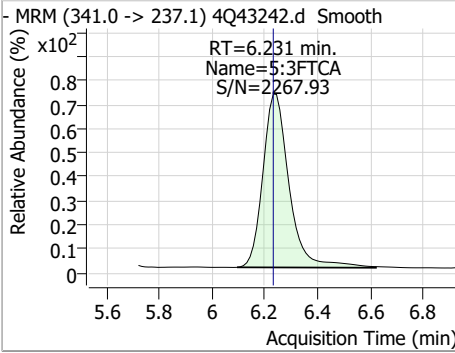
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.31	5.95	0.00	941	284.9 -> 184.9	10.1	5.6	16.8



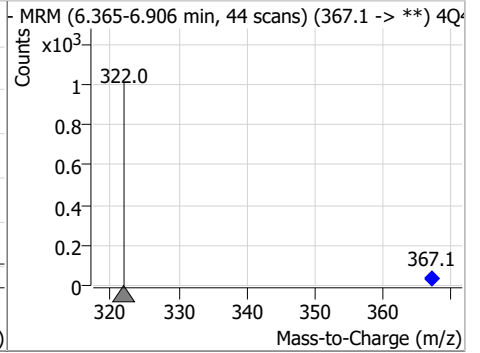
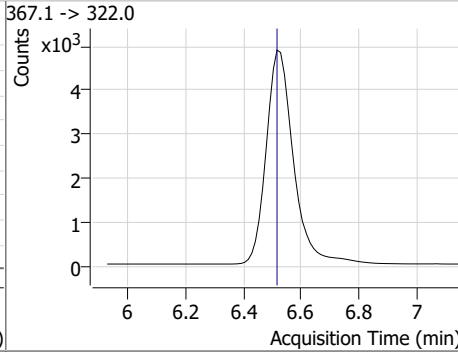
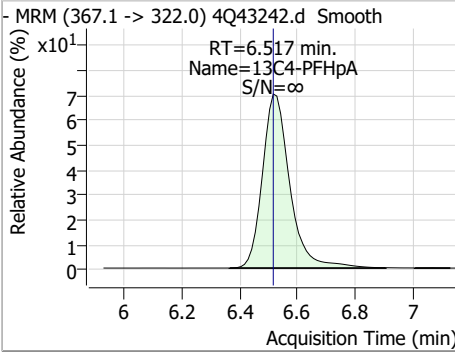
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.29	6.03	0.00	4488	314.8 -> 82.9	2.5	1.7	5.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	3.96	6.23	0.00	10990	341.0 -> 217.0	72.0	35.9	107.6



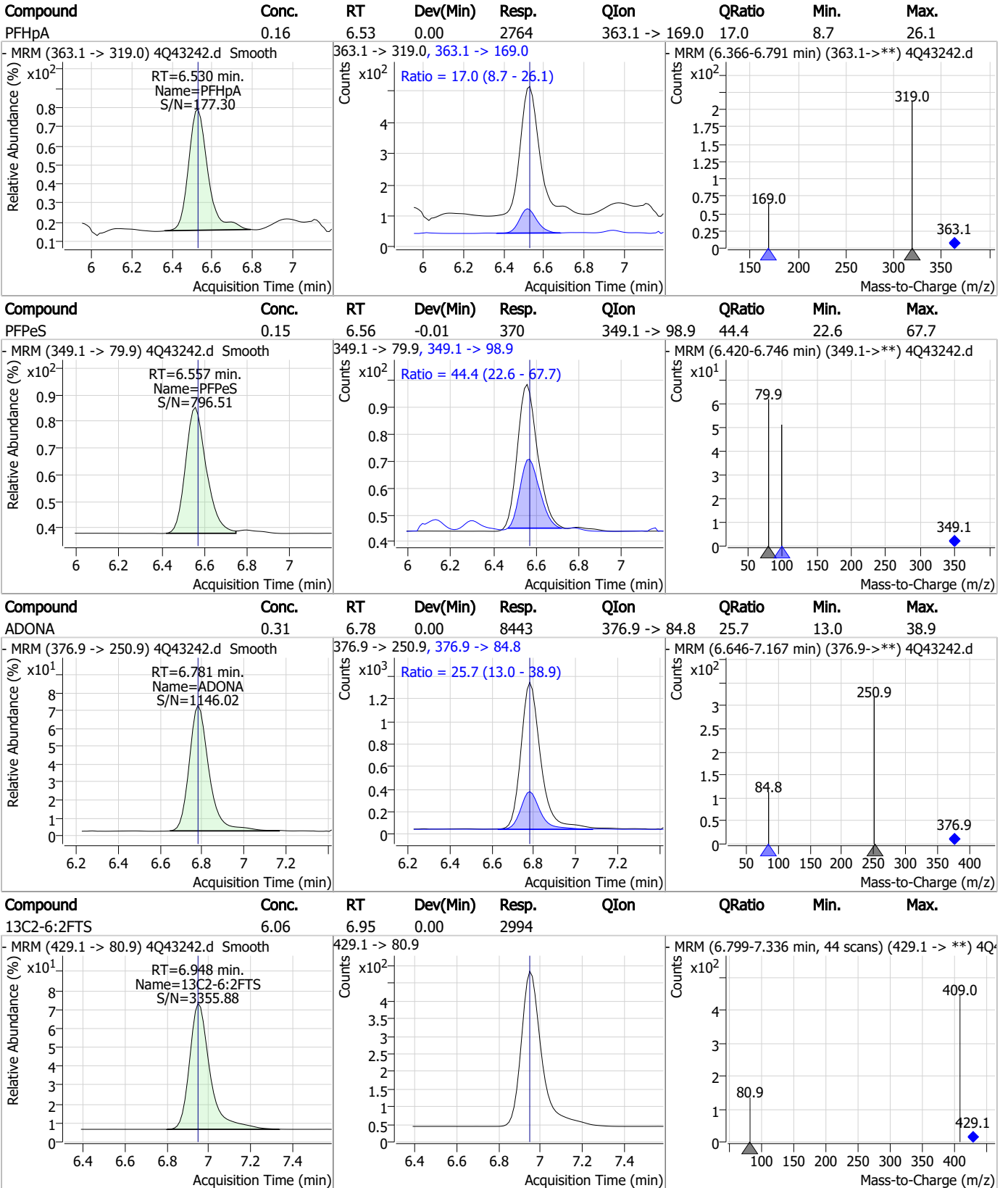
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.55	6.52	0.00	31971				



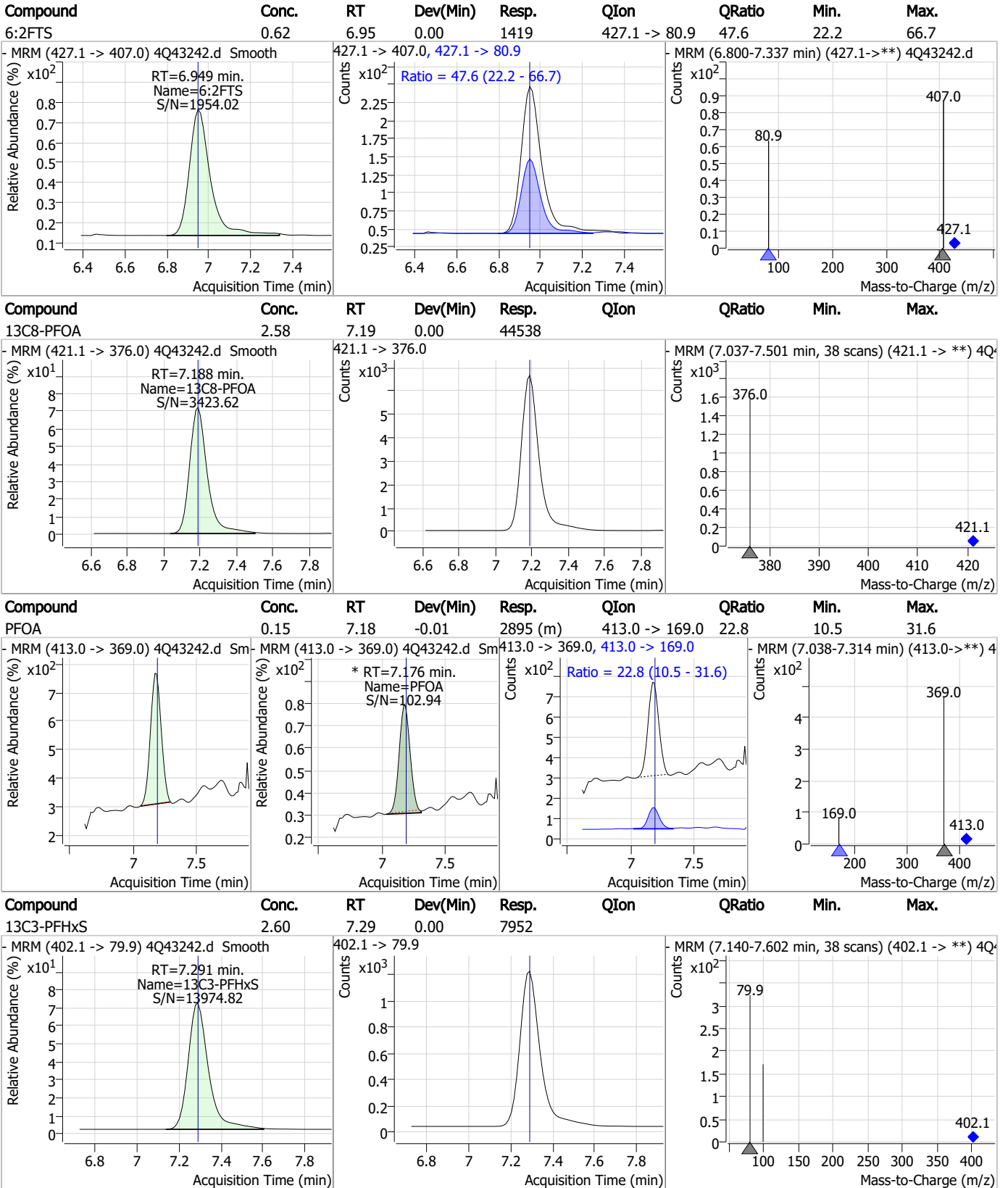
7.7.2
7



Perfluorinated Compounds by LC/MS/MS



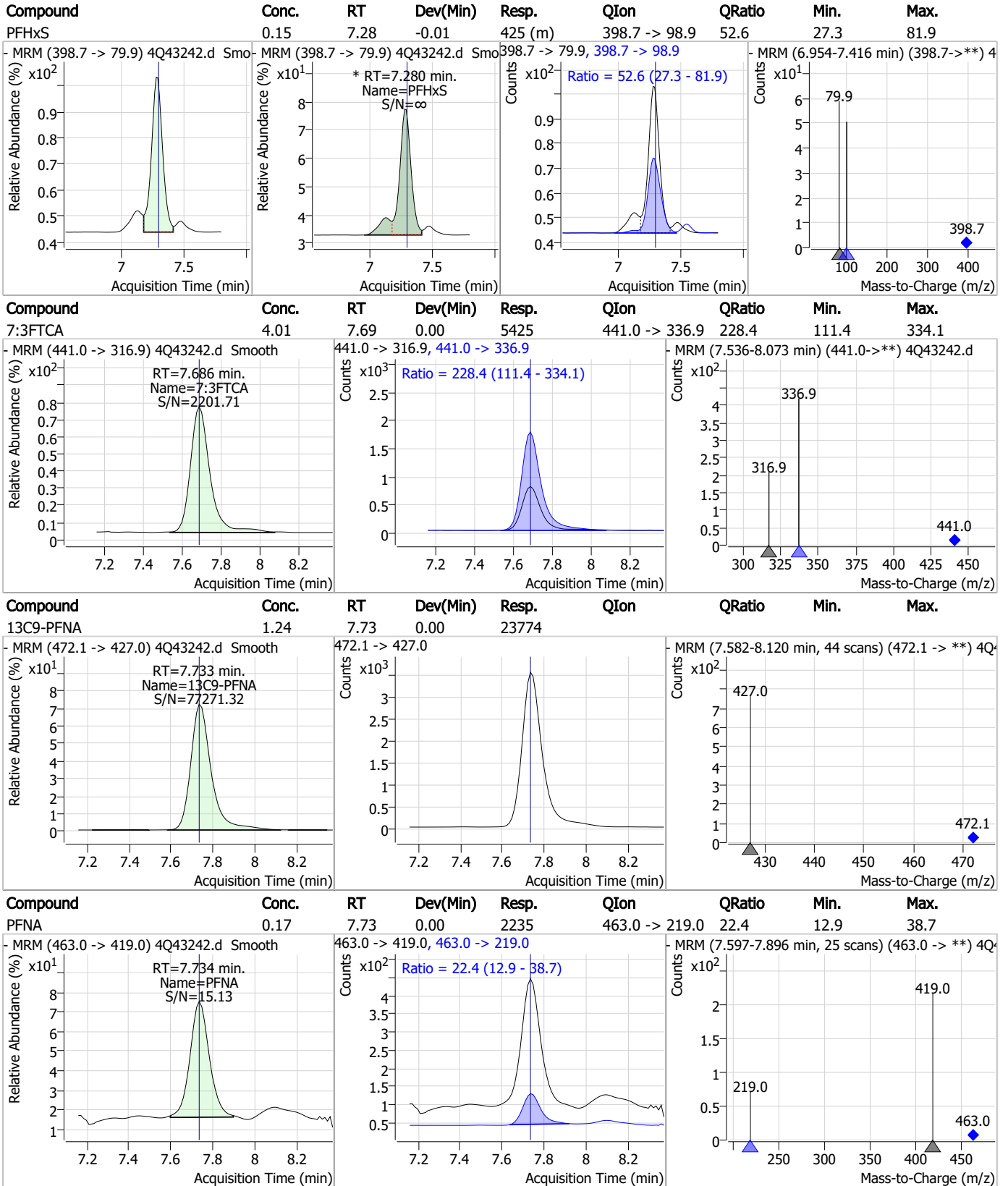
Perfluorinated Compounds by LC/MS/MS



7.7.2
7



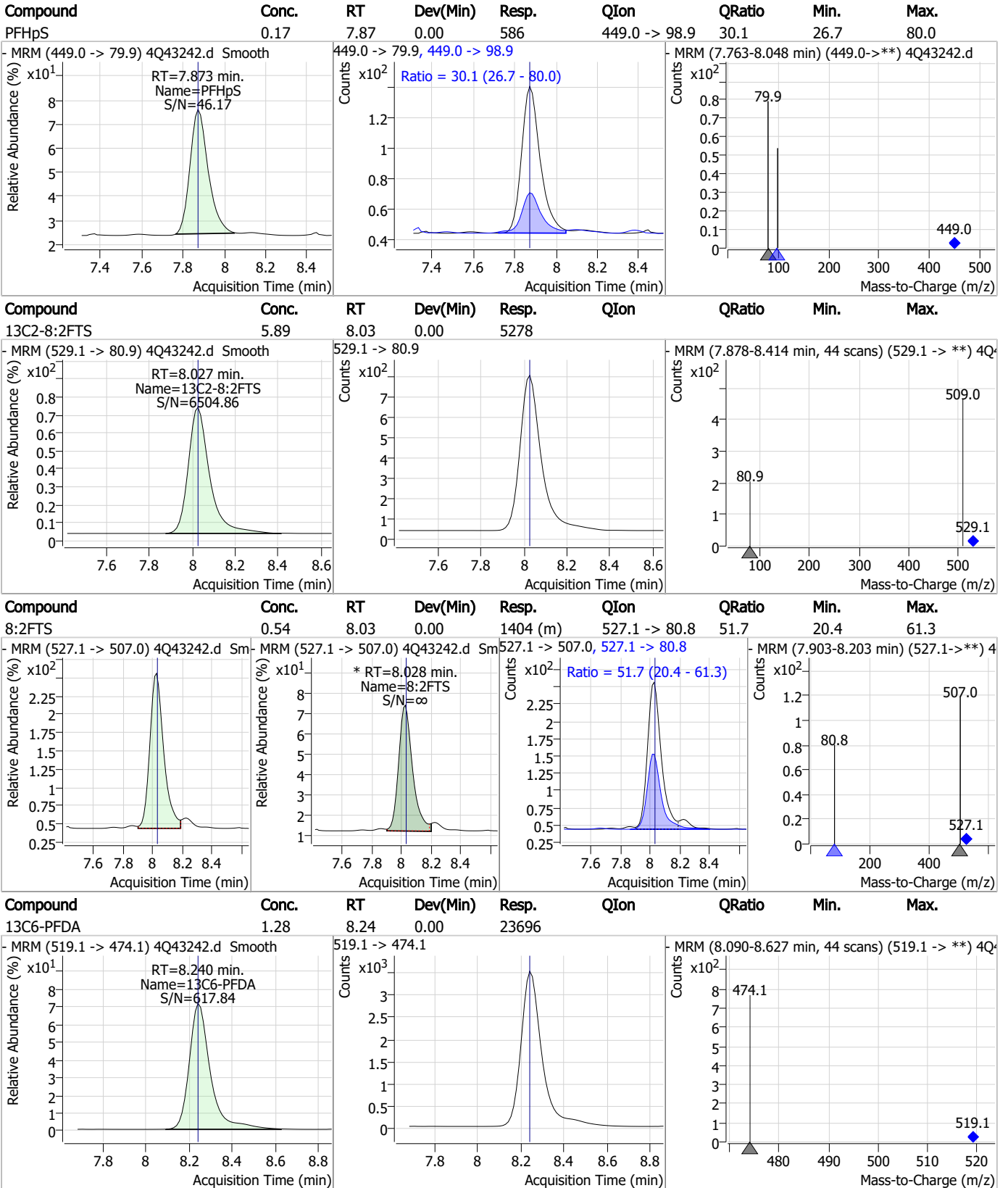
Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Perfluorinated Compounds by LC/MS/MS

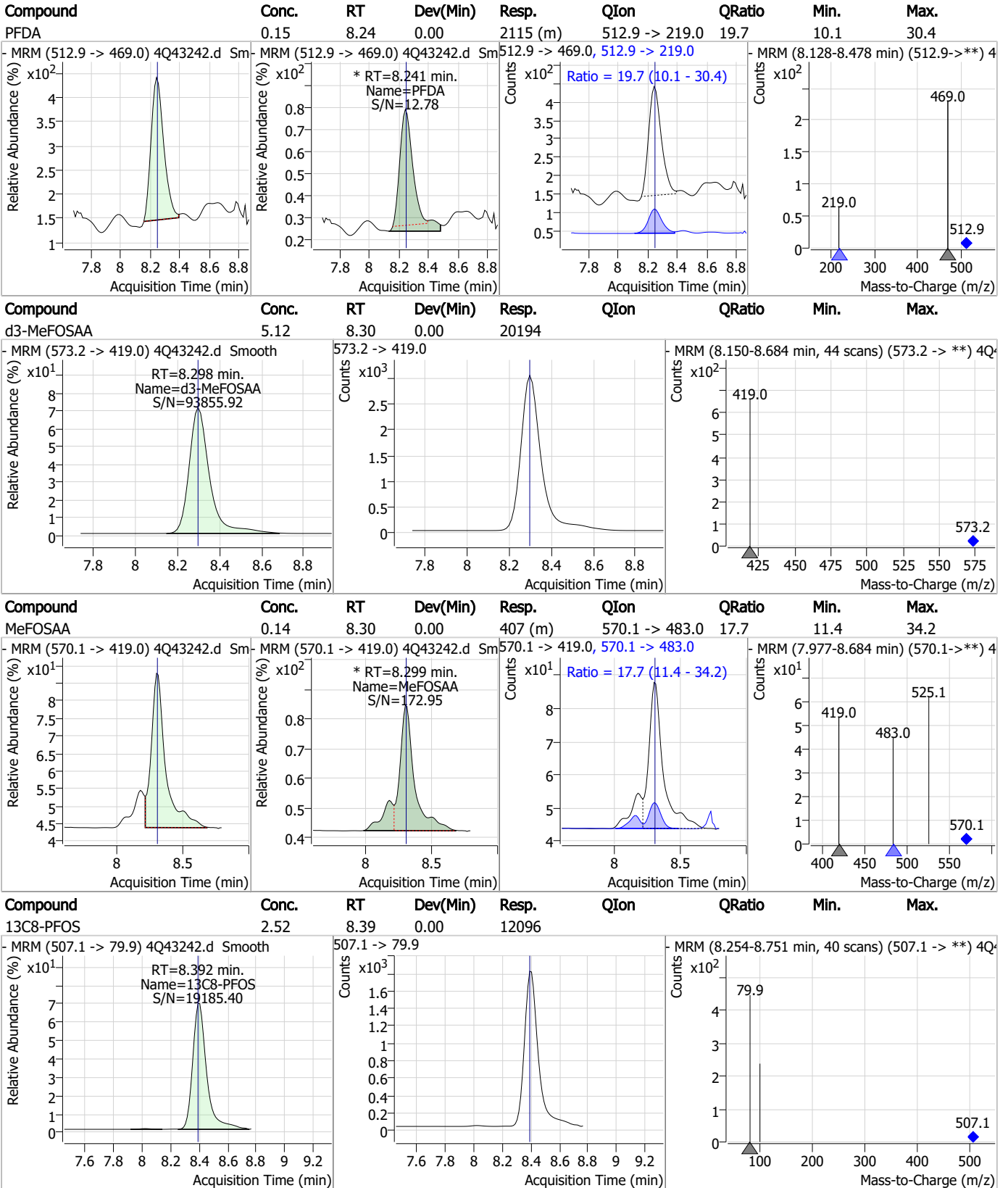


7.7.2

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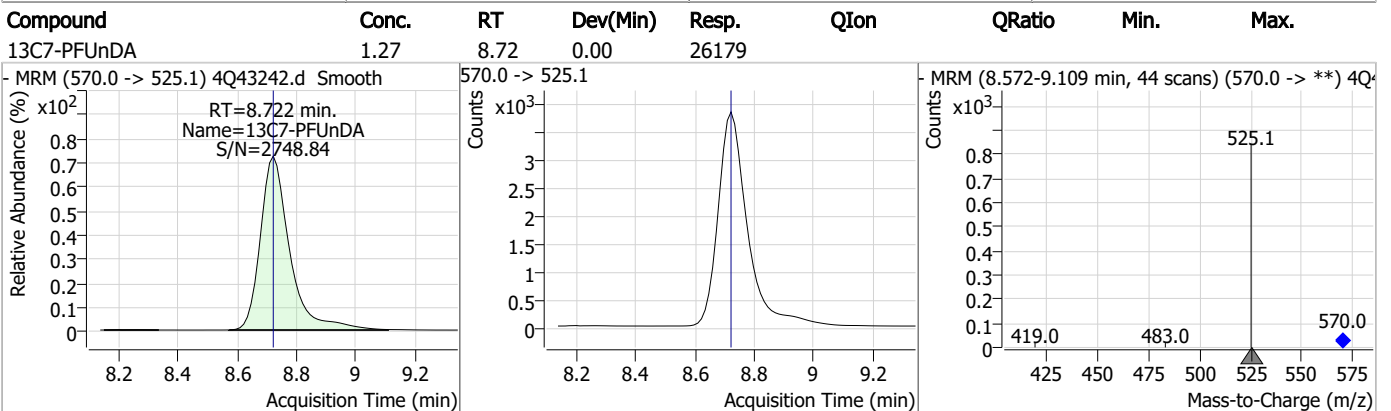
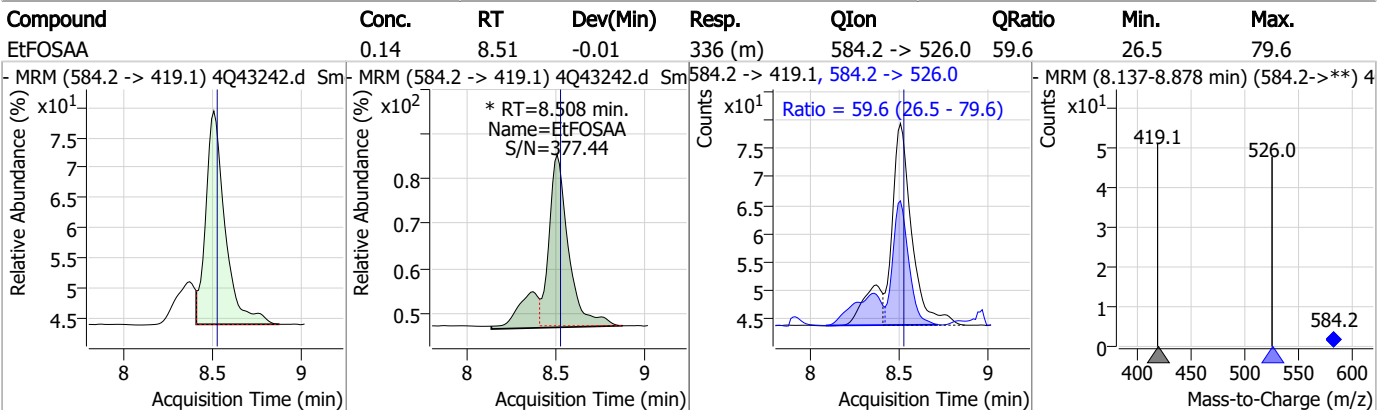
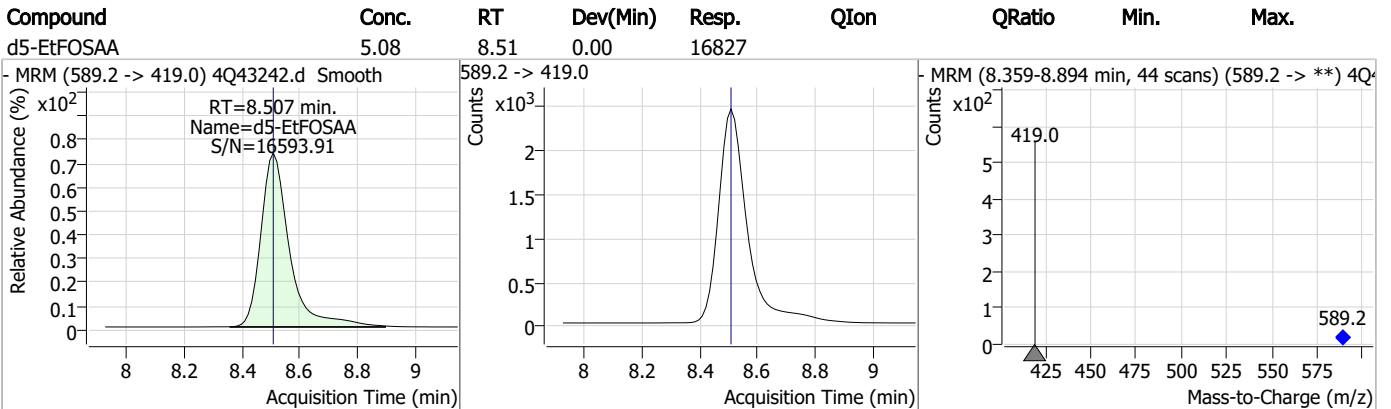
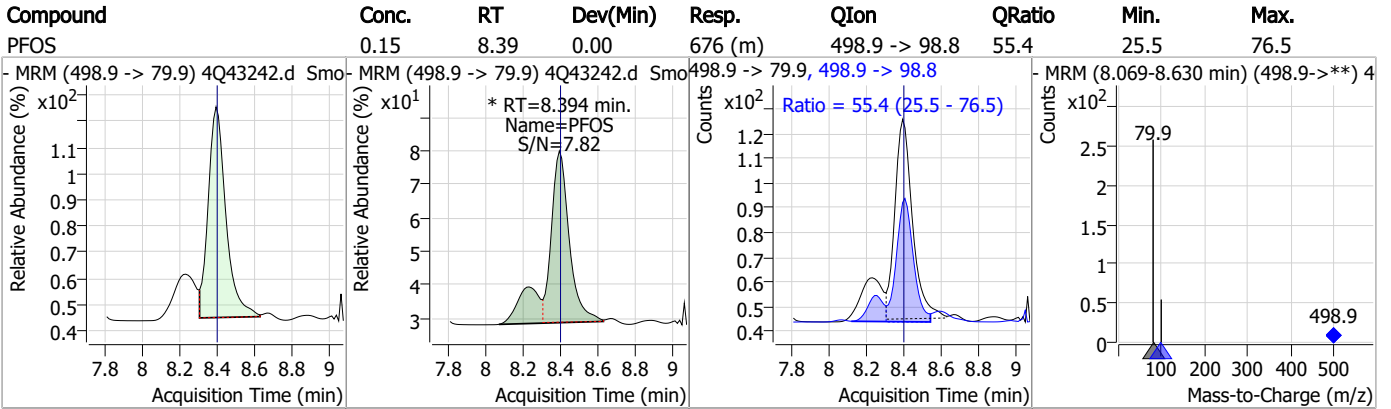
Perfluorinated Compounds by LC/MS/MS



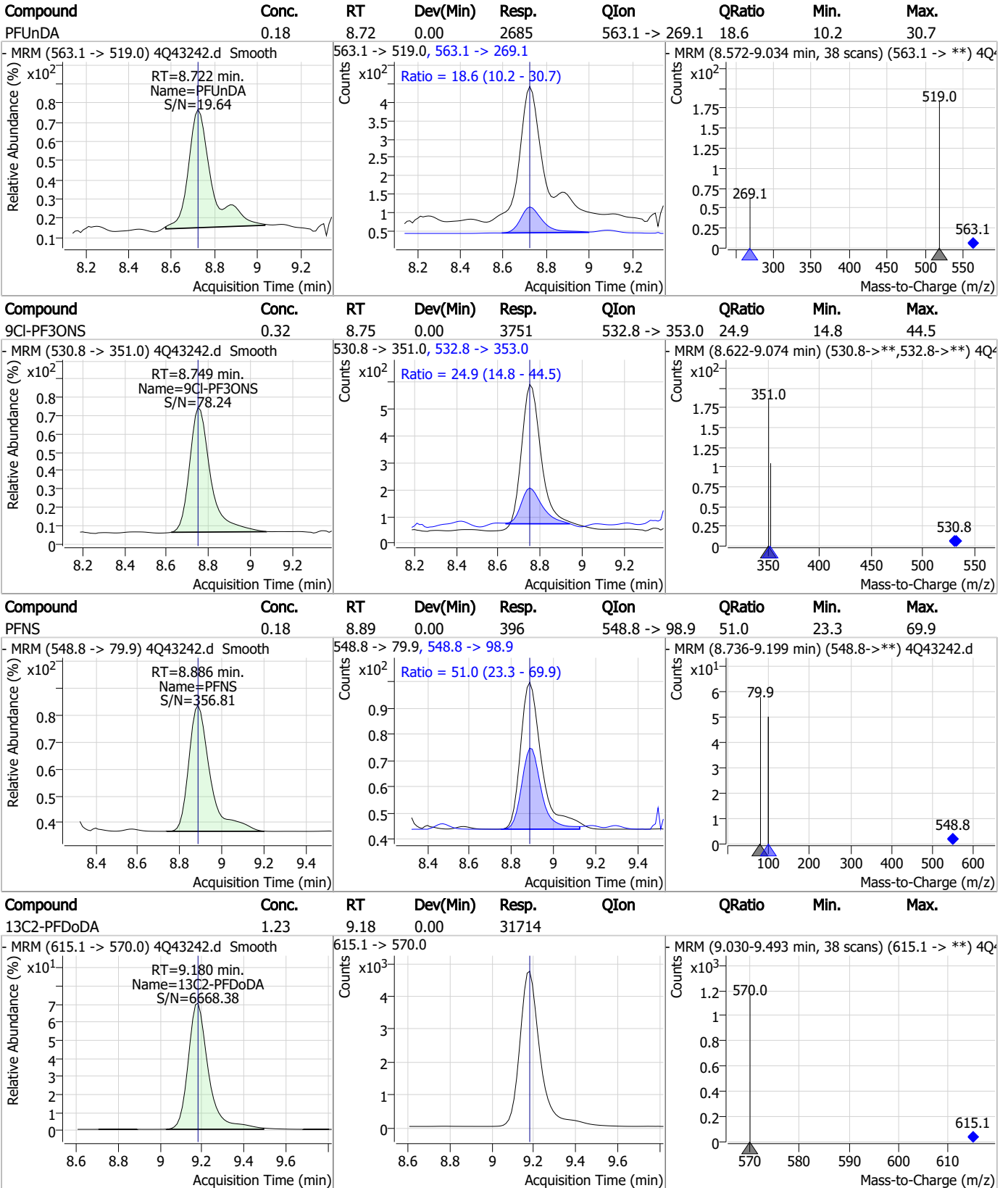
7.7.2

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Perfluorinated Compounds by LC/MS/MS



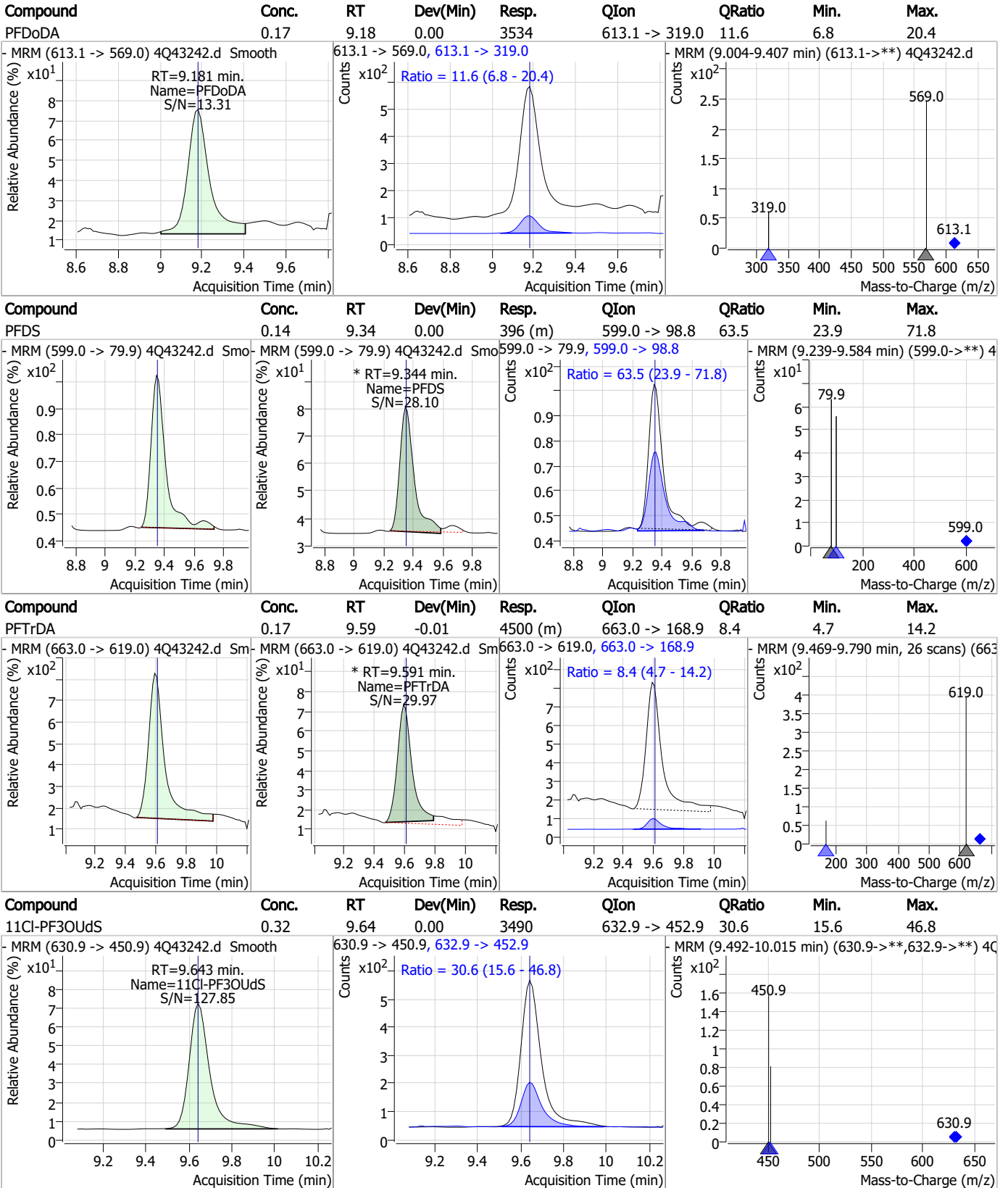
Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Perfluorinated Compounds by LC/MS/MS

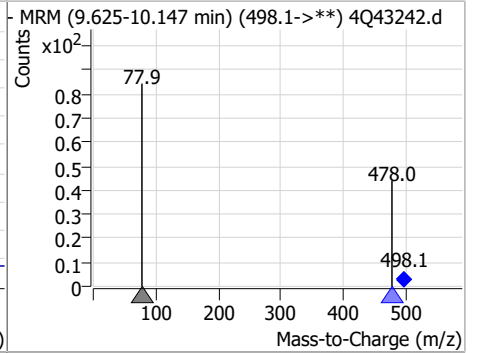
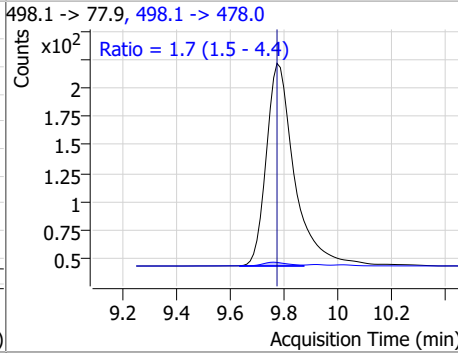
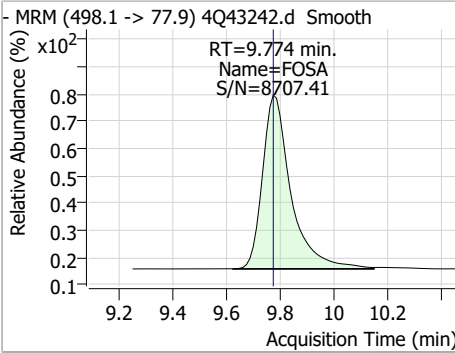


7.7.2

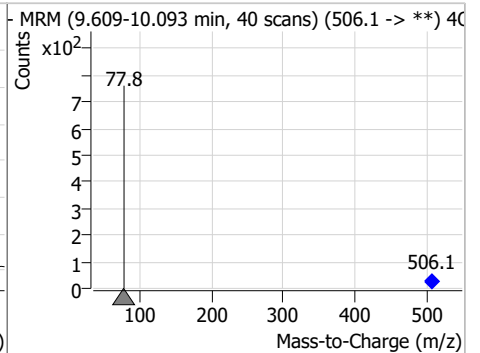
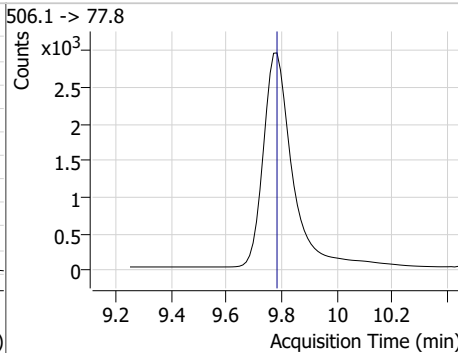
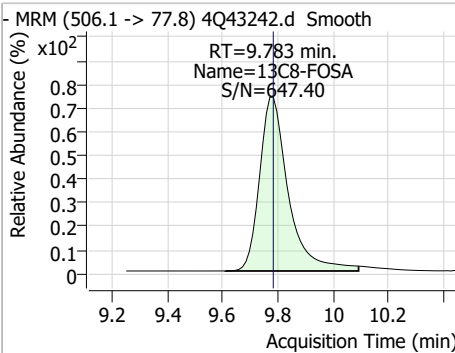
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Perfluorinated Compounds by LC/MS/MS

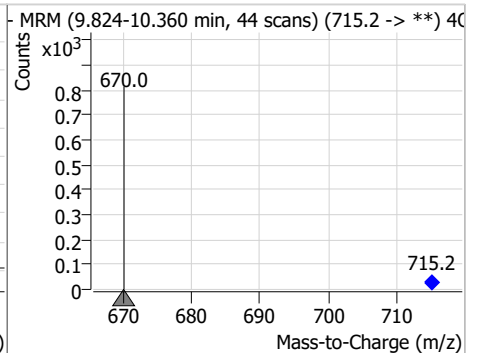
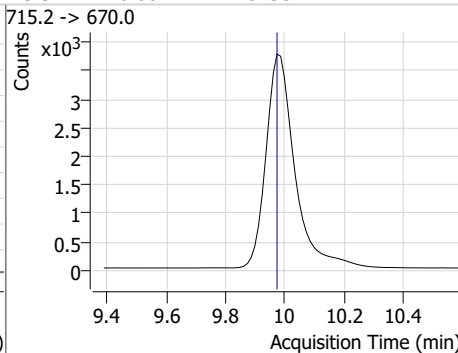
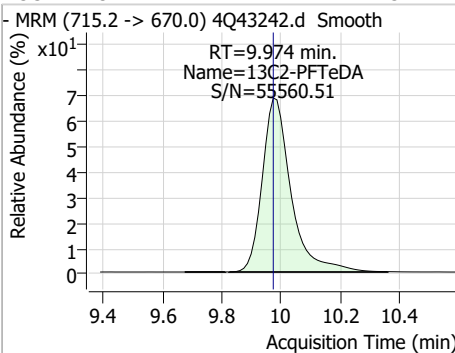
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.18	9.77	0.00	1297	498.1 -> 478.0	1.7	1.5	4.4



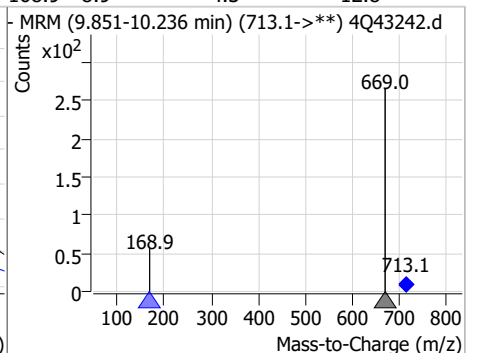
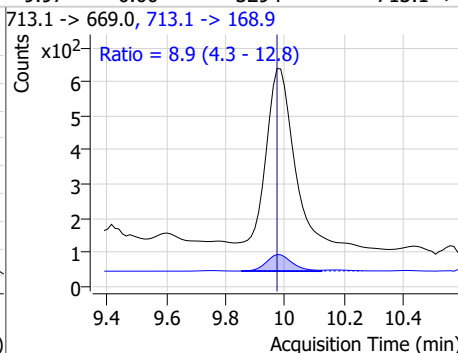
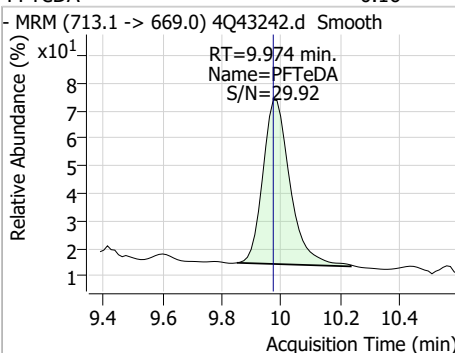
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.45	9.78	0.00	21321				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.23	9.97	0.00	25293				

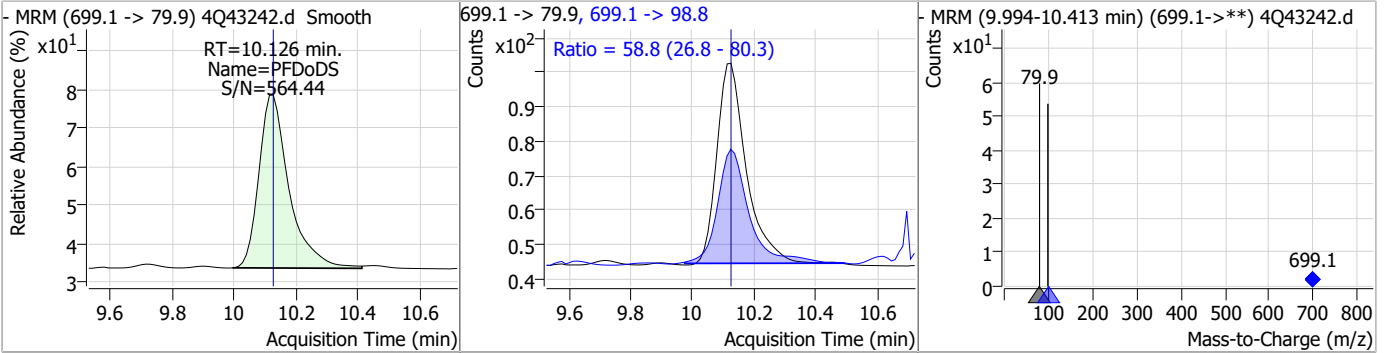


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.16	9.97	0.00	3294	713.1 -> 168.9	8.9	4.3	12.8

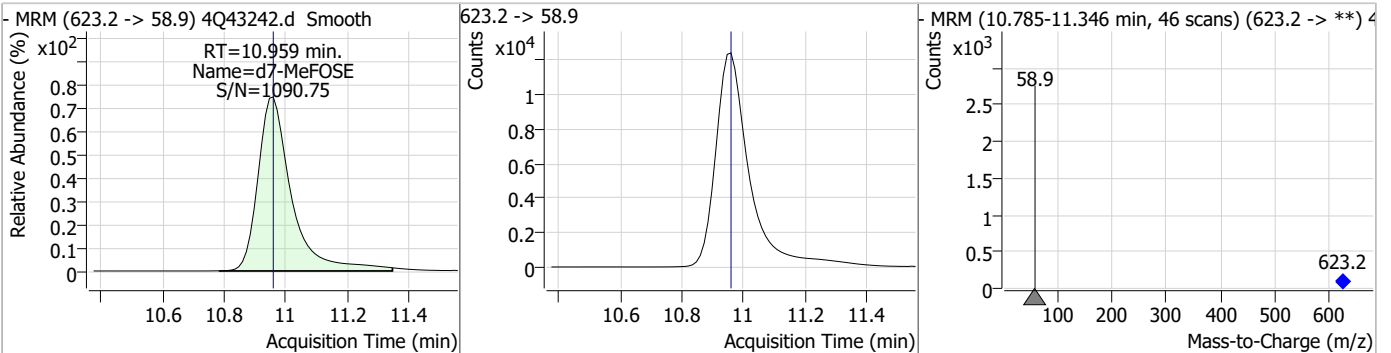


Perfluorinated Compounds by LC/MS/MS

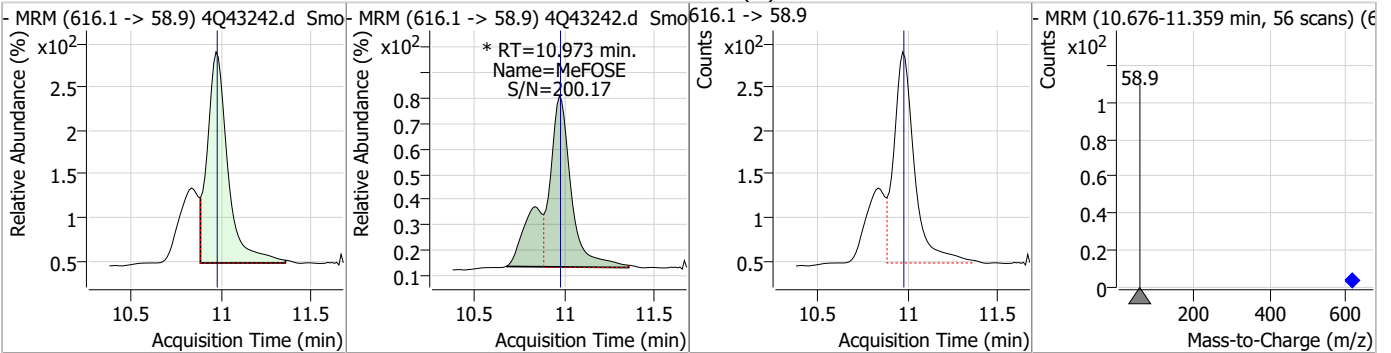
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.15	10.13	0.00	397	699.1 -> 98.8	58.8	26.8	80.3



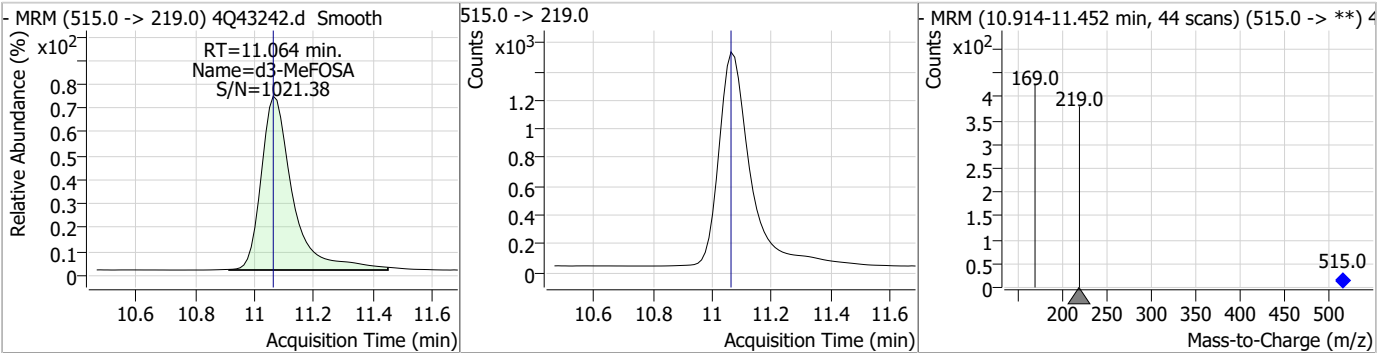
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.25	10.96	0.00	93022				



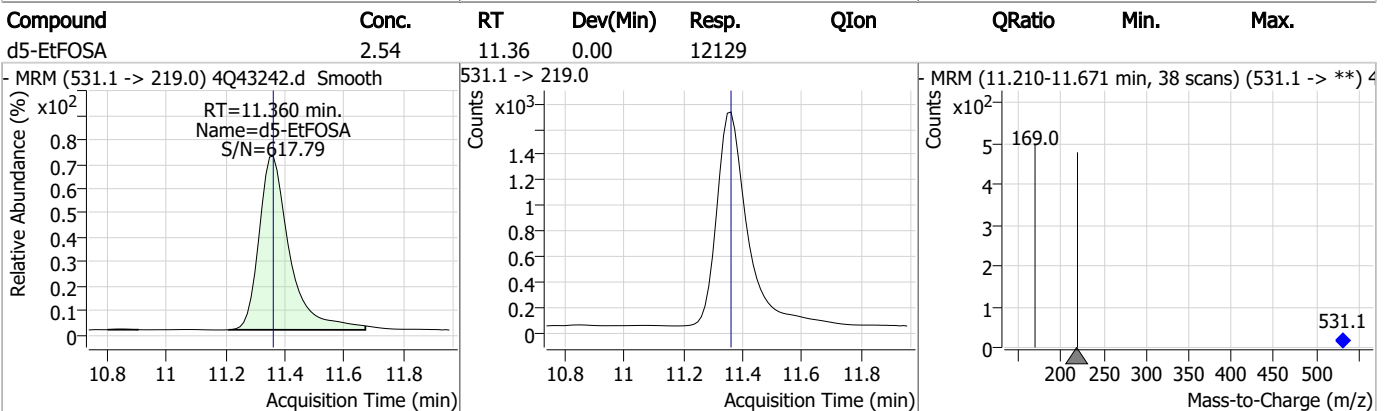
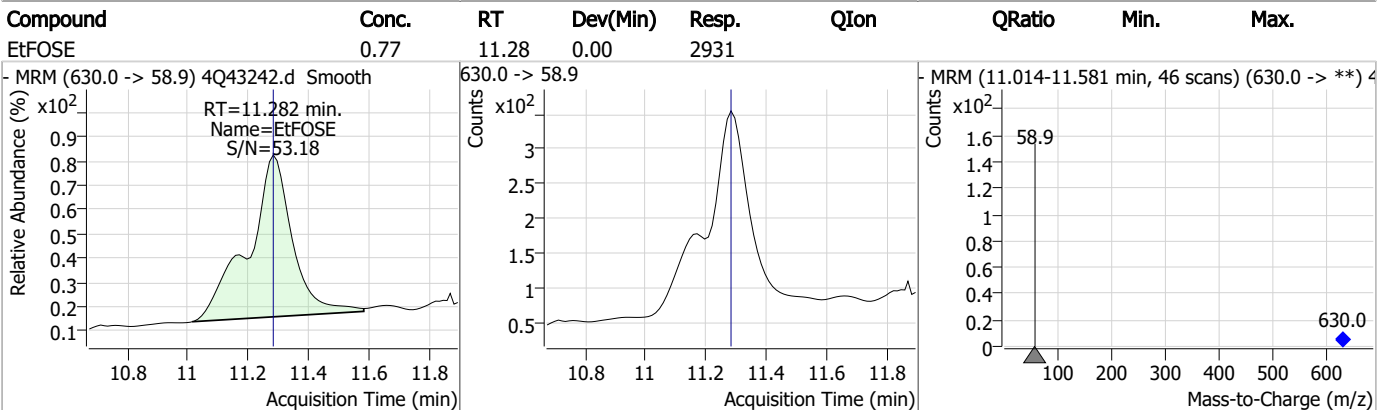
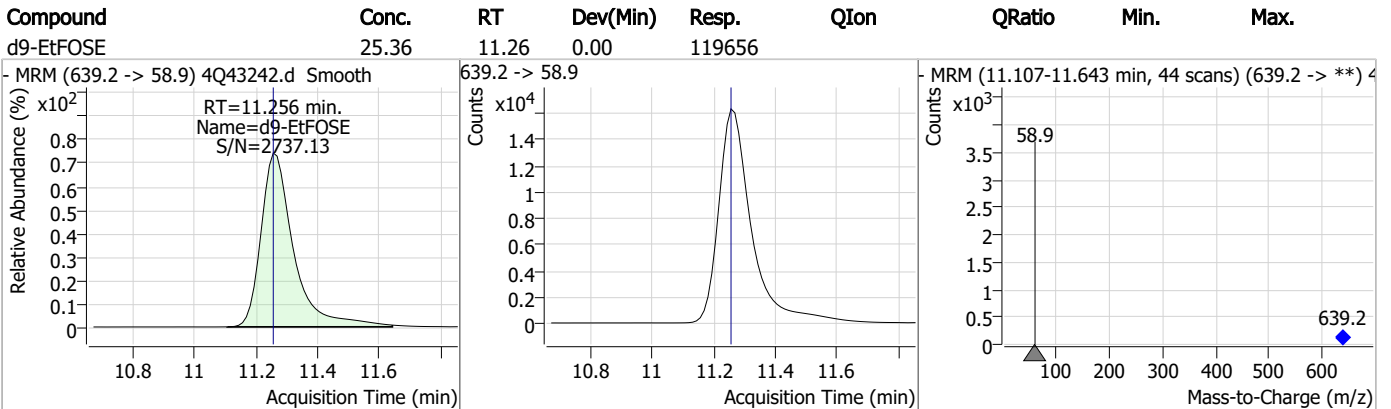
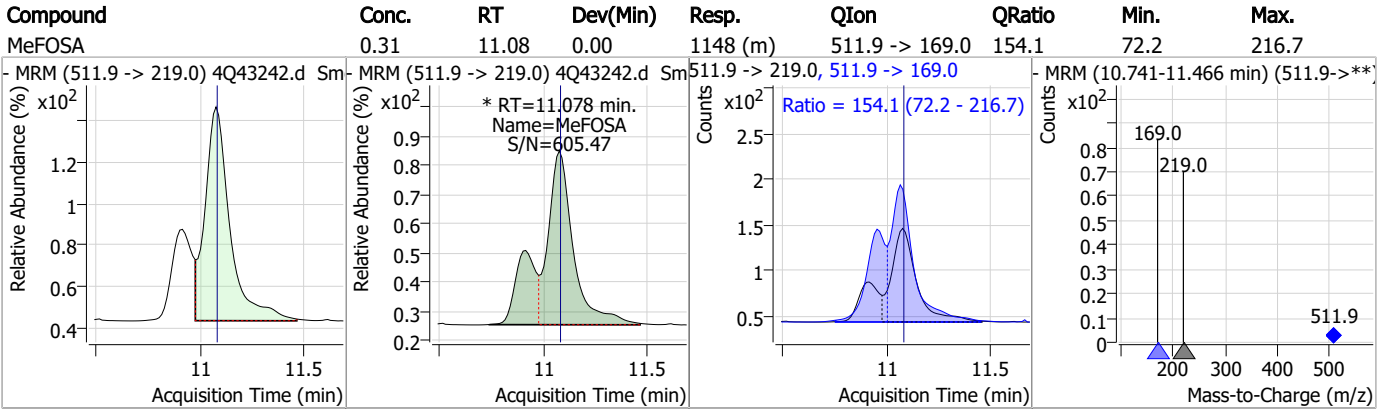
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.77	10.97	0.00	2562 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.45	11.06	0.00	11027				



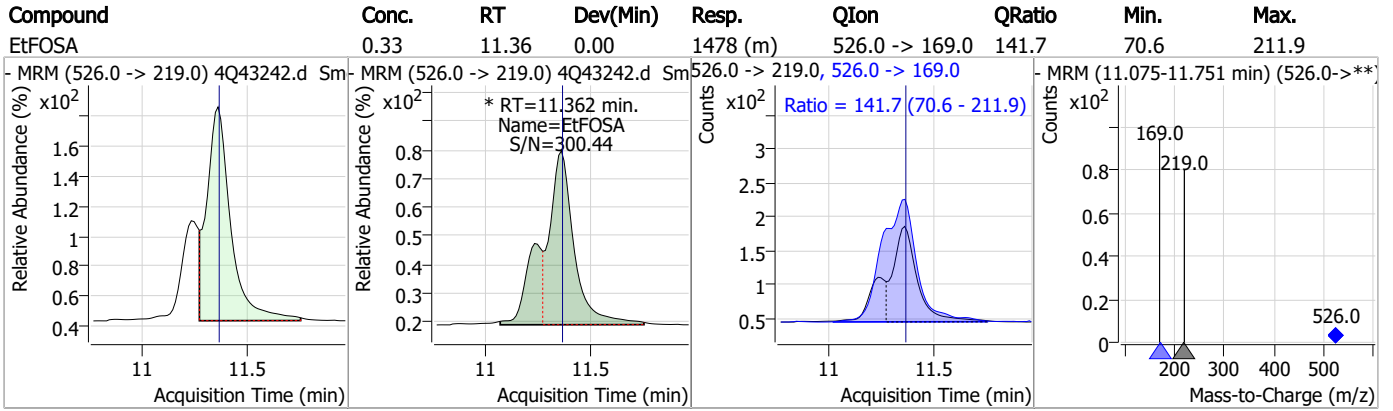
Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Manual Integration Approval Summary

Sample Number: S4Q625-IC625 **Method:** EPA DRAFT 1633
Lab FileID: 4Q43242.D **Analyst approved:** 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 11:54 **Supervisor approved:** 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.18	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.28	Split peak
8:2 Fluorotelomer sulfonate	39108-34-4		8.03	Poor instrument integration
Perfluorodecanoic acid	335-76-2		8.24	Split peak
MeFOSAA	2355-31-9		8.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.51	Split peak
Perfluorodecanesulfonic acid	335-77-3		9.34	Split peak
Perfluorotridecanoic acid	72629-94-8		9.59	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43243.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 12:08:50 PM
 Sample Name : ic625-2
 Vial : P1-A3
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	127982	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	76984	5.00 µg/L	0.000
M5-PFHxA	5.584	318.0 -> 273.0	57751	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	31885	2.50 µg/L	0.000
M8-PFOA	7.188	421.1 -> 376.0	43221	2.50 µg/L	0.000
M9-PFNA	7.733	472.1 -> 427.0	23197	1.25 µg/L	0.000
M6-PFDA	8.240	519.1 -> 474.1	23273	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	25408	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	30983	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	25324	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	21282	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	12771	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	7611	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	11641	2.50 µg/L	0.012
M2-4:2FTS	5.273	329.1 -> 80.9	1657	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2753	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	4839	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	20426	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	38348	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	16522	5.00 µg/L	0.000
M7-MeFOSE	10.947	623.2 -> 58.9	96961	25.00 µg/L	-0.012
M9-EtFOSE	11.256	639.2 -> 58.9	121317	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11879	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	10927	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	12285	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	70583	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	5513	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	52510	2.50 µg/L	0.000
13C2-PFDA	8.241	515.1 -> 470.1	21268	1.25 µg/L	0.000
13C5-PFNA	7.734	468.0 -> 423.0	26891	1.25 µg/L	0.000
13C2-PFHxA	5.585	315.1 -> 270.0	50142	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.273	329.1 -> 80.9	1657	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2753	5.40 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4839	5.24 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C2-PFDoDA	9.180	615.1 -> 570.0	30983	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C2-PFTeDA	9.974	715.2 -> 670.0	25324	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFBS	5.502	302.1 -> 79.9	12771	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C3-PFHxS	7.291	402.1 -> 79.9	7611	2.42 µg/L	0.000

7.7.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C4-PFBA	2.936	216.8 -> 171.9	127982	10.06 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.517	367.1 -> 322.0	31885	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.584	318.0 -> 273.0	57751	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFPeA	4.412	268.3 -> 223.0	76984	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C6-PFDA	8.240	519.1 -> 474.1	23273	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C7-PFUnDA	8.722	570.0 -> 525.1	25408	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-FOSA	9.783	506.1 -> 77.8	21282	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C8-PFOA	7.188	421.1 -> 376.0	43221	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C8-PFOS	8.405	507.1 -> 79.9	11641	2.37 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C9-PFNA	7.733	472.1 -> 427.0	23197	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
d3-MeFOSAA	8.298	573.2 -> 419.0	20426	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	38348	10.08 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d3-MeFOSA	11.064	515.0 -> 219.0	10927	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
d5-EtFOSAA	8.507	589.2 -> 419.0	16522	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d7-MeFOSE	10.947	623.2 -> 58.9	96961	25.73 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
d9-EtFOSE	11.256	639.2 -> 58.9	121317	25.14 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
d5-EtFOSA	11.360	531.1 -> 219.0	11879	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	2988	1.41 µg/L	98
		327.1 -> 80.9	1296		
6:2FTS	6.949	427.1 -> 407.0	2901	1.38 µg/L	93
		427.1 -> 80.9	1158		
8:2FTS	8.028	527.1 -> 507.0	3389	1.42 µg/L	95
		527.1 -> 80.8	1489		
EtFOSAA	8.521	584.2 -> 419.1	845	0.36 µg/L	m 88
		584.2 -> 526.0	518		
FOSA	9.774	498.1 -> 77.9	2494	0.35 µg/L	m 98
		498.1 -> 478.0	57		
MeFOSAA	8.299	570.1 -> 419.0	1000	0.34 µg/L	m 98
		570.1 -> 483.0	221		
PFBA	2.932	212.8 -> 168.9	4257	1.43 µg/L	100
PFBS	5.503	298.7 -> 79.9	1671	0.33 µg/L	93
		298.7 -> 98.8	600		
PFDA	8.241	512.9 -> 469.0	5088	0.36 µg/L	87
		512.9 -> 219.0	729		
PFDODA	9.181	613.1 -> 569.0	7323	0.36 µg/L	96
		613.1 -> 319.0	1119		
PFDS	9.344	599.0 -> 79.9	999	0.37 µg/L	88

7.7.3
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	562			
PFHpA	6.517	363.1 -> 319.0	5886	0.35	µg/L	99
		363.1 -> 169.0	1047			
PFHpS	7.873	449.0 -> 79.9	1190	0.36	µg/L	99
		449.0 -> 98.9	623			
PFHxA	5.587	313.0 -> 269.0	6611	0.36	µg/L	97
		313.0 -> 118.9	267			
PFHxS	7.292	398.7 -> 79.9	994	0.36	µg/L	m 97
		398.7 -> 98.9	520			
PFNA	7.734	463.0 -> 419.0	4718	0.36	µg/L	96
		463.0 -> 219.0	1306			
PFNS	8.899	548.8 -> 79.9	607	0.29	µg/L	84
		548.8 -> 98.9	346			
PFOA	7.189	413.0 -> 369.0	6097	0.32	µg/L	95
		413.0 -> 169.0	1412			
PFOS	8.394	498.9 -> 79.9	1505	0.34	µg/L	m 97
		498.9 -> 98.8	739			
PFPeA	4.414	263.0 -> 219.0	10890	0.71	µg/L	100
PFPeS	6.557	349.1 -> 79.9	773	0.32	µg/L	91
		349.1 -> 98.9	394			
PFTeDA	9.974	713.1 -> 669.0	7567	0.37	µg/L	100
		713.1 -> 168.9	643			
PFTrDA	9.604	663.0 -> 619.0	9132	0.36	µg/L	95
		663.0 -> 168.9	1036			
PFUnDA	8.722	563.1 -> 519.0	5037	0.35	µg/L	99
		563.1 -> 269.1	1049			
11Cl-PF3OUdS	9.643	630.9 -> 450.9	7689	0.70	µg/L	96
		632.9 -> 452.9	2241			
9Cl-PF3ONS	8.749	530.8 -> 351.0	7811	0.66	µg/L	99
		532.8 -> 353.0	2379			
ADONA	6.781	376.9 -> 250.9	18940	0.69	µg/L	98
		376.9 -> 84.8	5146			
HFPO-DA	5.953	284.9 -> 168.9	2057	0.68	µg/L	92
		284.9 -> 184.9	290			
3:3FTCA	3.867	241.0 -> 177.0	1345	1.84	µg/L	93
		241.0 -> 117.0	92			
5:3FTCA	6.231	341.0 -> 237.1	24613	9.08	µg/L	99
		341.0 -> 217.0	17524			
7:3FTCA	7.686	441.0 -> 316.9	12240	9.25	µg/L	95
		441.0 -> 336.9	26257			
EtFOSA	11.362	526.0 -> 219.0	3247	0.73	µg/L	m 96
		526.0 -> 169.0	4414			
EtFOSE	11.282	630.0 -> 58.9	7108	1.84	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	2783	0.76	µg/L	m 92
		511.9 -> 169.0	3735			
MeFOSE	10.973	616.1 -> 58.9	6439	1.87	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	847	0.34	µg/L	95
		699.1 -> 98.8	484			
NFDHA	5.465	295.0 -> 201.0	844	0.86	µg/L	99
		295.0 -> 84.9	244			
PFMBA	4.828	279.0 -> 85.1	6202	0.71	µg/L	100
PFMPA	3.553	229.0 -> 84.9	5500	0.70	µg/L	100
PFEESA	6.034	314.8 -> 134.9	9818	0.66	µg/L	99
		314.8 -> 82.9	360			

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

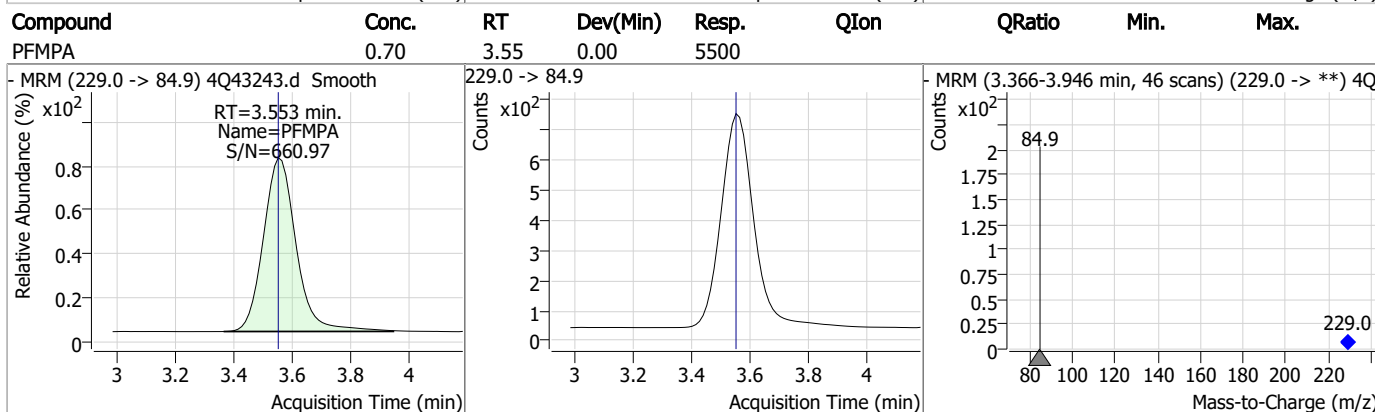
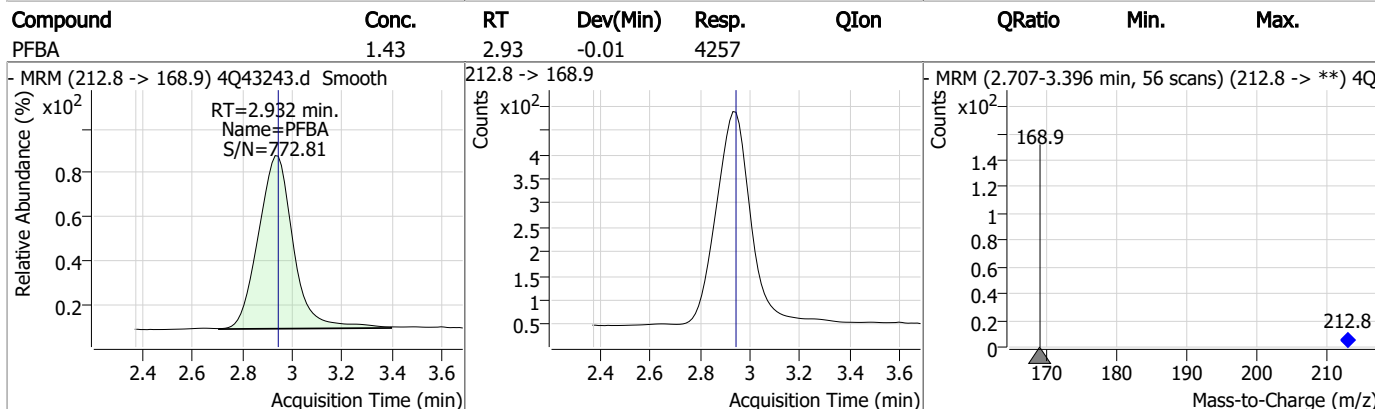
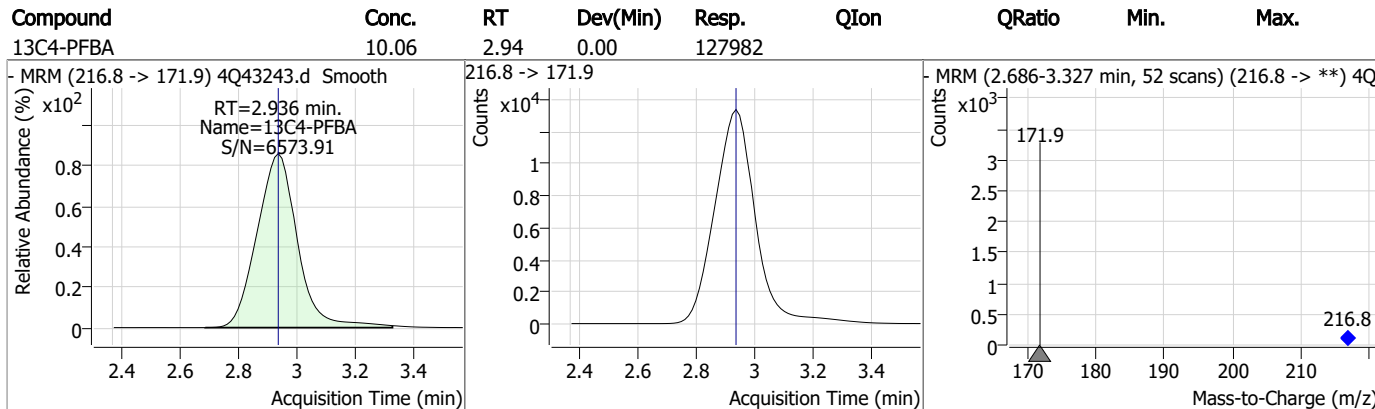
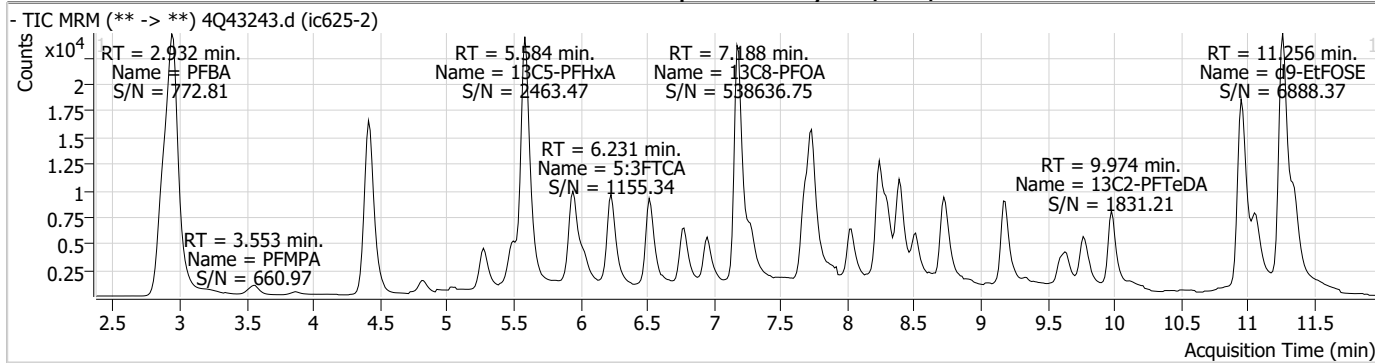
Perfluorinated Compounds by LC/MS/MS

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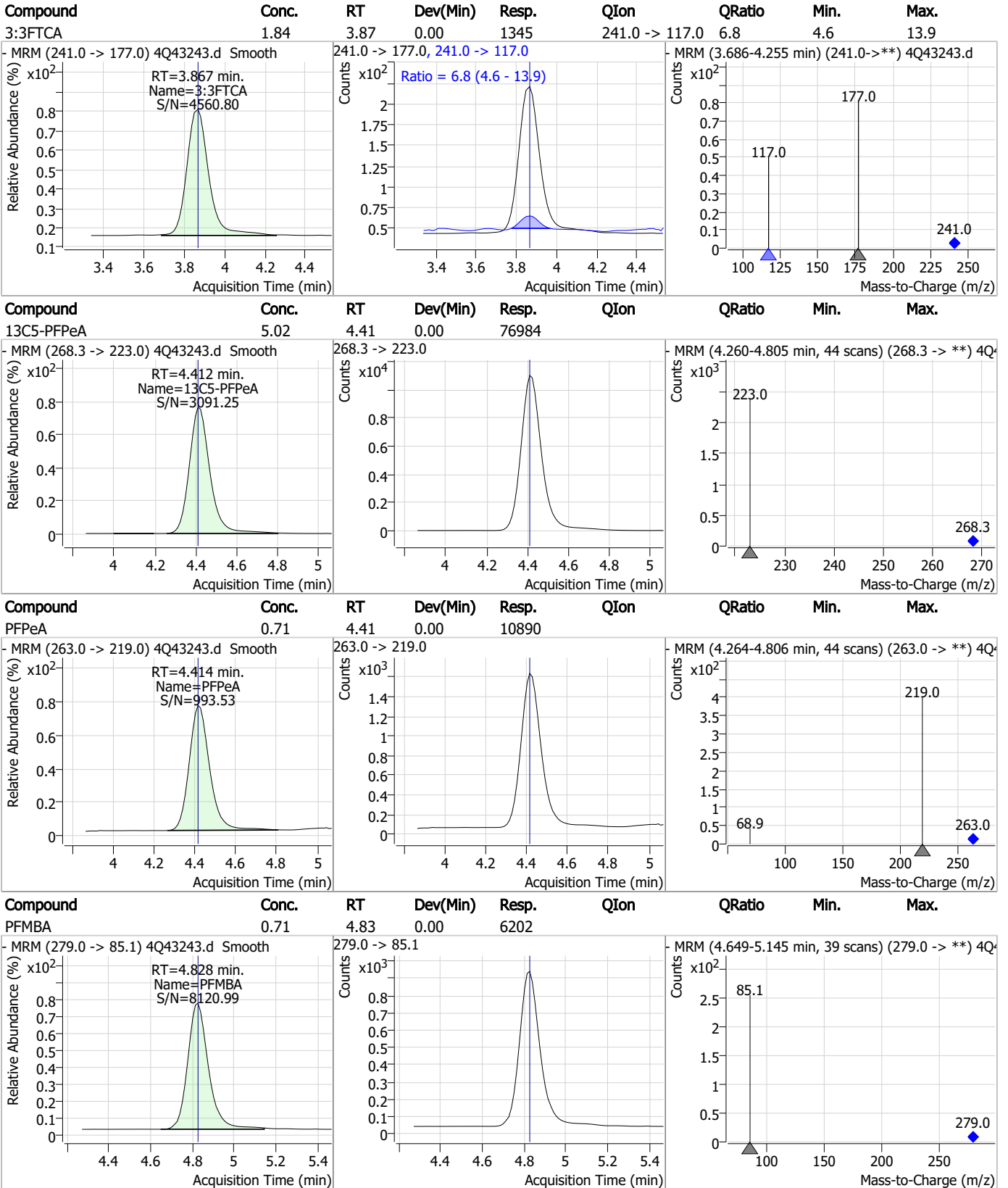
7.7.3

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

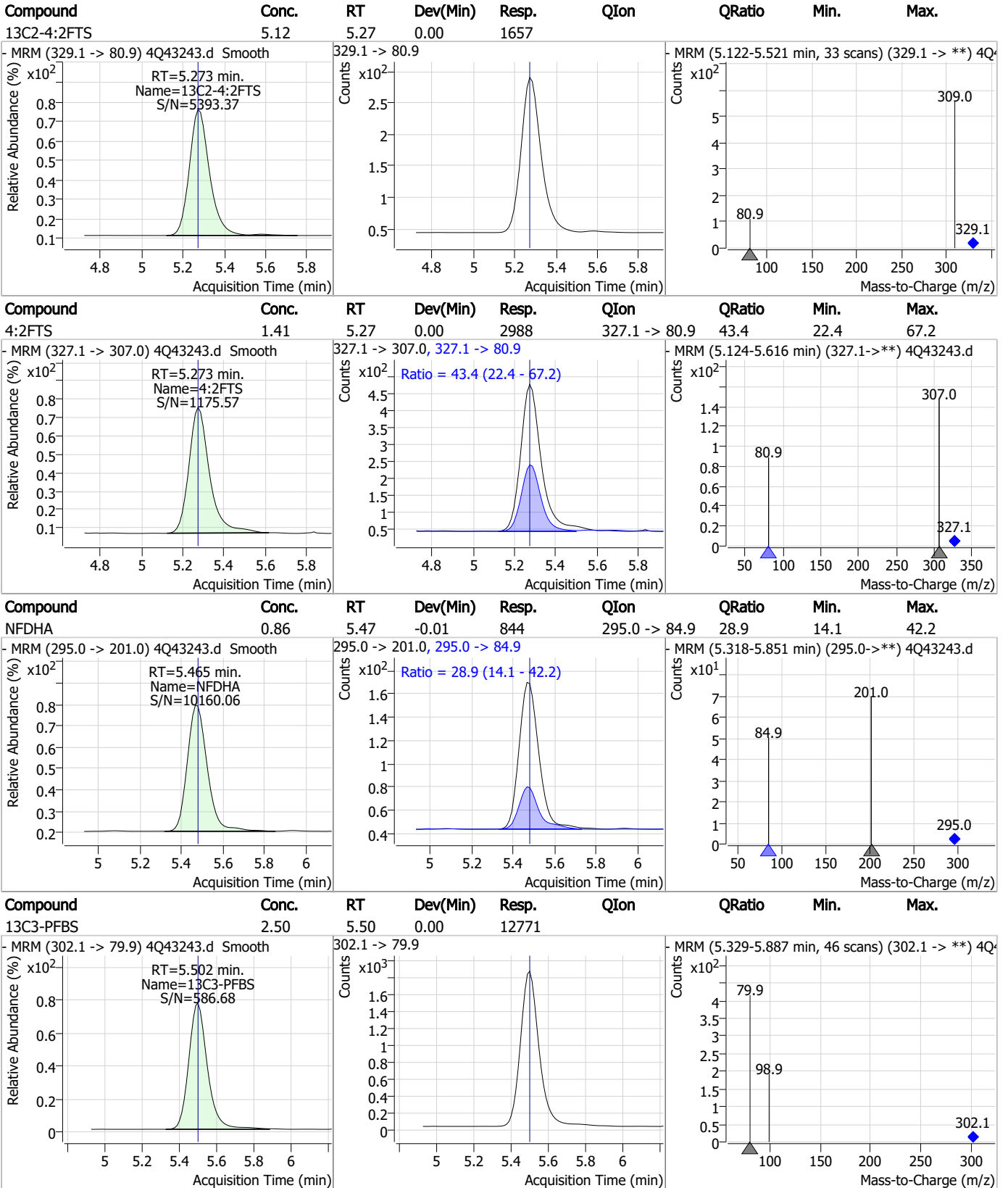


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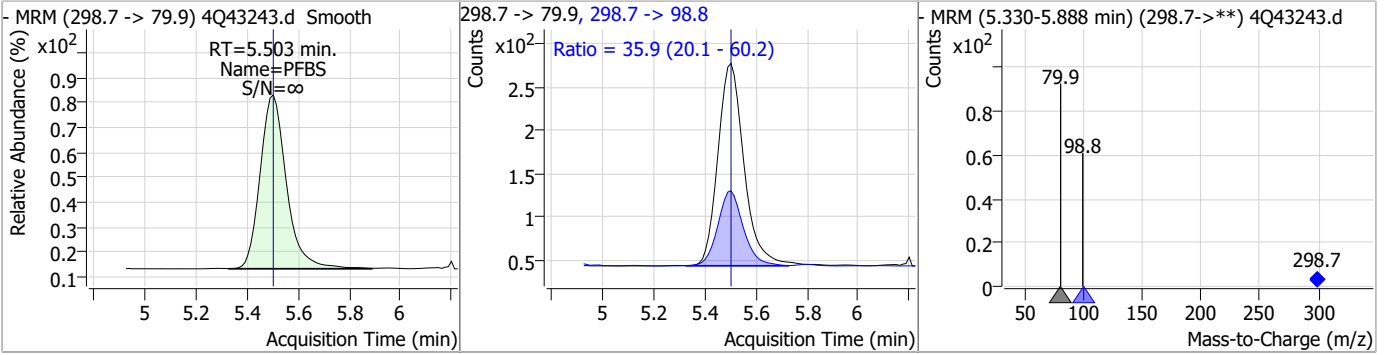


Perfluorinated Compounds by LC/MS/MS

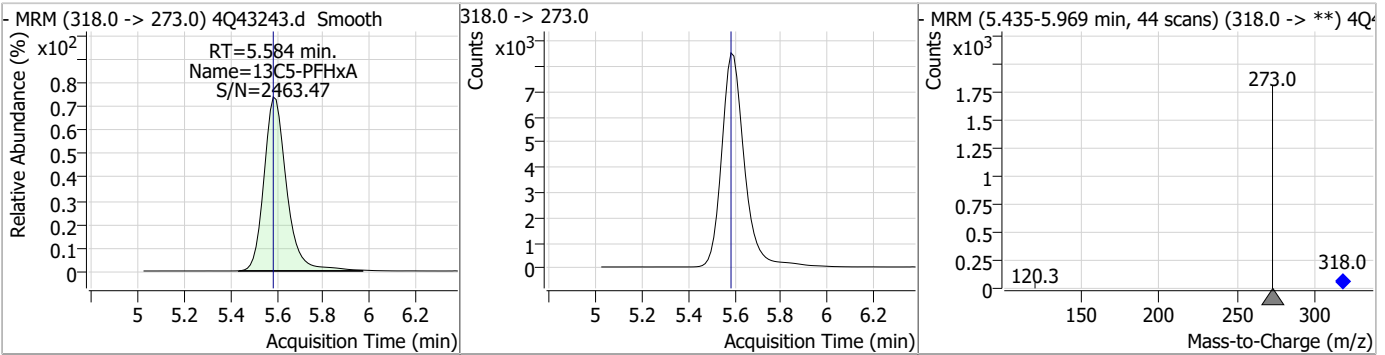


Perfluorinated Compounds by LC/MS/MS

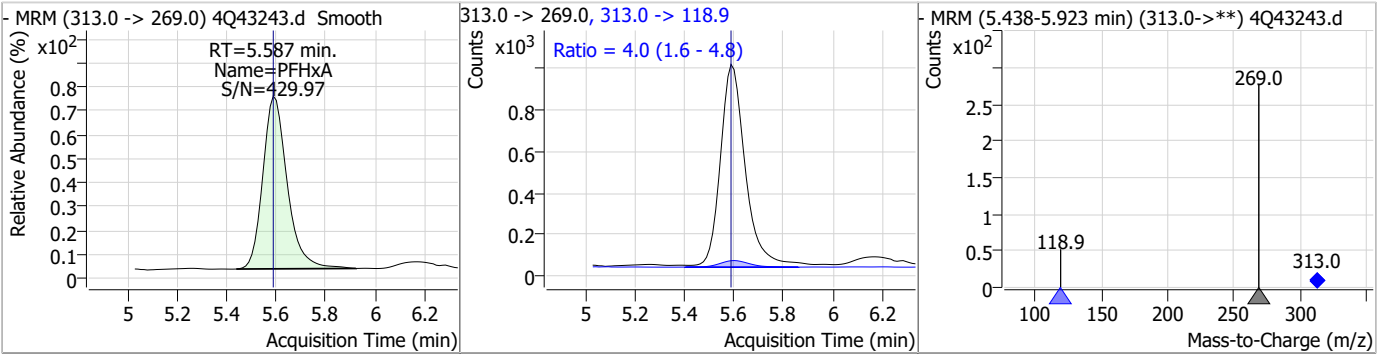
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.33	5.50	0.00	1671	298.7 -> 98.8	35.9	20.1	60.2



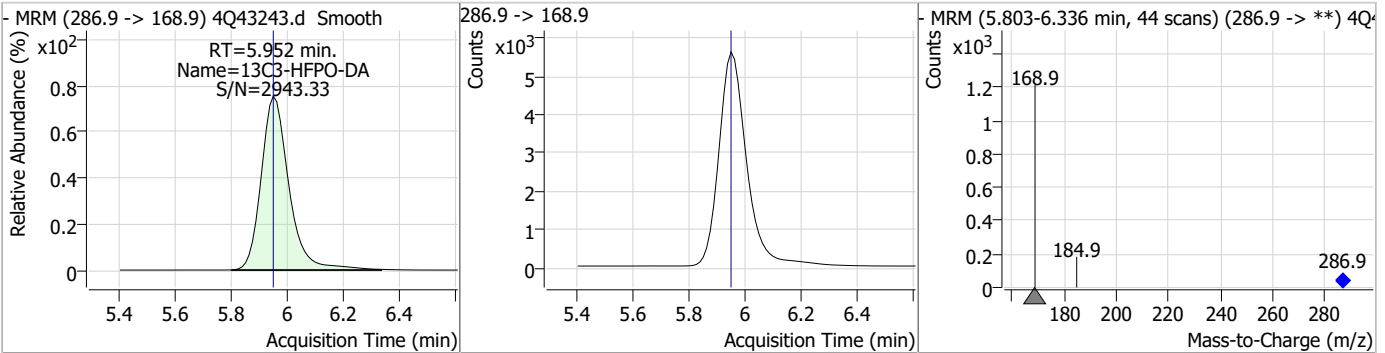
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.45	5.58	0.00	57751				



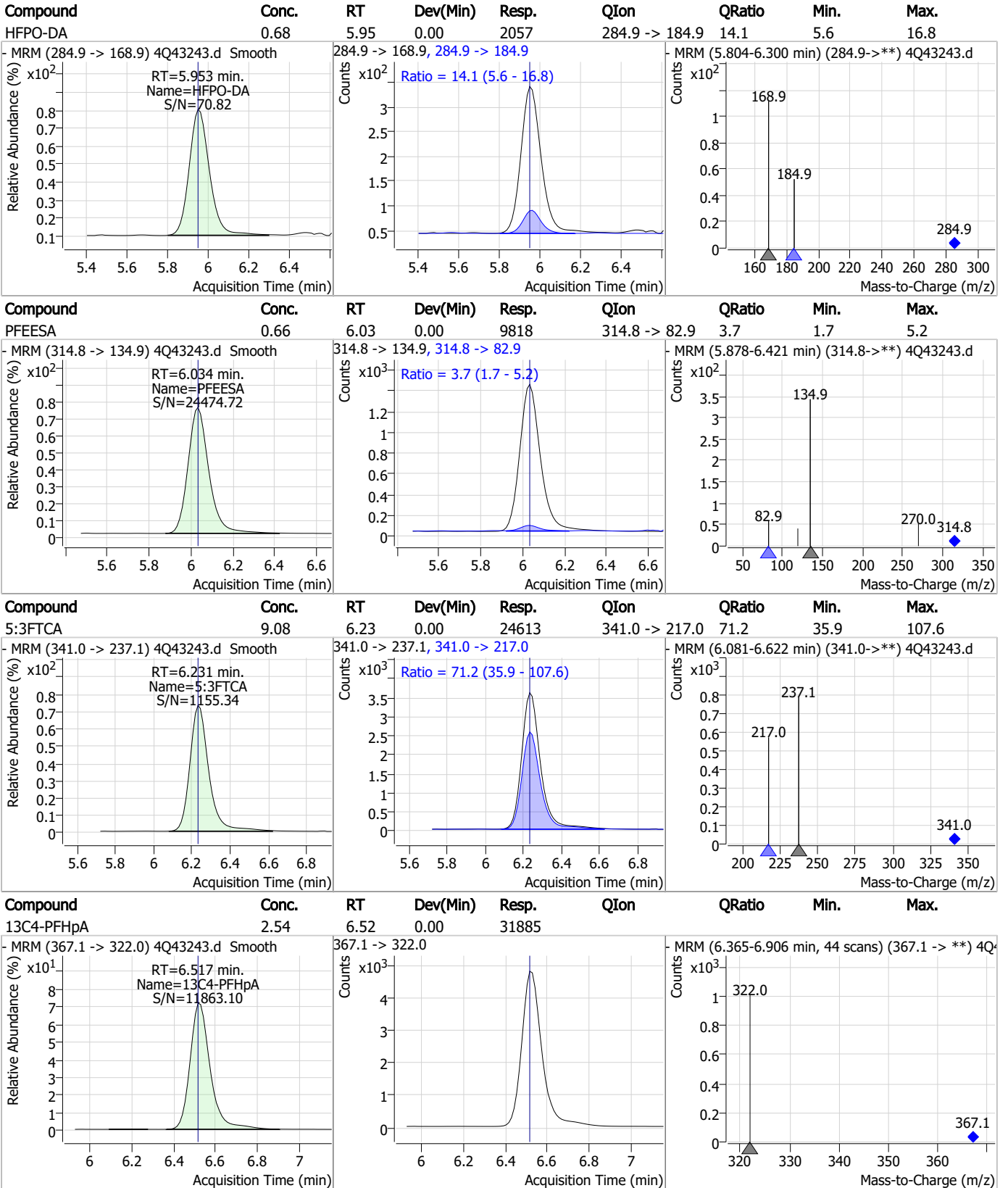
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.36	5.59	0.00	6611	313.0 -> 118.9	4.0	1.6	4.8



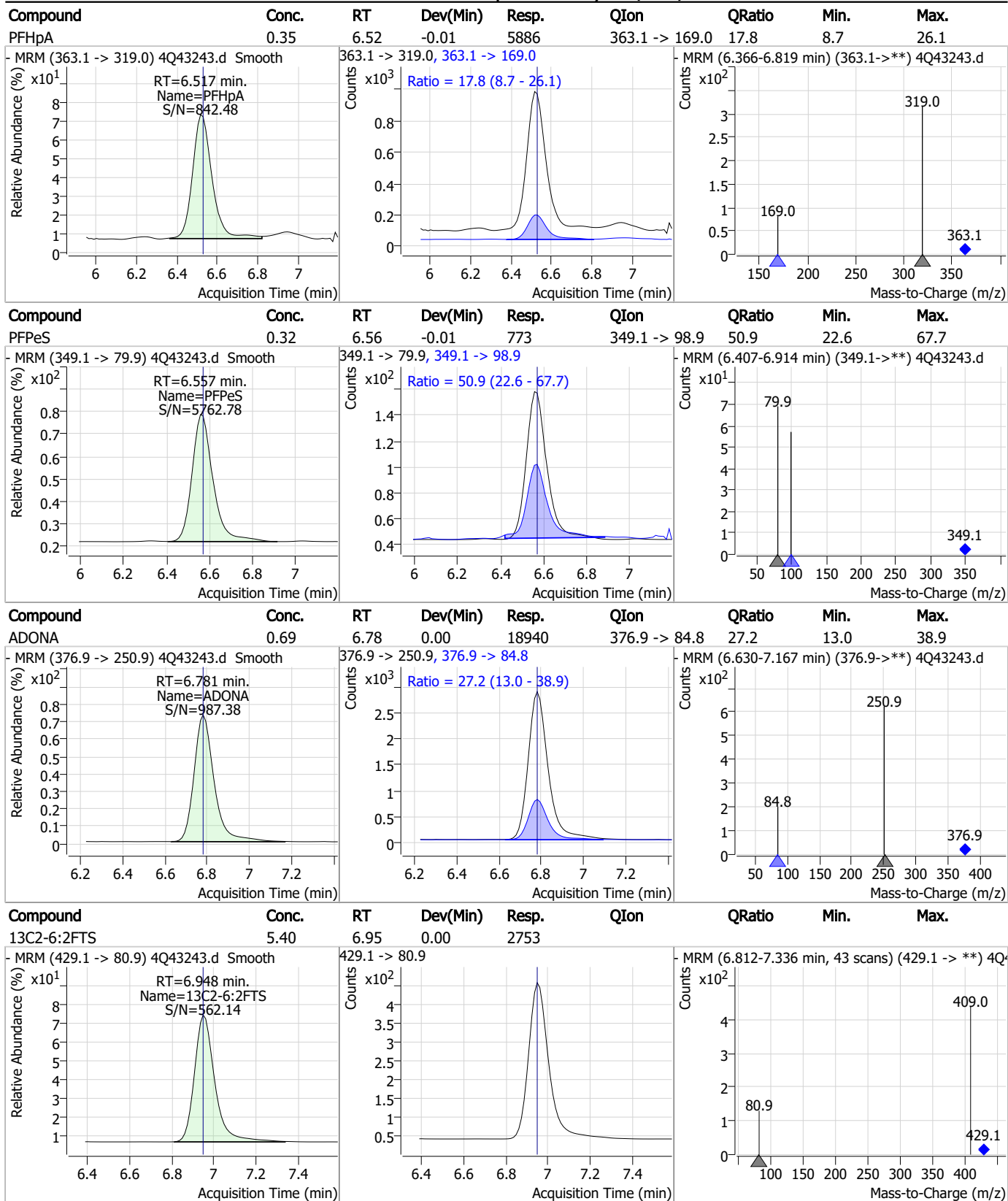
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.08	5.95	0.00	38348				



Perfluorinated Compounds by LC/MS/MS

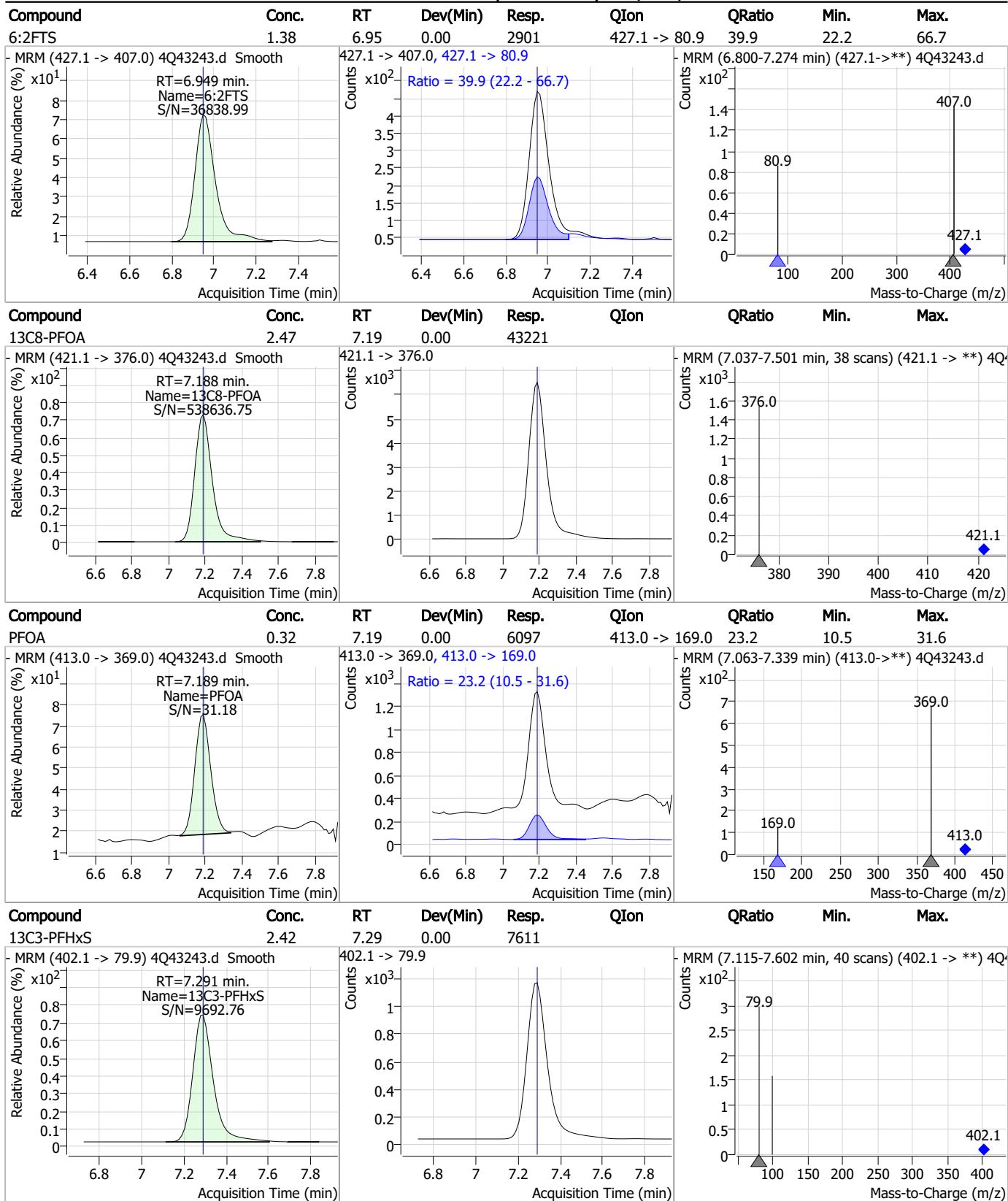


Perfluorinated Compounds by LC/MS/MS



7.7.3
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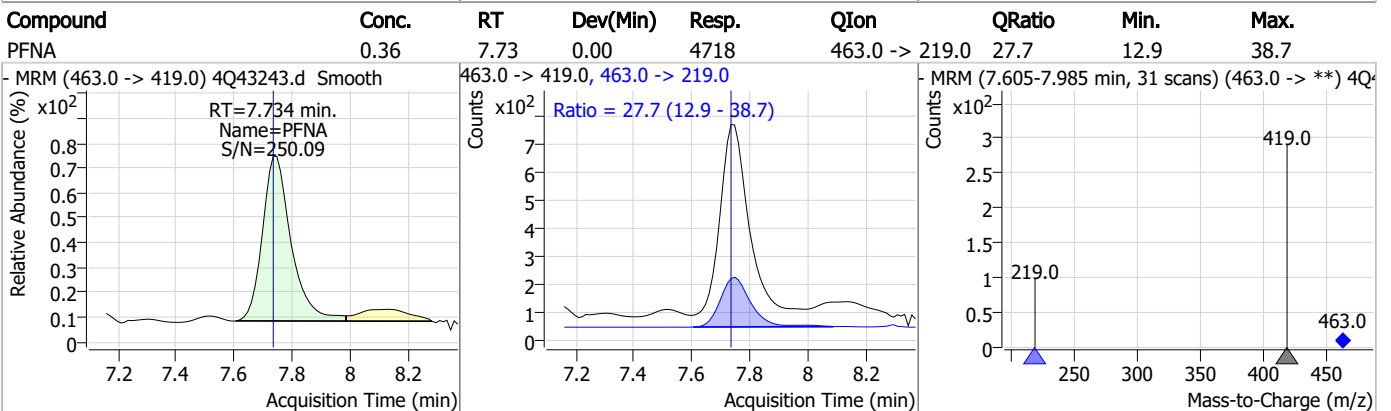
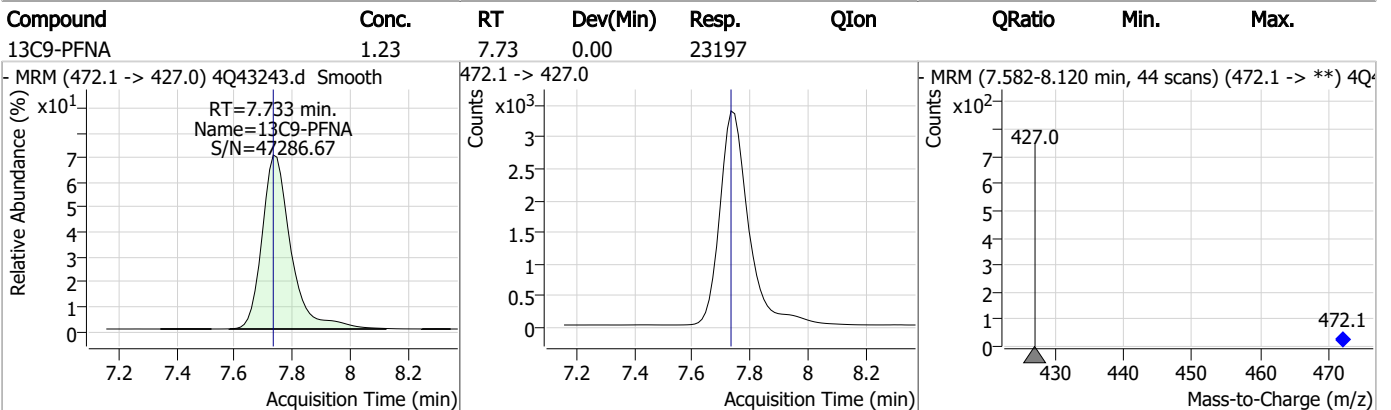
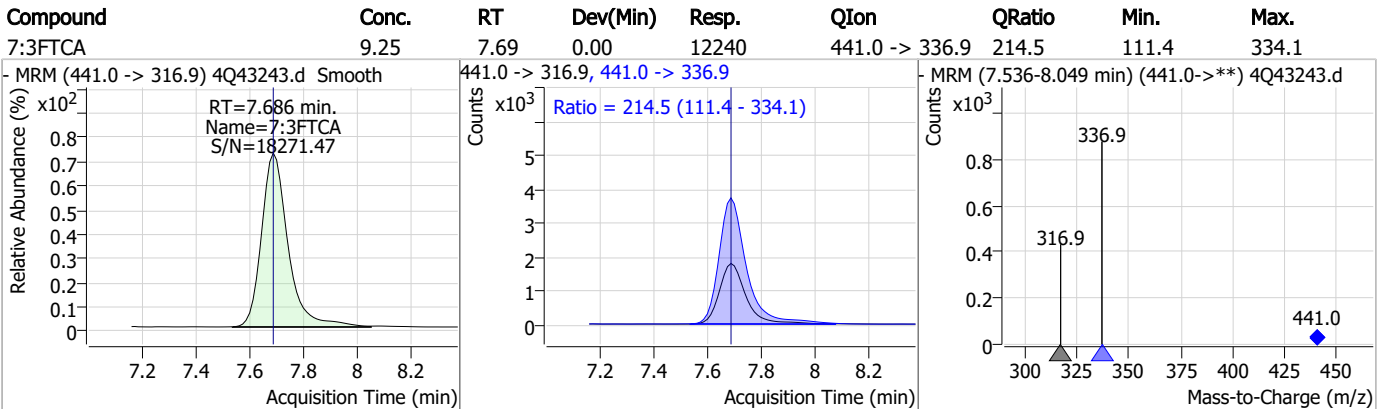
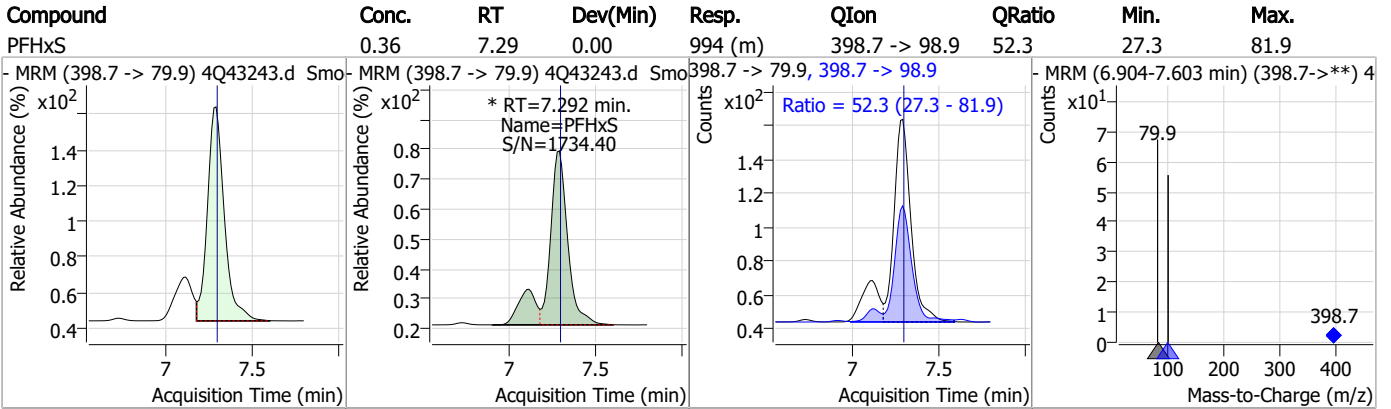
Perfluorinated Compounds by LC/MS/MS



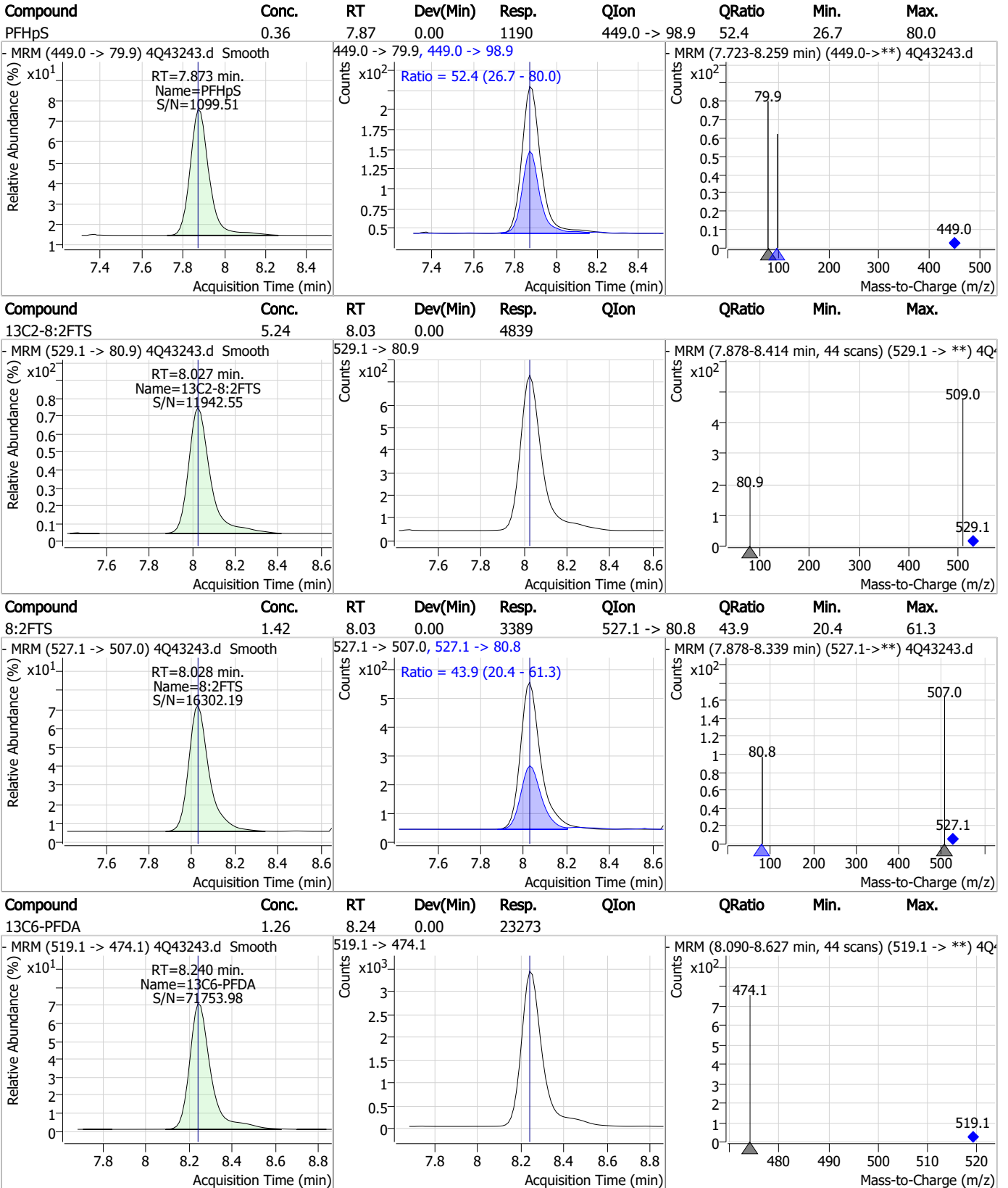
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Perfluorinated Compounds by LC/MS/MS



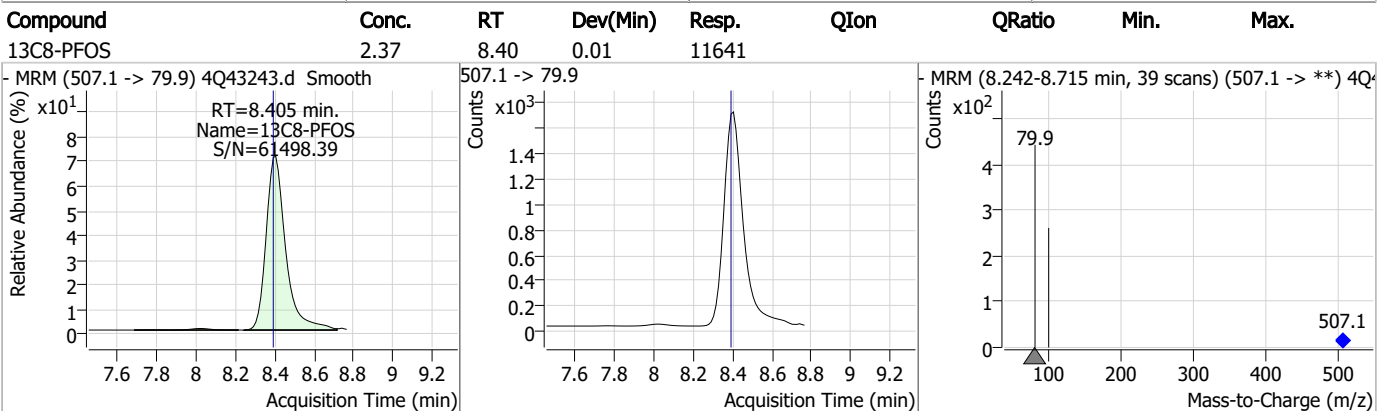
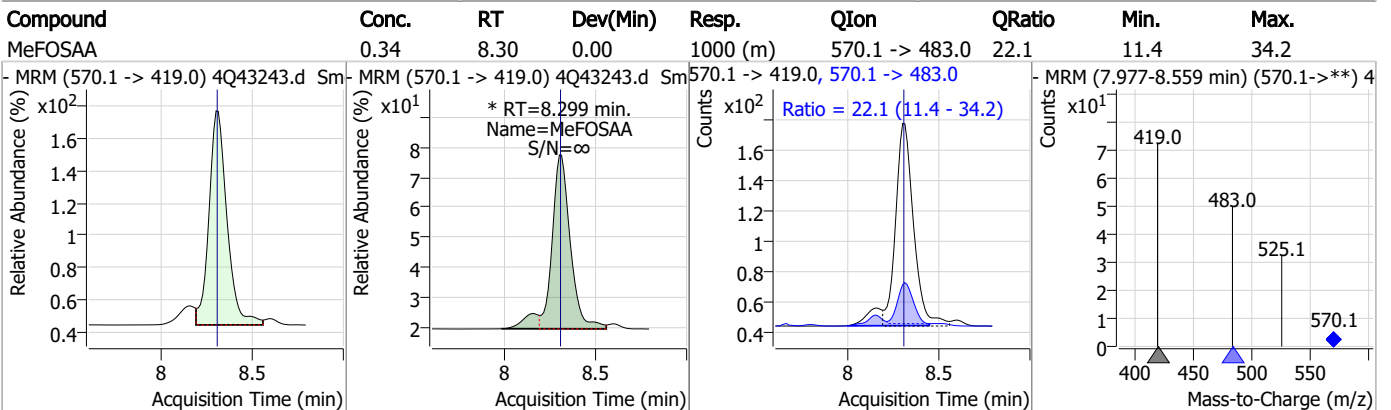
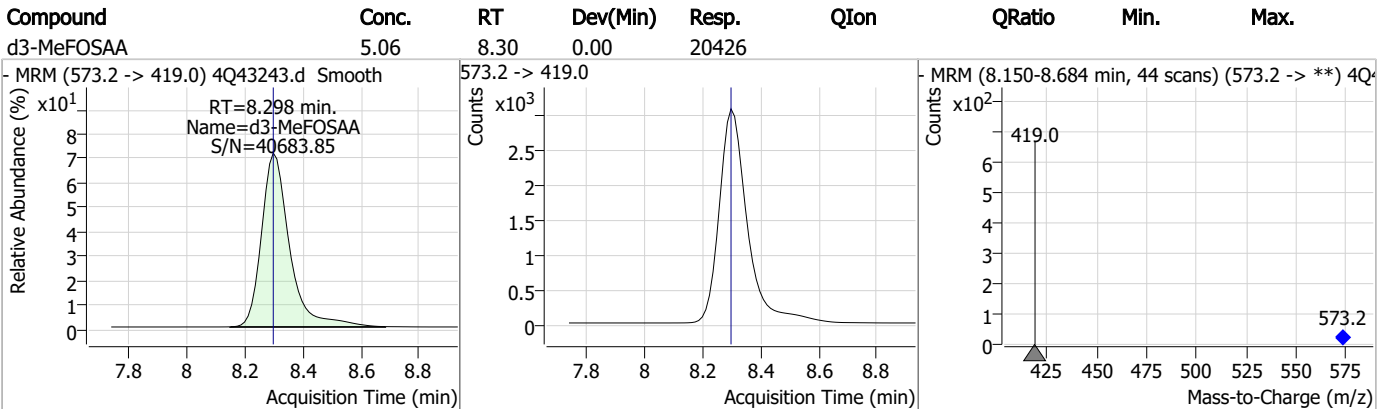
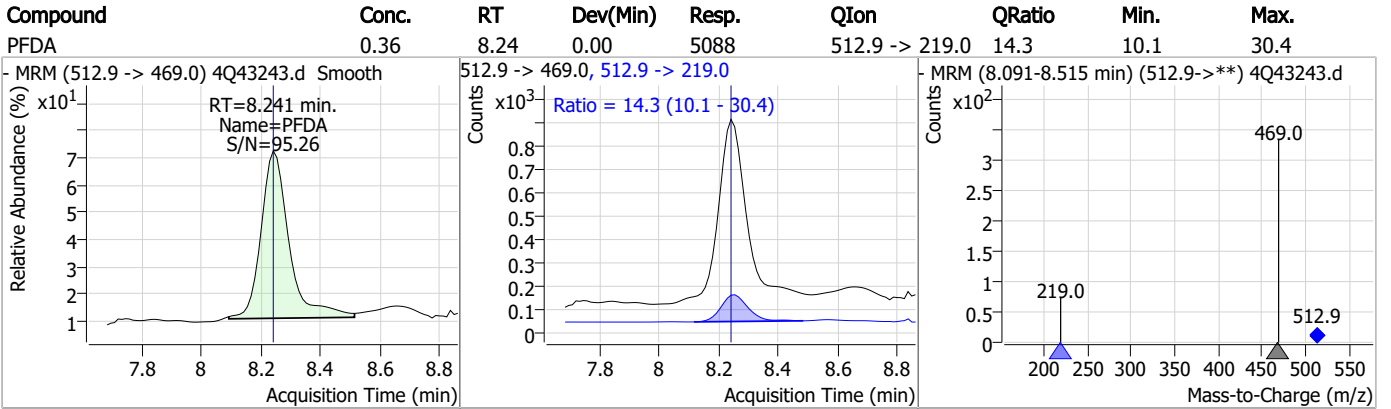
Perfluorinated Compounds by LC/MS/MS



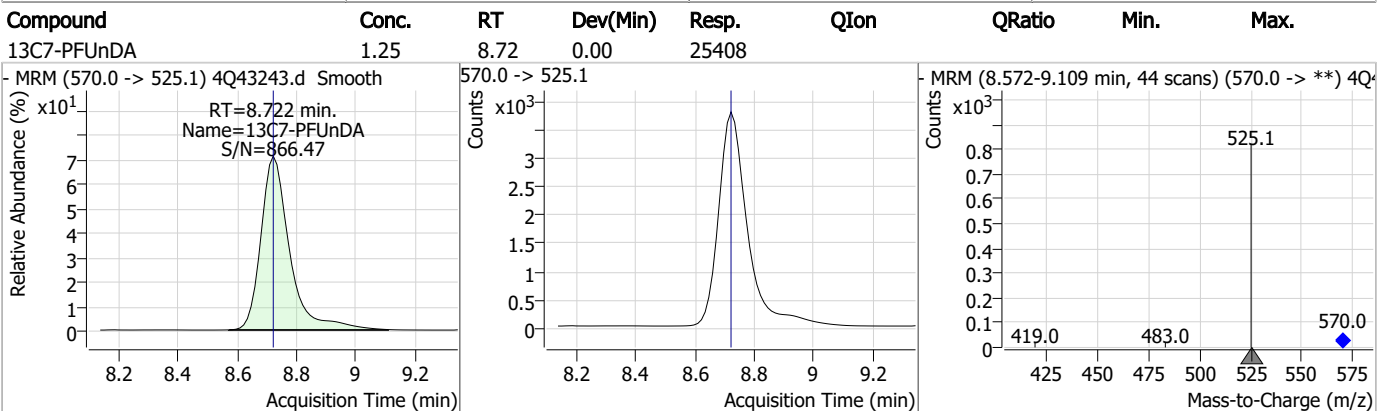
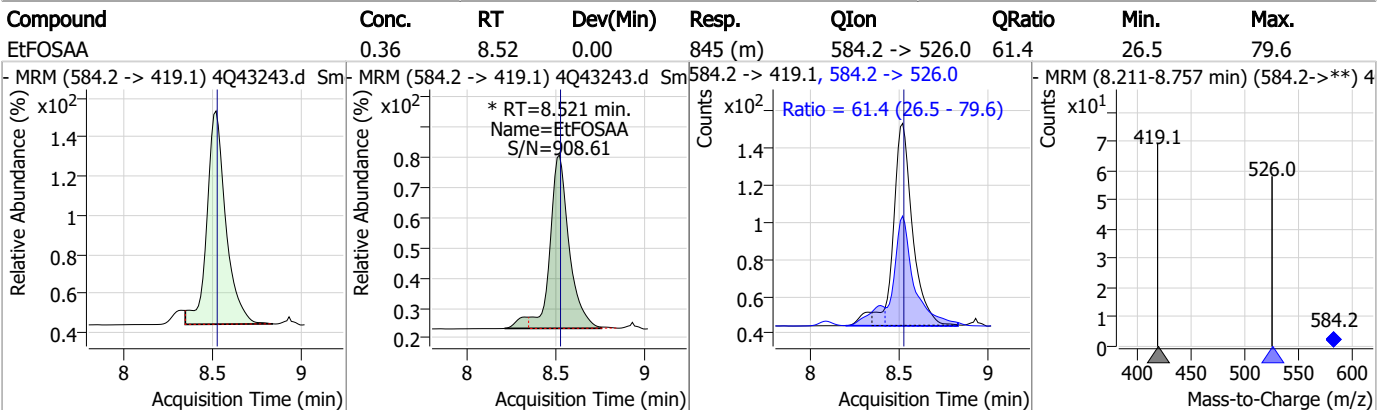
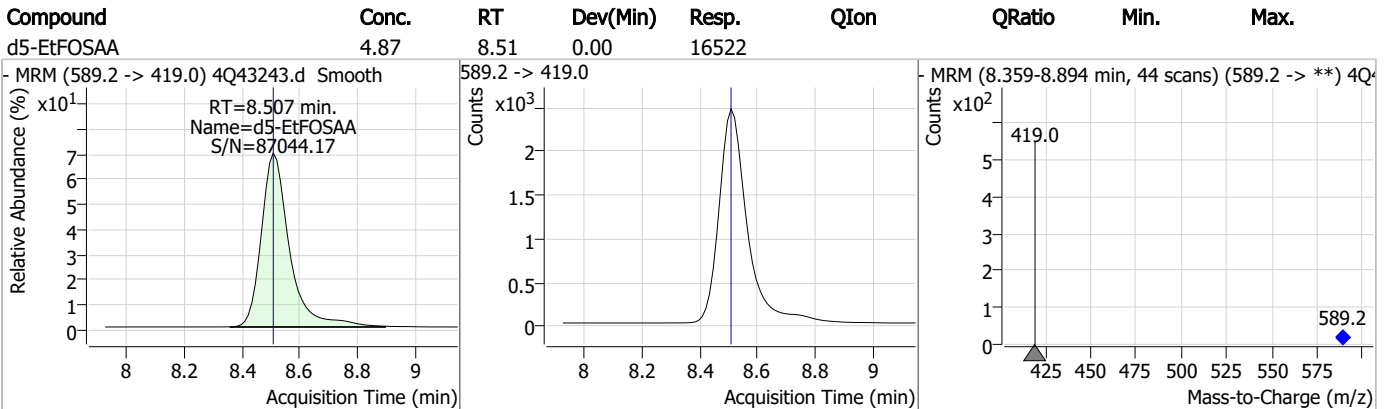
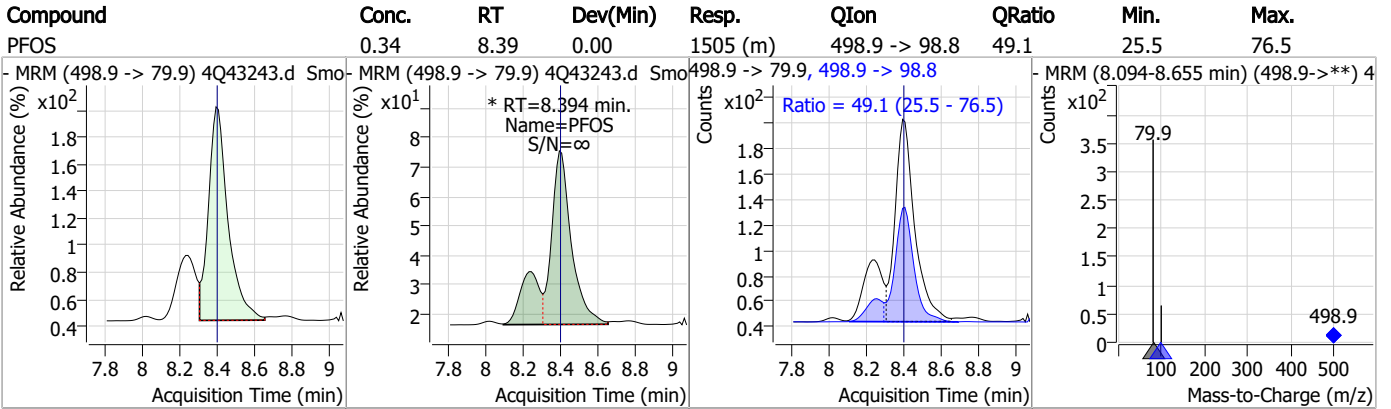
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Perfluorinated Compounds by LC/MS/MS



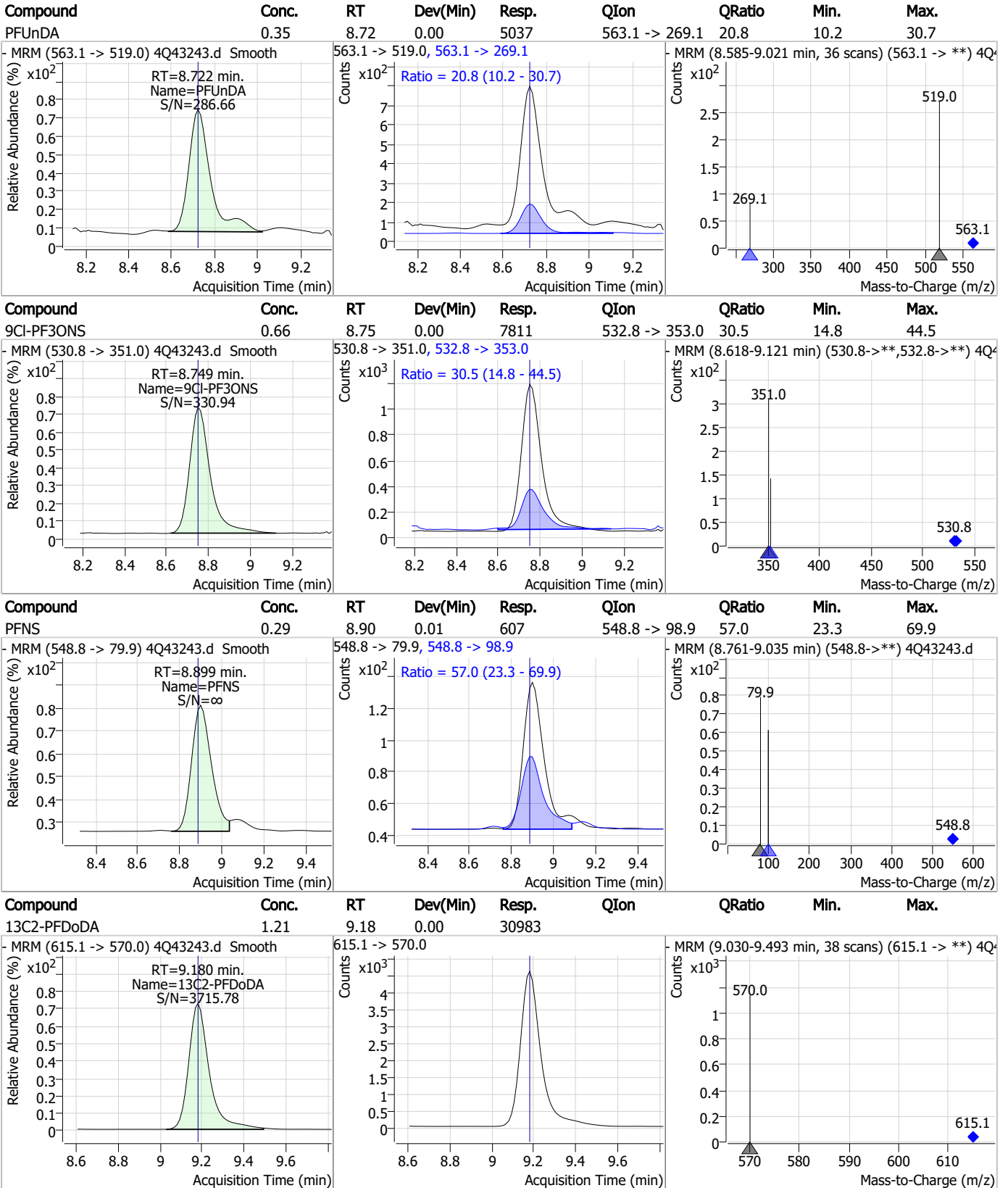
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS

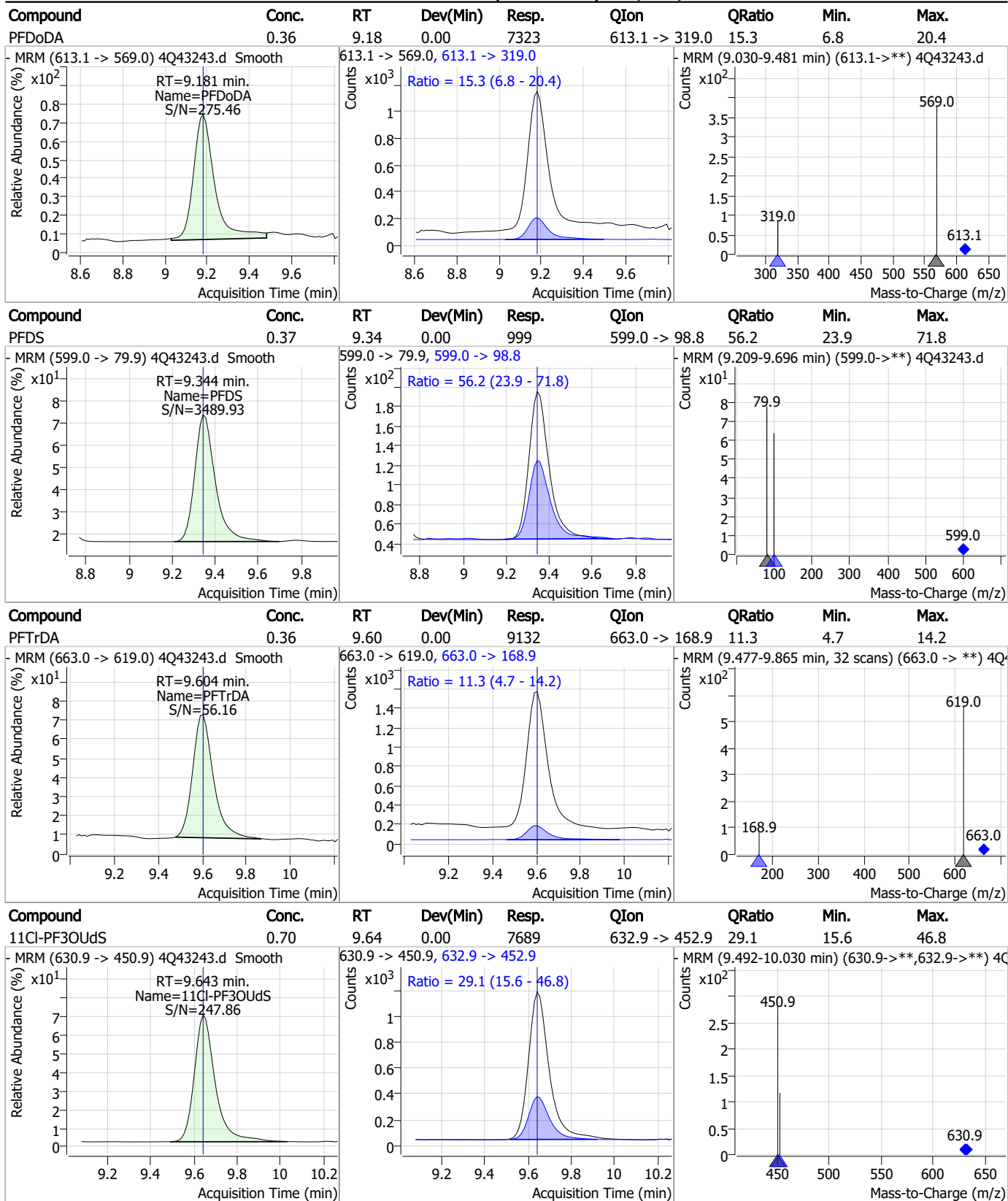


7.7.3

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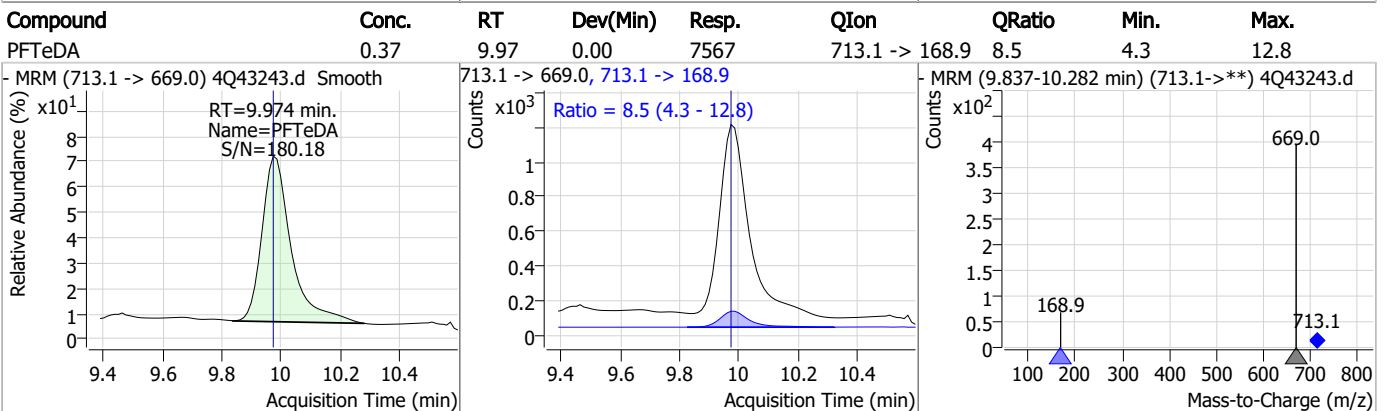
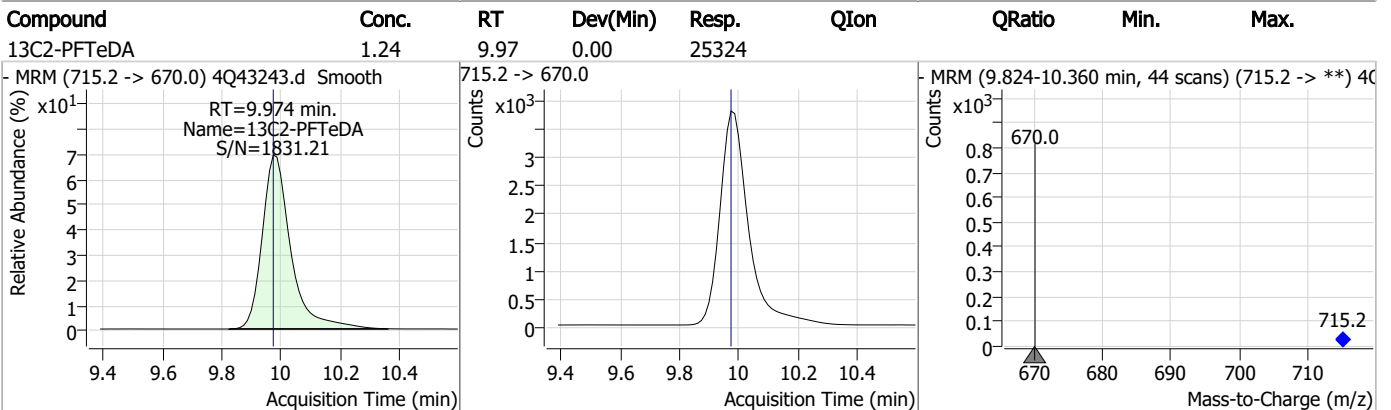
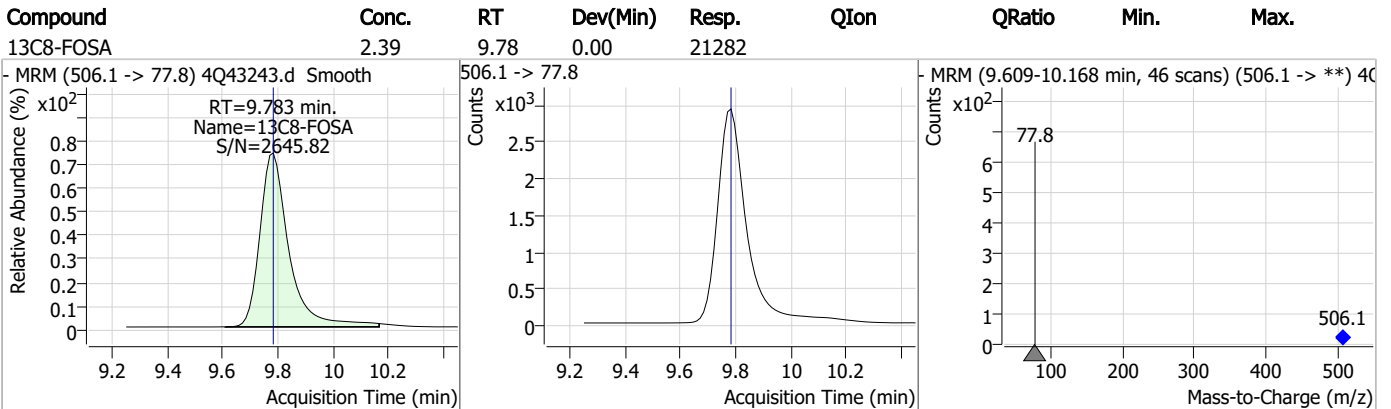
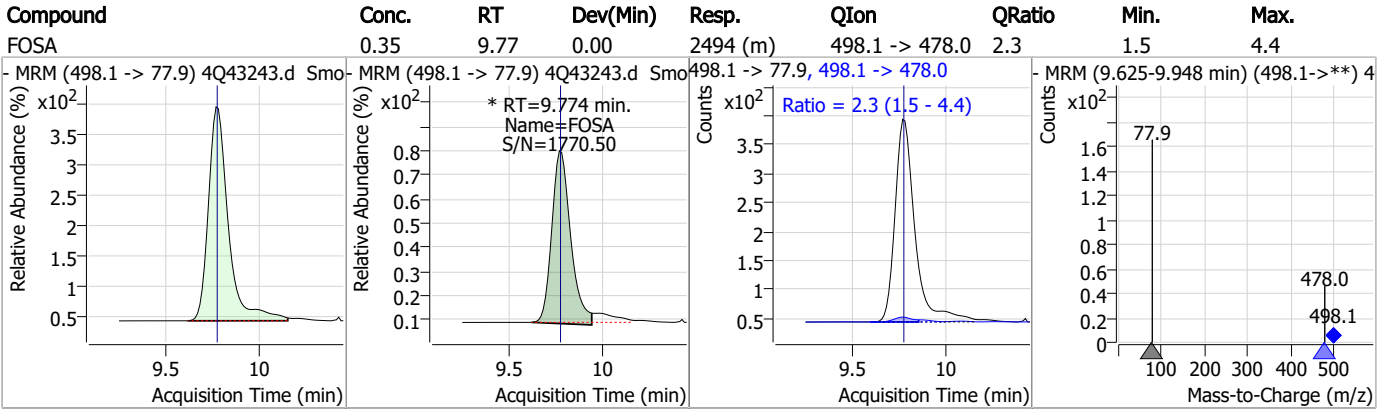
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS

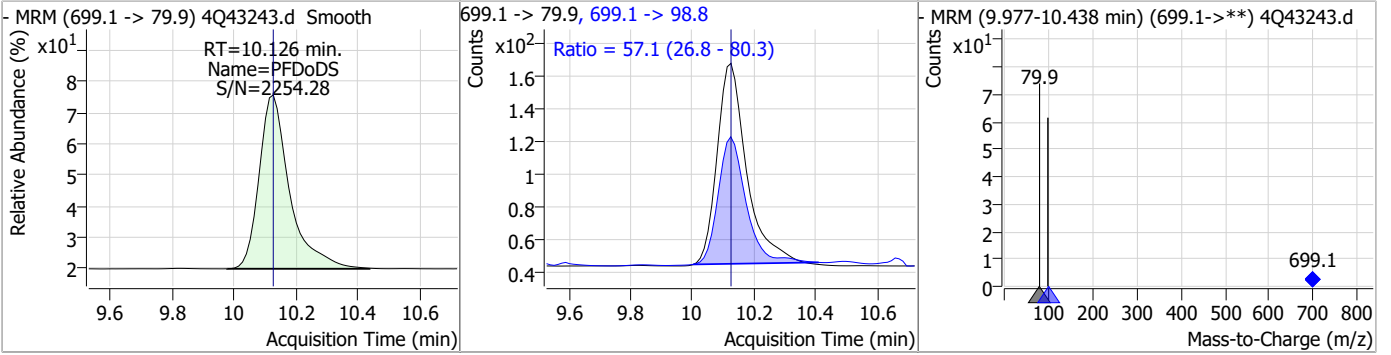


7.7.3

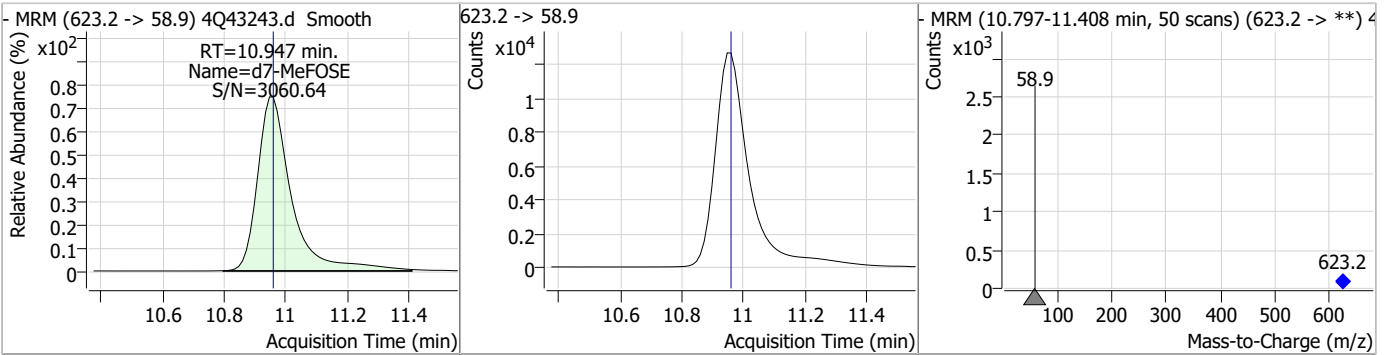
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Perfluorinated Compounds by LC/MS/MS

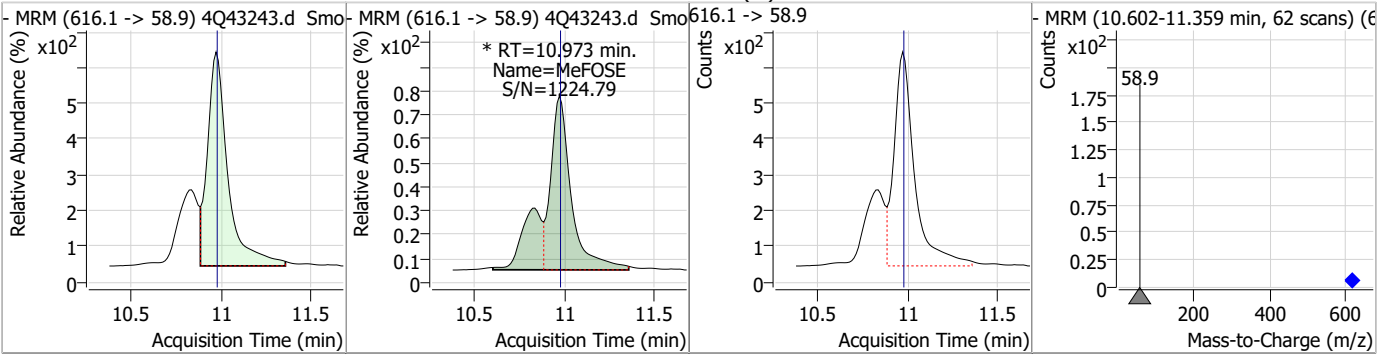
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.34	10.13	0.00	847	699.1 -> 98.8	57.1	26.8	80.3



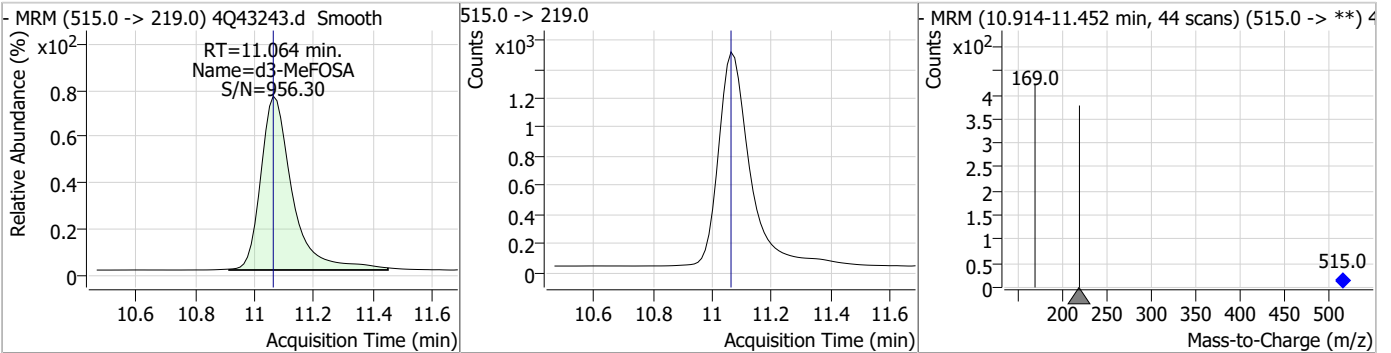
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.73	10.95	-0.01	96961				



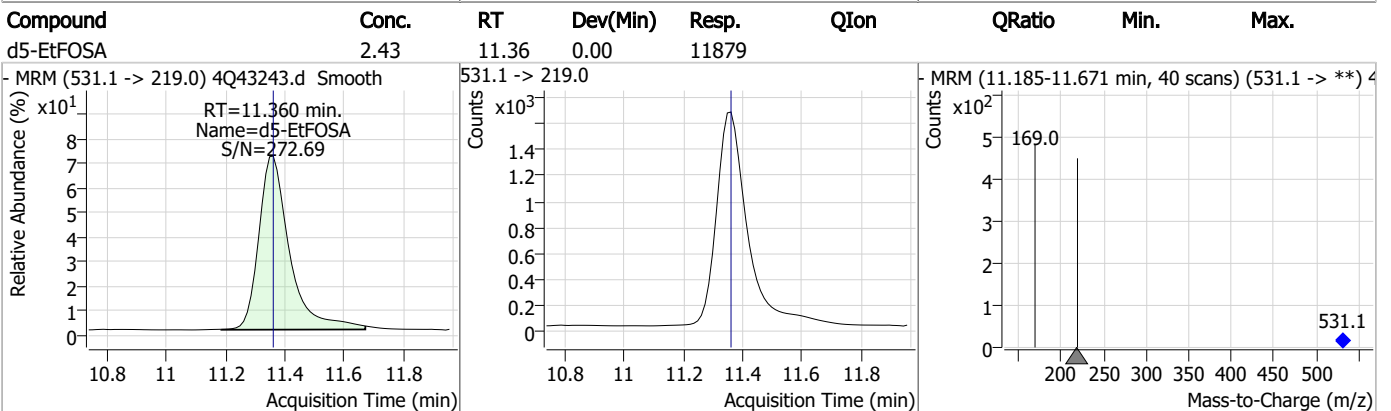
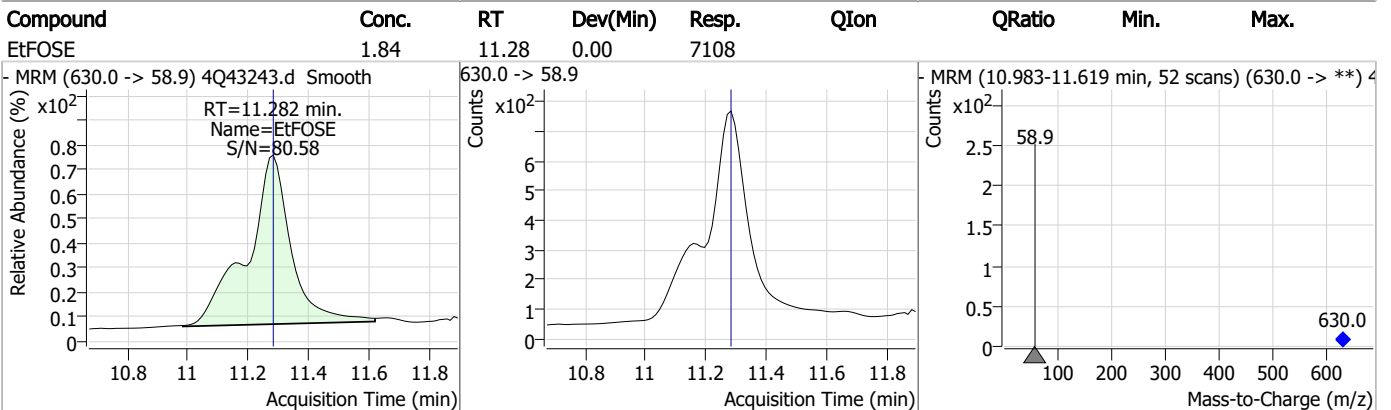
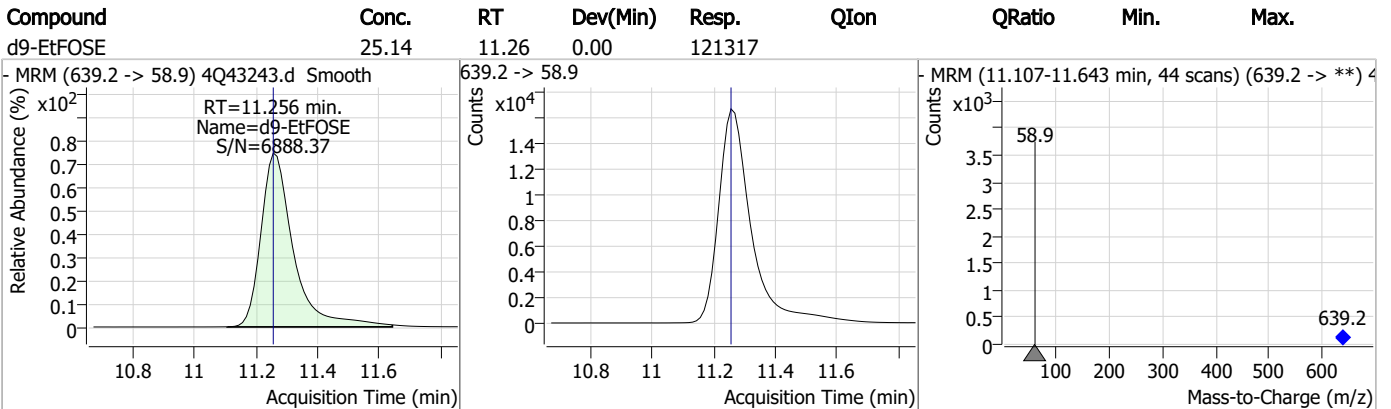
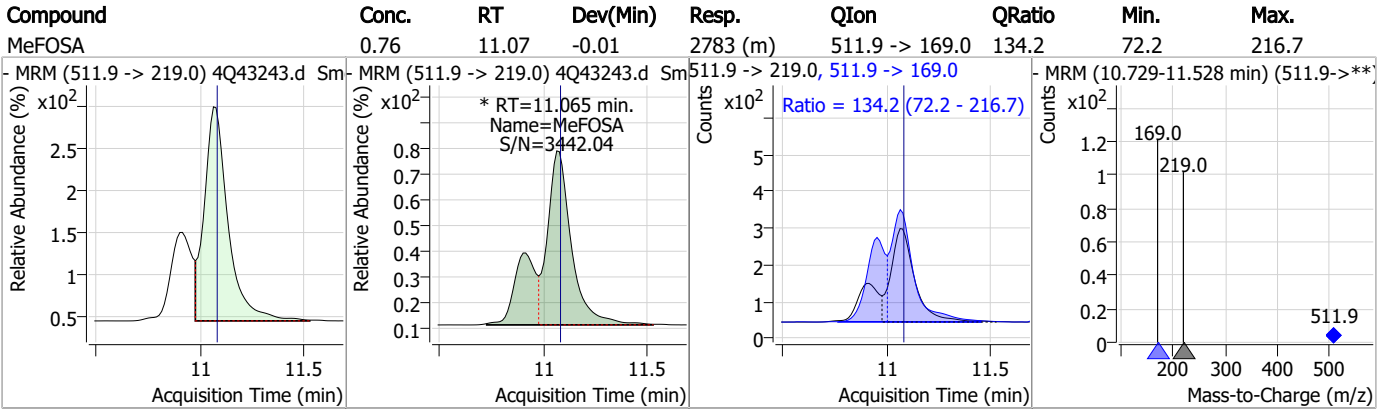
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.87	10.97	0.00	6439 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.37	11.06	0.00	10927				



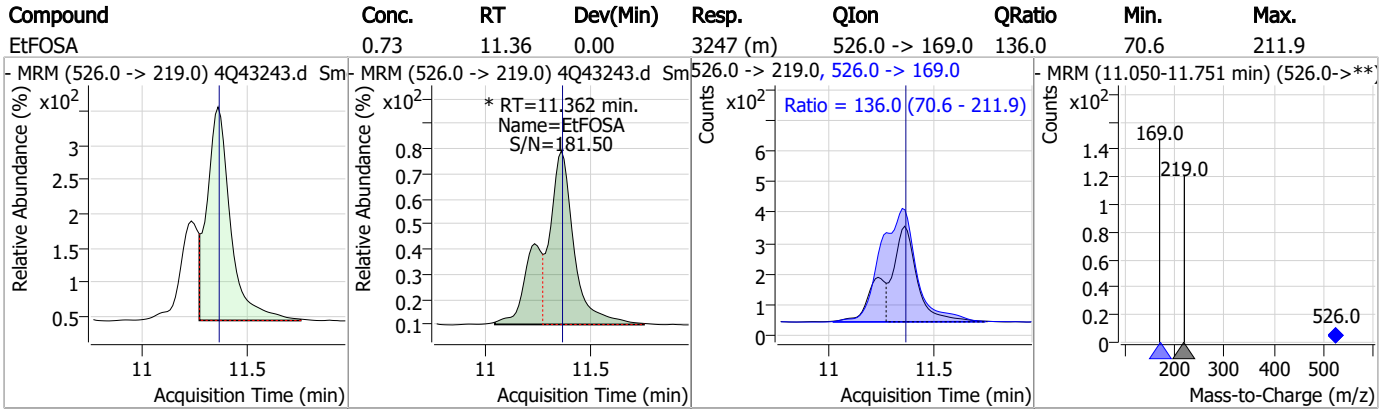
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q625-IC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43243.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 12:08 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
PFOSA	754-91-6		9.77	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43244.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 12:22:56 PM
 Sample Name : ic625-3
 Vial : P1-A4
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.949	216.8 -> 171.9	121090	10.00 µg/L	0.012
M5-PFPeA	4.412	268.3 -> 223.0	73640	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	56403	2.50 µg/L	0.012
M4-PFHpA	6.517	367.1 -> 322.0	30582	2.50 µg/L	0.000
M8-PFOA	7.188	421.1 -> 376.0	41424	2.50 µg/L	0.000
M9-PFNA	7.733	472.1 -> 427.0	22514	1.25 µg/L	0.000
M6-PFDA	8.240	519.1 -> 474.1	22015	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	24404	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	30042	1.25 µg/L	0.000
M2-PFTeDA	9.986	715.2 -> 670.0	23951	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	20720	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	12296	2.50 µg/L	0.000
M3-PFHxS	7.279	402.1 -> 79.9	7252	2.50 µg/L	-0.012
M8-PFOS	8.392	507.1 -> 79.9	11442	2.50 µg/L	0.000
M2-4:2FTS	5.273	329.1 -> 80.9	1742	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2602	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	4778	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	19025	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	35679	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	16171	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	89516	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	113632	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11339	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	10435	2.50 µg/L	0.000
13C4-PFOS	8.393	502.8 -> 79.9	11465	2.50 µg/L	-0.012
13C3-PFBA	2.941	216.0 -> 172.0	67554	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	5329	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	48425	2.50 µg/L	0.000
13C2-PFDA	8.241	515.1 -> 470.1	20152	1.25 µg/L	0.000
13C5-PFNA	7.734	468.0 -> 423.0	25858	1.25 µg/L	0.000
13C2-PFHxA	5.598	315.1 -> 270.0	47339	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1742	5.57 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.4%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2602	5.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4778	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-PFDoDA	9.180	615.1 -> 570.0	30042	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C2-PFTeDA	9.986	715.2 -> 670.0	23951	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-PFBS	5.502	302.1 -> 79.9	12296	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C3-PFHxS	7.279	402.1 -> 79.9	7252	2.38 µg/L	-0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C4-PFBA	2.949	216.8 -> 171.9	121090	9.95 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.517	367.1 -> 322.0	30582	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C5-PFHxA	5.597	318.0 -> 273.0	56403	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFPeA	4.412	268.3 -> 223.0	73640	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C6-PFDA	8.240	519.1 -> 474.1	22015	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C7-PFUnDA	8.722	570.0 -> 525.1	24404	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-FOSA	9.783	506.1 -> 77.8	20720	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-PFOA	7.188	421.1 -> 376.0	41424	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-PFOS	8.392	507.1 -> 79.9	11442	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C9-PFNA	7.733	472.1 -> 427.0	22514	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSAA	8.298	573.2 -> 419.0	19025	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	35679	9.93 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSA	11.064	515.0 -> 219.0	10435	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
d5-EtFOSAA	8.507	589.2 -> 419.0	16171	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
d7-MeFOSE	10.959	623.2 -> 58.9	89516	25.45 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
d9-EtFOSE	11.256	639.2 -> 58.9	113632	25.23 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d5-EtFOSA	11.360	531.1 -> 219.0	11339	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	10363	4.65 µg/L	97
		327.1 -> 80.9	4462		
6:2FTS	6.949	427.1 -> 407.0	9617	4.84 µg/L	99
		427.1 -> 80.9	4343		
8:2FTS	8.028	527.1 -> 507.0	11959	5.08 µg/L	99
		527.1 -> 80.8	4841		
EtFOSAA	8.508	584.2 -> 419.1	2824	1.22 µg/L	m 83
		584.2 -> 526.0	1159		
FOSA	9.774	498.1 -> 77.9	8739	1.25 µg/L	98
		498.1 -> 478.0	191		
MeFOSAA	8.299	570.1 -> 419.0	3561	1.31 µg/L	94
		570.1 -> 483.0	711		
PFBA	2.945	212.8 -> 168.9	13744	4.89 µg/L	100
PFBS	5.503	298.7 -> 79.9	5200	1.07 µg/L	96
		298.7 -> 98.8	1976		
PFDA	8.241	512.9 -> 469.0	15834	1.17 µg/L	m 96
		512.9 -> 219.0	3473		
PFDoDA	9.181	613.1 -> 569.0	24111	1.22 µg/L	99
		613.1 -> 319.0	3329		
PFDS	9.344	599.0 -> 79.9	3219	1.20 µg/L	99

7.7.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1565			
PFHpA	6.530	363.1 -> 319.0	18828	1.17	µg/L	97
		363.1 -> 169.0	3562			
PFHpS	7.873	449.0 -> 79.9	3603	1.09	µg/L	99
		449.0 -> 98.9	1946			
PFHxA	5.587	313.0 -> 269.0	21175	1.19	µg/L	99
		313.0 -> 118.9	770			
PFHxS	7.292	398.7 -> 79.9	3033	1.14	µg/L	m 87
		398.7 -> 98.9	1364			
PFNA	7.734	463.0 -> 419.0	14775	1.15	µg/L	98
		463.0 -> 219.0	3946			
PFNS	8.886	548.8 -> 79.9	2232	1.10	µg/L	90
		548.8 -> 98.9	1190			
PFOA	7.189	413.0 -> 369.0	21725	1.18	µg/L	99
		413.0 -> 169.0	4627			
PFOS	8.394	498.9 -> 79.9	4958	1.13	µg/L	m 96
		498.9 -> 98.8	2660			
PFPeA	4.414	263.0 -> 219.0	35578	2.42	µg/L	100
PFPeS	6.569	349.1 -> 79.9	2623	1.14	µg/L	88
		349.1 -> 98.9	1394			
PFTeDA	9.987	713.1 -> 669.0	24119	1.24	µg/L	98
		713.1 -> 168.9	1877			
PFTrDA	9.604	663.0 -> 619.0	31196	1.27	µg/L	98
		663.0 -> 168.9	3111			
PFUnDA	8.722	563.1 -> 519.0	16909	1.22	µg/L	97
		563.1 -> 269.1	3226			
11Cl-PF3OUdS	9.643	630.9 -> 450.9	24506	2.38	µg/L	100
		632.9 -> 452.9	7594			
9Cl-PF3ONS	8.749	530.8 -> 351.0	24949	2.26	µg/L	99
		532.8 -> 353.0	7490			
ADONA	6.781	376.9 -> 250.9	59948	2.34	µg/L	98
		376.9 -> 84.8	16225			
HFPO-DA	5.953	284.9 -> 168.9	7357	2.61	µg/L	97
		284.9 -> 184.9	741			
3:3FTCA	3.867	241.0 -> 177.0	4204	6.00	µg/L	99
		241.0 -> 117.0	400			
5:3FTCA	6.231	341.0 -> 237.1	81449	30.75	µg/L	98
		341.0 -> 217.0	56826			
7:3FTCA	7.686	441.0 -> 316.9	39803	30.80	µg/L	99
		441.0 -> 336.9	89410			
EtFOSA	11.362	526.0 -> 219.0	9960	2.35	µg/L	m 99
		526.0 -> 169.0	14149			
EtFOSE	11.282	630.0 -> 58.9	22624	6.24	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	8550	2.45	µg/L	m 95
		511.9 -> 169.0	12853			
MeFOSE	10.973	616.1 -> 58.9	19414	6.10	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	2920	1.20	µg/L	99
		699.1 -> 98.8	1537			
NFDHA	5.479	295.0 -> 201.0	2384	2.48	µg/L	95
		295.0 -> 84.9	735			
PFMBA	4.828	279.0 -> 85.1	20621	2.46	µg/L	100
PFMPA	3.553	229.0 -> 84.9	17951	2.41	µg/L	100
PFEESA	6.034	314.8 -> 134.9	31305	2.15	µg/L	100
		314.8 -> 82.9	1061			

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

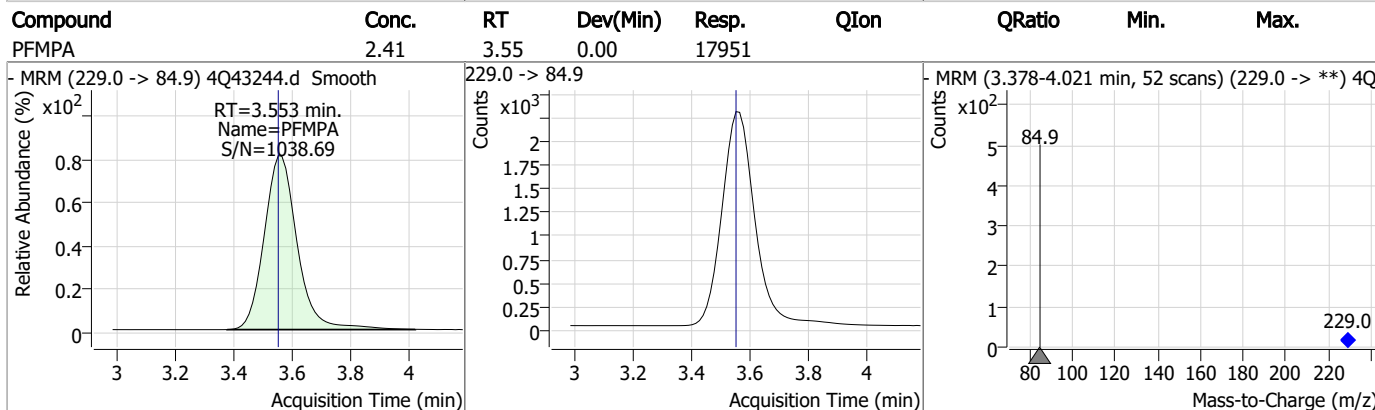
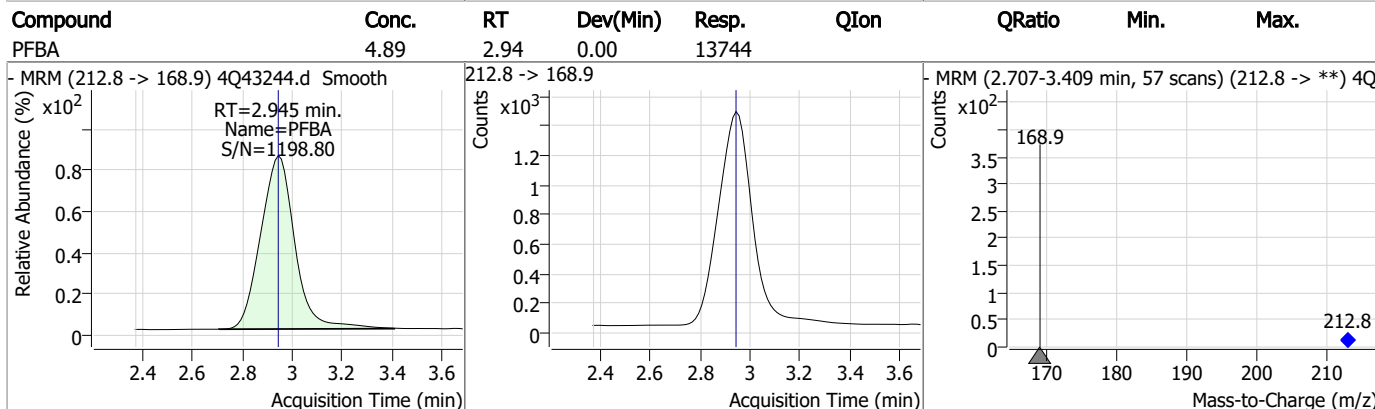
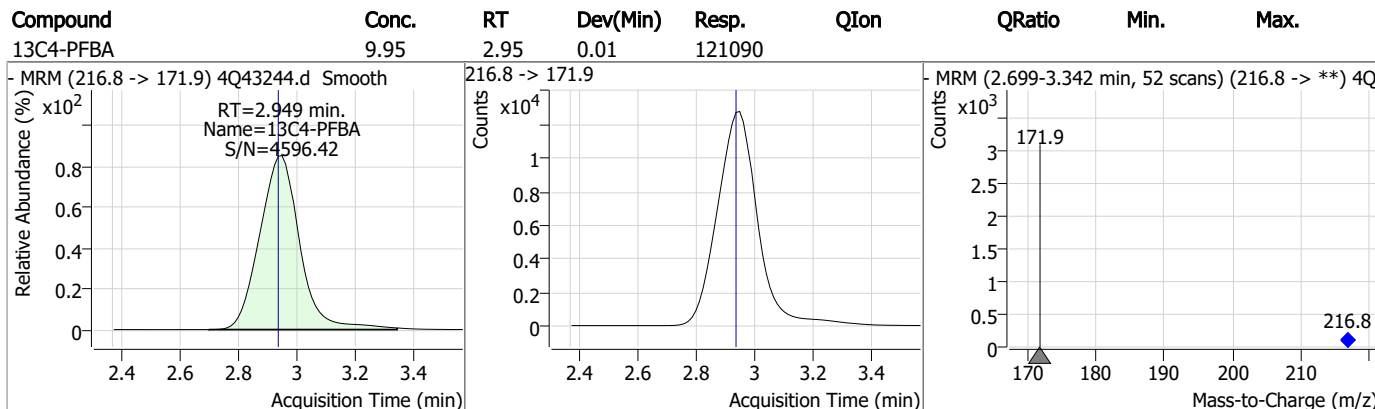
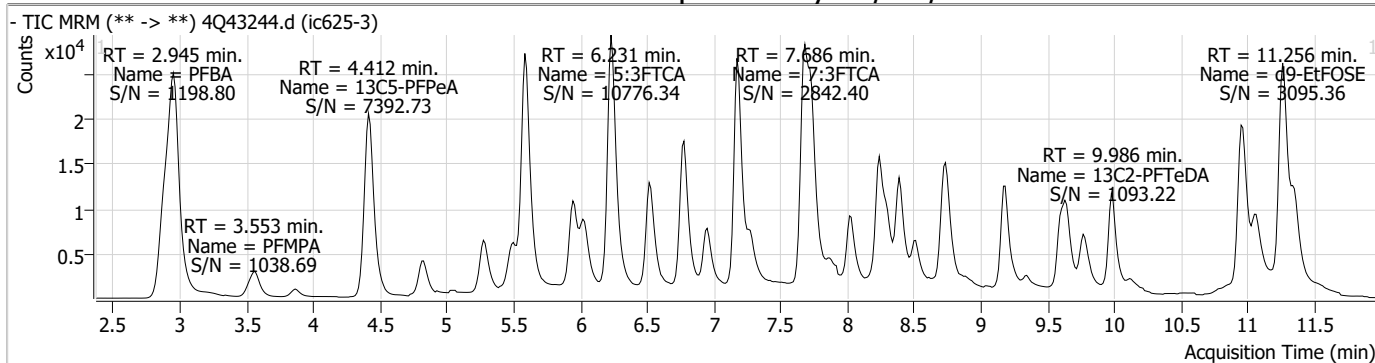
Perfluorinated Compounds by LC/MS/MS

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

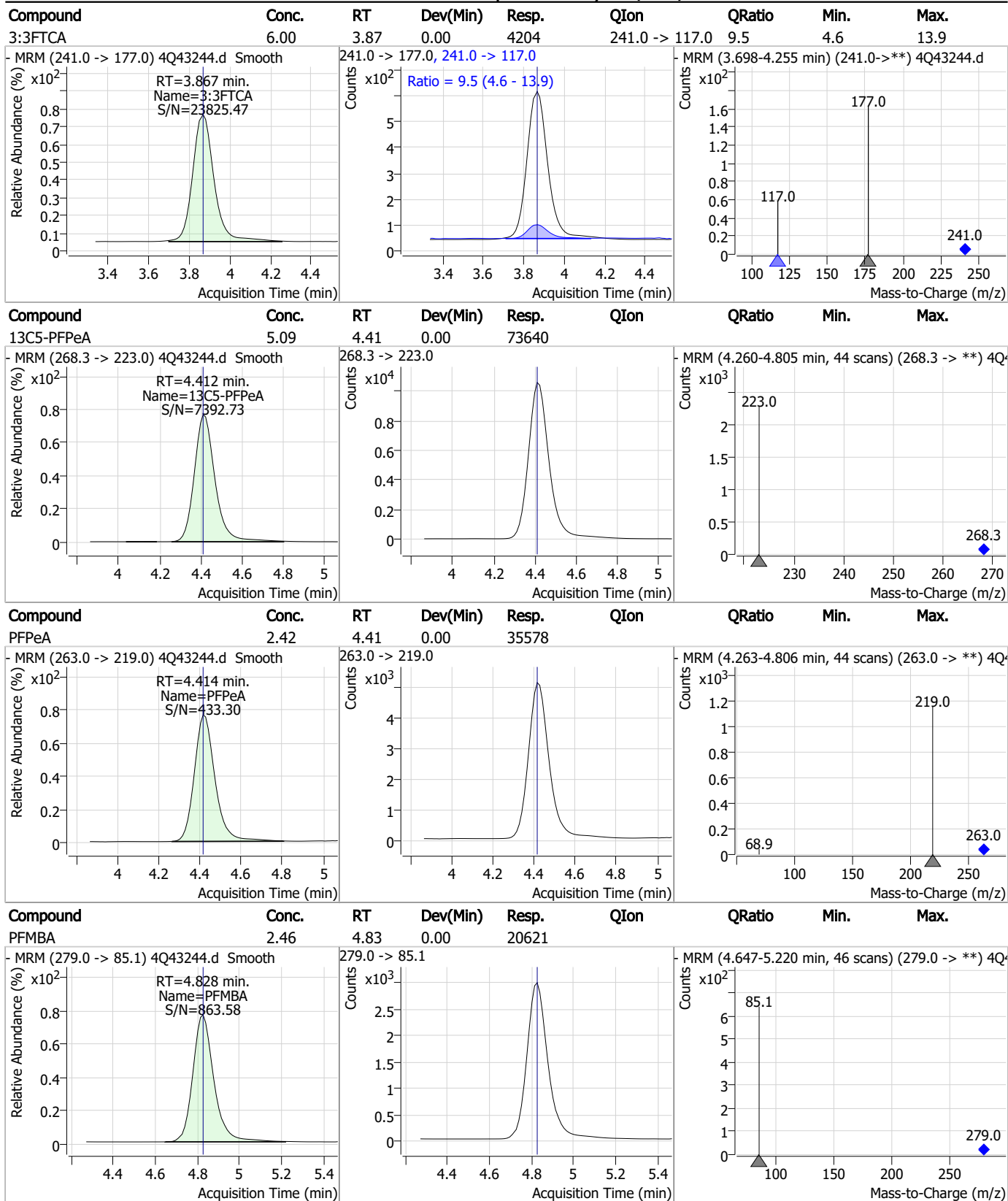
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Perfluorinated Compounds by LC/MS/MS



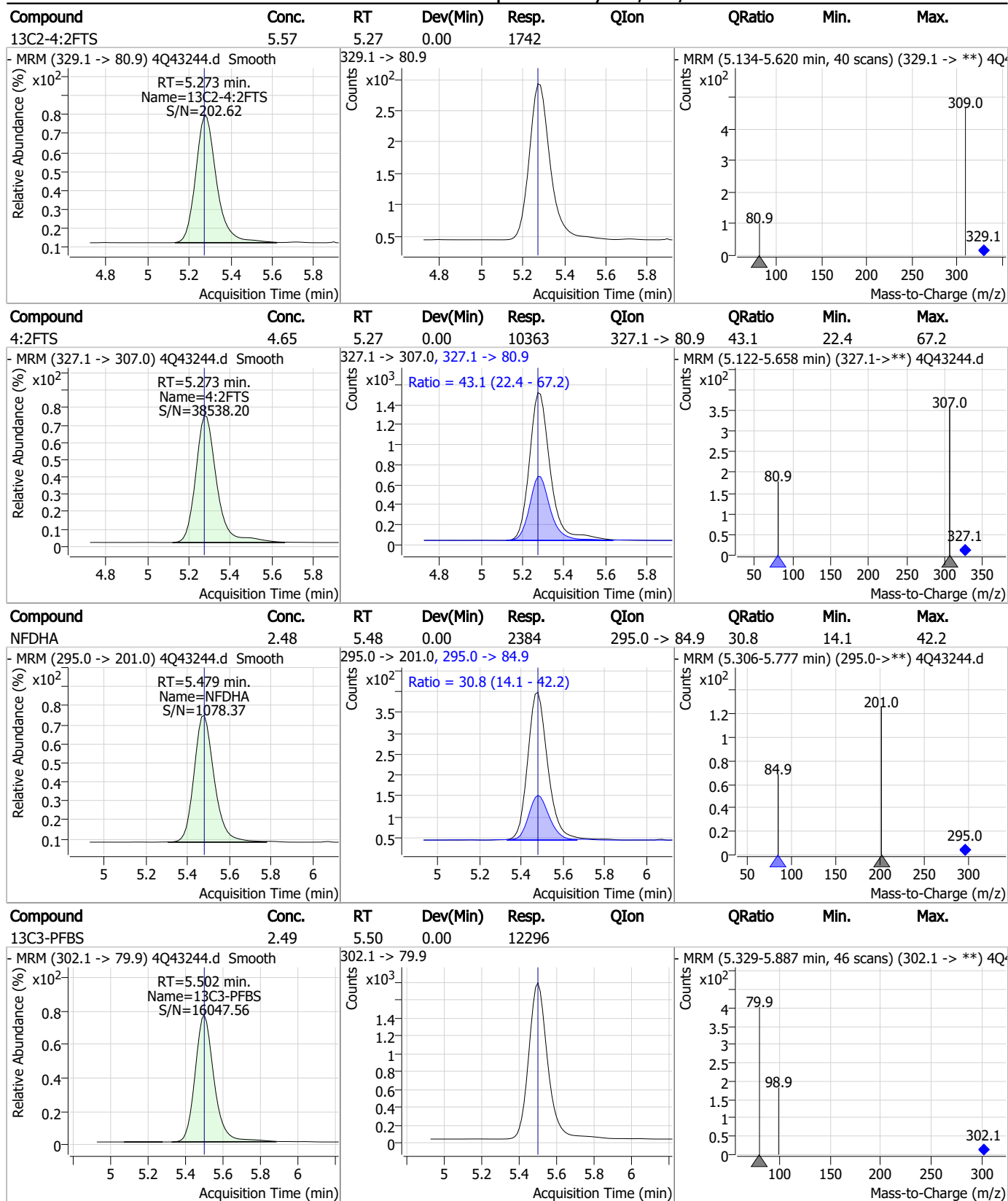
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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Perfluorinated Compounds by LC/MS/MS

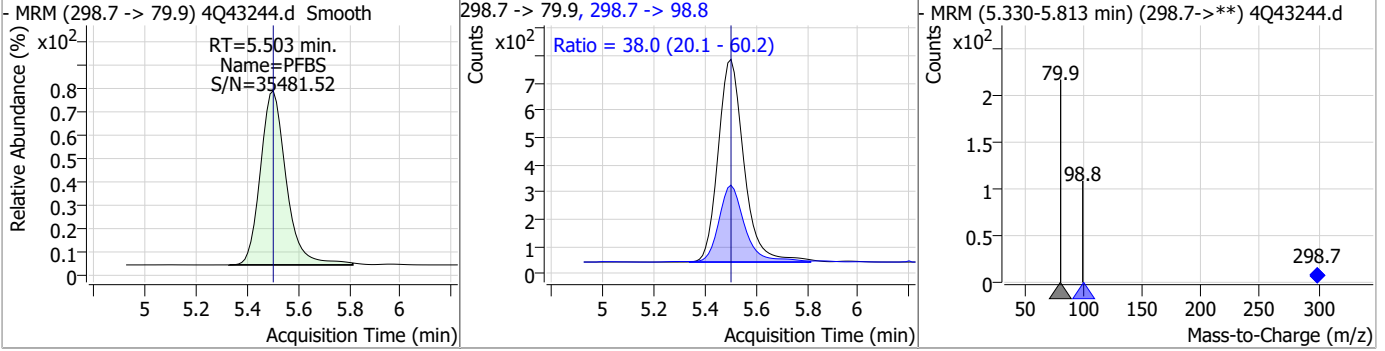


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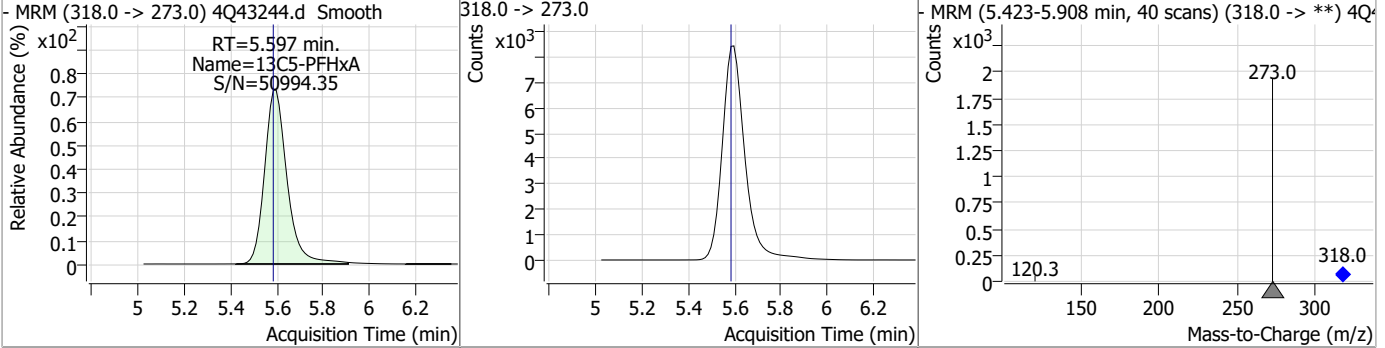
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Perfluorinated Compounds by LC/MS/MS

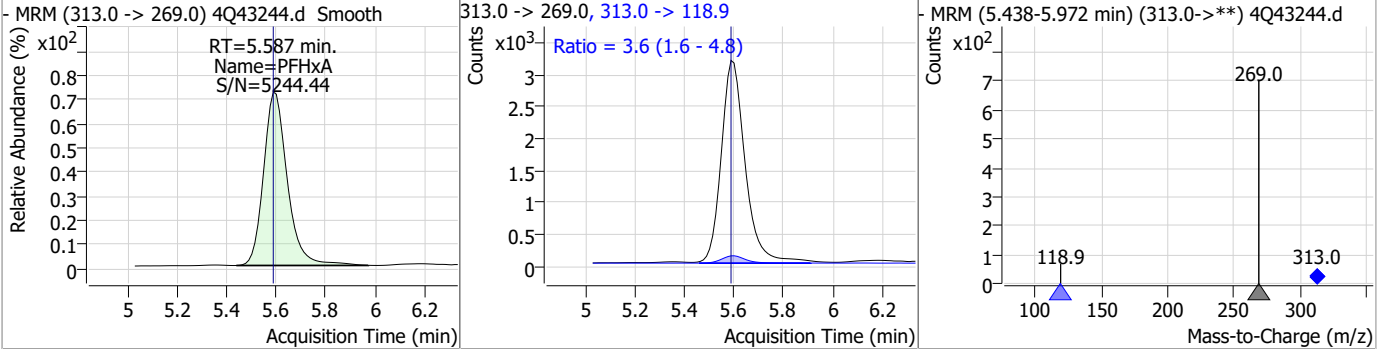
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.07	5.50	0.00	5200	298.7 -> 98.8	38.0	20.1	60.2



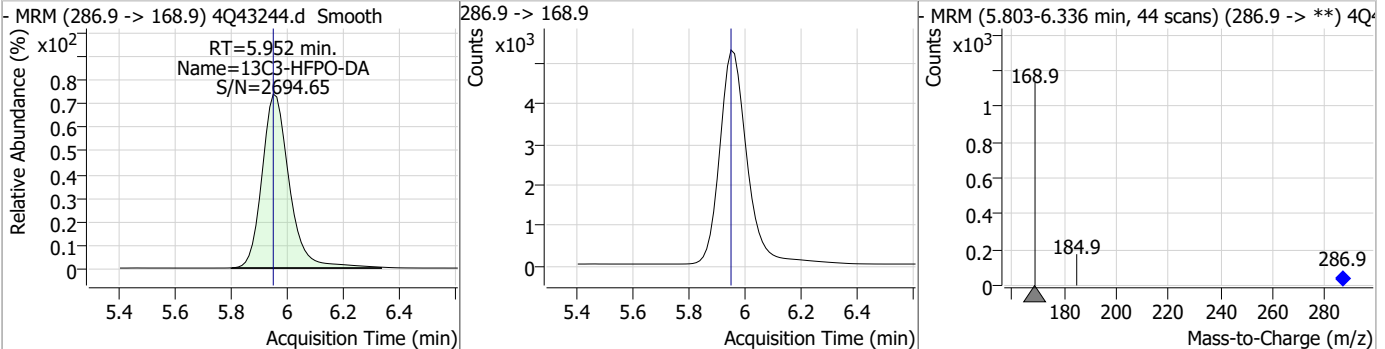
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.54	5.60	0.01	56403	318.0 -> 273.0	3.6	1.6	4.8



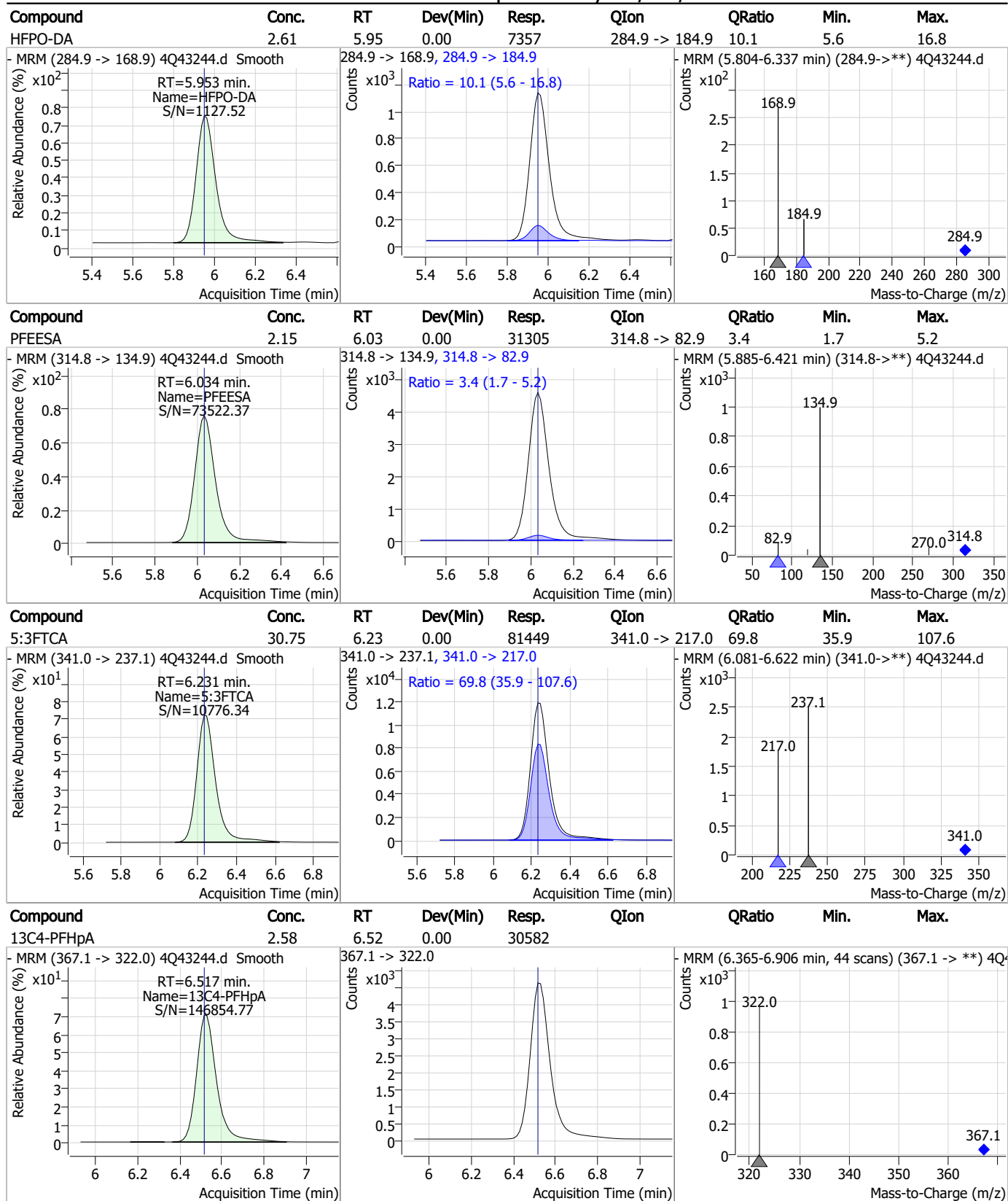
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.19	5.59	0.00	21175	313.0 -> 118.9	3.6	1.6	4.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.93	5.95	0.00	35679	286.9 -> 168.9	3.6	1.6	4.8



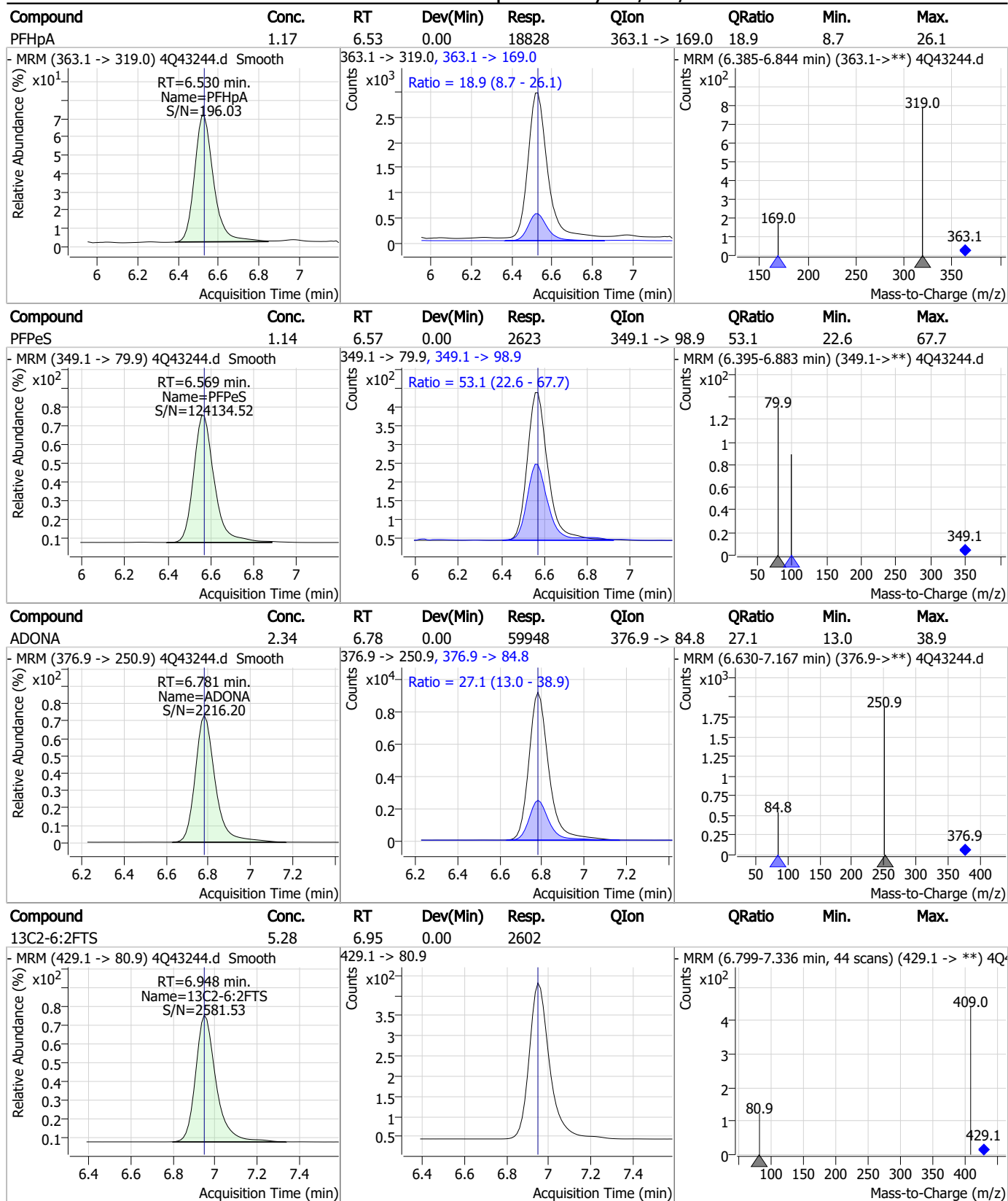
Perfluorinated Compounds by LC/MS/MS



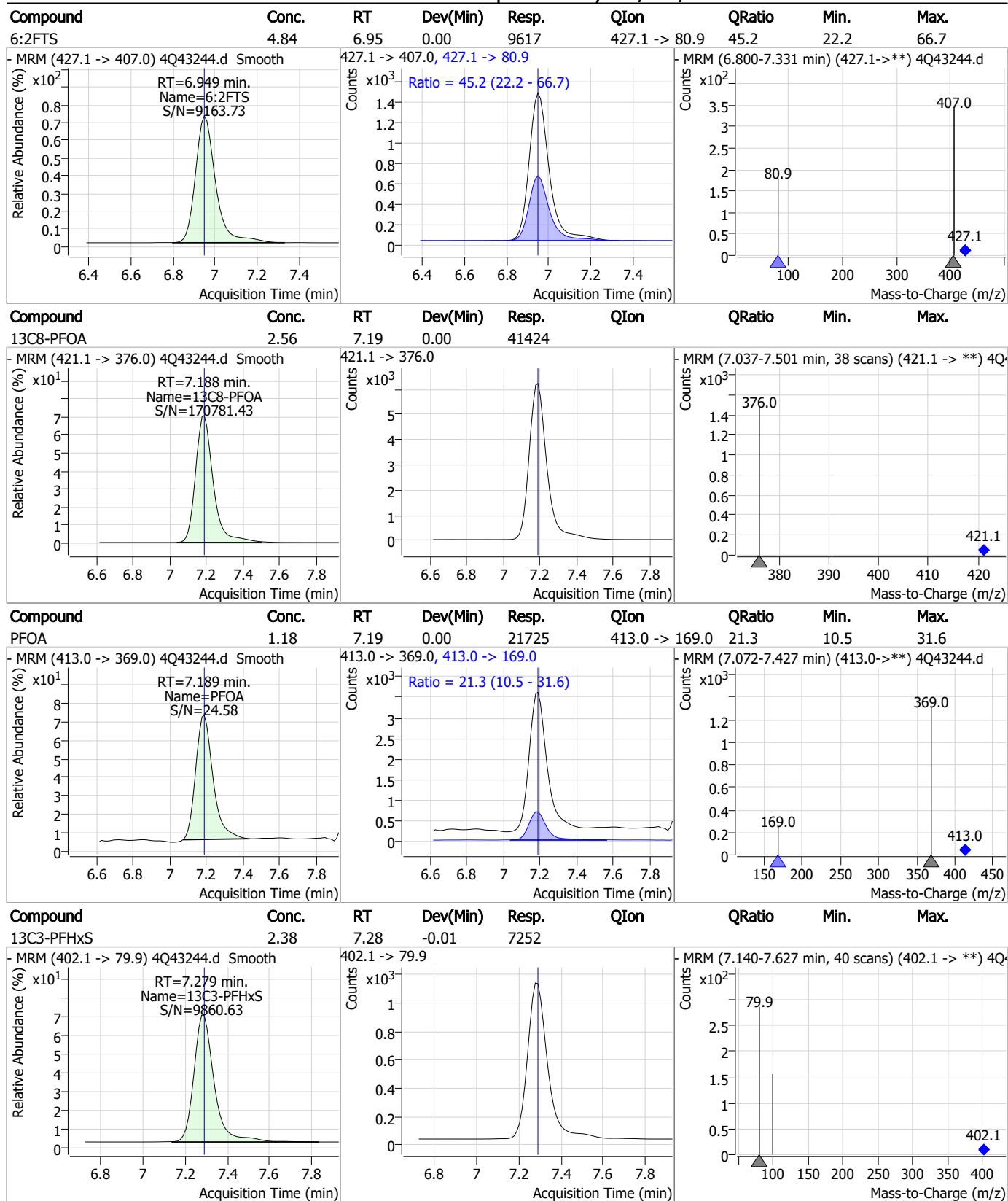
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Perfluorinated Compounds by LC/MS/MS

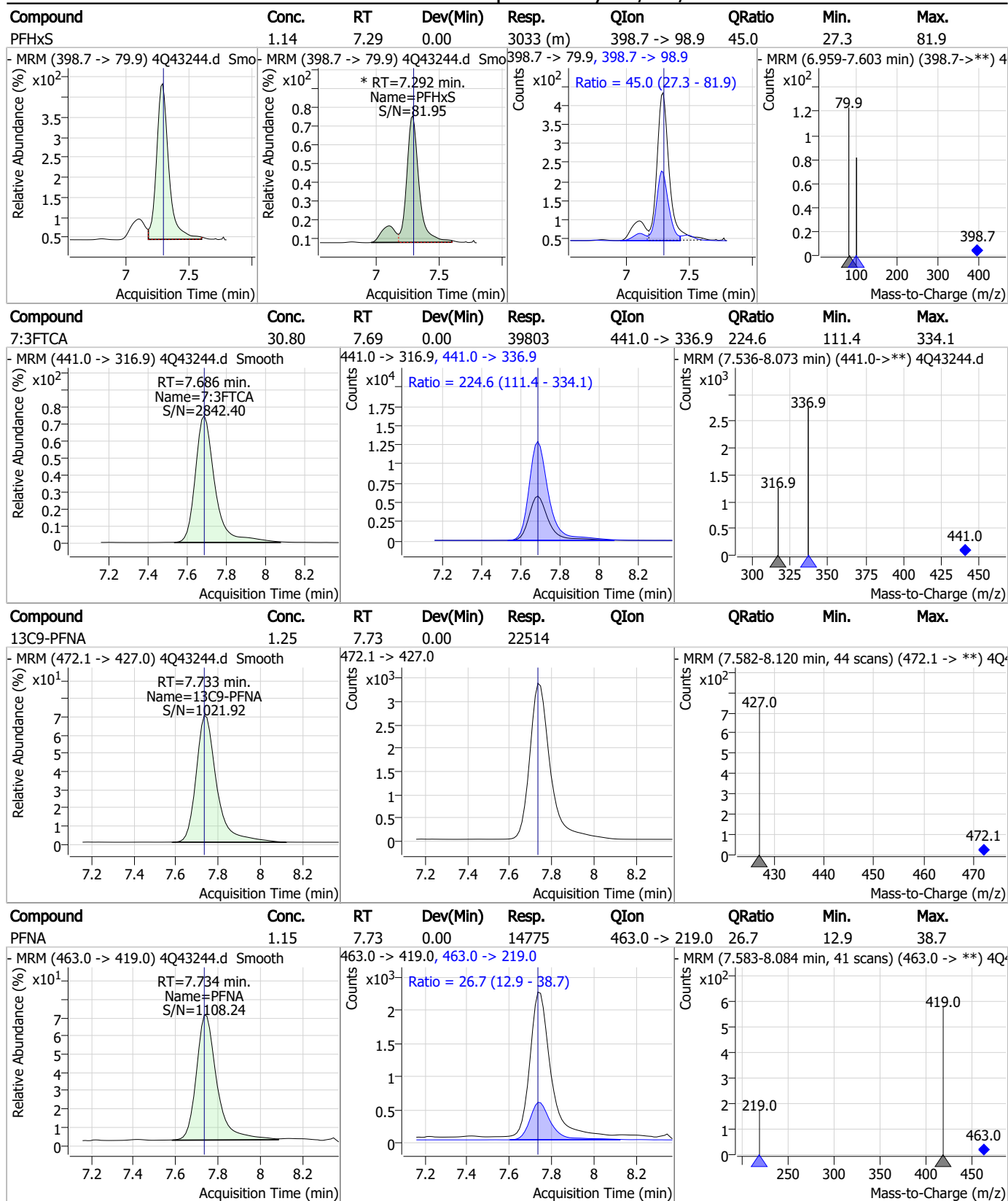


Perfluorinated Compounds by LC/MS/MS



7.7.4
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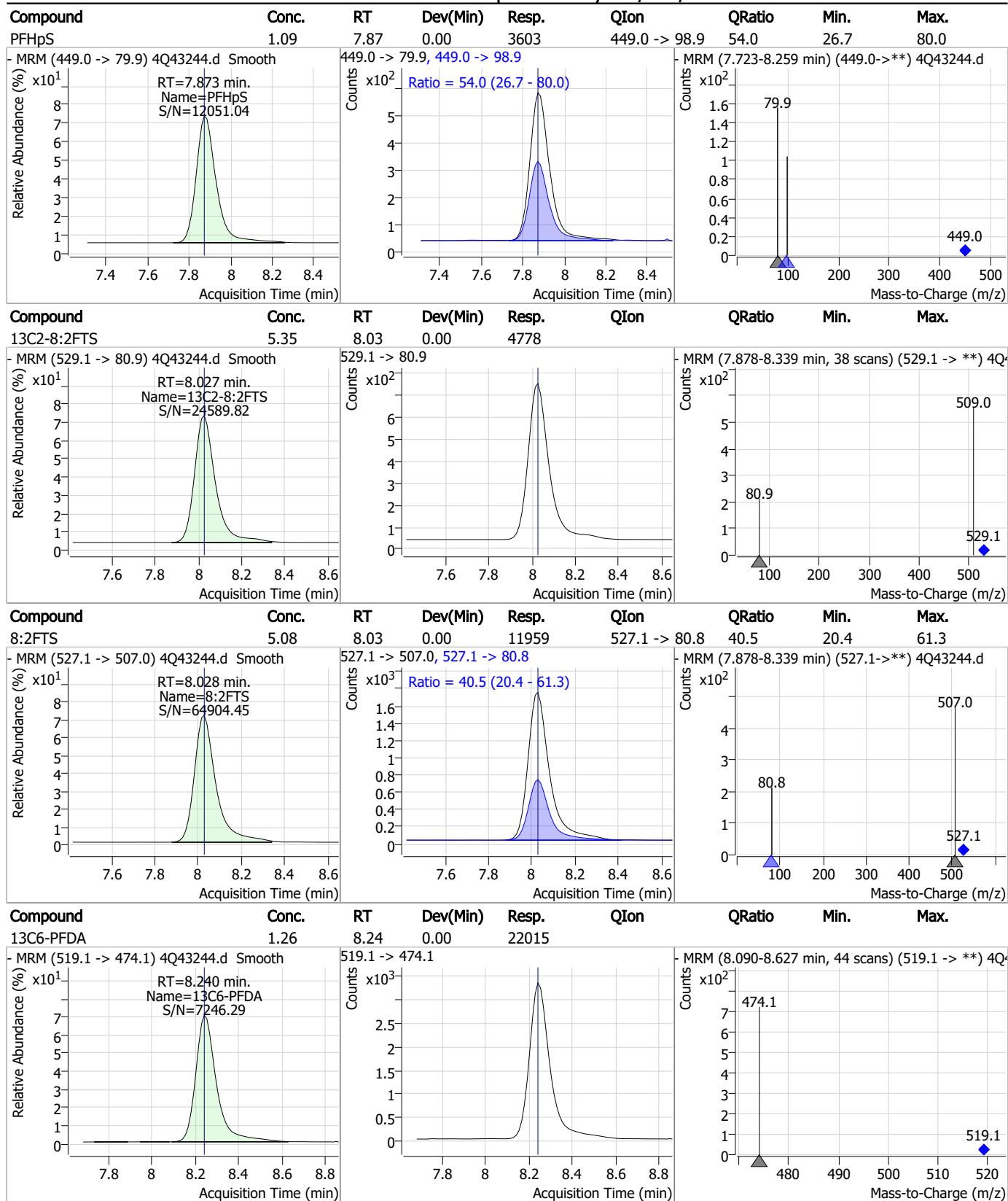
Perfluorinated Compounds by LC/MS/MS



7.7.4
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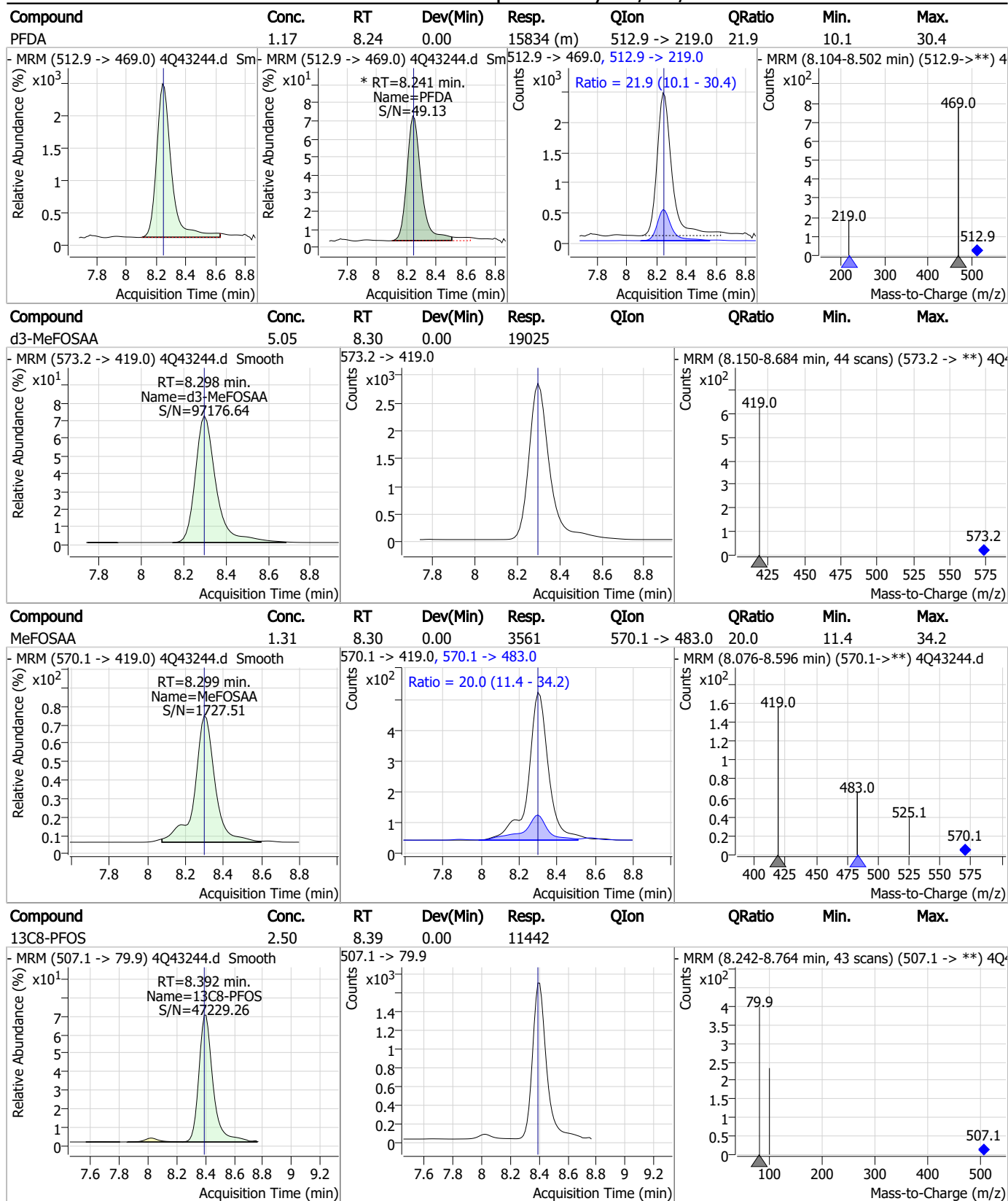


Perfluorinated Compounds by LC/MS/MS



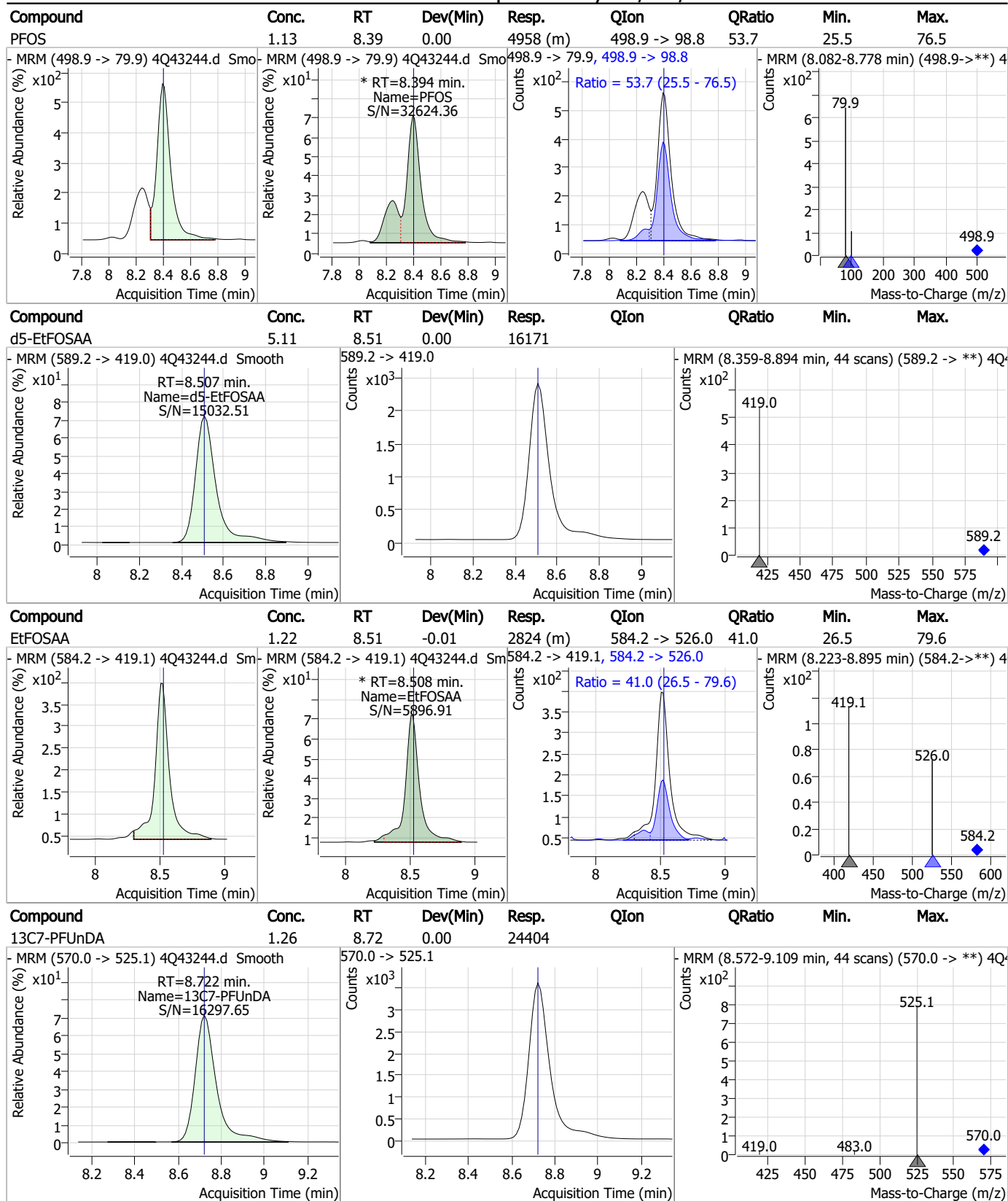
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Perfluorinated Compounds by LC/MS/MS



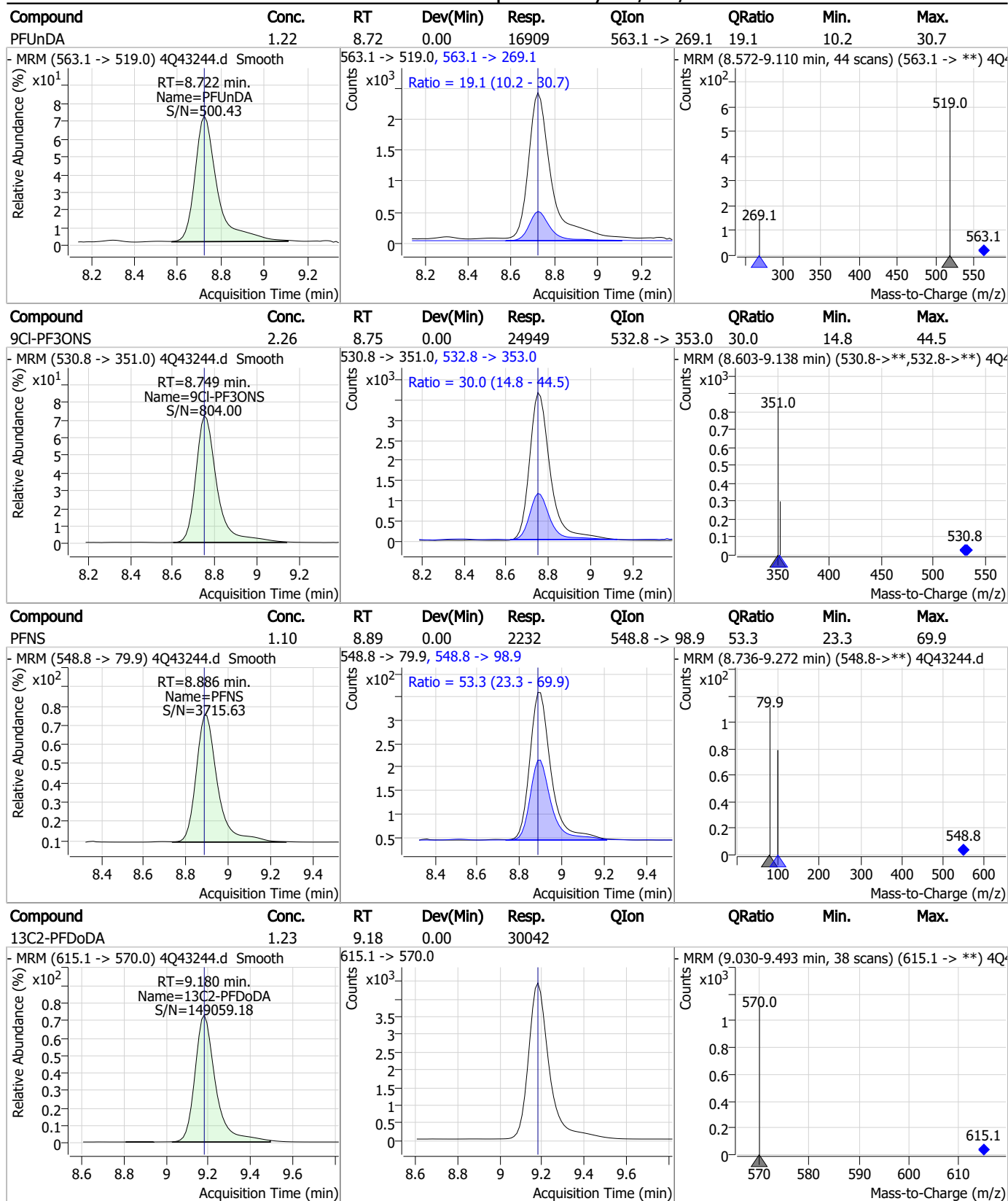
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Perfluorinated Compounds by LC/MS/MS



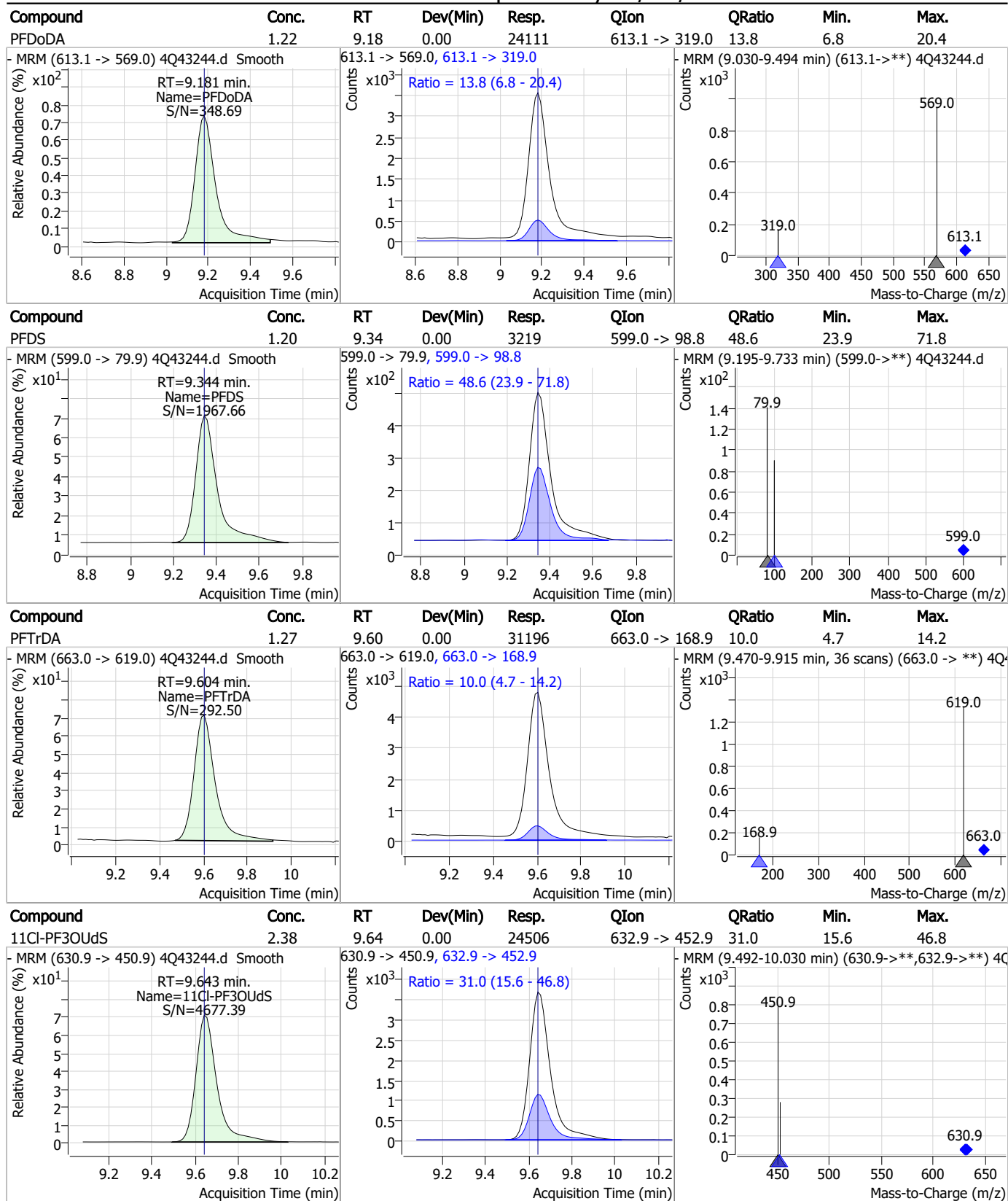
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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Perfluorinated Compounds by LC/MS/MS

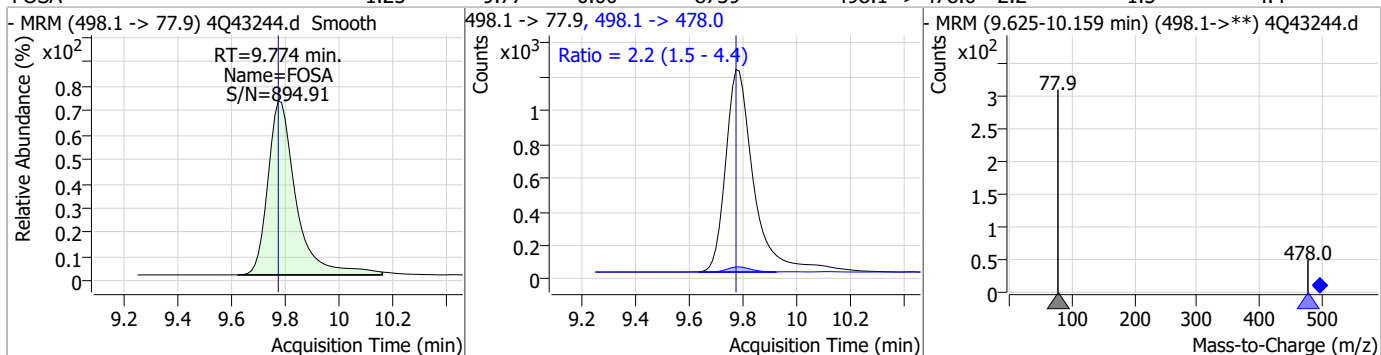


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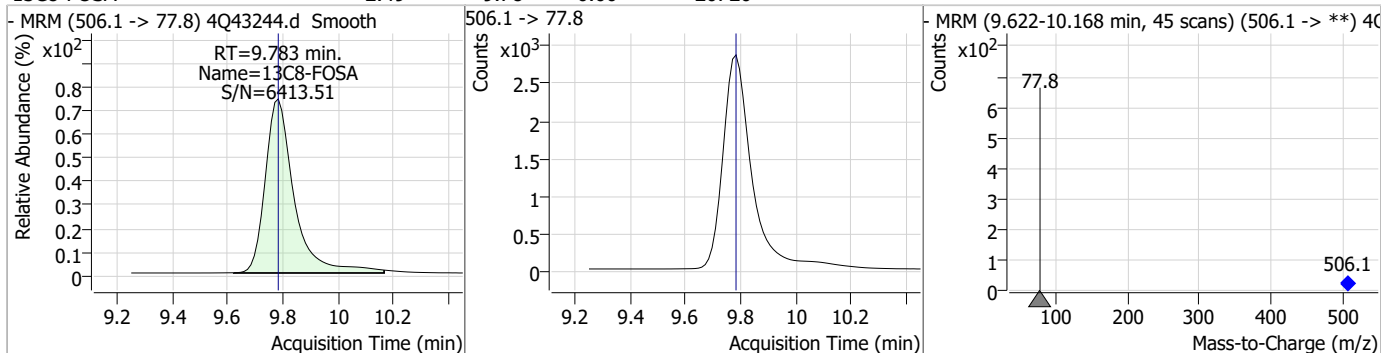
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Perfluorinated Compounds by LC/MS/MS

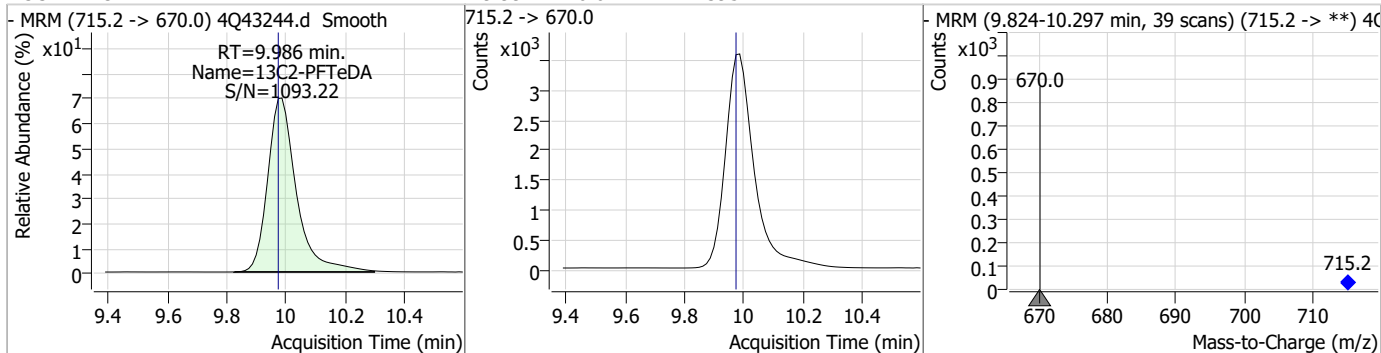
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.25	9.77	0.00	8739	498.1 -> 478.0	2.2	1.5	4.4



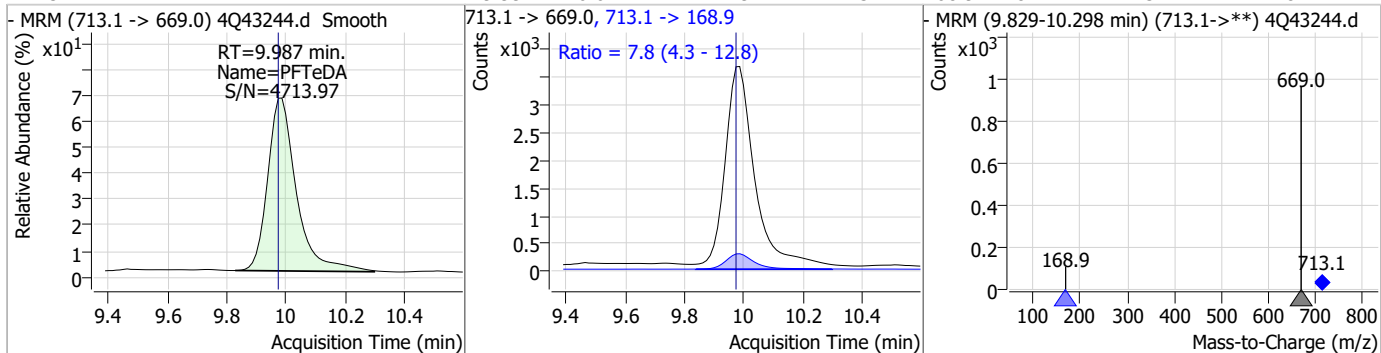
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.49	9.78	0.00	20720				



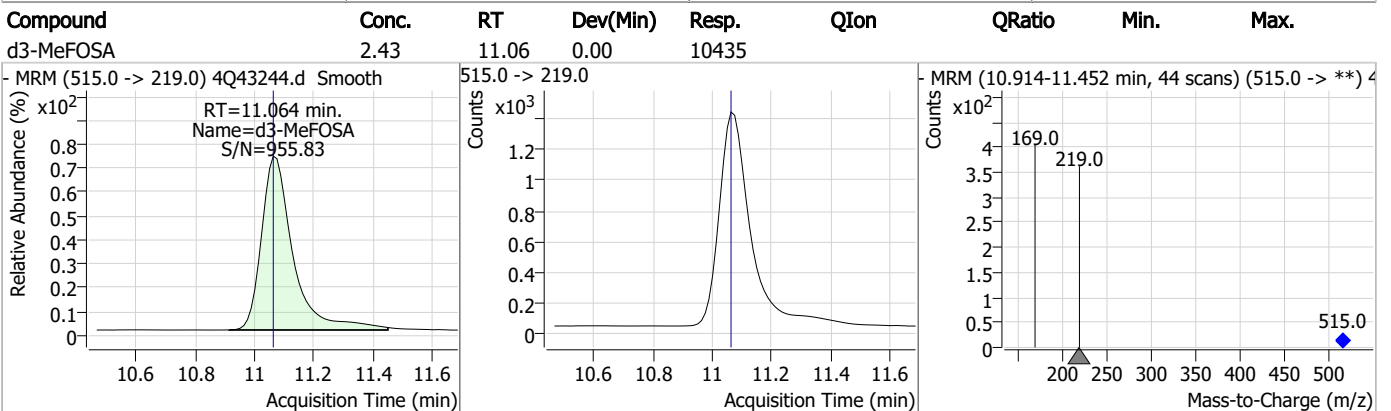
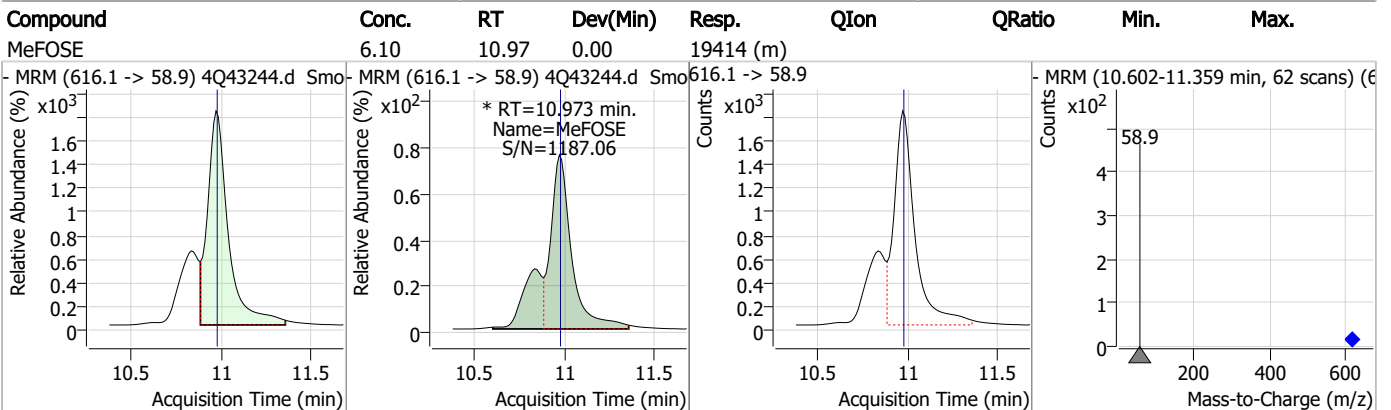
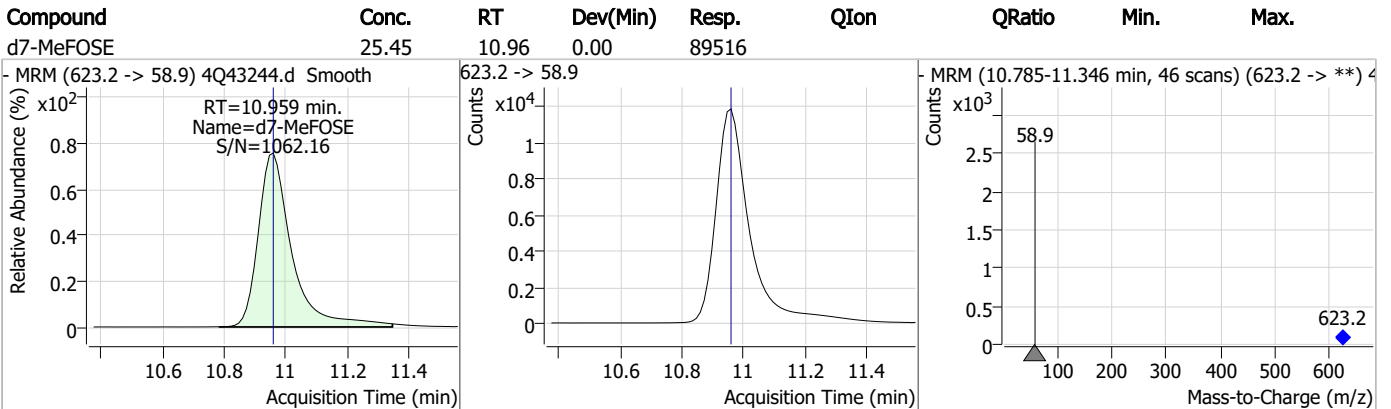
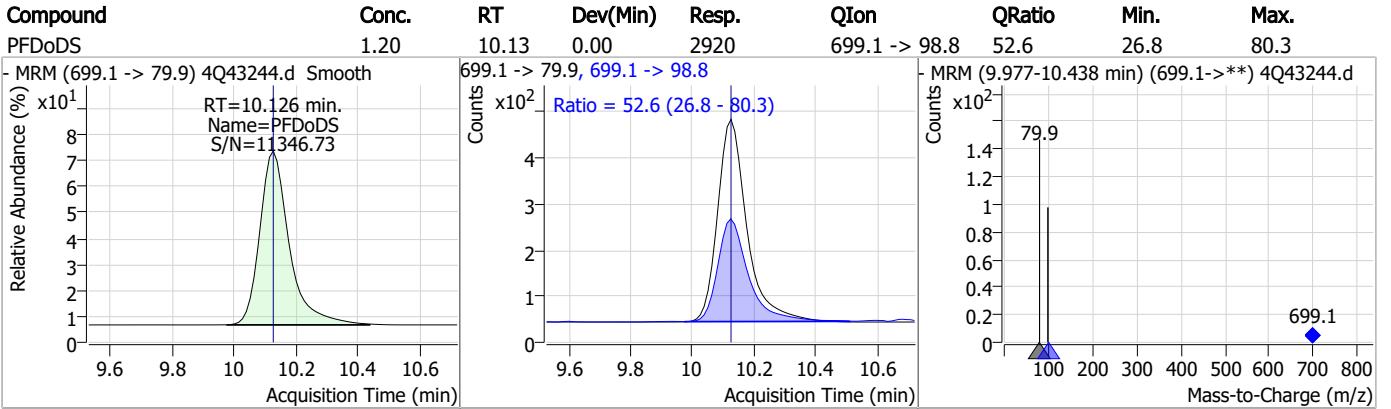
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.24	9.99	0.01	23951				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.24	9.99	0.01	24119	713.1 -> 168.9	7.8	4.3	12.8



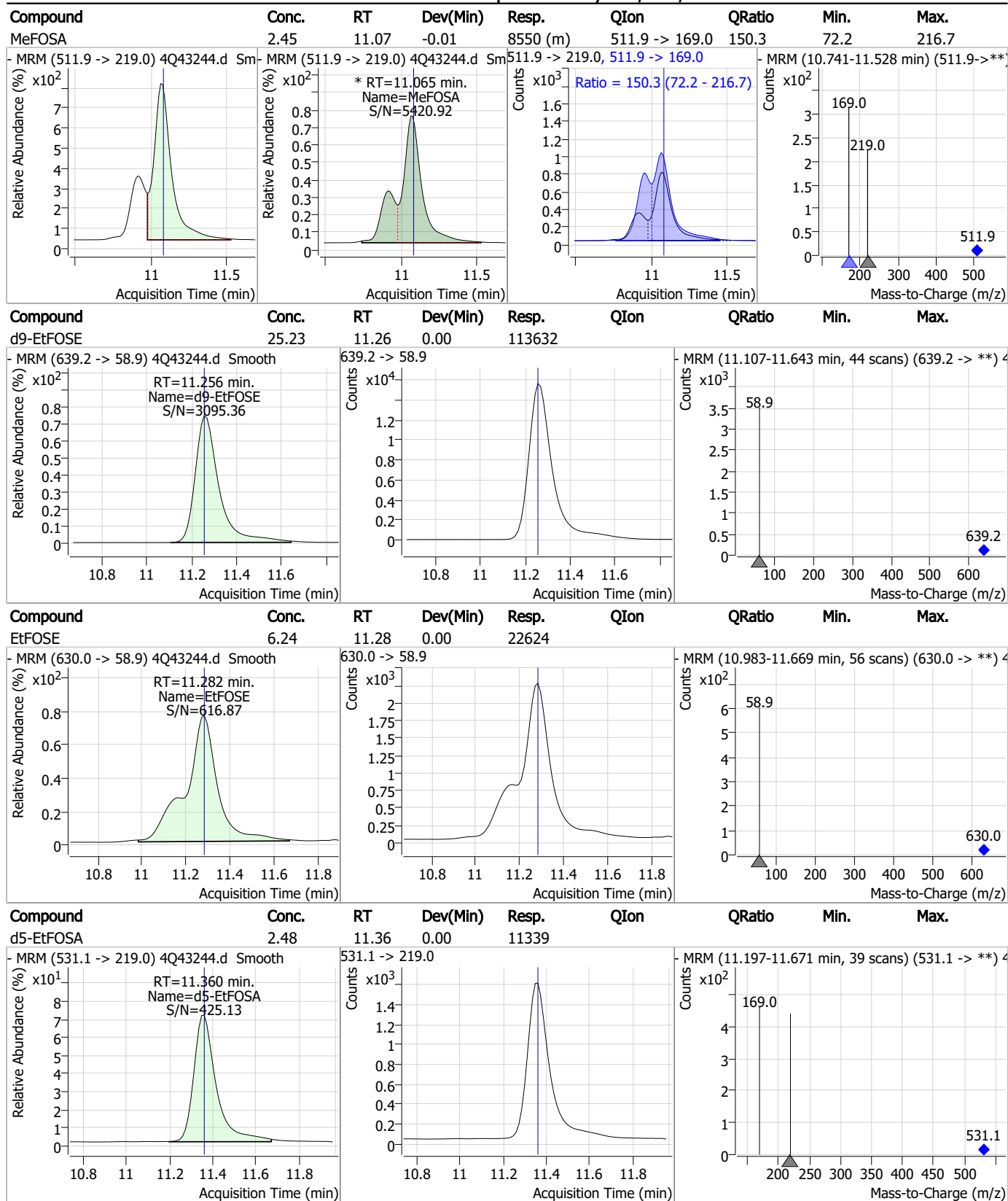
Perfluorinated Compounds by LC/MS/MS



7.7.4

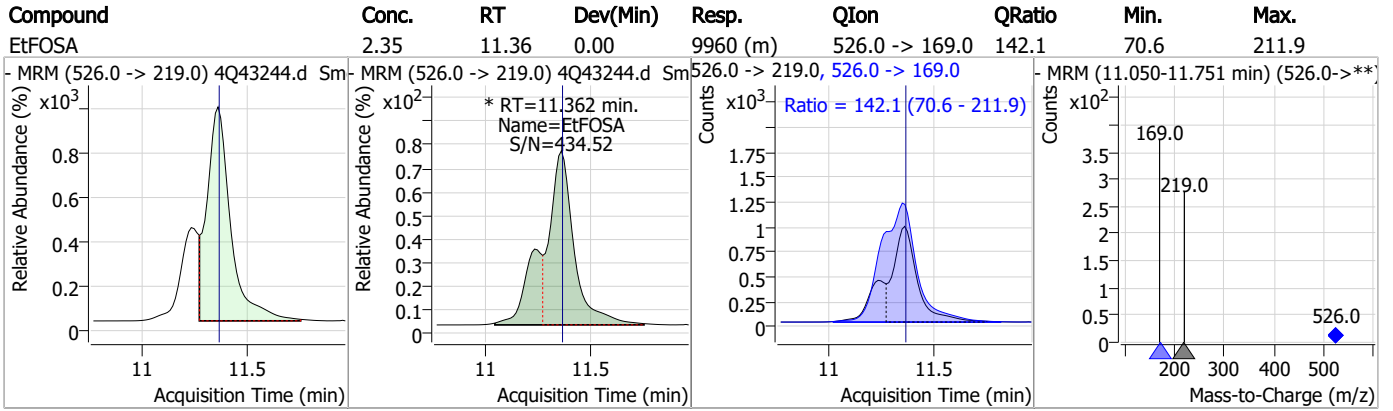
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4

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Manual Integration Approval Summary

Sample Number: S4Q625-IC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43244.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 12:22 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorodecanoic acid	335-76-2		8.24	Poor instrument integration
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.51	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.4.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43245.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 12:37:00 PM
 Sample Name : icc625-4
 Vial : P1-A5
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	117237	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	70959	5.00 µg/L	0.000
M5-PFHxA	5.584	318.0 -> 273.0	54151	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	29237	2.50 µg/L	0.000
M8-PFOA	7.188	421.1 -> 376.0	39658	2.50 µg/L	0.000
M9-PFNA	7.733	472.1 -> 427.0	21139	1.25 µg/L	0.000
M6-PFDA	8.240	519.1 -> 474.1	20355	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	23958	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	28882	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	23004	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	19463	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	11828	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	7427	2.50 µg/L	0.000
M8-PFOS	8.392	507.1 -> 79.9	10795	2.50 µg/L	0.000
M2-4:2FTS	5.273	329.1 -> 80.9	1527	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2487	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	4145	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	17830	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	33945	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	15313	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	82927	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	107681	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11003	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	10009	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	10659	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	64787	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	4980	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	47901	2.50 µg/L	0.000
13C2-PFDA	8.241	515.1 -> 470.1	19600	1.25 µg/L	0.000
13C5-PFNA	7.734	468.0 -> 423.0	24550	1.25 µg/L	0.000
13C2-PFHxA	5.585	315.1 -> 270.0	45871	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.273	329.1 -> 80.9	1527	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2487	5.40 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4145	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C2-PFDoDA	9.180	615.1 -> 570.0	28882	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C2-PFTeDA	9.974	715.2 -> 670.0	23004	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C3-PFBS	5.502	302.1 -> 79.9	11828	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C3-PFHxS	7.291	402.1 -> 79.9	7427	2.61 µg/L	0.000

7.7.5
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C4-PFBA	2.936	216.8 -> 171.9	117237	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.517	367.1 -> 322.0	29237	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C5-PFHxA	5.584	318.0 -> 273.0	54151	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C5-PFPeA	4.412	268.3 -> 223.0	70959	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C6-PFDA	8.240	519.1 -> 474.1	20355	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C7-PFUnDA	8.722	570.0 -> 525.1	23958	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-FOSA	9.783	506.1 -> 77.8	19463	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C8-PFOA	7.188	421.1 -> 376.0	39658	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C8-PFOS	8.392	507.1 -> 79.9	10795	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C9-PFNA	7.733	472.1 -> 427.0	21139	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSAA	8.298	573.2 -> 419.0	17830	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	33945	9.75 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d3-MeFOSA	11.064	515.0 -> 219.0	10009	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
d5-EtFOSAA	8.507	589.2 -> 419.0	15313	5.21 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.1%	
d7-MeFOSE	10.959	623.2 -> 58.9	82927	25.36 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
d9-EtFOSE	11.256	639.2 -> 58.9	107681	25.71 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
d5-EtFOSA	11.360	531.1 -> 219.0	11003	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	18892	9.67 µg/L	100
		327.1 -> 80.9	8465		
6:2FTS	6.949	427.1 -> 407.0	18232	9.59 µg/L	100
		427.1 -> 80.9	8113		
8:2FTS	8.028	527.1 -> 507.0	22274	10.90 µg/L	100
		527.1 -> 80.8	9100		
EtFOSAA	8.521	584.2 -> 419.1	5531	2.53 µg/L	m 100
		584.2 -> 526.0	2935		
FOSA	9.774	498.1 -> 77.9	16527	2.51 µg/L	100
		498.1 -> 478.0	480		
MeFOSAA	8.299	570.1 -> 419.0	6410	2.52 µg/L	m 100
		570.1 -> 483.0	1460		
PFBA	2.945	212.8 -> 168.9	27278	10.03 µg/L	100
PFBS	5.503	298.7 -> 79.9	9903	2.12 µg/L	100
		298.7 -> 98.8	3977		
PFDA	8.241	512.9 -> 469.0	32921	2.64 µg/L	100
		512.9 -> 219.0	6666		
PFDODA	9.181	613.1 -> 569.0	50201	2.64 µg/L	100
		613.1 -> 319.0	6830		
PFDS	9.344	599.0 -> 79.9	6396	2.54 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3062			
PFHpA	6.530	363.1 -> 319.0	38121	2.48	µg/L	100
		363.1 -> 169.0	6634			
PFHpS	7.873	449.0 -> 79.9	7454	2.40	µg/L	100
		449.0 -> 98.9	3976			
PFHxA	5.587	313.0 -> 269.0	42784	2.51	µg/L	100
		313.0 -> 118.9	1370			
PFHxS	7.292	398.7 -> 79.9	5723	2.10	µg/L	m 100
		398.7 -> 98.9	3124			
PFNA	7.734	463.0 -> 419.0	30924	2.57	µg/L	100
		463.0 -> 219.0	7976			
PFNS	8.886	548.8 -> 79.9	4710	2.46	µg/L	100
		548.8 -> 98.9	2196			
PFOA	7.189	413.0 -> 369.0	46193	2.61	µg/L	100
		413.0 -> 169.0	9717			
PFOS	8.394	498.9 -> 79.9	9982	2.41	µg/L	m 100
		498.9 -> 98.8	5089			
PFPeA	4.414	263.0 -> 219.0	71978	5.08	µg/L	100
PFPeS	6.569	349.1 -> 79.9	5539	2.36	µg/L	100
		349.1 -> 98.9	2499			
PFTeDA	9.974	713.1 -> 669.0	47555	2.54	µg/L	100
		713.1 -> 168.9	4052			
PFTrDA	9.604	663.0 -> 619.0	63427	2.68	µg/L	100
		663.0 -> 168.9	5988			
PFUnDA	8.722	563.1 -> 519.0	32586	2.40	µg/L	100
		563.1 -> 269.1	6664			
11Cl-PF3OUdS	9.643	630.9 -> 450.9	49085	5.02	µg/L	100
		632.9 -> 452.9	15317			
9Cl-PF3ONS	8.749	530.8 -> 351.0	50312	4.79	µg/L	100
		532.8 -> 353.0	14921			
ADONA	6.781	376.9 -> 250.9	119186	4.89	µg/L	100
		376.9 -> 84.8	30947			
HFPO-DA	5.953	284.9 -> 168.9	14273	5.32	µg/L	100
		284.9 -> 184.9	1598			
3:3FTCA	3.867	241.0 -> 177.0	8328	12.34	µg/L	100
		241.0 -> 117.0	772			
5:3FTCA	6.231	341.0 -> 237.1	161672	63.58	µg/L	100
		341.0 -> 217.0	115992			
7:3FTCA	7.686	441.0 -> 316.9	80338	64.74	µg/L	100
		441.0 -> 336.9	178949			
EtFOSA	11.362	526.0 -> 219.0	19551	4.76	µg/L	m 100
		526.0 -> 169.0	27621			
EtFOSE	11.282	630.0 -> 58.9	43331	12.62	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	17467	5.22	µg/L	m 100
		511.9 -> 169.0	25235			
MeFOSE	10.973	616.1 -> 58.9	38028	12.90	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	5795	2.53	µg/L	100
		699.1 -> 98.8	3104			
NFDHA	5.479	295.0 -> 201.0	4974	5.38	µg/L	100
		295.0 -> 84.9	1400			
PFMBA	4.828	279.0 -> 85.1	40792	5.04	µg/L	100
PFMPA	3.553	229.0 -> 84.9	35875	4.99	µg/L	100
PFEESA	6.034	314.8 -> 134.9	62170	4.44	µg/L	100
		314.8 -> 82.9	2166			

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

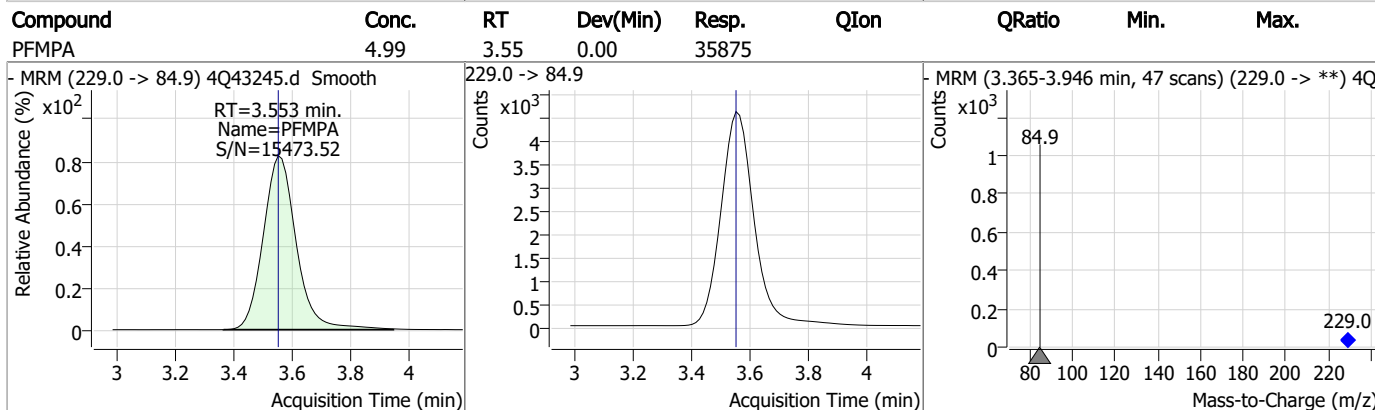
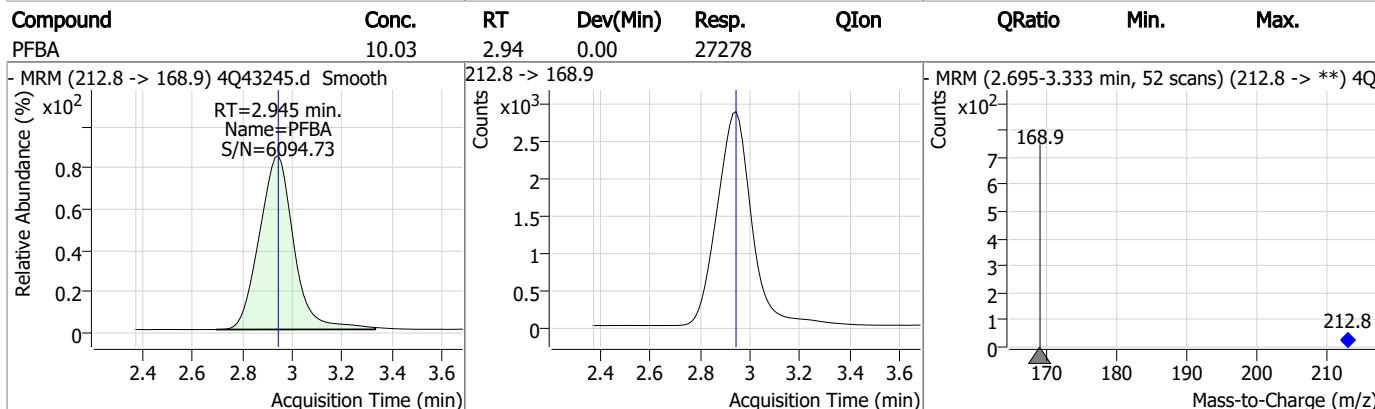
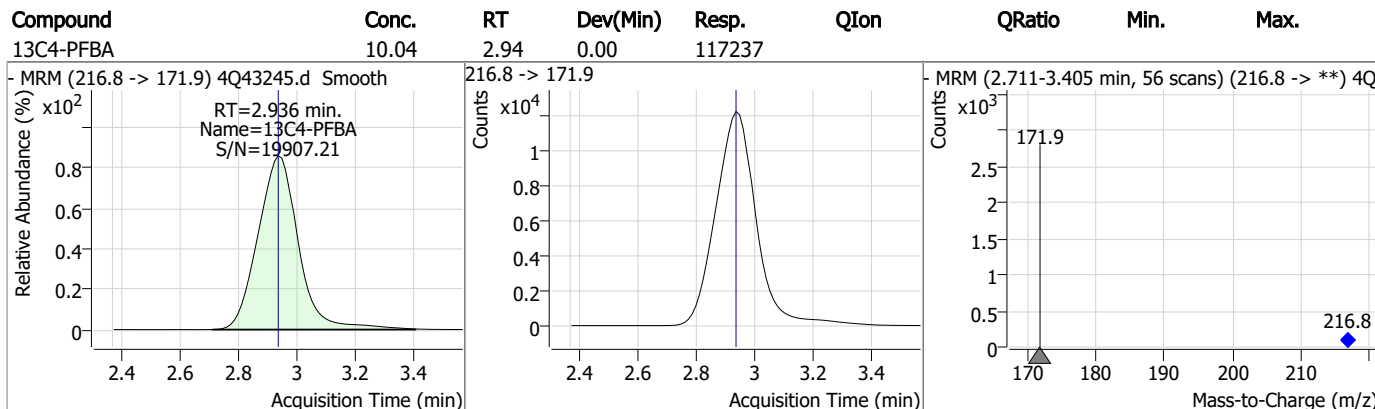
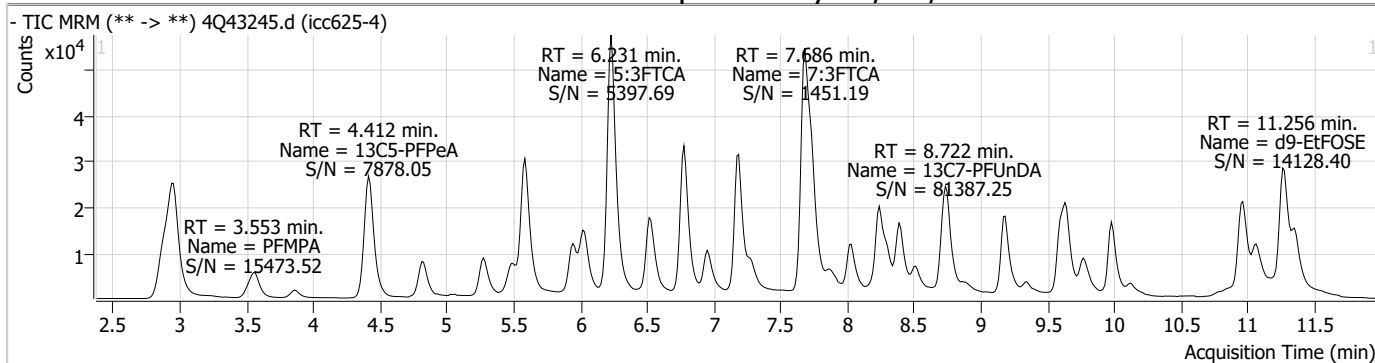
Perfluorinated Compounds by LC/MS/MS

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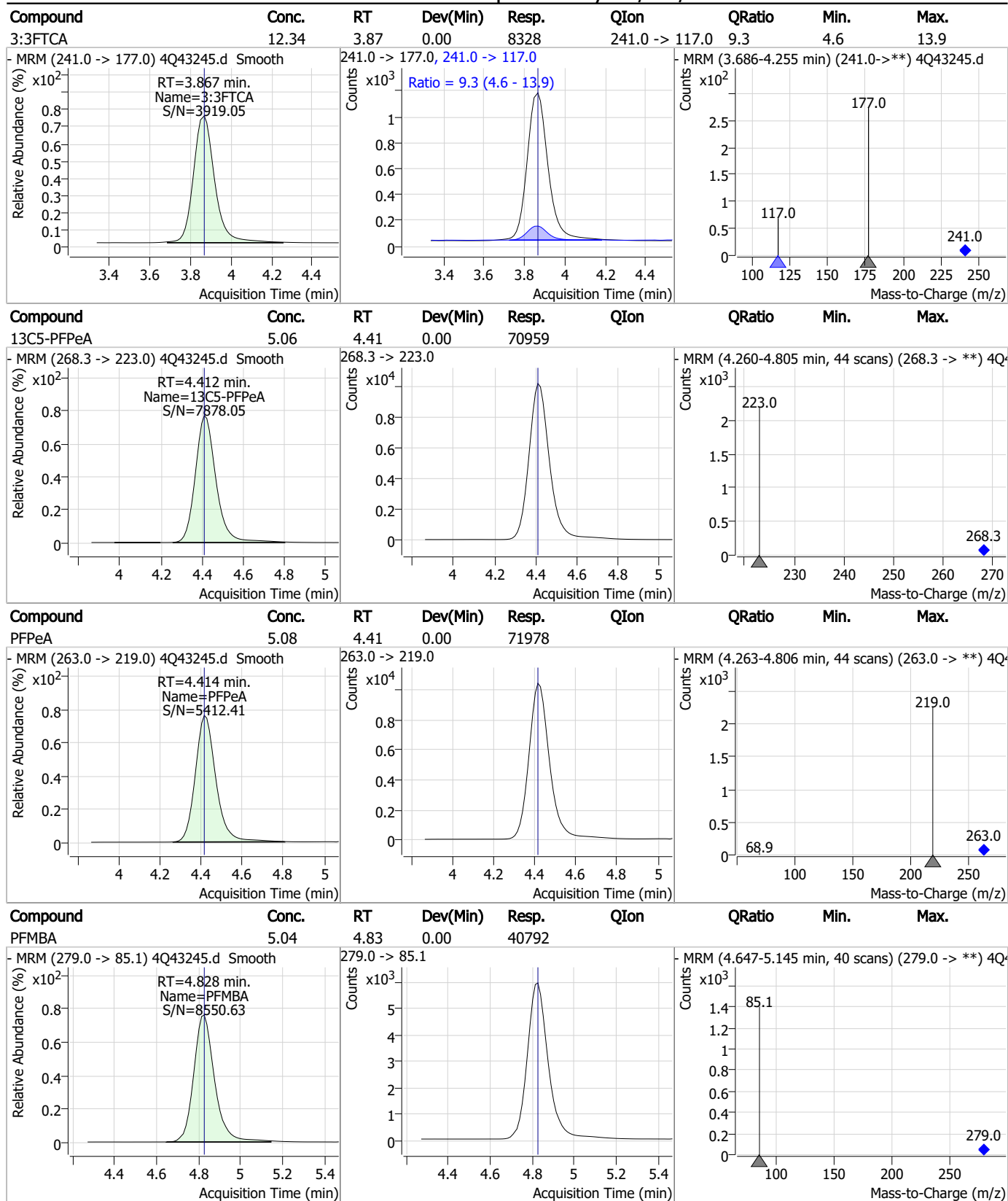
7.7.5

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Perfluorinated Compounds by LC/MS/MS

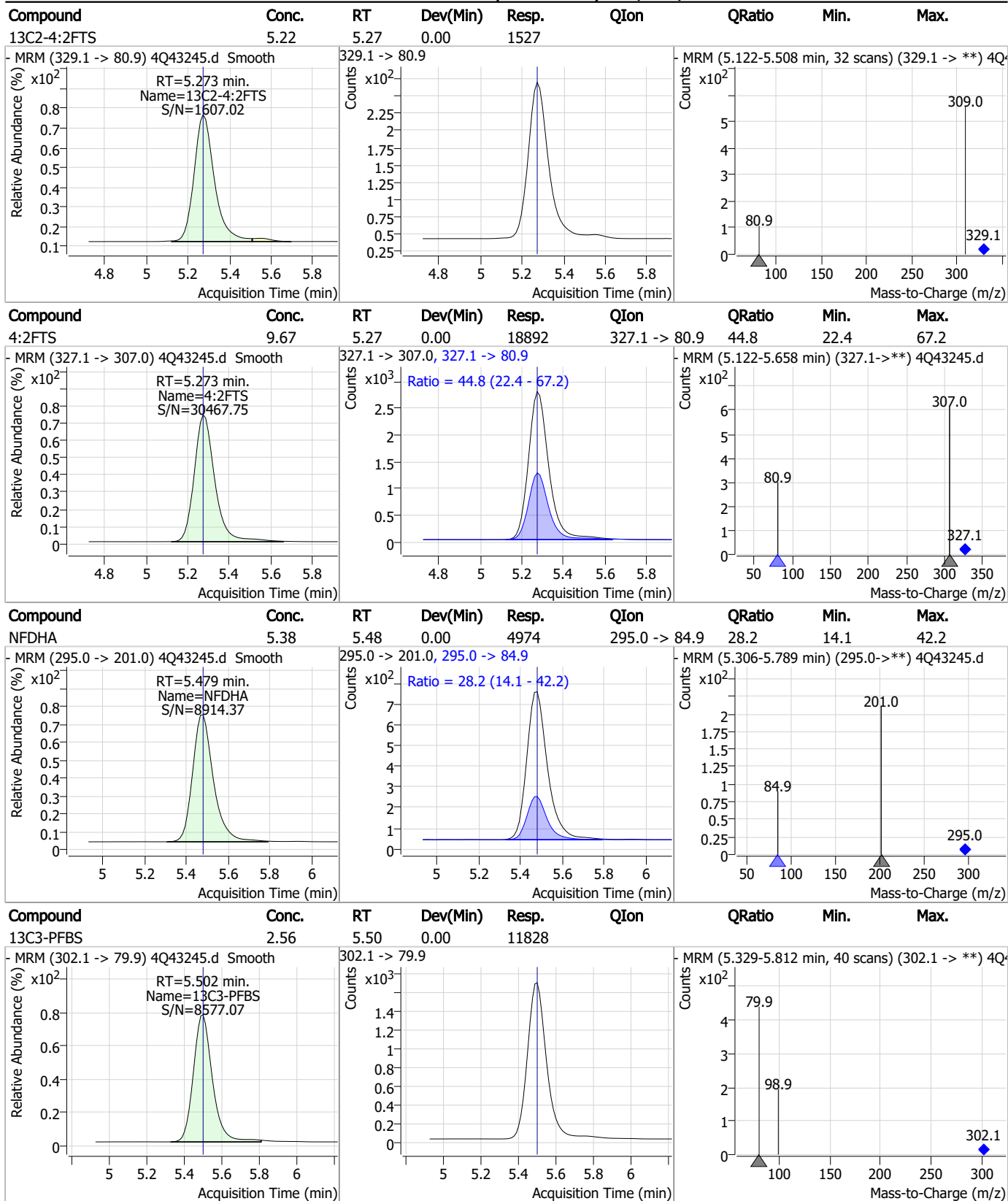


Perfluorinated Compounds by LC/MS/MS



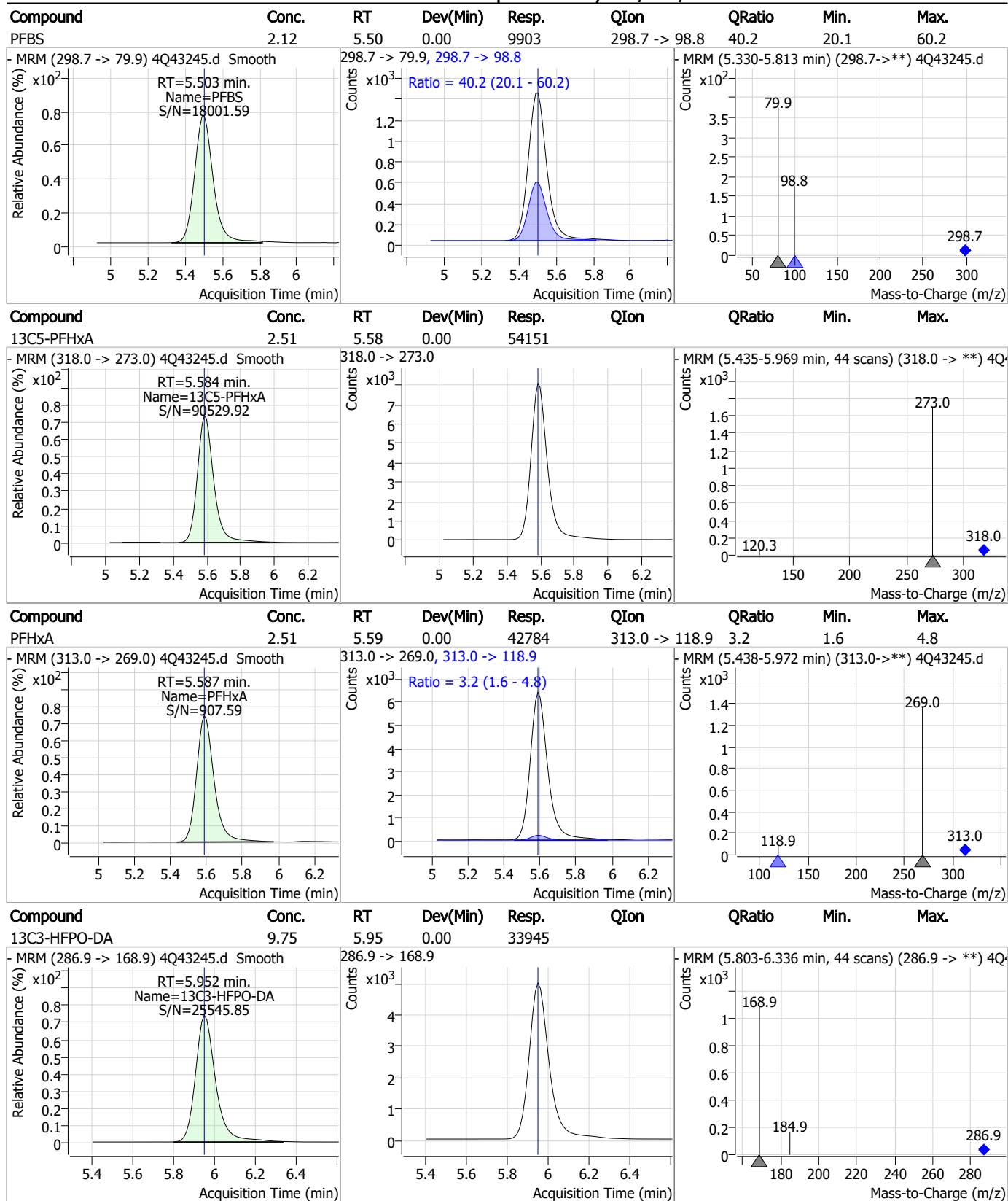
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Perfluorinated Compounds by LC/MS/MS



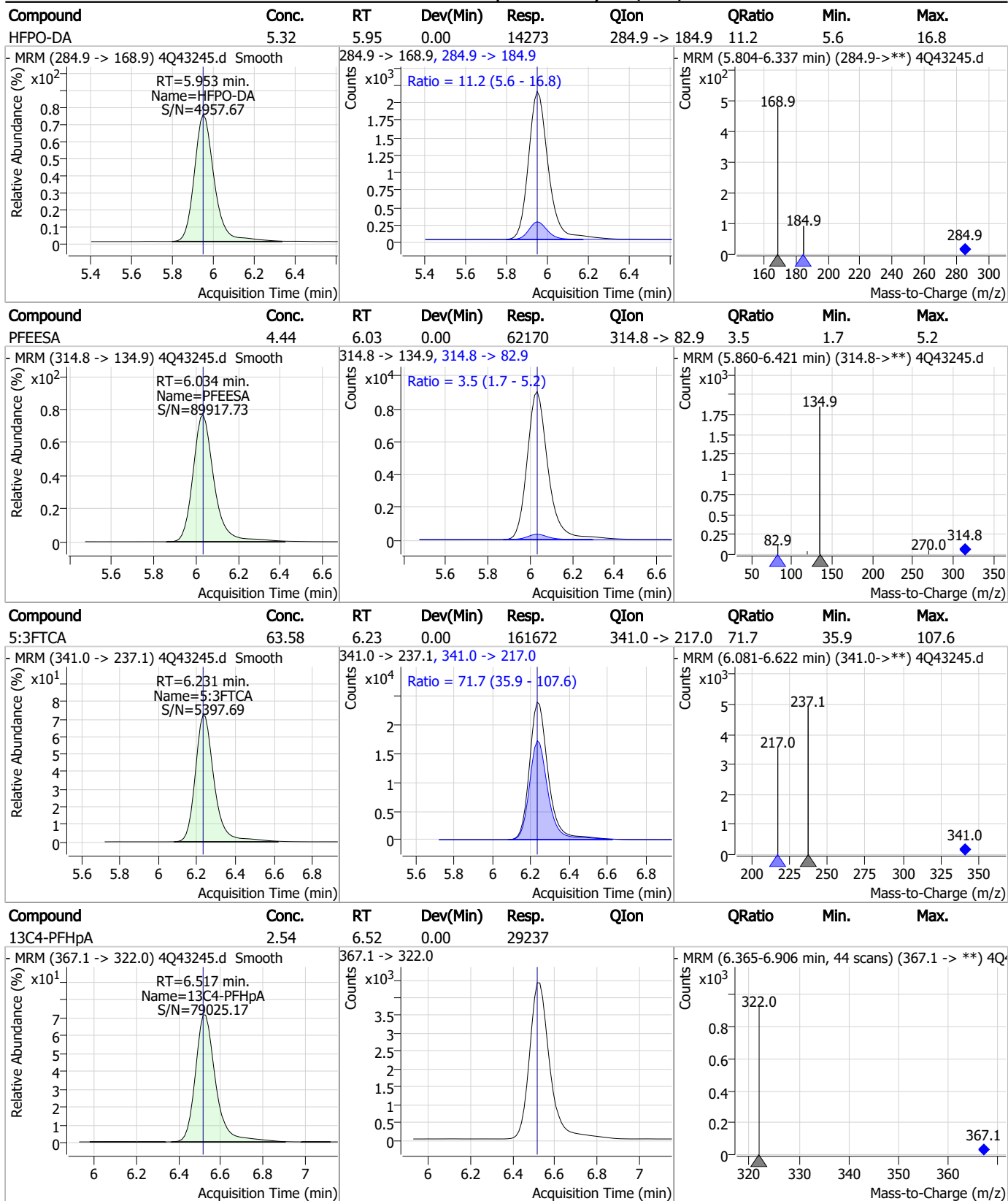
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Perfluorinated Compounds by LC/MS/MS



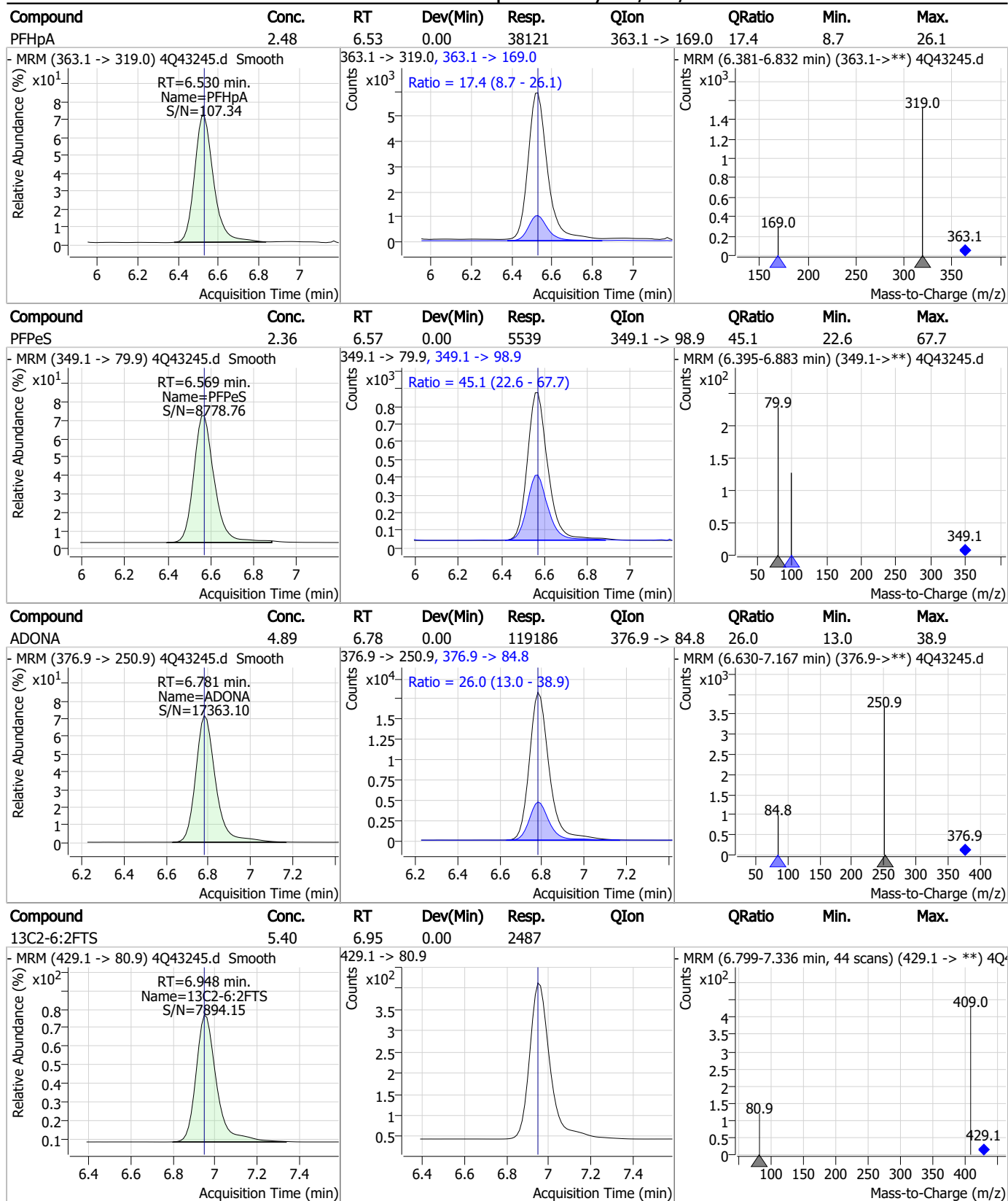
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Perfluorinated Compounds by LC/MS/MS



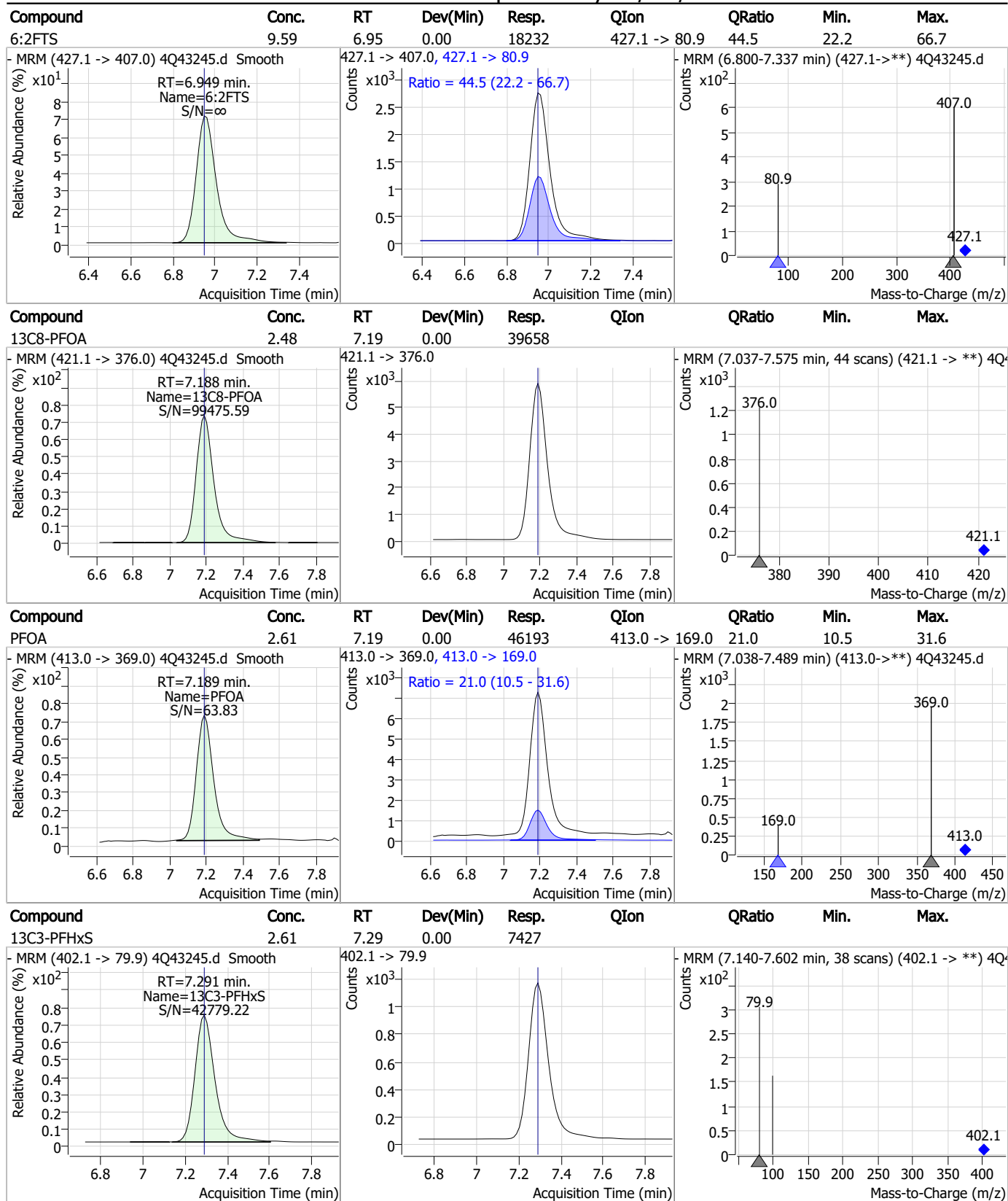
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Perfluorinated Compounds by LC/MS/MS



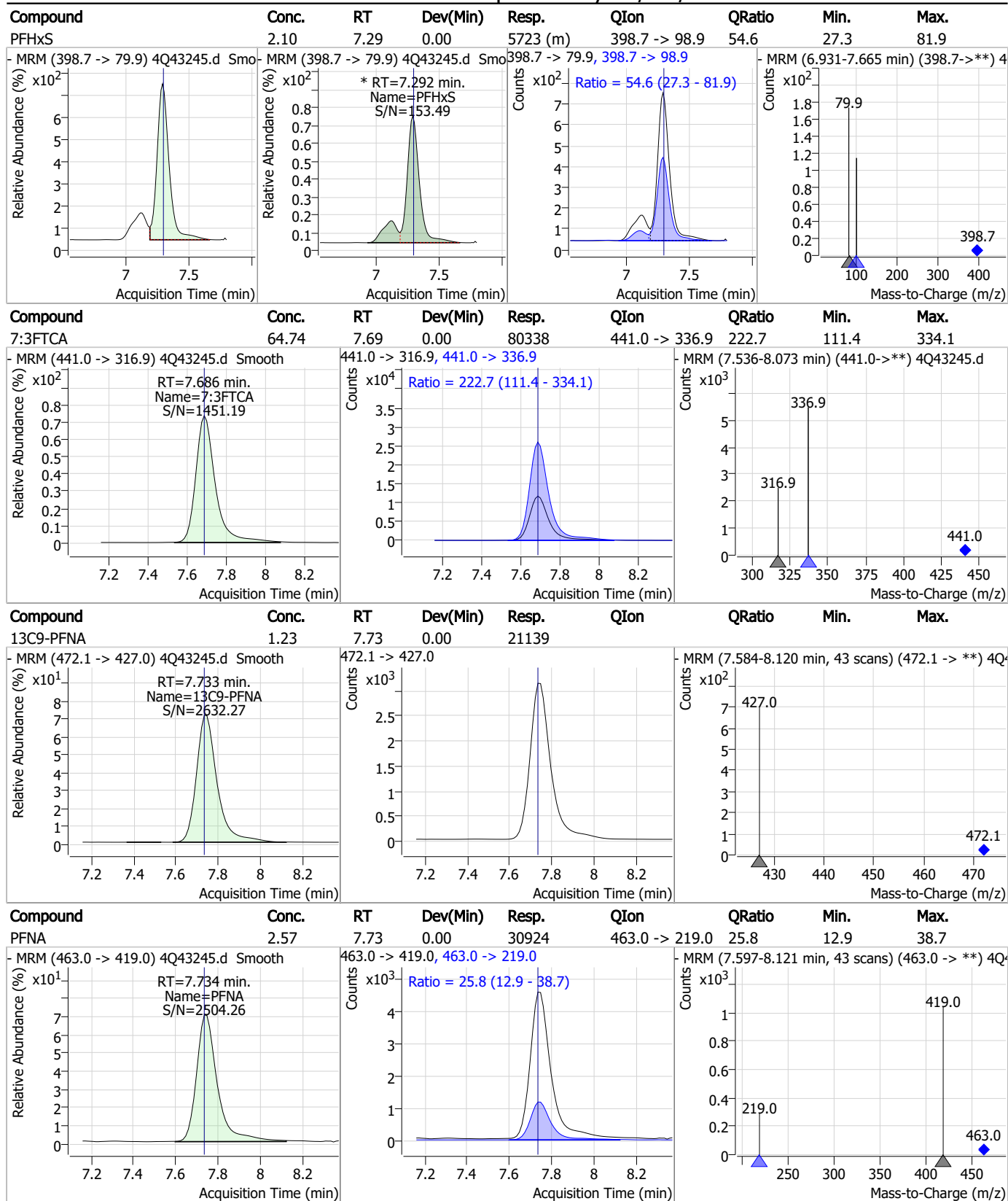
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Perfluorinated Compounds by LC/MS/MS



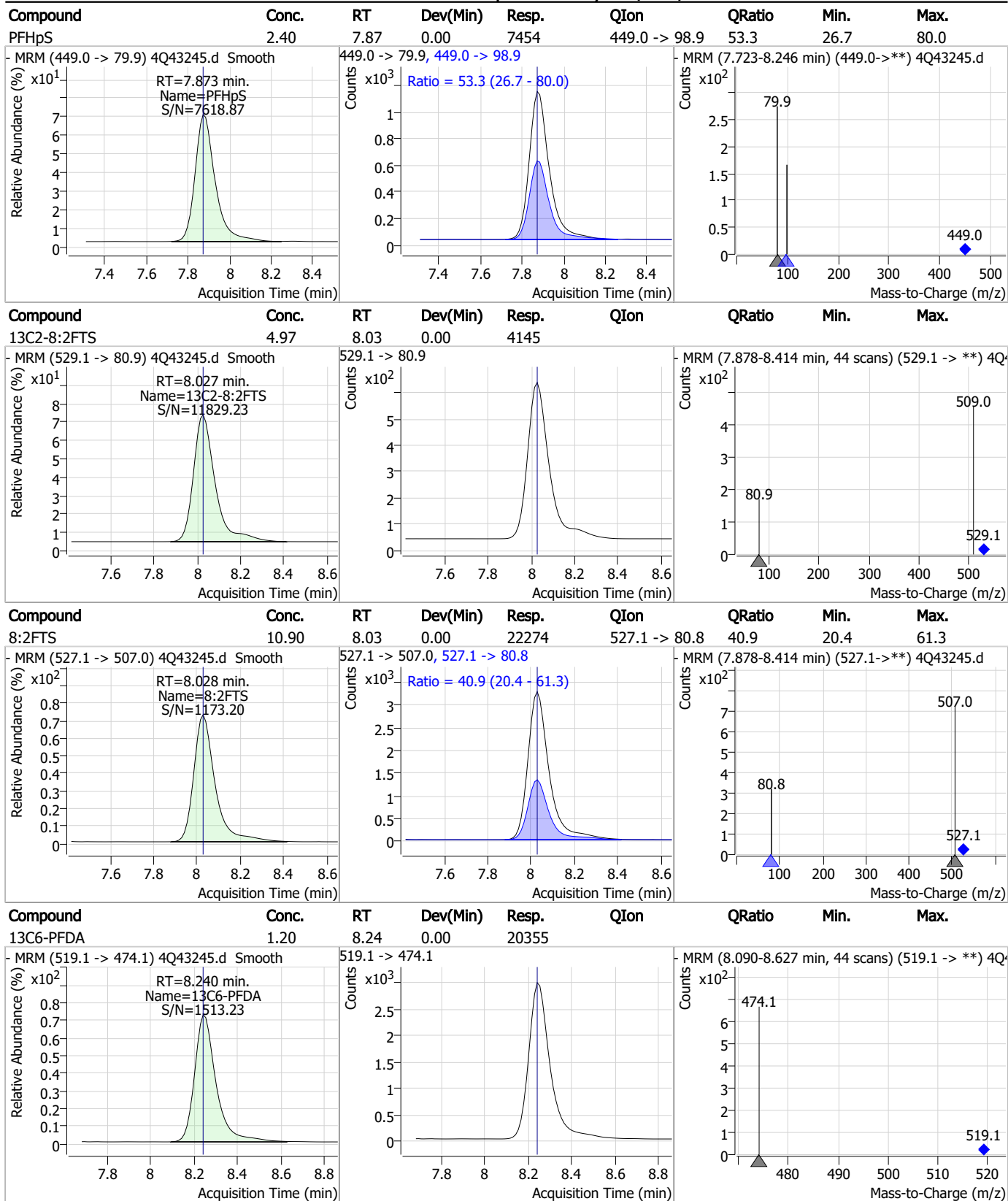
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Perfluorinated Compounds by LC/MS/MS



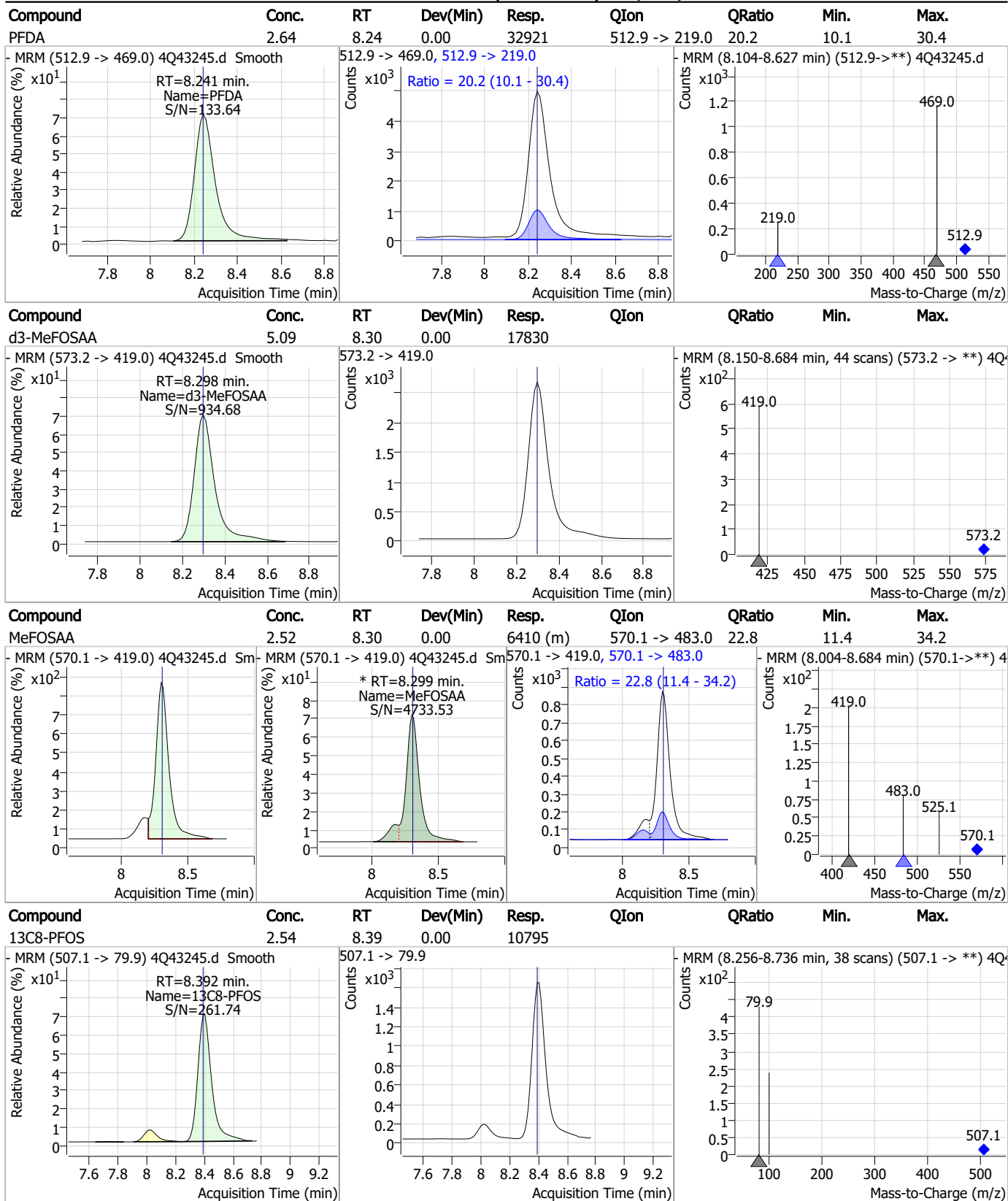
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Perfluorinated Compounds by LC/MS/MS



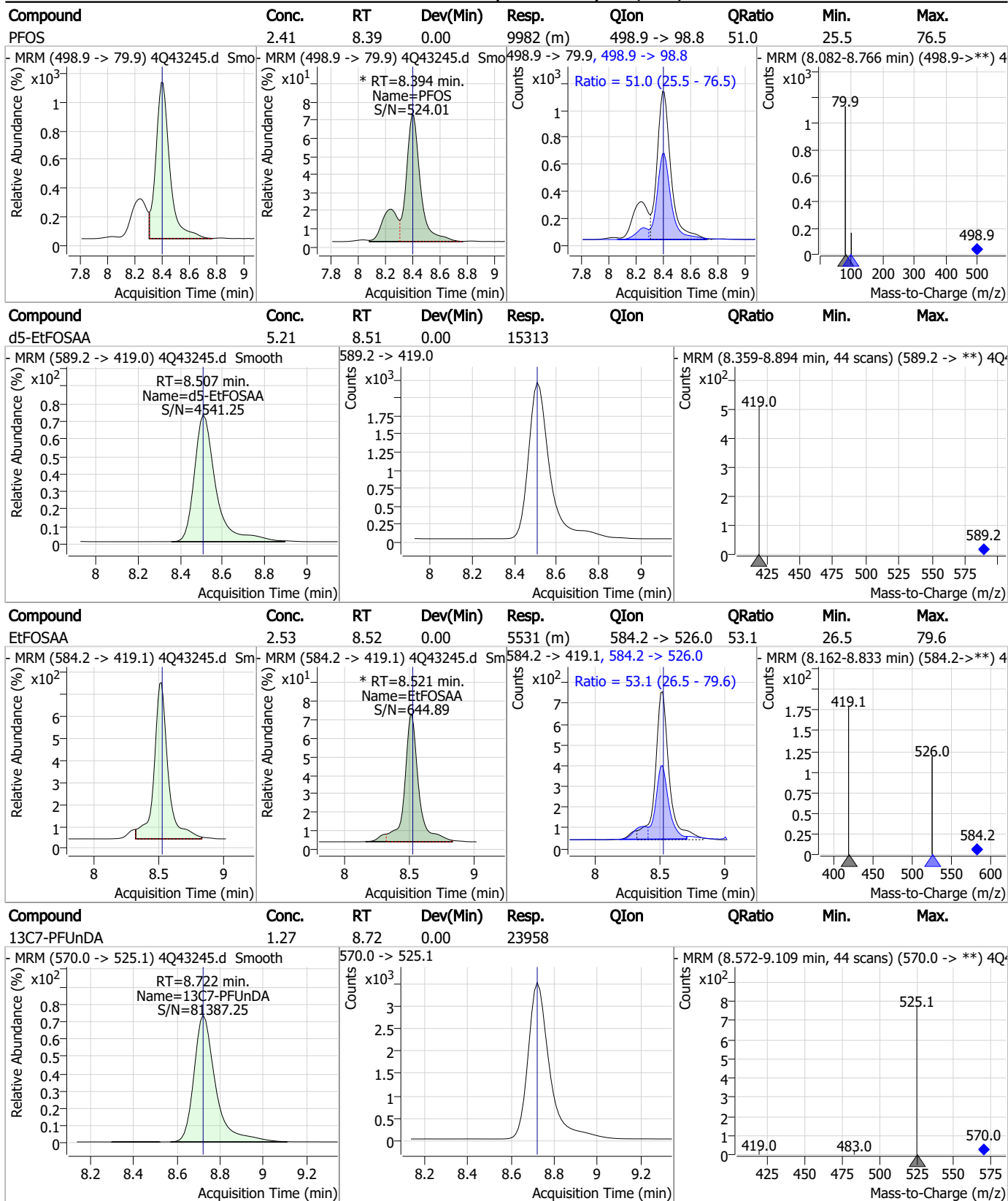
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Perfluorinated Compounds by LC/MS/MS



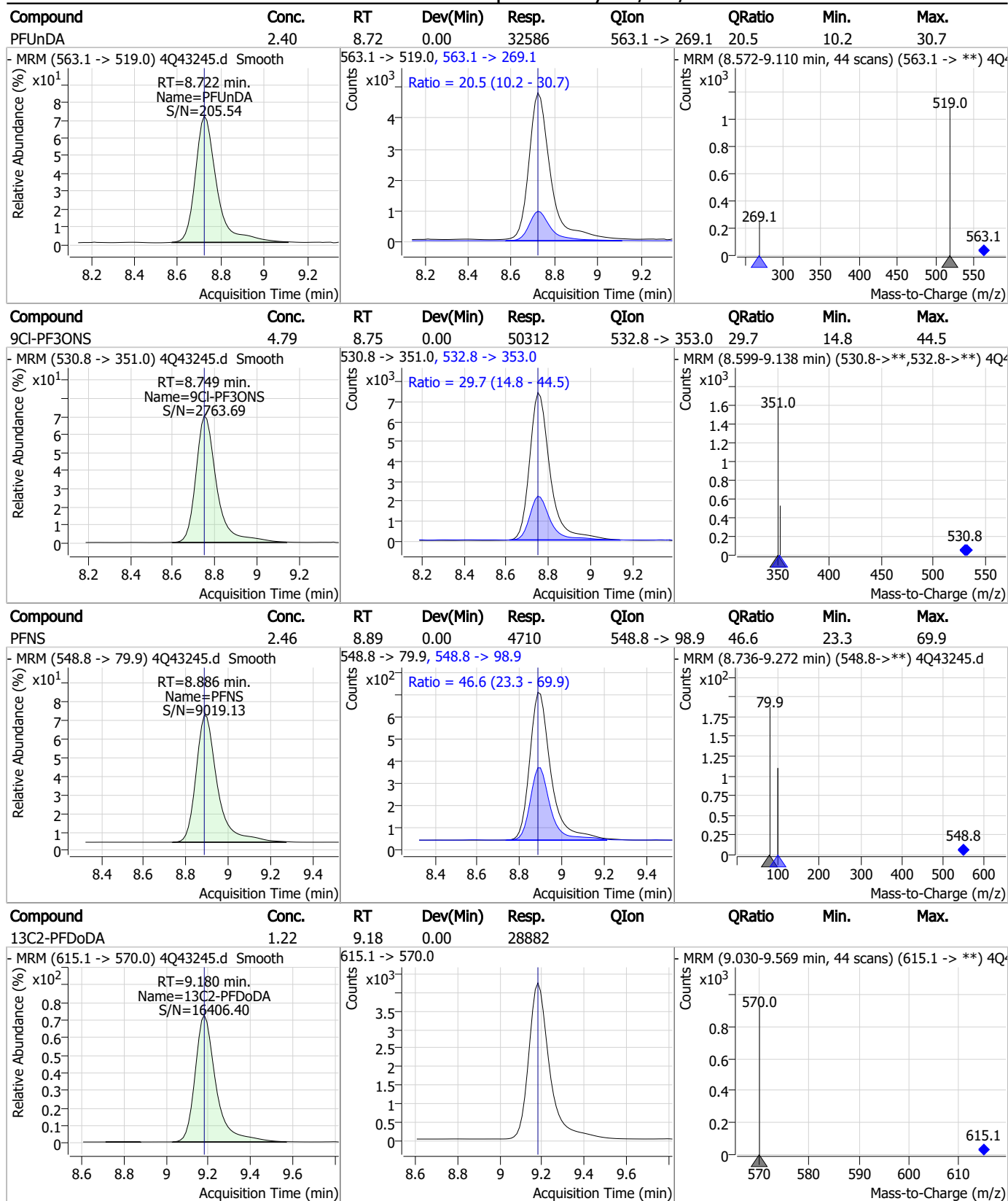
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5

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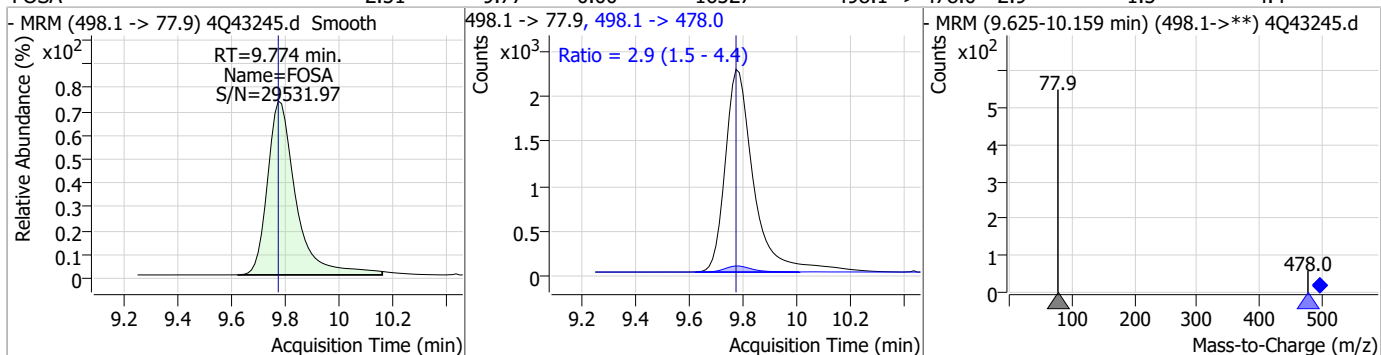
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.64	9.18	0.00	50201	613.1 -> 319.0	13.6	6.8	20.4
PFDS	2.54	9.34	0.00	6396	599.0 -> 98.8	47.9	23.9	71.8
PFTrDA	2.68	9.60	0.00	63427	663.0 -> 168.9	9.4	4.7	14.2
11Cl-PF3OUdS	5.02	9.64	0.00	49085	632.9 -> 452.9	31.2	15.6	46.8

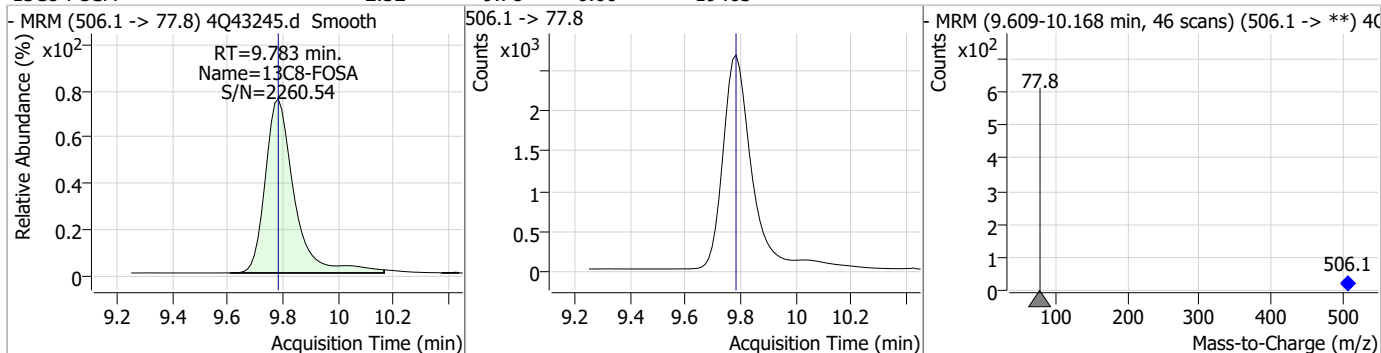
7.7.5
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Perfluorinated Compounds by LC/MS/MS

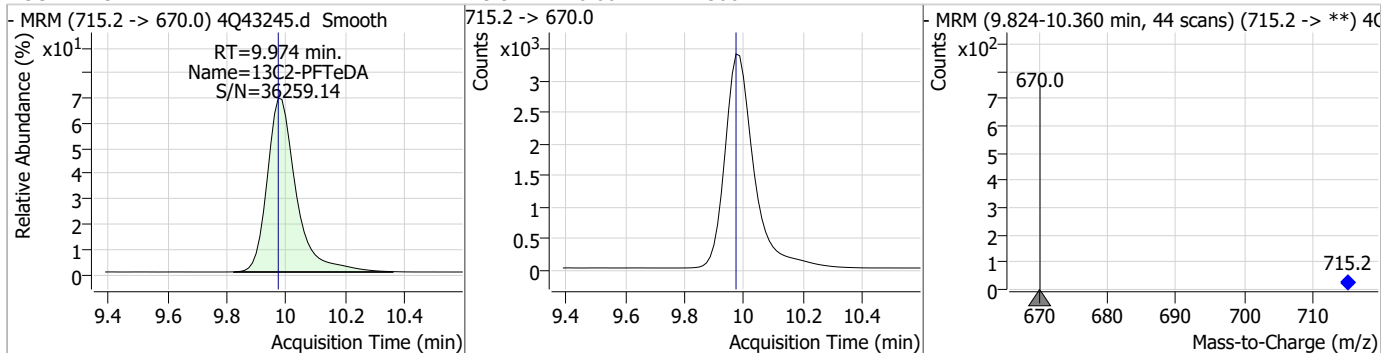
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.51	9.77	0.00	16527	498.1 -> 478.0	2.9	1.5	4.4



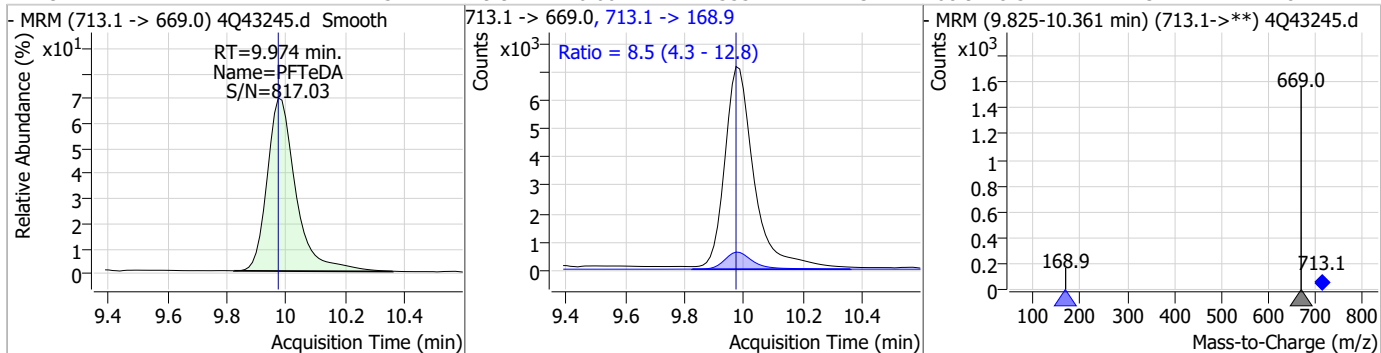
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.52	9.78	0.00	19463	506.1 -> 478.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.22	9.97	0.00	23004	715.2 -> 670.0			

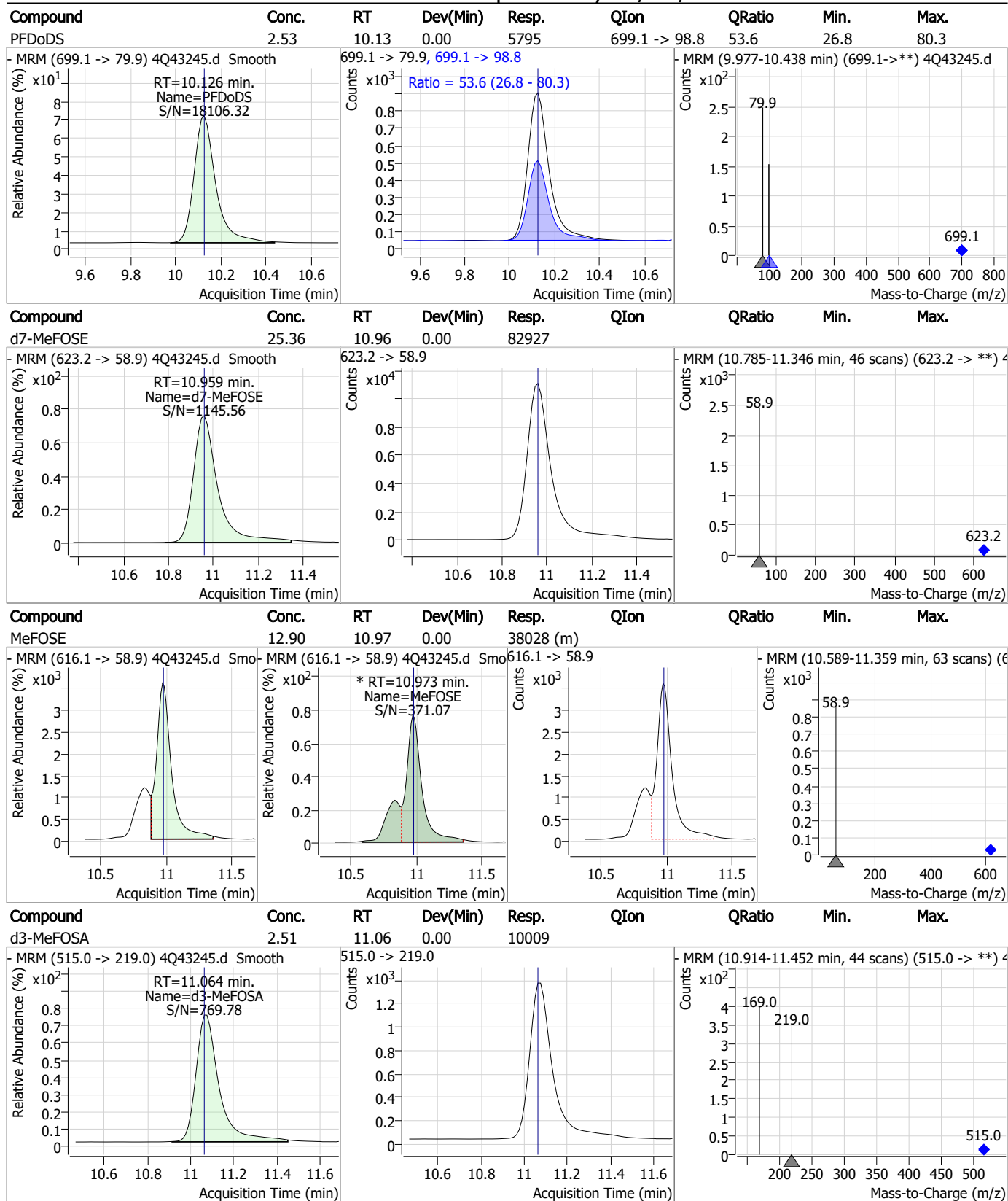


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.54	9.97	0.00	47555	713.1 -> 168.9	8.5	4.3	12.8



7.7.5
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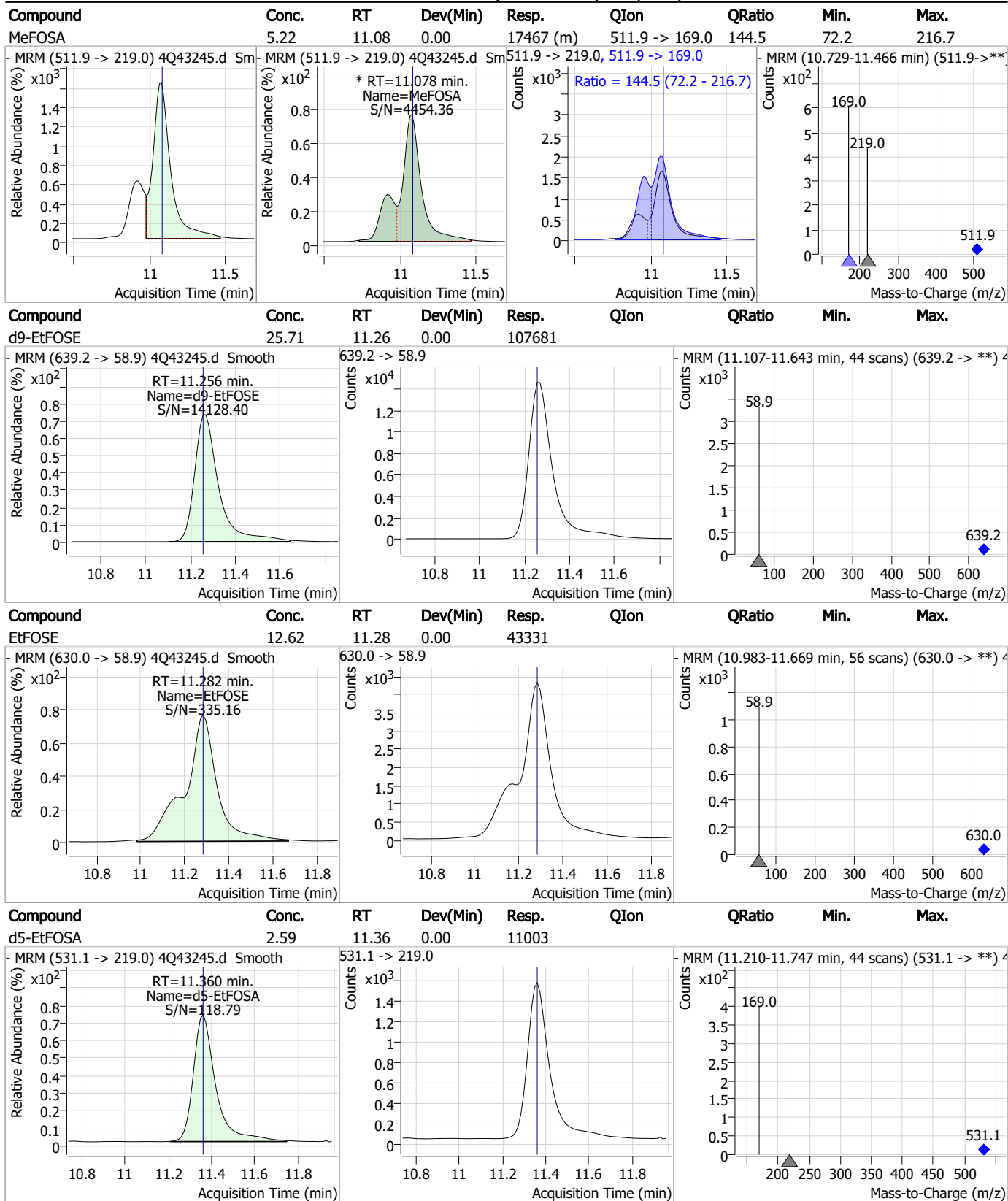
Perfluorinated Compounds by LC/MS/MS



7.7.5

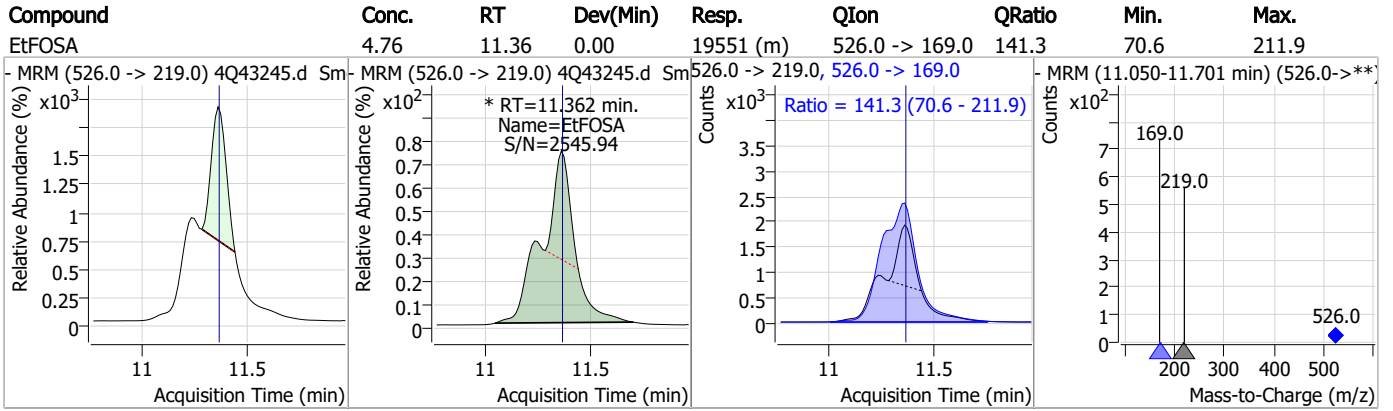
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5

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Manual Integration Approval Summary

Sample Number: S4Q625-ICC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43245.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 12:37 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.5.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 04/21/23 13:15

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43246.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 12:51:03 PM
 Sample Name : ic625-5
 Vial : P1-A6
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	112993	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	67826	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	52332	2.50 µg/L	0.012
M4-PFHpA	6.529	367.1 -> 322.0	27964	2.50 µg/L	0.012
M8-PFOA	7.188	421.1 -> 376.0	38331	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	20342	1.25 µg/L	0.013
M6-PFDA	8.253	519.1 -> 474.1	20144	1.25 µg/L	0.012
M7-PFUnDA	8.722	570.0 -> 525.1	23264	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	27644	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	22739	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	18573	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	11579	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	6913	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	10378	2.50 µg/L	0.012
M2-4:2FTS	5.273	329.1 -> 80.9	1514	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2462	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	4005	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	16935	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	32901	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	14546	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	80842	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	104259	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	10089	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	9626	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	10270	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	62410	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	4952	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	45940	2.50 µg/L	0.000
13C2-PFDA	8.253	515.1 -> 470.1	17219	1.25 µg/L	0.012
13C5-PFNA	7.746	468.0 -> 423.0	24251	1.25 µg/L	0.013
13C2-PFHxA	5.598	315.1 -> 270.0	45534	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1514	5.21 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2462	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4005	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	27644	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C2-PFTeDA	9.974	715.2 -> 670.0	22739	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.0%		
13C3-PFBS	5.502	302.1 -> 79.9	11579	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C3-PFHxS	7.291	402.1 -> 79.9	6913	2.44 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 = 97.8%	
13C4-PFBA	2.936	216.8 -> 171.9	112993	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	6.529	367.1 -> 322.0	27964	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFHxA	5.597	318.0 -> 273.0	52332	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C5-PFPeA	4.412	268.3 -> 223.0	67826	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C6-PFDA	8.253	519.1 -> 474.1	20144	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.2%	
13C7-PFUnDA	8.722	570.0 -> 525.1	23264	1.41 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C8-FOSA	9.783	506.1 -> 77.8	18573	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-PFOA	7.188	421.1 -> 376.0	38331	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-PFOS	8.405	507.1 -> 79.9	10378	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C9-PFNA	7.746	472.1 -> 427.0	20342	1.20 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.1%	
d3-MeFOSAA	8.298	573.2 -> 419.0	16935	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	32901	9.52 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d3-MeFOSA	11.064	515.0 -> 219.0	9626	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
d5-EtFOSAA	8.507	589.2 -> 419.0	14546	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.7%	
d7-MeFOSE	10.959	623.2 -> 58.9	80842	25.66 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
d9-EtFOSE	11.256	639.2 -> 58.9	104259	25.84 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
d5-EtFOSA	11.360	531.1 -> 219.0	10089	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	38541	19.89 µg/L	95
		327.1 -> 80.9	16097		
6:2FTS	6.949	427.1 -> 407.0	36565	19.43 µg/L	96
		427.1 -> 80.9	15311		
8:2FTS	8.028	527.1 -> 507.0	42859	21.71 µg/L	100
		527.1 -> 80.8	17595		
EtFOSAA	8.521	584.2 -> 419.1	11351	5.46 µg/L	m 99
		584.2 -> 526.0	5931		
FOSA	9.786	498.1 -> 77.9	32118	5.11 µg/L	99
		498.1 -> 478.0	862		
MeFOSAA	8.311	570.1 -> 419.0	13410	5.55 µg/L	m 93
		570.1 -> 483.0	2582		
PFBA	2.945	212.8 -> 168.9	54837	20.92 µg/L	100
PFBS	5.503	298.7 -> 79.9	20582	4.49 µg/L	98
		298.7 -> 98.8	8054		
PFDA	8.253	512.9 -> 469.0	65494	5.30 µg/L	99
		512.9 -> 219.0	13404		
PFDoDA	9.181	613.1 -> 569.0	97993	5.39 µg/L	99
		613.1 -> 319.0	13630		
PFDS	9.344	599.0 -> 79.9	12422	5.12 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	6214			
PFHpA	6.530	363.1 -> 319.0	77187	5.25	µg/L	98
		363.1 -> 169.0	14096			
PFHpS	7.885	449.0 -> 79.9	14624	4.90	µg/L	97
		449.0 -> 98.9	7523			
PFHxA	5.587	313.0 -> 269.0	87282	5.30	µg/L	99
		313.0 -> 118.9	2534			
PFHxS	7.292	398.7 -> 79.9	12080	4.77	µg/L	m 93
		398.7 -> 98.9	6013			
PFNA	7.747	463.0 -> 419.0	62633	5.41	µg/L	100
		463.0 -> 219.0	16104			
PFNS	8.899	548.8 -> 79.9	8944	4.87	µg/L	87
		548.8 -> 98.9	4934			
PFOA	7.189	413.0 -> 369.0	92556	5.42	µg/L	100
		413.0 -> 169.0	19636			
PFOS	8.406	498.9 -> 79.9	20188	5.07	µg/L	m 99
		498.9 -> 98.8	10380			
PFPeA	4.414	263.0 -> 219.0	144581	10.67	µg/L	100
PFPeS	6.569	349.1 -> 79.9	11147	5.10	µg/L	95
		349.1 -> 98.9	5408			
PFTeDA	9.974	713.1 -> 669.0	96573	5.23	µg/L	100
		713.1 -> 168.9	8152			
PFTrDA	9.604	663.0 -> 619.0	124563	5.50	µg/L	100
		663.0 -> 168.9	11729			
PFUnDA	8.722	563.1 -> 519.0	64963	4.94	µg/L	96
		563.1 -> 269.1	12232			
11CI-PF3OUdS	9.643	630.9 -> 450.9	99129	10.46	µg/L	99
		632.9 -> 452.9	30473			
9CI-PF3ONS	8.749	530.8 -> 351.0	101269	9.95	µg/L	98
		532.8 -> 353.0	31276			
ADONA	6.781	376.9 -> 250.9	241897	10.23	µg/L	98
		376.9 -> 84.8	65626			
HFPO-DA	5.953	284.9 -> 168.9	27322	10.51	µg/L	95
		284.9 -> 184.9	3573			
3:3FTCA	3.867	241.0 -> 177.0	16390	25.41	µg/L	99
		241.0 -> 117.0	1565			
5:3FTCA	6.231	341.0 -> 237.1	324592	132.08	µg/L	100
		341.0 -> 217.0	233206			
7:3FTCA	7.686	441.0 -> 316.9	160472	133.82	µg/L	100
		441.0 -> 336.9	358438			
EtFOSA	11.362	526.0 -> 219.0	40905	10.87	µg/L	m 95
		526.0 -> 169.0	55496			
EtFOSE	11.282	630.0 -> 58.9	90457	27.21	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	34414	10.69	µg/L	m 97
		511.9 -> 169.0	51046			
MeFOSE	10.973	616.1 -> 58.9	75804	26.37	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	11285	5.12	µg/L	98
		699.1 -> 98.8	6216			
NFDHA	5.479	295.0 -> 201.0	9282	10.39	µg/L	98
		295.0 -> 84.9	2538			
PFMBA	4.828	279.0 -> 85.1	81568	10.54	µg/L	100
PFMPA	3.553	229.0 -> 84.9	72120	10.49	µg/L	100
PFEESA	6.034	314.8 -> 134.9	125569	9.28	µg/L	100
		314.8 -> 82.9	4528			

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

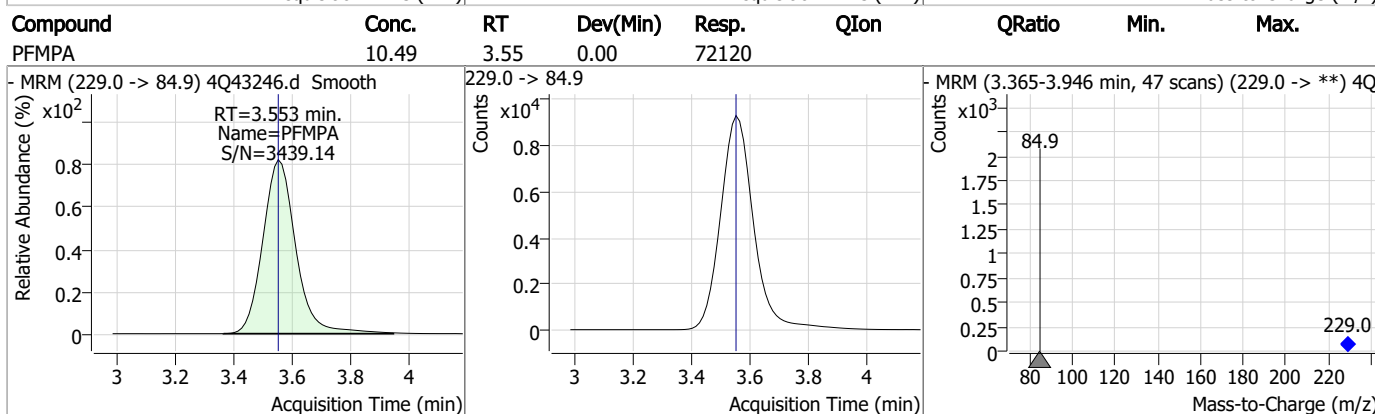
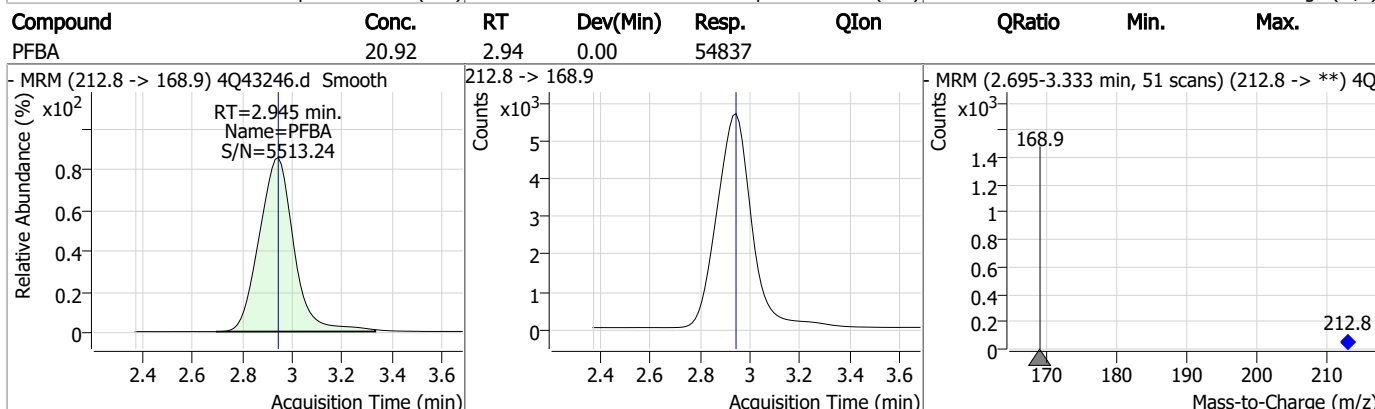
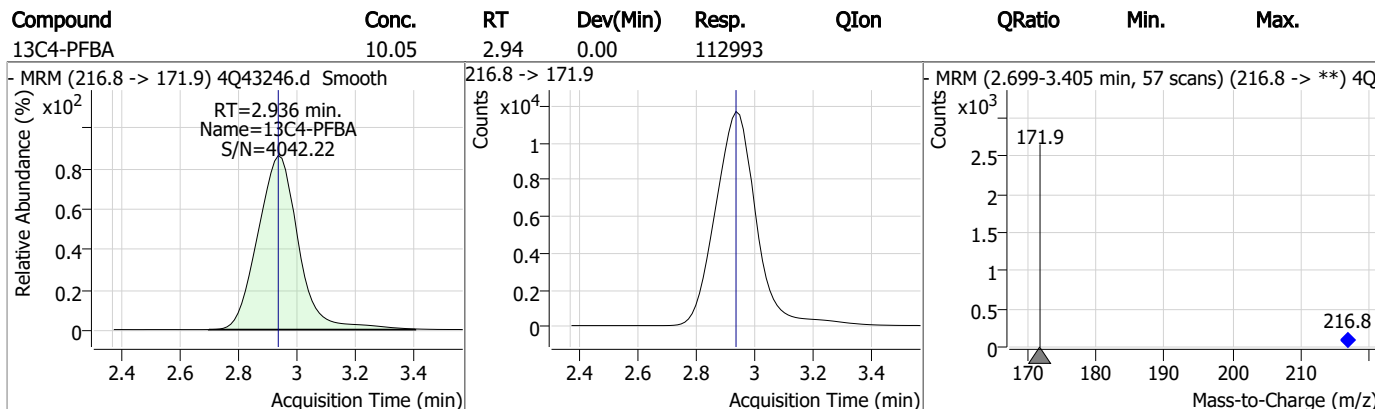
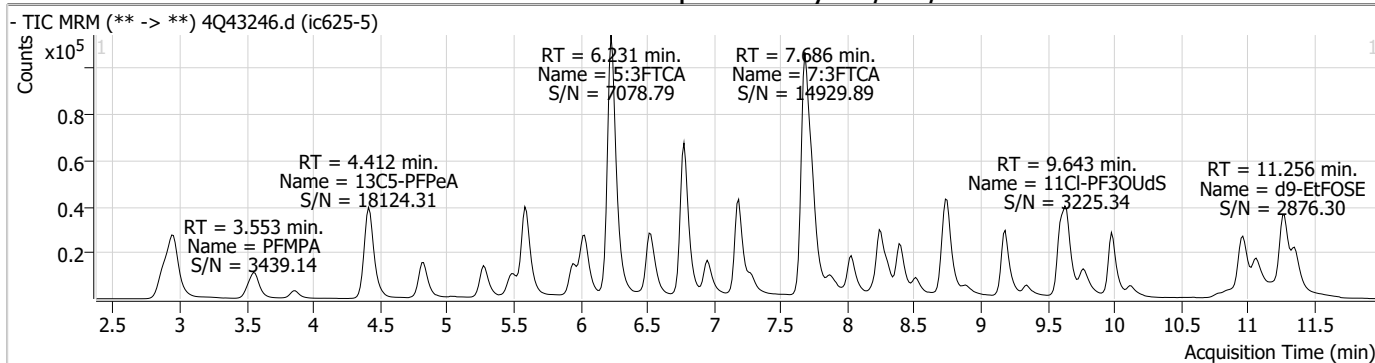
Perfluorinated Compounds by LC/MS/MS

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

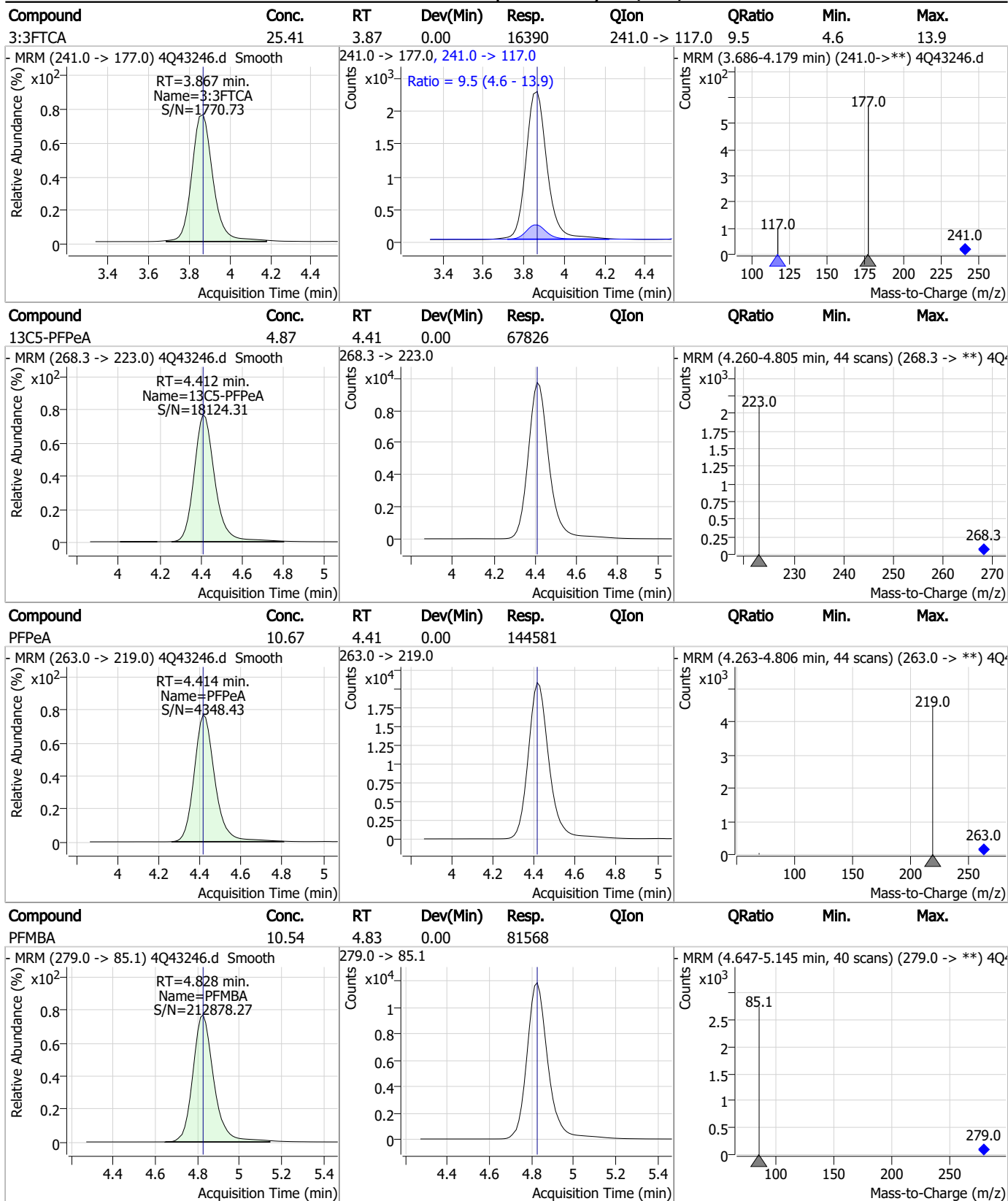
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Perfluorinated Compounds by LC/MS/MS



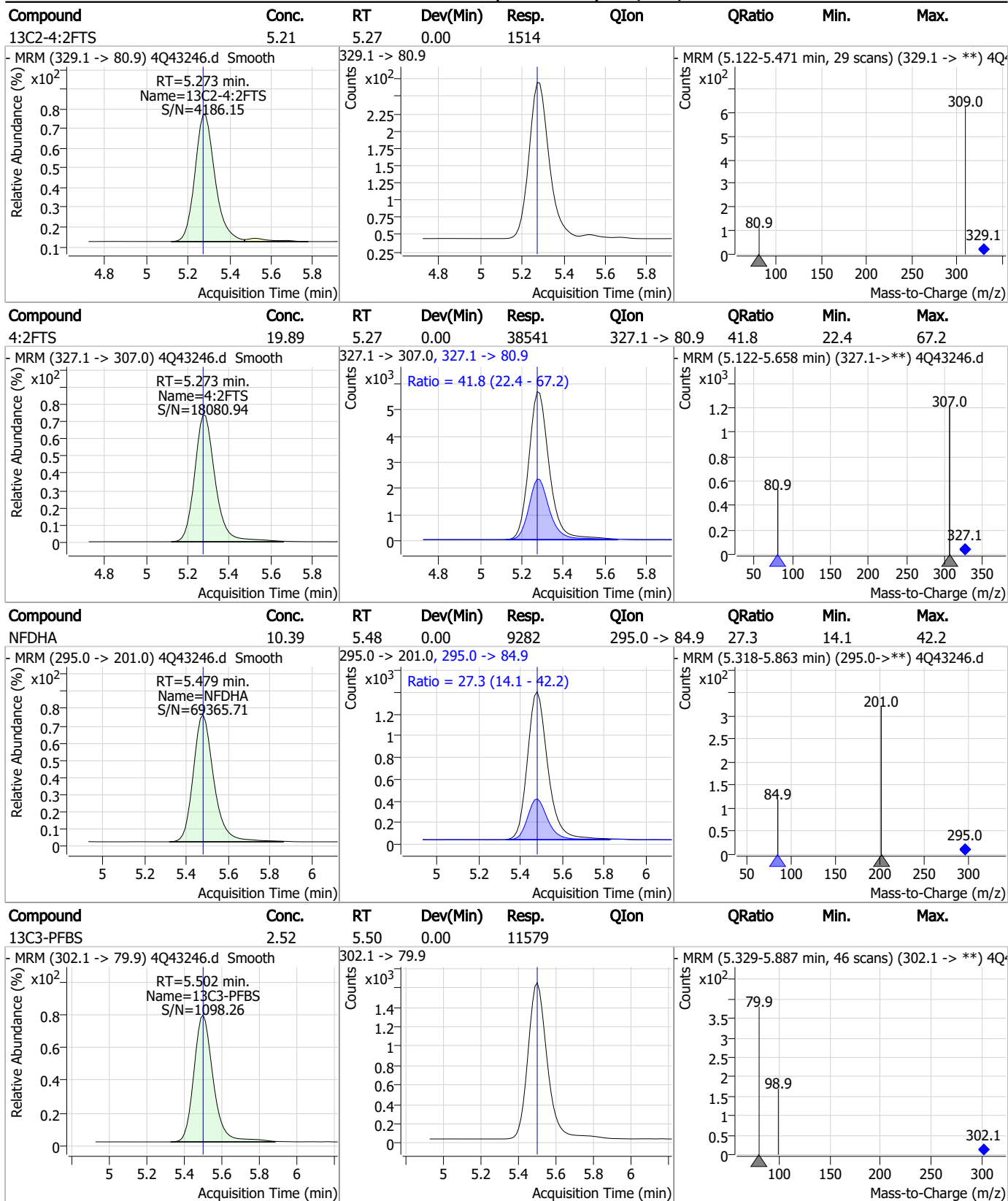
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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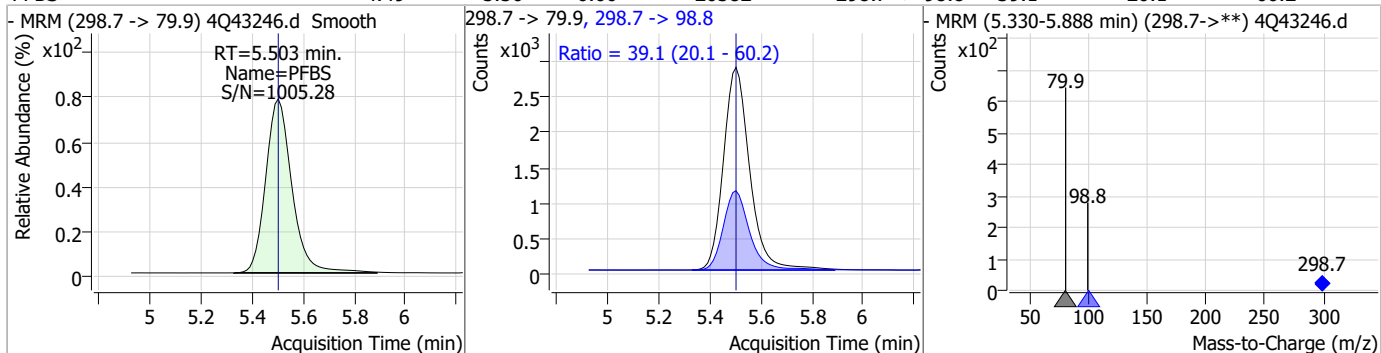
Perfluorinated Compounds by LC/MS/MS



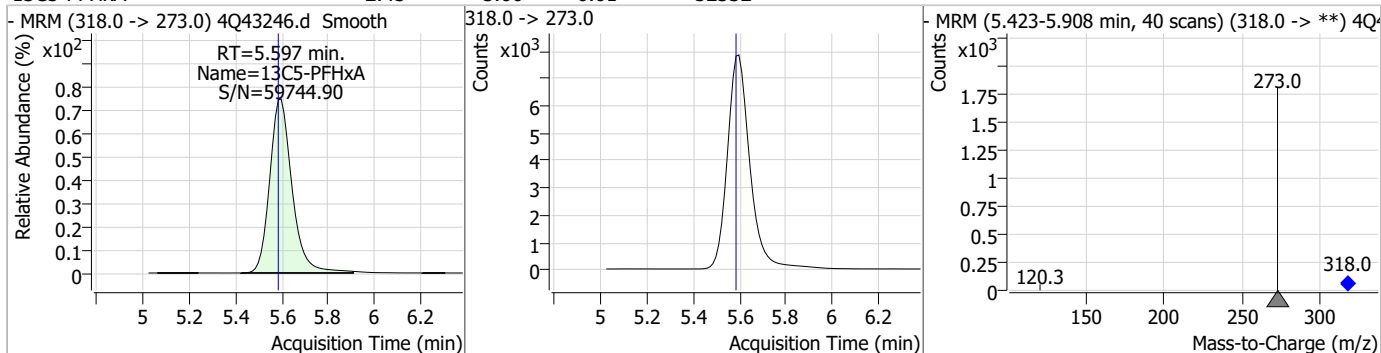
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Perfluorinated Compounds by LC/MS/MS

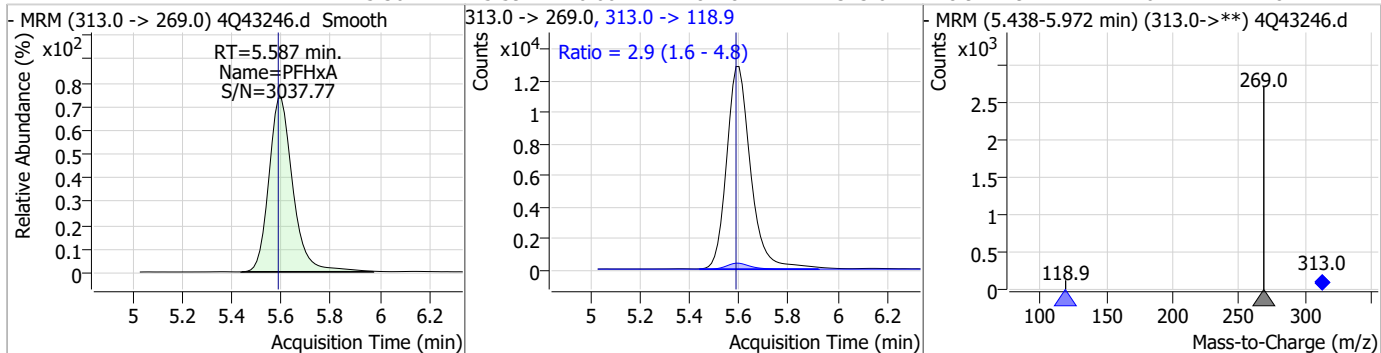
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.49	5.50	0.00	20582	298.7 -> 98.8	39.1	20.1	60.2



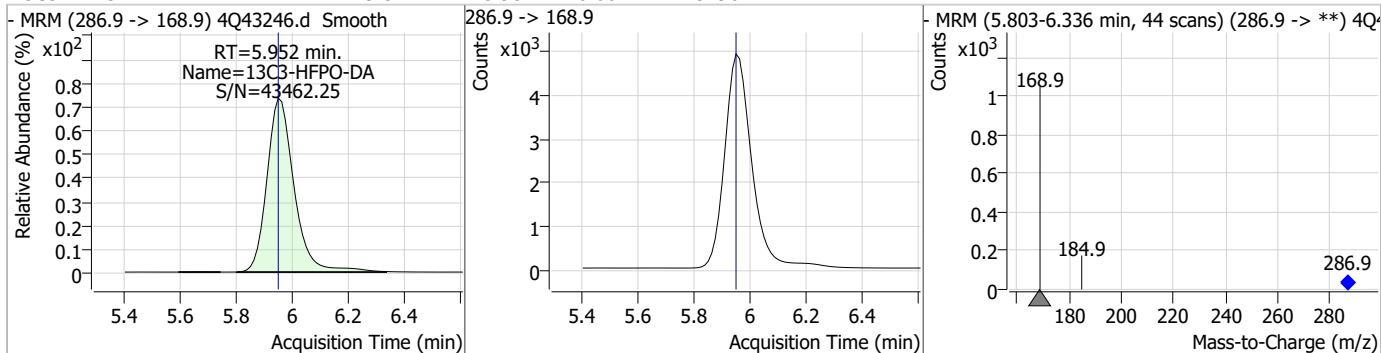
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.45	5.60	0.01	52332				



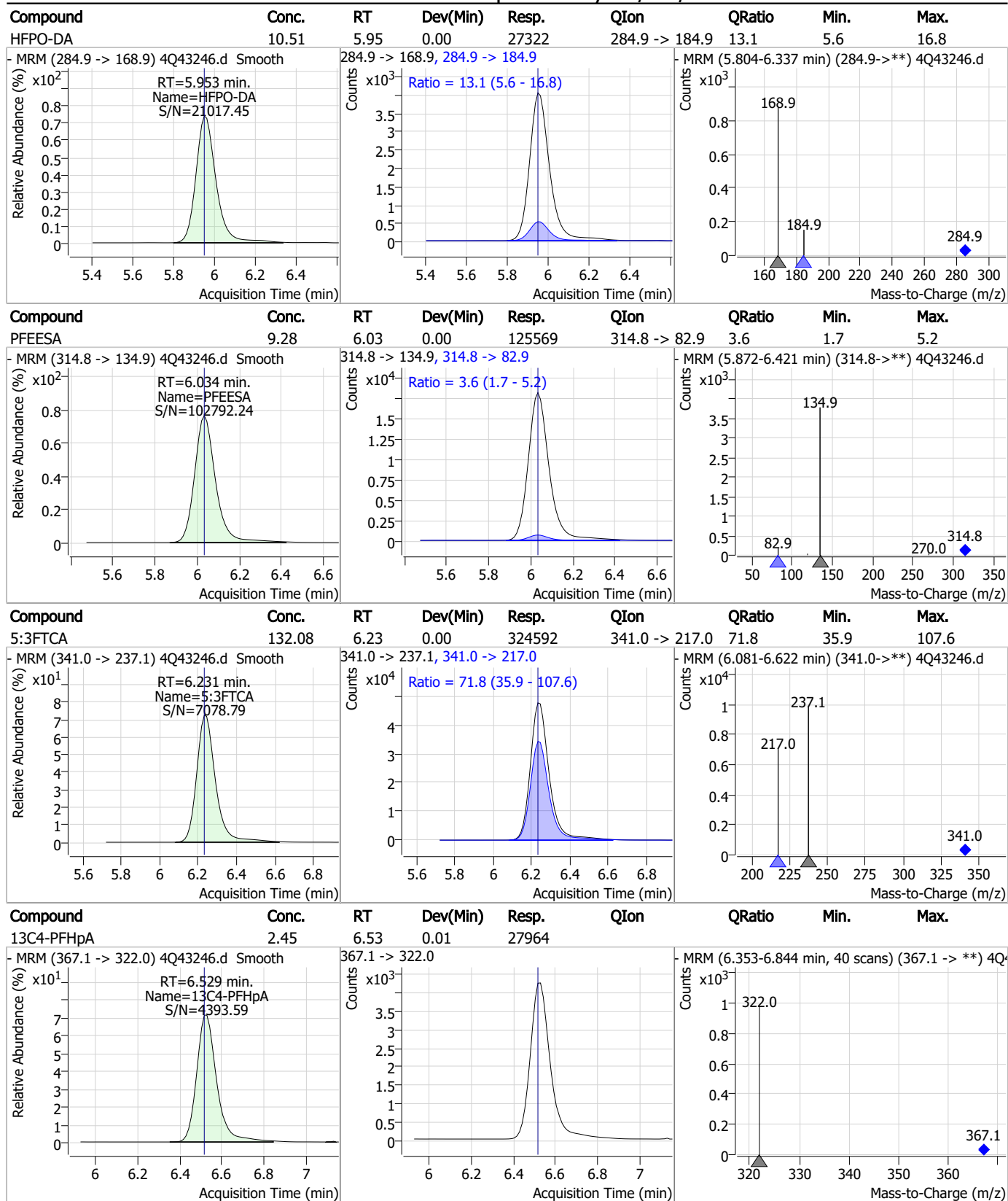
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	5.30	5.59	0.00	87282	313.0 -> 118.9	2.9	1.6	4.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.52	5.95	0.00	32901				

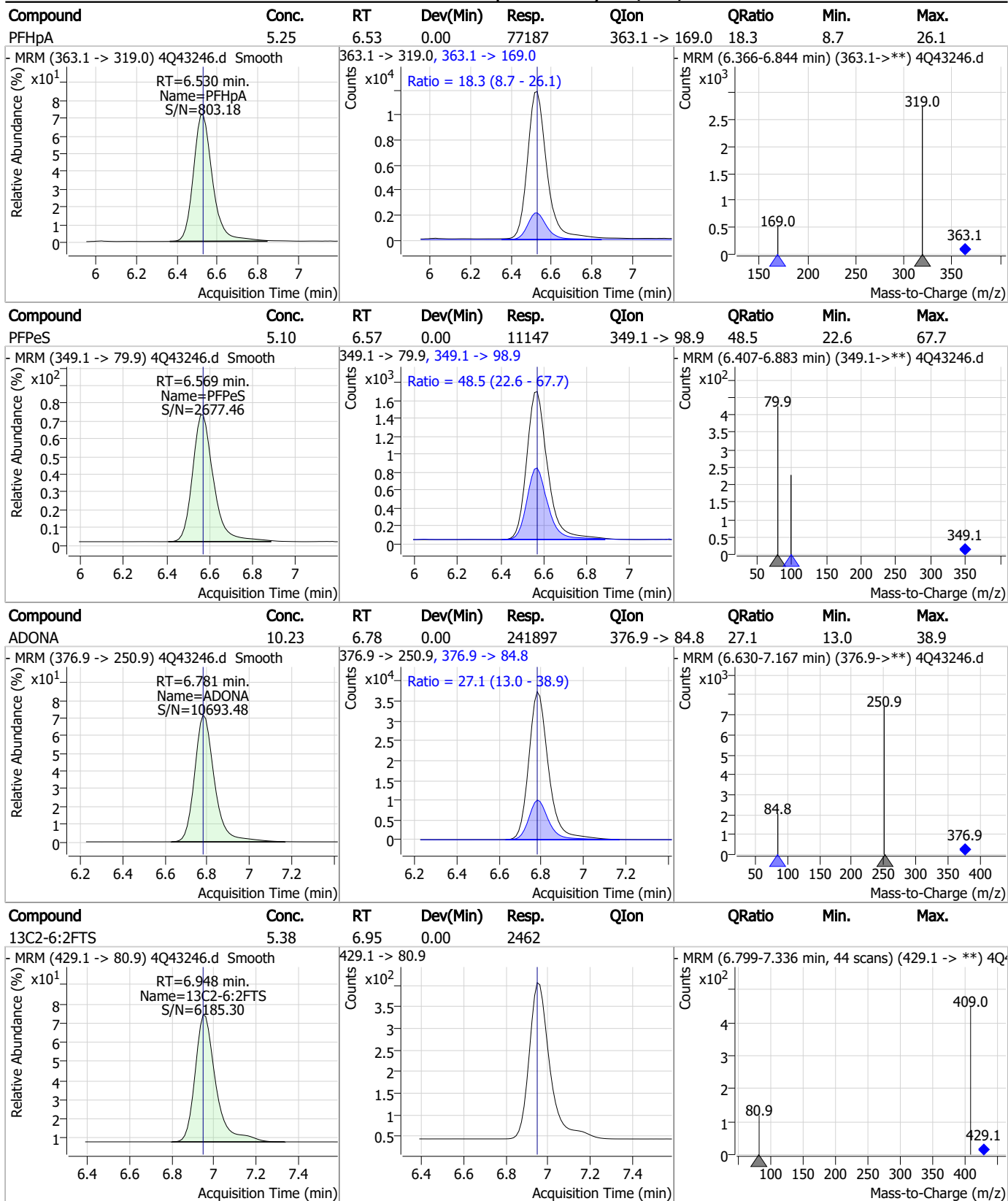


Perfluorinated Compounds by LC/MS/MS



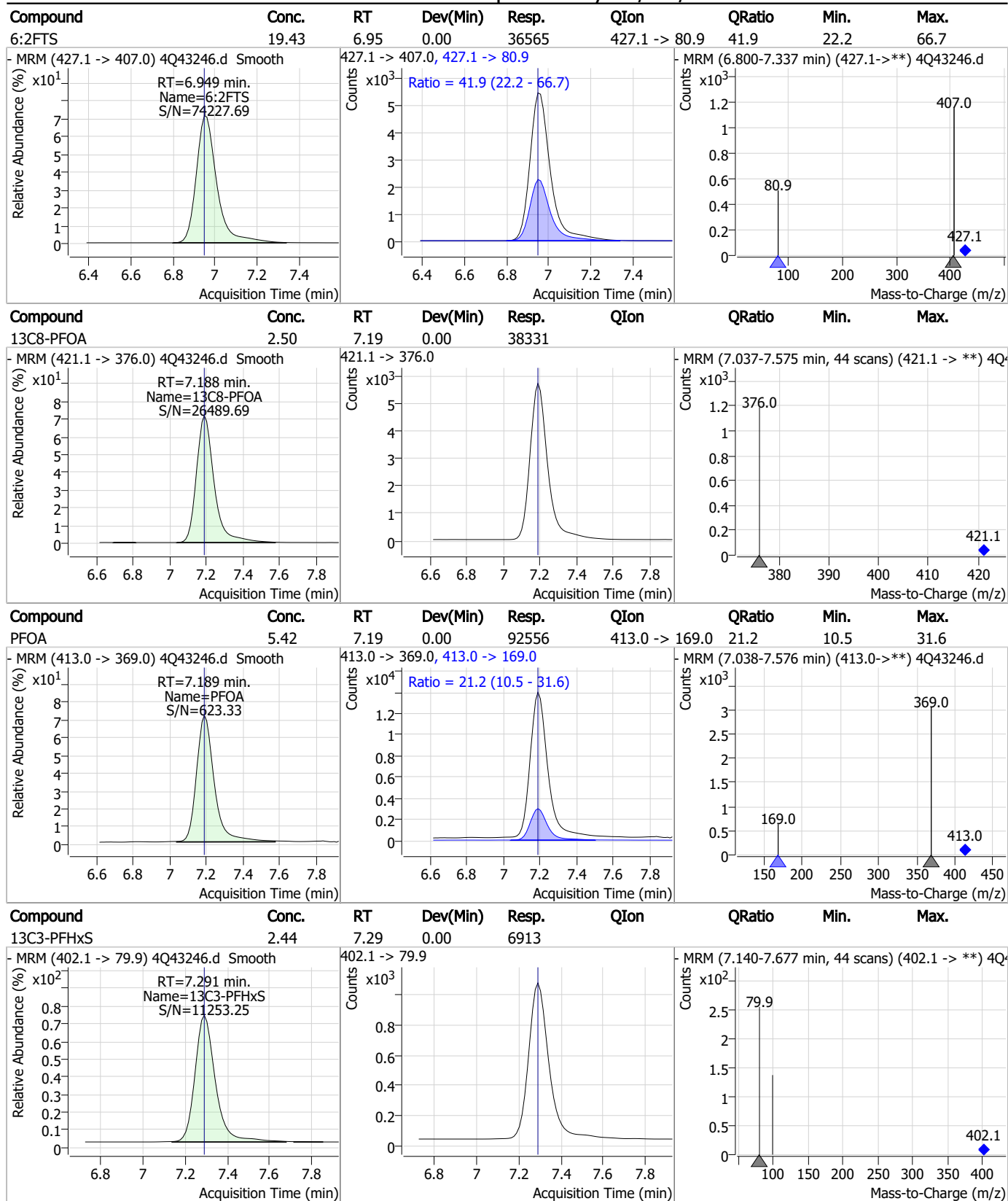
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Perfluorinated Compounds by LC/MS/MS



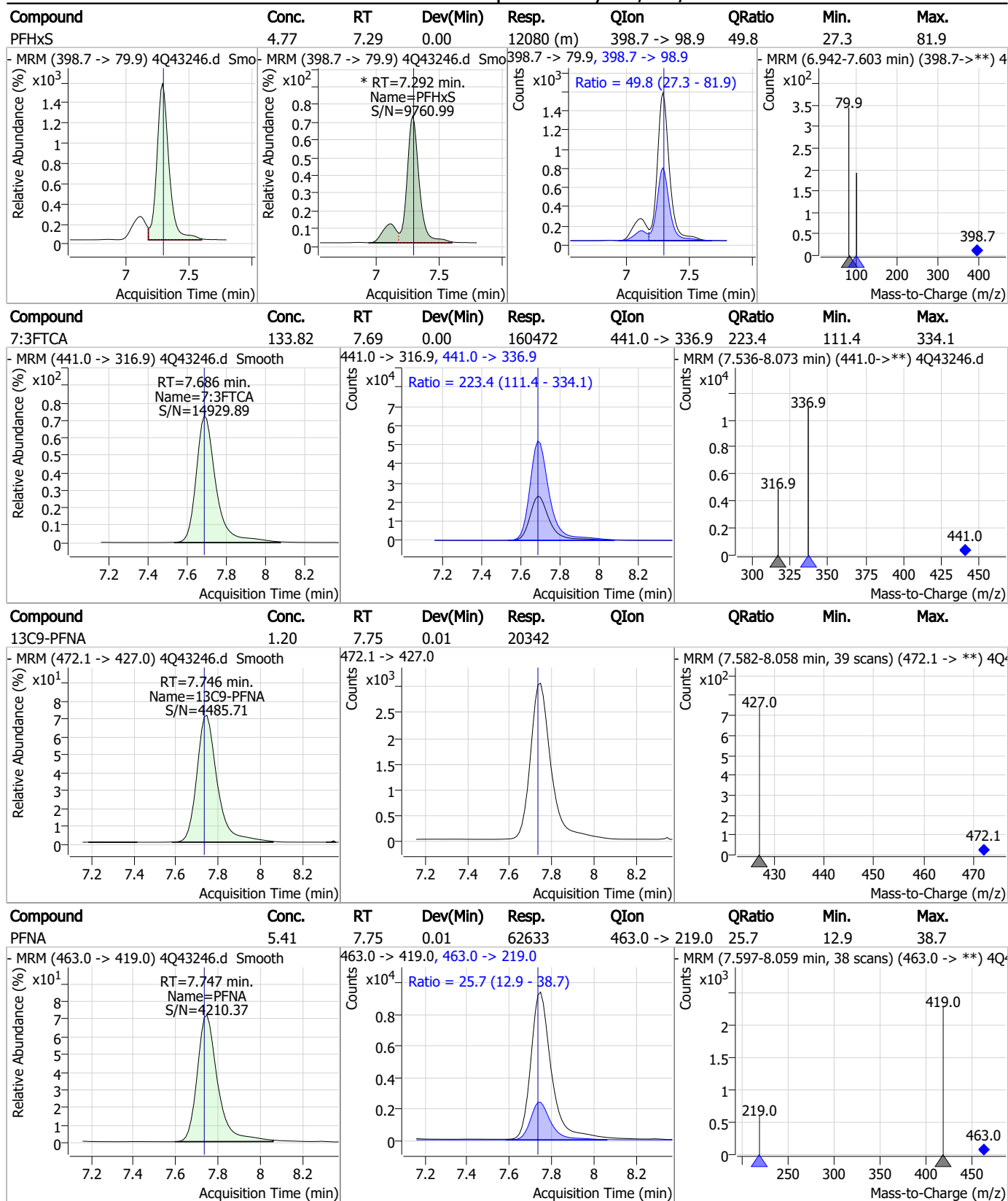
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Perfluorinated Compounds by LC/MS/MS



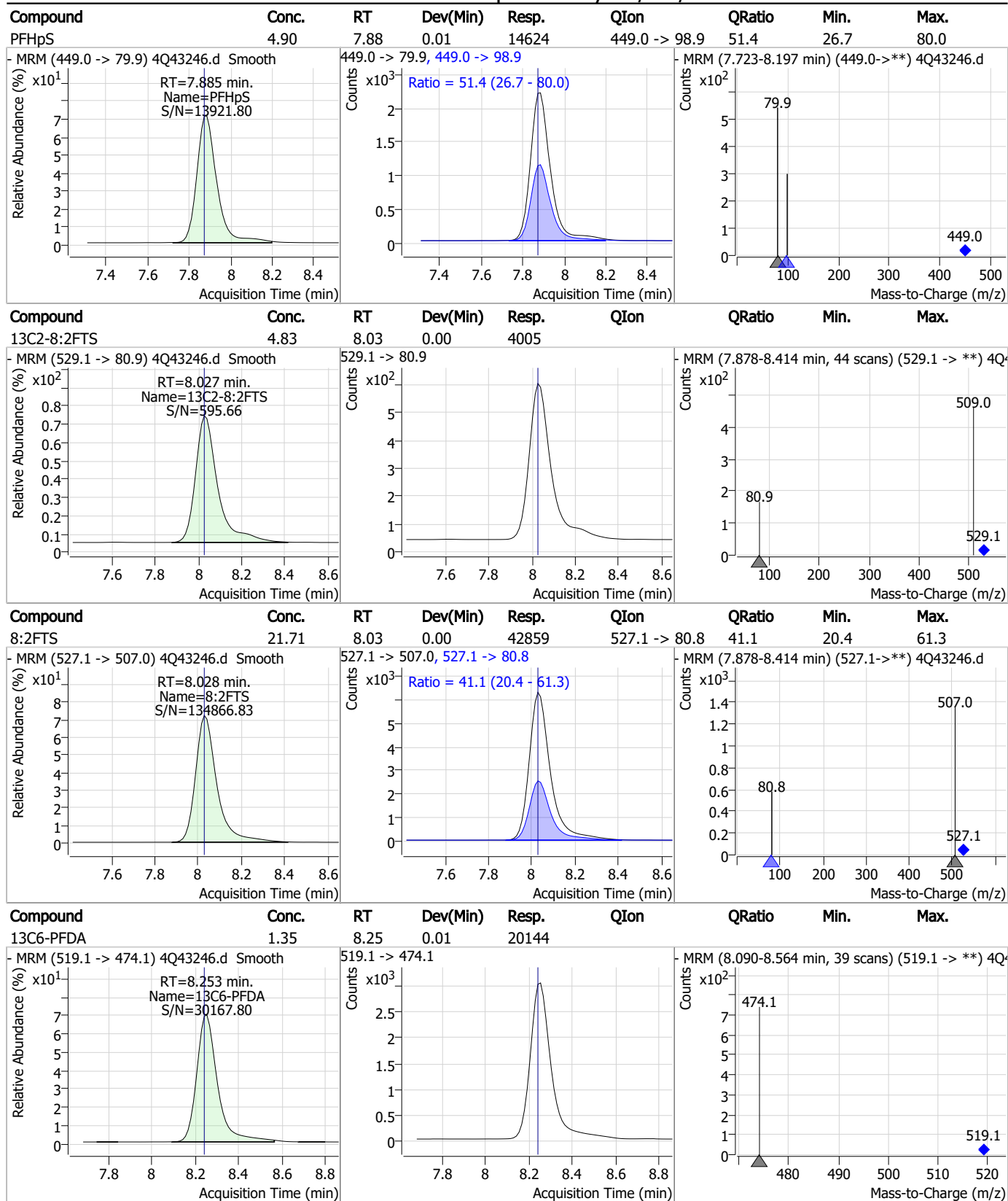
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Perfluorinated Compounds by LC/MS/MS



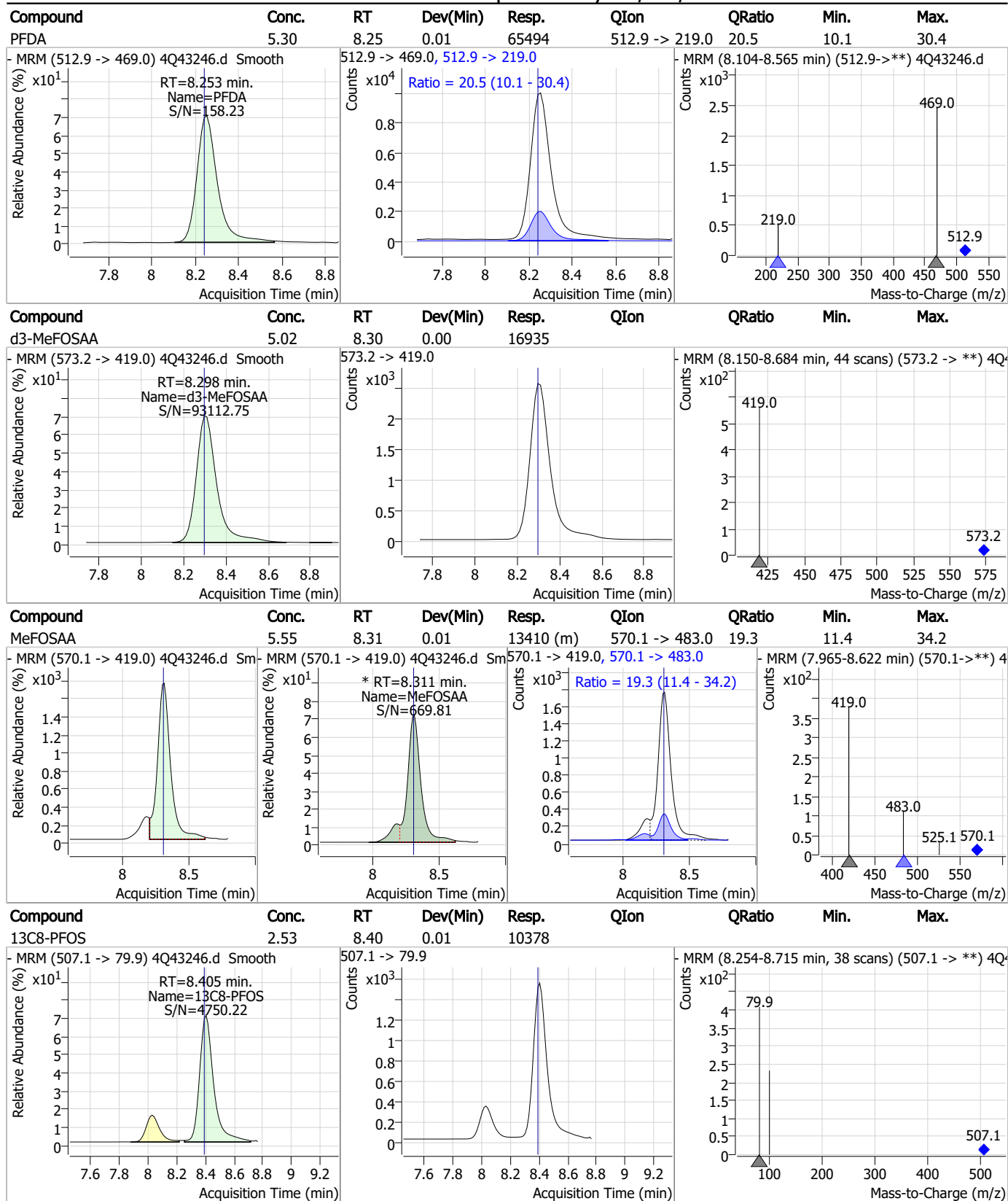
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Perfluorinated Compounds by LC/MS/MS



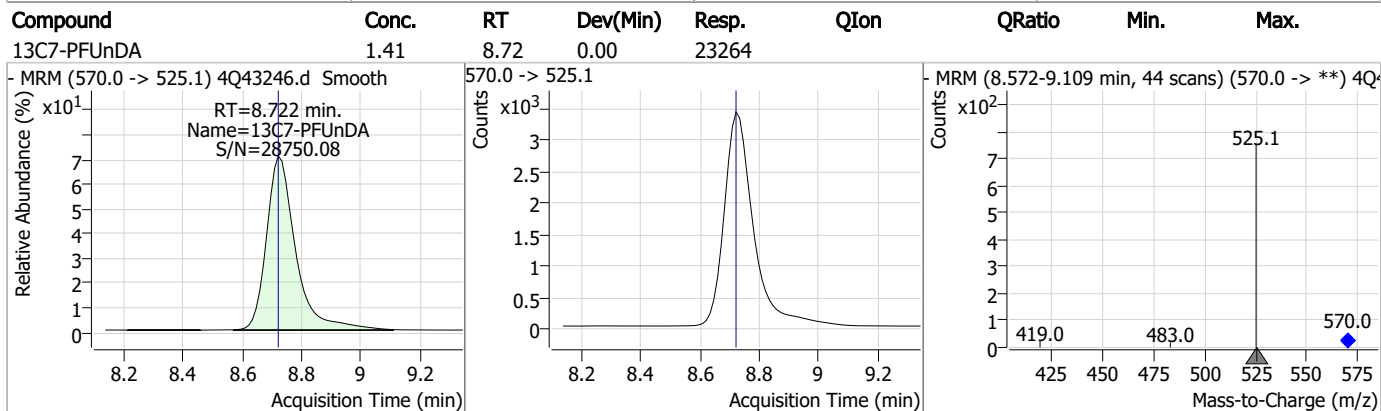
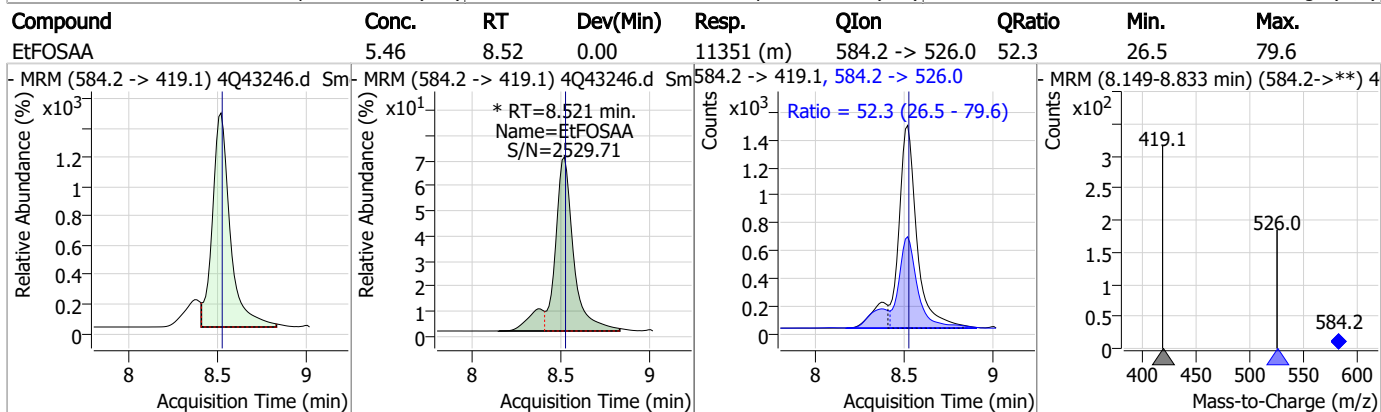
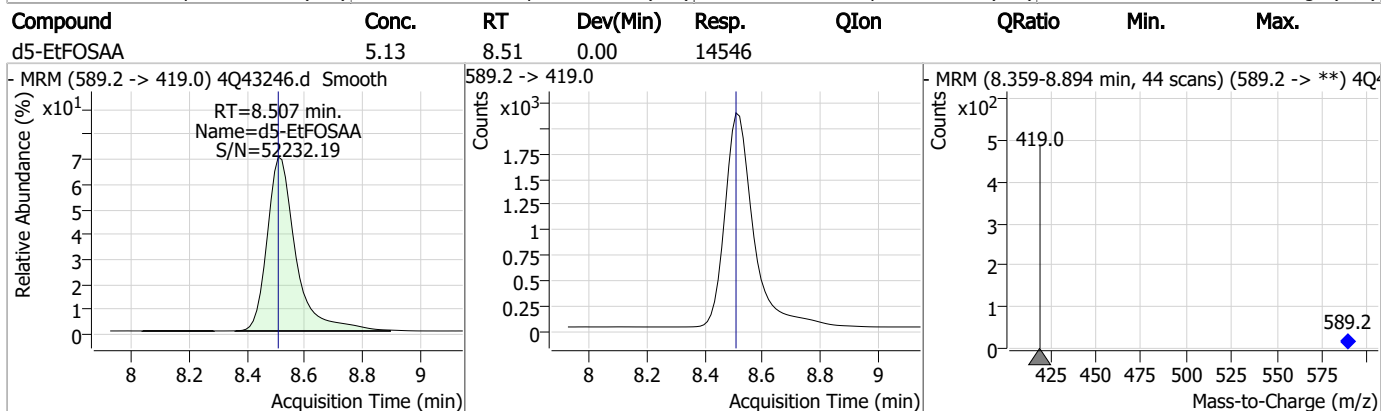
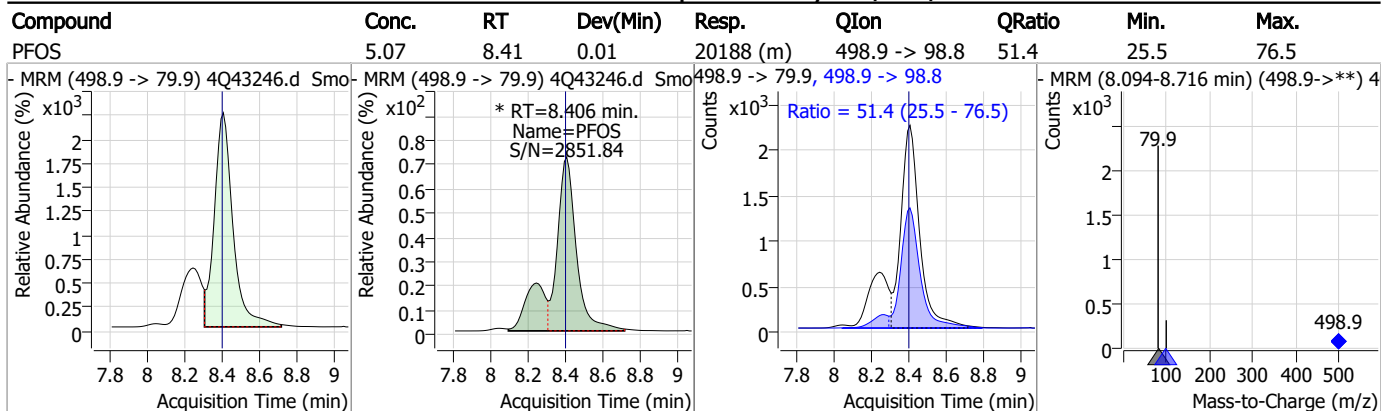
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Perfluorinated Compounds by LC/MS/MS

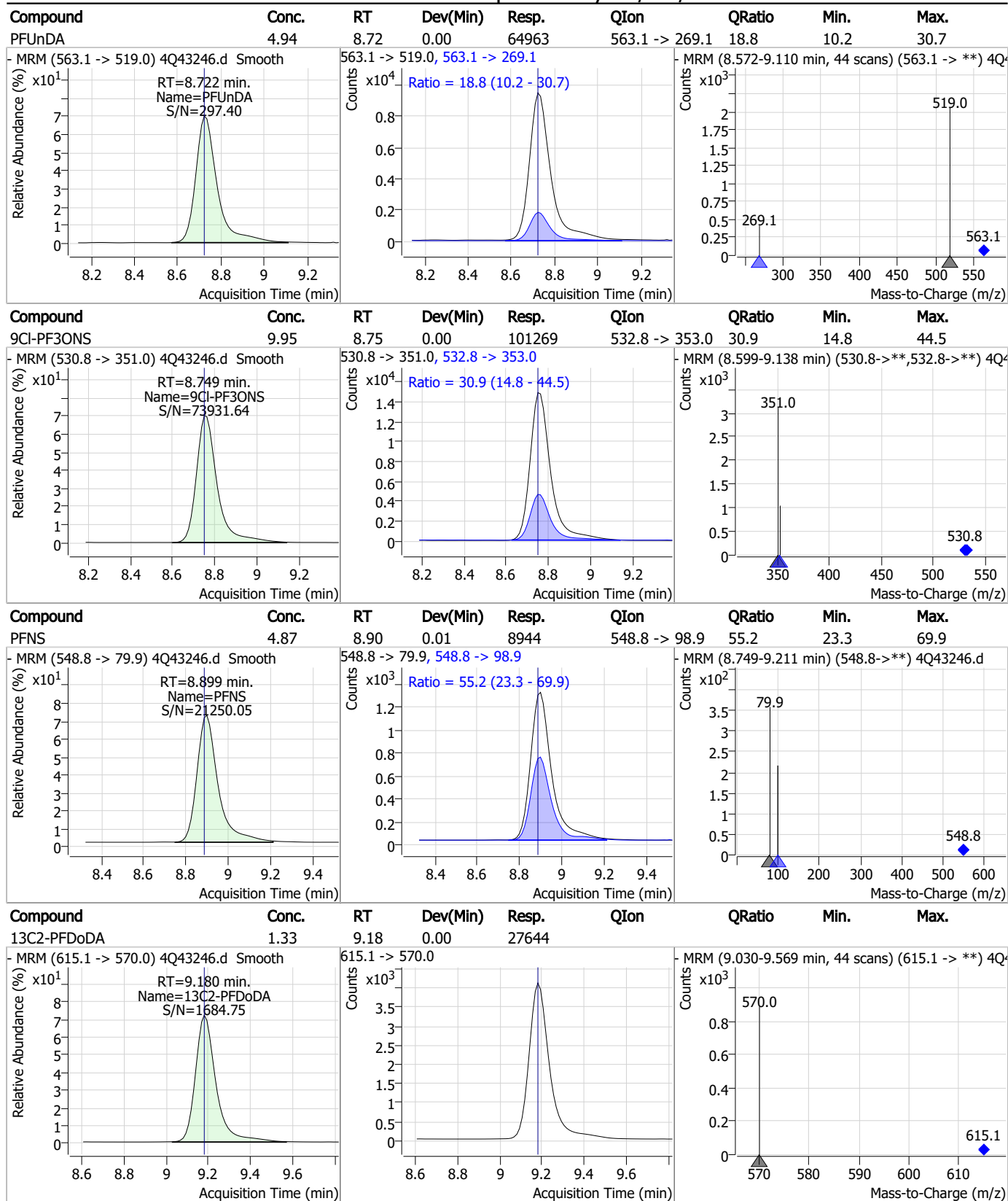


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Perfluorinated Compounds by LC/MS/MS

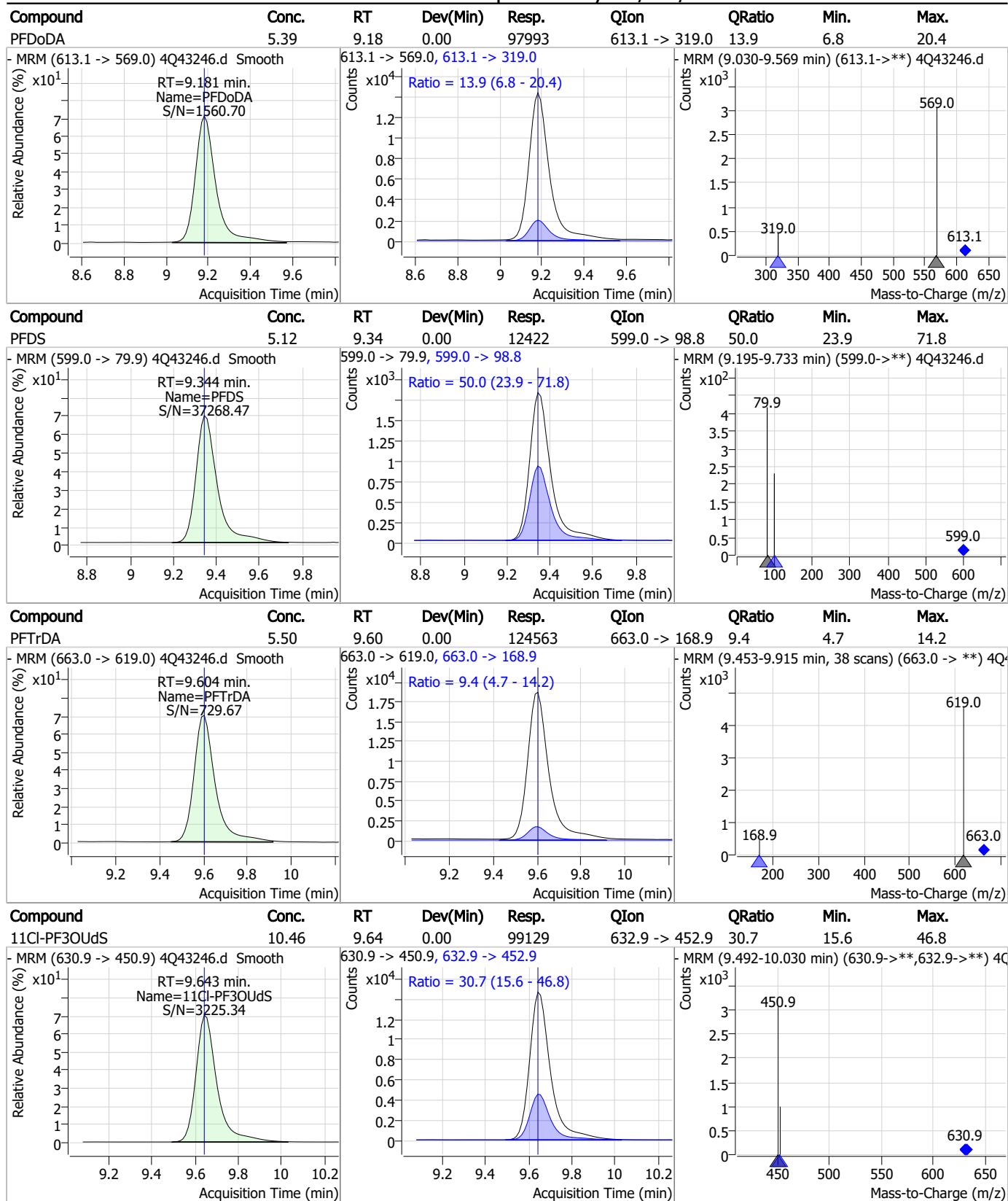


Perfluorinated Compounds by LC/MS/MS



7.7.6
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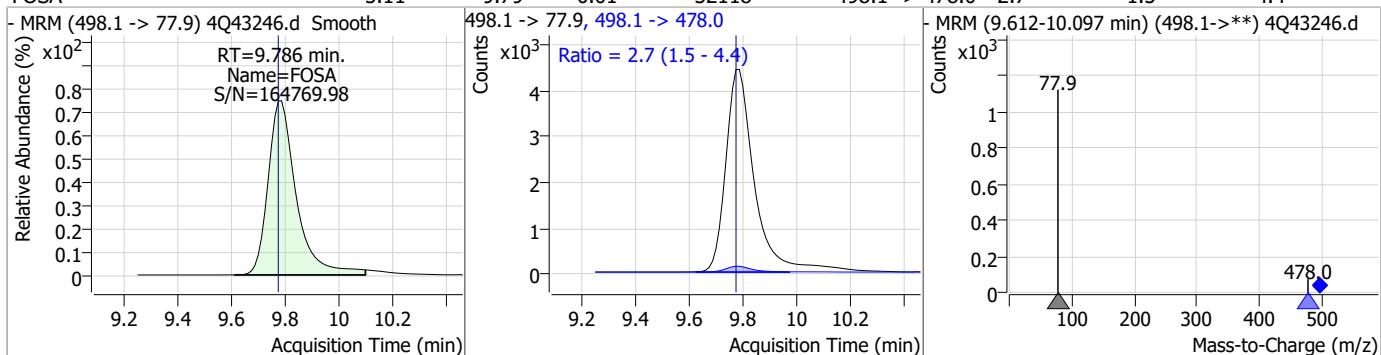
Perfluorinated Compounds by LC/MS/MS



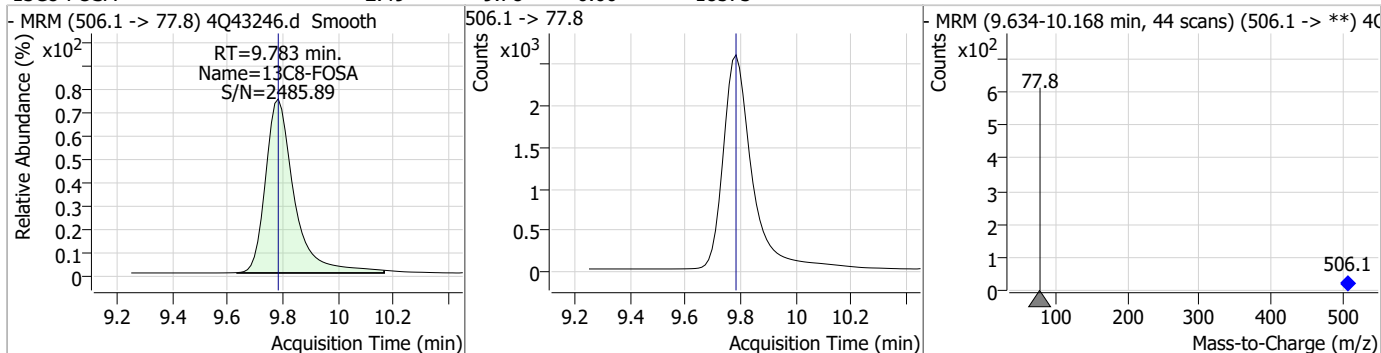
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Perfluorinated Compounds by LC/MS/MS

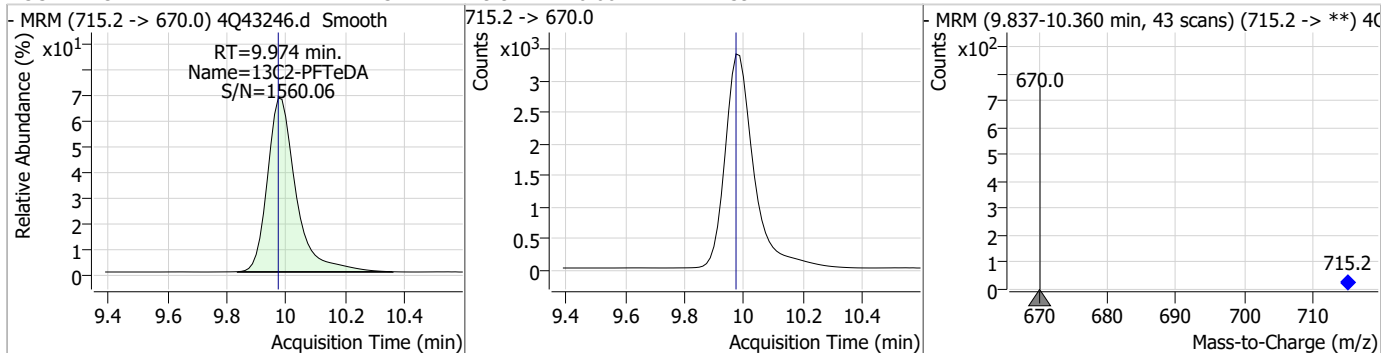
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	5.11	9.79	0.01	32118	498.1 -> 478.0	2.7	1.5	4.4



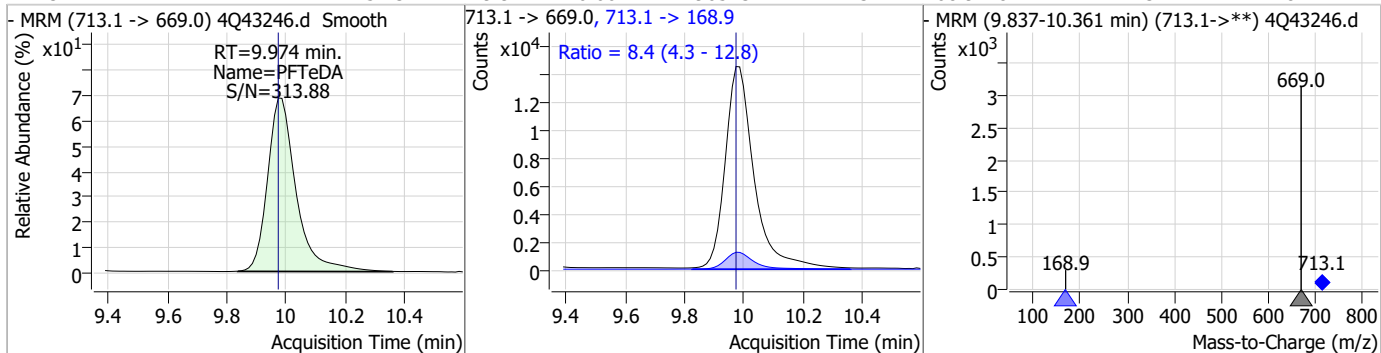
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.49	9.78	0.00	18573				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.37	9.97	0.00	22739				

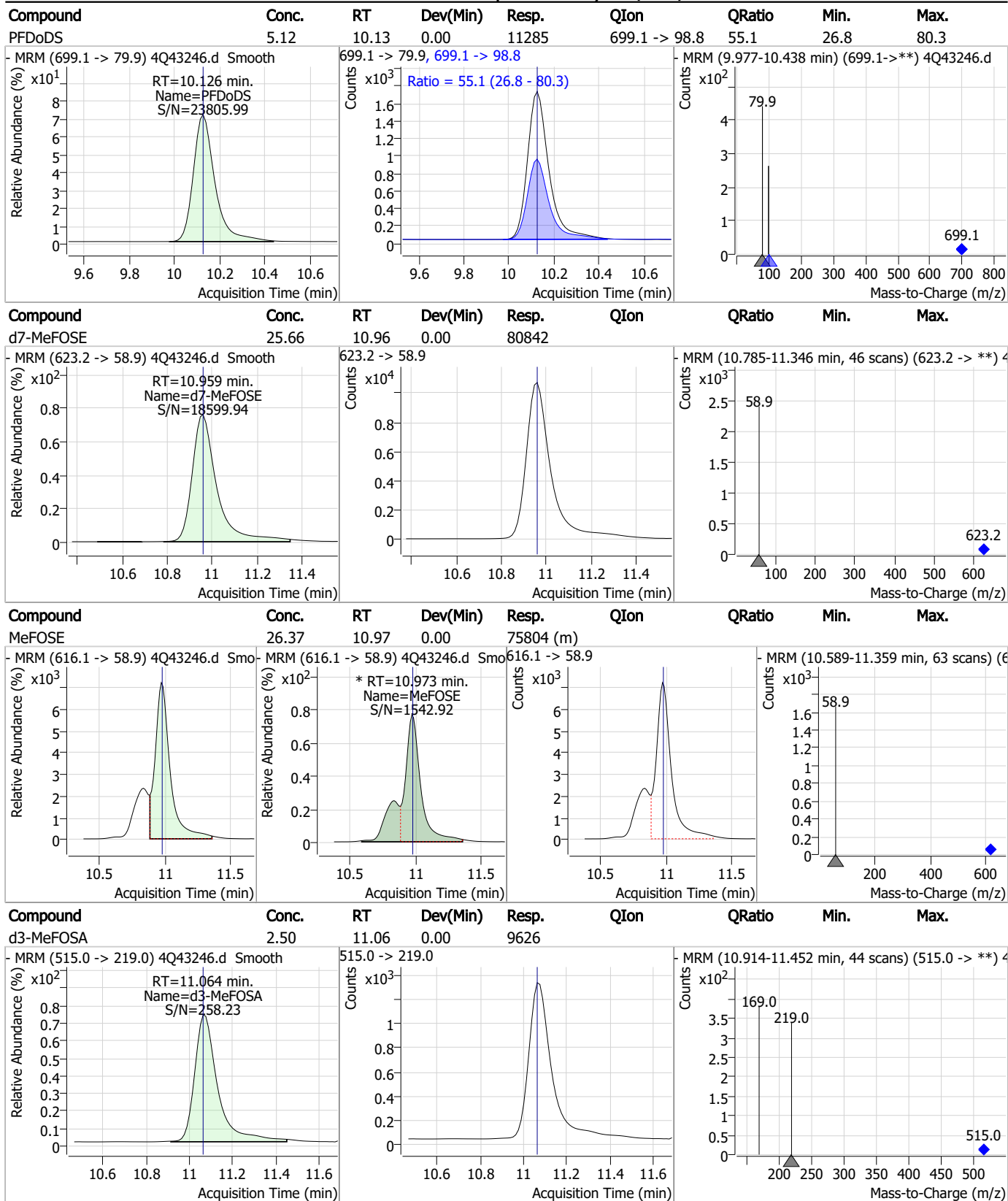


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	5.23	9.97	0.00	96573	713.1 -> 168.9	8.4	4.3	12.8



7.7.6
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Perfluorinated Compounds by LC/MS/MS

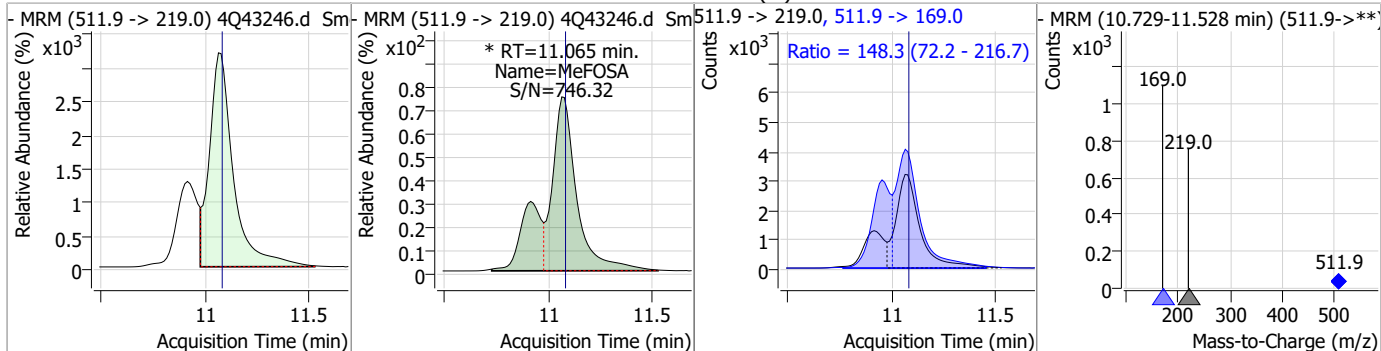


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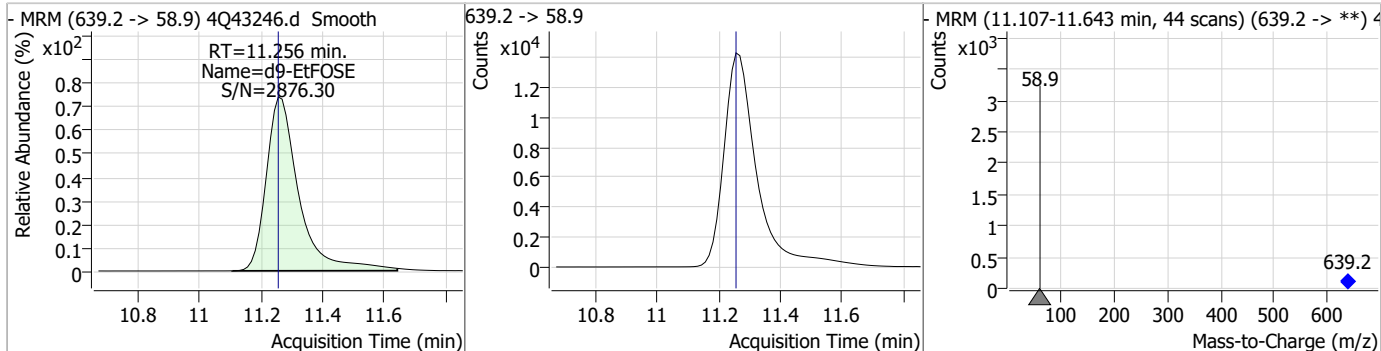
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Perfluorinated Compounds by LC/MS/MS

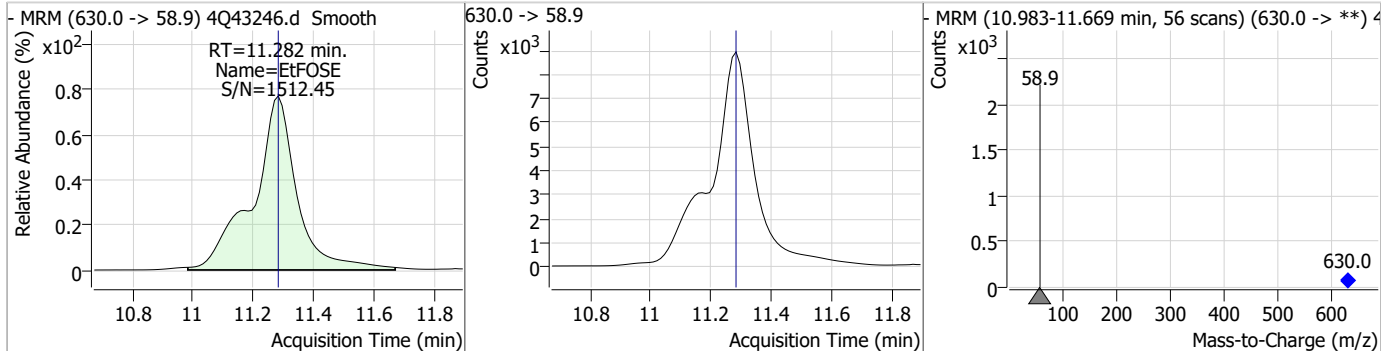
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	10.69	11.07	-0.01	34414 (m)	511.9 -> 169.0	148.3	72.2	216.7



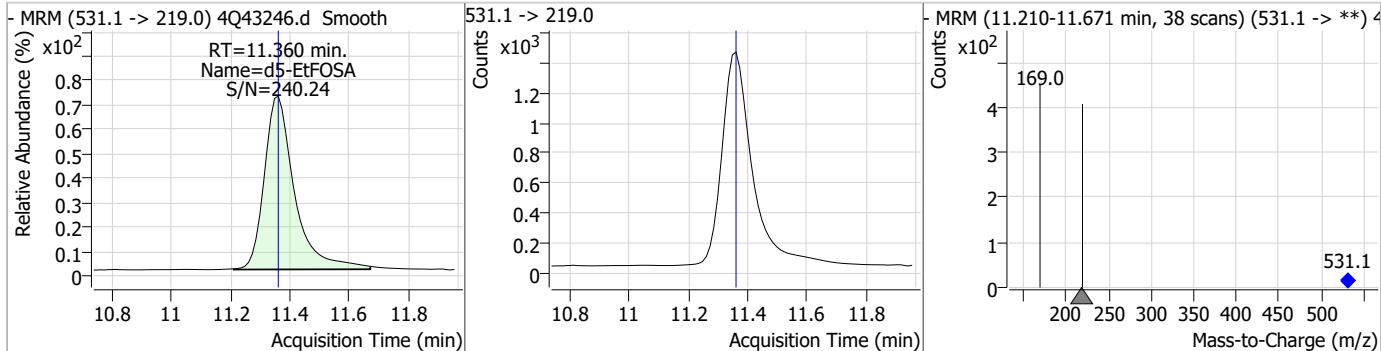
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.84	11.26	0.00	104259				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	27.21	11.28	0.00	90457				

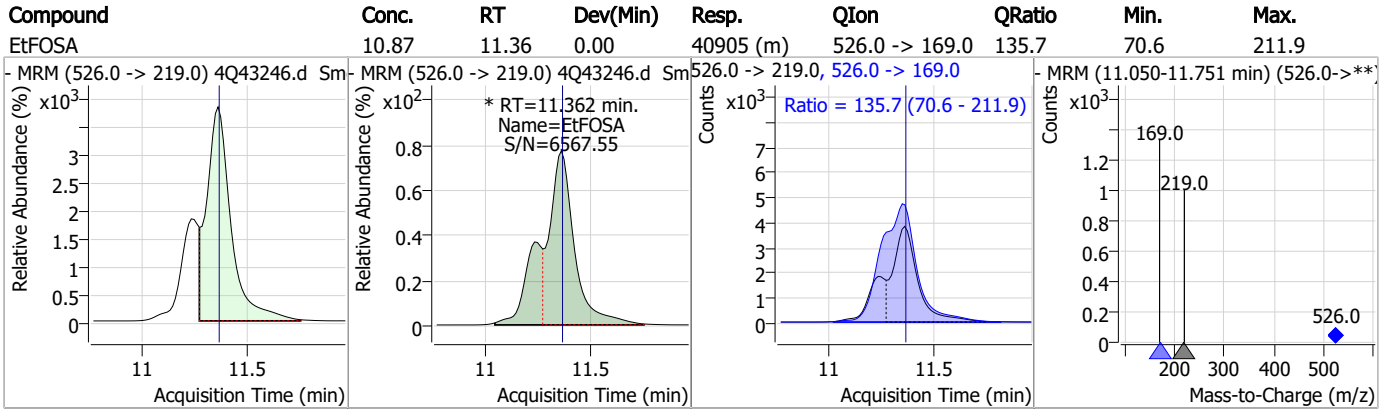


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.47	11.36	0.00	10089				



7.7.6
7

Perfluorinated Compounds by LC/MS/MS



7.7.6

7

Manual Integration Approval Summary

Sample Number: S4Q625-IC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43246.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 12:51 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.6.1
7

Manual Integrations
APPROVED
(compounds with "m" flag)

Norman Farmer
04/21/23 13:15

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43247.d
Operator : marthav
Acq. Method : 1633full_4Q.m
Acq. Date-Time : 4/19/2023 1:05:07 PM
Sample Name : ic625-6
Vial : P1-A7
DA Method File : 1633_041923_S4Q625.quantmethod.xml
Batch Name : s6q625.batch.bin
Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	114248	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	67886	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	53585	2.50 µg/L	0.012
M4-PFHpA	6.529	367.1 -> 322.0	27798	2.50 µg/L	0.012
M8-PFOA	7.188	421.1 -> 376.0	37707	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	20752	1.25 µg/L	0.013
M6-PFDA	8.253	519.1 -> 474.1	20196	1.25 µg/L	0.012
M7-PFUnDA	8.722	570.0 -> 525.1	22269	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	28148	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	22121	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	19152	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	11056	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	7229	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	10872	2.50 µg/L	0.012
M2-4:2FTS	5.285	329.1 -> 80.9	1481	5.00 µg/L	0.012
M2-6:2FTS	6.961	429.1 -> 80.9	2279	5.00 µg/L	0.012
M2-8:2FTS	8.027	529.1 -> 80.9	4193	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	17208	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	34374	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	14809	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	79700	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	101109	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	10317	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	9795	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	10377	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	63189	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	4877	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	44729	2.50 µg/L	0.000
13C2-PFDA	8.253	515.1 -> 470.1	18620	1.25 µg/L	0.012
13C5-PFNA	7.746	468.0 -> 423.0	23062	1.25 µg/L	0.013
13C2-PFHxA	5.598	315.1 -> 270.0	45168	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	1481	5.17 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C2-6:2FTS	6.961	429.1 -> 80.9	2279	5.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4193	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	28148	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-PFTeDA	9.974	715.2 -> 670.0	22121	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-PFBS	5.502	302.1 -> 79.9	11056	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C3-PFHxS	7.291	402.1 -> 79.9	7229	2.60 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C4-PFBA	2.936	216.8 -> 171.9	114248	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.529	367.1 -> 322.0	27798	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFHxA	5.597	318.0 -> 273.0	53585	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C5-PFPeA	4.412	268.3 -> 223.0	67886	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C6-PFDA	8.253	519.1 -> 474.1	20196	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C7-PFUnDA	8.722	570.0 -> 525.1	22269	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-FOSA	9.783	506.1 -> 77.8	19152	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C8-PFOA	7.188	421.1 -> 376.0	37707	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-PFOS	8.405	507.1 -> 79.9	10872	2.62 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C9-PFNA	7.746	472.1 -> 427.0	20752	1.29 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.1%	
d3-MeFOSAA	8.298	573.2 -> 419.0	17208	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	34374	10.03 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d3-MeFOSA	11.064	515.0 -> 219.0	9795	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
d5-EtFOSAA	8.507	589.2 -> 419.0	14809	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d7-MeFOSE	10.959	623.2 -> 58.9	79700	25.04 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
d9-EtFOSE	11.256	639.2 -> 58.9	101109	24.80 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d5-EtFOSA	11.360	531.1 -> 219.0	10317	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	92087	48.60 µg/L	96
		327.1 -> 80.9	39071		
6:2FTS	6.949	427.1 -> 407.0	85733	49.22 µg/L	94
		427.1 -> 80.9	34706		
8:2FTS	8.028	527.1 -> 507.0	105150	50.87 µg/L	97
		527.1 -> 80.8	41308		
EtFOSAA	8.521	584.2 -> 419.1	29783	14.08 µg/L	m 91
		584.2 -> 526.0	13906		
FOSA	9.774	498.1 -> 77.9	84532	13.05 µg/L	100
		498.1 -> 478.0	2515		
MeFOSAA	8.311	570.1 -> 419.0	33057	13.46 µg/L	m 93
		570.1 -> 483.0	6415		
PFBA	2.945	212.8 -> 168.9	142951	53.93 µg/L	100
PFBS	5.503	298.7 -> 79.9	54196	12.39 µg/L	95
		298.7 -> 98.8	20206		
PFDA	8.253	512.9 -> 469.0	173187	13.98 µg/L	99
		512.9 -> 219.0	34111		
PFDoDA	9.181	613.1 -> 569.0	247163	13.34 µg/L	99
		613.1 -> 319.0	34740		
PFDS	9.344	599.0 -> 79.9	31882	12.55 µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	16077			
PFHpA	6.530	363.1 -> 319.0	202319	13.84	µg/L	99
		363.1 -> 169.0	35738			
PFHpS	7.873	449.0 -> 79.9	39031	12.48	µg/L	95
		449.0 -> 98.9	19348			
PFHxA	5.600	313.0 -> 269.0	226996	13.45	µg/L	100
		313.0 -> 118.9	7228			
PFHxS	7.292	398.7 -> 79.9	31731	11.98	µg/L	m 95
		398.7 -> 98.9	16118			
PFNA	7.747	463.0 -> 419.0	159045	13.46	µg/L	98
		463.0 -> 219.0	39215			
PFNS	8.899	548.8 -> 79.9	23785	12.35	µg/L	93
		548.8 -> 98.9	12245			
PFOA	7.189	413.0 -> 369.0	236074	14.05	µg/L	99
		413.0 -> 169.0	48893			
PFOS	8.406	498.9 -> 79.9	49930	11.98	µg/L	m 100
		498.9 -> 98.8	25445			
PFPeA	4.414	263.0 -> 219.0	378453	27.91	µg/L	100
PFPeS	6.569	349.1 -> 79.9	29148	12.75	µg/L	99
		349.1 -> 98.9	12924			
PFTeDA	9.974	713.1 -> 669.0	247172	13.75	µg/L	99
		713.1 -> 168.9	20484			
PFTrDA	9.604	663.0 -> 619.0	312461	13.55	µg/L	99
		663.0 -> 168.9	30103			
PFUnDA	8.722	563.1 -> 519.0	169568	13.46	µg/L	97
		563.1 -> 269.1	32161			
11CI-PF3OUdS	9.643	630.9 -> 450.9	253518	25.60	µg/L	99
		632.9 -> 452.9	77473			
9CI-PF3ONS	8.749	530.8 -> 351.0	270616	25.44	µg/L	100
		532.8 -> 353.0	80998			
ADONA	6.781	376.9 -> 250.9	636520	25.76	µg/L	98
		376.9 -> 84.8	170631			
HFPO-DA	5.953	284.9 -> 168.9	72405	26.66	µg/L	98
		284.9 -> 184.9	8570			
3:3FTCA	3.867	241.0 -> 177.0	43985	68.13	µg/L	100
		241.0 -> 117.0	4080			
5:3FTCA	6.244	341.0 -> 237.1	847471	336.78	µg/L	100
		341.0 -> 217.0	606618			
7:3FTCA	7.686	441.0 -> 316.9	414720	337.74	µg/L	100
		441.0 -> 336.9	921113			
EtFOSA	11.362	526.0 -> 219.0	106394	27.64	µg/L	m 96
		526.0 -> 169.0	144792			
EtFOSE	11.282	630.0 -> 58.9	220860	68.51	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	89484	27.32	µg/L	m 99
		511.9 -> 169.0	129885			
MeFOSE	10.973	616.1 -> 58.9	192221	67.82	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	28550	12.37	µg/L	96
		699.1 -> 98.8	16135			
NFDHA	5.479	295.0 -> 201.0	25055	27.40	µg/L	97
		295.0 -> 84.9	6624			
PFMBA	4.828	279.0 -> 85.1	213238	27.54	µg/L	100
PFMPA	3.553	229.0 -> 84.9	190252	27.65	µg/L	100
PFEESA	6.034	314.8 -> 134.9	327981	23.68	µg/L	100
		314.8 -> 82.9	11154			

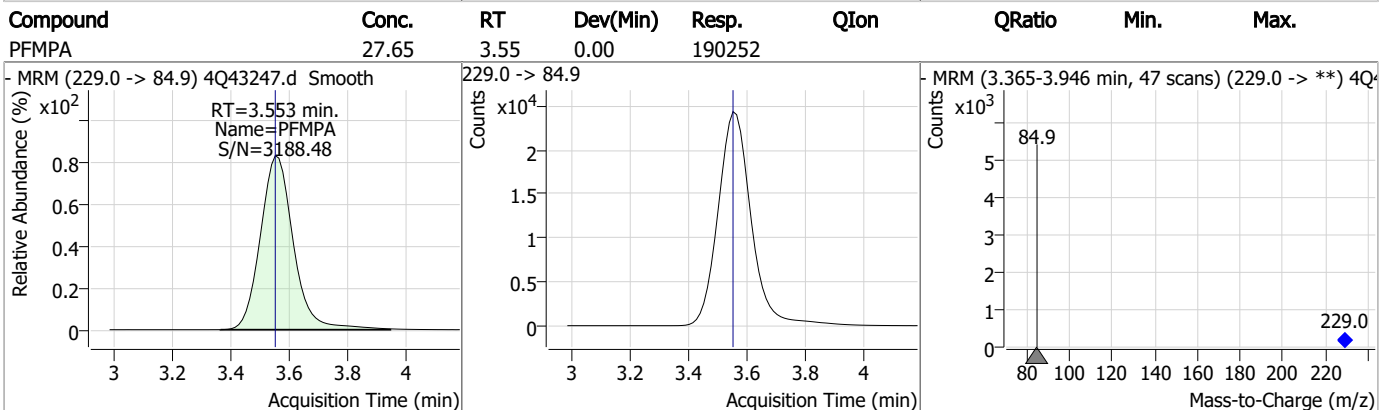
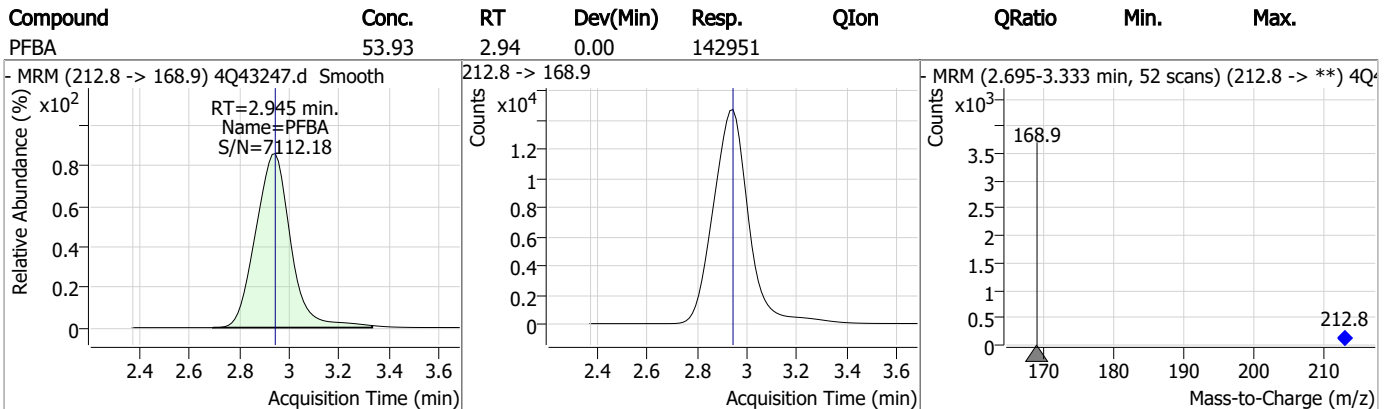
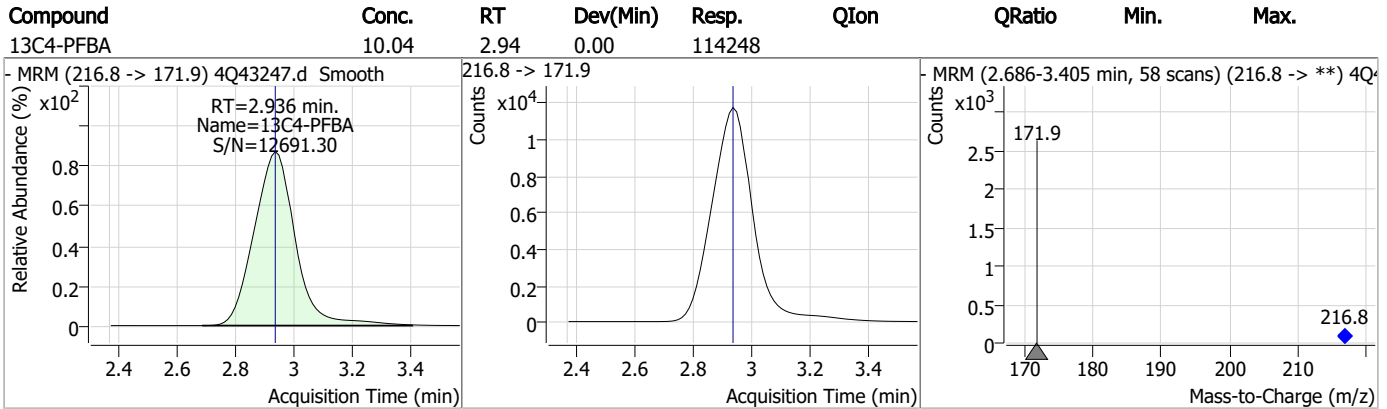
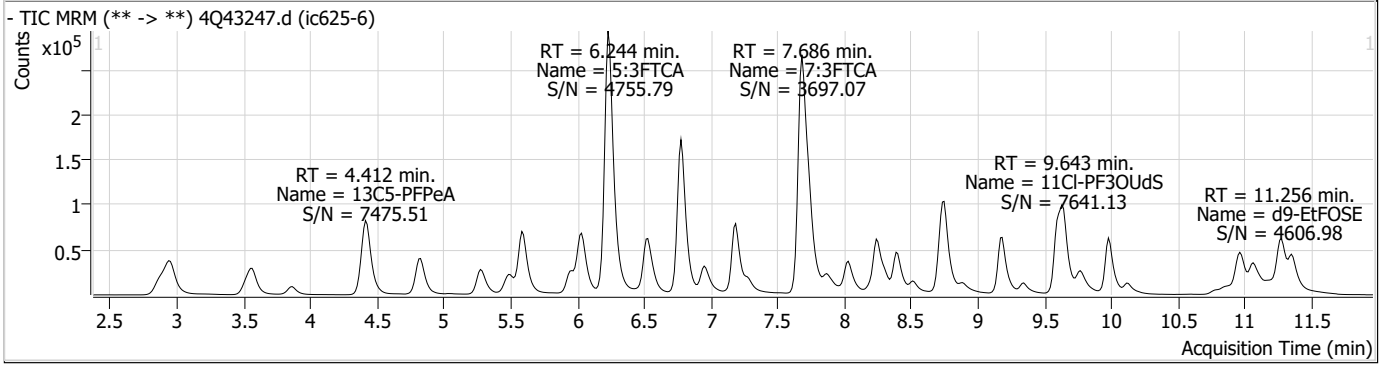
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

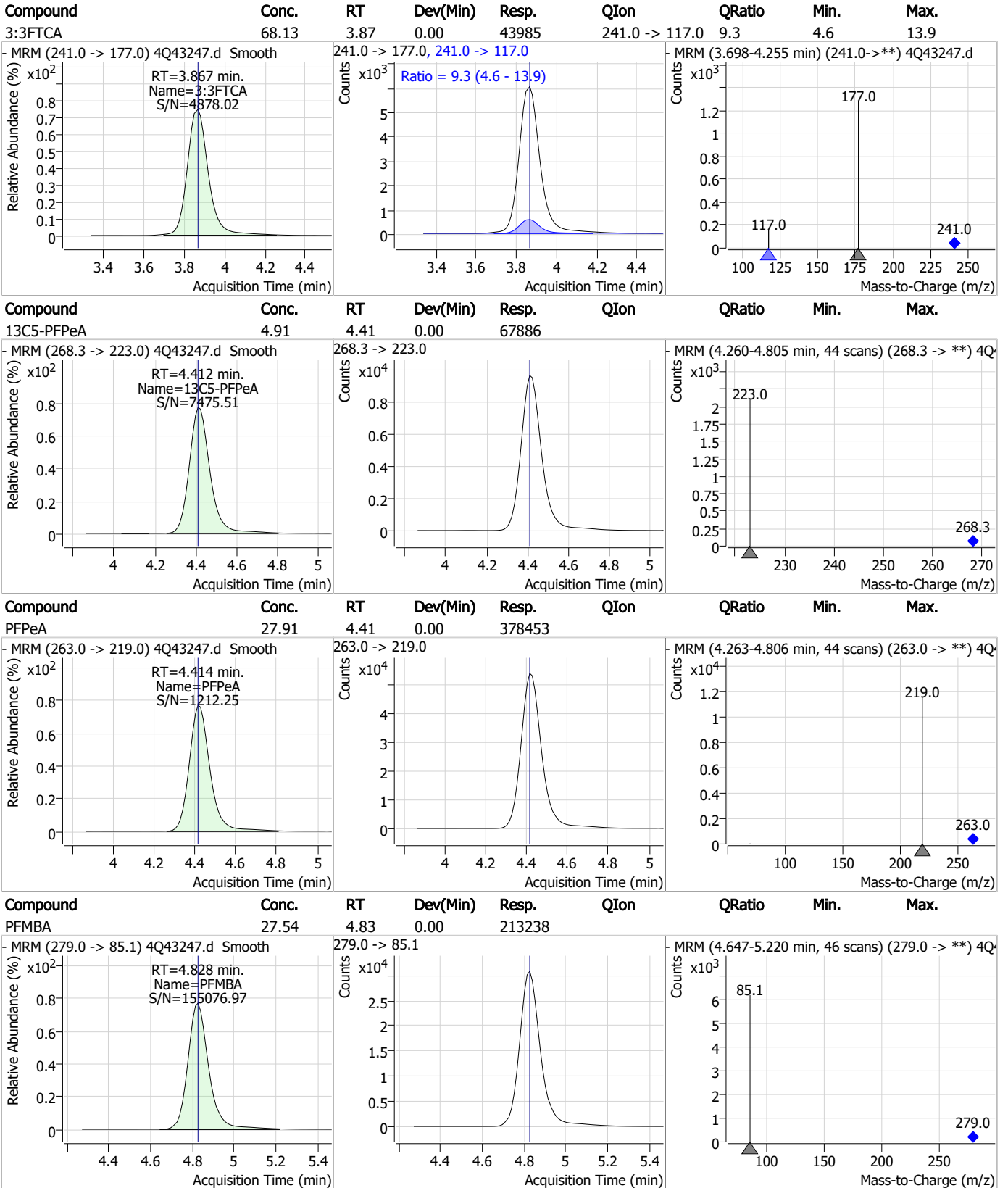
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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Perfluorinated Compounds by LC/MS/MS



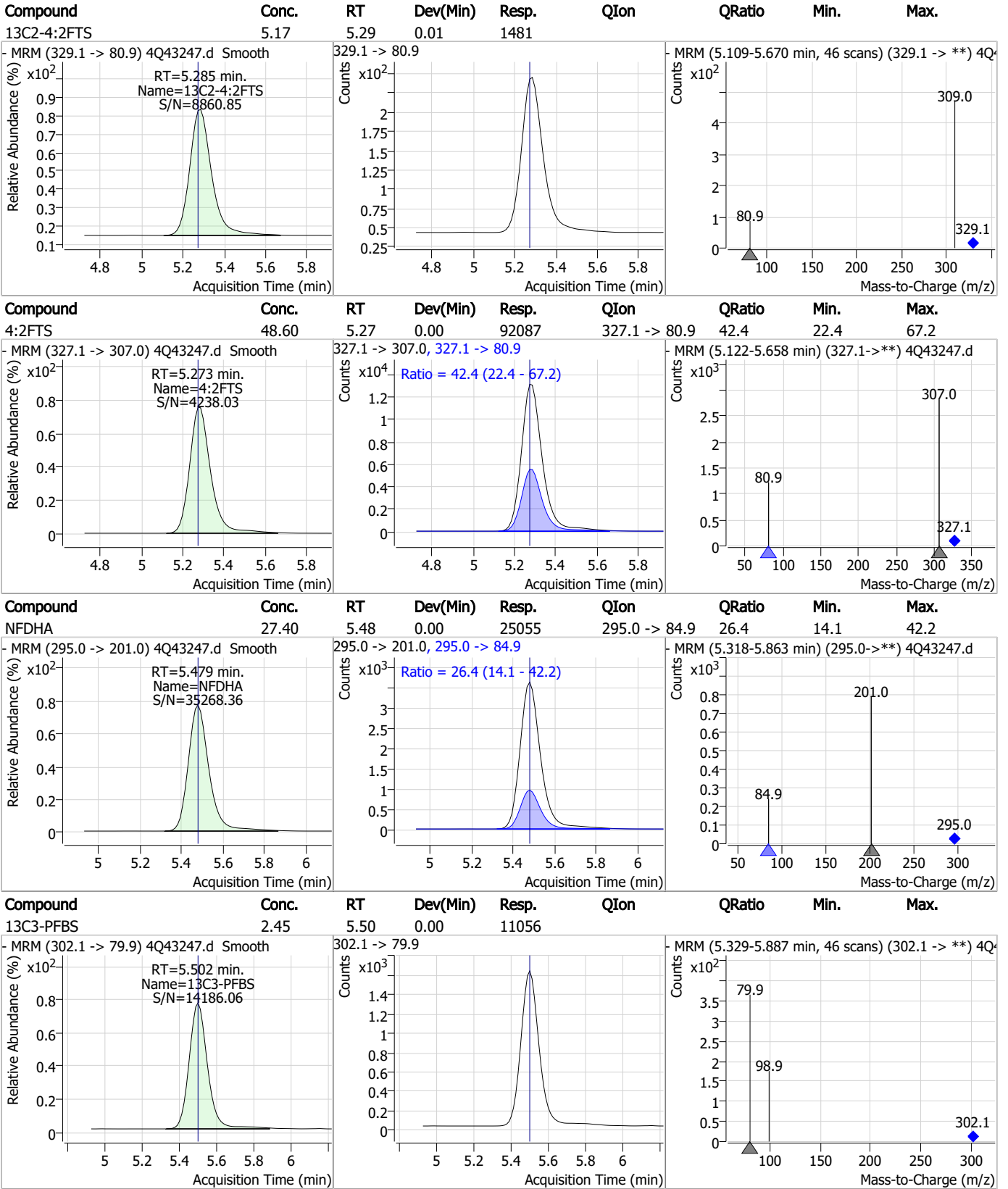
Perfluorinated Compounds by LC/MS/MS



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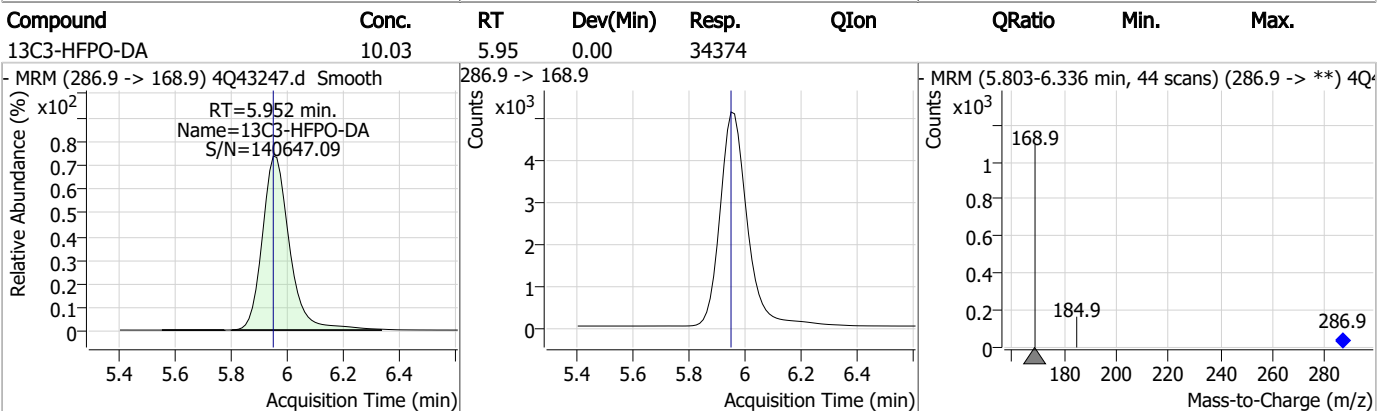
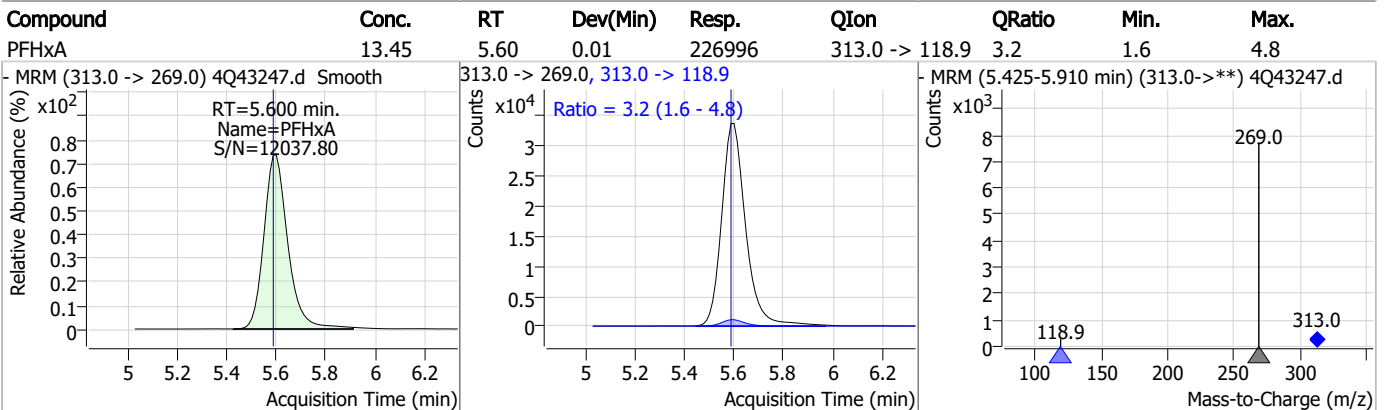
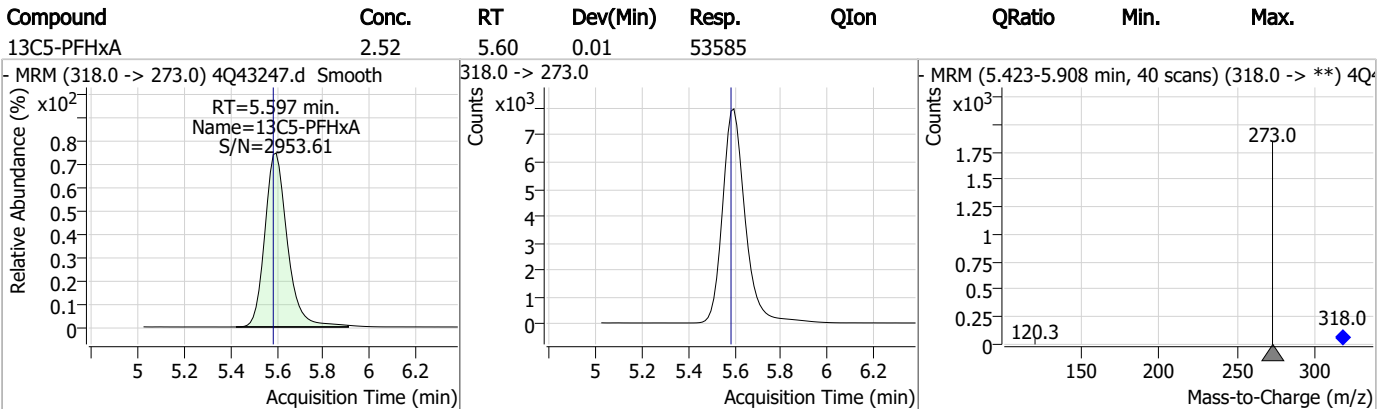
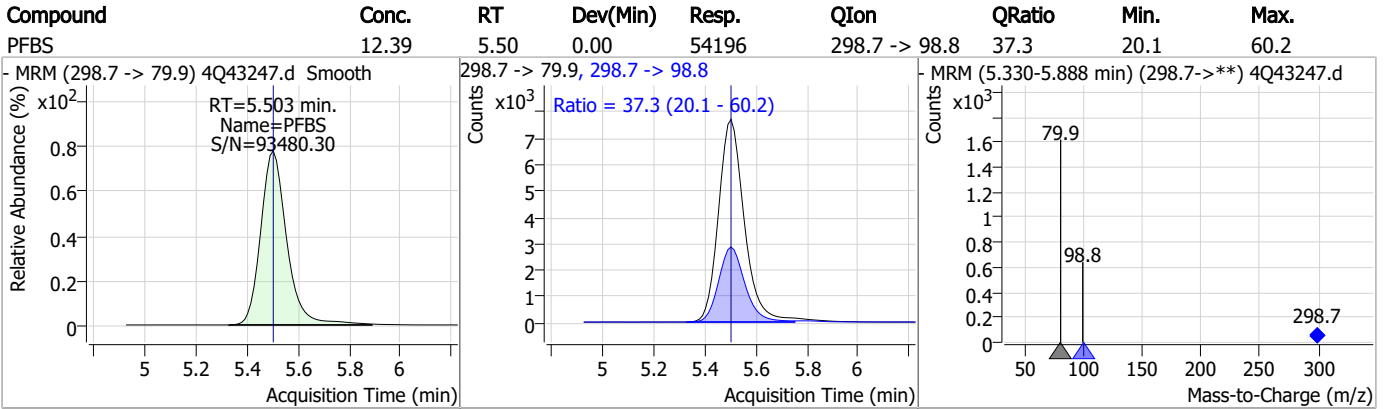
Perfluorinated Compounds by LC/MS/MS



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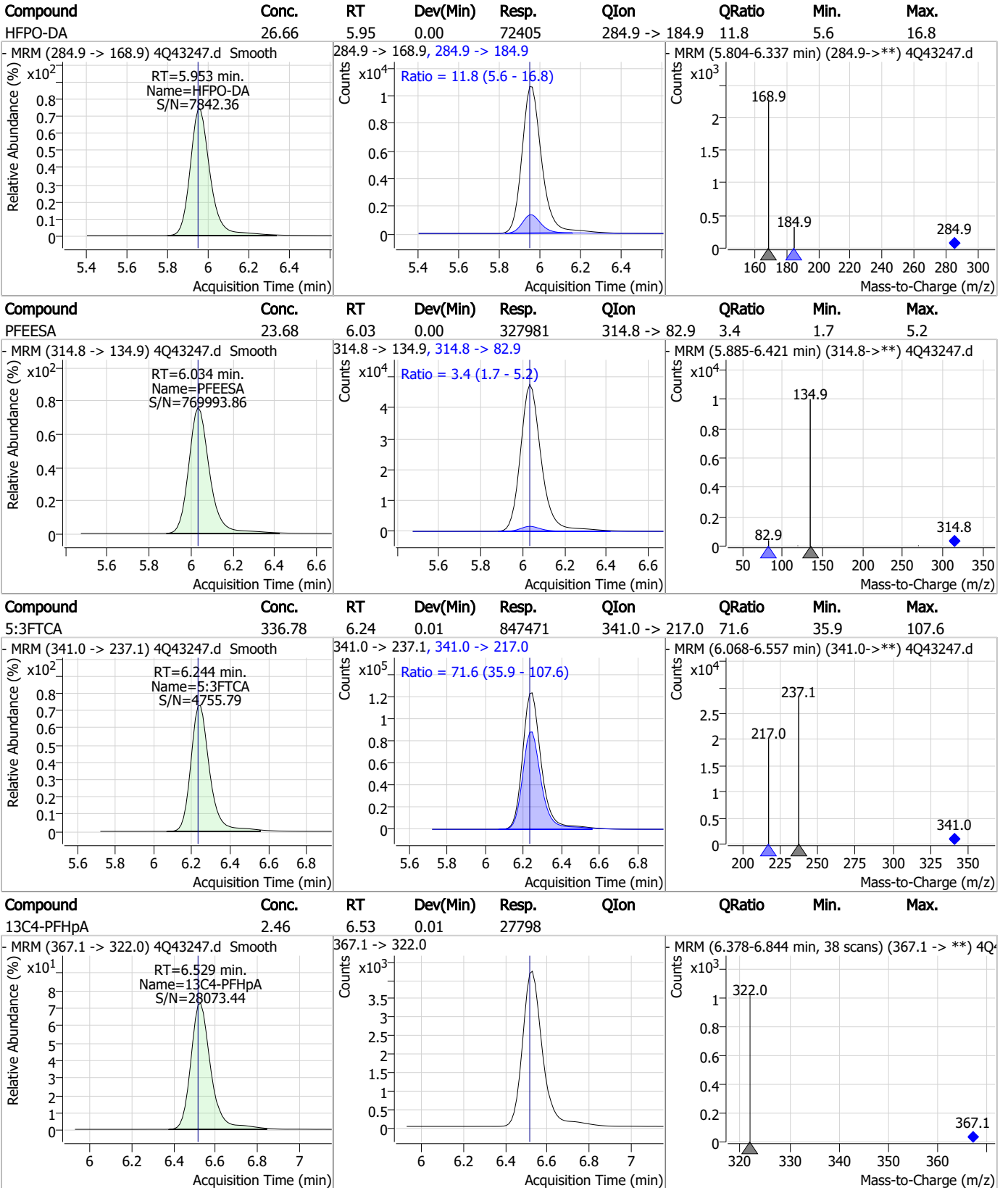
Perfluorinated Compounds by LC/MS/MS



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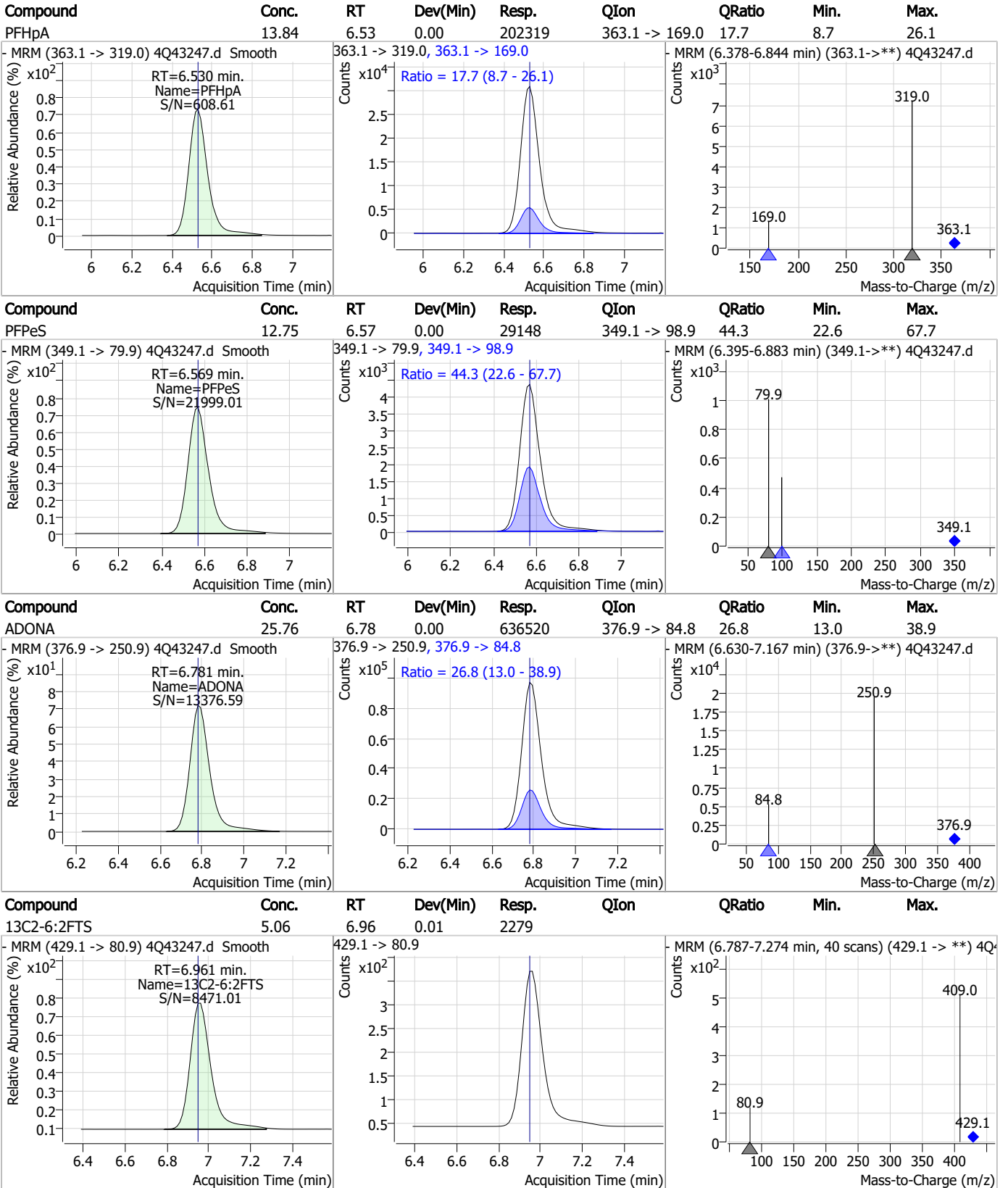
Perfluorinated Compounds by LC/MS/MS



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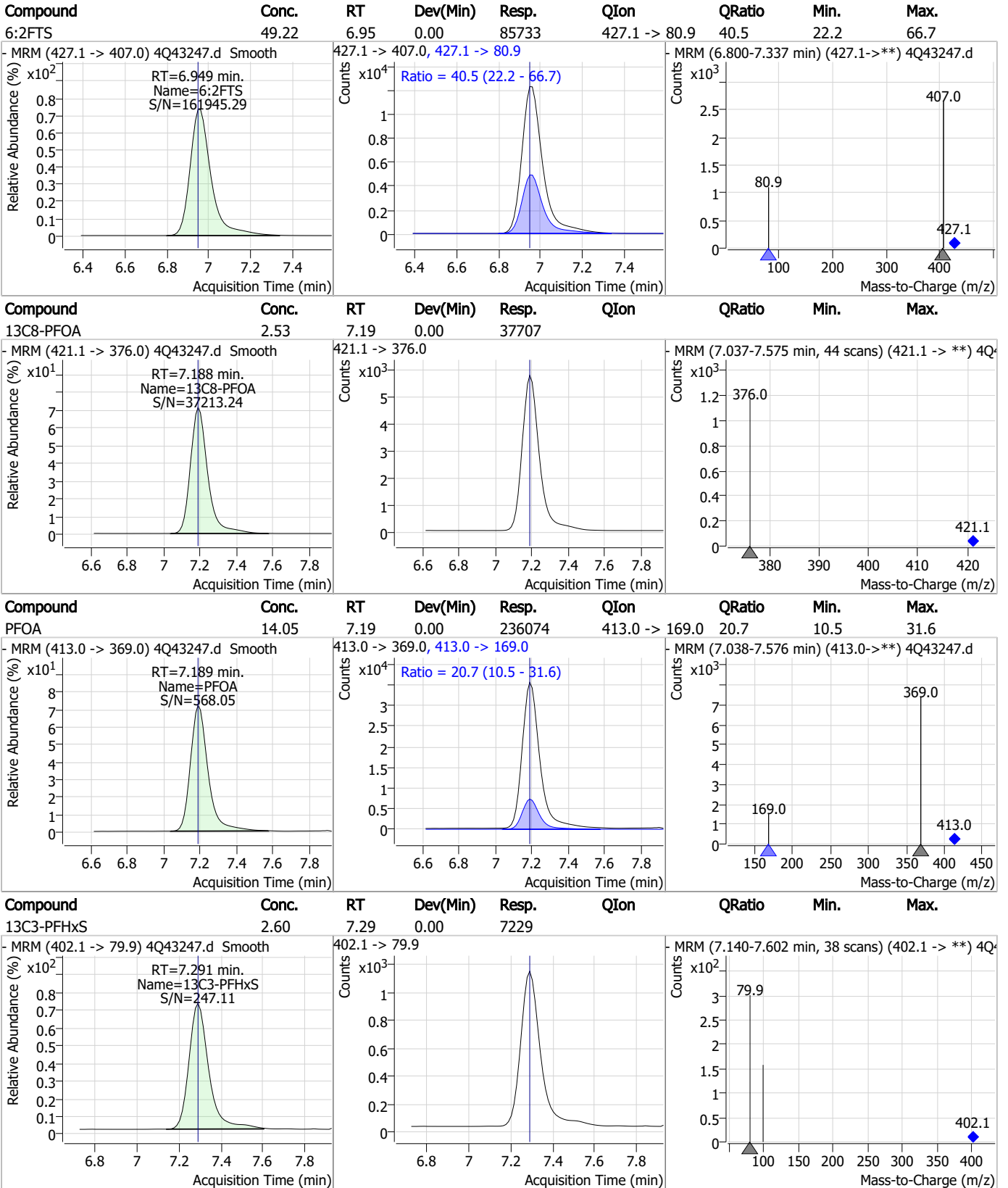
Perfluorinated Compounds by LC/MS/MS



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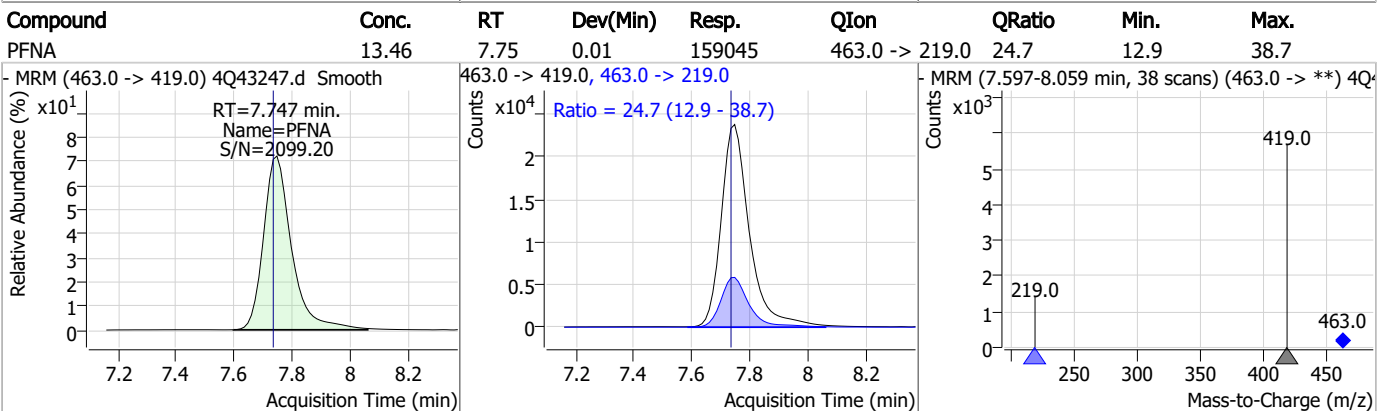
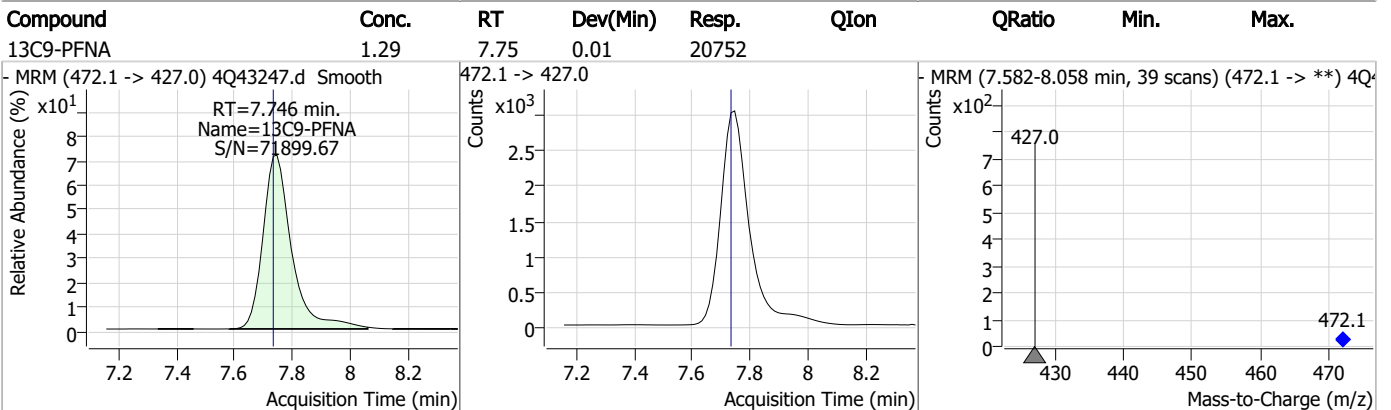
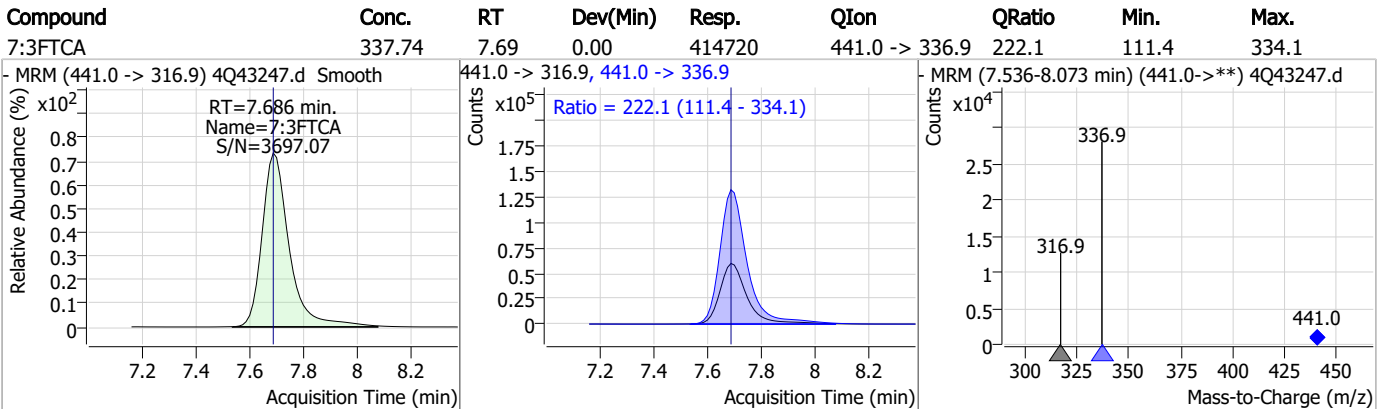
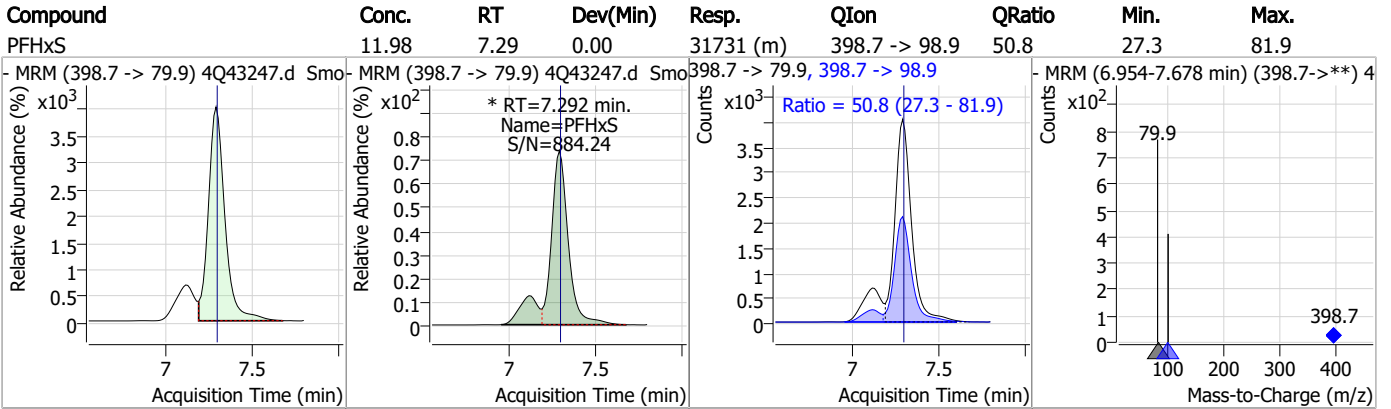
Perfluorinated Compounds by LC/MS/MS



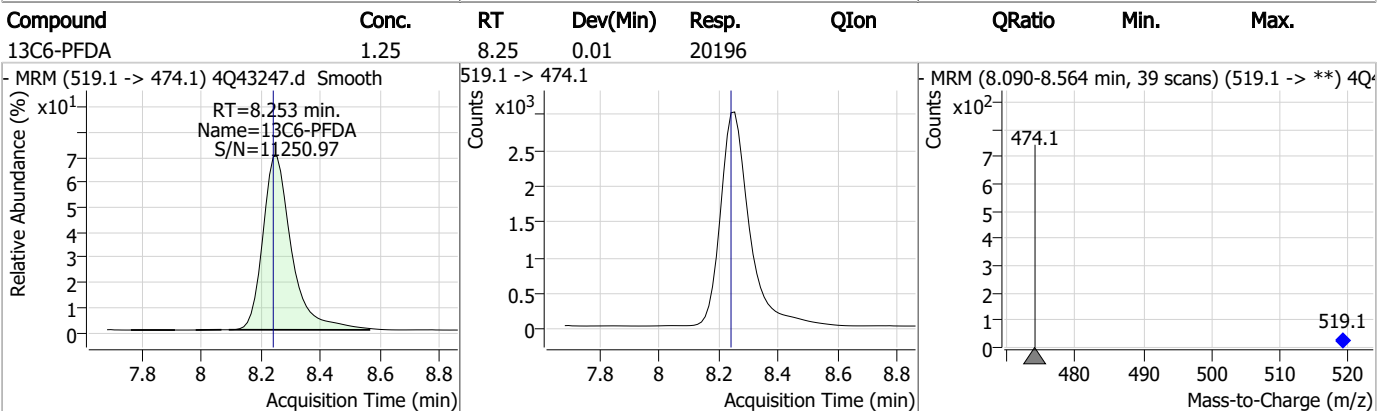
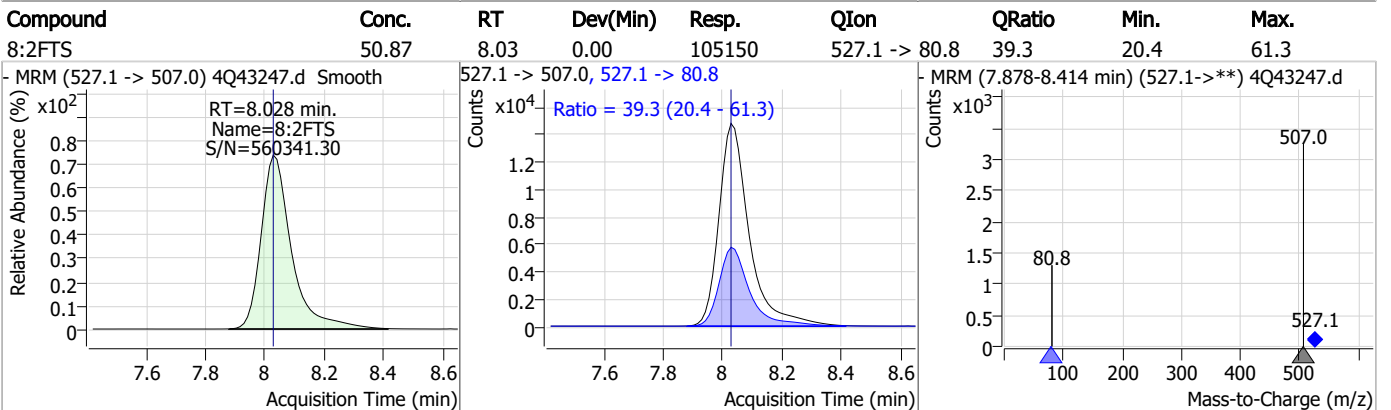
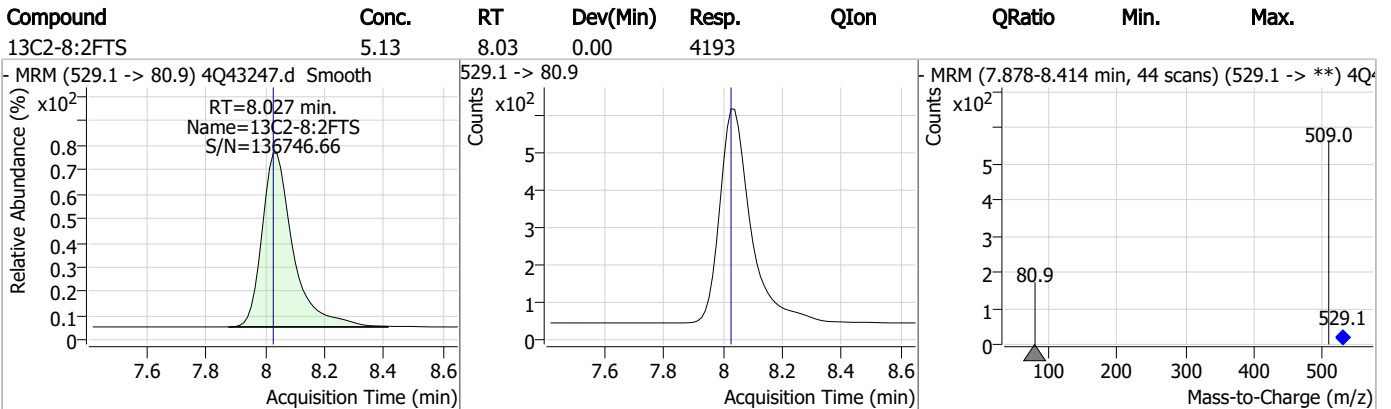
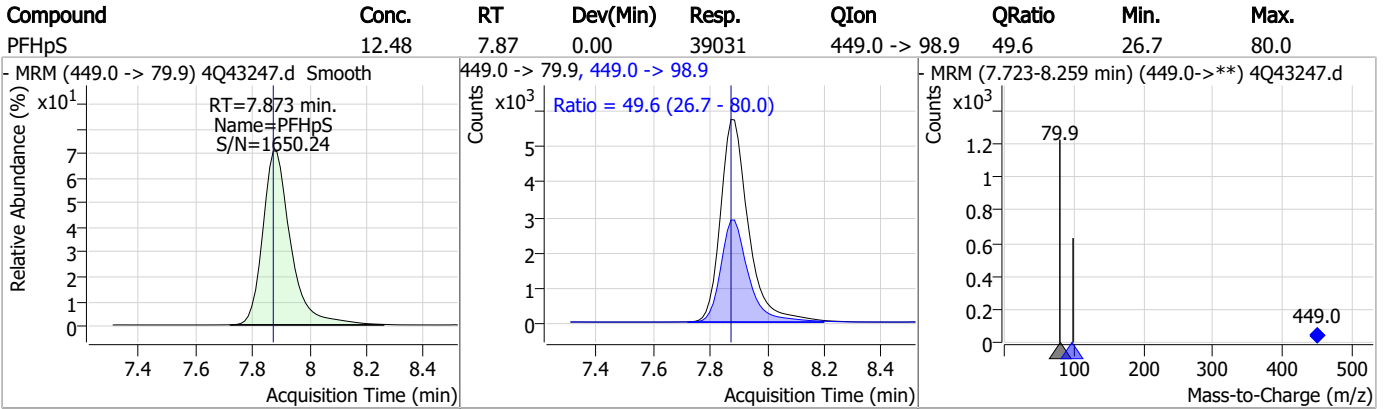
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Perfluorinated Compounds by LC/MS/MS



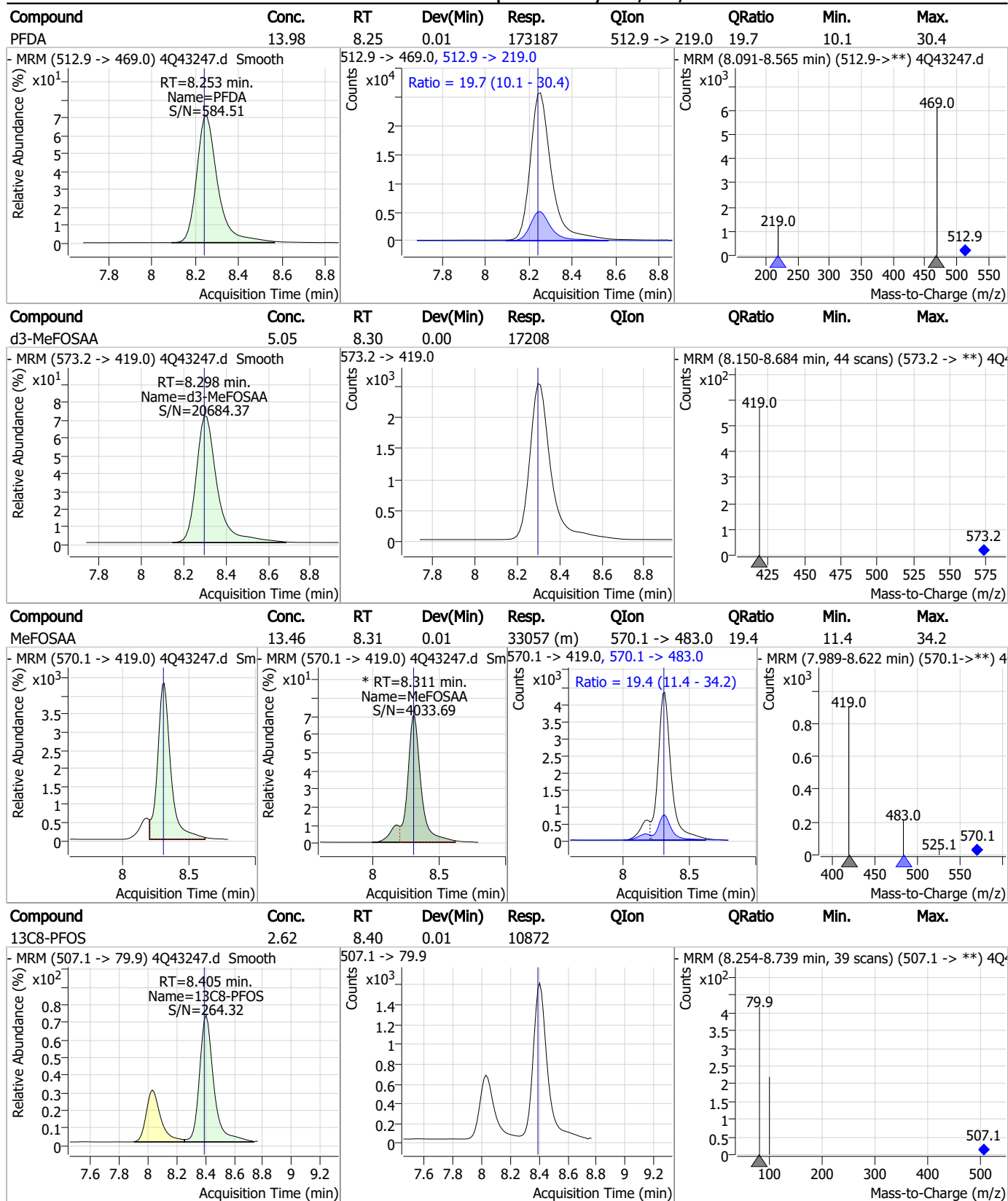
Perfluorinated Compounds by LC/MS/MS



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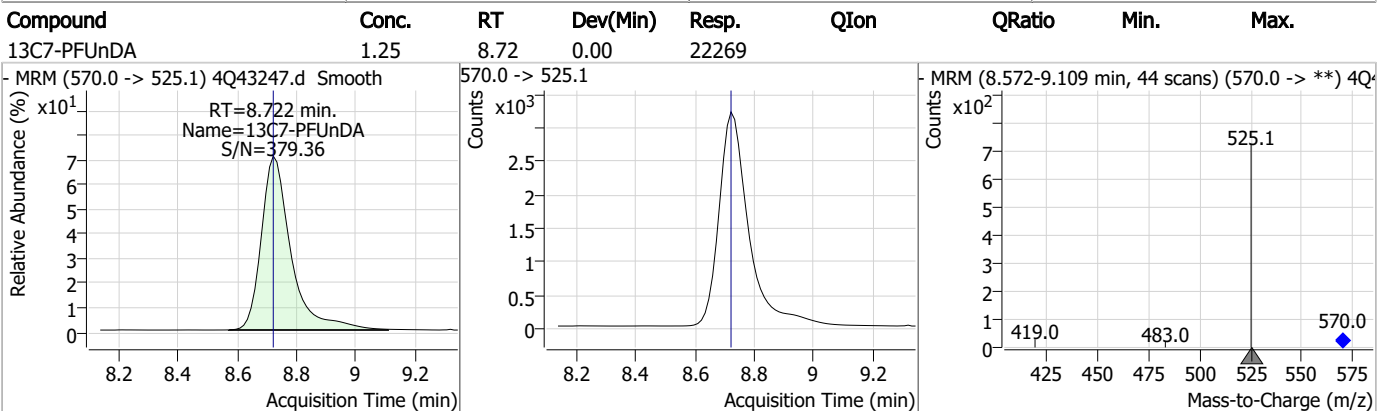
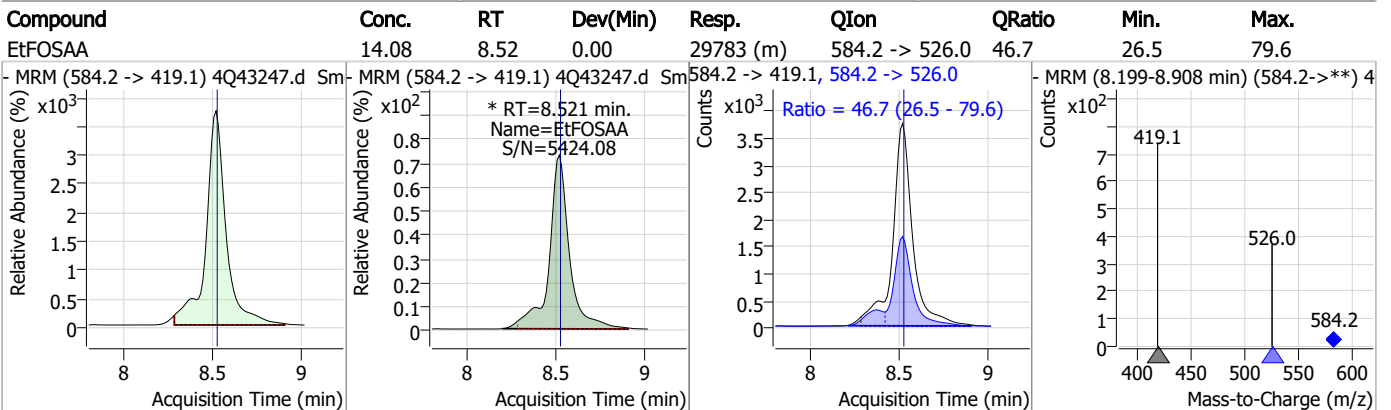
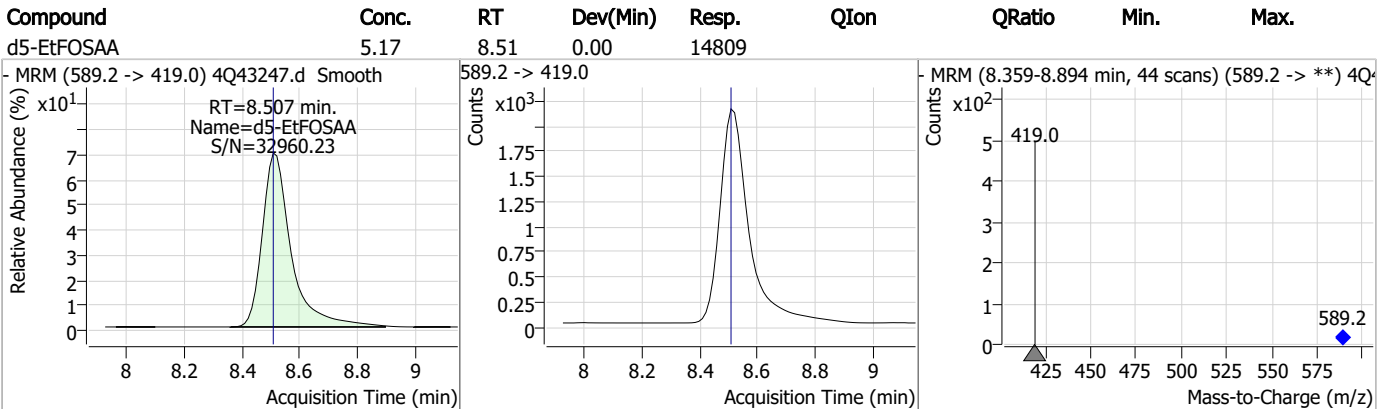
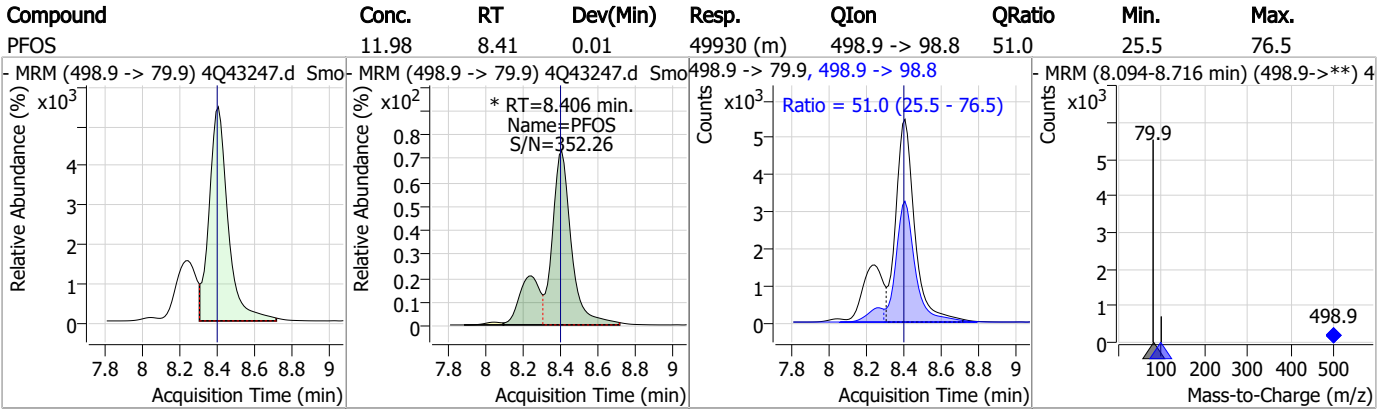
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Perfluorinated Compounds by LC/MS/MS

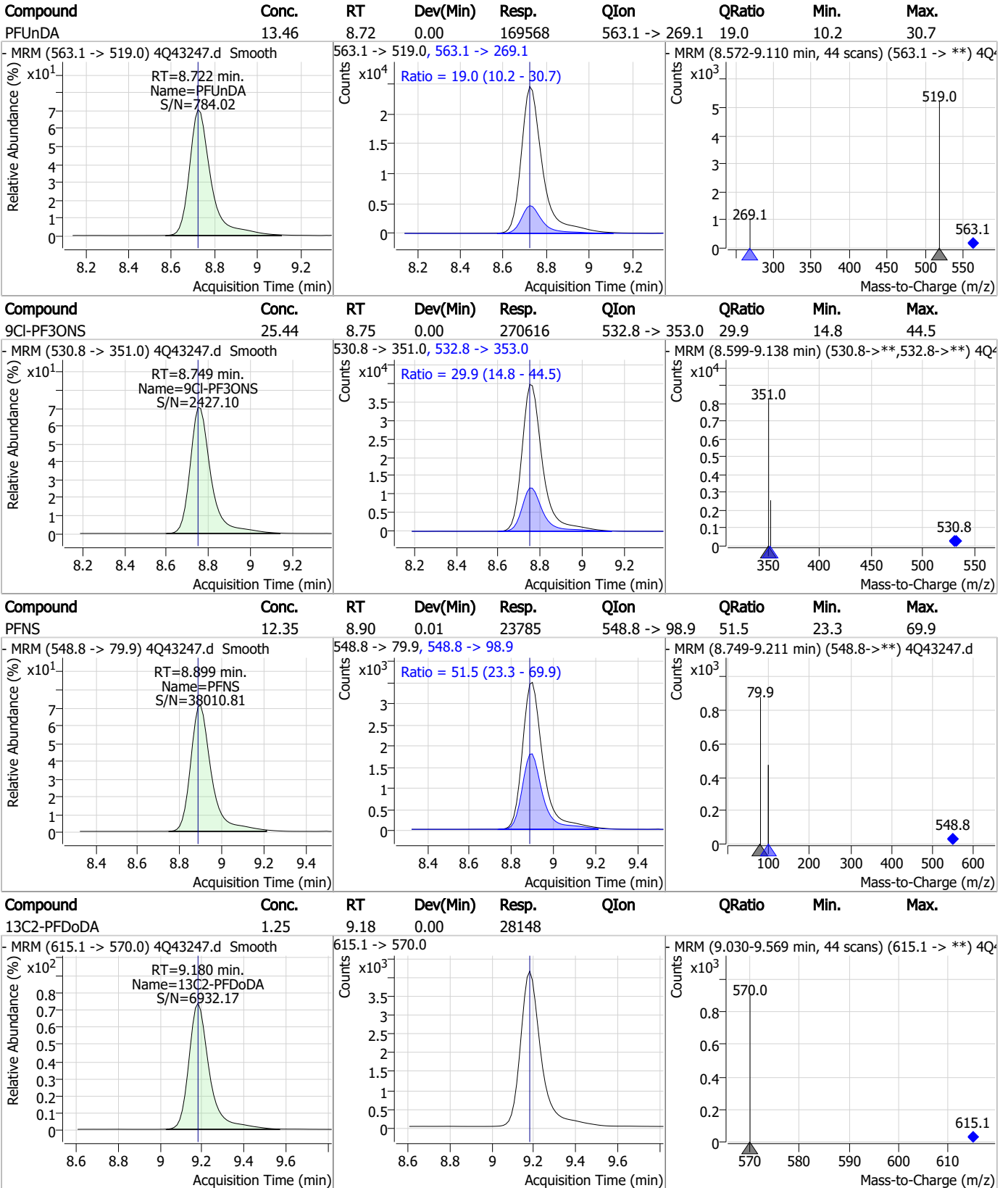


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

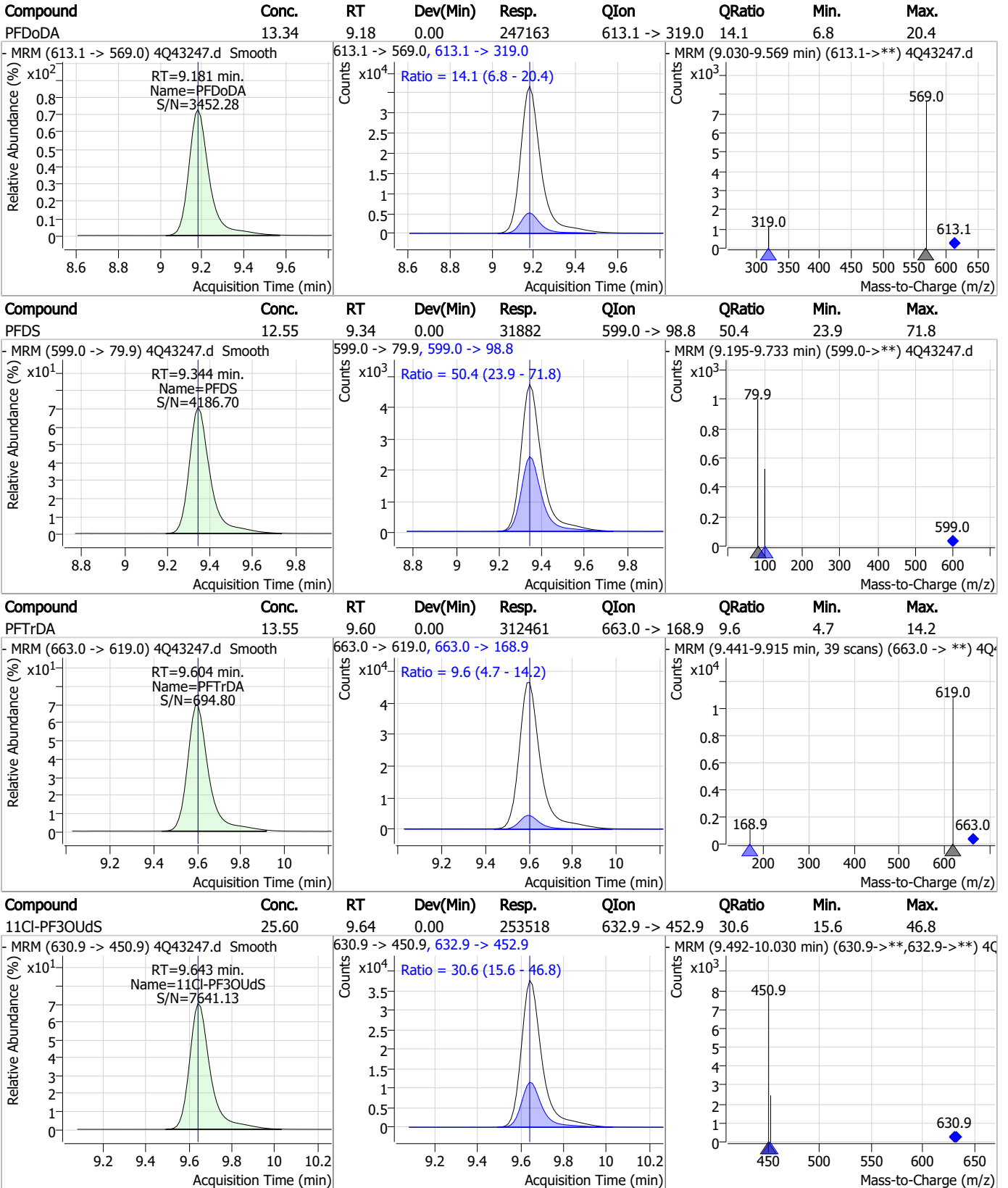


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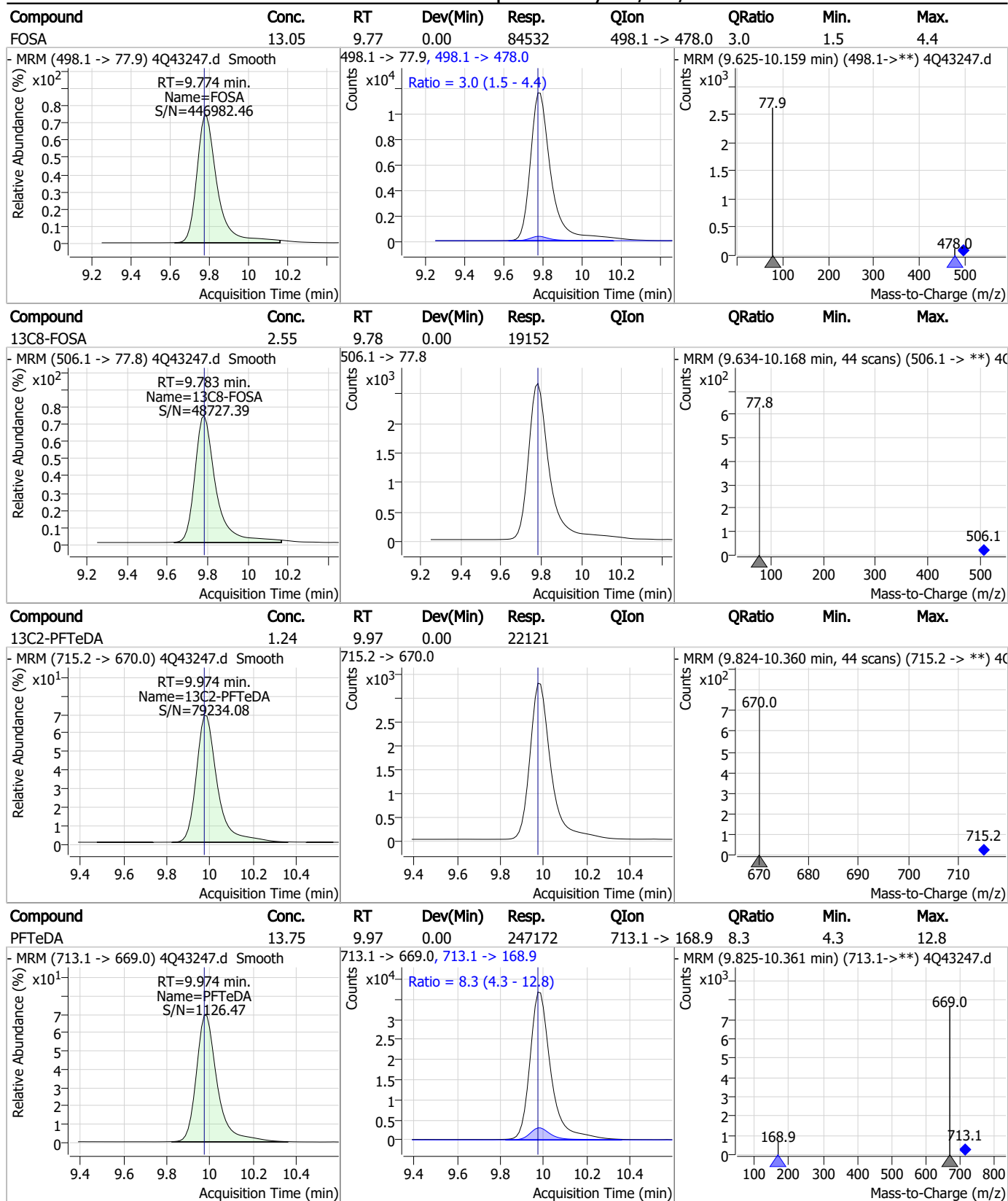


Perfluorinated Compounds by LC/MS/MS



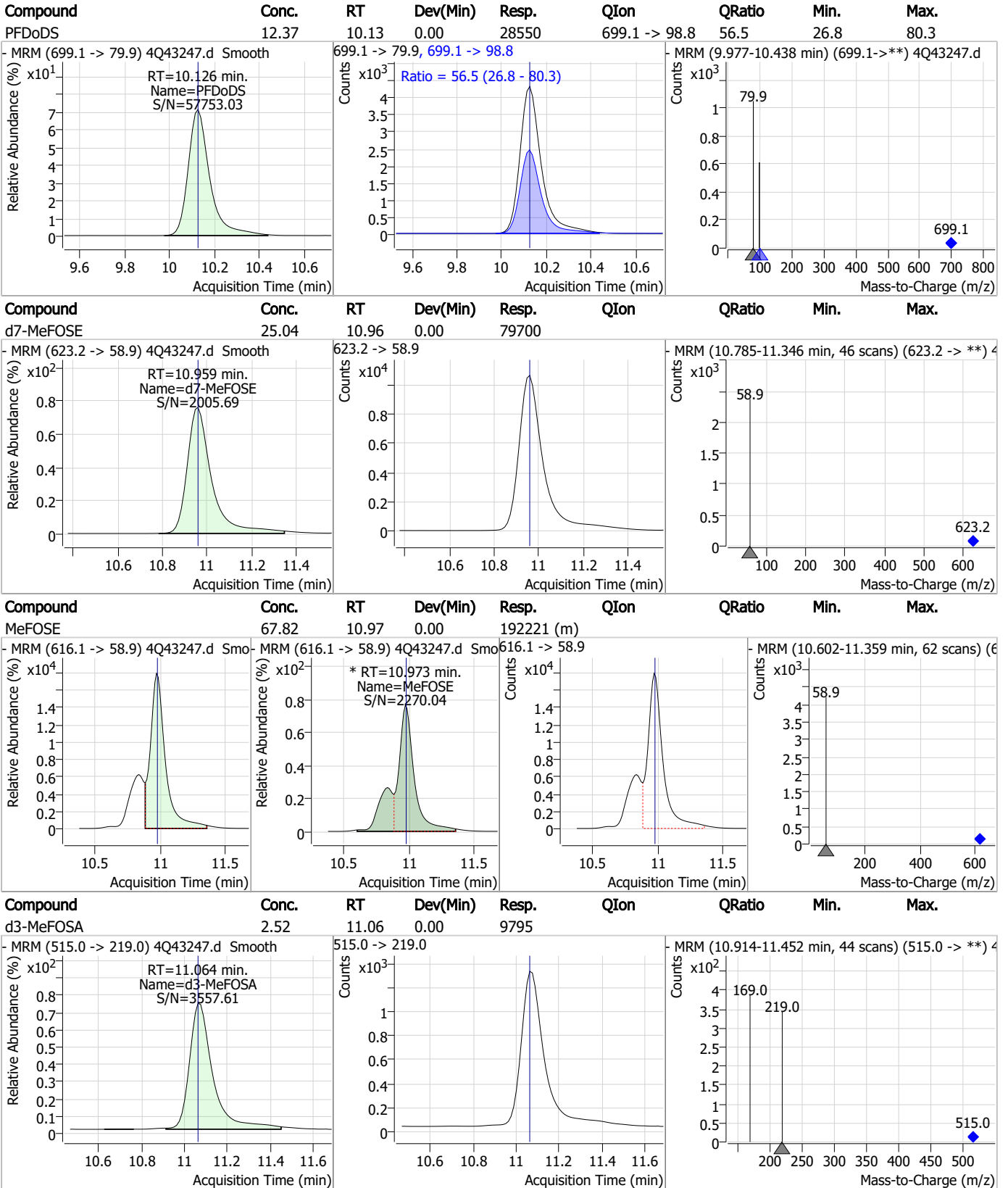
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



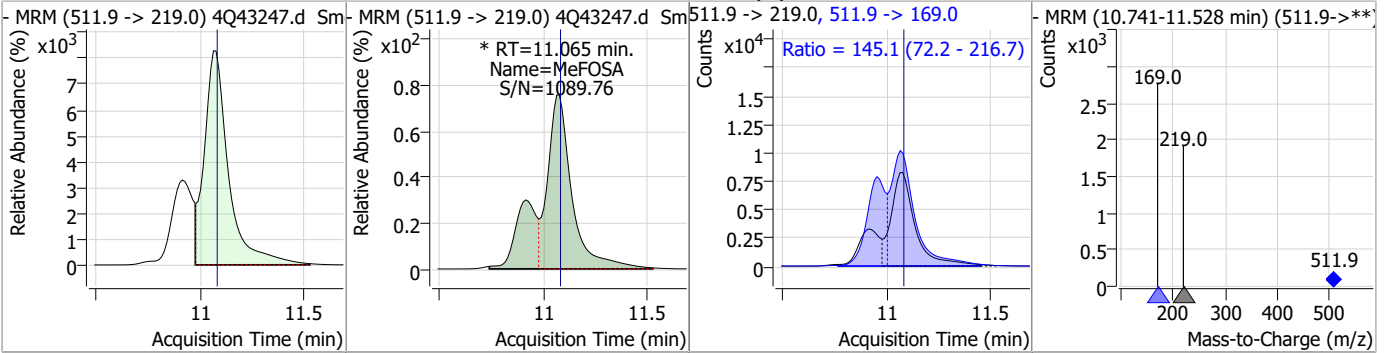
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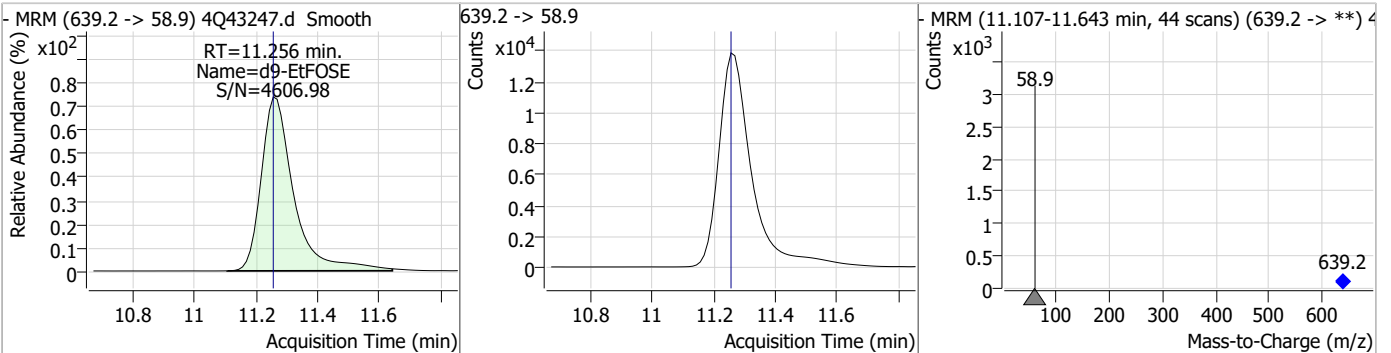


Perfluorinated Compounds by LC/MS/MS

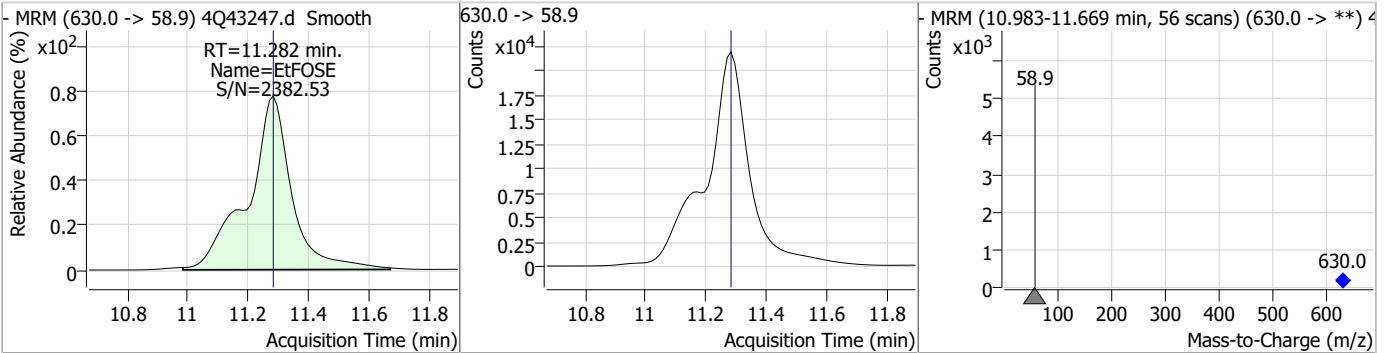
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	27.32	11.07	-0.01	89484 (m)	511.9 -> 169.0	145.1	72.2	216.7



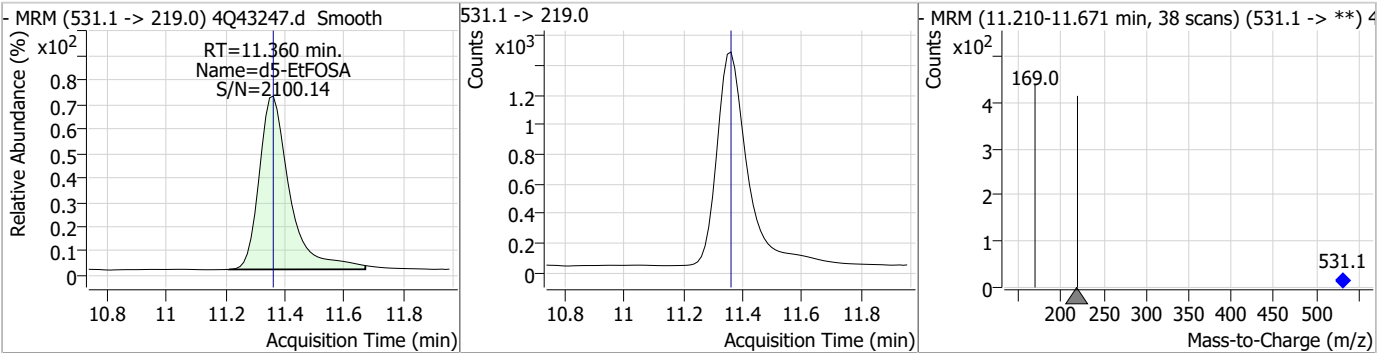
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.80	11.26	0.00	101109				



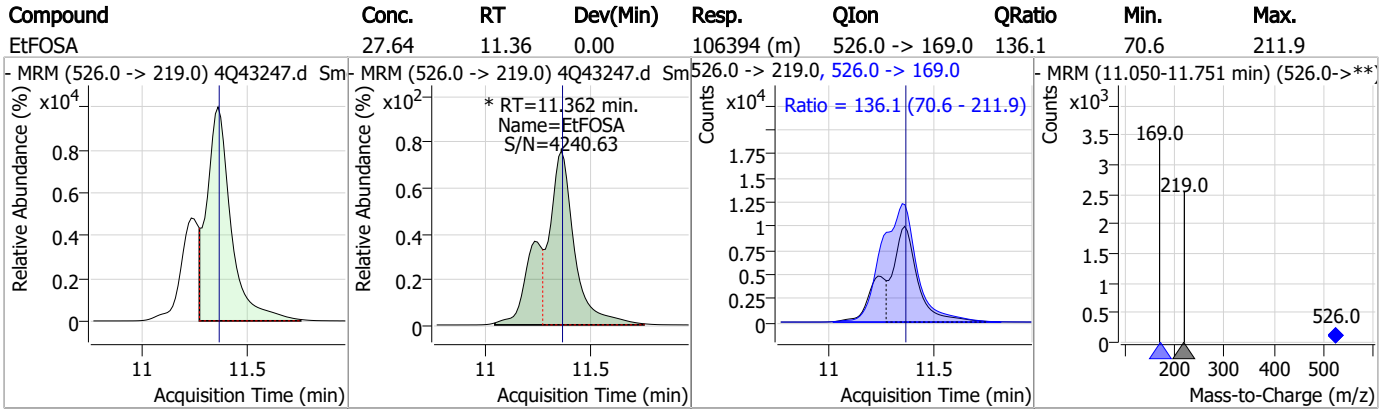
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	68.51	11.28	0.00	220860				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.50	11.36	0.00	10317				



Perfluorinated Compounds by LC/MS/MS



7.7.7

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Manual Integration Approval Summary

Sample Number: S4Q625-IC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43247.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 13:05 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 04/21/23 13:15

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43248.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 1:19:10 PM
 Sample Name : ic625-7
 Vial : P1-A8
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	108816	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	67326	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	52085	2.50 µg/L	0.012
M4-PFHpA	6.529	367.1 -> 322.0	27273	2.50 µg/L	0.012
M8-PFOA	7.188	421.1 -> 376.0	35898	2.50 µg/L	0.000
M9-PFNA	7.733	472.1 -> 427.0	19864	1.25 µg/L	0.000
M6-PFDA	8.240	519.1 -> 474.1	19435	1.25 µg/L	0.000
M7-PFUnDA	8.722	570.0 -> 525.1	20871	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	27751	1.25 µg/L	0.000
M2-PFTeDA	9.986	715.2 -> 670.0	21641	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	18534	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	10959	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	6918	2.50 µg/L	0.000
M8-PFOS	8.392	507.1 -> 79.9	10489	2.50 µg/L	0.000
M2-4:2FTS	5.273	329.1 -> 80.9	1202	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	1857	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	3570	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	16339	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	34649	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	13442	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	76089	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	98189	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	10171	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	9475	2.50 µg/L	0.012
13C4-PFOS	8.393	502.8 -> 79.9	10114	2.50 µg/L	-0.012
13C3-PFBA	2.941	216.0 -> 172.0	60733	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	5000	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	44741	2.50 µg/L	0.000
13C2-PFDA	8.241	515.1 -> 470.1	18518	1.25 µg/L	0.000
13C5-PFNA	7.734	468.0 -> 423.0	22340	1.25 µg/L	0.000
13C2-PFHxA	5.598	315.1 -> 270.0	43406	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1202	4.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.9%		
13C2-6:2FTS	6.948	429.1 -> 80.9	1857	4.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 80.4%		
13C2-8:2FTS	8.027	529.1 -> 80.9	3570	4.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.2%		
13C2-PFDoDA	9.180	615.1 -> 570.0	27751	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-PFTeDA	9.986	715.2 -> 670.0	21641	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C3-PFBS	5.502	302.1 -> 79.9	10959	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C3-PFHxS	7.291	402.1 -> 79.9	6918	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 = 96.9%	
13C4-PFBA	2.936	216.8 -> 171.9	108816	9.94 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C4-PFHpA	6.529	367.1 -> 322.0	27273	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFHxA	5.597	318.0 -> 273.0	52085	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C5-PFPeA	4.412	268.3 -> 223.0	67326	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C6-PFDA	8.240	519.1 -> 474.1	19435	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C7-PFUnDA	8.722	570.0 -> 525.1	20871	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C8-FOSA	9.783	506.1 -> 77.8	18534	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOA	7.188	421.1 -> 376.0	35898	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C8-PFOS	8.392	507.1 -> 79.9	10489	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C9-PFNA	7.733	472.1 -> 427.0	19864	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.8%	
d3-MeFOSAA	8.298	573.2 -> 419.0	16339	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	34649	10.52 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.2%	
d3-MeFOSA	11.076	515.0 -> 219.0	9475	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
d5-EtFOSAA	8.507	589.2 -> 419.0	13442	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.3%	
d7-MeFOSE	10.959	623.2 -> 58.9	76089	24.52 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d9-EtFOSE	11.269	639.2 -> 58.9	98189	24.71 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
d5-EtFOSA	11.360	531.1 -> 219.0	10171	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	165202	107.41 µg/L	95
		327.1 -> 80.9	68520		
6:2FTS	6.949	427.1 -> 407.0	148786	104.83 µg/L	95
		427.1 -> 80.9	61676		
8:2FTS	8.028	527.1 -> 507.0	185029	105.15 µg/L	96
		527.1 -> 80.8	70546		
EtFOSAA	8.508	584.2 -> 419.1	57346	29.88 µg/L	m 92
		584.2 -> 526.0	27264		
FOSA	9.774	498.1 -> 77.9	170141	27.15 µg/L	100
		498.1 -> 478.0	4756		
MeFOSAA	8.299	570.1 -> 419.0	64258	27.56 µg/L	m 95
		570.1 -> 483.0	13057		
PFBA	2.932	212.8 -> 168.9	274660	108.79 µg/L	100
PFBS	5.503	298.7 -> 79.9	106656	24.60 µg/L	97
		298.7 -> 98.8	40740		
PFDA	8.241	512.9 -> 469.0	332129	27.85 µg/L	99
		512.9 -> 219.0	66190		
PFDoDA	9.181	613.1 -> 569.0	481182	26.35 µg/L	98
		613.1 -> 319.0	68501		
PFDS	9.344	599.0 -> 79.9	61411	25.05 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	30721			
PFHpA	6.530	363.1 -> 319.0	392402	27.37	µg/L	99
		363.1 -> 169.0	69703			
PFHpS	7.873	449.0 -> 79.9	74201	24.59	µg/L	98
		449.0 -> 98.9	38256			
PFHxA	5.587	313.0 -> 269.0	448104	27.31	µg/L	99
		313.0 -> 118.9	13312			
PFHxS	7.292	398.7 -> 79.9	63234	24.96	µg/L	m 96
		398.7 -> 98.9	32569			
PFNA	7.747	463.0 -> 419.0	311563	27.54	µg/L	98
		463.0 -> 219.0	76927			
PFNS	8.886	548.8 -> 79.9	47507	25.57	µg/L	93
		548.8 -> 98.9	24438			
PFOA	7.189	413.0 -> 369.0	466865	29.20	µg/L	99
		413.0 -> 169.0	95785			
PFOS	8.394	498.9 -> 79.9	96621	24.02	µg/L	m 98
		498.9 -> 98.8	48125			
PFPeA	4.414	263.0 -> 219.0	733870	54.57	µg/L	100
PFPeS	6.569	349.1 -> 79.9	57815	26.42	µg/L	99
		349.1 -> 98.9	25633			
PFTeDA	9.987	713.1 -> 669.0	474301	26.97	µg/L	100
		713.1 -> 168.9	39878			
PFTrDA	9.604	663.0 -> 619.0	582051	25.61	µg/L	99
		663.0 -> 168.9	56983			
PFUnDA	8.722	563.1 -> 519.0	323933	27.43	µg/L	97
		563.1 -> 269.1	61746			
11Cl-PF3OUdS	9.643	630.9 -> 450.9	477438	47.83	µg/L	100
		632.9 -> 452.9	148165			
9Cl-PF3ONS	8.749	530.8 -> 351.0	535821	49.98	µg/L	99
		532.8 -> 353.0	161700			
ADONA	6.781	376.9 -> 250.9	1225443	49.21	µg/L	98
		376.9 -> 84.8	332492			
HFPO-DA	5.953	284.9 -> 168.9	146313	53.46	µg/L	98
		284.9 -> 184.9	17370			
3:3FTCA	3.867	241.0 -> 177.0	87219	136.23	µg/L	100
		241.0 -> 117.0	7967			
5:3FTCA	6.231	341.0 -> 237.1	1657272	677.55	µg/L	100
		341.0 -> 217.0	1188393			
7:3FTCA	7.686	441.0 -> 316.9	794079	665.31	µg/L	100
		441.0 -> 336.9	1769009			
EtFOSA	11.362	526.0 -> 219.0	206213	54.33	µg/L	m 96
		526.0 -> 169.0	281675			
EtFOSE	11.282	630.0 -> 58.9	414882	132.51	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	173614	54.79	µg/L	m 99
		511.9 -> 169.0	253694			
MeFOSE	10.985	616.1 -> 58.9	371417	137.27	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	56914	25.56	µg/L	98
		699.1 -> 98.8	31502			
NFDHA	5.479	295.0 -> 201.0	45094	50.74	µg/L	97
		295.0 -> 84.9	11961			
PFMBA	4.828	279.0 -> 85.1	415593	54.12	µg/L	100
PFMPA	3.553	229.0 -> 84.9	372228	54.55	µg/L	100
PFEESA	6.034	314.8 -> 134.9	656788	48.79	µg/L	99
		314.8 -> 82.9	21389			

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

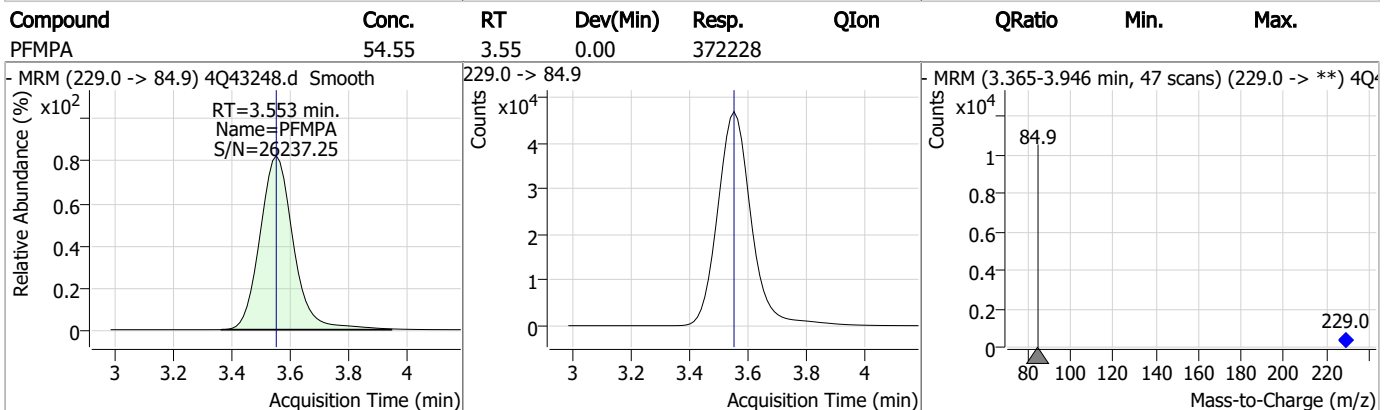
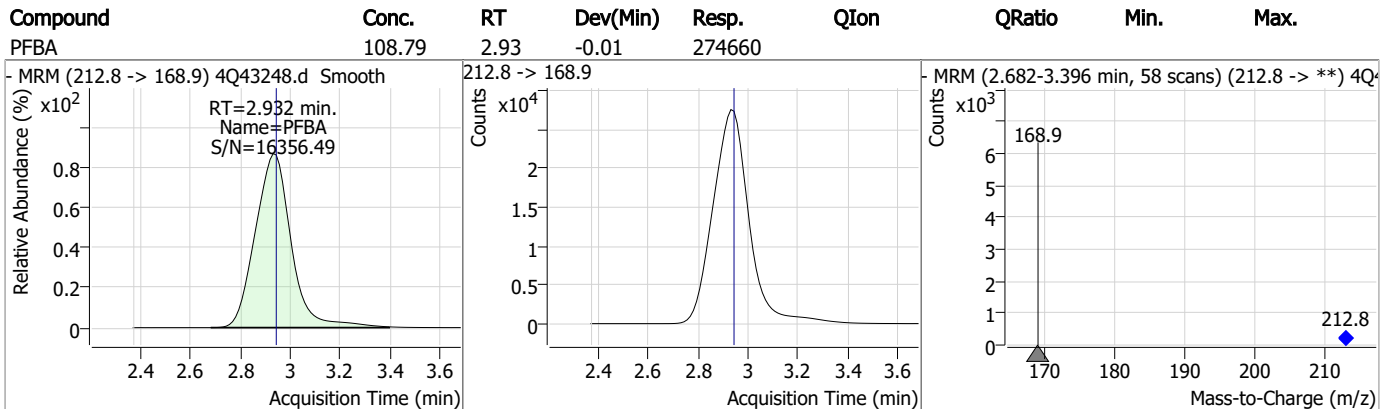
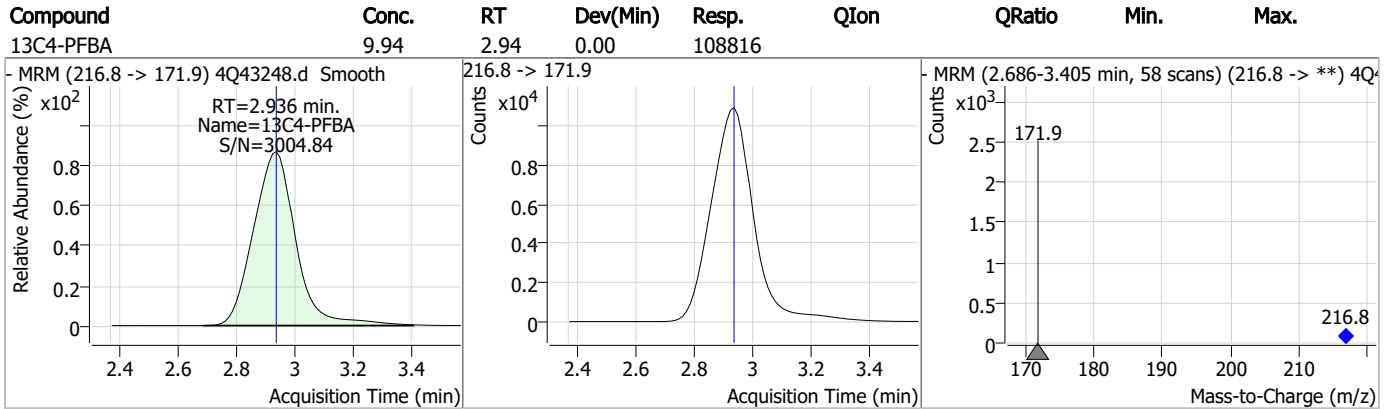
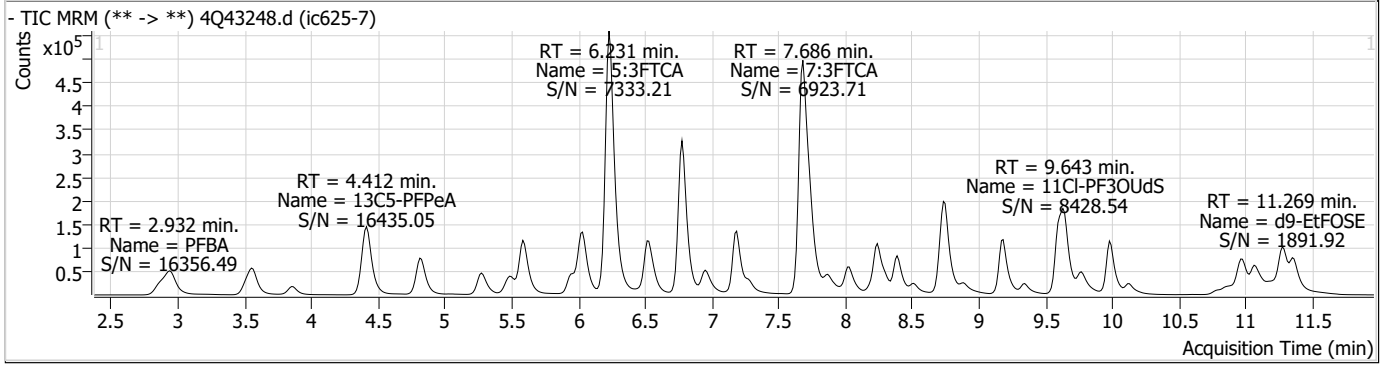
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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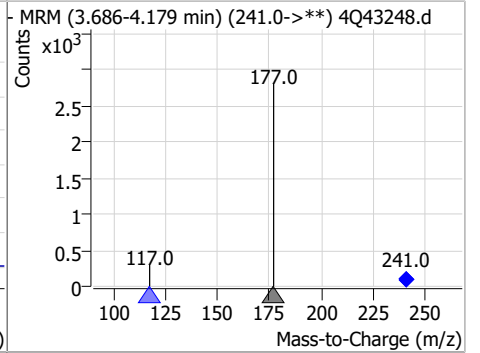
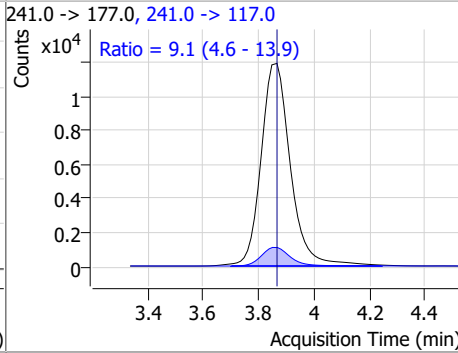
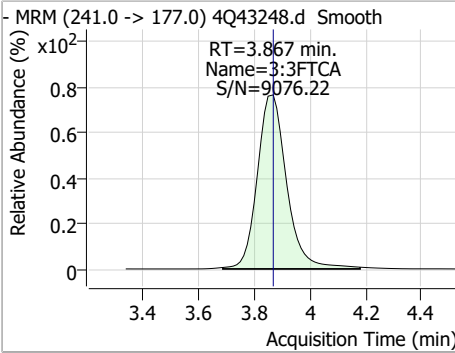


Perfluorinated Compounds by LC/MS/MS

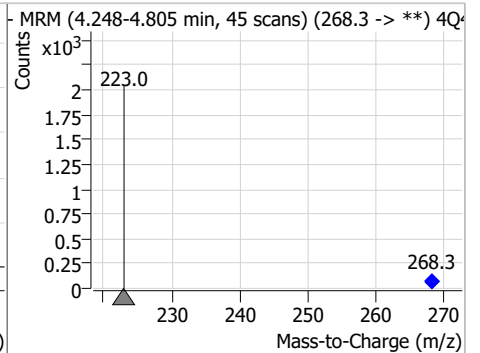
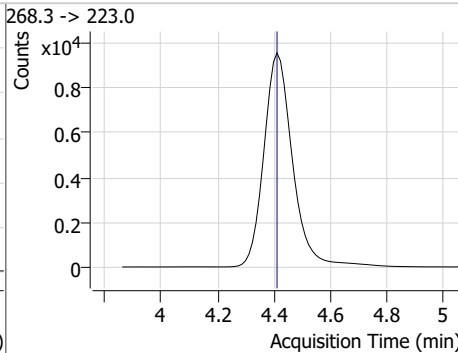
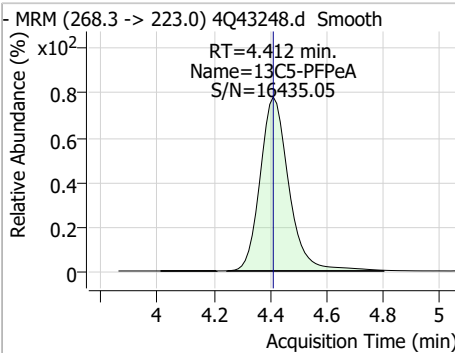


Perfluorinated Compounds by LC/MS/MS

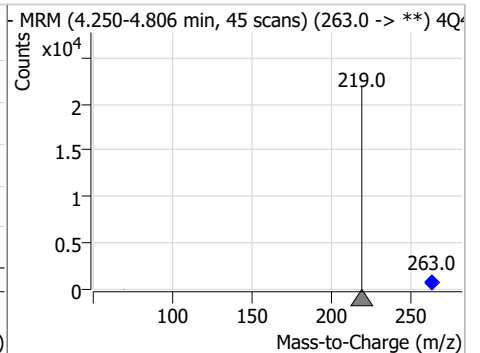
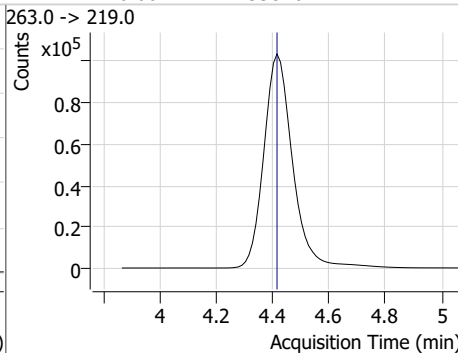
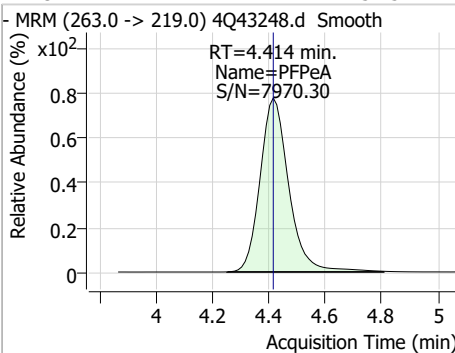
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	136.23	3.87	0.00	87219	241.0 -> 117.0	9.1	4.6	13.9



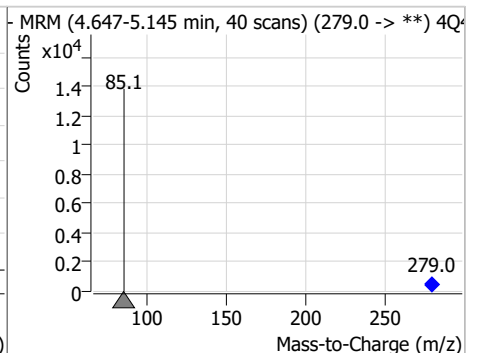
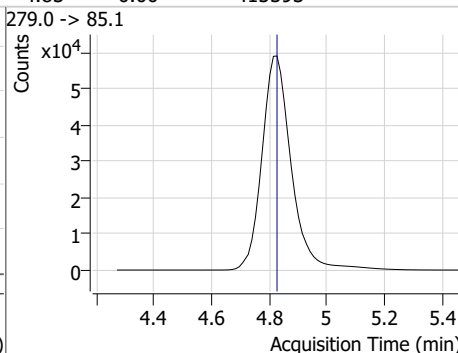
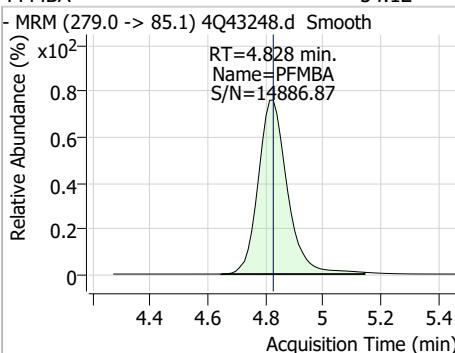
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.07	4.41	0.00	67326				



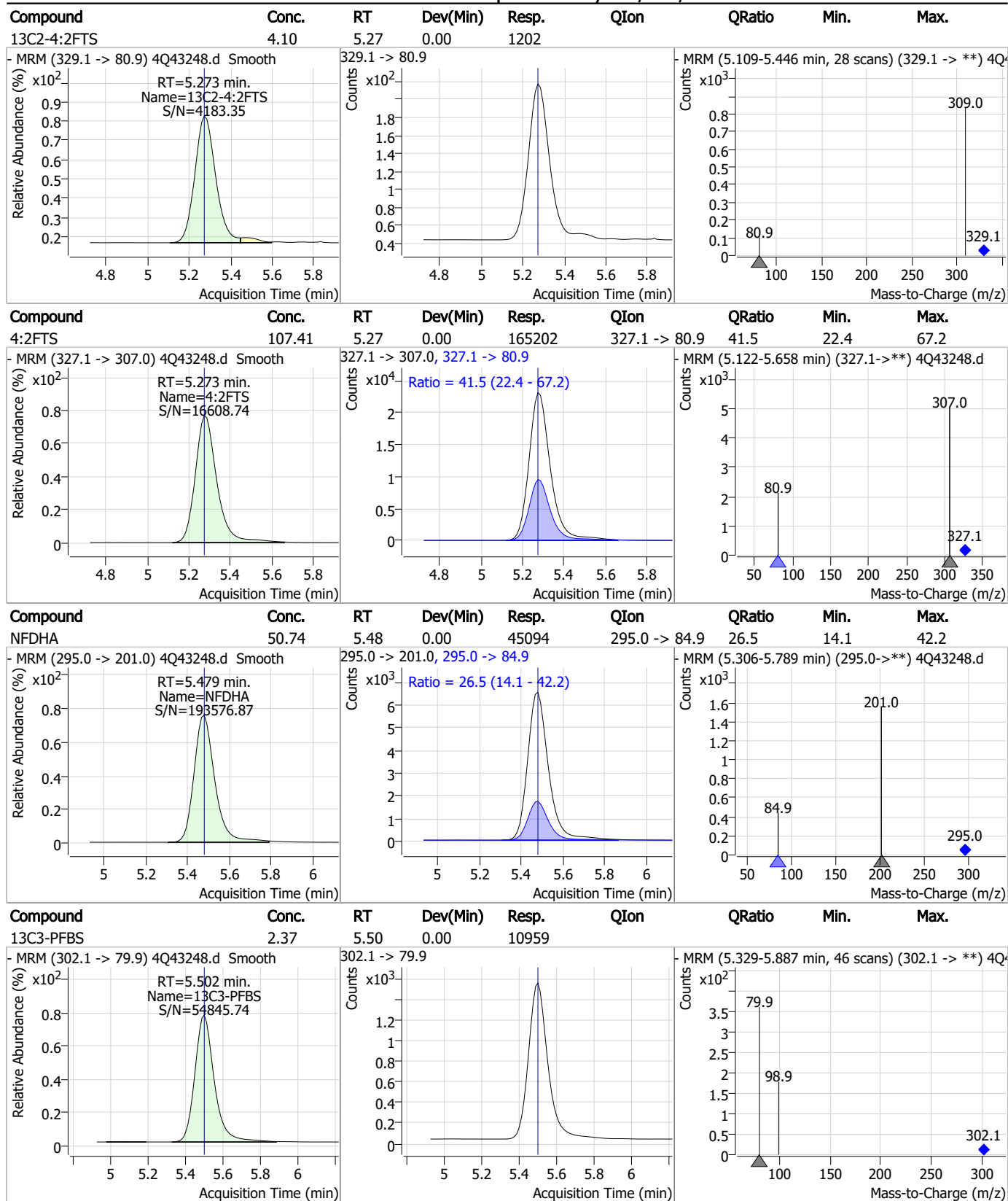
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	54.57	4.41	0.00	733870				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	54.12	4.83	0.00	415593				



Perfluorinated Compounds by LC/MS/MS

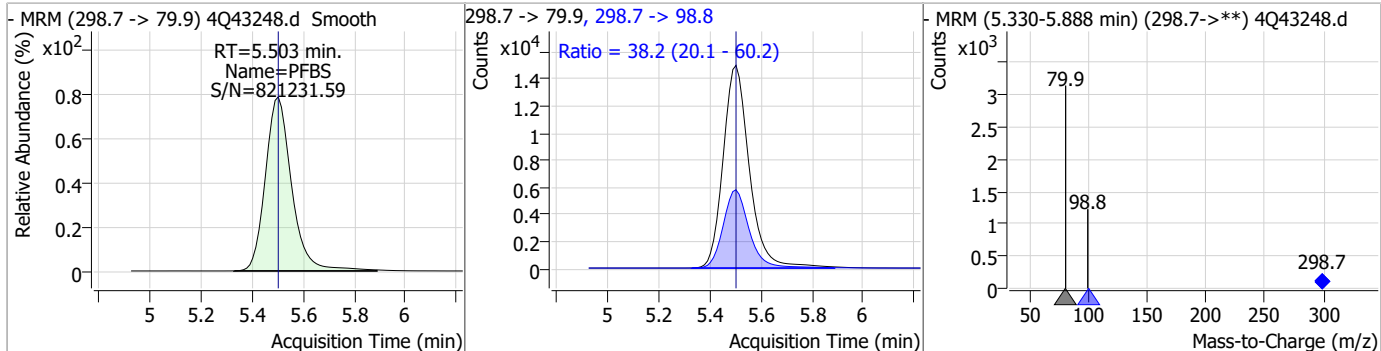


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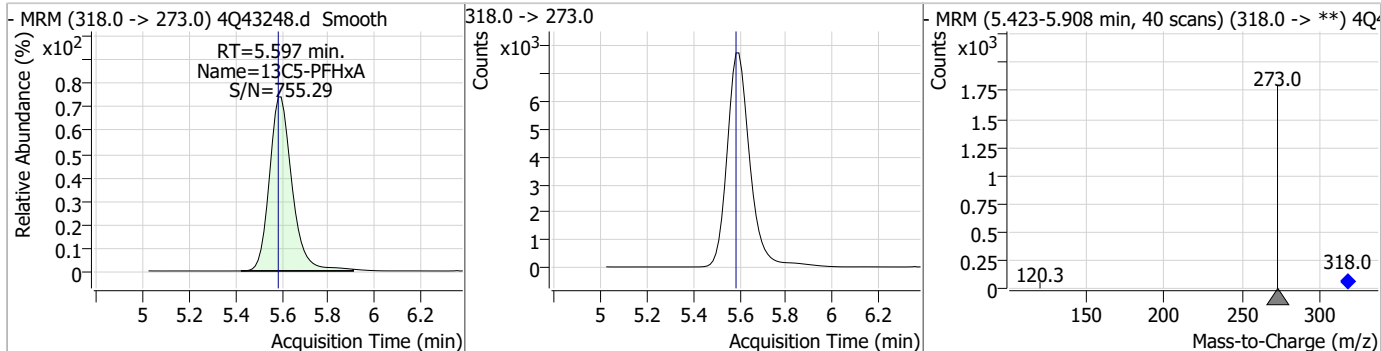
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Perfluorinated Compounds by LC/MS/MS

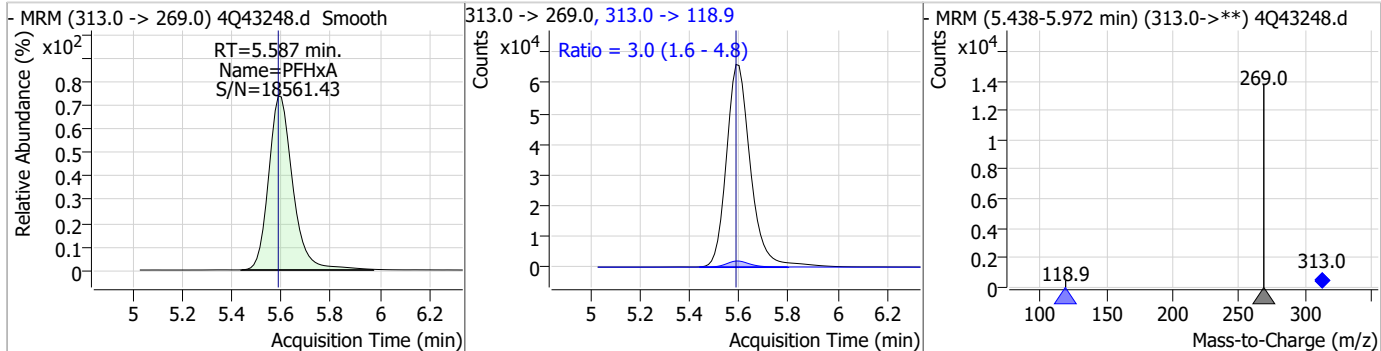
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	24.60	5.50	0.00	106656	298.7 -> 98.8	38.2	20.1	60.2



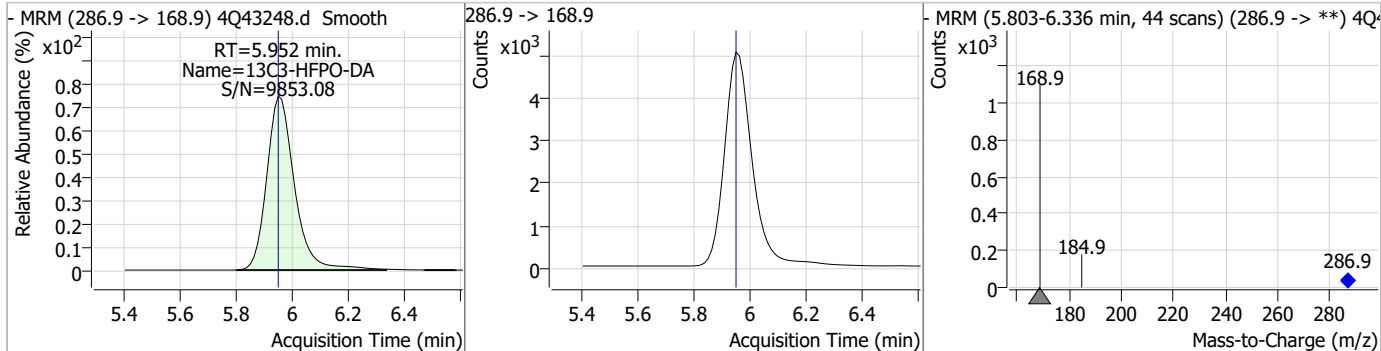
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.60	0.01	52085				



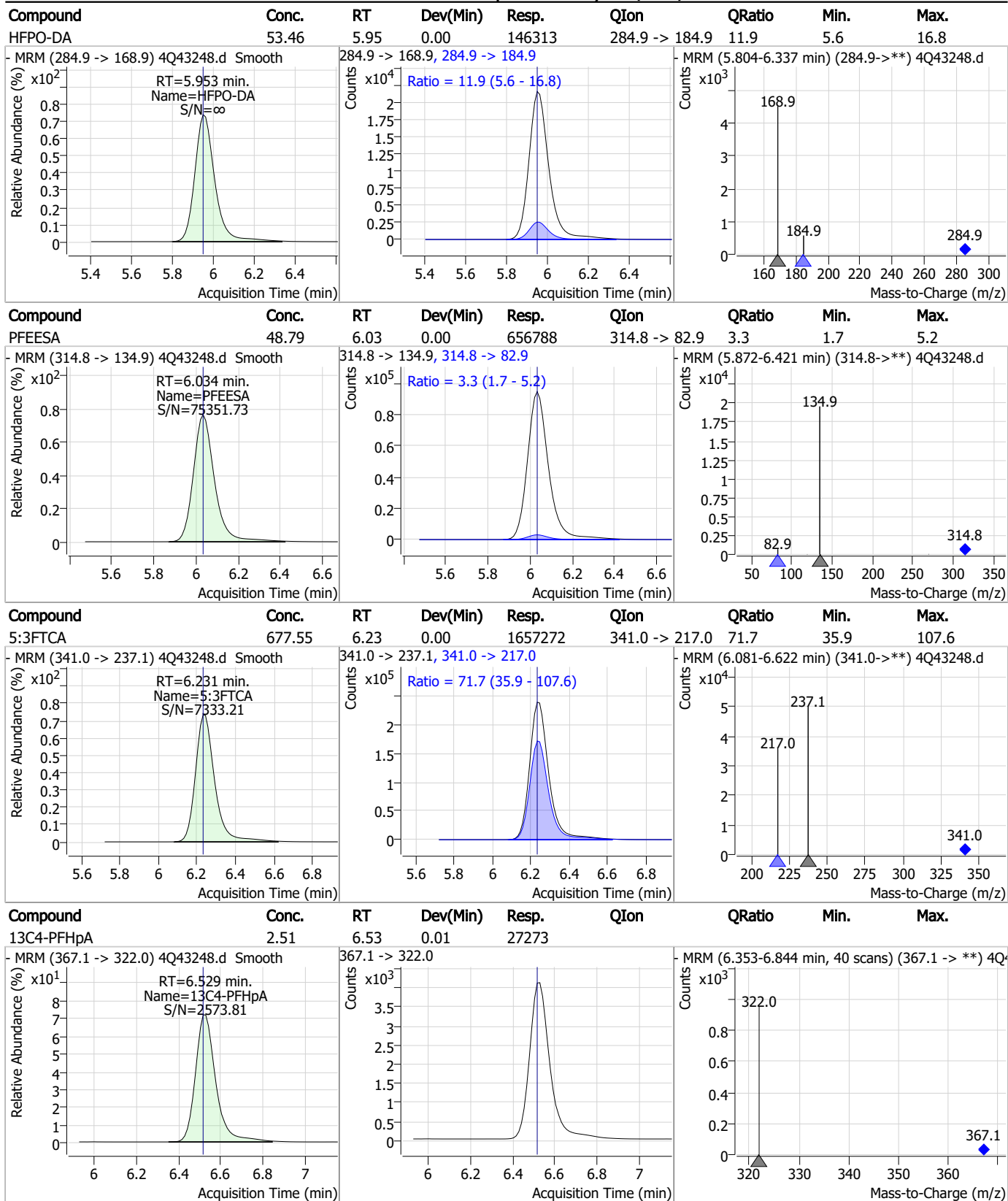
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	27.31	5.59	0.00	448104	313.0 -> 118.9	3.0	1.6	4.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.52	5.95	0.00	34649				

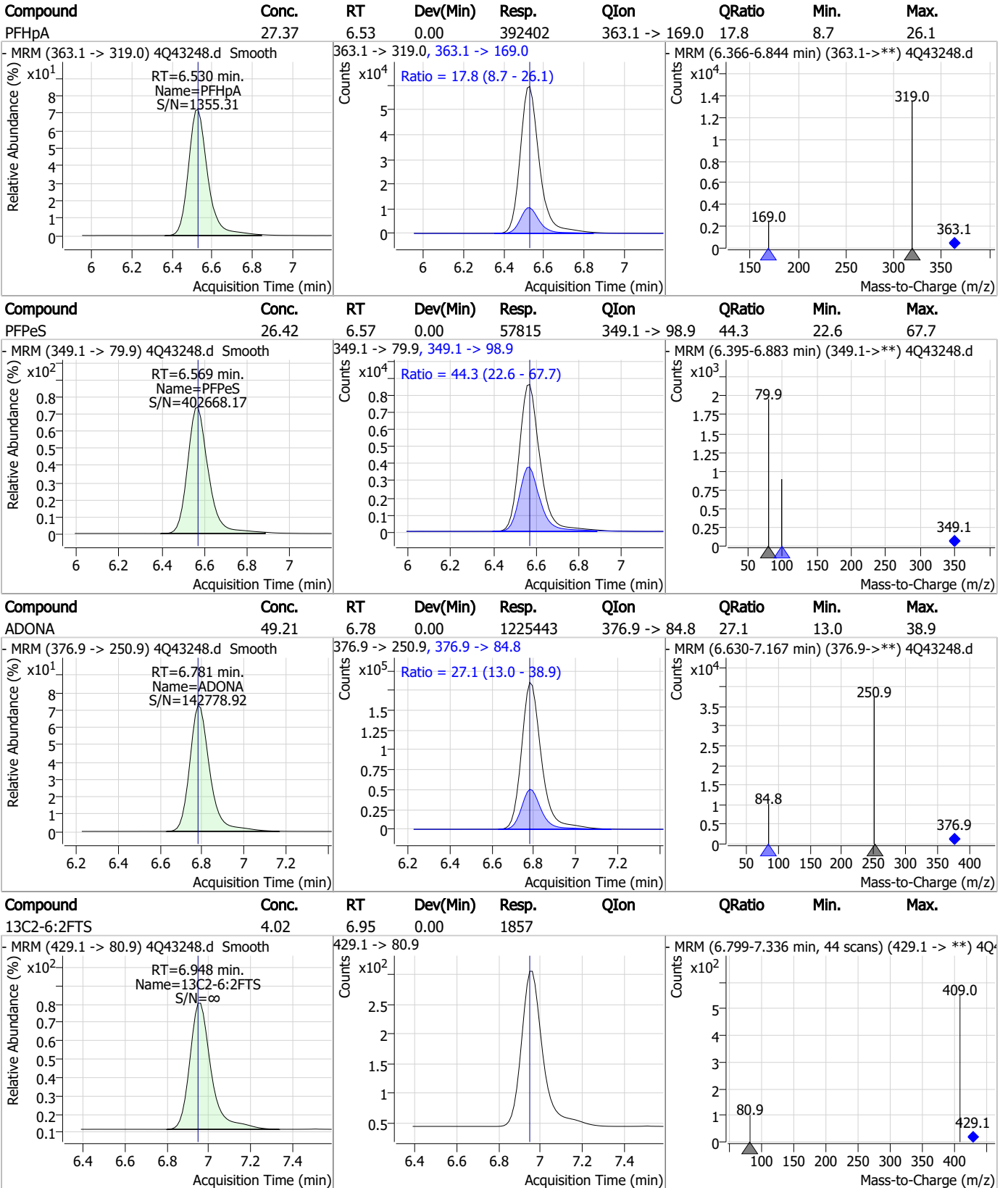


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

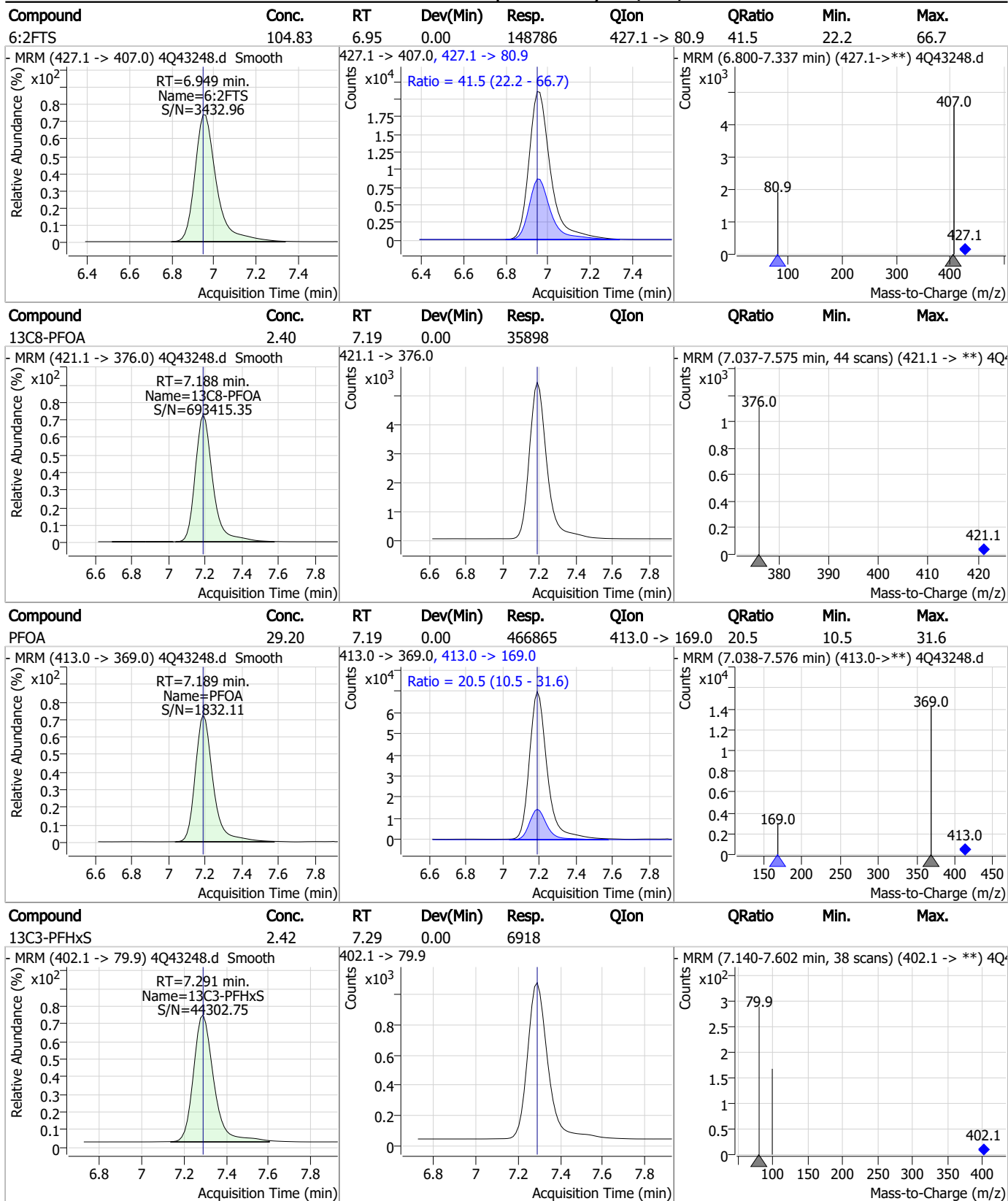


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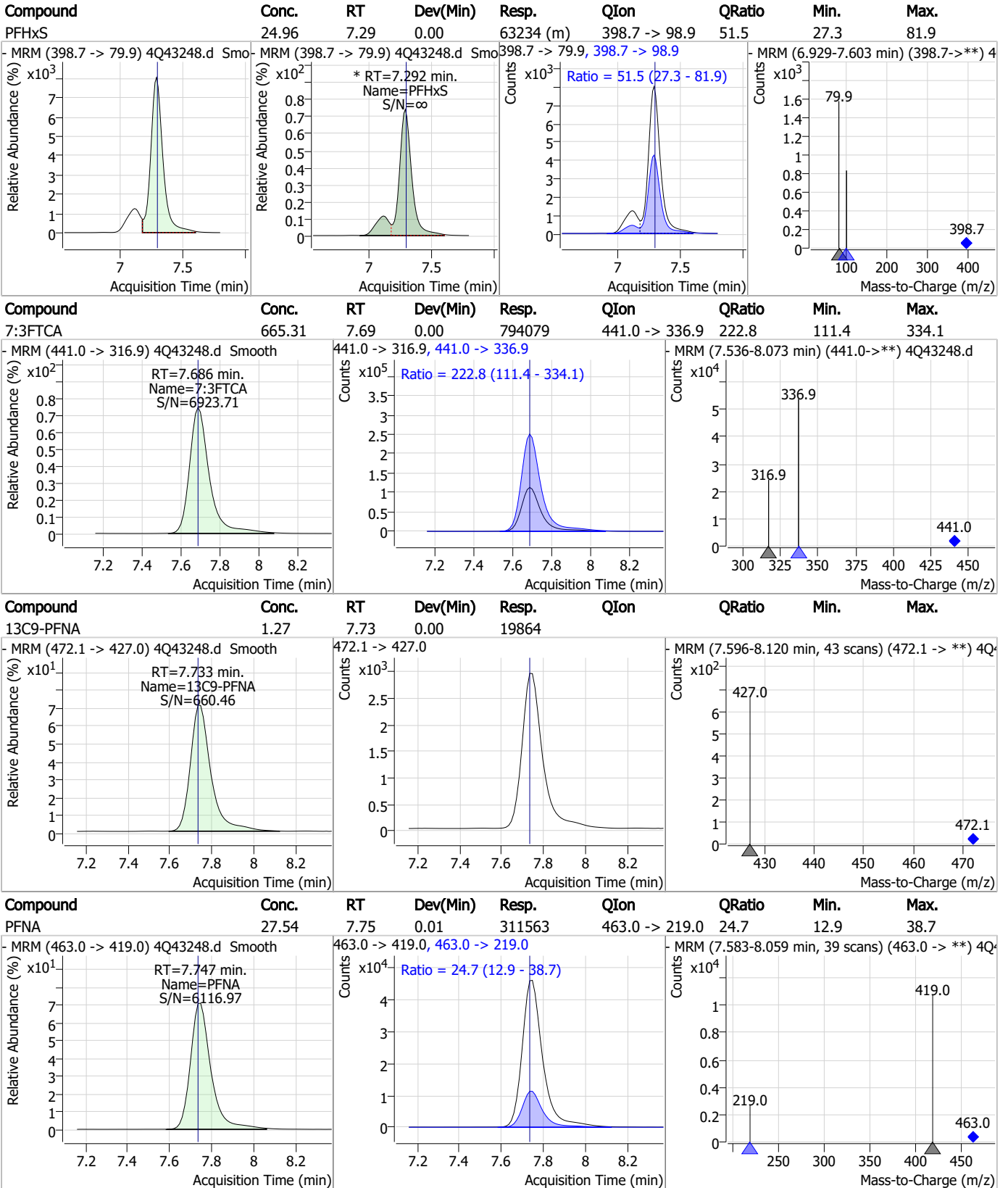
Perfluorinated Compounds by LC/MS/MS



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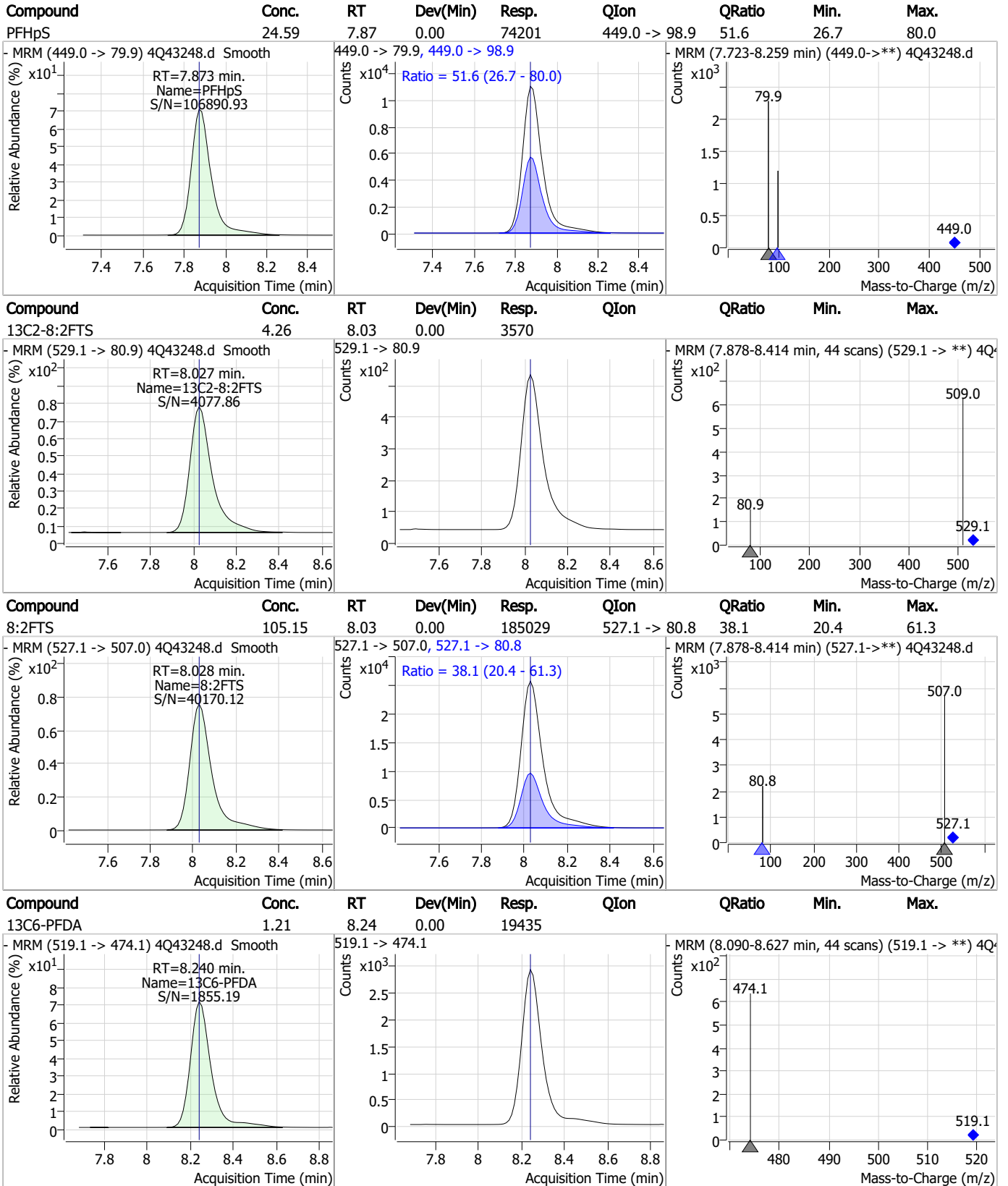
Perfluorinated Compounds by LC/MS/MS



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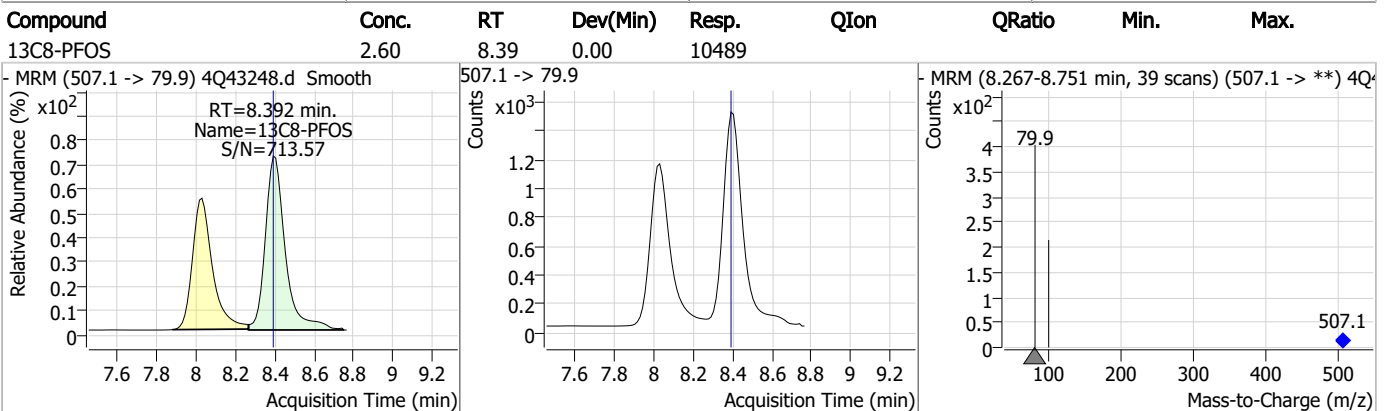
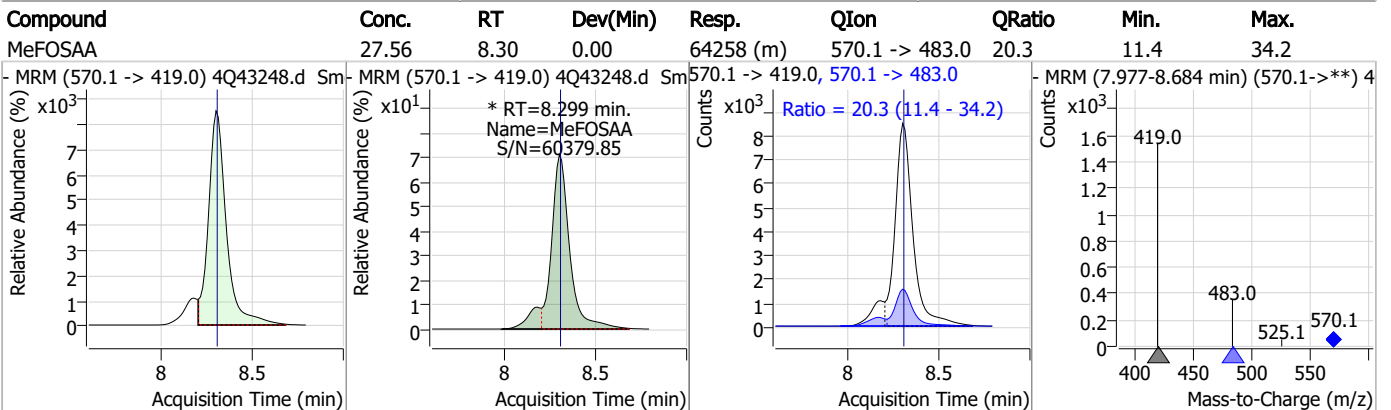
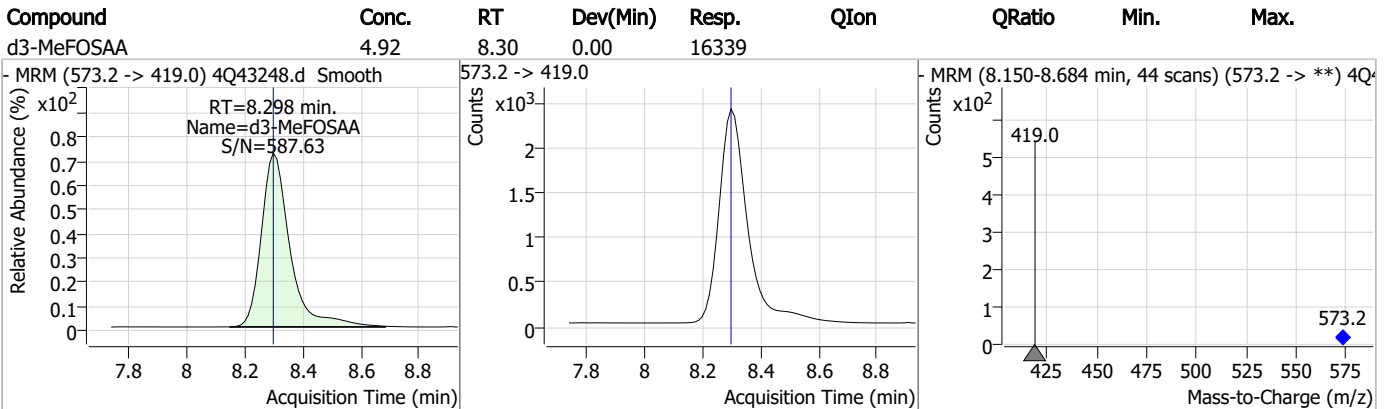
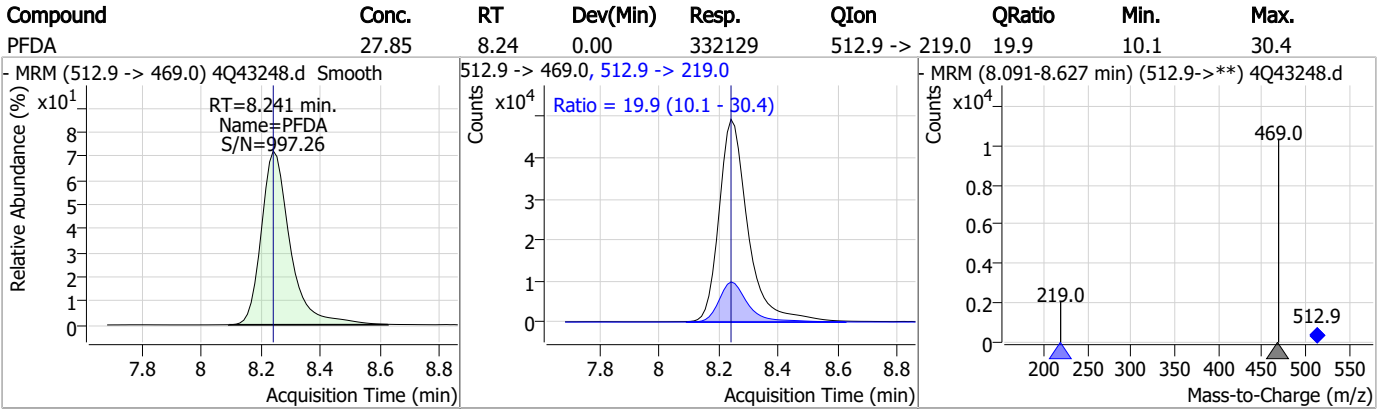
Perfluorinated Compounds by LC/MS/MS



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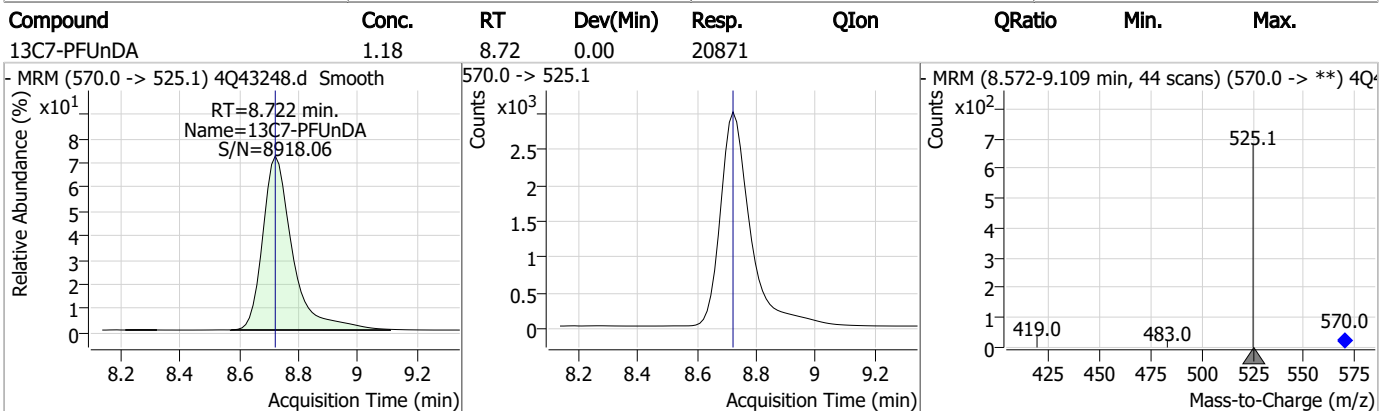
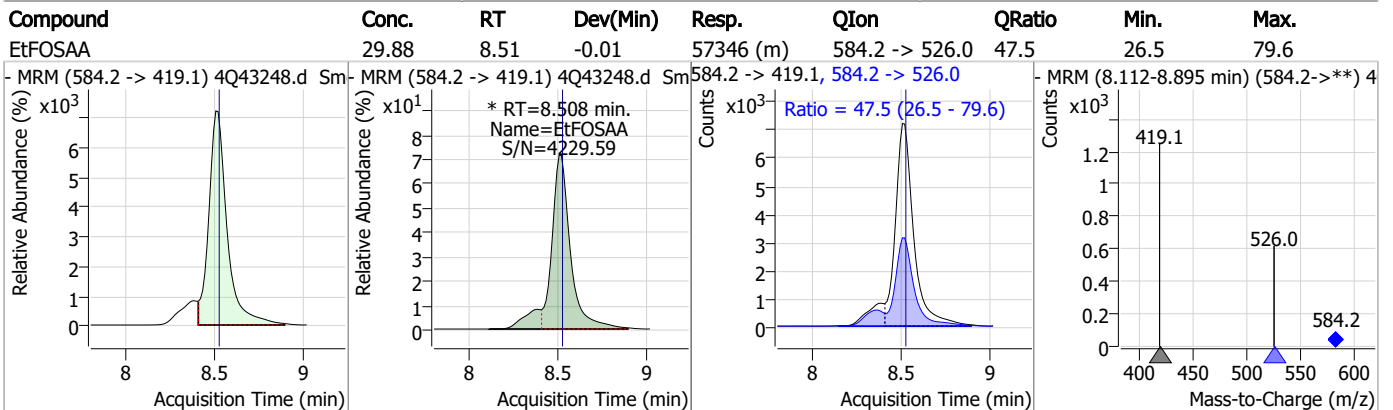
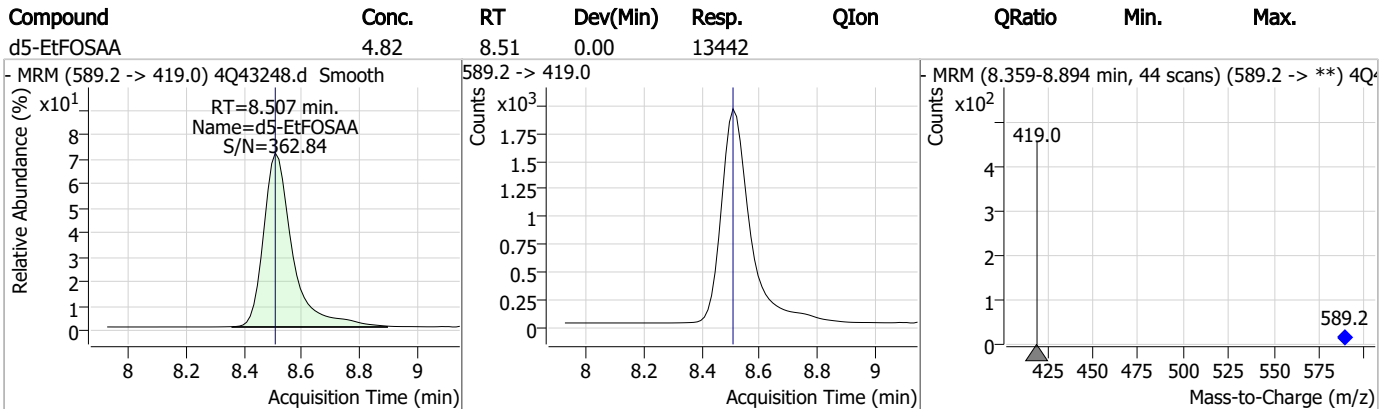
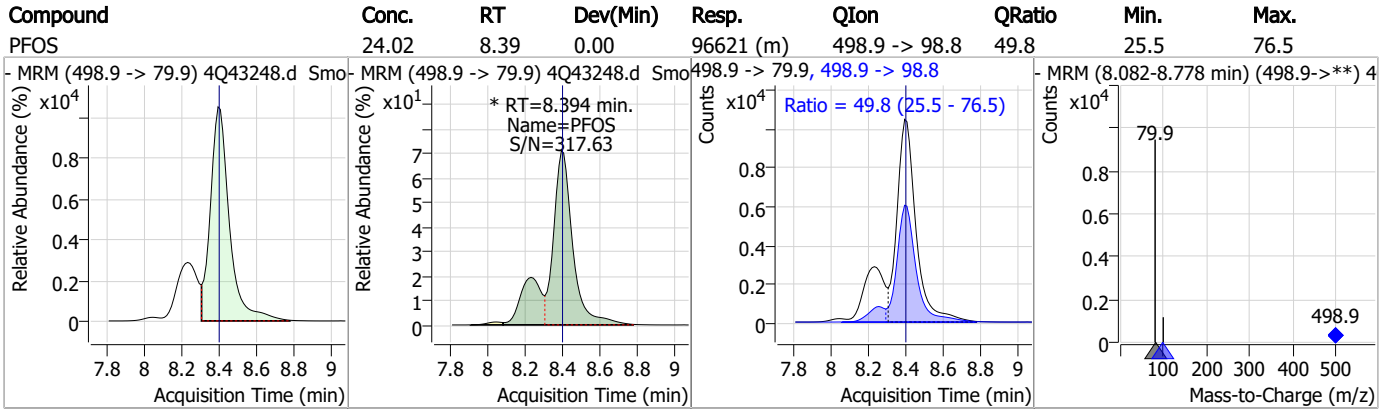
Perfluorinated Compounds by LC/MS/MS



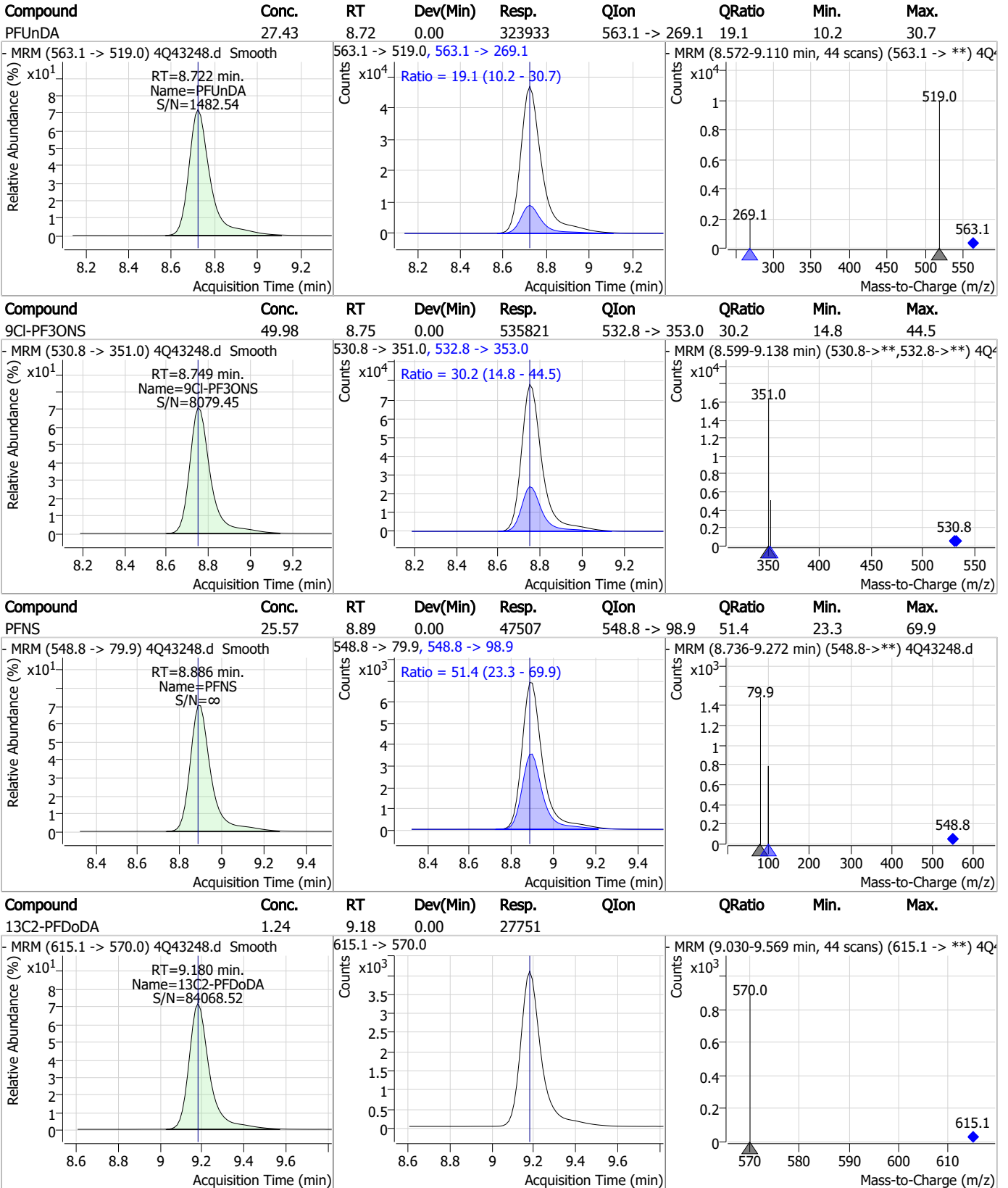
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Perfluorinated Compounds by LC/MS/MS



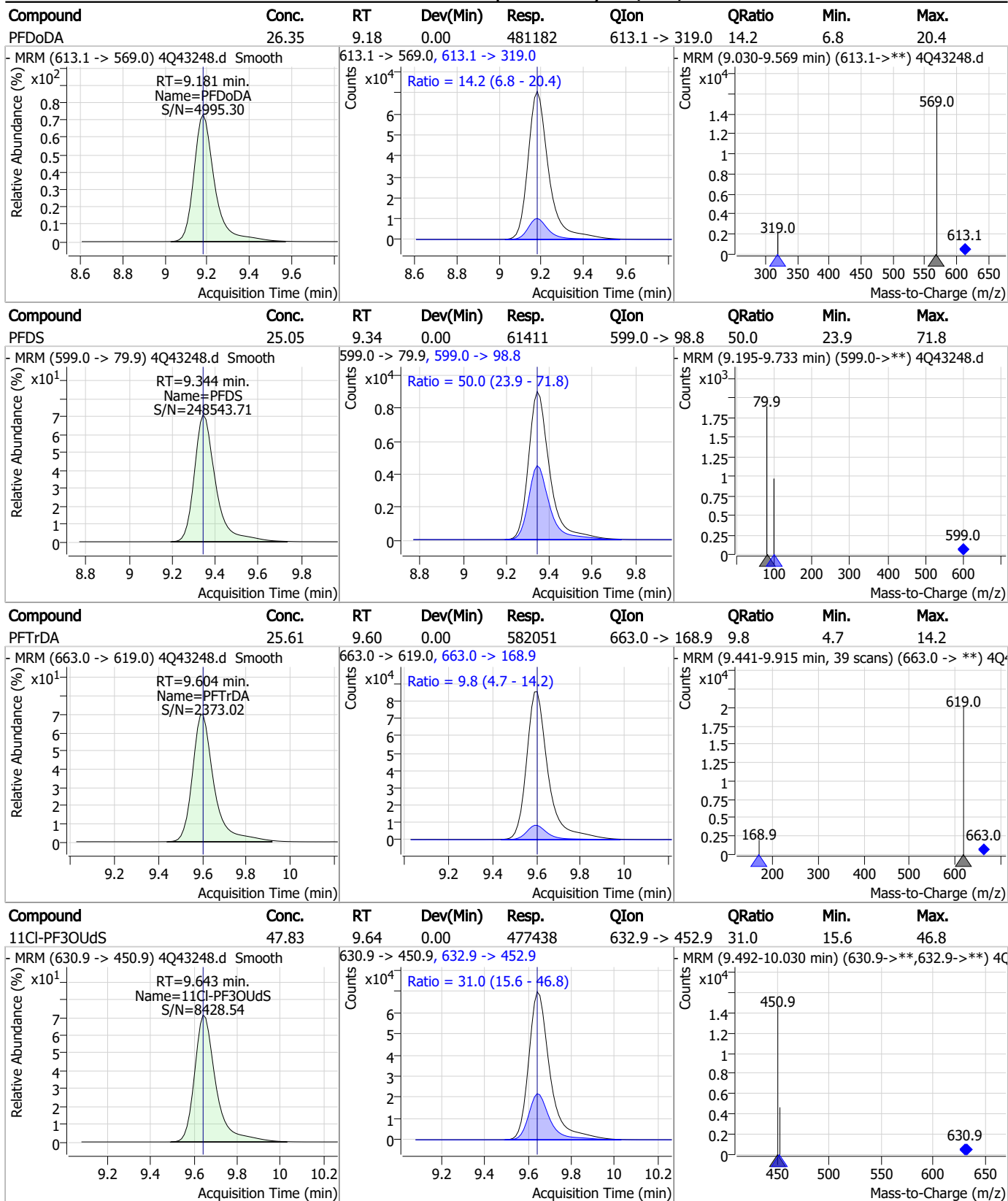
Perfluorinated Compounds by LC/MS/MS



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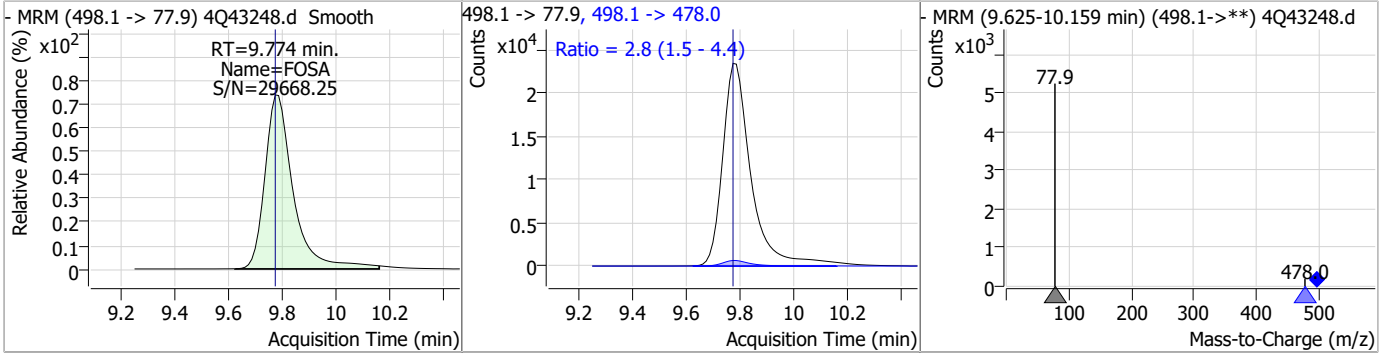
Perfluorinated Compounds by LC/MS/MS



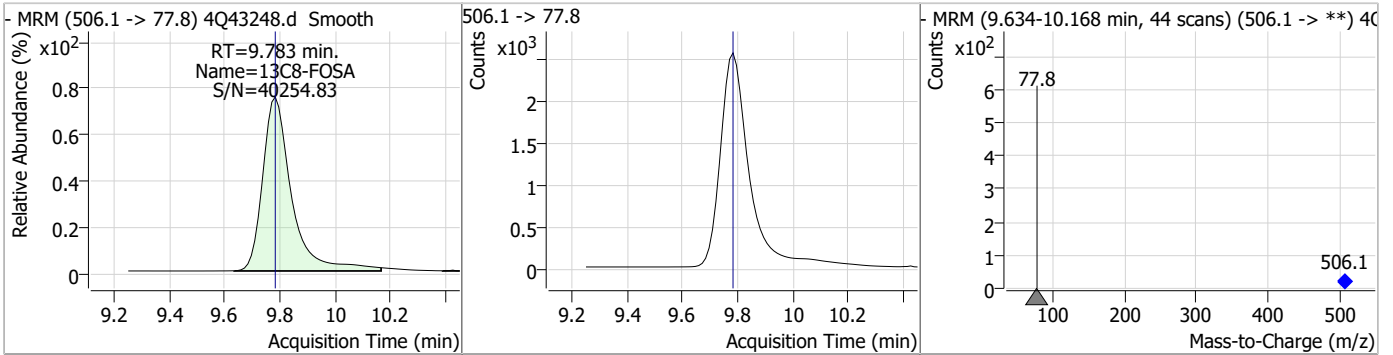
7.7.8
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Perfluorinated Compounds by LC/MS/MS

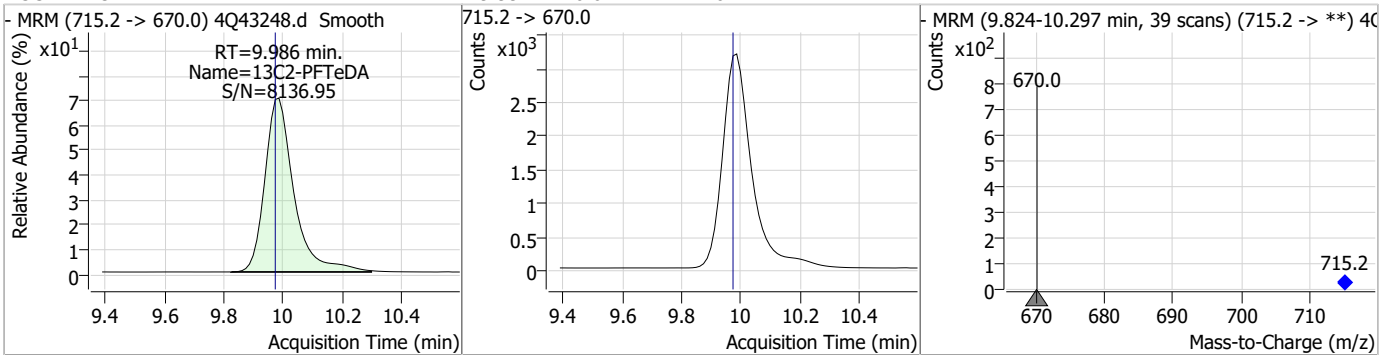
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	27.15	9.77	0.00	170141	498.1 -> 478.0	2.8	1.5	4.4



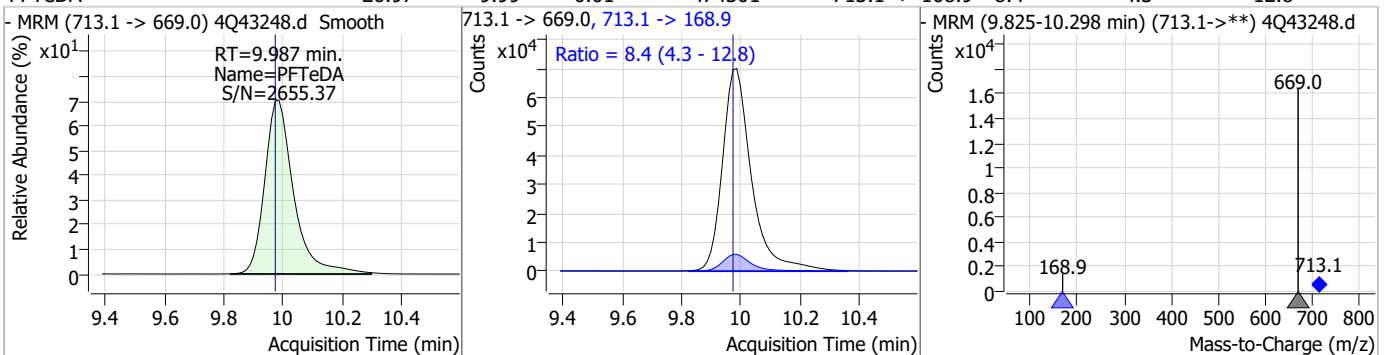
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
¹³ C8-FOSA	2.53	9.78	0.00	18534				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
¹³ C2-PFTeDA	1.22	9.99	0.01	21641				

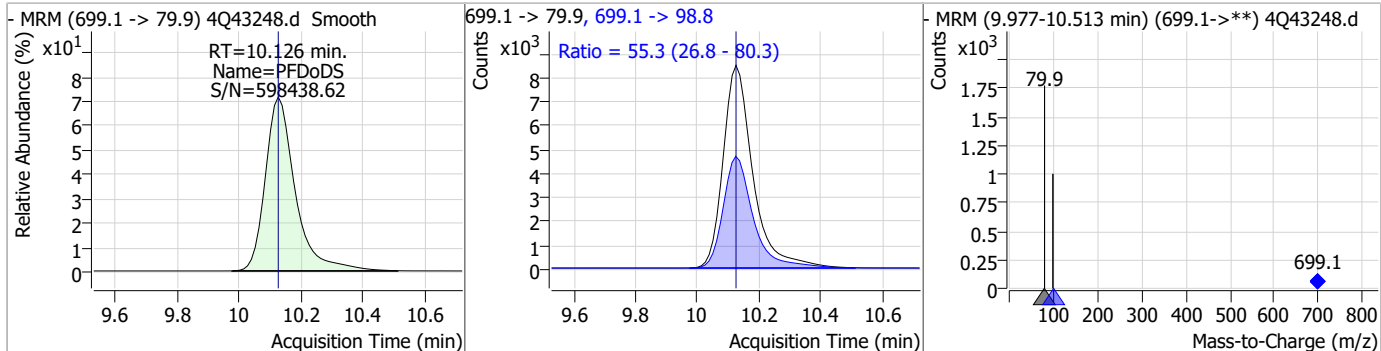


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	26.97	9.99	0.01	474301	713.1 -> 168.9	8.4	4.3	12.8

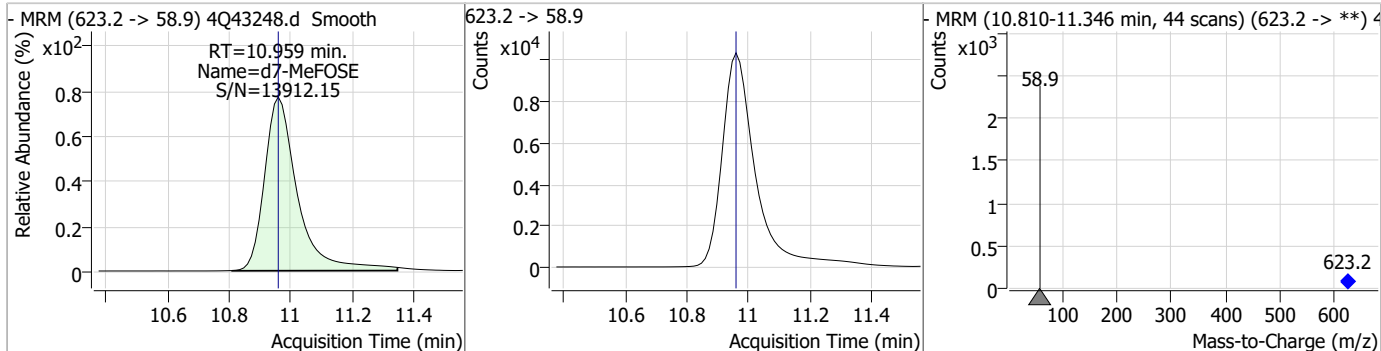


Perfluorinated Compounds by LC/MS/MS

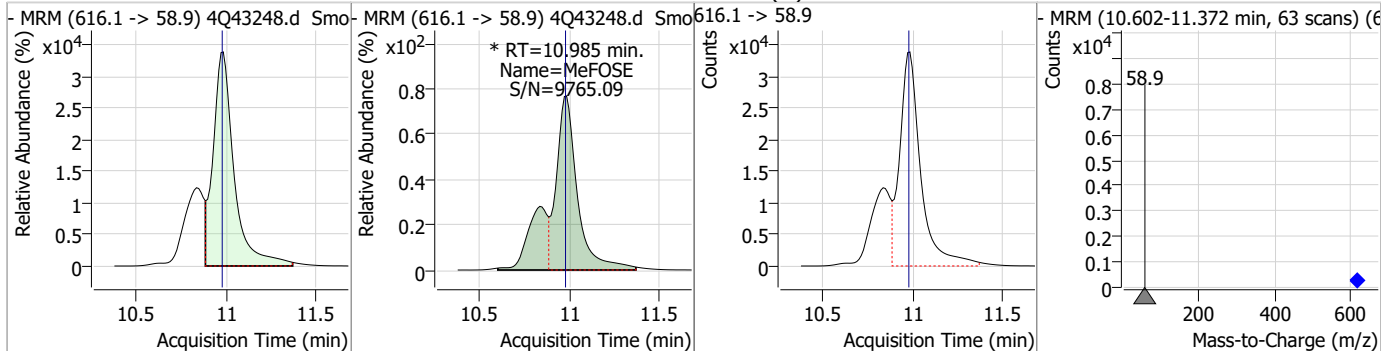
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	25.56	10.13	0.00	56914	699.1 -> 98.8	55.3	26.8	80.3



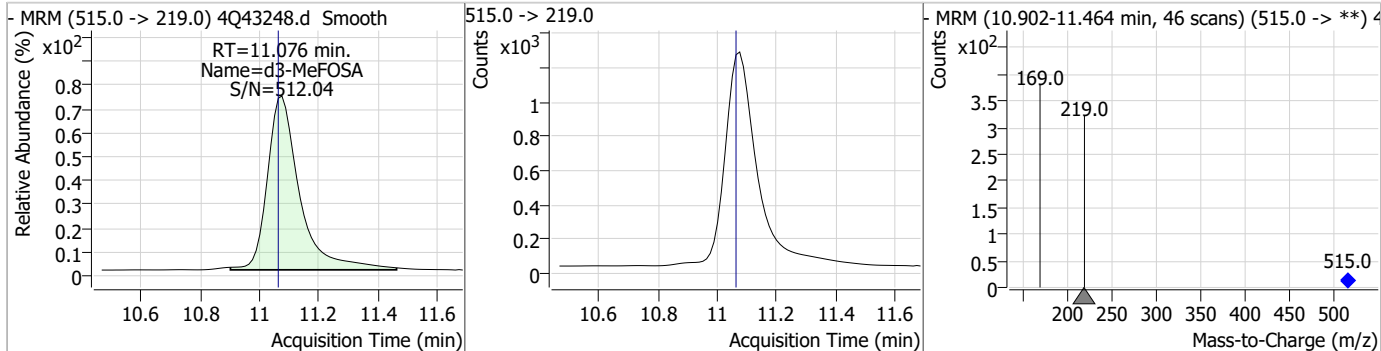
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.52	10.96	0.00	76089				



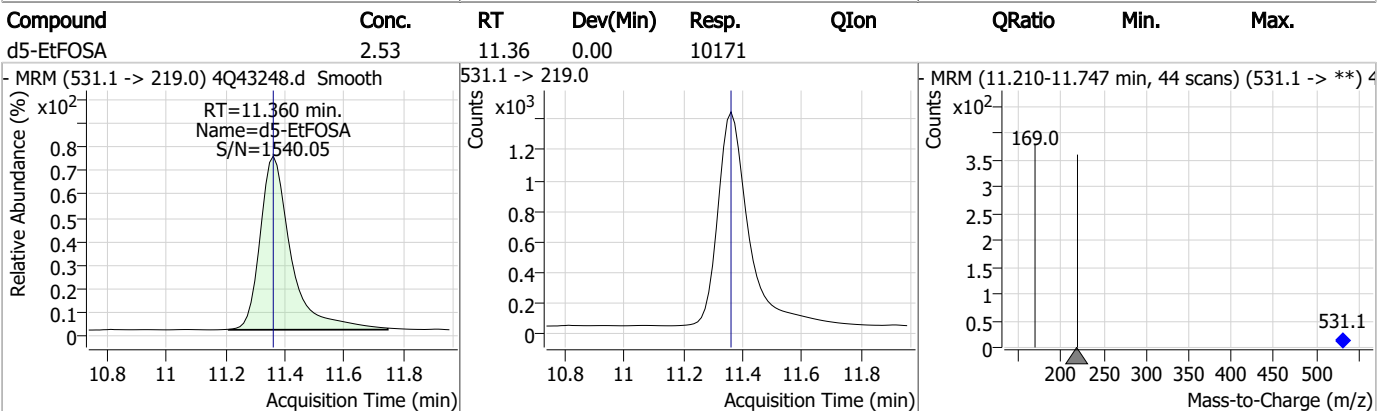
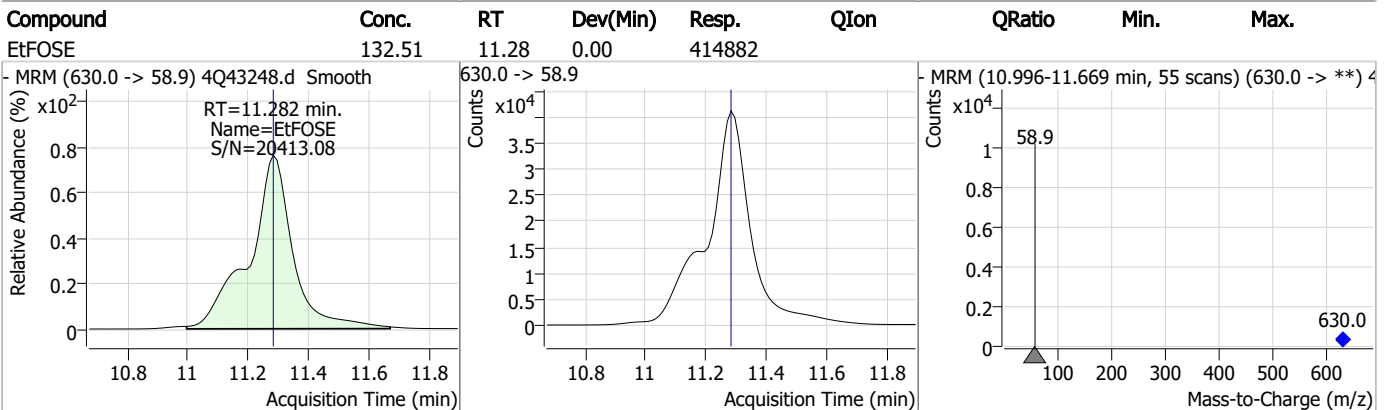
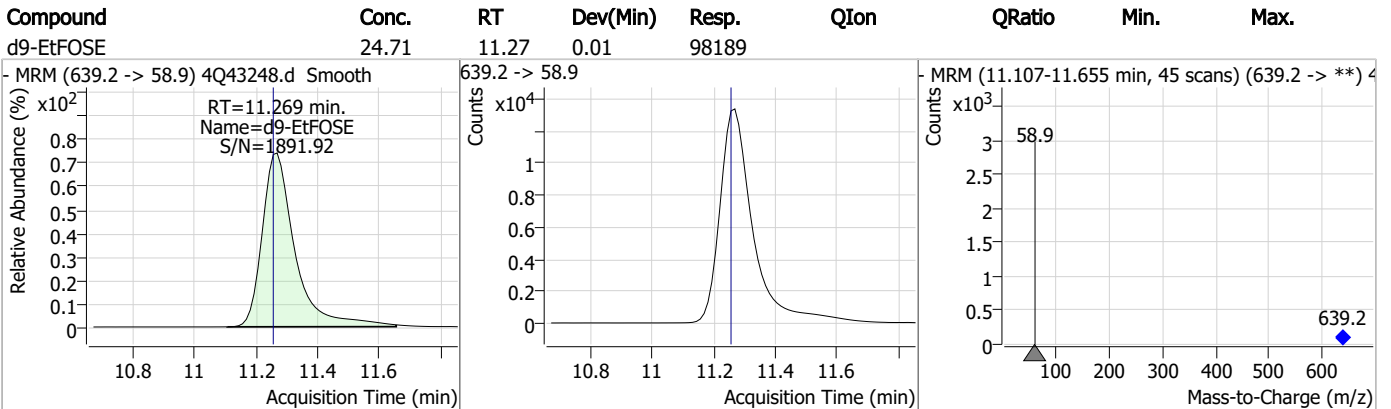
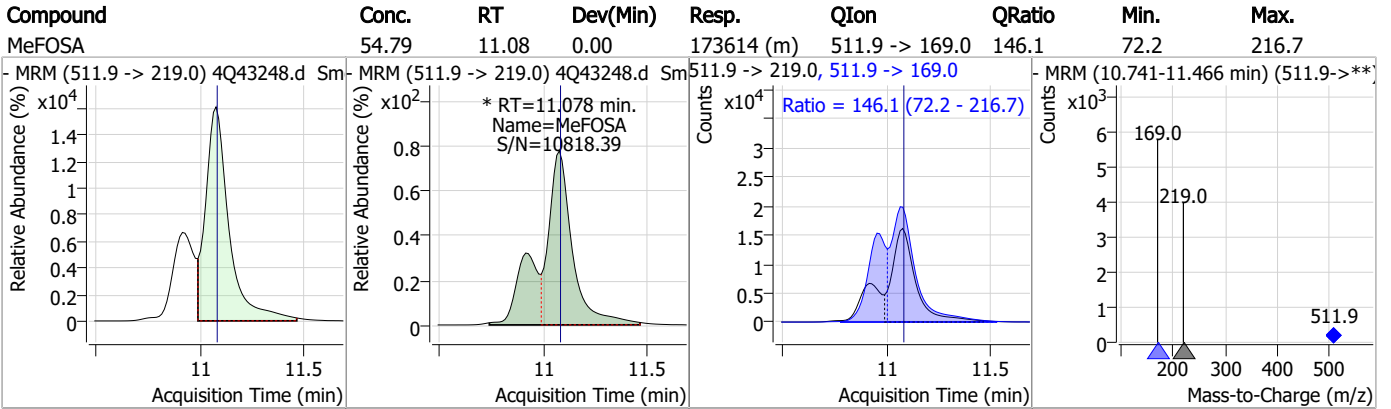
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	137.27	10.99	0.01	371417 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.50	11.08	0.01	9475				



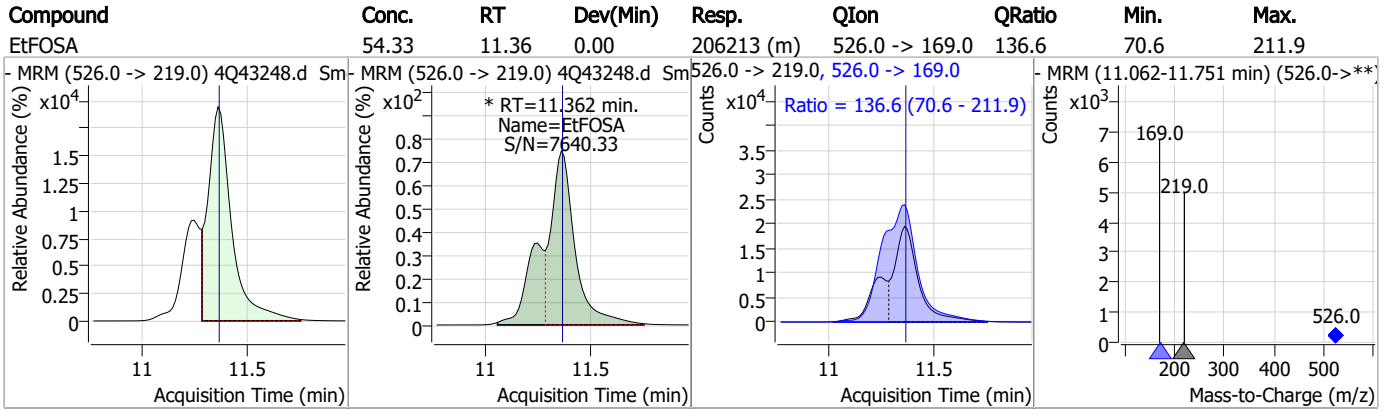
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q625-IC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43248.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 13:19 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.51	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43249.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 1:33:14 PM
 Sample Name : ic625-8
 Vial : P1-A9
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	96836	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	63376	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	49319	2.50 µg/L	0.012
M4-PFHpA	6.529	367.1 -> 322.0	25296	2.50 µg/L	0.012
M8-PFOA	7.188	421.1 -> 376.0	35215	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	18766	1.25 µg/L	0.013
M6-PFDA	8.253	519.1 -> 474.1	17448	1.25 µg/L	0.012
M7-PFUnDA	8.722	570.0 -> 525.1	18235	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	26675	1.25 µg/L	0.000
M2-PFTeDA	9.986	715.2 -> 670.0	20531	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	17785	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	10587	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	6814	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	8796	2.50 µg/L	0.012
M2-4:2FTS	5.273	329.1 -> 80.9	1114	5.00 µg/L	0.000
M2-6:2FTS	6.961	429.1 -> 80.9	1486	5.00 µg/L	0.012
M2-8:2FTS	8.027	529.1 -> 80.9	3432	5.00 µg/L	0.000
M3-MeFOSAA	8.298	573.2 -> 419.0	14580	5.00 µg/L	0.000
M3-HFPO-DA	5.952	286.9 -> 168.9	32769	10.00 µg/L	0.000
M5-EtFOSAA	8.507	589.2 -> 419.0	12055	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	66891	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	86519	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	9322	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	9666	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	9486	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	54457	5.00 µg/L	0.000
18O2-PFHxS	7.290	403.0 -> 83.9	4733	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	42555	2.50 µg/L	0.000
13C2-PFDA	8.241	515.1 -> 470.1	17140	1.25 µg/L	0.000
13C5-PFNA	7.746	468.0 -> 423.0	20902	1.25 µg/L	0.013
13C2-PFHxA	5.598	315.1 -> 270.0	42473	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1114	4.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 80.2%		
13C2-6:2FTS	6.961	429.1 -> 80.9	1486	3.40 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 68.0%		
13C2-8:2FTS	8.027	529.1 -> 80.9	3432	4.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	26675	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-PFTeDA	9.986	715.2 -> 670.0	20531	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C3-PFBS	5.502	302.1 -> 79.9	10587	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C3-PFHxS	7.291	402.1 -> 79.9	6814	2.52 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFBA	2.936	216.8 -> 171.9	96836	9.87 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFHpA	6.529	367.1 -> 322.0	25296	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C5-PFHxA	5.597	318.0 -> 273.0	49319	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C5-PFPeA	4.412	268.3 -> 223.0	63376	4.88 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C6-PFDA	8.253	519.1 -> 474.1	17448	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.1%	
13C7-PFUnDA	8.722	570.0 -> 525.1	18235	1.11 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 88.8%	
13C8-FOSA	9.783	506.1 -> 77.8	17785	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C8-PFOA	7.188	421.1 -> 376.0	35215	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C8-PFOS	8.405	507.1 -> 79.9	8796	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.9%	
13C9-PFNA	7.746	472.1 -> 427.0	18766	1.29 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
d3-MeFOSAA	8.298	573.2 -> 419.0	14580	4.68 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.6%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	32769	10.17 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
d3-MeFOSA	11.064	515.0 -> 219.0	9666	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.8%	
d5-EtFOSAA	8.507	589.2 -> 419.0	12055	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.1%	
d7-MeFOSE	10.959	623.2 -> 58.9	66891	22.99 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.9%	
d9-EtFOSE	11.256	639.2 -> 58.9	86519	23.21 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 92.9%	
d5-EtFOSA	11.360	531.1 -> 219.0	9322	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	348069	244.28 µg/L	95
		327.1 -> 80.9	145303		
6:2FTS	6.961	427.1 -> 407.0	293379	258.22 µg/L	95
		427.1 -> 80.9	120895		
8:2FTS	8.028	527.1 -> 507.0	362520	214.30 µg/L	95
		527.1 -> 80.8	137884		
EtFOSAA	8.521	584.2 -> 419.1	127839	74.27 µg/L	m 93
		584.2 -> 526.0	61481		
FOSA	9.786	498.1 -> 77.9	405770	67.46 µg/L	100
		498.1 -> 478.0	11775		
MeFOSAA	8.311	570.1 -> 419.0	141565	68.05 µg/L	m 98
		570.1 -> 483.0	30786		
PFBA	2.945	212.8 -> 168.9	618715	275.40 µg/L	100
PFBS	5.503	298.7 -> 79.9	245012	58.51 µg/L	97
		298.7 -> 98.8	93656		
PFDA	8.253	512.9 -> 469.0	734399	68.60 µg/L	100
		512.9 -> 219.0	146920		
PFDoDA	9.181	613.1 -> 569.0	1124521	64.06 µg/L	98
		613.1 -> 319.0	159816		
PFDS	9.344	599.0 -> 79.9	140394	68.30 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.530	599.0 -> 98.8	70045	69.89	µg/L	99
		363.1 -> 319.0	929393			
PFHpS	7.873	363.1 -> 169.0	164126	68.65	µg/L	97
		449.0 -> 79.9	173730			
PFHxA	5.600	449.0 -> 98.9	89218	69.01	µg/L	99
		313.0 -> 269.0	1072008			
PFHxS	7.292	313.0 -> 118.9	32243	64.20	µg/L	m
		398.7 -> 79.9	160247			
PFNA	7.747	398.7 -> 98.9	80326	67.07	µg/L	98
		463.0 -> 419.0	716768			
PFNS	8.899	463.0 -> 219.0	178386	74.05	µg/L	93
		548.8 -> 79.9	115377			
PFOA	7.189	548.8 -> 98.9	59437	69.67	µg/L	99
		413.0 -> 369.0	1092843			
PFOS	8.406	413.0 -> 169.0	225424	65.75	µg/L	m
		498.9 -> 79.9	221793			
PFPeA	4.414	498.9 -> 98.8	108819	134.05	µg/L	100
		263.0 -> 219.0	1696813			
PFPeS	6.569	349.1 -> 79.9	139406	64.67	µg/L	99
		349.1 -> 98.9	61602			
PFTeDA	9.987	713.1 -> 669.0	1089629	65.32	µg/L	99
		713.1 -> 168.9	89924			
PFTrDA	9.604	663.0 -> 619.0	1281163	58.64	µg/L	99
		663.0 -> 168.9	124390			
PFUnDA	8.722	563.1 -> 519.0	718941	69.69	µg/L	98
		563.1 -> 269.1	139404			
11Cl-PF3OUdS	9.643	630.9 -> 450.9	1070775	113.42	µg/L	100
		632.9 -> 452.9	334010			
9Cl-PF3ONS	8.749	530.8 -> 351.0	1228751	121.19	µg/L	98
		532.8 -> 353.0	379484			
ADONA	6.781	376.9 -> 250.9	2875977	122.11	µg/L	98
		376.9 -> 84.8	771815			
HFPO-DA	5.953	284.9 -> 168.9	346277	133.77	µg/L	98
		284.9 -> 184.9	41293			
3:3FTCA	3.867	241.0 -> 177.0	216383	359.04	µg/L	99
		241.0 -> 117.0	19502			
5:3FTCA	6.244	341.0 -> 237.1	3840785	1658.31	µg/L	100
		341.0 -> 217.0	2746440			
7:3FTCA	7.686	441.0 -> 316.9	1796102	1589.24	µg/L	99
		441.0 -> 336.9	3969309			
EtFOSA	11.362	526.0 -> 219.0	476236	136.91	µg/L	m
		526.0 -> 169.0	653142			
EtFOSE	11.282	630.0 -> 58.9	913658	331.18	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	399297	123.54	µg/L	m
		511.9 -> 169.0	589104			
MeFOSE	10.973	616.1 -> 58.9	777789	326.98	µg/L	m
PFDoDS	10.126	699.1 -> 79.9	130686	69.98	µg/L	96
		699.1 -> 98.8	73670			
NFDHA	5.479	295.0 -> 201.0	95398	113.36	µg/L	95
		295.0 -> 84.9	24543			
PFMBA	4.828	279.0 -> 85.1	966108	133.65	µg/L	100
PFMPA	3.553	229.0 -> 84.9	874633	136.16	µg/L	100
PFEESA	6.034	314.8 -> 134.9	1535541	120.46	µg/L	100
		314.8 -> 82.9	52810			

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

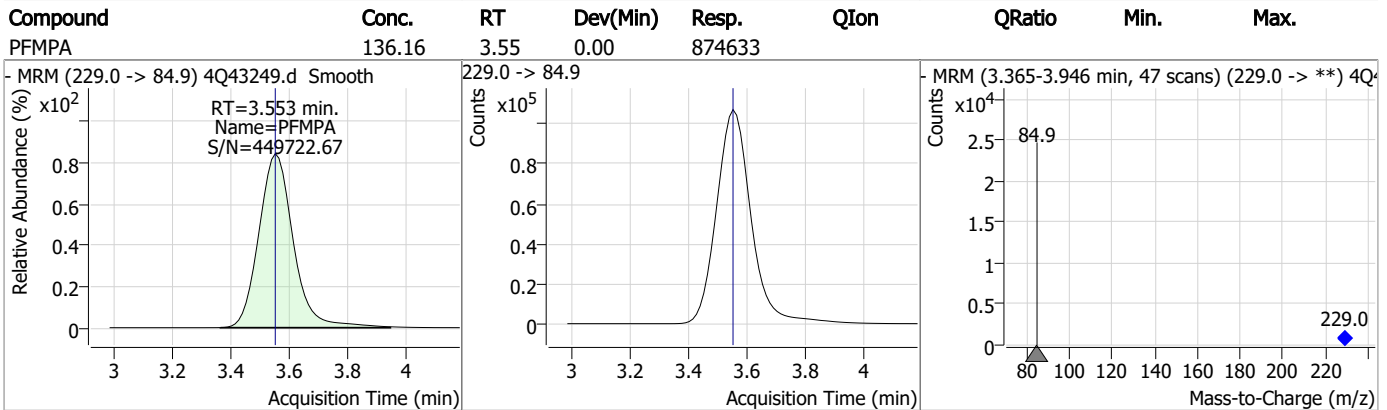
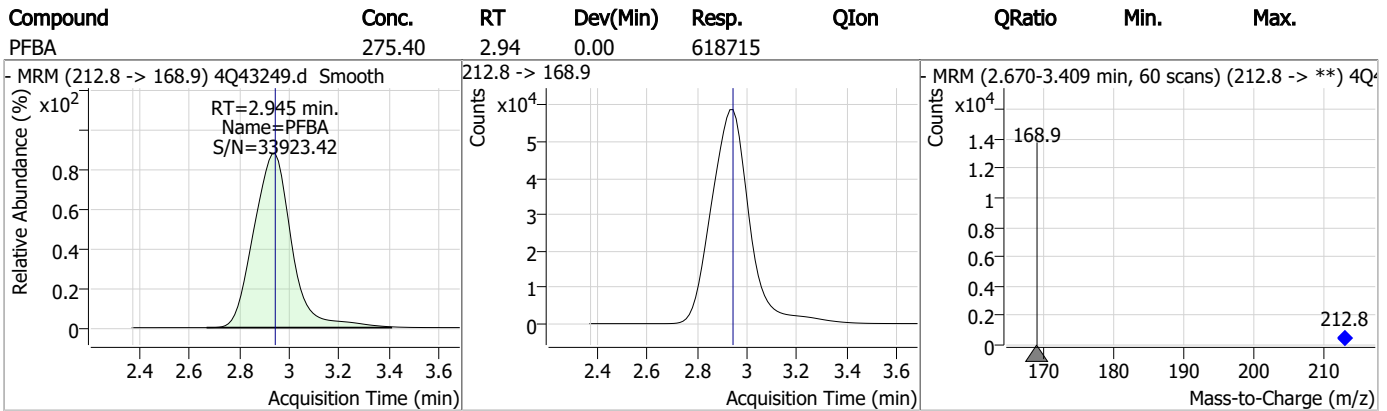
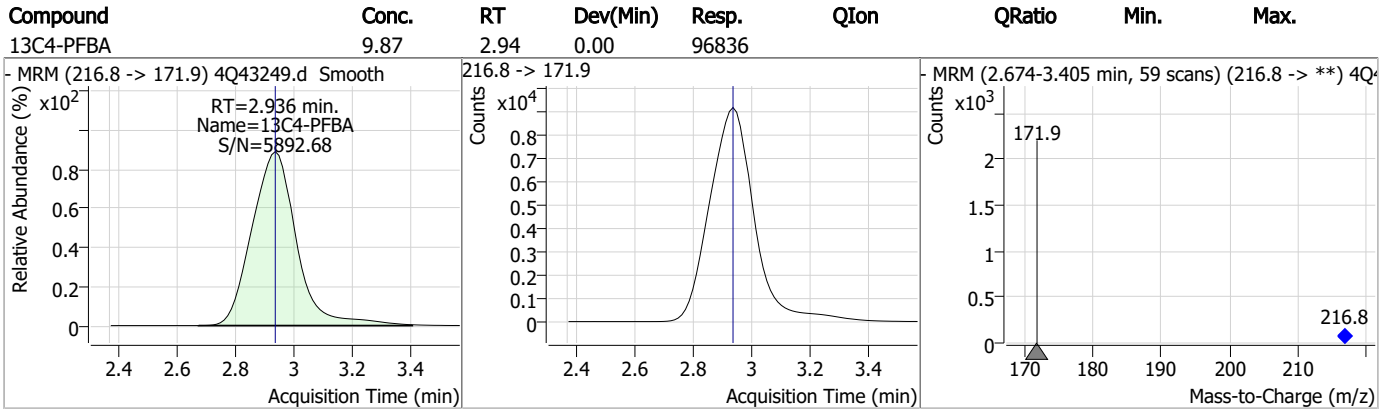
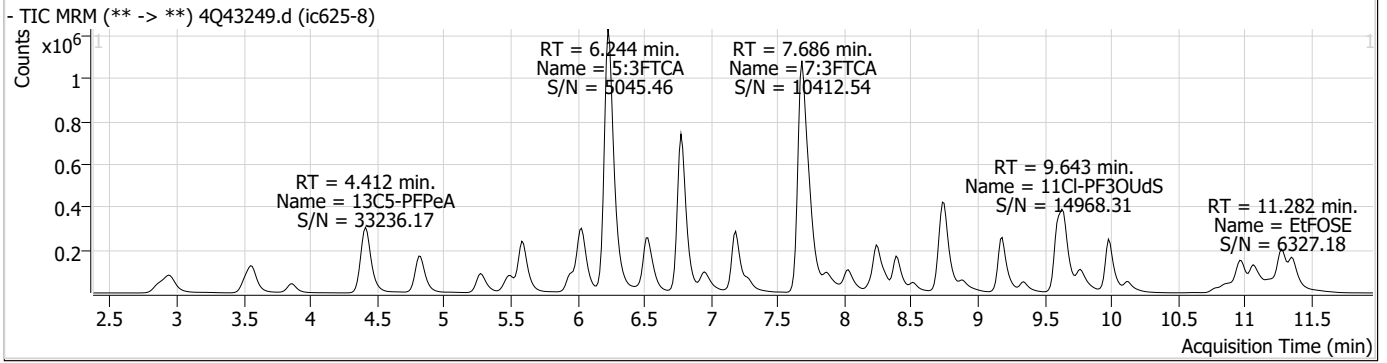
Perfluorinated Compounds by LC/MS/MS

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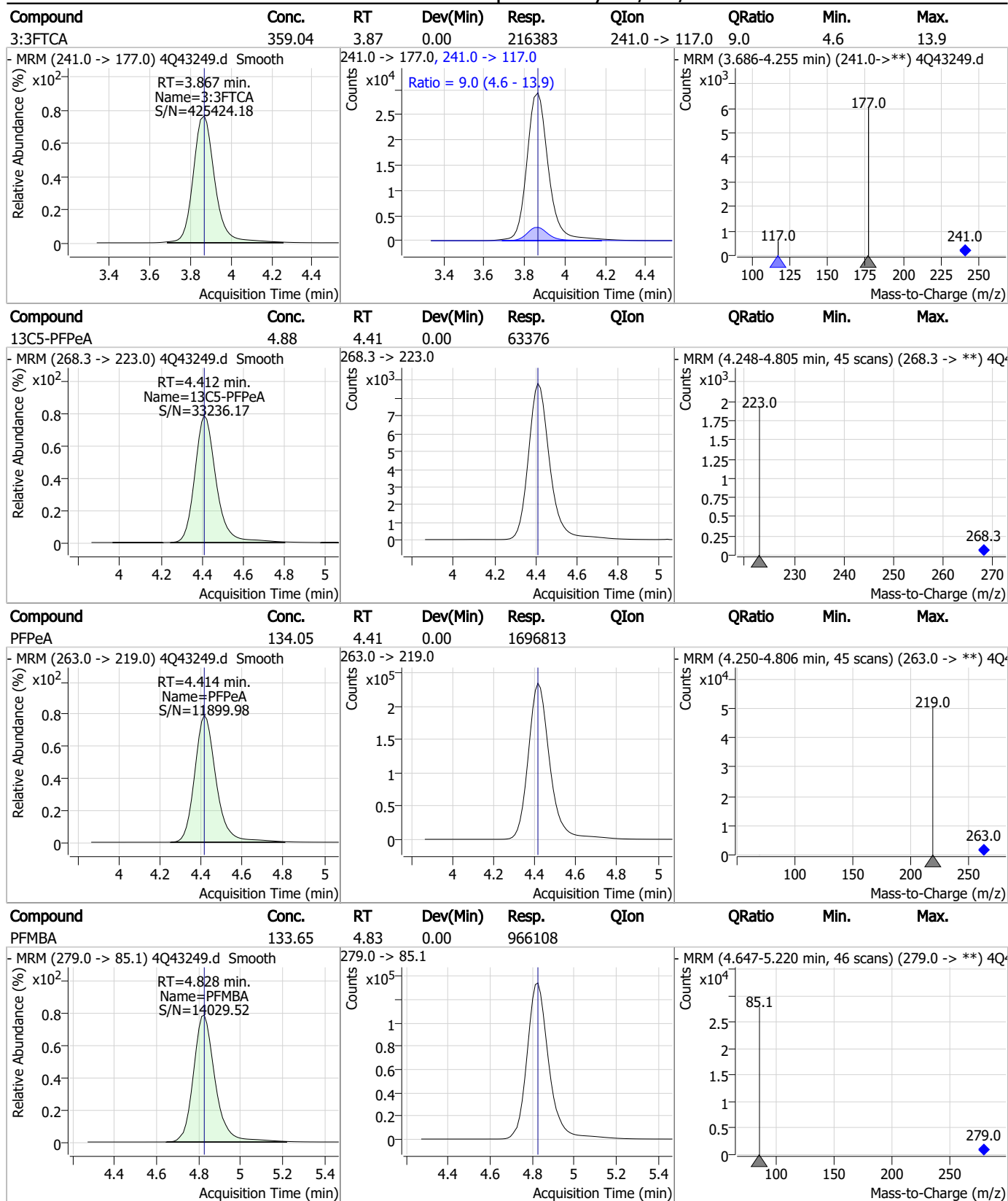
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Perfluorinated Compounds by LC/MS/MS

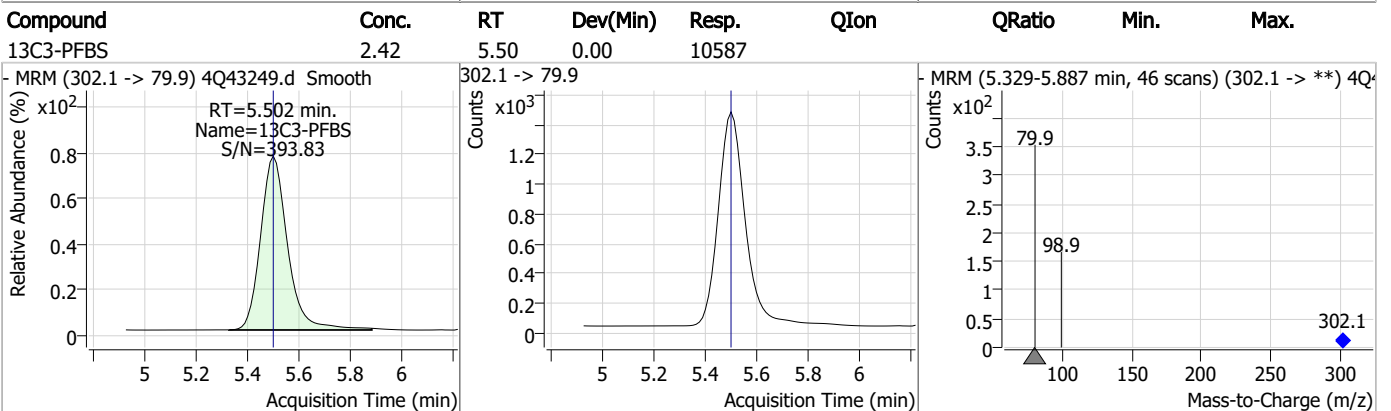
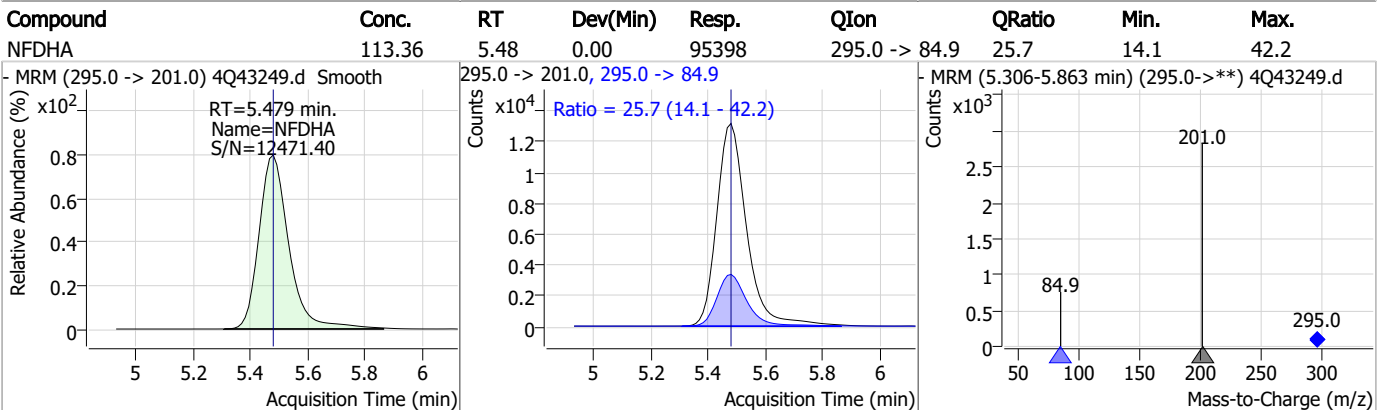
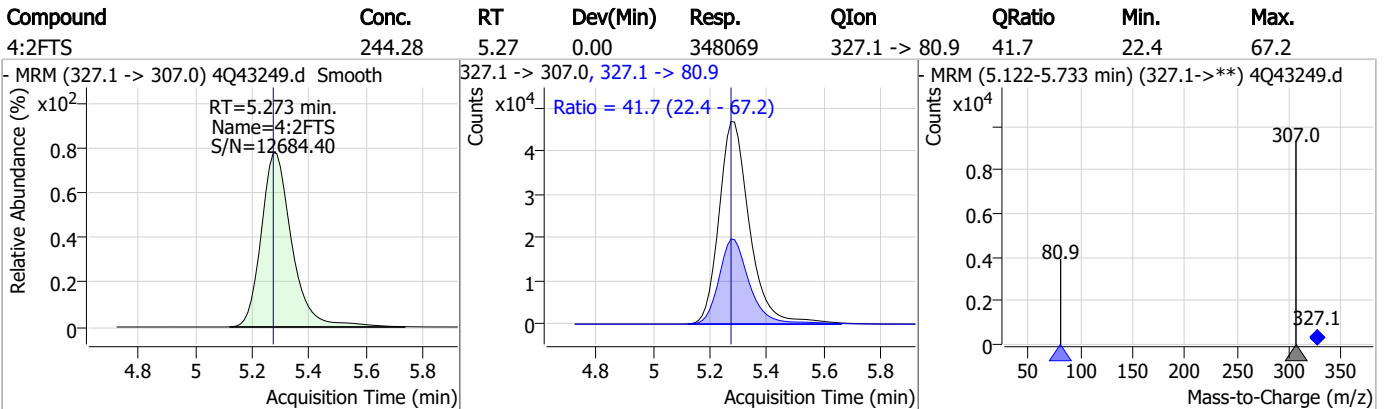
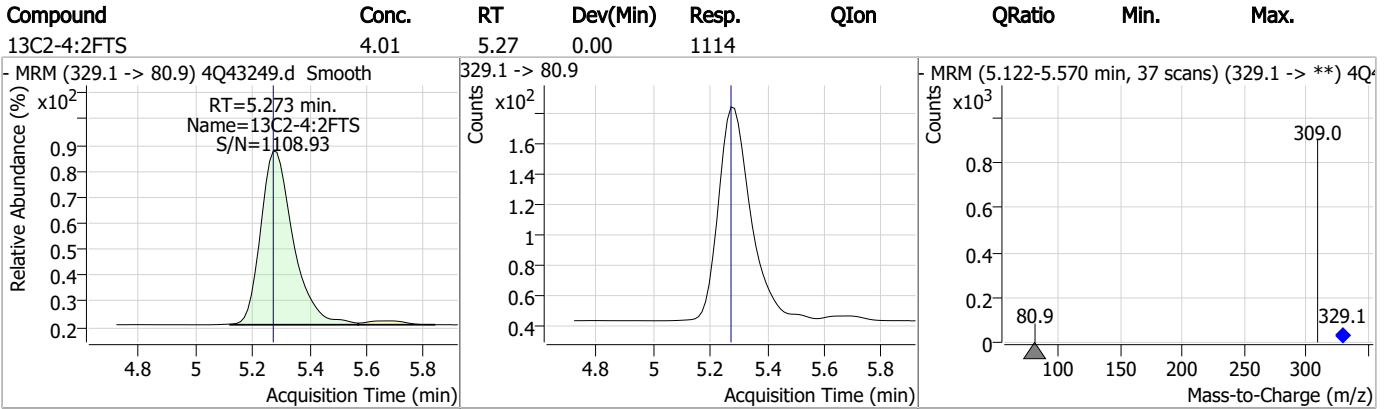


Perfluorinated Compounds by LC/MS/MS

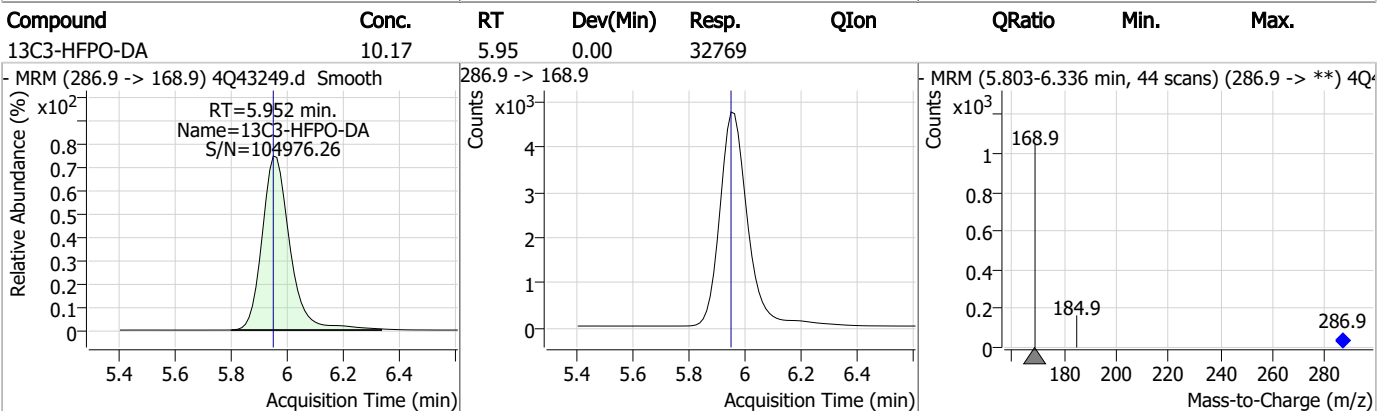
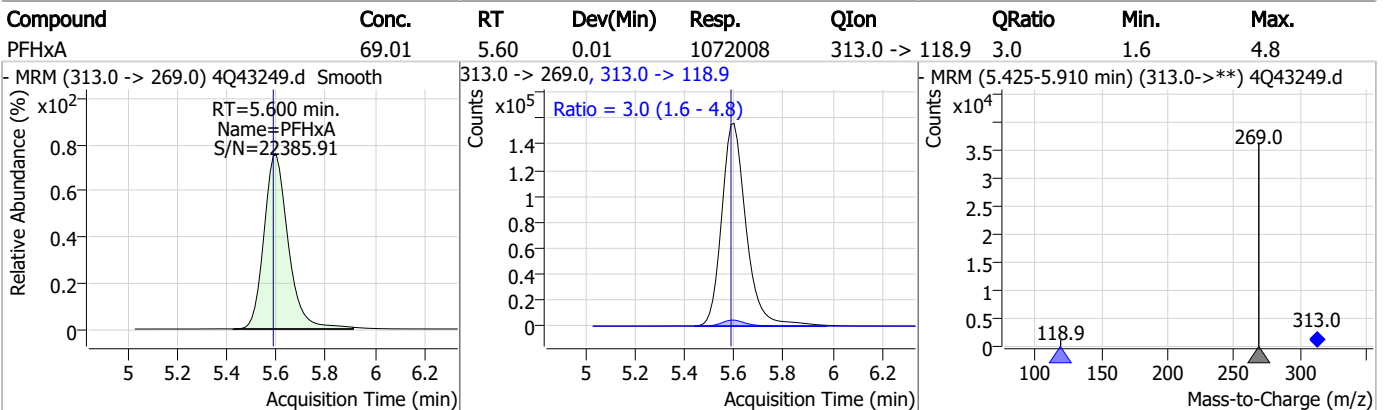
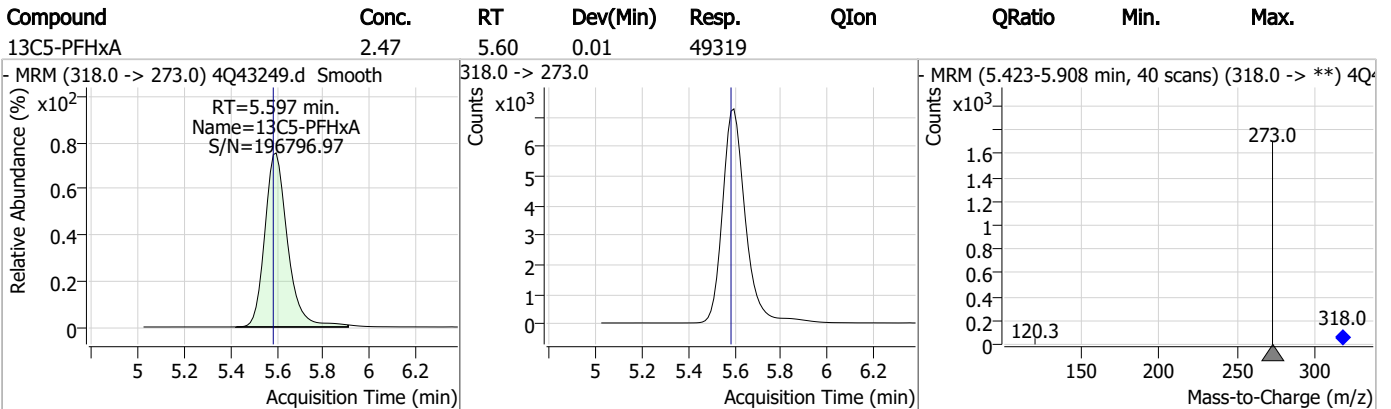
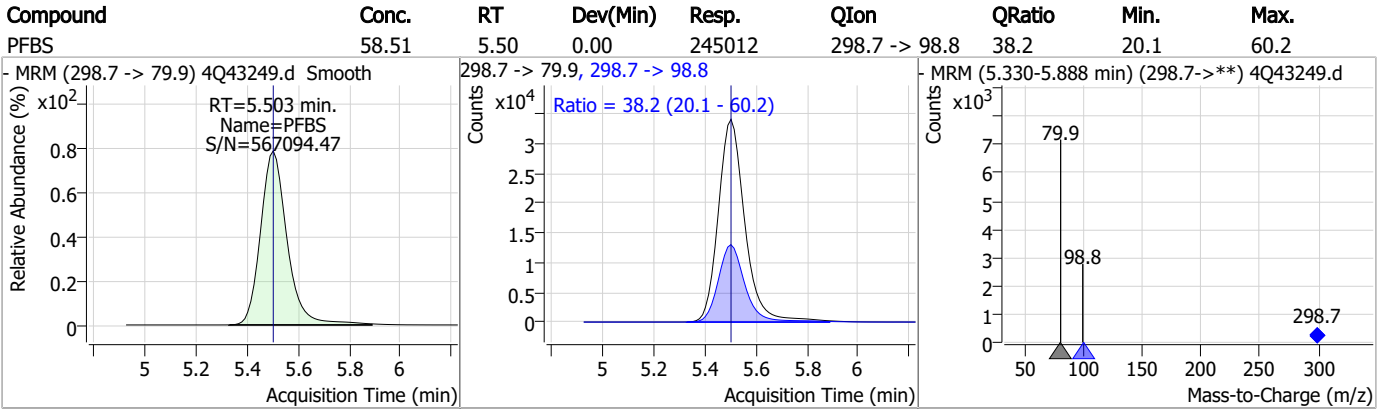


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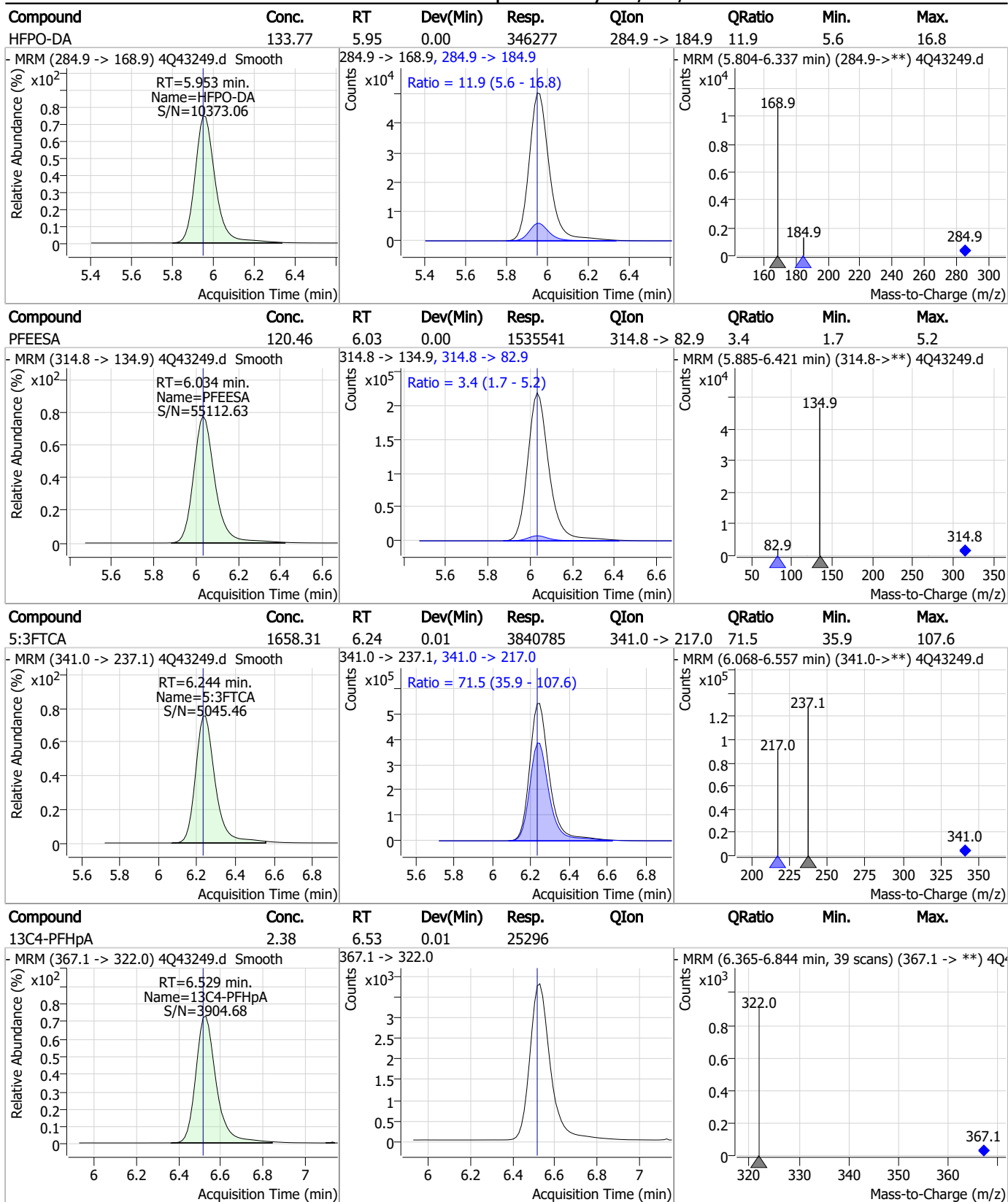
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

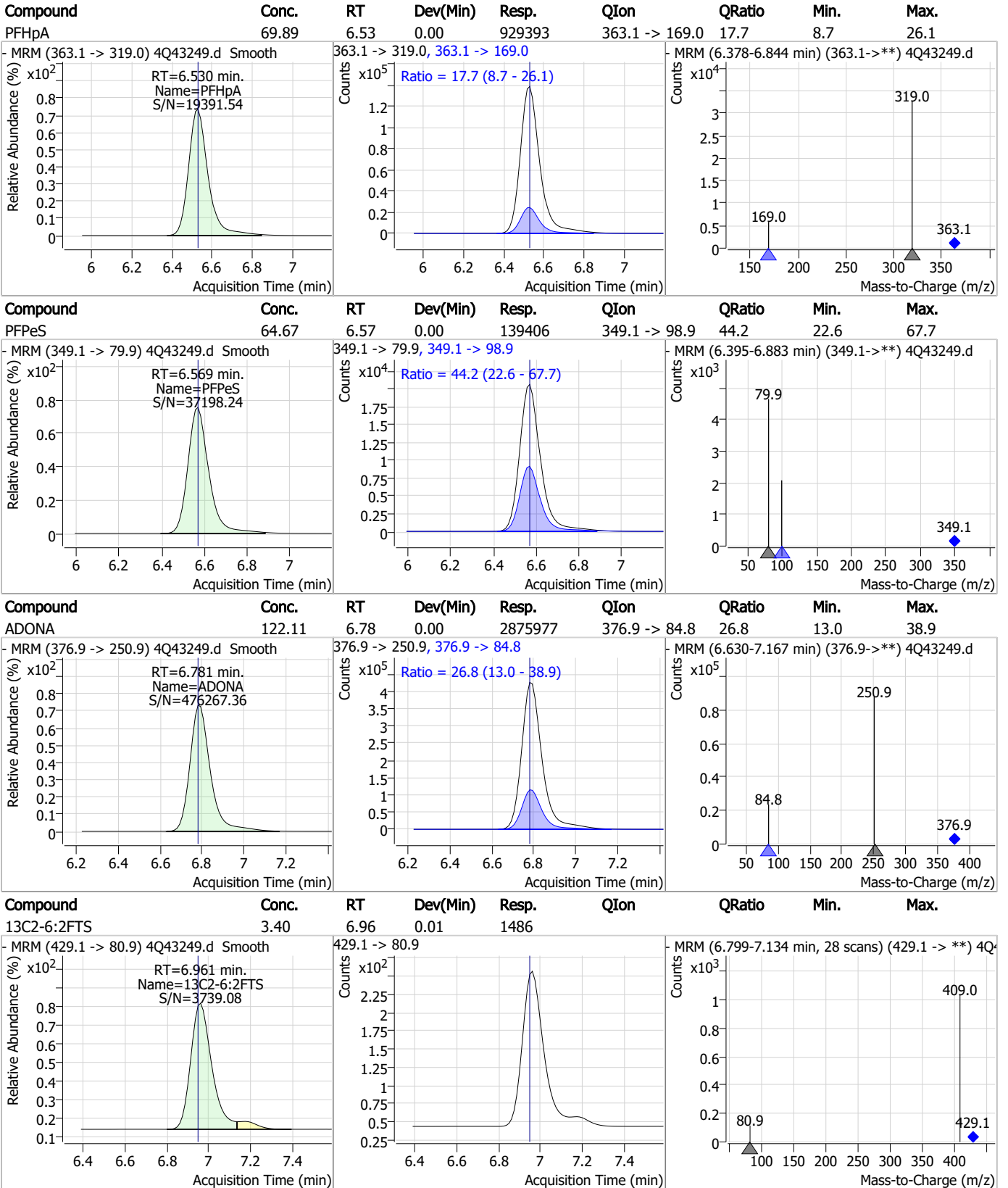


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

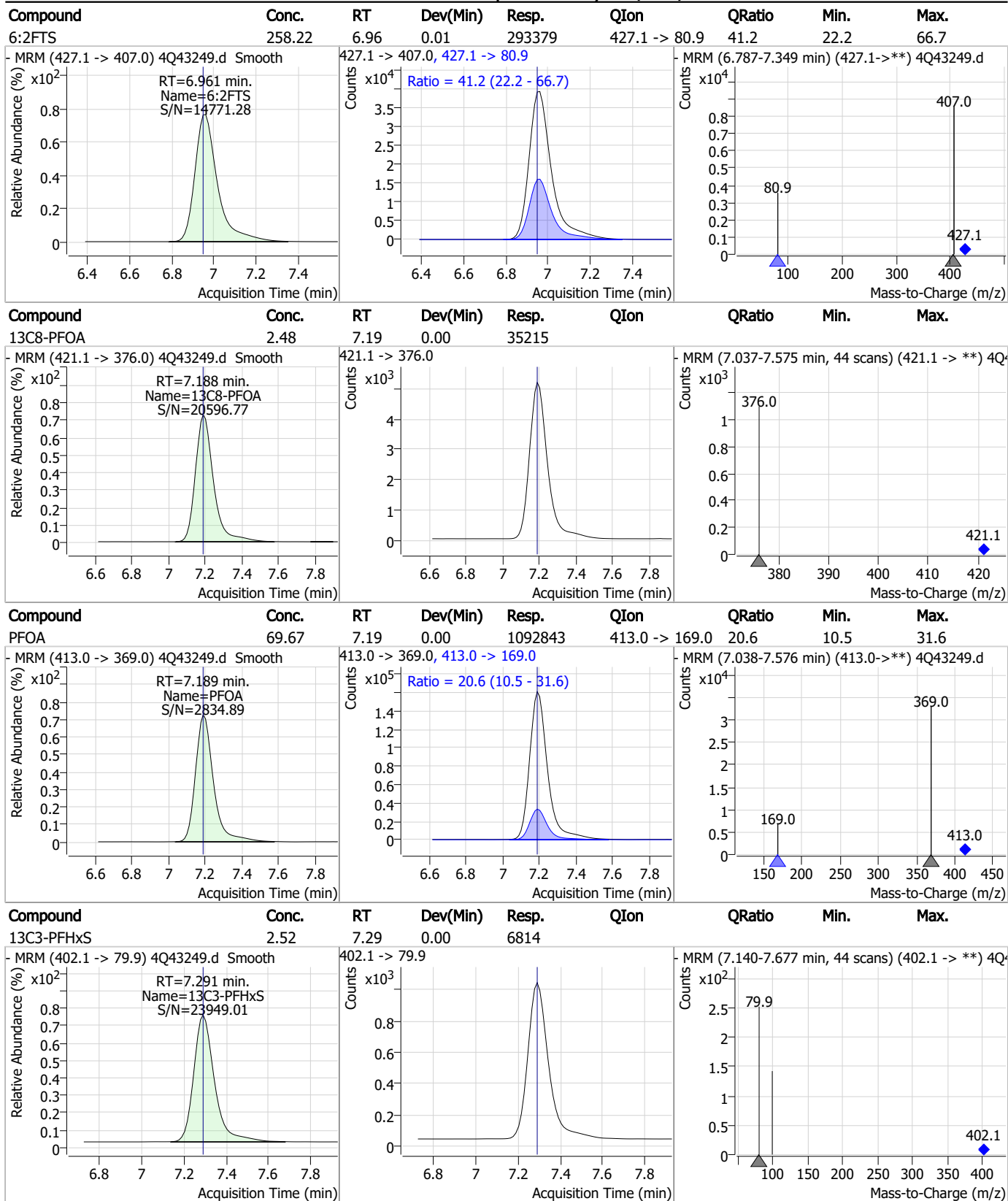


7.7.9

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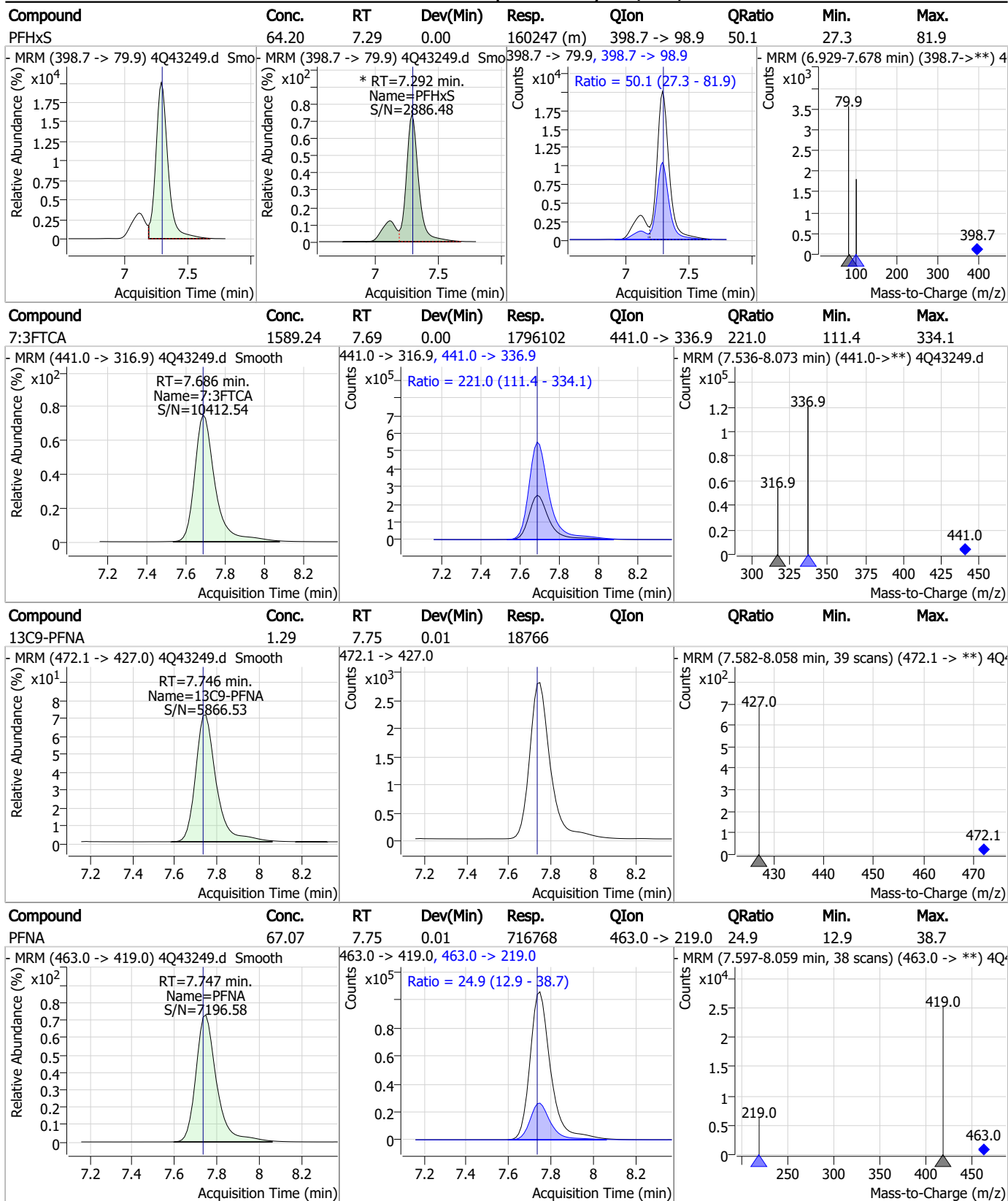


Perfluorinated Compounds by LC/MS/MS



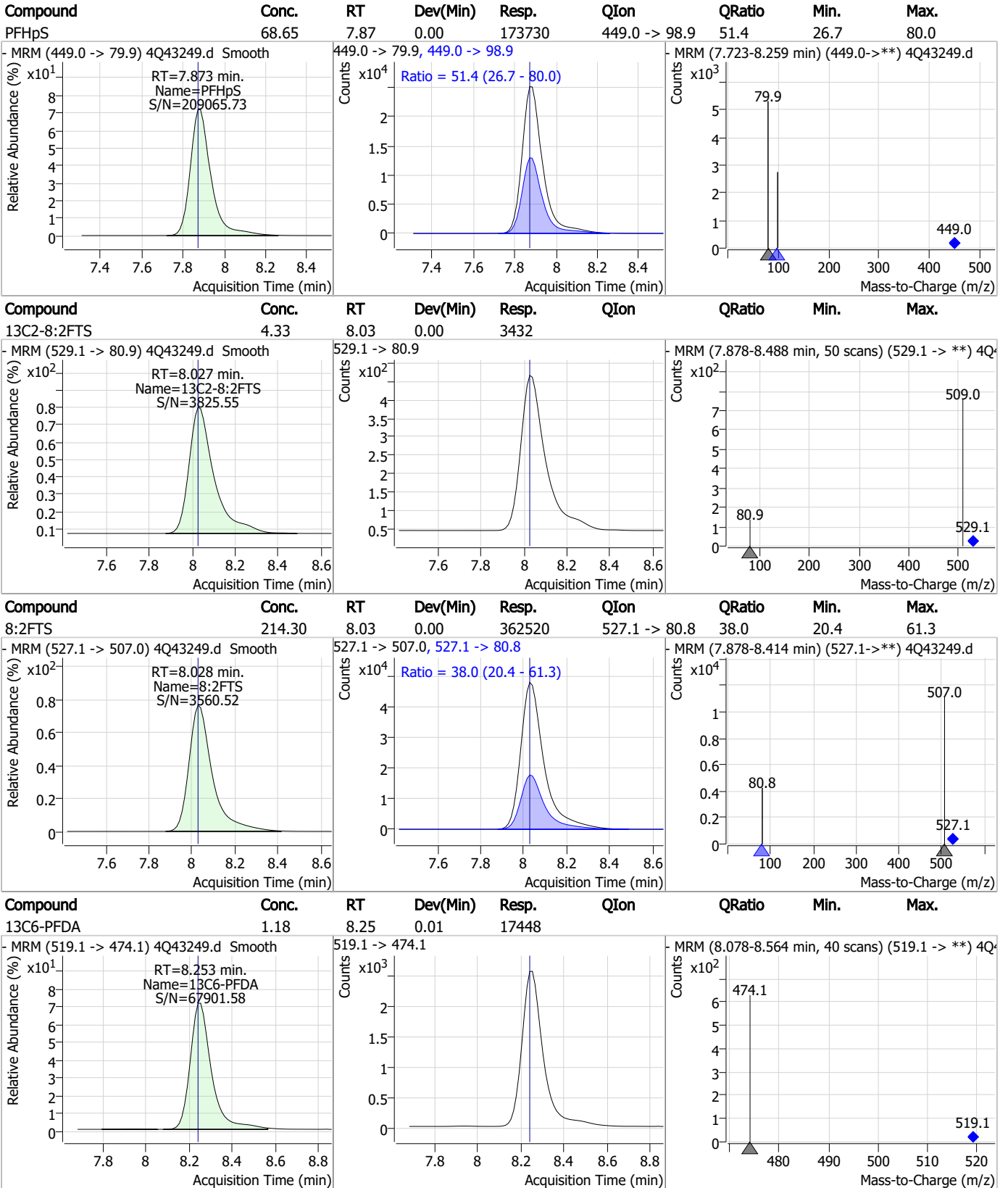
7.7.9
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



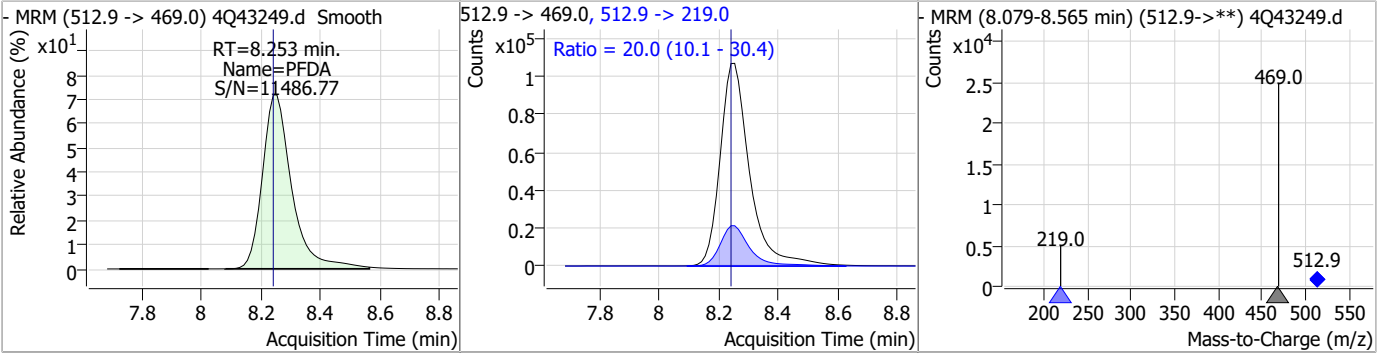
7.7.9

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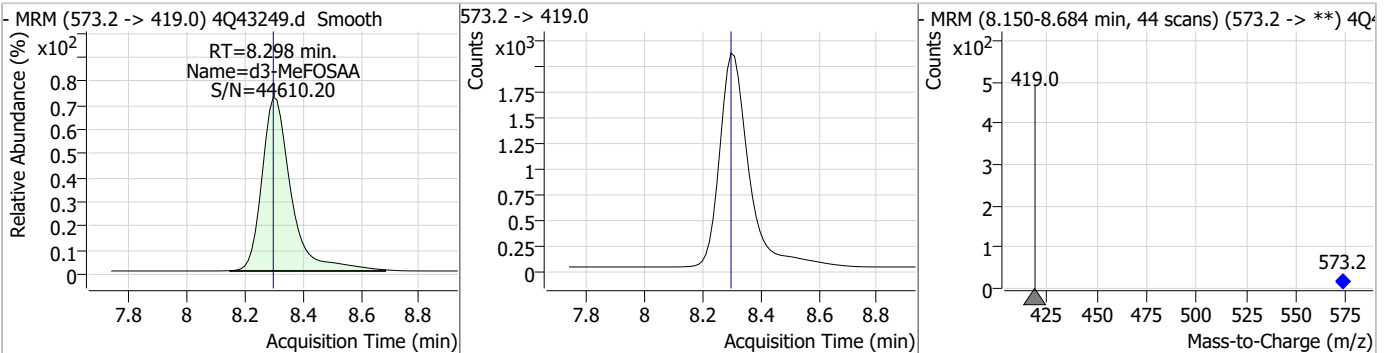


Perfluorinated Compounds by LC/MS/MS

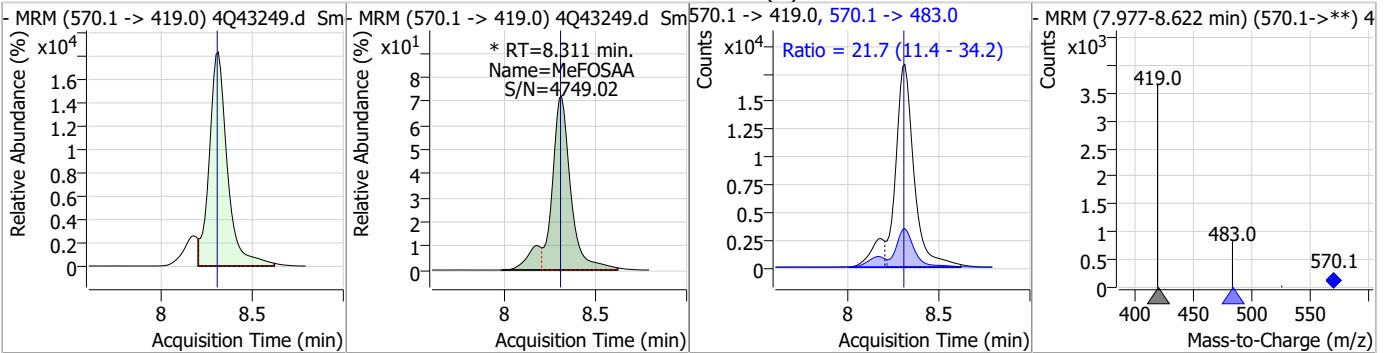
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	68.60	8.25	0.01	734399	512.9 -> 219.0	20.0	10.1	30.4



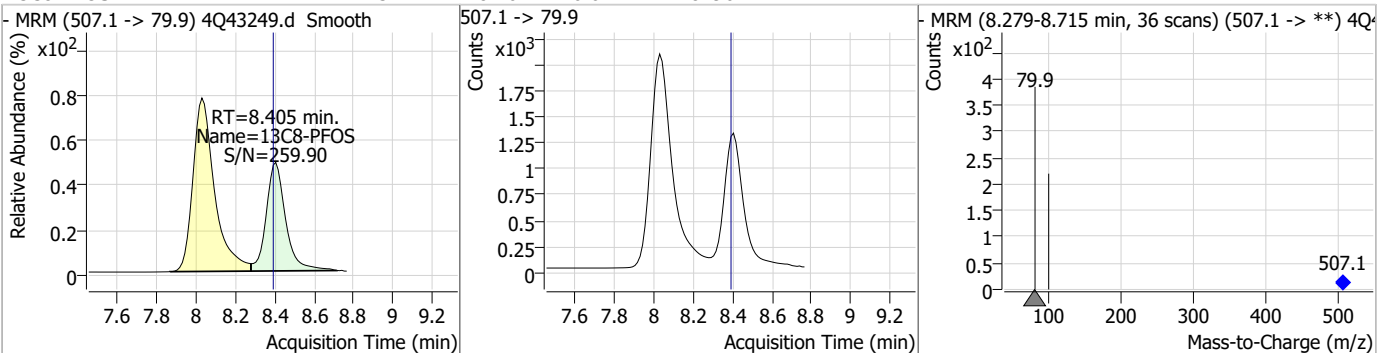
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.68	8.30	0.00	14580				



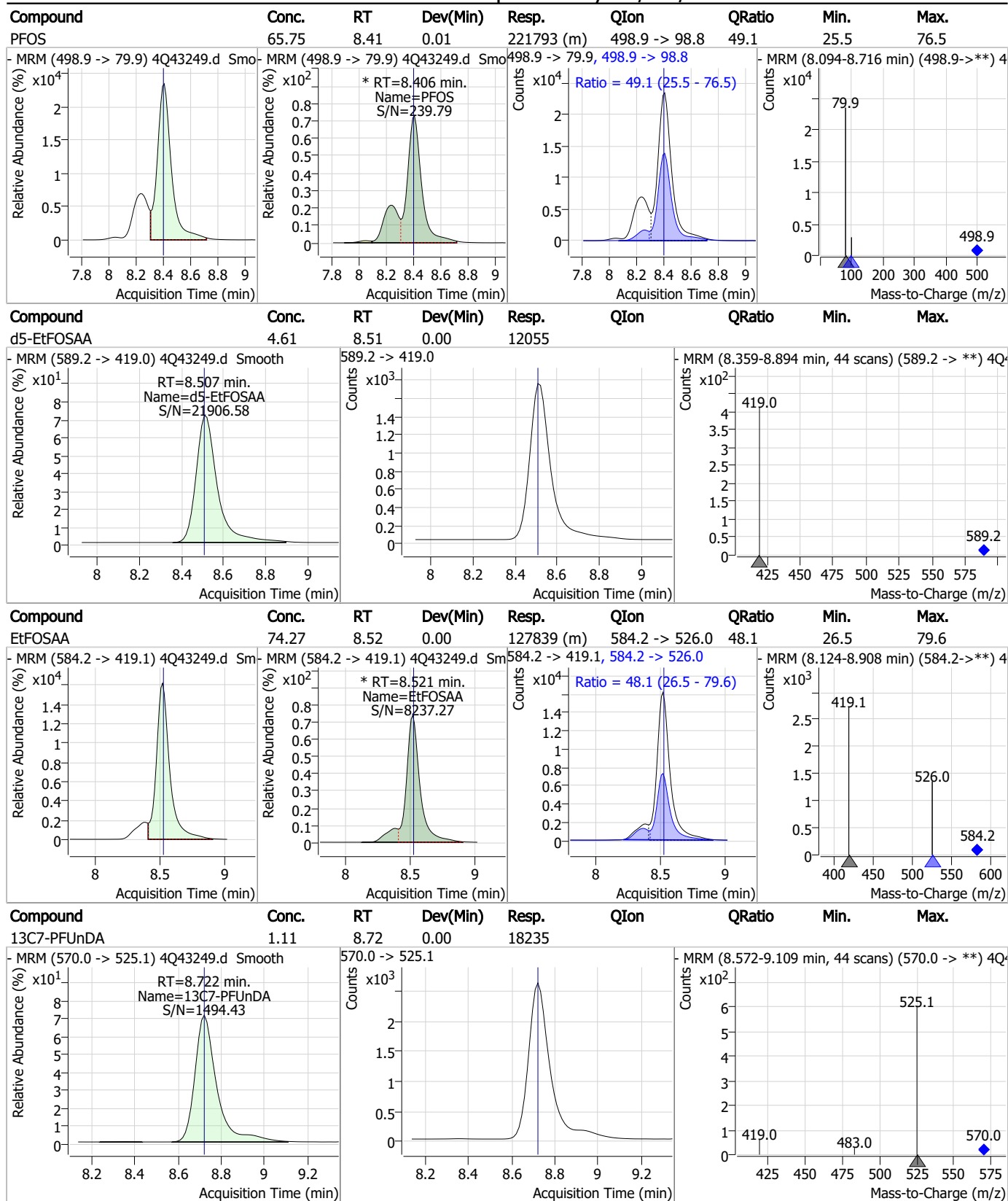
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	68.05	8.31	0.01	141565 (m)	570.1 -> 483.0	21.7	11.4	34.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.32	8.40	0.01	8796				



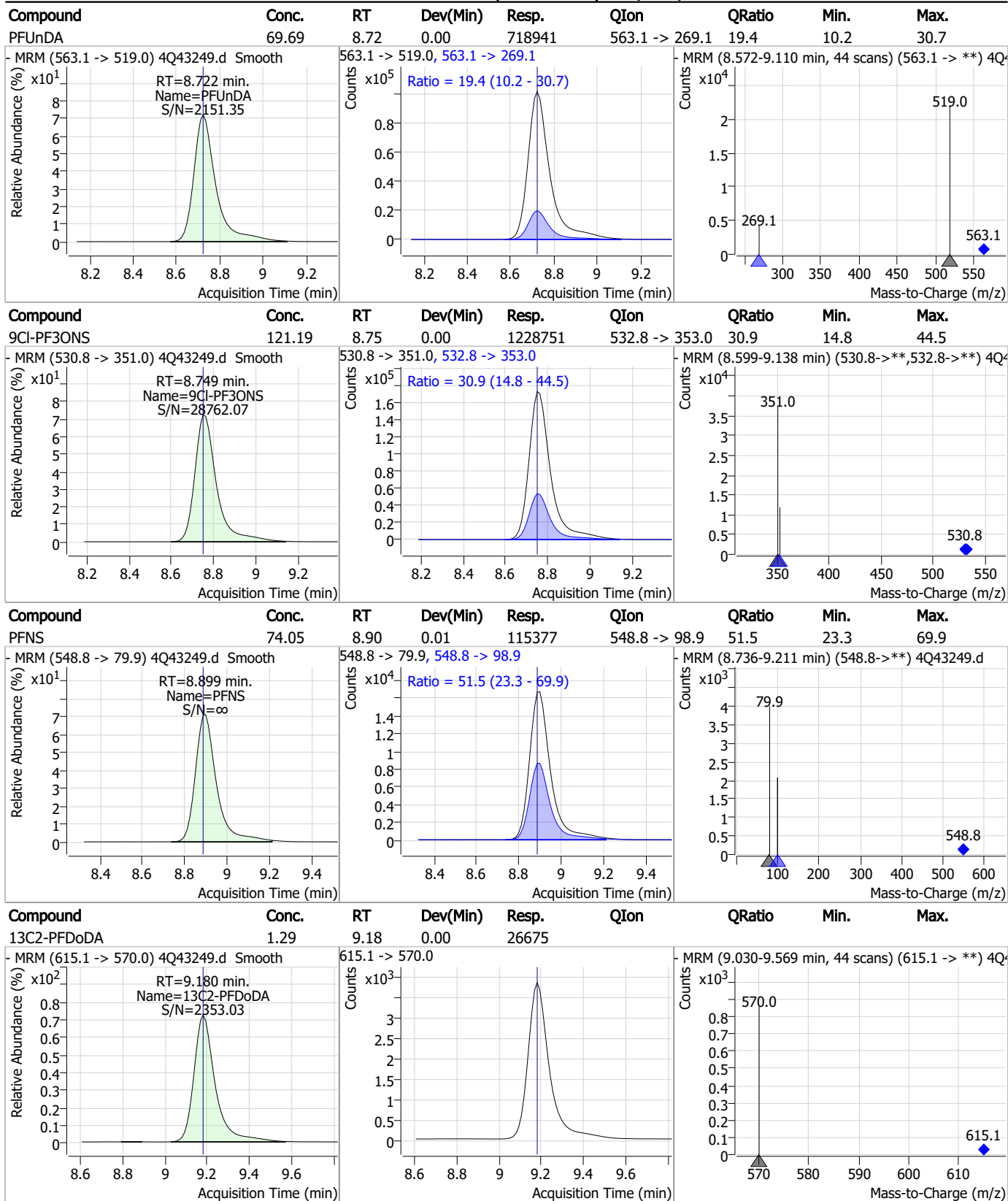
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

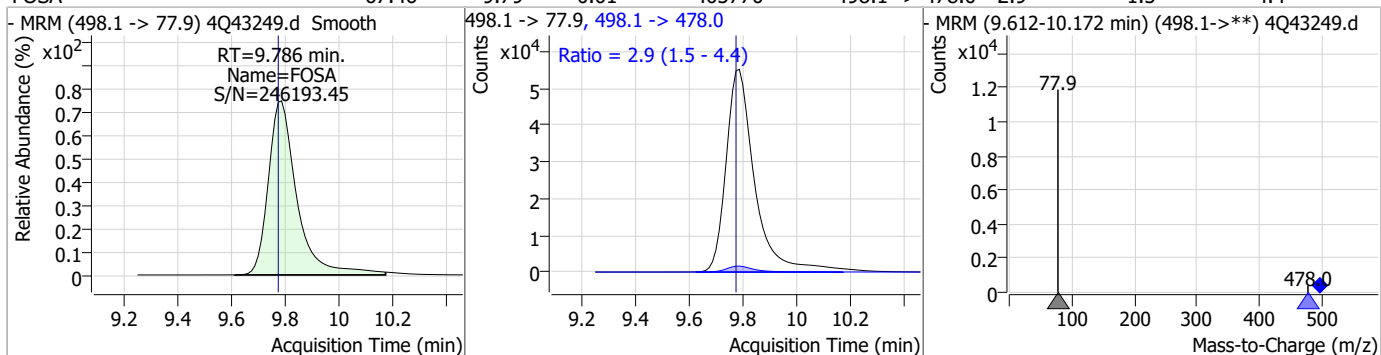
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	64.06	9.18	0.00	1124521	613.1 -> 319.0	14.2	6.8	20.4
- MRM (613.1 -> 569.0) 4Q43249.d Smooth			613.1 -> 569.0, 613.1 -> 319.0			- MRM (9.030-9.569 min) (613.1->**) 4Q43249.d		
PFDS	68.30	9.34	0.00	140394	599.0 -> 98.8	49.9	23.9	71.8
- MRM (599.0 -> 79.9) 4Q43249.d Smooth			599.0 -> 79.9, 599.0 -> 98.8			- MRM (9.195-9.733 min) (599.0->**) 4Q43249.d		
PFTrDA	58.64	9.60	0.00	1281163	663.0 -> 168.9	9.7	4.7	14.2
- MRM (663.0 -> 619.0) 4Q43249.d Smooth			663.0 -> 619.0, 663.0 -> 168.9			- MRM (9.441-9.915 min, 39 scans) (663.0 -> **) 4Q43249.d		
11CI-PF3OUdS	113.42	9.64	0.00	1070775	632.9 -> 452.9	31.2	15.6	46.8
- MRM (630.9 -> 450.9) 4Q43249.d Smooth			630.9 -> 450.9, 632.9 -> 452.9			- MRM (9.492-10.030 min) (630.9->**, 632.9->**) 4Q43249.d		

7.7.9
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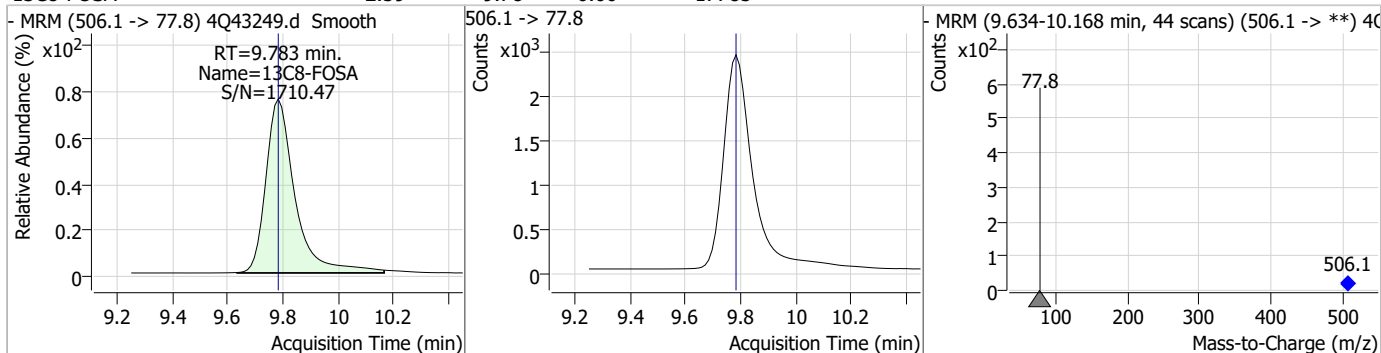


Perfluorinated Compounds by LC/MS/MS

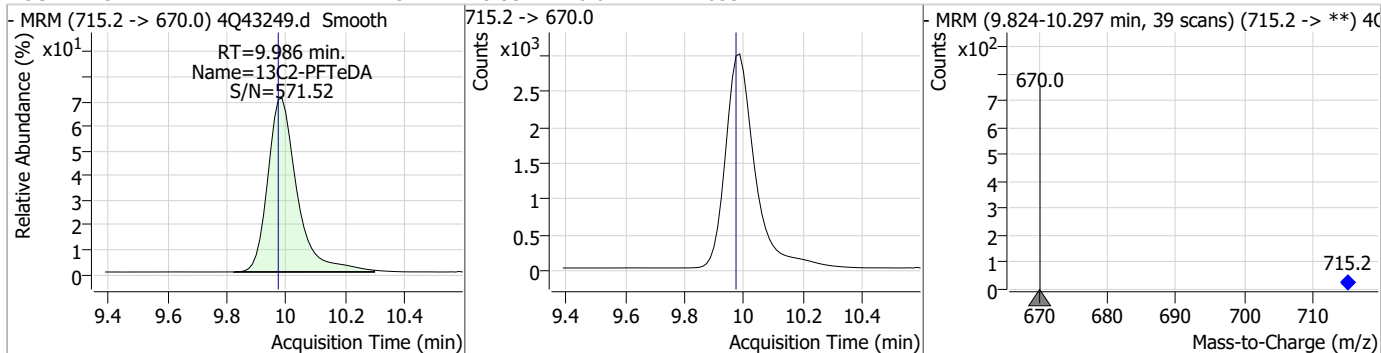
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	67.46	9.79	0.01	405770	498.1 -> 478.0	2.9	1.5	4.4



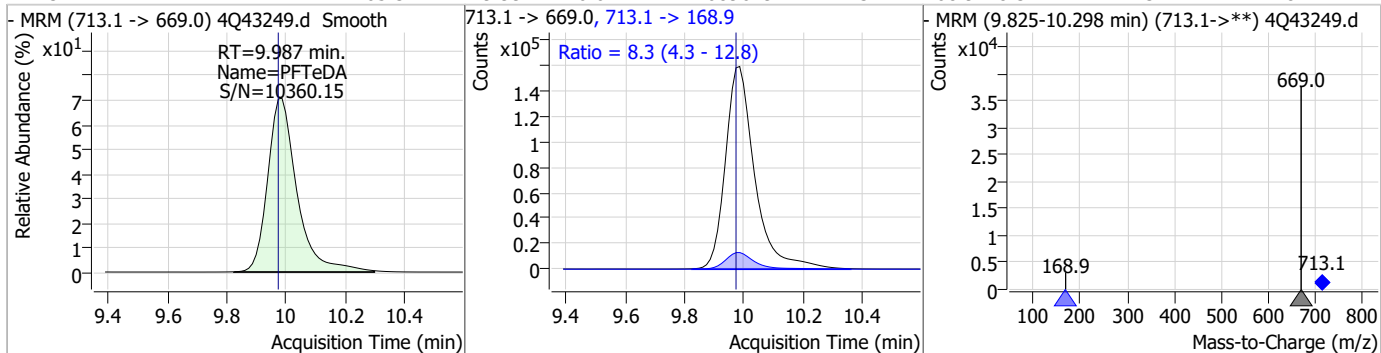
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.59	9.78	0.00	17785	506.1 -> 77.8			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.25	9.99	0.01	20531	715.2 -> 670.0			



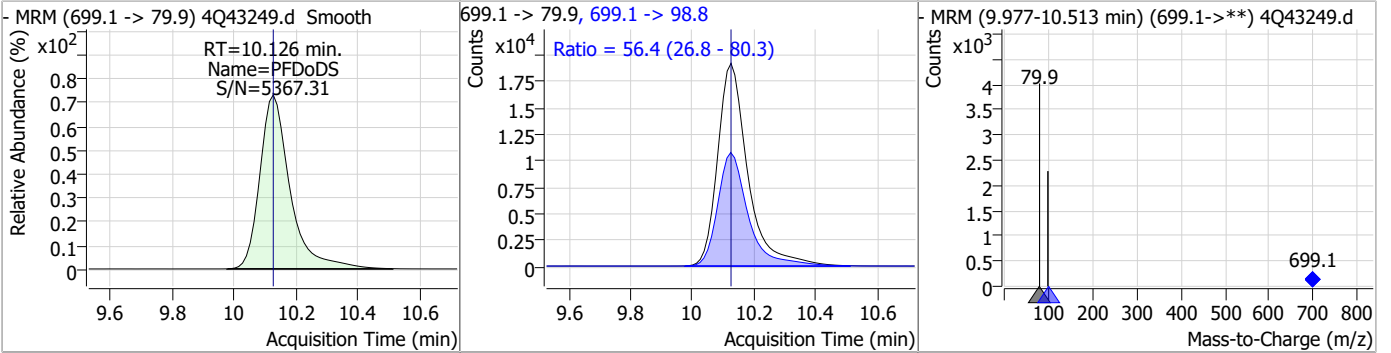
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	65.32	9.99	0.01	1089629	713.1 -> 168.9	8.3	4.3	12.8



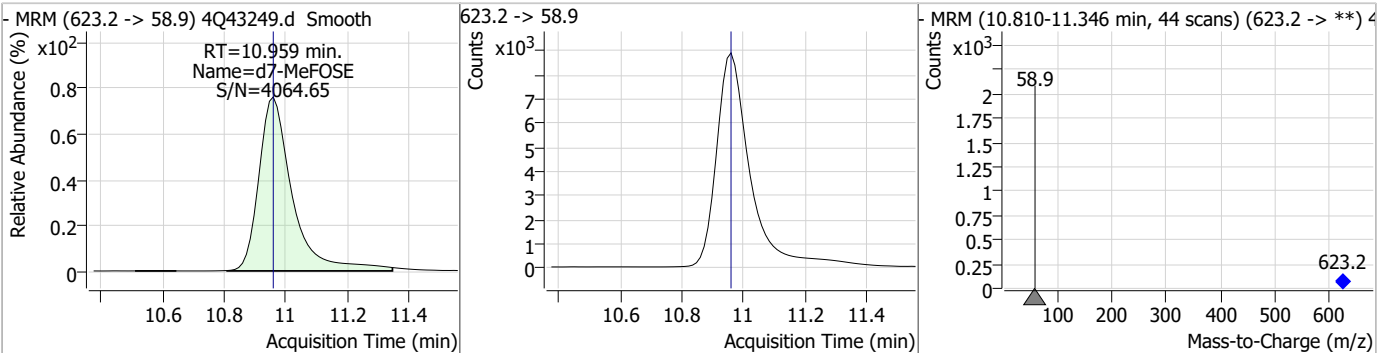
7.7.9
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Perfluorinated Compounds by LC/MS/MS

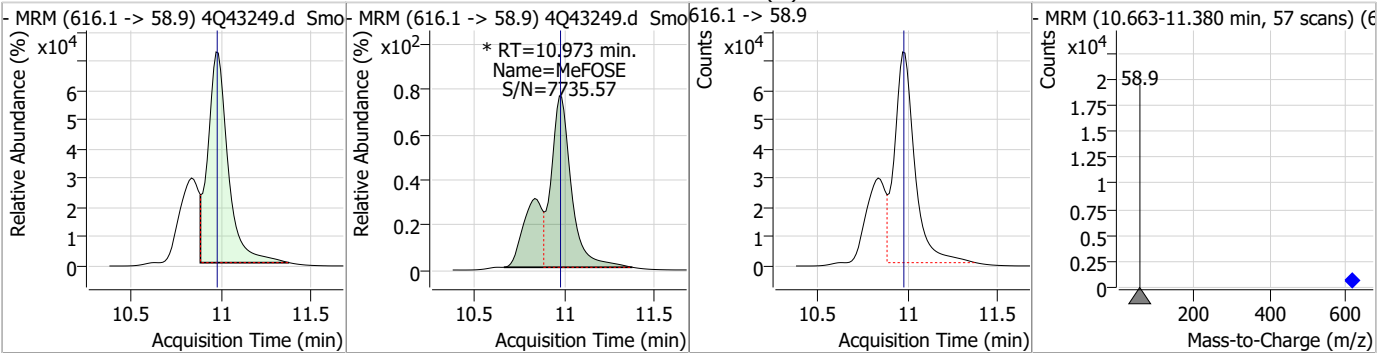
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	69.98	10.13	0.00	130686	699.1 -> 98.8	56.4	26.8	80.3



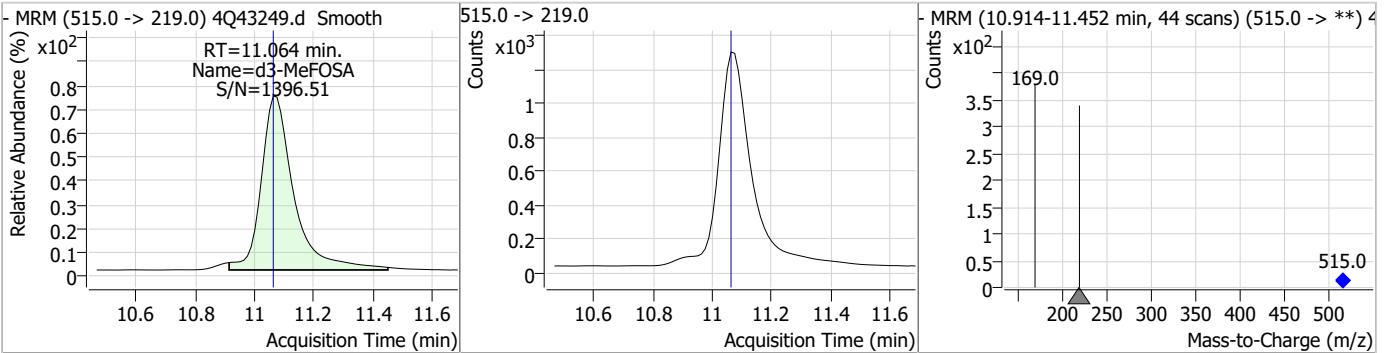
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.99	10.96	0.00	66891				



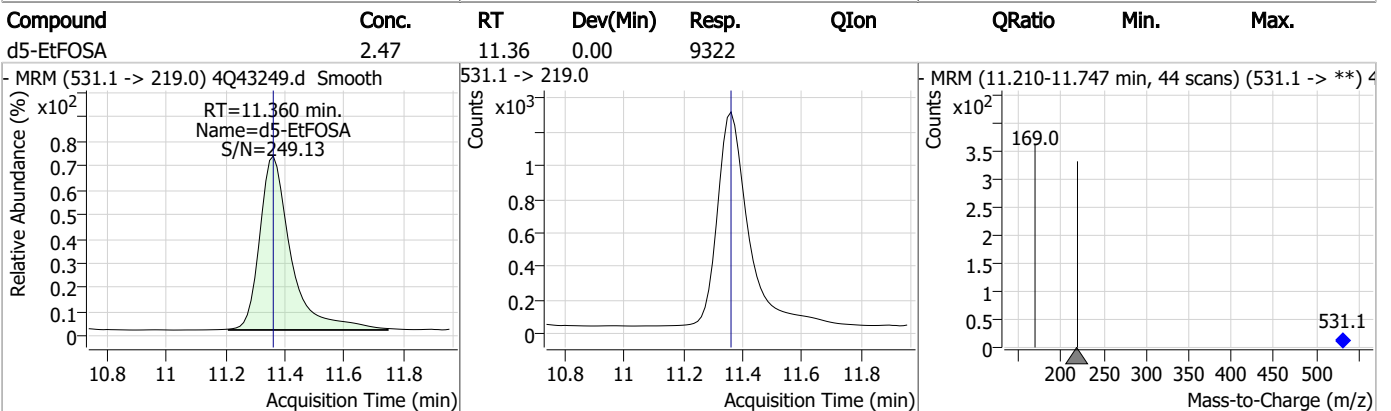
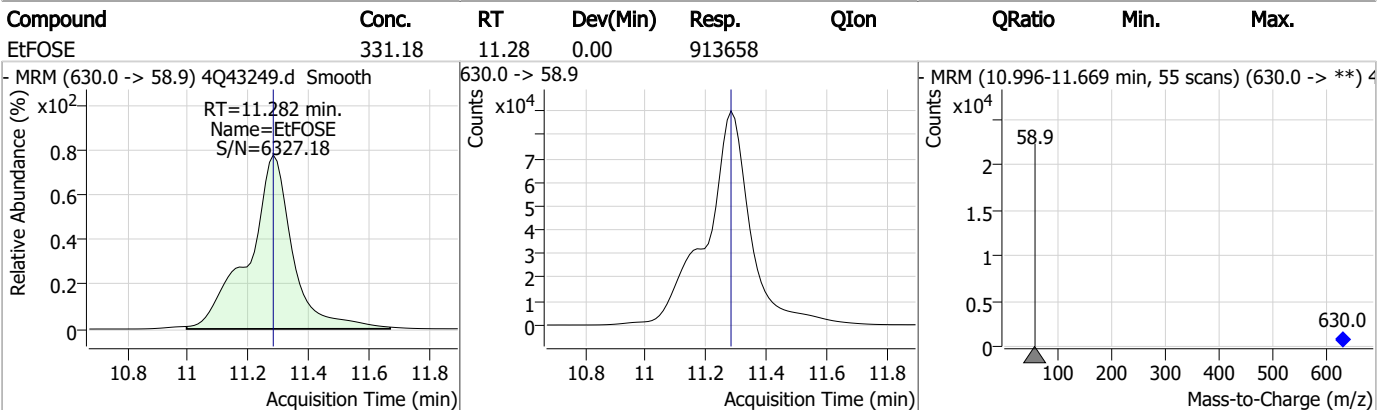
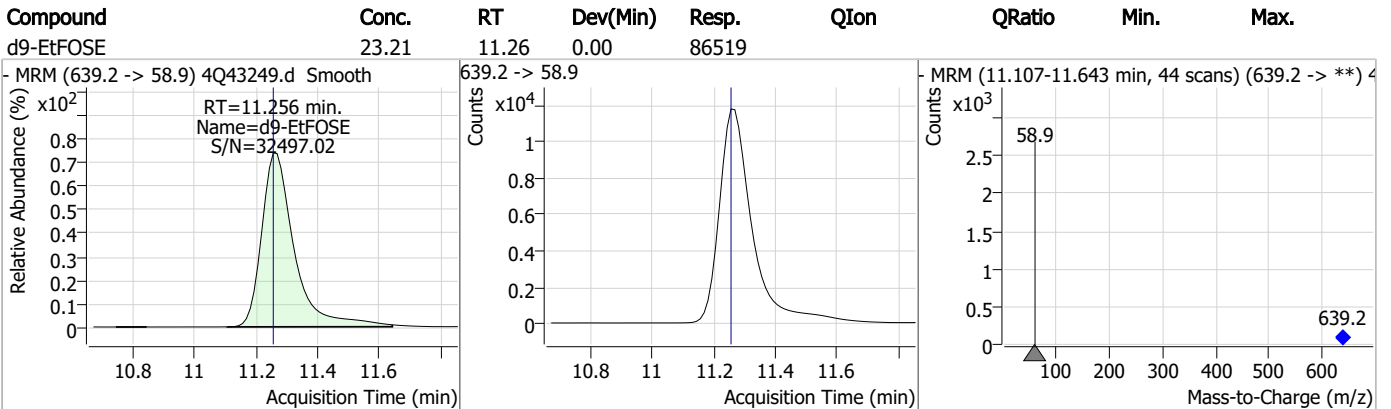
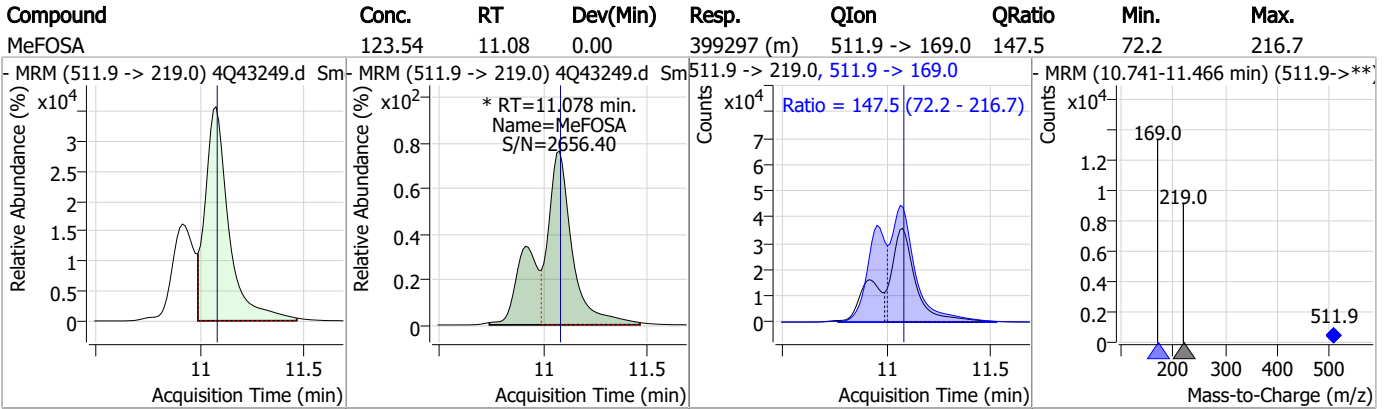
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	326.98	10.97	0.00	777789 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.72	11.06	0.00	9666				



Perfluorinated Compounds by LC/MS/MS

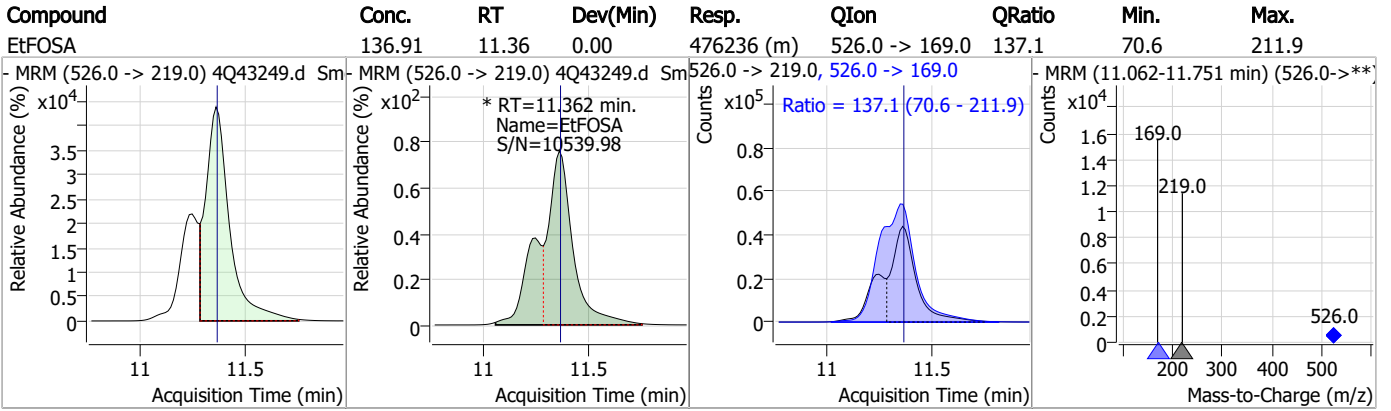


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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q625-IC625
Lab FileID: 4Q43249.D
Injection Time: 04/19/23 13:33

Method: EPA DRAFT 1633
Analyst approved: 04/20/23 14:17 Natasha Gumtie
Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43251.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 2:01:16 PM
 Sample Name : icv625-4
 Vial : P1-B1
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	118833	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	72834	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	54240	2.50 µg/L	0.012
M4-PFHpA	6.529	367.1 -> 322.0	28787	2.50 µg/L	0.012
M8-PFOA	7.188	421.1 -> 376.0	40690	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	22341	1.25 µg/L	0.013
M6-PFDA	8.253	519.1 -> 474.1	21967	1.25 µg/L	0.012
M7-PFUnDA	8.734	570.0 -> 525.1	23338	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	28824	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	22668	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	20261	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	11796	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	7436	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	11089	2.50 µg/L	0.012
M2-4:2FTS	5.273	329.1 -> 80.9	1685	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2790	5.00 µg/L	0.000
M2-8:2FTS	8.027	529.1 -> 80.9	4539	5.00 µg/L	0.000
M3-MeFOSAA	8.310	573.2 -> 419.0	19043	5.00 µg/L	0.012
M3-HFPO-DA	5.952	286.9 -> 168.9	35290	10.00 µg/L	0.000
M5-EtFOSAA	8.520	589.2 -> 419.0	15849	5.00 µg/L	0.012
M7-MeFOSE	10.947	623.2 -> 58.9	84940	25.00 µg/L	-0.012
M9-EtFOSE	11.256	639.2 -> 58.9	108851	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11350	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	9929	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	10840	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	66579	5.00 µg/L	-0.013
18O2-PFHxS	7.290	403.0 -> 83.9	5014	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	48713	2.50 µg/L	0.000
13C2-PFDA	8.253	515.1 -> 470.1	19779	1.25 µg/L	0.012
13C5-PFNA	7.746	468.0 -> 423.0	24530	1.25 µg/L	0.013
13C2-PFHxA	5.598	315.1 -> 270.0	46186	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.273	329.1 -> 80.9	1685	5.72 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.5%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2790	6.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.4%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4539	5.40 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-PFDoDA	9.180	615.1 -> 570.0	28824	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C2-PFTeDA	9.974	715.2 -> 670.0	22668	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C3-PFBS	5.502	302.1 -> 79.9	11796	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C3-PFHxS	7.291	402.1 -> 79.9	7436	2.60 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C4-PFBA	2.936	216.8 -> 171.9	118833	9.91 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C4-PFHpA	6.529	367.1 -> 322.0	28787	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFHxA	5.597	318.0 -> 273.0	54240	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFPeA	4.412	268.3 -> 223.0	72834	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C6-PFDA	8.253	519.1 -> 474.1	21967	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.734	570.0 -> 525.1	23338	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C8-FOSA	9.783	506.1 -> 77.8	20261	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C8-PFOA	7.188	421.1 -> 376.0	40690	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-PFOS	8.405	507.1 -> 79.9	11089	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C9-PFNA	7.746	472.1 -> 427.0	22341	1.30 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.3%	
d3-MeFOSAA	8.310	573.2 -> 419.0	19043	5.35 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.0%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	35290	10.07 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
d3-MeFOSA	11.064	515.0 -> 219.0	9929	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
d5-EtFOSAA	8.520	589.2 -> 419.0	15849	5.30 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.0%	
d7-MeFOSE	10.947	623.2 -> 58.9	84940	25.54 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
d9-EtFOSE	11.256	639.2 -> 58.9	108851	25.56 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
d5-EtFOSA	11.360	531.1 -> 219.0	11350	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
Target Compounds					QValue
4:2FTS	5.286	327.1 -> 307.0	20672	9.59 µg/L	96
		327.1 -> 80.9	8748		
6:2FTS	6.949	427.1 -> 407.0	19636	9.21 µg/L	97
		427.1 -> 80.9	8388		
8:2FTS	8.028	527.1 -> 507.0	22879	10.23 µg/L	97
		527.1 -> 80.8	8972		
EtFOSAA	8.521	584.2 -> 419.1	6024	2.66 µg/L	m 96
		584.2 -> 526.0	3039		
FOSA	9.786	498.1 -> 77.9	17171	2.51 µg/L	100
		498.1 -> 478.0	514		
MeFOSAA	8.311	570.1 -> 419.0	6336	2.33 µg/L	m 95
		570.1 -> 483.0	1290		
PFBA	2.932	212.8 -> 168.9	28270	10.25 µg/L	100
PFBS	5.503	298.7 -> 79.9	10735	2.30 µg/L	94
		298.7 -> 98.8	3940		
PFDA	8.253	512.9 -> 469.0	31264	2.32 µg/L	95
		512.9 -> 219.0	7097		
PFDODA	9.181	613.1 -> 569.0	48955	2.58 µg/L	100
		613.1 -> 319.0	6730		
PFDS	9.357	599.0 -> 79.9	6080	2.35 µg/L	90

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3303			
PFHpA	6.530	363.1 -> 319.0	39910	2.64	µg/L	99
		363.1 -> 169.0	7160			
PFHpS	7.885	449.0 -> 79.9	7320	2.29	µg/L	100
		449.0 -> 98.9	3927			
PFHxA	5.600	313.0 -> 269.0	43768	2.56	µg/L	99
		313.0 -> 118.9	1309			
PFHxS	7.292	398.7 -> 79.9	6331	2.32	µg/L	m 92
		398.7 -> 98.9	3091			
PFNA	7.747	463.0 -> 419.0	31517	2.48	µg/L	100
		463.0 -> 219.0	8066			
PFNS	8.899	548.8 -> 79.9	4645	2.36	µg/L	99
		548.8 -> 98.9	2193			
PFOA	7.189	413.0 -> 369.0	46794	2.58	µg/L	99
		413.0 -> 169.0	9652			
PFOS	8.406	498.9 -> 79.9	10126	2.38	µg/L	m 97
		498.9 -> 98.8	4971			
PFPeA	4.414	263.0 -> 219.0	73900	5.08	µg/L	100
PFPeS	6.569	349.1 -> 79.9	5651	2.40	µg/L	99
		349.1 -> 98.9	2499			
PFTeDA	9.974	713.1 -> 669.0	47774	2.59	µg/L	100
		713.1 -> 168.9	4121			
PFTrDA	9.604	663.0 -> 619.0	62115	2.63	µg/L	98
		663.0 -> 168.9	6391			
PFUnDA	8.735	563.1 -> 519.0	32621	2.47	µg/L	97
		563.1 -> 269.1	6294			
11CI-PF3OUdS	9.655	630.9 -> 450.9	49833	4.90	µg/L	100
		632.9 -> 452.9	15582			
9CI-PF3ONS	8.762	530.8 -> 351.0	50826	4.65	µg/L	98
		532.8 -> 353.0	14665			
ADONA	6.781	376.9 -> 250.9	125142	4.93	µg/L	98
		376.9 -> 84.8	33957			
HFPO-DA	5.965	284.9 -> 168.9	14518	5.21	µg/L	98
		284.9 -> 184.9	1738			
3:3FTCA	3.848	241.0 -> 177.0	8477	12.24	µg/L	100
		241.0 -> 117.0	800			
5:3FTCA	6.244	341.0 -> 237.1	167377	65.71	µg/L	99
		341.0 -> 217.0	118507			
7:3FTCA	7.686	441.0 -> 316.9	81246	65.37	µg/L	99
		441.0 -> 336.9	182255			
EtFOSA	11.362	526.0 -> 219.0	20886	4.93	µg/L	m 97
		526.0 -> 169.0	28716			
EtFOSE	11.282	630.0 -> 58.9	44029	12.69	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	17295	5.21	µg/L	m 99
		511.9 -> 169.0	24784			
MeFOSE	10.973	616.1 -> 58.9	38527	12.75	µg/L	m 100
PFDoDS	10.126	699.1 -> 79.9	5814	2.47	µg/L	98
		699.1 -> 98.8	3052			
NFDHA	5.479	295.0 -> 201.0	5334	5.76	µg/L	92
		295.0 -> 84.9	1272			
PFMBA	4.828	279.0 -> 85.1	41547	5.00	µg/L	100
PFMPA	3.553	229.0 -> 84.9	36572	4.95	µg/L	100
PFEESA	6.034	314.8 -> 134.9	64179	4.58	µg/L	100
		314.8 -> 82.9	2255			

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



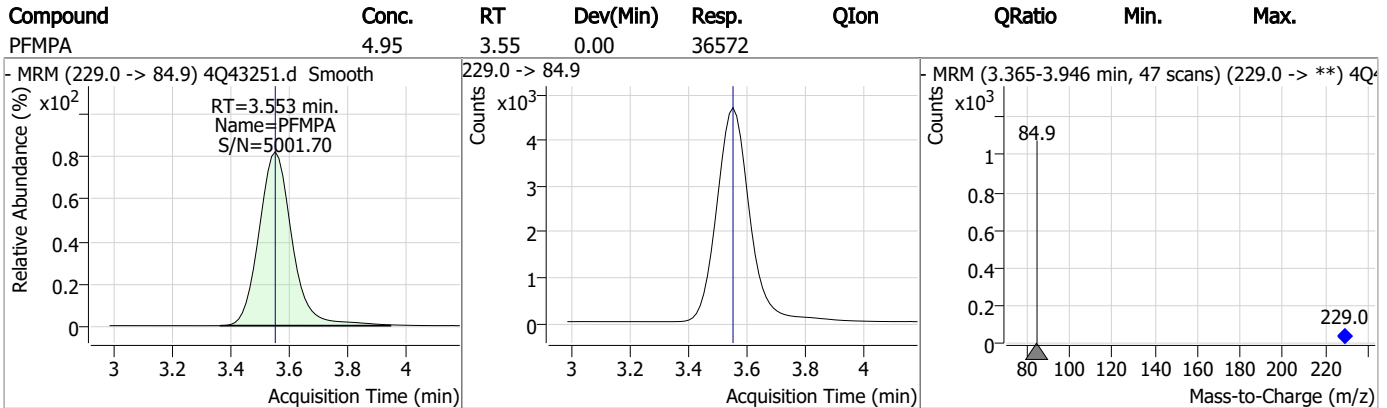
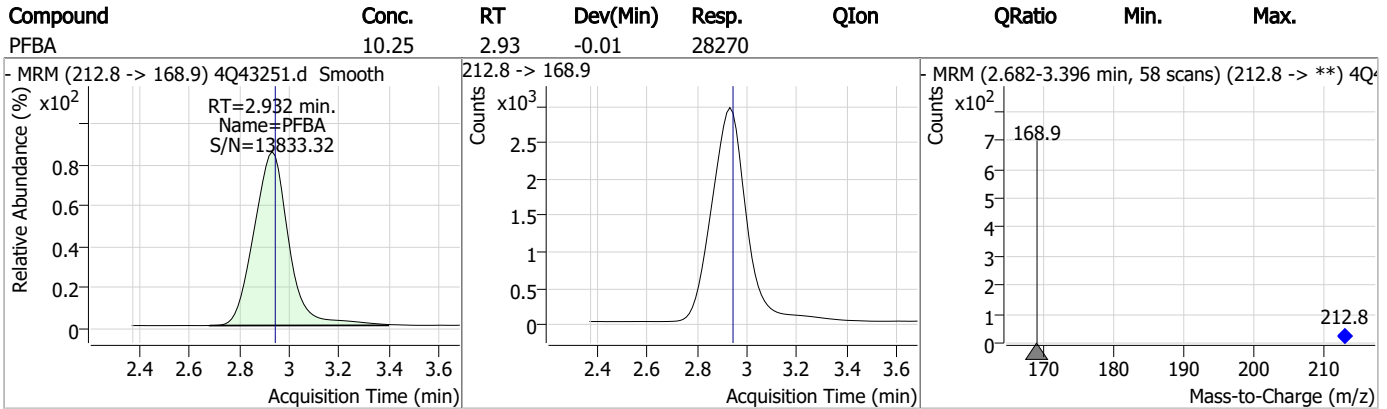
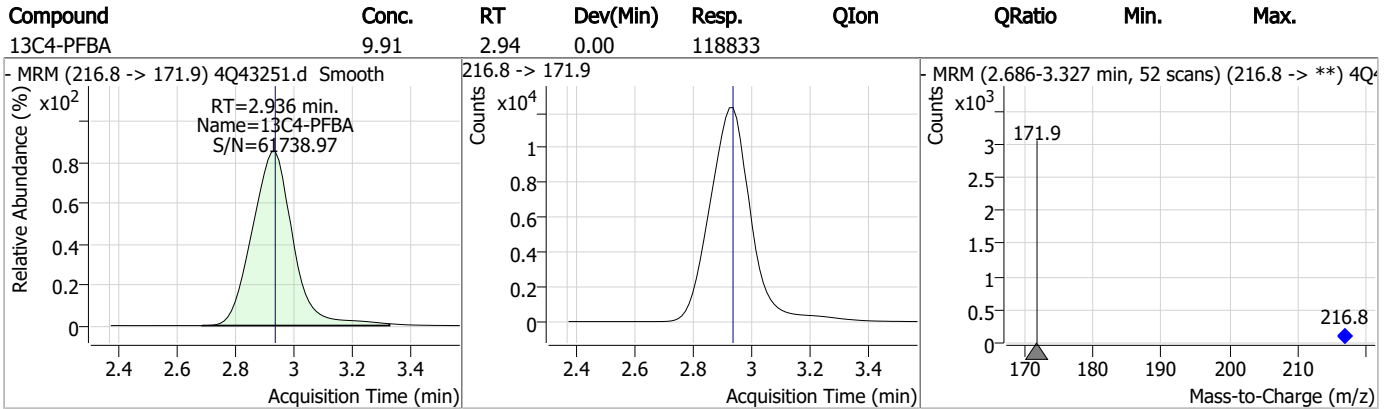
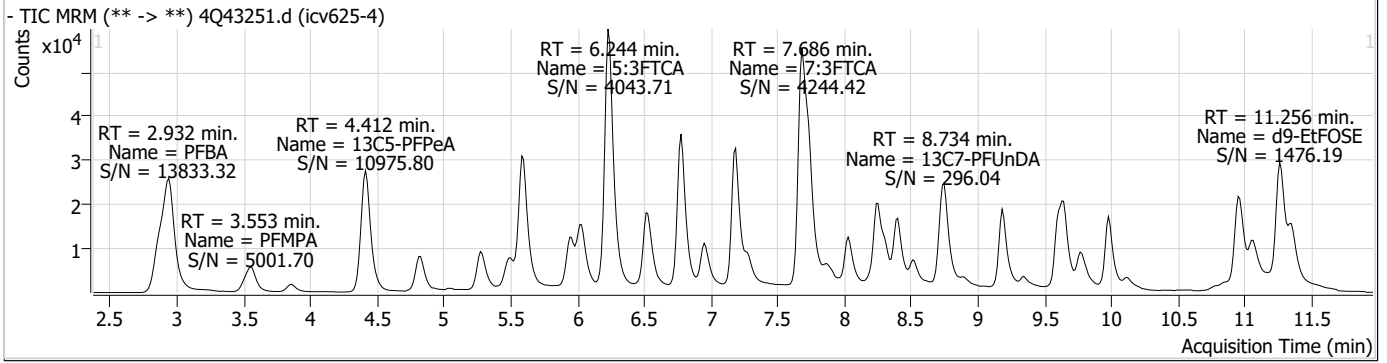
Perfluorinated Compounds by LC/MS/MS

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

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Perfluorinated Compounds by LC/MS/MS

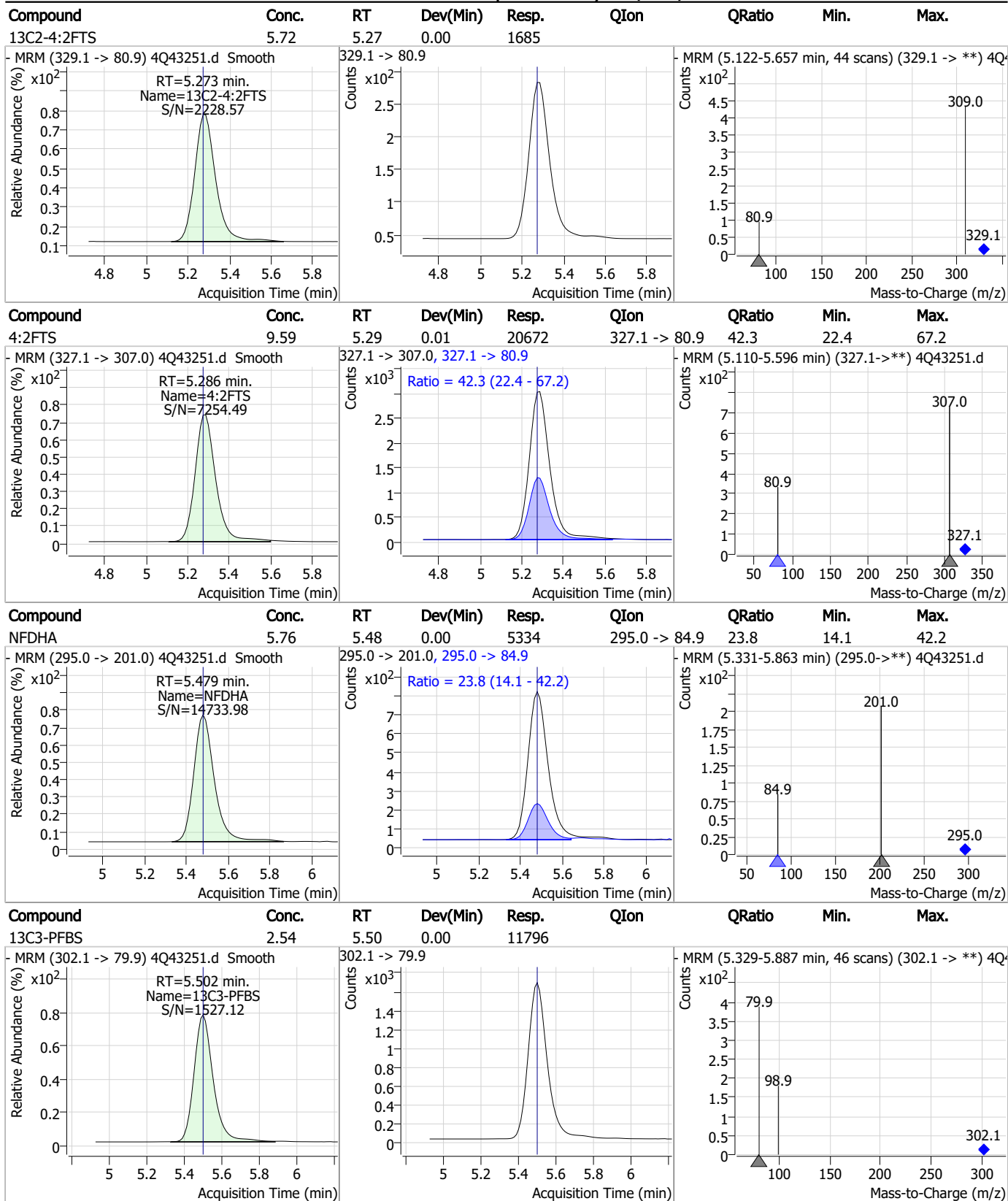


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	12.24	3.85	-0.02	8477	241.0 -> 117.0	9.4	4.6	13.9
- MRM (241.0 -> 177.0) 4Q43251.d Smooth			241.0 -> 177.0, 241.0 -> 117.0			- MRM (3.698-4.243 min) (241.0->**) 4Q43251.d		
13C5-PFPeA	5.16	4.41	0.00	72834				
- MRM (268.3 -> 223.0) 4Q43251.d Smooth			268.3 -> 223.0			- MRM (4.248-4.805 min, 45 scans) (268.3 -> **) 4Q		
PFPeA	5.08	4.41	0.00	73900				
- MRM (263.0 -> 219.0) 4Q43251.d Smooth			263.0 -> 219.0			- MRM (4.250-4.806 min, 45 scans) (263.0 -> **) 4Q		
PFMBA	5.00	4.83	0.00	41547				
- MRM (279.0 -> 85.1) 4Q43251.d Smooth			279.0 -> 85.1			- MRM (4.647-5.145 min, 40 scans) (279.0 -> **) 4Q		

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Perfluorinated Compounds by LC/MS/MS

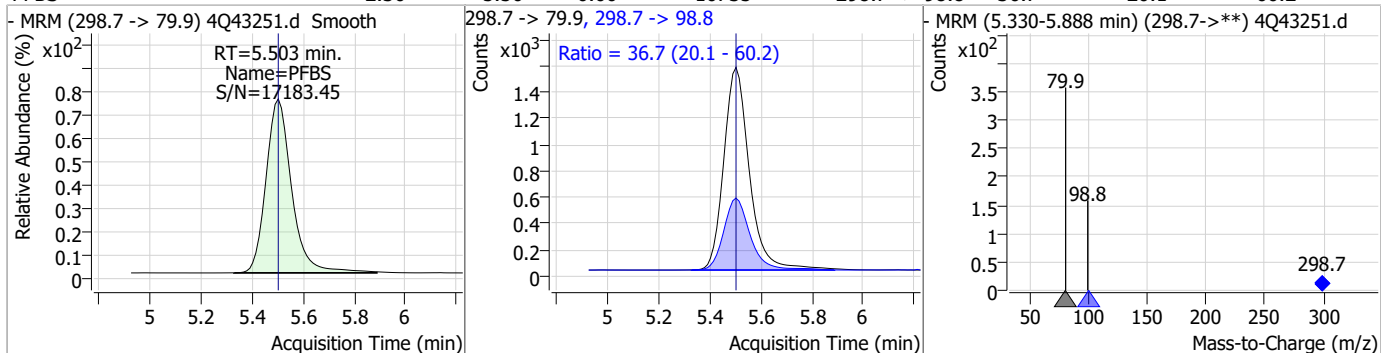


7.7.10 7

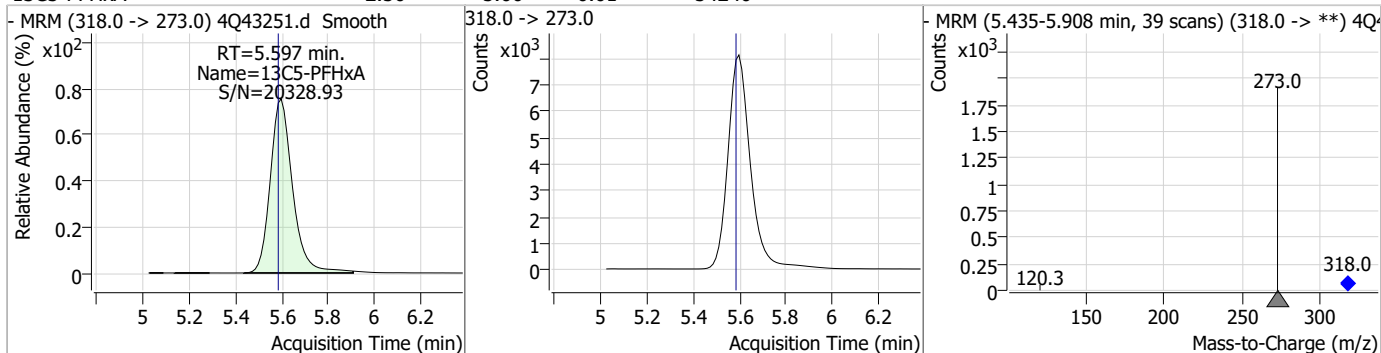


Perfluorinated Compounds by LC/MS/MS

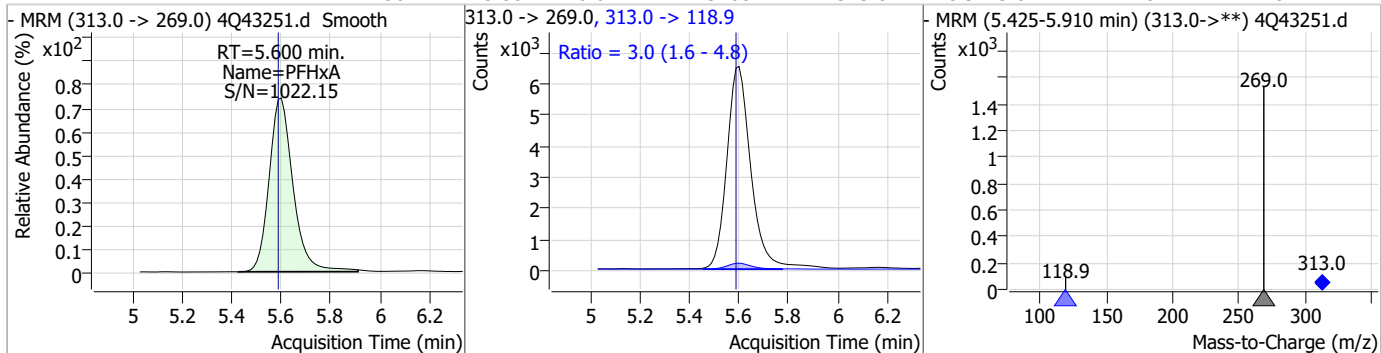
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.30	5.50	0.00	10735	298.7 -> 98.8	36.7	20.1	60.2



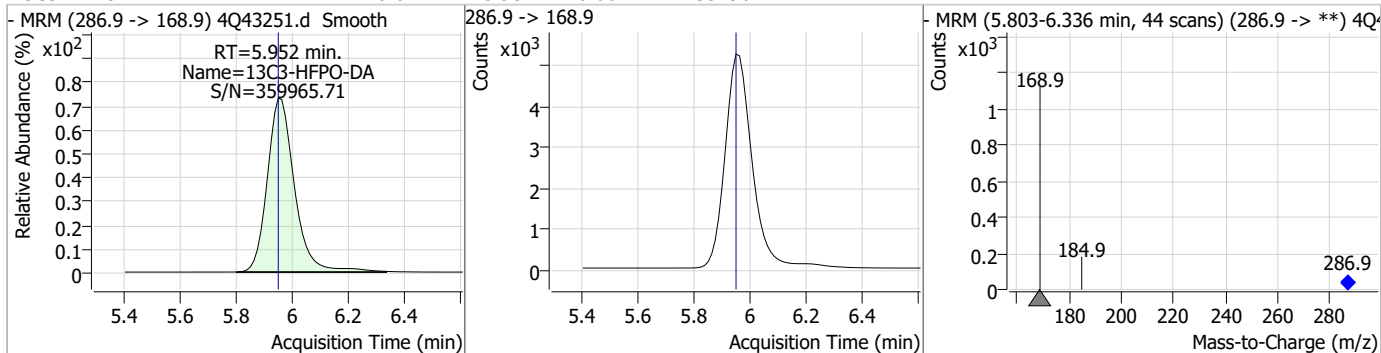
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.50	5.60	0.01	54240	318.0 -> 273.0	3.0	1.6	4.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.56	5.60	0.01	43768	313.0 -> 118.9	3.0	1.6	4.8

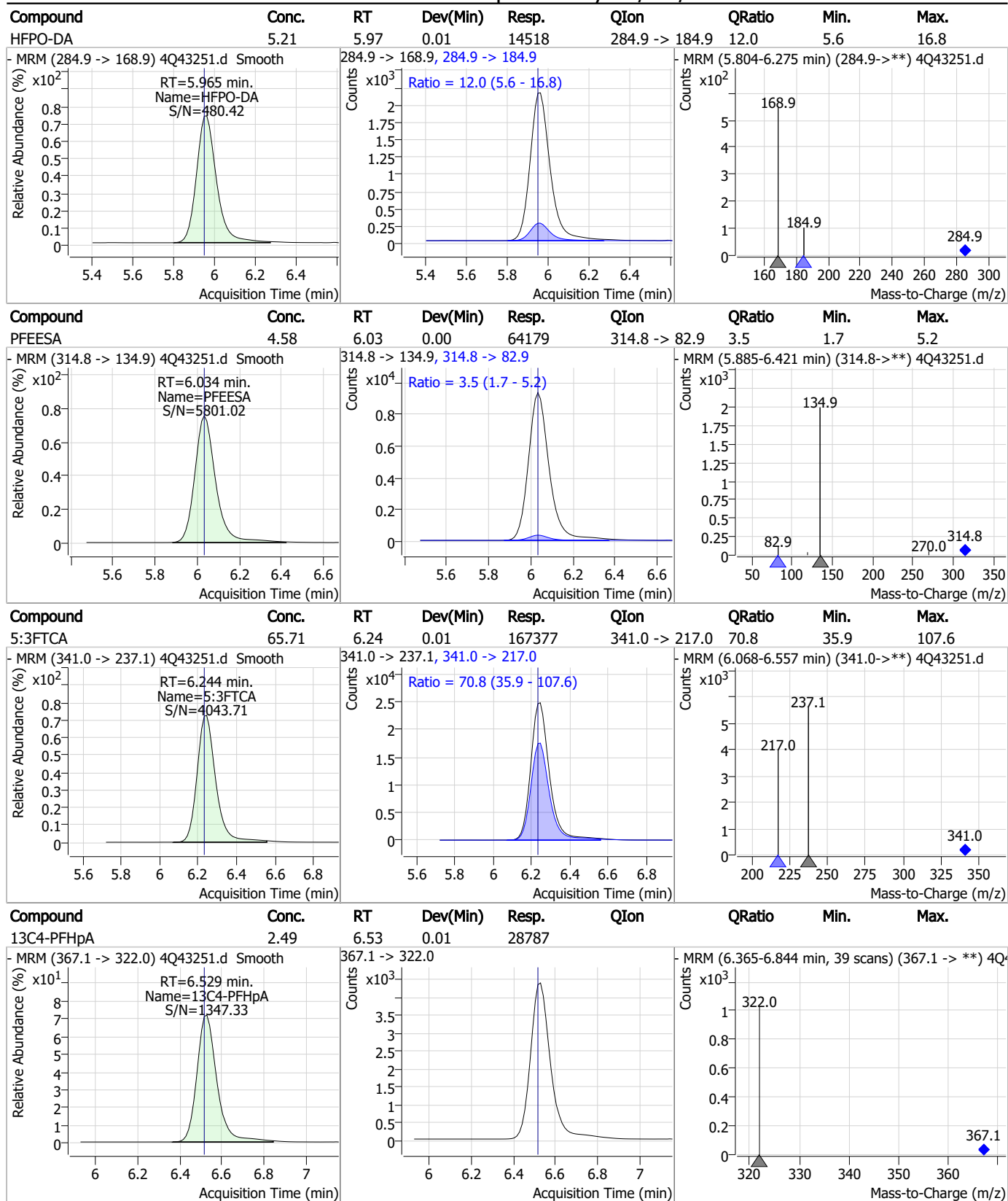


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.07	5.95	0.00	35290	286.9 -> 168.9	3.0	1.6	4.8



7.7.10 7

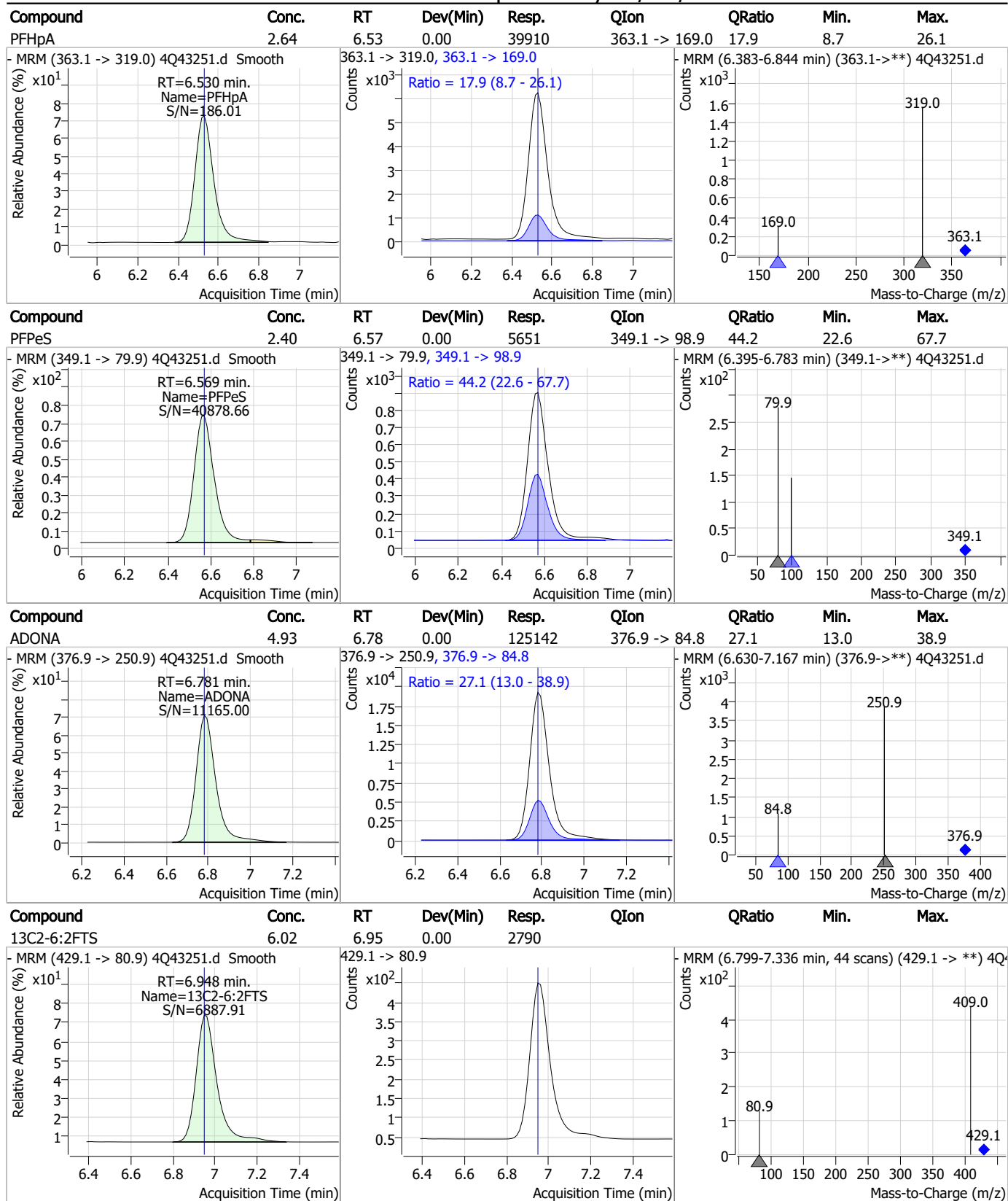
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



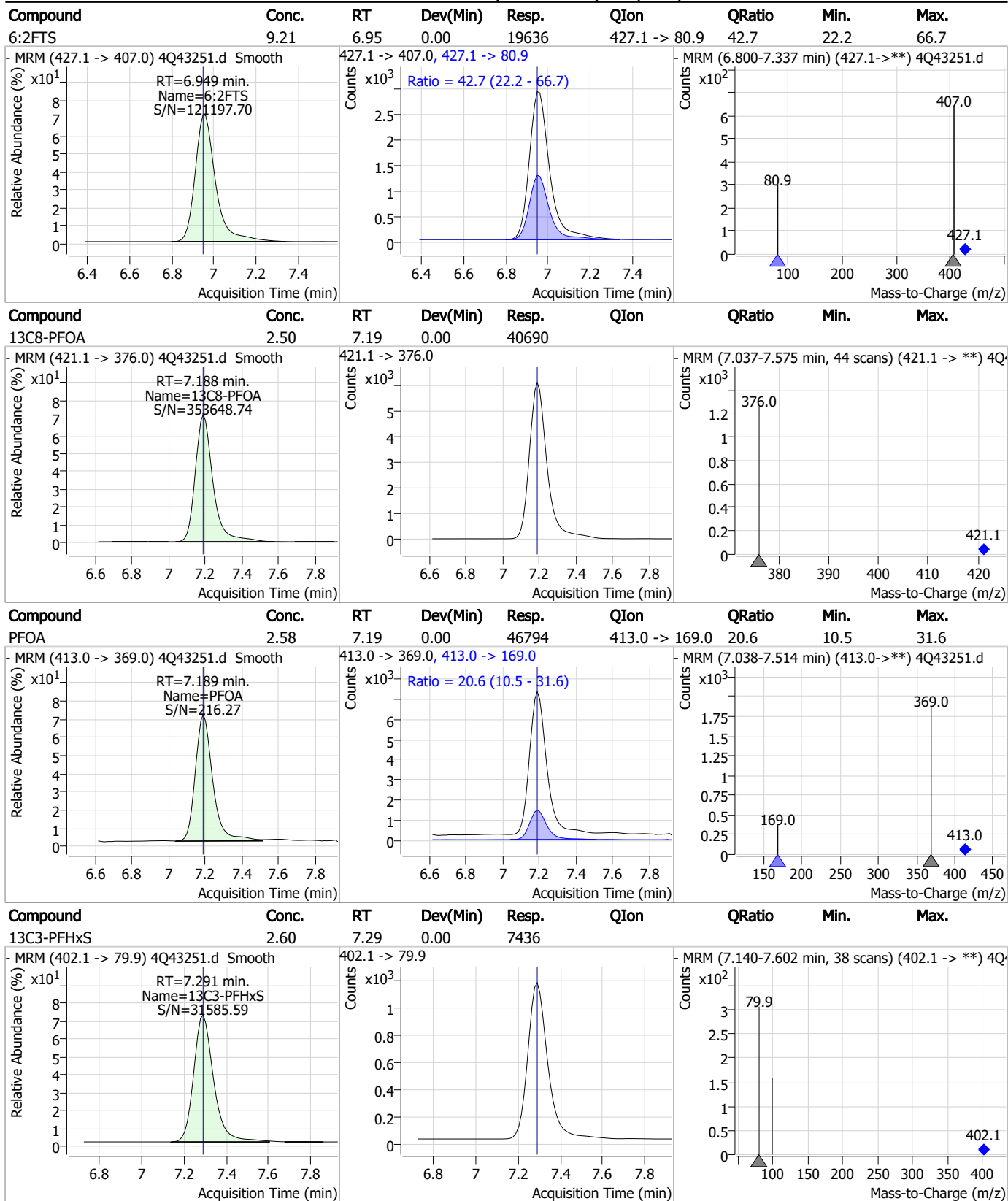
Perfluorinated Compounds by LC/MS/MS



7.7.10

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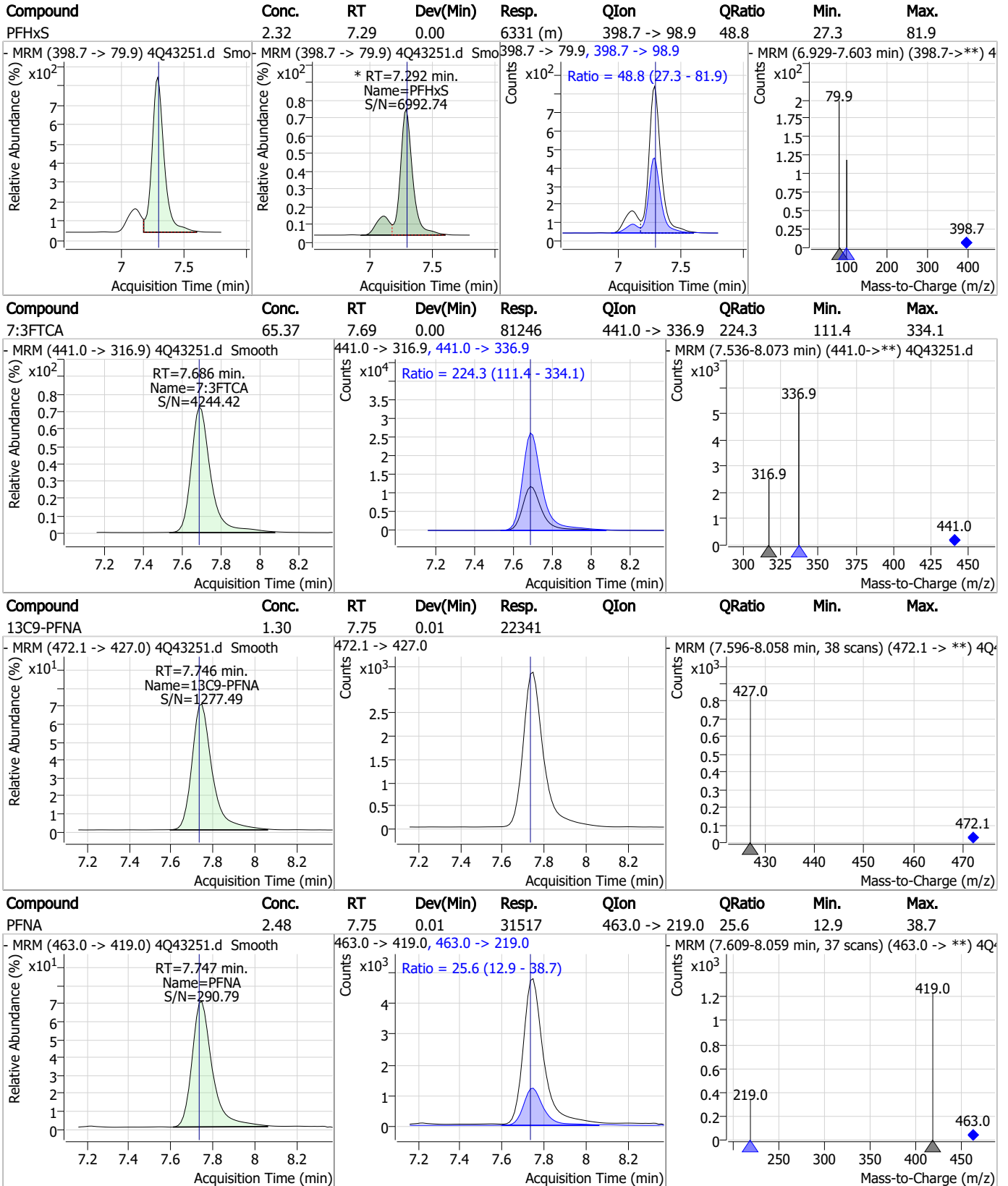
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



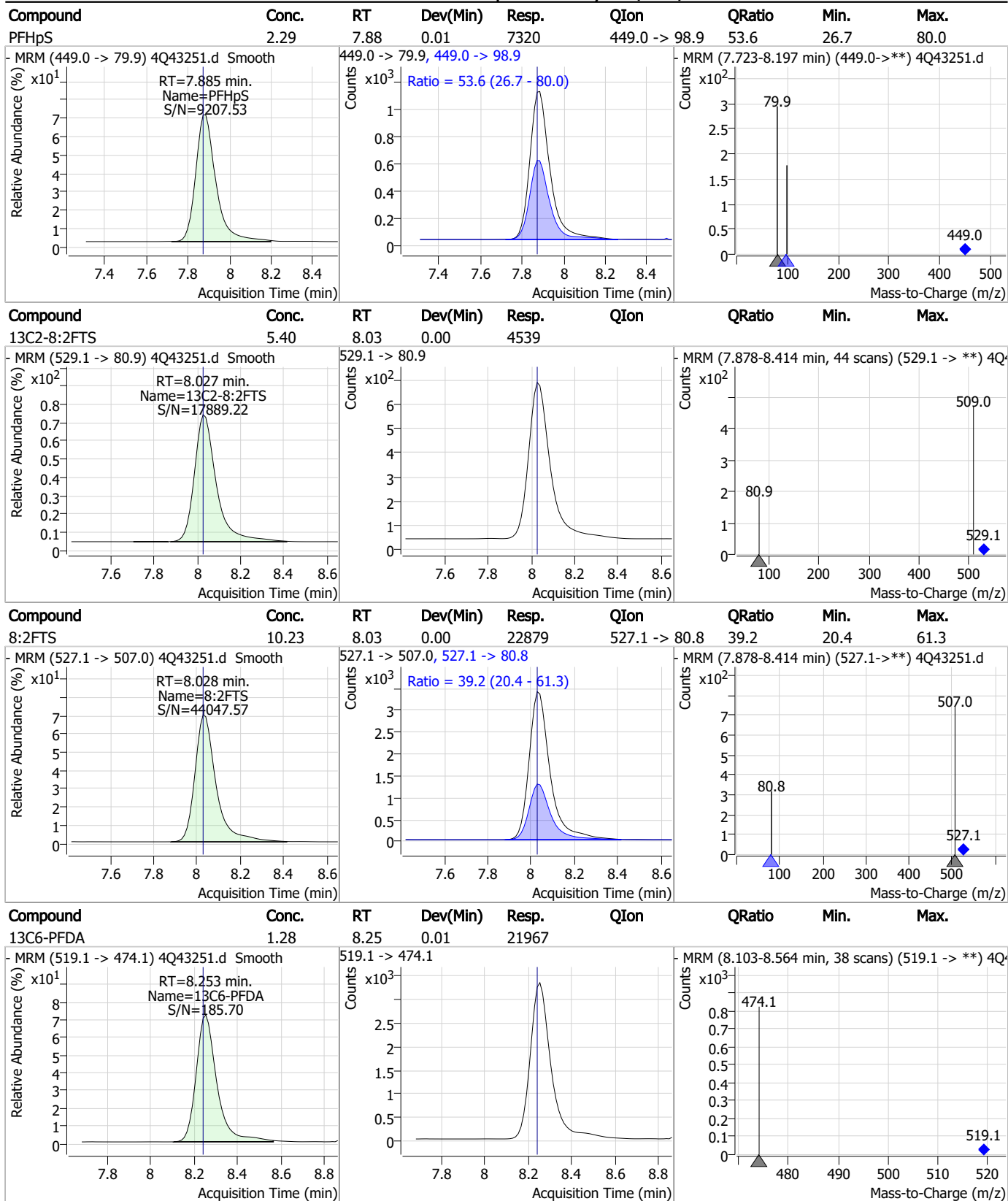
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



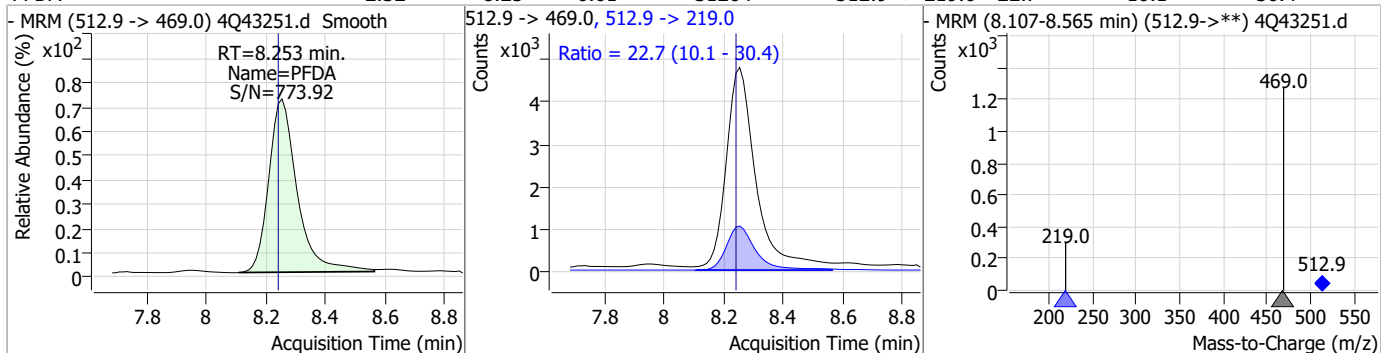
Perfluorinated Compounds by LC/MS/MS



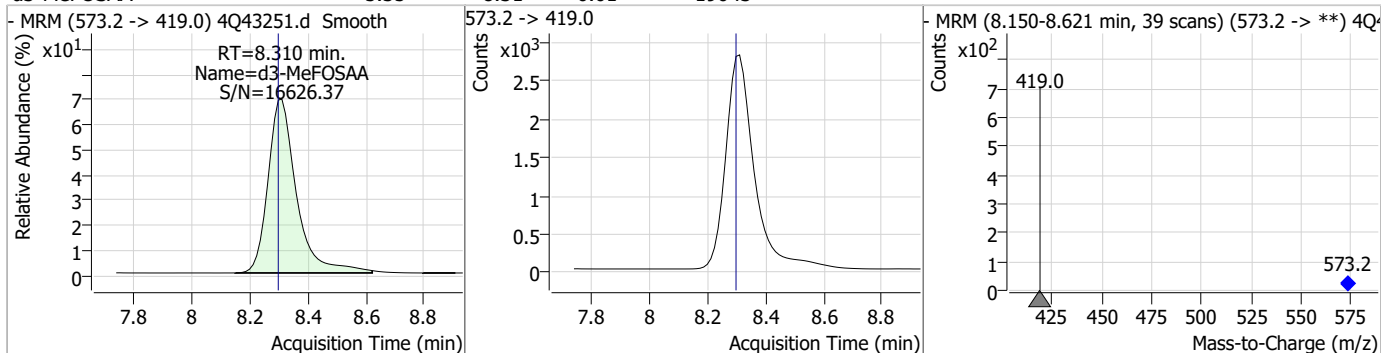
7.7.10
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Perfluorinated Compounds by LC/MS/MS

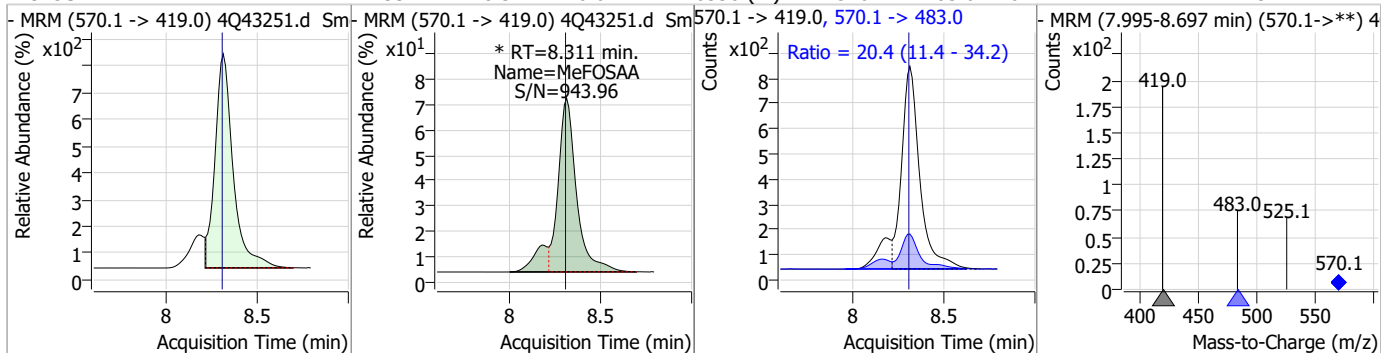
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.32	8.25	0.01	31264	512.9 -> 219.0	22.7	10.1	30.4



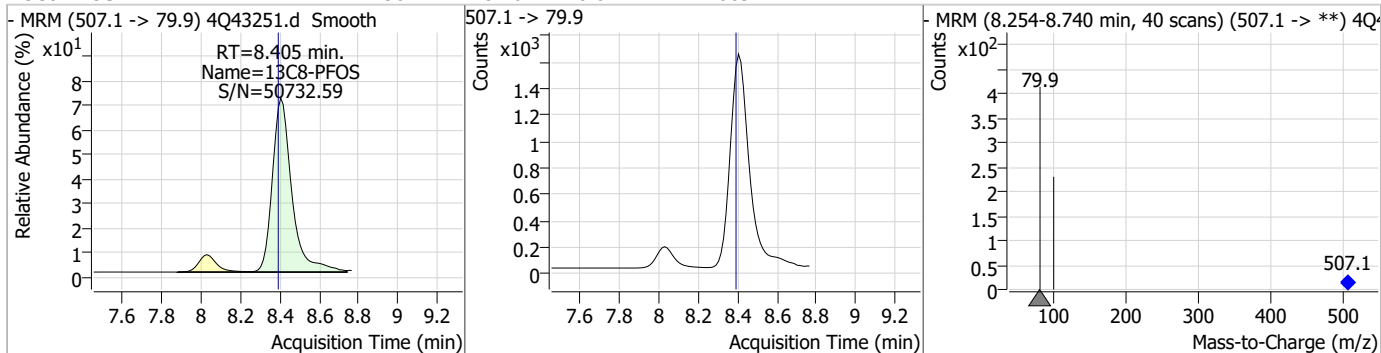
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.35	8.31	0.01	19043				



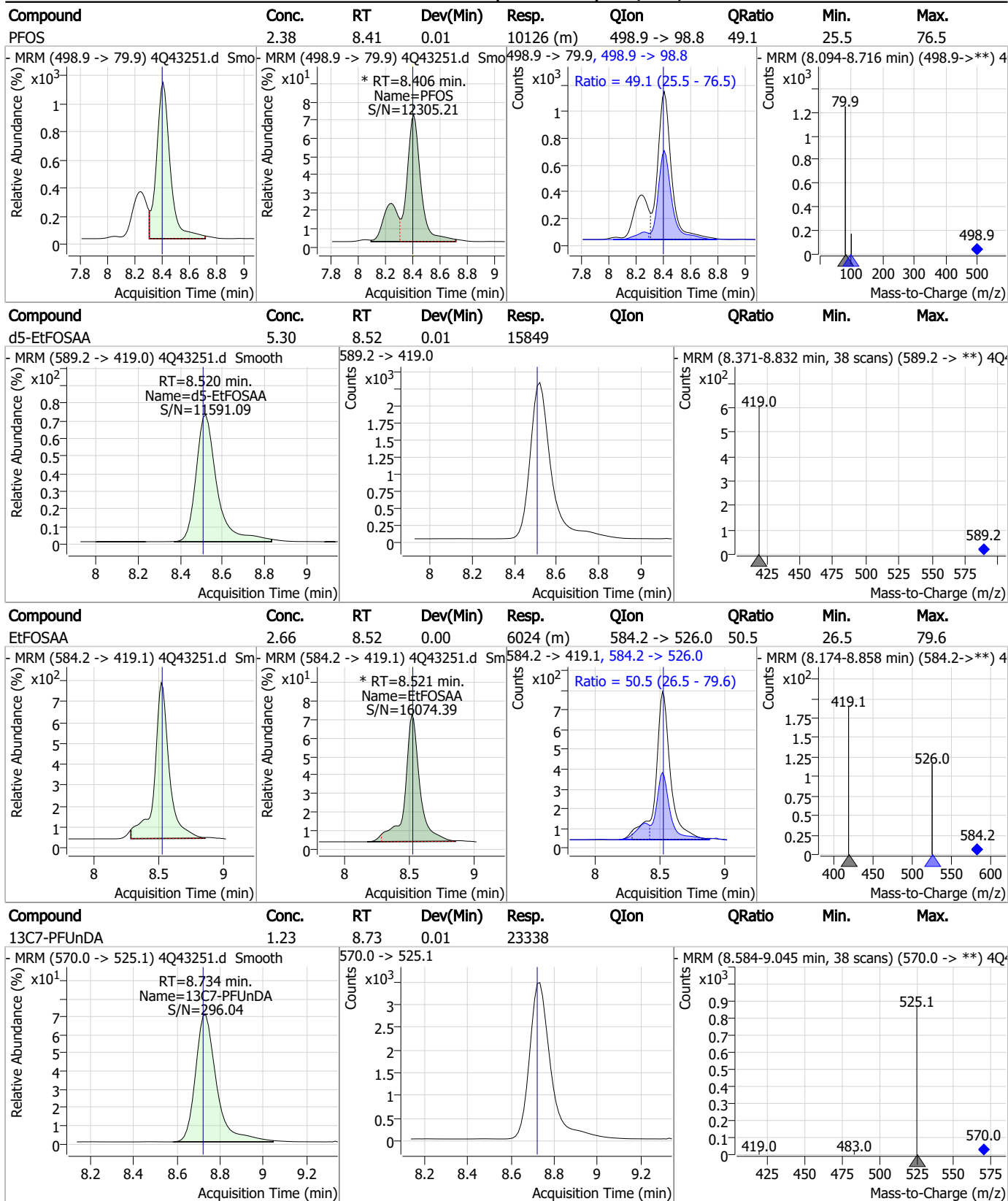
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.33	8.31	0.01	6336 (m)	570.1 -> 483.0	20.4	11.4	34.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.56	8.40	0.01	11089				

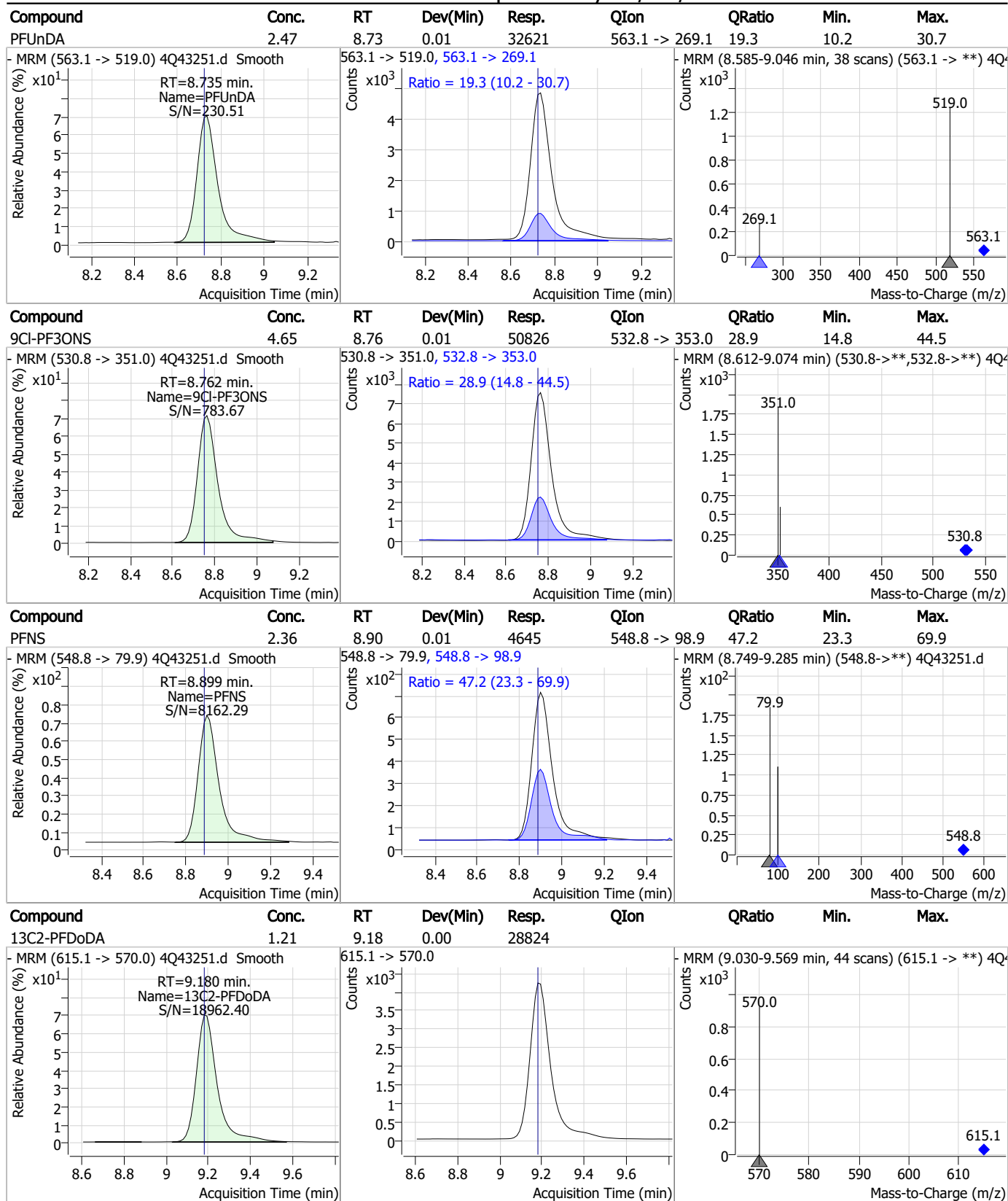


Perfluorinated Compounds by LC/MS/MS



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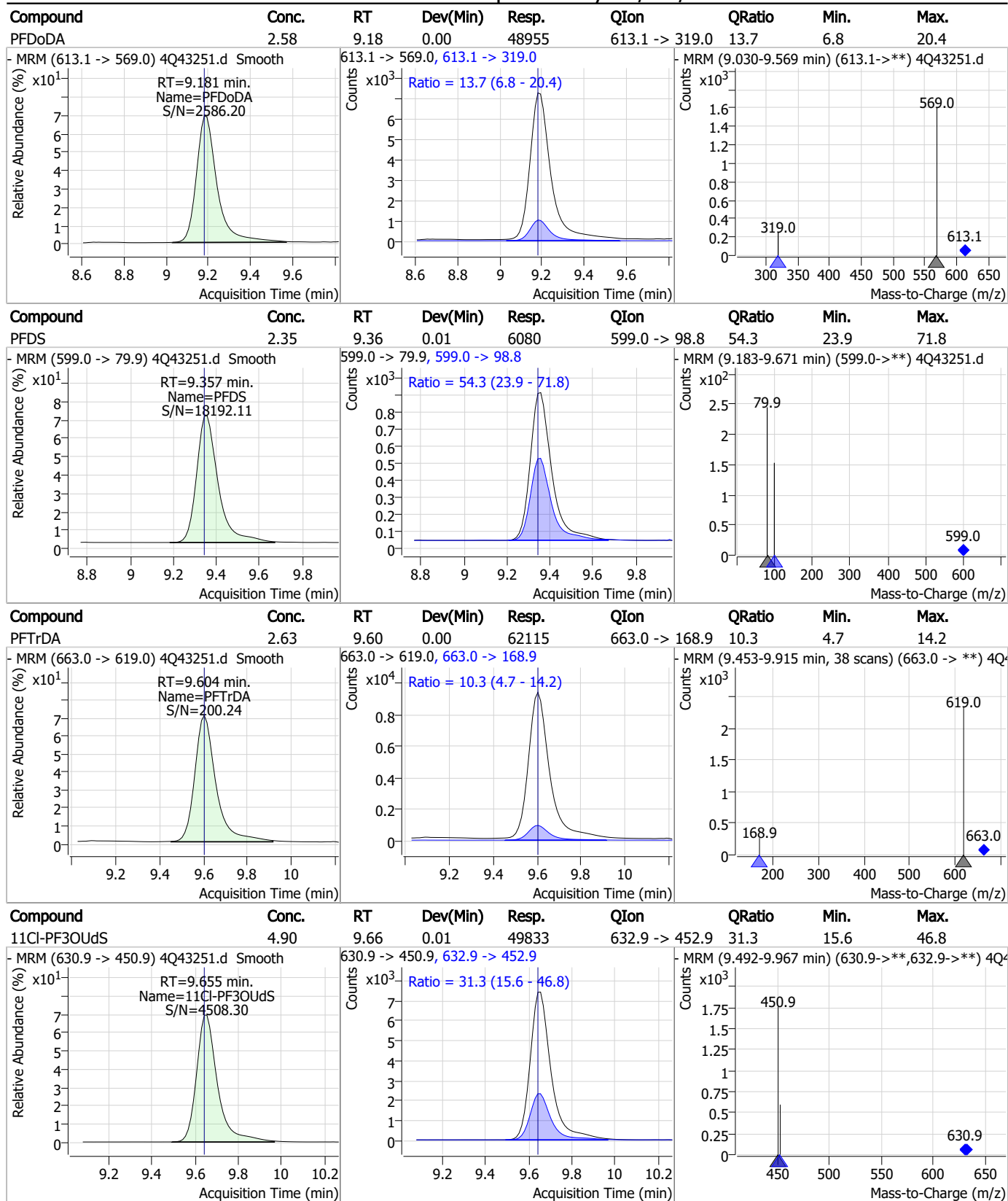
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

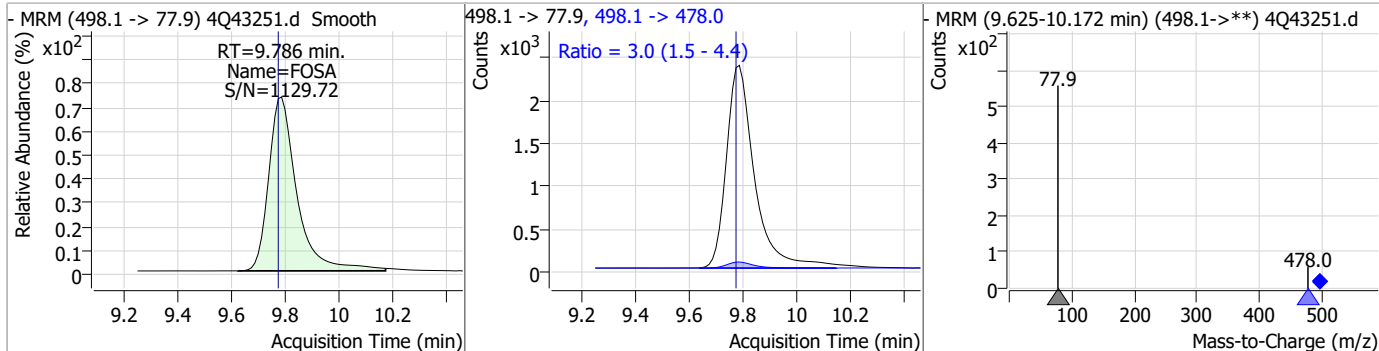


7.7.10 7

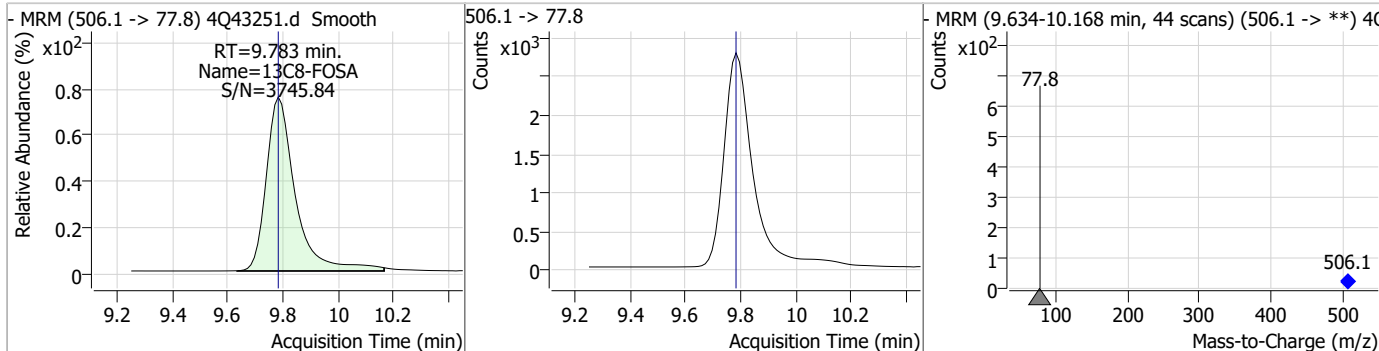


Perfluorinated Compounds by LC/MS/MS

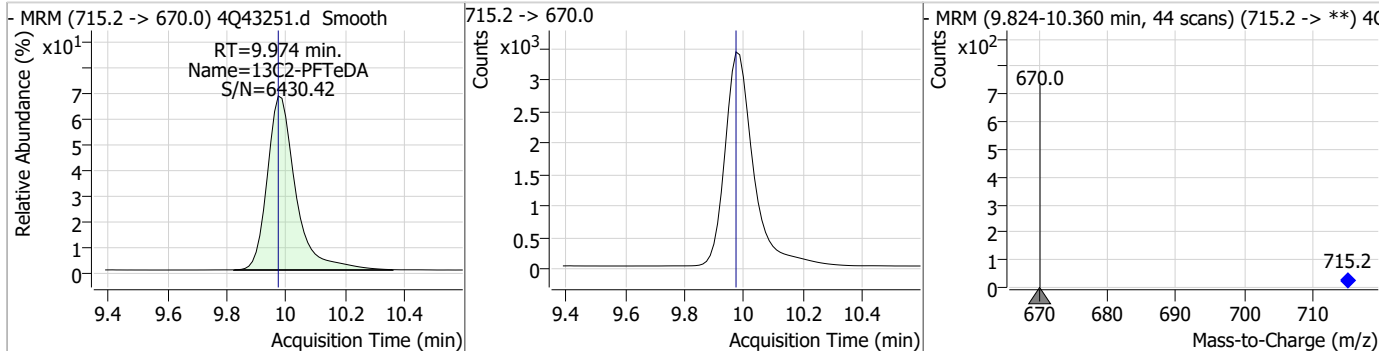
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.51	9.79	0.01	17171	498.1 -> 478.0	3.0	1.5	4.4



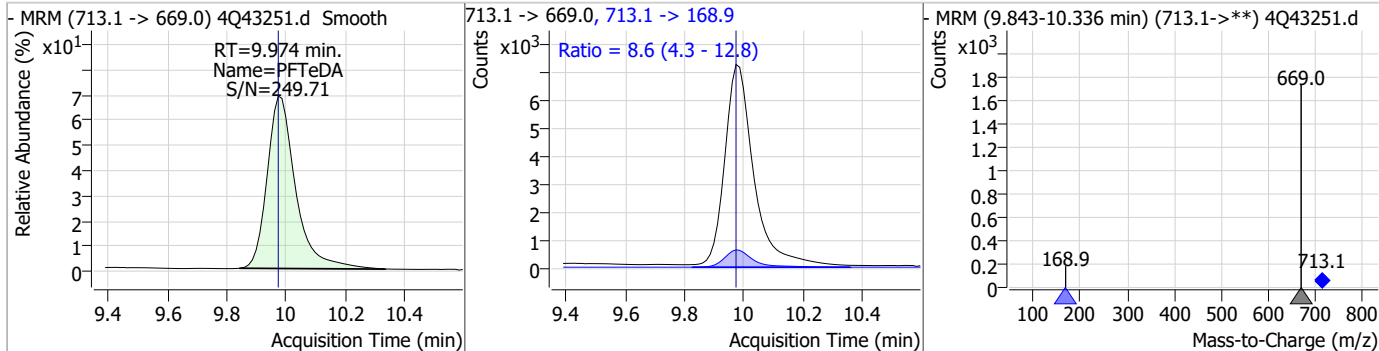
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
¹³ C8-FOSA	2.58	9.78	0.00	20261				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
¹³ C2-PFTeDA	1.19	9.97	0.00	22668				



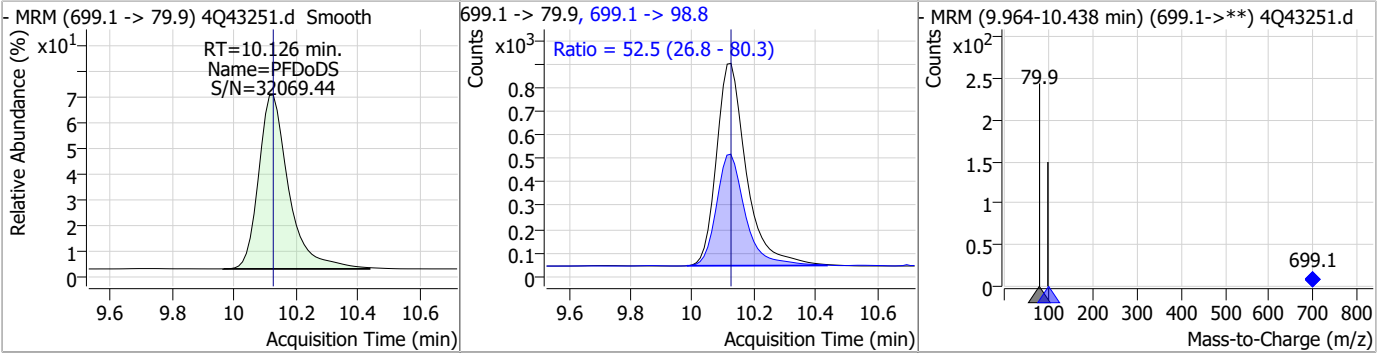
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.59	9.97	0.00	47774	713.1 -> 168.9	8.6	4.3	12.8



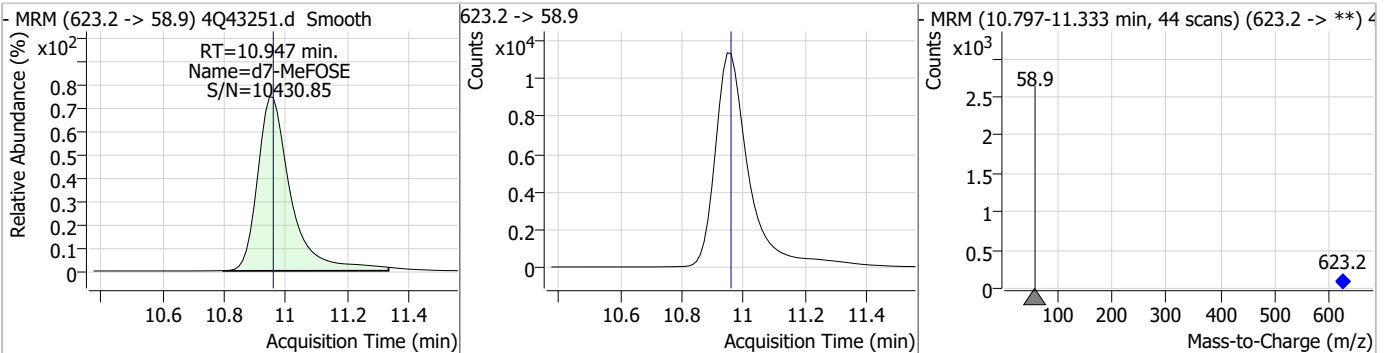
7.7.10
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Perfluorinated Compounds by LC/MS/MS

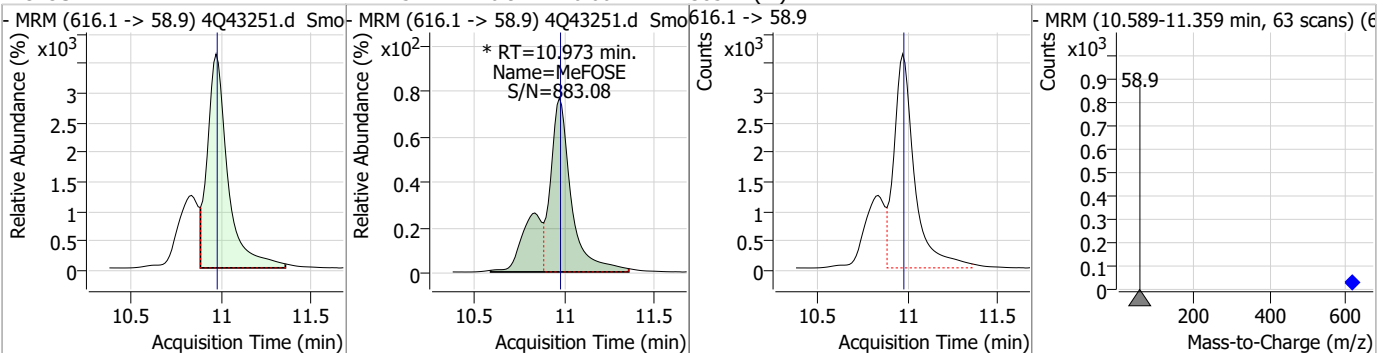
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.47	10.13	0.00	5814	699.1 -> 98.8	52.5	26.8	80.3



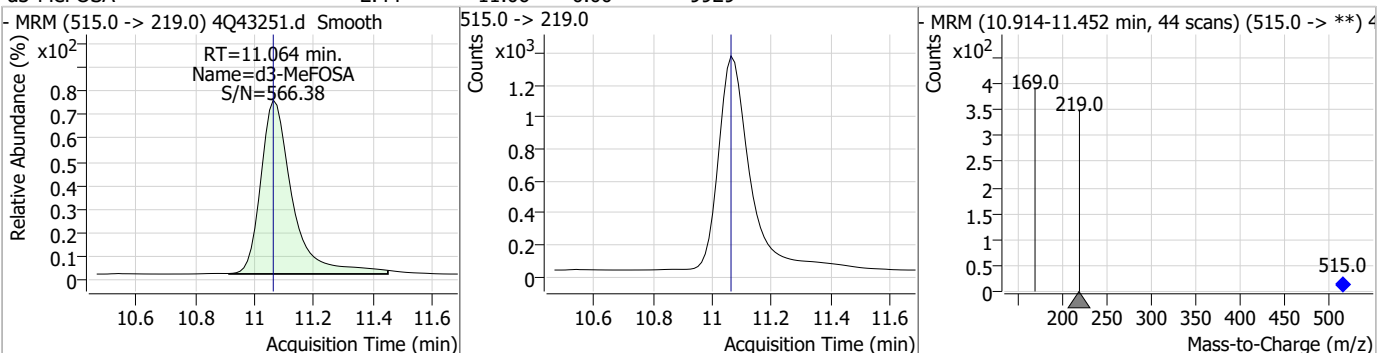
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.54	10.95	-0.01	84940				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.75	10.97	0.00	38527 (m)				

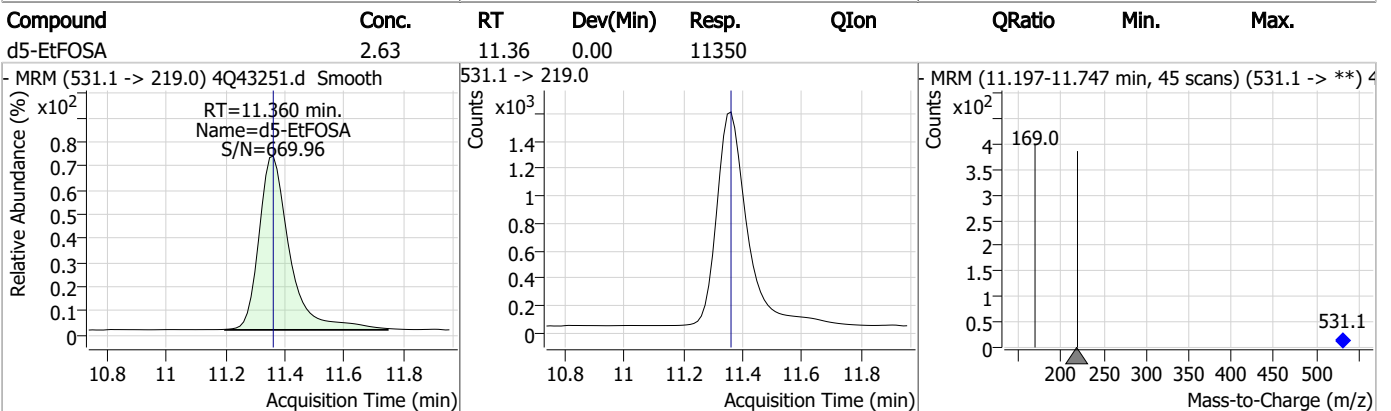
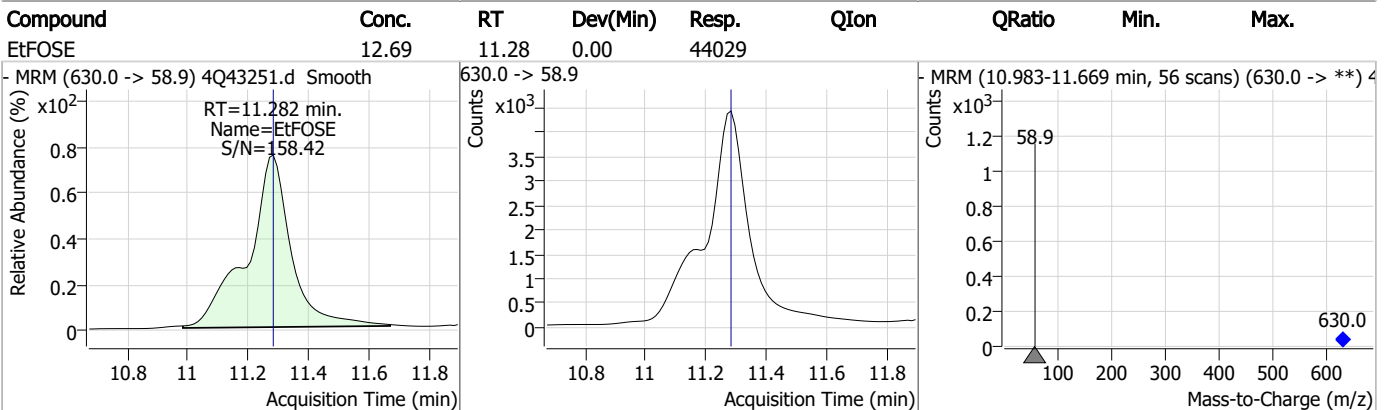
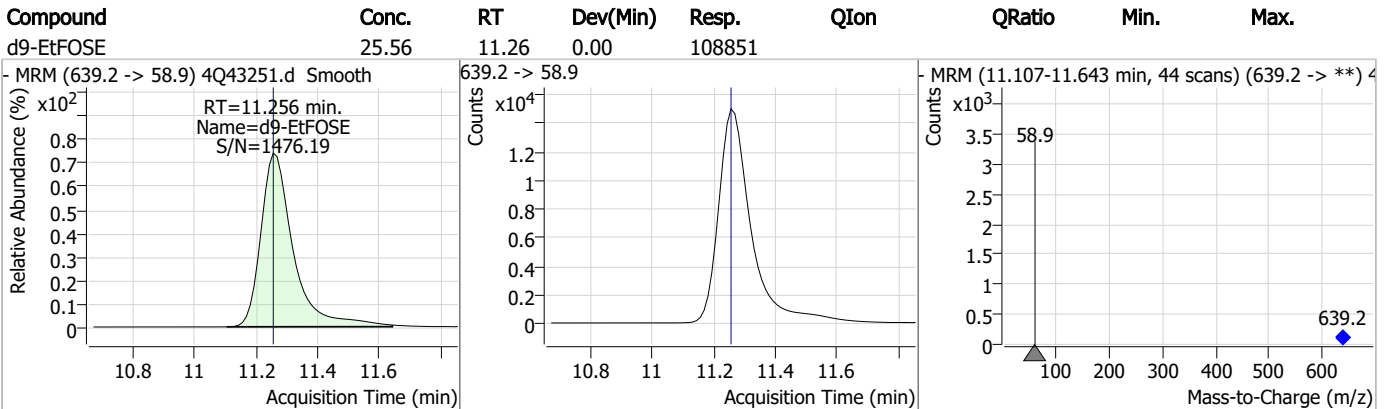
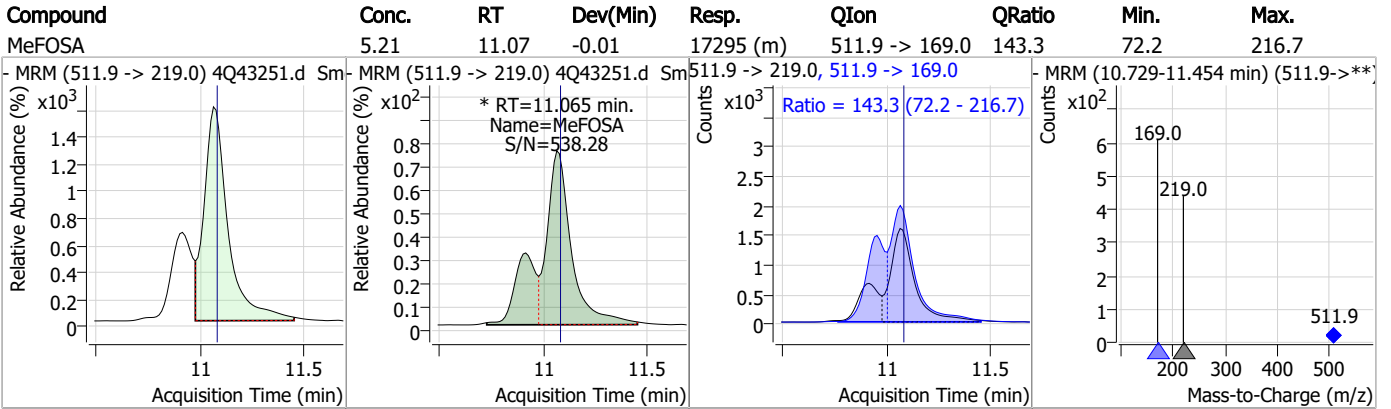


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.44	11.06	0.00	9929				



7.7.10
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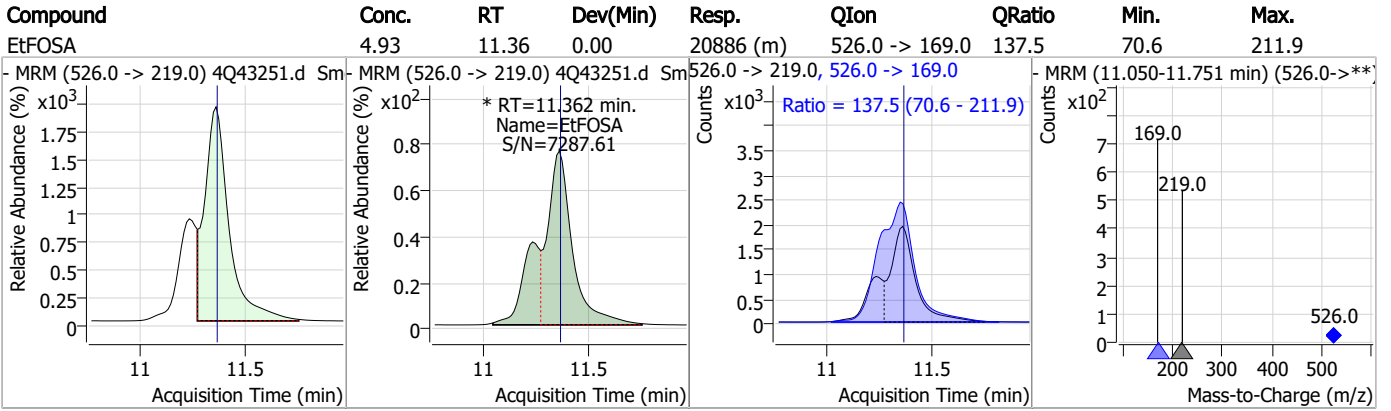
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q625-ICV625 Method: EPA DRAFT 1633
Lab FileID: 4Q43251.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 14:01 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43252.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/19/2023 2:15:18 PM
 Sample Name : icv625-20
 Vial : P1-B2
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s6q625.batch.bin
 Sample Information : OP96301,S4q625,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	116683	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	69243	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	51670	2.50 µg/L	0.012
M4-PFHpA	6.529	367.1 -> 322.0	27033	2.50 µg/L	0.012
M8-PFOA	7.188	421.1 -> 376.0	37669	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	20914	1.25 µg/L	0.013
M6-PFDA	8.253	519.1 -> 474.1	18872	1.25 µg/L	0.012
M7-PFUnDA	8.722	570.0 -> 525.1	21866	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	26638	1.25 µg/L	0.000
M2-PFTeDA	9.986	715.2 -> 670.0	21221	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	19115	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	11188	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	7061	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	10233	2.50 µg/L	0.012
M2-4:2FTS	5.285	329.1 -> 80.9	1467	5.00 µg/L	0.012
M2-6:2FTS	6.961	429.1 -> 80.9	2543	5.00 µg/L	0.012
M2-8:2FTS	8.027	529.1 -> 80.9	4376	5.00 µg/L	0.000
M3-MeFOSAA	8.310	573.2 -> 419.0	16673	5.00 µg/L	0.012
M3-HFPO-DA	5.964	286.9 -> 168.9	33521	10.00 µg/L	0.013
M5-EtFOSAA	8.520	589.2 -> 419.0	13970	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	78806	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	98626	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	10336	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	9735	2.50 µg/L	0.012
13C4-PFOS	8.405	502.8 -> 79.9	10534	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	65094	5.00 µg/L	-0.013
18O2-PFHxS	7.290	403.0 -> 83.9	4610	2.50 µg/L	0.000
13C4-PFOA	7.188	417.1 -> 372.0	44555	2.50 µg/L	0.000
13C2-PFDA	8.253	515.1 -> 470.1	19122	1.25 µg/L	0.012
13C5-PFNA	7.746	468.0 -> 423.0	23219	1.25 µg/L	0.013
13C2-PFHxA	5.598	315.1 -> 270.0	45359	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	1467	5.42 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.5%		
13C2-6:2FTS	6.961	429.1 -> 80.9	2543	5.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.4%		
13C2-8:2FTS	8.027	529.1 -> 80.9	4376	5.67 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.3%		
13C2-PFDoDA	9.180	615.1 -> 570.0	26638	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C2-PFTeDA	9.986	715.2 -> 670.0	21221	1.16 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.4%		
13C3-PFBS	5.502	302.1 -> 79.9	11188	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C3-PFHxS	7.291	402.1 -> 79.9	7061	2.68 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C4-PFBA	2.936	216.8 -> 171.9	116683	9.95 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.529	367.1 -> 322.0	27033	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C5-PFHxA	5.597	318.0 -> 273.0	51670	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFPeA	4.412	268.3 -> 223.0	69243	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C6-PFDA	8.253	519.1 -> 474.1	18872	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.2%	
13C7-PFUnDA	8.722	570.0 -> 525.1	21866	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C8-FOSA	9.783	506.1 -> 77.8	19115	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-PFOA	7.188	421.1 -> 376.0	37669	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-PFOS	8.405	507.1 -> 79.9	10233	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C9-PFNA	7.746	472.1 -> 427.0	20914	1.29 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.2%	
d3-MeFOSAA	8.310	573.2 -> 419.0	16673	4.82 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C3-HFPO-DA	5.964	286.9 -> 168.9	33521	9.74 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
d3-MeFOSA	11.076	515.0 -> 219.0	9735	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
d5-EtFOSAA	8.520	589.2 -> 419.0	13970	4.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.1%	
d7-MeFOSE	10.959	623.2 -> 58.9	78806	24.39 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
d9-EtFOSE	11.269	639.2 -> 58.9	98626	23.83 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
d5-EtFOSA	11.360	531.1 -> 219.0	10336	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
Target Compounds					QValue
4:2FTS	5.273	327.1 -> 307.0	42674	22.73 µg/L	94
		327.1 -> 80.9	17450		
6:2FTS	6.961	427.1 -> 407.0	37892	19.49 µg/L	96
		427.1 -> 80.9	15779		
8:2FTS	8.028	527.1 -> 507.0	43926	20.36 µg/L	97
		527.1 -> 80.8	17253		
EtFOSAA	8.521	584.2 -> 419.1	44877	22.50 µg/L	m 94
		584.2 -> 526.0	21785		
FOSA	9.786	498.1 -> 77.9	135378	20.94 µg/L	100
		498.1 -> 478.0	3880		
MeFOSAA	8.311	570.1 -> 419.0	47089	19.79 µg/L	98
		570.1 -> 483.0	10375		
PFBA	2.932	212.8 -> 168.9	53746	19.85 µg/L	100
PFBS	5.503	298.7 -> 79.9	97588	22.05 µg/L	96
		298.7 -> 98.8	37063		
PFDA	8.253	512.9 -> 469.0	260811	22.52 µg/L	99
		512.9 -> 219.0	51519		
PFDoDA	9.181	613.1 -> 569.0	324987	18.54 µg/L	99
		613.1 -> 319.0	45777		
PFDS	9.344	599.0 -> 79.9	49709	20.79 µg/L	99

7.7.11
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.530	599.0 -> 98.8	24136	21.06	µg/L	100
		363.1 -> 319.0	299261			
PFHpS	7.873	363.1 -> 169.0	52189	20.85	µg/L	98
		449.0 -> 79.9	61382			
PFHxA	5.600	449.0 -> 98.9	31736	22.09	µg/L	100
		313.0 -> 269.0	359526			
PFHxS	7.292	313.0 -> 118.9	11134	21.61	µg/L	94
		398.7 -> 79.9	55881			
PFNA	7.747	398.7 -> 98.9	28096	21.90	µg/L	98
		463.0 -> 419.0	260867			
PFNS	8.899	463.0 -> 219.0	64522	20.91	µg/L	92
		548.8 -> 79.9	37908			
PFOA	7.189	548.8 -> 98.9	19572	21.69	µg/L	100
		413.0 -> 369.0	363929			
PFOS	8.406	413.0 -> 169.0	75902	18.42	µg/L	94
		498.9 -> 79.9	72289			
PFPeA	4.414	498.9 -> 98.8	33865	22.19	µg/L	100
		263.0 -> 219.0	306949			
PFPeS	6.569	349.1 -> 79.9	49818	22.31	µg/L	99
		349.1 -> 98.9	22006			
PFTeDA	9.987	713.1 -> 669.0	383665	22.25	µg/L	100
		713.1 -> 168.9	32108			
PFTrDA	9.604	663.0 -> 619.0	413850	18.97	µg/L	99
		663.0 -> 168.9	40181			
PFUnDA	8.722	563.1 -> 519.0	241030	19.48	µg/L	97
		563.1 -> 269.1	46095			
11Cl-PF3OUdS	9.643	630.9 -> 450.9	208225	21.56	µg/L	99
		632.9 -> 452.9	63739			
9Cl-PF3ONS	8.762	530.8 -> 351.0	213870	20.62	µg/L	98
		532.8 -> 353.0	65257			
ADONA	6.781	376.9 -> 250.9	509795	21.16	µg/L	98
		376.9 -> 84.8	136640			
HFPO-DA	5.965	284.9 -> 168.9	52976	20.01	µg/L	97
		284.9 -> 184.9	6605			
3:3FTCA	3.867	241.0 -> 177.0	13209	20.06	µg/L	100
		241.0 -> 117.0	1242			
5:3FTCA	6.244	341.0 -> 237.1	53061	21.87	µg/L	100
		341.0 -> 217.0	37951			
7:3FTCA	7.686	441.0 -> 316.9	25670	21.68	µg/L	97
		441.0 -> 336.9	56119			
EtFOSA	11.362	526.0 -> 219.0	79874	20.71	µg/L	75
		526.0 -> 169.0	88110			
EtFOSE	11.282	630.0 -> 58.9	346926	110.32	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	66904	20.55	µg/L	77
		511.9 -> 169.0	77680			
MeFOSE	10.985	616.1 -> 58.9	302946	108.10	µg/L	100
PFDoDS	10.126	699.1 -> 79.9	43426	19.99	µg/L	97
		699.1 -> 98.8	24273			
NFDHA	5.479	295.0 -> 201.0	19251	21.83	µg/L	95
		295.0 -> 84.9	4902			
PFMBA	4.828	279.0 -> 85.1	167146	21.16	µg/L	100
PFMPA	3.553	229.0 -> 84.9	148249	21.12	µg/L	100
PFEESA	6.034	314.8 -> 134.9	251261	18.81	µg/L	100
		314.8 -> 82.9	8771			

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

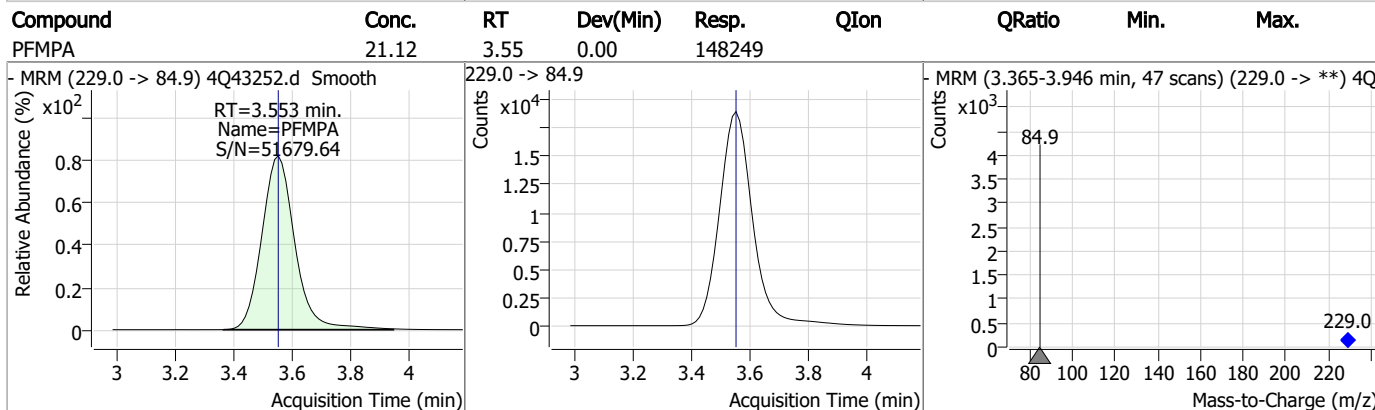
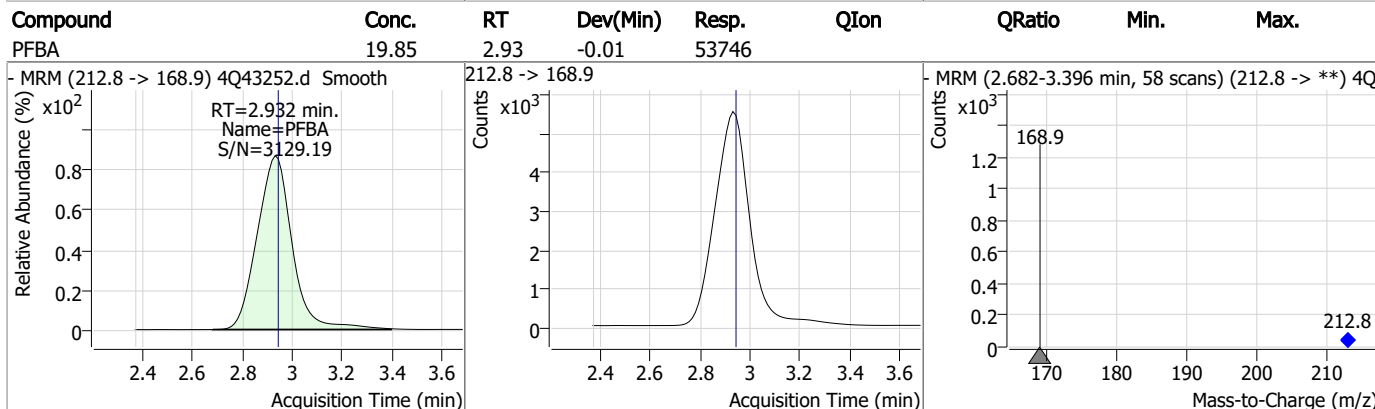
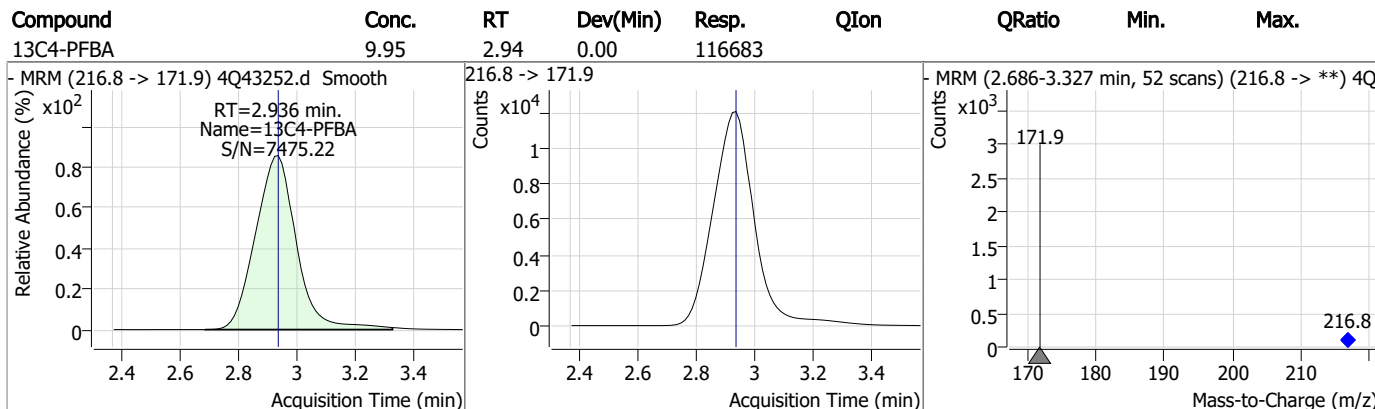
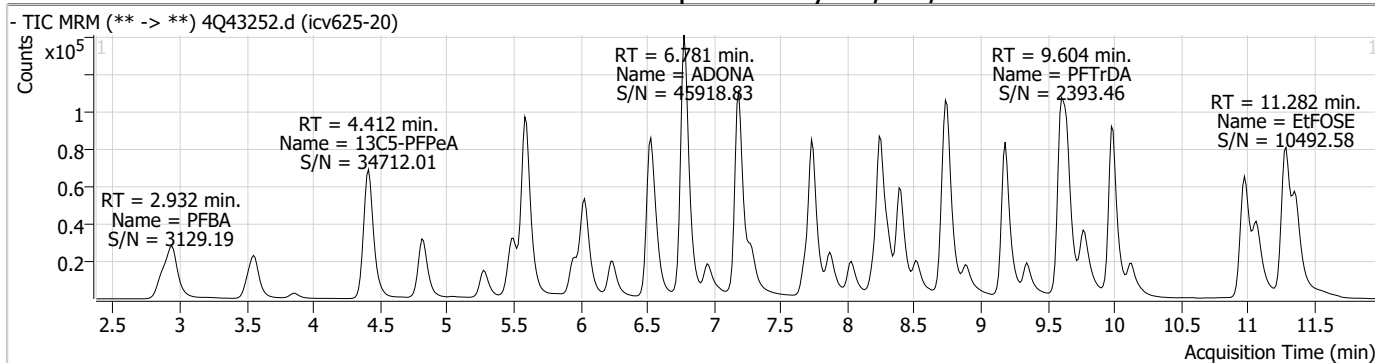
Perfluorinated Compounds by LC/MS/MS

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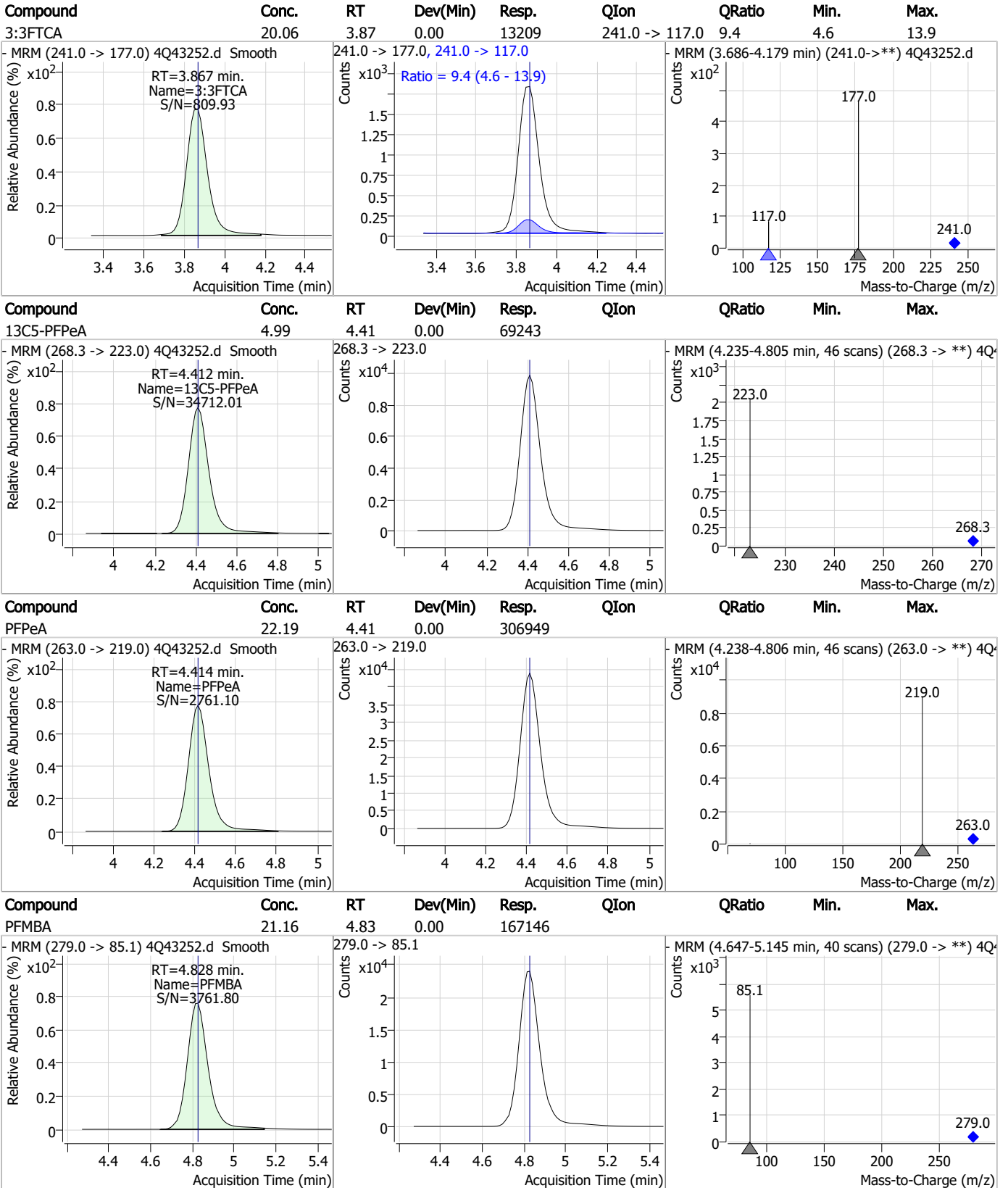
7.7.11

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

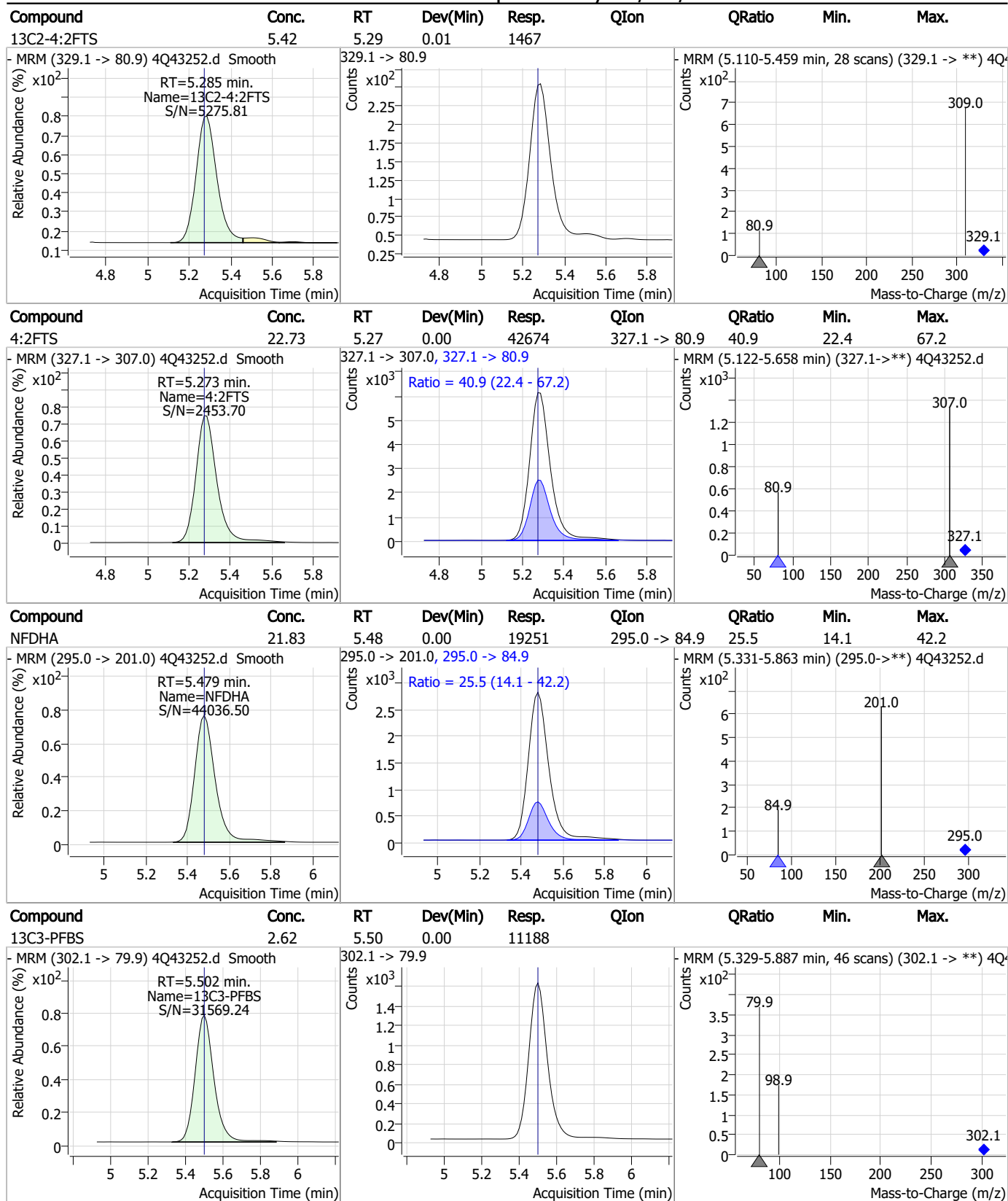


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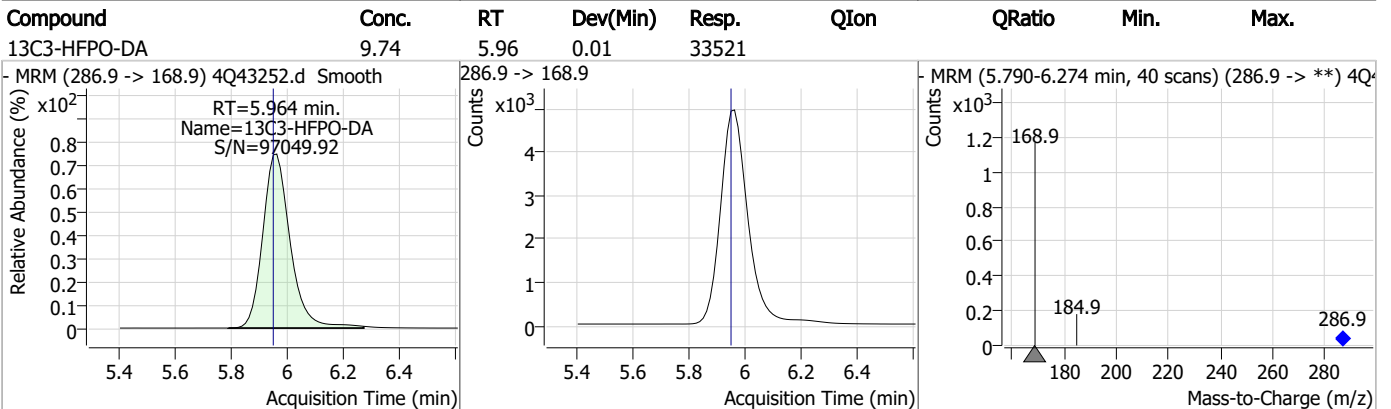
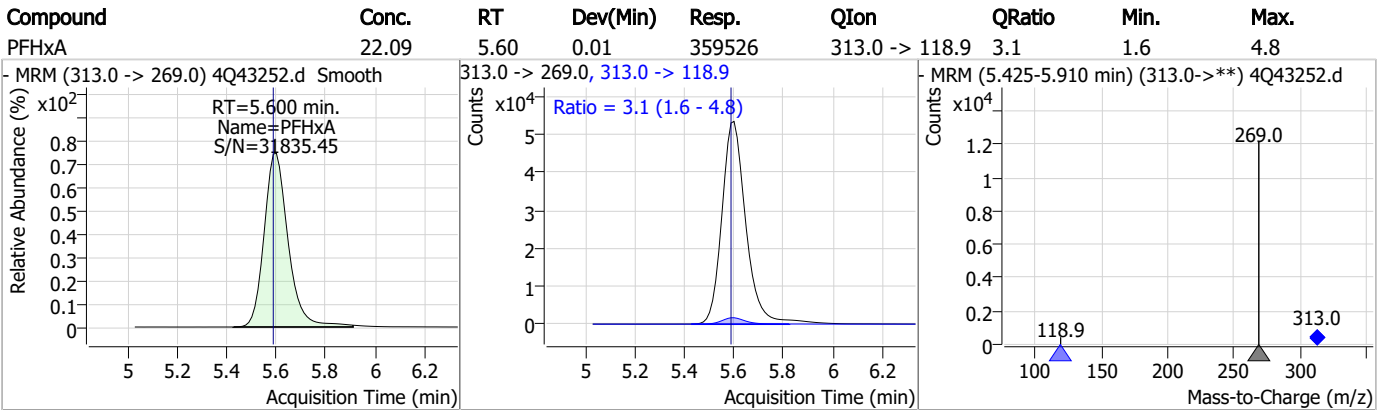
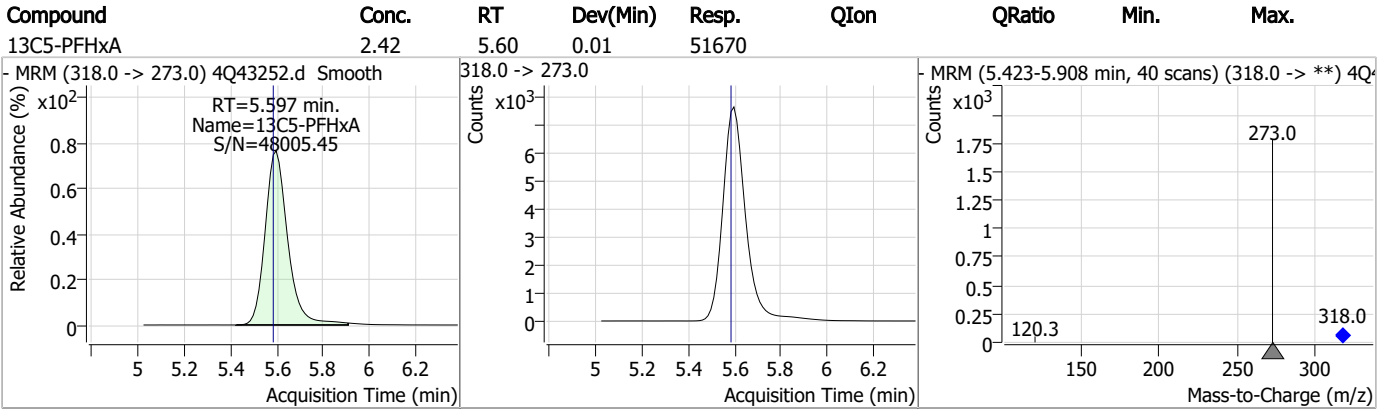
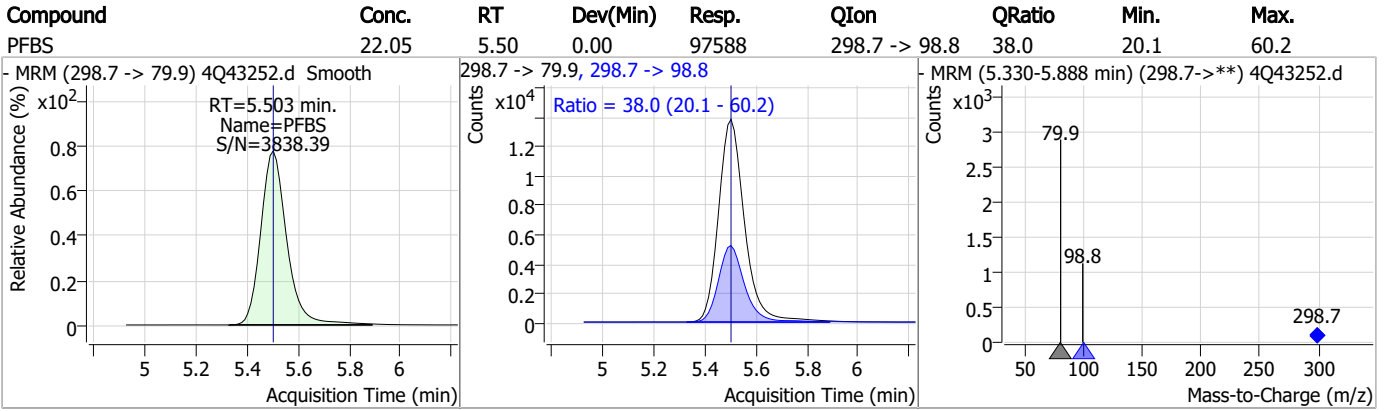


Perfluorinated Compounds by LC/MS/MS

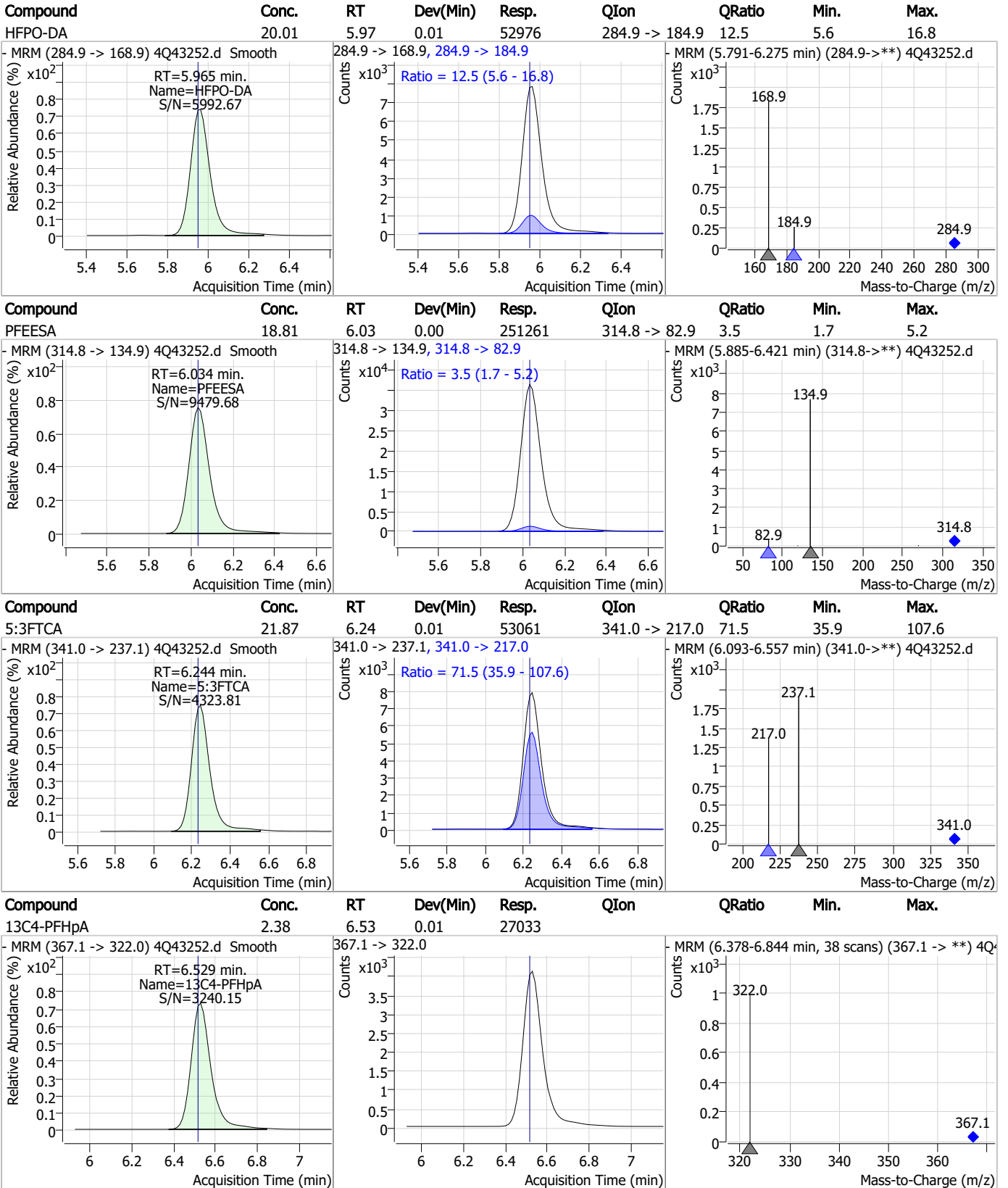


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

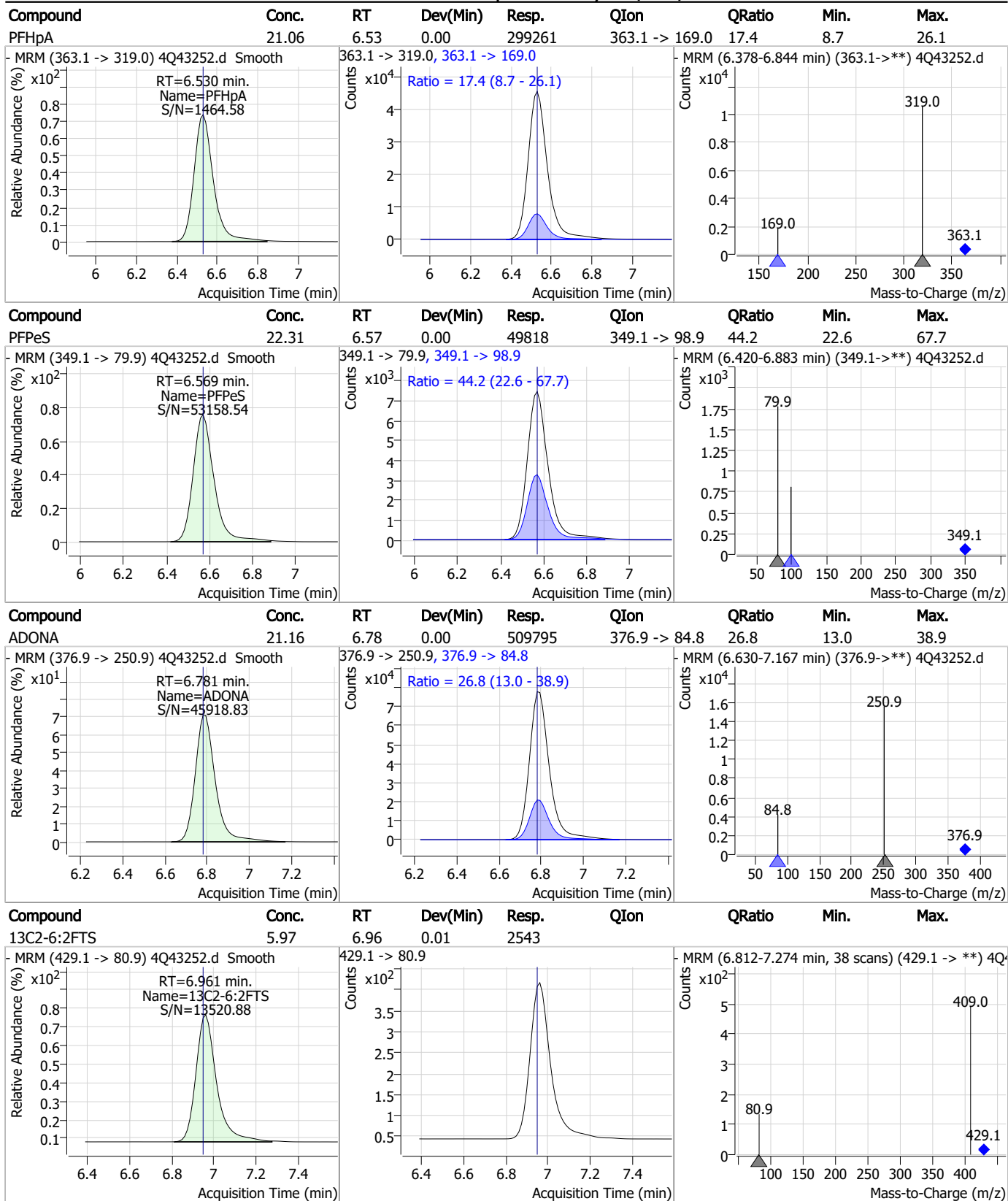


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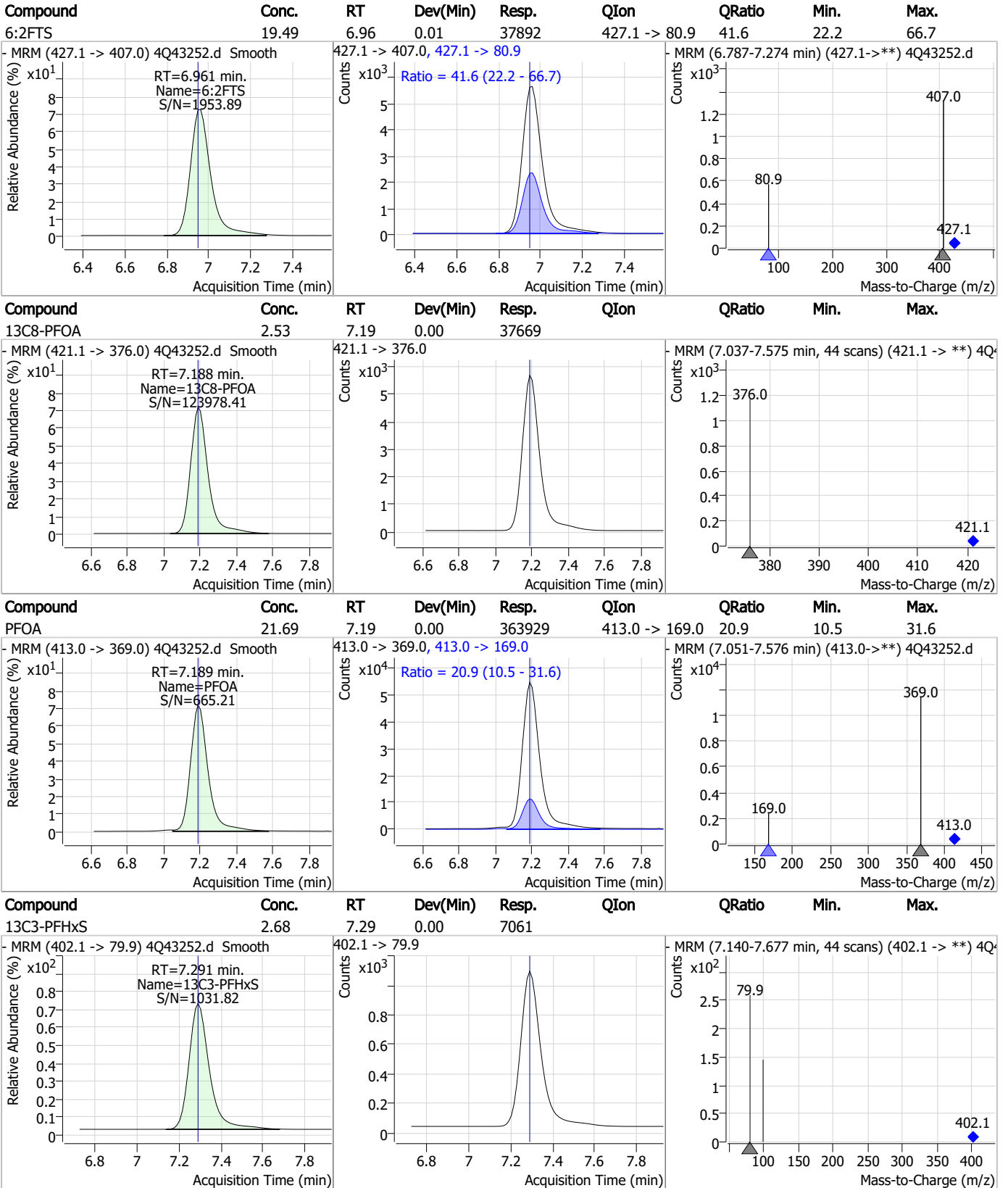


Perfluorinated Compounds by LC/MS/MS



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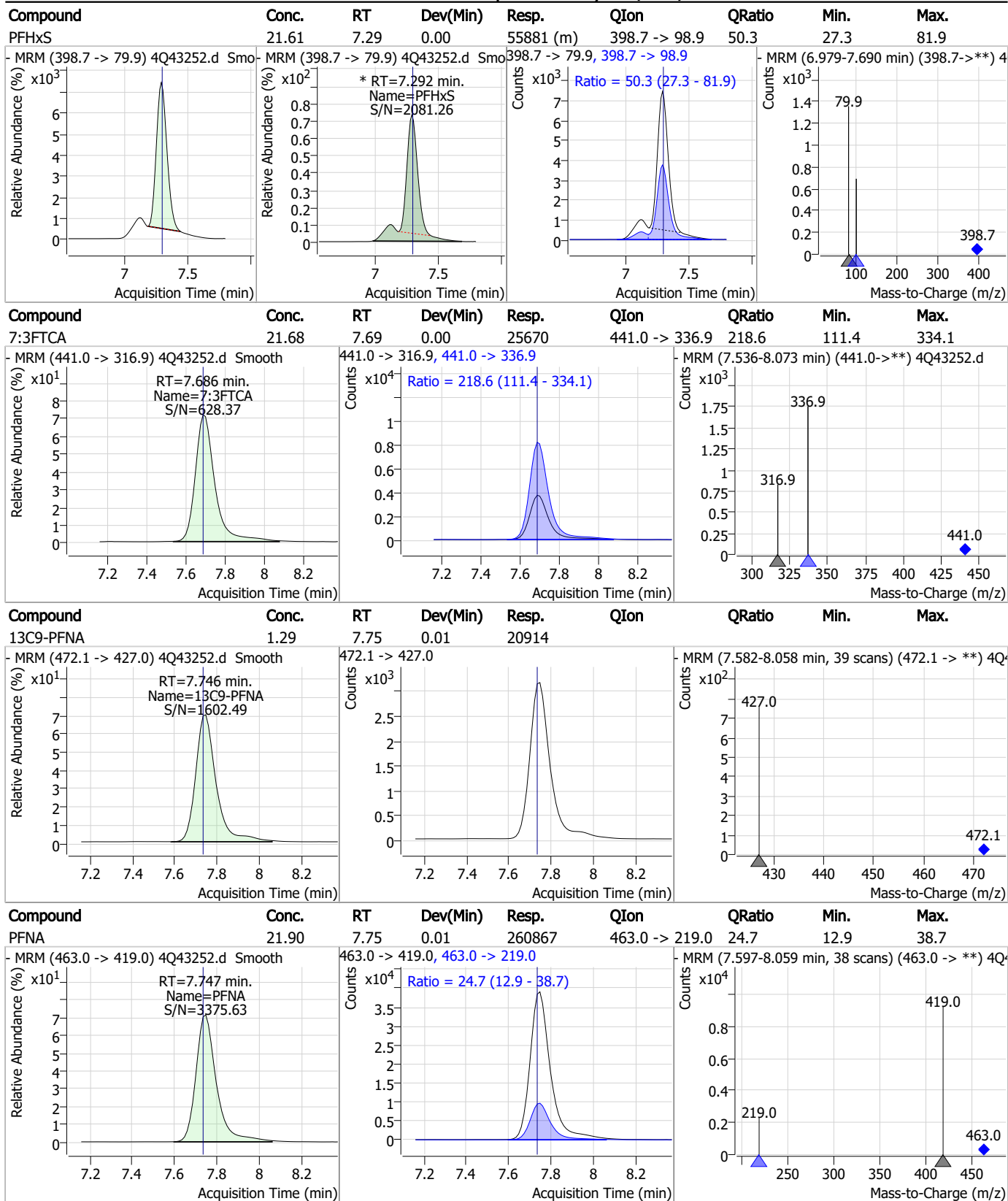
Perfluorinated Compounds by LC/MS/MS



7.7.11

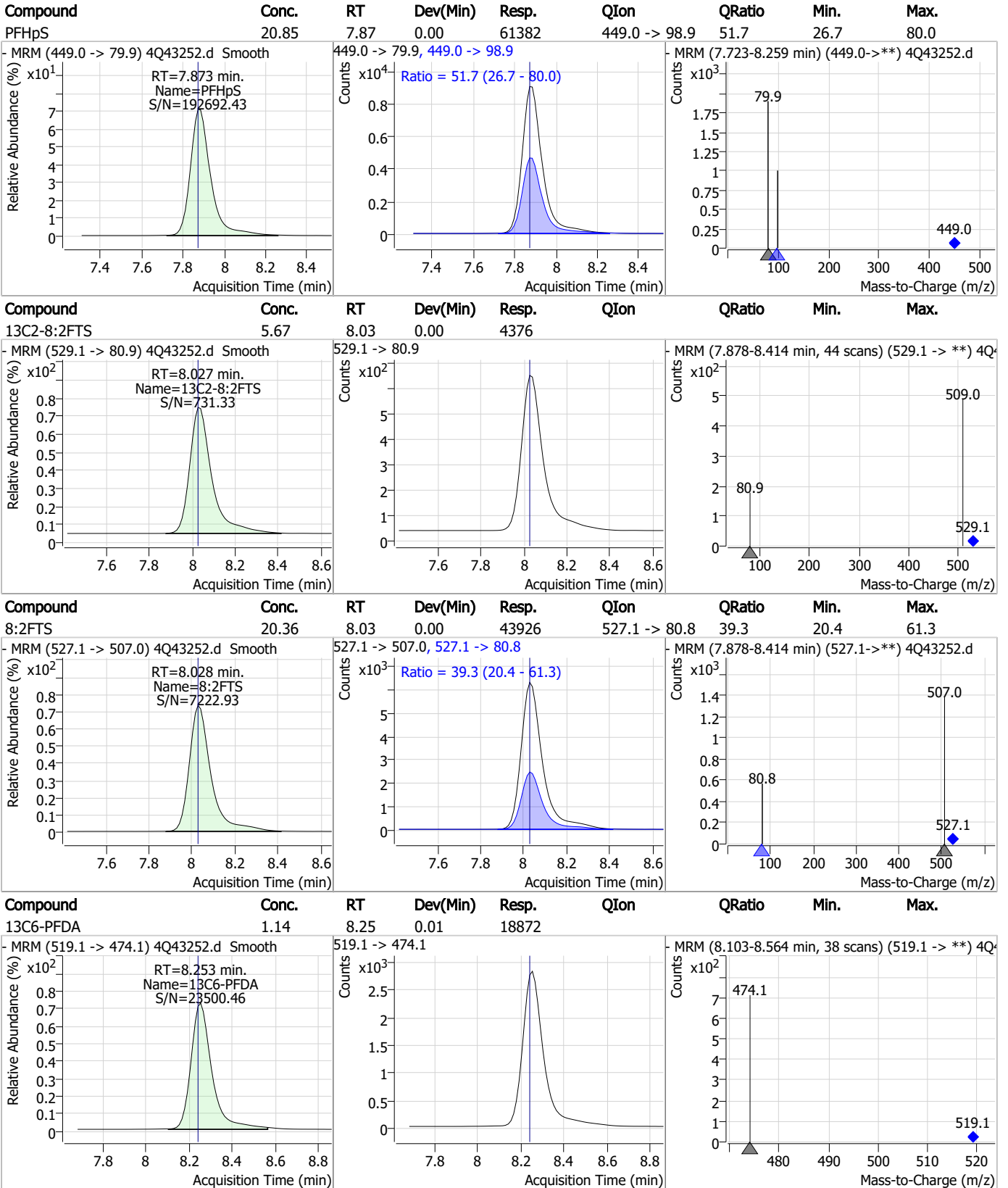


Perfluorinated Compounds by LC/MS/MS



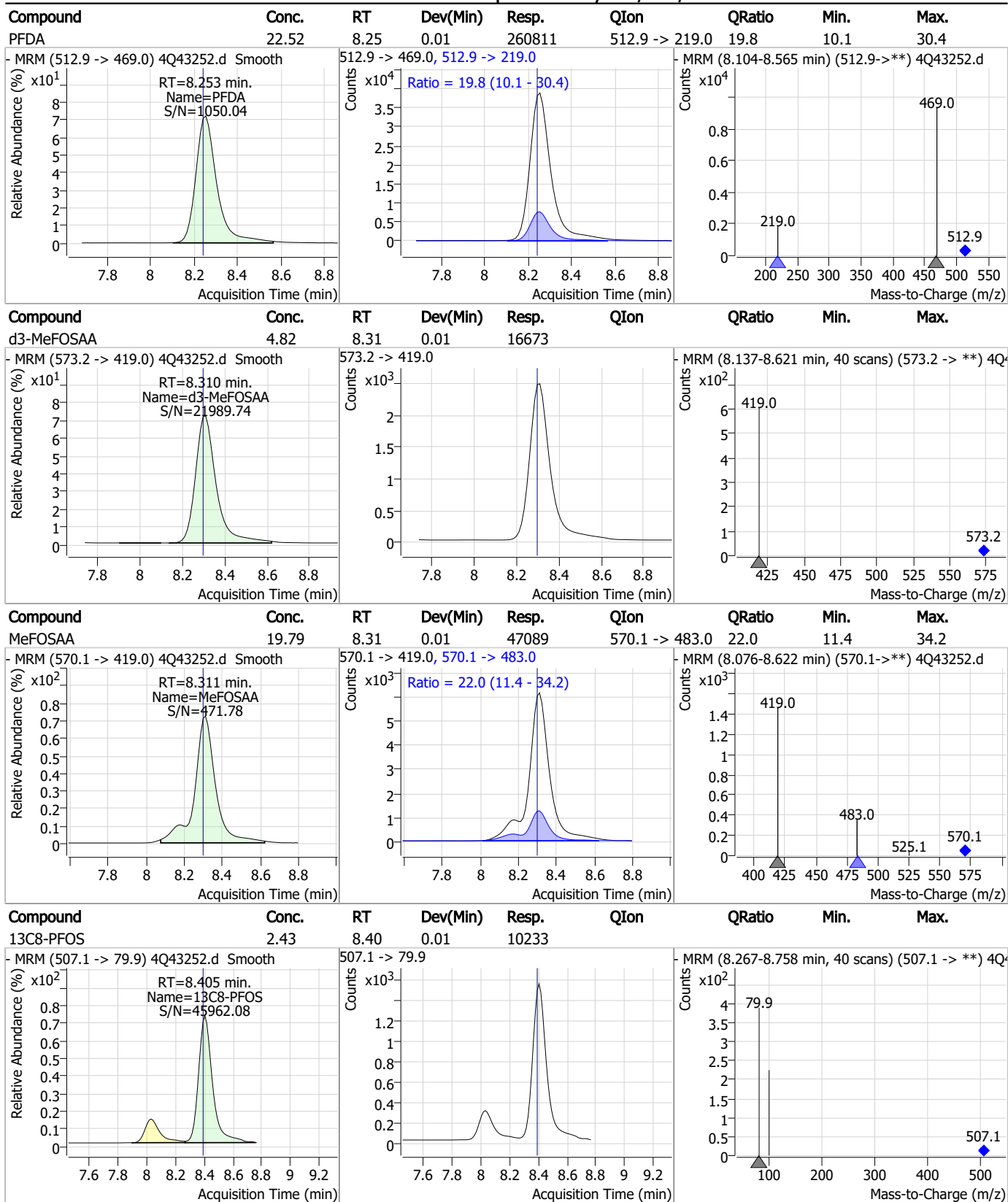
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Perfluorinated Compounds by LC/MS/MS



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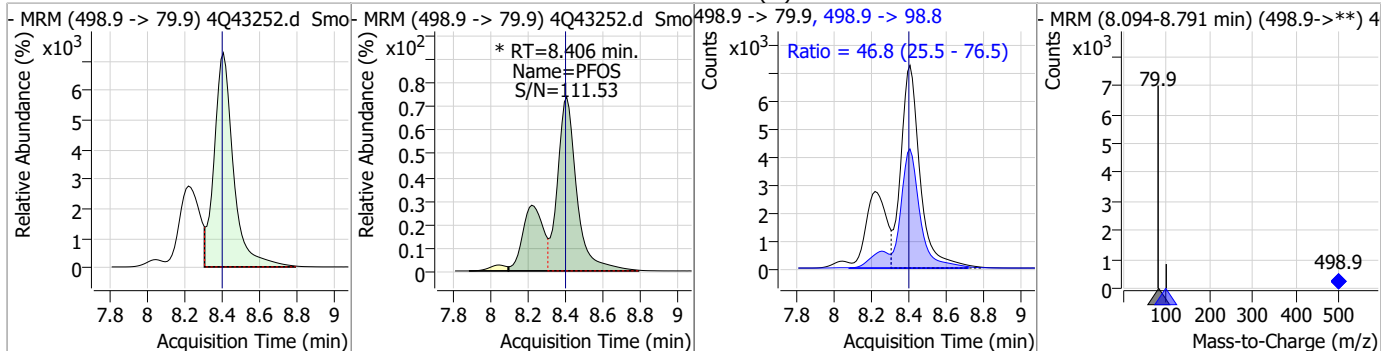
Perfluorinated Compounds by LC/MS/MS



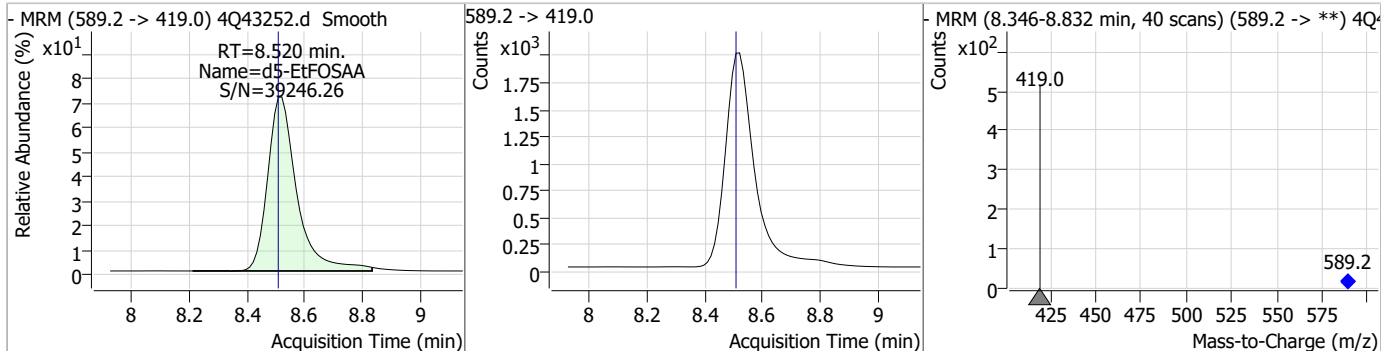
7.7.11
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Perfluorinated Compounds by LC/MS/MS

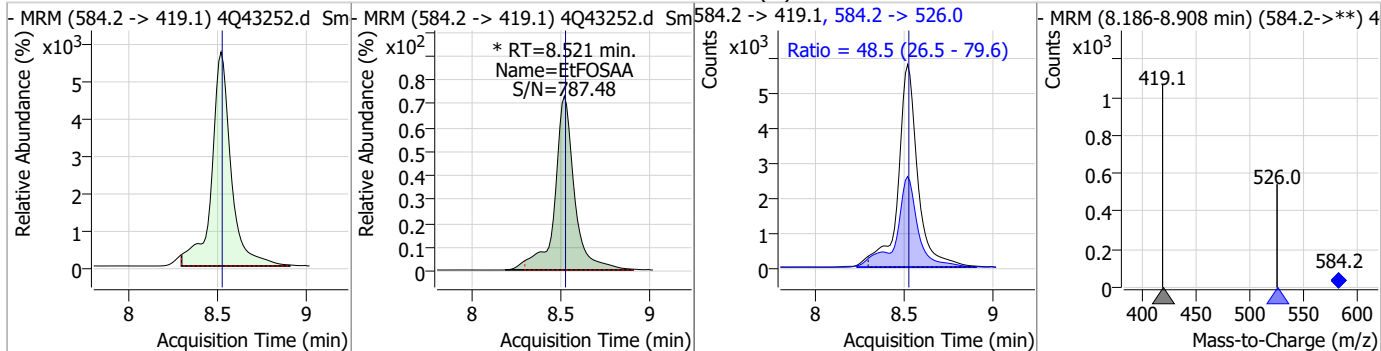
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.42	8.41	0.01	72289 (m)	498.9 -> 98.8	46.8	25.5	76.5



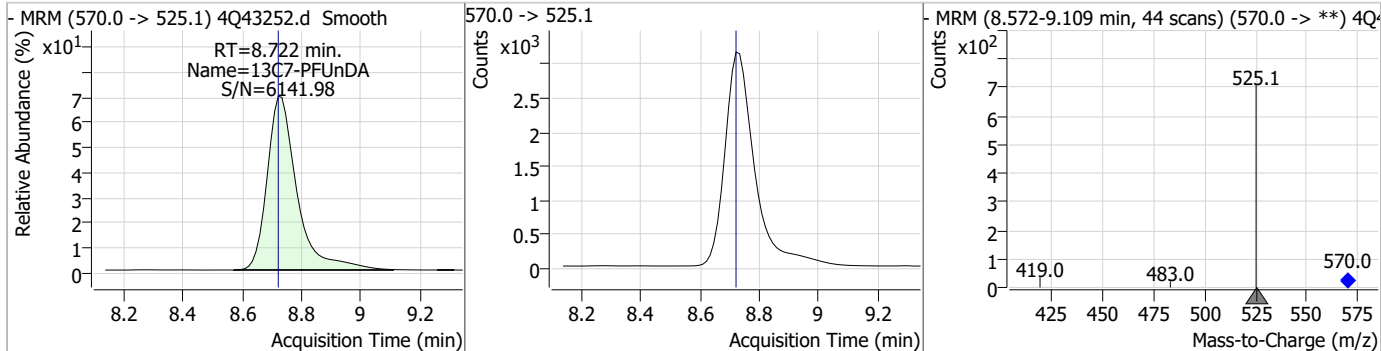
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.81	8.52	0.01	13970				



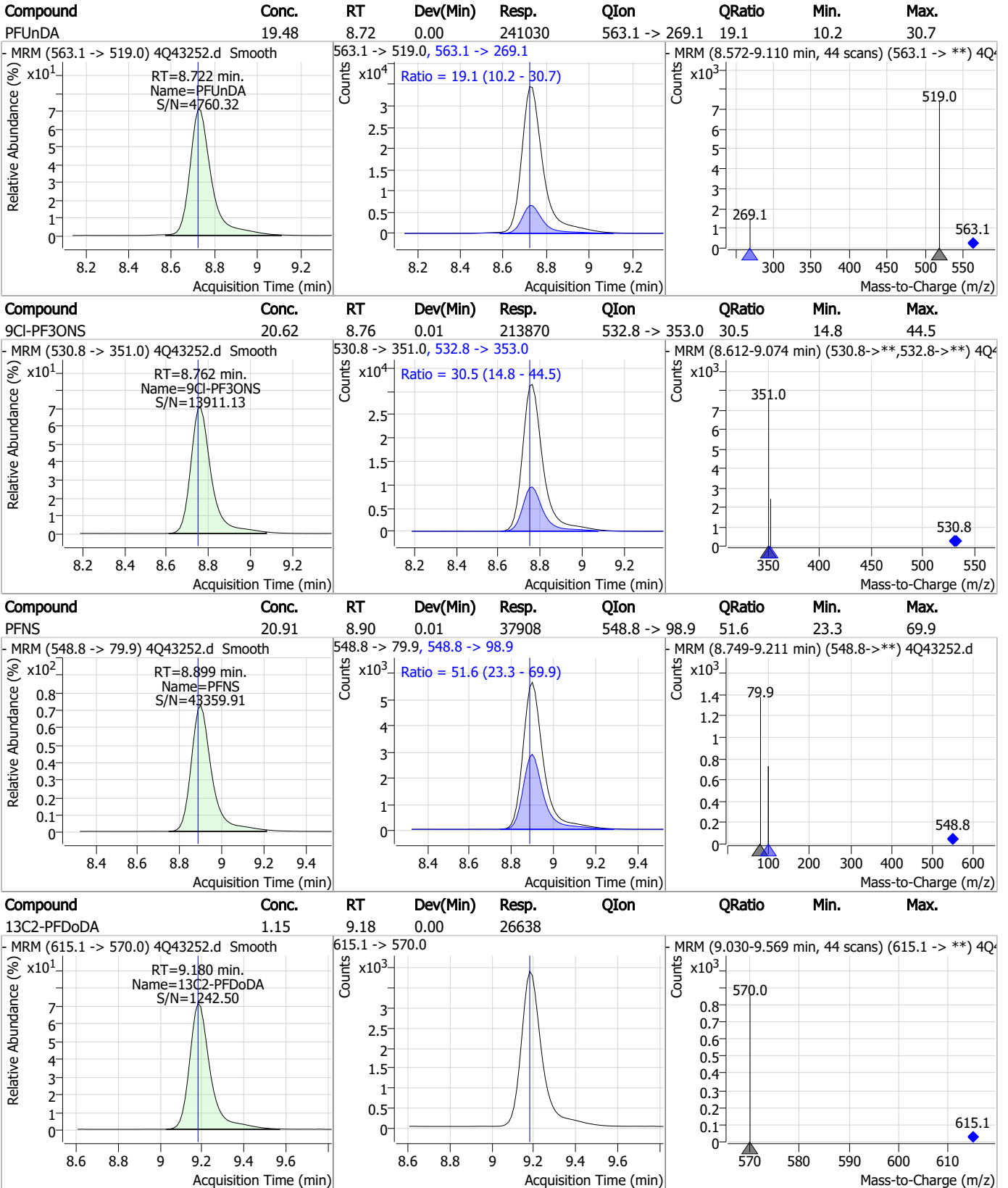
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	22.50	8.52	0.00	44877 (m)	584.2 -> 526.0	48.5	26.5	79.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.19	8.72	0.00	21866				



Perfluorinated Compounds by LC/MS/MS

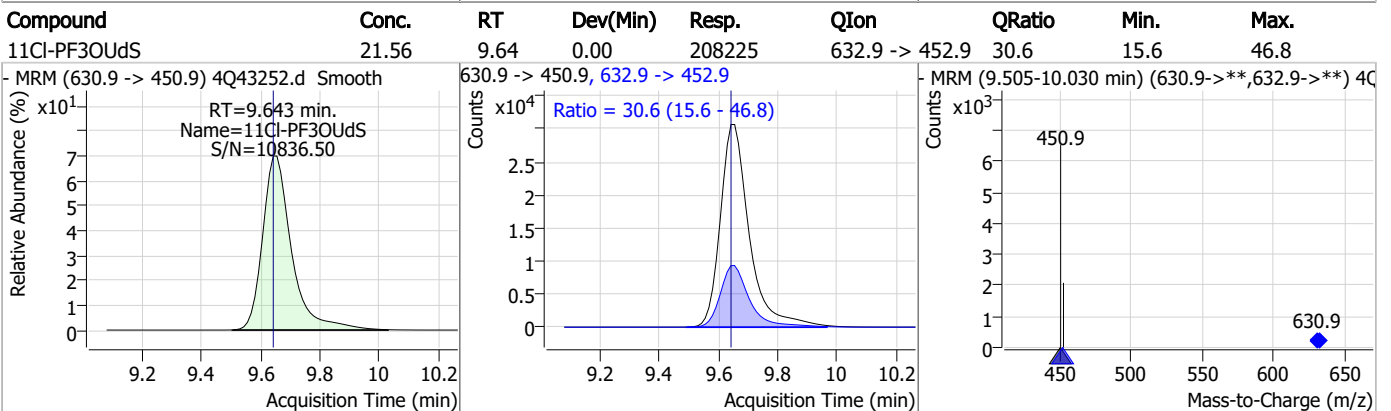
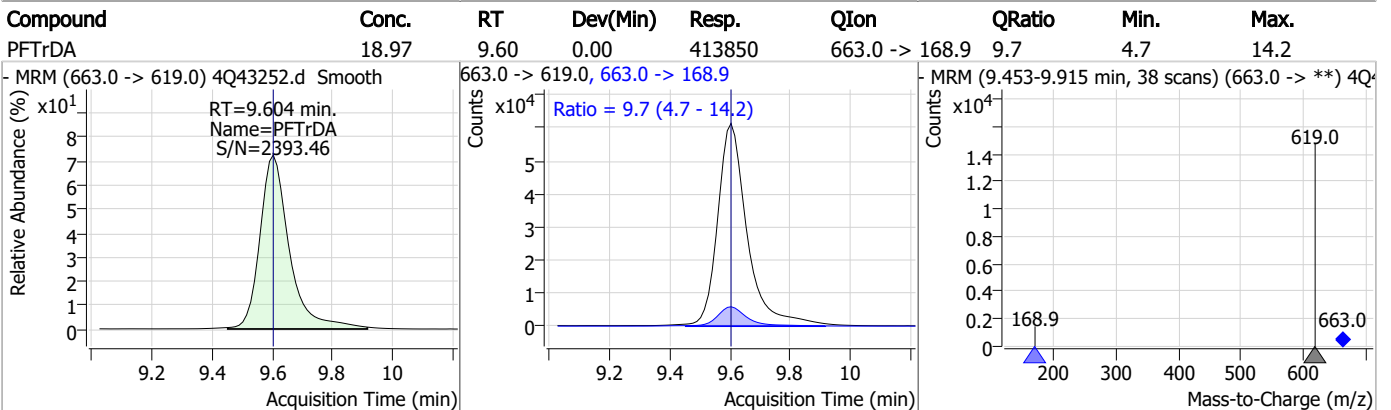
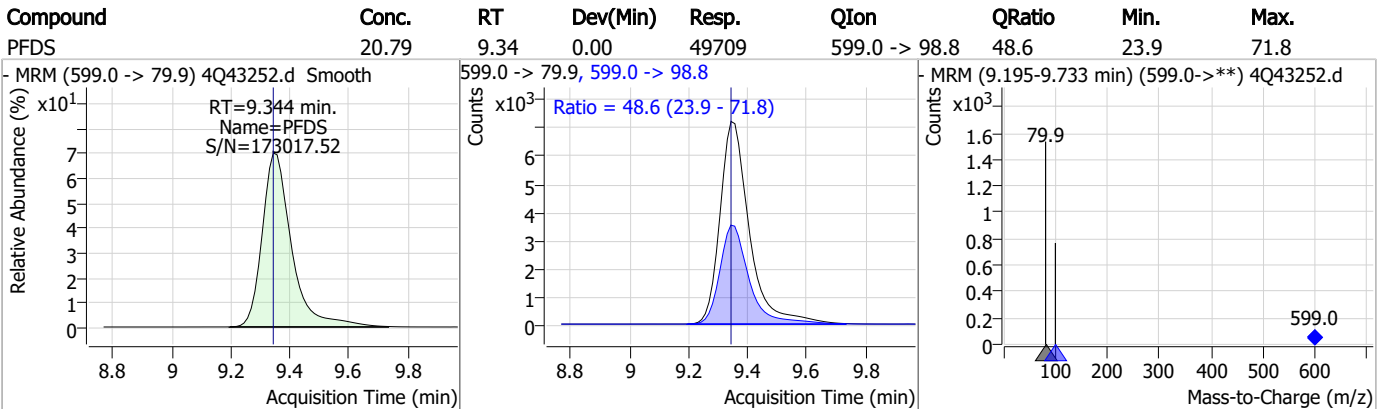
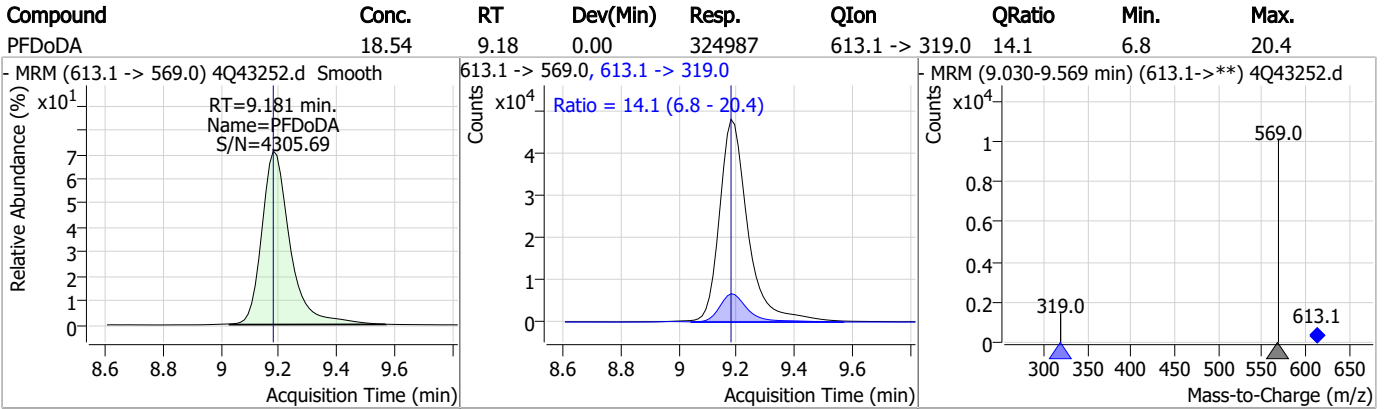


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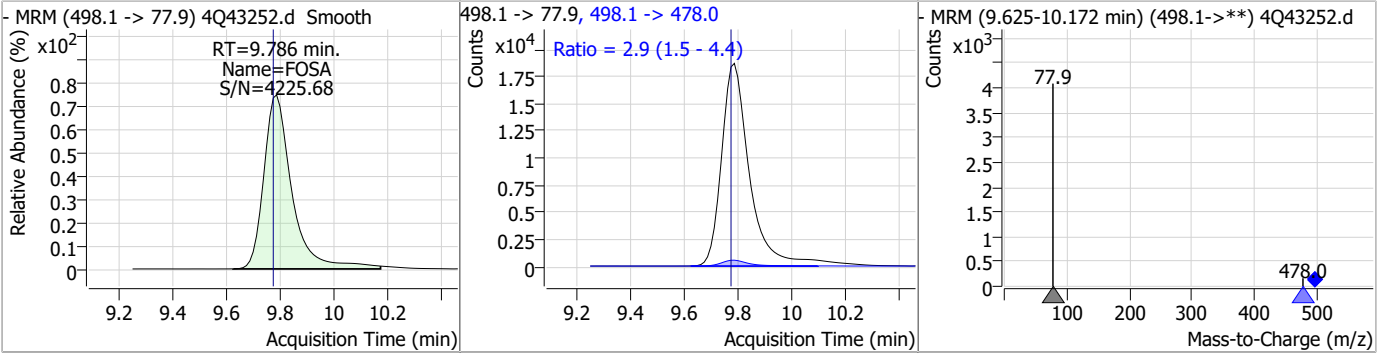
Perfluorinated Compounds by LC/MS/MS



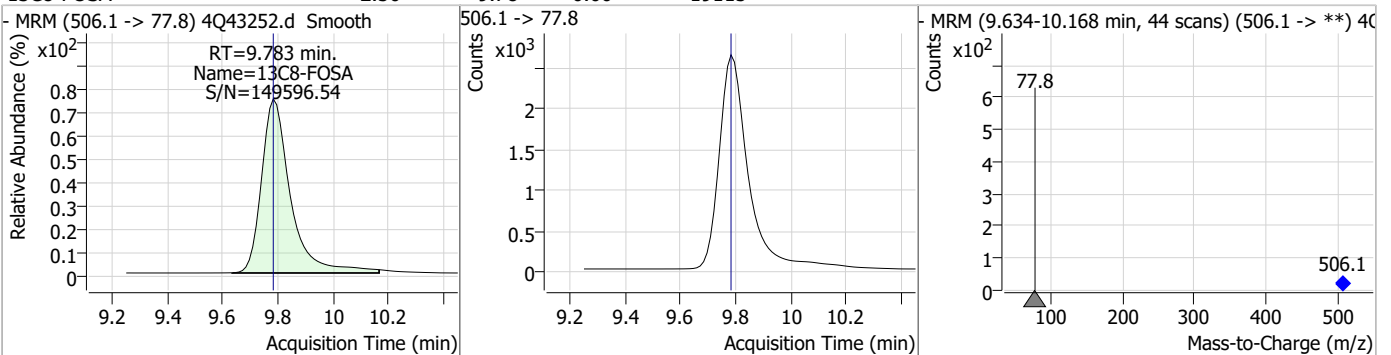
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Perfluorinated Compounds by LC/MS/MS

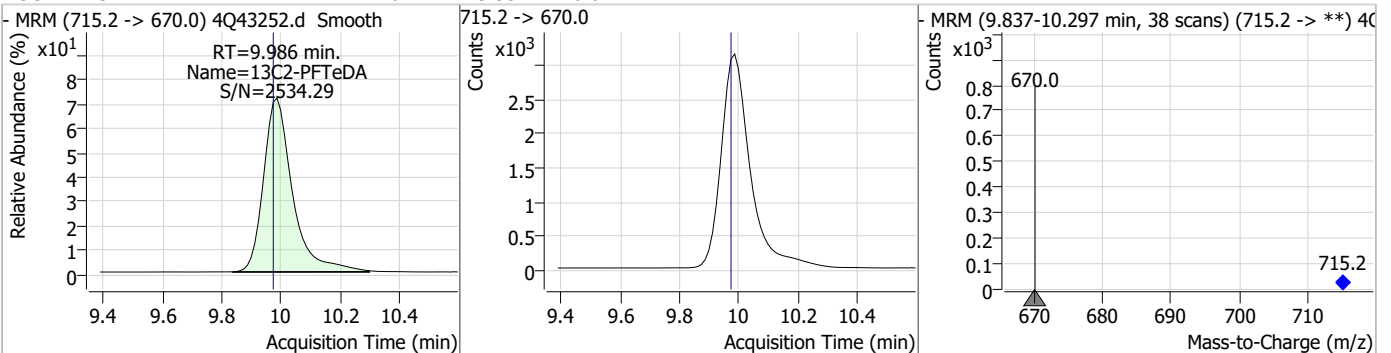
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.94	9.79	0.01	135378	498.1 -> 478.0	2.9	1.5	4.4



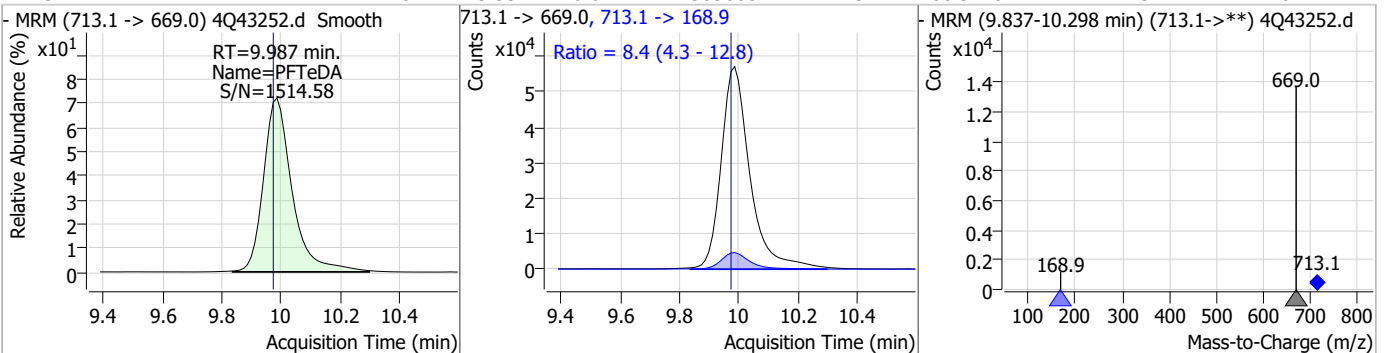
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.50	9.78	0.00	19115				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.16	9.99	0.01	21221				

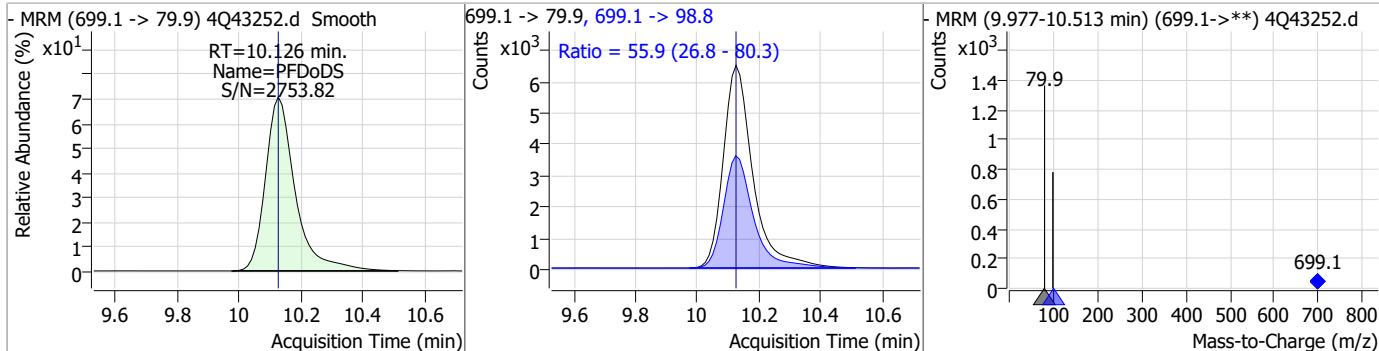


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	22.25	9.99	0.01	383665	713.1 -> 168.9	8.4	4.3	12.8

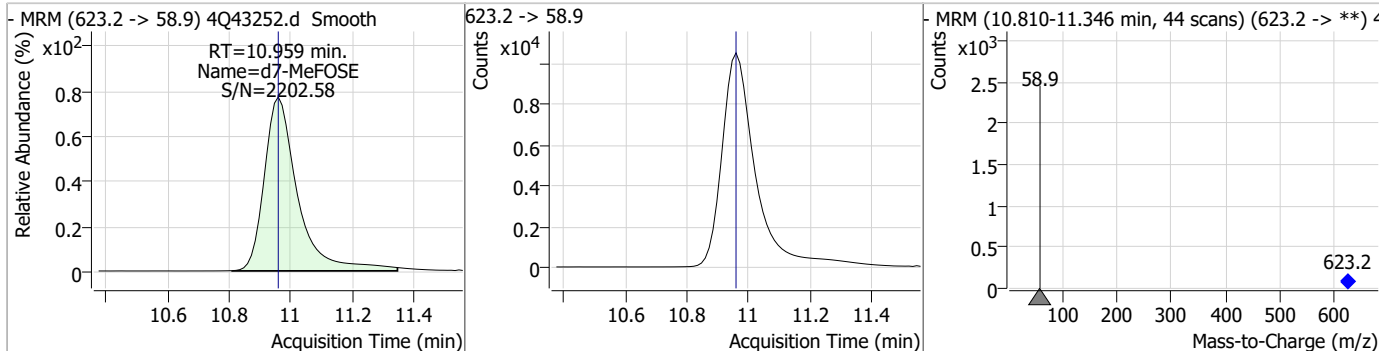


Perfluorinated Compounds by LC/MS/MS

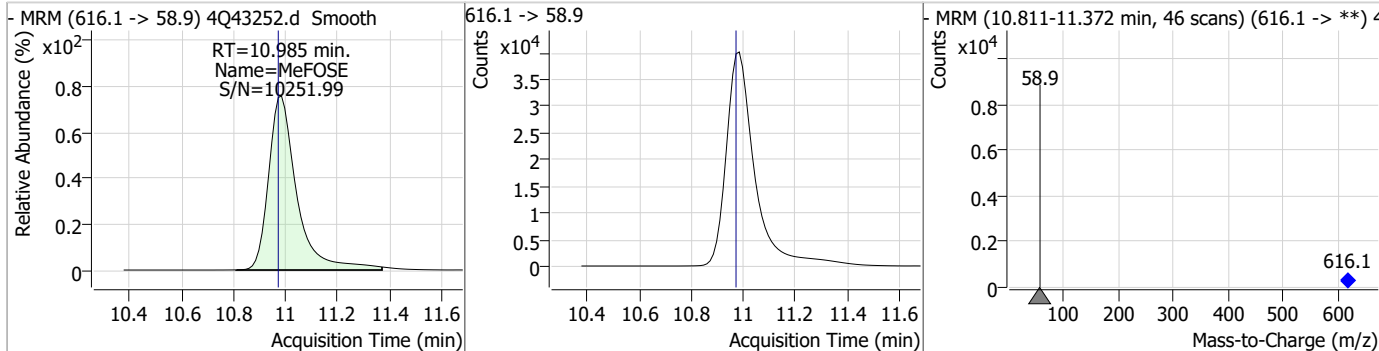
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	19.99	10.13	0.00	43426	699.1 -> 98.8	55.9	26.8	80.3



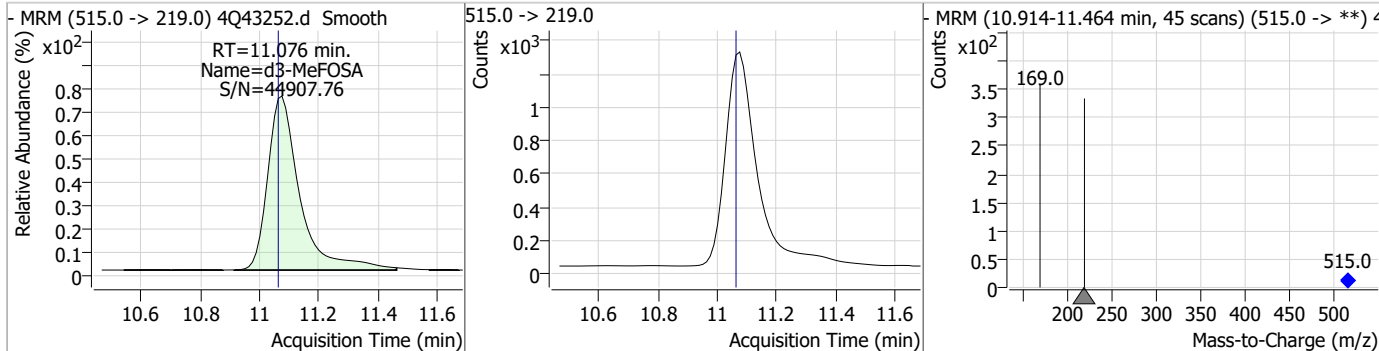
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.39	10.96	0.00	78806				



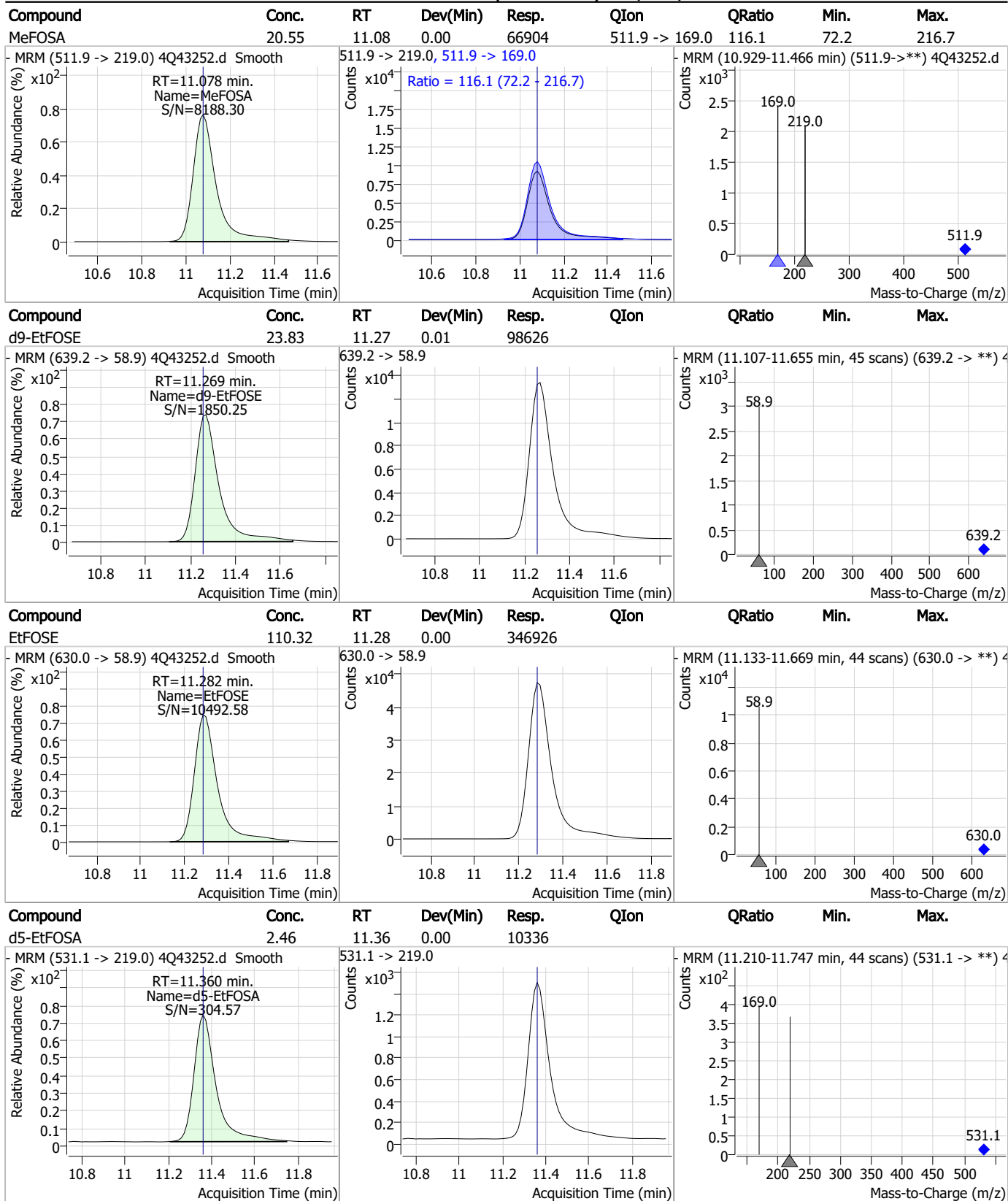
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	108.10	10.99	0.01	302946				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.47	11.08	0.01	9735				

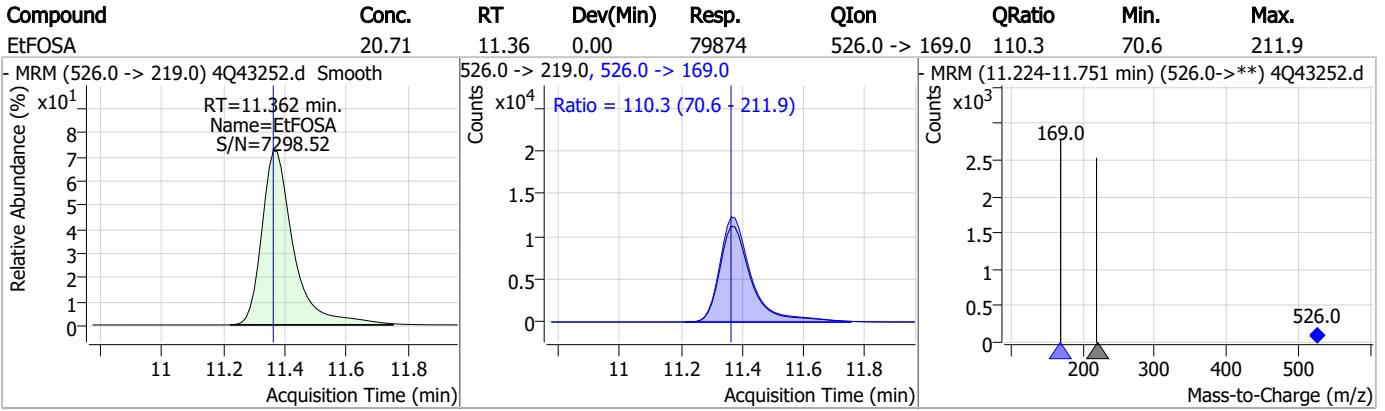


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



7.7.11

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Manual Integration Approval Summary

Sample Number: S4Q625-ICV625 Method: EPA DRAFT 1633
Lab FileID: 4Q43252.D Analyst approved: 04/20/23 14:17 Natasha Gumtie
Injection Time: 04/19/23 14:15 Supervisor approved: 04/21/23 13:15 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.52	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43429.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 4:09:10 PM
 Sample Name : cc625-1.0LL
 Vial : P1-A2
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96301,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	152221	10.00 µg/L	0.013
M5-PFPeA	4.412	268.3 -> 223.0	89359	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	69092	2.50 µg/L	0.000
M4-PFHpA	6.529	367.1 -> 322.0	36653	2.50 µg/L	0.000
M8-PFOA	7.201	421.1 -> 376.0	51080	2.50 µg/L	0.000
M9-PFNA	7.746	472.1 -> 427.0	27323	1.25 µg/L	0.000
M6-PFDA	8.253	519.1 -> 474.1	26637	1.25 µg/L	0.000
M7-PFUnDA	8.734	570.0 -> 525.1	28089	1.25 µg/L	0.000
M2-PFDoDA	9.193	615.1 -> 570.0	36837	1.25 µg/L	0.012
M2-PFTeDA	9.986	715.2 -> 670.0	27803	1.25 µg/L	0.000
M8-FOSA	9.796	506.1 -> 77.8	23848	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	14493	2.50 µg/L	0.000
M3-PFHxS	7.291	402.1 -> 79.9	8496	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	12565	2.50 µg/L	0.000
M2-4:2FTS	5.285	329.1 -> 80.9	2099	5.00 µg/L	0.000
M2-6:2FTS	6.961	429.1 -> 80.9	3461	5.00 µg/L	0.000
M2-8:2FTS	8.040	529.1 -> 80.9	5319	5.00 µg/L	0.000
M3-MeFOSAA	8.310	573.2 -> 419.0	23541	5.00 µg/L	0.000
M3-HFPO-DA	5.964	286.9 -> 168.9	38743	10.00 µg/L	0.000
M5-EtFOSAA	8.520	589.2 -> 419.0	19780	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	97128	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	129199	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	13224	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	12240	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	13307	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	84468	5.00 µg/L	0.012
18O2-PFHxS	7.290	403.0 -> 83.9	6088	2.50 µg/L	0.000
13C4-PFOA	7.201	417.1 -> 372.0	61091	2.50 µg/L	0.000
13C2-PFDA	8.253	515.1 -> 470.1	25158	1.25 µg/L	0.000
13C5-PFNA	7.746	468.0 -> 423.0	30720	1.25 µg/L	0.000
13C2-PFHxA	5.598	315.1 -> 270.0	59592	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	2099	5.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.5%		
13C2-6:2FTS	6.961	429.1 -> 80.9	3461	6.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.0%		
13C2-8:2FTS	8.040	529.1 -> 80.9	5319	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C2-PFDoDA	9.193	615.1 -> 570.0	36837	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C2-PFTeDA	9.986	715.2 -> 670.0	27803	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C3-PFBS	5.502	302.1 -> 79.9	14493	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C3-PFHxS	7.291	402.1 -> 79.9	8496	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 = 97.8%	
13C4-PFBA	2.936	216.8 -> 171.9	152221	10.00 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFHpA	6.529	367.1 -> 322.0	36653	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFHxA	5.597	318.0 -> 273.0	69092	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C5-PFPeA	4.412	268.3 -> 223.0	89359	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C6-PFDA	8.253	519.1 -> 474.1	26637	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C7-PFUnDA	8.734	570.0 -> 525.1	28089	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.2%	
13C8-FOSA	9.796	506.1 -> 77.8	23848	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOA	7.201	421.1 -> 376.0	51080	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOS	8.405	507.1 -> 79.9	12565	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C9-PFNA	7.746	472.1 -> 427.0	27323	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
d3-MeFOSAA	8.310	573.2 -> 419.0	23541	5.39 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C3-HFPO-DA	5.964	286.9 -> 168.9	38743	8.57 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 85.7%	
d3-MeFOSA	11.076	515.0 -> 219.0	12240	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
d5-EtFOSAA	8.520	589.2 -> 419.0	19780	5.39 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.7%	
d7-MeFOSE	10.972	623.2 -> 58.9	97128	23.79 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d9-EtFOSE	11.269	639.2 -> 58.9	129199	24.71 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
d5-EtFOSA	11.360	531.1 -> 219.0	13224	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
Target Compounds					QValue
4:2FTS	5.286	327.1 -> 307.0	1584	0.59 µg/L	99
		327.1 -> 80.9	644		
6:2FTS	6.961	427.1 -> 407.0	1619	0.61 µg/L	94
		427.1 -> 80.9	639		
8:2FTS	8.040	527.1 -> 507.0	1829	0.70 µg/L	96
		527.1 -> 80.8	792		
EtFOSAA	8.533	584.2 -> 419.1	450	0.16 µg/L	m 74
		584.2 -> 526.0	275		
FOSA	9.799	498.1 -> 77.9	1249	0.15 µg/L	99
		498.1 -> 478.0	28		
MeFOSAA	8.323	570.1 -> 419.0	590	0.18 µg/L	m 79
		570.1 -> 483.0	192		
PFBA	2.932	212.8 -> 168.9	2359	0.67 µg/L	100
PFBS	5.503	298.7 -> 79.9	866	0.15 µg/L	94
		298.7 -> 98.8	319		
PFDA	8.253	512.9 -> 469.0	2480	0.15 µg/L	m 98
		512.9 -> 219.0	420		
PFDODA	9.193	613.1 -> 569.0	3656	0.15 µg/L	98
		613.1 -> 319.0	491		
PFDS	9.344	599.0 -> 79.9	441	0.15 µg/L	88

7.7.12
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.530	599.0 -> 98.8	205	0.16	µg/L	95
		363.1 -> 319.0	3034			
PFHpS	7.873	363.1 -> 169.0	600	0.15	µg/L	88
		449.0 -> 79.9	542			
PFHxA	5.600	449.0 -> 98.9	254	0.15	µg/L	96
		313.0 -> 269.0	3225			
PFHxS	7.292	313.0 -> 118.9	148	0.16	µg/L	m
		398.7 -> 79.9	499			
PFNA	7.759	398.7 -> 98.9	335	0.15	µg/L	98
		463.0 -> 419.0	2351			
PFNS	8.899	463.0 -> 219.0	631	0.18	µg/L	92
		548.8 -> 79.9	398			
PFOA	7.202	548.8 -> 98.9	182	0.17	µg/L	m
		413.0 -> 369.0	3821			
PFOS	8.406	413.0 -> 169.0	687	0.15	µg/L	m
		498.9 -> 79.9	716			
PFPeA	4.414	498.9 -> 98.8	395	0.32	µg/L	100
		263.0 -> 219.0	5684			
PFPeS	6.569	349.1 -> 79.9	471	0.18	µg/L	97
		349.1 -> 98.9	210			
PFTeDA	9.987	713.1 -> 669.0	3454	0.15	µg/L	98
		713.1 -> 168.9	312			
PFTrDA	9.604	663.0 -> 619.0	4706	0.16	µg/L	98
		663.0 -> 168.9	496			
PFUnDA	8.735	563.1 -> 519.0	2341	0.15	µg/L	87
		563.1 -> 269.1	581			
11CI-PF3OUdS	9.643	630.9 -> 450.9	3664	0.33	µg/L	99
		632.9 -> 452.9	1161			
9CI-PF3ONS	8.762	530.8 -> 351.0	3757	0.31	µg/L	93
		532.8 -> 353.0	1277			
ADONA	6.793	376.9 -> 250.9	9077	0.33	µg/L	93
		376.9 -> 84.8	2757			
HFPO-DA	5.965	284.9 -> 168.9	897	0.29	µg/L	95
		284.9 -> 184.9	86			
3:3FTCA	3.879	241.0 -> 177.0	601	0.71	µg/L	m
		241.0 -> 117.0	69			
5:3FTCA	6.256	341.0 -> 237.1	11812	3.64	µg/L	99
		341.0 -> 217.0	8428			
7:3FTCA	7.711	441.0 -> 316.9	5646	3.57	µg/L	100
		441.0 -> 336.9	12422			
EtFOSA	11.375	526.0 -> 219.0	1683	0.34	µg/L	m
		526.0 -> 169.0	2048			
EtFOSE	11.295	630.0 -> 58.9	3411	0.83	µg/L	100
		511.9 -> 219.0	1341			
MeFOSA	11.090	511.9 -> 169.0	1827	0.33	µg/L	m
		616.1 -> 58.9	2441			
MeFOSE	10.985	699.1 -> 79.9	401	0.71	µg/L	m
		699.1 -> 98.8	311			
PFDoDS	10.126	295.0 -> 201.0	360	0.15	µg/L	80
		295.0 -> 84.9	114			
NFDHA	5.479	279.0 -> 85.1	3156	0.31	µg/L	100
		229.0 -> 84.9	2816			
PFMBA	4.828	314.8 -> 134.9	4921	0.31	µg/L	100
		314.8 -> 82.9	284			
PFMPA	3.553			0.28	µg/L	#
PFEESA	6.034			0.28	µg/L	#

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



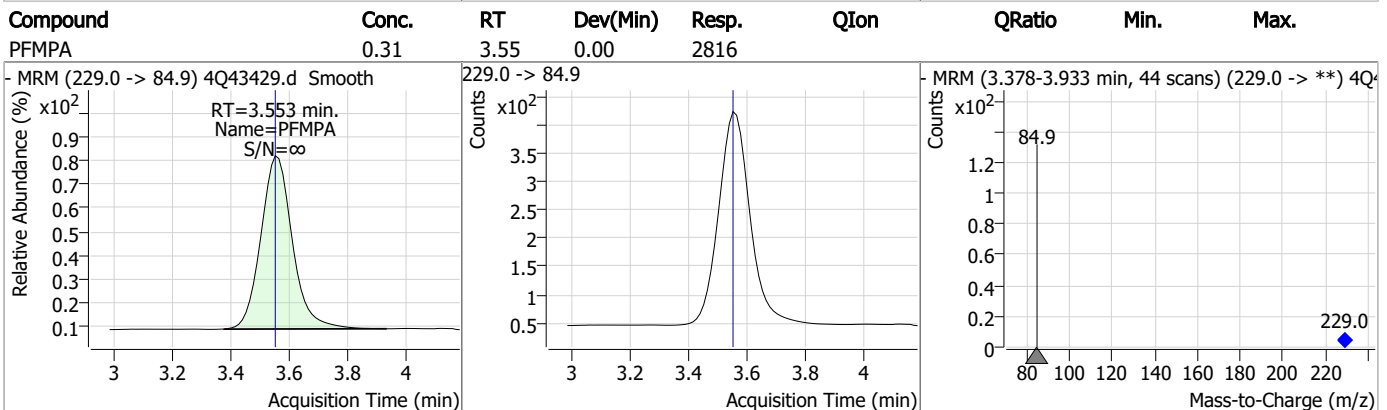
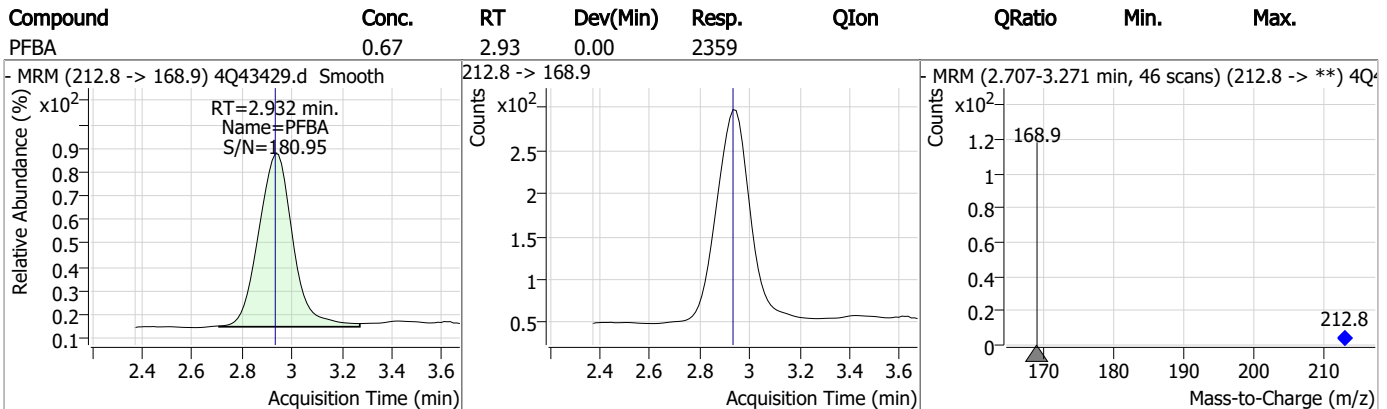
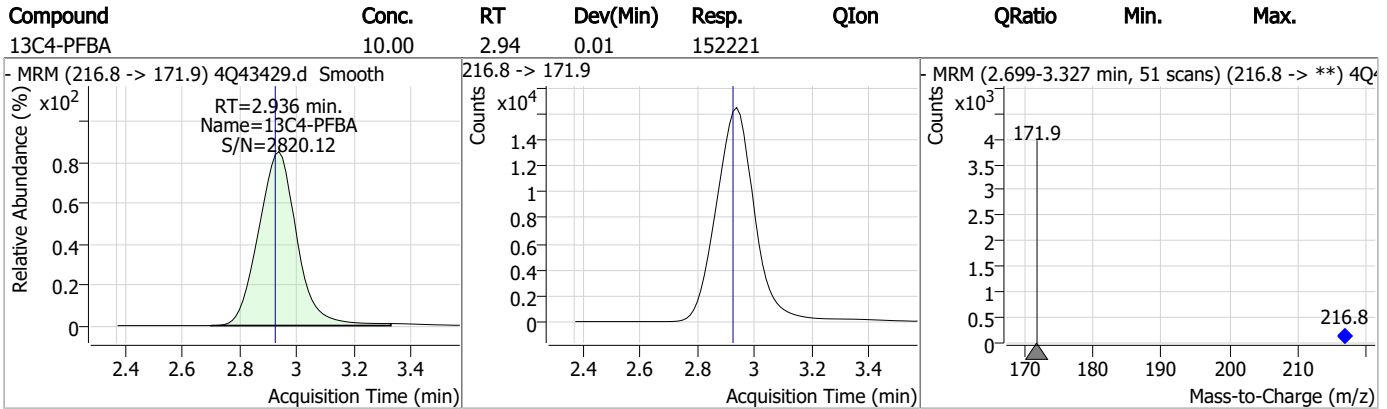
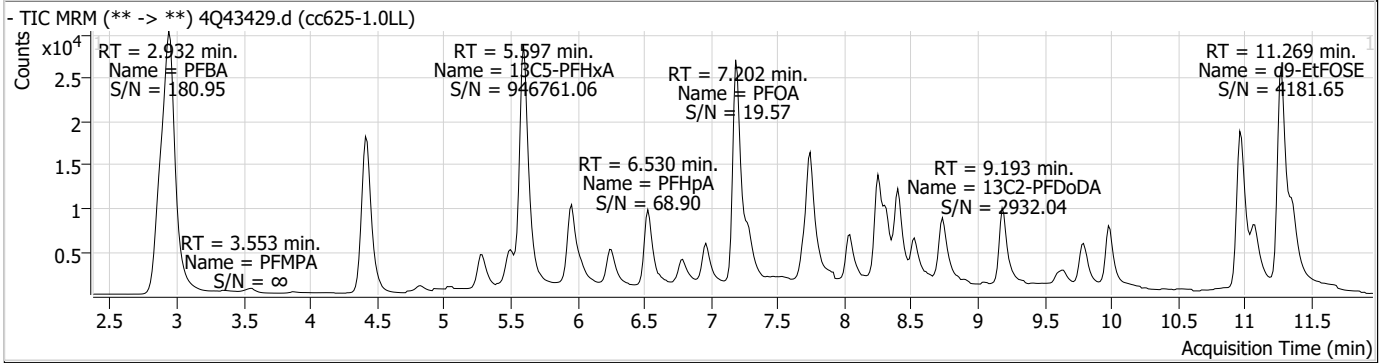
Perfluorinated Compounds by LC/MS/MS

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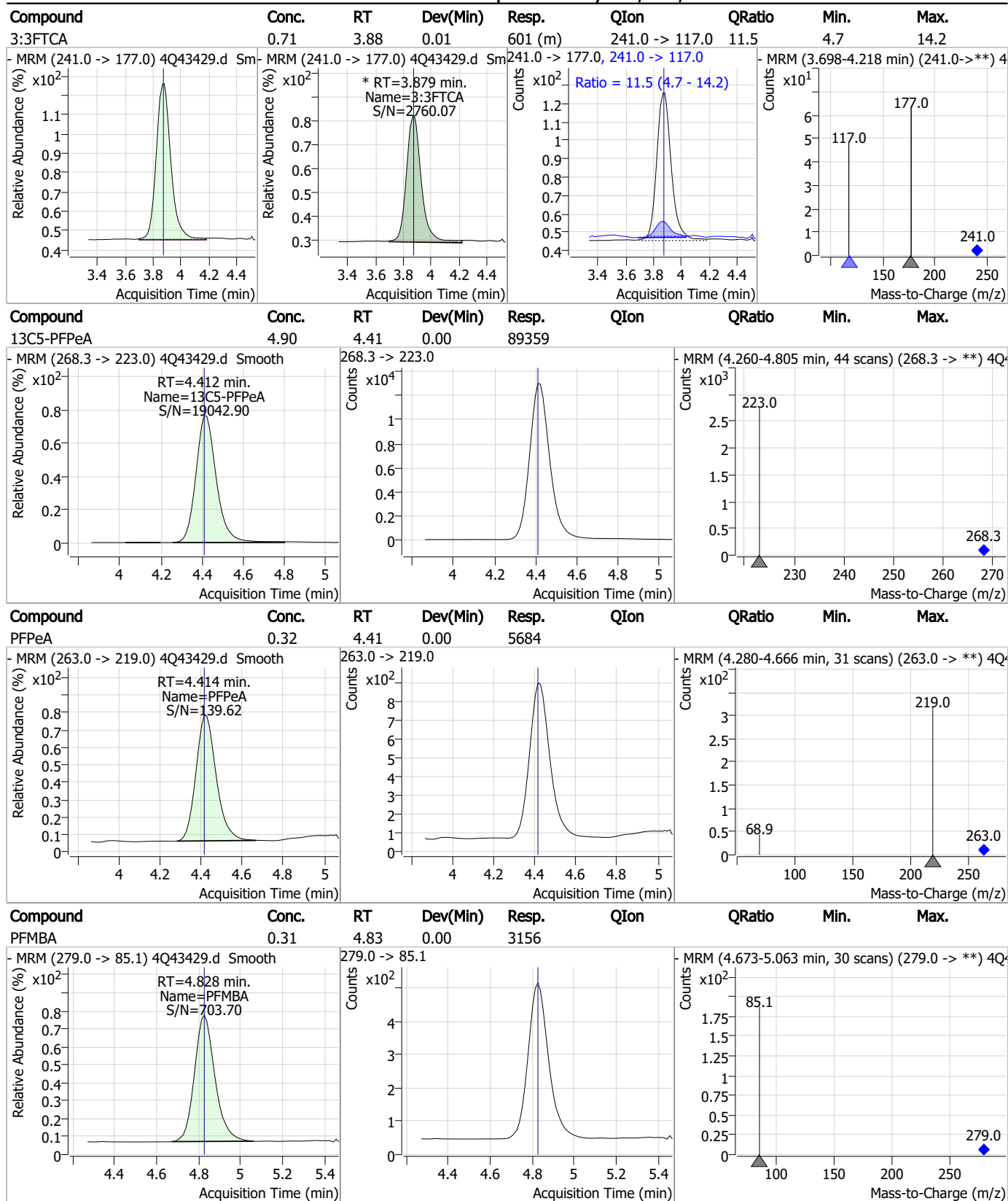
7.7.12

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Perfluorinated Compounds by LC/MS/MS



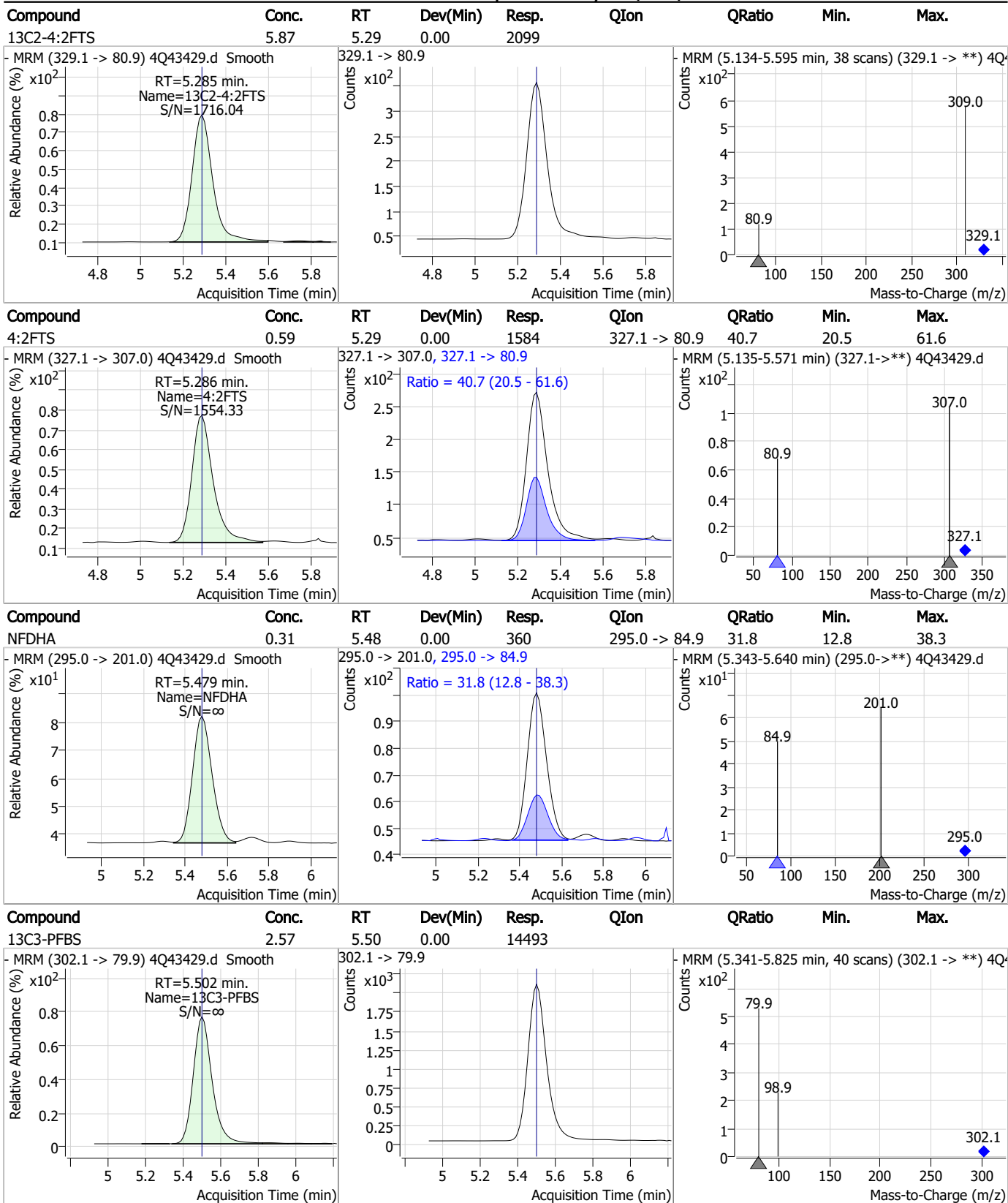
Perfluorinated Compounds by LC/MS/MS



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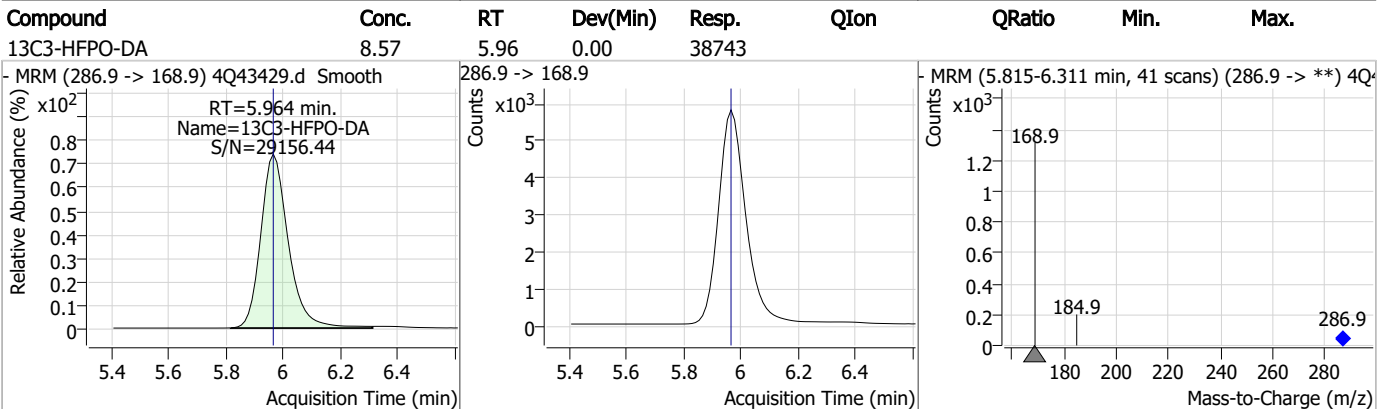
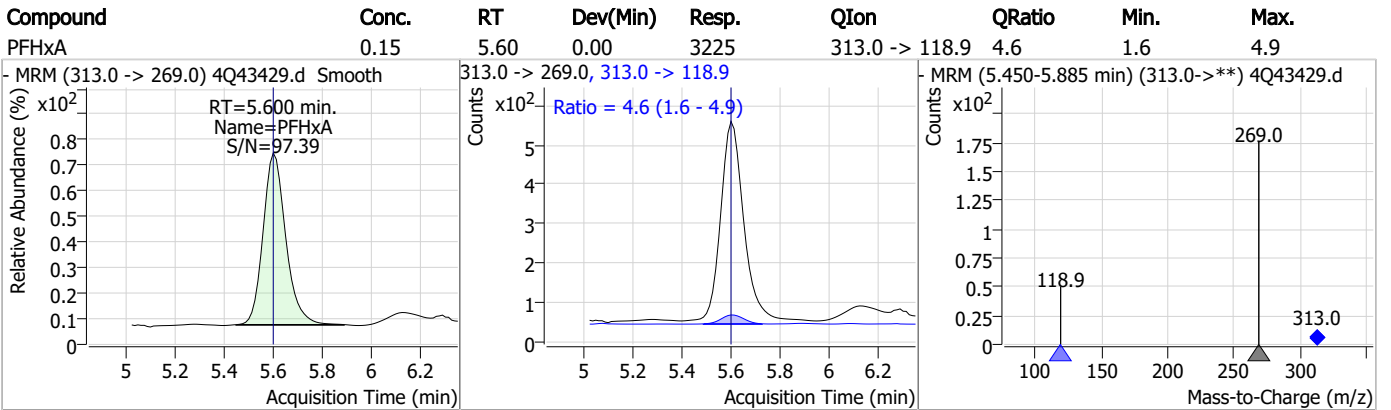
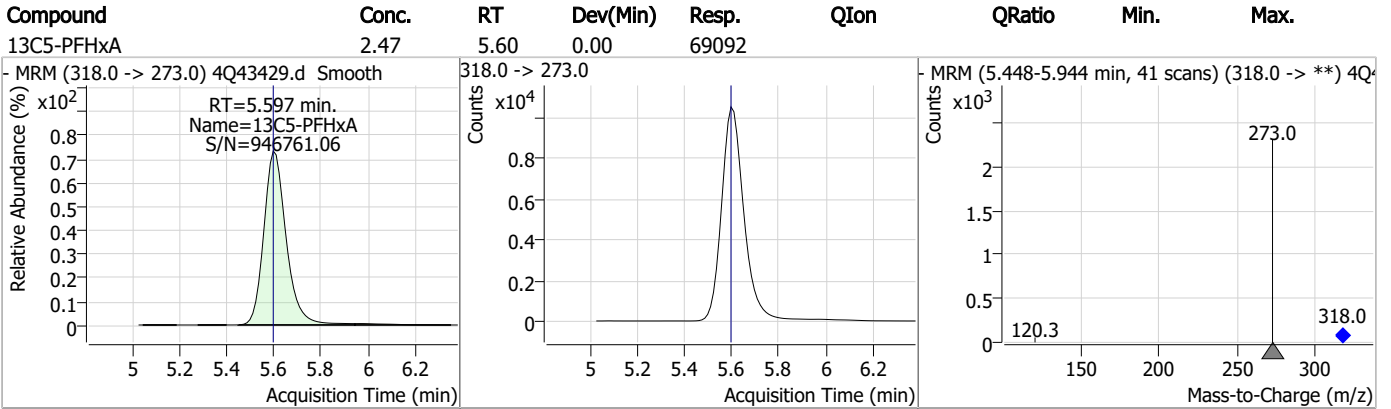
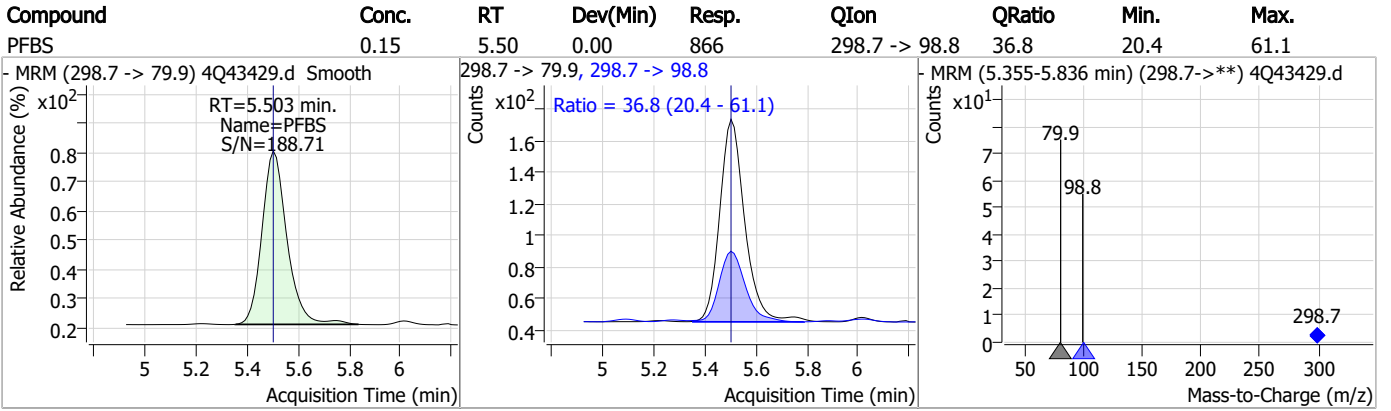


Perfluorinated Compounds by LC/MS/MS

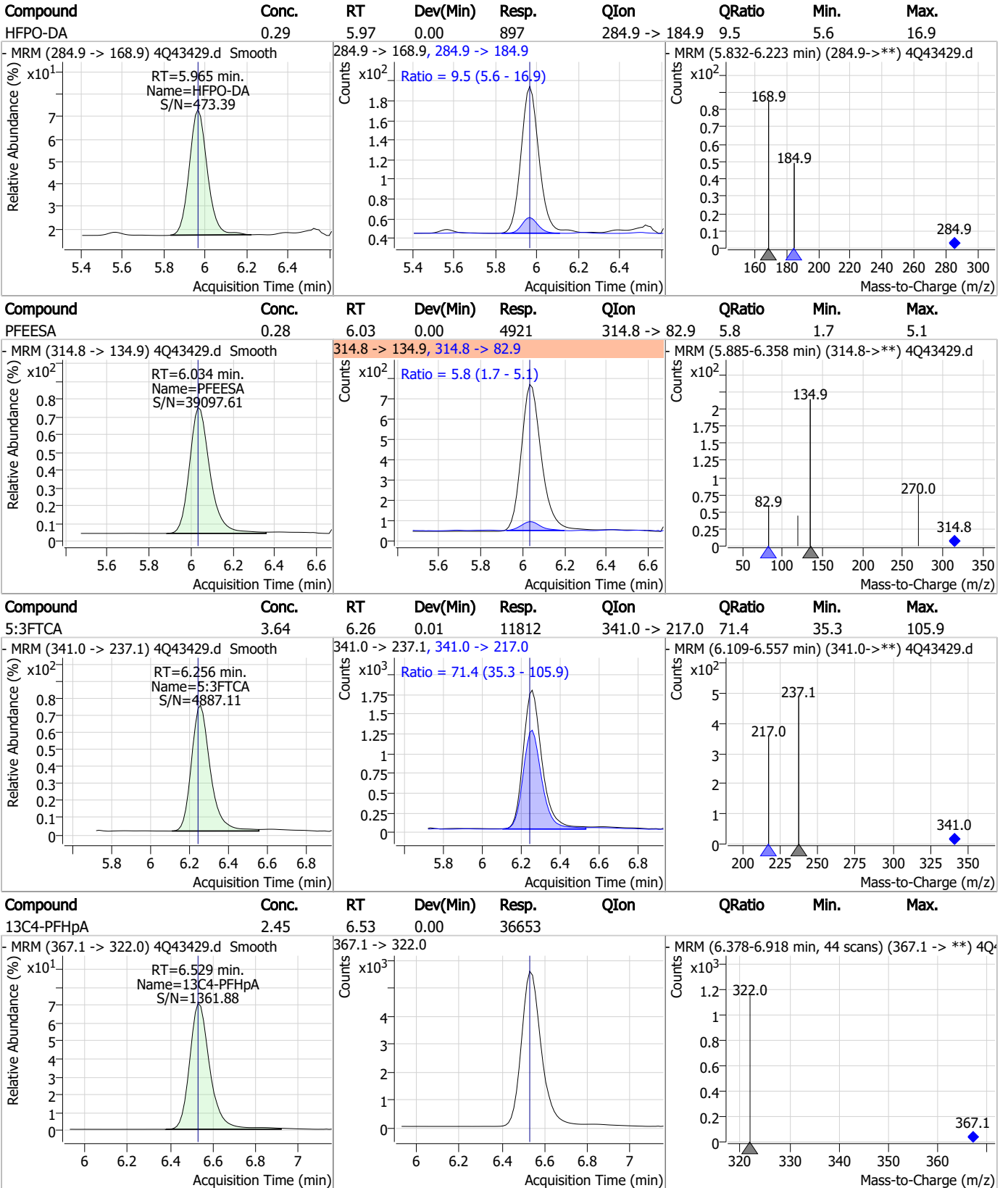


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Perfluorinated Compounds by LC/MS/MS



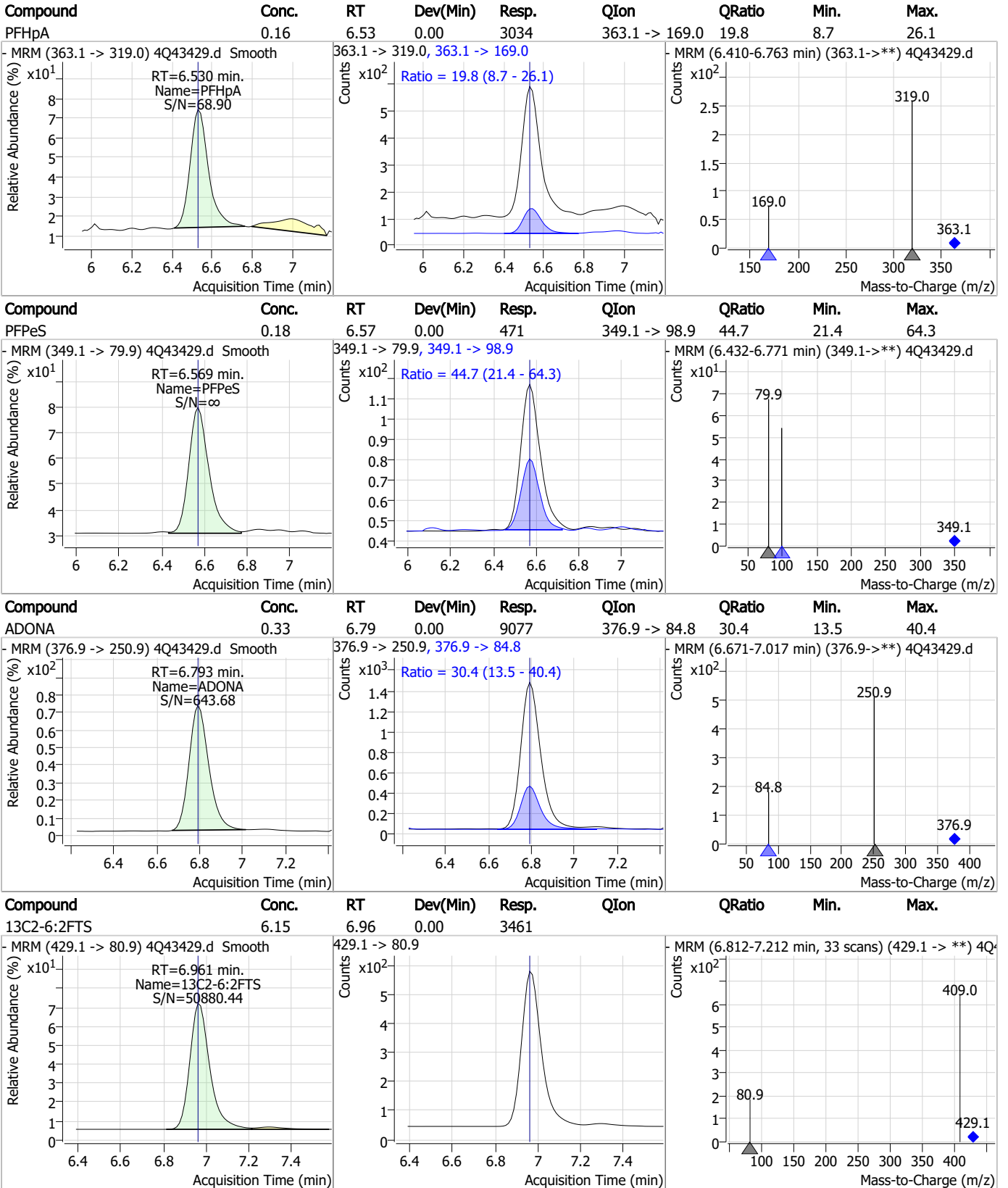
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



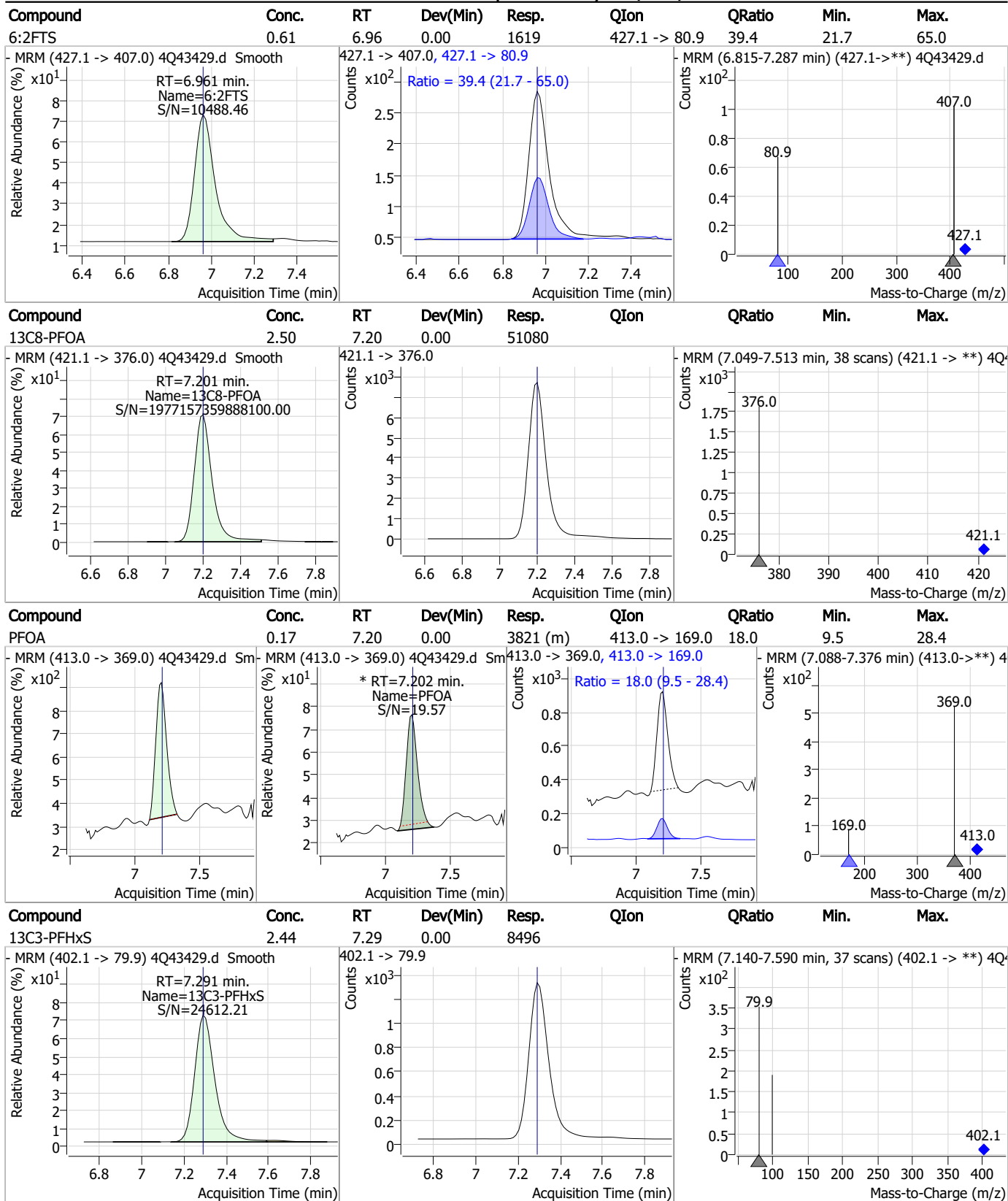
Perfluorinated Compounds by LC/MS/MS



7.7.12 7

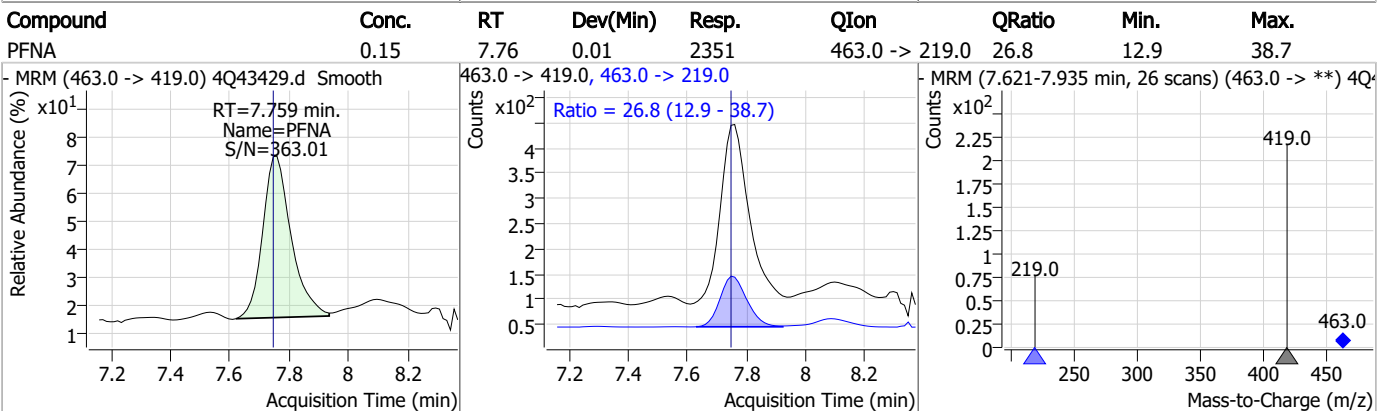
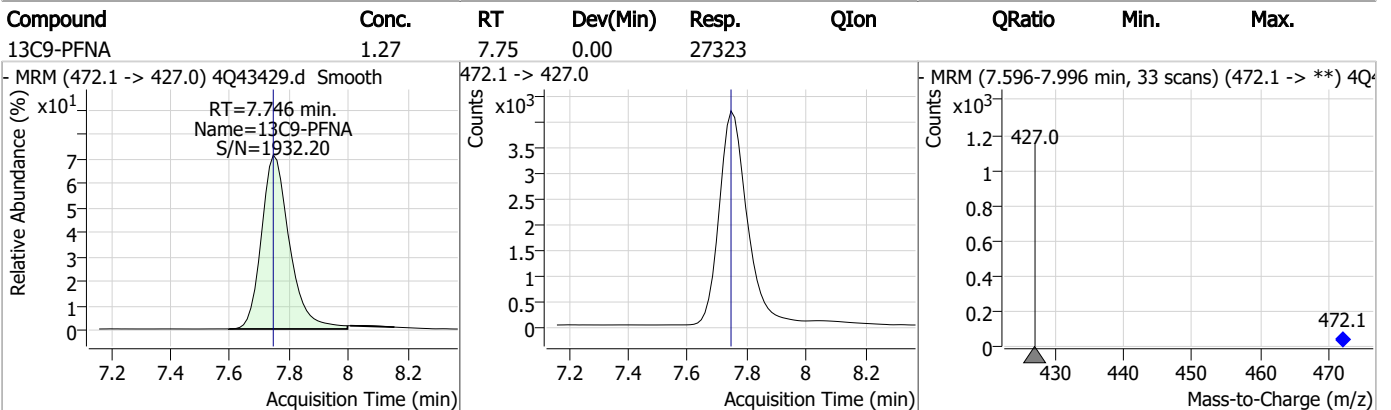
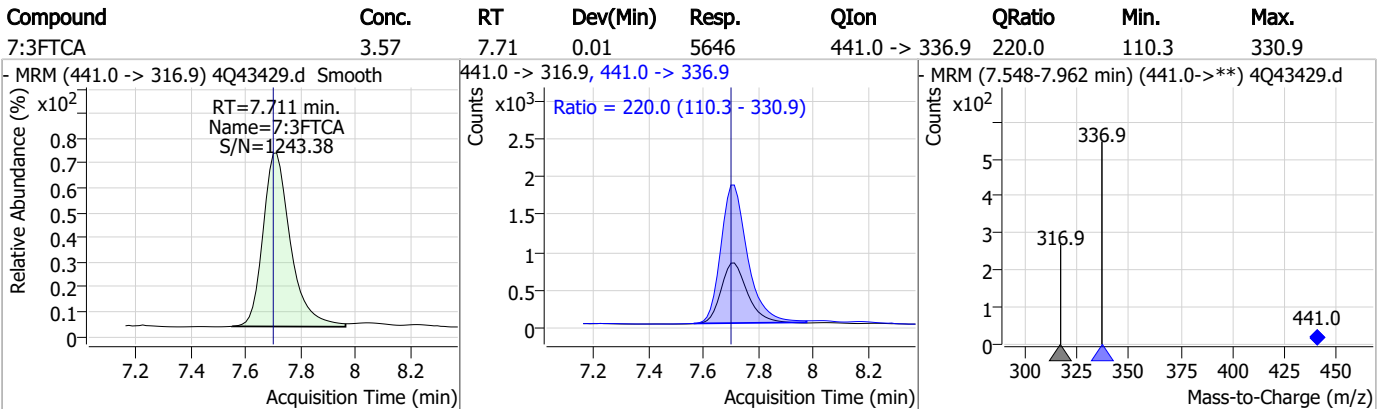
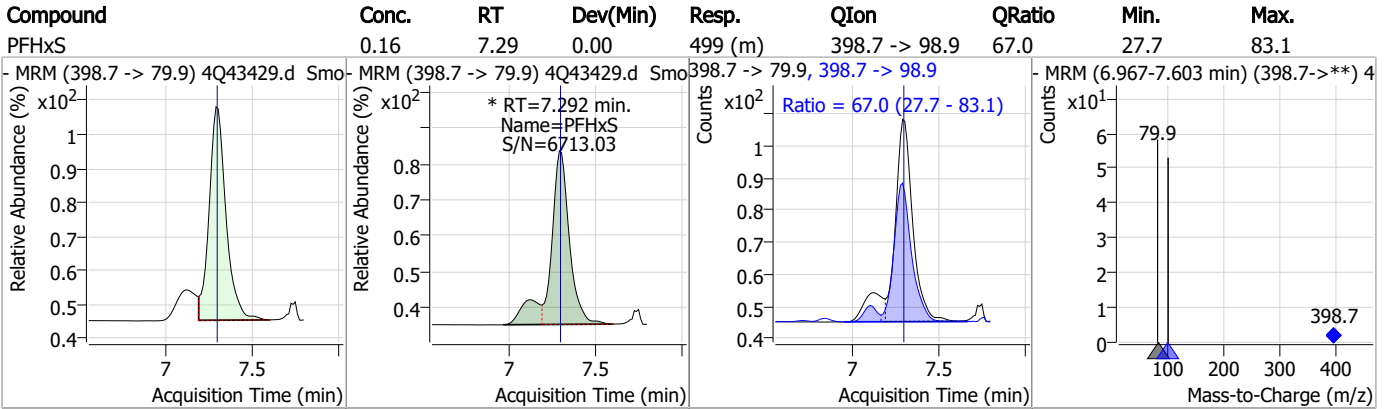


Perfluorinated Compounds by LC/MS/MS



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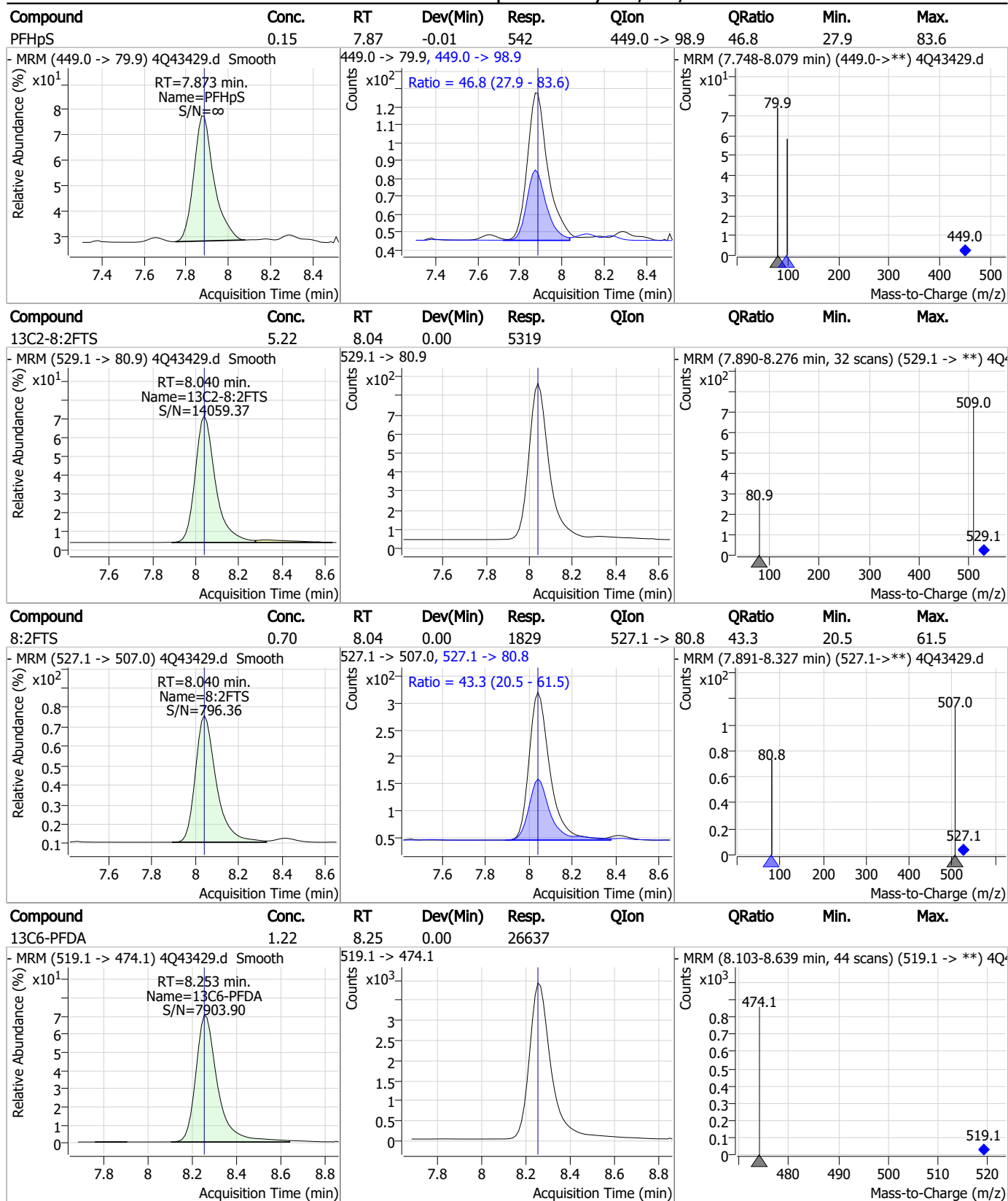
Perfluorinated Compounds by LC/MS/MS



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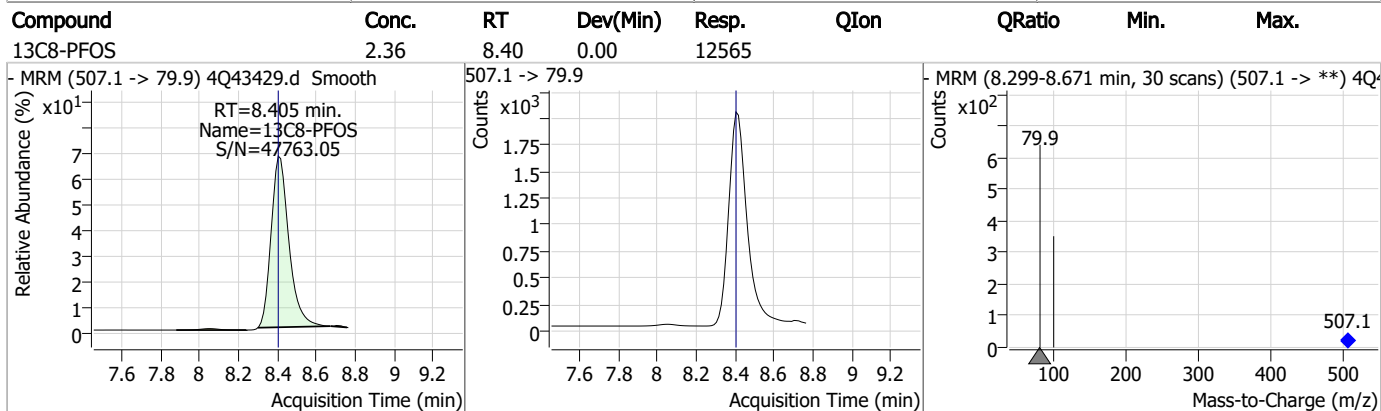
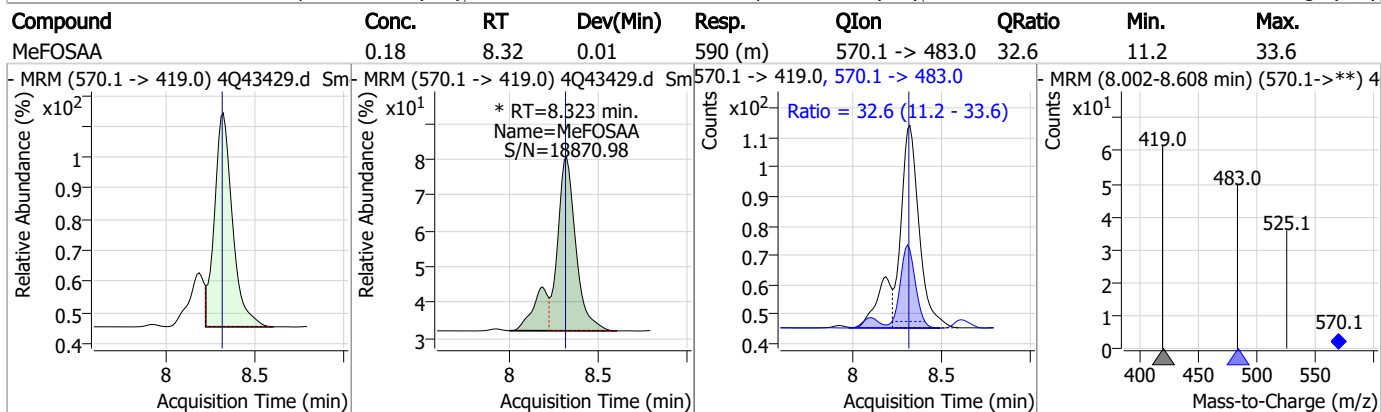
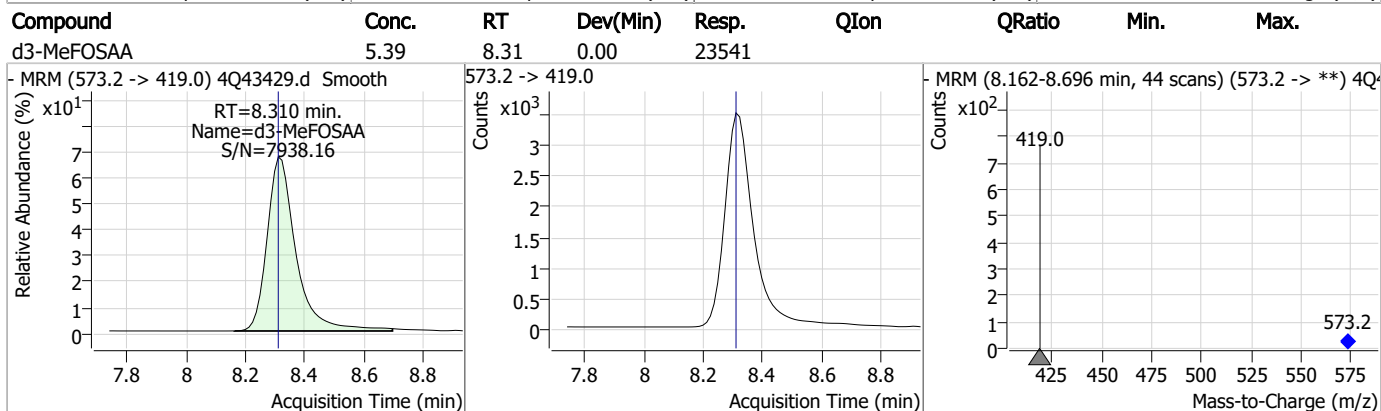
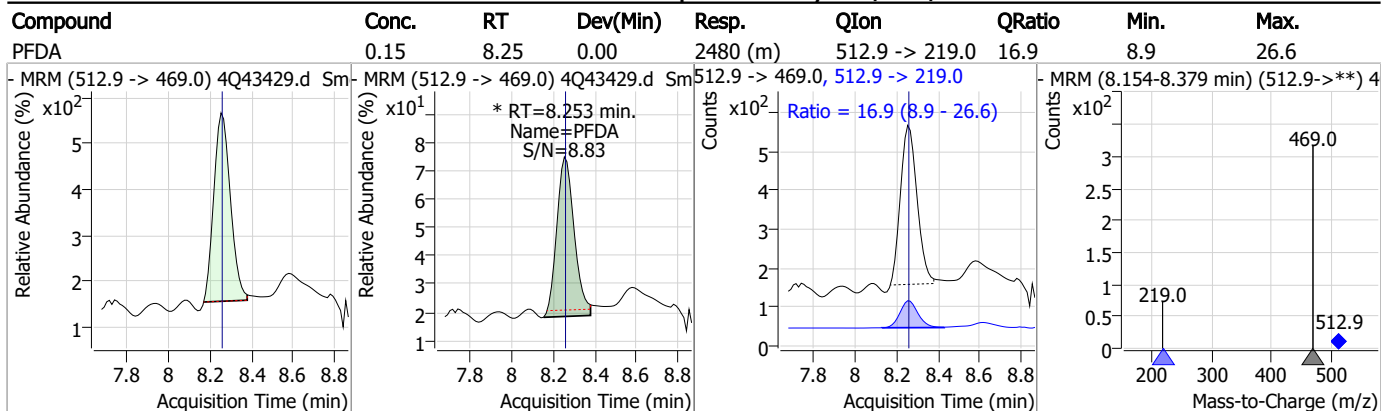


Perfluorinated Compounds by LC/MS/MS

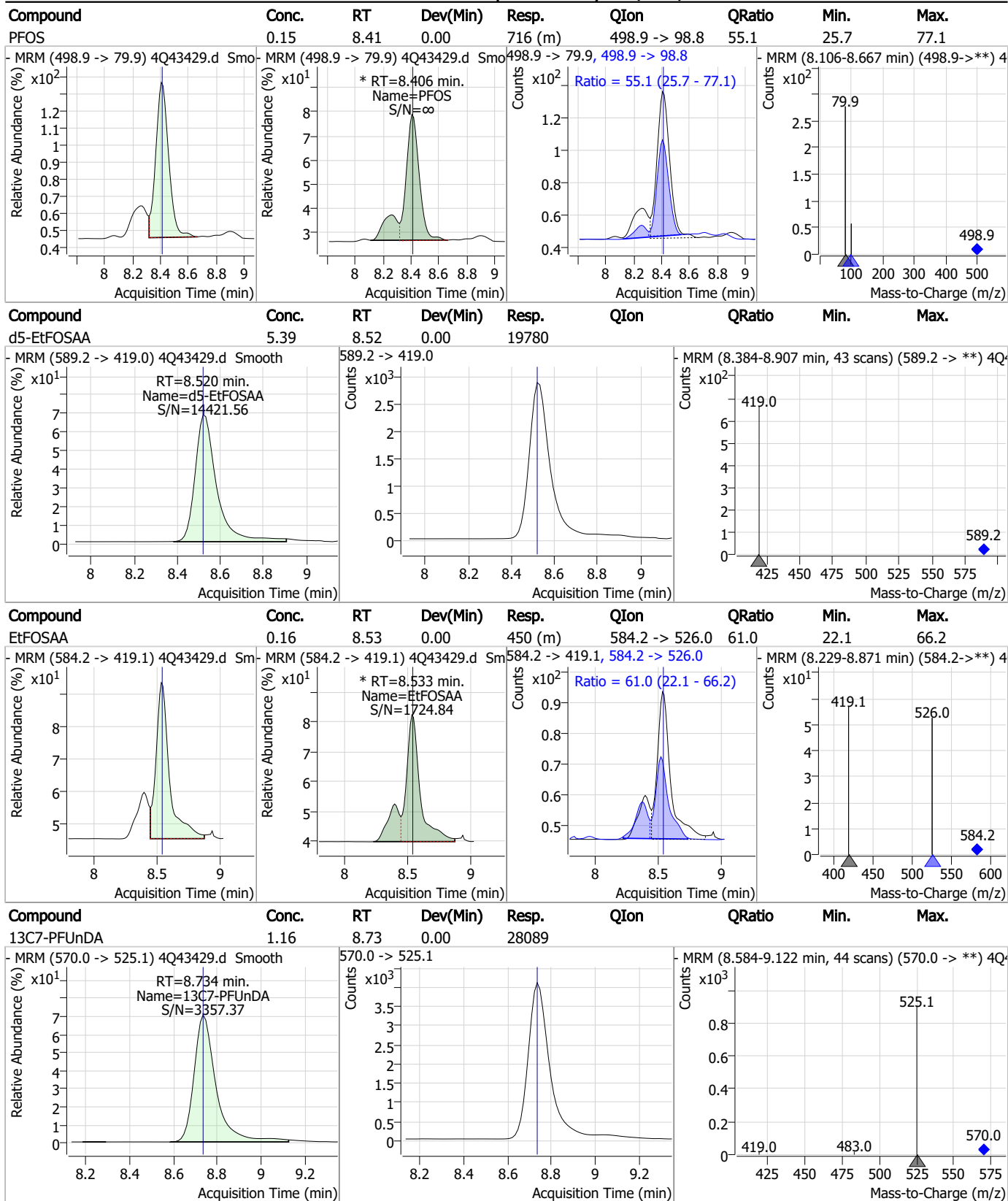


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Perfluorinated Compounds by LC/MS/MS

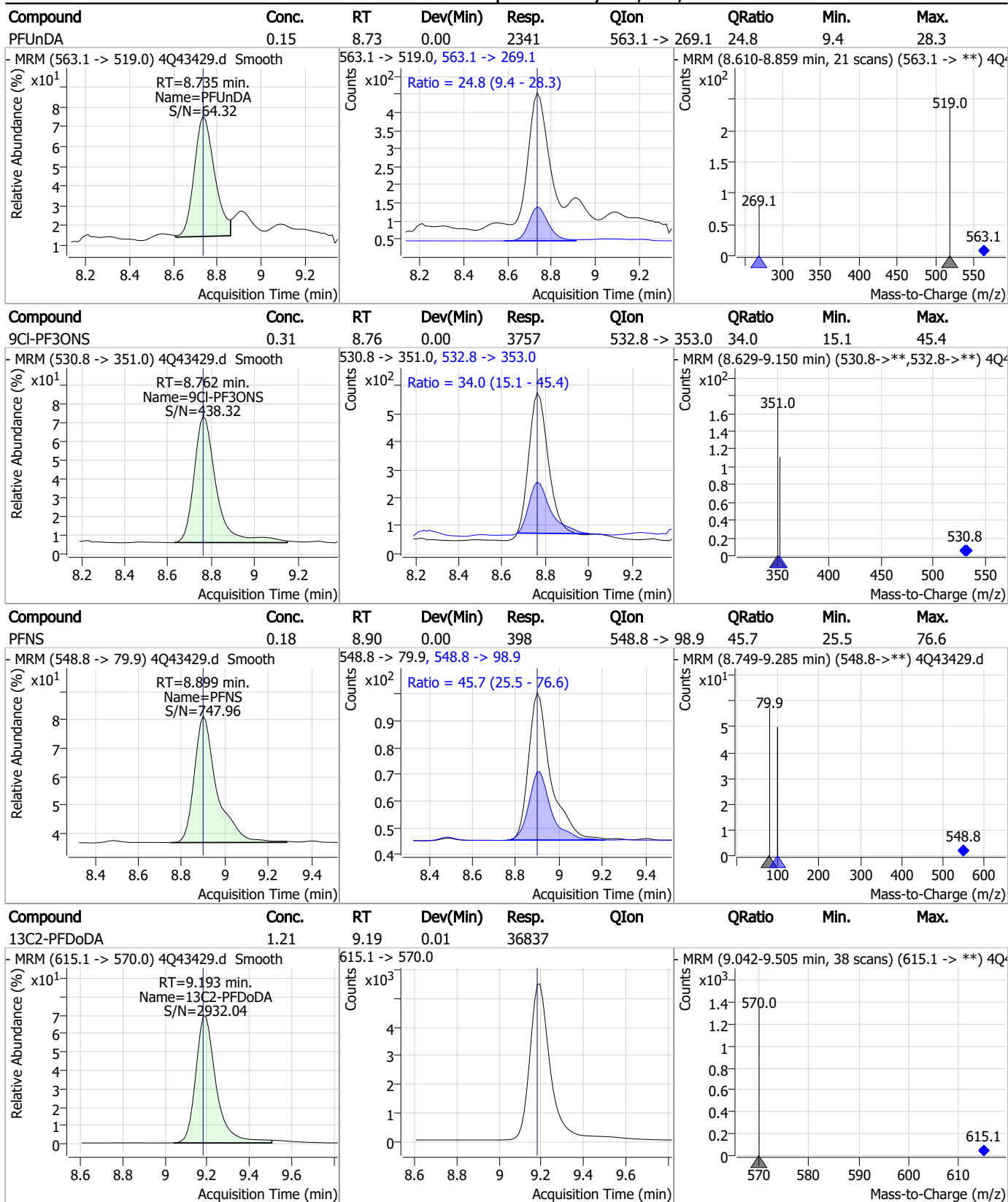


Perfluorinated Compounds by LC/MS/MS



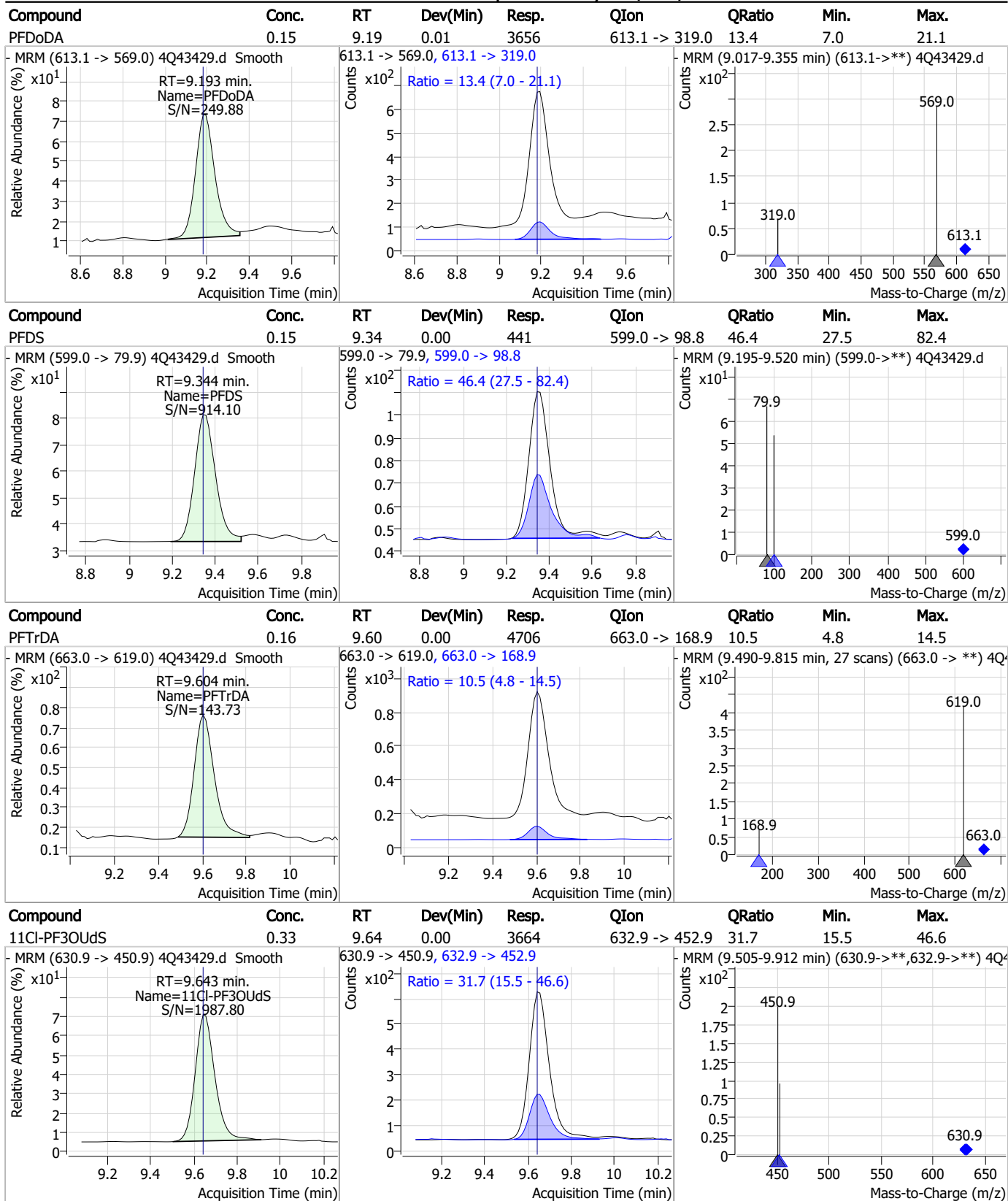
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Perfluorinated Compounds by LC/MS/MS



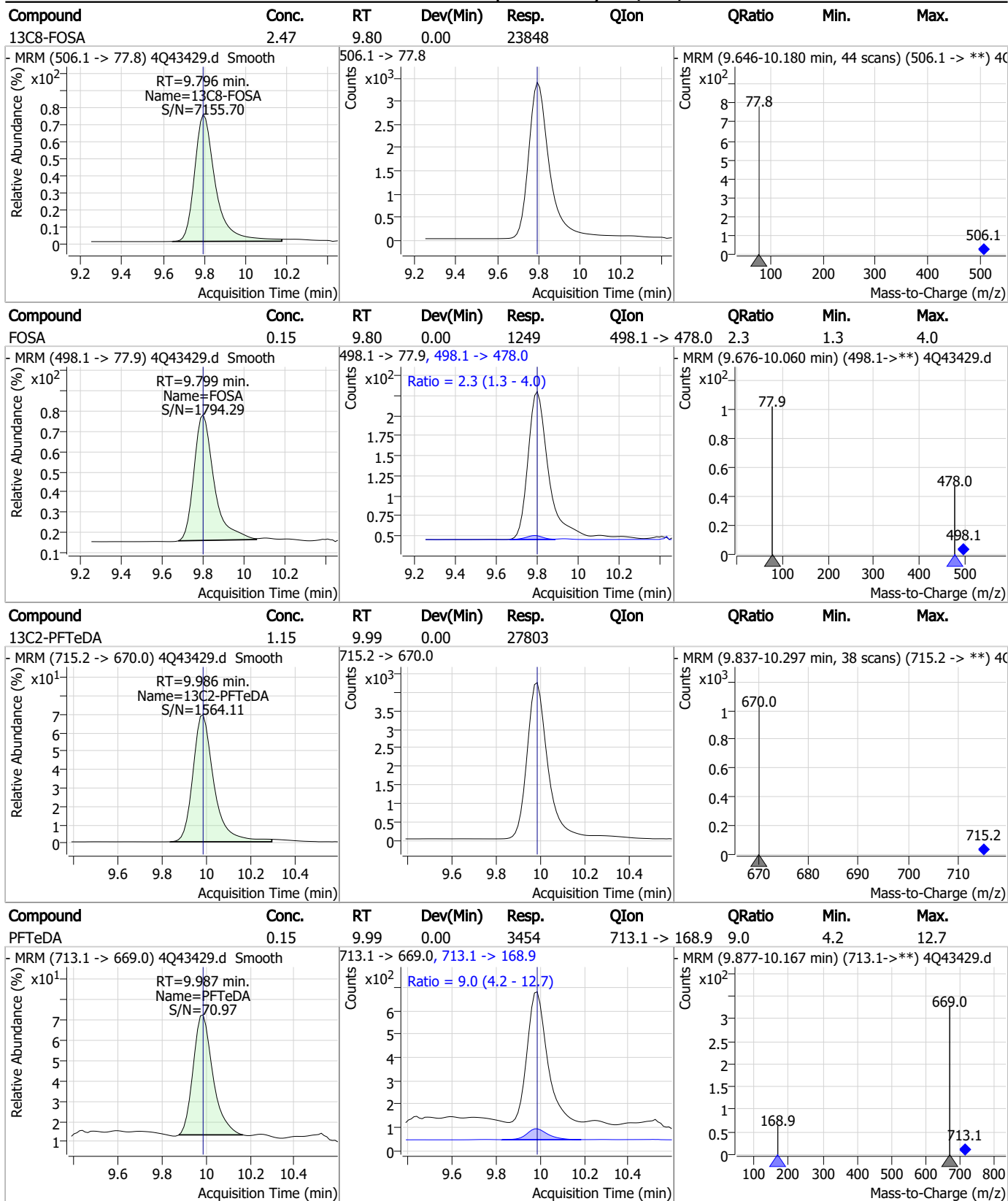
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

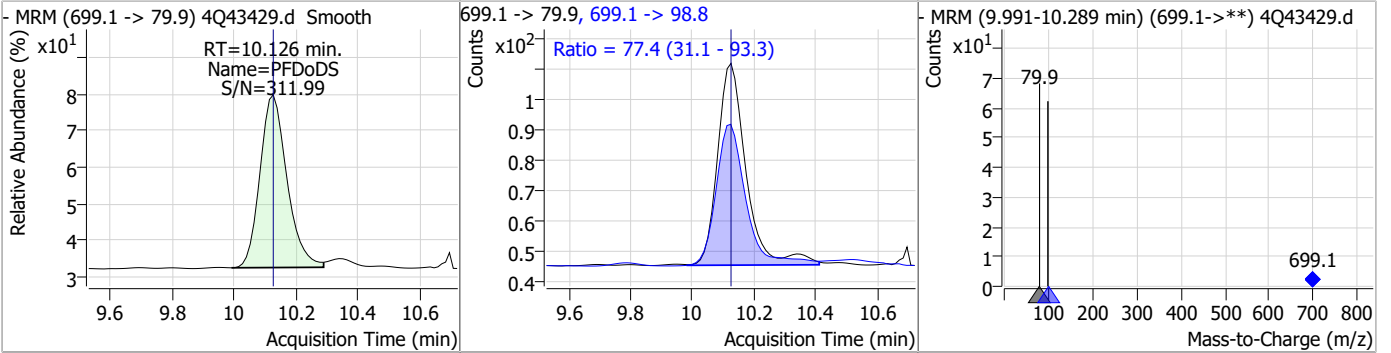


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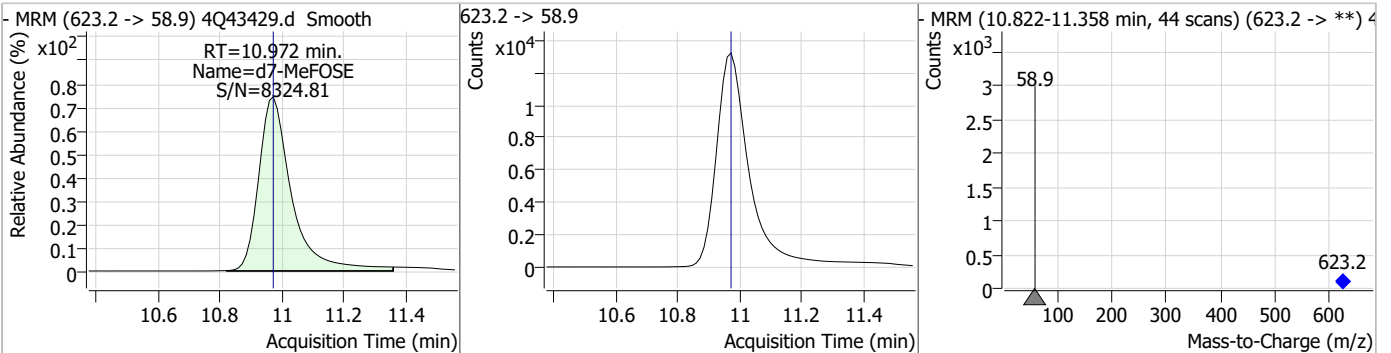
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Perfluorinated Compounds by LC/MS/MS

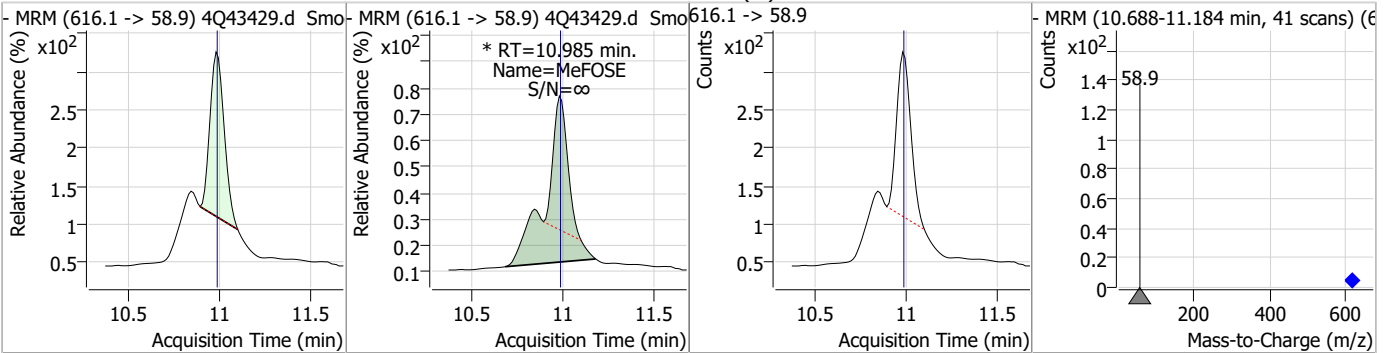
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.15	10.13	0.00	401	699.1 -> 98.8	77.4	31.1	93.3



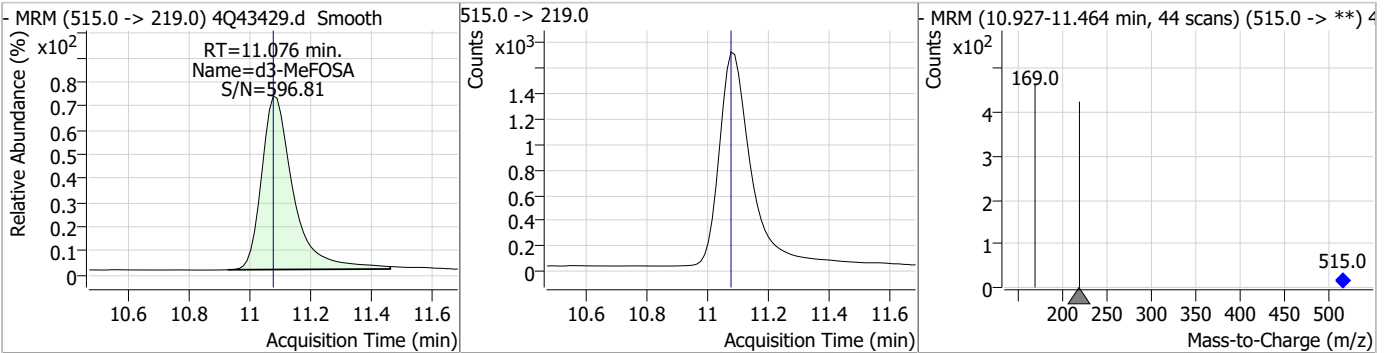
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.79	10.97	0.00	97128				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.71	10.99	0.00	2441 (m)				



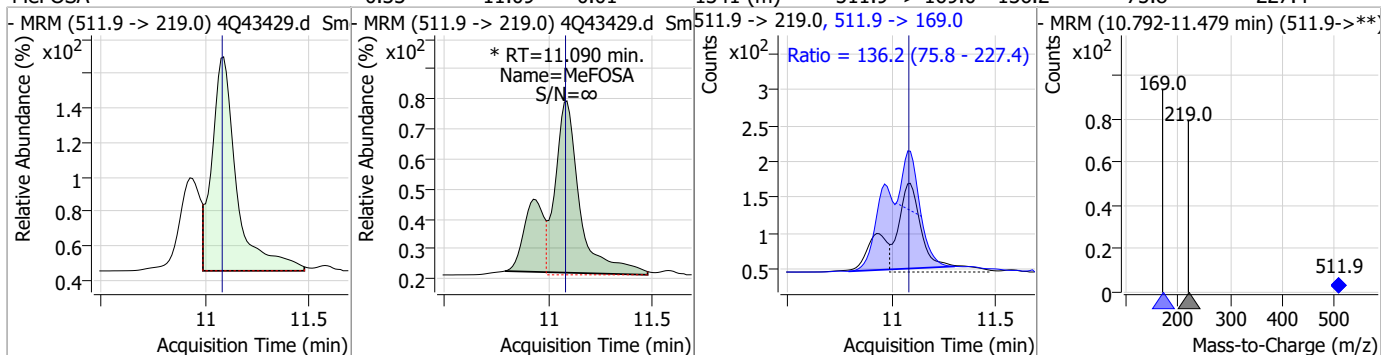
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.45	11.08	0.00	12240				



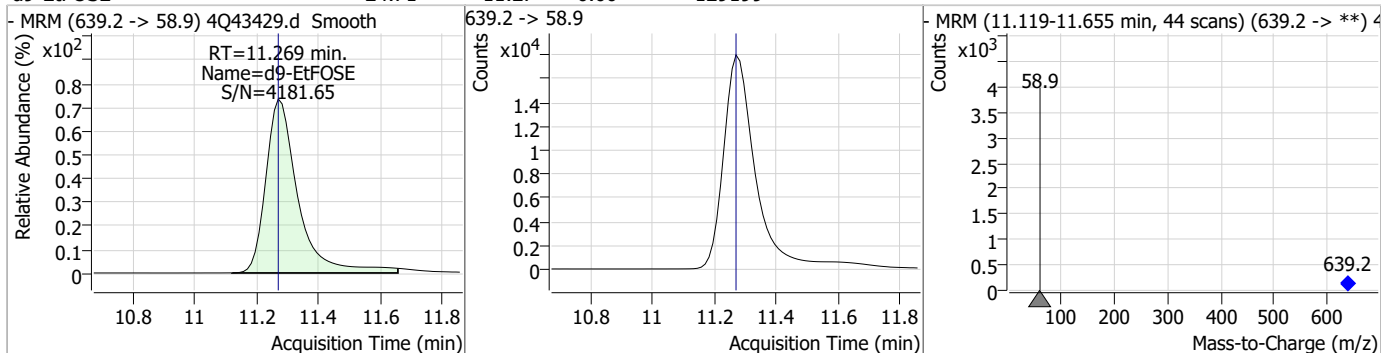
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Perfluorinated Compounds by LC/MS/MS

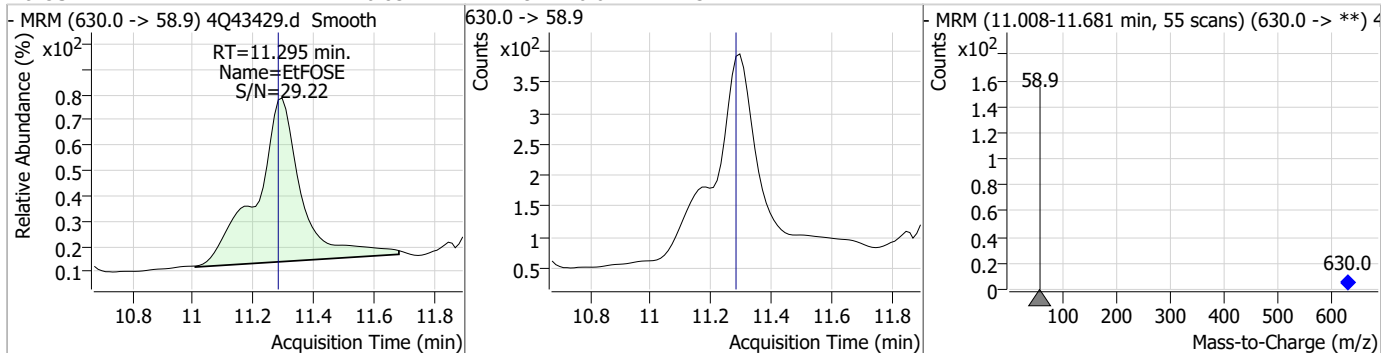
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.33	11.09	0.01	1341 (m)	511.9 -> 169.0	136.2	75.8	227.4



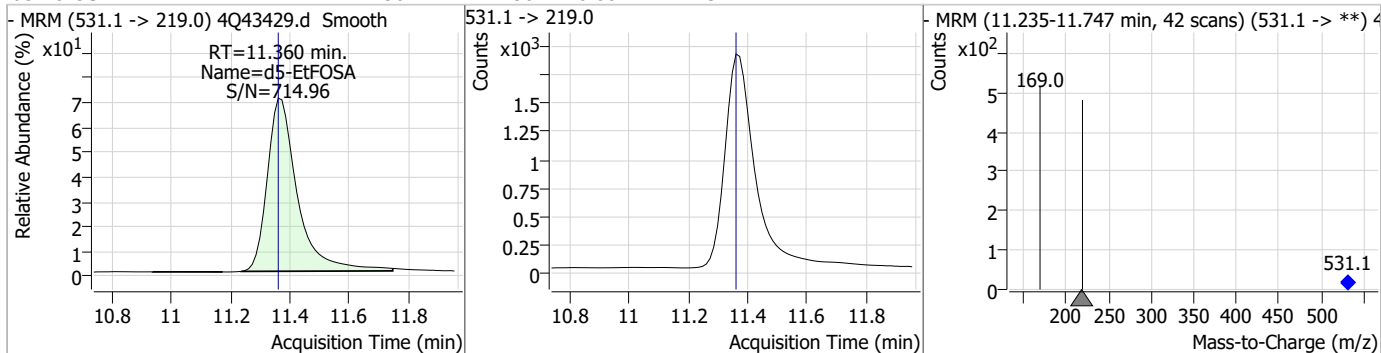
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.71	11.27	0.00	129199				



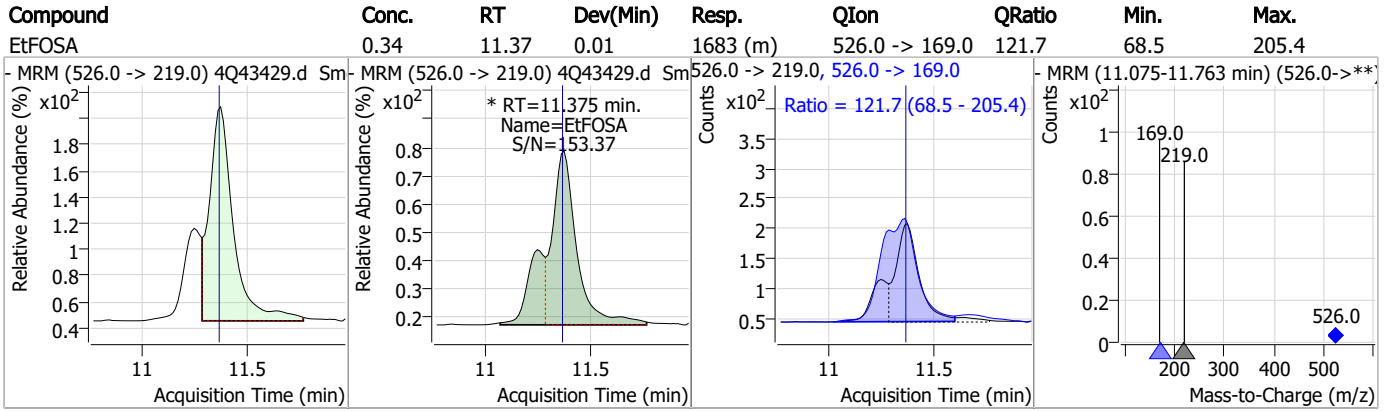
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	0.83	11.29	0.01	3411				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.50	11.36	0.00	13224				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q627-CC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43429.D Analyst approved: 04/24/23 15:01 Martha Valls
Injection Time: 04/21/23 16:09 Supervisor approved: 04/25/23 14:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
3:3 Fluorotelomer carboxylate	356-02-5		3.88	Poorly defined baseline
Perfluorooctanoic acid	335-67-1		7.20	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorodecanoic acid	335-76-2		8.25	Split peak
MeFOSAA	2355-31-9		8.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.53	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.09	Split peak
EtFOSA	4151-50-2		11.38	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43440.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 6:45:33 PM
 Sample Name : cc625-4
 Vial : P1-A5
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96301,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	133227	10.00 µg/L	0.000
M5-PFPeA	4.424	268.3 -> 223.0	75672	5.00 µg/L	0.012
M5-PFHxA	5.609	318.0 -> 273.0	60788	2.50 µg/L	0.012
M4-PFHpA	6.542	367.1 -> 322.0	31428	2.50 µg/L	0.013
M8-PFOA	7.201	421.1 -> 376.0	43929	2.50 µg/L	0.000
M9-PFNA	7.758	472.1 -> 427.0	23482	1.25 µg/L	0.012
M6-PFDA	8.265	519.1 -> 474.1	23067	1.25 µg/L	0.012
M7-PFUnDA	8.747	570.0 -> 525.1	23958	1.25 µg/L	0.012
M2-PFDoDA	9.193	615.1 -> 570.0	31938	1.25 µg/L	0.012
M2-PFTeDA	9.986	715.2 -> 670.0	24183	1.25 µg/L	0.000
M8-FOSA	9.808	506.1 -> 77.8	20111	2.50 µg/L	0.012
M3-PFBS	5.514	302.1 -> 79.9	12106	2.50 µg/L	0.012
M3-PFHxS	7.304	402.1 -> 79.9	7407	2.50 µg/L	0.012
M8-PFOS	8.417	507.1 -> 79.9	10987	2.50 µg/L	0.012
M2-4:2FTS	5.298	329.1 -> 80.9	1689	5.00 µg/L	0.012
M2-6:2FTS	6.973	429.1 -> 80.9	2768	5.00 µg/L	0.012
M2-8:2FTS	8.052	529.1 -> 80.9	4934	5.00 µg/L	0.012
M3-MeFOSAA	8.323	573.2 -> 419.0	20412	5.00 µg/L	0.012
M3-HFPO-DA	5.977	286.9 -> 168.9	31909	10.00 µg/L	0.012
M5-EtFOSAA	8.532	589.2 -> 419.0	17107	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	79739	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	104744	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	11126	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	10327	2.50 µg/L	0.012
13C4-PFOS	8.418	502.8 -> 79.9	12142	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	72520	5.00 µg/L	0.000
18O2-PFHxS	7.303	403.0 -> 83.9	5213	2.50 µg/L	0.012
13C4-PFOA	7.201	417.1 -> 372.0	52710	2.50 µg/L	0.000
13C2-PFDA	8.265	515.1 -> 470.1	22570	1.25 µg/L	0.012
13C5-PFNA	7.759	468.0 -> 423.0	27046	1.25 µg/L	0.012
13C2-PFHxA	5.610	315.1 -> 270.0	51411	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.298	329.1 -> 80.9	1689	5.52 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.4%		
13C2-6:2FTS	6.973	429.1 -> 80.9	2768	5.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.9%		
13C2-8:2FTS	8.052	529.1 -> 80.9	4934	5.65 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.0%		
13C2-PFDoDA	9.193	615.1 -> 570.0	31938	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-PFTeDA	9.986	715.2 -> 670.0	24183	1.12 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.2%		
13C3-PFBS	5.514	302.1 -> 79.9	12106	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C3-PFHxS	7.304	402.1 -> 79.9	7407	2.49 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 = 99.5%	
13C4-PFBA	2.924	216.8 -> 171.9	133227	10.20 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C4-PFHpA	6.542	367.1 -> 322.0	31428	2.44 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C5-PFHxA	5.609	318.0 -> 273.0	60788	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C5-PFPeA	4.424	268.3 -> 223.0	75672	4.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C6-PFDA	8.265	519.1 -> 474.1	23067	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C7-PFUnDA	8.747	570.0 -> 525.1	23958	1.11 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 88.6%	
13C8-FOSA	9.808	506.1 -> 77.8	20111	2.28 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.4%	
13C8-PFOA	7.201	421.1 -> 376.0	43929	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-PFOS	8.417	507.1 -> 79.9	10987	2.27 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.6%	
13C9-PFNA	7.758	472.1 -> 427.0	23482	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
d3-MeFOSAA	8.323	573.2 -> 419.0	20412	5.12 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C3-HFPO-DA	5.977	286.9 -> 168.9	31909	8.18 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 81.8%	
d3-MeFOSA	11.089	515.0 -> 219.0	10327	2.27 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.8%	
d5-EtFOSAA	8.532	589.2 -> 419.0	17107	5.11 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
d7-MeFOSE	10.972	623.2 -> 58.9	79739	21.41 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 85.6%	
d9-EtFOSE	11.269	639.2 -> 58.9	104744	21.96 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.8%	
d5-EtFOSA	11.373	531.1 -> 219.0	11126	2.30 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.1%	
Target Compounds					QValue
4:2FTS	5.286	327.1 -> 307.0	22489	10.41 µg/L	100
		327.1 -> 80.9	9283		
6:2FTS	6.974	427.1 -> 407.0	20131	9.51 µg/L	98
		427.1 -> 80.9	8447		
8:2FTS	8.040	527.1 -> 507.0	23823	9.80 µg/L	95
		527.1 -> 80.8	9054		
EtFOSAA	8.533	584.2 -> 419.1	6794	2.78 µg/L	m 93
		584.2 -> 526.0	3319		
FOSA	9.799	498.1 -> 77.9	16897	2.48 µg/L	98
		498.1 -> 478.0	542		
MeFOSAA	8.323	570.1 -> 419.0	6581	2.26 µg/L	m 98
		570.1 -> 483.0	1534		
PFBA	2.932	212.8 -> 168.9	30542	9.88 µg/L	100
PFBS	5.503	298.7 -> 79.9	10900	2.28 µg/L	99
		298.7 -> 98.8	4531		
PFDA	8.266	512.9 -> 469.0	34335	2.43 µg/L	94
		512.9 -> 219.0	7070		
PFDODA	9.193	613.1 -> 569.0	53155	2.53 µg/L	99
		613.1 -> 319.0	7338		
PFDS	9.357	599.0 -> 79.9	6639	2.59 µg/L	88

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.543	599.0 -> 98.8	3081	2.53	µg/L	98
		363.1 -> 319.0	41780			
PFHpS	7.885	363.1 -> 169.0	7651	2.46	µg/L	91
		449.0 -> 79.9	7764			
PFHxA	5.612	449.0 -> 98.9	3799	2.35	µg/L	100
		313.0 -> 269.0	44908			
PFHxS	7.305	313.0 -> 118.9	1390	2.42	µg/L	91
		398.7 -> 79.9	6570			
PFNA	7.759	398.7 -> 98.9	3221	2.46	µg/L	95
		463.0 -> 419.0	32965			
PFNS	8.911	463.0 -> 219.0	7674	2.33	µg/L	95
		548.8 -> 79.9	4534			
PFOA	7.202	548.8 -> 98.9	2486	2.63	µg/L	98
		413.0 -> 369.0	51547			
PFOS	8.418	413.0 -> 169.0	10129	2.47	µg/L	98
		498.9 -> 79.9	10406			
PFPeA	4.427	498.9 -> 98.8	5506	5.09	µg/L	100
		263.0 -> 219.0	76937			
PFPeS	6.569	349.1 -> 79.9	5841	2.49	µg/L	96
		349.1 -> 98.9	2637			
PFTeDA	9.987	713.1 -> 669.0	48999	2.49	µg/L	99
		713.1 -> 168.9	4048			
PFTrDA	9.604	663.0 -> 619.0	68449	2.62	µg/L	98
		663.0 -> 168.9	6219			
PFUnDA	8.747	563.1 -> 519.0	32556	2.40	µg/L	100
		563.1 -> 269.1	6152			
11CI-PF3OUdS	9.655	630.9 -> 450.9	51918	5.65	µg/L	98
		632.9 -> 452.9	15437			
9CI-PF3ONS	8.775	530.8 -> 351.0	54071	5.48	µg/L	100
		532.8 -> 353.0	16318			
ADONA	6.805	376.9 -> 250.9	132236	5.77	µg/L	100
		376.9 -> 84.8	35469			
HFPO-DA	5.977	284.9 -> 168.9	13264	5.26	µg/L	97
		284.9 -> 184.9	1666			
3:3FTCA	3.867	241.0 -> 177.0	8539	11.87	µg/L	100
		241.0 -> 117.0	802			
5:3FTCA	6.256	341.0 -> 237.1	174443	61.11	µg/L	98
		341.0 -> 217.0	119835			
7:3FTCA	7.711	441.0 -> 316.9	82534	59.25	µg/L	97
		441.0 -> 336.9	186706			
EtFOSA	11.375	526.0 -> 219.0	21902	5.28	µg/L	99
		526.0 -> 169.0	29849			
EtFOSE	11.295	630.0 -> 58.9	43280	12.96	µg/L	100
		511.9 -> 219.0	17615			
MeFOSA	11.090	511.9 -> 169.0	25674	5.10	µg/L	95
		616.1 -> 58.9	33885			
MeFOSE	10.997	699.1 -> 79.9	5803	11.95	µg/L	100
		699.1 -> 98.8	3321			
PFDoDS	10.126	295.0 -> 201.0	5681	2.49	µg/L	94
		295.0 -> 84.9	1394			
NFDHA	5.491	279.0 -> 85.1	43032	4.99	µg/L	100
		229.0 -> 84.9	38249			
PFMBA	3.553	314.8 -> 134.9	67731	4.99	µg/L	100
		314.8 -> 82.9	2185			
PFEESA	6.046			4.31	µg/L	99

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

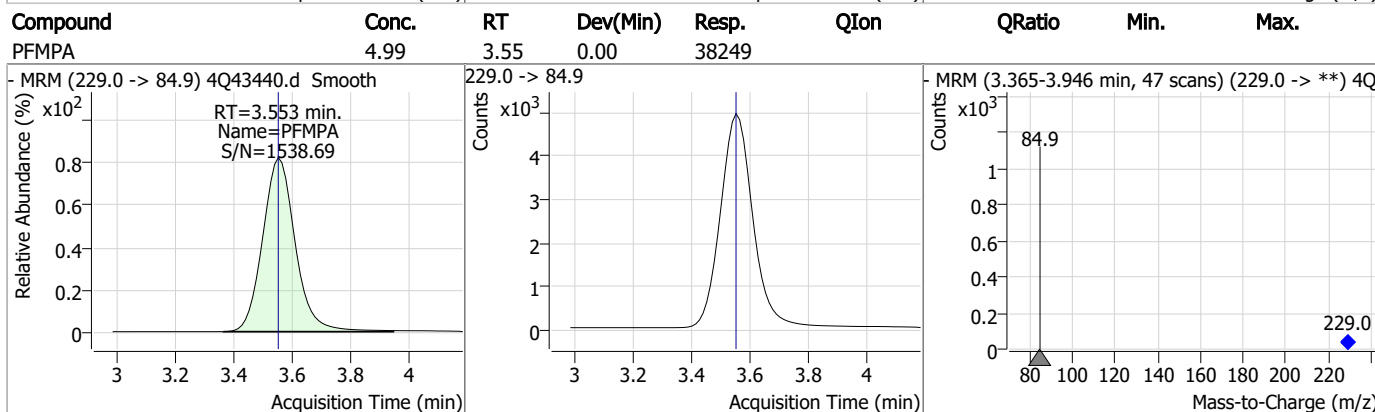
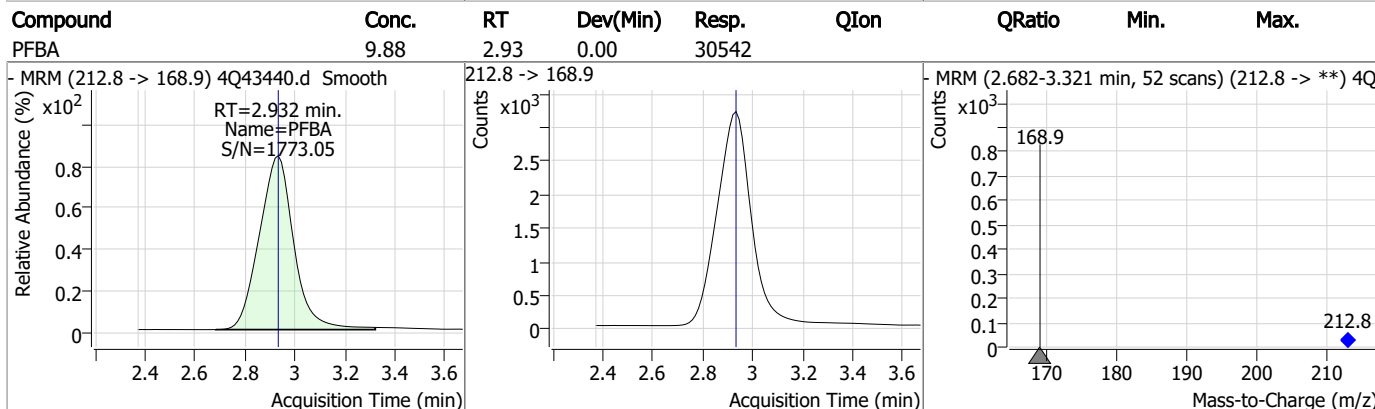
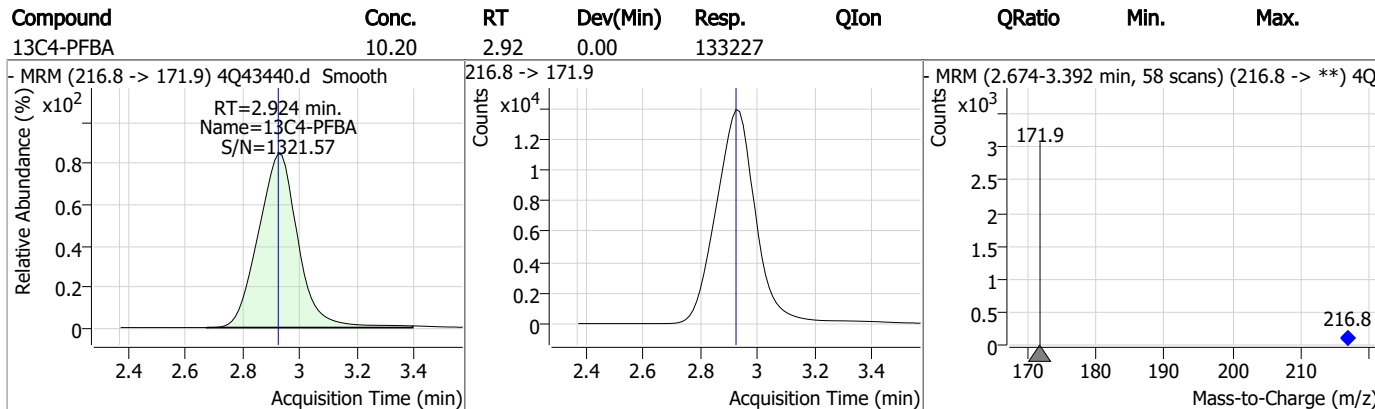
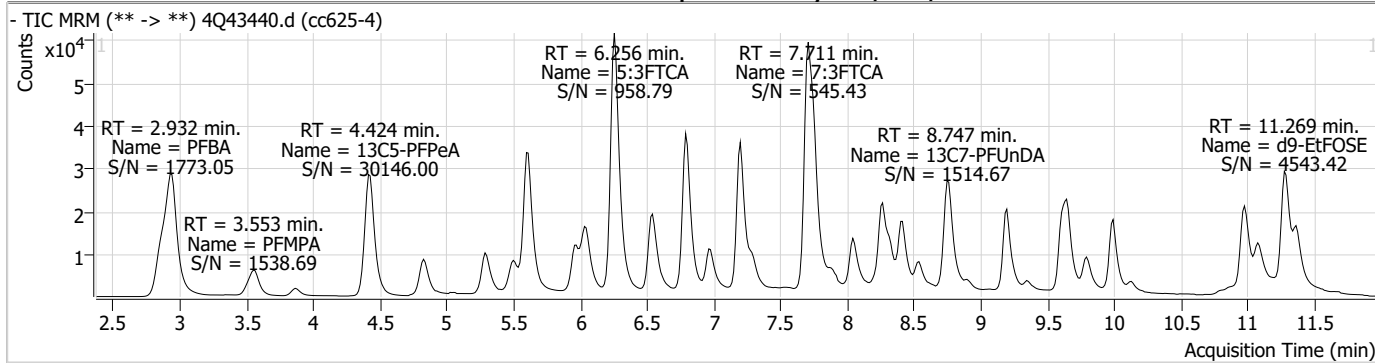
Perfluorinated Compounds by LC/MS/MS

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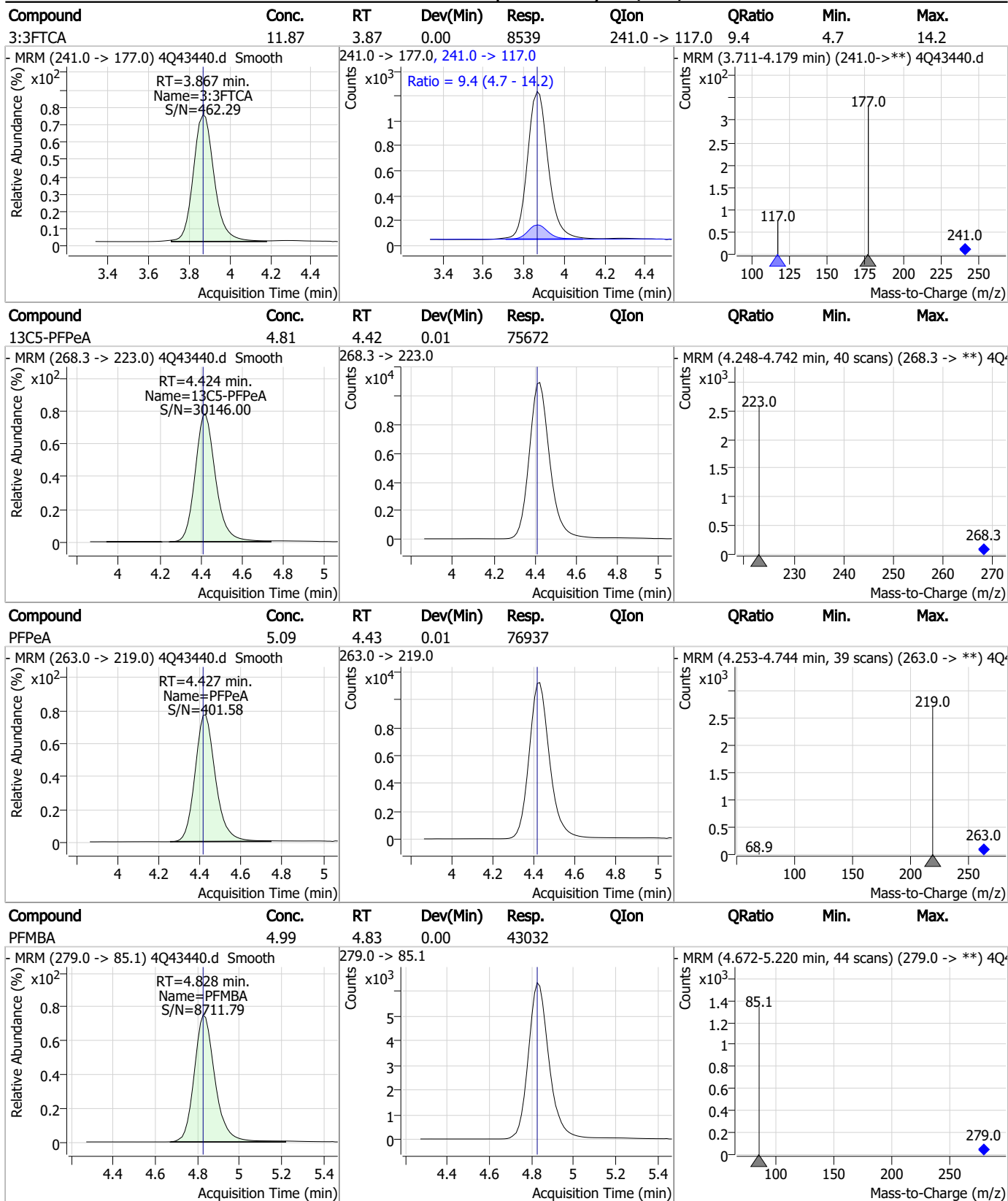
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Perfluorinated Compounds by LC/MS/MS



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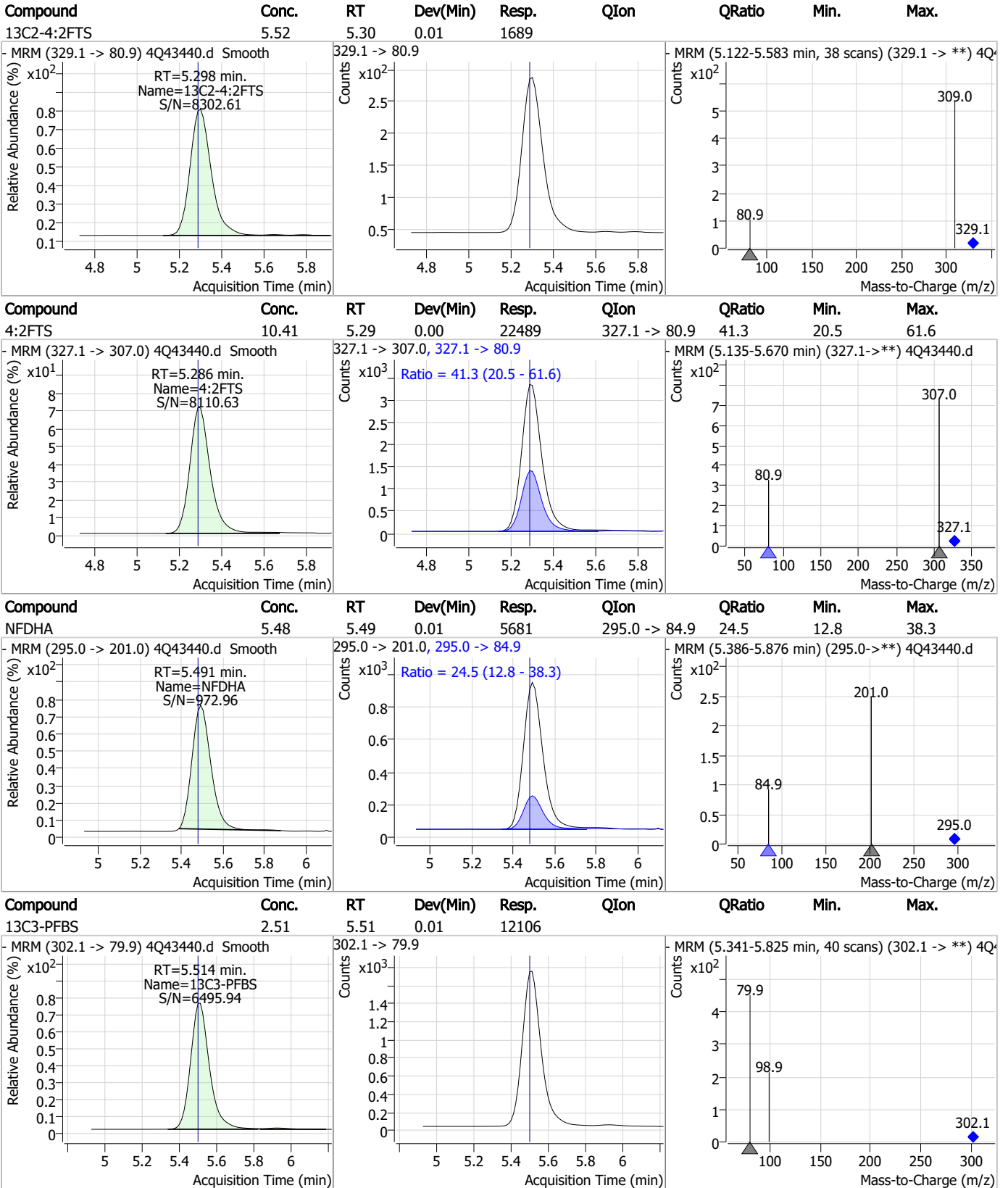
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

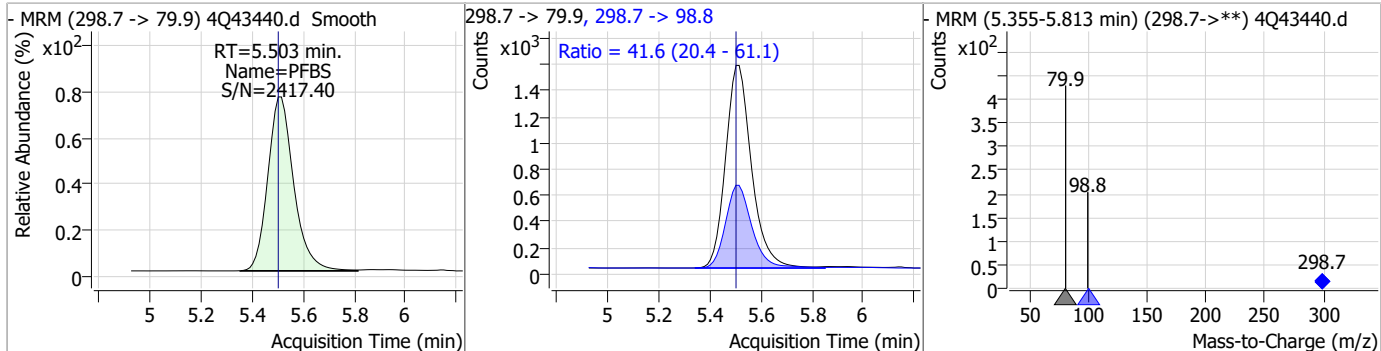


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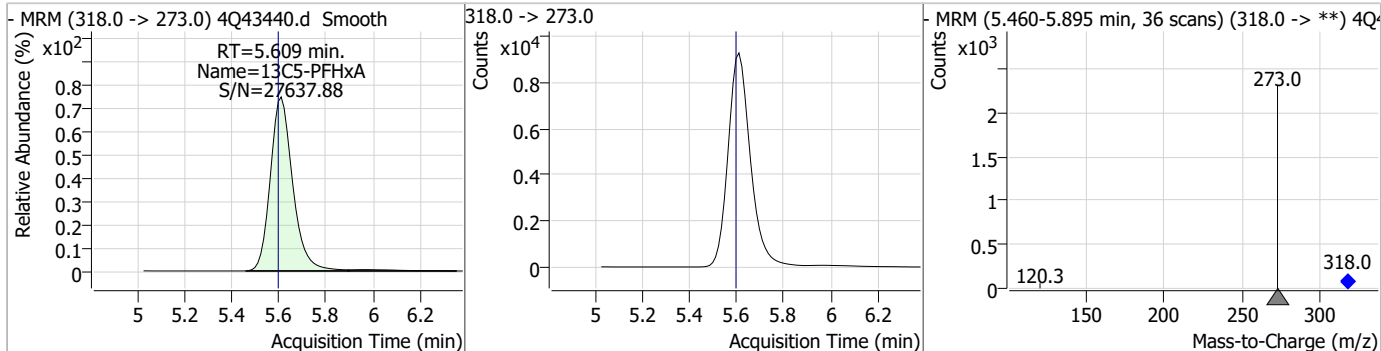


Perfluorinated Compounds by LC/MS/MS

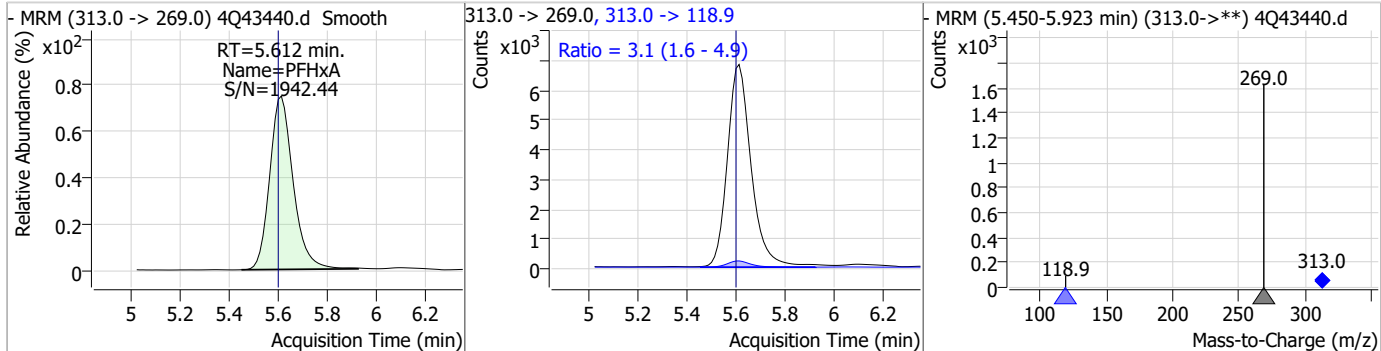
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.28	5.50	0.00	10900	298.7 -> 98.8	41.6	20.4	61.1



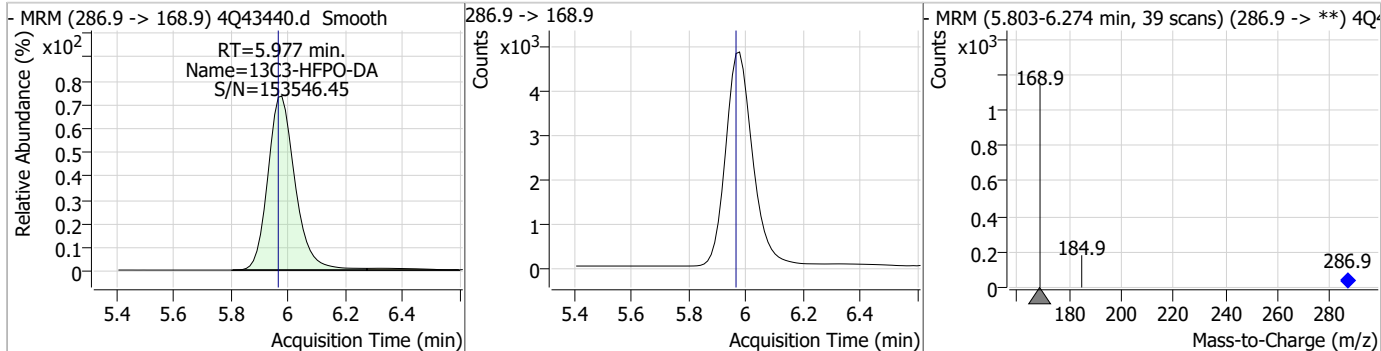
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.52	5.61	0.01	60788				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.35	5.61	0.01	44908	313.0 -> 118.9	3.1	1.6	4.9

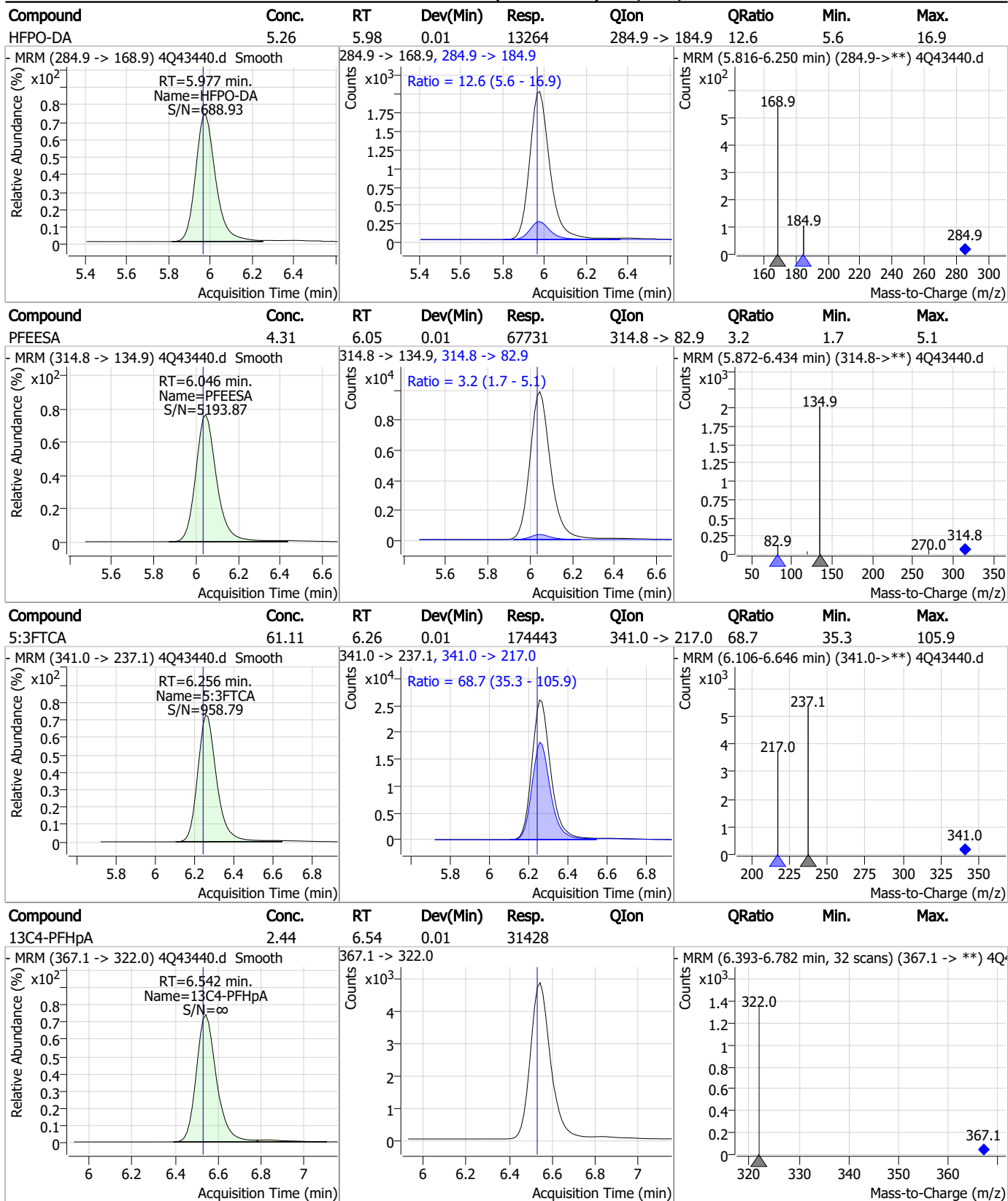


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.18	5.98	0.01	31909				



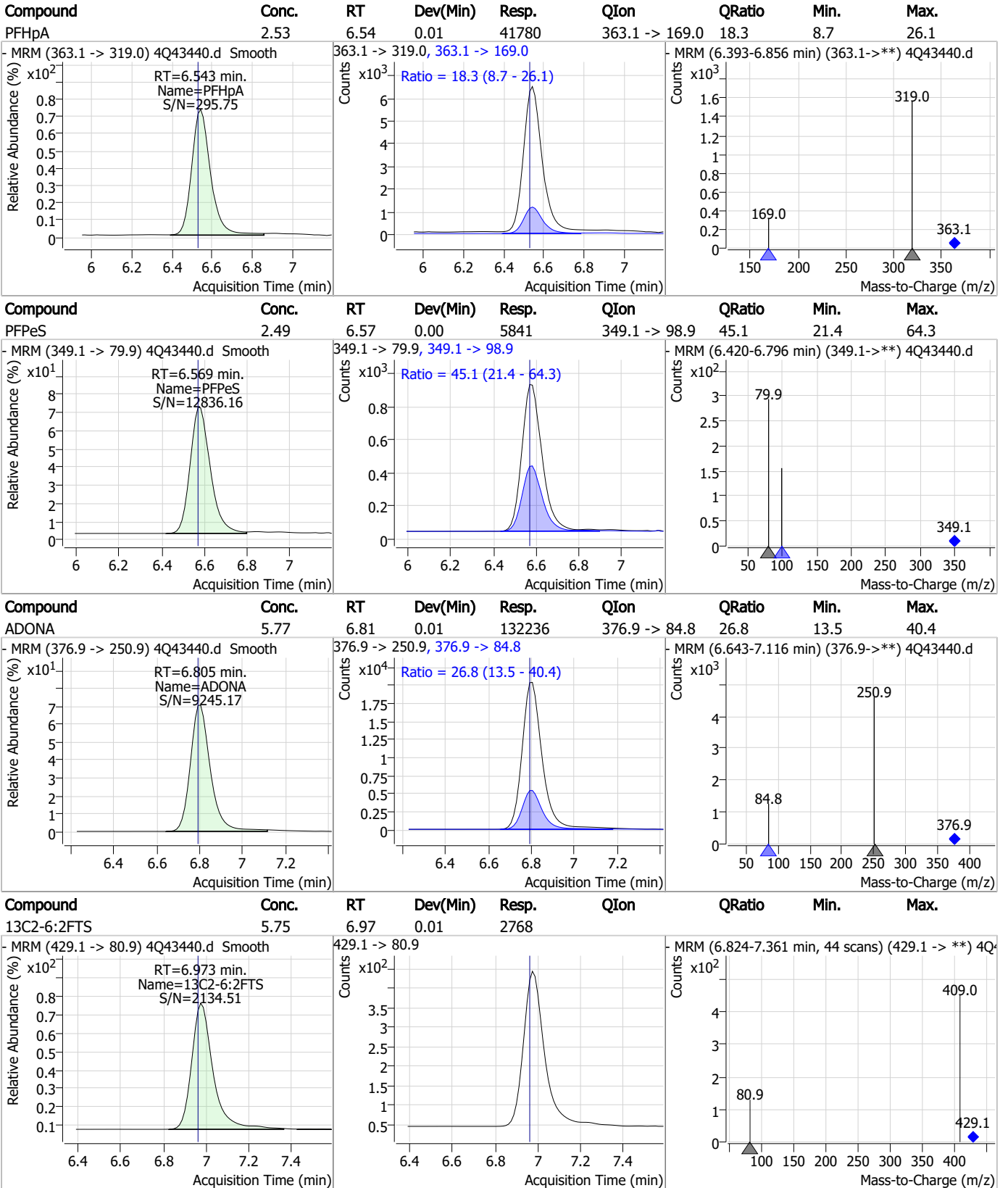
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Perfluorinated Compounds by LC/MS/MS



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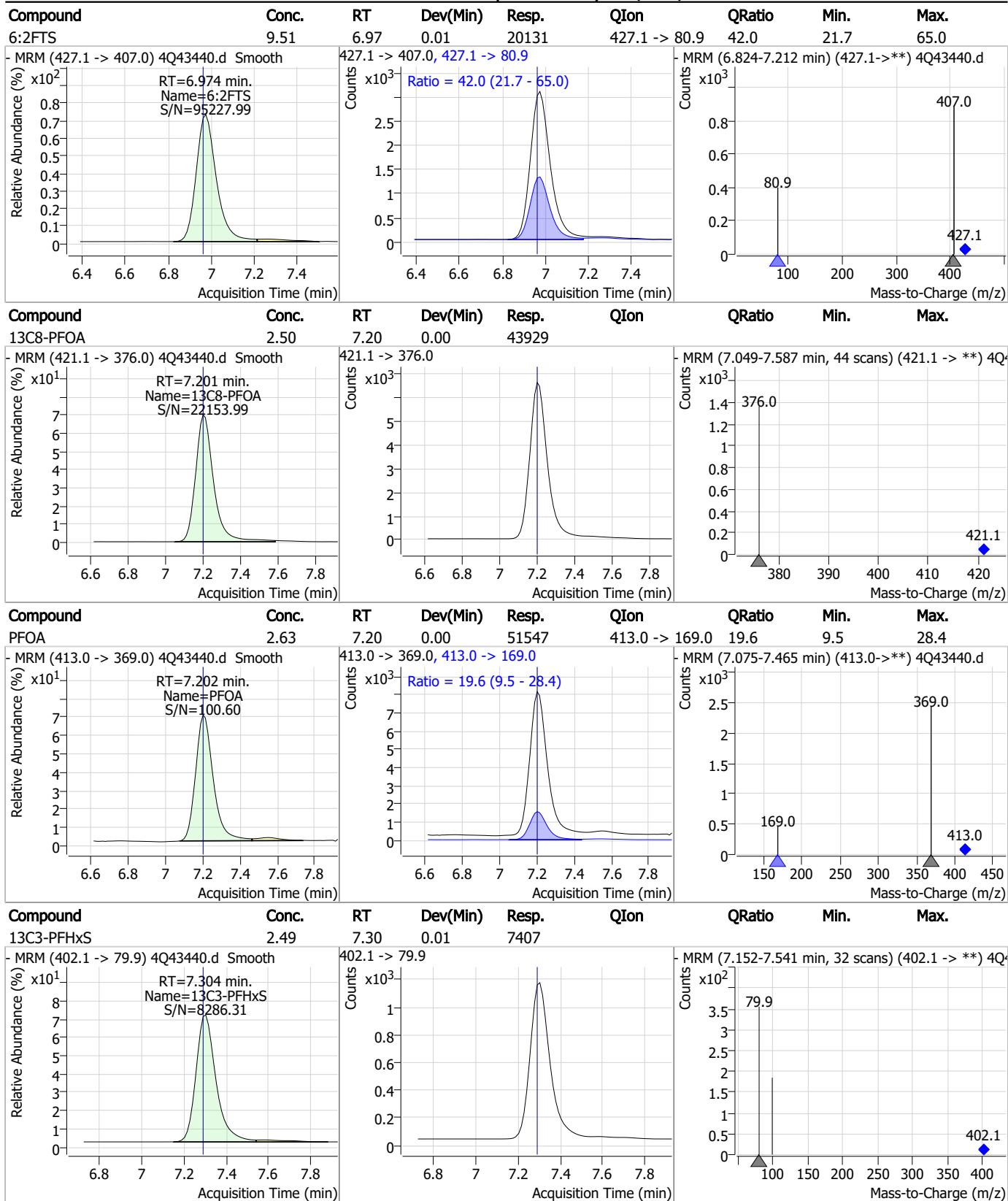
Perfluorinated Compounds by LC/MS/MS



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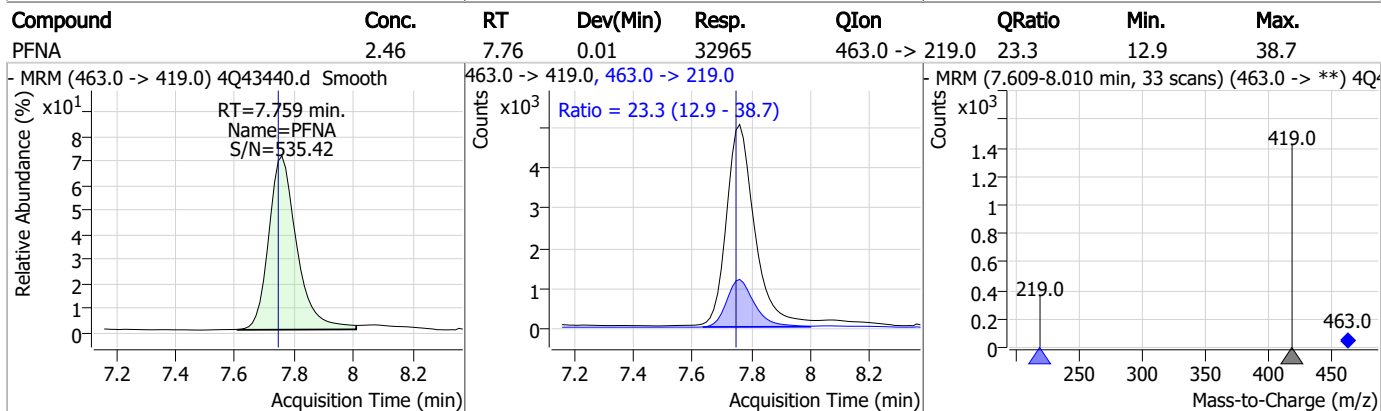
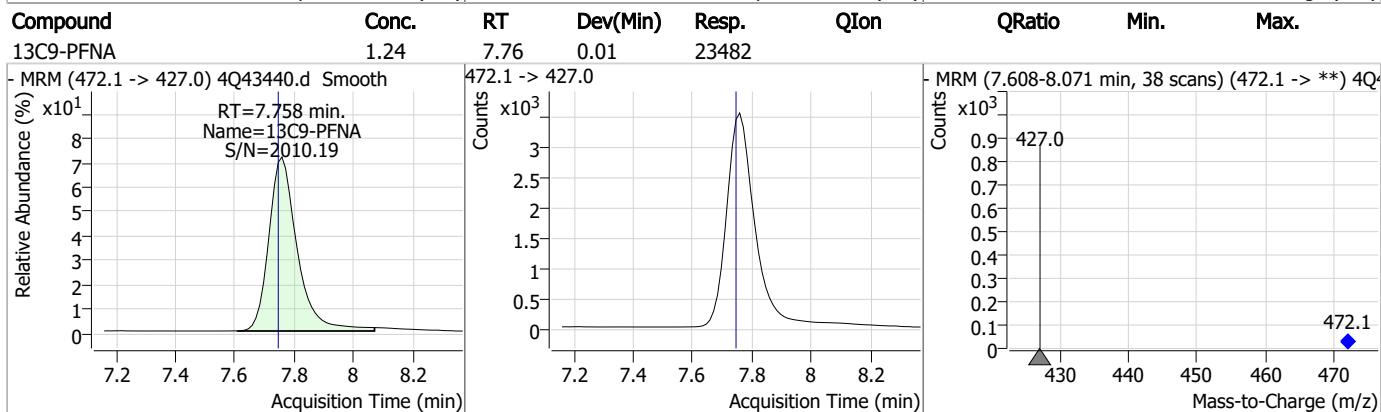
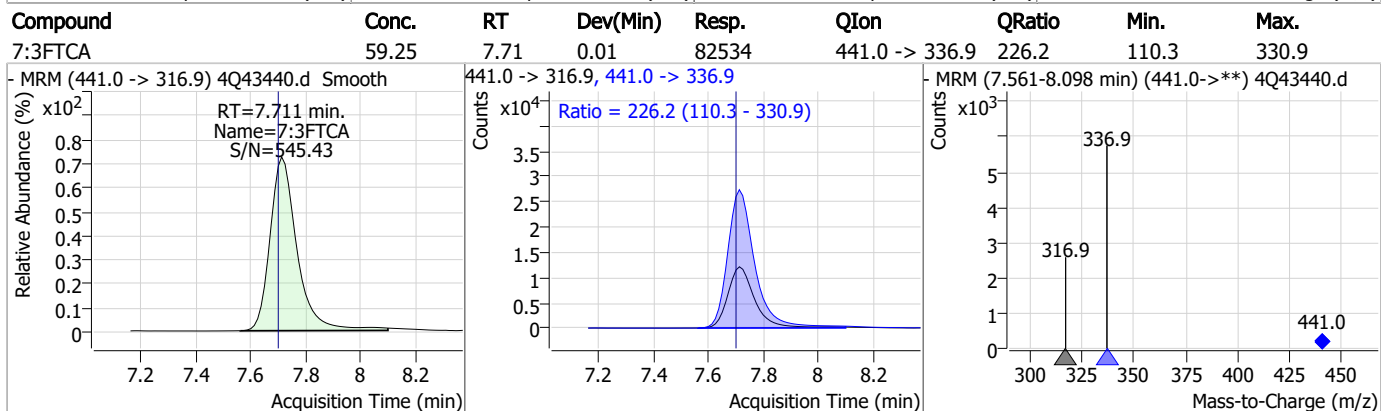
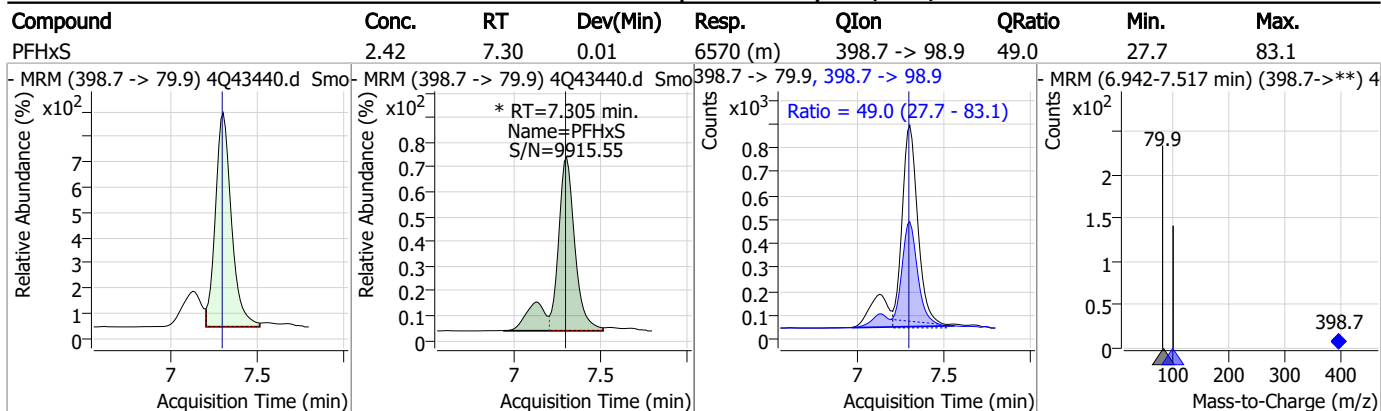


Perfluorinated Compounds by LC/MS/MS



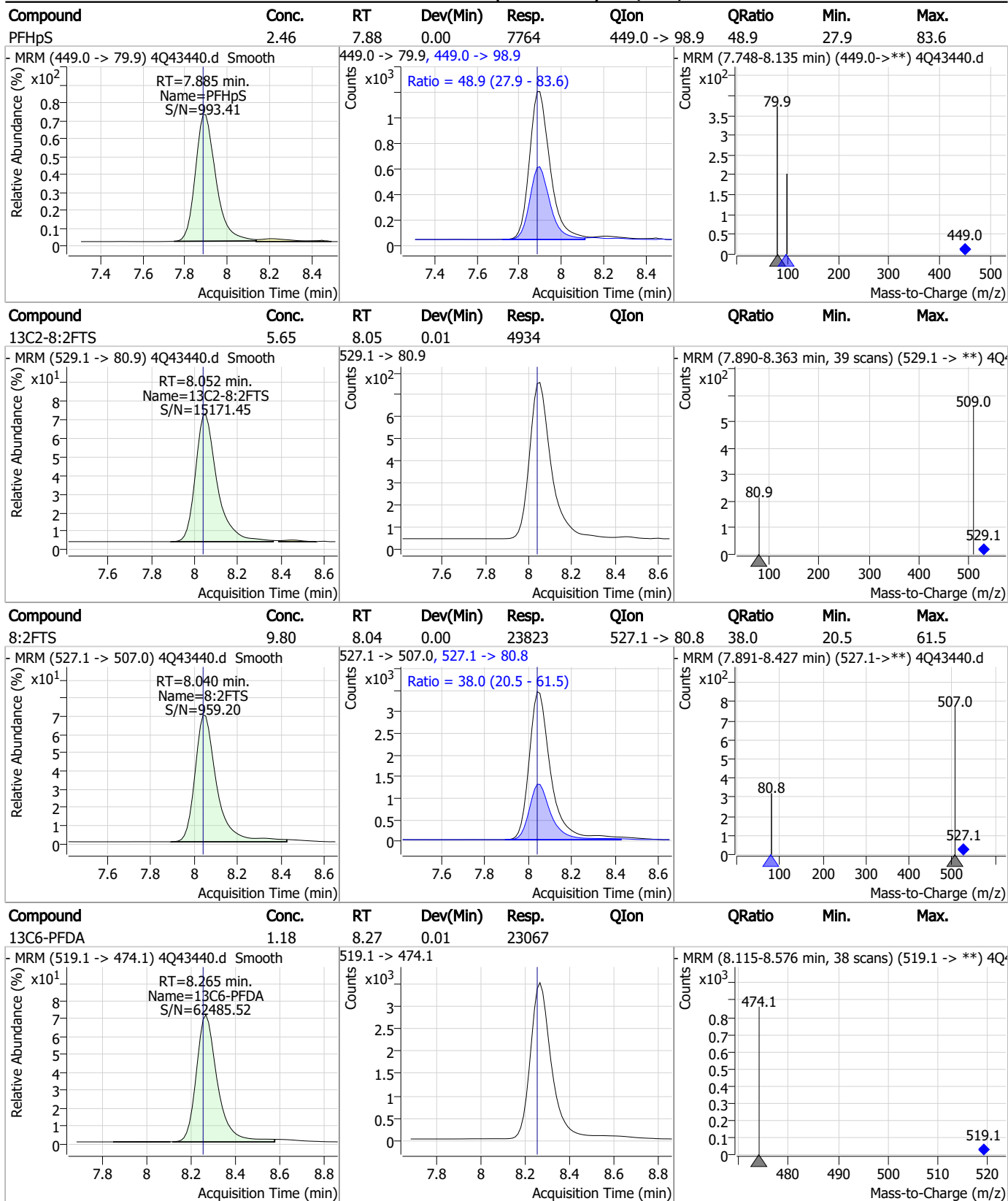
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Perfluorinated Compounds by LC/MS/MS



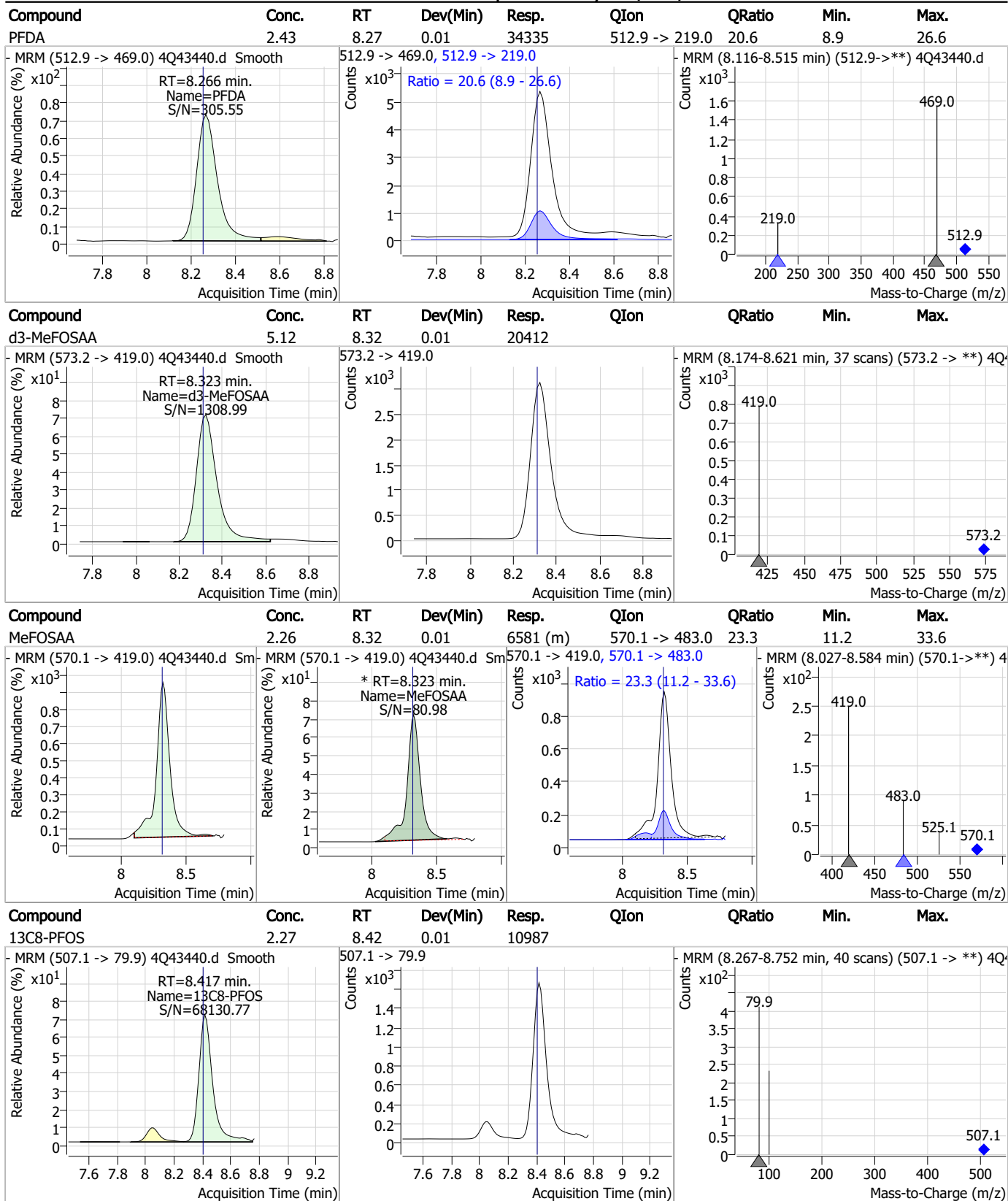
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Perfluorinated Compounds by LC/MS/MS



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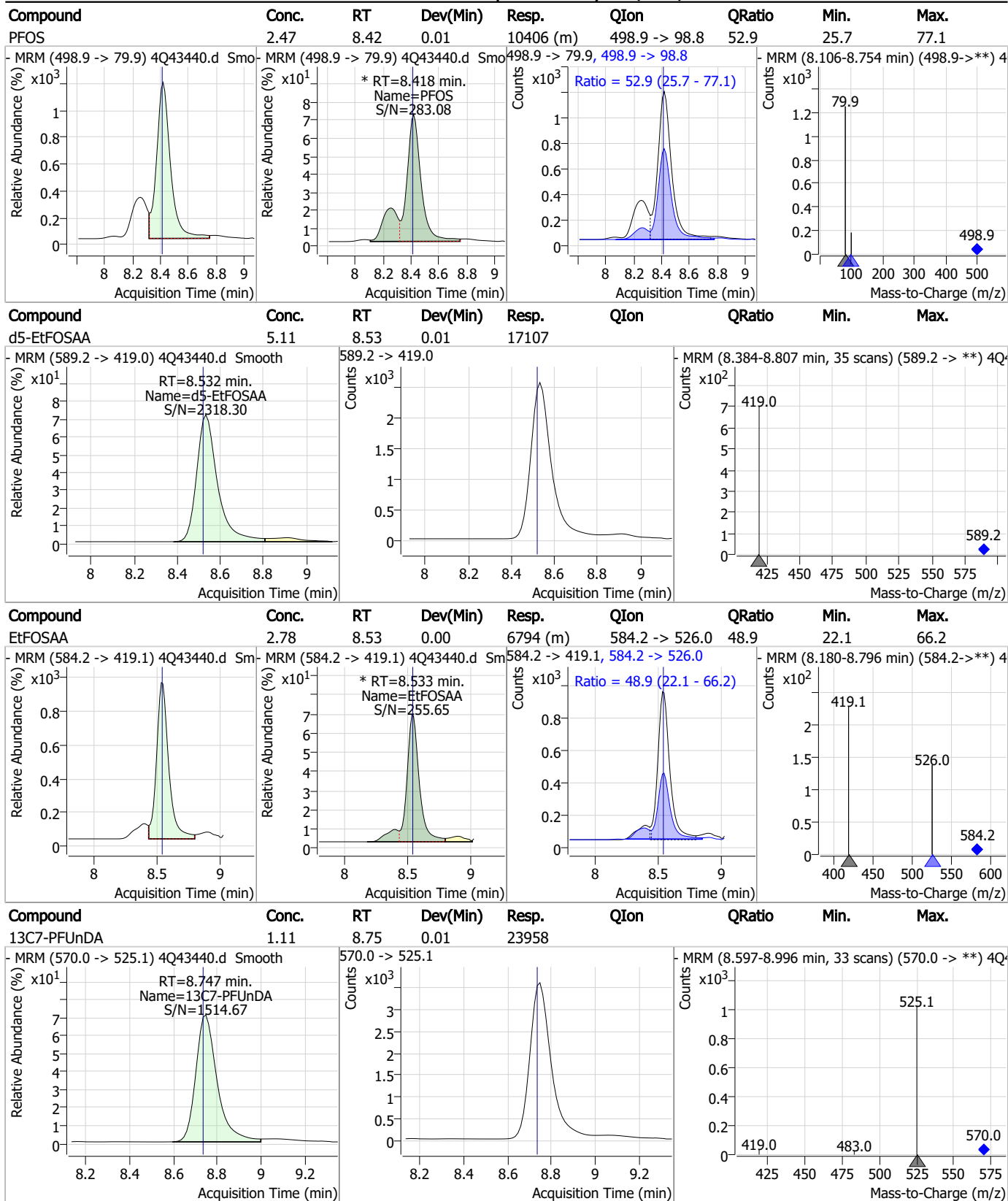
Perfluorinated Compounds by LC/MS/MS



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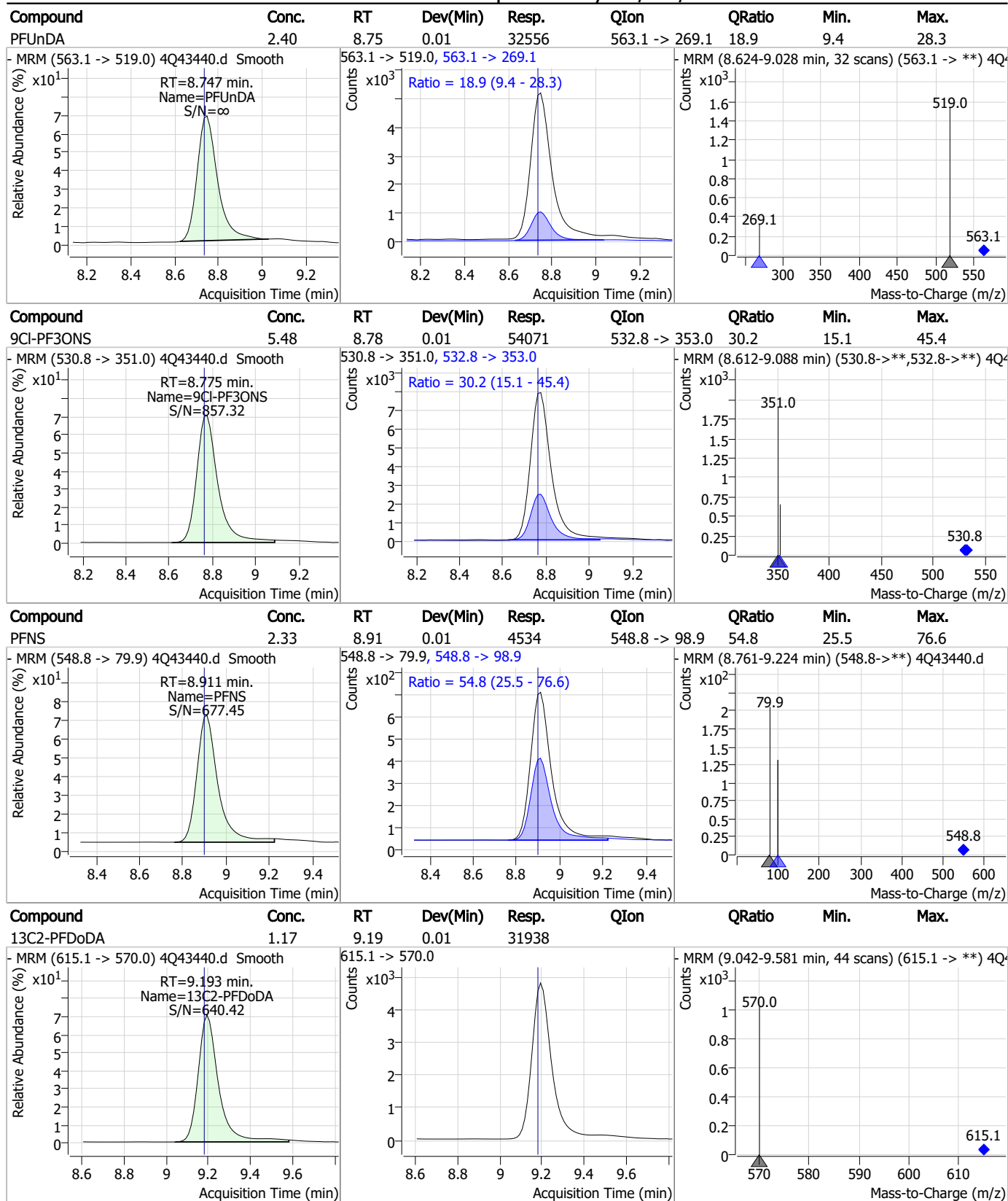
Perfluorinated Compounds by LC/MS/MS



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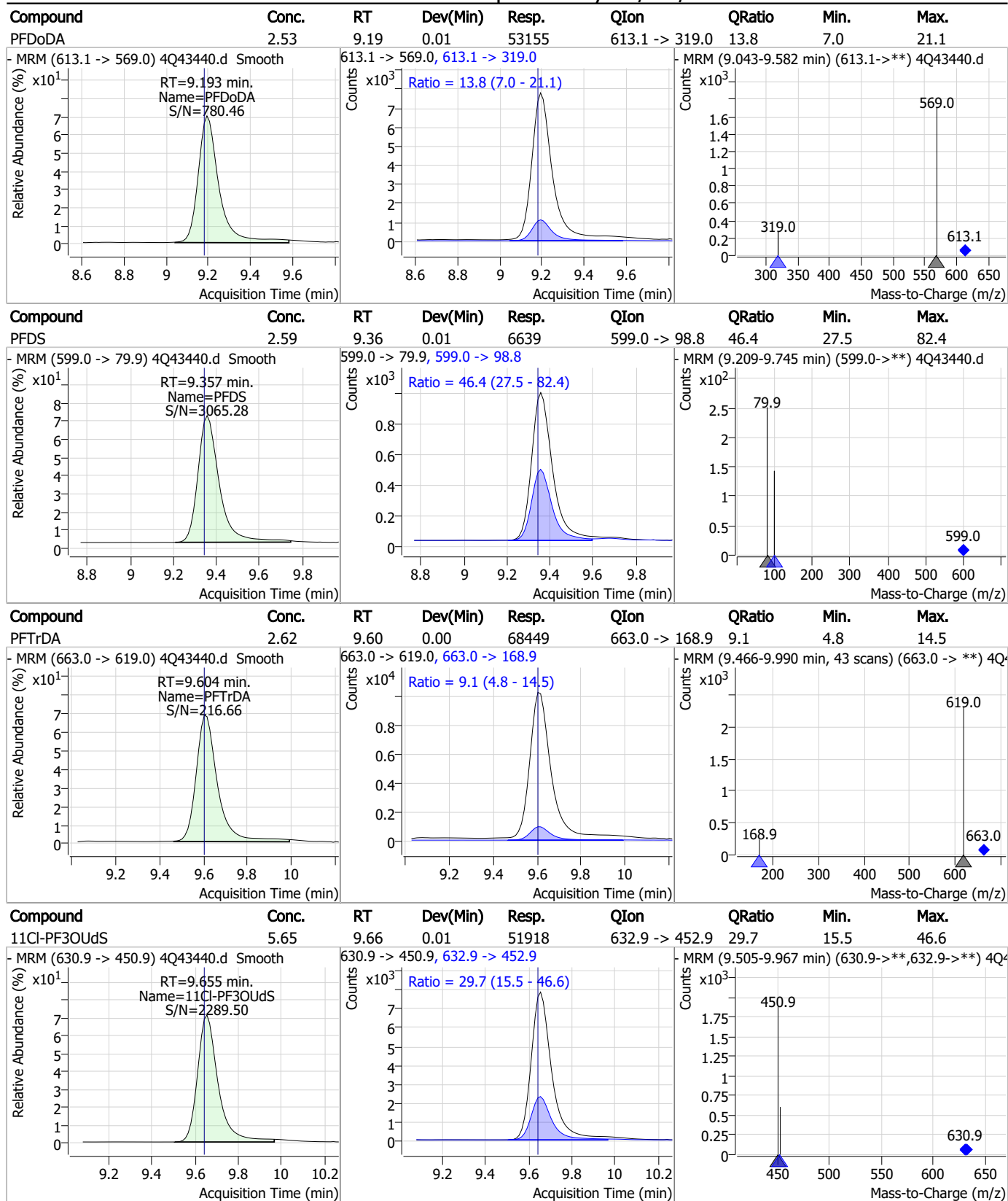
Perfluorinated Compounds by LC/MS/MS



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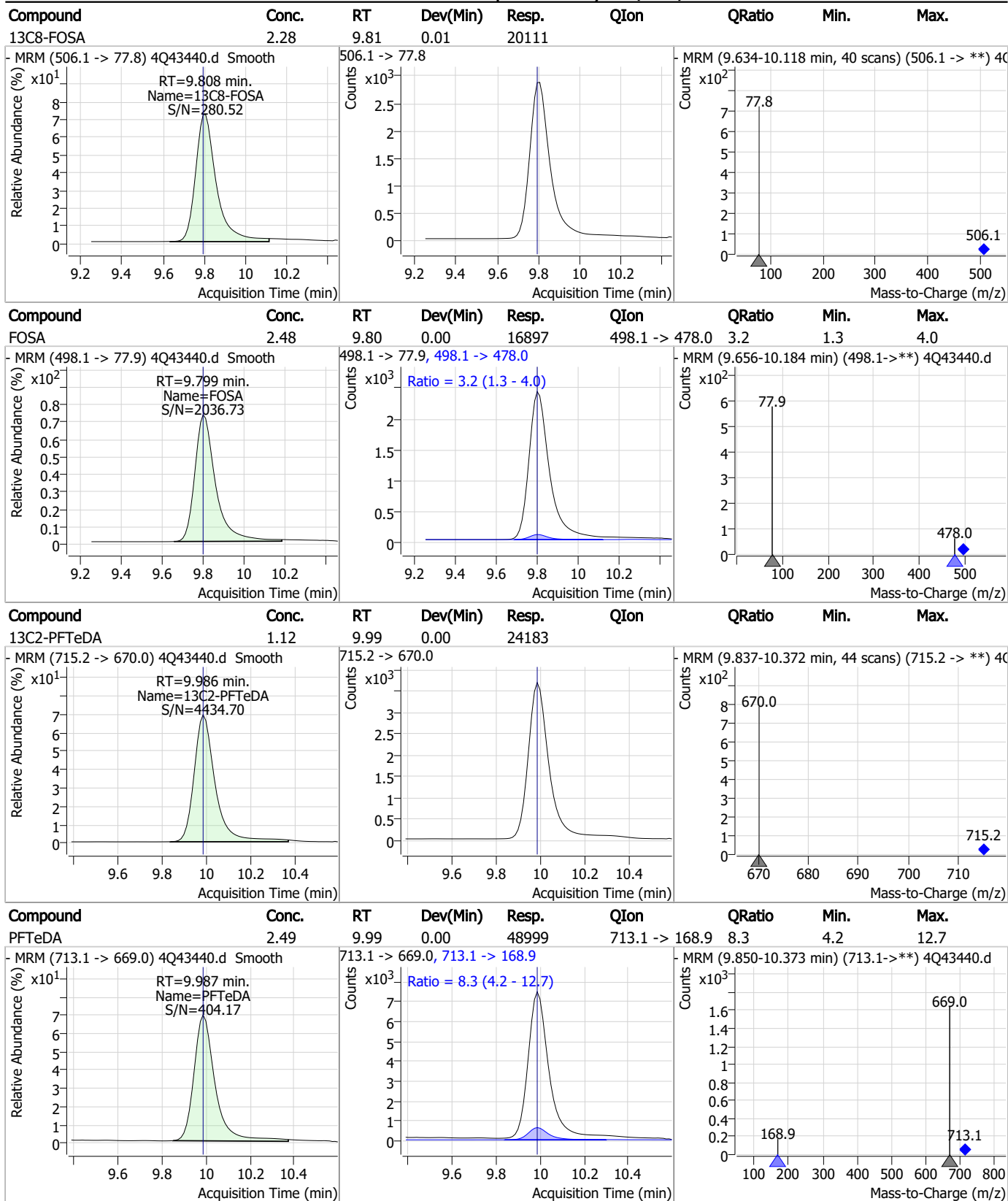
Perfluorinated Compounds by LC/MS/MS



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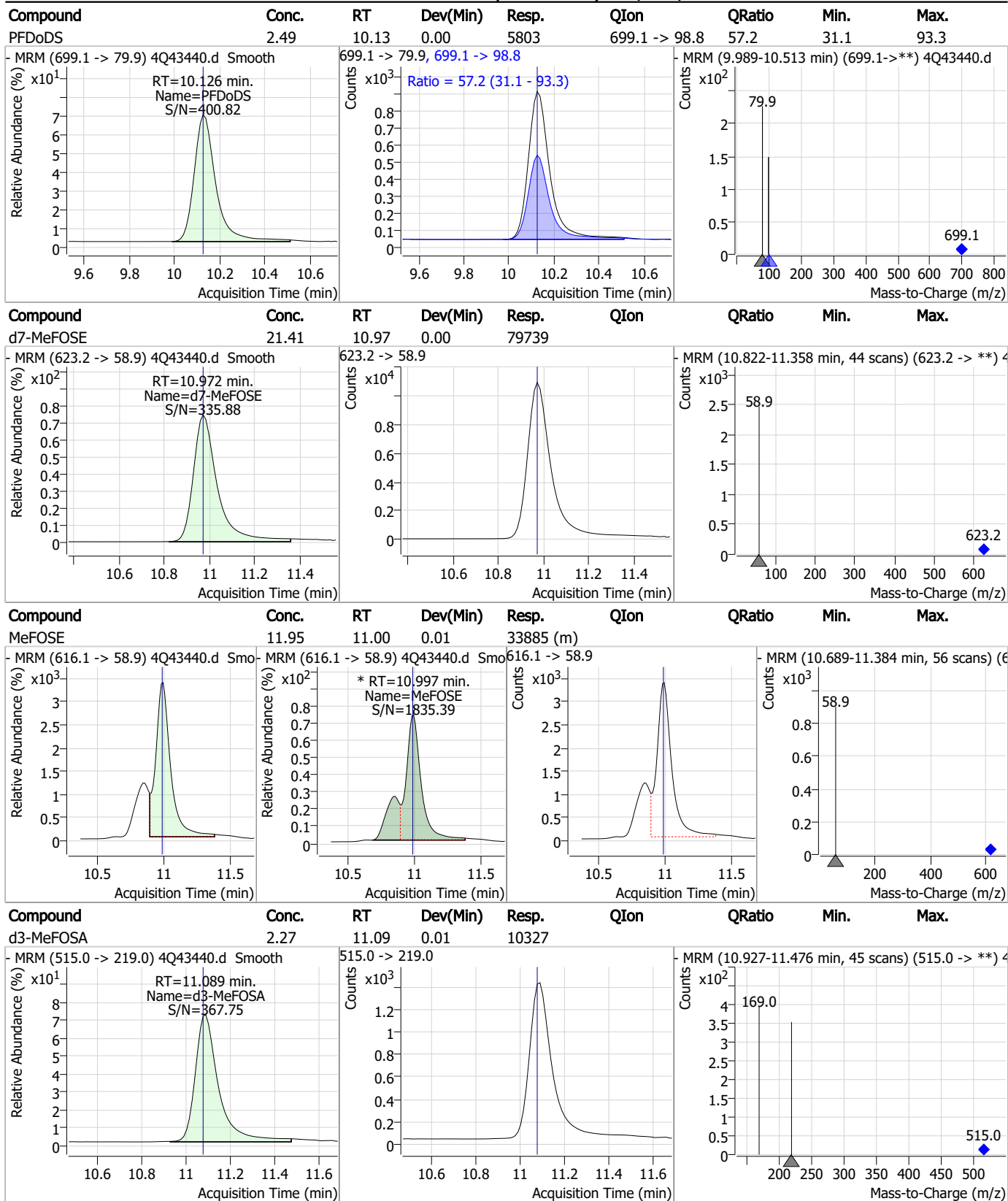
Perfluorinated Compounds by LC/MS/MS



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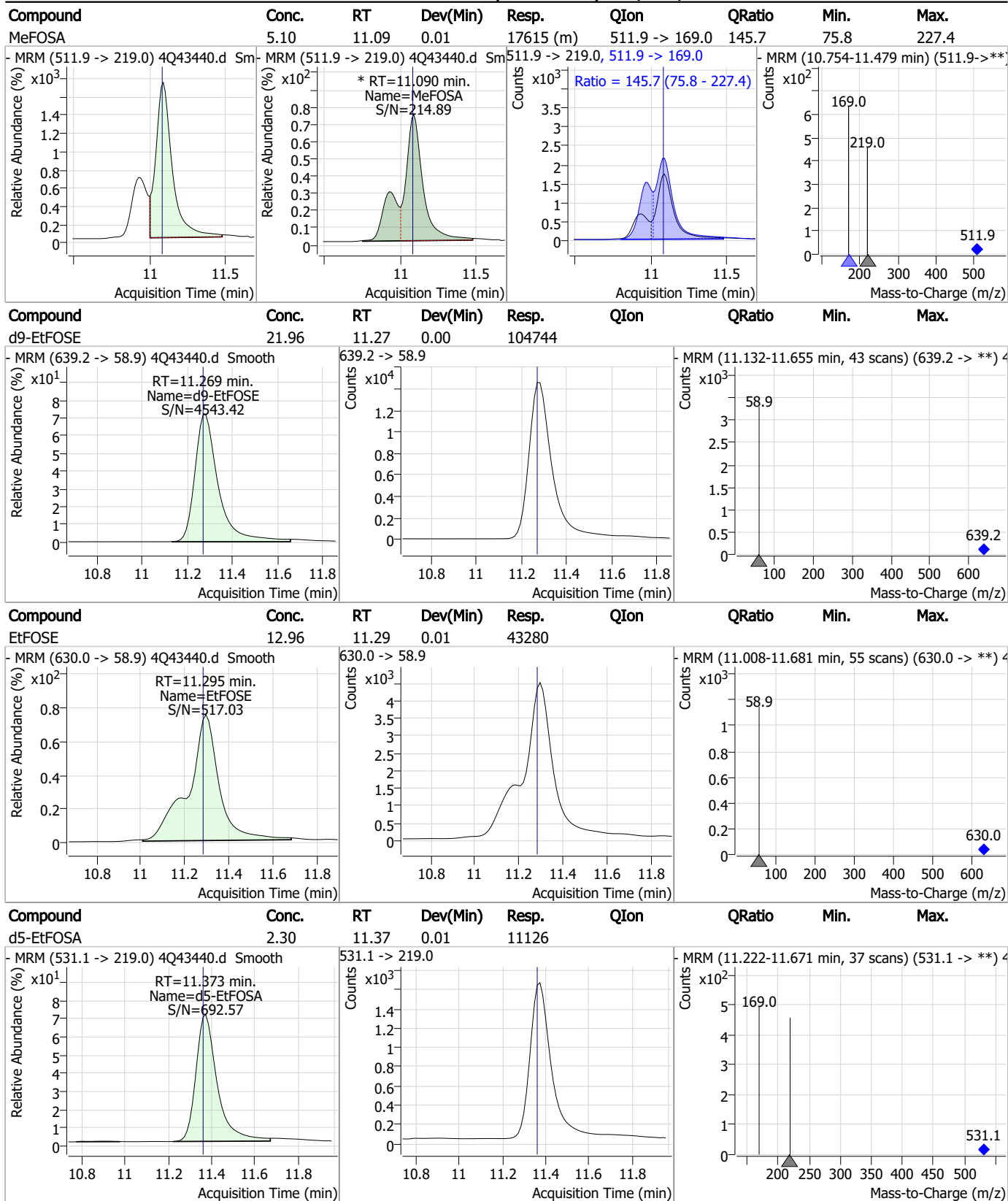
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Perfluorinated Compounds by LC/MS/MS



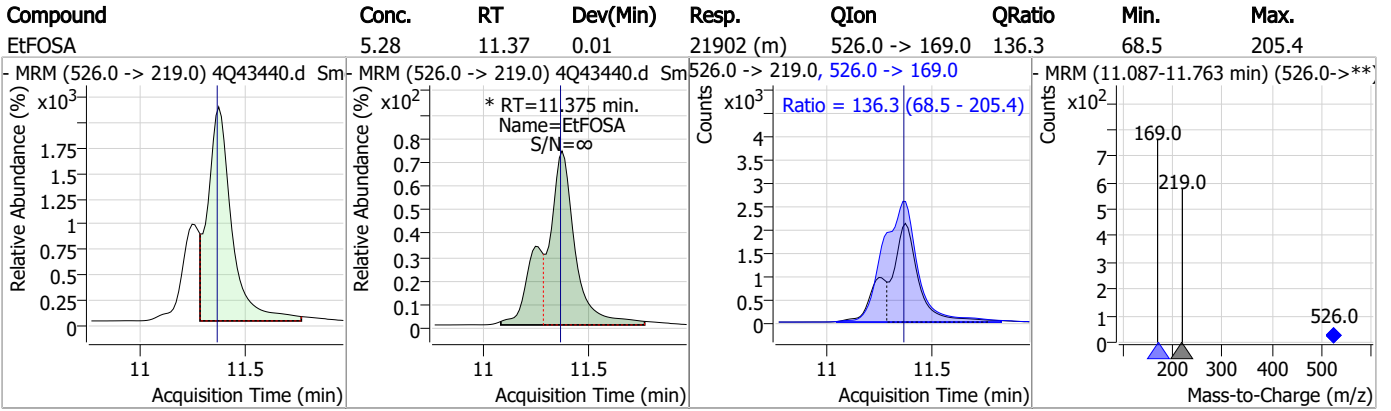
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q627-CC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43440.D Analyst approved: 04/24/23 15:01 Martha Valls
Injection Time: 04/21/23 18:45 Supervisor approved: 04/25/23 14:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.53	Split peak
MeFOSE	24448-09-7		11.00	Split peak
MeFOSA	31506-32-8		11.09	Split peak
EtFOSA	4151-50-2		11.38	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43450.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 4/21/2023 9:05:58 PM
 Sample Name : cc625-4
 Vial : P1-A5
 DA Method File : 1633_041923_S4Q625.quantmethod.xml
 Batch Name : s4q627.batch.bin
 Sample Information : OP96301,S4q627,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.961	216.8 -> 171.9	133310	10.00 µg/L	0.037
M5-PFPeA	4.424	268.3 -> 223.0	77337	5.00 µg/L	0.012
M5-PFHxA	5.597	318.0 -> 273.0	60889	2.50 µg/L	0.000
M4-PFHpA	6.517	367.1 -> 322.0	31637	2.50 µg/L	-0.012
M8-PFOA	7.175	421.1 -> 376.0	44068	2.50 µg/L	-0.026
M9-PFNA	7.733	472.1 -> 427.0	23909	1.25 µg/L	-0.013
M6-PFDA	8.240	519.1 -> 474.1	21925	1.25 µg/L	-0.012
M7-PFUnDA	8.710	570.0 -> 525.1	26301	1.25 µg/L	-0.025
M2-PFDoDA	9.155	615.1 -> 570.0	30998	1.25 µg/L	-0.025
M2-PFTeDA	9.949	715.2 -> 670.0	24024	1.25 µg/L	-0.037
M8-FOSA	9.771	506.1 -> 77.8	19815	2.50 µg/L	-0.025
M3-PFBS	5.502	302.1 -> 79.9	12491	2.50 µg/L	0.000
M3-PFHxS	7.279	402.1 -> 79.9	7533	2.50 µg/L	-0.012
M8-PFOS	8.392	507.1 -> 79.9	11480	2.50 µg/L	-0.012
M2-4:2FTS	5.285	329.1 -> 80.9	1808	5.00 µg/L	0.000
M2-6:2FTS	6.948	429.1 -> 80.9	2666	5.00 µg/L	-0.012
M2-8:2FTS	8.015	529.1 -> 80.9	5026	5.00 µg/L	-0.025
M3-MeFOSAA	8.286	573.2 -> 419.0	21383	5.00 µg/L	-0.025
M3-HFPO-DA	5.952	286.9 -> 168.9	32257	10.00 µg/L	-0.013
M5-EtFOSAA	8.495	589.2 -> 419.0	17211	5.00 µg/L	-0.025
M7-MeFOSE	10.947	623.2 -> 58.9	81148	25.00 µg/L	-0.025
M9-EtFOSE	11.256	639.2 -> 58.9	104525	25.00 µg/L	-0.012
M5-EtFOSA	11.360	531.1 -> 219.0	10812	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	10611	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	11637	2.50 µg/L	-0.012
13C3-PFBA	2.953	216.0 -> 172.0	73733	5.00 µg/L	0.025
18O2-PFHxS	7.278	403.0 -> 83.9	5548	2.50 µg/L	-0.012
13C4-PFOA	7.176	417.1 -> 372.0	51198	2.50 µg/L	-0.026
13C2-PFDA	8.228	515.1 -> 470.1	21383	1.25 µg/L	-0.025
13C5-PFNA	7.734	468.0 -> 423.0	26855	1.25 µg/L	-0.013
13C2-PFHxA	5.598	315.1 -> 270.0	50039	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.285	329.1 -> 80.9	1808	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C2-6:2FTS	6.948	429.1 -> 80.9	2666	5.20 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-8:2FTS	8.015	529.1 -> 80.9	5026	5.41 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C2-PFDoDA	9.155	615.1 -> 570.0	30998	1.20 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C2-PFTeDA	9.949	715.2 -> 670.0	24024	1.17 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.5%		
13C3-PFBS	5.502	302.1 -> 79.9	12491	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.279	402.1 -> 79.9	7533	2.38 µg/L	-0.012

7.7.14
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C4-PFBA	2.961	216.8 -> 171.9	133310	10.04 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.517	367.1 -> 322.0	31637	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C5-PFHxA	5.597	318.0 -> 273.0	60889	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C5-PFPeA	4.424	268.3 -> 223.0	77337	5.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C6-PFDA	8.240	519.1 -> 474.1	21925	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C7-PFUnDA	8.710	570.0 -> 525.1	26301	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-FOSA	9.771	506.1 -> 77.8	19815	2.35 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.9%	
13C8-PFOA	7.175	421.1 -> 376.0	44068	2.58 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C8-PFOS	8.392	507.1 -> 79.9	11480	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C9-PFNA	7.733	472.1 -> 427.0	23909	1.27 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.0%	
d3-MeFOSAA	8.286	573.2 -> 419.0	21383	5.60 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C3-HFPO-DA	5.952	286.9 -> 168.9	32257	8.50 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 85.0%	
d3-MeFOSA	11.064	515.0 -> 219.0	10611	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
d5-EtFOSAA	8.495	589.2 -> 419.0	17211	5.36 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.2%	
d7-MeFOSE	10.947	623.2 -> 58.9	81148	22.73 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.9%	
d9-EtFOSE	11.256	639.2 -> 58.9	104525	22.86 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.4%	
d5-EtFOSA	11.360	531.1 -> 219.0	10812	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
Target Compounds					QValue
4:2FTS	5.286	327.1 -> 307.0	22194	9.59 µg/L	99
		327.1 -> 80.9	9287		
6:2FTS	6.949	427.1 -> 407.0	20636	10.13 µg/L	99
		427.1 -> 80.9	8771		
8:2FTS	8.015	527.1 -> 507.0	25187	10.17 µg/L	94
		527.1 -> 80.8	9453		
EtFOSAA	8.508	584.2 -> 419.1	6476	2.63 µg/L	m 93
		584.2 -> 526.0	3136		
FOSA	9.774	498.1 -> 77.9	17134	2.56 µg/L	98
		498.1 -> 478.0	575		
MeFOSAA	8.299	570.1 -> 419.0	7472	2.45 µg/L	m 95
		570.1 -> 483.0	1493		
PFBA	2.957	212.8 -> 168.9	30900	9.99 µg/L	100
PFBS	5.503	298.7 -> 79.9	11137	2.25 µg/L	92
		298.7 -> 98.8	3981		
PFDA	8.229	512.9 -> 469.0	33929	2.52 µg/L	95
		512.9 -> 219.0	6772		
PFDoDA	9.156	613.1 -> 569.0	53323	2.61 µg/L	99
		613.1 -> 319.0	7357		
PFDS	9.319	599.0 -> 79.9	6002	2.24 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.517	599.0 -> 98.8	3067	2.45	µg/L	97
		363.1 -> 319.0	40736			
PFHpS	7.860	363.1 -> 169.0	7709	2.41	µg/L	92
		449.0 -> 79.9	7959			
PFHxA	5.600	449.0 -> 98.9	3943	2.36	µg/L	100
		313.0 -> 269.0	45289			
PFHxS	7.280	313.0 -> 118.9	1484	2.44	µg/L	m
		398.7 -> 79.9	6740			
PFNA	7.734	398.7 -> 98.9	3535	2.39	µg/L	99
		463.0 -> 419.0	32476			
PFNS	8.874	463.0 -> 219.0	8156	2.19	µg/L	97
		548.8 -> 79.9	4463			
PFOA	7.176	548.8 -> 98.9	2365	2.62	µg/L	98
		413.0 -> 369.0	51393			
PFOS	8.394	413.0 -> 169.0	10268	2.35	µg/L	m
		498.9 -> 79.9	10367			
PFPeA	4.427	498.9 -> 98.8	5217	5.07	µg/L	100
		263.0 -> 219.0	78261			
PFPeS	6.557	349.1 -> 79.9	6112	2.56	µg/L	98
		349.1 -> 98.9	2550			
PFTeDA	9.949	713.1 -> 669.0	49490	2.54	µg/L	99
		713.1 -> 168.9	3961			
PFTrDA	9.579	663.0 -> 619.0	68358	2.69	µg/L	100
		663.0 -> 168.9	6677			
PFUnDA	8.710	563.1 -> 519.0	36512	2.45	µg/L	100
		563.1 -> 269.1	6943			
11Cl-PF3OUdS	9.618	630.9 -> 450.9	51774	5.57	µg/L	97
		632.9 -> 452.9	15298			
9Cl-PF3ONS	8.737	530.8 -> 351.0	53640	5.37	µg/L	96
		532.8 -> 353.0	17286			
ADONA	6.781	376.9 -> 250.9	132875	5.73	µg/L	100
		376.9 -> 84.8	35473			
HFPO-DA	5.953	284.9 -> 168.9	12809	5.03	µg/L	96
		284.9 -> 184.9	1636			
3:3FTCA	3.879	241.0 -> 177.0	8759	11.91	µg/L	99
		241.0 -> 117.0	870			
5:3FTCA	6.231	341.0 -> 237.1	174392	60.99	µg/L	99
		341.0 -> 217.0	122323			
7:3FTCA	7.686	441.0 -> 316.9	84057	60.24	µg/L	99
		441.0 -> 336.9	187121			
EtFOSA	11.362	526.0 -> 219.0	22242	5.51	µg/L	m
		526.0 -> 169.0	30316			
EtFOSE	11.282	630.0 -> 58.9	43647	13.10	µg/L	100
		511.9 -> 219.0	17930			
MeFOSA	11.065	511.9 -> 169.0	16971	5.05	µg/L	m
		616.1 -> 58.9	35609			
MeFOSE	10.973	699.1 -> 79.9	5674	12.34	µg/L	m
		699.1 -> 98.8	3309			
PFDoDS	10.101	295.0 -> 201.0	5760	2.33	µg/L	95
		295.0 -> 84.9	1419			
NFDHA	5.479	279.0 -> 85.1	43541	4.94	µg/L	100
		229.0 -> 84.9	38507			
PFMBA	3.578	314.8 -> 134.9	68064	4.91	µg/L	100
		314.8 -> 82.9	2079			
PFEESA	6.021			4.32	µg/L	99

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



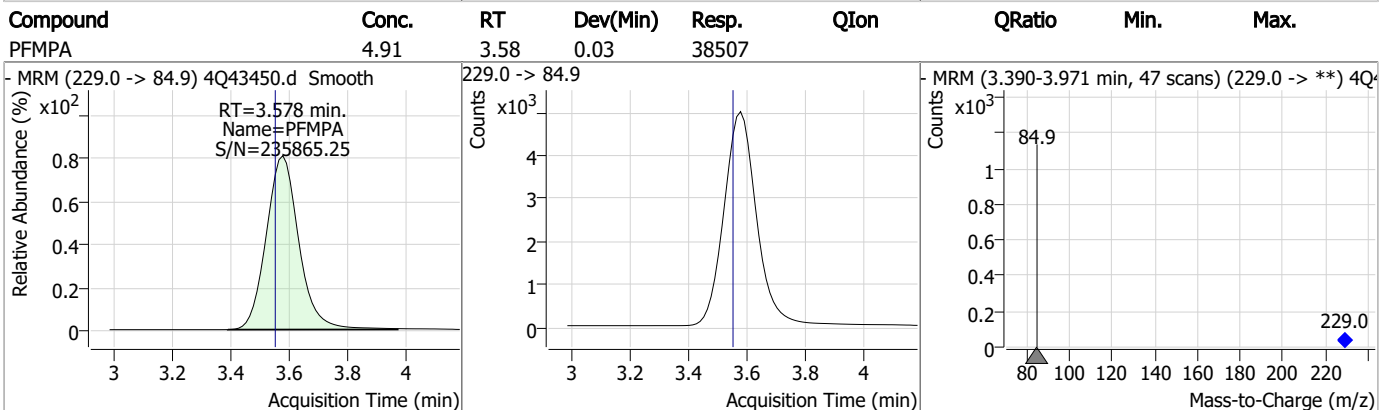
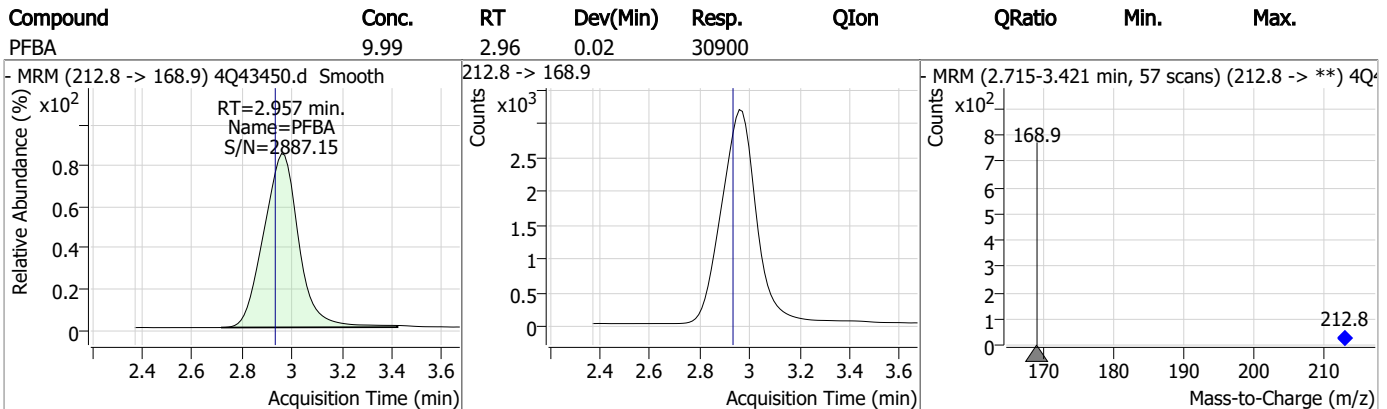
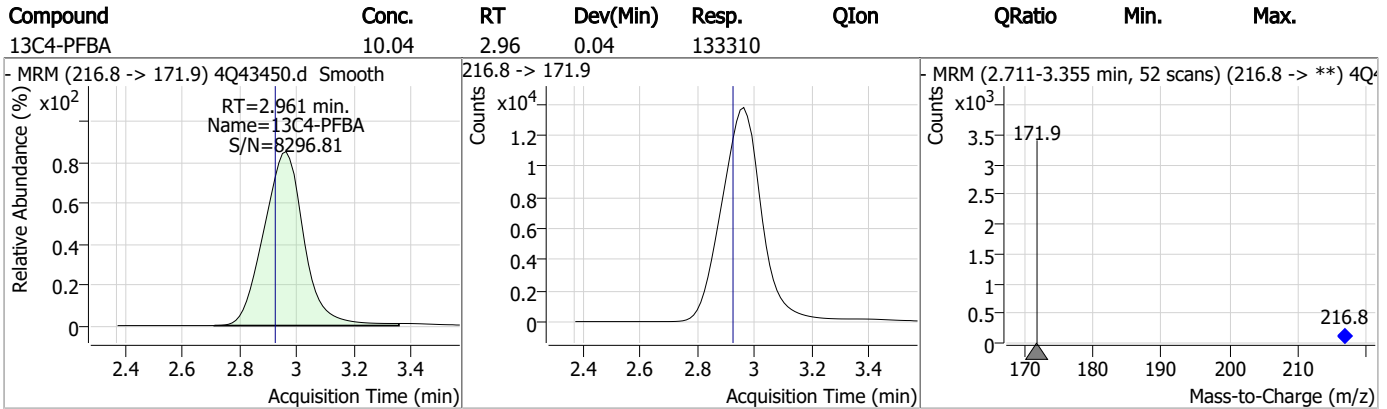
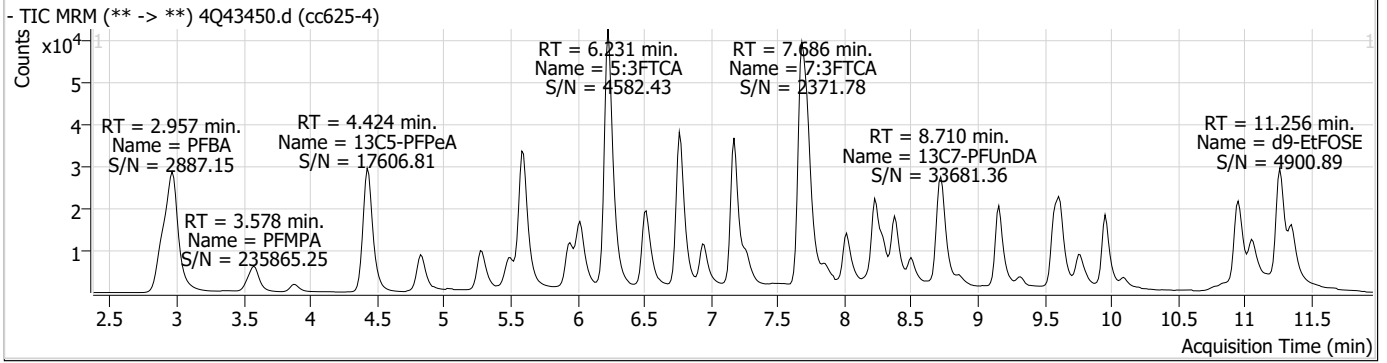
Perfluorinated Compounds by LC/MS/MS

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

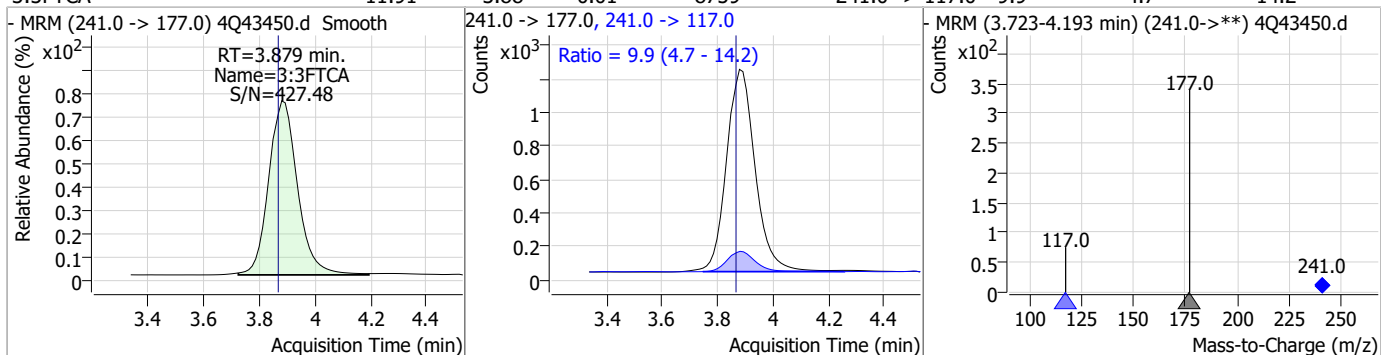
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Perfluorinated Compounds by LC/MS/MS

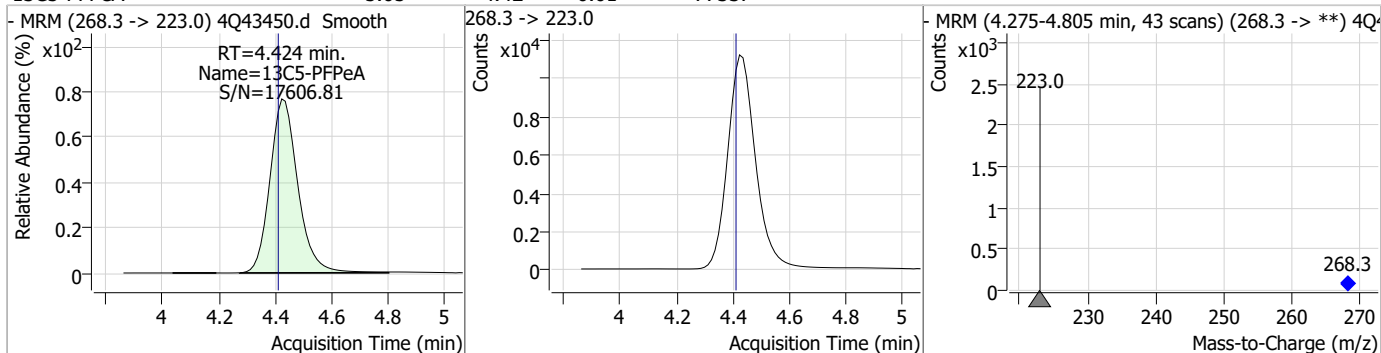


Perfluorinated Compounds by LC/MS/MS

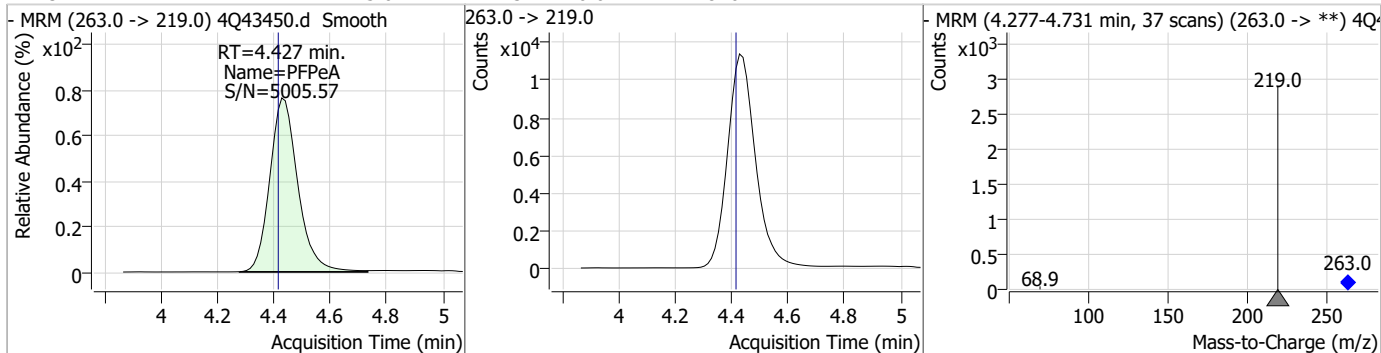
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.91	3.88	0.01	8759	241.0 -> 117.0	9.9	4.7	14.2



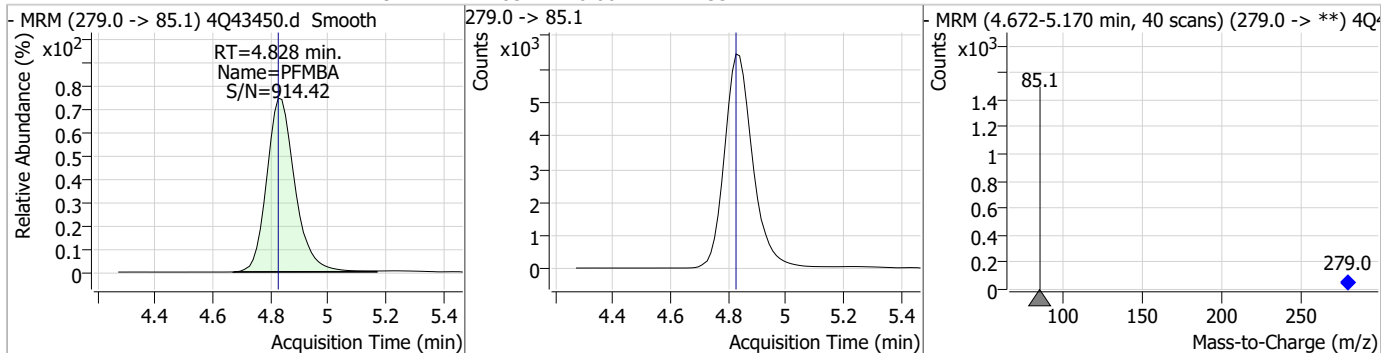
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.05	4.42	0.01	77337				



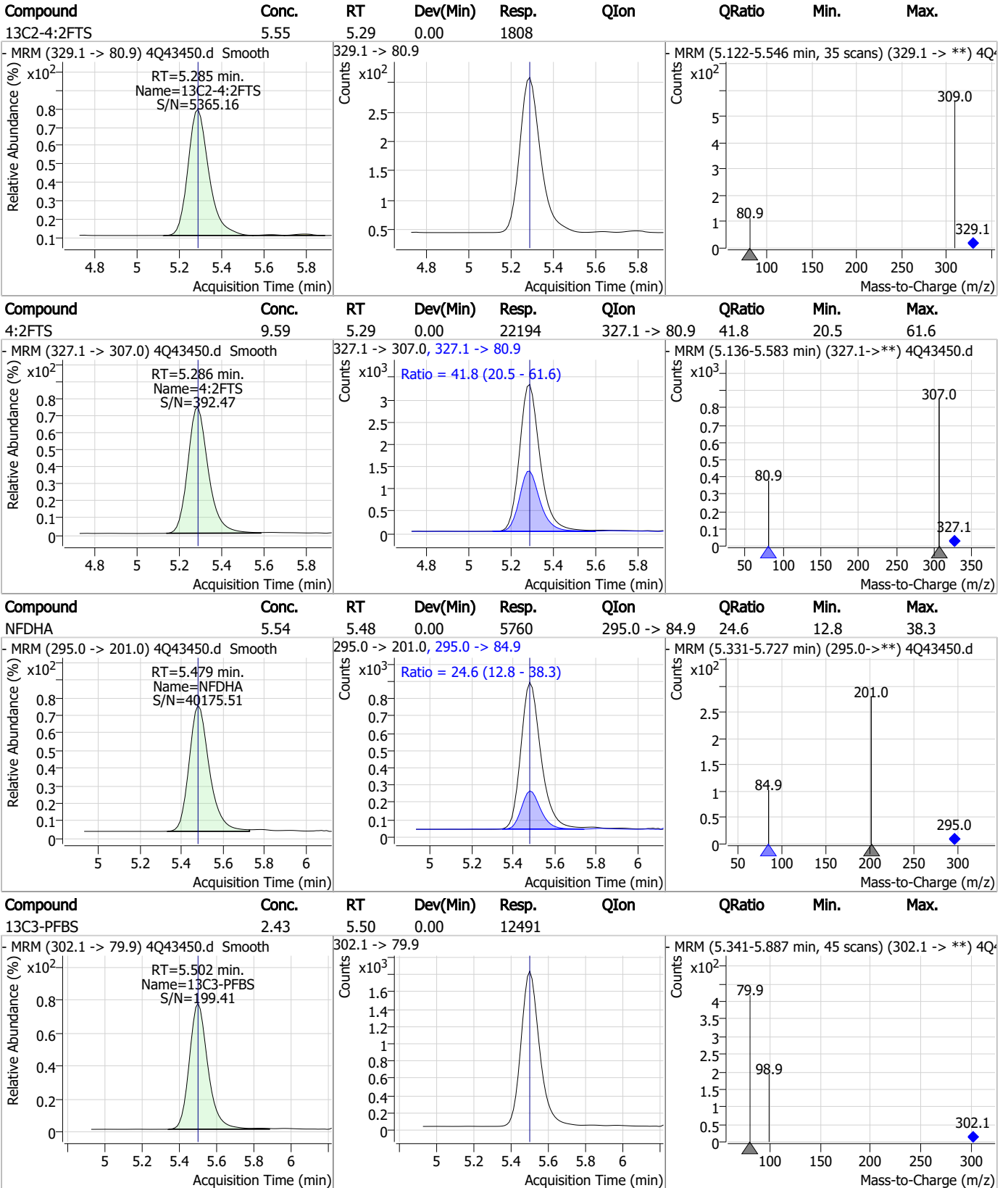
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	5.07	4.43	0.01	78261				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.94	4.83	0.00	43541				



Perfluorinated Compounds by LC/MS/MS

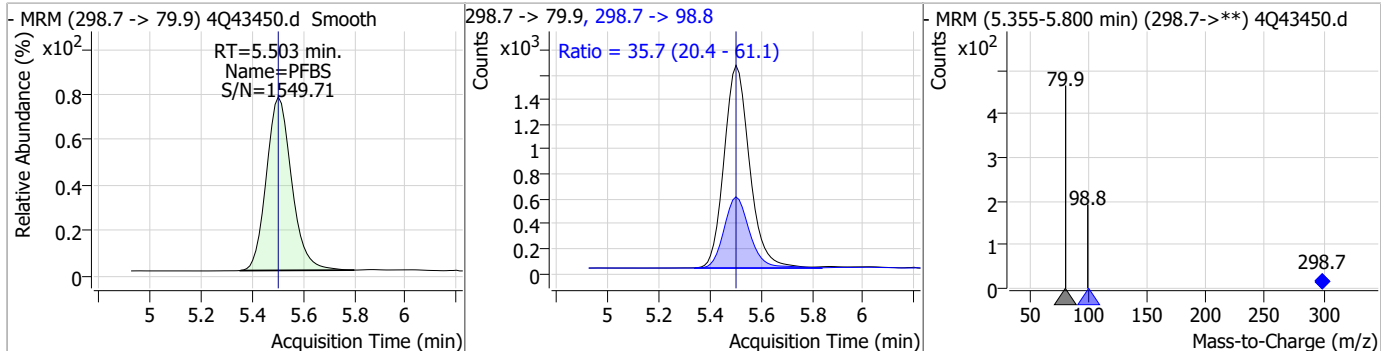


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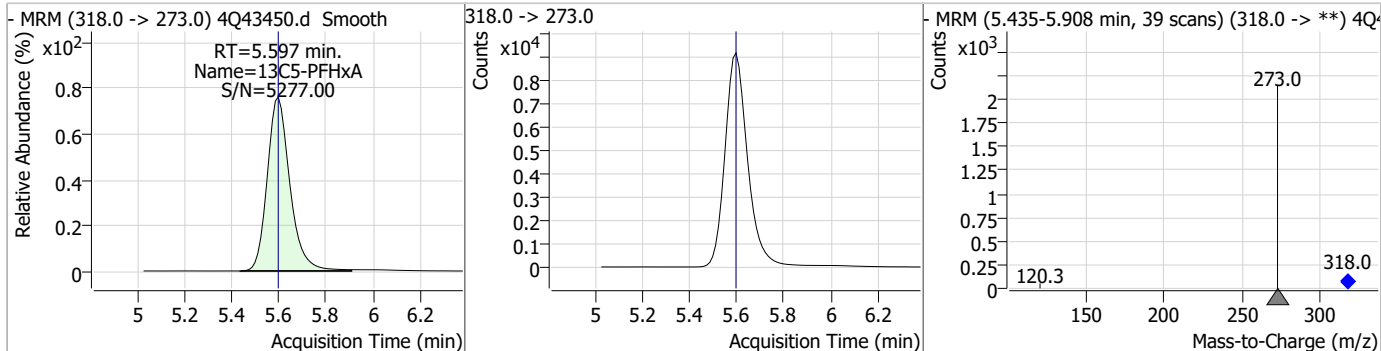
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Perfluorinated Compounds by LC/MS/MS

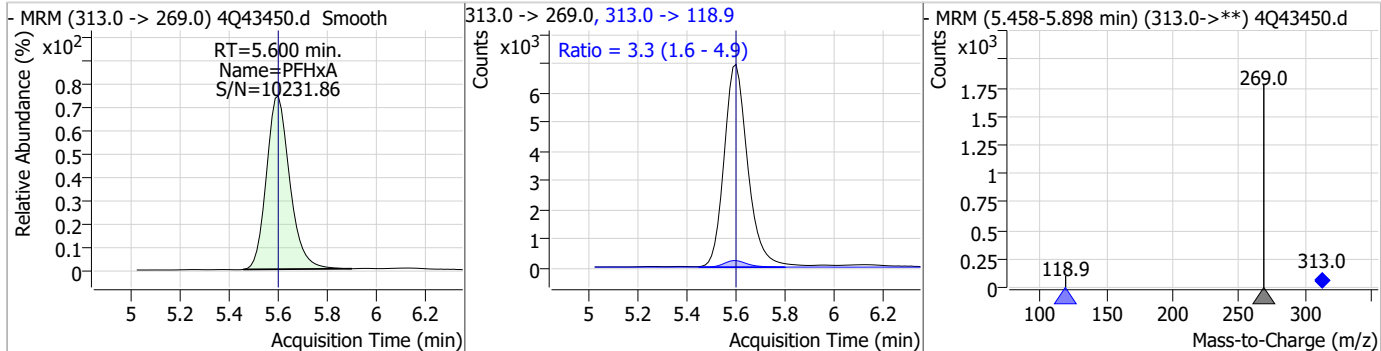
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.25	5.50	0.00	11137	298.7 -> 98.8	35.7	20.4	61.1



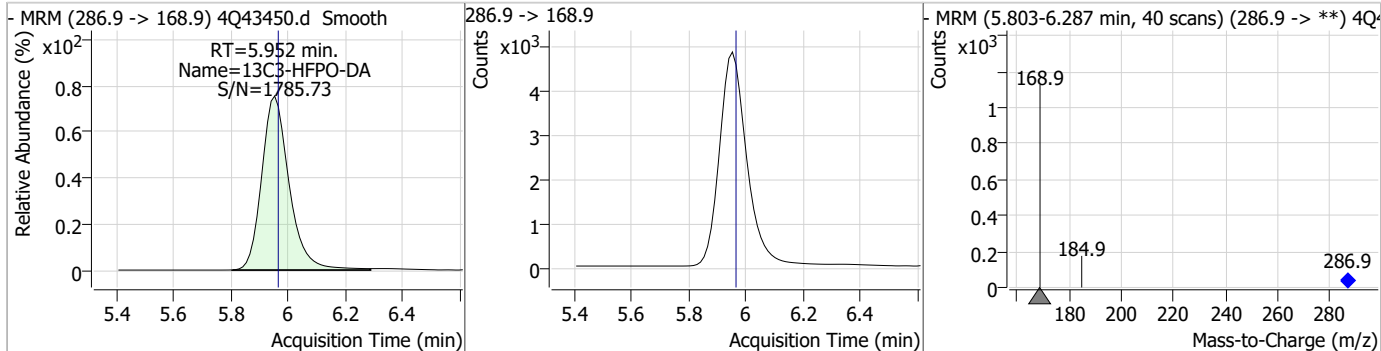
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.59	5.60	0.00	60889	318.0 -> 273.0	3.3	1.6	4.9



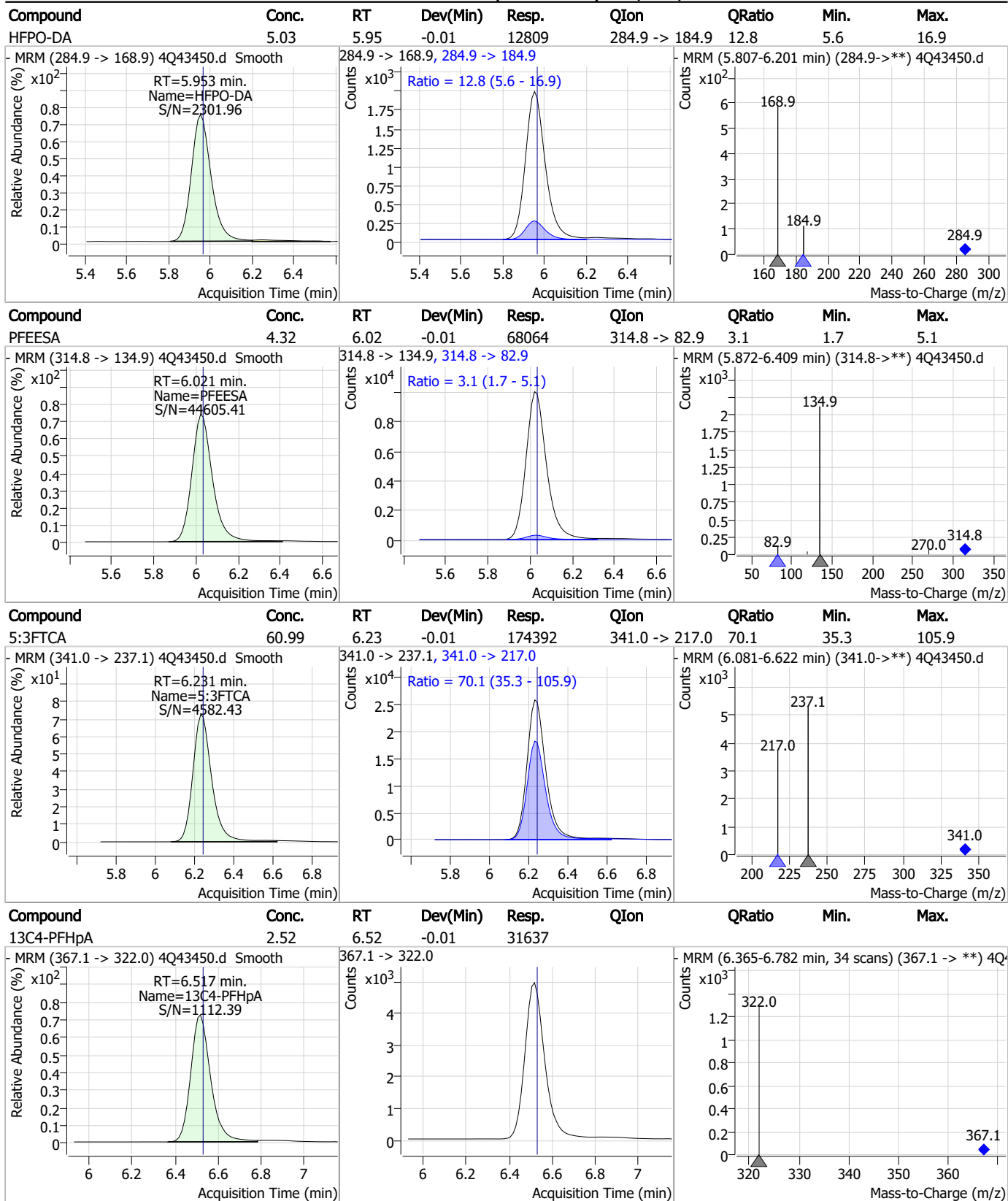
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.36	5.60	0.00	45289	313.0 -> 118.9	3.3	1.6	4.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.50	5.95	-0.01	32257	286.9 -> 168.9	3.3	1.6	4.9

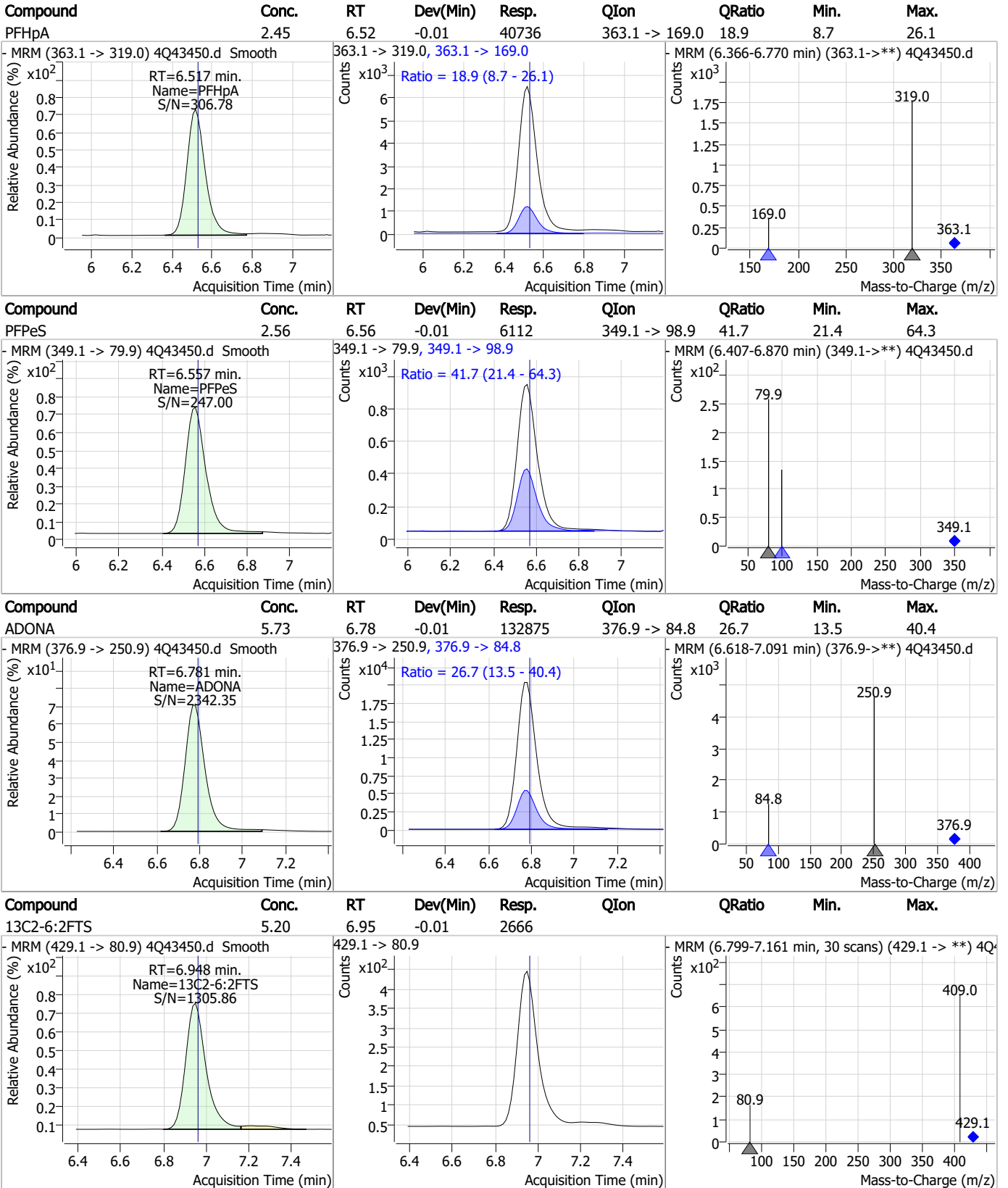


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

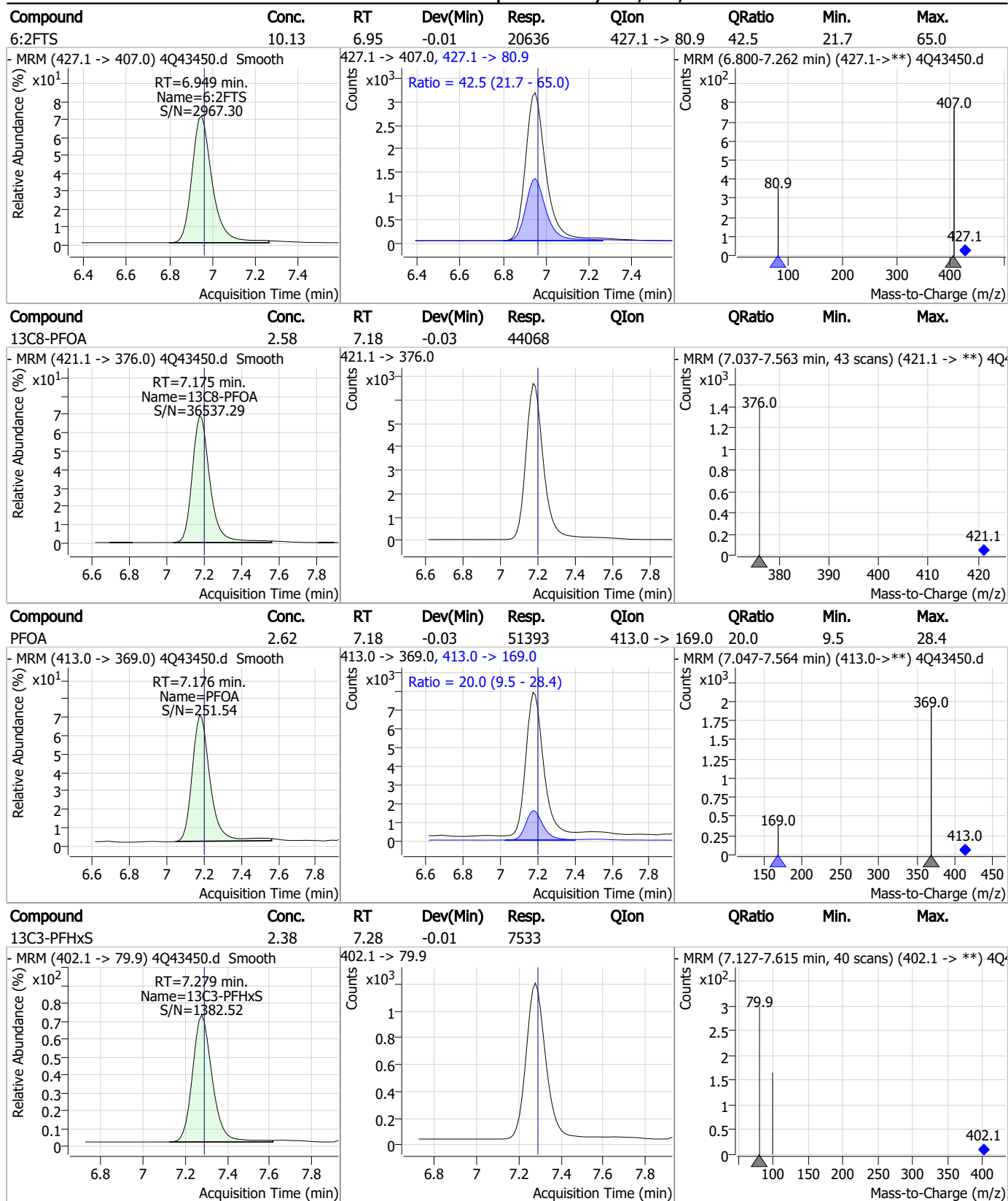


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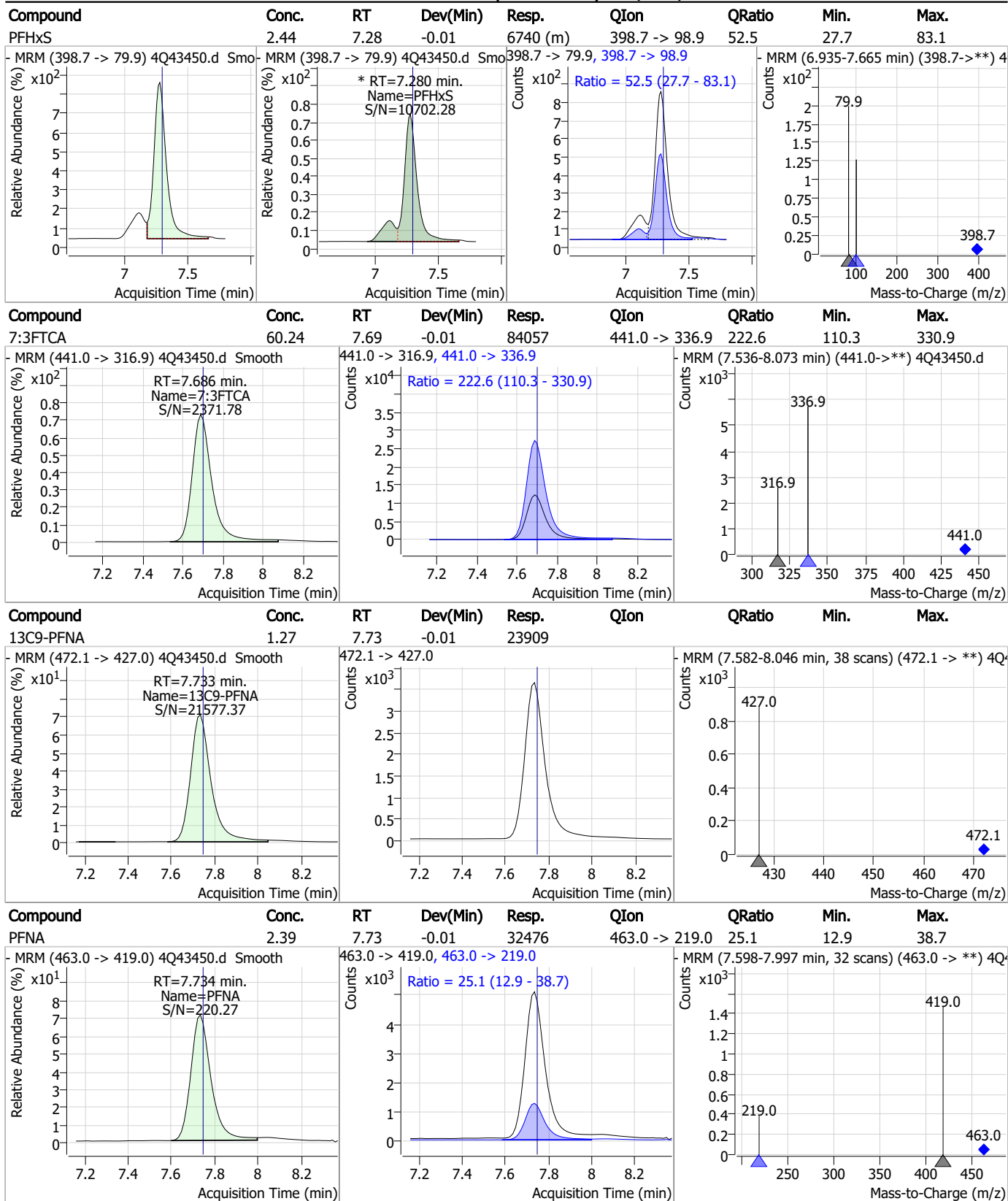


Perfluorinated Compounds by LC/MS/MS



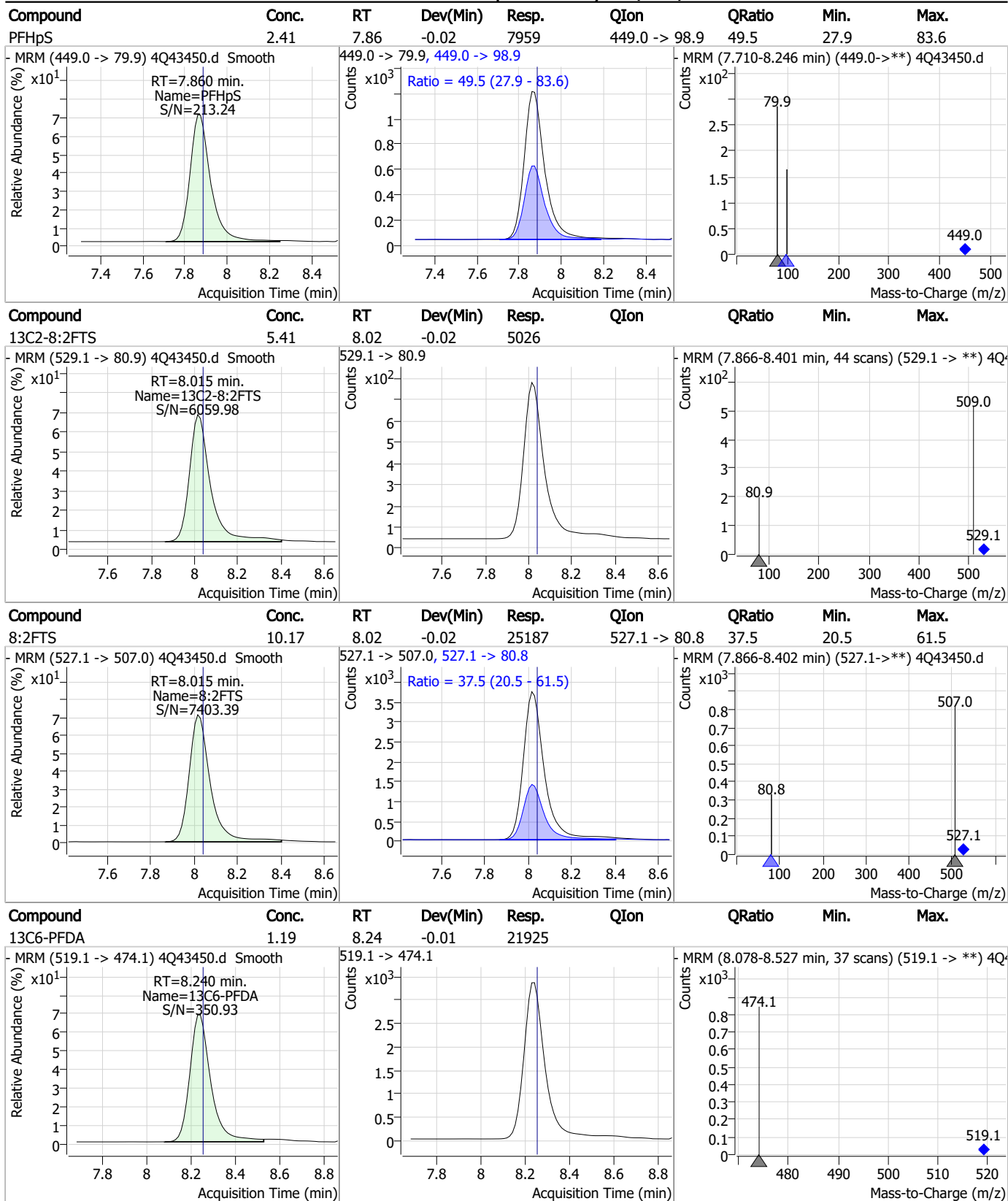
7.7.14
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Perfluorinated Compounds by LC/MS/MS



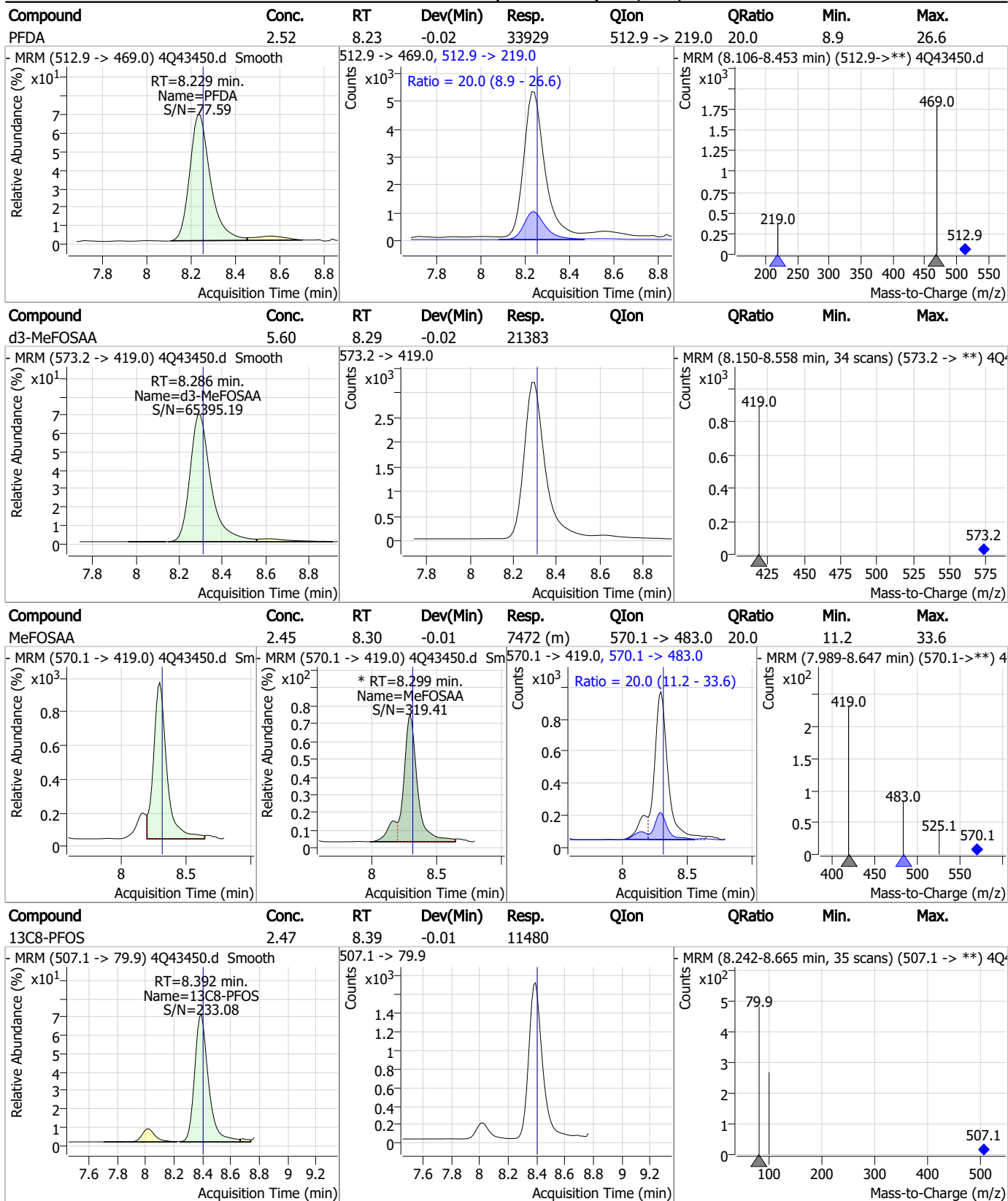
7.7.14
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Perfluorinated Compounds by LC/MS/MS



7.7.14

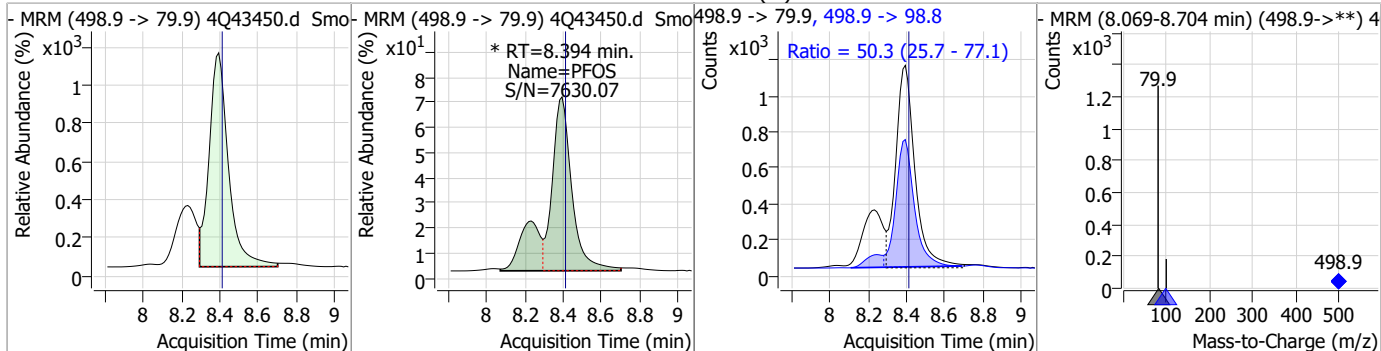
Perfluorinated Compounds by LC/MS/MS



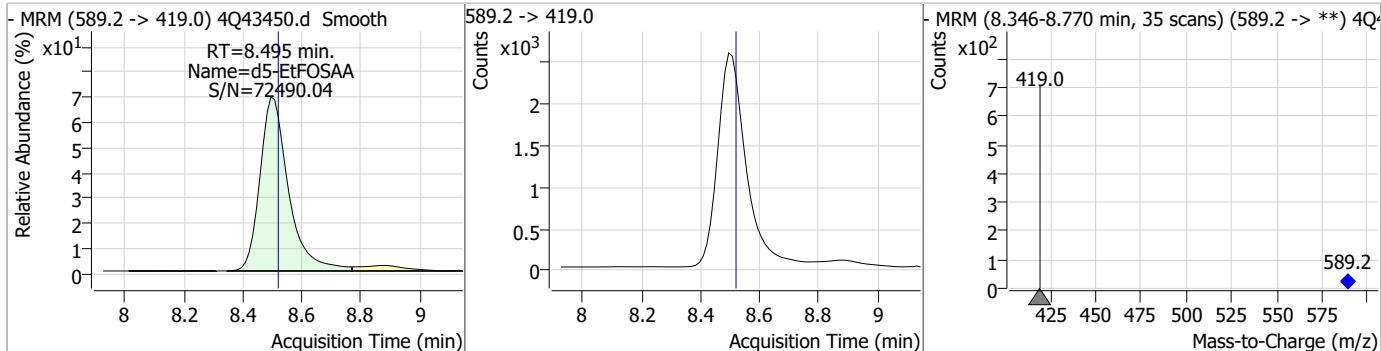
7.7.14

Perfluorinated Compounds by LC/MS/MS

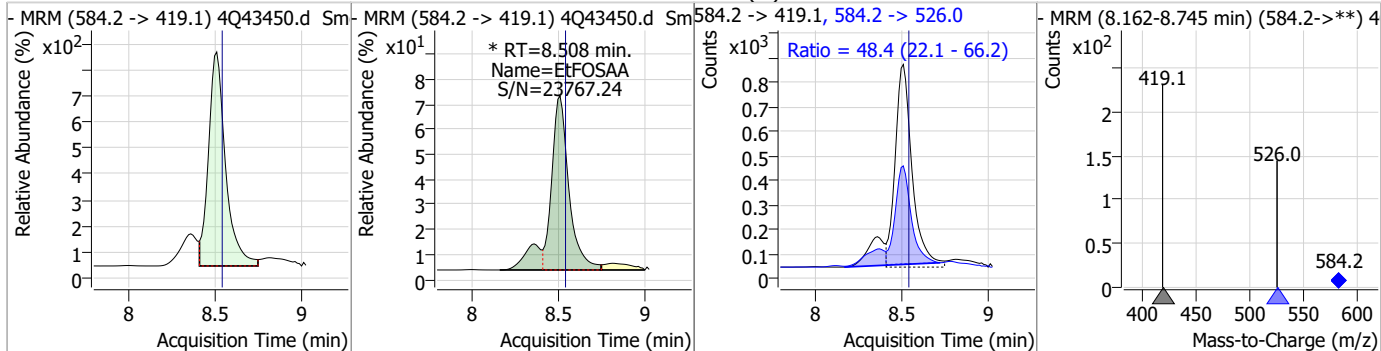
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.35	8.39	-0.01	10367 (m)	498.9 -> 98.8	50.3	25.7	77.1



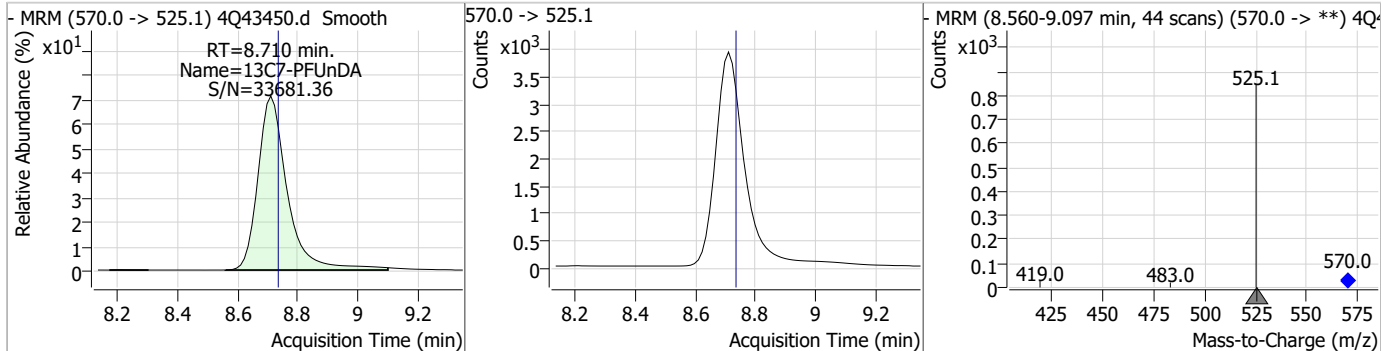
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.36	8.50	-0.02	17211				



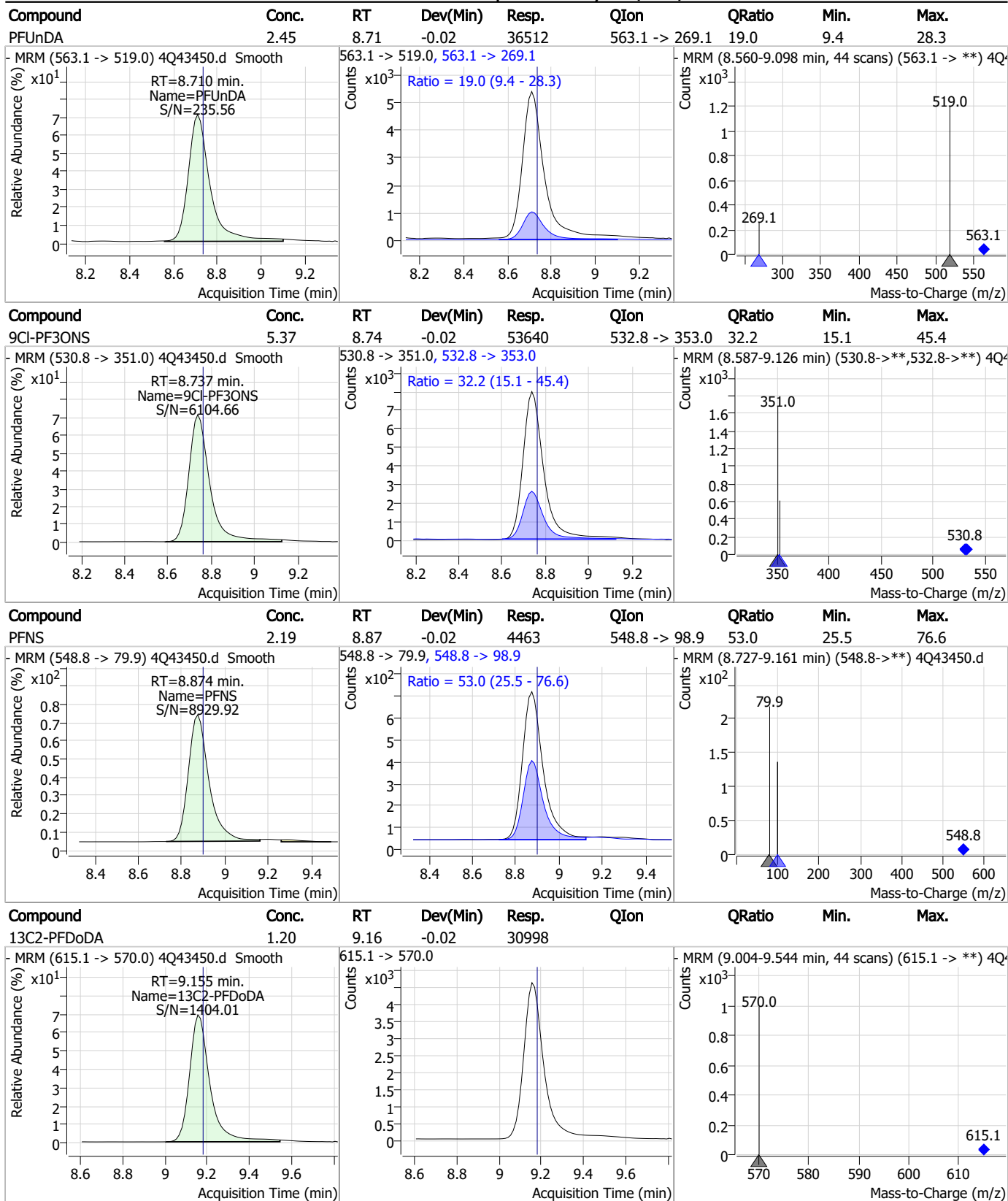
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.63	8.51	-0.02	6476 (m)	584.2 -> 526.0	48.4	22.1	66.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.28	8.71	-0.02	26301				



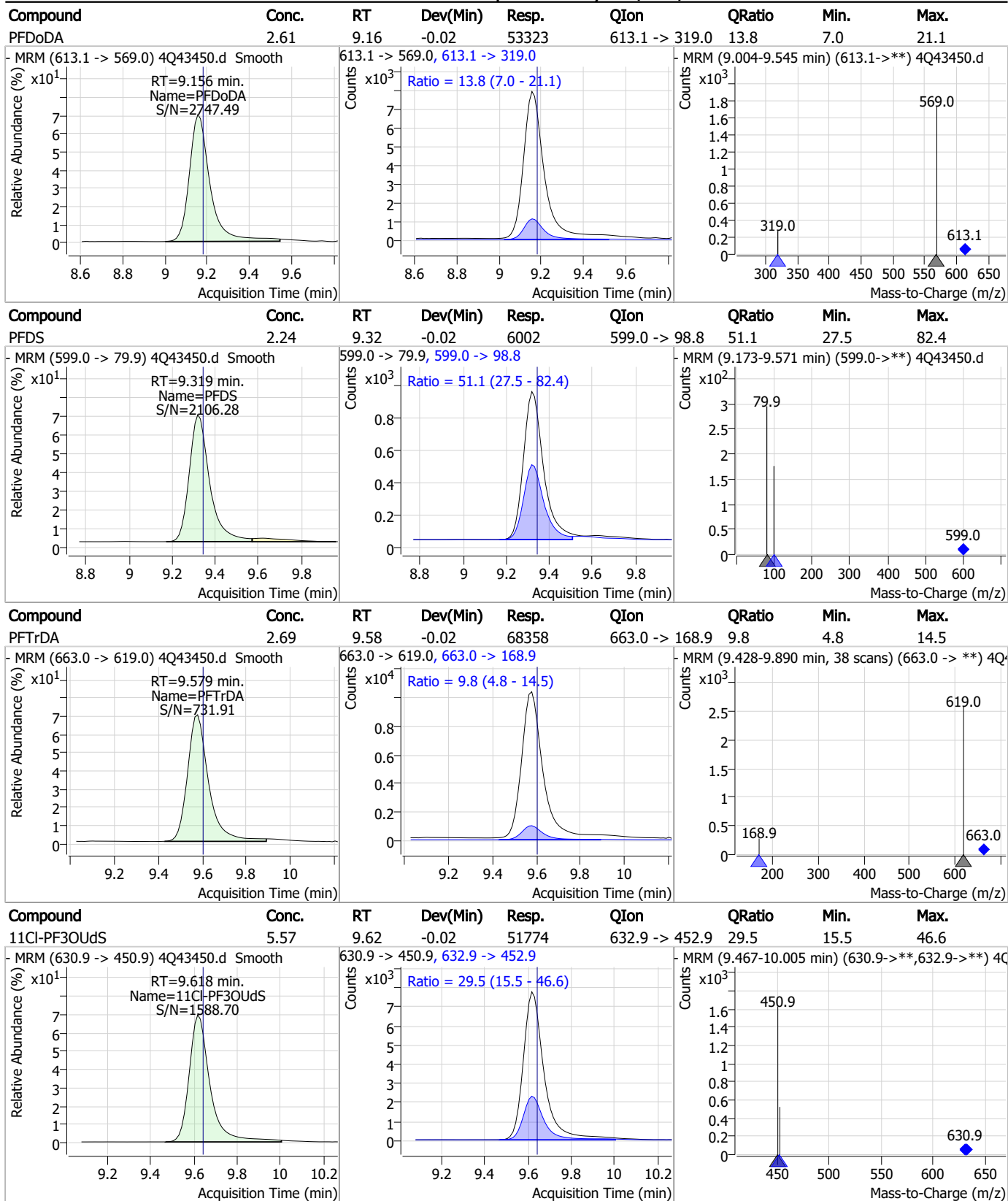
Perfluorinated Compounds by LC/MS/MS



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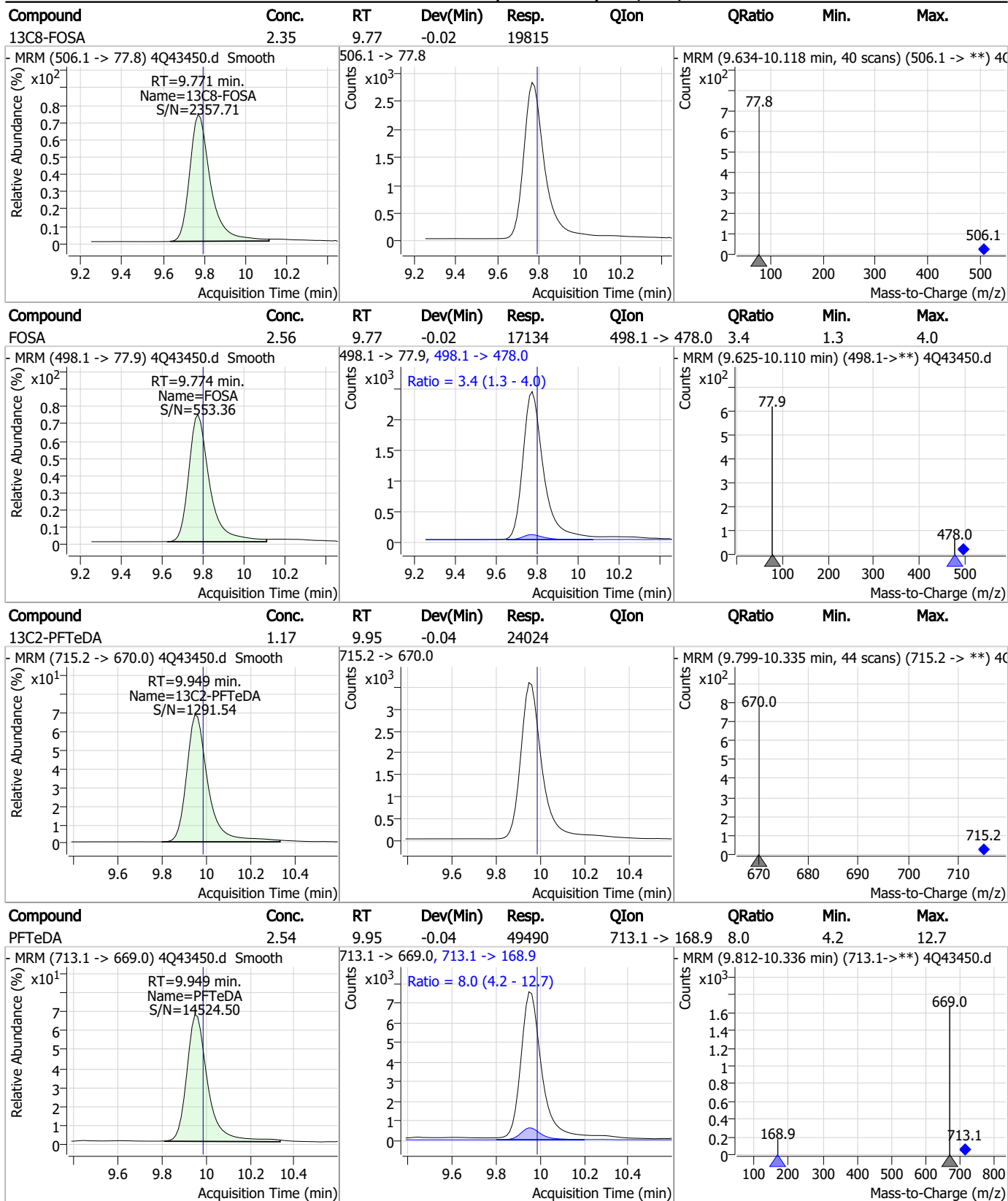
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

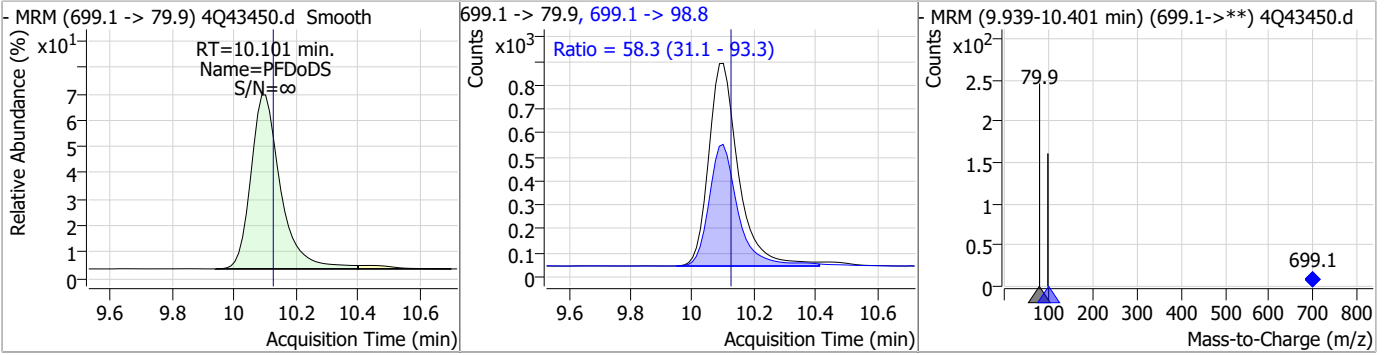


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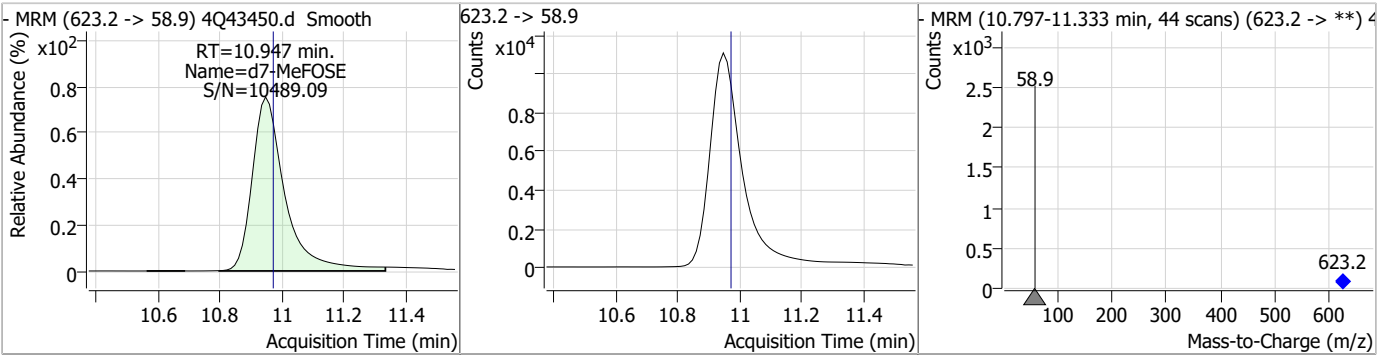


Perfluorinated Compounds by LC/MS/MS

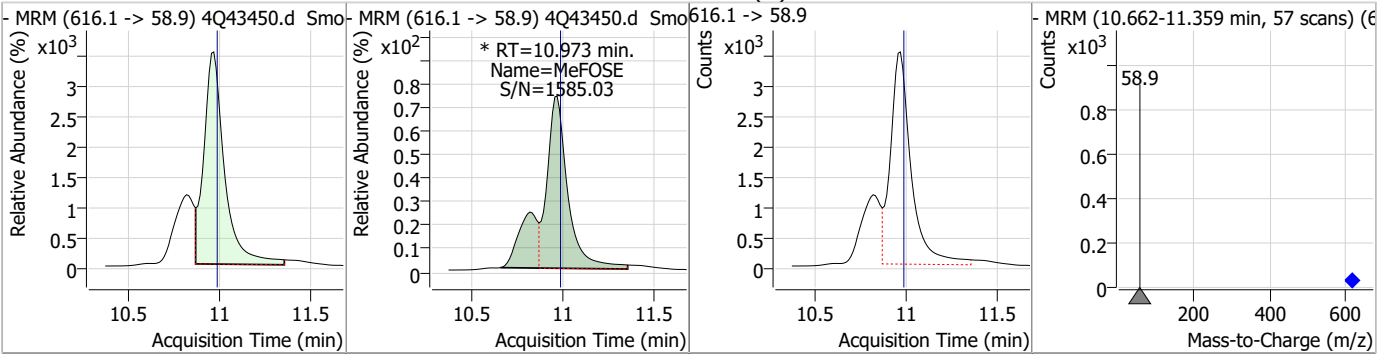
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.33	10.10	-0.02	5674	699.1 -> 98.8	58.3	31.1	93.3



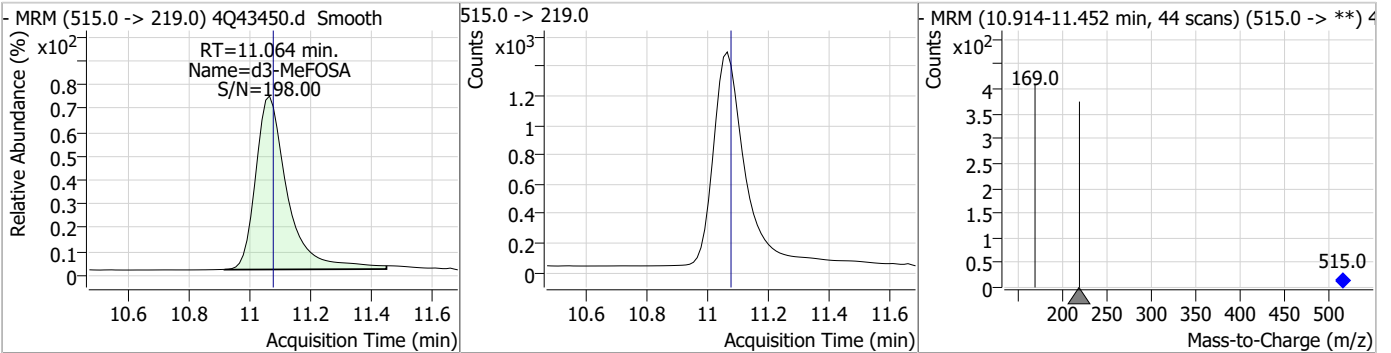
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.73	10.95	-0.02	81148				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.34	10.97	-0.01	35609 (m)				

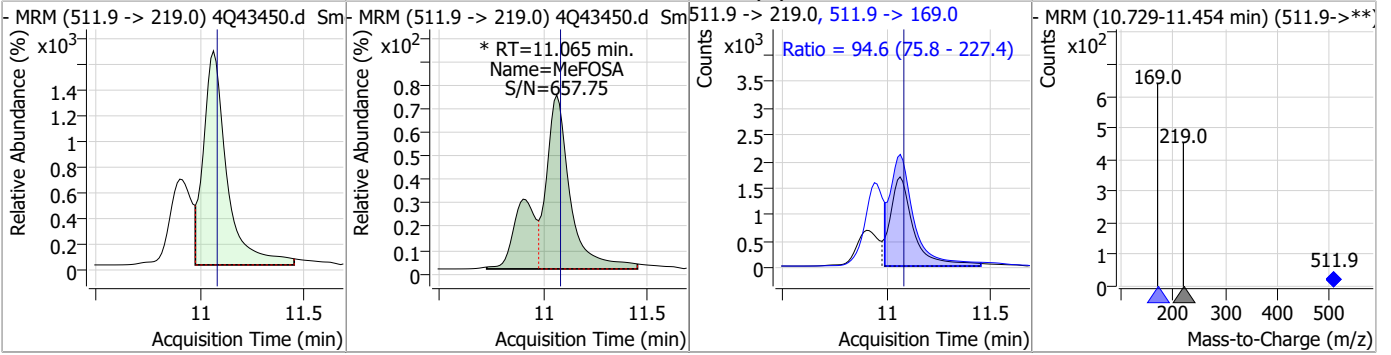


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.43	11.06	-0.01	10611				

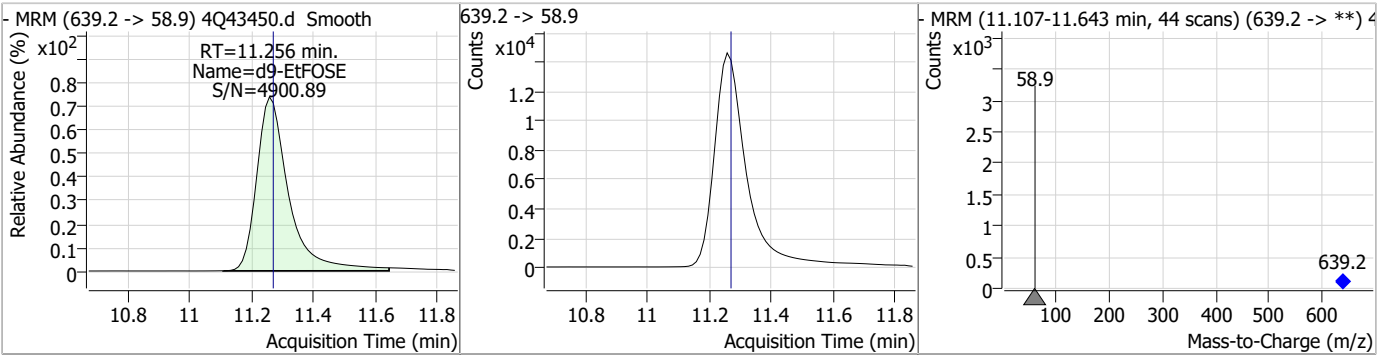


Perfluorinated Compounds by LC/MS/MS

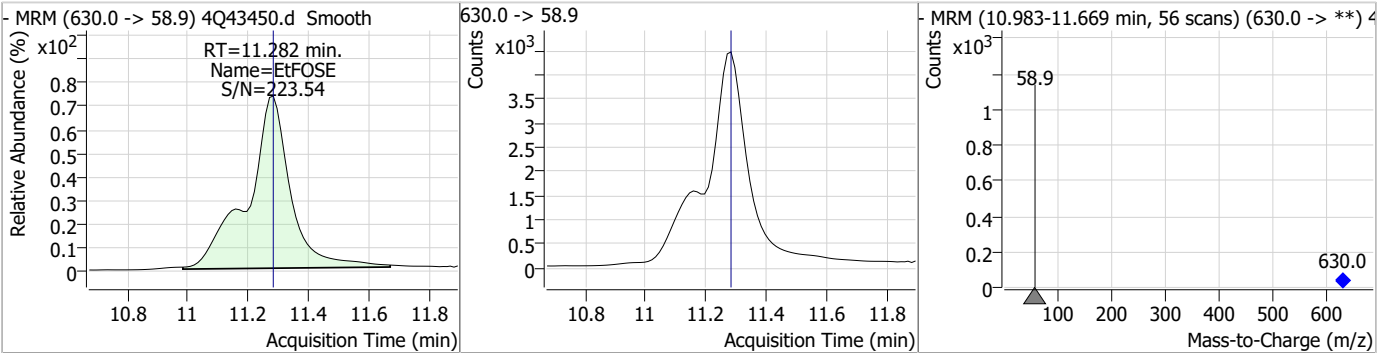
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.05	11.07	-0.01	17930 (m)	511.9 -> 169.0	94.6	75.8	227.4



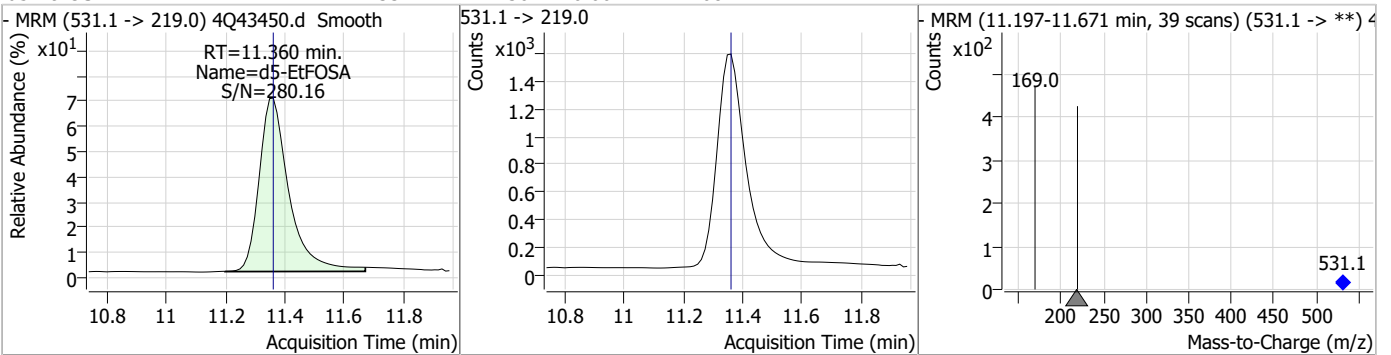
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.86	11.26	-0.01	104525				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	13.10	11.28	0.00	43647				

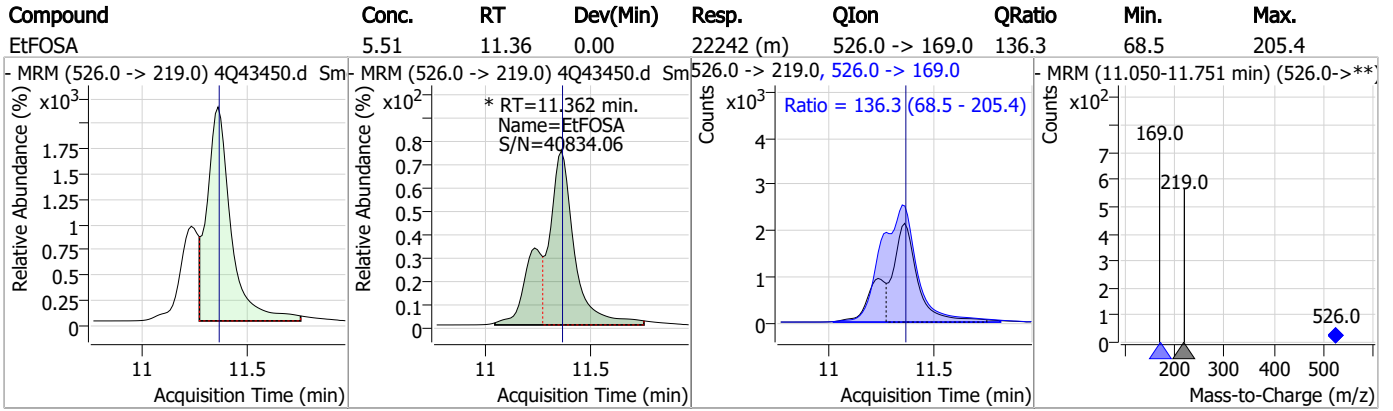


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.33	11.36	0.00	10812				



7.7.14

Perfluorinated Compounds by LC/MS/MS



7.7.14

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Manual Integration Approval Summary

Sample Number: S4Q627-CC625 Method: EPA DRAFT 1633
Lab FileID: 4Q43450.D Analyst approved: 04/24/23 15:01 Martha Valls
Injection Time: 04/21/23 21:05 Supervisor approved: 04/25/23 14:29 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.28	Split peak
MeFOSAA	2355-31-9		8.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.51	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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SGS ORLANDO

DATE:	04/19/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	ID_041923_S4Q625
CAL DATE:	04/19/23
ANALYST:	M. Valls NG
RUN BATCH:	S4Q625

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

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q43237.d	P1-B9	CCB	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	ND
2	4Q43238.d	P1-B9	CCB	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	ND
3	4Q43239.d	P1-B3	RT TDCA	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	✓
4	4Q43240.d	P1-B4	RT BR-LN	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	✓
5	4Q43241.d	P1-A1	ic625-0	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	Check Tune File
6	4Q43242.d	P1-A2	ic625-1	1633full_4Q.m	Calibration	1.6/500	OP96301,S4q625 500,,5.0.1,water	PASS
7	4Q43243.d	P1-A3	ic625-2	1633full_4Q.m	Calibration	3.2/500	OP96301,S4q625 500,,5.0.1,water	PASS
8	4Q43244.d	P1-A4	ic625-3	1633full_4Q.m	Calibration	10/500	OP96301,S4q625 500,,5.0.1,water	PASS
9	4Q43245.d	P1-A5	ic625-4	1633full_4Q.m	Calibration	20/500	OP96301,S4q625 500,,5.0.1,water	PASS
10	4Q43246.d	P1-A6	ic625-5	1633full_4Q.m	Calibration	40/500	OP96301,S4q625 500,,5.0.1,water	PASS
11	4Q43247.d	P1-A7	ic625-6	1633full_4Q.m	Calibration	100/500	OP96301,S4q625 500,,5.0.1,water	PASS
12	4Q43248.d	P1-A8	ic625-7	1633full_4Q.m	Calibration	200/500	OP96301,S4q625 500,,5.0.1,water	PASS
13	4Q43249.d	P1-A9	ic625-8	1633full_4Q.m	Calibration	1x	OP96301,S4q625 500,,5.0.1,water	PASS, EifOSAA dropped
14	4Q43250.d	P1-A1	IBLK	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	ND
15	4Q43251.d	P1-B1	icv625-4	1633full_4Q.m	QC	20/500	OP96301,S4q625 500,,5.0.1,water	PASS, prepped by NG
16	4Q43252.d	P1-B2	icv625-20	1633full_4Q.m	QC	100/500	OP96301,S4q625 500,,5.0.1,water	PASS
17	4Q43253.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q625 500,,5.0.1,water	PASS
18	4Q43254.d	P1-A2	cc625-1.0LL	1633full_4Q.m	QC	1.6/500	OP96301,S4q625 500,,5.0.1,water	PASS
19	4Q43255.d	P2-A1	op96455-bs	1633full_4Q.m	Sample		OP96455,S4q625 500,,5.0.1,water	✓
20	4Q43256.d	P2-A2	op96455-llbs:2	1633full_4Q.m	Sample		OP96455,S4q625 500,,5.0.1,water	✓
21	4Q43257.d	P2-A3	op96455-mb	1633full_4Q.m	Sample		OP96455,S4q625 500,,5.0.1,water	✓
22	4Q43258.d	P2-A4	FC5043-3	1633full_4Q.m	Sample		OP96455,S4q625 460,,5.0.1,water	✓
23	4Q43259.d	P2-A5	FC5043-5	1633full_4Q.m	Sample		OP96455,S4q625 515,,5.0.1,water	✓
24	4Q43260.d	P2-A6	DA54565-2	1633full_4Q.m	Sample		OP96455,S4q625 225,,5.0.1,water	✓
25	4Q43261.d	P2-A7	JD62814-1	1633full_4Q.m	Sample		OP96455,S4q625 540,,5.0.1,water	✓
26	4Q43262.d	P2-A8	JD62814-2	1633full_4Q.m	Sample		OP96455,S4q625 540,,5.0.1,water	✓
27	4Q43263.d	P2-A9	JD62814-3	1633full_4Q.m	Sample		OP96455,S4q625 270,,5.0.1,water	✓
28	4Q43264.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q625 500,,5.0.1,water	PASS
29	4Q43265.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	ND
30	4Q43266.d	P2-B1	op96452-bs	1633full_4Q.m	Sample		OP96452,S4q625 500,,5.0.1,water	✓
31	4Q43267.d	P2-B2	op96452-llbs:3	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	✓
32	4Q43268.d	P2-B3	op96452-mb	1633full_4Q.m	Sample		OP96301,S4q625 500,,5.0.1,water	✓
33	4Q43269.d	P2-B4	FC3818-6	1633full_4Q.m	Sample		OP96301,S4q625 560,,5.0.1,water	✓
34	4Q43270.d	P2-B5	DA54565-1	1633full_4Q.m	Sample		OP96322,S4q625 250,,5.0.1,water	✓
35	4Q43271.d	P2-B6	DA54565-2	1633full_4Q.m	Sample		OP96322,S4q625 240,,5.0.1,water	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q43272.d	P2-B7	JD63151-2	1633full_4Q.m	Sample	250/500	OP96386.S4q625.545,,5.0.2,water	rr 5x
37	4Q43273.d	P2-B8	JD63170-2	1633full_4Q.m	Sample	50/500	OP96386.S4q625.545,,5.0.10,water	✓
38	4Q43274.d	P2-B9	JD63170-3	1633full_4Q.m	Sample		OP96386.S4q625.545,,5.0.1,water	✓
39	4Q43275.d	P2-C1	JD63170-3	1633full_4Q.m	Sample	100/500	OP96386.S4q625.545,,5.0.5,water	✓
40	4Q43276.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301.S4q625.500,,5.0.1,water	PASS
41	4Q43277.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301.S4q625.500,,5.0.1,water	ND
42	4Q43278.d	P2-C2	JD63170-4	1633full_4Q.m	Sample	50/500	OP96386.S4q625.545,,5.0.10,water	✓
43	4Q43279.d	P2-C3	JD63170-5	1633full_4Q.m	Sample	50/500	OP96386.S4q625.545,,5.0.10,water	✓
44	4Q43280.d	P2-C4	JD63170-6	1633full_4Q.m	Sample	50/500	OP96386.S4q625.545,,5.0.10,water	✓
45	4Q43281.d	P2-C5	JD63170-7	1633full_4Q.m	Sample		OP96386.S4q625.545,,5.0.1,water	✓
46	4Q43282.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301.S4q625.500,,5.0.1,water	PASS
47	4Q43283.d	P1-A2	cc625-1.0LL	1633full_4Q.m	QC	1.6/500	OP96301.S4q625.500,,5.0.1,water	PASS
48	4Q43284.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301.S4q625.500,,5.0.1,water	ND
49	4Q43285.d	P2-C6	op96429-bs	1633full_4Q.m	Sample		OP96429.S4q625.500,,5.0.1,water	✓
50	4Q43286.d	P2-C7	op96429-llbs:2	1633full_4Q.m	Sample		OP96429.S4q625.500,,5.0.1,water	✓
51	4Q43287.d	P2-C8	op96429-mb	1633full_4Q.m	Sample		OP96429.S4q625.500,,5.0.1,water	✓
52	4Q43288.d	P2-C9	JD63290-1A	1633full_4Q.m	Sample		OP96429.S4q625.495,,5.0.1,water	✓
53	4Q43289.d	P2-D1	op96429-ms	1633full_4Q.m	Sample		OP96429.S4q625.495,,5.0.1,water	✓
54	4Q43290.d	P2-D2	JD63290-2A	1633full_4Q.m	Sample		OP96429.S4q625.545,,5.0.1,water	✓
55	4Q43291.d	P2-D3	op96429-dup	1633full_4Q.m	Sample		OP96429.S4q625.545,,5.0.1,water	✓
56	4Q43292.d	P2-D4	JD63290-3A	1633full_4Q.m	Sample		OP96429.S4q625.500,,5.0.1,water	✓
57	4Q43293.d	P2-D5	JD63290-4	1633full_4Q.m	Sample		OP96429.S4q625.545,,5.0.1,water	✓
58	4Q43294.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301.S4q625.500,,5.0.1,water	PASS
59	4Q43295.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301.S4q625.500,,5.0.1,water	ND
60	4Q43296.d	P2-D6	op96382-bs	1633full_4Q.m	Sample		OP96382.S4q625.500,,5.0.1,water	rr 1x
61	4Q43297.d	P2-D7	op96382-llbs:3	1633full_4Q.m	Sample		OP96382.S4q625.500,,5.0.1,water	✓
62	4Q43298.d	P2-D8	op96382-mb	1633full_4Q.m	Sample		OP96382.S4q625.500,,5.0.1,water	✓
63	4Q43299.d	P2-D9	FC3817-1	1633full_4Q.m	Sample		OP96382.S4q625.550,,5.0.1,water	✓
64	4Q43300.d	P2-E1	FC3817-2	1633full_4Q.m	Sample		OP96382.S4q625.520,,5.0.1,water	✓
65	4Q43301.d	P2-E2	FC3817-3	1633full_4Q.m	Sample		OP96382.S4q625.540,,5.0.1,water	✓
66	4Q43302.d	P2-E3	FC3817-4	1633full_4Q.m	Sample		OP96382.S4q625.460,,5.0.1,water	✓
67	4Q43303.d	P2-E4	FC3817-5	1633full_4Q.m	Sample		OP96382.S4q625.560,,5.0.1,water	rr 1x
68	4Q43304.d	P2-E5	FC3817-6	1633full_4Q.m	Sample		OP96382.S4q625.550,,5.0.1,water	rr 1x
69	4Q43305.d	P2-E6	FC3817-7	1633full_4Q.m	Sample		OP96382.S4q625.540,,5.0.1,water	✓
70	4Q43306.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301.S4q625.500,,5.0.1,water	PASS
71	4Q43307.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301.S4q625.500,,5.0.1,water	ND
72	4Q43308.d	P2-E7	FC3817-8	1633full_4Q.m	Sample		OP96382.S4q625.570,,5.0.1,water	rr 10x
73	4Q43309.d	P2-E8	FC3817-9	1633full_4Q.m	Sample		OP96382.S4q625.530,,5.0.1,water	✓
74	4Q43310.d	P2-E9	FC3817-10	1633full_4Q.m	Sample		OP96382.S4q625.480,,5.0.1,water	rr 1x
75	4Q43311.d	P2-F1	FC3817-11	1633full_4Q.m	Sample		OP96382.S4q625.520,,5.0.1,water	rr 1x
76	4Q43312.d	P2-F2	FC3817-12	1633full_4Q.m	Sample		OP96382.S4q625.540,,5.0.1,water	✓
77	4Q43313.d	P2-F3	FC3817-13	1633full_4Q.m	Sample		OP96382.S4q625.520,,5.0.1,water	rr 5x
78	4Q43314.d	P2-F4	FC3817-14	1633full_4Q.m	Sample		OP96382.S4q625.485,,5.0.1,water	✓

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79	4Q43315.d	P2-F5	FC3817-15	1633full_4Q.m	Sample	OP96382,S4q625,500,,5.0.1,water	✓
80	4Q43316.d	P2-F6	op96382-ms	1633full_4Q.m	Sample	OP96382,S4q625,530,,5.0.1,water	✓
81	4Q43317.d	P2-F7	op96382-msd	1633full_4Q.m	Sample	OP96382,S4q625,485,,5.0.1,water	✓
82	4Q43318.d	P1-A5	cc625-4	1633full_4Q.m	QC	OP96301,S4q625,500,,5.0.1,water	PASS
83	4Q43319.d	P1-A1	iccb	1633full_4Q.m	Sample	OP96301,S4q625,500,,5.0.1,water	ND
84	4Q43320.d	P2-F8	FC3817-16	1633full_4Q.m	Sample	OP96382,S4q625,500,,5.0.1,water	✓
85	4Q43321.d	P2-F9	FC3817-17	1633full_4Q.m	Sample	OP96382,S4q625,540,,5.0.1,water	✓
86	4Q43322.d	P1-A5	ecc625-4	1633full_4Q.m	QC	OP96301,S4q625,500,,5.0.1,water	PASS
87	4Q43323.d	P1-A1	iccb	1633full_4Q.m	Sample	OP96301,S4q625,500,,5.0.1,water	ND
88	4Q43324.d	P1-F1	Test 2107-a	1633full_4Q.m	Sample	OP96301,S4q625,500,,5.0.1,water	test pass
89	4Q43325.d	P1-F2	Test 2107-b	1633full_4Q.m	Sample	OP96301,S4q625,500,,5.0.1,water	test pass
90	4Q43326.d	P1-F3	Test 2107-c	1633full_4Q.m	Sample	OP96301,S4q625,500,,5.0.1,water	test pass

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DATE:	04/21/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	ID_041923_S4Q625
CAL DATE:	04/19/23
ANALYST:	M. Valls NG
RUN BATCH:	S4Q627

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

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q43423.d	P1-A1	CCB	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
2	4Q43424.d	P1-B3	RT TDCA	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
3	4Q43425.d	P1-B4	RT BR-LN	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
4	4Q43426.d	P1-A9	high std	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
5	4Q43427.d	P1-A1	IBLK	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
6	4Q43428.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q627 500,,5.0.1,water	✓
7	4Q43429.d	P1-A2	cc625-1.0LL	1633full_4Q.m	QC	1.6/500	OP96301,S4q627 500,,5.0.1,water	✓
8	4Q43430.d	P4-B8	fc3816-1	1633full_4Q.m	Sample		OP96296,S4q627 560,,5.0.1,water	✓
9	4Q43431.d	P3-D7	fc3839-5	1633full_4Q.m	Sample		OP96383,S4q627 545,,5.0.1,water	✓
10	4Q43432.d	P4-C1	fc3839-12	1633full_4Q.m	Sample	50/500	OP96383,S4q627 530,,5.0.10,water	✓
11	4Q43433.d	P4-C2	fc3839-13	1633full_4Q.m	Sample	50/500	OP96383,S4q627 575,,5.0.10,water	✓
12	4Q43434.d	P4-C3	fc3922-8	1633full_4Q.m	Sample	50/500	OP96426,S4q627 530,,5.0.10,water	✓
13	4Q43435.d	P4-C4	fc3922-9	1633full_4Q.m	Sample	50/500	OP96426,S4q627 540,,5.0.10,water	✓
14	4Q43436.d	P4-A6	fc3922-10	1633full_4Q.m	Sample		OP96426,S4q627 550,,5.0.1,water	✓
15	4Q43437.d	P4-C5	fc3922-13	1633full_4Q.m	Sample	50/500	OP96426,S4q627 540,,5.0.10,water	✓
16	4Q43438.d	P4-C6	fc3922-17	1633full_4Q.m	Sample	50/500	OP96426,S4q627 530,,5.0.10,water	✓
17	4Q43439.d	P4-C7	fc3922-18	1633full_4Q.m	Sample	50/500	OP96426,S4q627 530,,5.0.10,water	✓
18	4Q43440.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q627 500,,5.0.1,water	✓
19	4Q43441.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
20	4Q43442.d	P3-F4	op96426-llbs:3	1633full_4Q.m	Sample		OP96426,S4q627 500,,5.0.1,water	Test only
21	4Q43443.d	P4-D1	op96472-bs	1633full_4Q.m	Sample		OP96472,S4q627 500,,5.0.1,water	✓
22	4Q43444.d	P4-D2	op96472-llbs:3	1633full_4Q.m	Sample		OP96472,S4q627 500,,5.0.1,water	✓
23	4Q43445.d	P4-D3	op96472-mb	1633full_4Q.m	Sample		OP96472,S4q627 500,,5.0.1,water	✓
24	4Q43446.d	P4-D4	fc5316-1	1633full_4Q.m	Sample		OP96472,S4q627 560,,5.0.1,water	✓
25	4Q43447.d	P4-D5	op96472-ms	1633full_4Q.m	Sample		OP96472,S4q627 560,,5.0.1,water	✓
26	4Q43448.d	P4-D6	fc5316-2	1633full_4Q.m	Sample		OP96472,S4q627 560,,5.0.1,water	✓
27	4Q43449.d	P4-D7	op96472-dup	1633full_4Q.m	Sample		OP96472,S4q627 550,,5.0.1,water	✓
28	4Q43450.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q627 500,,5.0.1,water	✓
29	4Q43451.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
30	4Q43452.d	P4-D8	op96492-bs	1633full_4Q.m	Sample		OP96492,S4q627 500,,5.0.1,water	3:3 Fluorotoluene carboxylate fall low
31	4Q43453.d	P4-D9	op96492-llbs:3	1633full_4Q.m	Sample		OP96492,S4q627 500,,5.0.1,water	✓
32	4Q43454.d	P4-E1	op96492-mb	1633full_4Q.m	Sample		OP96492,S4q627 500,,5.0.1,water	✓
33	4Q43455.d	P4-E2	fc5352-1	1633full_4Q.m	Sample		OP96492,S4q627 540,,5.0.1,water	✓
34	4Q43456.d	P4-E3	op96492-ms	1633full_4Q.m	Sample		OP96492,S4q627 550,,5.0.1,water	✓
35	4Q43457.d	P4-E4	fc5352-2	1633full_4Q.m	Sample		OP96492,S4q627 540,,5.0.1,water	✓

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36	4Q43458.d	P4-E5	op96492-dup	1633full_4Q.m	Sample	20/500	OP96492,S4q627 530,,5.0.1,water	✓
37	4Q43459.d	P1-A5	ecc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q627 500,,5.0.1,water	✓
38	4Q43460.d	P1-A2	cc625-1.0ILL	1633full_4Q.m	QC	1.16/500	OP96301,S4q627 500,,5.0.1,water	Unda fail low. RR samples after.
39	4Q43461.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	✓
40	4Q43462.d	P4-E6	op96431-bs	1633full_4Q.m	Sample		OP96431,S4q627 500,,5.0.1,water	Screen run
41	4Q43463.d	P4-E7	op96431-llbs:3	1633full_4Q.m	Sample		OP96431,S4q627 500,,5.0.1,water	↓
42	4Q43464.d	P4-E8	op96431-mb	1633full_4Q.m	Sample		OP96431,S4q627 500,,5.0.1,water	↓
43	4Q43465.d	P4-E9	fc3969-1	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
44	4Q43466.d	P4-F1	fc3969-2	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
45	4Q43467.d	P4-F2	op96431-ms	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
46	4Q43468.d	P4-F3	op96431-msd	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
47	4Q43469.d	P4-F4	fc3969-3	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
48	4Q43470.d	P4-F5	fc3969-4	1633full_4Q.m	Sample		OP96431,S4q627 560,,5.0.1,water	↓
49	4Q43471.d	P4-F6	fc3969-5	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
50	4Q43472.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q627 500,,5.0.1,water	↓
51	4Q43473.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	↓
52	4Q43474.d	P4-F7	fc3970-1	1633full_4Q.m	Sample		OP96431,S4q627 545,,5.0.1,water	↓
53	4Q43475.d	P4-F8	fc3970-2	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
54	4Q43476.d	P4-F9	fc3970-3	1633full_4Q.m	Sample		OP96431,S4q627 550,,5.0.1,water	↓
55	4Q43477.d	P5-A1	fc3970-4	1633full_4Q.m	Sample		OP96431,S4q627 565,,5.0.1,water	↓
56	4Q43478.d	P5-A2	fc3970-5	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
57	4Q43479.d	P5-A3	fc3970-6	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
58	4Q43480.d	P5-A4	fc3970-7	1633full_4Q.m	Sample		OP96431,S4q627 260,,5.0.1,water	↓
59	4Q43481.d	P5-A5	fc3970-8	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
60	4Q43482.d	P5-A6	fc3970-9	1633full_4Q.m	Sample		OP96431,S4q627 565,,5.0.1,water	↓
61	4Q43483.d	P5-A7	fc3970-10	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
62	4Q43484.d	P1-A5	cc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q627 500,,5.0.1,water	↓
63	4Q43485.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	↓
64	4Q43486.d	P5-A8	fc3970-11	1633full_4Q.m	Sample		OP96431,S4q627 550,,5.0.1,water	↓
65	4Q43487.d	P5-A9	fc3970-12	1633full_4Q.m	Sample		OP96431,S4q627 285,,5.0.1,water	↓
66	4Q43488.d	P5-B1	fc3970-13	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
67	4Q43489.d	P5-B2	fc3970-14	1633full_4Q.m	Sample		OP96431,S4q627 570,,5.0.1,water	↓
68	4Q43490.d	P1-A5	ecc625-4	1633full_4Q.m	QC	20/500	OP96301,S4q627 500,,5.0.1,water	↓
69	4Q43491.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96301,S4q627 500,,5.0.1,water	↓

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2098A	1033 SPIKE Cal std.	11672A	PFAC	Wellington	8/18/27	3/23/24	1-4 ppm	2.50uL	4mL	0.25 ppm	1033 MIX	4/6/23	10/6/23	MW
		11672B	MXH			4/16/24				250ppb				
		LCMS 2097	Br-In Et, Me	Sgs	9/1	10/28/23	3ppm	250uL		312.5ppb				
		11674B	PFAC MXF	Wellington	1/11/25	3/30/24	2ppm	250uL		350ppb				
		11675	PFAC MXG		12/1/27	3/30/24	2ppm	250uL		125ppb				
		11672B	PFAC MXJ		9/14/26	3/23/24	4-20 ppm	312uL		312/1000 ppb				
LCMS 2099	537.1 Du std. (INTERNAL)	11070	MPF-PEA	Wellington Labs	07/06/25	04/06/24	50ppm	80uL	4mL	1.0ppm	2011MESH 41, H2O	04/13/23	06/15/23	NG
		10428A	Mw:2 FTS		11/05/25	04/06/24		80uL		1.0ppm				NG
		10528B	d3-N-NIST684A		10/22/25	05/15/23		160uL		2.0ppm				NG
		10498A	M1F05		11/02/25	03/22/24		80uL		1.0ppm				NG
		11069	M3RFA		12/09/26	03/22/24		80uL		1.0ppm				NG
LCMS 2100	Full List (90)	11626	PFOR 28 Comp.	Absolute	11/19/27	4/11/24	1.0ppm	400uL	4.0mL	100ppb	75% MeOH 5% H2O	4/11/23	7/24/23	MW
91B	List 40 spike (Std)	LCMS 2067	40 List ADD ON #1	Sgs wld.		8/23/23	1.0ppm	400uL			(2.40031)			
		LCMS 2070	40 List ADD ON #2			5/12/23	1.0ppm	400uL						
		LCMS 2054	F05g Std.			7/24/23	5.0ppm	400uL		500ppb				
LCMS 2101	F05e std.	11336	N-et F05e	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% MeOH 5% H2O	9/11/23	9/19/23	MW
		11338	N-me F05e		5/13/27	9/19/23	50ppm	200uL						

* B/C checked are normal

* tested & used on 10/11/23

LCMS 2100 91B * 100% 100uL 100ppb

* based on date opened as specified in each SGS - Orlando SOP. (1.000)



Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2095A-J	(10ppb) PFC ID SURF	A-J 11669	PFAC-2YES	Wellington Labs	01/15/23	03/28/24	1.0ppm	2.4mL	~50mL	0.5ppm	05/11/23 57.425	03/28/23	09/26/23	NS
↓	↓	11585	M2HFO-DA	↓	11/08/23	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
↓	↓	11431	d-N-METOSAM	↓	05/06/27	03/13/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
LCMS 2096A-B	1033 spike Cal cert.	11672	PFAC-MxH	Wellington Labs	8/15/27	3/23/24	1-4 ppm	250uL	4mL	0.25 1.25 2.50ppb	1033 MIX	3/30/23	9/30/23	MUJ
↓	↓	11686	PFAC-MxI	↓	2/27/28	3/30/24	170 ppm	250uL	↓	0.25 0.25ppb	↓	↓	↓	↓
↓	↓	11674A	PFAC-MxG	↓	11/1/25	3/23/24	2ppm	500uL	↓	250ppb	↓	↓	↓	↓
↓	↓	11674B	PFAC-MxH	↓	12/1/27	3/30/24	2ppm	250uL	↓	125ppb	↓	↓	↓	↓
↓	↓	11675	PFAC-MxG	↓	9/14/26	3/23/24	4-20 ppm	312uL	↓	312/100 ppb	↓	↓	↓	↓
LCMS 2097A-B	BR-LN metet for 1033	11428	PFAC-MxJ	Wellington Labs	08/23/27	10/28/23	50ppm	200uL	5mL	2ppm 5ppm	1033 MIX	4/16/23	10/28/23	MUJ
↓	↓	11497	br-N metosa	↓	10/07/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11498	br-N Effosa	↓	10/07/27	10/28/23	50ppm	200uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11495	br-N metose	↓	10/28/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11494	br-N Effose	↓	10/7/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓					4/6/27								

* tested & used on 3/20/24

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

Organic Standards Preparation Log

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

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

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
* 2074 A-B LCMS 2074 A-B	PFC SPIKE	11613	PROA-SDP C8800015	Absolute	11/09/27	02/23/24	1.0ppm	2mL	5mL	400ppb	95% MeOH 5% H2O	02/23/23	03/23/23	UG
↓	↓	10829	N-Me- FSA-M	Wellington Labs	08/23/26	09/23/23	50ppm	40uL	↓	↓	↓	↓	↓	NG
↓	↓	11250	FBSA-1	↓	11/10/26	11/08/23	↓	↓	↓	↓	↓	↓	↓	NG
↓	↓	11249	FHSA-1	↓	12/29/26	11/03/23	↓	↓	↓	↓	↓	↓	↓	NG
↓	↓	11332	FTECHS	↓	03/28/27	10/18/23	↓	↓	↓	↓	↓	↓	↓	NG
* 2075 A-F LCMS 2075 A-F	(10 PPB) PFC ID SURC	11639	MPAC- 24ES	Wellington Labs	03/24/27	02/23/24	1.0ppm	2.4mL	~50 mL	0.5ppm	95% MeOH 5% H2O	02/23/23	02/23/23	NG
↓	↓	11585	N2HFO- DA	Wellington Labs	11/08/25	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
↓	↓	11385	A-N- NFCOSAM	Wellington Labs	05/10/27	01/01/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
LCMS 2076	40 List std. ADDON #2	11250	FBSA-1	Wellington Labs	11/10/26	11/8/23	50ppm	80uL	4.0mL	1ppm	95% MeOH 5% H2O	2/17/23	5/19/26	MV
↓	↓	11249	FHSA-1	↓	2/29/26	11/3/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
↓	↓	11140	L-PFAS	↓	7/12/26	5/26/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
LCMS 2077A-B	1633 Solvent B	11387	Ammonium Acetate	Sigmall drich	---	1/25/24	99.9%	0.62g	4L	2mM	MA	2/28/23	4/28/23	MV
↓	↓	224870	HPLC water	Fisher	---	2/28/23	↓	3,800ml	↓	95%	↓	↓	↓	↓
↓	↓	220225	Acetonil trile	↓	---	2/20/24	↓	200mL	↓	5%	↓	↓	↓	↓
↓	↓					n/a	n/a	n/a	2/28/23					
↓	↓					Continue next page #1								

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



Organic Standards Preparation Log

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

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

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

11494



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

brNMeFOSE0922 (1 of 7)
rev1

7.9.1

7

11495



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

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

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Revision#:9, Revised 2020-12-23

brNEtFOSE1022 (1 of 7)
rev1

7.9.1

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11497



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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brNMeFOSA0822 (1 of 6)
rev1

7.9.1

7

11498



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

N-Ethylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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

brNEtFOSA0922 (1 of 6)
rev1

7.9.1

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

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

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

PFACMXJ:0921 (1 of 5)
rev1

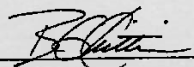
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Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g}/\text{mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g}/\text{mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By:


 B.G. Chittim, General Manager

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

11672
rec'd: 02/23/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS Solution/Mixture

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

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide (FOSA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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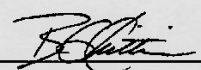
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Table A: PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		24
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		23
N-methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-ethylperfluorooctanesulfonamidoacetic acid ^a	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.
^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.
^c See Table D for percent composition of linear and branched PFHxSK isomers.
^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 08/09/2022
(mm/dd/yyyy)

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE:	PFAC-MXF
LOT NUMBER:	PFACMXF0122
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2022
LAST TESTED: (mm/dd/yyyy)	01/11/2022
EXPIRY DATE: (mm/dd/yyyy)	01/11/2025
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUDS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

The individual native components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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Revision# 9, Revised 2020-12-23

PFACMXFC122 (1 of 5)
rev0

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Table A:

PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 

B.G. Chittim, General Manager

Date: 01/12/2022
(mm/dd/yyyy)

11675
rec'd: 02/23/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic Acids and Sulfonate Solution/Mixture

PRODUCT CODE: PFAC-MXG
LOT NUMBER: PFACMXG1122
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/30/2022
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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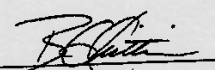
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PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Table A

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxaheptanoic acid	3,6-OPFHpA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	

* Concentrations have been rounded to three significant figures.

Certified By:  Date: 12/09/2022
(mm/dd/yyyy)
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7.9.1
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

FPePA1120

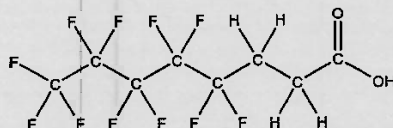
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

C₈H₅F₁₁O₂

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

50.0 ± 2.5 µg/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)

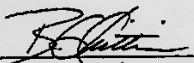
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 5:3 telomer acid (C₈H₃F₁₁O₂) as an impurity determined by ¹⁹F NMR.

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Certified By:


B.G. Chittim, General Manager

Date: 11/27/2020

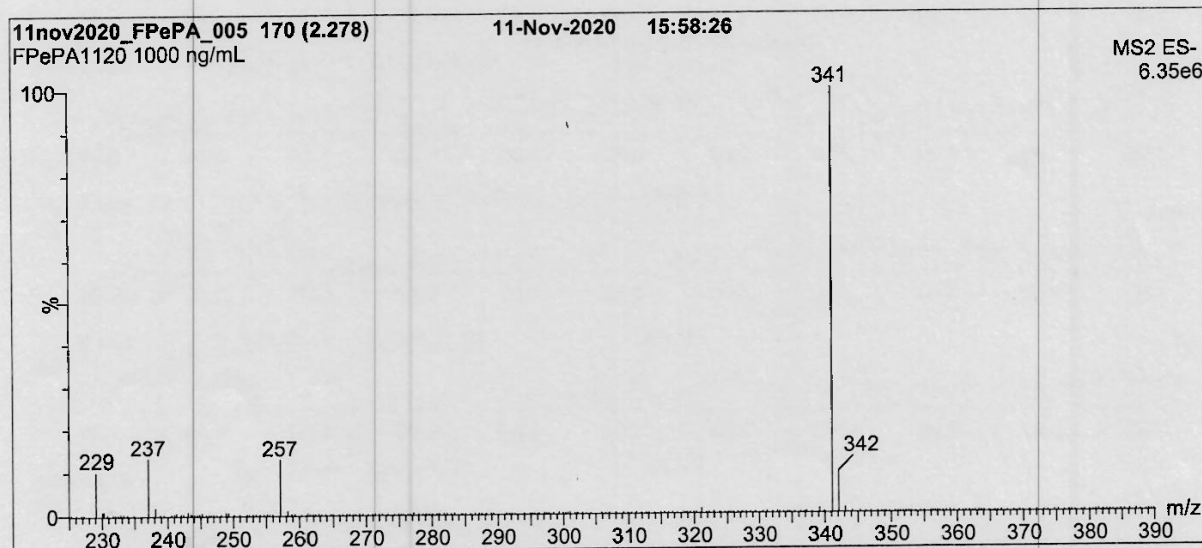
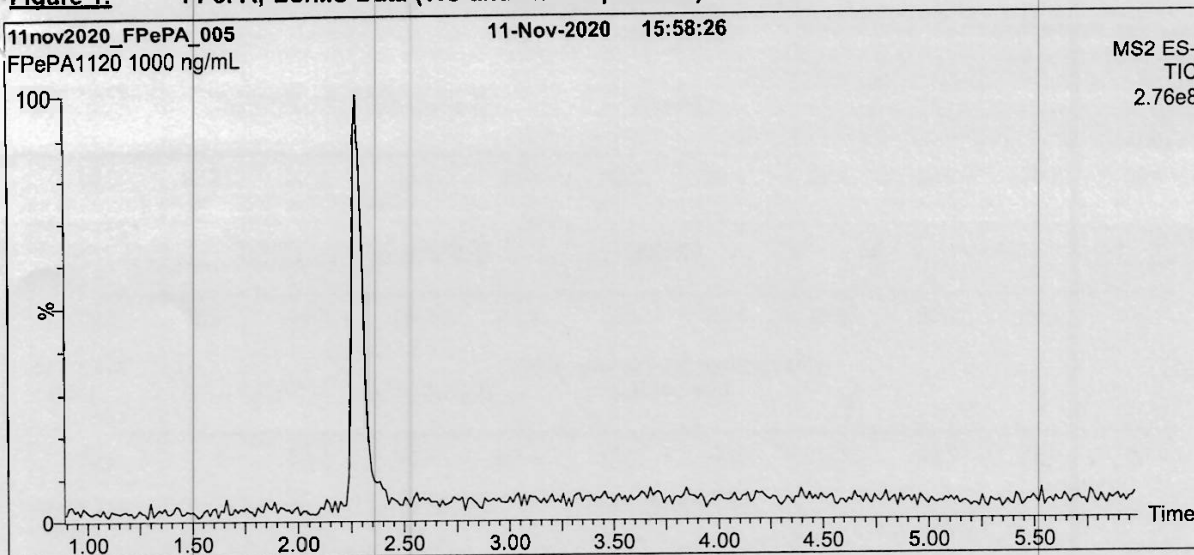
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Revision#:8, Revised 2020-09-10

FPePA1120 (1 of 4)
rev0

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



Conditions for Figure 1:

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

Chromatographic Conditions:

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

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

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

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

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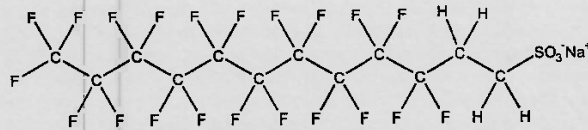


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS0221
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
48.3 ± 2.4 µg/mL (10:2FTS acid)
48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/03/2021
EXPIRY DATE: (mm/dd/yyyy) 03/03/2026
RECOMMENDED STORAGE: Refrigerate ampoule

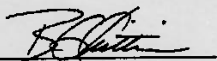
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

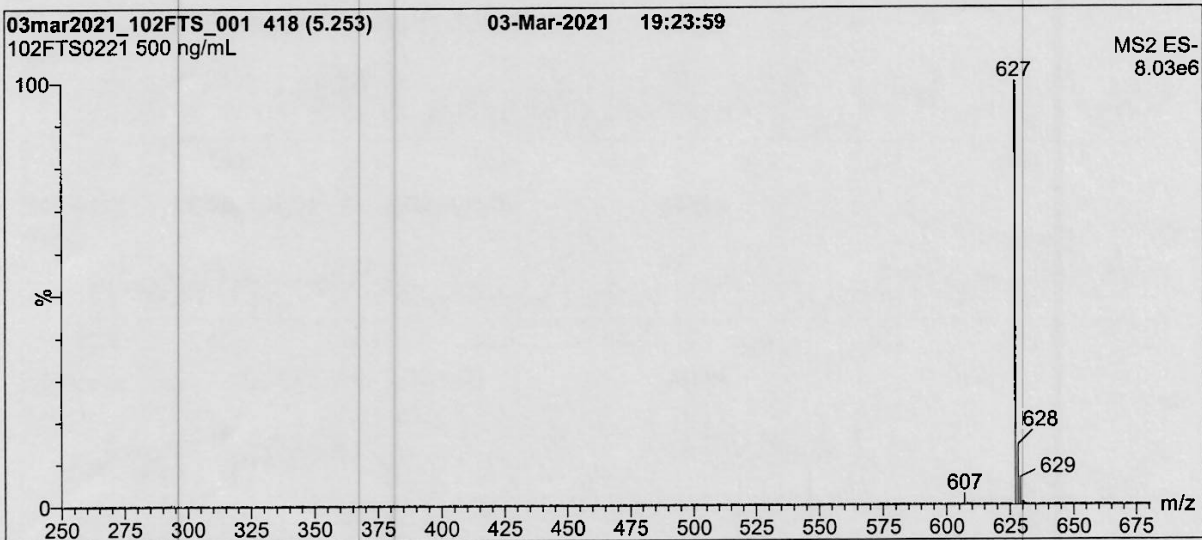
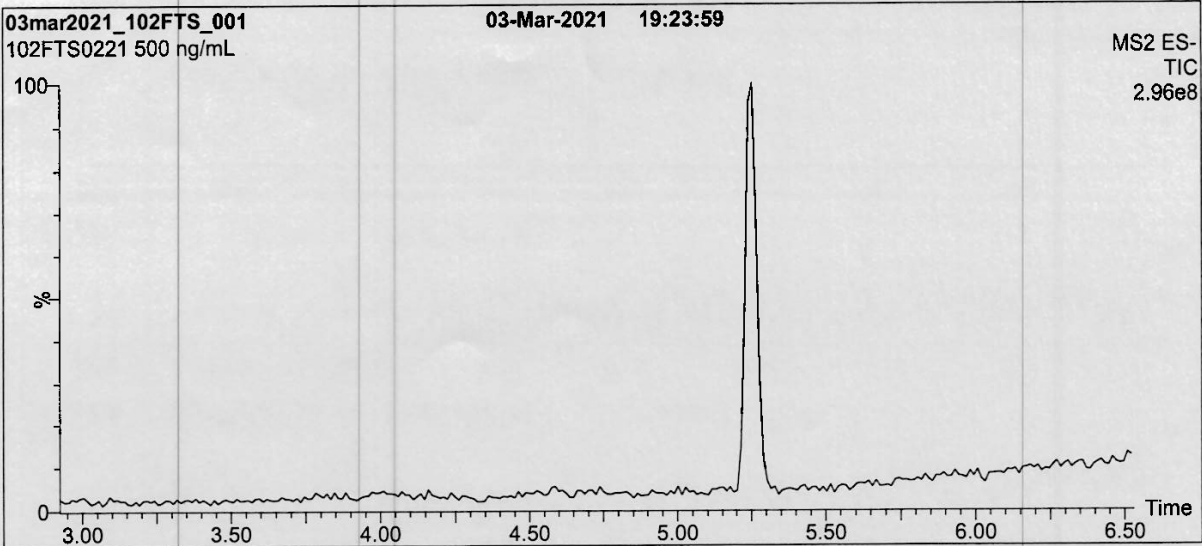
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Revision#: 9, Revised 2020-12-23

7.9.1

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Figure 1: 10:2FTS; LC/MS Data (Full Scan and Mass Spectrum)



Conditions for Figure 1:

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

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

Mobile phase: Gradient
 Start: 40% H₂O / 60% (80:20 MeOH:ACN)
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 3 min
 before returning to initial conditions in 0.75 min.
 Time: 12 min

Flow: 300 μ L/min

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

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 Revision#: 9, Revised 2020-12-23

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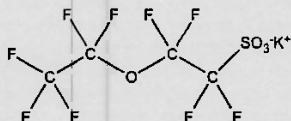
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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Potassium perfluoro(2-ethoxyethane)sulfonate

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



MOLECULAR FORMULA: C₄F₈SO₄K

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

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

MOLECULAR WEIGHT: 354.19

SOLVENT(S): Methanol

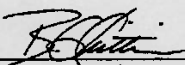
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: 
B.G. Chittim, General Manager

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

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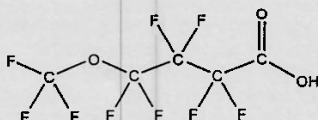
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

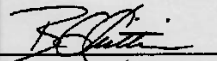
DOCUMENTATION/ DATA ATTACHED:

- 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.

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

B.G. Chittim, General Manager

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

PF5OHxA0320 (1 of 4)
rev1

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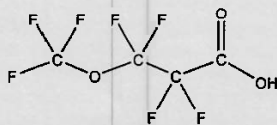
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

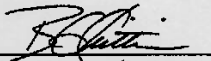
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

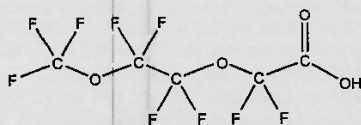
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

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

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10829



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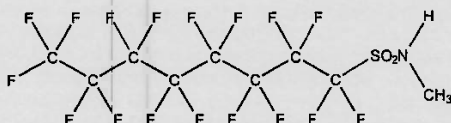
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPA
10/5/21

MOLECULAR FORMULA: C₈H₄F₁₇NO₂S
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

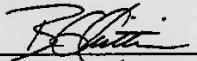
DOCUMENTATION/ DATA ATTACHED:

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

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

NMeFOSA0721M (1 of 4)
rev0

7.9.1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

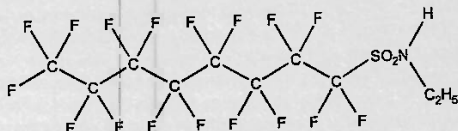
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

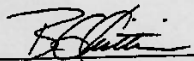
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021
(mm/dd/yyyy)

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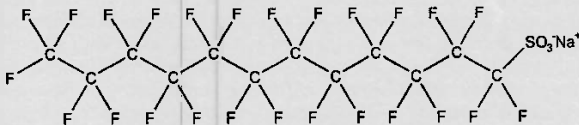
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CERTIFICATE OF ANALYSIS
DOCUMENTATION

10840

PRODUCT CODE: L-PFDoS **LOT NUMBER:** LPFDoS0721
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

STRUCTURE: **CAS #:** 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na **MOLECULAR WEIGHT:** 722.14
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 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

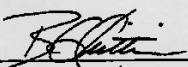
DOCUMENTATION/ DATA ATTACHED:

- 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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PRODUCT CODE:

PFODA

10847 NS 01/18/23

LOT NUMBER:

PFODA0821

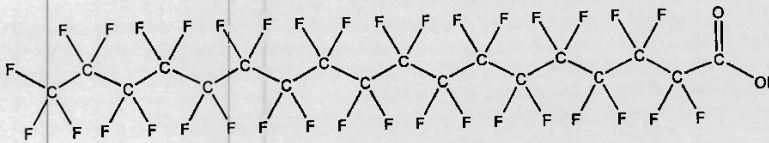
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoules at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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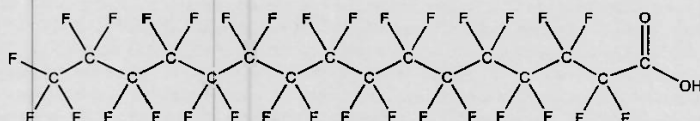
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



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

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

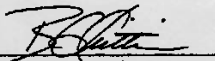
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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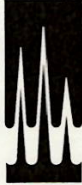
Form#:27, Issued 2004-11-10
 Revision#:9, Revised 2020-12-23

PFHxDA0421 (1 of 4)
 rev0

7.9.1
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1116 A.B ^{mw}

1116B on the back mw



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

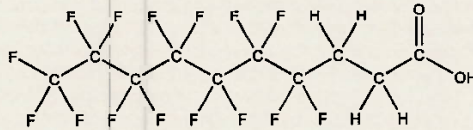
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

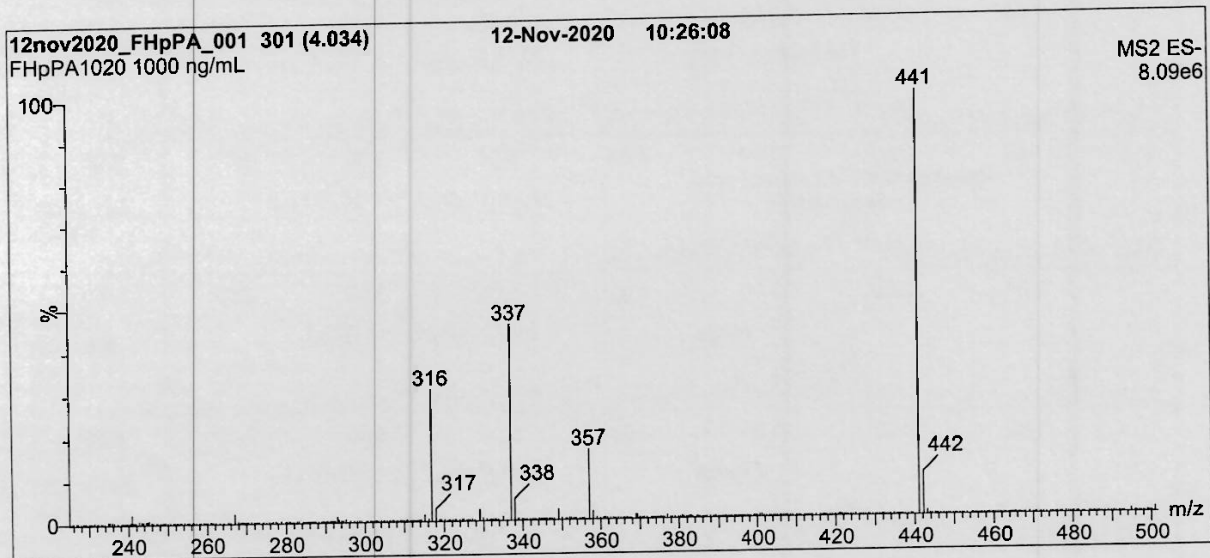
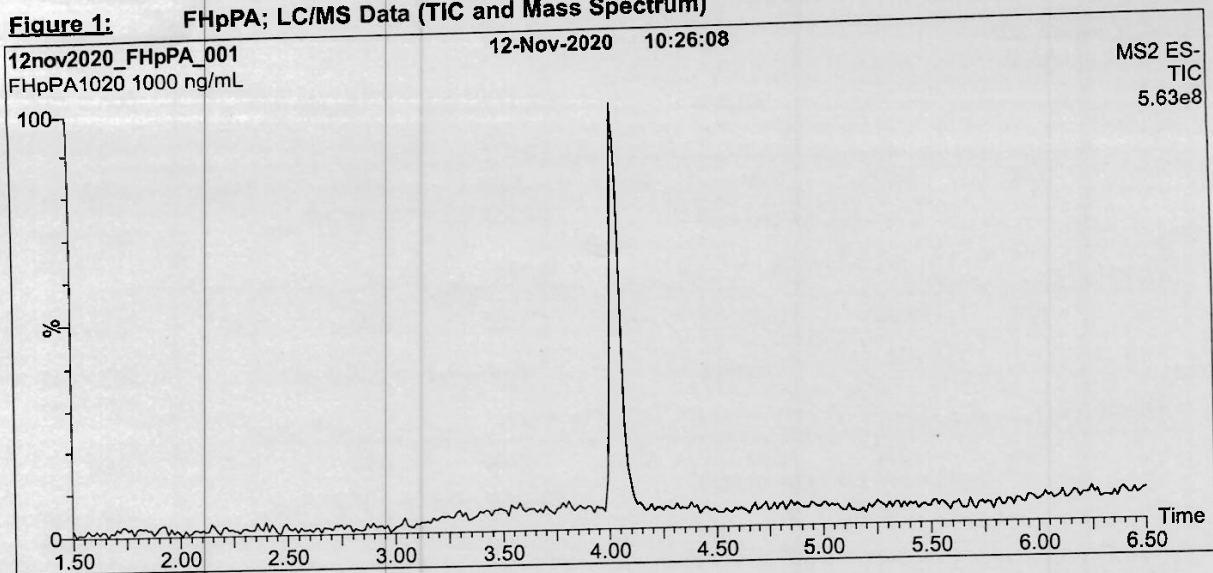
(mm/dd/yyyy)

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

FHpPA1020 (1 of 4)
rev0

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



Conditions for Figure 1:

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

Chromatographic Conditions:

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

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

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

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

FP_rPA(3:3FTCA) 1116 B



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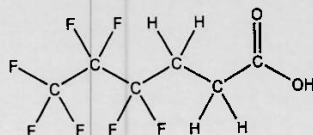
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPrPA0122

STRUCTURE:

CAS #: 356-02-5



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

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

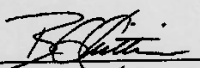
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

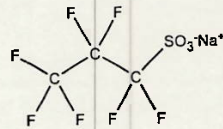
COMPOUND:

Sodium perfluoro-1-propanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₃F₇SO₃Na

MOLECULAR WEIGHT:

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)

46.0 ± 2.3 µg/mL (PFPrS acid)

45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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7/1/22 KA



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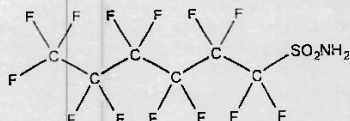
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: FHxSA12211

STRUCTURE:

CAS #: 41997-13-1



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

MOLECULAR WEIGHT: 399.13
SOLVENT(S): Isopropanol

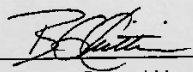
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

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

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Revision# 9, Revised 2020-12-23

FHxSA12211 (1 of 4)
rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FBSA-I

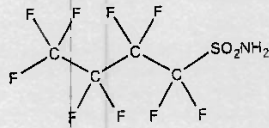
LOT NUMBER: FBSA11211

COMPOUND:

Perfluoro-1-butananesulfonamide

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA:

C₄H₂F₉NO₂S

MOLECULAR WEIGHT: 299.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/10/2021

EXPIRY DATE: (mm/dd/yyyy)

11/10/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 11/10/2021

(mm/dd/yyyy)

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rev0

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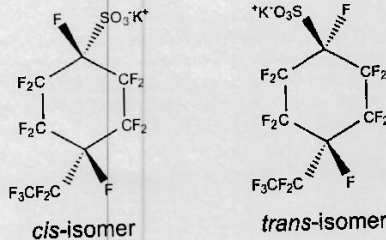
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:
COMPOUND:

PFECHS
Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

LOT NUMBER: PFECHS0222

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:
CONCENTRATION:

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

MOLECULAR WEIGHT: 500.22
SOLVENT(S): Methanol

CHEMICAL PURITY:

LAST TESTED: (mm/dd/yyyy)

03/28/2022

EXPIRY DATE: (mm/dd/yyyy)

03/28/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

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

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11338



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

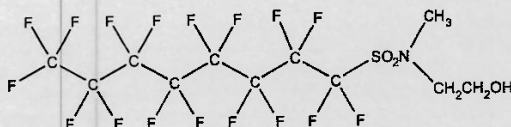
NMeFOSE0522M

COMPOUND:

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

STRUCTURE:**CAS #:**

24448-09-7

**MOLECULAR FORMULA:**C₁₁H₈F₁₇NO₃S**MOLECULAR WEIGHT:**

557.22

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS Data (Full Scan and Mass Spectrum)

Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 06/14/2022

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled PFAS Injection
Standard Solution/Mixture

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

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₆ and C₈). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and mass-labelled perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ¹³C or >94% per ¹⁸O.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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

MPFACHIFIS1122 (1 of 5)
rev0

7.9.1

7

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

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

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



11626
rec'd 01/26/23

CERTIFIED WEIGHT REPORT

Part Number: **64029A**
Lot Number: **110922**
Description: **PFOA - DOD**
28 components
Expiration Date: **110827**
Recommended Storage: **Freezer (0 °C)**
Nominal Concentration (µg/mL): **1.0**
NIST Test ID#: **6UTB**

Solvent(s):
Methanol (1 mM KOH)
2-Propanol
Lot#
102722 (98%)
32500 (2%)

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

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

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.)		
									Free Acid CAS#	OSHA PEL (TWA)	LD50
1. Perfluoro-n-butanoic acid (PFBA)	99542	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A
2. Perfluoro-n-pentanoic acid (PFPeA)	99543	050222	0.02	2.00	0.017	50.3	1.01	0.02	2706-90-3	N/A	N/A
3. Perfluorohexanoic acid (PFHxA)	99199	071122	0.02	2.00	0.017	50.2	1.00	0.02	307-24-4	N/A	N/A
4. Perfluoroheptanoic acid (PFHpA)	99197	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-85-9	N/A	N/A
5. Perfluorooctanoic acid (br-PFOA)*	99202	080522	0.02	2.00	0.017	50.2	1.00	0.02	335-67-1 (L)	N/A	ipr-rat 189mg/kg
6. Perfluorononanoic acid (PFNA)	99200	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-95-1	N/A	N/A
7. Perfluorodecanoic acid (PFDA)	99195	110922	0.02	2.00	0.017	50.0	1.00	0.02	335-76-2	N/A	rat 57mg/kg
8. Perfluoroundecanoic acid (PFUnA)	99205	071522	0.02	2.00	0.017	50.2	1.00	0.02	2058-94-8	N/A	N/A
9. Perfluorododecanoic acid (PFDoA)	99196	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A
10. Perfluorotridecanoic acid (PFTriDA)	99204	110922	0.02	2.00	0.017	50.1	1.00	0.02	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid (PFTeDA)	99203	033022	0.02	2.00	0.017	50.1	1.00	0.02	376-06-7	N/A	N/A
12. Perfluorooctanesulfonamide (FOSA)	3677	FOSA03221	0.02	2.00	0.017	50.0	1.00	0.05	2355-31-9 (L)	N/A	N/A
13. N-Methylperfluorooctanesulfonamidoacetic acid (br-NMeFOSAA)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
14. N-Ethylperfluorooctanesulfonamidoacetic acid (br-NEFOSAA)*	4163	brNEFOSAA1121	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	99194	080522	0.02	2.00	0.017	50.2	1.00	0.02	375-73-5	N/A	N/A
16. Perfluoro-1-pentanesulfonic acid (PFPeS)	99544	032422	0.02	2.00	0.017	50.1	1.00	0.02	2706-91-4	N/A	N/A
17. Perfluorohexanesulfonic acid (br-PFHxS)*	99198	071522	0.02	2.00	0.017	50.2	1.00	0.02	355-46-4 (L)	N/A	N/A
18. Perfluoro-1-heptanesulfonic acid (PFHpS)	3672	LPFHPS0822	0.021	2.10	0.017	47.6	1.00	0.05	375-92-8	N/A	N/A
19. Heptadecafluorooctanesulfonic acid (br-PFOS)*	99201	033022	0.02	2.00	0.017	50.1	1.00	0.02	1763-23-1 (L)	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid (PFNS)	3957	LPFNS1021	0.021	2.10	0.017	48.0	1.01	0.05	68259-12-1	N/A	N/A
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPFDS0222	0.021	2.10	0.017	48.2	1.01	0.05	335-77-3	N/A	N/A
22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	65271	080522	0.02	2.00	0.017	50.2	1.00	0.05	757124-72-4	N/A	N/A
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	65272	071522	0.02	2.00	0.017	50.2	1.00	0.05	29108-34-4	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	3662	82FTS0822	0.021	2.10	0.017	47.9	1.01	0.05	39108-34-4	N/A	N/A
25. 2-(Heptafluoropropoxy)-2,3,3,3-tetrafluoropropanoic acid (HFPO-DA)	99666	080522	0.02	2.00	0.017	50.1	1.00	0.02	13252-13-6	N/A	N/A
26. 11-Chlorooctadecafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUdS)	4165	11ClPF3OUdS0522	0.021	2.12	0.017	47.1	1.00	0.05	763051-92-9	N/A	N/A
27. 9-Chlorooctadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	4164	9ClPF3ONS0522	0.021	2.14	0.017	46.8	1.00	0.05	756426-56-1	N/A	N/A
28. Dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA)	4103	NaDONA0922	0.021	2.12	0.017	47.1	1.00	0.05	919005-14-4	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	080522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	ipr-rat 189mg/kg
Perfluorooctanoic acid (branched isomer)*	99202	080522	0.02	2.00	0.004	0.6	0.01	0.001	335-67-1 (L)	N/A	ipr-rat 189mg/kg
Perfluorohexanesulfonic acid (linear)*	99198	071522	0.02	2.00	0.017	44.2	0.88	0.02	355-46-4 (L)	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	99198	071522	0.02	2.00	0.017	6.0	0.12	0.0021	355-46-4 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (linear)*	99201	033022	0.02	2.00	0.017	38.1	0.76	0.02	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	7.5	0.15	0.003	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	4.0	0.08	0.002	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	0.5	0.010	0.0002	1763-23-1 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	36.0	0.72	0.04	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	6.5	0.13	0.011	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	5.0	0.10	0.005	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	2.5	0.05	0.0009	2355-31-9 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSAA1121	0.02	2.00	0.017	36.6	0.73	0.04	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	7.7	0.15	0.009	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	6.3	0.11	0.005	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	0.4	0.007	0.0006	2991-50-6 (L)	N/A	N/A

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

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

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



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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

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

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) perfluorooctanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ¹³C-labelled components all have chemical purities >98% and isotopic purities of ≥99%. The individual ²H-labelled components all have chemical purities >98% and isotopic purities of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

MPFACHIFES1022 (1 of 7)
 rev0

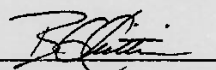
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Table A: MPFAC-HIF-ES; Components and Concentrations (ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₆)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₆)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-(¹³ C ₈)octanoic acid	M8PFOA	500		10
Perfluoro-n-(¹³ C ₉)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- ¹³ C ₁₀)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₁₁)undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- ¹³ C ₁₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₁₄)tetradecanoic acid	M2PFTeDA	250		22
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		17
N-methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		24
N-methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-ethyl-d ₅ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		16
2-(N-methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₃ -ol	d7-N-MeFOSE	5000		20
2-(N-ethyl-d ₅ -perfluoro-1-octanesulfonamido)ethan-d ₅ -ol	d9-N-EtFOSE	5000		23
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By:  Date: 11/24/2022
(mm/dd/yyyy)
 B.G. Chittim, General Manager

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 04/19/23 10:00
Started (mm/dd/yy, 24.00)

Method: EPA 1633 Draft (QSM)

Date/Time: 04/21/23 12:15
Finished (mm/dd/yy, 24.00)

Balance ID: _____

Batch# OP96472 Ext. By: GH

Conc. By: _____ Viald By: _____

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount (ul)	Spike Amount (ul)	Final Volume (ml)	Manifold ID	Comments
OP 96472 MB	/	500	7	N/A	25		5	Ab	
OP 96472 BS	/	500	7						
OP 96472 LLBS	/	500	7			200			
FC5316-1	2	500	7			60			
	2	500	7	N/A	25		5	Ab	
OPFC 5316-1 MS	3	500	7	N/A	25	200	5	Ab	
OP MSD									
OPFC 5316-2 DUP	3	550	7	N/A	25		5	Ab	

Comments:

EIS (SURR) ID: 11741GH Conc: 250-5000 ng/ml Exp. Date: 04/18/24 Inj. By: GH Ver. By: DBL
 SPIKE 1 ID: LMS 2104B Conc: VARIED Exp. Date: 10/14/23 Inj. By: GH Ver. By: DBL
 SPIKE 2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11704A-C Conc: 250-1000 ng/ml Exp. Date: 04/21/24 Inj. By: NG Ver. By: AL

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

Methanol Lot # 224231 1% NH4OH MeOH PF 364 SPE Lot # 6723930-02
 Water Lot# 0196255 0.3M Formic Acid PF 360 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF359 5% Formic Acid _____ Carbon Lot# 160898

Relinquished By: Isabella Vasquez
 Accepted By: NA

Date: 04/19/23
 Date: 04/21/23

7.10.1
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