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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC5783

Sampling Date: 05/02/23



Report to:

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Total number of pages in report: 584



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

Norm Farmer
Technical Director

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

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Sample Summary

AECOM, INC.

Job No: FC5783

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC5783-1	05/02/23	10:05	AYTN 05/03/23	AQ	Ground Water	AF-HDMW225303-WGN01LF-2305W1
FC5783-2	05/02/23	12:15	AYTN 05/03/23	AQ	Ground Water	AF-RHMW10-WGN01LF-2305W1

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC5783

Site: N6274223F0104 RH Fire Suppression System

Report Date: 5/9/2023 4:18:42 PM

On 05/03/2023, 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 4.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5783 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: OP96726

Sample(s) FC5783-1MS, FC5783-2DUP were used as the QC samples indicated.

RPD(s) for Duplicate for PFOSA are outside control limits for sample OP96726-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: FC5783
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 05/02/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC5783-1	AF-HDMW225303-WGN01LF-2305W1					
PFOSA		0.66 J	3.7	1.9	ng/l	EPA DRAFT 1633
FC5783-2	AF-RHMW10-WGN01LF-2305W1					
PFOSA		0.66 J	3.5	1.8	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-HDMW225303-WGN01LF-2305W1		
Lab Sample ID:	FC5783-1	Date Sampled:	05/02/23
Matrix:	AQ - Ground Water	Date Received:	05/03/23
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	4Q44094.D	1	05/08/23 17:32	MV	05/04/23 11:30	OP96726	S4Q638
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.7 U	15	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.4	1.9	0.87	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
335-67-1	Perfluorooctanoic acid	0.93 U	3.7	0.93	0.46	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.7	1.9	0.78	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.7	1.9	0.65	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.7	1.9	0.50	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.7	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.7	1.9	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.8	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	0.66	3.7	1.9	0.62	ng/l	J
31506-32-8	MeFOSA	3.7 U	7.4	3.7	0.93	ng/l	
4151-50-2	EtFOSA	3.7 U	7.4	3.7	0.93	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-HDMW225303-WGN01LF-2305W1		
Lab Sample ID:	FC5783-1	Date Sampled:	05/02/23
Matrix:	AQ - Ground Water	Date Received:	05/03/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

2355-31-9	MeFOSAA	3.7 U	4.6	3.7	0.93	ng/l	
2991-50-6	EtFOSAA	3.7 U	4.6	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

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

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

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

FLUOROTELOMER CARBOXYLIC ACIDS

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

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	100%		20-150%
	13C5-PFPeA	99%		20-150%
	13C5-PFHxA	96%		20-150%
	13C4-PFHpA	98%		20-150%
	13C8-PFOA	94%		20-150%
	13C9-PFNA	82%		20-150%
	13C6-PFDA	83%		20-150%
	13C7-PFUnDA	79%		20-150%
	13C2-PFDoDA	75%		20-150%
	13C2-PFTeDA	64%		20-150%
	13C3-PFBS	92%		20-150%
	13C3-PFHxS	88%		20-150%

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

Report of Analysis

Client Sample ID:	AF-HDMW225303-WGN01LF-2305W1		
Lab Sample ID:	FC5783-1	Date Sampled:	05/02/23
Matrix:	AQ - Ground Water	Date Received:	05/03/23
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	82%		20-150%
	13C8-FOSA	60%		20-150%
	d3-MeFOSA	62%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	75%		20-150%
	d5-EtFOSAA	81%		20-150%
	d7-MeFOSE	50%		20-150%
	d9-EtFOSE	56%		20-150%
	13C2-4:2FTS	86%		20-180%
	13C2-6:2FTS	111%		20-180%
	13C2-8:2FTS	89%		20-180%
	13C3-HFPO-DA	89%		20-150%

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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW10-WGN01LF-2305W1		
Lab Sample ID:	FC5783-2	Date Sampled:	05/02/23
Matrix:	AQ - Ground Water	Date Received:	05/03/23
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	4Q44096.D	1	05/08/23 18:00	MV	05/04/23 11:30	OP96726	S4Q638
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.5 U	14	3.5	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	7.0	1.8	0.82	ng/l	
307-24-4	Perfluorohexanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
375-85-9	Perfluoroheptanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
335-67-1	Perfluorooctanoic acid	0.88 U	3.5	0.88	0.44	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.5	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.5	1.8	0.74	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.5 U	4.4	3.5	0.98	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.5	1.8	0.61	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.5	1.8	0.44	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.5	1.8	0.47	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.5	1.8	0.50	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.5	1.8	0.56	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.5 U	4.4	3.5	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.0 U	18	7.0	2.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.0	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.6	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	0.66	3.5	1.8	0.59	ng/l	J
31506-32-8	MeFOSA	3.5 U	7.0	3.5	0.88	ng/l	
4151-50-2	EtFOSA	3.5 U	7.0	3.5	0.88	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW10-WGN01LF-2305W1		
Lab Sample ID:	FC5783-2	Date Sampled:	05/02/23
Matrix:	AQ - Ground Water	Date Received:	05/03/23
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

PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

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

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

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

FLUOROTELOMER CARBOXYLIC ACIDS

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

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

13C4-PFBA	96%	20-150%
13C5-PFPeA	104%	20-150%
13C5-PFHxA	103%	20-150%
13C4-PFHpA	103%	20-150%
13C8-PFOA	102%	20-150%
13C9-PFNA	93%	20-150%
13C6-PFDA	99%	20-150%
13C7-PFUnDA	92%	20-150%
13C2-PFDoDA	89%	20-150%
13C2-PFTeDA	73%	20-150%
13C3-PFBS	99%	20-150%
13C3-PFHxS	97%	20-150%

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

4.2
4

Report of Analysis

Client Sample ID:	AF-RHMW10-WGN01LF-2305W1	
Lab Sample ID:	FC5783-2	Date Sampled: 05/02/23
Matrix:	AQ - Ground Water	Date Received: 05/03/23
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	100%		20-150%
	13C8-FOSA	59%		20-150%
	d3-MeFOSA	68%		20-150%
	d5-EtFOSA	81%		20-150%
	d3-MeFOSAA	104%		20-150%
	d5-EtFOSAA	103%		20-150%
	d7-MeFOSE	51%		20-150%
	d9-EtFOSE	58%		20-150%
	13C2-4:2FTS	102%		20-180%
	13C2-6:2FTS	109%		20-180%
	13C2-8:2FTS	114%		20-180%
	13C3-HFPO-DA	94%		20-150%

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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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



Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
WWW.SGS.COM

Client / Reporting Information			Project Information			Analytical Information												Matrix Codes								
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System															DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SS - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe								
Address: 1001 Bishop St. ste 1600			Street																							
City: Honolulu State: HI Zip: 96813			City Honolulu State Hawaii																							
Project Contact: Katie Abbott Email: katie.abbott@aecom.com			Project # 60697810																							
Project Manager: Watson Tani Email: watson.tani@aecom.com			Fax #																							
Phone #: 303-796-4624 / 808-954-4512			Client Purchase Order #																							
Sampler(s) Name(s) (Printed) Sampler 1: <i>Andy Yang</i> Sampler 2: <i>Tyler Nihilaw</i>																										
SGS Orlando Sample	Field ID / Point of Collection		DATE		TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	PCB	HCB	PAHs	PCBs	PCPs	PCDDs	PCDFs	PCB		PCP	PCDD	PCDF	MEDIA			PFAS EPA Draft 1633 X	LAB USE ONLY
	①	AF-HDMW225303-WGN01LF-2305W1		5/2/23	1005	AY, TN	GW	3		X																
	<p style="text-align: center;"><i>[Handwritten signature]</i> 5/2/23</p>																									
	Turnaround Time (Business days)						Data Deliverable Information						Comments / Remarks													
	<input type="checkbox"/> 10 Day (Business) <input type="checkbox"/> 7 Day <input checked="" type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day RUSH Other _____ 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"/> FULL T/A (EPA LEVEL 3) <input checked="" type="checkbox"/> EDD'S LABEL VERIFICATION _____						EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWR 016 4908115													
	Relinquished by Sampler/Affiliation 1 <i>Tyler Nihilaw / SP/PC</i>						Date Time: 5/2/23 1:30 Received By/Affiliation 2 <i>[Signature]</i> AECOM						Relinquished By/Affiliation 3 <i>[Signature]</i> AECOM						Date Time: 5/2/23 4:40 Received By/Affiliation 4 <i>United Cargo</i>							
	Relinquished by/Affiliation 5 <i>United Cargo</i>						Date Time: Received By/Affiliation 6 <i>[Signature]</i> 05/03/23						Relinquished By/Affiliation 7 _____						Date Time: Received By/Affiliation 8 _____							
	Lab Use Only: Cooler Temperature (s) Celsius (corrected):																									

PFAS_COCs_ALL.xls Rev 031318

4.4 IL#1





Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6781 FAX: 407-425-0707
www.sgs.com

FC5783

COC #: 2305W1AFSG03

SGS - ORLANDO JOB # :

PAGE 1 OF 1

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes			
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System		 PFAS EPA Draft 1633										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe			
Address: 1001 Bishop St. ste 1600		Street															
City: Honolulu State: HI Zip: 96813		City: Honolulu State: Hawaii															
Project Contact: Katie Abbott Email: katie.abbott@aecom.com Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Project # 60697810															
Phone #: 303-796-4624 / 808-954-4512		Fax #															
Sampler(s) Name(s) (Printed) Sampler 1: <u>Patty Yang</u> Sampler 2: <u>Taka Nishikawa</u>		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	PCII	NHCl	NHCl	NHCl	PICUS		NaOH/ZnAC	DI WATER	MICH
2	AF-RHMMW10-WGN01LF-2305W1	5/2/23	12:15	ATJ	GW	3		X									X
Turnaround Time (Business days)		Data Deliverable Information			Comments / Remarks												
10 Day (Business) 7 Day 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other		Approved By: / Date:		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S			EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWC 016 4908115										
Rush T/A Data Available VIA Email or Lablink		Sample Custody must be documented below each time samples change possession, including courier delivery.															
Relinquished by/Sampler/Affiliation 1 Taka Nishikawa AECOM	Date Time: 5/2/23 13:30	Received By/Affiliation 2 IL	Date Time:	Relinquished By/Affiliation 3 IL	Date Time: 5/2/23 14:40	Received By/Affiliation 4 United Cargo	Date Time:	Relinquished By/Affiliation 5 United Cargo	Date Time:	Received By/Affiliation 6 [Signature]	Date Time: 05/03/23 15:40	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8			
Lab Use Only: Cooler Temperature (s) Celsius (corrected):		http://www.sgs.com/en/terms-and-conditions															

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SGS Sample Receipt Summary

Job Number: FC5783

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 5/3/2023 3:40:00 PM

Delivery Method: United Cargo/Airspace

Airbill #s: United Cargo AWB #: 016-49081115

Therm ID: IR 1;

Therm CF: -0.1;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.5);

Cooler Temps (Corrected) °C: Cooler 1: (4.4);

Cooler Information

Y or N

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

Trip Blank Information

Y or N N/A

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

Sample Information

Y or N N/A

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

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____
 Test Strip Lot #s: pH 0-3 230320 pH 10-12 25BDH07 Other: (Specify) pH 1.0 - 12.0 222221
 Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP

Date: 5/3/2023 3:40:00 PM

Reviewer: CD

Date: 5/4/2023

FC5783: Chain of Custody

Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FC5783
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 05/02/23

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 FC5783

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: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q638-IBLK	4Q44079.D	1	05/08/23	MV	n/a	n/a	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

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

Instrument Blank

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q638-IBLK	4Q44079.D	1	05/08/23	MV	n/a	n/a	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	97% 20-150%
	13C5-PFPeA	107% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	102% 20-150%
	13C6-PFDA	96% 20-150%
	13C7-PFUnDA	99% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	87% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	93% 20-150%
	13C8-PFOS	103% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	101% 20-150%
	d5-EtFOSAA	97% 20-150%
	d7-MeFOSE	85% 20-150%
	d9-EtFOSE	85% 20-150%
	13C2-4:2FTS	102% 20-180%
	13C2-6:2FTS	91% 20-180%
	13C2-8:2FTS	103% 20-180%
	13C3-HFPO-DA	101% 20-150%

6.1.1
6

Continuing Calibration Blank

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q638-ICCB	4Q44090.D	1	05/08/23	MV	n/a	n/a	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

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

Continuing Calibration Blank

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q638-ICCB	4Q44090.D	1	05/08/23	MV	n/a	n/a	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	103% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	99% 20-150%
	13C6-PFDA	107% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	90% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	91% 20-150%
	13C8-PFOS	106% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSA	94% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	108% 20-150%
	d7-MeFOSE	88% 20-150%
	d9-EtFOSE	82% 20-150%
	13C2-4:2FTS	98% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	106% 20-180%
	13C3-HFPO-DA	96% 20-150%

Method Blank Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-MB	4Q44093.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

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

Method Blank Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-MB	4Q44093.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	102% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	99% 20-150%
	13C6-PFDA	100% 20-150%
	13C7-PFUnDA	98% 20-150%
	13C2-PFDoDA	88% 20-150%
	13C2-PFTeDA	71% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	95% 20-150%
	13C8-FOSA	64% 20-150%
	d3-MeFOSA	63% 20-150%
	d5-EtFOSA	68% 20-150%
	d3-MeFOSAA	100% 20-150%
	d5-EtFOSAA	95% 20-150%
	d7-MeFOSE	51% 20-150%
	d9-EtFOSE	56% 20-150%
	13C2-4:2FTS	123% 20-180%
	13C2-6:2FTS	111% 20-180%
	13C2-8:2FTS	105% 20-180%
	13C3-HFPO-DA	93% 20-150%

6.1.3
6

Blank Spike Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-LLBS	4Q44092.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0271	90	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0132	88	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0065	87	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0067	89	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0061	81	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0059	79	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0067	89	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0068	91	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0073	97	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0057	76	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0063	84	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0057	86	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0070	99	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0067	98	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0066	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0066	95	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0064	89	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0067	93	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0058	80	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0240	85	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0253	89	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0266	92	40-150
754-91-6	PFOSA	0.0075	0.0072	96	40-150
31506-32-8	MeFOSA	0.015	0.0139	93	40-150
4151-50-2	EtFOSA	0.015	0.0133	89	40-150
2355-31-9	MeFOSAA	0.0075	0.0059	79	40-150
2991-50-6	EtFOSAA	0.0075	0.0067	89	40-150
24448-09-7	MeFOSE	0.0375	0.0351	94	40-150
1691-99-2	EtFOSE	0.0375	0.0381	102	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0134	89	40-150
919005-14-4	ADONA	0.0142	0.0134	95	40-150
377-73-1	PFMPA	0.015	0.0140	93	40-150
863090-89-5	PFMBA	0.015	0.0134	89	40-150
151772-58-6	NFDHA	0.015	0.0131	87	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0133	95	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0127	90	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-LLBS	4Q44092.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0115	86	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0250	67	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.150	80	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.164	87	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	107%	20-150%
	13C5-PFPeA	109%	20-150%
	13C5-PFHxA	109%	20-150%
	13C4-PFHpA	111%	20-150%
	13C8-PFOA	107%	20-150%
	13C9-PFNA	109%	20-150%
	13C6-PFDA	106%	20-150%
	13C7-PFUnDA	102%	20-150%
	13C2-PFDoDA	93%	20-150%
	13C2-PFTeDA	77%	20-150%
	13C3-PFBS	101%	20-150%
	13C3-PFHxS	93%	20-150%
	13C8-PFOS	104%	20-150%
	13C8-FOSA	62%	20-150%
	d3-MeFOSA	60%	20-150%
	d5-EtFOSA	64%	20-150%
	d3-MeFOSAA	106%	20-150%
	d5-EtFOSAA	102%	20-150%
	d7-MeFOSE	45%	20-150%
	d9-EtFOSE	52%	20-150%
	13C2-4:2FTS	113%	20-180%
	13C2-6:2FTS	104%	20-180%
	13C2-8:2FTS	101%	20-180%
	13C3-HFPO-DA	100%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-BS	4Q44091.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0887	89	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0444	89	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0214	86	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0233	93	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0223	89	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0214	86	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0228	91	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0233	93	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0229	92	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0213	85	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0222	89	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0192	87	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0211	90	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0202	88	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0220	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0213	92	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0201	84	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0203	84	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0192	79	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0813	87	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0877	92	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0978	102	40-150
754-91-6	PFOSA	0.025	0.0217	87	40-150
31506-32-8	MeFOSA	0.05	0.0450	90	40-150
4151-50-2	EtFOSA	0.05	0.0450	90	40-150
2355-31-9	MeFOSAA	0.025	0.0211	84	40-150
2991-50-6	EtFOSAA	0.025	0.0223	89	40-150
24448-09-7	MeFOSE	0.125	0.114	91	40-150
1691-99-2	EtFOSE	0.125	0.122	98	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0448	90	40-150
919005-14-4	ADONA	0.0473	0.0441	93	40-150
377-73-1	PFMPA	0.05	0.0469	94	40-150
863090-89-5	PFMBA	0.05	0.0449	90	40-150
151772-58-6	NFDHA	0.05	0.0396	79	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0429	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0416	88	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-BS	4Q44091.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0390	88	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0928	74	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.540	86	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.575	92	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	105%	20-150%
	13C5-PFPeA	100%	20-150%
	13C5-PFHxA	100%	20-150%
	13C4-PFHpA	97%	20-150%
	13C8-PFOA	104%	20-150%
	13C9-PFNA	101%	20-150%
	13C6-PFDA	103%	20-150%
	13C7-PFUnDA	99%	20-150%
	13C2-PFDoDA	94%	20-150%
	13C2-PFTeDA	83%	20-150%
	13C3-PFBS	97%	20-150%
	13C3-PFHxS	94%	20-150%
	13C8-PFOS	99%	20-150%
	13C8-FOSA	70%	20-150%
	d3-MeFOSA	66%	20-150%
	d5-EtFOSA	71%	20-150%
	d3-MeFOSAA	98%	20-150%
	d5-EtFOSAA	98%	20-150%
	d7-MeFOSE	53%	20-150%
	d9-EtFOSE	59%	20-150%
	13C2-4:2FTS	100%	20-180%
	13C2-6:2FTS	97%	20-180%
	13C2-8:2FTS	87%	20-180%
	13C3-HFPO-DA	94%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-MS	4Q44095.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638
FC5783-1	4Q44094.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	FC5783-1 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.1	0.0889	89	40-150
2706-90-3	Perfluoropentanoic acid	0.0074 U	0.05	0.0445	89	40-150
307-24-4	Perfluorohexanoic acid	0.0037 U	0.025	0.0219	88	40-150
375-85-9	Perfluoroheptanoic acid	0.0037 U	0.025	0.0216	86	40-150
335-67-1	Perfluorooctanoic acid	0.0037 U	0.025	0.0223	89	40-150
375-95-1	Perfluorononanoic acid	0.0037 U	0.025	0.0213	85	40-150
335-76-2	Perfluorodecanoic acid	0.0037 U	0.025	0.0231	92	40-150
2058-94-8	Perfluoroundecanoic acid	0.0037 U	0.025	0.0226	90	40-150
307-55-1	Perfluorododecanoic acid	0.0037 U	0.025	0.0225	90	40-150
72629-94-8	Perfluorotridecanoic acid	0.0037 U	0.025	0.0222	89	40-150
376-06-7	Perfluorotetradecanoic acid	0.0037 U	0.025	0.0232	93	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	0.0222	0.0189	85	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	0.0235	0.0210	89	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	0.0229	0.0202	88	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	0.0238	0.0253	106	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0037 U	0.0232	0.0220	95	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	0.0241	0.0209	87	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	0.0241	0.0210	87	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	0.0243	0.0183	75	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0938	0.0828	88	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.095	0.0921	97	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.096	0.0959	100	40-150
754-91-6	PFOSA	0.00066 J	0.025	0.0246	96	40-150
31506-32-8	MeFOSA	0.0074 U	0.05	0.0436	87	40-150
4151-50-2	EtFOSA	0.0074 U	0.05	0.0453	91	40-150
2355-31-9	MeFOSAA	0.0046 U	0.025	0.0220	88	40-150
2991-50-6	EtFOSAA	0.0046 U	0.025	0.0234	94	40-150
24448-09-7	MeFOSE	0.037 U	0.125	0.109	87	40-150
1691-99-2	EtFOSE	0.037 U	0.125	0.122	98	40-150
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.05	0.0446	89	40-150
919005-14-4	ADONA	0.0074 U	0.0473	0.0446	94	40-150
377-73-1	PFMPA	0.0074 U	0.05	0.0460	92	40-150
863090-89-5	PFMBA	0.0074 U	0.05	0.0453	91	40-150
151772-58-6	NFDHA	0.0074 U	0.05	0.0406	81	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	0.0468	0.0403	86	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	0.0473	0.0355	75	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-MS	4Q44095.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638
FC5783-1	4Q44094.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	FC5783-1 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0074 U	0.0445	0.0405	91	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.125	0.0885	71	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.093 U	0.625	0.538	86	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.093 U	0.625	0.568	91	40-150

CAS No.	ID Standard Recoveries	MS	FC5783-1	Limits
	13C4-PFBA	105%	100%	20-150%
	13C5-PFPeA	106%	99%	20-150%
	13C5-PFHxA	103%	96%	20-150%
	13C4-PFHpA	104%	98%	20-150%
	13C8-PFOA	105%	94%	20-150%
	13C9-PFNA	91%	82%	20-150%
	13C6-PFDA	89%	83%	20-150%
	13C7-PFUnDA	88%	79%	20-150%
	13C2-PFDoDA	80%	75%	20-150%
	13C2-PFTeDA	69%	64%	20-150%
	13C3-PFBS	106%	92%	20-150%
	13C3-PFHxS	99%	88%	20-150%
	13C8-PFOS	84%	82%	20-150%
	13C8-FOSA	67%	60%	20-150%
	d3-MeFOSA	74%	62%	20-150%
	d5-EtFOSA	77%	72%	20-150%
	d3-MeFOSAA	91%	75%	20-150%
	d5-EtFOSAA	88%	81%	20-150%
	d7-MeFOSE	57%	50%	20-150%
	d9-EtFOSE	62%	56%	20-150%
	13C2-4:2FTS	106%	86%	20-180%
	13C2-6:2FTS	102%	111%	20-180%
	13C2-8:2FTS	96%	89%	20-180%
	13C3-HFPO-DA	99%	89%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-DUP	4Q44097.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638
FC5783-2	4Q44096.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	FC5783-2 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.014 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0070 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0035 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0035 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0035 U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0035 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0035 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0035 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0035 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0035 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0035 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0035 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0044 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0035 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0035 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0035 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0035 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0035 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0044 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	ND		nc	30
754-91-6	PFOSA	0.00066 J	ND		200*	30
31506-32-8	MeFOSA	0.0070 U	ND		nc	30
4151-50-2	EtFOSA	0.0070 U	ND		nc	30
2355-31-9	MeFOSAA	0.0044 U	ND		nc	30
2991-50-6	EtFOSAA	0.0044 U	ND		nc	30
24448-09-7	MeFOSE	0.035 U	ND		nc	30
1691-99-2	EtFOSE	0.035 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0035 U	ND		nc	30
919005-14-4	ADONA	0.0070 U	ND		nc	30
377-73-1	PFMPA	0.0070 U	ND		nc	30
863090-89-5	PFMBA	0.0070 U	ND		nc	30
151772-58-6	NFDHA	0.0070 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0070 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0070 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96726-DUP	4Q44097.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638
FC5783-2	4Q44096.D	1	05/08/23	MV	05/04/23	OP96726	S4Q638

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5783-1, FC5783-2

CAS No.	Compound	FC5783-2 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7PFEESA		0.0070 U	ND			nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	ND			nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.088 U	ND			nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.088 U	ND			nc	30

CAS No.	ID Standard Recoveries	DUP	FC5783-2	Limits
	13C4-PFBA	98%	96%	20-150%
	13C5-PFPeA	102%	104%	20-150%
	13C5-PFHxA	102%	103%	20-150%
	13C4-PFHpA	102%	103%	20-150%
	13C8-PFOA	98%	102%	20-150%
	13C9-PFNA	93%	93%	20-150%
	13C6-PFDA	86%	99%	20-150%
	13C7-PFUnDA	81%	92%	20-150%
	13C2-PFDoDA	78%	89%	20-150%
	13C2-PFTeDA	72%	73%	20-150%
	13C3-PFBS	93%	99%	20-150%
	13C3-PFHxS	90%	97%	20-150%
	13C8-PFOS	92%	100%	20-150%
	13C8-FOSA	69%	59%	20-150%
	d3-MeFOSA	71%	68%	20-150%
	d5-EtFOSA	73%	81%	20-150%
	d3-MeFOSAA	99%	104%	20-150%
	d5-EtFOSAA	90%	103%	20-150%
	d7-MeFOSE	56%	51%	20-150%
	d9-EtFOSE	61%	58%	20-150%
	13C2-4:2FTS	101%	102%	20-180%
	13C2-6:2FTS	107%	109%	20-180%
	13C2-8:2FTS	87%	114%	20-180%
	13C3-HFPO-DA	91%	94%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q638-CC634	Injection Date:	05/08/23
Lab File ID:	4Q44089.D	Injection Time:	16:22
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	68618	2.93	45028	5.54	53770	7.12	24678	7.68	18492	8.18
Check Std ^c	70948	2.90	42788	5.56	53858	7.16	25153	7.71	18255	8.22
Upper Limit ^d	137236	3.30	90056	5.96	107540	7.56	49356	8.11	36984	8.62
Lower Limit ^e	20585	2.50	13508	5.16	16131	6.76	7403	7.31	5548	7.82

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
S4Q638-ICCB	71049	2.92	43555	5.56	52664	7.16	25037	7.71	17761	8.22	1
OP96726-BS	62771	2.92	40895	5.56	47607	7.16	22559	7.71	16331	8.22	1
OP96726-LLBS	62185	2.92	38046	5.56	46085	7.16	22309	7.71	16083	8.22	1
OP96726-MB	64159	2.92	40269	5.56	47767	7.16	22694	7.71	16108	8.22	1
FC5783-1	66252	2.92	42042	5.56	50462	7.16	24532	7.72	16979	8.22	1
OP96726-MS	63682	2.92	39752	5.56	45832	7.16	23083	7.72	16302	8.22	1
FC5783-2	64585	2.92	40013	5.56	48187	7.16	23914	7.72	16990	8.22	1
OP96726-DUP	63461	2.92	39321	5.56	47343	7.16	22957	7.72	16822	8.22	1

- IS 1 = 13C3-PFBA
- IS 2 = 13C2-PFHxA
- IS 3 = 13C4-PFOA
- IS 4 = 13C5-PFNA
- IS 5 = 13C2-PFDA

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q634-ICC634 4Q43887.D 05/03/23 11:54. 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: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q638-CC634	Injection Date:	05/08/23
Lab File ID:	4Q44089.D	Injection Time:	16:22
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5105	7.23	11432	8.33
Check Std ^c	5417	7.25	11968	8.35
Upper Limit ^d	10210	7.65	22864	8.75
Lower Limit ^e	1532	6.85	3430	7.95

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q638-ICCB	5219	7.25	10787	8.35	1
OP96726-BS	4857	7.25	10403	8.35	1
OP96726-LLBS	4586	7.25	9832	8.37	1
OP96726-MB	4475	7.25	10115	8.37	1
FC5783-1	4975	7.25	11065	8.37	1
OP96726-MS	4500	7.25	10242	8.37	1
FC5783-2	4770	7.25	10185	8.37	1
OP96726-DUP	4772	7.25	10162	8.37	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q634-ICC634 4Q43887.D 05/03/23 11:54. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
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TDCA Retention Time Check

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q634-RT	Injection Date:	05/03/23
Lab File ID:	4Q43881.D	Injection Time:	10:23
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.305	--	--
TDCA	6.847	1.458	1.000
TCDCA	6.686	1.619	1.000
TUDCA	5.842	2.463	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q634-IC634	4Q43883.D	05/03/23	10:58	00:35	Mass Calibration Verification
S4Q634-IC634	4Q43884.D	05/03/23	11:12	00:49	Initial cal 1
S4Q634-IC634	4Q43885.D	05/03/23	11:26	01:03	Initial cal 2
S4Q634-IC634	4Q43886.D	05/03/23	11:40	01:17	Initial cal 3
S4Q634-ICC634	4Q43887.D	05/03/23	11:54	01:31	Initial cal 4
S4Q634-IC634	4Q43888.D	05/03/23	12:08	01:45	Initial cal 5
S4Q634-IC634	4Q43889.D	05/03/23	12:22	01:59	Initial cal 6
S4Q634-IC634	4Q43890.D	05/03/23	12:36	02:13	Initial cal 7
S4Q634-IC634	4Q43891.D	05/03/23	12:50	02:27	Initial cal 8
S4Q634-IBLK	4Q43892.D	05/03/23	13:04	02:41	Instrument Blank
S4Q634-IBLK	4Q43892.D	05/03/23	13:04	02:41	Instrument Blank
S4Q634-ICV634	4Q43894.D	05/03/23	13:20	02:57	Initial cal verification 20
S4Q634-ICV634	4Q43895.D	05/03/23	13:35	03:12	Initial cal verification 4
S4Q634-CC634	4Q43897.D	05/03/23	13:51	03:28	Continuing cal 1.0LL
OP96662-BS	4Q43898.D	05/03/23	14:05	03:42	Blank Spike
OP96662-LLBS	4Q43899.D	05/03/23	14:19	03:56	Blank Spike
OP96662-MB	4Q43900.D	05/03/23	14:33	04:10	Method Blank
ZZZZZZ	4Q43901.D	05/03/23	14:47	04:24	(unrelated sample)
ZZZZZZ	4Q43902.D	05/03/23	15:01	04:38	(unrelated sample)
ZZZZZZ	4Q43903.D	05/03/23	15:15	04:52	(unrelated sample)
ZZZZZZ	4Q43904.D	05/03/23	15:29	05:06	(unrelated sample)
FC5685-3	4Q43905.D	05/03/23	15:43	05:20	(used for QC only; not part of job FC5783)
OP96662-MS	4Q43906.D	05/03/23	15:57	05:34	Matrix Spike
S4Q634-CC634	4Q43907.D	05/03/23	16:11	05:48	Continuing cal 4
S4Q634-ICCB	4Q43908.D	05/03/23	16:25	06:02	Continuing Calibration Blank
FC5685-4	4Q43909.D	05/03/23	16:39	06:16	(used for QC only; not part of job FC5783)
OP96662-DUP	4Q43910.D	05/03/23	16:54	06:31	Duplicate
ZZZZZZ	4Q43911.D	05/03/23	17:08	06:45	(unrelated sample)
OP96659-BS	4Q43912.D	05/03/23	17:22	06:59	Blank Spike
OP96659-LLBS	4Q43913.D	05/03/23	17:36	07:13	Blank Spike
OP96659-MB	4Q43914.D	05/03/23	17:50	07:27	Method Blank
ZZZZZZ	4Q43916.D	05/03/23	18:18	07:55	(unrelated sample)
S4Q634-CC634	4Q43917.D	05/03/23	18:32	08:09	Continuing cal 4
S4Q634-ICCB	4Q43918.D	05/03/23	18:46	08:23	Continuing Calibration Blank

TDCA Retention Time Check

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q634-RT	Injection Date:	05/03/23
Lab File ID:	4Q43881.D	Injection Time:	10:23
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q634-ICCB	4Q43918.D	05/03/23	18:46	08:23	Continuing Calibration Blank
ZZZZZZ	4Q43919.D	05/03/23	19:00	08:37	(unrelated sample)
ZZZZZZ	4Q43920.D	05/03/23	19:14	08:51	(unrelated sample)
ZZZZZZ	4Q43921.D	05/03/23	19:28	09:05	(unrelated sample)
ZZZZZZ	4Q43922.D	05/03/23	19:42	09:19	(unrelated sample)
OP96657-BS	4Q43923.D	05/03/23	19:56	09:33	Blank Spike
OP96657-LLBS	4Q43924.D	05/03/23	20:10	09:47	Blank Spike
OP96657-MB	4Q43925.D	05/03/23	20:24	10:01	Method Blank
ZZZZZZ	4Q43926.D	05/03/23	20:38	10:15	(unrelated sample)
S4Q634-CC634	4Q43927.D	05/03/23	20:53	10:30	Continuing cal 4
S4Q634-ICCB	4Q43928.D	05/03/23	21:07	10:44	Continuing Calibration Blank
S4Q634-ICCB	4Q43928.D	05/03/23	21:07	10:44	Continuing Calibration Blank
FC5371-11	4Q43929.D	05/03/23	21:21	10:58	(used for QC only; not part of job FC5783)
OP96657-MS	4Q43930.D	05/03/23	21:35	11:12	Matrix Spike
OP96657-MSD	4Q43931.D	05/03/23	21:49	11:26	Matrix Spike Duplicate
ZZZZZZ	4Q43932.D	05/03/23	22:03	11:40	(unrelated sample)
ZZZZZZ	4Q43933.D	05/03/23	22:17	11:54	(unrelated sample)
ZZZZZZ	4Q43935.D	05/03/23	22:45	12:22	(unrelated sample)
ZZZZZZ	4Q43936.D	05/03/23	22:59	12:36	(unrelated sample)
ZZZZZZ	4Q43938.D	05/03/23	23:27	13:04	(unrelated sample)
S4Q634-CC634	4Q43939.D	05/03/23	23:41	13:18	Continuing cal 4
S4Q634-ICCB	4Q43940.D	05/03/23	23:55	13:32	Continuing Calibration Blank
S4Q634-ICCB	4Q43940.D	05/03/23	23:55	13:32	Continuing Calibration Blank
ZZZZZZ	4Q43941.D	05/04/23	00:09	13:46	(unrelated sample)
FC5371-20	4Q43942.D	05/04/23	00:23	14:00	(used for QC only; not part of job FC5783)
OP96657-MS2	4Q43943.D	05/04/23	00:37	14:14	Matrix Spike
OP96657-MSD2	4Q43944.D	05/04/23	00:51	14:28	Matrix Spike Duplicate
ZZZZZZ	4Q43945.D	05/04/23	01:05	14:42	(unrelated sample)
S4Q634-ECC634	4Q43946.D	05/04/23	01:19	14:56	Ending cal 4
S4Q634-ICCB	4Q43947.D	05/04/23	01:34	15:11	Continuing Calibration Blank
S4Q634-ICCB	4Q43947.D	05/04/23	01:34	15:11	Continuing Calibration Blank

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TDCA Retention Time Check

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q638-RT	Injection Date:	05/08/23
Lab File ID:	4Q44076.D	Injection Time:	13:19
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.330	--	--
TDCA	6.860	1.470	1.000
TCDCA	6.710	1.620	1.000
TUDCA	5.867	2.463	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q638-IBLK	4Q44079.D	05/08/23	14:01	00:42	Instrument Blank
S4Q638-IBLK	4Q44079.D	05/08/23	14:01	00:42	Instrument Blank
S4Q638-CC634	4Q44080.D	05/08/23	14:15	00:56	Continuing cal 4
S4Q638-CC634	4Q44081.D	05/08/23	14:29	01:10	Continuing cal 1.0LL
ZZZZZZ	4Q44082.D	05/08/23	14:43	01:24	(unrelated sample)
ZZZZZZ	4Q44083.D	05/08/23	14:57	01:38	(unrelated sample)
ZZZZZZ	4Q44084.D	05/08/23	15:11	01:52	(unrelated sample)
JD64313-4A	4Q44085.D	05/08/23	15:25	02:06	(used for QC only; not part of job FC5783)
OP96681-MS	4Q44086.D	05/08/23	15:39	02:20	Matrix Spike
JD64313-5A	4Q44087.D	05/08/23	15:53	02:34	(used for QC only; not part of job FC5783)
S4Q638-CC634	4Q44089.D	05/08/23	16:22	03:03	Continuing cal 4
S4Q638-ICCB	4Q44090.D	05/08/23	16:36	03:17	Continuing Calibration Blank
OP96726-BS	4Q44091.D	05/08/23	16:50	03:31	Blank Spike
OP96726-LLBS	4Q44092.D	05/08/23	17:04	03:45	Blank Spike
OP96726-MB	4Q44093.D	05/08/23	17:18	03:59	Method Blank
FC5783-1	4Q44094.D	05/08/23	17:32	04:13	AF-HDMW225303-WGN01LF-2305W1
OP96726-MS	4Q44095.D	05/08/23	17:46	04:27	Matrix Spike
FC5783-2	4Q44096.D	05/08/23	18:00	04:41	AF-RHMW10-WGN01LF-2305W1
OP96726-DUP	4Q44097.D	05/08/23	18:14	04:55	Duplicate
S4Q638-CC634	4Q44098.D	05/08/23	18:28	05:09	Continuing cal 4
S4Q638-ICCB	4Q44099.D	05/08/23	18:42	05:23	Continuing Calibration Blank
OP96722-BS	4Q44100.D	05/08/23	18:56	05:37	Blank Spike
OP96722-LLBS	4Q44101.D	05/08/23	19:10	05:51	Blank Spike
OP96722-MB	4Q44102.D	05/08/23	19:24	06:05	Method Blank
FC5447-2	4Q44103.D	05/08/23	19:38	06:19	(used for QC only; not part of job FC5783)
OP96722-MS	4Q44104.D	05/08/23	19:52	06:33	Matrix Spike
OP96722-MSD	4Q44105.D	05/08/23	20:06	06:47	Matrix Spike Duplicate
ZZZZZZ	4Q44106.D	05/08/23	20:21	07:02	(unrelated sample)
ZZZZZZ	4Q44107.D	05/08/23	20:35	07:16	(unrelated sample)
ZZZZZZ	4Q44108.D	05/08/23	20:49	07:30	(unrelated sample)
ZZZZZZ	4Q44109.D	05/08/23	21:03	07:44	(unrelated sample)
S4Q638-CC634	4Q44110.D	05/08/23	21:17	07:58	Continuing cal 4
S4Q638-ICCB	4Q44111.D	05/08/23	21:31	08:12	Continuing Calibration Blank
ZZZZZZ	4Q44112.D	05/08/23	21:45	08:26	(unrelated sample)

TDCA Retention Time Check

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q638-RT	Injection Date:	05/08/23
Lab File ID:	4Q44076.D	Injection Time:	13:19
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q44113.D	05/08/23	21:59	08:40	(unrelated sample)
ZZZZZZ	4Q44114.D	05/08/23	22:13	08:54	(unrelated sample)
ZZZZZZ	4Q44115.D	05/08/23	22:27	09:08	(unrelated sample)
ZZZZZZ	4Q44116.D	05/08/23	22:41	09:22	(unrelated sample)
ZZZZZZ	4Q44117.D	05/08/23	22:55	09:36	(unrelated sample)
ZZZZZZ	4Q44118.D	05/08/23	23:09	09:50	(unrelated sample)
ZZZZZZ	4Q44119.D	05/08/23	23:23	10:04	(unrelated sample)
ZZZZZZ	4Q44120.D	05/08/23	23:37	10:18	(unrelated sample)
ZZZZZZ	4Q44121.D	05/08/23	23:51	10:32	(unrelated sample)
S4Q638-CC634	4Q44122.D	05/09/23	00:05	10:46	Continuing cal 4
S4Q638-CC634	4Q44123.D	05/09/23	00:19	11:00	Continuing cal 1.0LL
S4Q638-ICCB	4Q44124.D	05/09/23	00:34	11:15	Continuing Calibration Blank
ZZZZZZ	4Q44125.D	05/09/23	00:48	11:29	(unrelated sample)
ZZZZZZ	4Q44126.D	05/09/23	01:02	11:43	(unrelated sample)
ZZZZZZ	4Q44127.D	05/09/23	01:16	11:57	(unrelated sample)
ZZZZZZ	4Q44128.D	05/09/23	01:30	12:11	(unrelated sample)
S4Q638-ECC634	4Q44129.D	05/09/23	01:44	12:25	Ending cal 4
S4Q638-ICCB	4Q44130.D	05/09/23	01:58	12:39	Continuing Calibration Blank

6.6.2
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Ion Ratio Summary

Job Number: FC5783
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q638	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios FOSA
S4Q634-ICC634	4Q43887.D	3.3
FC5783-1	4Q44094.D	.6
FC5783-2	4Q44096.D	4.7

Isotope Dilution Standard Recovery Summary

Job Number: FC5783
 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
FC5783-1	4Q44094.D	100	99	96	98	94	82	83	79
FC5783-2	4Q44096.D	96	104	103	103	102	93	99	92
OP96726-BS	4Q44091.D	105	100	100	97	104	101	103	99
OP96726-DUP	4Q44097.D	98	102	102	102	98	93	86	81
OP96726-LLBS	4Q44092.D	107	109	109	111	107	109	106	102
OP96726-MB	4Q44093.D	103	102	100	102	102	99	100	98
OP96726-MS	4Q44095.D	105	106	103	104	105	91	89	88
S4Q638-IBLK	4Q44079.D	97	107	99	102	101	102	96	99
S4Q638-ICCB	4Q44090.D	100	103	100	102	100	99	107	104

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: FC5783
 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
FC5783-1	4Q44094.D	75	64	92	88	82	60	62	72
FC5783-2	4Q44096.D	89	73	99	97	100	59	68	81
OP96726-BS	4Q44091.D	94	83	97	94	99	70	66	71
OP96726-DUP	4Q44097.D	78	72	93	90	92	69	71	73
OP96726-LLBS	4Q44092.D	93	77	101	93	104	62	60	64
OP96726-MB	4Q44093.D	88	71	101	98	95	64	63	68
OP96726-MS	4Q44095.D	80	69	106	99	84	67	74	77
S4Q638-IBLK	4Q44079.D	97	87	101	93	103	99	97	99
S4Q638-ICCB	4Q44090.D	101	90	94	91	106	99	94	99

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%

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Isotope Dilution Standard Recovery Summary

Job Number: FC5783
 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
FC5783-1	4Q44094.D	75	81	50	56	86	111	89	89
FC5783-2	4Q44096.D	104	103	51	58	102	109	114	94
OP96726-BS	4Q44091.D	98	98	53	59	100	97	87	94
OP96726-DUP	4Q44097.D	99	90	56	61	101	107	87	91
OP96726-LLBS	4Q44092.D	106	102	45	52	113	104	101	100
OP96726-MB	4Q44093.D	100	95	51	56	123	111	105	93
OP96726-MS	4Q44095.D	91	88	57	62	106	102	96	99
S4Q638-IBLK	4Q44079.D	101	97	85	85	102	91	103	101
S4Q638-ICCB	4Q44090.D	105	108	88	82	98	107	106	96

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	20-180%
S22 = 13C2-6:2FTS	20-180%
S23 = 13C2-8:2FTS	20-180%
S24 = 13C3-HFPO-DA	20-150%

6.8.1

6

Initial Calibration Summary

Job Number: FC5783
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICC634
Lab FileID: 4Q43887.D

Initial Calibration Report

Method Path	D:\MassHunter\methods	Level Name	Level Last Update Time								
Method File	1633_050323_S4Q634.quantmethod.xml	1	5/3/2023 11:12:11 AM								
Batch Name	D:\MassHunter\Data\050323_1633_S4Q634\QuantResults\4q634.batch.bin	2	5/3/2023 2:36:06 PM								
Last Calib Update	5/3/2023 2:36:06 PM	3	5/3/2023 2:36:06 PM								
		4	5/3/2023 2:36:06 PM								
		5	5/3/2023 2:36:06 PM								
		6	5/3/2023 2:36:06 PM								
		7	5/3/2023 2:36:06 PM								
		8	5/3/2023 2:36:06 PM								
Calibration Files	Acq. Date-Time	8	Avg RF	%RSD							
D:\MassHunter\Data\050323_1633_S4Q634\4Q43884.d	5/3/2023 11:12:11 AM	0.2537	0.2602	0.2588	0.2885	0.2970	0.2678	6.711			
D:\MassHunter\Data\050323_1633_S4Q634\4Q43885.d	5/3/2023 11:26:14 AM	0.6080	0.6163	0.6026	0.6527	0.6921	0.6288	6.286			
D:\MassHunter\Data\050323_1633_S4Q634\4Q43886.d	5/3/2023 11:40:17 AM	0.0503	0.0510	0.0495	0.0540	0.0565	0.0529	9.003			
D:\MassHunter\Data\050323_1633_S4Q634\4Q43887.d	5/3/2023 11:54:24 AM	1.1491	1.1980	1.1723	1.2688	1.2816	1.2030	6.035			
D:\MassHunter\Data\050323_1633_S4Q634\4Q43888.d	5/3/2023 12:08:27 PM	0.6512	0.6538	0.6369	0.6931	0.7034	0.6714	4.441			
D:\MassHunter\Data\050323_1633_S4Q634\4Q43889.d	5/3/2023 12:22:30 PM	0.0720	0.0724	0.0661	0.0716	0.0707	0.0699	4.965			
D:\MassHunter\Data\050323_1633_S4Q634\4Q43890.d	5/3/2023 12:36:33 PM	0.9479	0.9673	0.9184	1.0146	1.0493	0.9796	6.279			
D:\MassHunter\Data\050323_1633_S4Q634\4Q43891.d	5/3/2023 12:50:36 PM	0.7073	0.7334	0.6927	0.7903	0.7981	0.7414	6.397			
Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M4-PFBA	Avg RF	0.2504	0.2538	0.2537	0.2602	0.2588	0.2798	0.2885	0.2970	0.2678	6.711
T PFBA											
I M5-PFPeA	Avg RF	0.5750	0.6115	0.6080	0.6163	0.6026	0.6527	0.6722	0.6921	0.6288	6.286
T 3:3FTCA	Avg RF	0.0478	0.0517	0.0503	0.0510	0.0495	0.0540	0.0565	0.0626	0.0529	9.003
T PFPeA	Avg RF	1.0898	1.1688	1.1491	1.1980	1.1723	1.2688	1.2816	1.2954	1.2030	6.035
T PFMBa	Avg RF	0.6517	0.6614	0.6512	0.6538	0.6369	0.6931	0.7034	0.7197	0.6714	4.441
I M5-PFHxA	Avg RF	0.0674	0.0747	0.0720	0.0724	0.0661	0.0716	0.0707	0.0647	0.0699	4.965
T NFDHA	Avg RF	0.9533	0.9081	0.9479	0.9673	0.9184	1.0146	1.0493	1.0780	0.9796	6.279
T PFHxA	Avg RF	0.6957	0.7073	0.7124	0.7334	0.6927	0.7903	0.7981	0.8015	0.7414	6.397
T PFEEsA	Avg RF	0.1206	0.1232	0.1300	0.1350	0.1268	0.1392	0.1434	0.1450	0.1329	6.915
T 5:3FTCA	Avg RF	0.0620	0.0637	0.0665	0.0702	0.0670	0.0722	0.0752	0.0756	0.0691	7.359
T 7:3FTCA											
I M4-PFHpA	Avg RF	1.3498	1.5110	1.5459	1.5452	1.5753	1.7086	1.6655	1.7394	1.5801	7.913
T PFHpA											
I M8-PFOA	Avg RF	1.3945	1.3613	1.3697	1.5034	1.3513	1.5014	1.5441	1.5125	1.4423	5.553
T PFOA											
I M9-PFNA	Avg RF	0.9948	0.9058	0.8803	0.8935	0.9013	0.9685	0.9454	0.9220	0.9264	4.296
T PFNA											
I M6-PFDA	Avg RF	0.8758	0.8681	0.9454	0.9120	0.9343	1.0187	0.9840	1.0488	0.9484	6.852
T PFDA											
I M7-PFUnDA	Avg RF	0.7913	0.7501	0.8195	0.8568	0.8063	0.9016	0.9386	0.9278	0.8490	8.072
T PFUnDA											
I M2-PFDODA											



Initial Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICC634
 Lab FileID: 4Q43887.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	1.0517	0.9317	0.9713	0.9511	0.9772	1.0612	1.0552	1.0246	1.0030	5.111
T PFTfDA	Avg RF	1.5121	1.2188	1.3516	1.3026	1.3355	1.3884	1.3320	1.2823	1.3404	6.405
I M2-PFTeDA	Avg RF	1.0874	1.1761	1.1742	1.2028	1.2067	1.2859	1.3553	1.3005	1.2236	6.981
T PFTeDA						ISTD					
I M8-FOSA	Avg RF	1.0199	1.0337	1.0399	1.0094	0.9598	1.0939	1.0715	1.1528	1.0476	5.585
T FOSA						ISTD					
I M3-PFBS	Avg RF	0.9762	0.9895	0.9259	1.0263	0.9986	1.0891	1.0880	1.1104	1.0255	6.333
T PFBS						ISTD					
I M3-PFHxS	Avg RF	0.8228	0.9177	0.8171	0.8943	0.8276	0.8739	0.9197	0.9591	0.8790	5.998
T PFPeS	Avg RF	0.9489	0.9500	0.9507	1.0599	1.0278	1.0253	1.0789	1.1563	1.0247	7.219
T PFHxS						ISTD					
I M8-PFOS	Avg RF	0.9069	0.7781	0.9593	0.8466	0.8745	0.9619	0.8979	0.9794	0.9006	7.515
T PFHpS	Avg RF	1.3089	1.0233	1.2520	1.2364	1.1129	1.3196	1.3138	1.2207	1.2235	8.626
T PFOs	Avg RF	0.5375	0.5103	0.6127	0.5196	0.5189	0.5548	0.5302	0.5821	0.5488	6.514
T PFNS	Avg RF	0.5712	0.6140	0.6741	0.6171	0.5955	0.6407	0.5899	0.6518	0.6193	5.558
T PFDS	Avg RF	0.5744	0.4802	0.5883	0.5423	0.5478	0.5826	0.5373	0.5686	0.5527	6.308
T PFDoDS						ISTD					
I M2-4:2FTS	Avg RF	7.7011	8.0461	8.0228	8.3503	7.8109	7.4550	8.9479	8.0189	8.0441	5.620
T 4:2FTS						ISTD					
I M2-6:2FTS	Avg RF	4.5824	4.8856	4.7997	5.3724	4.4974	4.7330	5.1432	4.6215	4.8294	6.168
T 6:2FTS						ISTD					
I M2-8:2FTS	Avg RF	2.6507	2.3592	2.9342	3.0041	2.9492	2.7714	3.0994	2.5303	2.7873	9.201
T 8:2FTS						ISTD					
I M3-MeFOSAA	Avg RF	1.0154	0.8321	0.7942	0.7955	0.8322	0.9054	0.8576	0.9393	0.8715	8.835
T MeFOSAA						ISTD					
I M3-HFO-DA	Avg RF	0.9249	0.9004	0.9267	0.9394	0.9088	1.0230	1.0020	1.0195	0.9556	5.314
T HFO-DA	Avg RF	9.9265	9.9475	9.8908	10.01	9.7701	10.46	10.24	10.20	10.06	2.258
T ADONA	Avg RF	4.3417	4.5268	4.6403	4.5503	4.4417	4.8388	4.6559	4.6434	4.5799	3.302
T 9Cl-PF3ONS	Avg RF	3.2726	3.4845	3.4936	3.6619	3.6116	3.8301	3.7290	3.6859	3.5961	4.847
T 11Cl-PF3OUds						ISTD					
I M5-EFOSAA	Avg RF	0.9545	0.9537	0.9862	0.8150	0.9424	0.9961	1.0072	1.0294	0.9605	6.864
T EFOSAA						ISTD					
I M7-MeFOSE	Avg RF	1.1230	1.0416	0.9123	1.0158	0.8815	1.0215	1.0555	1.1636	1.0268	9.268
T MeFOSE						ISTD					
I M9-EFOSE	Avg RF	0.9071	0.9448	0.9234	0.9458	0.9337	0.9977	1.0397	1.0504	0.9678	5.623
T EFOSE						ISTD					

Generated at 2:36 PM on 5/3/2023

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Initial Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICC634
 Lab FileID: 4Q43887.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	0.8263	1.0054	1.0110	1.0788	0.9993	1.1318	1.1661	1.1600	1.0473	10.776
I M3-MeFOSA											
T MeFOSA	Avg RF	0.8291	0.8709	0.9209	0.9057	0.9259	1.0268	1.0333	1.0217	0.9418	8.196
I 13C4-PFOS											
S d3-MeFO5AA	Linear	0.5858	0.6032	0.6022	0.6539	0.6144	0.6079	0.6982	0.6828	0.6311	6.608
S 13C8-PFOS	Linear	0.8673	0.9865	0.8358	0.9730	0.9142	0.9282	1.0539	0.9710	0.9412	7.418
S d5-EFO5AA	Linear	0.4472	0.4981	0.4701	0.5664	0.5250	0.5192	0.5559	0.5754	0.5197	8.850
S 13C8-FOSA	Linear	1.4476	1.5207	1.4801	1.7116	1.7515	1.5014	1.5770	1.5524	1.5678	6.968
S d7-MeFOSE	Linear	0.6942	0.7871	0.8307	0.9697	0.9467	0.6923	0.6787	0.6234	0.7778	16.563
S d3-MeFO5A	Linear	0.9149	0.9977	0.9568	1.0593	0.9573	0.9404	0.9859	1.0311	0.9804	4.890
S d9-EFO5E	Linear	1.0482	1.1457	1.1884	1.3249	1.2785	0.9836	0.9499	0.8920	1.1014	14.328
S d5-EFO5A	Linear	1.0190	1.0393	1.0002	1.0300	1.0340	1.0444	1.0900	1.0808	1.0422	2.880
I 13C3-PFBA											
S 13C4-PFBA	Linear	0.9419	0.9424	0.9441	0.9489	0.9425	0.9416	0.9399	0.9258	0.9409	0.708
I 1802-PFHxS											
S 13C2-4:2FTS	Linear	0.1148	0.1010	0.1095	0.0977	0.1033	0.1072	0.0917	0.0877	0.1016	8.935
S 13C3-PBBS	Linear	2.4774	2.3246	2.6089	2.2592	2.3778	2.2863	2.3961	2.1298	2.3575	6.150
S 13C2-6:2FTS	Linear	0.2018	0.1846	0.1959	0.1742	0.1956	0.1866	0.1682	0.1585	0.1832	8.231
S 13C3-PFHxS	Linear	1.5780	1.5174	1.6873	1.4849	1.5504	1.5703	1.5824	1.4264	1.5496	4.979
S 13C2-8:2FTS	Linear	0.3000	0.2936	0.2924	0.2737	0.2876	0.2969	0.2645	0.2787	0.2859	4.357
I 13C4-PFOA											
S 13C8-PFOA	Linear	0.8048	0.8379	0.8309	0.8093	0.8265	0.8219	0.8063	0.8294	0.8209	1.528
I 13C2-PFDA											
S 13C6-PFDA	Linear	1.0744	1.0307	1.0830	1.0667	1.0646	1.0841	1.1362	1.0251	1.0706	3.228
S 13C7-PFUnDA	Linear	1.1430	1.0538	1.1673	1.1173	1.1842	1.1414	1.0804	1.0247	1.1140	5.044
S 13C2-PFDODA	Linear	1.1355	1.1282	1.2168	1.2688	1.2865	1.2138	1.2274	1.2123	1.2112	4.621
S 13C2-PFTEdA	Linear	0.9810	0.9567	1.0416	1.0420	1.0806	0.9685	0.9062	0.9075	0.9855	6.520
I 13C5-PFNA											
S 13C9-PFNA	Linear	0.8245	0.8755	0.8324	0.8282	0.8204	0.8292	0.8848	0.9024	0.8497	3.812
I 13C2-PFHxA											
S 13C5-PPeA	Linear	0.7803	0.7635	0.7594	0.7761	0.7821	0.7803	0.7656	0.7531	0.7701	1.435
S 13C5-PFHxA	Linear	1.1387	1.0991	1.0961	1.0805	1.1224	1.1056	1.0817	1.0850	1.1011	1.874
S 13C3-HPOdA	Linear	0.1628	0.1588	0.1598	0.1632	0.1644	0.1655	0.1701	0.1711	0.1645	2.681
S 13C4-PFHpA	Linear	0.6701	0.6325	0.6289	0.6410	0.6353	0.6389	0.6604	0.6415	0.6436	2.218

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

Initial Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICC634
 Lab FileID: 4Q43887.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 = 0.940892 * x	
S 13C5-PFPeA	Linear	y = 0.770055 * x	
S 13C2-4:2FTS	Linear	y = 0.101613 * x	
S 13C3-PFBS	Linear	y = 2.357511 * x	
S 13C5-PFHxA	Linear	y = 1.101142 * x	
S 13C3-HFPO-DA	Linear	y = 0.164465 * x	
S 13C4-PFHpA	Linear	y = 0.643569 * x	
S 13C2-6:2FTS	Linear	y = 0.183170 * x	
S 13C8-PFOA	Linear	y = 0.820904 * x	
S 13C3-PFHxS	Linear	y = 1.549646 * x	
S 13C9-PFNA	Linear	y = 0.849685 * x	
S 13C2-8:2FTS	Linear	y = 0.285923 * x	
S 13C6-PEDA	Linear	y = 1.070585 * x	
S d3-MeFOSAA	Linear	y = 0.631061 * x	
S 13C8-PFOS	Linear	y = 0.941239 * x	
S d5-EFOSAA	Linear	y = 0.519656 * x	
S 13C7-PFUInDA	Linear	y = 1.114017 * x	
S 13C2-PFDODA	Linear	y = 1.211165 * x	
S 13C8-FOSA	Linear	y = 1.567785 * x	
S 13C2-PFTeDA	Linear	y = 0.985520 * x	
S d7-MeFOSE	Linear	y = 0.777842 * x	
S d3-MeFOSA	Linear	y = 0.980410 * x	
S d9-EFOSE	Linear	y = 1.101380 * x	
S d5-EFOSA	Linear	y = 1.042215 * x	

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

Initial Calibration Verification

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICV634
 Lab FileID: 4Q43894.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050323_1633_S4Q634\s4q634.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\050323_1633_S4Q634\4Q43884.d
 2:D:\MassHunter\Data\050323_1633_S4Q634\4Q43885.d
 3:D:\MassHunter\Data\050323_1633_S4Q634\4Q43886.d
 4:D:\MassHunter\Data\050323_1633_S4Q634\4Q43887.d
 5:D:\MassHunter\Data\050323_1633_S4Q634\4Q43888.d
 6:D:\MassHunter\Data\050323_1633_S4Q634\4Q43889.d
 7:D:\MassHunter\Data\050323_1633_S4Q634\4Q43890.d
 8:D:\MassHunter\Data\050323_1633_S4Q634\4Q43891.d

Data File: 4Q43894
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.232	4.6	104.6
13C2-6:2FTS	5.000	5.310	6.2	106.2
13C2-8:2FTS	5.000	5.361	7.2	107.2
13C2-PFDoDA	1.250	1.329	6.3	106.3
13C2-PFTeDA	1.250	1.210	-3.2	96.8
13C3-PFBS	2.500	2.370	-5.2	94.8
13C3-PFHxS	2.500	2.439	-2.4	97.6
13C4-PFBA	10.000	10.101	1.0	101.0
13C4-PFHpA	2.500	2.581	3.2	103.2
13C5-PFHxA	2.500	2.494	-0.2	99.8
13C5-PFPeA	5.000	5.155	3.1	103.1
13C6-PFDA	1.250	1.317	5.4	105.4
13C7-PFUnDA	1.250	1.264	1.1	101.1
13C8-FOSA	2.500	2.395	-4.2	95.8
13C8-PFOA	2.500	2.593	3.7	103.7
13C8-PFOS	2.500	2.590	3.6	103.6
13C9-PFNA	1.250	1.283	2.6	102.6
4:2FTS	20.000	21.008	5.0	105.0
6:2FTS	20.000	19.784	-1.1	98.9
8:2FTS	20.000	19.681	-1.6	98.4
d3-MeFOSAA	5.000	5.156	3.1	103.1
EtFOSAA	20.000	19.622	-1.9	98.1
FOSA	20.000	21.189	5.9	105.9
MeFOSAA	20.000	21.188	5.9	105.9
PFBA	20.000	19.285	-3.6	96.4
PFBS	20.000	21.672	8.4	108.4
PFDA	20.000	21.489	7.4	107.4
PFDoDA	20.000	18.483	-7.6	92.4
PFDS	20.000	20.356	1.8	101.8
PFHpA	20.000	20.571	2.9	102.9
PFHpS	20.000	20.453	2.3	102.3
PFHxA	20.000	21.781	8.9	108.9
PFHxS	20.000	21.628	8.1	108.1
PFNA	20.000	21.766	8.8	108.8
PFNS	20.000	19.676	-1.6	98.4
PFOA	20.000	20.675	3.4	103.4
PFOS	20.000	17.958	-10.2	89.8

Initial Calibration Verification

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICV634
 Lab FileID: 4Q43894.D

PFPeA	20.000	22.207	11.0	111.0
PFPeS	20.000	21.124	5.6	105.6
PFTeDA	20.000	22.200	11.0	111.0
PFTrDA	20.000	17.597	-12.0	88.0
PFUnDA	20.000	21.187	5.9	105.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	20.956	4.8	104.8
13C3-HFPO-DA	10.000	10.436	4.4	104.4
9C1-PF3ONS	20.000	20.003	0.0	100.0
ADONA	20.000	20.063	0.3	100.3
HFPO-DA	20.000	19.289	-3.6	96.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	20.642	3.2	103.2
5:3FTCA	20.000	21.505	7.5	107.5
7:3FTCA	20.000	19.966	-0.2	99.8
d3-MeFOSA	2.500	2.334	-6.6	93.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	22.087	10.4	110.4
EtFOSE	100.000	117.541	17.5	117.5
MeFOSA	20.000	21.625	8.1	108.1
MeFOSE	100.000	115.447	15.4	115.4
PFDoDS	20.000	18.910	-5.4	94.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.377	7.5	107.5
d7-MeFOSE	25.000	19.407	-22.4	77.6
d9-EtFOSE	25.000	19.443	-22.2	77.8
d5-EtFOSA	2.500	2.486	-0.6	99.4
NFDHA	20.000	22.218	11.1	111.1
PFMBA	20.000	21.080	5.4	105.4
PFMPA	20.000	21.251	6.3	106.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	20.000	19.156	-4.2	95.8

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICV634
 Lab FileID: 4Q43895.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050323_1633_S4Q634\s4q634.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\050323_1633_S4Q634\4Q43884.d
 2:D:\MassHunter\Data\050323_1633_S4Q634\4Q43885.d
 3:D:\MassHunter\Data\050323_1633_S4Q634\4Q43886.d
 4:D:\MassHunter\Data\050323_1633_S4Q634\4Q43887.d
 5:D:\MassHunter\Data\050323_1633_S4Q634\4Q43888.d
 6:D:\MassHunter\Data\050323_1633_S4Q634\4Q43889.d
 7:D:\MassHunter\Data\050323_1633_S4Q634\4Q43890.d
 8:D:\MassHunter\Data\050323_1633_S4Q634\4Q43891.d

Data File: 4Q43895
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.225	4.5	104.5
13C2-6:2FTS	5.000	5.427	8.5	108.5
13C2-8:2FTS	5.000	5.503	10.1	110.1
13C2-PFDoDA	1.250	1.352	8.2	108.2
13C2-PFTeDA	1.250	1.175	-6.0	94.0
13C3-PFBS	2.500	2.446	-2.2	97.8
13C3-PFHxS	2.500	2.501	0.0	100.0
13C4-PFBA	10.000	9.953	-0.5	99.5
13C4-PFHpA	2.500	2.507	0.3	100.3
13C5-PFHxA	2.500	2.463	-1.5	98.5
13C5-PFPeA	5.000	5.107	2.1	102.1
13C6-PFDA	1.250	1.390	11.2	111.2
13C7-PFUnDA	1.250	1.321	5.7	105.7
13C8-FOSA	2.500	2.358	-5.7	94.3
13C8-PFOA	2.500	2.569	2.8	102.8
13C8-PFOS	2.500	2.663	6.5	106.5
13C9-PFNA	1.250	1.253	0.2	100.2
4:2FTS	9.375	9.629	2.7	102.7
6:2FTS	9.500	9.570	0.7	100.7
8:2FTS	9.600	9.305	-3.1	96.9
d3-MeFOSAA	5.000	5.122	2.4	102.4
EtFOSAA	2.500	2.476	-1.0	99.0
FOSA	2.500	2.374	-5.0	95.0
MeFOSAA	2.500	2.411	-3.5	96.5
PFBA	10.000	9.658	-3.4	96.6
PFBS	2.218	2.126	-4.2	95.8
PFDA	2.500	2.394	-4.3	95.7
PFDoDA	2.500	2.428	-2.9	97.1
PFDS	2.413	2.127	-11.9	88.1
PFHpA	2.500	2.493	-0.3	99.7
PFHpS	2.383	2.285	-4.1	95.9
PFHxA	2.500	2.426	-2.9	97.1
PFHxS	2.285	2.247	-1.7	98.3
PFNA	2.500	2.420	-3.2	96.8
PFNS	2.405	2.162	-10.1	89.9
PFOA	2.500	2.445	-2.2	97.8
PFOS	2.320	2.145	-7.6	92.4

Initial Calibration Verification

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-ICV634
 Lab FileID: 4Q43895.D

PFPeA	5.000	4.862	-2.8	97.2
PFPeS	2.353	2.157	-8.3	91.7
PFTeDA	2.500	2.573	2.9	102.9
PFTTrDA	2.500	2.326	-6.9	93.1
PFUnDA	2.500	2.535	1.4	101.4
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.708	-0.4	99.6
13C3-HFPO-DA	10.000	9.782	-2.2	97.8
9C1-PF3ONS	4.675	4.643	-0.7	99.3
ADONA	4.725	4.705	-0.4	99.6
HFPO-DA	5.000	5.194	3.9	103.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.478	0.0	100.0
5:3FTCA	62.400	61.286	-1.8	98.2
7:3FTCA	62.400	63.299	1.4	101.4
d3-MeFOSA	2.500	2.227	-10.9	89.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.831	-3.4	96.6
EtFOSE	12.500	12.331	-1.3	98.7
MeFOSA	5.000	5.497	9.9	109.9
MeFOSE	12.500	11.966	-4.3	95.7
PFDoDS	2.425	2.184	-9.9	90.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.122	2.4	102.4
d7-MeFOSE	25.000	19.955	-20.2	79.8
d9-EtFOSE	25.000	19.264	-22.9	77.1
d5-EtFOSA	2.500	2.483	-0.7	99.3
NFDHA	5.000	4.925	-1.5	98.5
PFMBA	5.000	4.790	-4.2	95.8
PFMPA	5.000	4.814	-3.7	96.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.399	-1.1	98.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q638-CC634
 Lab FileID: 4Q44081.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050823_1633_S4Q638\s4q638.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\050323_1633_S4Q634\4Q43884.d
 2:D:\MassHunter\Data\050323_1633_S4Q634\4Q43885.d
 3:D:\MassHunter\Data\050323_1633_S4Q634\4Q43886.d
 4:D:\MassHunter\Data\050323_1633_S4Q634\4Q43887.d
 5:D:\MassHunter\Data\050323_1633_S4Q634\4Q43888.d
 6:D:\MassHunter\Data\050323_1633_S4Q634\4Q43889.d
 7:D:\MassHunter\Data\050323_1633_S4Q634\4Q43890.d
 8:D:\MassHunter\Data\050323_1633_S4Q634\4Q43891.d

Data File: 4Q44081
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.472	-10.6	89.4
13C2-6:2FTS	5.000	4.612	-7.8	92.2
13C2-8:2FTS	5.000	4.740	-5.2	94.8
13C2-PFDoDA	1.250	1.224	-2.1	97.9
13C2-PFTeDA	1.250	1.103	-11.8	88.2
13C3-PFBS	2.500	2.260	-9.6	90.4
13C3-PFHxS	2.500	2.221	-11.2	88.8
13C4-PFBA	10.000	9.649	-3.5	96.5
13C4-PFHpA	2.500	2.555	2.2	102.2
13C5-PFHxA	2.500	2.455	-1.8	98.2
13C5-PFPeA	5.000	5.253	5.1	105.1
13C6-PFDA	1.250	1.254	0.3	100.3
13C7-PFUnDA	1.250	1.216	-2.7	97.3
13C8-FOSA	2.500	2.520	0.8	100.8
13C8-PFOA	2.500	2.496	-0.2	99.8
13C8-PFOS	2.500	2.568	2.7	102.7
13C9-PFNA	1.250	1.279	2.3	102.3
4:2FTS	0.750	0.751	0.2	100.2
6:2FTS	0.760	0.781	2.7	102.7
8:2FTS	0.768	0.751	-2.2	97.8
d3-MeFOSAA	5.000	4.735	-5.3	94.7
EtFOSAA	0.200	0.210	5.0	105.0
FOSA	0.200	0.194	-3.1	96.9
MeFOSAA	0.200	0.223	11.7	111.7
PFBA	0.800	0.781	-2.4	97.6
PFBS	0.177	0.168	-5.4	94.6
PFDA	0.200	0.194	-2.8	97.2
PFDoDA	0.200	0.214	6.8	106.8
PFDS	0.193	0.154	-20.1	79.9
PFHpA	0.200	0.193	-3.3	96.7
PFHpS	0.191	0.184	-3.4	96.6
PFHxA	0.200	0.189	-5.4	94.6
PFHxS	0.183	0.179	-2.4	97.6
PFNA	0.200	0.186	-6.9	93.1
PFNS	0.192	0.158	-17.5	82.5
PFOA	0.200	0.192	-4.1	95.9
PFOS	0.186	0.192	3.0	103.0

Continuing Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q638-CC634
 Lab FileID: 4Q44081.D

PFPeA	0.400	0.355	-11.2	88.8
PFPeS	0.188	0.209	11.1	111.1
PFTeDA	0.200	0.190	-4.8	95.2
PFTTrDA	0.200	0.173	-13.3	86.7
PFUnDA	0.200	0.184	-8.0	92.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.353	-6.7	93.3
13C3-HFPO-DA	10.000	9.869	-1.3	98.7
9C1-PF3ONS	0.367	0.372	1.1	101.1
ADONA	0.378	0.339	-10.2	89.8
HFPO-DA	0.400	0.370	-7.4	92.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.836	-16.2	83.8
5:3FTCA	4.992	4.687	-6.1	93.9
7:3FTCA	4.992	4.501	-9.8	90.2
d3-MeFOSA	2.500	2.355	-5.8	94.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.365	-8.8	91.2
EtFOSE	1.000	1.011	1.1	101.1
MeFOSA	0.400	0.353	-11.8	88.2
MeFOSE	1.000	0.970	-3.0	97.0
PFDoDS	0.194	0.174	-10.1	89.9
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.336	6.7	106.7
d7-MeFOSE	25.000	20.804	-16.8	83.2
d9-EtFOSE	25.000	22.177	-11.3	88.7
d5-EtFOSA	2.500	2.538	1.5	101.5
NFDHA	0.400	0.329	-17.6	82.4
PFMBA	0.400	0.373	-6.7	93.3
PFMPA	0.400	0.381	-4.8	95.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.334	-6.3	93.7

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q638-CC634
 Lab FileID: 4Q44089.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050823_1633_S4Q638\s4q638.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\050323_1633_S4Q634\4Q43884.d
 2:D:\MassHunter\Data\050323_1633_S4Q634\4Q43885.d
 3:D:\MassHunter\Data\050323_1633_S4Q634\4Q43886.d
 4:D:\MassHunter\Data\050323_1633_S4Q634\4Q43887.d
 5:D:\MassHunter\Data\050323_1633_S4Q634\4Q43888.d
 6:D:\MassHunter\Data\050323_1633_S4Q634\4Q43889.d
 7:D:\MassHunter\Data\050323_1633_S4Q634\4Q43890.d
 8:D:\MassHunter\Data\050323_1633_S4Q634\4Q43891.d

Data File: 4Q44089
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.770	-4.6	95.4
13C2-6:2FTS	5.000	4.795	-4.1	95.9
13C2-8:2FTS	5.000	4.802	-4.0	96.0
13C2-PFDoDA	1.250	1.256	0.5	100.5
13C2-PFTeDA	1.250	1.124	-10.1	89.9
13C3-PFBS	2.500	2.321	-7.2	92.8
13C3-PFHxS	2.500	2.411	-3.6	96.4
13C4-PFBA	10.000	9.921	-0.8	99.2
13C4-PFHpA	2.500	2.613	4.5	104.5
13C5-PFHxA	2.500	2.556	2.2	102.2
13C5-PFPeA	5.000	5.239	4.8	104.8
13C6-PFDA	1.250	1.291	3.3	103.3
13C7-PFUnDA	1.250	1.301	4.1	104.1
13C8-FOSA	2.500	2.214	-11.4	88.6
13C8-PFOA	2.500	2.497	-0.1	99.9
13C8-PFOS	2.500	2.299	-8.1	91.9
13C9-PFNA	1.250	1.264	1.1	101.1
4:2FTS	9.375	9.191	-2.0	98.0
6:2FTS	9.500	9.596	1.0	101.0
8:2FTS	9.600	9.452	-1.5	98.5
d3-MeFOSAA	5.000	4.750	-5.0	95.0
EtFOSAA	2.500	2.146	-14.2	85.8
FOSA	2.500	2.661	6.4	106.4
MeFOSAA	2.500	2.527	1.1	101.1
PFBA	10.000	9.908	-0.9	99.1
PFBS	2.218	2.181	-1.7	98.3
PFDA	2.500	2.396	-4.2	95.8
PFDoDA	2.500	2.408	-3.7	96.3
PFDS	2.413	2.371	-1.8	98.2
PFHpA	2.500	2.403	-3.9	96.1
PFHpS	2.383	2.440	2.4	102.4
PFHxA	2.500	2.423	-3.1	96.9
PFHxS	2.285	2.104	-7.9	92.1
PFNA	2.500	2.284	-8.6	91.4
PFNS	2.405	2.392	-0.6	99.4
PFOA	2.500	2.425	-3.0	97.0
PFOS	2.320	2.323	0.1	100.1

Continuing Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q638-CC634
 Lab FileID: 4Q44089.D

PFPeA	5.000	4.899	-2.0	98.0
PFPeS	2.353	2.162	-8.1	91.9
PFTeDA	2.500	2.475	-1.0	99.0
PFTTrDA	2.500	2.400	-4.0	96.0
PFUnDA	2.500	2.376	-5.0	95.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.831	2.2	102.2
13C3-HFPO-DA	10.000	9.815	-1.9	98.1
9C1-PF3ONS	4.675	4.842	3.6	103.6
ADONA	4.725	4.815	1.9	101.9
HFPO-DA	5.000	4.978	-0.4	99.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.041	-3.5	96.5
5:3FTCA	62.400	64.375	3.2	103.2
7:3FTCA	62.400	65.739	5.4	105.4
d3-MeFOSA	2.500	2.039	-18.4	81.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.579	-8.4	91.6
EtFOSE	12.500	12.916	3.3	103.3
MeFOSA	5.000	5.603	12.1	112.1
MeFOSE	12.500	11.553	-7.6	92.4
PFDoDS	2.425	2.351	-3.0	97.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.090	1.8	101.8
d7-MeFOSE	25.000	20.531	-17.9	82.1
d9-EtFOSE	25.000	19.623	-21.5	78.5
d5-EtFOSA	2.500	2.539	1.6	101.6
NFDHA	5.000	4.505	-9.9	90.1
PFMBA	5.000	4.828	-3.4	96.6
PFMPA	5.000	5.012	0.2	100.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.341	-2.5	97.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q638-CC634
 Lab FileID: 4Q44098.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050823_1633_S4Q638\s4q638.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\050323_1633_S4Q634\4Q43884.d
 2:D:\MassHunter\Data\050323_1633_S4Q634\4Q43885.d
 3:D:\MassHunter\Data\050323_1633_S4Q634\4Q43886.d
 4:D:\MassHunter\Data\050323_1633_S4Q634\4Q43887.d
 5:D:\MassHunter\Data\050323_1633_S4Q634\4Q43888.d
 6:D:\MassHunter\Data\050323_1633_S4Q634\4Q43889.d
 7:D:\MassHunter\Data\050323_1633_S4Q634\4Q43890.d
 8:D:\MassHunter\Data\050323_1633_S4Q634\4Q43891.d

Data File: 4Q44098
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.165	23.3	123.3
13C2-6:2FTS	5.000	5.569	11.4	111.4
13C2-8:2FTS	5.000	5.942	18.8	118.8
13C2-PFDoDA	1.250	1.199	-4.1	95.9
13C2-PFTeDA	1.250	1.096	-12.3	87.7
13C3-PFBS	2.500	2.512	0.5	100.5
13C3-PFHxS	2.500	2.441	-2.3	97.7
13C4-PFBA	10.000	10.233	2.3	102.3
13C4-PFHpA	2.500	2.462	-1.5	98.5
13C5-PFHxA	2.500	2.491	-0.4	99.6
13C5-PFPeA	5.000	4.966	-0.7	99.3
13C6-PFDA	1.250	1.245	-0.4	99.6
13C7-PFUnDA	1.250	1.247	-0.3	99.7
13C8-FOSA	2.500	2.483	-0.7	99.3
13C8-PFOA	2.500	2.471	-1.2	98.8
13C8-PFOS	2.500	2.654	6.1	106.1
13C9-PFNA	1.250	1.265	1.2	101.2
4:2FTS	9.375	7.924	-15.5	84.5
6:2FTS	9.500	9.312	-2.0	98.0
8:2FTS	9.600	9.209	-4.1	95.9
d3-MeFOSAA	5.000	5.242	4.8	104.8
EtFOSAA	2.500	2.354	-5.8	94.2
FOSA	2.500	2.505	0.2	100.2
MeFOSAA	2.500	2.589	3.6	103.6
PFBA	10.000	9.639	-3.6	96.4
PFBS	2.218	2.041	-8.0	92.0
PFDA	2.500	2.543	1.7	101.7
PFDoDA	2.500	2.537	1.5	101.5
PFDS	2.413	2.197	-9.0	91.0
PFHpA	2.500	2.553	2.1	102.1
PFHpS	2.383	2.177	-8.7	91.3
PFHxA	2.500	2.329	-6.8	93.2
PFHxS	2.285	2.233	-2.3	97.7
PFNA	2.500	2.273	-9.1	90.9
PFNS	2.405	2.117	-12.0	88.0
PFOA	2.500	2.472	-1.1	98.9
PFOS	2.320	2.215	-4.5	95.5

Continuing Calibration Summary

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q638-CC634
 Lab FileID: 4Q44098.D

PFPeA	5.000	4.967	-0.7	99.3
PFPeS	2.353	2.341	-0.5	99.5
PFTeDA	2.500	2.521	0.8	100.8
PFTTrDA	2.500	2.434	-2.6	97.4
PFUnDA	2.500	2.629	5.2	105.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.024	6.3	106.3
13C3-HFPO-DA	10.000	8.991	-10.1	89.9
9C1-PF3ONS	4.675	5.169	10.6	110.6
ADONA	4.725	5.128	8.5	108.5
HFPO-DA	5.000	5.240	4.8	104.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.499	0.2	100.2
5:3FTCA	62.400	63.816	2.3	102.3
7:3FTCA	62.400	66.546	6.6	106.6
d3-MeFOSA	2.500	2.402	-3.9	96.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.849	-3.0	97.0
EtFOSE	12.500	12.790	2.3	102.3
MeFOSA	5.000	5.071	1.4	101.4
MeFOSE	12.500	11.660	-6.7	93.3
PFDoDS	2.425	2.078	-14.3	85.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.529	10.6	110.6
d7-MeFOSE	25.000	22.025	-11.9	88.1
d9-EtFOSE	25.000	20.129	-19.5	80.5
d5-EtFOSA	2.500	2.556	2.2	102.2
NFDHA	5.000	4.382	-12.4	87.6
PFMBA	5.000	4.934	-1.3	98.7
PFMPA	5.000	5.077	1.5	101.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.188	-5.9	94.1

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q634	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q634-RT	4Q43881.D	05/03/23 10:23	n/a	Retention Time Marker
S4Q634-RT	4Q43882.D	05/03/23 10:37	n/a	Retention Time Marker
S4Q634-IC634	4Q43883.D	05/03/23 10:58	n/a	Mass Calibration Verification
S4Q634-IC634	4Q43884.D	05/03/23 11:12	n/a	Initial cal 1
S4Q634-IC634	4Q43885.D	05/03/23 11:26	n/a	Initial cal 2
S4Q634-IC634	4Q43886.D	05/03/23 11:40	n/a	Initial cal 3
S4Q634-ICC634	4Q43887.D	05/03/23 11:54	n/a	Initial cal 4
S4Q634-IC634	4Q43888.D	05/03/23 12:08	n/a	Initial cal 5
S4Q634-IC634	4Q43889.D	05/03/23 12:22	n/a	Initial cal 6
S4Q634-IC634	4Q43890.D	05/03/23 12:36	n/a	Initial cal 7
S4Q634-IC634	4Q43891.D	05/03/23 12:50	n/a	Initial cal 8
S4Q634-IBLK	4Q43892.D	05/03/23 13:04	n/a	Instrument Blank
S4Q634-IBLK	4Q43892.D	05/03/23 13:04	n/a	Instrument Blank
S4Q634-ICV634	4Q43894.D	05/03/23 13:20	n/a	Initial cal verification 20
S4Q634-ICV634	4Q43895.D	05/03/23 13:35	n/a	Initial cal verification 4
S4Q634-CC634	4Q43897.D	05/03/23 13:51	n/a	Continuing cal 1.0LL
OP96662-BS	4Q43898.D	05/03/23 14:05	OP96662	Blank Spike
OP96662-LLBS	4Q43899.D	05/03/23 14:19	OP96662	Blank Spike
OP96662-MB	4Q43900.D	05/03/23 14:33	OP96662	Method Blank
ZZZZZZ	4Q43901.D	05/03/23 14:47	OP96662	(unrelated sample)
ZZZZZZ	4Q43902.D	05/03/23 15:01	OP96662	(unrelated sample)
ZZZZZZ	4Q43903.D	05/03/23 15:15	OP96662	(unrelated sample)
ZZZZZZ	4Q43904.D	05/03/23 15:29	OP96662	(unrelated sample)
FC5685-3	4Q43905.D	05/03/23 15:43	OP96662	(used for QC only; not part of job FC5783)
OP96662-MS	4Q43906.D	05/03/23 15:57	OP96662	Matrix Spike
S4Q634-CC634	4Q43907.D	05/03/23 16:11	n/a	Continuing cal 4
S4Q634-ICCB	4Q43908.D	05/03/23 16:25	n/a	Continuing Calibration Blank
FC5685-4	4Q43909.D	05/03/23 16:39	OP96662	(used for QC only; not part of job FC5783)
OP96662-DUP	4Q43910.D	05/03/23 16:54	OP96662	Duplicate
ZZZZZZ	4Q43911.D	05/03/23 17:08	OP96662	(unrelated sample)
OP96659-BS	4Q43912.D	05/03/23 17:22	OP96659	Blank Spike
OP96659-LLBS	4Q43913.D	05/03/23 17:36	OP96659	Blank Spike
OP96659-MB	4Q43914.D	05/03/23 17:50	OP96659	Method Blank
ZZZZZZ	4Q43916.D	05/03/23 18:18	OP96659	(unrelated sample)
S4Q634-CC634	4Q43917.D	05/03/23 18:32	n/a	Continuing cal 4
S4Q634-ICCB	4Q43918.D	05/03/23 18:46	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43918.D	05/03/23 18:46	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43919.D	05/03/23 19:00	OP96659	(unrelated sample)
ZZZZZZ	4Q43920.D	05/03/23 19:14	OP96659	(unrelated sample)
ZZZZZZ	4Q43921.D	05/03/23 19:28	OP96659	(unrelated sample)
ZZZZZZ	4Q43922.D	05/03/23 19:42	OP96659	(unrelated sample)
OP96657-BS	4Q43923.D	05/03/23 19:56	OP96657	Blank Spike
OP96657-LLBS	4Q43924.D	05/03/23 20:10	OP96657	Blank Spike
OP96657-MB	4Q43925.D	05/03/23 20:24	OP96657	Method Blank
ZZZZZZ	4Q43926.D	05/03/23 20:38	OP96657	(unrelated sample)
S4Q634-CC634	4Q43927.D	05/03/23 20:53	n/a	Continuing cal 4

Run Sequence Report

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q634	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
S4Q634-ICCB	4Q43928.D	05/03/23 21:07	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43928.D	05/03/23 21:07	n/a	Continuing Calibration Blank
FC5371-11	4Q43929.D	05/03/23 21:21	OP96657	(used for QC only; not part of job FC5783)
OP96657-MS	4Q43930.D	05/03/23 21:35	OP96657	Matrix Spike
OP96657-MSD	4Q43931.D	05/03/23 21:49	OP96657	Matrix Spike Duplicate
ZZZZZZ	4Q43932.D	05/03/23 22:03	OP96657	(unrelated sample)
ZZZZZZ	4Q43933.D	05/03/23 22:17	OP96657	(unrelated sample)
ZZZZZZ	4Q43935.D	05/03/23 22:45	OP96657	(unrelated sample)
ZZZZZZ	4Q43936.D	05/03/23 22:59	OP96657	(unrelated sample)
ZZZZZZ	4Q43938.D	05/03/23 23:27	OP96657	(unrelated sample)
S4Q634-CC634	4Q43939.D	05/03/23 23:41	n/a	Continuing cal 4
S4Q634-ICCB	4Q43940.D	05/03/23 23:55	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43940.D	05/03/23 23:55	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43941.D	05/04/23 00:09	OP96657	(unrelated sample)
FC5371-20	4Q43942.D	05/04/23 00:23	OP96657	(used for QC only; not part of job FC5783)
OP96657-MS2	4Q43943.D	05/04/23 00:37	OP96657	Matrix Spike
OP96657-MSD2	4Q43944.D	05/04/23 00:51	OP96657	Matrix Spike Duplicate
ZZZZZZ	4Q43945.D	05/04/23 01:05	OP96657	(unrelated sample)
S4Q634-ECC634	4Q43946.D	05/04/23 01:19	n/a	Ending cal 4
S4Q634-ICCB	4Q43947.D	05/04/23 01:34	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43947.D	05/04/23 01:34	n/a	Continuing Calibration Blank

6.10.1

6

Run Sequence Report

Job Number: FC5783
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q638	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q638-RT	4Q44076.D	05/08/23 13:19	n/a	Retention Time Marker
S4Q638-RT	4Q44077.D	05/08/23 13:33	n/a	Retention Time Marker
S4Q638-IBLK	4Q44079.D	05/08/23 14:01	n/a	Instrument Blank
S4Q638-IBLK	4Q44079.D	05/08/23 14:01	n/a	Instrument Blank
S4Q638-CC634	4Q44080.D	05/08/23 14:15	n/a	Continuing cal 4
S4Q638-CC634	4Q44081.D	05/08/23 14:29	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q44082.D	05/08/23 14:43	OP96681	(unrelated sample)
ZZZZZZ	4Q44083.D	05/08/23 14:57	OP96681	(unrelated sample)
ZZZZZZ	4Q44084.D	05/08/23 15:11	OP96681	(unrelated sample)
JD64313-4A	4Q44085.D	05/08/23 15:25	OP96681	(used for QC only; not part of job FC5783)
OP96681-MS	4Q44086.D	05/08/23 15:39	OP96681	Matrix Spike
JD64313-5A	4Q44087.D	05/08/23 15:53	OP96681	(used for QC only; not part of job FC5783)
S4Q638-CC634	4Q44089.D	05/08/23 16:22	n/a	Continuing cal 4
S4Q638-ICCB	4Q44090.D	05/08/23 16:36	n/a	Continuing Calibration Blank
OP96726-BS	4Q44091.D	05/08/23 16:50	OP96726	Blank Spike
OP96726-LLBS	4Q44092.D	05/08/23 17:04	OP96726	Blank Spike
OP96726-MB	4Q44093.D	05/08/23 17:18	OP96726	Method Blank
FC5783-1	4Q44094.D	05/08/23 17:32	OP96726	AF-HDMW225303-WGN01LF-2305W1
OP96726-MS	4Q44095.D	05/08/23 17:46	OP96726	Matrix Spike
FC5783-2	4Q44096.D	05/08/23 18:00	OP96726	AF-RHMW10-WGN01LF-2305W1
OP96726-DUP	4Q44097.D	05/08/23 18:14	OP96726	Duplicate
S4Q638-CC634	4Q44098.D	05/08/23 18:28	n/a	Continuing cal 4
S4Q638-ICCB	4Q44099.D	05/08/23 18:42	n/a	Continuing Calibration Blank
OP96722-BS	4Q44100.D	05/08/23 18:56	OP96722	Blank Spike
OP96722-LLBS	4Q44101.D	05/08/23 19:10	OP96722	Blank Spike
OP96722-MB	4Q44102.D	05/08/23 19:24	OP96722	Method Blank
FC5447-2	4Q44103.D	05/08/23 19:38	OP96722	(used for QC only; not part of job FC5783)
OP96722-MS	4Q44104.D	05/08/23 19:52	OP96722	Matrix Spike
OP96722-MSD	4Q44105.D	05/08/23 20:06	OP96722	Matrix Spike Duplicate
ZZZZZZ	4Q44106.D	05/08/23 20:21	OP96722	(unrelated sample)
ZZZZZZ	4Q44107.D	05/08/23 20:35	OP96722	(unrelated sample)
ZZZZZZ	4Q44108.D	05/08/23 20:49	OP96722	(unrelated sample)
ZZZZZZ	4Q44109.D	05/08/23 21:03	OP96722	(unrelated sample)
S4Q638-CC634	4Q44110.D	05/08/23 21:17	n/a	Continuing cal 4
S4Q638-ICCB	4Q44111.D	05/08/23 21:31	n/a	Continuing Calibration Blank
ZZZZZZ	4Q44112.D	05/08/23 21:45	OP96722	(unrelated sample)
ZZZZZZ	4Q44113.D	05/08/23 21:59	OP96722	(unrelated sample)
ZZZZZZ	4Q44114.D	05/08/23 22:13	OP96722	(unrelated sample)
ZZZZZZ	4Q44115.D	05/08/23 22:27	OP96722	(unrelated sample)
ZZZZZZ	4Q44116.D	05/08/23 22:41	OP96722	(unrelated sample)
ZZZZZZ	4Q44117.D	05/08/23 22:55	OP96722	(unrelated sample)
ZZZZZZ	4Q44118.D	05/08/23 23:09	OP96722	(unrelated sample)
ZZZZZZ	4Q44119.D	05/08/23 23:23	OP96722	(unrelated sample)
ZZZZZZ	4Q44120.D	05/08/23 23:37	OP96722	(unrelated sample)
ZZZZZZ	4Q44121.D	05/08/23 23:51	OP96722	(unrelated sample)
S4Q638-CC634	4Q44122.D	05/09/23 00:05	n/a	Continuing cal 4

Run Sequence Report

Job Number: FC5783
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q638	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
S4Q638-CC634	4Q44123.D	05/09/23 00:19	n/a	Continuing cal 1.0LL
S4Q638-ICCB	4Q44124.D	05/09/23 00:34	n/a	Continuing Calibration Blank
ZZZZZZ	4Q44125.D	05/09/23 00:48	OP96722	(unrelated sample)
ZZZZZZ	4Q44126.D	05/09/23 01:02	OP96722	(unrelated sample)
ZZZZZZ	4Q44127.D	05/09/23 01:16	OP96722	(unrelated sample)
ZZZZZZ	4Q44128.D	05/09/23 01:30	OP96722	(unrelated sample)
S4Q638-ECC634	4Q44129.D	05/09/23 01:44	n/a	Ending cal 4
S4Q638-ICCB	4Q44130.D	05/09/23 01:58	n/a	Continuing Calibration Blank

6.10.2

6

MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44094.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 5:32:23 PM
 Sample Name : FC5783-1
 Vial : P2-B4
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96726,S4Q638,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	124169	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	64392	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	44662	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	26545	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	39050	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	17189	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	15047	1.25 µg/L	0.025
M7-PFUnDA	8.685	570.0 -> 525.1	14881	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	15499	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	10744	1.25 µg/L	0.025
M8-FOSA	9.796	506.1 -> 77.8	10410	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	10762	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6787	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8566	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	874	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	2027	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2527	5.00 µg/L	0.012
M3-MeFOSAA	8.286	573.2 -> 419.0	10527	5.00 µg/L	0.025
M3-HFPO-DA	5.927	286.9 -> 168.9	24563	10.00 µg/L	0.025
M5-EtFOSAA	8.495	589.2 -> 419.0	9320	5.00 µg/L	0.025
M7-MeFOSE	10.984	623.2 -> 58.9	43343	25.00 µg/L	0.025
M9-EtFOSE	11.281	639.2 -> 58.9	68130	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	8281	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	6693	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	11065	2.50 µg/L	0.025
13C3-PFBA	2.916	216.0 -> 172.0	66252	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4975	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	50462	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16979	1.25 µg/L	0.025
13C5-PFNA	7.721	468.0 -> 423.0	24532	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	42042	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	874	4.32 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.5%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2027	5.56 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.2%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2527	4.44 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.8%		
13C2-PFDoDA	9.130	615.1 -> 570.0	15499	0.94 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.4%		
13C2-PFTeDA	9.924	715.2 -> 670.0	10744	0.80 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 64.2%		
13C3-PFBS	5.452	302.1 -> 79.9	10762	2.29 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C3-PFHxS	7.254	402.1 -> 79.9	6787	2.20 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 = 88.0%		
13C4-PFBA	2.924	216.8 -> 171.9	124169	9.96	µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
13C4-PFHpA	6.492	367.1 -> 322.0	26545	2.45	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C5-PFHxA	5.559	318.0 -> 273.0	44662	2.41	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%		
13C5-PFPeA	4.387	268.3 -> 223.0	64392	4.97	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%		
13C6-PFDA	8.216	519.1 -> 474.1	15047	1.03	µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 82.8%		
13C7-PFUnDA	8.685	570.0 -> 525.1	14881	0.98	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 78.7%		
13C8-FOSA	9.796	506.1 -> 77.8	10410	1.50	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 60.0%		
13C8-PFOA	7.163	421.1 -> 376.0	39050	2.36	µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%		
13C8-PFOS	8.366	507.1 -> 79.9	8566	2.06	µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 82.2%		
13C9-PFNA	7.721	472.1 -> 427.0	17189	1.03	µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 82.5%		
d3-MeFOSAA	8.286	573.2 -> 419.0	10527	3.77	µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 75.4%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	24563	8.88	µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.8%		
d3-MeFOSA	11.089	515.0 -> 219.0	6693	1.54	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 61.7%		
d5-EtFOSAA	8.495	589.2 -> 419.0	9320	4.05	µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 81.0%		
d7-MeFOSE	10.984	623.2 -> 58.9	43343	12.59	µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 50.4%		
d9-EtFOSE	11.281	639.2 -> 58.9	68130	13.98	µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.9%		
d5-EtFOSA	11.373	531.1 -> 219.0	8281	1.80	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 71.8%		

Target Compounds

Compound	RT	Transition	Response	Conc.	Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.		
		327.1 -> 80.9				
6:2FTS	-	427.1 -> 407.0	-	N.D.		
		427.1 -> 80.9				
8:2FTS	-	527.1 -> 507.0	-	N.D.		
		527.1 -> 80.8				
EtFOSAA	-	584.2 -> 419.1	-	N.D.		
		584.2 -> 526.0				
FOSA	9.799	498.1 -> 77.9	312	0.07	µg/L	# 92
		498.1 -> 478.0	2			
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	8.528	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.		

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	7.514	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.619	630.0 -> 58.9	0	µg/L	m	1
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

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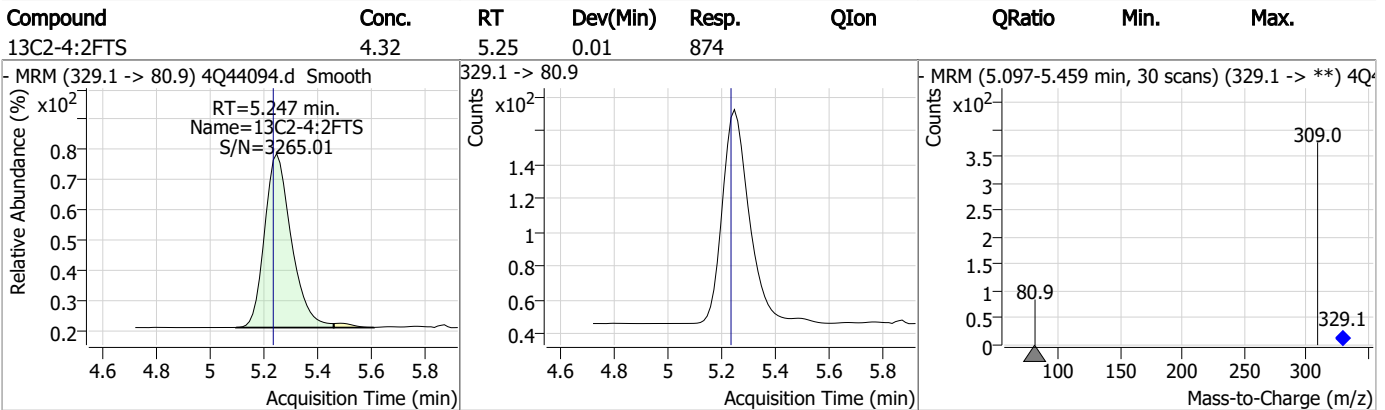
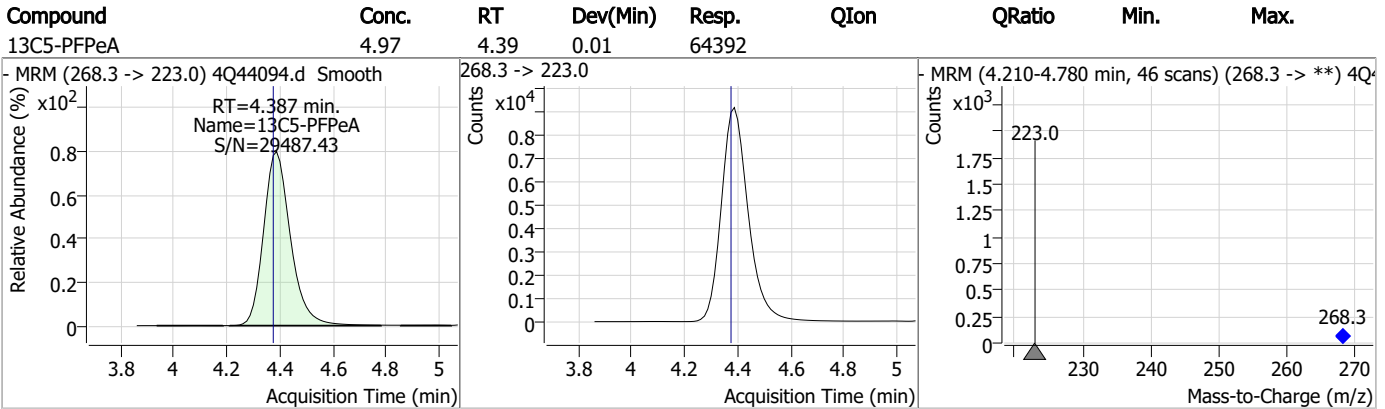
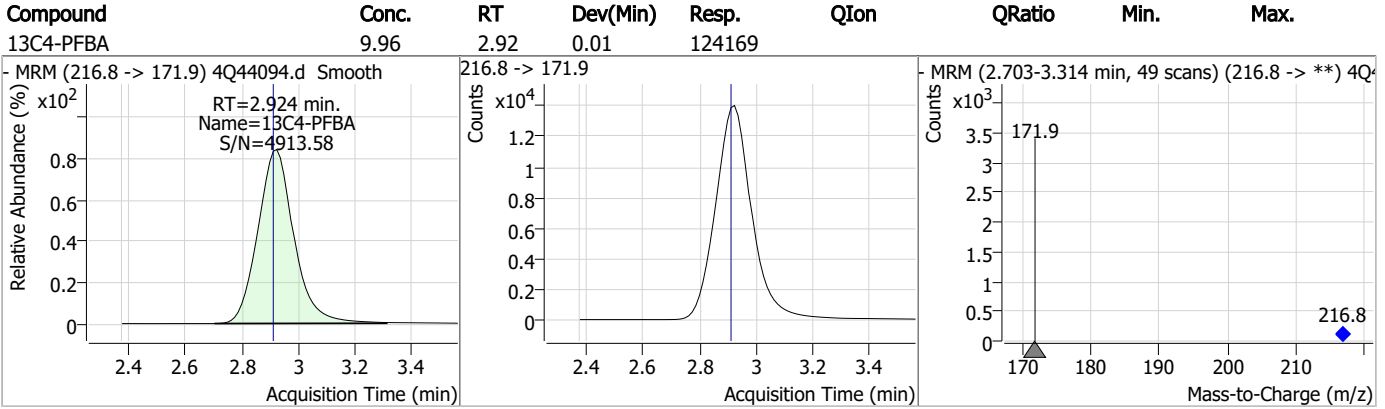
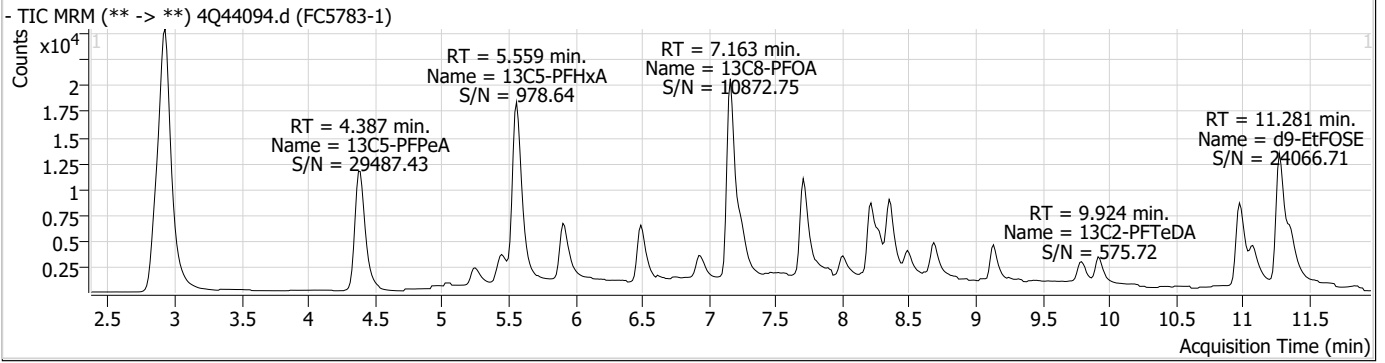
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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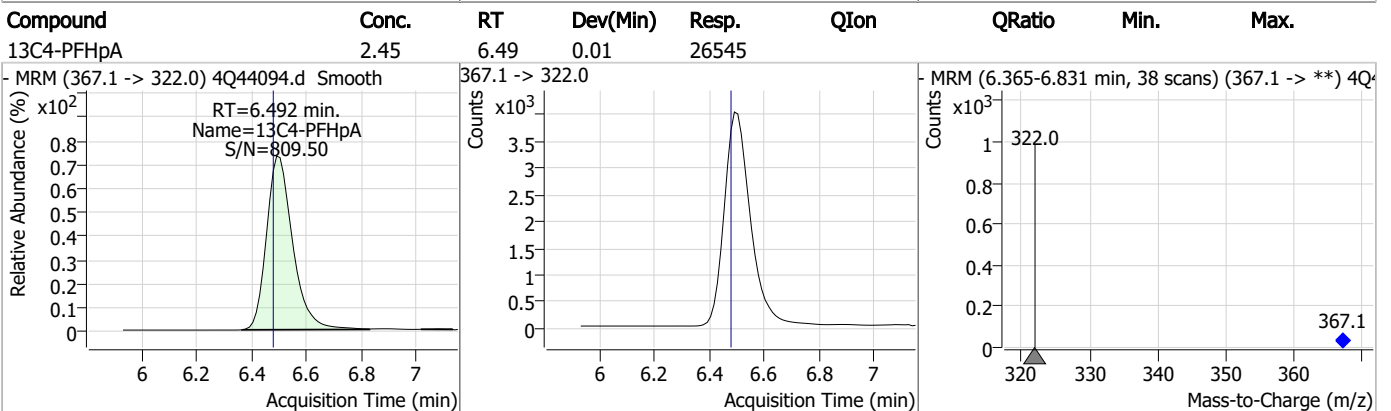
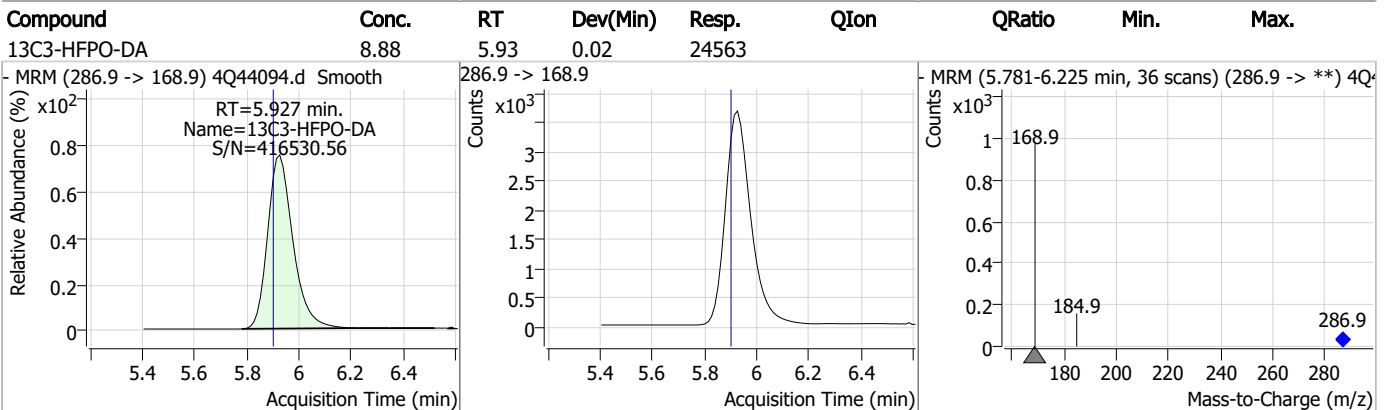
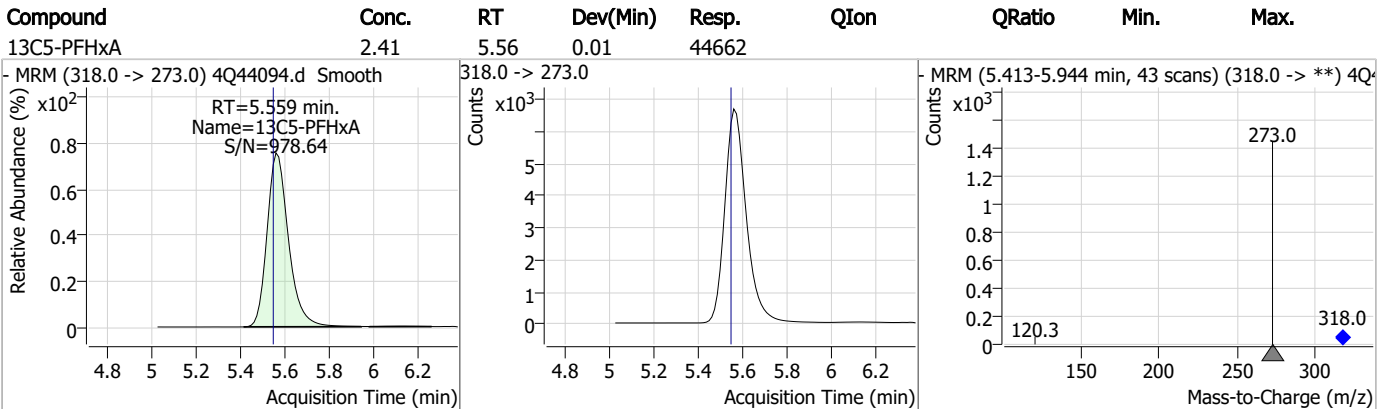
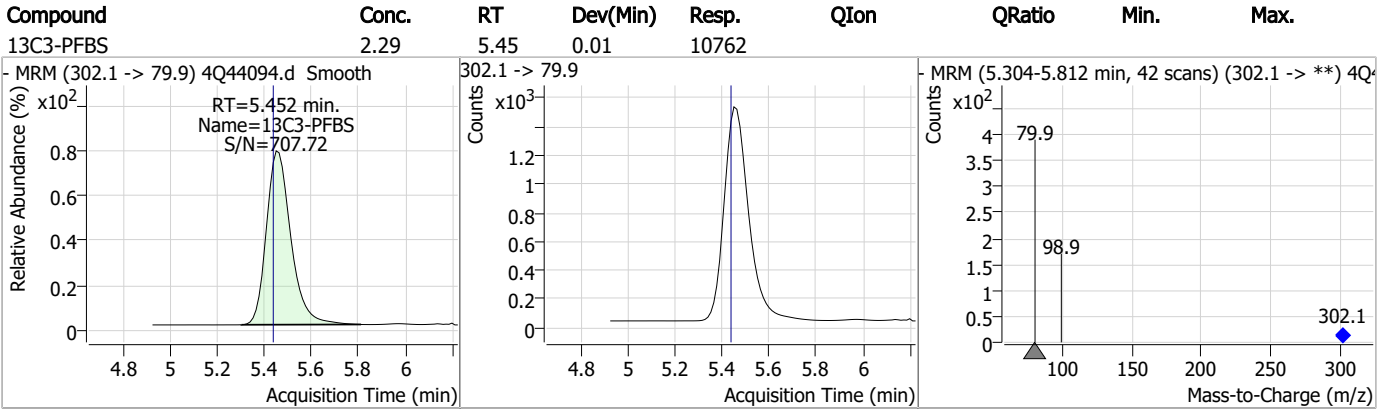
7.1.1
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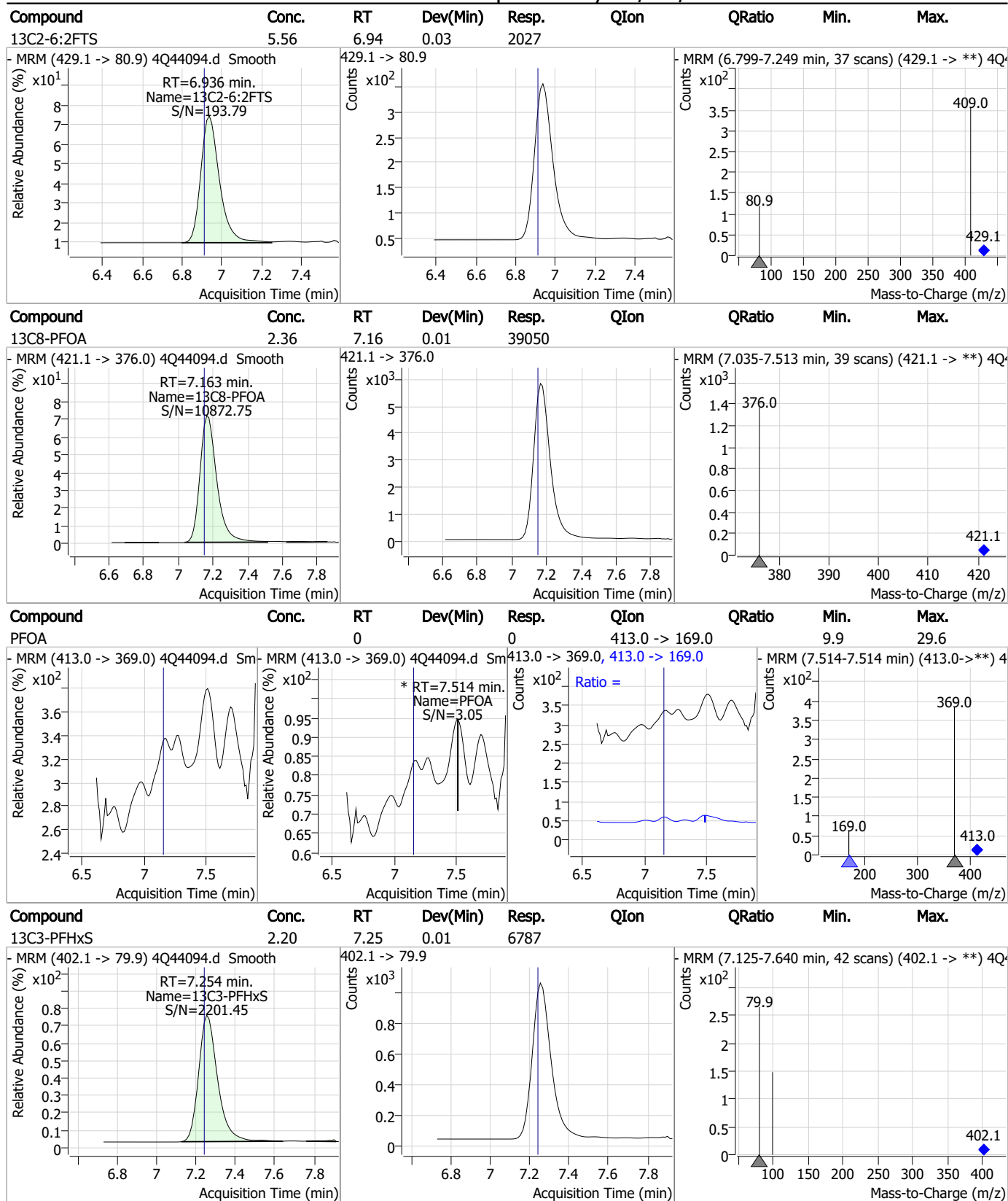
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

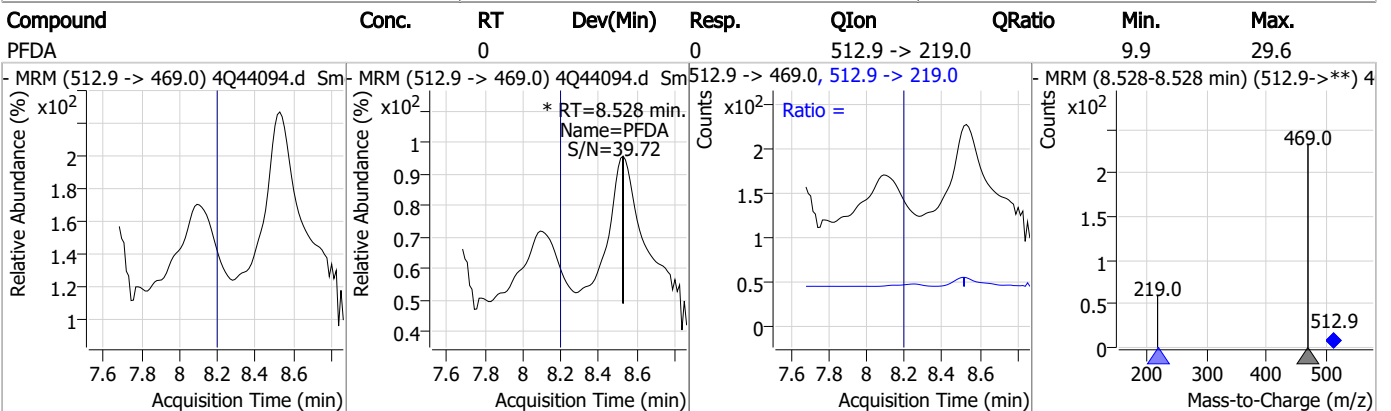
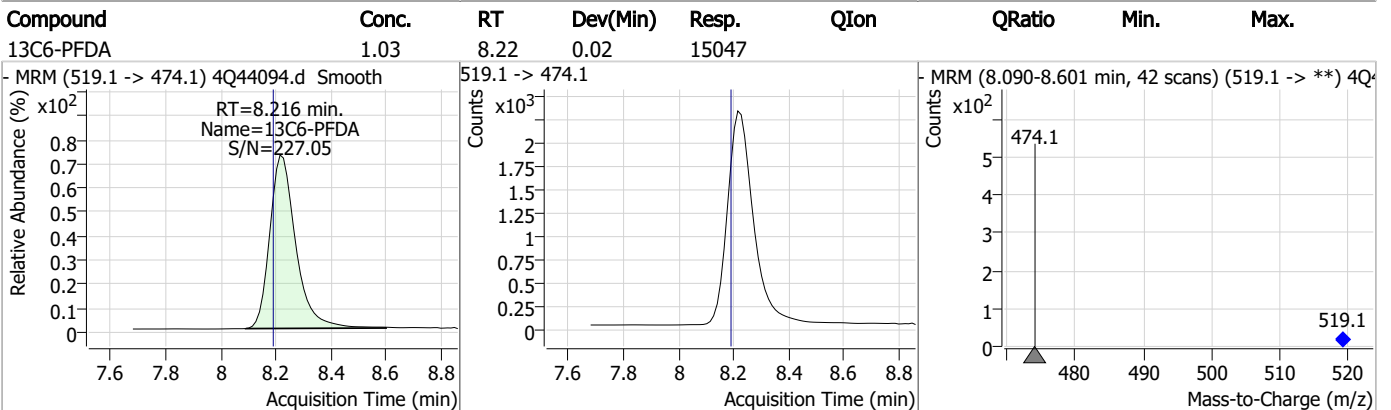
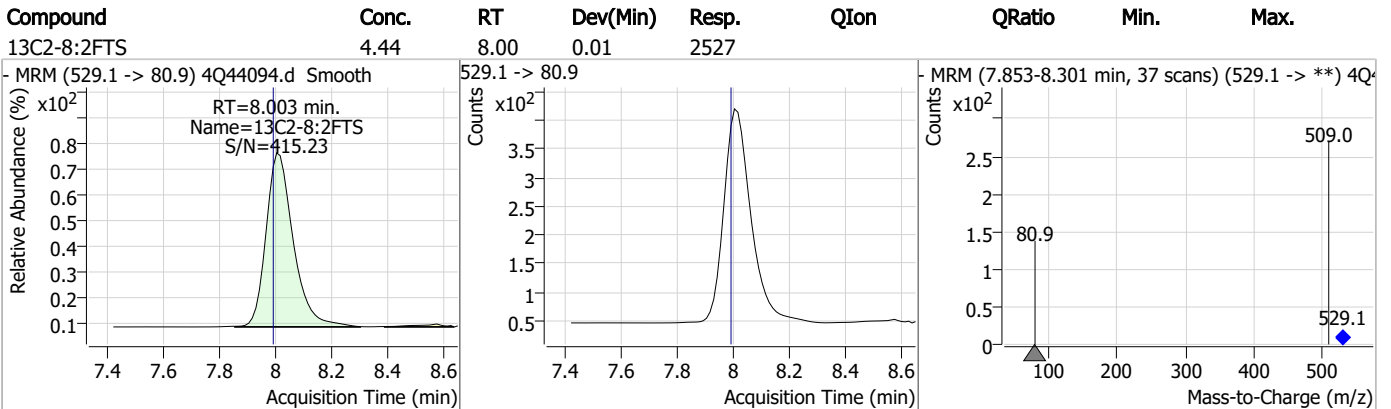
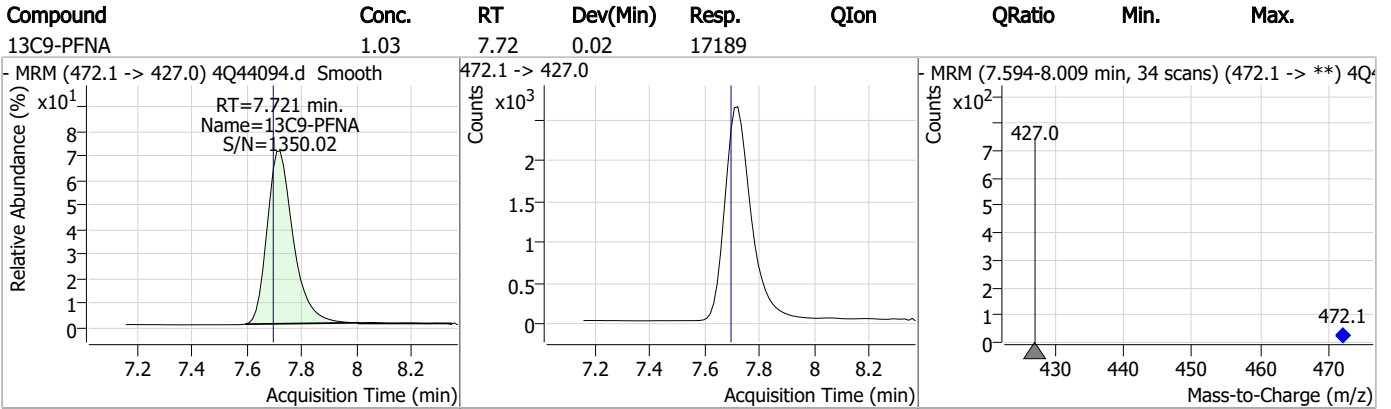


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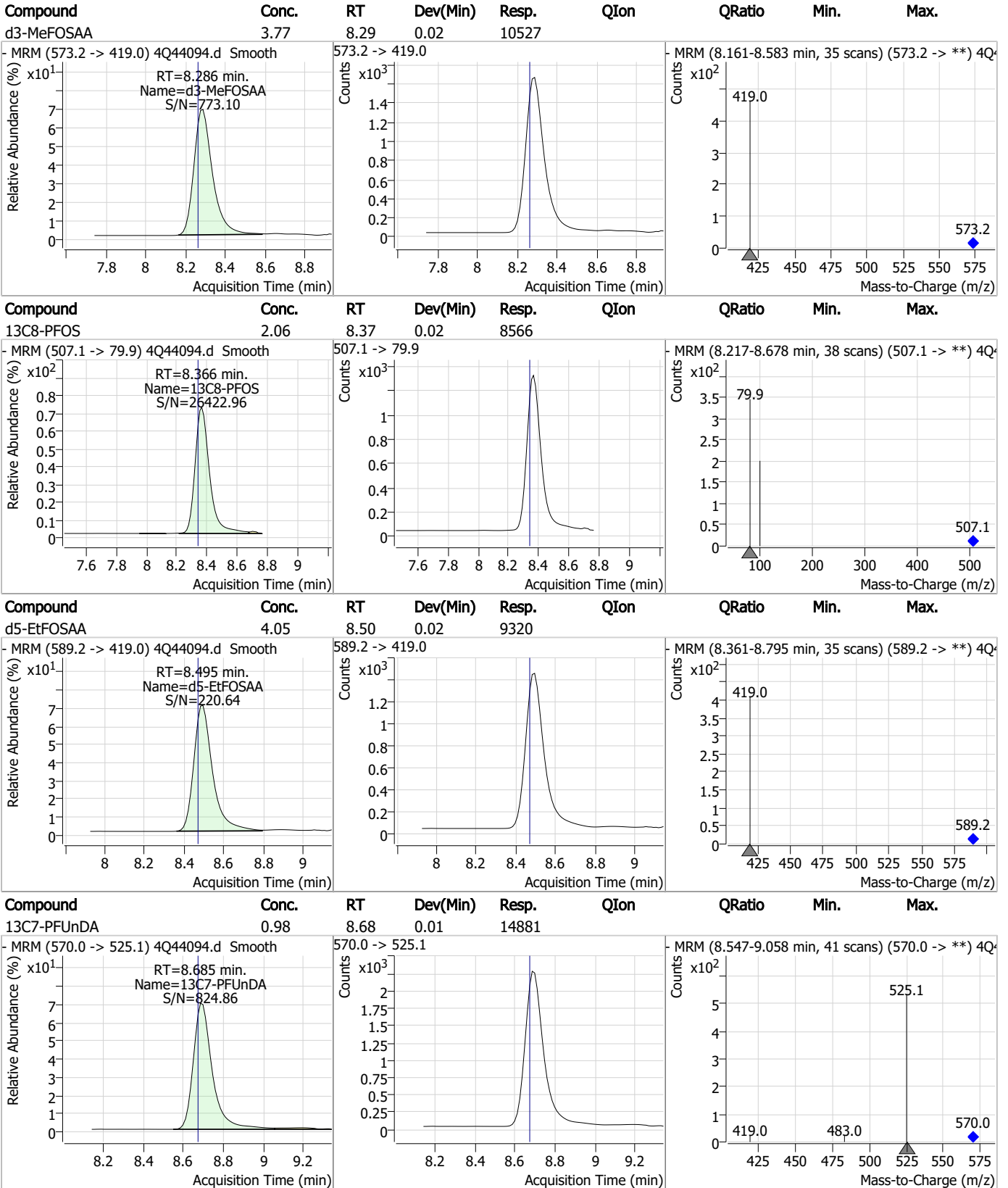


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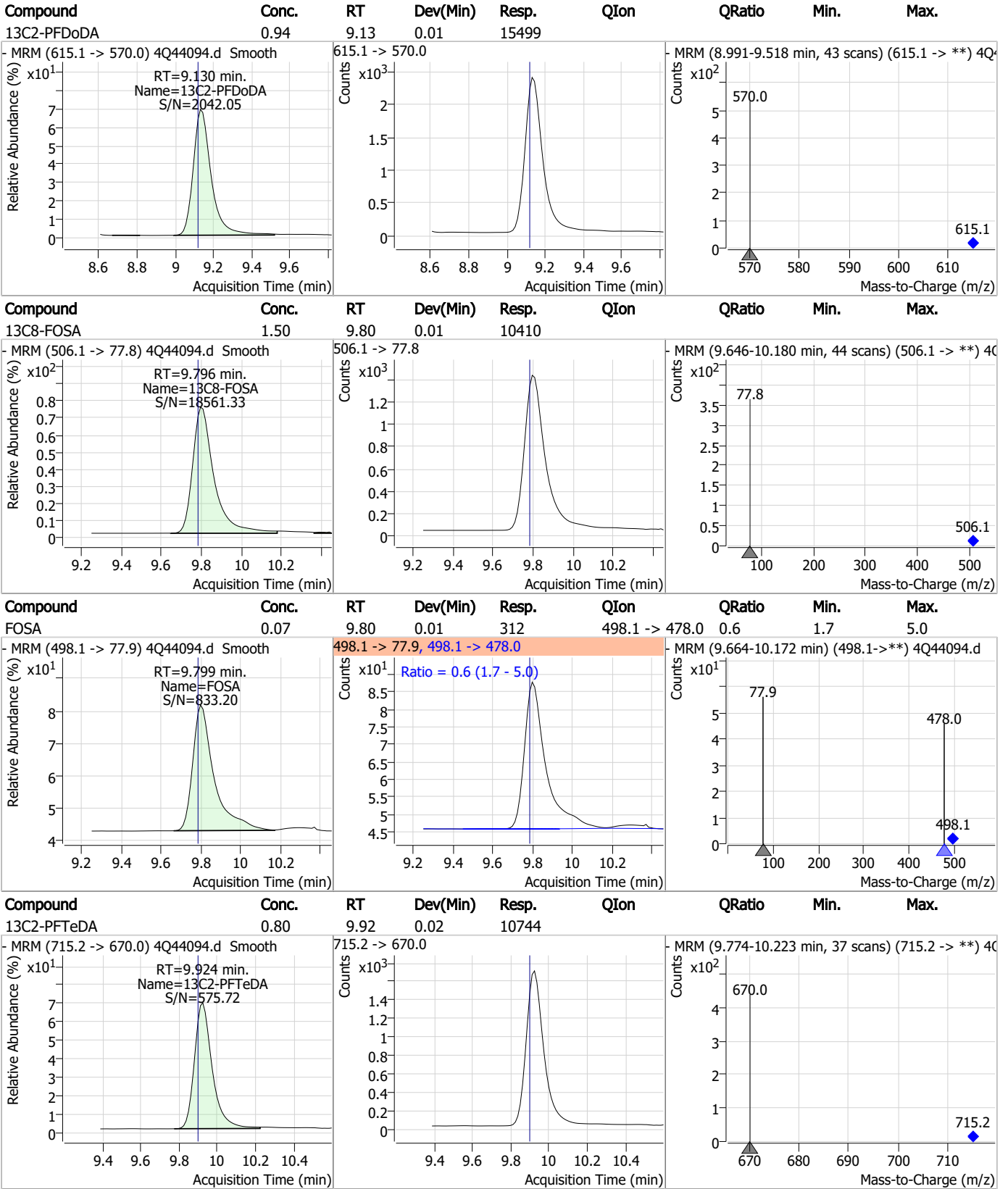
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



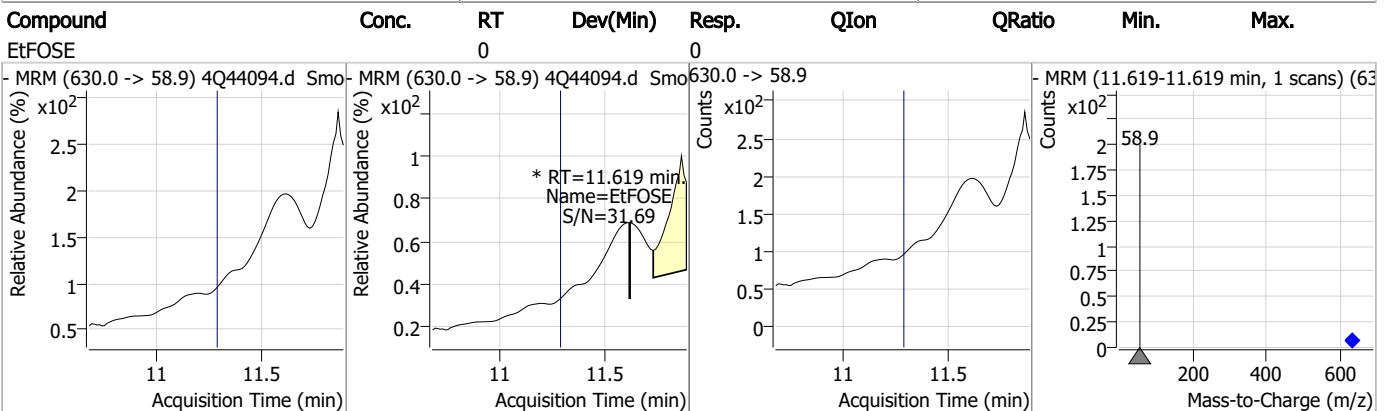
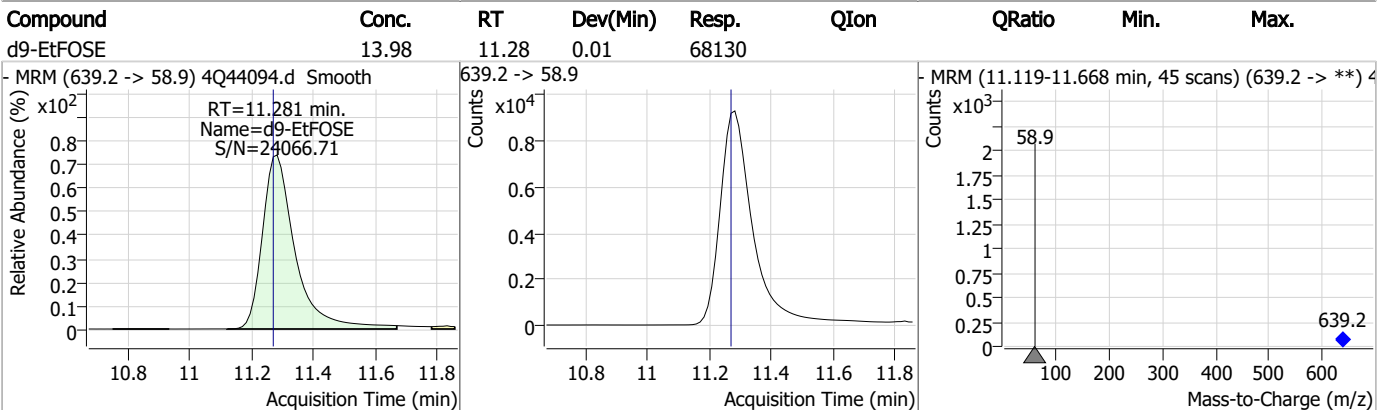
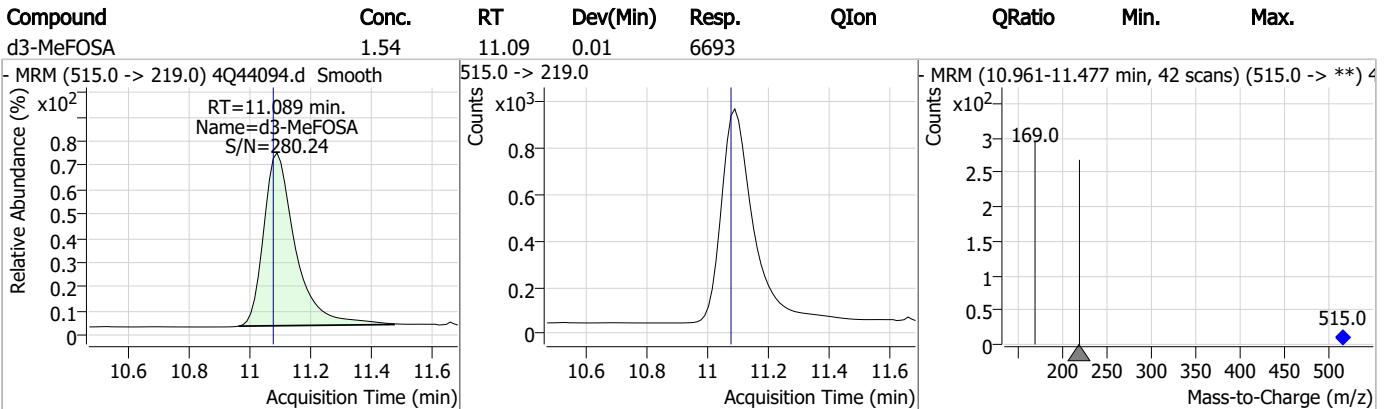
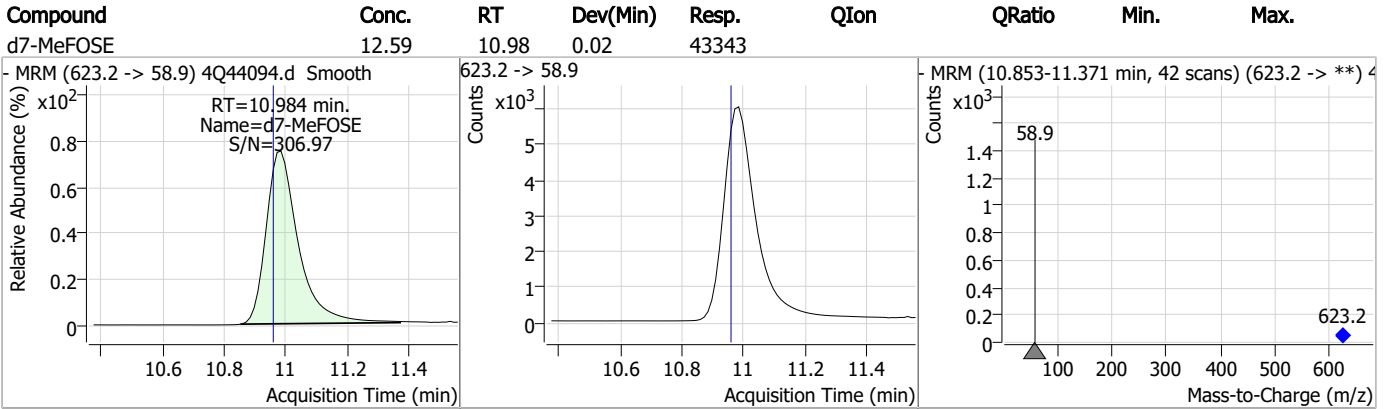
Perfluorinated Compounds by LC/MS/MS



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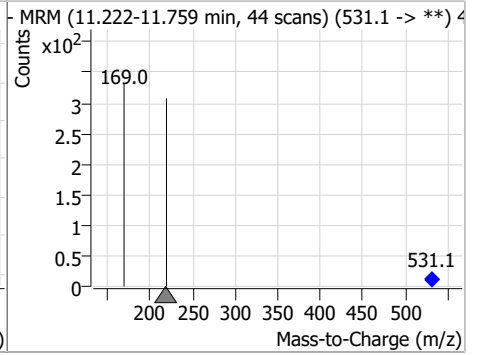
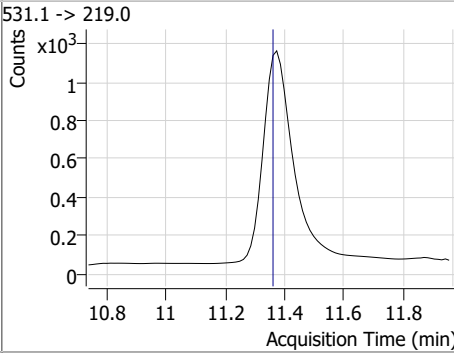
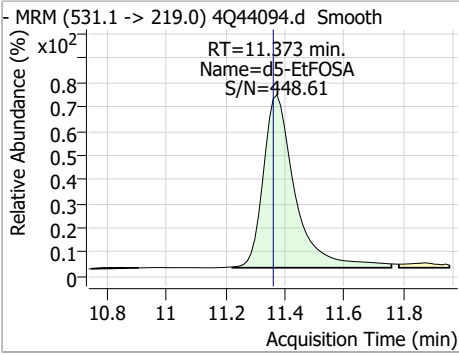


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.80	11.37	0.01	8281				



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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44096.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 6:00:29 PM
 Sample Name : FC5783-2
 Vial : P2-B6
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96726,S4Q638,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	117243	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	63972	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	45265	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	26455	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	40495	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	18826	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	17967	1.25 µg/L	0.025
M7-PFUnDA	8.697	570.0 -> 525.1	17344	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	18248	1.25 µg/L	0.025
M2-PFTeDA	9.924	715.2 -> 670.0	12216	1.25 µg/L	0.025
M8-FOSA	9.808	506.1 -> 77.8	9429	2.50 µg/L	0.025
M3-PFBS	5.452	302.1 -> 79.9	11128	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	7151	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	9540	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	990	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1903	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	3114	5.00 µg/L	0.012
M3-MeFOSAA	8.286	573.2 -> 419.0	13318	5.00 µg/L	0.025
M3-HFPO-DA	5.927	286.9 -> 168.9	24829	10.00 µg/L	0.025
M5-EtFOSAA	8.495	589.2 -> 419.0	10899	5.00 µg/L	0.025
M7-MeFOSE	10.984	623.2 -> 58.9	40589	25.00 µg/L	0.025
M9-EtFOSE	11.281	639.2 -> 58.9	64863	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	8602	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	6813	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	10185	2.50 µg/L	0.025
13C3-PFBA	2.916	216.0 -> 172.0	64585	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4770	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	48187	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16990	1.25 µg/L	0.025
13C5-PFNA	7.721	468.0 -> 423.0	23914	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	40013	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	990	5.11 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1903	5.44 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3114	5.71 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.1%		
13C2-PFDoDA	9.143	615.1 -> 570.0	18248	1.11 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.7%		
13C2-PFTeDA	9.924	715.2 -> 670.0	12216	0.91 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 73.0%		
13C3-PFBS	5.452	302.1 -> 79.9	11128	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-PFHxS	7.254	402.1 -> 79.9	7151	2.42 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C4-PFBA	2.924	216.8 -> 171.9	117243	9.65 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C4-PFHpA	6.492	367.1 -> 322.0	26455	2.57 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C5-PFHxA	5.559	318.0 -> 273.0	45265	2.57 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C5-PFPeA	4.387	268.3 -> 223.0	63972	5.19 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C6-PFDA	8.216	519.1 -> 474.1	17967	1.23 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C7-PFUnDA	8.697	570.0 -> 525.1	17344	1.15 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.6%	
13C8-FOSA	9.808	506.1 -> 77.8	9429	1.48 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 59.1%	
13C8-PFOA	7.163	421.1 -> 376.0	40495	2.56 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-PFOS	8.366	507.1 -> 79.9	9540	2.49 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C9-PFNA	7.721	472.1 -> 427.0	18826	1.16 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.6%	
d3-MeFOSAA	8.286	573.2 -> 419.0	13318	5.18 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	24829	9.43 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.3%	
d3-MeFOSA	11.089	515.0 -> 219.0	6813	1.71 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 68.2%	
d5-EtFOSAA	8.495	589.2 -> 419.0	10899	5.15 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.0%	
d7-MeFOSE	10.984	623.2 -> 58.9	40589	12.81 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 51.2%	
d9-EtFOSE	11.281	639.2 -> 58.9	64863	14.46 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 57.8%	
d5-EtFOSA	11.373	531.1 -> 219.0	8602	2.03 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.0%	

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	9.799	498.1 -> 77.9	297	0.08 µg/L	96
		498.1 -> 478.0	14		
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.502	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.644	630.0 -> 58.9	0	µg/L	m	1
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

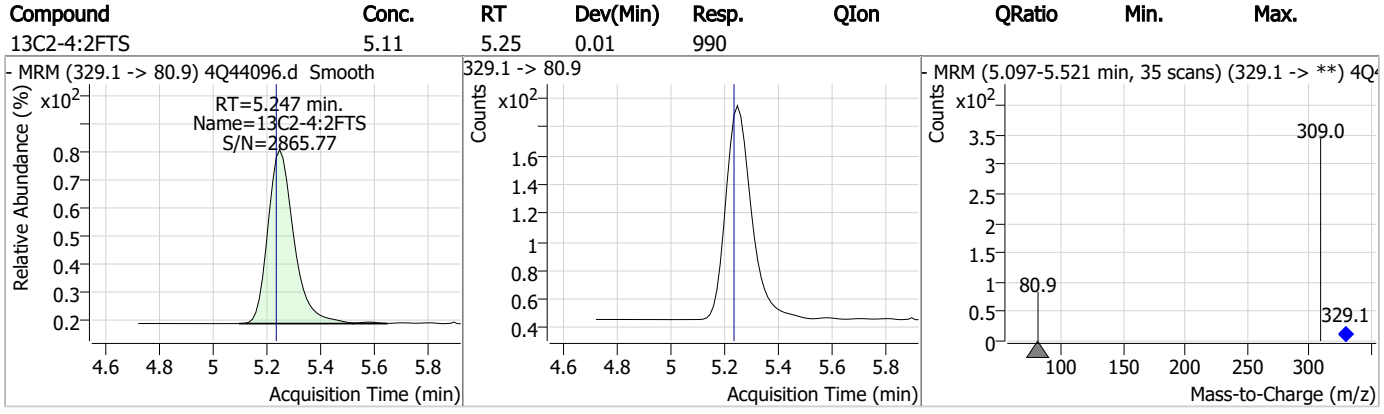
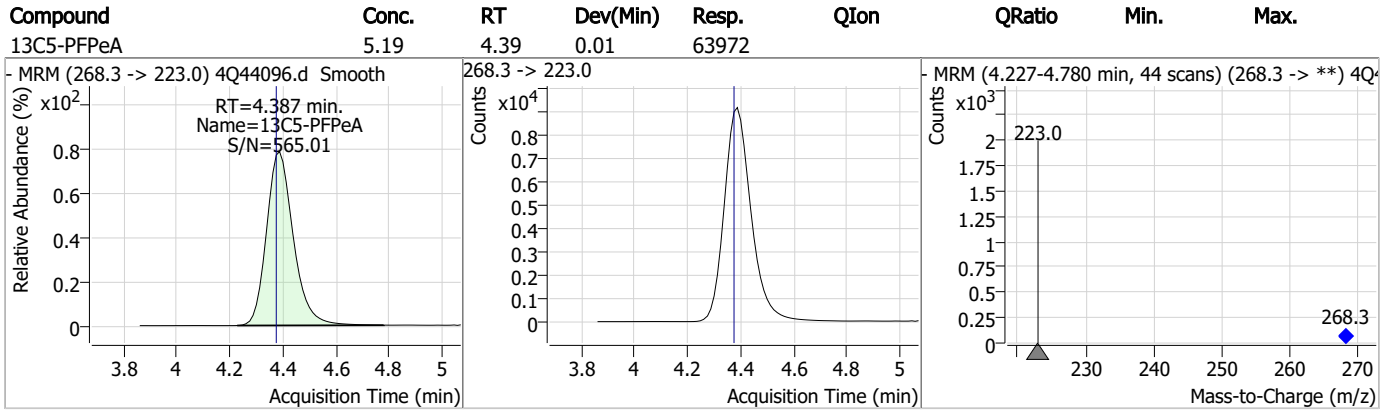
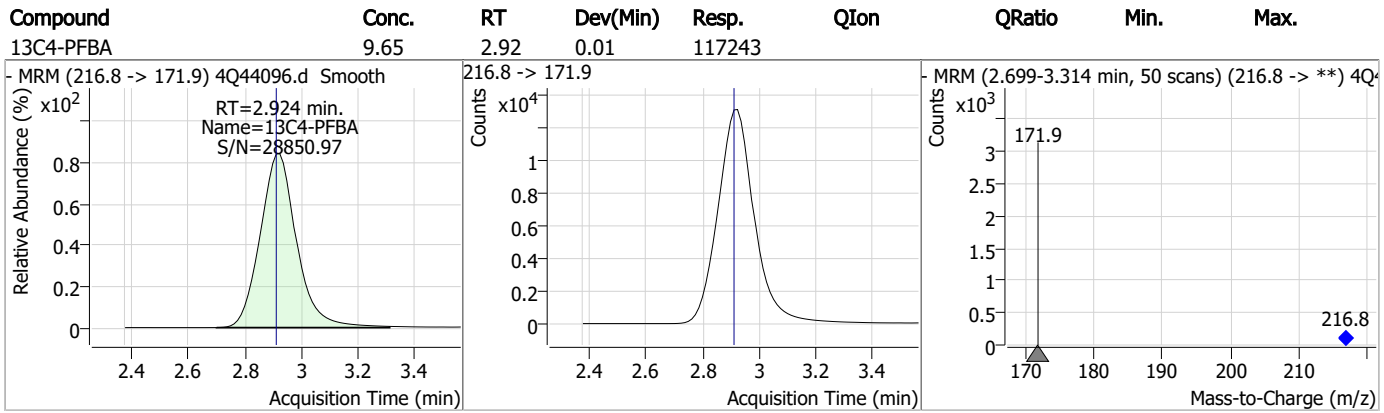
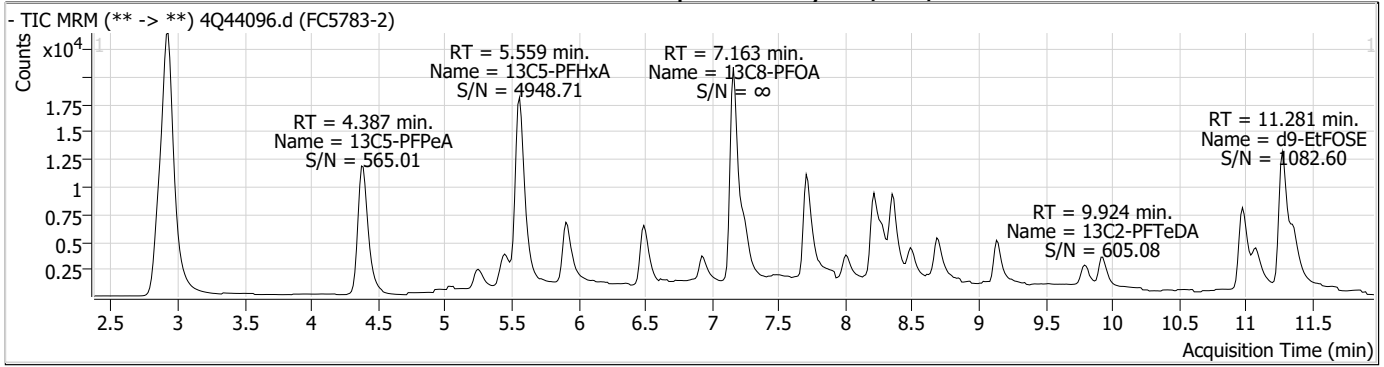
Perfluorinated Compounds by LC/MS/MS

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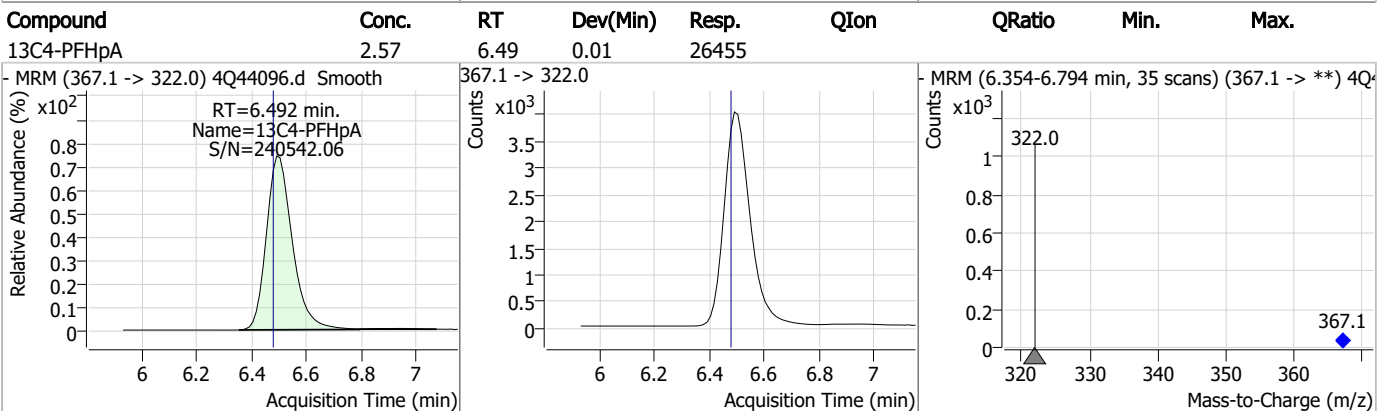
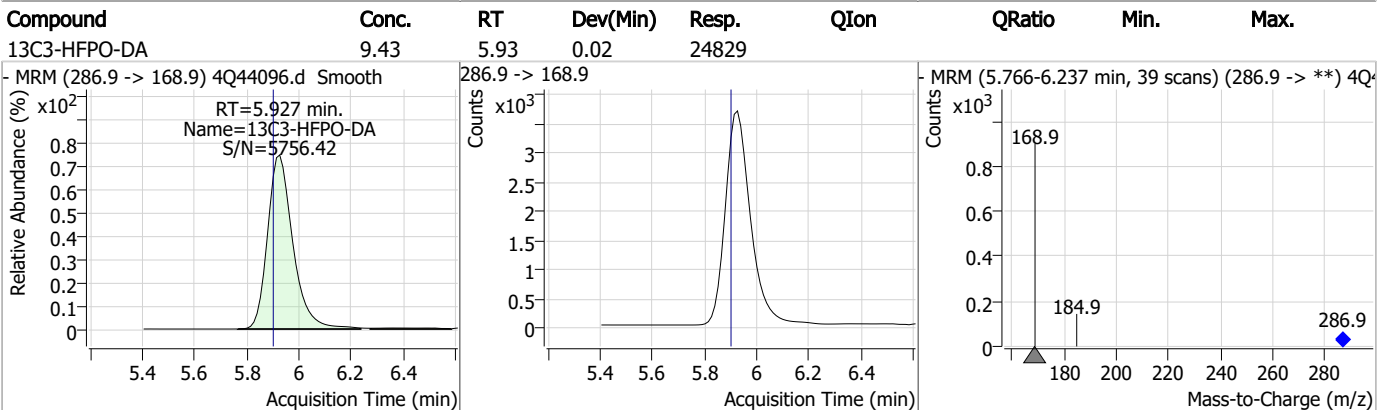
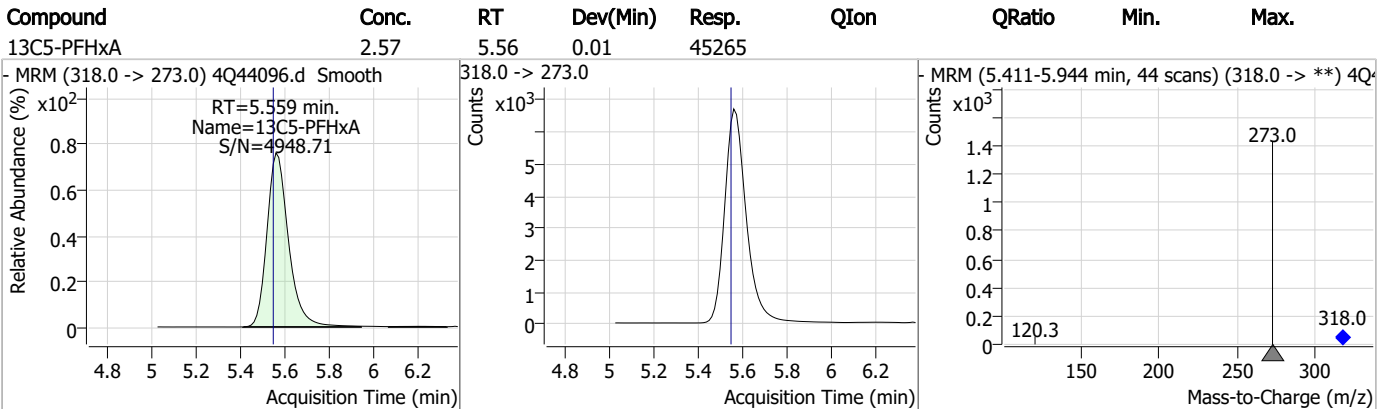
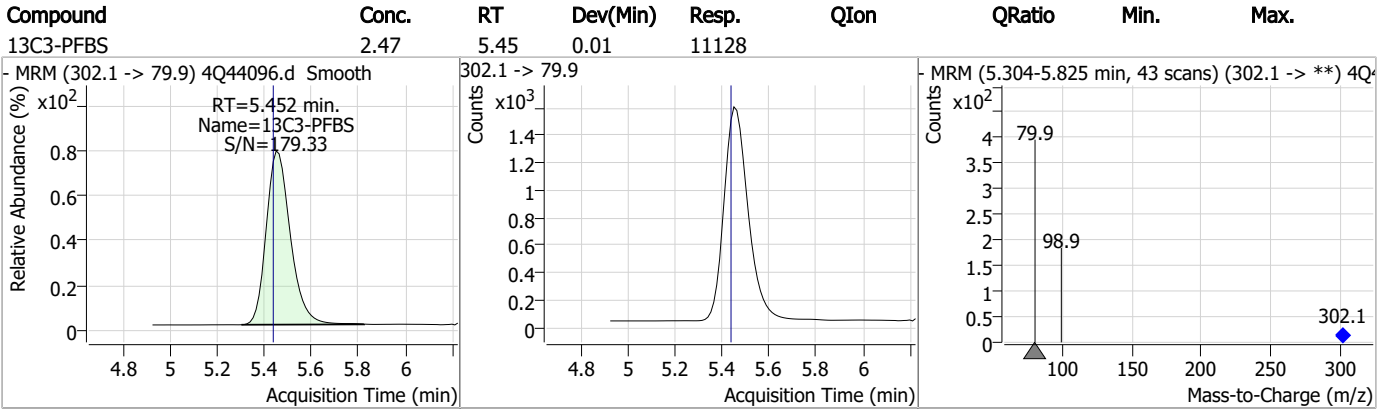
7.1.2

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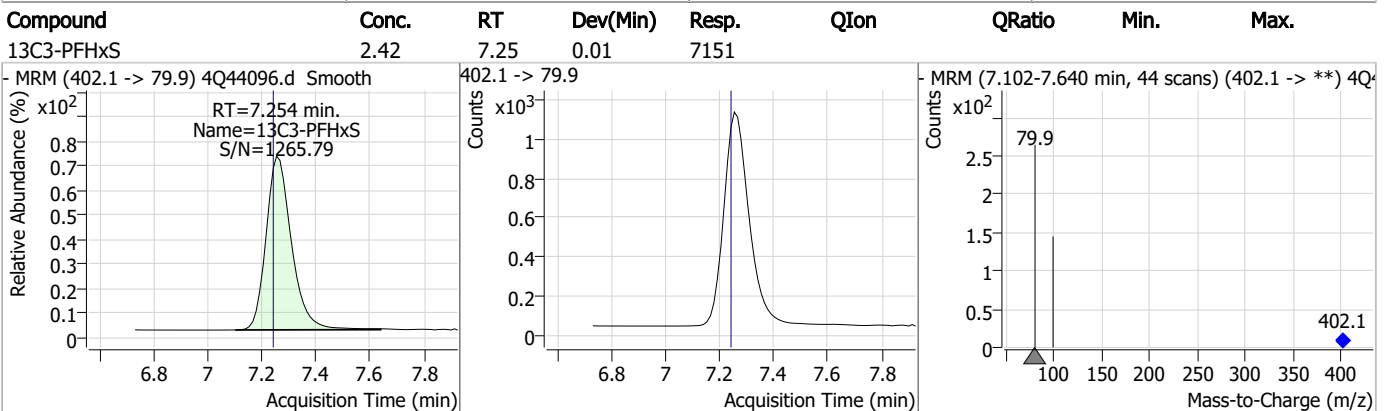
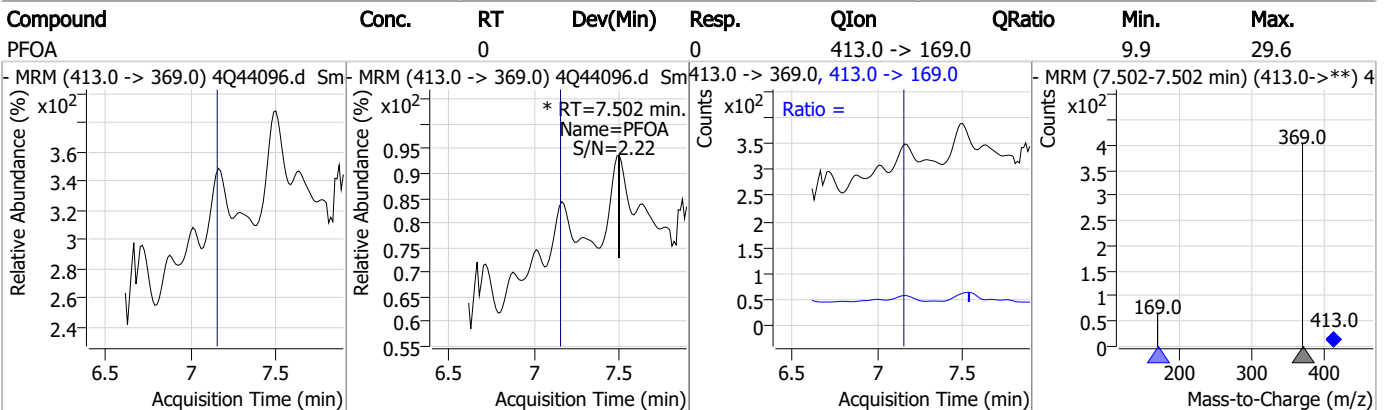
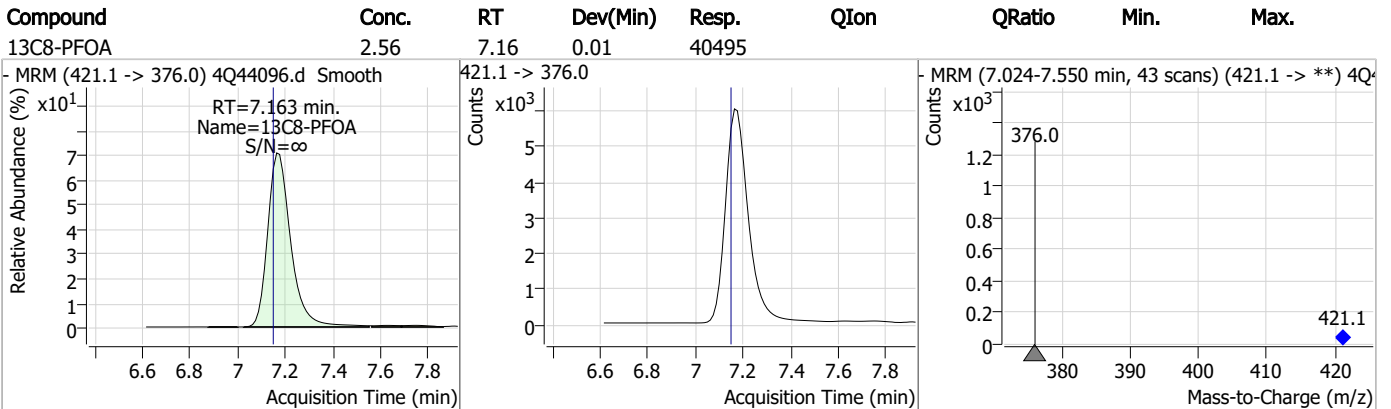
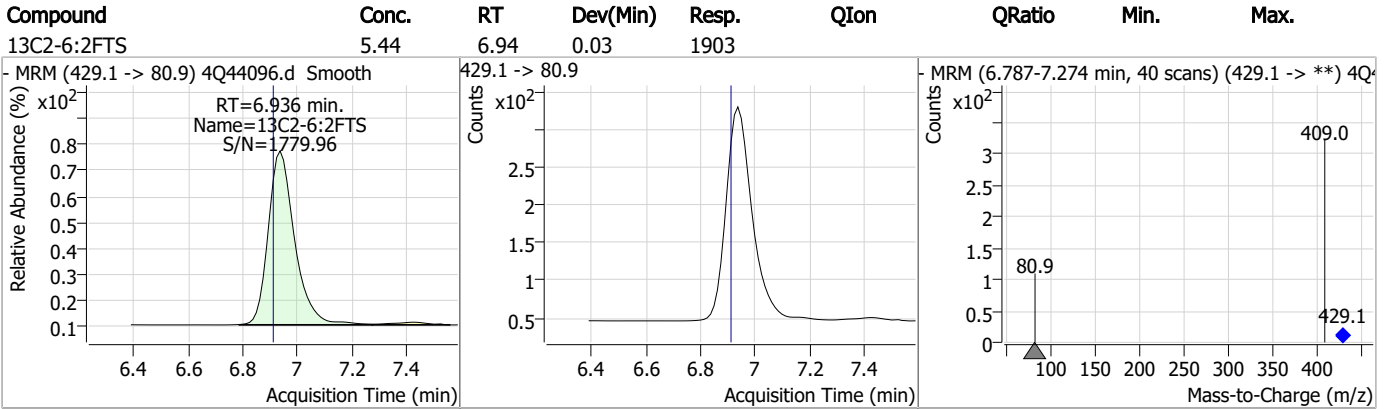
Perfluorinated Compounds by LC/MS/MS



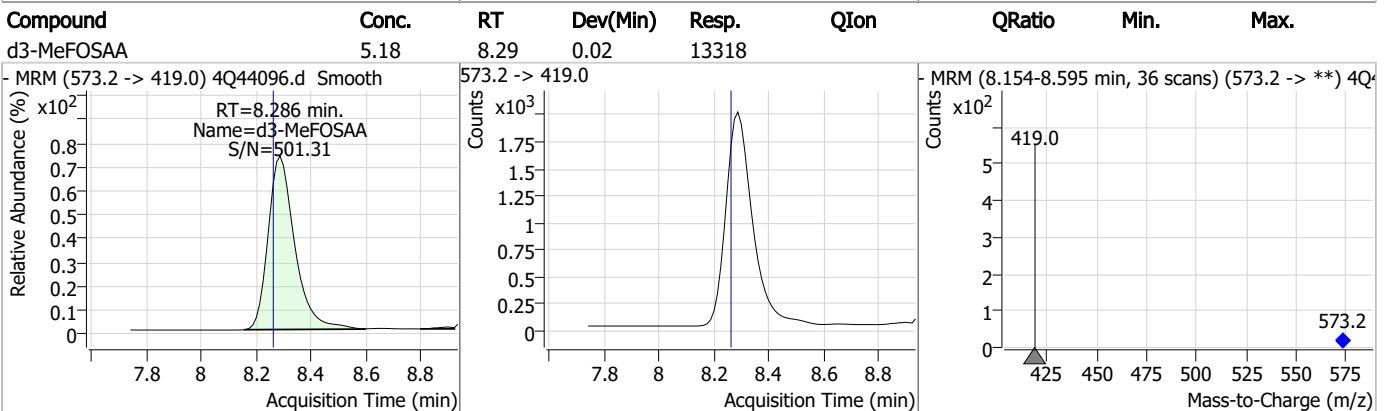
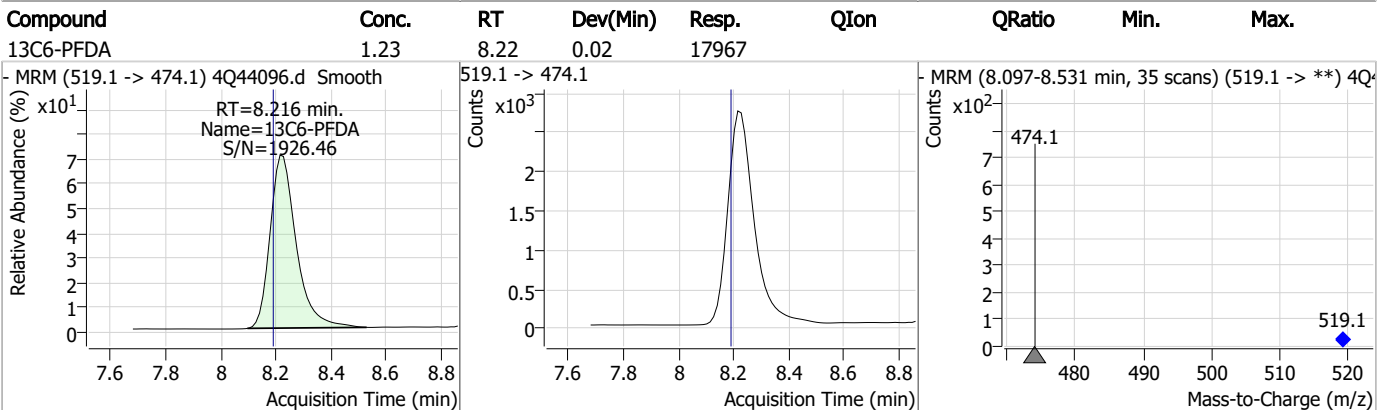
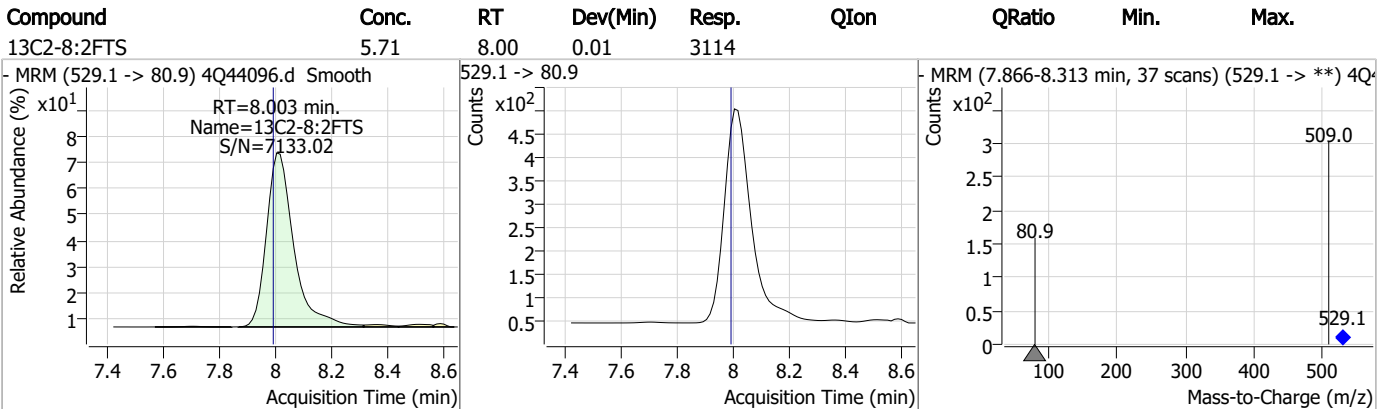
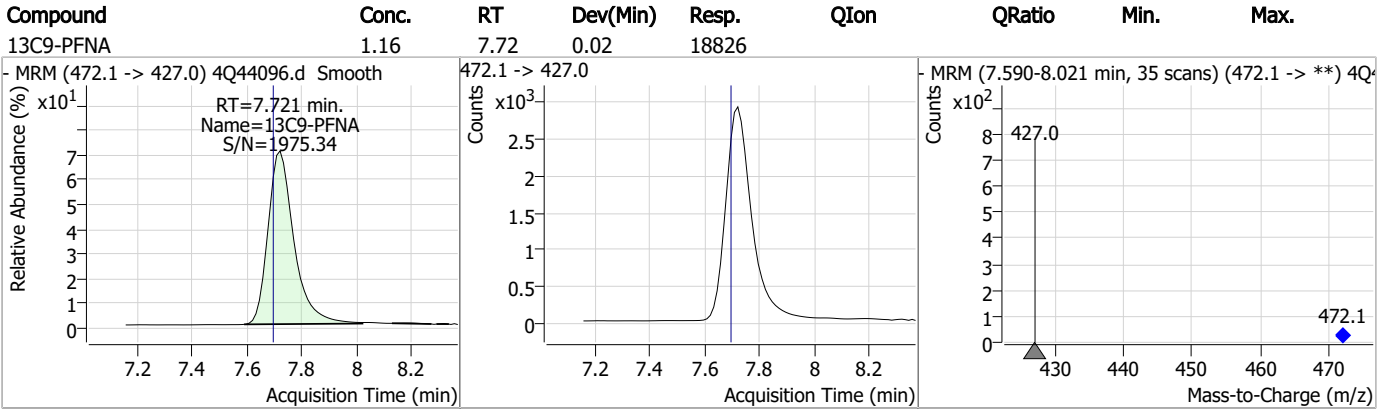
Perfluorinated Compounds by LC/MS/MS



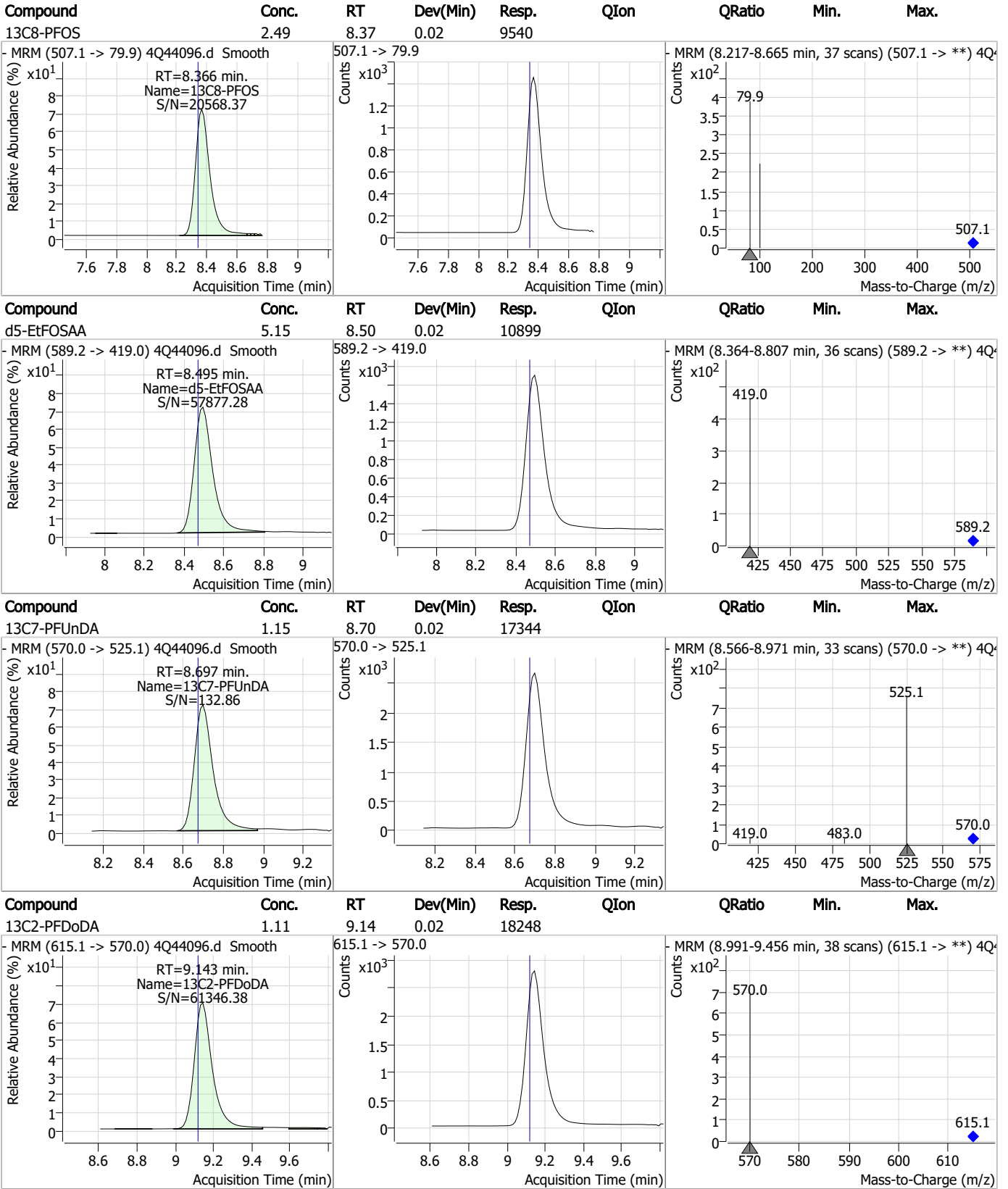
Perfluorinated Compounds by LC/MS/MS



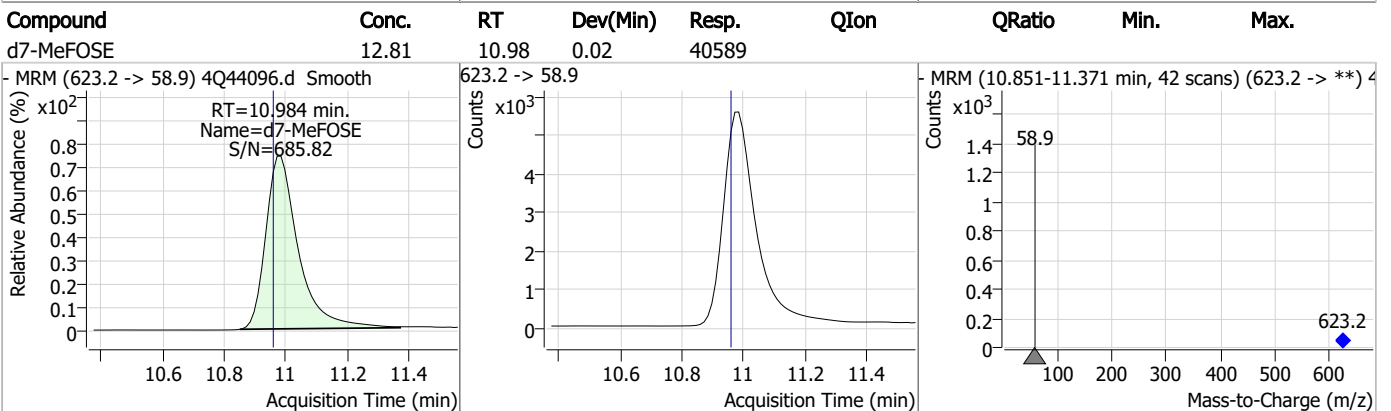
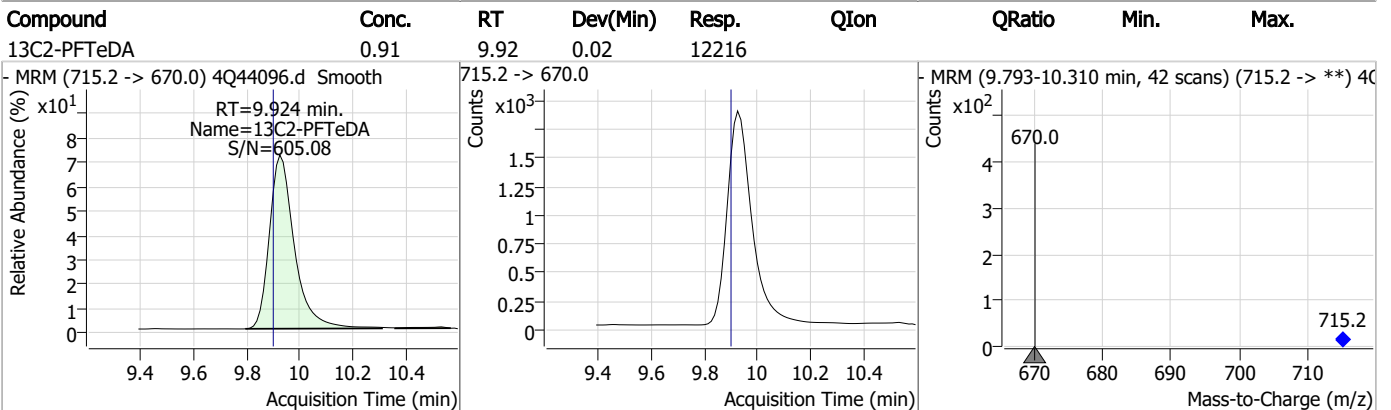
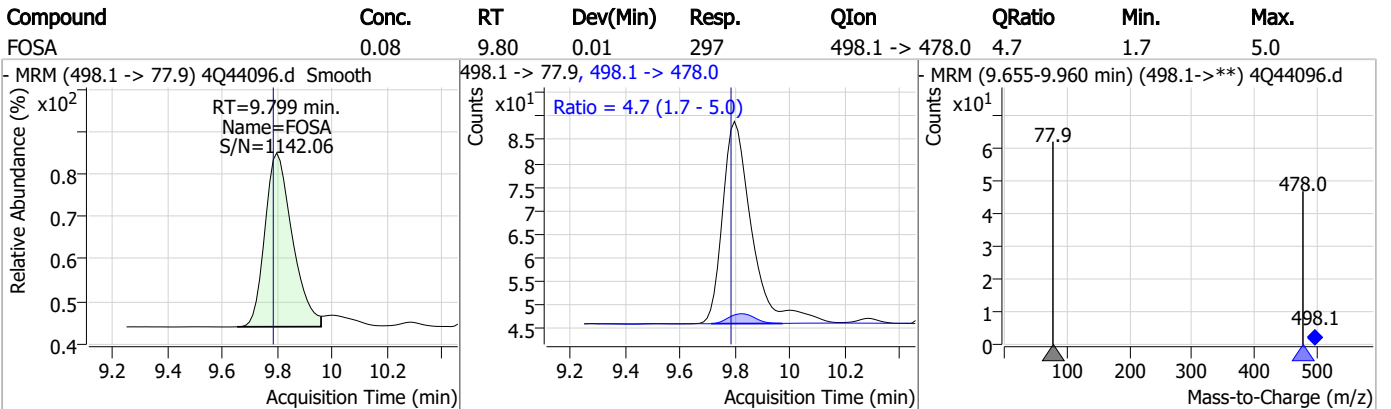
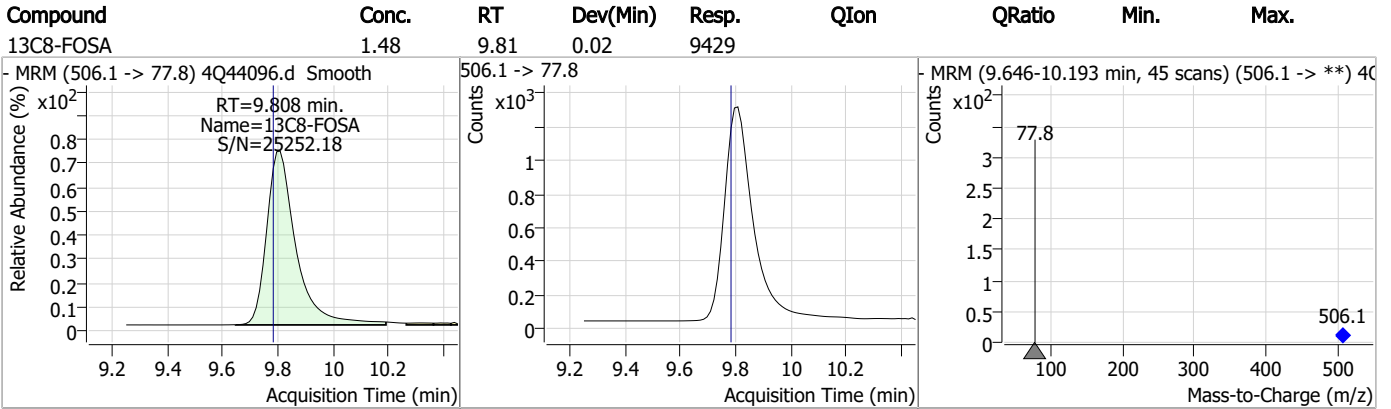
Perfluorinated Compounds by LC/MS/MS



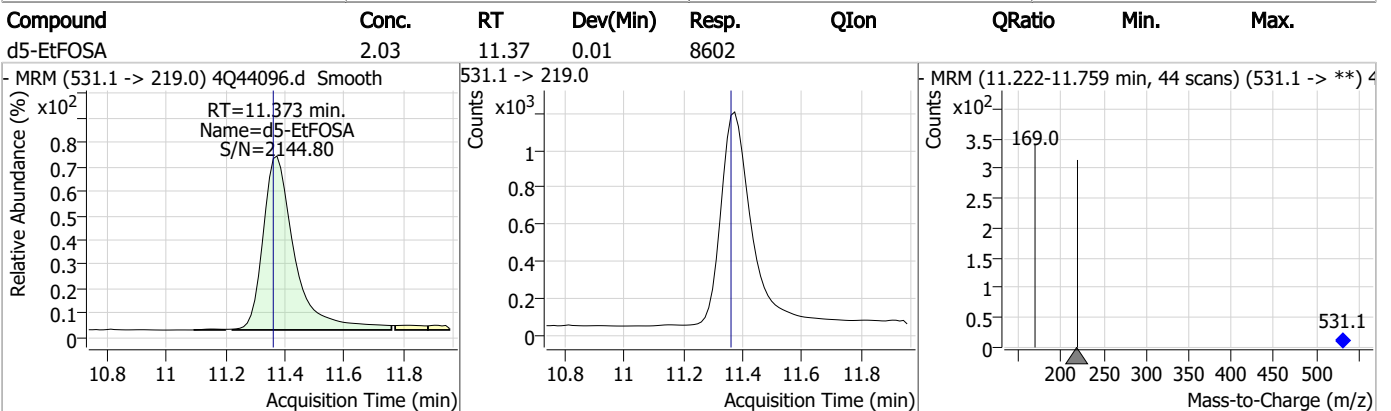
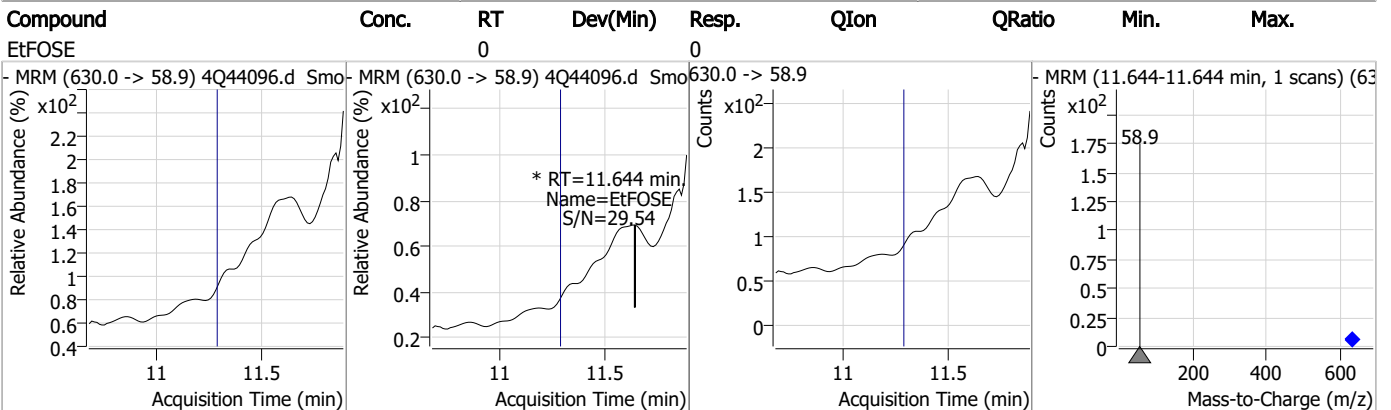
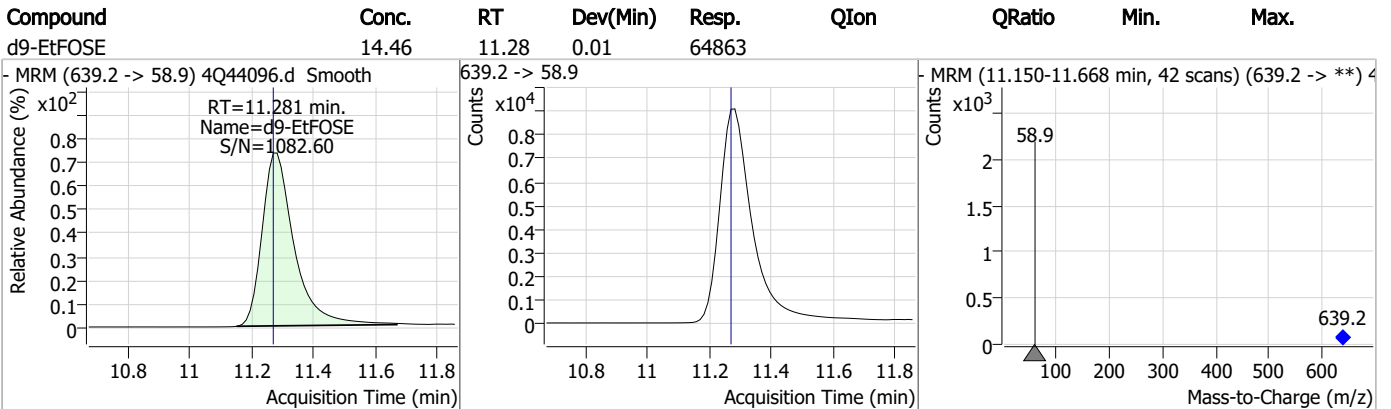
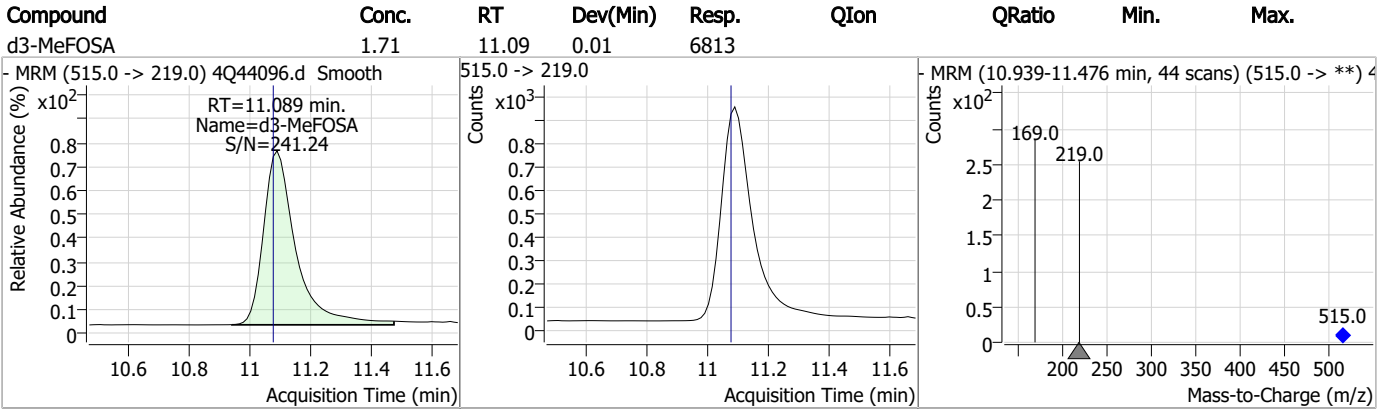
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.1.2

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44093.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 5:18:17 PM
 Sample Name : op96726-mb
 Vial : P2-B3
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96726,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	123882	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	62964	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	44303	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	26318	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	39983	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	19154	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	17323	1.25 µg/L	0.025
M7-PFUnDA	8.685	570.0 -> 525.1	17524	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	17095	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	11287	1.25 µg/L	0.025
M8-FOSA	9.796	506.1 -> 77.8	10121	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	10654	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6820	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	9079	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	1117	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1825	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2696	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	12751	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	24607	10.00 µg/L	0.025
M5-EtFOSAA	8.483	589.2 -> 419.0	9992	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	40324	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	62297	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	7152	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	6276	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	10115	2.50 µg/L	0.025
13C3-PFBA	2.916	216.0 -> 172.0	64159	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4475	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	47767	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16108	1.25 µg/L	0.025
13C5-PFNA	7.709	468.0 -> 423.0	22694	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	40269	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1117	6.14 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.8%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1825	5.56 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.3%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2696	5.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-PFDoDA	9.130	615.1 -> 570.0	17095	1.10 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.6%		
13C2-PFTeDA	9.924	715.2 -> 670.0	11287	0.89 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 71.1%		
13C3-PFBS	5.452	302.1 -> 79.9	10654	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C3-PFHxS	7.254	402.1 -> 79.9	6820	2.46 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 = 98.3%	
13C4-PFBA	2.911	216.8 -> 171.9	123882	10.26 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C4-PFHpA	6.492	367.1 -> 322.0	26318	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C5-PFHxA	5.559	318.0 -> 273.0	44303	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.387	268.3 -> 223.0	62964	5.08 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C6-PFDA	8.216	519.1 -> 474.1	17323	1.26 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C7-PFUnDA	8.685	570.0 -> 525.1	17524	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C8-FOSA	9.796	506.1 -> 77.8	10121	1.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 63.8%	
13C8-PFOA	7.163	421.1 -> 376.0	39983	2.55 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOS	8.366	507.1 -> 79.9	9079	2.38 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C9-PFNA	7.709	472.1 -> 427.0	19154	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSAA	8.273	573.2 -> 419.0	12751	4.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	24607	9.29 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.9%	
d3-MeFOSA	11.089	515.0 -> 219.0	6276	1.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 63.3%	
d5-EtFOSAA	8.483	589.2 -> 419.0	9992	4.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
d7-MeFOSE	10.972	623.2 -> 58.9	40324	12.81 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 51.2%	
d9-EtFOSE	11.269	639.2 -> 58.9	62297	13.98 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.9%	
d5-EtFOSA	11.373	531.1 -> 219.0	7152	1.70 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 67.8%	

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

7.2.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	8.096	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	0	N.D.		
		548.8 -> 79.9				
PFOA	7.164	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	0	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.631	630.0 -> 58.9	0	µg/L	m	1
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.1
7

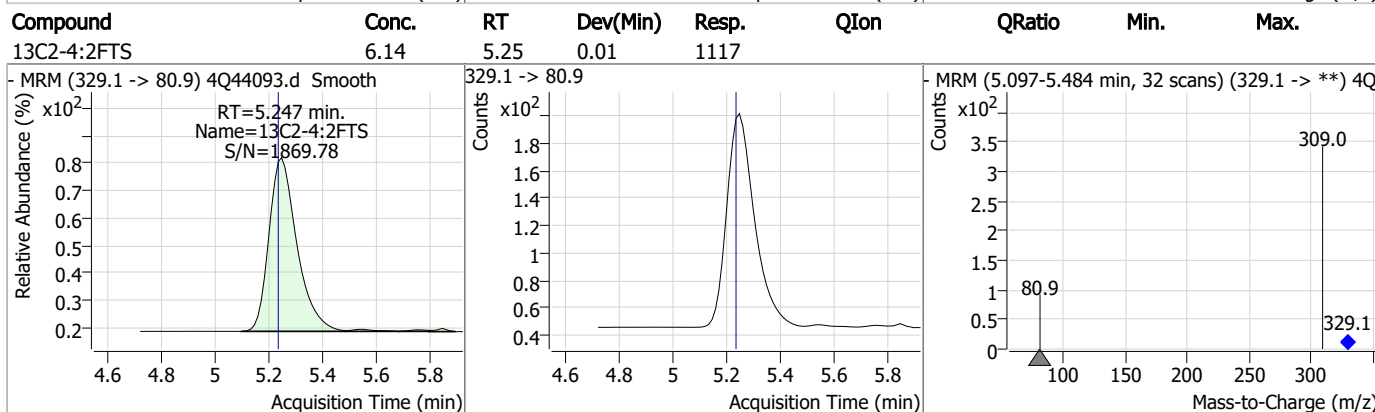
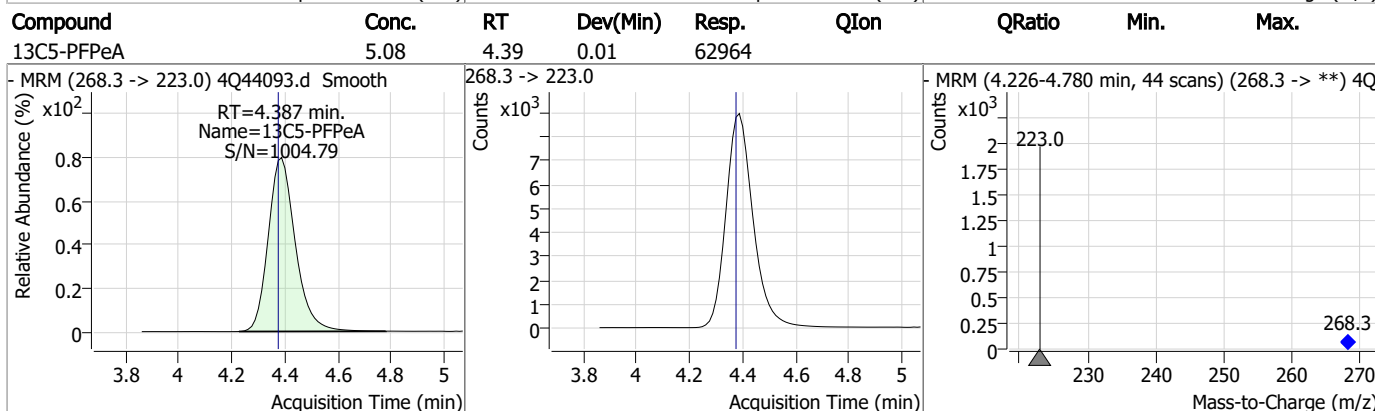
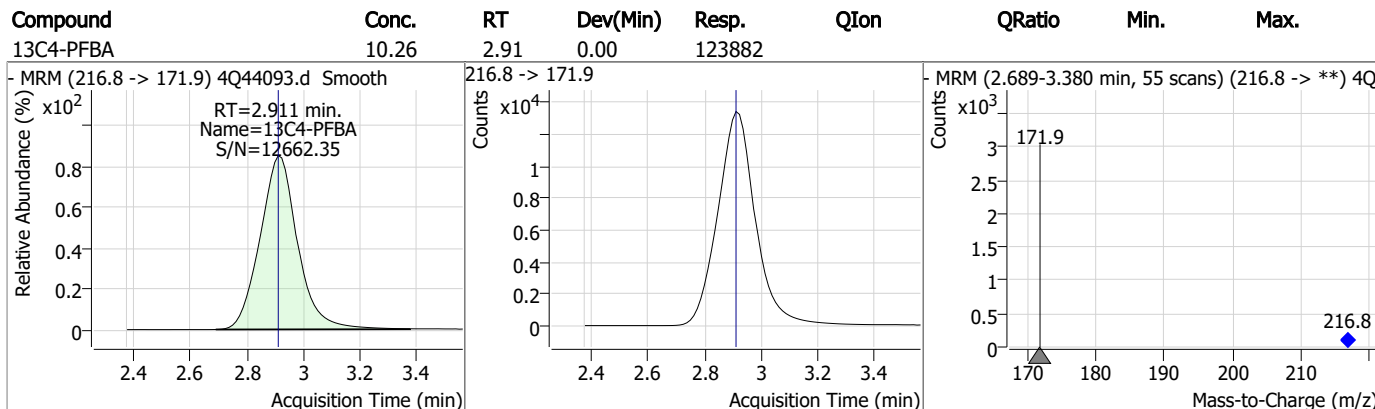
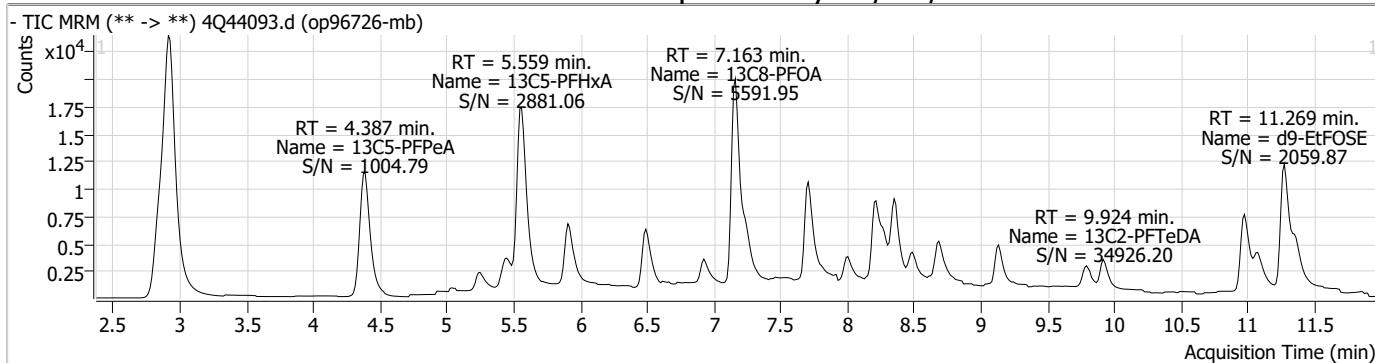
Perfluorinated Compounds by LC/MS/MS

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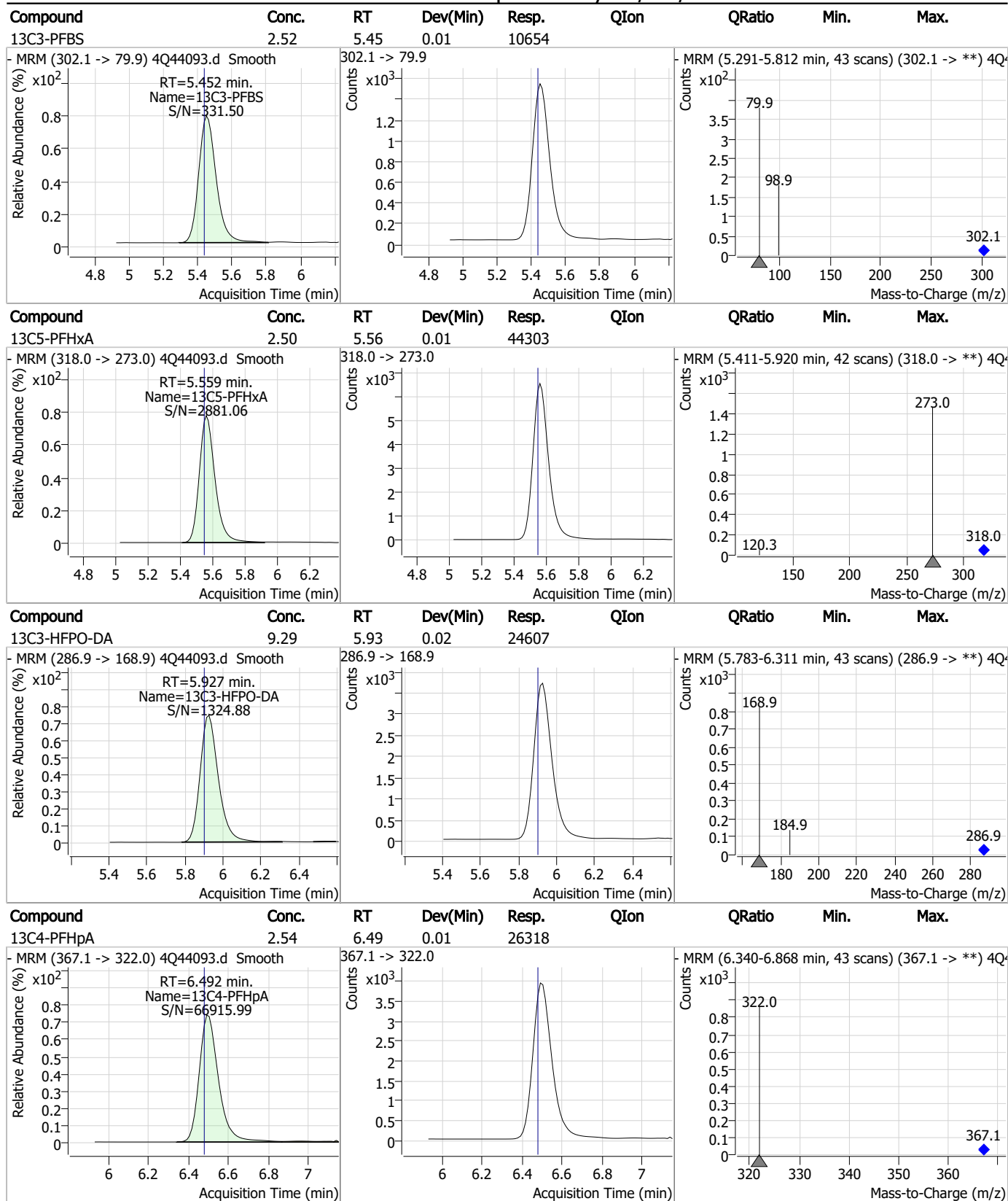
7.2.1

7

Perfluorinated Compounds by LC/MS/MS

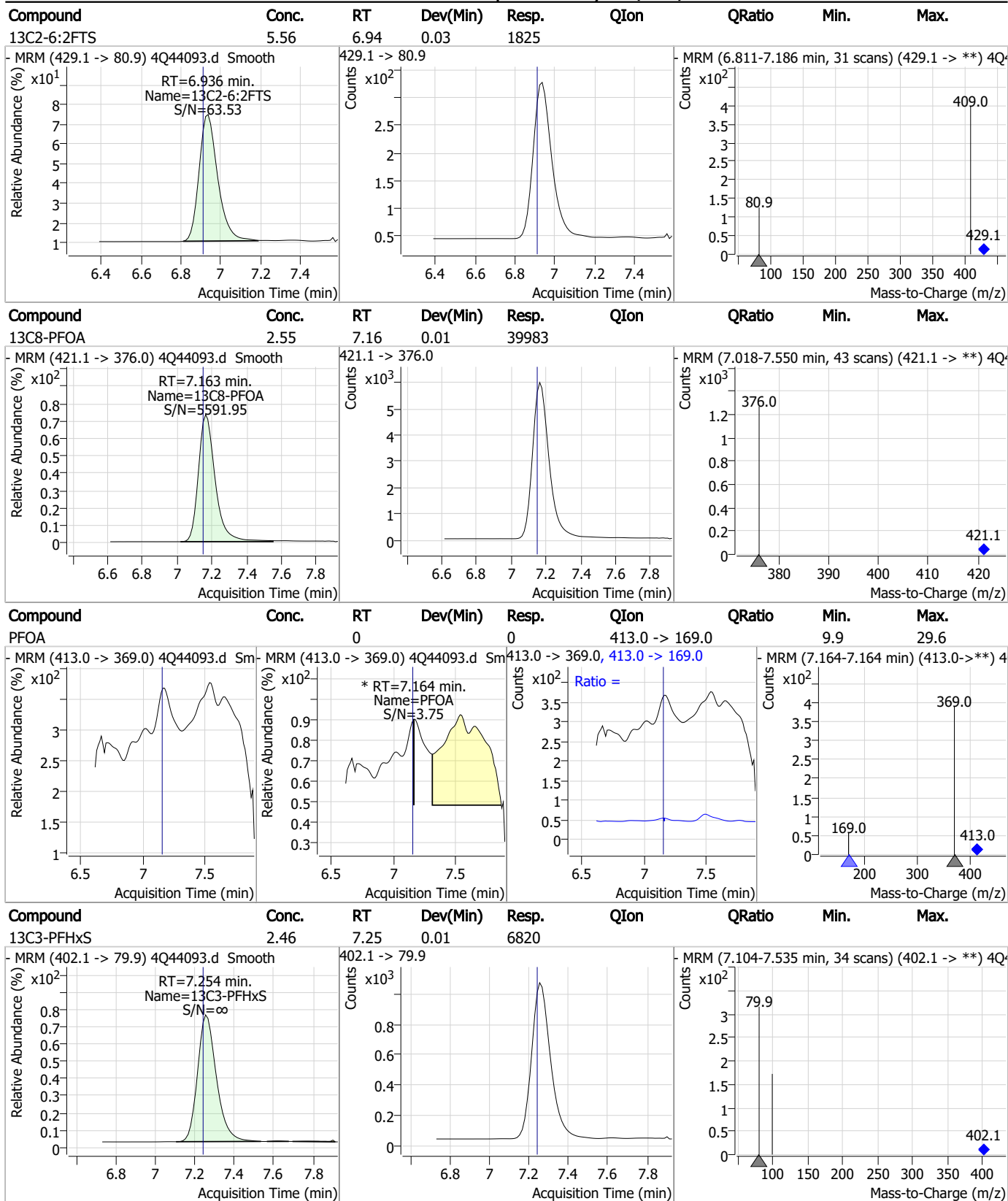


Perfluorinated Compounds by LC/MS/MS



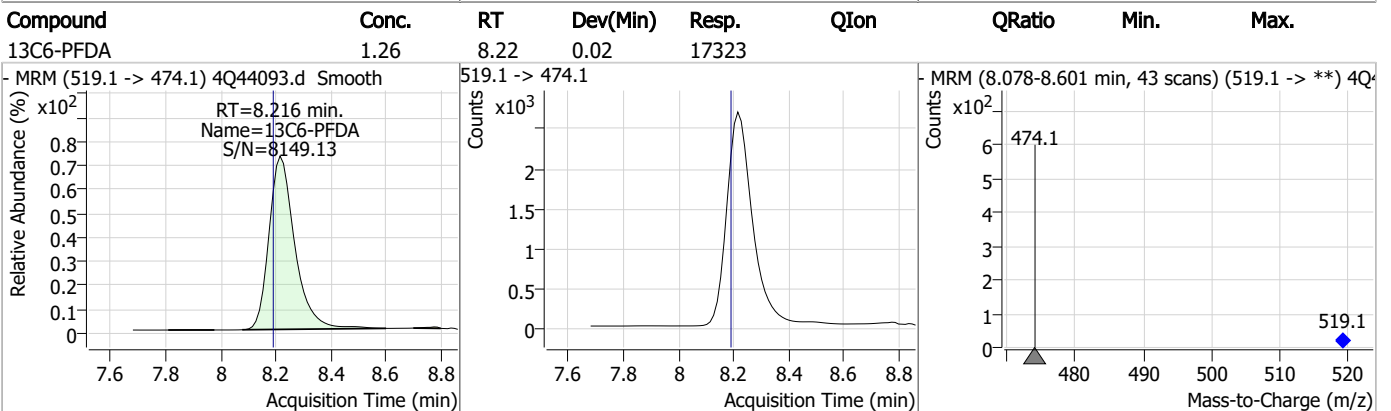
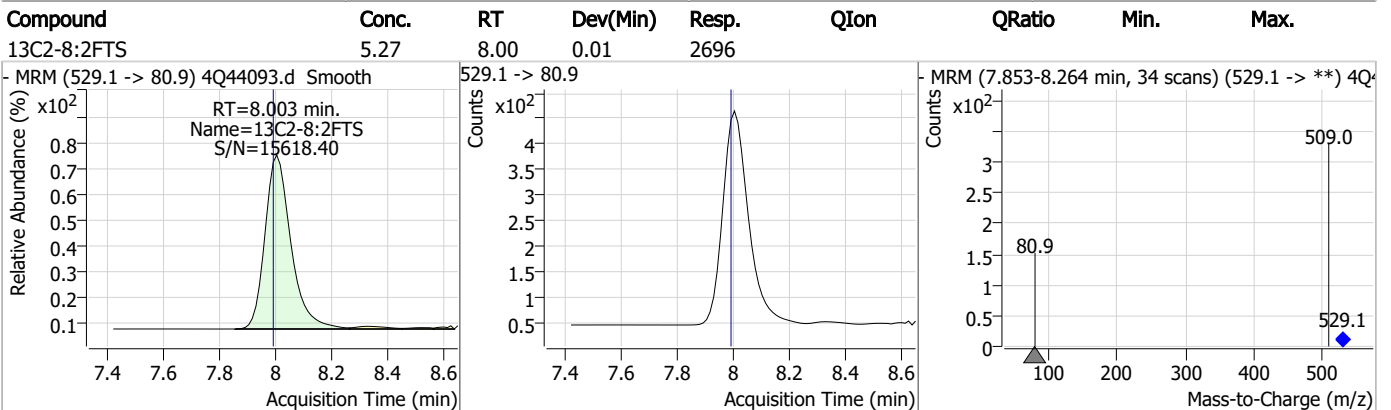
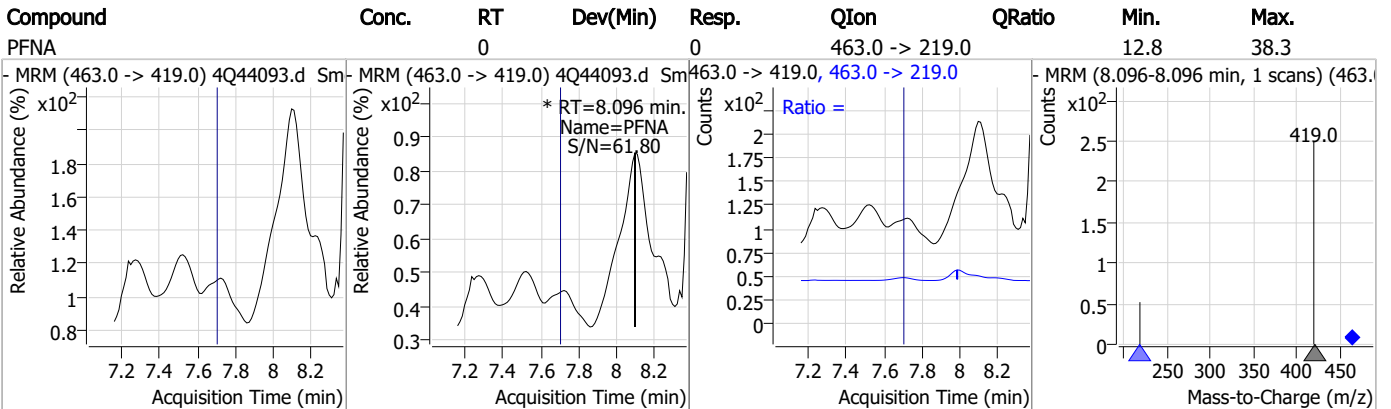
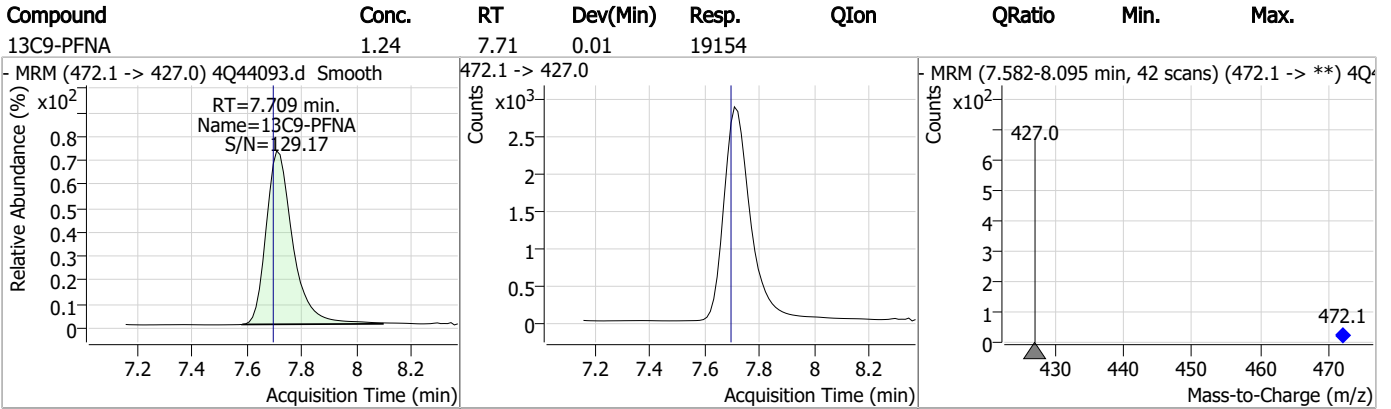
7.2.1
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Perfluorinated Compounds by LC/MS/MS

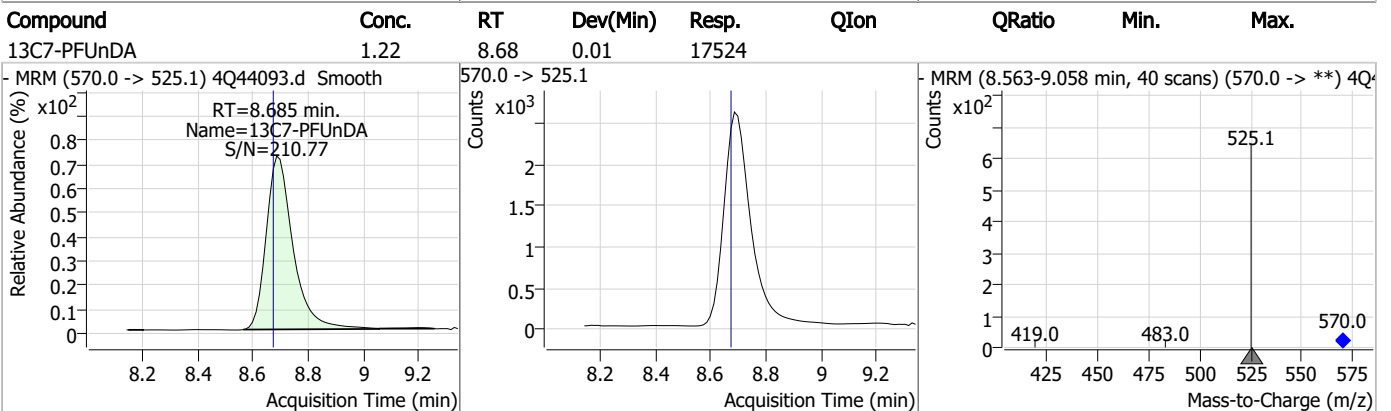
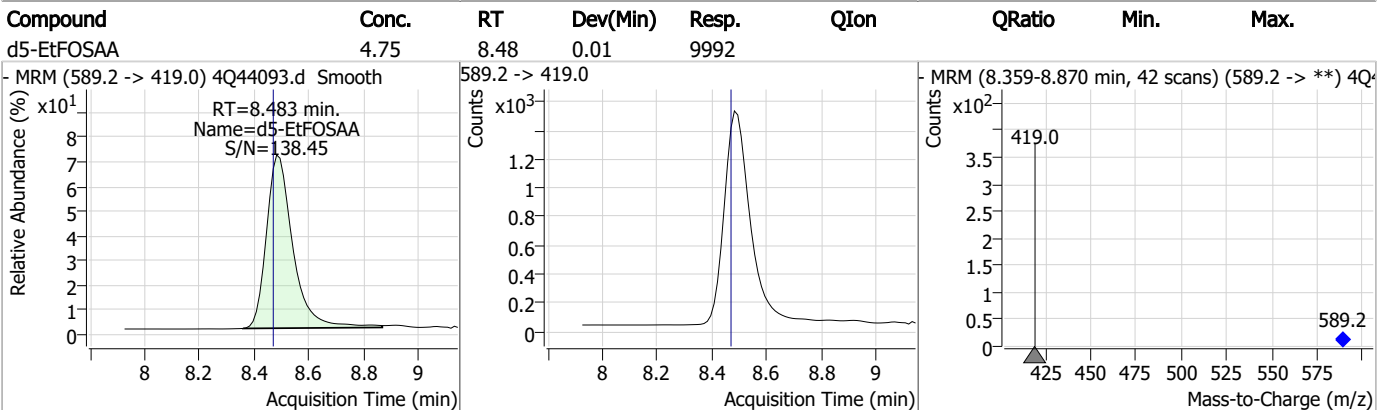
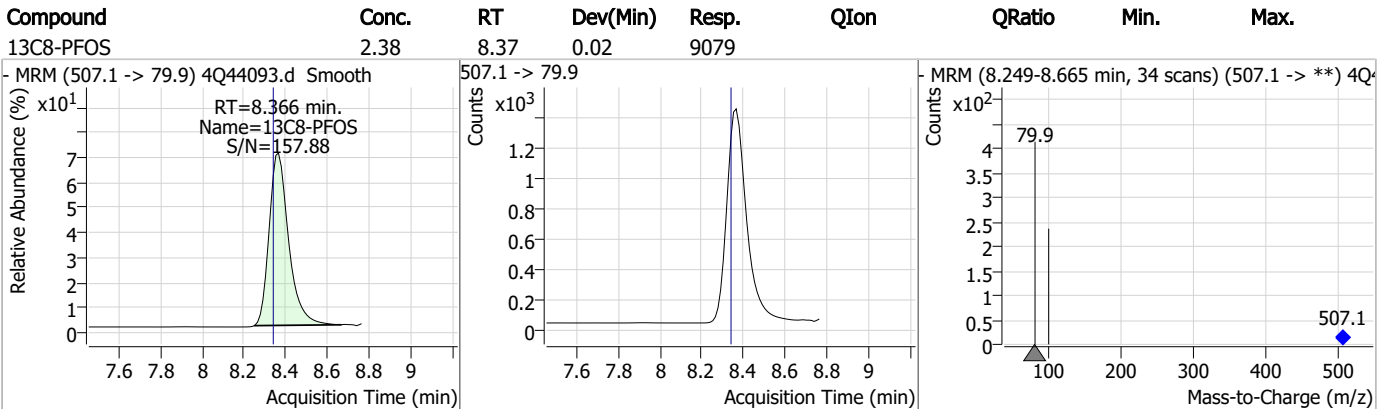
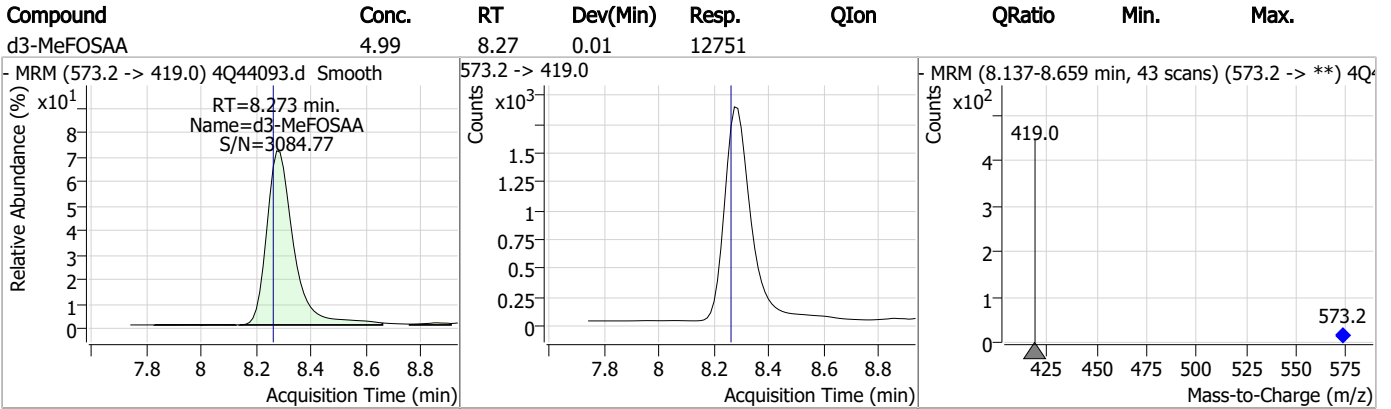


7.2.1
7

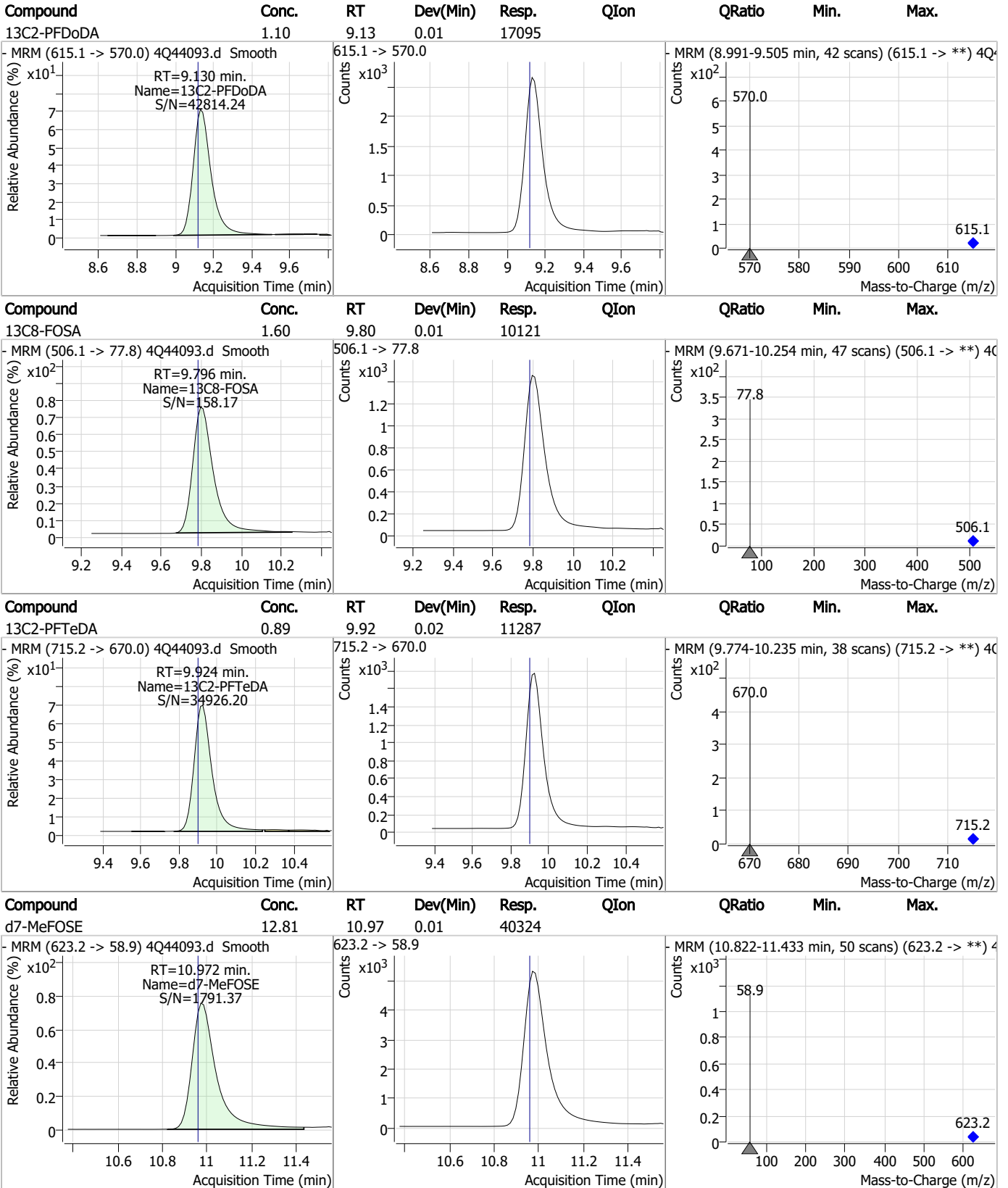
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



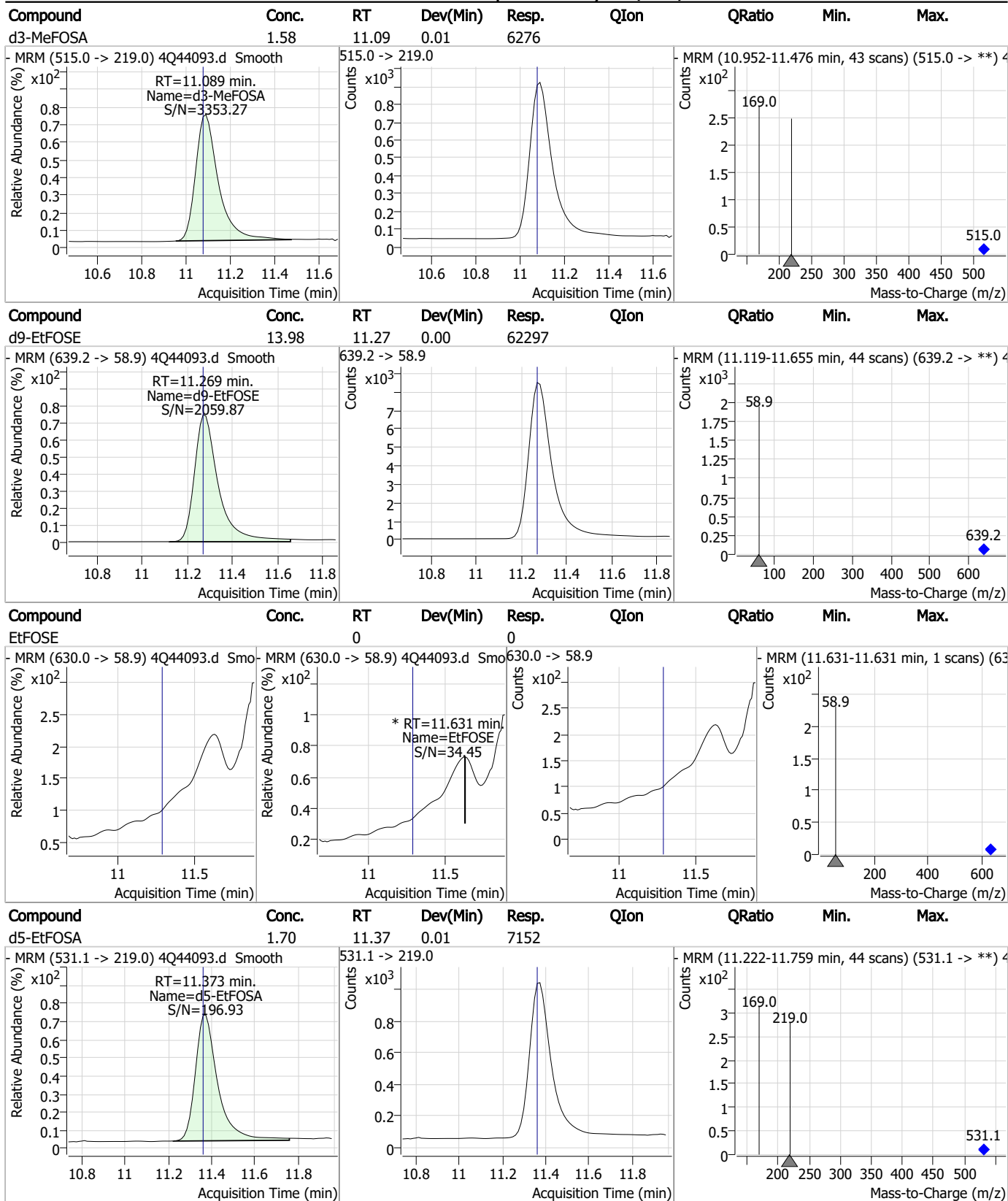
Perfluorinated Compounds by LC/MS/MS



7.2.1

7

Perfluorinated Compounds by LC/MS/MS



7.2.1
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44079.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 2:01:30 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96548,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	123503	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	69431	5.00 µg/L	-0.012
M5-PFHxA	5.535	318.0 -> 273.0	45602	2.50 µg/L	-0.012
M4-PFHpA	6.479	367.1 -> 322.0	27703	2.50 µg/L	0.000
M8-PFOA	7.136	421.1 -> 376.0	43300	2.50 µg/L	-0.012
M9-PFNA	7.684	472.1 -> 427.0	21058	1.25 µg/L	-0.012
M6-PFDA	8.191	519.1 -> 474.1	18878	1.25 µg/L	0.000
M7-PFUnDA	8.660	570.0 -> 525.1	20286	1.25 µg/L	-0.012
M2-PFDoDA	9.118	615.1 -> 570.0	21640	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	15804	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	17068	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	11953	2.50 µg/L	0.000
M3-PFHxS	7.229	402.1 -> 79.9	7233	2.50 µg/L	-0.012
M8-PFOS	8.341	507.1 -> 79.9	10641	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1045	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1678	5.00 µg/L	0.000
M2-8:2FTS	7.978	529.1 -> 80.9	2983	5.00 µg/L	-0.012
M3-MeFOSAA	8.261	573.2 -> 419.0	13994	5.00 µg/L	0.000
M3-HFPO-DA	5.902	286.9 -> 168.9	27839	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	11157	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	73107	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	103628	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11346	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	10436	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	11017	2.50 µg/L	0.000
13C3-PFBA	2.903	216.0 -> 172.0	67638	5.00 µg/L	-0.012
18O2-PFHxS	7.228	403.0 -> 83.9	5043	2.50 µg/L	-0.012
13C4-PFOA	7.136	417.1 -> 372.0	52183	2.50 µg/L	-0.012
13C2-PFDA	8.191	515.1 -> 470.1	18439	1.25 µg/L	0.000
13C5-PFNA	7.684	468.0 -> 423.0	24370	1.25 µg/L	-0.012
13C2-PFHxA	5.536	315.1 -> 270.0	42018	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1045	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1678	4.54 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.8%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2983	5.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C2-PFDoDA	9.118	615.1 -> 570.0	21640	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C2-PFTeDA	9.899	715.2 -> 670.0	15804	1.09 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.0%		
13C3-PFBS	5.439	302.1 -> 79.9	11953	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C3-PFHxS	7.229	402.1 -> 79.9	7233	2.31 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 = 92.6%	
13C4-PFBA	2.911	216.8 -> 171.9	123503	9.70 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C4-PFHpA	6.479	367.1 -> 322.0	27703	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C5-PFHxA	5.535	318.0 -> 273.0	45602	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C5-PFPeA	4.362	268.3 -> 223.0	69431	5.36 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C6-PFDA	8.191	519.1 -> 474.1	18878	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C7-PFUnDA	8.660	570.0 -> 525.1	20286	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-FOSA	9.783	506.1 -> 77.8	17068	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-PFOA	7.136	421.1 -> 376.0	43300	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOS	8.341	507.1 -> 79.9	10641	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C9-PFNA	7.684	472.1 -> 427.0	21058	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.7%	
d3-MeFOSAA	8.261	573.2 -> 419.0	13994	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	27839	10.07 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
d3-MeFOSA	11.076	515.0 -> 219.0	10436	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.6%	
d5-EtFOSAA	8.470	589.2 -> 419.0	11157	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
d7-MeFOSE	10.959	623.2 -> 58.9	73107	21.33 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 85.3%	
d9-EtFOSE	11.269	639.2 -> 58.9	103628	21.35 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 85.4%	
d5-EtFOSA	11.360	531.1 -> 219.0	11346	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	

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

7.2.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.477	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.2
7

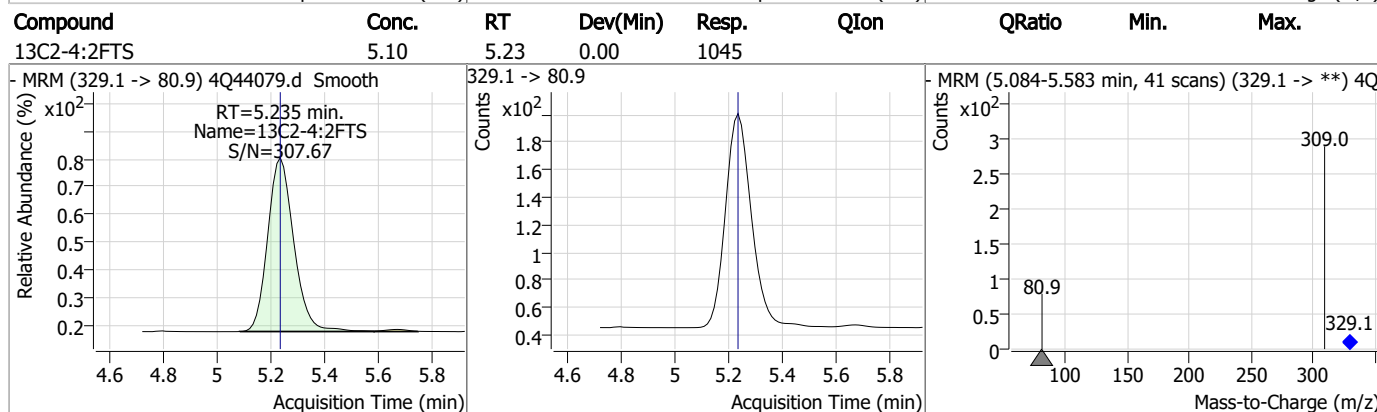
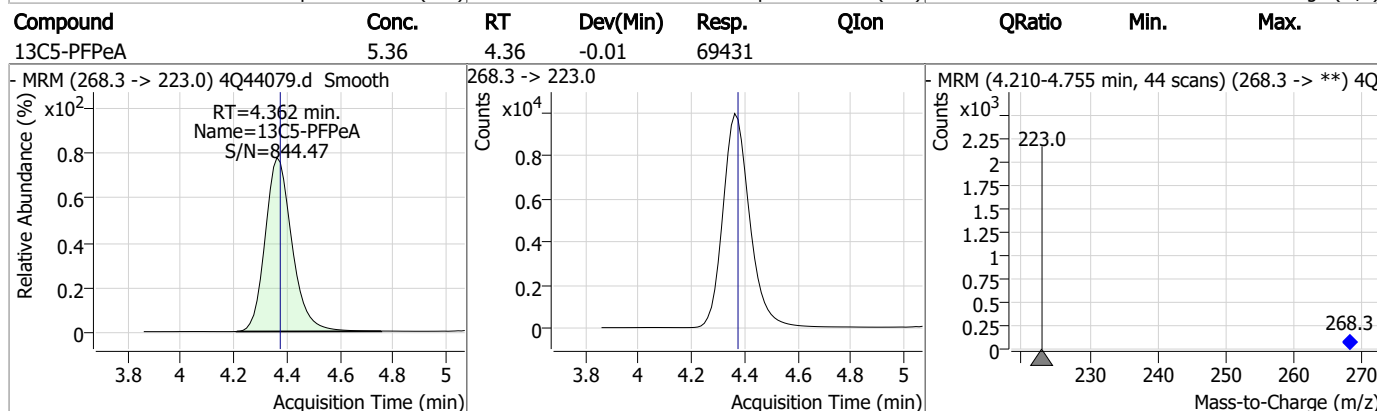
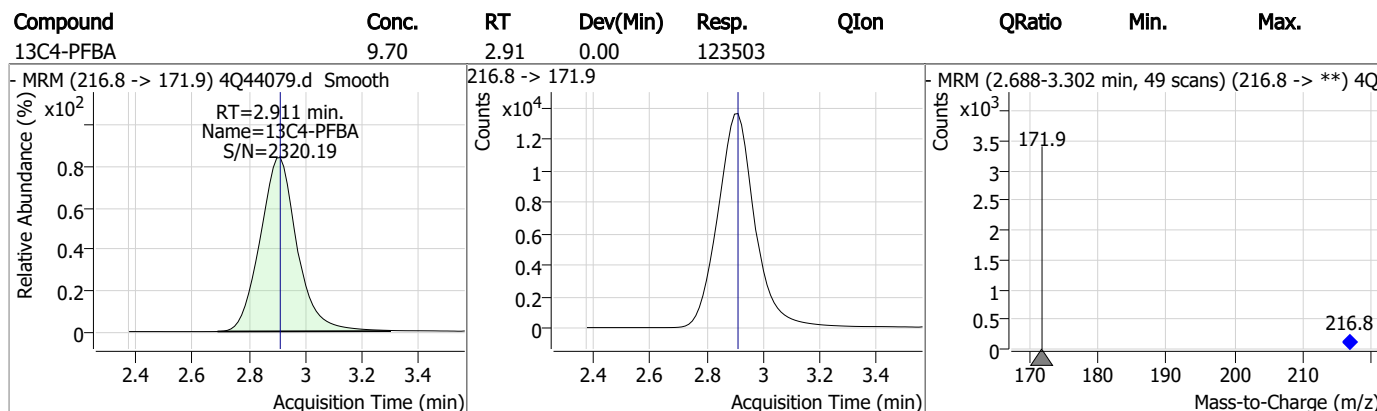
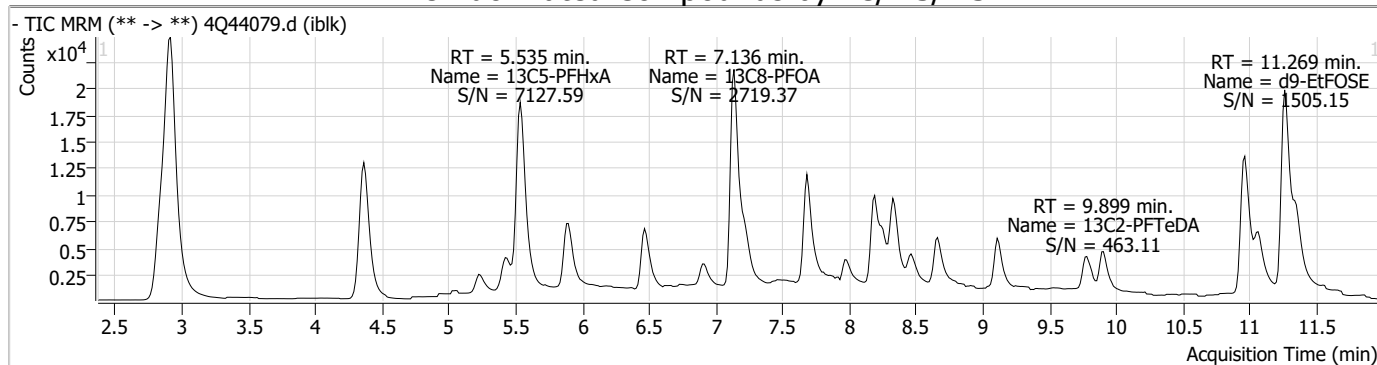
Perfluorinated Compounds by LC/MS/MS

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

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Perfluorinated Compounds by LC/MS/MS



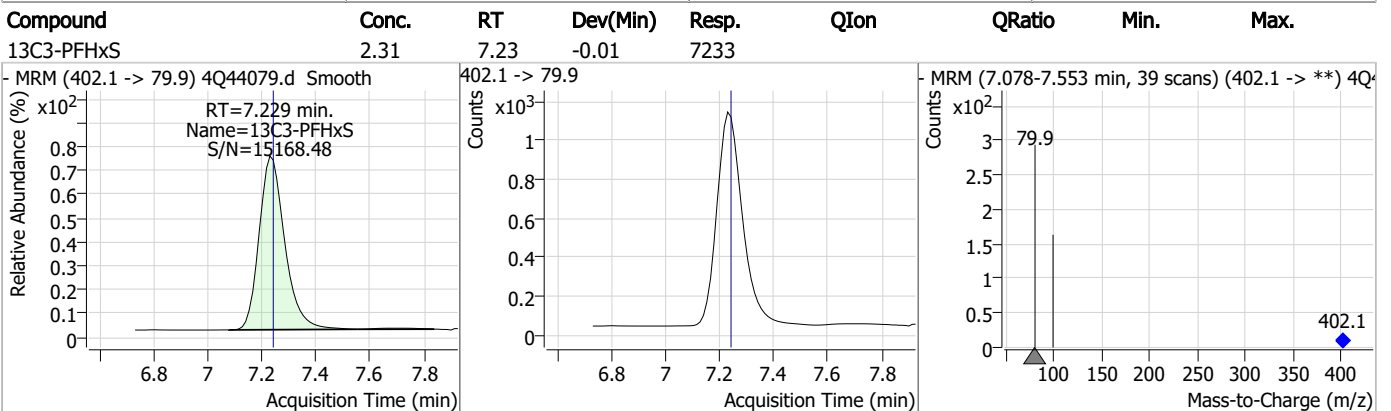
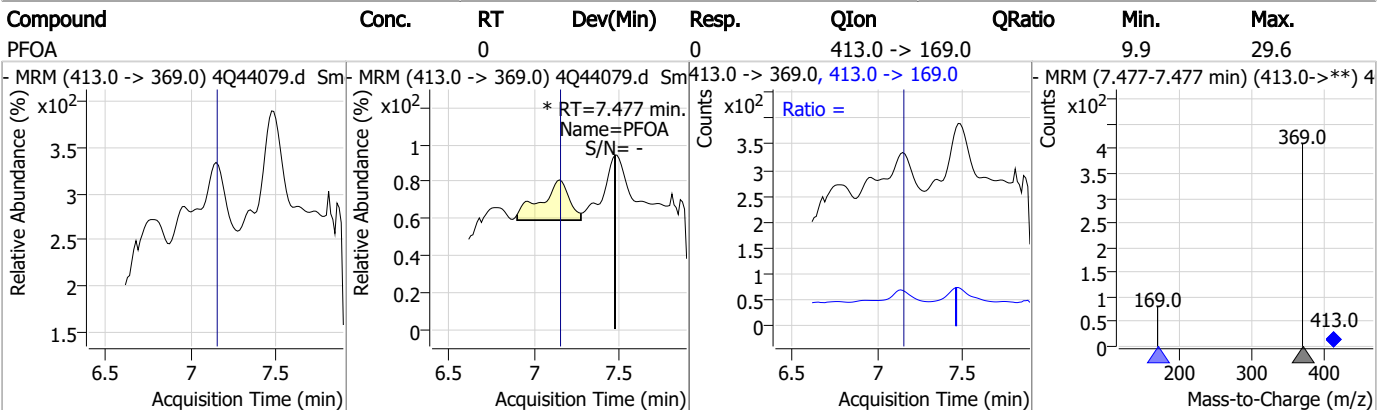
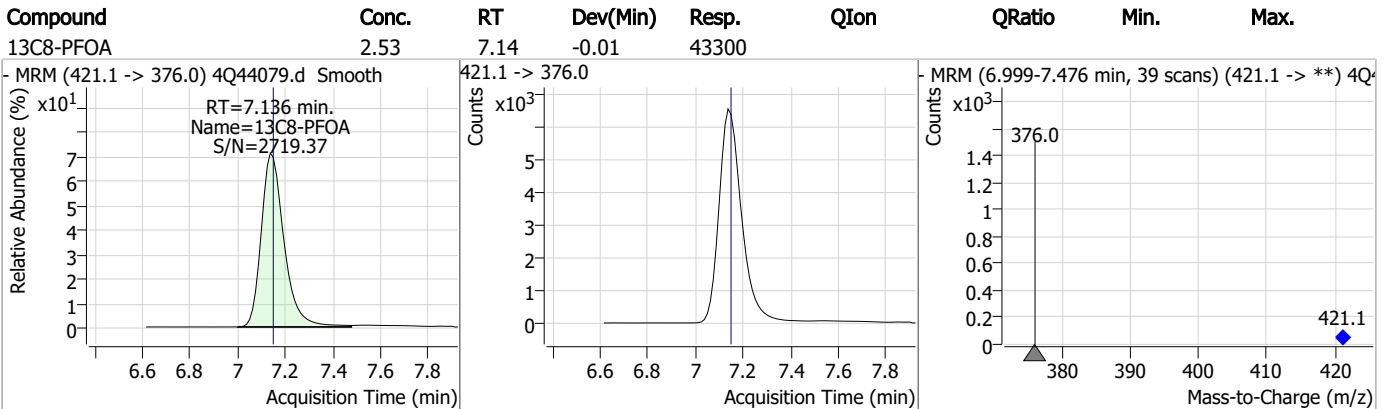
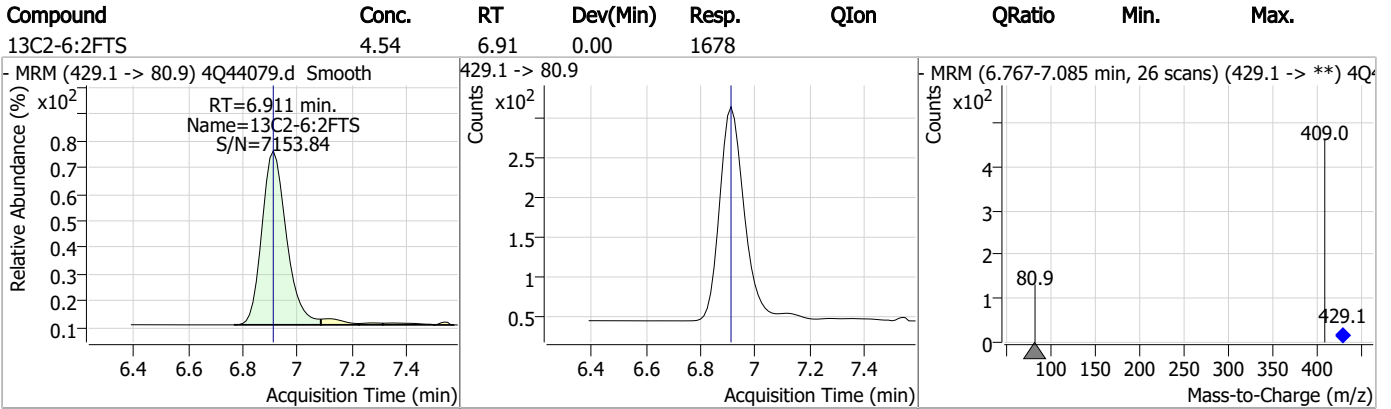
7.2.2
7

Perfluorinated Compounds by LC/MS/MS

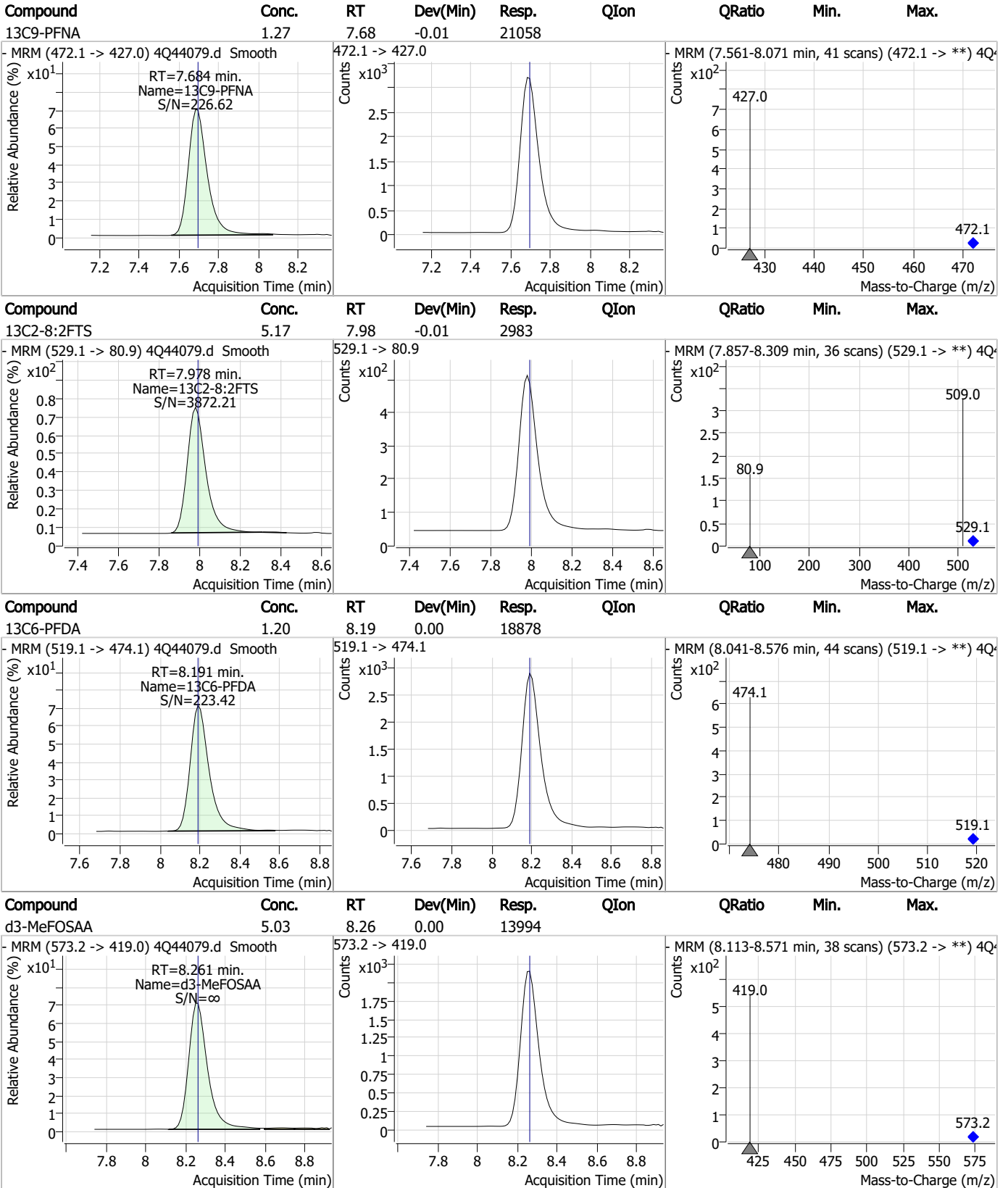
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.51	5.44	0.00	11953				
13C5-PFHxA	2.46	5.53	-0.01	45602				
13C3-HFPO-DA	10.07	5.90	0.00	27839				
13C4-PFHpA	2.56	6.48	0.00	27703				

7.2.2
7

Perfluorinated Compounds by LC/MS/MS



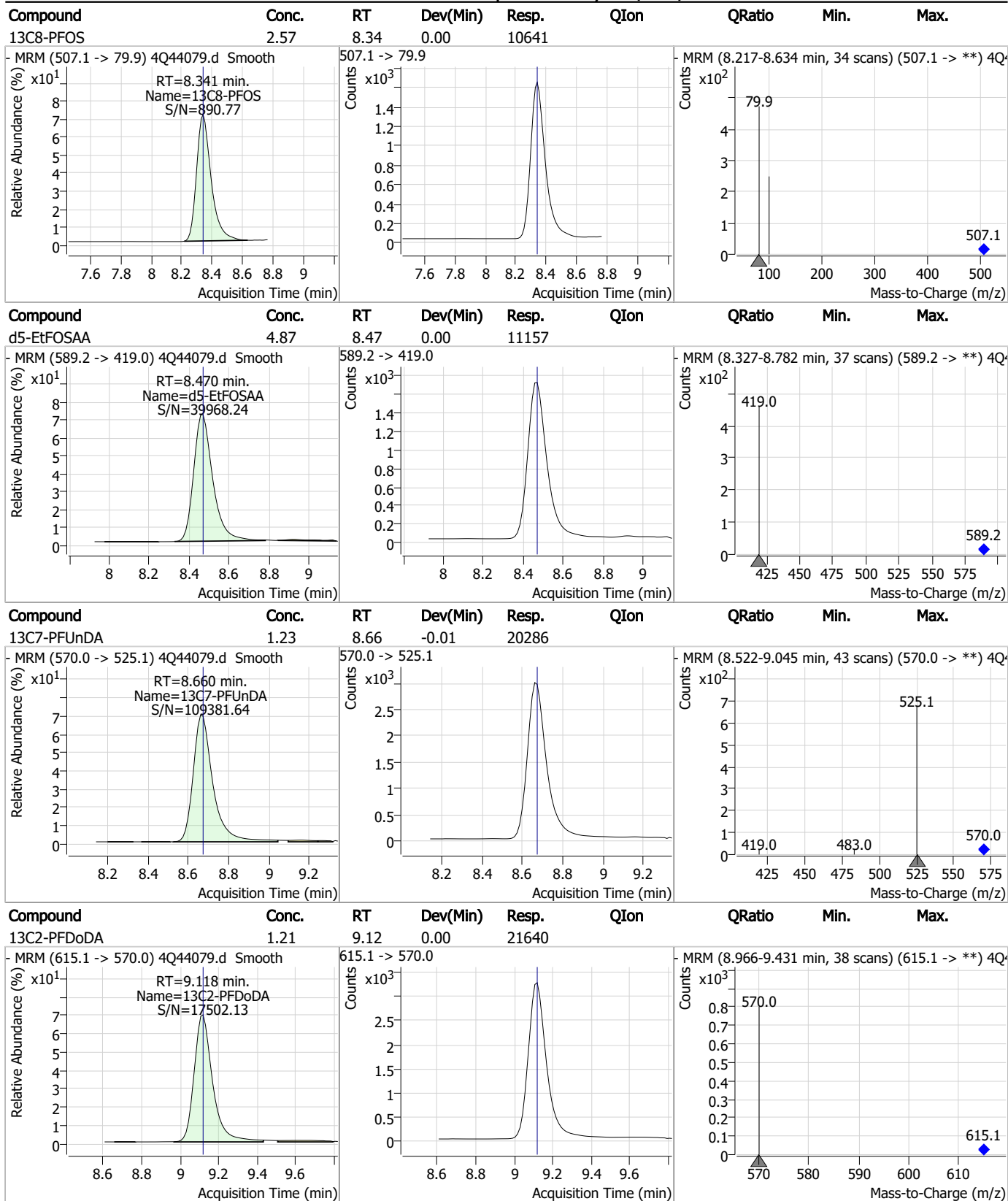
Perfluorinated Compounds by LC/MS/MS



7.2.2

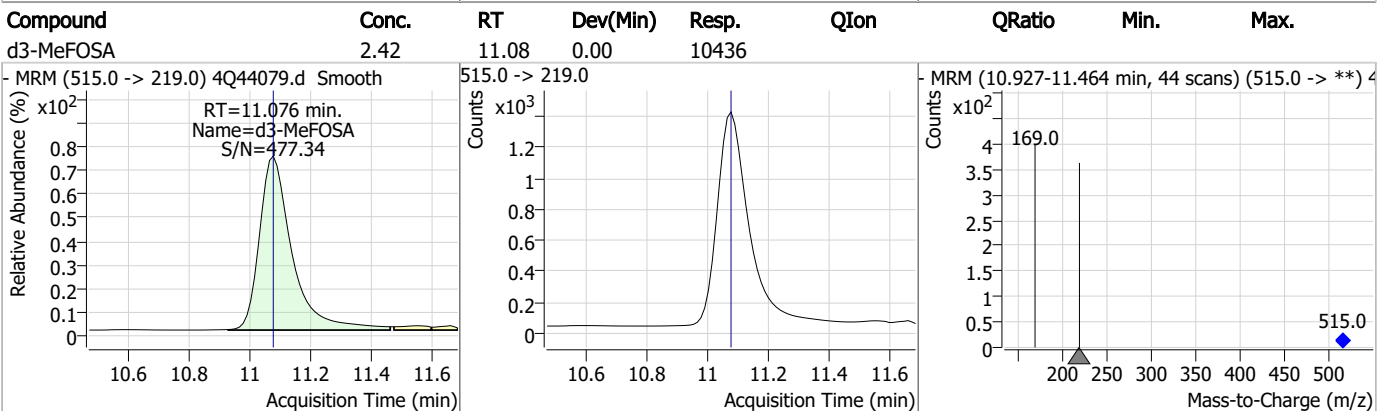
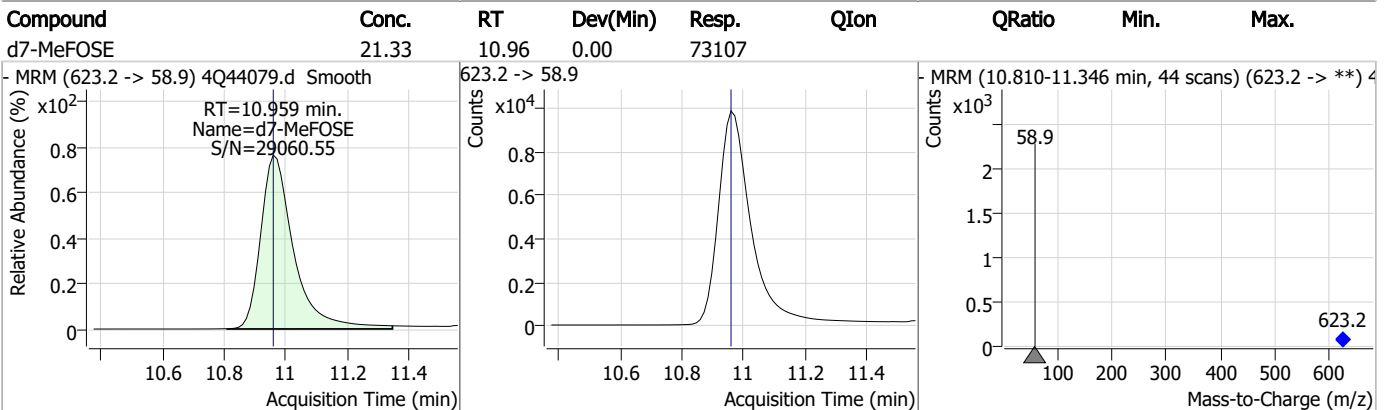
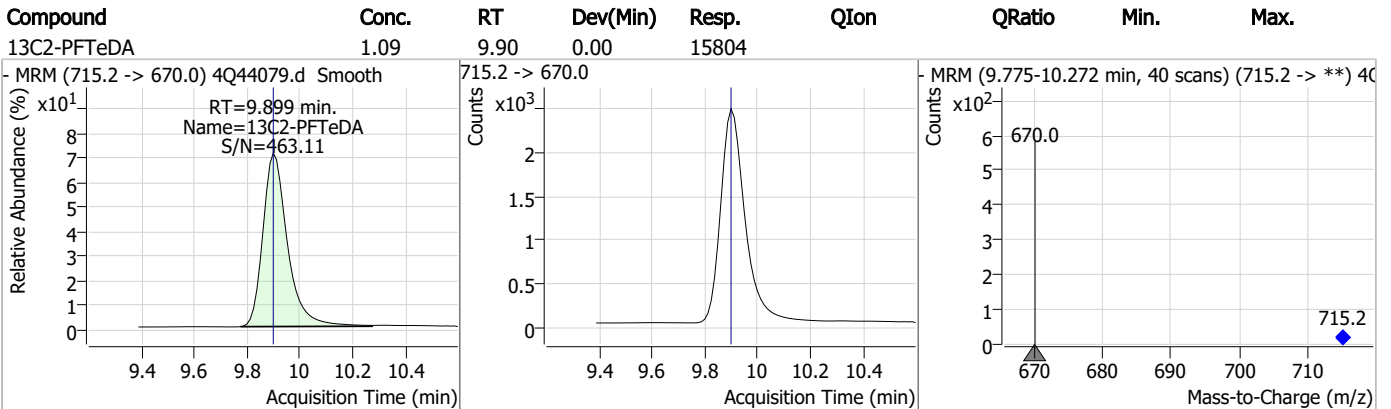
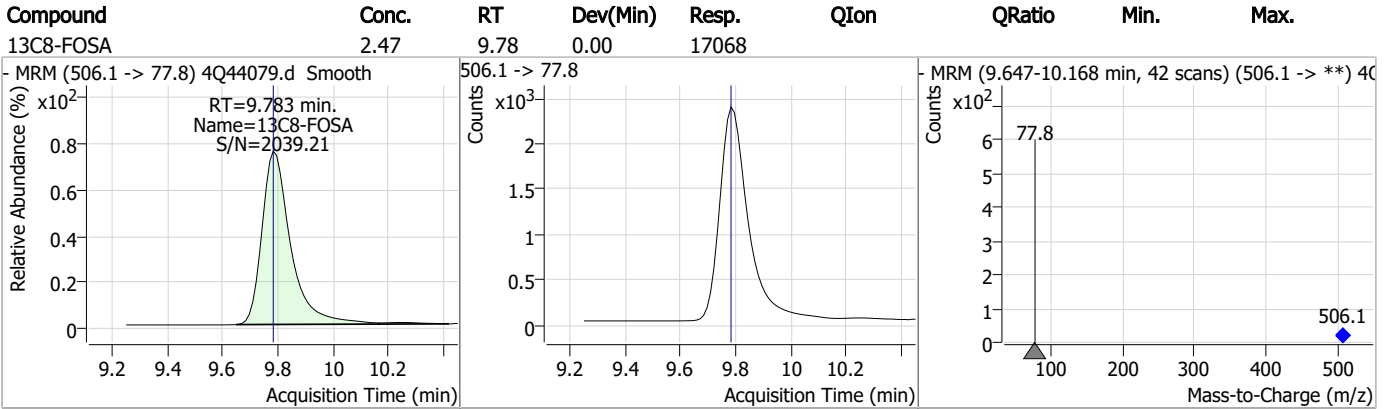
7

Perfluorinated Compounds by LC/MS/MS



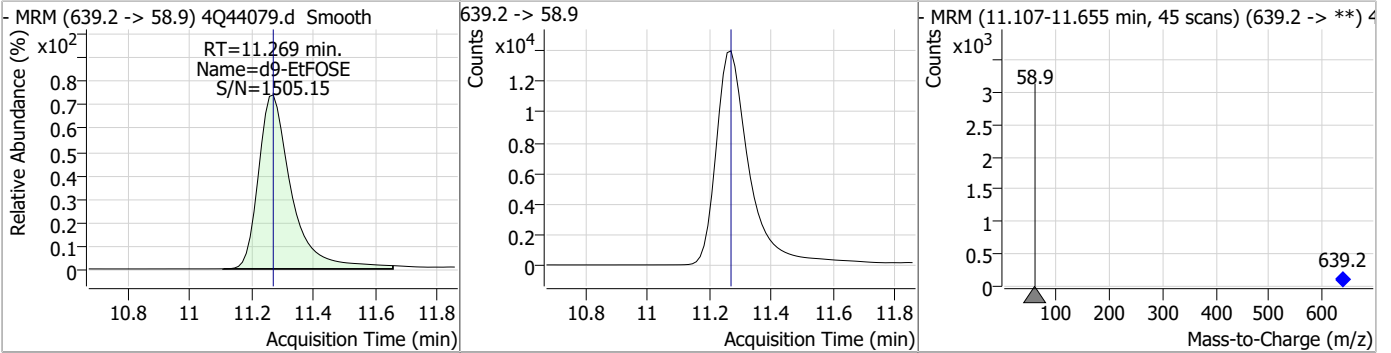
7.2.2
7

Perfluorinated Compounds by LC/MS/MS

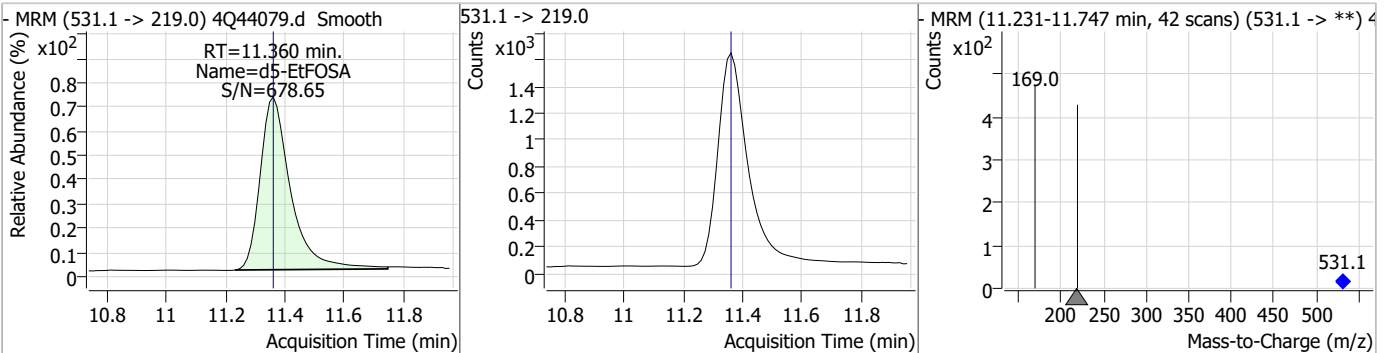


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	21.35	11.27	0.00	103628				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.47	11.36	0.00	11346				



7.2.2

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44090.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 4:36:08 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96548,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	133652	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	69373	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	47942	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	28537	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	43319	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	21137	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	20274	1.25 µg/L	0.025
M7-PFUnDA	8.685	570.0 -> 525.1	20625	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	21826	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	15744	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	16720	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11606	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	7393	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10730	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1043	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	2052	5.00 µg/L	0.025
M2-8:2FTS	7.990	529.1 -> 80.9	3158	5.00 µg/L	0.000
M3-MeFOSAA	8.273	573.2 -> 419.0	14243	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	27411	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	12101	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	73497	25.00 µg/L	0.012
M9-EtFOSE	11.281	639.2 -> 58.9	97666	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	11127	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	9943	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	10787	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	71049	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	5219	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	52664	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	17761	1.25 µg/L	0.025
13C5-PFNA	7.709	468.0 -> 423.0	25037	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	43555	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1043	4.92 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2052	5.37 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.3%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3158	5.29 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C2-PFDoDA	9.130	615.1 -> 570.0	21826	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15744	1.12 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.9%		
13C3-PFBS	5.452	302.1 -> 79.9	11606	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C3-PFHxS	7.254	402.1 -> 79.9	7393	2.29 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 = 91.4%	
13C4-PFBA	2.911	216.8 -> 171.9	133652	10.00 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFHpA	6.492	367.1 -> 322.0	28537	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C5-PFHxA	5.559	318.0 -> 273.0	47942	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFPeA	4.375	268.3 -> 223.0	69373	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C6-PFDA	8.216	519.1 -> 474.1	20274	1.33 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C7-PFUnDA	8.685	570.0 -> 525.1	20625	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C8-FOSA	9.796	506.1 -> 77.8	16720	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOA	7.163	421.1 -> 376.0	43319	2.51 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOS	8.354	507.1 -> 79.9	10730	2.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C9-PFNA	7.709	472.1 -> 427.0	21137	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14243	5.23 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	27411	9.57 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.7%	
d3-MeFOSA	11.089	515.0 -> 219.0	9943	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.0%	
d5-EtFOSAA	8.483	589.2 -> 419.0	12101	5.40 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.9%	
d7-MeFOSE	10.972	623.2 -> 58.9	73497	21.90 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.6%	
d9-EtFOSE	11.281	639.2 -> 58.9	97666	20.55 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.2%	
d5-EtFOSA	11.373	531.1 -> 219.0	11127	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	

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	8.515	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	7.176	548.8 -> 98.9	980	0.04	µg/L	83
		413.0 -> 369.0	118			
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	9.924	713.1 -> 669.0	602	0.04	µg/L	93
		713.1 -> 168.9	34		m	
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.947	563.1 -> 519.0	0		µg/L	1
		563.1 -> 269.1	0		m	
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

7.2.3
7

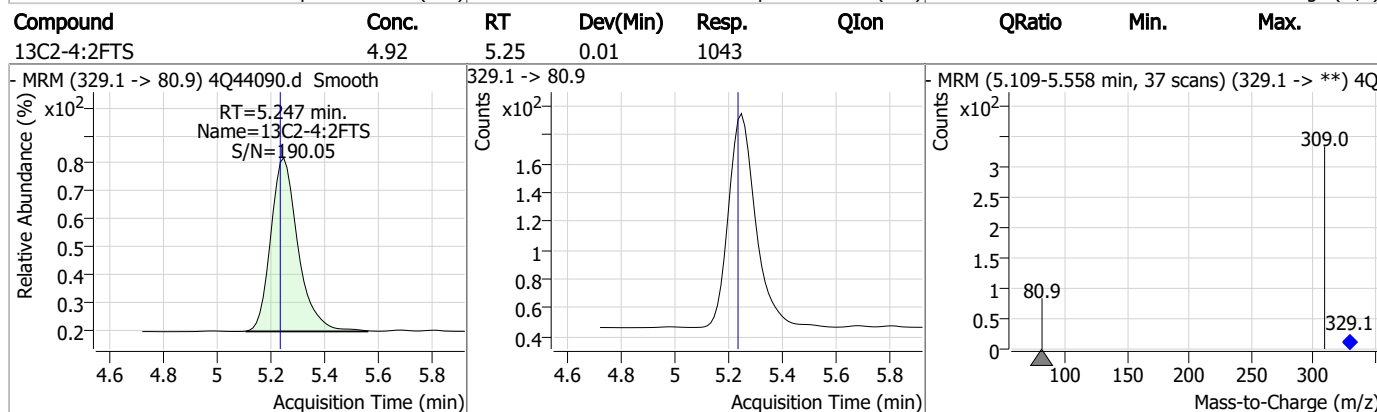
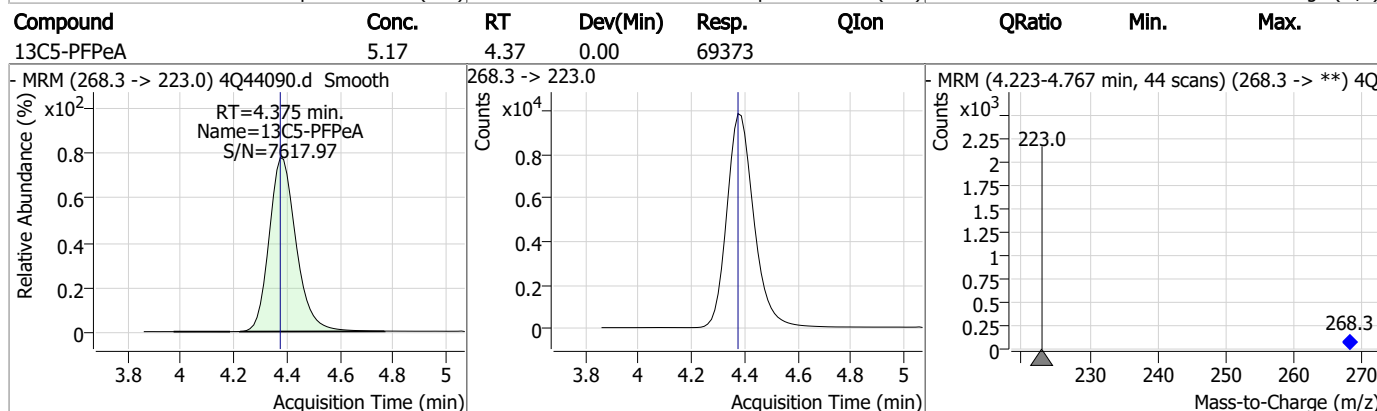
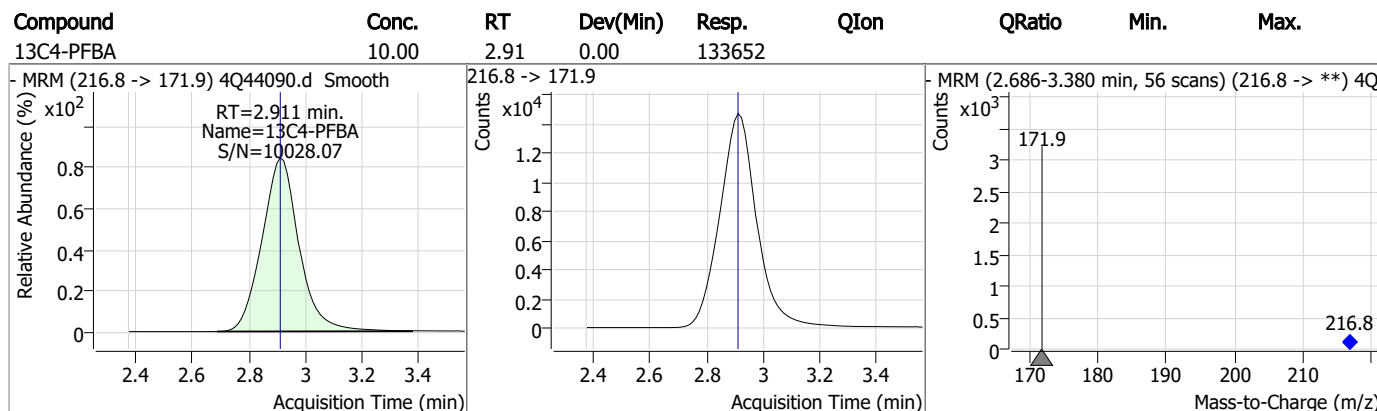
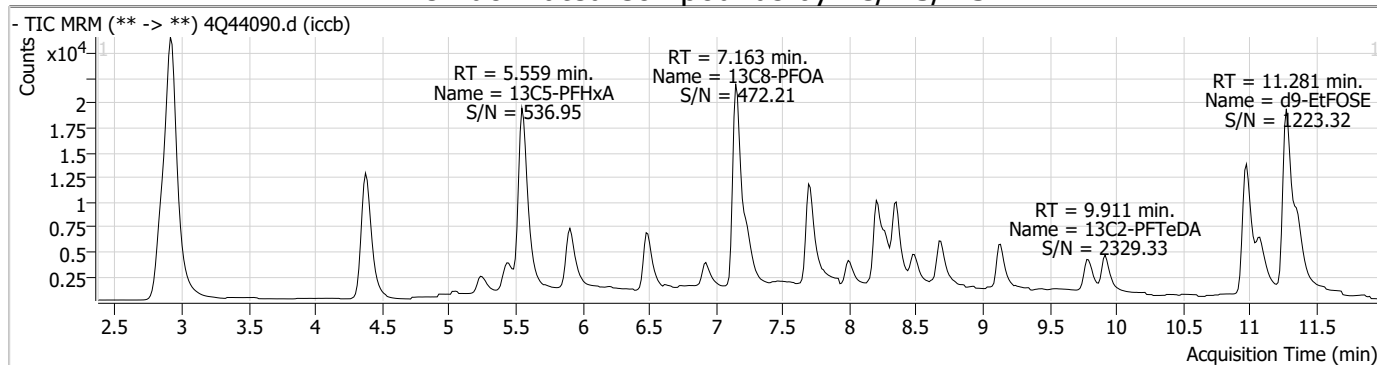
Perfluorinated Compounds by LC/MS/MS

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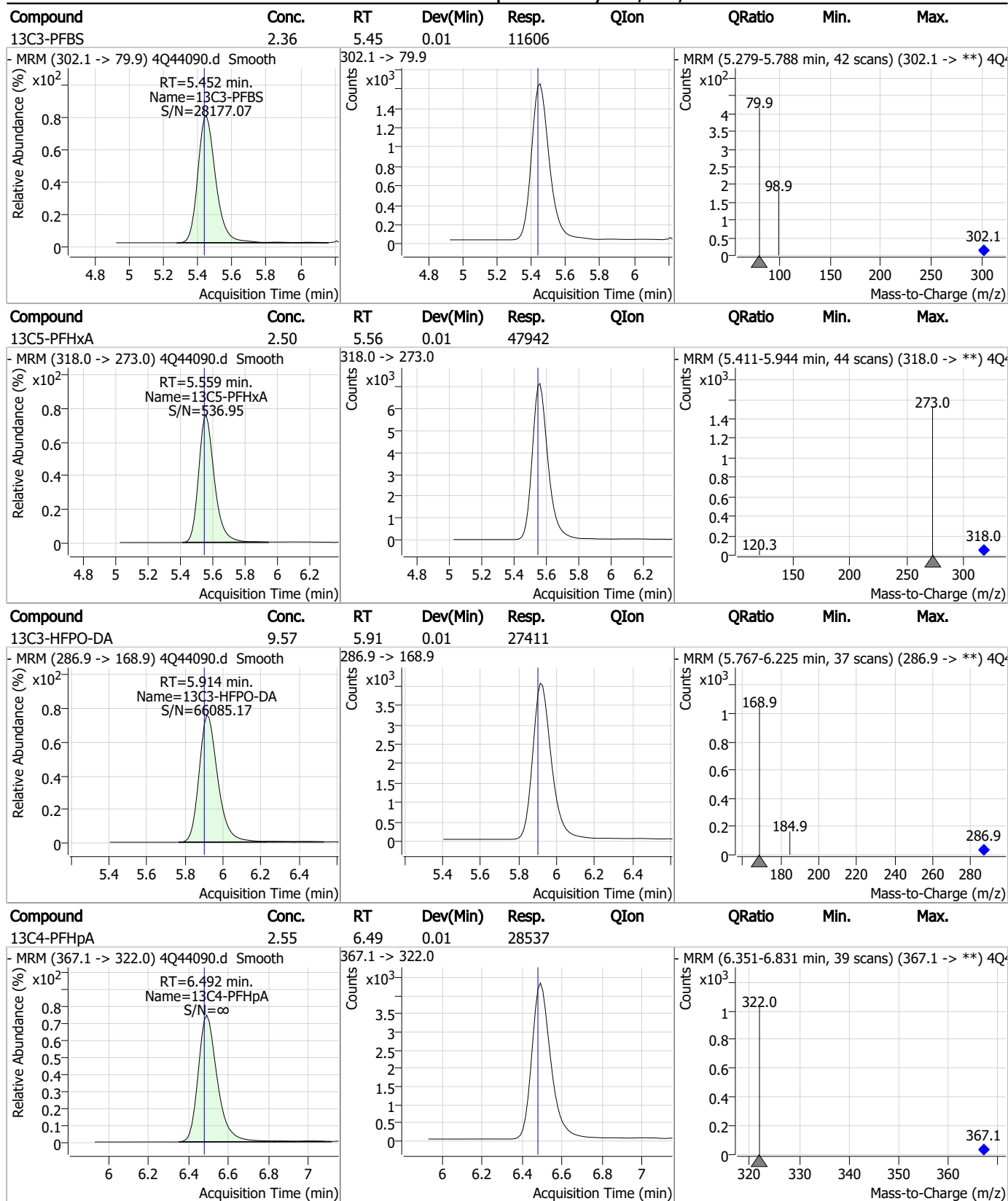
7.2.3

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Perfluorinated Compounds by LC/MS/MS

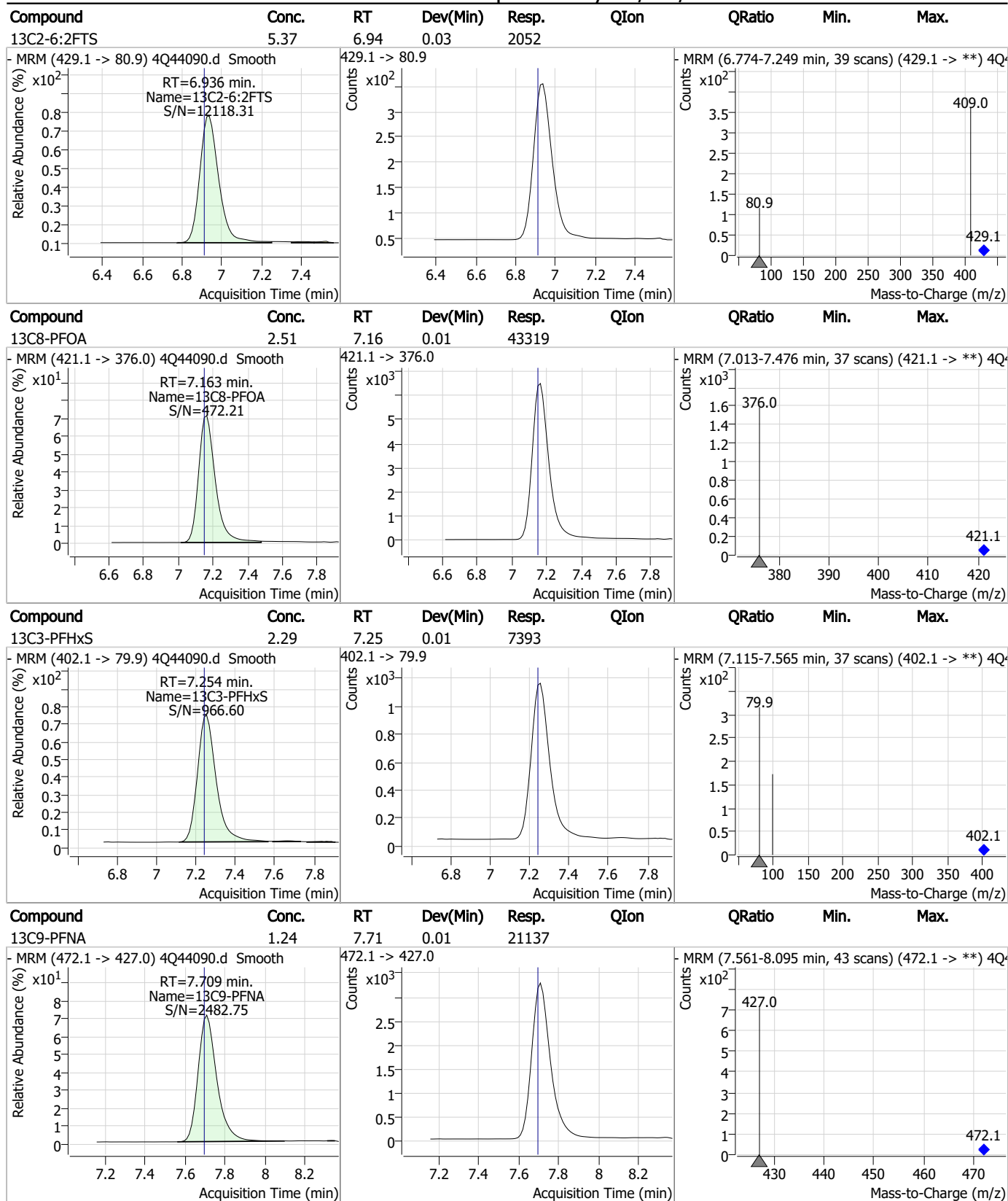


Perfluorinated Compounds by LC/MS/MS



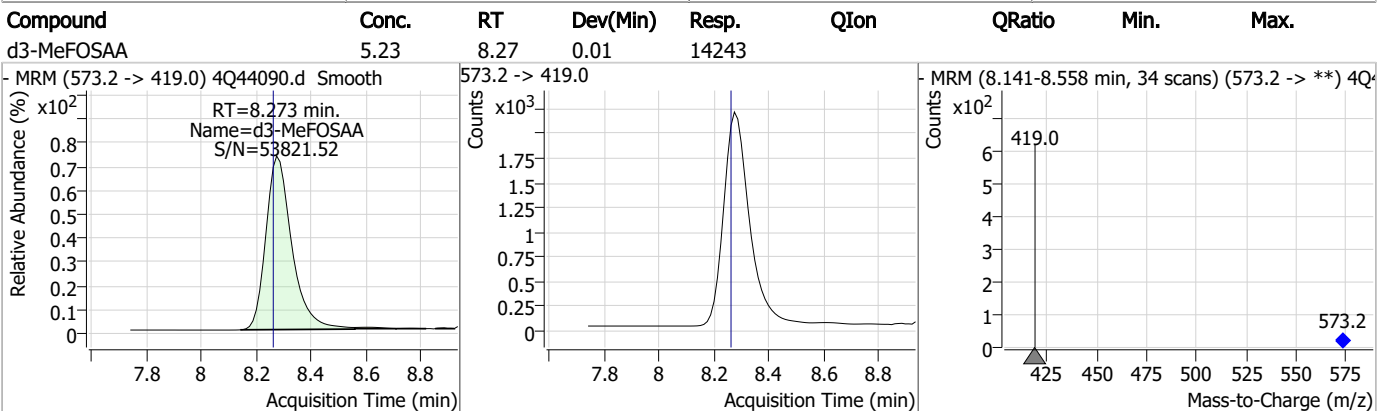
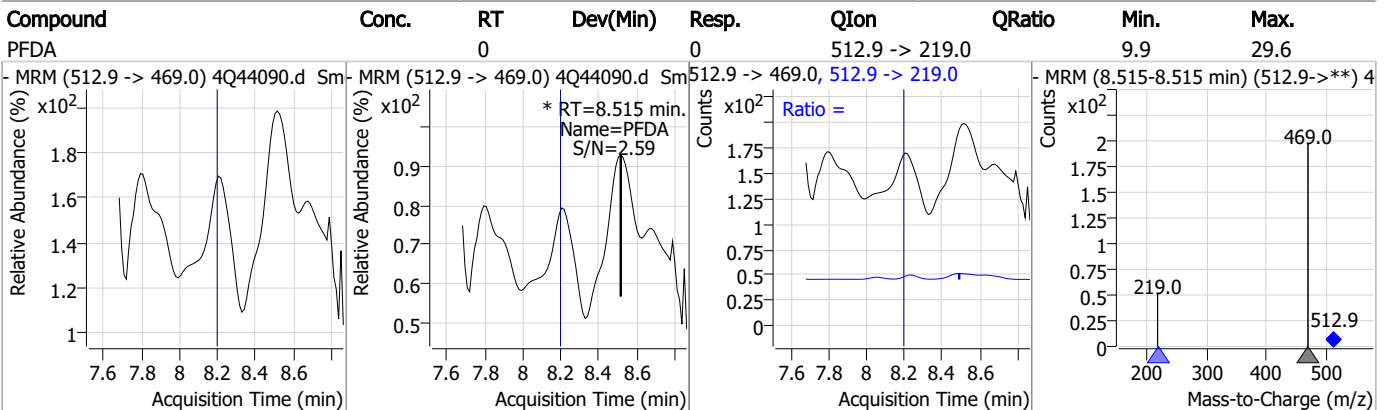
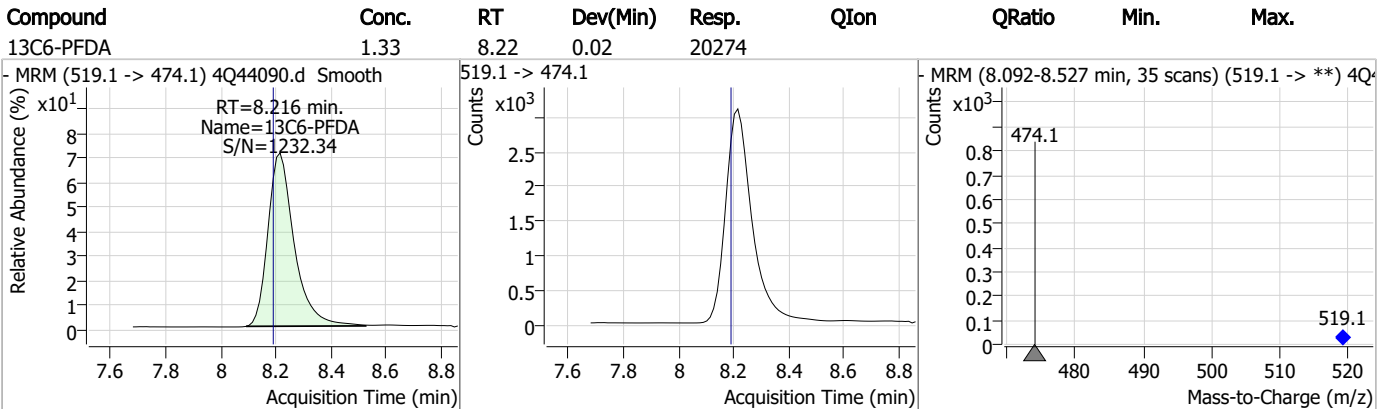
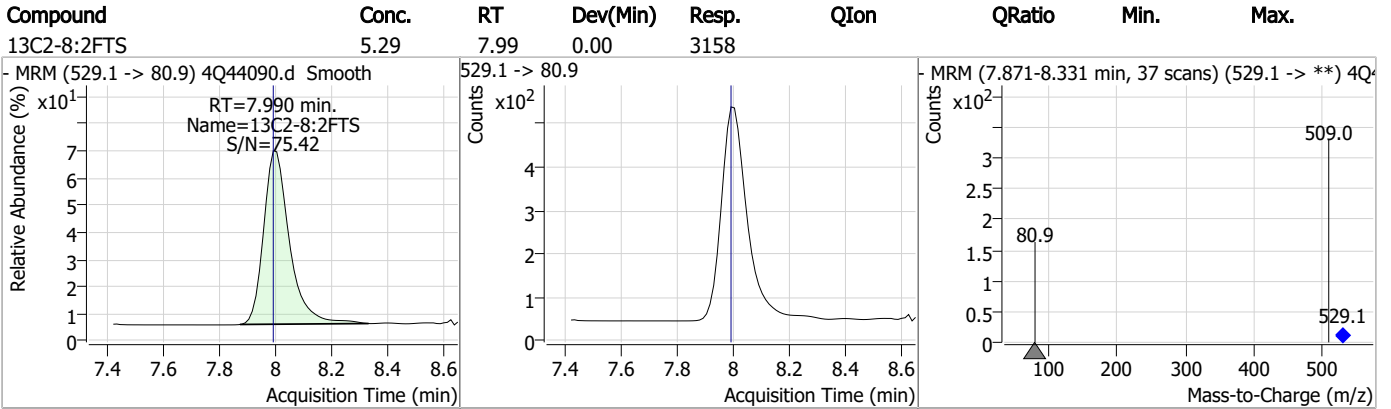
7.2.3
7

Perfluorinated Compounds by LC/MS/MS



7.2.3
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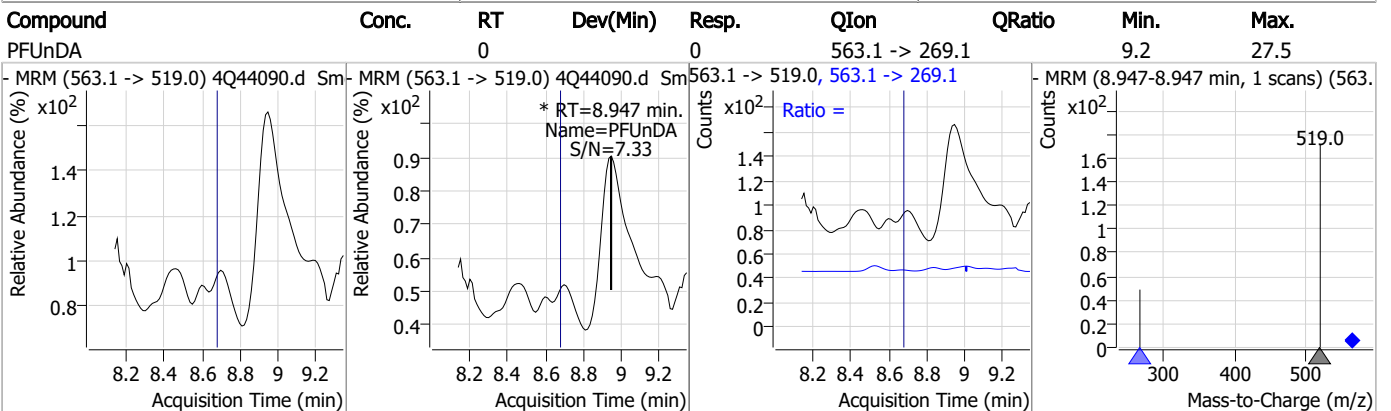
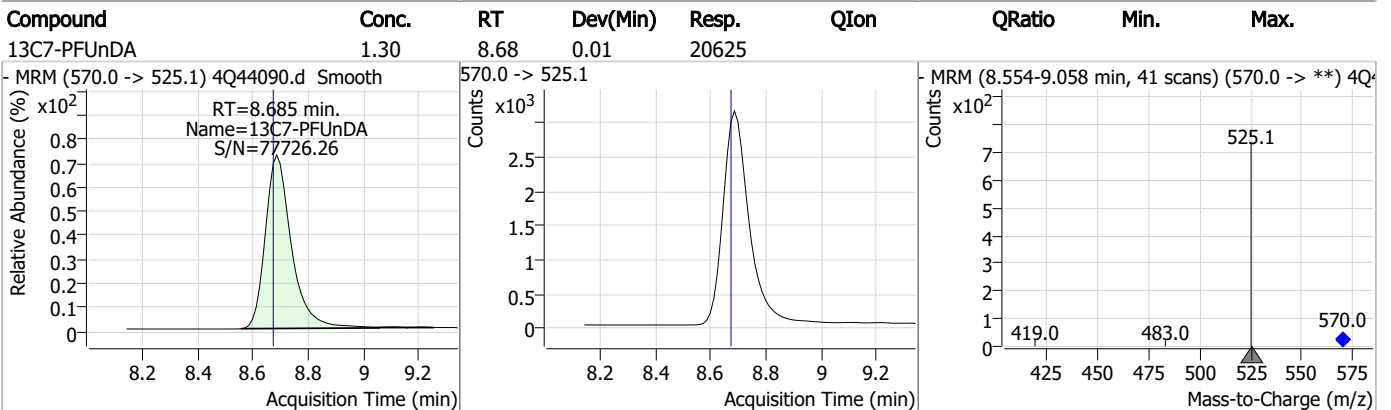
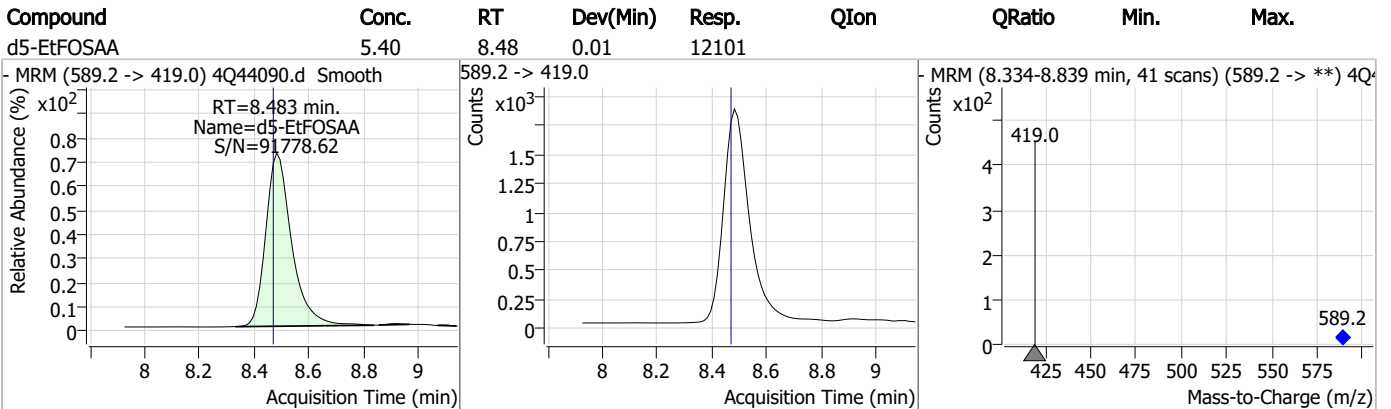
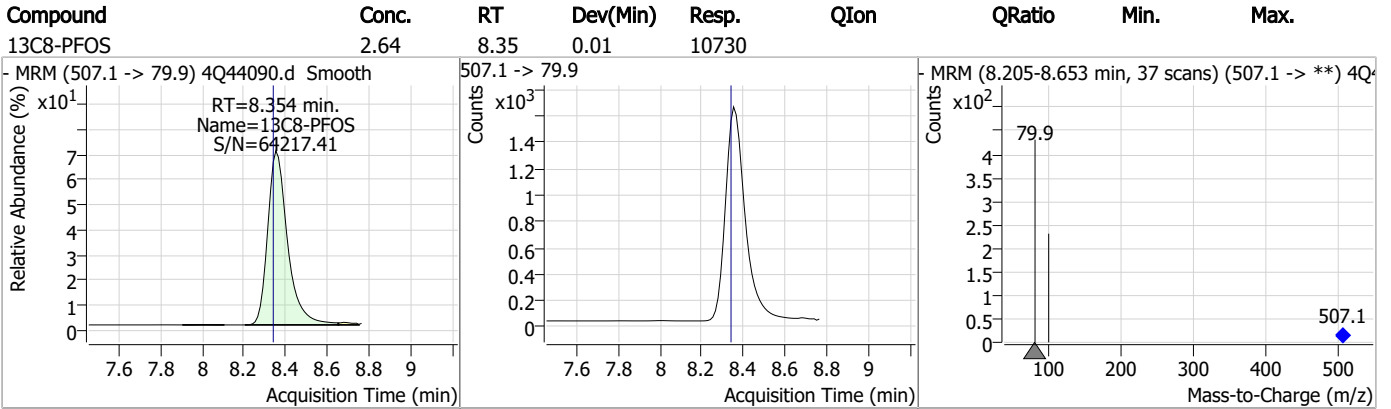
Perfluorinated Compounds by LC/MS/MS



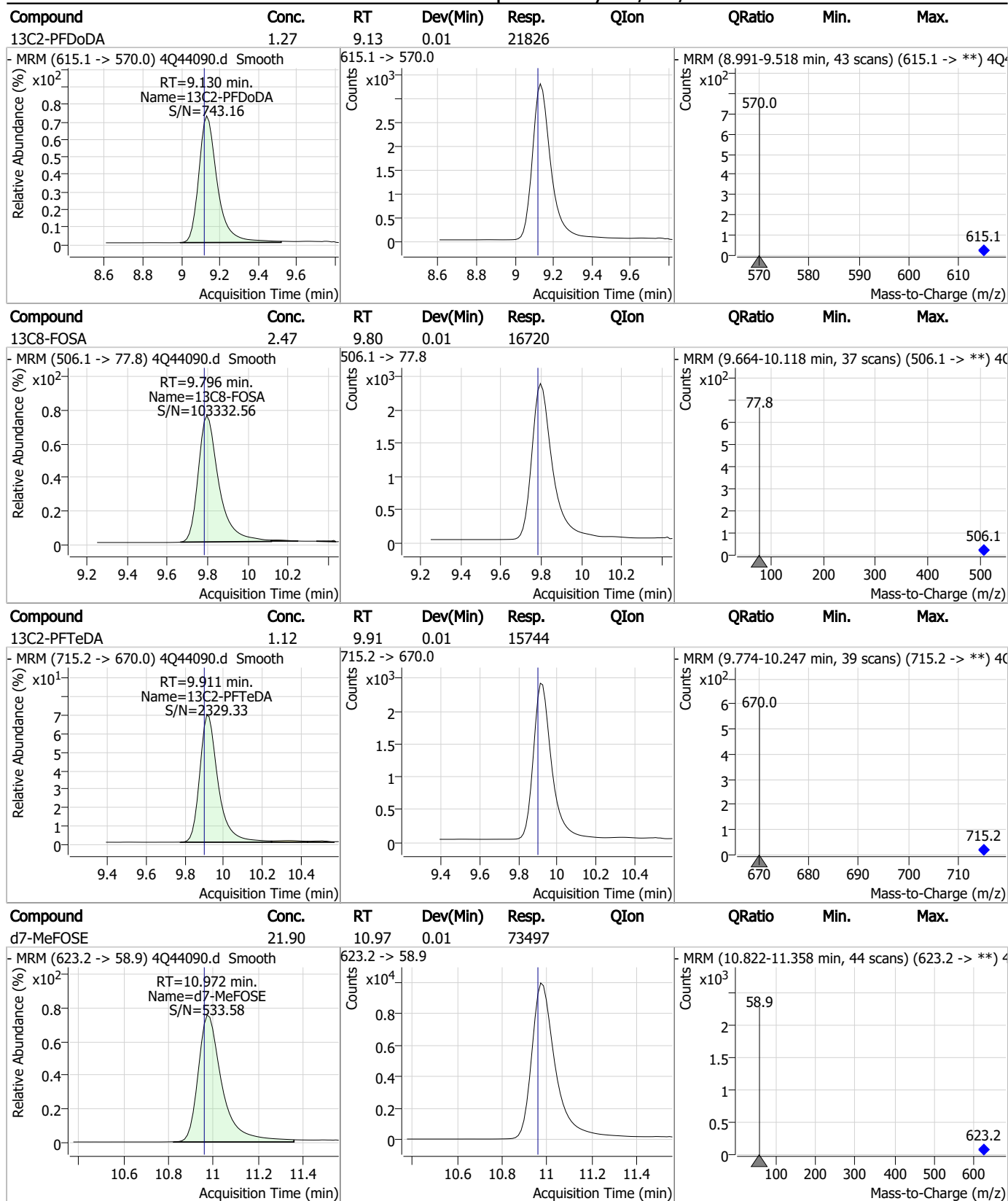
7.2.3

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Perfluorinated Compounds by LC/MS/MS

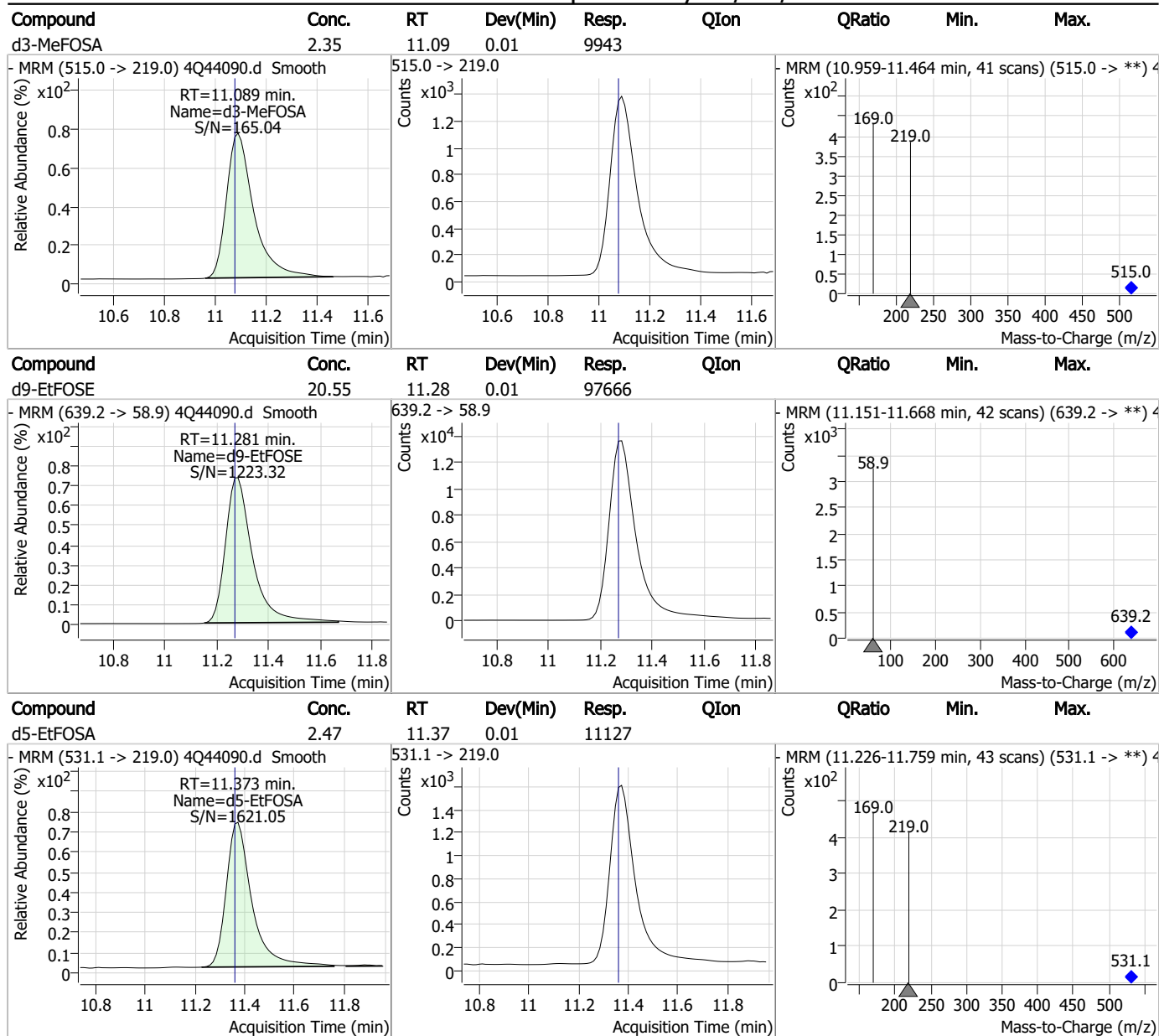


Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Manual Integration Approval Summary

Sample Number: S4Q638-ICCB Method: EPA DRAFT 1633
Lab FileID: 4Q44090.D Analyst approved: 05/09/23 10:17 Martha Valls
Injection Time: 05/08/23 16:36 Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorotetradecanoic acid	376-06-7		9.92	Split peak

7.2.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44091.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 4:50:13 PM
 Sample Name : op96726-bs
 Vial : P2-B1
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96726,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	124016	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	62891	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	45027	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	25640	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	40581	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	19445	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	17937	1.25 µg/L	0.025
M7-PFUnDA	8.685	570.0 -> 525.1	17990	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	18517	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	13381	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	11397	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11156	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	7077	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	9694	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	986	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	1724	5.00 µg/L	0.012
M2-8:2FTS	8.003	529.1 -> 80.9	2412	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	12867	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	25229	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	10559	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	42744	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	67495	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	7647	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	6692	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	10403	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	62771	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4857	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	47607	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16331	1.25 µg/L	0.025
13C5-PFNA	7.709	468.0 -> 423.0	22559	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	40895	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	986	4.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1724	4.84 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2412	4.34 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.8%		
13C2-PFDoDA	9.130	615.1 -> 570.0	18517	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C2-PFTeDA	9.911	715.2 -> 670.0	13381	1.04 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.1%		
13C3-PFBS	5.452	302.1 -> 79.9	11156	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C3-PFHxS	7.254	402.1 -> 79.9	7077	2.35 µg/L	0.012

7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C4-PFBA	2.924	216.8 -> 171.9	124016	10.50 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C4-PFHpA	6.492	367.1 -> 322.0	25640	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C5-PFHxA	5.559	318.0 -> 273.0	45027	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C5-PFPeA	4.387	268.3 -> 223.0	62891	4.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C6-PFDA	8.216	519.1 -> 474.1	17937	1.28 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C7-PFUnDA	8.685	570.0 -> 525.1	17990	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C8-FOSA	9.796	506.1 -> 77.8	11397	1.75 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 69.9%		
13C8-PFOA	7.163	421.1 -> 376.0	40581	2.60 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C8-PFOS	8.354	507.1 -> 79.9	9694	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C9-PFNA	7.709	472.1 -> 427.0	19445	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%		
d3-MeFOSAA	8.273	573.2 -> 419.0	12867	4.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-HFPO-DA	5.914	286.9 -> 168.9	25229	9.38 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 93.8%		
d3-MeFOSA	11.076	515.0 -> 219.0	6692	1.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 65.6%		
d5-EtFOSAA	8.483	589.2 -> 419.0	10559	4.88 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.7%		
d7-MeFOSE	10.972	623.2 -> 58.9	42744	13.21 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 52.8%		
d9-EtFOSE	11.269	639.2 -> 58.9	67495	14.73 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 58.9%		
d5-EtFOSA	11.373	531.1 -> 219.0	7647	1.76 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 70.5%		
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	12896	8.13 µg/L	95
		327.1 -> 80.9	5899		
6:2FTS	6.936	427.1 -> 407.0	14597	8.77 µg/L	99
		427.1 -> 80.9	6388		
8:2FTS	8.003	527.1 -> 507.0	13147	9.78 µg/L	89
		527.1 -> 80.8	4799		
EtFOSAA	8.483	584.2 -> 419.1	4523	2.23 µg/L	97
		584.2 -> 526.0	2246		
FOSA	9.799	498.1 -> 77.9	10355	2.17 µg/L	97
		498.1 -> 478.0	224		
MeFOSAA	8.274	570.1 -> 419.0	4726	2.11 µg/L	89
		570.1 -> 483.0	1118		
PFBA	2.920	212.8 -> 168.9	29451	8.87 µg/L	100
PFBS	5.453	298.7 -> 79.9	8770	1.92 µg/L	98
		298.7 -> 98.8	3233		
PFDA	8.216	512.9 -> 469.0	31071	2.28 µg/L	99
		512.9 -> 219.0	6038		
PFDoDA	9.131	613.1 -> 569.0	34016	2.29 µg/L	99
		613.1 -> 319.0	4894		
PFDS	9.282	599.0 -> 79.9	4881	2.03 µg/L	95

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	2372			
PFHpA	6.492	363.1 -> 319.0	37707	2.33	µg/L	99
		363.1 -> 169.0	6618			
PFHpS	7.836	449.0 -> 79.9	7693	2.20	µg/L	97
		449.0 -> 98.9	3852			
PFHxA	5.562	313.0 -> 269.0	37764	2.14	µg/L	100
		313.0 -> 118.9	1141			
PFHxS	7.255	398.7 -> 79.9	5869	2.02	µg/L	m 85
		398.7 -> 98.9	2753			
PFNA	7.709	463.0 -> 419.0	30778	2.14	µg/L	99
		463.0 -> 219.0	7734			
PFNS	8.836	548.8 -> 79.9	4261	2.01	µg/L	94
		548.8 -> 98.9	2211			
PFOA	7.164	413.0 -> 369.0	52289	2.23	µg/L	99
		413.0 -> 169.0	10103			
PFOS	8.355	498.9 -> 79.9	10091	2.13	µg/L	m 82
		498.9 -> 98.8	4735			
PFPeA	4.389	263.0 -> 219.0	67154	4.44	µg/L	100
PFPeS	6.519	349.1 -> 79.9	5254	2.11	µg/L	91
		349.1 -> 98.9	2057			
PFTeDA	9.912	713.1 -> 669.0	29117	2.22	µg/L	99
		713.1 -> 168.9	2532			
PFTrDA	9.541	663.0 -> 619.0	42295	2.13	µg/L	98
		663.0 -> 168.9	4168			
PFUnDA	8.685	563.1 -> 519.0	28430	2.33	µg/L	97
		563.1 -> 269.1	5641			
11CI-PF3OUdS	9.581	630.9 -> 450.9	37766	4.16	µg/L	98
		632.9 -> 452.9	11673			
9CI-PF3ONS	8.700	530.8 -> 351.0	49519	4.29	µg/L	100
		532.8 -> 353.0	14625			
ADONA	6.756	376.9 -> 250.9	111933	4.41	µg/L	100
		376.9 -> 84.8	30160			
HFPO-DA	5.928	284.9 -> 168.9	10806	4.48	µg/L	98
		284.9 -> 184.9	1317			
3:3FTCA	3.867	241.0 -> 177.0	6176	9.28	µg/L	99
		241.0 -> 117.0	591			
5:3FTCA	6.231	341.0 -> 237.1	129280	54.00	µg/L	99
		341.0 -> 217.0	86921			
7:3FTCA	7.686	441.0 -> 316.9	71461	57.45	µg/L	99
		441.0 -> 336.9	167516			
EtFOSA	11.375	526.0 -> 219.0	14409	4.50	µg/L	66
		526.0 -> 169.0	19296			
EtFOSE	11.295	630.0 -> 58.9	31793	12.17	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	11347	4.50	µg/L	m 80
		511.9 -> 169.0	16888			
MeFOSE	10.997	616.1 -> 58.9	19934	11.35	µg/L	m 100
PFDoDS	10.052	699.1 -> 79.9	4119	1.92	µg/L	100
		699.1 -> 98.8	2335			
NFDHA	5.441	295.0 -> 201.0	4983	3.96	µg/L	100
		295.0 -> 84.9	1329			
PFMBA	4.791	279.0 -> 85.1	37937	4.49	µg/L	100
PFMPA	3.528	229.0 -> 84.9	37090	4.69	µg/L	100
PFEESA	5.984	314.8 -> 134.9	52130	3.90	µg/L	99
		314.8 -> 82.9	1862			

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

7.3.1
7

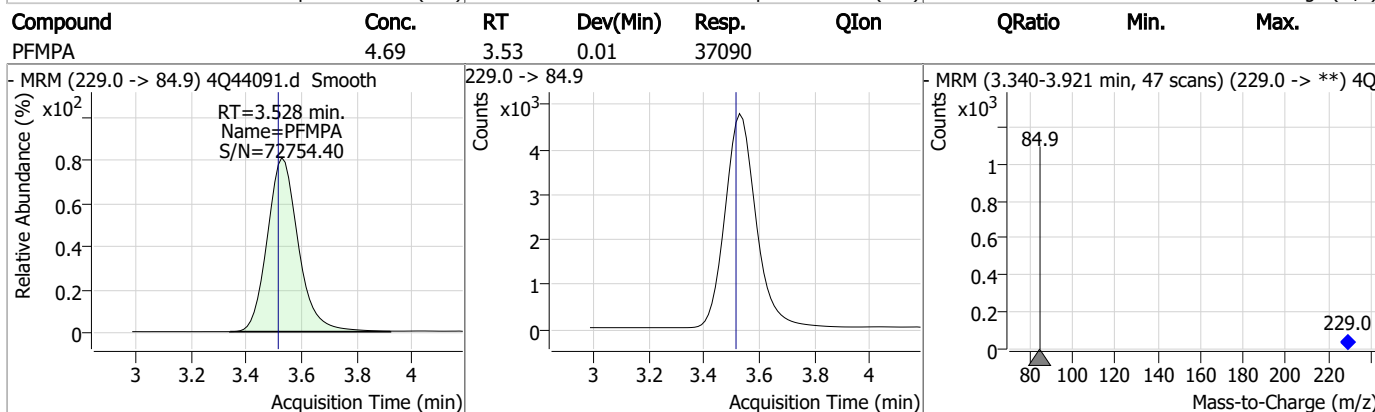
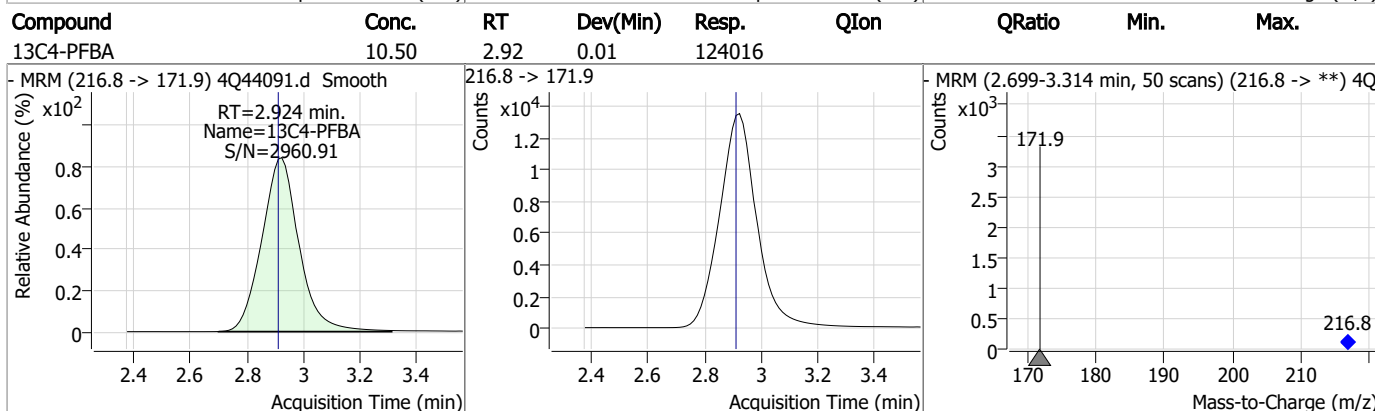
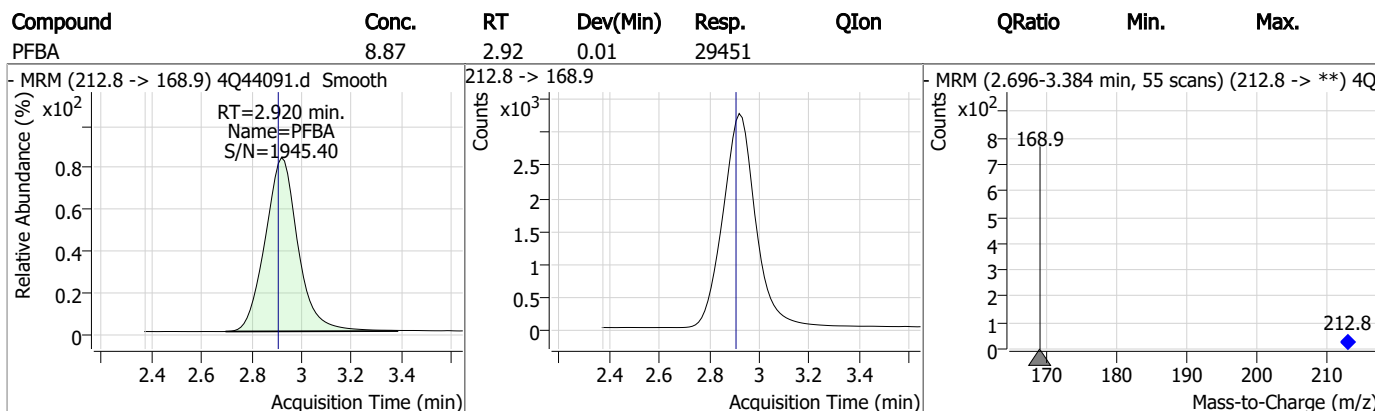
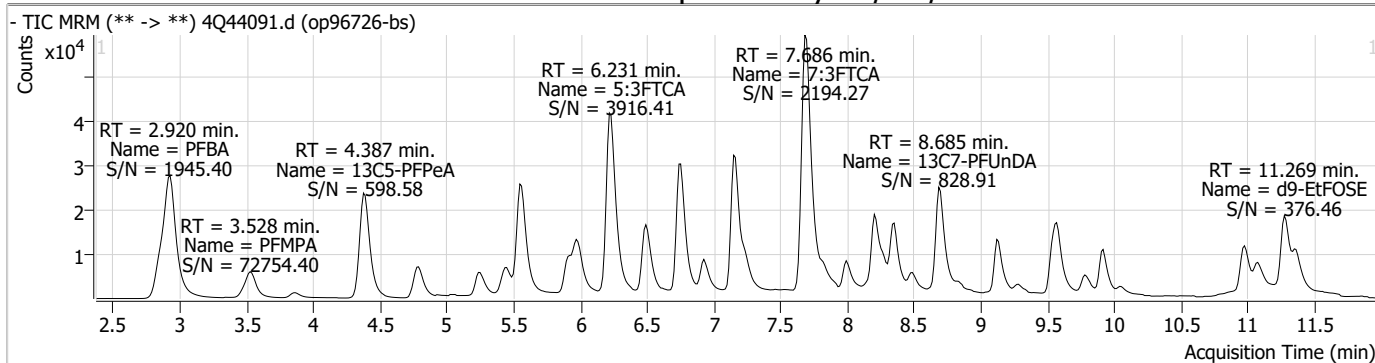
Perfluorinated Compounds by LC/MS/MS

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

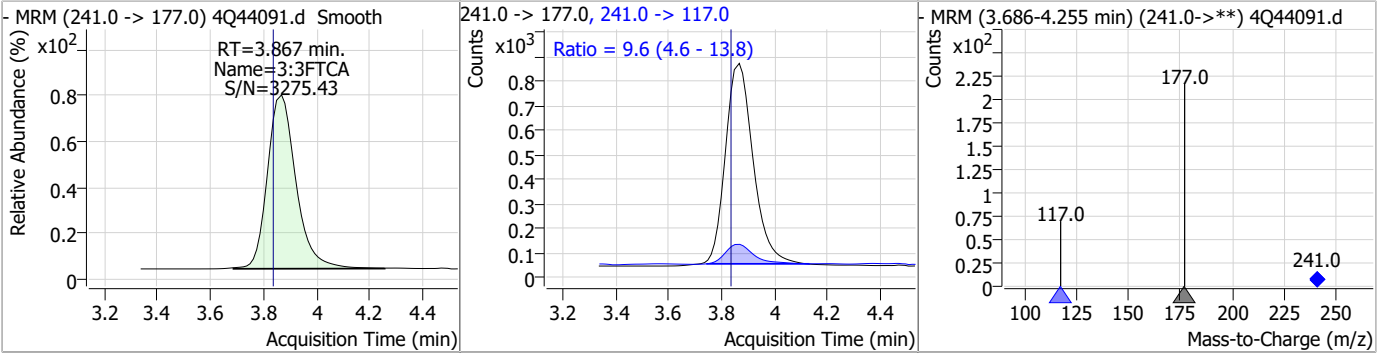
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Perfluorinated Compounds by LC/MS/MS

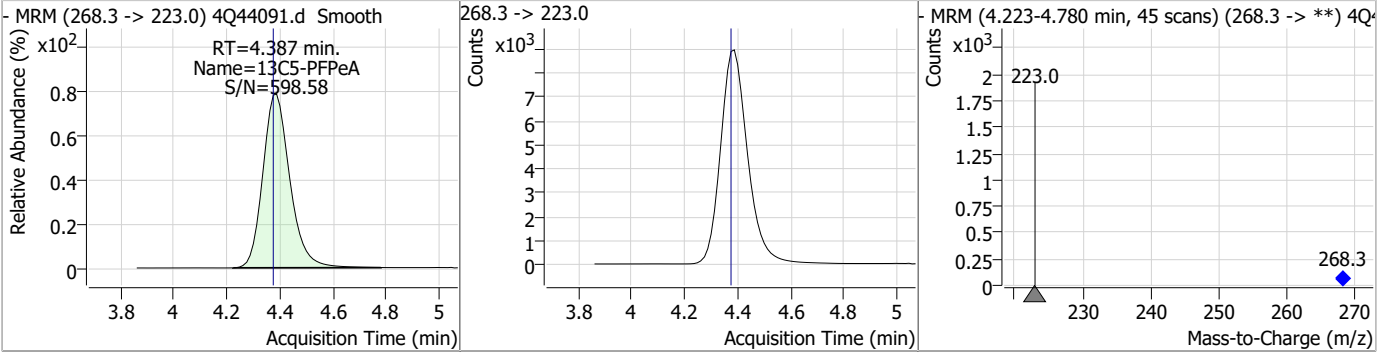


Perfluorinated Compounds by LC/MS/MS

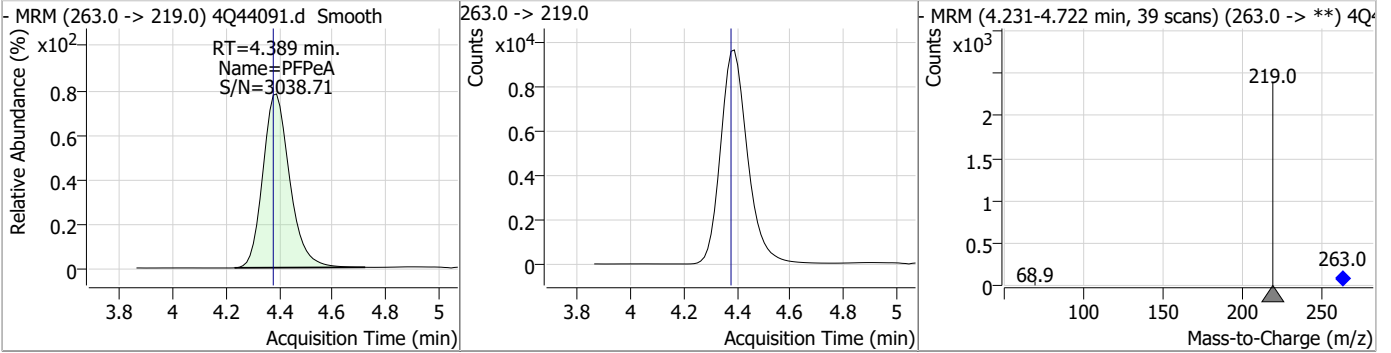
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	9.28	3.87	0.03	6176	241.0 -> 117.0	9.6	4.6	13.8



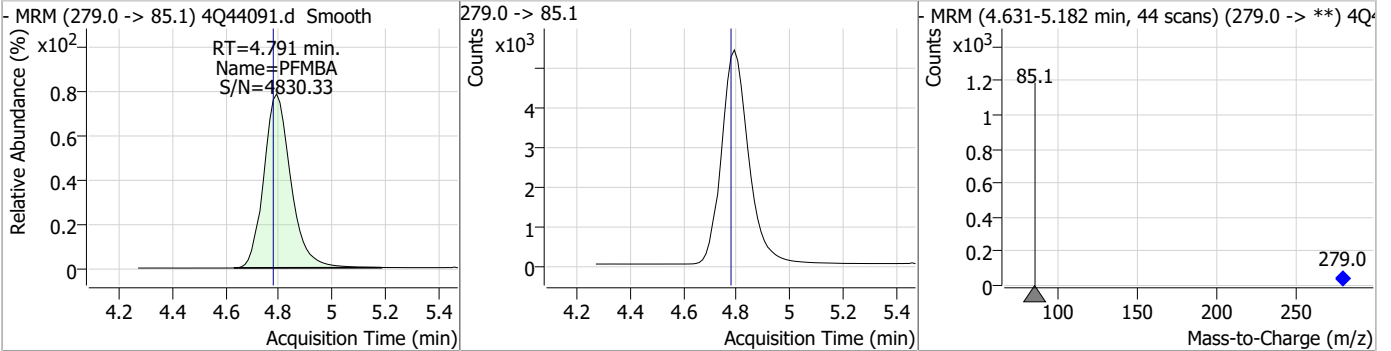
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.99	4.39	0.01	62891				



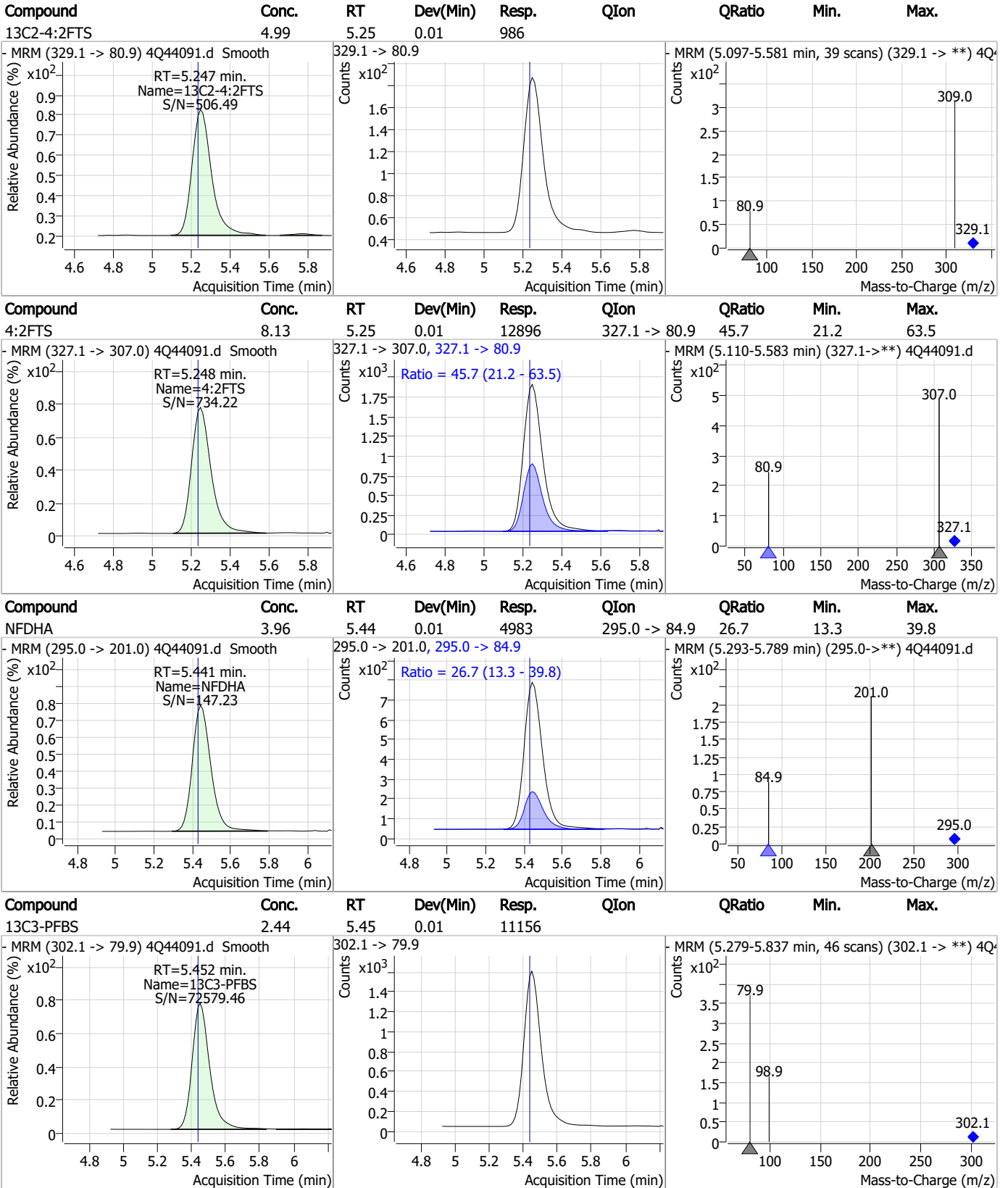
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.44	4.39	0.01	67154				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.49	4.79	0.01	37937				



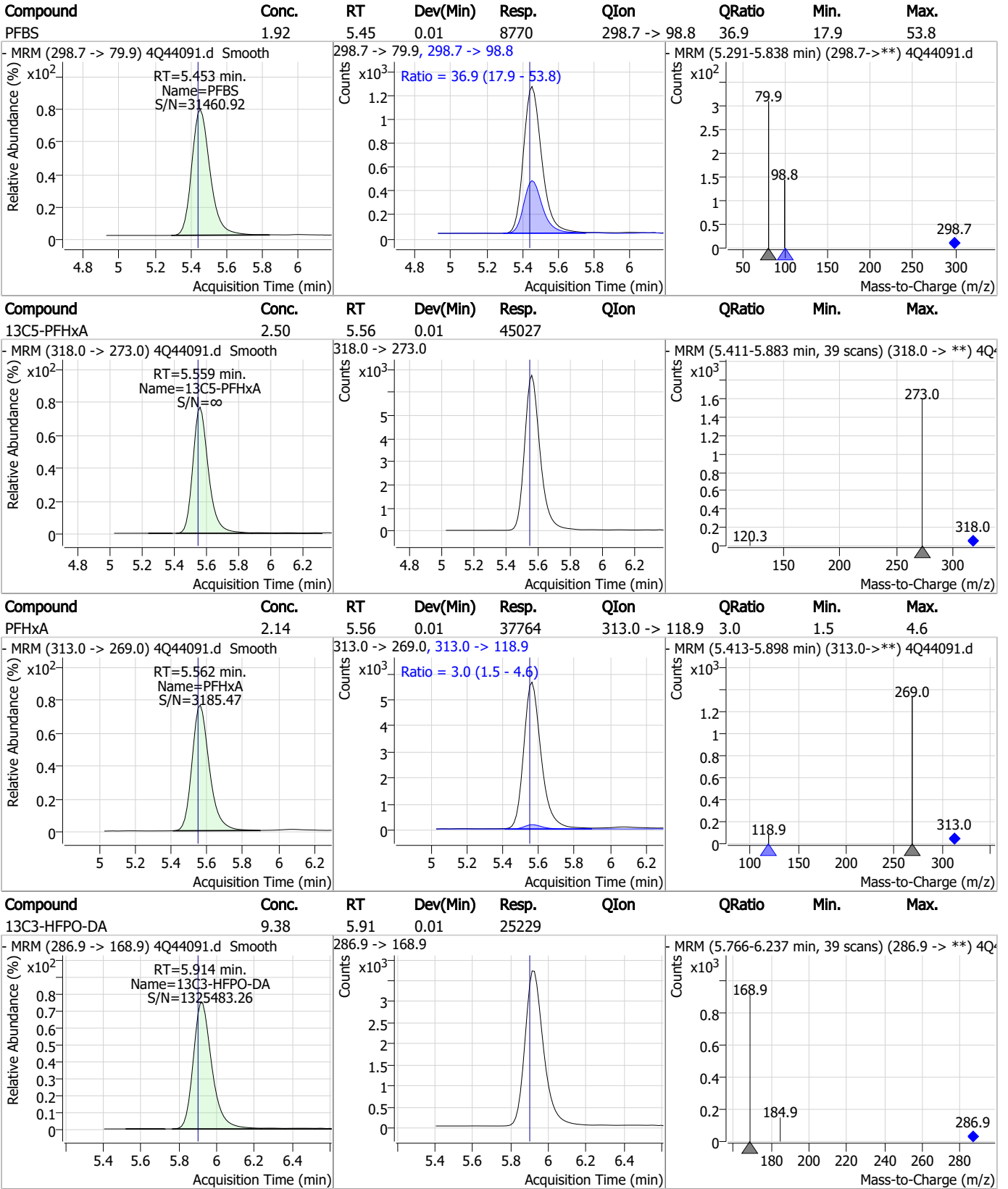
Perfluorinated Compounds by LC/MS/MS



7.3.1

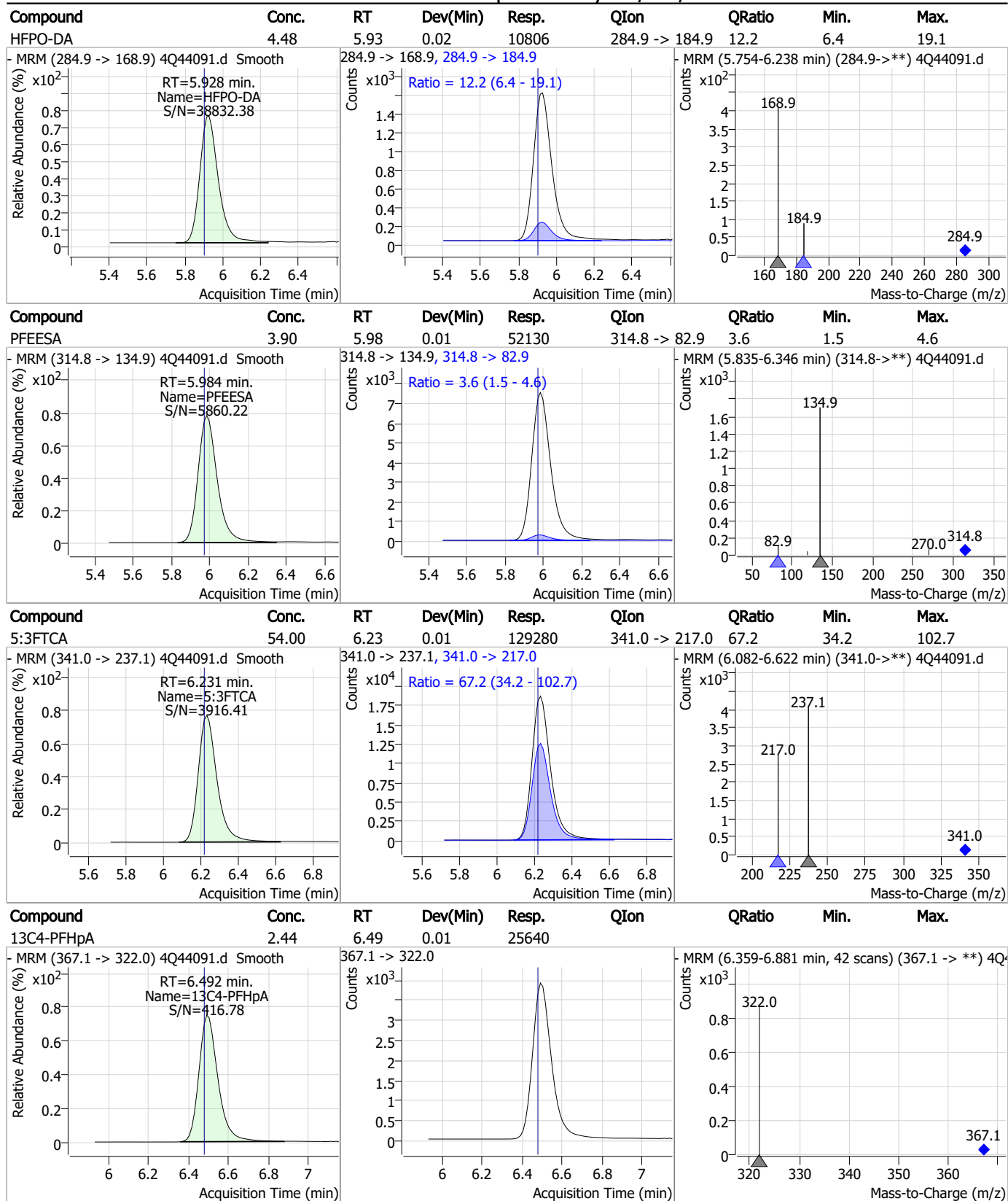
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Perfluorinated Compounds by LC/MS/MS



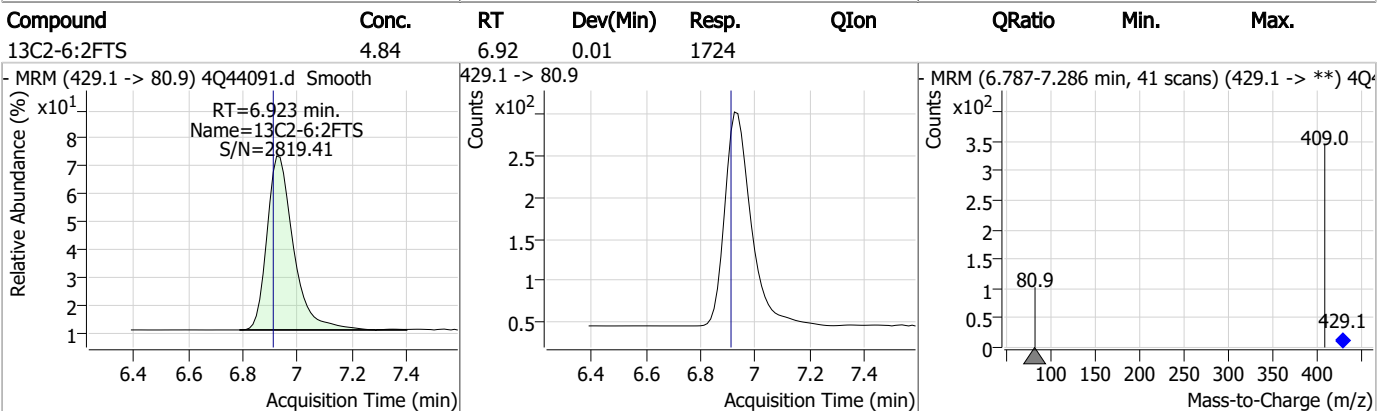
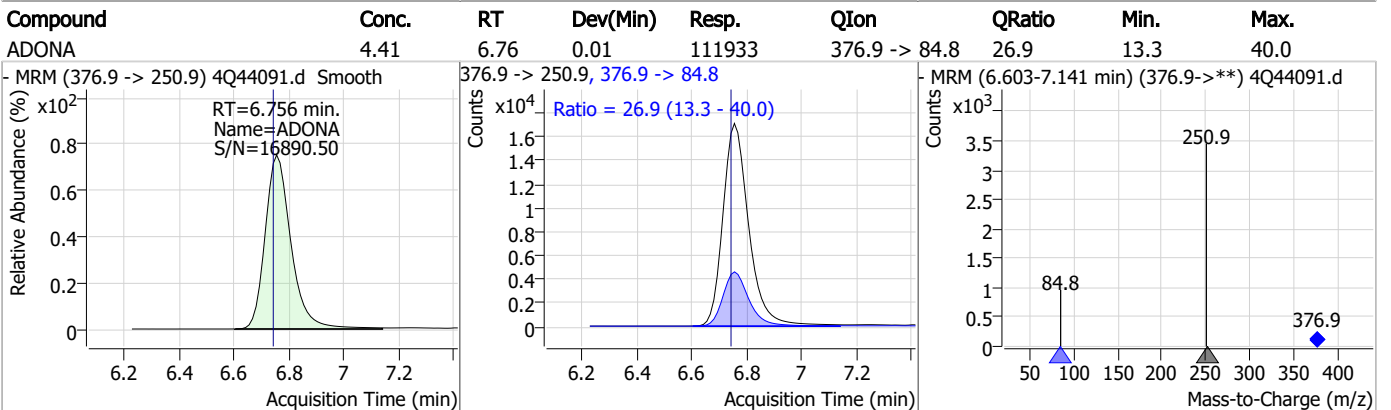
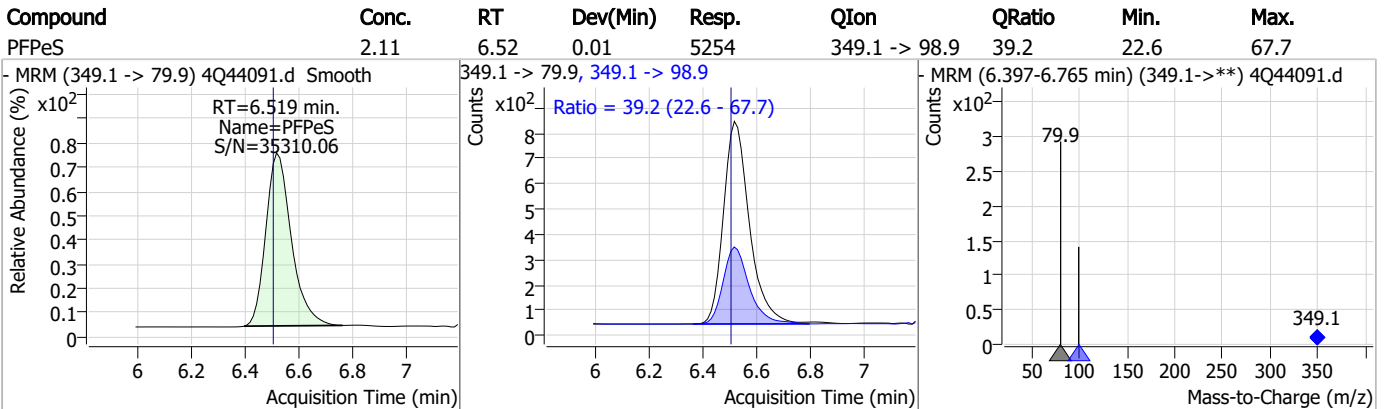
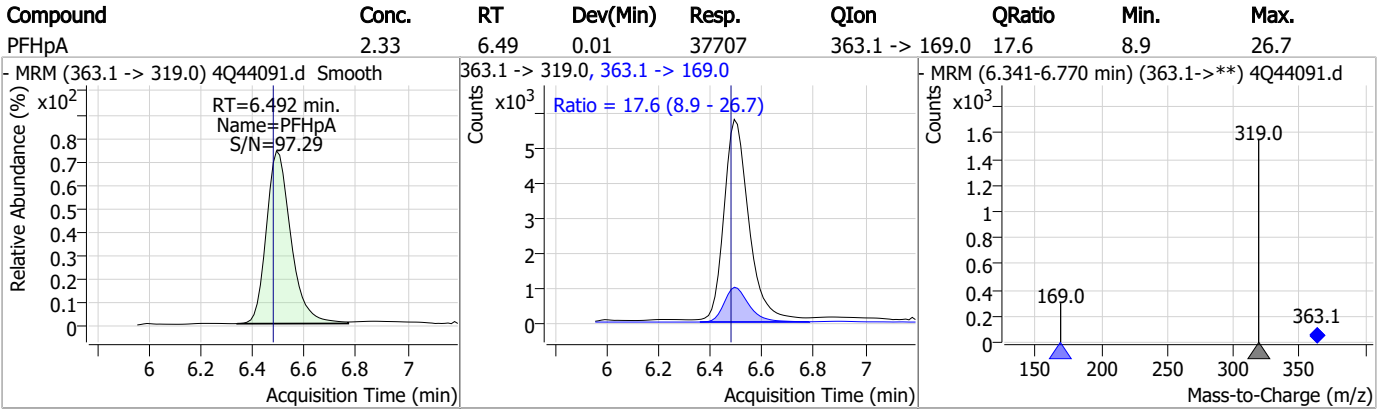
7.3.1 7

Perfluorinated Compounds by LC/MS/MS

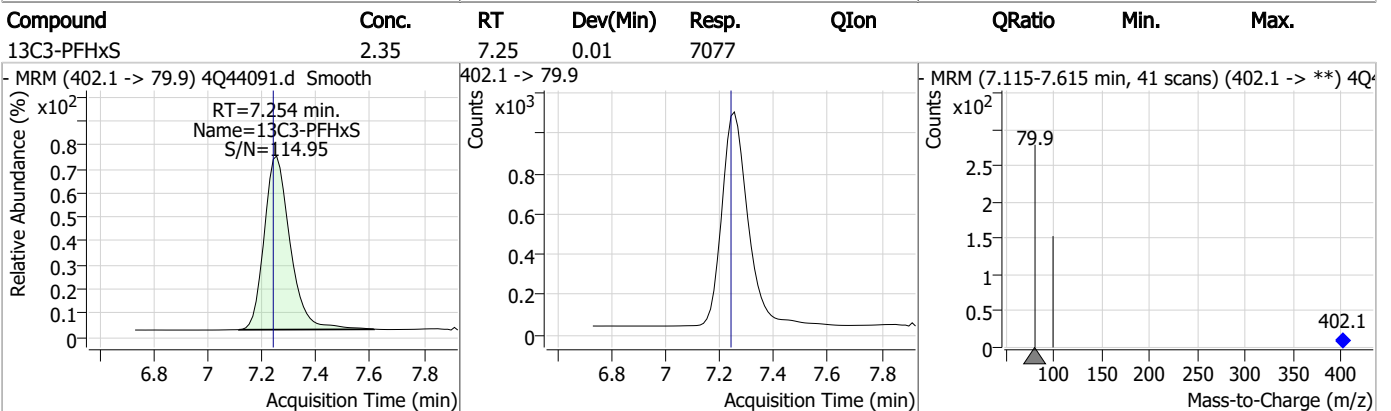
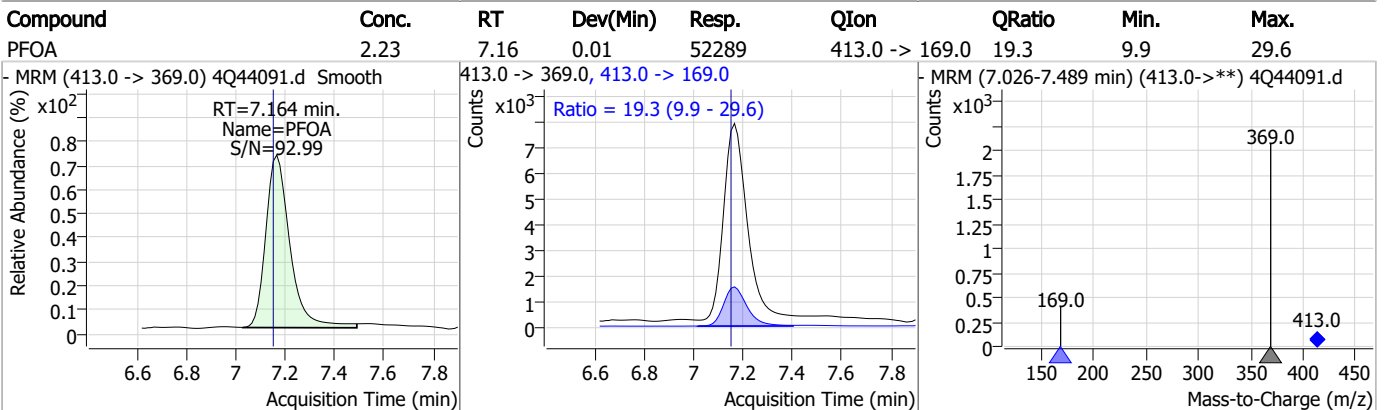
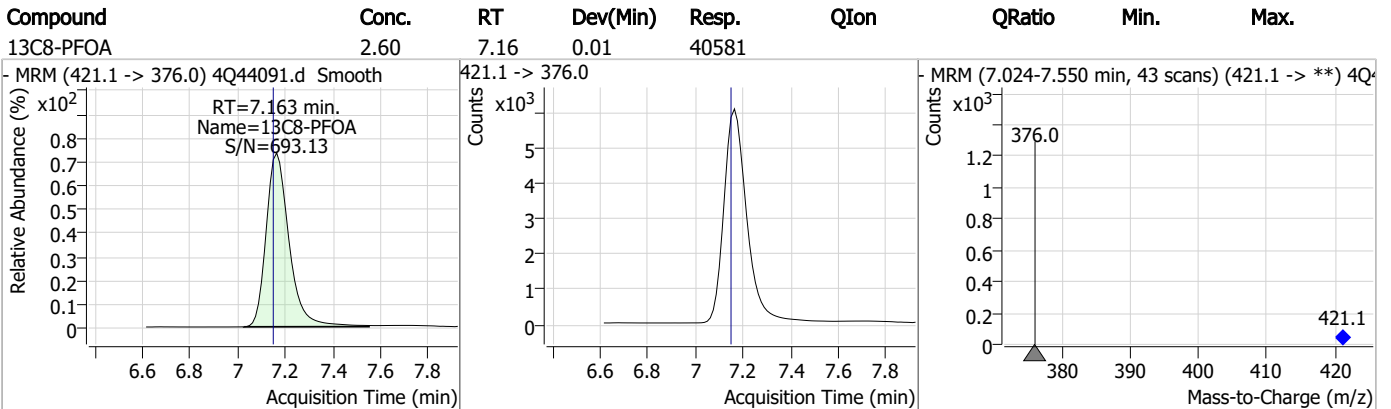
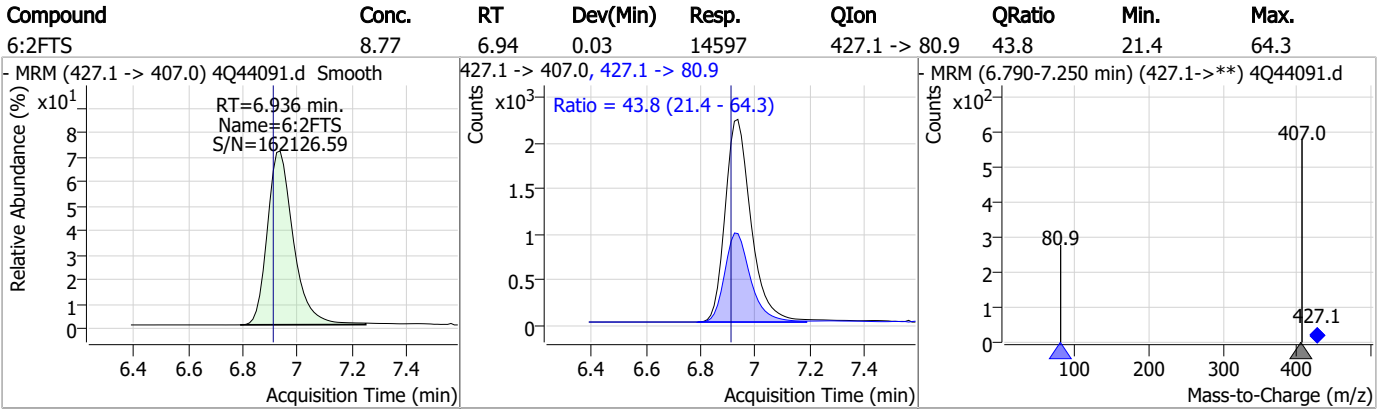


7.3.1
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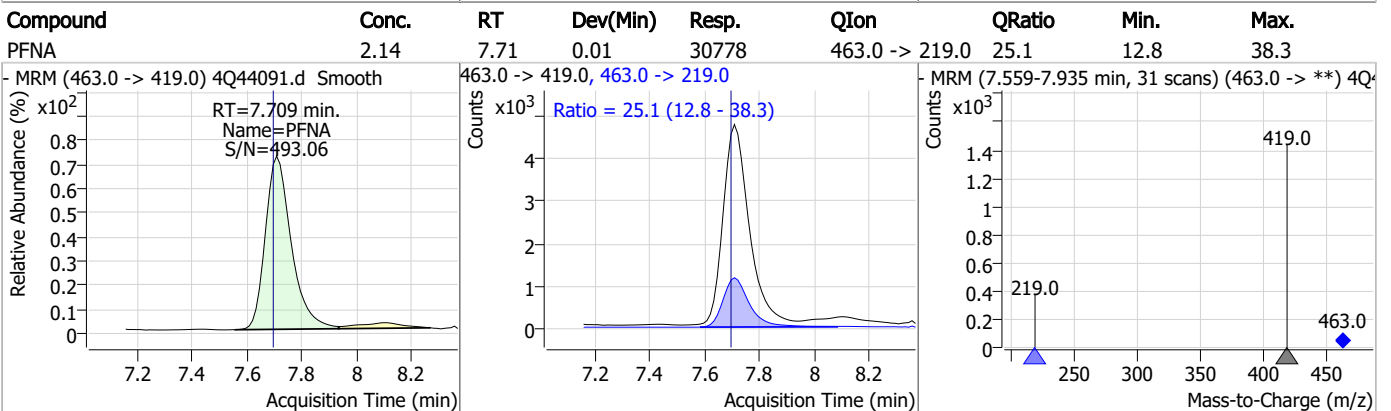
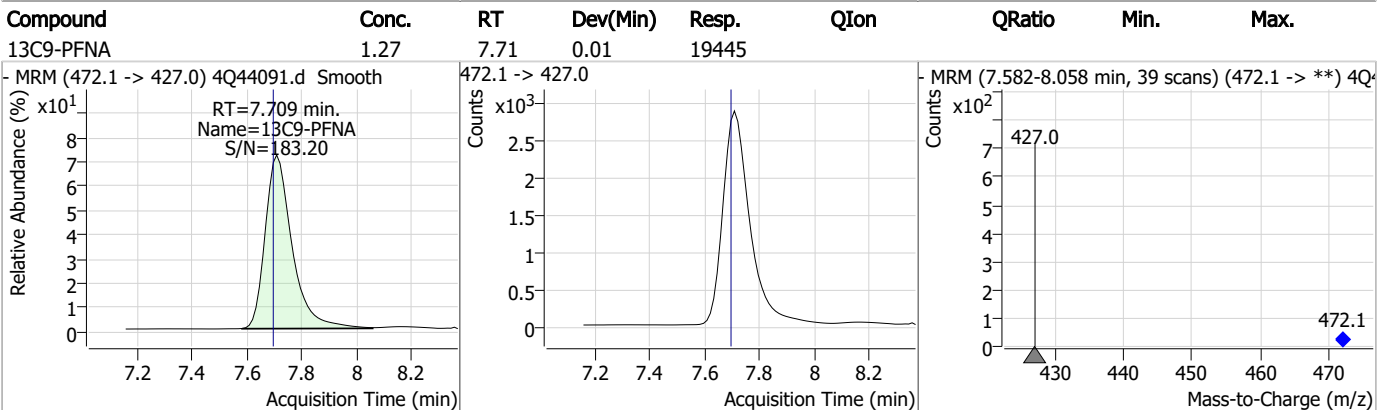
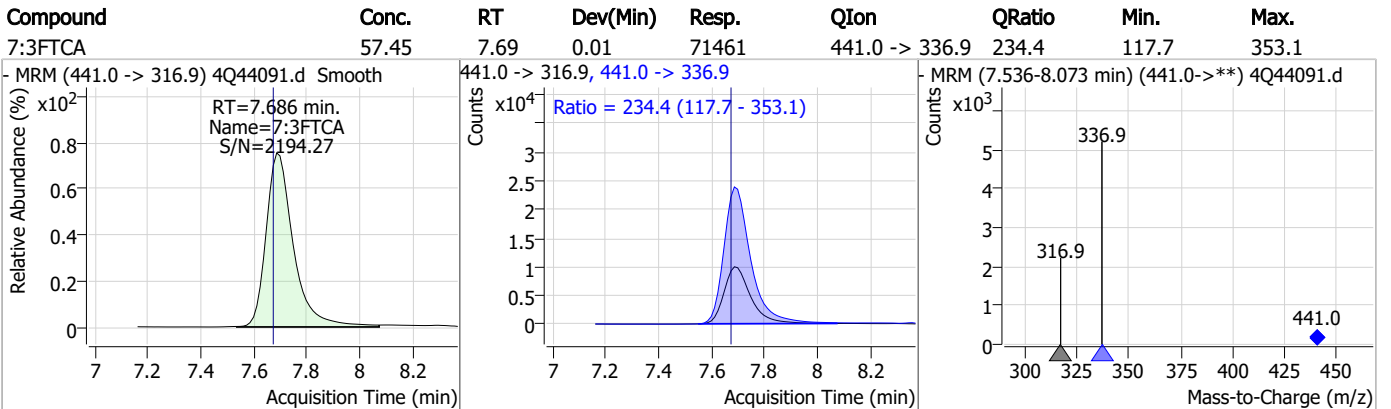
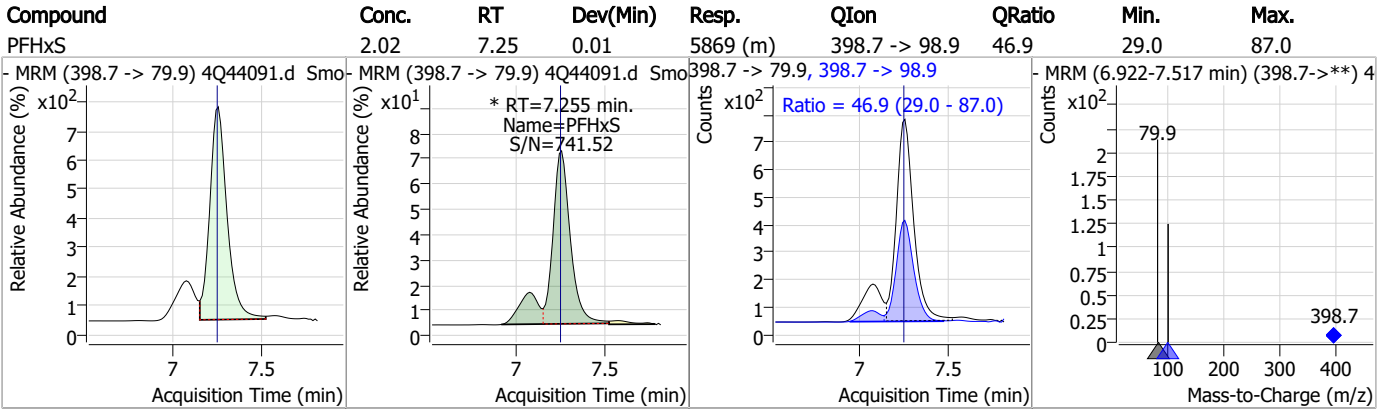
Perfluorinated Compounds by LC/MS/MS



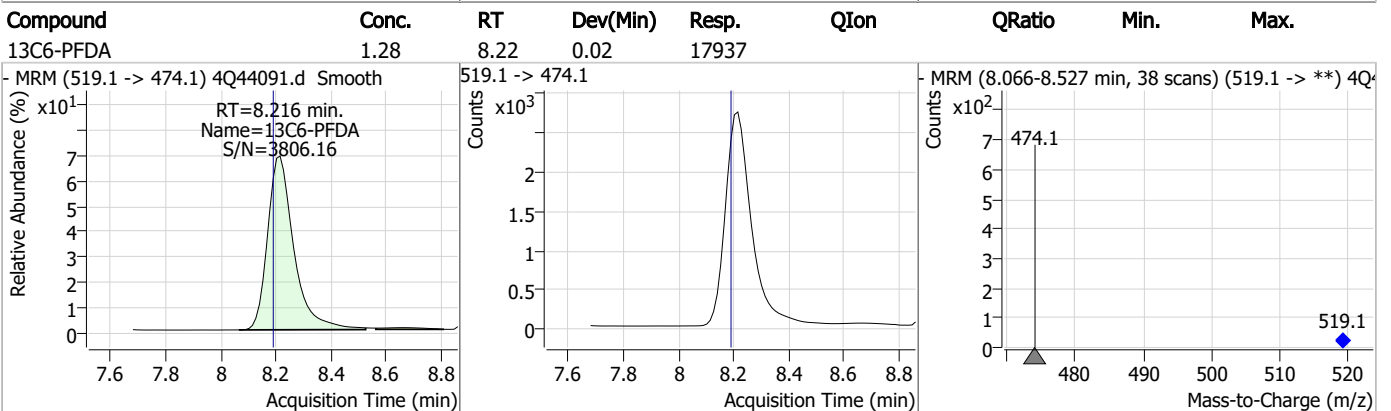
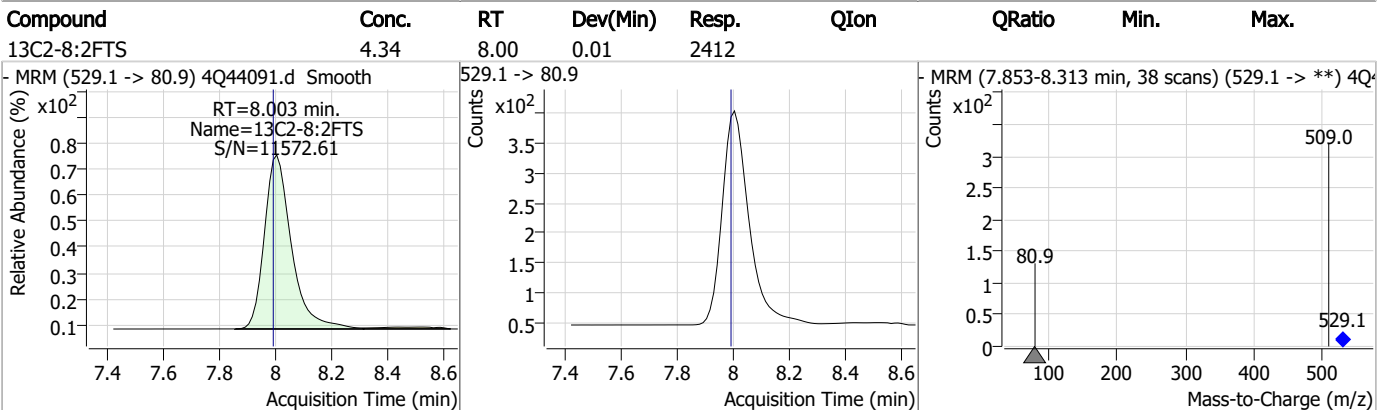
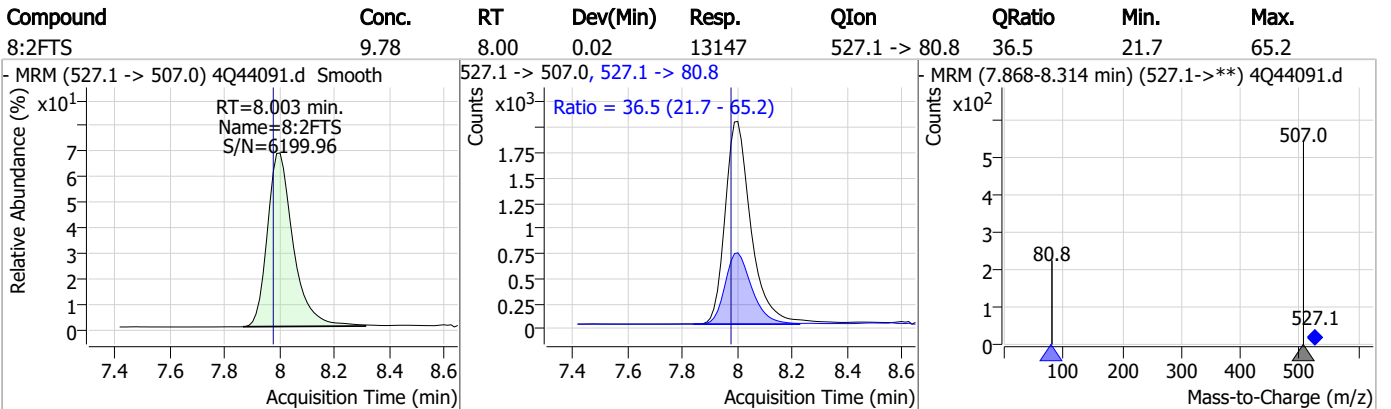
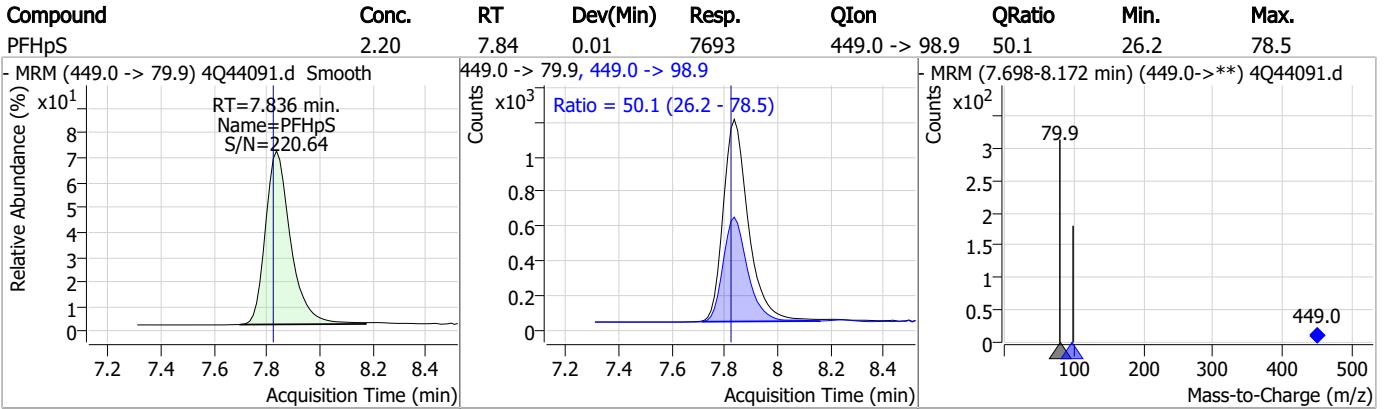
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

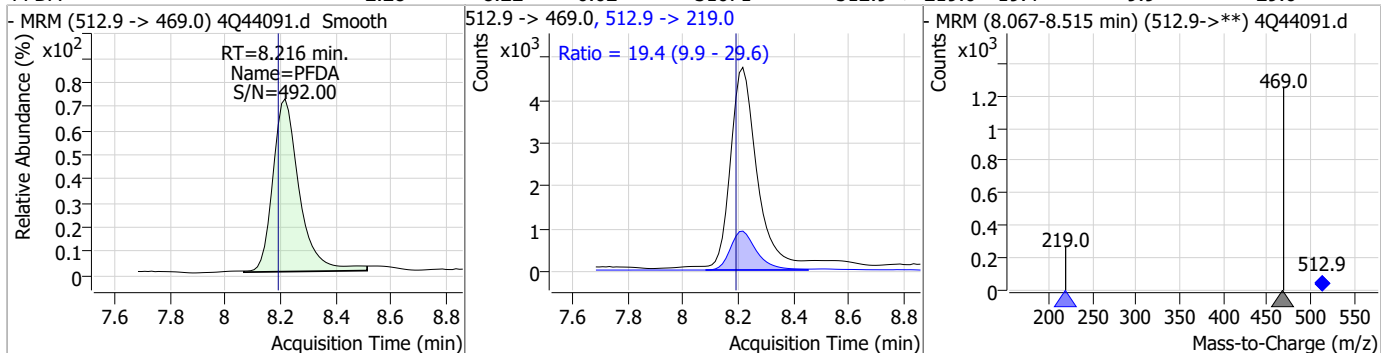


Perfluorinated Compounds by LC/MS/MS

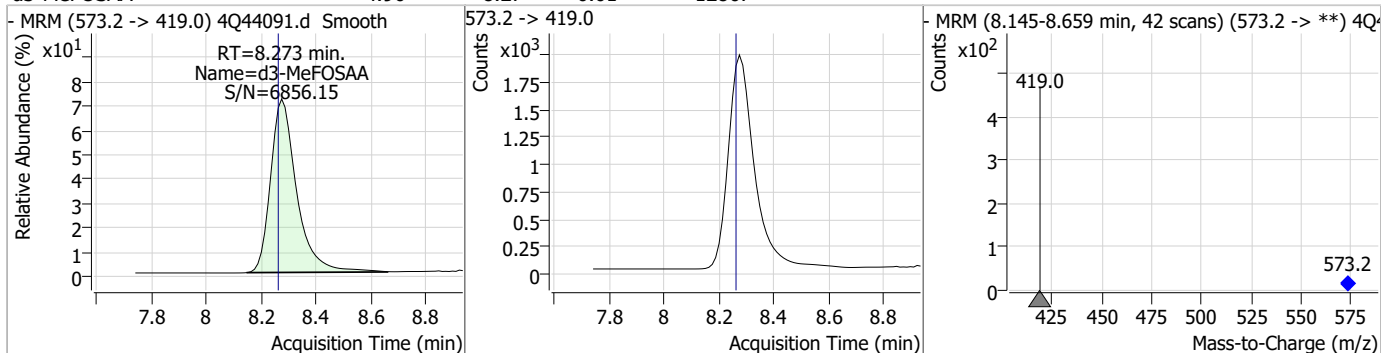


Perfluorinated Compounds by LC/MS/MS

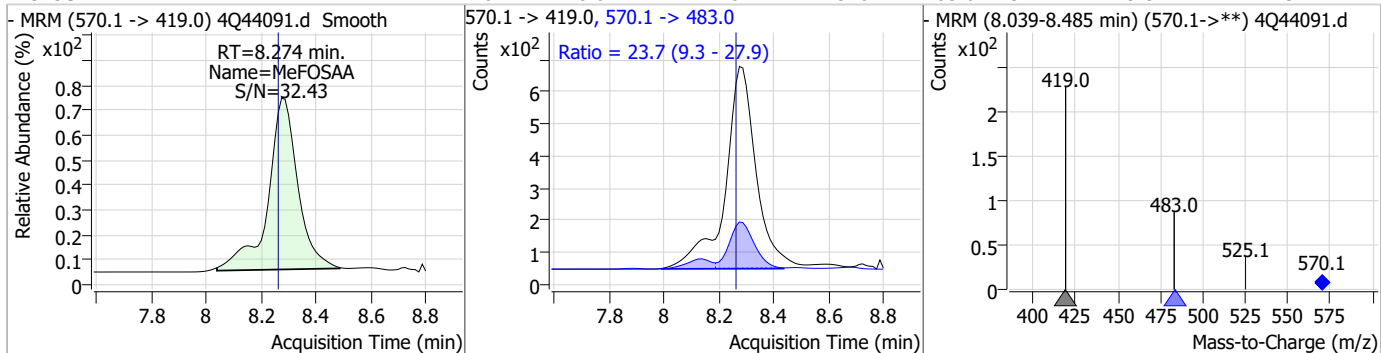
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.28	8.22	0.02	31071	512.9 -> 219.0	19.4	9.9	29.6



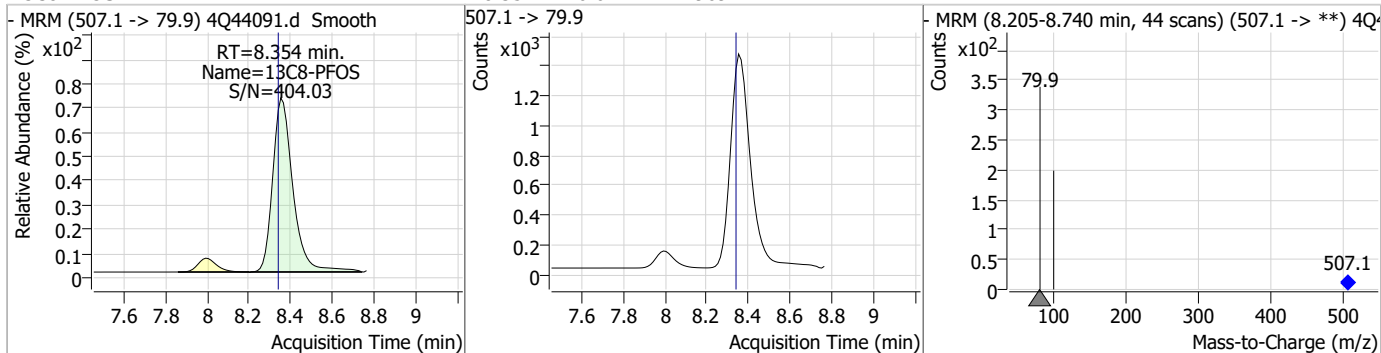
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.90	8.27	0.01	12867				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.11	8.27	0.01	4726	570.1 -> 483.0	23.7	9.3	27.9

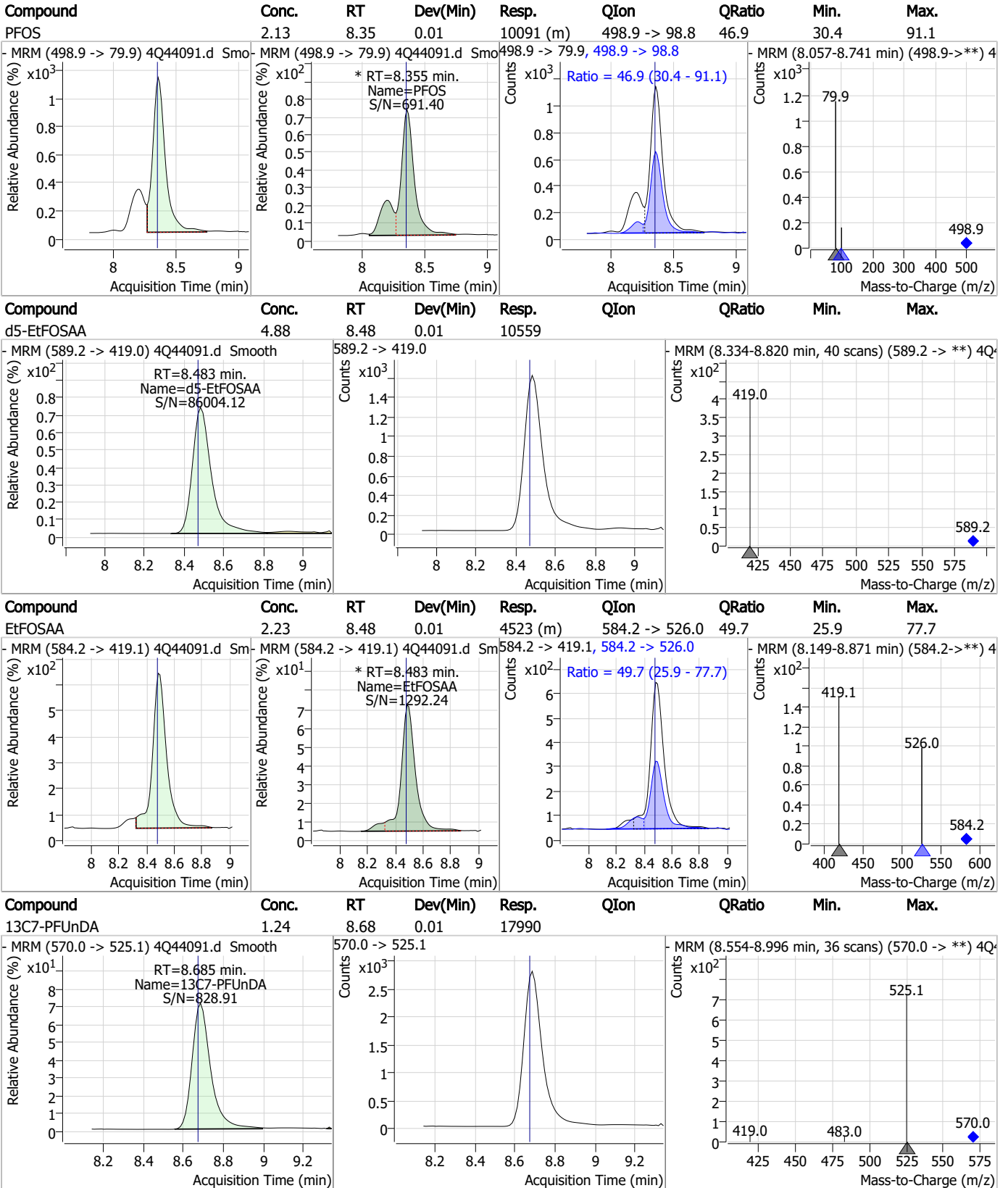


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.47	8.35	0.01	9694				



7.3.1
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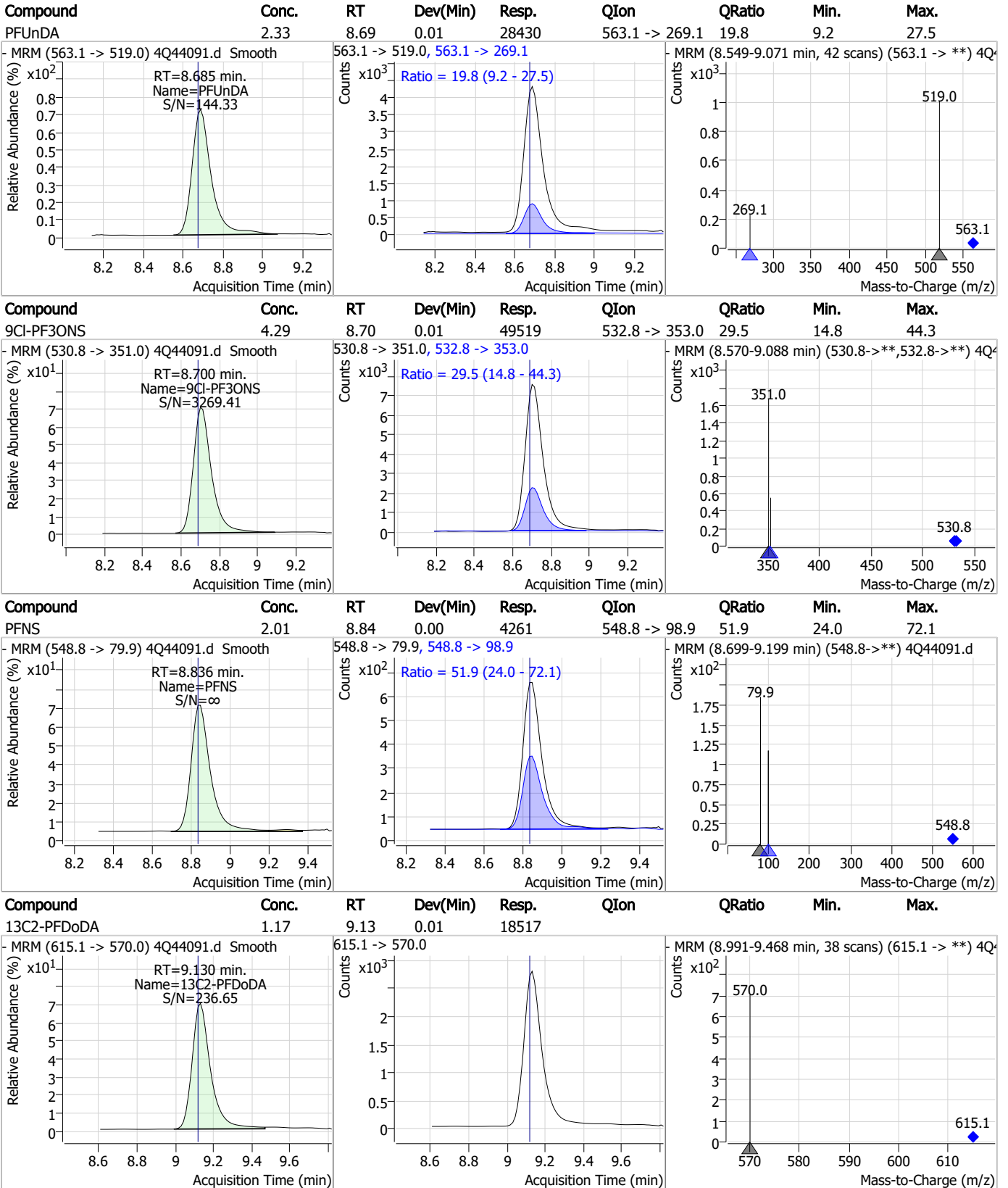
Perfluorinated Compounds by LC/MS/MS



7.3.1

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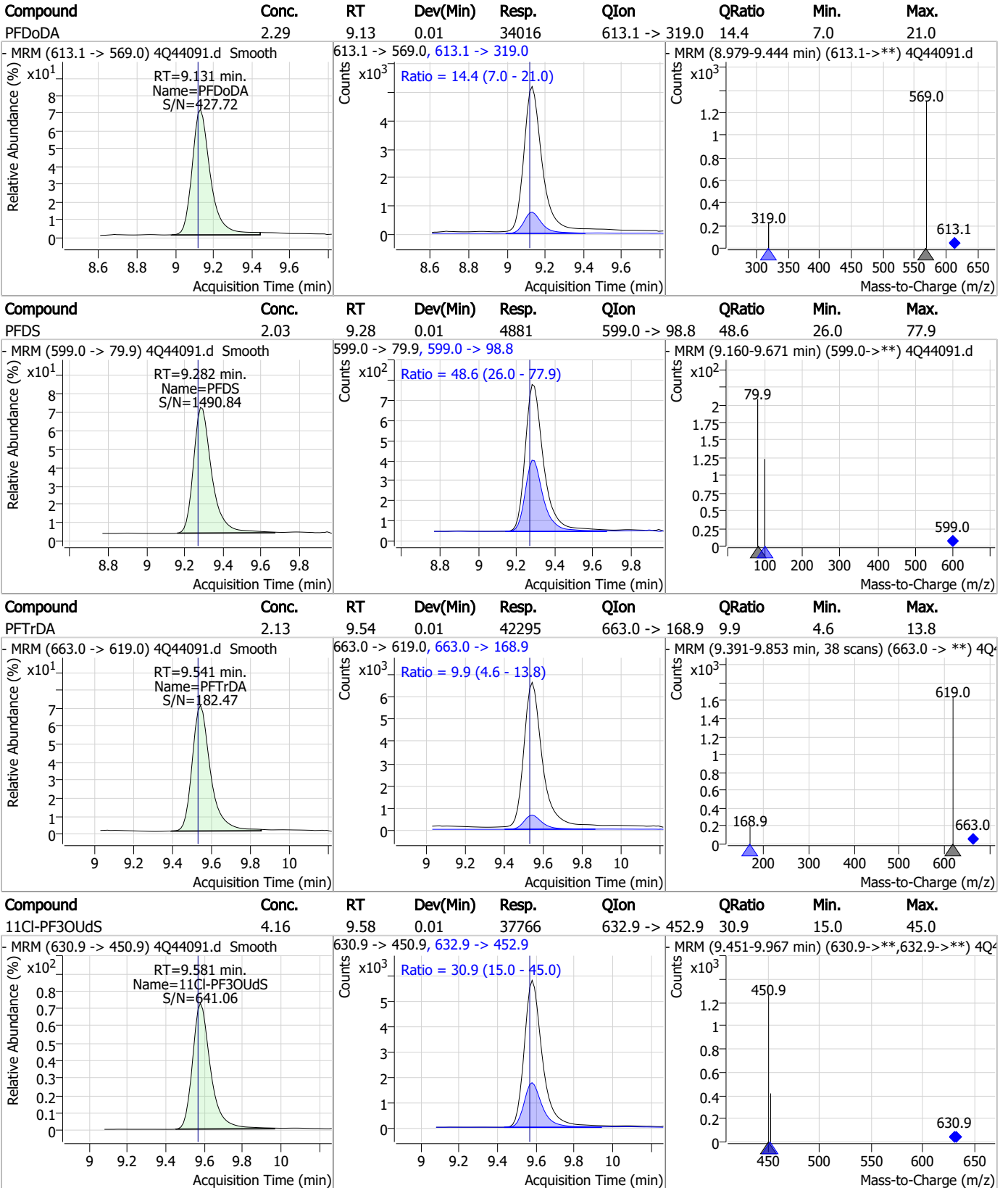
Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS

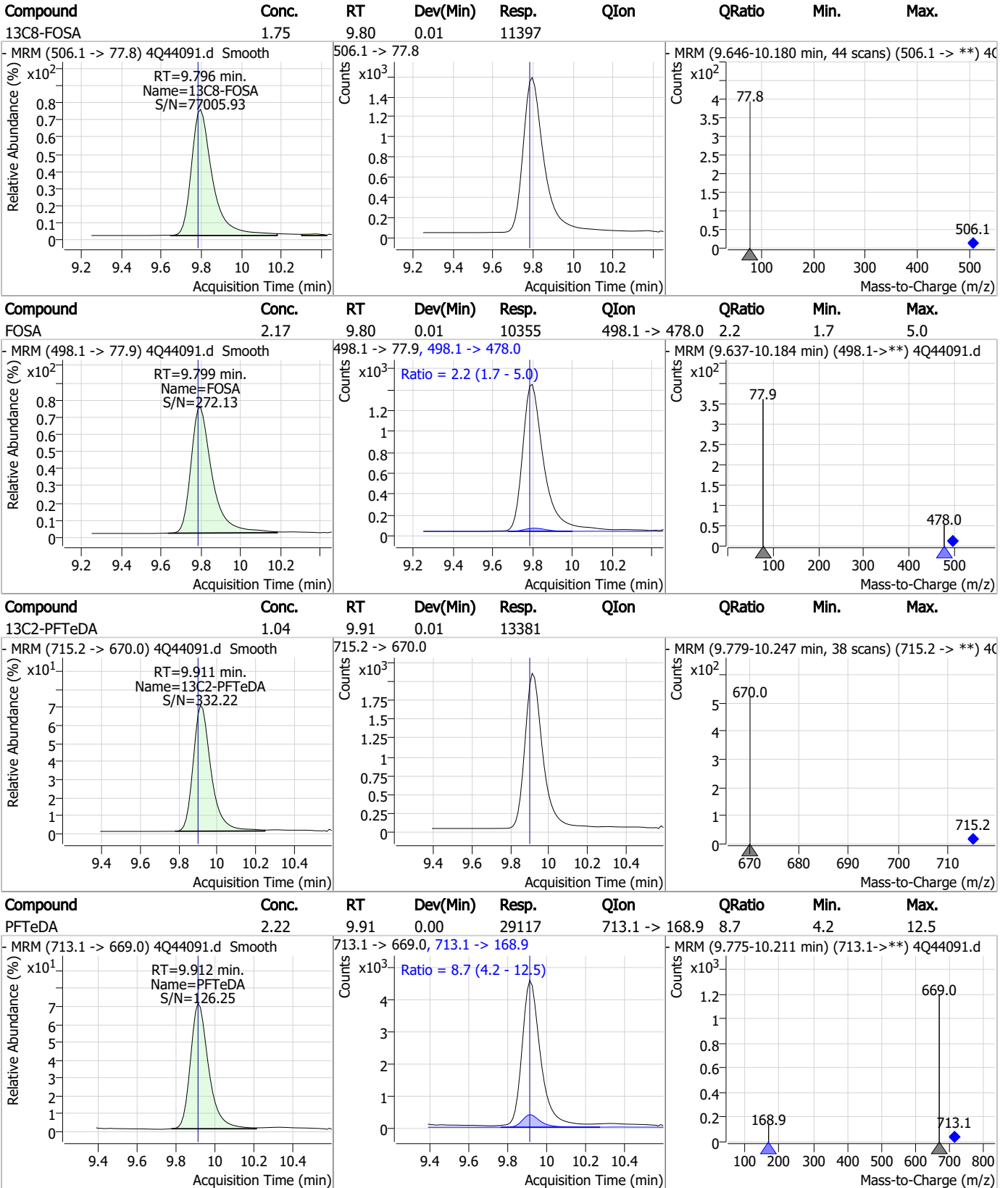


7.3.1

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Perfluorinated Compounds by LC/MS/MS

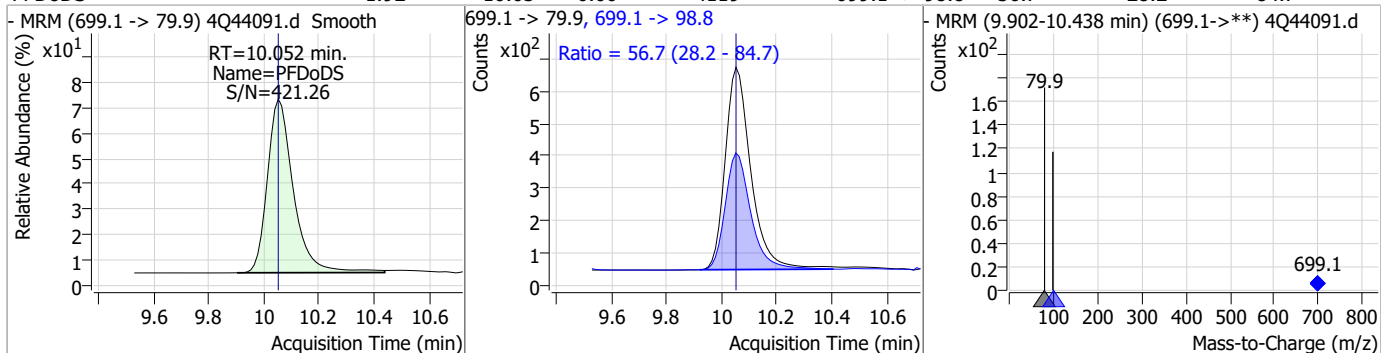


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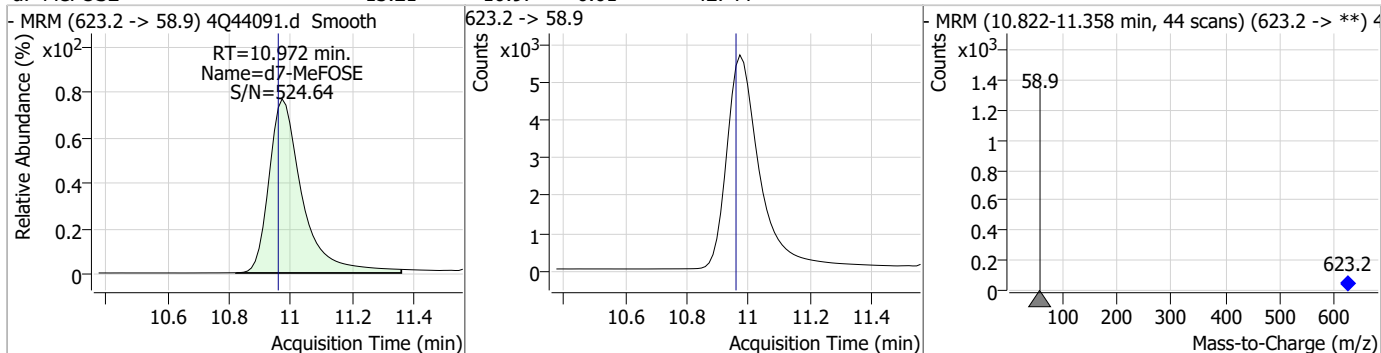
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Perfluorinated Compounds by LC/MS/MS

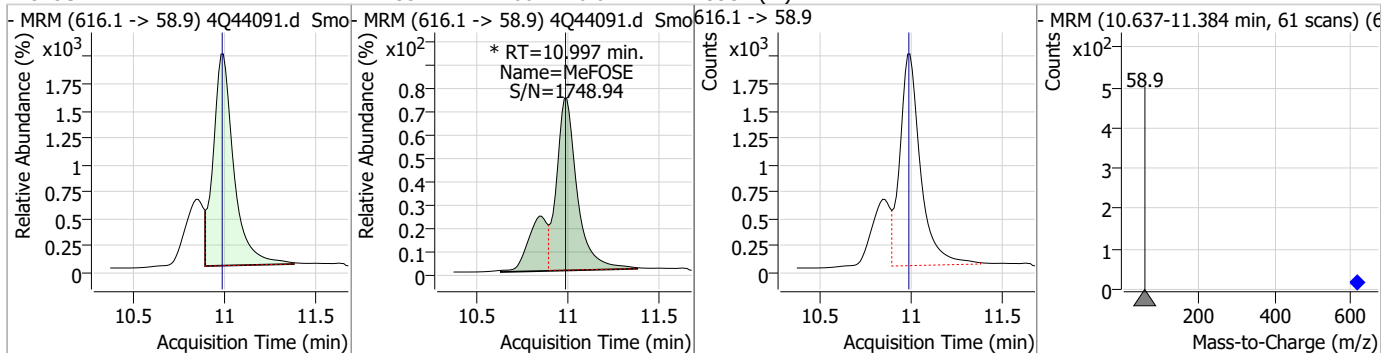
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.92	10.05	0.00	4119	699.1 -> 98.8	56.7	28.2	84.7



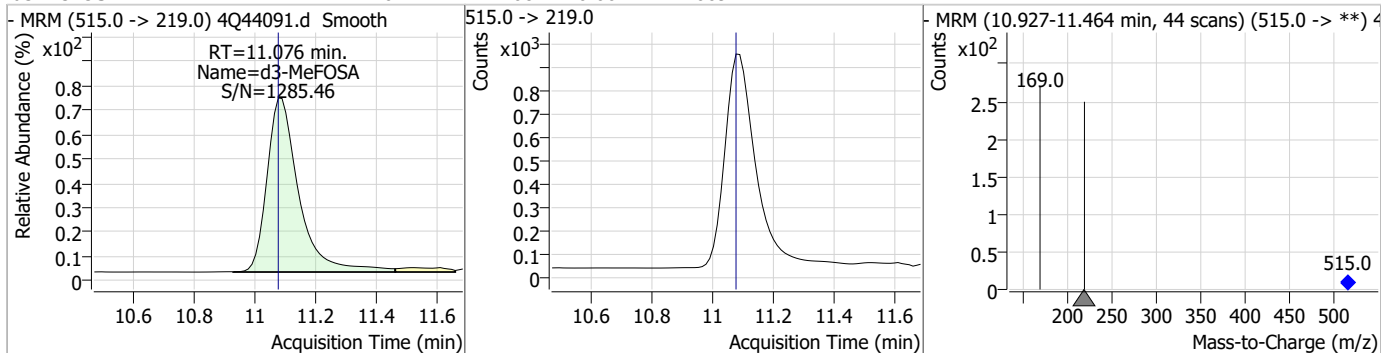
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	13.21	10.97	0.01	42744				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.35	11.00	0.01	19934 (m)				



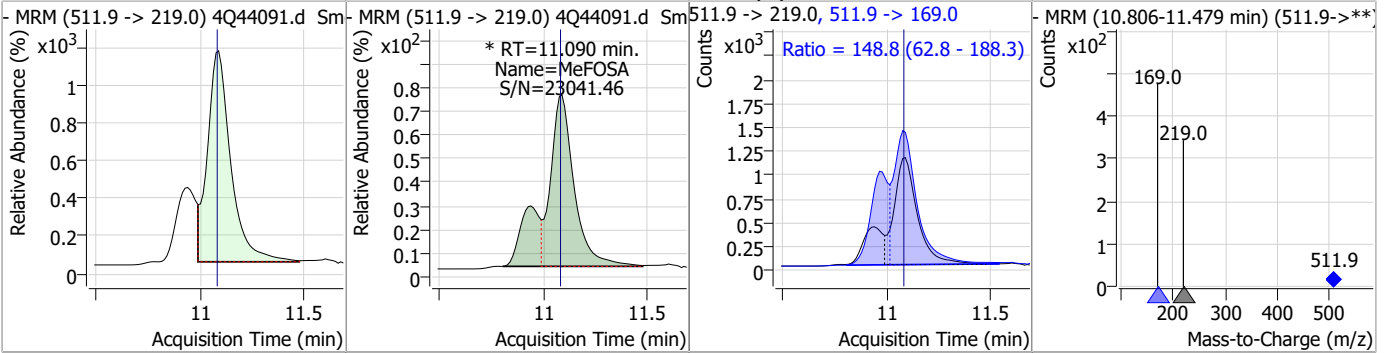
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.64	11.08	0.00	6692				



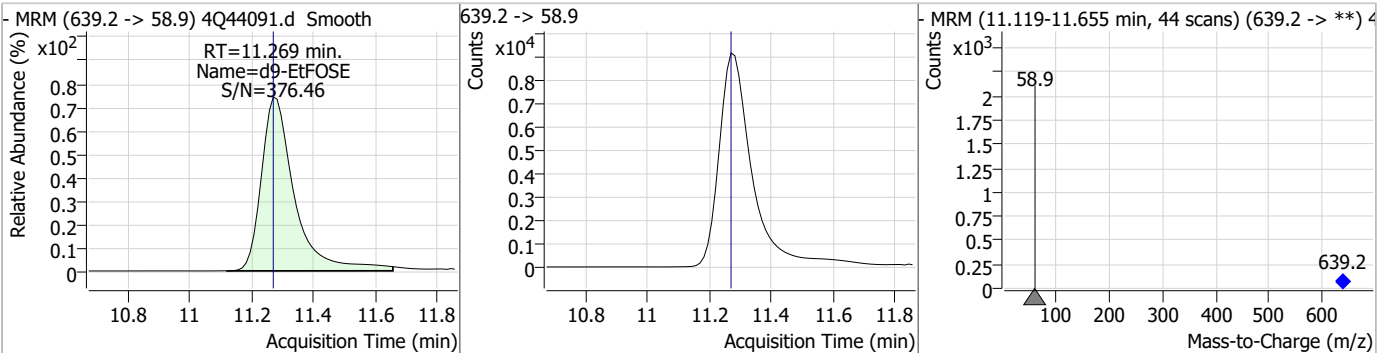
7.3.1
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Perfluorinated Compounds by LC/MS/MS

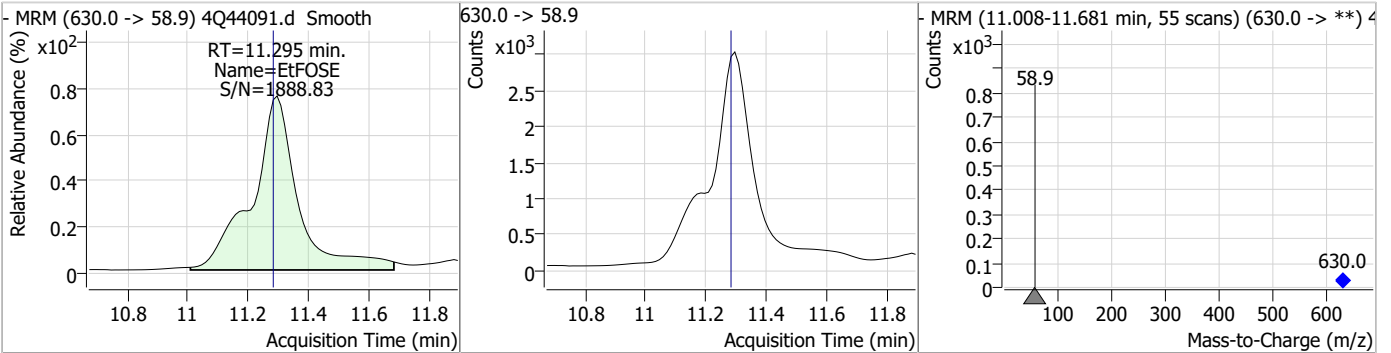
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.50	11.09	0.01	11347 (m)	511.9 -> 169.0	148.8	62.8	188.3



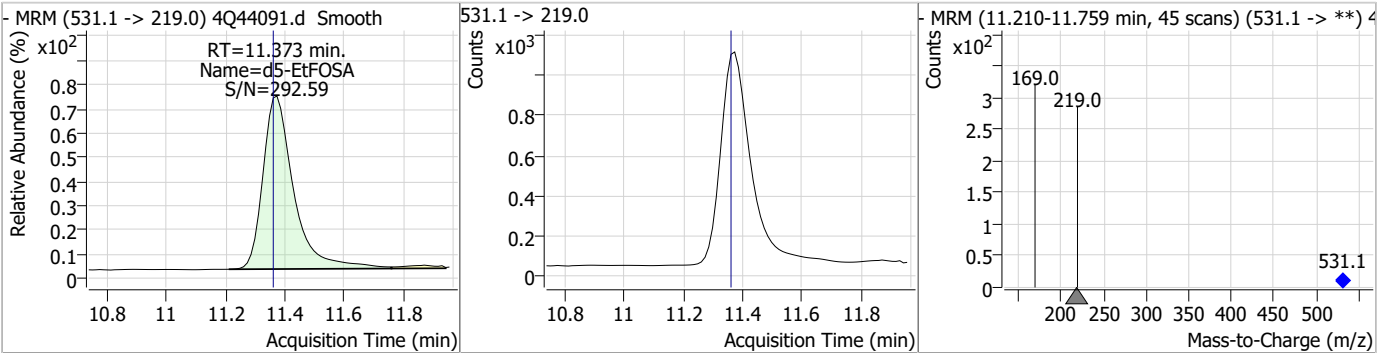
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	14.73	11.27	0.00	67495				



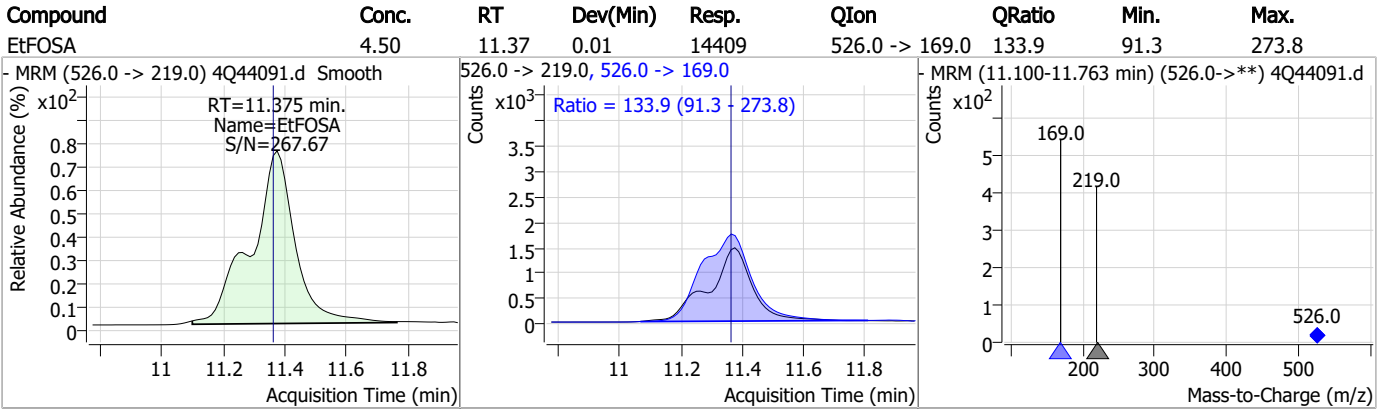
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.17	11.29	0.01	31793				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.76	11.37	0.01	7647				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: OP96726-BS Method: EPA DRAFT 1633
Lab FileID: 4Q44091.D Analyst approved: 05/09/23 10:17 Martha Valls
Injection Time: 05/08/23 16:50 Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.48	Split peak
MeFOSE	24448-09-7		11.00	Split peak
MeFOSA	31506-32-8		11.09	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44092.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 5:04:16 PM
 Sample Name : op96726-llbs:3
 Vial : P2-B2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96726,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	125609	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	64054	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	45794	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	27068	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	40509	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	20634	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	18168	1.25 µg/L	0.025
M7-PFUnDA	8.685	570.0 -> 525.1	18209	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	18148	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	12265	1.25 µg/L	0.025
M8-FOSA	9.796	506.1 -> 77.8	9627	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	10956	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6618	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	9654	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	1057	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1748	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2650	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	13179	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	25059	10.00 µg/L	0.025
M5-EtFOSAA	8.483	589.2 -> 419.0	10462	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	34222	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	56280	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	6600	2.50 µg/L	0.000
M3-MeFOSA	11.089	515.0 -> 219.0	5791	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	9832	2.50 µg/L	0.025
13C3-PFBA	2.916	216.0 -> 172.0	62185	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4586	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	46085	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16083	1.25 µg/L	0.025
13C5-PFNA	7.709	468.0 -> 423.0	22309	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	38046	2.50 µg/L	0.012

System Monitoring Compounds

13C2-4:2FTS	5.247	329.1 -> 80.9	1057	5.67 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.4%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1748	5.20 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2650	5.05 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C2-PFDoDA	9.130	615.1 -> 570.0	18148	1.16 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C2-PFTeDA	9.924	715.2 -> 670.0	12265	0.97 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 77.4%		
13C3-PFBS	5.452	302.1 -> 79.9	10956	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C3-PFHxS	7.254	402.1 -> 79.9	6618	2.33 µg/L	0.012

7.32
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.1%	
13C4-PFBA	2.924	216.8 -> 171.9	125609	10.73 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C4-PFHpA	6.492	367.1 -> 322.0	27068	2.76 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	45794	2.73 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.3%	
13C5-PFPeA	4.387	268.3 -> 223.0	64054	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.3%	
13C6-PFDA	8.216	519.1 -> 474.1	18168	1.32 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C7-PFUnDA	8.685	570.0 -> 525.1	18209	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C8-FOSA	9.796	506.1 -> 77.8	9627	1.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 62.5%	
13C8-PFOA	7.163	421.1 -> 376.0	40509	2.68 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C8-PFOS	8.366	507.1 -> 79.9	9654	2.61 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C9-PFNA	7.709	472.1 -> 427.0	20634	1.36 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.9%	
d3-MeFOSAA	8.273	573.2 -> 419.0	13179	5.31 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	25059	10.01 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d3-MeFOSA	11.089	515.0 -> 219.0	5791	1.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 60.1%	
d5-EtFOSAA	8.483	589.2 -> 419.0	10462	5.12 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d7-MeFOSE	10.972	623.2 -> 58.9	34222	11.19 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 44.8%	
d9-EtFOSE	11.269	639.2 -> 58.9	56280	12.99 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 52.0%	
d5-EtFOSA	11.360	531.1 -> 219.0	6600	1.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 64.4%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	4074	2.40 µg/L	97
		327.1 -> 80.9	1646		
6:2FTS	6.936	427.1 -> 407.0	4276	2.53 µg/L	95
		427.1 -> 80.9	1969		
8:2FTS	8.003	527.1 -> 507.0	3932	2.66 µg/L	99
		527.1 -> 80.8	1692		
EtFOSAA	8.496	584.2 -> 419.1	1353	0.67 µg/L	95
		584.2 -> 526.0	649		
FOSA	9.799	498.1 -> 77.9	2912	0.72 µg/L	96
		498.1 -> 478.0	53		
MeFOSAA	8.286	570.1 -> 419.0	1357	0.59 µg/L	87
		570.1 -> 483.0	329		
PFBA	2.920	212.8 -> 168.9	9114	2.71 µg/L	100
PFBS	5.453	298.7 -> 79.9	2569	0.57 µg/L	100
		298.7 -> 98.8	920		
PFDA	8.216	512.9 -> 469.0	9178	0.67 µg/L	98
		512.9 -> 219.0	1738		
PFDODA	9.131	613.1 -> 569.0	10627	0.73 µg/L	99
		613.1 -> 319.0	1445		
PFDS	9.294	599.0 -> 79.9	1612	0.67 µg/L	98

7.3.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	857			
PFHpA	6.492	363.1 -> 319.0	11426	0.67	µg/L	99
		363.1 -> 169.0	2002			
PFHpS	7.836	449.0 -> 79.9	2293	0.66	µg/L	99
		449.0 -> 98.9	1220			
PFHxA	5.562	313.0 -> 269.0	11681	0.65	µg/L	99
		313.0 -> 118.9	308			
PFHxS	7.255	398.7 -> 79.9	1819	0.67	µg/L	m 89
		398.7 -> 98.9	903			
PFNA	7.709	463.0 -> 419.0	9045	0.59	µg/L	98
		463.0 -> 219.0	2212			
PFNS	8.848	548.8 -> 79.9	1340	0.64	µg/L	96
		548.8 -> 98.9	605			
PFOA	7.164	413.0 -> 369.0	14185	0.61	µg/L	96
		413.0 -> 169.0	3070			
PFOS	8.355	498.9 -> 79.9	3129	0.66	µg/L	m 88
		498.9 -> 98.8	1625			
PFPeA	4.389	263.0 -> 219.0	20352	1.32	µg/L	100
PFPeS	6.519	349.1 -> 79.9	1628	0.70	µg/L	94
		349.1 -> 98.9	674			
PFTeDA	9.924	713.1 -> 669.0	7570	0.63	µg/L	97
		713.1 -> 168.9	698			
PFTrDA	9.541	663.0 -> 619.0	11148	0.57	µg/L	96
		663.0 -> 168.9	1186			
PFUnDA	8.685	563.1 -> 519.0	8440	0.68	µg/L	99
		563.1 -> 269.1	1518			
11Cl-PF3OUdS	9.581	630.9 -> 450.9	11470	1.27	µg/L	98
		632.9 -> 452.9	3321			
9Cl-PF3ONS	8.712	530.8 -> 351.0	15237	1.33	µg/L	98
		532.8 -> 353.0	4650			
ADONA	6.756	376.9 -> 250.9	33805	1.34	µg/L	99
		376.9 -> 84.8	8899			
HFPO-DA	5.928	284.9 -> 168.9	3202	1.34	µg/L	95
		284.9 -> 184.9	475			
3:3FTCA	3.867	241.0 -> 177.0	1694	2.50	µg/L	94
		241.0 -> 117.0	191			
5:3FTCA	6.231	341.0 -> 237.1	36593	15.03	µg/L	100
		341.0 -> 217.0	25057			
7:3FTCA	7.699	441.0 -> 316.9	20758	16.41	µg/L	98
		441.0 -> 336.9	49564			
EtFOSA	11.375	526.0 -> 219.0	3682	1.33	µg/L	76
		526.0 -> 169.0	5457			
EtFOSE	11.295	630.0 -> 58.9	8301	3.81	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	3028	1.39	µg/L	m 85
		511.9 -> 169.0	4319			
MeFOSE	10.997	616.1 -> 58.9	4927	3.51	µg/L	100
PFDoDS	10.052	699.1 -> 79.9	1231	0.58	µg/L	95
		699.1 -> 98.8	650			
NFDHA	5.441	295.0 -> 201.0	1675	1.31	µg/L	96
		295.0 -> 84.9	411			
PFMBA	4.791	279.0 -> 85.1	11534	1.34	µg/L	100
PFMPA	3.528	229.0 -> 84.9	11304	1.40	µg/L	100
PFEESA	5.984	314.8 -> 134.9	15640	1.15	µg/L	99
		314.8 -> 82.9	512			

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

7.3.2
7

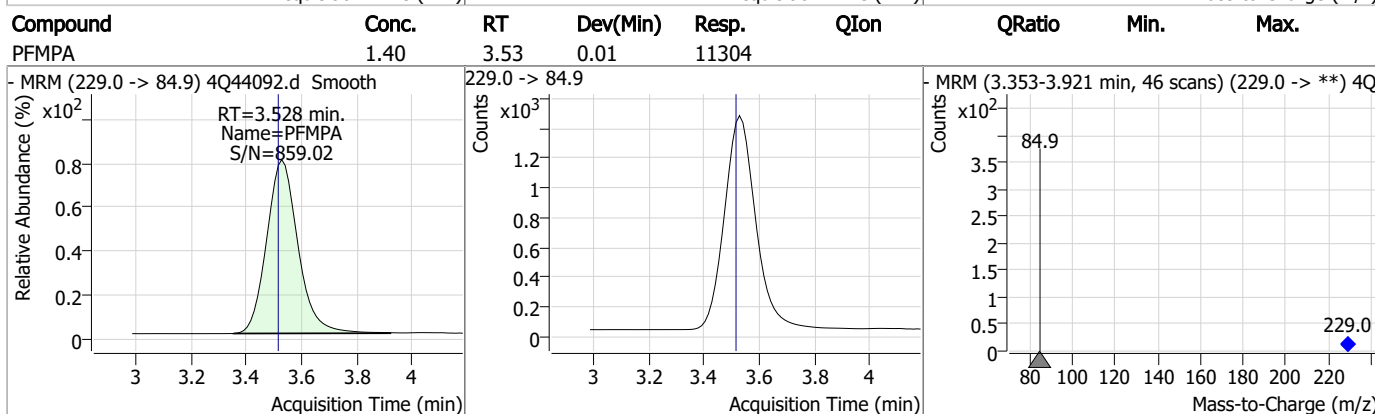
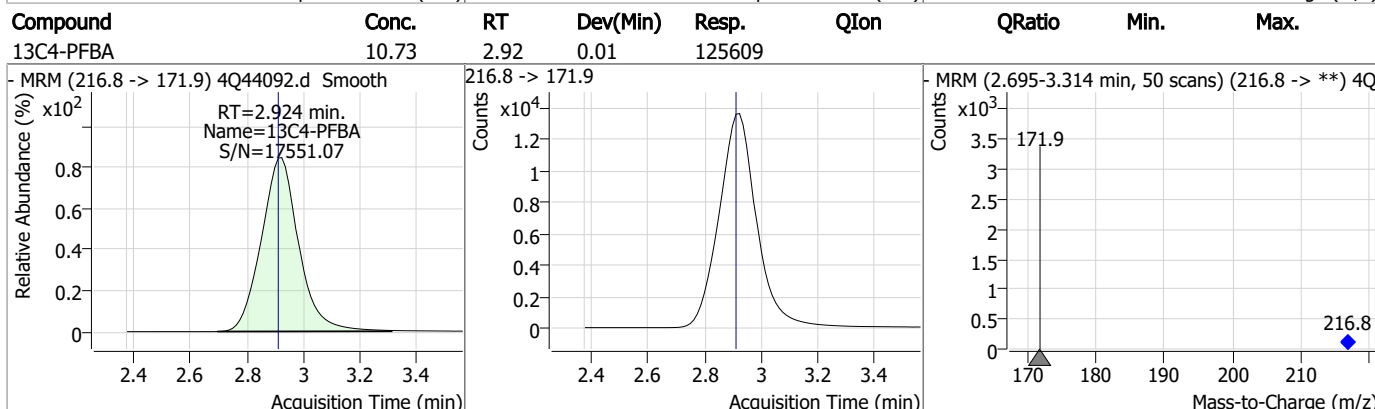
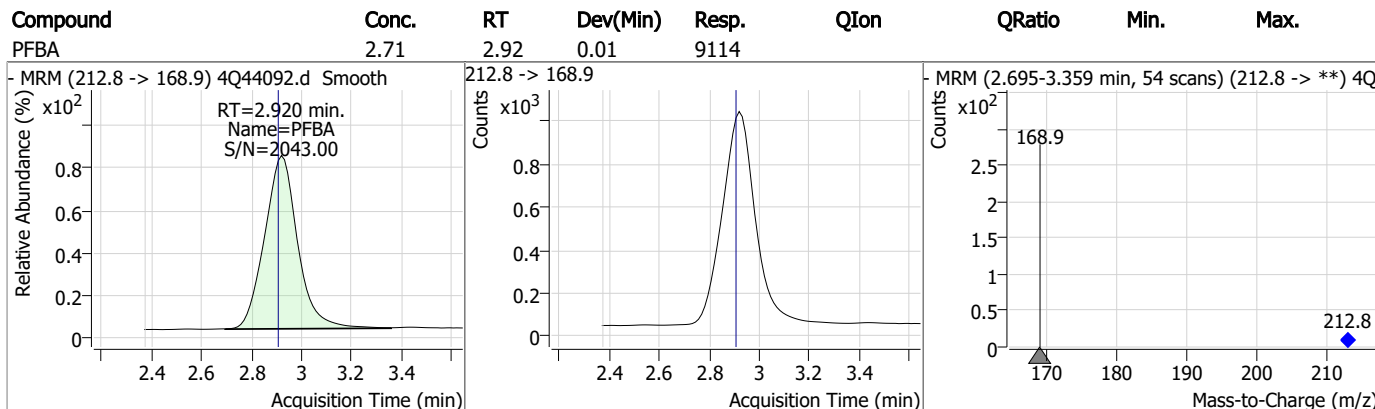
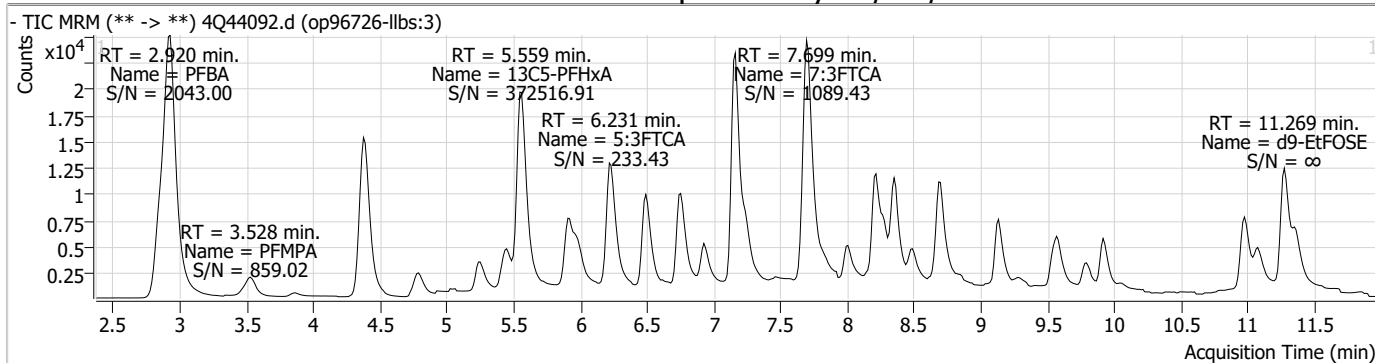
Perfluorinated Compounds by LC/MS/MS

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

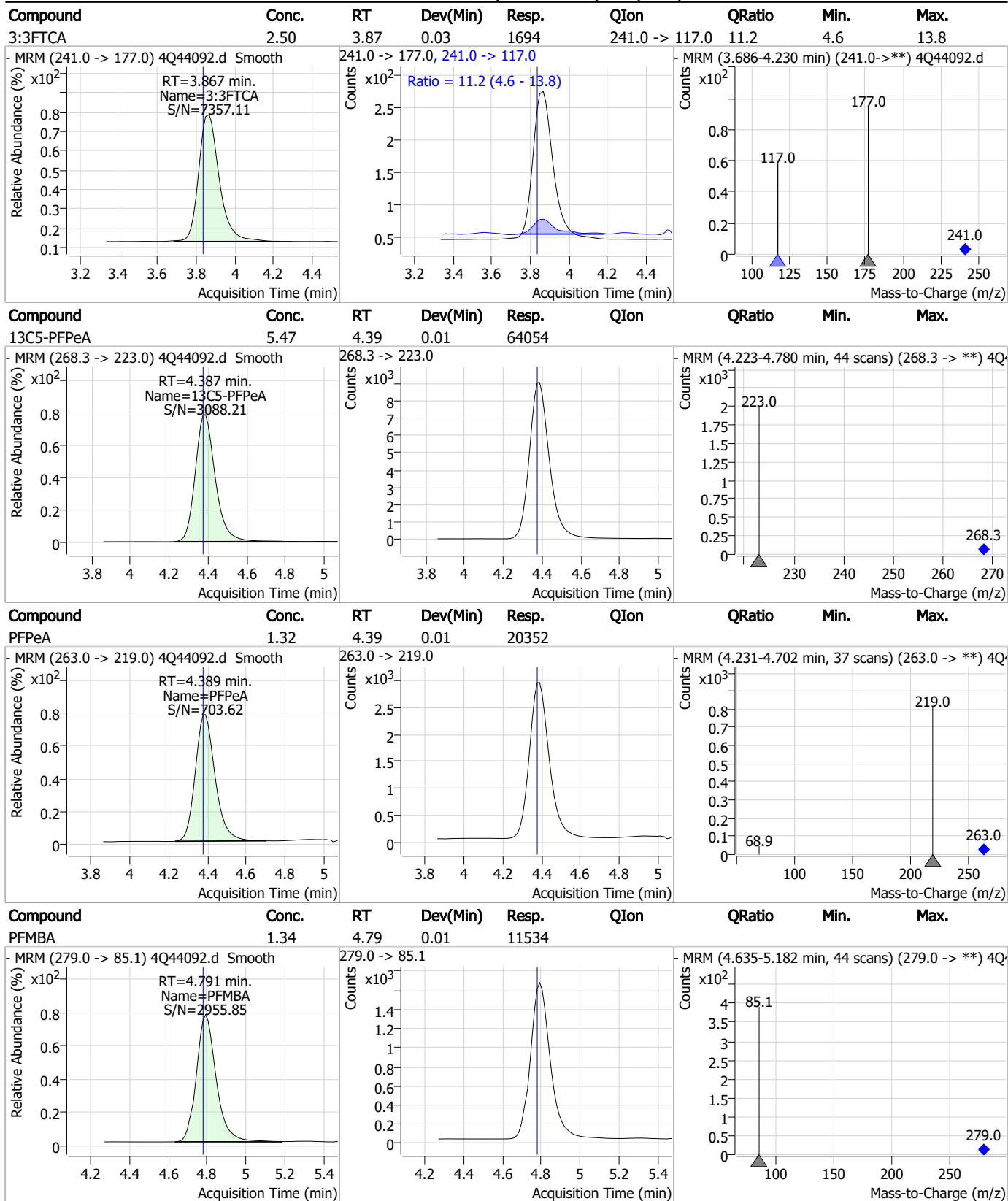
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Perfluorinated Compounds by LC/MS/MS



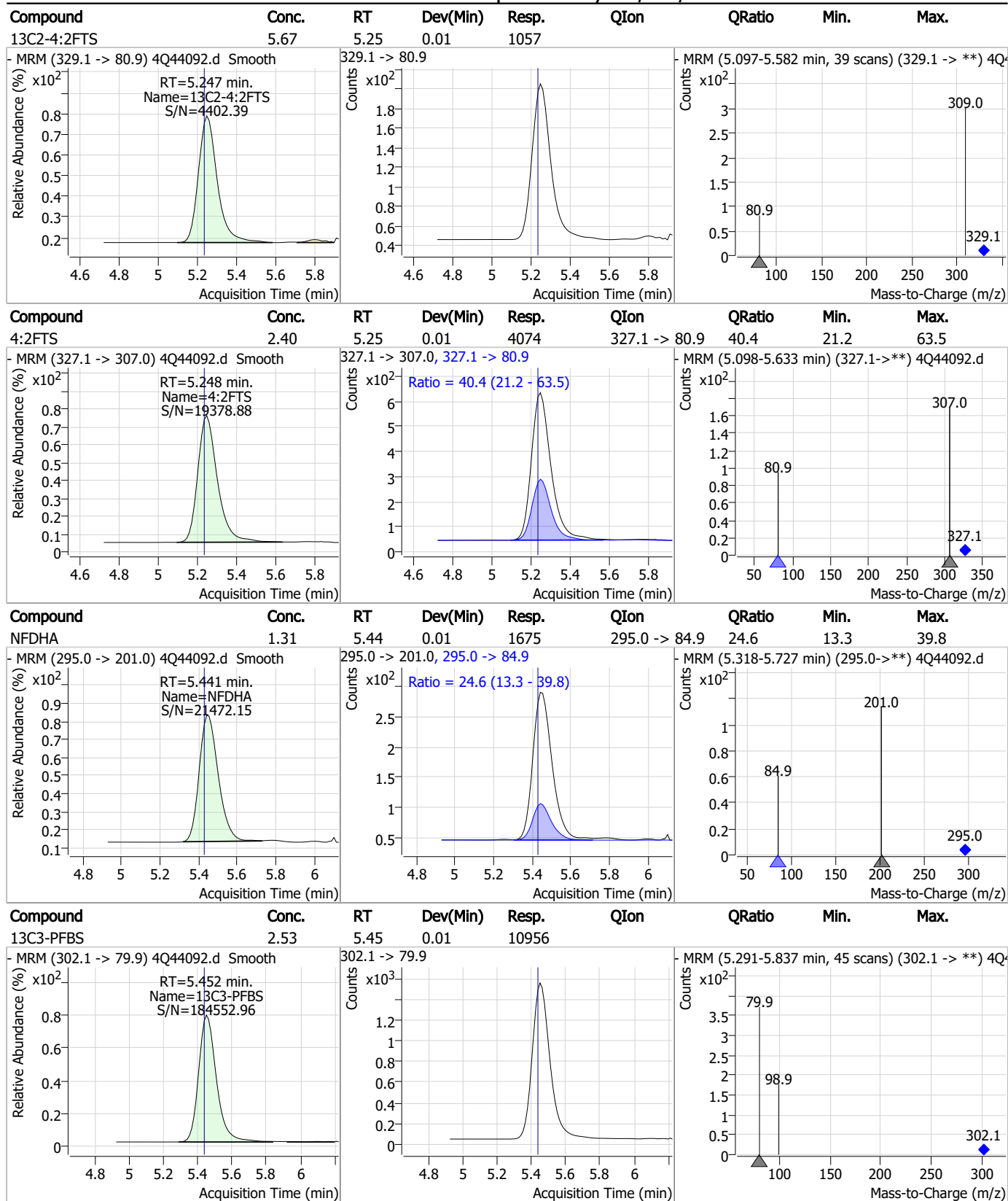
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Perfluorinated Compounds by LC/MS/MS



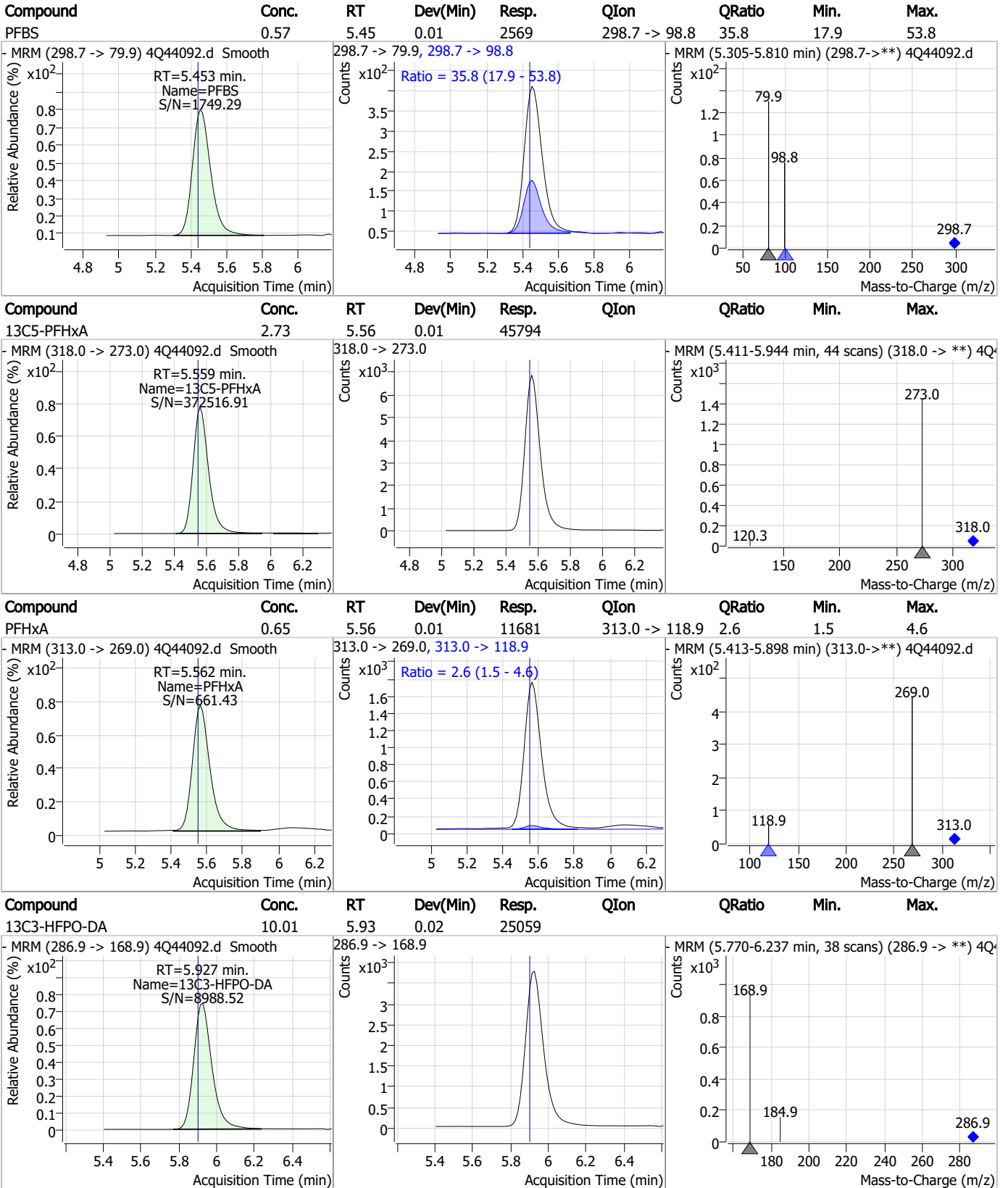
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

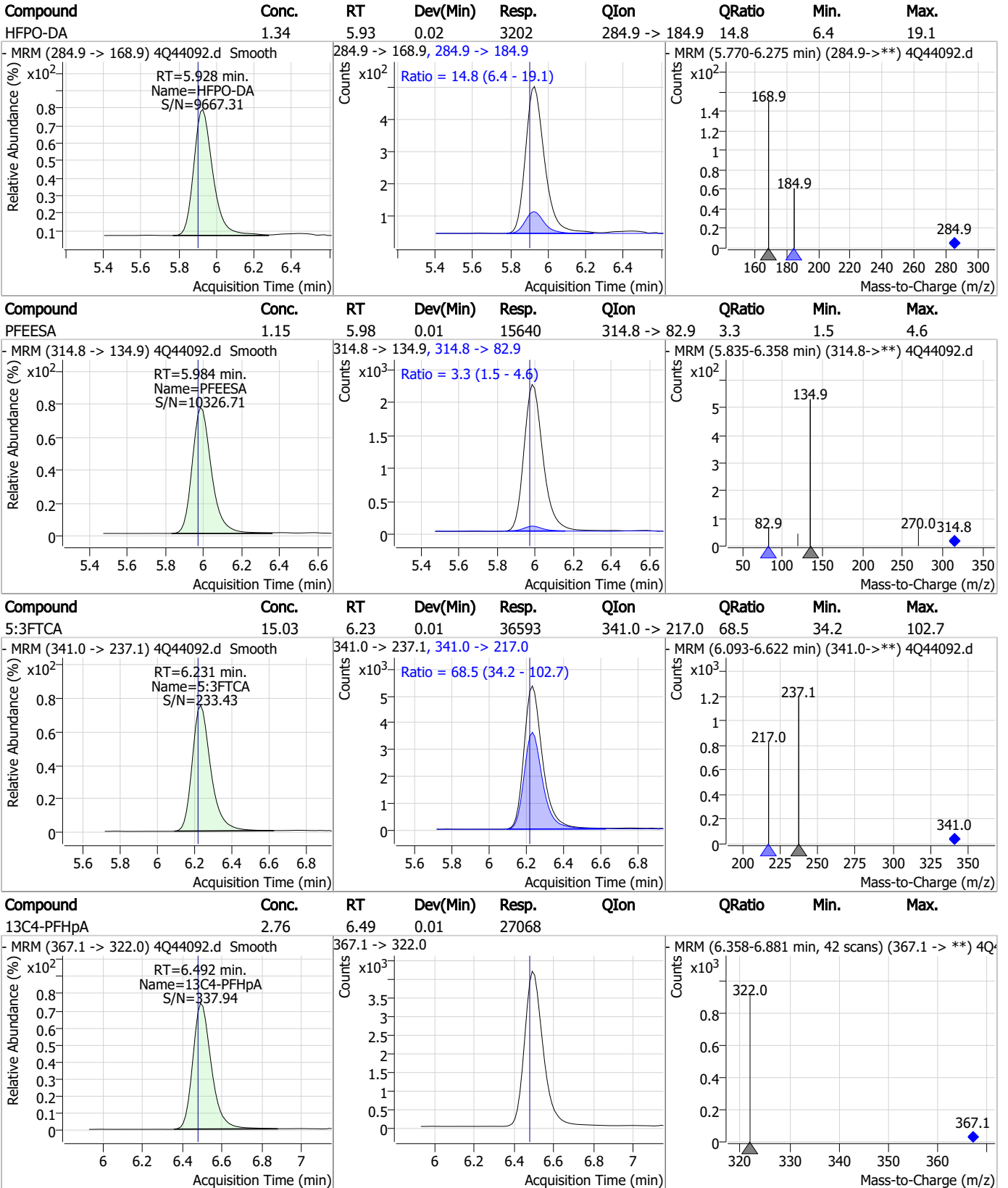
Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

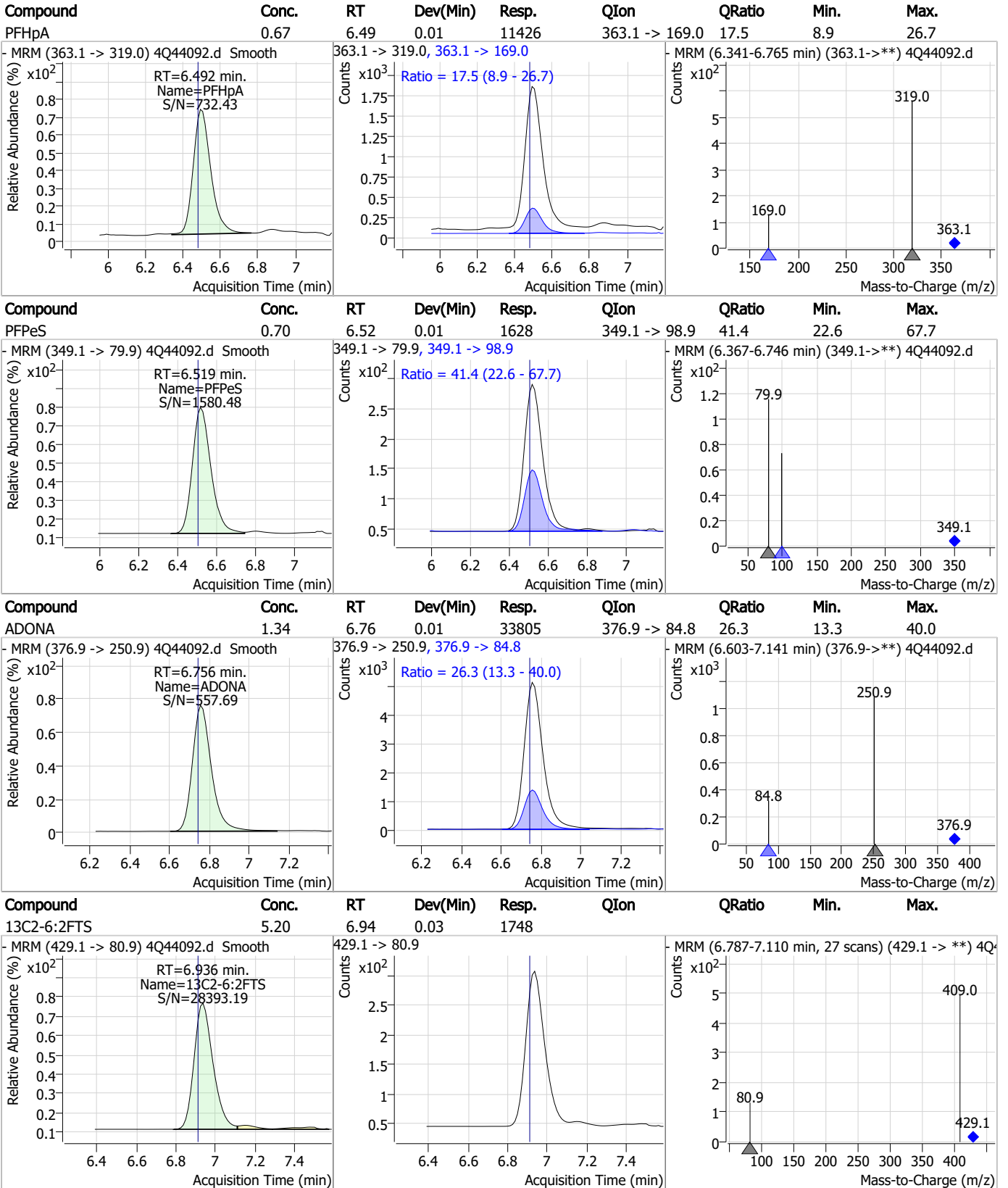


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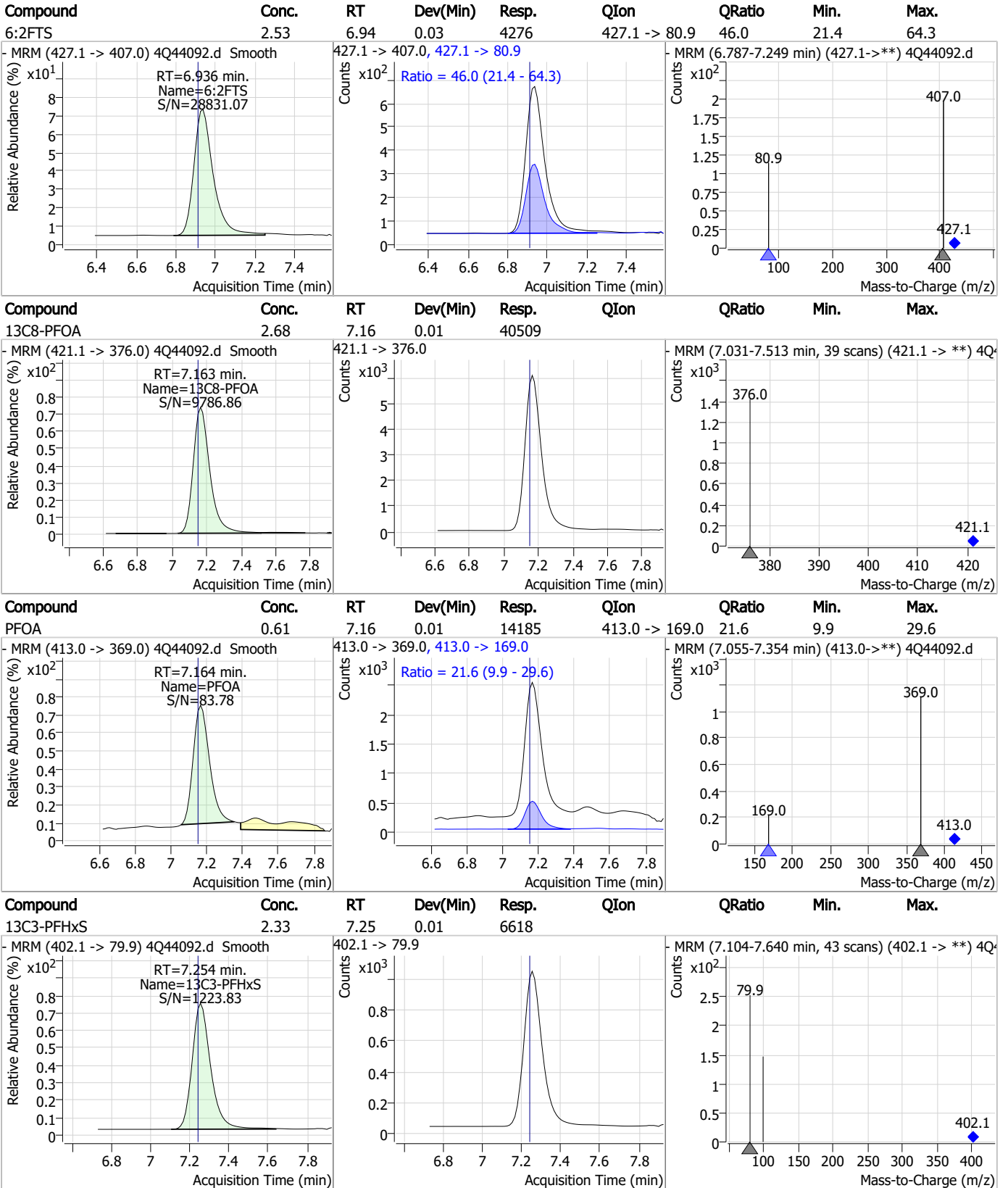
Perfluorinated Compounds by LC/MS/MS



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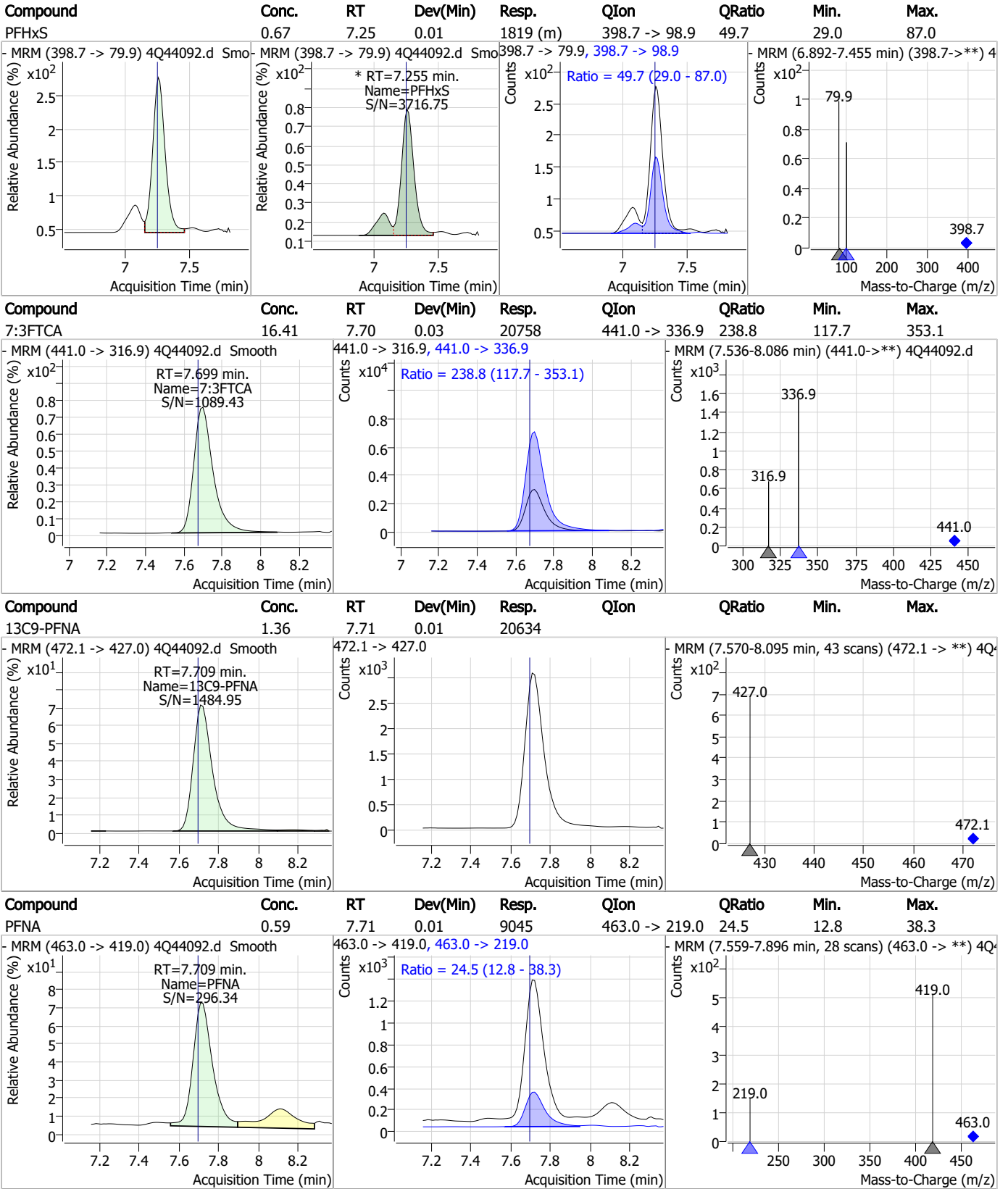
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

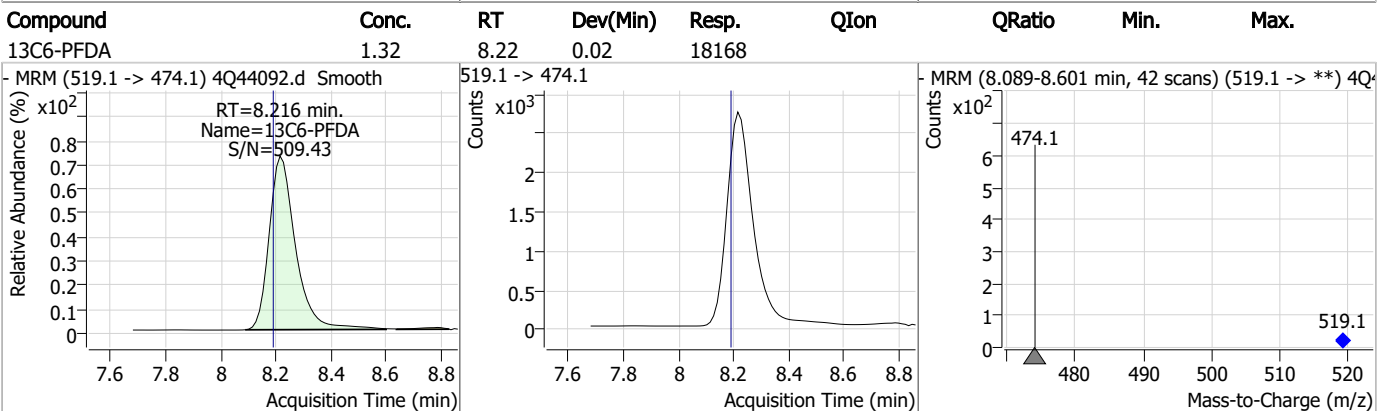
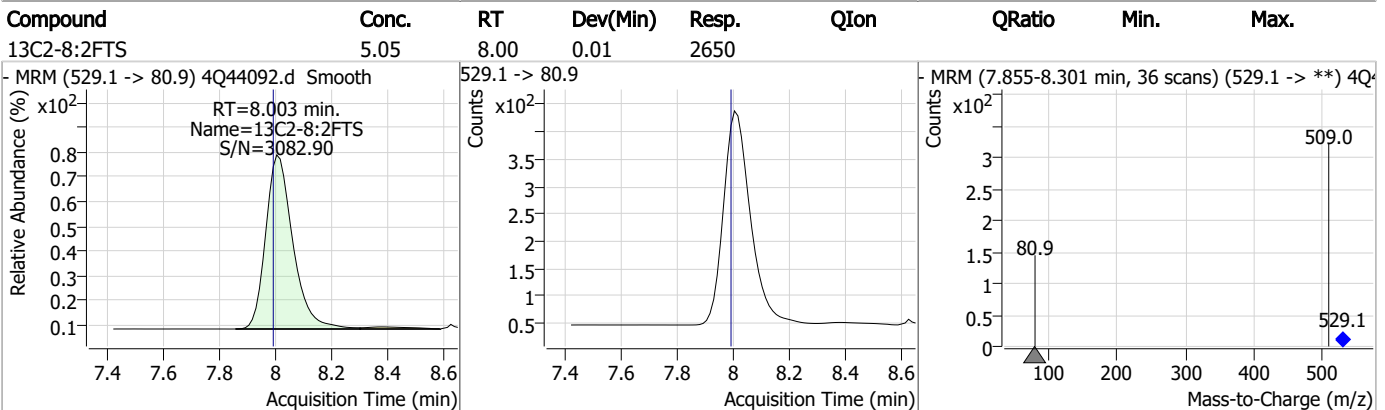
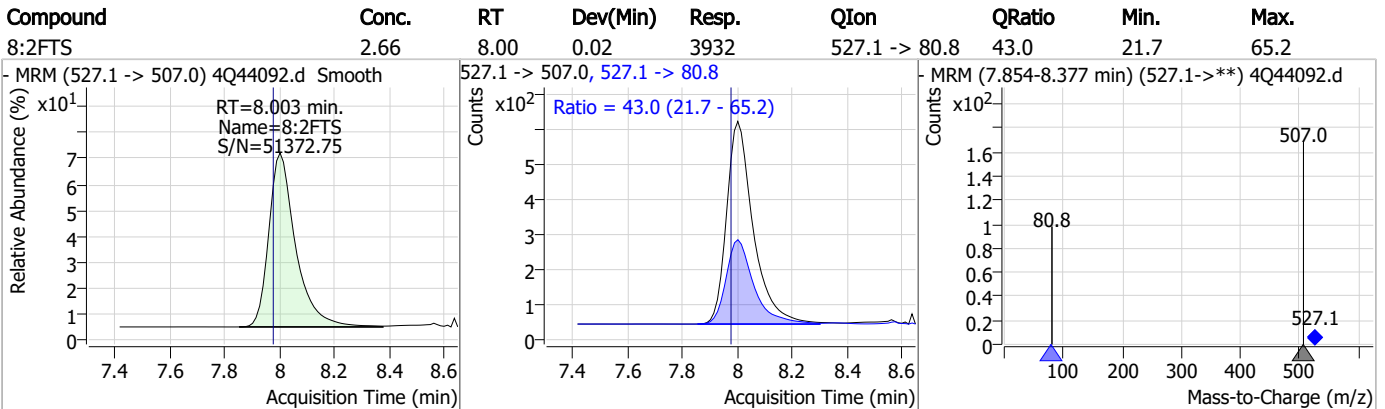
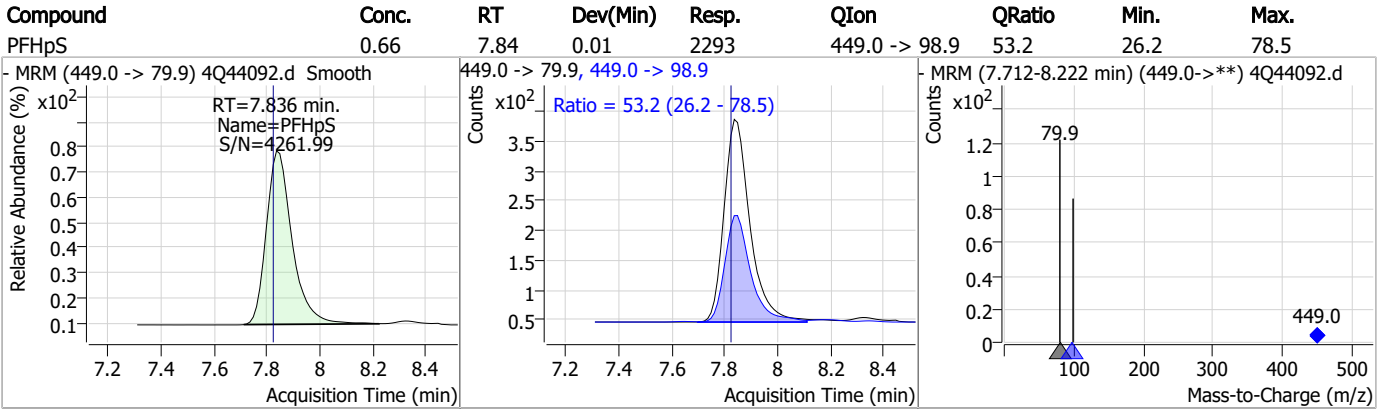


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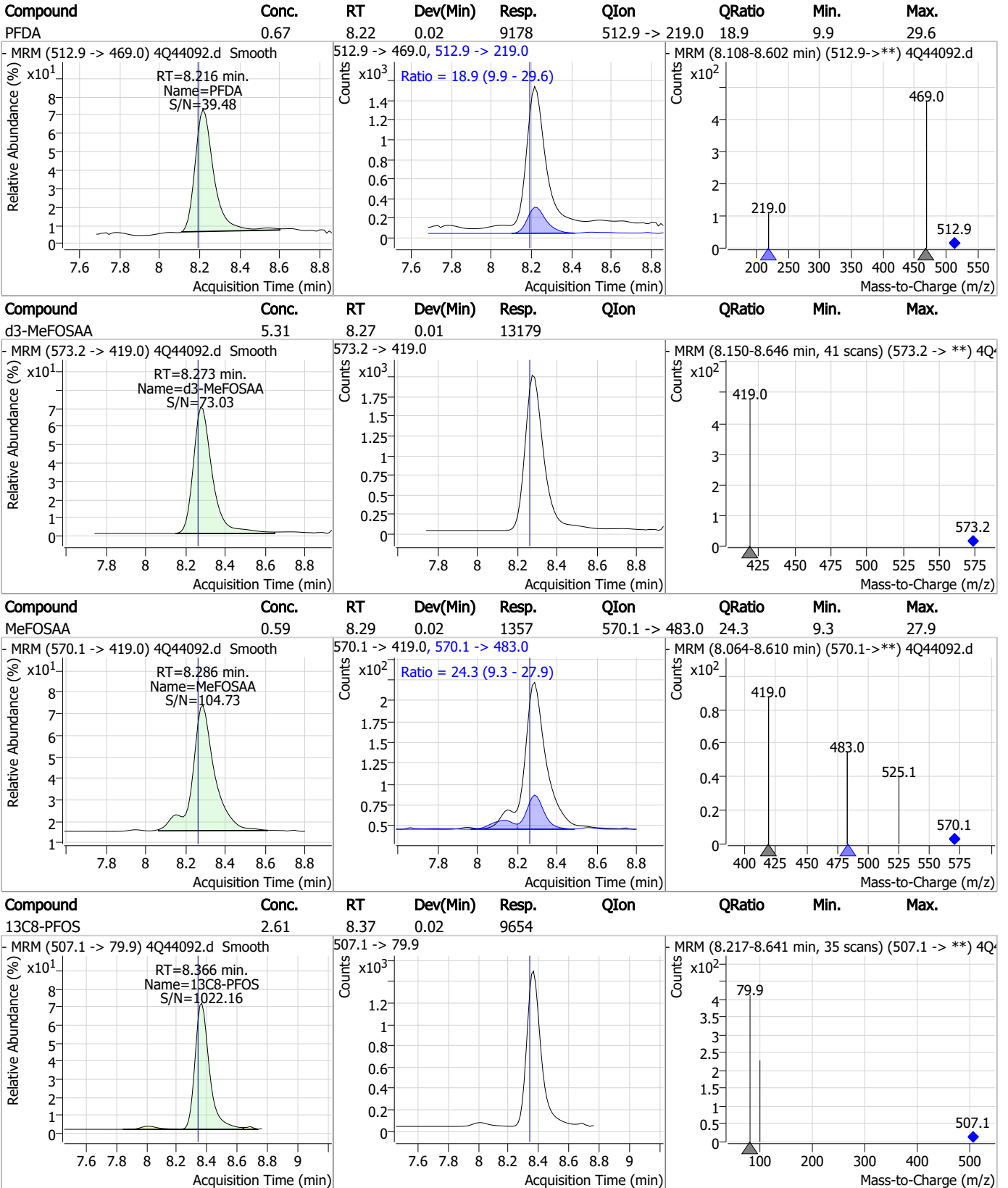
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Perfluorinated Compounds by LC/MS/MS



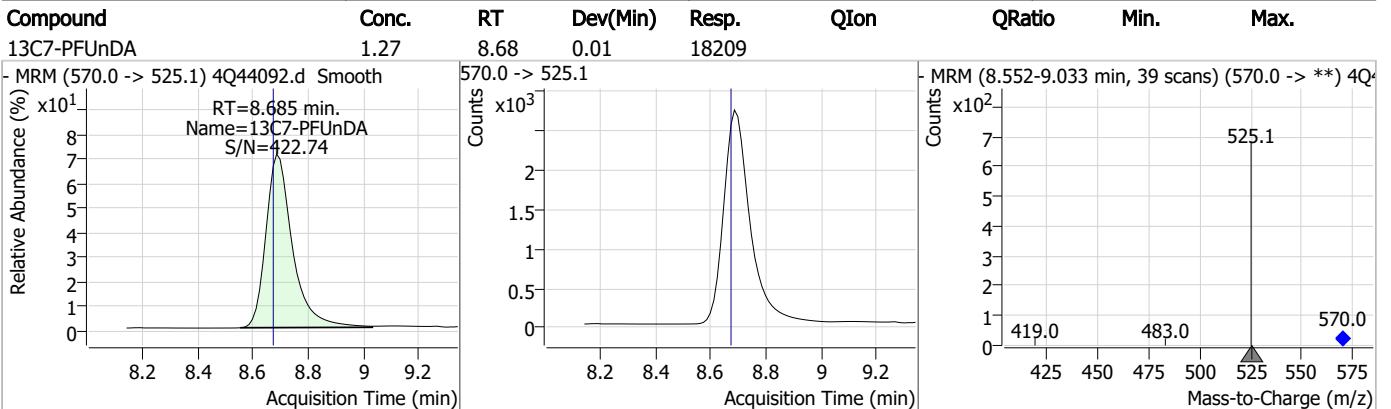
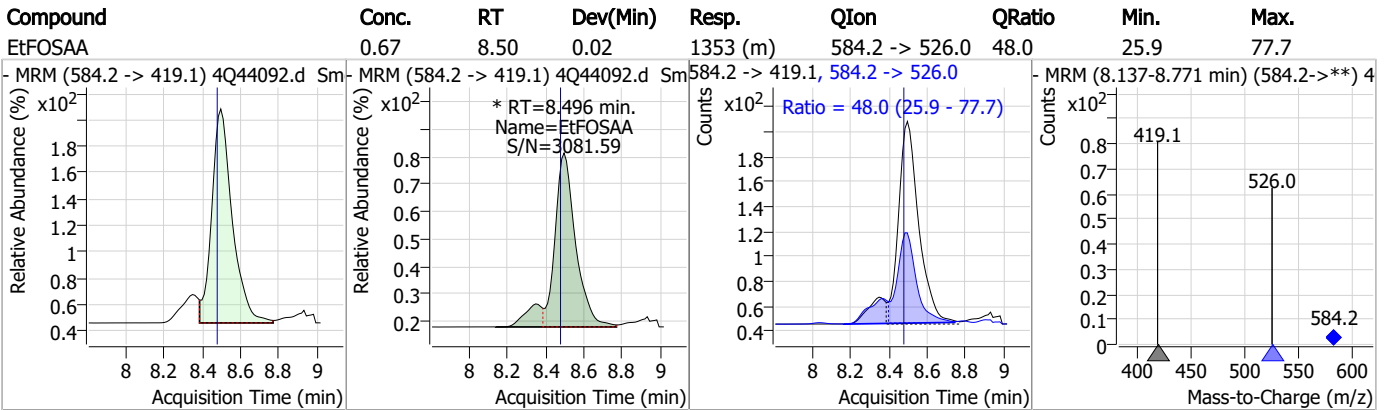
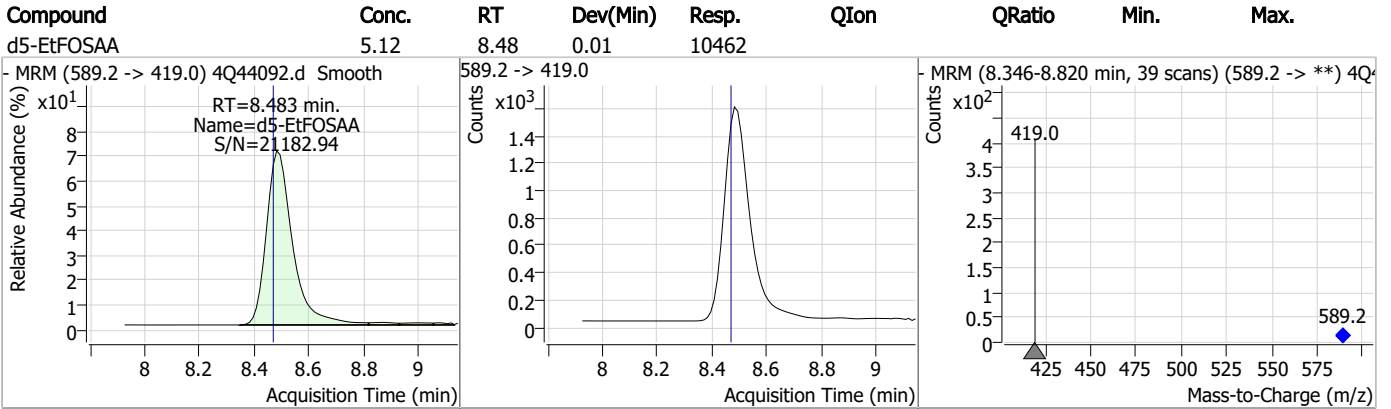
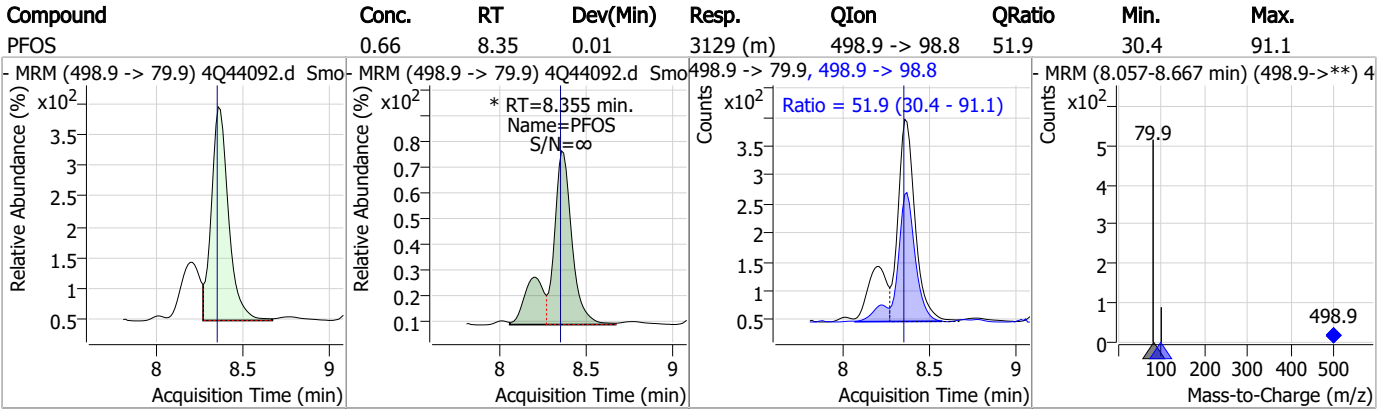
Perfluorinated Compounds by LC/MS/MS



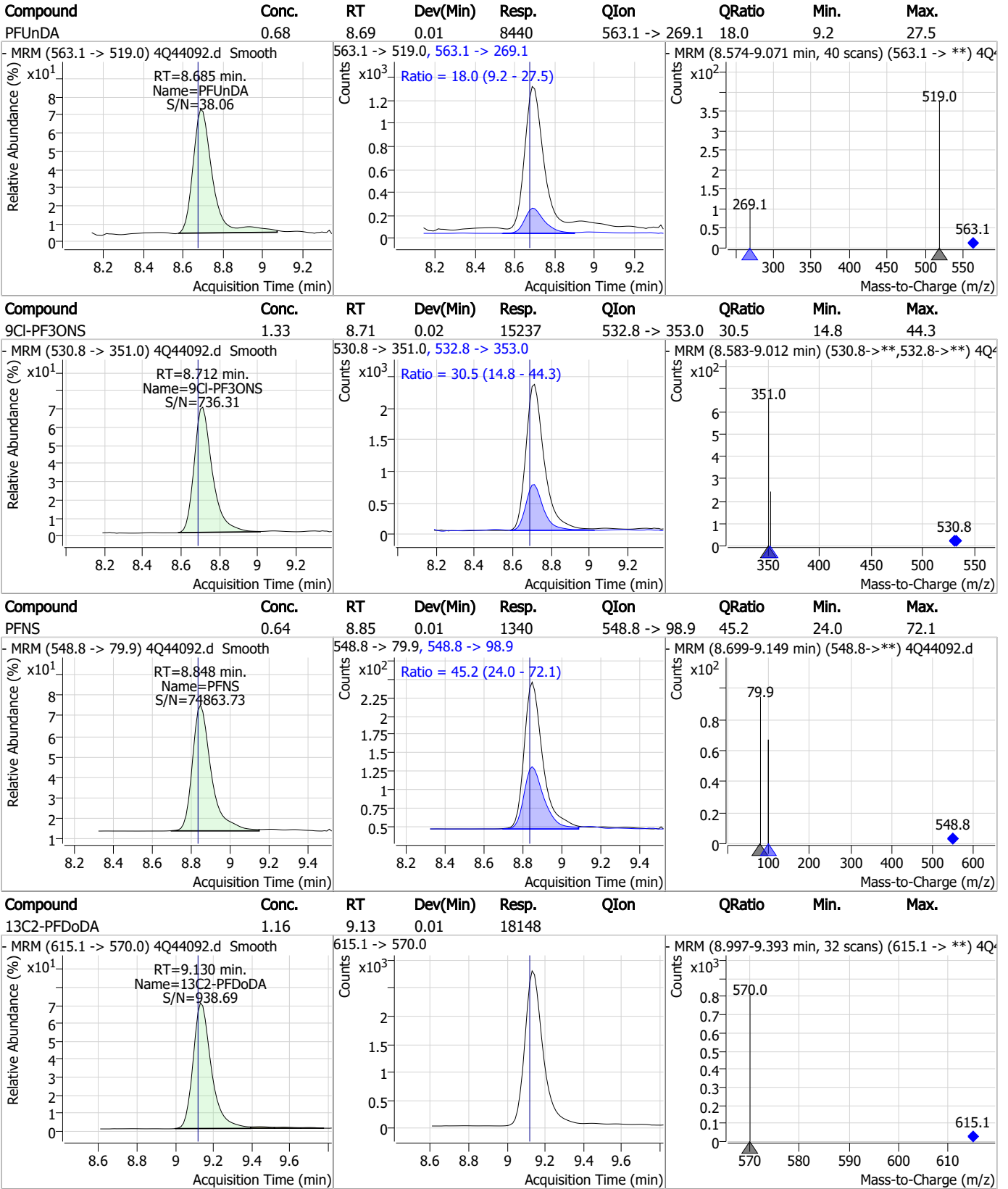
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

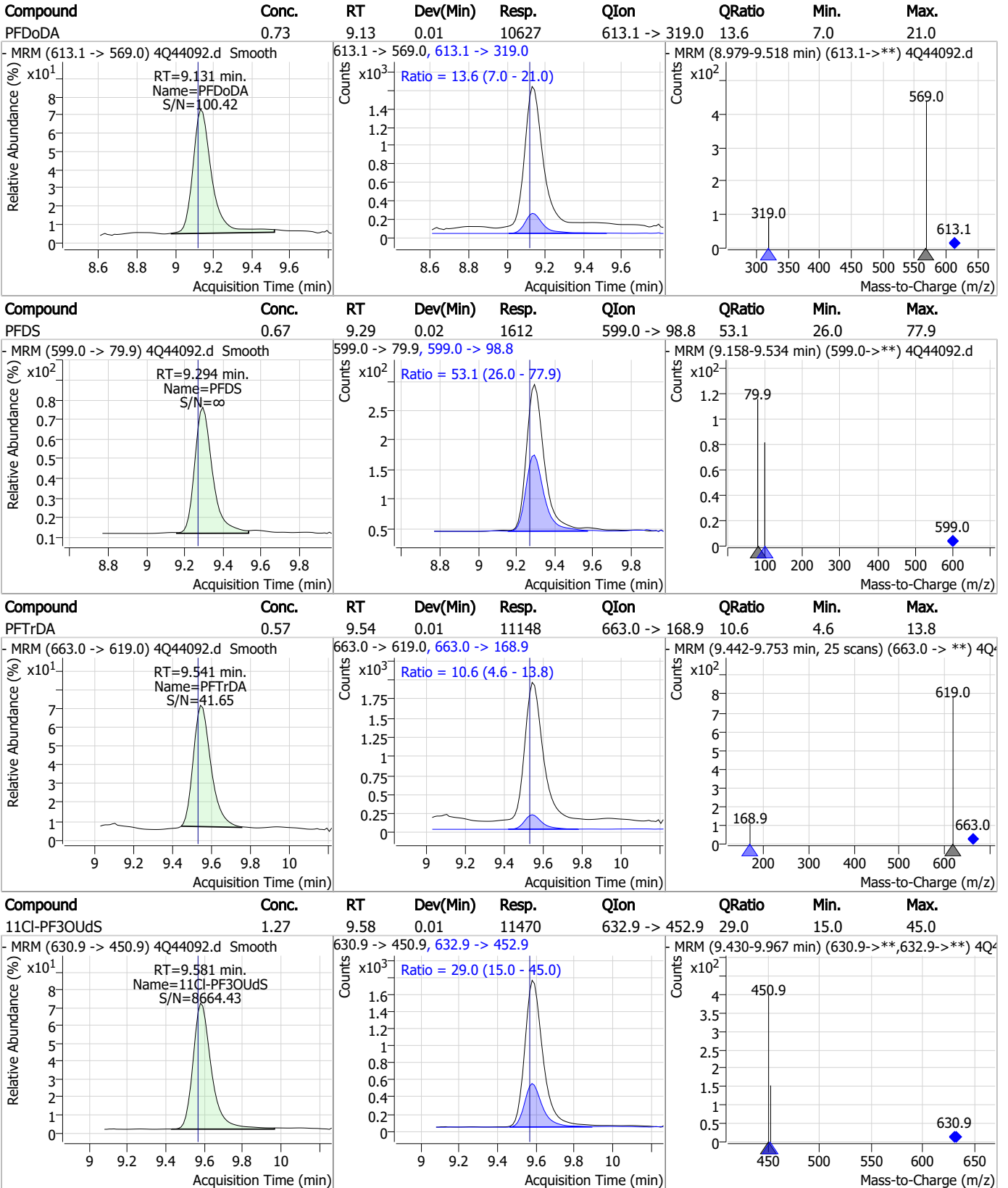


7.3.2

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Perfluorinated Compounds by LC/MS/MS

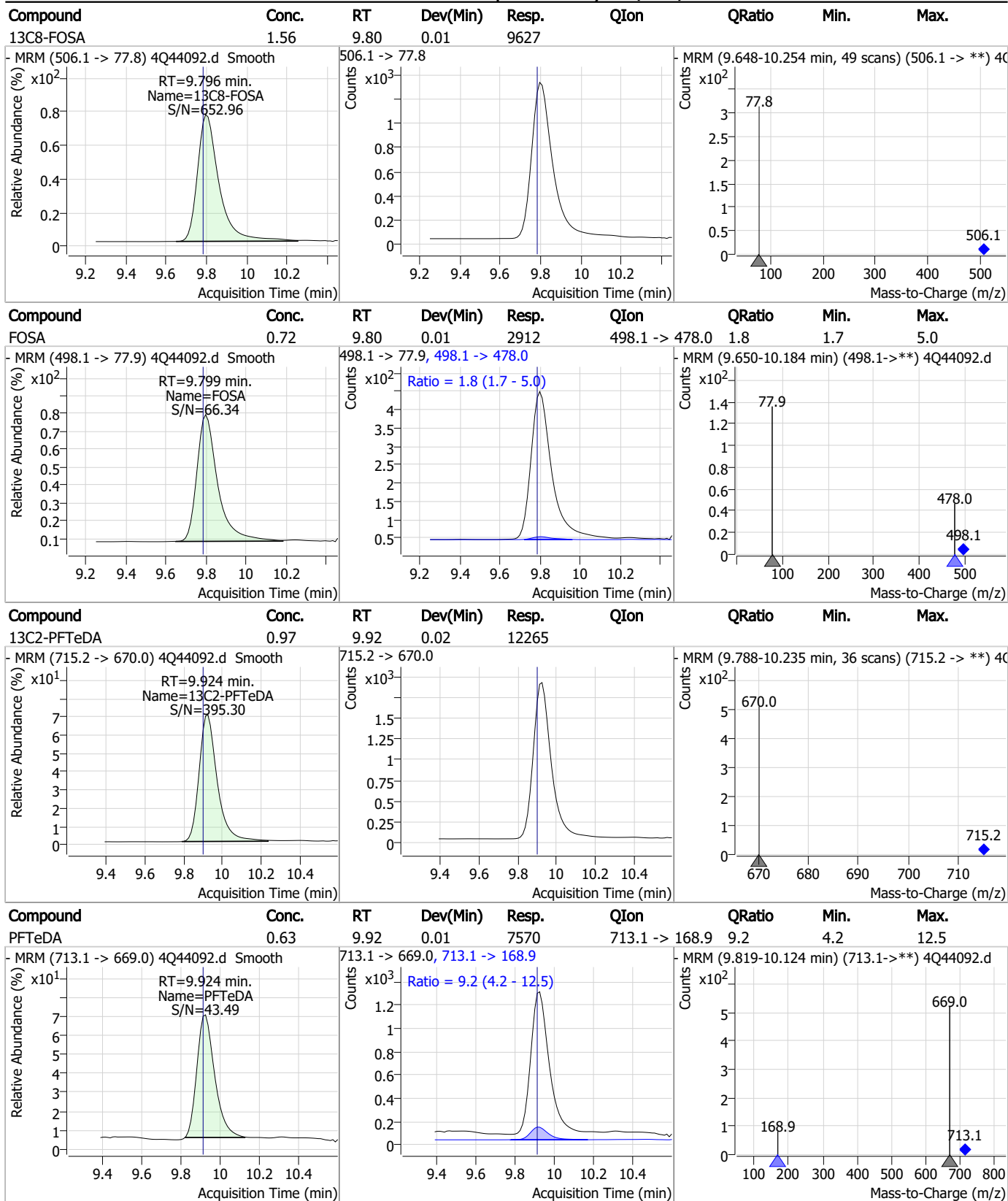


7.3.2

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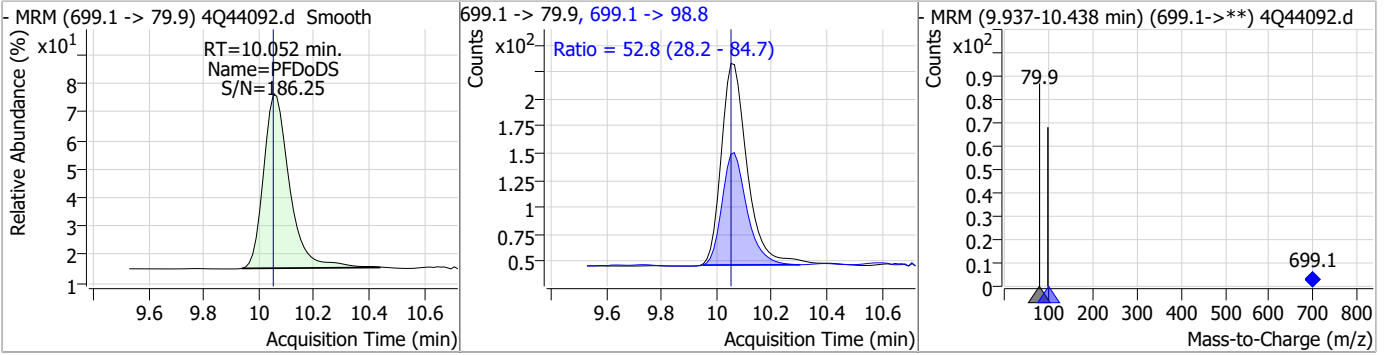
Perfluorinated Compounds by LC/MS/MS



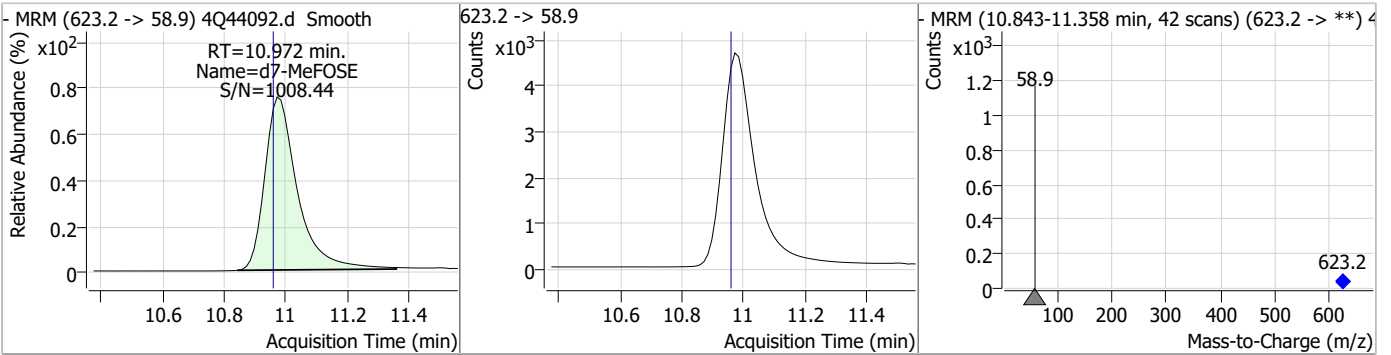
7.3.2
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Perfluorinated Compounds by LC/MS/MS

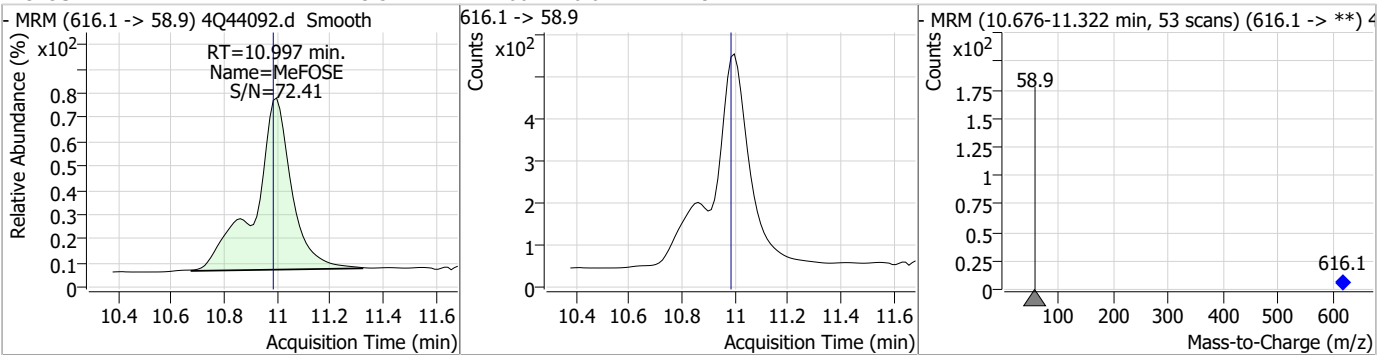
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.58	10.05	0.00	1231	699.1 -> 98.8	52.8	28.2	84.7



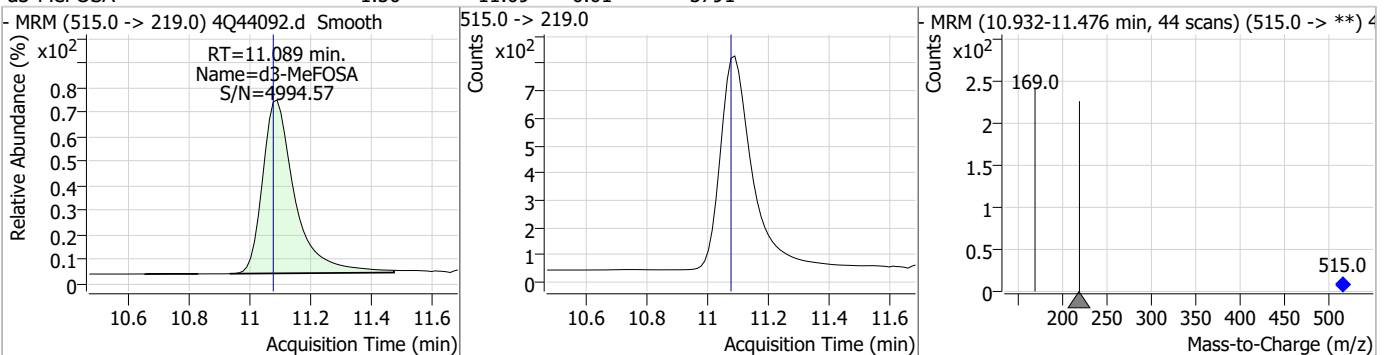
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	11.19	10.97	0.01	34222				



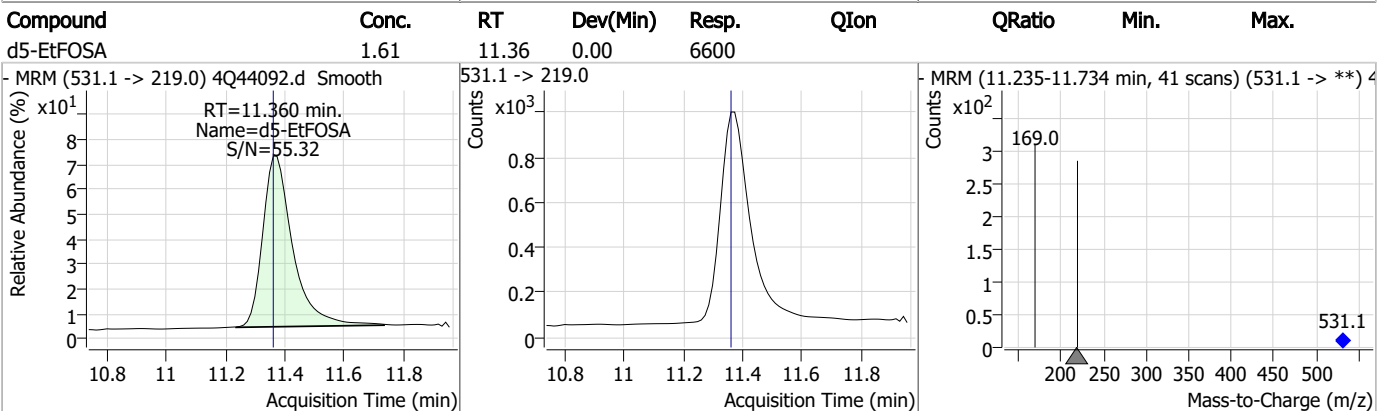
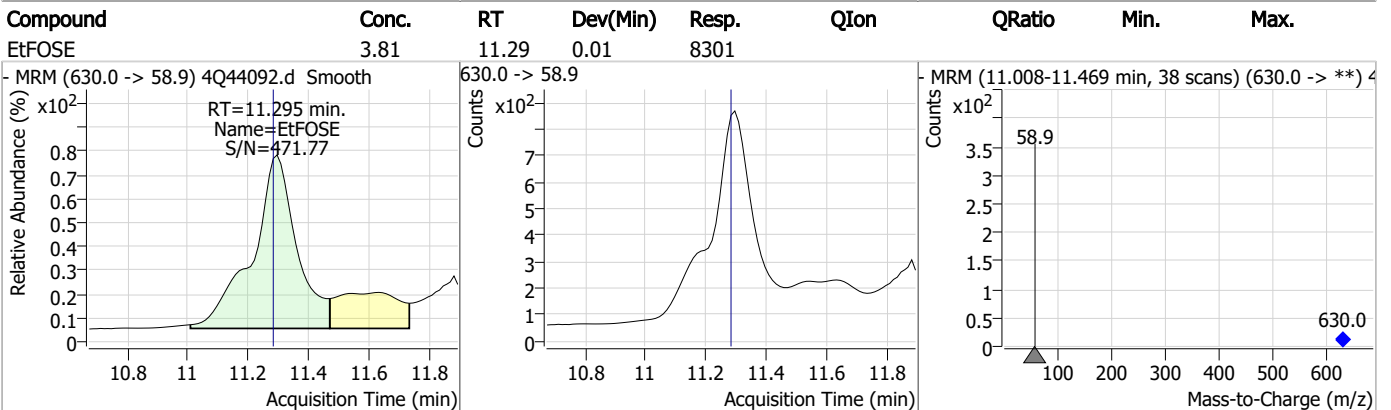
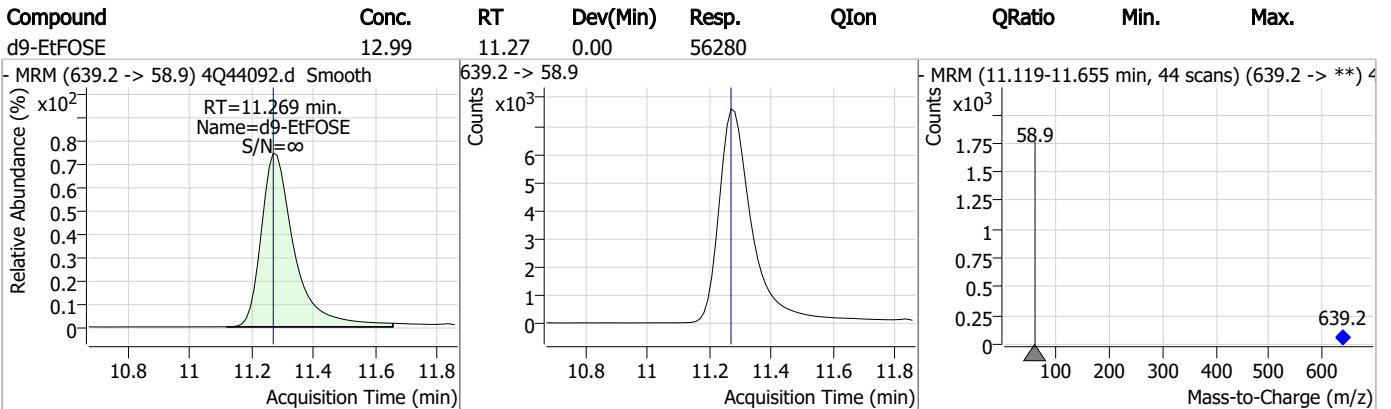
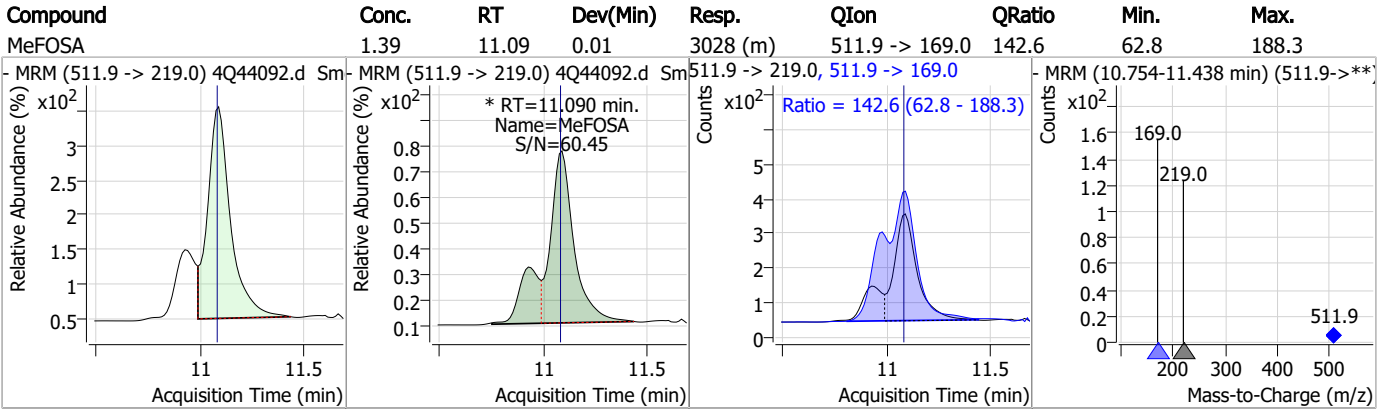
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.51	11.00	0.01	4927				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.50	11.09	0.01	5791				



Perfluorinated Compounds by LC/MS/MS

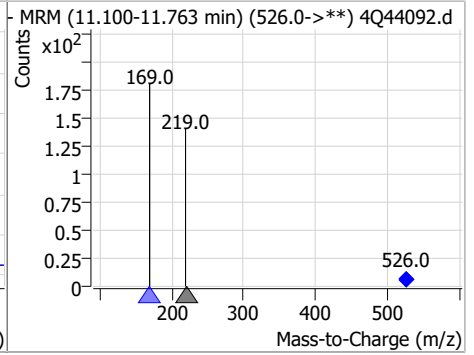
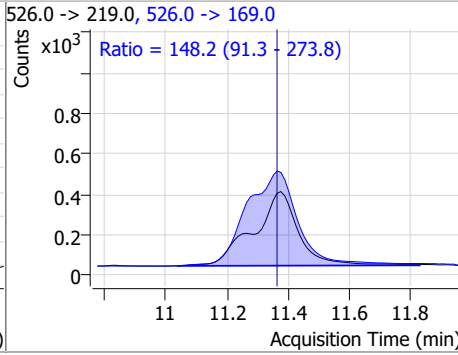
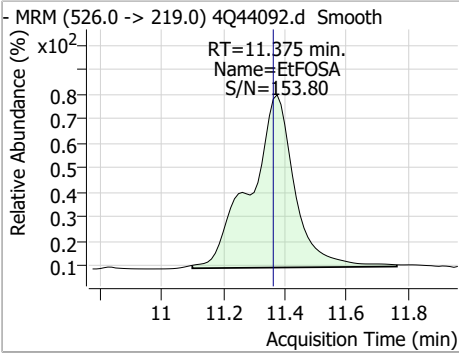


7.3.2

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	1.33	11.37	0.01	3682	526.0 -> 169.0	148.2	91.3	273.8



7.3.2
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Manual Integration Approval Summary

Sample Number: OP96726-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q44092.D Analyst approved: 05/09/23 10:17 Martha Valls
Injection Time: 05/08/23 17:04 Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.50	Split peak
MeFOSA	31506-32-8		11.09	Split peak

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44095.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 5:46:25 PM
 Sample Name : op96726-ms
 Vial : P2-B5
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96726,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	126376	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	64629	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	45100	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	26691	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	39640	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	17931	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	15584	1.25 µg/L	0.025
M7-PFUnDA	8.697	570.0 -> 525.1	16056	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	15788	1.25 µg/L	0.025
M2-PFTeDA	9.924	715.2 -> 670.0	11126	1.25 µg/L	0.025
M8-FOSA	9.796	506.1 -> 77.8	10800	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11206	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6890	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8121	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	966	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1685	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2478	5.00 µg/L	0.012
M3-MeFOSAA	8.286	573.2 -> 419.0	11754	5.00 µg/L	0.025
M3-HFPO-DA	5.927	286.9 -> 168.9	25800	10.00 µg/L	0.025
M5-EtFOSAA	8.483	589.2 -> 419.0	9408	5.00 µg/L	0.012
M7-MeFOSE	10.984	623.2 -> 58.9	45598	25.00 µg/L	0.025
M9-EtFOSE	11.281	639.2 -> 58.9	70004	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	8235	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	7430	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	10242	2.50 µg/L	0.025
13C3-PFBA	2.916	216.0 -> 172.0	63682	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4500	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	45832	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16302	1.25 µg/L	0.025
13C5-PFNA	7.721	468.0 -> 423.0	23083	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	39752	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	966	5.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1685	5.11 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2478	4.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-PFDoDA	9.143	615.1 -> 570.0	15788	1.00 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.0%		
13C2-PFTeDA	9.924	715.2 -> 670.0	11126	0.87 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.2%		
13C3-PFBS	5.452	302.1 -> 79.9	11206	2.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C3-PFHxS	7.254	402.1 -> 79.9	6890	2.47 µg/L	0.012

7.4.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C4-PFBA	2.911	216.8 -> 171.9	126376	10.55 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C4-PFHpA	6.504	367.1 -> 322.0	26691	2.61 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C5-PFHxA	5.559	318.0 -> 273.0	45100	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C5-PFPeA	4.387	268.3 -> 223.0	64629	5.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C6-PFDA	8.216	519.1 -> 474.1	15584	1.12 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.3%		
13C7-PFUnDA	8.697	570.0 -> 525.1	16056	1.11 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.4%		
13C8-FOSA	9.796	506.1 -> 77.8	10800	1.68 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 67.3%		
13C8-PFOA	7.163	421.1 -> 376.0	39640	2.63 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C8-PFOS	8.366	507.1 -> 79.9	8121	2.11 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 84.2%		
13C9-PFNA	7.721	472.1 -> 427.0	17931	1.14 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.4%		
d3-MeFOSAA	8.286	573.2 -> 419.0	11754	4.55 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.9%		
13C3-HFPO-DA	5.927	286.9 -> 168.9	25800	9.87 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
d3-MeFOSA	11.089	515.0 -> 219.0	7430	1.85 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 74.0%		
d5-EtFOSAA	8.483	589.2 -> 419.0	9408	4.42 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.4%		
d7-MeFOSE	10.984	623.2 -> 58.9	45598	14.31 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 57.2%		
d9-EtFOSE	11.281	639.2 -> 58.9	70004	15.51 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 62.1%		
d5-EtFOSA	11.373	531.1 -> 219.0	8235	1.93 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 77.1%		
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	12875	8.28 µg/L	96
		327.1 -> 80.9	5757		
6:2FTS	6.936	427.1 -> 407.0	14983	9.21 µg/L	99
		427.1 -> 80.9	6507		
8:2FTS	8.003	527.1 -> 507.0	13244	9.59 µg/L	95
		527.1 -> 80.8	5375		
EtFOSAA	8.496	584.2 -> 419.1	4226	2.34 µg/L	94
		584.2 -> 526.0	2022		
FOSA	9.799	498.1 -> 77.9	11149	2.46 µg/L	99
		498.1 -> 478.0	332		
MeFOSAA	8.286	570.1 -> 419.0	4511	2.20 µg/L	87
		570.1 -> 483.0	1110		
PFBA	2.920	212.8 -> 168.9	30070	8.89 µg/L	100
PFBS	5.453	298.7 -> 79.9	8709	1.89 µg/L	92
		298.7 -> 98.8	3551		
PFDA	8.216	512.9 -> 469.0	27360	2.31 µg/L	99
		512.9 -> 219.0	5527		
PFDODA	9.144	613.1 -> 569.0	28540	2.25 µg/L	97
		613.1 -> 319.0	4300		
PFDS	9.294	599.0 -> 79.9	4220	2.10 µg/L	99

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	2215			
PFHpA	6.505	363.1 -> 319.0	36368	2.16	µg/L	98
		363.1 -> 169.0	6787			
PFHpS	7.848	449.0 -> 79.9	7388	2.53	µg/L	95
		449.0 -> 98.9	3628			
PFHxA	5.562	313.0 -> 269.0	38760	2.19	µg/L	99
		313.0 -> 118.9	1252			
PFHxS	7.255	398.7 -> 79.9	5711	2.02	µg/L	m 94
		398.7 -> 98.9	3066			
PFNA	7.722	463.0 -> 419.0	28345	2.13	µg/L	100
		463.0 -> 219.0	7270			
PFNS	8.848	548.8 -> 79.9	3707	2.09	µg/L	92
		548.8 -> 98.9	1979			
PFOA	7.164	413.0 -> 369.0	50982	2.23	µg/L	98
		413.0 -> 169.0	9654			
PFOS	8.367	498.9 -> 79.9	8742	2.20	µg/L	m 90
		498.9 -> 98.8	4620			
PFPeA	4.389	263.0 -> 219.0	69187	4.45	µg/L	100
PFPeS	6.531	349.1 -> 79.9	5097	2.10	µg/L	95
		349.1 -> 98.9	2462			
PFTeDA	9.924	713.1 -> 669.0	25284	2.32	µg/L	99
		713.1 -> 168.9	2206			
PFTrDA	9.541	663.0 -> 619.0	37646	2.22	µg/L	98
		663.0 -> 168.9	3670			
PFUnDA	8.698	563.1 -> 519.0	24643	2.26	µg/L	98
		563.1 -> 269.1	4782			
11CI-PF3OUdS	9.593	630.9 -> 450.9	32938	3.55	µg/L	100
		632.9 -> 452.9	9929			
9CI-PF3ONS	8.712	530.8 -> 351.0	47582	4.03	µg/L	100
		532.8 -> 353.0	14053			
ADONA	6.756	376.9 -> 250.9	115742	4.46	µg/L	100
		376.9 -> 84.8	30628			
HFPO-DA	5.928	284.9 -> 168.9	11007	4.46	µg/L	97
		284.9 -> 184.9	1260			
3:3FTCA	3.867	241.0 -> 177.0	6055	8.85	µg/L	99
		241.0 -> 117.0	570			
5:3FTCA	6.231	341.0 -> 237.1	128995	53.80	µg/L	100
		341.0 -> 217.0	87747			
7:3FTCA	7.699	441.0 -> 316.9	70821	56.84	µg/L	99
		441.0 -> 336.9	165128			
EtFOSA	11.375	526.0 -> 219.0	15644	4.53	µg/L	m 70
		526.0 -> 169.0	21877			
EtFOSE	11.295	630.0 -> 58.9	32940	12.15	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	12198	4.36	µg/L	m 82
		511.9 -> 169.0	17775			
MeFOSE	10.997	616.1 -> 58.9	20346	10.86	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	3284	1.83	µg/L	96
		699.1 -> 98.8	1954			
NFDHA	5.441	295.0 -> 201.0	5116	4.06	µg/L	98
		295.0 -> 84.9	1412			
PFMBA	4.791	279.0 -> 85.1	39289	4.53	µg/L	100
PFMPA	3.528	229.0 -> 84.9	37363	4.60	µg/L	100
PFEESA	5.984	314.8 -> 134.9	54221	4.05	µg/L	99
		314.8 -> 82.9	1917			

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

7.4.1
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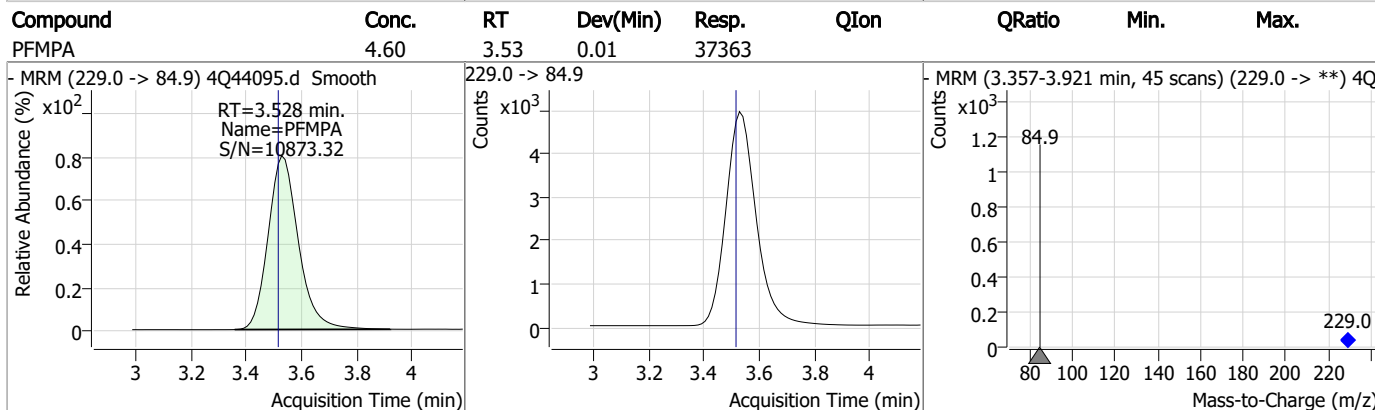
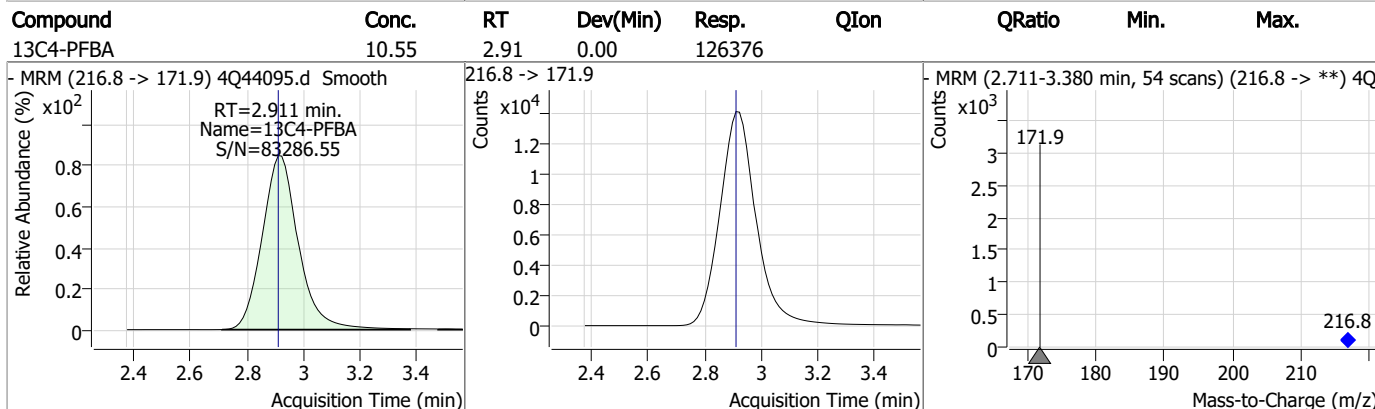
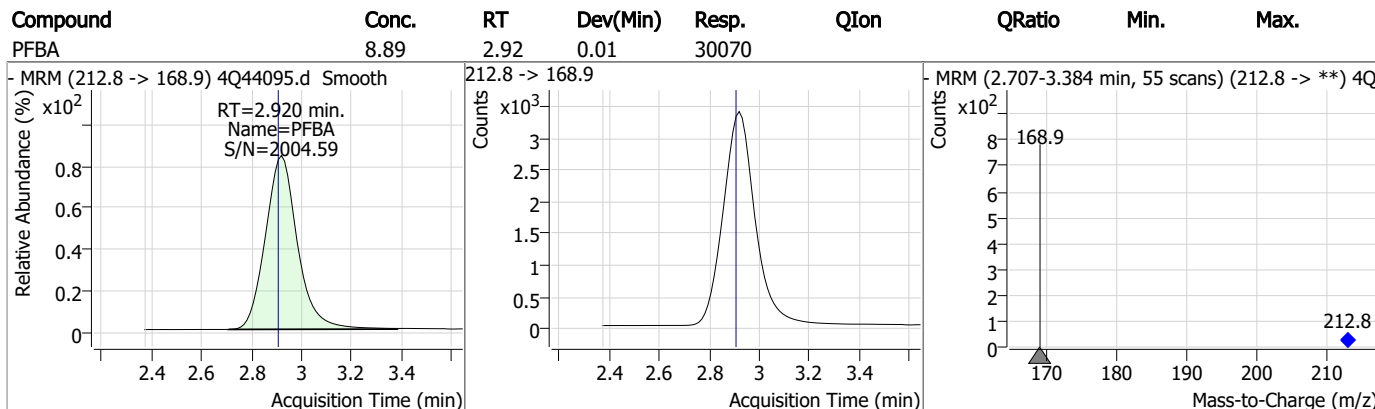
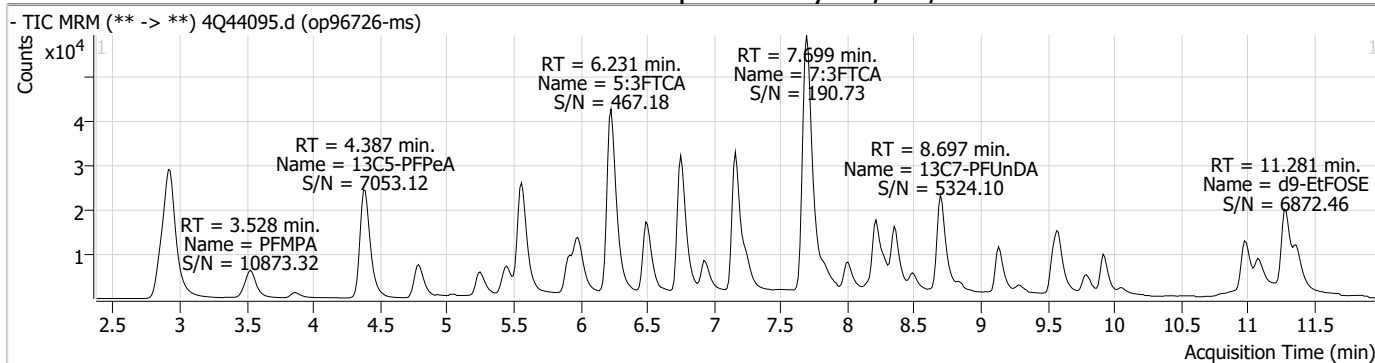
Perfluorinated Compounds by LC/MS/MS

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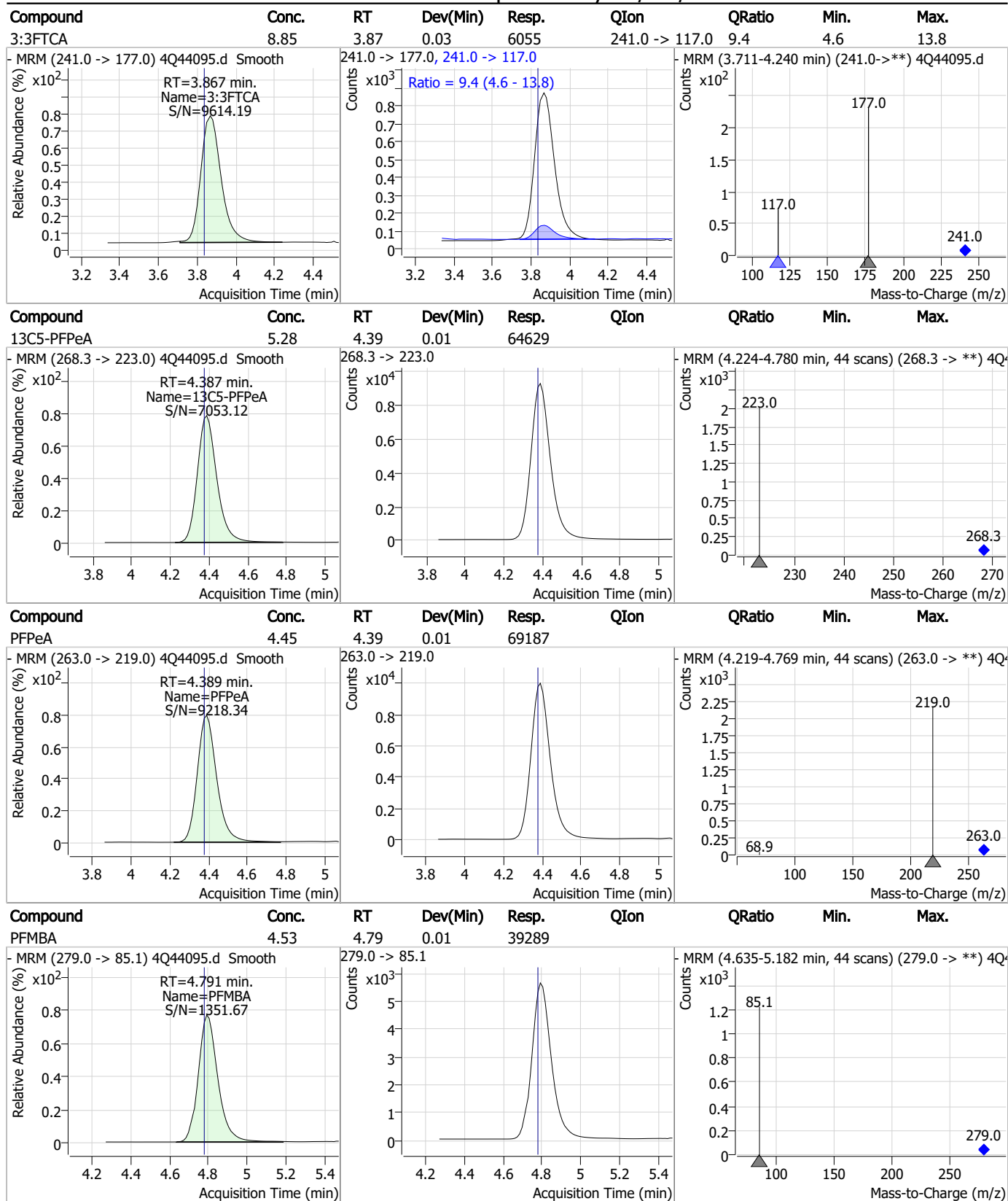
7.4.1

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Perfluorinated Compounds by LC/MS/MS

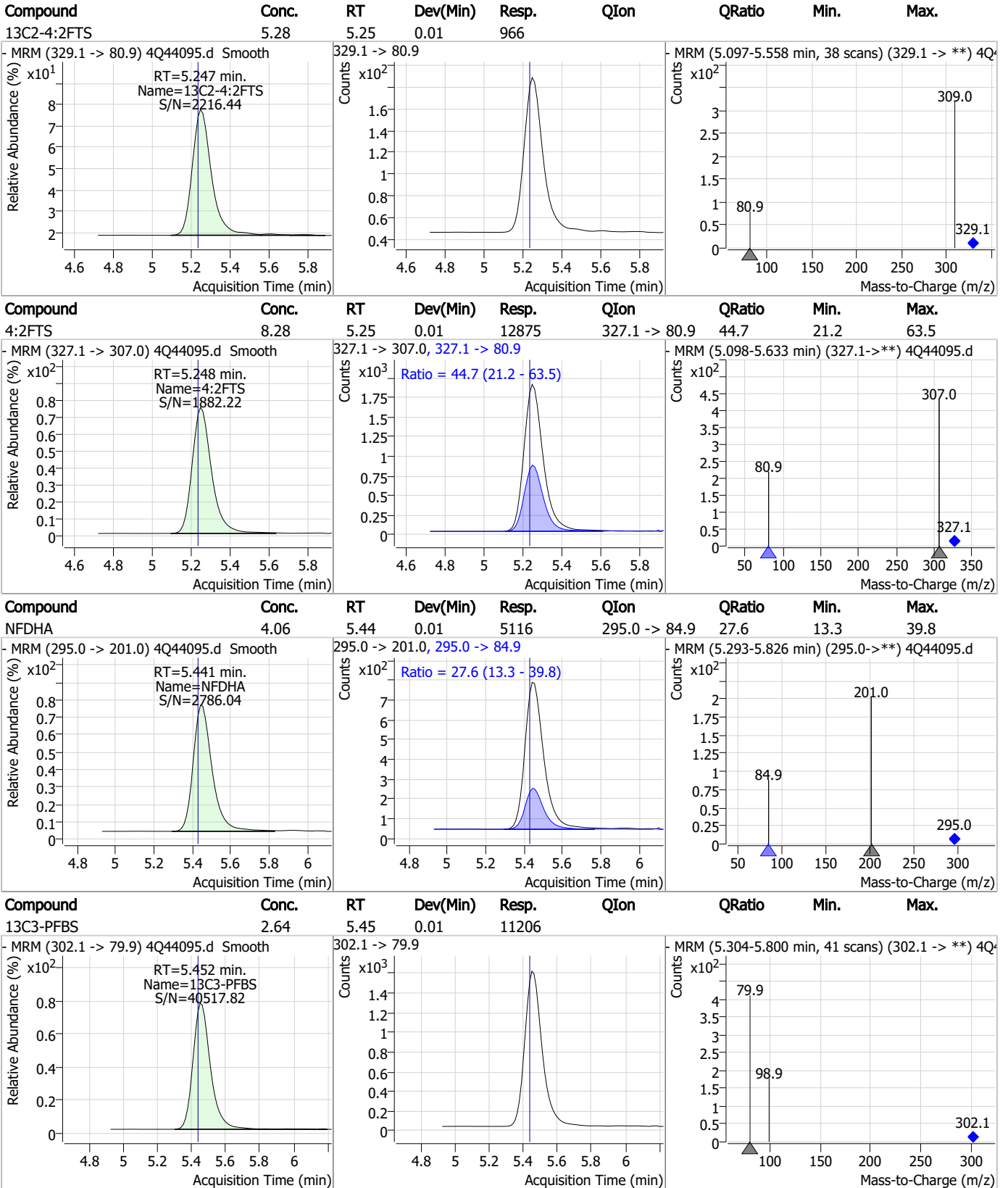


Perfluorinated Compounds by LC/MS/MS



7.4.1
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Perfluorinated Compounds by LC/MS/MS

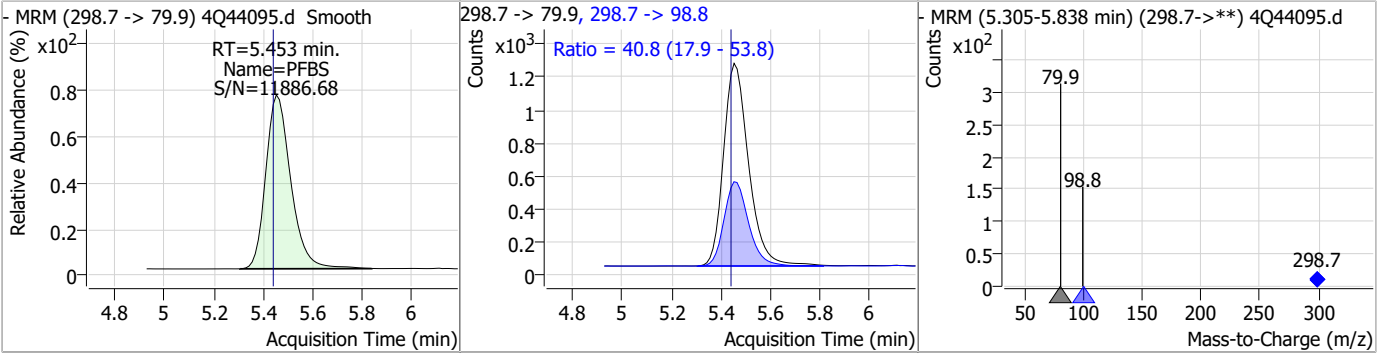


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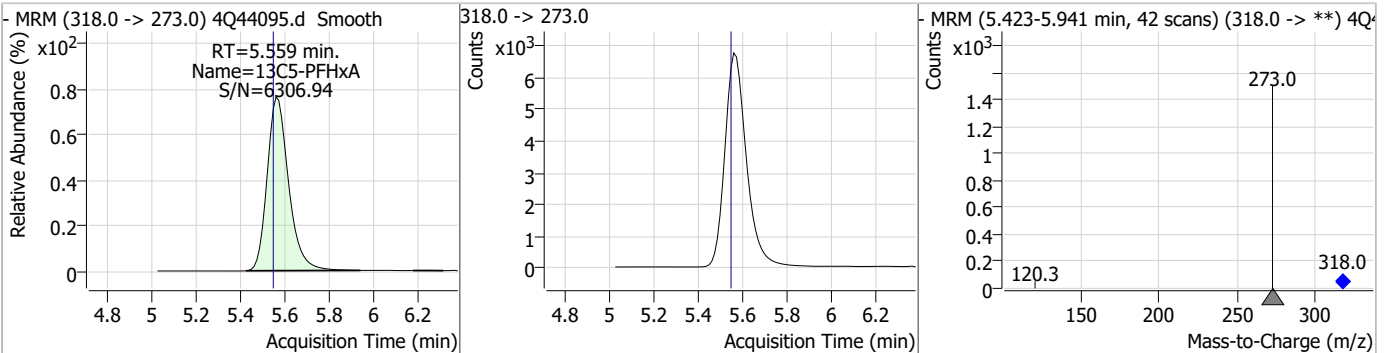
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Perfluorinated Compounds by LC/MS/MS

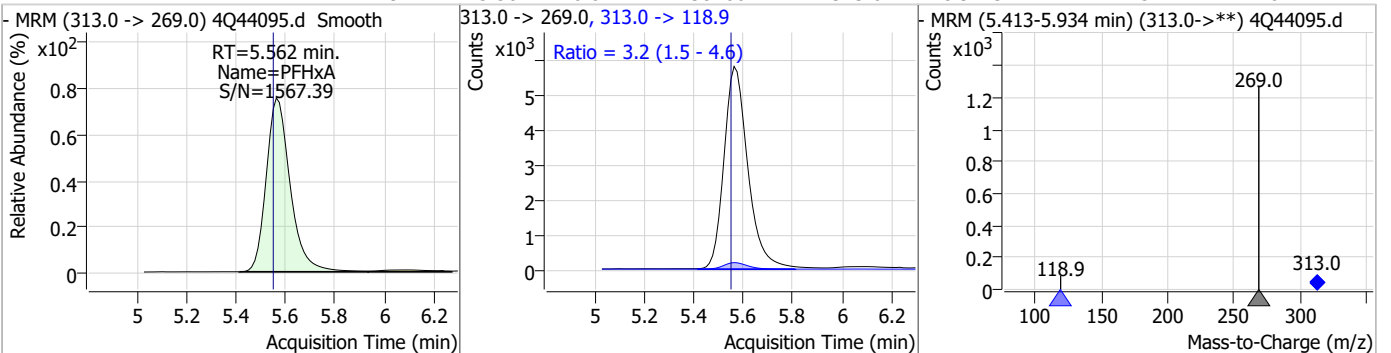
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.89	5.45	0.01	8709	298.7 -> 98.8	40.8	17.9	53.8



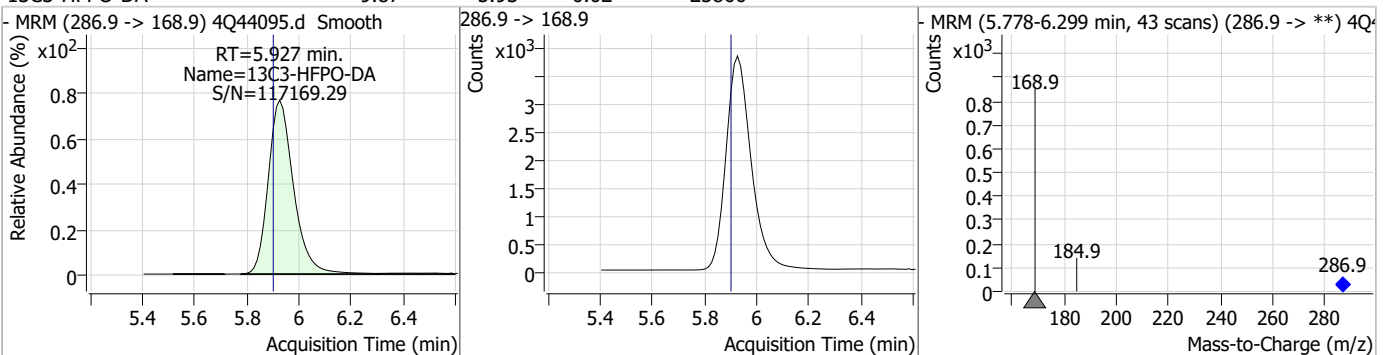
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.58	5.56	0.01	45100	318.0 -> 273.0	3.2	1.5	4.6



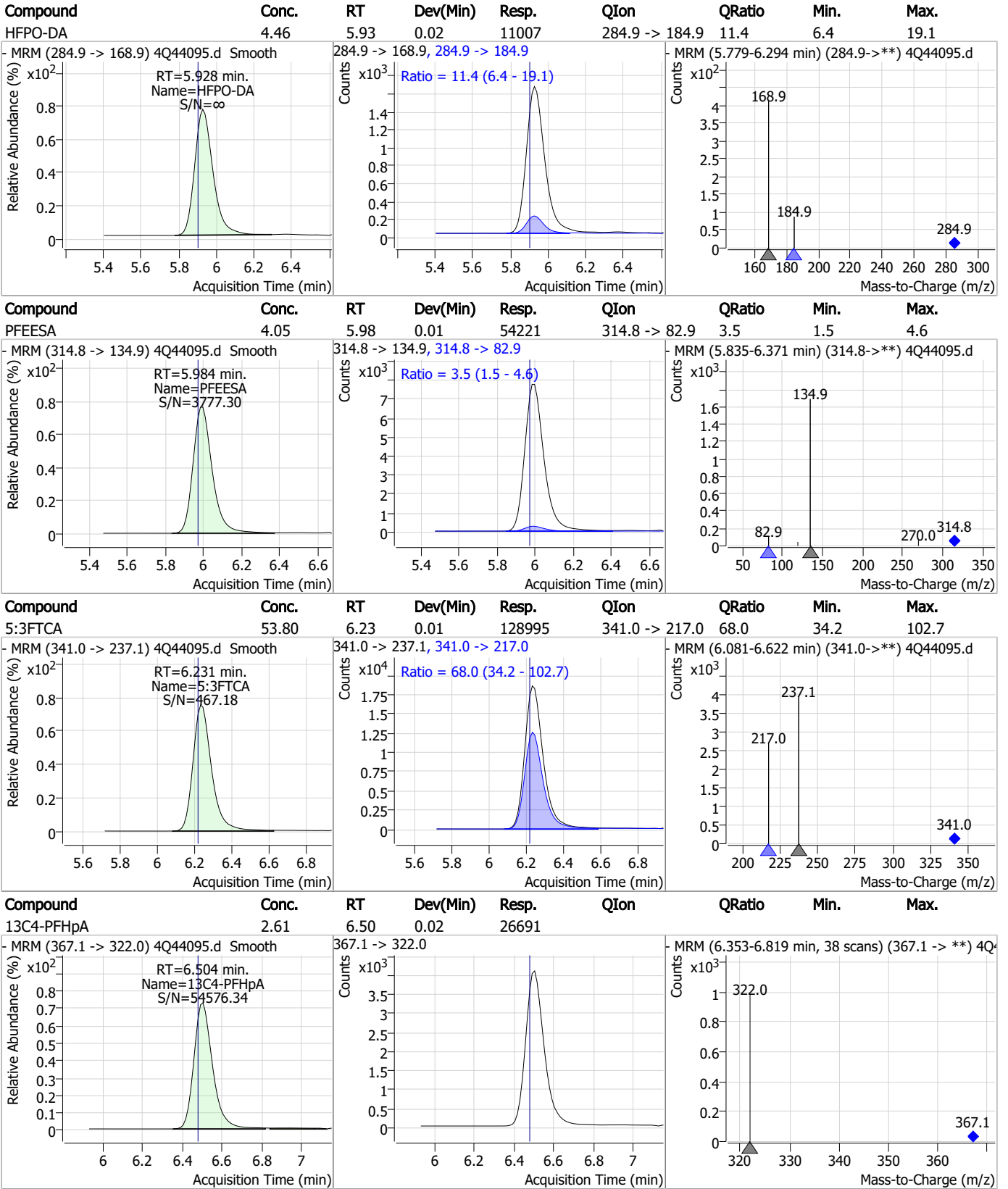
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.19	5.56	0.01	38760	313.0 -> 118.9	3.2	1.5	4.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.87	5.93	0.02	25800	286.9 -> 168.9	3.2	1.5	4.6



Perfluorinated Compounds by LC/MS/MS

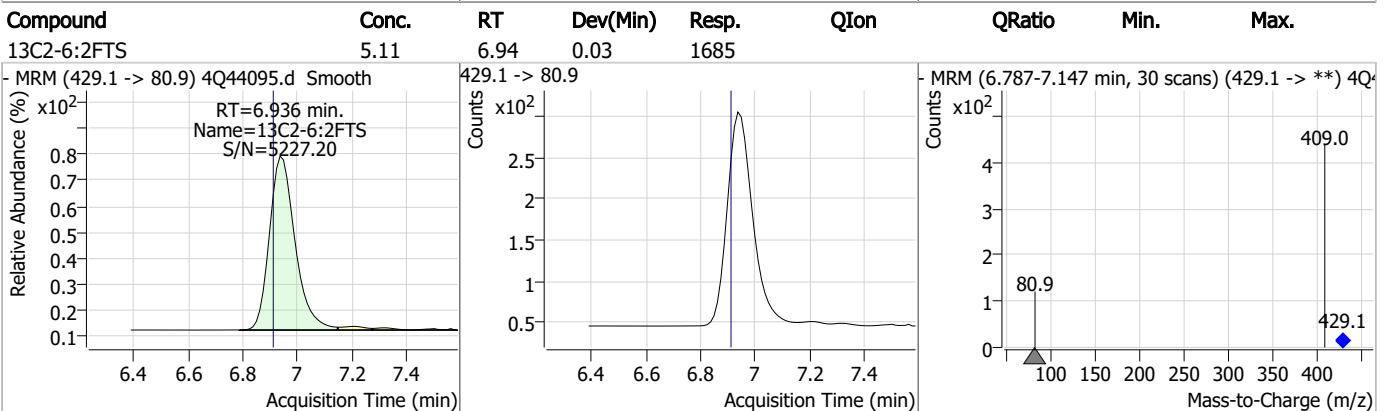
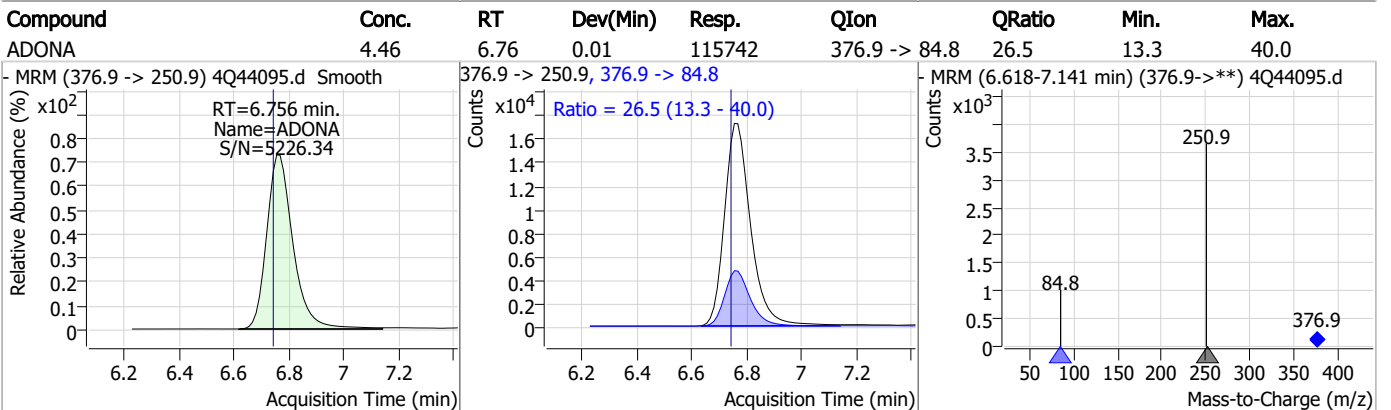
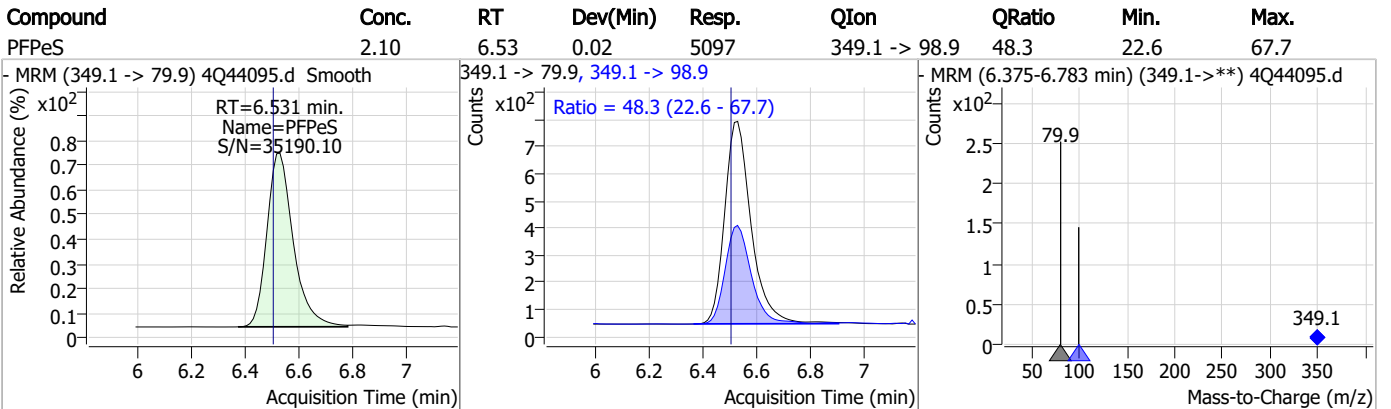
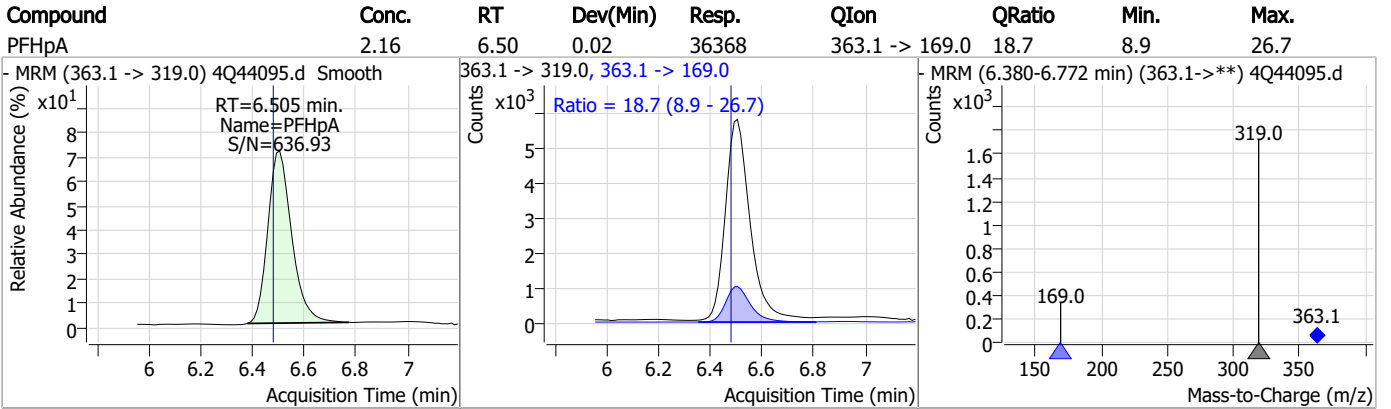


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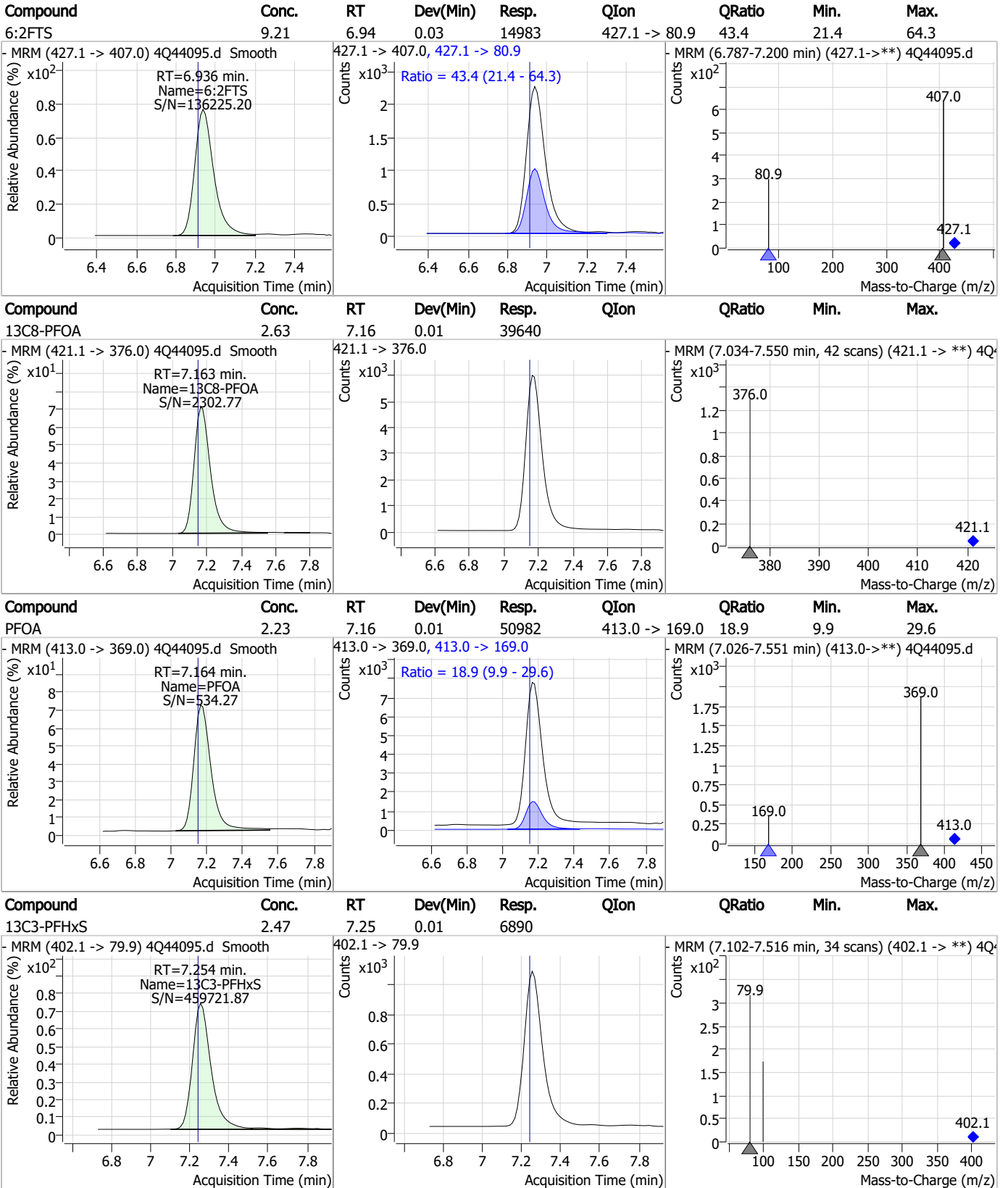
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Perfluorinated Compounds by LC/MS/MS



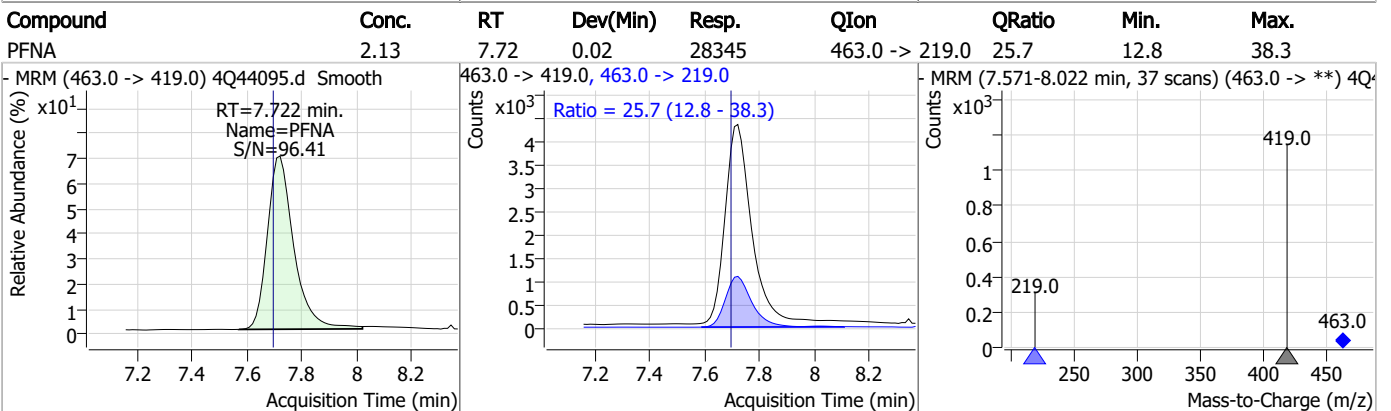
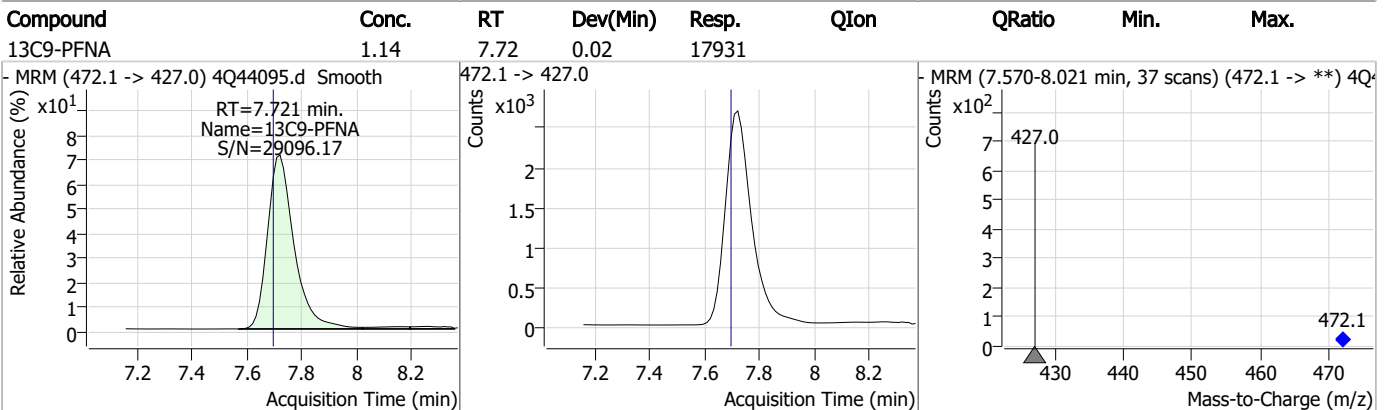
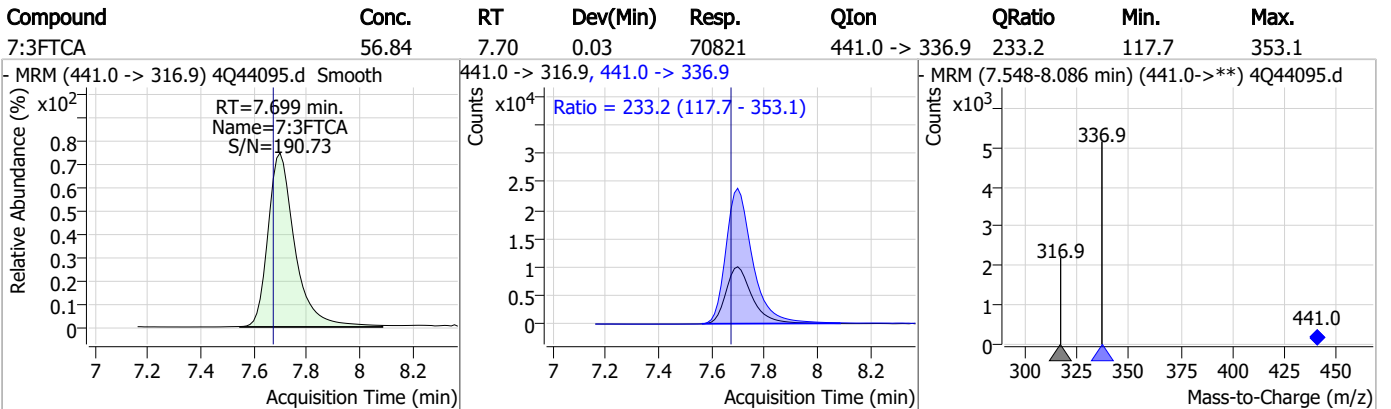
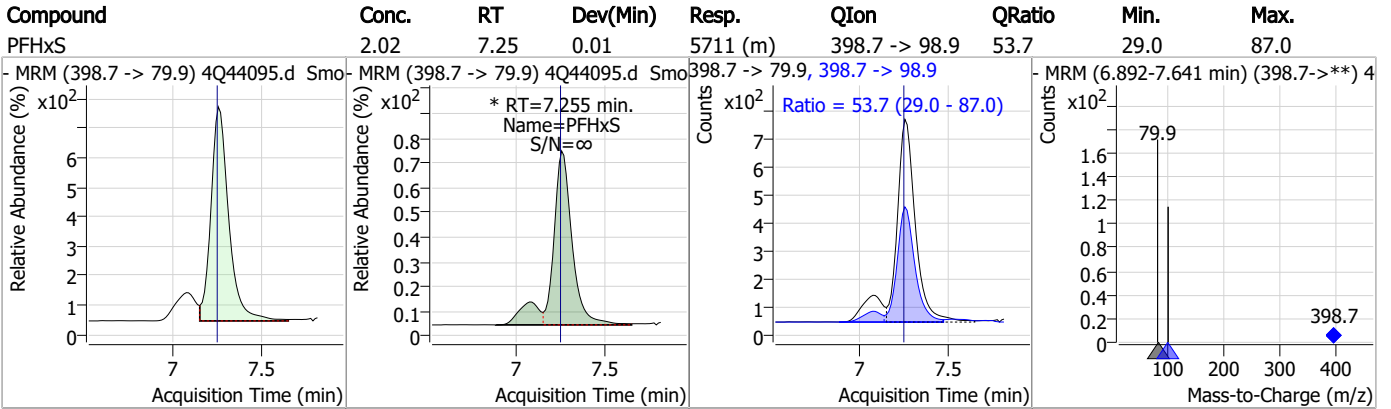
Perfluorinated Compounds by LC/MS/MS



7.4.1

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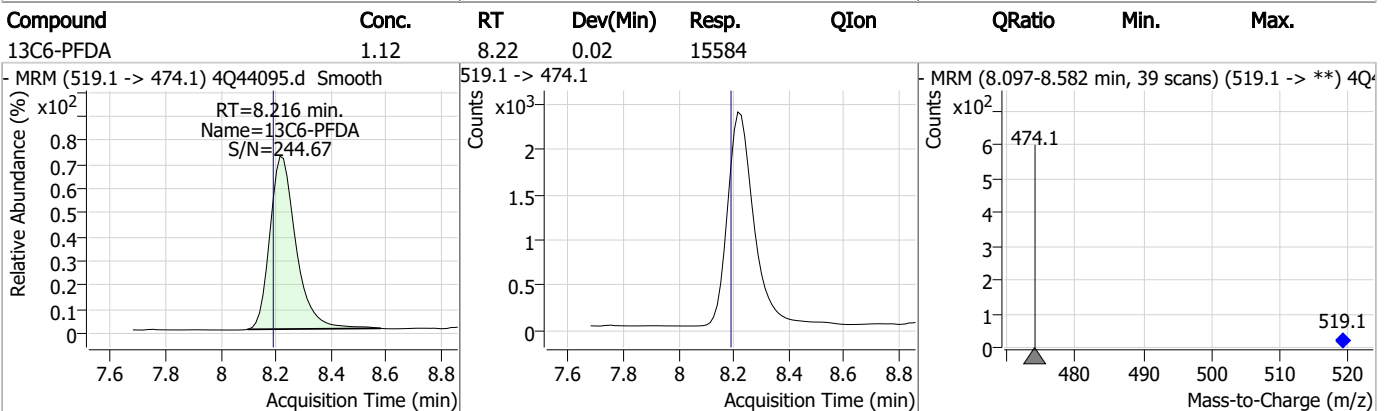
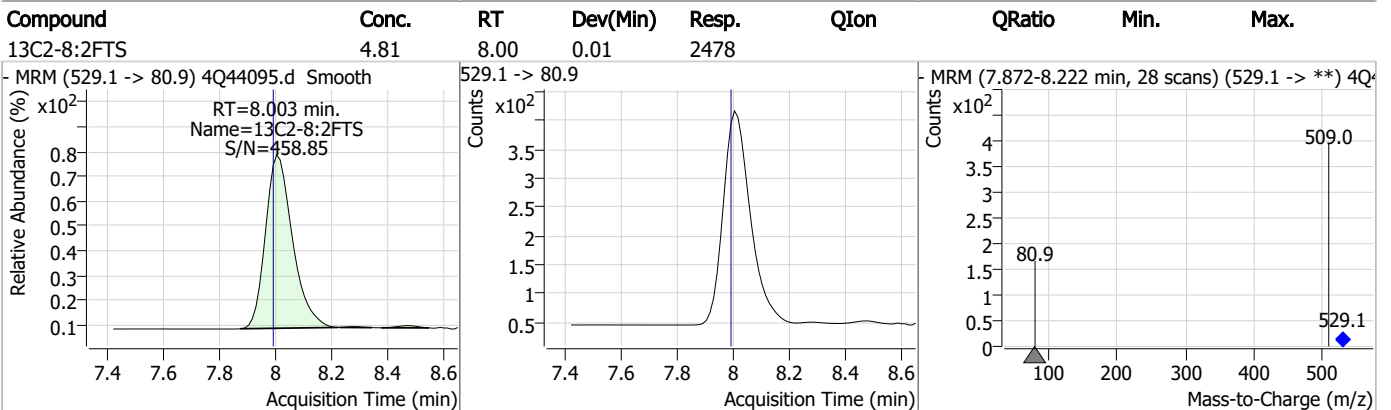
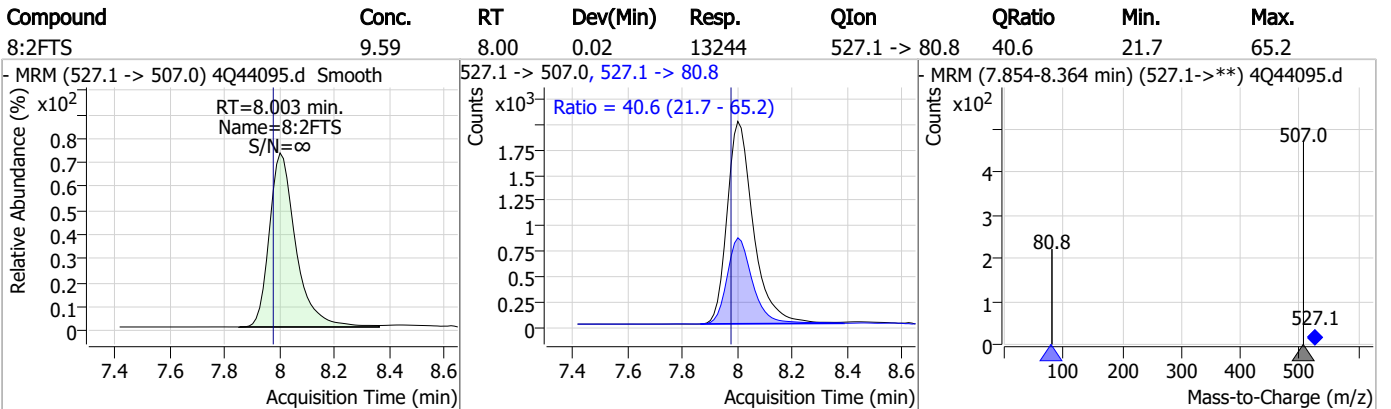
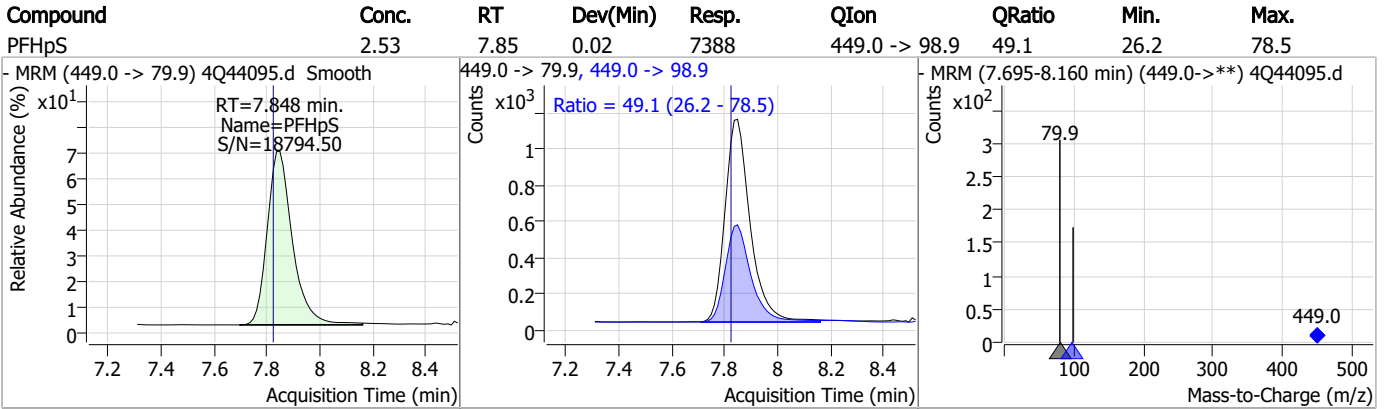
Perfluorinated Compounds by LC/MS/MS



7.4.1

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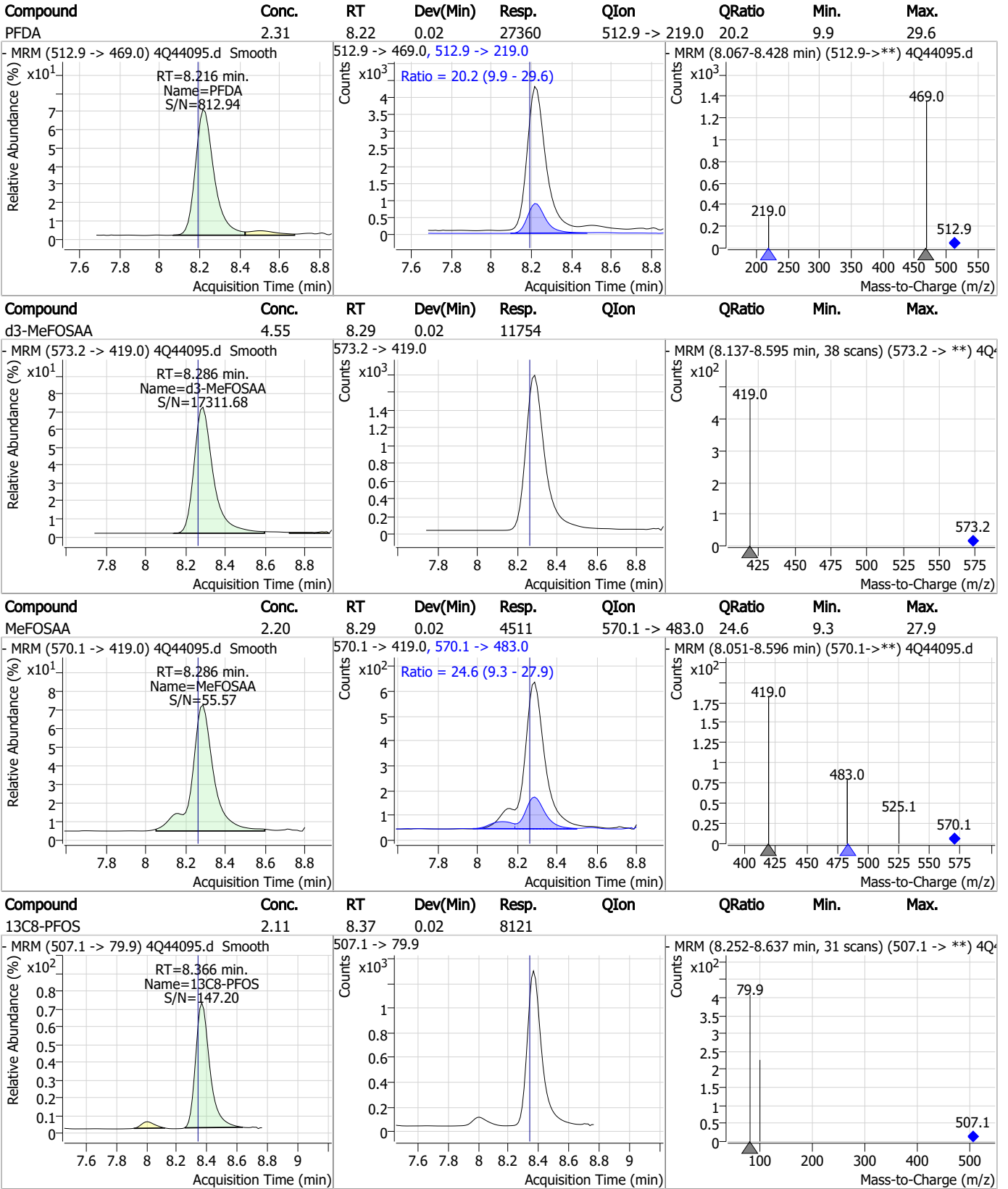
Perfluorinated Compounds by LC/MS/MS



7.4.1

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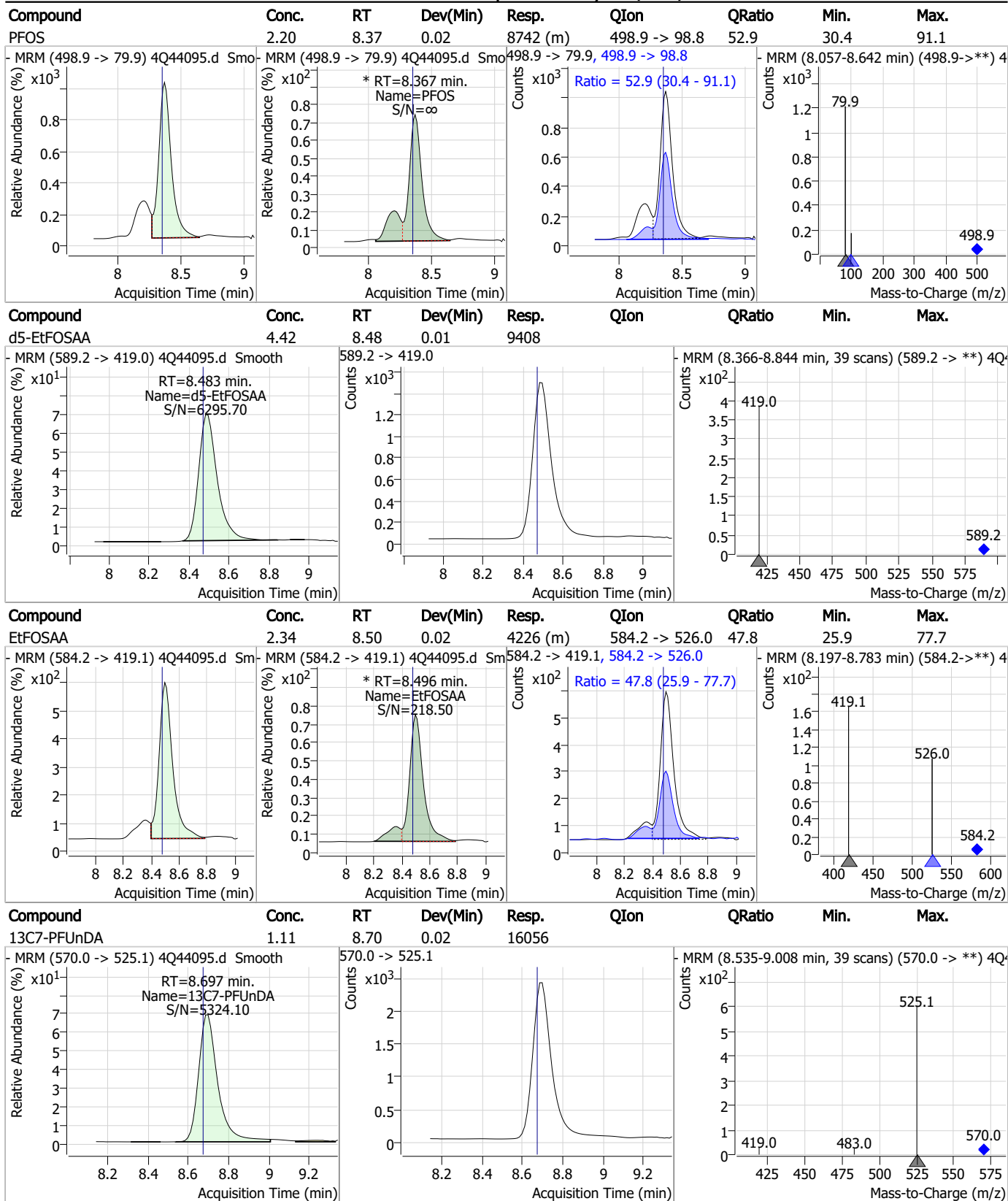
Perfluorinated Compounds by LC/MS/MS



7.4.1

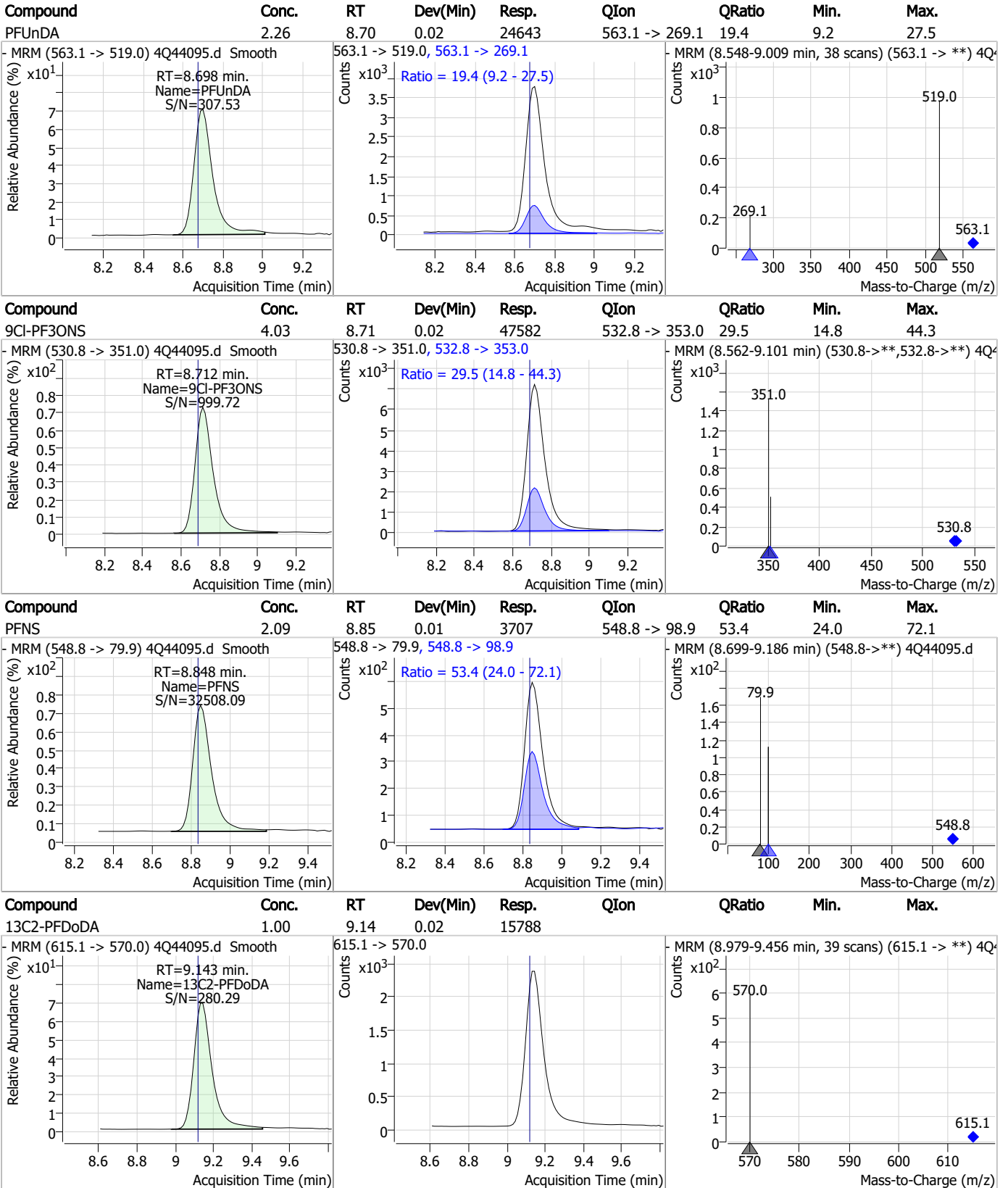
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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Perfluorinated Compounds by LC/MS/MS

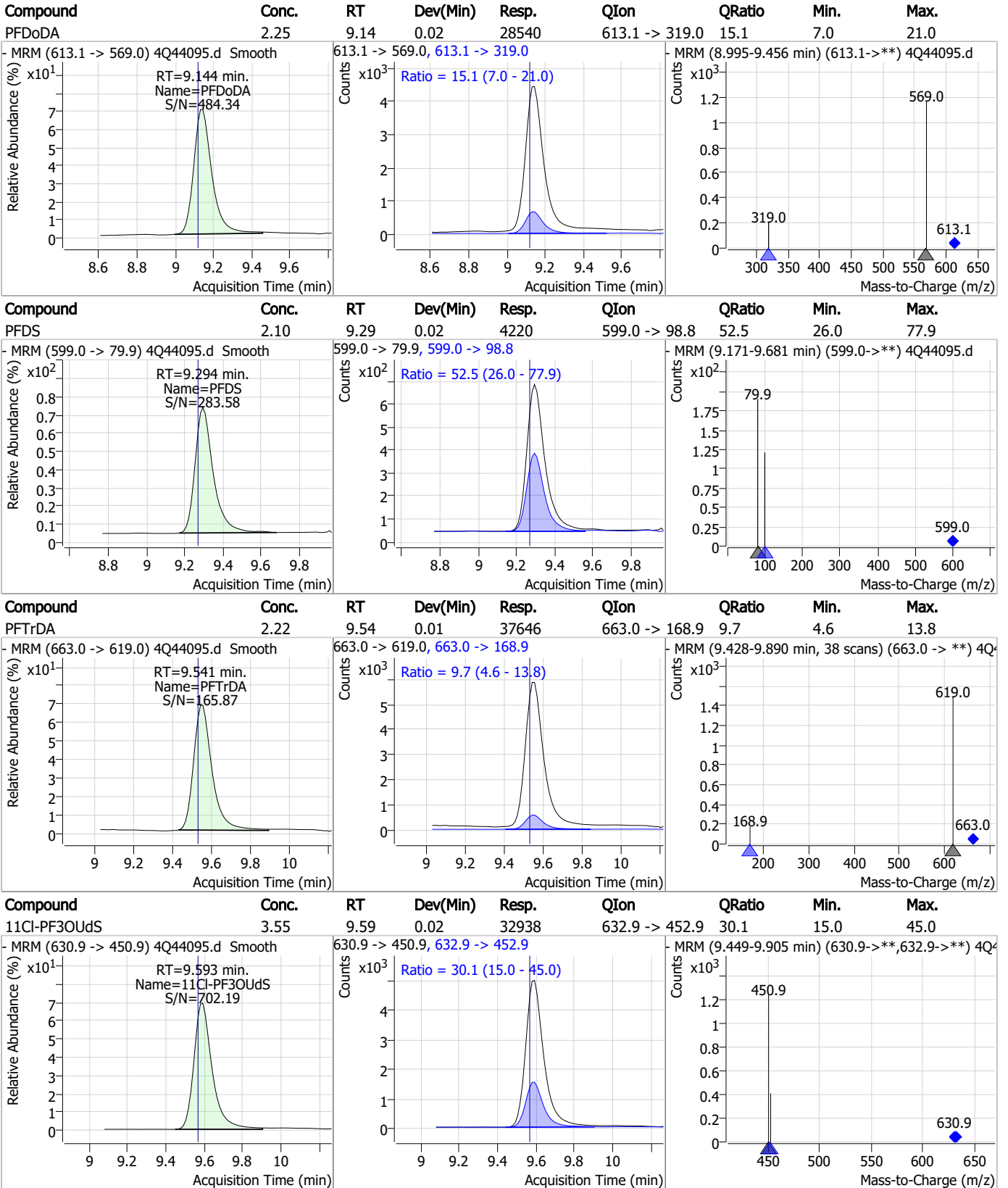


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Perfluorinated Compounds by LC/MS/MS

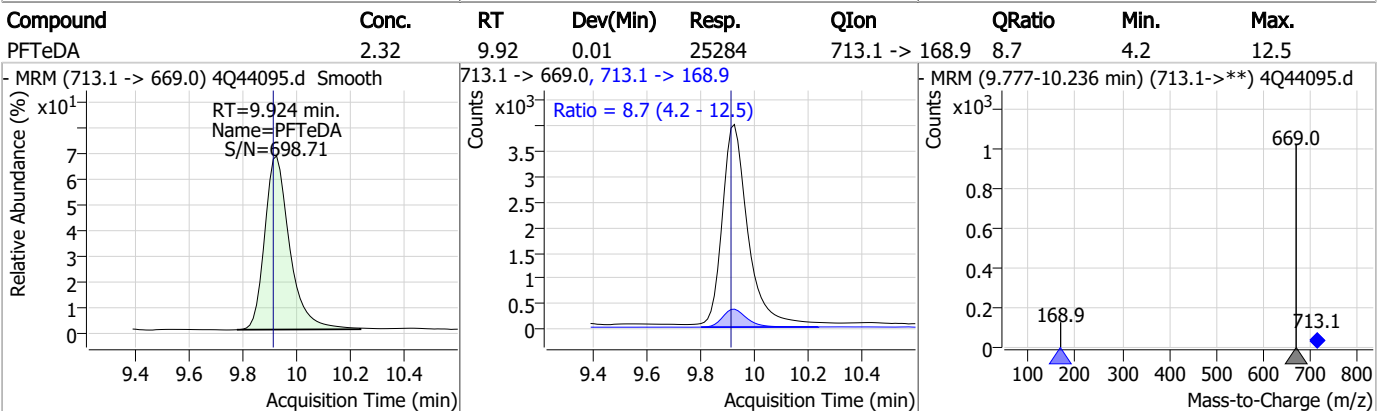
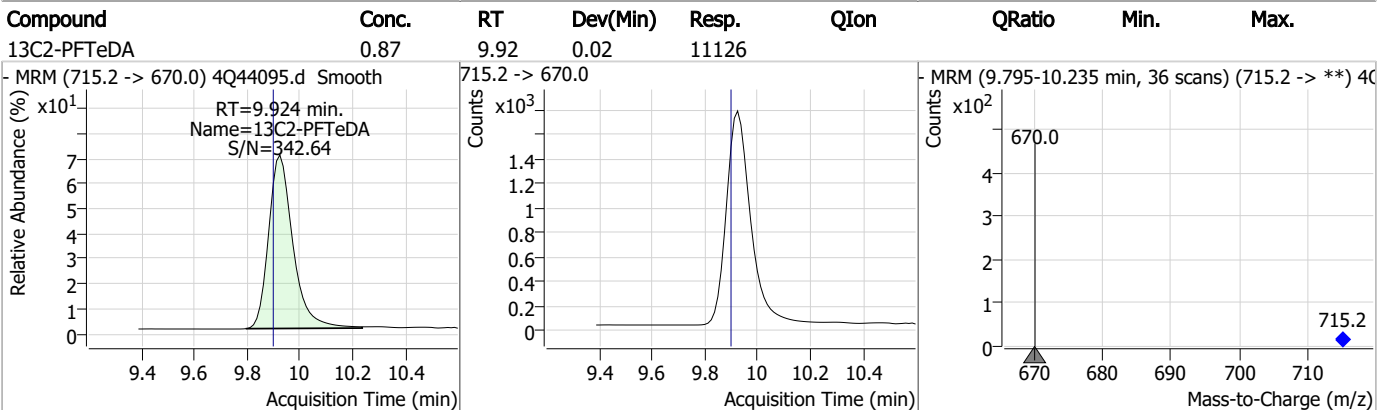
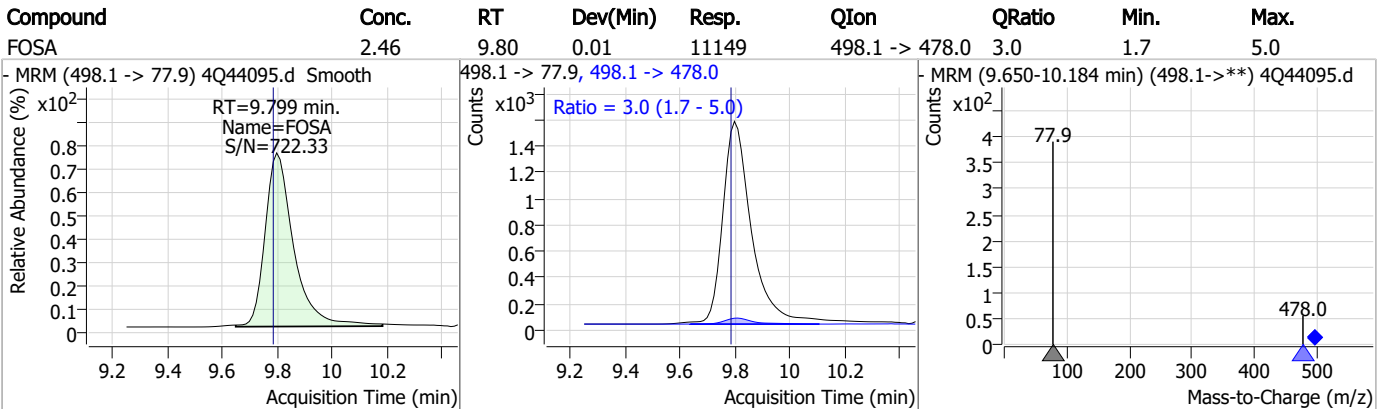
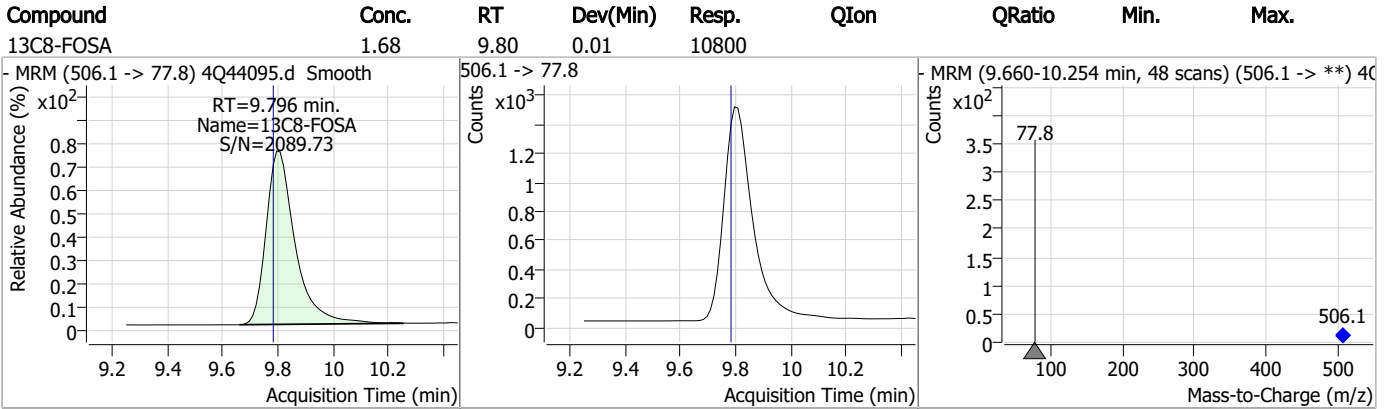


7.4.1

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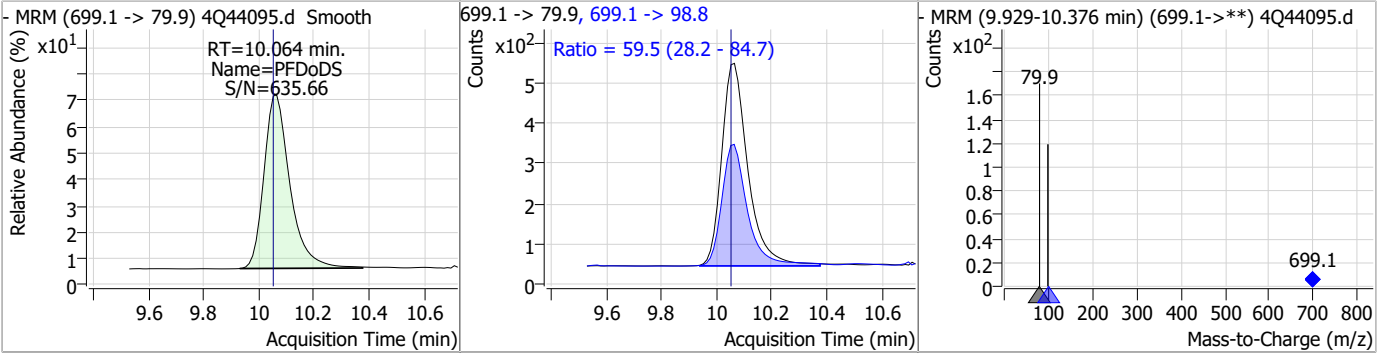


Perfluorinated Compounds by LC/MS/MS

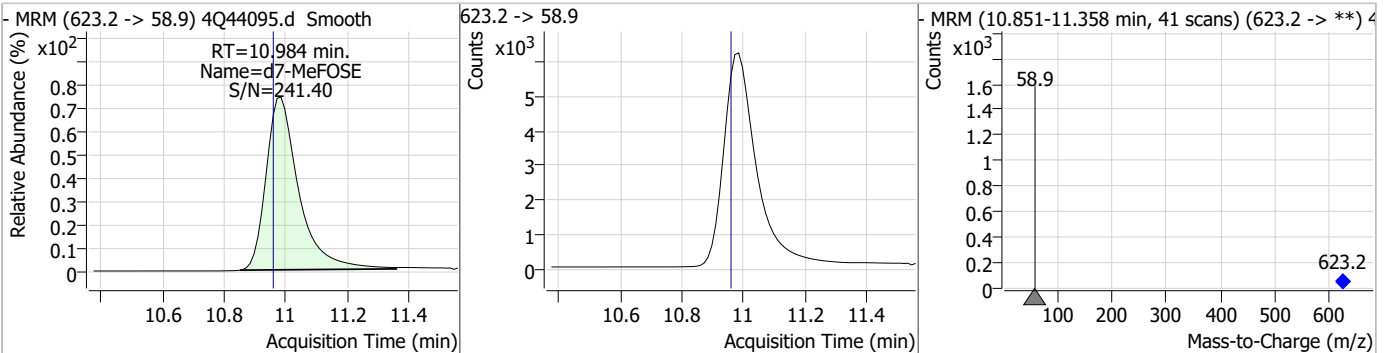


Perfluorinated Compounds by LC/MS/MS

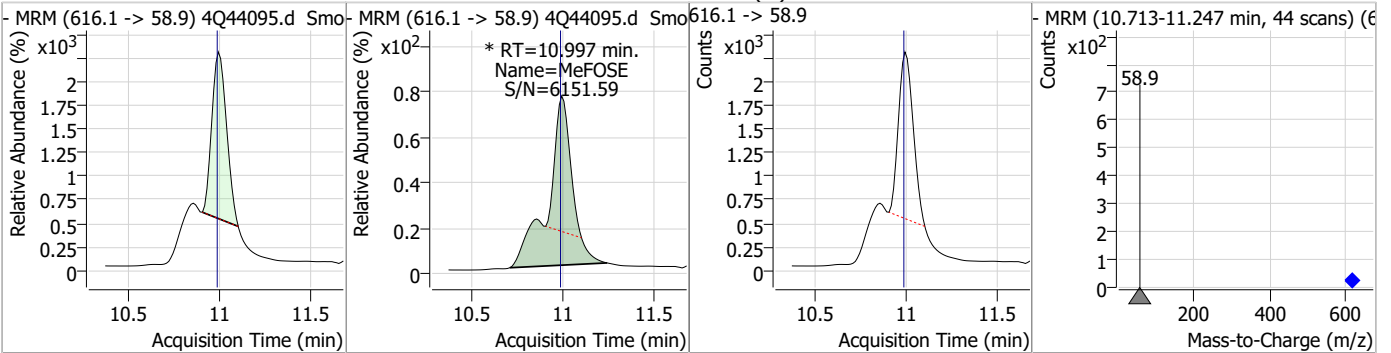
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.83	10.06	0.01	3284	699.1 -> 98.8	59.5	28.2	84.7



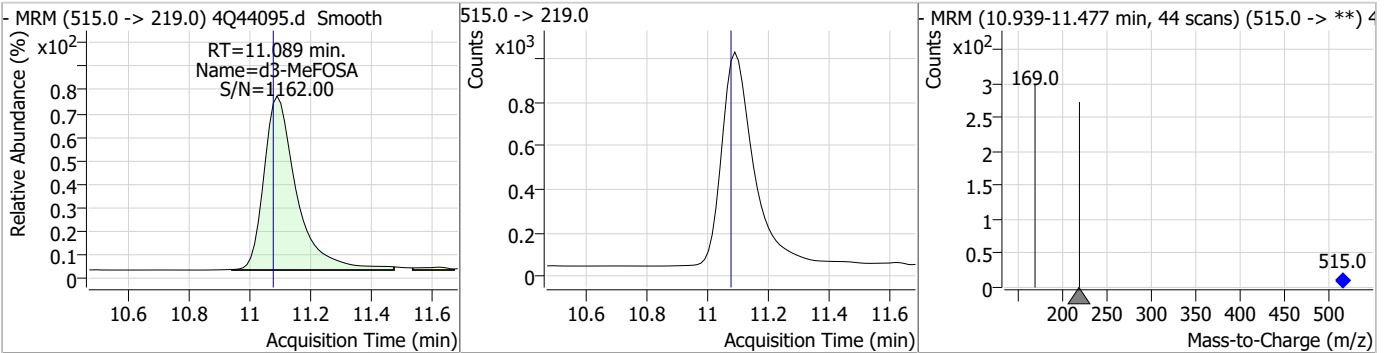
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	14.31	10.98	0.02	45598				



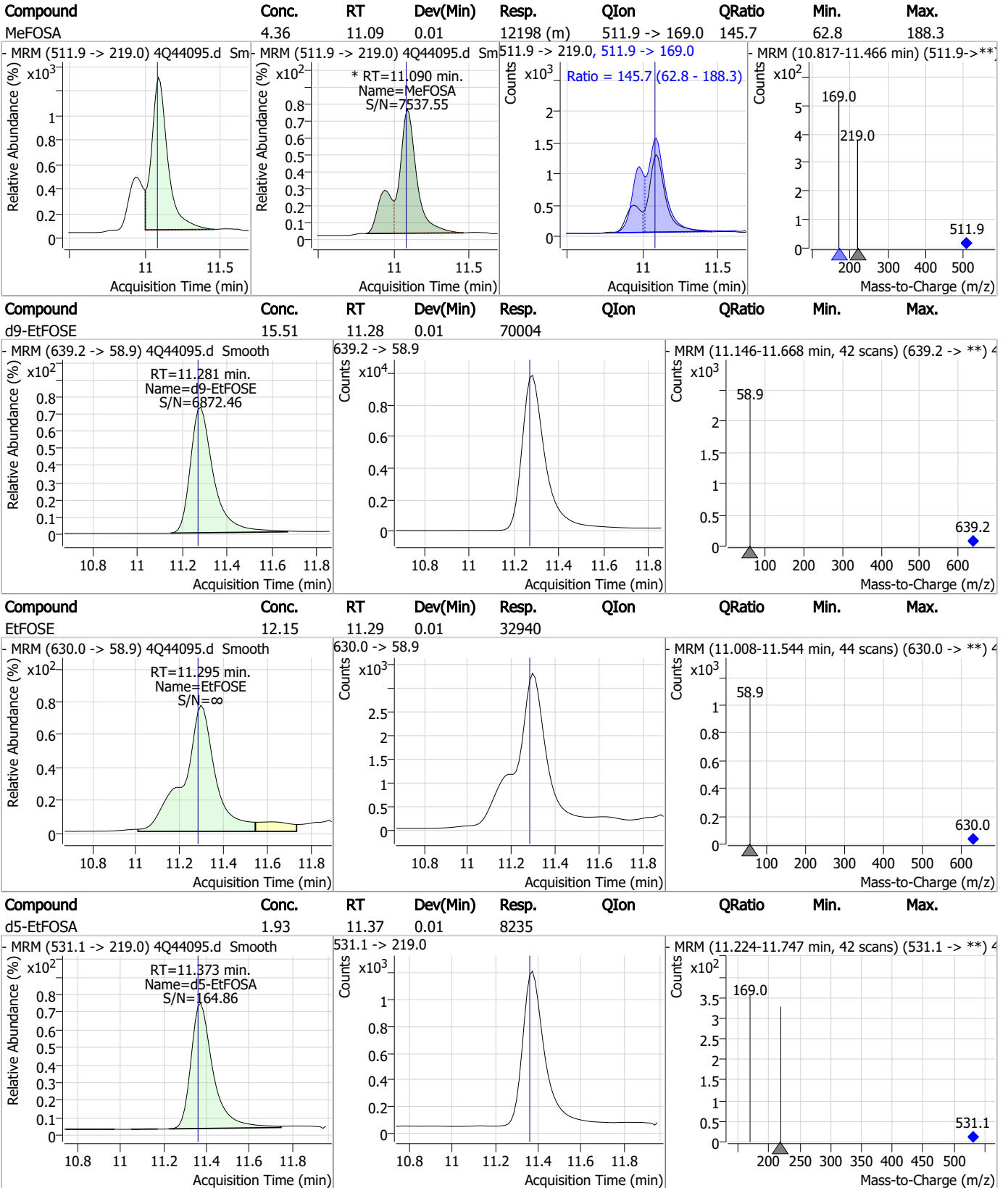
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	10.86	11.00	0.01	20346 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.85	11.09	0.01	7430				



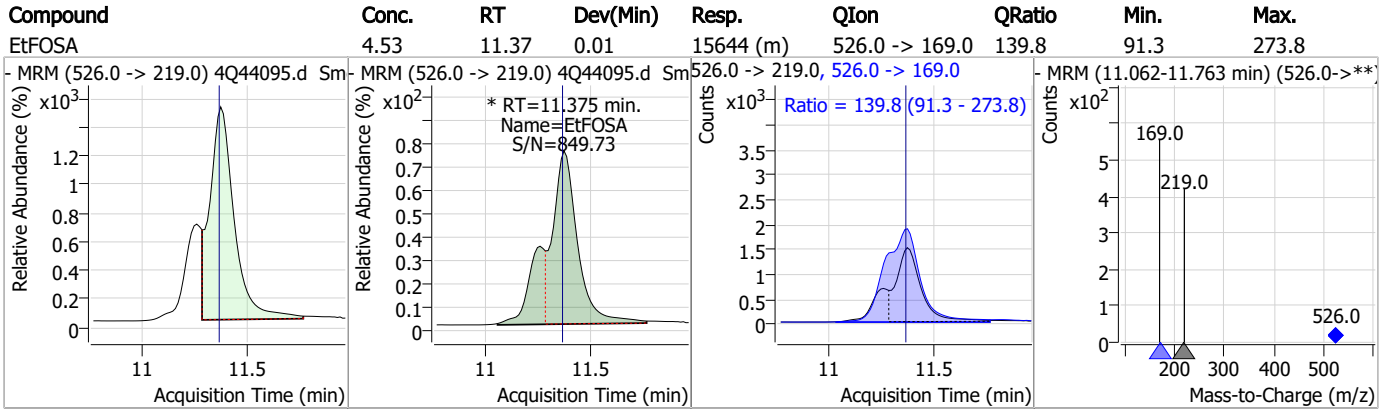
Perfluorinated Compounds by LC/MS/MS



7.4.1

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Perfluorinated Compounds by LC/MS/MS



7.4.1

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Manual Integration Approval Summary

Sample Number: OP96726-MS Method: EPA DRAFT 1633
Lab FileID: 4Q44095.D Analyst approved: 05/09/23 10:41 Martha Valls
Injection Time: 05/08/23 17:46 Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.50	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

7.4.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44097.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 6:14:34 PM
 Sample Name : op96726-dup
 Vial : P2-B7
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96726,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	117135	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	61666	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	44143	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	25926	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	37989	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	18086	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	15485	1.25 µg/L	0.025
M7-PFUnDA	8.697	570.0 -> 525.1	15151	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	15791	1.25 µg/L	0.025
M2-PFTeDA	9.924	715.2 -> 670.0	11939	1.25 µg/L	0.025
M8-FOSA	9.808	506.1 -> 77.8	11016	2.50 µg/L	0.025
M3-PFBS	5.452	302.1 -> 79.9	10451	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6648	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	8788	2.50 µg/L	0.025
M2-4:2FTS	5.260	329.1 -> 80.9	984	5.00 µg/L	0.025
M2-6:2FTS	6.936	429.1 -> 80.9	1866	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2373	5.00 µg/L	0.012
M3-MeFOSAA	8.286	573.2 -> 419.0	12739	5.00 µg/L	0.025
M3-HFPO-DA	5.927	286.9 -> 168.9	23517	10.00 µg/L	0.025
M5-EtFOSAA	8.495	589.2 -> 419.0	9505	5.00 µg/L	0.025
M7-MeFOSE	10.984	623.2 -> 58.9	43873	25.00 µg/L	0.025
M9-EtFOSE	11.281	639.2 -> 58.9	67865	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	7710	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	7089	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	10162	2.50 µg/L	0.025
13C3-PFBA	2.916	216.0 -> 172.0	63461	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4772	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	47343	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16822	1.25 µg/L	0.025
13C5-PFNA	7.721	468.0 -> 423.0	22957	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	39321	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	984	5.07 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1866	5.34 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2373	4.35 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.9%		
13C2-PFDoDA	9.143	615.1 -> 570.0	15791	0.97 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 77.5%		
13C2-PFTeDA	9.924	715.2 -> 670.0	11939	0.90 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 72.0%		
13C3-PFBS	5.452	302.1 -> 79.9	10451	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C3-PFHxS	7.254	402.1 -> 79.9	6648	2.25 µg/L	0.012

7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.9%	
13C4-PFBA	2.924	216.8 -> 171.9	117135	9.81 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C4-PFHpA	6.504	367.1 -> 322.0	25926	2.56 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	44143	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C5-PFPeA	4.387	268.3 -> 223.0	61666	5.09 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C6-PFDA	8.216	519.1 -> 474.1	15485	1.07 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 86.0%	
13C7-PFUnDA	8.697	570.0 -> 525.1	15151	1.01 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 80.9%	
13C8-FOSA	9.808	506.1 -> 77.8	11016	1.73 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 69.1%	
13C8-PFOA	7.163	421.1 -> 376.0	37989	2.44 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C8-PFOS	8.366	507.1 -> 79.9	8788	2.30 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.9%	
13C9-PFNA	7.721	472.1 -> 427.0	18086	1.16 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.7%	
d3-MeFOSAA	8.286	573.2 -> 419.0	12739	4.97 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	23517	9.09 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 90.9%	
d3-MeFOSA	11.089	515.0 -> 219.0	7089	1.78 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 71.2%	
d5-EtFOSAA	8.495	589.2 -> 419.0	9505	4.50 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.0%	
d7-MeFOSE	10.984	623.2 -> 58.9	43873	13.88 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.5%	
d9-EtFOSE	11.281	639.2 -> 58.9	67865	15.16 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 60.6%	
d5-EtFOSA	11.373	531.1 -> 219.0	7710	1.82 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.8%	

Target Compounds

QValue

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

7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.176	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.5.1
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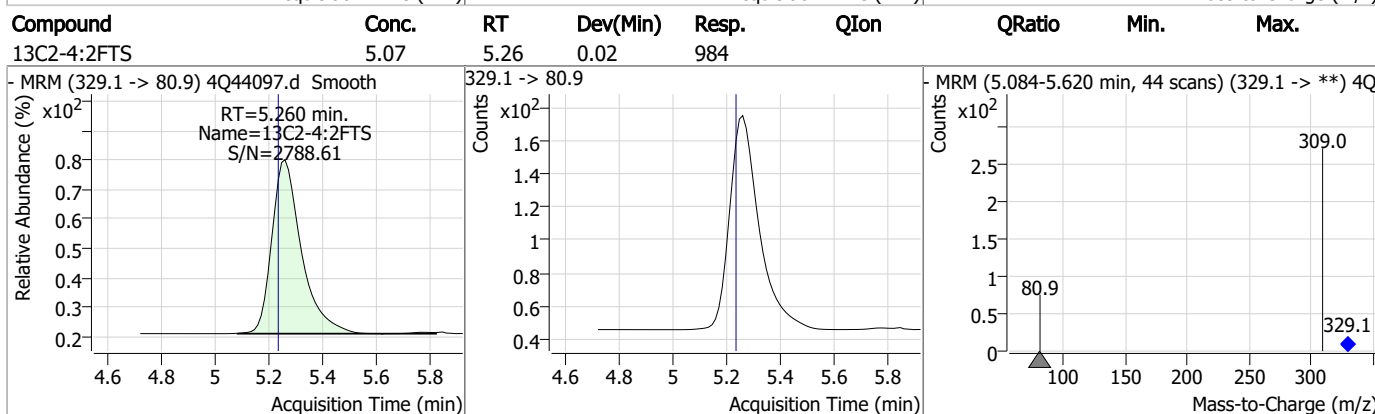
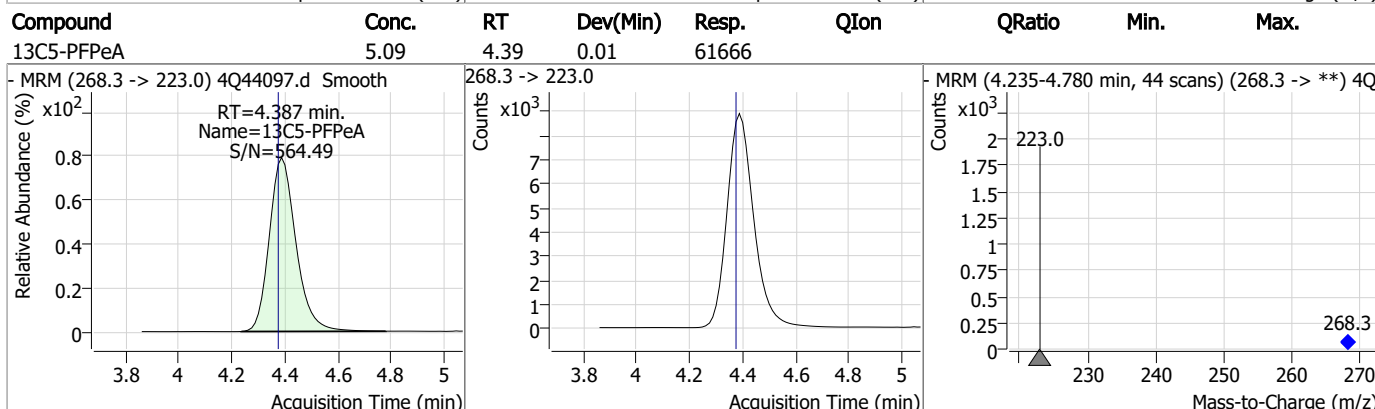
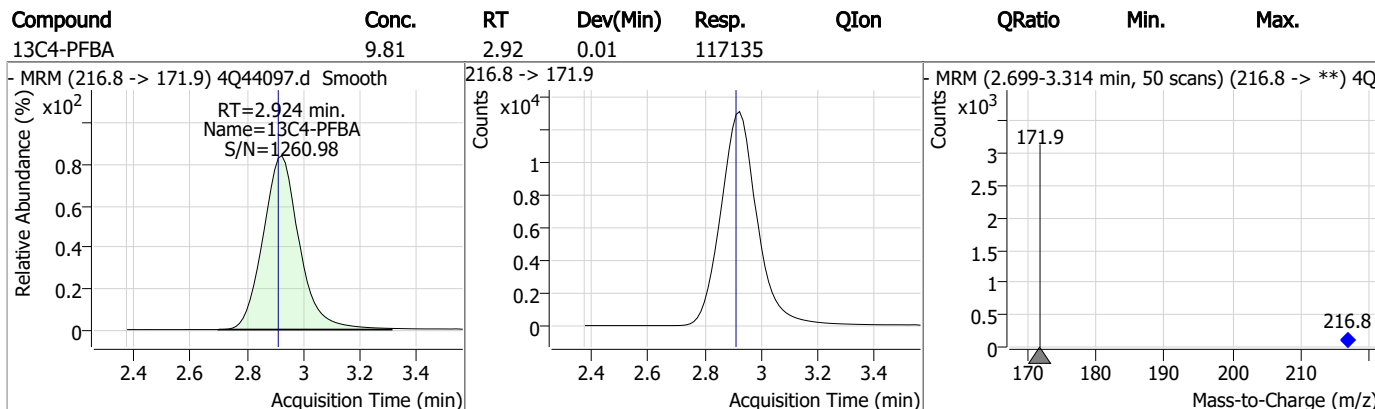
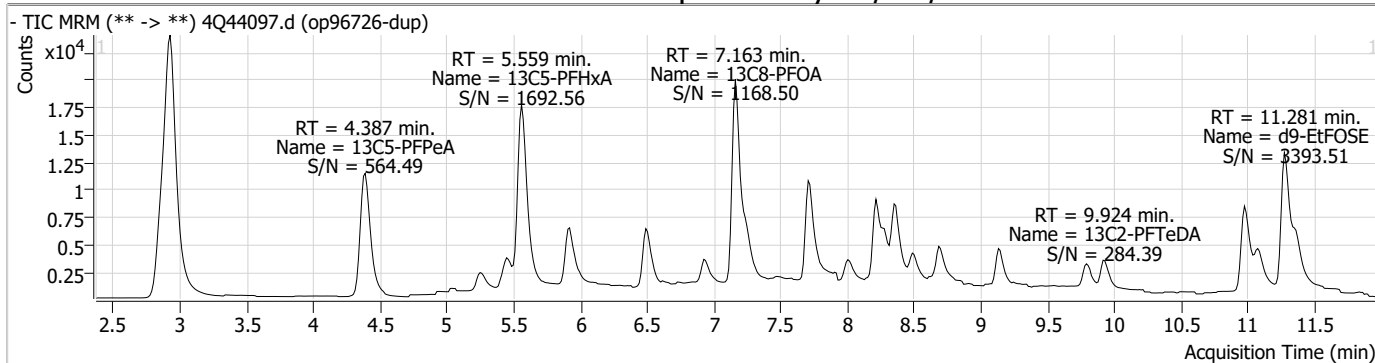
Perfluorinated Compounds by LC/MS/MS

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

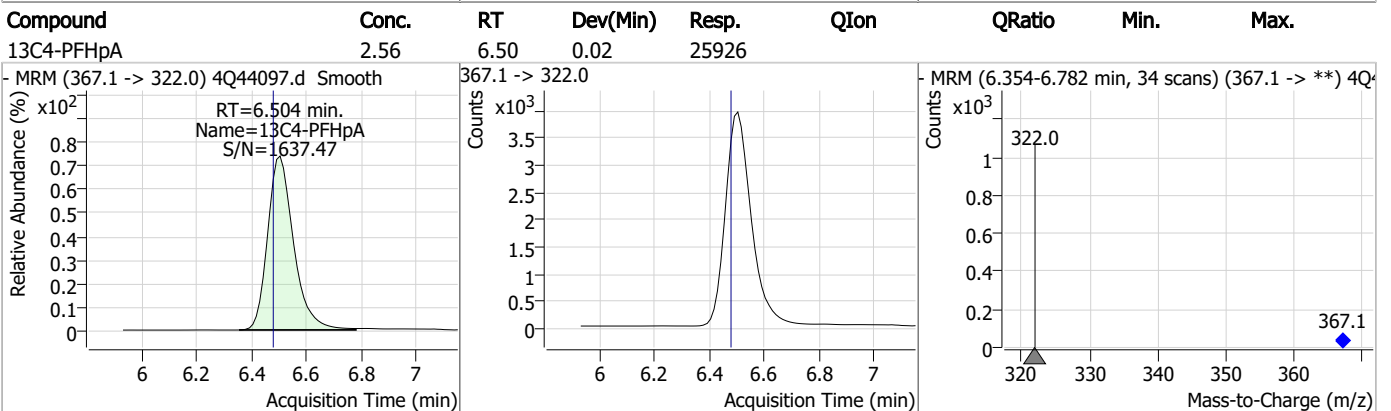
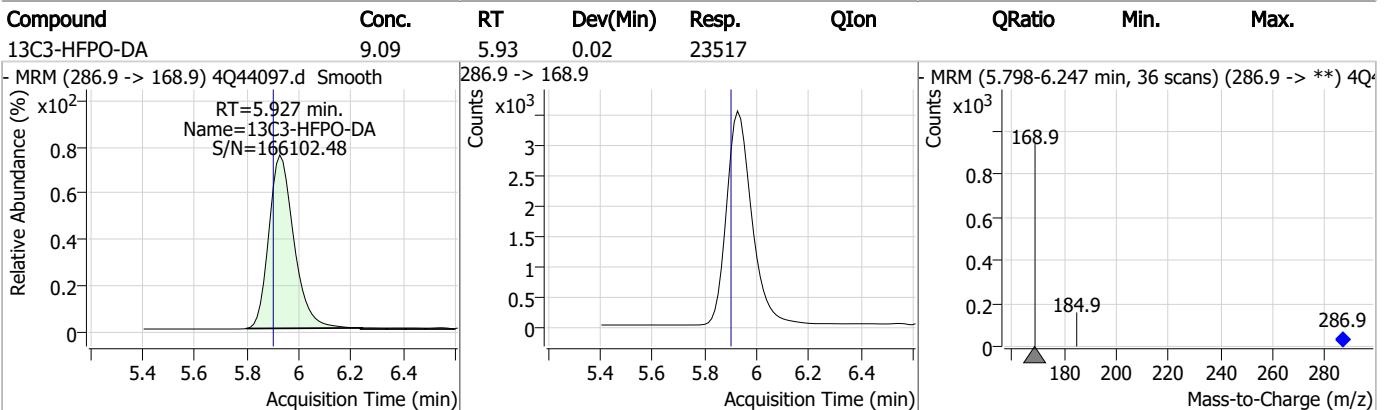
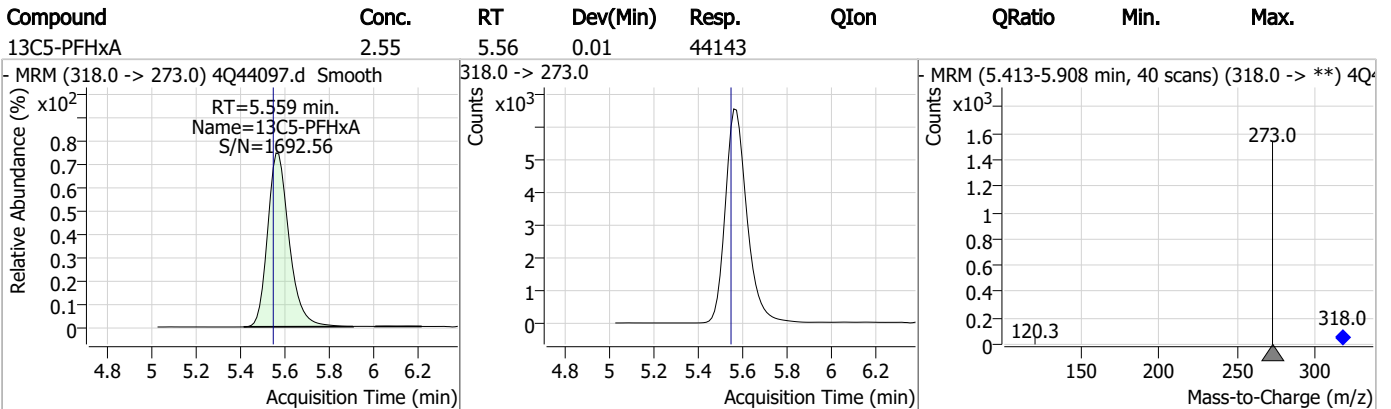
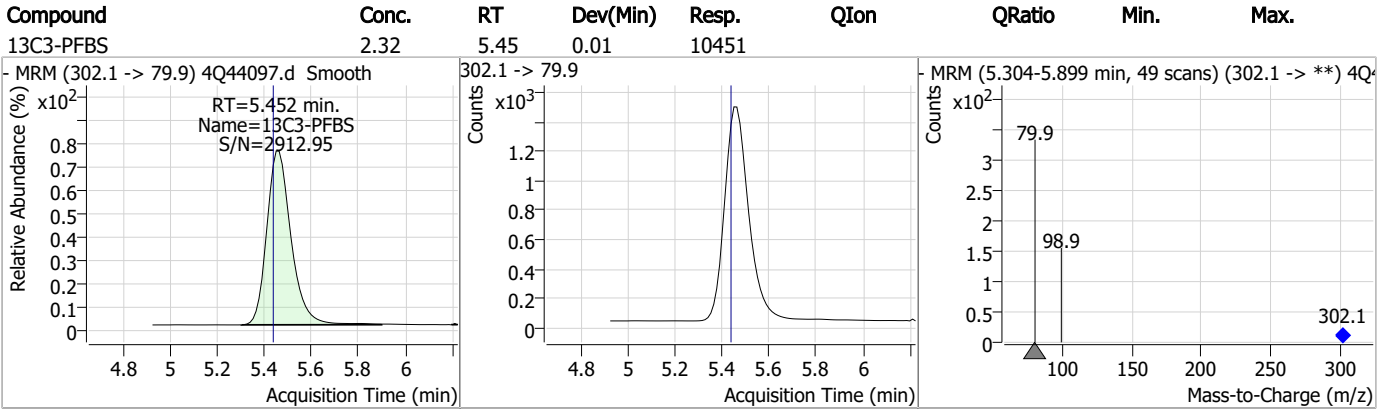
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Perfluorinated Compounds by LC/MS/MS

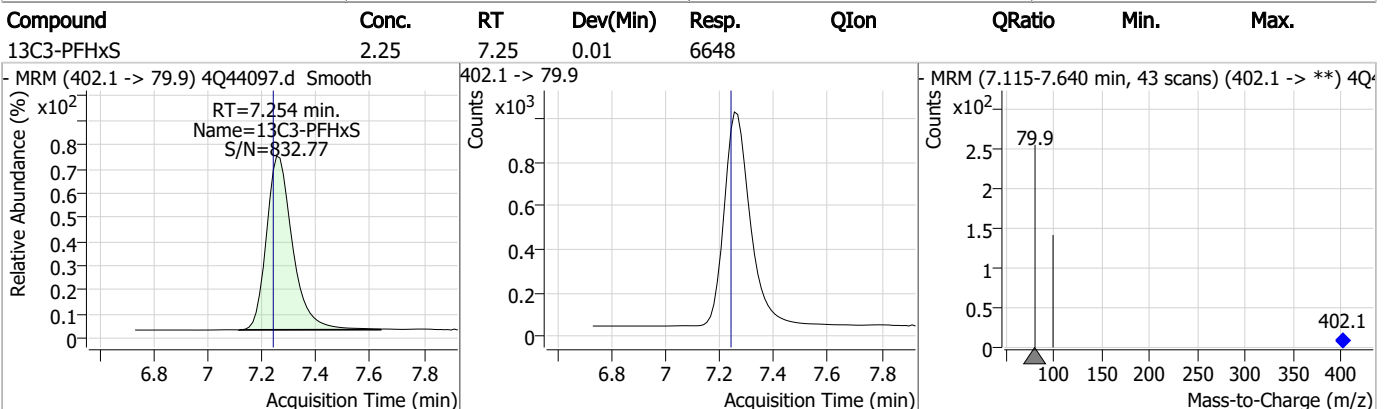
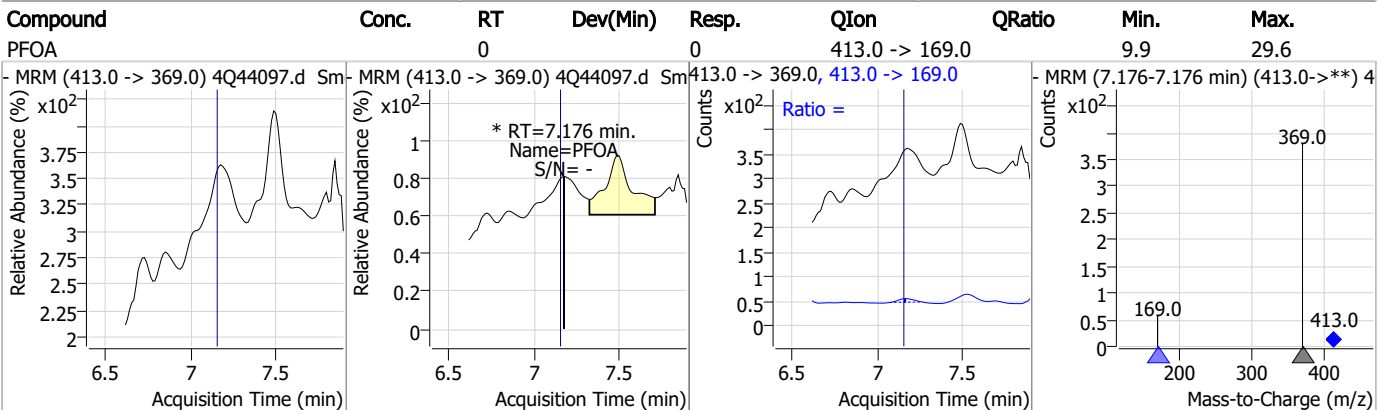
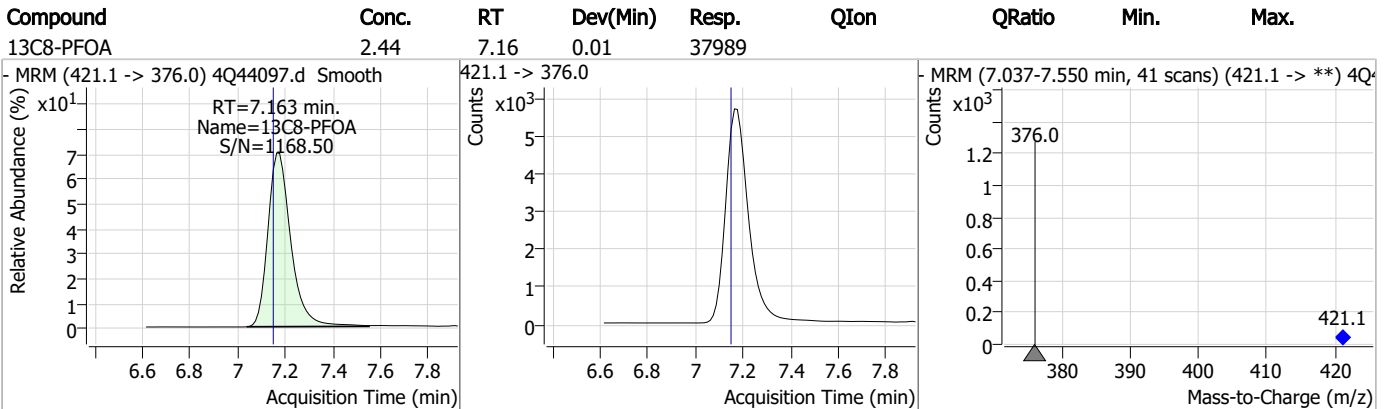
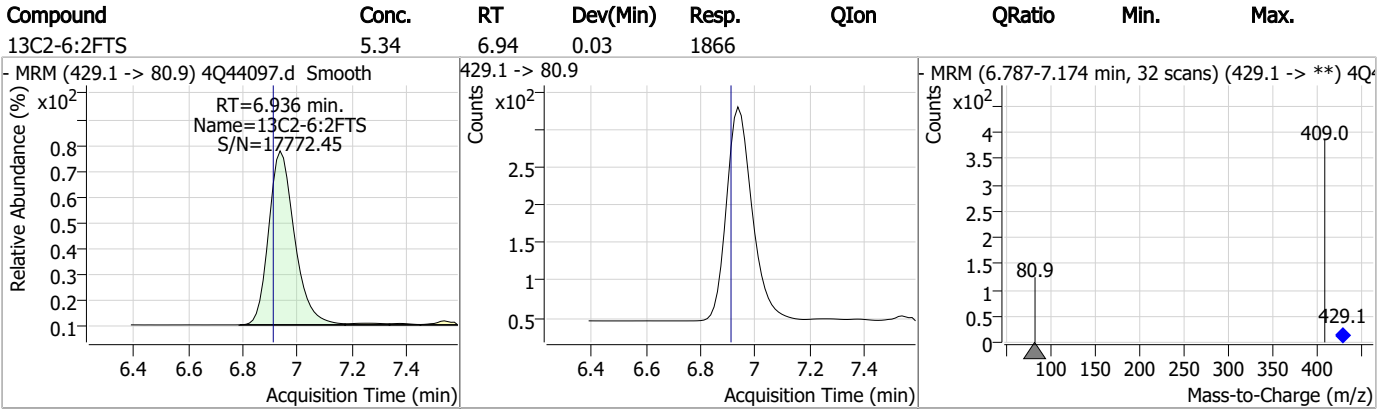


7.5.1
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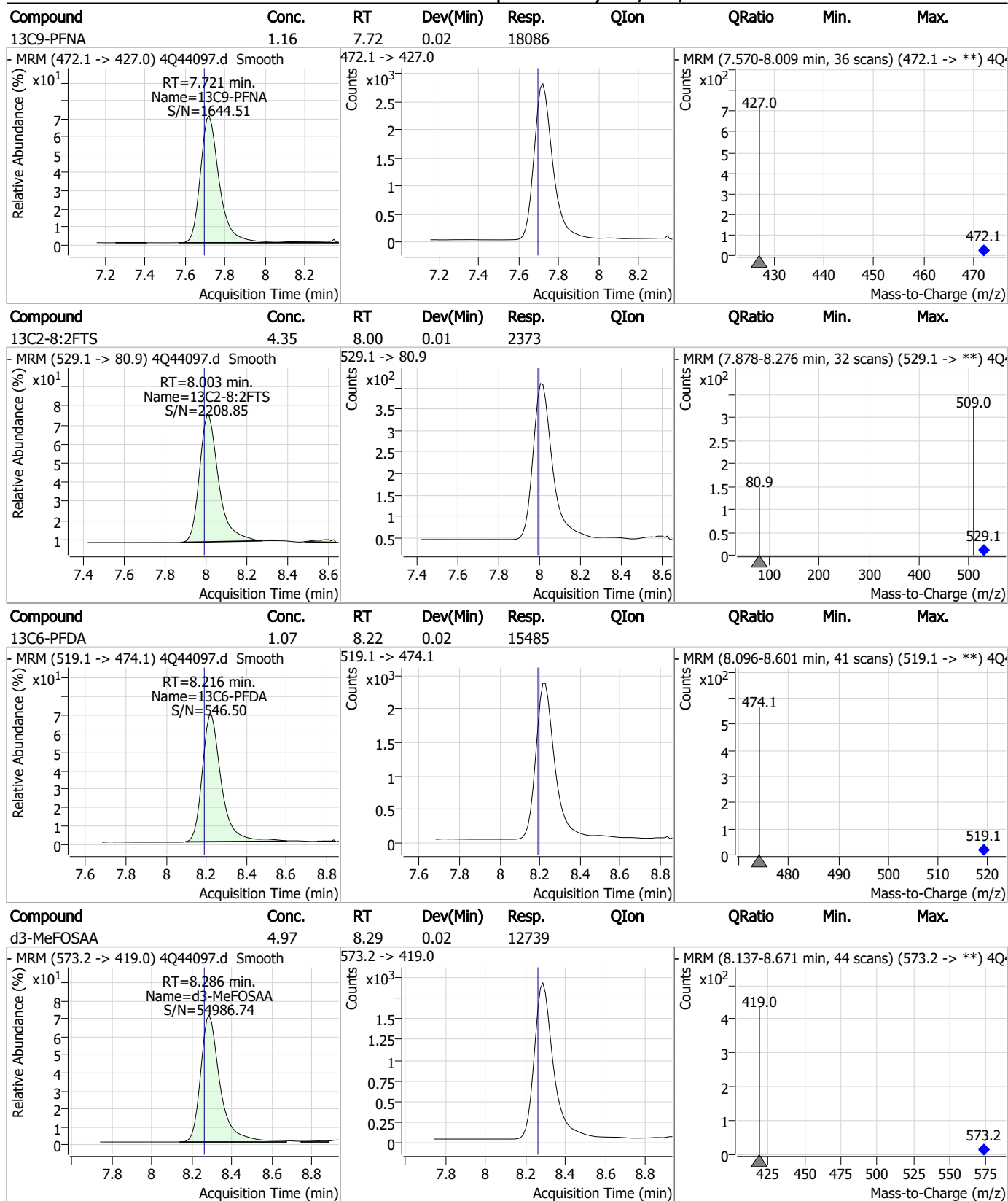
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

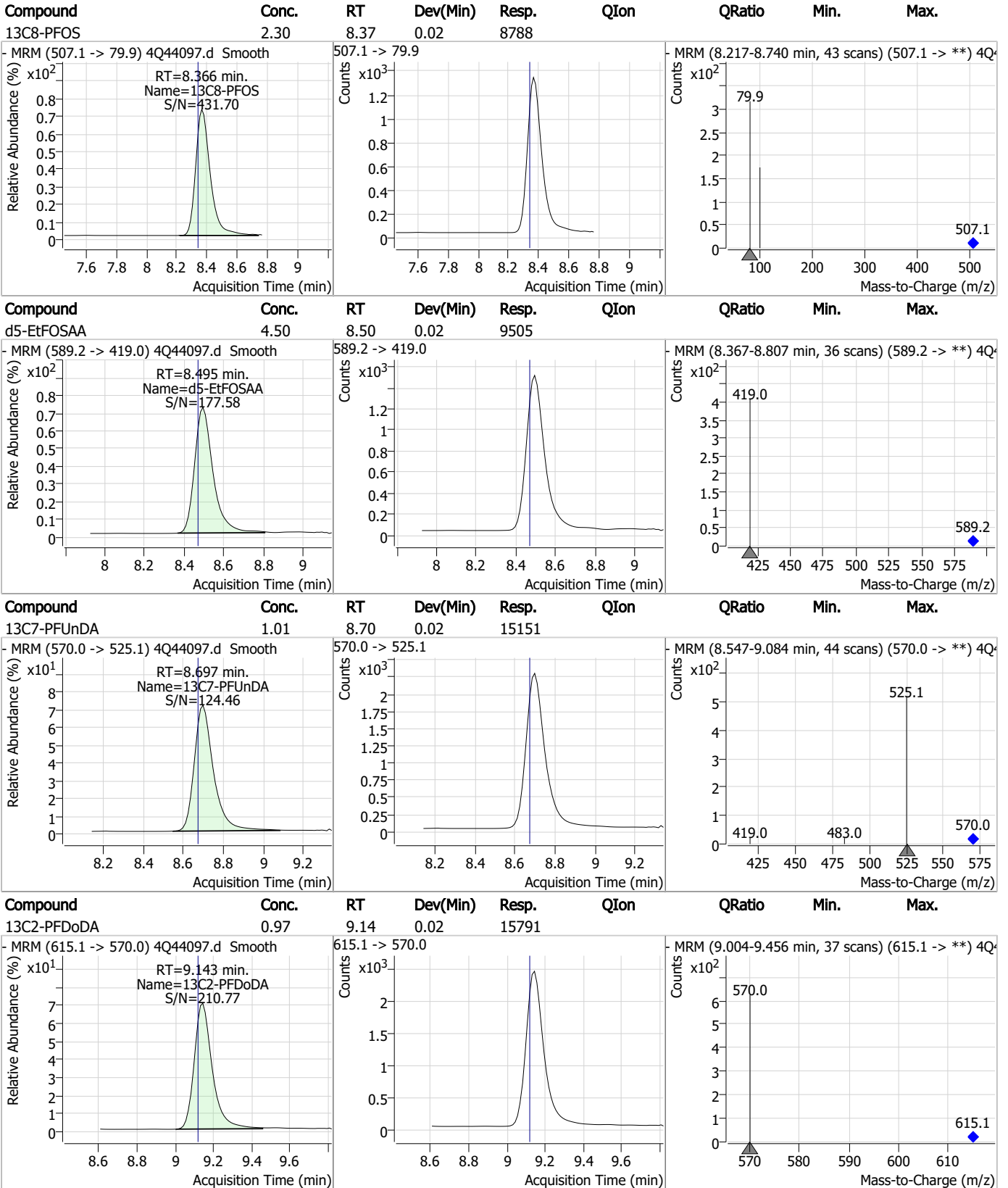


Perfluorinated Compounds by LC/MS/MS



7.5.1
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Perfluorinated Compounds by LC/MS/MS

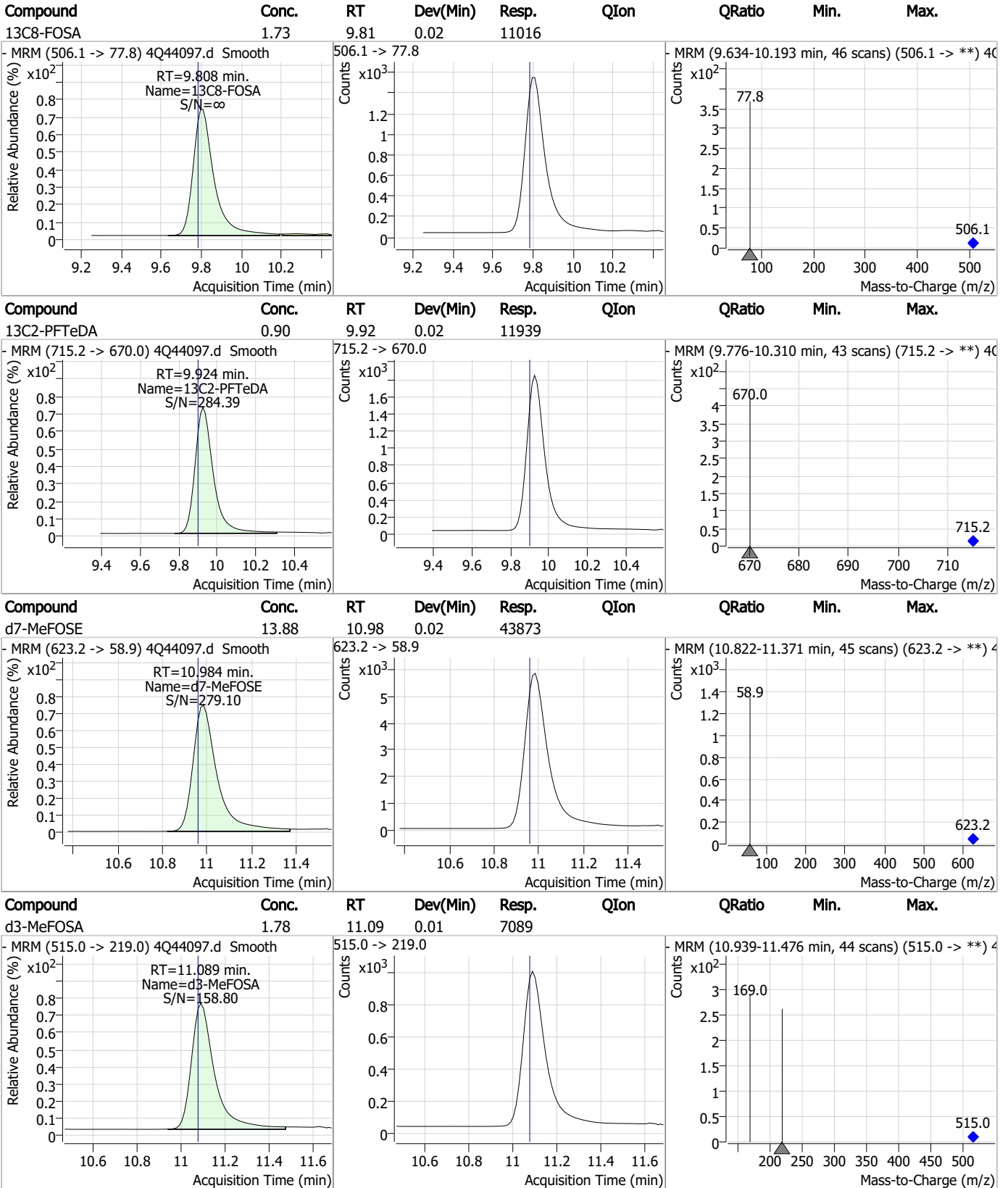


7.5.1

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Perfluorinated Compounds by LC/MS/MS

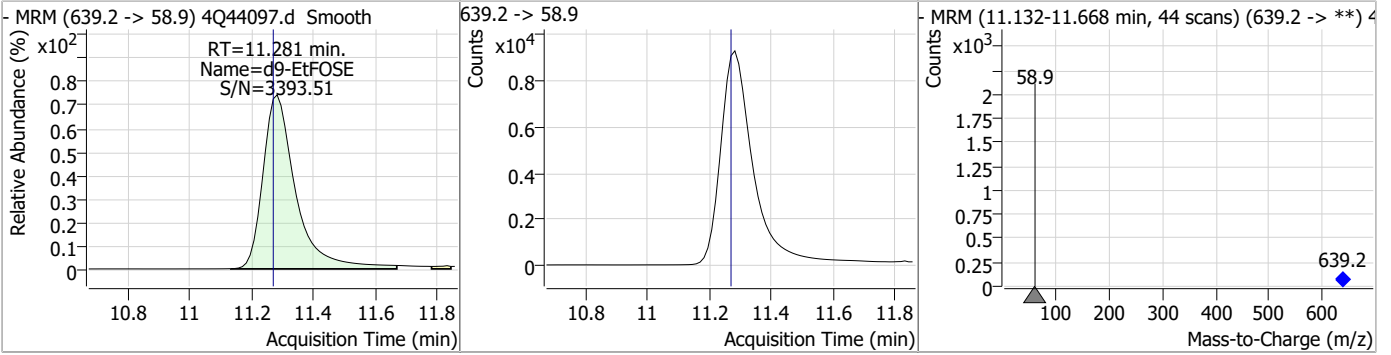


7.5.1

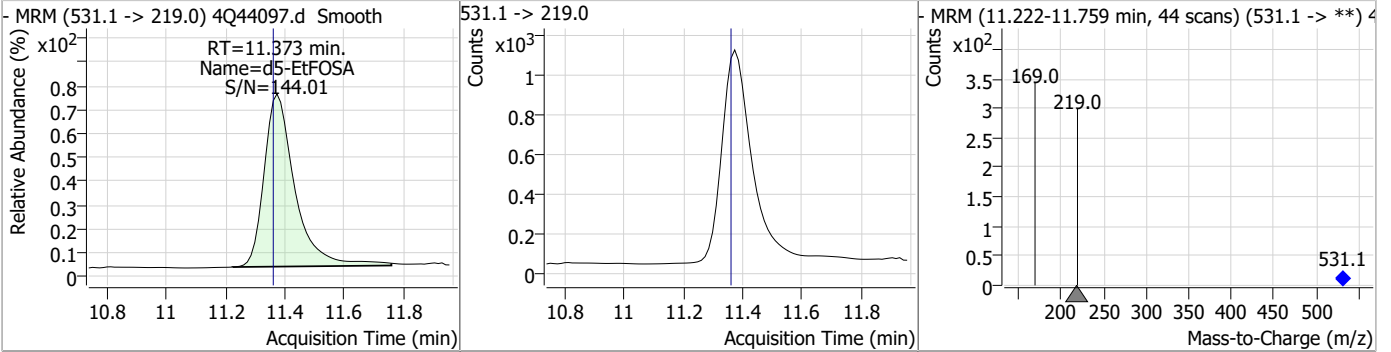
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	15.16	11.28	0.01	67865				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	1.82	11.37	0.01	7710				



7.5.1

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Perfluorinated Compounds by LC/MS/MS

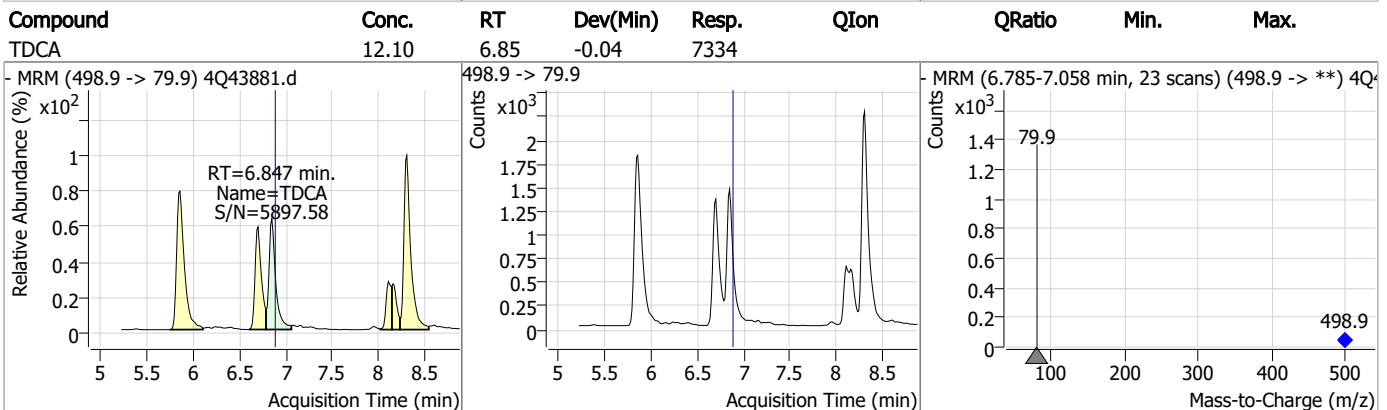
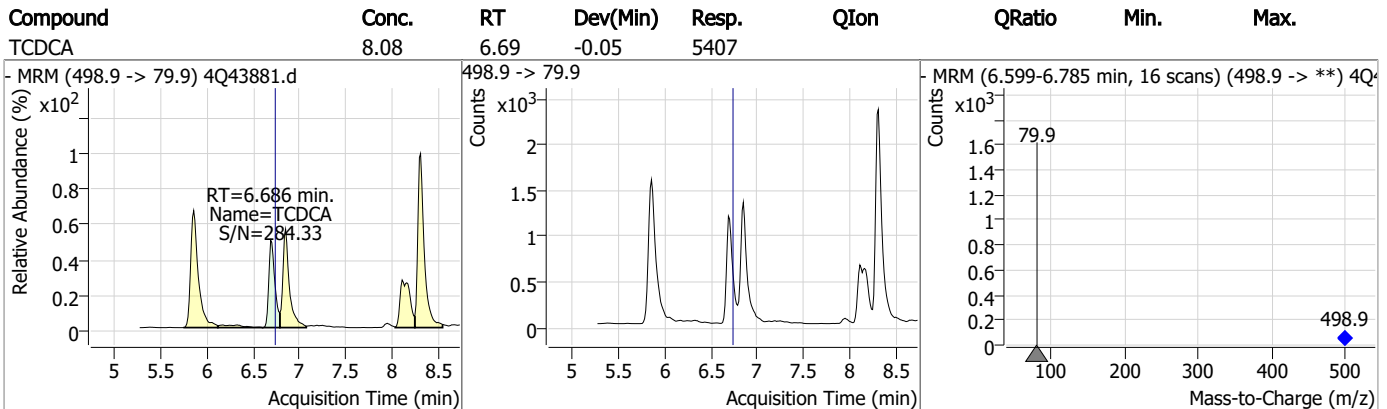
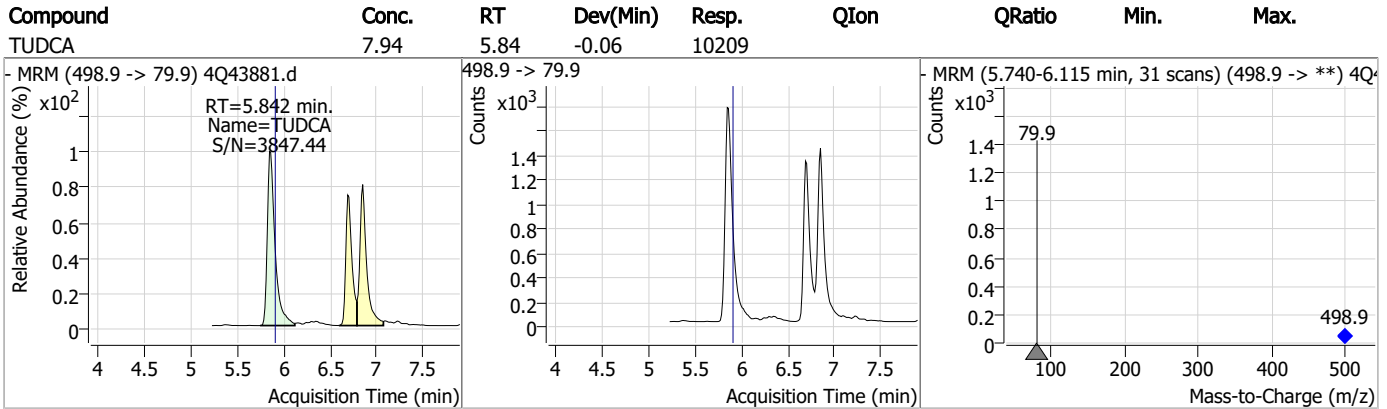
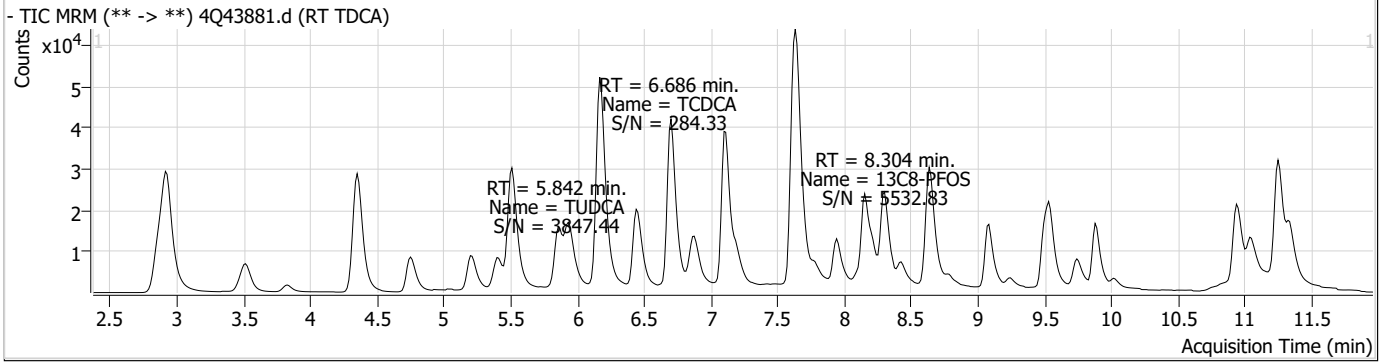
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 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 10:23:06 AM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q634_TDCA.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.304	507.1 -> 79.9	14500	2.50	µg/L	-0.062	
13C4-PFOS	8.305	502.8 -> 79.9	17051	2.50	µg/L	-0.062	
System Monitoring Compounds							
13C8-PFOS	8.304	507.1 -> 79.9	14500	2.16	µg/L	-0.062	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.3%				
Target Compounds							
PFOS	8.305	498.9 -> 79.9	15511	3.13	µg/L	m	96
		498.9 -> 98.8	7886				
TCDCa	6.686	498.9 -> 79.9	5407	8.08	ng/ml		100
TDCA	6.847	498.9 -> 79.9	7334	12.10	ng/ml		100
TUDCA	5.842	498.9 -> 79.9	10209	7.94	ng/ml		100

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

7.6.1
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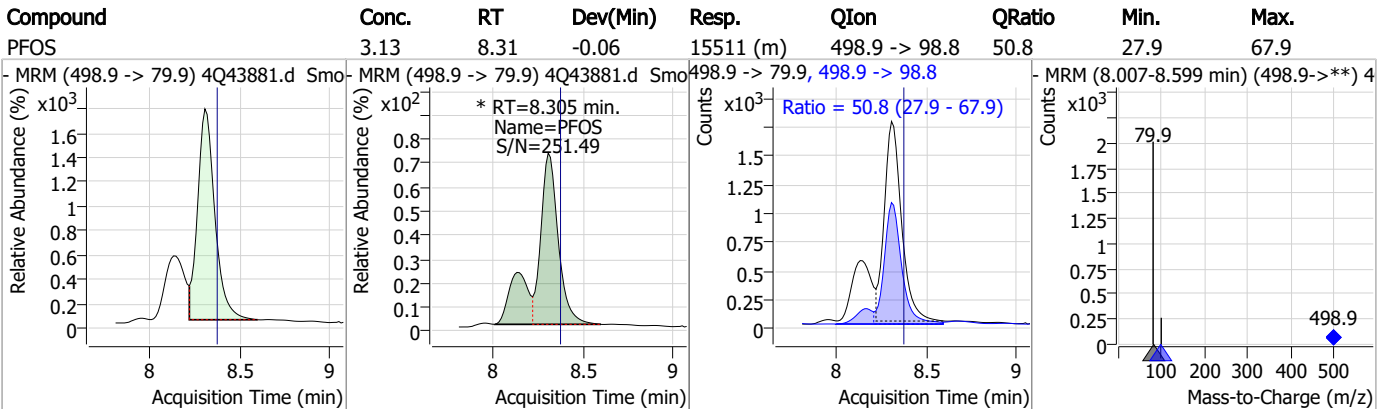
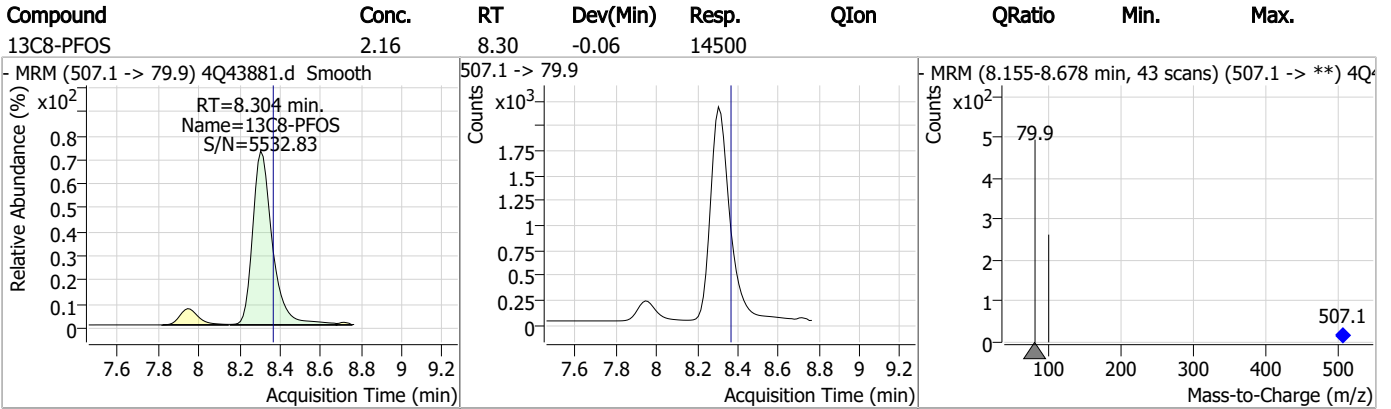
Perfluorinated Compounds by LC/MS/MS



7.6.1

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Perfluorinated Compounds by LC/MS/MS



7.6.1

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Manual Integration Approval Summary

Sample Number: S4Q634-RT Method: EPA DRAFT 1633
Lab FileID: 4Q43881.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 10:23 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.30	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43882.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 10:37:09 AM
 Sample Name : RT br/lr
 Vial : P1-B2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	119654	10.00 µg/L	-0.012
M5-PFPeA	4.350	268.3 -> 223.0	67757	5.00 µg/L	-0.012
M5-PFHxA	5.510	318.0 -> 273.0	49354	2.50 µg/L	-0.025
M4-PFHpA	6.455	367.1 -> 322.0	29875	2.50 µg/L	-0.012
M8-PFOA	7.111	421.1 -> 376.0	43497	2.50 µg/L	-0.012
M9-PFNA	7.658	472.1 -> 427.0	20317	1.25 µg/L	-0.012
M6-PFDA	8.166	519.1 -> 474.1	20346	1.25 µg/L	-0.012
M7-PFUnDA	8.635	570.0 -> 525.1	21156	1.25 µg/L	-0.012
M2-PFDoDA	9.081	615.1 -> 570.0	22468	1.25 µg/L	-0.025
M2-PFTeDA	9.886	715.2 -> 670.0	18596	1.25 µg/L	-0.012
M8-FOSA	9.758	506.1 -> 77.8	16919	2.50 µg/L	-0.012
M3-PFBS	5.414	302.1 -> 79.9	11687	2.50 µg/L	-0.012
M3-PFHxS	7.217	402.1 -> 79.9	7599	2.50 µg/L	-0.012
M8-PFOS	8.316	507.1 -> 79.9	10335	2.50 µg/L	-0.013
M2-4:2FTS	5.209	329.1 -> 80.9	1135	5.00 µg/L	-0.014
M2-6:2FTS	6.886	429.1 -> 80.9	1876	5.00 µg/L	-0.012
M2-8:2FTS	7.953	529.1 -> 80.9	3057	5.00 µg/L	-0.012
M3-MeFOSAA	8.224	573.2 -> 419.0	15580	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	30253	10.00 µg/L	-0.012
M5-EtFOSAA	8.433	589.2 -> 419.0	12098	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	80643	25.00 µg/L	0.000
M9-EtFOSE	11.244	639.2 -> 58.9	119872	25.00 µg/L	-0.012
M5-EtFOSA	11.348	531.1 -> 219.0	11379	2.50 µg/L	0.000
M3-MeFOSA	11.051	515.0 -> 219.0	10964	2.50 µg/L	-0.012
13C4-PFOS	8.317	502.8 -> 79.9	10254	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	63918	5.00 µg/L	-0.013
18O2-PFHxS	7.216	403.0 -> 83.9	5128	2.50 µg/L	-0.012
13C4-PFOA	7.112	417.1 -> 372.0	52496	2.50 µg/L	-0.012
13C2-PFDA	8.166	515.1 -> 470.1	18252	1.25 µg/L	-0.012
13C5-PFNA	7.658	468.0 -> 423.0	24666	1.25 µg/L	-0.026
13C2-PFHxA	5.511	315.1 -> 270.0	43755	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.209	329.1 -> 80.9	1135	5.44 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C2-6:2FTS	6.886	429.1 -> 80.9	1876	4.99 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C2-8:2FTS	7.953	529.1 -> 80.9	3057	5.21 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C2-PFDoDA	9.081	615.1 -> 570.0	22468	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFTeDA	9.886	715.2 -> 670.0	18596	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C3-PFBS	5.414	302.1 -> 79.9	11687	2.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C3-PFHxS	7.217	402.1 -> 79.9	7599	2.39 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 = 95.6%	
13C4-PFBA	2.911	216.8 -> 171.9	119654	9.95 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.455	367.1 -> 322.0	29875	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C5-PFHxA	5.510	318.0 -> 273.0	49354	2.56 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C5-PFPeA	4.350	268.3 -> 223.0	67757	5.03 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C6-PFDA	8.166	519.1 -> 474.1	20346	1.30 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C7-PFUnDA	8.635	570.0 -> 525.1	21156	1.30 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C8-FOSA	9.758	506.1 -> 77.8	16919	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C8-PFOA	7.111	421.1 -> 376.0	43497	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOS	8.316	507.1 -> 79.9	10335	2.68 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C9-PFNA	7.658	472.1 -> 427.0	20317	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
d3-MeFOSAA	8.224	573.2 -> 419.0	15580	6.02 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 120.4%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	30253	10.51 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
d3-MeFOSA	11.051	515.0 -> 219.0	10964	2.73 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.1%	
d5-EtFOSAA	8.433	589.2 -> 419.0	12098	5.68 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.5%	
d7-MeFOSE	10.947	623.2 -> 58.9	80643	25.28 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d9-EtFOSE	11.244	639.2 -> 58.9	119872	26.54 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.1%	
d5-EtFOSA	11.348	531.1 -> 219.0	11379	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.5%	
Target Compounds					QValue
4:2FTS	5.210	327.1 -> 307.0	91008	49.85 µg/L	93
		327.1 -> 80.9	38405		
6:2FTS	6.886	427.1 -> 407.0	96692	53.36 µg/L	97
		427.1 -> 80.9	39102		
8:2FTS	7.954	527.1 -> 507.0	91390	53.63 µg/L	95
		527.1 -> 80.8	35708		
EtFOSAA	8.434	584.2 -> 419.1	29724	12.79 µg/L	m 97
		584.2 -> 526.0	14584		
FOSA	9.761	498.1 -> 77.9	215824	30.44 µg/L	m 99
		498.1 -> 478.0	6518		
MeFOSAA	8.225	570.1 -> 419.0	32953	12.14 µg/L	m 94
		570.1 -> 483.0	6799		
PFBA	2.907	212.8 -> 168.9	172708	53.90 µg/L	100
PFBS	5.415	298.7 -> 79.9	57018	11.89 µg/L	97
		298.7 -> 98.8	22261		
PFDA	8.166	512.9 -> 469.0	205207	13.29 µg/L	97
		512.9 -> 219.0	41256		
PFDoDA	9.094	613.1 -> 569.0	229603	12.74 µg/L	100
		613.1 -> 319.0	33205		
PFDS	9.244	599.0 -> 79.9	32797	12.81 µg/L	93

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	16772			
PFHpA	6.455	363.1 -> 319.0	251318	13.31	µg/L	98
		363.1 -> 169.0	43064			
PFHpS	7.797	449.0 -> 79.9	47137	12.66	µg/L	99
		449.0 -> 98.9	24887			
PFHxA	5.513	313.0 -> 269.0	252397	13.05	µg/L	99
		313.0 -> 118.9	7767			
PFHxS	7.218	398.7 -> 79.9	37325	11.98	µg/L	m 97
		398.7 -> 98.9	19559			
PFNA	7.659	463.0 -> 419.0	399781	26.55	µg/L	m 96
		463.0 -> 219.0	107916			
PFNS	8.799	548.8 -> 79.9	29412	13.04	µg/L	98
		548.8 -> 98.9	14968			
PFOA	7.113	413.0 -> 369.0	661230	26.35	µg/L	m 93
		413.0 -> 169.0	150084			
PFOS	8.318	498.9 -> 79.9	60984	12.06	µg/L	m 93
		498.9 -> 98.8	32611			
PFPeA	4.352	263.0 -> 219.0	435219	26.70	µg/L	100
PFPeS	6.482	349.1 -> 79.9	34058	12.75	µg/L	96
		349.1 -> 98.9	14905			
PFTeDA	9.887	713.1 -> 669.0	247298	13.59	µg/L	100
		713.1 -> 168.9	20837			
PFTrDA	9.503	663.0 -> 619.0	322406	13.38	µg/L	97
		663.0 -> 168.9	31668			
PFUnDA	8.635	563.1 -> 519.0	186826	13.00	µg/L	96
		563.1 -> 269.1	36943			
11Cl-PF3OUdS	9.556	630.9 -> 450.9	263768	24.24	µg/L	96
		632.9 -> 452.9	82123			
9Cl-PF3ONS	8.663	530.8 -> 351.0	338021	24.40	µg/L	99
		532.8 -> 353.0	101547			
ADONA	6.718	376.9 -> 250.9	728297	23.94	µg/L	99
		376.9 -> 84.8	194611			
HFPO-DA	5.878	284.9 -> 168.9	76483	26.46	µg/L	99
		284.9 -> 184.9	9054			
3:3FTCA	3.823	241.0 -> 177.0	45775	63.82	µg/L	99
		241.0 -> 117.0	4083			
5:3FTCA	6.180	341.0 -> 237.1	841708	320.79	µg/L	100
		341.0 -> 217.0	575949			
7:3FTCA	7.636	441.0 -> 316.9	430006	315.39	µg/L	96
		441.0 -> 336.9	997461			
EtFOSA	11.350	526.0 -> 219.0	225204	47.24	µg/L	m 99
		526.0 -> 169.0	309822			
EtFOSE	11.270	630.0 -> 58.9	402929	86.83	µg/L	100
MeFOSA	11.053	511.9 -> 219.0	191225	46.30	µg/L	m 98
		511.9 -> 169.0	278854			
MeFOSE	10.960	616.1 -> 58.9	287291	86.73	µg/L	m 100
PFDoS	10.027	699.1 -> 79.9	29285	12.82	µg/L	98
		699.1 -> 98.8	16233			
NFDHA	5.403	295.0 -> 201.0	37035	26.82	µg/L	95
		295.0 -> 84.9	9242			
PFMBA	4.753	279.0 -> 85.1	239209	26.29	µg/L	100
PFMPA	3.515	229.0 -> 84.9	222443	26.10	µg/L	100
PFEESA	5.946	314.8 -> 134.9	340737	23.28	µg/L	100
		314.8 -> 82.9	12053			

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

7.6.2
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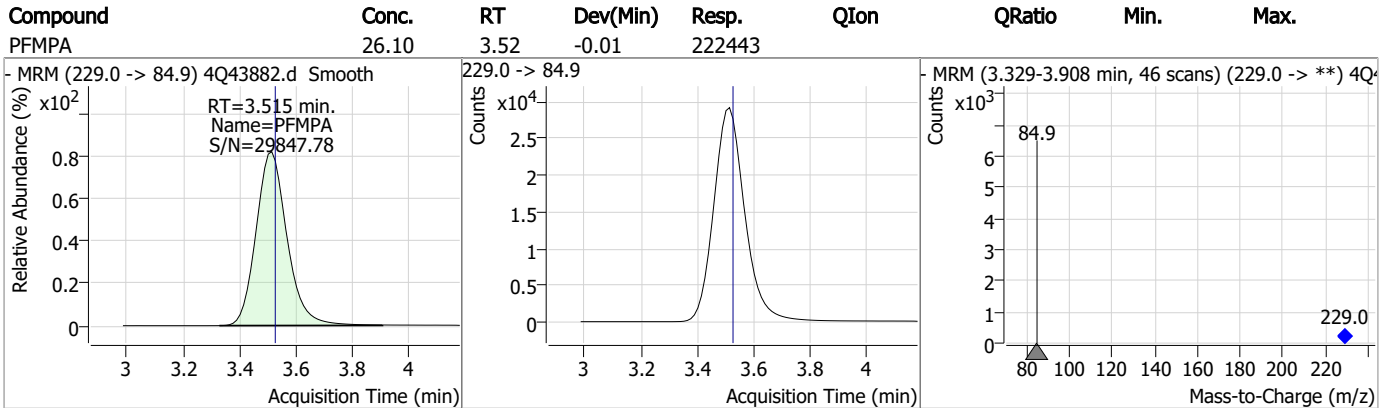
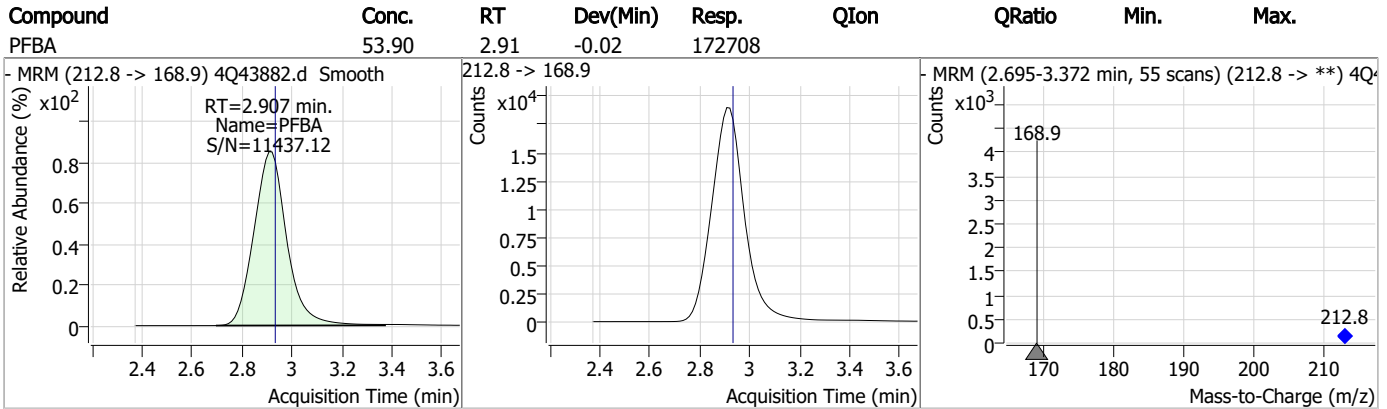
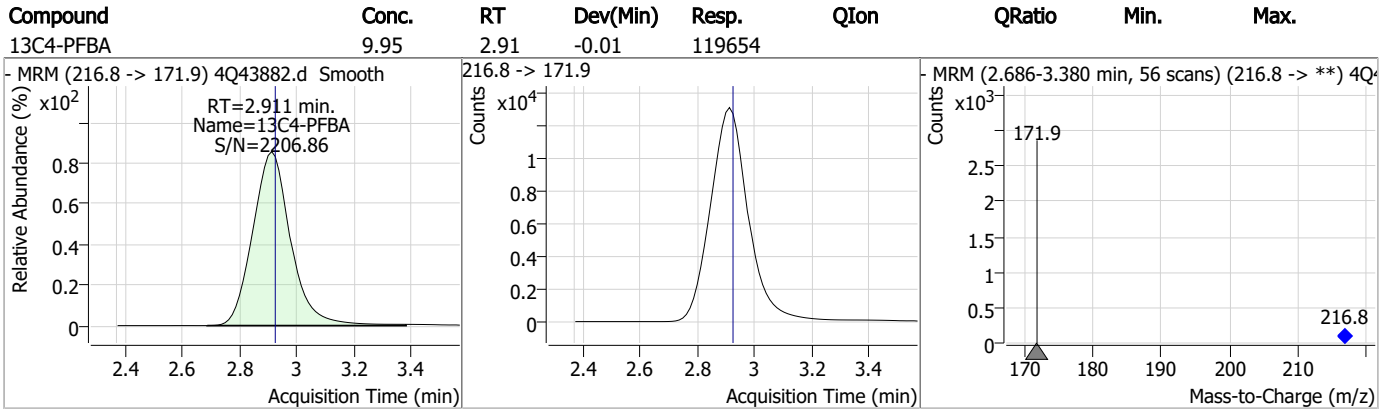
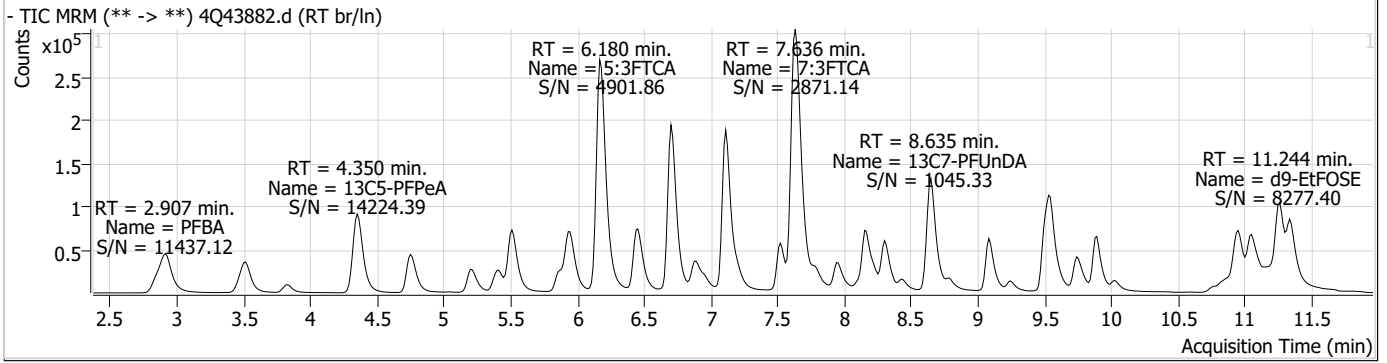
Perfluorinated Compounds by LC/MS/MS

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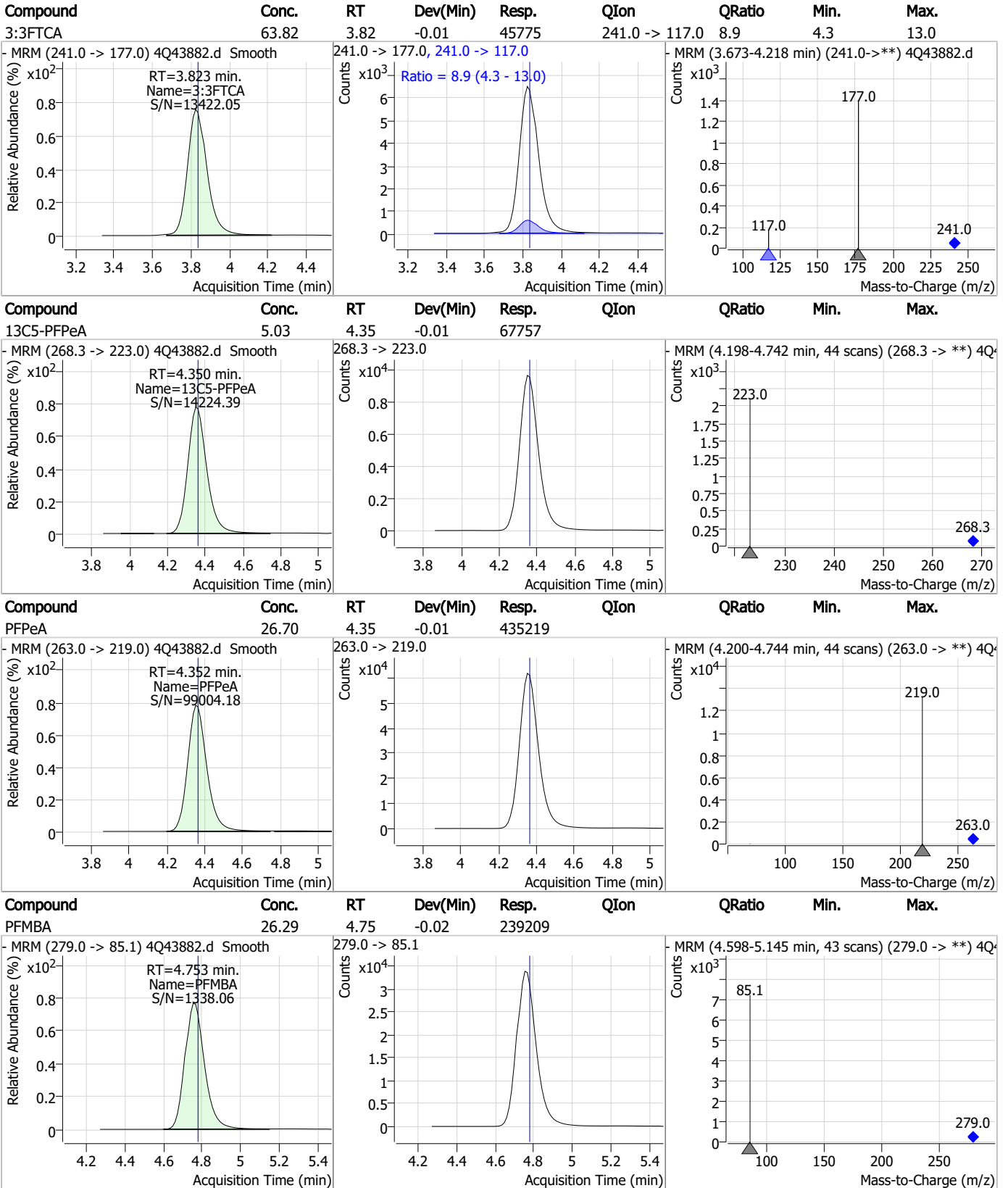
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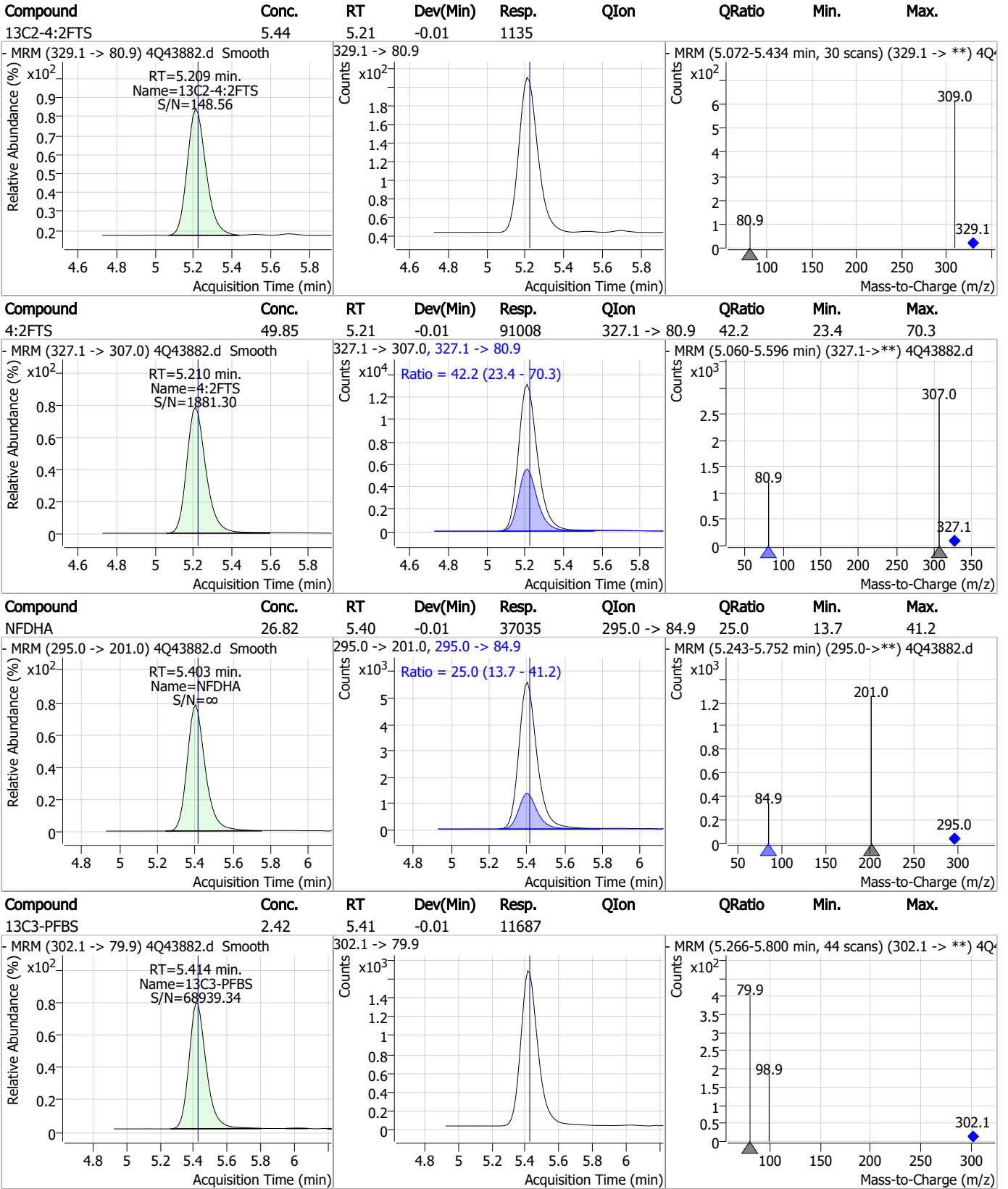
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

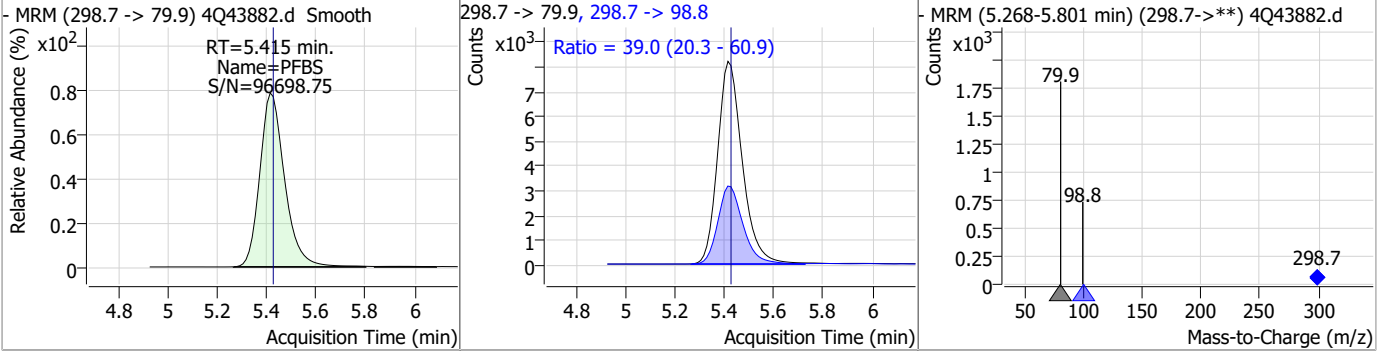


Perfluorinated Compounds by LC/MS/MS

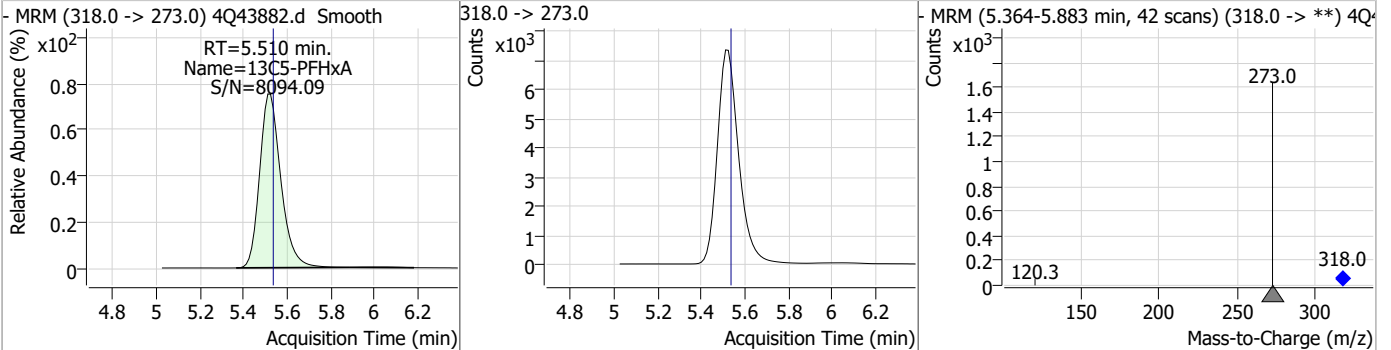


Perfluorinated Compounds by LC/MS/MS

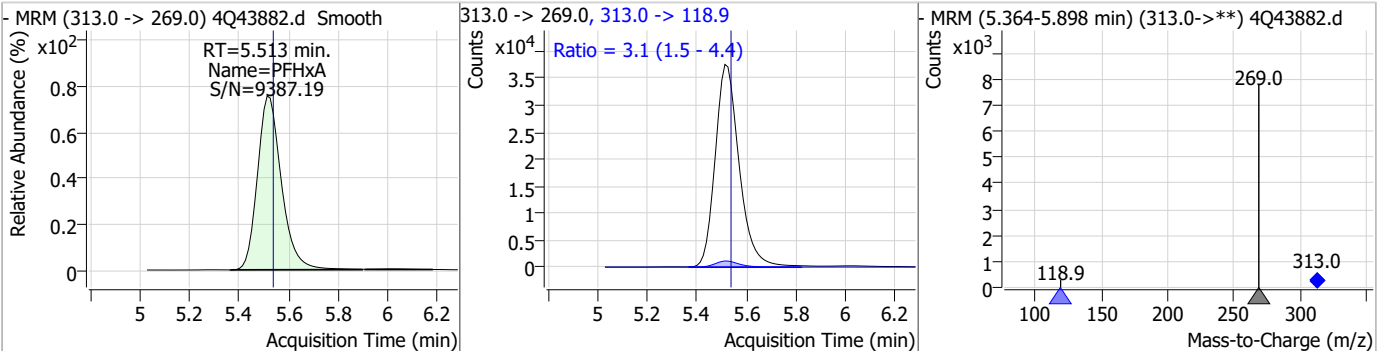
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	11.89	5.42	-0.01	57018	298.7 -> 98.8	39.0	20.3	60.9



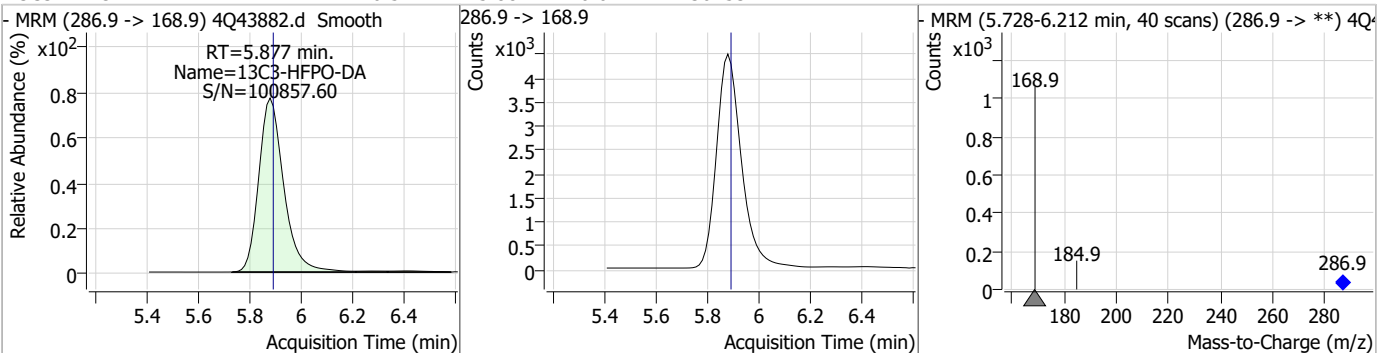
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.56	5.51	-0.02	49354				



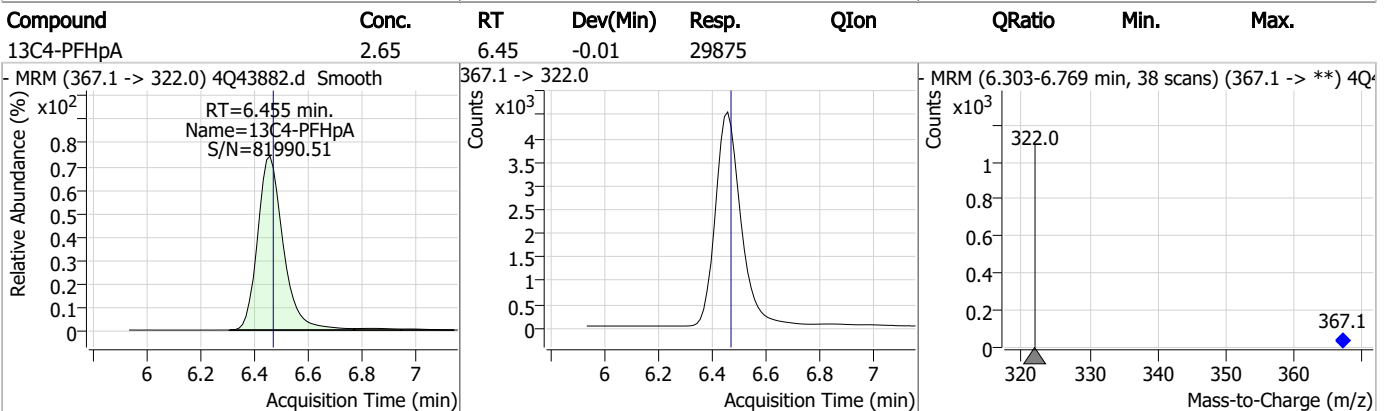
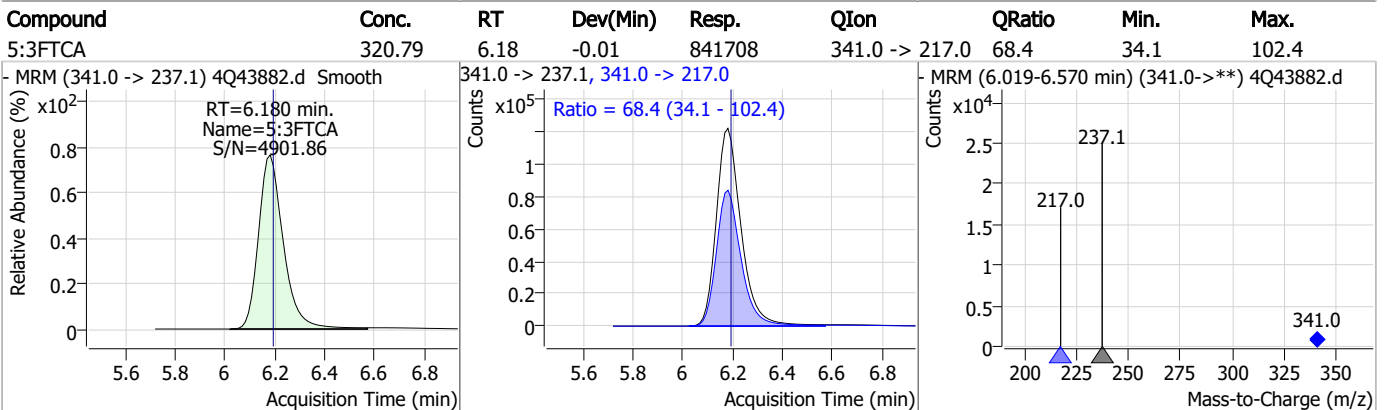
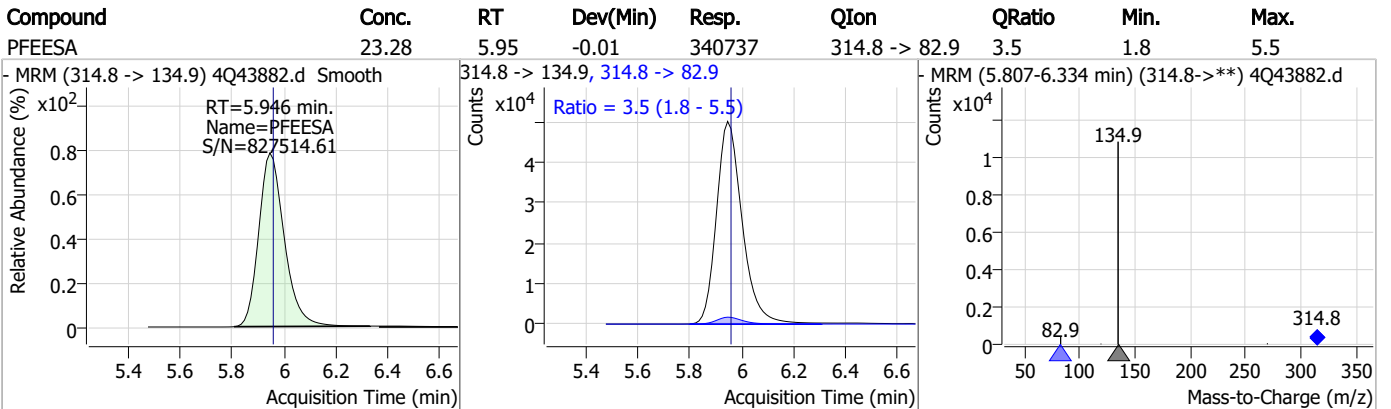
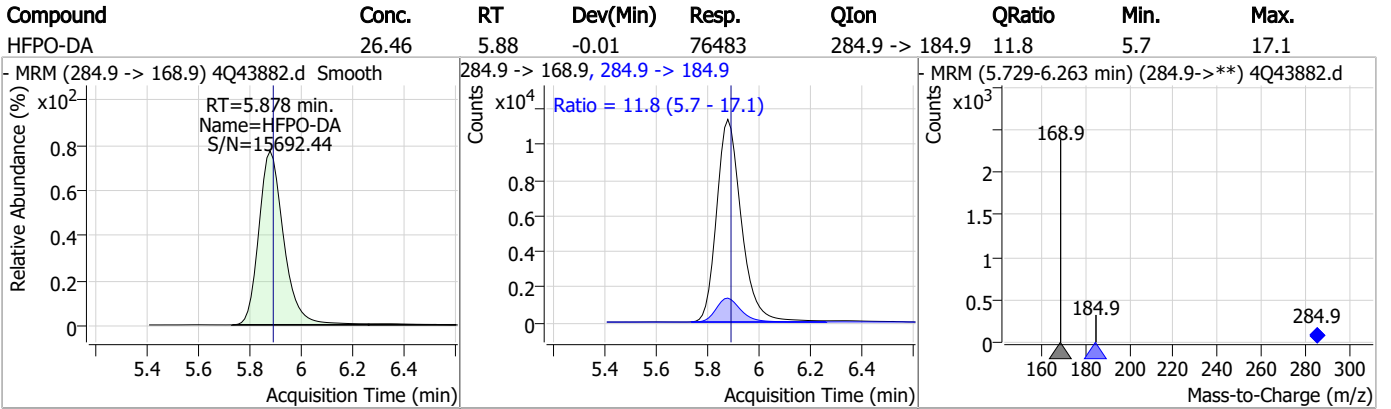
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	13.05	5.51	-0.02	252397	313.0 -> 118.9	3.1	1.5	4.4



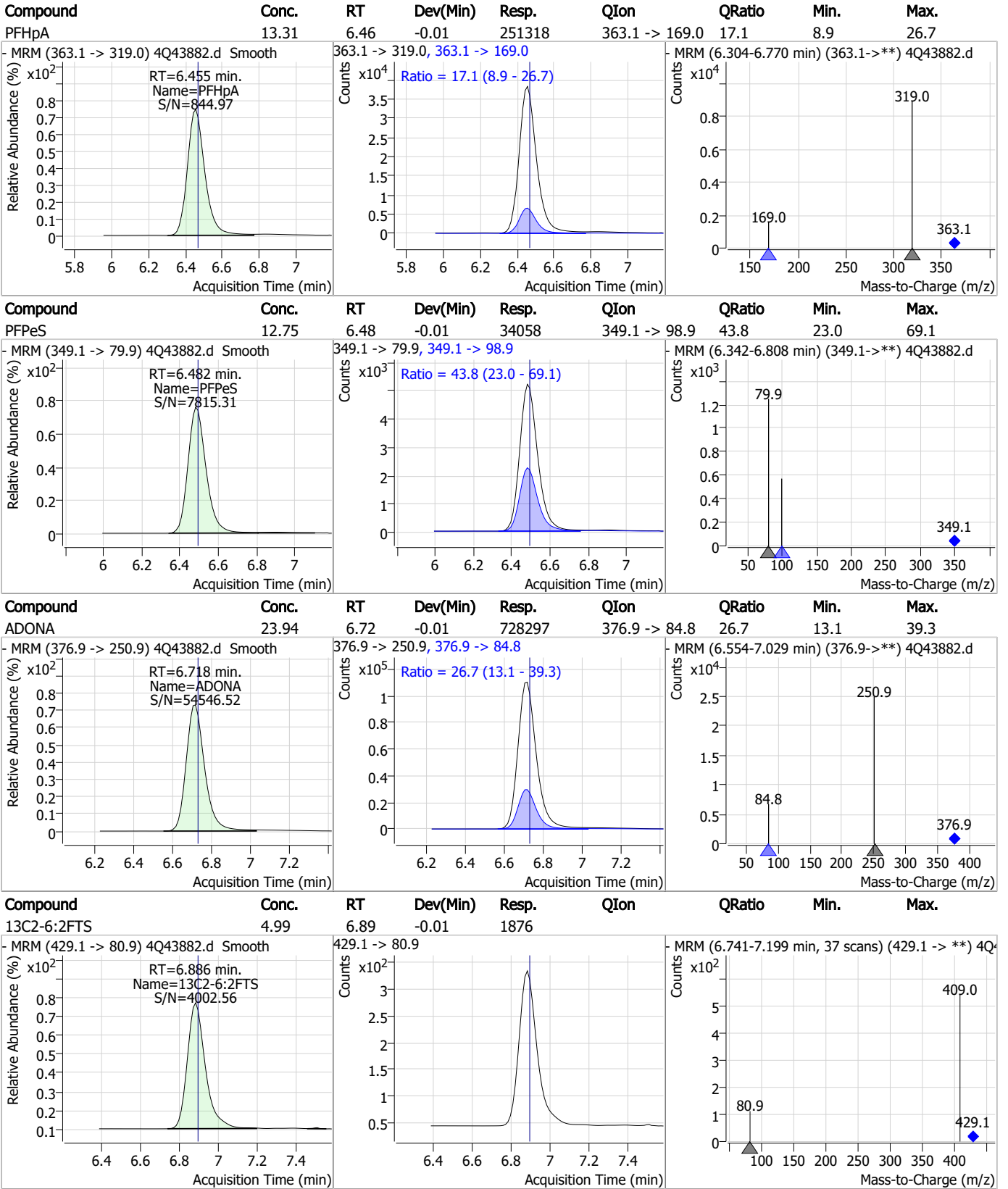
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.51	5.88	-0.01	30253				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

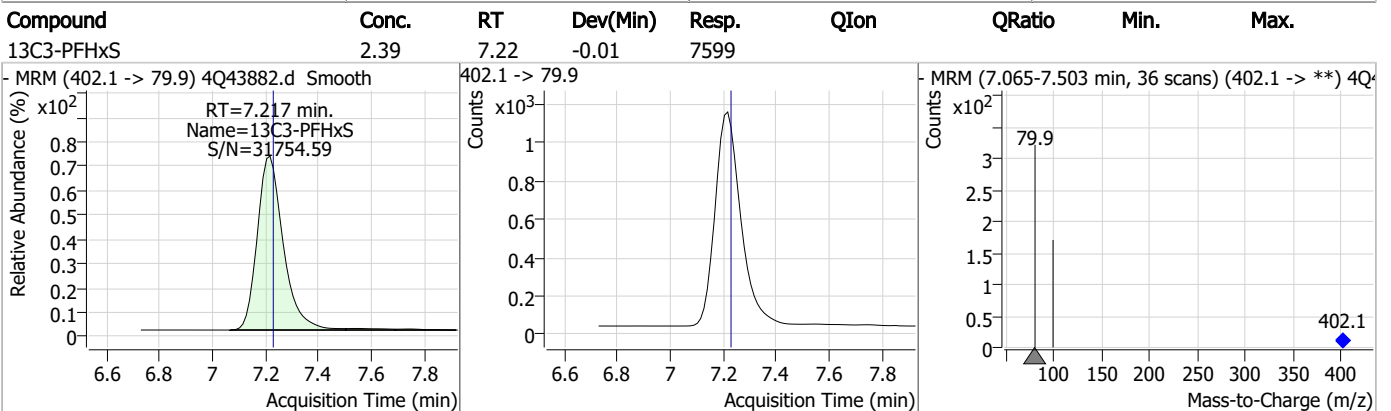
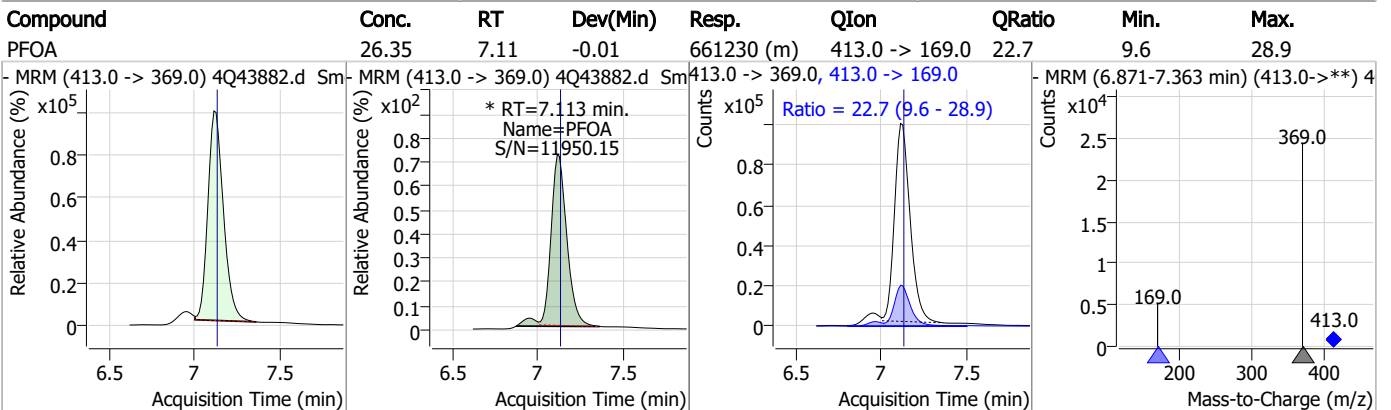
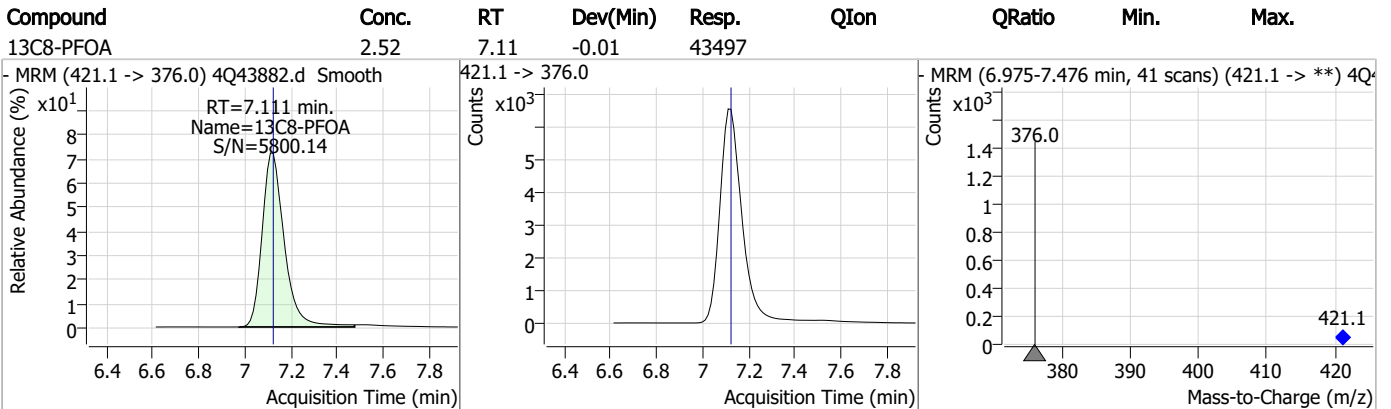
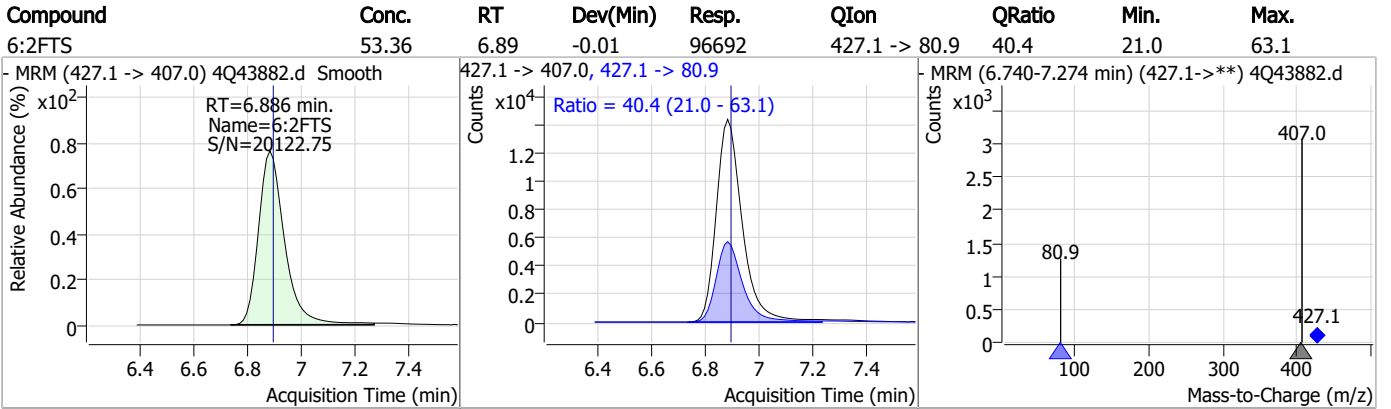


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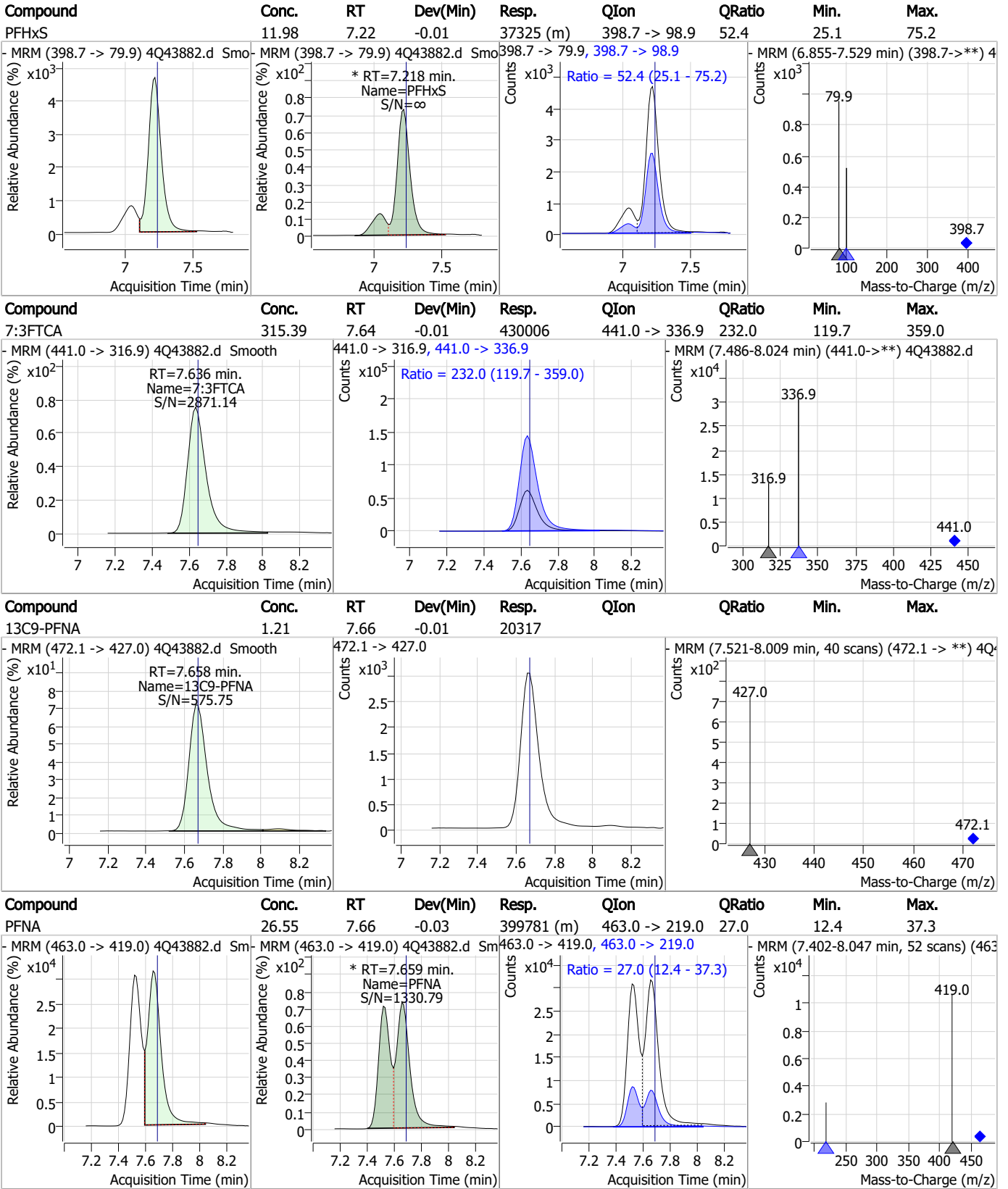
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Perfluorinated Compounds by LC/MS/MS



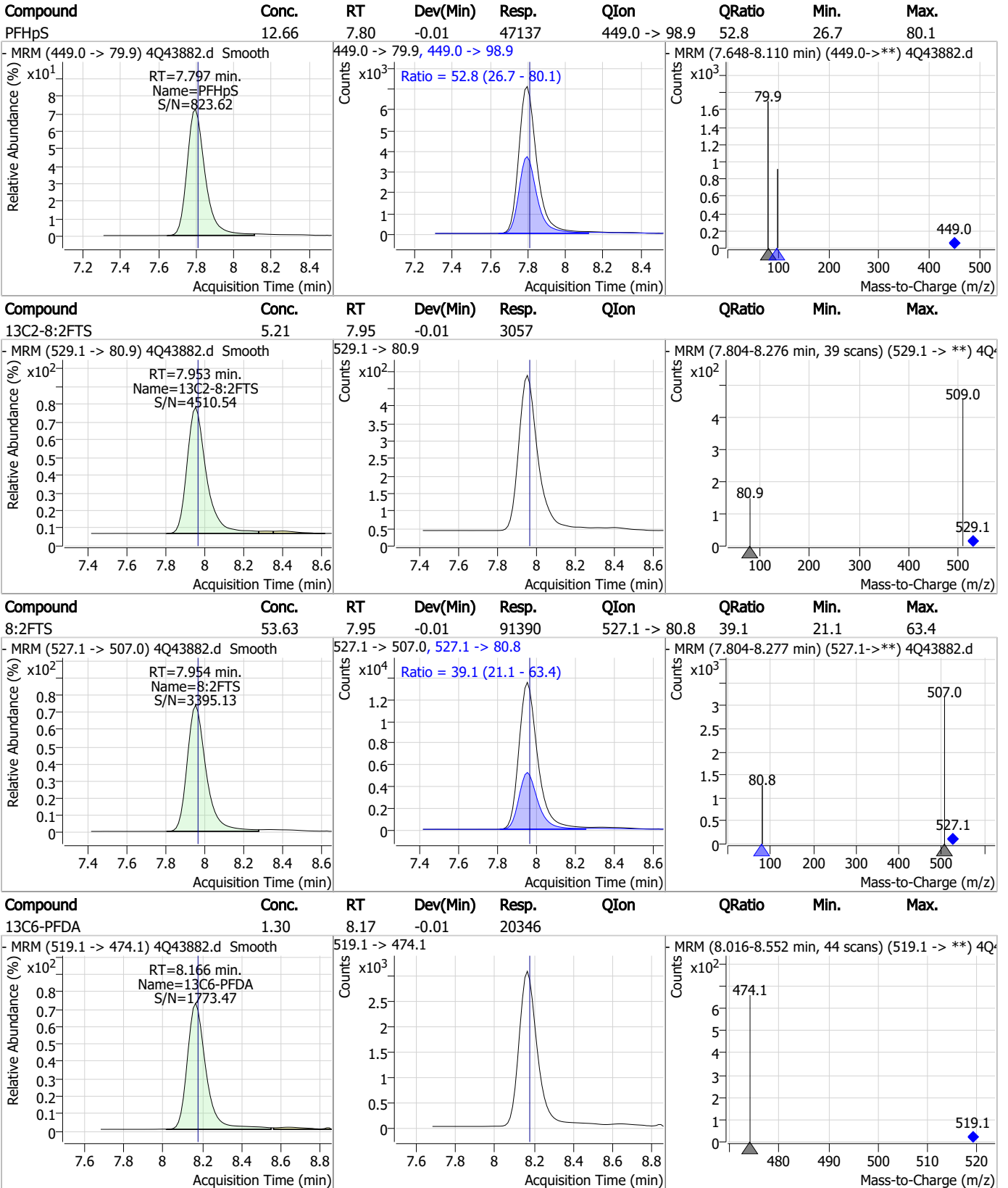
Perfluorinated Compounds by LC/MS/MS



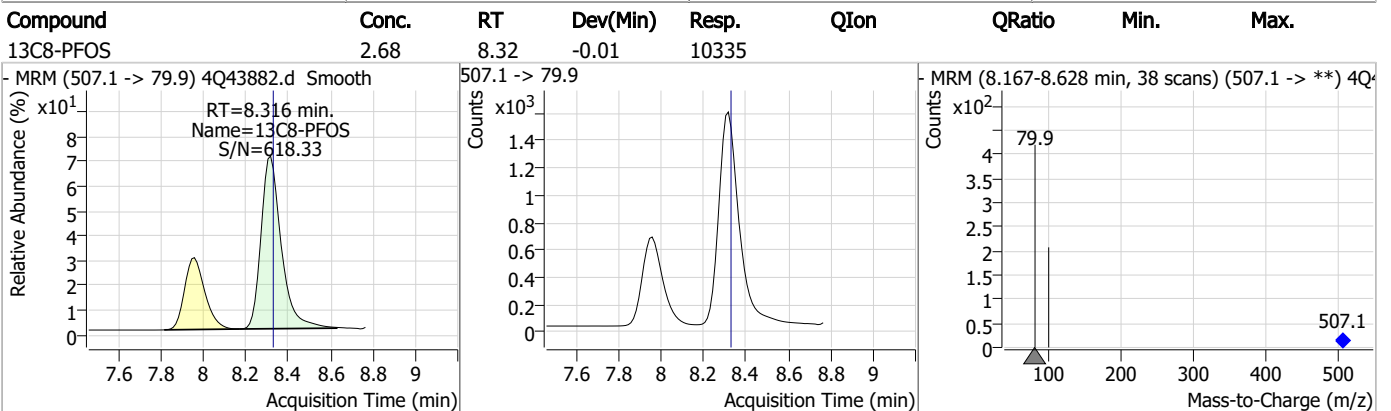
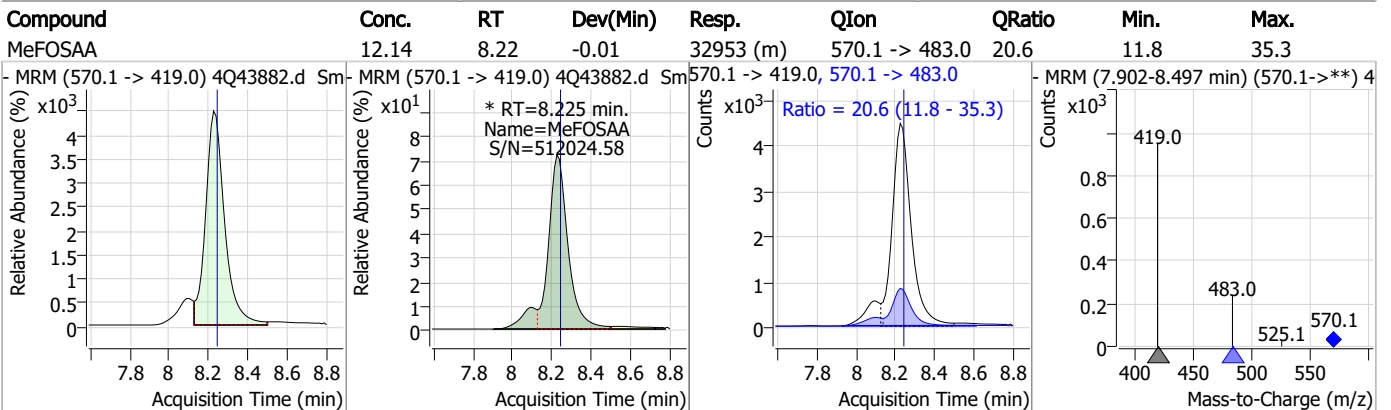
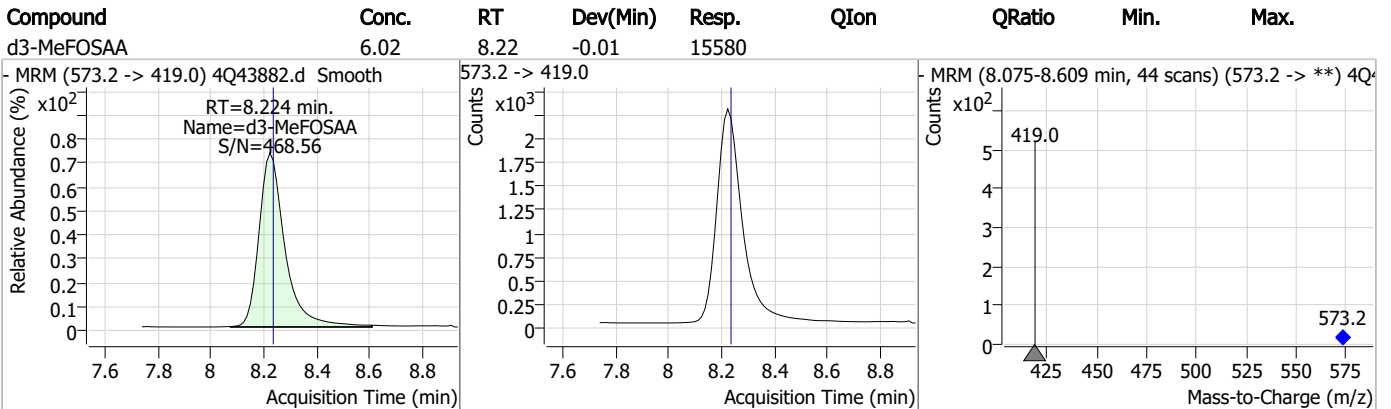
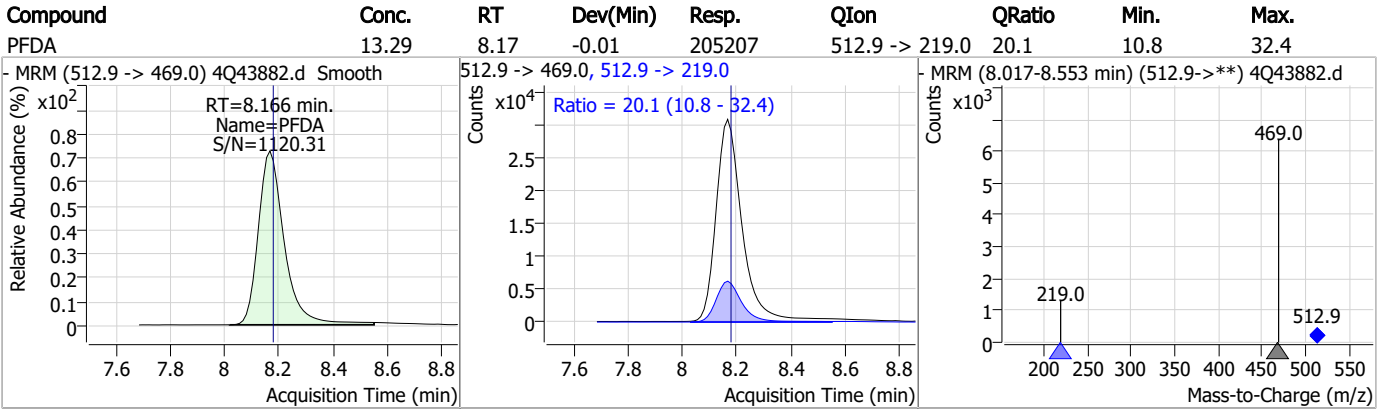
7.6.2

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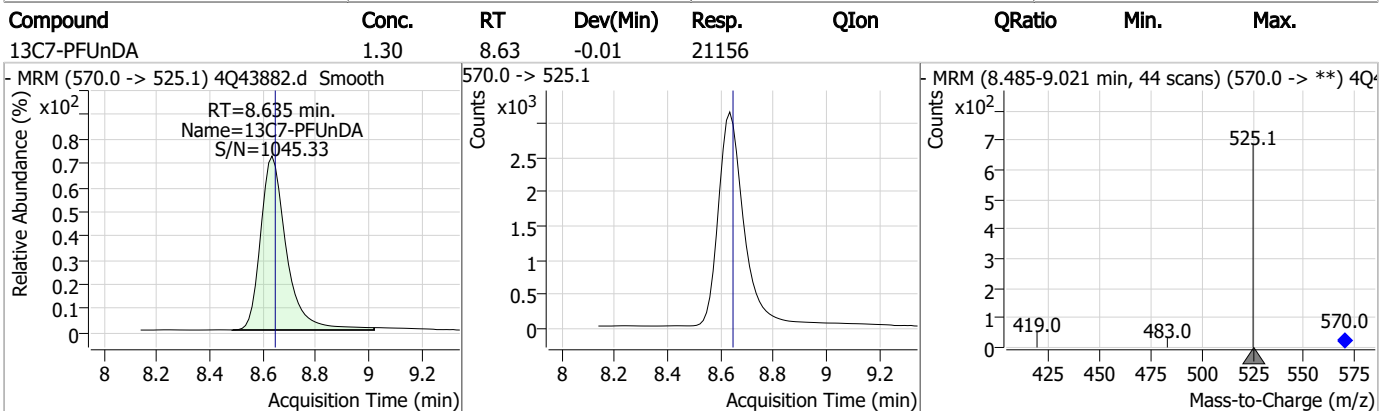
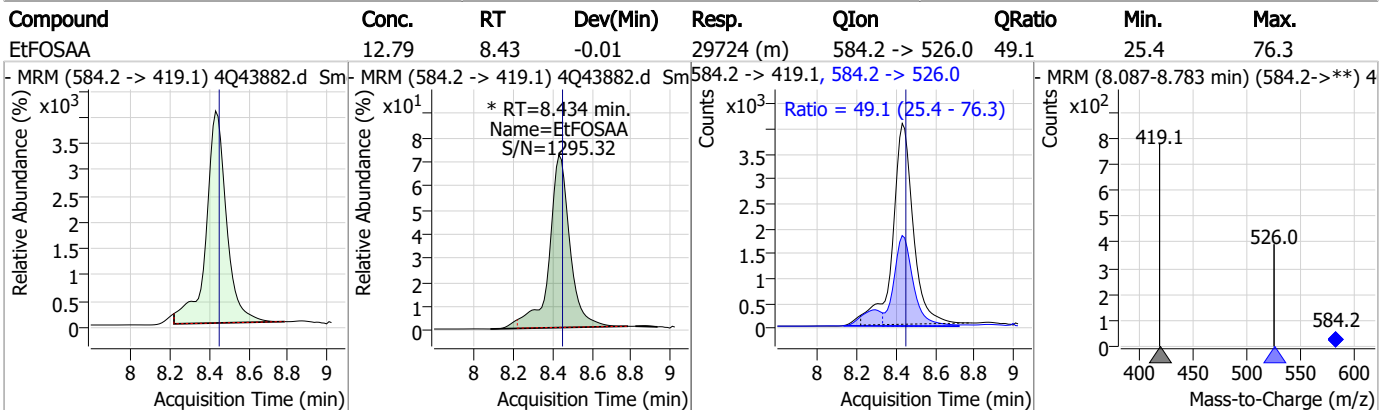
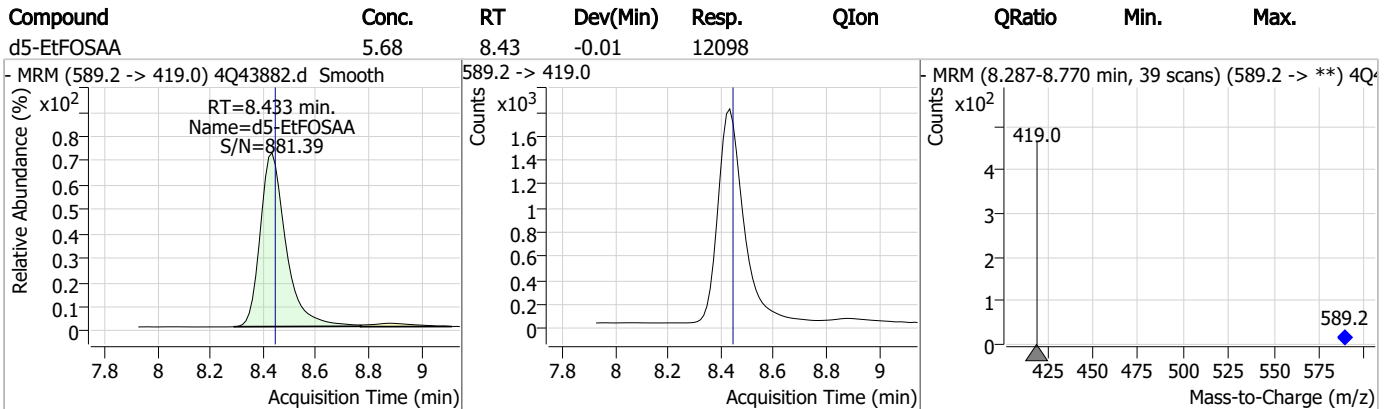
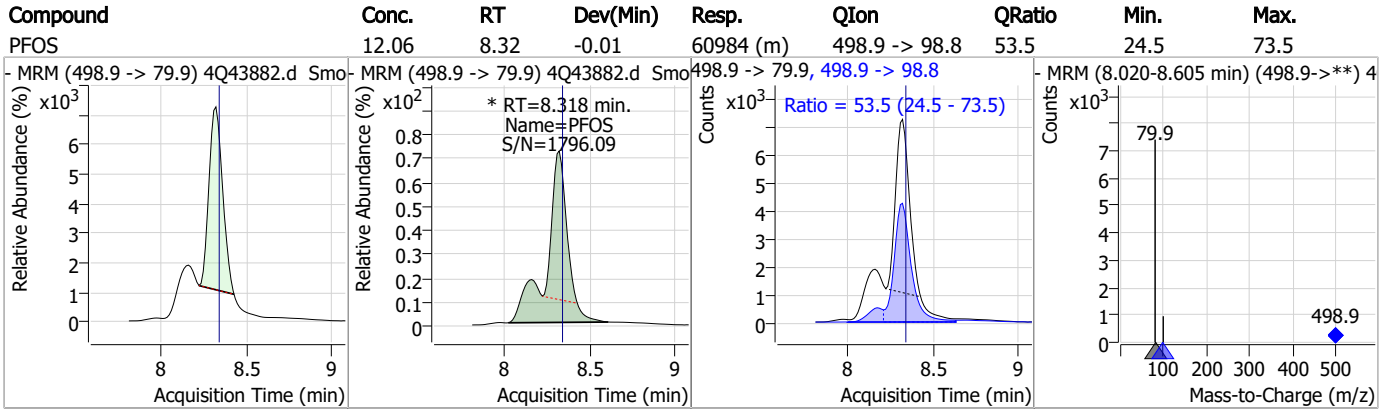
Perfluorinated Compounds by LC/MS/MS



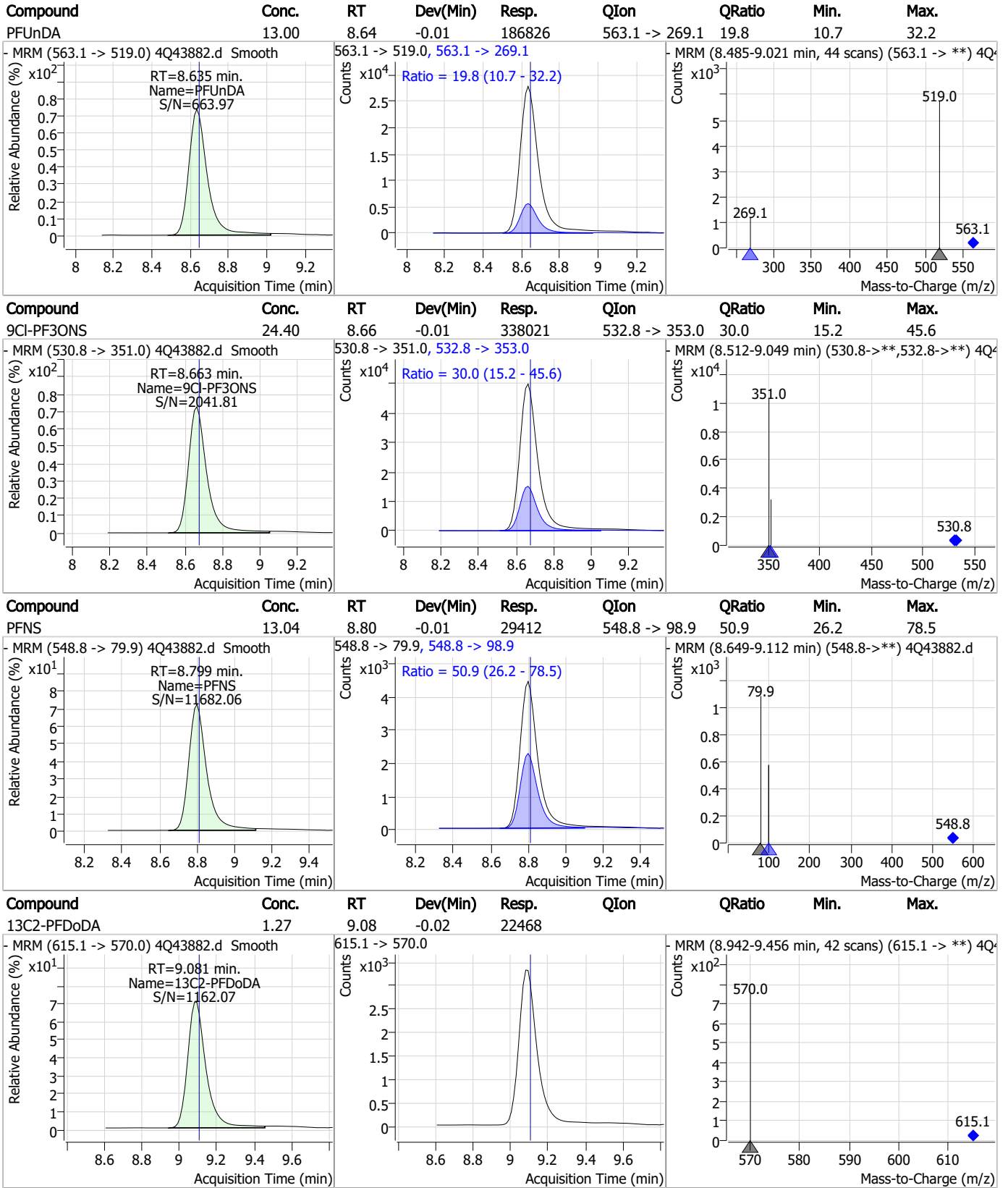
Perfluorinated Compounds by LC/MS/MS



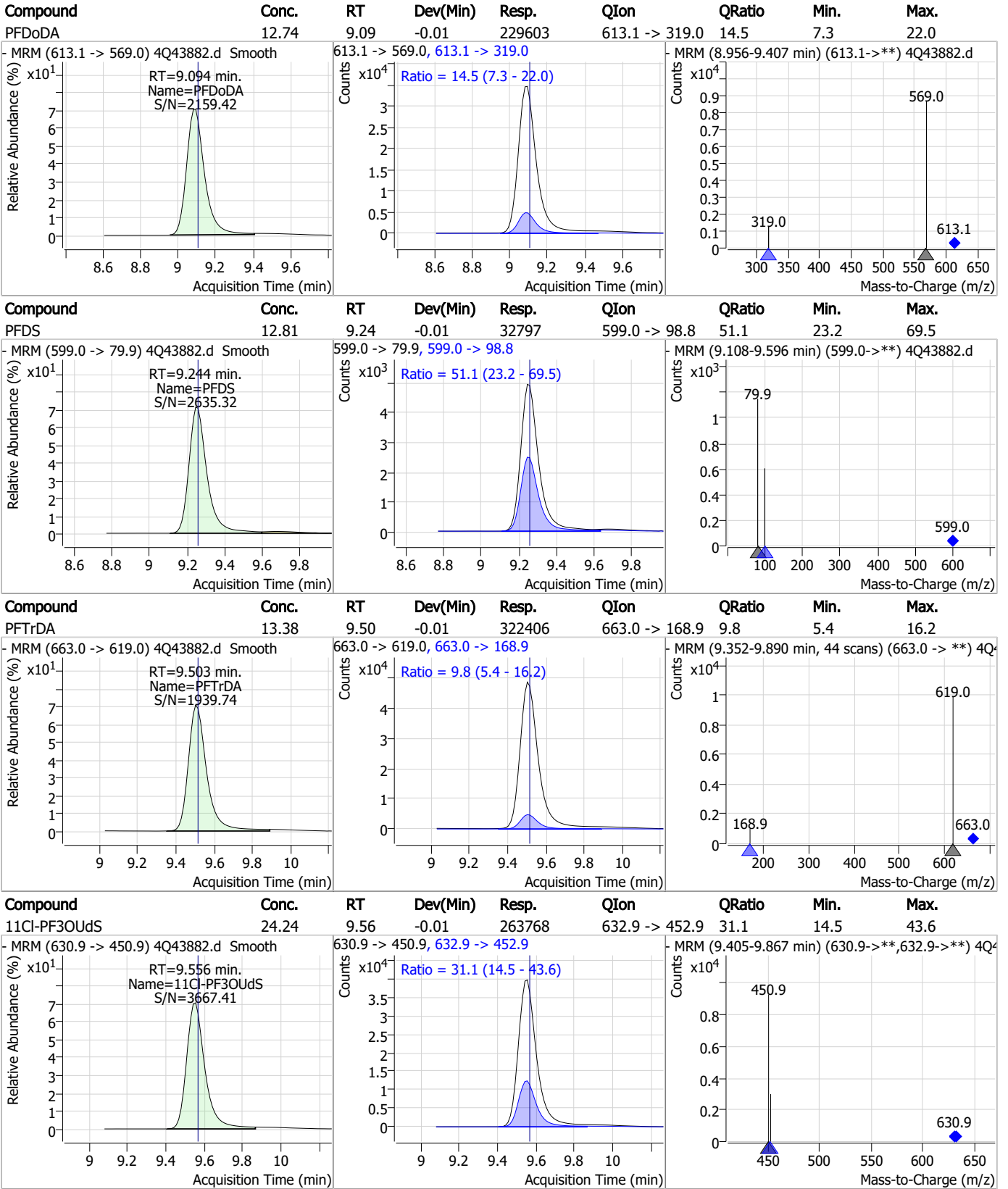
Perfluorinated Compounds by LC/MS/MS



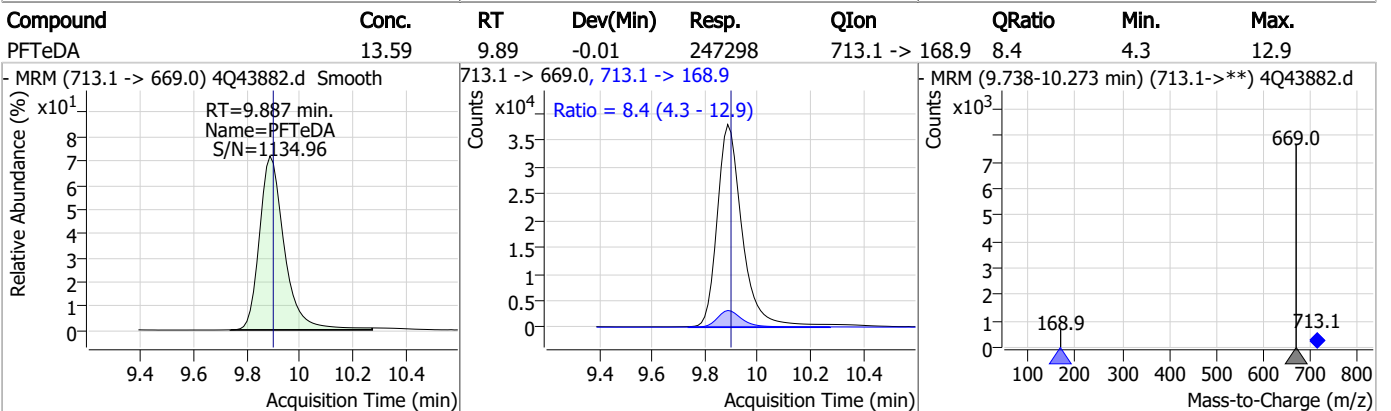
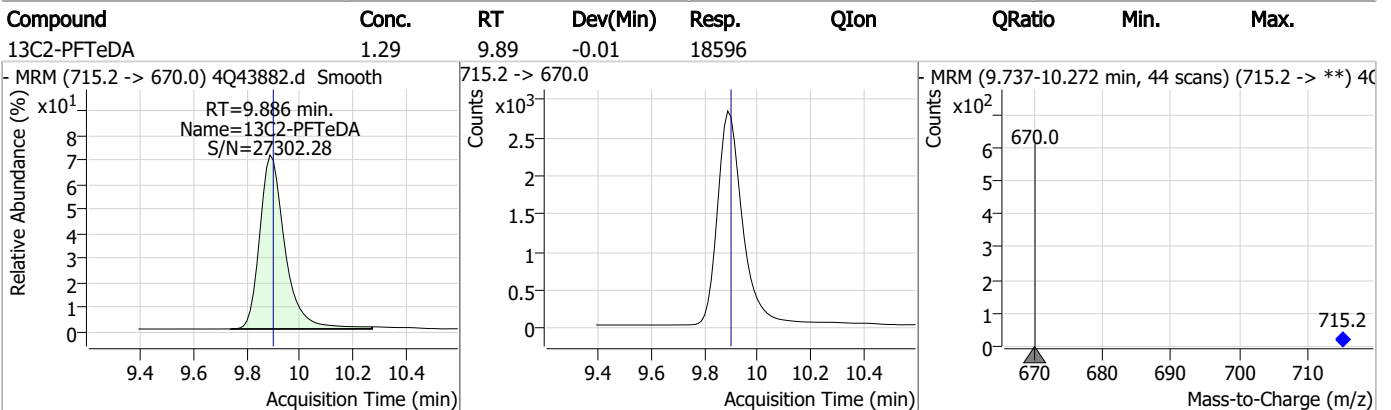
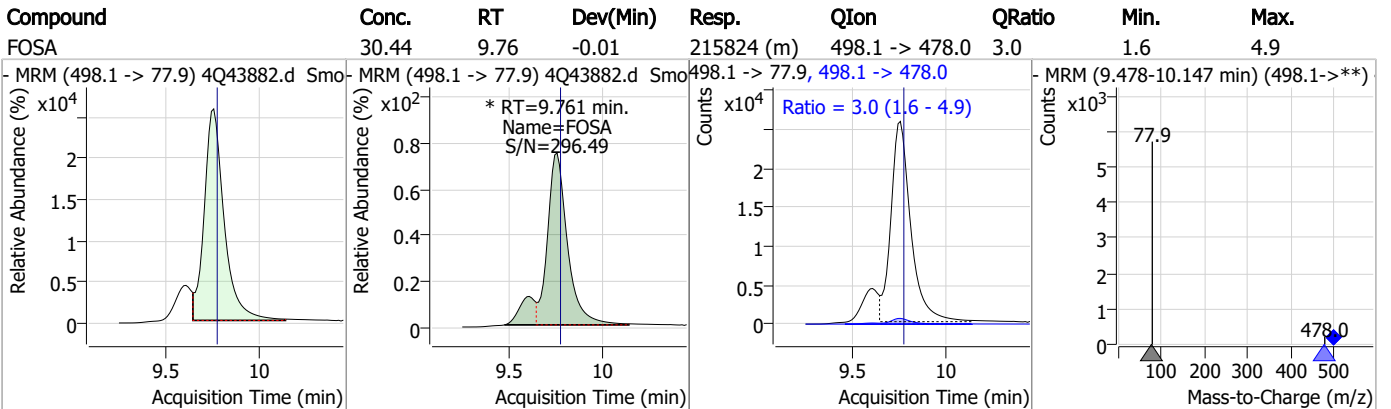
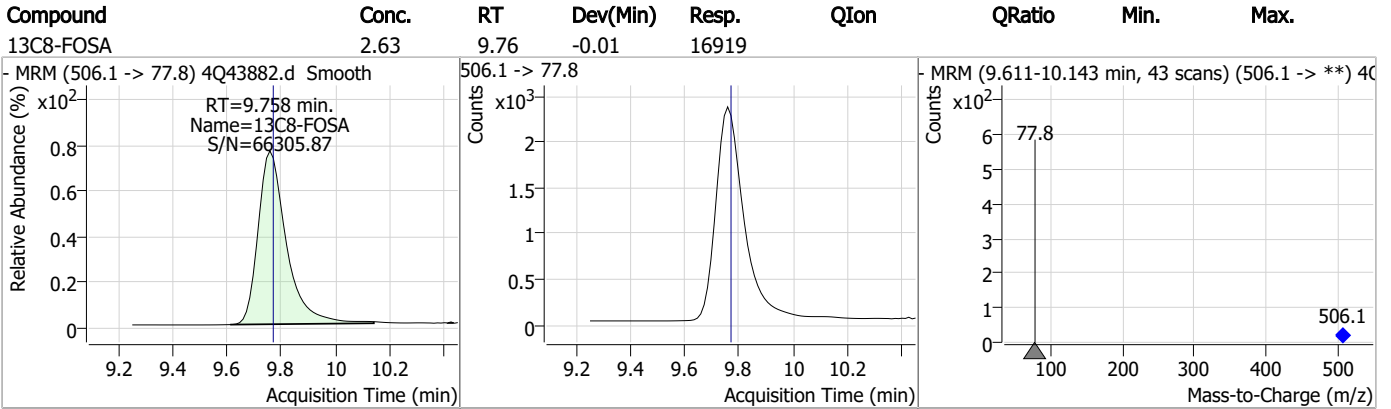
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

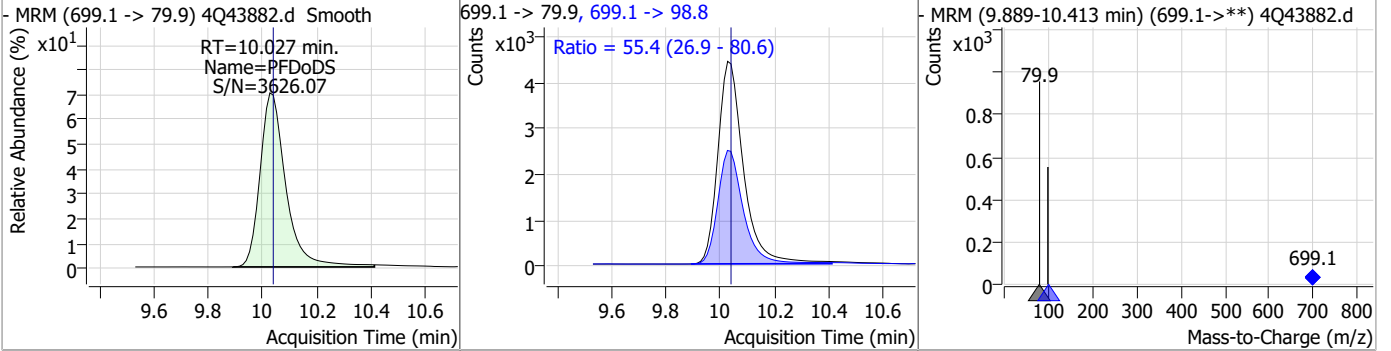


Perfluorinated Compounds by LC/MS/MS

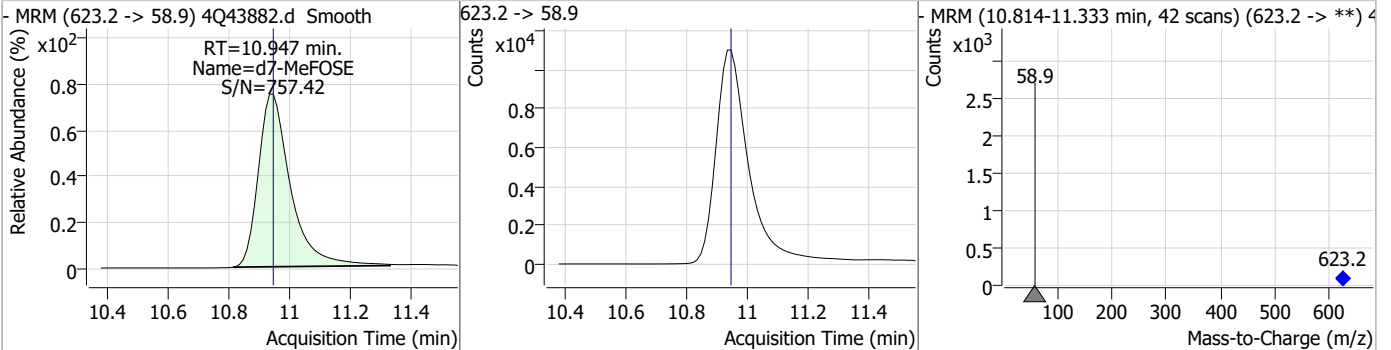


Perfluorinated Compounds by LC/MS/MS

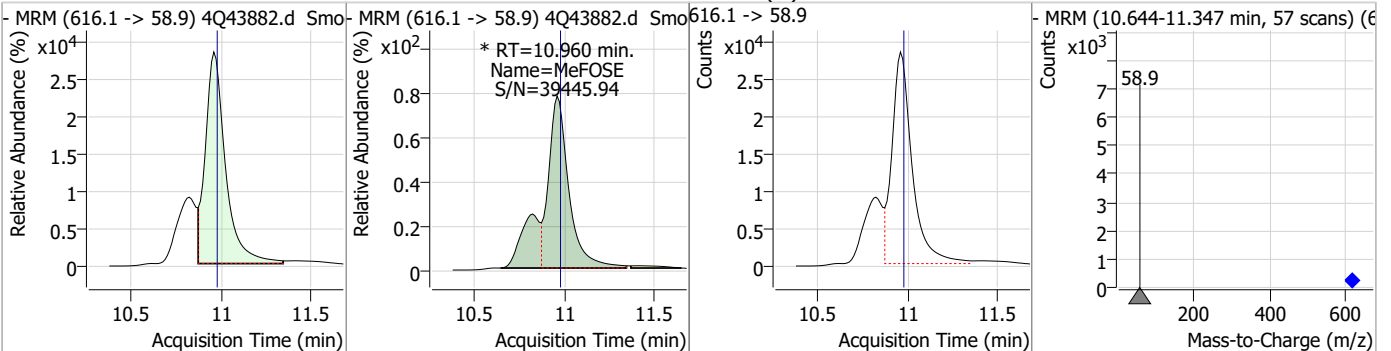
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	12.82	10.03	-0.01	29285	699.1 -> 98.8	55.4	26.9	80.6



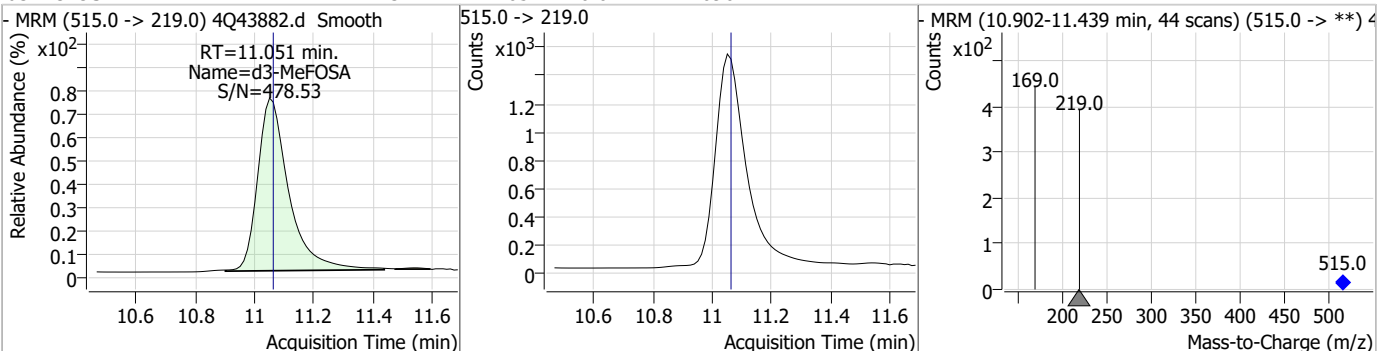
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.28	10.95	0.00	80643				



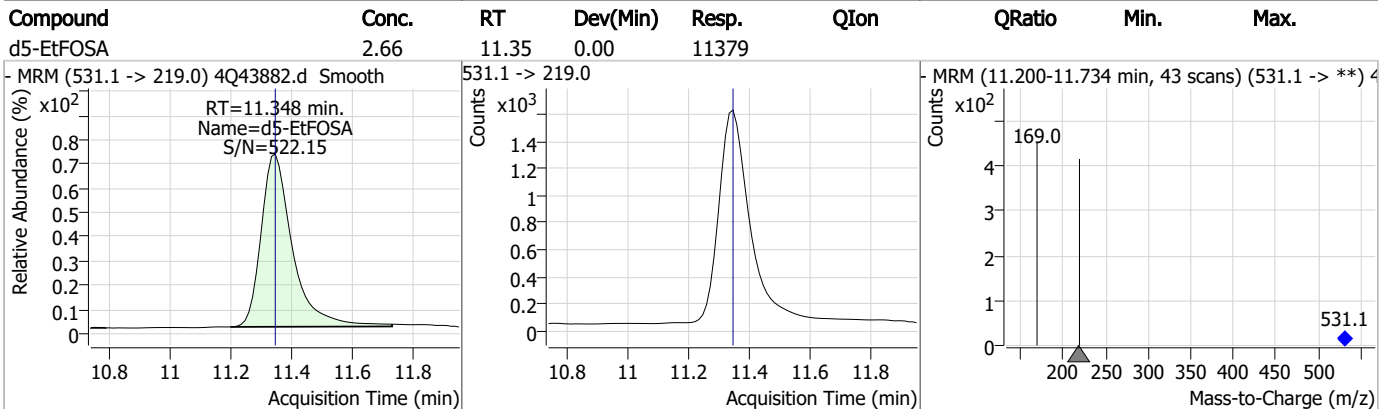
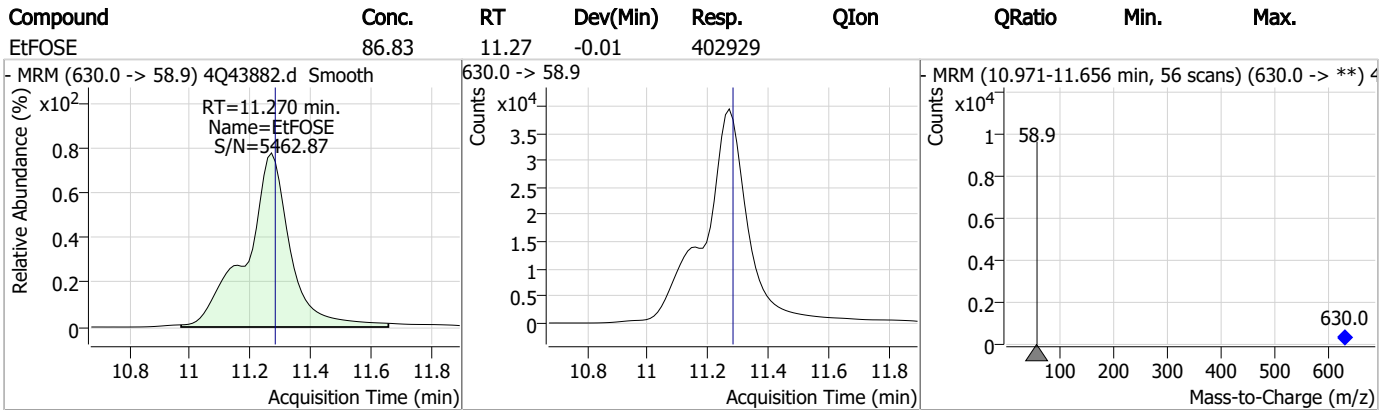
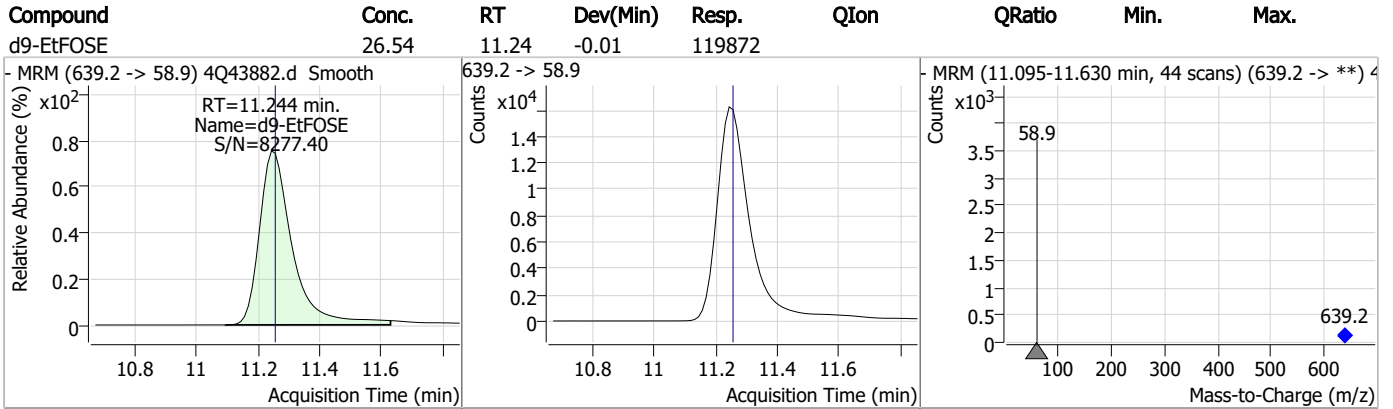
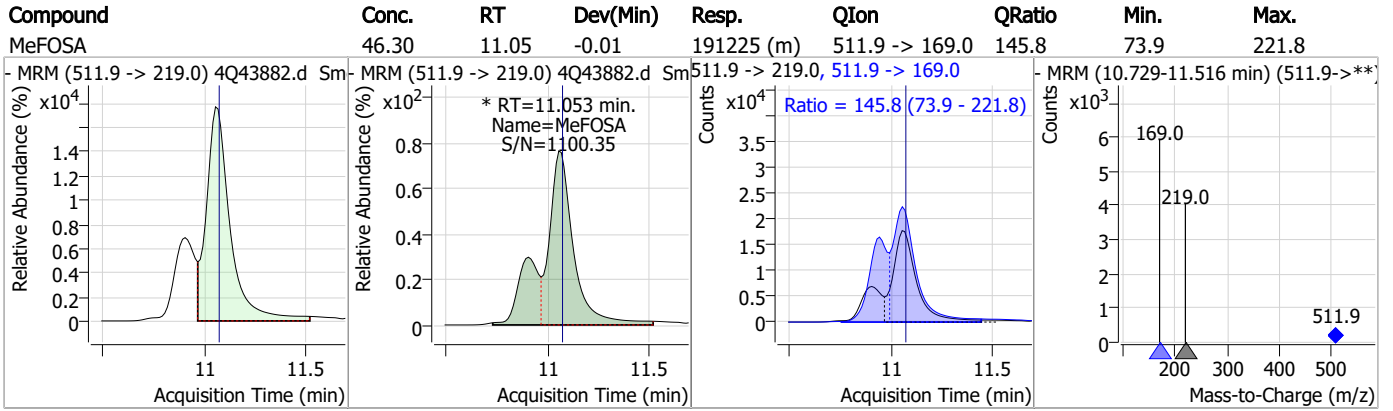
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	86.73	10.96	-0.01	287291 (m)				



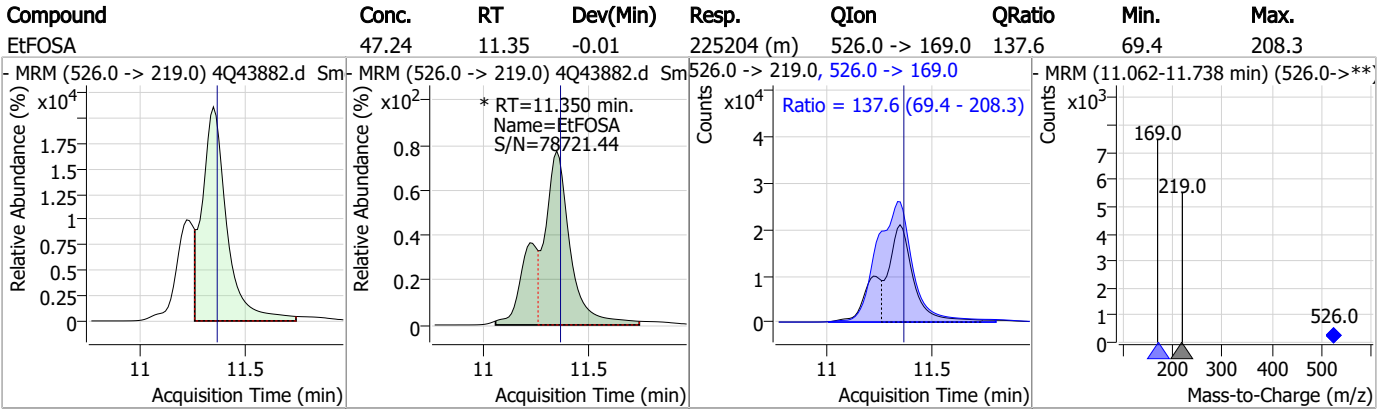
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.73	11.05	-0.01	10964				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S4Q634-RT
Lab FileID: 4Q43882.D
Injection Time: 05/03/23 10:37

Method: EPA DRAFT 1633
Analyst approved: 05/04/23 11:23 Natasha Gumtie
Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.11	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.22	Split peak
Perfluorononanoic acid	375-95-1		7.66	Split peak
MeFOSAA	2355-31-9		8.22	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.32	Split peak
EtFOSAA	2991-50-6		8.43	Split peak
PFOSA	754-91-6		9.76	Split peak
MeFOSE	24448-09-7		10.96	Split peak
MeFOSA	31506-32-8		11.05	Split peak
EtFOSA	4151-50-2		11.35	Split peak

7.6.2.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Mike Eger
 05/09/23 16:01

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44076.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 1:19:21 PM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q638 TDCA.batch.bin
 Sample Information : OP96548,S4Q638,500,,,5.0,1,water

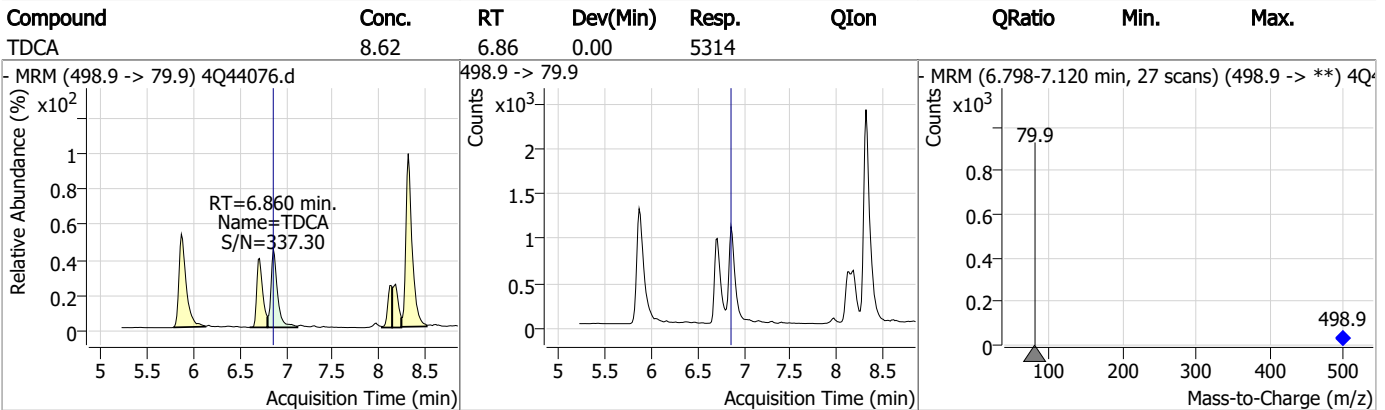
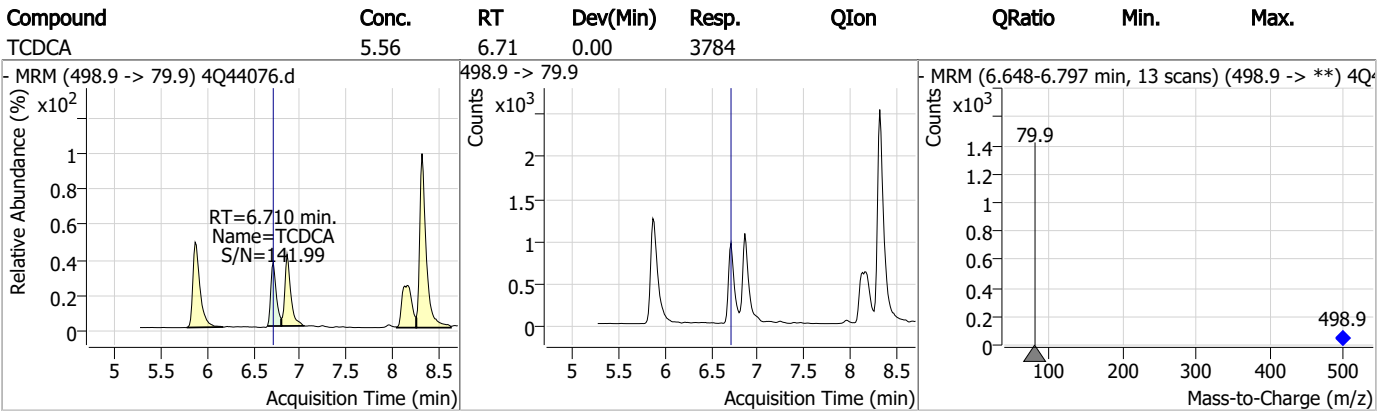
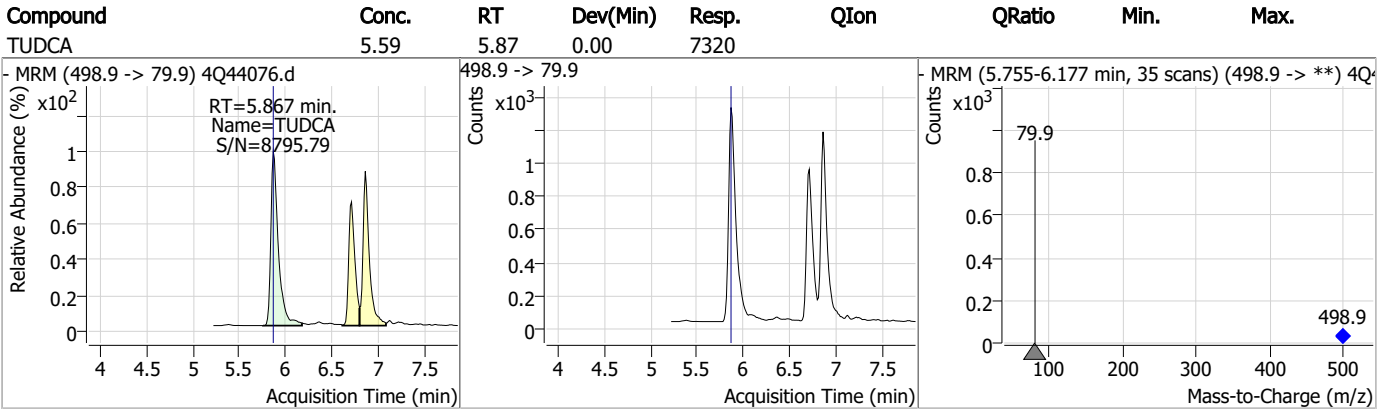
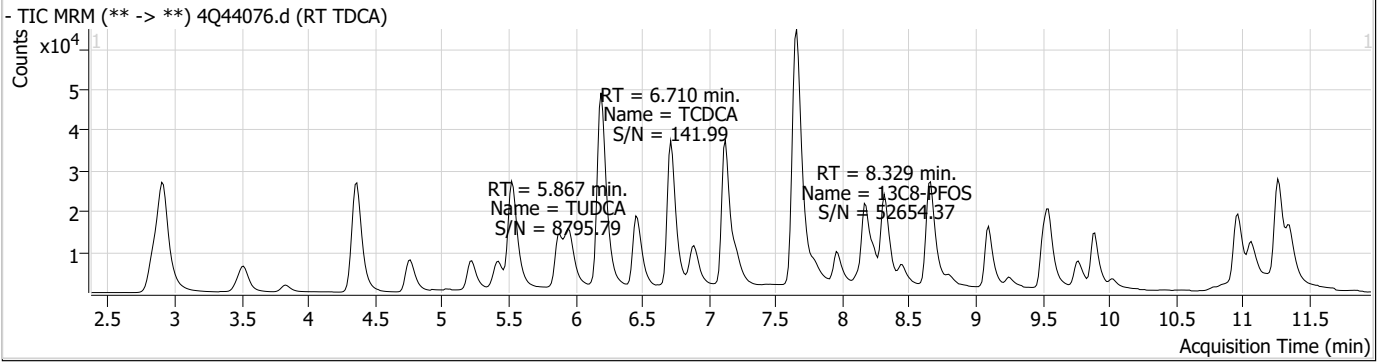
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.329	507.1 -> 79.9	14758	2.50	µg/L	0.000	
13C4-PFOS	8.330	502.8 -> 79.9	14192	2.50	µg/L	0.000	
System Monitoring Compounds							
13C8-PFOS	8.329	507.1 -> 79.9	14758	2.64	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.5%				
Target Compounds							
PFOS	8.330	498.9 -> 79.9	15877	3.15	µg/L	m	96
		498.9 -> 98.8	8026				
TCDCa	6.710	498.9 -> 79.9	3784	5.56	ng/ml	100	
TDCA	6.860	498.9 -> 79.9	5314	8.62	ng/ml	100	
TUDCA	5.867	498.9 -> 79.9	7320	5.59	ng/ml	100	

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

7.6.3

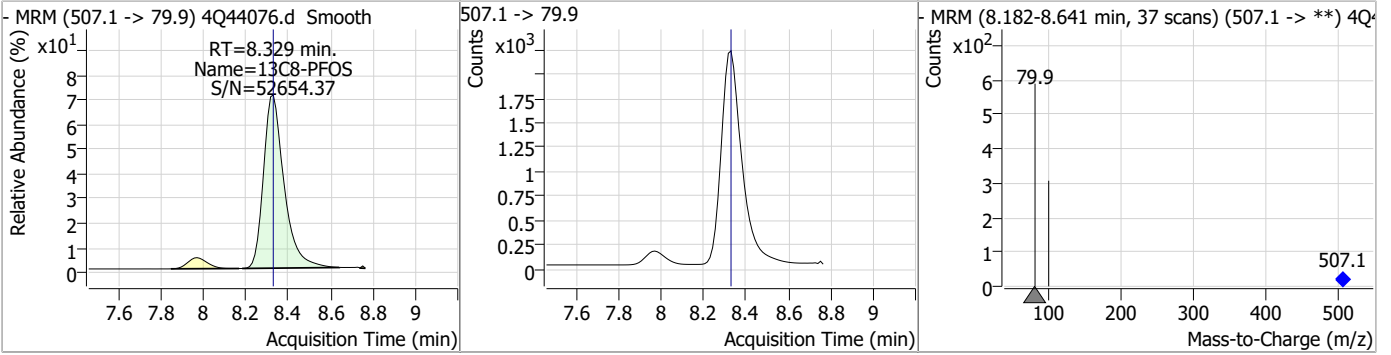
7

Perfluorinated Compounds by LC/MS/MS

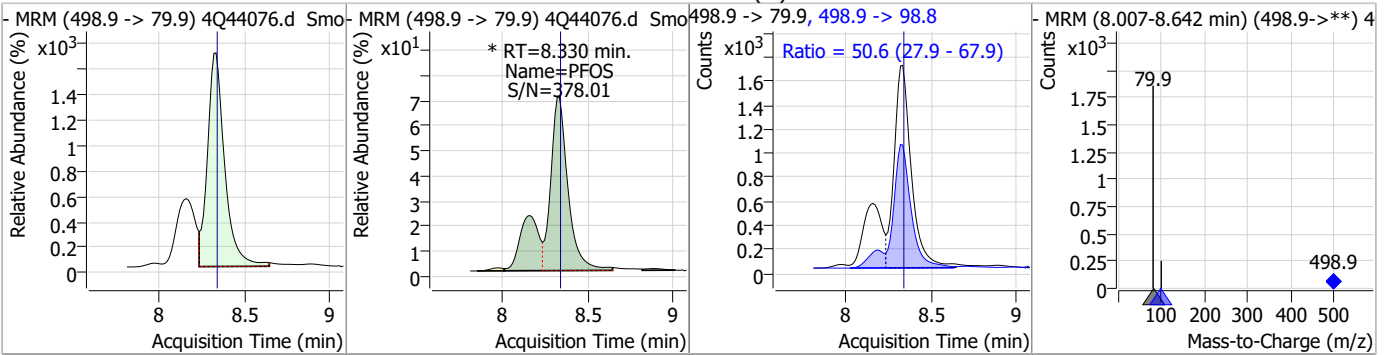


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.64	8.33	0.00	14758				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.15	8.33	0.00	15877 (m)	498.9 -> 98.8	50.6	27.9	67.9



7.6.3

7

Manual Integration Approval Summary

Sample Number: S4Q638-RT Method: EPA DRAFT 1633
Lab FileID: 4Q44076.D Analyst approved: 05/09/23 10:17 Martha Valls
Injection Time: 05/08/23 13:19 Supervisor approved: 05/09/23 16:01 Mike Eger

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

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44077.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 1:33:24 PM
 Sample Name : RT br/ln
 Vial : P1-B2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96548,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	111676	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	65864	5.00 µg/L	-0.012
M5-PFHxA	5.535	318.0 -> 273.0	43556	2.50 µg/L	-0.012
M4-PFHpA	6.467	367.1 -> 322.0	25906	2.50 µg/L	-0.012
M8-PFOA	7.136	421.1 -> 376.0	42177	2.50 µg/L	-0.012
M9-PFNA	7.684	472.1 -> 427.0	19567	1.25 µg/L	-0.012
M6-PFDA	8.178	519.1 -> 474.1	19653	1.25 µg/L	-0.013
M7-PFUnDA	8.660	570.0 -> 525.1	17550	1.25 µg/L	-0.012
M2-PFDoDA	9.106	615.1 -> 570.0	21036	1.25 µg/L	-0.012
M2-PFTeDA	9.899	715.2 -> 670.0	16096	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	16720	2.50 µg/L	0.000
M3-PFBS	5.427	302.1 -> 79.9	11103	2.50 µg/L	-0.012
M3-PFHxS	7.229	402.1 -> 79.9	6729	2.50 µg/L	-0.012
M8-PFOS	8.329	507.1 -> 79.9	10734	2.50 µg/L	-0.012
M2-4:2FTS	5.222	329.1 -> 80.9	948	5.00 µg/L	-0.012
M2-6:2FTS	6.898	429.1 -> 80.9	1479	5.00 µg/L	-0.012
M2-8:2FTS	7.966	529.1 -> 80.9	2706	5.00 µg/L	-0.025
M3-MeFOSAA	8.249	573.2 -> 419.0	13159	5.00 µg/L	-0.012
M3-HFPO-DA	5.890	286.9 -> 168.9	27595	10.00 µg/L	-0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10791	5.00 µg/L	-0.012
M7-MeFOSE	10.959	623.2 -> 58.9	68921	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	95758	25.00 µg/L	-0.012
M5-EtFOSA	11.360	531.1 -> 219.0	10477	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	9937	2.50 µg/L	0.000
13C4-PFOS	8.330	502.8 -> 79.9	9922	2.50 µg/L	-0.012
13C3-PFBA	2.916	216.0 -> 172.0	61834	5.00 µg/L	0.000
18O2-PFHxS	7.228	403.0 -> 83.9	5041	2.50 µg/L	-0.012
13C4-PFOA	7.136	417.1 -> 372.0	49775	2.50 µg/L	-0.012
13C2-PFDA	8.178	515.1 -> 470.1	16621	1.25 µg/L	-0.013
13C5-PFNA	7.684	468.0 -> 423.0	21902	1.25 µg/L	-0.012
13C2-PFHxA	5.536	315.1 -> 270.0	40121	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.222	329.1 -> 80.9	948	4.63 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C2-6:2FTS	6.898	429.1 -> 80.9	1479	4.01 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 80.1%		
13C2-8:2FTS	7.966	529.1 -> 80.9	2706	4.69 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C2-PFDoDA	9.106	615.1 -> 570.0	21036	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C2-PFTeDA	9.899	715.2 -> 670.0	16096	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFBS	5.427	302.1 -> 79.9	11103	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.4%		
13C3-PFHxS	7.229	402.1 -> 79.9	6729	2.15 µg/L	-0.012

7.6.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.1%	
13C4-PFBA	2.911	216.8 -> 171.9	111676	9.60 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C4-PFHpA	6.467	367.1 -> 322.0	25906	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFHxA	5.535	318.0 -> 273.0	43556	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C5-PFPeA	4.362	268.3 -> 223.0	65864	5.33 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C6-PFDA	8.178	519.1 -> 474.1	19653	1.38 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.4%	
13C7-PFUnDA	8.660	570.0 -> 525.1	17550	1.18 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C8-FOSA	9.783	506.1 -> 77.8	16720	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C8-PFOA	7.136	421.1 -> 376.0	42177	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C8-PFOS	8.329	507.1 -> 79.9	10734	2.87 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.9%	
13C9-PFNA	7.684	472.1 -> 427.0	19567	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.1%	
d3-MeFOSAA	8.249	573.2 -> 419.0	13159	5.25 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	27595	10.46 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.6%	
d3-MeFOSA	11.076	515.0 -> 219.0	9937	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
d5-EtFOSAA	8.458	589.2 -> 419.0	10791	5.23 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.7%	
d7-MeFOSE	10.959	623.2 -> 58.9	68921	22.33 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.3%	
d9-EtFOSE	11.256	639.2 -> 58.9	95758	21.91 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.6%	
d5-EtFOSA	11.360	531.1 -> 219.0	10477	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	77816	51.04 µg/L	98
		327.1 -> 80.9	32019		
6:2FTS	6.899	427.1 -> 407.0	80123	56.07 µg/L	98
		427.1 -> 80.9	33313		
8:2FTS	7.966	527.1 -> 507.0	73772	48.91 µg/L	98
		527.1 -> 80.8	31013		
EtFOSAA	8.459	584.2 -> 419.1	25801	12.45 µg/L	m 99
		584.2 -> 526.0	13270		
FOSA	9.774	498.1 -> 77.9	196261	28.01 µg/L	m 100
		498.1 -> 478.0	6266		
MeFOSAA	8.249	570.1 -> 419.0	28760	12.54 µg/L	93
		570.1 -> 483.0	6188		
PFBA	2.907	212.8 -> 168.9	165504	55.34 µg/L	100
PFBS	5.428	298.7 -> 79.9	48821	10.72 µg/L	95
		298.7 -> 98.8	18858		
PFDA	8.179	512.9 -> 469.0	186186	12.49 µg/L	100
		512.9 -> 219.0	36858		
PFDoDA	9.106	613.1 -> 569.0	222814	13.20 µg/L	99
		613.1 -> 319.0	32186		
PFDS	9.269	599.0 -> 79.9	29519	11.10 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	15099			
PFHpA	6.468	363.1 -> 319.0	226113	13.81	µg/L	100
		363.1 -> 169.0	40305			
PFHpS	7.811	449.0 -> 79.9	44467	11.50	µg/L	99
		449.0 -> 98.9	23046			
PFHxA	5.538	313.0 -> 269.0	223067	13.07	µg/L	100
		313.0 -> 118.9	6883			
PFHxS	7.230	398.7 -> 79.9	32558	11.80	µg/L	m 92
		398.7 -> 98.9	16871			
PFNA	7.685	463.0 -> 419.0	365970	25.24	µg/L	m 98
		463.0 -> 219.0	97457			
PFNS	8.811	548.8 -> 79.9	25453	10.86	µg/L	95
		548.8 -> 98.9	13121			
PFOA	7.137	413.0 -> 369.0	638072	26.22	µg/L	m 97
		413.0 -> 169.0	134864			
PFOS	8.330	498.9 -> 79.9	58078	11.06	µg/L	m 89
		498.9 -> 98.8	30514			
PFPeA	4.364	263.0 -> 219.0	400509	25.27	µg/L	100
PFPeS	6.494	349.1 -> 79.9	30759	13.00	µg/L	97
		349.1 -> 98.9	13306			
PFTeDA	9.900	713.1 -> 669.0	214741	13.63	µg/L	100
		713.1 -> 168.9	17696			
PFTrDA	9.515	663.0 -> 619.0	282722	12.53	µg/L	98
		663.0 -> 168.9	27557			
PFUnDA	8.660	563.1 -> 519.0	169246	14.20	µg/L	96
		563.1 -> 269.1	33621			
11CI-PF3OUdS	9.556	630.9 -> 450.9	247785	24.97	µg/L	99
		632.9 -> 452.9	75401			
9CI-PF3ONS	8.675	530.8 -> 351.0	301837	23.88	µg/L	99
		532.8 -> 353.0	90712			
ADONA	6.731	376.9 -> 250.9	639509	23.04	µg/L	100
		376.9 -> 84.8	172249			
HFPO-DA	5.891	284.9 -> 168.9	69828	26.48	µg/L	98
		284.9 -> 184.9	8399			
3:3FTCA	3.836	241.0 -> 177.0	44014	63.13	µg/L	99
		241.0 -> 117.0	4147			
5:3FTCA	6.205	341.0 -> 237.1	760932	328.60	µg/L	99
		341.0 -> 217.0	529018			
7:3FTCA	7.661	441.0 -> 316.9	407389	338.58	µg/L	97
		441.0 -> 336.9	936731			
EtFOSA	11.362	526.0 -> 219.0	208423	47.48	µg/L	m 70
		526.0 -> 169.0	290519			
EtFOSE	11.282	630.0 -> 58.9	294068	79.33	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	168258	44.95	µg/L	m 81
		511.9 -> 169.0	247676			
MeFOSE	10.973	616.1 -> 58.9	218210	77.08	µg/L	m 100
PFDoDS	10.039	699.1 -> 79.9	27395	11.54	µg/L	100
		699.1 -> 98.8	15395			
NFDHA	5.416	295.0 -> 201.0	31293	25.68	µg/L	97
		295.0 -> 84.9	7792			
PFMBA	4.766	279.0 -> 85.1	220758	24.96	µg/L	100
PFMPA	3.515	229.0 -> 84.9	210658	25.43	µg/L	100
PFEESA	5.959	314.8 -> 134.9	310292	24.02	µg/L	99
		314.8 -> 82.9	10500			

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

7.6.4
7

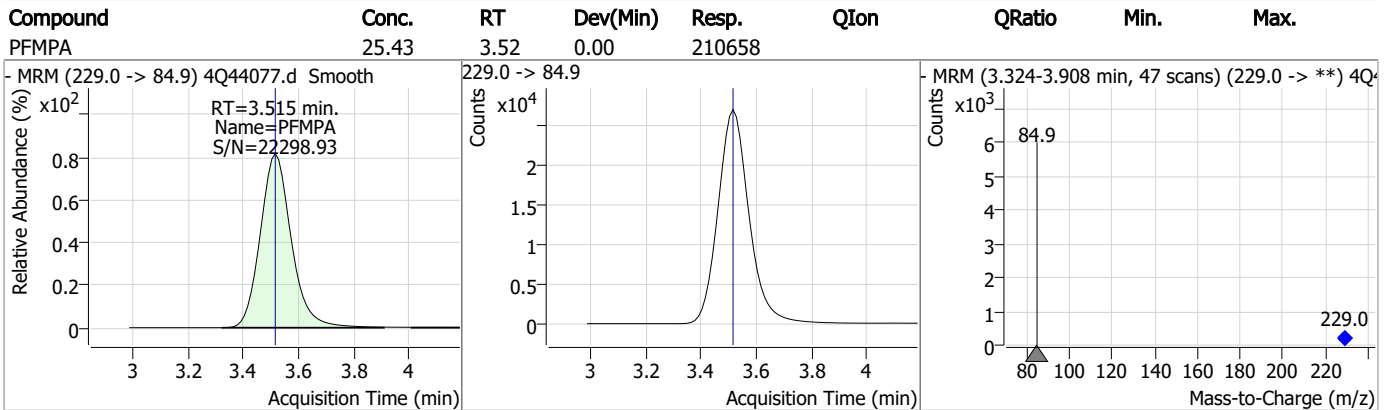
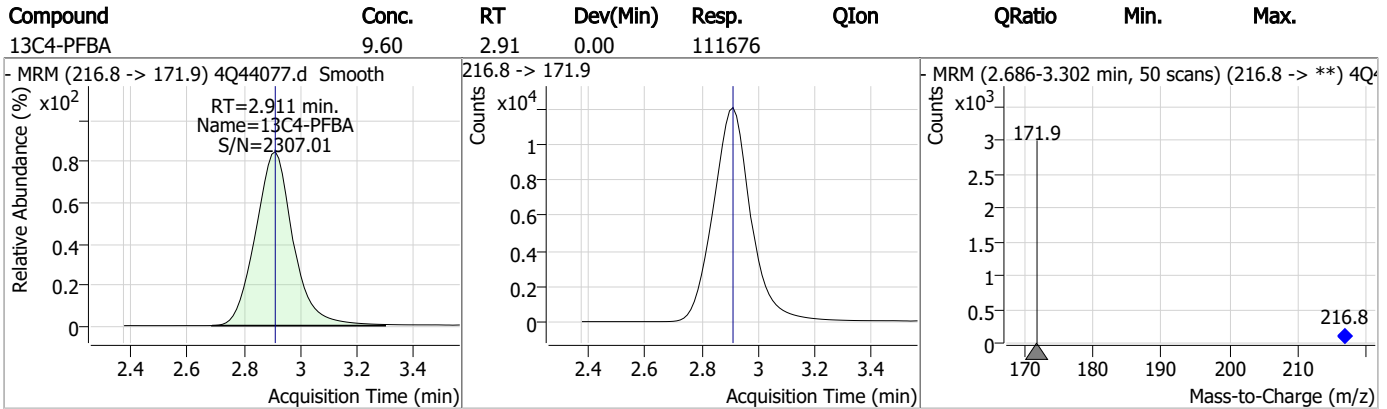
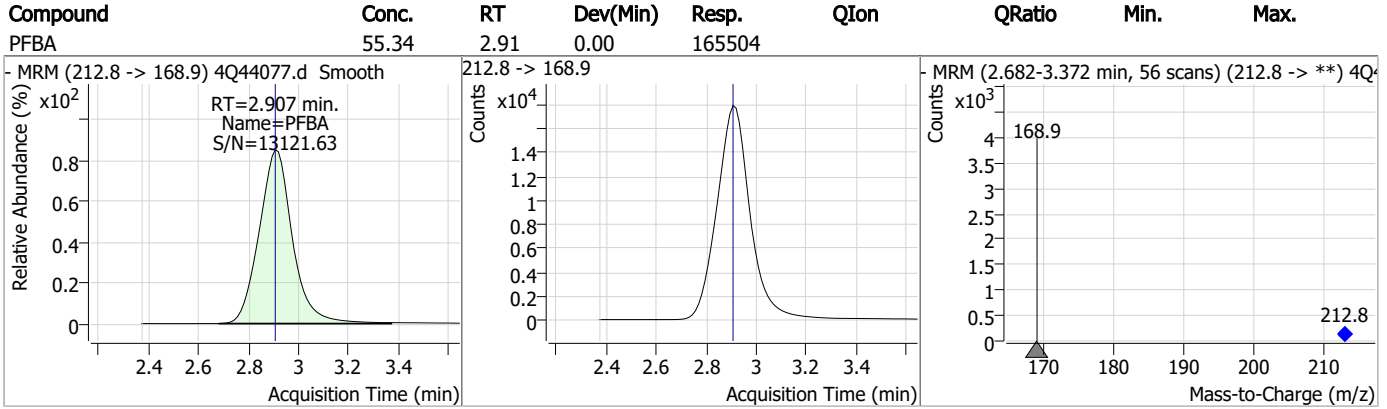
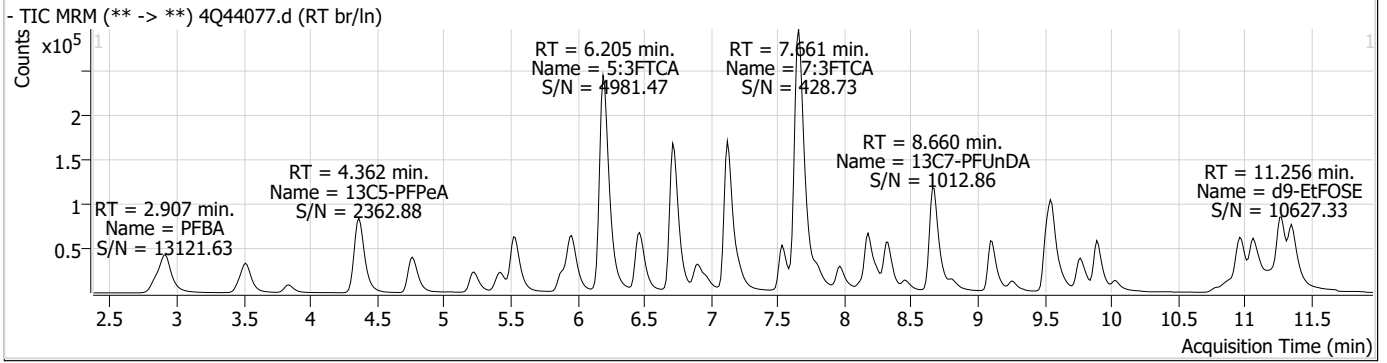
Perfluorinated Compounds by LC/MS/MS

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

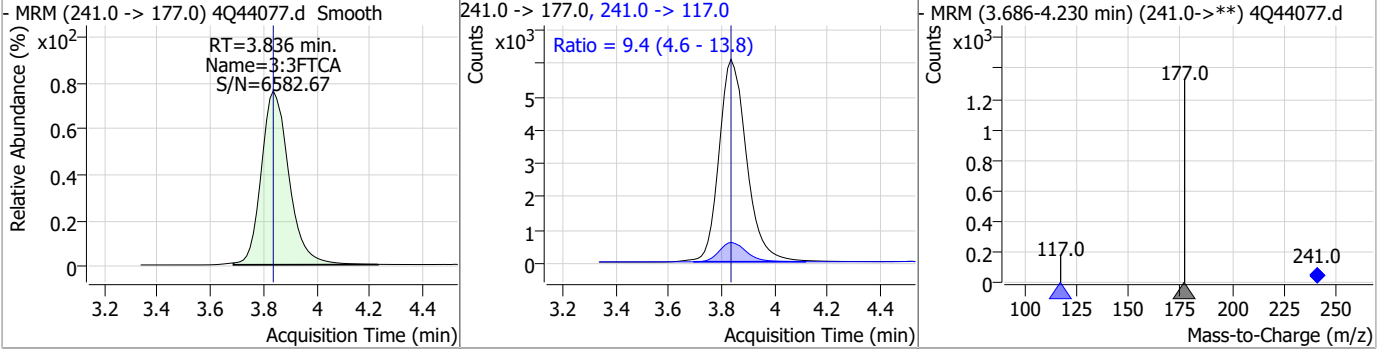
7

Perfluorinated Compounds by LC/MS/MS

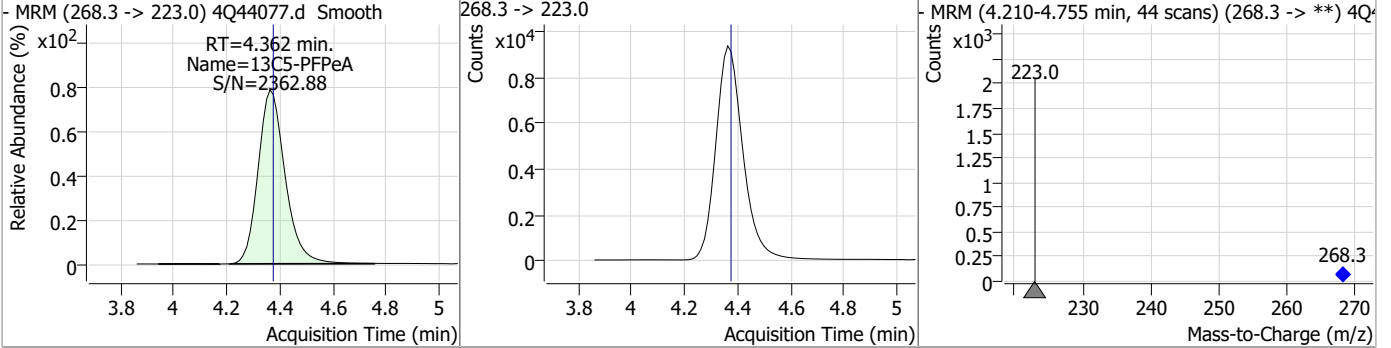


Perfluorinated Compounds by LC/MS/MS

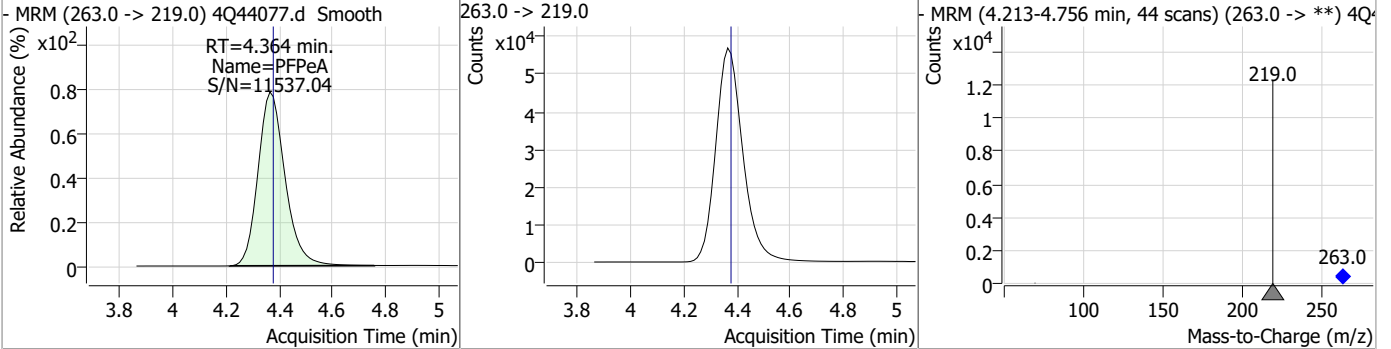
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	63.13	3.84	0.00	44014	241.0 -> 117.0	9.4	4.6	13.8



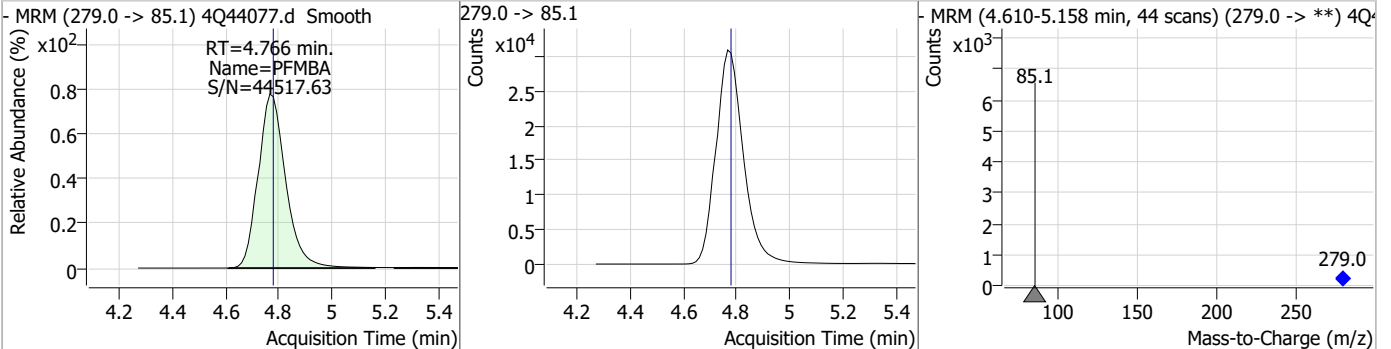
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.33	4.36	-0.01	65864				



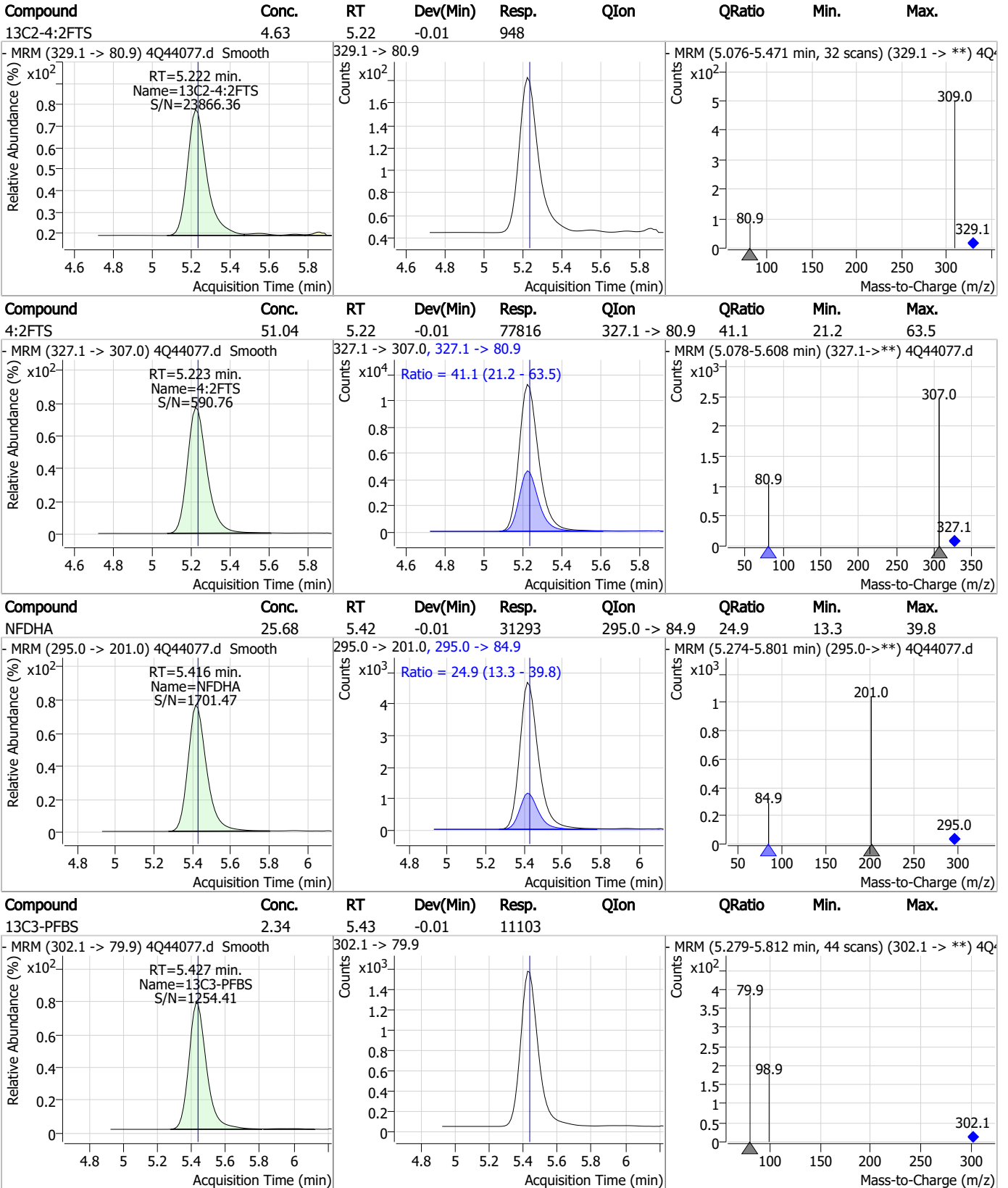
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	25.27	4.36	-0.01	400509				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	24.96	4.77	-0.01	220758				



Perfluorinated Compounds by LC/MS/MS

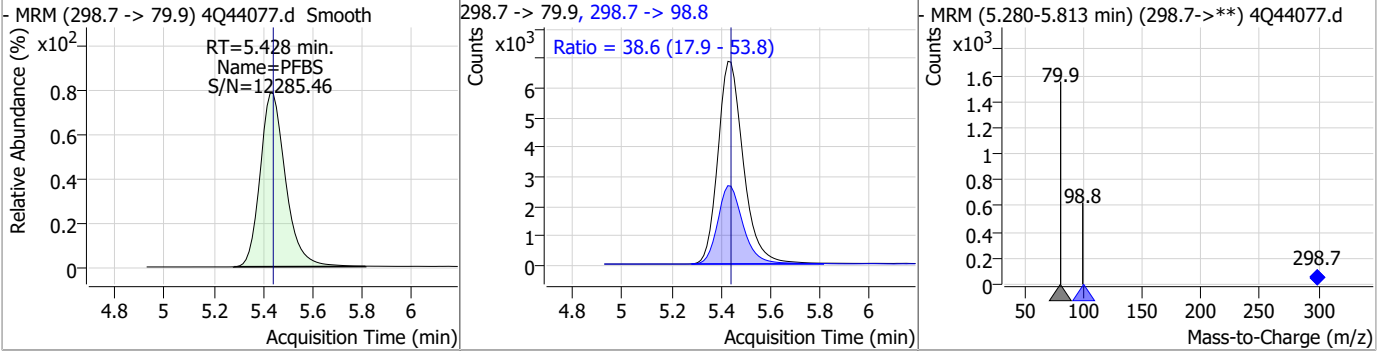


7.6.4

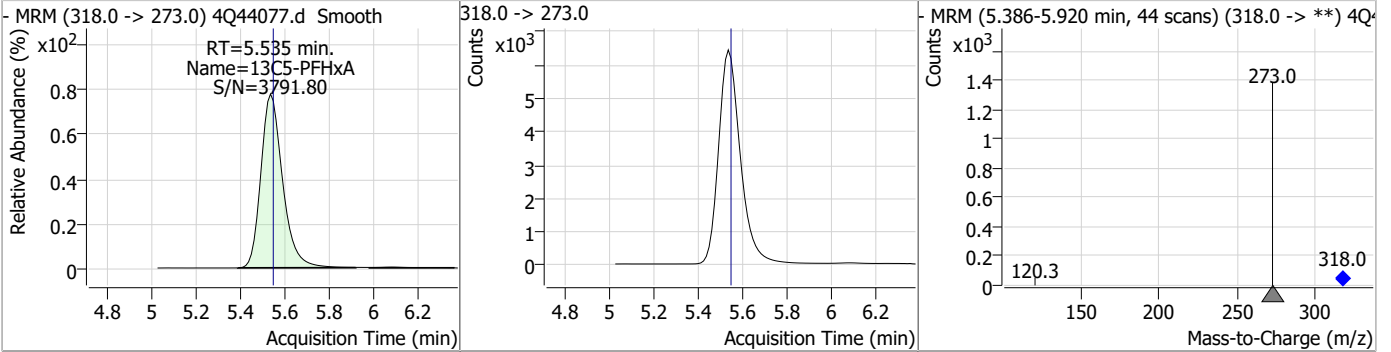
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Perfluorinated Compounds by LC/MS/MS

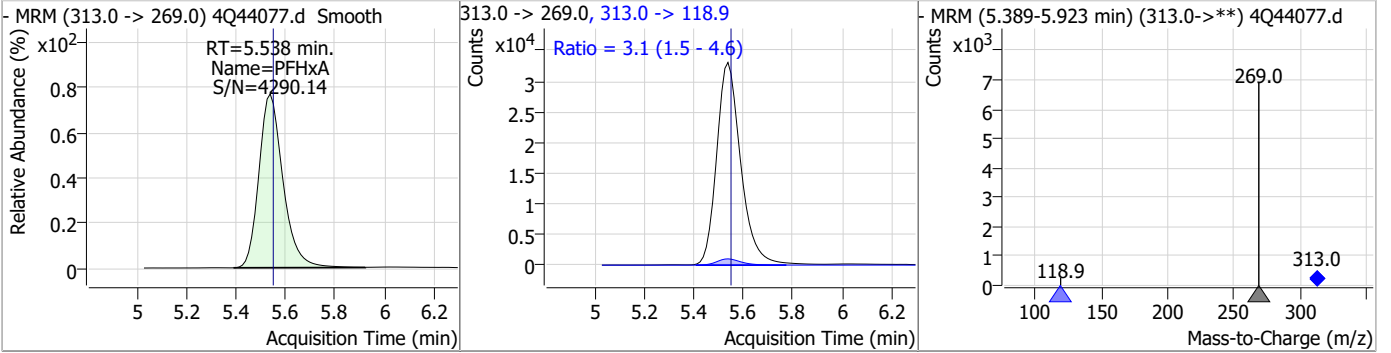
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	10.72	5.43	-0.01	48821	298.7 -> 98.8	38.6	17.9	53.8



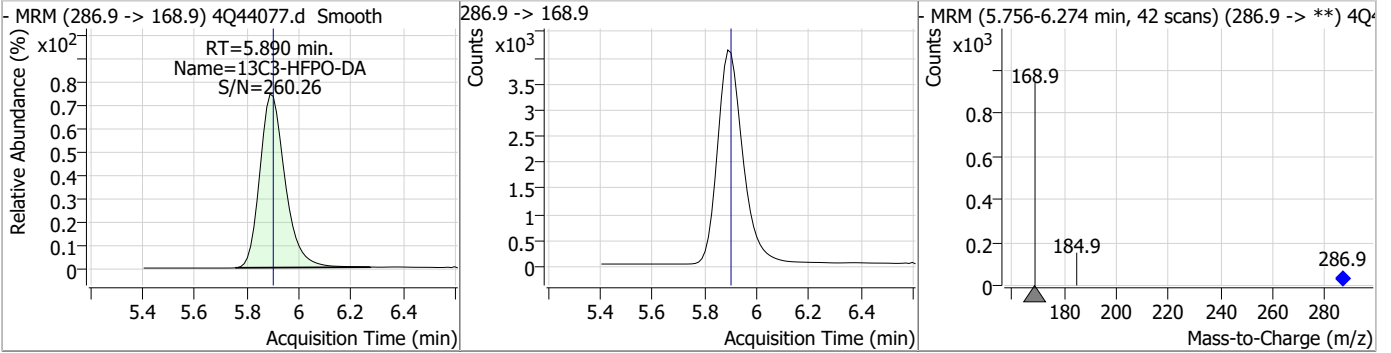
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.53	-0.01	43556				



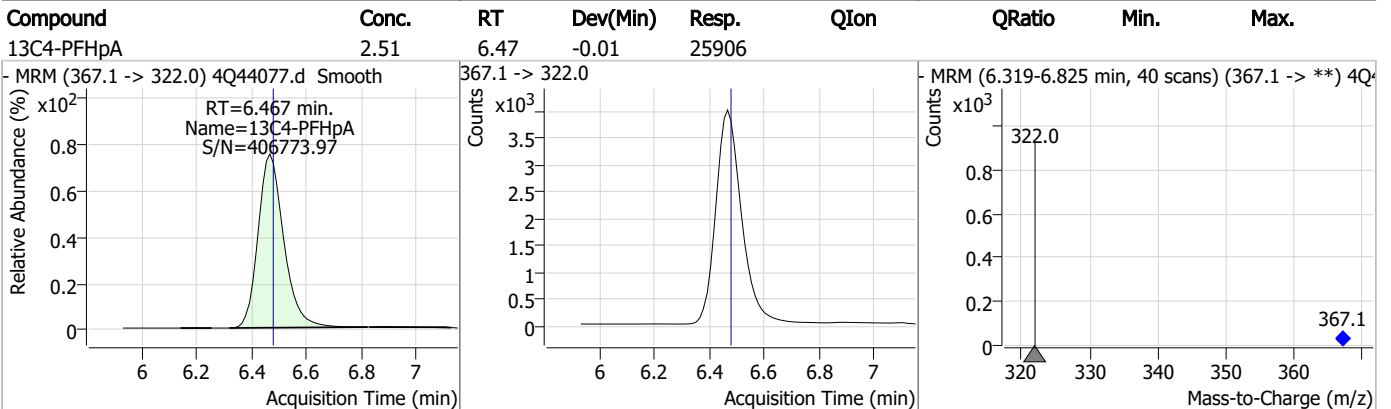
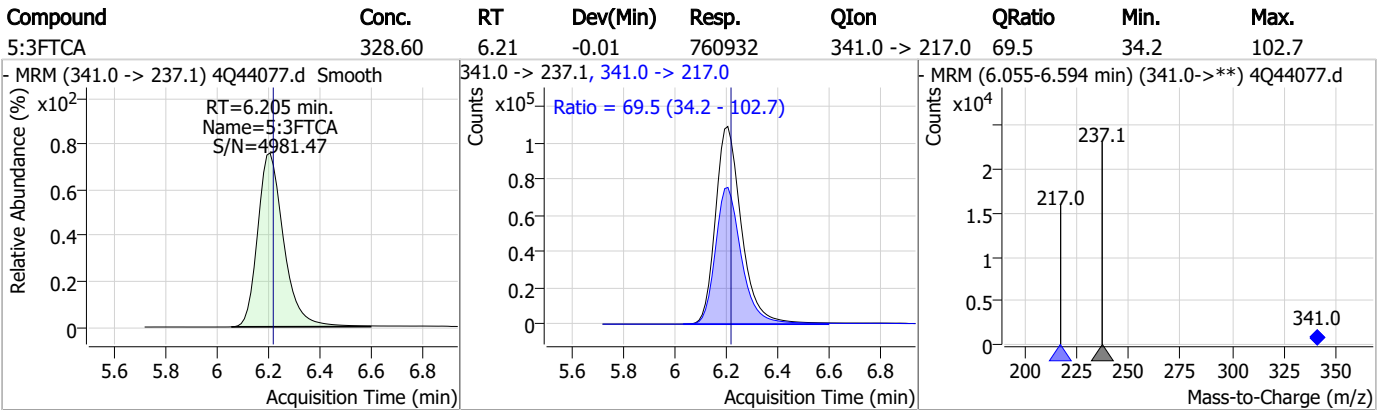
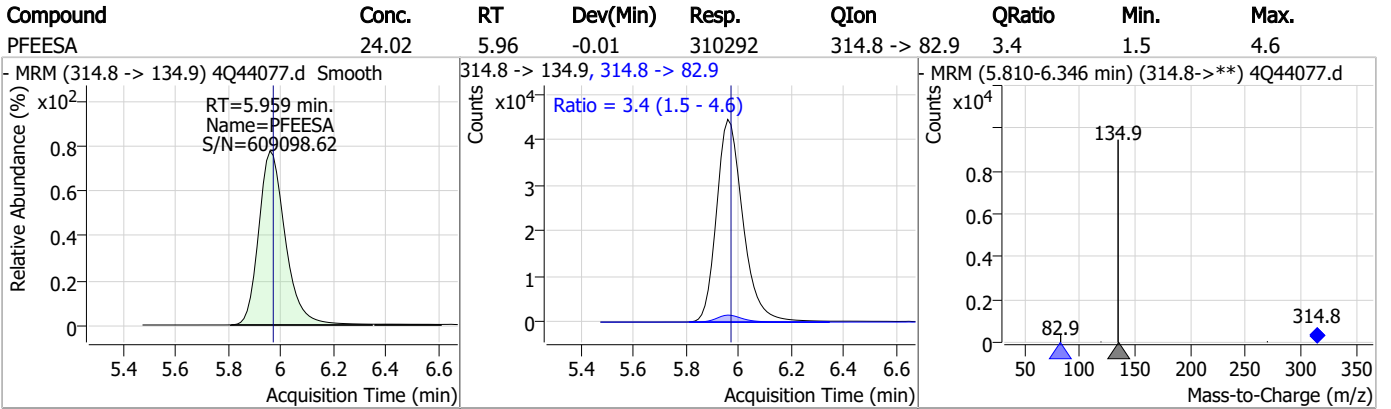
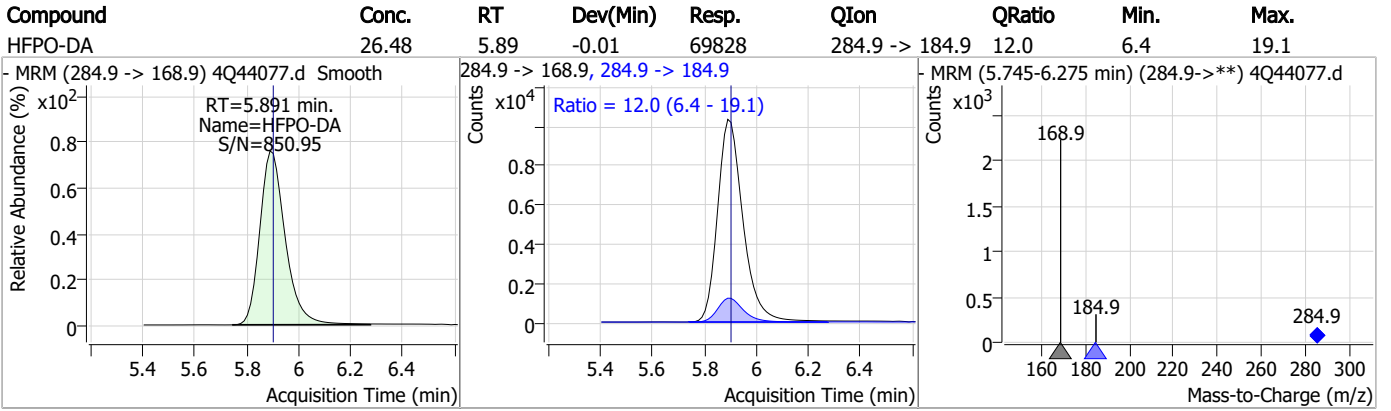
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	13.07	5.54	-0.01	223067	313.0 -> 118.9	3.1	1.5	4.6



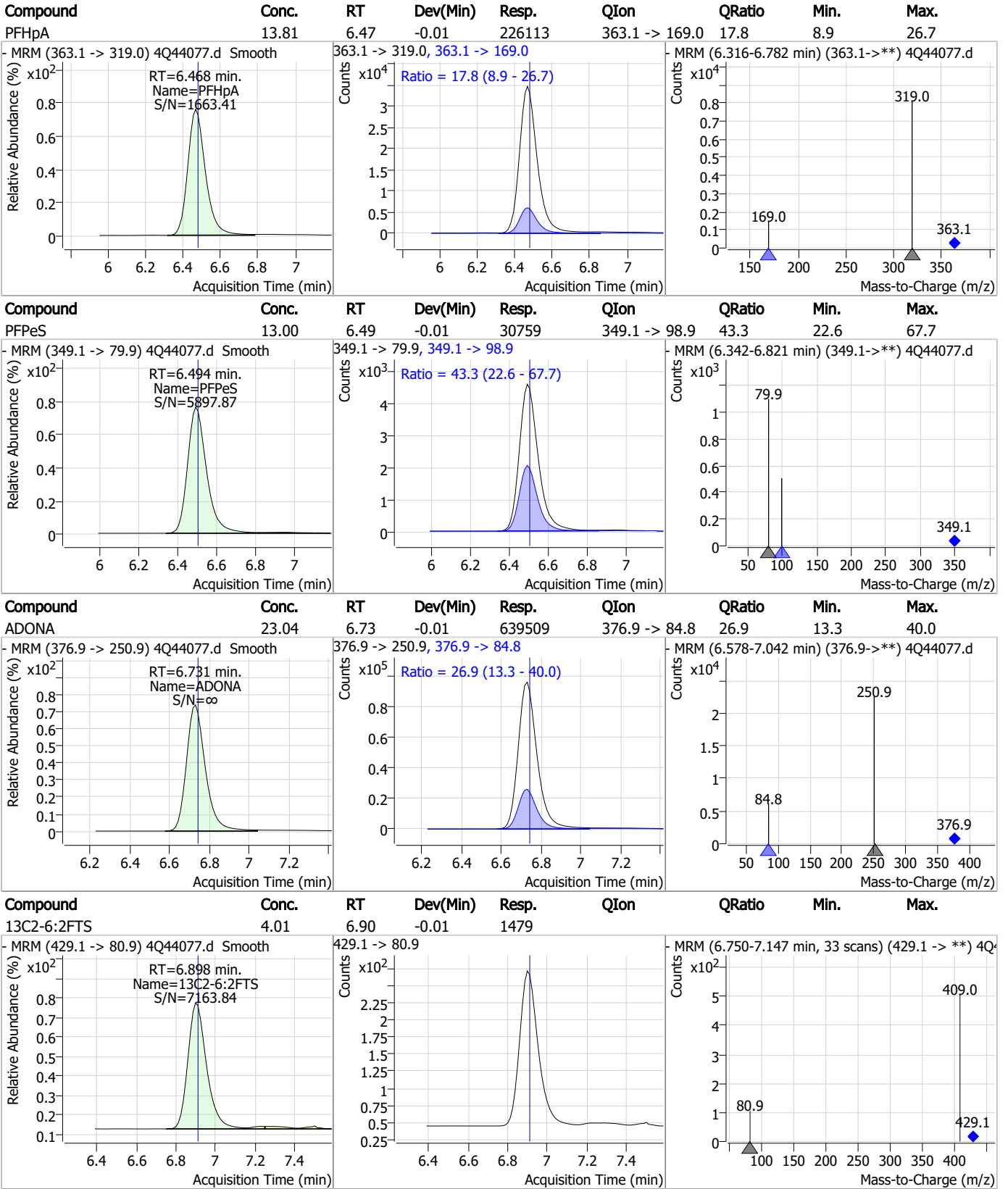
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.46	5.89	-0.01	27595				



Perfluorinated Compounds by LC/MS/MS



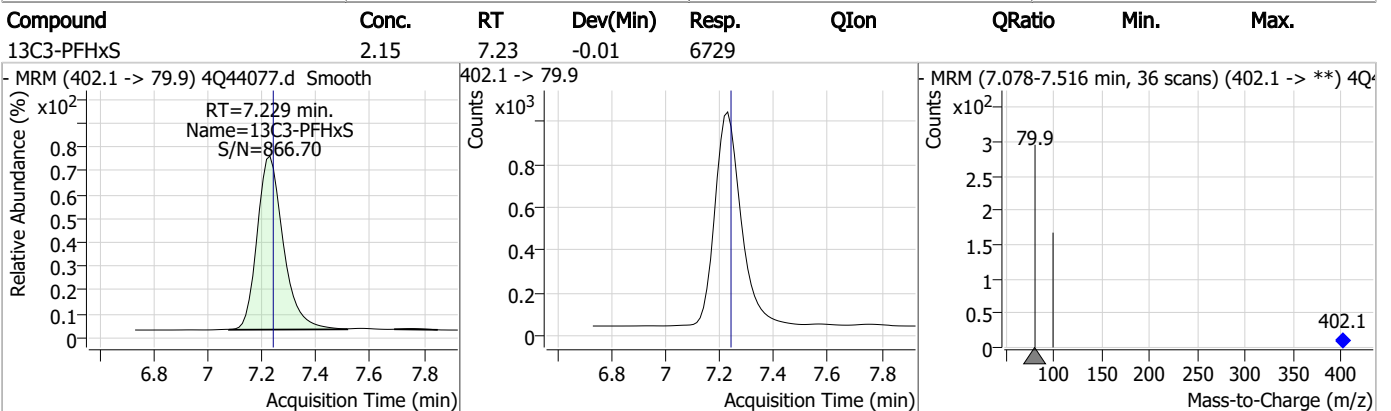
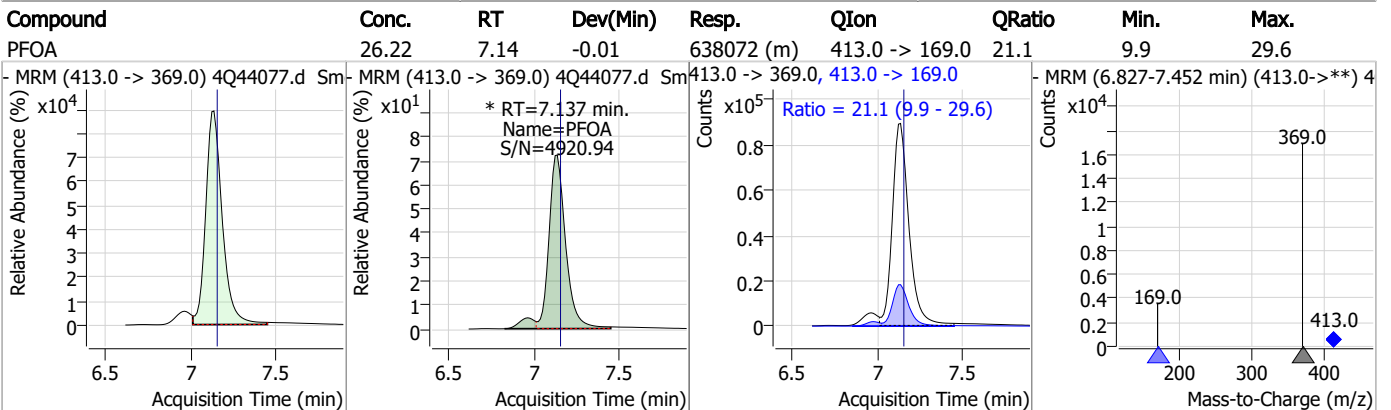
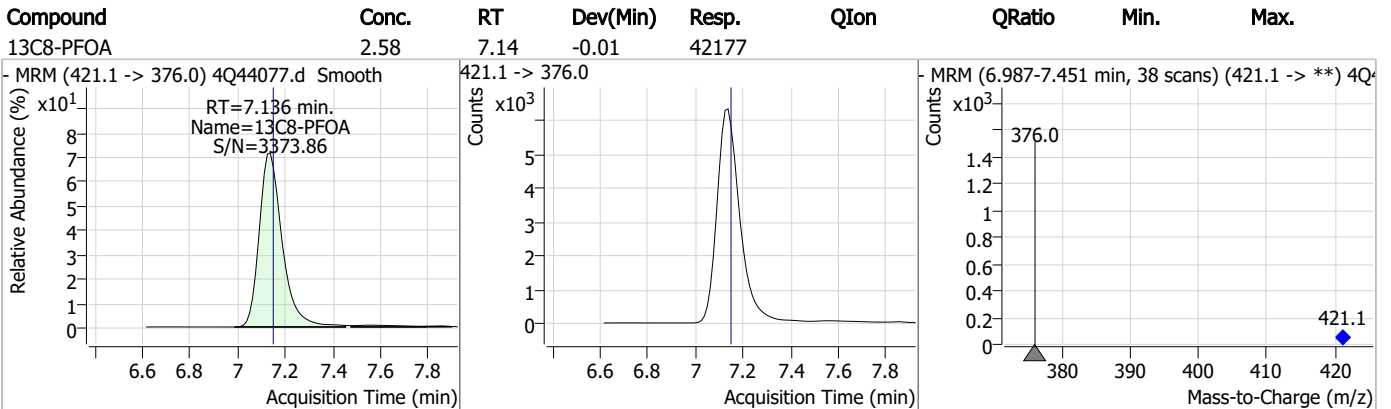
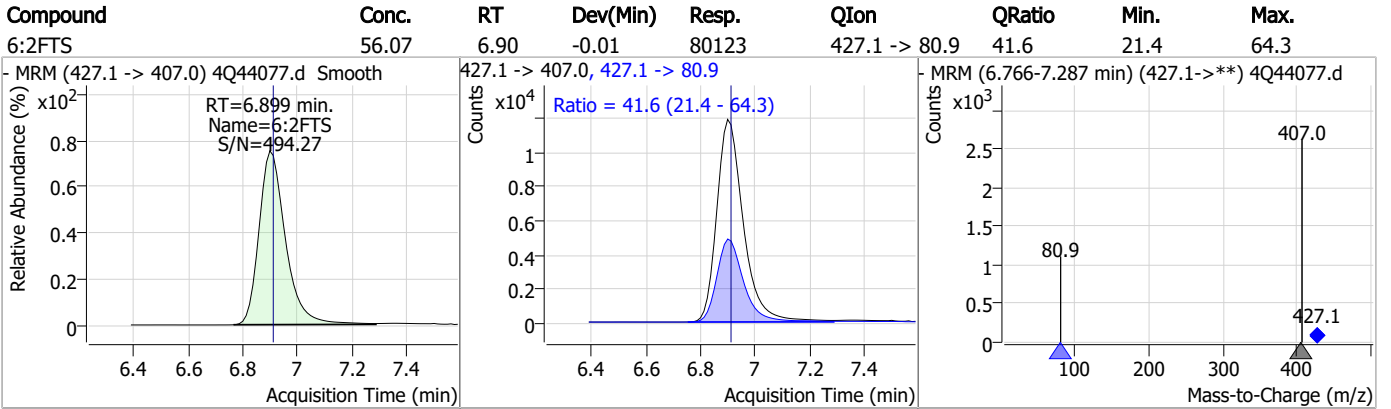
Perfluorinated Compounds by LC/MS/MS



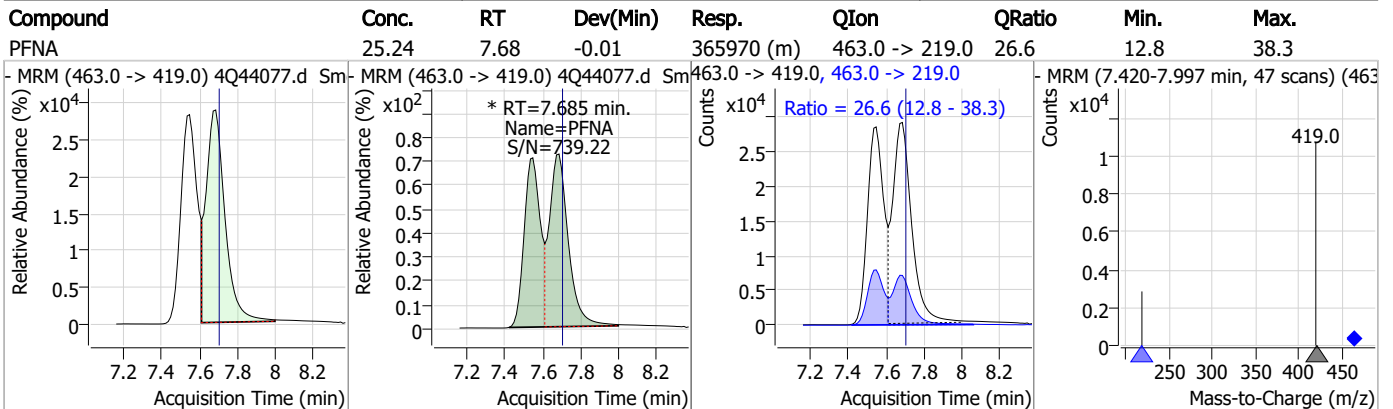
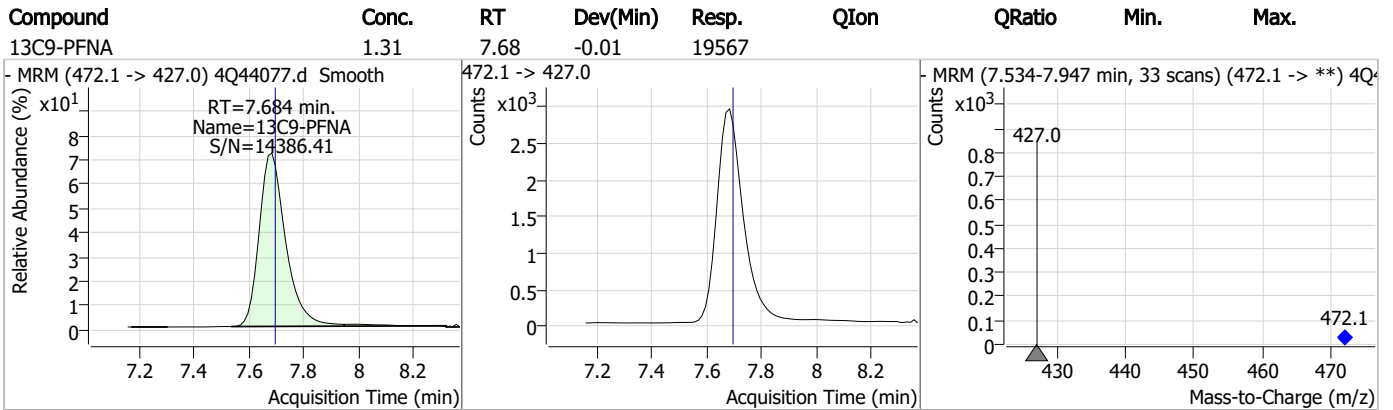
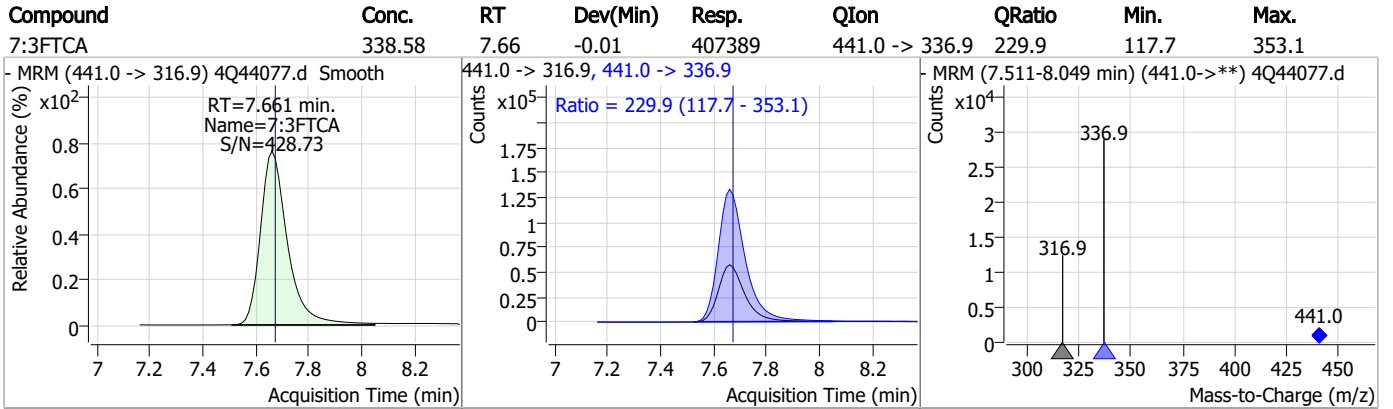
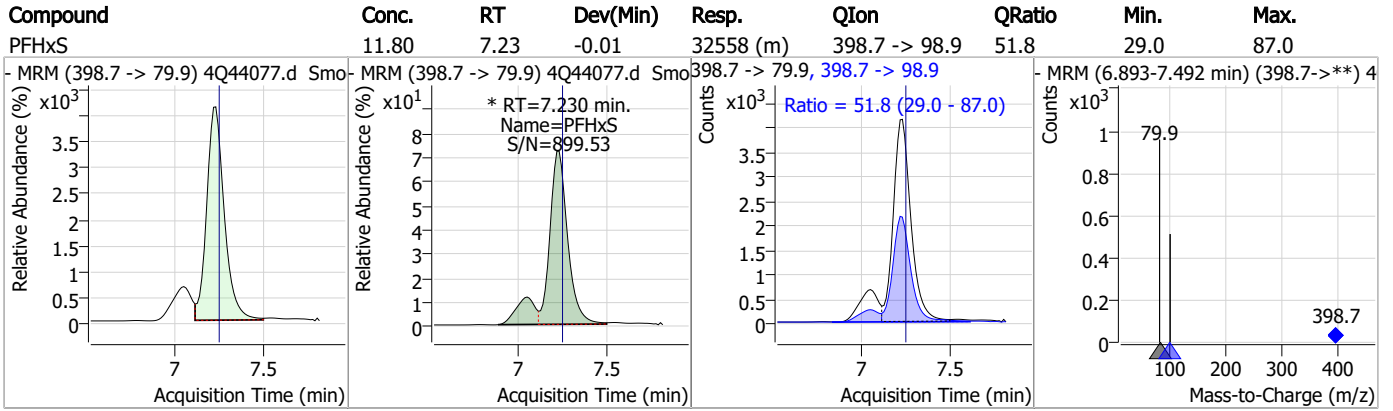
7.6.4

7

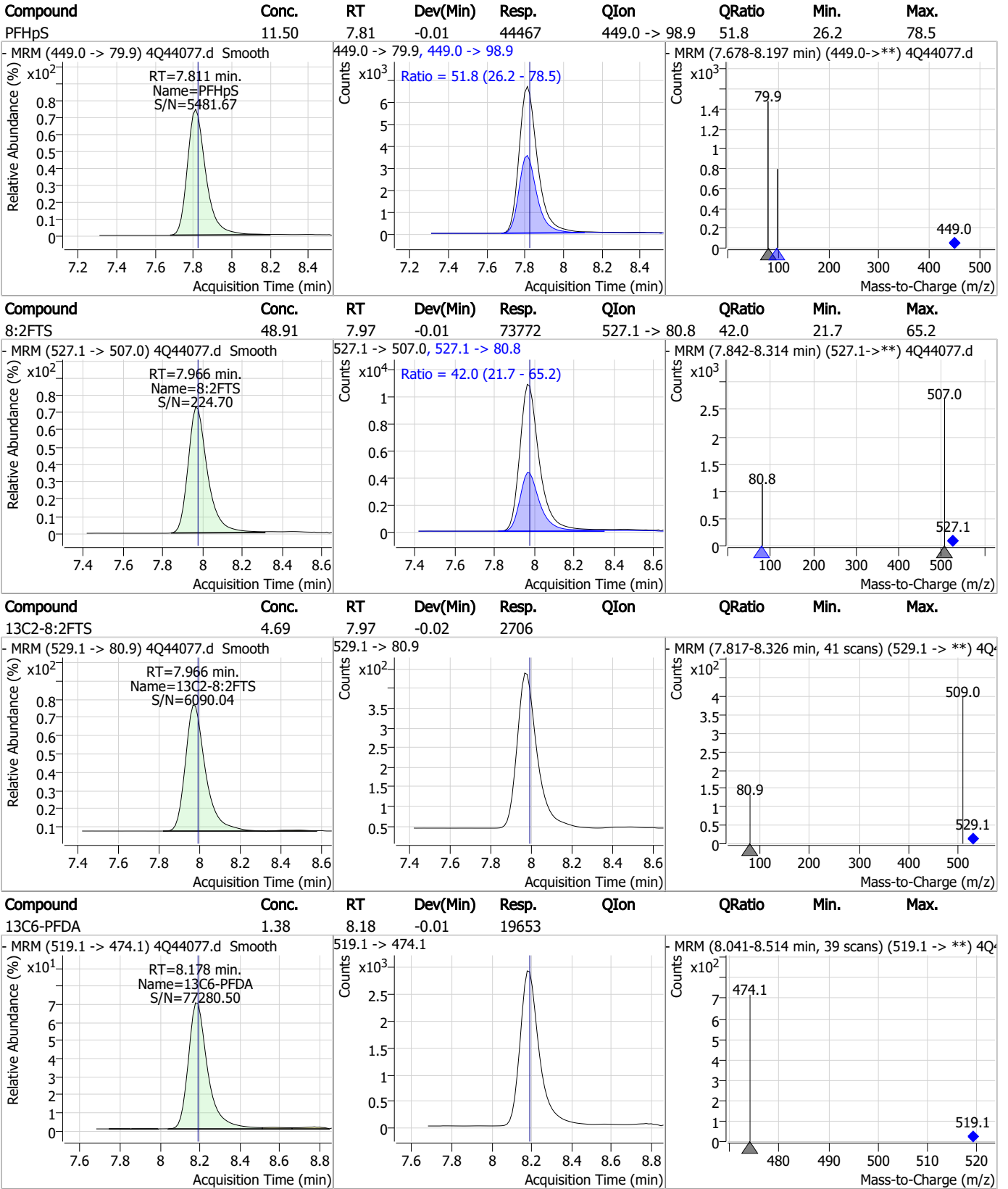
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



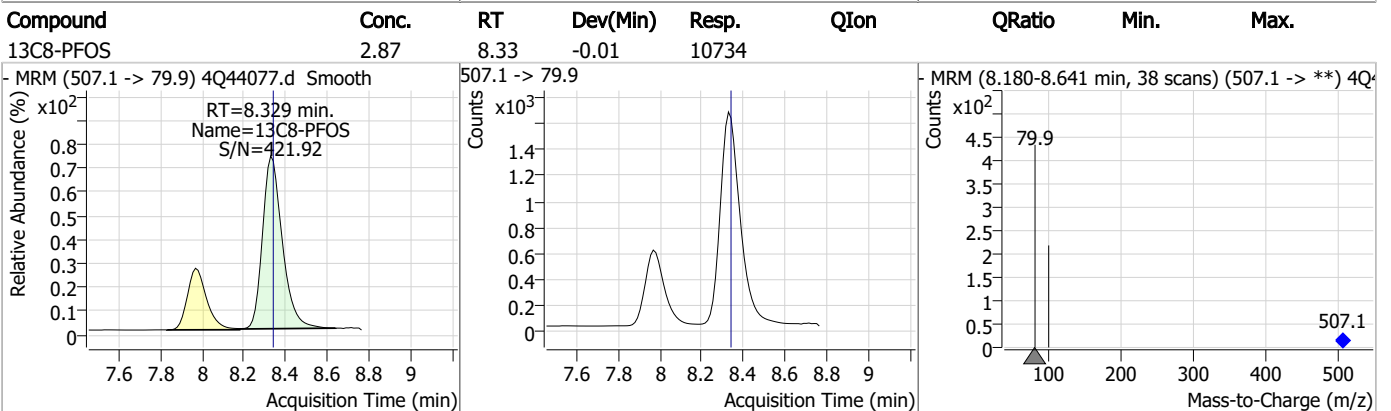
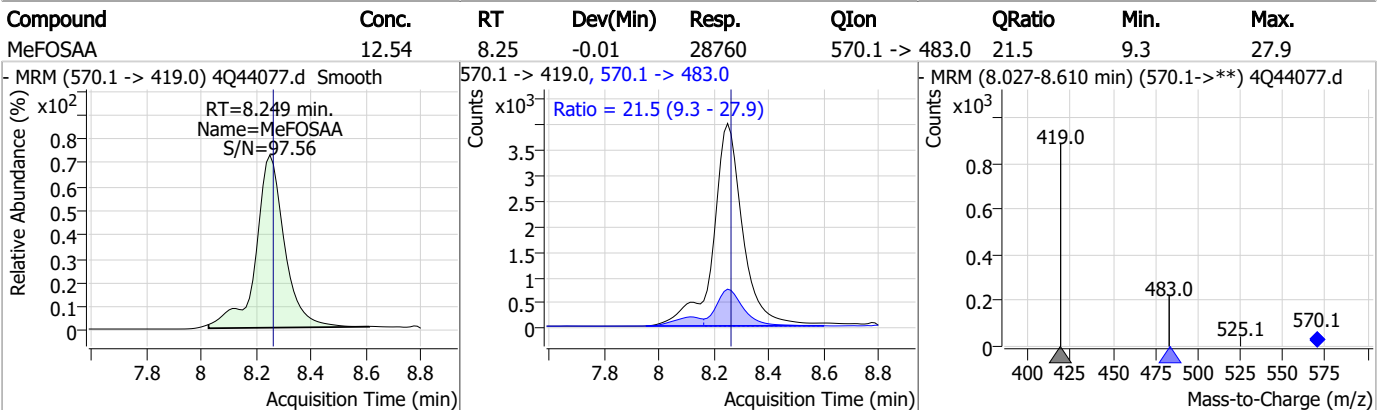
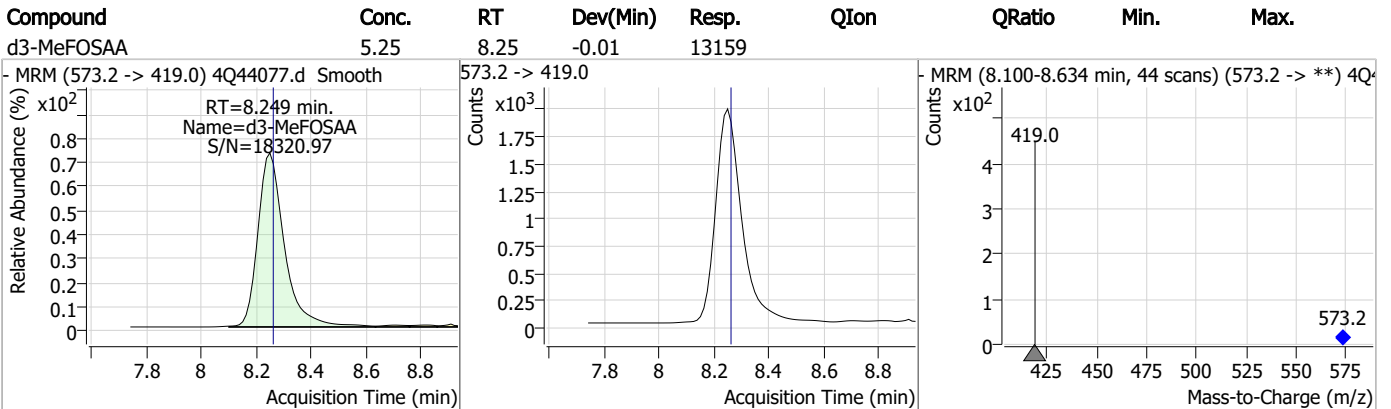
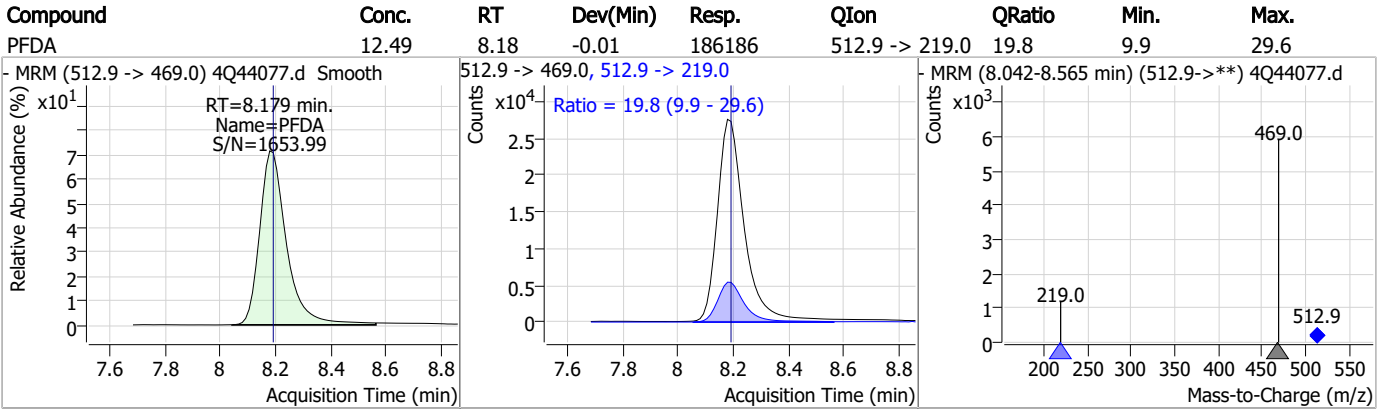
Perfluorinated Compounds by LC/MS/MS



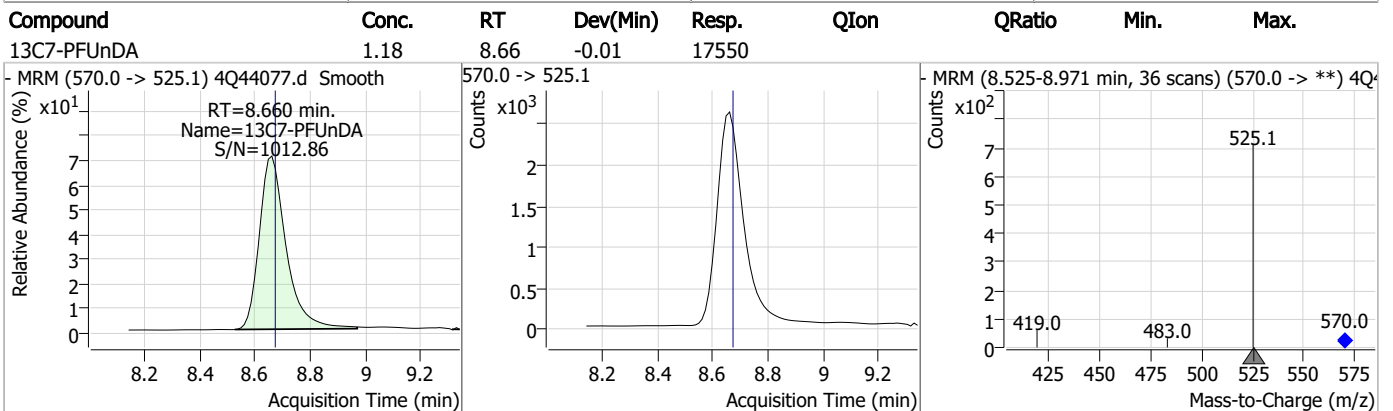
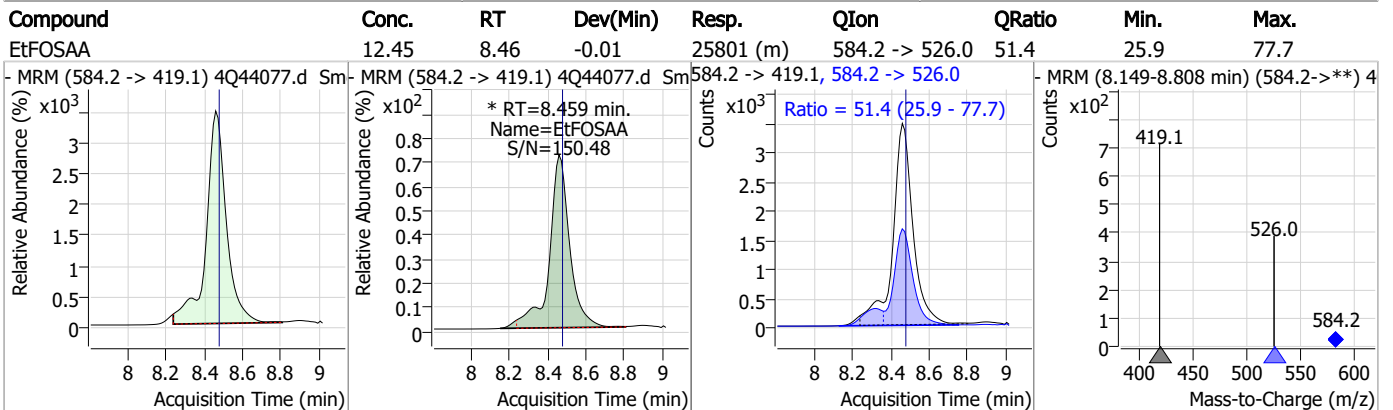
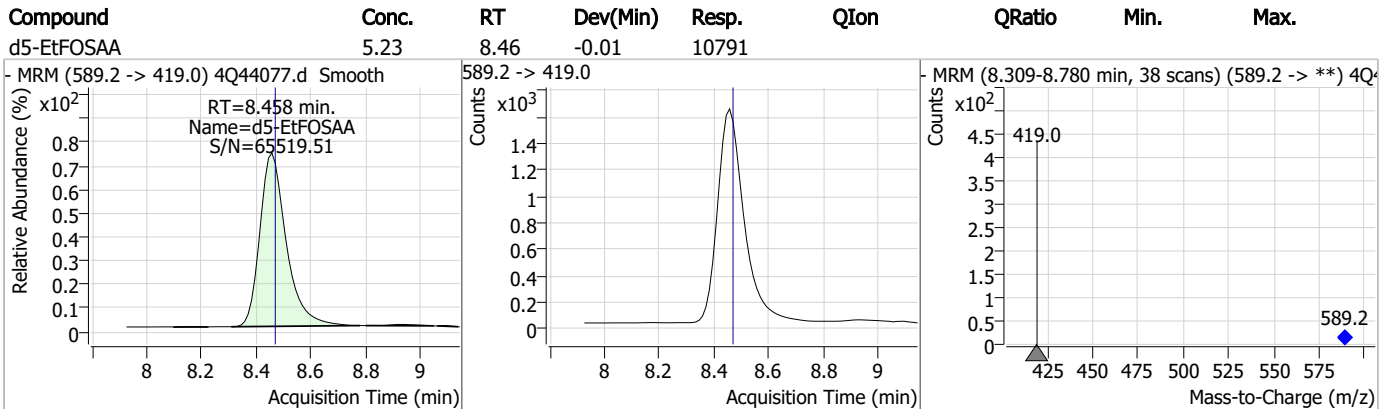
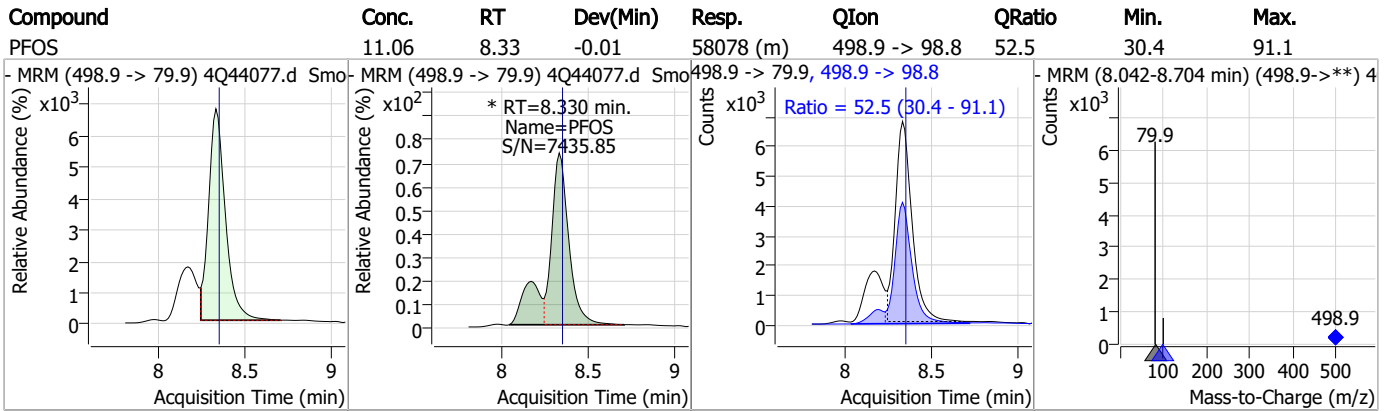
7.6.4

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Perfluorinated Compounds by LC/MS/MS

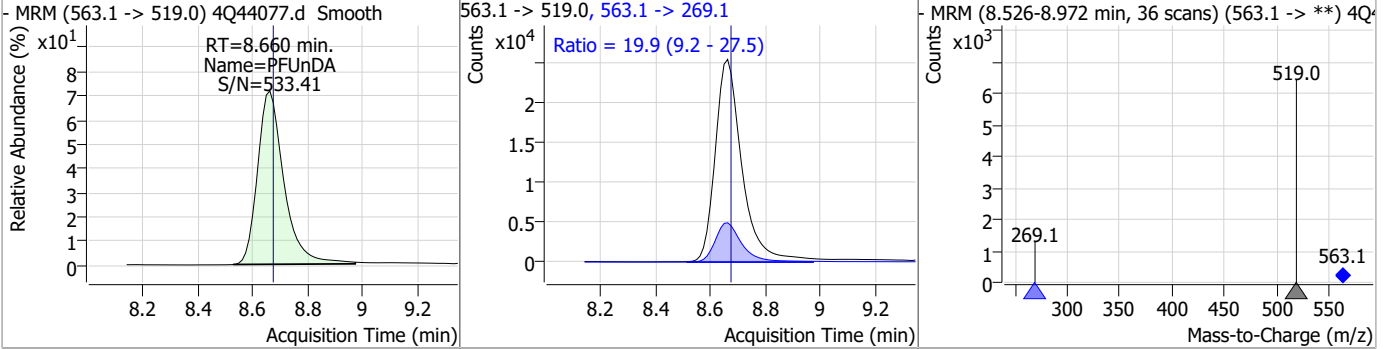


Perfluorinated Compounds by LC/MS/MS

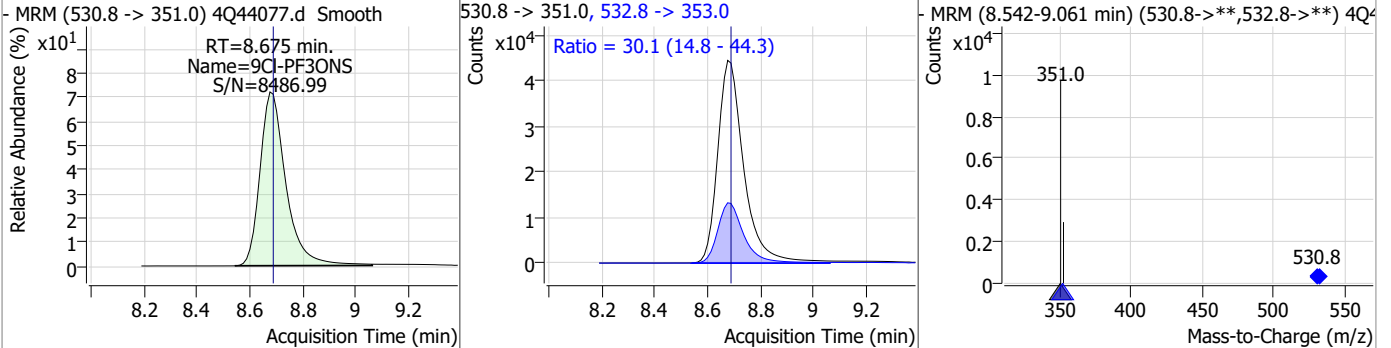


Perfluorinated Compounds by LC/MS/MS

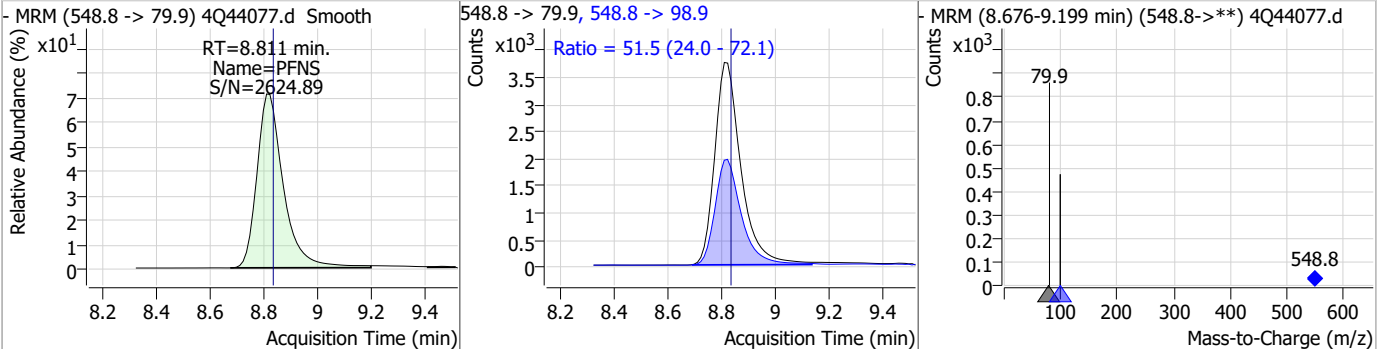
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	14.20	8.66	-0.01	169246	563.1 -> 269.1	19.9	9.2	27.5



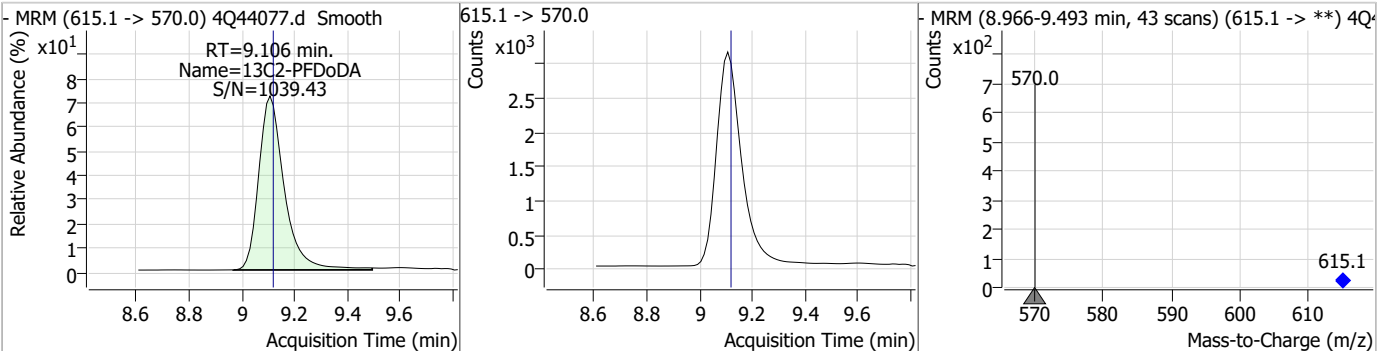
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	23.88	8.68	-0.01	301837	532.8 -> 353.0	30.1	14.8	44.3



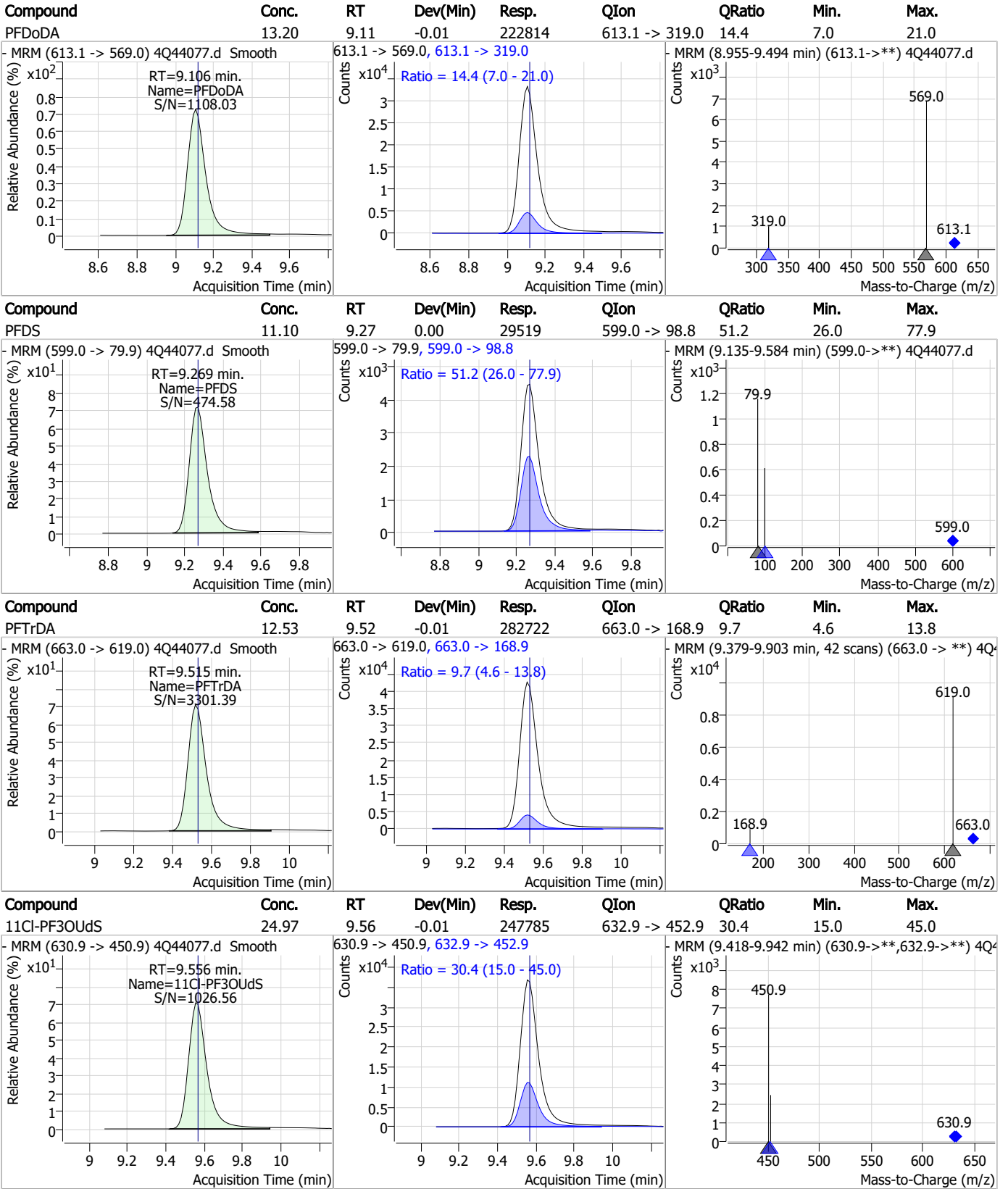
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	10.86	8.81	-0.02	25453	548.8 -> 98.9	51.5	24.0	72.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.31	9.11	-0.01	21036	615.1 -> 570.0	-	-	-



Perfluorinated Compounds by LC/MS/MS

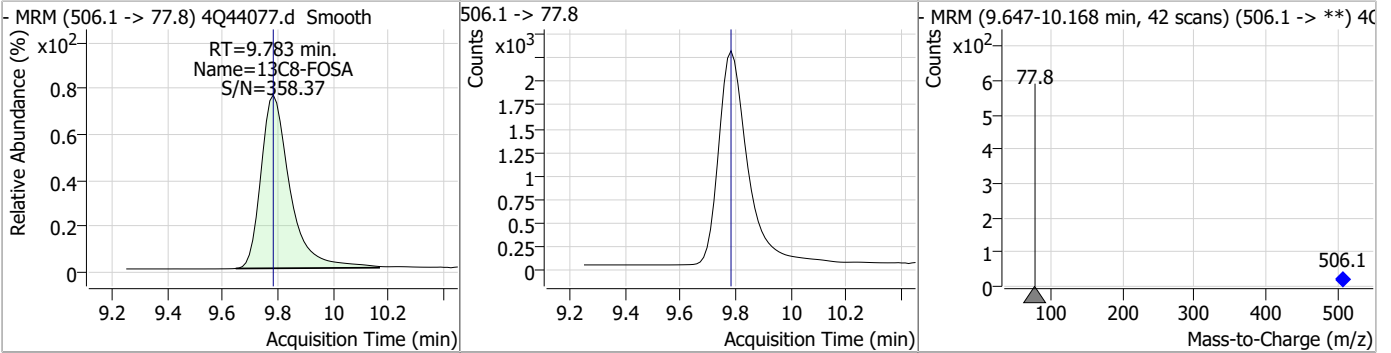


7.6.4

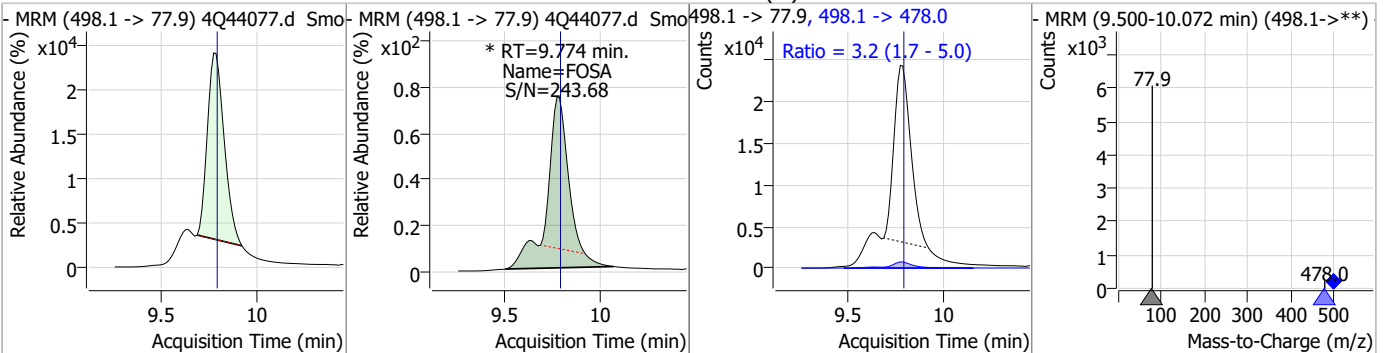
7

Perfluorinated Compounds by LC/MS/MS

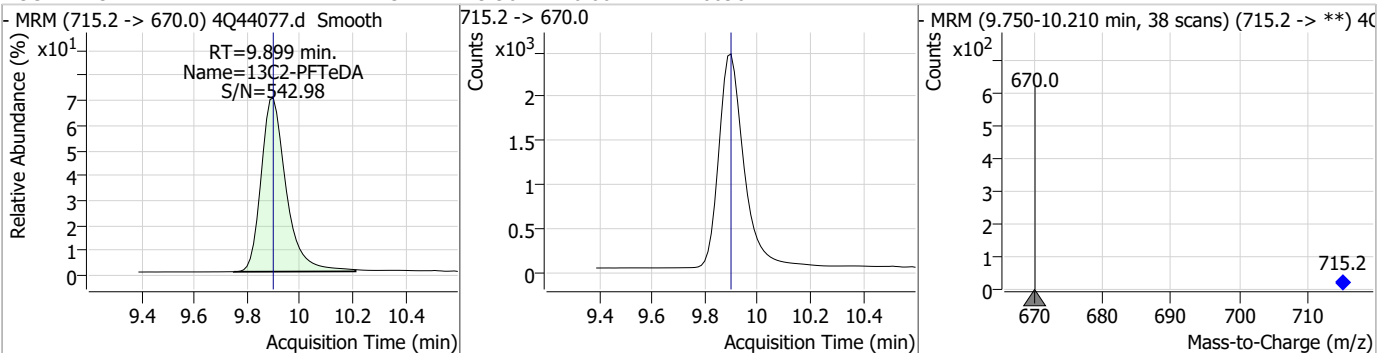
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.69	9.78	0.00	16720				



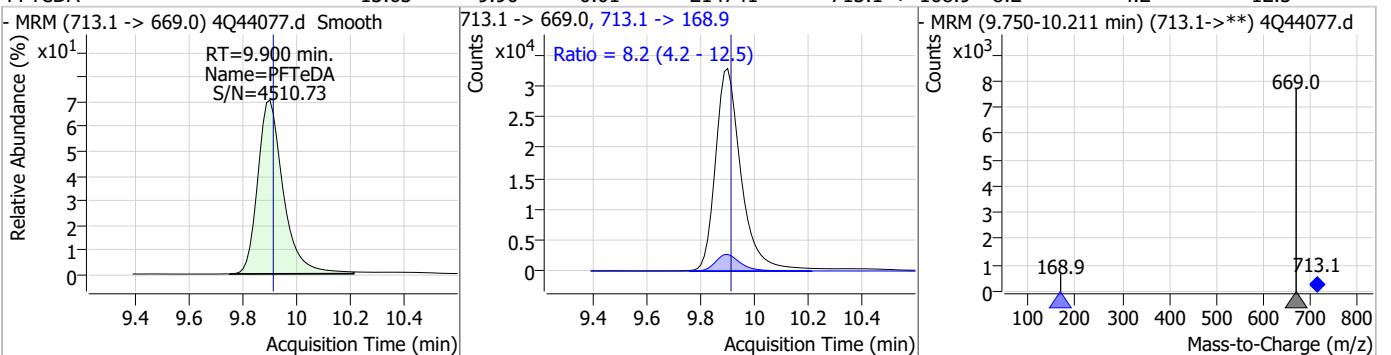
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.01	9.77	-0.01	196261 (m)	498.1 -> 478.0	3.2	1.7	5.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.23	9.90	0.00	16096				

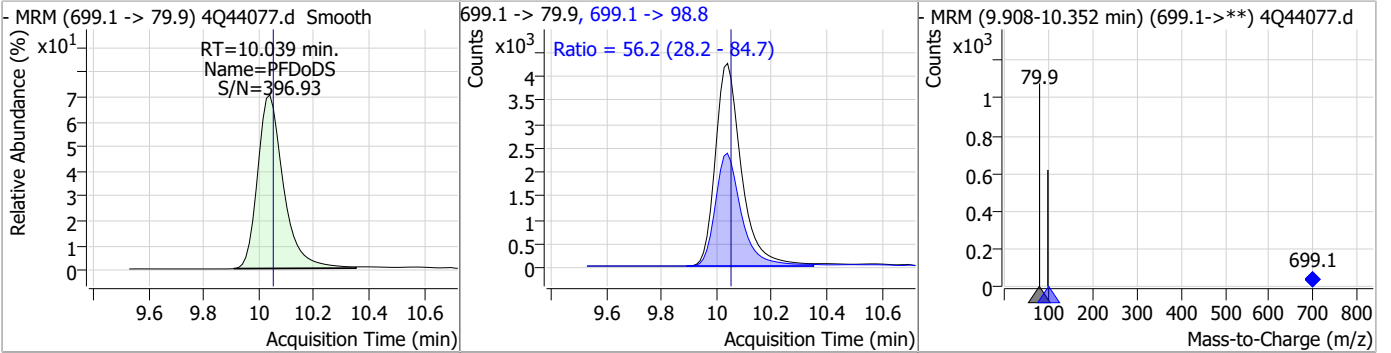


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	13.63	9.90	-0.01	214741	713.1 -> 168.9	8.2	4.2	12.5

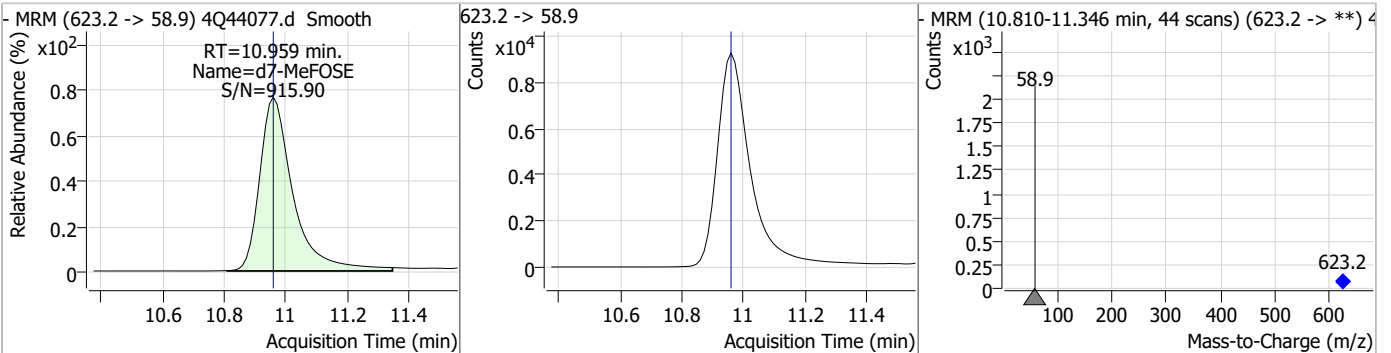


Perfluorinated Compounds by LC/MS/MS

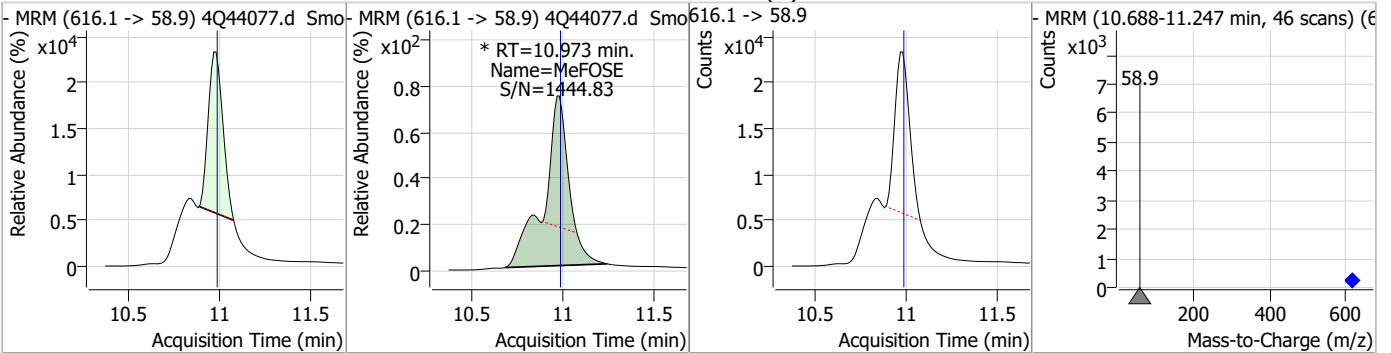
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	11.54	10.04	-0.01	27395	699.1 -> 98.8	56.2	28.2	84.7



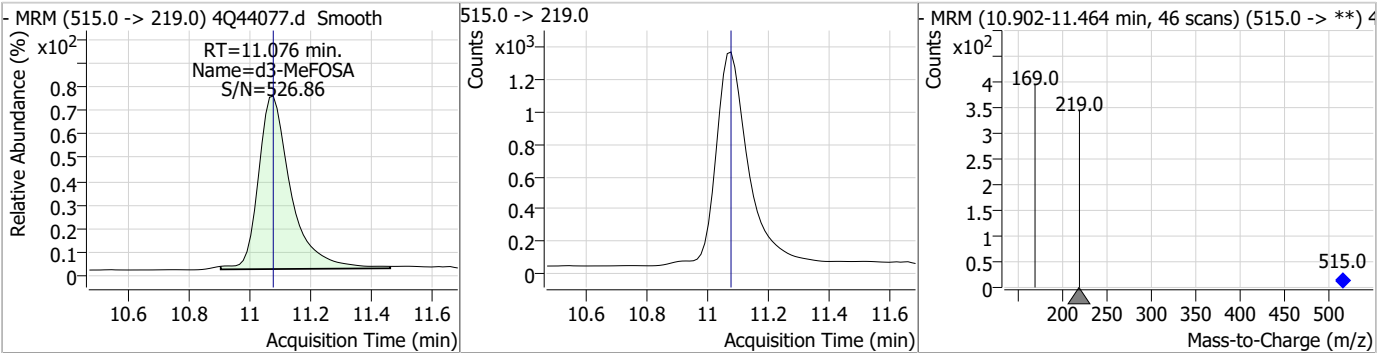
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.33	10.96	0.00	68921				



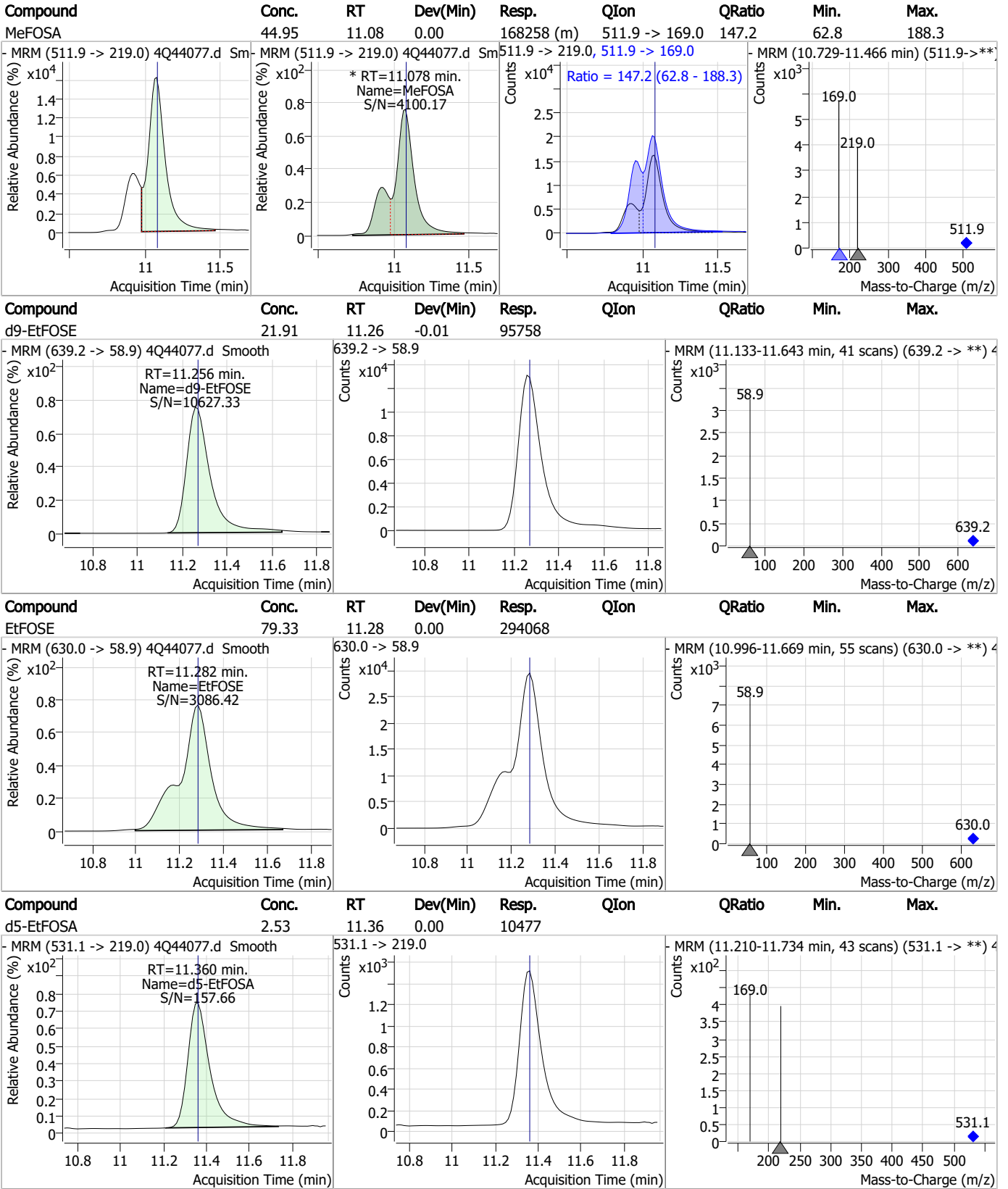
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	77.08	10.97	-0.01	218210 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.55	11.08	0.00	9937				



Perfluorinated Compounds by LC/MS/MS

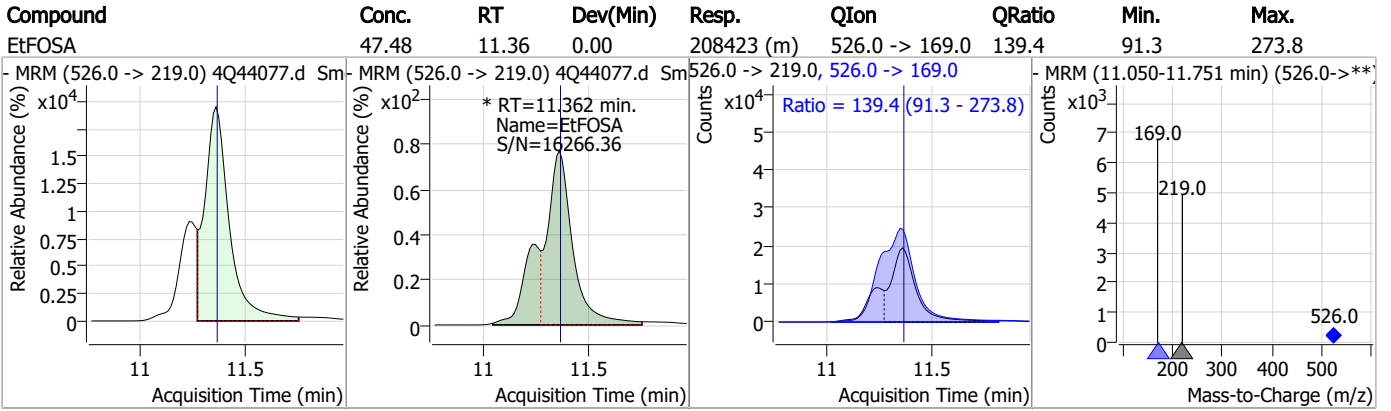


7.6.4

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Perfluorinated Compounds by LC/MS/MS



7.6.4

7

Manual Integration Approval Summary

Sample Number: S4Q638-RT
Lab FileID: 4Q44077.D
Injection Time: 05/08/23 13:33

Method: EPA DRAFT 1633
Analyst approved: 05/09/23 10:17 Martha Valls
Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.14	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
Perfluorononanoic acid	375-95-1		7.68	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
PFOSA	754-91-6		9.77	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

7.6.4.1

7

QQQ Check Tune Report



Instrument Name LCMS4-Q
MS Model G6470A
MS Instrument Serial SG2004G105
Software_Firmware Version 10.0.142, FW: A.00.08.100
Tune Date & Time 30 April 2023 11:24:53
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.76E+0 [R] (Torr); 3.64E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	4000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	7

7.7.1

7

QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.98	-0.01	Pass	0.70	0.66	-0.04	Pass	201034
302.00	302.01	0.01	Pass	0.70	0.67	-0.03	Pass	310264
601.98	602.01	0.03	Pass	0.70	0.69	-0.01	Pass	444462
1033.99	1034.02	0.03	Pass	0.70	0.70	0.00	Pass	616104
1633.95	1633.95	0.00	Pass	0.70	0.68	-0.02	Pass	1304259
2233.91	2233.90	-0.01	Pass	0.70	0.72	0.02	Pass	724412

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	43506
112.99	112.98	-0.01	Pass	0.70	0.71	0.01	Pass	146601
302.00	301.99	-0.01	Pass	0.70	0.66	-0.04	Pass	234306
601.98	601.92	-0.06	Pass	0.70	0.70	0.00	Pass	233181
1033.99	1033.85	-0.14	Pass	0.70	0.74	0.04	Pass	144228
1633.95	1633.70	-0.25	Adjust	0.70	0.78	0.08	Pass	201645
2233.91	2233.63	-0.28	Pass	0.70	0.79	0.09	Pass	82948

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.01	0.02	Pass	1.20	1.21	0.01	Pass	272389
302.00	301.98	-0.02	Pass	1.20	1.41	0.21	Pass	420909
601.98	601.99	0.01	Pass	1.20	1.44	0.24	Pass	763120
1033.99	1034.01	0.02	Pass	1.20	1.49	0.29	Pass	1327450
1633.95	1633.95	0.00	Pass	1.20	1.36	0.16	Pass	3403405
2233.91	2233.87	-0.04	Pass	1.20	1.20	0.00	Pass	1664147

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	1.20	1.10	-0.10	Pass	59945
112.99	112.96	-0.03	Pass	1.20	1.22	0.02	Pass	213730
302.00	302.00	0.00	Pass	1.20	1.45	0.25	Pass	349114
601.98	601.95	-0.03	Pass	1.20	1.53	0.33	Pass	449128
1033.99	1033.84	-0.15	Pass	1.20	1.59	0.39	Pass	302100
1633.95	1633.61	-0.34	Pass	1.20	1.55	0.35	Pass	580971
2233.91	2233.60	-0.31	Pass	1.20	1.47	0.27	Pass	324311

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	2.53	0.03	Pass	390598
302.00	302.01	0.01	Pass	2.50	2.70	0.20	Pass	510334
601.98	602.05	0.07	Pass	2.50	2.73	0.23	Pass	1033779
1033.99	1034.01	0.02	Pass	2.50	2.75	0.25	Pass	2141360
1633.95	1633.92	-0.03	Pass	2.50	2.63	0.13	Pass	6705580
2233.91	2233.79	-0.12	Pass	2.50	2.42	-0.08	Pass	4259918

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	2.37	-0.13	Pass	76909
112.99	112.97	-0.02	Pass	2.50	2.50	0.00	Pass	286009
302.00	301.99	-0.01	Pass	2.50	2.68	0.18	Pass	456032
601.98	601.95	-0.03	Pass	2.50	2.79	0.29	Pass	609214
1033.99	1033.83	-0.16	Pass	2.50	2.85	0.35	Pass	451181
1633.95	1633.68	-0.27	Pass	2.50	2.72	0.22	Pass	1021433
2233.91	2233.59	-0.32	Pass	2.50	2.47	-0.03	Pass	789629

7.7.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43884.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 11:12:11 AM
 Sample Name : ic634-1
 Vial : P1-A2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	133324	10.00 µg/L	-0.012
M5-PFPeA	4.362	268.3 -> 223.0	70436	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	51396	2.50 µg/L	-0.012
M4-PFHpA	6.455	367.1 -> 322.0	30242	2.50 µg/L	-0.012
M8-PFOA	7.124	421.1 -> 376.0	42914	2.50 µg/L	0.000
M9-PFNA	7.670	472.1 -> 427.0	20504	1.25 µg/L	0.000
M6-PFDA	8.166	519.1 -> 474.1	20136	1.25 µg/L	-0.012
M7-PFUnDA	8.635	570.0 -> 525.1	21422	1.25 µg/L	-0.012
M2-PFDoDA	9.093	615.1 -> 570.0	21281	1.25 µg/L	-0.012
M2-PFTeDA	9.886	715.2 -> 670.0	18387	1.25 µg/L	-0.012
M8-FOSA	9.758	506.1 -> 77.8	17575	2.50 µg/L	-0.012
M3-PFBS	5.427	302.1 -> 79.9	12829	2.50 µg/L	0.000
M3-PFHxS	7.217	402.1 -> 79.9	8172	2.50 µg/L	-0.012
M8-PFOS	8.316	507.1 -> 79.9	10530	2.50 µg/L	-0.013
M2-4:2FTS	5.209	329.1 -> 80.9	1189	5.00 µg/L	-0.014
M2-6:2FTS	6.886	429.1 -> 80.9	2090	5.00 µg/L	-0.012
M2-8:2FTS	7.953	529.1 -> 80.9	3107	5.00 µg/L	-0.012
M3-MeFOSAA	8.224	573.2 -> 419.0	14225	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	29384	10.00 µg/L	-0.012
M5-EtFOSAA	8.433	589.2 -> 419.0	10858	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	84284	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	127257	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	12371	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	11108	2.50 µg/L	0.000
13C4-PFOS	8.317	502.8 -> 79.9	12141	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	70772	5.00 µg/L	-0.013
18O2-PFHxS	7.216	403.0 -> 83.9	5179	2.50 µg/L	-0.012
13C4-PFOA	7.124	417.1 -> 372.0	53320	2.50 µg/L	0.000
13C2-PFDA	8.166	515.1 -> 470.1	18742	1.25 µg/L	-0.012
13C5-PFNA	7.671	468.0 -> 423.0	24868	1.25 µg/L	-0.013
13C2-PFHxA	5.523	315.1 -> 270.0	45134	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.209	329.1 -> 80.9	1189	5.65 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.0%		
13C2-6:2FTS	6.886	429.1 -> 80.9	2090	5.51 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.2%		
13C2-8:2FTS	7.953	529.1 -> 80.9	3107	5.25 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C2-PFDoDA	9.093	615.1 -> 570.0	21281	1.17 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-PFTeDA	9.886	715.2 -> 670.0	18387	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C3-PFBS	5.427	302.1 -> 79.9	12829	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.1%		
13C3-PFHxS	7.217	402.1 -> 79.9	8172	2.55 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C4-PFBA	2.911	216.8 -> 171.9	133324	10.01 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.455	367.1 -> 322.0	30242	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C5-PFHxA	5.522	318.0 -> 273.0	51396	2.59 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C5-PFPeA	4.362	268.3 -> 223.0	70436	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C6-PFDA	8.166	519.1 -> 474.1	20136	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C7-PFUnDA	8.635	570.0 -> 525.1	21422	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-FOSA	9.758	506.1 -> 77.8	17575	2.31 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C8-PFOA	7.124	421.1 -> 376.0	42914	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C8-PFOS	8.316	507.1 -> 79.9	10530	2.30 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C9-PFNA	7.670	472.1 -> 427.0	20504	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
d3-MeFOSAA	8.224	573.2 -> 419.0	14225	4.64 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	29384	9.90 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
d3-MeFOSA	11.064	515.0 -> 219.0	11108	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
d5-EtFOSAA	8.433	589.2 -> 419.0	10858	4.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.1%	
d7-MeFOSE	10.947	623.2 -> 58.9	84284	22.31 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.3%	
d9-EtFOSE	11.256	639.2 -> 58.9	127257	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	12371	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
Target Compounds					QValue
4:2FTS	5.209	327.1 -> 307.0	1373	0.72 µg/L	99
		327.1 -> 80.9	654		
6:2FTS	6.886	427.1 -> 407.0	1456	0.72 µg/L	78
		427.1 -> 80.9	820		
8:2FTS	7.954	527.1 -> 507.0	1265	0.73 µg/L	99
		527.1 -> 80.8	529		
EtFOSAA	8.446	584.2 -> 419.1	415	0.20 µg/L	m 91
		584.2 -> 526.0	236		
FOSA	9.761	498.1 -> 77.9	1434	0.19 µg/L	99
		498.1 -> 478.0	51		
MeFOSAA	8.237	570.1 -> 419.0	578	0.23 µg/L	m 93
		570.1 -> 483.0	157		
PFBA	2.920	212.8 -> 168.9	2671	0.75 µg/L	100
PFBS	5.415	298.7 -> 79.9	887	0.17 µg/L	94
		298.7 -> 98.8	396		
PFDA	8.166	512.9 -> 469.0	2822	0.18 µg/L	96
		512.9 -> 219.0	561		
PFDODA	9.094	613.1 -> 569.0	3581	0.21 µg/L	m 93
		613.1 -> 319.0	631		
PFDS	9.257	599.0 -> 79.9	464	0.18 µg/L	93

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	235			
PFHpA	6.455	363.1 -> 319.0	3266	0.17	µg/L	m
		363.1 -> 169.0	704			
PFHpS	7.797	449.0 -> 79.9	730	0.19	µg/L	88
		449.0 -> 98.9	450			
PFHxA	5.525	313.0 -> 269.0	3920	0.19	µg/L	98
		313.0 -> 118.9	88			
PFHxS	7.218	398.7 -> 79.9	568	0.17	µg/L	m
		398.7 -> 98.9	277			
PFNA	7.671	463.0 -> 419.0	3263	0.21	µg/L	96
		463.0 -> 219.0	753			
PFNS	8.799	548.8 -> 79.9	435	0.19	µg/L	99
		548.8 -> 98.9	230			
PFOA	7.125	413.0 -> 369.0	4788	0.19	µg/L	87
		413.0 -> 169.0	1204			
PFOS	8.305	498.9 -> 79.9	1025	0.20	µg/L	m
		498.9 -> 98.8	575			
PFPeA	4.364	263.0 -> 219.0	6141	0.36	µg/L	100
PFPeS	6.494	349.1 -> 79.9	506	0.18	µg/L	98
		349.1 -> 98.9	227			
PFTeDA	9.887	713.1 -> 669.0	3199	0.18	µg/L	99
		713.1 -> 168.9	282			
PFTrDA	9.515	663.0 -> 619.0	5149	0.23	µg/L	96
		663.0 -> 168.9	485			
PFUnDA	8.648	563.1 -> 519.0	2712	0.19	µg/L	99
		563.1 -> 269.1	564			
11Cl-PF3OUdS	9.556	630.9 -> 450.9	3635	0.34	µg/L	89
		632.9 -> 452.9	1273			
9Cl-PF3ONS	8.663	530.8 -> 351.0	4687	0.35	µg/L	95
		532.8 -> 353.0	1553			
ADONA	6.718	376.9 -> 250.9	11026	0.37	µg/L	99
		376.9 -> 84.8	2854			
HFPO-DA	5.891	284.9 -> 168.9	1087	0.39	µg/L	92
		284.9 -> 184.9	91			
3:3FTCA	3.823	241.0 -> 177.0	672	0.90	µg/L	100
		241.0 -> 117.0	57			
5:3FTCA	6.180	341.0 -> 237.1	12380	4.53	µg/L	96
		341.0 -> 217.0	8858			
7:3FTCA	7.636	441.0 -> 316.9	6366	4.48	µg/L	99
		441.0 -> 336.9	15098			
EtFOSA	11.350	526.0 -> 219.0	1635	0.32	µg/L	m
		526.0 -> 169.0	2557			
EtFOSE	11.270	630.0 -> 58.9	4617	0.94	µg/L	m
MeFOSA	11.066	511.9 -> 219.0	1473	0.35	µg/L	m
		511.9 -> 169.0	2671			
MeFOSE	10.960	616.1 -> 58.9	3786	1.09	µg/L	m
PFDoDS	10.039	699.1 -> 79.9	469	0.20	µg/L	87
		699.1 -> 98.8	207			
NFDHA	5.403	295.0 -> 201.0	554	0.39	µg/L	80
		295.0 -> 84.9	96			
PFMBA	4.766	279.0 -> 85.1	3672	0.39	µg/L	100
PFMPA	3.515	229.0 -> 84.9	3240	0.37	µg/L	100
PFEESA	5.959	314.8 -> 134.9	5092	0.33	µg/L	95
		314.8 -> 82.9	107			

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

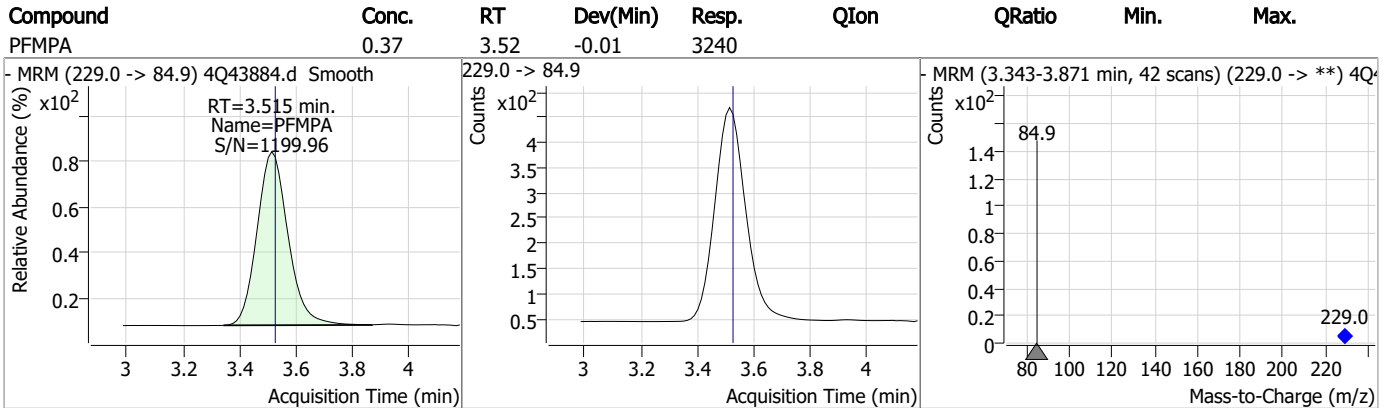
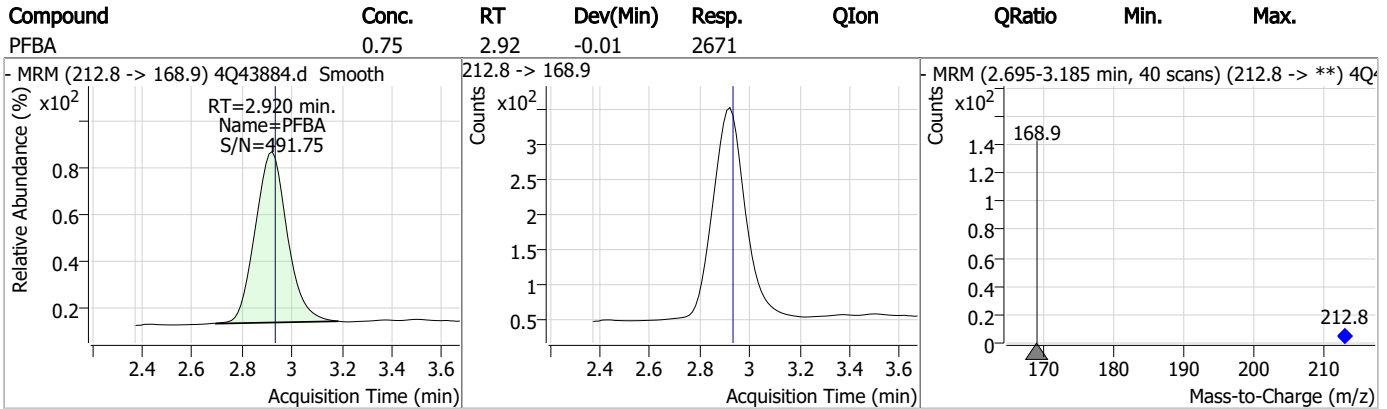
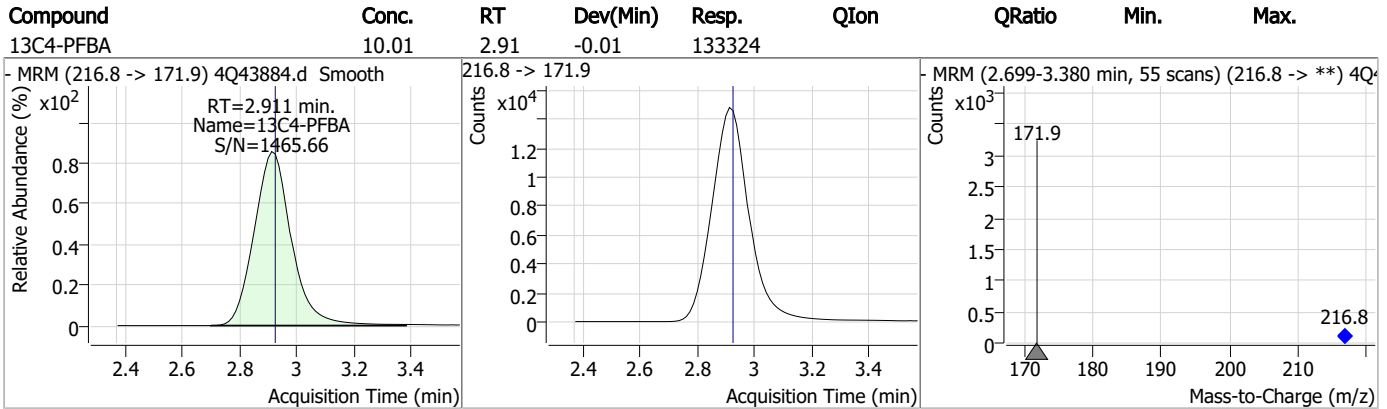
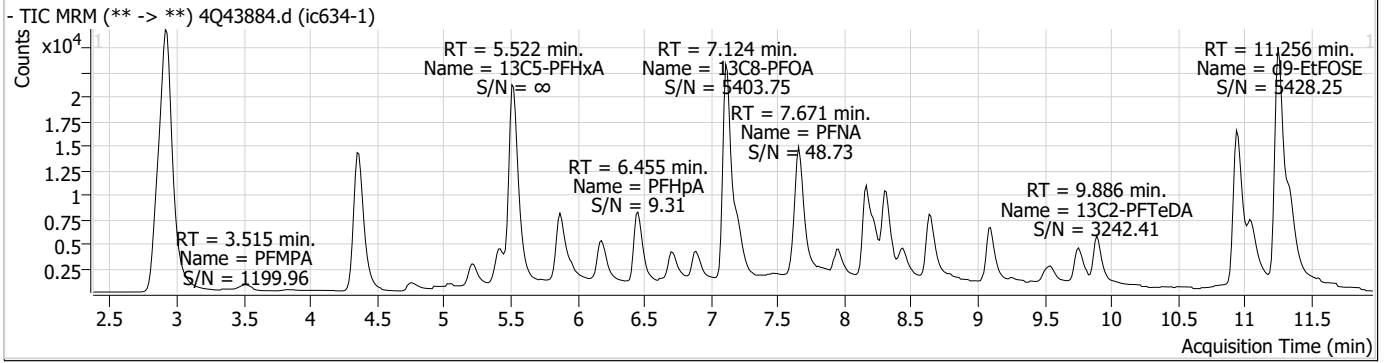
Perfluorinated Compounds by LC/MS/MS

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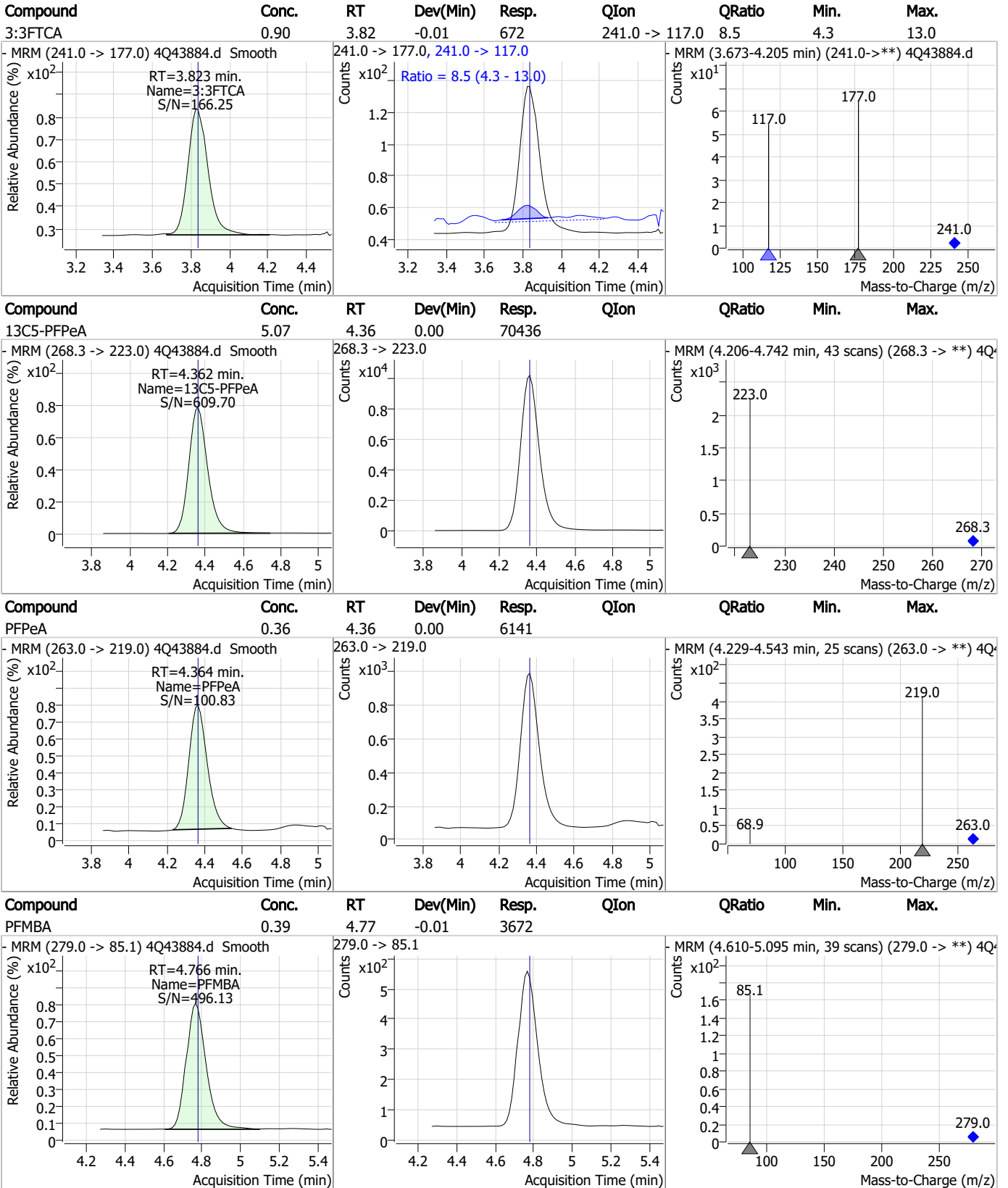
Perfluorinated Compounds by LC/MS/MS



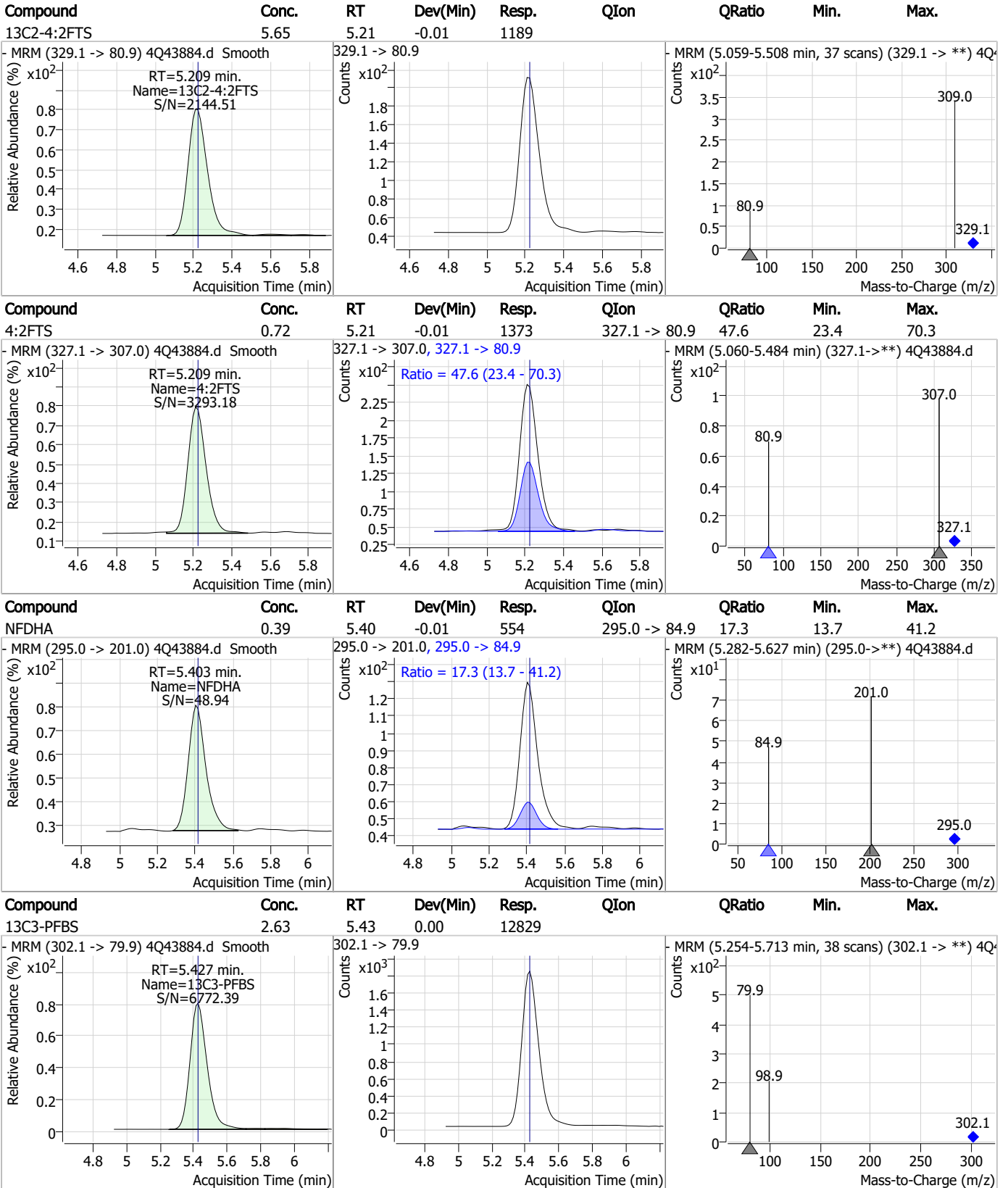
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

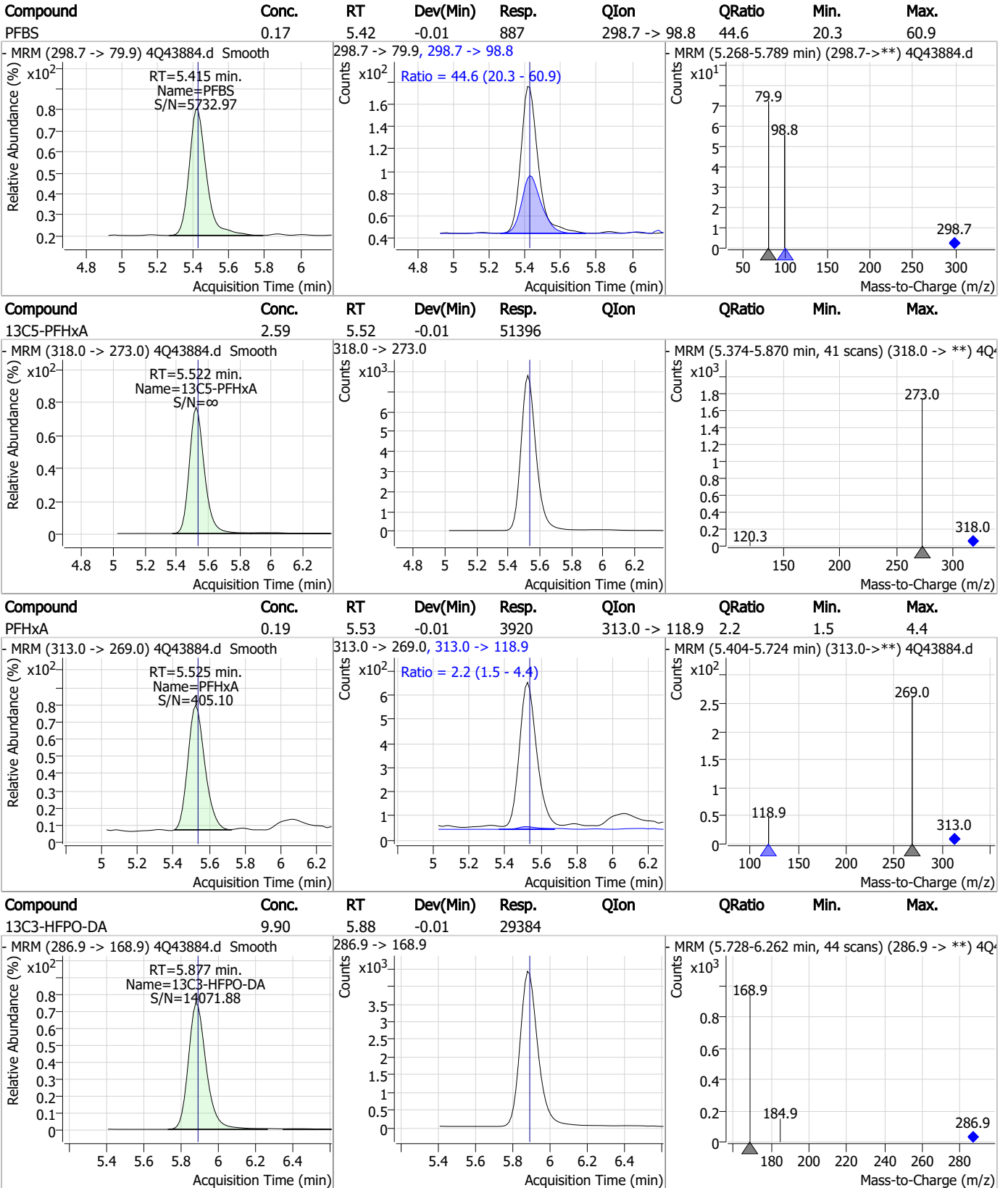


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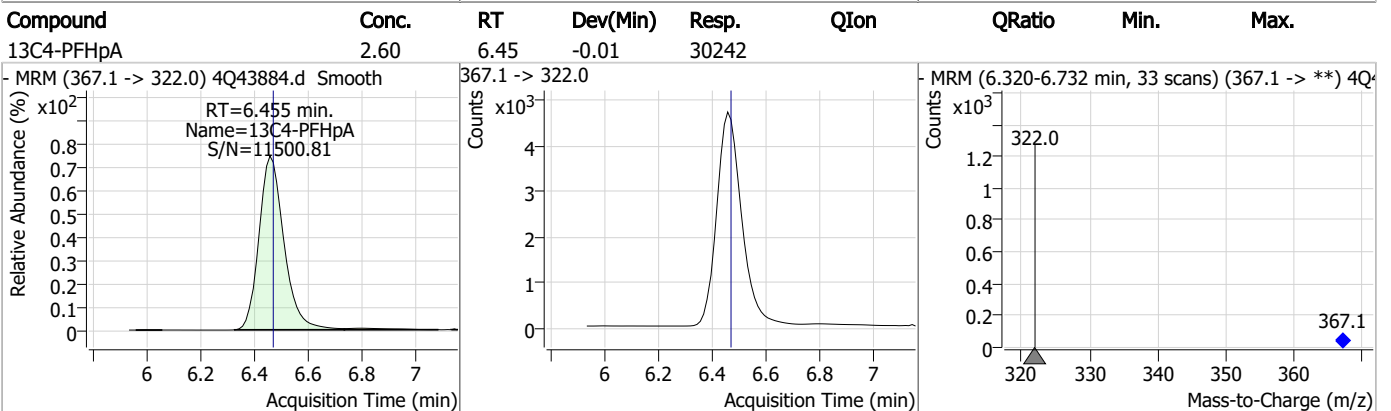
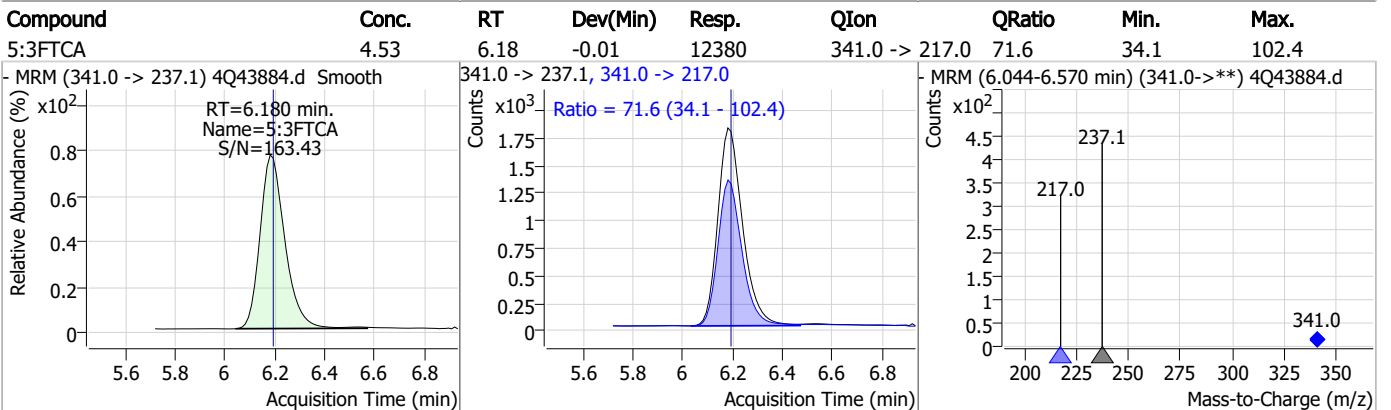
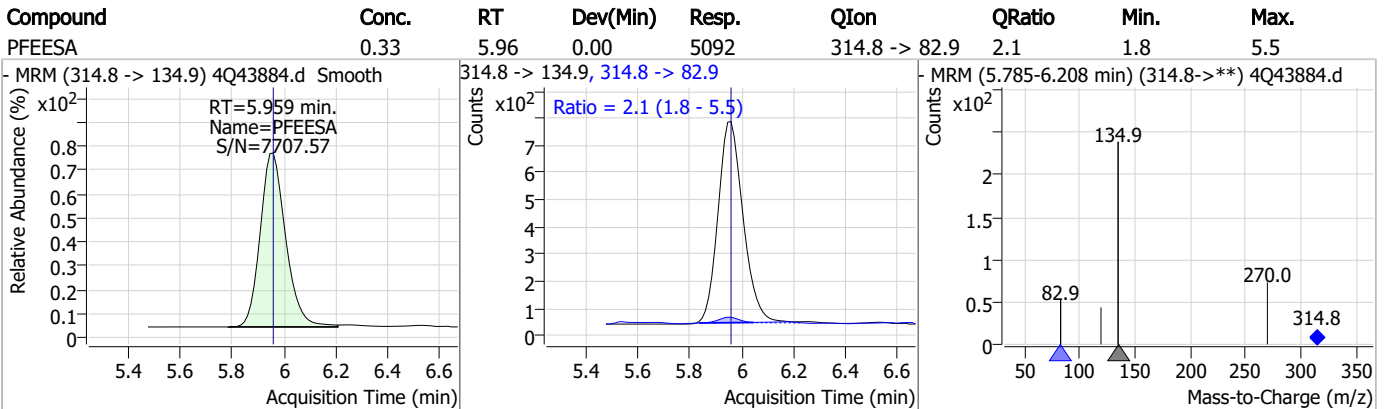
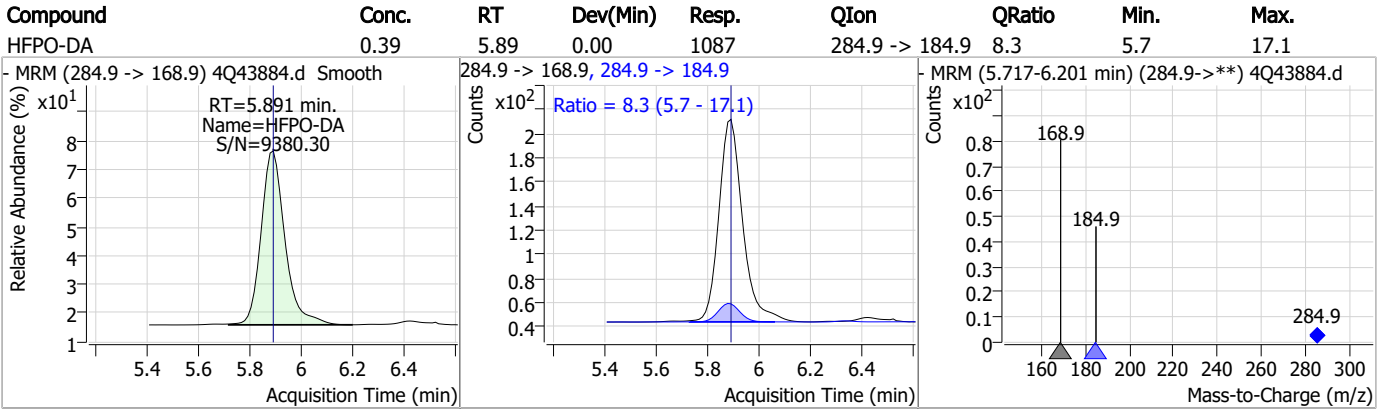
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Perfluorinated Compounds by LC/MS/MS



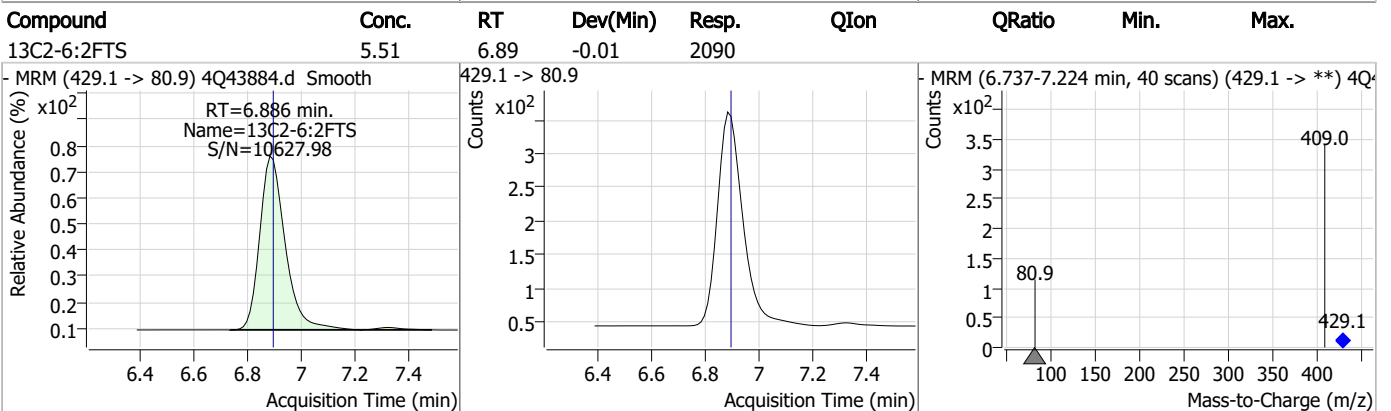
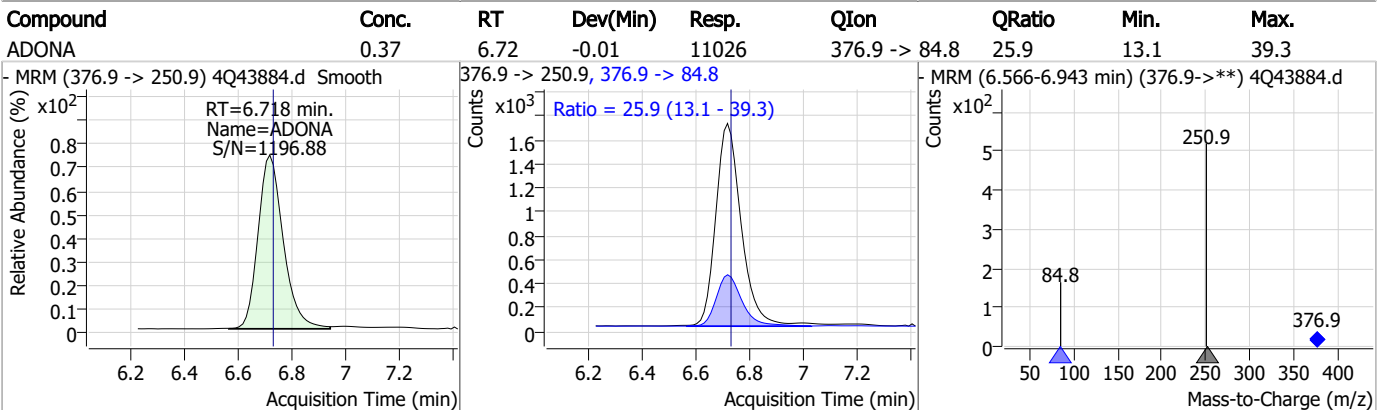
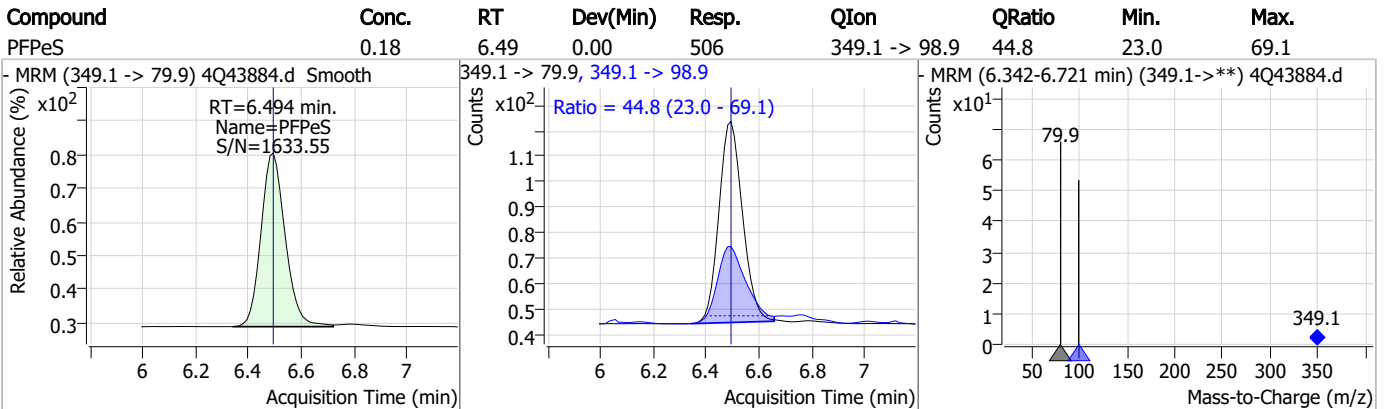
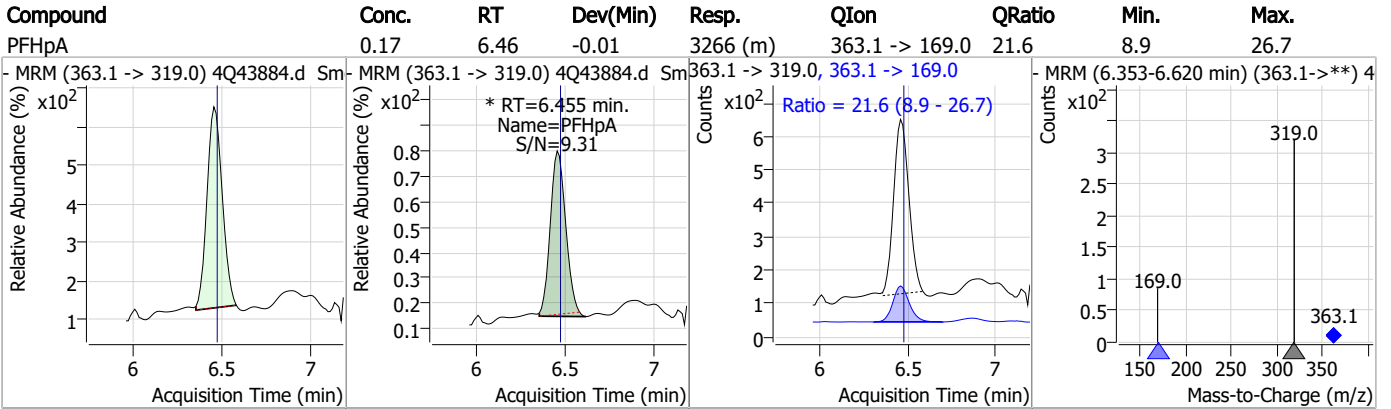
Perfluorinated Compounds by LC/MS/MS



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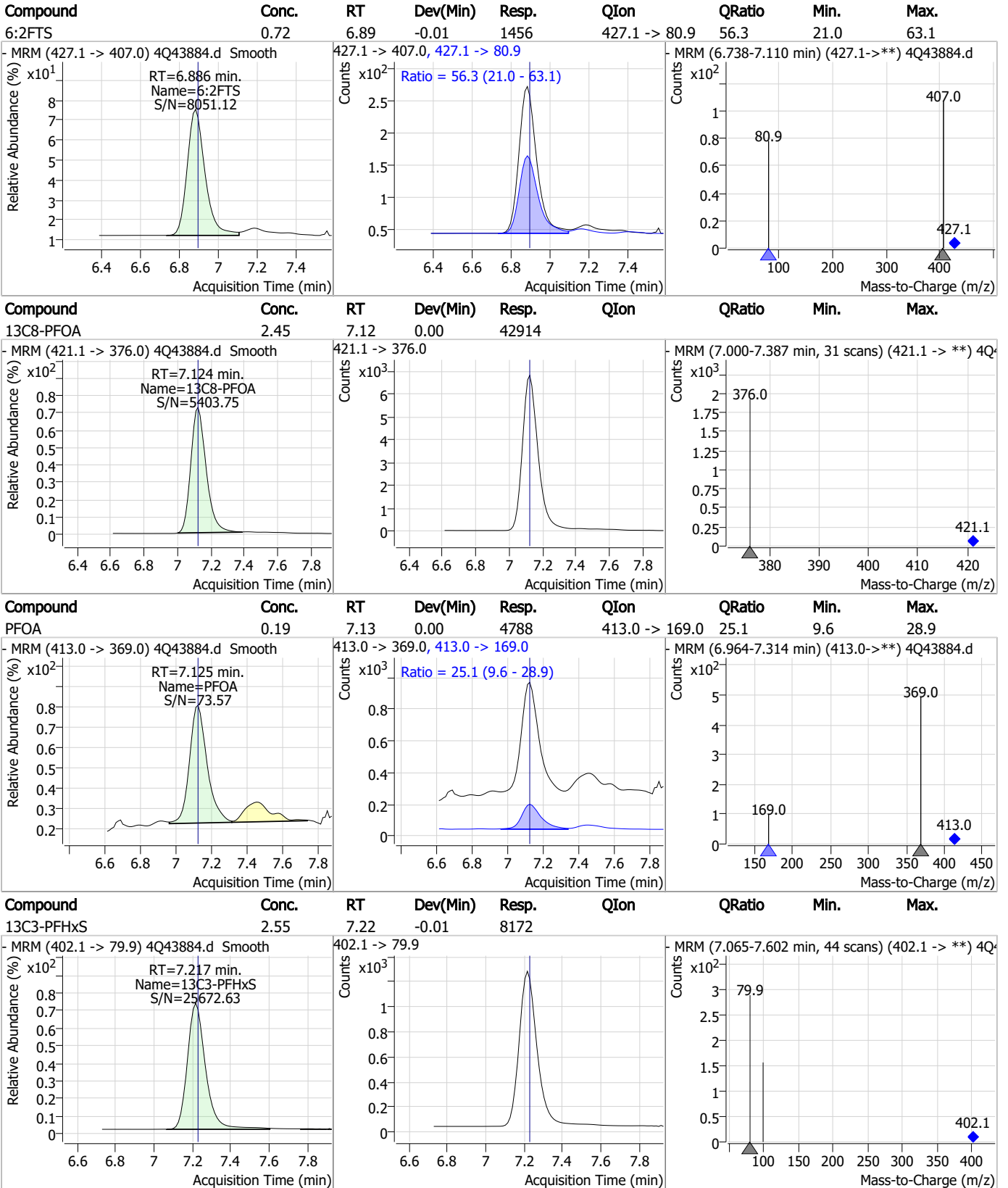
Perfluorinated Compounds by LC/MS/MS



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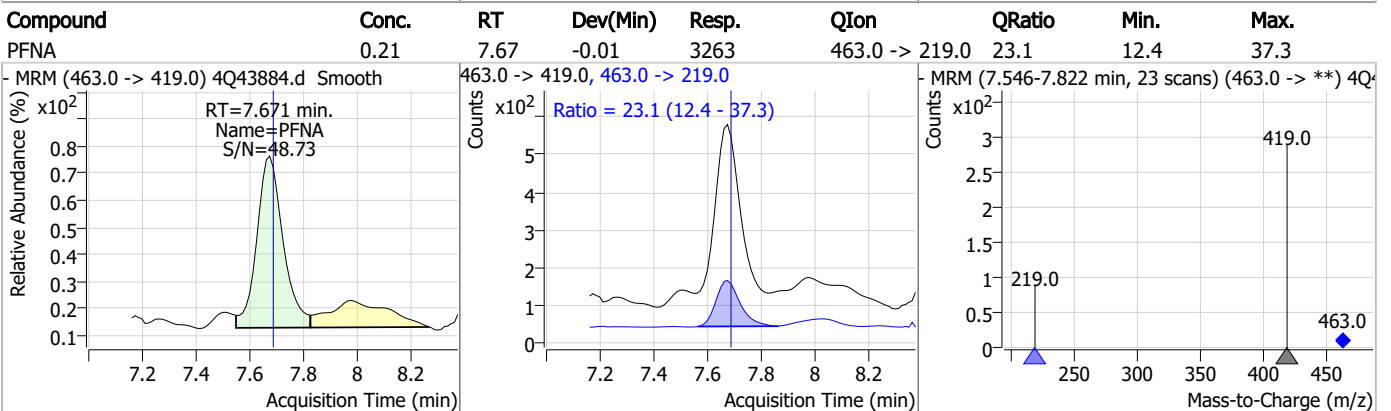
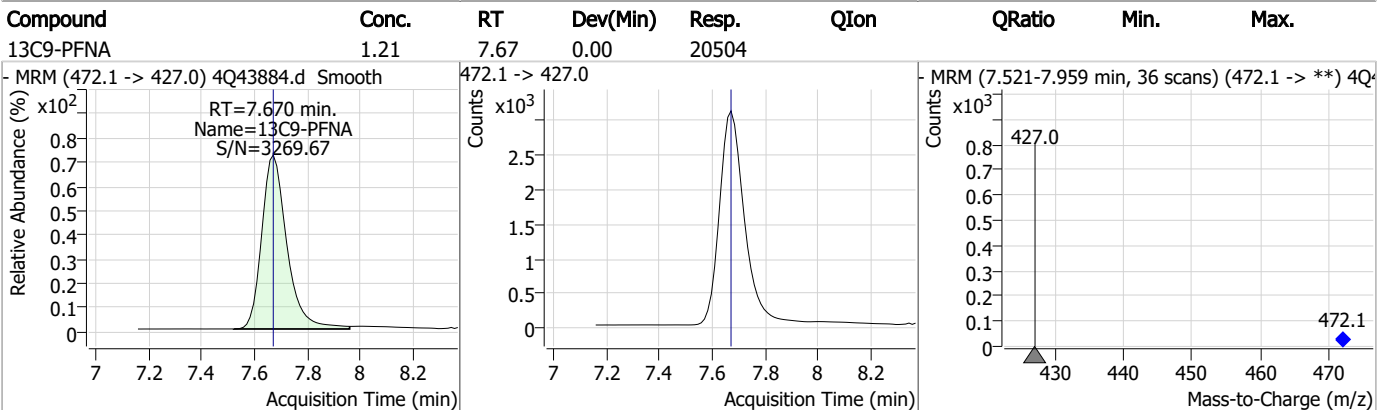
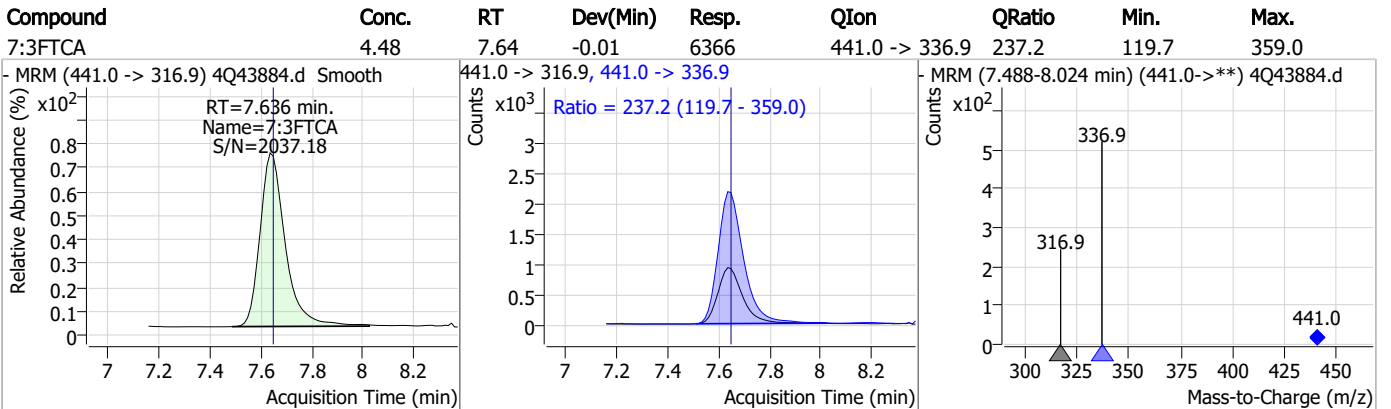
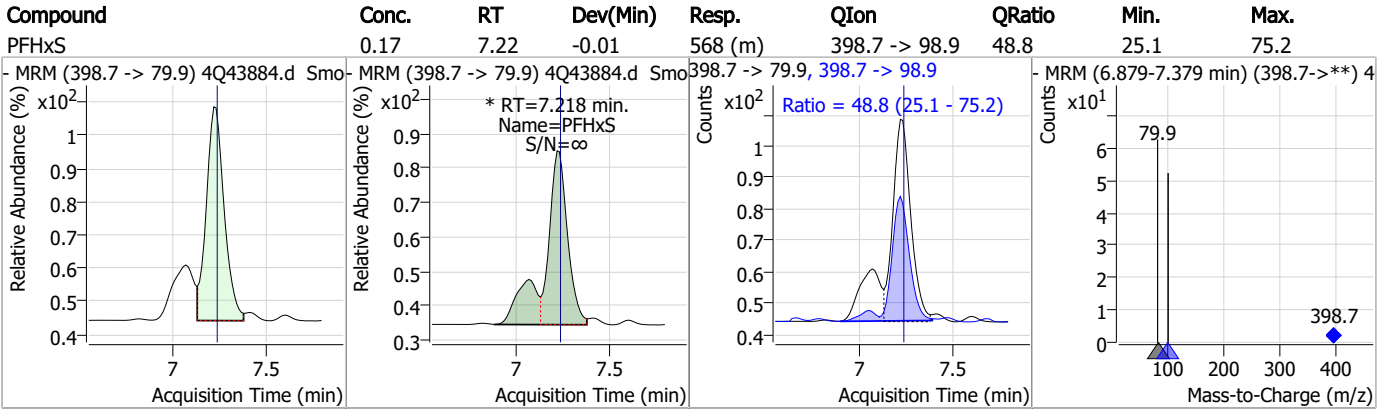
Perfluorinated Compounds by LC/MS/MS



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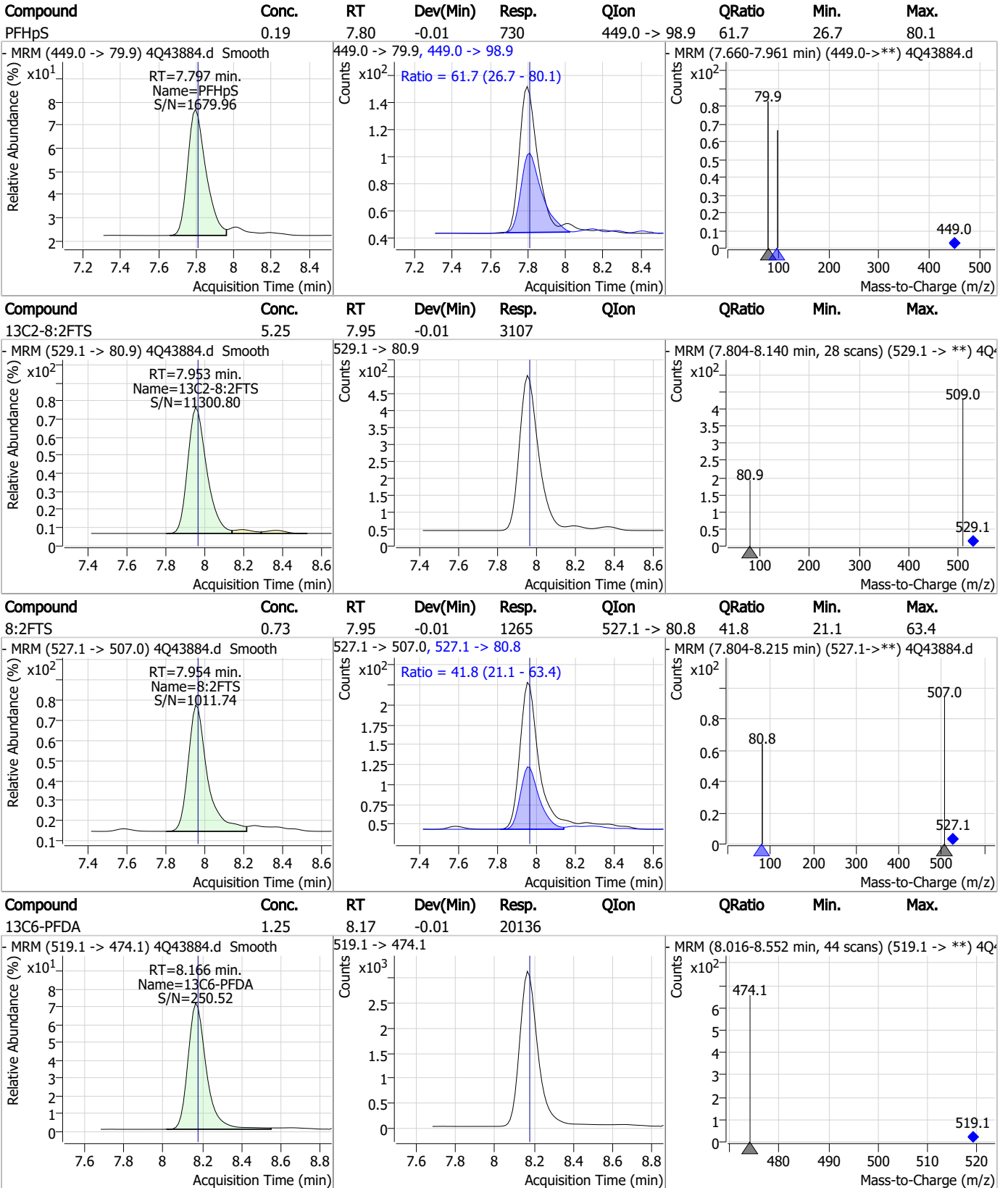
Perfluorinated Compounds by LC/MS/MS



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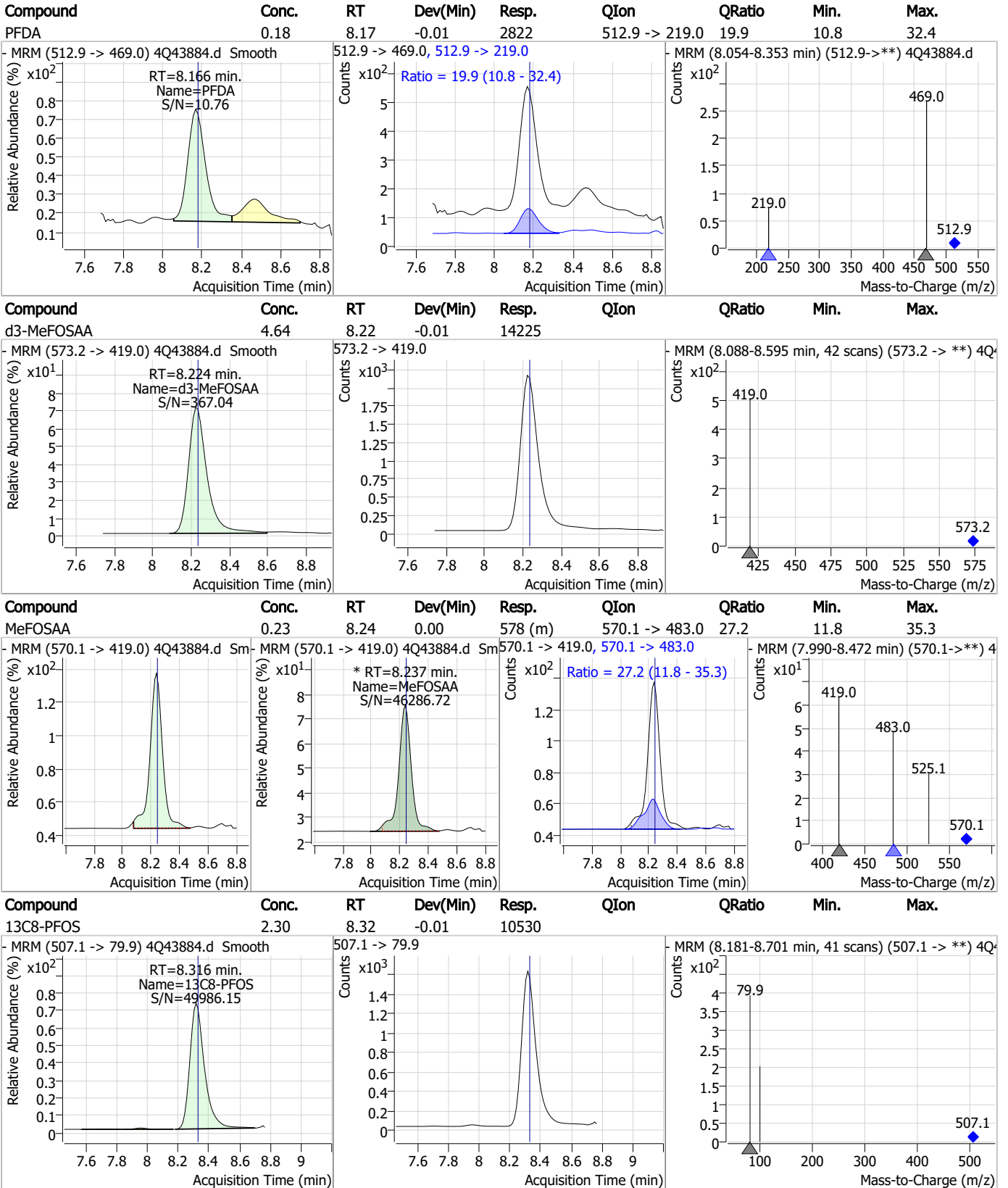
Perfluorinated Compounds by LC/MS/MS



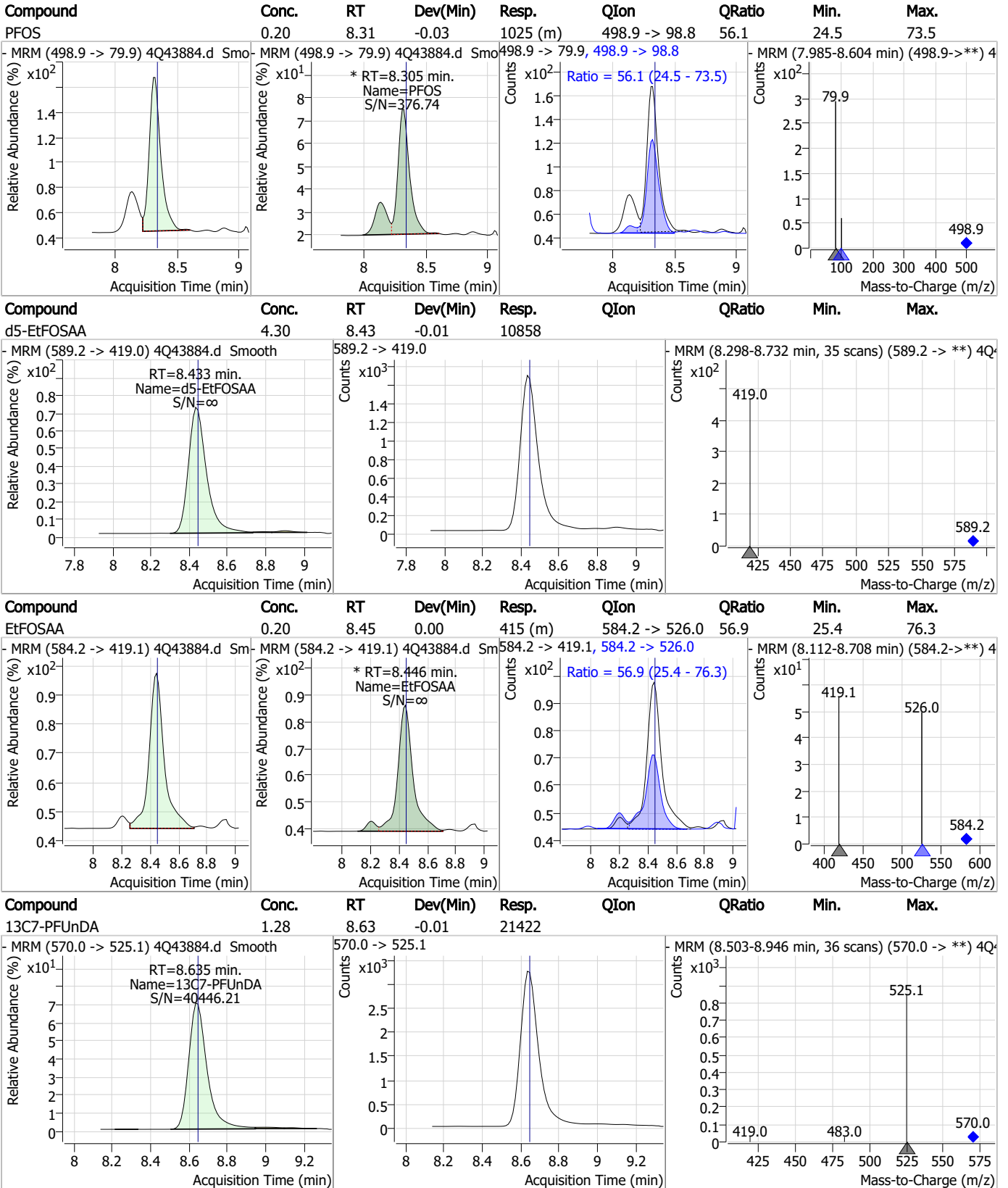
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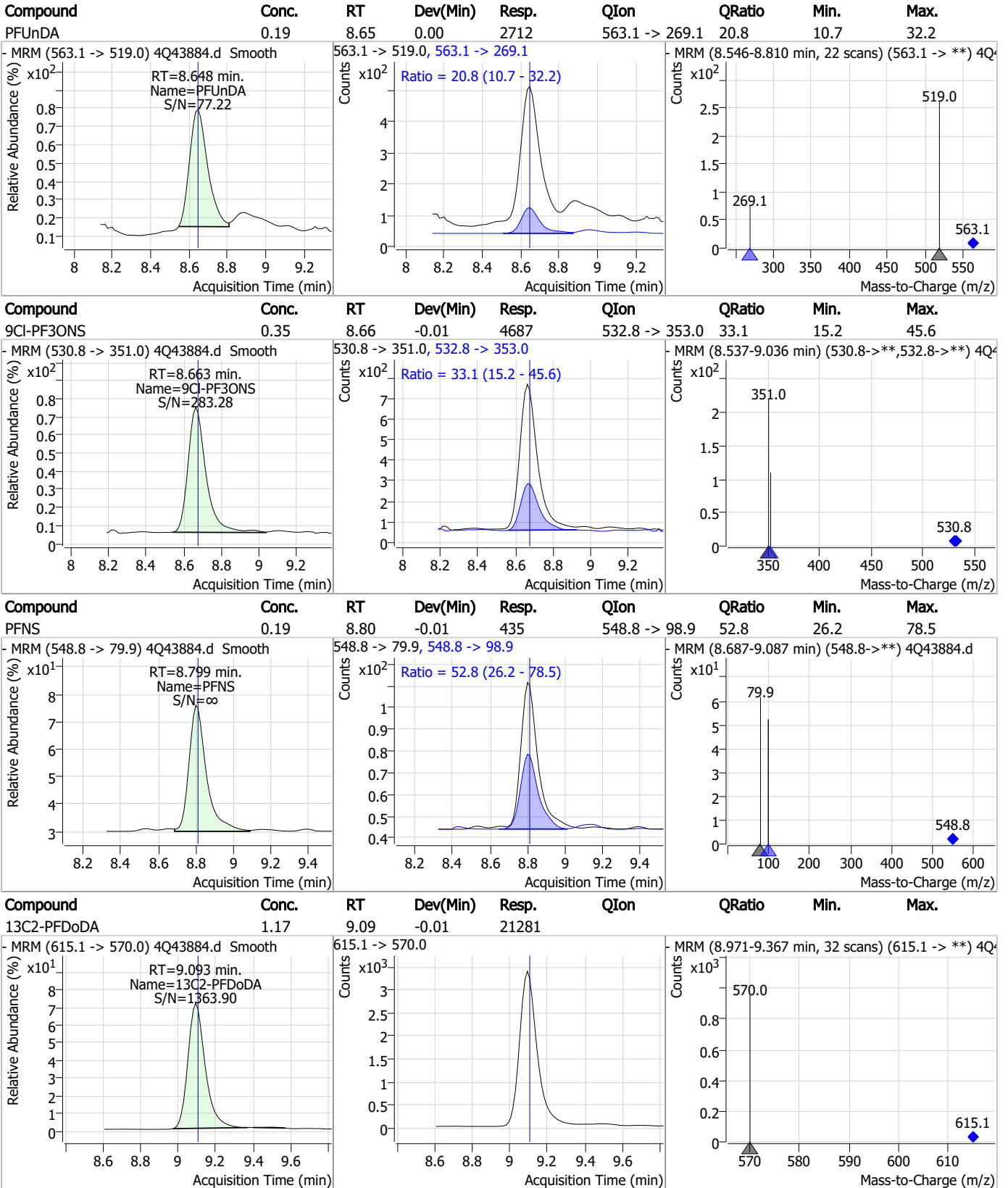
Perfluorinated Compounds by LC/MS/MS



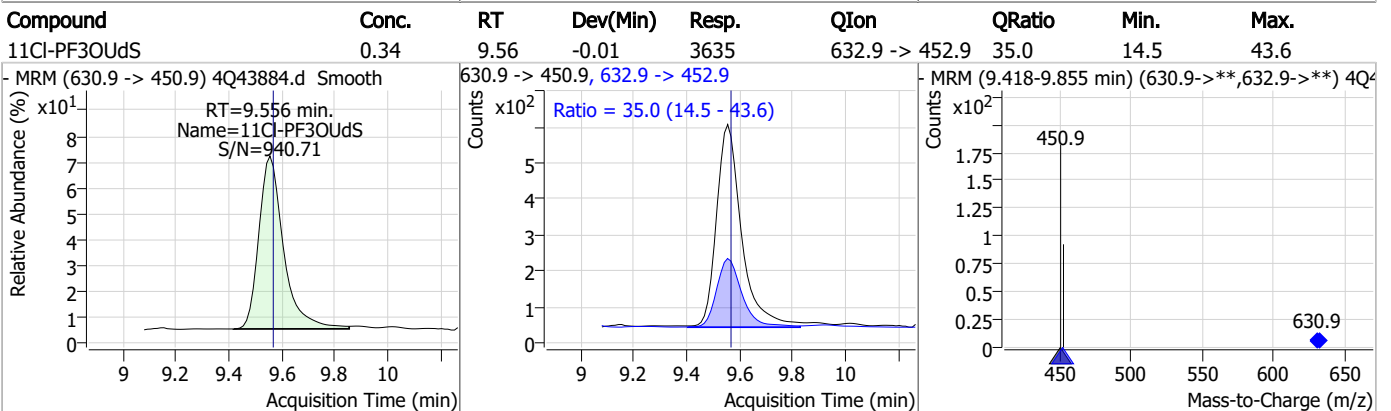
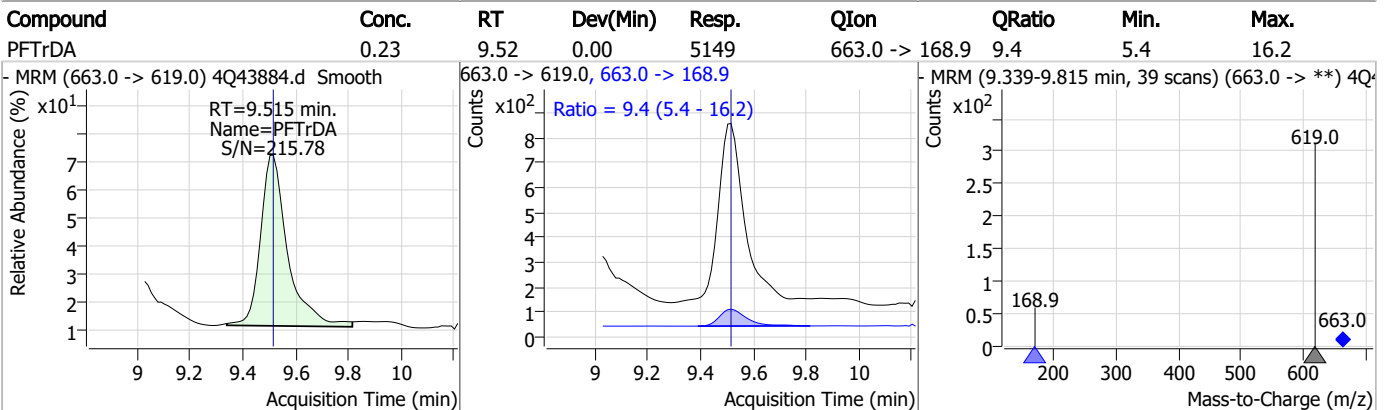
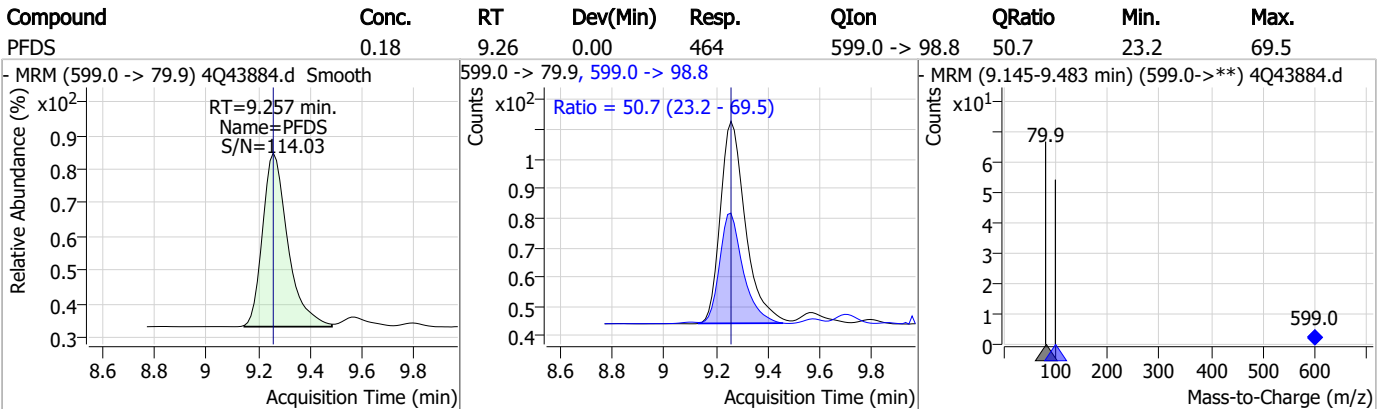
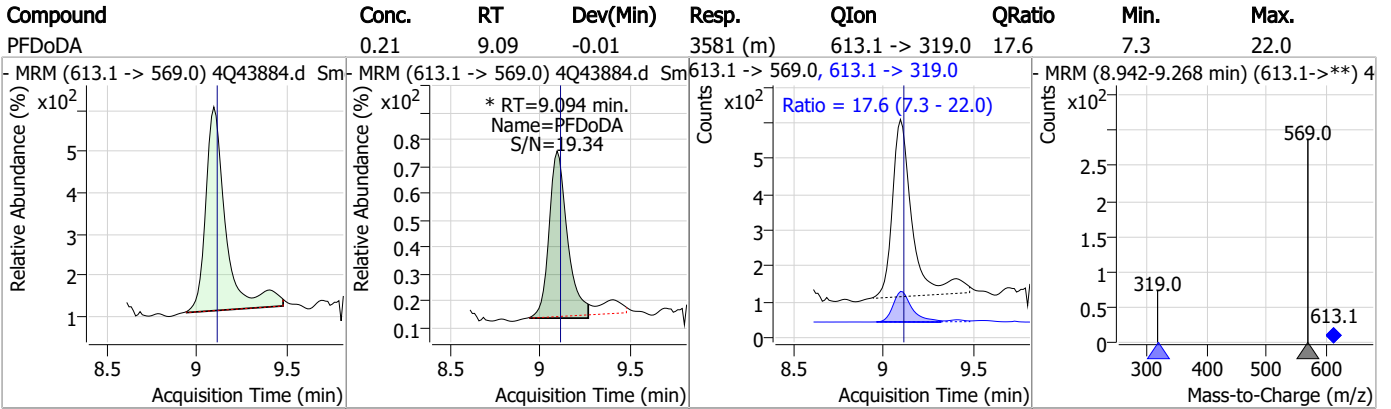
Perfluorinated Compounds by LC/MS/MS



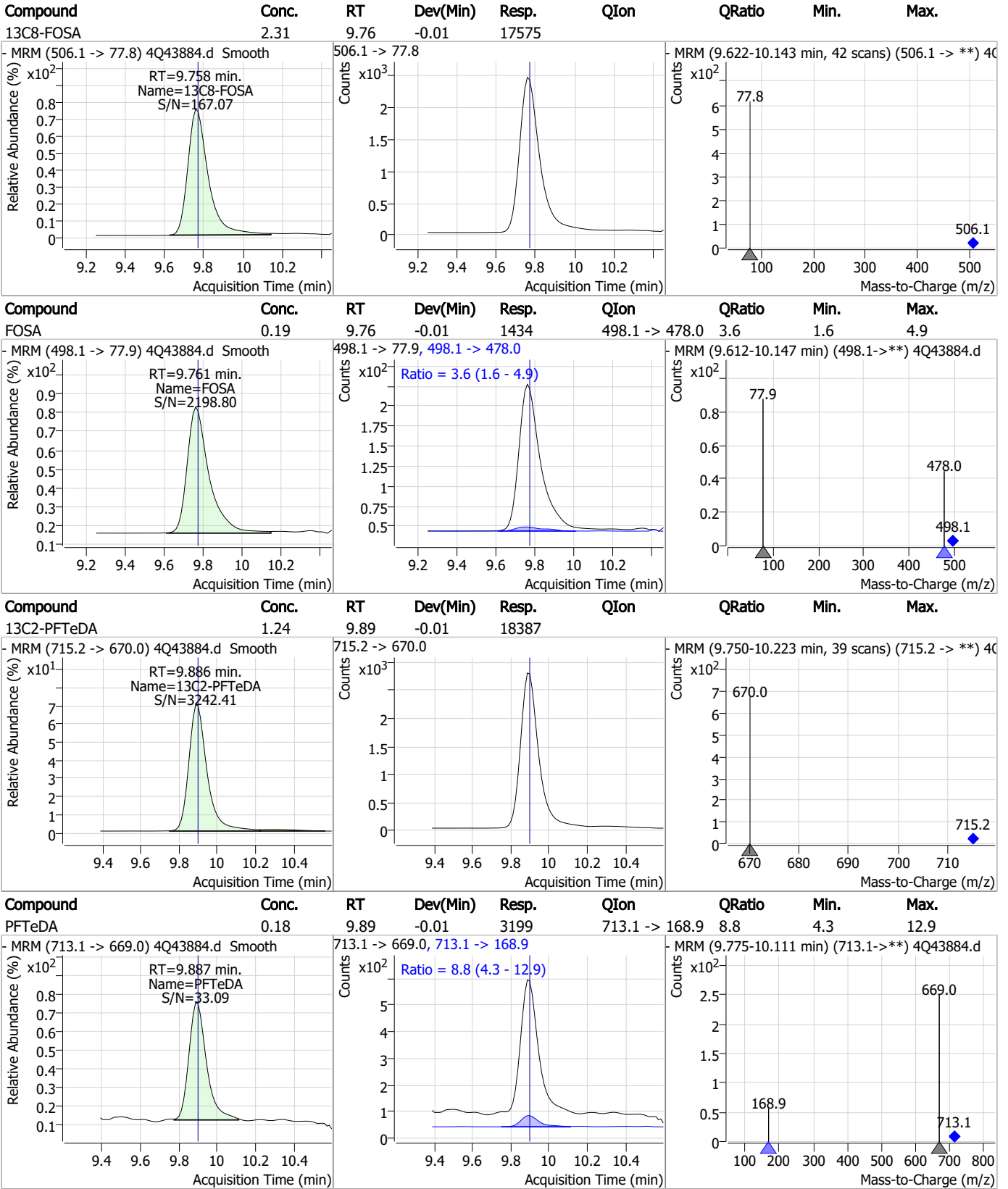
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

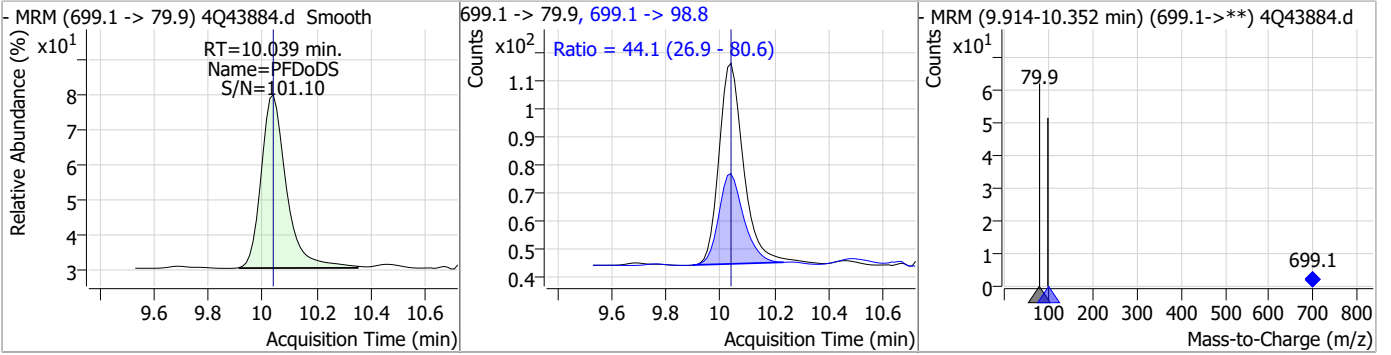


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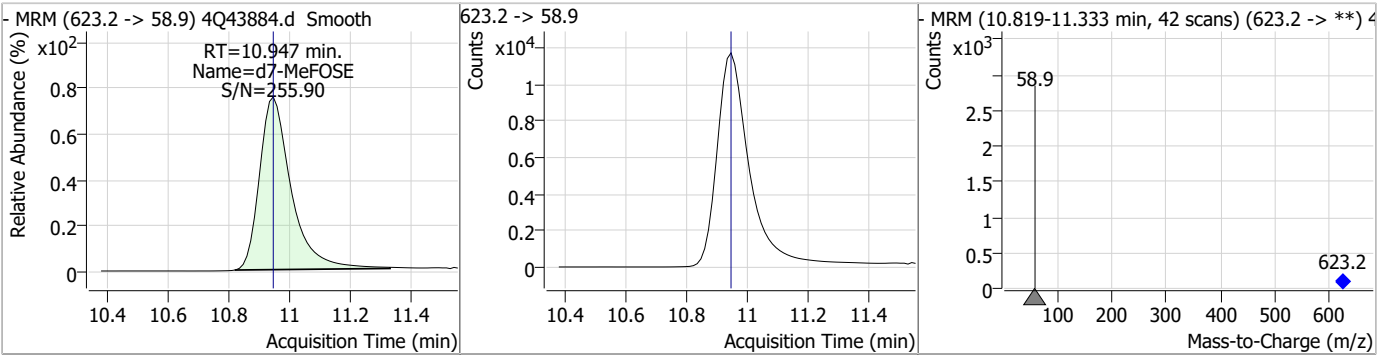
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Perfluorinated Compounds by LC/MS/MS

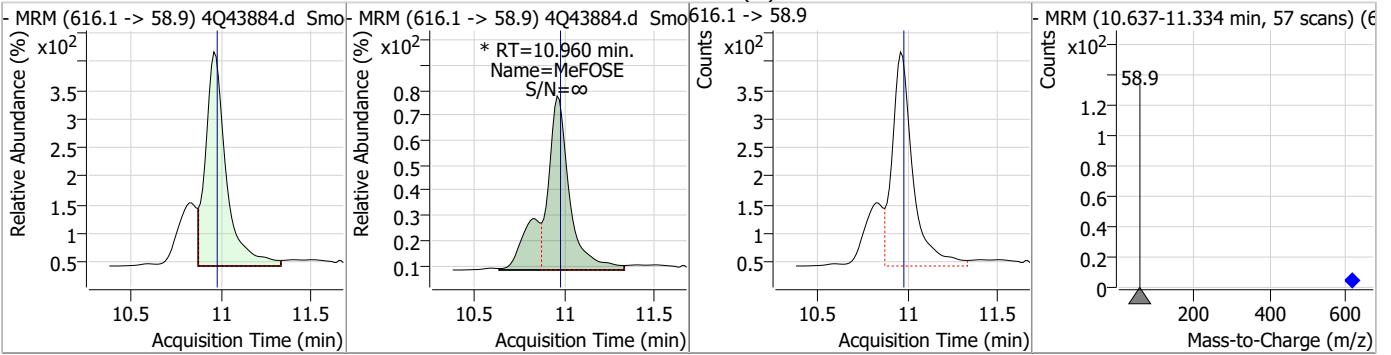
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.20	10.04	0.00	469	699.1 -> 98.8	44.1	26.9	80.6



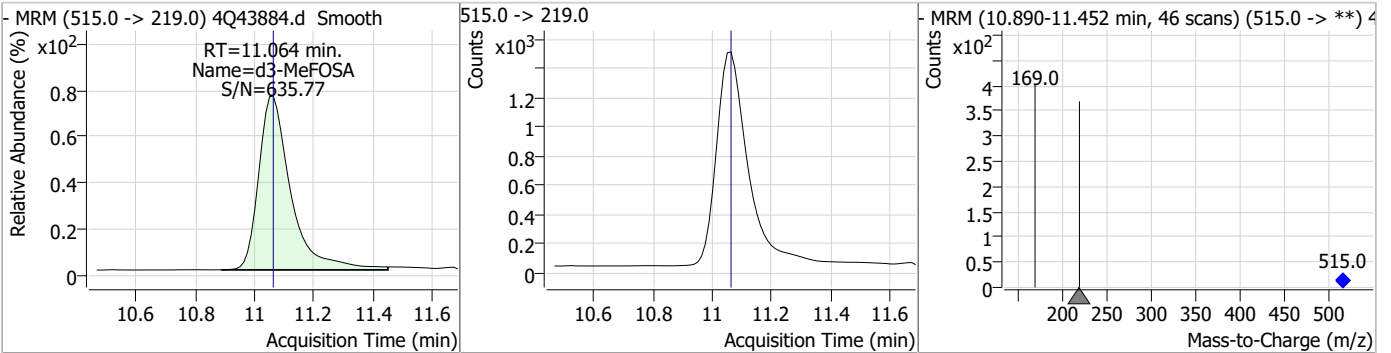
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.31	10.95	0.00	84284				



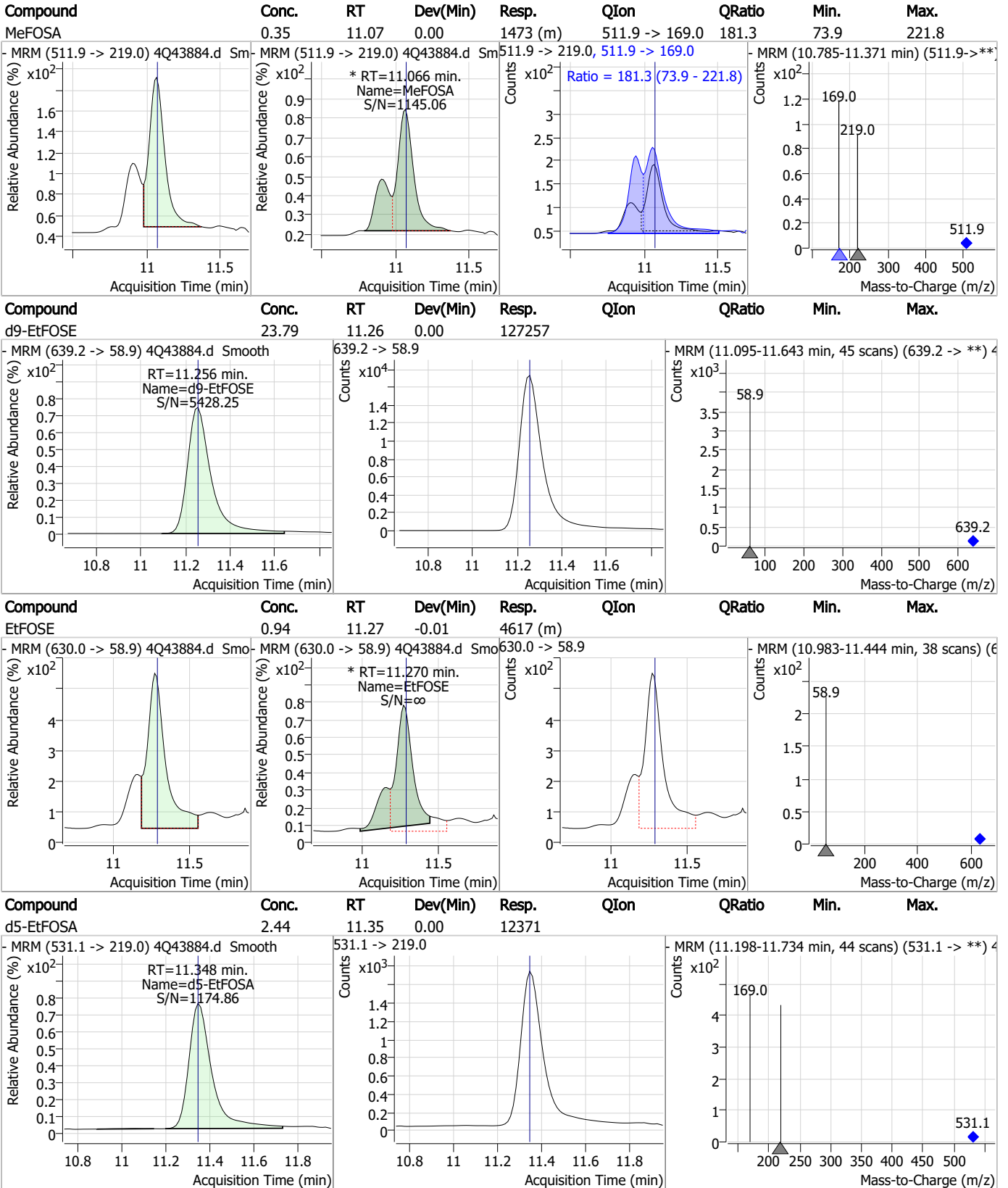
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.09	10.96	-0.01	3786 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.06	0.00	11108				



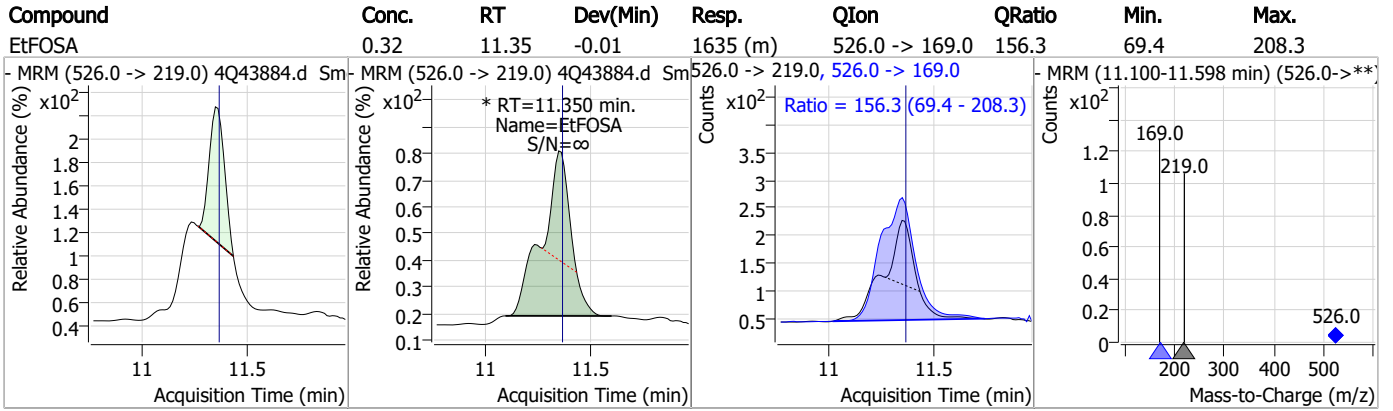
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q634-IC634 **Method:** EPA DRAFT 1633
Lab FileID: 4Q43884.D **Analyst approved:** 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 11:12 **Supervisor approved:** 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.46	Poor instrument integration
Perfluorohexanesulfonic acid	355-46-4		7.22	Split peak
MeFOSAA	2355-31-9		8.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.30	Split peak
EtFOSAA	2991-50-6		8.45	Split peak
Perfluorododecanoic acid	307-55-1		9.09	Poor instrument integration
MeFOSE	24448-09-7		10.96	Split peak
MeFOSA	31506-32-8		11.07	Split peak
EtFOSE	1691-99-2		11.27	Split peak
EtFOSA	4151-50-2		11.35	Split peak

7.7.2.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43885.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 11:26:14 AM
 Sample Name : ic634-2
 Vial : P1-A3
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	137179	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	72419	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	52123	2.50 µg/L	-0.012
M4-PFHpA	6.455	367.1 -> 322.0	29993	2.50 µg/L	-0.012
M8-PFOA	7.124	421.1 -> 376.0	46706	2.50 µg/L	0.000
M9-PFNA	7.670	472.1 -> 427.0	22151	1.25 µg/L	0.000
M6-PFDA	8.166	519.1 -> 474.1	20112	1.25 µg/L	-0.012
M7-PFUnDA	8.647	570.0 -> 525.1	20563	1.25 µg/L	0.000
M2-PFDoDA	9.093	615.1 -> 570.0	22014	1.25 µg/L	-0.012
M2-PFTeDA	9.899	715.2 -> 670.0	18668	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	18230	2.50 µg/L	0.000
M3-PFBS	5.427	302.1 -> 79.9	12687	2.50 µg/L	0.000
M3-PFHxS	7.217	402.1 -> 79.9	8282	2.50 µg/L	-0.012
M8-PFOS	8.316	507.1 -> 79.9	11826	2.50 µg/L	-0.013
M2-4:2FTS	5.209	329.1 -> 80.9	1103	5.00 µg/L	-0.014
M2-6:2FTS	6.898	429.1 -> 80.9	2015	5.00 µg/L	0.000
M2-8:2FTS	7.953	529.1 -> 80.9	3205	5.00 µg/L	-0.012
M3-MeFOSAA	8.236	573.2 -> 419.0	14463	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	30118	10.00 µg/L	0.000
M5-EtFOSAA	8.433	589.2 -> 419.0	11942	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	94353	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	137343	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	12459	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	11960	2.50 µg/L	0.000
13C4-PFOS	8.317	502.8 -> 79.9	11988	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	72783	5.00 µg/L	-0.013
18O2-PFHxS	7.216	403.0 -> 83.9	5458	2.50 µg/L	-0.012
13C4-PFOA	7.124	417.1 -> 372.0	55739	2.50 µg/L	0.000
13C2-PFDA	8.166	515.1 -> 470.1	19514	1.25 µg/L	-0.012
13C5-PFNA	7.671	468.0 -> 423.0	25301	1.25 µg/L	-0.013
13C2-PFHxA	5.523	315.1 -> 270.0	47423	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.209	329.1 -> 80.9	1103	4.97 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C2-6:2FTS	6.898	429.1 -> 80.9	2015	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C2-8:2FTS	7.953	529.1 -> 80.9	3205	5.13 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C2-PFDoDA	9.093	615.1 -> 570.0	22014	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.1%		
13C2-PFTeDA	9.899	715.2 -> 670.0	18668	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C3-PFBS	5.427	302.1 -> 79.9	12687	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFHxS	7.217	402.1 -> 79.9	8282	2.45 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 = 97.9%	
13C4-PFBA	2.924	216.8 -> 171.9	137179	10.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.455	367.1 -> 322.0	29993	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFHxA	5.522	318.0 -> 273.0	52123	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFPeA	4.362	268.3 -> 223.0	72419	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C6-PFDA	8.166	519.1 -> 474.1	20112	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C7-PFUnDA	8.647	570.0 -> 525.1	20563	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C8-FOSA	9.771	506.1 -> 77.8	18230	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-PFOA	7.124	421.1 -> 376.0	46706	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C8-PFOS	8.316	507.1 -> 79.9	11826	2.62 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C9-PFNA	7.670	472.1 -> 427.0	22151	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
d3-MeFOSAA	8.236	573.2 -> 419.0	14463	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	30118	9.65 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
d3-MeFOSA	11.064	515.0 -> 219.0	11960	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
d5-EtFOSAA	8.433	589.2 -> 419.0	11942	4.79 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
d7-MeFOSE	10.947	623.2 -> 58.9	94353	25.30 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d9-EtFOSE	11.256	639.2 -> 58.9	137343	26.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d5-EtFOSA	11.348	531.1 -> 219.0	12459	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	2662	1.50 µg/L	99
		327.1 -> 80.9	1226		
6:2FTS	6.886	427.1 -> 407.0	2993	1.54 µg/L	98
		427.1 -> 80.9	1289		
8:2FTS	7.966	527.1 -> 507.0	2323	1.30 µg/L	94
		527.1 -> 80.8	1062		
EtFOSAA	8.446	584.2 -> 419.1	911	0.40 µg/L	m 95
		584.2 -> 526.0	435		
FOSA	9.761	498.1 -> 77.9	3015	0.39 µg/L	95
		498.1 -> 478.0	54		
MeFOSAA	8.237	570.1 -> 419.0	963	0.38 µg/L	m 91
		570.1 -> 483.0	272		
PFBA	2.920	212.8 -> 168.9	5570	1.52 µg/L	100
PFBS	5.428	298.7 -> 79.9	1783	0.34 µg/L	97
		298.7 -> 98.8	691		
PFDA	8.166	512.9 -> 469.0	5587	0.37 µg/L	m 97
		512.9 -> 219.0	1133		
PFDODA	9.094	613.1 -> 569.0	6564	0.37 µg/L	96
		613.1 -> 319.0	1053		
PFDS	9.257	599.0 -> 79.9	1121	0.38 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	519			
PFHpA	6.455	363.1 -> 319.0	7251	0.38	µg/L	97
		363.1 -> 169.0	1400			
PFHpS	7.797	449.0 -> 79.9	1402	0.33	µg/L	87
		449.0 -> 98.9	877			
PFHxA	5.525	313.0 -> 269.0	7573	0.37	µg/L	98
		313.0 -> 118.9	281			
PFHxS	7.218	398.7 -> 79.9	1152	0.34	µg/L	m 95
		398.7 -> 98.9	535			
PFNA	7.671	463.0 -> 419.0	6420	0.39	µg/L	99
		463.0 -> 219.0	1559			
PFNS	8.811	548.8 -> 79.9	929	0.36	µg/L	97
		548.8 -> 98.9	504			
PFOA	7.125	413.0 -> 369.0	10173	0.38	µg/L	94
		413.0 -> 169.0	2260			
PFOS	8.318	498.9 -> 79.9	1796	0.31	µg/L	m 87
		498.9 -> 98.8	1033			
PFPeA	4.364	263.0 -> 219.0	13543	0.78	µg/L	100
PFPeS	6.494	349.1 -> 79.9	1143	0.39	µg/L	96
		349.1 -> 98.9	500			
PFTeDA	9.900	713.1 -> 669.0	7026	0.38	µg/L	99
		713.1 -> 168.9	586			
PFTrDA	9.515	663.0 -> 619.0	8586	0.36	µg/L	99
		663.0 -> 168.9	911			
PFUnDA	8.648	563.1 -> 519.0	4936	0.35	µg/L	96
		563.1 -> 269.1	1166			
11CI-PF3OUdS	9.556	630.9 -> 450.9	7934	0.73	µg/L	97
		632.9 -> 452.9	2438			
9CI-PF3ONS	8.675	530.8 -> 351.0	10198	0.74	µg/L	97
		532.8 -> 353.0	2949			
ADONA	6.718	376.9 -> 250.9	22650	0.75	µg/L	98
		376.9 -> 84.8	6196			
HFPO-DA	5.891	284.9 -> 168.9	2169	0.75	µg/L	93
		284.9 -> 184.9	307			
3:3FTCA	3.836	241.0 -> 177.0	1496	1.95	µg/L	99
		241.0 -> 117.0	124			
5:3FTCA	6.193	341.0 -> 237.1	25482	9.20	µg/L	100
		341.0 -> 217.0	17465			
7:3FTCA	7.649	441.0 -> 316.9	13175	9.15	µg/L	97
		441.0 -> 336.9	32090			
EtFOSA	11.350	526.0 -> 219.0	4009	0.77	µg/L	m 100
		526.0 -> 169.0	5563			
EtFOSE	11.270	630.0 -> 58.9	10380	1.95	µg/L	100
MeFOSA	11.066	511.9 -> 219.0	3333	0.74	µg/L	m 99
		511.9 -> 169.0	4985			
MeFOSE	10.973	616.1 -> 58.9	7862	2.03	µg/L	m 100
PFDoDS	10.039	699.1 -> 79.9	881	0.34	µg/L	92
		699.1 -> 98.8	524			
NFDHA	5.403	295.0 -> 201.0	1245	0.85	µg/L	87
		295.0 -> 84.9	256			
PFMBA	4.766	279.0 -> 85.1	7663	0.79	µg/L	100
PFMPA	3.515	229.0 -> 84.9	7085	0.78	µg/L	100
PFEESA	5.959	314.8 -> 134.9	10499	0.68	µg/L	100
		314.8 -> 82.9	377			

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

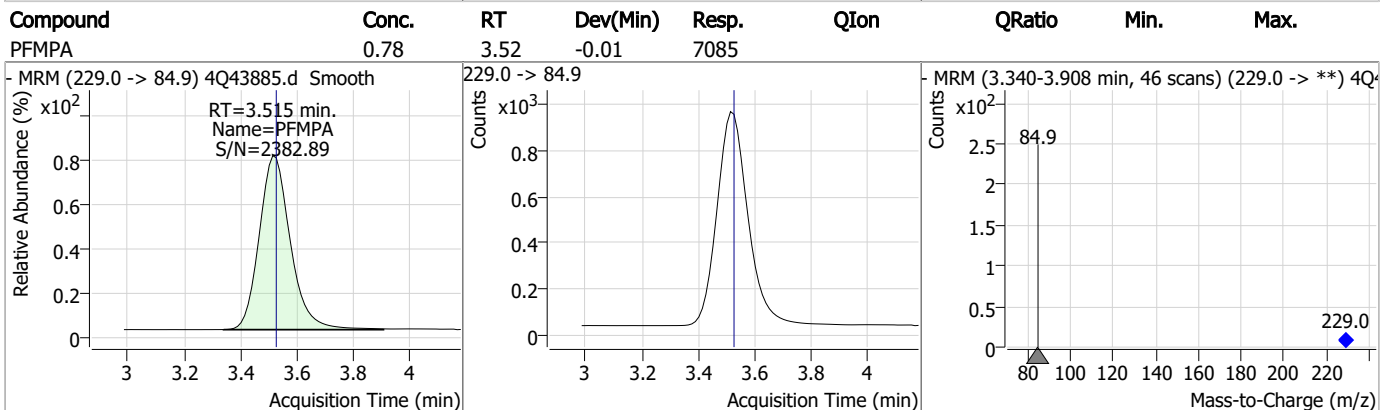
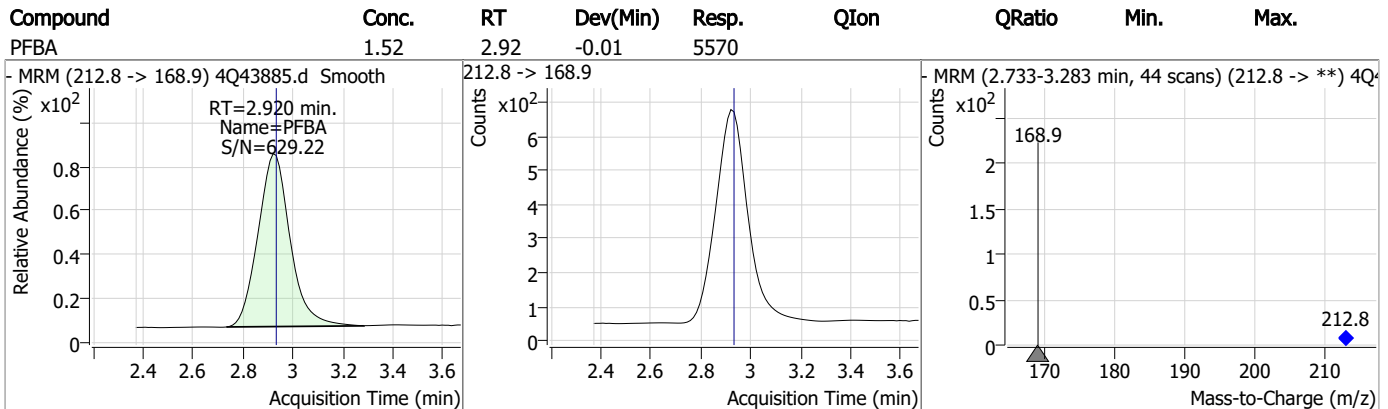
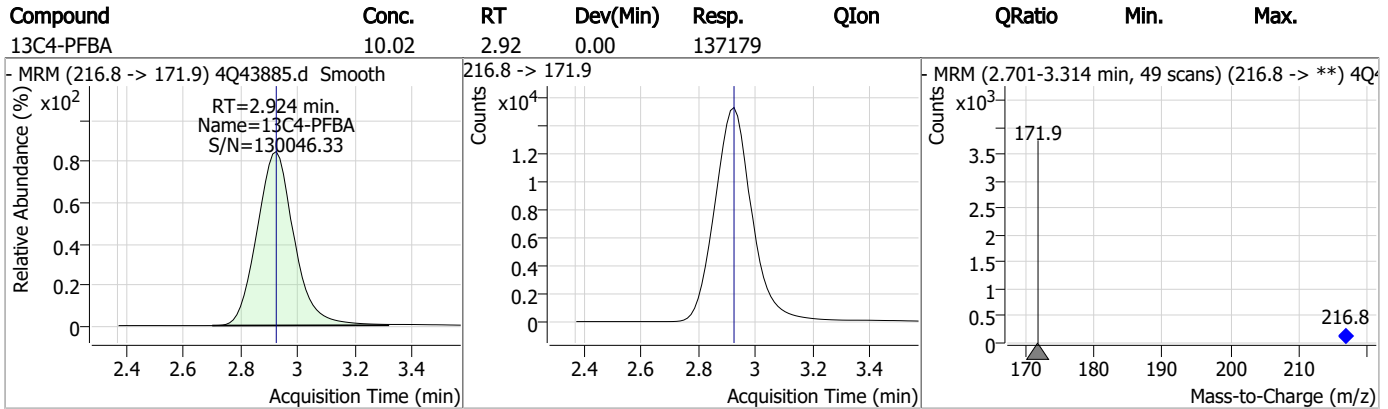
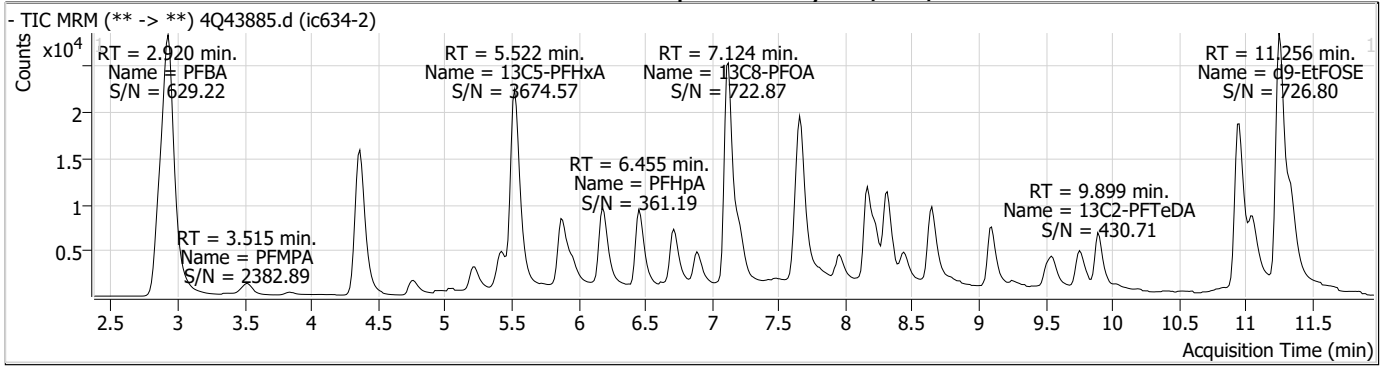
Perfluorinated Compounds by LC/MS/MS

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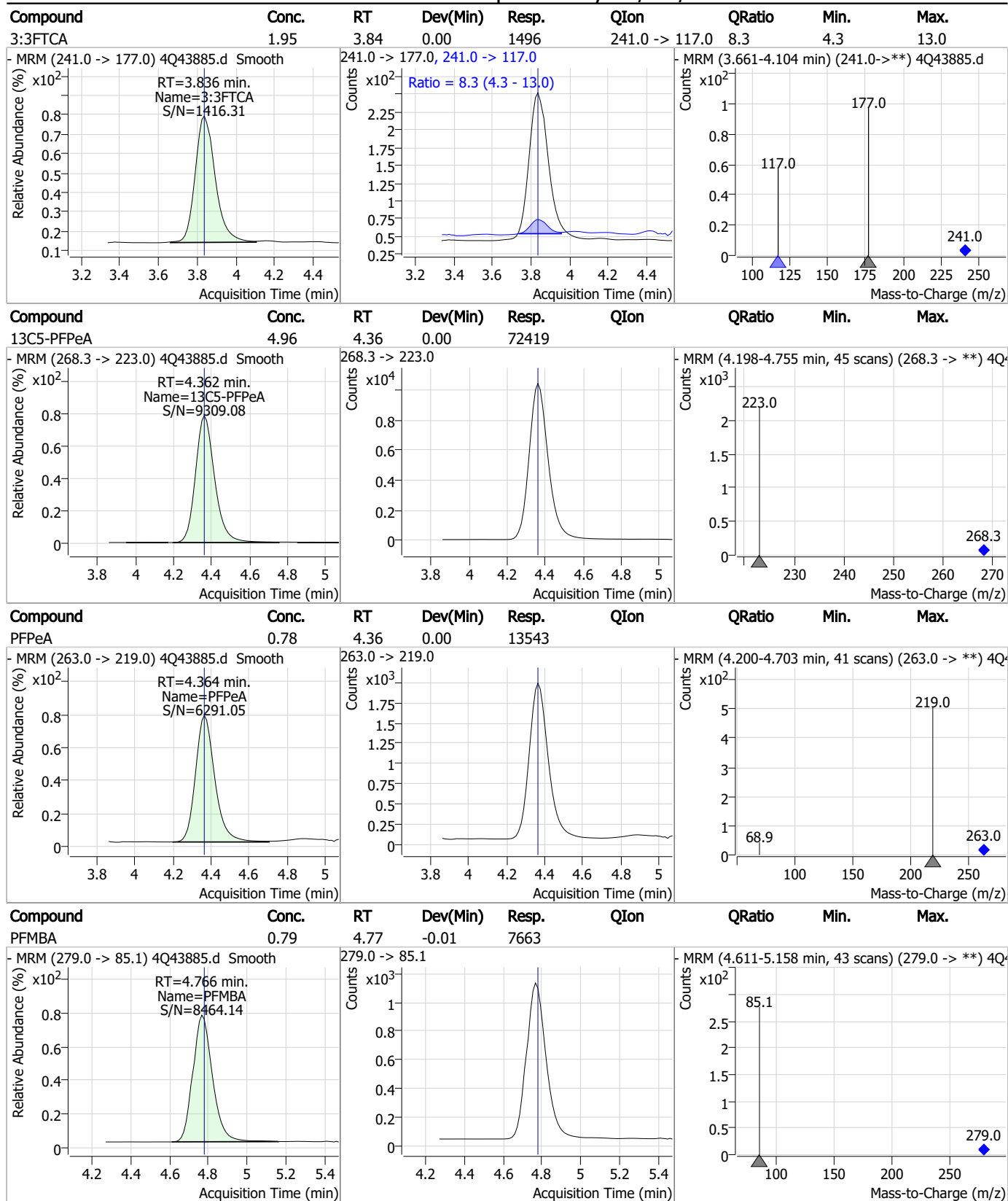
Perfluorinated Compounds by LC/MS/MS



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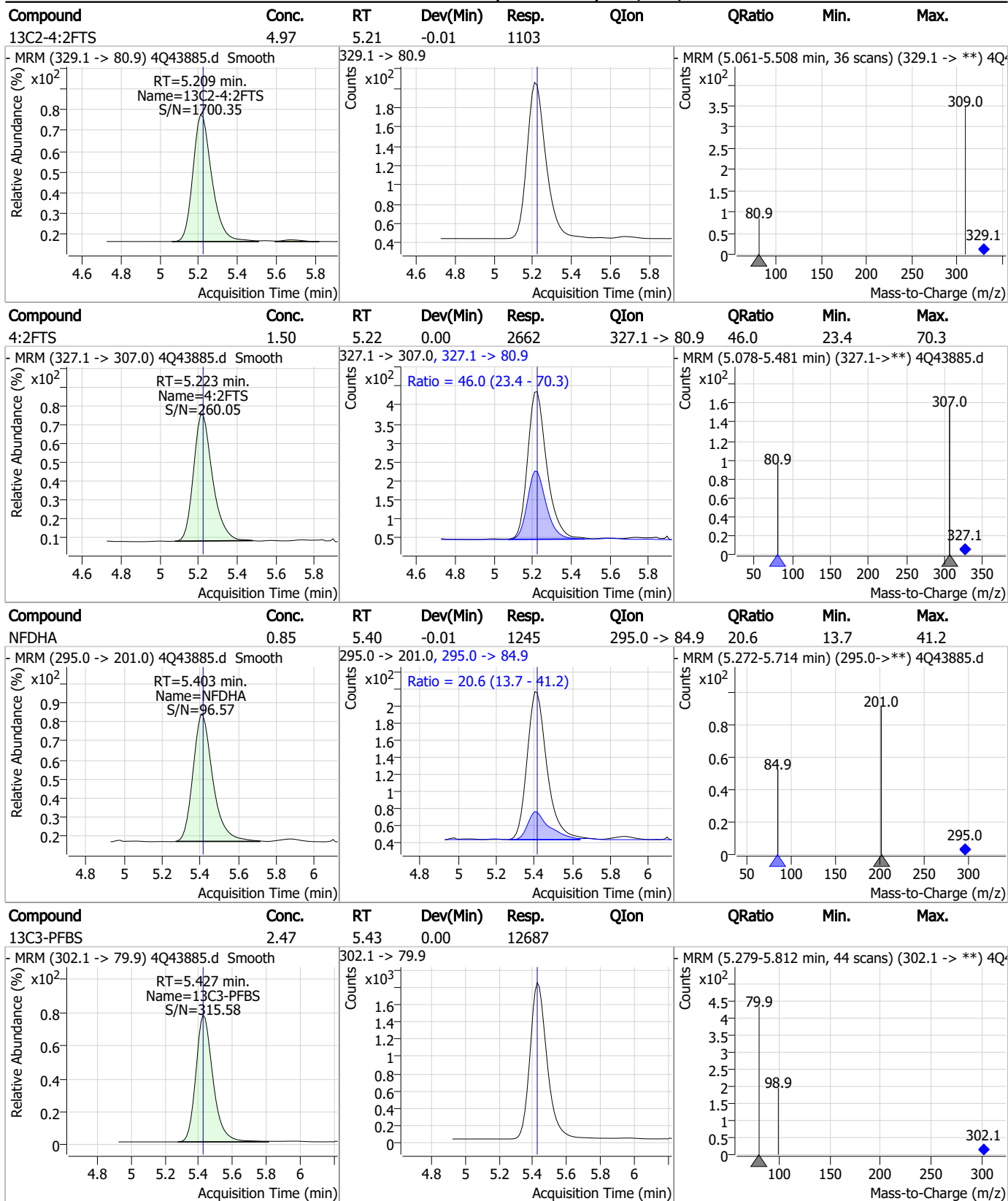
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Perfluorinated Compounds by LC/MS/MS



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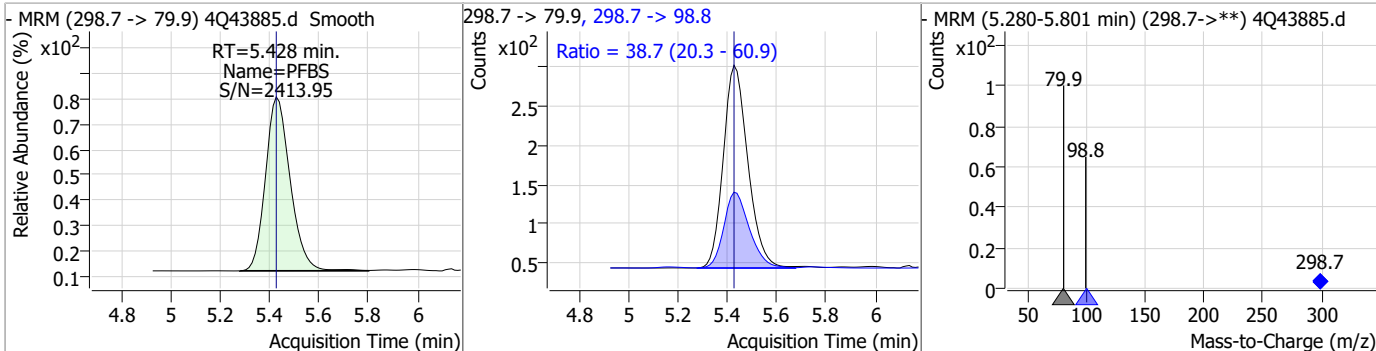
Perfluorinated Compounds by LC/MS/MS



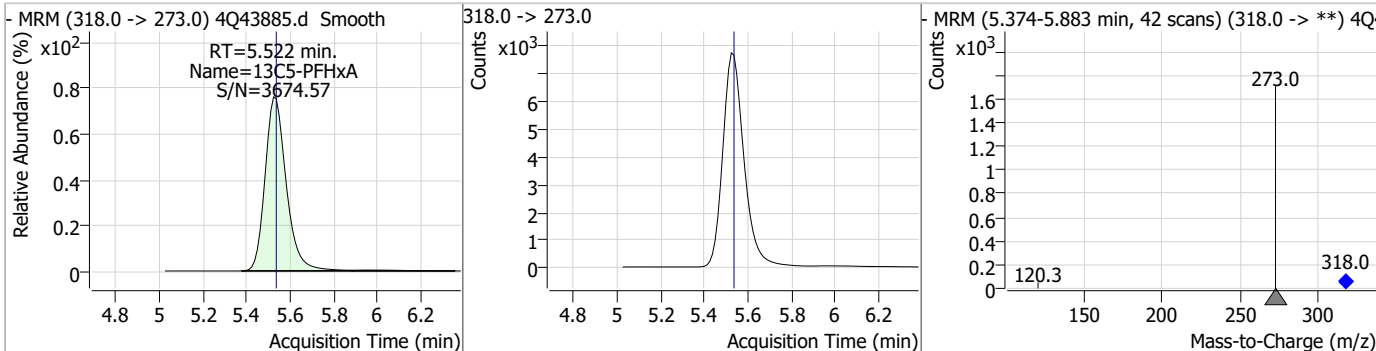
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Perfluorinated Compounds by LC/MS/MS

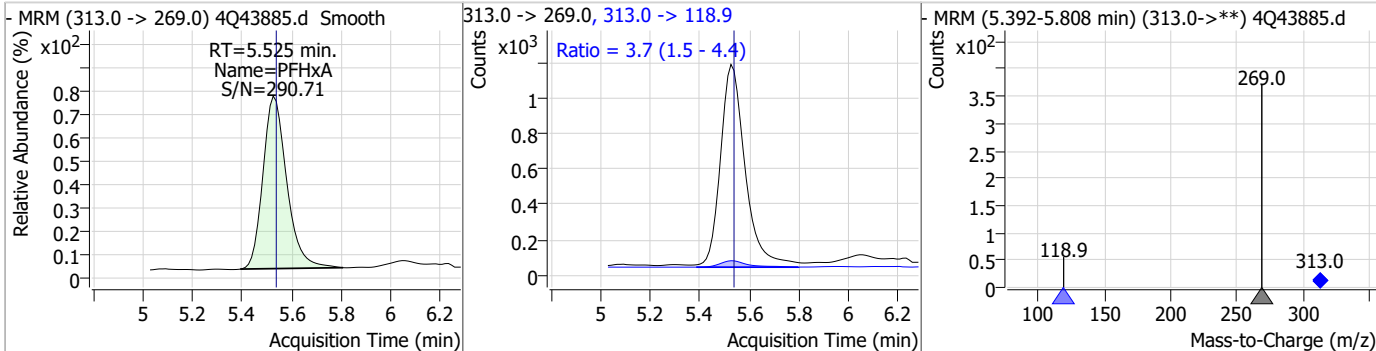
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.34	5.43	0.00	1783	298.7 -> 98.8	38.7	20.3	60.9



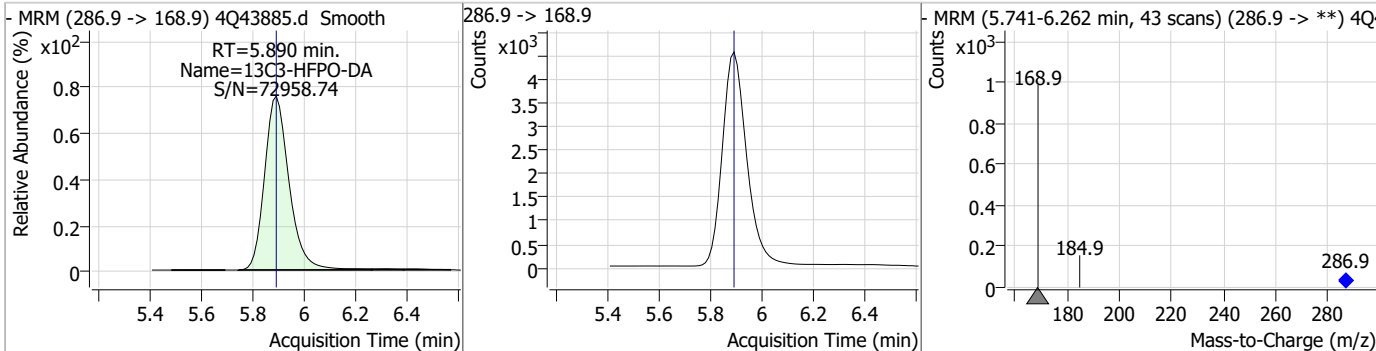
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.50	5.52	-0.01	52123				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.37	5.53	-0.01	7573	313.0 -> 118.9	3.7	1.5	4.4

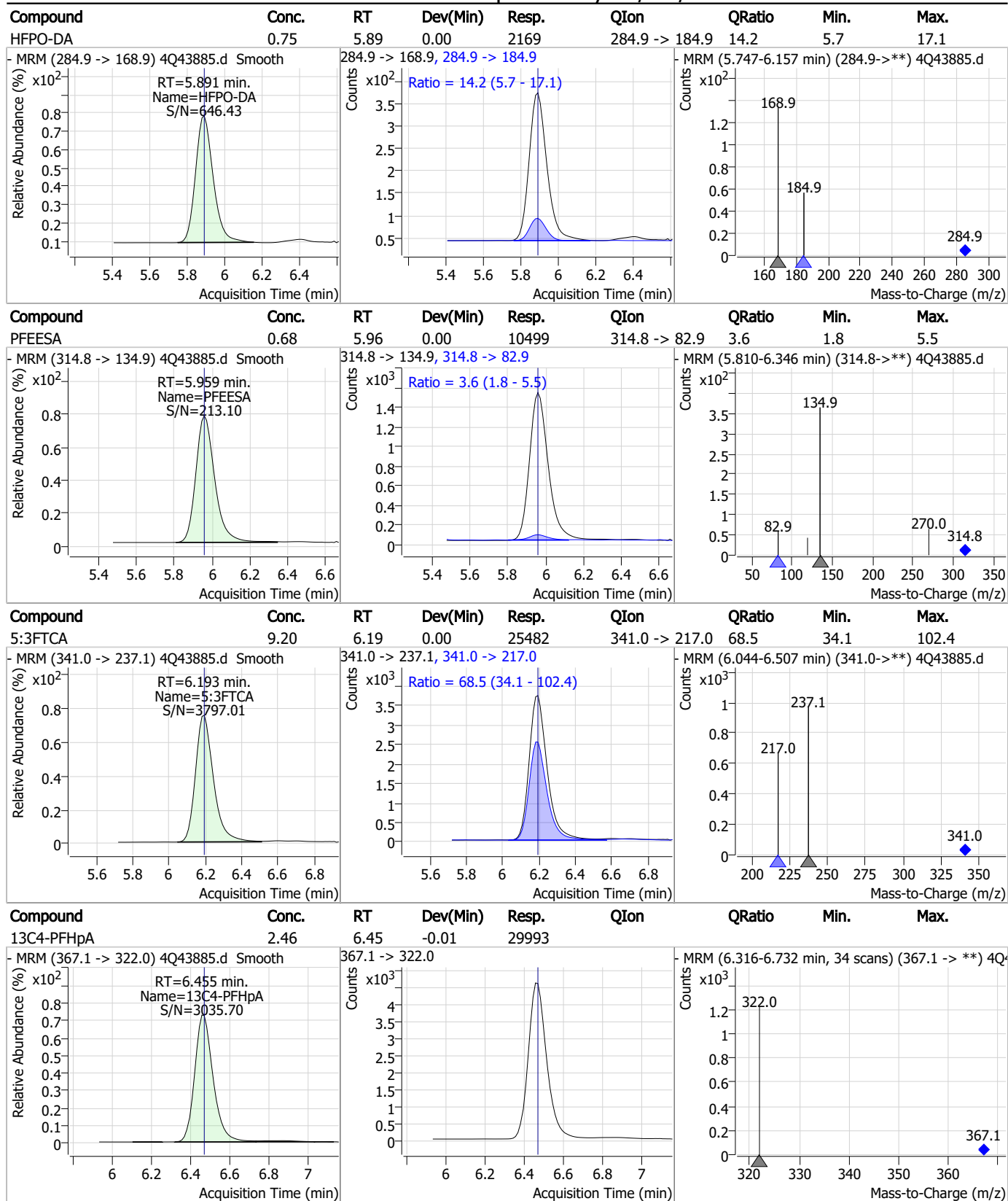


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.65	5.89	0.00	30118				



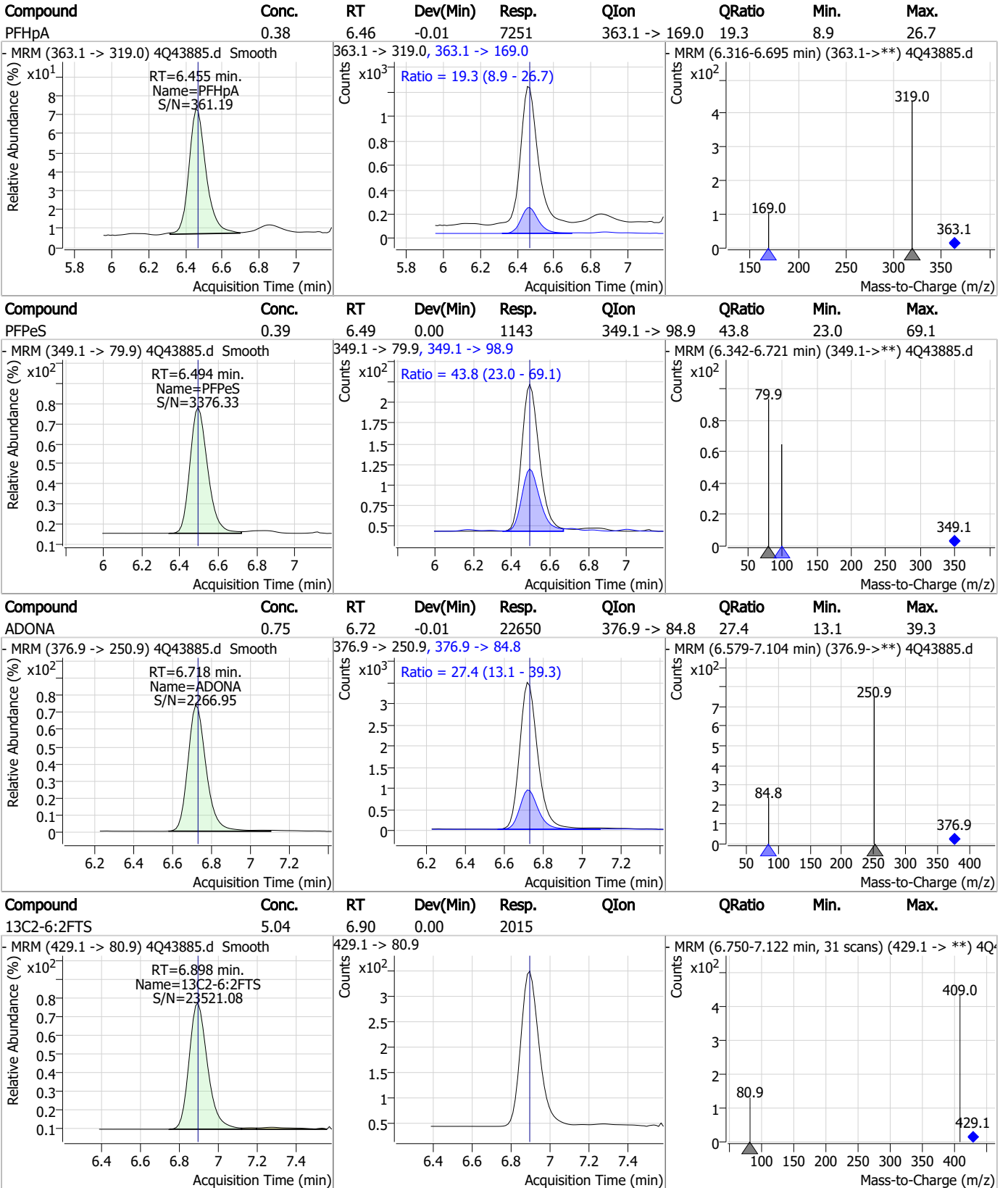
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Perfluorinated Compounds by LC/MS/MS



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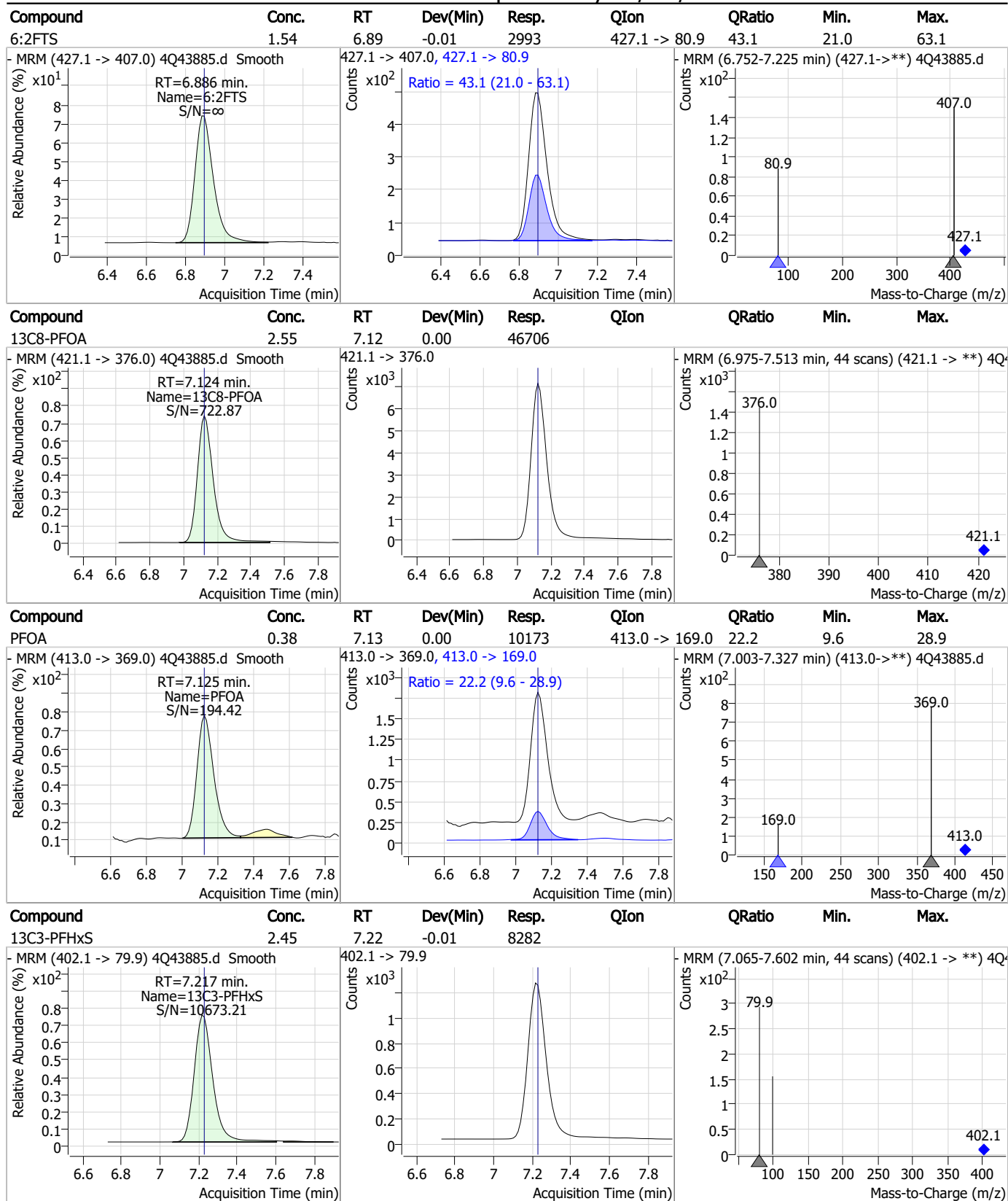
Perfluorinated Compounds by LC/MS/MS



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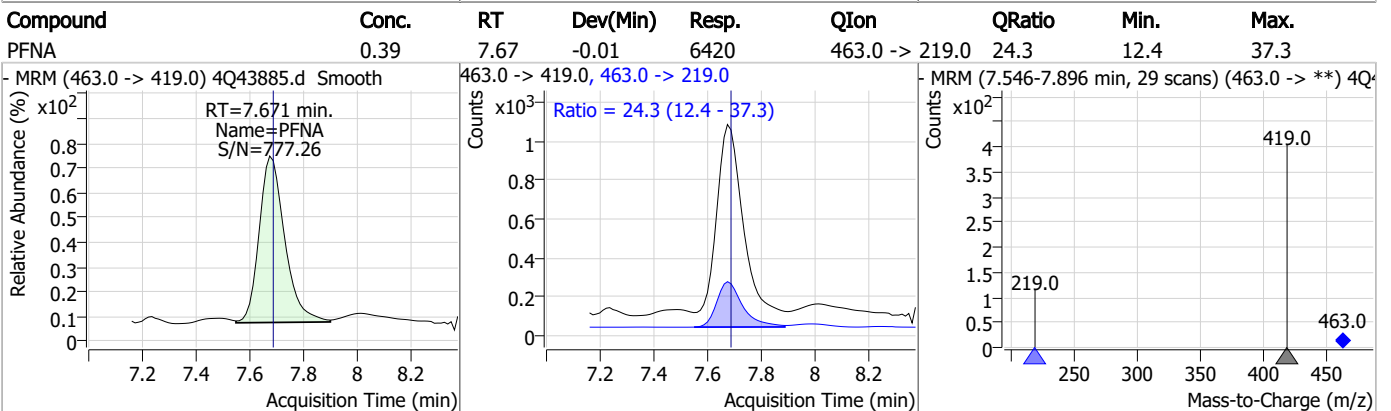
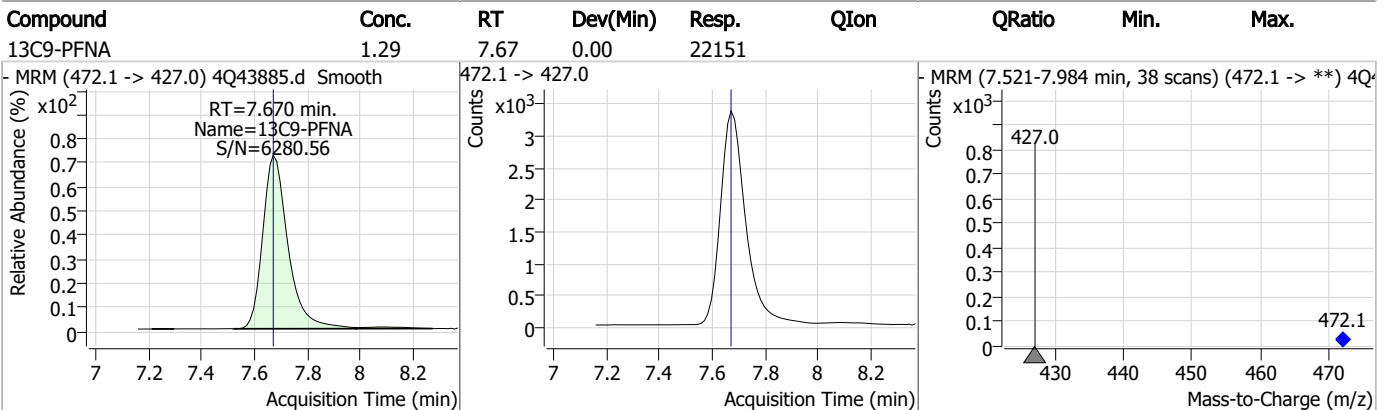
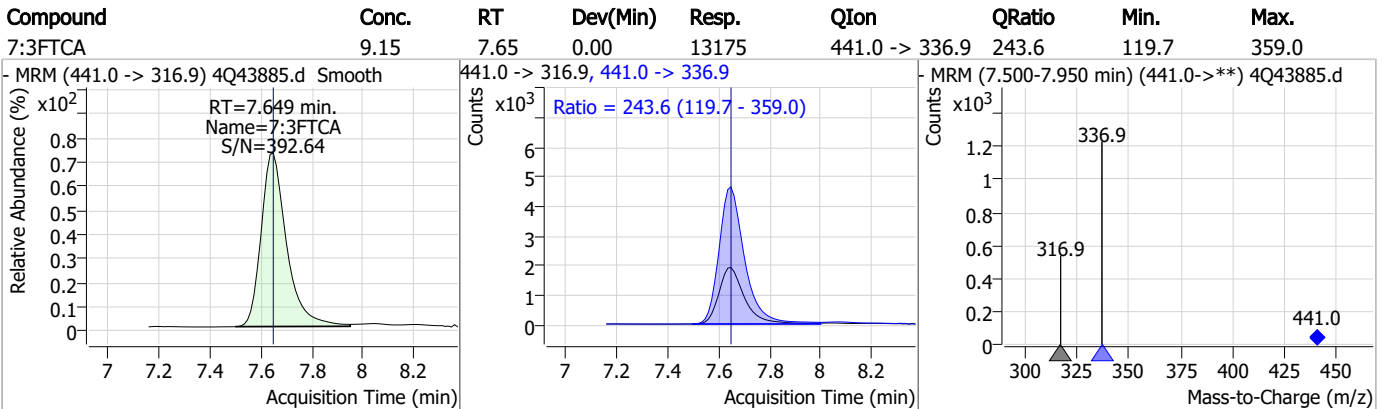
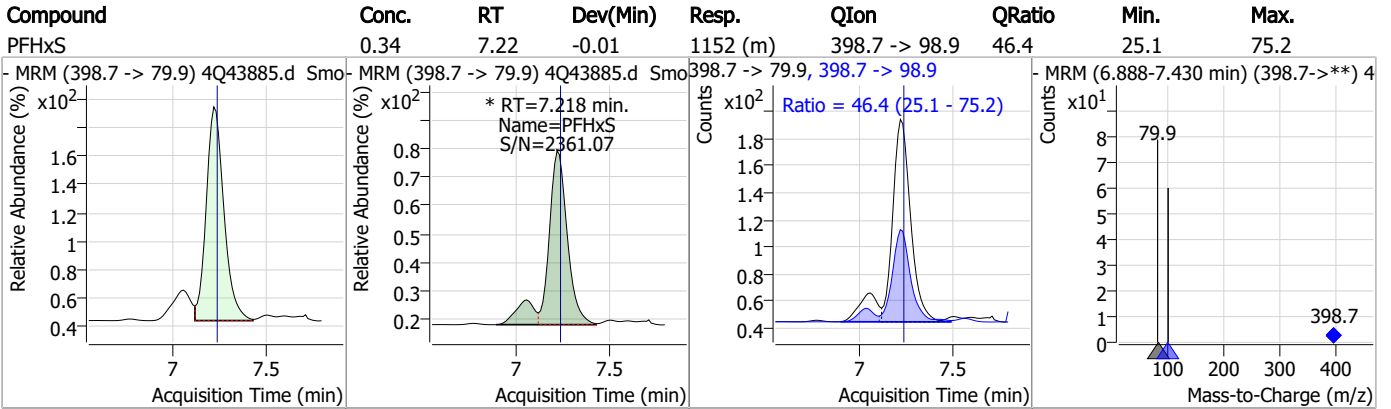
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Perfluorinated Compounds by LC/MS/MS



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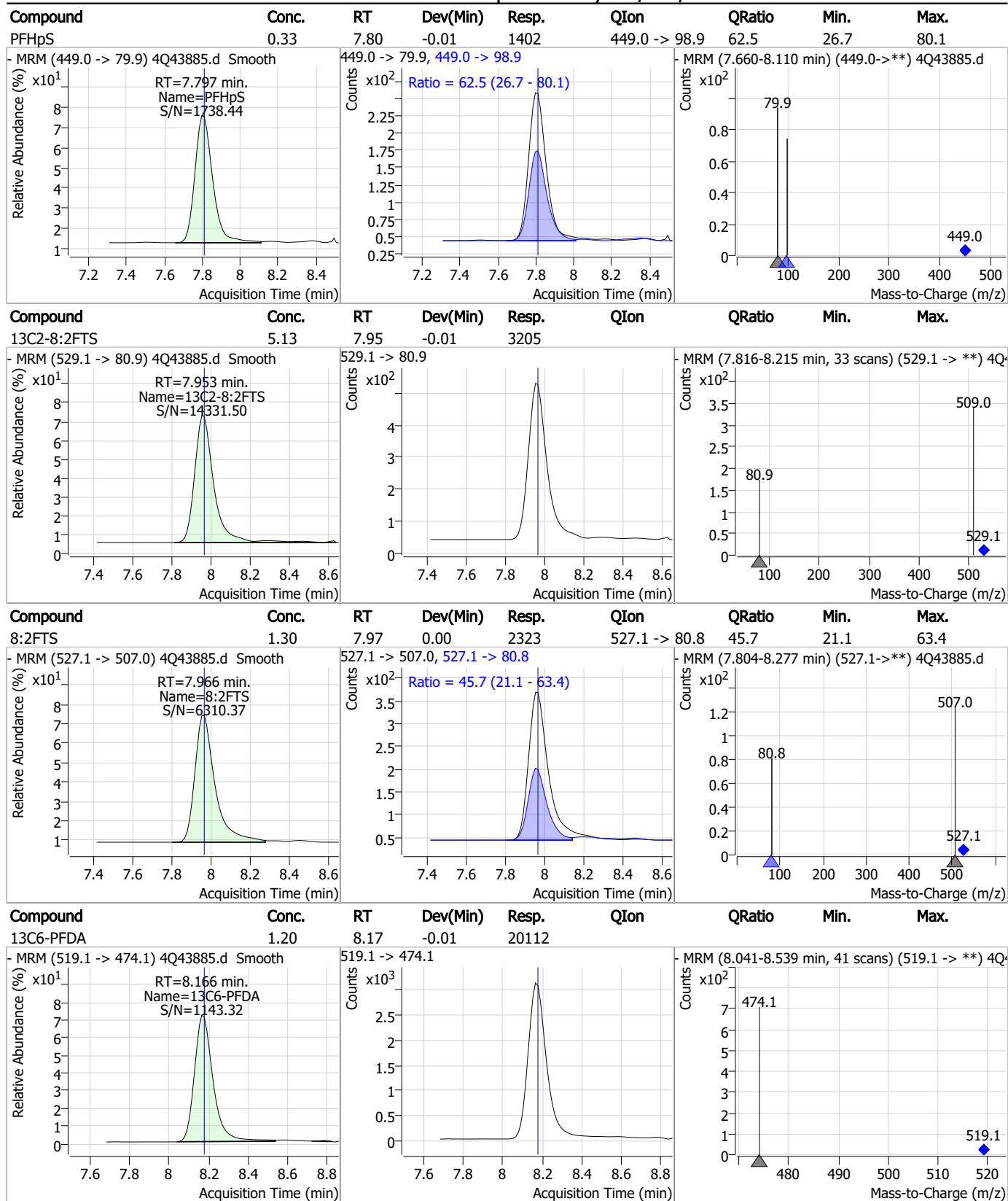
Perfluorinated Compounds by LC/MS/MS



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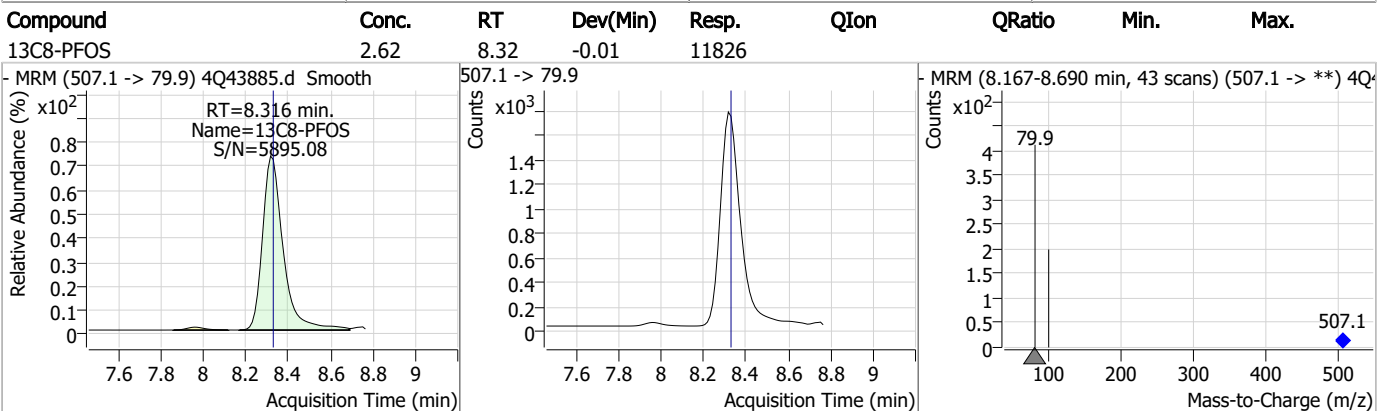
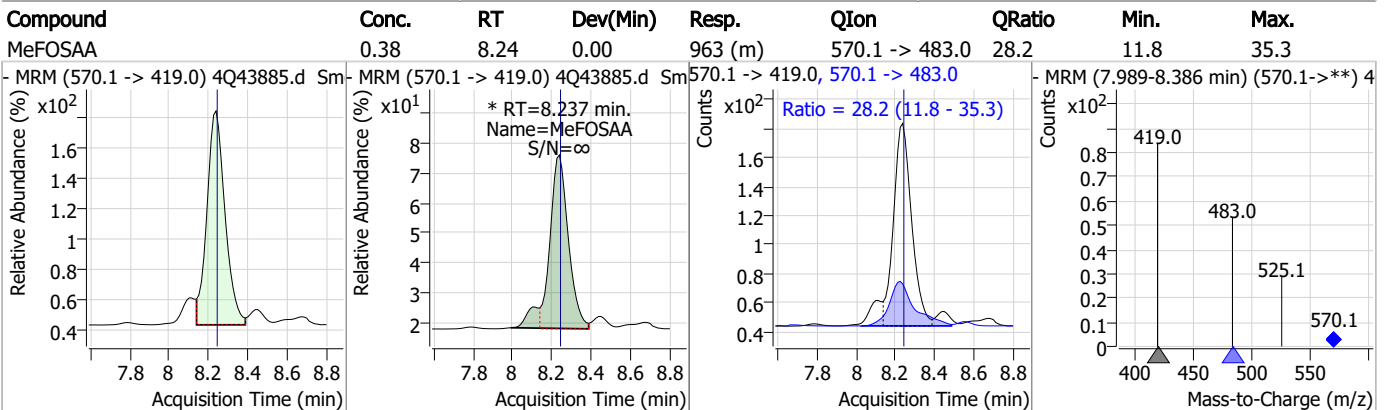
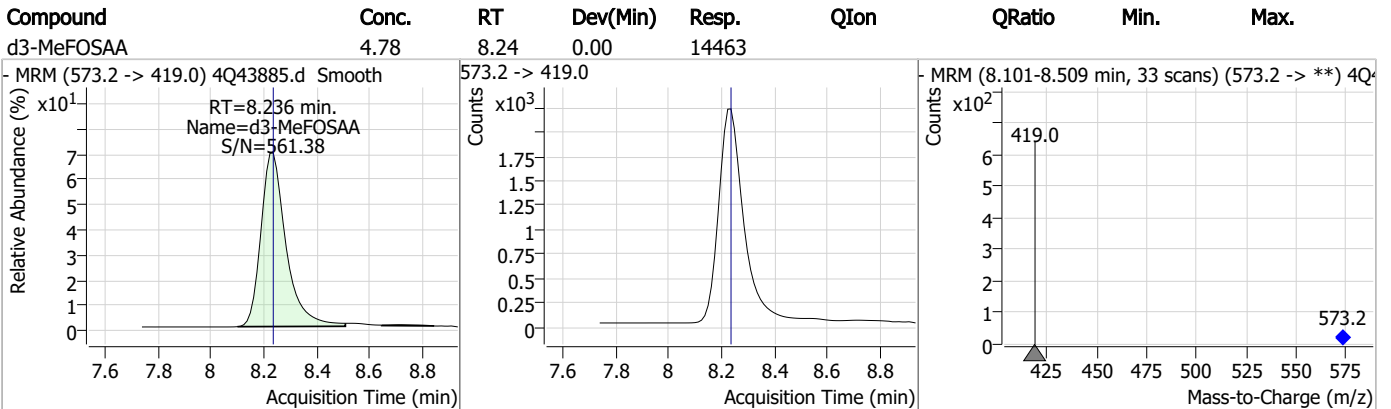
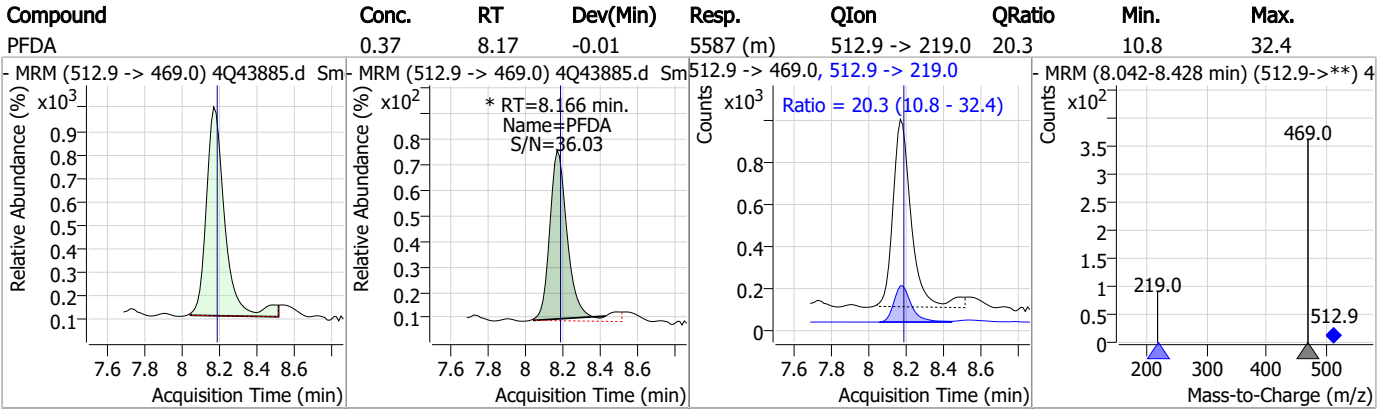
Perfluorinated Compounds by LC/MS/MS



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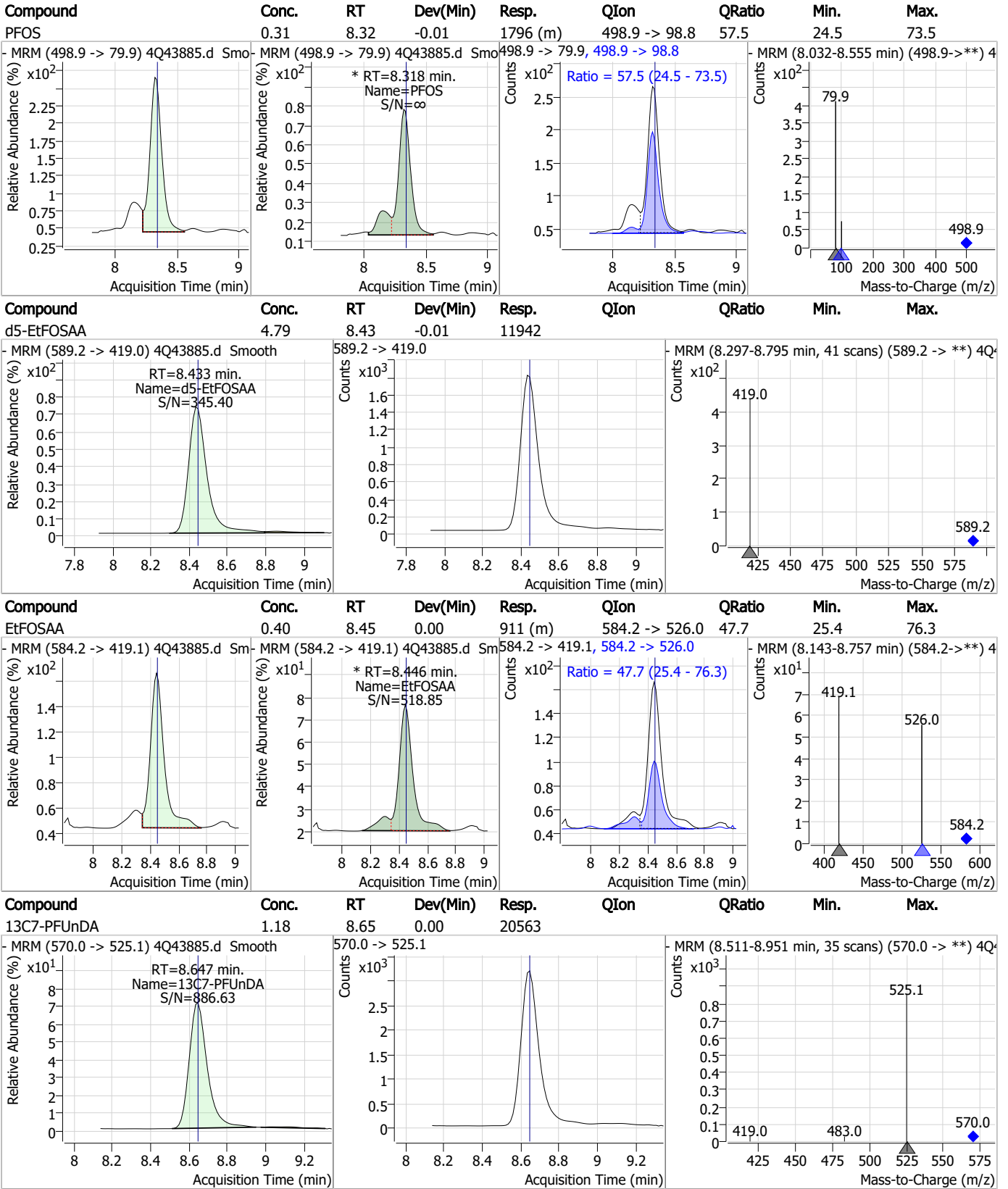
Perfluorinated Compounds by LC/MS/MS



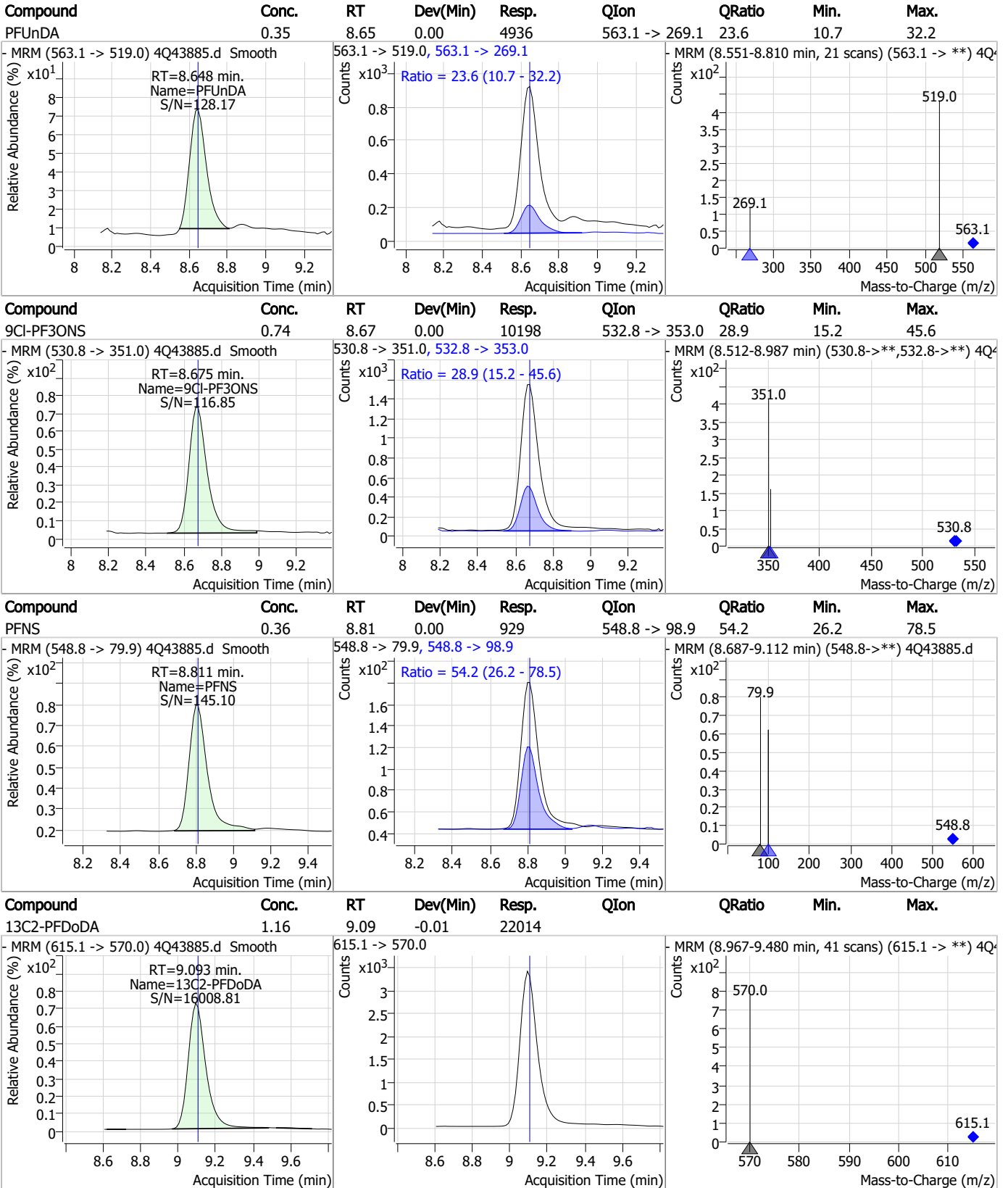
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Perfluorinated Compounds by LC/MS/MS



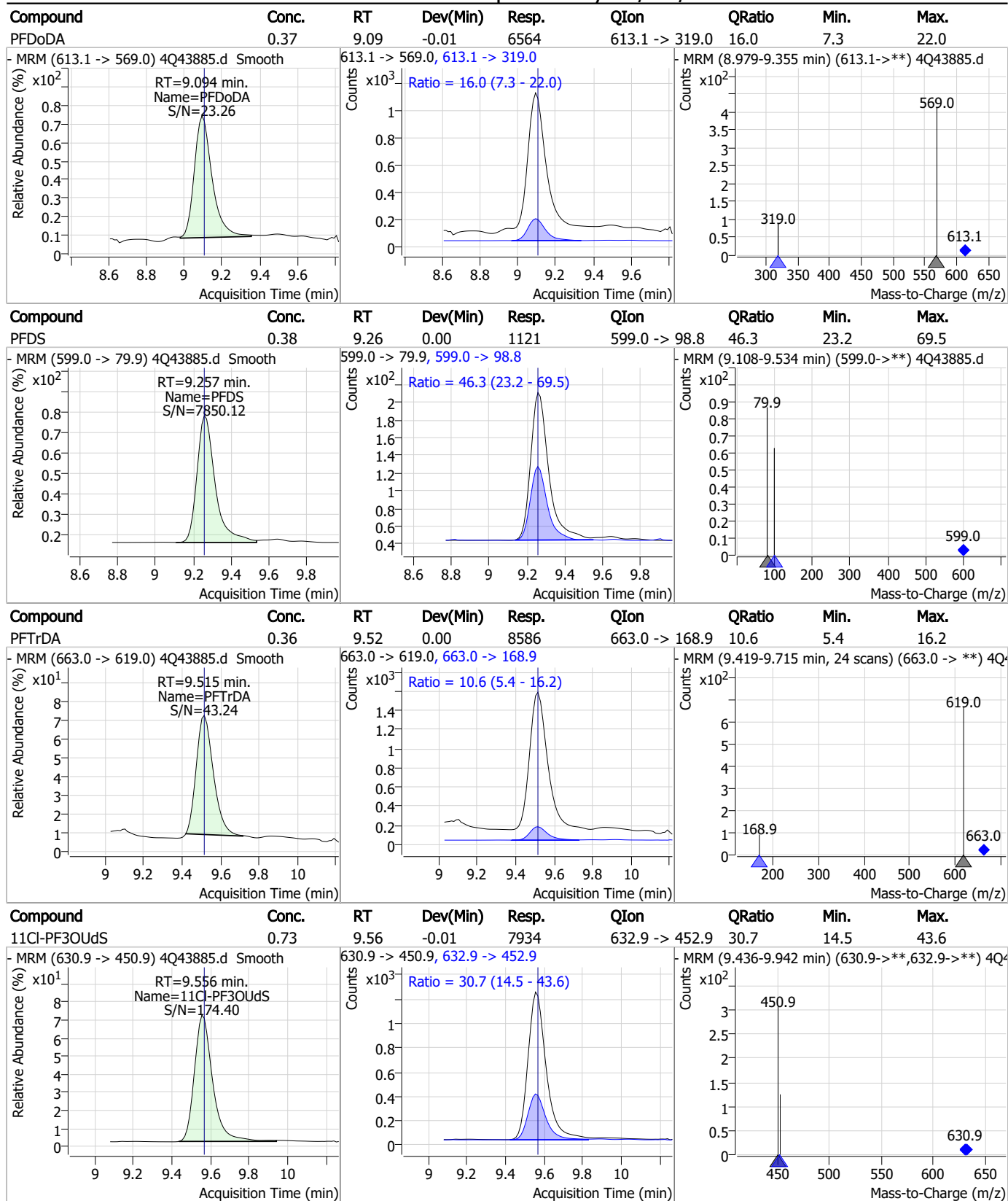
Perfluorinated Compounds by LC/MS/MS



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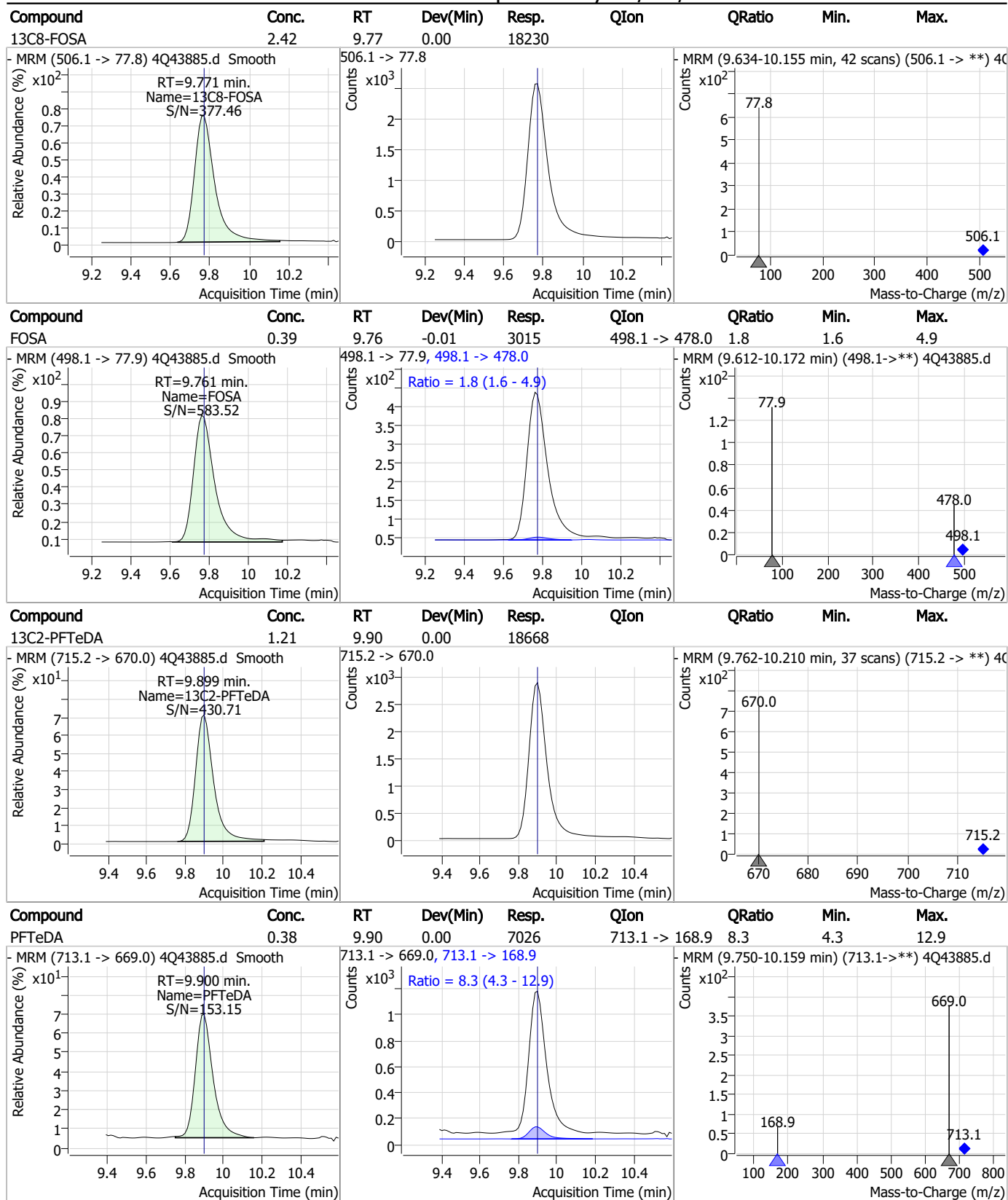
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Perfluorinated Compounds by LC/MS/MS



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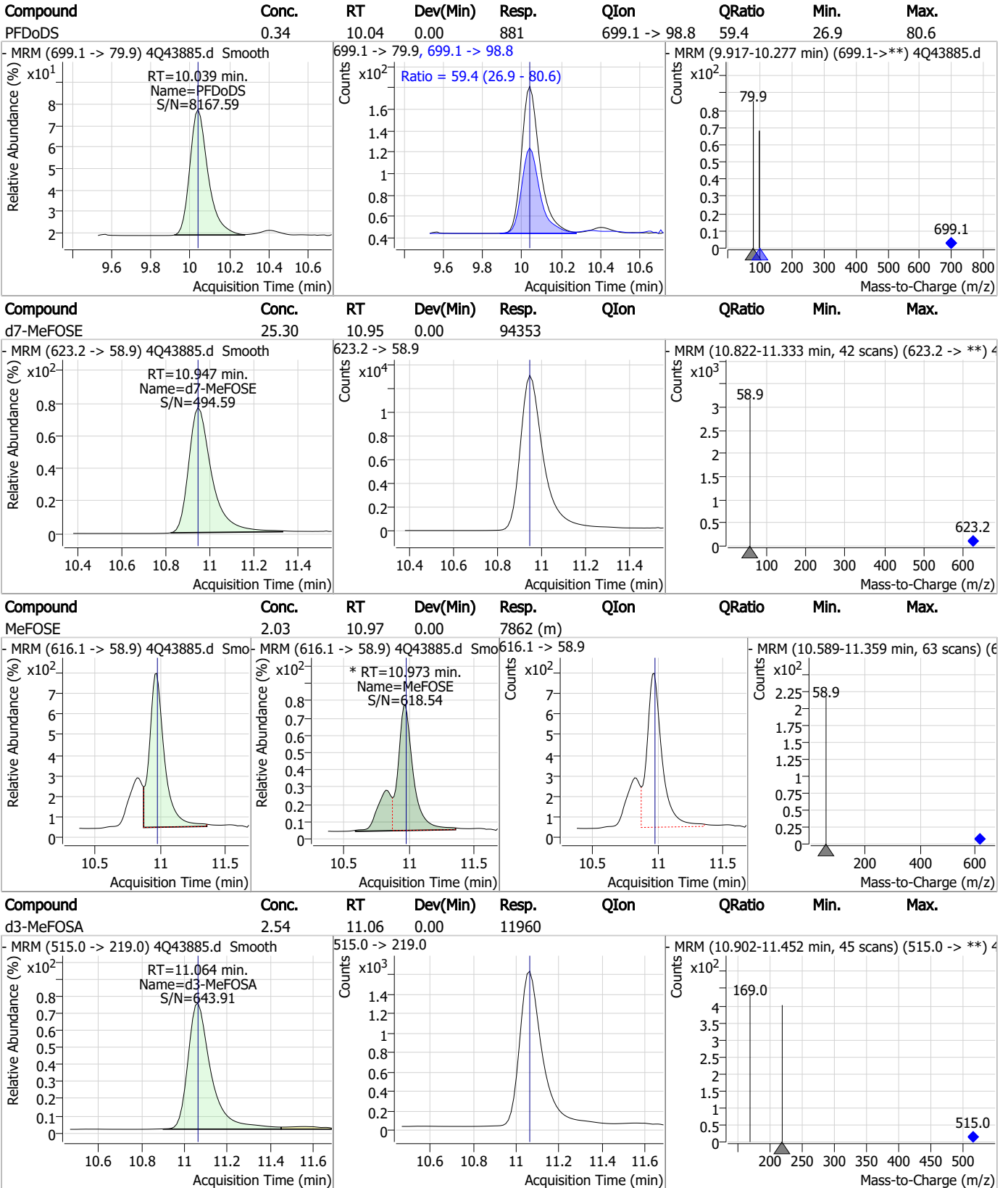
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

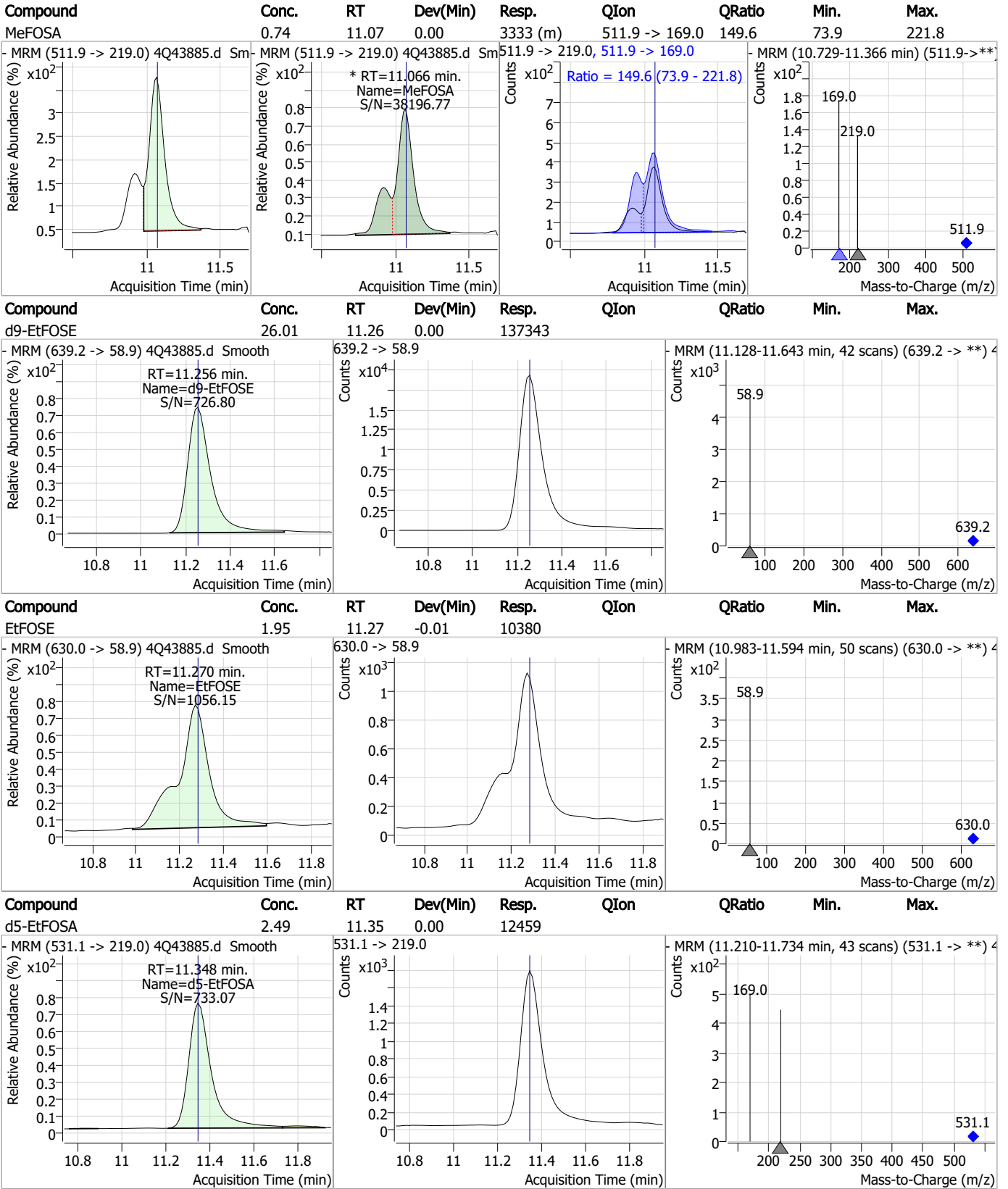


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Perfluorinated Compounds by LC/MS/MS

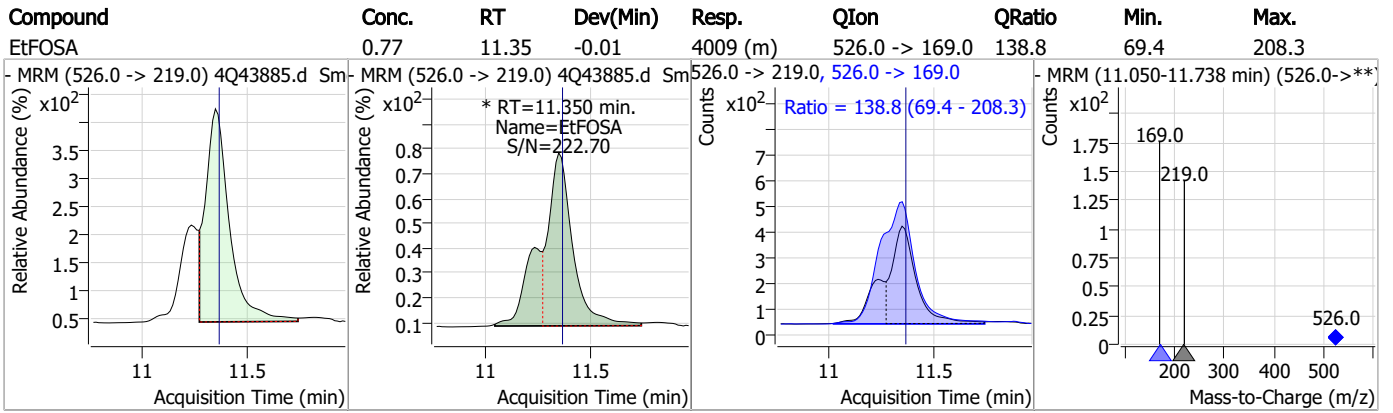


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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q634-IC634 Method: EPA DRAFT 1633
Lab FileID: 4Q43885.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 11:26 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.22	Split peak
Perfluorodecanoic acid	335-76-2		8.17	Poor instrument integration
MeFOSAA	2355-31-9		8.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.32	Split peak
EtFOSAA	2991-50-6		8.45	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.07	Split peak
EtFOSA	4151-50-2		11.35	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43886.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 11:40:17 AM
 Sample Name : ic634-3
 Vial : P1-A4
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	137252	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	71771	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	51796	2.50 µg/L	-0.012
M4-PFHpA	6.467	367.1 -> 322.0	29720	2.50 µg/L	0.000
M8-PFOA	7.124	421.1 -> 376.0	46449	2.50 µg/L	0.000
M9-PFNA	7.670	472.1 -> 427.0	21605	1.25 µg/L	0.000
M6-PFDA	8.178	519.1 -> 474.1	20369	1.25 µg/L	0.000
M7-PFUnDA	8.647	570.0 -> 525.1	21956	1.25 µg/L	0.000
M2-PFDoDA	9.106	615.1 -> 570.0	22886	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	19592	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	18365	2.50 µg/L	0.000
M3-PFBS	5.427	302.1 -> 79.9	12905	2.50 µg/L	0.000
M3-PFHxS	7.217	402.1 -> 79.9	8347	2.50 µg/L	-0.012
M8-PFOS	8.329	507.1 -> 79.9	10370	2.50 µg/L	0.000
M2-4:2FTS	5.222	329.1 -> 80.9	1084	5.00 µg/L	0.000
M2-6:2FTS	6.898	429.1 -> 80.9	1938	5.00 µg/L	0.000
M2-8:2FTS	7.966	529.1 -> 80.9	2893	5.00 µg/L	0.000
M3-MeFOSAA	8.236	573.2 -> 419.0	14943	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	30209	10.00 µg/L	0.000
M5-EtFOSAA	8.446	589.2 -> 419.0	11666	5.00 µg/L	0.000
M7-MeFOSE	10.947	623.2 -> 58.9	103075	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	147452	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	12410	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	11872	2.50 µg/L	0.000
13C4-PFOS	8.317	502.8 -> 79.9	12408	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	72692	5.00 µg/L	-0.013
18O2-PFHxS	7.228	403.0 -> 83.9	4947	2.50 µg/L	0.000
13C4-PFOA	7.124	417.1 -> 372.0	55898	2.50 µg/L	0.000
13C2-PFDA	8.178	515.1 -> 470.1	18809	1.25 µg/L	0.000
13C5-PFNA	7.671	468.0 -> 423.0	25955	1.25 µg/L	-0.013
13C2-PFHxA	5.523	315.1 -> 270.0	47256	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.222	329.1 -> 80.9	1084	5.39 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.8%		
13C2-6:2FTS	6.898	429.1 -> 80.9	1938	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-8:2FTS	7.966	529.1 -> 80.9	2893	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-PFDoDA	9.106	615.1 -> 570.0	22886	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-PFTeDA	9.899	715.2 -> 670.0	19592	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C3-PFBS	5.427	302.1 -> 79.9	12905	2.77 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.7%		
13C3-PFHxS	7.217	402.1 -> 79.9	8347	2.72 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.9%	
13C4-PFBA	2.924	216.8 -> 171.9	137252	10.03 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFHpA	6.467	367.1 -> 322.0	29720	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C5-PFHxA	5.522	318.0 -> 273.0	51796	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	4.362	268.3 -> 223.0	71771	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C6-PFDA	8.178	519.1 -> 474.1	20369	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C7-PFUnDA	8.647	570.0 -> 525.1	21956	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C8-FOSA	9.771	506.1 -> 77.8	18365	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C8-PFOA	7.124	421.1 -> 376.0	46449	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C8-PFOS	8.329	507.1 -> 79.9	10370	2.22 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.8%	
13C9-PFNA	7.670	472.1 -> 427.0	21605	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.0%	
d3-MeFOSAA	8.236	573.2 -> 419.0	14943	4.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	30209	9.72 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
d3-MeFOSA	11.064	515.0 -> 219.0	11872	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
d5-EtFOSAA	8.446	589.2 -> 419.0	11666	4.52 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.5%	
d7-MeFOSE	10.947	623.2 -> 58.9	103075	26.70 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.8%	
d9-EtFOSE	11.256	639.2 -> 58.9	147452	26.97 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.9%	
d5-EtFOSA	11.348	531.1 -> 219.0	12410	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.0%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	8153	4.68 µg/L	93
		327.1 -> 80.9	3436		
6:2FTS	6.899	427.1 -> 407.0	8839	4.72 µg/L	95
		427.1 -> 80.9	4012		
8:2FTS	7.966	527.1 -> 507.0	8150	5.05 µg/L	98
		527.1 -> 80.8	3536		
EtFOSAA	8.446	584.2 -> 419.1	2876	1.28 µg/L	m 96
		584.2 -> 526.0	1387		
FOSA	9.761	498.1 -> 77.9	9549	1.24 µg/L	98
		498.1 -> 478.0	238		
MeFOSAA	8.237	570.1 -> 419.0	2967	1.14 µg/L	m 100
		570.1 -> 483.0	697		
PFBA	2.920	212.8 -> 168.9	17412	4.74 µg/L	100
PFBS	5.428	298.7 -> 79.9	5301	1.00 µg/L	97
		298.7 -> 98.8	2251		
PFDA	8.179	512.9 -> 469.0	19257	1.25 µg/L	97
		512.9 -> 219.0	3926		
PFDODA	9.094	613.1 -> 569.0	22231	1.21 µg/L	97
		613.1 -> 319.0	3534		
PFDS	9.257	599.0 -> 79.9	3372	1.31 µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1658			
PFHpA	6.468	363.1 -> 319.0	22972	1.22	µg/L	99
		363.1 -> 169.0	4191			
PFHpS	7.811	449.0 -> 79.9	4739	1.27	µg/L	95
		449.0 -> 98.9	2366			
PFHxA	5.525	313.0 -> 269.0	24548	1.21	µg/L	99
		313.0 -> 118.9	755			
PFHxS	7.218	398.7 -> 79.9	3628	1.06	µg/L	m 90
		398.7 -> 98.9	2056			
PFNA	7.671	463.0 -> 419.0	19018	1.19	µg/L	95
		463.0 -> 219.0	5179			
PFNS	8.811	548.8 -> 79.9	3057	1.35	µg/L	93
		548.8 -> 98.9	1450			
PFOA	7.125	413.0 -> 369.0	31811	1.19	µg/L	99
		413.0 -> 169.0	6346			
PFOS	8.330	498.9 -> 79.9	6025	1.19	µg/L	m 93
		498.9 -> 98.8	3234			
PFPeA	4.364	263.0 -> 219.0	41238	2.39	µg/L	100
PFPeS	6.494	349.1 -> 79.9	3208	1.09	µg/L	98
		349.1 -> 98.9	1440			
PFTeDA	9.900	713.1 -> 669.0	23005	1.20	µg/L	98
		713.1 -> 168.9	1851			
PFTrDA	9.515	663.0 -> 619.0	30932	1.26	µg/L	98
		663.0 -> 168.9	3083			
PFUnDA	8.648	563.1 -> 519.0	17992	1.21	µg/L	95
		563.1 -> 269.1	3457			
11CI-PF3OUdS	9.556	630.9 -> 450.9	24933	2.30	µg/L	94
		632.9 -> 452.9	8060			
9CI-PF3ONS	8.675	530.8 -> 351.0	32766	2.37	µg/L	94
		532.8 -> 353.0	8890			
ADONA	6.718	376.9 -> 250.9	70589	2.32	µg/L	99
		376.9 -> 84.8	18818			
HFPO-DA	5.891	284.9 -> 168.9	6999	2.42	µg/L	95
		284.9 -> 184.9	919			
3:3FTCA	3.836	241.0 -> 177.0	4501	5.92	µg/L	95
		241.0 -> 117.0	469			
5:3FTCA	6.193	341.0 -> 237.1	84055	30.52	µg/L	98
		341.0 -> 217.0	56171			
7:3FTCA	7.649	441.0 -> 316.9	43011	30.06	µg/L	96
		441.0 -> 336.9	100210			
EtFOSA	11.350	526.0 -> 219.0	12547	2.41	µg/L	m 97
		526.0 -> 169.0	17949			
EtFOSE	11.270	630.0 -> 58.9	34039	5.96	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	10932	2.44	µg/L	m 99
		511.9 -> 169.0	16340			
MeFOSE	10.973	616.1 -> 58.9	23509	5.55	µg/L	m 100
PFDoDS	10.039	699.1 -> 79.9	2960	1.29	µg/L	97
		699.1 -> 98.8	1646			
NFDHA	5.416	295.0 -> 201.0	3731	2.57	µg/L	96
		295.0 -> 84.9	945			
PFMBA	4.766	279.0 -> 85.1	23367	2.42	µg/L	100
PFMPA	3.515	229.0 -> 84.9	21818	2.42	µg/L	100
PFEESA	5.959	314.8 -> 134.9	32841	2.14	µg/L	99
		314.8 -> 82.9	1144			

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

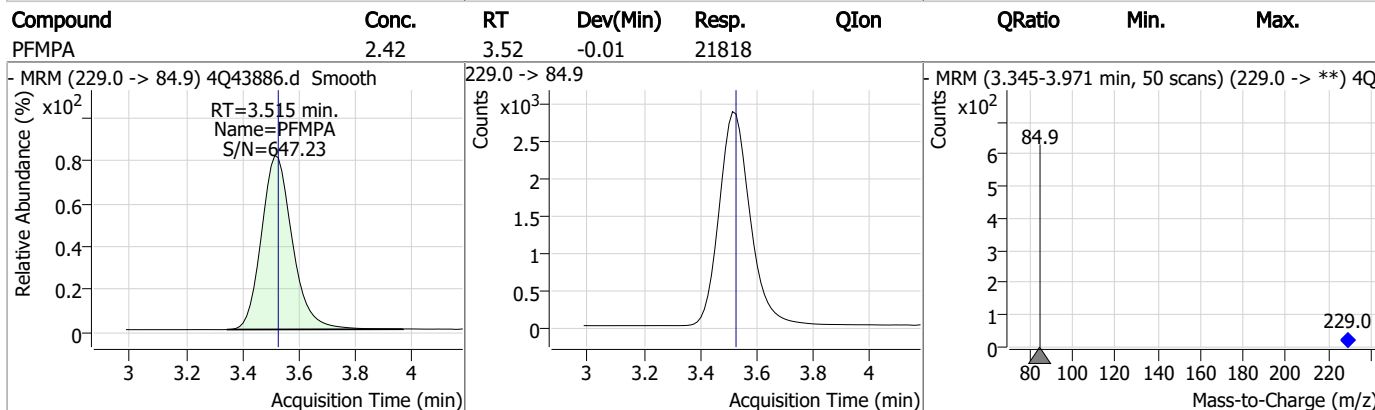
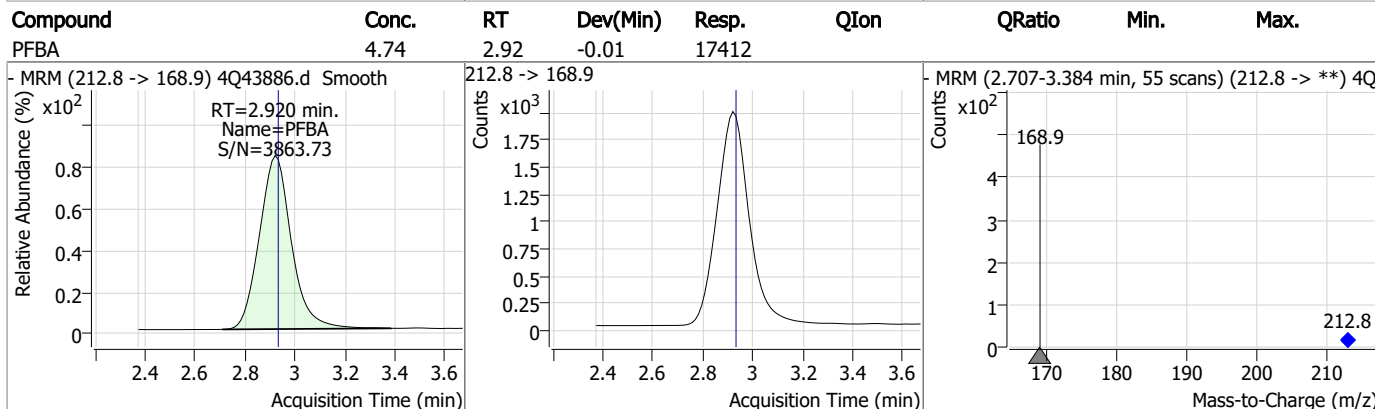
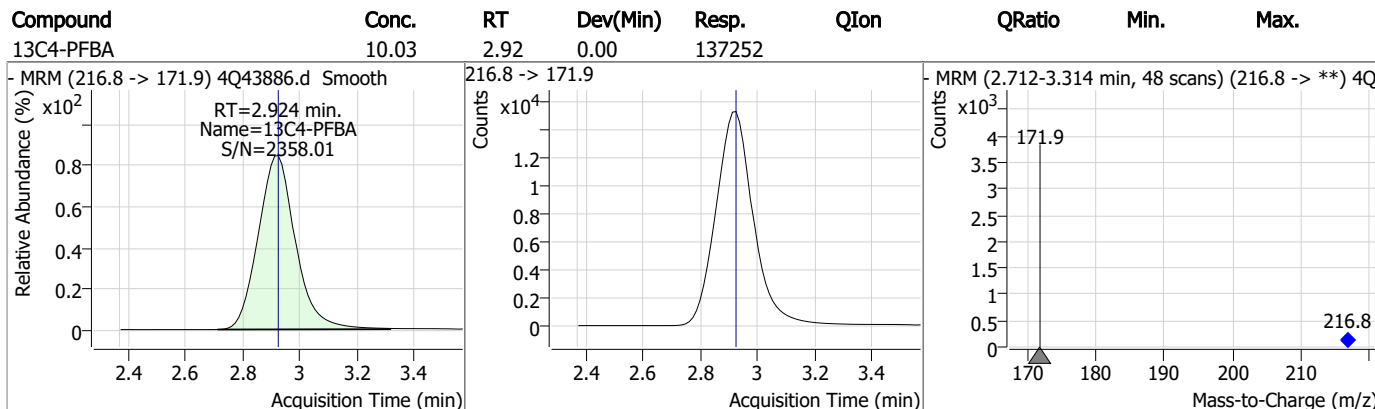
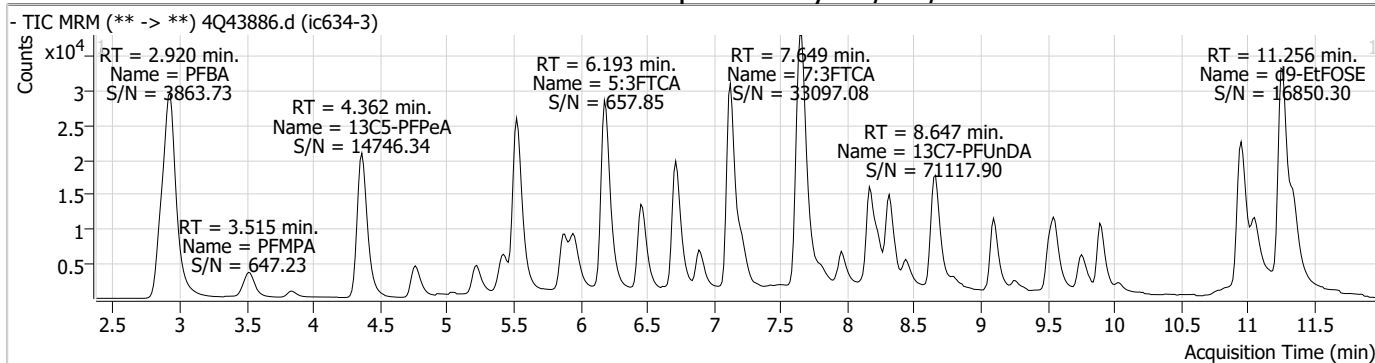
Perfluorinated Compounds by LC/MS/MS

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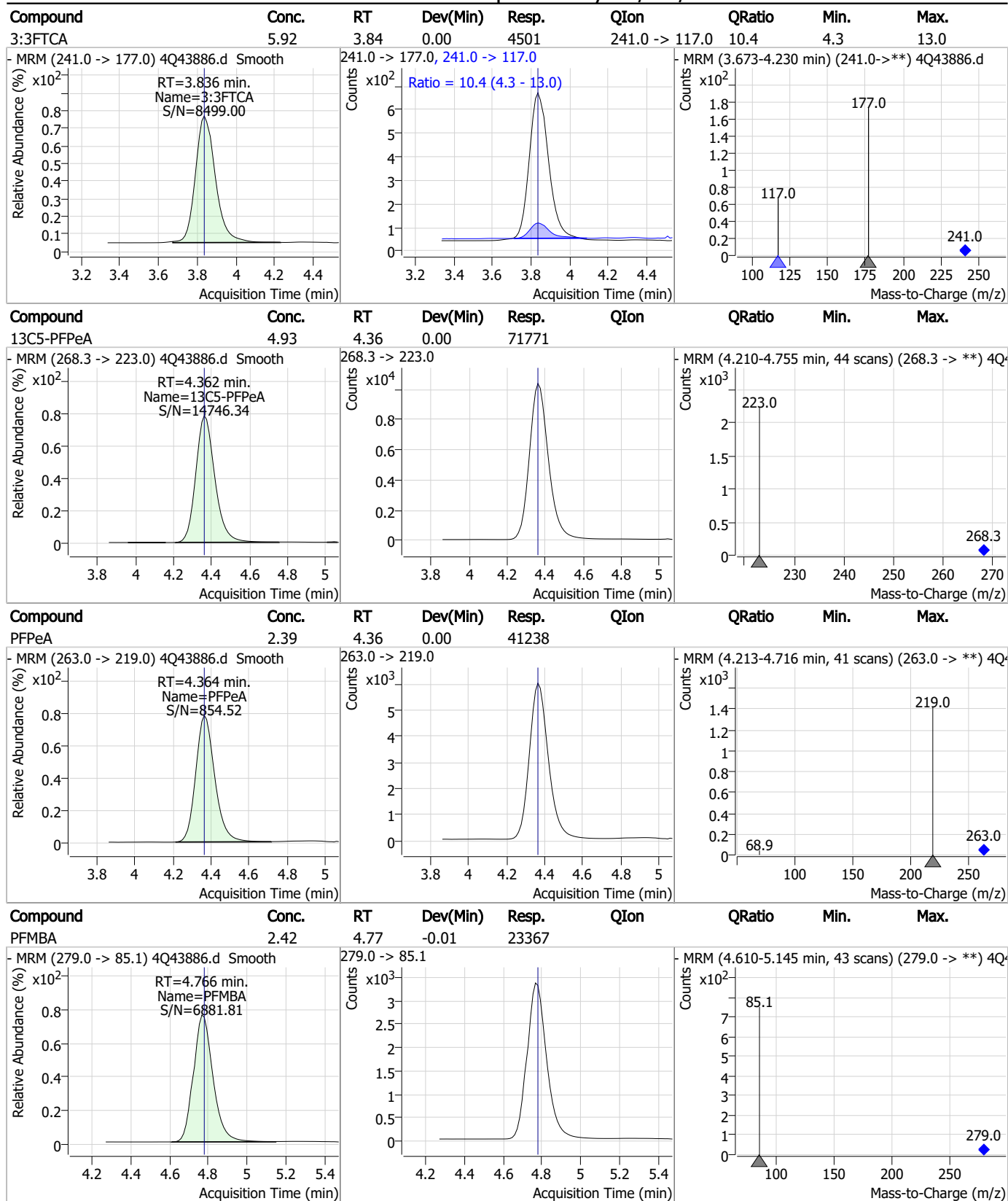
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Perfluorinated Compounds by LC/MS/MS

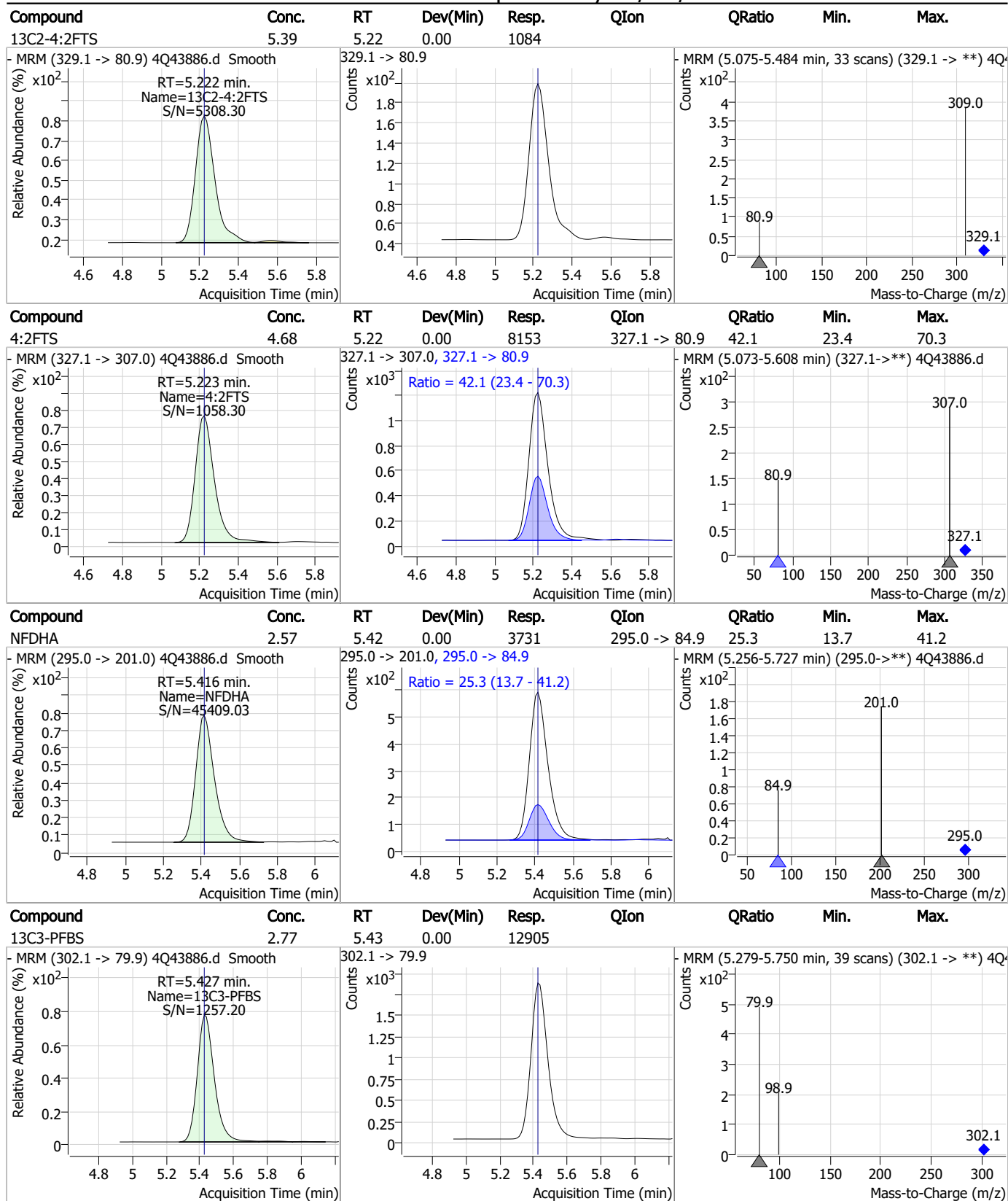


Perfluorinated Compounds by LC/MS/MS



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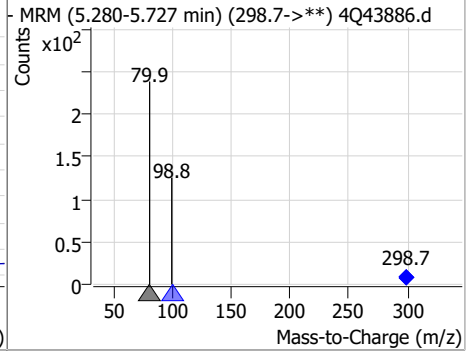
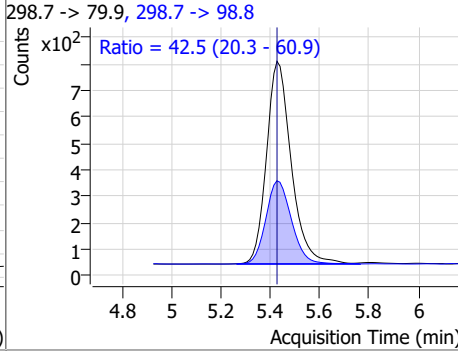
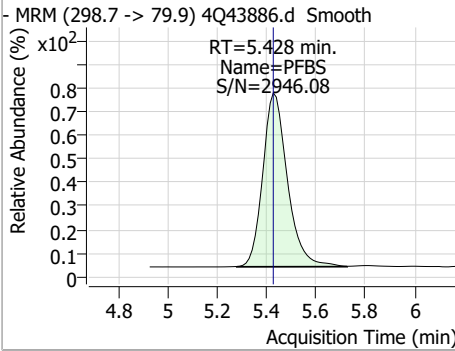
Perfluorinated Compounds by LC/MS/MS



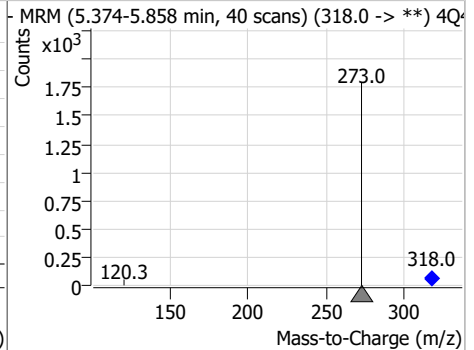
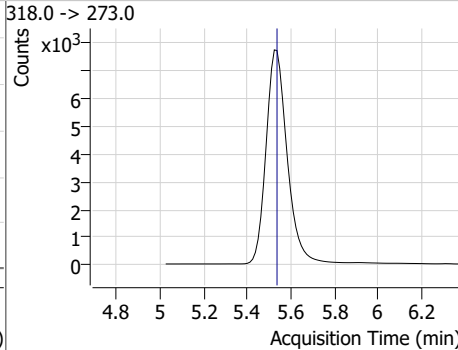
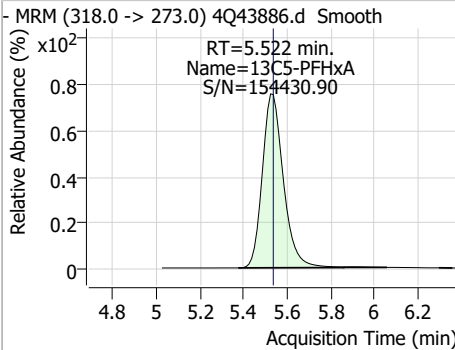
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Perfluorinated Compounds by LC/MS/MS

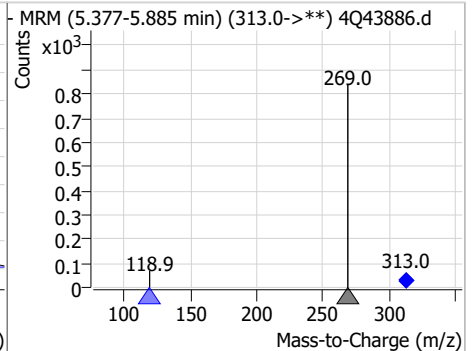
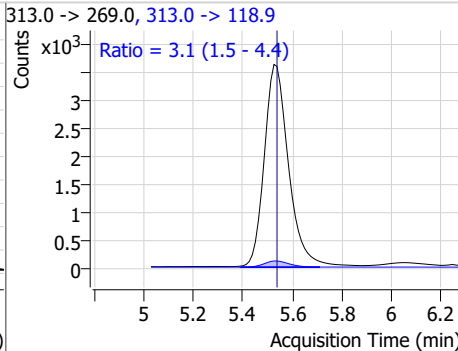
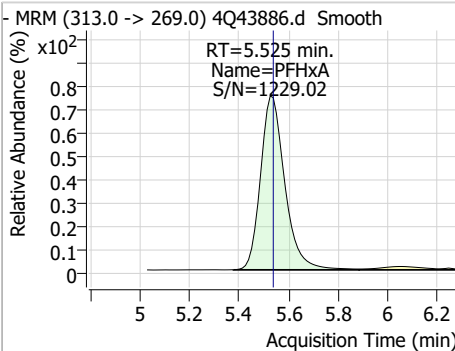
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.00	5.43	0.00	5301	298.7 -> 98.8	42.5	20.3	60.9



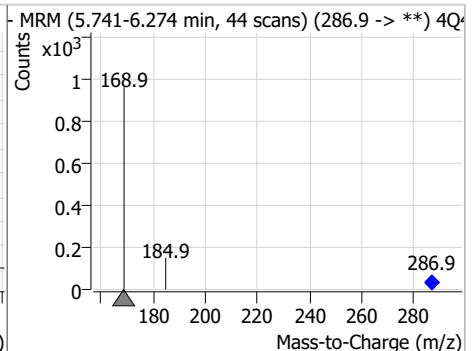
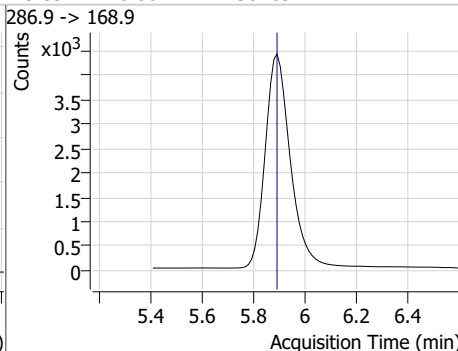
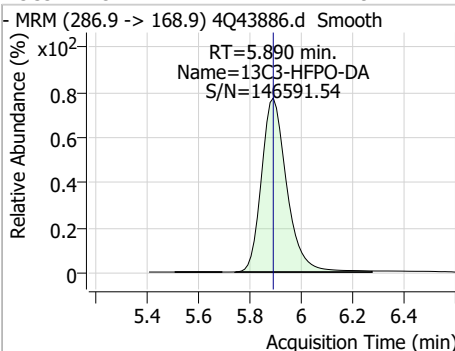
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.52	-0.01	51796				



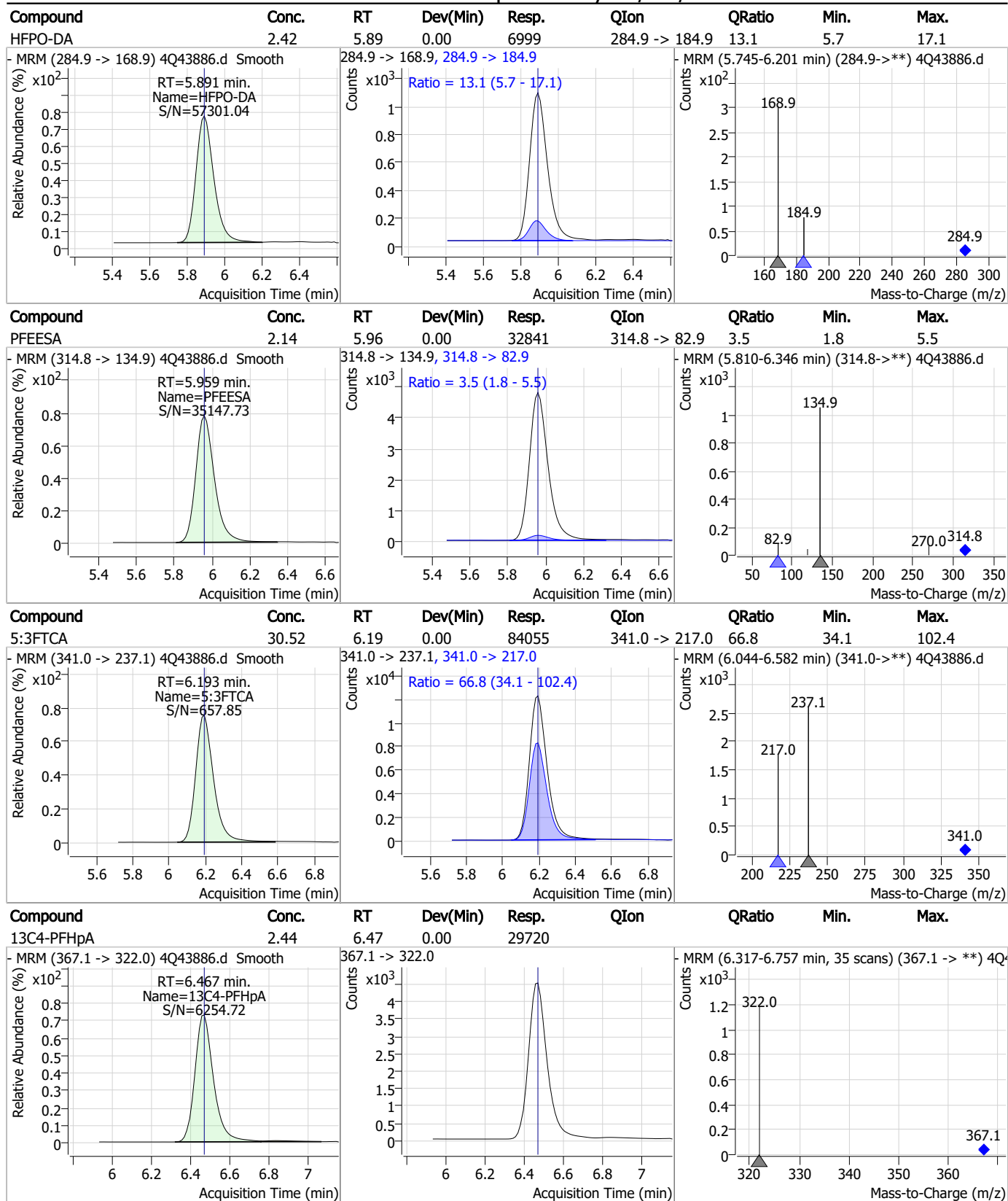
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.21	5.53	-0.01	24548	313.0 -> 118.9	3.1	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.72	5.89	0.00	30209				

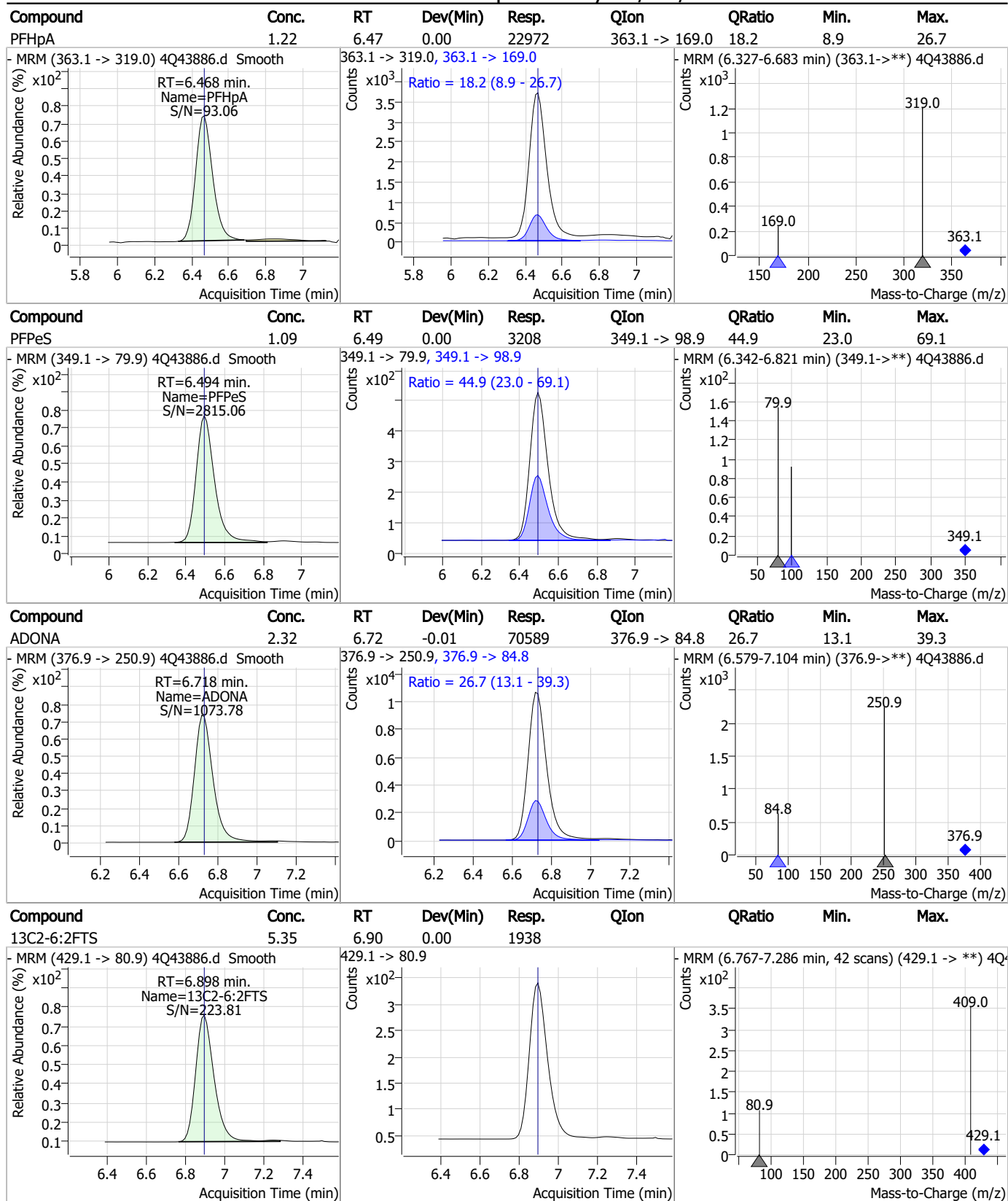


Perfluorinated Compounds by LC/MS/MS



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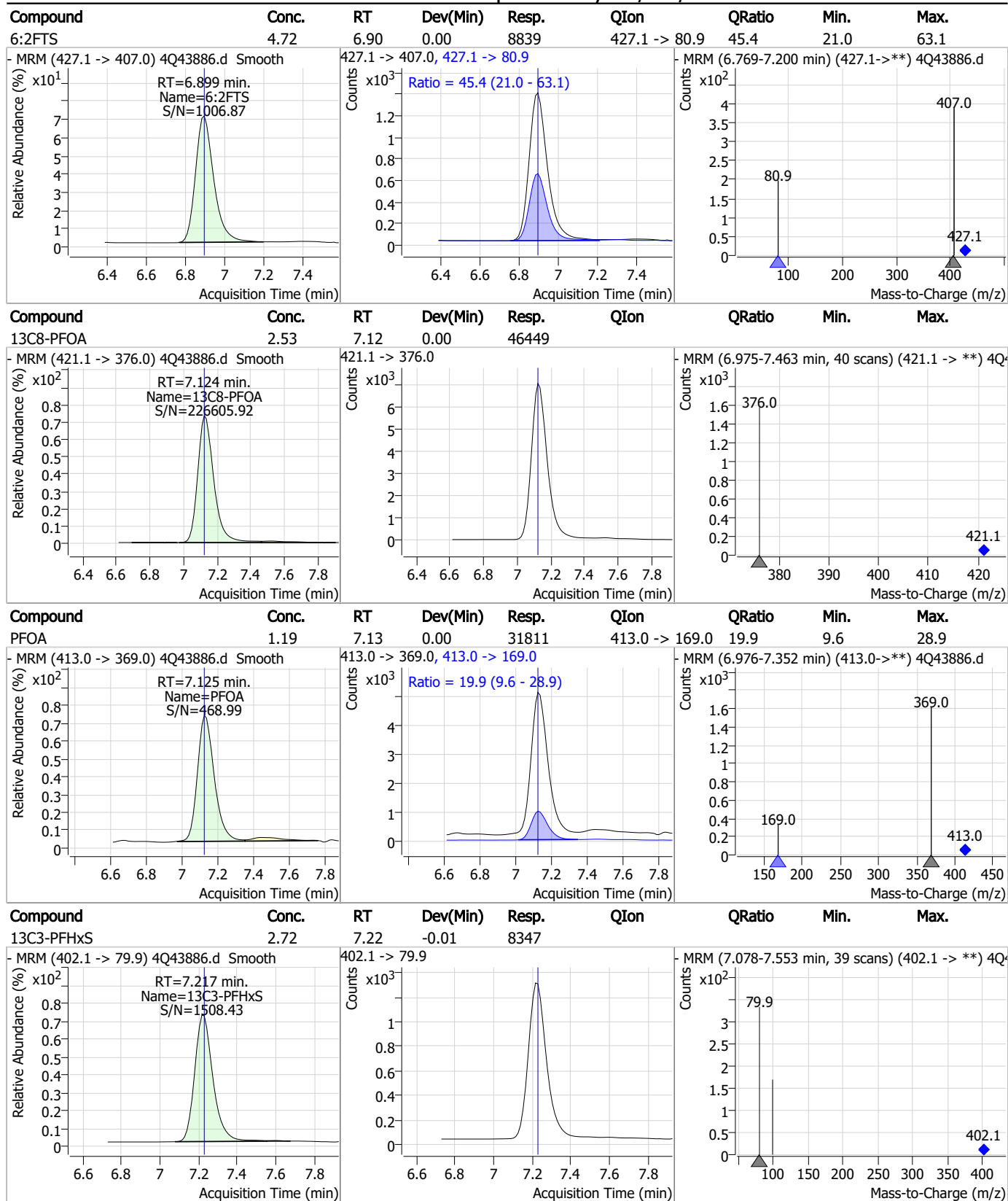
Perfluorinated Compounds by LC/MS/MS



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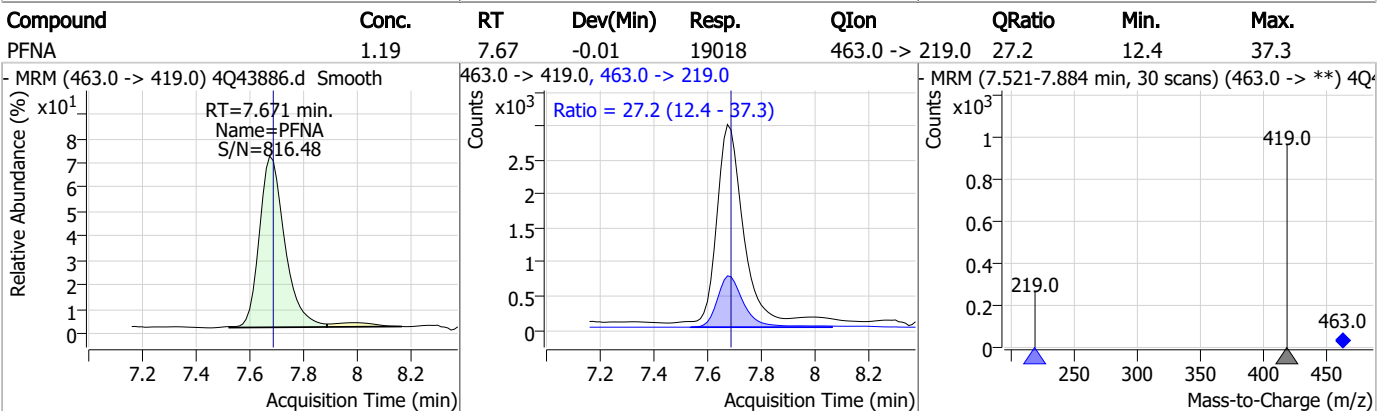
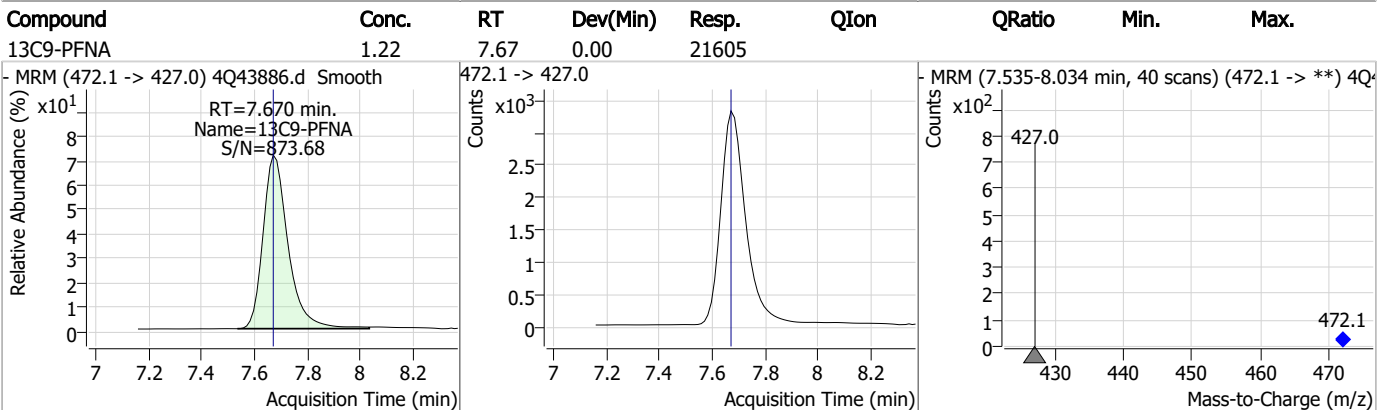
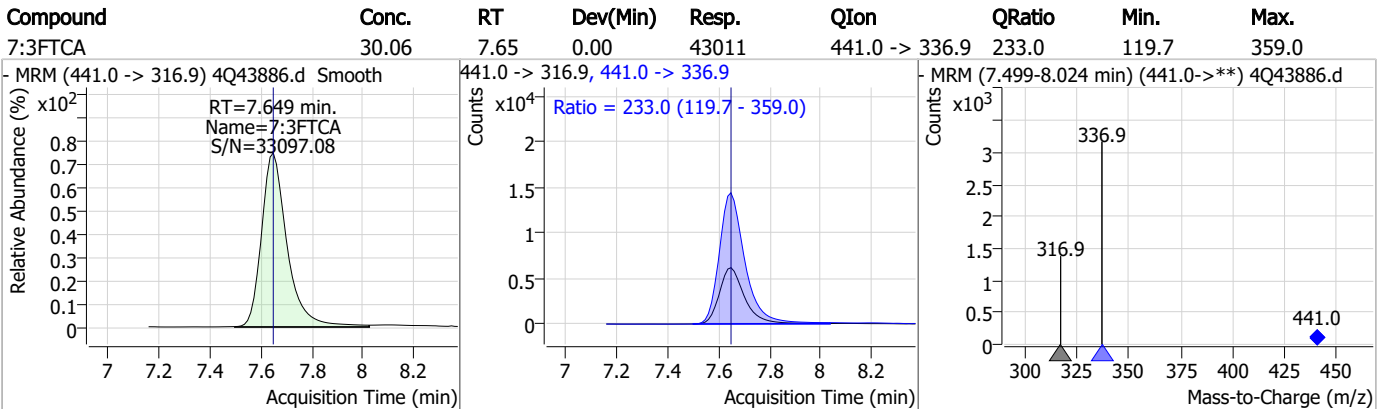
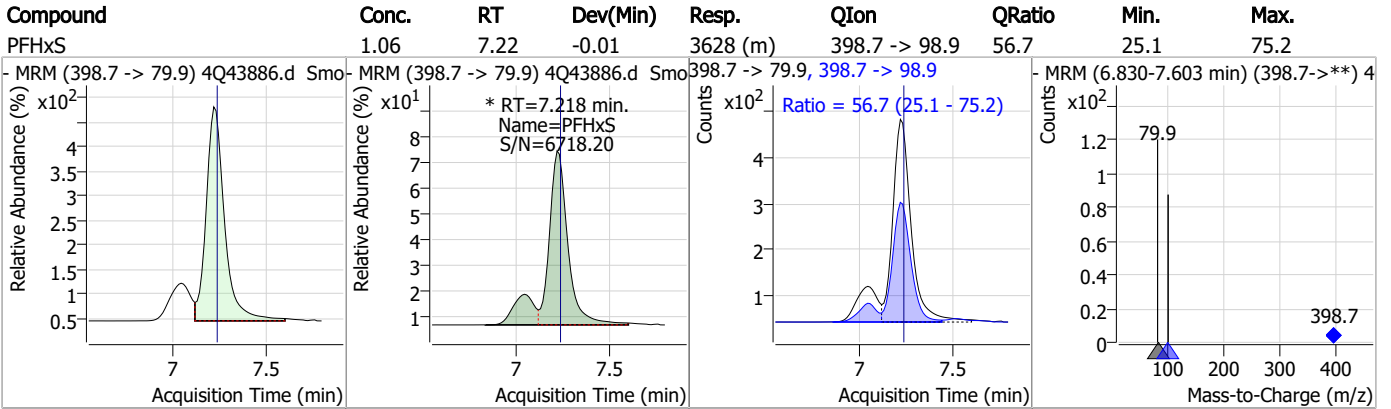
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Perfluorinated Compounds by LC/MS/MS



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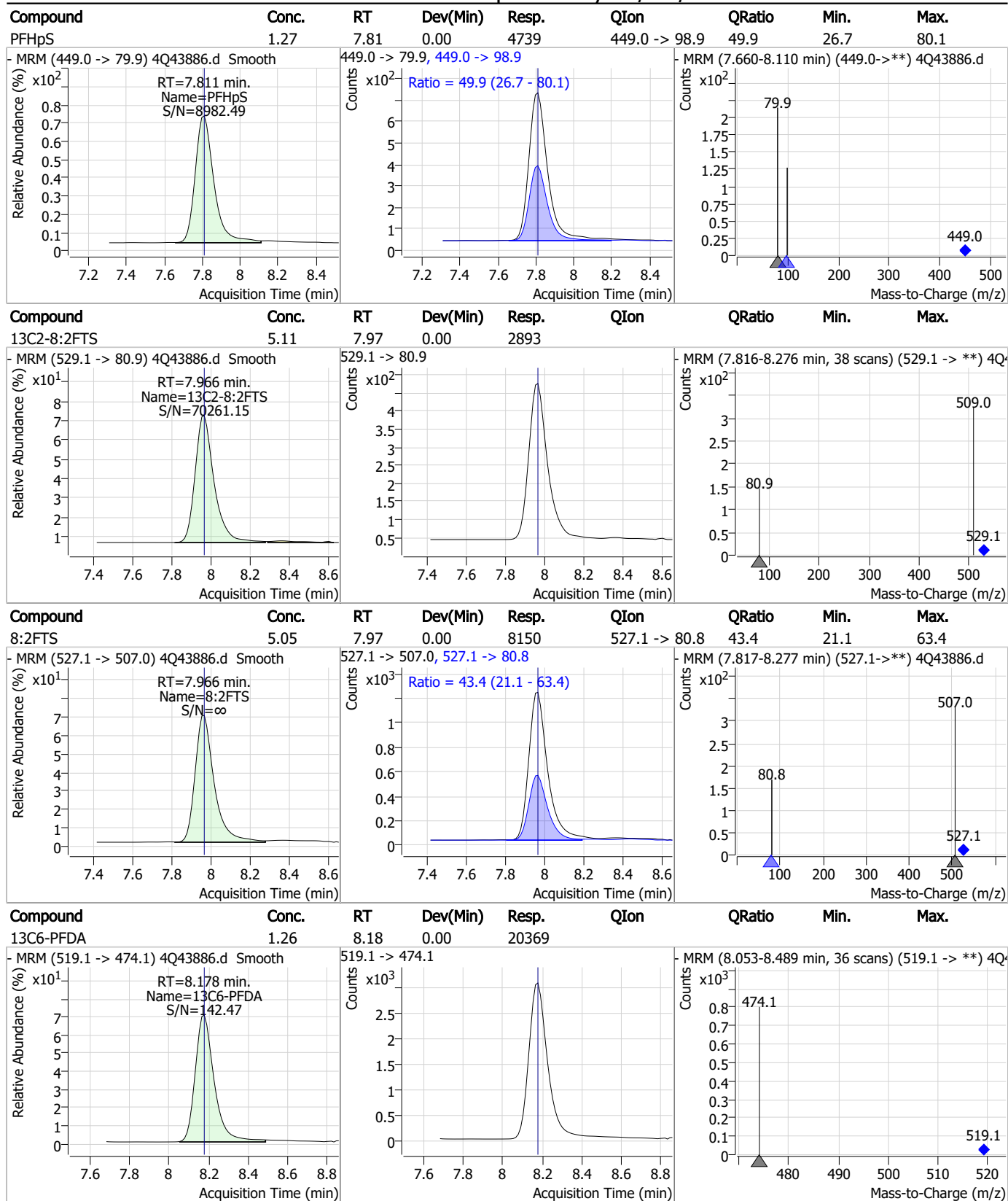
Perfluorinated Compounds by LC/MS/MS



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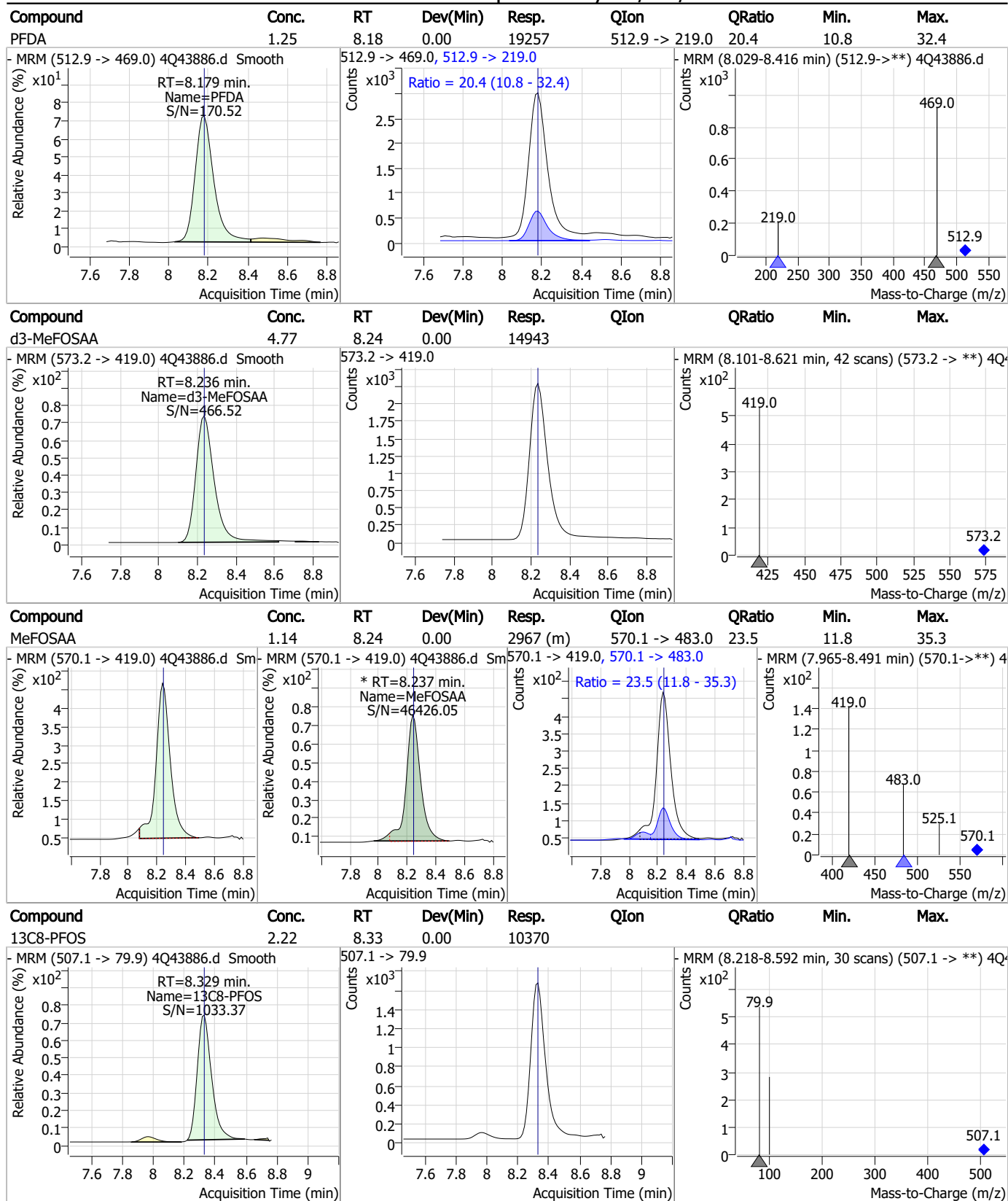
Perfluorinated Compounds by LC/MS/MS



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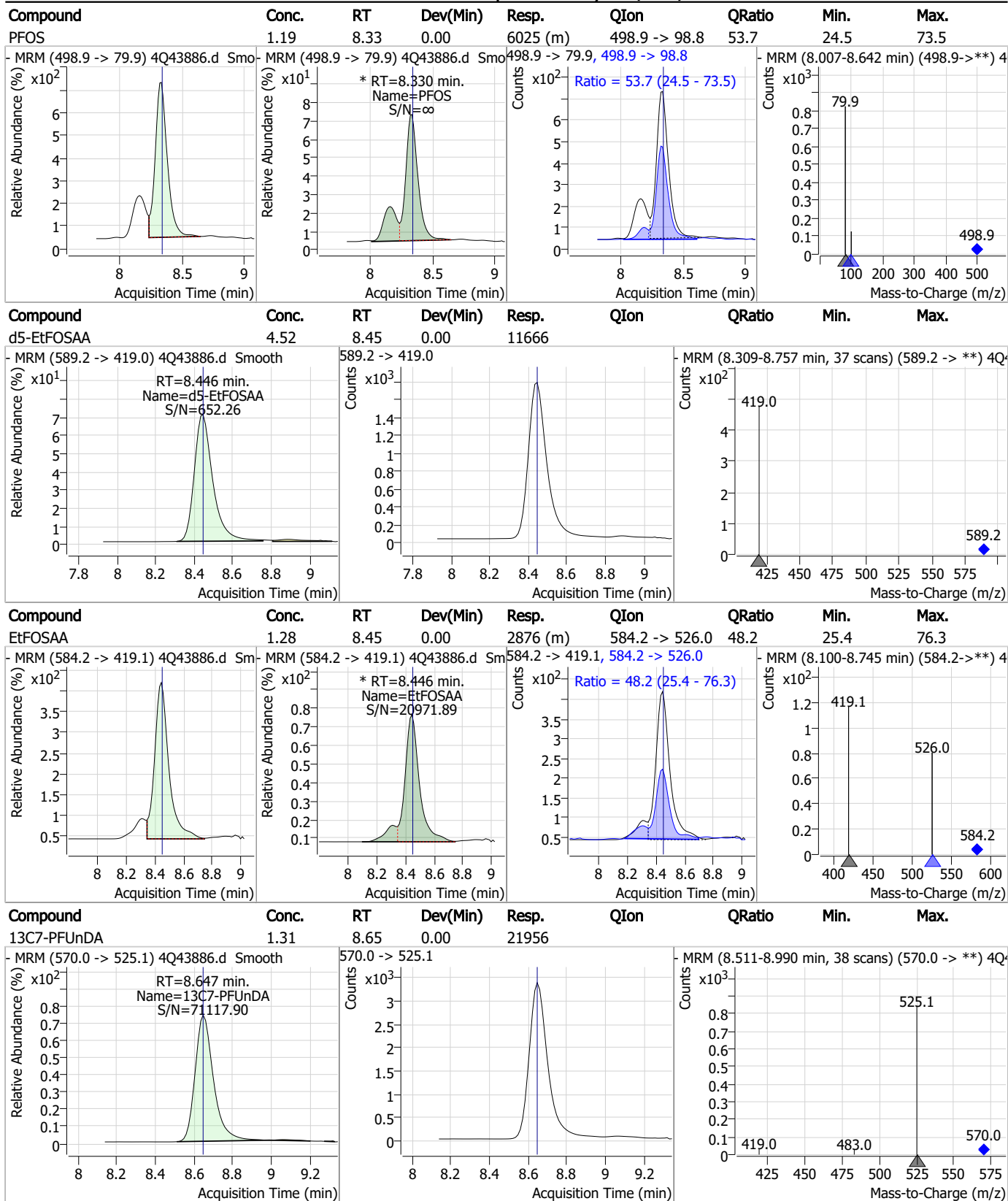
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Perfluorinated Compounds by LC/MS/MS



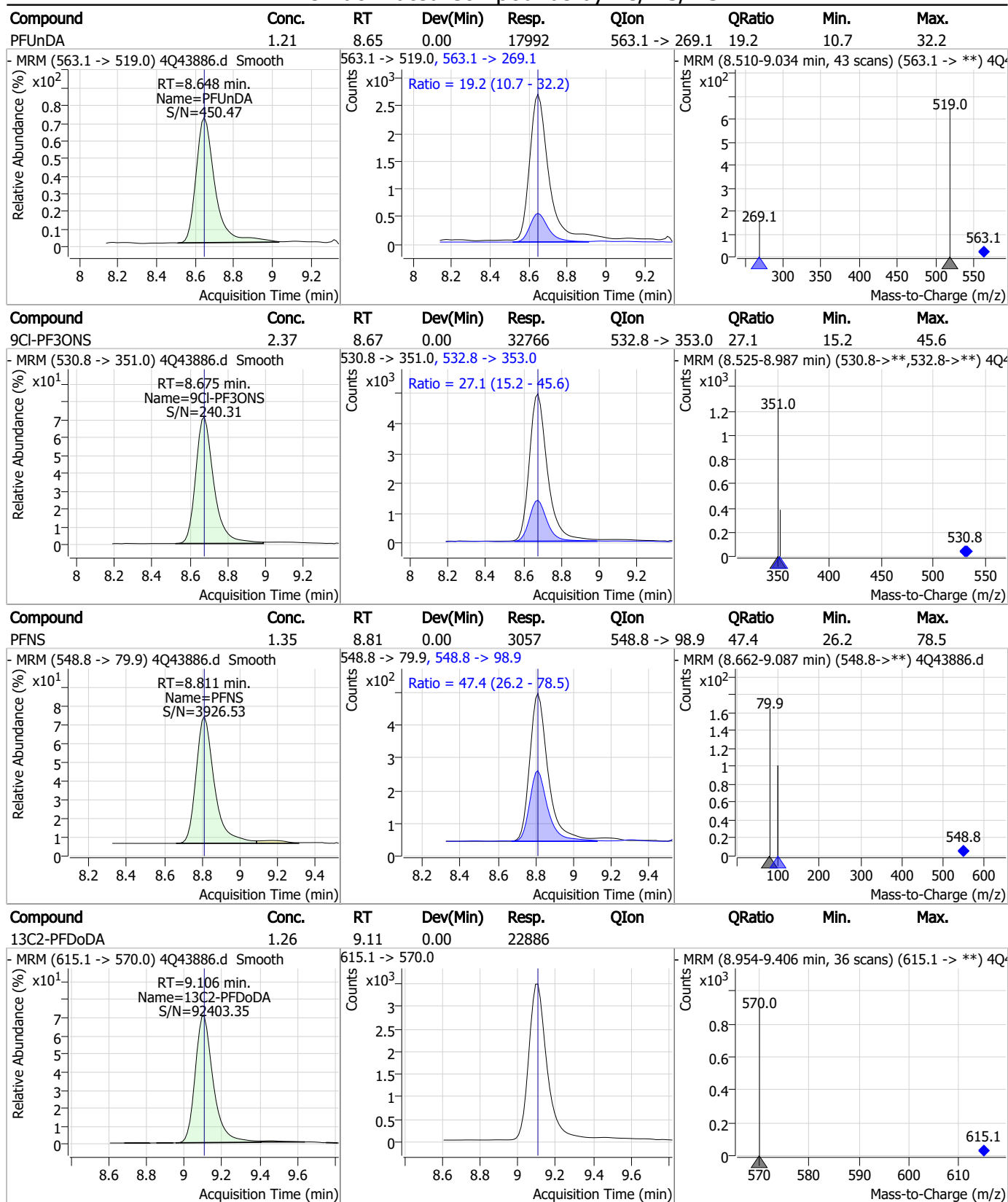
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Perfluorinated Compounds by LC/MS/MS



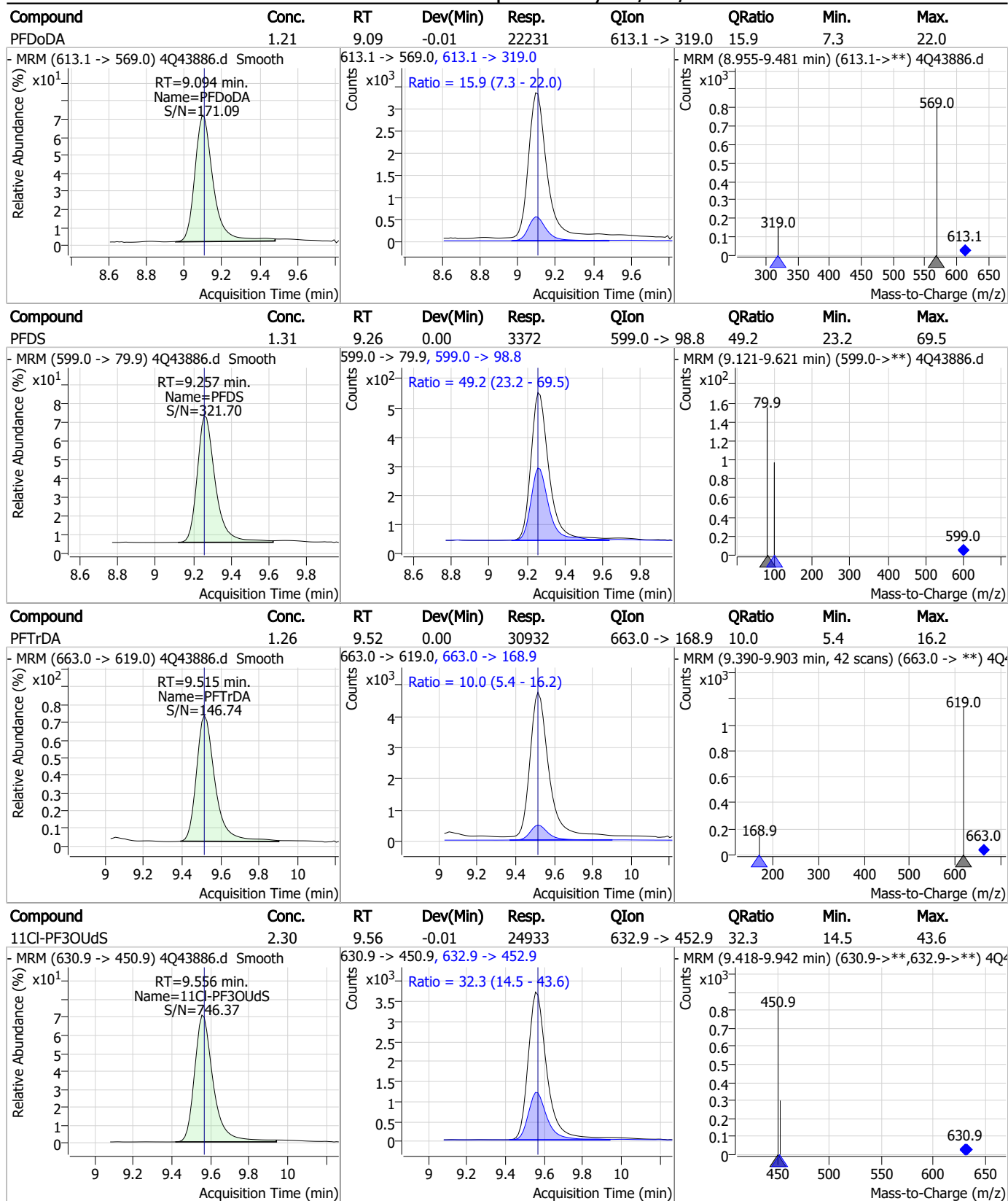
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Perfluorinated Compounds by LC/MS/MS



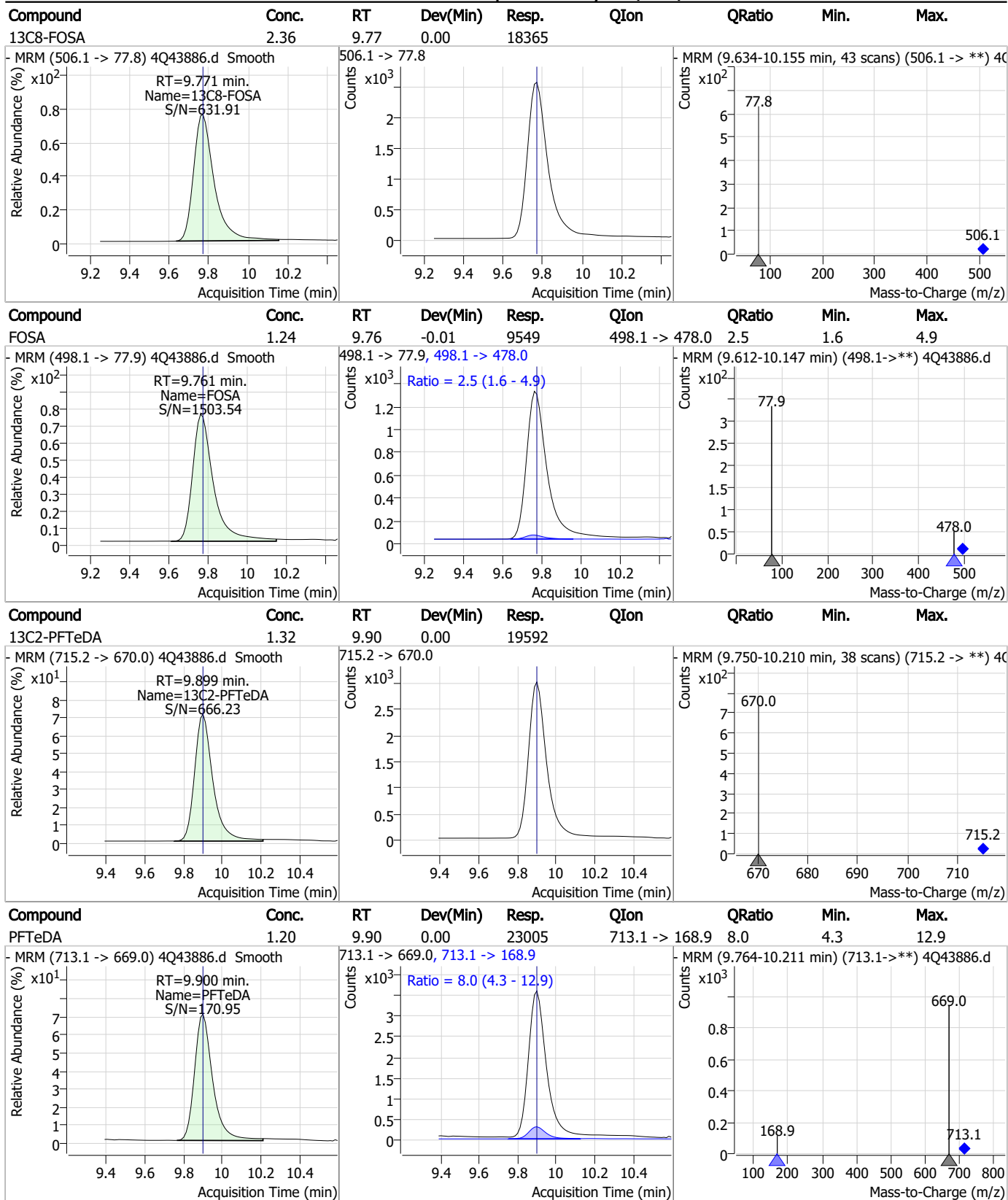
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Perfluorinated Compounds by LC/MS/MS



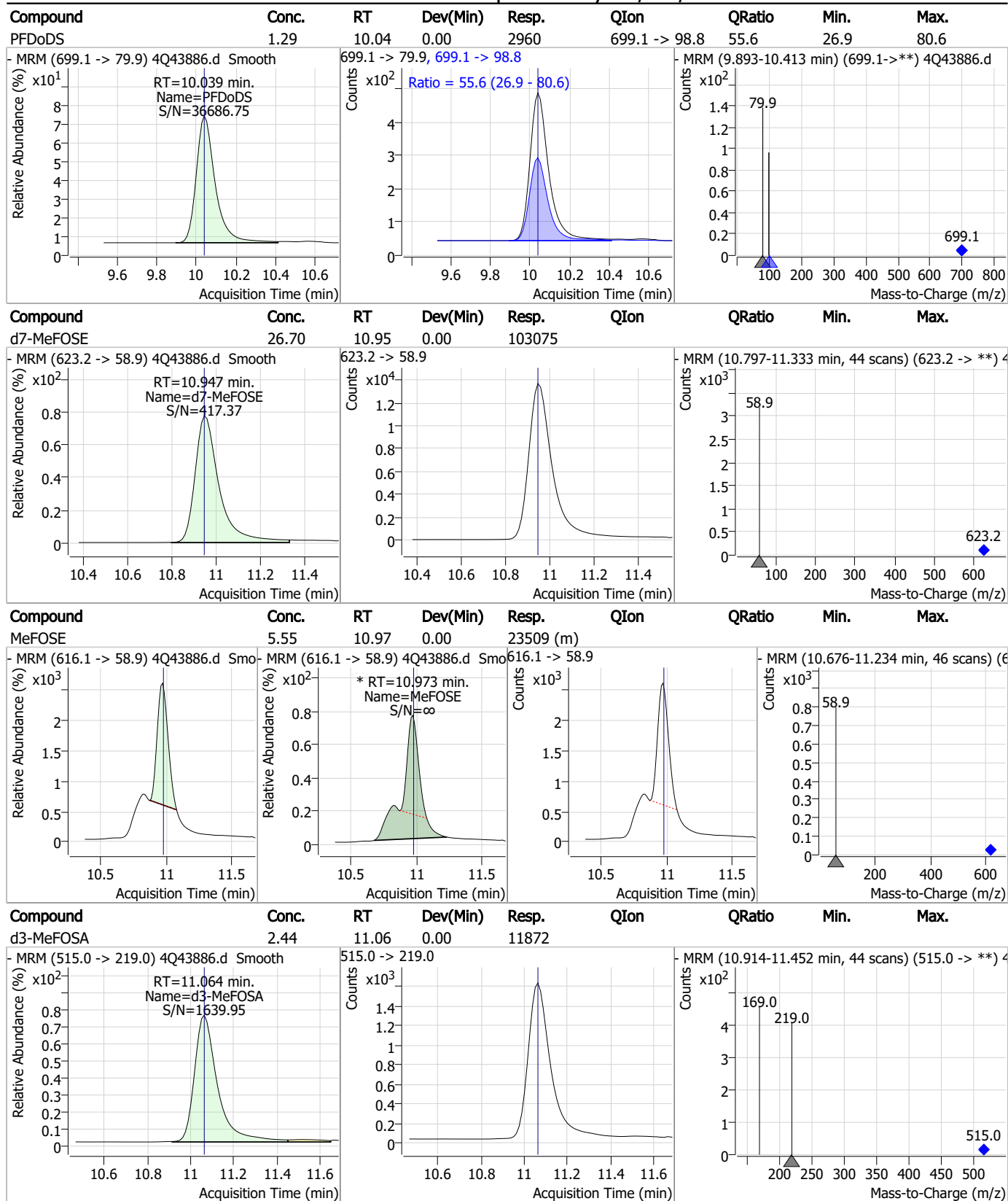
7.7.4
7

Perfluorinated Compounds by LC/MS/MS



7.7.4
7

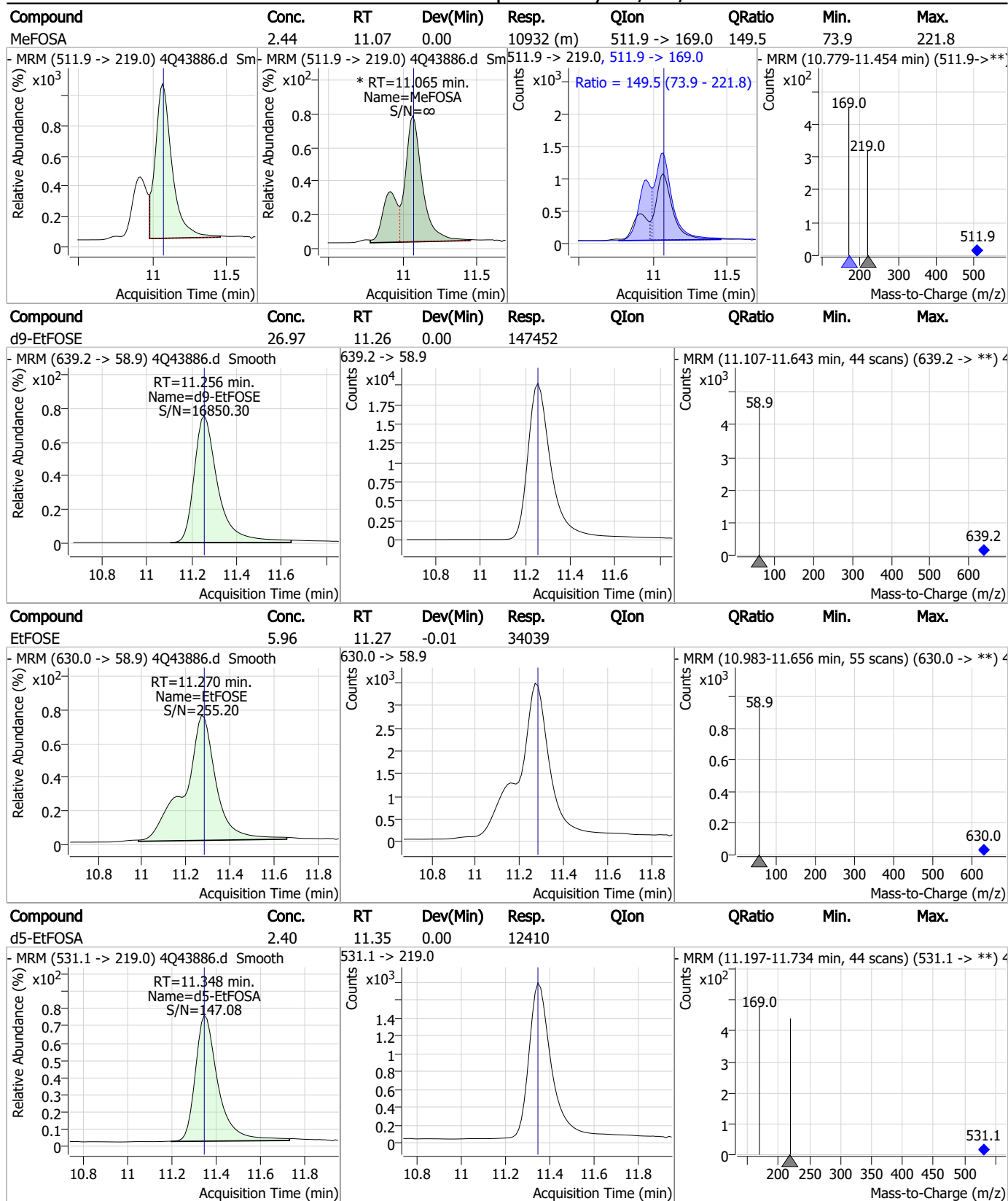
Perfluorinated Compounds by LC/MS/MS



7.7.4

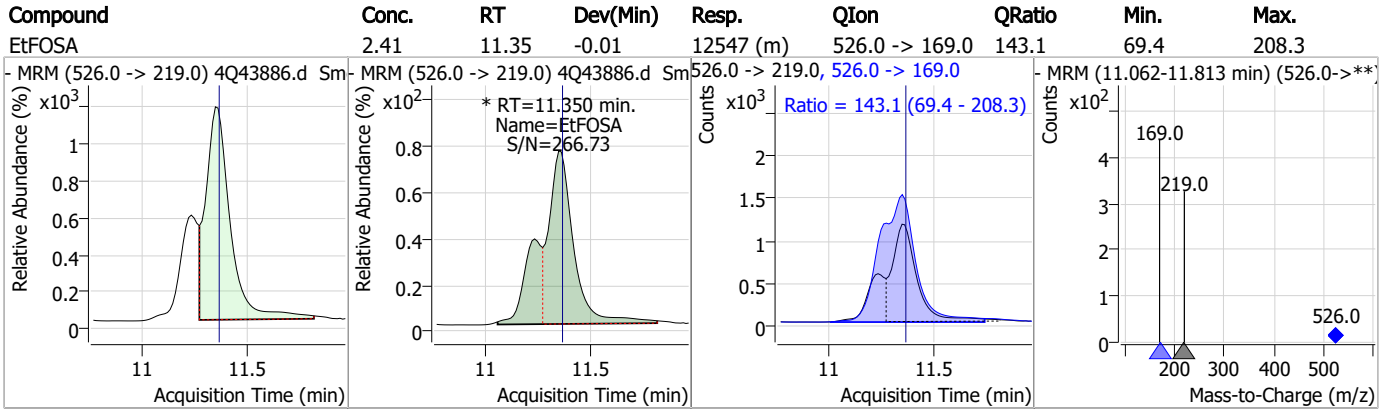
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Manual Integration Approval Summary

Sample Number: S4Q634-IC634 Method: EPA DRAFT 1633
Lab FileID: 4Q43886.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 11:40 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.22	Split peak
MeFOSAA	2355-31-9		8.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.45	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.35	Split peak

7.7.4.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 05/04/23 17:44

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43887.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 11:54:24 AM
 Sample Name : icc634-4
 Vial : P1-A5
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	136945	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	71702	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	49910	2.50 µg/L	0.000
M4-PFHpA	6.467	367.1 -> 322.0	29610	2.50 µg/L	0.000
M8-PFOA	7.124	421.1 -> 376.0	44424	2.50 µg/L	0.000
M9-PFNA	7.670	472.1 -> 427.0	21310	1.25 µg/L	0.000
M6-PFDA	8.178	519.1 -> 474.1	20739	1.25 µg/L	0.000
M7-PFUnDA	8.647	570.0 -> 525.1	21721	1.25 µg/L	0.000
M2-PFDoDA	9.106	615.1 -> 570.0	24668	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	20258	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	19470	2.50 µg/L	0.000
M3-PFBS	5.427	302.1 -> 79.9	12093	2.50 µg/L	0.000
M3-PFHxS	7.229	402.1 -> 79.9	7948	2.50 µg/L	0.000
M8-PFOS	8.329	507.1 -> 79.9	11069	2.50 µg/L	0.000
M2-4:2FTS	5.222	329.1 -> 80.9	1045	5.00 µg/L	0.000
M2-6:2FTS	6.898	429.1 -> 80.9	1865	5.00 µg/L	0.000
M2-8:2FTS	7.966	529.1 -> 80.9	2930	5.00 µg/L	0.000
M3-MeFOSAA	8.236	573.2 -> 419.0	14878	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	30150	10.00 µg/L	0.000
M5-EtFOSAA	8.446	589.2 -> 419.0	12886	5.00 µg/L	0.000
M7-MeFOSE	10.947	623.2 -> 58.9	110308	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	150711	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	11717	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	12050	2.50 µg/L	0.000
13C4-PFOS	8.330	502.8 -> 79.9	11376	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	72159	5.00 µg/L	0.000
18O2-PFHxS	7.228	403.0 -> 83.9	5353	2.50 µg/L	0.000
13C4-PFOA	7.124	417.1 -> 372.0	54891	2.50 µg/L	0.000
13C2-PFDA	8.178	515.1 -> 470.1	19442	1.25 µg/L	0.000
13C5-PFNA	7.684	468.0 -> 423.0	25730	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	46191	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.222	329.1 -> 80.9	1045	4.81 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C2-6:2FTS	6.898	429.1 -> 80.9	1865	4.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C2-8:2FTS	7.966	529.1 -> 80.9	2930	4.79 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C2-PFDoDA	9.106	615.1 -> 570.0	24668	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C2-PFTeDA	9.899	715.2 -> 670.0	20258	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C3-PFBS	5.427	302.1 -> 79.9	12093	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C3-PFHxS	7.229	402.1 -> 79.9	7948	2.40 µg/L	0.000

7.7.5
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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 = 95.8%	
13C4-PFBA	2.924	216.8 -> 171.9	136945	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.467	367.1 -> 322.0	29610	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.535	318.0 -> 273.0	49910	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C5-PFPeA	4.362	268.3 -> 223.0	71702	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C6-PFDA	8.178	519.1 -> 474.1	20739	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C7-PFUnDA	8.647	570.0 -> 525.1	21721	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-FOSA	9.771	506.1 -> 77.8	19470	2.73 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.2%	
13C8-PFOA	7.124	421.1 -> 376.0	44424	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C8-PFOS	8.329	507.1 -> 79.9	11069	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C9-PFNA	7.670	472.1 -> 427.0	21310	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.5%	
d3-MeFOSAA	8.236	573.2 -> 419.0	14878	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	30150	9.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d3-MeFOSA	11.064	515.0 -> 219.0	12050	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.0%	
d5-EtFOSAA	8.446	589.2 -> 419.0	12886	5.45 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.0%	
d7-MeFOSE	10.947	623.2 -> 58.9	110308	31.17 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 124.7%	
d9-EtFOSE	11.256	639.2 -> 58.9	150711	30.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 120.3%	
d5-EtFOSA	11.348	531.1 -> 219.0	11717	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	16368	9.73 µg/L	100
		327.1 -> 80.9	7675		
6:2FTS	6.899	427.1 -> 407.0	19037	10.57 µg/L	100
		427.1 -> 80.9	8009		
8:2FTS	7.966	527.1 -> 507.0	16898	10.35 µg/L	100
		527.1 -> 80.8	7139		
EtFOSAA	8.446	584.2 -> 419.1	5251	2.12 µg/L	m 100
		584.2 -> 526.0	2672		
FOSA	9.774	498.1 -> 77.9	19654	2.41 µg/L	100
		498.1 -> 478.0	646		
MeFOSAA	8.237	570.1 -> 419.0	5917	2.28 µg/L	m 100
		570.1 -> 483.0	1394		
PFBA	2.932	212.8 -> 168.9	35630	9.72 µg/L	100
PFBS	5.428	298.7 -> 79.9	11011	2.22 µg/L	100
		298.7 -> 98.8	4473		
PFDA	8.179	512.9 -> 469.0	37828	2.40 µg/L	100
		512.9 -> 219.0	8158		
PFDODA	9.106	613.1 -> 569.0	46925	2.37 µg/L	100
		613.1 -> 319.0	6874		
PFDS	9.257	599.0 -> 79.9	6593	2.40 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.468	599.0 -> 98.8	3053	2.44	µg/L	100
		363.1 -> 319.0	45754			
PFHpS	7.811	363.1 -> 169.0	8131	2.24	µg/L	100
		449.0 -> 79.9	8932			
PFHxA	5.538	449.0 -> 98.9	4767	2.47	µg/L	100
		313.0 -> 269.0	48280			
PFHxS	7.230	313.0 -> 118.9	1419	2.36	µg/L	m
		398.7 -> 79.9	7700			
PFNA	7.685	398.7 -> 98.9	3861	2.41	µg/L	100
		463.0 -> 419.0	38083			
PFNS	8.811	463.0 -> 219.0	9466	2.29	µg/L	100
		548.8 -> 79.9	5533			
PFOA	7.125	548.8 -> 98.9	2894	2.61	µg/L	100
		413.0 -> 369.0	66788			
PFOS	8.330	413.0 -> 169.0	12884	2.34	µg/L	m
		498.9 -> 79.9	12700			
PFPeA	4.364	498.9 -> 98.8	6227	4.98	µg/L	100
		263.0 -> 219.0	85901			
PFPeS	6.494	349.1 -> 79.9	6690	2.39	µg/L	100
		349.1 -> 98.9	3083			
PFTeDA	9.900	713.1 -> 669.0	48732	2.46	µg/L	100
		713.1 -> 168.9	4176			
PFTrDA	9.515	663.0 -> 619.0	64267	2.43	µg/L	100
		663.0 -> 168.9	6945			
PFUnDA	8.648	563.1 -> 519.0	37222	2.52	µg/L	100
		563.1 -> 269.1	7998			
11CI-PF3OUdS	9.568	630.9 -> 450.9	52167	4.81	µg/L	100
		632.9 -> 452.9	15156			
9CI-PF3ONS	8.675	530.8 -> 351.0	64137	4.64	µg/L	100
		532.8 -> 353.0	19505			
ADONA	6.731	376.9 -> 250.9	142578	4.70	µg/L	100
		376.9 -> 84.8	37314			
HFPO-DA	5.891	284.9 -> 168.9	14161	4.92	µg/L	100
		284.9 -> 184.9	1610			
3:3FTCA	3.836	241.0 -> 177.0	9126	12.02	µg/L	100
		241.0 -> 117.0	789			
5:3FTCA	6.193	341.0 -> 237.1	168151	63.37	µg/L	100
		341.0 -> 217.0	114841			
7:3FTCA	7.649	441.0 -> 316.9	87477	63.45	µg/L	100
		441.0 -> 336.9	209338			
EtFOSA	11.362	526.0 -> 219.0	25279	5.15	µg/L	100
		526.0 -> 169.0	35104			
EtFOSE	11.282	630.0 -> 58.9	71271	12.22	µg/L	100
		511.9 -> 219.0	21827			
MeFOSA	11.065	511.9 -> 169.0	32269	4.81	µg/L	m
		616.1 -> 58.9	56025			
MeFOSE	10.973	699.1 -> 79.9	5823	12.37	µg/L	m
		699.1 -> 98.8	3130			
PFDoDS	10.039	295.0 -> 201.0	7223	2.38	µg/L	100
		295.0 -> 84.9	1983			
NFDHA	5.416	279.0 -> 85.1	46882	5.17	µg/L	100
		229.0 -> 84.9	44190			
PFMBA	4.778	314.8 -> 134.9	65159	4.90	µg/L	100
		314.8 -> 82.9	2381			
PFMPA	3.528			4.40	µg/L	100
PFEESA	5.959			4.40	µg/L	100

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

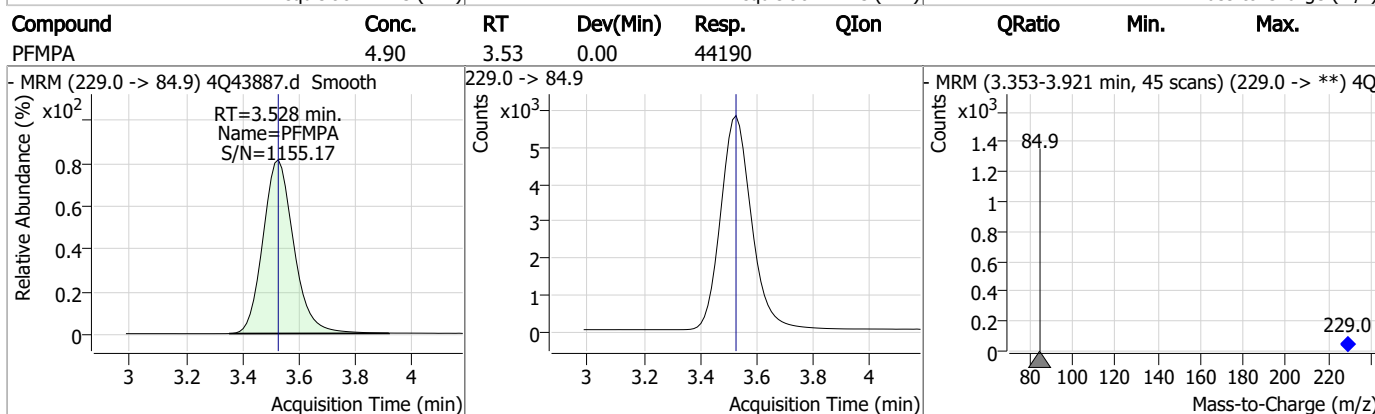
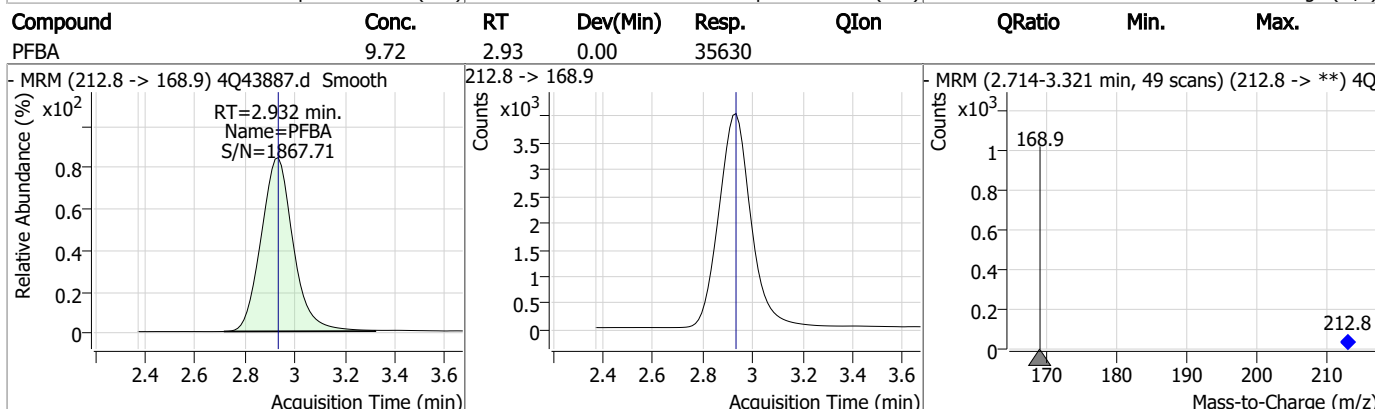
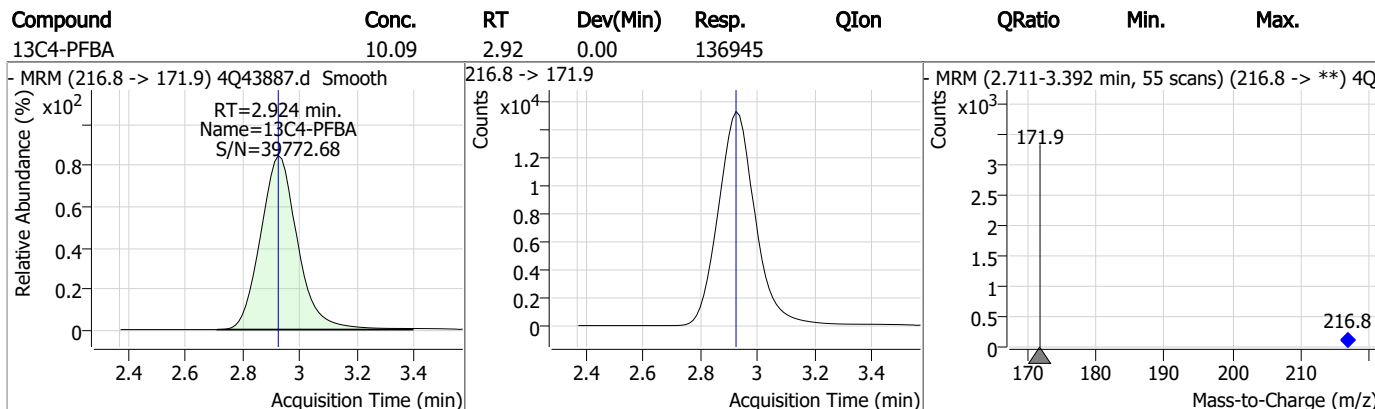
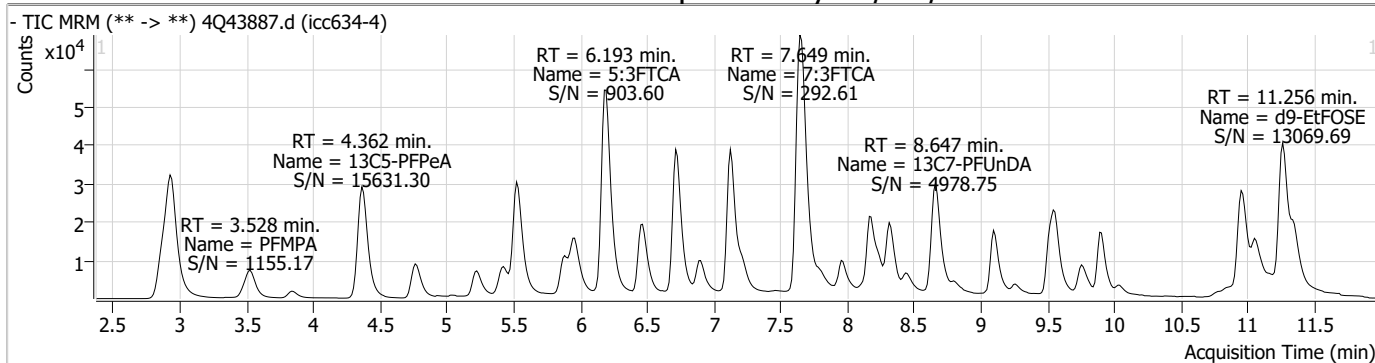
Perfluorinated Compounds by LC/MS/MS

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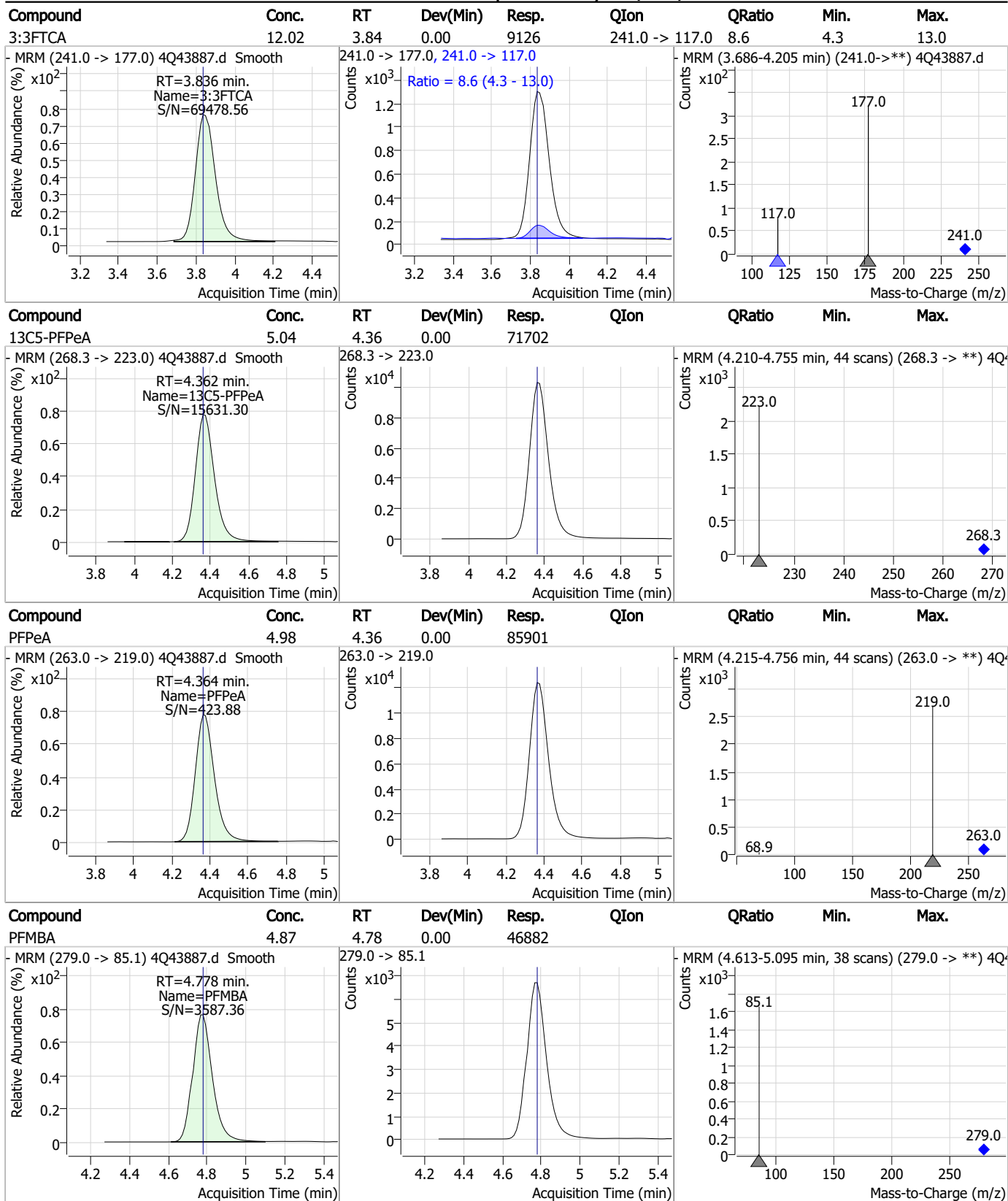
7.7.5

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Perfluorinated Compounds by LC/MS/MS

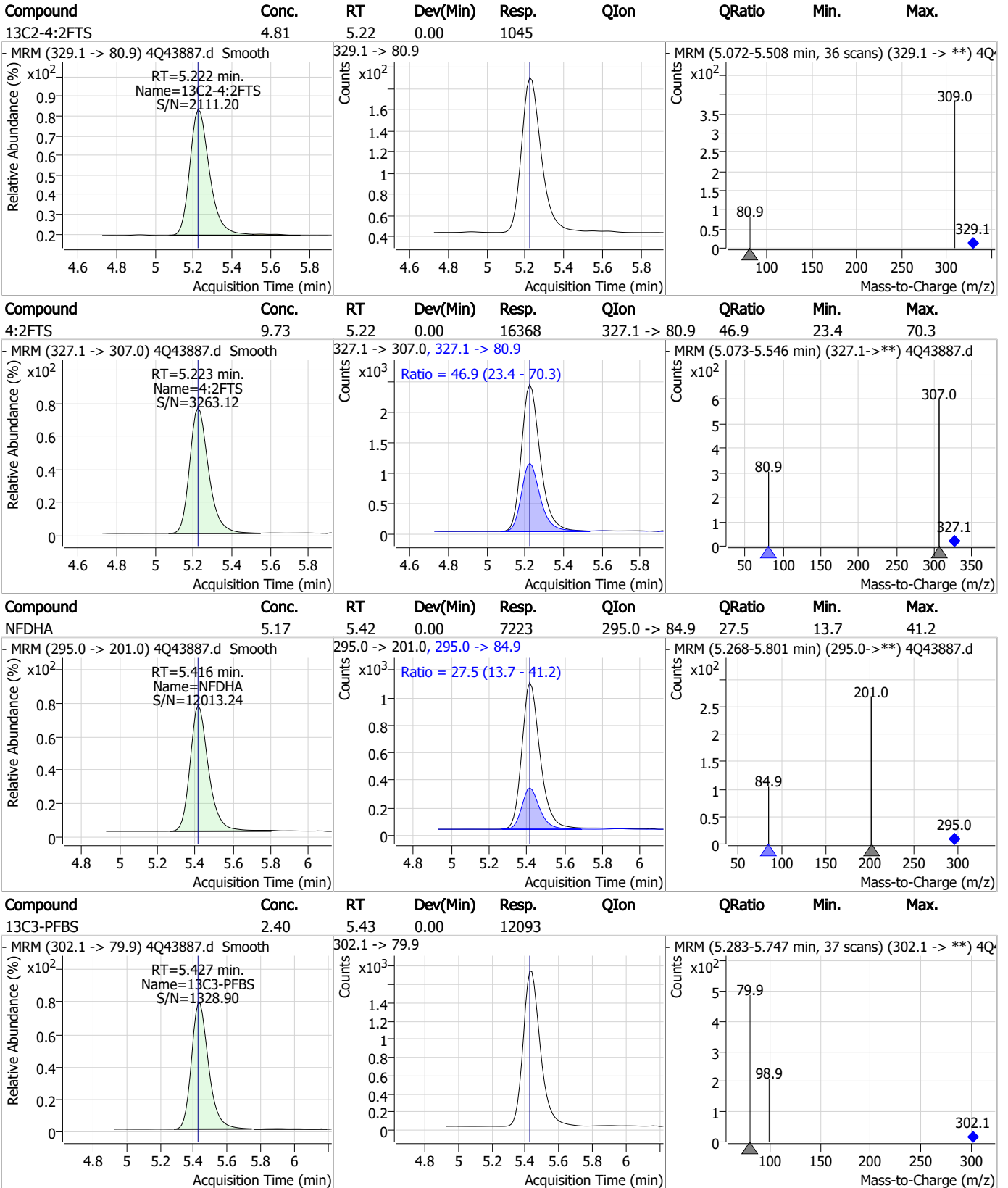


Perfluorinated Compounds by LC/MS/MS



7.7.5
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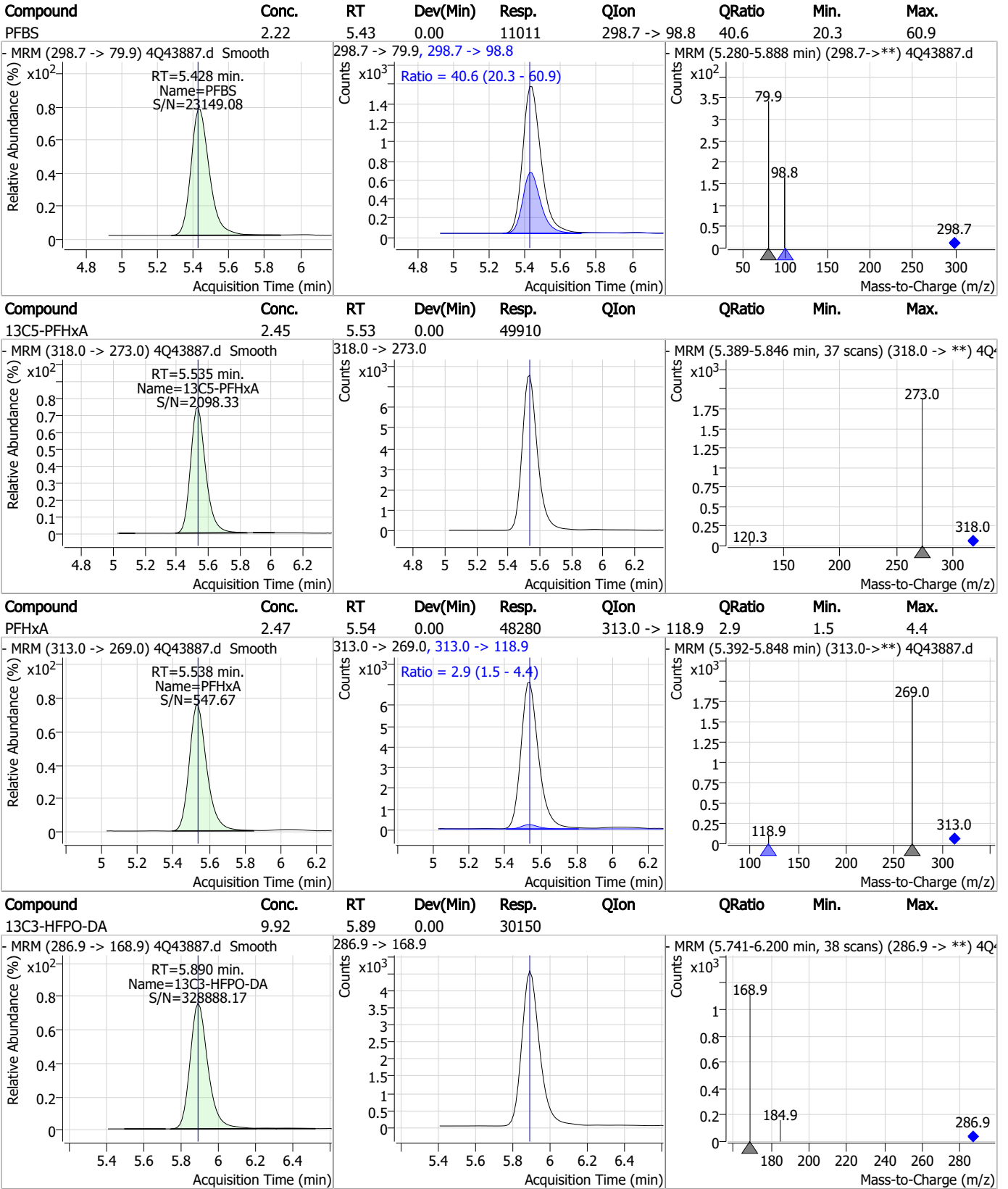
Perfluorinated Compounds by LC/MS/MS



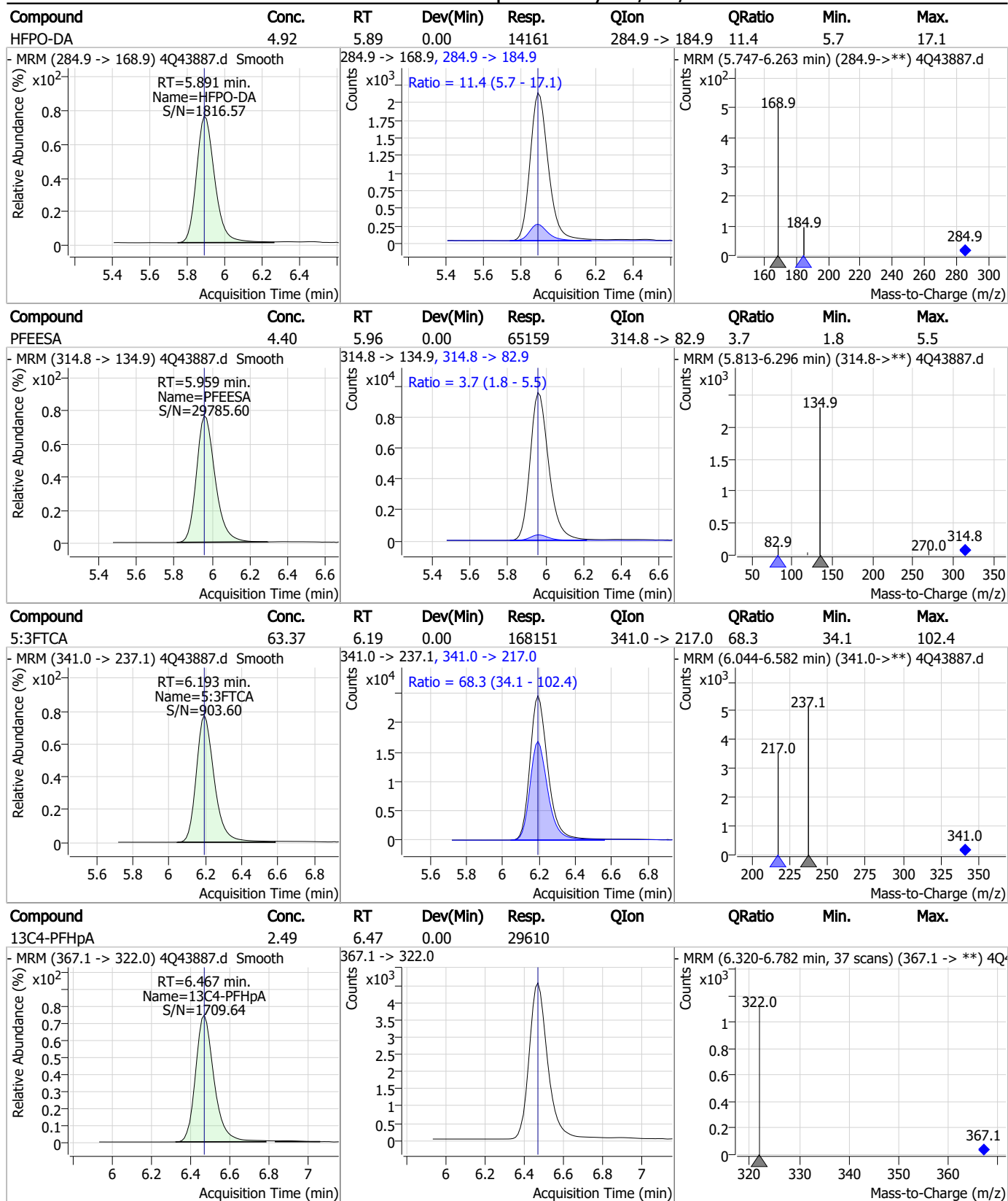
7.7.5

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Perfluorinated Compounds by LC/MS/MS



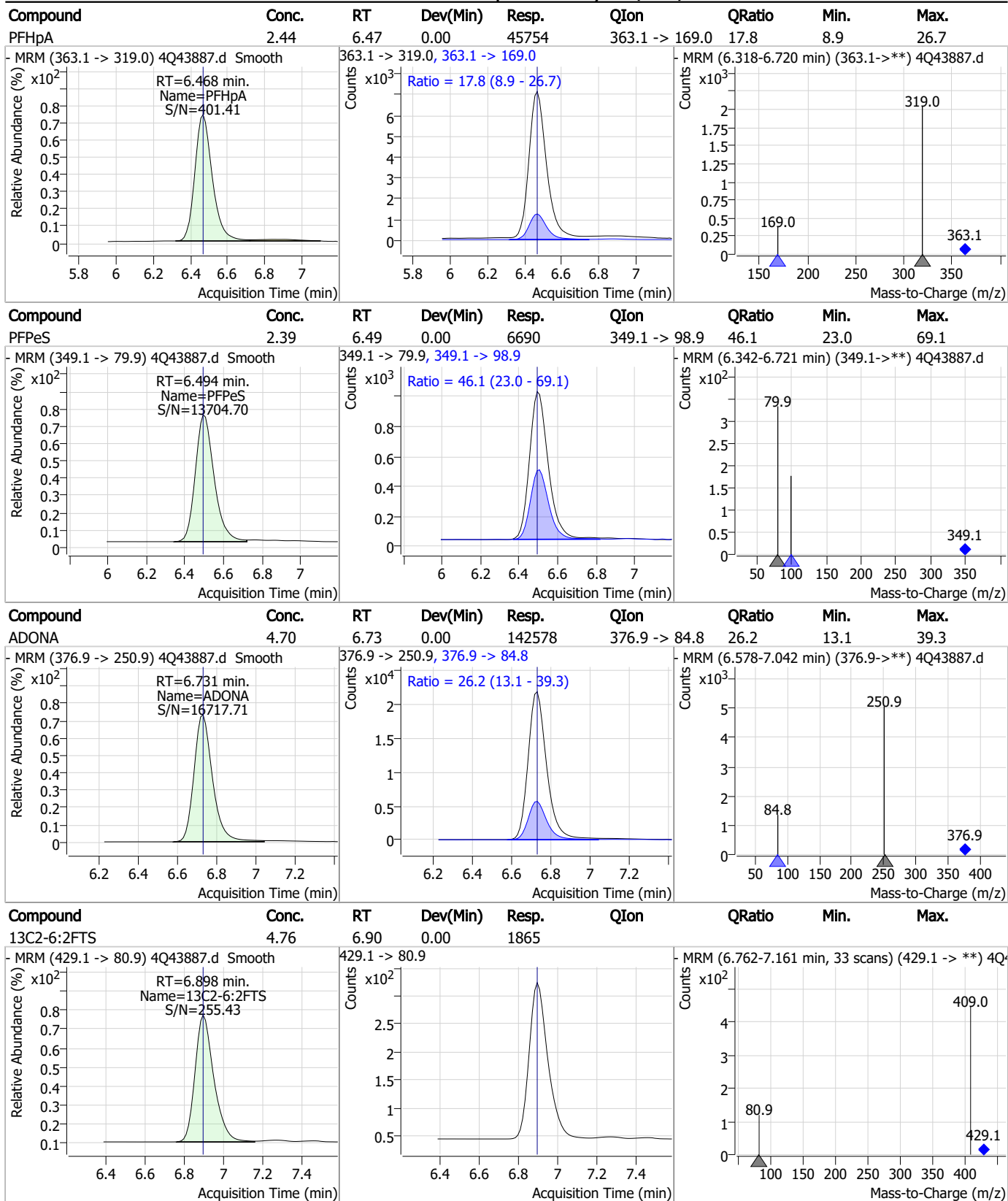
Perfluorinated Compounds by LC/MS/MS



7.7.5

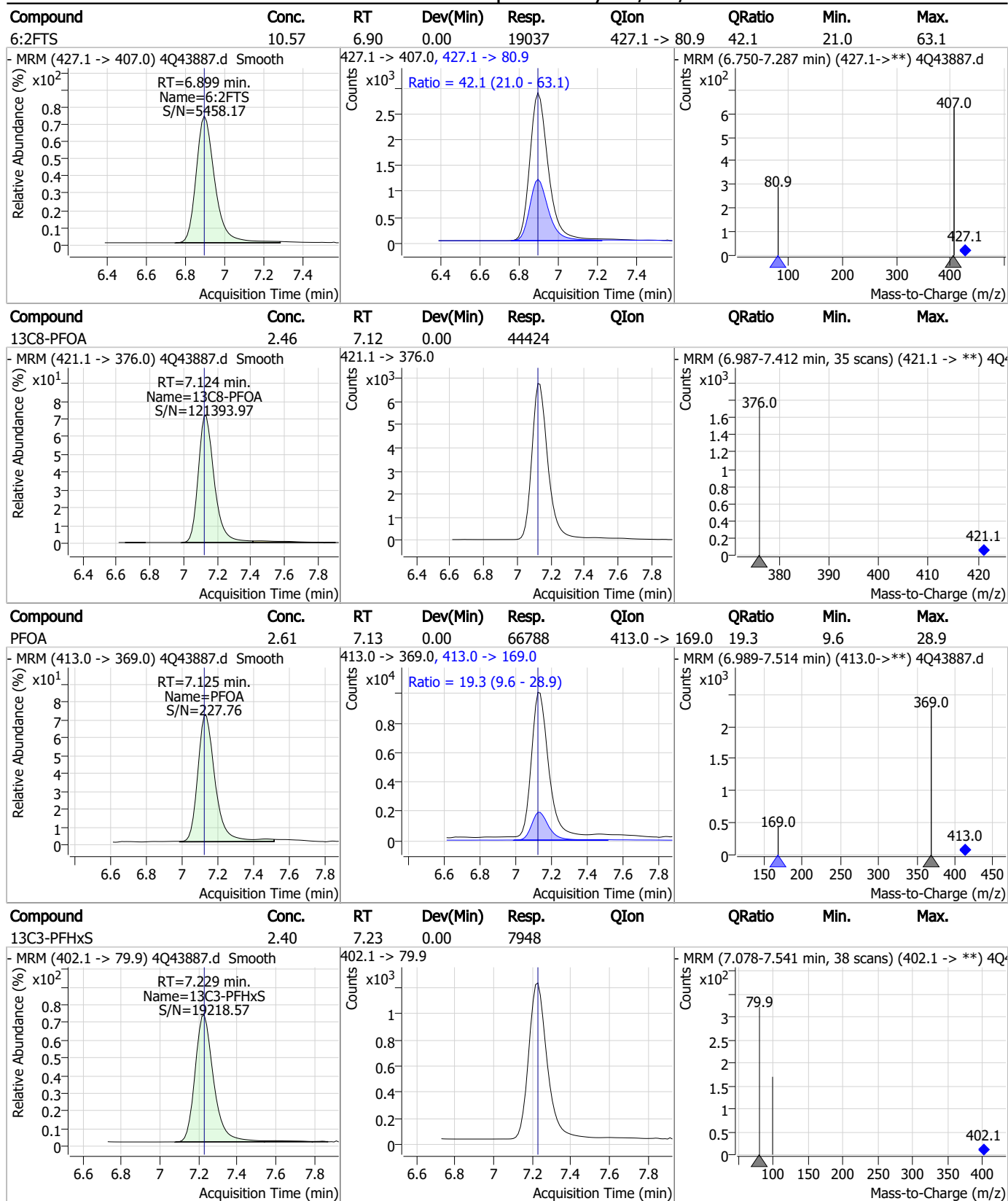
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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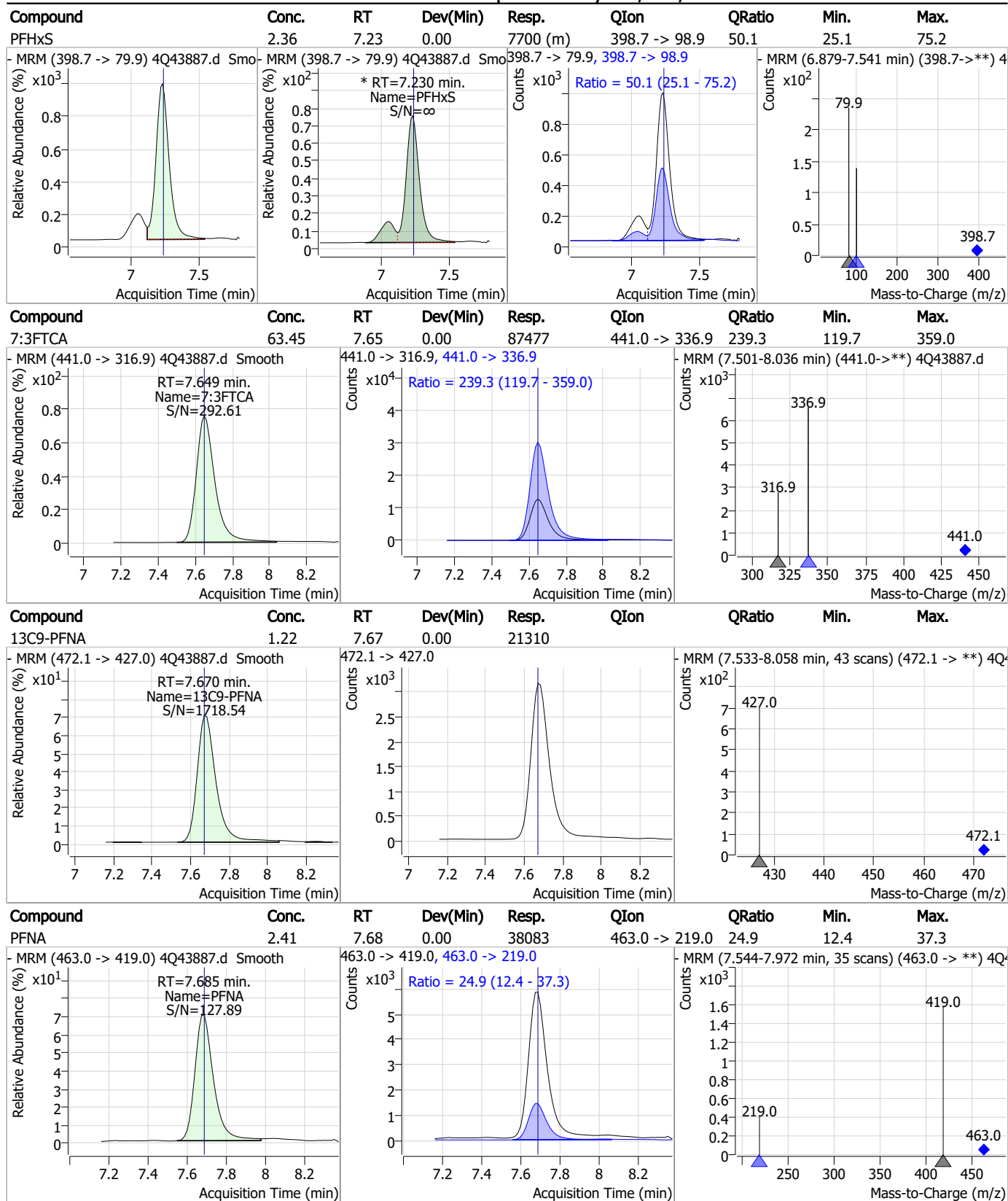
Perfluorinated Compounds by LC/MS/MS



7.7.5

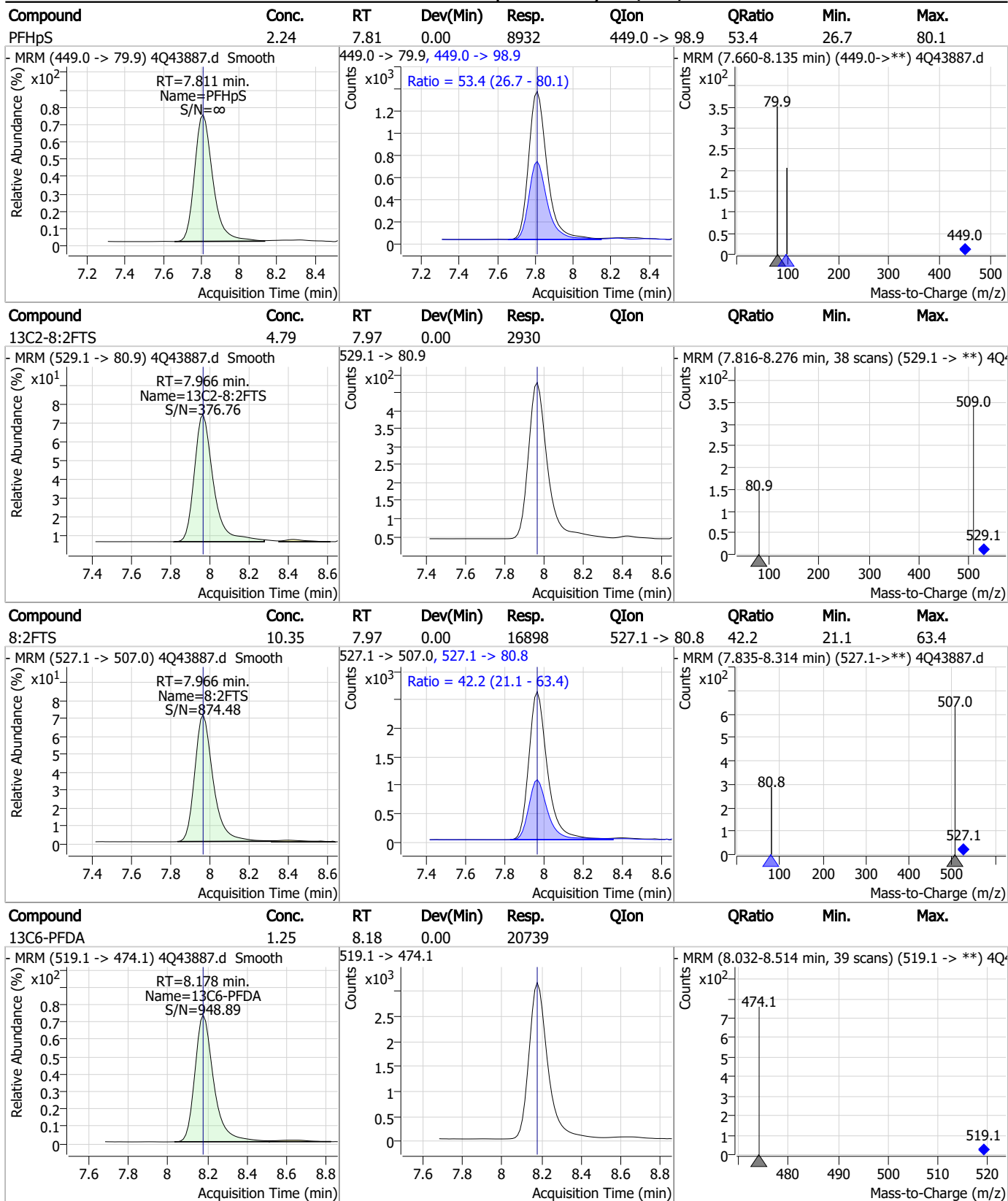
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Perfluorinated Compounds by LC/MS/MS



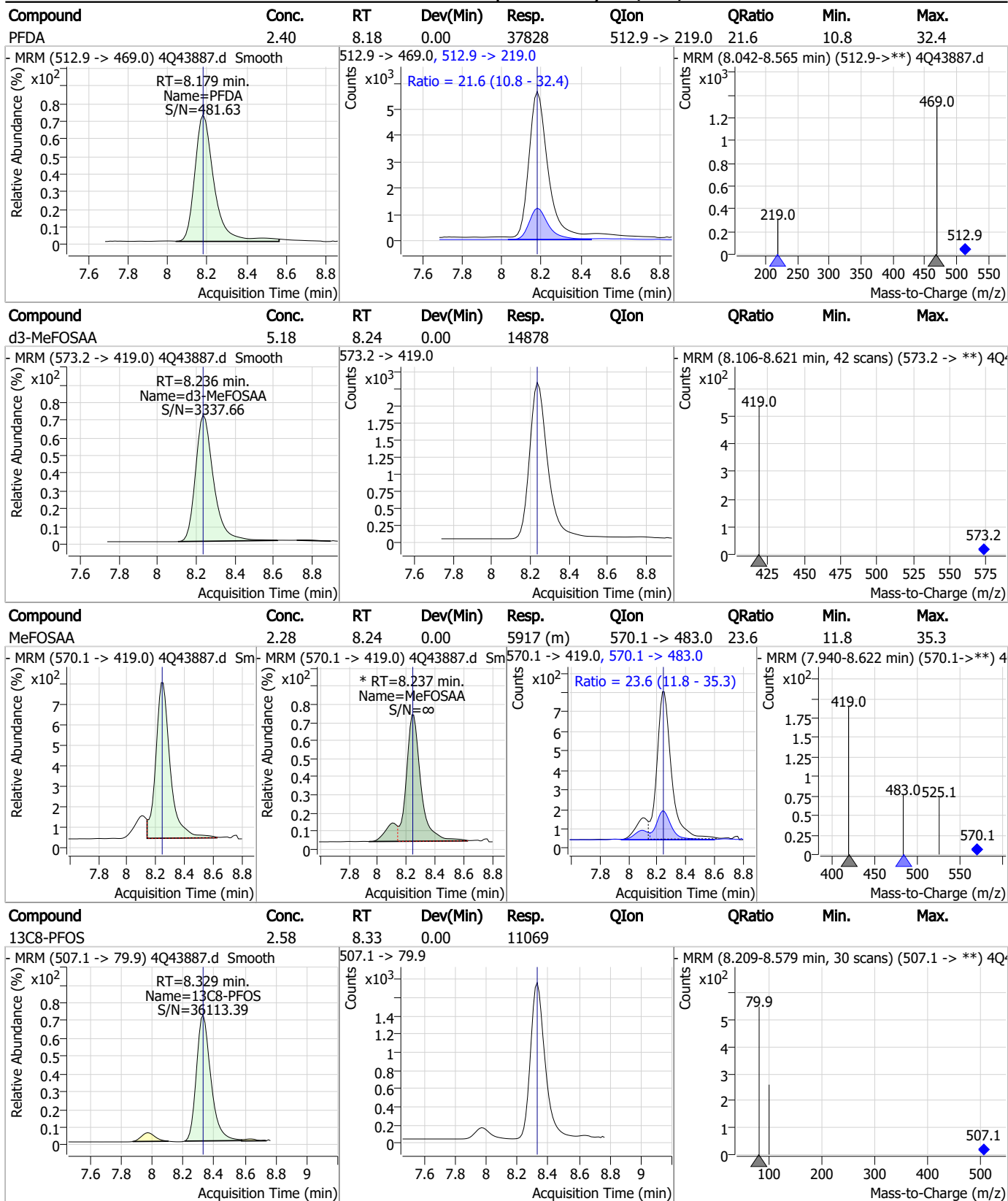
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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Perfluorinated Compounds by LC/MS/MS

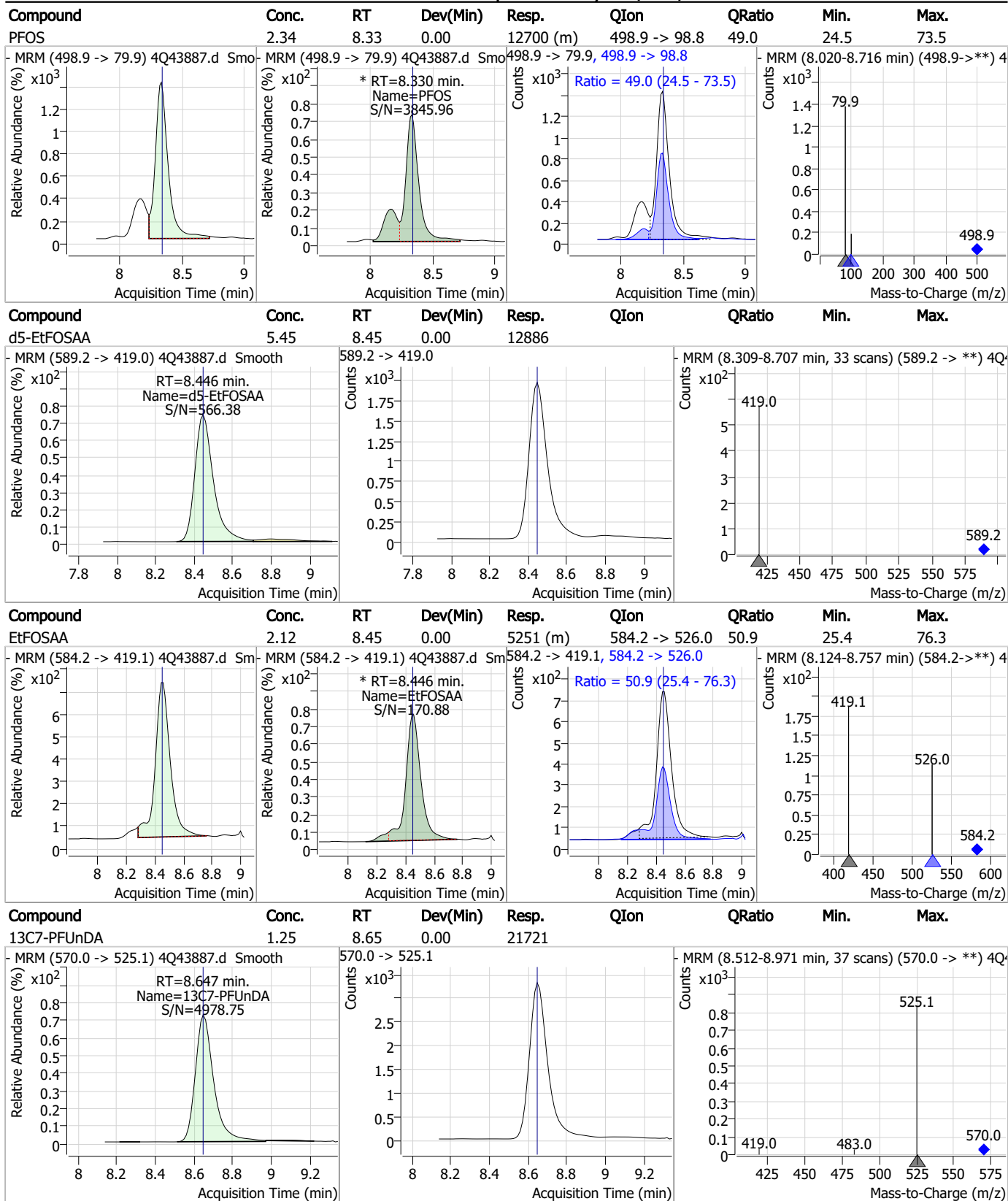


7.7.5

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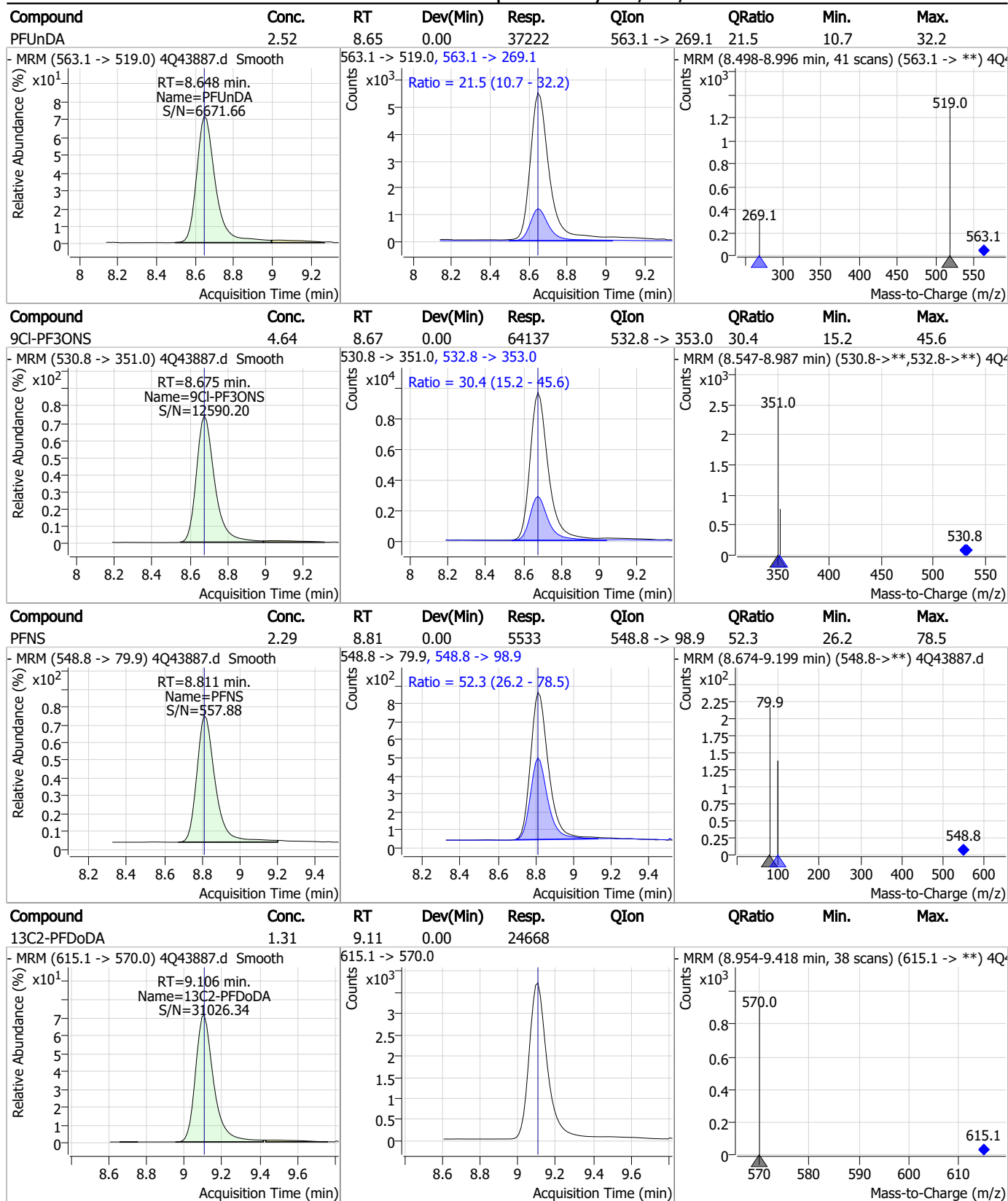
Perfluorinated Compounds by LC/MS/MS



7.7.5

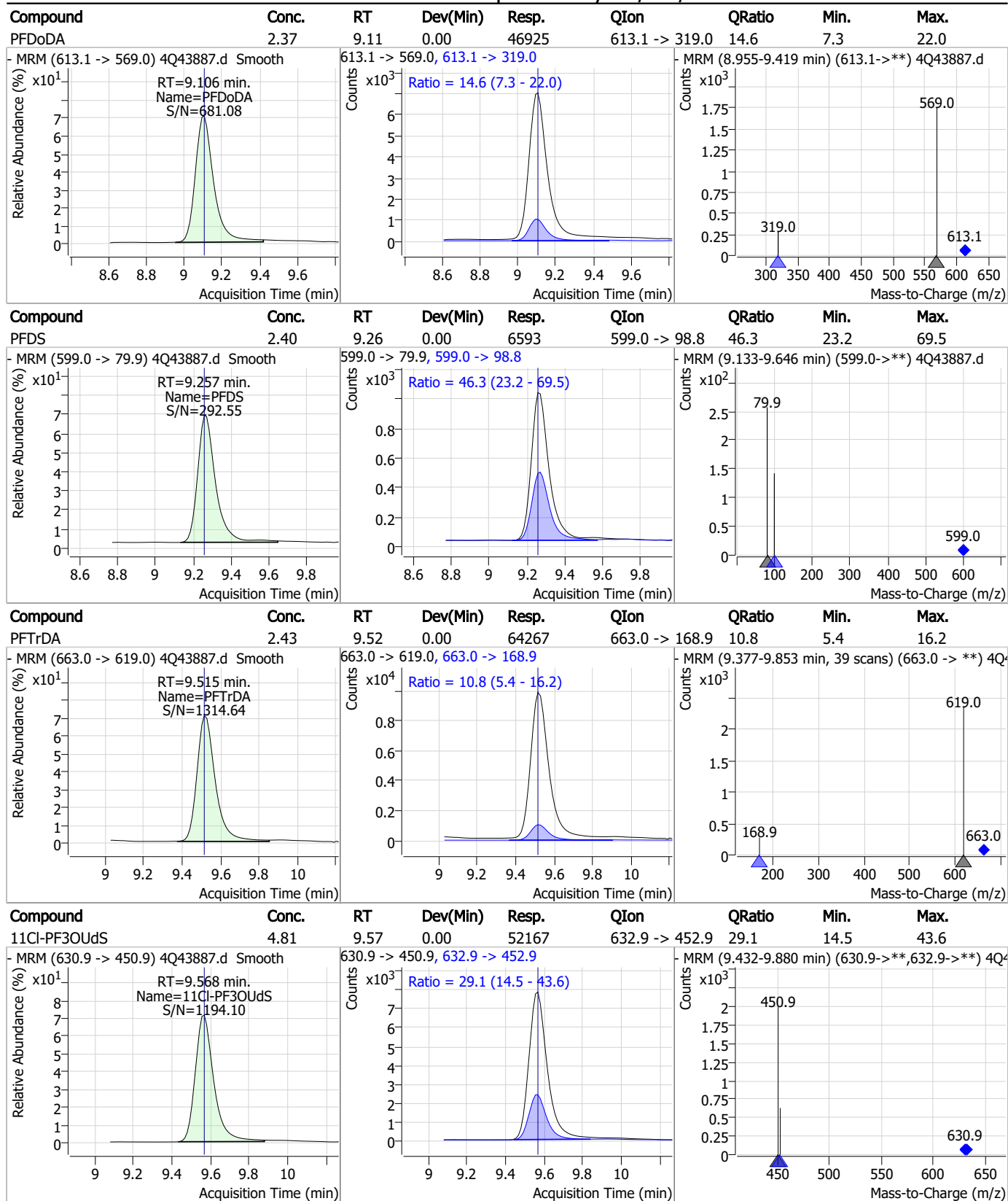
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Perfluorinated Compounds by LC/MS/MS



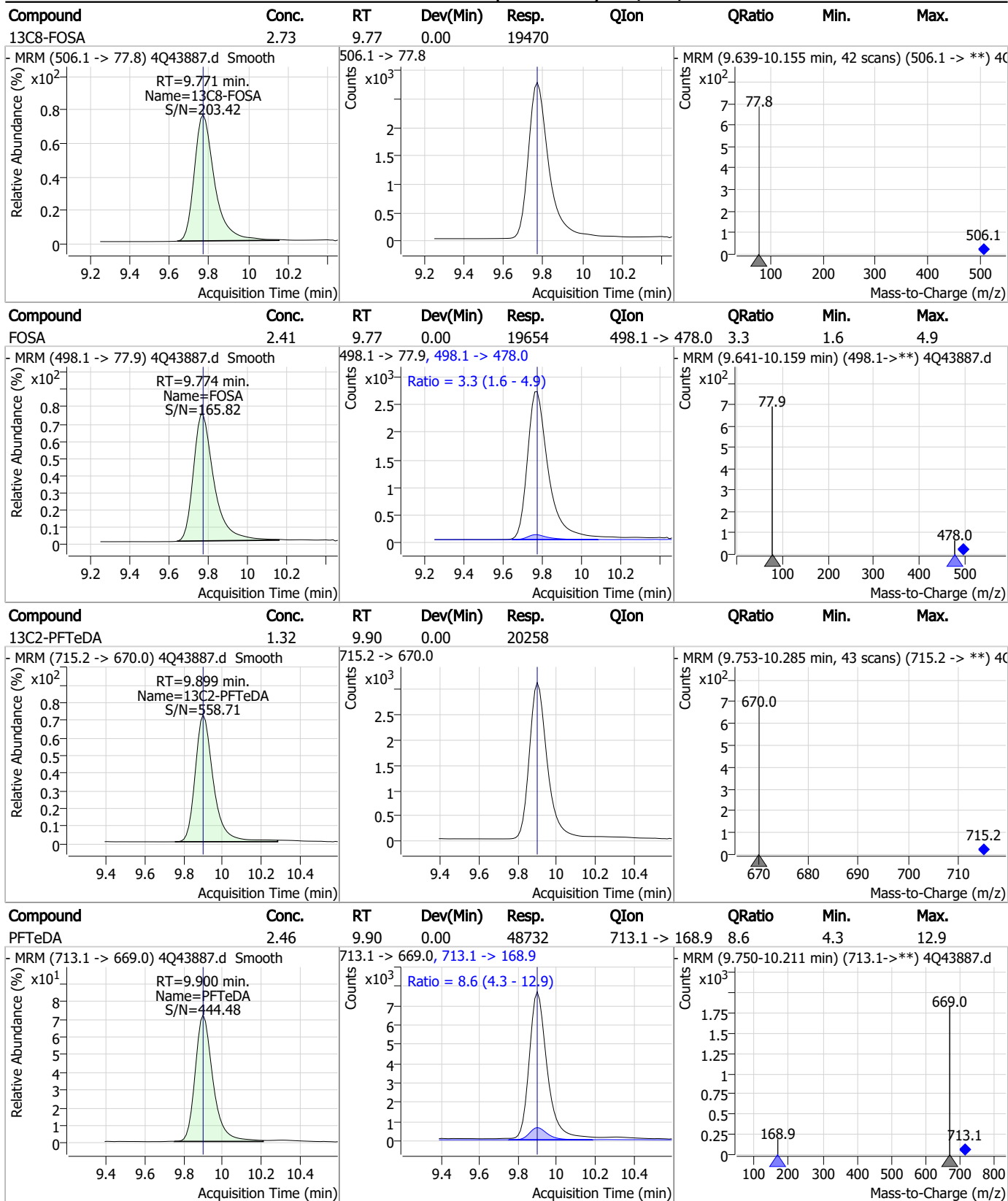
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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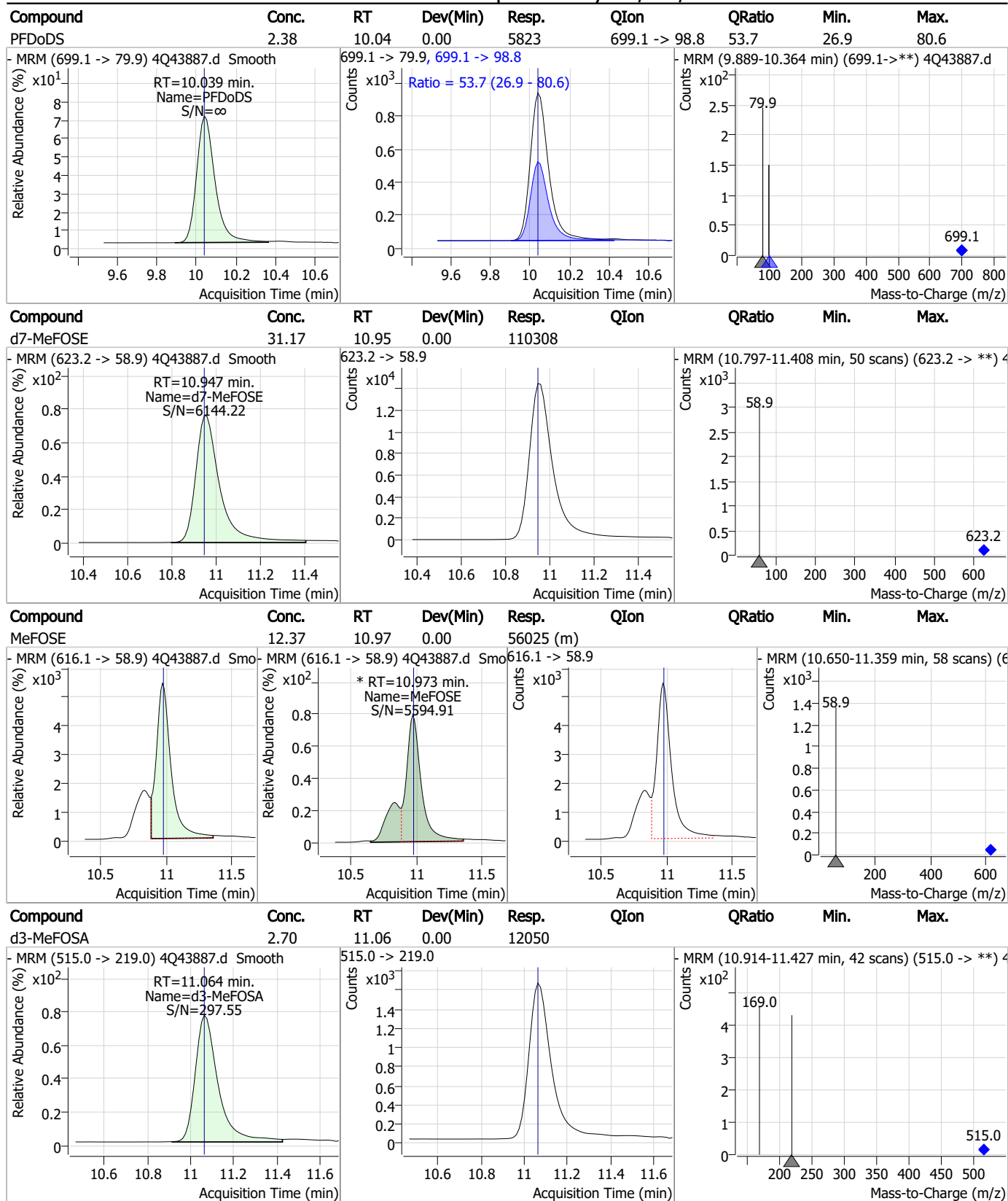
Perfluorinated Compounds by LC/MS/MS



7.7.5

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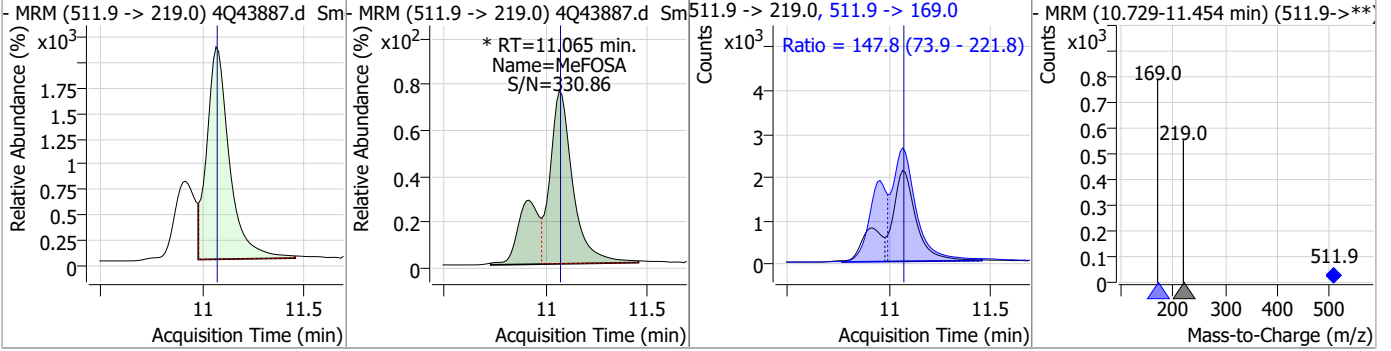
Perfluorinated Compounds by LC/MS/MS



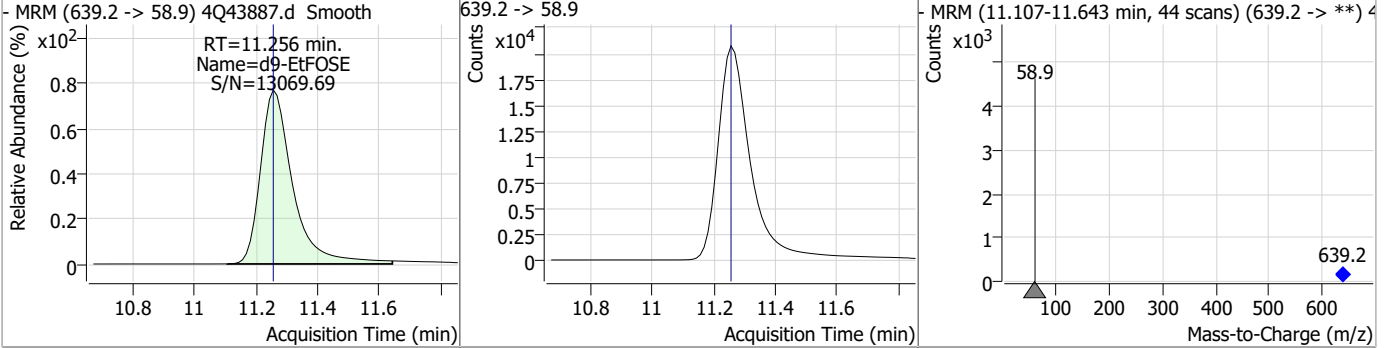
7.7.5
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Perfluorinated Compounds by LC/MS/MS

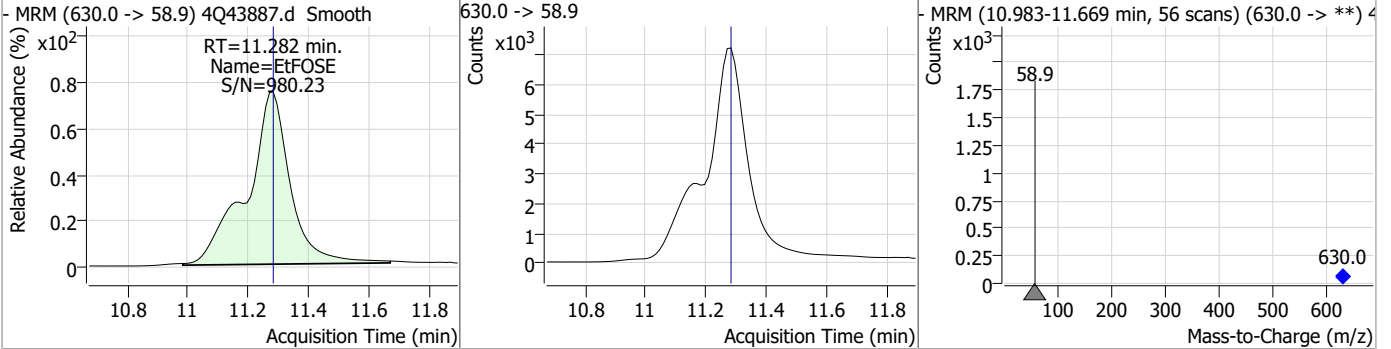
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.81	11.07	0.00	21827 (m)	511.9 -> 169.0	147.8	73.9	221.8



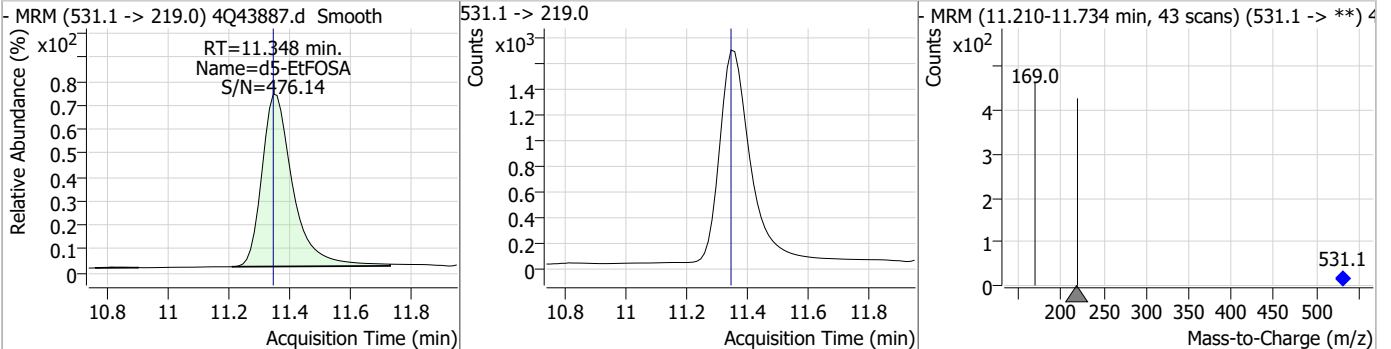
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	30.07	11.26	0.00	150711				



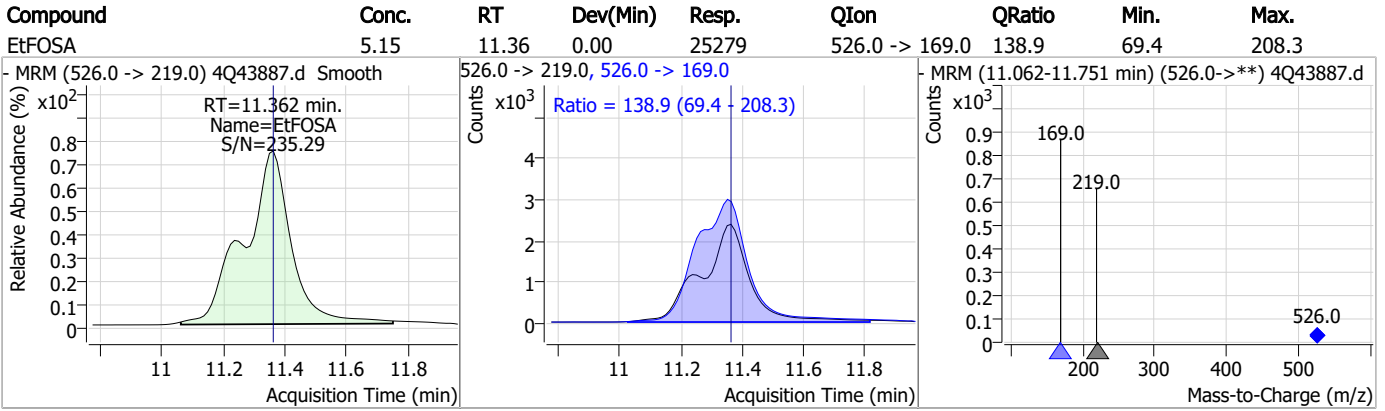
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.22	11.28	0.00	71271				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.47	11.35	0.00	11717				



Perfluorinated Compounds by LC/MS/MS



7.7.5

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Manual Integration Approval Summary

Sample Number: S4Q634-ICC634 Method: EPA DRAFT 1633
Lab FileID: 4Q43887.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 11:54 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.45	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak

7.7.5.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 05/04/23 17:44

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43888.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 12:08:27 PM
 Sample Name : ic634-5
 Vial : P1-A6
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	134804	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	72823	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	52258	2.50 µg/L	0.000
M4-PFHpA	6.467	367.1 -> 322.0	29578	2.50 µg/L	0.000
M8-PFOA	7.124	421.1 -> 376.0	47154	2.50 µg/L	0.000
M9-PFNA	7.684	472.1 -> 427.0	21268	1.25 µg/L	0.013
M6-PFDA	8.178	519.1 -> 474.1	20452	1.25 µg/L	0.000
M7-PFUnDA	8.647	570.0 -> 525.1	22750	1.25 µg/L	0.000
M2-PFDoDA	9.106	615.1 -> 570.0	24715	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	20759	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	21043	2.50 µg/L	0.000
M3-PFBS	5.427	302.1 -> 79.9	12398	2.50 µg/L	0.000
M3-PFHxS	7.229	402.1 -> 79.9	8084	2.50 µg/L	0.000
M8-PFOS	8.329	507.1 -> 79.9	10984	2.50 µg/L	0.000
M2-4:2FTS	5.222	329.1 -> 80.9	1077	5.00 µg/L	0.000
M2-6:2FTS	6.898	429.1 -> 80.9	2039	5.00 µg/L	0.000
M2-8:2FTS	7.966	529.1 -> 80.9	3000	5.00 µg/L	0.000
M3-MeFOSAA	8.236	573.2 -> 419.0	14764	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	30622	10.00 µg/L	0.000
M5-EtFOSAA	8.446	589.2 -> 419.0	12616	5.00 µg/L	0.000
M7-MeFOSE	10.947	623.2 -> 58.9	113735	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	153598	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	12423	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	11501	2.50 µg/L	0.000
13C4-PFOS	8.330	502.8 -> 79.9	12014	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	71515	5.00 µg/L	-0.012
18O2-PFHxS	7.228	403.0 -> 83.9	5214	2.50 µg/L	0.000
13C4-PFOA	7.124	417.1 -> 372.0	57051	2.50 µg/L	0.000
13C2-PFDA	8.178	515.1 -> 470.1	19211	1.25 µg/L	0.000
13C5-PFNA	7.684	468.0 -> 423.0	25924	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	46558	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.222	329.1 -> 80.9	1077	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-6:2FTS	6.898	429.1 -> 80.9	2039	5.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.8%		
13C2-8:2FTS	7.966	529.1 -> 80.9	3000	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C2-PFDoDA	9.106	615.1 -> 570.0	24715	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C2-PFTeDA	9.899	715.2 -> 670.0	20759	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C3-PFBS	5.427	302.1 -> 79.9	12398	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFHxS	7.229	402.1 -> 79.9	8084	2.50 µg/L	0.000

7.7.6
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C4-PFBA	2.924	216.8 -> 171.9	134804	10.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C4-PFHpA	6.467	367.1 -> 322.0	29578	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C5-PFHxA	5.535	318.0 -> 273.0	52258	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C5-PFPeA	4.362	268.3 -> 223.0	72823	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C6-PFDA	8.178	519.1 -> 474.1	20452	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C7-PFUnDA	8.647	570.0 -> 525.1	22750	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C8-FOSA	9.771	506.1 -> 77.8	21043	2.79 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.7%		
13C8-PFOA	7.124	421.1 -> 376.0	47154	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOS	8.329	507.1 -> 79.9	10984	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C9-PFNA	7.684	472.1 -> 427.0	21268	1.21 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
d3-MeFOSAA	8.236	573.2 -> 419.0	14764	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C3-HFPO-DA	5.890	286.9 -> 168.9	30622	10.00 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
d3-MeFOSA	11.064	515.0 -> 219.0	11501	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
d5-EtFOSAA	8.446	589.2 -> 419.0	12616	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.0%		
d7-MeFOSE	10.947	623.2 -> 58.9	113735	30.43 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 121.7%		
d9-EtFOSE	11.256	639.2 -> 58.9	153598	29.02 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 116.1%		
d5-EtFOSA	11.348	531.1 -> 219.0	12423	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	31539	18.21 µg/L	93
		327.1 -> 80.9	13355		
6:2FTS	6.899	427.1 -> 407.0	34855	17.69 µg/L	97
		427.1 -> 80.9	15248		
8:2FTS	7.966	527.1 -> 507.0	33969	20.32 µg/L	96
		527.1 -> 80.8	13558		
EtFOSAA	8.459	584.2 -> 419.1	11889	4.91 µg/L	m 86
		584.2 -> 526.0	4874		
FOSA	9.774	498.1 -> 77.9	40395	4.58 µg/L	100
		498.1 -> 478.0	1299		
MeFOSAA	8.249	570.1 -> 419.0	12287	4.77 µg/L	m 94
		570.1 -> 483.0	2551		
PFBA	2.920	212.8 -> 168.9	69778	19.33 µg/L	100
PFBS	5.428	298.7 -> 79.9	21965	4.32 µg/L	95
		298.7 -> 98.8	8210		
PFDA	8.179	512.9 -> 469.0	76434	4.93 µg/L	96
		512.9 -> 219.0	15009		
PFDoDA	9.106	613.1 -> 569.0	96603	4.87 µg/L	98
		613.1 -> 319.0	13468		
PFDS	9.269	599.0 -> 79.9	12625	4.64 µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	6186			
PFHpA	6.468	363.1 -> 319.0	93191	4.98	µg/L	97
		363.1 -> 169.0	15263			
PFHpS	7.811	449.0 -> 79.9	18307	4.63	µg/L	98
		449.0 -> 98.9	9503			
PFHxA	5.538	313.0 -> 269.0	95984	4.69	µg/L	99
		313.0 -> 118.9	3021			
PFHxS	7.230	398.7 -> 79.9	15189	4.58	µg/L	m 100
		398.7 -> 98.9	7586			
PFNA	7.685	463.0 -> 419.0	76679	4.86	µg/L	98
		463.0 -> 219.0	18428			
PFNS	8.811	548.8 -> 79.9	10967	4.57	µg/L	99
		548.8 -> 98.9	5623			
PFOA	7.125	413.0 -> 369.0	127443	4.68	µg/L	98
		413.0 -> 169.0	25603			
PFOS	8.330	498.9 -> 79.9	22688	4.22	µg/L	m 92
		498.9 -> 98.8	12327			
PFPeA	4.364	263.0 -> 219.0	170747	9.75	µg/L	100
PFPeS	6.494	349.1 -> 79.9	12591	4.43	µg/L	97
		349.1 -> 98.9	5579			
PFTeDA	9.900	713.1 -> 669.0	100204	4.93	µg/L	100
		713.1 -> 168.9	8586			
PFTrDA	9.515	663.0 -> 619.0	132030	4.98	µg/L	98
		663.0 -> 168.9	13100			
PFUnDA	8.648	563.1 -> 519.0	73373	4.75	µg/L	97
		563.1 -> 269.1	14796			
11Cl-PF3OUdS	9.568	630.9 -> 450.9	104514	9.49	µg/L	99
		632.9 -> 452.9	31228			
9Cl-PF3ONS	8.675	530.8 -> 351.0	127175	9.07	µg/L	99
		532.8 -> 353.0	37776			
ADONA	6.731	376.9 -> 250.9	282729	9.18	µg/L	99
		376.9 -> 84.8	74836			
HFPO-DA	5.891	284.9 -> 168.9	27831	9.51	µg/L	99
		284.9 -> 184.9	3310			
3:3FTCA	3.836	241.0 -> 177.0	18002	23.35	µg/L	98
		241.0 -> 117.0	1663			
5:3FTCA	6.193	341.0 -> 237.1	330806	119.07	µg/L	99
		341.0 -> 217.0	227780			
7:3FTCA	7.649	441.0 -> 316.9	174758	121.06	µg/L	98
		441.0 -> 336.9	410856			
EtFOSA	11.362	526.0 -> 219.0	49660	9.54	µg/L	99
		526.0 -> 169.0	68360			
EtFOSE	11.282	630.0 -> 58.9	143421	24.12	µg/L	100
MeFOSA	11.066	511.9 -> 219.0	42597	9.83	µg/L	m 96
		511.9 -> 169.0	65145			
MeFOSE	10.973	616.1 -> 58.9	100255	21.46	µg/L	m 100
PFDoDS	10.039	699.1 -> 79.9	11673	4.81	µg/L	95
		699.1 -> 98.8	6646			
NFDHA	5.416	295.0 -> 201.0	13821	9.45	µg/L	95
		295.0 -> 84.9	3465			
PFMBA	4.778	279.0 -> 85.1	92755	9.49	µg/L	100
PFMPA	3.528	229.0 -> 84.9	87763	9.58	µg/L	100
PFEESA	5.959	314.8 -> 134.9	128861	8.31	µg/L	99
		314.8 -> 82.9	4504			

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

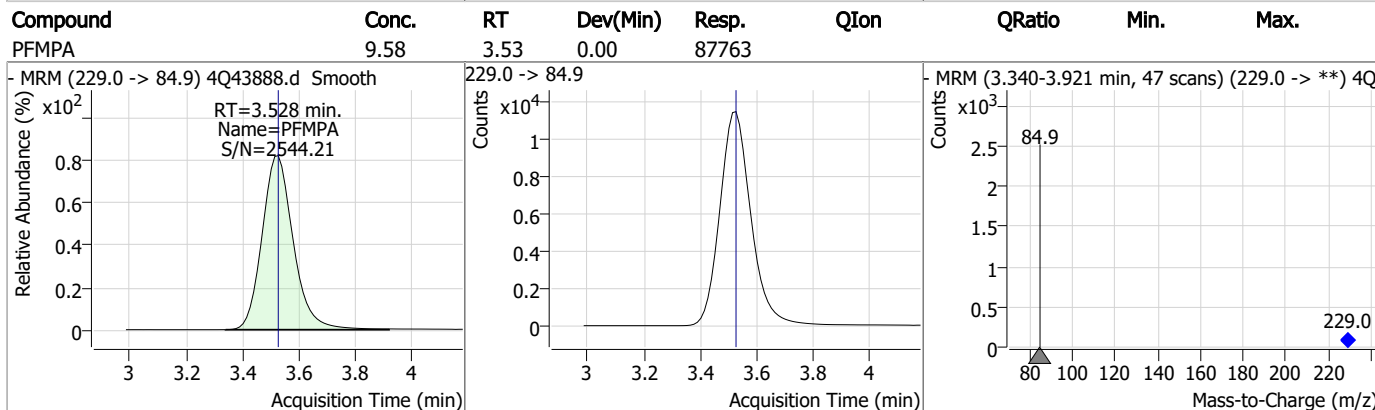
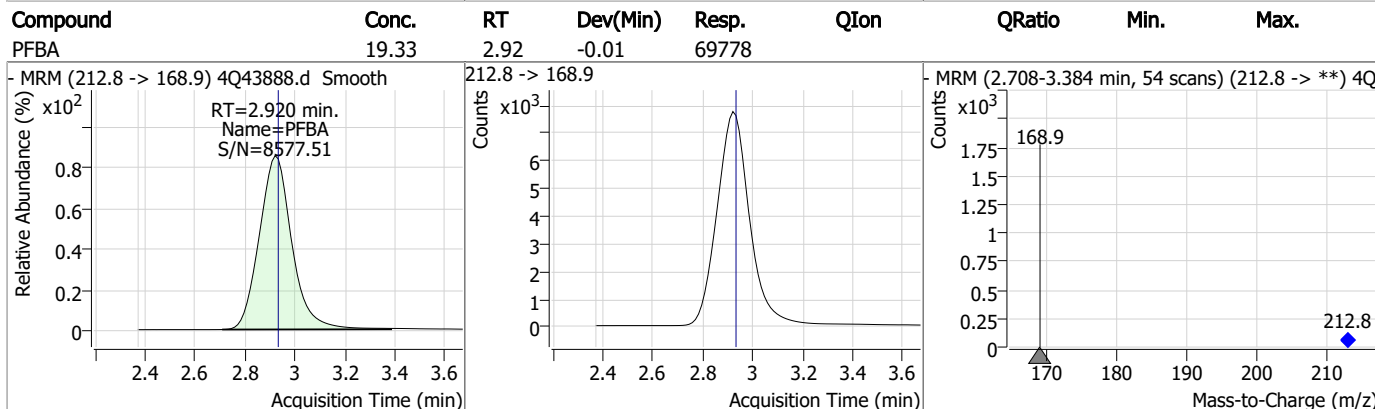
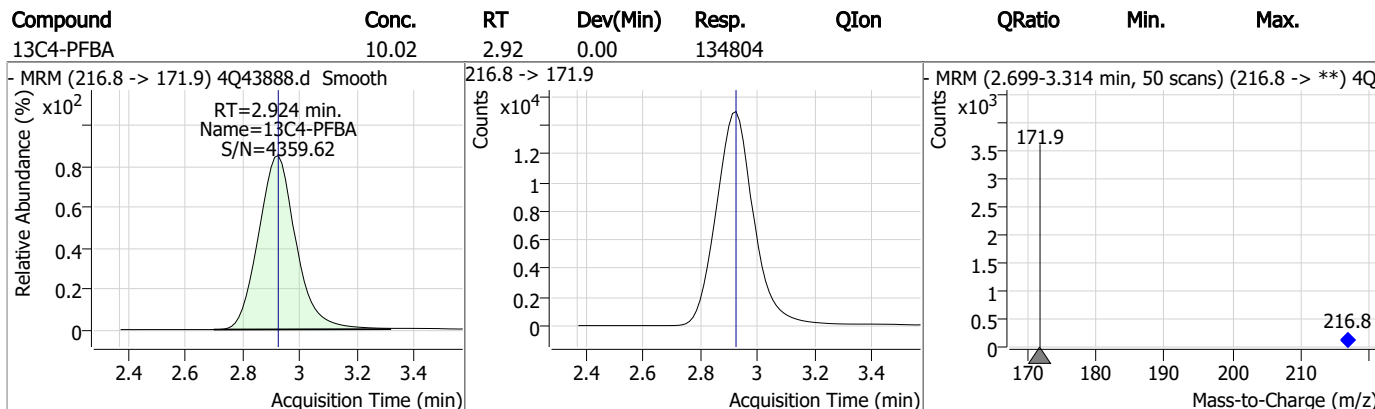
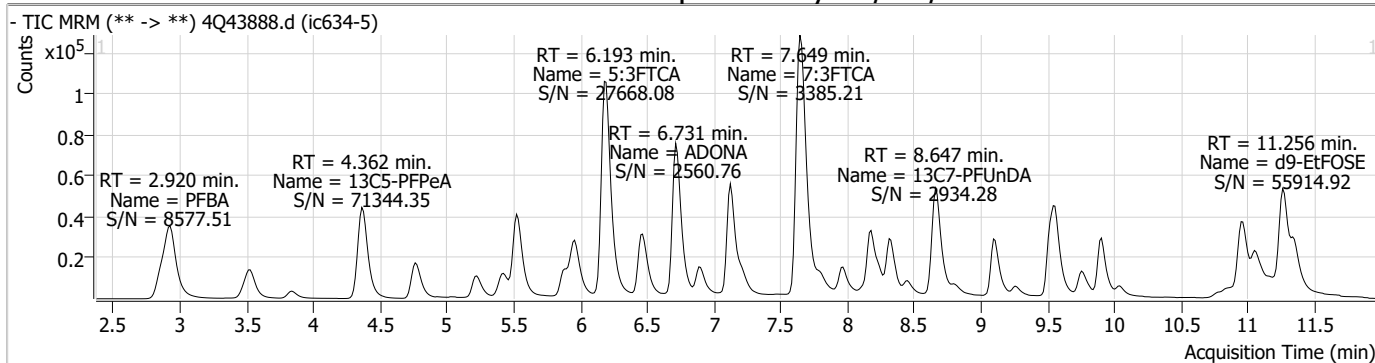
Perfluorinated Compounds by LC/MS/MS

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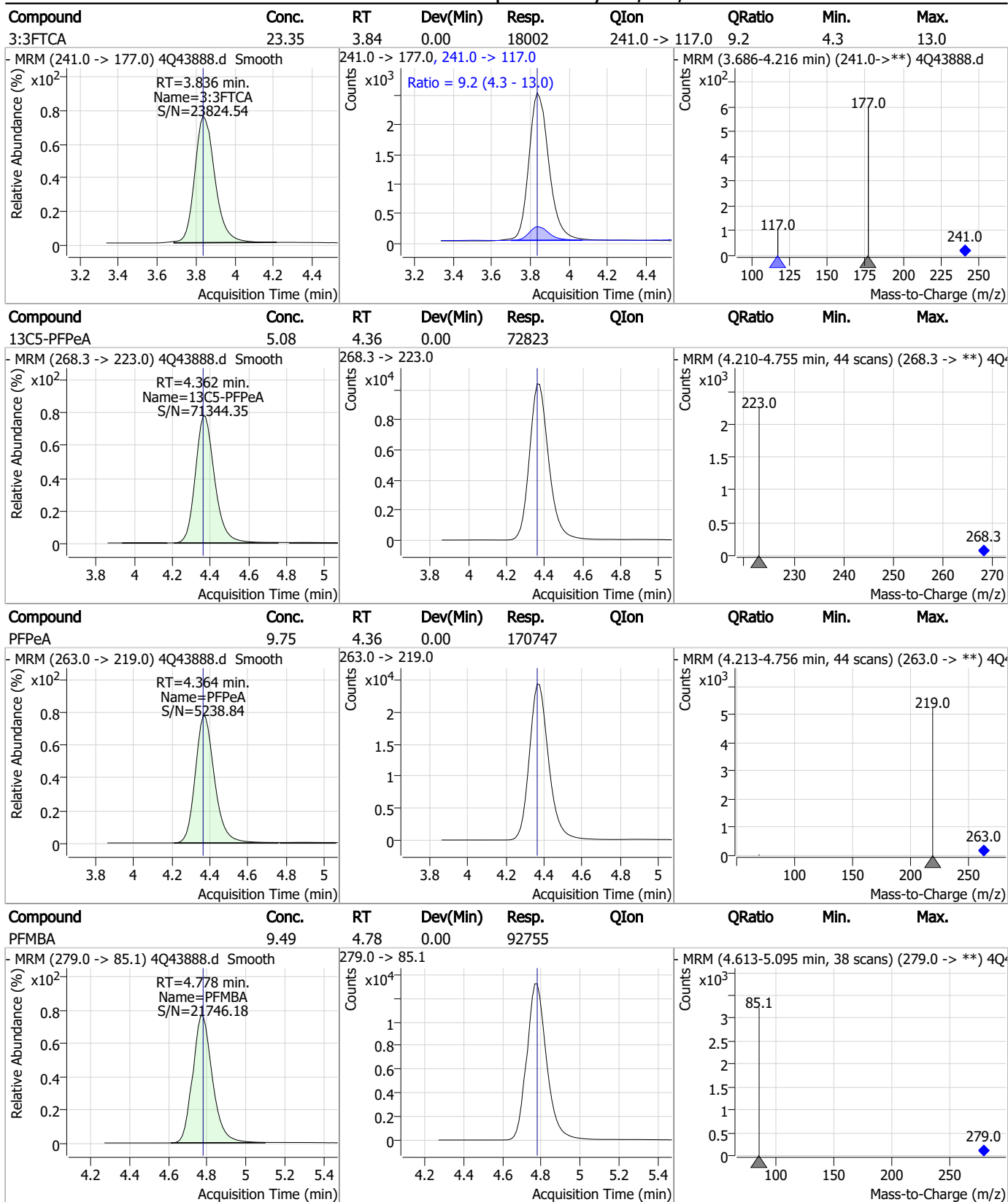
7.7.6

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Perfluorinated Compounds by LC/MS/MS

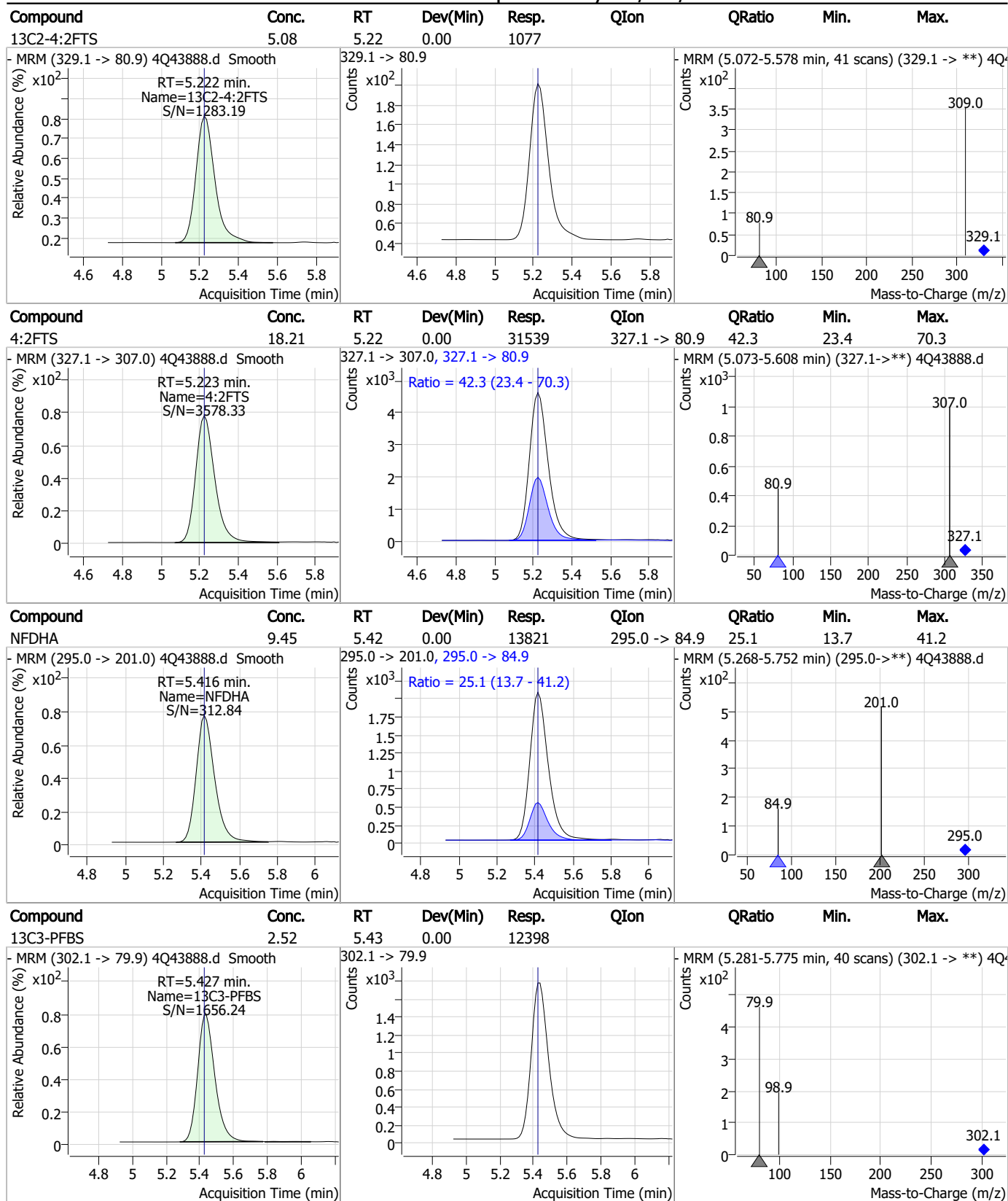


Perfluorinated Compounds by LC/MS/MS



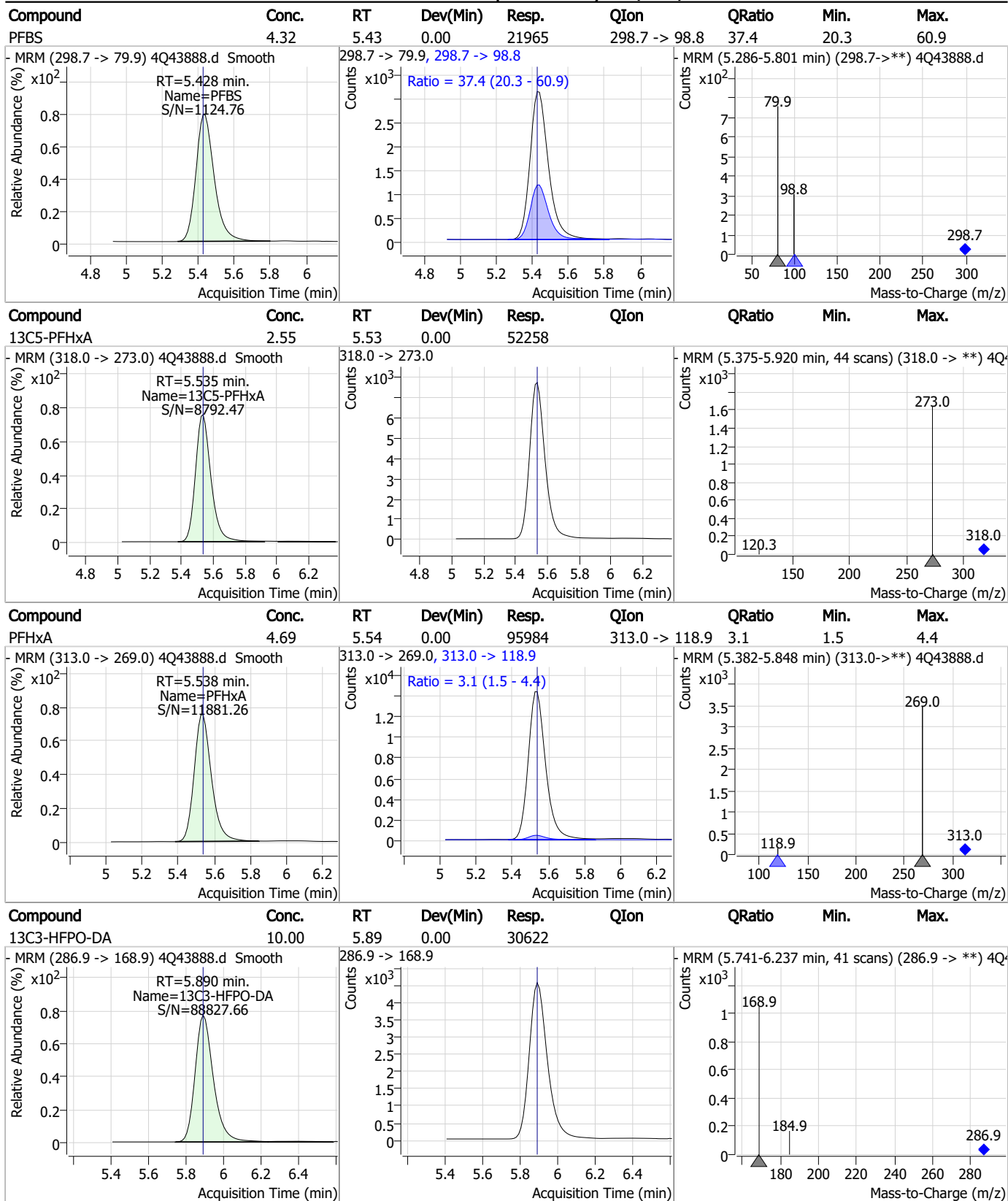
7.7.6
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Perfluorinated Compounds by LC/MS/MS



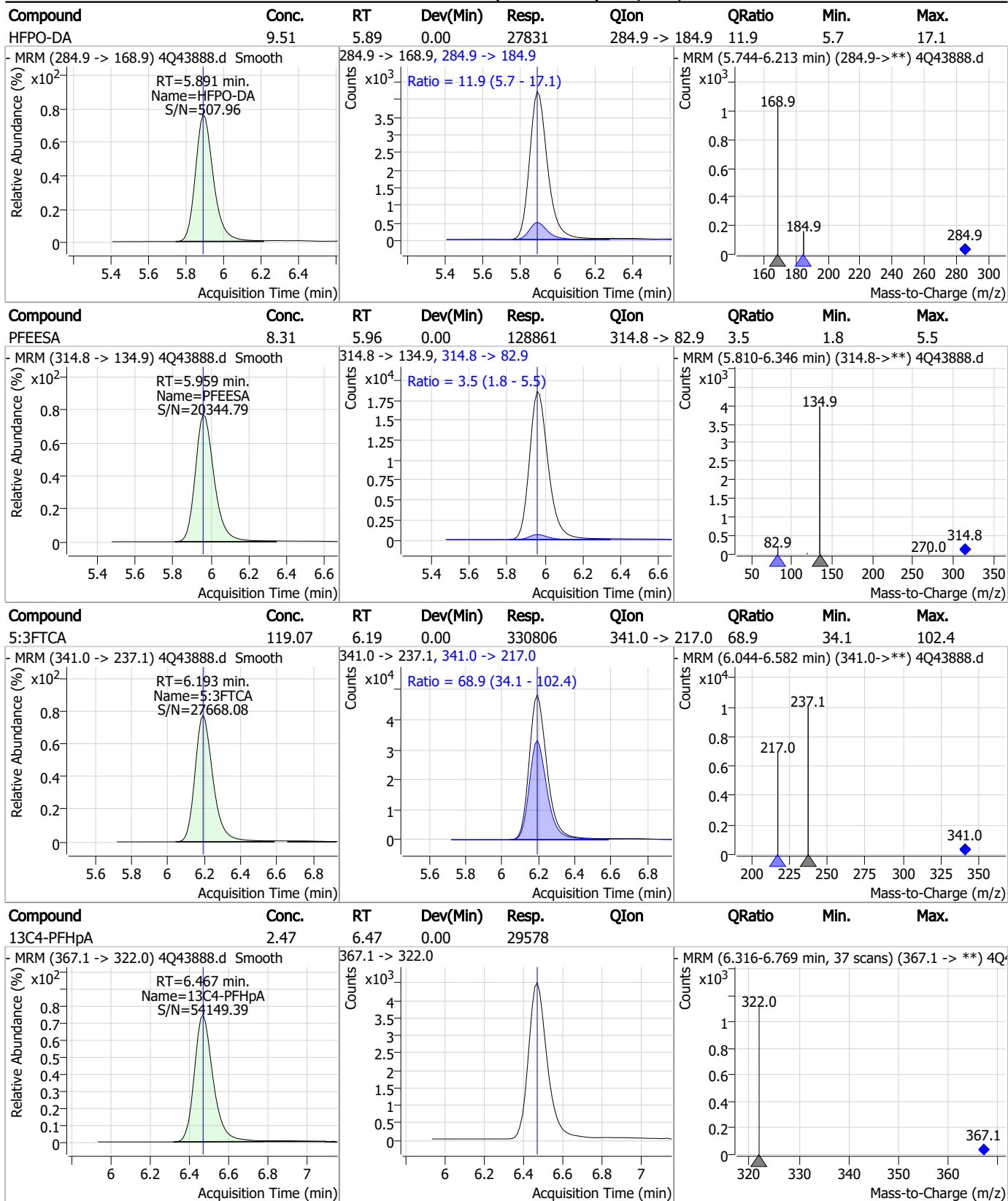
7.7.6
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Perfluorinated Compounds by LC/MS/MS



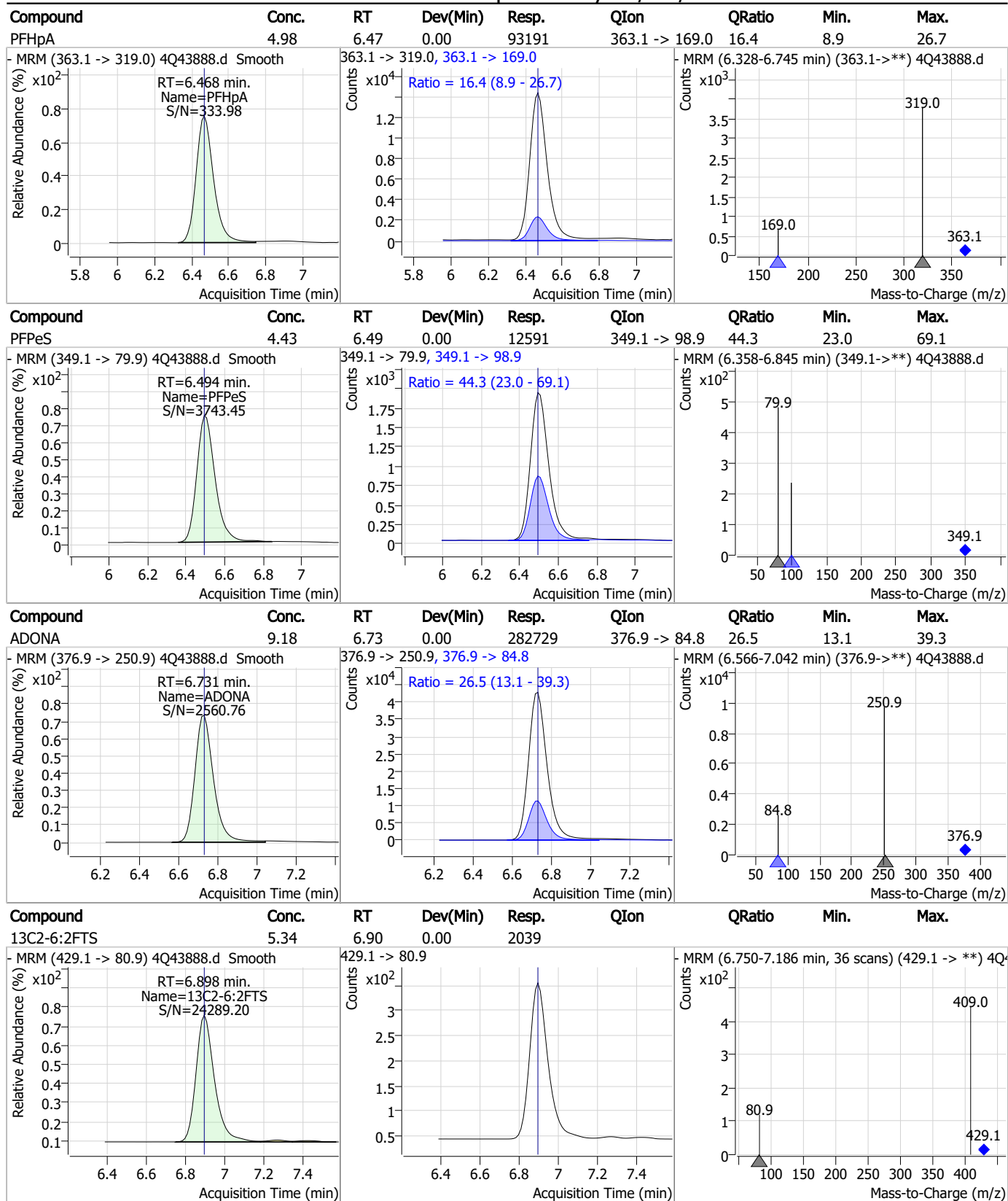
7.7.6
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Perfluorinated Compounds by LC/MS/MS



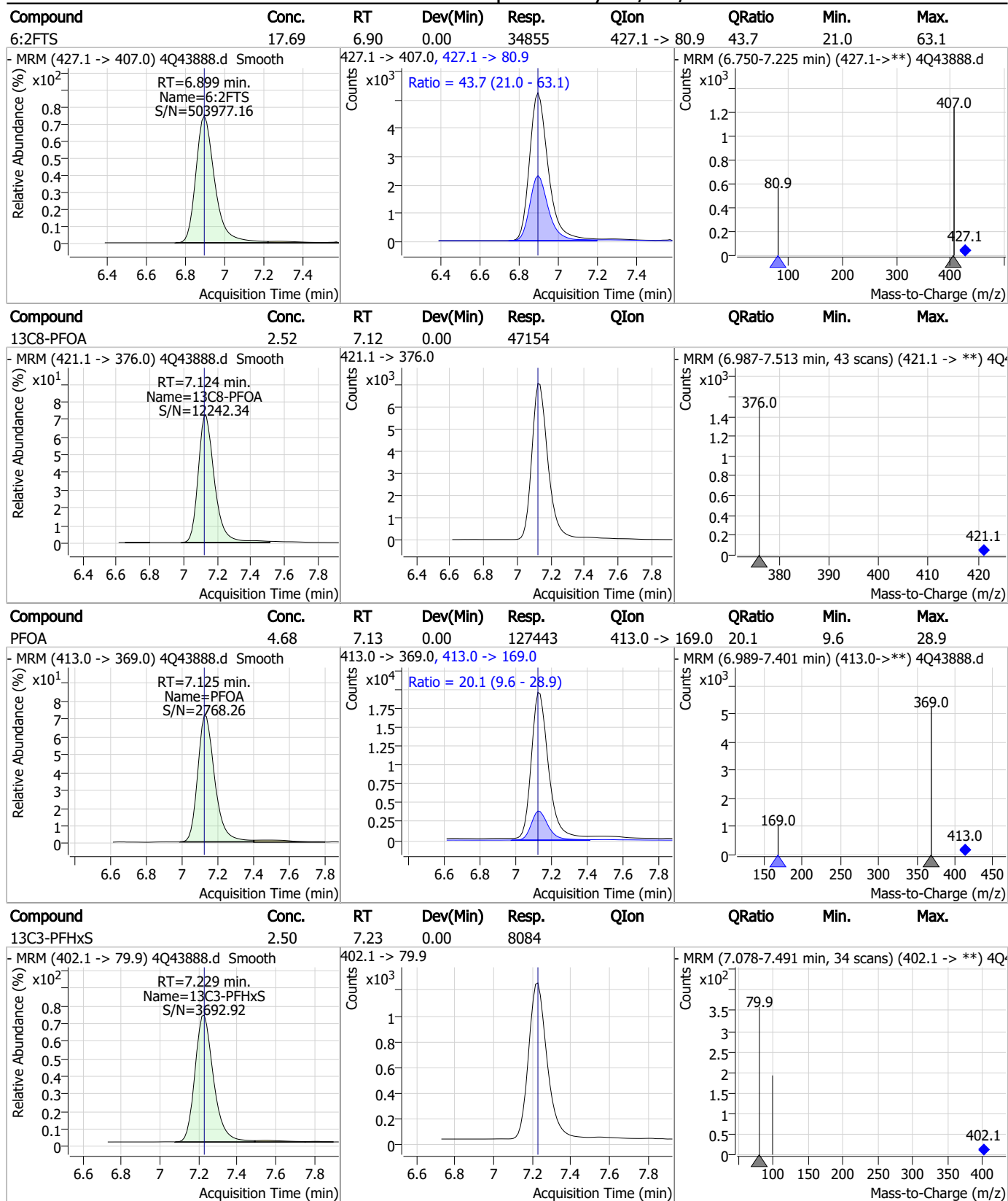
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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Perfluorinated Compounds by LC/MS/MS

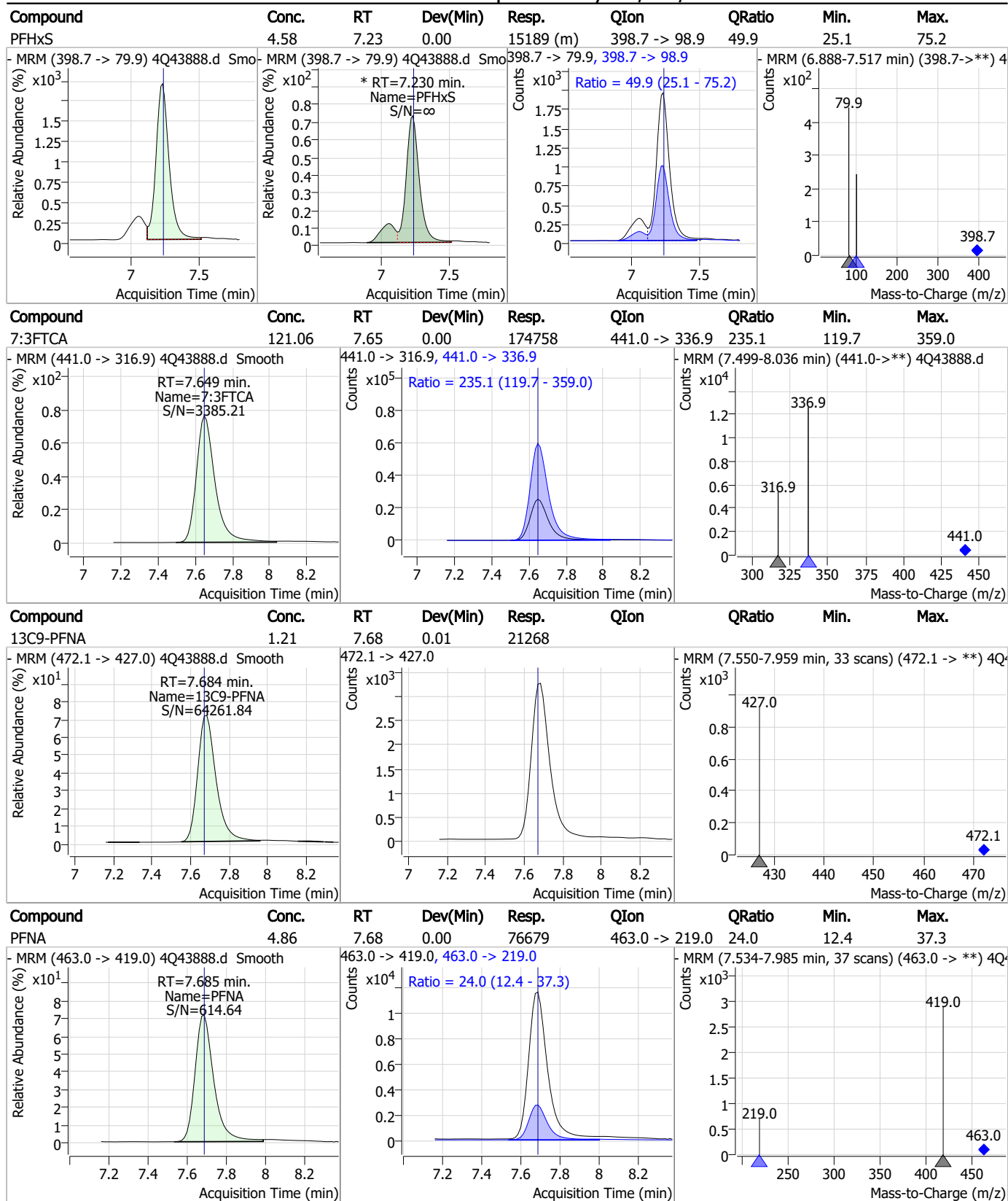


7.7.6

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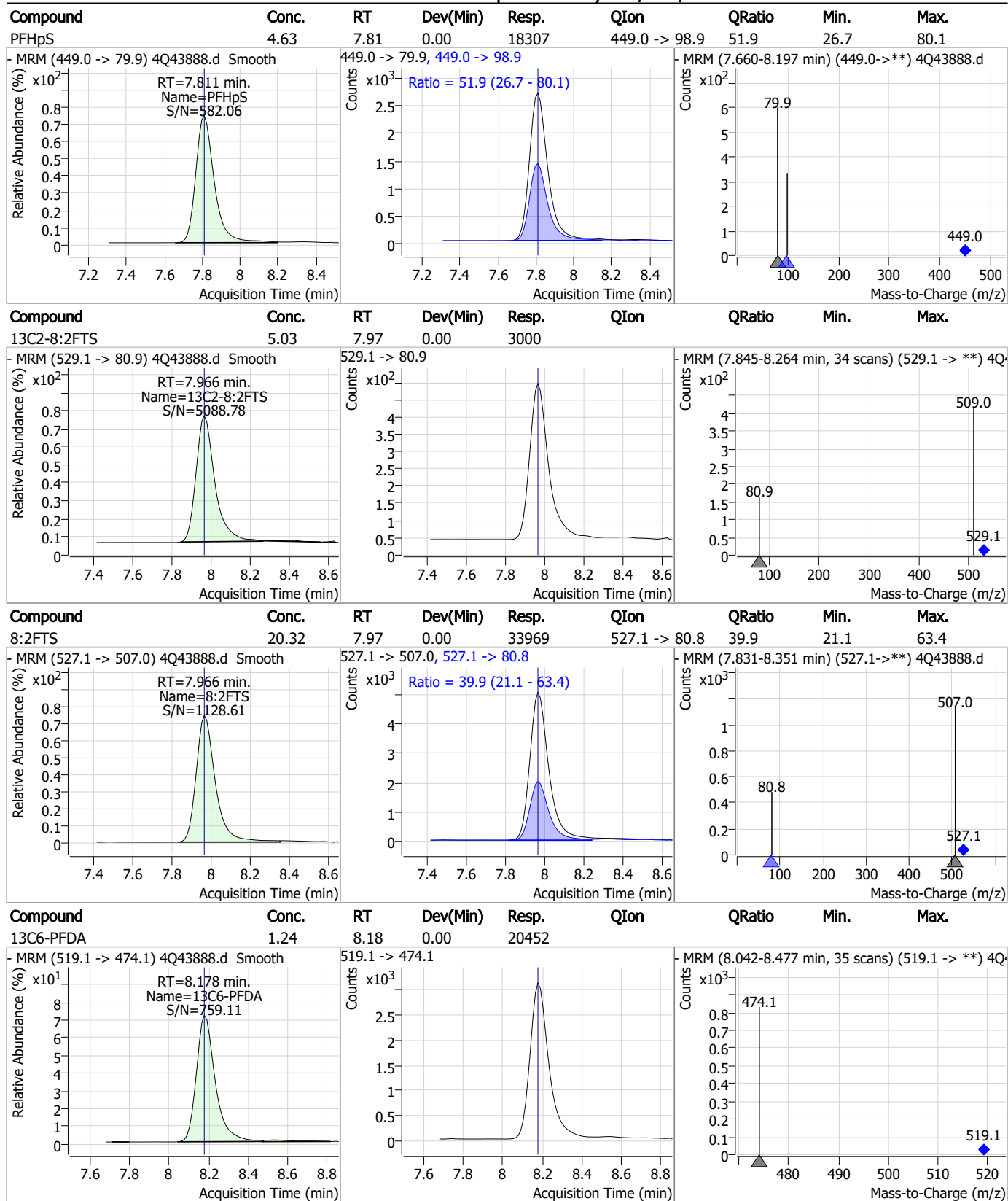


Perfluorinated Compounds by LC/MS/MS



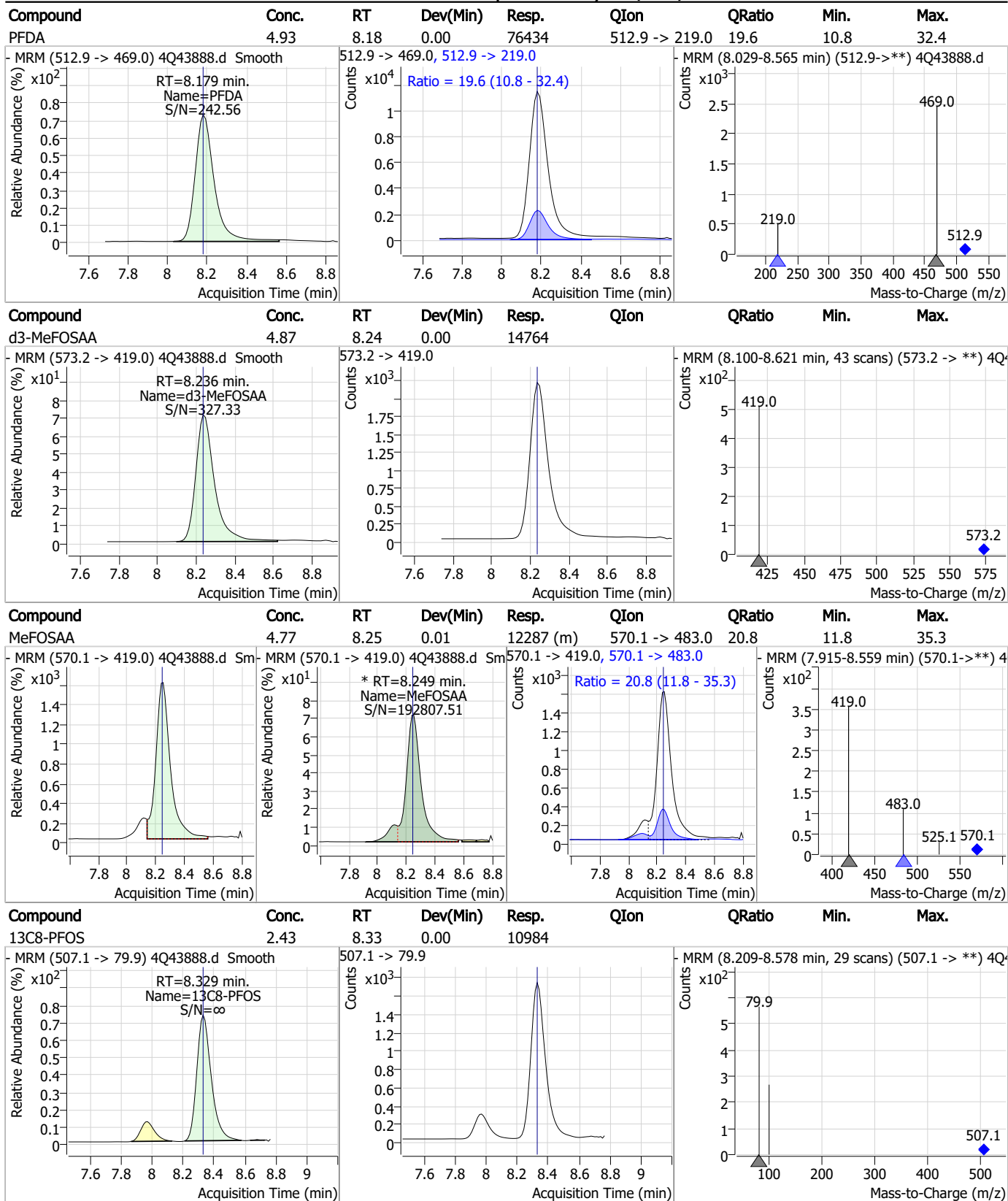
7.7.6
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Perfluorinated Compounds by LC/MS/MS



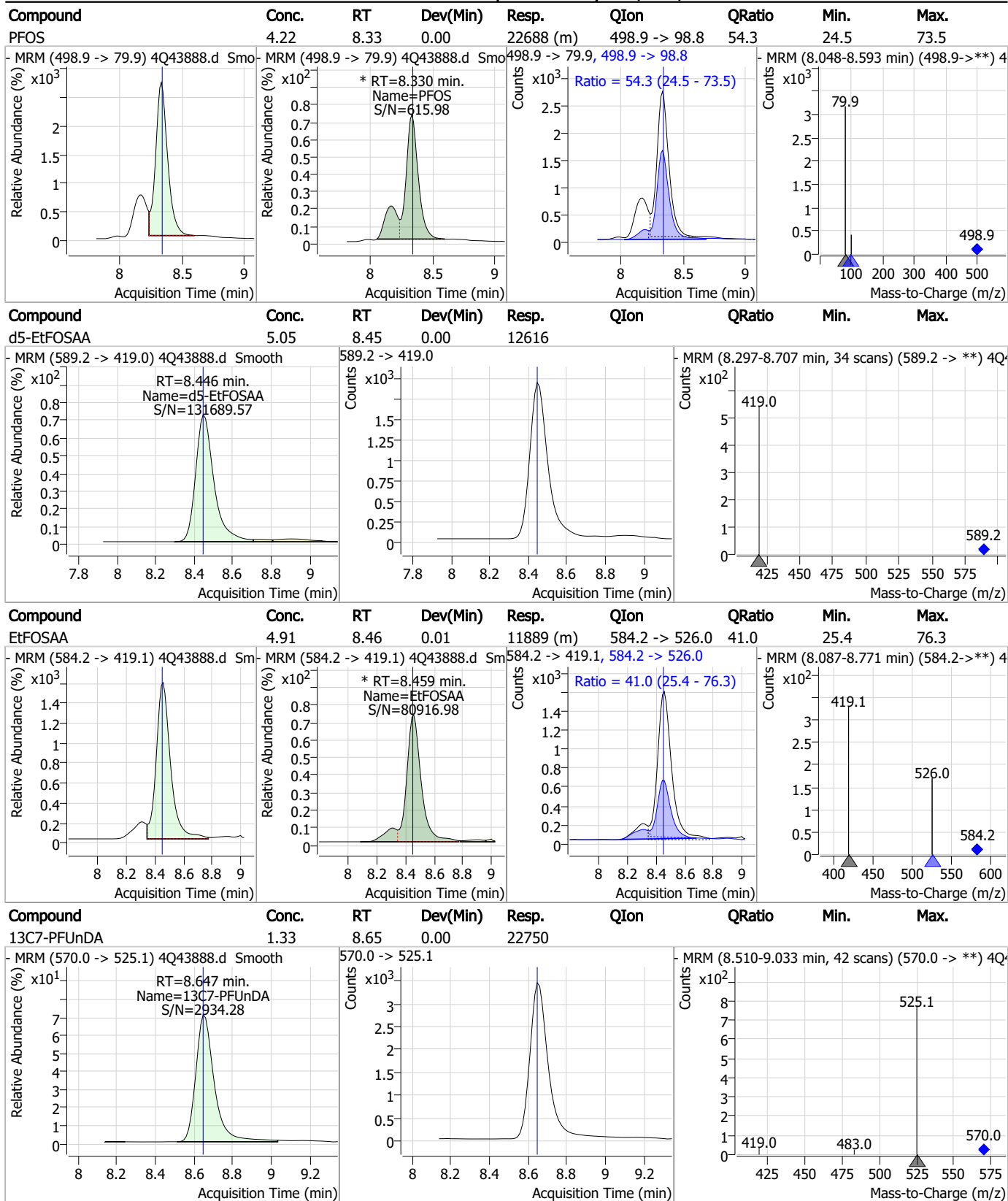
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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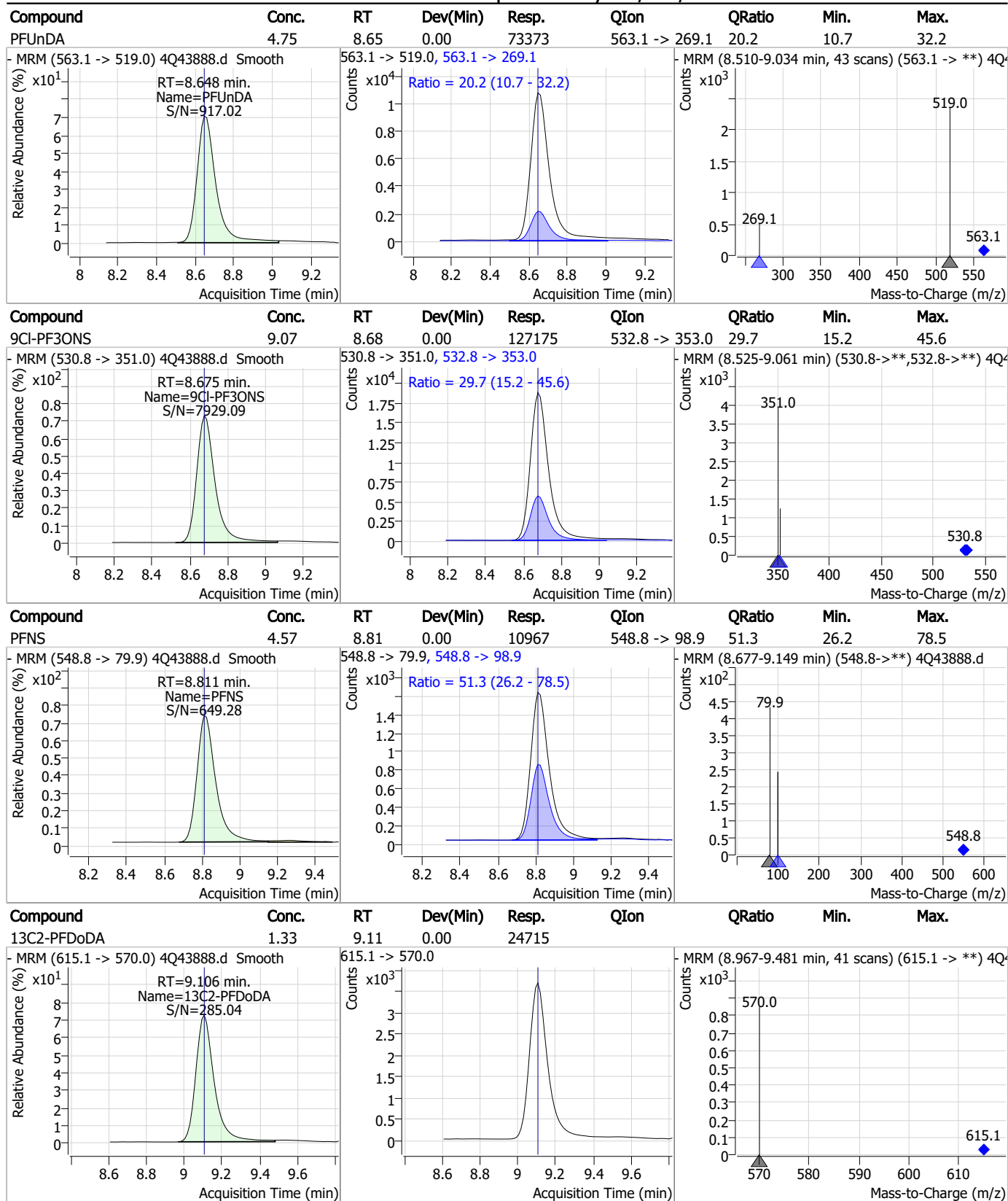
Perfluorinated Compounds by LC/MS/MS



7.7.6

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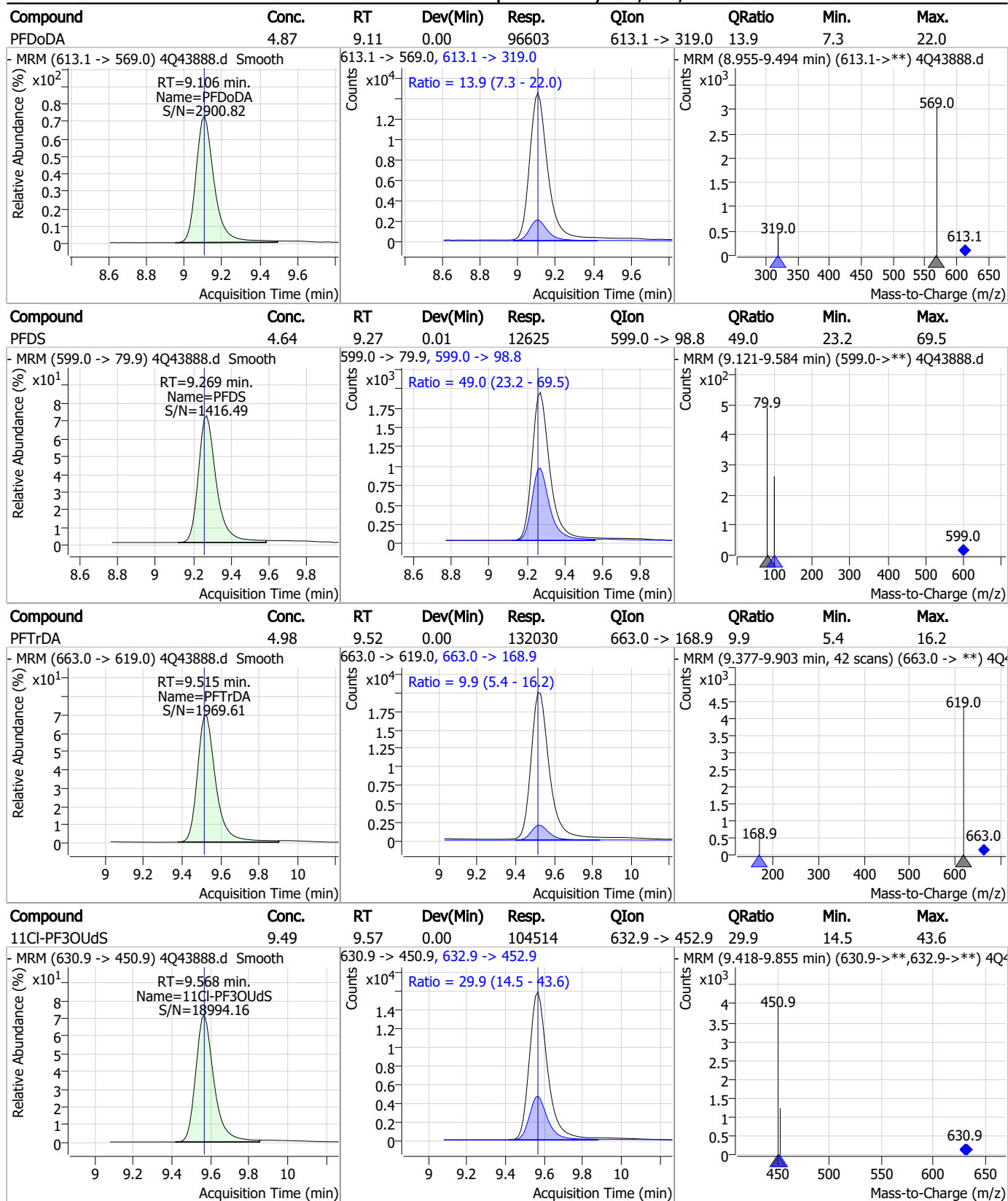
Perfluorinated Compounds by LC/MS/MS



7.7.6

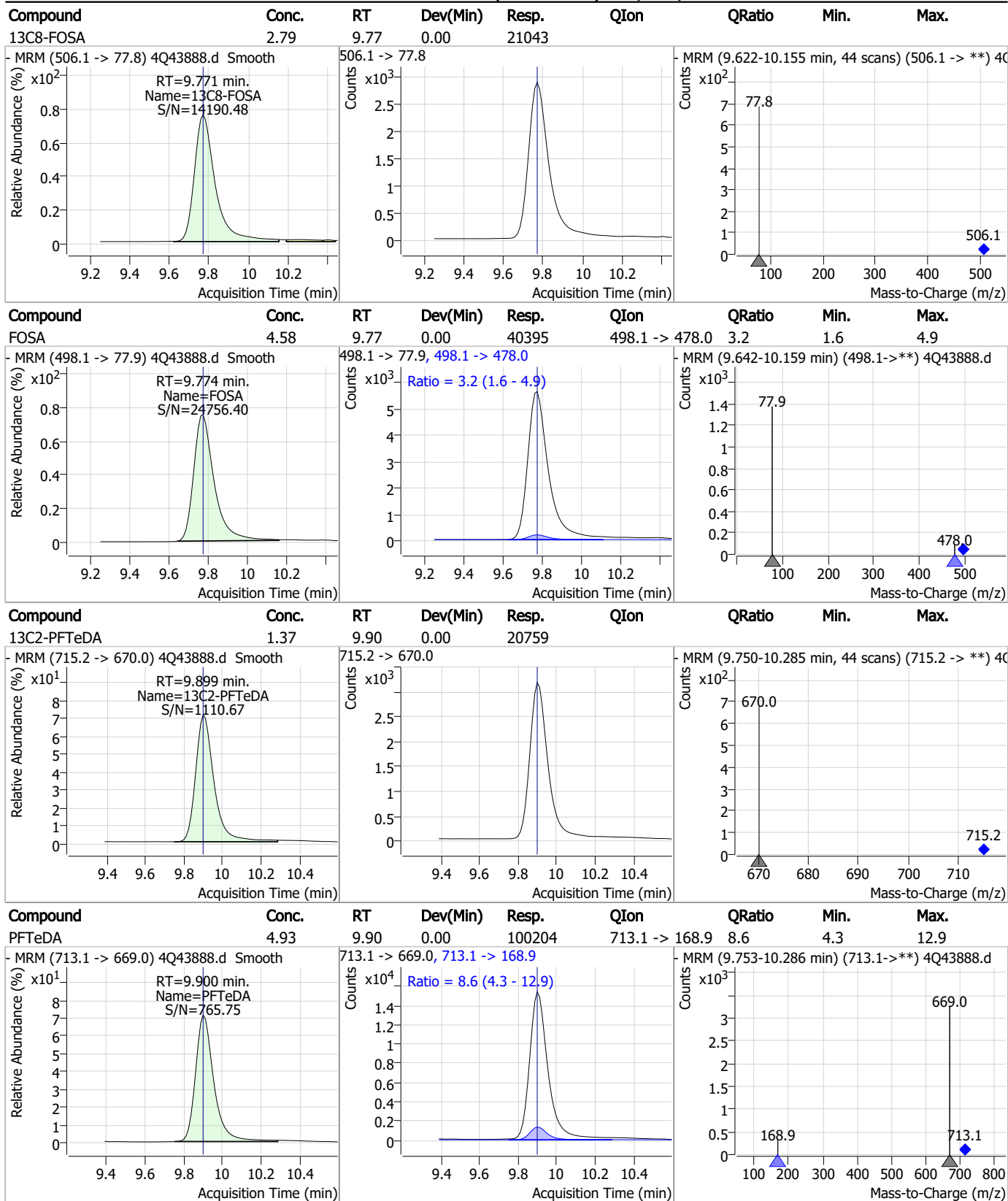
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Perfluorinated Compounds by LC/MS/MS



7.7.6
7

Perfluorinated Compounds by LC/MS/MS

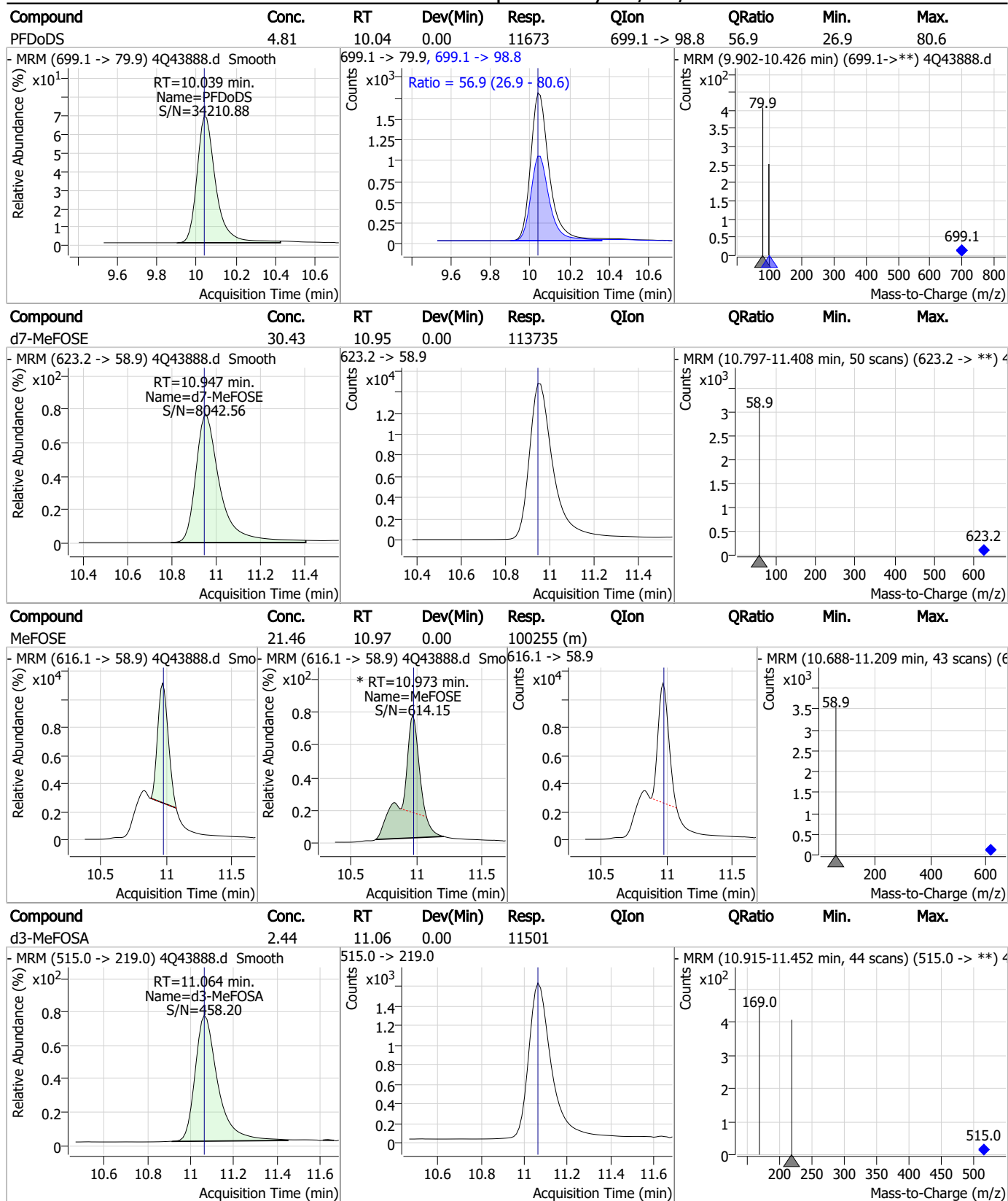


7.7.6

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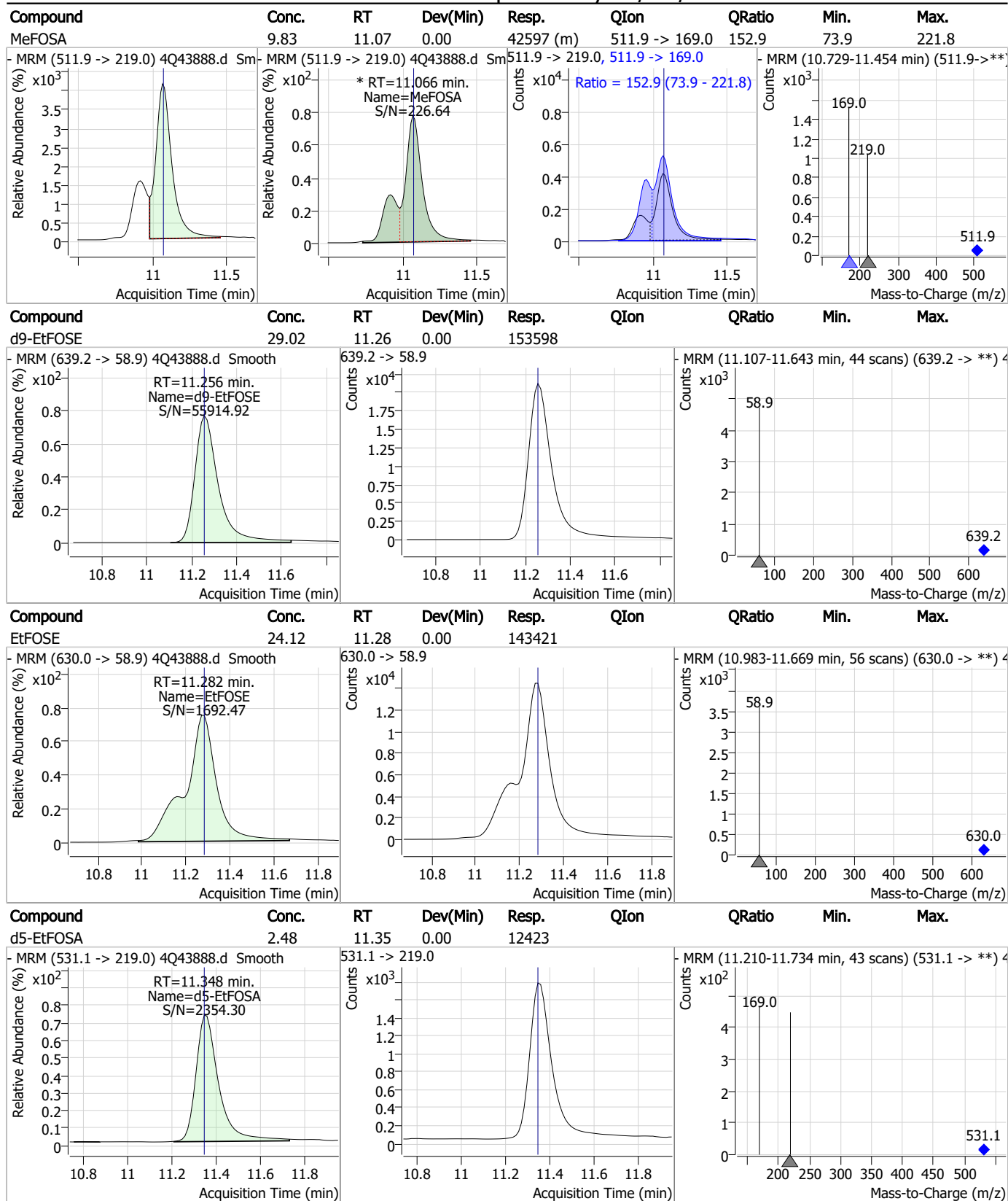


Perfluorinated Compounds by LC/MS/MS



7.7.6
7

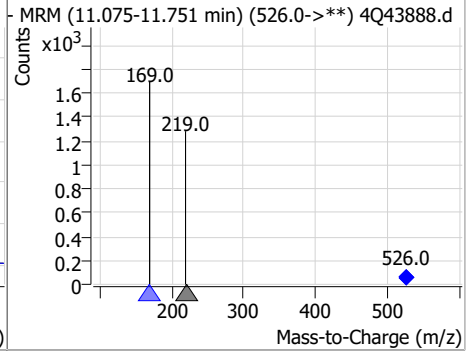
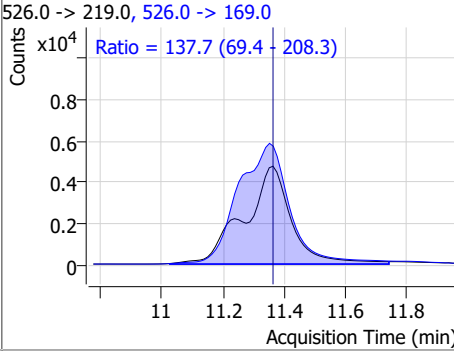
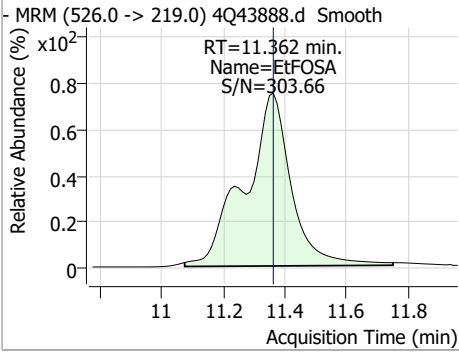
Perfluorinated Compounds by LC/MS/MS



7.7.6
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOFA	9.54	11.36	0.00	49660	526.0 -> 169.0	137.7	69.4	208.3



7.7.6

7

Manual Integration Approval Summary

Sample Number: S4Q634-IC634 Method: EPA DRAFT 1633
Lab FileID: 4Q43888.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 12:08 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.07	Split peak

7.7.6.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43889.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 12:22:30 PM
 Sample Name : ic634-6
 Vial : P1-A7
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	128713	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	69264	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	49069	2.50 µg/L	0.000
M4-PFHpA	6.467	367.1 -> 322.0	28355	2.50 µg/L	0.000
M8-PFOA	7.136	421.1 -> 376.0	44315	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	20413	1.25 µg/L	0.013
M6-PFDA	8.178	519.1 -> 474.1	19410	1.25 µg/L	0.000
M7-PFUnDA	8.647	570.0 -> 525.1	20436	1.25 µg/L	0.000
M2-PFDoDA	9.106	615.1 -> 570.0	21733	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	17340	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	17130	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	11741	2.50 µg/L	0.012
M3-PFHxS	7.229	402.1 -> 79.9	8064	2.50 µg/L	0.000
M8-PFOS	8.329	507.1 -> 79.9	10590	2.50 µg/L	0.000
M2-4:2FTS	5.222	329.1 -> 80.9	1101	5.00 µg/L	0.000
M2-6:2FTS	6.898	429.1 -> 80.9	1916	5.00 µg/L	0.000
M2-8:2FTS	7.966	529.1 -> 80.9	3050	5.00 µg/L	0.000
M3-MeFOSAA	8.236	573.2 -> 419.0	13872	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	29381	10.00 µg/L	0.000
M5-EtFOSAA	8.446	589.2 -> 419.0	11848	5.00 µg/L	0.000
M7-MeFOSE	10.947	623.2 -> 58.9	78988	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	112230	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	11917	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	10730	2.50 µg/L	0.000
13C4-PFOS	8.330	502.8 -> 79.9	11410	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	68345	5.00 µg/L	-0.013
18O2-PFHxS	7.228	403.0 -> 83.9	5135	2.50 µg/L	0.000
13C4-PFOA	7.136	417.1 -> 372.0	53915	2.50 µg/L	0.012
13C2-PFDA	8.178	515.1 -> 470.1	17904	1.25 µg/L	0.000
13C5-PFNA	7.684	468.0 -> 423.0	24617	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	44383	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.222	329.1 -> 80.9	1101	5.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-6:2FTS	6.898	429.1 -> 80.9	1916	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-8:2FTS	7.966	529.1 -> 80.9	3050	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C2-PFDoDA	9.106	615.1 -> 570.0	21733	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-PFTeDA	9.899	715.2 -> 670.0	17340	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFBS	5.439	302.1 -> 79.9	11741	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C3-PFHxS	7.229	402.1 -> 79.9	8064	2.53 µg/L	0.000

7.7.7
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C4-PFBA	2.924	216.8 -> 171.9	128713	10.01 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.467	367.1 -> 322.0	28355	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFHxA	5.535	318.0 -> 273.0	49069	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFPeA	4.362	268.3 -> 223.0	69264	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C6-PFDA	8.178	519.1 -> 474.1	19410	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C7-PFUnDA	8.647	570.0 -> 525.1	20436	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-FOSA	9.771	506.1 -> 77.8	17130	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-PFOA	7.136	421.1 -> 376.0	44315	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-PFOS	8.329	507.1 -> 79.9	10590	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C9-PFNA	7.684	472.1 -> 427.0	20413	1.22 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSAA	8.236	573.2 -> 419.0	13872	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	29381	10.06 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
d3-MeFOSA	11.064	515.0 -> 219.0	10730	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
d5-EtFOSAA	8.446	589.2 -> 419.0	11848	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d7-MeFOSE	10.947	623.2 -> 58.9	78988	22.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.0%	
d9-EtFOSE	11.256	639.2 -> 58.9	112230	22.33 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.3%	
d5-EtFOSA	11.348	531.1 -> 219.0	11917	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	76961	43.44 µg/L	94
		327.1 -> 80.9	32830		
6:2FTS	6.899	427.1 -> 407.0	86158	46.55 µg/L	99
		427.1 -> 80.9	35567		
8:2FTS	7.966	527.1 -> 507.0	81135	47.73 µg/L	98
		527.1 -> 80.8	32973		
EtFOSAA	8.459	584.2 -> 419.1	29503	12.96 µg/L	m 95
		584.2 -> 526.0	14022		
FOSA	9.774	498.1 -> 77.9	93693	13.05 µg/L	98
		498.1 -> 478.0	2566		
MeFOSAA	8.249	570.1 -> 419.0	31400	12.99 µg/L	m 97
		570.1 -> 483.0	6893		
PFBA	2.920	212.8 -> 168.9	180069	52.24 µg/L	100
PFBS	5.440	298.7 -> 79.9	56713	11.78 µg/L	94
		298.7 -> 98.8	20771		
PFDA	8.179	512.9 -> 469.0	197729	13.43 µg/L	95
		512.9 -> 219.0	38436		
PFDoDA	9.106	613.1 -> 569.0	230624	13.22 µg/L	99
		613.1 -> 319.0	32458		
PFDS	9.269	599.0 -> 79.9	32741	12.48 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	16222			
PFHpA	6.468	363.1 -> 319.0	242238	13.52	µg/L	98
		363.1 -> 169.0	41387			
PFHpS	7.811	449.0 -> 79.9	48544	12.72	µg/L	95
		449.0 -> 98.9	24110			
PFHxA	5.538	313.0 -> 269.0	248936	12.95	µg/L	100
		313.0 -> 118.9	7161			
PFHxS	7.230	398.7 -> 79.9	37785	11.43	µg/L	m 98
		398.7 -> 98.9	19513			
PFNA	7.685	463.0 -> 419.0	197700	13.07	µg/L	98
		463.0 -> 219.0	47530			
PFNS	8.811	548.8 -> 79.9	28263	12.22	µg/L	98
		548.8 -> 98.9	14381			
PFOA	7.137	413.0 -> 369.0	332675	13.01	µg/L	100
		413.0 -> 169.0	64573			
PFOS	8.330	498.9 -> 79.9	64846	12.51	µg/L	m 98
		498.9 -> 98.8	30733			
PFPeA	4.364	263.0 -> 219.0	439404	26.37	µg/L	100
PFPeS	6.494	349.1 -> 79.9	33156	11.69	µg/L	96
		349.1 -> 98.9	14416			
PFTeDA	9.900	713.1 -> 669.0	222966	13.14	µg/L	99
		713.1 -> 168.9	18397			
PFTrDA	9.515	663.0 -> 619.0	301738	12.95	µg/L	98
		663.0 -> 168.9	30099			
PFUnDA	8.648	563.1 -> 519.0	184252	13.27	µg/L	97
		563.1 -> 269.1	36980			
11Cl-PF3OUdS	9.568	630.9 -> 450.9	265861	25.16	µg/L	98
		632.9 -> 452.9	80306			
9Cl-PF3ONS	8.675	530.8 -> 351.0	332327	24.70	µg/L	100
		532.8 -> 353.0	100643			
ADONA	6.731	376.9 -> 250.9	726148	24.58	µg/L	99
		376.9 -> 84.8	193928			
HFPO-DA	5.891	284.9 -> 168.9	75140	26.76	µg/L	100
		284.9 -> 184.9	8692			
3:3FTCA	3.836	241.0 -> 177.0	46712	63.71	µg/L	99
		241.0 -> 117.0	4223			
5:3FTCA	6.193	341.0 -> 237.1	852354	326.73	µg/L	99
		341.0 -> 217.0	591774			
7:3FTCA	7.649	441.0 -> 316.9	442038	326.10	µg/L	99
		441.0 -> 336.9	1050456			
EtFOSA	11.362	526.0 -> 219.0	134876	27.02	µg/L	m 99
		526.0 -> 169.0	185812			
EtFOSE	11.282	630.0 -> 58.9	279923	64.43	µg/L	100
MeFOSA	11.065	511.9 -> 219.0	110174	27.26	µg/L	m 98
		511.9 -> 169.0	159475			
MeFOSE	10.973	616.1 -> 58.9	201716	62.18	µg/L	m 100
PFDoDS	10.039	699.1 -> 79.9	29923	12.78	µg/L	97
		699.1 -> 98.8	15349			
NFDHA	5.416	295.0 -> 201.0	35115	25.58	µg/L	94
		295.0 -> 84.9	8578			
PFMBA	4.778	279.0 -> 85.1	240040	25.81	µg/L	100
PFMPA	3.528	229.0 -> 84.9	226056	25.95	µg/L	100
PFEESA	5.959	314.8 -> 134.9	345119	23.72	µg/L	99
		314.8 -> 82.9	11323			

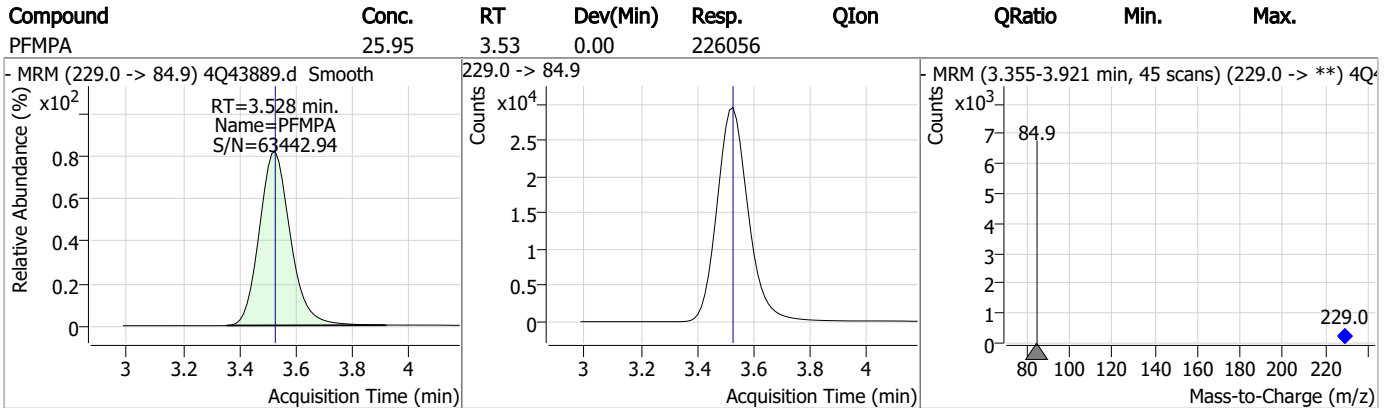
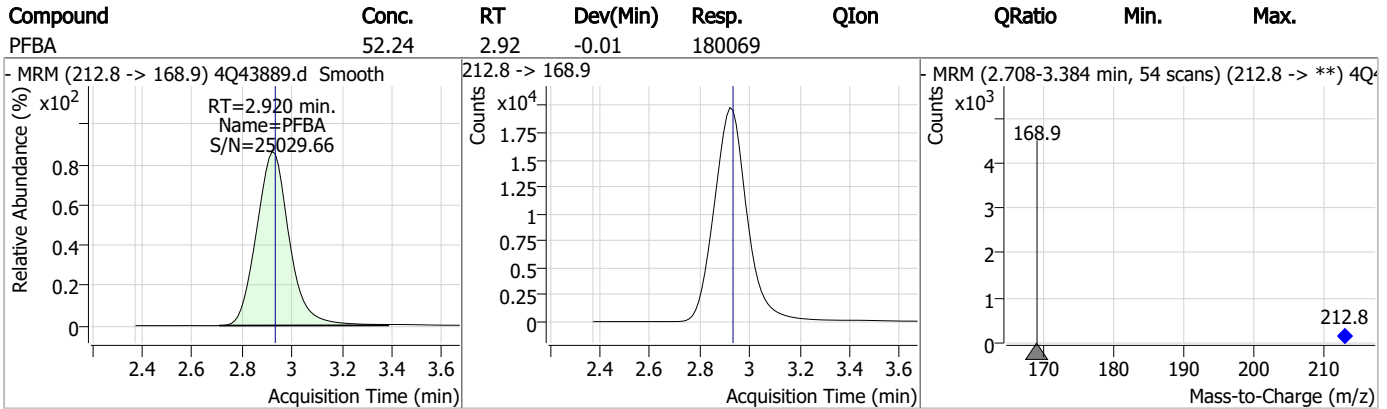
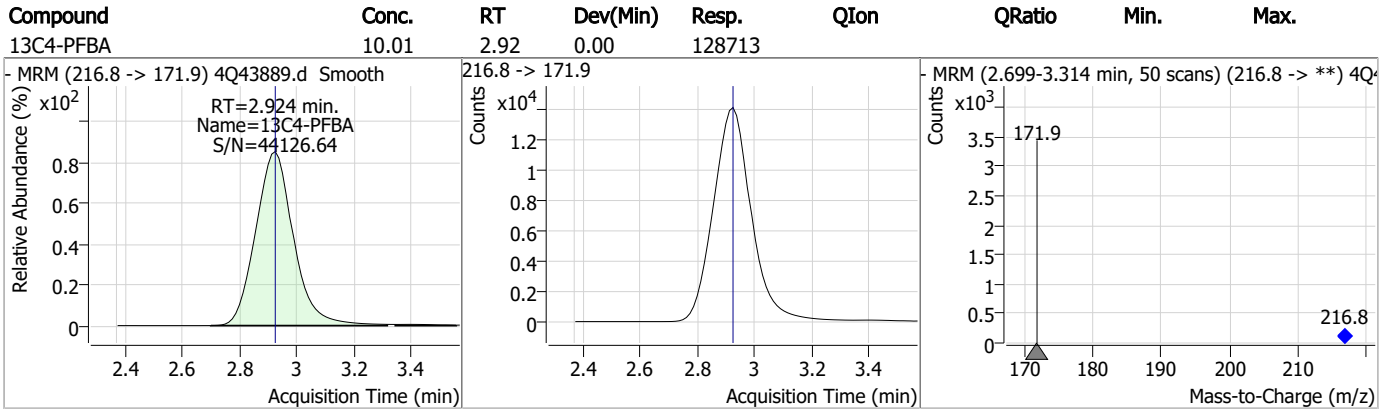
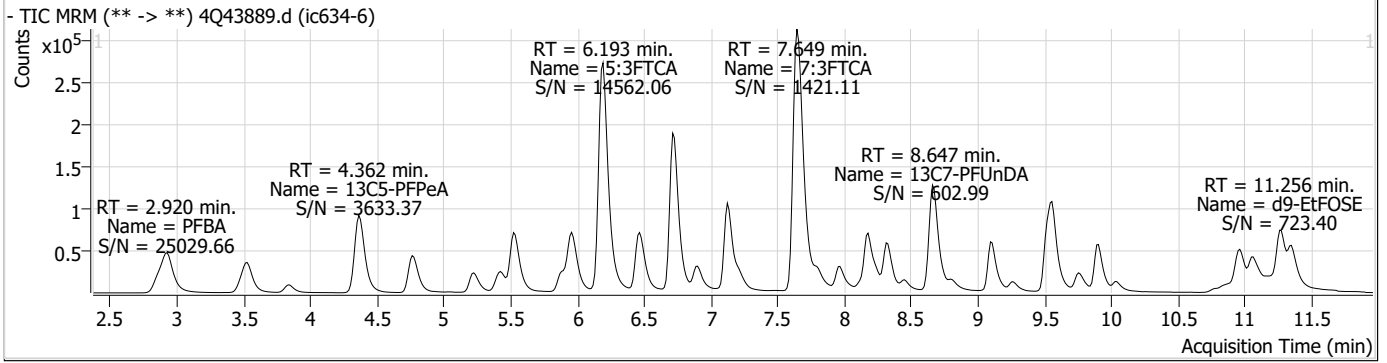
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

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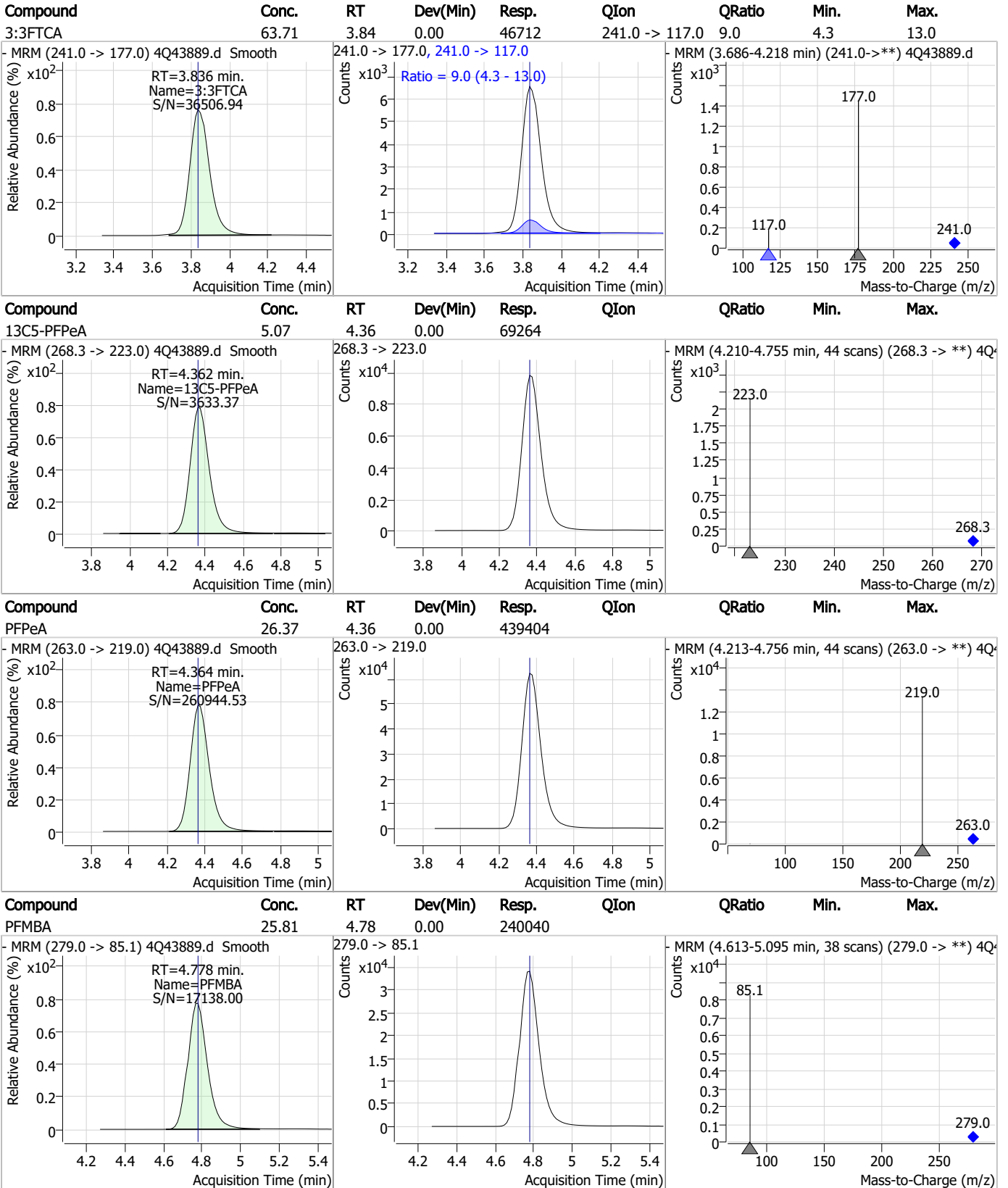
7.7.7
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Perfluorinated Compounds by LC/MS/MS



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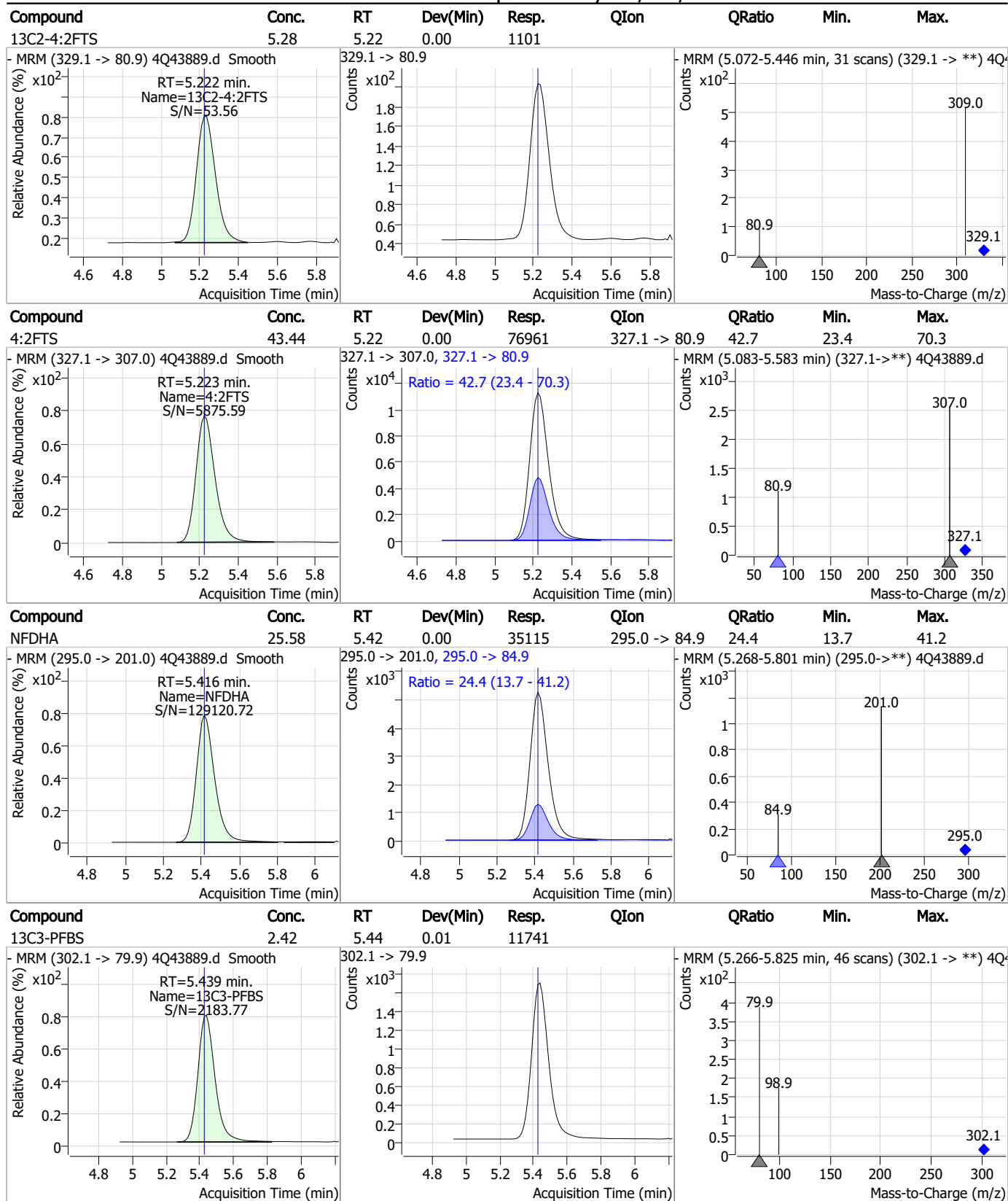
Perfluorinated Compounds by LC/MS/MS



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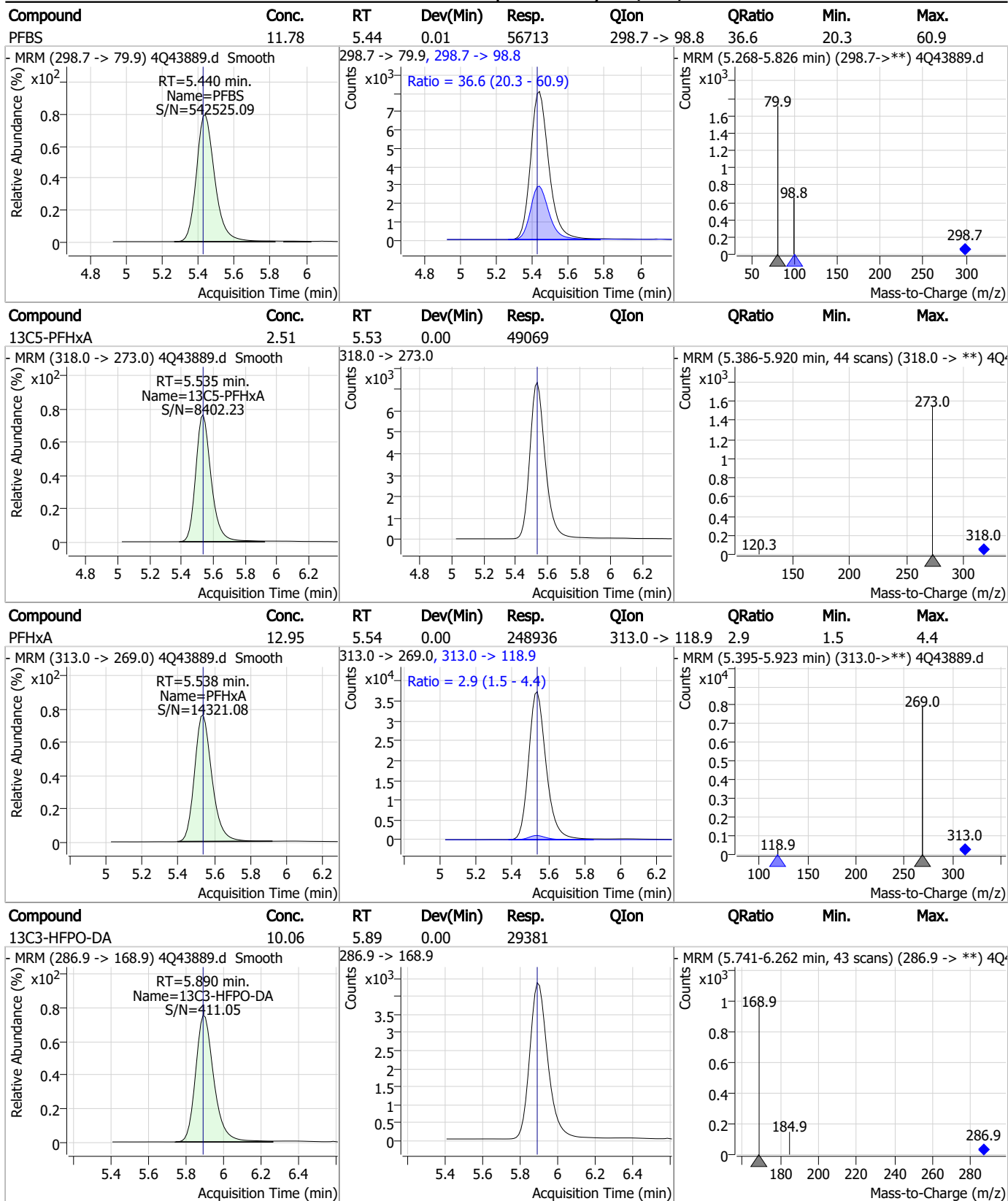
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Perfluorinated Compounds by LC/MS/MS



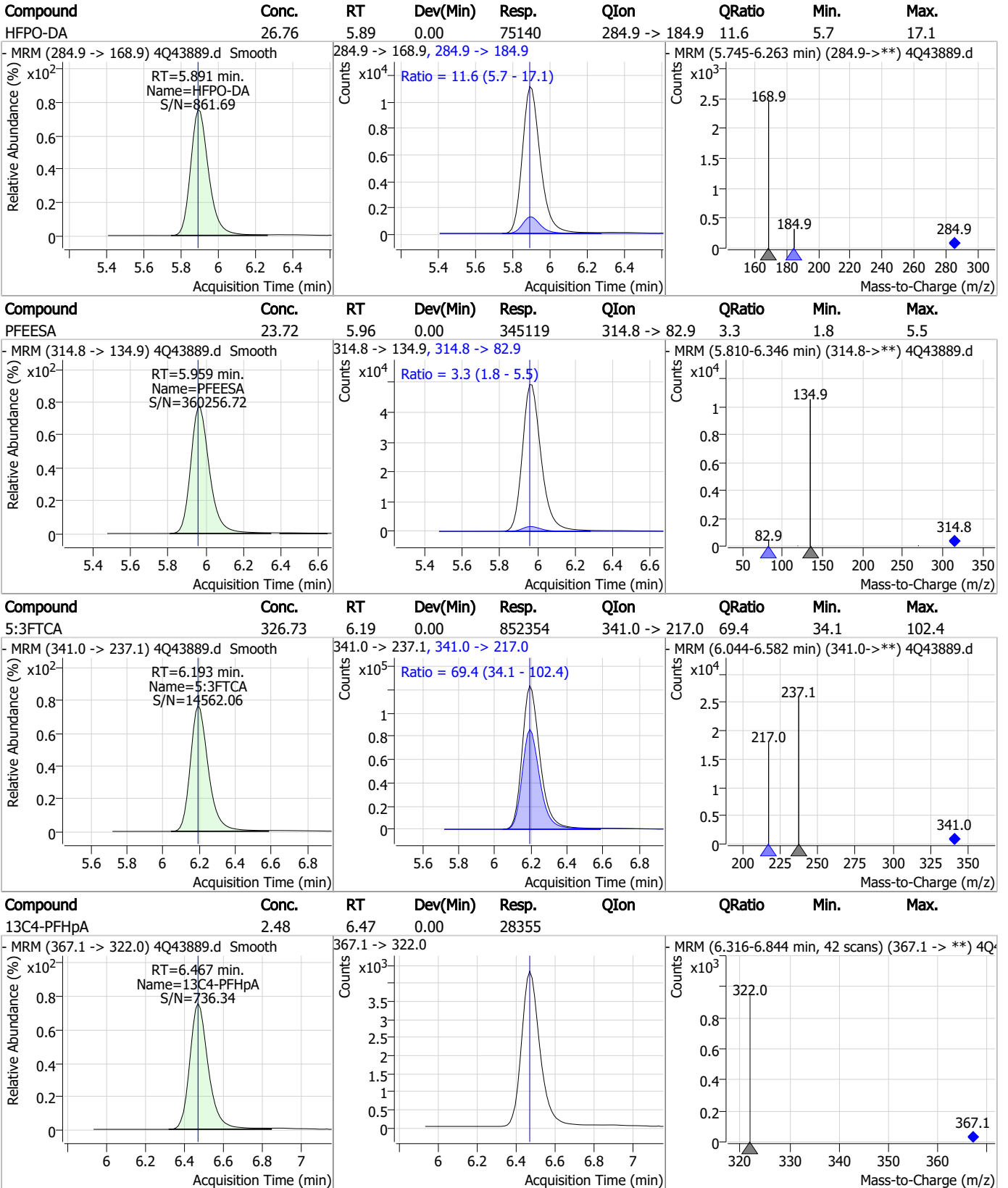
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

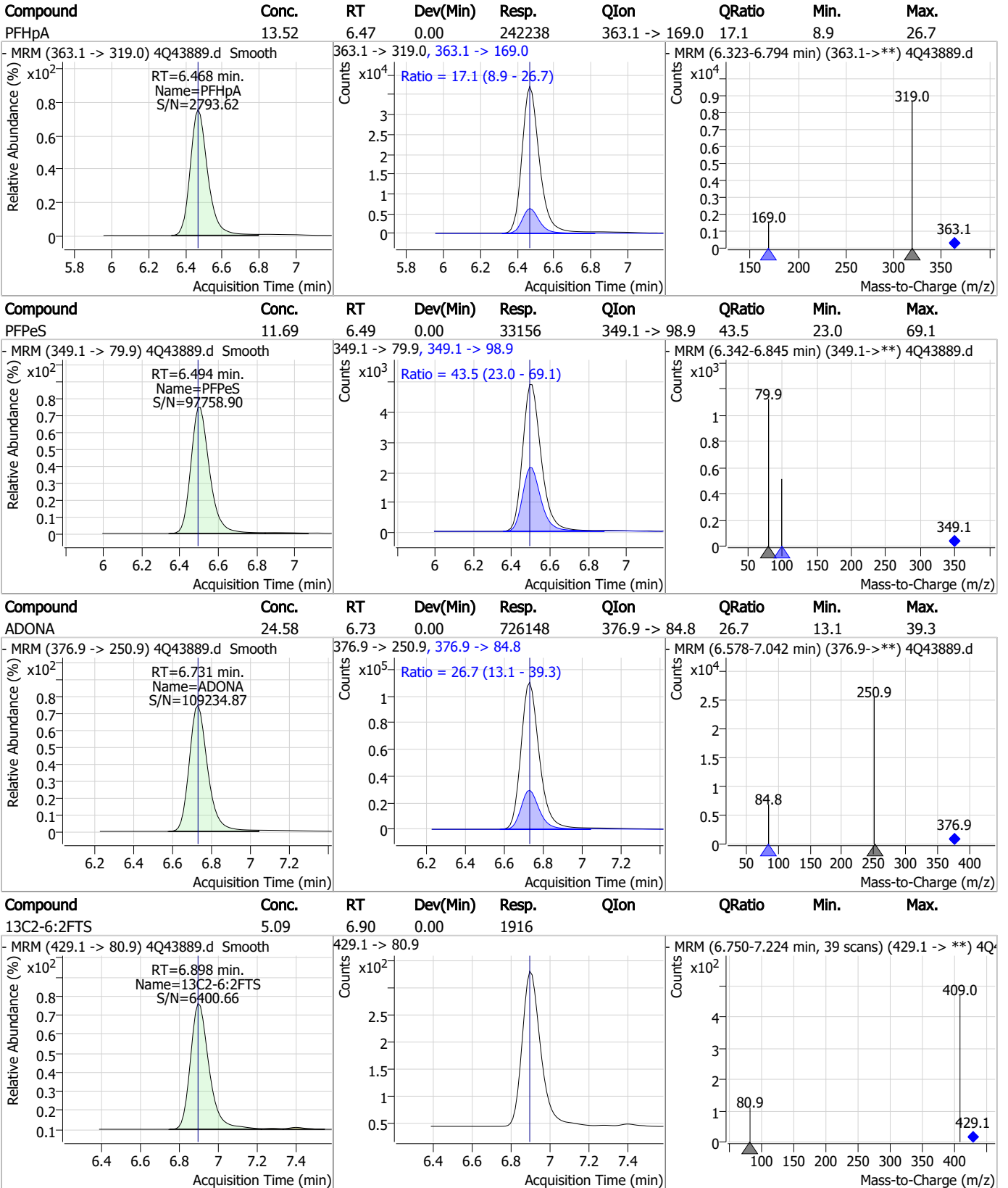


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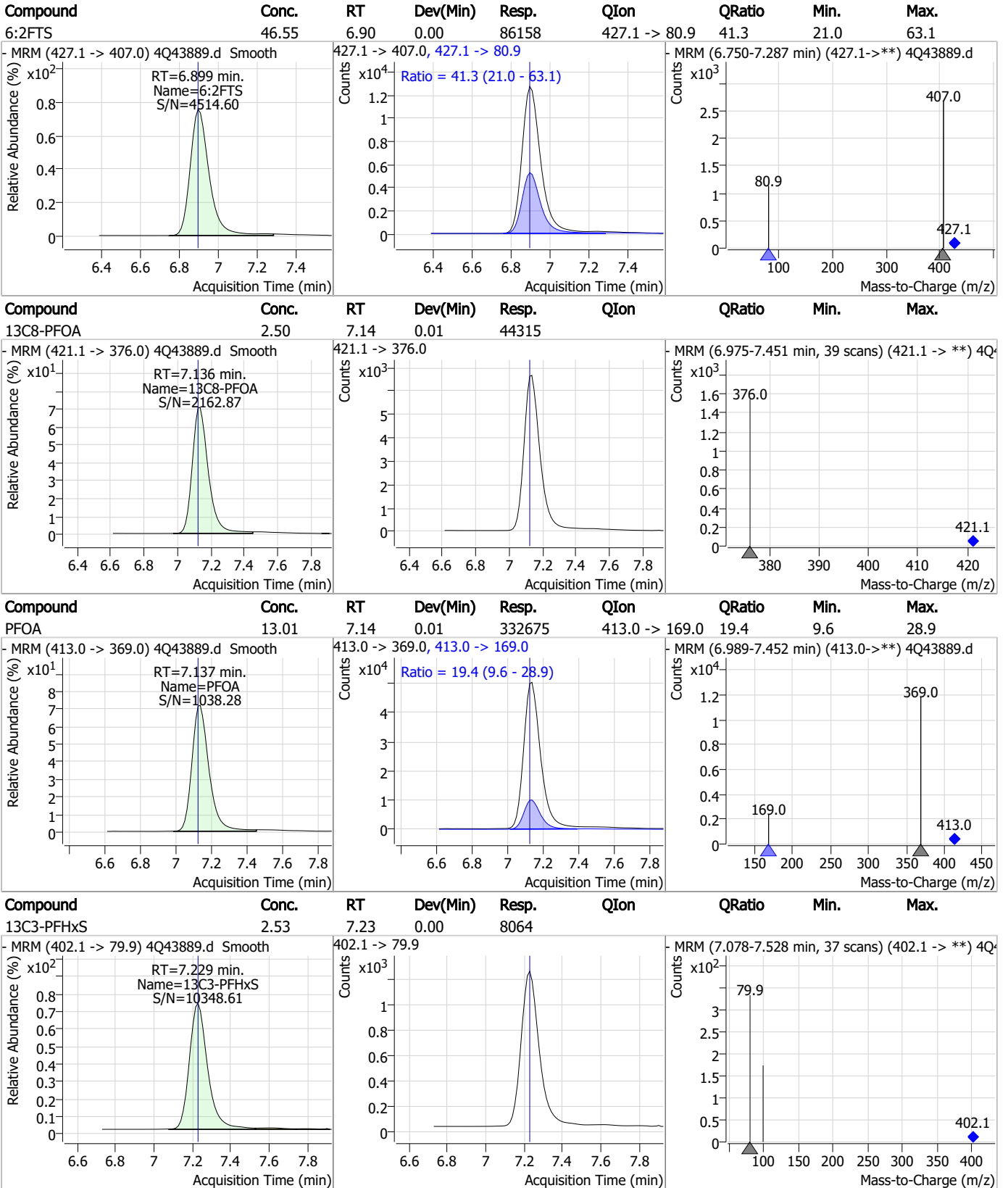
Perfluorinated Compounds by LC/MS/MS



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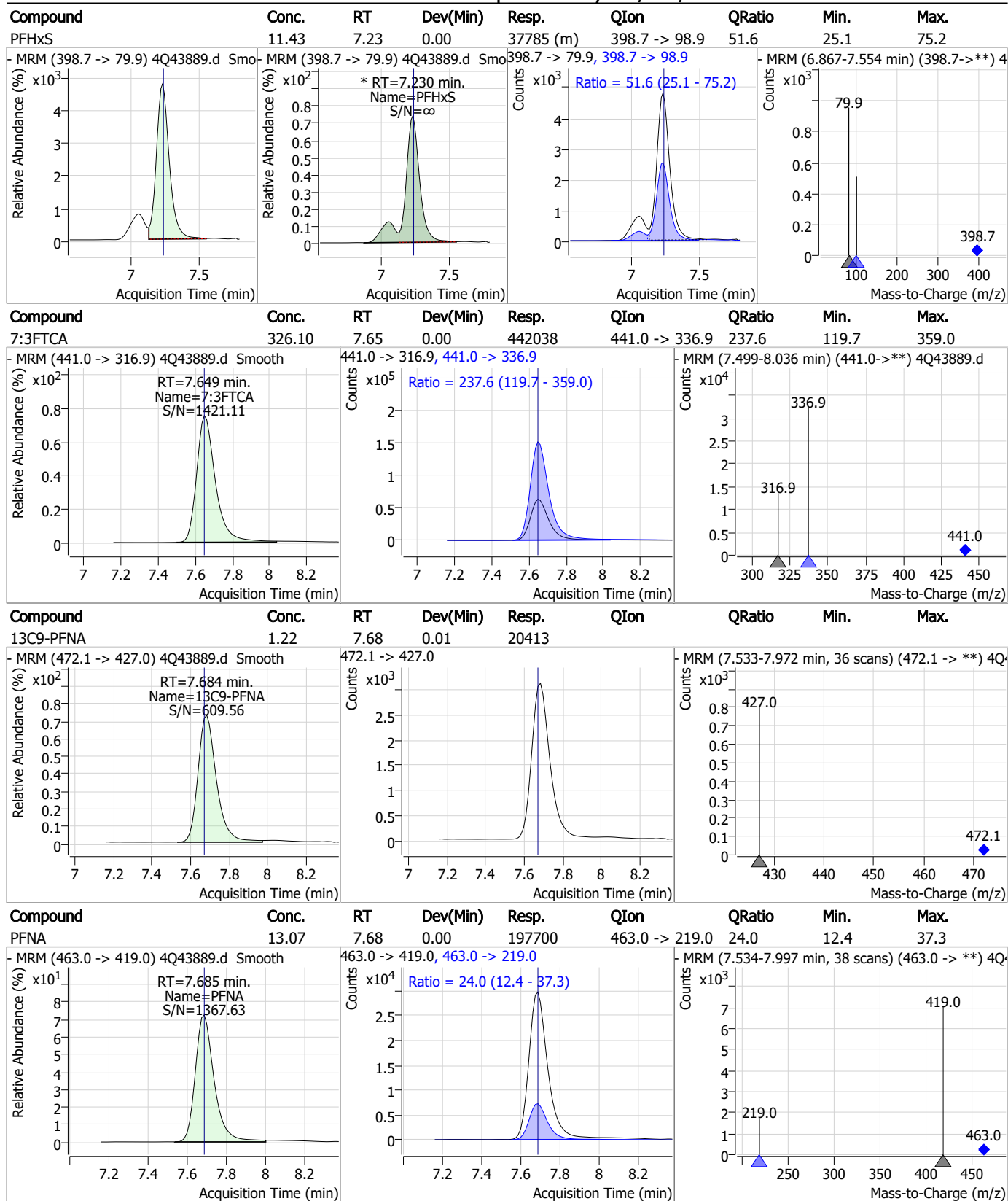
Perfluorinated Compounds by LC/MS/MS



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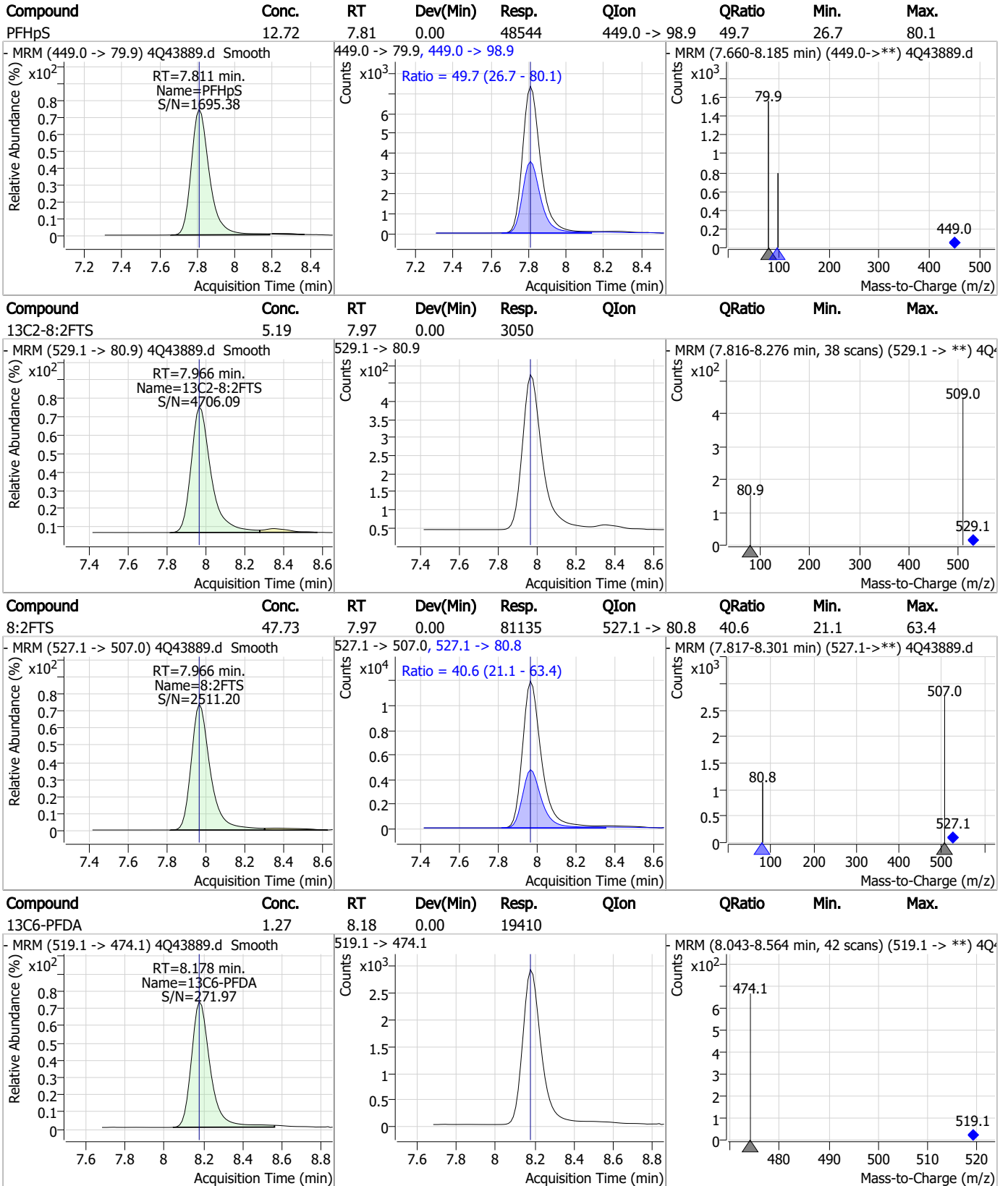
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Perfluorinated Compounds by LC/MS/MS



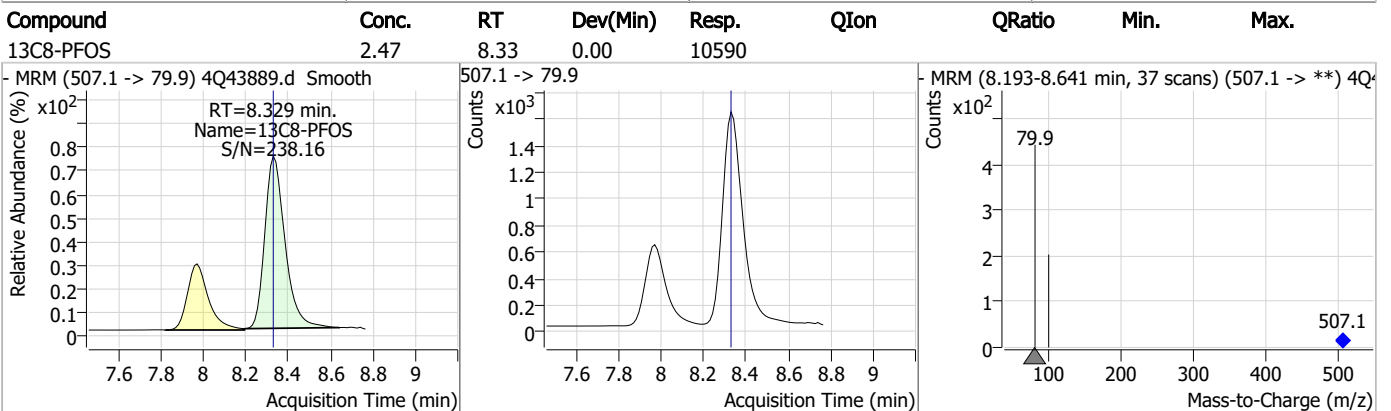
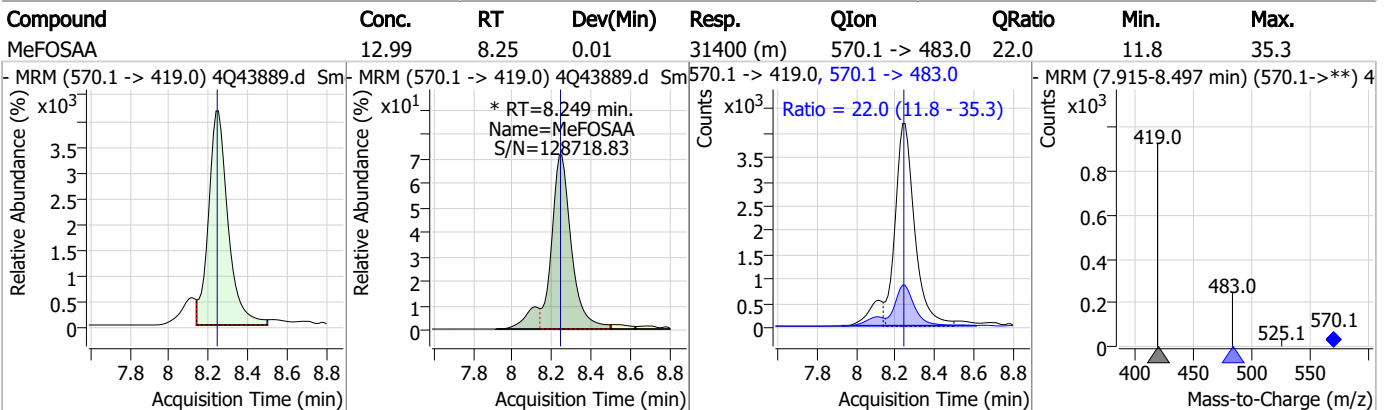
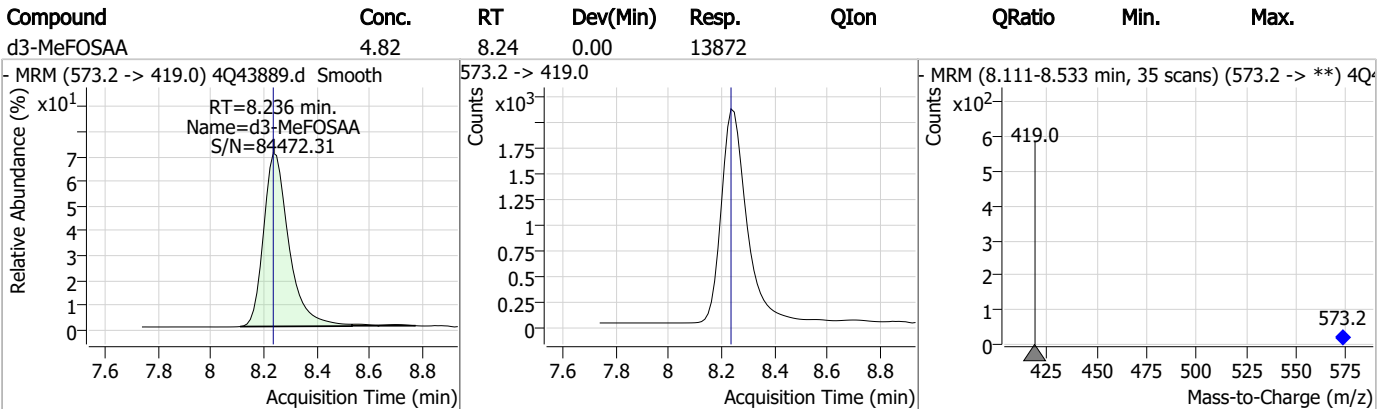
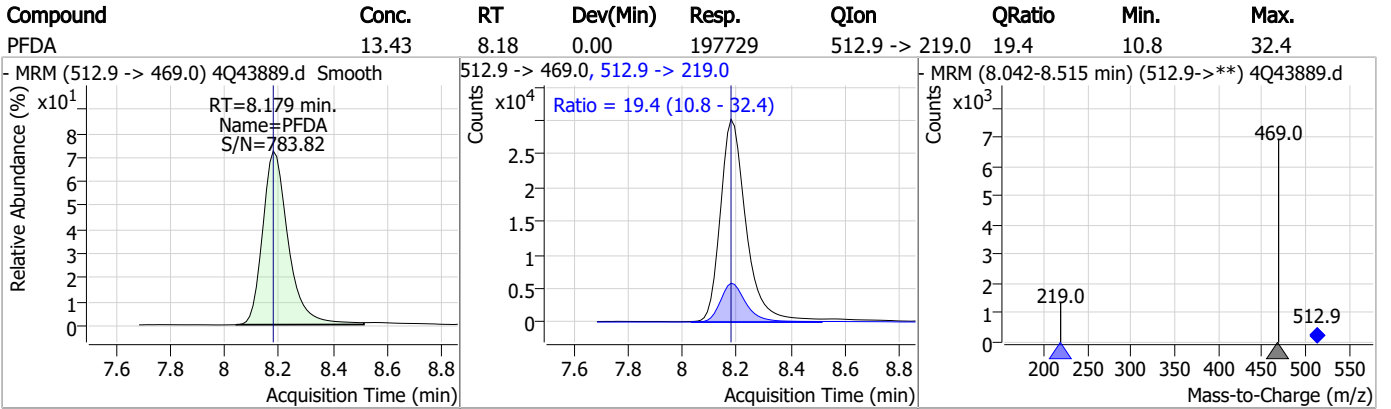
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Perfluorinated Compounds by LC/MS/MS



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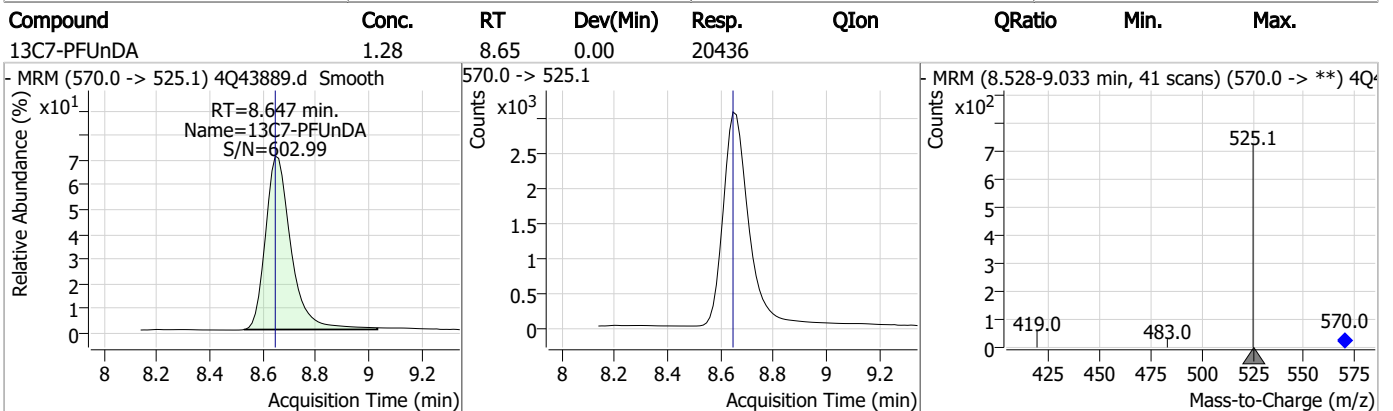
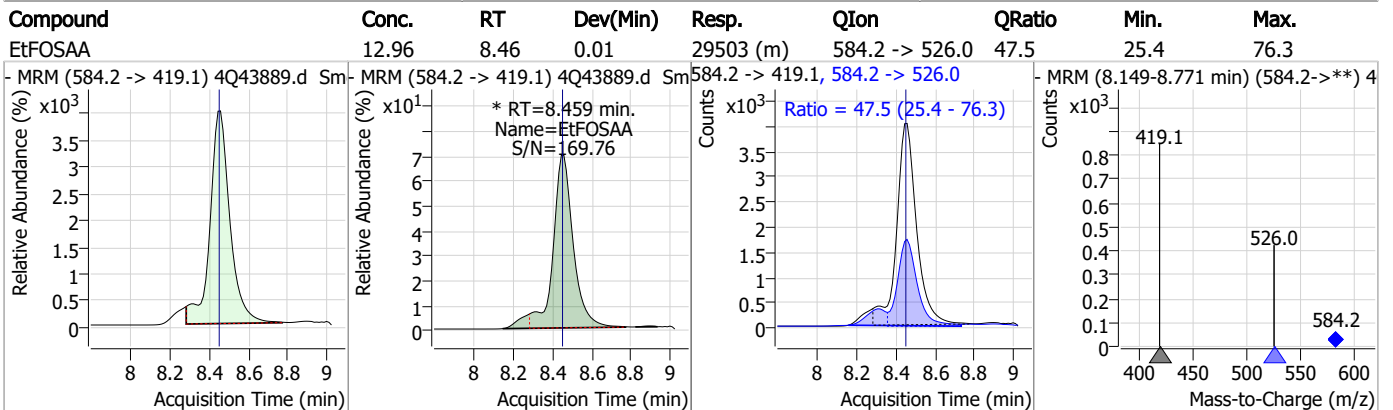
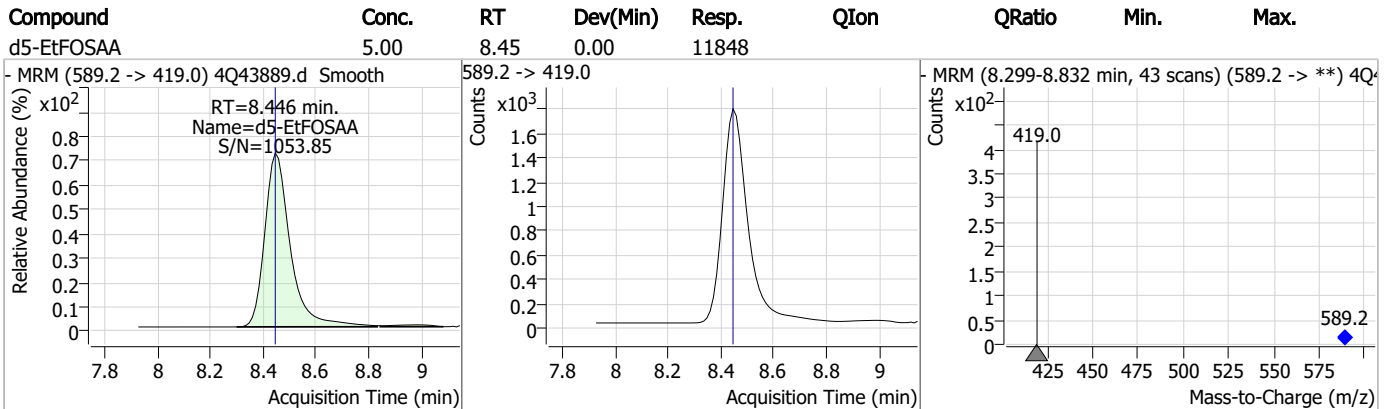
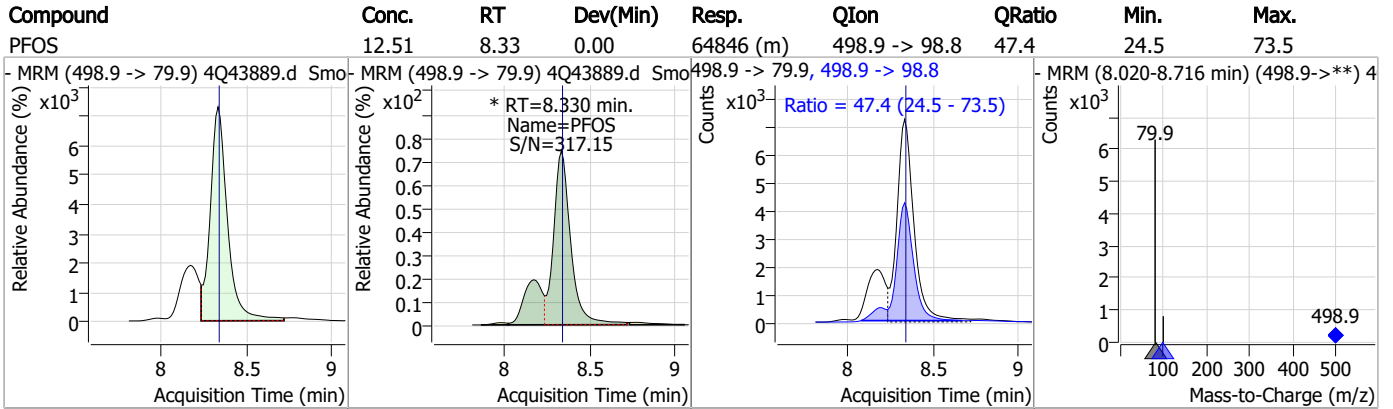
Perfluorinated Compounds by LC/MS/MS



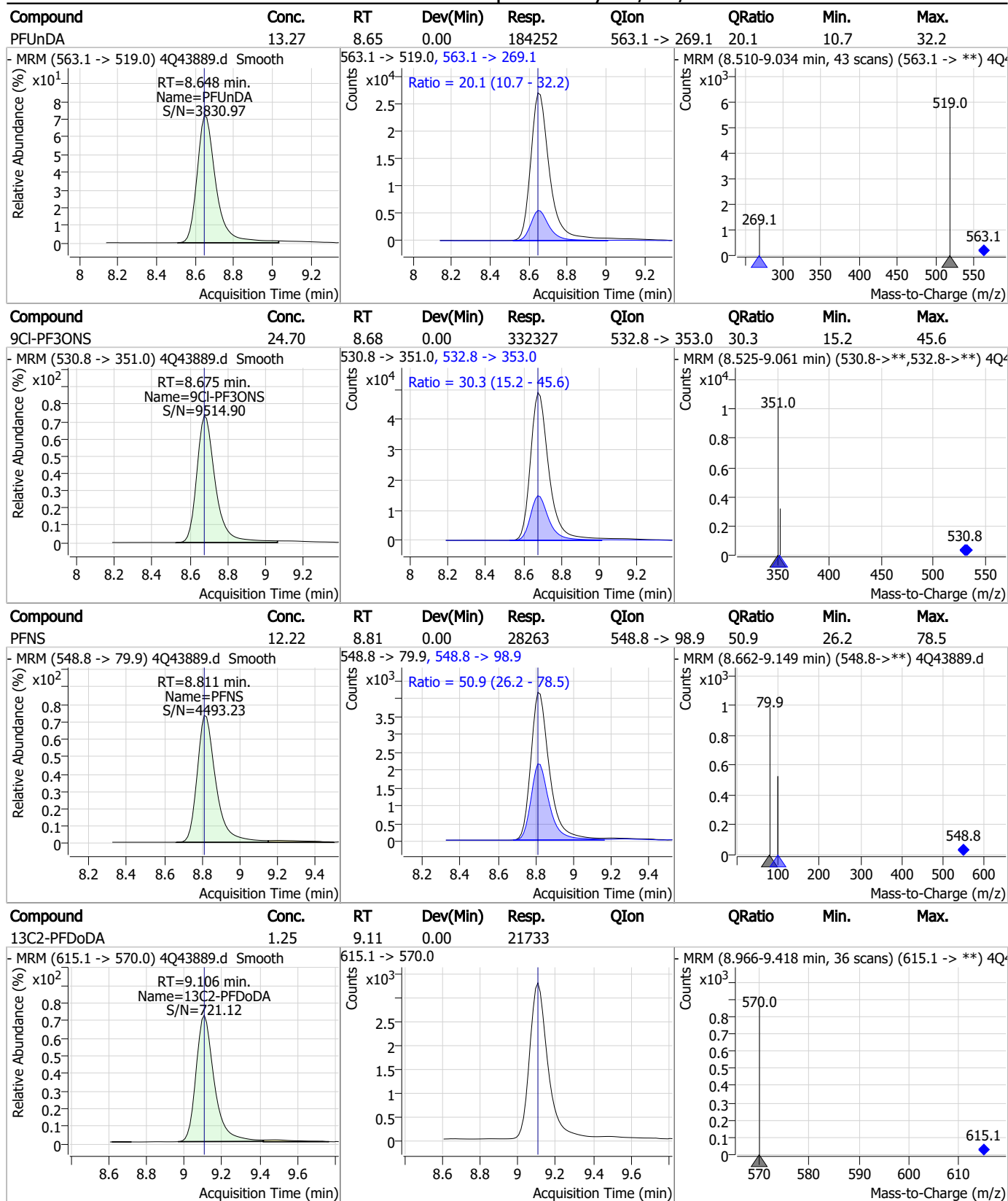
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



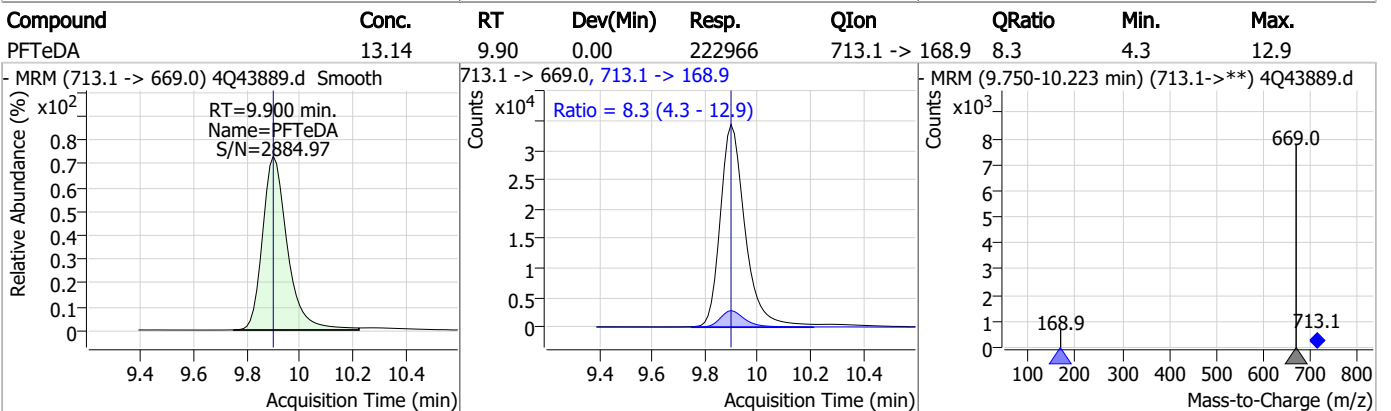
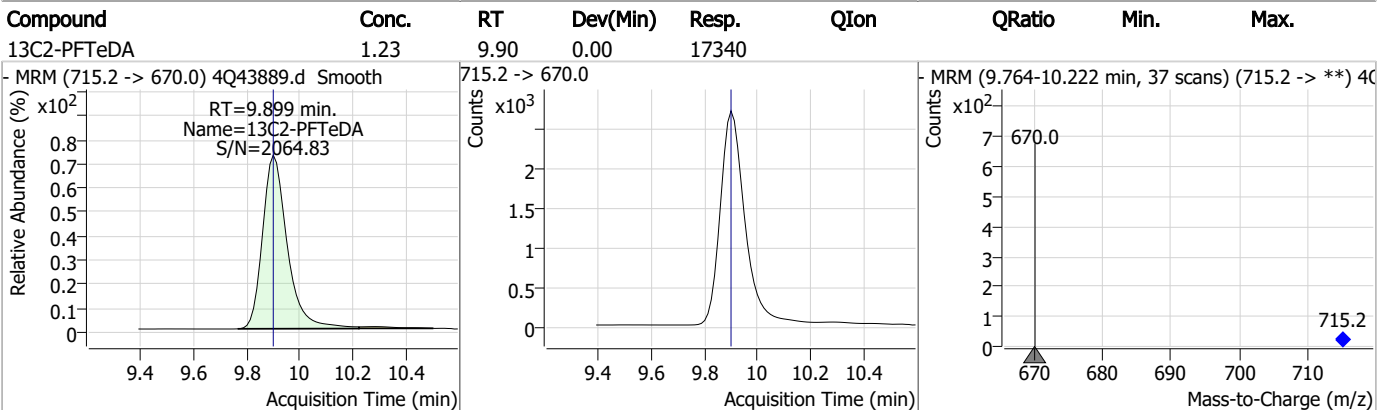
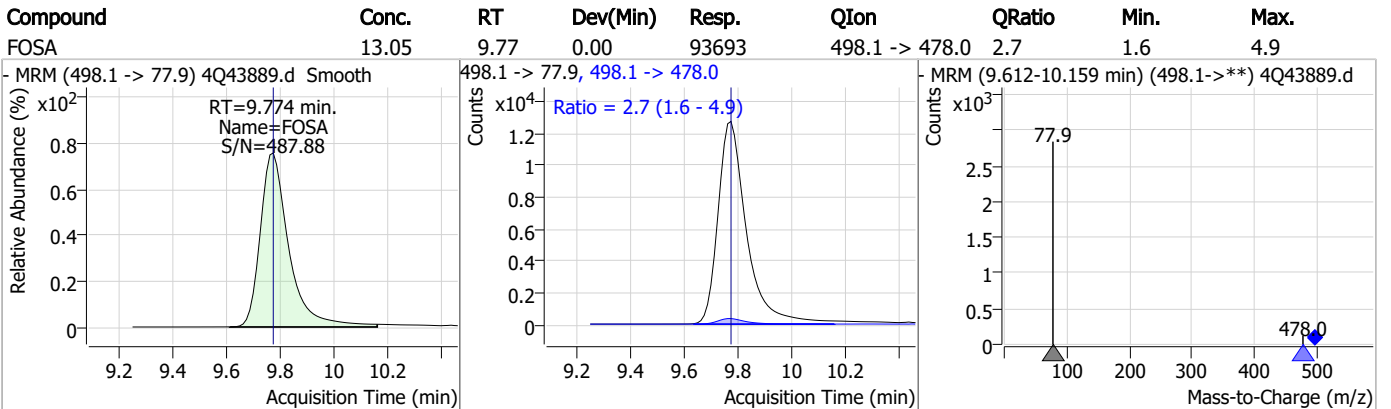
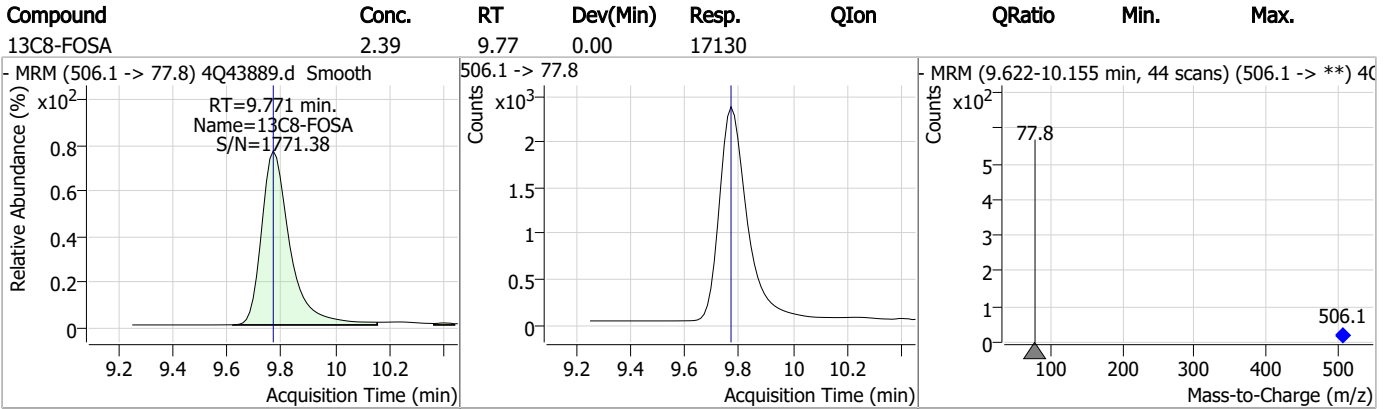
7.7.7
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Perfluorinated Compounds by LC/MS/MS

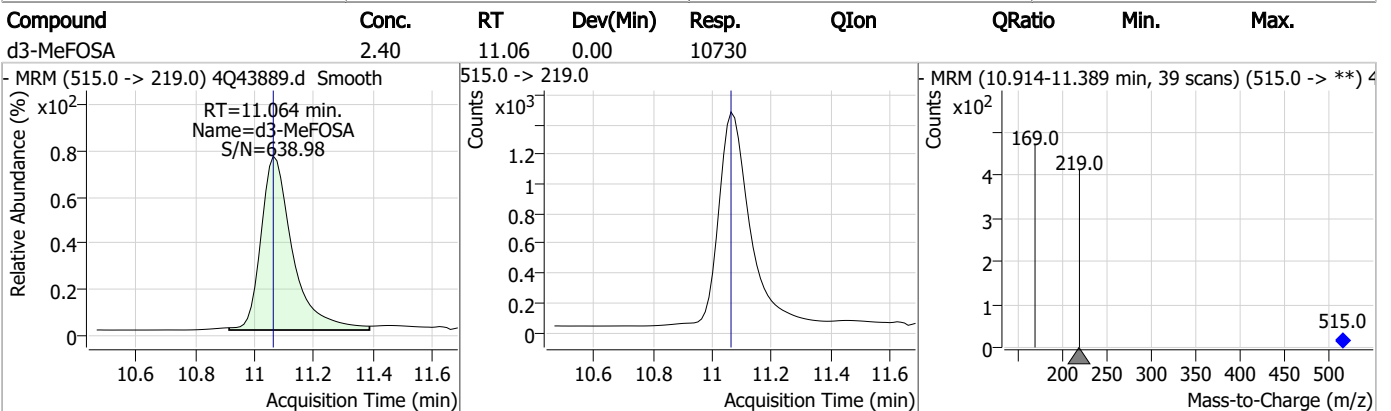
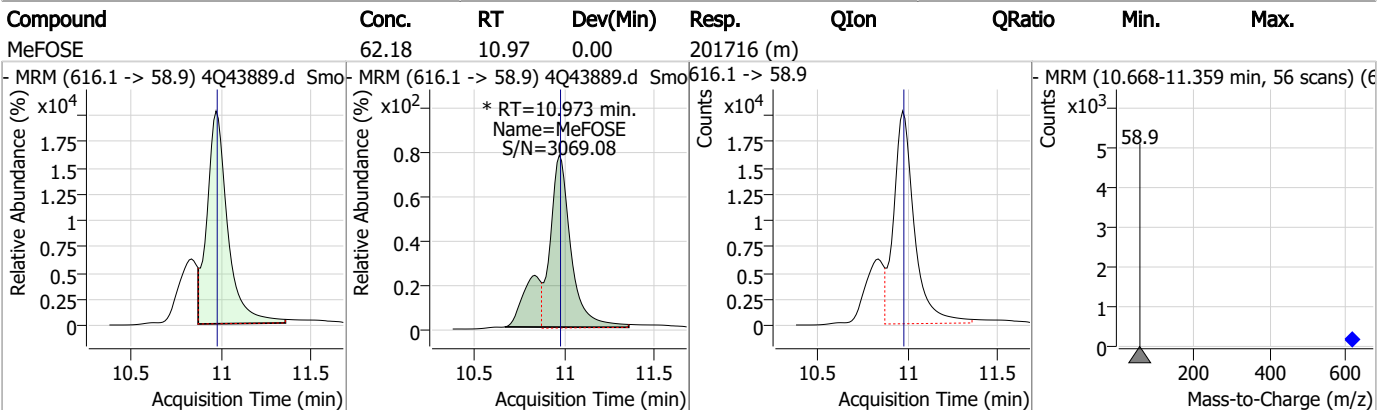
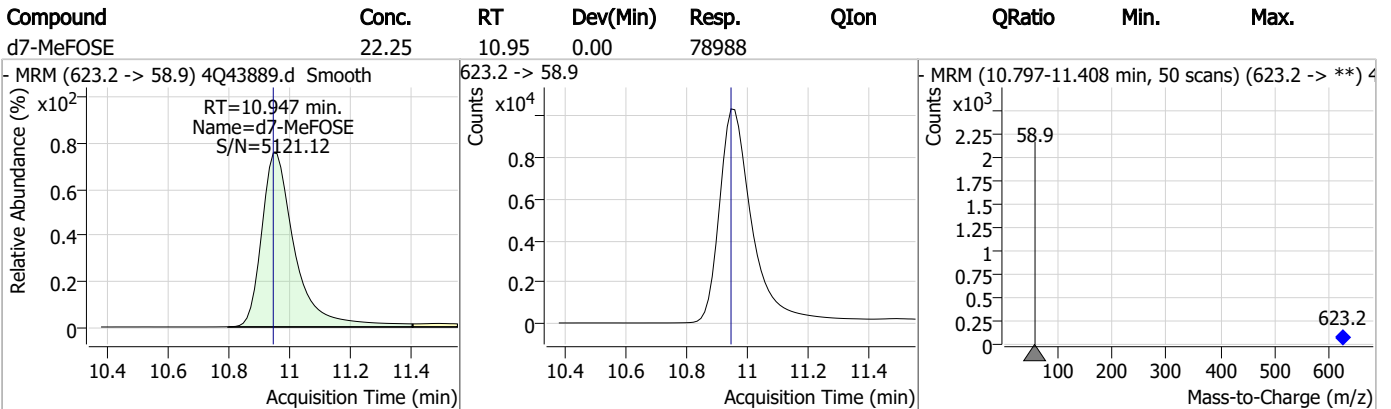
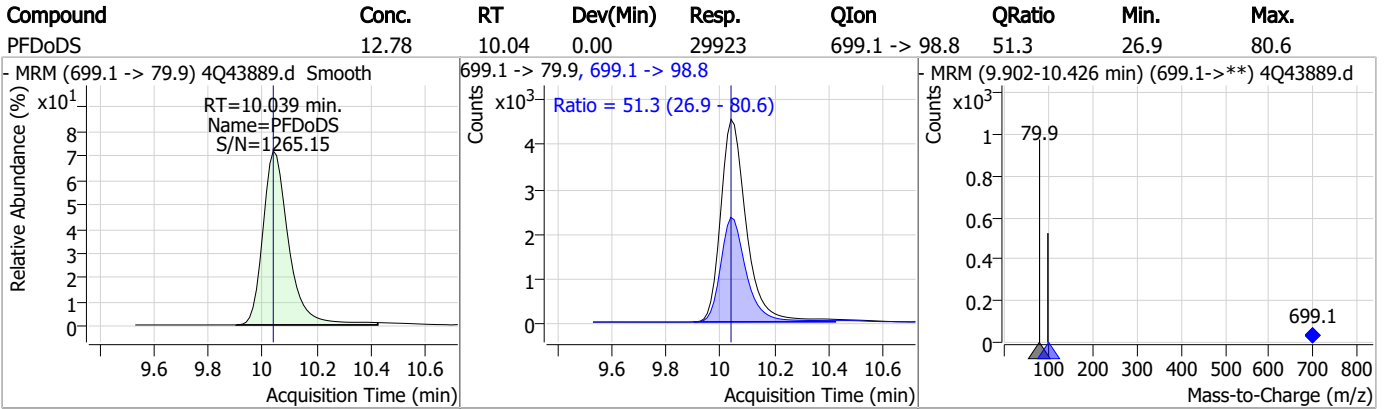
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDODA	13.22	9.11	0.00	230624	613.1 -> 319.0	14.1	7.3	22.0
- MRM (613.1 -> 569.0) 4Q43889.d Smooth			613.1 -> 569.0, 613.1 -> 319.0		- MRM (8.955-9.494 min) (613.1->**) 4Q43889.d			
PFDS	12.48	9.27	0.01	32741	599.0 -> 98.8	49.5	23.2	69.5
- MRM (599.0 -> 79.9) 4Q43889.d Smooth			599.0 -> 79.9, 599.0 -> 98.8		- MRM (9.125-9.658 min) (599.0->**) 4Q43889.d			
PFTrDA	12.95	9.52	0.00	301738	663.0 -> 168.9	10.0	5.4	16.2
- MRM (663.0 -> 619.0) 4Q43889.d Smooth			663.0 -> 619.0, 663.0 -> 168.9		- MRM (9.377-9.878 min, 41 scans) (663.0 -> **) 4Q43889.d			
11Cl-PF3OUds	25.16	9.57	0.00	265861	632.9 -> 452.9	30.2	14.5	43.6
- MRM (630.9 -> 450.9) 4Q43889.d Smooth			630.9 -> 450.9, 632.9 -> 452.9		- MRM (9.418-9.880 min) (630.9->**, 632.9->**) 4Q43889.d			

7.7.7
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Perfluorinated Compounds by LC/MS/MS



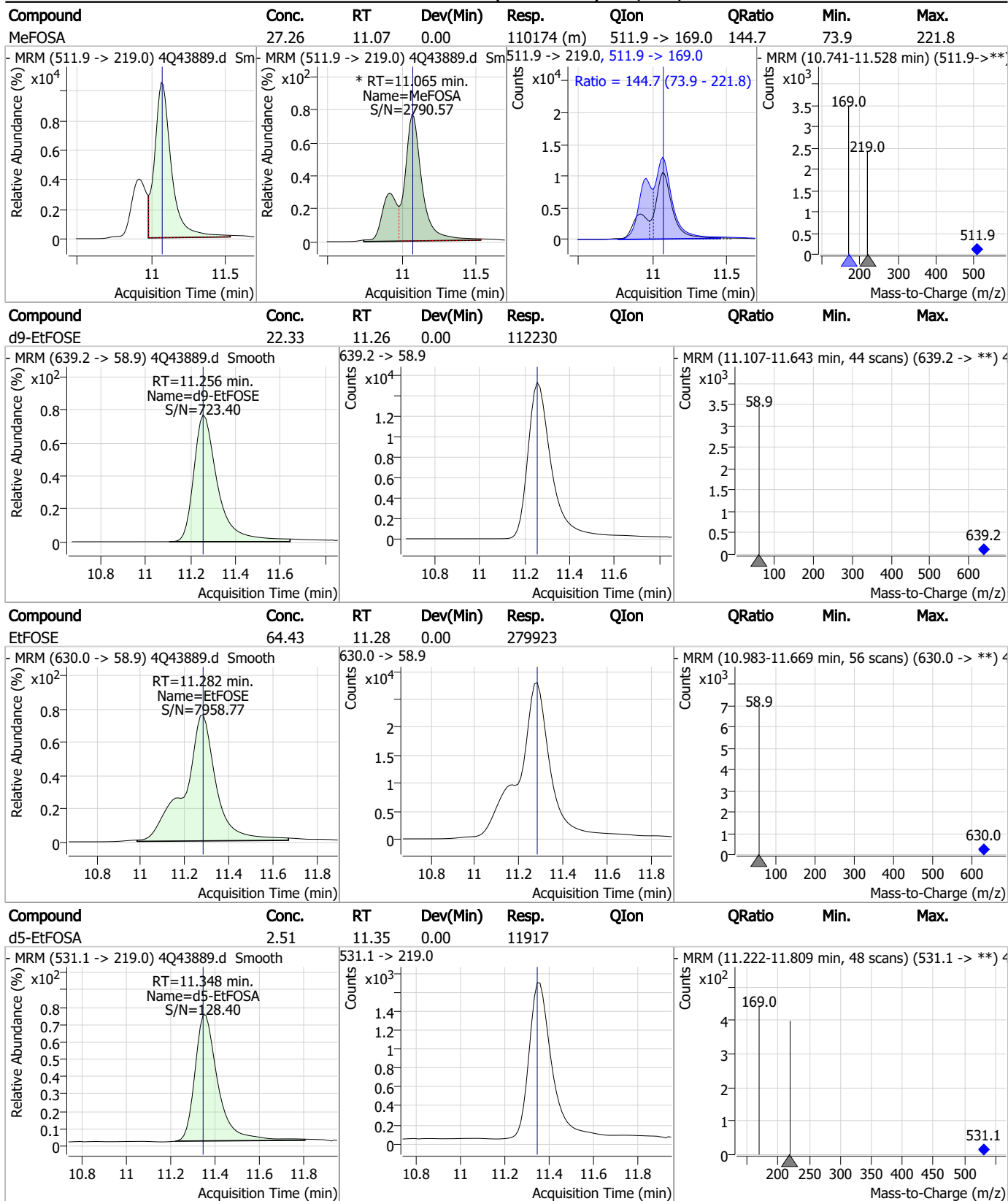
Perfluorinated Compounds by LC/MS/MS



7.7.7

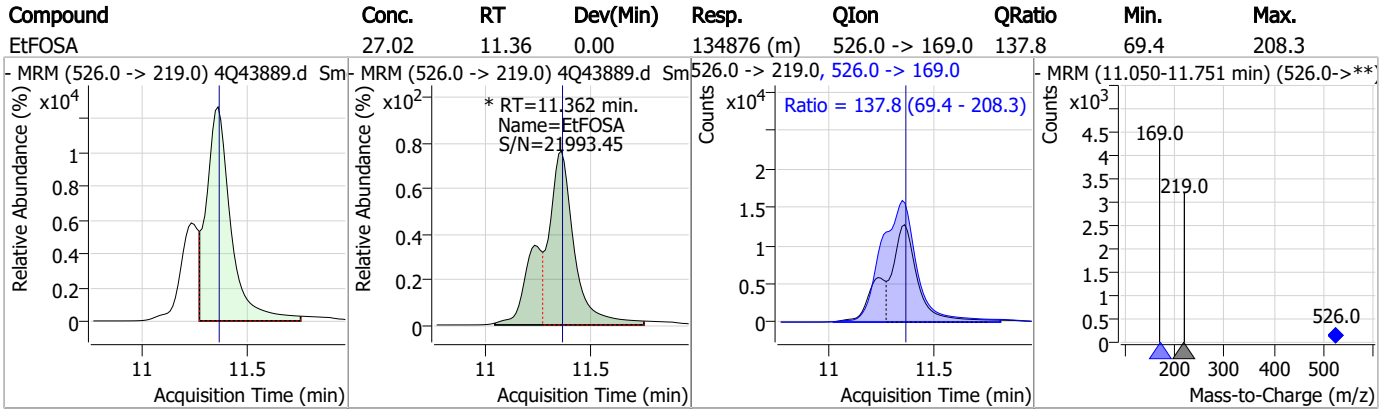
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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Manual Integration Approval Summary

Sample Number: S4Q634-IC634 Method: EPA DRAFT 1633
Lab FileID: 4Q43889.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 12:22 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.46	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

7.7.7.1
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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 05/04/23 17:44

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43890.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 12:36:33 PM
 Sample Name : ic634-7
 Vial : P1-A8
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	120121	10.00 µg/L	-0.012
M5-PFPeA	4.362	268.3 -> 223.0	66273	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	46821	2.50 µg/L	0.000
M4-PFHpA	6.467	367.1 -> 322.0	28586	2.50 µg/L	0.000
M8-PFOA	7.136	421.1 -> 376.0	41636	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	20543	1.25 µg/L	0.013
M6-PFDA	8.178	519.1 -> 474.1	19612	1.25 µg/L	0.000
M7-PFUnDA	8.647	570.0 -> 525.1	18650	1.25 µg/L	0.000
M2-PFDoDA	9.106	615.1 -> 570.0	21188	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	15643	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	16278	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	11395	2.50 µg/L	0.012
M3-PFHxS	7.229	402.1 -> 79.9	7525	2.50 µg/L	0.000
M8-PFOS	8.329	507.1 -> 79.9	10878	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	872	5.00 µg/L	0.012
M2-6:2FTS	6.898	429.1 -> 80.9	1599	5.00 µg/L	0.000
M2-8:2FTS	7.978	529.1 -> 80.9	2515	5.00 µg/L	0.012
M3-MeFOSAA	8.236	573.2 -> 419.0	14413	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	29456	10.00 µg/L	0.000
M5-EtFOSAA	8.446	589.2 -> 419.0	11475	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	70051	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	98044	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	11250	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	10176	2.50 µg/L	0.000
13C4-PFOS	8.330	502.8 -> 79.9	10322	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	63898	5.00 µg/L	-0.012
18O2-PFHxS	7.228	403.0 -> 83.9	4756	2.50 µg/L	0.000
13C4-PFOA	7.136	417.1 -> 372.0	51637	2.50 µg/L	0.012
13C2-PFDA	8.178	515.1 -> 470.1	17262	1.25 µg/L	0.000
13C5-PFNA	7.684	468.0 -> 423.0	23219	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	43283	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	872	4.51 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.2%		
13C2-6:2FTS	6.898	429.1 -> 80.9	1599	4.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2515	4.62 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C2-PFDoDA	9.106	615.1 -> 570.0	21188	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C2-PFTeDA	9.899	715.2 -> 670.0	15643	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C3-PFBS	5.439	302.1 -> 79.9	11395	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C3-PFHxS	7.229	402.1 -> 79.9	7525	2.55 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C4-PFBA	2.911	216.8 -> 171.9	120121	9.99 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.467	367.1 -> 322.0	28586	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C5-PFHxA	5.535	318.0 -> 273.0	46821	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFPeA	4.362	268.3 -> 223.0	66273	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C6-PFDA	8.178	519.1 -> 474.1	19612	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C7-PFUnDA	8.647	570.0 -> 525.1	18650	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-FOSA	9.771	506.1 -> 77.8	16278	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C8-PFOA	7.136	421.1 -> 376.0	41636	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C8-PFOS	8.329	507.1 -> 79.9	10878	2.80 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.0%	
13C9-PFNA	7.684	472.1 -> 427.0	20543	1.30 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
d3-MeFOSAA	8.236	573.2 -> 419.0	14413	5.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.6%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	29456	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	10176	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
d5-EtFOSAA	8.446	589.2 -> 419.0	11475	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.0%	
d7-MeFOSE	10.959	623.2 -> 58.9	70051	21.81 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.2%	
d9-EtFOSE	11.256	639.2 -> 58.9	98044	21.56 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.2%	
d5-EtFOSA	11.348	531.1 -> 219.0	11250	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.6%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	146301	104.28 µg/L	92
		327.1 -> 80.9	60380		
6:2FTS	6.899	427.1 -> 407.0	156292	101.17 µg/L	98
		427.1 -> 80.9	64052		
8:2FTS	7.966	527.1 -> 507.0	149695	106.75 µg/L	95
		527.1 -> 80.8	58775		
EtFOSAA	8.459	584.2 -> 419.1	57787	26.21 µg/L	m 94
		584.2 -> 526.0	26926		
FOSA	9.774	498.1 -> 77.9	174421	25.57 µg/L	99
		498.1 -> 478.0	4957		
MeFOSAA	8.249	570.1 -> 419.0	61802	24.60 µg/L	m 99
		570.1 -> 483.0	14322		
PFBA	2.920	212.8 -> 168.9	346581	107.75 µg/L	100
PFBS	5.440	298.7 -> 79.9	109963	23.53 µg/L	95
		298.7 -> 98.8	41302		
PFDA	8.179	512.9 -> 469.0	385953	25.94 µg/L	97
		512.9 -> 219.0	77211		
PFDoDA	9.106	613.1 -> 569.0	447161	26.30 µg/L	100
		613.1 -> 319.0	64881		
PFDS	9.269	599.0 -> 79.9	61928	22.98 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	30537			
PFHpA	6.468	363.1 -> 319.0	476095	26.35	µg/L	99
		363.1 -> 169.0	82464			
PFHpS	7.811	449.0 -> 79.9	93082	23.75	µg/L	98
		449.0 -> 98.9	48374			
PFHxA	5.538	313.0 -> 269.0	491297	26.78	µg/L	100
		313.0 -> 118.9	14658			
PFHxS	7.230	398.7 -> 79.9	74205	24.06	µg/L	m 98
		398.7 -> 98.9	38246			
PFNA	7.685	463.0 -> 419.0	388441	25.51	µg/L	99
		463.0 -> 219.0	95620			
PFNS	8.811	548.8 -> 79.9	55484	23.36	µg/L	97
		548.8 -> 98.9	28020			
PFOA	7.137	413.0 -> 369.0	642884	26.76	µg/L	97
		413.0 -> 169.0	131407			
PFOS	8.330	498.9 -> 79.9	132624	24.91	µg/L	m 98
		498.9 -> 98.8	62946			
PFPeA	4.364	263.0 -> 219.0	849369	53.27	µg/L	100
PFPeS	6.507	349.1 -> 79.9	65126	24.61	µg/L	96
		349.1 -> 98.9	28467			
PFTeDA	9.900	713.1 -> 669.0	424000	27.69	µg/L	99
		713.1 -> 168.9	34965			
PFTrDA	9.529	663.0 -> 619.0	564435	24.84	µg/L	98
		663.0 -> 168.9	56187			
PFUnDA	8.648	563.1 -> 519.0	350086	27.64	µg/L	97
		563.1 -> 269.1	70679			
11CI-PF3OUdS	9.568	630.9 -> 450.9	519008	49.00	µg/L	97
		632.9 -> 452.9	159065			
9CI-PF3ONS	8.675	530.8 -> 351.0	641153	47.53	µg/L	99
		532.8 -> 353.0	197012			
ADONA	6.731	376.9 -> 250.9	1425503	48.12	µg/L	100
		376.9 -> 84.8	372213			
HFPO-DA	5.891	284.9 -> 168.9	147577	52.43	µg/L	100
		284.9 -> 184.9	16918			
3:3FTCA	3.836	241.0 -> 177.0	93481	133.25	µg/L	99
		241.0 -> 117.0	8317			
5:3FTCA	6.193	341.0 -> 237.1	1676151	673.37	µg/L	100
		341.0 -> 217.0	1146237			
7:3FTCA	7.649	441.0 -> 316.9	878718	679.38	µg/L	97
		441.0 -> 336.9	2052834			
EtFOSA	11.362	526.0 -> 219.0	262384	55.67	µg/L	m 98
		526.0 -> 169.0	357124			
EtFOSE	11.282	630.0 -> 58.9	509704	134.29	µg/L	100
MeFOSA	11.066	511.9 -> 219.0	210295	54.86	µg/L	m 98
		511.9 -> 169.0	316383			
MeFOSE	10.973	616.1 -> 58.9	369686	128.49	µg/L	m 100
PFDoDS	10.052	699.1 -> 79.9	56691	23.57	µg/L	99
		699.1 -> 98.8	31005			
NFDHA	5.416	295.0 -> 201.0	66188	50.53	µg/L	95
		295.0 -> 84.9	16643			
PFMBA	4.778	279.0 -> 85.1	466141	52.38	µg/L	100
PFMPA	3.515	229.0 -> 84.9	445482	53.45	µg/L	100
PFEESA	5.971	314.8 -> 134.9	665147	47.90	µg/L	99
		314.8 -> 82.9	22108			

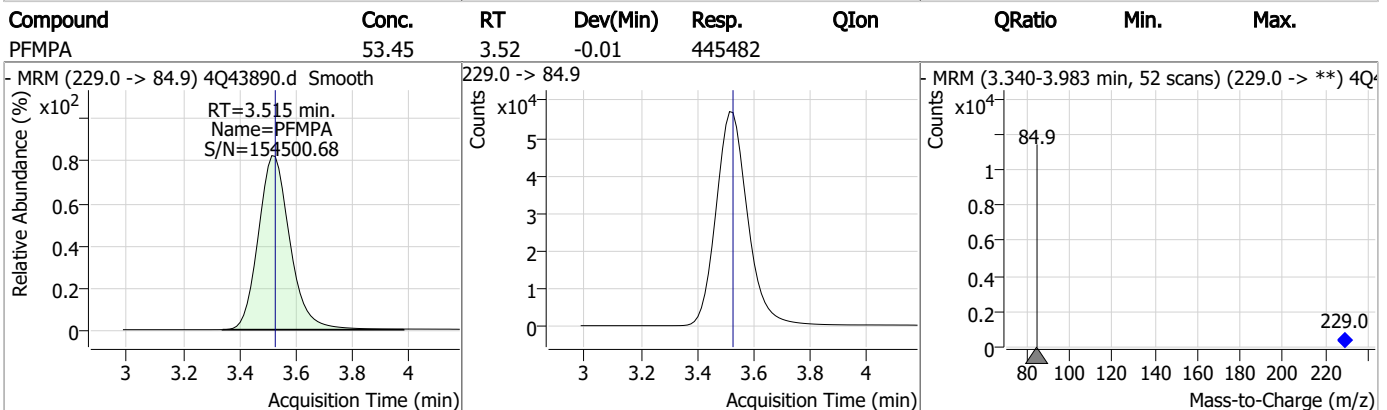
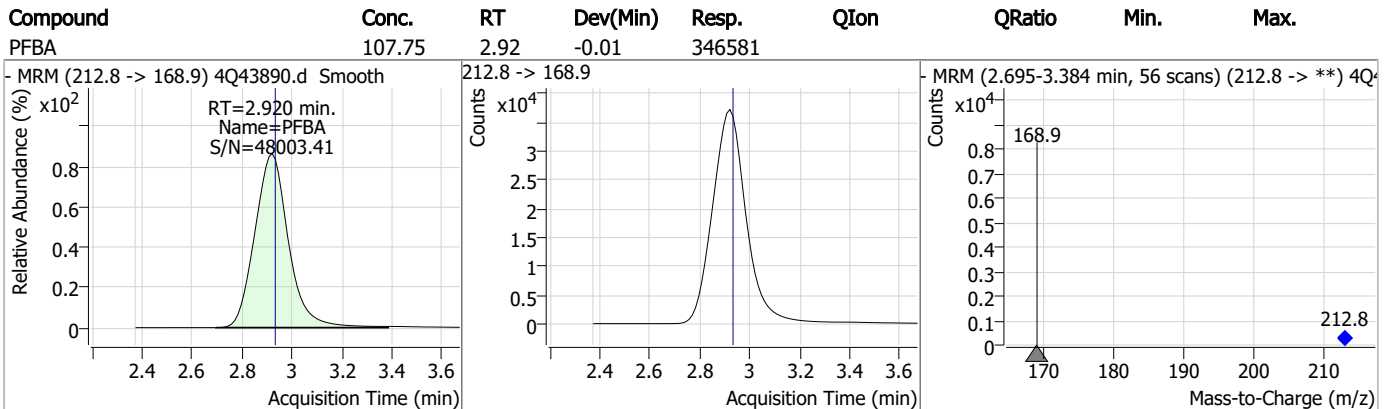
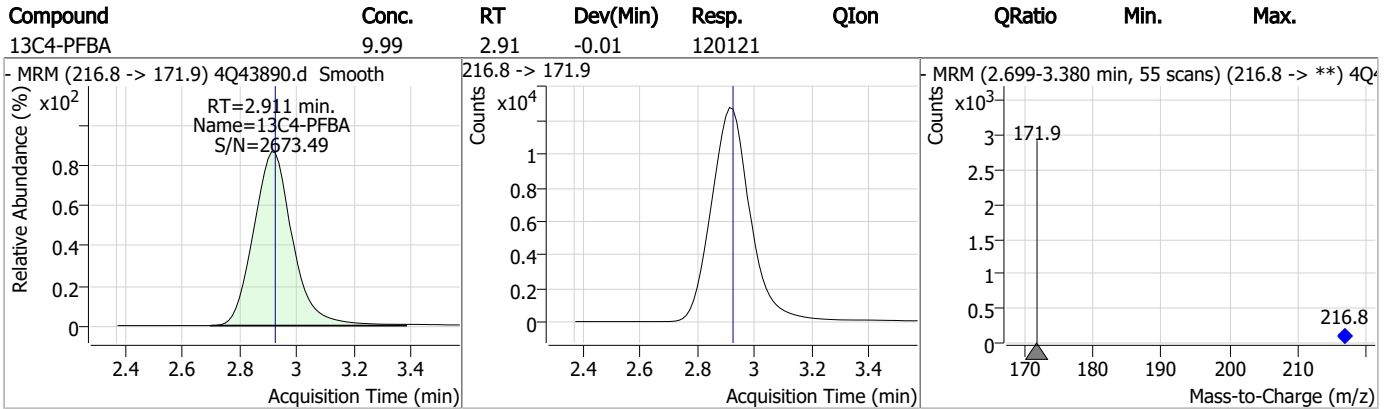
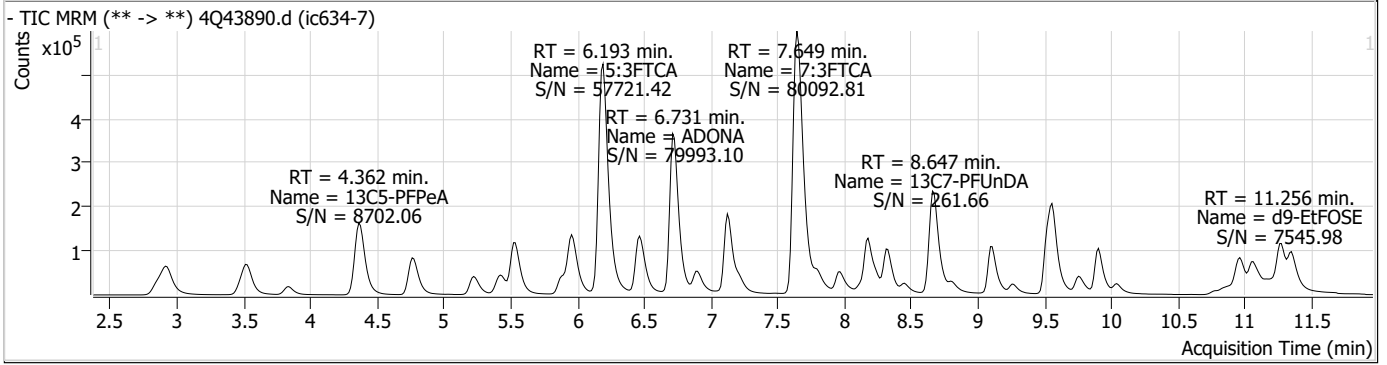
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

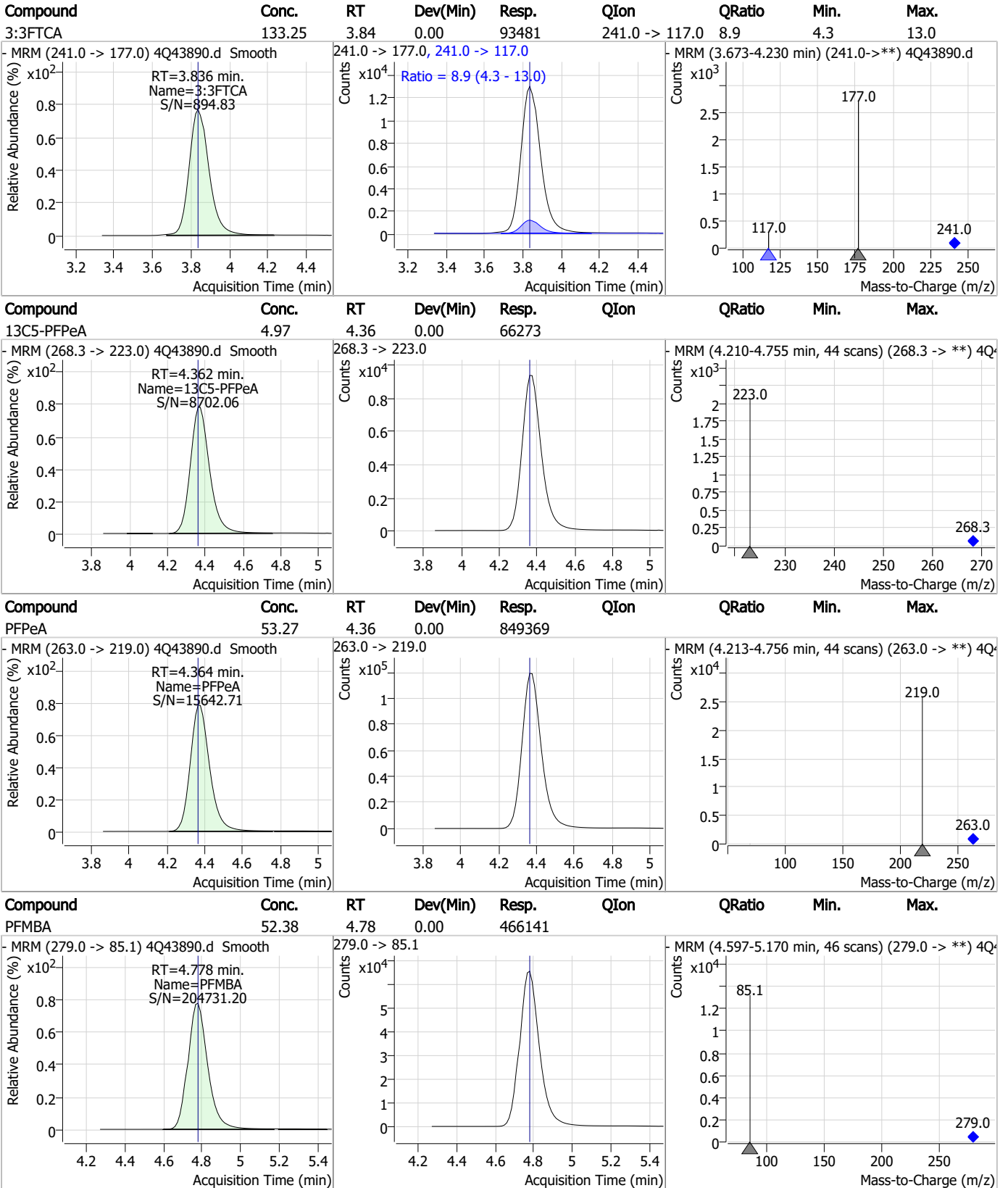
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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Perfluorinated Compounds by LC/MS/MS



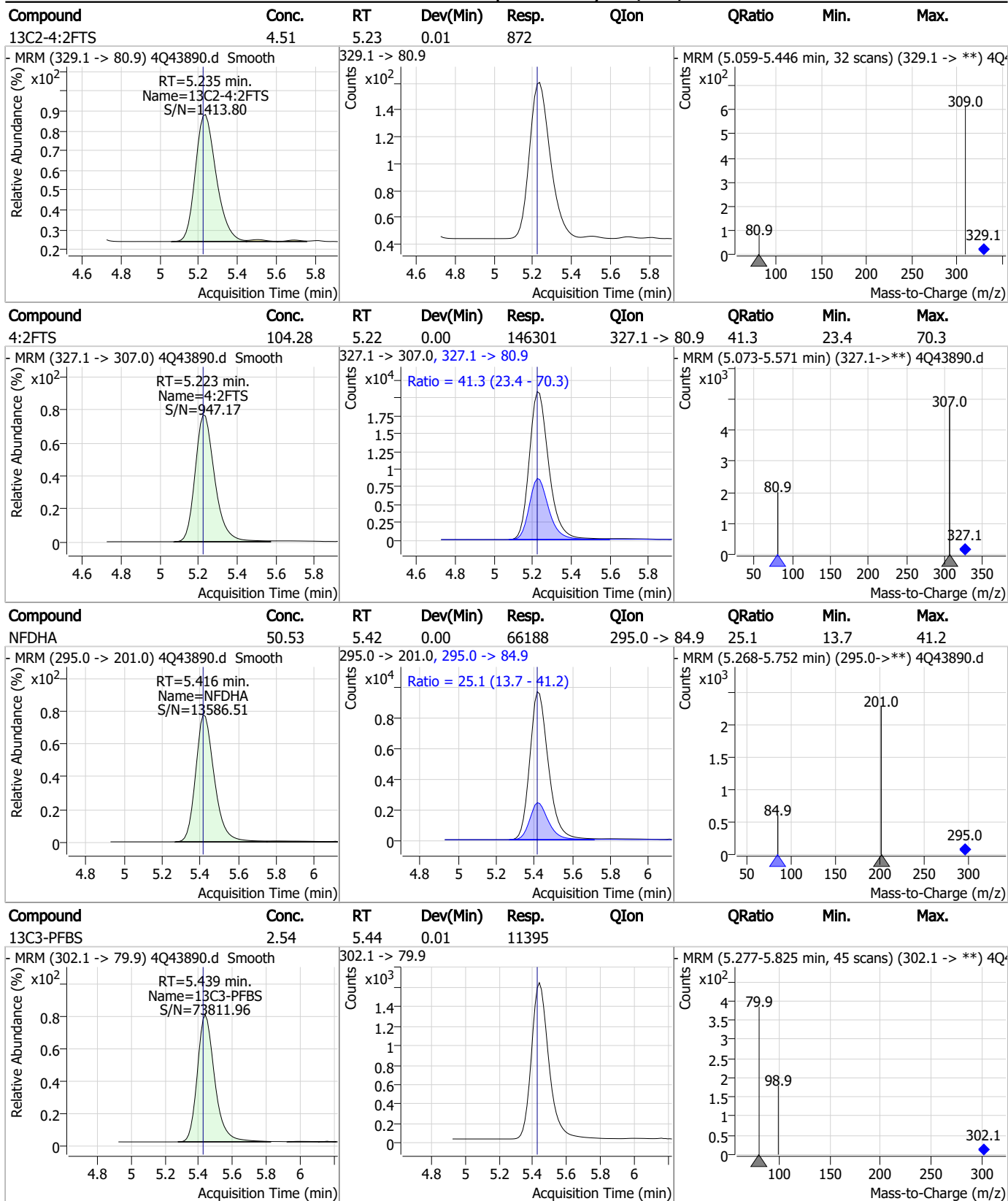
Perfluorinated Compounds by LC/MS/MS



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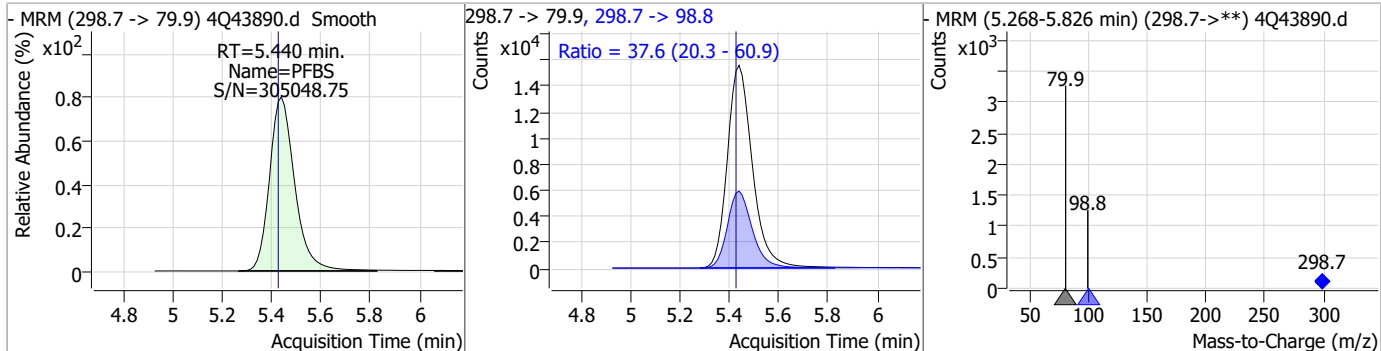
Perfluorinated Compounds by LC/MS/MS



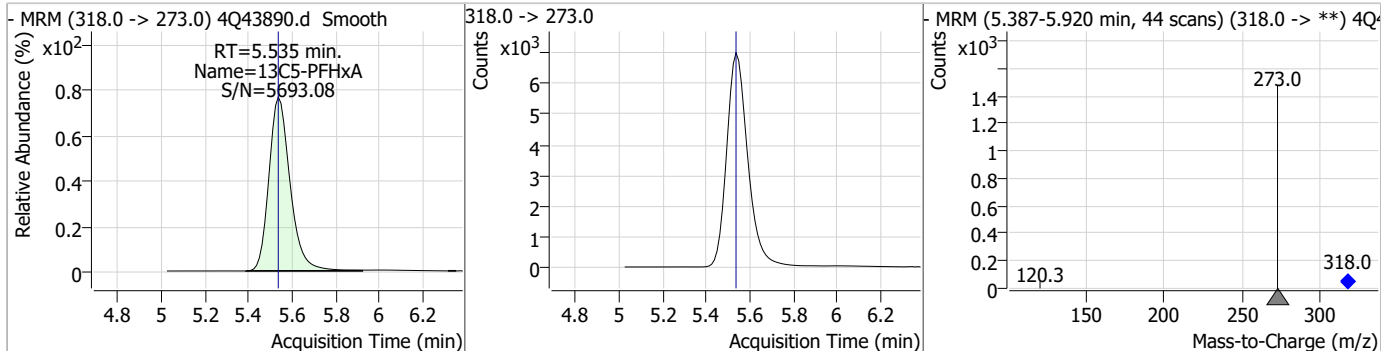
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Perfluorinated Compounds by LC/MS/MS

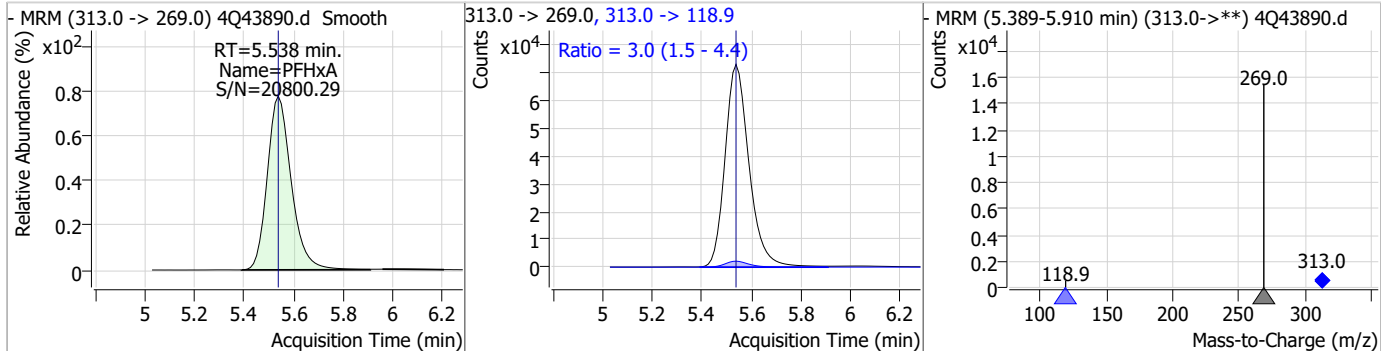
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	23.53	5.44	0.01	109963	298.7 -> 98.8	37.6	20.3	60.9



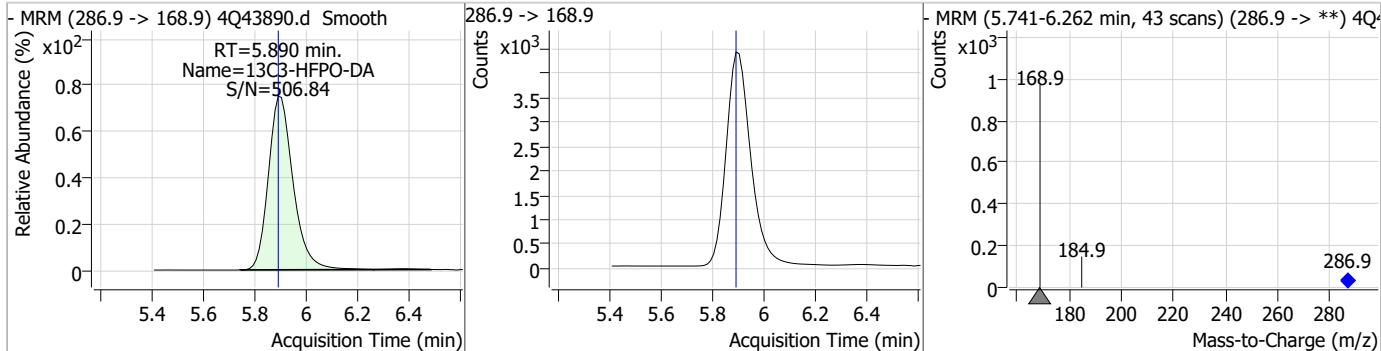
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.53	0.00	46821				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	26.78	5.54	0.00	491297	313.0 -> 118.9	3.0	1.5	4.4

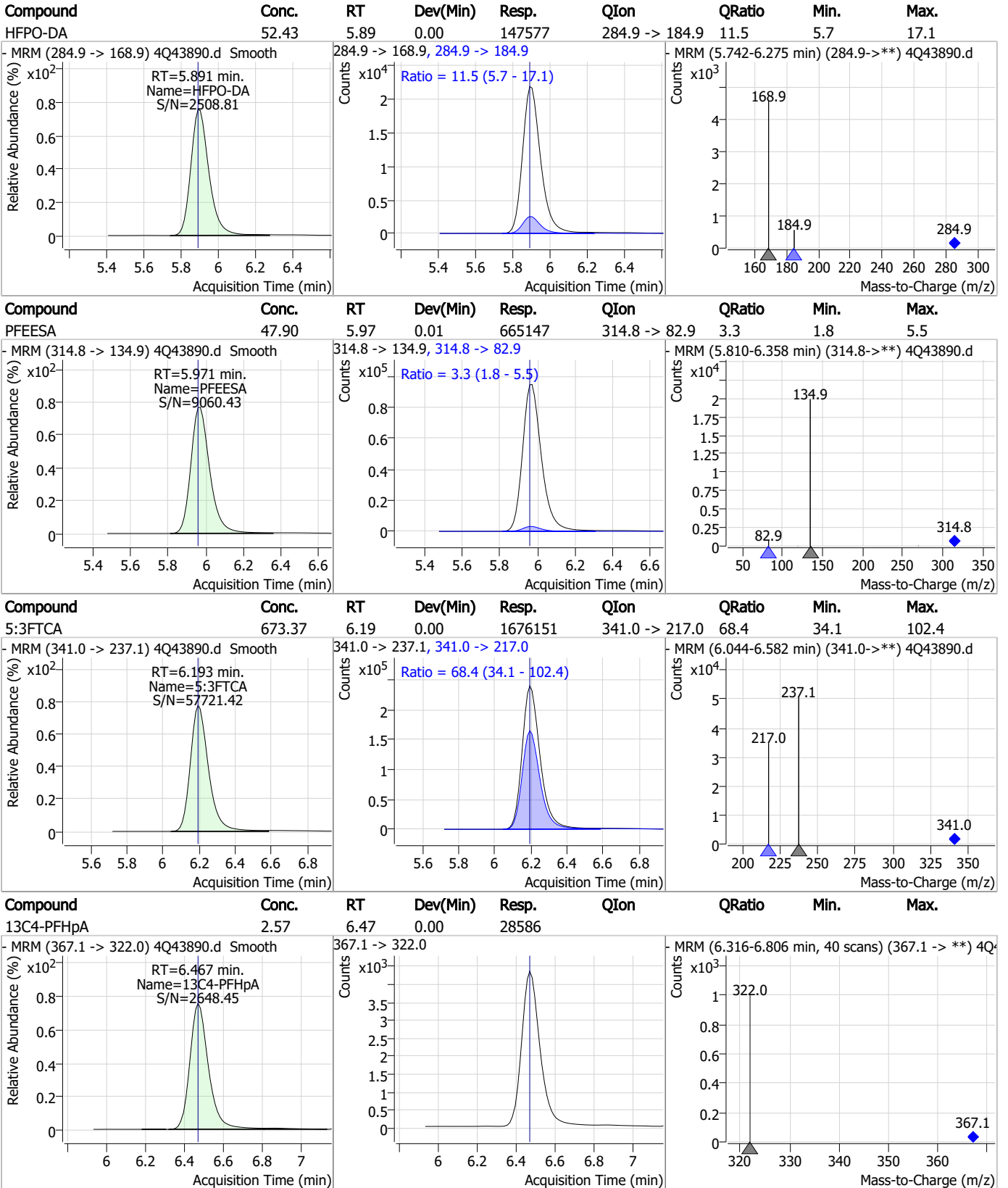


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.34	5.89	0.00	29456				



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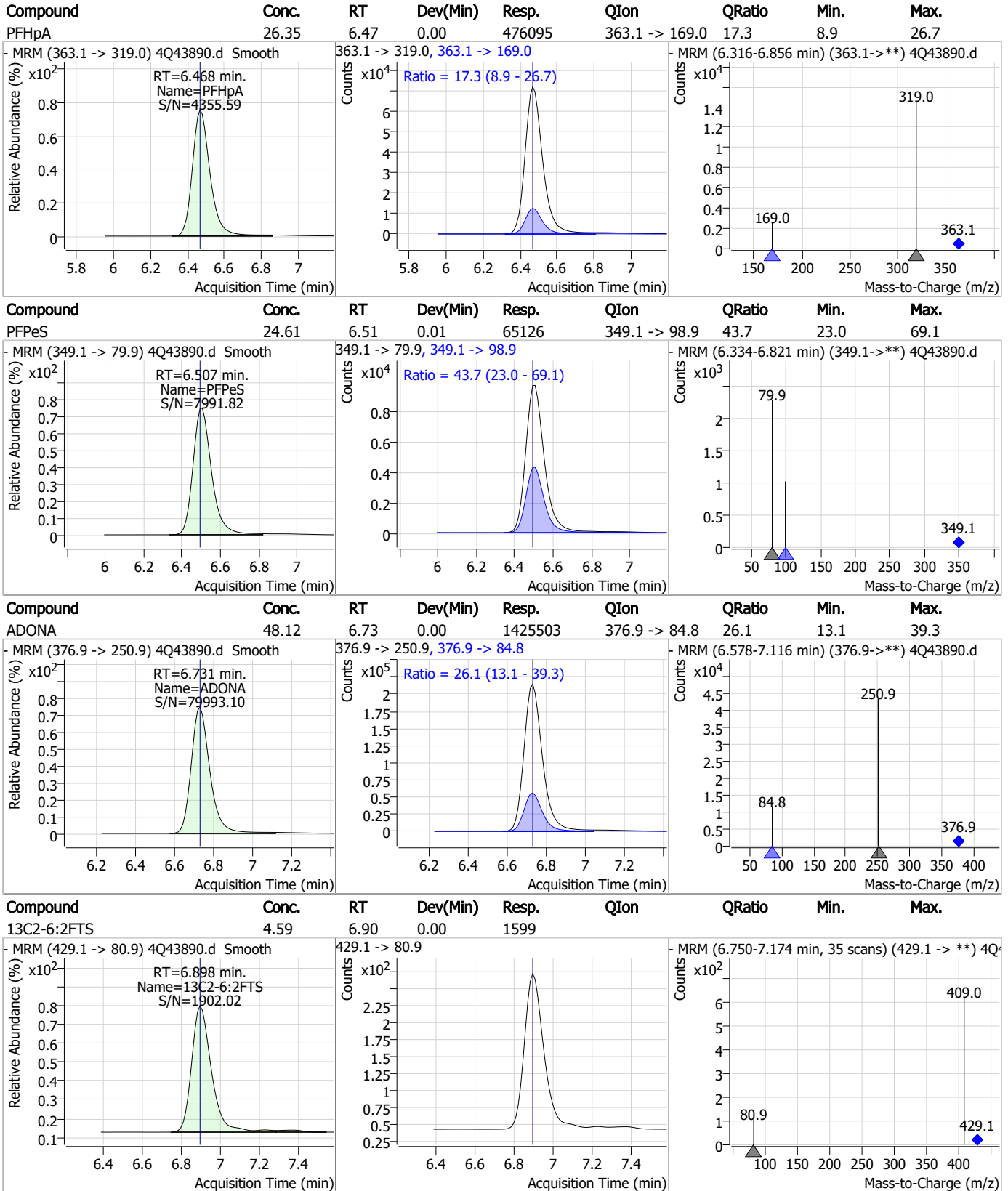
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

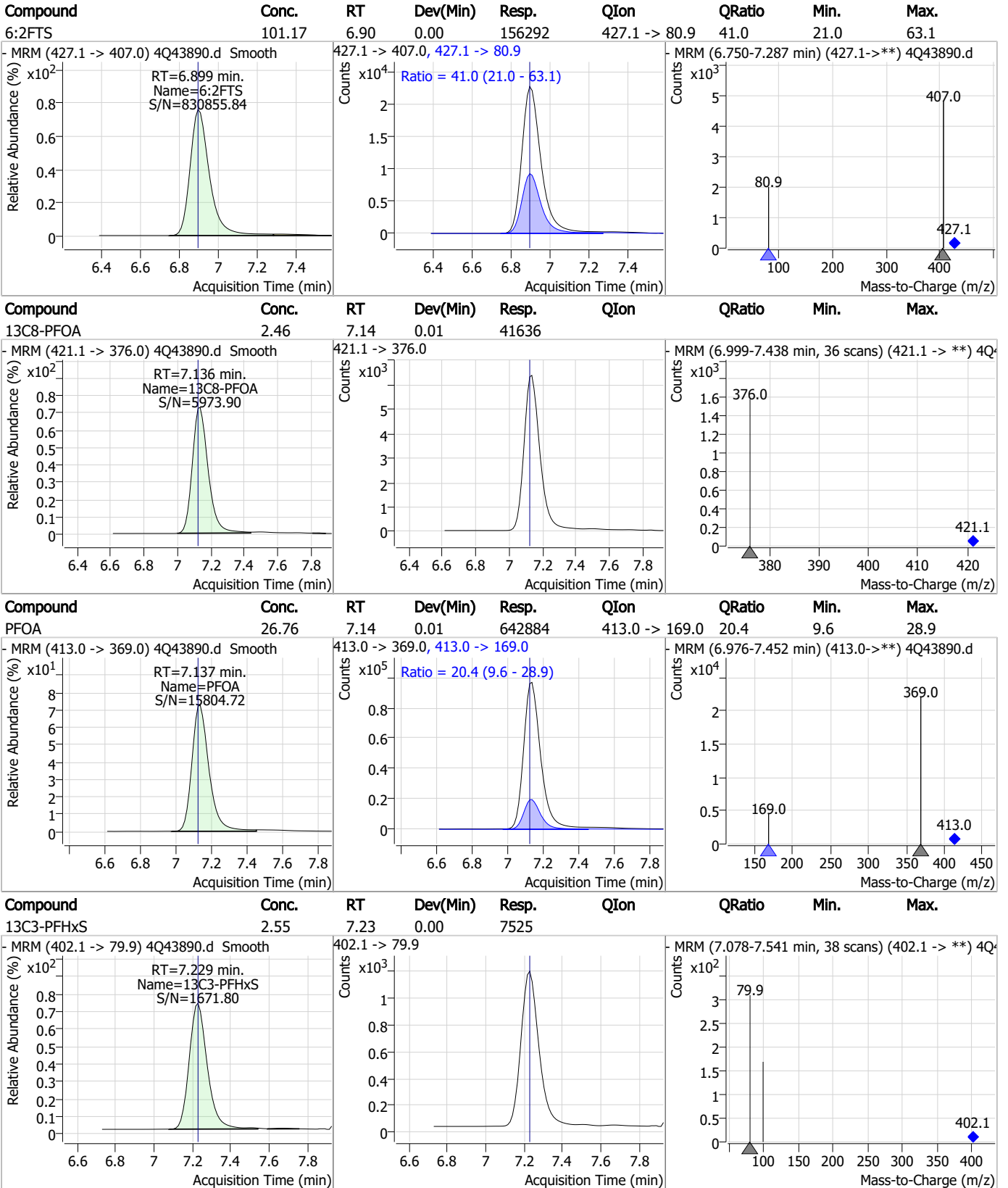


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Perfluorinated Compounds by LC/MS/MS

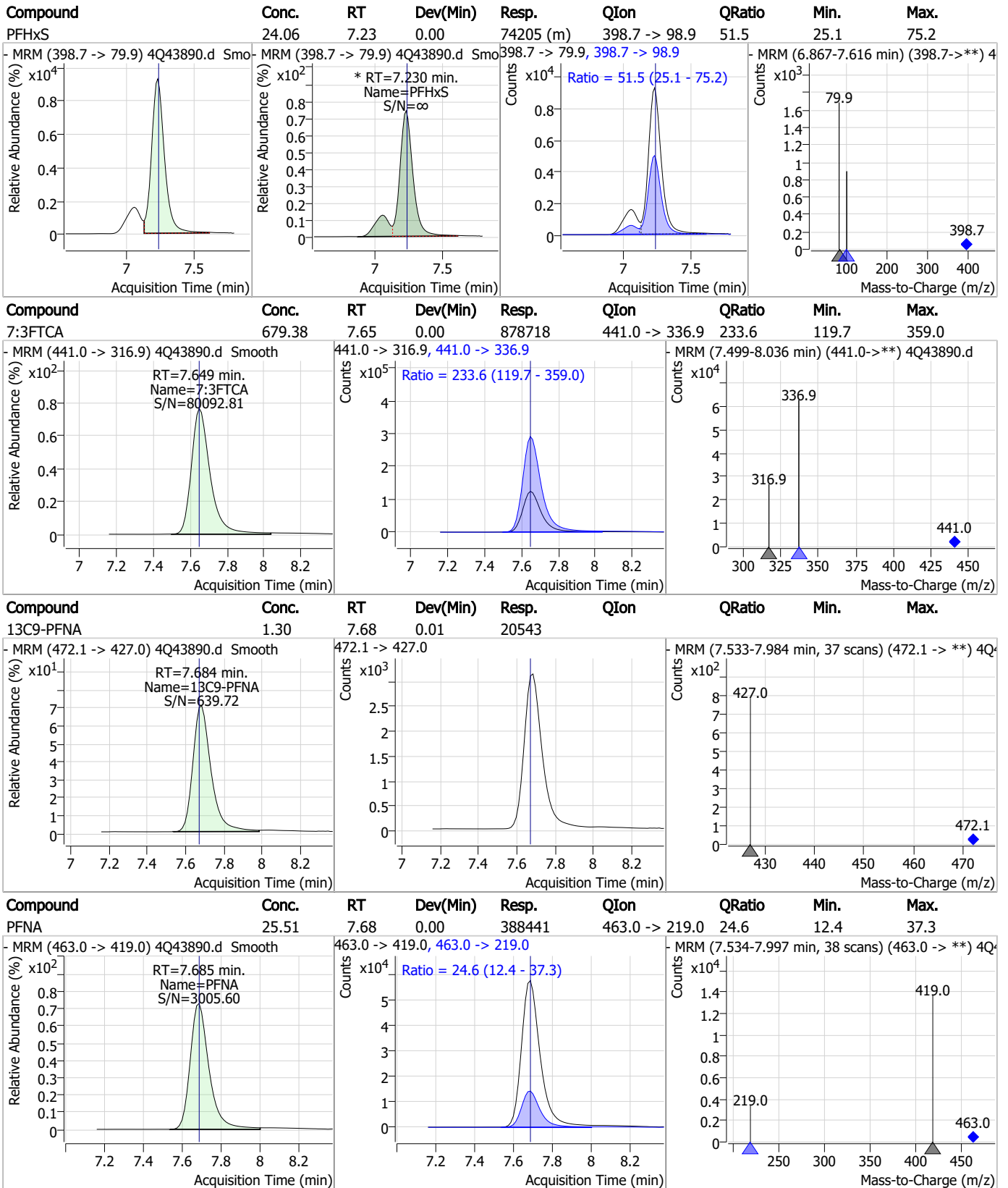


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Perfluorinated Compounds by LC/MS/MS

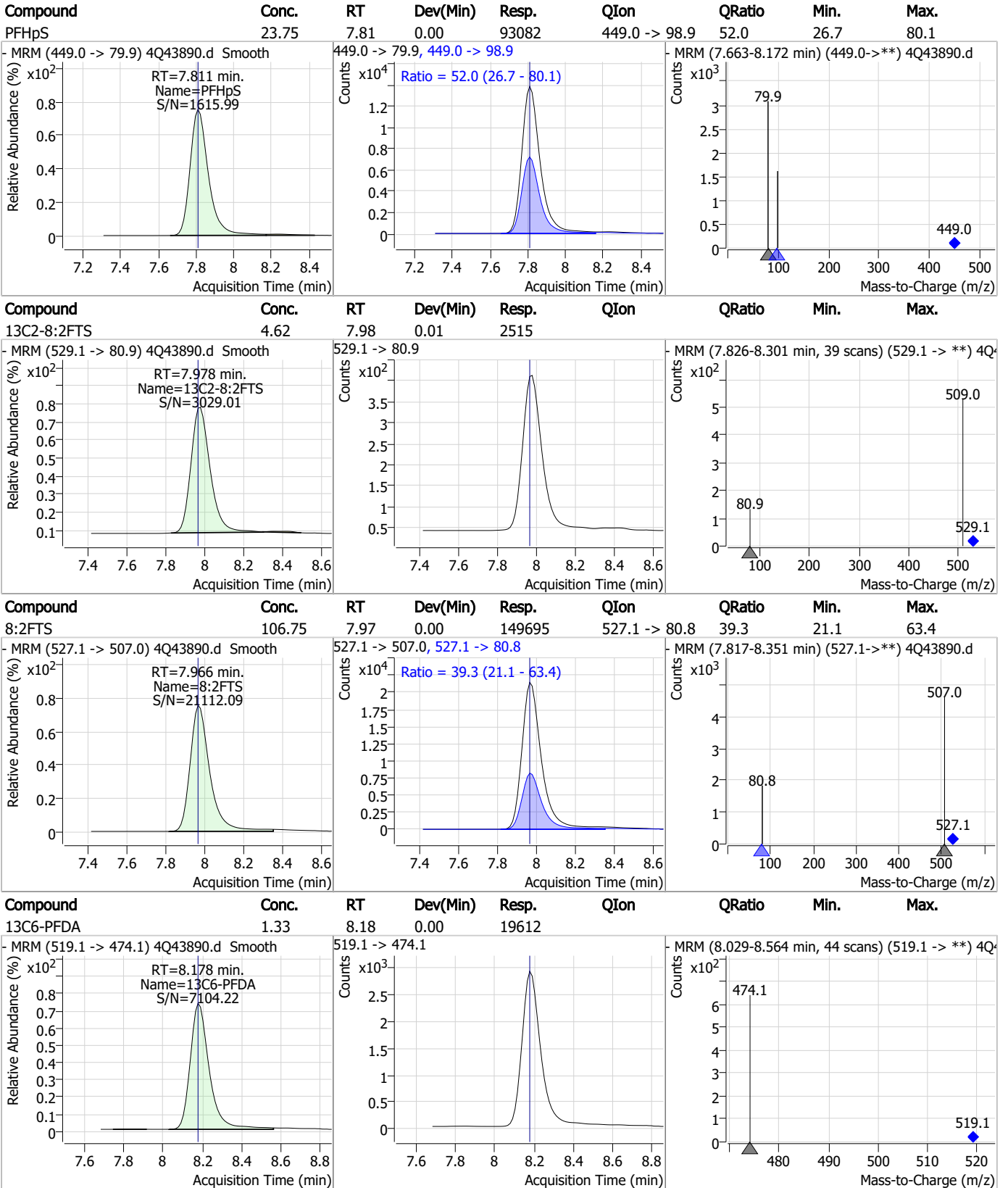


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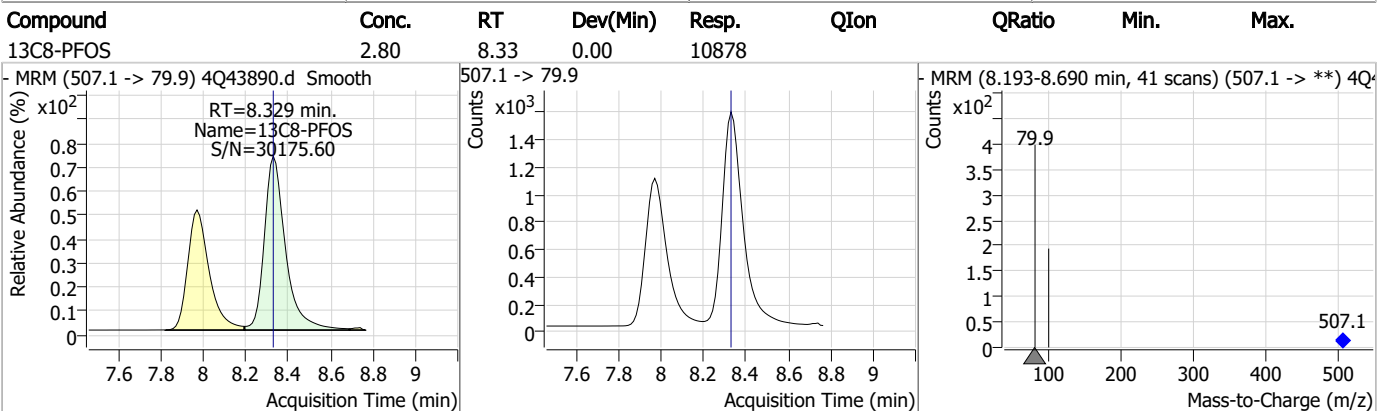
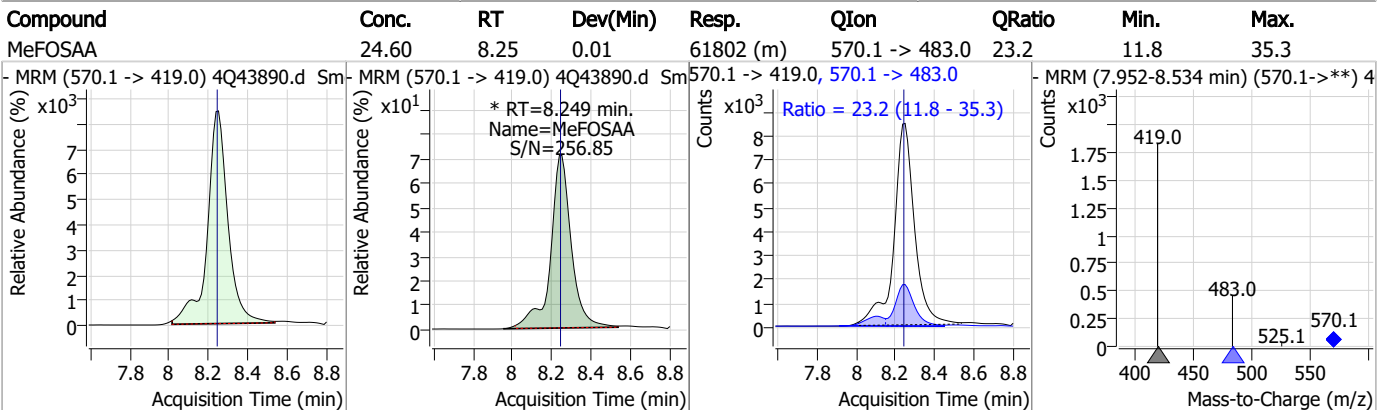
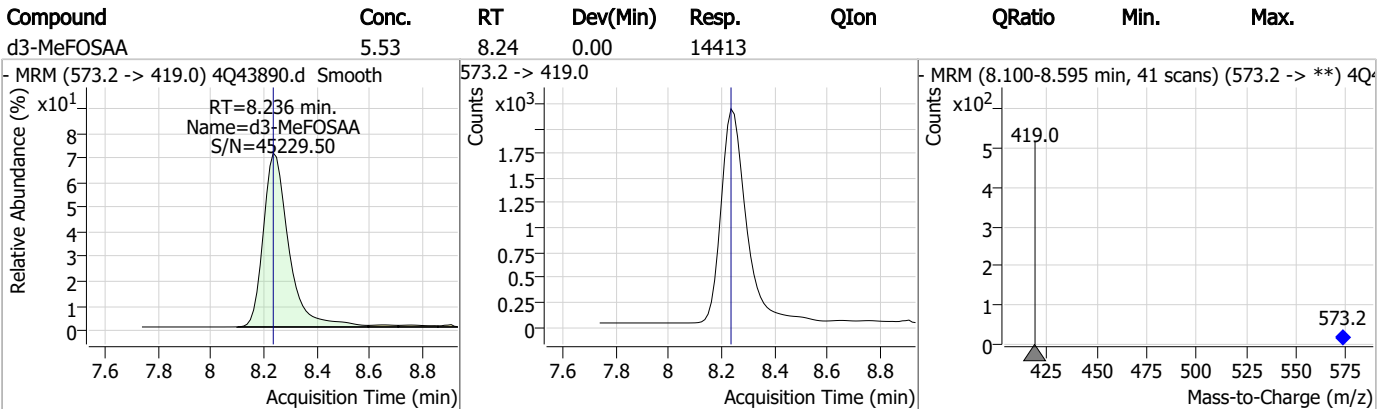
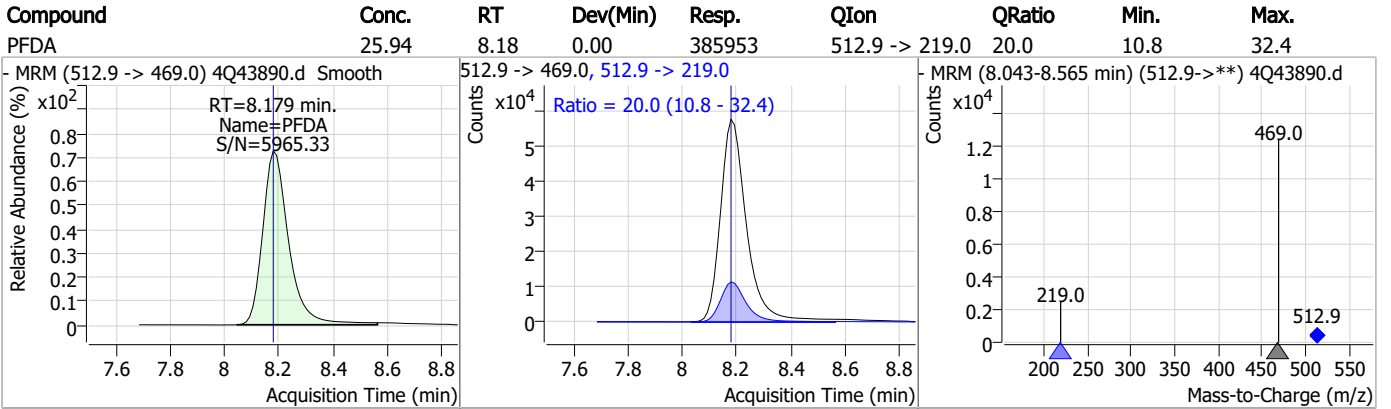
Perfluorinated Compounds by LC/MS/MS



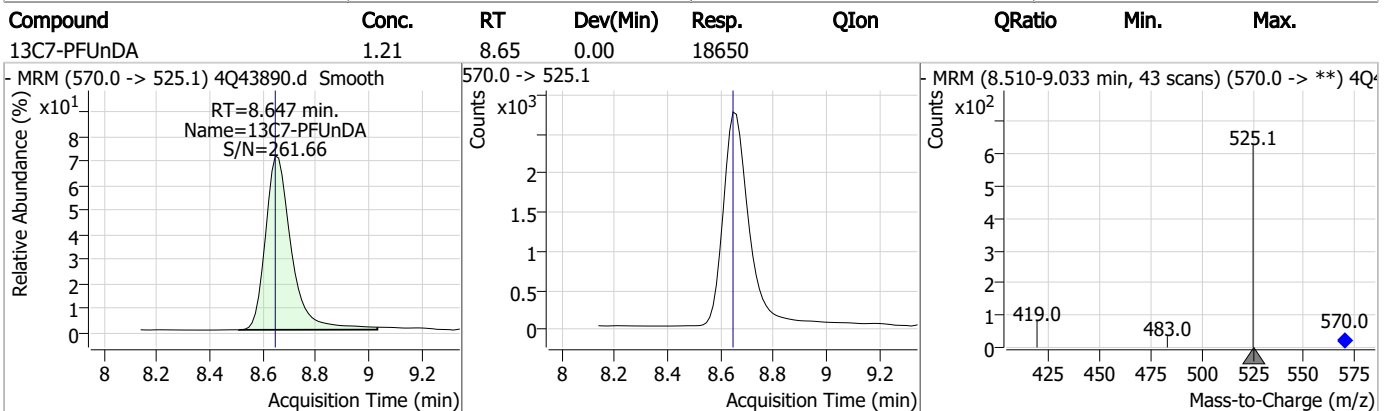
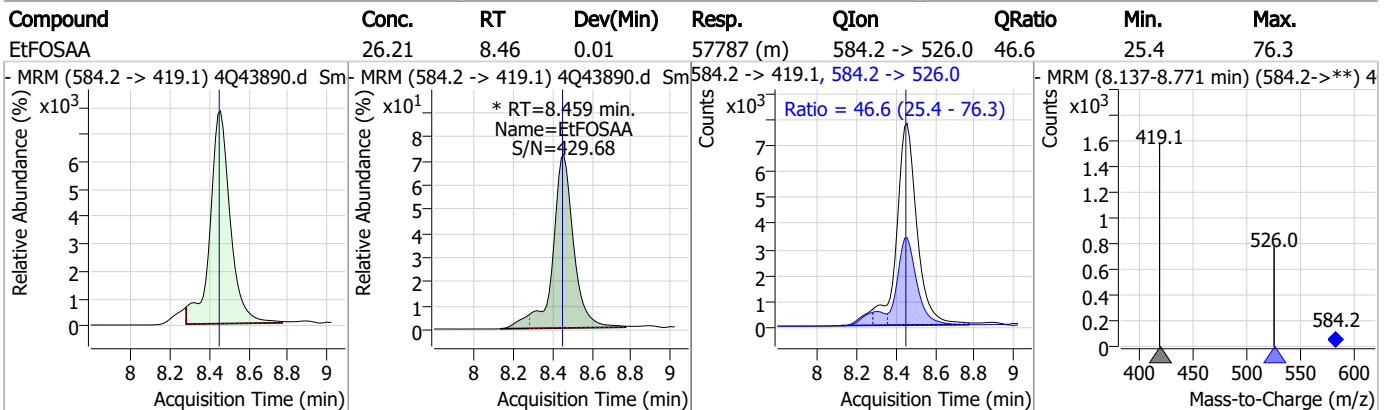
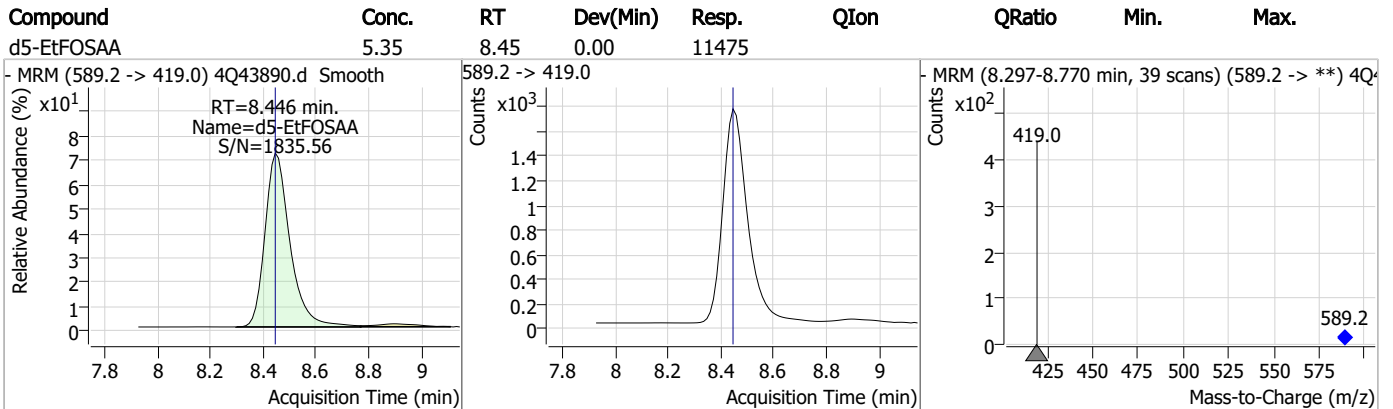
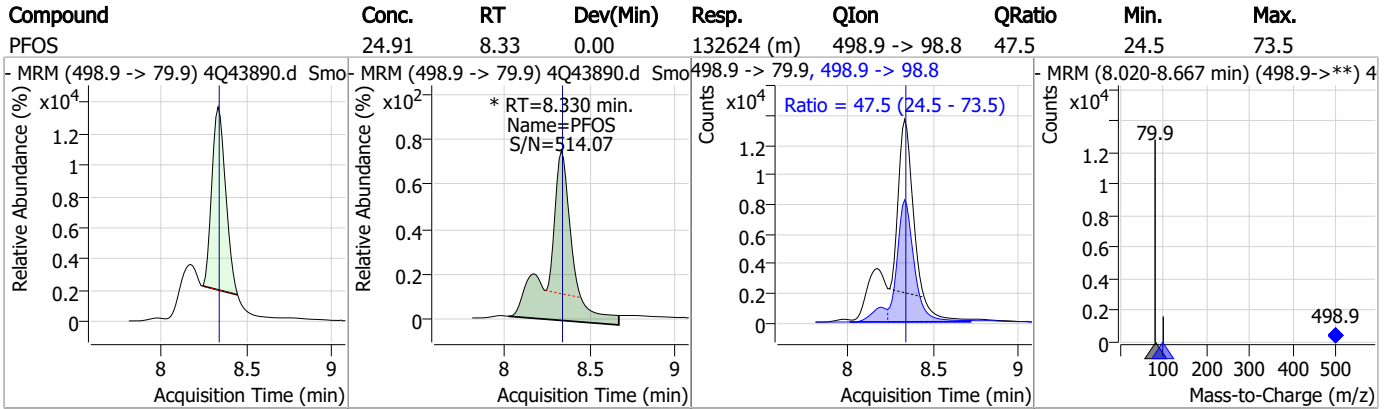
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Perfluorinated Compounds by LC/MS/MS



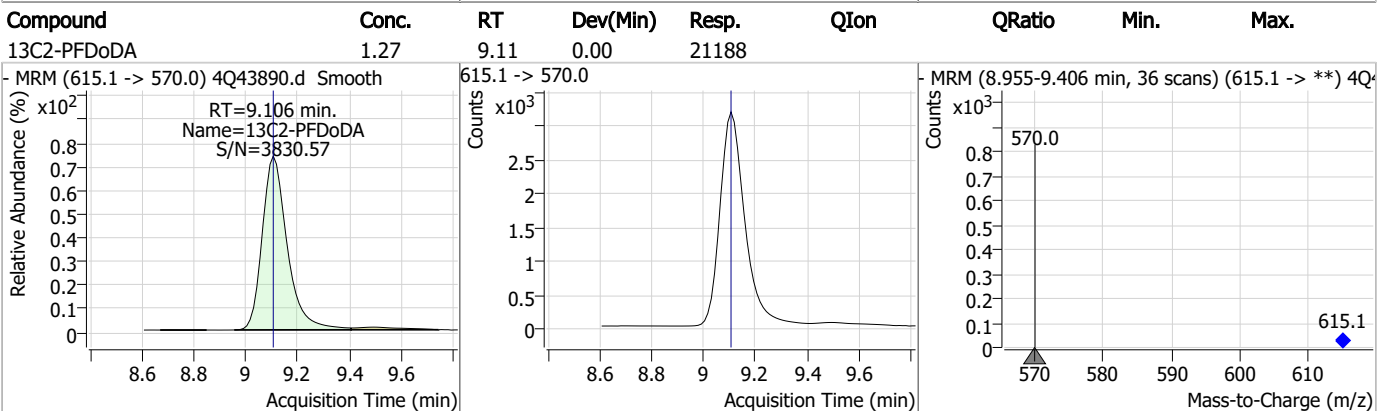
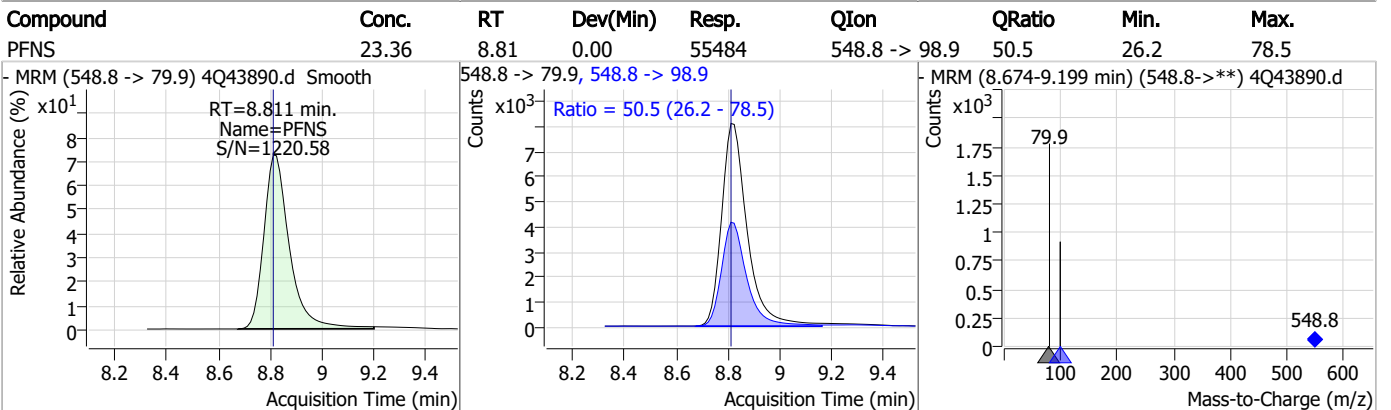
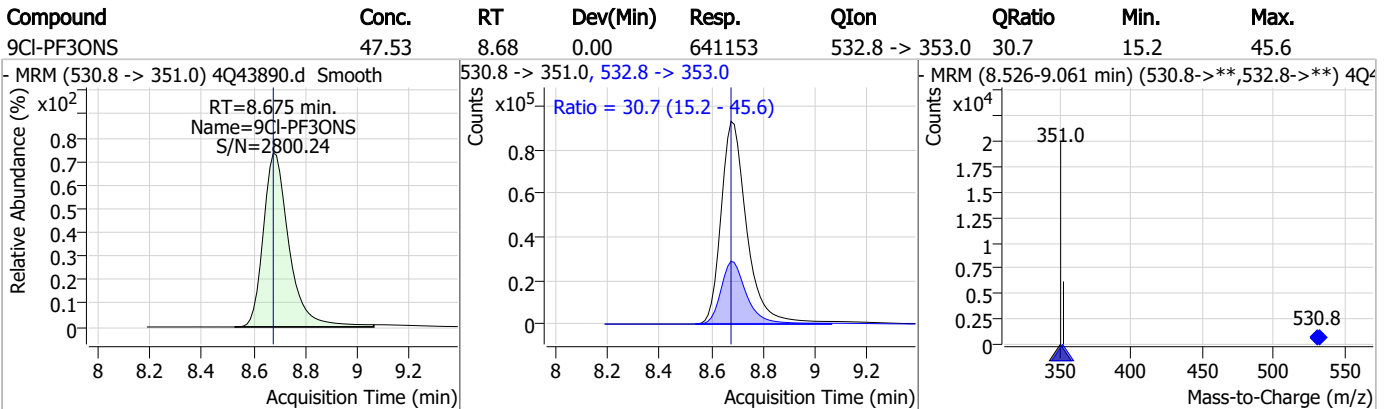
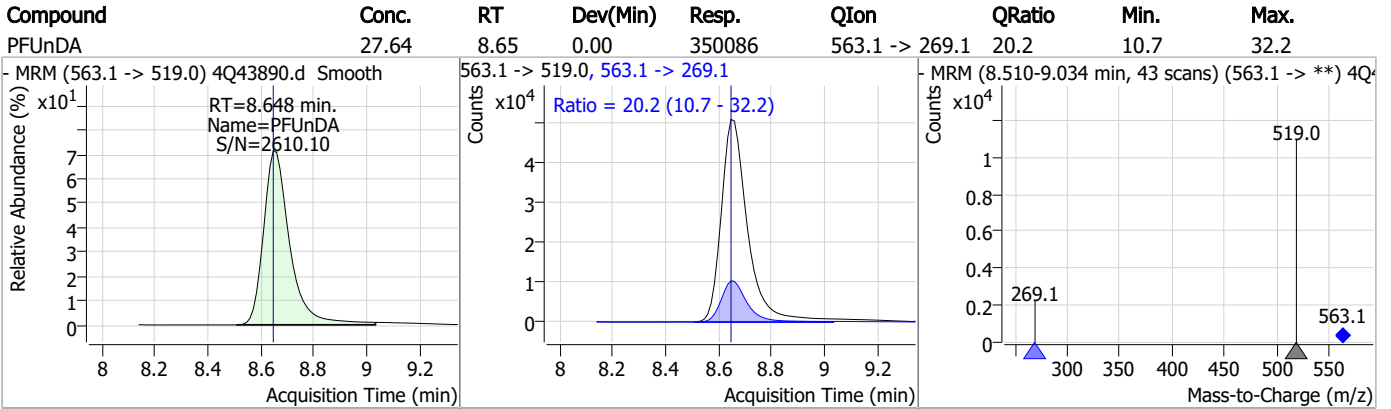
Perfluorinated Compounds by LC/MS/MS



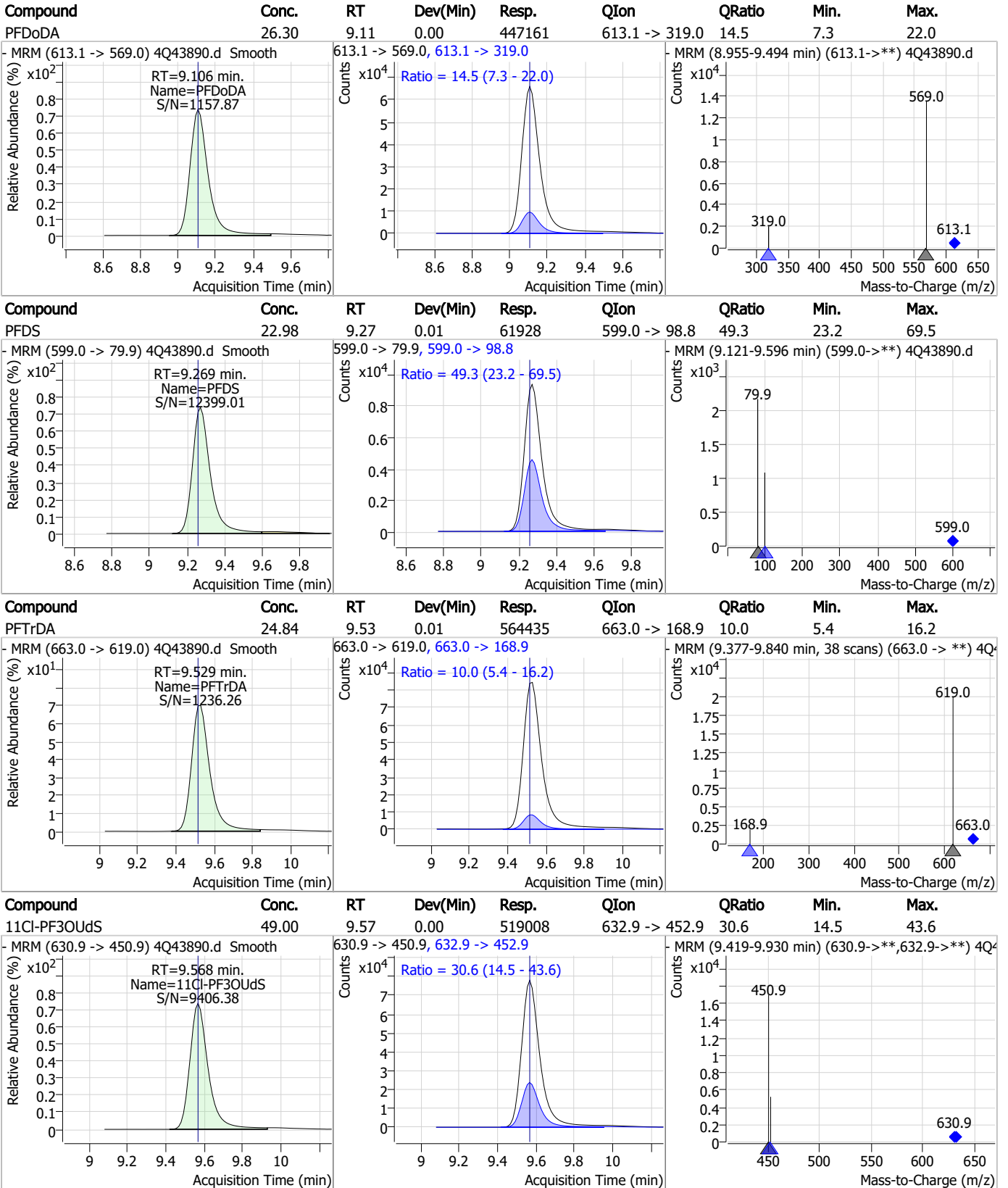
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Perfluorinated Compounds by LC/MS/MS

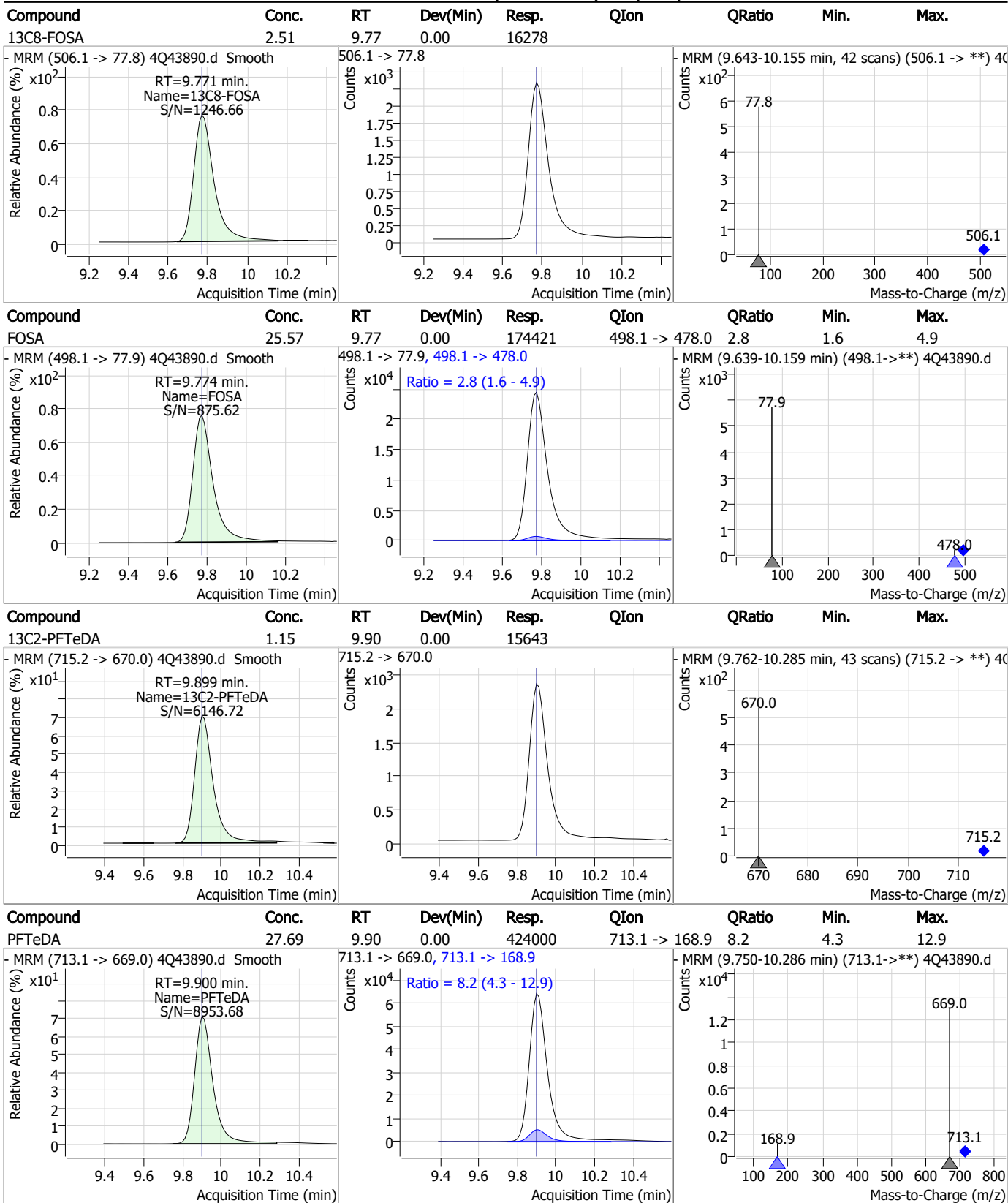


Perfluorinated Compounds by LC/MS/MS



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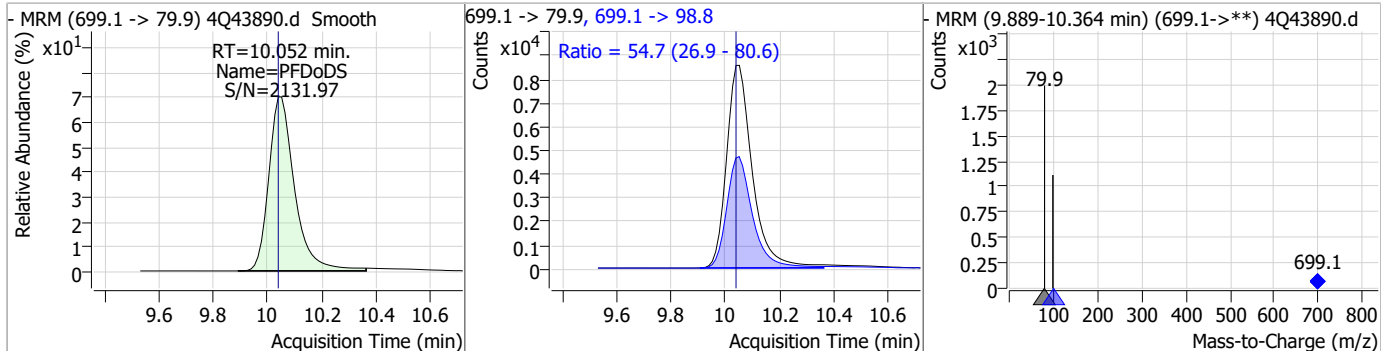
Perfluorinated Compounds by LC/MS/MS



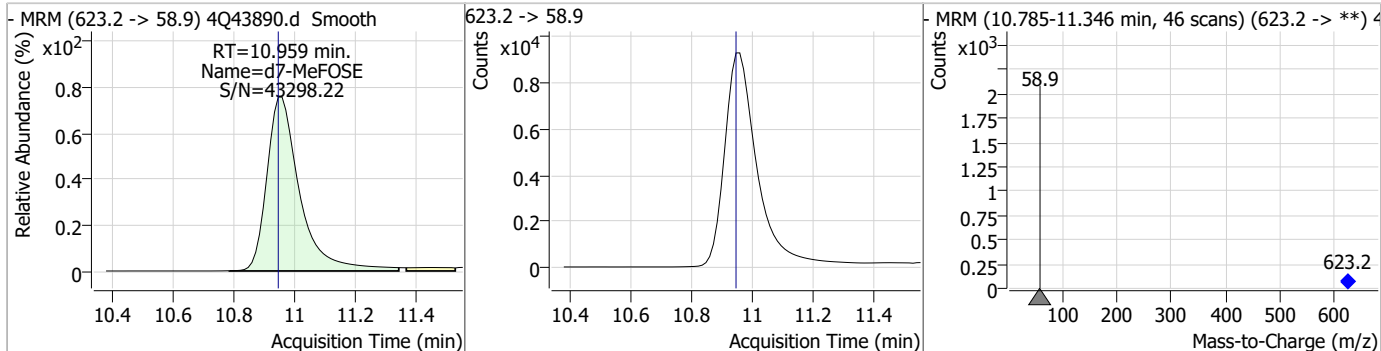
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Perfluorinated Compounds by LC/MS/MS

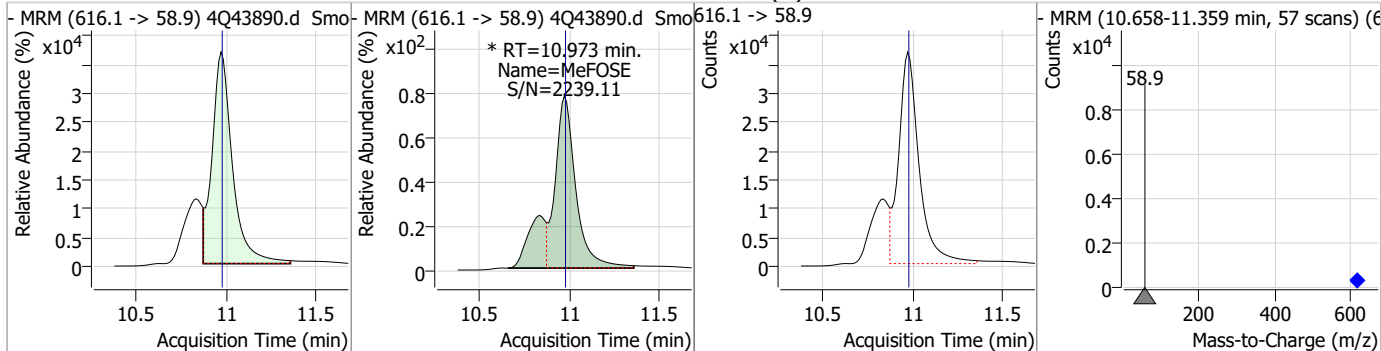
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	23.57	10.05	0.01	56691	699.1 -> 98.8	54.7	26.9	80.6



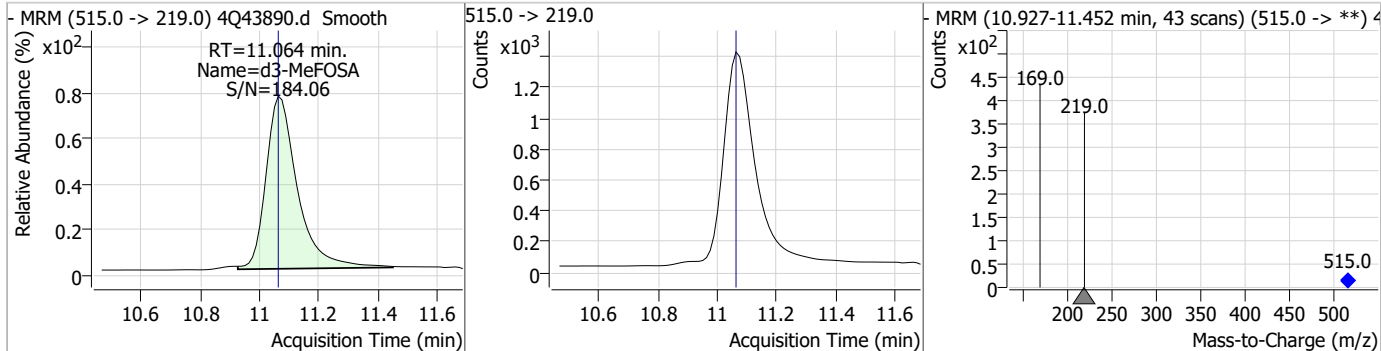
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	21.81	10.96	0.01	70051				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	128.49	10.97	0.00	369686 (m)				

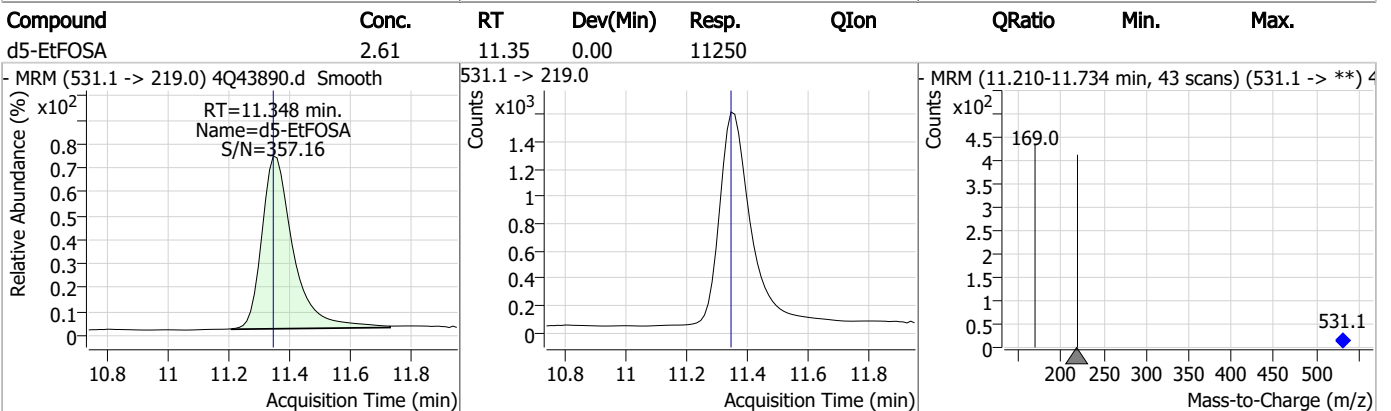
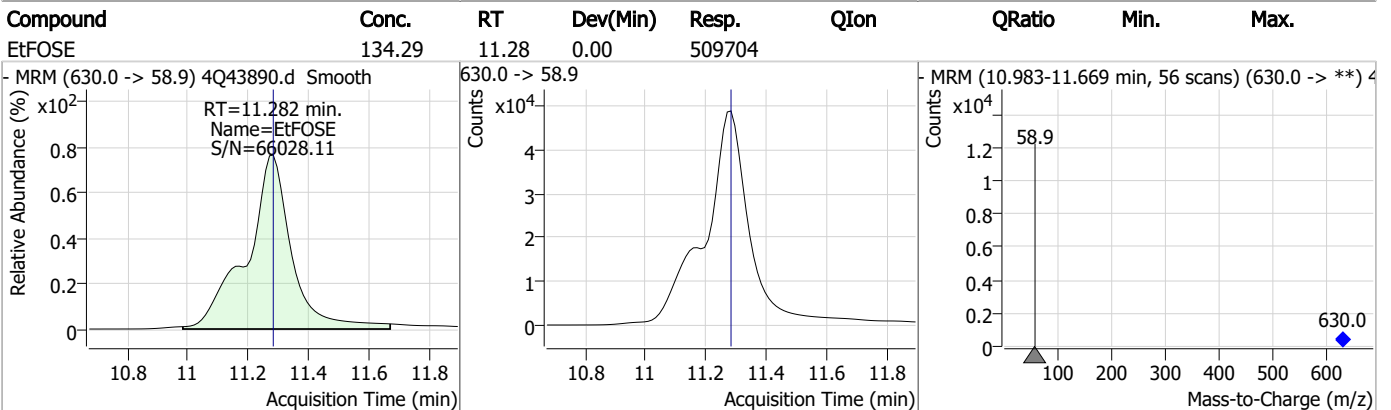
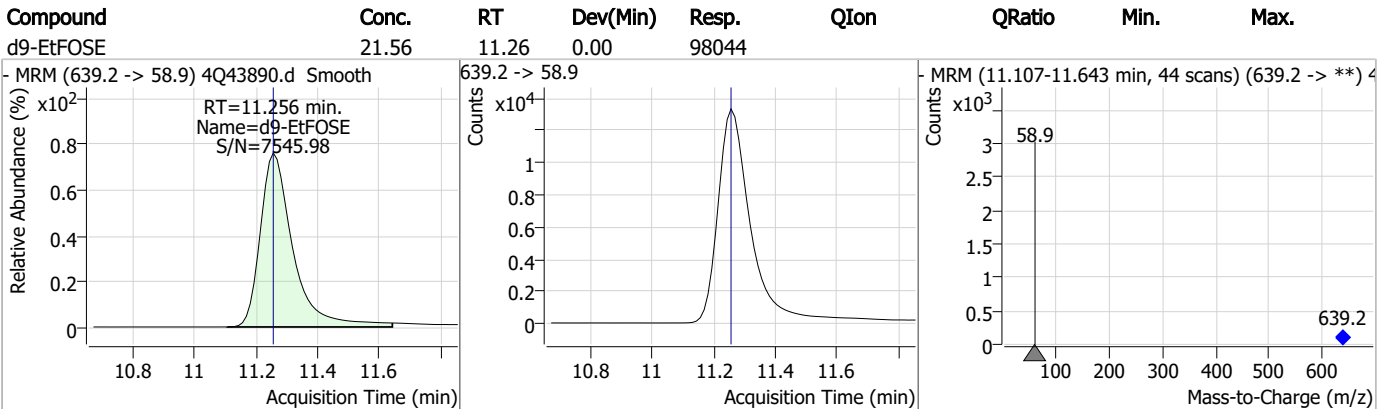
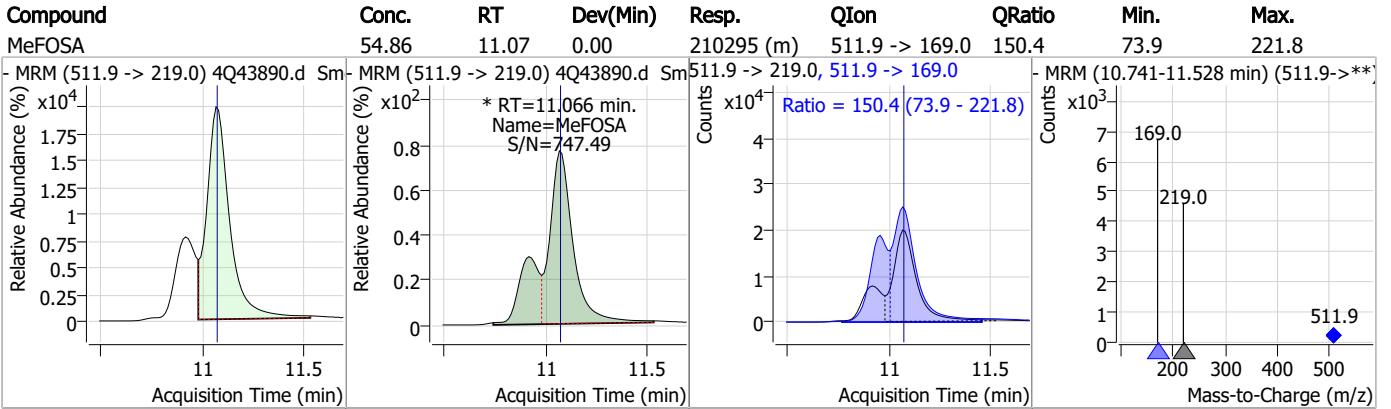


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.51	11.06	0.00	10176				



7.7.8
7

Perfluorinated Compounds by LC/MS/MS

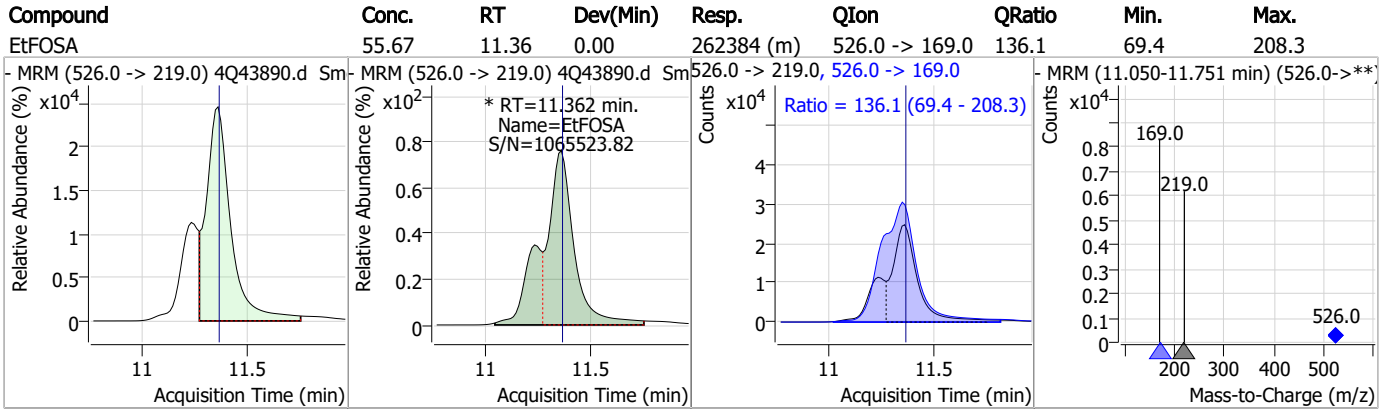


7.7.8

7



Perfluorinated Compounds by LC/MS/MS



7.7.8

7

Manual Integration Approval Summary

Sample Number: S4Q634-IC634 Method: EPA DRAFT 1633
Lab FileID: 4Q43890.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 12:36 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.07	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.8.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43891.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 12:50:36 PM
 Sample Name : ic634-8
 Vial : P1-A9
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	105134	10.00 µg/L	-0.012
M5-PFPeA	4.362	268.3 -> 223.0	60246	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	43396	2.50 µg/L	0.000
M4-PFHpA	6.467	367.1 -> 322.0	25658	2.50 µg/L	0.000
M8-PFOA	7.136	421.1 -> 376.0	39570	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	19681	1.25 µg/L	0.013
M6-PFDA	8.178	519.1 -> 474.1	17478	1.25 µg/L	0.000
M7-PFUnDA	8.647	570.0 -> 525.1	17471	1.25 µg/L	0.000
M2-PFDoDA	9.106	615.1 -> 570.0	20670	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	15473	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	15213	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	10217	2.50 µg/L	0.012
M3-PFHxS	7.229	402.1 -> 79.9	6843	2.50 µg/L	0.000
M8-PFOS	8.329	507.1 -> 79.9	9515	2.50 µg/L	0.000
M2-4:2FTS	5.222	329.1 -> 80.9	842	5.00 µg/L	0.000
M2-6:2FTS	6.898	429.1 -> 80.9	1521	5.00 µg/L	0.000
M2-8:2FTS	7.966	529.1 -> 80.9	2674	5.00 µg/L	0.000
M3-MeFOSAA	8.236	573.2 -> 419.0	13382	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	27378	10.00 µg/L	0.000
M5-EtFOSAA	8.446	589.2 -> 419.0	11277	5.00 µg/L	0.000
M7-MeFOSE	10.959	623.2 -> 58.9	61091	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	87409	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	10591	2.50 µg/L	0.012
M3-MeFOSA	11.064	515.0 -> 219.0	10104	2.50 µg/L	0.000
13C4-PFOS	8.330	502.8 -> 79.9	9799	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	56782	5.00 µg/L	-0.013
18O2-PFHxS	7.228	403.0 -> 83.9	4797	2.50 µg/L	0.000
13C4-PFOA	7.136	417.1 -> 372.0	47709	2.50 µg/L	0.012
13C2-PFDA	8.178	515.1 -> 470.1	17050	1.25 µg/L	0.000
13C5-PFNA	7.684	468.0 -> 423.0	21809	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	39998	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.222	329.1 -> 80.9	842	4.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.4%		
13C2-6:2FTS	6.898	429.1 -> 80.9	1521	4.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.5%		
13C2-8:2FTS	7.966	529.1 -> 80.9	2674	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C2-PFDoDA	9.106	615.1 -> 570.0	20670	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C2-PFTeDA	9.899	715.2 -> 670.0	15473	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.1%		
13C3-PFBS	5.439	302.1 -> 79.9	10217	2.26 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.3%		
13C3-PFHxS	7.229	402.1 -> 79.9	6843	2.30 µg/L	0.000

7.7.9
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C4-PFBA	2.911	216.8 -> 171.9	105134	9.84 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C4-PFHpA	6.467	367.1 -> 322.0	25658	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C5-PFHxA	5.535	318.0 -> 273.0	43396	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFPeA	4.362	268.3 -> 223.0	60246	4.89 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C6-PFDA	8.178	519.1 -> 474.1	17478	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C7-PFUnDA	8.647	570.0 -> 525.1	17471	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C8-FOSA	9.771	506.1 -> 77.8	15213	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C8-PFOA	7.136	421.1 -> 376.0	39570	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-PFOS	8.329	507.1 -> 79.9	9515	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C9-PFNA	7.684	472.1 -> 427.0	19681	1.33 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.2%	
d3-MeFOSAA	8.236	573.2 -> 419.0	13382	5.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.2%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	27378	10.40 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d3-MeFOSA	11.064	515.0 -> 219.0	10104	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
d5-EtFOSAA	8.446	589.2 -> 419.0	11277	5.54 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.7%	
d7-MeFOSE	10.959	623.2 -> 58.9	61091	20.04 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.1%	
d9-EtFOSE	11.256	639.2 -> 58.9	87409	20.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.0%	
d5-EtFOSA	11.360	531.1 -> 219.0	10591	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0 327.1 -> 80.9	316462 134287	233.64 µg/L	93
6:2FTS	6.899	427.1 -> 407.0 427.1 -> 80.9	333858 133307	227.27 µg/L	97
8:2FTS	7.966	527.1 -> 507.0 527.1 -> 80.8	324709 121732	217.87 µg/L	93
EtFOSAA	8.459	584.2 -> 419.1 584.2 -> 526.0	145113 66283	66.98 µg/L	m 92
FOSA	9.774	498.1 -> 77.9 498.1 -> 478.0	438428 11984	68.77 µg/L	98
MeFOSAA	8.249	570.1 -> 419.0 570.1 -> 483.0	157123 34451	67.37 µg/L	m 97
PFBA	2.920	212.8 -> 168.9	780608	277.27 µg/L	100
PFBS	5.440	298.7 -> 79.9 298.7 -> 98.8	251571 94993	60.03 µg/L	95
PFDA	8.179	512.9 -> 469.0 512.9 -> 219.0	916605 178851	69.12 µg/L	96
PFDoDA	9.106	613.1 -> 569.0 613.1 -> 319.0	1058949 155967	63.85 µg/L	100
PFDS	9.269	599.0 -> 79.9	149623	63.48 µg/L	95

7.7.9
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	74022			
PFHpA	6.468	363.1 -> 319.0	1115770	68.80	µg/L	99
		363.1 -> 169.0	195581			
PFHpS	7.811	449.0 -> 79.9	222028	64.78	µg/L	97
		449.0 -> 98.9	113217			
PFHxA	5.538	313.0 -> 269.0	1169490	68.78	µg/L	100
		313.0 -> 118.9	34560			
PFHxS	7.230	398.7 -> 79.9	180803	64.46	µg/L	m 98
		398.7 -> 98.9	92773			
PFNA	7.685	463.0 -> 419.0	907289	62.20	µg/L	99
		463.0 -> 219.0	222637			
PFNS	8.823	548.8 -> 79.9	133198	64.12	µg/L	99
		548.8 -> 98.9	68994			
PFOA	7.138	413.0 -> 369.0	1496248	65.54	µg/L	98
		413.0 -> 169.0	302844			
PFOS	8.330	498.9 -> 79.9	269483	57.87	µg/L	m 93
		498.9 -> 98.8	144658			
PFPeA	4.364	263.0 -> 219.0	1951040	134.60	µg/L	100
PFPeS	6.507	349.1 -> 79.9	154398	64.17	µg/L	96
		349.1 -> 98.9	66746			
PFTeDA	9.900	713.1 -> 669.0	1006100	66.43	µg/L	99
		713.1 -> 168.9	83501			
PFTrDA	9.515	663.0 -> 619.0	1325238	59.79	µg/L	98
		663.0 -> 168.9	134887			
PFUnDA	8.648	563.1 -> 519.0	810524	68.30	µg/L	97
		563.1 -> 269.1	163751			
11Cl-PF3OUdS	9.568	630.9 -> 450.9	1192020	121.07	µg/L	97
		632.9 -> 452.9	368570			
9Cl-PF3ONS	8.675	530.8 -> 351.0	1485788	118.50	µg/L	99
		532.8 -> 353.0	458667			
ADONA	6.731	376.9 -> 250.9	3300217	119.87	µg/L	99
		376.9 -> 84.8	880949			
HFPO-DA	5.891	284.9 -> 168.9	348903	133.36	µg/L	99
		284.9 -> 184.9	40667			
3:3FTCA	3.836	241.0 -> 177.0	235825	369.78	µg/L	99
		241.0 -> 117.0	20747			
5:3FTCA	6.193	341.0 -> 237.1	3927001	1702.10	µg/L	99
		341.0 -> 217.0	2700284			
7:3FTCA	7.649	441.0 -> 316.9	2048322	1708.63	µg/L	94
		441.0 -> 336.9	4708575			
EtFOSA	11.362	526.0 -> 219.0	614296	138.45	µg/L	m 98
		526.0 -> 169.0	840549			
EtFOSE	11.282	630.0 -> 58.9	1147731	339.18	µg/L	m 100
MeFOSA	11.066	511.9 -> 219.0	516182	135.61	µg/L	m 96
		511.9 -> 169.0	735589			
MeFOSE	10.973	616.1 -> 58.9	888597	354.13	µg/L	m 100
PFDoDS	10.052	699.1 -> 79.9	131199	62.37	µg/L	97
		699.1 -> 98.8	73404			
NFDHA	5.416	295.0 -> 201.0	140318	115.59	µg/L	95
		295.0 -> 84.9	35181			
PFMBA	4.766	279.0 -> 85.1	1083924	133.99	µg/L	100
PFMPA	3.515	229.0 -> 84.9	1042459	137.59	µg/L	100
PFEESA	5.971	314.8 -> 134.9	1547810	120.26	µg/L	99
		314.8 -> 82.9	53143			

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

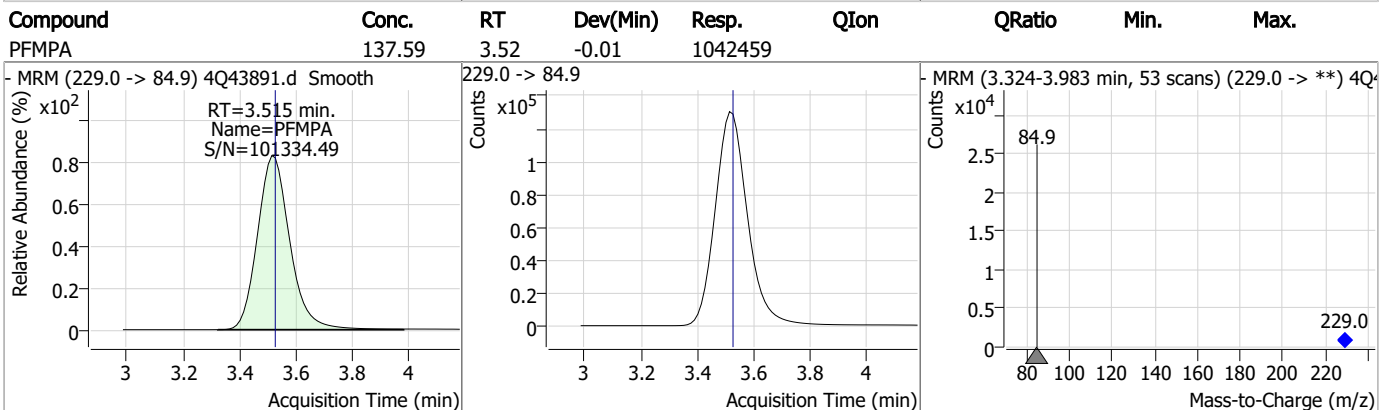
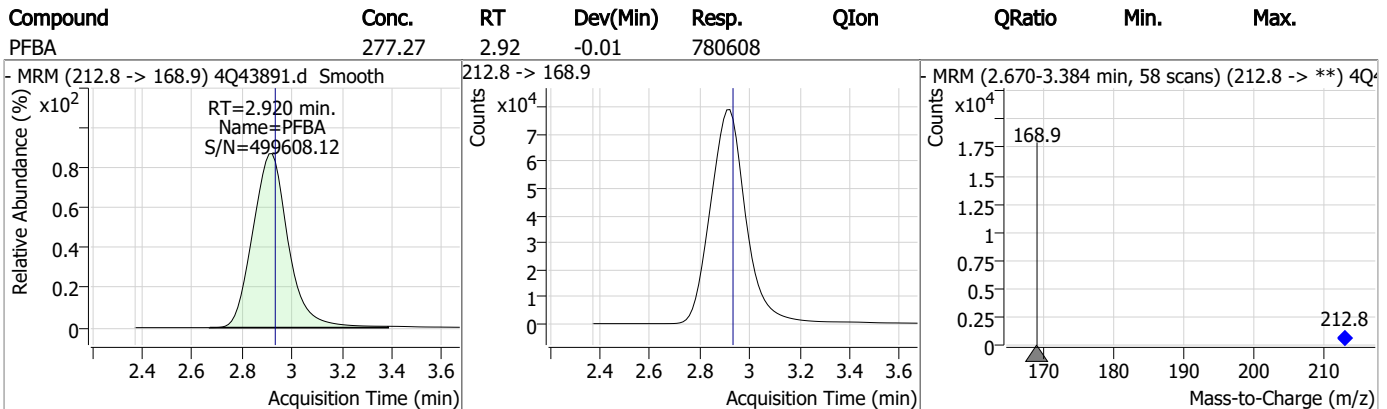
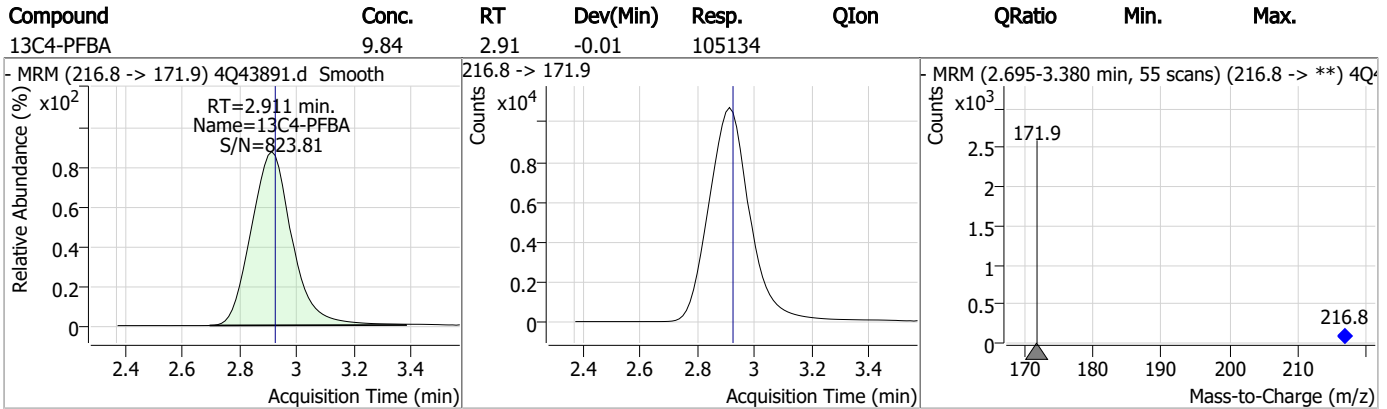
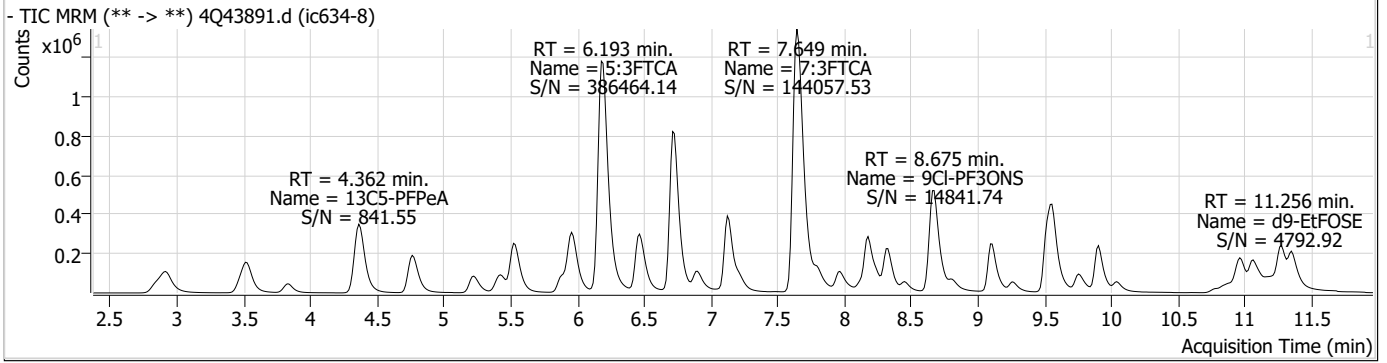
Perfluorinated Compounds by LC/MS/MS

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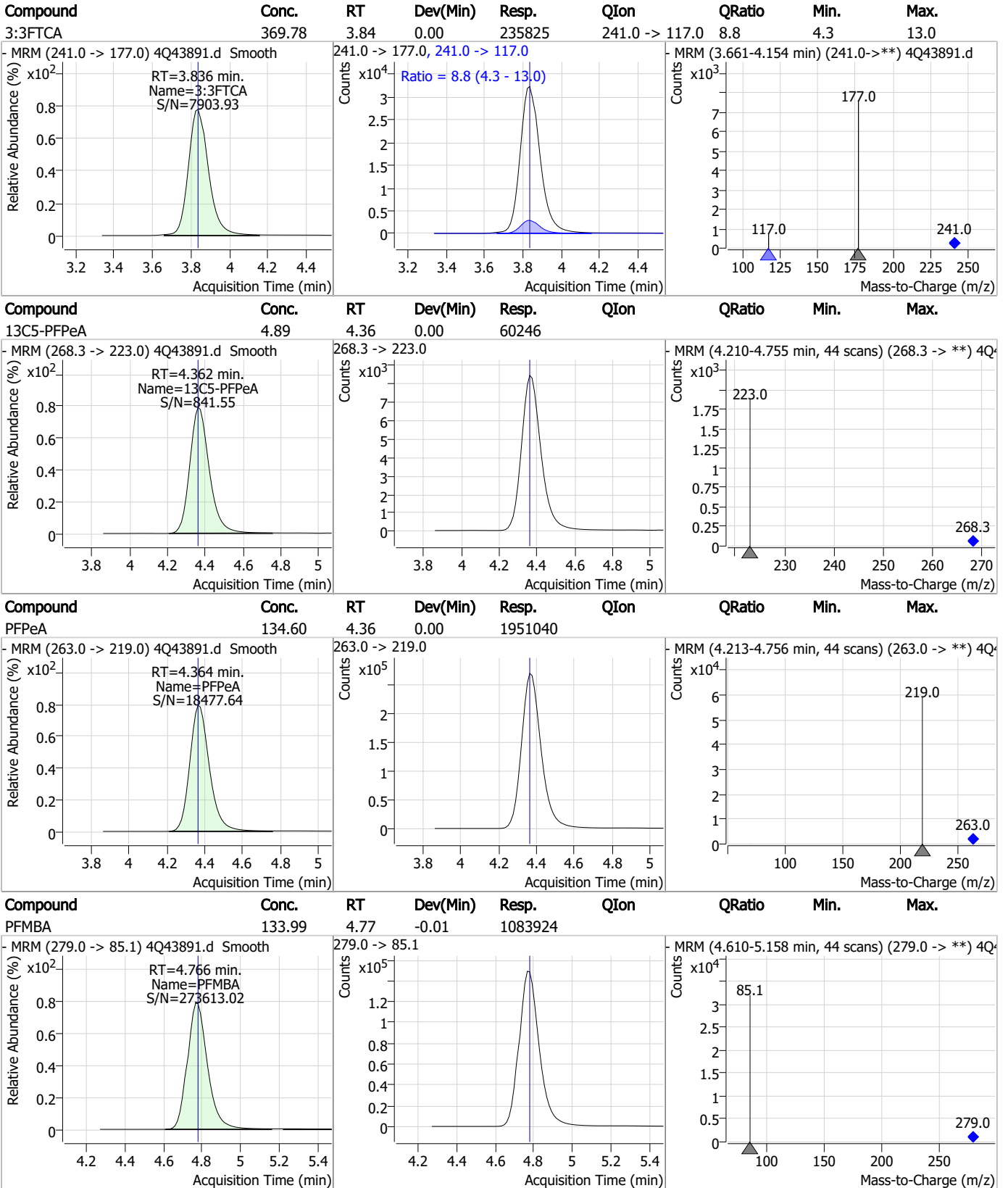
7.7.9

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Perfluorinated Compounds by LC/MS/MS



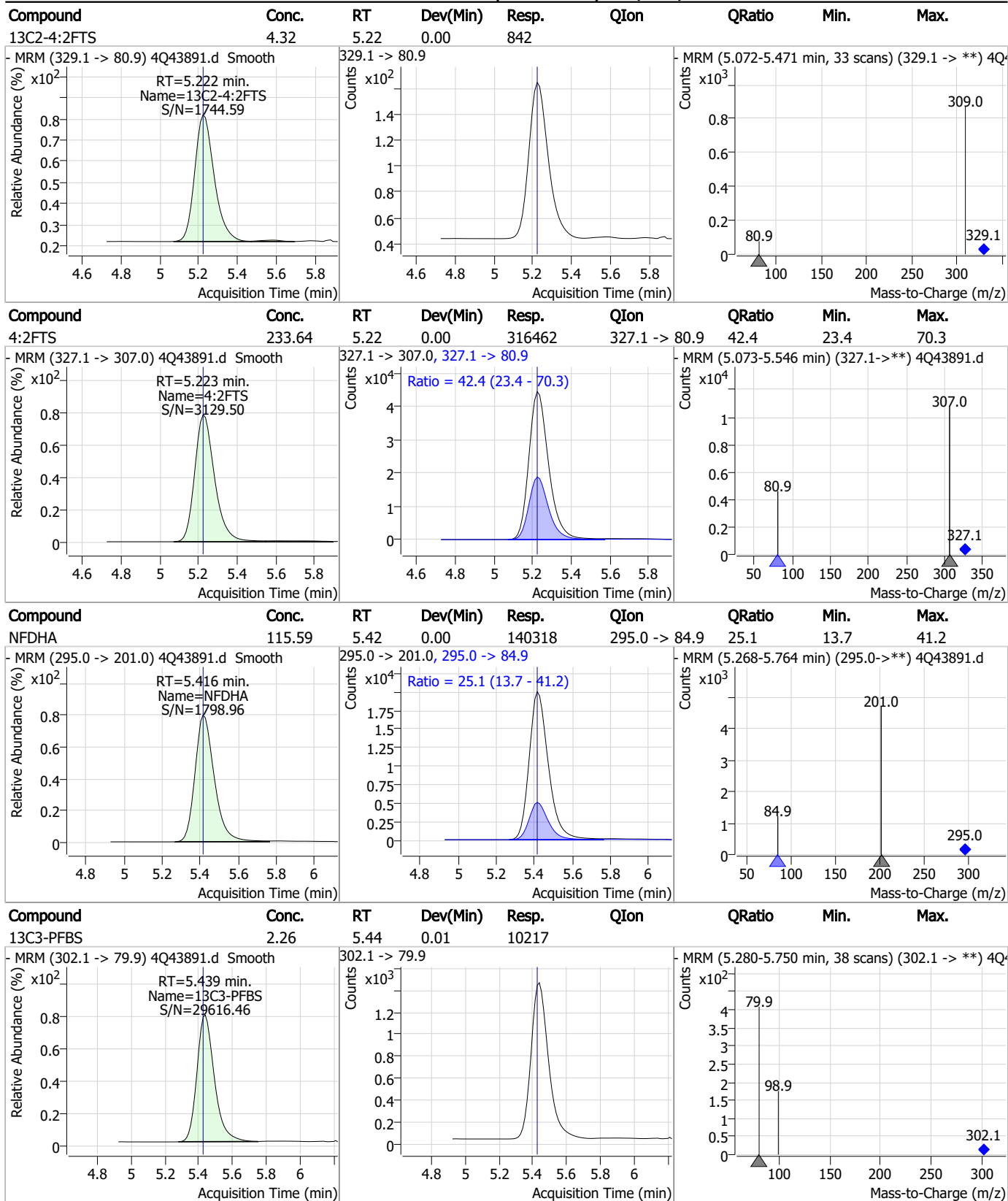
Perfluorinated Compounds by LC/MS/MS



7.7.9

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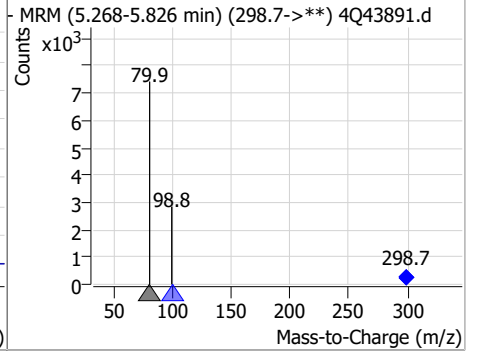
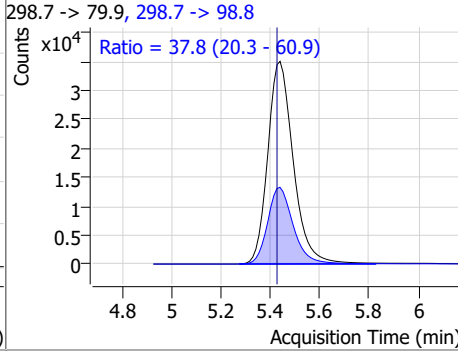
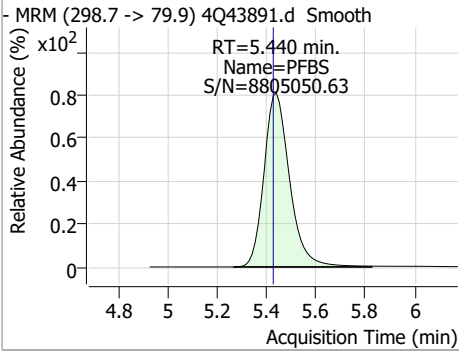
Perfluorinated Compounds by LC/MS/MS



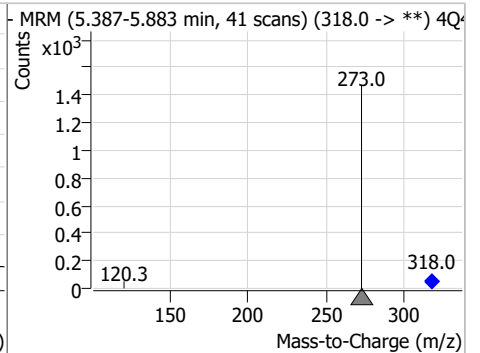
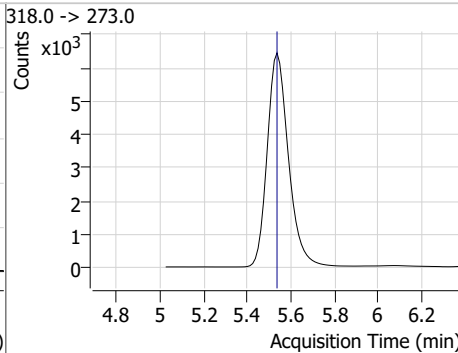
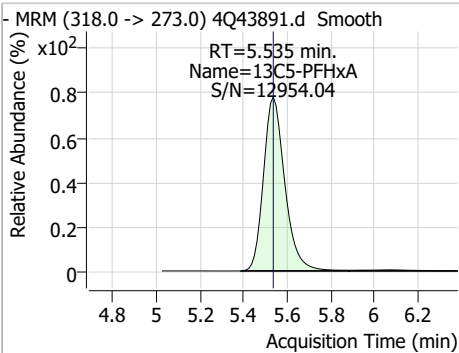
7.7.9
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Perfluorinated Compounds by LC/MS/MS

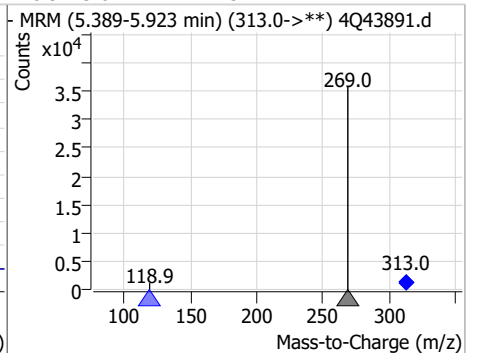
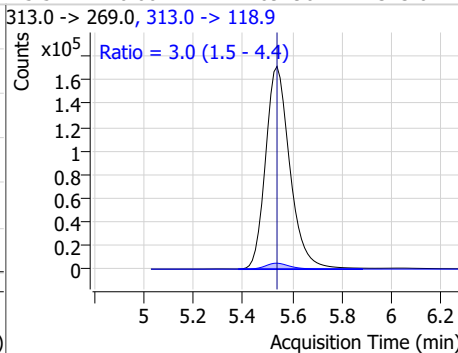
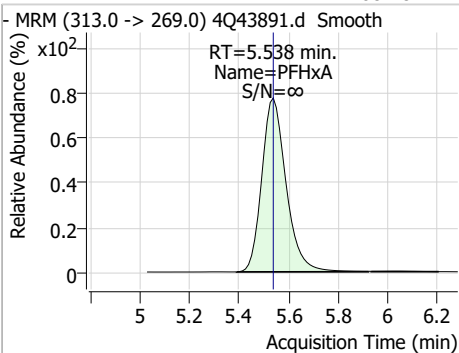
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	60.03	5.44	0.01	251571	298.7 -> 98.8	37.8	20.3	60.9



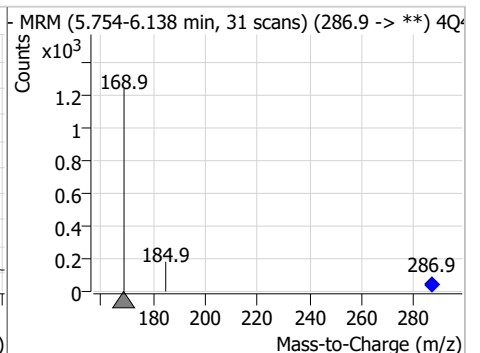
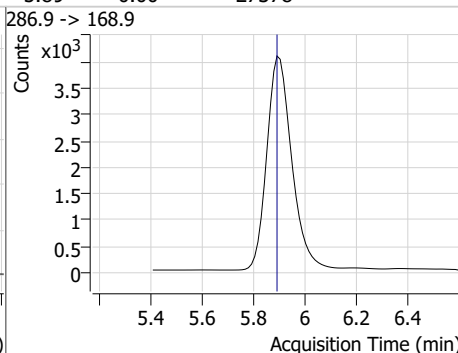
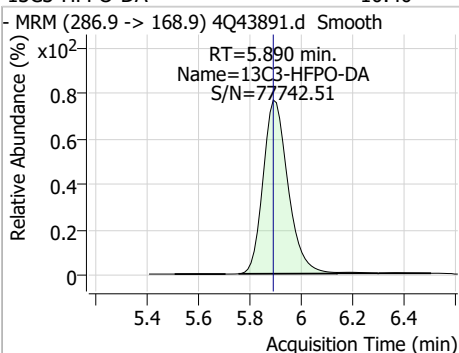
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.53	0.00	43396				



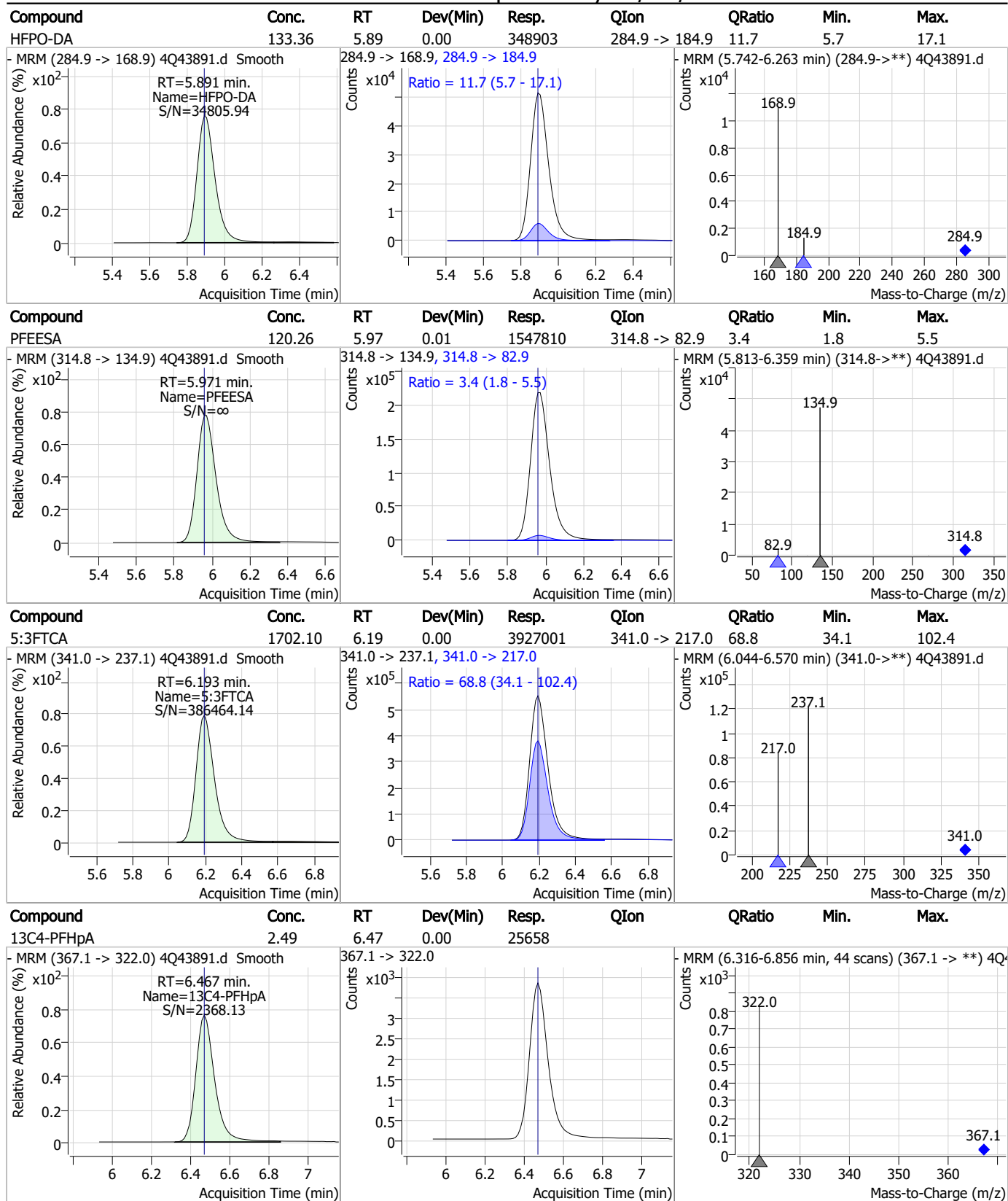
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	68.78	5.54	0.00	1169490	313.0 -> 118.9	3.0	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.40	5.89	0.00	27378				

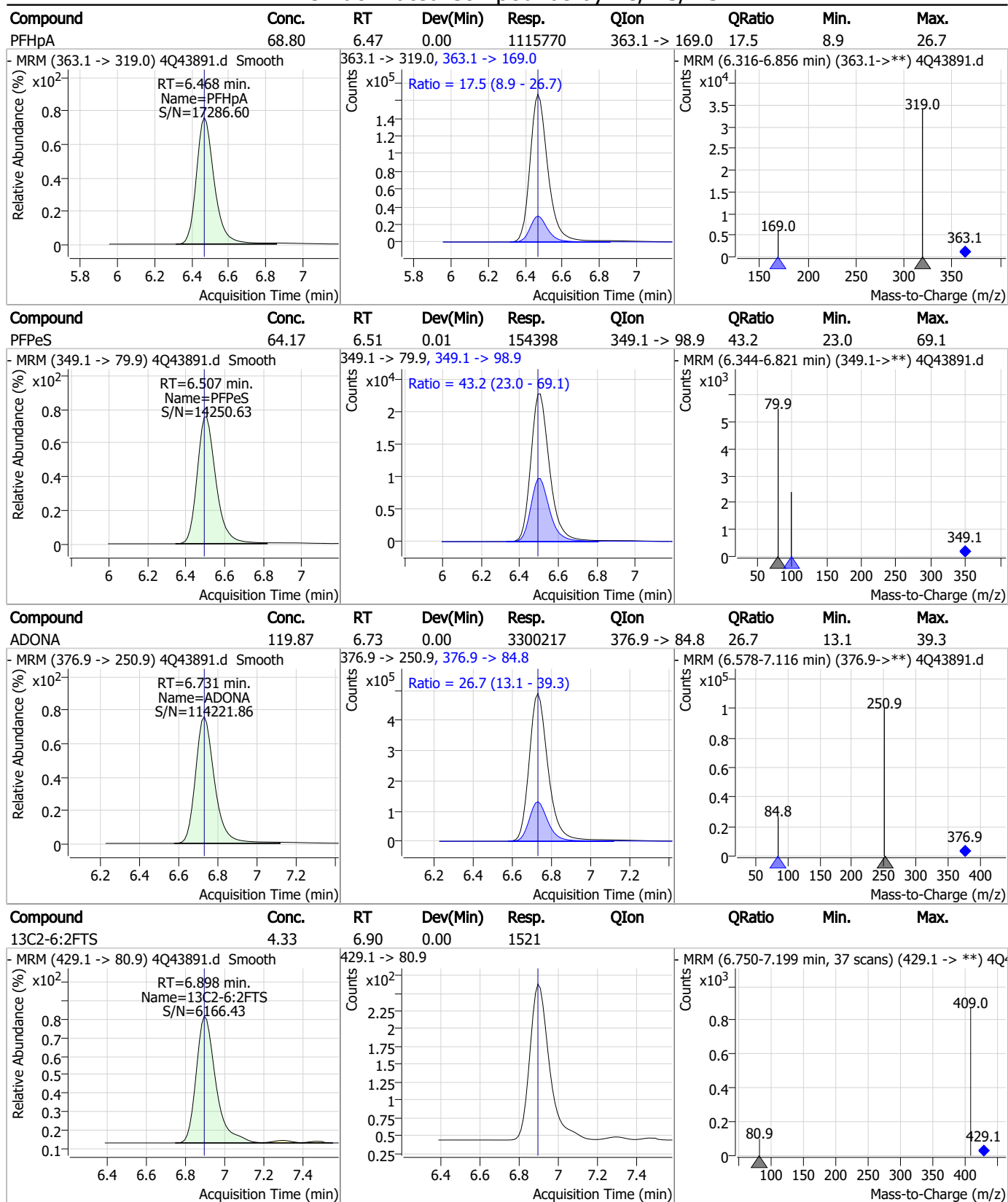


Perfluorinated Compounds by LC/MS/MS



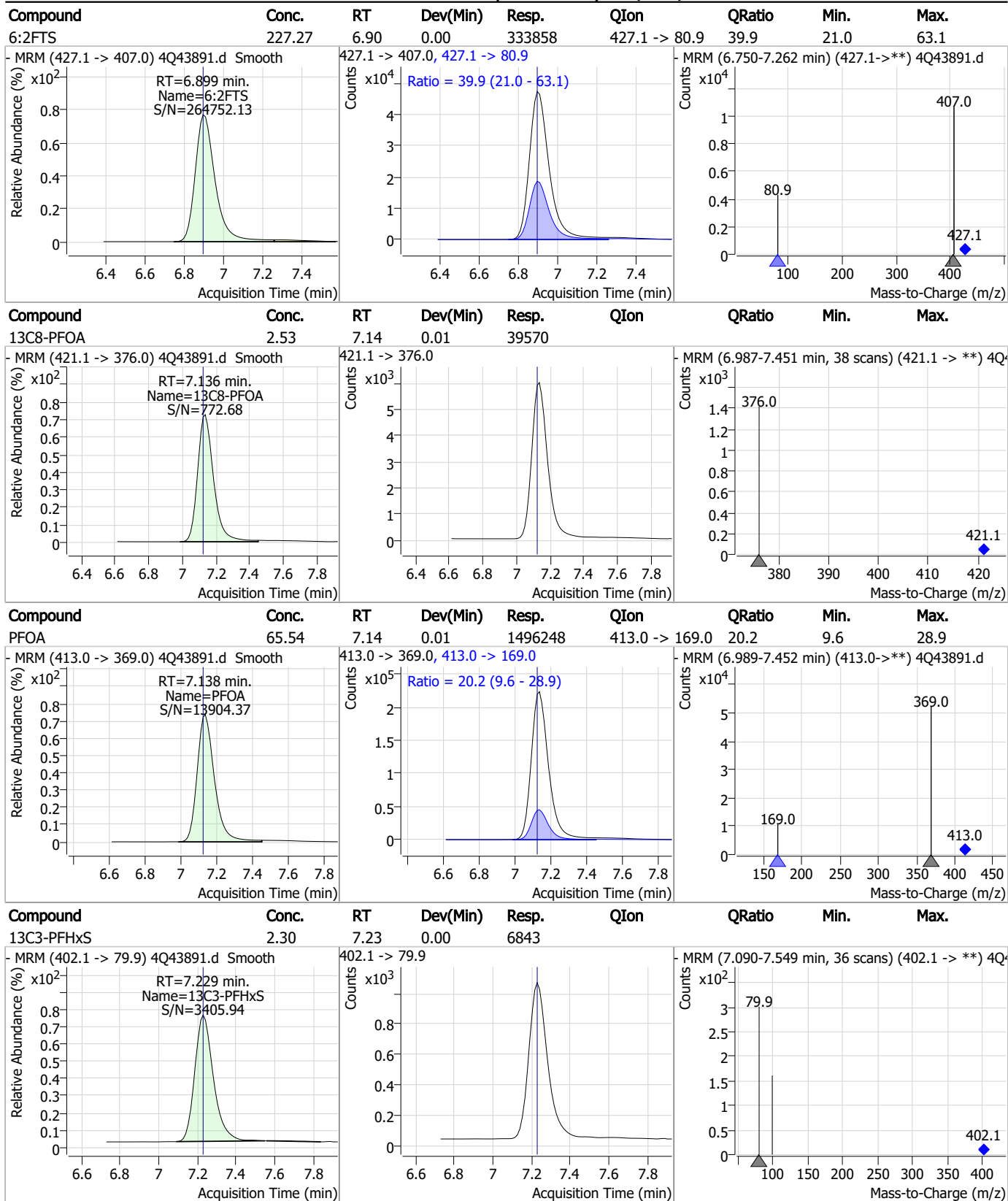
7.7.9
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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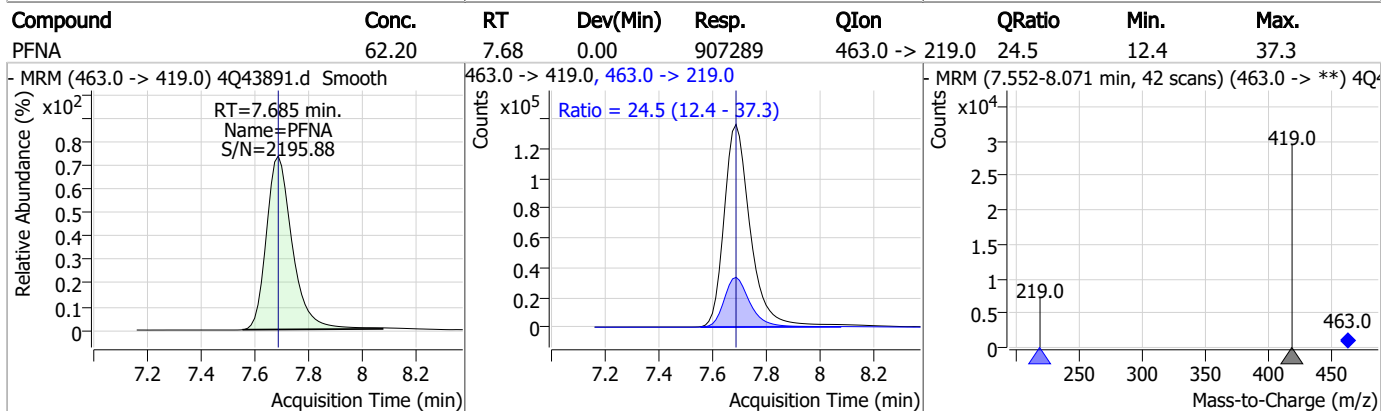
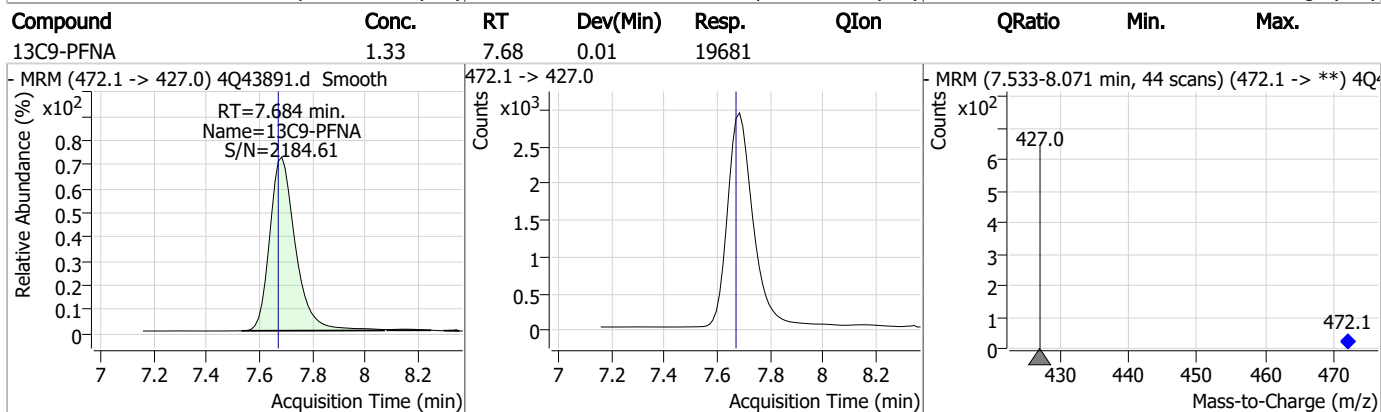
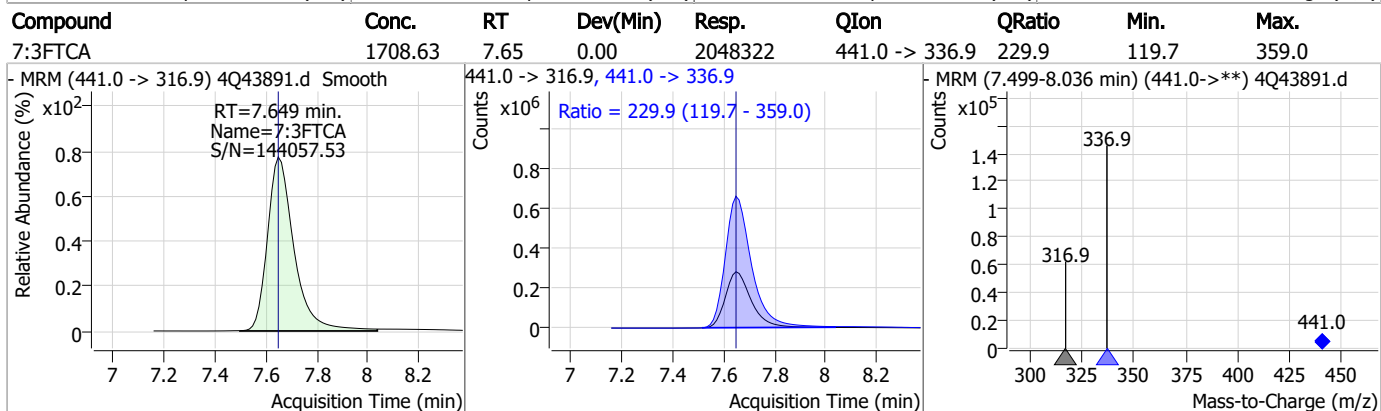
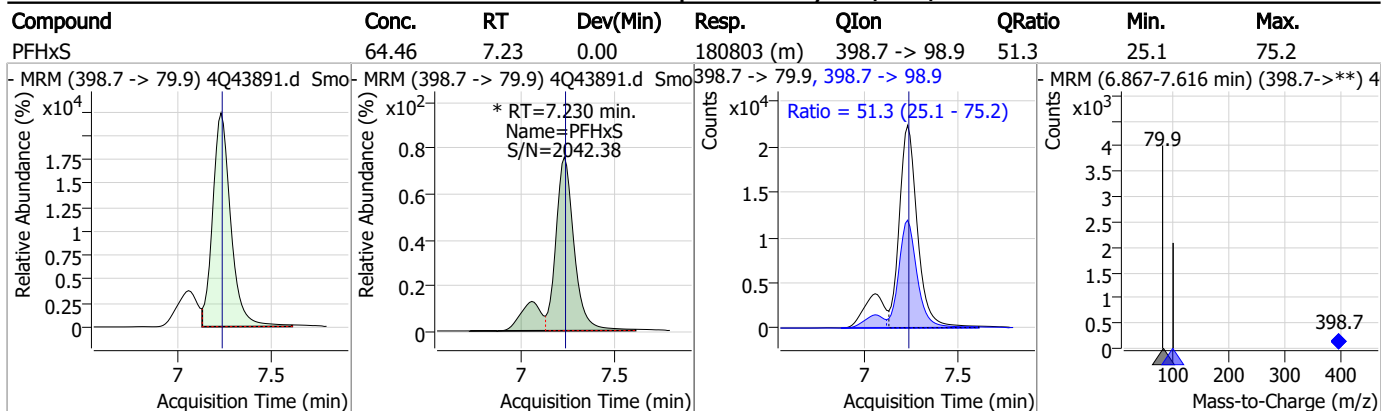
Perfluorinated Compounds by LC/MS/MS



7.7.9
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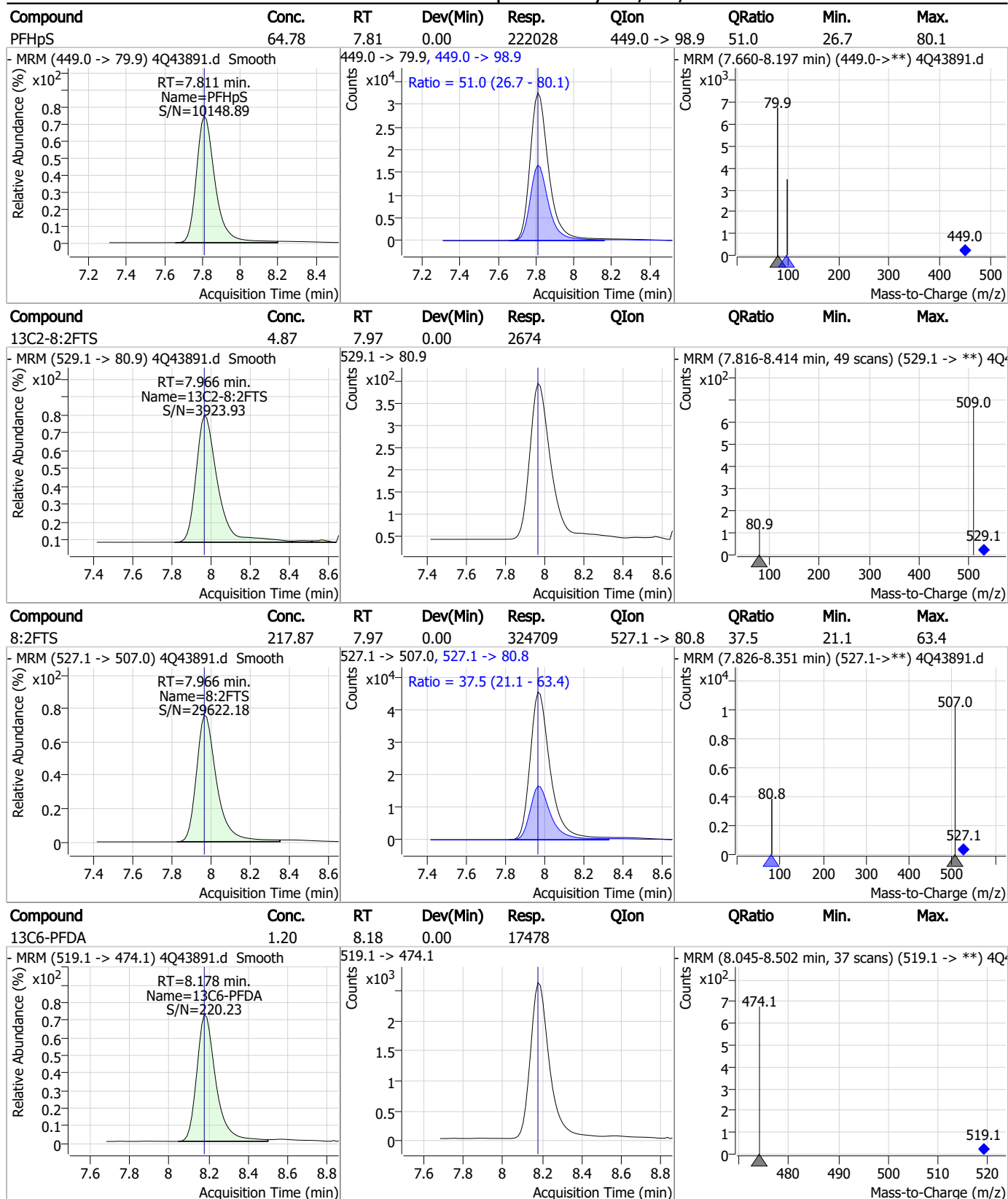


Perfluorinated Compounds by LC/MS/MS



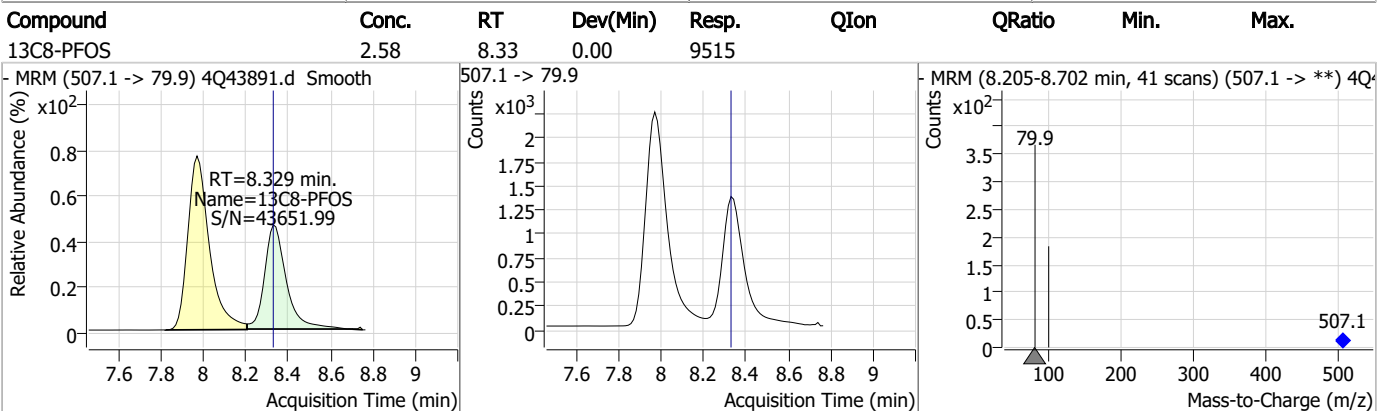
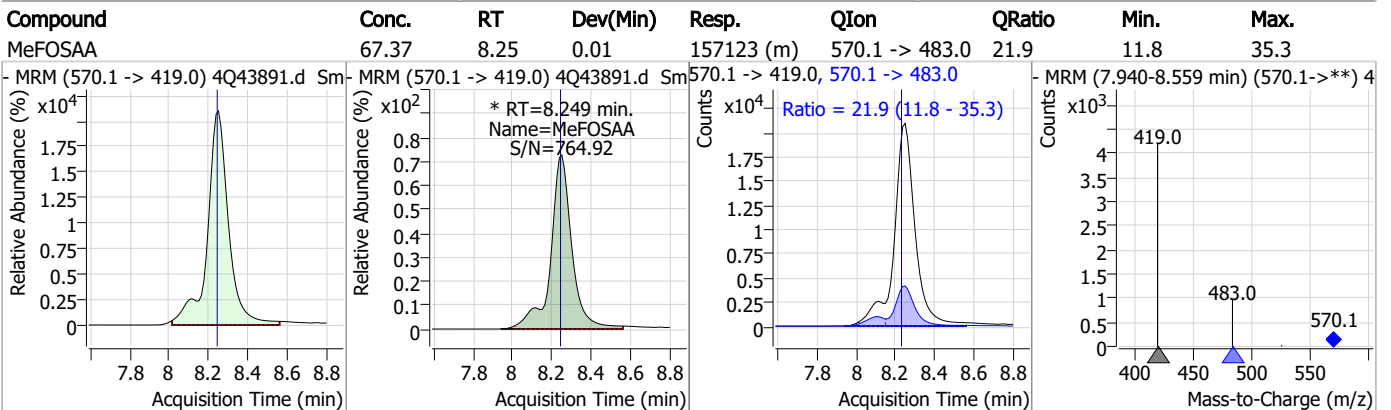
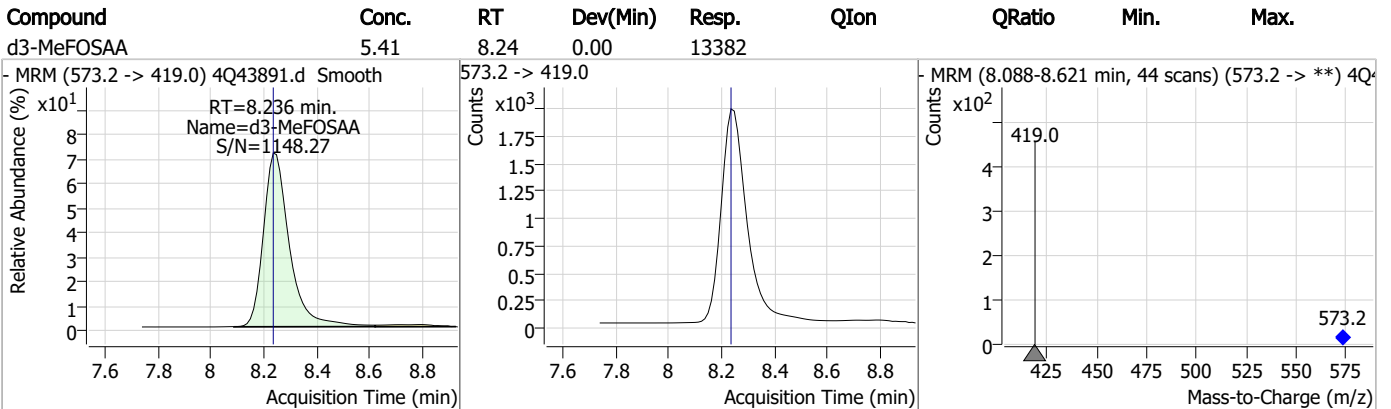
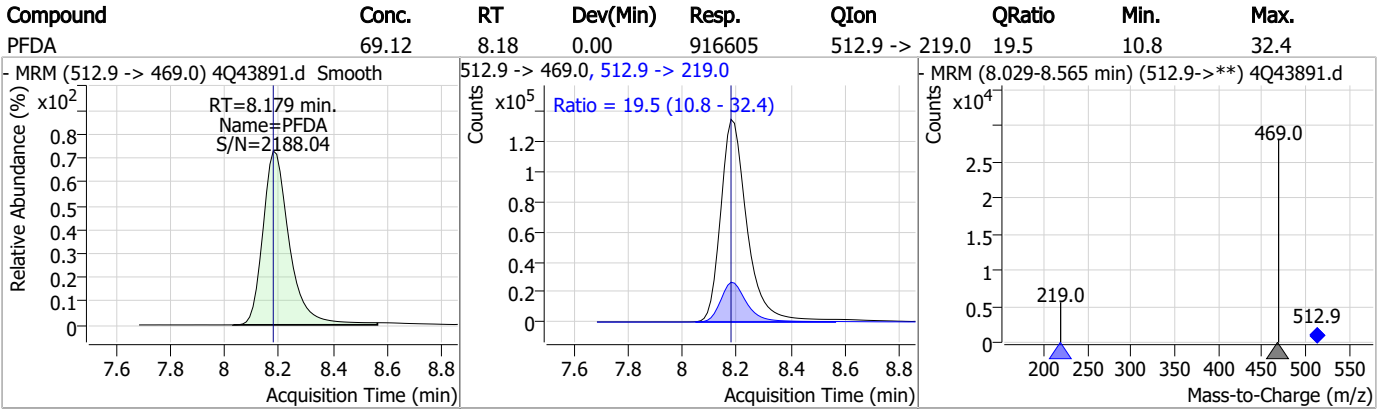
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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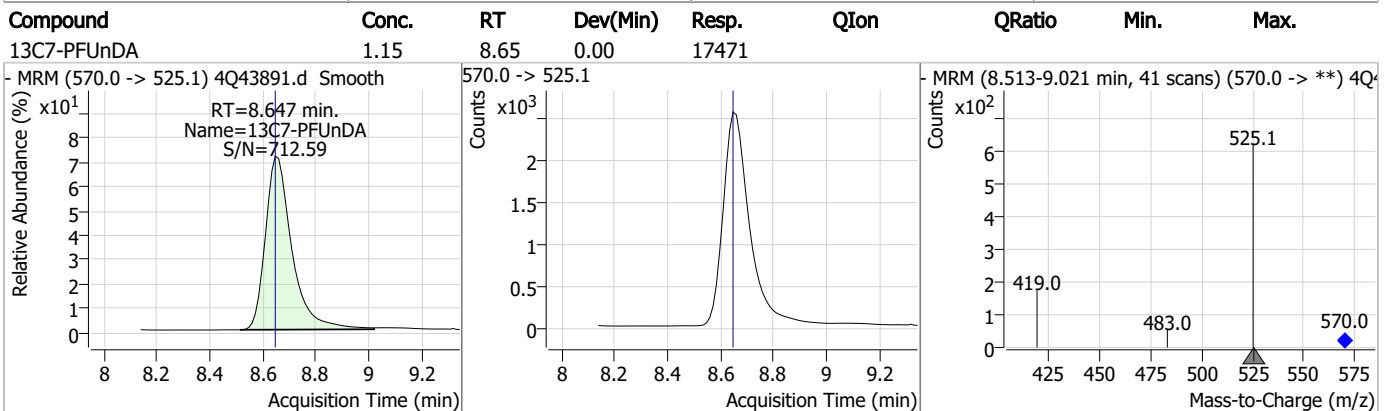
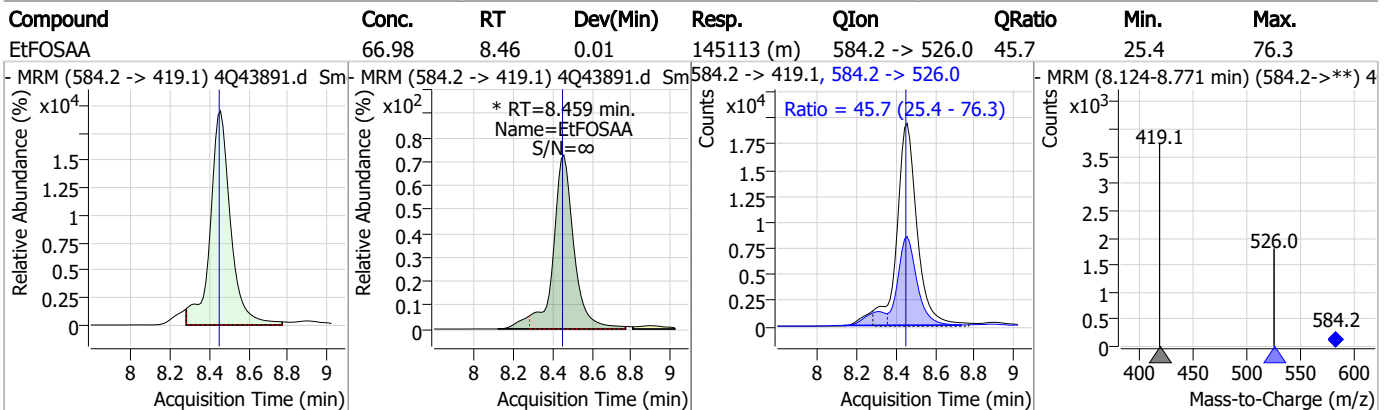
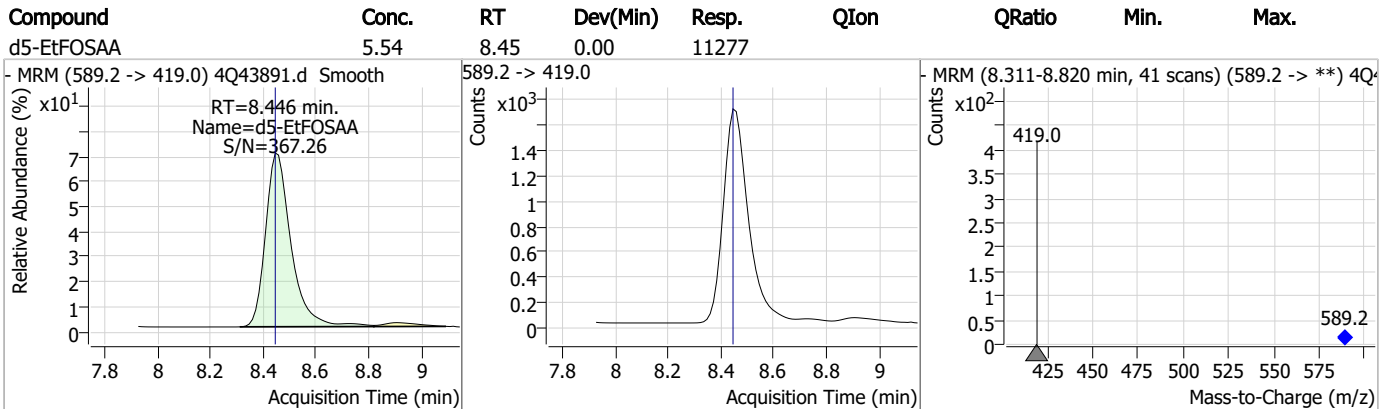
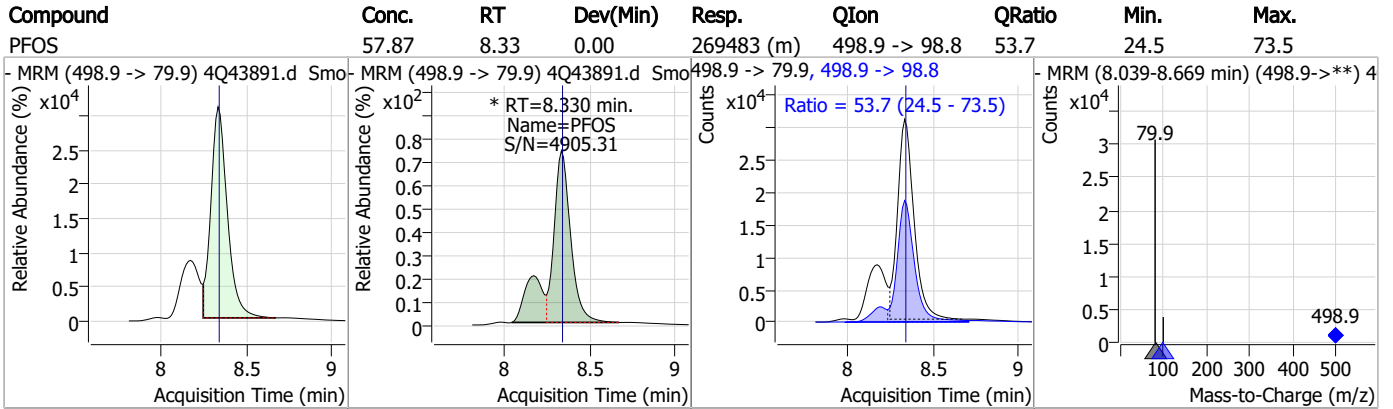
Perfluorinated Compounds by LC/MS/MS



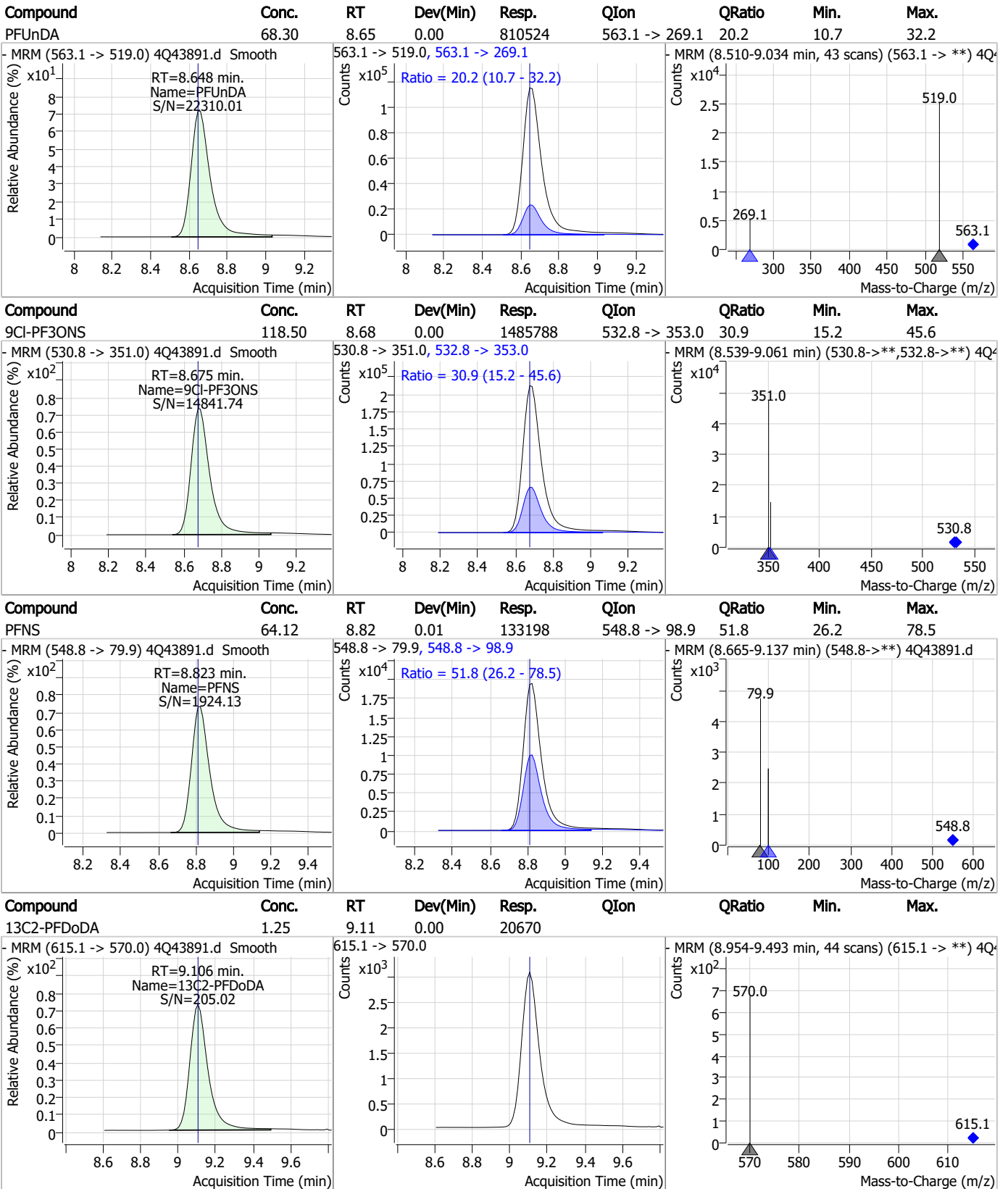
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

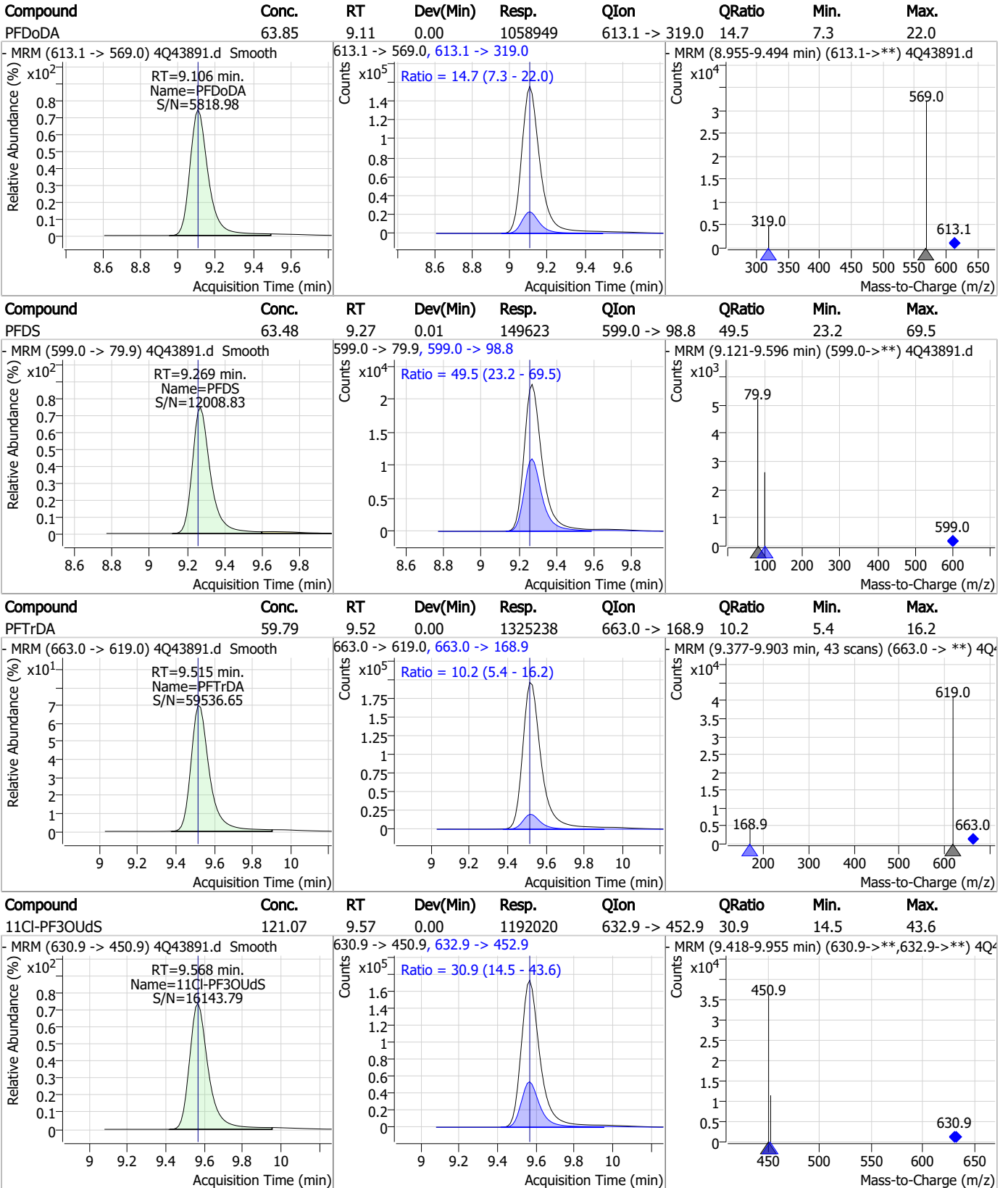


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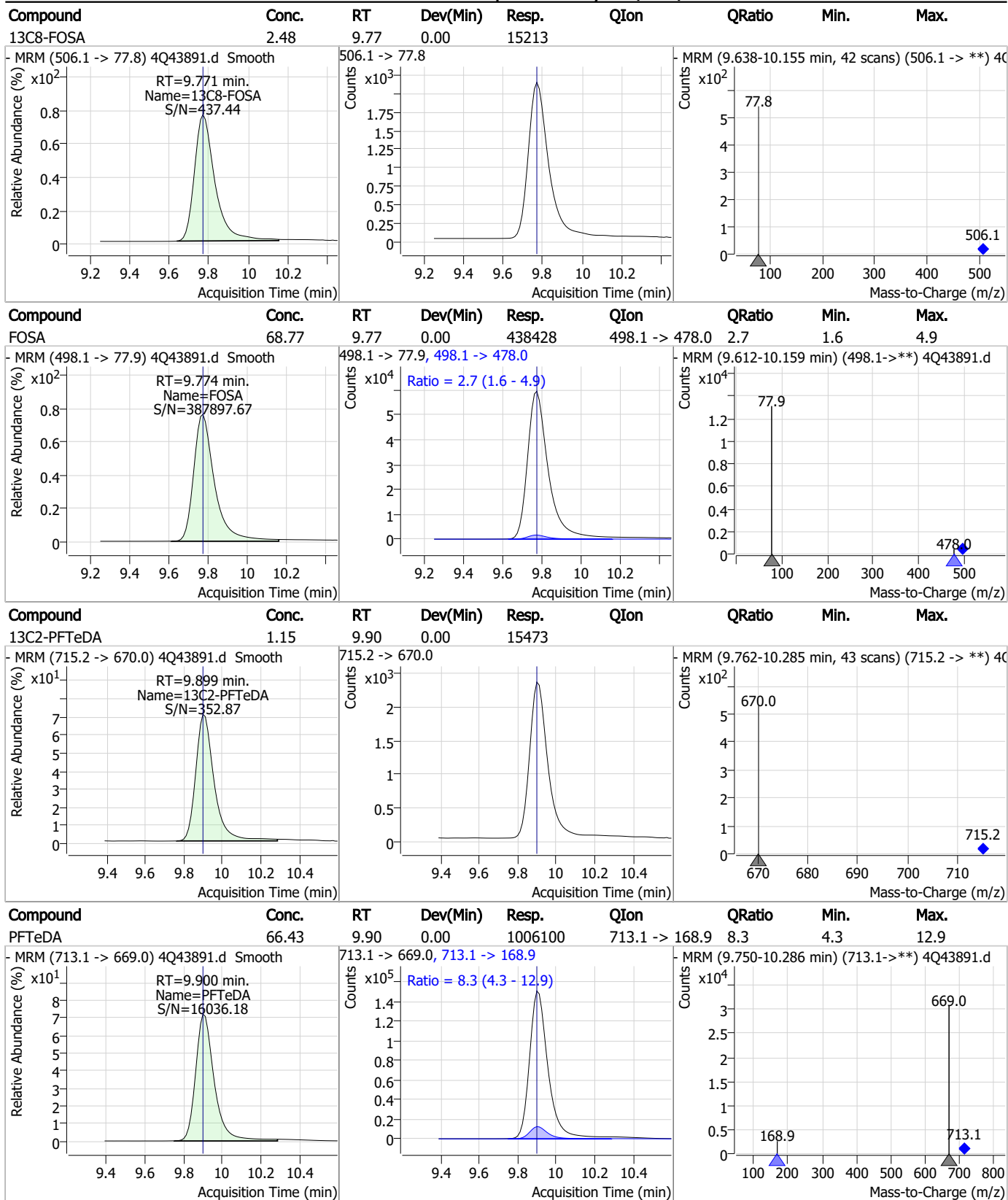
Perfluorinated Compounds by LC/MS/MS



7.7.9

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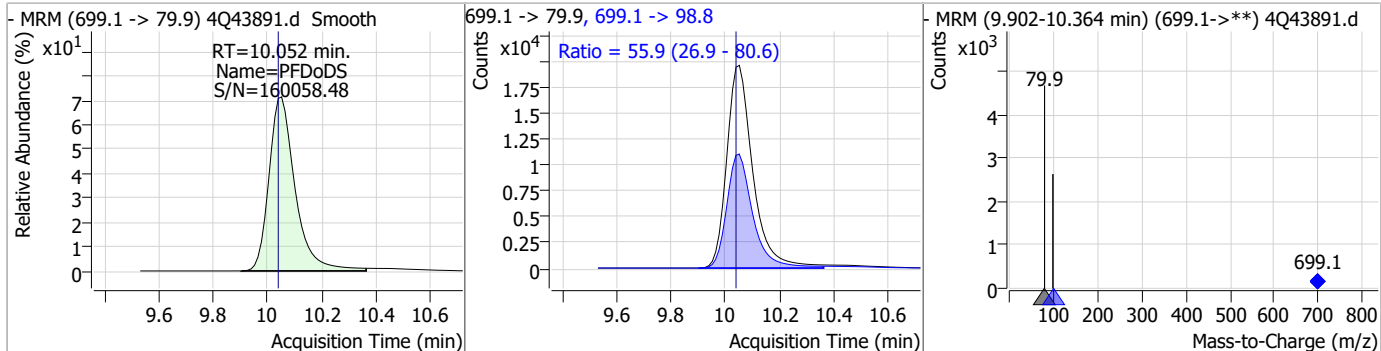
Perfluorinated Compounds by LC/MS/MS



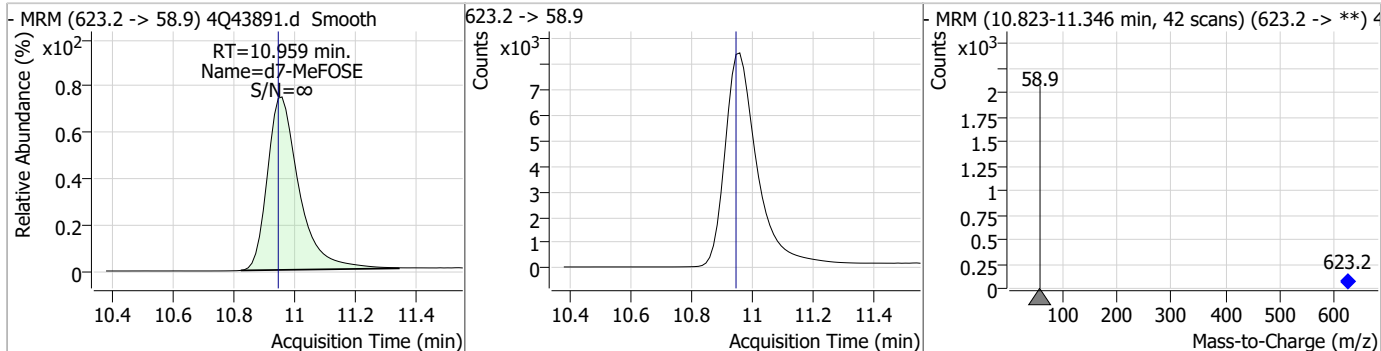
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Perfluorinated Compounds by LC/MS/MS

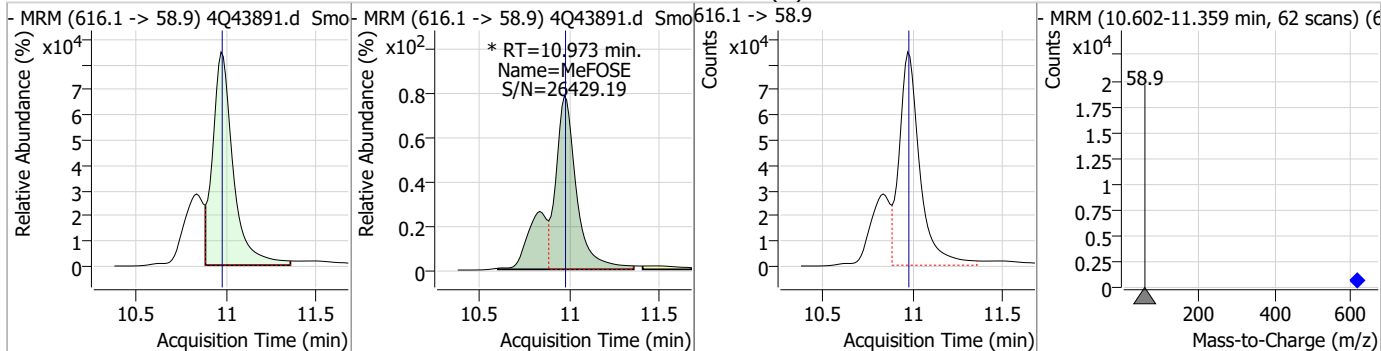
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	62.37	10.05	0.01	131199	699.1 -> 98.8	55.9	26.9	80.6



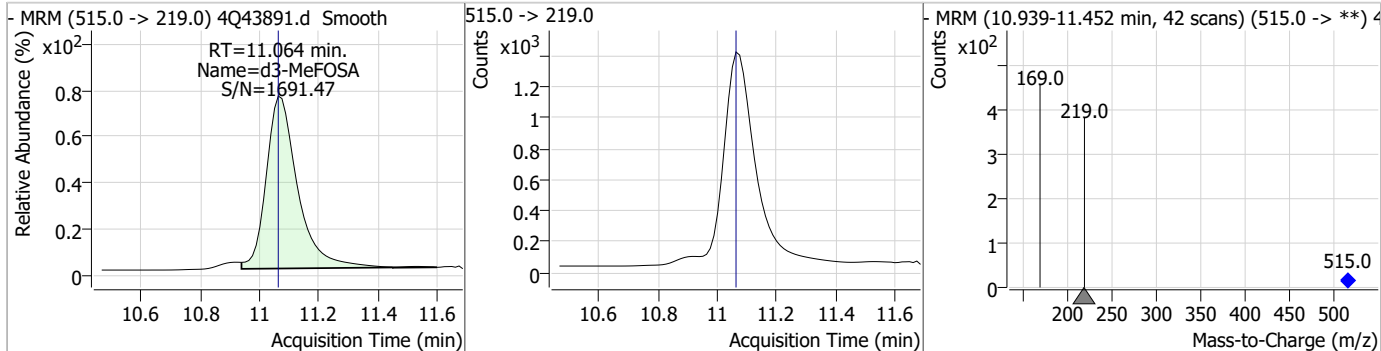
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.04	10.96	0.01	61091				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	354.13	10.97	0.00	888597 (m)				

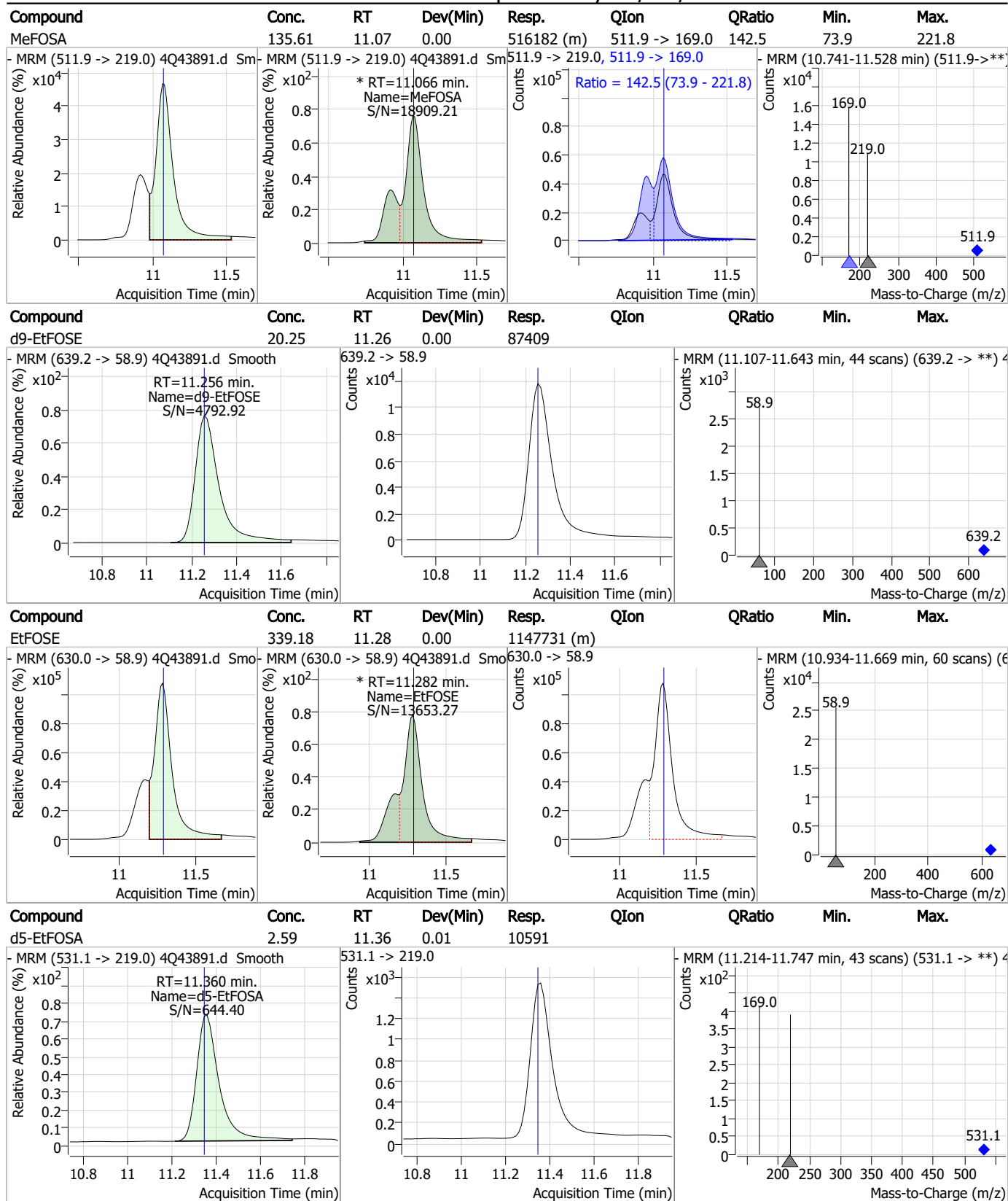


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.63	11.06	0.00	10104				



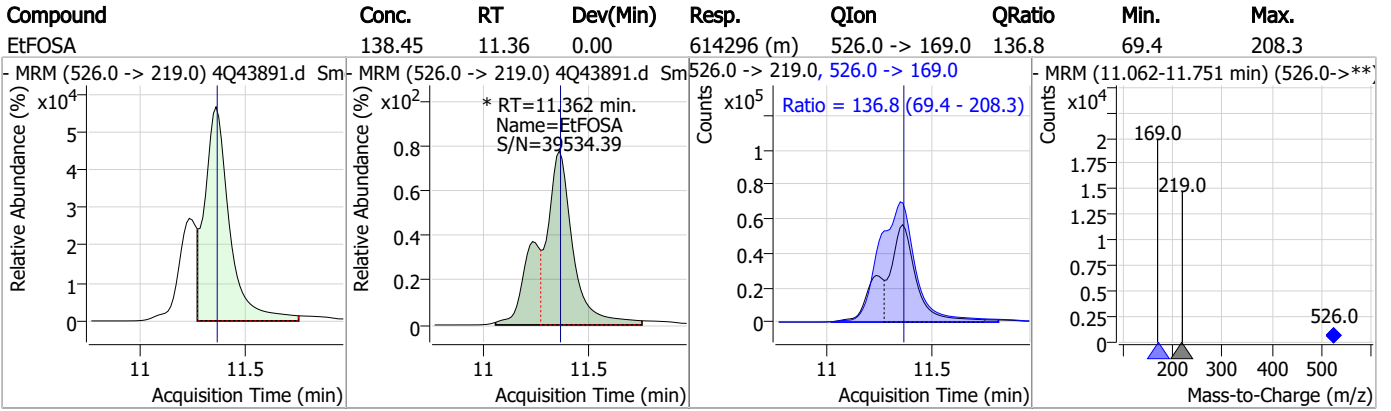
7.7.9
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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Perfluorinated Compounds by LC/MS/MS



7.7.9

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Manual Integration Approval Summary

Sample Number: S4Q634-IC634 Method: EPA DRAFT 1633
Lab FileID: 4Q43891.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 12:50 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.07	Split peak
EtFOSE	1691-99-2		11.28	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43894.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 1:20:27 PM
 Sample Name : icv634-20
 Vial : P1-B4
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.961	216.8 -> 171.9	130791	10.00 µg/L	0.037
M5-PFPeA	4.387	268.3 -> 223.0	66851	5.00 µg/L	0.025
M5-PFHxA	5.547	318.0 -> 273.0	46251	2.50 µg/L	0.012
M4-PFHpA	6.480	367.1 -> 322.0	27970	2.50 µg/L	0.012
M8-PFOA	7.136	421.1 -> 376.0	42684	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	20224	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	18744	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	18716	1.25 µg/L	0.013
M2-PFDoDA	9.106	615.1 -> 570.0	21397	1.25 µg/L	0.000
M2-PFTeDA	9.911	715.2 -> 670.0	15850	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	15950	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11303	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	7645	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	10355	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1075	5.00 µg/L	0.025
M2-6:2FTS	6.911	429.1 -> 80.9	1967	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	3100	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	13820	5.00 µg/L	0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	28905	10.00 µg/L	0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	11868	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	64121	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	90962	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11004	2.50 µg/L	0.012
M3-MeFOSA	11.064	515.0 -> 219.0	9720	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	10619	2.50 µg/L	0.012
13C3-PFBA	2.966	216.0 -> 172.0	68812	5.00 µg/L	0.037
18O2-PFHxS	7.228	403.0 -> 83.9	5057	2.50 µg/L	0.000
13C4-PFOA	7.136	417.1 -> 372.0	50127	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	16617	1.25 µg/L	0.013
13C5-PFNA	7.684	468.0 -> 423.0	23190	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	42103	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1075	5.23 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.6%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1967	5.31 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3100	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C2-PFDoDA	9.106	615.1 -> 570.0	21397	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15850	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-PFBS	5.452	302.1 -> 79.9	11303	2.37 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C3-PFHxS	7.242	402.1 -> 79.9	7645	2.44 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 = 97.6%	
13C4-PFBA	2.961	216.8 -> 171.9	130791	10.10 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.480	367.1 -> 322.0	27970	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C5-PFHxA	5.547	318.0 -> 273.0	46251	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFPeA	4.387	268.3 -> 223.0	66851	5.15 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C6-PFDA	8.191	519.1 -> 474.1	18744	1.32 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C7-PFUnDA	8.660	570.0 -> 525.1	18716	1.26 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-FOSA	9.783	506.1 -> 77.8	15950	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-PFOA	7.136	421.1 -> 376.0	42684	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C8-PFOS	8.341	507.1 -> 79.9	10355	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C9-PFNA	7.684	472.1 -> 427.0	20224	1.28 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.249	573.2 -> 419.0	13820	5.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	28905	10.44 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.4%	
d3-MeFOSA	11.064	515.0 -> 219.0	9720	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
d5-EtFOSAA	8.458	589.2 -> 419.0	11868	5.38 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.5%	
d7-MeFOSE	10.959	623.2 -> 58.9	64121	19.41 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.6%	
d9-EtFOSE	11.256	639.2 -> 58.9	90962	19.44 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.8%	
d5-EtFOSA	11.360	531.1 -> 219.0	11004	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	36343	21.01 µg/L	93
		327.1 -> 80.9	15405		
6:2FTS	6.911	427.1 -> 407.0	37596	19.78 µg/L	98
		427.1 -> 80.9	15426		
8:2FTS	7.978	527.1 -> 507.0	34017	19.68 µg/L	99
		527.1 -> 80.8	14554		
EtFOSAA	8.459	584.2 -> 419.1	44738	19.62 µg/L	m 97
		584.2 -> 526.0	21689		
FOSA	9.774	498.1 -> 77.9	141624	21.19 µg/L	98
		498.1 -> 478.0	3779		
MeFOSAA	8.249	570.1 -> 419.0	51036	21.19 µg/L	m 95
		570.1 -> 483.0	10701		
PFBA	2.957	212.8 -> 168.9	67542	19.28 µg/L	100
PFBS	5.453	298.7 -> 79.9	100483	21.67 µg/L	95
		298.7 -> 98.8	37786		
PFDA	8.192	512.9 -> 469.0	305610	21.49 µg/L	96
		512.9 -> 219.0	60753		
PFDoDA	9.106	613.1 -> 569.0	317329	18.48 µg/L	96
		613.1 -> 319.0	41610		
PFDS	9.269	599.0 -> 79.9	52213	20.36 µg/L	96

7.7.10
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.480	599.0 -> 98.8	25568	20.57	µg/L	99
		363.1 -> 319.0	363659			
PFHpS	7.823	363.1 -> 169.0	63506	20.45	µg/L	96
		449.0 -> 79.9	76288			
PFHxA	5.550	449.0 -> 98.9	38819	21.78	µg/L	100
		313.0 -> 269.0	394737			
PFHxS	7.230	313.0 -> 118.9	11460	21.63	µg/L	m
		398.7 -> 79.9	67769			
PFNA	7.685	398.7 -> 98.9	33658	21.77	µg/L	99
		463.0 -> 419.0	326243			
PFNS	8.823	463.0 -> 219.0	79570	19.68	µg/L	100
		548.8 -> 79.9	44477			
PFOA	7.138	548.8 -> 98.9	23137	20.68	µg/L	99
		413.0 -> 369.0	509126			
PFOS	8.343	413.0 -> 169.0	101566	17.96	µg/L	m
		498.9 -> 79.9	91001			
PFPeA	4.389	498.9 -> 98.8	42607	22.21	µg/L	100
		263.0 -> 219.0	357175			
PFPeS	6.507	349.1 -> 79.9	56780	21.12	µg/L	97
		349.1 -> 98.9	25166			
PFTeDA	9.912	713.1 -> 669.0	344427	22.20	µg/L	99
		713.1 -> 168.9	28576			
PFTrDA	9.529	663.0 -> 619.0	403759	17.60	µg/L	98
		663.0 -> 168.9	40559			
PFUnDA	8.660	563.1 -> 519.0	269334	21.19	µg/L	96
		563.1 -> 269.1	53065			
11CI-PF3OUdS	9.568	630.9 -> 450.9	217826	20.96	µg/L	97
		632.9 -> 452.9	67365			
9CI-PF3ONS	8.687	530.8 -> 351.0	264806	20.00	µg/L	100
		532.8 -> 353.0	80138			
ADONA	6.731	376.9 -> 250.9	583198	20.06	µg/L	99
		376.9 -> 84.8	155449			
HFPO-DA	5.903	284.9 -> 168.9	53279	19.29	µg/L	97
		284.9 -> 184.9	6640			
3:3FTCA	3.879	241.0 -> 177.0	14608	20.64	µg/L	98
		241.0 -> 117.0	1379			
5:3FTCA	6.217	341.0 -> 237.1	52878	21.50	µg/L	100
		341.0 -> 217.0	36203			
7:3FTCA	7.661	441.0 -> 316.9	25510	19.97	µg/L	94
		441.0 -> 336.9	63644			
EtFOSA	11.362	526.0 -> 219.0	101818	22.09	µg/L	78
		526.0 -> 169.0	114269			
EtFOSE	11.282	630.0 -> 58.9	413915	117.54	µg/L	100
		511.9 -> 219.0	79178			
MeFOSA	11.078	511.9 -> 169.0	93425	21.62	µg/L	76
		616.1 -> 58.9	304054			
MeFOSE	10.973	699.1 -> 79.9	43287	115.45	µg/L	100
		699.1 -> 98.8	23566			
PFDoDS	10.052	295.0 -> 201.0	28746	18.91	µg/L	99
		295.0 -> 84.9	6982			
NFDHA	5.428	279.0 -> 85.1	189220	22.22	µg/L	94
		229.0 -> 84.9	178659			
PFMBA	4.791	314.8 -> 134.9	262758	21.08	µg/L	100
		314.8 -> 82.9	8347			
PFMPA	3.553			21.25	µg/L	100
PFEESA	5.984			19.16	µg/L	98

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

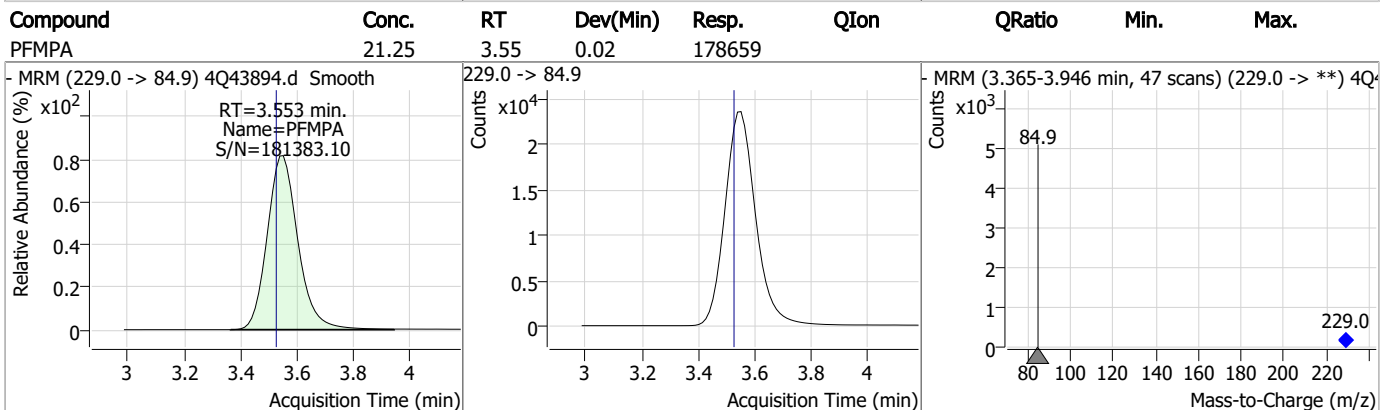
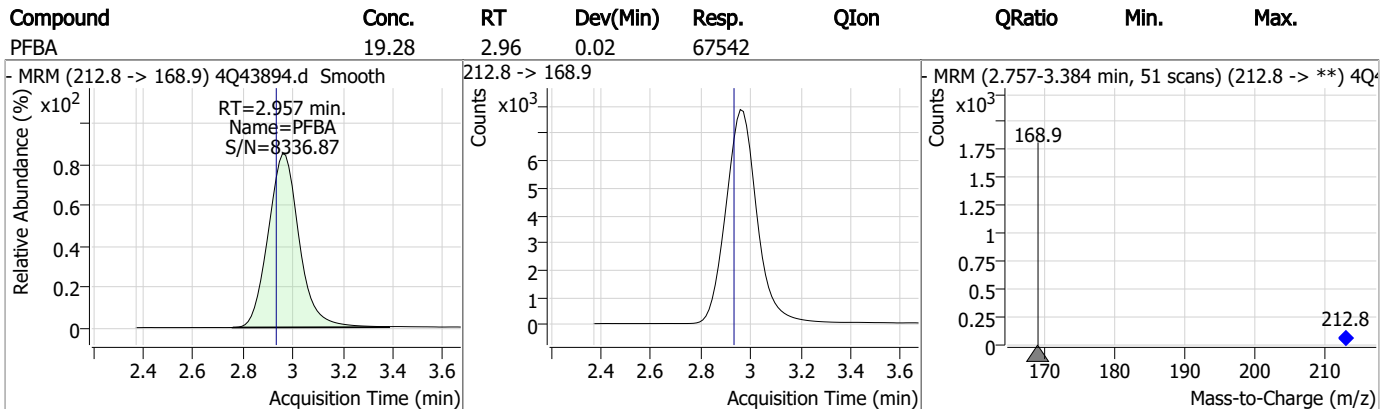
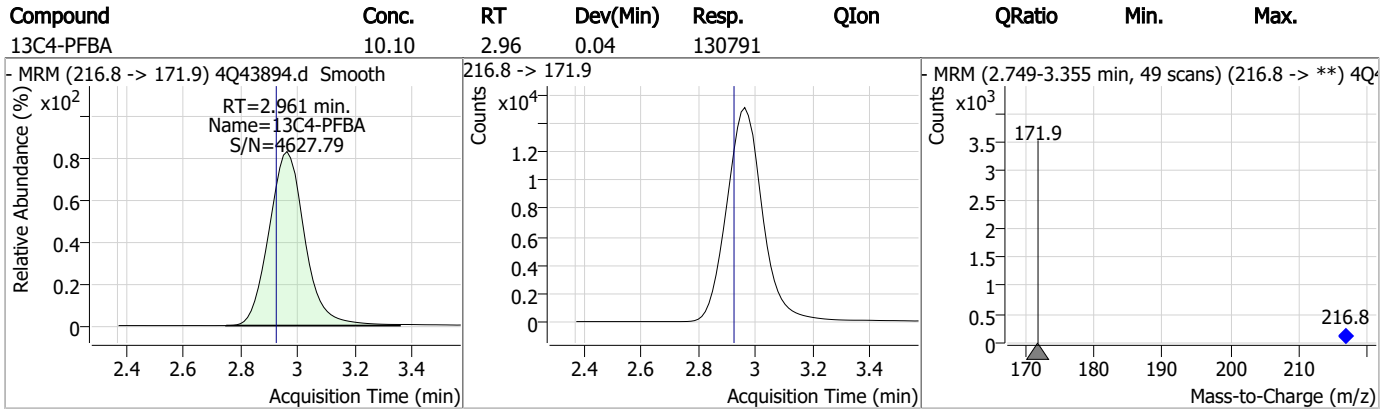
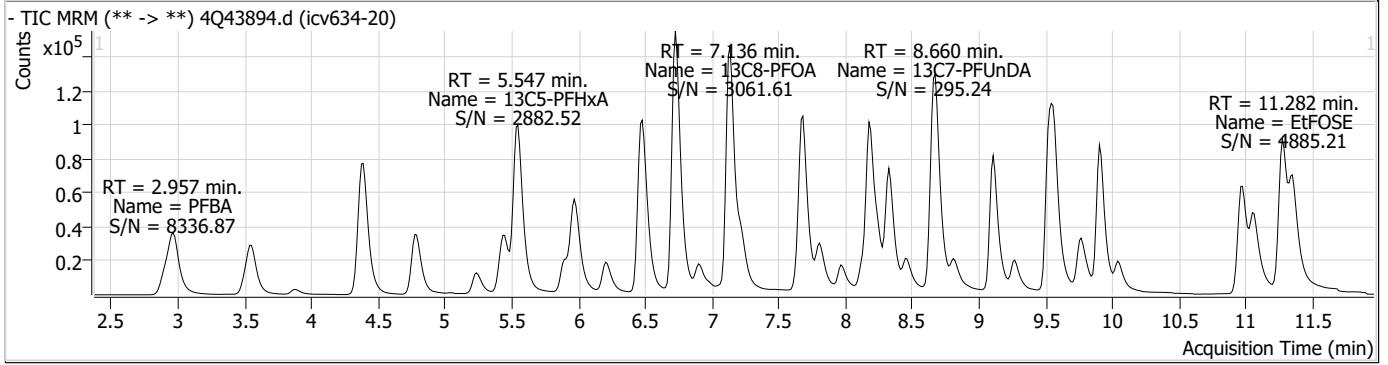
Perfluorinated Compounds by LC/MS/MS

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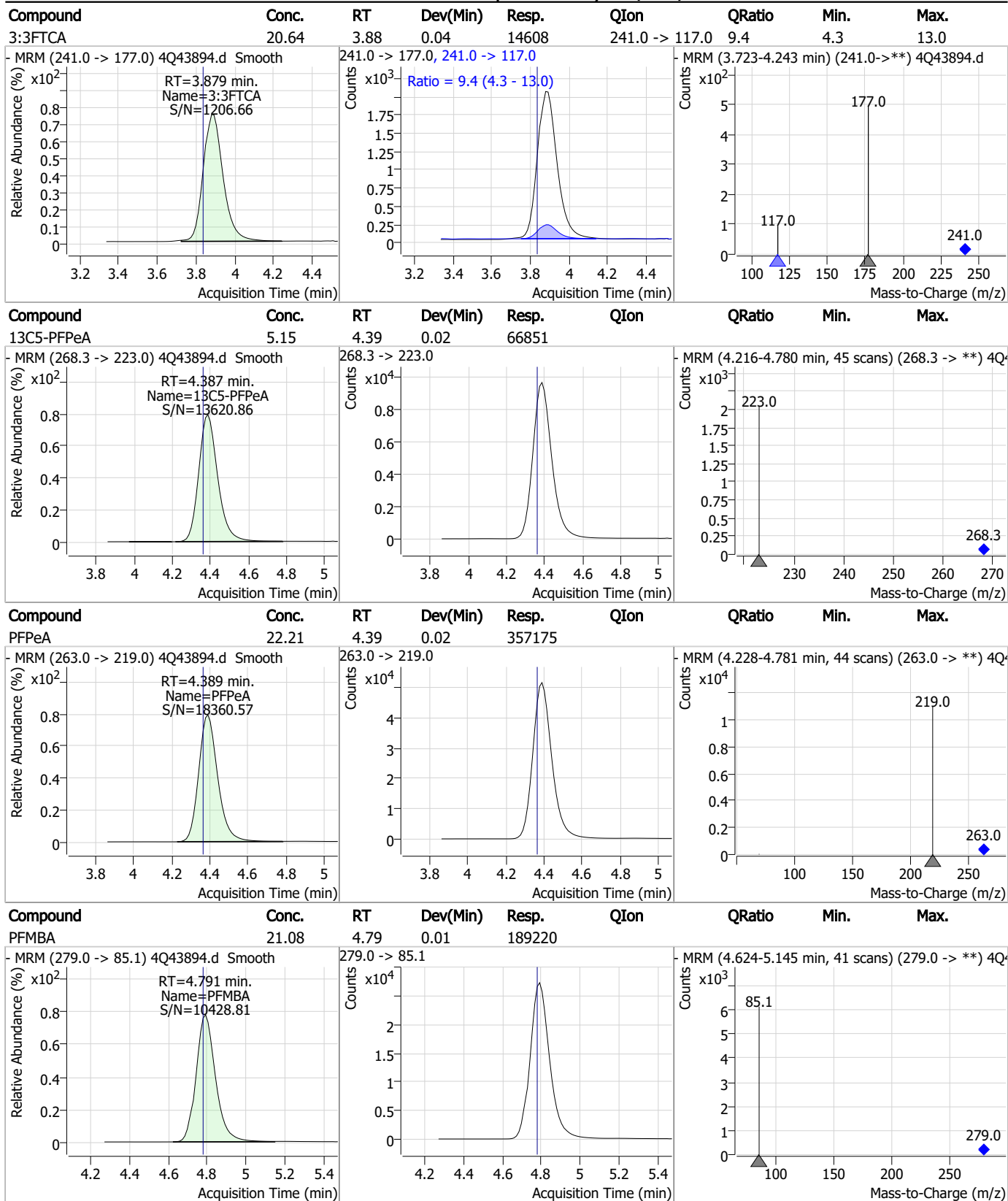
7.7.10

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Perfluorinated Compounds by LC/MS/MS

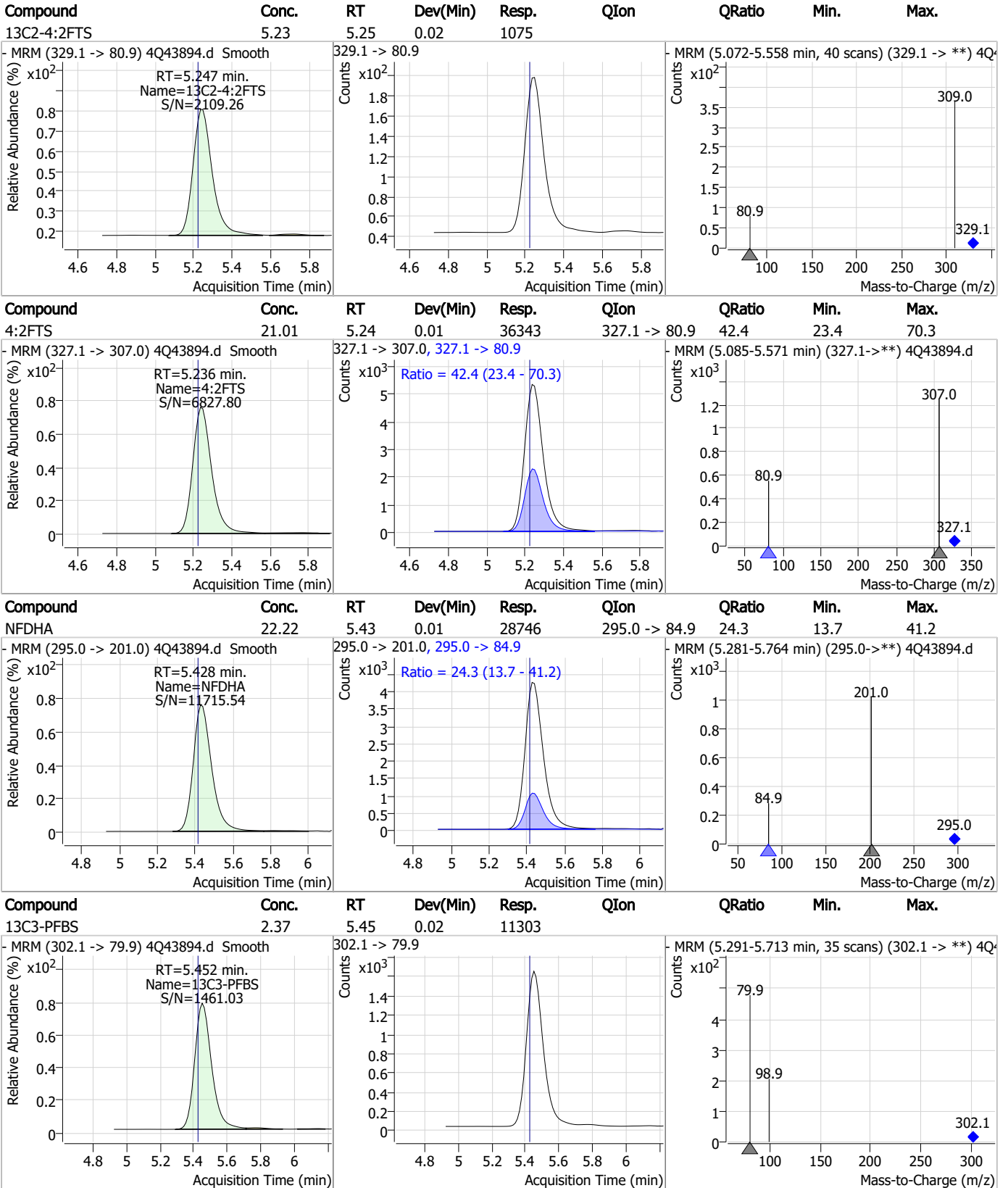


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS

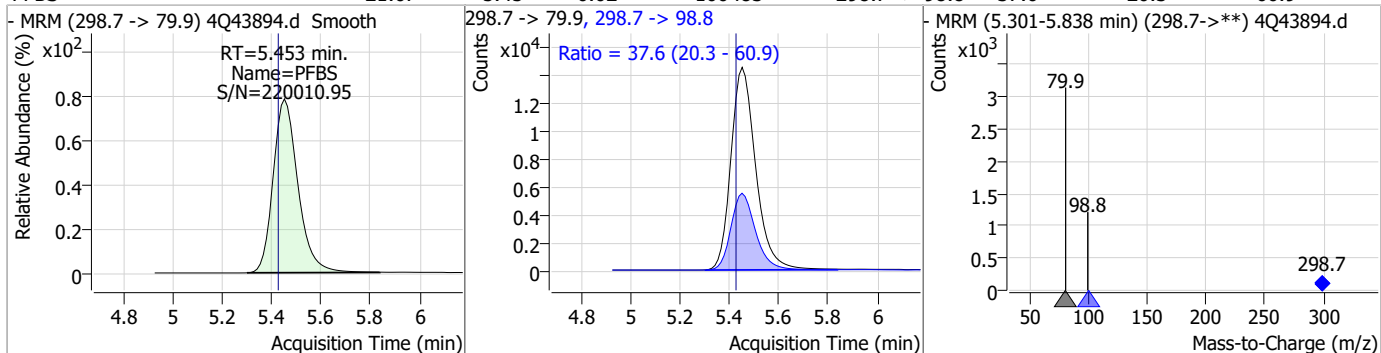


7.7.10 7

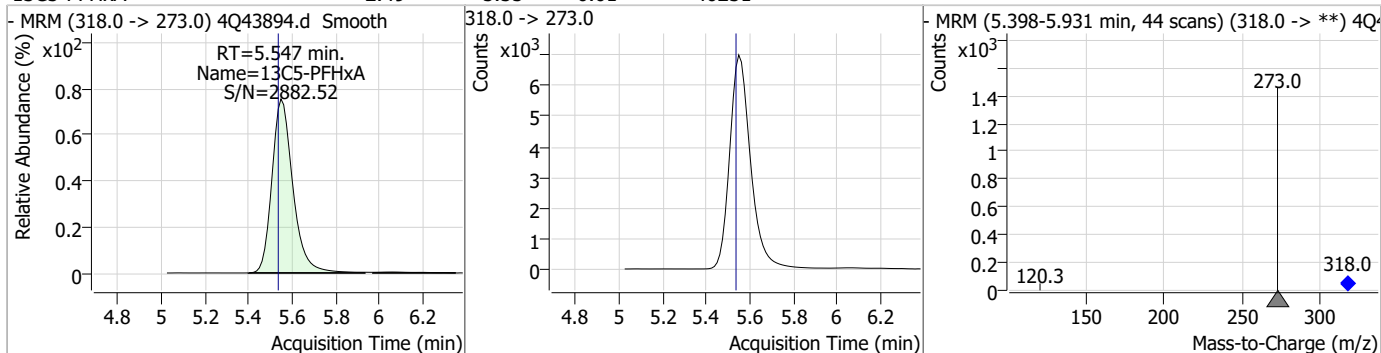


Perfluorinated Compounds by LC/MS/MS

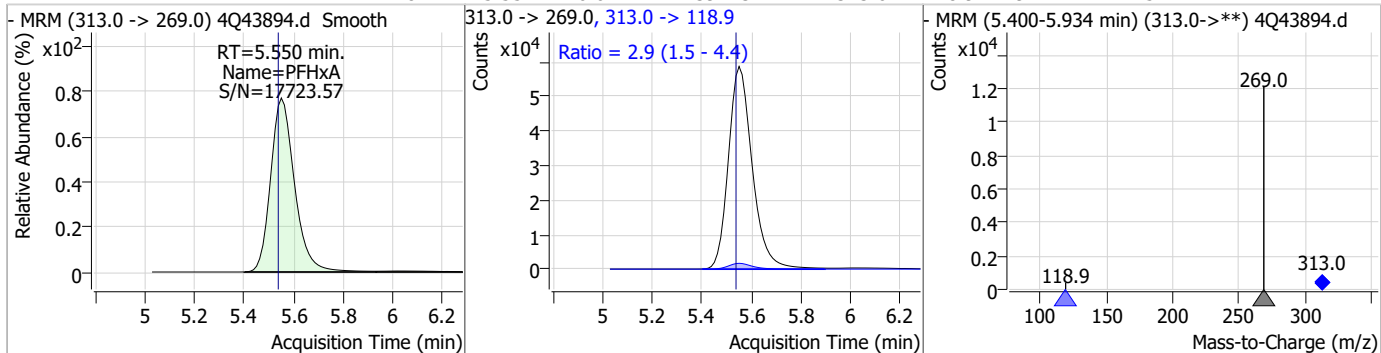
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	21.67	5.45	0.02	100483	298.7 -> 98.8	37.6	20.3	60.9



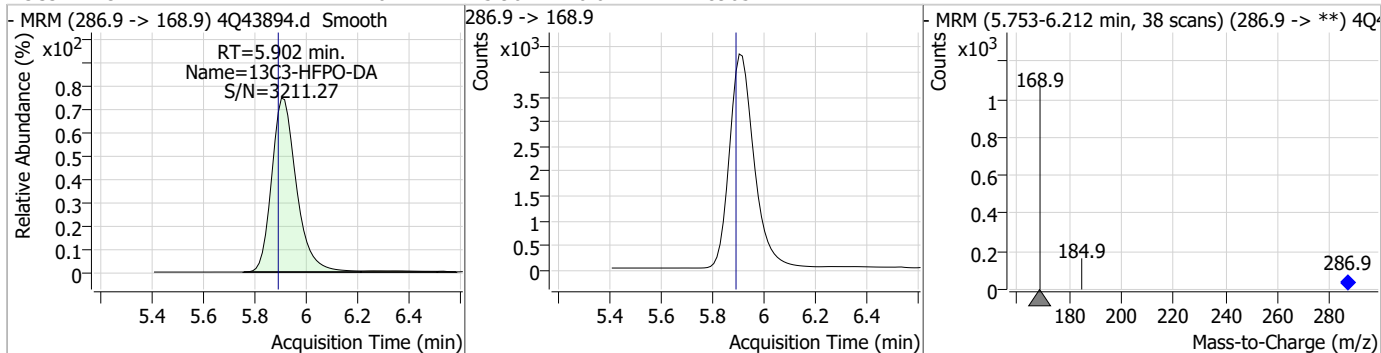
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.55	0.01	46251				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	21.78	5.55	0.01	394737	313.0 -> 118.9	2.9	1.5	4.4



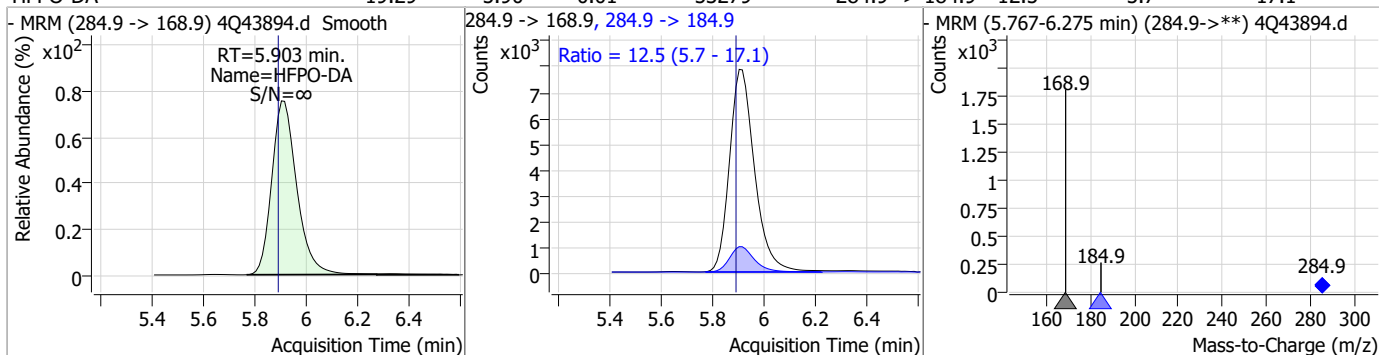
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.44	5.90	0.01	28905				



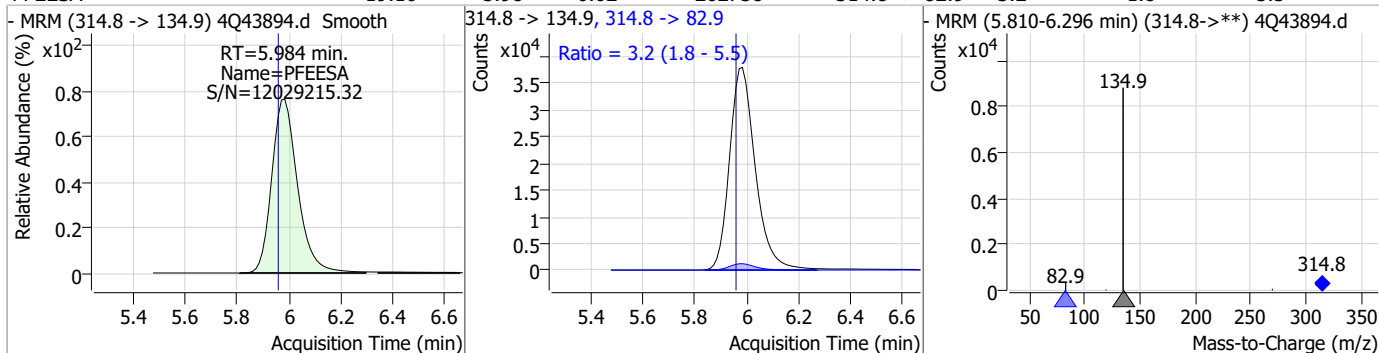
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

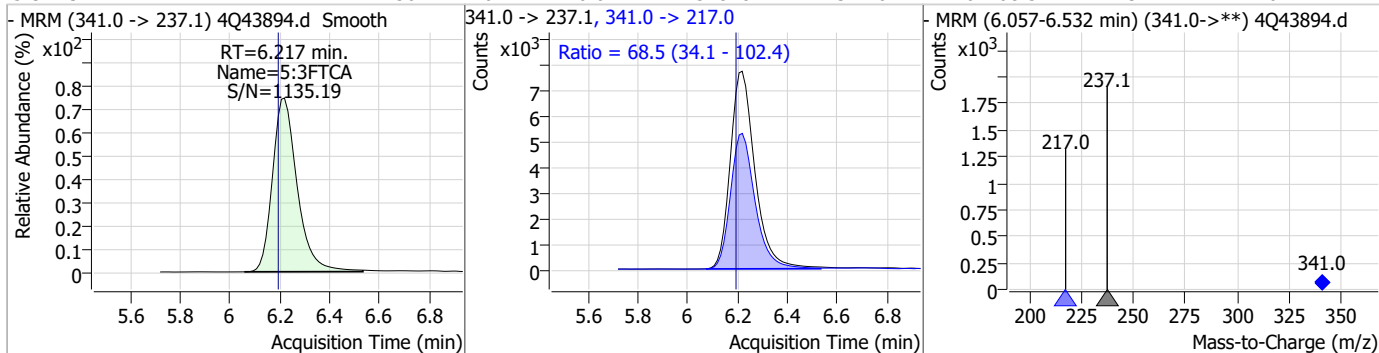
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	19.29	5.90	0.01	53279	284.9 -> 184.9	12.5	5.7	17.1



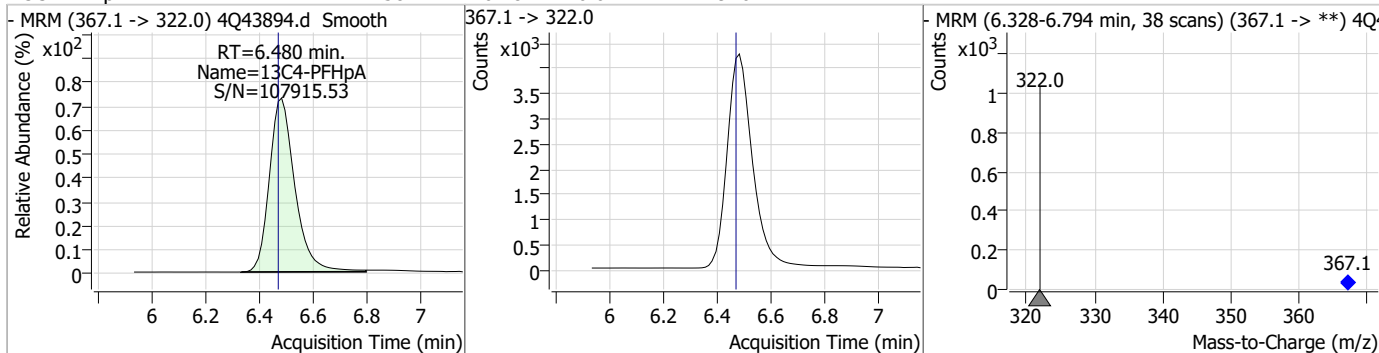
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	19.16	5.98	0.02	262758	314.8 -> 82.9	3.2	1.8	5.5



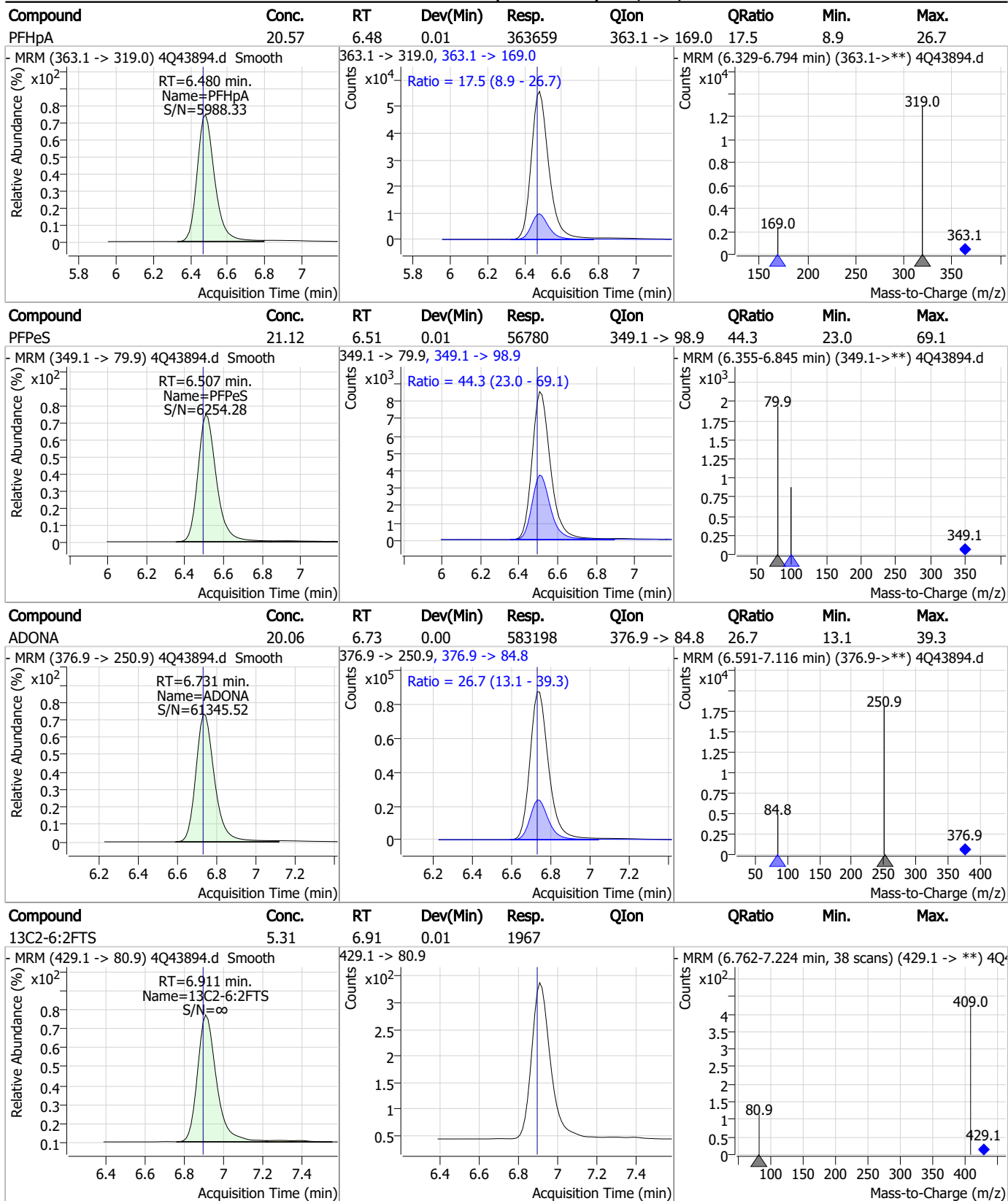
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	21.50	6.22	0.02	52878	341.0 -> 217.0	68.5	34.1	102.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.58	6.48	0.01	27970	367.1 -> 322.0			

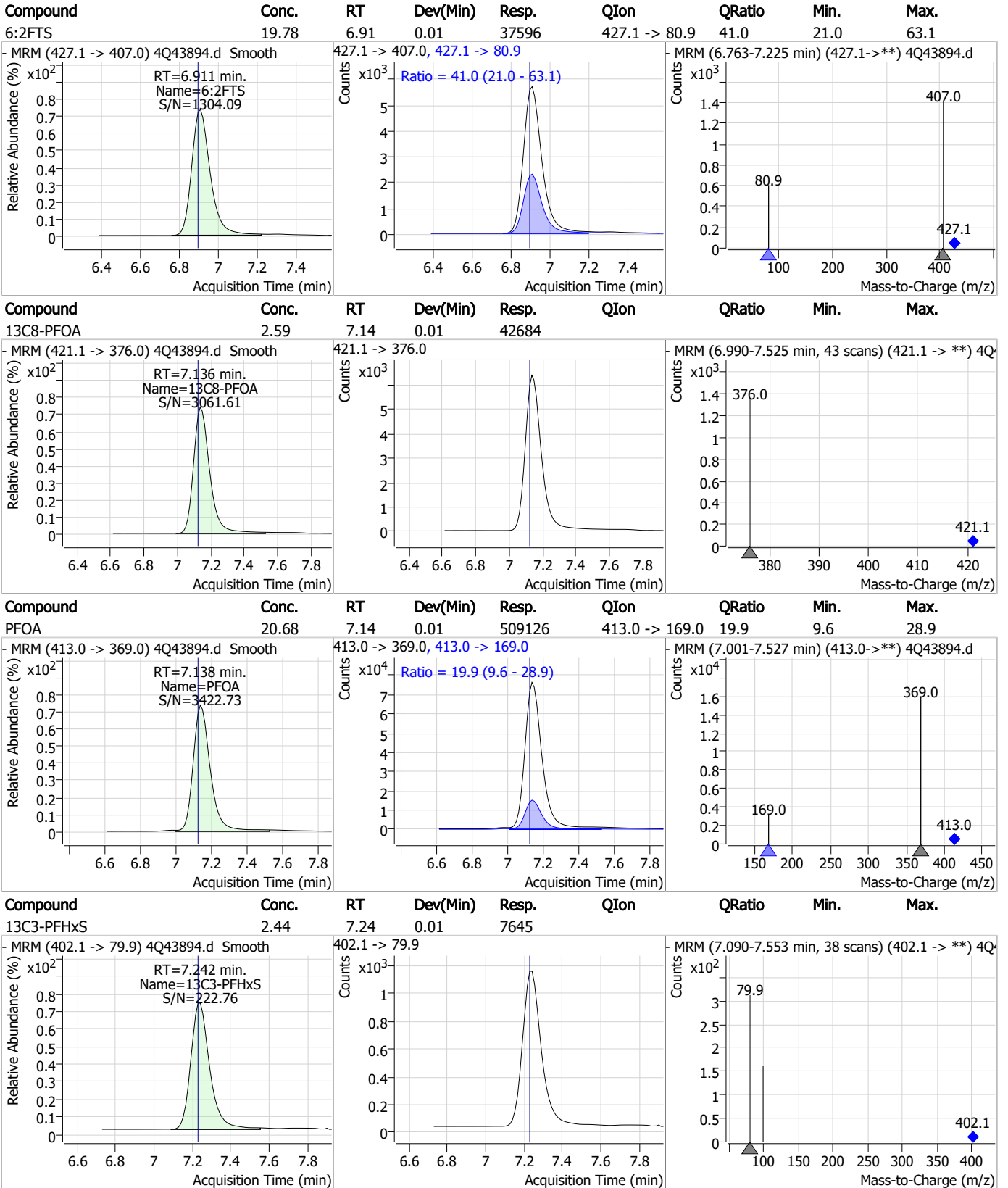


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

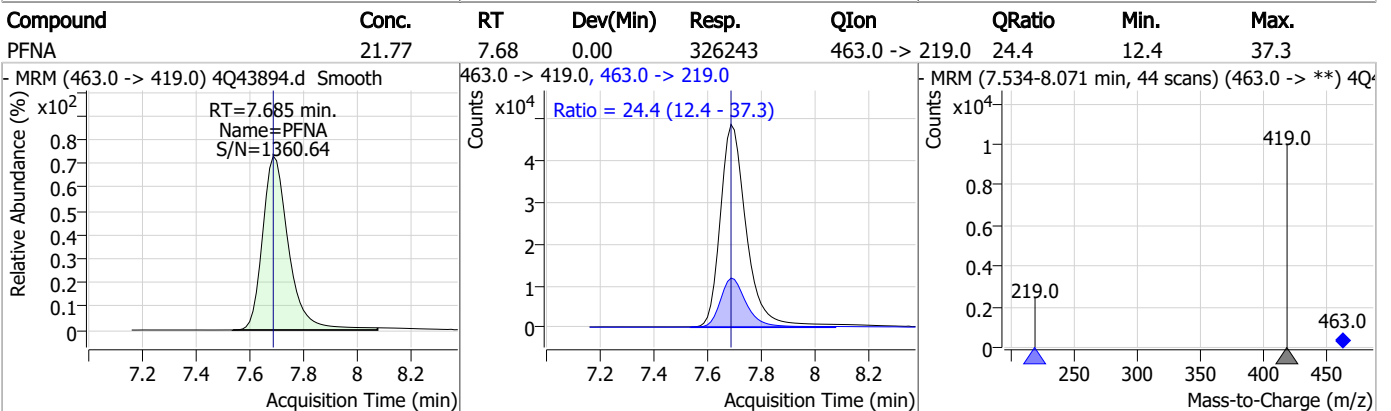
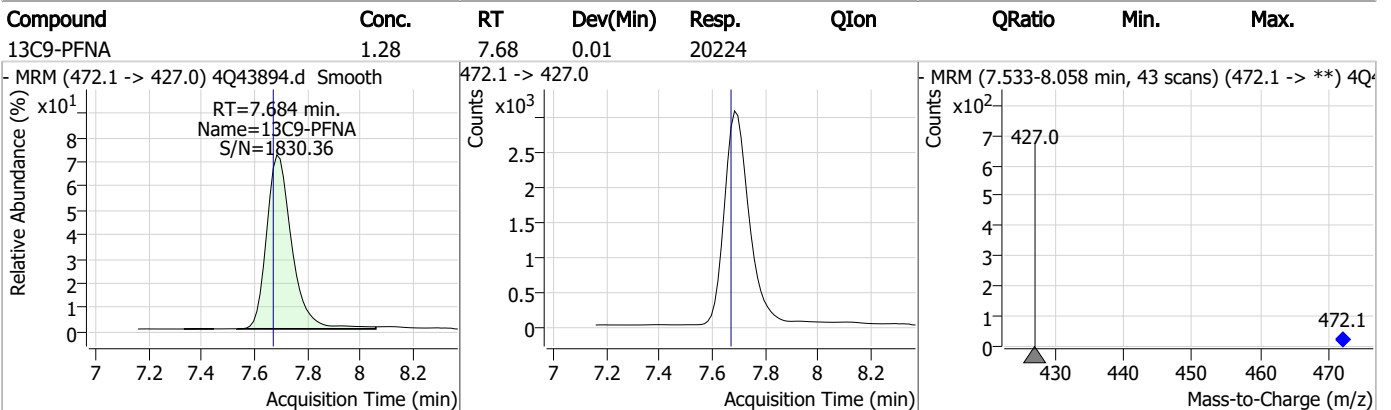
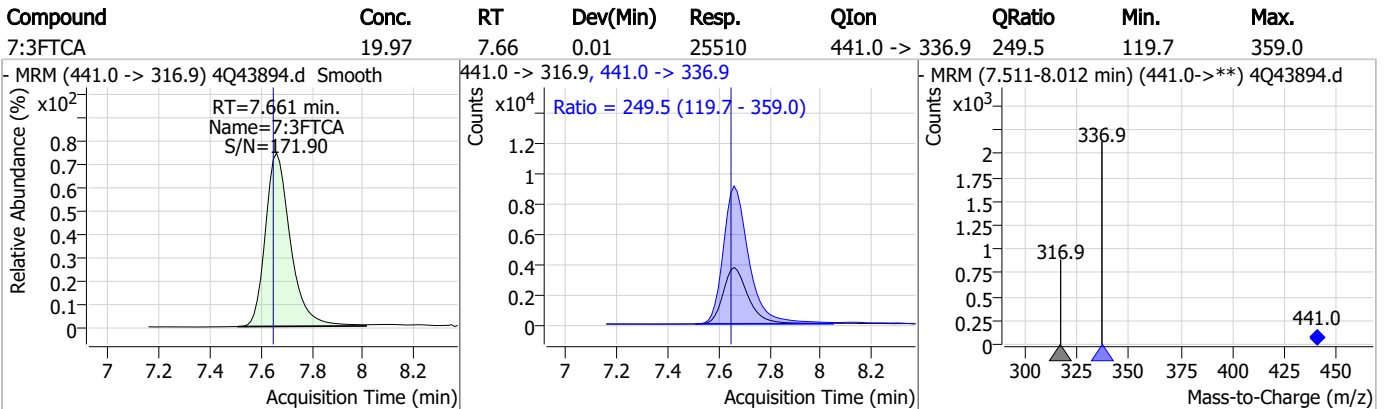
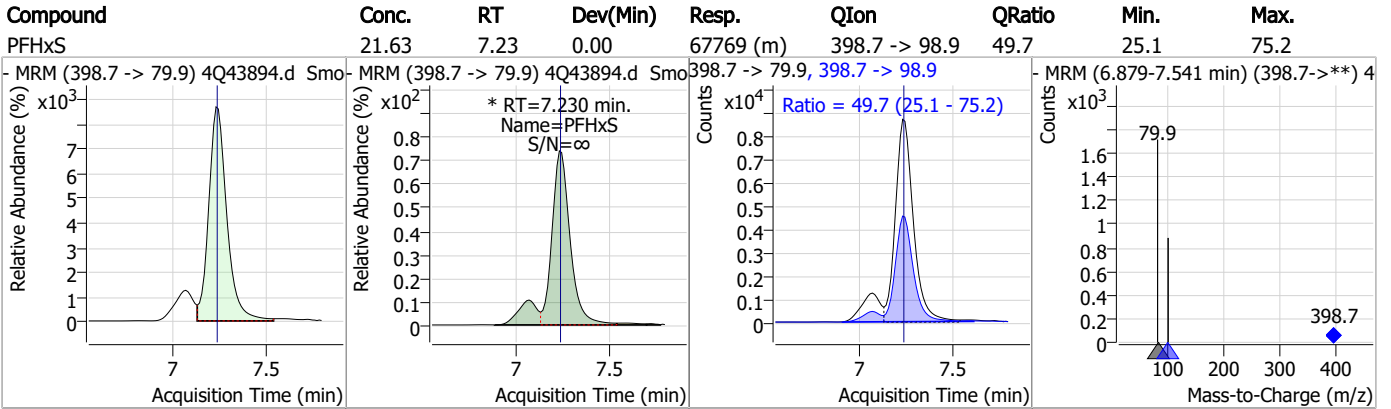
Perfluorinated Compounds by LC/MS/MS



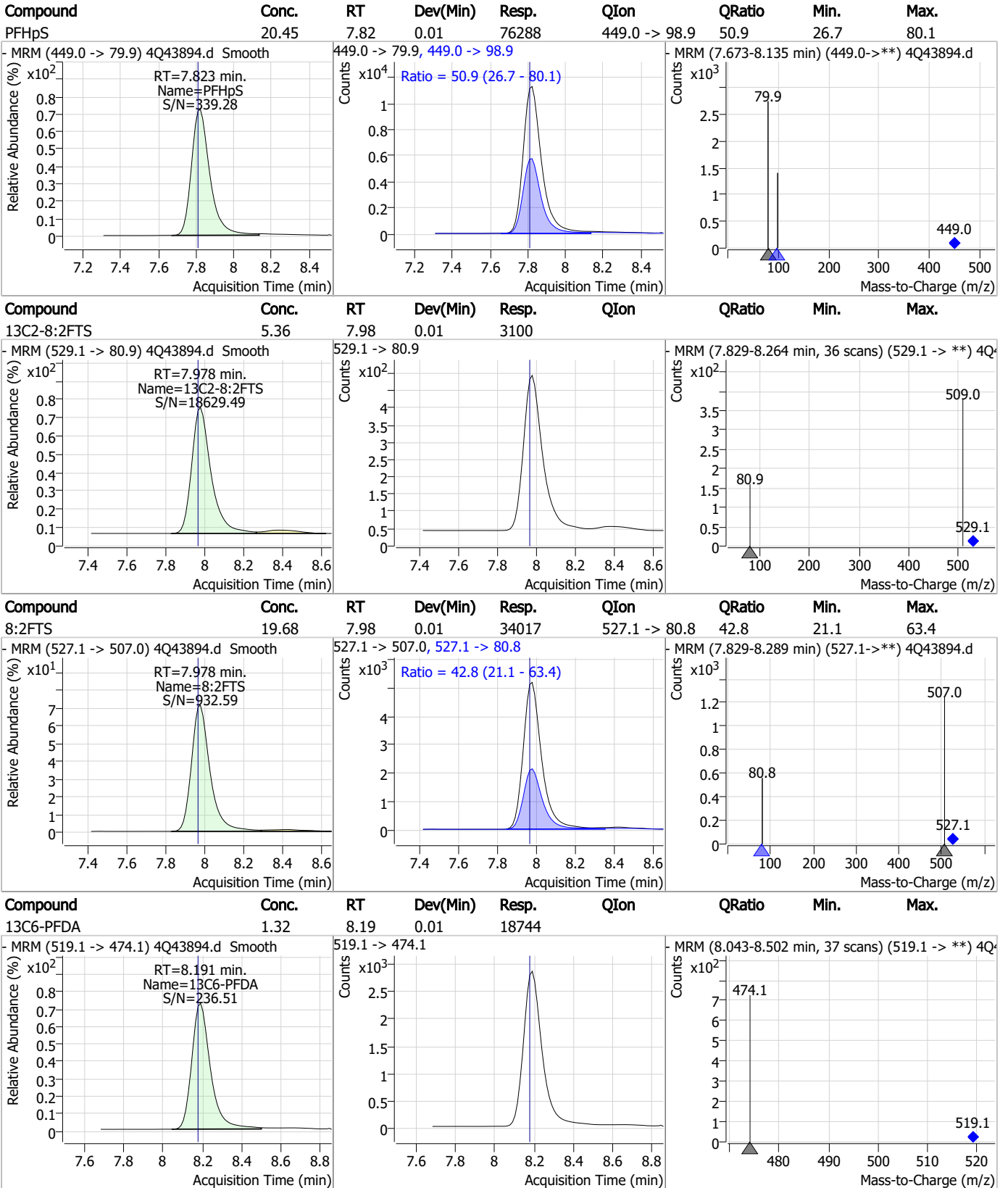
7.7.10 7



Perfluorinated Compounds by LC/MS/MS



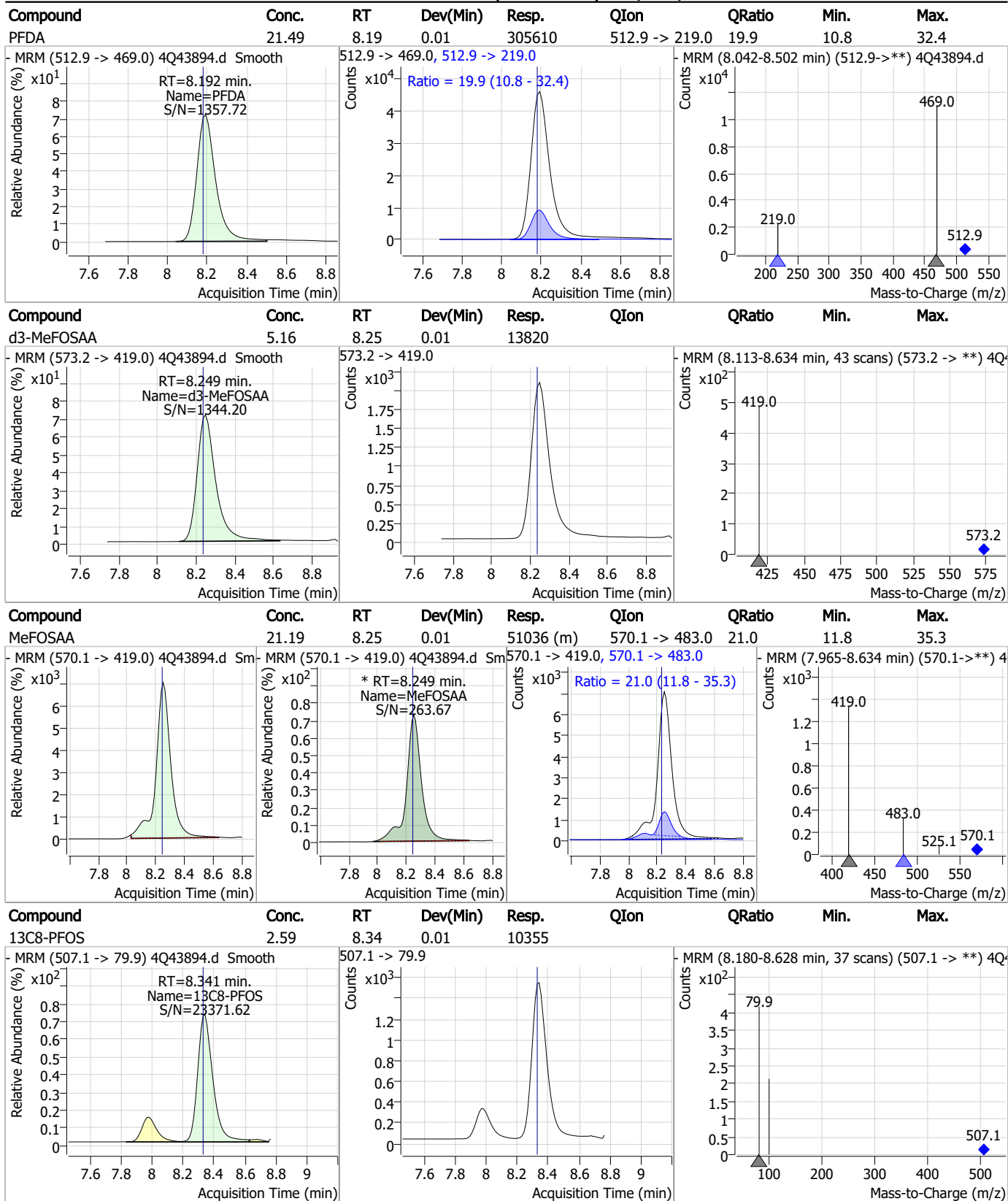
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



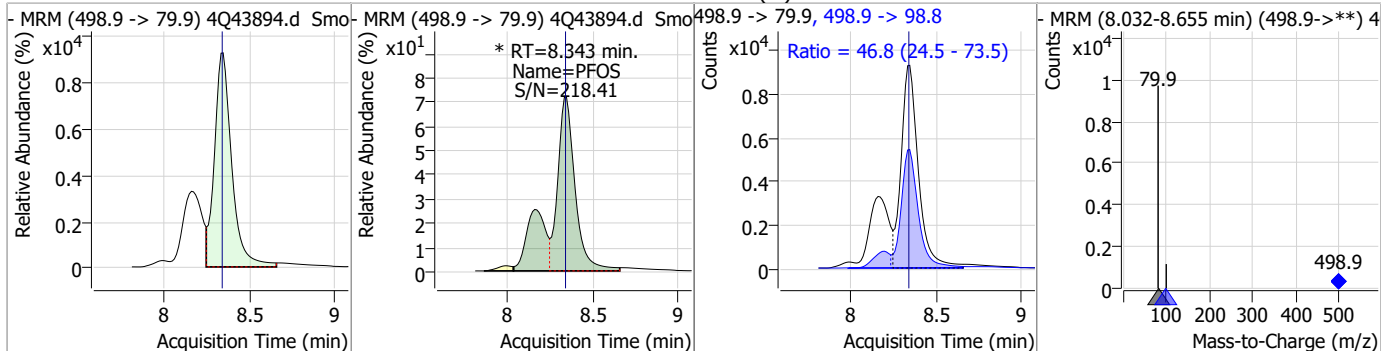
Perfluorinated Compounds by LC/MS/MS



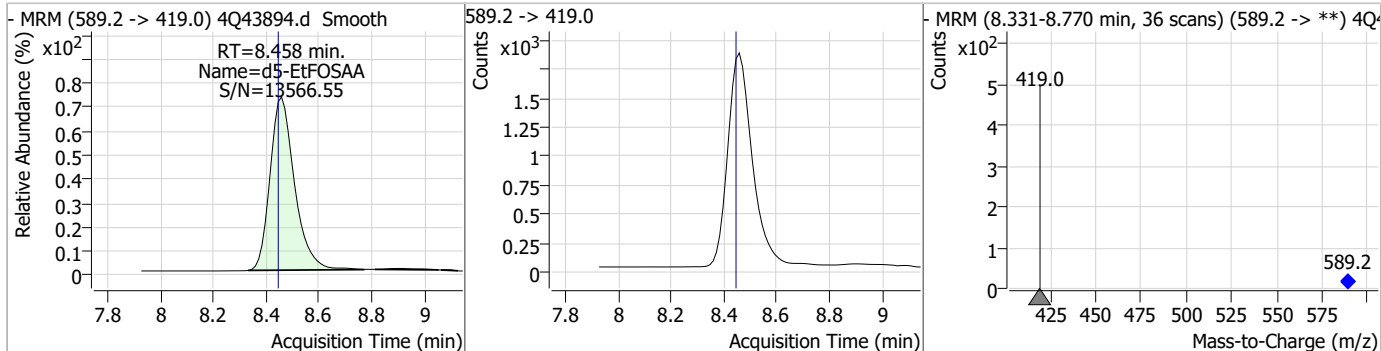
7.7.10
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Perfluorinated Compounds by LC/MS/MS

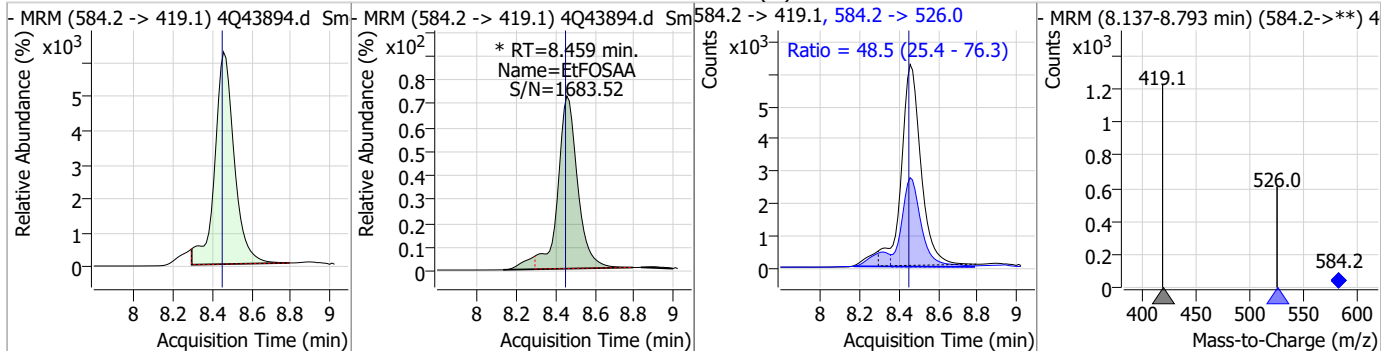
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.96	8.34	0.01	91001 (m)	498.9 -> 98.8	46.8	24.5	73.5



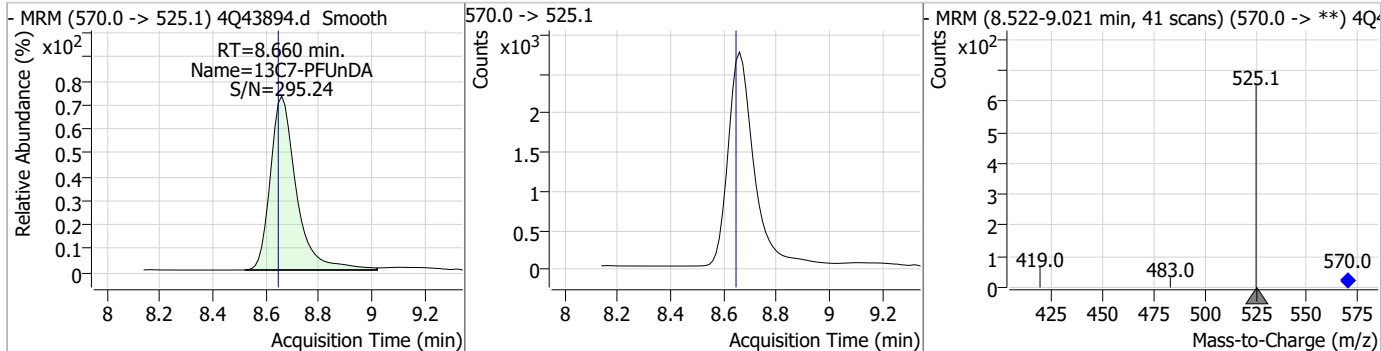
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.38	8.46	0.01	11868				



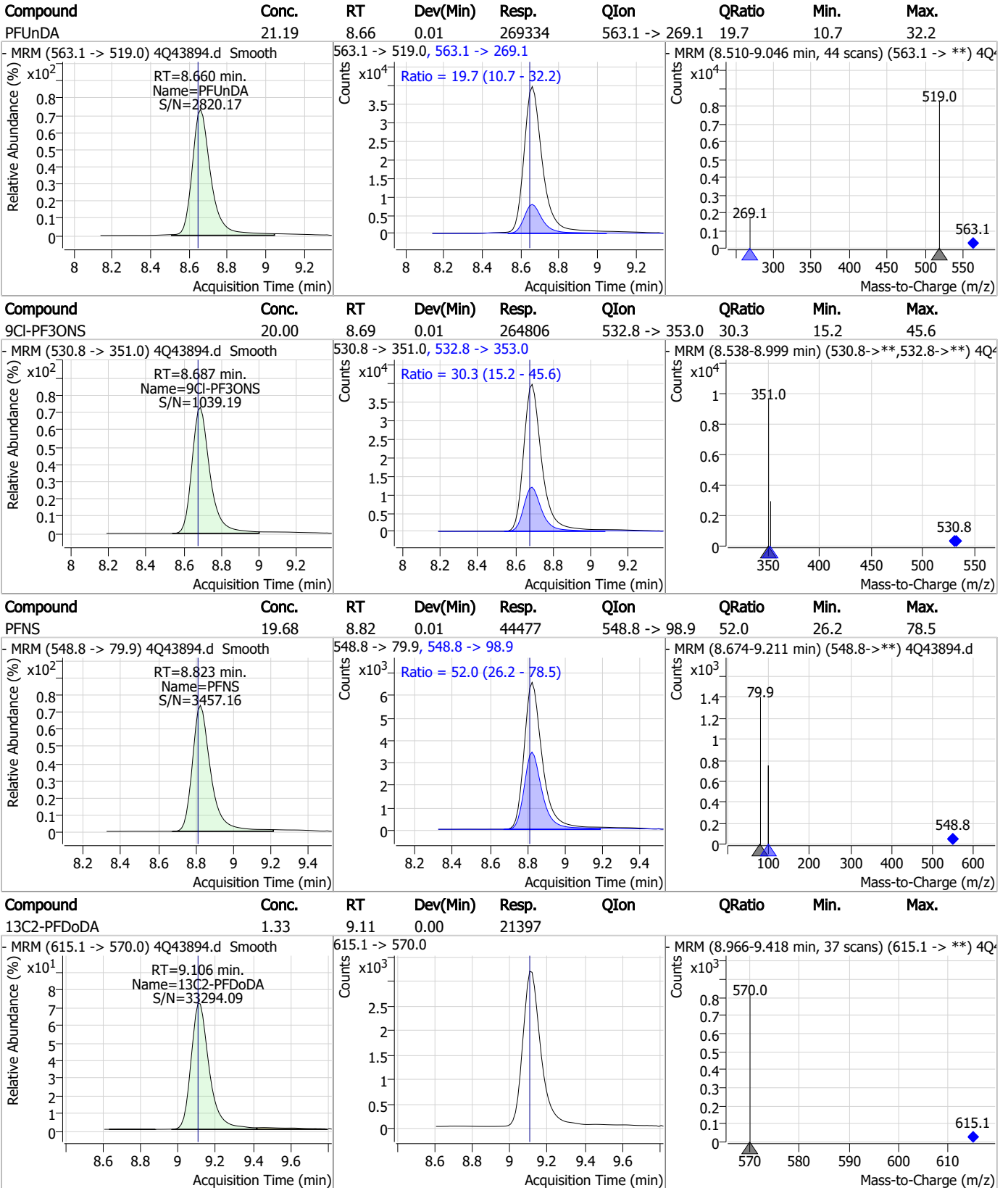
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.62	8.46	0.01	44738 (m)	584.2 -> 526.0	48.5	25.4	76.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.26	8.66	0.01	18716				



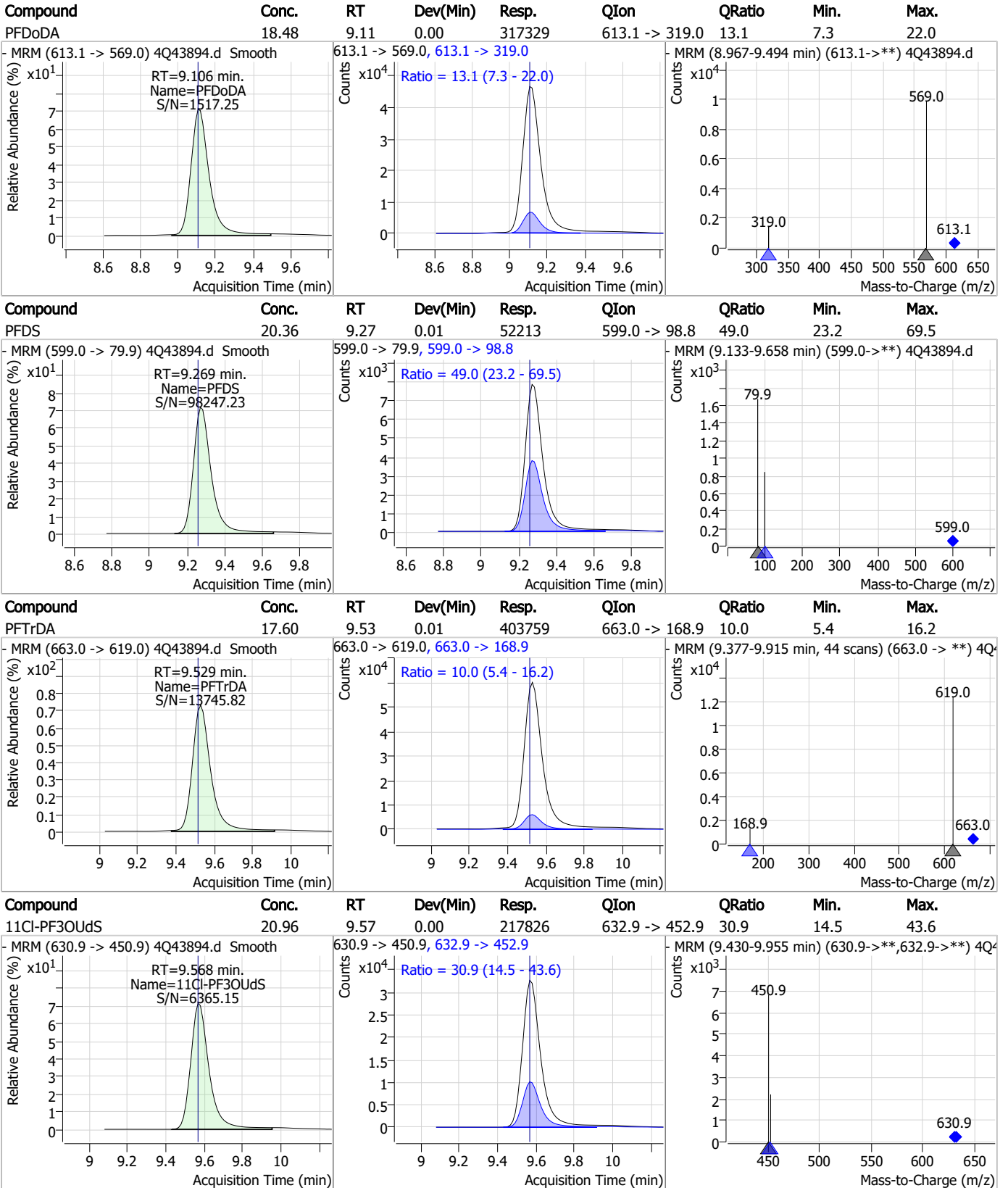
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



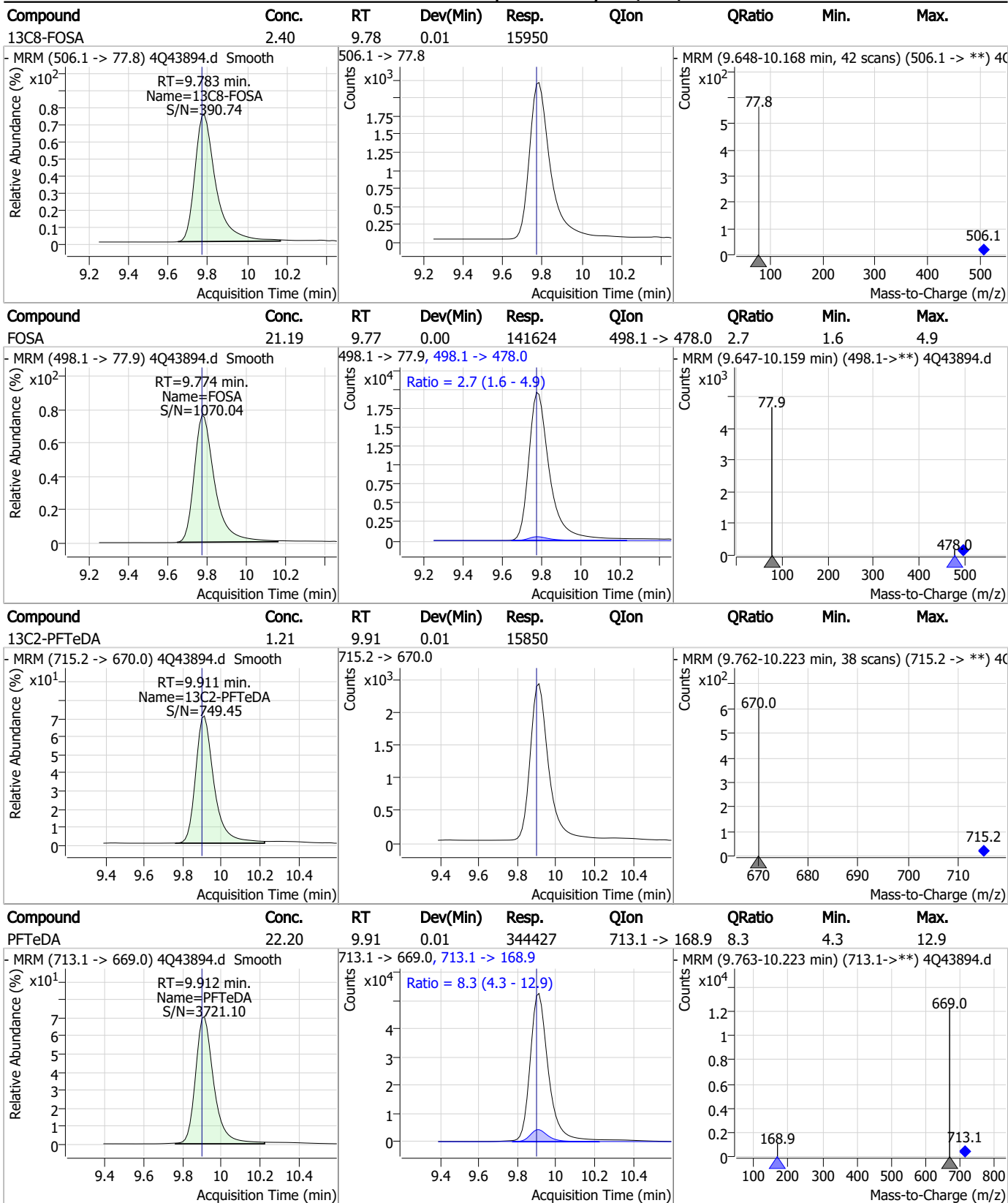
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



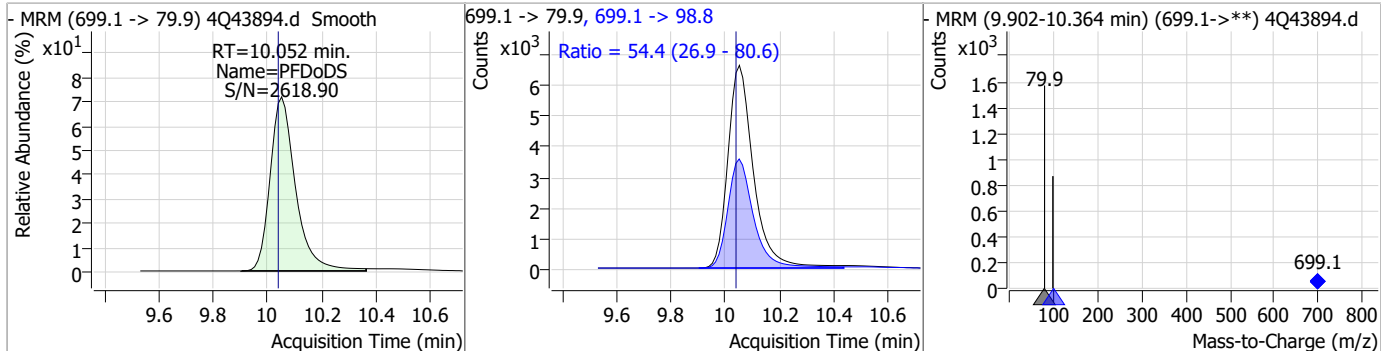
Perfluorinated Compounds by LC/MS/MS



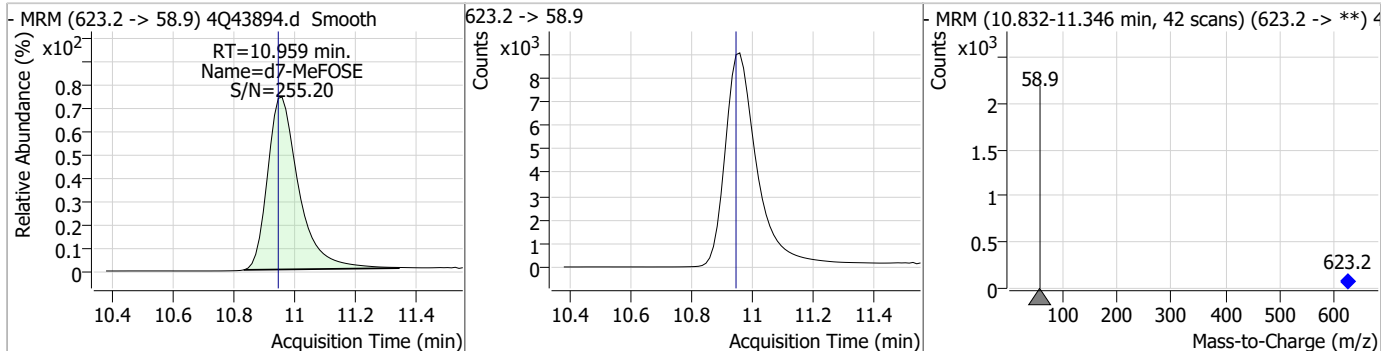
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

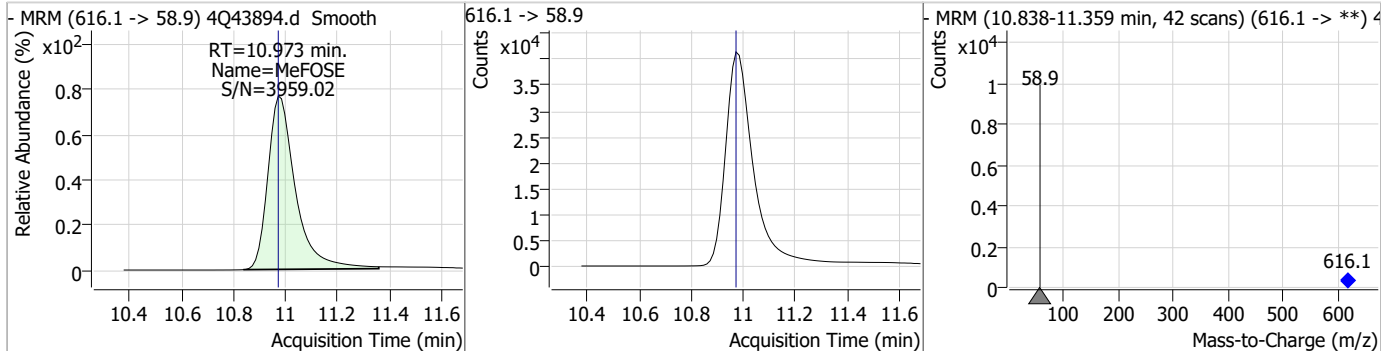
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	18.91	10.05	0.01	43287	699.1 -> 98.8	54.4	26.9	80.6



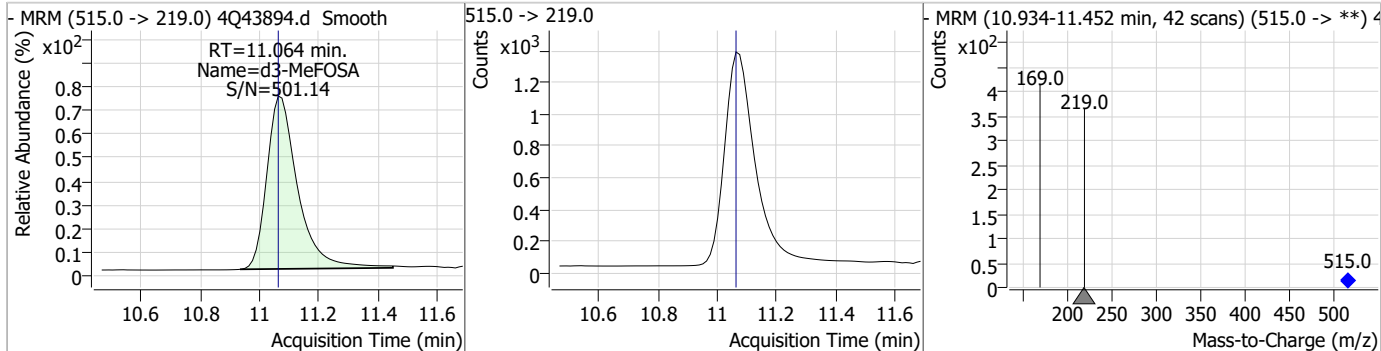
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.41	10.96	0.01	64121				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	115.45	10.97	0.00	304054				



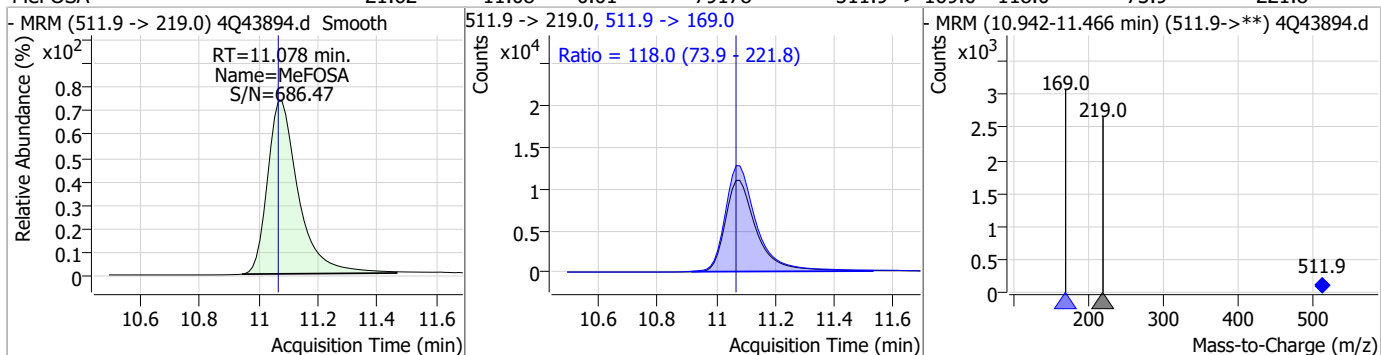
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.06	0.00	9720				



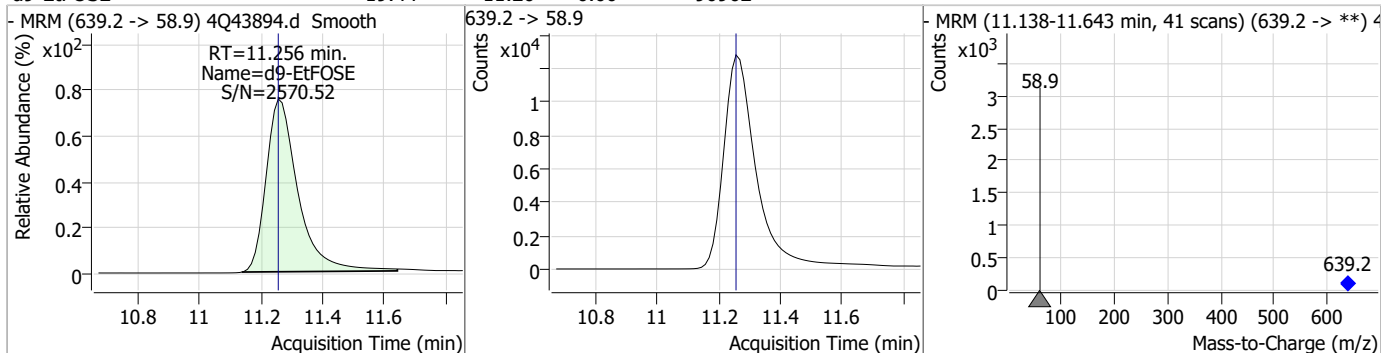
7.7.10
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Perfluorinated Compounds by LC/MS/MS

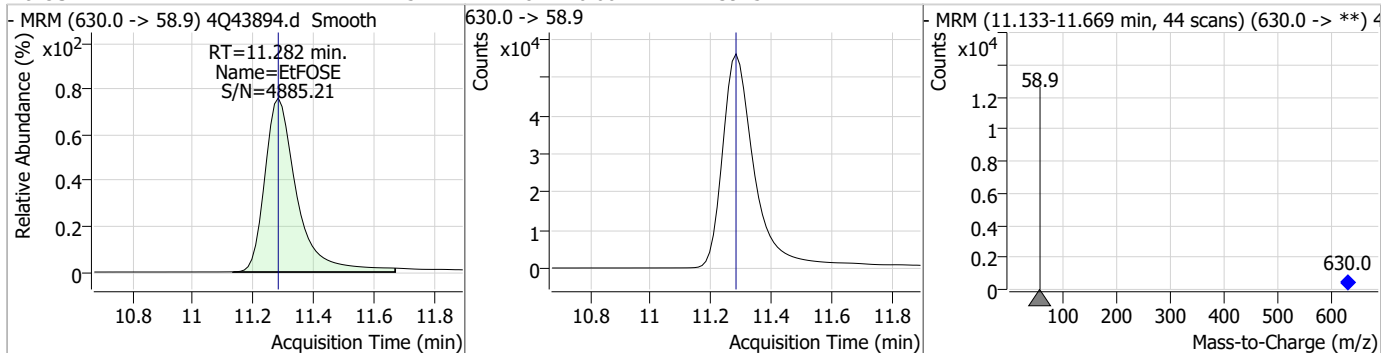
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	21.62	11.08	0.01	79178	511.9 -> 169.0	118.0	73.9	221.8



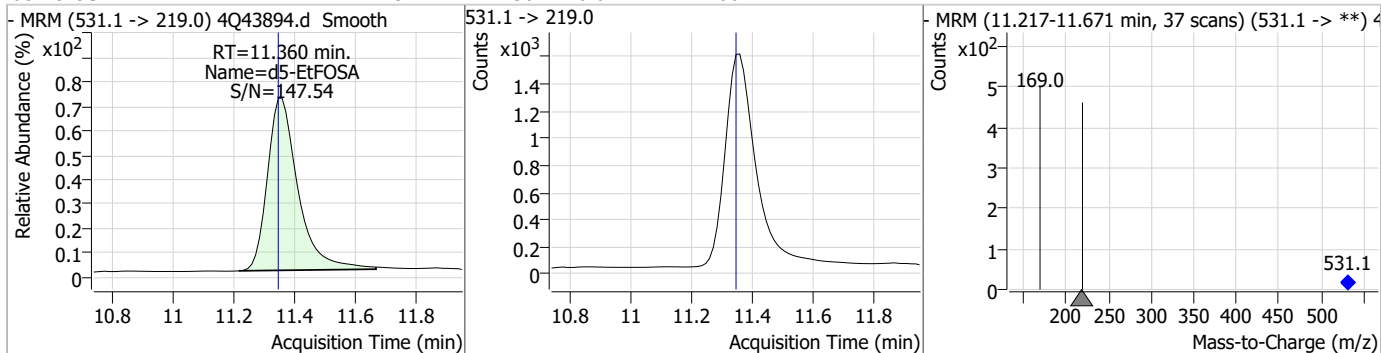
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.44	11.26	0.00	90962	639.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	117.54	11.28	0.00	413915	630.0 -> 58.9			

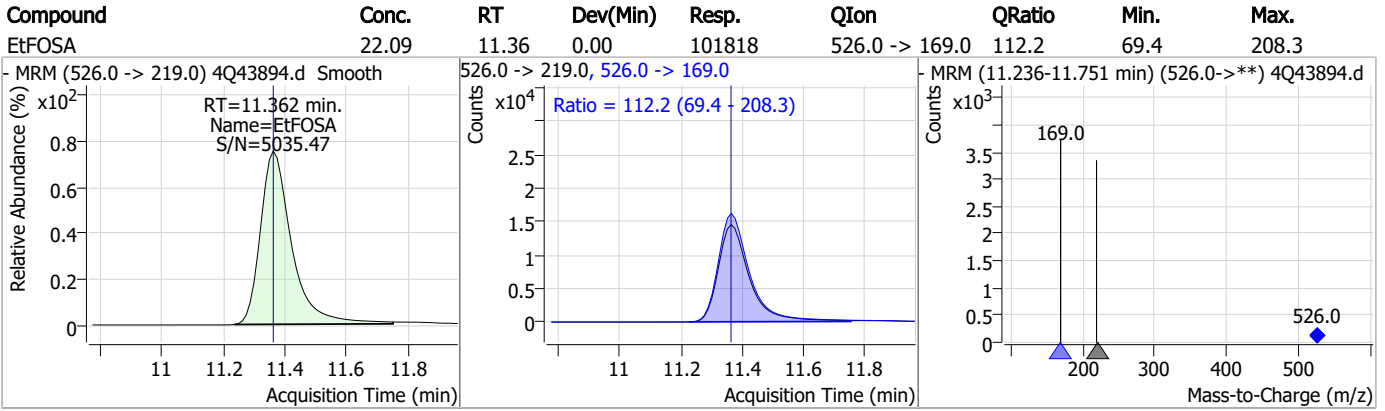


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	11.36	0.01	11004	531.1 -> 219.0			



7.7.10
7

Perfluorinated Compounds by LC/MS/MS



7.7.10
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Manual Integration Approval Summary

Sample Number: S4Q634-ICV634 Method: EPA DRAFT 1633
Lab FileID: 4Q43894.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 13:20 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.46	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43895.d
 Operator : natashag
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/3/2023 1:35:25 PM
 Sample Name : icv634-4
 Vial : P1-B3
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q634.batch.bin
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.990	216.8 -> 171.9	136957	10.00 µg/L	0.066
M5-PFPeA	4.400	268.3 -> 223.0	70717	5.00 µg/L	0.037
M5-PFHxA	5.547	318.0 -> 273.0	48764	2.50 µg/L	0.012
M4-PFHpA	6.480	367.1 -> 322.0	29013	2.50 µg/L	0.012
M8-PFOA	7.136	421.1 -> 376.0	46078	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	21117	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	20281	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	20063	1.25 µg/L	0.013
M2-PFDoDA	9.106	615.1 -> 570.0	22329	1.25 µg/L	0.000
M2-PFTeDA	9.911	715.2 -> 670.0	15785	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	17104	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11932	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	8020	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	11596	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1099	5.00 µg/L	0.025
M2-6:2FTS	6.911	429.1 -> 80.9	2057	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	3256	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	14953	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	28932	10.00 µg/L	0.025
M5-EtFOSAA	8.458	589.2 -> 419.0	12315	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	71810	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	98159	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11972	2.50 µg/L	0.012
M3-MeFOSA	11.064	515.0 -> 219.0	10103	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	11566	2.50 µg/L	0.012
13C3-PFBA	2.993	216.0 -> 172.0	73121	5.00 µg/L	0.065
18O2-PFHxS	7.241	403.0 -> 83.9	5173	2.50 µg/L	0.012
13C4-PFOA	7.136	417.1 -> 372.0	54623	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	17040	1.25 µg/L	0.013
13C5-PFNA	7.684	468.0 -> 423.0	24797	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	44958	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1099	5.23 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C2-6:2FTS	6.911	429.1 -> 80.9	2057	5.43 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.5%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3256	5.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.1%		
13C2-PFDoDA	9.106	615.1 -> 570.0	22329	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15785	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C3-PFBS	5.452	302.1 -> 79.9	11932	2.45 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C3-PFHxS	7.242	402.1 -> 79.9	8020	2.50 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFBA	2.990	216.8 -> 171.9	136957	9.95 µg/L	0.066
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.480	367.1 -> 322.0	29013	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFHxA	5.547	318.0 -> 273.0	48764	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFPeA	4.400	268.3 -> 223.0	70717	5.11 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C6-PFDA	8.191	519.1 -> 474.1	20281	1.39 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.2%	
13C7-PFUnDA	8.660	570.0 -> 525.1	20063	1.32 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C8-FOSA	9.783	506.1 -> 77.8	17104	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	
13C8-PFOA	7.136	421.1 -> 376.0	46078	2.57 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C8-PFOS	8.341	507.1 -> 79.9	11596	2.66 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C9-PFNA	7.684	472.1 -> 427.0	21117	1.25 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%	
d3-MeFOSAA	8.249	573.2 -> 419.0	14953	5.12 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	28932	9.78 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d3-MeFOSA	11.064	515.0 -> 219.0	10103	2.23 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.1%	
d5-EtFOSAA	8.458	589.2 -> 419.0	12315	5.12 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d7-MeFOSE	10.959	623.2 -> 58.9	71810	19.96 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.8%	
d9-EtFOSE	11.256	639.2 -> 58.9	98159	19.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.1%	
d5-EtFOSA	11.360	531.1 -> 219.0	11972	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	17022	9.63 µg/L	92
		327.1 -> 80.9	7103		
6:2FTS	6.911	427.1 -> 407.0	19013	9.57 µg/L	100
		427.1 -> 80.9	7983		
8:2FTS	7.978	527.1 -> 507.0	16889	9.30 µg/L	93
		527.1 -> 80.8	7840		
EtFOSAA	8.459	584.2 -> 419.1	5858	2.48 µg/L	m 90
		584.2 -> 526.0	2583		
FOSA	9.774	498.1 -> 77.9	17018	2.37 µg/L	99
		498.1 -> 478.0	486		
MeFOSAA	8.249	570.1 -> 419.0	6285	2.41 µg/L	m 90
		570.1 -> 483.0	1173		
PFBA	2.996	212.8 -> 168.9	35422	9.66 µg/L	100
PFBS	5.453	298.7 -> 79.9	10405	2.13 µg/L	98
		298.7 -> 98.8	4122		
PFDA	8.192	512.9 -> 469.0	36831	2.39 µg/L	97
		512.9 -> 219.0	7422		
PFDODA	9.106	613.1 -> 569.0	43500	2.43 µg/L	99
		613.1 -> 319.0	6222		
PFDS	9.269	599.0 -> 79.9	6110	2.13 µg/L	97

7.7.11
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.480	599.0 -> 98.8	2952	2.49	µg/L	100
		363.1 -> 319.0	45710			
PFHpS	7.823	363.1 -> 169.0	8223	2.29	µg/L	98
		449.0 -> 79.9	9547			
PFHxA	5.550	449.0 -> 98.9	4967	2.43	µg/L	99
		313.0 -> 269.0	46362			
PFHxS	7.243	313.0 -> 118.9	1480	2.25	µg/L	m
		398.7 -> 79.9	7386			
PFNA	7.685	398.7 -> 98.9	3843	2.42	µg/L	100
		463.0 -> 419.0	37870			
PFNS	8.823	463.0 -> 219.0	9515	2.16	µg/L	99
		548.8 -> 79.9	5473			
PFOA	7.137	548.8 -> 98.9	2902	2.44	µg/L	99
		413.0 -> 369.0	64985			
PFOS	8.343	413.0 -> 169.0	12350	2.14	µg/L	m
		498.9 -> 79.9	12171			
PFPeA	4.402	498.9 -> 98.8	6199	4.86	µg/L	100
		263.0 -> 219.0	82728			
PFPeS	6.519	349.1 -> 79.9	6083	2.16	µg/L	99
		349.1 -> 98.9	2767			
PFTeDA	9.912	713.1 -> 669.0	39752	2.57	µg/L	98
		713.1 -> 168.9	3141			
PFTrDA	9.529	663.0 -> 619.0	55701	2.33	µg/L	99
		663.0 -> 168.9	5752			
PFUnDA	8.660	563.1 -> 519.0	34545	2.54	µg/L	95
		563.1 -> 269.1	6627			
11CI-PF3OUdS	9.568	630.9 -> 450.9	48981	4.71	µg/L	97
		632.9 -> 452.9	14928			
9CI-PF3ONS	8.687	530.8 -> 351.0	61516	4.64	µg/L	98
		532.8 -> 353.0	18165			
ADONA	6.743	376.9 -> 250.9	136907	4.71	µg/L	99
		376.9 -> 84.8	36276			
HFPO-DA	5.915	284.9 -> 168.9	14361	5.19	µg/L	98
		284.9 -> 184.9	1759			
3:3FTCA	3.892	241.0 -> 177.0	9341	12.48	µg/L	98
		241.0 -> 117.0	863			
5:3FTCA	6.217	341.0 -> 237.1	158885	61.29	µg/L	99
		341.0 -> 217.0	109735			
7:3FTCA	7.661	441.0 -> 316.9	85269	63.30	µg/L	99
		441.0 -> 336.9	203049			
EtFOSA	11.362	526.0 -> 219.0	24230	4.83	µg/L	m
		526.0 -> 169.0	33119			
EtFOSE	11.282	630.0 -> 58.9	46860	12.33	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	20921	5.50	µg/L	m
		511.9 -> 169.0	29592			
MeFOSE	10.973	616.1 -> 58.9	35294	11.97	µg/L	m
PFDoDS	10.052	699.1 -> 79.9	5598	2.18	µg/L	97
		699.1 -> 98.8	3120			
NFDHA	5.441	295.0 -> 201.0	6718	4.92	µg/L	99
		295.0 -> 84.9	1820			
PFMBA	4.791	279.0 -> 85.1	45480	4.79	µg/L	100
PFMPA	3.565	229.0 -> 84.9	42809	4.81	µg/L	100
PFEESA	5.984	314.8 -> 134.9	63619	4.40	µg/L	100
		314.8 -> 82.9	2308			

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



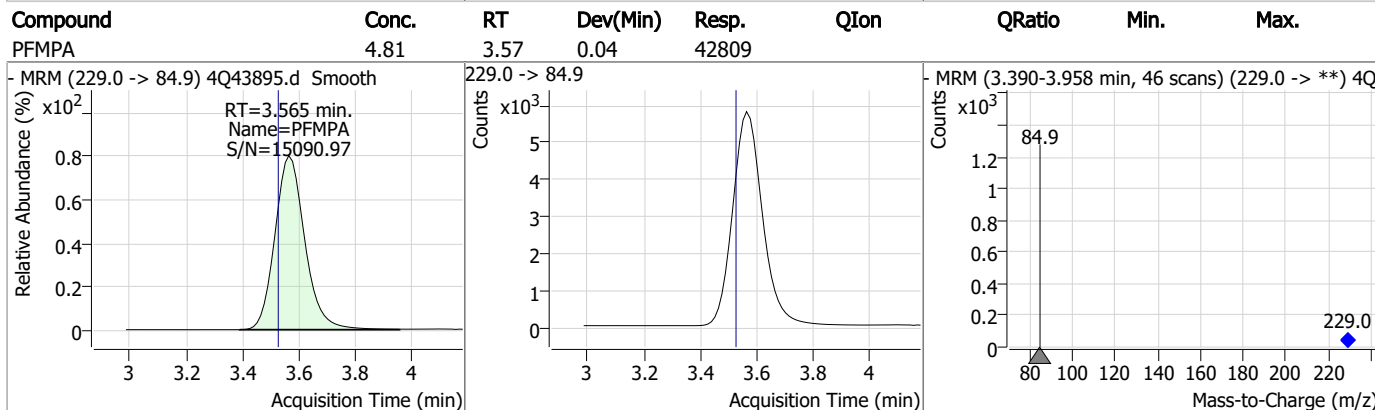
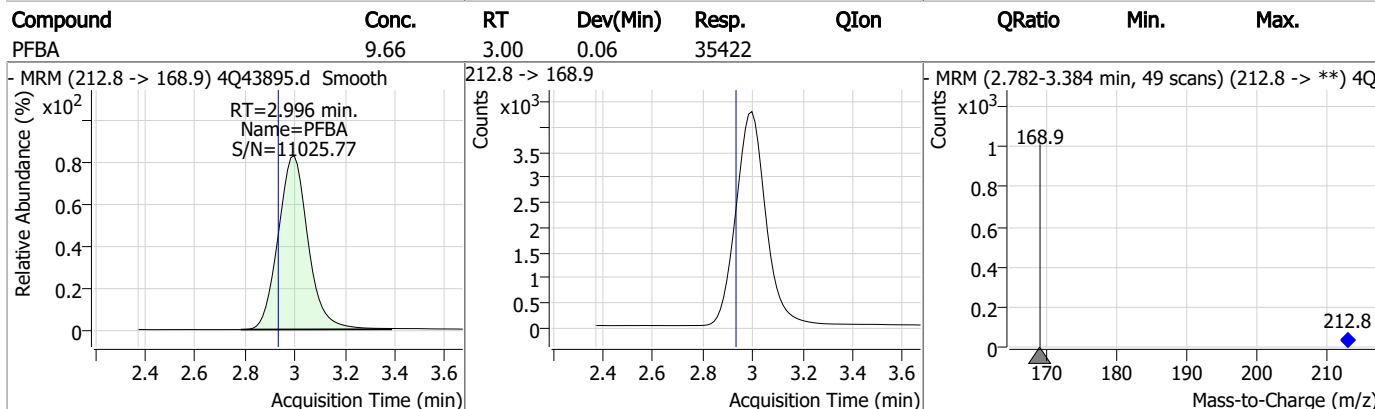
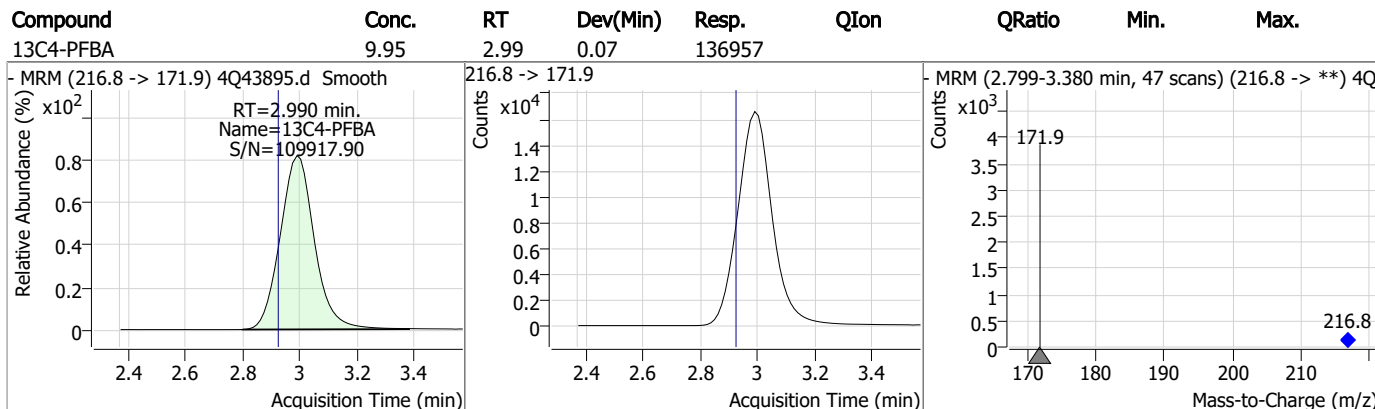
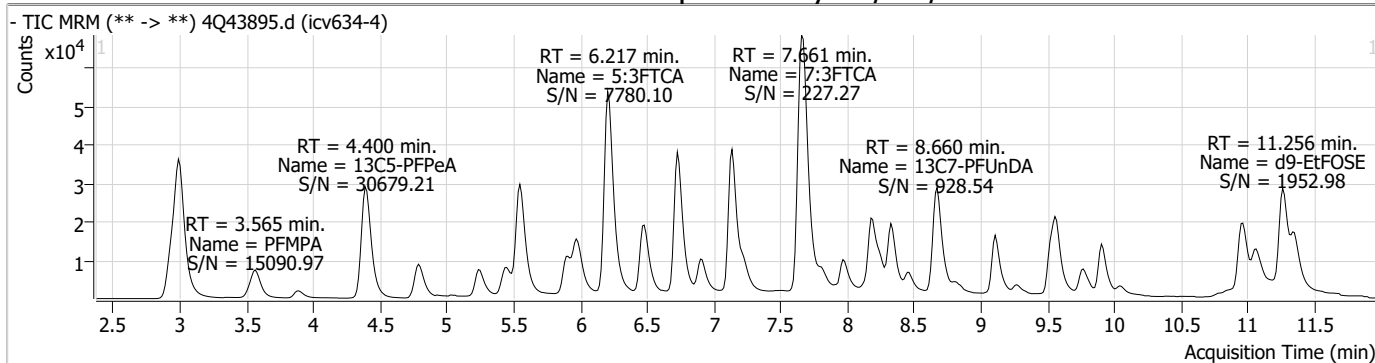
Perfluorinated Compounds by LC/MS/MS

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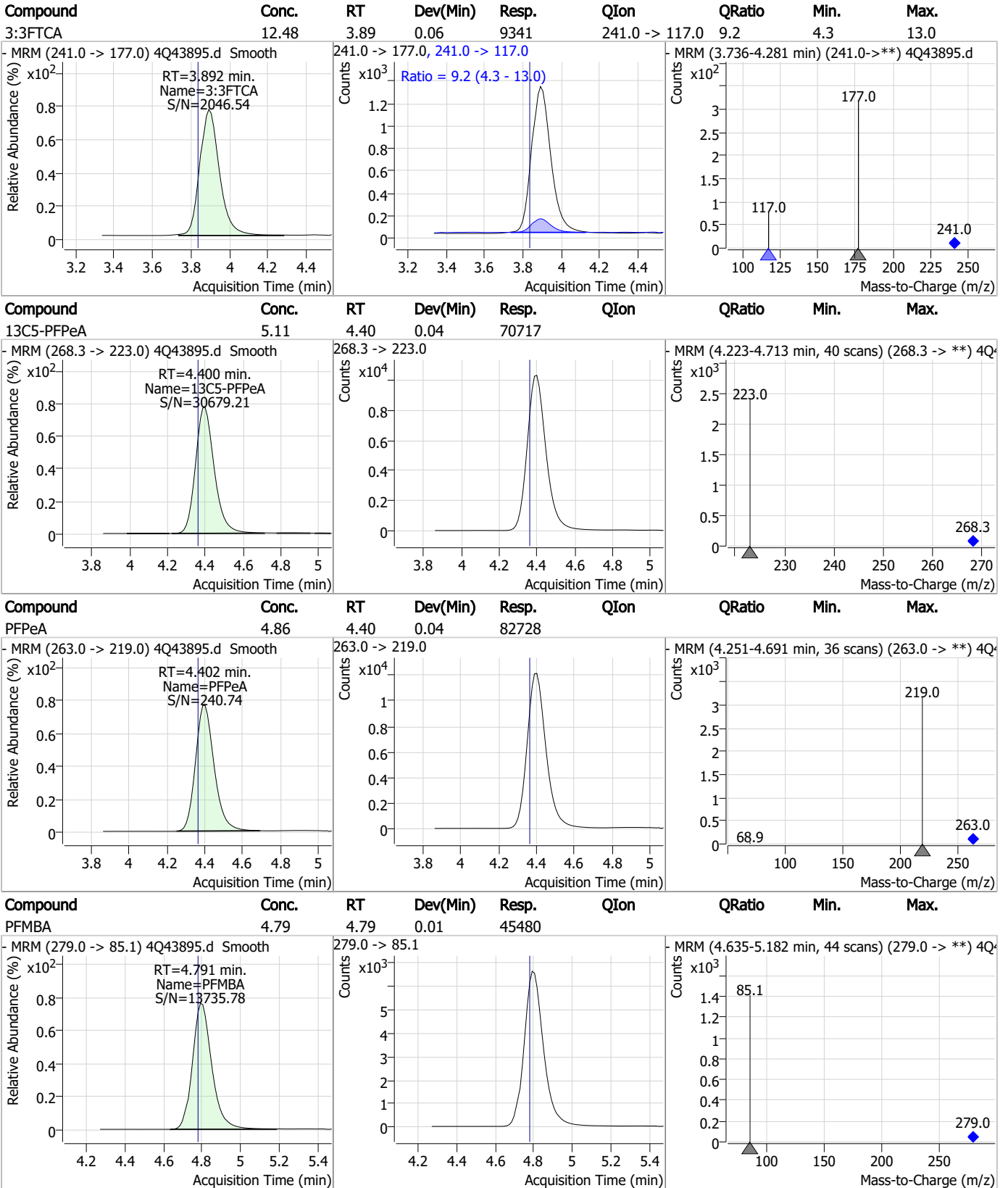
7.7.11

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

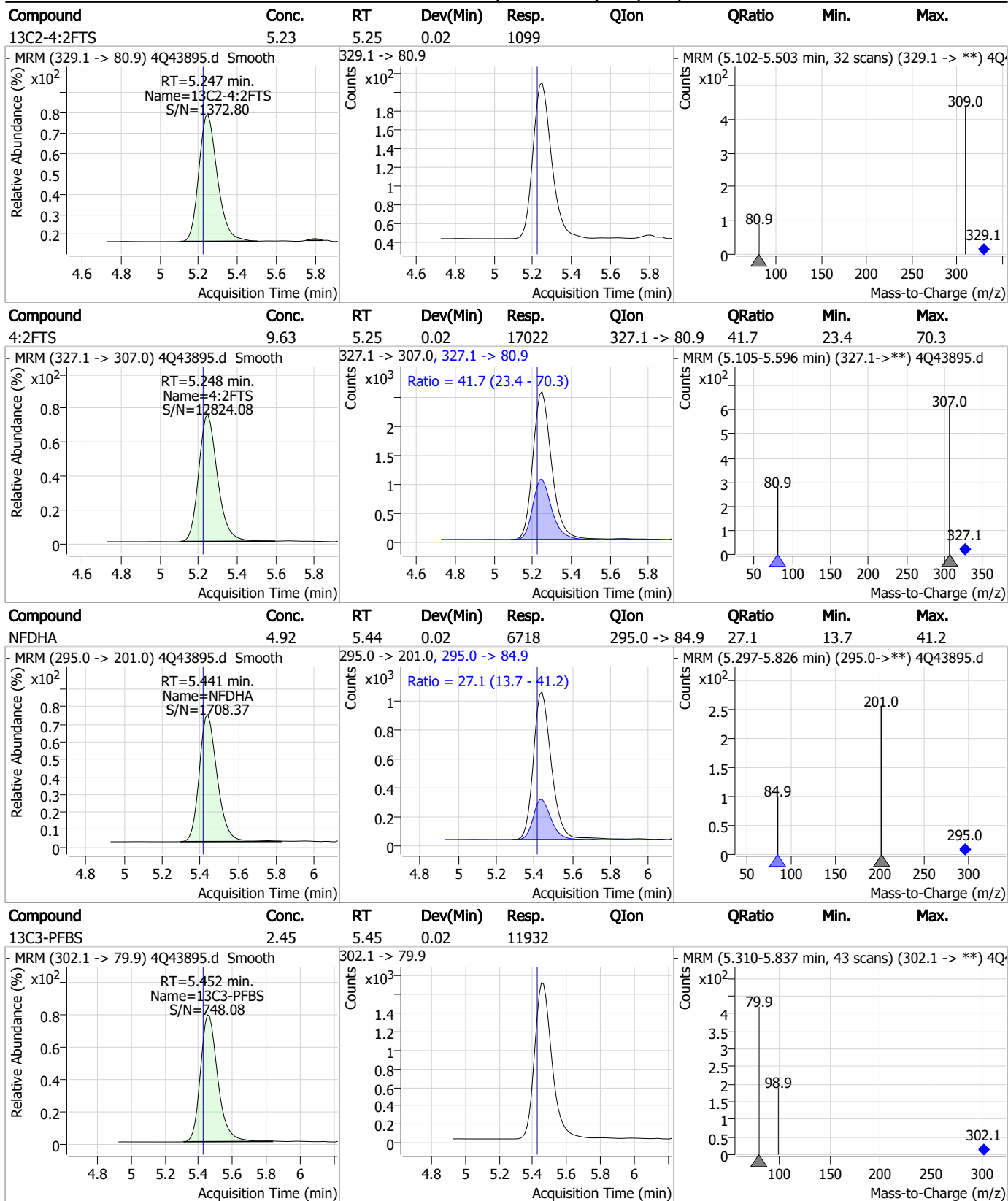


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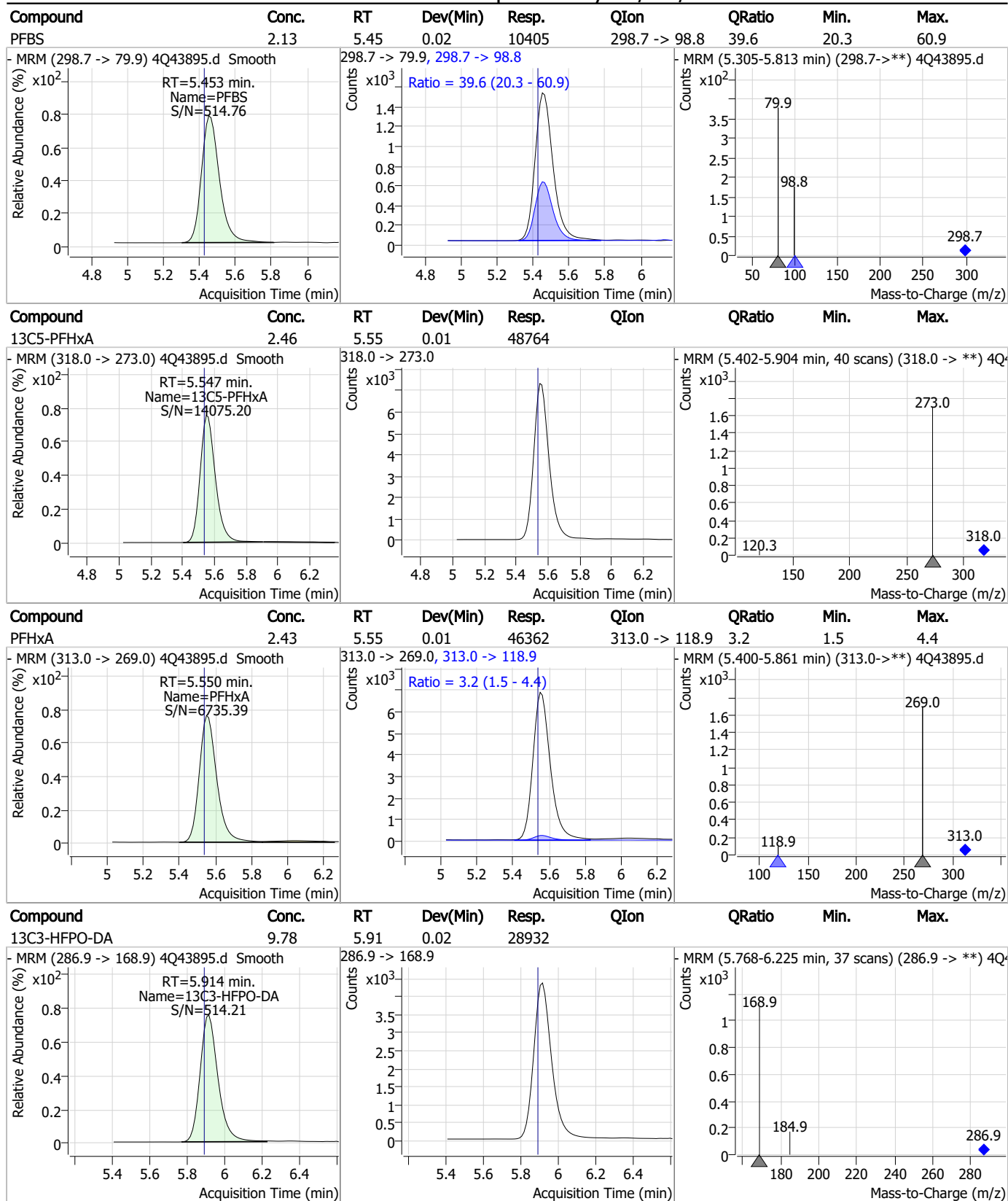


Perfluorinated Compounds by LC/MS/MS



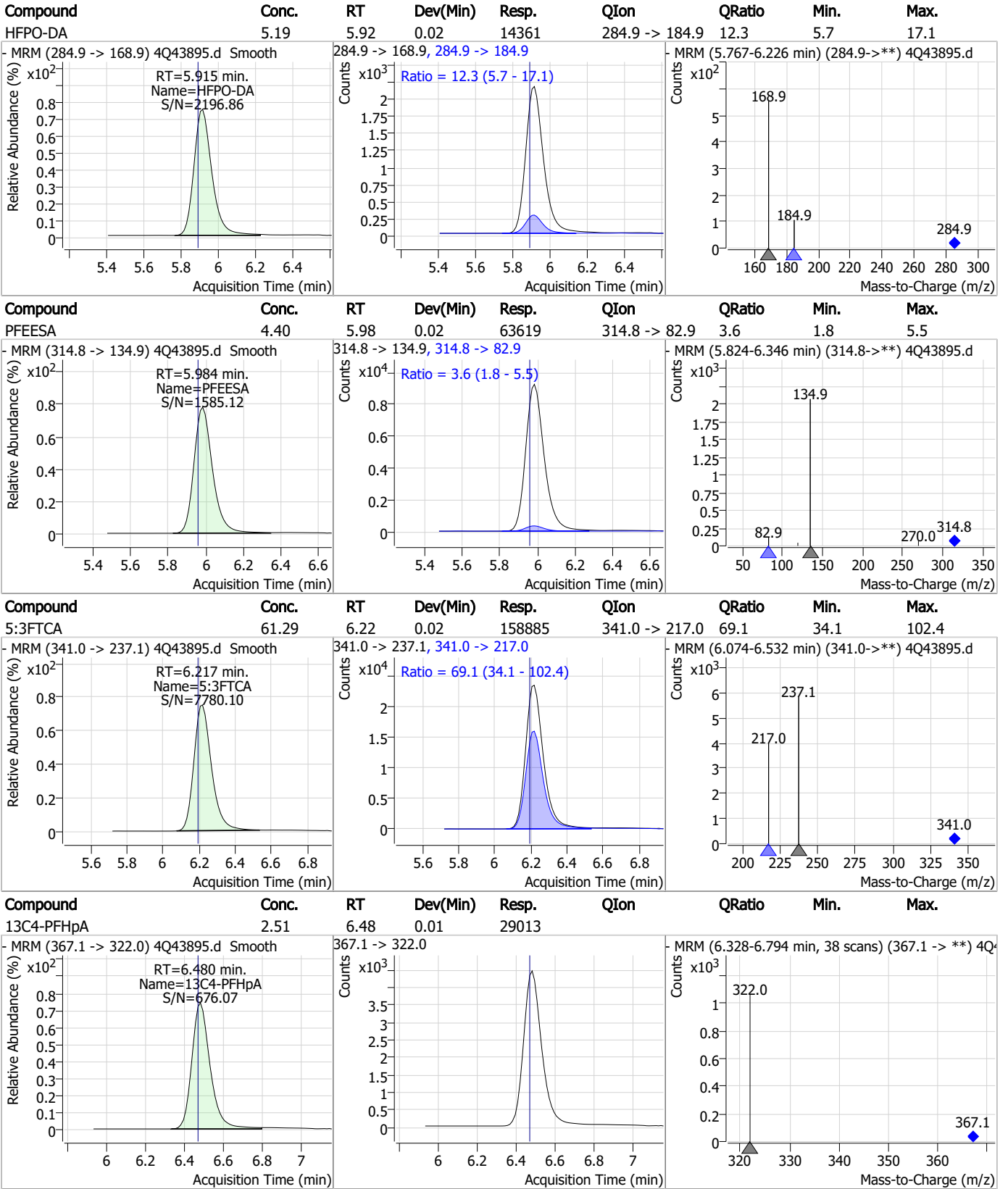
7.7.11
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Perfluorinated Compounds by LC/MS/MS



7.7.11
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Perfluorinated Compounds by LC/MS/MS

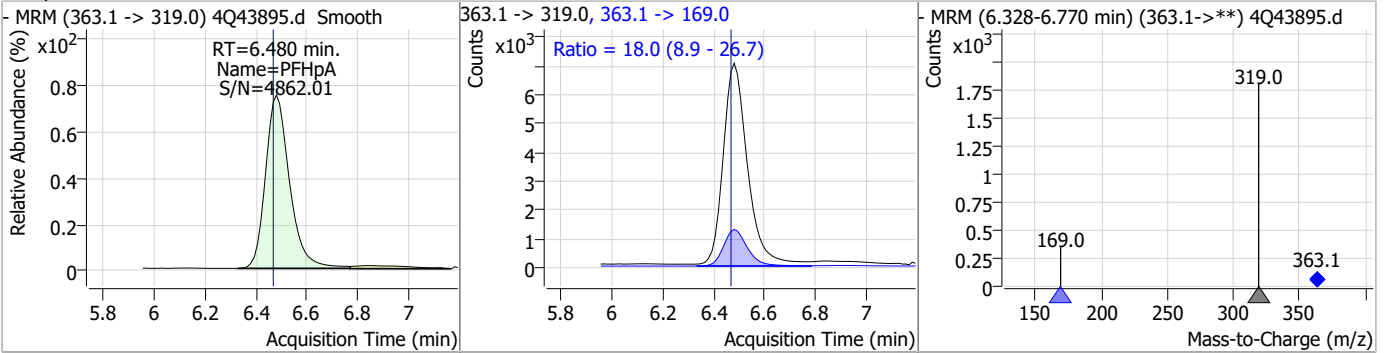


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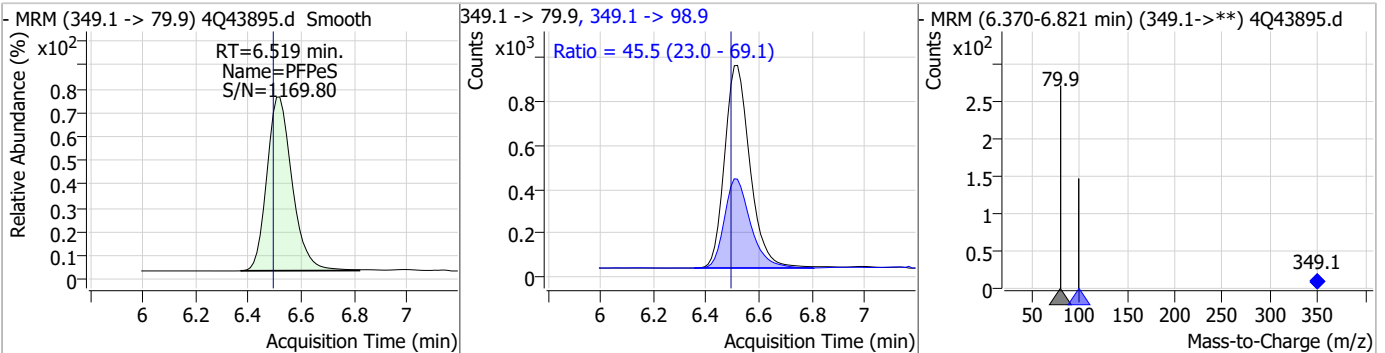


Perfluorinated Compounds by LC/MS/MS

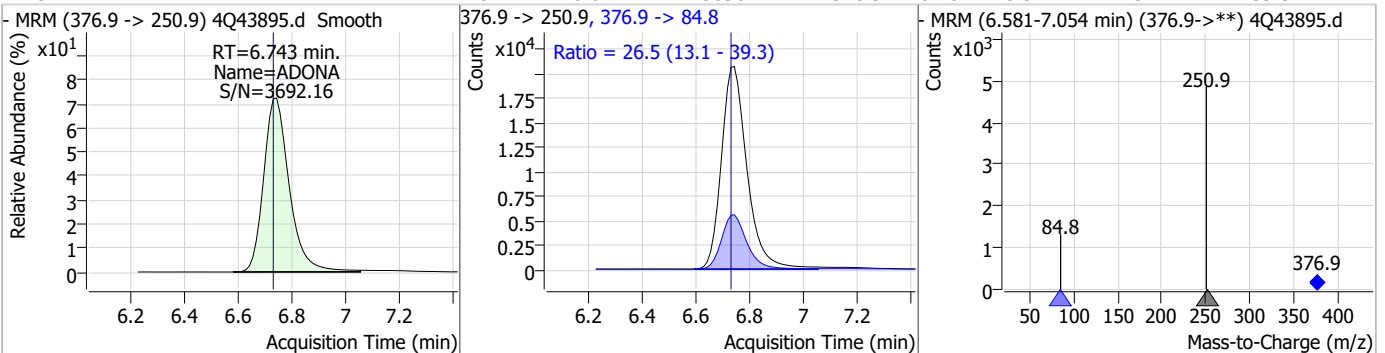
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.49	6.48	0.01	45710	363.1 -> 169.0	18.0	8.9	26.7



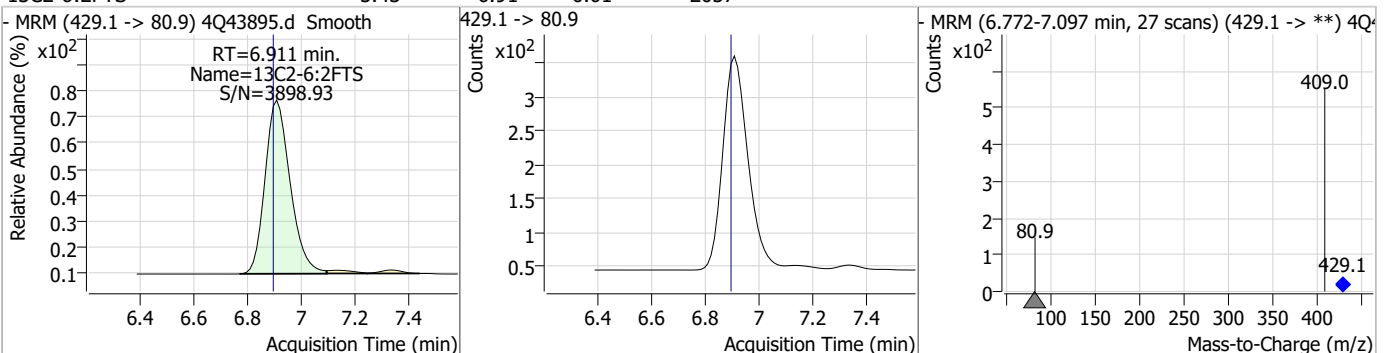
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.16	6.52	0.02	6083	349.1 -> 98.9	45.5	23.0	69.1



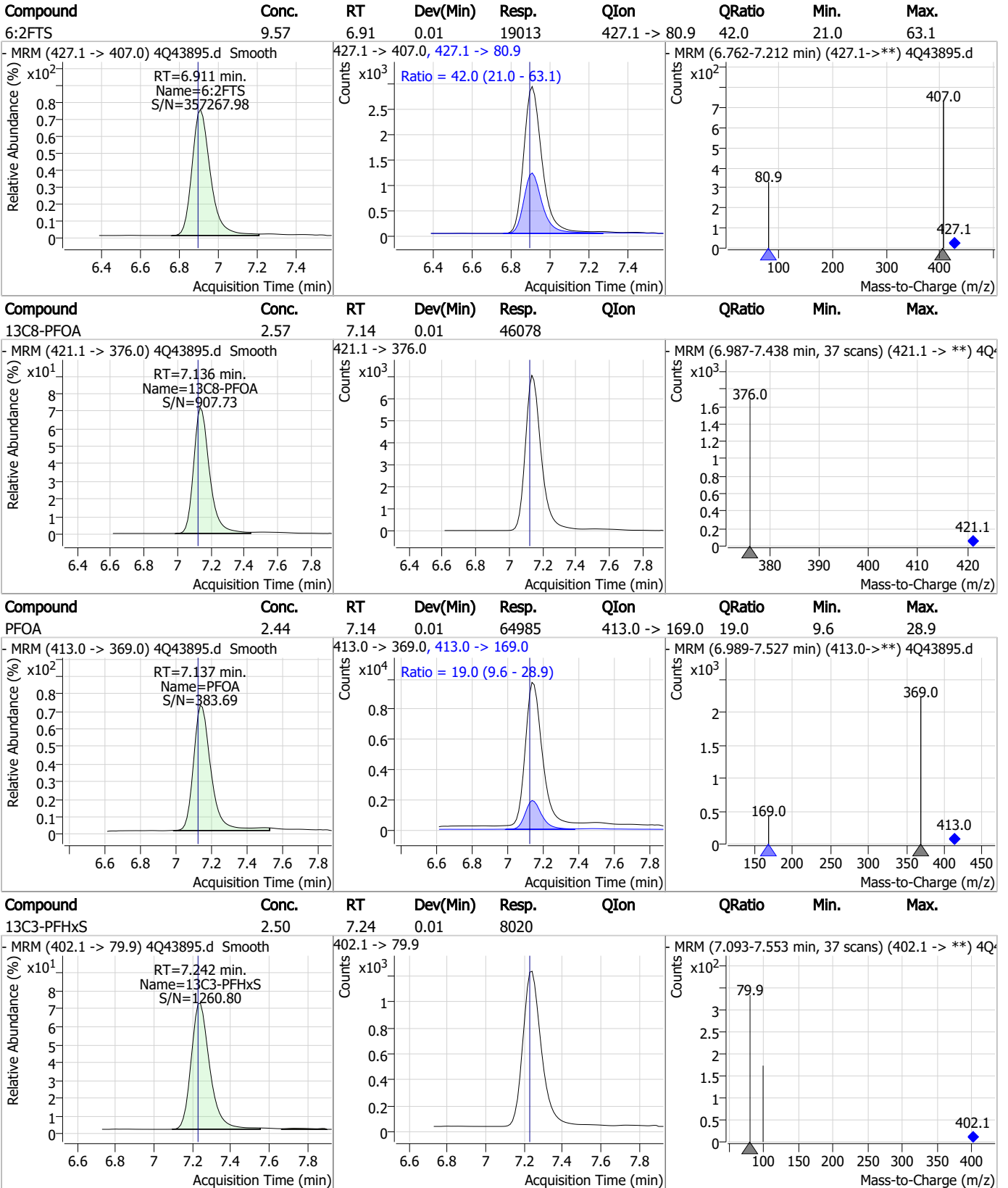
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.71	6.74	0.01	136907	376.9 -> 84.8	26.5	13.1	39.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.43	6.91	0.01	2057	429.1 -> 80.9			



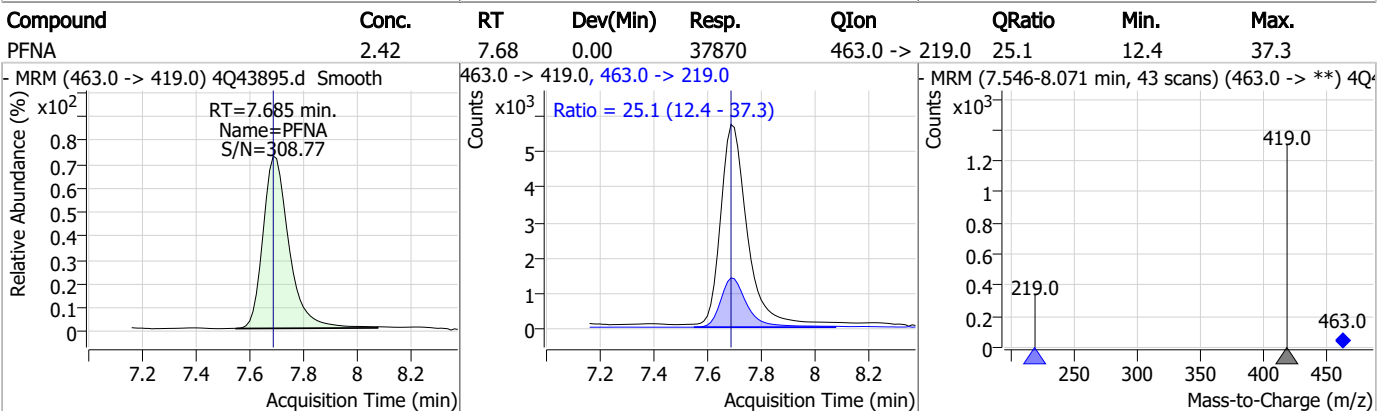
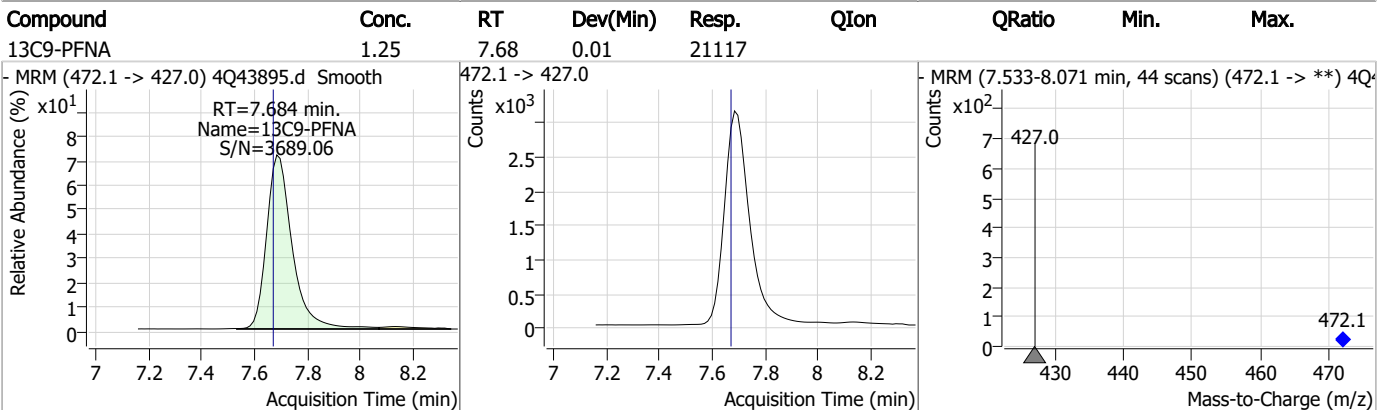
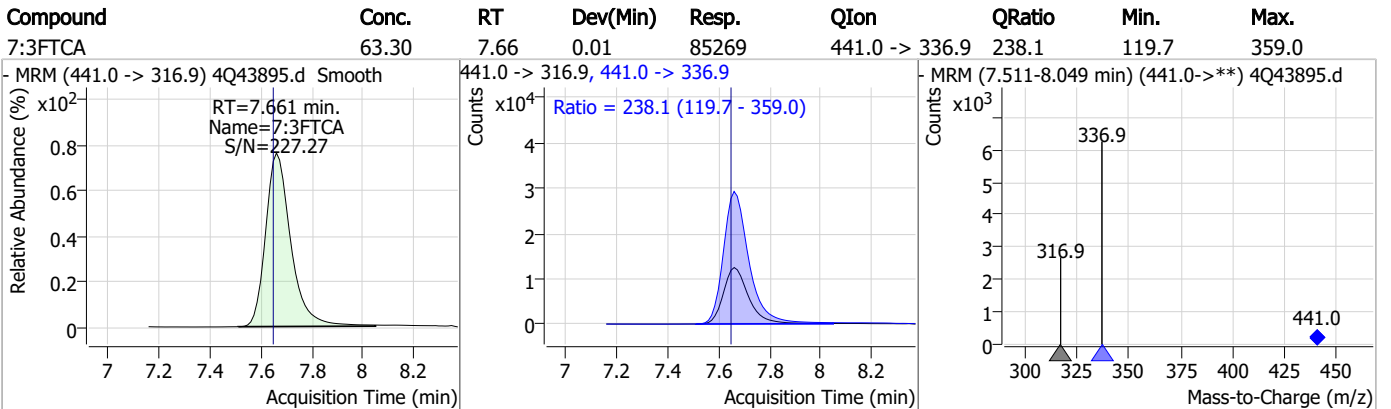
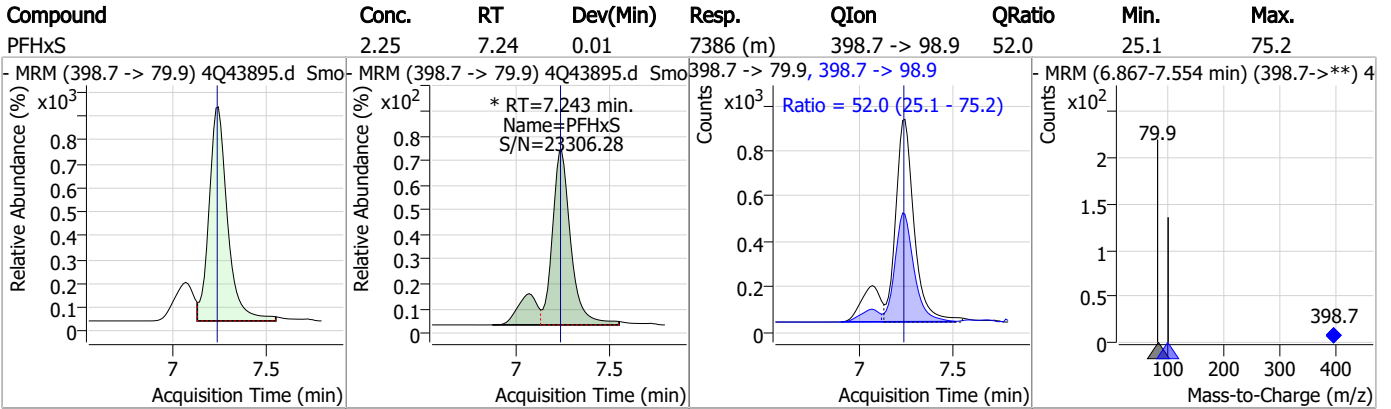
Perfluorinated Compounds by LC/MS/MS



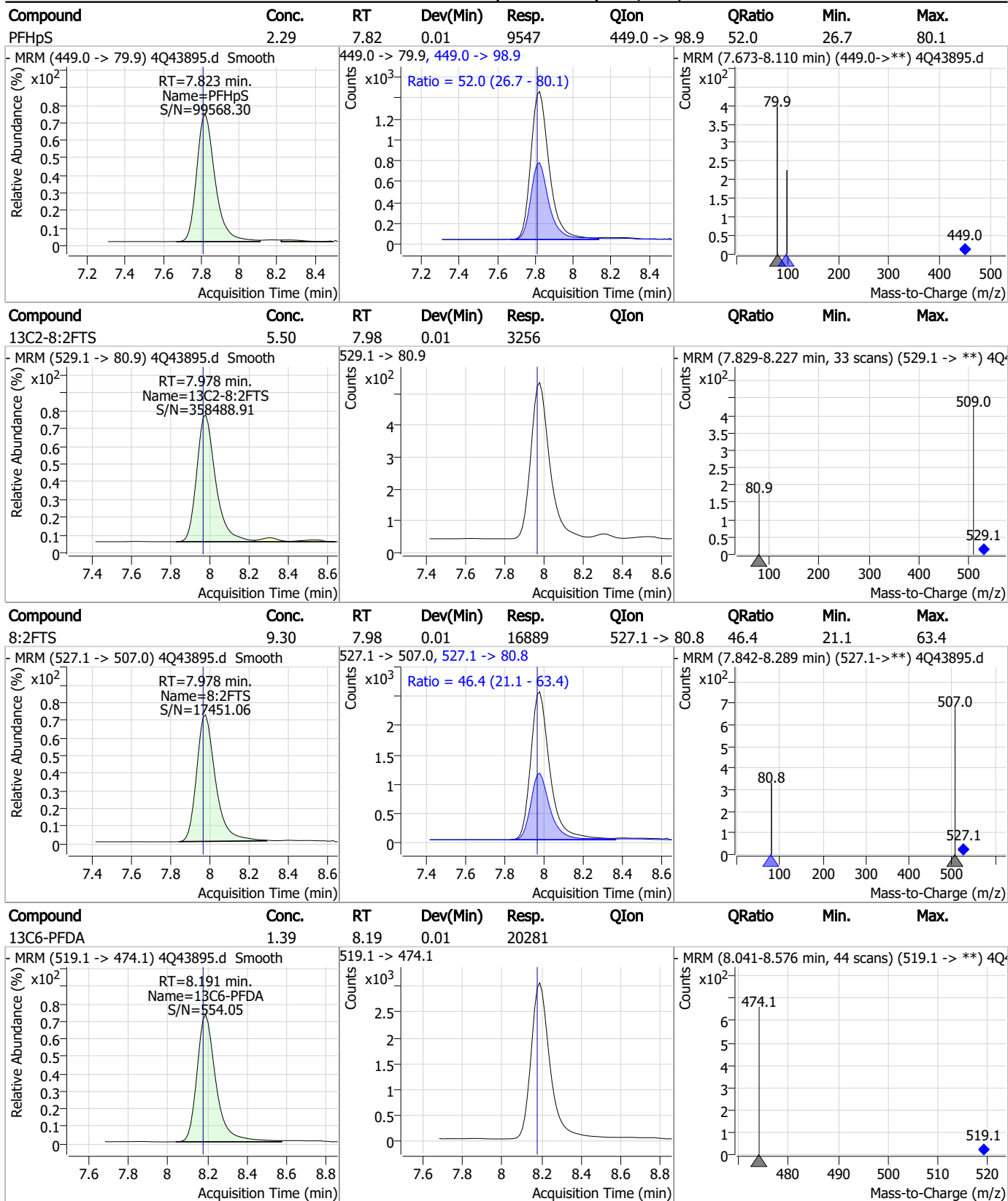
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Perfluorinated Compounds by LC/MS/MS

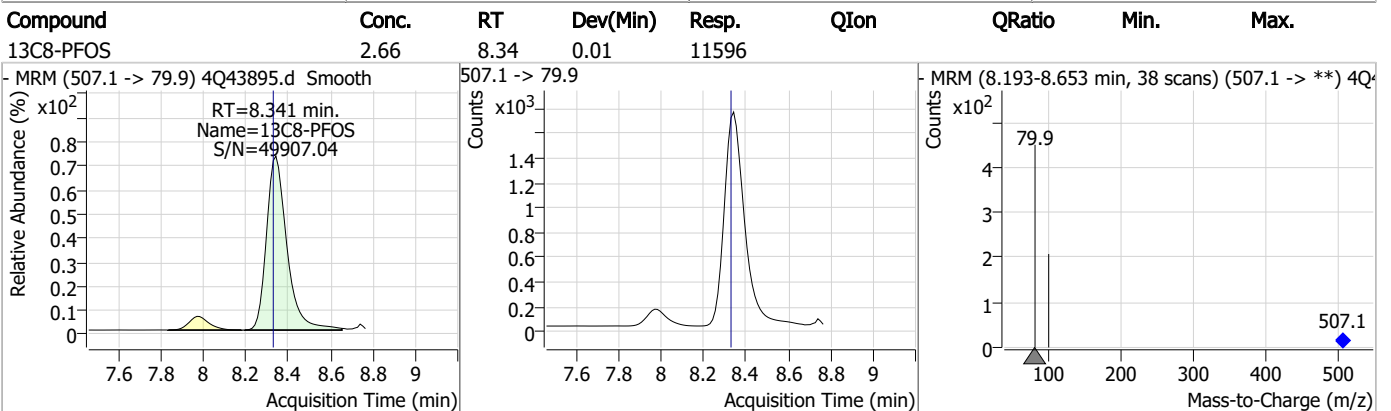
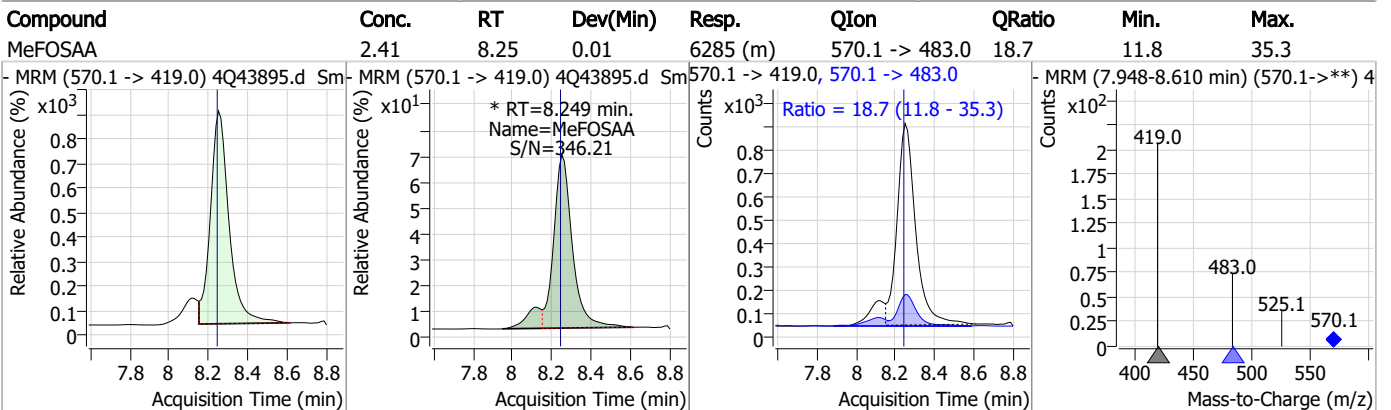
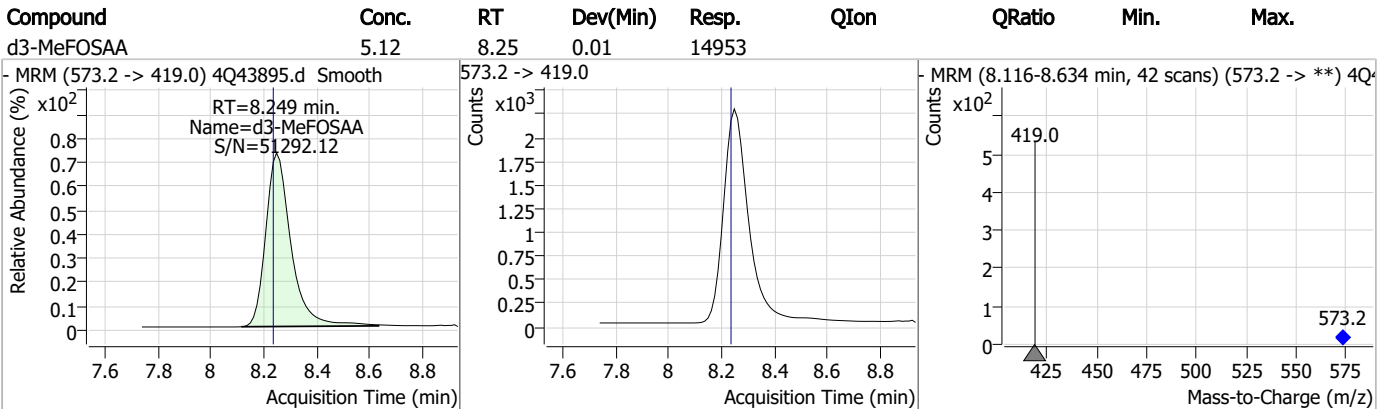
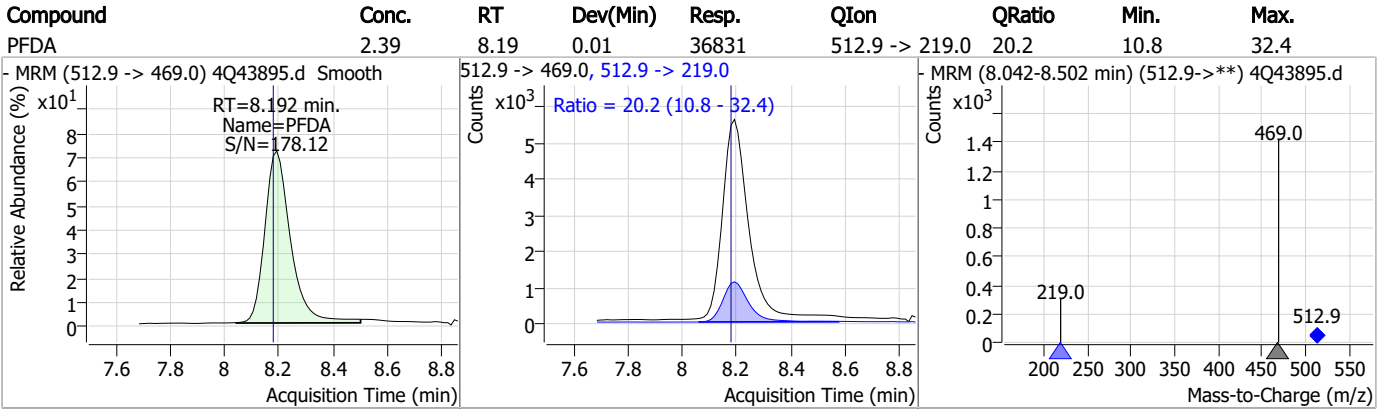


Perfluorinated Compounds by LC/MS/MS

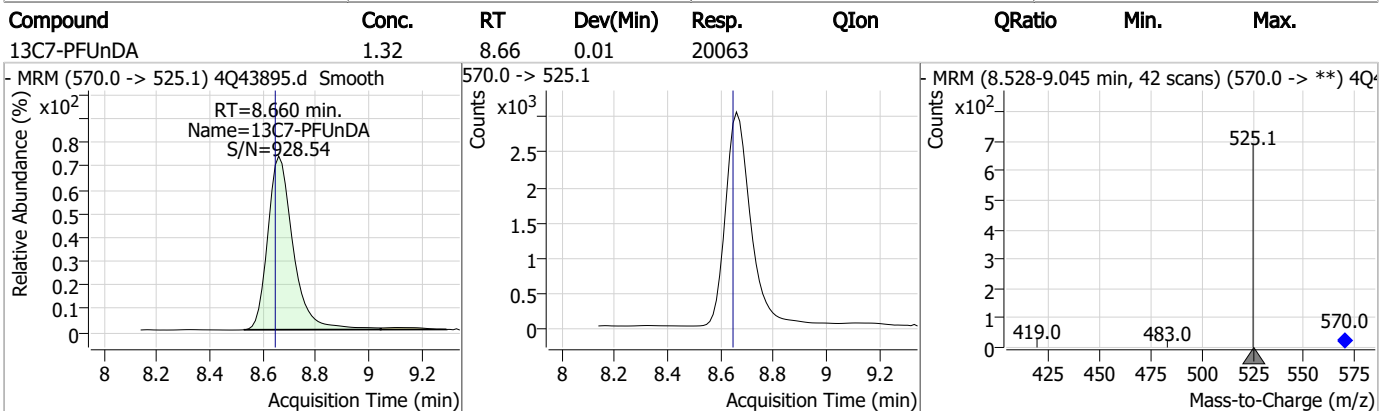
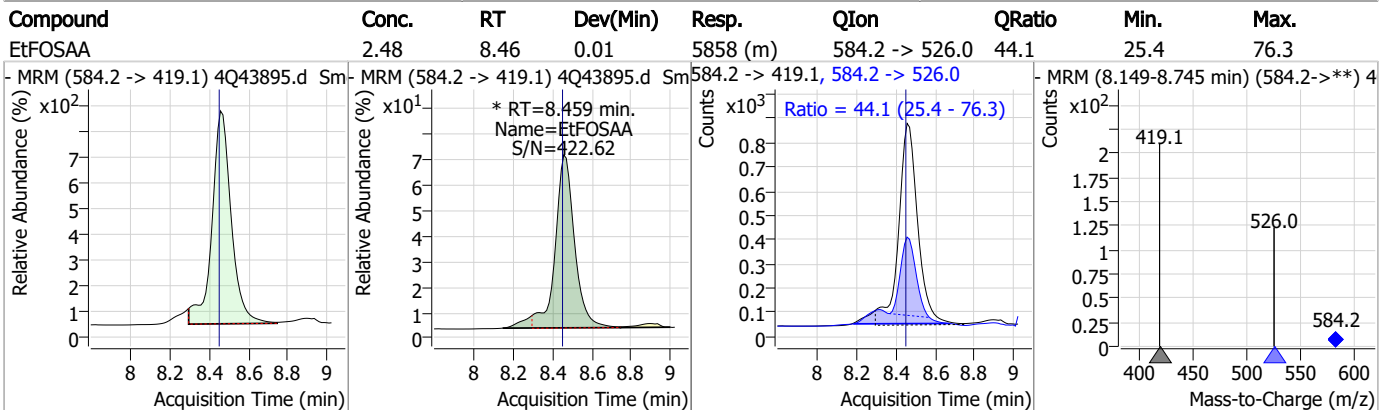
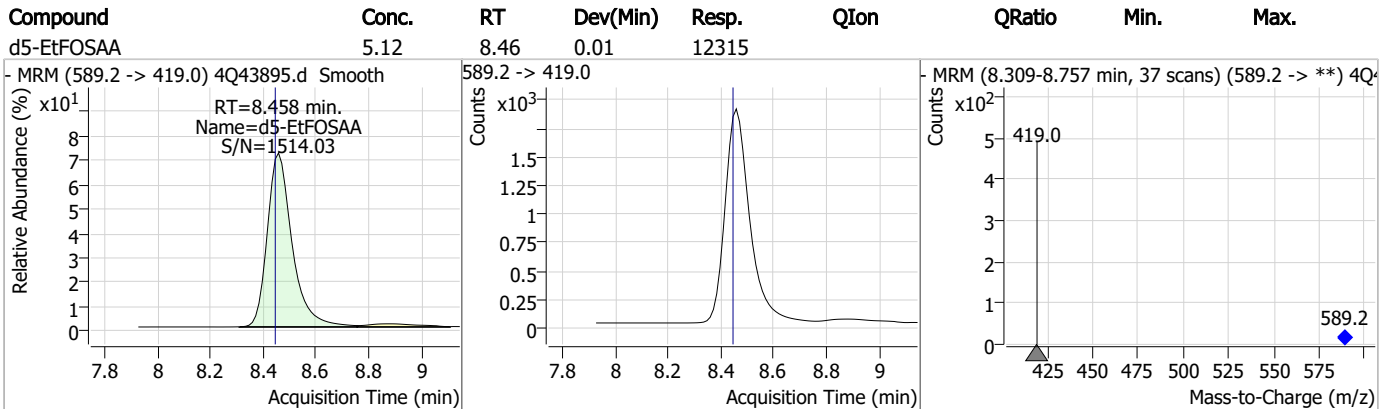
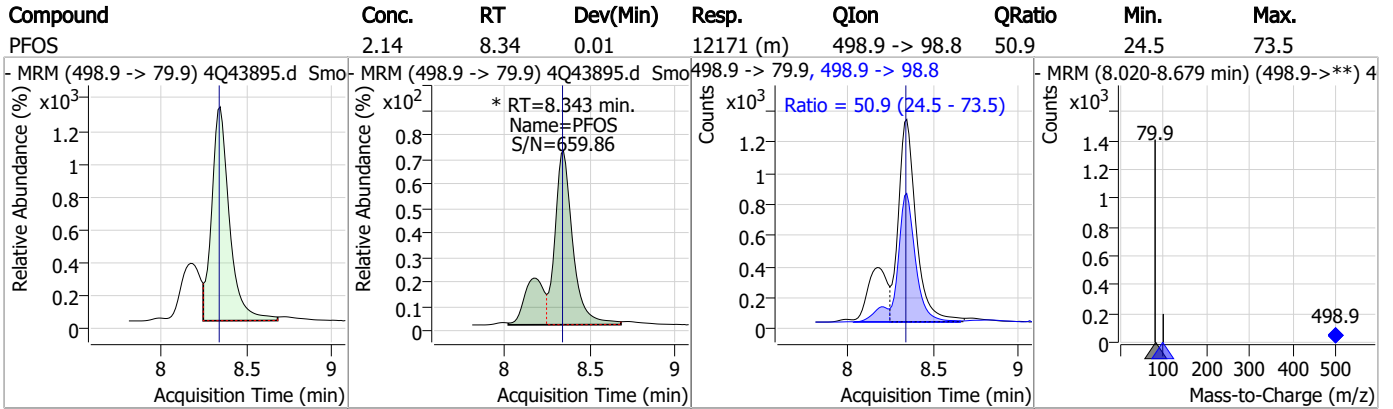


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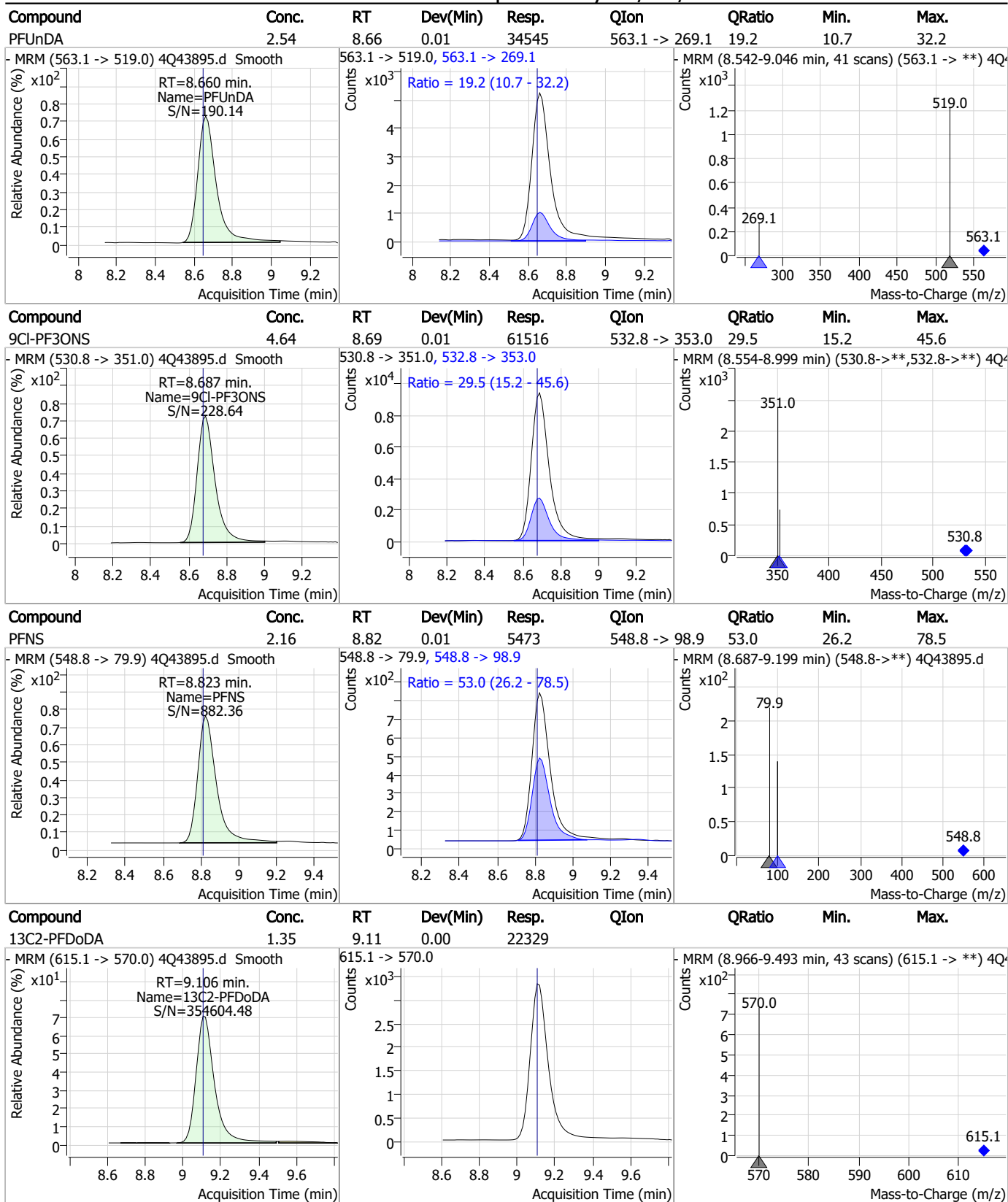
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

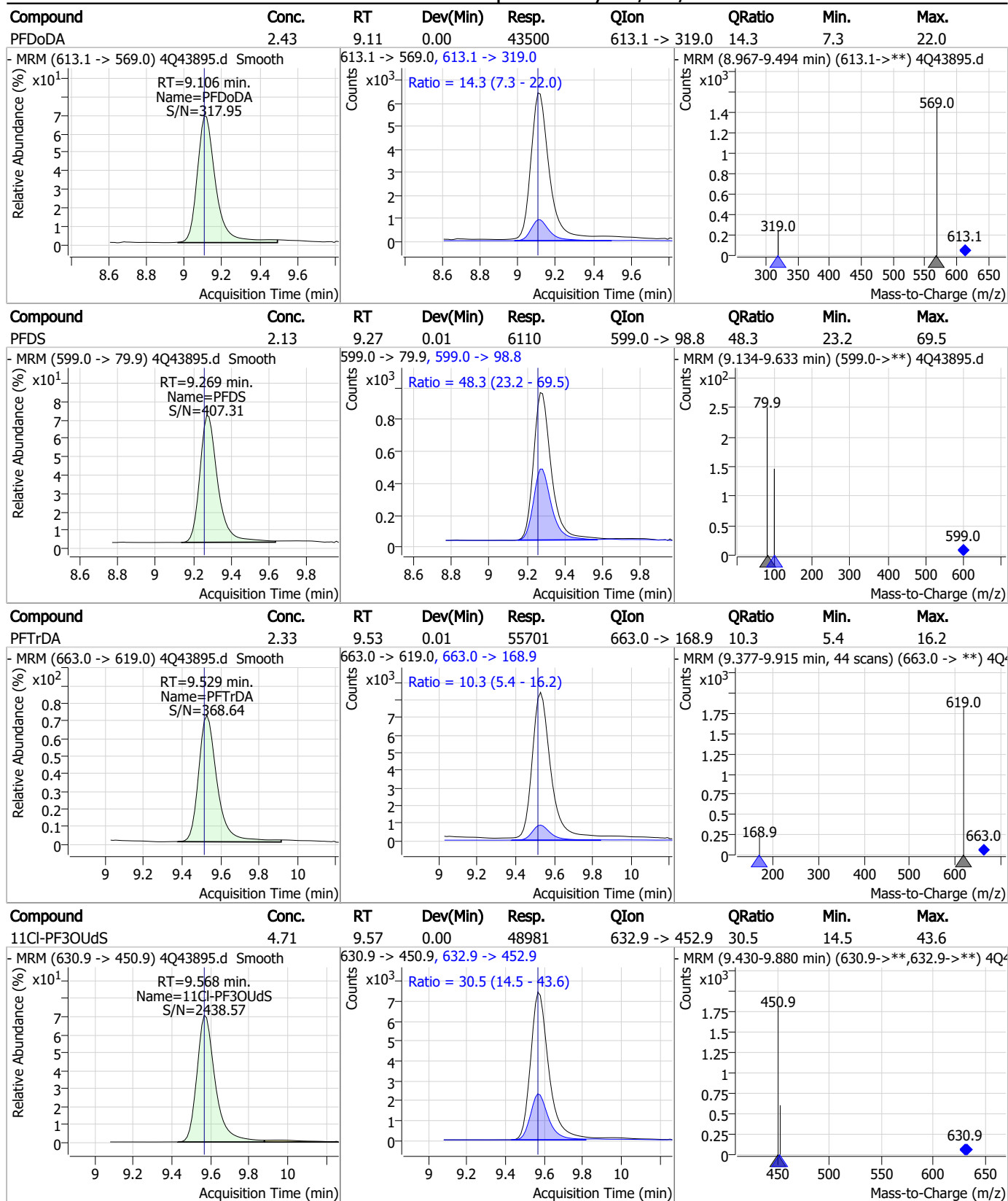


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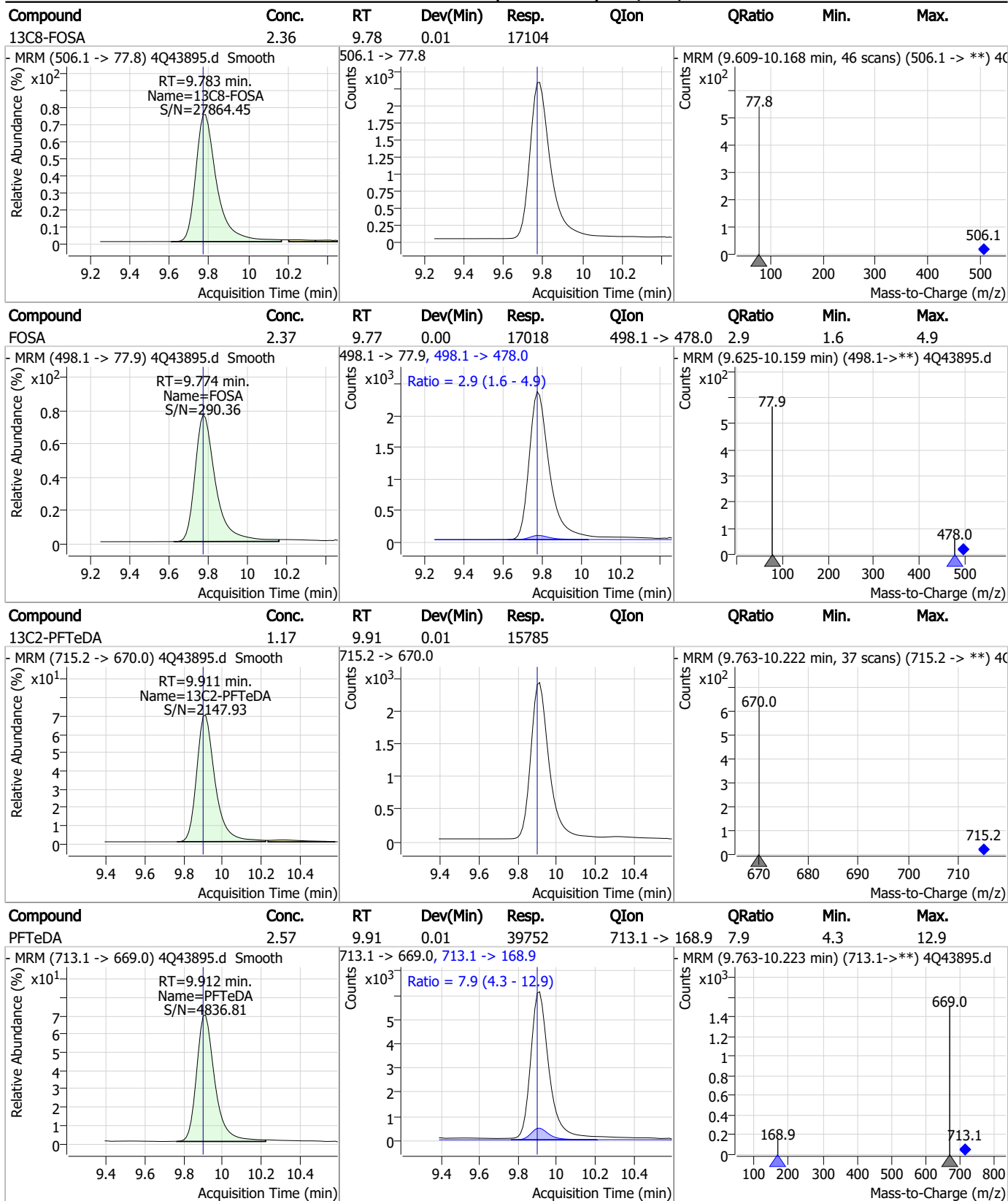


Perfluorinated Compounds by LC/MS/MS



7.7.11

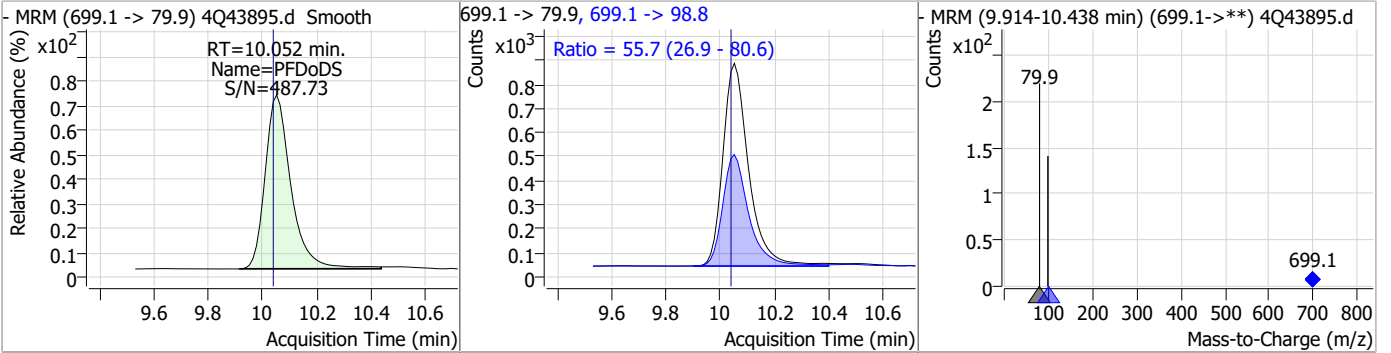
Perfluorinated Compounds by LC/MS/MS



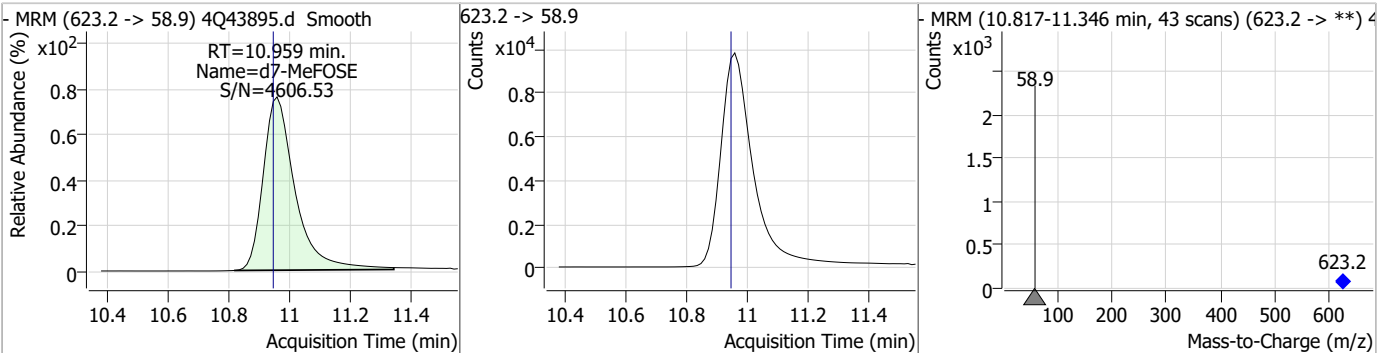
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Perfluorinated Compounds by LC/MS/MS

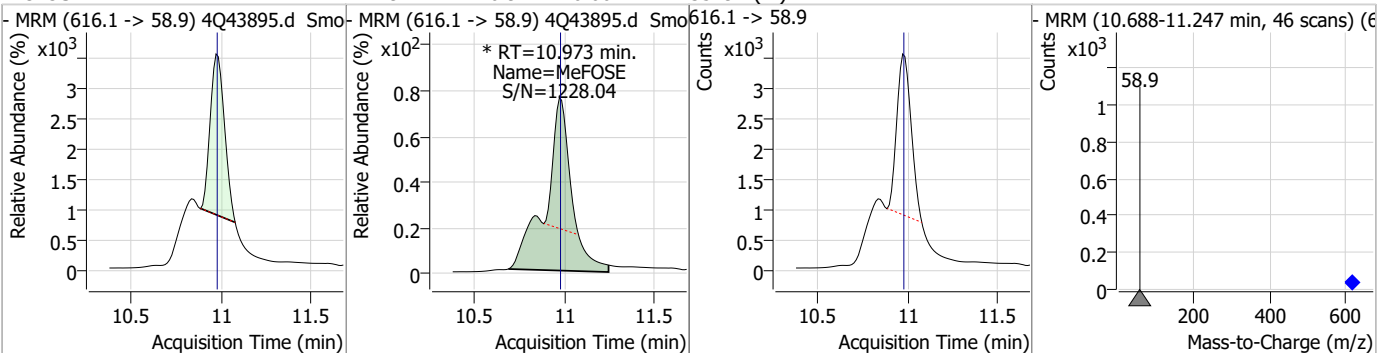
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.18	10.05	0.01	5598	699.1 -> 98.8	55.7	26.9	80.6



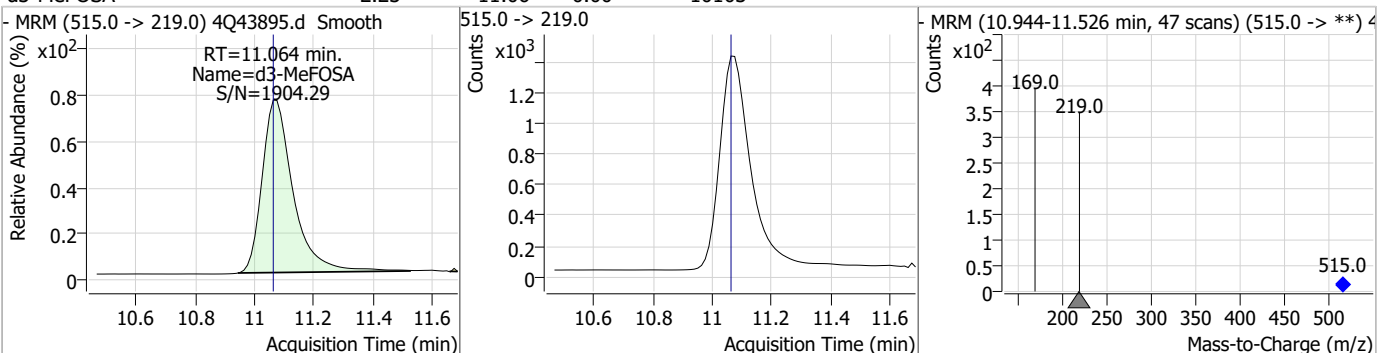
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.96	10.96	0.01	71810				



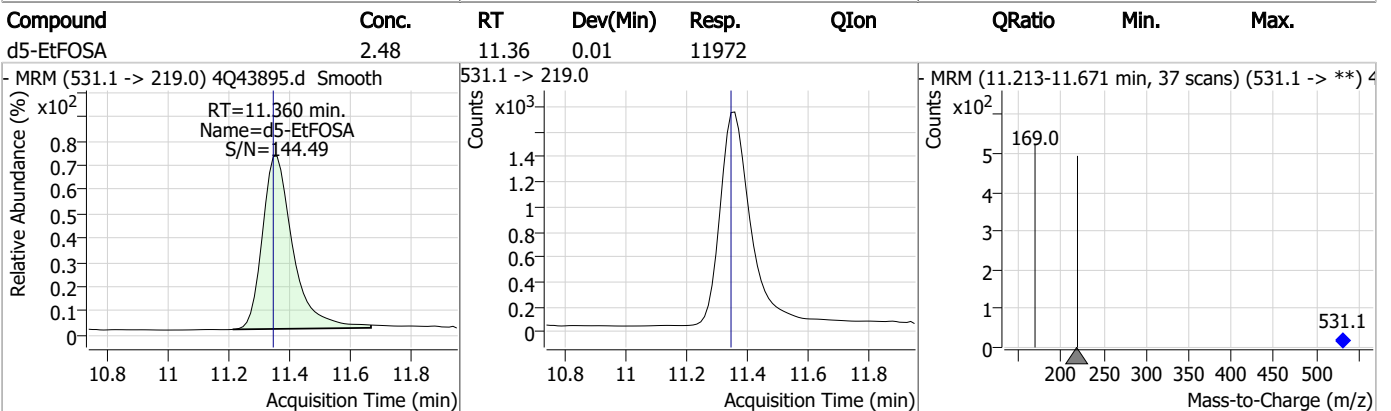
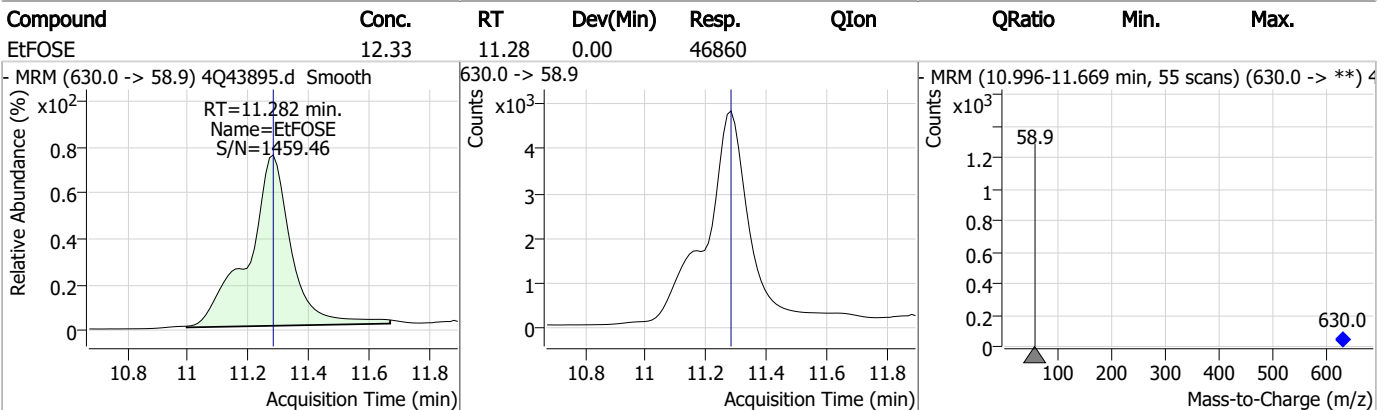
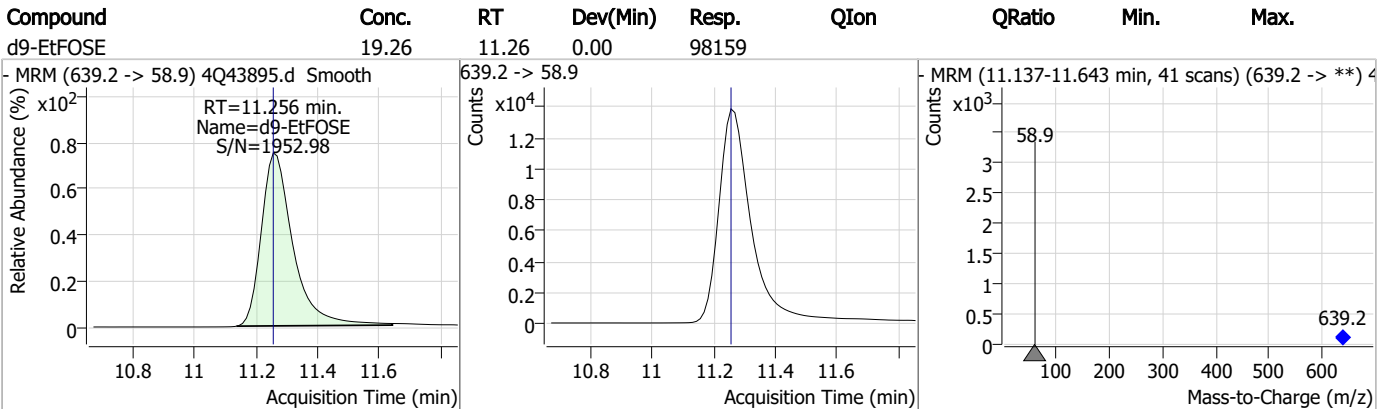
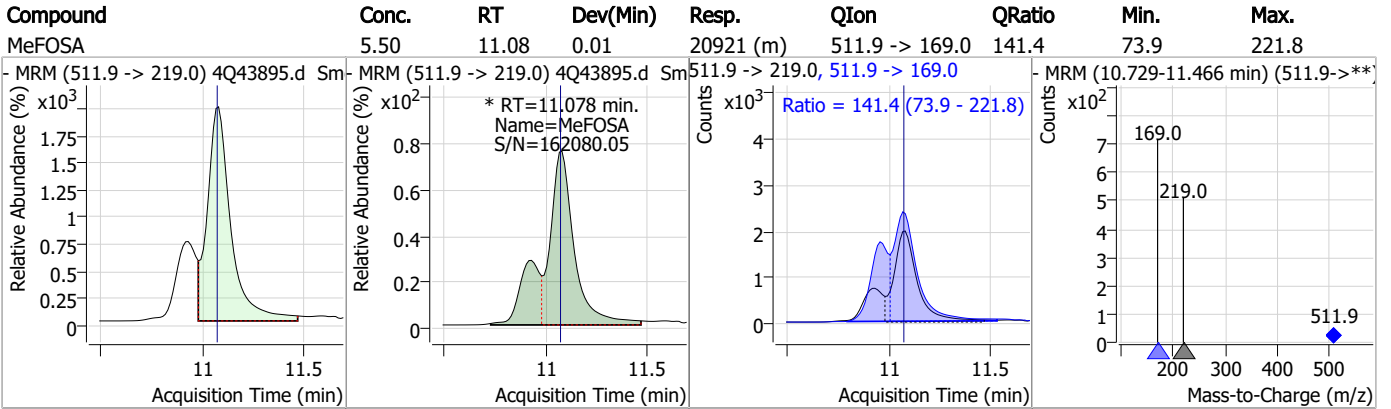
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.97	10.97	0.00	35294 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.23	11.06	0.00	10103				



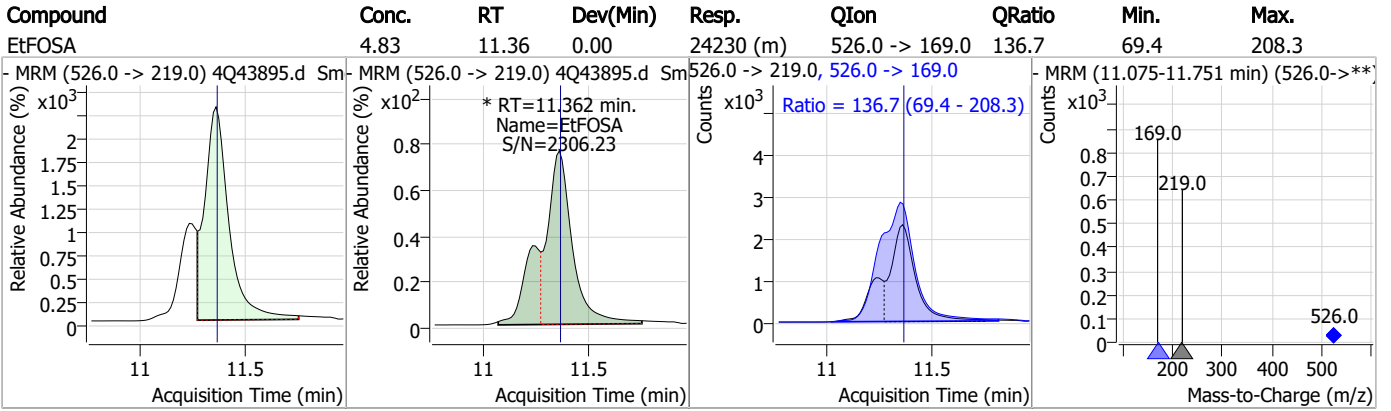
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q634-ICV634 Method: EPA DRAFT 1633
Lab FileID: 4Q43895.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 13:35 Supervisor approved: 05/04/23 17:44 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.11.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44081.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 2:29:37 PM
 Sample Name : cc634-1.0LL
 Vial : P1-A2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96548,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	125968	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	70844	5.00 µg/L	0.000
M5-PFHxA	5.547	318.0 -> 273.0	47352	2.50 µg/L	0.000
M4-PFHpA	6.480	367.1 -> 322.0	28800	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	44009	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	21002	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	19615	1.25 µg/L	0.012
M7-PFUnDA	8.672	570.0 -> 525.1	19792	1.25 µg/L	0.000
M2-PFDoDA	9.118	615.1 -> 570.0	21654	1.25 µg/L	0.000
M2-PFTeDA	9.899	715.2 -> 670.0	15878	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	17476	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	11494	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	7425	2.50 µg/L	0.000
M8-PFOS	8.341	507.1 -> 79.9	10689	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	981	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1823	5.00 µg/L	0.000
M2-8:2FTS	7.990	529.1 -> 80.9	2924	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	13217	5.00 µg/L	0.000
M3-HFPO-DA	5.902	286.9 -> 168.9	28429	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	12265	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	71571	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	108028	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11698	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	10212	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	11057	2.50 µg/L	0.000
13C3-PFBA	2.903	216.0 -> 172.0	69378	5.00 µg/L	-0.012
18O2-PFHxS	7.241	403.0 -> 83.9	5394	2.50 µg/L	0.000
13C4-PFOA	7.149	417.1 -> 372.0	53699	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	18258	1.25 µg/L	0.012
13C5-PFNA	7.697	468.0 -> 423.0	24152	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	43787	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	981	4.47 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.4%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1823	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C2-8:2FTS	7.990	529.1 -> 80.9	2924	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-PFDoDA	9.118	615.1 -> 570.0	21654	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C2-PFTeDA	9.899	715.2 -> 670.0	15878	1.10 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.2%		
13C3-PFBS	5.439	302.1 -> 79.9	11494	2.26 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.4%		
13C3-PFHxS	7.242	402.1 -> 79.9	7425	2.22 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 = 88.8%	
13C4-PFBA	2.911	216.8 -> 171.9	125968	9.65 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C4-PFHpA	6.480	367.1 -> 322.0	28800	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C5-PFHxA	5.547	318.0 -> 273.0	47352	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFPeA	4.375	268.3 -> 223.0	70844	5.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C6-PFDA	8.203	519.1 -> 474.1	19615	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C7-PFUnDA	8.672	570.0 -> 525.1	19792	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C8-FOSA	9.783	506.1 -> 77.8	17476	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-PFOA	7.148	421.1 -> 376.0	44009	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-PFOS	8.341	507.1 -> 79.9	10689	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C9-PFNA	7.696	472.1 -> 427.0	21002	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.3%	
d3-MeFOSAA	8.261	573.2 -> 419.0	13217	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	28429	9.87 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSA	11.076	515.0 -> 219.0	10212	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.2%	
d5-EtFOSAA	8.470	589.2 -> 419.0	12265	5.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
d7-MeFOSE	10.972	623.2 -> 58.9	71571	20.80 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.2%	
d9-EtFOSE	11.269	639.2 -> 58.9	108028	22.18 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.7%	
d5-EtFOSA	11.360	531.1 -> 219.0	11698	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	1185	0.75 µg/L	97
		327.1 -> 80.9	523		
6:2FTS	6.911	427.1 -> 407.0	1375	0.78 µg/L	96
		427.1 -> 80.9	629		
8:2FTS	7.991	527.1 -> 507.0	1225	0.75 µg/L	98
		527.1 -> 80.8	546		
EtFOSAA	8.471	584.2 -> 419.1	495	0.21 µg/L	m 83
		584.2 -> 526.0	199		
FOSA	9.786	498.1 -> 77.9	1419	0.19 µg/L	98
		498.1 -> 478.0	36		
MeFOSAA	8.262	570.1 -> 419.0	514	0.22 µg/L	m 99
		570.1 -> 483.0	99		
PFBA	2.907	212.8 -> 168.9	2633	0.78 µg/L	100
PFBS	5.440	298.7 -> 79.9	790	0.17 µg/L	89
		298.7 -> 98.8	333		
PFDA	8.204	512.9 -> 469.0	2894	0.19 µg/L	98
		512.9 -> 219.0	596		
PFDODA	9.119	613.1 -> 569.0	3713	0.21 µg/L	100
		613.1 -> 319.0	520		
PFDS	9.282	599.0 -> 79.9	408	0.15 µg/L	83

7.7.12
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.480	599.0 -> 98.8	262	0.19	µg/L	94
		363.1 -> 319.0	3521			
PFHpS	7.823	363.1 -> 169.0	720	0.18	µg/L	99
		449.0 -> 79.9	710			
PFHxA	5.550	449.0 -> 98.9	375	0.19	µg/L	97
		313.0 -> 269.0	3509			
PFHxS	7.230	313.0 -> 118.9	65	0.18	µg/L	m
		398.7 -> 79.9	543			
PFNA	7.697	398.7 -> 98.9	246	0.19	µg/L	88
		463.0 -> 419.0	2899			
PFNS	8.823	463.0 -> 219.0	566	0.16	µg/L	88
		548.8 -> 79.9	370			
PFOA	7.150	548.8 -> 98.9	208	0.19	µg/L	96
		413.0 -> 369.0	4868			
PFOS	8.343	413.0 -> 169.0	1057	0.19	µg/L	m
		498.9 -> 79.9	1002			
PFPeA	4.377	498.9 -> 98.8	514	0.36	µg/L	100
		263.0 -> 219.0	6057			
PFPeS	6.507	349.1 -> 79.9	545	0.21	µg/L	96
		349.1 -> 98.9	231			
PFTeDA	9.912	713.1 -> 669.0	2961	0.19	µg/L	99
		713.1 -> 168.9	258			
PFTrDA	9.529	663.0 -> 619.0	4026	0.17	µg/L	98
		663.0 -> 168.9	395			
PFUnDA	8.673	563.1 -> 519.0	2474	0.18	µg/L	92
		563.1 -> 269.1	543			
11CI-PF3OUdS	9.568	630.9 -> 450.9	3607	0.35	µg/L	91
		632.9 -> 452.9	1251			
9CI-PF3ONS	8.687	530.8 -> 351.0	4837	0.37	µg/L	95
		532.8 -> 353.0	1285			
ADONA	6.743	376.9 -> 250.9	9702	0.34	µg/L	98
		376.9 -> 84.8	2676			
HFPO-DA	5.915	284.9 -> 168.9	1006	0.37	µg/L	95
		284.9 -> 184.9	110			
3:3FTCA	3.836	241.0 -> 177.0	627	0.84	µg/L	#
		241.0 -> 117.0	96			
5:3FTCA	6.217	341.0 -> 237.1	11800	4.69	µg/L	99
		341.0 -> 217.0	8169			
7:3FTCA	7.673	441.0 -> 316.9	5888	4.50	µg/L	91
		441.0 -> 336.9	14747			
EtFOSA	11.362	526.0 -> 219.0	1787	0.36	µg/L	m
		526.0 -> 169.0	2692			
EtFOSE	11.295	630.0 -> 58.9	4227	1.01	µg/L	m
		511.9 -> 219.0	1356			
MeFOSA	11.078	511.9 -> 169.0	2320	0.35	µg/L	m
		616.1 -> 58.9	2850			
MeFOSE	10.985	699.1 -> 79.9	412	0.97	µg/L	m
		699.1 -> 98.8	249			
PFDoDS	10.052	295.0 -> 201.0	436	0.17	µg/L	95
		295.0 -> 84.9	118			
NFDHA	5.428	279.0 -> 85.1	3550	0.37	µg/L	100
		229.0 -> 84.9	3393			
PFMBA	3.515	314.8 -> 134.9	4686	0.38	µg/L	100
		314.8 -> 82.9	205			
PFEESA	5.971			0.33	µg/L	96

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

7.7.12
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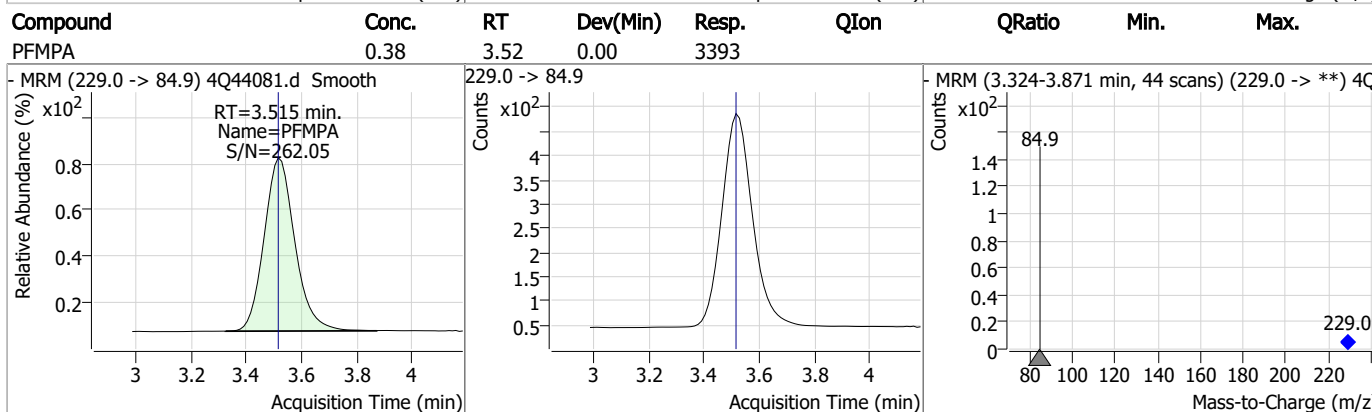
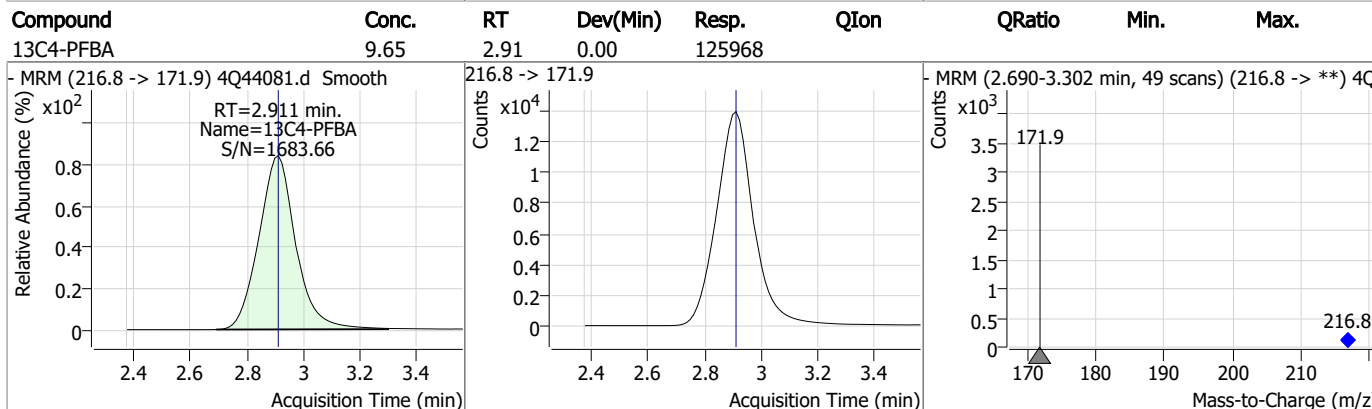
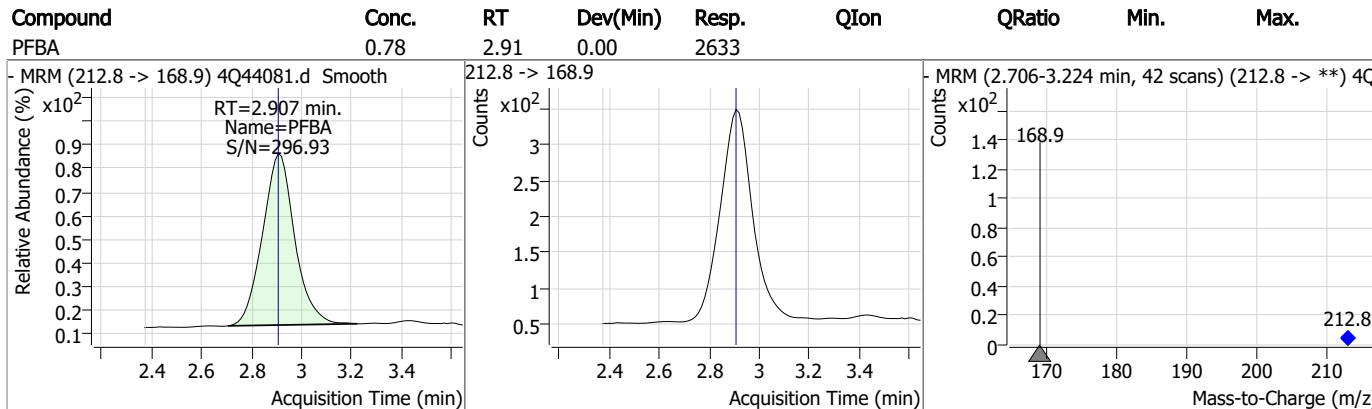
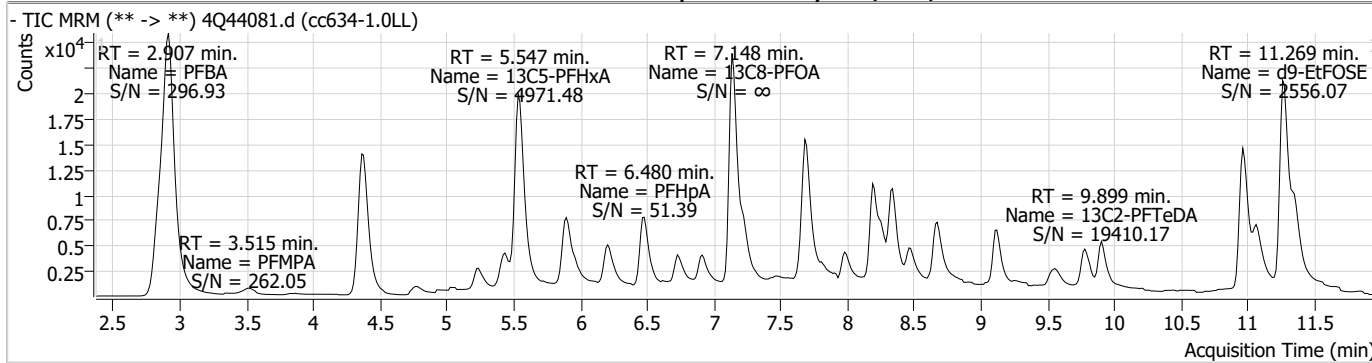
Perfluorinated Compounds by LC/MS/MS

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

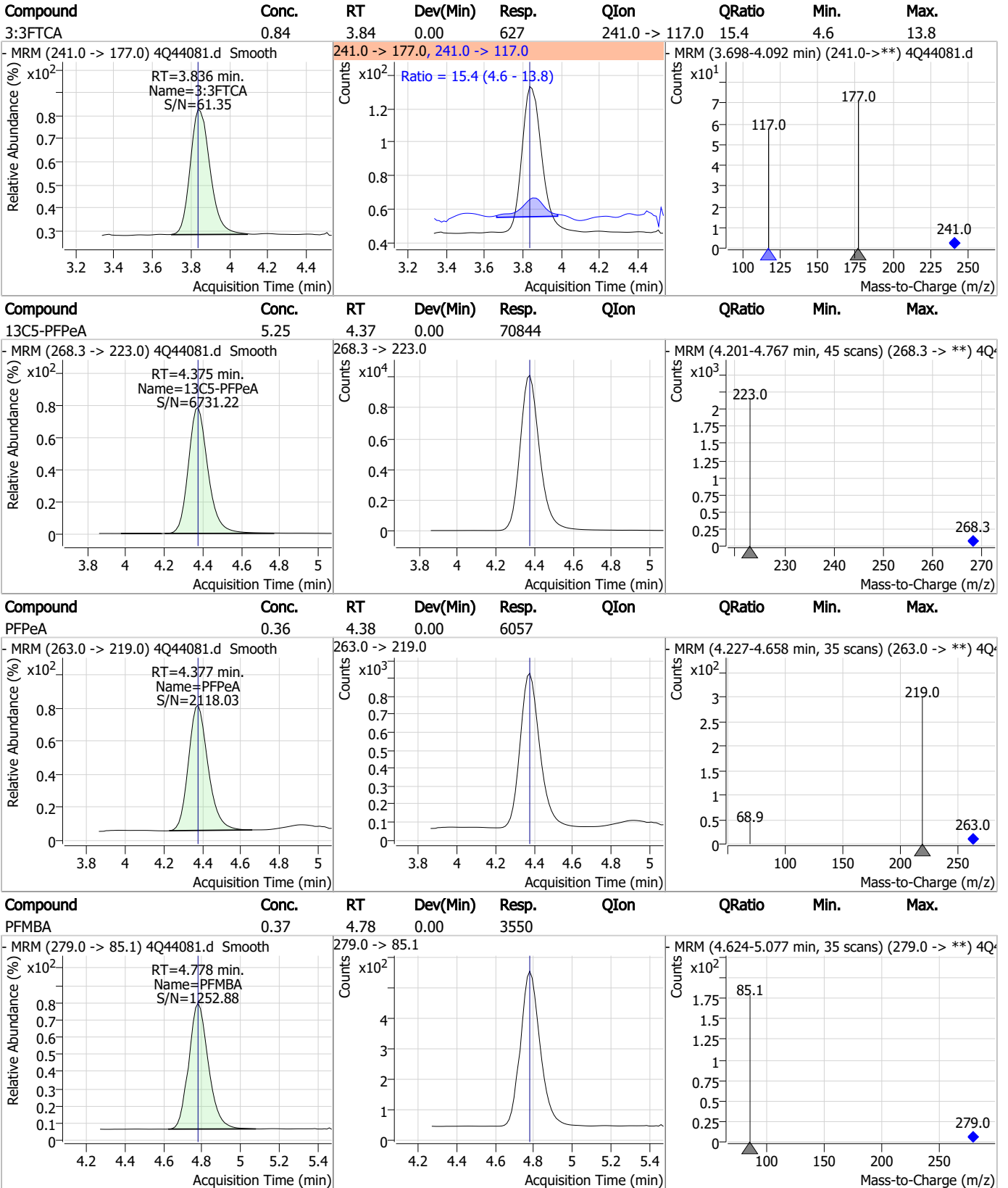
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Perfluorinated Compounds by LC/MS/MS



7.7.12
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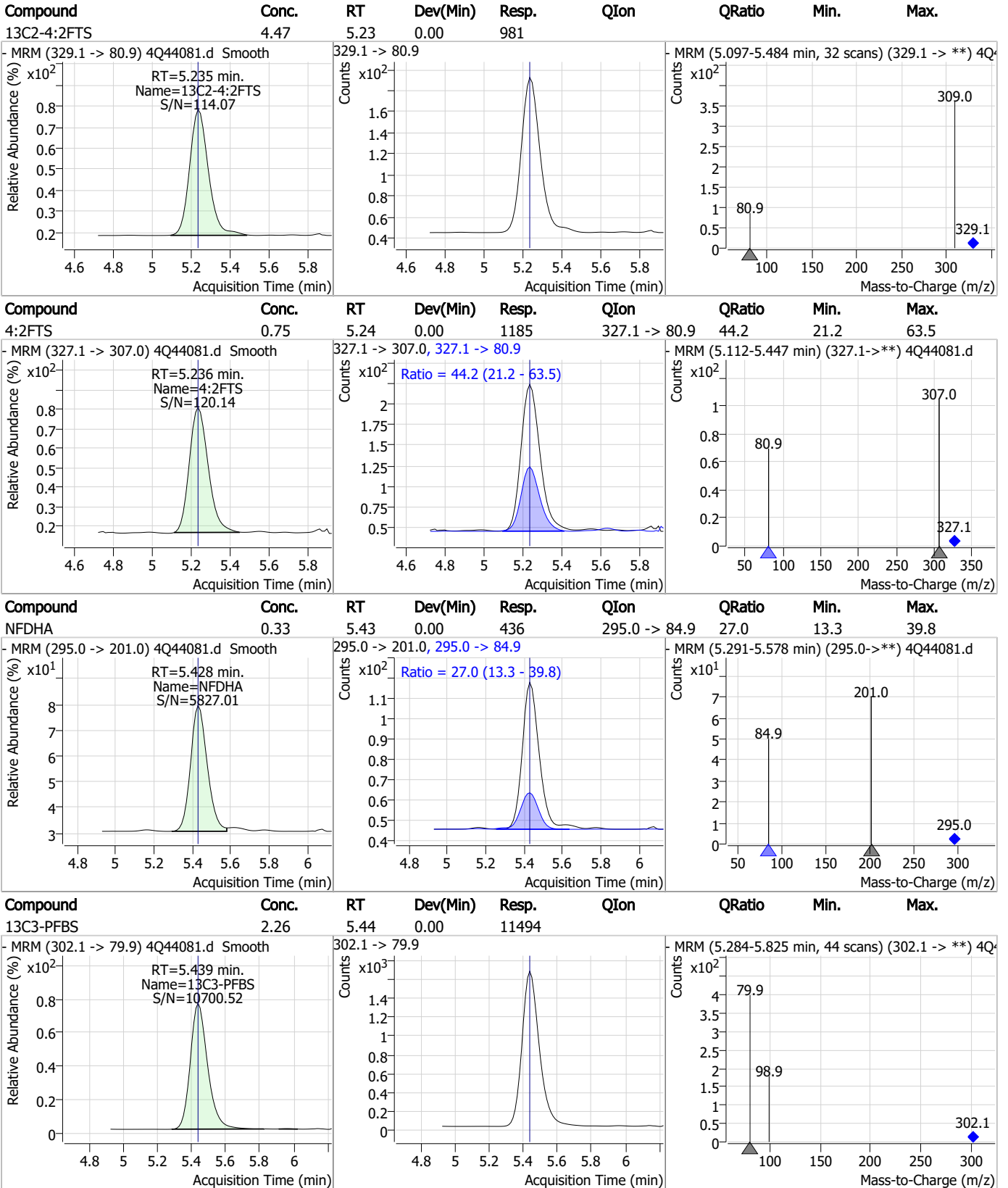
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



Perfluorinated Compounds by LC/MS/MS



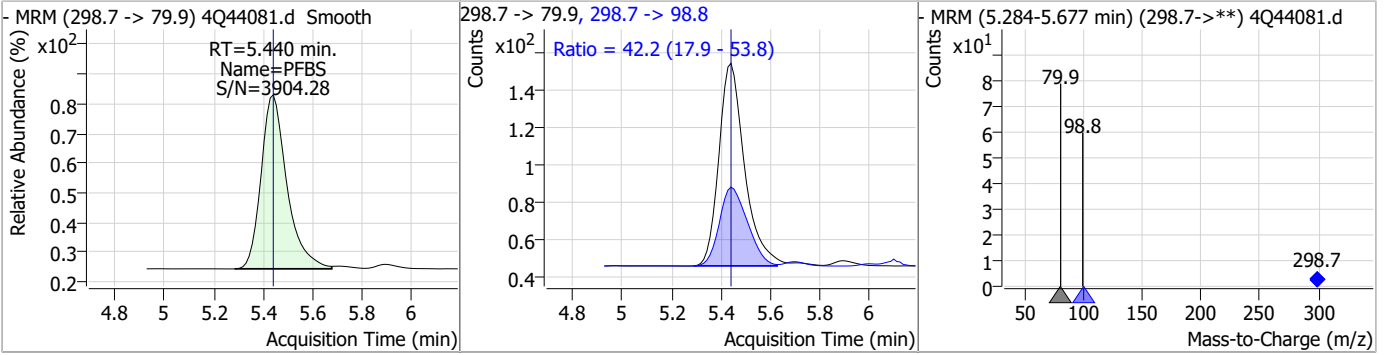
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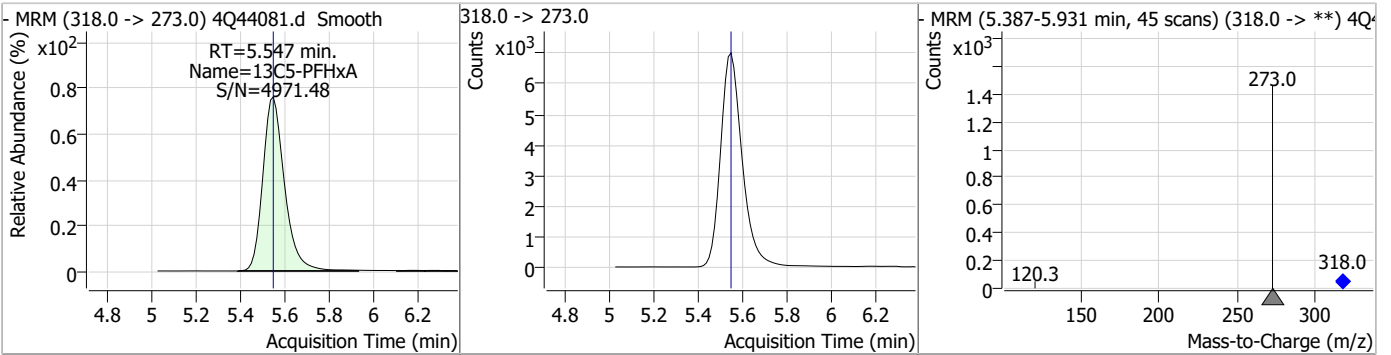


Perfluorinated Compounds by LC/MS/MS

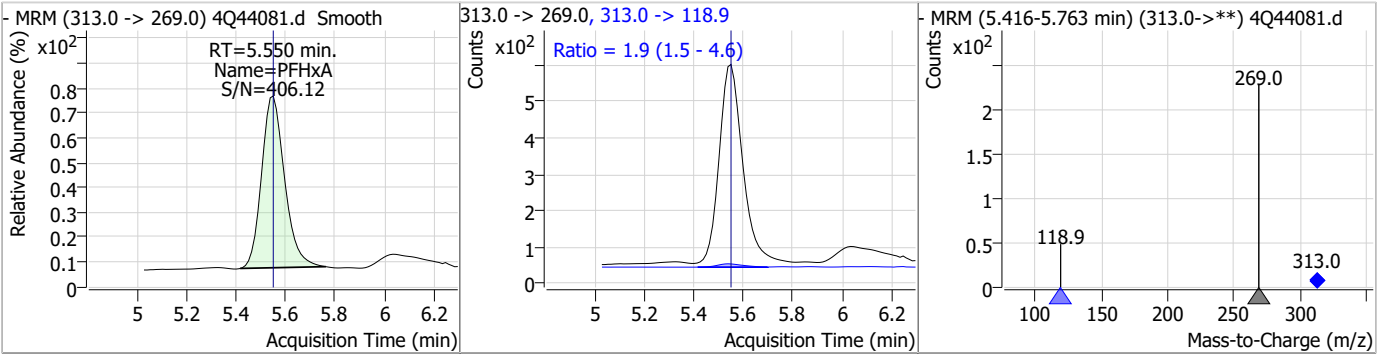
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.17	5.44	0.00	790	298.7 -> 98.8	42.2	17.9	53.8



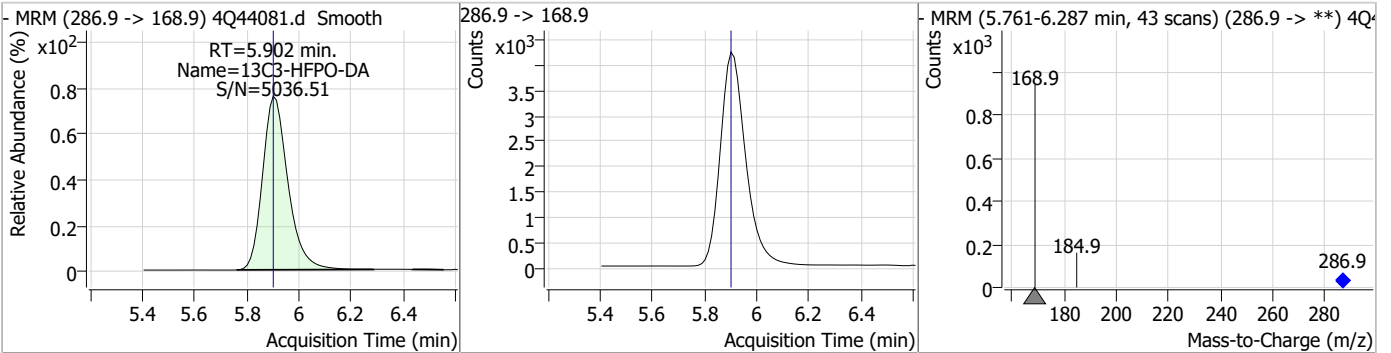
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.55	0.00	47352				



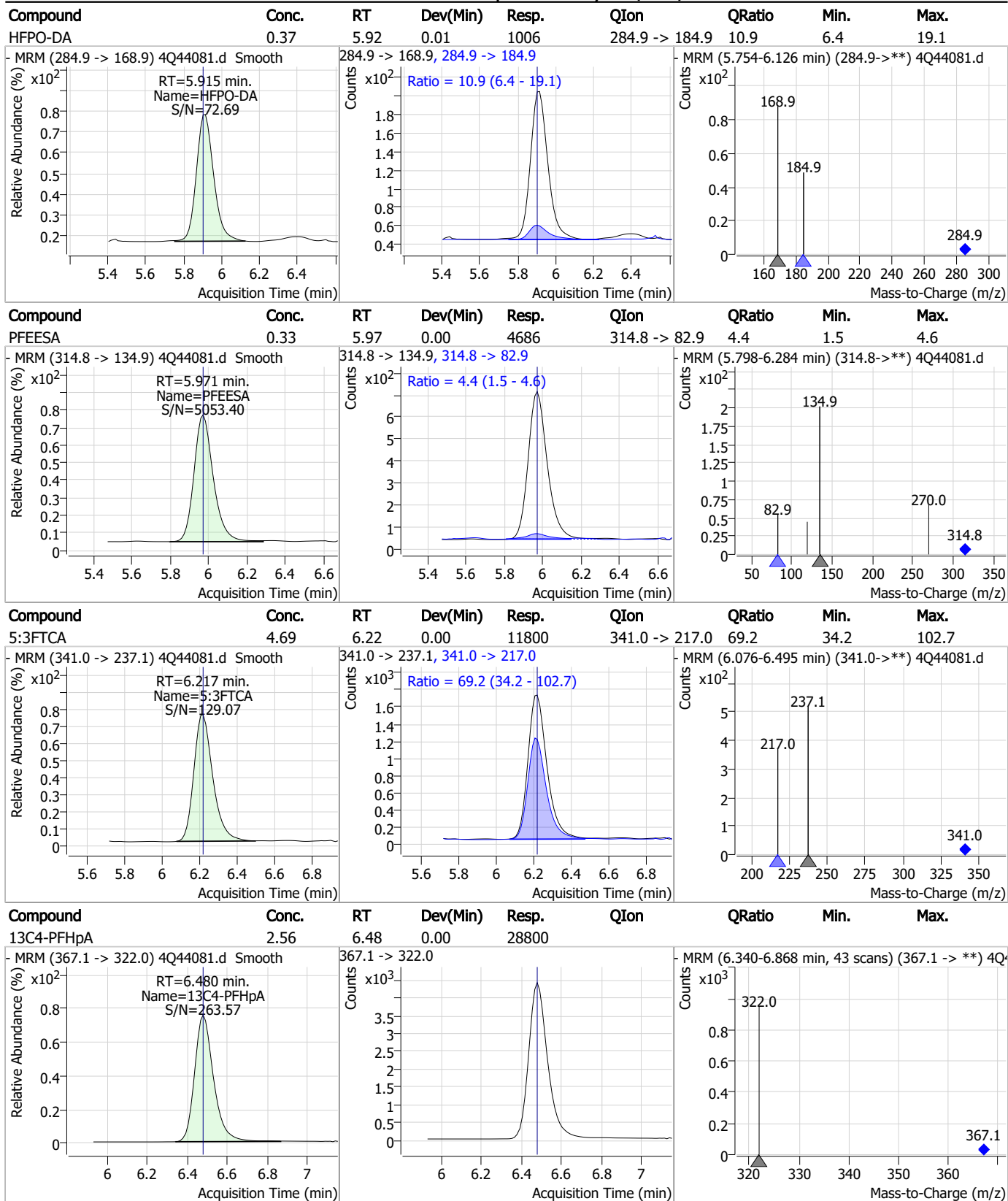
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.19	5.55	0.00	3509	313.0 -> 118.9	1.9	1.5	4.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.87	5.90	0.00	28429				



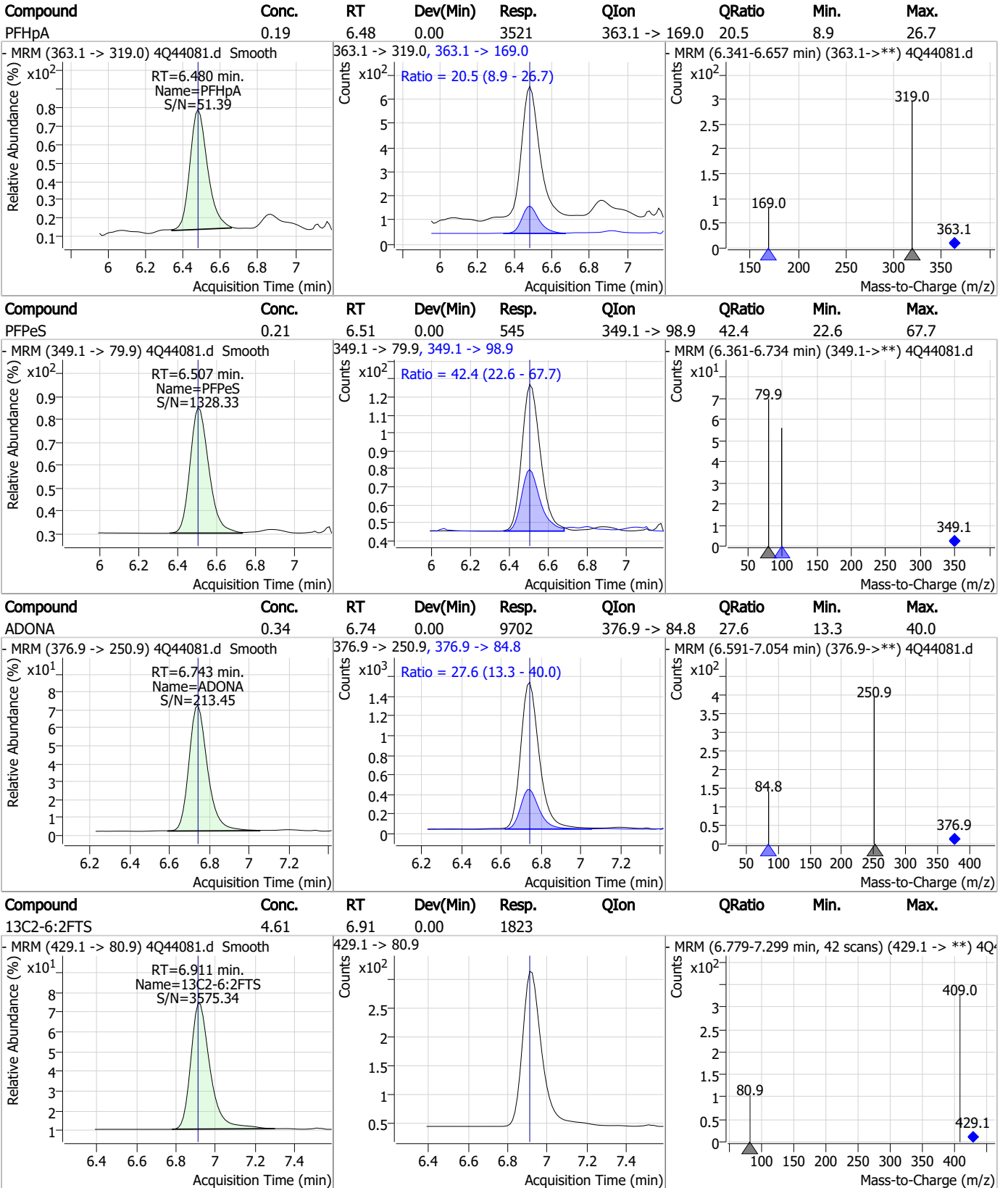
Perfluorinated Compounds by LC/MS/MS



7.7.12
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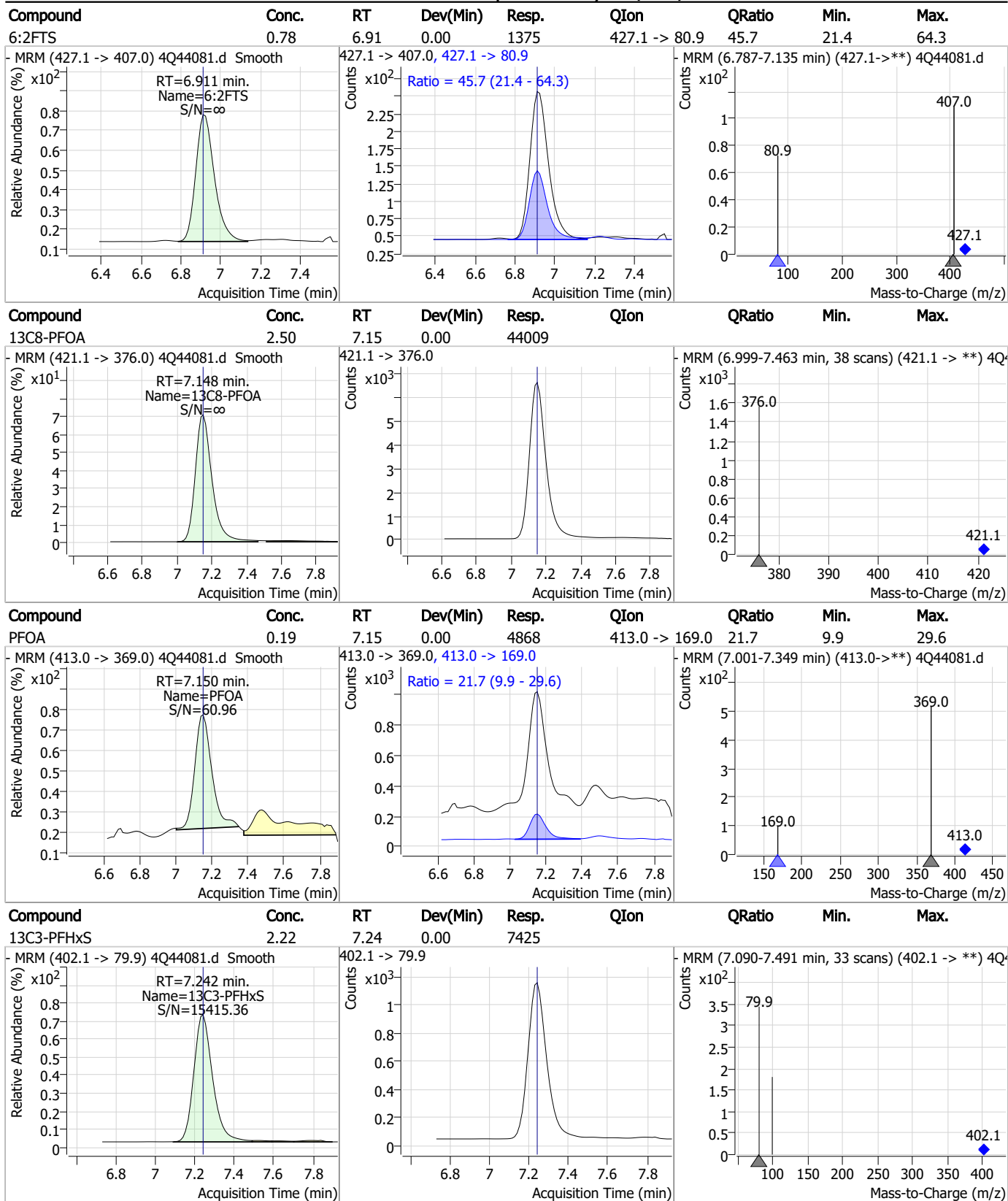
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



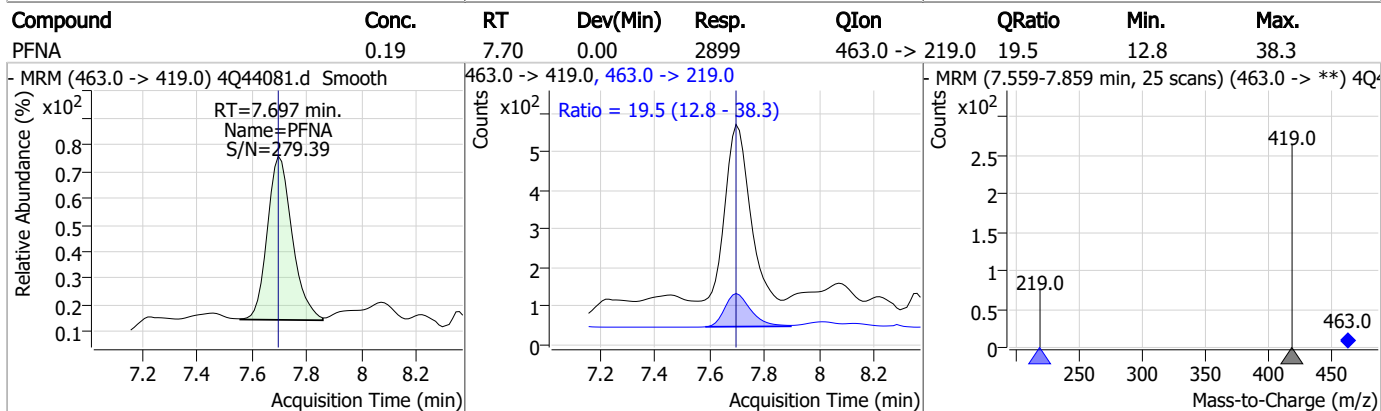
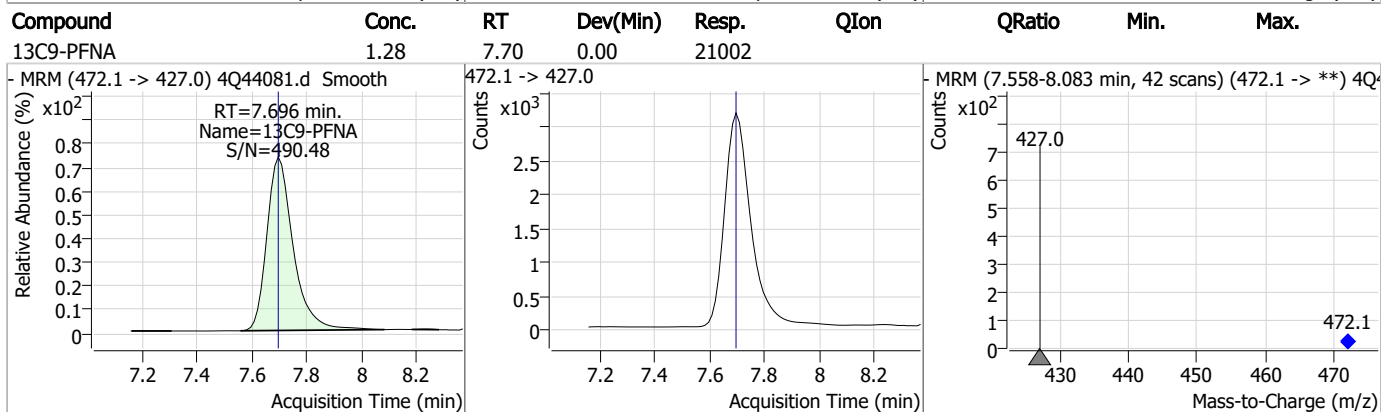
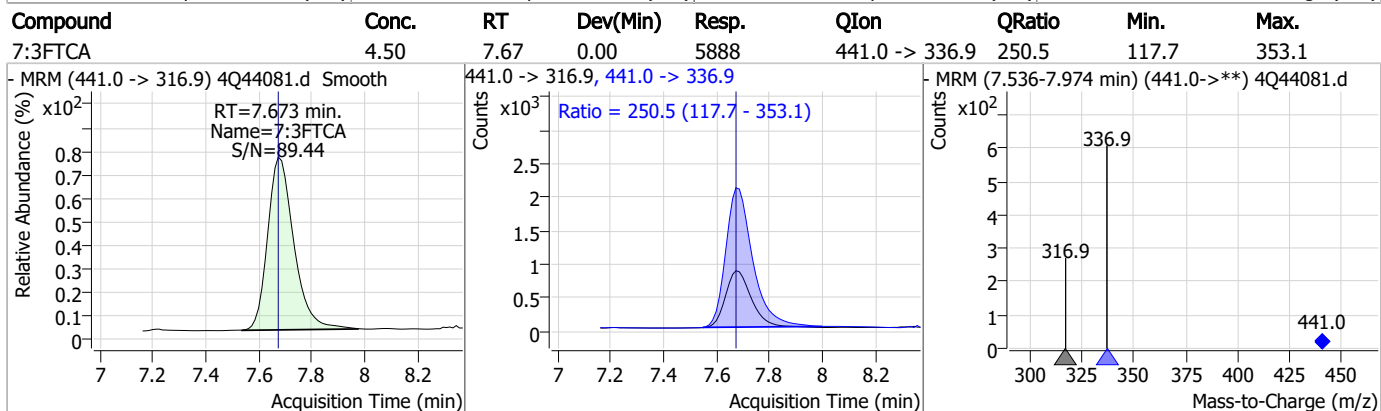
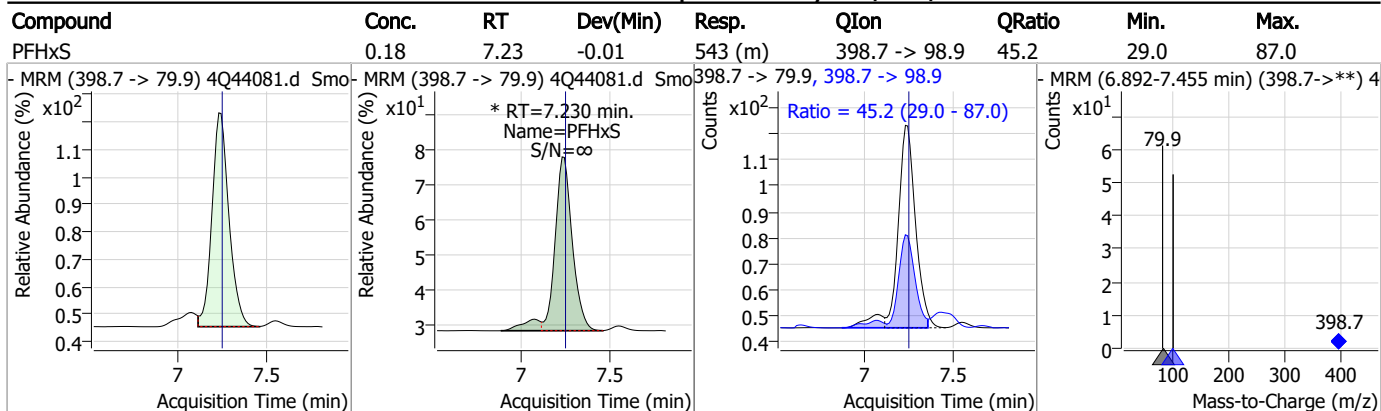
Perfluorinated Compounds by LC/MS/MS



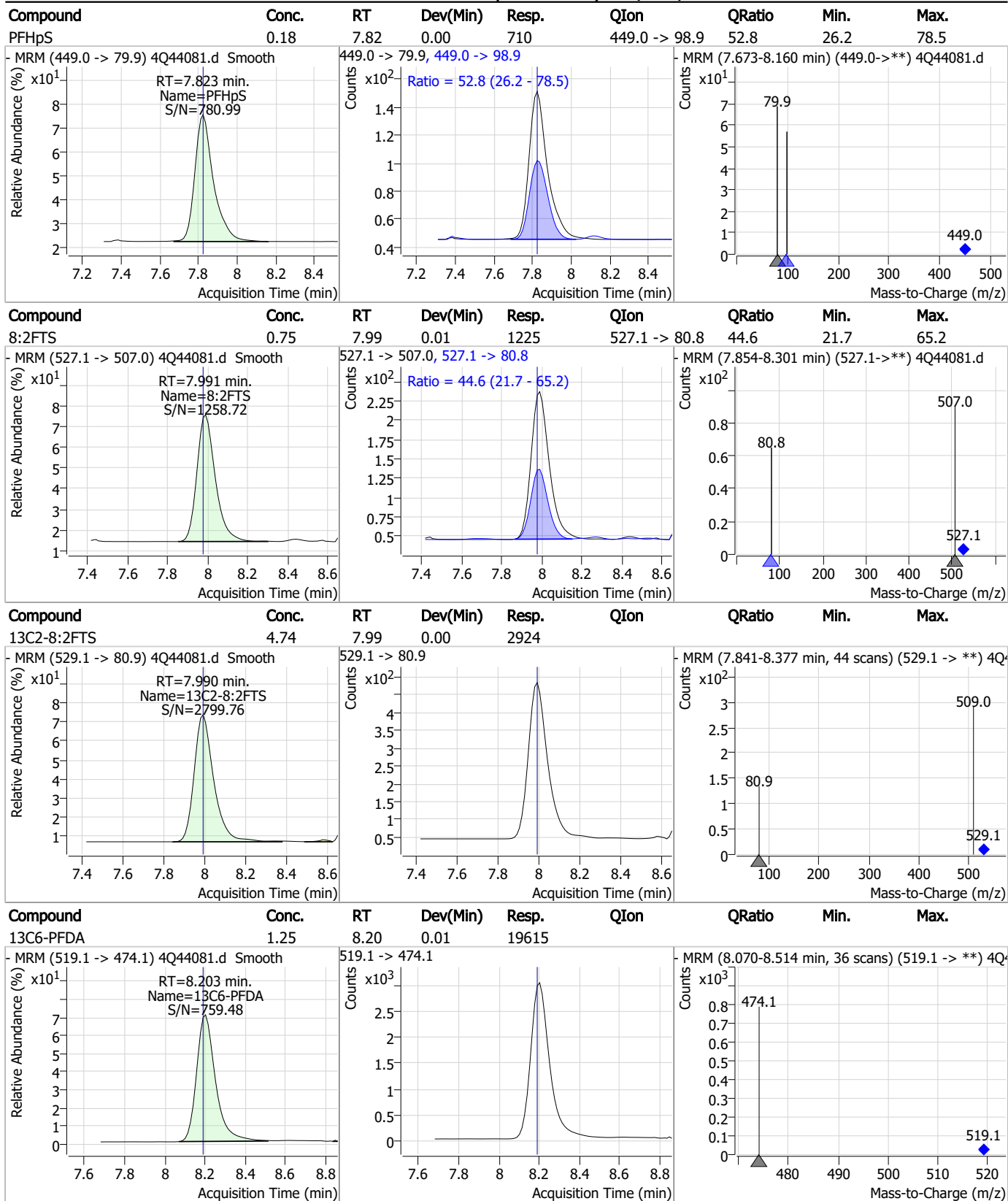
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Perfluorinated Compounds by LC/MS/MS

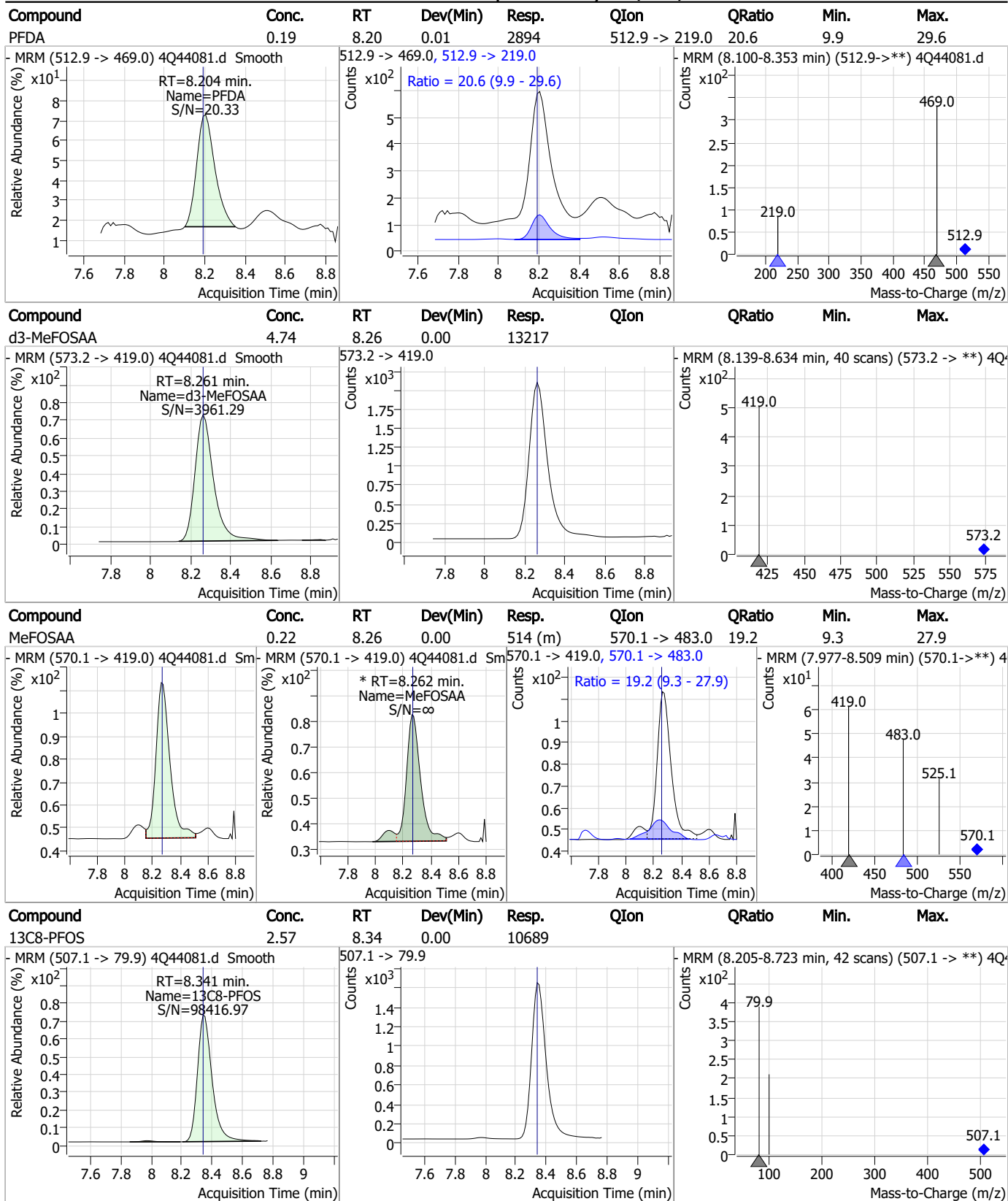


Perfluorinated Compounds by LC/MS/MS



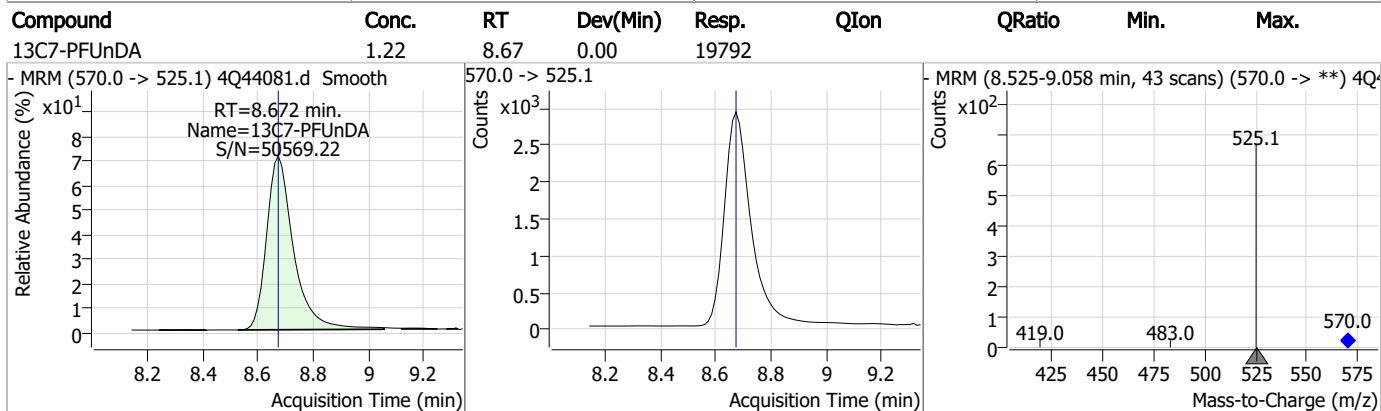
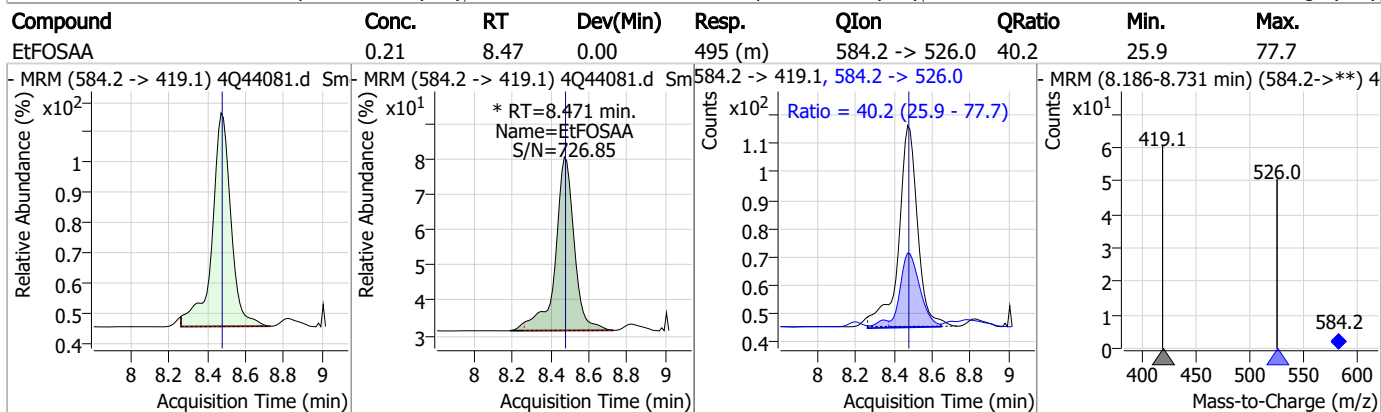
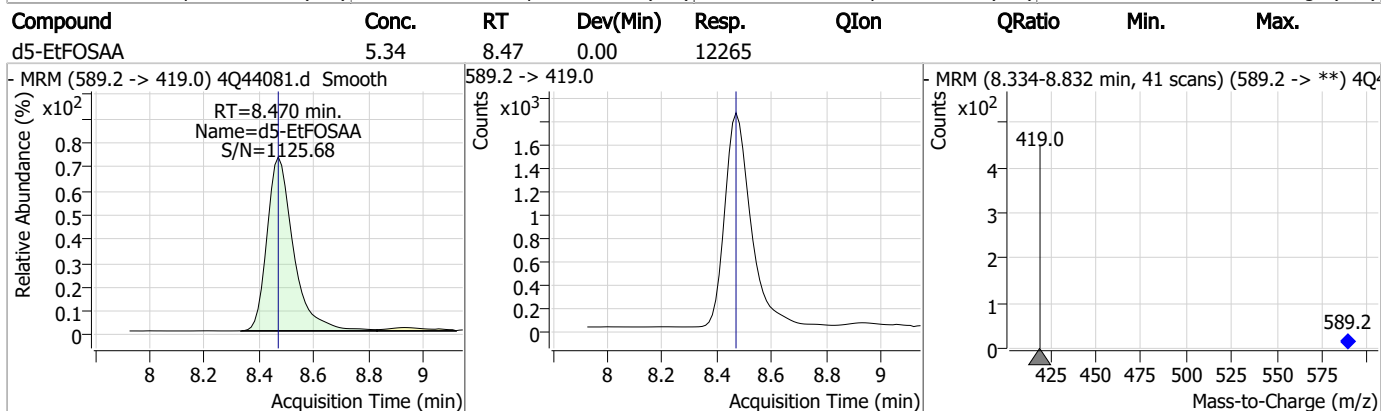
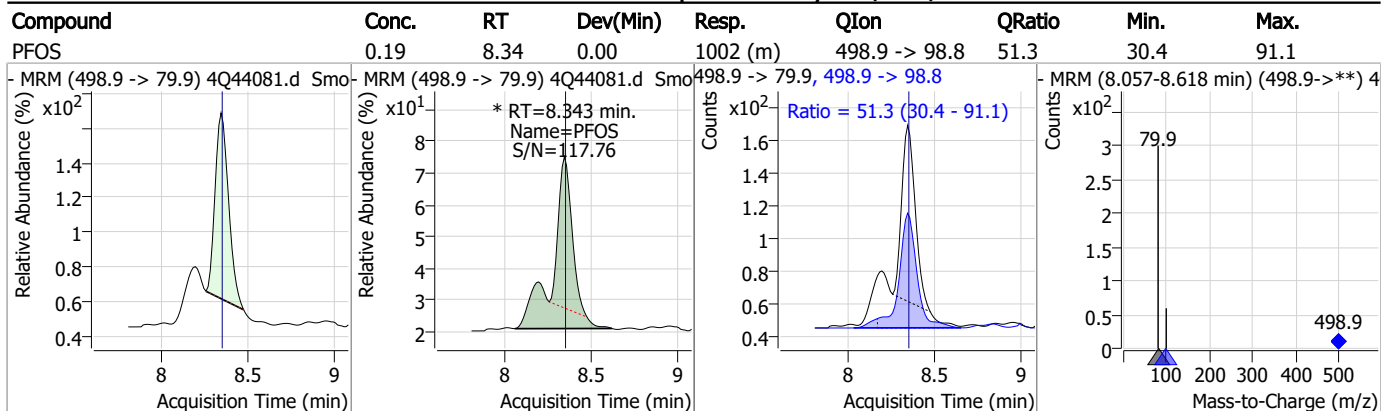
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Perfluorinated Compounds by LC/MS/MS



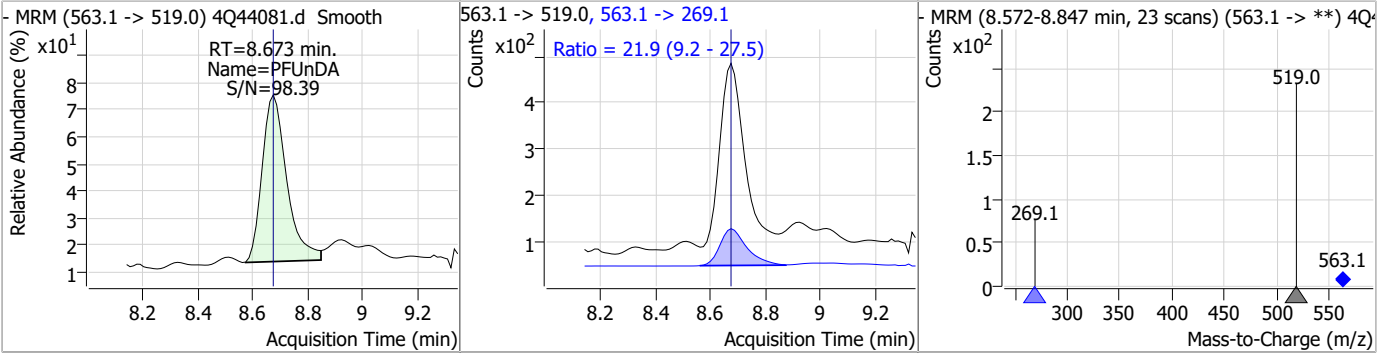
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Perfluorinated Compounds by LC/MS/MS

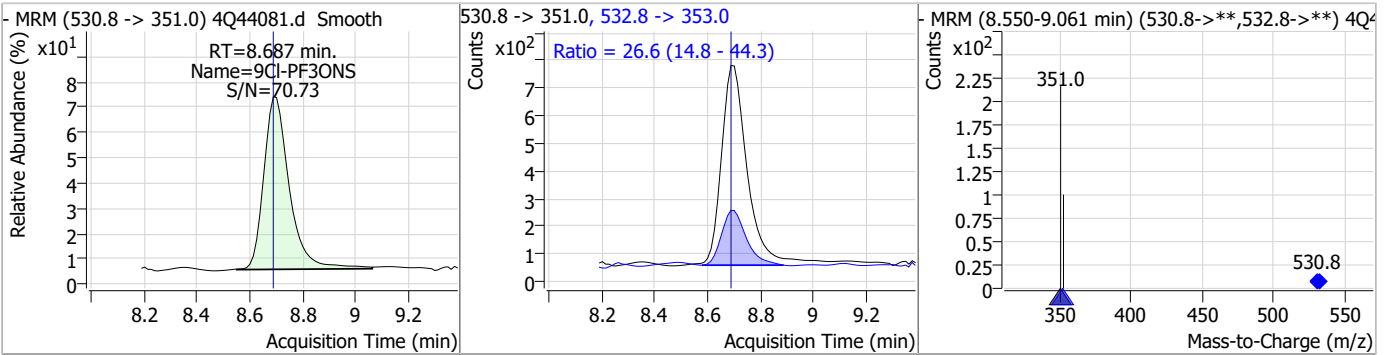


Perfluorinated Compounds by LC/MS/MS

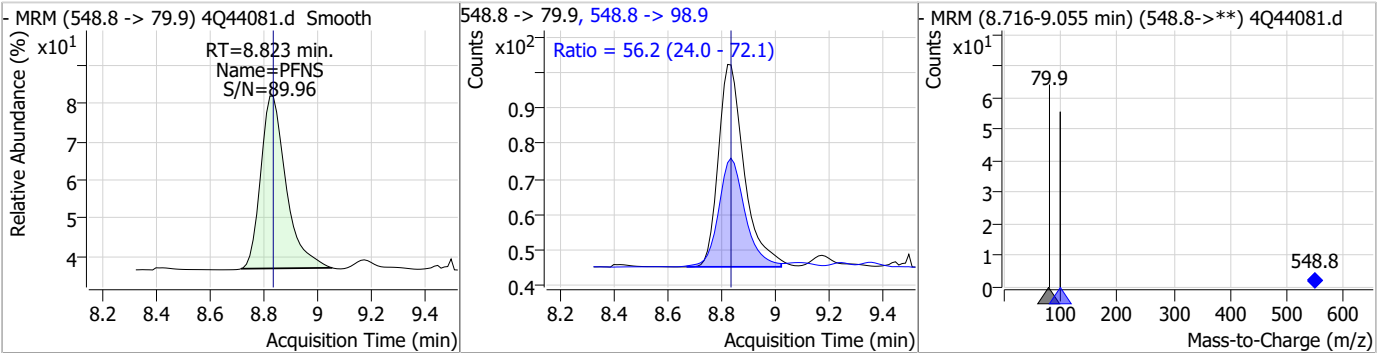
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.18	8.67	0.00	2474	563.1 -> 269.1	21.9	9.2	27.5



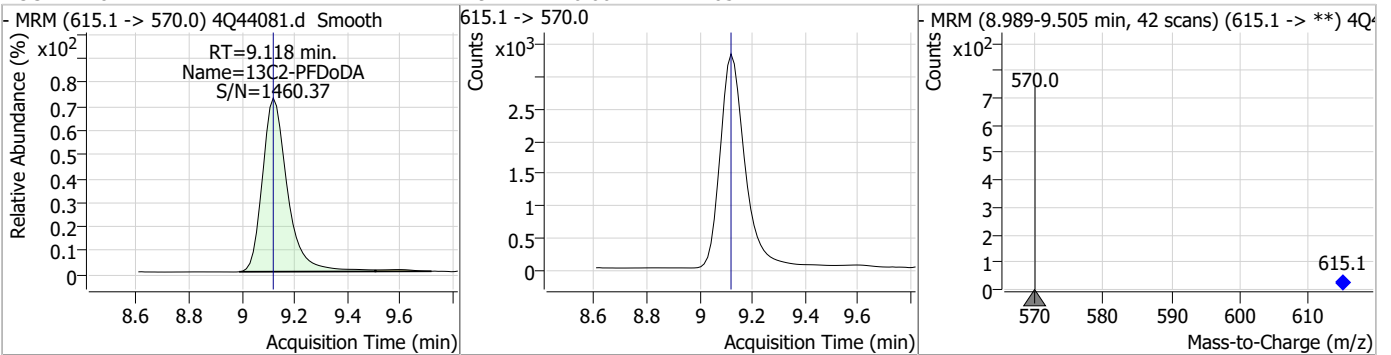
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.37	8.69	0.00	4837	532.8 -> 353.0	26.6	14.8	44.3



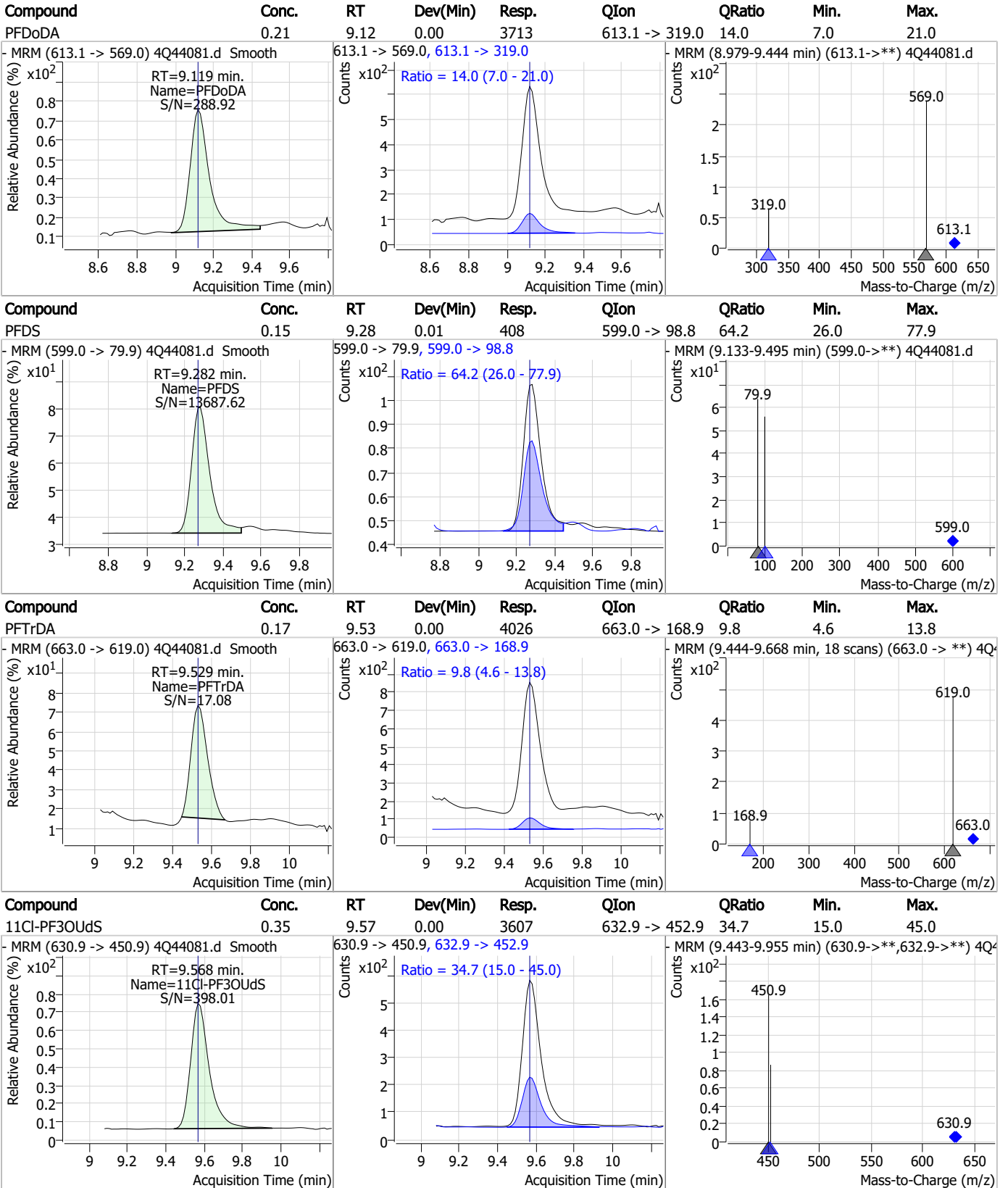
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.16	8.82	-0.01	370	548.8 -> 98.9	56.2	24.0	72.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.22	9.12	0.00	21654	615.1 -> 570.0	-	-	-



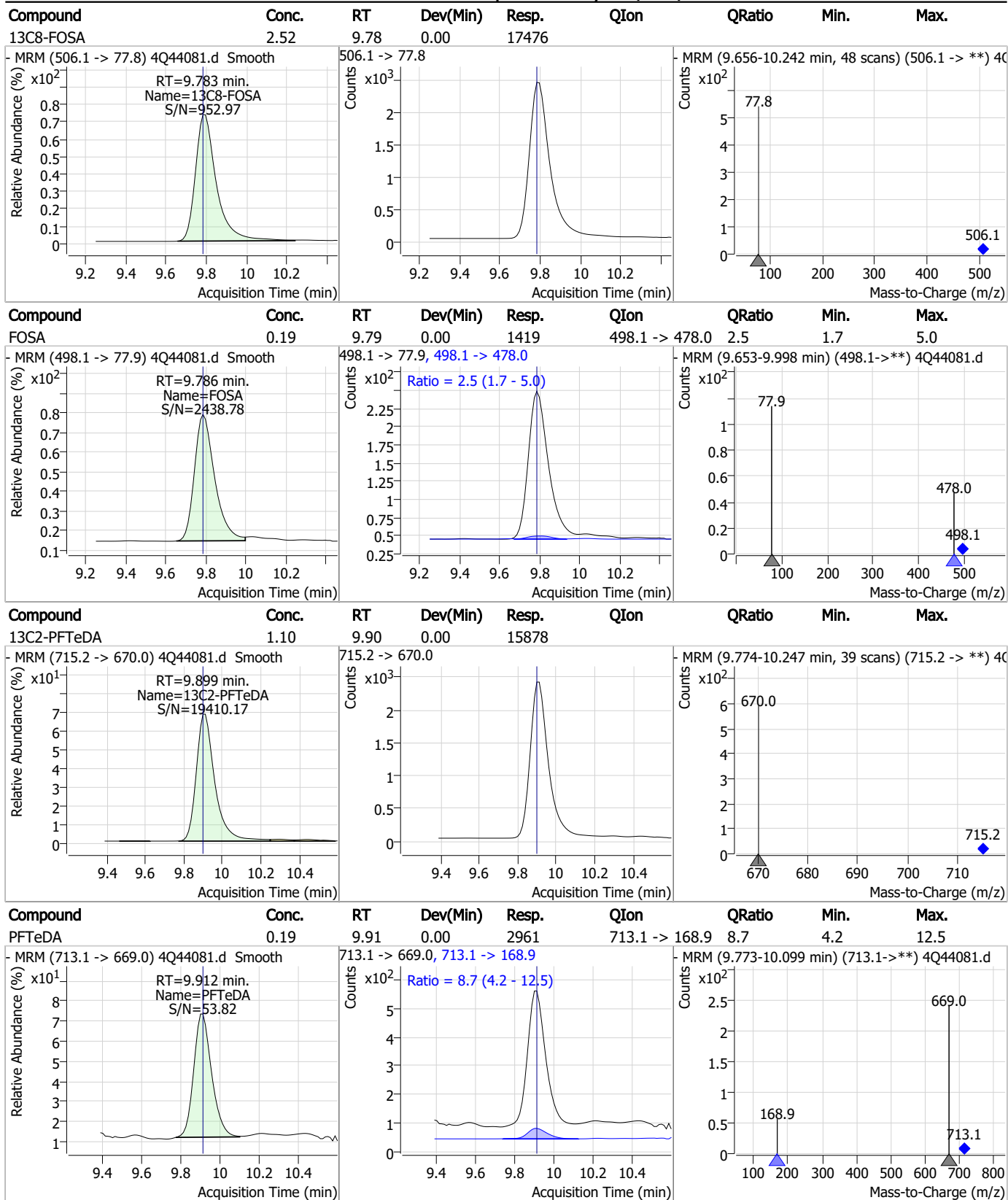
Perfluorinated Compounds by LC/MS/MS



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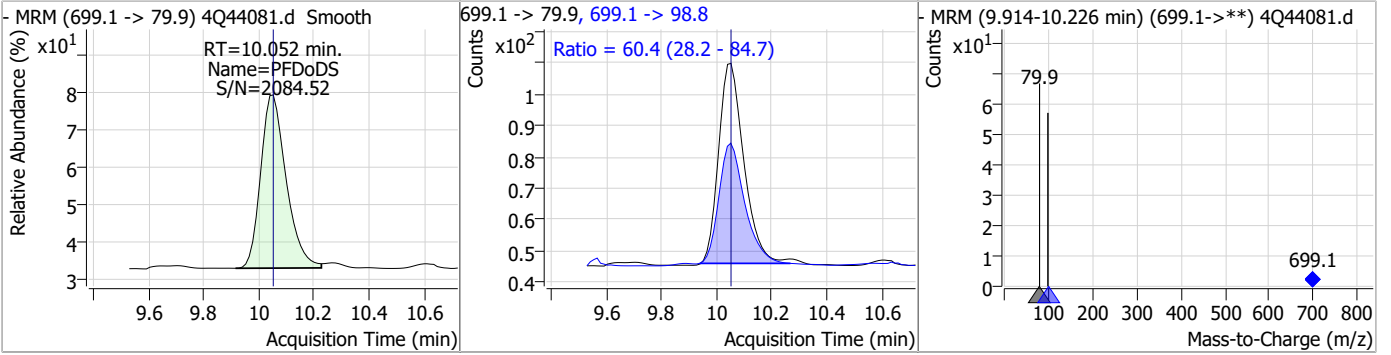
Perfluorinated Compounds by LC/MS/MS



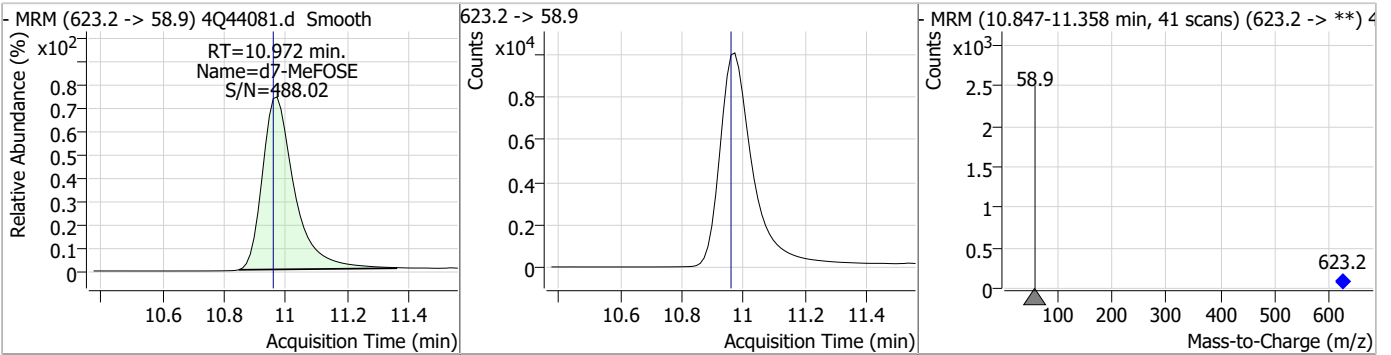
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Perfluorinated Compounds by LC/MS/MS

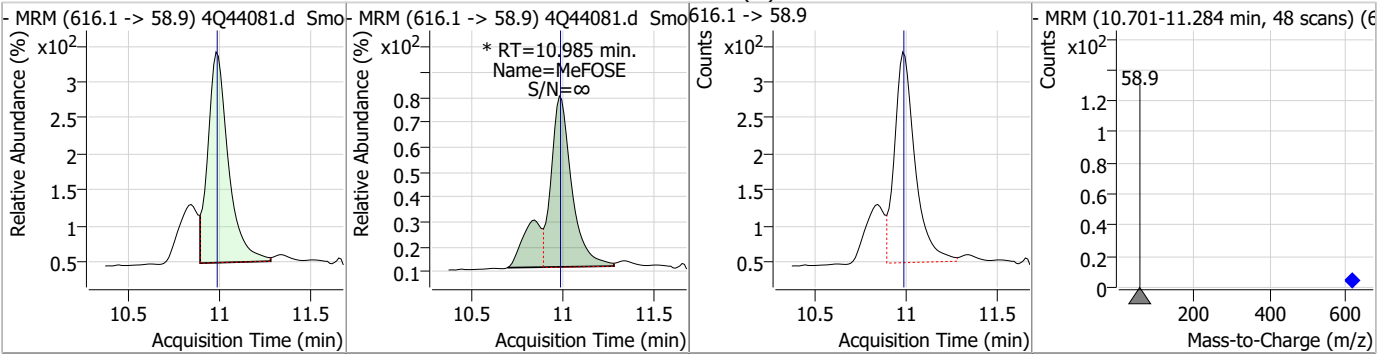
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.17	10.05	0.00	412	699.1 -> 98.8	60.4	28.2	84.7



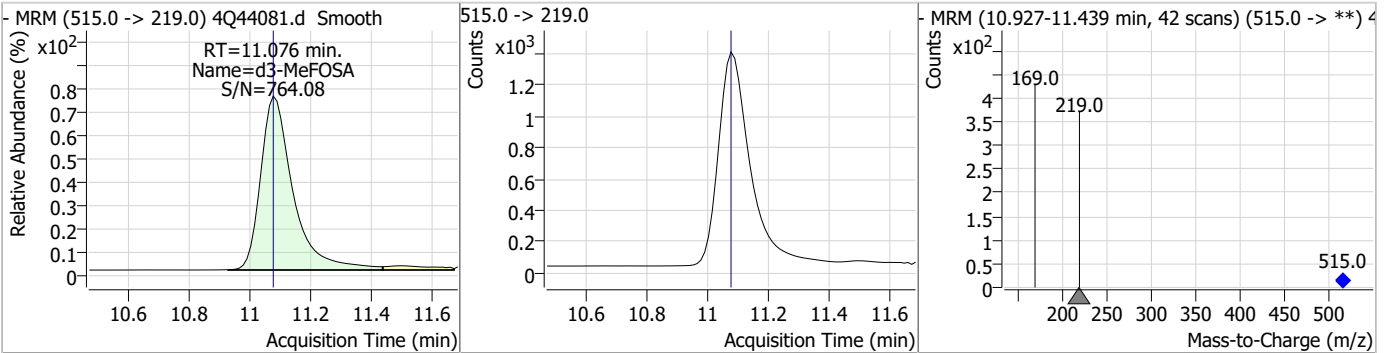
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.80	10.97	0.01	71571				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.97	10.99	0.00	2850 (m)				

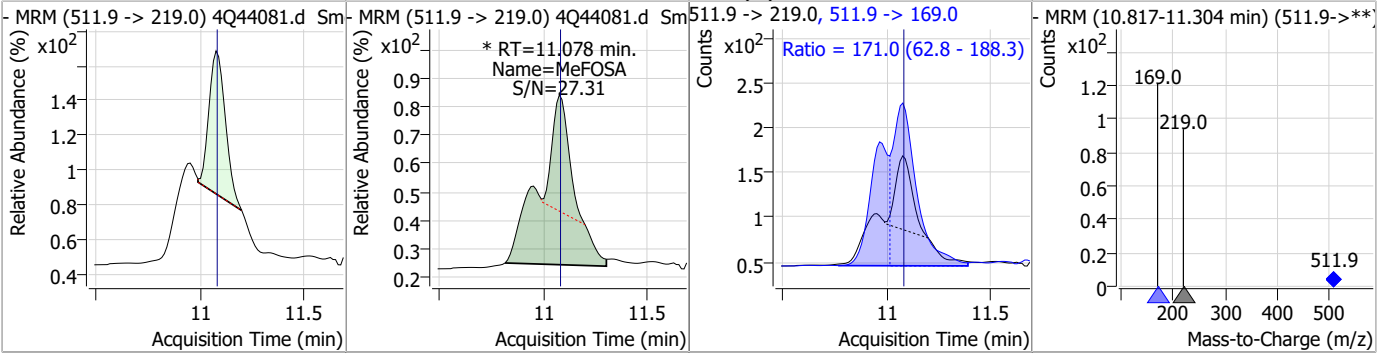


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	11.08	0.00	10212				

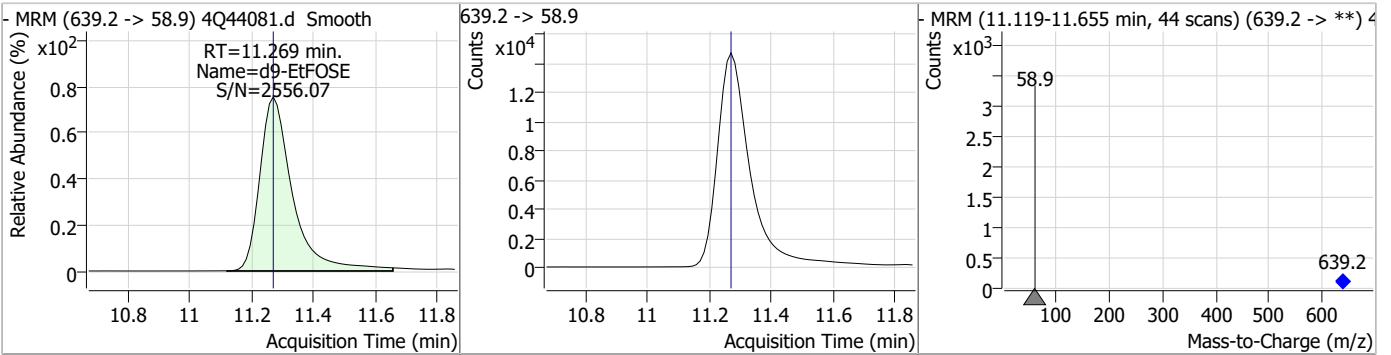


Perfluorinated Compounds by LC/MS/MS

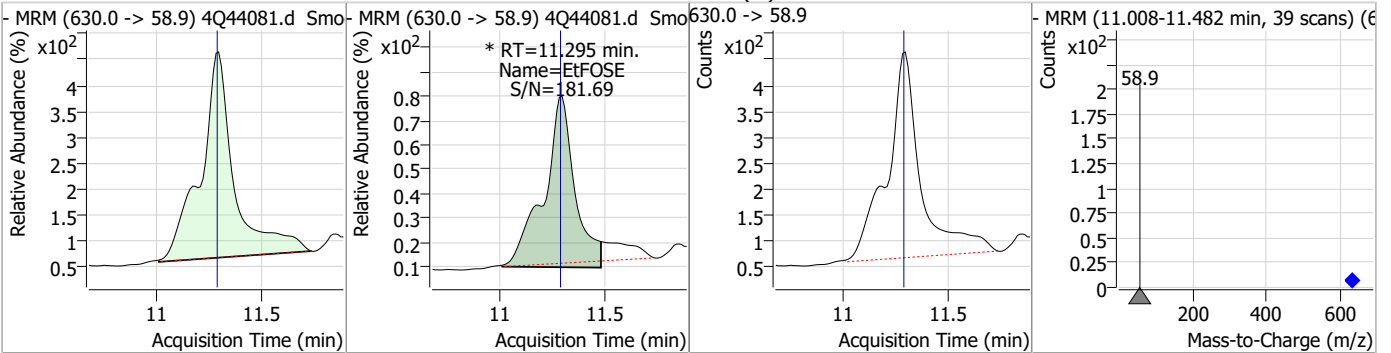
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.35	11.08	0.00	1356 (m)	511.9 -> 169.0	171.0	62.8	188.3



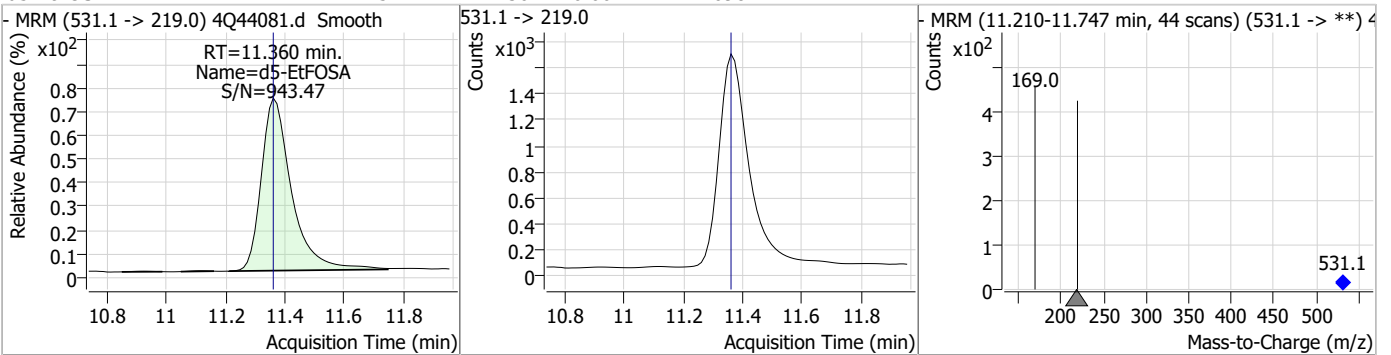
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.18	11.27	0.00	108028				



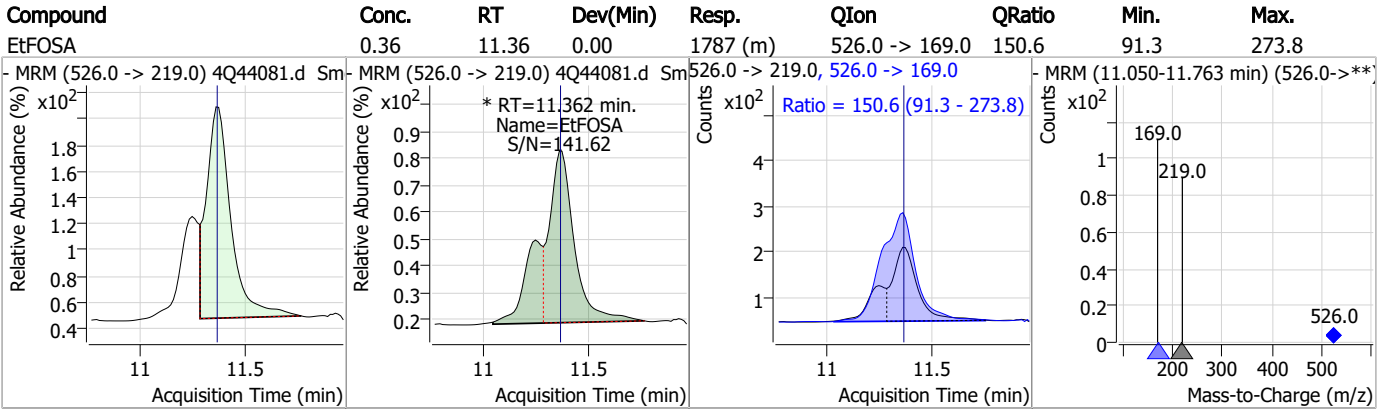
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	1.01	11.29	0.01	4227 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.54	11.36	0.00	11698				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q638-CC634 Method: EPA DRAFT 1633
Lab FileID: 4Q44081.D Analyst approved: 05/09/23 10:17 Martha Valls
Injection Time: 05/08/23 14:29 Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSE	1691-99-2		11.29	Split peak
EtFOSA	4151-50-2		11.36	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44089.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 4:22:05 PM
 Sample Name : cc634-4
 Vial : P1-A5
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96548,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	132456	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	69052	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	48175	2.50 µg/L	0.012
M4-PFHpA	6.492	367.1 -> 322.0	28779	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	44160	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	21610	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	20187	1.25 µg/L	0.025
M7-PFUnDA	8.685	570.0 -> 525.1	21161	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	22211	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	16180	1.25 µg/L	0.025
M8-FOSA	9.796	506.1 -> 77.8	16619	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11855	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	8096	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10358	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1050	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	1903	5.00 µg/L	0.025
M2-8:2FTS	8.003	529.1 -> 80.9	2975	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14350	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	27627	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	12662	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	76452	25.00 µg/L	0.012
M9-EtFOSE	11.281	639.2 -> 58.9	103467	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	12669	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	9572	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	11968	2.50 µg/L	0.012
13C3-PFBA	2.903	216.0 -> 172.0	70948	5.00 µg/L	-0.012
18O2-PFHxS	7.253	403.0 -> 83.9	5417	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	53858	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	18255	1.25 µg/L	0.025
13C5-PFNA	7.709	468.0 -> 423.0	25153	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	42788	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1050	4.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C2-6:2FTS	6.936	429.1 -> 80.9	1903	4.79 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C2-8:2FTS	8.003	529.1 -> 80.9	2975	4.80 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C2-PFDoDA	9.130	615.1 -> 570.0	22211	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-PFTeDA	9.924	715.2 -> 670.0	16180	1.12 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.9%		
13C3-PFBS	5.452	302.1 -> 79.9	11855	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C3-PFHxS	7.254	402.1 -> 79.9	8096	2.41 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C4-PFBA	2.911	216.8 -> 171.9	132456	9.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.492	367.1 -> 322.0	28779	2.61 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	48175	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C5-PFPeA	4.375	268.3 -> 223.0	69052	5.24 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C6-PFDA	8.216	519.1 -> 474.1	20187	1.29 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C7-PFUnDA	8.685	570.0 -> 525.1	21161	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C8-FOSA	9.796	506.1 -> 77.8	16619	2.21 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.6%	
13C8-PFOA	7.163	421.1 -> 376.0	44160	2.50 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-PFOS	8.354	507.1 -> 79.9	10358	2.30 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.9%	
13C9-PFNA	7.709	472.1 -> 427.0	21610	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14350	4.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	27627	9.81 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d3-MeFOSA	11.089	515.0 -> 219.0	9572	2.04 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.6%	
d5-EtFOSAA	8.483	589.2 -> 419.0	12662	5.09 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
d7-MeFOSE	10.972	623.2 -> 58.9	76452	20.53 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.1%	
d9-EtFOSE	11.281	639.2 -> 58.9	103467	19.62 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.5%	
d5-EtFOSA	11.373	531.1 -> 219.0	12669	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	15528	9.19 µg/L	99
		327.1 -> 80.9	6434		
6:2FTS	6.924	427.1 -> 407.0	17637	9.60 µg/L	99
		427.1 -> 80.9	7477		
8:2FTS	8.003	527.1 -> 507.0	15674	9.45 µg/L	100
		527.1 -> 80.8	6829		
EtFOSAA	8.496	584.2 -> 419.1	5219	2.15 µg/L	m 93
		584.2 -> 526.0	2462		
FOSA	9.799	498.1 -> 77.9	18533	2.66 µg/L	99
		498.1 -> 478.0	547		
MeFOSAA	8.286	570.1 -> 419.0	6321	2.53 µg/L	m 98
		570.1 -> 483.0	1237		
PFBA	2.907	212.8 -> 168.9	35142	9.91 µg/L	100
PFBS	5.453	298.7 -> 79.9	10605	2.18 µg/L	99
		298.7 -> 98.8	3720		
PFDA	8.216	512.9 -> 469.0	36696	2.40 µg/L	99
		512.9 -> 219.0	7416		
PFDODA	9.131	613.1 -> 569.0	42914	2.41 µg/L	100
		613.1 -> 319.0	6040		
PFDS	9.294	599.0 -> 79.9	6083	2.37 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.492	599.0 -> 98.8	3124	2.40	µg/L	99
		363.1 -> 319.0	43706			
PFHpS	7.836	363.1 -> 169.0	7549	2.44	µg/L	96
		449.0 -> 79.9	9104			
PFHxA	5.550	449.0 -> 98.9	5008	2.42	µg/L	99
		313.0 -> 269.0	45739			
PFHxS	7.255	313.0 -> 118.9	1540	2.10	µg/L	95
		398.7 -> 79.9	6980			
PFNA	7.709	398.7 -> 98.9	3796	2.28	µg/L	100
		463.0 -> 419.0	36579			
PFNS	8.848	463.0 -> 219.0	9237	2.39	µg/L	94
		548.8 -> 79.9	5408			
PFOA	7.164	548.8 -> 98.9	2829	2.42	µg/L	99
		413.0 -> 369.0	61769			
PFOS	8.355	413.0 -> 169.0	12324	2.32	µg/L	88
		498.9 -> 79.9	11775			
PFPeA	4.377	498.9 -> 98.8	6106	4.90	µg/L	100
		263.0 -> 219.0	81393			
PFPeS	6.519	349.1 -> 79.9	6154	2.16	µg/L	98
		349.1 -> 98.9	2702			
PFTeDA	9.924	713.1 -> 669.0	39197	2.47	µg/L	100
		713.1 -> 168.9	3299			
PFTrDA	9.541	663.0 -> 619.0	57166	2.40	µg/L	98
		663.0 -> 168.9	5765			
PFUnDA	8.685	563.1 -> 519.0	34147	2.38	µg/L	96
		563.1 -> 269.1	6898			
11CI-PF3OUdS	9.581	630.9 -> 450.9	47998	4.83	µg/L	99
		632.9 -> 452.9	14640			
9CI-PF3ONS	8.712	530.8 -> 351.0	61262	4.84	µg/L	100
		532.8 -> 353.0	18138			
ADONA	6.756	376.9 -> 250.9	133765	4.81	µg/L	100
		376.9 -> 84.8	35553			
HFPO-DA	5.915	284.9 -> 168.9	13140	4.98	µg/L	97
		284.9 -> 184.9	1518			
3:3FTCA	3.848	241.0 -> 177.0	8801	12.04	µg/L	96
		241.0 -> 117.0	945			
5:3FTCA	6.231	341.0 -> 237.1	164876	64.37	µg/L	99
		341.0 -> 217.0	111208			
7:3FTCA	7.686	441.0 -> 316.9	87486	65.74	µg/L	98
		441.0 -> 336.9	208148			
EtFOSA	11.375	526.0 -> 219.0	24304	4.58	µg/L	67
		526.0 -> 169.0	32956			
EtFOSE	11.295	630.0 -> 58.9	51734	12.92	µg/L	100
		511.9 -> 219.0	20204			
MeFOSA	11.090	511.9 -> 169.0	28801	5.60	µg/L	85
		616.1 -> 58.9	36277			
MeFOSE	10.997	699.1 -> 79.9	5384	11.55	µg/L	100
		699.1 -> 98.8	2948			
PFDoDS	10.052	295.0 -> 201.0	6071	2.35	µg/L	98
		295.0 -> 84.9	1724			
NFDHA	5.441	279.0 -> 85.1	44770	4.50	µg/L	96
		229.0 -> 84.9	43528			
PFMBA	4.778	314.8 -> 134.9	62016	4.83	µg/L	100
		314.8 -> 82.9	2267			
PFMPA	3.515			5.01	µg/L	100
PFEESA	5.984			4.34	µg/L	98

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

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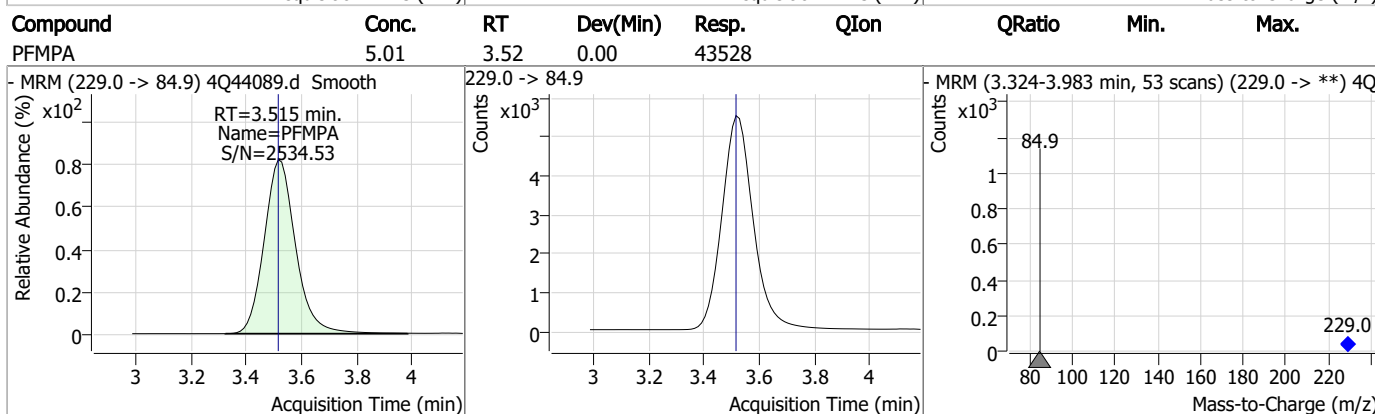
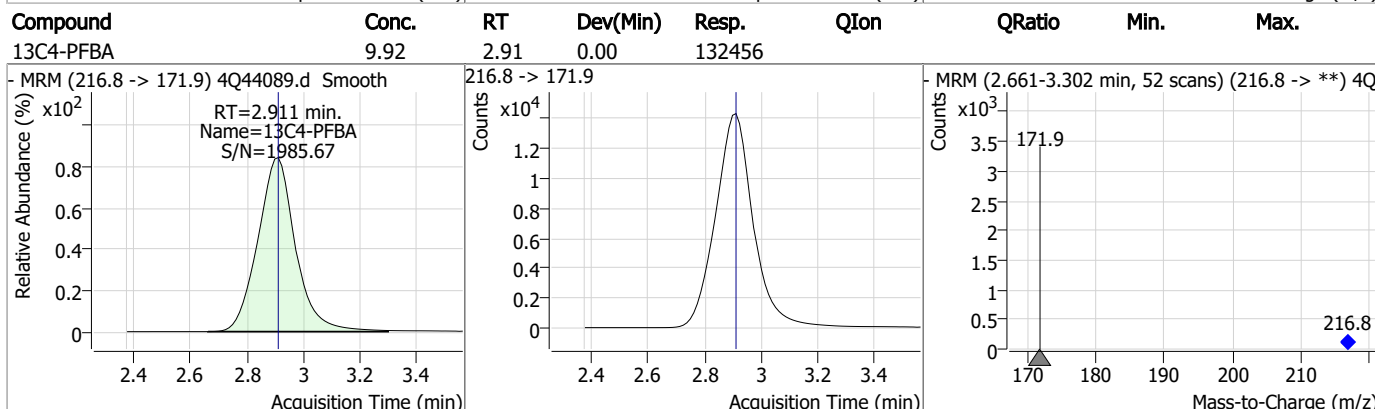
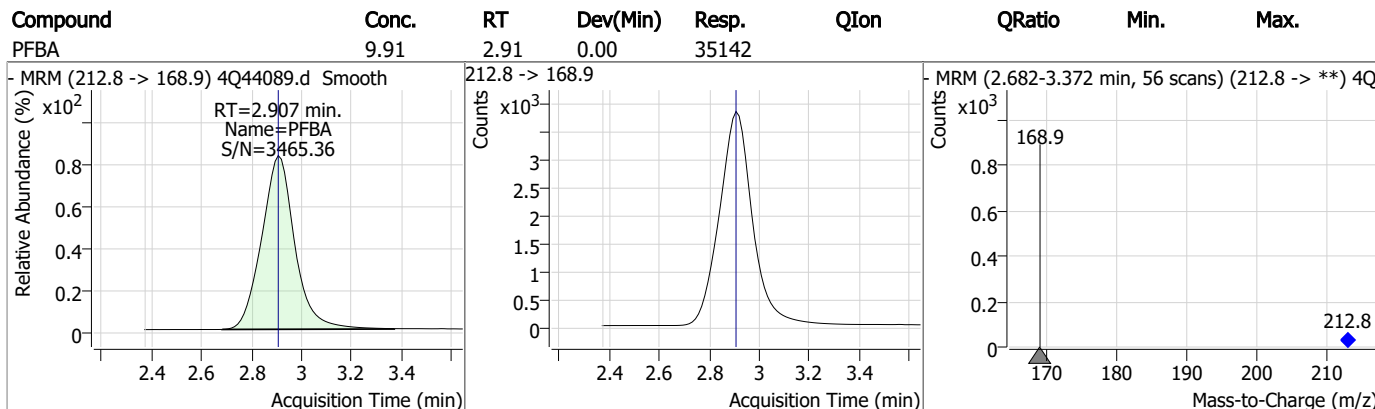
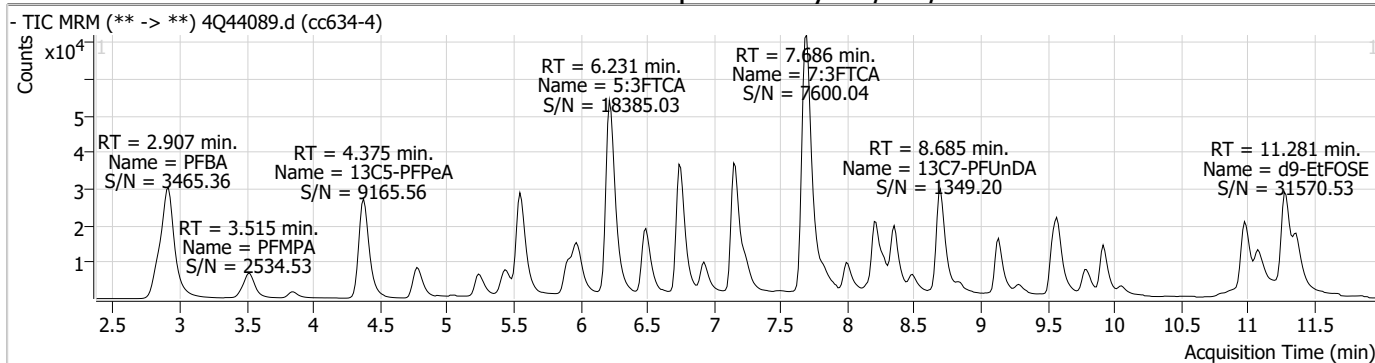
Perfluorinated Compounds by LC/MS/MS

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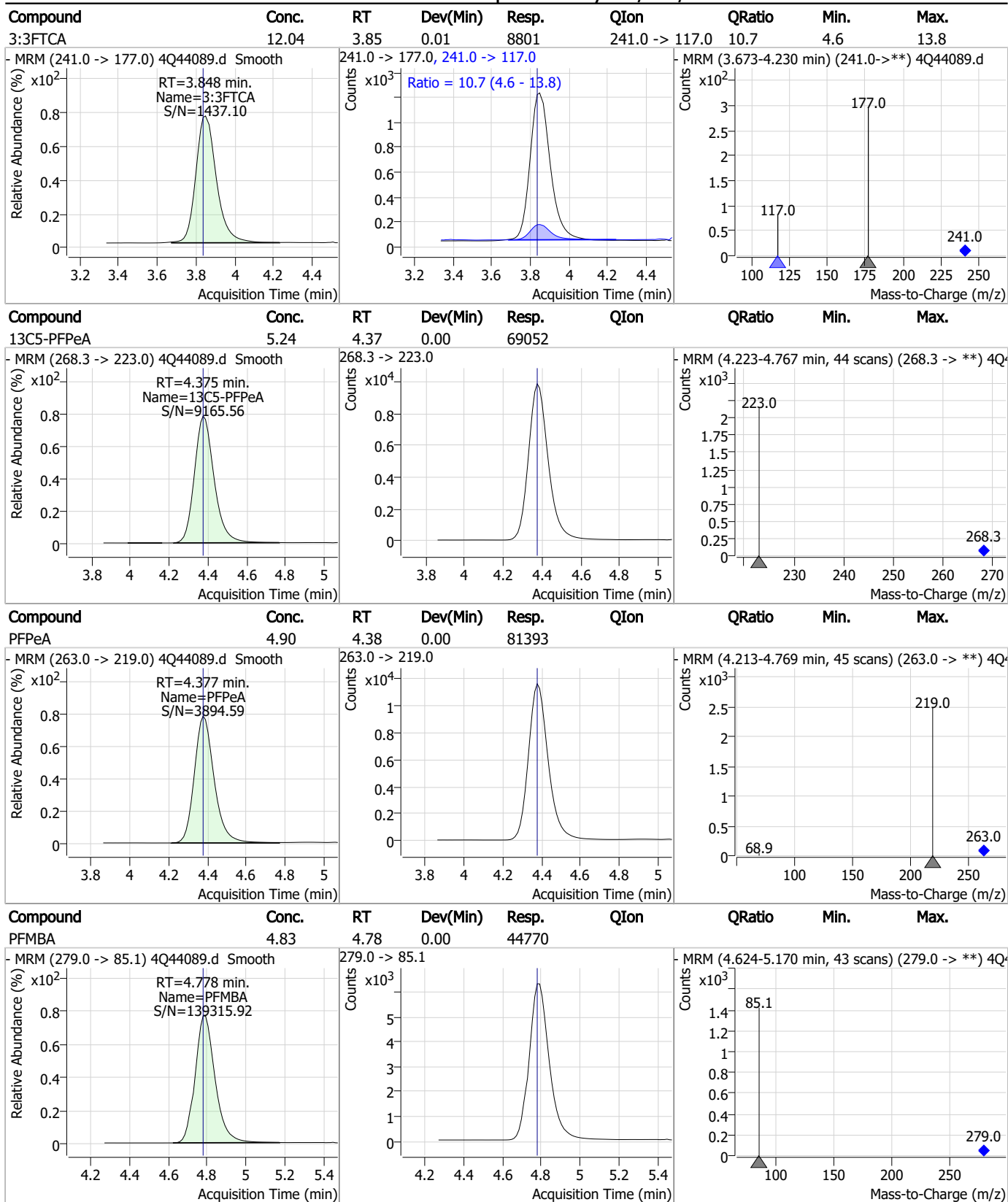
7.7.13

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Perfluorinated Compounds by LC/MS/MS



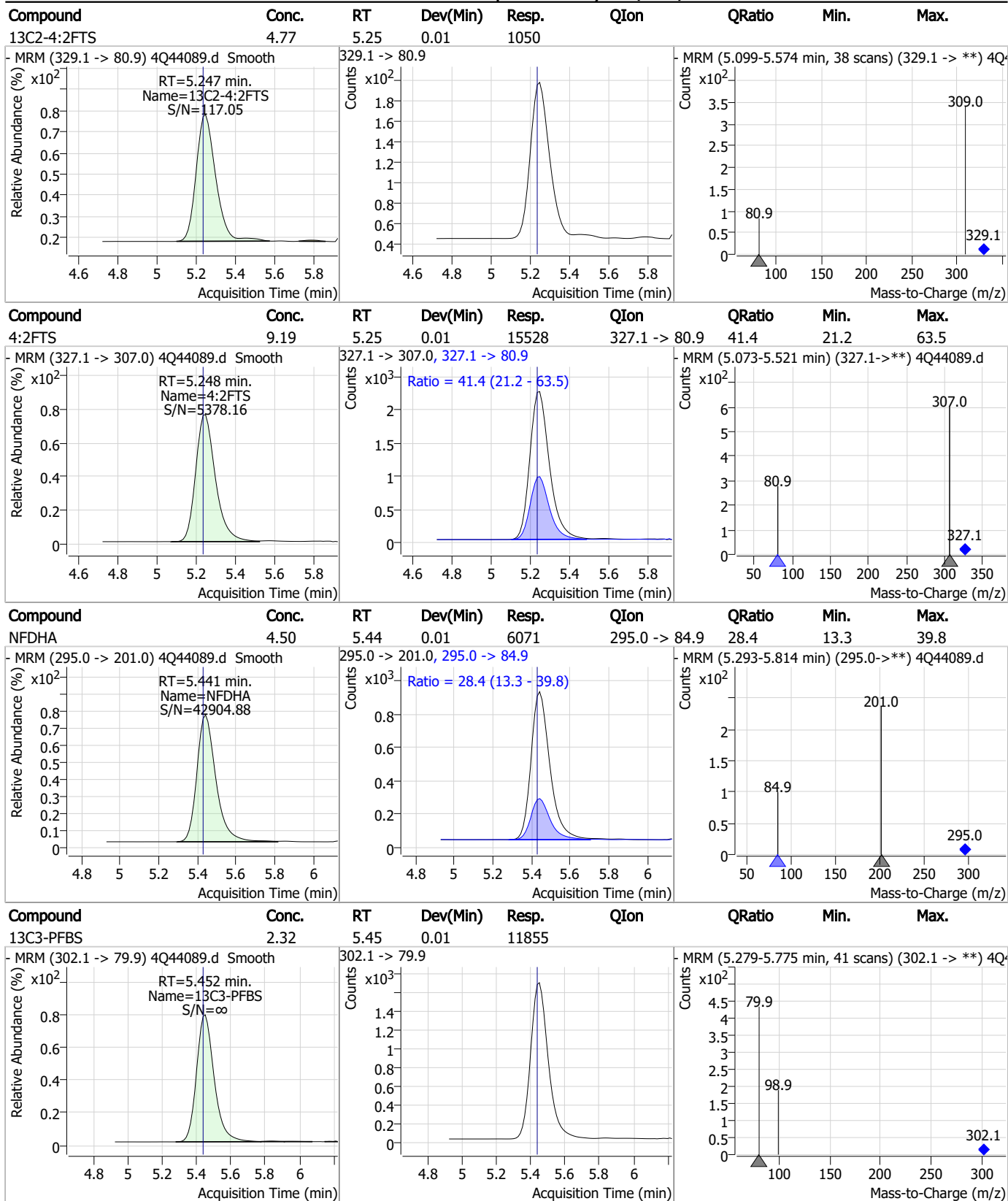
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

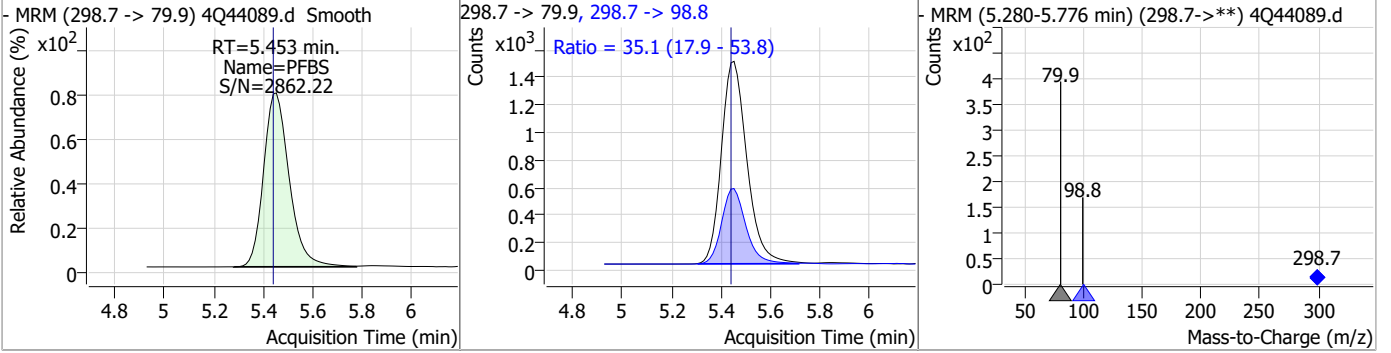


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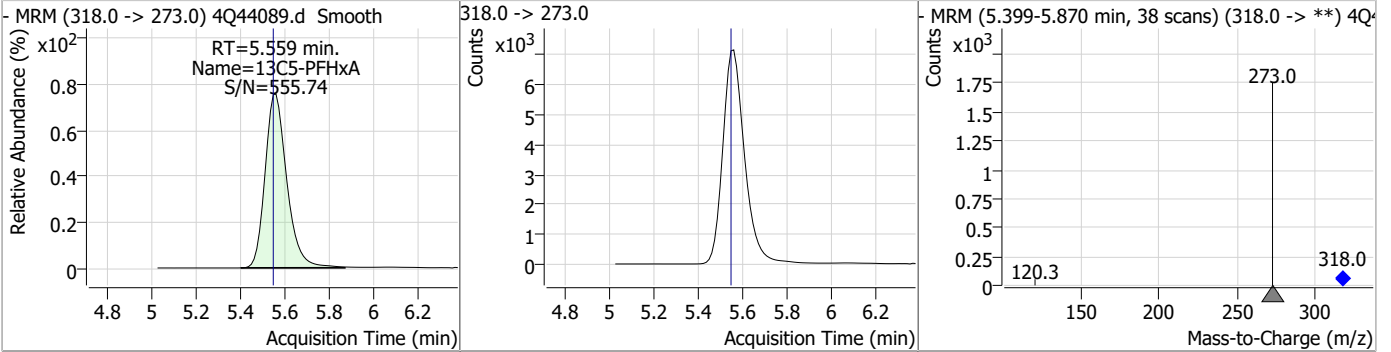
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Perfluorinated Compounds by LC/MS/MS

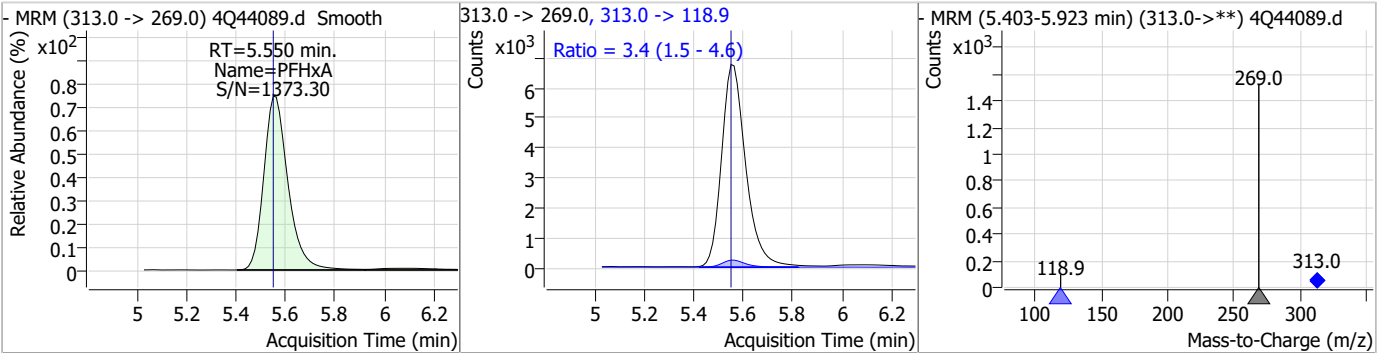
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.18	5.45	0.01	10605	298.7 -> 98.8	35.1	17.9	53.8



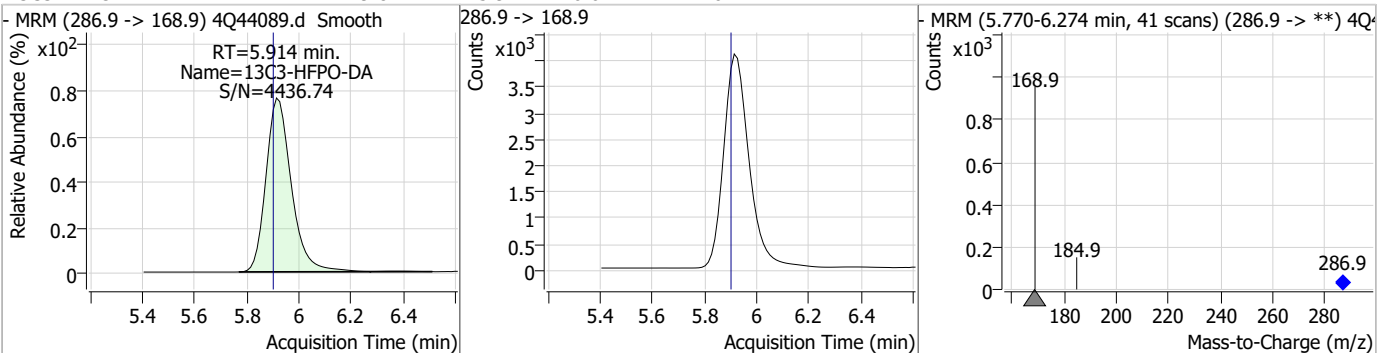
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.56	5.56	0.01	48175	318.0 -> 273.0	3.4	1.5	4.6



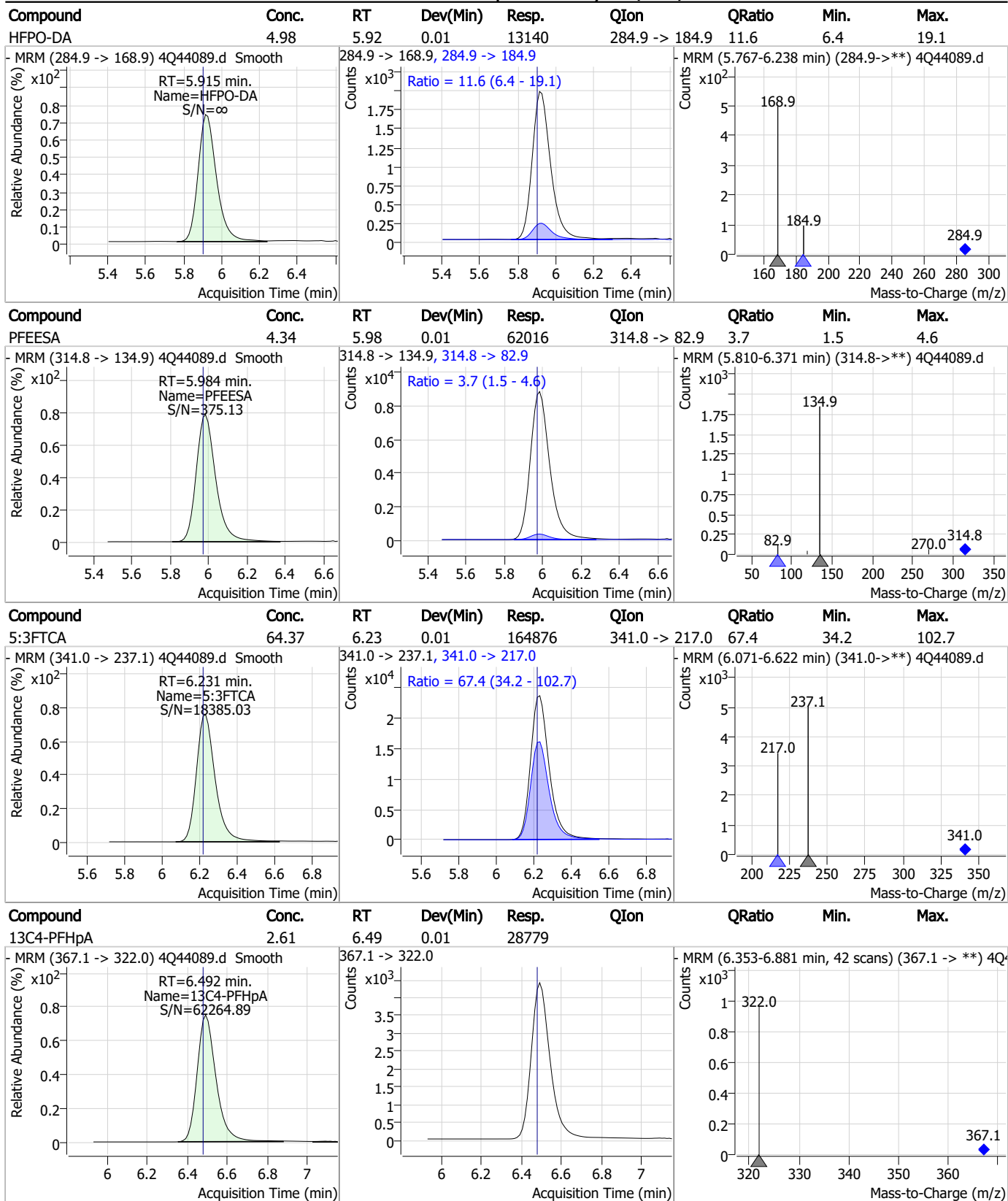
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.42	5.55	0.00	45739	313.0 -> 118.9	3.4	1.5	4.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.81	5.91	0.01	27627	286.9 -> 168.9	3.4	1.5	4.6



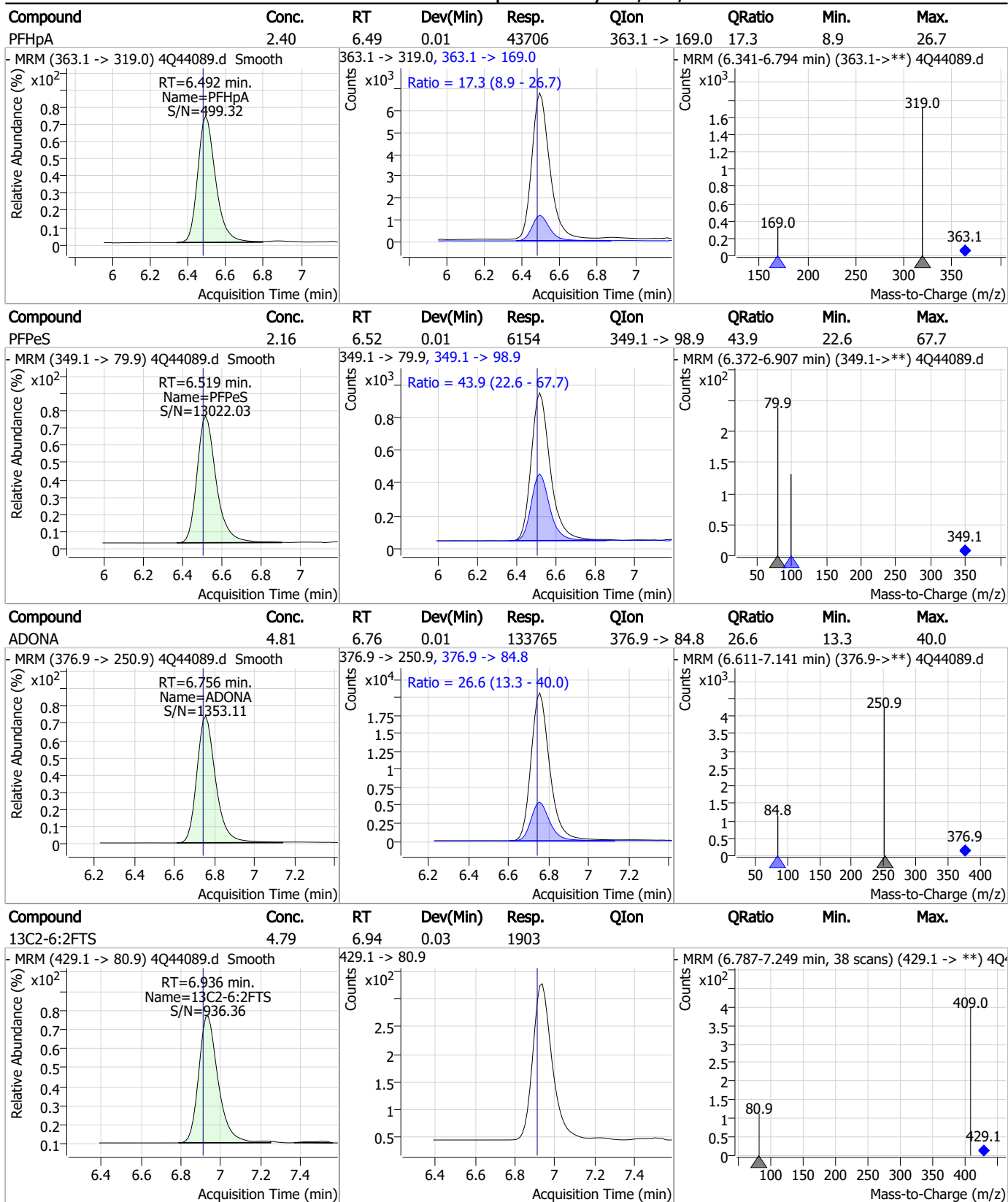
Perfluorinated Compounds by LC/MS/MS



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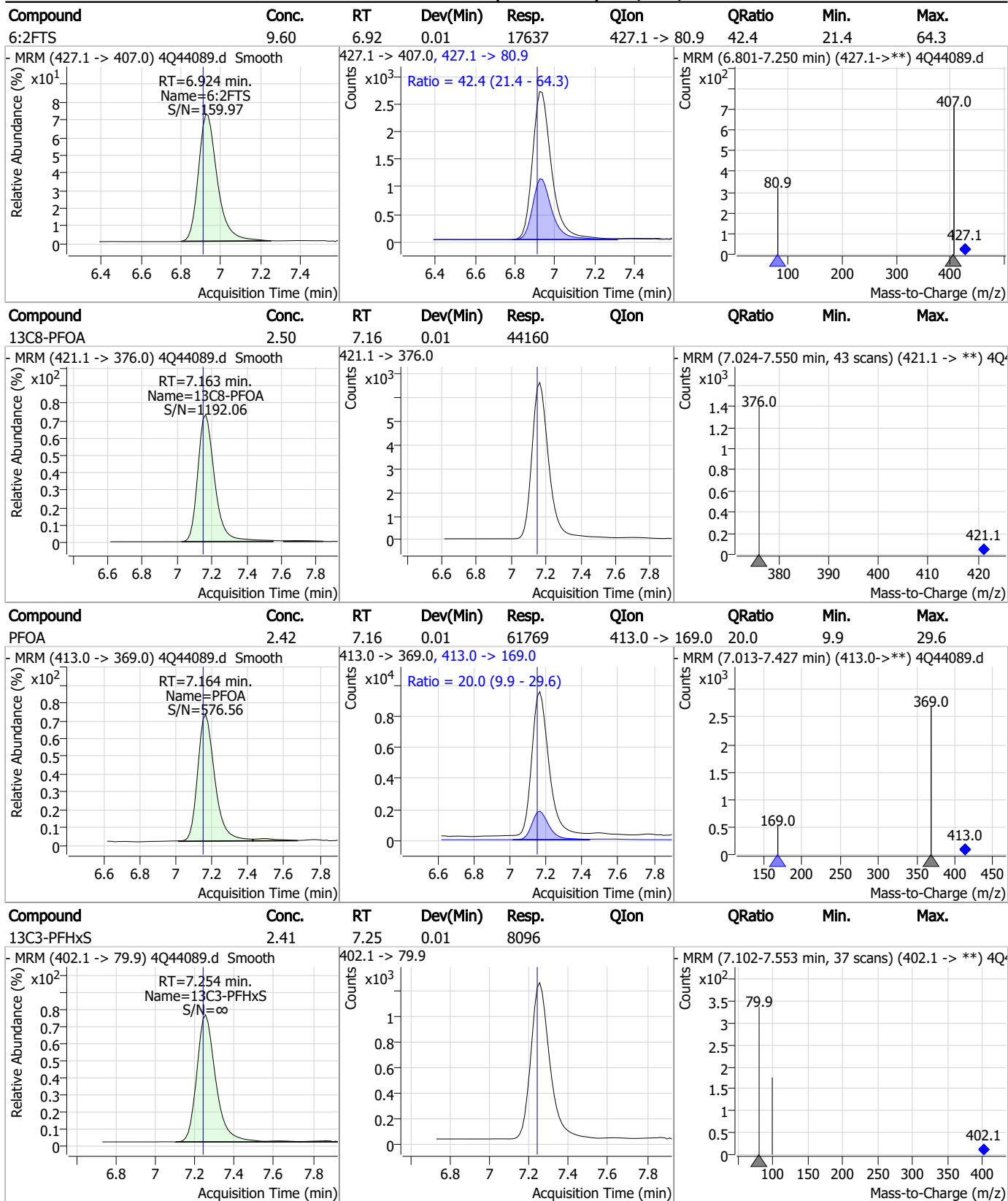
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

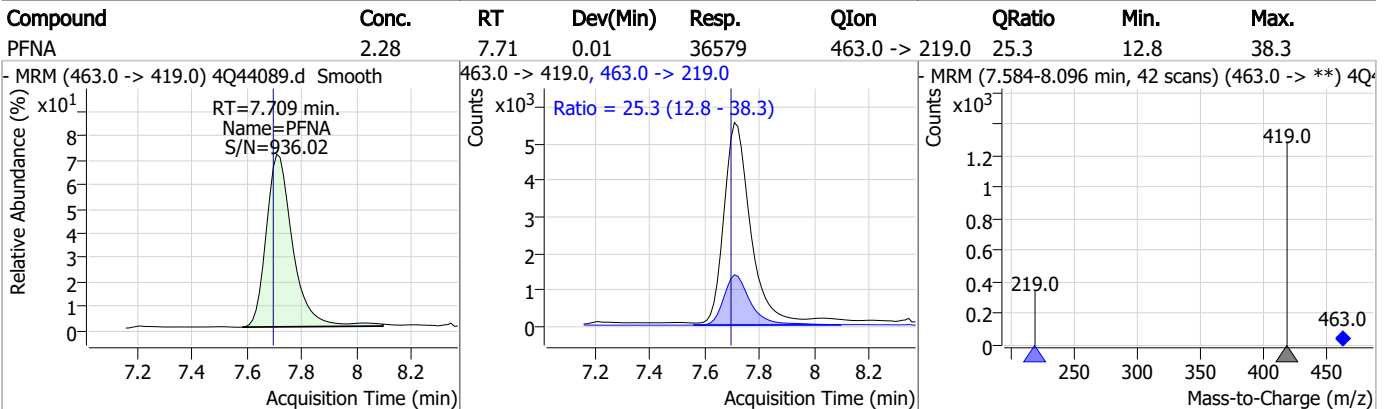
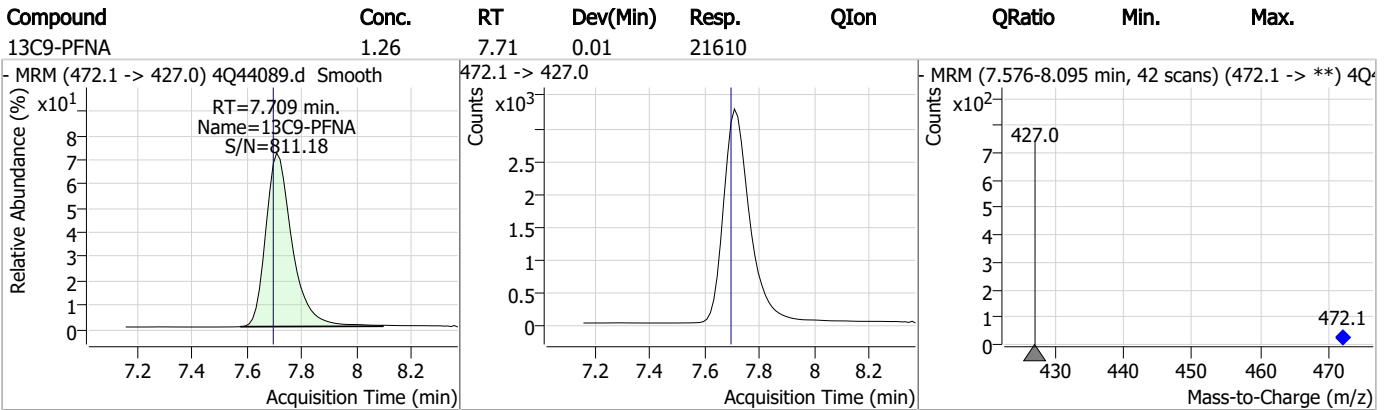
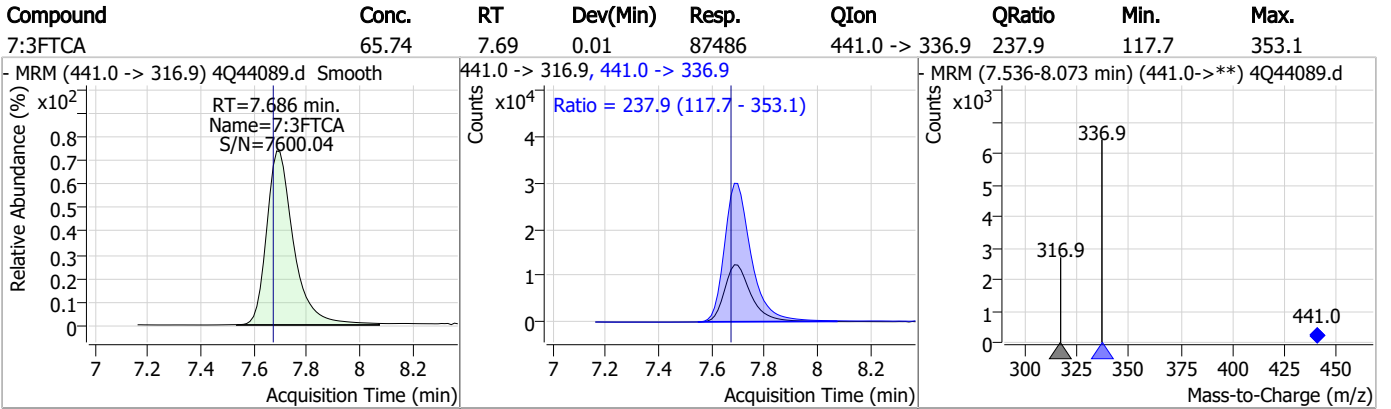
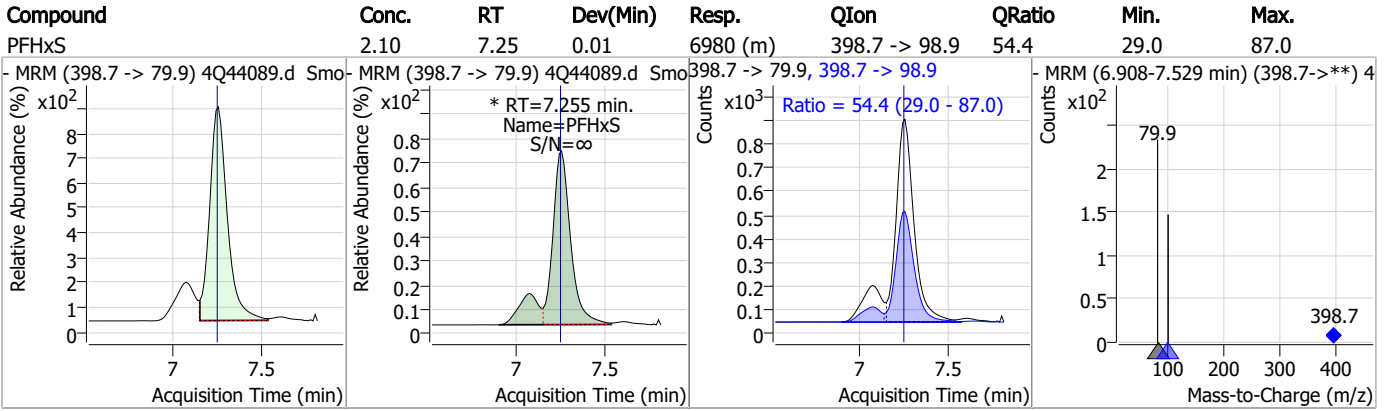


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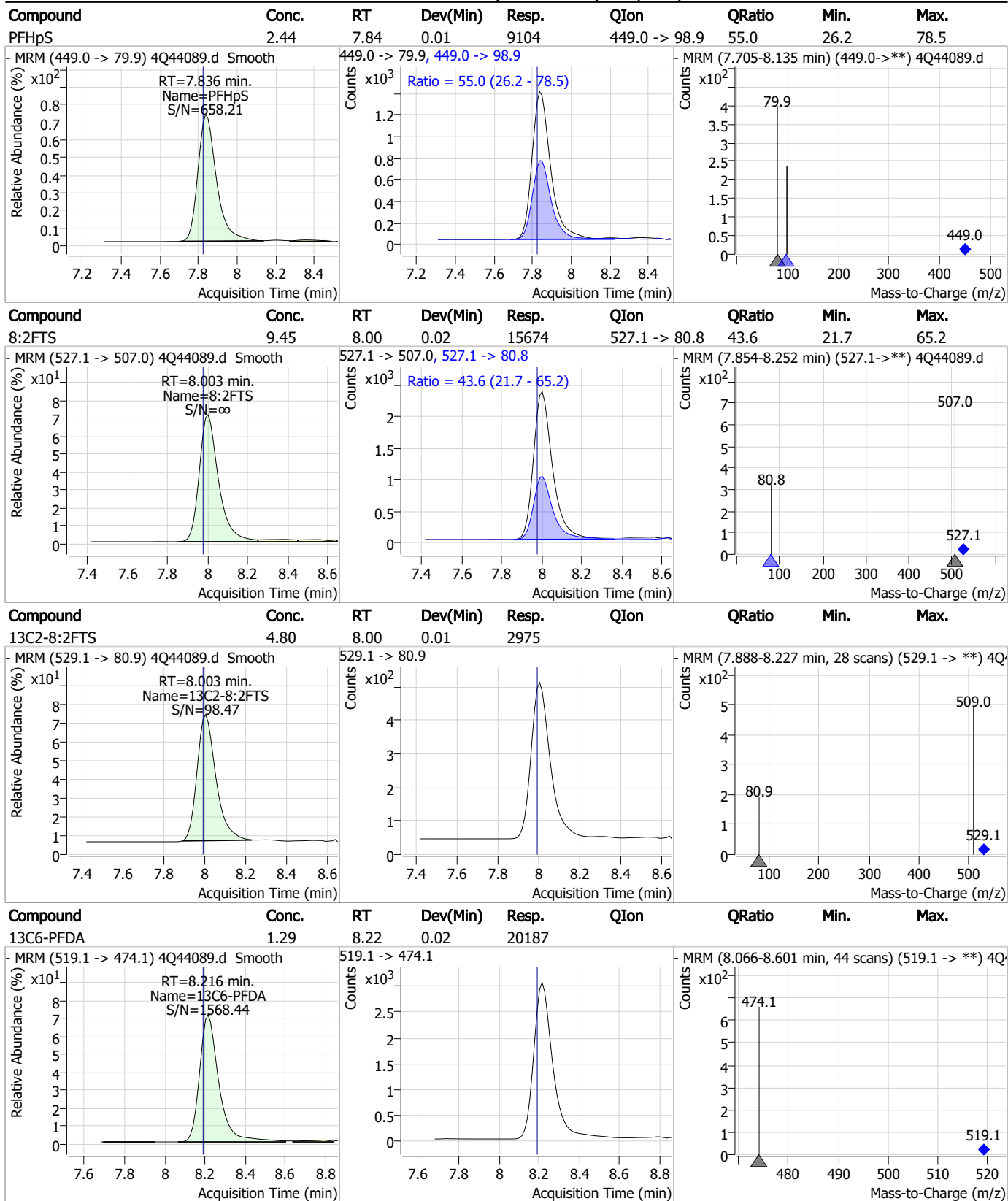
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Perfluorinated Compounds by LC/MS/MS



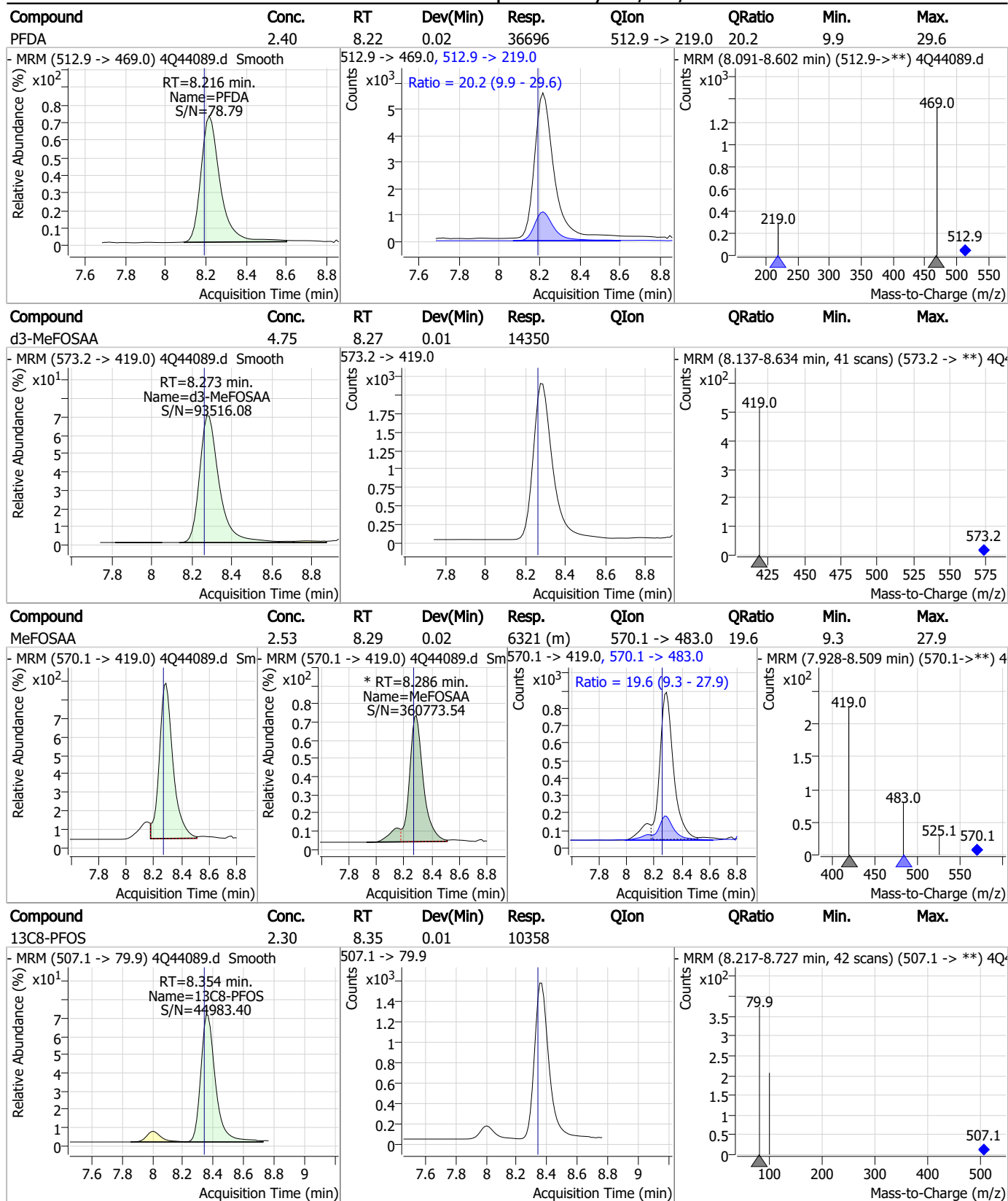
Perfluorinated Compounds by LC/MS/MS



7.7.13
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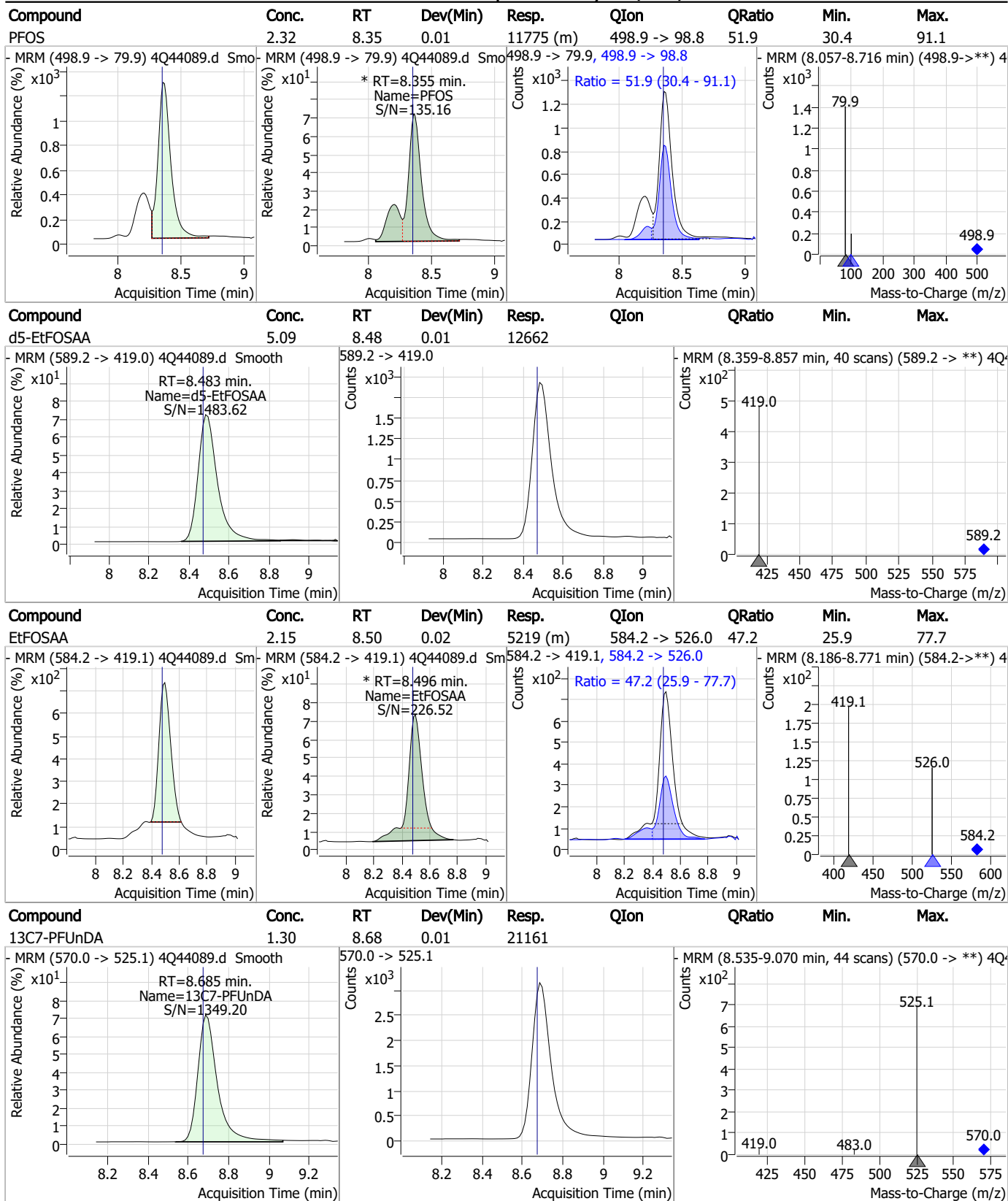


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

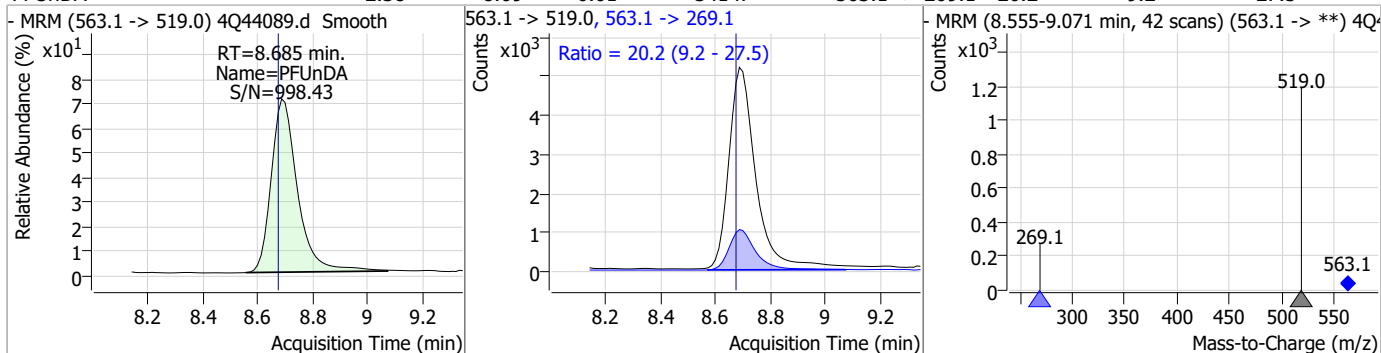


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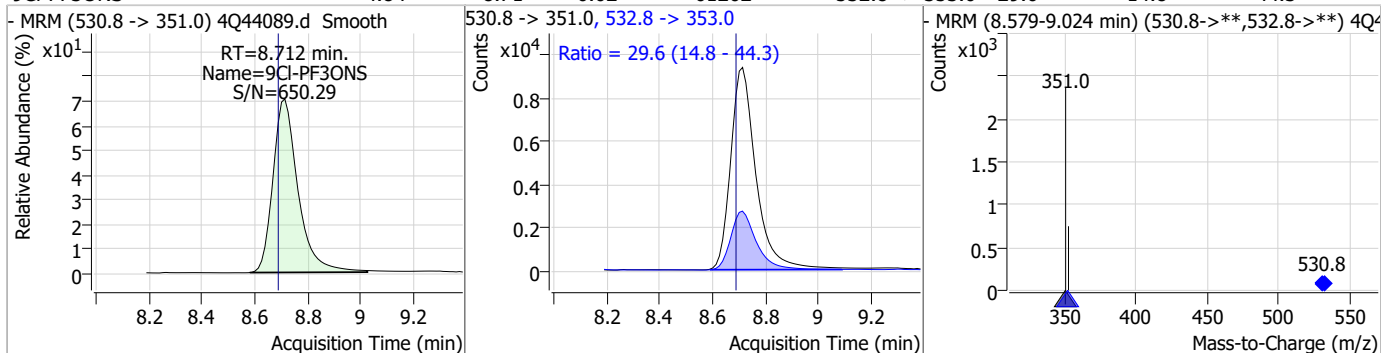
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Perfluorinated Compounds by LC/MS/MS

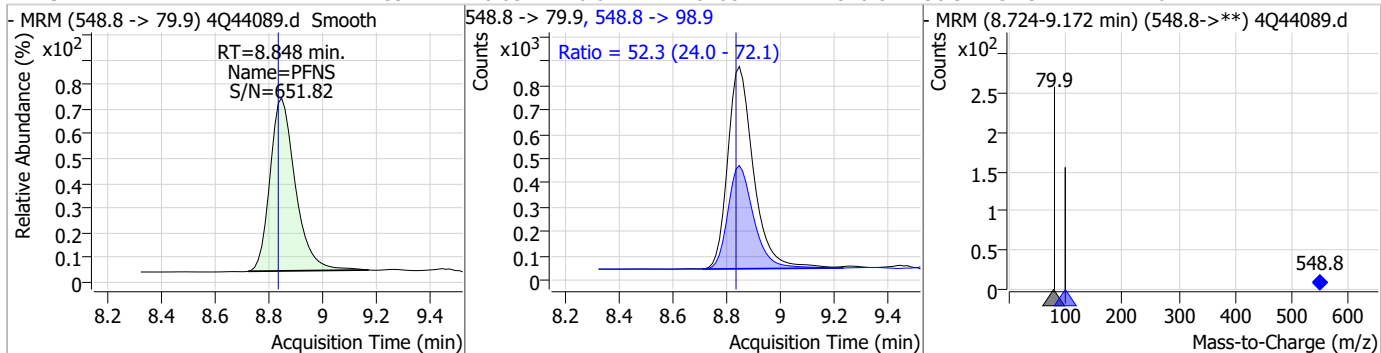
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	2.38	8.69	0.01	34147	563.1 -> 269.1	20.2	9.2	27.5



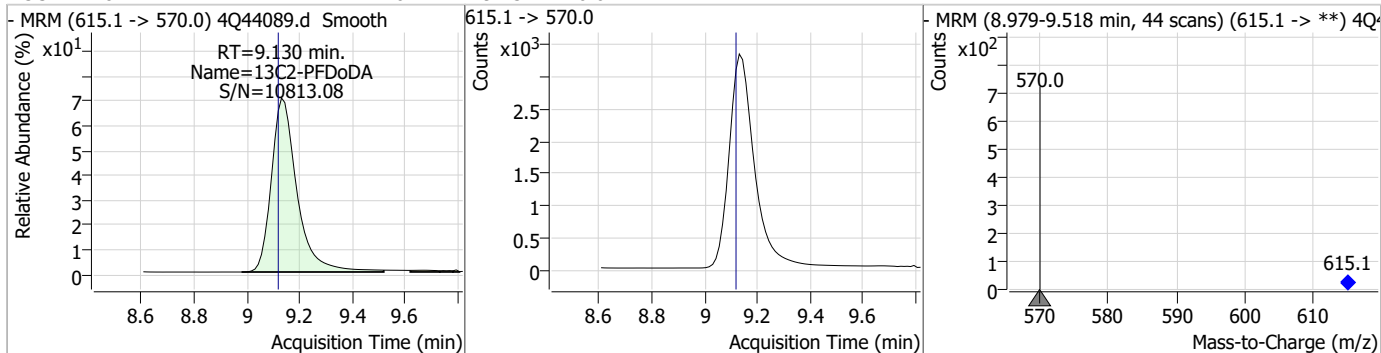
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	4.84	8.71	0.02	61262	532.8 -> 353.0	29.6	14.8	44.3



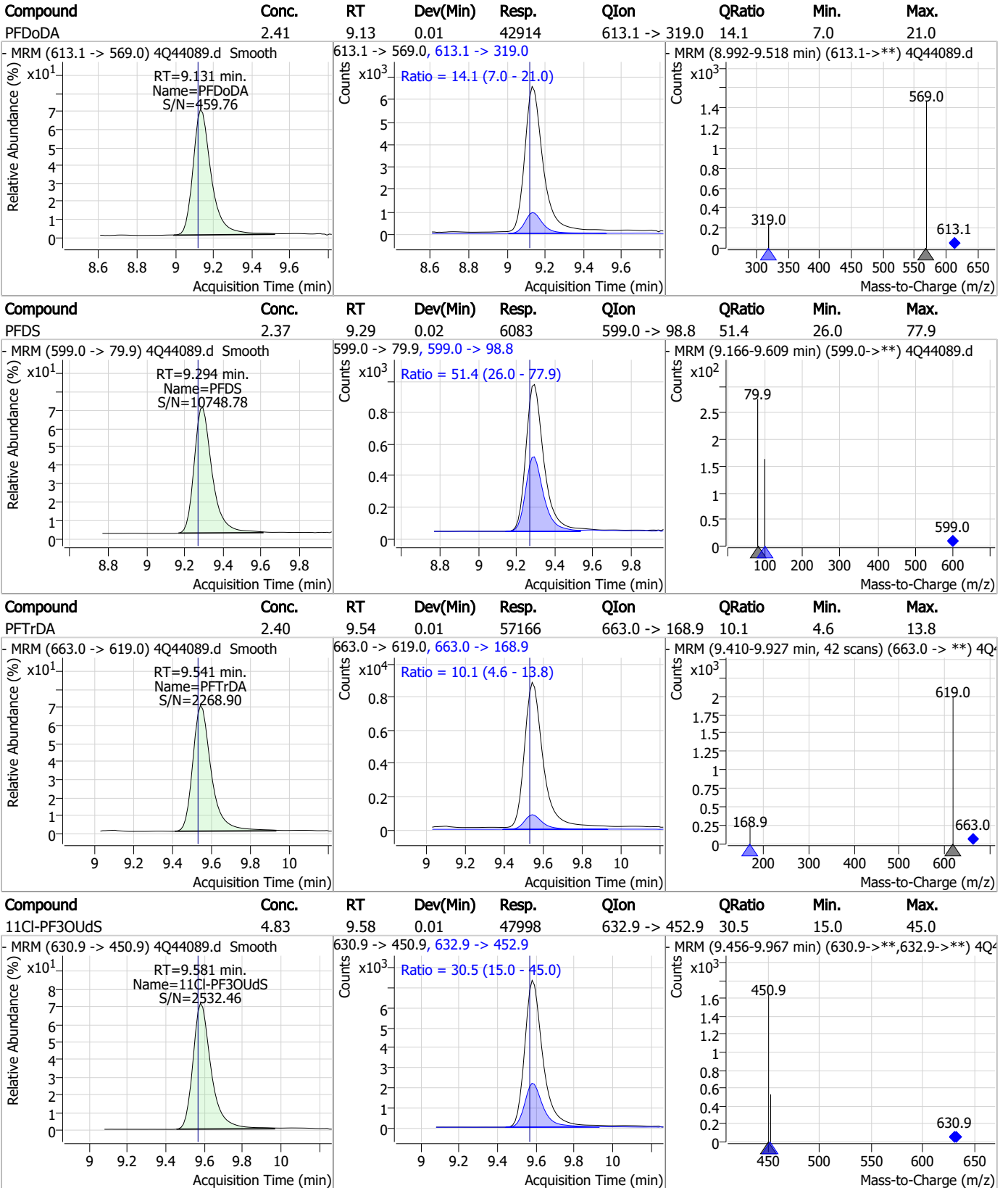
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.39	8.85	0.01	5408	548.8 -> 98.9	52.3	24.0	72.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.26	9.13	0.01	22211	615.1 -> 570.0			



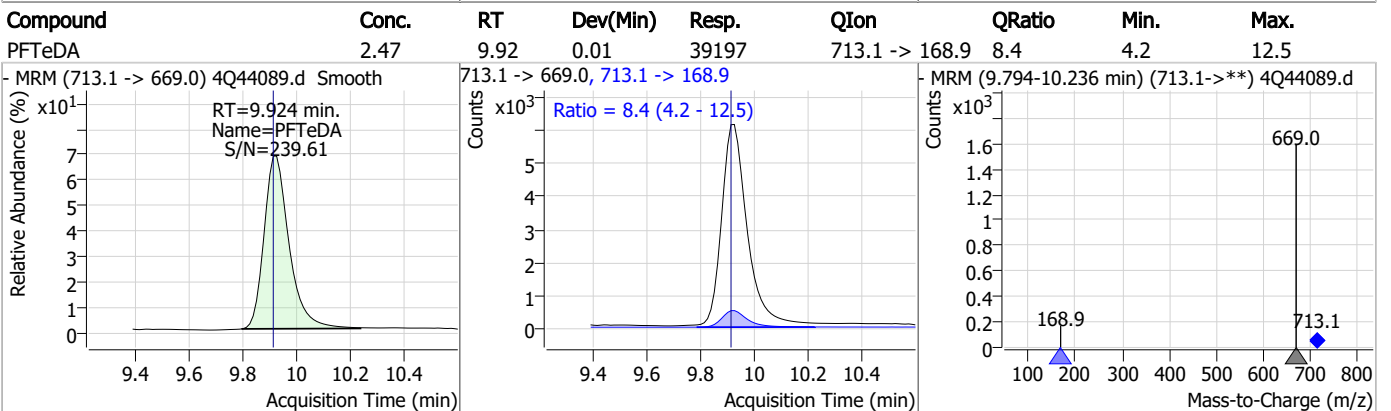
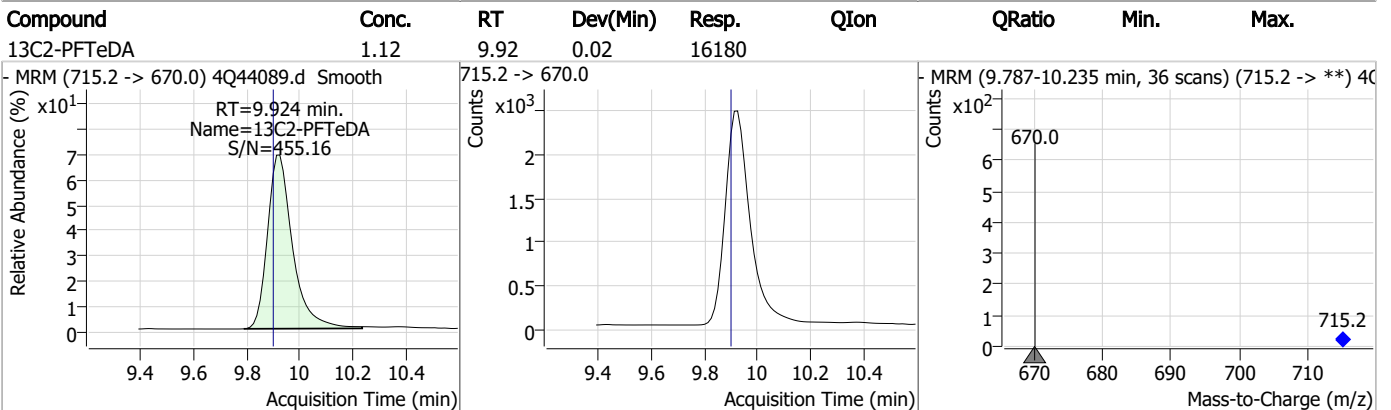
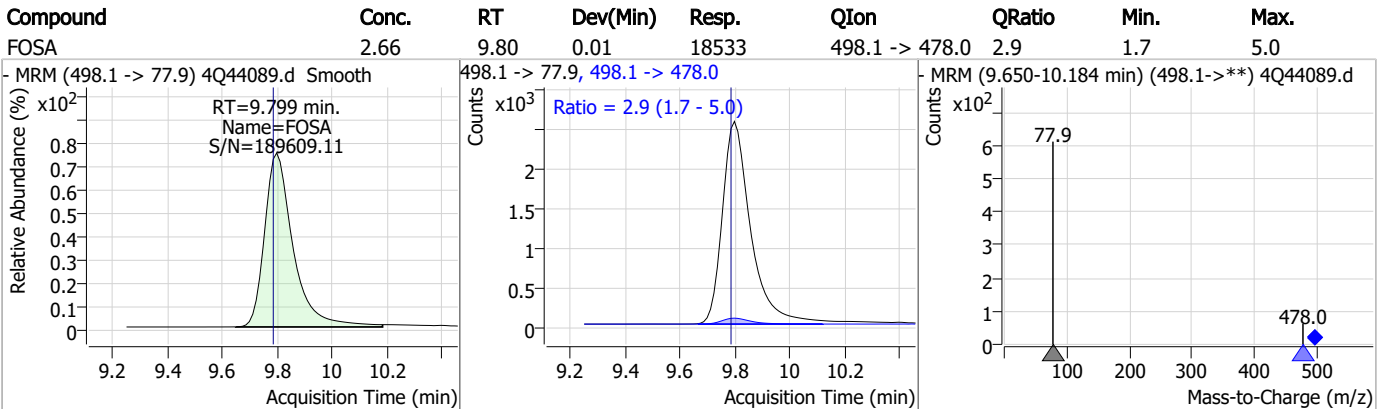
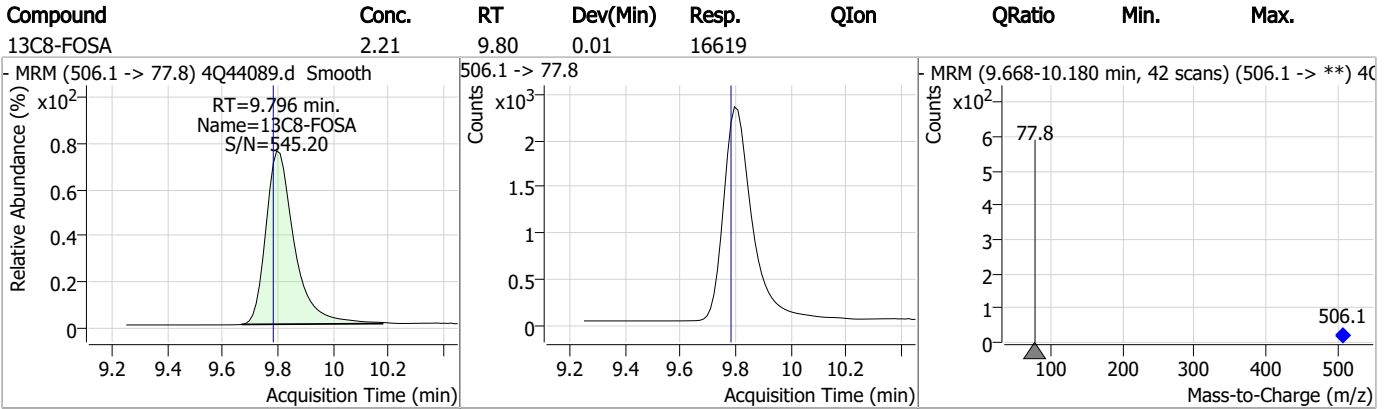
Perfluorinated Compounds by LC/MS/MS



7.7.13 7

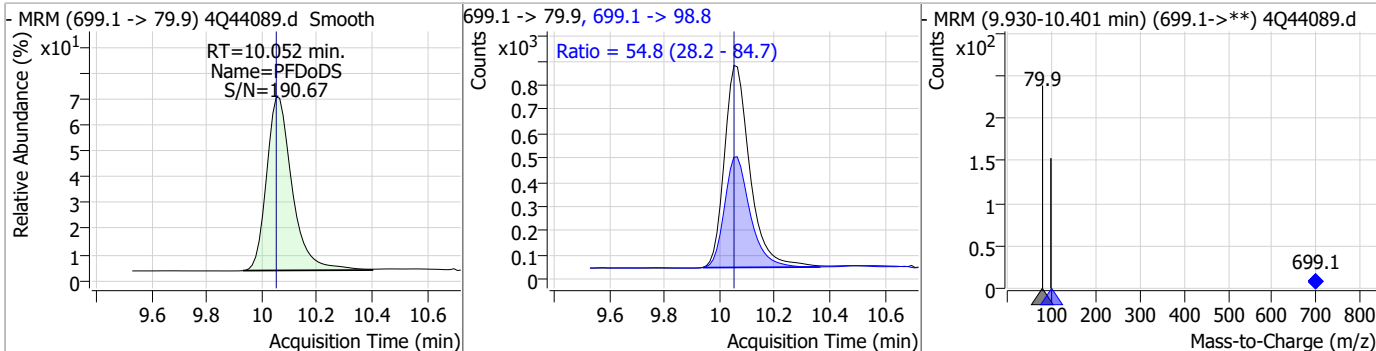


Perfluorinated Compounds by LC/MS/MS

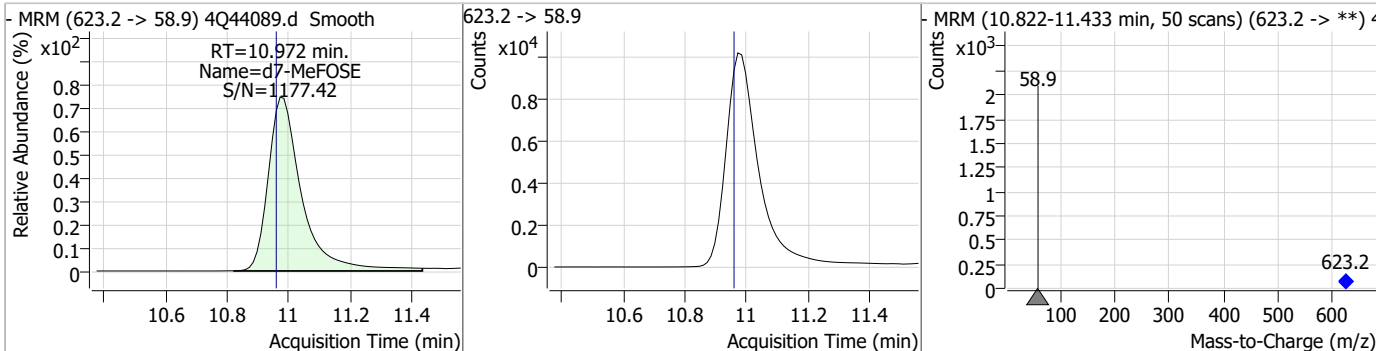


Perfluorinated Compounds by LC/MS/MS

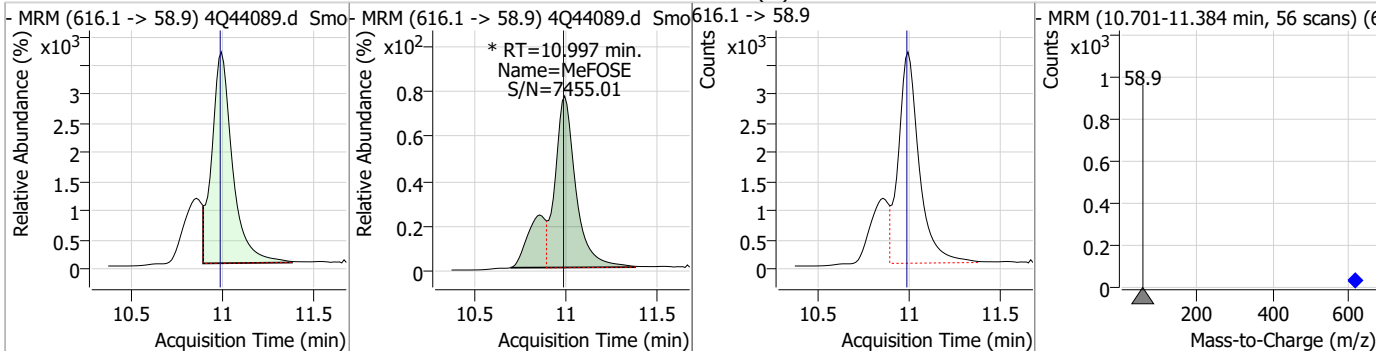
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.35	10.05	0.00	5384	699.1 -> 98.8	54.8	28.2	84.7



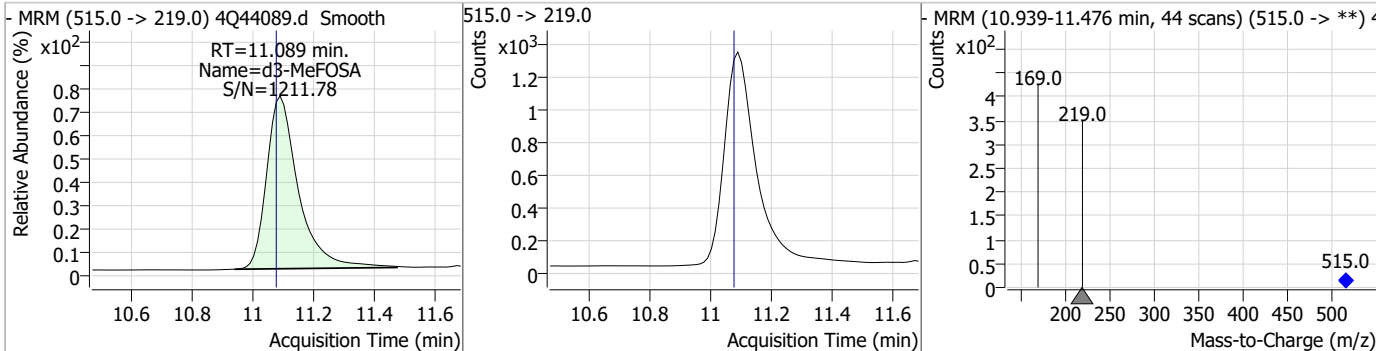
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.53	10.97	0.01	76452				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.55	11.00	0.01	36277 (m)				



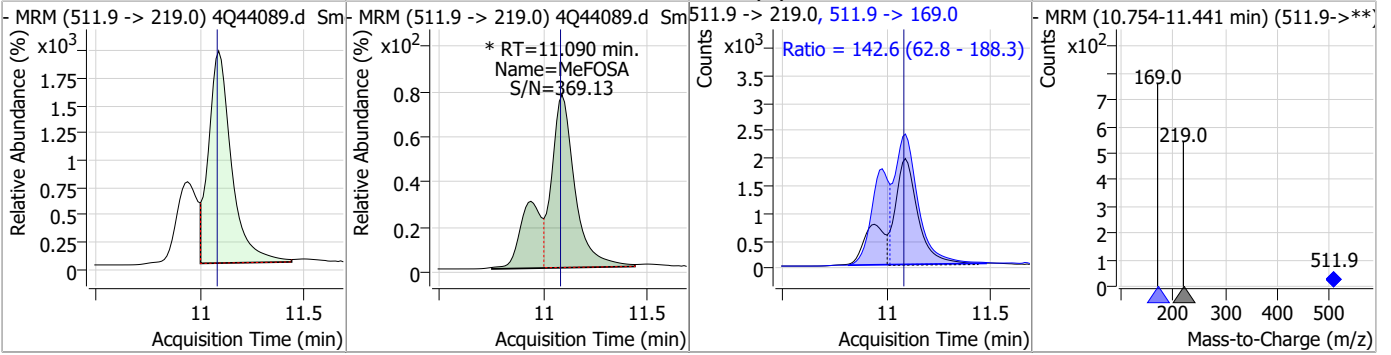
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.04	11.09	0.01	9572				



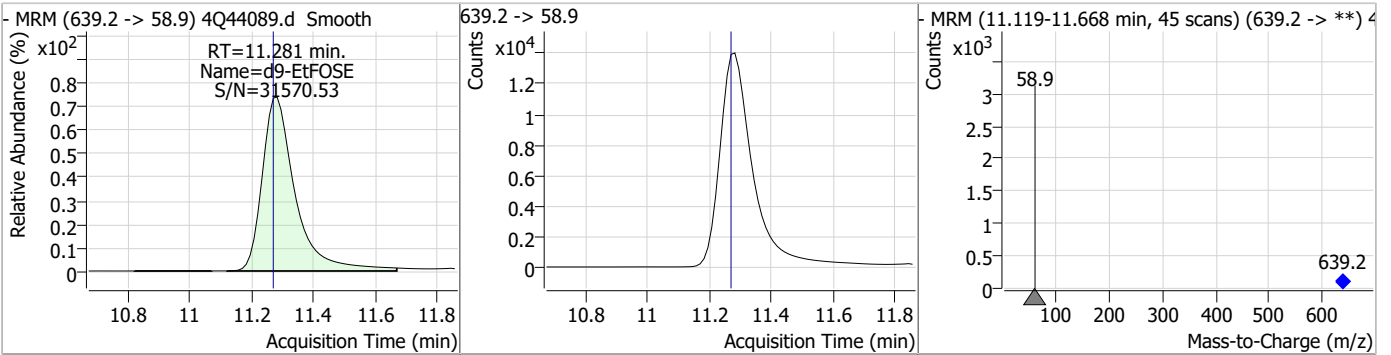
7.7.13
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Perfluorinated Compounds by LC/MS/MS

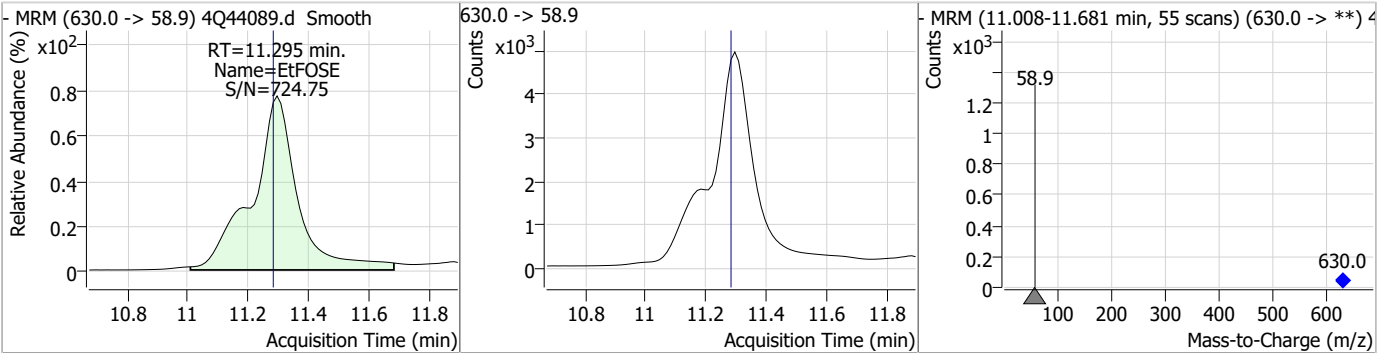
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.60	11.09	0.01	20204 (m)	511.9 -> 169.0	142.6	62.8	188.3



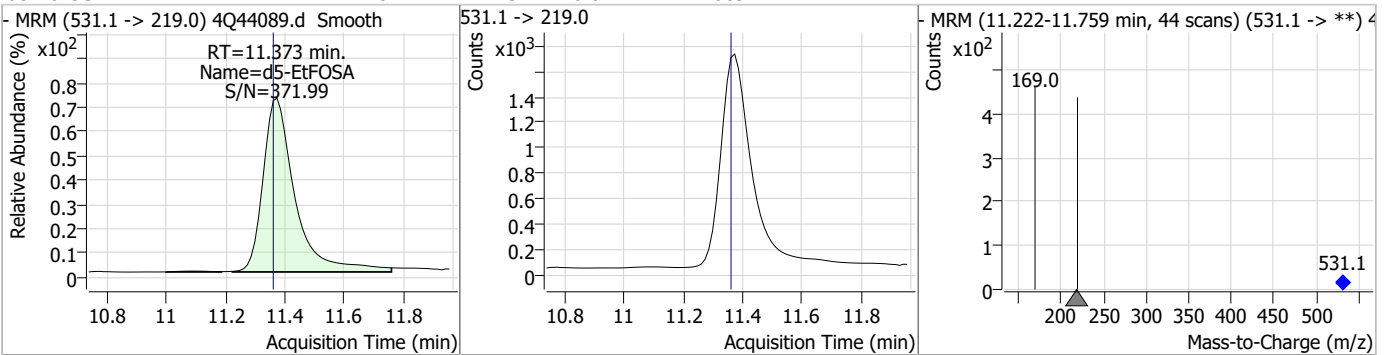
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.62	11.28	0.01	103467				



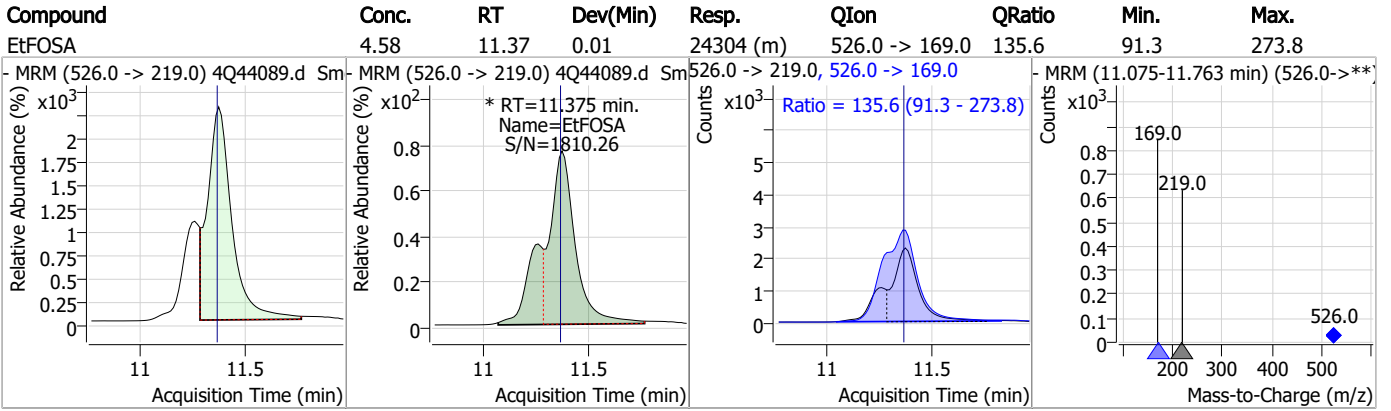
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.92	11.29	0.01	51734				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.54	11.37	0.01	12669				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q638-CC634 Method: EPA DRAFT 1633
Lab FileID: 4Q44089.D Analyst approved: 05/09/23 10:17 Martha Valls
Injection Time: 05/08/23 16:22 Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.50	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 : 4Q44098.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/8/2023 6:28:38 PM
 Sample Name : cc634-4
 Vial : P1-A5
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q638.batch.bin
 Sample Information : OP96548,S4Q638,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	137931	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	68811	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	49350	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	28517	2.50 µg/L	0.025
M8-PFOA	7.163	421.1 -> 376.0	43775	2.50 µg/L	0.014
M9-PFNA	7.721	472.1 -> 427.0	22040	1.25 µg/L	0.025
M6-PFDA	8.216	519.1 -> 474.1	19479	1.25 µg/L	0.025
M7-PFUnDA	8.697	570.0 -> 525.1	20302	1.25 µg/L	0.025
M2-PFDoDA	9.143	615.1 -> 570.0	21222	1.25 µg/L	0.025
M2-PFTeDA	9.924	715.2 -> 670.0	15794	1.25 µg/L	0.025
M8-FOSA	9.808	506.1 -> 77.8	17347	2.50 µg/L	0.025
M3-PFBS	5.452	302.1 -> 79.9	11886	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	7594	2.50 µg/L	0.012
M8-PFOS	8.366	507.1 -> 79.9	11130	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	1257	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	2048	5.00 µg/L	0.025
M2-8:2FTS	8.015	529.1 -> 80.9	3410	5.00 µg/L	0.025
M3-MeFOSAA	8.286	573.2 -> 419.0	14742	5.00 µg/L	0.025
M3-HFPO-DA	5.927	286.9 -> 168.9	26608	10.00 µg/L	0.025
M5-EtFOSAA	8.495	589.2 -> 419.0	12804	5.00 µg/L	0.025
M7-MeFOSE	10.972	623.2 -> 58.9	76347	25.00 µg/L	0.012
M9-EtFOSE	11.281	639.2 -> 58.9	98798	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	11871	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	10493	2.50 µg/L	0.012
13C4-PFOS	8.367	502.8 -> 79.9	11141	2.50 µg/L	0.025
13C3-PFBA	2.916	216.0 -> 172.0	71630	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	5018	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	53959	2.50 µg/L	0.014
13C2-PFDA	8.228	515.1 -> 470.1	18274	1.25 µg/L	0.037
13C5-PFNA	7.721	468.0 -> 423.0	25637	1.25 µg/L	0.025
13C2-PFHxA	5.560	315.1 -> 270.0	44985	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1257	6.17 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.3%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2048	5.57 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.4%		
13C2-8:2FTS	8.015	529.1 -> 80.9	3410	5.94 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.8%		
13C2-PFDoDA	9.143	615.1 -> 570.0	21222	1.20 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C2-PFTeDA	9.924	715.2 -> 670.0	15794	1.10 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.7%		
13C3-PFBS	5.452	302.1 -> 79.9	11886	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C3-PFHxS	7.254	402.1 -> 79.9	7594	2.44 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 = 97.7%	
13C4-PFBA	2.911	216.8 -> 171.9	137931	10.23 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C4-PFHpA	6.504	367.1 -> 322.0	28517	2.46 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	49350	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFPeA	4.387	268.3 -> 223.0	68811	4.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C6-PFDA	8.216	519.1 -> 474.1	19479	1.24 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C7-PFUnDA	8.697	570.0 -> 525.1	20302	1.25 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-FOSA	9.808	506.1 -> 77.8	17347	2.48 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-PFOA	7.163	421.1 -> 376.0	43775	2.47 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-PFOS	8.366	507.1 -> 79.9	11130	2.65 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C9-PFNA	7.721	472.1 -> 427.0	22040	1.26 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
d3-MeFOSAA	8.286	573.2 -> 419.0	14742	5.24 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	26608	8.99 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d3-MeFOSA	11.089	515.0 -> 219.0	10493	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
d5-EtFOSAA	8.495	589.2 -> 419.0	12804	5.53 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.6%	
d7-MeFOSE	10.972	623.2 -> 58.9	76347	22.02 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.1%	
d9-EtFOSE	11.281	639.2 -> 58.9	98798	20.13 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.5%	
d5-EtFOSA	11.373	531.1 -> 219.0	11871	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	16032	7.92 µg/L	96
		327.1 -> 80.9	7144		
6:2FTS	6.936	427.1 -> 407.0	18419	9.31 µg/L	98
		427.1 -> 80.9	8092		
8:2FTS	8.003	527.1 -> 507.0	17506	9.21 µg/L	99
		527.1 -> 80.8	7496		
EtFOSAA	8.496	584.2 -> 419.1	5790	2.35 µg/L	m 97
		584.2 -> 526.0	2890		
FOSA	9.799	498.1 -> 77.9	18212	2.51 µg/L	97
		498.1 -> 478.0	439		
MeFOSAA	8.286	570.1 -> 419.0	6652	2.59 µg/L	m 100
		570.1 -> 483.0	1234		
PFBA	2.920	212.8 -> 168.9	35603	9.64 µg/L	100
PFBS	5.453	298.7 -> 79.9	9949	2.04 µg/L	93
		298.7 -> 98.8	4006		
PFDA	8.216	512.9 -> 469.0	37576	2.54 µg/L	98
		512.9 -> 219.0	6998		
PFDODA	9.144	613.1 -> 569.0	43197	2.54 µg/L	100
		613.1 -> 319.0	6002		
PFDS	9.294	599.0 -> 79.9	6058	2.20 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.505	599.0 -> 98.8	3132	2.55	µg/L	100
		363.1 -> 319.0	46012			
PFHpS	7.848	363.1 -> 169.0	8165	2.18	µg/L	95
		449.0 -> 79.9	8727			
PFHxA	5.562	449.0 -> 98.9	4883	2.33	µg/L	99
		313.0 -> 269.0	45037			
PFHxS	7.255	313.0 -> 118.9	1488	2.23	µg/L	m
		398.7 -> 79.9	6952			
PFNA	7.722	398.7 -> 98.9	3758	2.27	µg/L	96
		463.0 -> 419.0	37126			
PFNS	8.848	463.0 -> 219.0	8759	2.12	µg/L	90
		548.8 -> 79.9	5143			
PFOA	7.164	548.8 -> 98.9	2809	2.47	µg/L	99
		413.0 -> 369.0	62417			
PFOS	8.367	413.0 -> 169.0	11940	2.22	µg/L	m
		498.9 -> 79.9	12068			
PFPeA	4.389	498.9 -> 98.8	6534	4.97	µg/L	100
		263.0 -> 219.0	82231			
PFPeS	6.531	349.1 -> 79.9	6250	2.34	µg/L	100
		349.1 -> 98.9	2820			
PFTeDA	9.924	713.1 -> 669.0	38970	2.52	µg/L	100
		713.1 -> 168.9	3199			
PFTrDA	9.554	663.0 -> 619.0	55394	2.43	µg/L	98
		663.0 -> 168.9	5422			
PFUnDA	8.698	563.1 -> 519.0	36254	2.63	µg/L	100
		563.1 -> 269.1	6623			
11Cl-PF3OUdS	9.593	630.9 -> 450.9	48073	5.02	µg/L	98
		632.9 -> 452.9	14824			
9Cl-PF3ONS	8.712	530.8 -> 351.0	62986	5.17	µg/L	100
		532.8 -> 353.0	18520			
ADONA	6.756	376.9 -> 250.9	137220	5.13	µg/L	98
		376.9 -> 84.8	35488			
HFPO-DA	5.928	284.9 -> 168.9	13325	5.24	µg/L	95
		284.9 -> 184.9	1429			
3:3FTCA	3.848	241.0 -> 177.0	9104	12.50	µg/L	99
		241.0 -> 117.0	813			
5:3FTCA	6.231	341.0 -> 237.1	167434	63.82	µg/L	99
		341.0 -> 217.0	113369			
7:3FTCA	7.699	441.0 -> 316.9	90721	66.55	µg/L	98
		441.0 -> 336.9	210990			
EtFOSA	11.375	526.0 -> 219.0	24115	4.85	µg/L	73
		526.0 -> 169.0	34601			
EtFOSE	11.295	630.0 -> 58.9	48919	12.79	µg/L	m
		511.9 -> 219.0	20043			
MeFOSA	11.090	511.9 -> 169.0	29294	5.07	µg/L	m
		616.1 -> 58.9	36562			
MeFOSE	10.997	699.1 -> 79.9	5114	11.66	µg/L	m
		699.1 -> 98.8	2791			
PFDoDS	10.064	295.0 -> 201.0	6049	4.38	µg/L	98
		295.0 -> 84.9	1545			
NFDHA	5.441	279.0 -> 85.1	45589	4.93	µg/L	100
		229.0 -> 84.9	43931			
PFMBA	3.528	314.8 -> 134.9	61297	5.08	µg/L	100
		314.8 -> 82.9	2105			
PFEESA	5.984			4.19	µg/L	99

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



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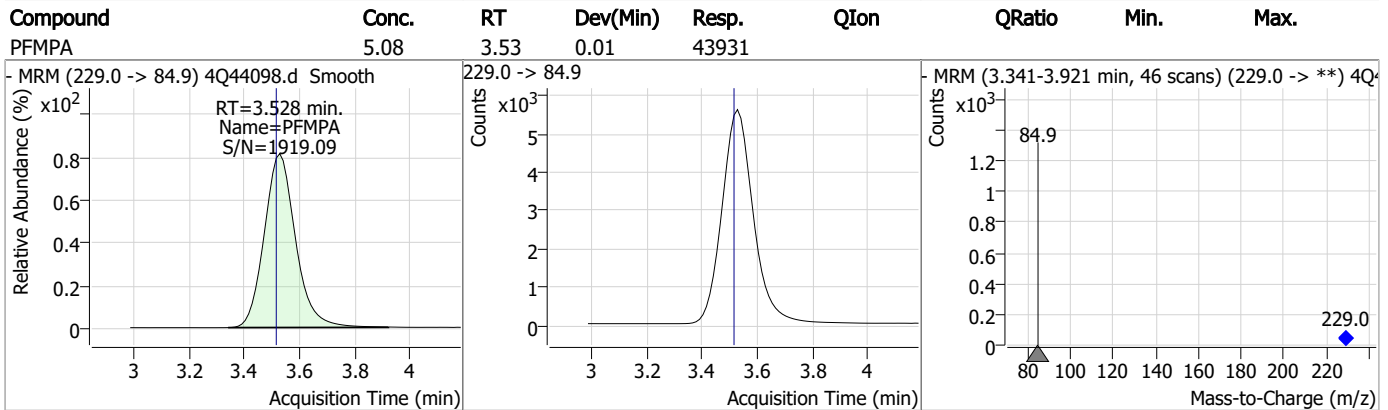
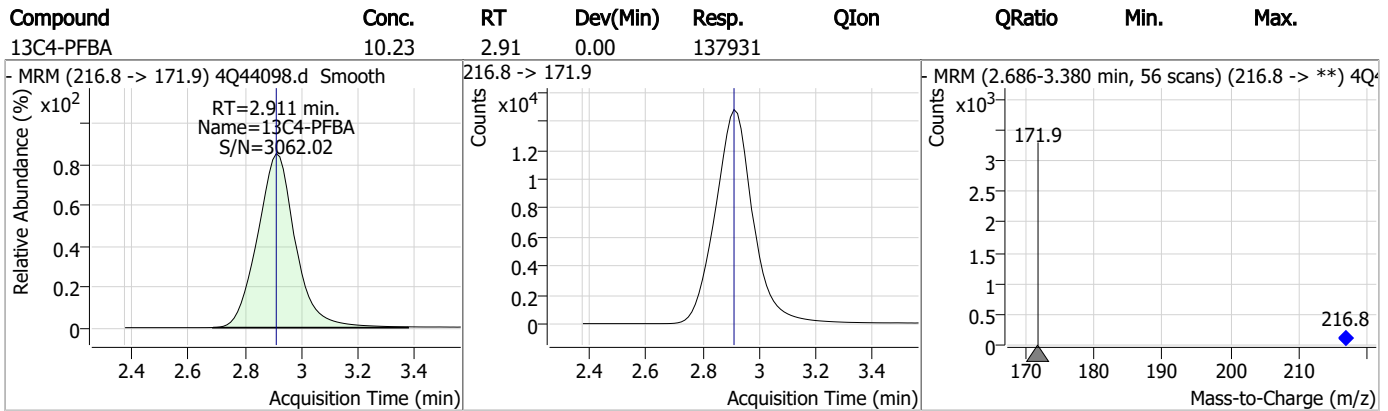
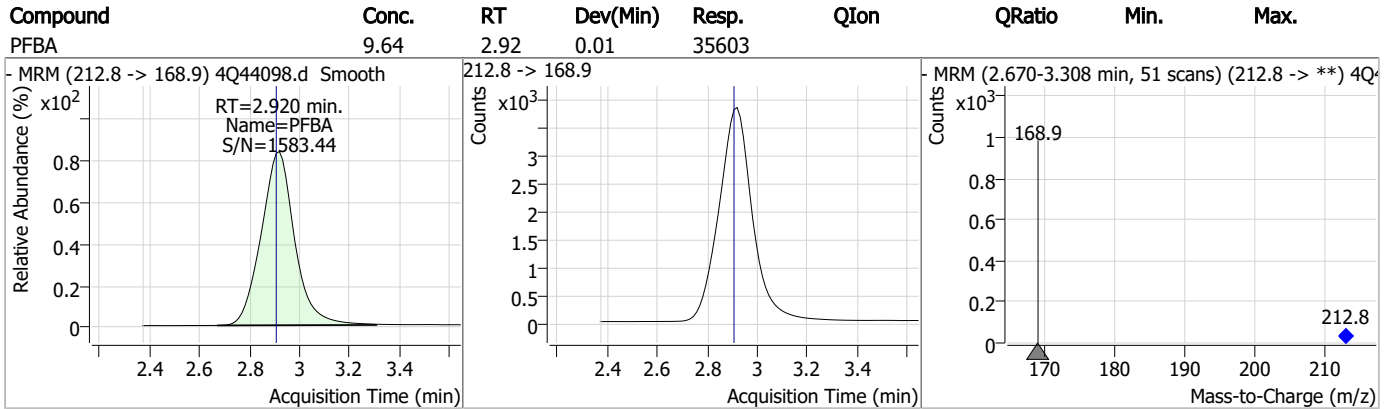
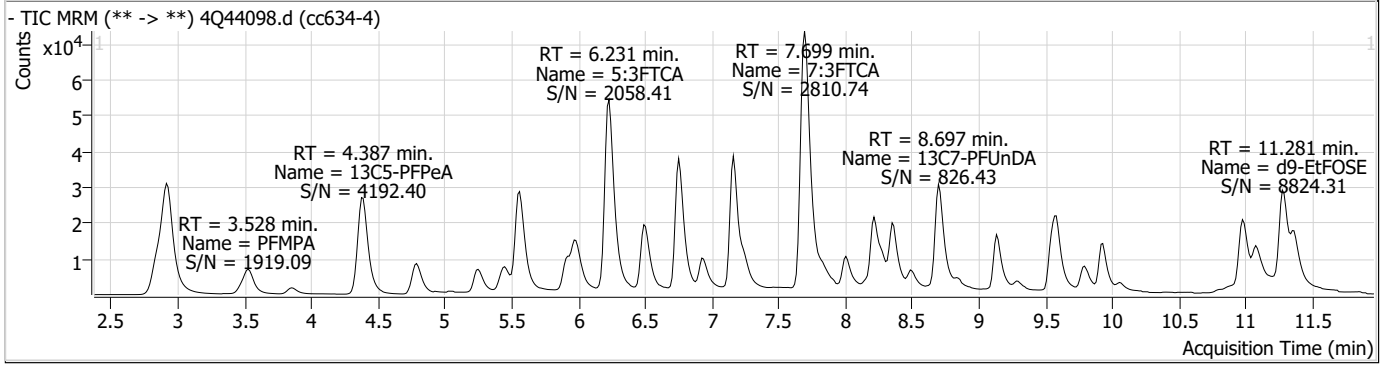
Perfluorinated Compounds by LC/MS/MS

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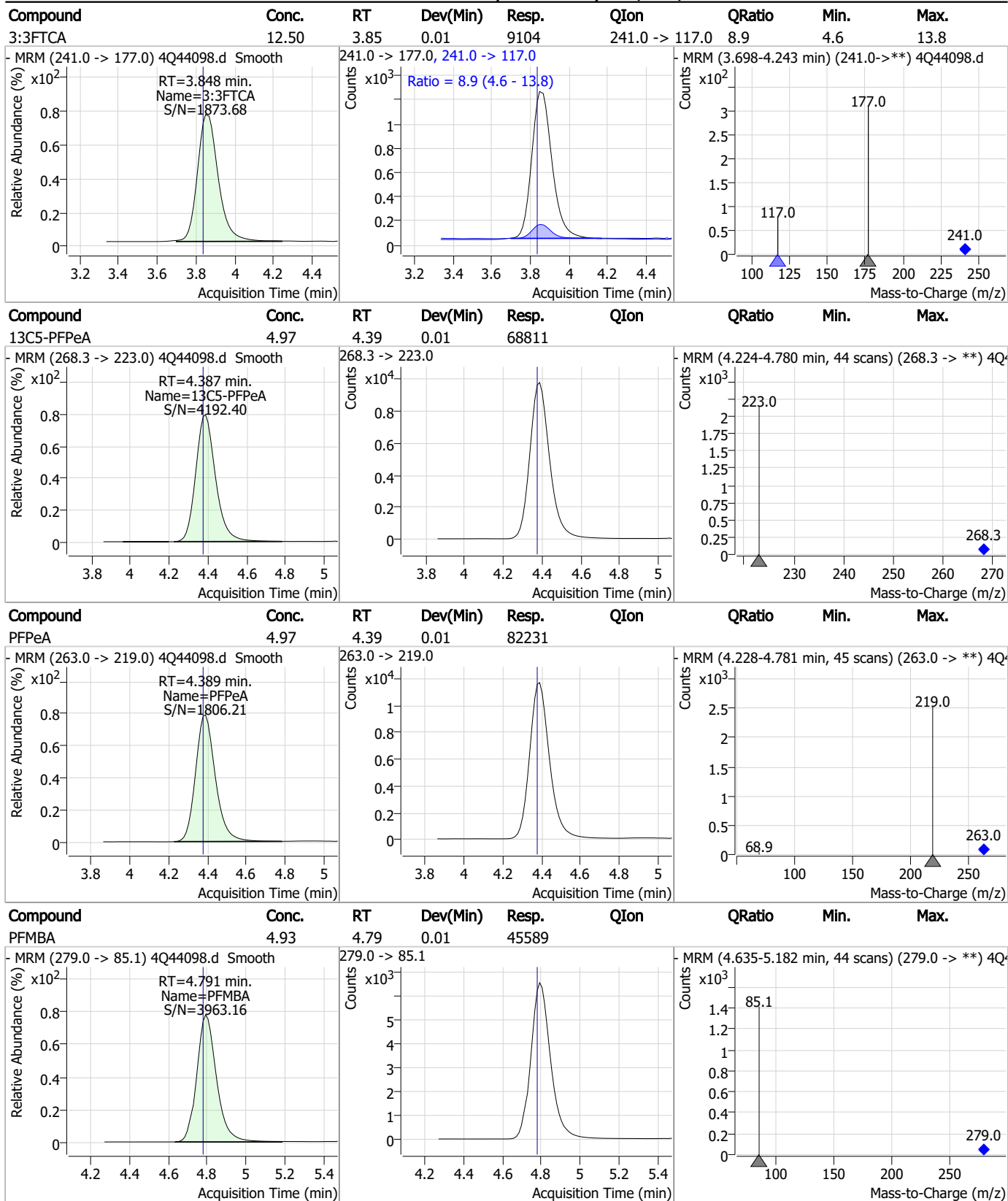
7.7.14

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Perfluorinated Compounds by LC/MS/MS

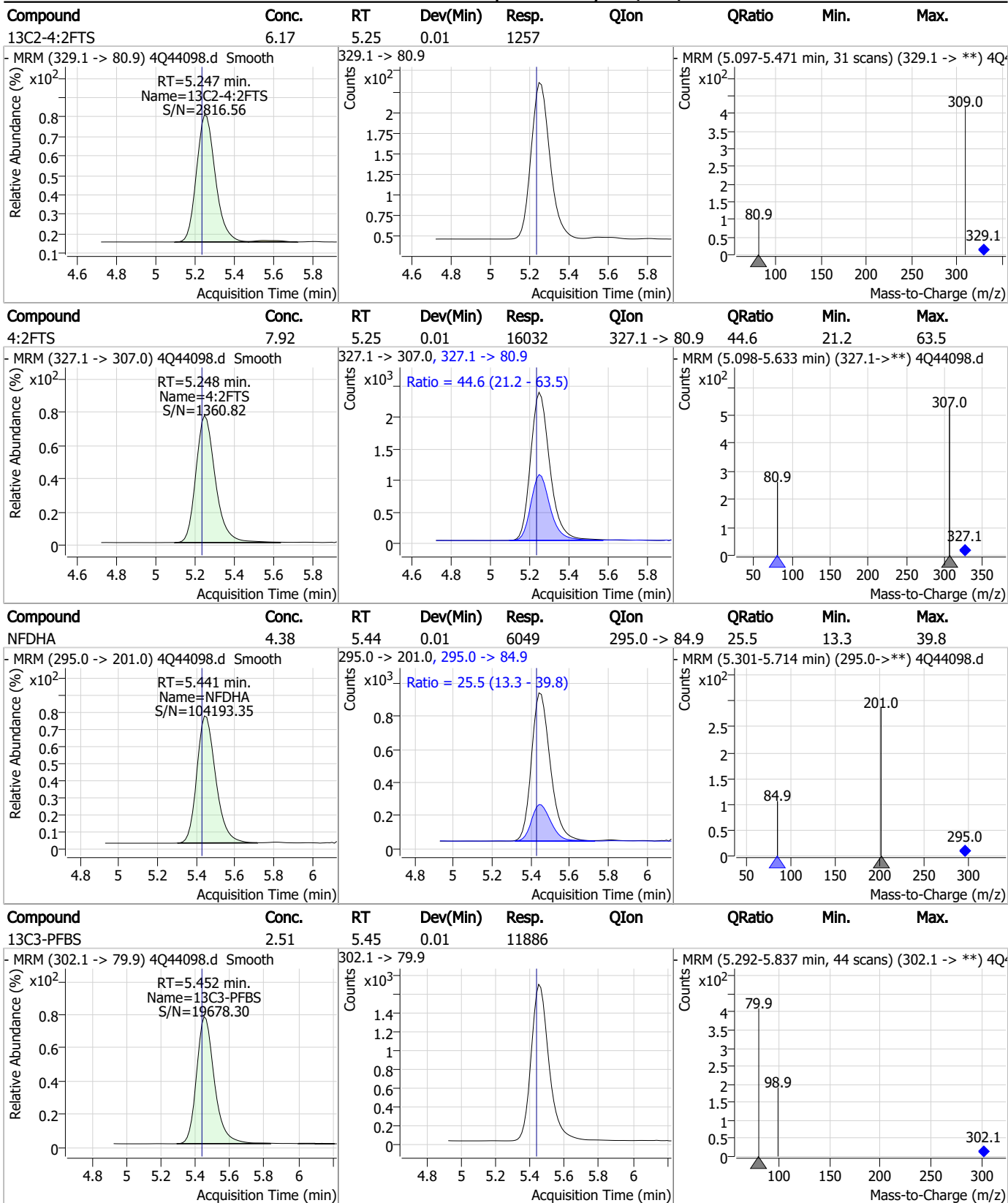


Perfluorinated Compounds by LC/MS/MS



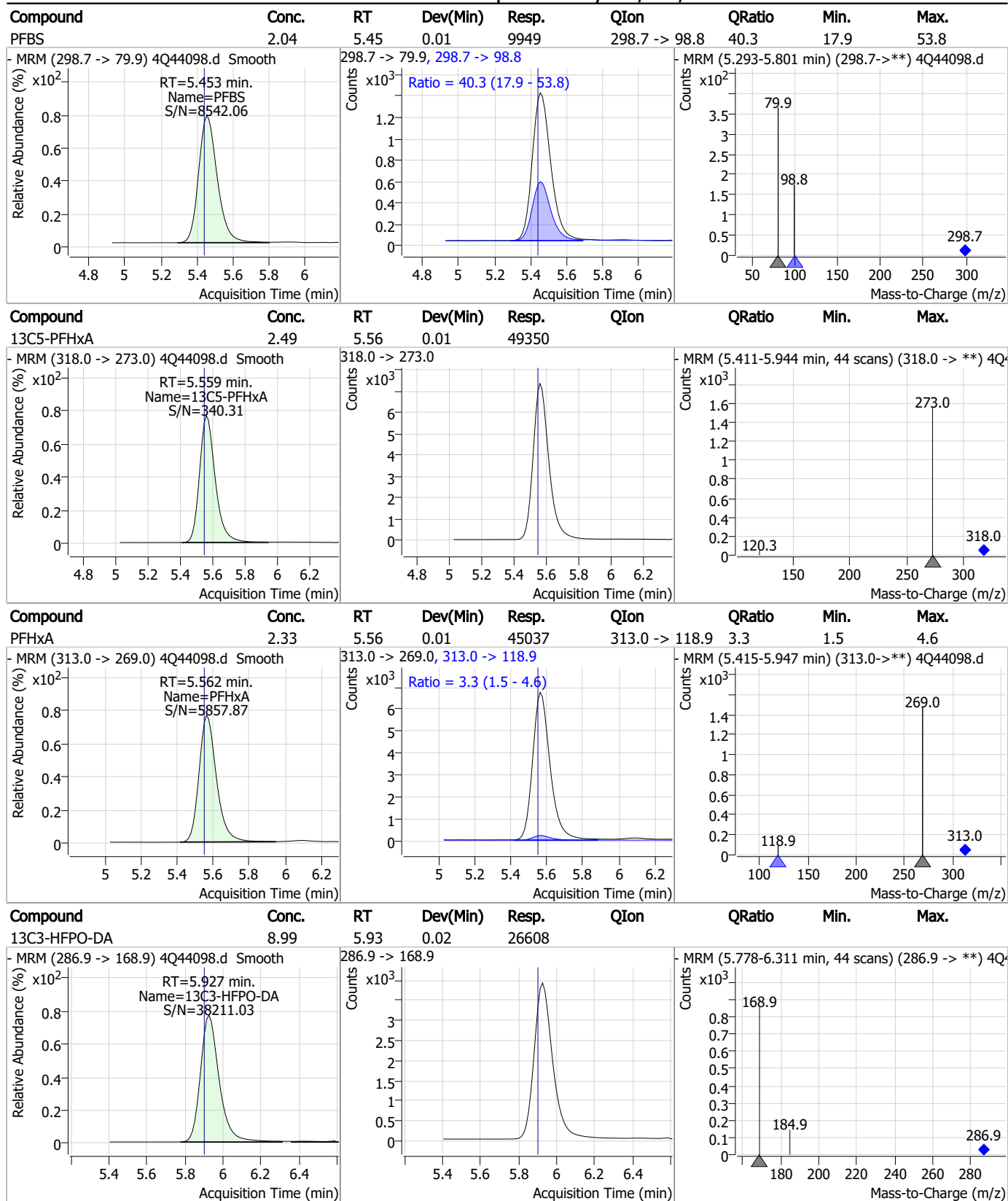
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Perfluorinated Compounds by LC/MS/MS



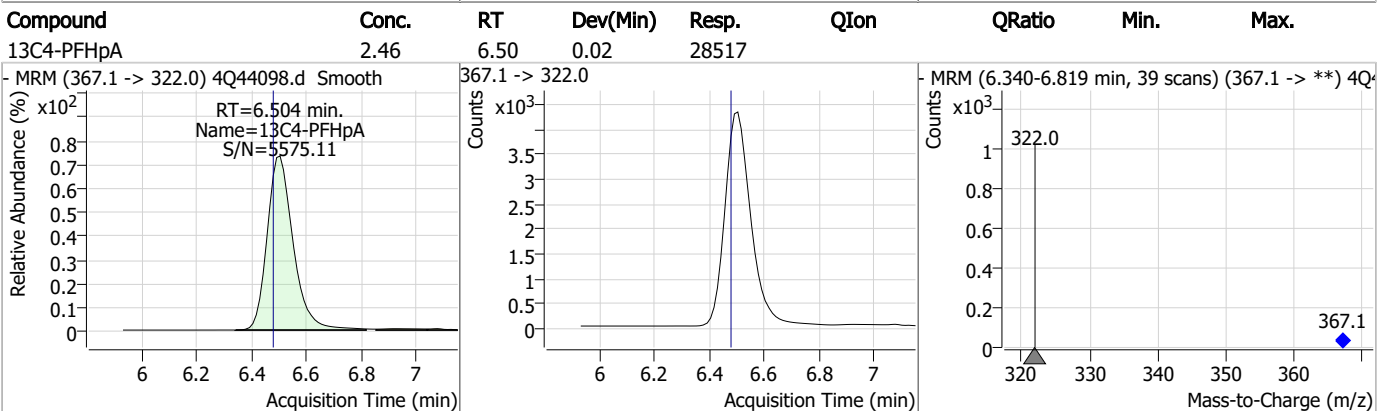
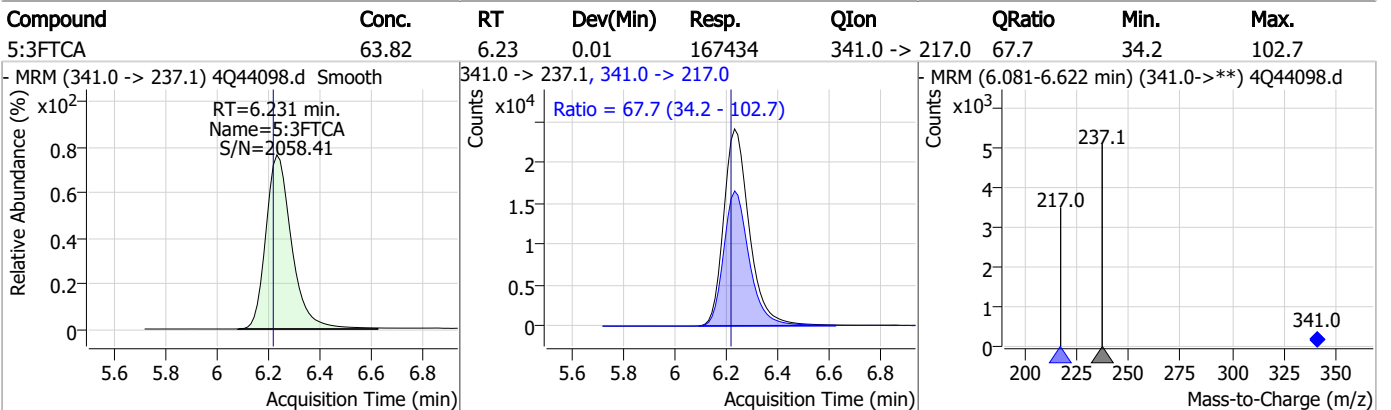
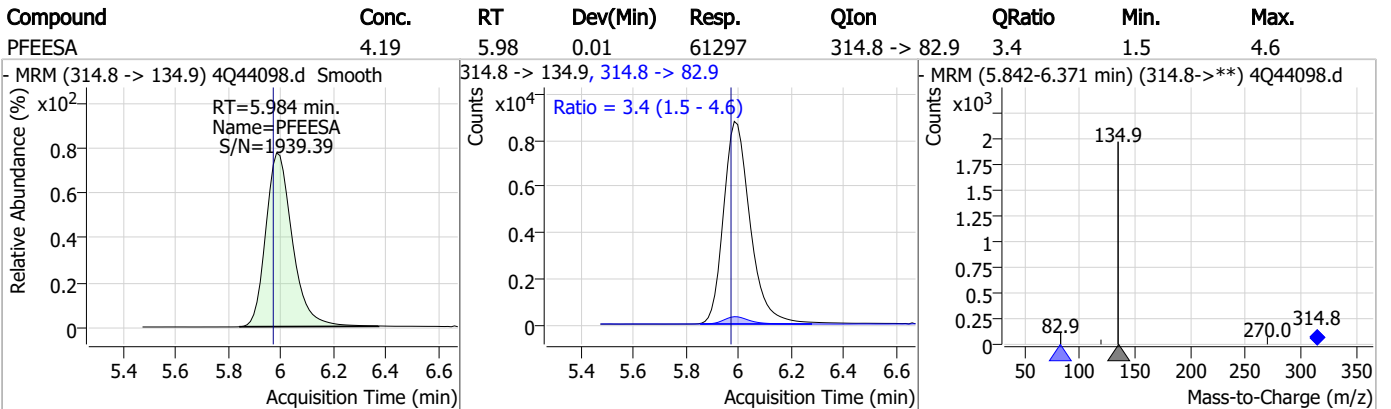
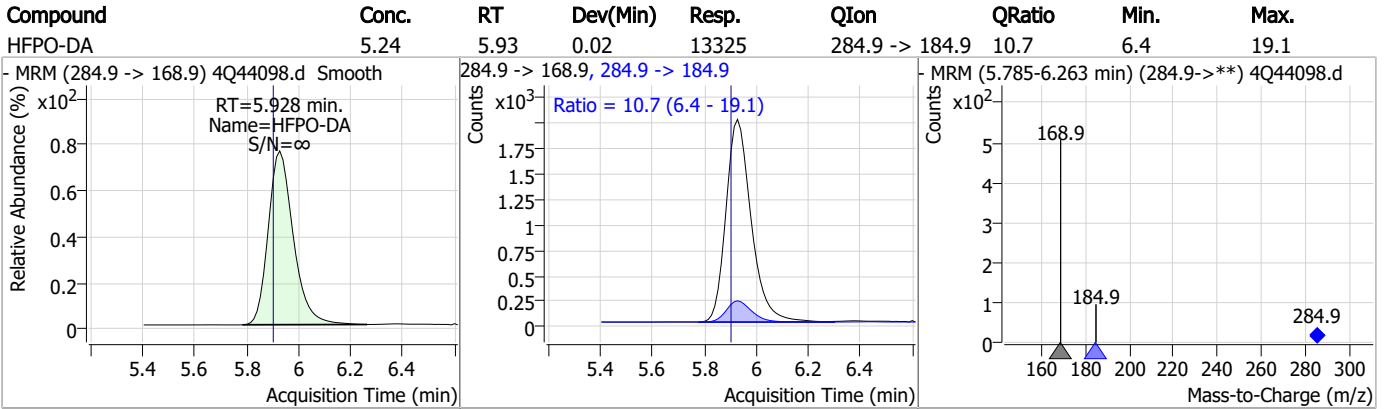
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Perfluorinated Compounds by LC/MS/MS

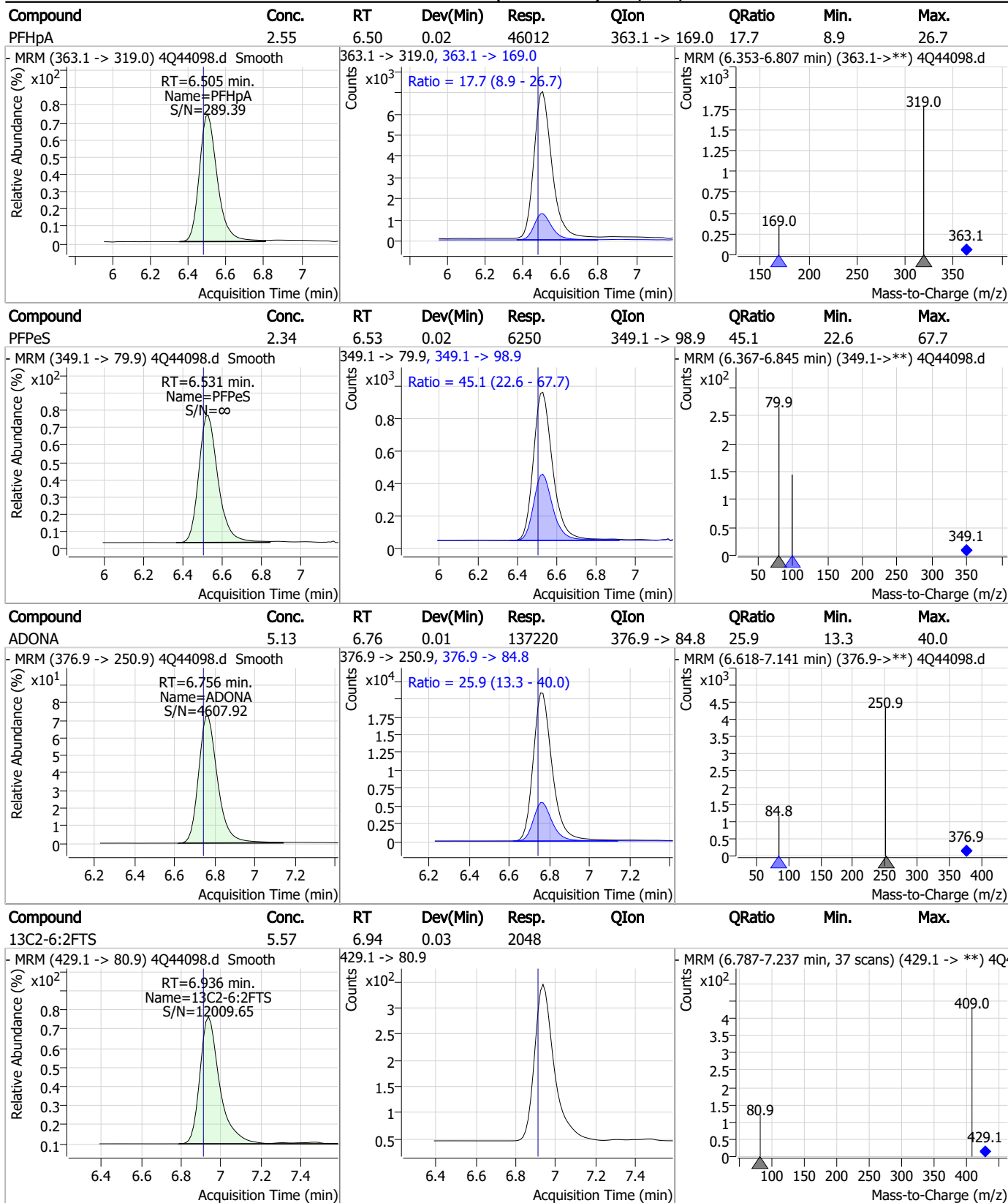


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Perfluorinated Compounds by LC/MS/MS

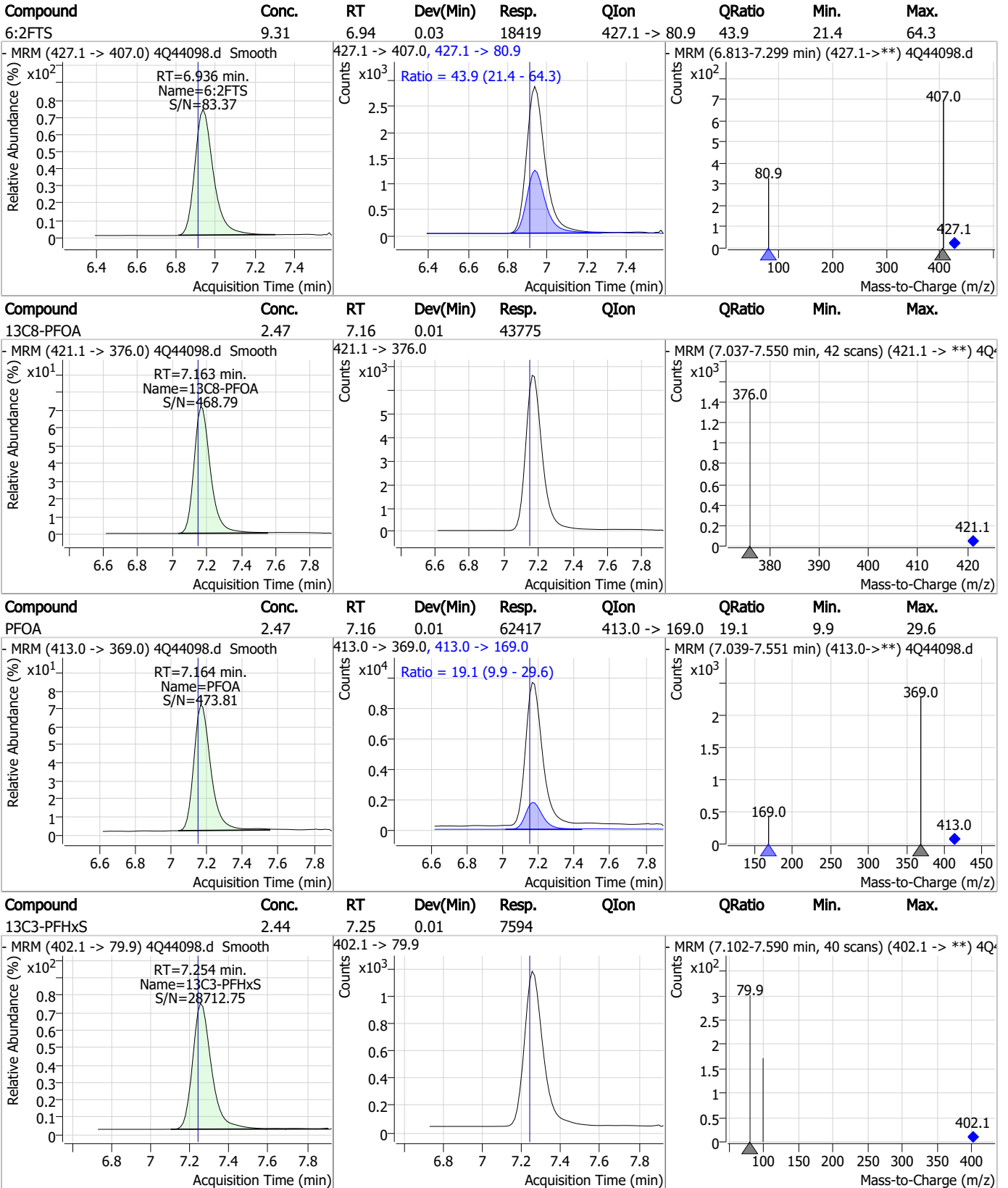


Perfluorinated Compounds by LC/MS/MS



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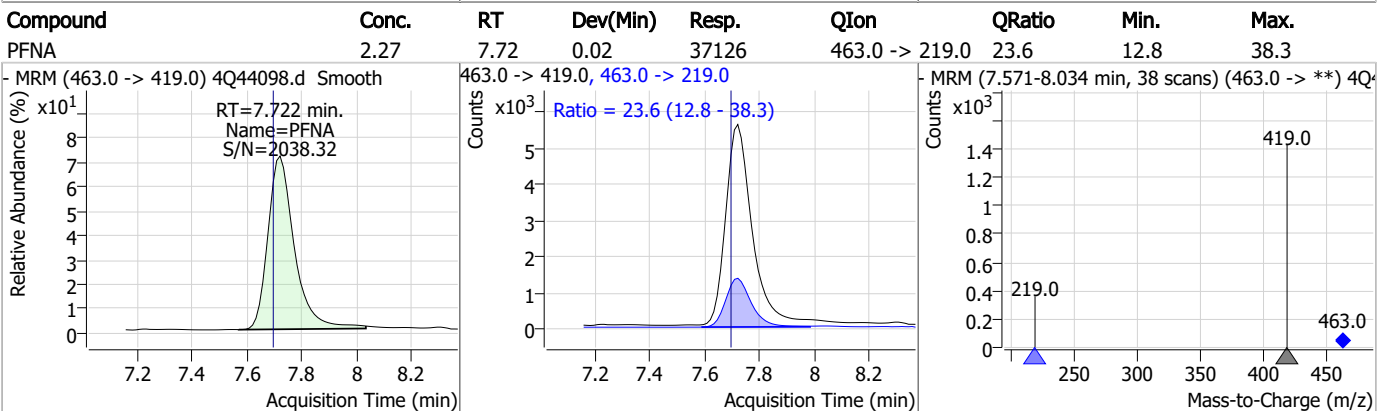
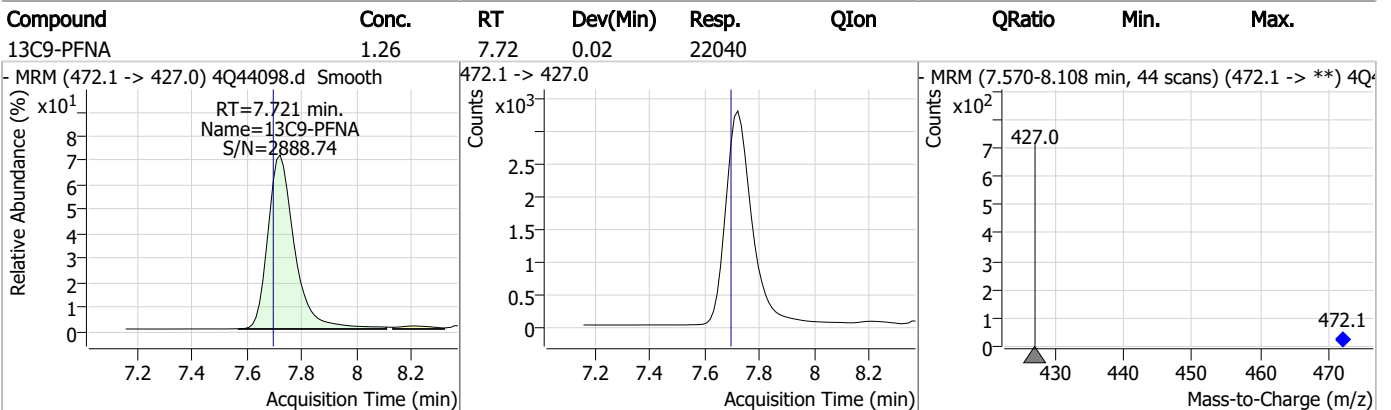
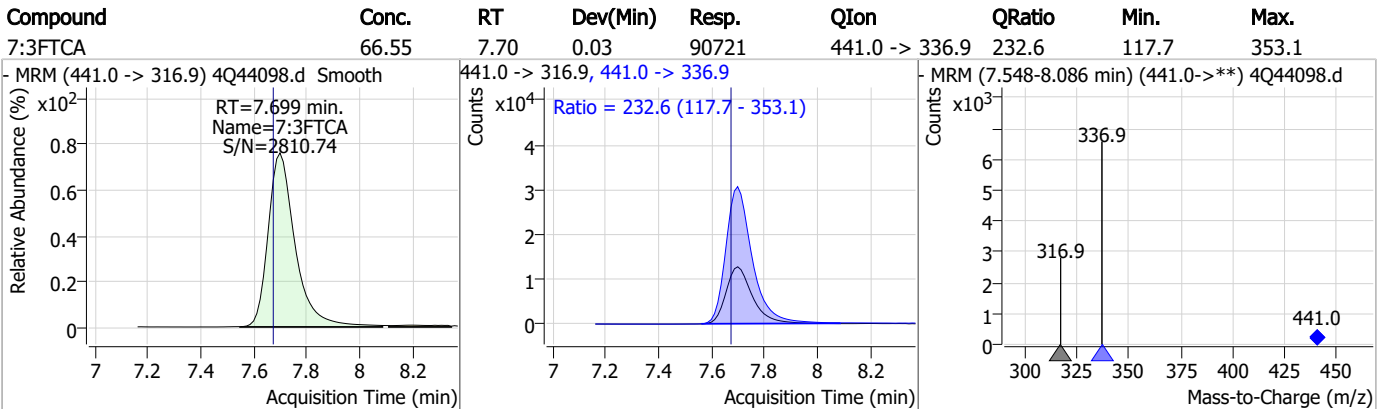
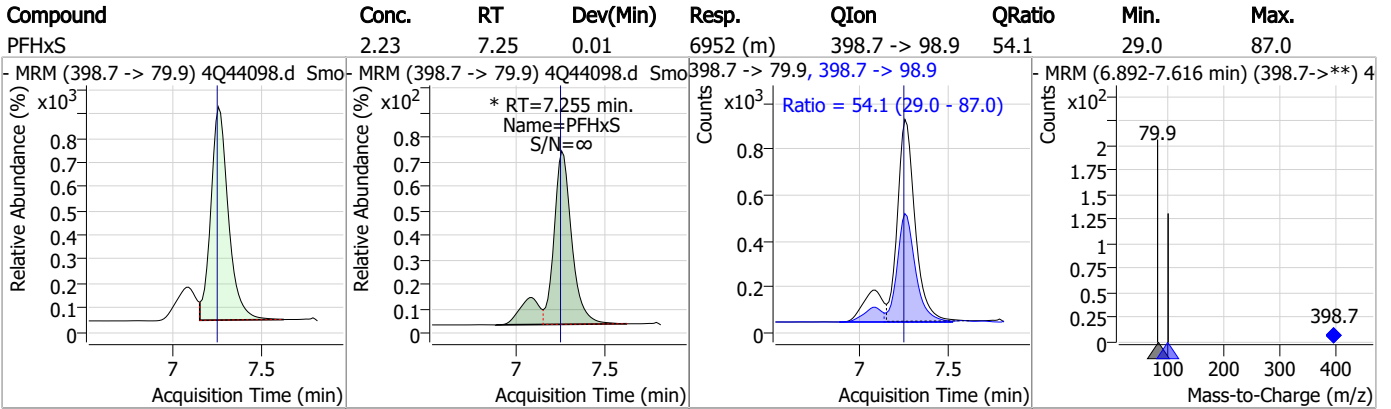
Perfluorinated Compounds by LC/MS/MS



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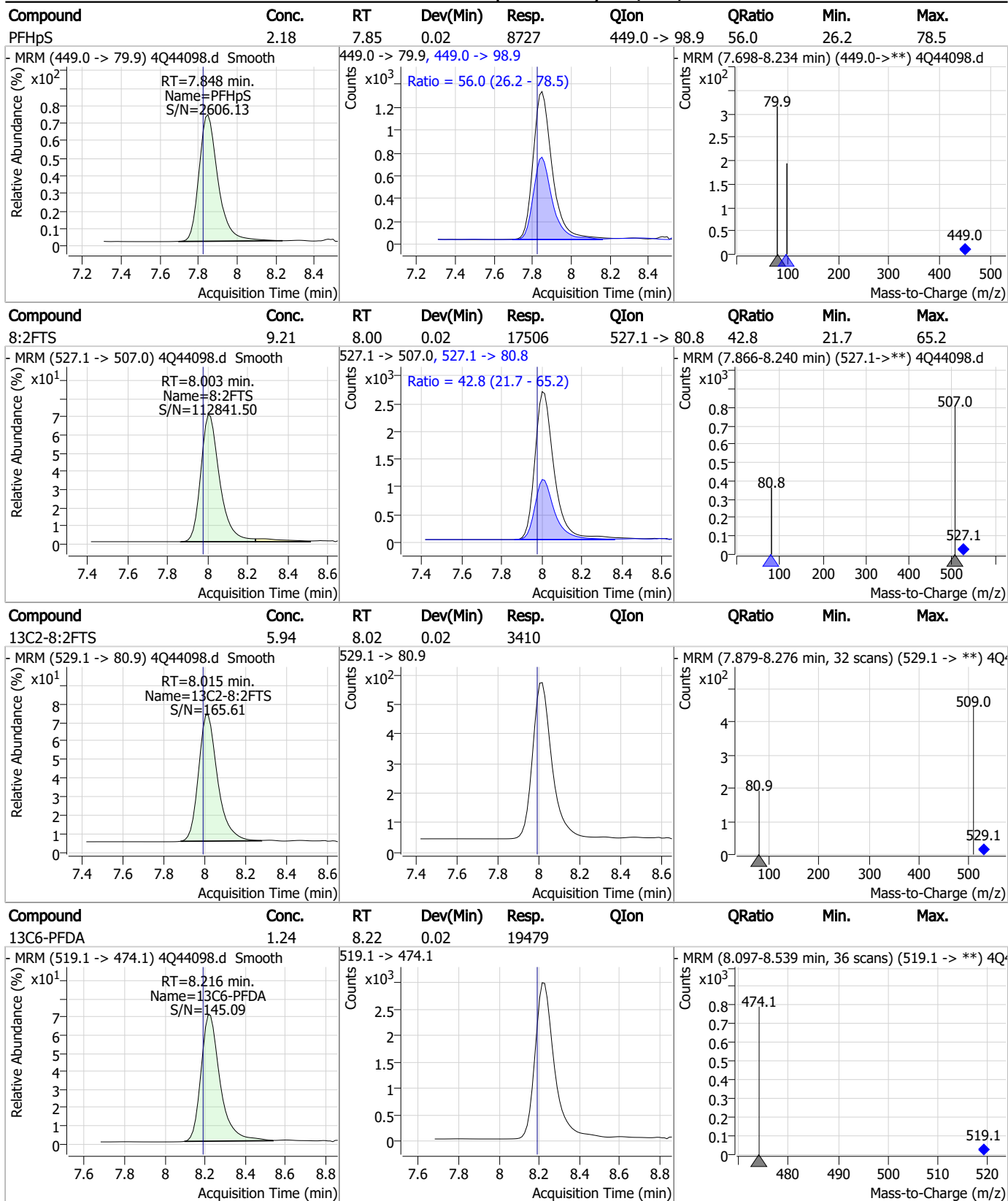


Perfluorinated Compounds by LC/MS/MS



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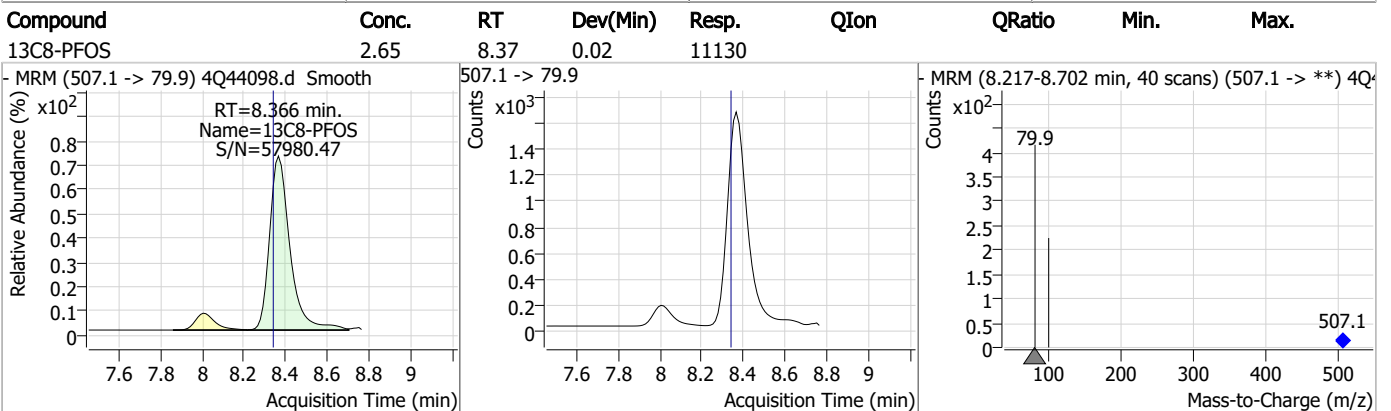
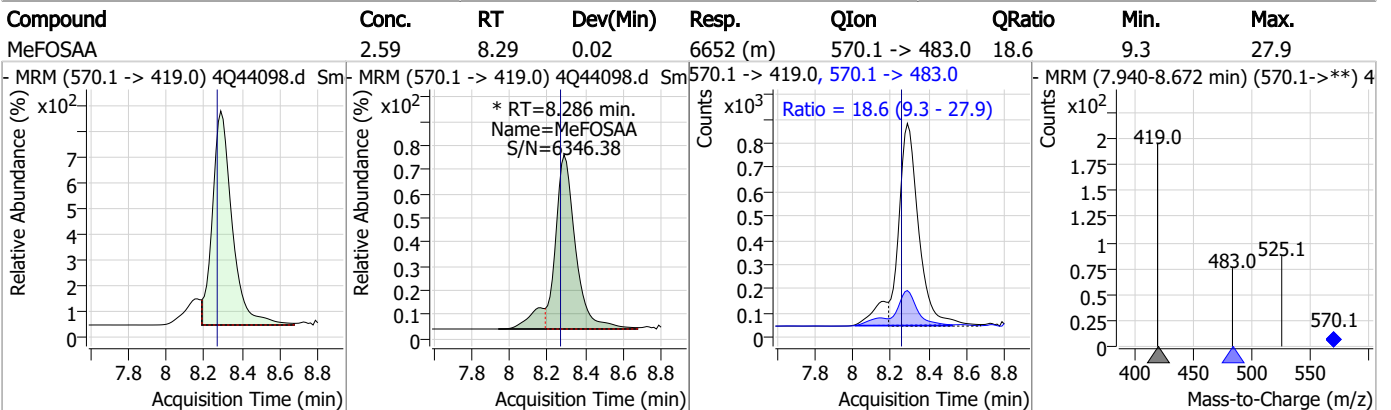
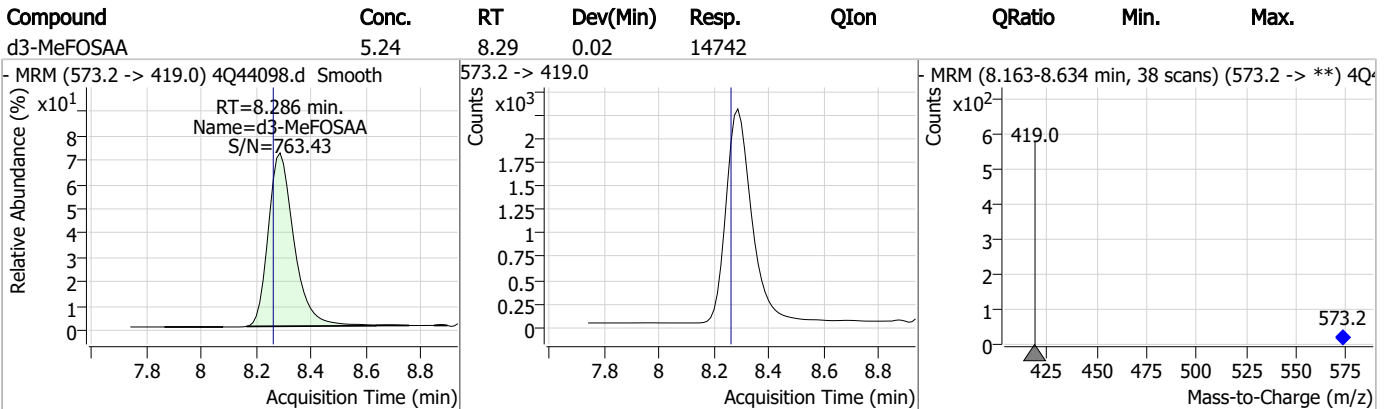
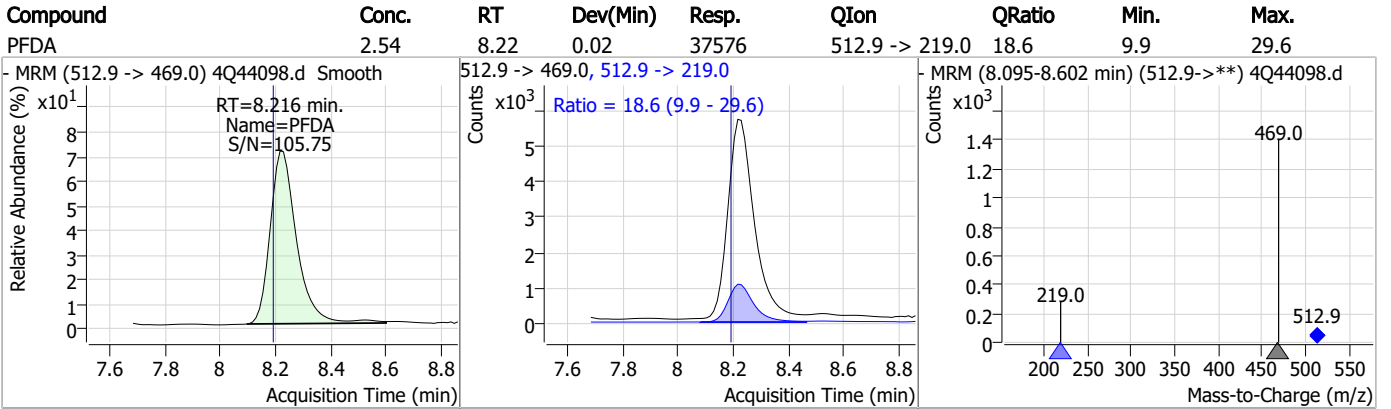
Perfluorinated Compounds by LC/MS/MS



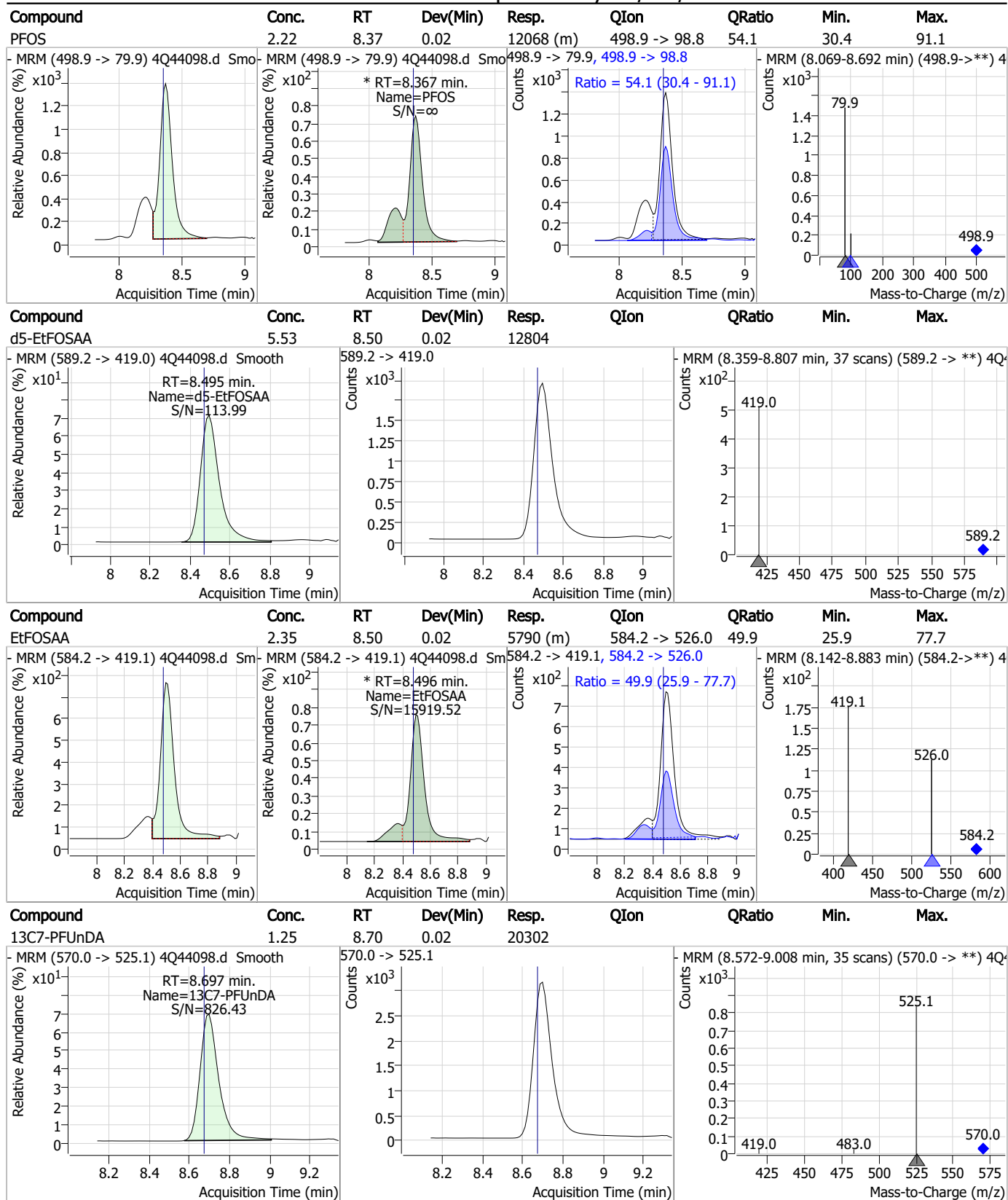
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Perfluorinated Compounds by LC/MS/MS



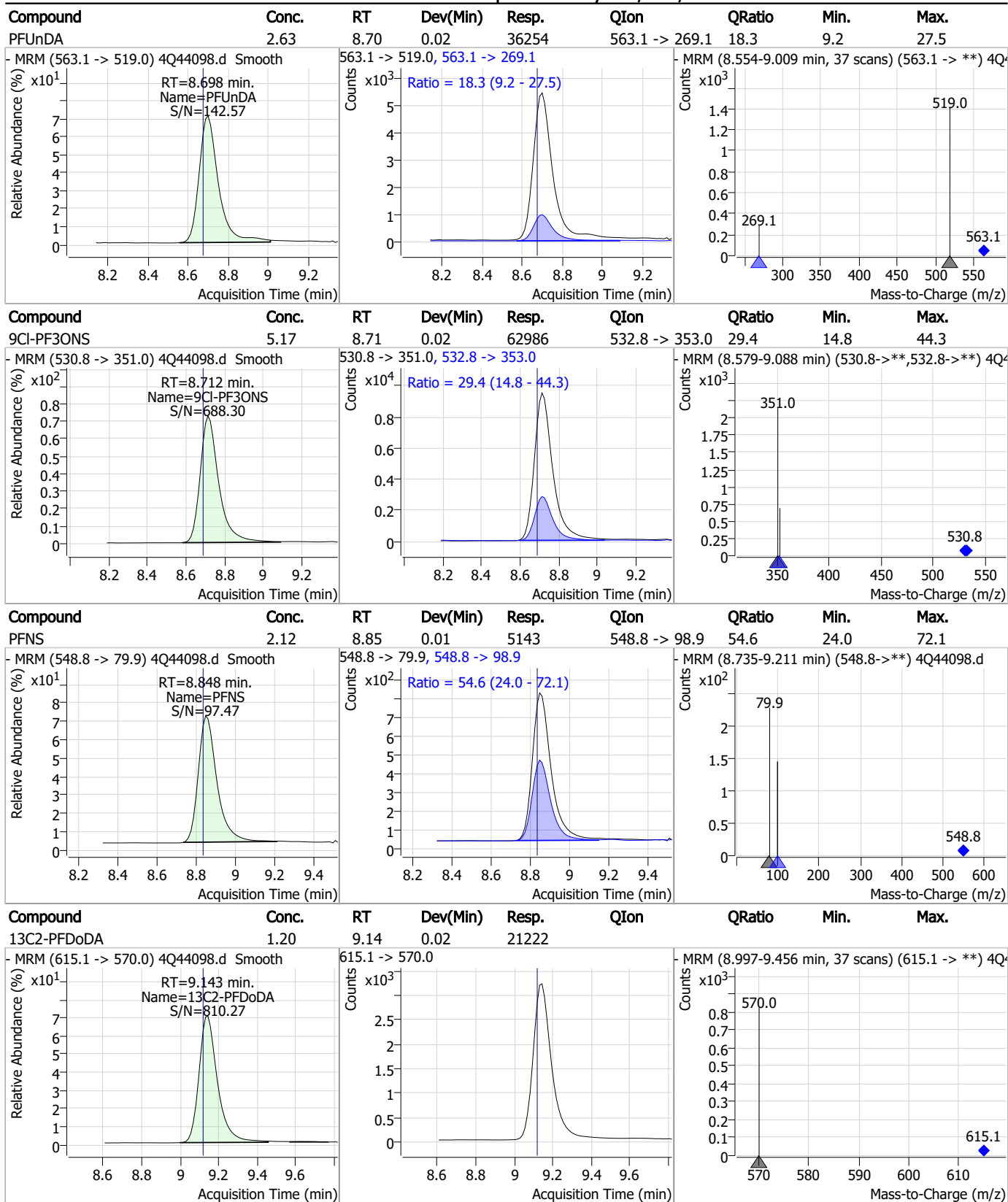
Perfluorinated Compounds by LC/MS/MS



7.7.14

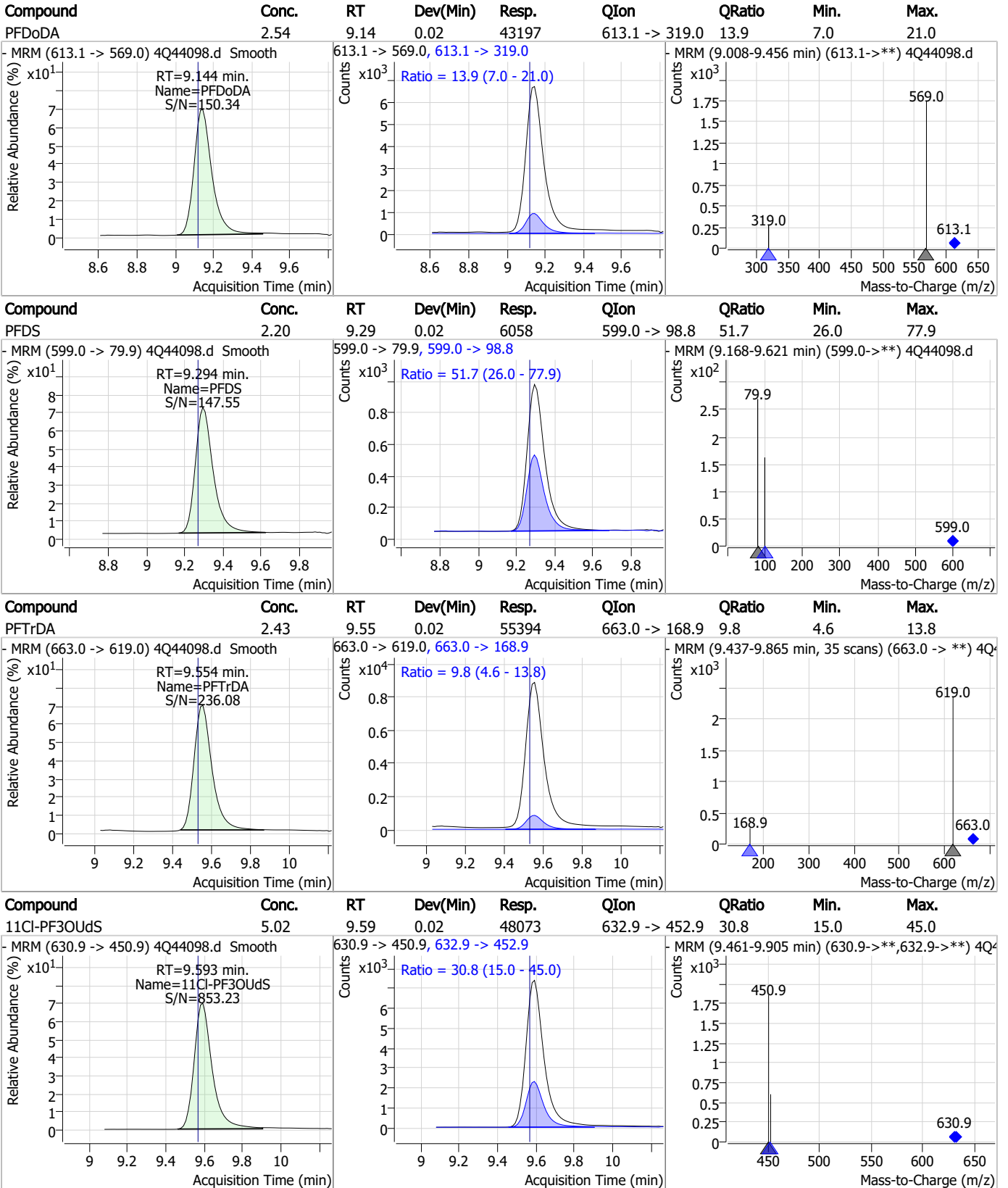
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

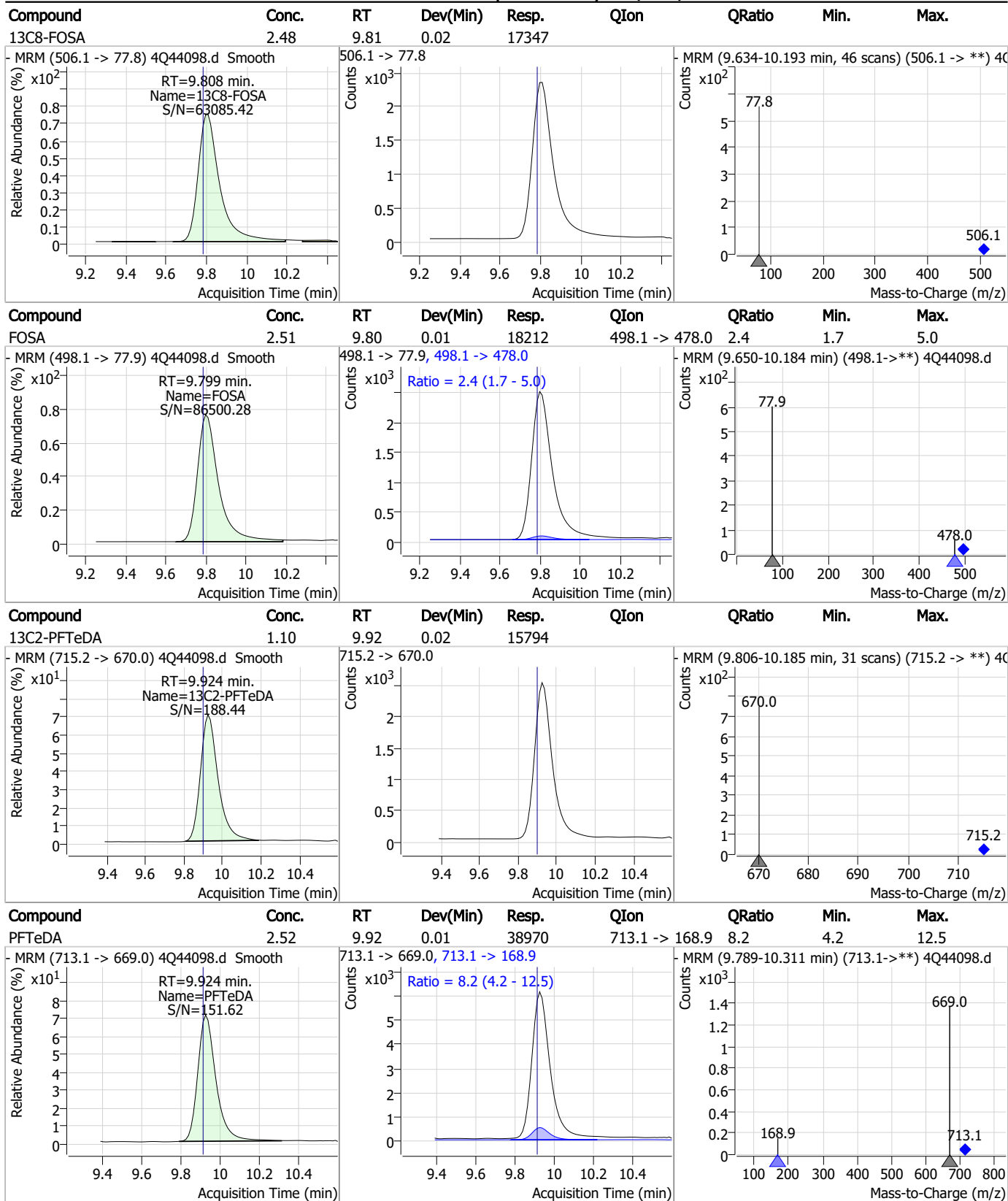


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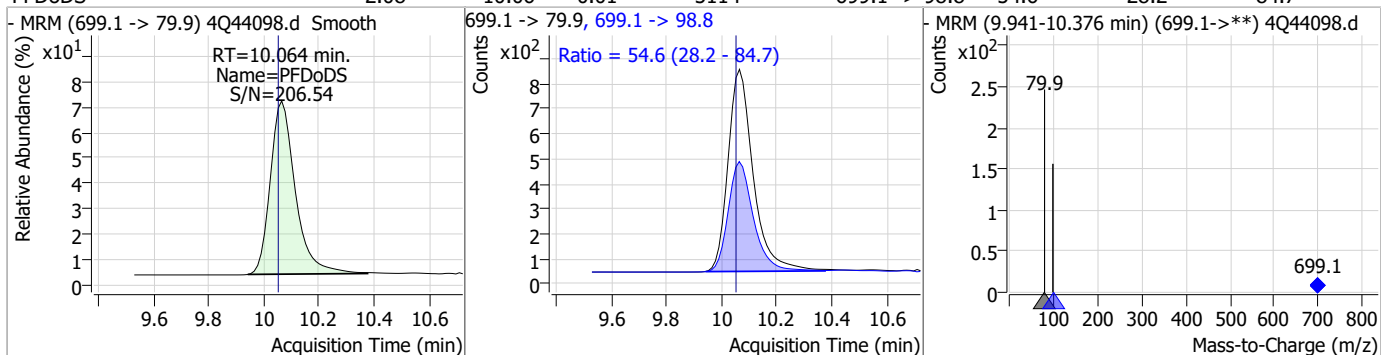
Perfluorinated Compounds by LC/MS/MS



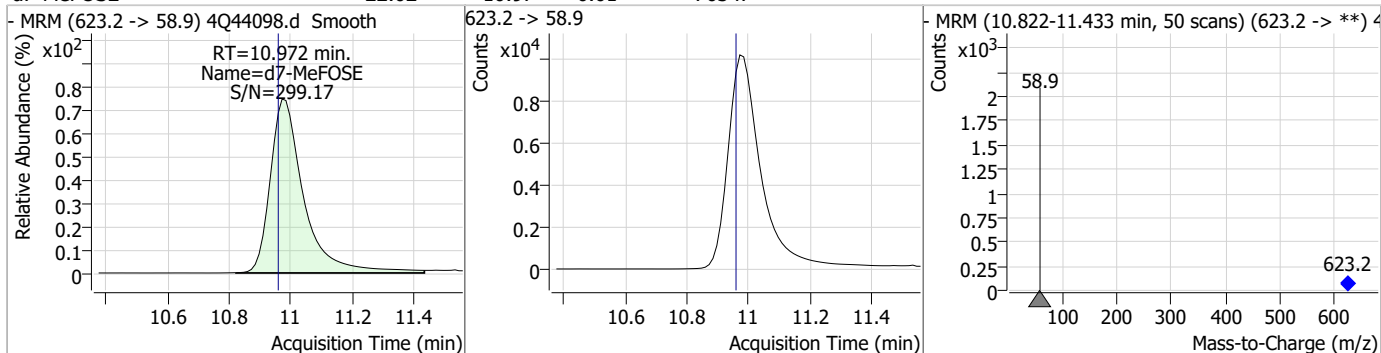
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Perfluorinated Compounds by LC/MS/MS

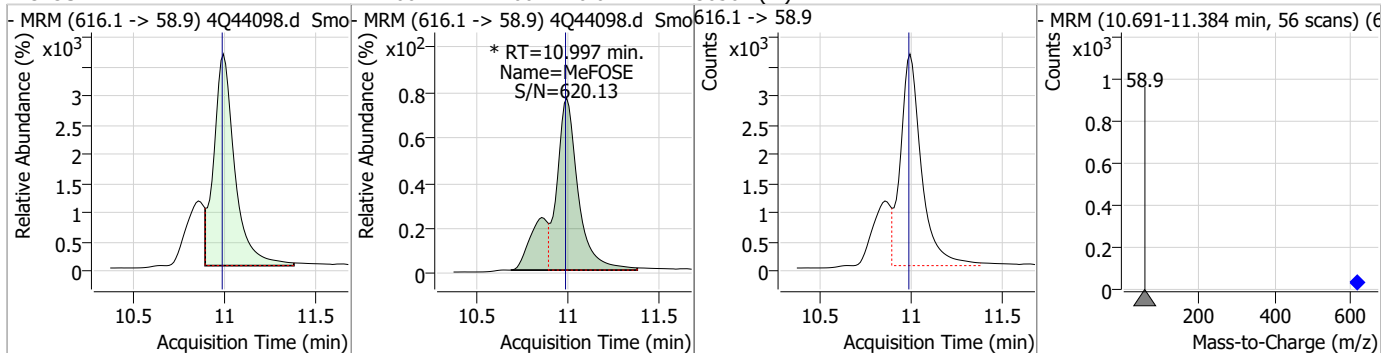
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.08	10.06	0.01	5114	699.1 -> 98.8	54.6	28.2	84.7



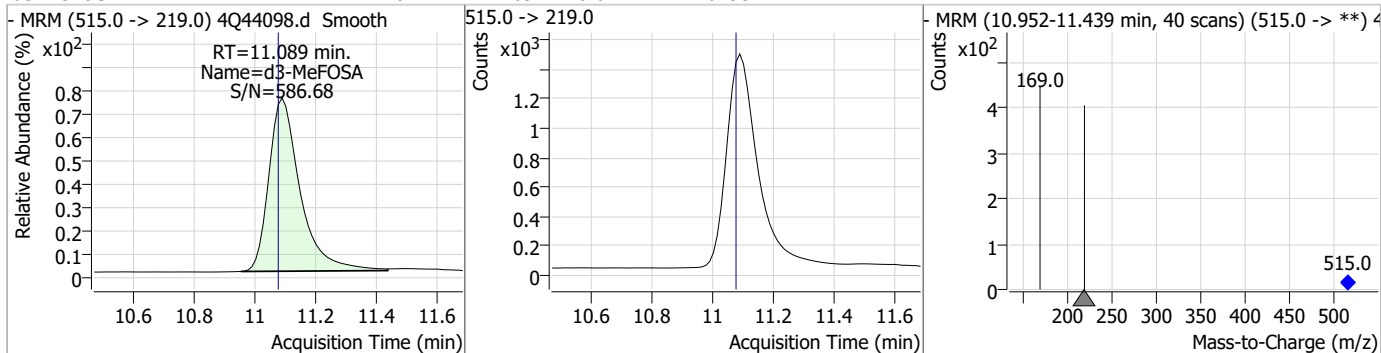
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.02	10.97	0.01	76347				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.66	11.00	0.01	36562 (m)				

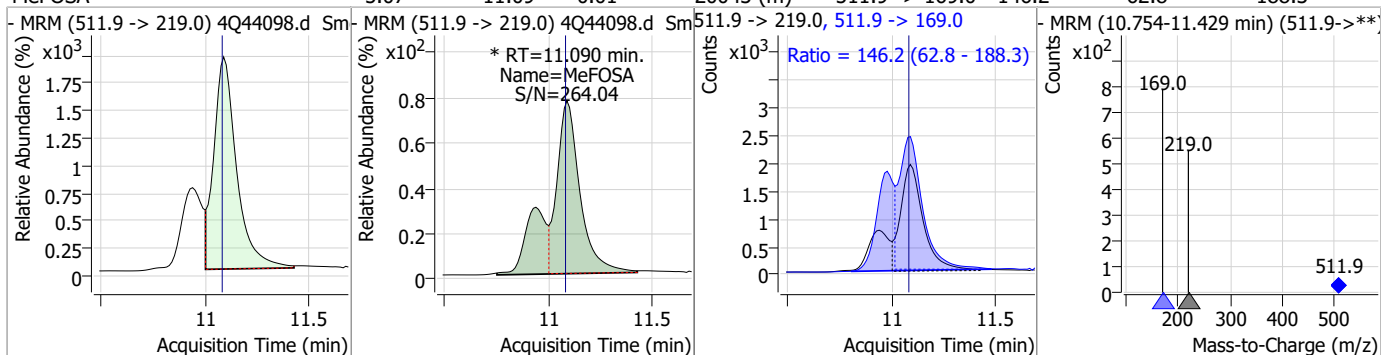


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.40	11.09	0.01	10493				

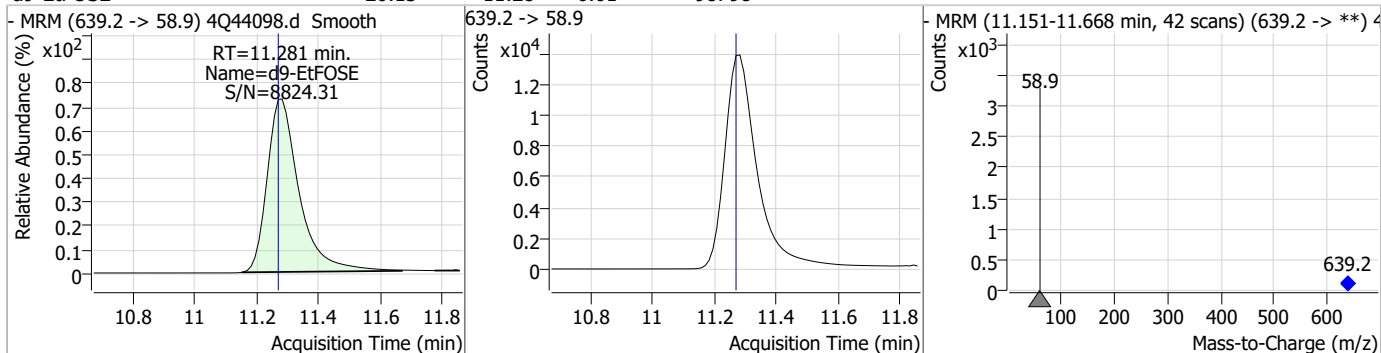


Perfluorinated Compounds by LC/MS/MS

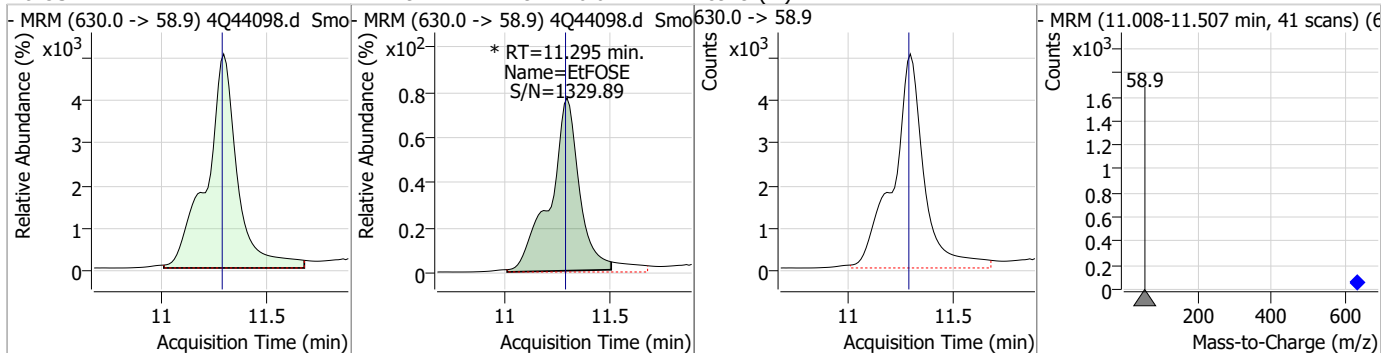
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.07	11.09	0.01	20043 (m)	511.9 -> 169.0	146.2	62.8	188.3



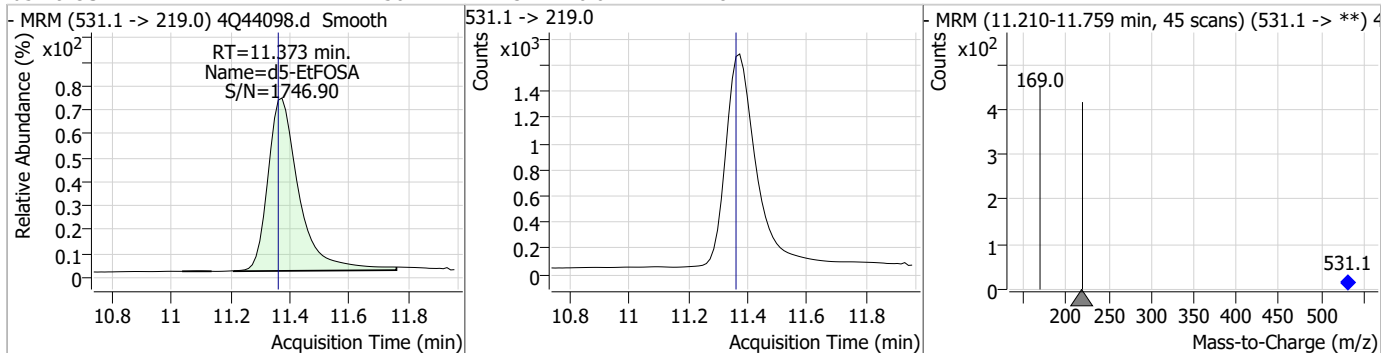
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.13	11.28	0.01	98798				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.79	11.29	0.01	48919 (m)				



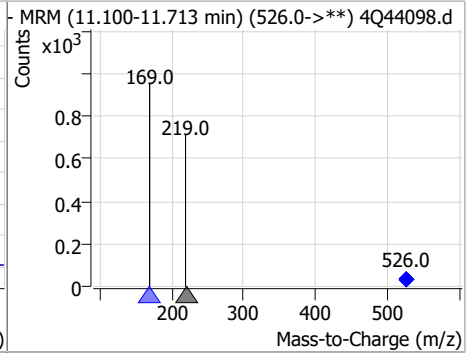
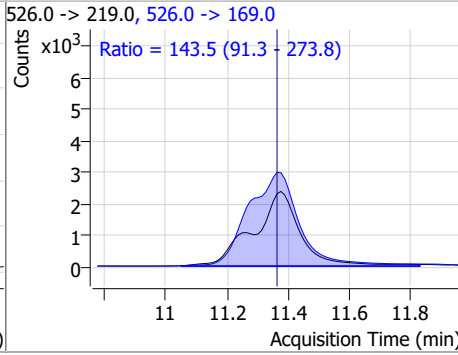
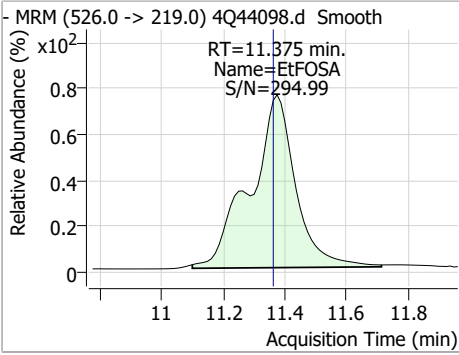
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.56	11.37	0.01	11871				



7.7.14
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.85	11.37	0.01	24115	526.0 -> 169.0	143.5	91.3	273.8



7.7.14
7

Manual Integration Approval Summary

Sample Number: S4Q638-CC634 Method: EPA DRAFT 1633
Lab FileID: 4Q44098.D Analyst approved: 05/09/23 10:17 Martha Valls
Injection Time: 05/08/23 18:28 Supervisor approved: 05/09/23 16:01 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak
EtFOSAA	2991-50-6		8.50	Split peak
MeFOSE	24448-09-7		11.00	Split peak
MeFOSA	31506-32-8		11.09	Split peak
EtFOSE	1691-99-2		11.29	Split peak

7.7.14.1
7

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DATE:	05/03/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_050323_S4Q634
CAL DATE:	05/03/23
ANALYST:	NG
RUN BATCH:	S4Q634

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/D STD LOT #:	11615/11636

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q43879.d	P1-A1	CCB	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
2	4Q43880.d	P1-A1	CCB	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
3	4Q43881.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	✓
4	4Q43882.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	✓
5	4Q43883.d	P1-A1	ic634-0	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	Check Tune File
6	4Q43884.d	P1-A2	ic634-1	1633full_4Q.m	Calibration	1.6/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
7	4Q43885.d	P1-A3	ic634-2	1633full_4Q.m	Calibration	3.2/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
8	4Q43886.d	P1-A4	ic634-3	1633full_4Q.m	Calibration	10/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
9	4Q43887.d	P1-A5	ic634-4	1633full_4Q.m	Calibration	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
10	4Q43888.d	P1-A6	ic634-5	1633full_4Q.m	Calibration	40/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
11	4Q43889.d	P1-A7	ic634-6	1633full_4Q.m	Calibration	100/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
12	4Q43890.d	P1-A8	ic634-7	1633full_4Q.m	Calibration	200/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
13	4Q43891.d	P1-A9	ic634-8	1633full_4Q.m	Calibration	1x	OP96548,S4Q634,500,,,5.0,1,water	PASS
14	4Q43892.d	P1-A1	iblk	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
15	4Q43893.d	P1-B3	icv634-4	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	wrong vial position, rerun icv
16	4Q43894.d	P1-B4	icv634-20	1633full_4Q.m	QC	100/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
17	4Q43895.d	P1-B3	icv634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
18	4Q43896.d	P1-A5	cc634-4	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	wrong vial position, (incorrect tray #)
19	4Q43897.d	P1-A2	cc634-1.0LL	1633full_4Q.m	QC	1.6/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
20	4Q43898.d	P1-B5	op96662-bs	1633full_4Q.m	Sample		OP96662,S4Q634,500,,,5.0,1,water	✓
21	4Q43899.d	P1-B6	op96662-llbs:3	1633full_4Q.m	Sample		OP96662,S4Q634,500,,,5.0,1,water	✓
22	4Q43900.d	P1-B7	op96662-mb	1633full_4Q.m	Sample		OP96662,S4Q634,500,,,5.0,1,water	✓
23	4Q43901.d	P1-B8	fc5652-1	1633full_4Q.m	Sample		OP96662,S4Q634,530,,,5.0,1,water	✓
24	4Q43902.d	P1-B9	fc5652-2	1633full_4Q.m	Sample		OP96662,S4Q634,530,,,5.0,1,water	✓
25	4Q43903.d	P1-C1	fc5685-1	1633full_4Q.m	Sample		OP96662,S4Q634,550,,,5.0,1,water	✓
26	4Q43904.d	P1-C2	fc5685-2	1633full_4Q.m	Sample		OP96662,S4Q634,530,,,5.0,1,water	✓
27	4Q43905.d	P1-C3	fc5685-3	1633full_4Q.m	Sample		OP96662,S4Q634,560,,,5.0,1,water	✓
28	4Q43906.d	P1-C4	op96662-ms	1633full_4Q.m	Sample		OP96662,S4Q634,520,,,5.0,1,water	✓
29	4Q43907.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
30	4Q43908.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
31	4Q43909.d	P1-C5	fc5685-4	1633full_4Q.m	Sample		OP96662,S4Q634,570,,,5.0,1,water	rr 5x high and low EIS
32	4Q43910.d	P1-C6	op96662-dup	1633full_4Q.m	Sample		OP96662,S4Q634,570,,,5.0,1,water	rr 5x high and low EIS
33	4Q43911.d	P1-C7	fc5685-5	1633full_4Q.m	Sample		OP96662,S4Q634,550,,,5.0,1,water	✓
34	4Q43912.d	P1-C8	op96659-bs	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
35	4Q43913.d	P1-C9	op96659-llbs:2	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q43914.d	P1-D1	op96659-mb	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
37	4Q43915.d	P1-D2	j63879-1	1633full_4Q.m	Sample		OP96659,S4Q634,60,,,5.0,1,water	✓
38	4Q43916.d	P1-D3	j63879-1	1633full_4Q.m	Sample	50/500	OP96659,S4Q634,60,,,5.0,10,water	✓
39	4Q43917.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
40	4Q43918.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
41	4Q43919.d	P1-D4	fc5212-1	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
42	4Q43920.d	P1-D5	fc5212-1A	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
43	4Q43921.d	P1-D6	fc5214-1	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
44	4Q43922.d	P1-D7	fc5214-1A	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
45	4Q43923.d	P1-D8	op96657-bs	1633full_4Q.m	Sample		OP96657,S4Q634,5.00,,,5.0,1,soil	DoDS low rerun BS
46	4Q43924.d	P1-D9	op96657-llbs:3	1633full_4Q.m	Sample		OP96657,S4Q634,5.00,,,5.0,1,soil	DoDS low rerun LLBS
47	4Q43925.d	P1-E1	op96657-mb	1633full_4Q.m	Sample		OP96657,S4Q634,5.00,,,5.0,1,soil	✓
48	4Q43926.d	P1-E2	fc5371-10	1633full_4Q.m	Sample		OP96657,S4Q634,4.98,,,5.0,1,soil	✓
49	4Q43927.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
50	4Q43928.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
51	4Q43929.d	P1-E3	fc5371-11	1633full_4Q.m	Sample		OP96657,S4Q634,5.02,,,5.0,1,soil	✓
52	4Q43930.d	P1-E4	op96657-ms	1633full_4Q.m	Sample		OP96657,S4Q634,5.01,,,5.0,1,soil	✓
53	4Q43931.d	P1-E5	op96657-msd	1633full_4Q.m	Sample		OP96657,S4Q634,5.03,,,5.0,1,soil	✓
54	4Q43932.d	P1-E6	fc5371-12	1633full_4Q.m	Sample		OP96657,S4Q634,5.02,,,5.0,1,soil	✓
55	4Q43933.d	P1-E7	fc5371-13	1633full_4Q.m	Sample		OP96657,S4Q634,5.04,,,5.0,1,soil	rr 10x
56	4Q43934.d	P1-E8	fc5371-14	1633full_4Q.m	Sample		OP96657,S4Q634,5.02,,,5.0,1,soil	rr 1x c/o
57	4Q43935.d	P1-E9	fc5371-15	1633full_4Q.m	Sample		OP96657,S4Q634,5.05,,,5.0,1,soil	✓
58	4Q43936.d	P1-F1	fc5371-16	1633full_4Q.m	Sample		OP96657,S4Q634,4.97,,,5.0,1,soil	rr 10x
59	4Q43937.d	P1-F2	fc5371-17	1633full_4Q.m	Sample		OP96657,S4Q634,5.03,,,5.0,1,soil	rr 1x c/o
60	4Q43938.d	P1-F3	fc5371-18	1633full_4Q.m	Sample		OP96657,S4Q634,5.03,,,5.0,1,soil	rr 10x
61	4Q43939.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
62	4Q43940.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
63	4Q43941.d	P1-F4	fc5371-19	1633full_4Q.m	Sample		OP96657,S4Q634,4.96,,,5.0,1,soil	✓
64	4Q43942.d	P1-F5	fc5371-20	1633full_4Q.m	Sample		OP96657,S4Q634,5.05,,,5.0,1,soil	✓
65	4Q43943.d	P1-F6	op96657-ms2	1633full_4Q.m	Sample		OP96657,S4Q634,4.96,,,5.0,1,soil	✓
66	4Q43944.d	P1-F7	op96657-msd2	1633full_4Q.m	Sample		OP96657,S4Q634,5.05,,,5.0,1,soil	✓
67	4Q43945.d	P1-F8	fc5371-21	1633full_4Q.m	Sample		OP96657,S4Q634,4.99,,,5.0,1,soil	✓
68	4Q43946.d	P1-A5	ecc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
69	4Q43947.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND

SGS ORLANDO

DATE:	05/08/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_050323_S4Q634
CAL DATE:	05/03/23
ANALYST:	IMV
RUN BATCH:	S4Q638

ELUENT A LOT #:	224863 W5%ACN 214785 2mmMAMAC.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	4Q44074.d	P1-A1	CCB	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
2	4Q44075.d	P1-A1	CCB	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
3	4Q44076.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
4	4Q44077.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
5	4Q44078.d	P1-A9	high std	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
6	4Q44079.d	P1-A1	iblk	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
7	4Q44080.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q638,500,,,5.0,1,water	✓
8	4Q44081.d	P1-A2	cc634-1.0LL	1633full_4Q.m	QC	1.6/500	OP96548,S4Q638,500,,,5.0,1,water	✓
9	4Q44082.d	P2-A1	jd64313-1A	1633full_4Q.m	Sample	50/500	OP96681,S4Q638,545,,,5.0,10,water	✓
10	4Q44083.d	P2-A2	jd64313-2A	1633full_4Q.m	Sample	50/500	OP96681,S4Q638,545,,,5.0,10,water	Redo, surr failing
11	4Q44084.d	P2-A3	jd64313-3A	1633full_4Q.m	Sample	50/500	OP96681,S4Q638,510,,,5.0,10,water	✓
12	4Q44085.d	P2-A4	jd64313-4A	1633full_4Q.m	Sample	50/500	OP96681,S4Q638,545,,,5.0,10,water	Redo, surr failing
13	4Q44086.d	P2-A5	op96681-ms	1633full_4Q.m	Sample	50/500	OP96681,S4Q638,545,,,5.0,10,water	✓
14	4Q44087.d	P2-A6	jd64313-5A	1633full_4Q.m	Sample	50/500	OP96681,S4Q638,510,,,5.0,10,water	✓
15	4Q44088.d	P2-A7	op96681-dup	1633full_4Q.m	Sample	50/500	OP96681,S4Q638,510,,,5.0,10,water	✓
16	4Q44089.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q638,500,,,5.0,1,water	✓
17	4Q44090.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
18	4Q44091.d	P2-B1	op96726-bs	1633full_4Q.m	Sample		OP96726,S4Q638,500,,,5.0,1,water	✓
19	4Q44092.d	P2-B2	op96726-llbs:3	1633full_4Q.m	Sample		OP96726,S4Q638,500,,,5.0,1,water	✓
20	4Q44093.d	P2-B3	op96726-mb	1633full_4Q.m	Sample		OP96726,S4Q638,500,,,5.0,1,water	✓
21	4Q44094.d	P2-B4	FC5783-1	1633full_4Q.m	Sample		OP96726,S4Q638,540,,,5.0,1,water	✓
22	4Q44095.d	P2-B5	op96726-ms	1633full_4Q.m	Sample		OP96726,S4Q638,500,,,5.0,1,water	✓
23	4Q44096.d	P2-B6	FC5783-2	1633full_4Q.m	Sample		OP96726,S4Q638,570,,,5.0,1,water	✓
24	4Q44097.d	P2-B7	op96726-dup	1633full_4Q.m	Sample		OP96726,S4Q638,500,,,5.0,1,water	✓
25	4Q44098.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q638,500,,,5.0,1,water	✓
26	4Q44099.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q638,500,,,5.0,1,water	✓
27	4Q44100.d	P2-C1	op96722-bs	1633full_4Q.m	Sample		OP96722,S4Q638,500,,,5.0,1,water	✓
28	4Q44101.d	P2-C2	op96722-llbs:3	1633full_4Q.m	Sample		OP96722,S4Q638,500,,,5.0,1,water	✓
29	4Q44102.d	P2-C3	op96722-mb	1633full_4Q.m	Sample		OP96722,S4Q638,500,,,5.0,1,water	✓
30	4Q44103.d	P2-C4	FC5447-2	1633full_4Q.m	Sample		OP96722,S4Q638,545,,,5.0,1,water	✓
31	4Q44104.d	P2-C5	op96722-ms	1633full_4Q.m	Sample		OP96722,S4Q638,545,,,5.0,1,water	✓
32	4Q44105.d	P2-C6	op96722-msd	1633full_4Q.m	Sample		OP96722,S4Q638,545,,,5.0,1,water	✓
33	4Q44106.d	P2-C7	FC5446-1	1633full_4Q.m	Sample		OP96722,S4Q638,565,,,5.0,1,water	Redo to confirm
34	4Q44107.d	P2-C8	FC5446-2	1633full_4Q.m	Sample		OP96722,S4Q638,565,,,5.0,1,water	✓
35	4Q44108.d	P2-C9	FC5446-3	1633full_4Q.m	Sample		OP96722,S4Q638,560,,,5.0,1,water	✓

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36	4Q44109.d	P2-D1	FC5446-4	1633full_4Q.m	Sample		OP96722.S4Q638.540,,,5.0,1,water	✓
37	4Q44110.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548.S4Q638.500,,,5.0,1,water	✓
38	4Q44111.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548.S4Q638.500,,,5.0,1,water	✓
39	4Q44112.d	P2-D2	FC5446-5	1633full_4Q.m	Sample		OP96722.S4Q638.570,,,5.0,1,water	✓
40	4Q44113.d	P2-D3	FC5446-6	1633full_4Q.m	Sample		OP96722.S4Q638.560,,,5.0,1,water	✓
41	4Q44114.d	P2-D4	FC5446-7	1633full_4Q.m	Sample		OP96722.S4Q638.560,,,5.0,1,water	✓
42	4Q44115.d	P2-D5	FC5446-8	1633full_4Q.m	Sample		OP96722.S4Q638.565,,,5.0,1,water	✓
43	4Q44116.d	P2-D6	FC5446-9	1633full_4Q.m	Sample		OP96722.S4Q638.565,,,5.0,1,water	✓
44	4Q44117.d	P2-D7	FC5446-10	1633full_4Q.m	Sample		OP96722.S4Q638.565,,,5.0,1,water	✓
45	4Q44118.d	P2-D8	FC5446-11	1633full_4Q.m	Sample		OP96722.S4Q638.555,,,5.0,1,water	✓
46	4Q44119.d	P2-D9	FC5446-12	1633full_4Q.m	Sample		OP96722.S4Q638.550,,,5.0,1,water	✓
47	4Q44120.d	P2-E1	FC5446-13	1633full_4Q.m	Sample		OP96722.S4Q638.550,,,5.0,1,water	✓
48	4Q44121.d	P2-E2	FC5446-14	1633full_4Q.m	Sample		OP96722.S4Q638.565,,,5.0,1,water	✓
49	4Q44122.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548.S4Q638.500,,,5.0,1,water	✓
50	4Q44123.d	P1-A2	cc634-1.0LL	1633full_4Q.m	QC	1.6/500	OP96548.S4Q638.500,,,5.0,1,water	✓
51	4Q44124.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548.S4Q638.500,,,5.0,1,water	✓
52	4Q44125.d	P2-E3	FC5446-15	1633full_4Q.m	Sample		OP96722.S4Q638.555,,,5.0,1,water	✓
53	4Q44126.d	P2-E4	FC5446-16	1633full_4Q.m	Sample		OP96722.S4Q638.550,,,5.0,1,water	✓
54	4Q44127.d	P2-E5	FC5446-17	1633full_4Q.m	Sample		OP96722.S4Q638.545,,,5.0,1,water	✓
55	4Q44128.d	P2-E6	FC5446-18	1633full_4Q.m	Sample		OP96722.S4Q638.560,,,5.0,1,water	✓
56	4Q44129.d	P1-A5	ecc634-4	1633full_4Q.m	QC	20/500	OP96548.S4Q638.500,,,5.0,1,water	✓
57	4Q44130.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548.S4Q638.500,,,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	MBP-PEA	Wellington Labs	07/06/25	04/06/24	50ppm	80uL	4mL	1.0ppm	2011MEH 41, H2O	04/03/23	06/15/23	NG
		10438A	Mw:2 FTS		11/05/25	04/06/24		80uL		1.0ppm				NG
		10512B	d3-N-NIST684A		10/22/25	05/15/23		160uL		2.0ppm				NG
		10498A	MIPFOS		11/02/25	03/22/24		80uL		1.0ppm				NG
		11069	M-ARFA		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	Fose Std.			7/24/23	5.0ppm	400uL		500ppb				
LCMS 2101	Fose std.	11336	N-et Fose	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% MeOH 5% H2O	9/11/23	9/19/23	MW
		11338	N-me Fose		5/13/27	9/19/23	50ppm	200uL						

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

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2095A-J	(10ppb) PFC ID SURF	A-J 11669	MPFAC-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-METOSA	↓	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	↓	↓	↓	↓
↓	↓	11642B	PFAC-MxJ	↓	10/28/23	10/28/23	50ppm	200uL	5mL	2ppm	1033 MIX	4/16/23	10/28/23	MUJ
LCMS 2097A-B	BR-LN metet for 1033	11497	br-N metosa	Wellington Labs	08/23/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11498	br-N Effosa	↓	10/07/27	10/28/23	50ppm	200uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11495	br-N metosa	↓	10/28/23	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11494	br-N Effosa	↓	10/17/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓					4/6/24								

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

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 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								

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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-SD 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	11/08/23	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
↓	↓	11385	A-N- NFCOSAM	Wellington Labs	05/10/27	01/01/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
* 2076 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						
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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2052	1633 prep mix	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.

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Revision#:9, Revised 2020-12-23

brNMeFOSE0922 (1 of 7)
rev1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

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

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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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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brNEtFOSA0922 (1 of 6)
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rec'd: 02/06/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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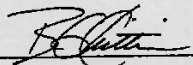
Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ:0921 (1 of 5)
rev1

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

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

Certified By: 
 B.G. Chittim, General Manager

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

11672
rec'd: 02/23/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

**Native PFAS
Solution/Mixture**

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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rev0

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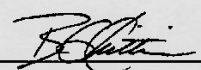
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Table A: PFAC-MXH; Components and Concentrations (ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

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

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Table A:

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 

B.G. Chittim, General Manager

Date: 01/12/2022

(mm/dd/yyyy)

11675
rec'd: 02/23/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic Acids and Sulfonate Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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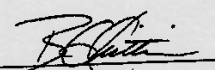
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PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Table A

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

* Concentrations have been rounded to three significant figures.

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

FPePA1120

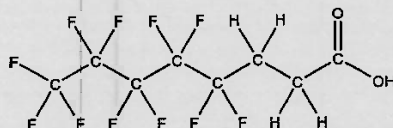
COMPOUND:

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

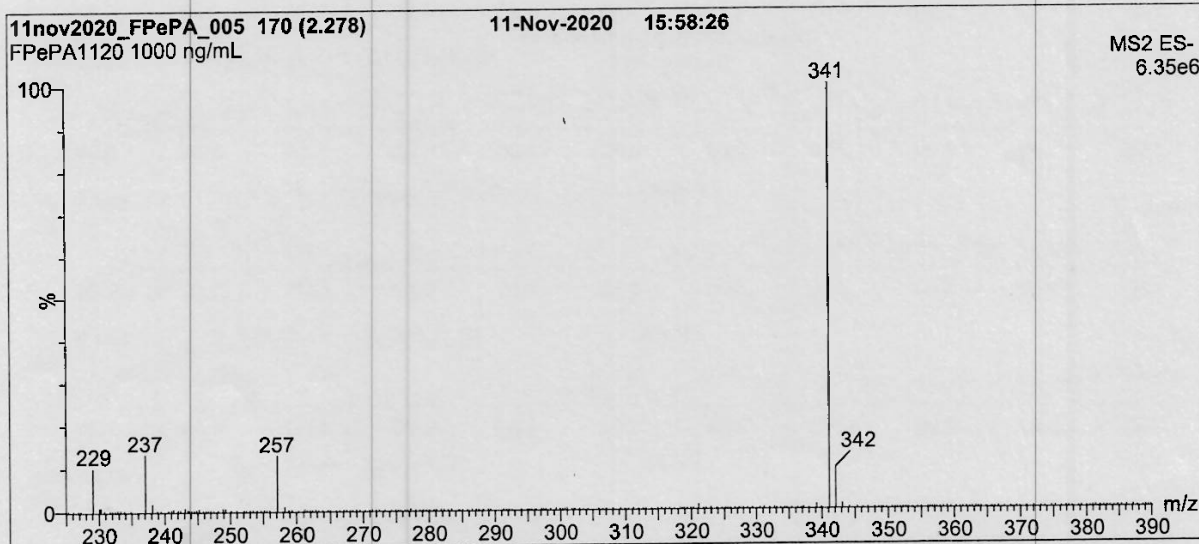
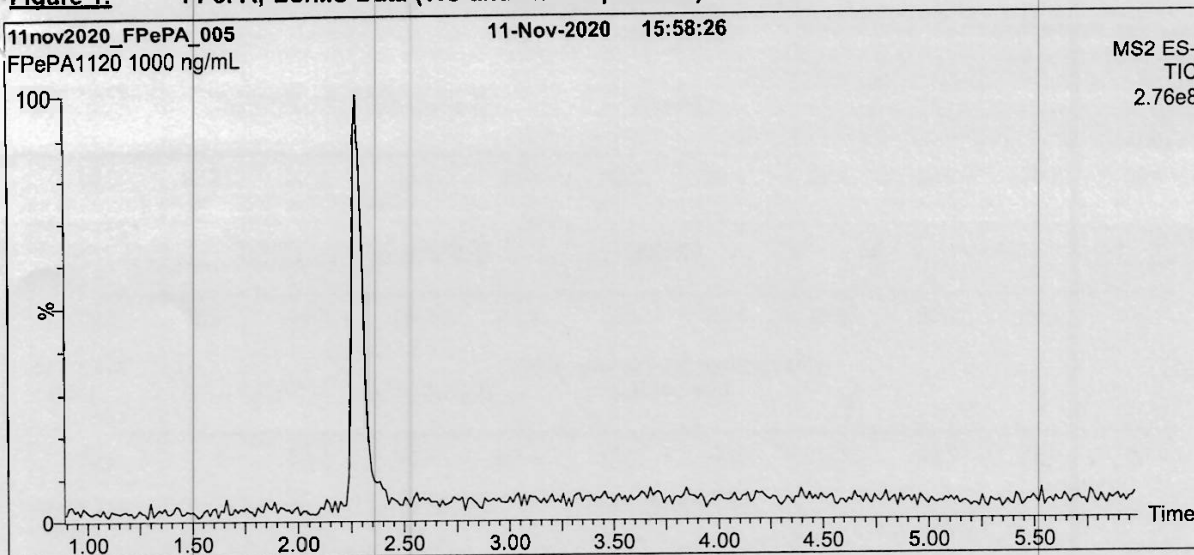
Date: 11/27/2020
(mm/dd/yyyy)

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

FPePA1120 (1 of 4)
rev0

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



Conditions for Figure 1:

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

Chromatographic Conditions:

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

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

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

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

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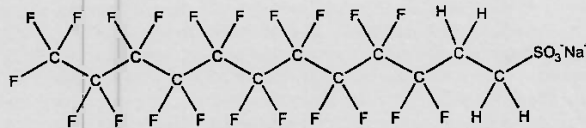


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

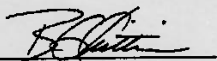
DOCUMENTATION/ DATA ATTACHED:

- 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

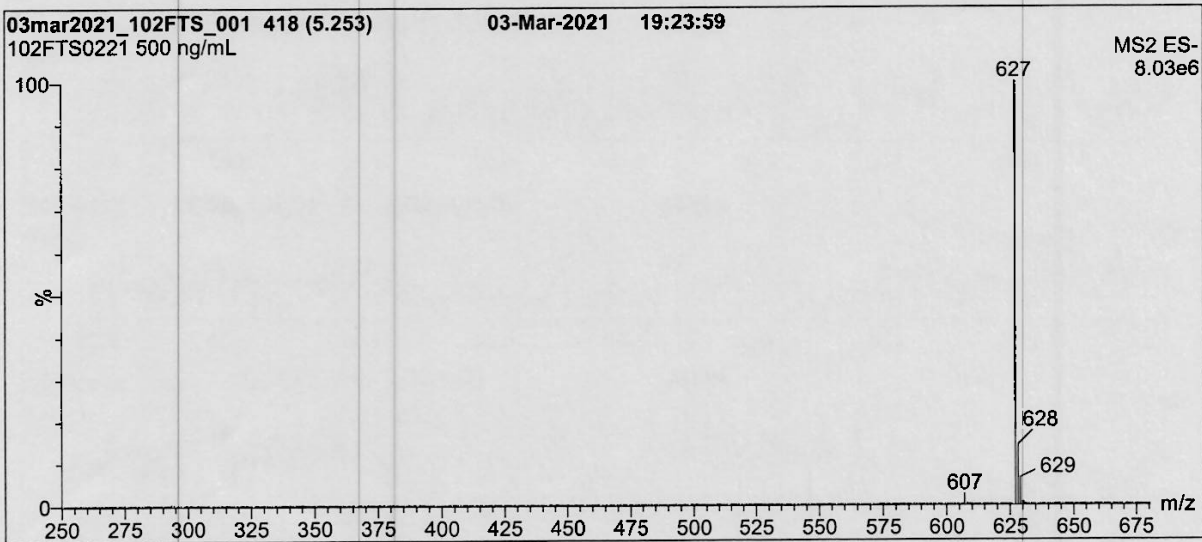
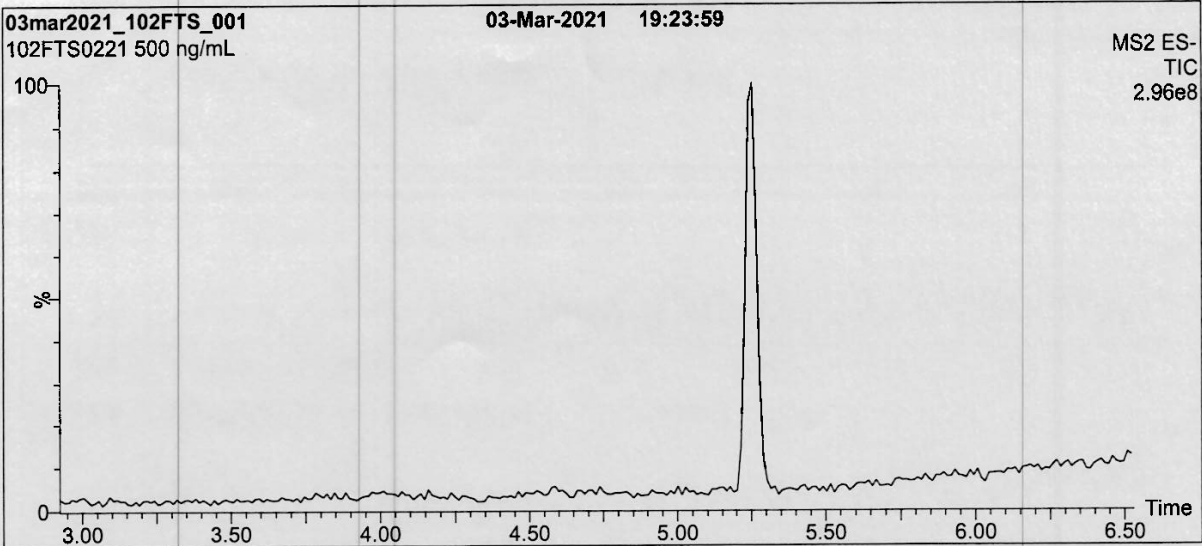
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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

7.9.1

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



Conditions for Figure 1:

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

Chromatographic Conditions:

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

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

Flow: 300 μ L/min

MS Parameters:

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

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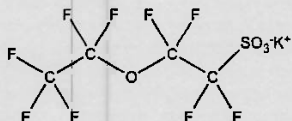
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CERTIFICATE OF ANALYSIS DOCUMENTATION

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 **MOLECULAR WEIGHT:** 354.19

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

44.6 ± 2.2 µg/ml (PFEESA acid)

44.5 ± 2.2 µg/ml (PFEESA anion)

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

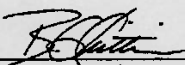
Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

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

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Revision#:7, Revised 2020-01-09

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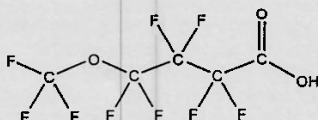
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-5-oxahexanoic acid

SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

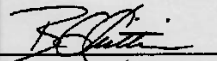
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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Revision#: 8, Revised 2020-09-10

PF5OHxA0320 (1 of 4)
rev1

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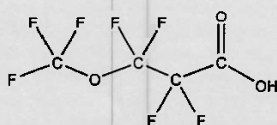
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

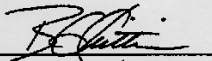
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: 
B.G. Chittim, General Manager

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

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PF4OPeA0320 (1 of 4)
rev1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

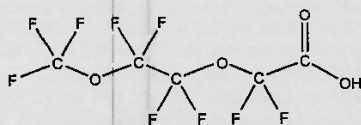
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager

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

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10829



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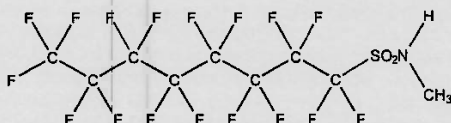
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPA
10/5/21

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

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

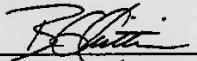
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

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Revision#:9, Revised 2020-12-23

NMeFOSA0721M (1 of 4)
rev0

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PRODUCT CODE:

N-EtFOSA-M

10837

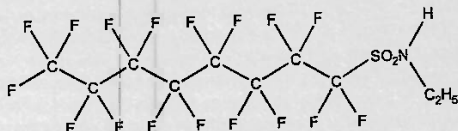
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

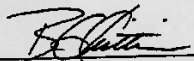
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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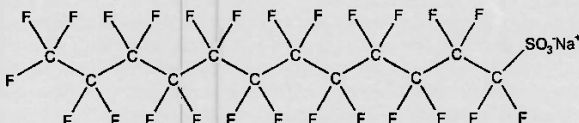
10840

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

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/09/2021
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

10847 NS 01/18/23

LOT NUMBER:

PFODA0821

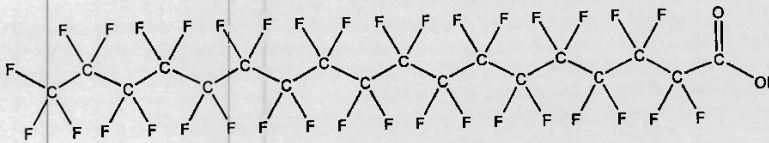
COMPOUND:

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 ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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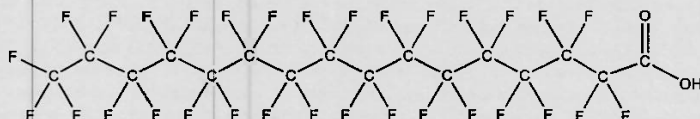
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



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

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

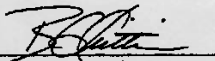
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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1116 A.B NW

1116B on the back NW



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

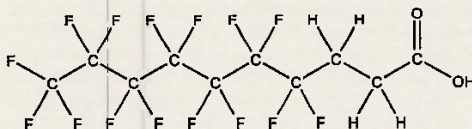
COMPOUND:

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.

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Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

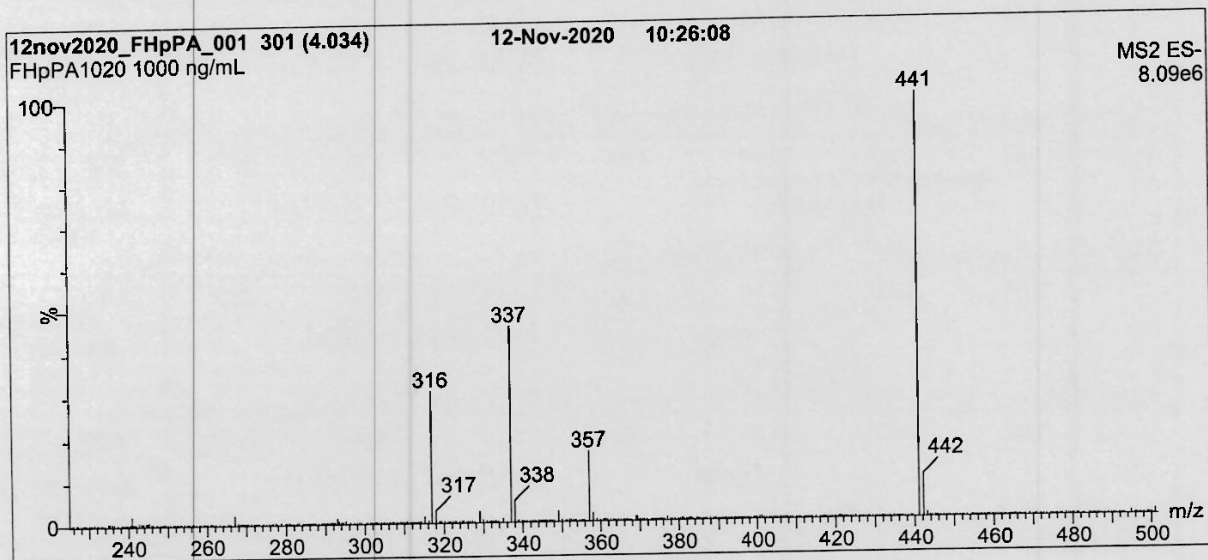
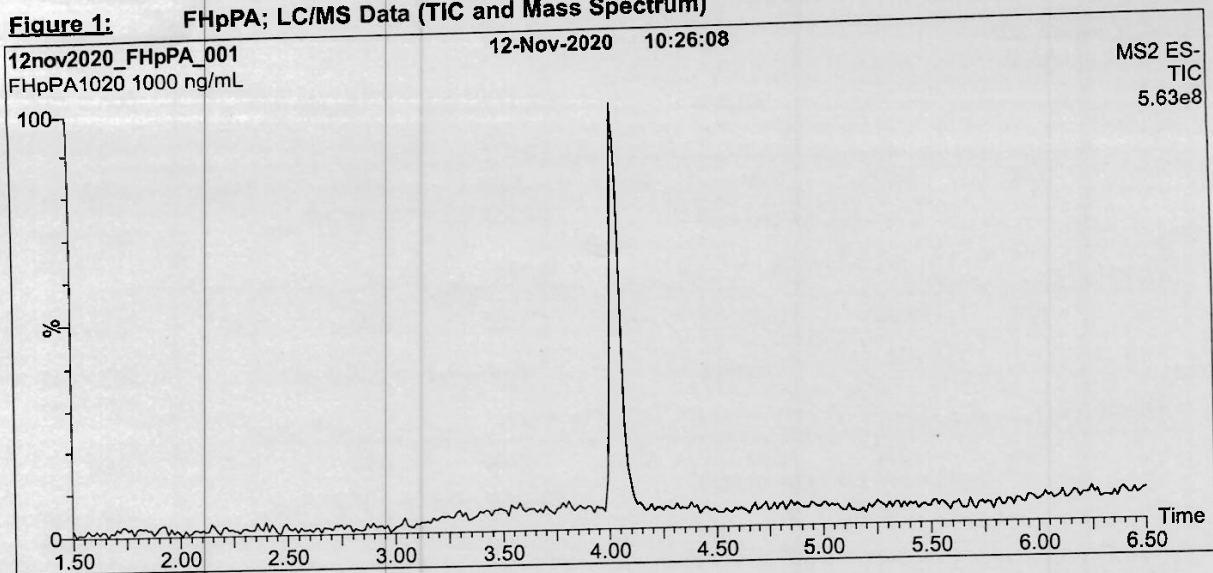
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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

FHpPA1020 (1 of 4)
rev0

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



Conditions for Figure 1:

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

Chromatographic Conditions:

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

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

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

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

FPPrPA(3:3FTCA) 1116 B



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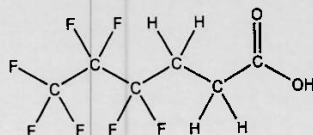
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPPrPA0122

STRUCTURE:

CAS #: 356-02-5



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

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

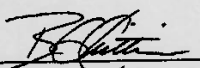
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: 
B.G. Chittim, General Manager

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

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11140



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

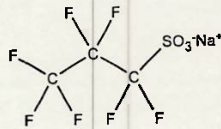
COMPOUND:

Sodium perfluoro-1-propanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₃F₇SO₃Na

MOLECULAR WEIGHT:

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)

46.0 ± 2.3 µg/mL (PFPrS acid)

45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

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

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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11252 11249
7/1/22 KA



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

LOT NUMBER:

FHxSA12211

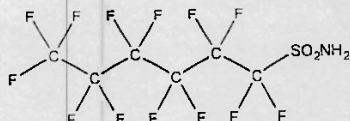
COMPOUND:

Perfluoro-1-hexanesulfonamide

STRUCTURE:

CAS #:

41997-13-1



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT:

399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022

(mm/dd/yyyy)

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11250 Lx 7/1122



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FBSA-I

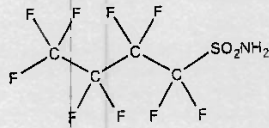
LOT NUMBER: FBSA11211

COMPOUND:

Perfluoro-1-butananesulfonamide

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA:

C₄H₂F₁₀NO₂S

MOLECULAR WEIGHT: 299.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/10/2021

EXPIRY DATE: (mm/dd/yyyy)

11/10/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 11/10/2021

(mm/dd/yyyy)

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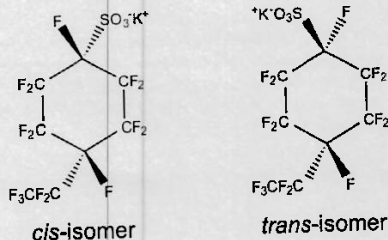
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:
COMPOUND:

PFECHS
Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

LOT NUMBER: PFECHS0222

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:
CONCENTRATION:

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

MOLECULAR WEIGHT: 500.22
SOLVENT(S): Methanol

CHEMICAL PURITY:

LAST TESTED: (mm/dd/yyyy)

03/28/2022

EXPIRY DATE: (mm/dd/yyyy)

03/28/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

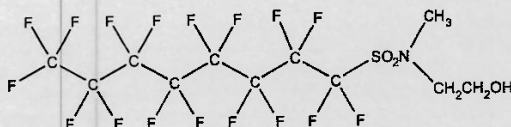
NMeFOSE0522M

COMPOUND:

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

STRUCTURE:**CAS #:**

24448-09-7

**MOLECULAR FORMULA:** $C_{11}H_8F_{17}NO_3S$ **MOLECULAR WEIGHT:**

557.22

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager
Date: 06/14/2022
(mm/dd/yyyy)

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled PFAS Injection
Standard Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

MPFACHIFIS1122 (1 of 5)
rev0

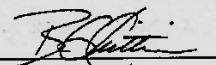
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Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

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

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

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



11626
rec'd 01/26/23

CERTIFIED WEIGHT REPORT

Part Number: **64029A**
Lot Number: **110922**
Description: **PFOA - DOD**
28 components
Expiration Date: **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 (PTTDA)	99204	110922	0.02	2.00	0.017	50.1	1.00	0.02	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid (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	756426-58-1	N/A	N/A
28. Dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA)	4103	NaDONA0922	0.021	2.12	0.017	47.1	1.00	0.05	919005-14-4	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	080522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	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).

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

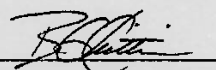
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Table A: MPFAC-HIF-ES; Components and Concentrations (ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

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

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 11/24/2022
(mm/dd/yyyy)

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 05/04/23 11:30
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (QSM) List 40

Date/Time: 5/8/23 10:00
Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP96726 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 96726 MB	/	500	7	N/A	25		5	Ab	
OP 96726 BS	/	500	7			200			
OP 96726 LLBS	/	500	7			100			
FC5783-1	2	540	6						
	2	570	6	N/A	25		5	Ab	
OPFC5783-1 MS	3	550	6	N/A	25	200	5	Ab	
OP MSD									
OPFC5783-2 DUP	3	570	6	N/A	25		5	Ab	

Comments:

EIS (SURR) ID: 117770-F Conc: 250-5000 $\mu\text{g}/\text{ml}$ Exp. Date: 05/1/24 Inj. By: GH Ver. By: DBL
 SPIKE.1 ID: LCMS 2112A Conc: VARIED Exp. Date: 10/28/03 Inj. By: GH Ver. By: DBL
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 117646-J Conc: 250-1000 $\mu\text{g}/\text{ml}$ Exp. Date: 4/27/04 Inj. By: MV Ver. By: JL

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

Methanol Lot # 223237 1% NH4OH MeOH PF385 SPE Lot # 6723930-02
 Water Lot# OP96255 0.3M Formic Acid PF375 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF382 5% Formic Acid _____ Carbon Lot# 160898

Relinquished By: Hannah Jachet
Accepted By: MV

Date: 05/04/23
Date: 5/8/23

7.10.1
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