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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC5861

Sampling Date: 05/04/23



Report to:

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Total number of pages in report: 586



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

Norm Farmer
Technical Director

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)
DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),
AL, AK, AR, CT, IA, KY, MA, MI, MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC5861

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC5861-1	05/04/23	11:00	CAMY05/05/23	AQ	Ground Water	AF-RHMW225401-WGN01B-2305W1

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC5861

Site: N6274223F0104 RH Fire Suppression System

Report Date: 5/12/2023 1:36:16 PM

On 05/05/2023, 1 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 1.1 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5861 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: OP96784

Sample(s) FC5890-1MS, FC5890-2DUP, FC5890-1MS were used as the QC samples indicated.

RPD(s) for Duplicate for 6:2 Fluorotelomer sulfonate are outside control limits for sample OP96784-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: FC5861
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 05/04/23



Lab Sample ID	Client Sample ID	Result/ Analyte	LOQ	LOD	Units	Method
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FC5861-1 AF-RHMW225401-WGN01B-2305W1

Perfluoropentanoic acid	1.3 J	7.7	1.9	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.92 J	3.8	1.9	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.68 J	3.8	1.9	ng/l	EPA DRAFT 1633
Perfluorooctanoic acid	0.80 J	3.8	0.96	ng/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.58 J	3.8	1.9	ng/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.1 J	3.8	1.9	ng/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.3 J	3.8	1.9	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-RHMW225401-WGN01B-2305W1		
Lab Sample ID:	FC5861-1	Date Sampled:	05/04/23
Matrix:	AQ - Ground Water	Date Received:	05/05/23
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	4Q44178.D	1	05/10/23 00:12	MV	05/08/23 10:30	OP96784	S4Q639
Run #2							

Run #	Initial Volume	Final Volume
Run #1	520 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.3	7.7	1.9	0.90	ng/l	J
307-24-4	Perfluorohexanoic acid	0.92	3.8	1.9	0.48	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.68	3.8	1.9	0.48	ng/l	J
335-67-1	Perfluorooctanoic acid	0.80	3.8	0.96	0.48	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.59	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.81	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.58	3.8	1.9	0.48	ng/l	J
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.8	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.1	3.8	1.9	0.67	ng/l	J
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.3	3.8	1.9	0.52	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.55	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.62	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.8	3.8	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.7 U	19	7.7	3.1	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.7 U	19	7.7	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.7 U	19	7.7	4.0	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	3.8	1.9	0.64	ng/l	
31506-32-8	MeFOSA	3.8 U	7.7	3.8	0.96	ng/l	
4151-50-2	EtFOSA	3.8 U	7.7	3.8	0.96	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW225401-WGN01B-2305W1		
Lab Sample ID:	FC5861-1	Date Sampled:	05/04/23
Matrix:	AQ - Ground Water	Date Received:	05/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

2355-31-9	MeFOSAA	3.8 U	4.8	3.8	0.96	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.8	3.8	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.2	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.1	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.96	ng/l	
919005-14-4	ADONA	3.8 U	7.7	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.7	1.9	0.96	ng/l	
863090-89-5	PFMBA	3.8 U	7.7	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.7	3.8	1.2	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.7	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.7	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.7	1.9	0.75	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.6 U	19	9.6	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	96	19	8.4	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	96	19	7.5	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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13C4-PFBA	104%		20-150%
13C5-PFPeA	113%		20-150%
13C5-PFHxA	109%		20-150%
13C4-PFHpA	110%		20-150%
13C8-PFOA	110%		20-150%
13C9-PFNA	112%		20-150%
13C6-PFDA	104%		20-150%
13C7-PFUnDA	103%		20-150%
13C2-PFDoDA	90%		20-150%
13C2-PFTeDA	81%		20-150%
13C3-PFBS	98%		20-150%
13C3-PFHxS	95%		20-150%

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

Report of Analysis

Client Sample ID:	AF-RHMW225401-WGN01B-2305W1		
Lab Sample ID:	FC5861-1	Date Sampled:	05/04/23
Matrix:	AQ - Ground Water	Date Received:	05/05/23
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	101%		20-150%
	13C8-FOSA	72%		20-150%
	d3-MeFOSA	69%		20-150%
	d5-EtFOSA	69%		20-150%
	d3-MeFOSAA	100%		20-150%
	d5-EtFOSAA	107%		20-150%
	d7-MeFOSE	52%		20-150%
	d9-EtFOSE	57%		20-150%
	13C2-4:2FTS	124%		20-180%
	13C2-6:2FTS	134%		20-180%
	13C2-8:2FTS	140%		20-180%
	13C3-HFPO-DA	98%		20-150%

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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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



SGS North America Inc - Orlando
Chain of Custody

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

FC5861
SGS - ORLANDO JOB # :

COC #: 2305W 1AFSG07

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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 SD - 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 Project Manager: Watson Tanji Phone #: 303-796-4624 / 808-954-4512			Email: katie.abbott@aecom.com Email: watson.tanji@aecom.com													Project # 60697810		Fax #	
Sampler(s) Name(s) (Printed) Sampler 1: <i>AMBER KUBO</i> Sampler 2: <i>MAT YIU</i>			COLLECTION		CONTAINER INFORMATION											LAB USE ONLY			
SGS Orlando Sample #	Field ID / Point of Collection		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	PHONE	PVC	HD	NACH	HNC3	PEBOL	NACH-ZN/C	DI WATER	MICH	PFAS EPA Draft 1633	X
/	AF-RHMMW225401-WGN01B-2305W1		05/14/23	1100	KAT	GW	3	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 GC)	<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	Unitel AWB: 016-92539134			
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 <i>GABRIEL MORALES</i>	Date Time: 05/14/23	Received By/Affiliation 2 <i>Katie Abbott</i>	Relinquished By/Affiliation 3 <i>Katie Abbott</i>	Date Time: 5/14/23	Received By/Affiliation 4 <i>Katie Abbott</i>														
Relinquished by/Affiliation 5	Date Time:	Received By/Affiliation 6	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8														
Lab Use Only: Cooler Temperature (s) Celsius (corrected): <i>1.25</i>			http://www.sgs.com/en/terms-and-conditions																

PFAS_COCs_ALL.xls Rev 031318

FC5861: Chain of Custody

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5.1
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SGS Sample Receipt Summary

Job Number: FC5861

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 5/5/2023 3:30:00 PM

Delivery Method: United Cargo/Airspace

Airbill #s: United Cargo AWB #: 016-92539134

Therm ID: IR 1;

Therm CF: -0.1;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (1.2);

Cooler Temps (Corrected) °C: Cooler 1: (1.1);

Cooler Information

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

Trip Blank Information

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

Sample Information

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

Misc. Information

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

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS

Date: 5/5/2023 3:30:00 PM

Reviewer: CD

Date: 5/7/2023

FC5861: Chain of Custody

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QC Evaluation: DOD QSM5.x Limits

Job Number: FC5861
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 05/04/23

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 FC5861

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: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q639-IBLK	4Q44136.D	1	05/09/23	MV	n/a	n/a	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q639-IBLK	4Q44136.D	1	05/09/23	MV	n/a	n/a	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	105% 20-150%
	13C5-PFHxA	98% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	107% 20-150%
	13C6-PFDA	97% 20-150%
	13C7-PFUnDA	99% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	93% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	93% 20-150%
	13C8-PFOS	104% 20-150%
	13C8-FOSA	109% 20-150%
	d3-MeFOSA	94% 20-150%
	d5-EtFOSA	103% 20-150%
	d3-MeFOSAA	100% 20-150%
	d5-EtFOSAA	108% 20-150%
	d7-MeFOSE	85% 20-150%
	d9-EtFOSE	90% 20-150%
	13C2-4:2FTS	103% 20-180%
	13C2-6:2FTS	111% 20-180%
	13C2-8:2FTS	116% 20-180%
	13C3-HFPO-DA	93% 20-150%

Continuing Calibration Blank

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q639-ICCB	4Q44174.D	1	05/09/23	MV	n/a	n/a	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q639-ICCB	4Q44174.D	1	05/09/23	MV	n/a	n/a	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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	102% 20-150%
	13C5-PFPeA	102% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	106% 20-150%
	13C6-PFDA	99% 20-150%
	13C7-PFUnDA	108% 20-150%
	13C2-PFDoDA	103% 20-150%
	13C2-PFTeDA	102% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	95% 20-150%
	13C8-PFOS	94% 20-150%
	13C8-FOSA	102% 20-150%
	d3-MeFOSA	88% 20-150%
	d5-EtFOSA	91% 20-150%
	d3-MeFOSAA	107% 20-150%
	d5-EtFOSAA	108% 20-150%
	d7-MeFOSE	76% 20-150%
	d9-EtFOSE	79% 20-150%
	13C2-4:2FTS	115% 20-180%
	13C2-6:2FTS	129% 20-180%
	13C2-8:2FTS	143% 20-180%
	13C3-HFPO-DA	89% 20-150%

Continuing Calibration Blank

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q639-ICCB	4Q44185.D	1	05/10/23	MV	n/a	n/a	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q639-ICCB	4Q44185.D	1	05/10/23	MV	n/a	n/a	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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	99% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	101% 20-150%
	13C6-PFDA	107% 20-150%
	13C7-PFUnDA	109% 20-150%
	13C2-PFDoDA	105% 20-150%
	13C2-PFTeDA	98% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	104% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSA	89% 20-150%
	d5-EtFOSA	87% 20-150%
	d3-MeFOSAA	106% 20-150%
	d5-EtFOSAA	114% 20-150%
	d7-MeFOSE	74% 20-150%
	d9-EtFOSE	77% 20-150%
	13C2-4:2FTS	148% 20-180%
	13C2-6:2FTS	146% 20-180%
	13C2-8:2FTS	153% 20-180%
	13C3-HFPO-DA	89% 20-150%

Method Blank Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-MB	4Q44177.D	1	05/09/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-MB	4Q44177.D	1	05/09/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

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	113% 20-150%
	13C5-PFPeA	115% 20-150%
	13C5-PFHxA	113% 20-150%
	13C4-PFHpA	111% 20-150%
	13C8-PFOA	110% 20-150%
	13C9-PFNA	109% 20-150%
	13C6-PFDA	115% 20-150%
	13C7-PFUnDA	113% 20-150%
	13C2-PFDoDA	107% 20-150%
	13C2-PFTeDA	92% 20-150%
	13C3-PFBS	108% 20-150%
	13C3-PFHxS	105% 20-150%
	13C8-PFOS	110% 20-150%
	13C8-FOSA	92% 20-150%
	d3-MeFOSA	80% 20-150%
	d5-EtFOSA	85% 20-150%
	d3-MeFOSAA	128% 20-150%
	d5-EtFOSAA	117% 20-150%
	d7-MeFOSE	70% 20-150%
	d9-EtFOSE	75% 20-150%
	13C2-4:2FTS	154% 20-180%
	13C2-6:2FTS	147% 20-180%
	13C2-8:2FTS	153% 20-180%
	13C3-HFPO-DA	100% 20-150%

6.1.4

6

Blank Spike Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-LLBS	4Q44176.D	1	05/09/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0268	89	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0131	87	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0067	89	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0067	89	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0063	84	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0067	89	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0067	89	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0077	103	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0064	85	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0068	91	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0065	87	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0058	87	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0061	86	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0065	95	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0063	88	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0064	92	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0064	89	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0062	86	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0061	84	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0238	85	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0259	91	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0298	103	40-150
754-91-6	PFOSA	0.0075	0.0072	96	40-150
31506-32-8	MeFOSA	0.015	0.0141	94	40-150
4151-50-2	EtFOSA	0.015	0.0141	94	40-150
2355-31-9	MeFOSAA	0.0075	0.0070	93	40-150
2991-50-6	EtFOSAA	0.0075	0.0061	81	40-150
24448-09-7	MeFOSE	0.0375	0.0356	95	40-150
1691-99-2	EtFOSE	0.0375	0.0289	77	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0138	92	40-150
919005-14-4	ADONA	0.0142	0.0139	98	40-150
377-73-1	PFMPA	0.015	0.0138	92	40-150
863090-89-5	PFMBA	0.015	0.0134	89	40-150
151772-58-6	NFDHA	0.015	0.0103	69	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0138	98	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0131	92	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-LLBS	4Q44176.D	1	05/09/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0121	91	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0251	67	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.164	87	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.187	100	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	112%	20-150%
	13C5-PFPeA	116%	20-150%
	13C5-PFHxA	113%	20-150%
	13C4-PFHpA	116%	20-150%
	13C8-PFOA	115%	20-150%
	13C9-PFNA	110%	20-150%
	13C6-PFDA	109%	20-150%
	13C7-PFUnDA	106%	20-150%
	13C2-PFDoDA	103%	20-150%
	13C2-PFTeDA	94%	20-150%
	13C3-PFBS	105%	20-150%
	13C3-PFHxS	104%	20-150%
	13C8-PFOS	108%	20-150%
	13C8-FOSA	73%	20-150%
	d3-MeFOSA	68%	20-150%
	d5-EtFOSA	72%	20-150%
	d3-MeFOSAA	114%	20-150%
	d5-EtFOSAA	112%	20-150%
	d7-MeFOSE	52%	20-150%
	d9-EtFOSE	59%	20-150%
	13C2-4:2FTS	144%	20-180%
	13C2-6:2FTS	145%	20-180%
	13C2-8:2FTS	132%	20-180%
	13C3-HFPO-DA	102%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-BS	4Q44175.D	1	05/09/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0895	90	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0456	91	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0223	89	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0232	93	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0218	87	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0230	92	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0229	92	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0231	92	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0226	90	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0219	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0236	94	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0197	89	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0206	88	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0222	97	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0219	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0223	96	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0219	91	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0215	89	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0197	81	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0879	94	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0866	91	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0939	98	40-150
754-91-6	PFOSA	0.025	0.0225	90	40-150
31506-32-8	MeFOSA	0.05	0.0496	99	40-150
4151-50-2	EtFOSA	0.05	0.0461	92	40-150
2355-31-9	MeFOSAA	0.025	0.0203	81	40-150
2991-50-6	EtFOSAA	0.025	0.0208	83	40-150
24448-09-7	MeFOSE	0.125	0.109	87	40-150
1691-99-2	EtFOSE	0.125	0.114	91	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0477	95	40-150
919005-14-4	ADONA	0.0473	0.0485	103	40-150
377-73-1	PFMPA	0.05	0.0469	94	40-150
863090-89-5	PFMBA	0.05	0.0452	90	40-150
151772-58-6	NFDHA	0.05	0.0381	76	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0495	106	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0460	97	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-BS	4Q44175.D	1	05/09/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0393	88	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0890	71	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.566	91	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.662	106	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	111%	20-150%
	13C5-PFPeA	113%	20-150%
	13C5-PFHxA	111%	20-150%
	13C4-PFHpA	109%	20-150%
	13C8-PFOA	106%	20-150%
	13C9-PFNA	103%	20-150%
	13C6-PFDA	108%	20-150%
	13C7-PFUnDA	112%	20-150%
	13C2-PFDoDA	106%	20-150%
	13C2-PFTeDA	89%	20-150%
	13C3-PFBS	101%	20-150%
	13C3-PFHxS	100%	20-150%
	13C8-PFOS	106%	20-150%
	13C8-FOSA	74%	20-150%
	d3-MeFOSA	63%	20-150%
	d5-EtFOSA	74%	20-150%
	d3-MeFOSAA	119%	20-150%
	d5-EtFOSAA	117%	20-150%
	d7-MeFOSE	53%	20-150%
	d9-EtFOSE	56%	20-150%
	13C2-4:2FTS	129%	20-180%
	13C2-6:2FTS	143%	20-180%
	13C2-8:2FTS	143%	20-180%
	13C3-HFPO-DA	97%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-MS	4Q44180.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639
FC5890-1	4Q44179.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	FC5890-1 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.0926	0.0859	93	40-150
2706-90-3	Perfluoropentanoic acid	0.0102	0.0463	0.0544	95	40-150
307-24-4	Perfluorohexanoic acid	0.0036 U	0.0231	0.0215	93	40-150
375-85-9	Perfluoroheptanoic acid	0.0036 U	0.0231	0.0215	93	40-150
335-67-1	Perfluorooctanoic acid	0.0036 U	0.0231	0.0214	92	40-150
375-95-1	Perfluorononanoic acid	0.0036 U	0.0231	0.0195	84	40-150
335-76-2	Perfluorodecanoic acid	0.0036 U	0.0231	0.0201	87	40-150
2058-94-8	Perfluoroundecanoic acid	0.0036 U	0.0231	0.0214	92	40-150
307-55-1	Perfluorododecanoic acid	0.00062 J	0.0231	0.0199	83	40-150
72629-94-8	Perfluorotridecanoic acid	0.0036 U	0.0231	0.0173	75	40-150
376-06-7	Perfluorotetradecanoic acid	0.0036 U	0.0231	0.0212	92	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0036 U	0.0205	0.0177	86	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	0.0218	0.0209	96	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0036 U	0.0212	0.0210	99	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0036 U	0.0221	0.0211	96	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0036 U	0.0215	0.0213	99	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0036 U	0.0223	0.0191	86	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0036 U	0.0223	0.0177	79	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U	0.0225	0.0141	63	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	0.0868	0.0817	94	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U	0.088	0.0892	101	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	0.0889	0.0997	112	40-150
754-91-6	PFOSA	0.0036 U	0.0231	0.0223	96	40-150
31506-32-8	MeFOSA	0.0073 U	0.0463	0.0439	95	40-150
4151-50-2	EtFOSA	0.0073 U	0.0463	0.0429	93	40-150
2355-31-9	MeFOSAA	0.0045 U	0.0231	0.0188	81	40-150
2991-50-6	EtFOSAA	0.0045 U	0.0231	0.0199	86	40-150
24448-09-7	MeFOSE	0.036 U	0.116	0.108	93	40-150
1691-99-2	EtFOSE	0.036 U	0.116	0.0976	84	40-150
13252-13-6	HFPO-DA (GenX)	0.0036 U	0.0463	0.0437	94	40-150
919005-14-4	ADONA	0.0073 U	0.0438	0.0520	119	40-150
377-73-1	PFMPA	0.0073 U	0.0463	0.0320	69	40-150
863090-89-5	PFMBA	0.0073 U	0.0463	0.0507	110	40-150
151772-58-6	NFDHA	0.0073 U	0.0463	0.0192	41	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0073 U	0.0433	0.0432	100	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0073 U	0.0438	0.0398	91	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-MS	4Q44180.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639
FC5890-1	4Q44179.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	FC5890-1 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0073 U	0.0412	0.0357	87	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	0.116	0.0606	52	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.091 U	0.579	0.685	118	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.091 U	0.579	0.782	135	40-150

CAS No.	ID Standard Recoveries	MS	FC5890-1	Limits
	13C4-PFBA	76%	66%	20-150%
	13C5-PFPeA	88%	87%	20-150%
	13C5-PFHxA	113%	114%	20-150%
	13C4-PFHpA	120%	120%	20-150%
	13C8-PFOA	114%	114%	20-150%
	13C9-PFNA	114%	106%	20-150%
	13C6-PFDA	113%	107%	20-150%
	13C7-PFUnDA	105%	108%	20-150%
	13C2-PFDoDA	101%	93%	20-150%
	13C2-PFTeDA	65%	63%	20-150%
	13C3-PFBS	121%	108%	20-150%
	13C3-PFHxS	106%	106%	20-150%
	13C8-PFOS	100%	104%	20-150%
	13C8-FOSA	104%	83%	20-150%
	d3-MeFOSA	85%	72%	20-150%
	d5-EtFOSA	86%	71%	20-150%
	d3-MeFOSAA	130%	125%	20-150%
	d5-EtFOSAA	127%	125%	20-150%
	d7-MeFOSE	76%	59%	20-150%
	d9-EtFOSE	77%	61%	20-150%
	13C2-4:2FTS	181%* a	153%	20-180%
	13C2-6:2FTS	161%	141%	20-180%
	13C2-8:2FTS	127%	118%	20-180%
	13C3-HFPO-DA	89%	85%	20-150%

(a) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-DUP	4Q44182.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639
FC5890-2	4Q44181.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	FC5890-2 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0073 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0036 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0036 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0036 U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0036 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0036 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0036 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0036 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0036 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0036 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0036 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0045 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0036 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0036 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0036 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0036 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0036 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0045 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0033 U	ND	J	200*	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	ND		nc	30
754-91-6	PFOSA	0.0036 U	ND		nc	30
31506-32-8	MeFOSA	0.0073 U	ND		nc	30
4151-50-2	EtFOSA	0.0073 U	ND		nc	30
2355-31-9	MeFOSAA	0.0045 U	ND		nc	30
2991-50-6	EtFOSAA	0.0045 U	ND		nc	30
24448-09-7	MeFOSE	0.036 U	ND		nc	30
1691-99-2	EtFOSE	0.036 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0036 U	ND		nc	30
919005-14-4	ADONA	0.0073 U	ND		nc	30
377-73-1	PFMPA	0.0073 U	ND		nc	30
863090-89-5	PFMBA	0.0073 U	ND		nc	30
151772-58-6	NFDHA	0.0073 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0073 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0073 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96784-DUP	4Q44182.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639
FC5890-2	4Q44181.D	1	05/10/23	MV	05/08/23	OP96784	S4Q639

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5861-1

CAS No.	Compound	FC5890-2 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0073 U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.091 U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.091 U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC5890-2	Limits
	13C4-PFBA	62%	63%	20-150%
	13C5-PFPeA	84%	81%	20-150%
	13C5-PFHxA	111%	107%	20-150%
	13C4-PFHpA	119%	107%	20-150%
	13C8-PFOA	107%	101%	20-150%
	13C9-PFNA	110%	102%	20-150%
	13C6-PFDA	107%	100%	20-150%
	13C7-PFUnDA	109%	102%	20-150%
	13C2-PFDoDA	98%	92%	20-150%
	13C2-PFTeDA	68%	62%	20-150%
	13C3-PFBS	103%	101%	20-150%
	13C3-PFHxS	95%	93%	20-150%
	13C8-PFOS	103%	101%	20-150%
	13C8-FOSA	94%	84%	20-150%
	d3-MeFOSA	78%	69%	20-150%
	d5-EtFOSA	73%	72%	20-150%
	d3-MeFOSAA	119%	118%	20-150%
	d5-EtFOSAA	118%	126%	20-150%
	d7-MeFOSE	62%	59%	20-150%
	d9-EtFOSE	63%	65%	20-150%
	13C2-4:2FTS	147%	168%	20-180%
	13C2-6:2FTS	146%	128%	20-180%
	13C2-8:2FTS	120%	114%	20-180%
	13C3-HFPO-DA	83%	79%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q639-CC634	Injection Date:	05/09/23
Lab File ID:	4Q44172.D	Injection Time:	22:48
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	76073	2.93	47242	5.56	57582	7.16	26686	7.71	19950	8.22
Upper Limit ^d	137236	3.33	90056	5.96	107540	7.56	49356	8.11	36984	8.62
Lower Limit ^e	20585	2.53	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
S4Q639-ICCB	65392	2.88	40232	5.56	49225	7.16	22561	7.71	16420	8.22	1
OP96784-BS	64239	2.93	39034	5.56	49121	7.16	23205	7.71	16339	8.22	1
OP96784-LLBS	62005	2.92	37437	5.56	45864	7.16	22901	7.71	16106	8.22	1
OP96784-MB	65634	2.93	39710	5.56	48691	7.16	24260	7.71	16125	8.22	1
FC5861-1	60277	2.93	36733	5.57	44723	7.16	20826	7.71	14685	8.22	1
FC5890-1	38459	2.92	39897	5.56	48461	7.16	25359	7.71	17658	8.22	1
OP96784-MS	35455	2.92	38041	5.56	46571	7.16	23305	7.71	16385	8.22	1
FC5890-2	40786	2.92	43148	5.55	52605	7.16	25303	7.71	18346	8.22	1
OP96784-DUP	39068	2.92	40149	5.56	51017	7.16	23398	7.71	16906	8.20	1
ZZZZZZ	59615	2.93	39893	5.56	47574	7.16	23291	7.71	16137	8.20	1
S4Q639-ECC634	77579	2.93	47284	5.56	59026	7.16	28140	7.71	19577	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
6

Injection Standard Area Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q639-CC634	Injection Date:	05/09/23
Lab File ID:	4Q44172.D	Injection Time:	22:48
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	5746	7.25	12493	8.37
Upper Limit ^d	10210	7.65	22864	8.77
Lower Limit ^e	1532	6.85	3430	7.97

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q639-ICCB	4801	7.25	10862	8.35	1
OP96784-BS	4713	7.25	10029	8.35	1
OP96784-LLBS	4548	7.25	10122	8.35	1
OP96784-MB	4713	7.25	10157	8.35	1
FC5861-1	4658	7.25	9852	8.35	1
FC5890-1	4531	7.25	10059	8.35	1
OP96784-MS	4144	7.25	9390	8.35	1
FC5890-2	4893	7.25	10375	8.35	1
OP96784-DUP	4721	7.25	10397	8.35	1
ZZZZZZ	4589	7.25	10264	8.35	1
S4Q639-ECC634	5881	7.25	12026	8.35	1

IS 6 = 1802-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
6

TDCA Retention Time Check

Job Number: FC5861
 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 FC5861)
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 FC5861)
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: FC5861
 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 FC5861)
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 FC5861)
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

6.6.1

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TDCA Retention Time Check

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q639-RT	Injection Date:	05/09/23
Lab File ID:	4Q44133.D	Injection Time:	13:28
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.343	--	--
TDCA	6.885	1.458	1.000
TCDCA	6.735	1.608	1.000
TUDCA	5.892	2.451	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
S4Q639-IBLK	4Q44136.D	05/09/23	14:10	00:42	Instrument Blank
S4Q639-IBLK	4Q44136.D	05/09/23	14:10	00:42	Instrument Blank
S4Q639-CC634	4Q44137.D	05/09/23	14:24	00:56	Continuing cal 4
S4Q639-CC634	4Q44138.D	05/09/23	14:38	01:10	Continuing cal 1.0LL
OP96746-BS	4Q44139.D	05/09/23	14:52	01:24	Blank Spike
OP96746-LLBS	4Q44140.D	05/09/23	15:06	01:38	Blank Spike
OP96746-MB	4Q44141.D	05/09/23	15:20	01:52	Method Blank
ZZZZZZ	4Q44144.D	05/09/23	16:02	02:34	(unrelated sample)
ZZZZZZ	4Q44145.D	05/09/23	16:26	02:58	(unrelated sample)
ZZZZZZ	4Q44146.D	05/09/23	16:40	03:12	(unrelated sample)
ZZZZZZ	4Q44148.D	05/09/23	17:11	03:43	(unrelated sample)
S4Q639-CC634	4Q44149.D	05/09/23	17:25	03:57	Continuing cal 4
S4Q639-ICCB	4Q44150.D	05/09/23	17:39	04:11	Continuing Calibration Blank
ZZZZZZ	4Q44151.D	05/09/23	17:53	04:25	(unrelated sample)
ZZZZZZ	4Q44152.D	05/09/23	18:07	04:39	(unrelated sample)
ZZZZZZ	4Q44153.D	05/09/23	18:21	04:53	(unrelated sample)
ZZZZZZ	4Q44154.D	05/09/23	18:35	05:07	(unrelated sample)
ZZZZZZ	4Q44155.D	05/09/23	18:49	05:21	(unrelated sample)
ZZZZZZ	4Q44156.D	05/09/23	19:03	05:35	(unrelated sample)
ZZZZZZ	4Q44157.D	05/09/23	19:17	05:49	(unrelated sample)
S4Q639-CC634	4Q44158.D	05/09/23	19:31	06:03	Continuing cal 4
S4Q639-ICCB	4Q44159.D	05/09/23	19:45	06:17	Continuing Calibration Blank
OP96747-BS	4Q44160.D	05/09/23	19:59	06:31	Blank Spike
OP96747-LLBS	4Q44161.D	05/09/23	20:13	06:45	Blank Spike
OP96747-MB	4Q44162.D	05/09/23	20:28	07:00	Method Blank
ZZZZZZ	4Q44163.D	05/09/23	20:42	07:14	(unrelated sample)
ZZZZZZ	4Q44164.D	05/09/23	20:56	07:28	(unrelated sample)
S4Q639-CC634	4Q44165.D	05/09/23	21:10	07:42	Continuing cal 4
S4Q639-ICCB	4Q44166.D	05/09/23	21:24	07:56	Continuing Calibration Blank
FC5818-3	4Q44167.D	05/09/23	21:38	08:10	(used for QC only; not part of job FC5861)
OP96747-MS	4Q44168.D	05/09/23	21:52	08:24	Matrix Spike
ZZZZZZ	4Q44169.D	05/09/23	22:06	08:38	(unrelated sample)
FC5818-5	4Q44170.D	05/09/23	22:20	08:52	(used for QC only; not part of job FC5861)
OP96747-DUP	4Q44171.D	05/09/23	22:34	09:06	Duplicate

TDCA Retention Time Check

Job Number: FC5861
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q639-RT	Injection Date: 05/09/23
Lab File ID: 4Q44133.D	Injection Time: 13:28
Instrument ID: GCMS4Q	

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q639-CC634	4Q44172.D	05/09/23	22:48	09:20	Continuing cal 4
S4Q639-CC634	4Q44173.D	05/09/23	23:02	09:34	Continuing cal 1.0LL
S4Q639-ICCB	4Q44174.D	05/09/23	23:16	09:48	Continuing Calibration Blank
OP96784-BS	4Q44175.D	05/09/23	23:30	10:02	Blank Spike
OP96784-LLBS	4Q44176.D	05/09/23	23:44	10:16	Blank Spike
OP96784-MB	4Q44177.D	05/09/23	23:58	10:30	Method Blank
FC5861-1	4Q44178.D	05/10/23	00:12	10:44	AF-RHMW225401-WGN01B-2305W1
FC5890-1	4Q44179.D	05/10/23	00:27	10:59	(used for QC only; not part of job FC5861)
OP96784-MS	4Q44180.D	05/10/23	00:41	11:13	Matrix Spike
FC5890-2	4Q44181.D	05/10/23	00:55	11:27	(used for QC only; not part of job FC5861)
OP96784-DUP	4Q44182.D	05/10/23	01:09	11:41	Duplicate
ZZZZZZ	4Q44183.D	05/10/23	01:23	11:55	(unrelated sample)
S4Q639-ECC634	4Q44184.D	05/10/23	01:37	12:09	Ending cal 4
S4Q639-ICCB	4Q44185.D	05/10/23	01:51	12:23	Continuing Calibration Blank

6.6.2

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Ion Ratio Summary

Job Number: FC5861
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q639 Method: EPA DRAFT 1633

Lab Sample ID	Lab File ID	Ion Ratios						
		PFPeA	PFHxA	PFHpA	PFOA	PFBS	PFHxS	PFOS
S4Q634-ICC634	4Q43887.D	0	2.9	17.8	19.3	40.6	50.1	49
FC5861-1	4Q44178.D	0	3.6	19.3	21.2	33.3	77.5	44.8

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC5861
 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
FC5861-1	4Q44178.D	104	113	109	110	110	112	104	103
OP96784-BS	4Q44175.D	111	113	111	109	106	103	108	112
OP96784-DUP	4Q44182.D	62	84	111	119	107	110	107	109
OP96784-LLBS	4Q44176.D	112	116	113	116	115	110	109	106
OP96784-MB	4Q44177.D	113	115	113	111	110	109	115	113
OP96784-MS	4Q44180.D	76	88	113	120	114	114	113	105
S4Q639-IBLK	4Q44136.D	101	105	98	103	102	107	97	99
S4Q639-ICCB	4Q44174.D	102	102	100	101	102	106	99	108
S4Q639-ICCB	4Q44185.D	103	99	100	101	101	101	107	109

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: FC5861
 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
FC5861-1	4Q44178.D	90	81	98	95	101	72	69	69
OP96784-BS	4Q44175.D	106	89	101	100	106	74	63	74
OP96784-DUP	4Q44182.D	98	68	103	95	103	94	78	73
OP96784-LLBS	4Q44176.D	103	94	105	104	108	73	68	72
OP96784-MB	4Q44177.D	107	92	108	105	110	92	80	85
OP96784-MS	4Q44180.D	101	65	121	106	100	104	85	86
S4Q639-IBLK	4Q44136.D	97	93	100	93	104	109	94	103
S4Q639-ICCB	4Q44174.D	103	102	94	95	94	102	88	91
S4Q639-ICCB	4Q44185.D	105	98	101	104	91	95	89	87

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%

Isotope Dilution Standard Recovery Summary

Job Number: FC5861
 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
FC5861-1	4Q44178.D	100	107	52	57	124	134	140	98
OP96784-BS	4Q44175.D	119	117	53	56	129	143	143	97
OP96784-DUP	4Q44182.D	119	118	62	63	147	146	120	83
OP96784-LLBS	4Q44176.D	114	112	52	59	144	145	132	102
OP96784-MB	4Q44177.D	128	117	70	75	154	147	153	100
OP96784-MS	4Q44180.D	130	127	76	77	181* a	161	127	89
S4Q639-IBLK	4Q44136.D	100	108	85	90	103	111	116	93
S4Q639-ICCB	4Q44174.D	107	108	76	79	115	129	143	89
S4Q639-ICCB	4Q44185.D	106	114	74	77	148	146	153	89

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%

(a) Outside control limits.

Initial Calibration Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

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

Initial Calibration Report

Method Path	Method File	Batch Name	Last Calib Update	Calibration Files	Level Name	1	2	3	4	5	6	7	8	Avg RF	%RSD
D:\MassHunter\methods	1633_050323_S4Q634.quantmethod.xml	D:\MassHunter\Data\050323_1633_S4Q634	5/3/2023 2:36:06 PM	D:\MassHunter\Data\050323_1633_S4Q634\4Q43884.d	1	0.2504	0.2538	0.2537	0.2602	0.2588	0.2798	0.2885	0.2970	0.2678	6.711
D:\MassHunter\Data\050323_1633_S4Q634\4Q43885.d	D:\MassHunter\Data\050323_1633_S4Q634\4Q43886.d	D:\MassHunter\Data\050323_1633_S4Q634\4Q43887.d	D:\MassHunter\Data\050323_1633_S4Q634\4Q43888.d	D:\MassHunter\Data\050323_1633_S4Q634\4Q43889.d	D:\MassHunter\Data\050323_1633_S4Q634\4Q43890.d	D:\MassHunter\Data\050323_1633_S4Q634\4Q43891.d									
I M4-PFBA	T PFBA														
I M5-PFPeA	T PFMPA														
T 3:3FTCA	T PFEEA														
T PFMB															
I M5-PFHxA	T NFDHA														
T PFHxA	T PFEEA														
T 5:3FTCA	T 7:3FTCA														
I M4-PFHpA	T PFHpA														
I M8-PFOA	T PFOA														
I M9-PFNA	T PFNA														
I M6-PFDA	T PFDA														
I M7-PFUDA	T PFUDA														
I M2-PFDODA															

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

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Initial Calibration Summary

Job Number: FC5861
 Account: AECOM 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 HFPO-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					

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Initial Calibration Summary

Job Number: FC5861
 Account: AECOM 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-MeFOSAA	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-EFOSAA	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-MeFOSA	Linear	0.9149	0.9977	0.9568	1.0593	0.9573	0.9404	0.9859	1.0311	0.9804	4.890
S d9-EFOSE	Linear	1.0482	1.1457	1.1884	1.3249	1.2785	0.9836	0.9499	0.8920	1.1014	14.328
S d5-EFOSA	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-PFUDA	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; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Summary

Job Number: FC5861
 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 13C8-PFOA	Linear	y = 0.183170 * x	
S 13C3-PFHxS	Linear	y = 0.820904 * x	
S 13C9-PFNA	Linear	y = 1.549646 * x	
S 13C2-8:2FTS	Linear	y = 0.849685 * x	
S 13C6-PEDA	Linear	y = 0.285923 * x	
S d3-MeFOSAA	Linear	y = 1.070585 * x	
S 13C8-PFOS	Linear	y = 0.631061 * x	
S d5-EFOSAA	Linear	y = 0.941239 * x	
S 13C7-PFUInDA	Linear	y = 0.519656 * x	
S 13C2-PFDODA	Linear	y = 1.114017 * x	
S 13C8-FOSA	Linear	y = 1.211165 * x	
S 13C2-PFTeDA	Linear	y = 1.567785 * x	
S d7-MeFOSE	Linear	y = 0.985520 * x	
S d3-MeFOSA	Linear	y = 0.777842 * x	
S d9-EFOSE	Linear	y = 0.980410 * x	
S d5-EFOSA	Linear	y = 1.101380 * x	
	Linear	y = 1.042215 * x	

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

Initial Calibration Verification

Job Number: FC5861
 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: FC5861
 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: FC5861
 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: FC5861
 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--		
PFEESA	4.450	4.399	-1.1	98.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q639-CC634
 Lab FileID: 4Q44172.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050923_1633_S4Q639\s4q639.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: 4Q44172
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.790	15.8	115.8
13C2-6:2FTS	5.000	6.174	23.5	123.5
13C2-8:2FTS	5.000	6.259	25.2	125.2
13C2-PFDoDA	1.250	1.269	1.5	101.5
13C2-PFTeDA	1.250	1.137	-9.0	91.0
13C3-PFBS	2.500	2.331	-6.8	93.2
13C3-PFHxS	2.500	2.223	-11.1	88.9
13C4-PFBA	10.000	10.164	1.6	101.6
13C4-PFHpA	2.500	2.548	1.9	101.9
13C5-PFHxA	2.500	2.492	-0.3	99.7
13C5-PFPeA	5.000	5.163	3.3	103.3
13C6-PFDA	1.250	1.209	-3.3	96.7
13C7-PFUnDA	1.250	1.290	3.2	103.2
13C8-FOSA	2.500	2.688	7.5	107.5
13C8-PFOA	2.500	2.493	-0.3	99.7
13C8-PFOS	2.500	2.306	-7.7	92.3
13C9-PFNA	1.250	1.323	5.8	105.8
4:2FTS	9.375	9.338	-0.4	99.6
6:2FTS	9.500	9.315	-1.9	98.1
8:2FTS	9.600	10.528	9.7	109.7
d3-MeFOSAA	5.000	5.307	6.1	106.1
EtFOSAA	2.500	2.450	-2.0	98.0
FOSA	2.500	2.450	-2.0	98.0
MeFOSAA	2.500	2.415	-3.4	96.6
PFBA	10.000	9.705	-3.0	97.0
PFBS	2.218	2.088	-5.9	94.1
PFDA	2.500	2.548	1.9	101.9
PFDoDA	2.500	2.434	-2.6	97.4
PFDS	2.413	2.544	5.4	105.4
PFHpA	2.500	2.420	-3.2	96.8
PFHpS	2.383	2.427	1.8	101.8
PFHxA	2.500	2.347	-6.1	93.9
PFHxS	2.285	2.285	0.0	100.0
PFNA	2.500	2.311	-7.5	92.5
PFNS	2.405	2.387	-0.7	99.3
PFOA	2.500	2.373	-5.1	94.9
PFOS	2.320	2.305	-0.6	99.4

Continuing Calibration Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q639-CC634
 Lab FileID: 4Q44172.D

PFPeA	5.000	4.819	-3.6	96.4
PFPeS	2.353	2.355	0.1	100.1
PFTeDA	2.500	2.509	0.4	100.4
PFTTrDA	2.500	2.442	-2.3	97.7
PFUnDA	2.500	2.430	-2.8	97.2
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	5.331	12.8	112.8
13C3-HFPO-DA	10.000	8.794	-12.1	87.9
9C1-PF3ONS	4.675	5.343	14.3	114.3
ADONA	4.725	5.162	9.3	109.3
HFPO-DA	5.000	5.119	2.4	102.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.552	0.6	100.6
5:3FTCA	62.400	68.409	9.6	109.6
7:3FTCA	62.400	73.628	18.0	118.0
d3-MeFOSA	2.500	2.368	-5.3	94.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.889	-2.2	97.8
EtFOSE	12.500	11.642	-6.9	93.1
MeFOSA	5.000	4.928	-1.4	98.6
MeFOSE	12.500	12.092	-3.3	96.7
PFDoDS	2.425	2.403	-0.9	99.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.710	14.2	114.2
d7-MeFOSE	25.000	21.386	-14.5	85.5
d9-EtFOSE	25.000	20.413	-18.3	81.7
d5-EtFOSA	2.500	2.385	-4.6	95.4
NFDHA	5.000	3.767	-24.7	75.3
PFMBA	5.000	4.787	-4.3	95.7
PFMPA	5.000	4.853	-2.9	97.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.226	-5.0	95.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q639-CC634
 Lab FileID: 4Q44173.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050923_1633_S4Q639\s4q639.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: 4Q44173
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.340	26.8	126.8
13C2-6:2FTS	5.000	6.412	28.2	128.2
13C2-8:2FTS	5.000	7.548	# 51.0	151.0
13C2-PFDoDA	1.250	1.237	-1.1	98.9
13C2-PFTeDA	1.250	1.099	-12.0	88.0
13C3-PFBS	2.500	2.388	-4.5	95.5
13C3-PFHxS	2.500	2.592	3.7	103.7
13C4-PFBA	10.000	10.009	0.1	100.1
13C4-PFHpA	2.500	2.548	1.9	101.9
13C5-PFHxA	2.500	2.455	-1.8	98.2
13C5-PFPeA	5.000	4.988	-0.2	99.8
13C6-PFDA	1.250	1.253	0.3	100.3
13C7-PFUnDA	1.250	1.320	5.6	105.6
13C8-FOSA	2.500	2.695	7.8	107.8
13C8-PFOA	2.500	2.478	-0.9	99.1
13C8-PFOS	2.500	2.442	-2.3	97.7
13C9-PFNA	1.250	1.263	1.0	101.0
4:2FTS	0.750	0.774	3.2	103.2
6:2FTS	0.760	0.795	4.6	104.6
8:2FTS	0.768	0.646	-15.9	84.1
d3-MeFOSAA	5.000	5.307	6.1	106.1
EtFOSAA	0.200	0.173	-13.6	86.4
FOSA	0.200	0.219	9.5	109.5
MeFOSAA	0.200	0.165	-17.4	82.6
PFBA	0.800	0.751	-6.1	93.9
PFBS	0.177	0.203	14.7	114.7
PFDA	0.200	0.187	-6.4	93.6
PFDoDA	0.200	0.196	-2.0	98.0
PFDS	0.193	0.191	-0.8	99.2
PFHpA	0.200	0.163	-18.4	81.6
PFHpS	0.191	0.158	-17.3	82.7
PFHxA	0.200	0.181	-9.6	90.4
PFHxS	0.183	0.167	-8.7	91.3
PFNA	0.200	0.189	-5.7	94.3
PFNS	0.192	0.181	-5.8	94.2
PFOA	0.200	0.183	-8.4	91.6
PFOS	0.186	0.191	2.9	102.9

Continuing Calibration Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q639-CC634
 Lab FileID: 4Q44173.D

PFPeA	0.400	0.387	-3.2	96.8
PFPeS	0.188	0.163	-13.5	86.5
PFTeDA	0.200	0.199	-0.6	99.4
PFTrDA	0.200	0.179	-10.4	89.6
PFUnDA	0.200	0.196	-2.1	97.9
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	0.378	0.410	8.5	108.5
13C3-HFPO-DA	10.000	8.747	-12.5	87.5
9C1-PF3ONS	0.367	0.393	7.1	107.1
ADONA	0.378	0.393	4.0	104.0
HFPO-DA	0.400	0.435	8.7	108.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	1.066	6.7	106.7
5:3FTCA	4.992	5.253	5.2	105.2
7:3FTCA	4.992	5.618	12.5	112.5
d3-MeFOSA	2.500	2.273	-9.1	90.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.390	-2.5	97.5
EtFOSE	1.000	0.998	-0.2	99.8
MeFOSA	0.400	0.406	1.6	101.6
MeFOSE	1.000	0.936	-6.4	93.6
PFDoDS	0.194	0.184	-4.9	95.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.824	16.5	116.5
d7-MeFOSE	25.000	19.913	-20.3	79.7
d9-EtFOSE	25.000	19.617	-21.5	78.5
d5-EtFOSA	2.500	2.324	-7.1	92.9
NFDHA	0.400	0.371	-7.3	92.7
PFMBA	0.400	0.373	-6.7	93.3
PFMPA	0.400	0.394	-1.4	98.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.322	-9.6	90.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q639-ECC634
 Lab FileID: 4Q44184.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\050923_1633_S4Q639\s4q639.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: 4Q44184
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.707	14.1	114.1
13C2-6:2FTS	5.000	6.172	23.4	123.4
13C2-8:2FTS	5.000	5.924	18.5	118.5
13C2-PFDoDA	1.250	1.306	4.5	104.5
13C2-PFTeDA	1.250	1.139	-8.9	91.1
13C3-PFBS	2.500	2.243	-10.3	89.7
13C3-PFHxS	2.500	2.326	-6.9	93.1
13C4-PFBA	10.000	10.305	3.1	103.1
13C4-PFHpA	2.500	2.522	0.9	100.9
13C5-PFHxA	2.500	2.532	1.3	101.3
13C5-PFPeA	5.000	5.074	1.5	101.5
13C6-PFDA	1.250	1.252	0.2	100.2
13C7-PFUnDA	1.250	1.290	3.2	103.2
13C8-FOSA	2.500	2.649	6.0	106.0
13C8-PFOA	2.500	2.410	-3.6	96.4
13C8-PFOS	2.500	2.572	2.9	102.9
13C9-PFNA	1.250	1.226	-1.9	98.1
4:2FTS	9.375	9.477	1.1	101.1
6:2FTS	9.500	9.866	3.9	103.9
8:2FTS	9.600	10.967	14.2	114.2
d3-MeFOSAA	5.000	5.850	17.0	117.0
EtFOSAA	2.500	2.572	2.9	102.9
FOSA	2.500	2.525	1.0	101.0
MeFOSAA	2.500	2.259	-9.6	90.4
PFBA	10.000	9.540	-4.6	95.4
PFBS	2.218	2.178	-1.8	98.2
PFDA	2.500	2.501	0.1	100.1
PFDoDA	2.500	2.434	-2.6	97.4
PFDS	2.413	2.340	-3.0	97.0
PFHpA	2.500	2.514	0.5	100.5
PFHpS	2.383	2.443	2.5	102.5
PFHxA	2.500	2.327	-6.9	93.1
PFHxS	2.285	2.179	-4.6	95.4
PFNA	2.500	2.368	-5.3	94.7
PFNS	2.405	2.338	-2.8	97.2
PFOA	2.500	2.465	-1.4	98.6
PFOS	2.320	2.249	-3.0	97.0

Continuing Calibration Summary

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q639-ECC634
 Lab FileID: 4Q44184.D

PFPeA	5.000	5.024	0.5	100.5
PFPeS	2.353	2.222	-5.6	94.4
PFTeDA	2.500	2.519	0.8	100.8
PFTTrDA	2.500	2.476	-0.9	99.1
PFUnDA	2.500	2.492	-0.3	99.7
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	5.348	13.2	113.2
13C3-HFPO-DA	10.000	8.994	-10.1	89.9
9C1-PF3ONS	4.675	5.274	12.8	112.8
ADONA	4.725	5.322	12.6	112.6
HFPO-DA	5.000	5.041	0.8	100.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	13.083	4.8	104.8
5:3FTCA	62.400	69.014	10.6	110.6
7:3FTCA	62.400	74.646	19.6	119.6
d3-MeFOSA	2.500	2.423	-3.1	96.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.151	3.0	103.0
EtFOSE	12.500	11.819	-5.4	94.6
MeFOSA	5.000	4.986	-0.3	99.7
MeFOSE	12.500	11.975	-4.2	95.8
PFDoDS	2.425	2.260	-6.8	93.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.568	11.4	111.4
d7-MeFOSE	25.000	21.331	-14.7	85.3
d9-EtFOSE	25.000	20.914	-16.3	83.7
d5-EtFOSA	2.500	2.437	-2.5	97.5
NFDHA	5.000	3.902	-22.0	78.0
PFMBA	5.000	4.996	-0.1	99.9
PFMPA	5.000	5.062	1.2	101.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.260	-4.3	95.7

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC5861
 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 FC5861)
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 FC5861)
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: FC5861
 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 FC5861)
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 FC5861)
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

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Run Sequence Report

Job Number: FC5861
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q639	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
S4Q639-RT	4Q44133.D	05/09/23 13:28	n/a	Retention Time Marker
S4Q639-RT	4Q44134.D	05/09/23 13:42	n/a	Retention Time Marker
S4Q639-IBLK	4Q44136.D	05/09/23 14:10	n/a	Instrument Blank
S4Q639-IBLK	4Q44136.D	05/09/23 14:10	n/a	Instrument Blank
S4Q639-CC634	4Q44137.D	05/09/23 14:24	n/a	Continuing cal 4
S4Q639-CC634	4Q44138.D	05/09/23 14:38	n/a	Continuing cal 1.0LL
OP96746-BS	4Q44139.D	05/09/23 14:52	OP96746	Blank Spike
OP96746-LLBS	4Q44140.D	05/09/23 15:06	OP96746	Blank Spike
OP96746-MB	4Q44141.D	05/09/23 15:20	OP96746	Method Blank
ZZZZZZ	4Q44144.D	05/09/23 16:02	OP96746	(unrelated sample)
ZZZZZZ	4Q44145.D	05/09/23 16:26	OP96746	(unrelated sample)
ZZZZZZ	4Q44146.D	05/09/23 16:40	OP96746	(unrelated sample)
ZZZZZZ	4Q44148.D	05/09/23 17:11	OP96746	(unrelated sample)
S4Q639-CC634	4Q44149.D	05/09/23 17:25	n/a	Continuing cal 4
S4Q639-ICCB	4Q44150.D	05/09/23 17:39	n/a	Continuing Calibration Blank
ZZZZZZ	4Q44151.D	05/09/23 17:53	OP96746	(unrelated sample)
ZZZZZZ	4Q44152.D	05/09/23 18:07	OP96746	(unrelated sample)
ZZZZZZ	4Q44153.D	05/09/23 18:21	OP96746	(unrelated sample)
ZZZZZZ	4Q44154.D	05/09/23 18:35	OP96746	(unrelated sample)
ZZZZZZ	4Q44155.D	05/09/23 18:49	OP96746	(unrelated sample)
ZZZZZZ	4Q44156.D	05/09/23 19:03	OP96746	(unrelated sample)
ZZZZZZ	4Q44157.D	05/09/23 19:17	OP96746	(unrelated sample)
S4Q639-CC634	4Q44158.D	05/09/23 19:31	n/a	Continuing cal 4
S4Q639-ICCB	4Q44159.D	05/09/23 19:45	n/a	Continuing Calibration Blank
OP96747-BS	4Q44160.D	05/09/23 19:59	OP96747	Blank Spike
OP96747-LLBS	4Q44161.D	05/09/23 20:13	OP96747	Blank Spike
OP96747-MB	4Q44162.D	05/09/23 20:28	OP96747	Method Blank
ZZZZZZ	4Q44163.D	05/09/23 20:42	OP96747	(unrelated sample)
ZZZZZZ	4Q44164.D	05/09/23 20:56	OP96747	(unrelated sample)
S4Q639-CC634	4Q44165.D	05/09/23 21:10	n/a	Continuing cal 4
S4Q639-ICCB	4Q44166.D	05/09/23 21:24	n/a	Continuing Calibration Blank
FC5818-3	4Q44167.D	05/09/23 21:38	OP96747	(used for QC only; not part of job FC5861)
OP96747-MS	4Q44168.D	05/09/23 21:52	OP96747	Matrix Spike
ZZZZZZ	4Q44169.D	05/09/23 22:06	OP96747	(unrelated sample)
FC5818-5	4Q44170.D	05/09/23 22:20	OP96747	(used for QC only; not part of job FC5861)
OP96747-DUP	4Q44171.D	05/09/23 22:34	OP96747	Duplicate
S4Q639-CC634	4Q44172.D	05/09/23 22:48	n/a	Continuing cal 4
S4Q639-CC634	4Q44173.D	05/09/23 23:02	n/a	Continuing cal 1.0LL
S4Q639-ICCB	4Q44174.D	05/09/23 23:16	n/a	Continuing Calibration Blank
OP96784-BS	4Q44175.D	05/09/23 23:30	OP96784	Blank Spike
OP96784-LLBS	4Q44176.D	05/09/23 23:44	OP96784	Blank Spike
OP96784-MB	4Q44177.D	05/09/23 23:58	OP96784	Method Blank
FC5861-1	4Q44178.D	05/10/23 00:12	OP96784	AF-RHMW225401-WGN01B-2305W1
FC5890-1	4Q44179.D	05/10/23 00:27	OP96784	(used for QC only; not part of job FC5861)
OP96784-MS	4Q44180.D	05/10/23 00:41	OP96784	Matrix Spike
FC5890-2	4Q44181.D	05/10/23 00:55	OP96784	(used for QC only; not part of job FC5861)

Run Sequence Report

Job Number: FC5861
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q639	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
OP96784-DUP	4Q44182.D	05/10/23 01:09	OP96784	Duplicate
ZZZZZZ	4Q44183.D	05/10/23 01:23	OP96784	(unrelated sample)
S4Q639-ECC634	4Q44184.D	05/10/23 01:37	n/a	Ending cal 4
S4Q639-ICCB	4Q44185.D	05/10/23 01:51	n/a	Continuing Calibration Blank

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MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44178.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/10/2023 12:12:57 AM
 Sample Name : FC5861-1
 Vial : P3-D4
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96784,S4Q639,520,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	117740	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	63924	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	44131	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	25998	2.50 µg/L	0.000
M8-PFOA	7.163	421.1 -> 376.0	40505	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	19806	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	16370	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	16920	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	15940	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	11700	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	11135	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	10804	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	6848	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	9392	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1169	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2295	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	3722	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	12415	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	23589	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	10955	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	39682	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	62009	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	7108	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	6642	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	9852	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	60277	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4658	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	44723	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	14685	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	20826	1.25 µg/L	0.012
13C2-PFHxA	5.573	315.1 -> 270.0	36733	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1169	6.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.5%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2295	6.72 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 134.5%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3722	6.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.7%		
13C2-PFDoDA	9.130	615.1 -> 570.0	15940	1.12 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.6%		
13C2-PFTeDA	9.924	715.2 -> 670.0	11700	1.01 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.8%		
13C3-PFBS	5.464	302.1 -> 79.9	10804	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C3-PFHxS	7.254	402.1 -> 79.9	6848	2.37 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C4-PFBA	2.924	216.8 -> 171.9	117740	10.38 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C4-PFHpA	6.492	367.1 -> 322.0	25998	2.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	44131	2.73 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.1%	
13C5-PFPeA	4.387	268.3 -> 223.0	63924	5.65 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.0%	
13C6-PFDA	8.216	519.1 -> 474.1	16370	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C7-PFUnDA	8.685	570.0 -> 525.1	16920	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C8-FOSA	9.796	506.1 -> 77.8	11135	1.80 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.1%	
13C8-PFOA	7.163	421.1 -> 376.0	40505	2.76 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.3%	
13C8-PFOS	8.354	507.1 -> 79.9	9392	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C9-PFNA	7.709	472.1 -> 427.0	19806	1.40 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.9%	
d3-MeFOSAA	8.273	573.2 -> 419.0	12415	4.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	23589	9.76 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSA	11.089	515.0 -> 219.0	6642	1.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 68.8%	
d5-EtFOSAA	8.483	589.2 -> 419.0	10955	5.35 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.0%	
d7-MeFOSE	10.972	623.2 -> 58.9	39682	12.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 51.8%	
d9-EtFOSE	11.269	639.2 -> 58.9	62009	14.29 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 57.1%	
d5-EtFOSA	11.373	531.1 -> 219.0	7108	1.73 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 69.2%	

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	5.465	298.7 -> 79.9	269	0.06 µg/L	96
		298.7 -> 98.8	89		
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8				
PFHpA	6.505	363.1 -> 319.0	1166	0.07	µg/L	97
		363.1 -> 169.0	225			
PFHpS	-	449.0 -> 79.9	-	N.D.		
		449.0 -> 98.9				
PFHxA	5.562	313.0 -> 269.0	1663	0.10	µg/L	98
		313.0 -> 118.9	61			
PFHxS	7.255	398.7 -> 79.9	312	0.11	µg/L	m 74
		398.7 -> 98.9	242			
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	7.150	413.0 -> 369.0	1933	0.08	µg/L	m 97
		413.0 -> 169.0	409			
PFOS	8.367	498.9 -> 79.9	623	0.14	µg/L	m 79
		498.9 -> 98.8	279			
PFPeA	4.389	263.0 -> 219.0	2047	0.13	µg/L	100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	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	11.669	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

7.1.1
7

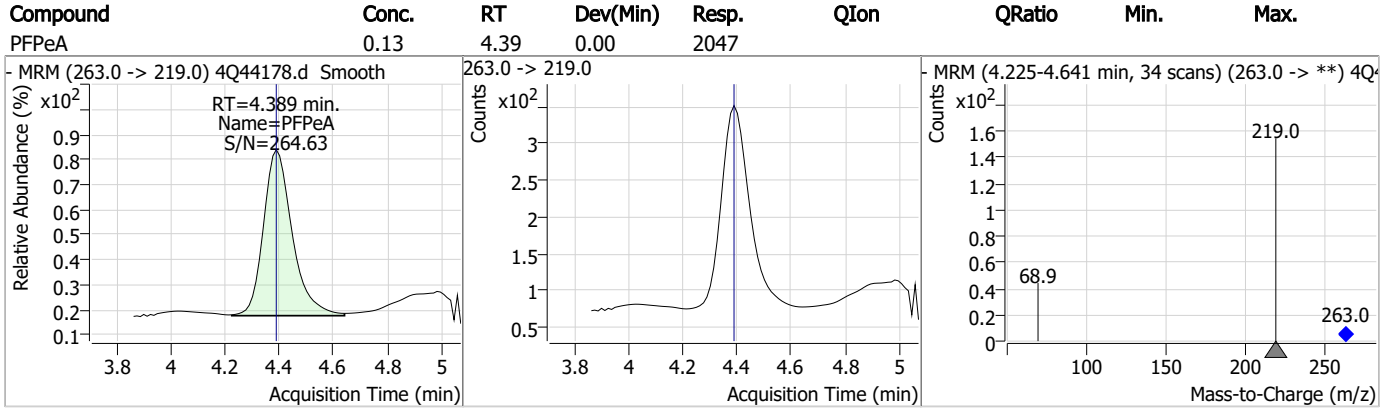
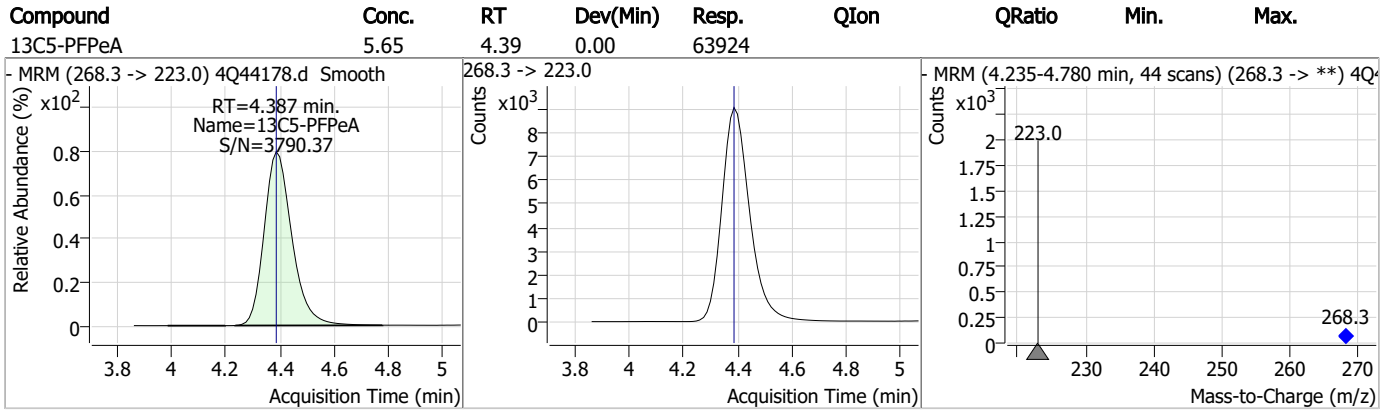
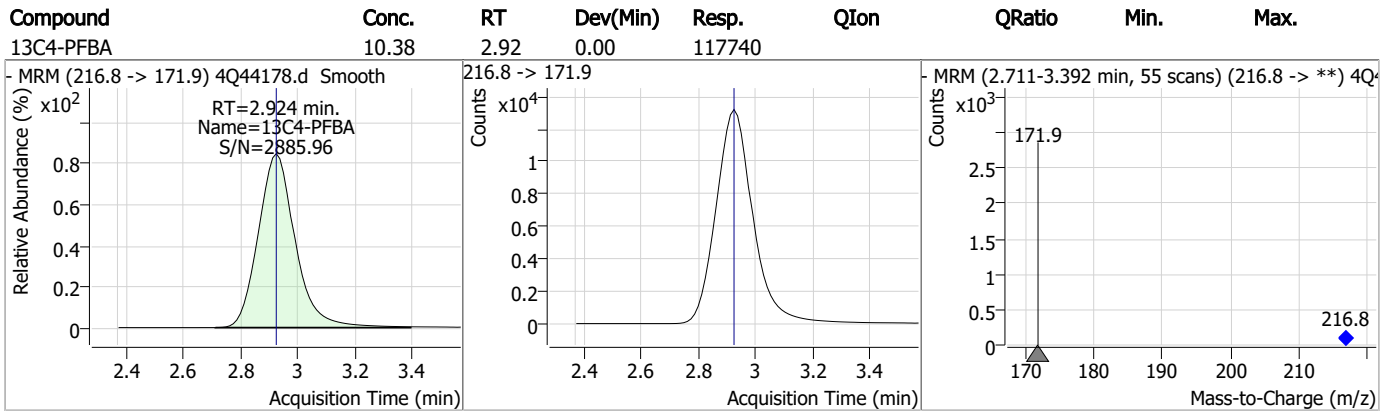
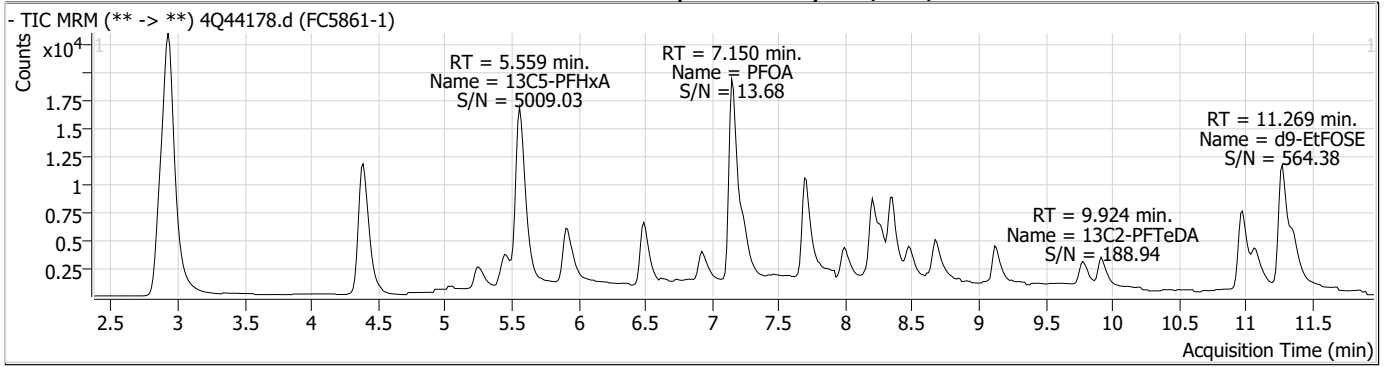
Perfluorinated Compounds by LC/MS/MS

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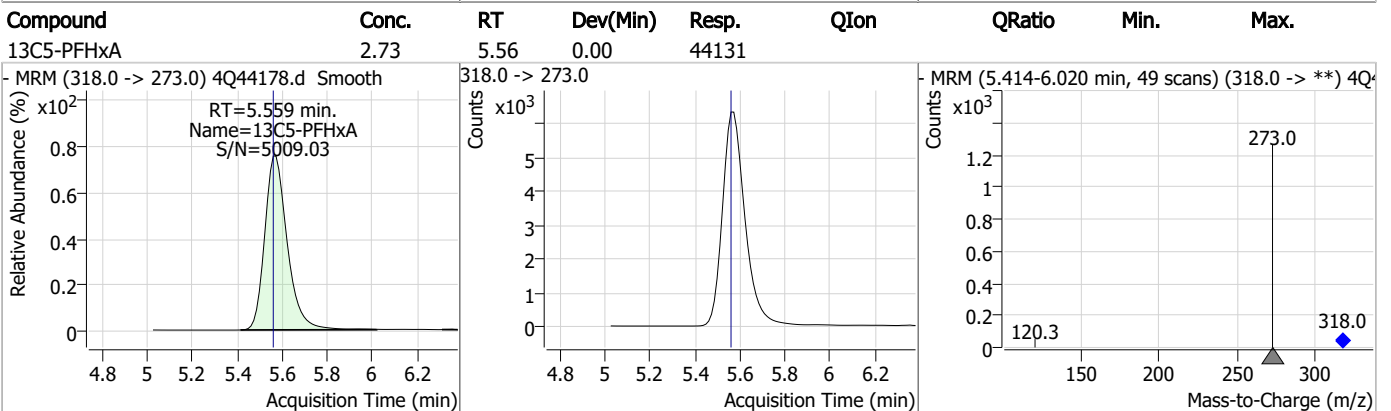
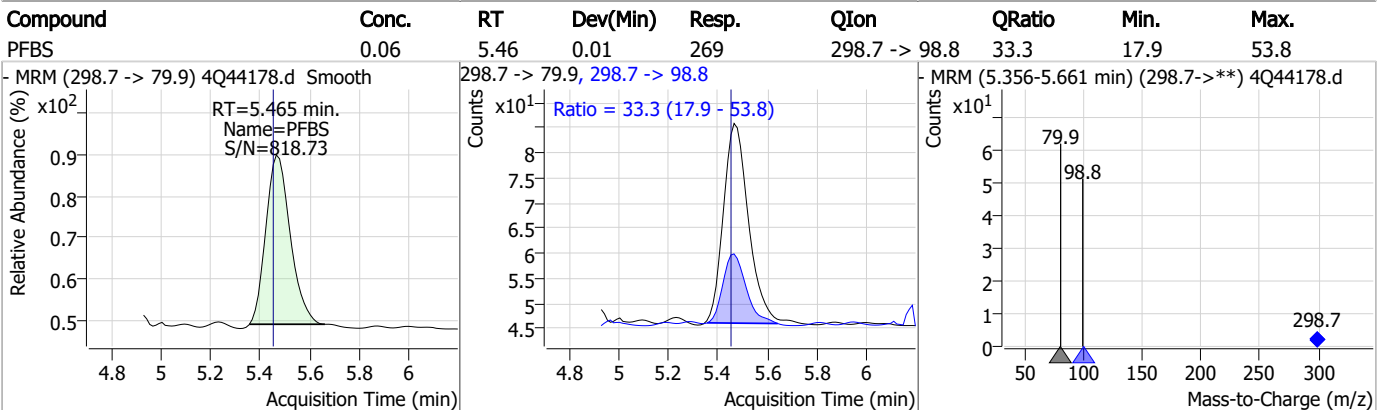
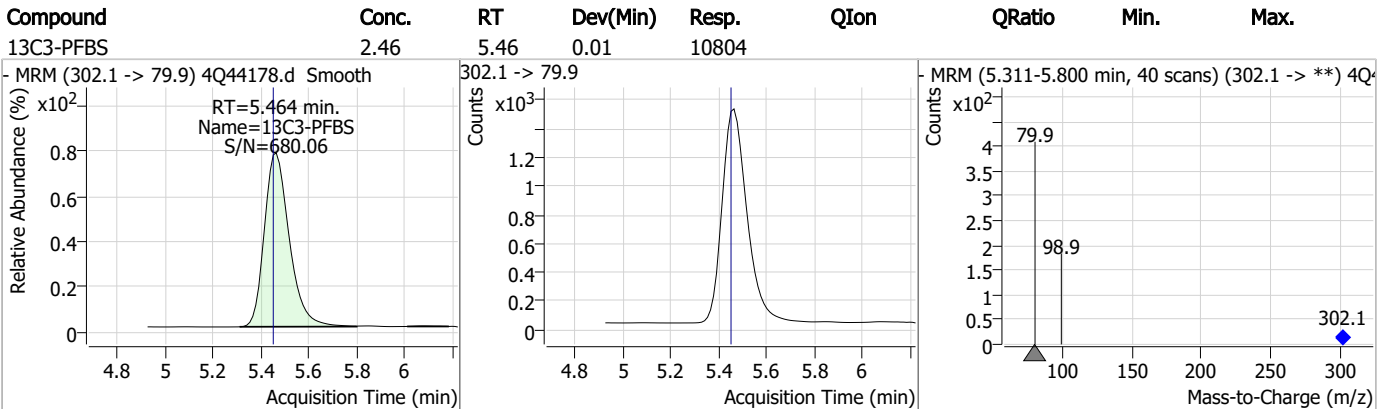
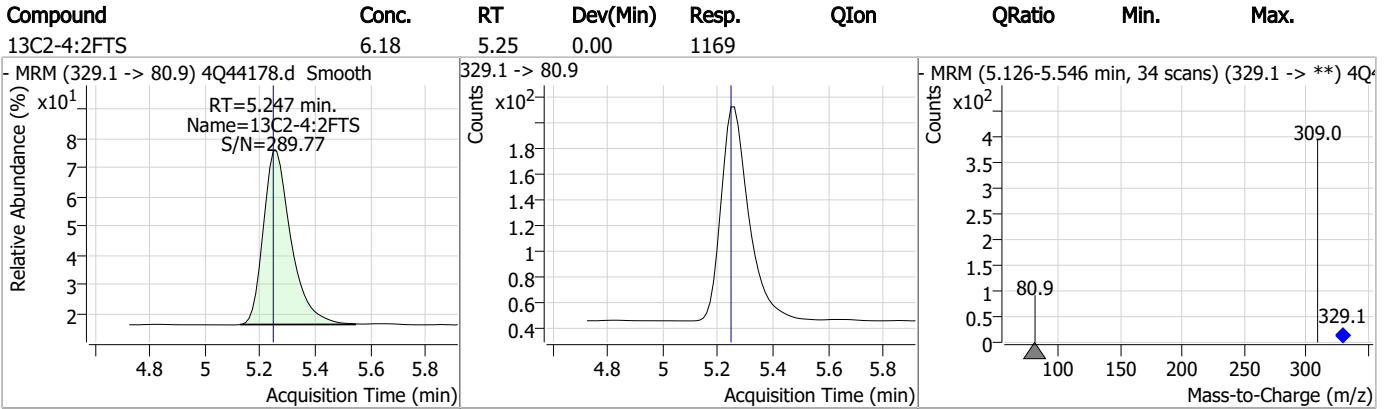
7.1.1
7



Perfluorinated Compounds by LC/MS/MS

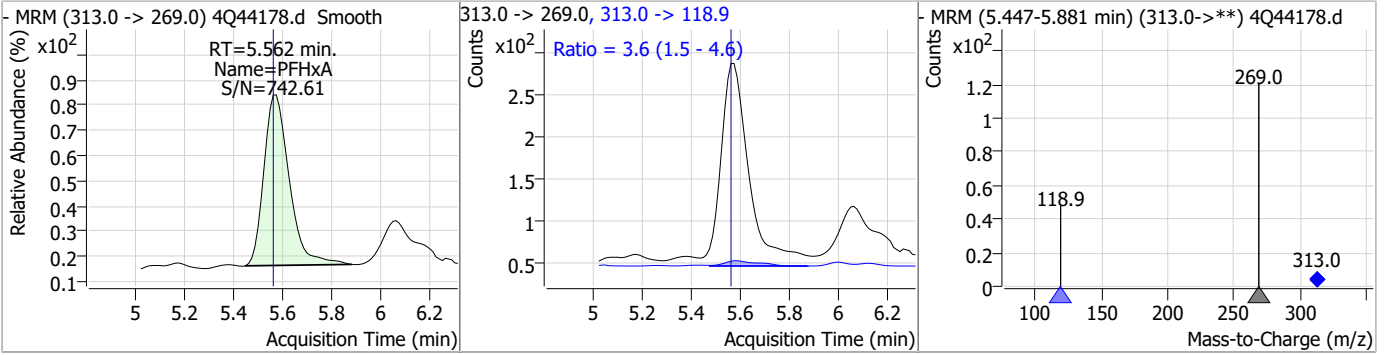


Perfluorinated Compounds by LC/MS/MS

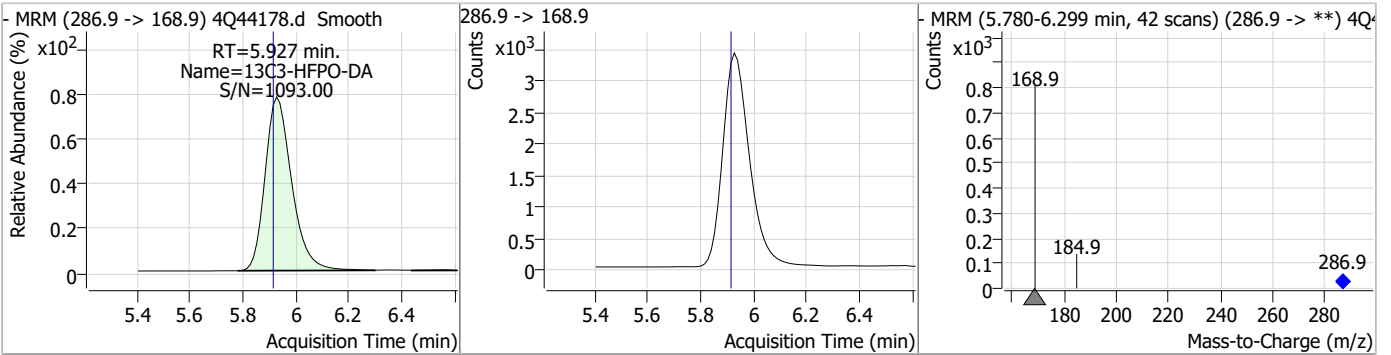


Perfluorinated Compounds by LC/MS/MS

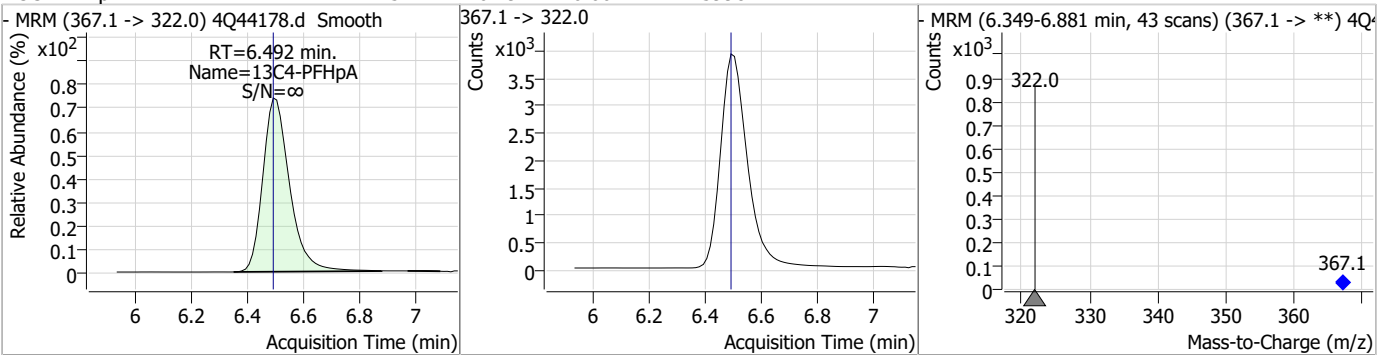
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.10	5.56	0.00	1663	313.0 -> 118.9	3.6	1.5	4.6



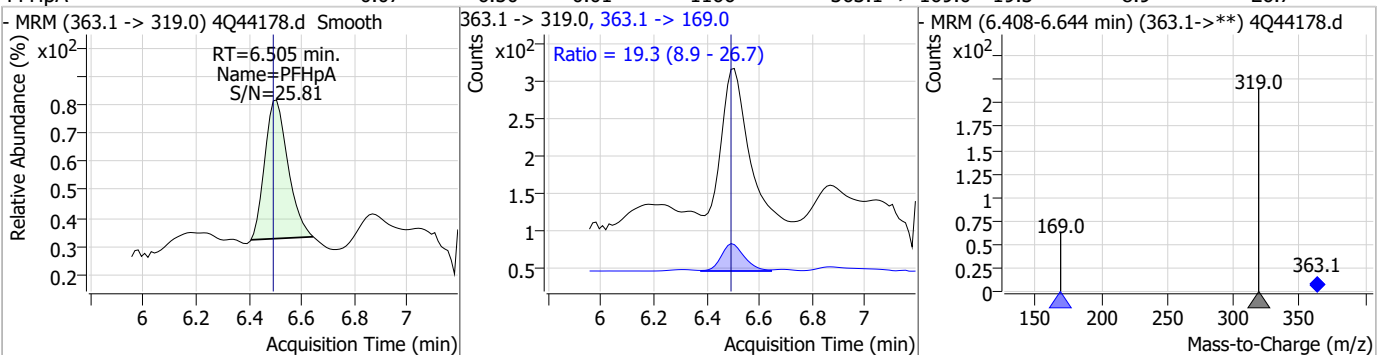
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.76	5.93	0.01	23589				



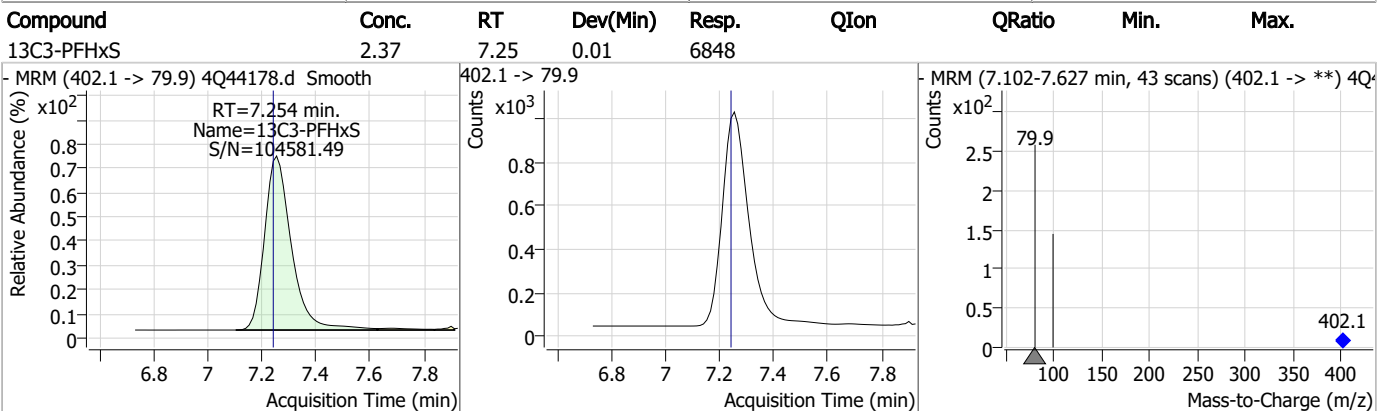
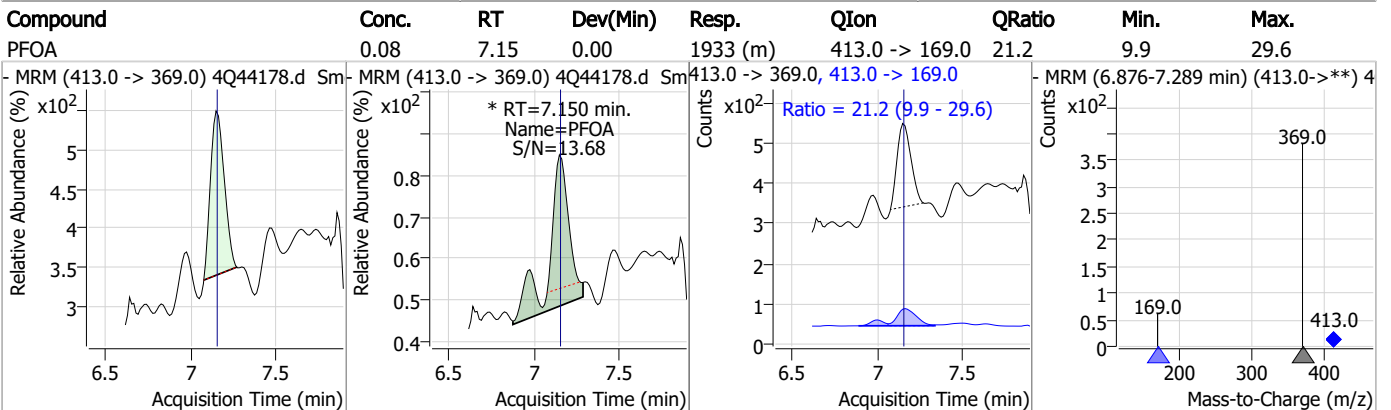
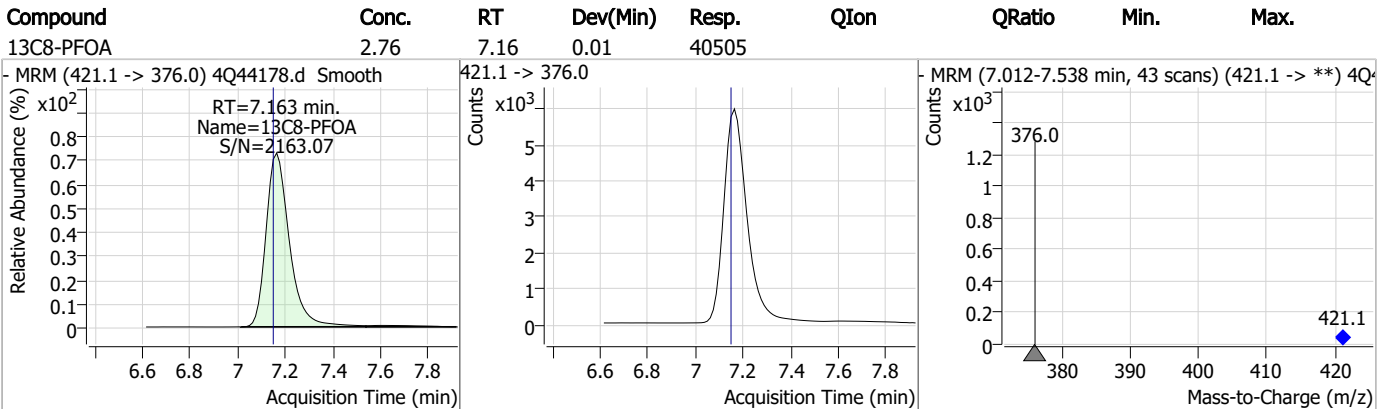
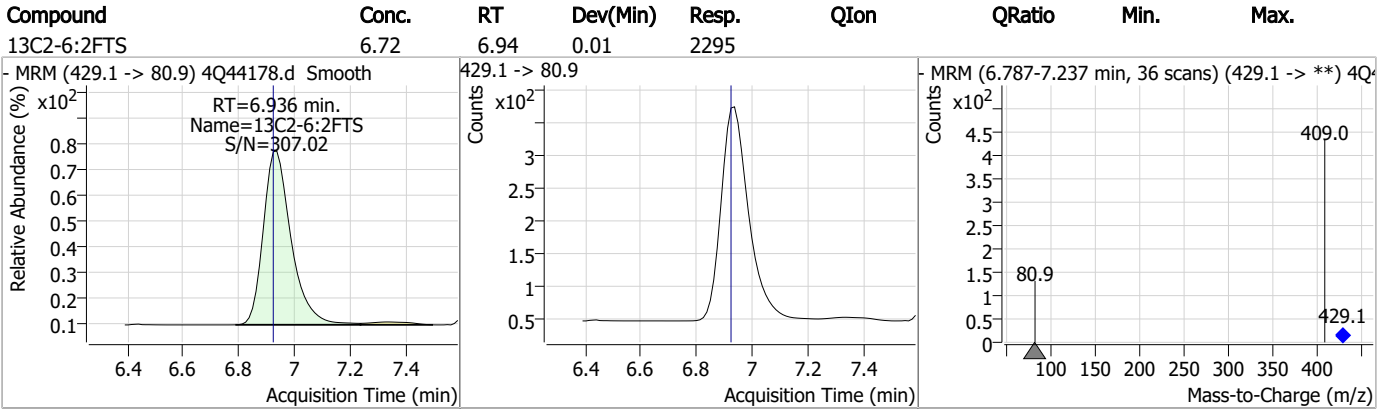
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.75	6.49	0.00	25998				



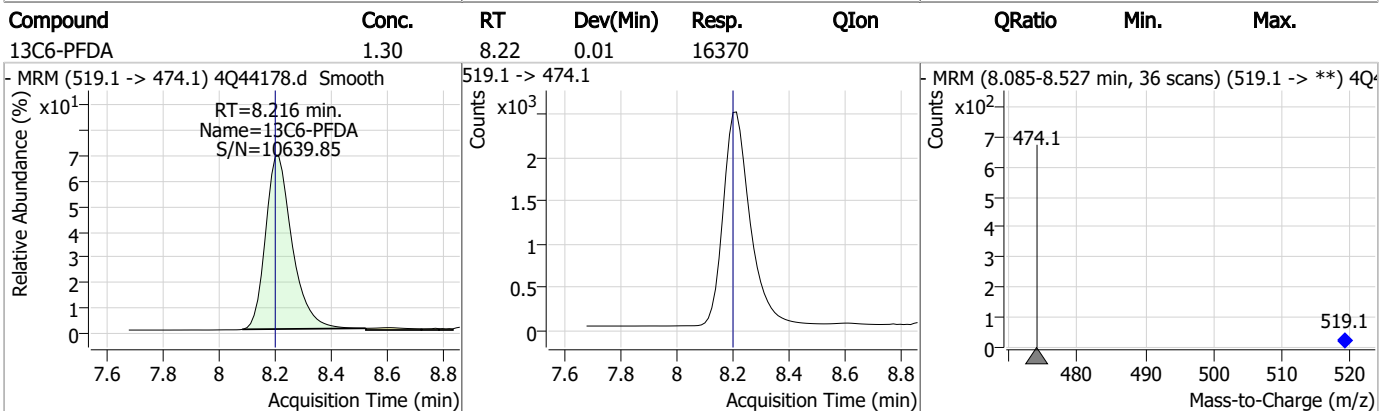
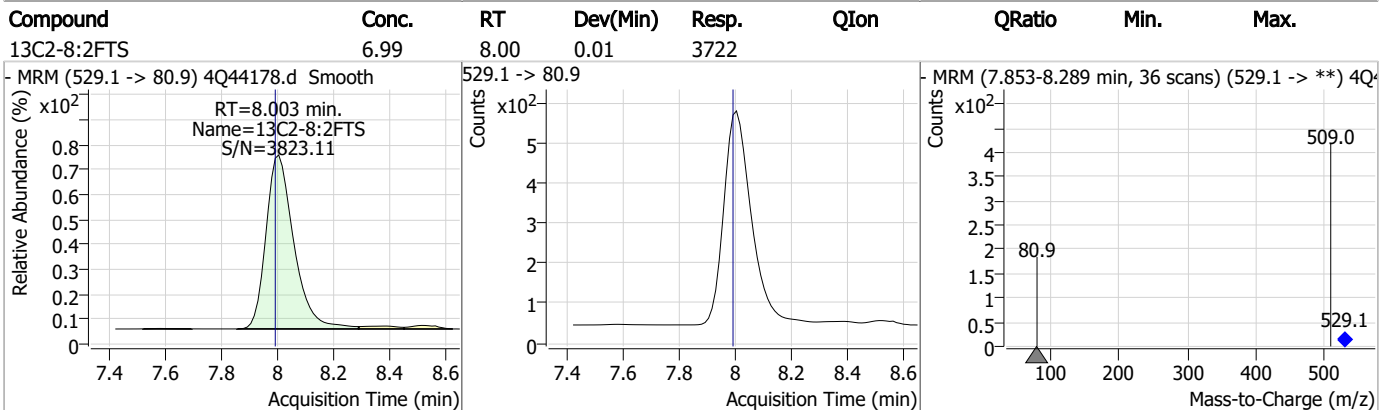
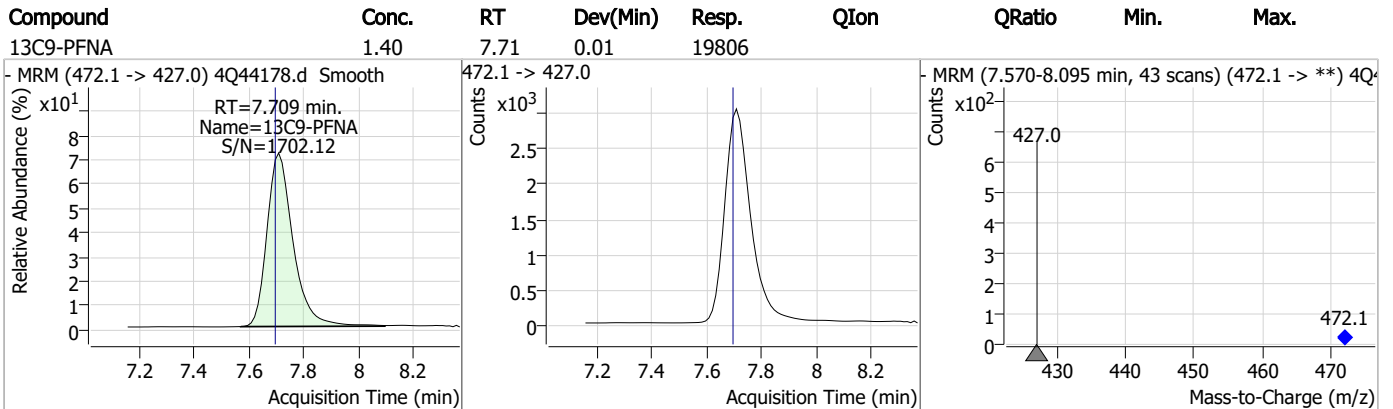
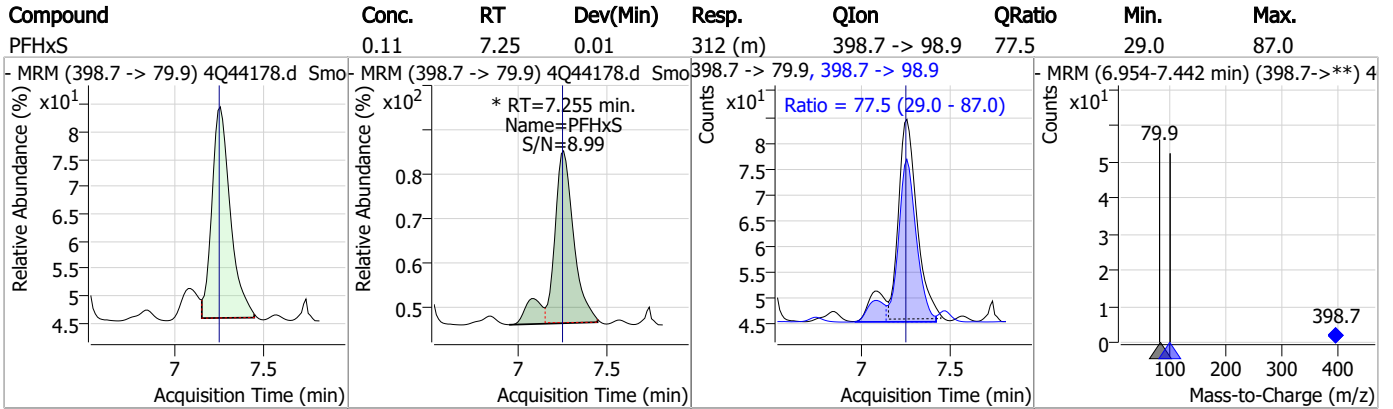
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.07	6.50	0.01	1166	363.1 -> 169.0	19.3	8.9	26.7



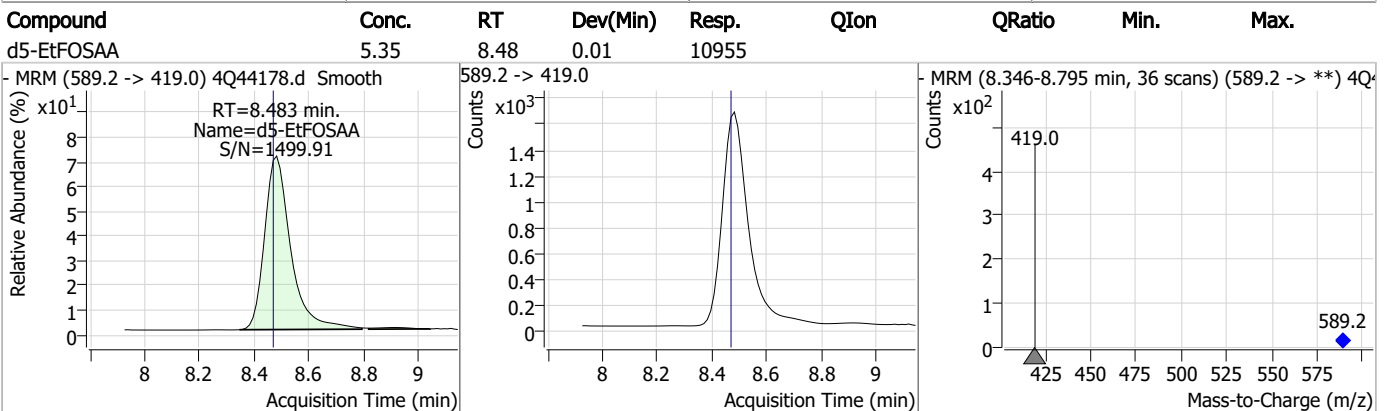
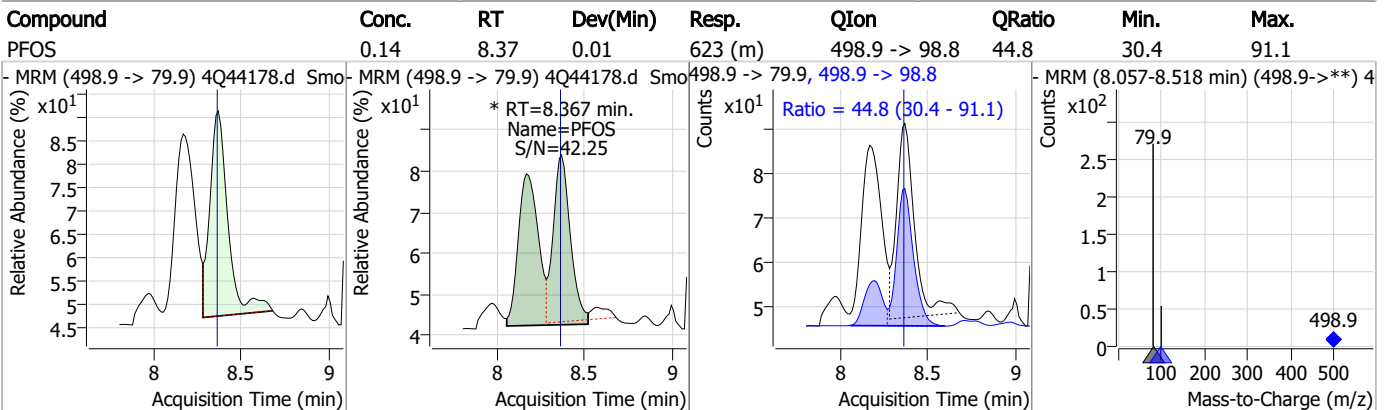
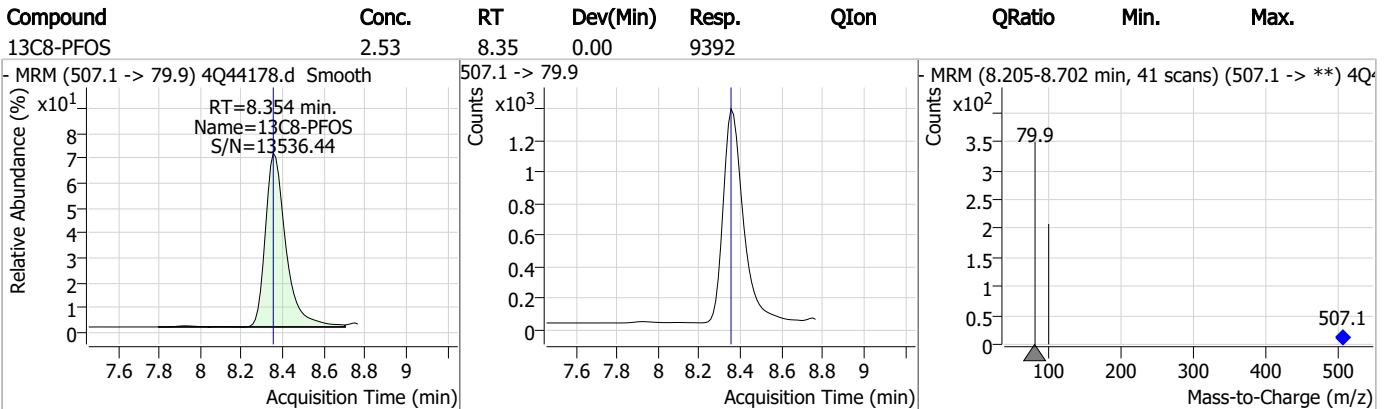
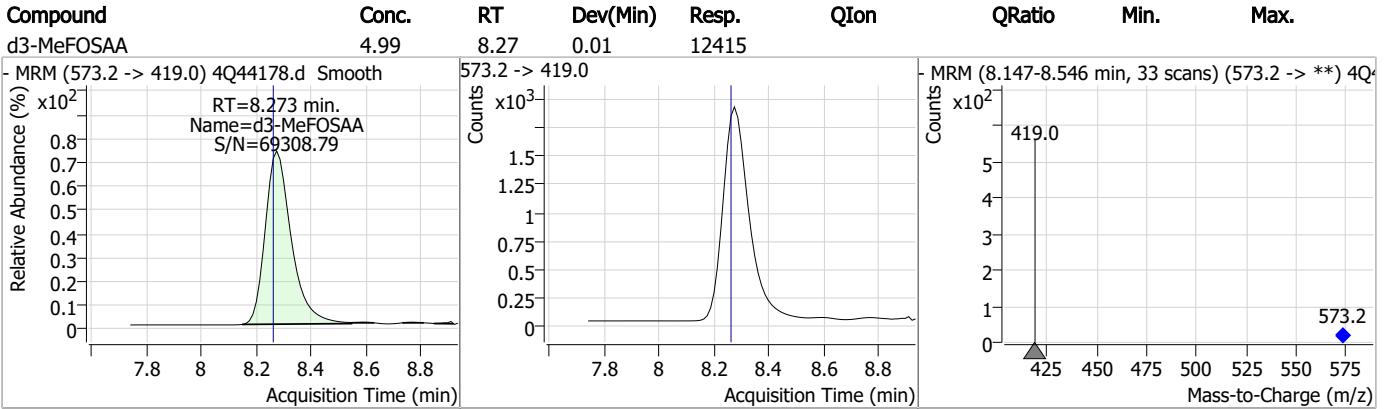
Perfluorinated Compounds by LC/MS/MS



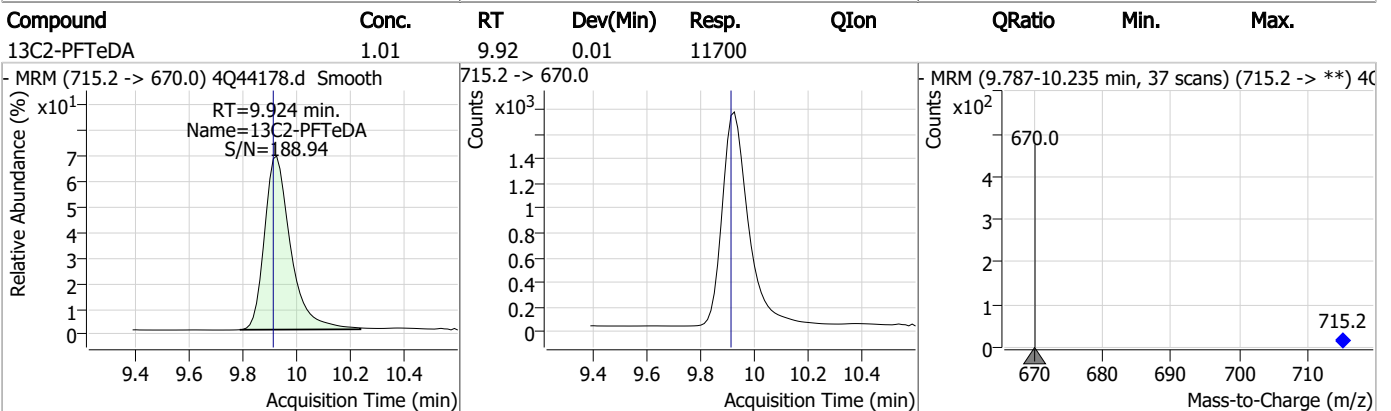
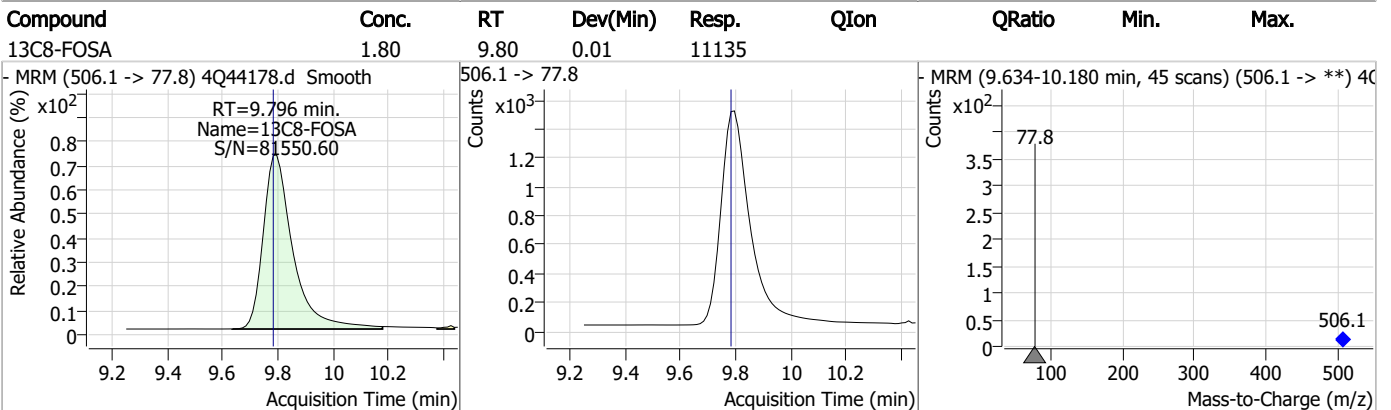
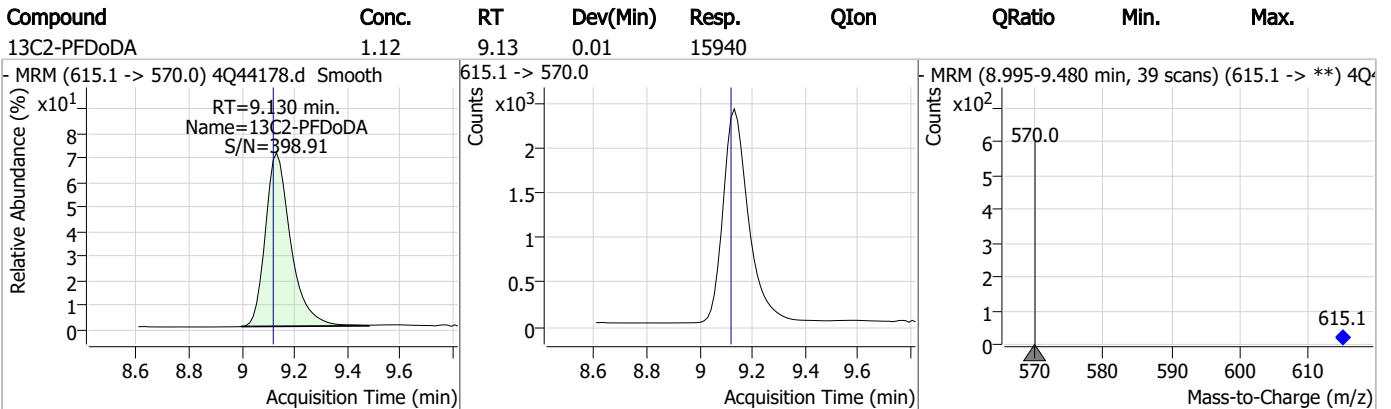
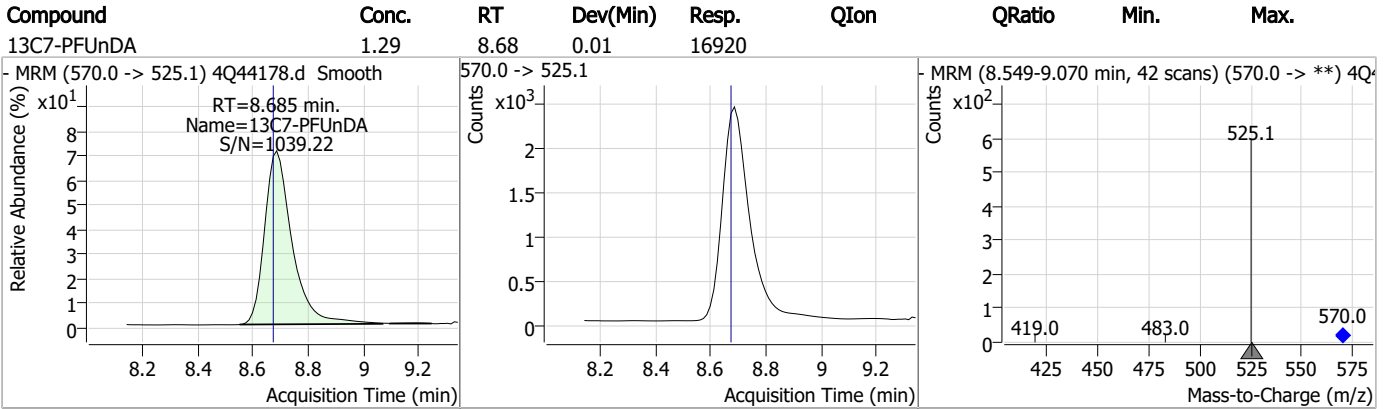
Perfluorinated Compounds by LC/MS/MS



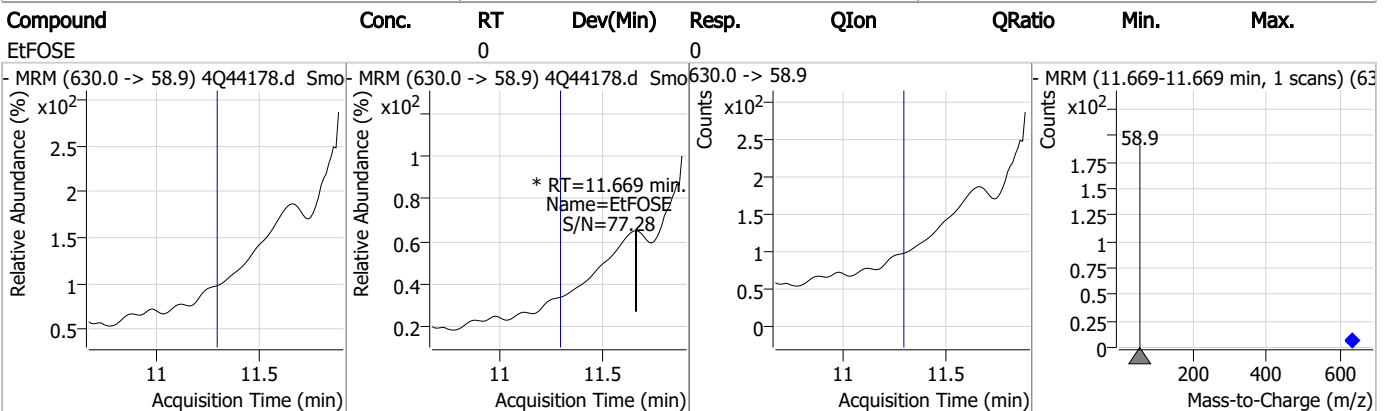
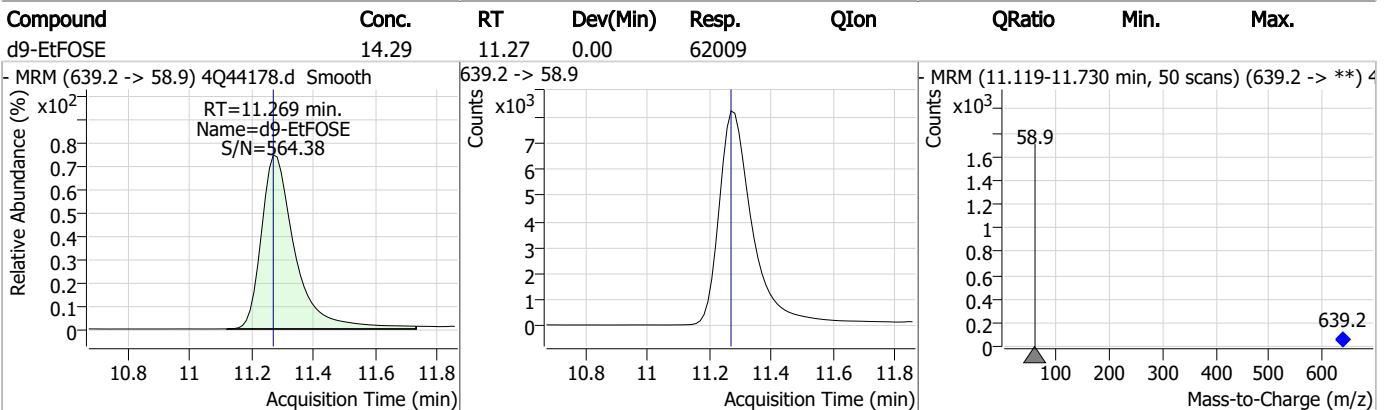
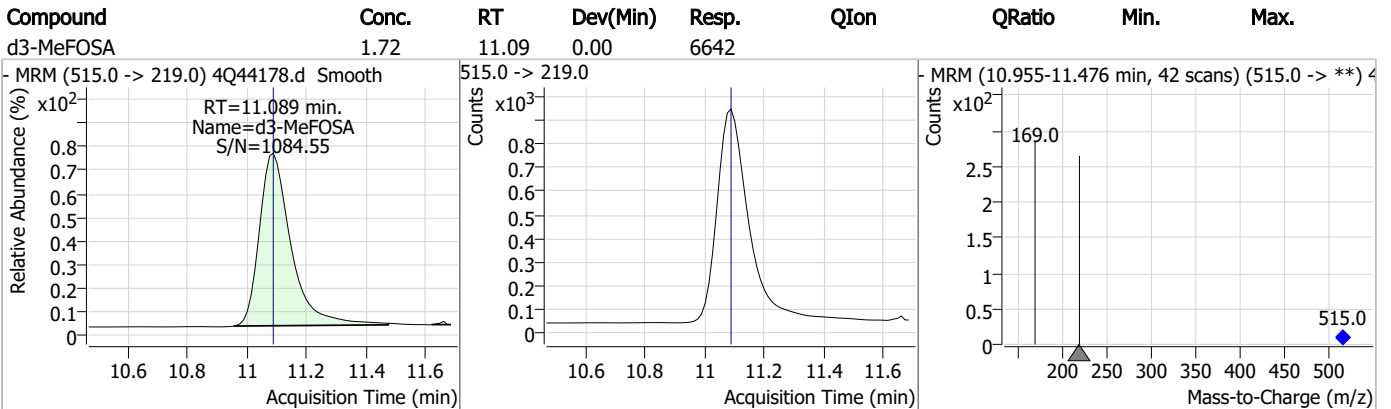
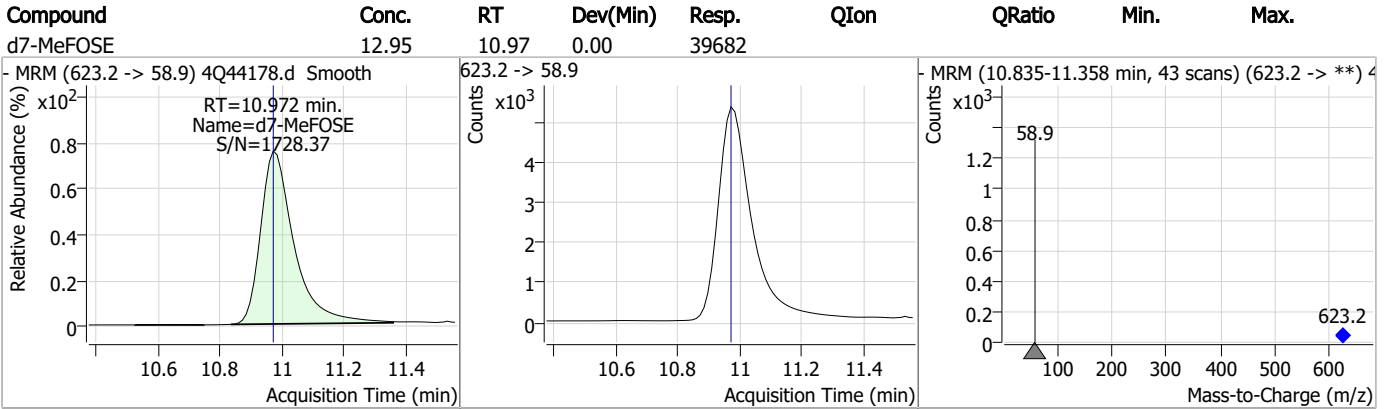
Perfluorinated Compounds by LC/MS/MS



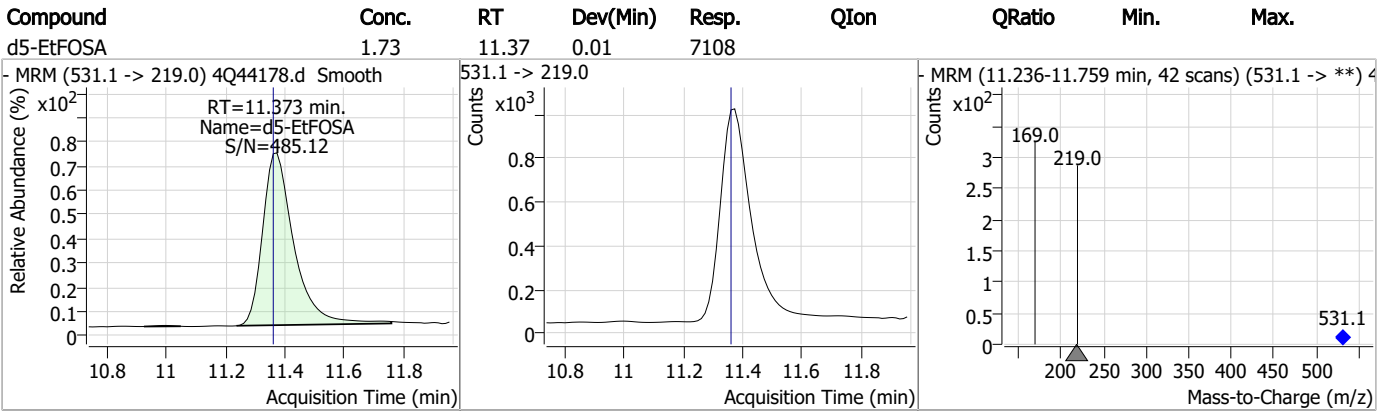
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.1.1
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Manual Integration Approval Summary

Sample Number: FC5861-1 Method: EPA DRAFT 1633
Lab FileID: 4Q44178.D Analyst approved: 05/10/23 11:51 Martha Valls
Injection Time: 05/10/23 00:12 Supervisor approved: 05/10/23 17:32 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.15	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.37	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44177.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 11:58:54 PM
 Sample Name : op96784-mb
 Vial : P3-D3
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96784,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	139770	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	70044	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	49263	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	28370	2.50 µg/L	0.000
M8-PFOA	7.163	421.1 -> 376.0	43795	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	22403	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	19795	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	20295	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20834	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	14547	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	14721	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	11947	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	7672	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10489	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1476	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2534	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	4112	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	16380	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	26151	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	12362	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	54919	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	83601	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	8975	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	7962	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	10157	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	65634	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4713	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	48691	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16125	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	24260	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	39710	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1476	7.70 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 154.0%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2534	7.34 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 146.7%		
13C2-8:2FTS	8.003	529.1 -> 80.9	4112	7.63 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 152.6%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20834	1.33 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C2-PFTeDA	9.924	715.2 -> 670.0	14547	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.5%		
13C3-PFBS	5.464	302.1 -> 79.9	11947	2.69 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C3-PFHxS	7.254	402.1 -> 79.9	7672	2.63 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 = 105.0%	
13C4-PFBA	2.924	216.8 -> 171.9	139770	11.32 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 113.2%	
13C4-PFHpA	6.492	367.1 -> 322.0	28370	2.78 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	49263	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C5-PFPeA	4.387	268.3 -> 223.0	70044	5.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.5%	
13C6-PFDA	8.216	519.1 -> 474.1	19795	1.43 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.7%	
13C7-PFUnDA	8.685	570.0 -> 525.1	20295	1.41 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.0%	
13C8-FOSA	9.796	506.1 -> 77.8	14721	2.31 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.4%	
13C8-PFOA	7.163	421.1 -> 376.0	43795	2.74 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.6%	
13C8-PFOS	8.354	507.1 -> 79.9	10489	2.74 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.7%	
13C9-PFNA	7.709	472.1 -> 427.0	22403	1.36 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.7%	
d3-MeFOSAA	8.273	573.2 -> 419.0	16380	6.39 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 127.8%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	26151	10.01 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d3-MeFOSA	11.089	515.0 -> 219.0	7962	2.00 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.0%	
d5-EtFOSAA	8.483	589.2 -> 419.0	12362	5.86 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.1%	
d7-MeFOSE	10.972	623.2 -> 58.9	54919	17.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 69.5%	
d9-EtFOSE	11.269	639.2 -> 58.9	83601	18.68 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.7%	
d5-EtFOSA	11.373	531.1 -> 219.0	8975	2.12 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.8%	

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.	



7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.906	599.0 -> 98.8				
		363.1 -> 319.0	0	µg/L	m	1
PFHpS	-	363.1 -> 169.0	0			
		449.0 -> 79.9	-	N.D.		
PFHxA	-	449.0 -> 98.9				
		313.0 -> 269.0	-	N.D.		
PFHxS	-	313.0 -> 118.9				
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	-	498.9 -> 98.8				
		263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	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	11.681	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

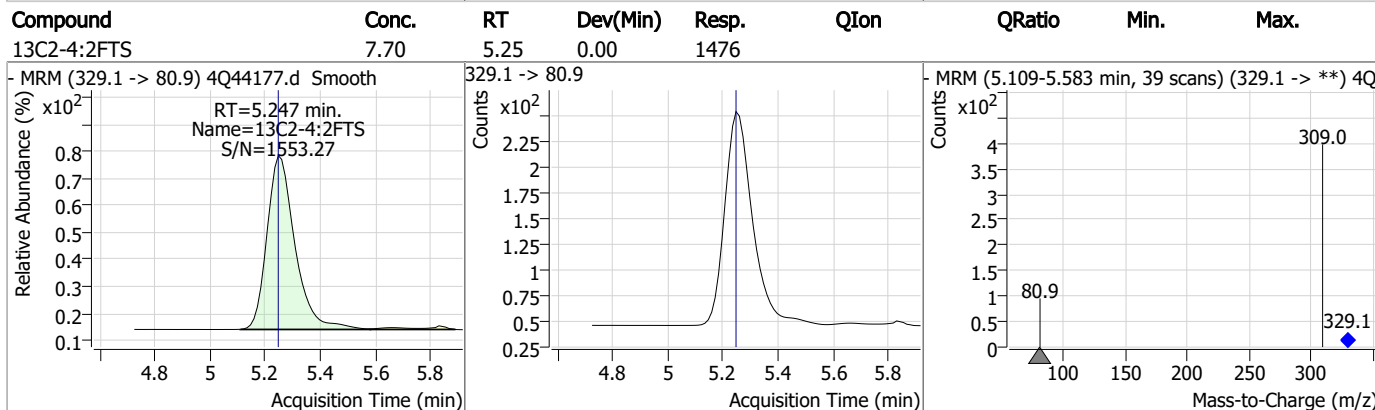
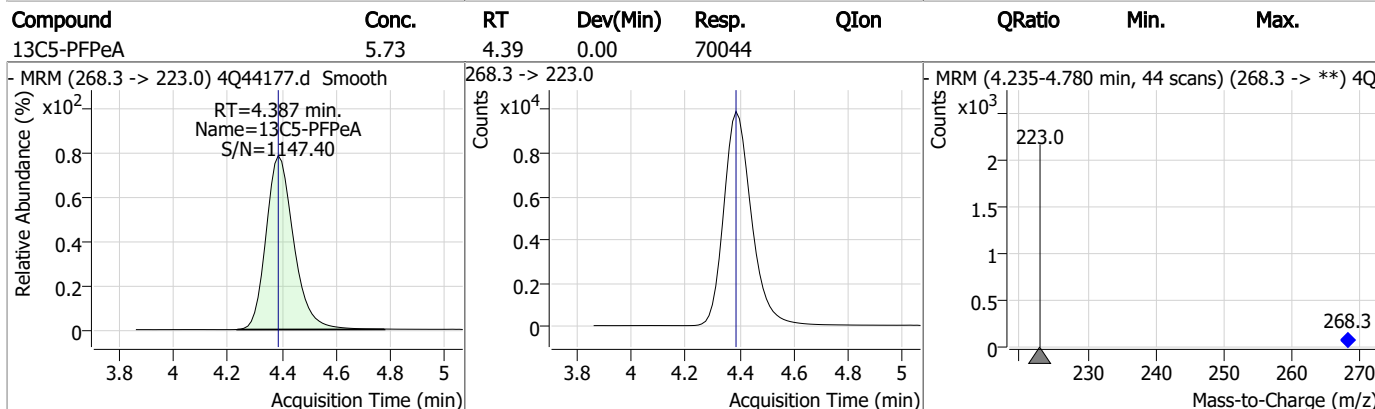
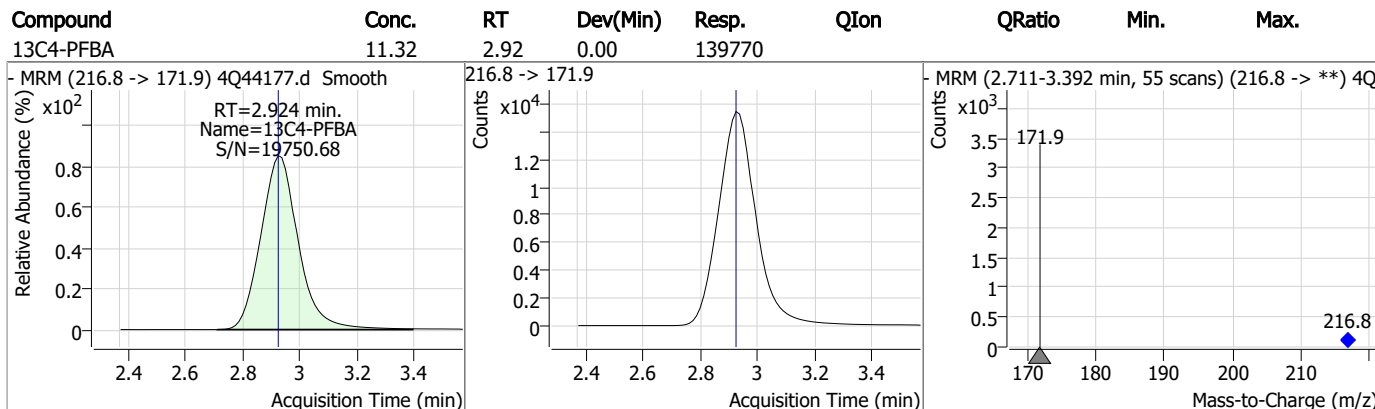
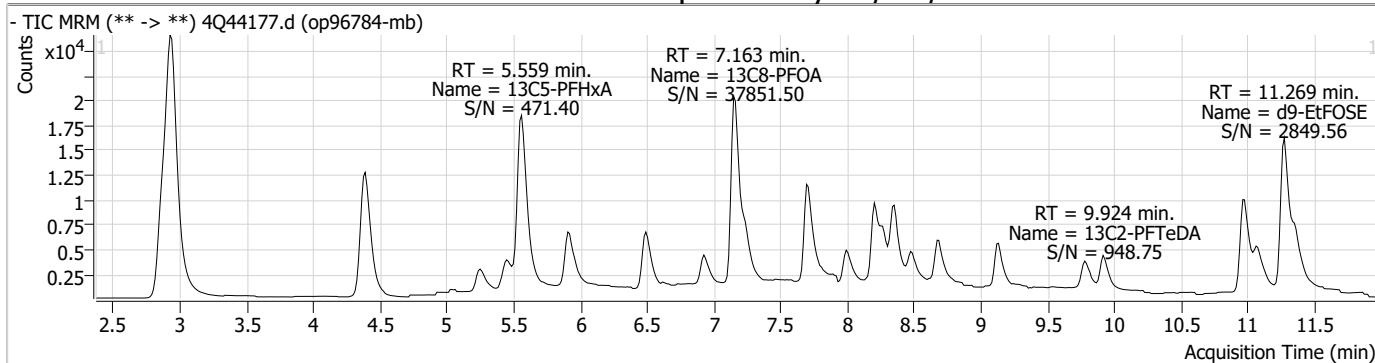
Perfluorinated Compounds by LC/MS/MS

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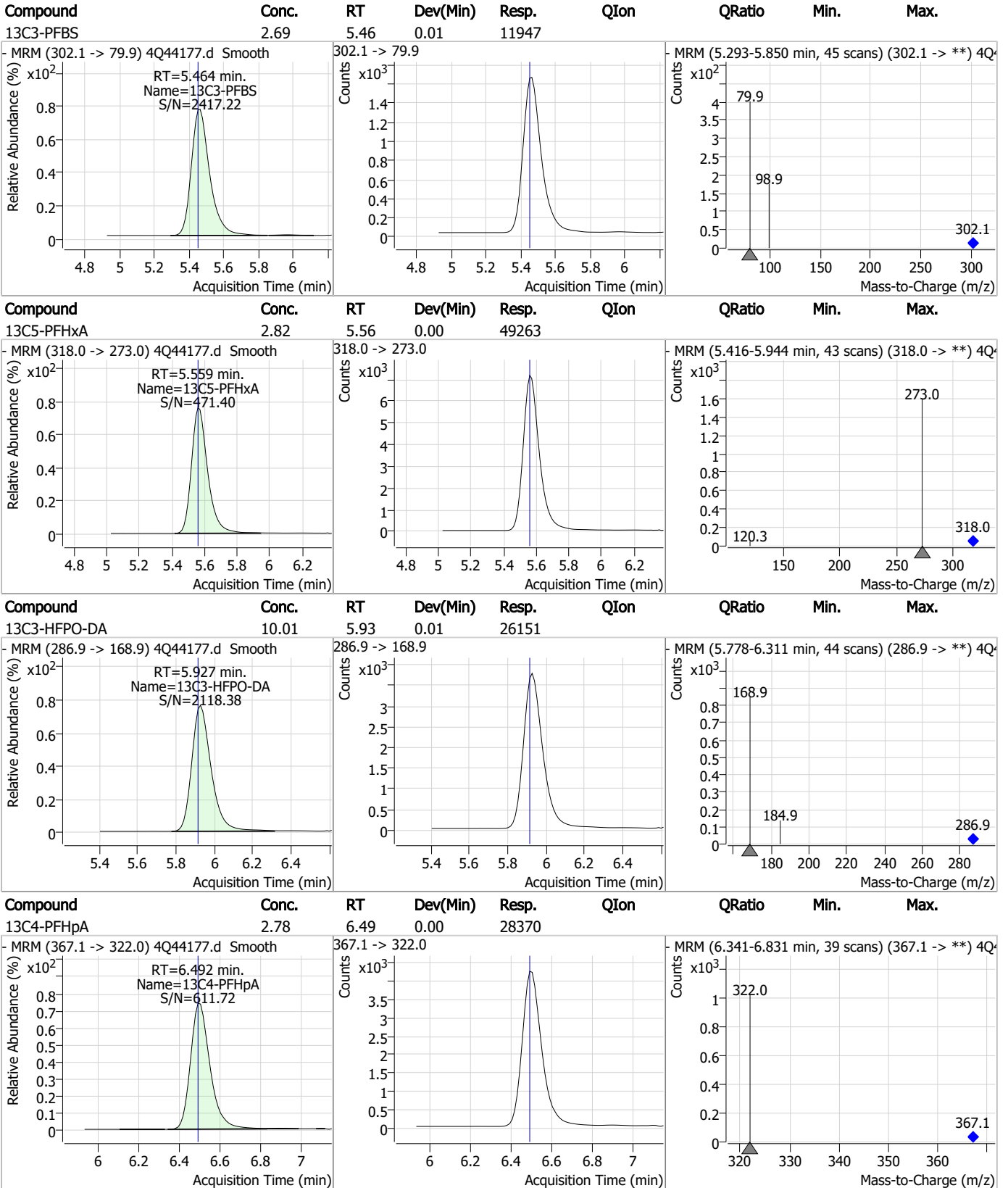
7.2.1

7

Perfluorinated Compounds by LC/MS/MS



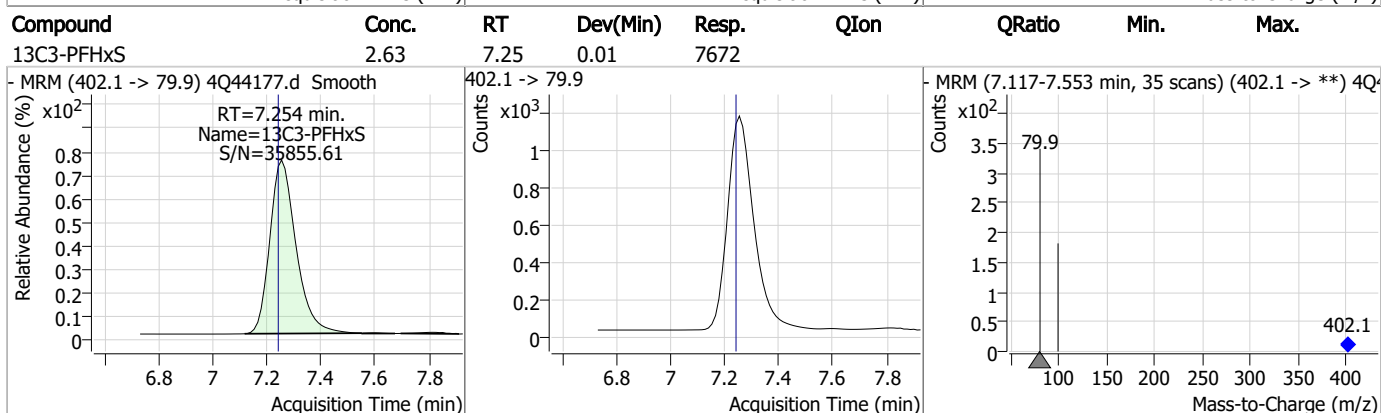
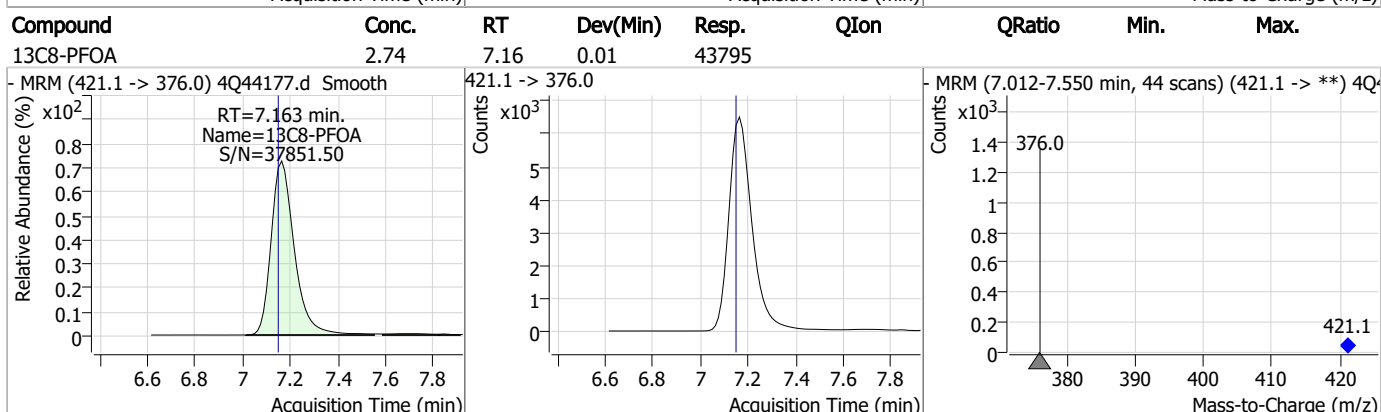
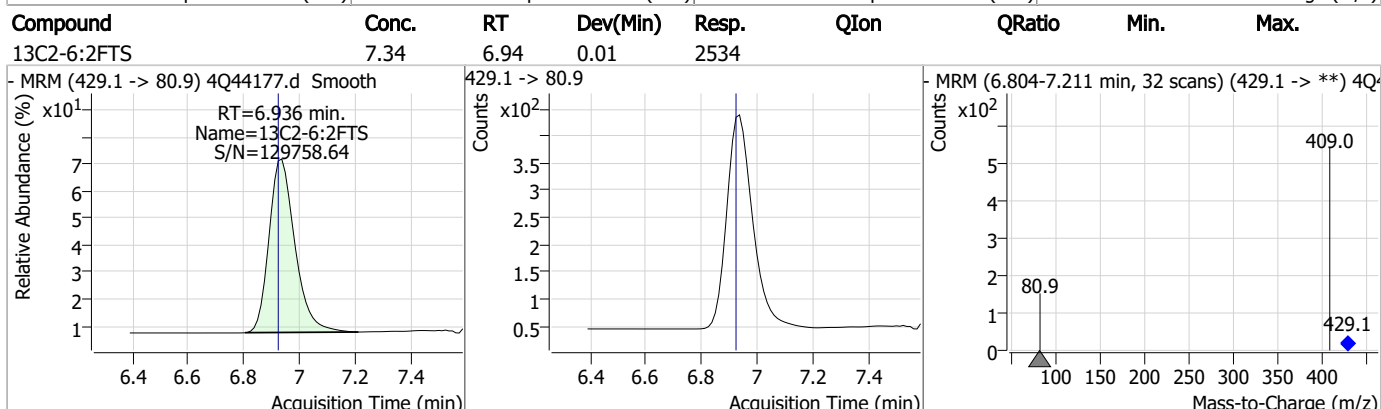
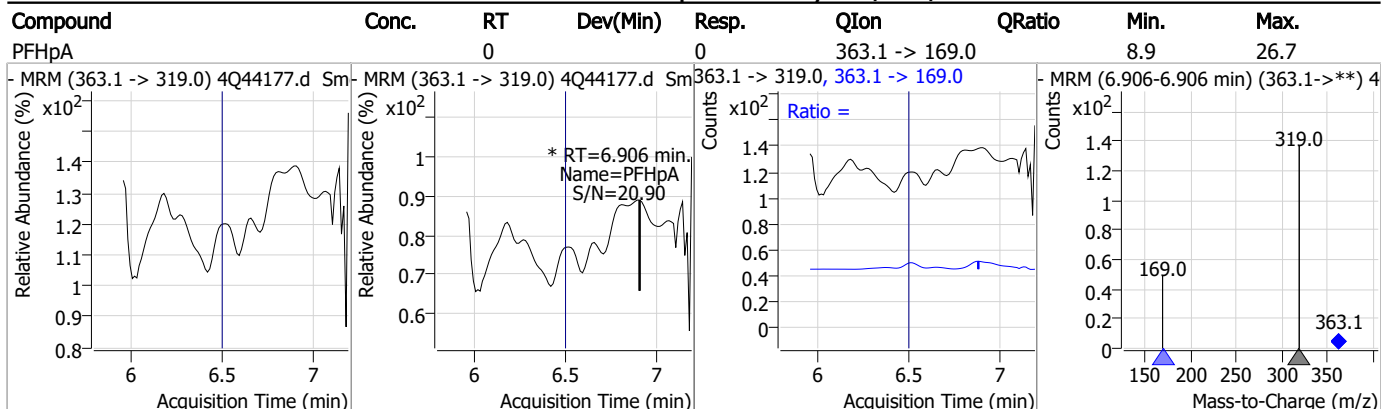
Perfluorinated Compounds by LC/MS/MS



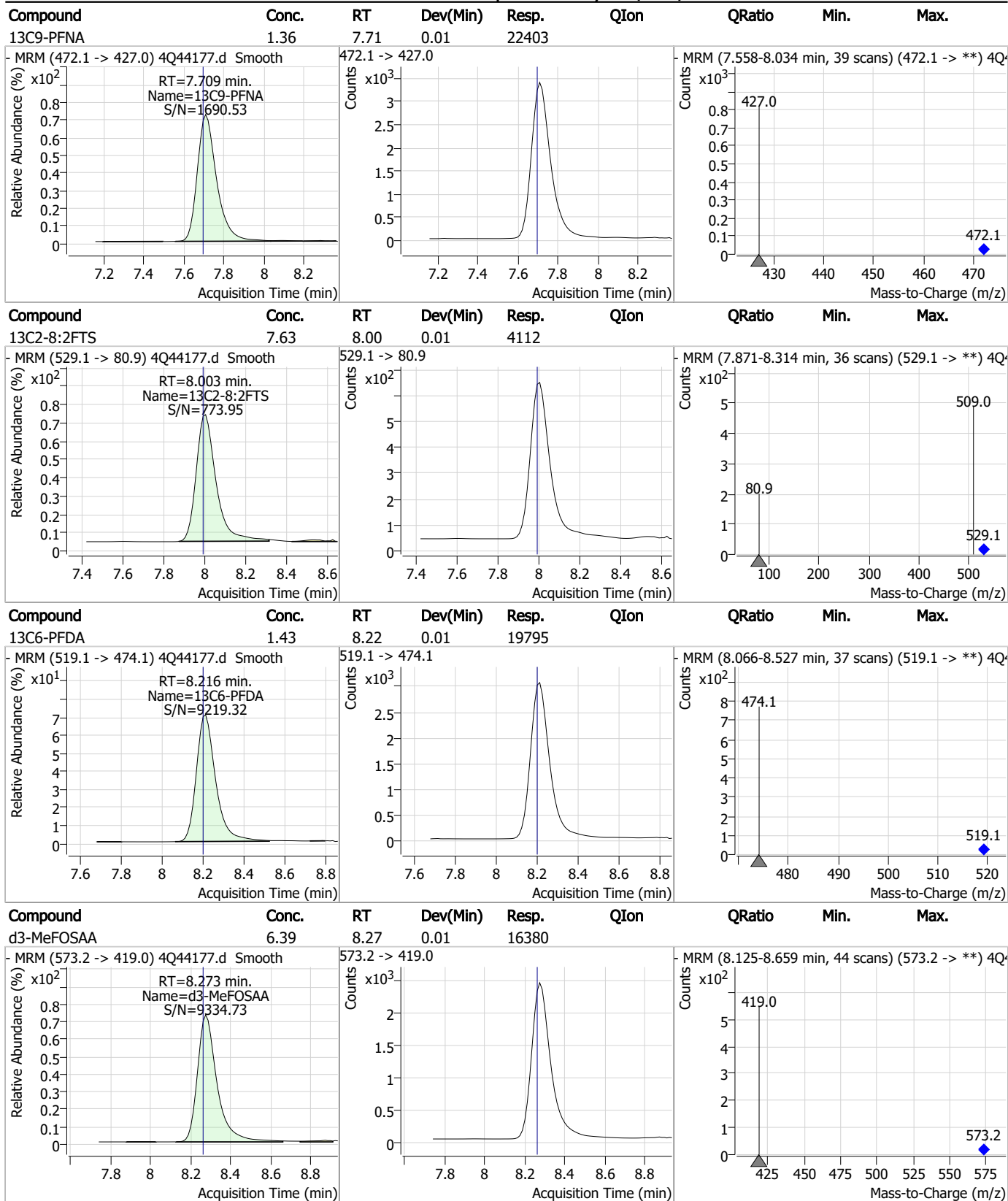
7.2.1

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Perfluorinated Compounds by LC/MS/MS

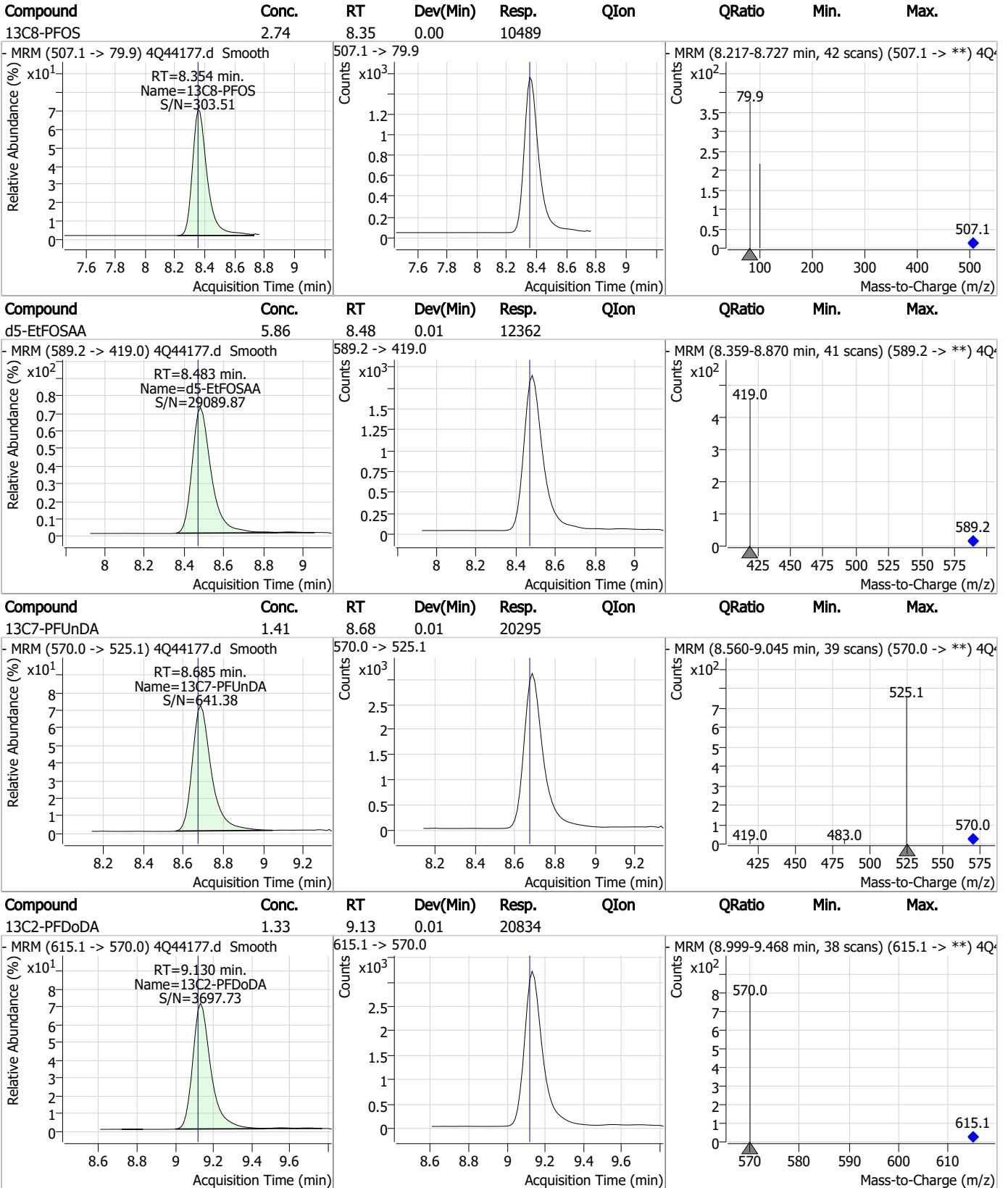


Perfluorinated Compounds by LC/MS/MS



7.2.1
7

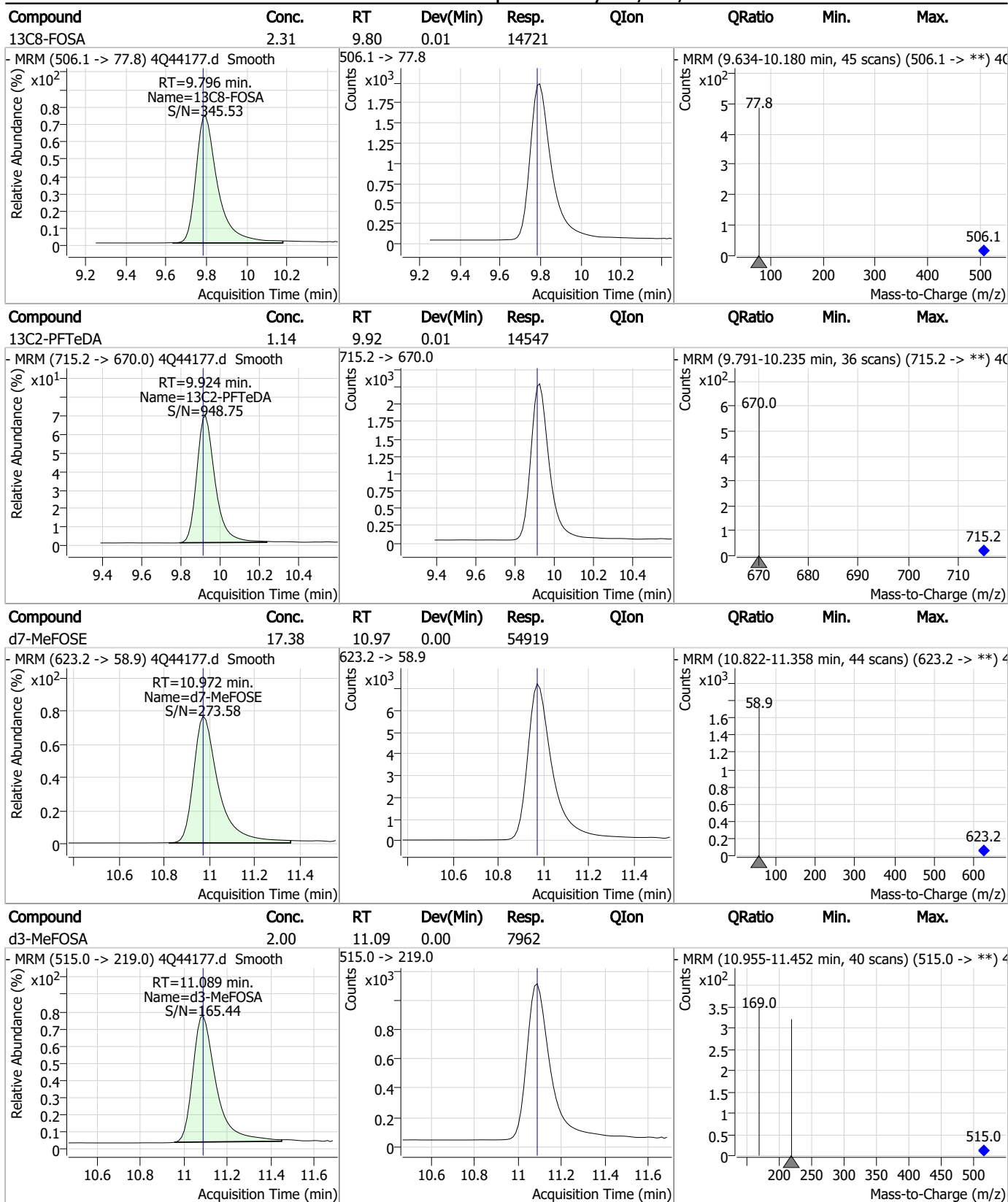
Perfluorinated Compounds by LC/MS/MS



7.2.1

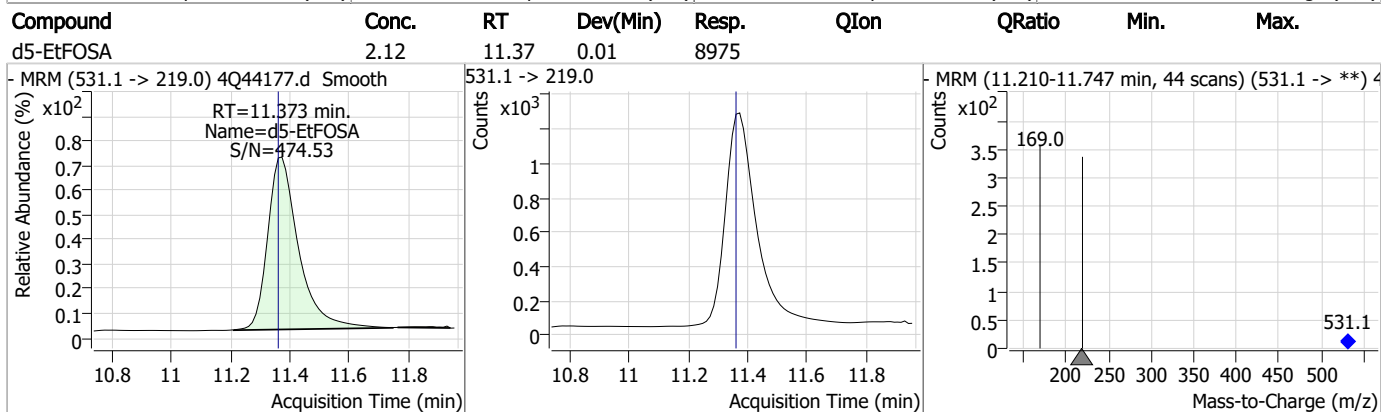
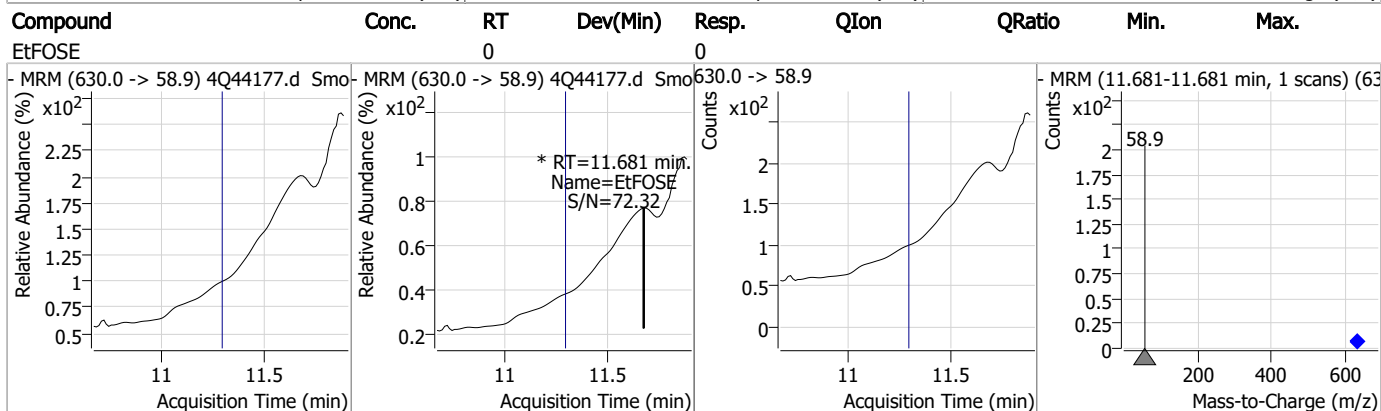
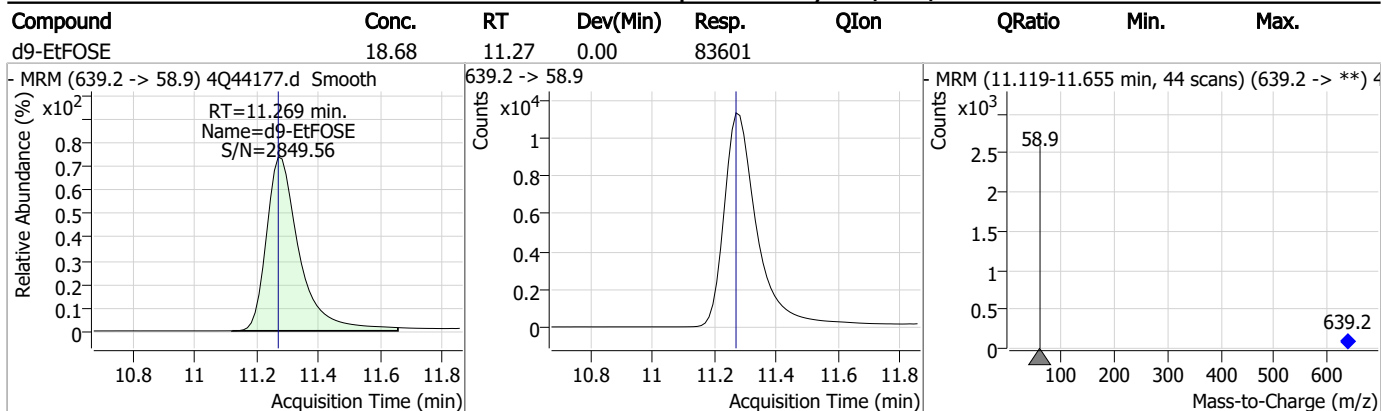
7

Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44136.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 2:10:23 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	117787	10.00 µg/L	-0.050
M5-PFPeA	4.375	268.3 -> 223.0	62360	5.00 µg/L	-0.012
M5-PFHxA	5.547	318.0 -> 273.0	41703	2.50 µg/L	-0.012
M4-PFHpA	6.479	367.1 -> 322.0	25609	2.50 µg/L	-0.012
M8-PFOA	7.148	421.1 -> 376.0	39325	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	19733	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	16408	1.25 µg/L	0.000
M7-PFUnDA	8.672	570.0 -> 525.1	17347	1.25 µg/L	0.000
M2-PFDoDA	9.118	615.1 -> 570.0	18464	1.25 µg/L	0.000
M2-PFTeDA	9.911	715.2 -> 670.0	14371	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	16283	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	10938	2.50 µg/L	-0.012
M3-PFHxS	7.242	402.1 -> 79.9	6676	2.50 µg/L	0.000
M8-PFOS	8.341	507.1 -> 79.9	9377	2.50 µg/L	-0.012
M2-4:2FTS	5.235	329.1 -> 80.9	968	5.00 µg/L	-0.012
M2-6:2FTS	6.911	429.1 -> 80.9	1885	5.00 µg/L	-0.012
M2-8:2FTS	7.990	529.1 -> 80.9	3068	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	11992	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	23487	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	10749	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	63050	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	94920	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	10199	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	8769	2.50 µg/L	-0.012
13C4-PFOS	8.342	502.8 -> 79.9	9542	2.50 µg/L	-0.012
13C3-PFBA	2.878	216.0 -> 172.0	61944	5.00 µg/L	-0.050
18O2-PFHxS	7.241	403.0 -> 83.9	4619	2.50 µg/L	0.000
13C4-PFOA	7.149	417.1 -> 372.0	47066	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	15763	1.25 µg/L	0.000
13C5-PFNA	7.697	468.0 -> 423.0	21697	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	38534	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	968	5.16 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1885	5.57 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.4%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3068	5.81 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.2%		
13C2-PFDoDA	9.118	615.1 -> 570.0	18464	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-PFTeDA	9.911	715.2 -> 670.0	14371	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C3-PFBS	5.439	302.1 -> 79.9	10938	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C3-PFHxS	7.242	402.1 -> 79.9	6676	2.33 µg/L	0.000

7.22
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C4-PFBA	2.874	216.8 -> 171.9	117787	10.10 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.479	367.1 -> 322.0	25609	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFHxA	5.547	318.0 -> 273.0	41703	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.375	268.3 -> 223.0	62360	5.25 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C6-PFDA	8.203	519.1 -> 474.1	16408	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C7-PFUnDA	8.672	570.0 -> 525.1	17347	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-FOSA	9.783	506.1 -> 77.8	16283	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.8%	
13C8-PFOA	7.148	421.1 -> 376.0	39325	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C8-PFOS	8.341	507.1 -> 79.9	9377	2.61 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C9-PFNA	7.696	472.1 -> 427.0	19733	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.0%	
d3-MeFOSAA	8.261	573.2 -> 419.0	11992	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	23487	9.27 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.7%	
d3-MeFOSA	11.076	515.0 -> 219.0	8769	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
d5-EtFOSAA	8.470	589.2 -> 419.0	10749	5.42 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.4%	
d7-MeFOSE	10.972	623.2 -> 58.9	63050	21.24 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.9%	
d9-EtFOSE	11.269	639.2 -> 58.9	94920	22.58 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.3%	
d5-EtFOSA	11.360	531.1 -> 219.0	10199	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	

Target Compounds

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



7.2.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.539	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	11.295	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

7.2.2
7

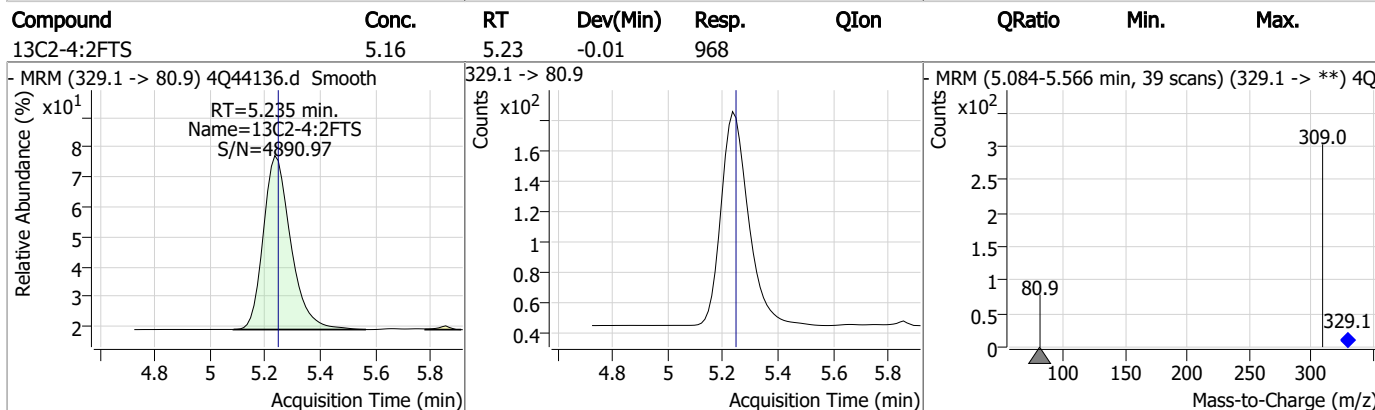
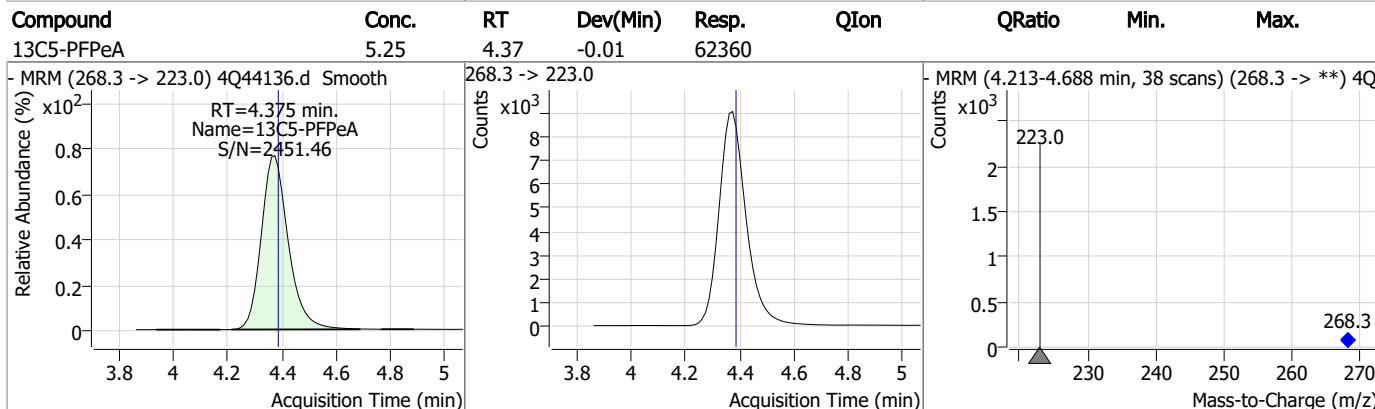
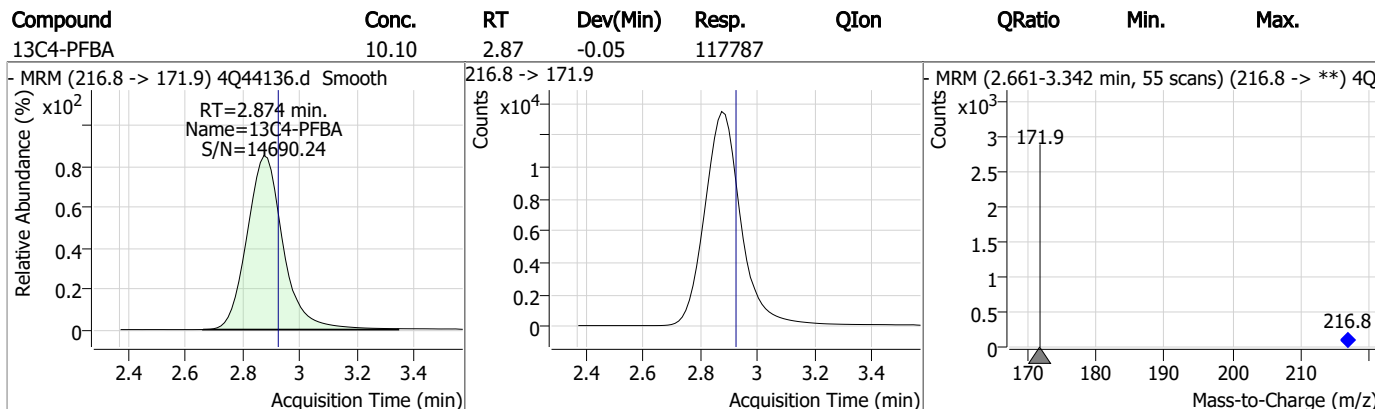
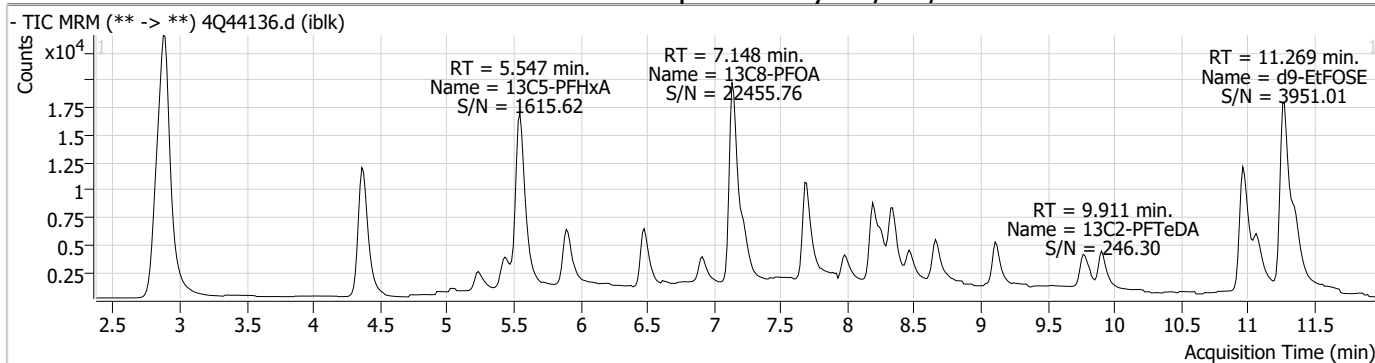
Perfluorinated Compounds by LC/MS/MS

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

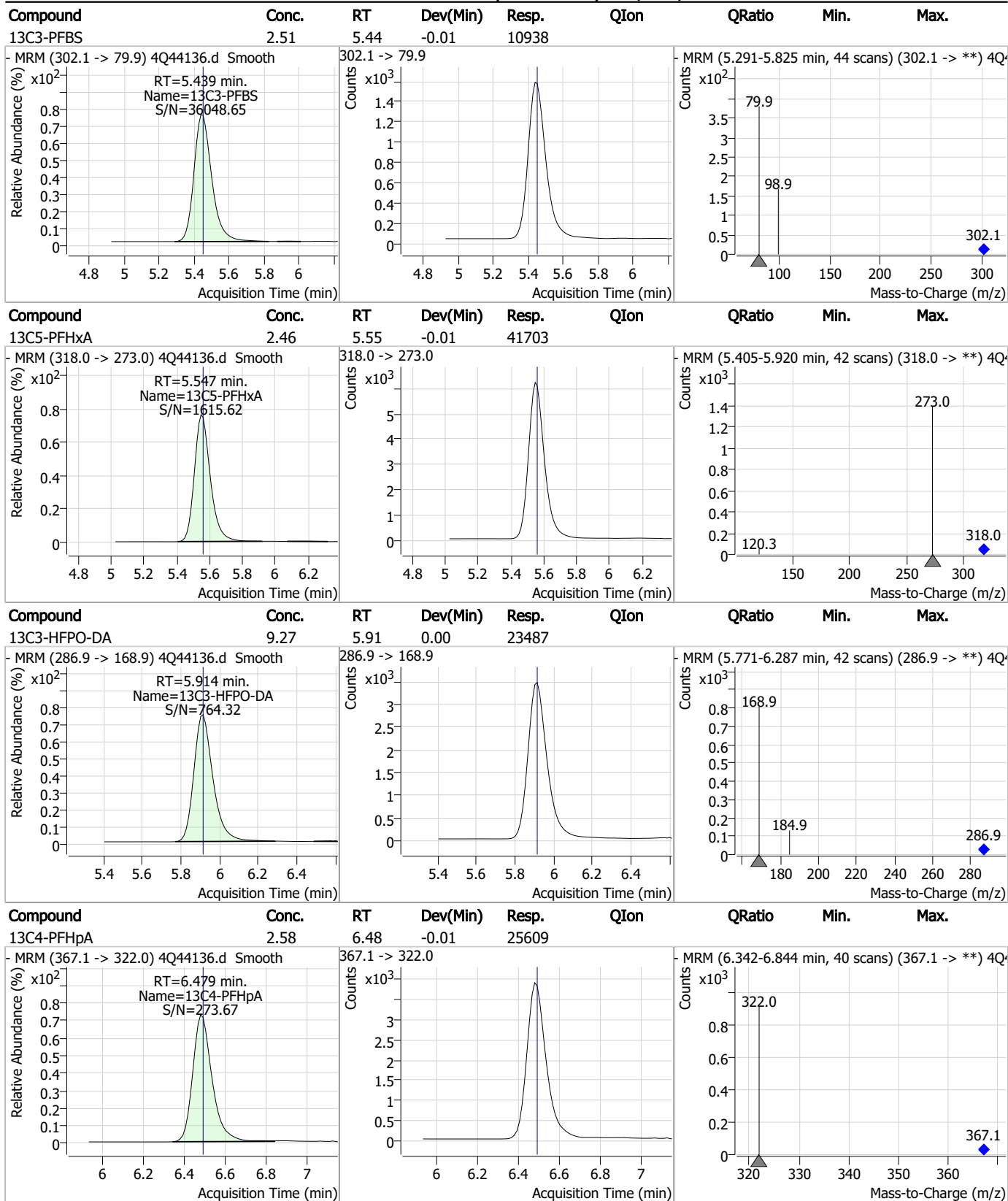
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Perfluorinated Compounds by LC/MS/MS



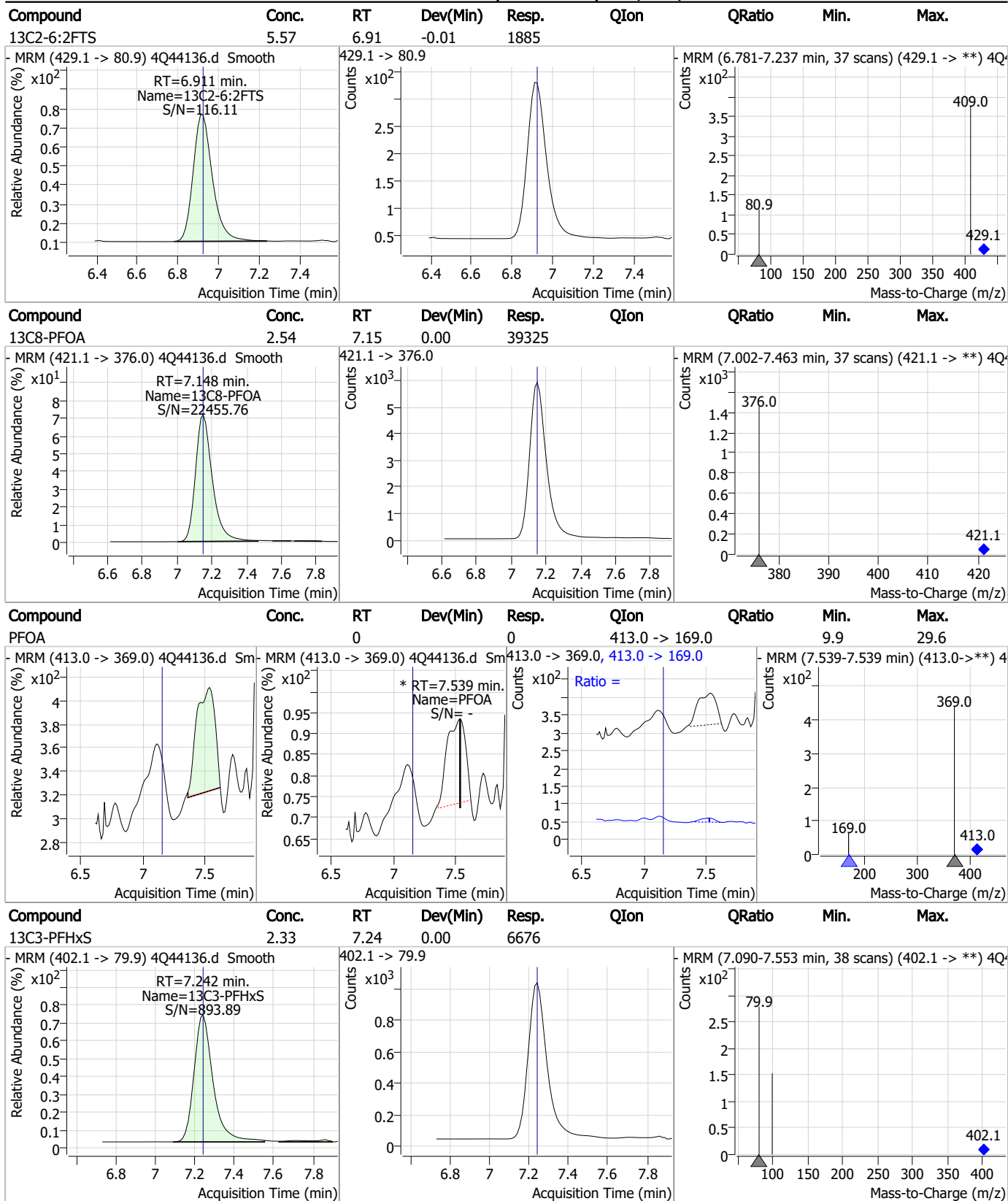
7.2.2
7

Perfluorinated Compounds by LC/MS/MS



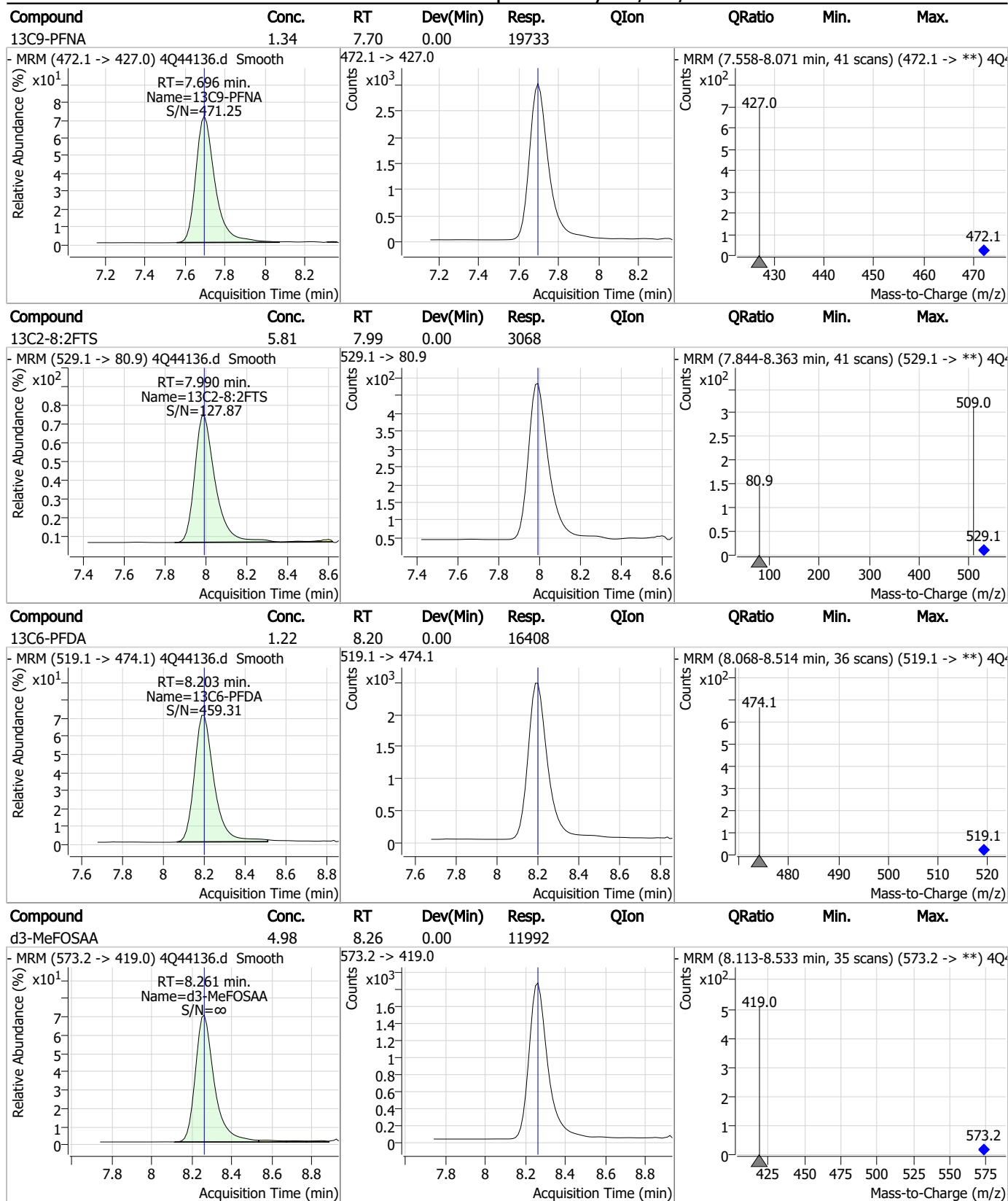
7.2.2
7

Perfluorinated Compounds by LC/MS/MS



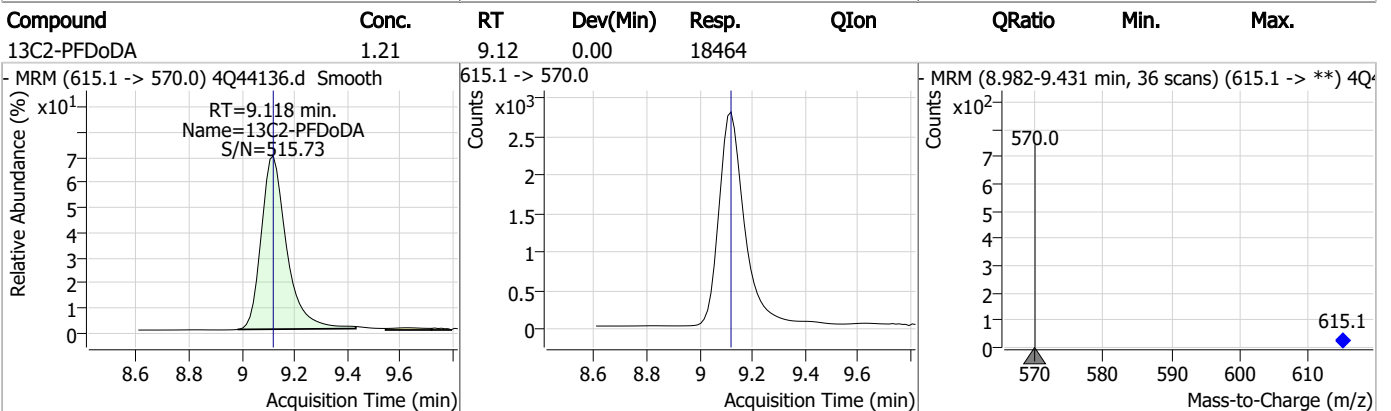
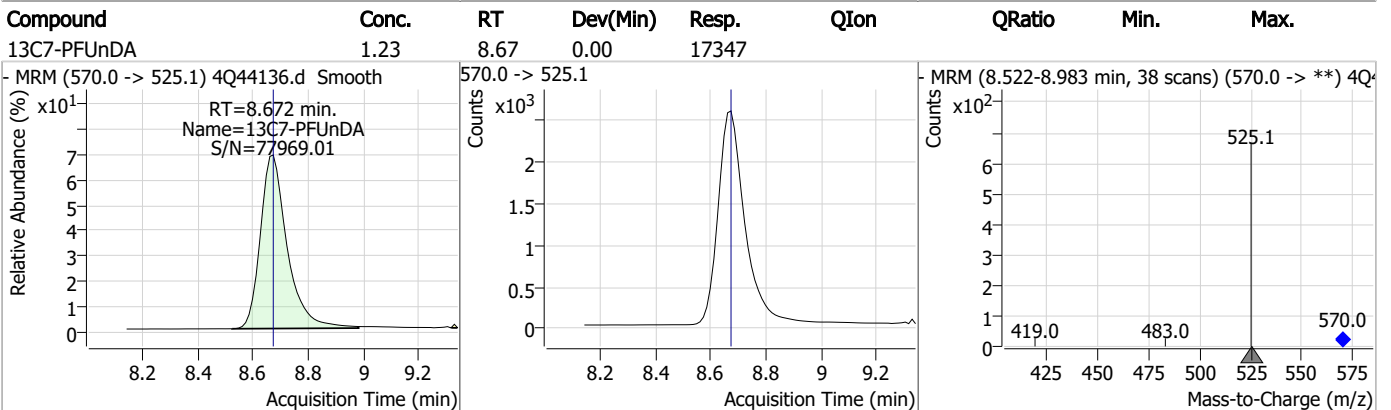
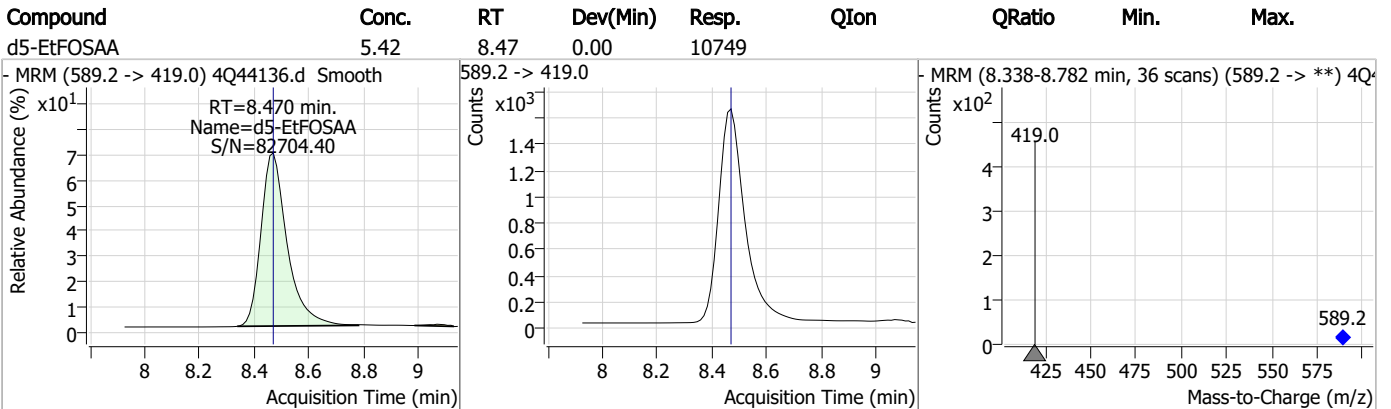
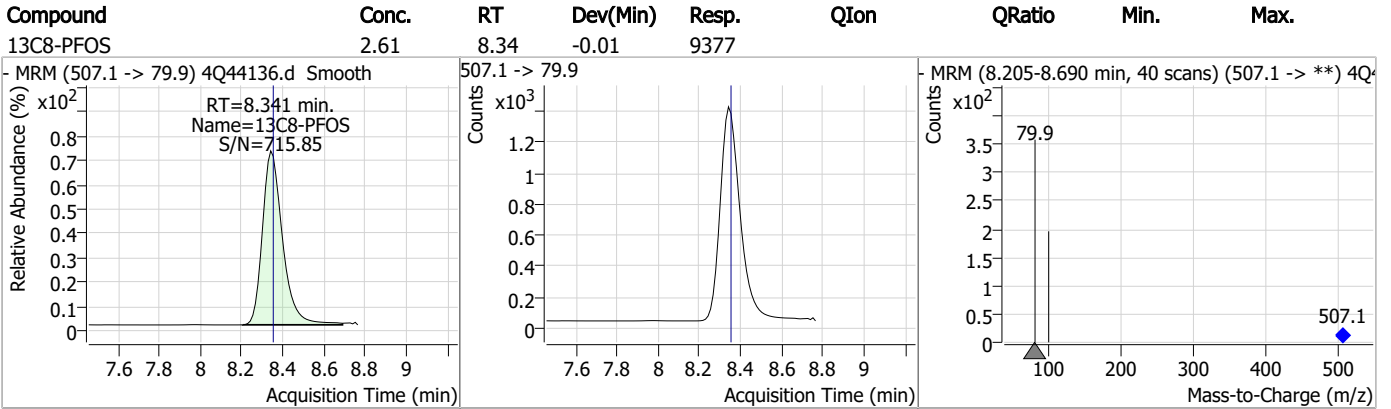
7.22
7

Perfluorinated Compounds by LC/MS/MS

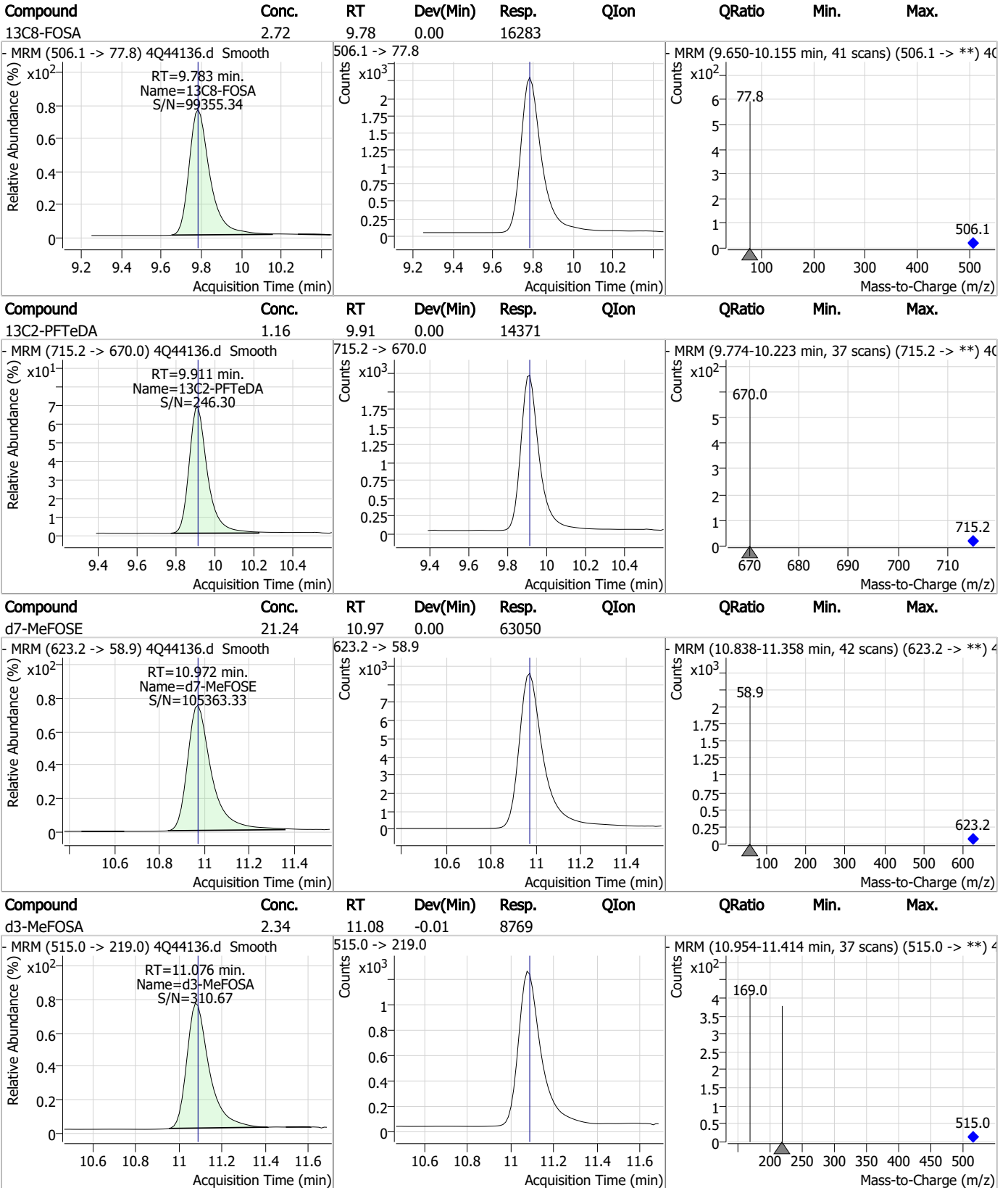


7.2.2
7

Perfluorinated Compounds by LC/MS/MS



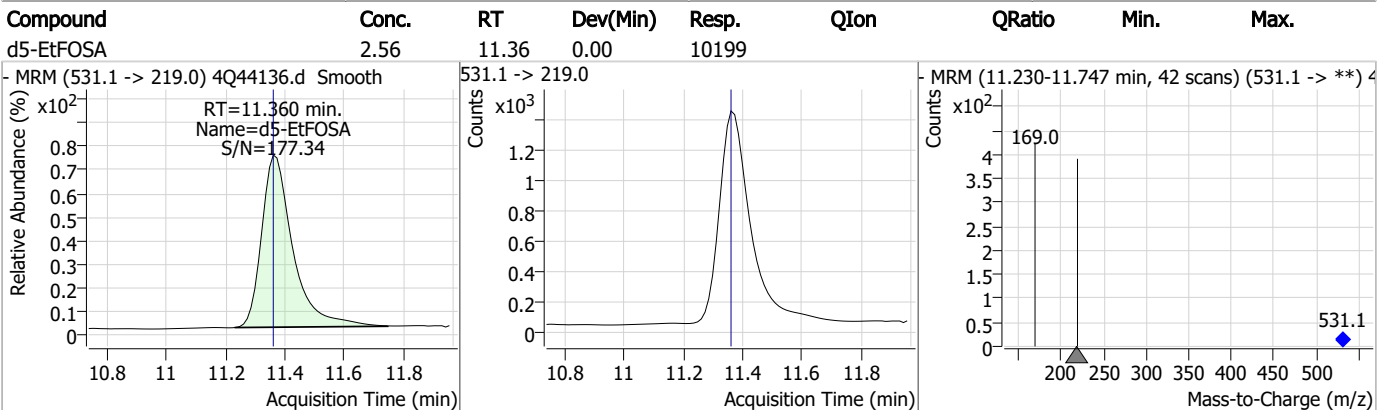
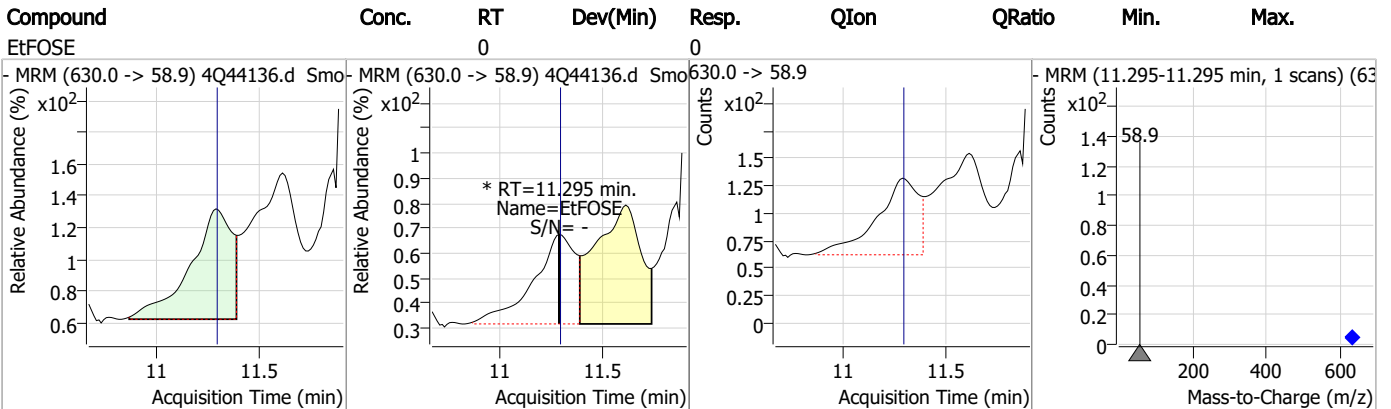
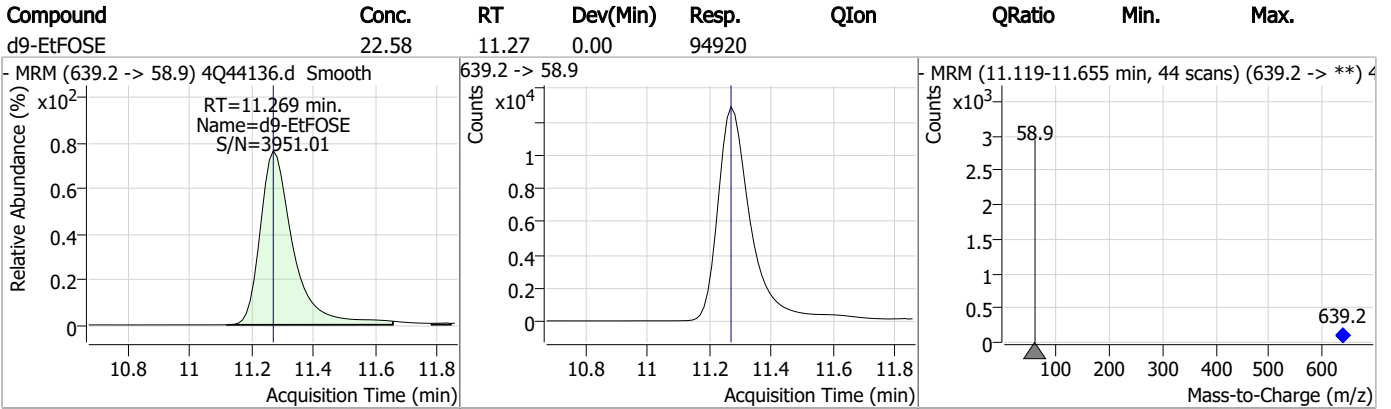
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44174.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 11:16:45 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	124983	10.00 µg/L	-0.037
M5-PFPeA	4.375	268.3 -> 223.0	63410	5.00 µg/L	-0.012
M5-PFHxA	5.559	318.0 -> 273.0	44201	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	26154	2.50 µg/L	0.000
M8-PFOA	7.163	421.1 -> 376.0	41343	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	20276	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	17379	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	19693	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20441	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	16505	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	17444	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	10624	2.50 µg/L	0.000
M3-PFHxS	7.254	402.1 -> 79.9	7052	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	9646	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1122	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2264	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	3925	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14719	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	23677	10.00 µg/L	0.000
M5-EtFOSAA	8.483	589.2 -> 419.0	12195	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	64370	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	94090	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	10280	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	9367	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	10862	2.50 µg/L	0.000
13C3-PFBA	2.878	216.0 -> 172.0	65392	5.00 µg/L	-0.050
18O2-PFHxS	7.253	403.0 -> 83.9	4801	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	49225	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16420	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	22561	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	40232	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1122	5.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.0%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2264	6.44 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.7%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3925	7.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 142.9%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20441	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C2-PFTeDA	9.924	715.2 -> 670.0	16505	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C3-PFBS	5.452	302.1 -> 79.9	10624	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C3-PFHxS	7.254	402.1 -> 79.9	7052	2.37 µg/L	0.012

7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C4-PFBA	2.886	216.8 -> 171.9	124983	10.16 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C4-PFHpA	6.492	367.1 -> 322.0	26154	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	44201	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFPeA	4.375	268.3 -> 223.0	63410	5.12 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C6-PFDA	8.216	519.1 -> 474.1	17379	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C7-PFUnDA	8.685	570.0 -> 525.1	19693	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C8-FOSA	9.783	506.1 -> 77.8	17444	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-PFOA	7.163	421.1 -> 376.0	41343	2.56 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C8-PFOS	8.354	507.1 -> 79.9	9646	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C9-PFNA	7.709	472.1 -> 427.0	20276	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.8%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14719	5.37 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.4%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	23677	8.95 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.5%	
d3-MeFOSA	11.089	515.0 -> 219.0	9367	2.20 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.0%	
d5-EtFOSAA	8.483	589.2 -> 419.0	12195	5.40 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.0%	
d7-MeFOSE	10.972	623.2 -> 58.9	64370	19.05 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 76.2%	
d9-EtFOSE	11.269	639.2 -> 58.9	94090	19.66 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.7%	
d5-EtFOSA	11.373	531.1 -> 219.0	10280	2.27 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.8%	

Target Compounds

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



7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.594	630.0 -> 58.9	0		µg/L	m
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
		699.1 -> 79.9				
PFDoDS	-	699.1 -> 98.8	-	N.D.		
		295.0 -> 201.0				
NFDHA	-	295.0 -> 84.9	-	N.D.		
		279.0 -> 85.1				
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

7.2.3
7

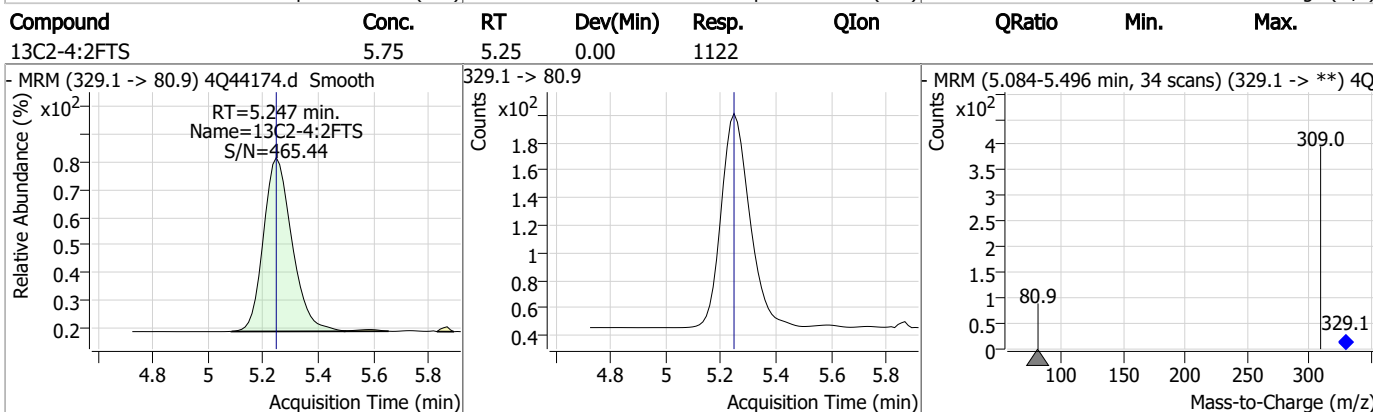
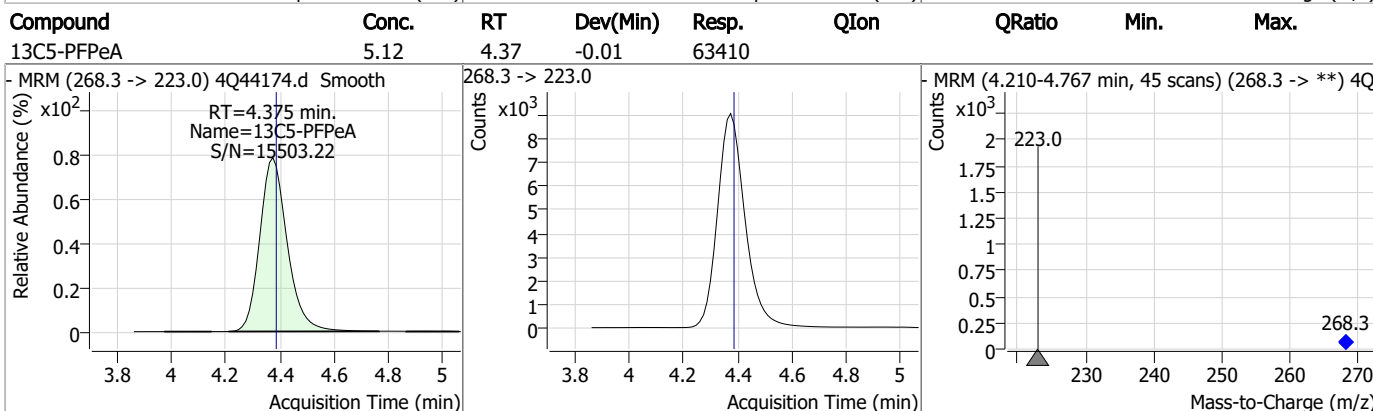
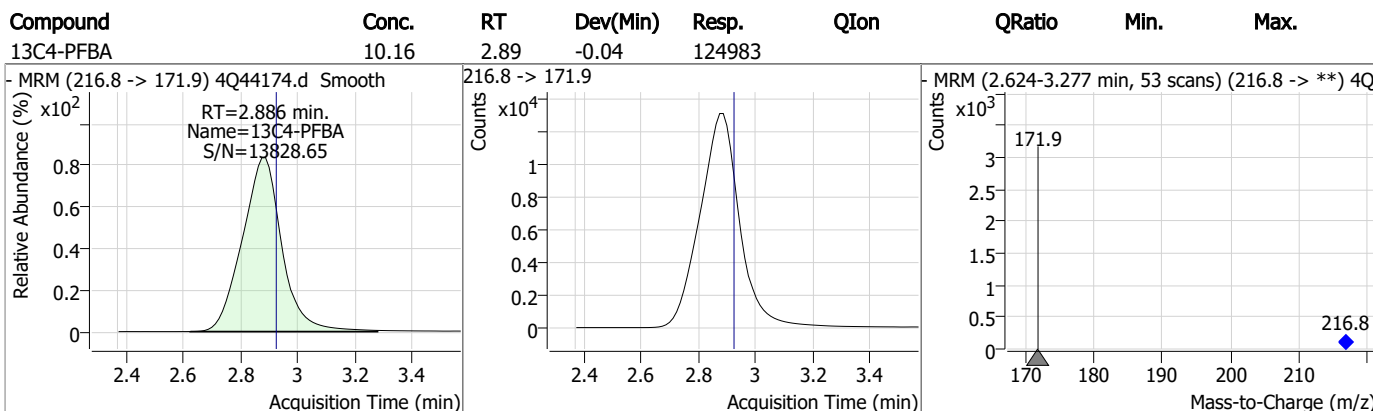
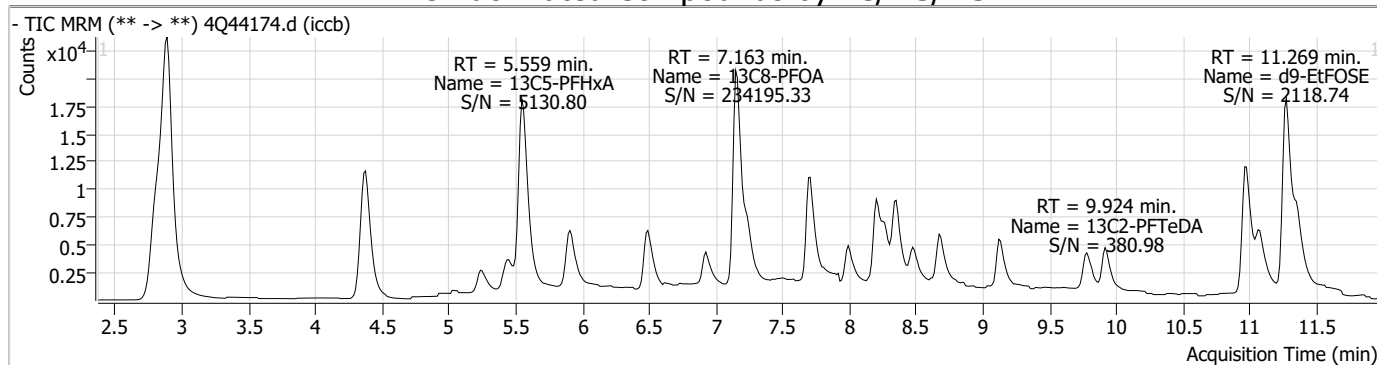
Perfluorinated Compounds by LC/MS/MS

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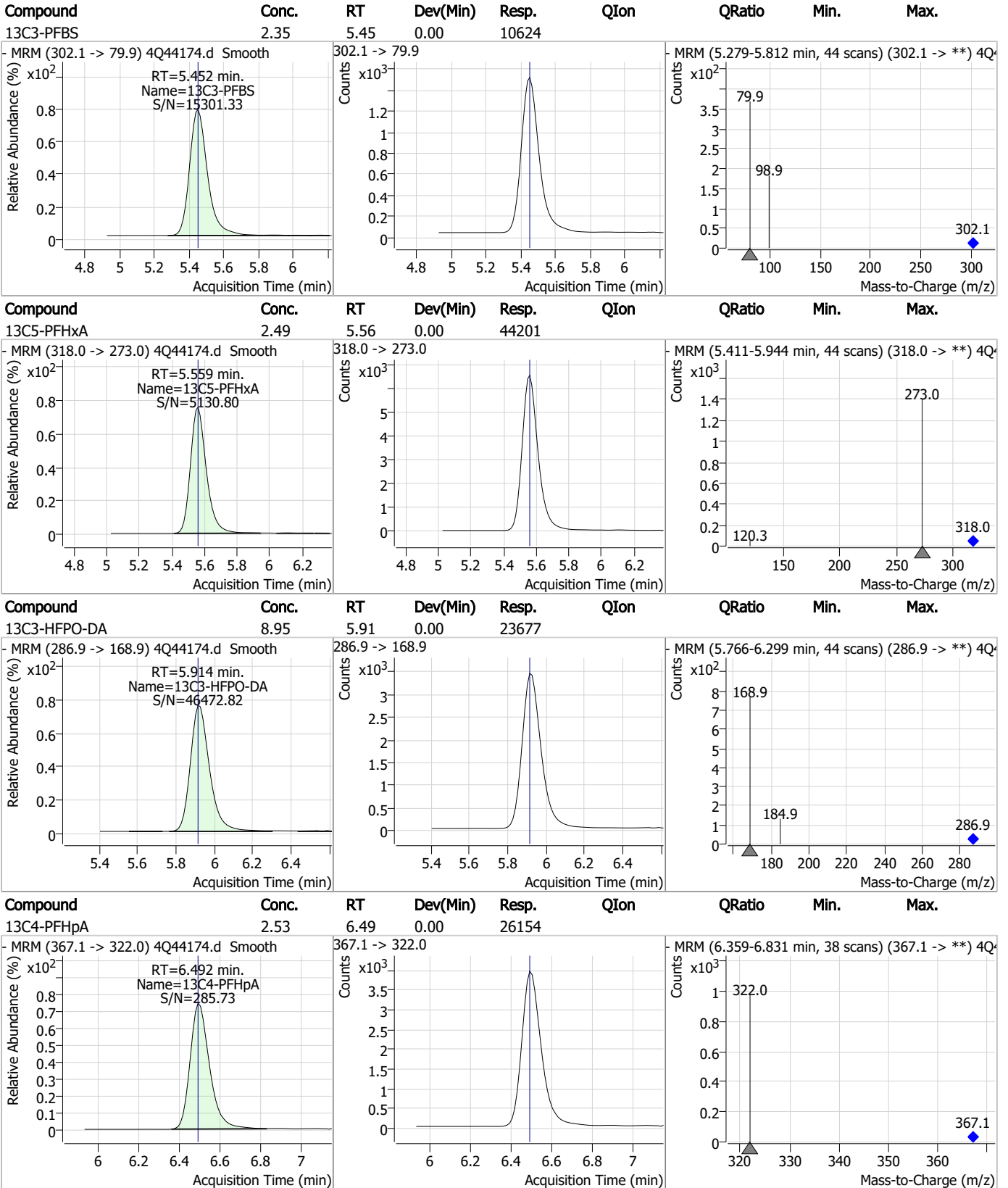
7.2.3

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Perfluorinated Compounds by LC/MS/MS



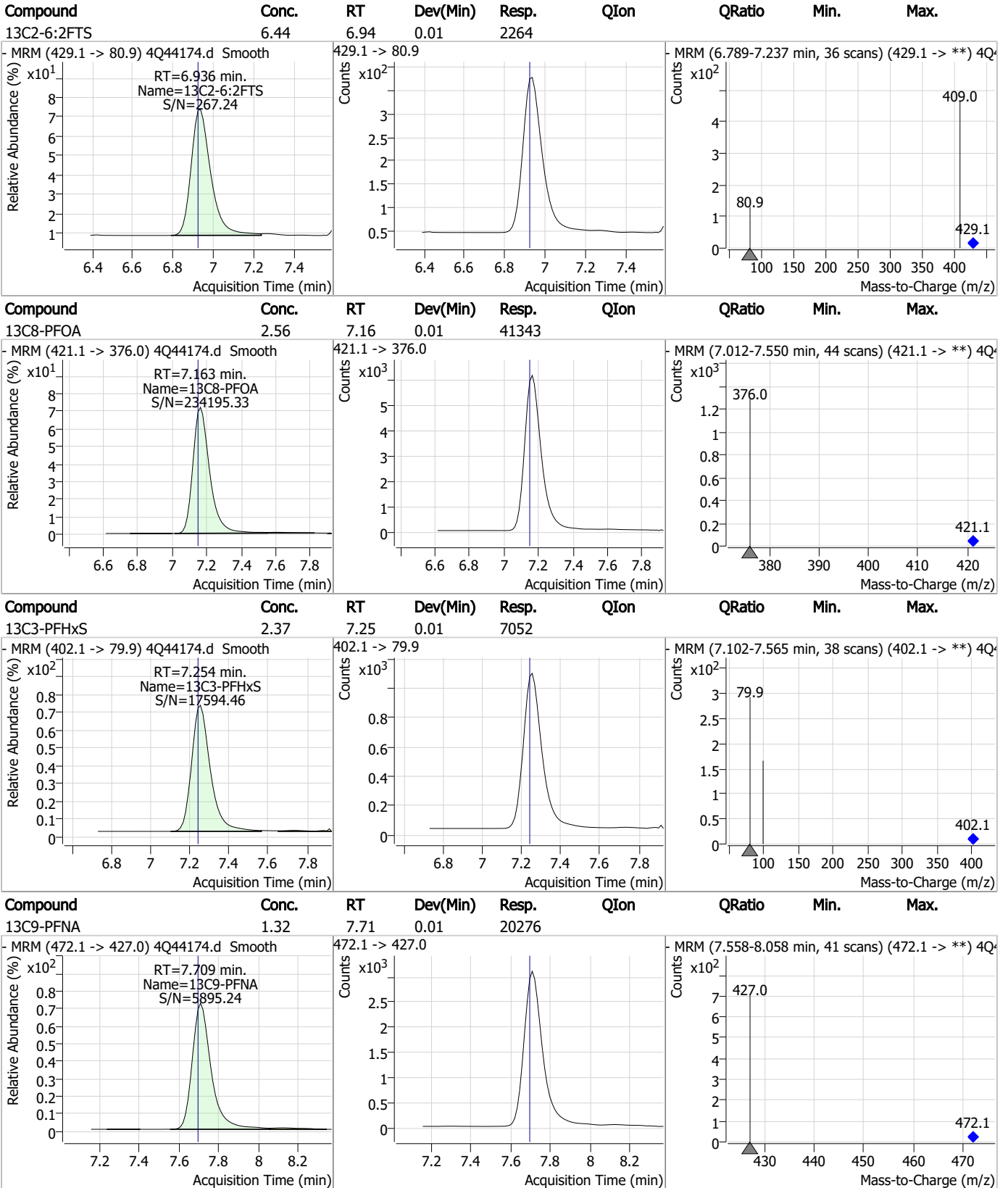
Perfluorinated Compounds by LC/MS/MS



7.2.3

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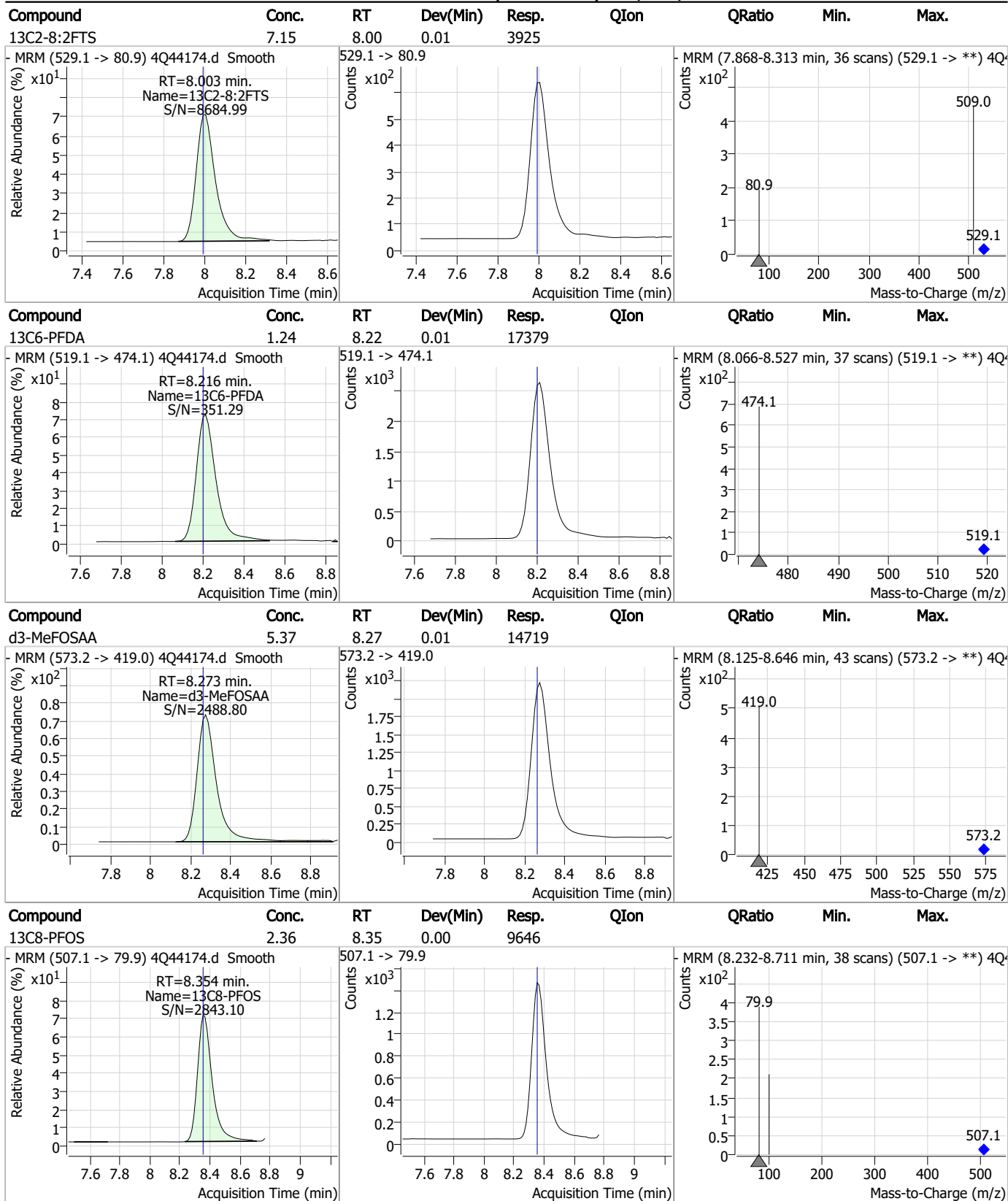
Perfluorinated Compounds by LC/MS/MS



7.2.3

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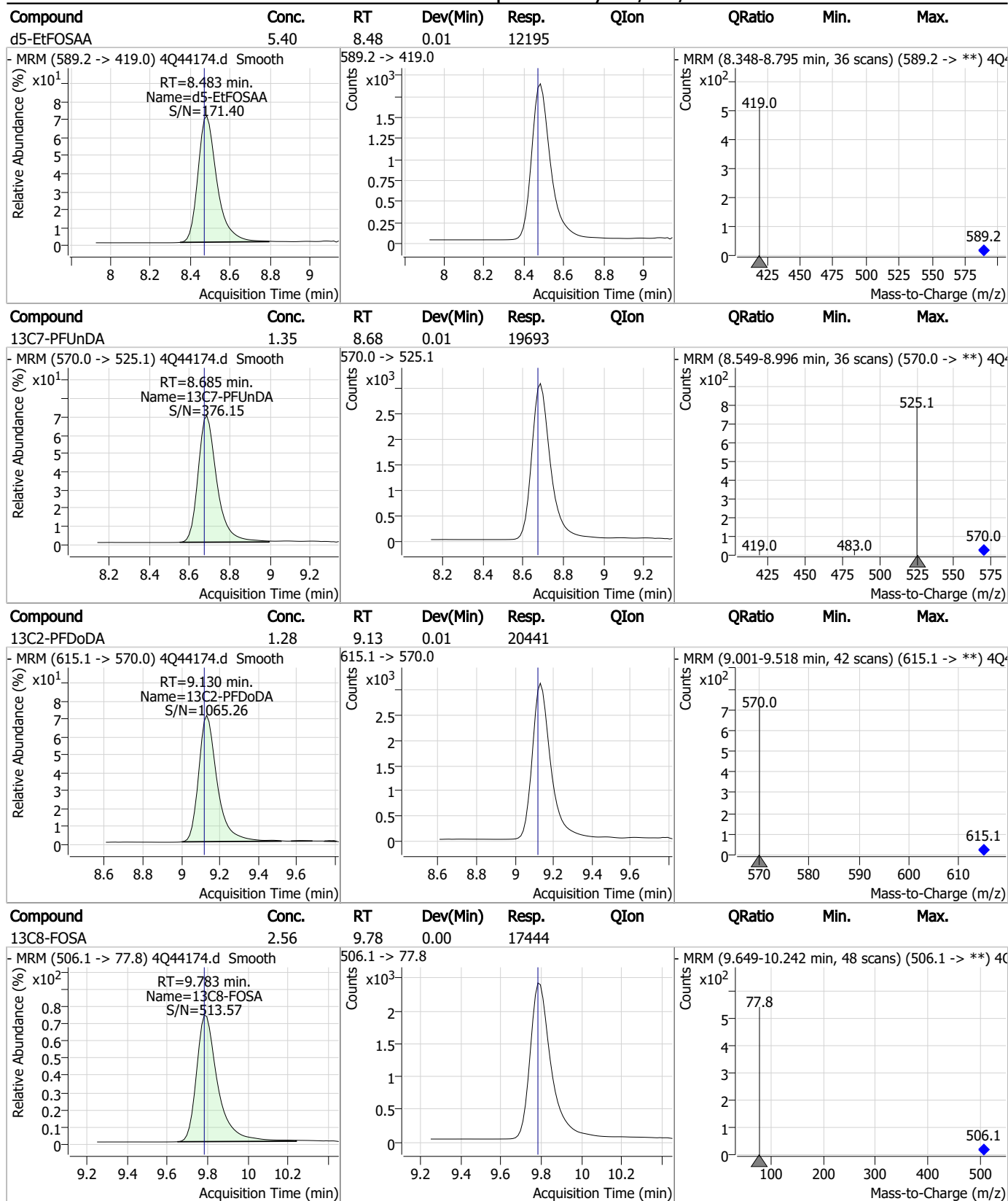
Perfluorinated Compounds by LC/MS/MS



7.2.3

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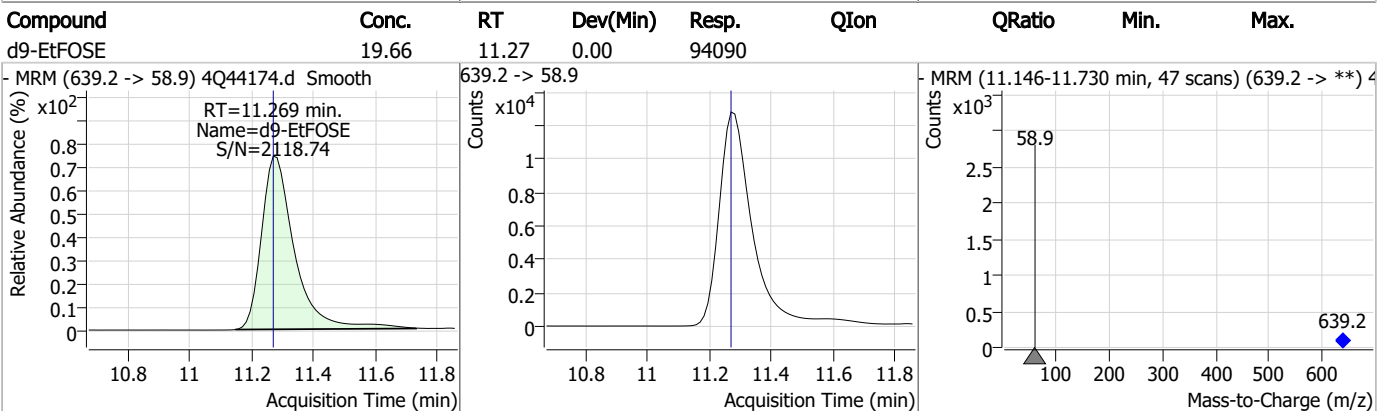
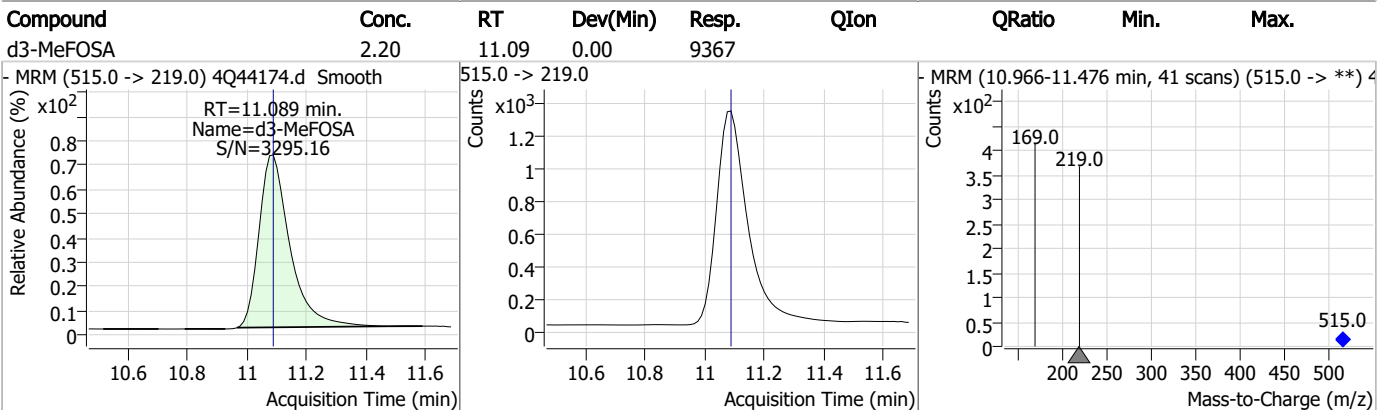
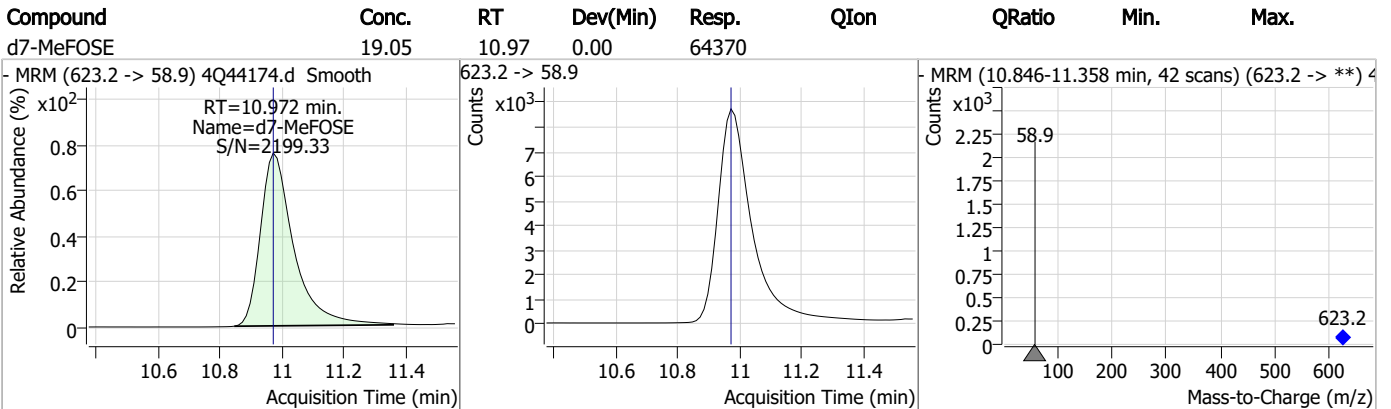
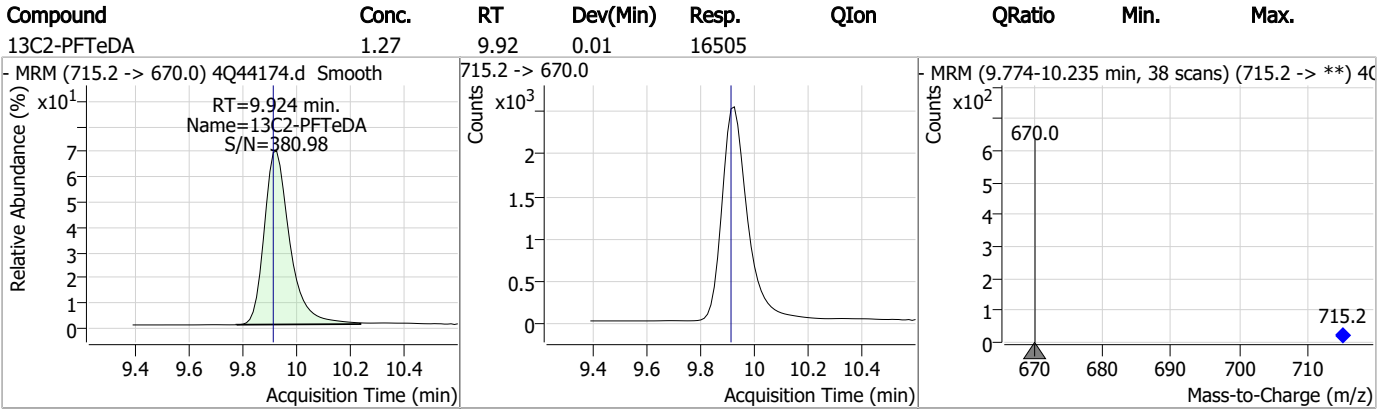
Perfluorinated Compounds by LC/MS/MS



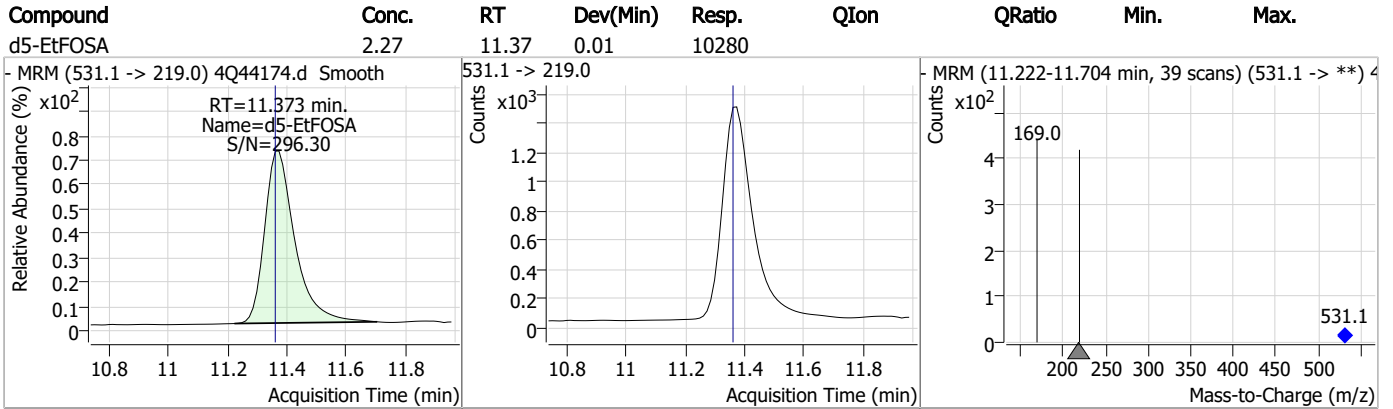
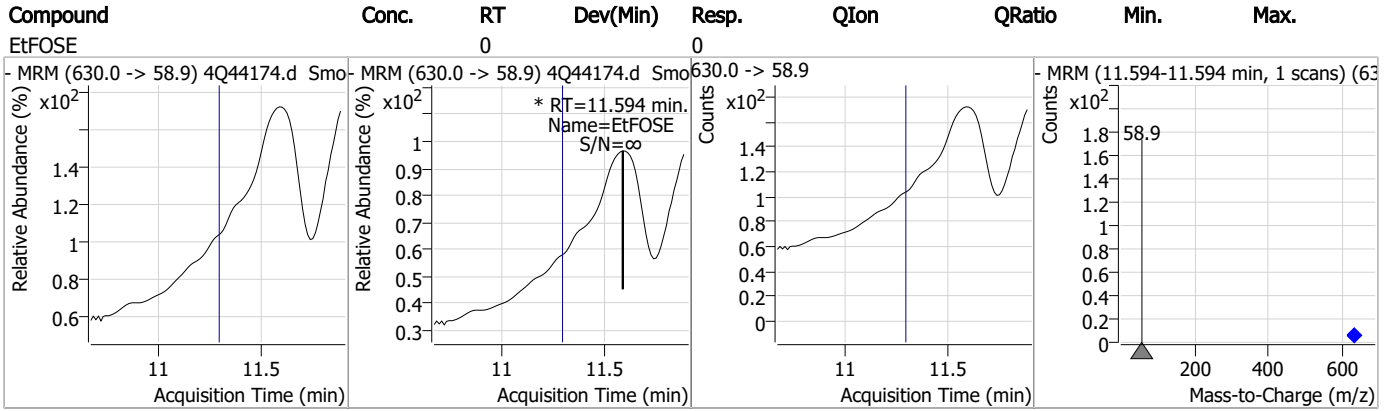
7.2.3

7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.3

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44185.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/10/2023 1:51:19 AM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	126700	10.00 µg/L	-0.050
M5-PFPeA	4.375	268.3 -> 223.0	63029	5.00 µg/L	-0.012
M5-PFHxA	5.559	318.0 -> 273.0	45659	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	26880	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	41180	2.50 µg/L	0.000
M9-PFNA	7.709	472.1 -> 427.0	20058	1.25 µg/L	0.012
M6-PFDA	8.203	519.1 -> 474.1	18673	1.25 µg/L	0.000
M7-PFUnDA	8.672	570.0 -> 525.1	19797	1.25 µg/L	0.000
M2-PFDoDA	9.130	615.1 -> 570.0	20768	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	15754	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	16948	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	10645	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	7187	2.50 µg/L	0.000
M8-PFOS	8.354	507.1 -> 79.9	9733	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1342	5.00 µg/L	0.000
M2-6:2FTS	6.923	429.1 -> 80.9	2387	5.00 µg/L	0.000
M2-8:2FTS	7.990	529.1 -> 80.9	3926	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	15200	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	24111	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	13376	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	64823	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	96522	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	10286	2.50 µg/L	0.000
M3-MeFOSA	11.089	515.0 -> 219.0	9839	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	11337	2.50 µg/L	0.000
13C3-PFBA	2.878	216.0 -> 172.0	65182	5.00 µg/L	-0.050
18O2-PFHxS	7.253	403.0 -> 83.9	4474	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	49839	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	16275	1.25 µg/L	0.000
13C5-PFNA	7.709	468.0 -> 423.0	23305	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	41335	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1342	7.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 147.5%		
13C2-6:2FTS	6.923	429.1 -> 80.9	2387	7.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 145.6%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3926	7.67 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 153.4%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20768	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15754	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-PFBS	5.452	302.1 -> 79.9	10645	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFHxS	7.242	402.1 -> 79.9	7187	2.59 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C4-PFBA	2.874	216.8 -> 171.9	126700	10.33 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C4-PFHpA	6.492	367.1 -> 322.0	26880	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	45659	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.375	268.3 -> 223.0	63029	4.95 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C6-PFDA	8.203	519.1 -> 474.1	18673	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.2%	
13C7-PFUnDA	8.672	570.0 -> 525.1	19797	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.2%	
13C8-FOSA	9.783	506.1 -> 77.8	16948	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C8-PFOA	7.148	421.1 -> 376.0	41180	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C8-PFOS	8.354	507.1 -> 79.9	9733	2.28 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.2%	
13C9-PFNA	7.709	472.1 -> 427.0	20058	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
d3-MeFOSAA	8.261	573.2 -> 419.0	15200	5.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	24111	8.87 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.7%	
d3-MeFOSA	11.089	515.0 -> 219.0	9839	2.21 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.5%	
d5-EtFOSAA	8.470	589.2 -> 419.0	13376	5.68 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.5%	
d7-MeFOSE	10.972	623.2 -> 58.9	64823	18.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 73.5%	
d9-EtFOSE	11.269	639.2 -> 58.9	96522	19.33 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.3%	
d5-EtFOSA	11.360	531.1 -> 219.0	10286	2.18 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.0%	

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.	

7.2.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	7.168	599.0 -> 98.8				
		363.1 -> 319.0	0	µg/L	m	1
PFHpS	-	363.1 -> 169.0	0			
		449.0 -> 79.9	-	N.D.		
PFHxA	-	449.0 -> 98.9				
		313.0 -> 269.0	-	N.D.		
PFHxS	-	313.0 -> 118.9				
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	7.150	548.8 -> 98.9				
		413.0 -> 369.0	0	µg/L	m	1
PFOS	-	413.0 -> 169.0	0			
		498.9 -> 79.9	-	N.D.		
PFPeA	-	498.9 -> 98.8				
		263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.947	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.24
7

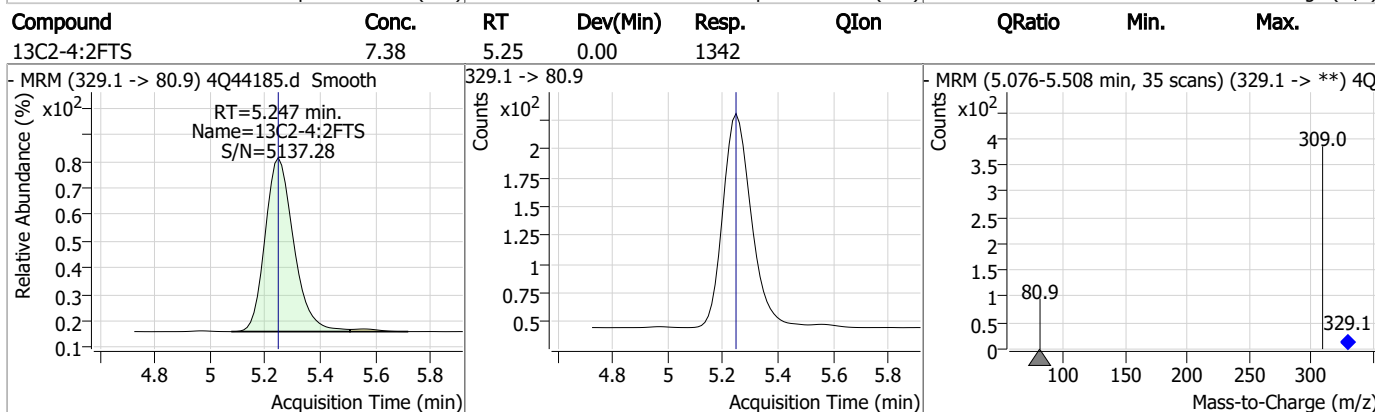
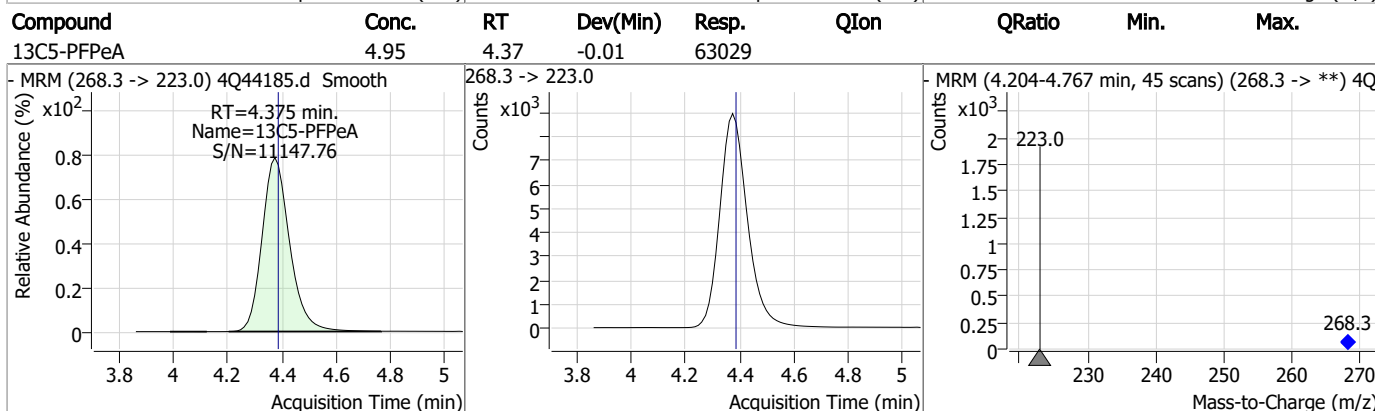
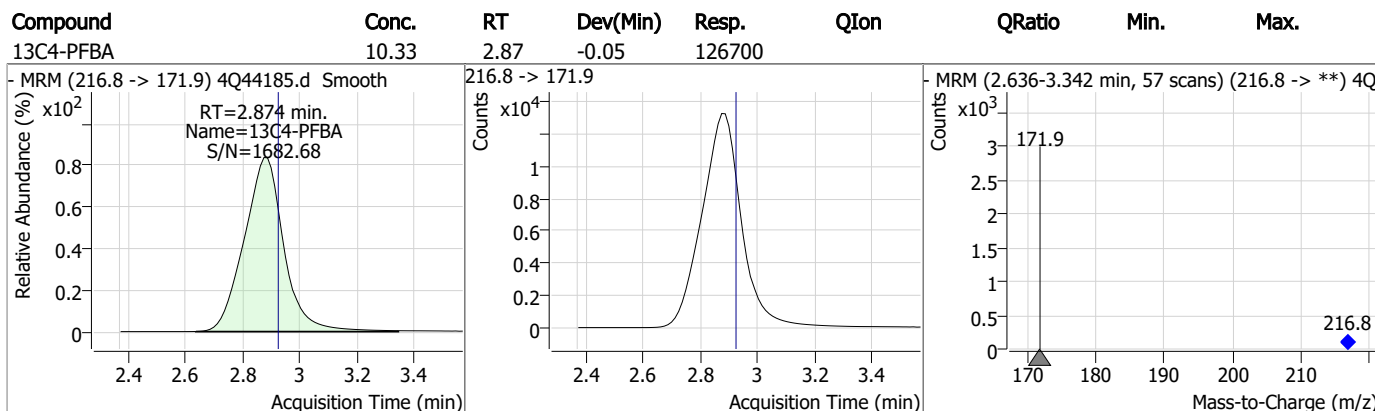
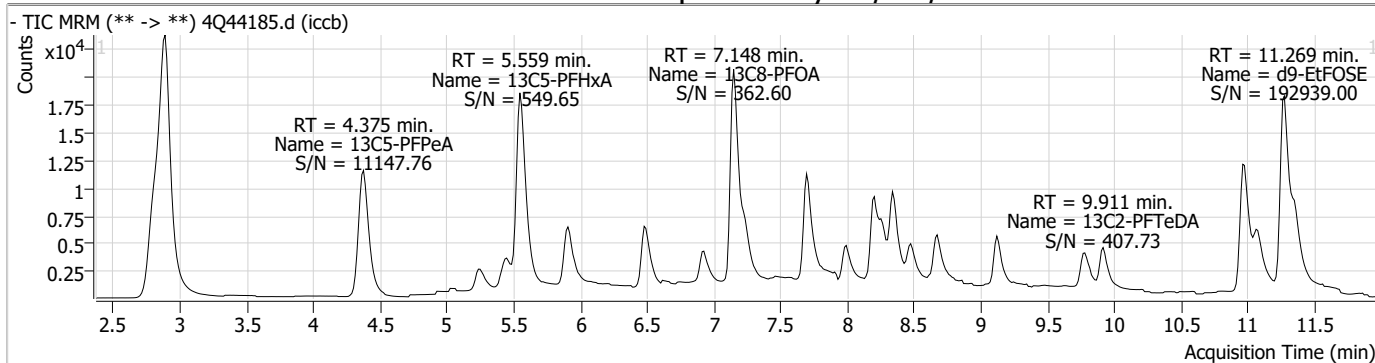
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.4

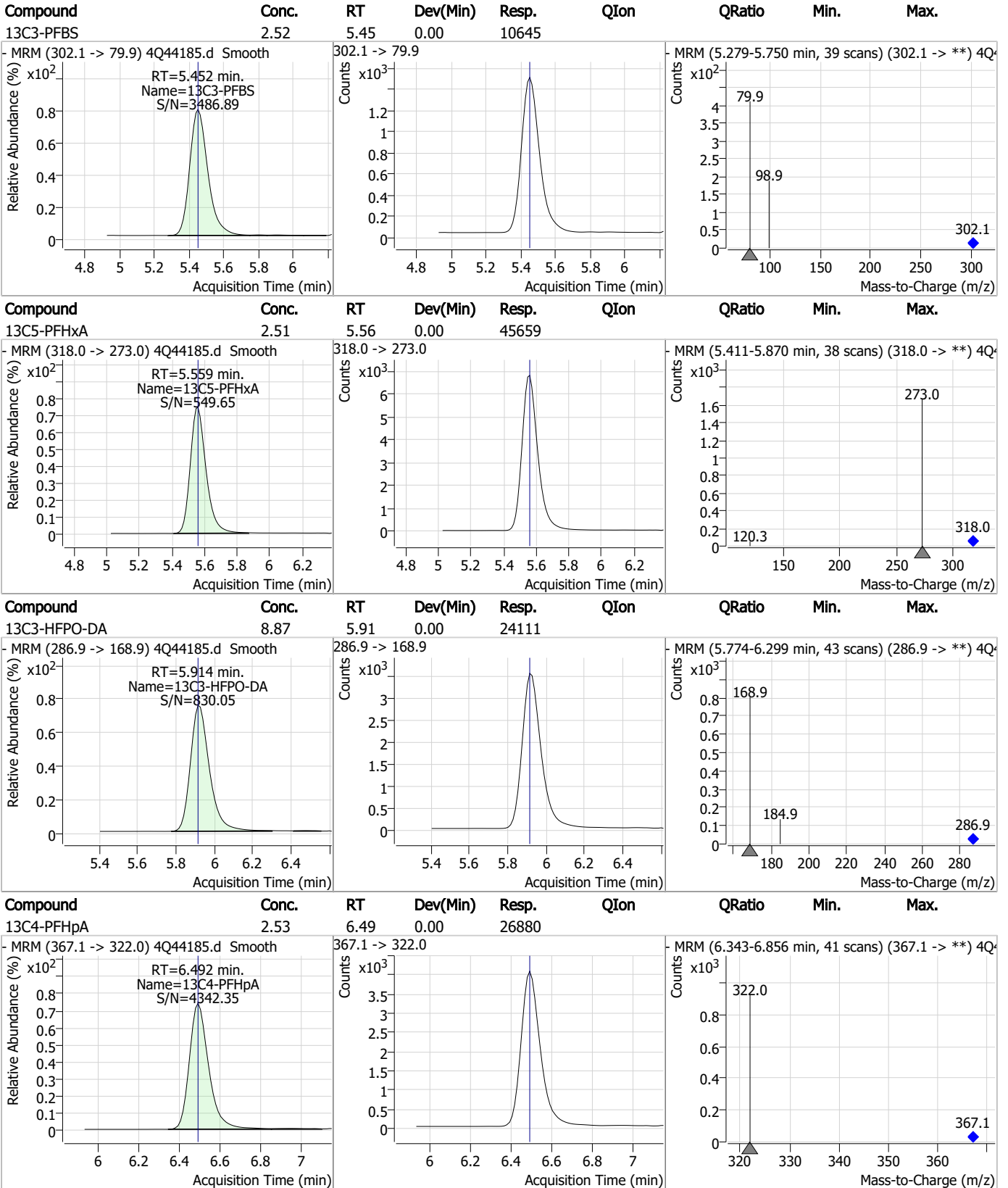
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Perfluorinated Compounds by LC/MS/MS



7.2.4
7

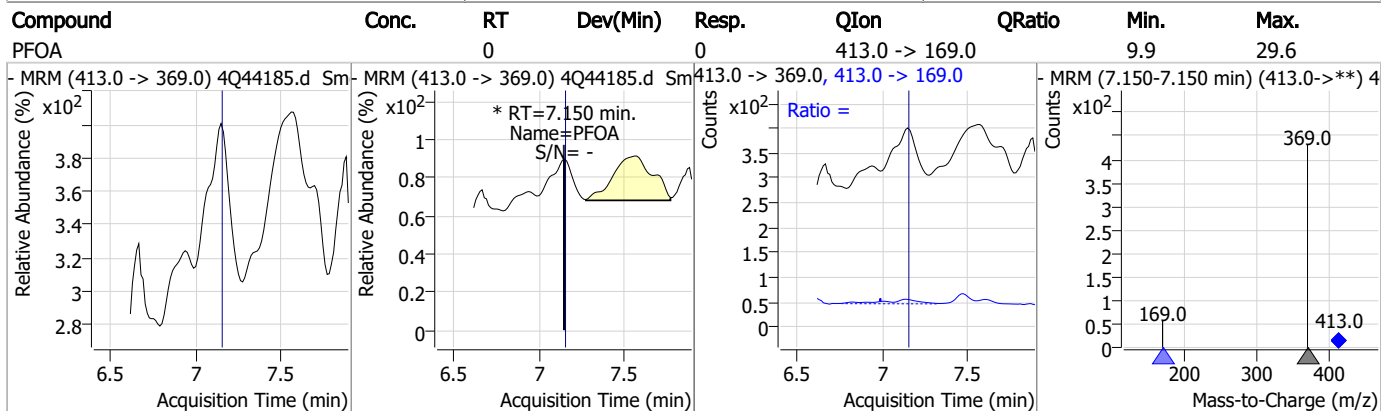
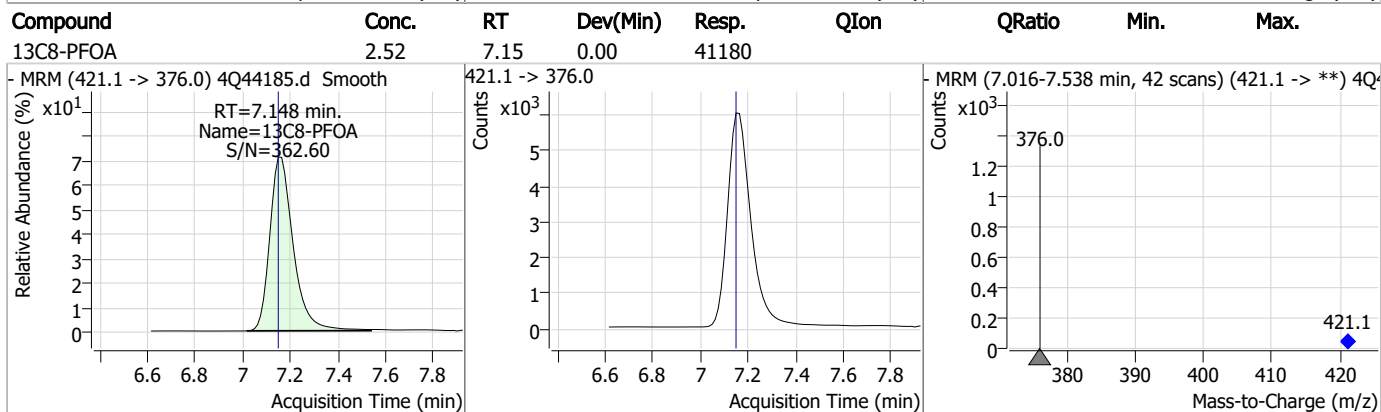
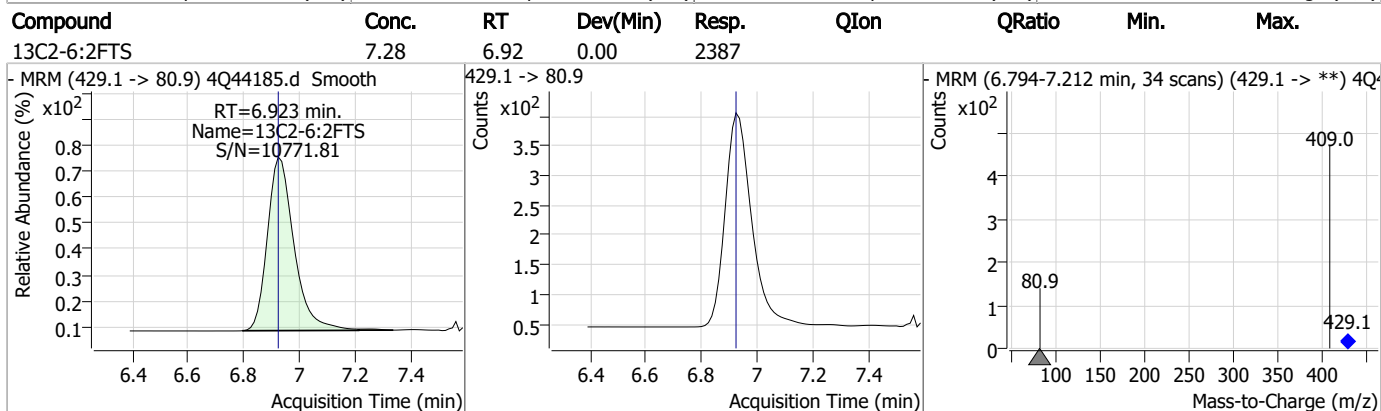
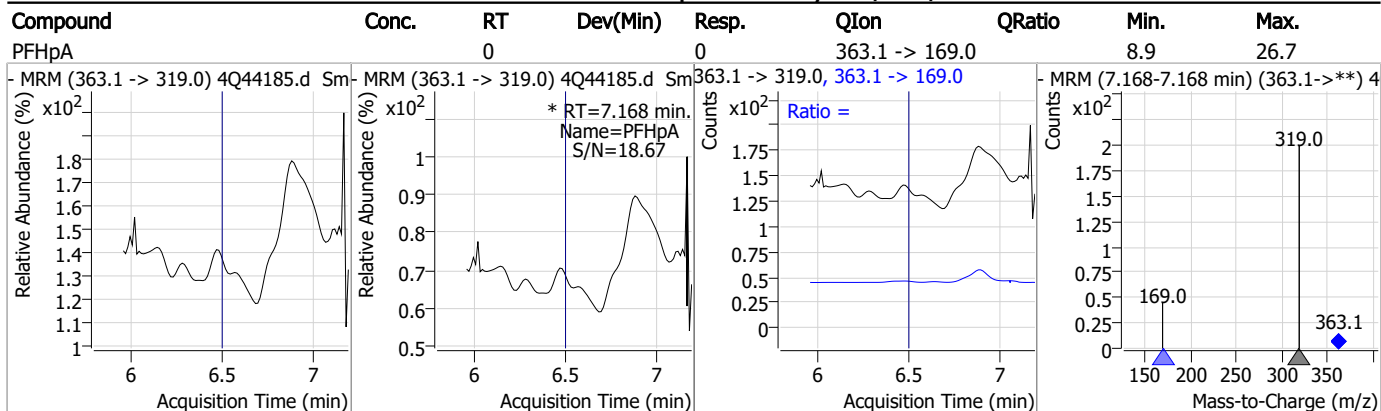
Perfluorinated Compounds by LC/MS/MS



7.2.4

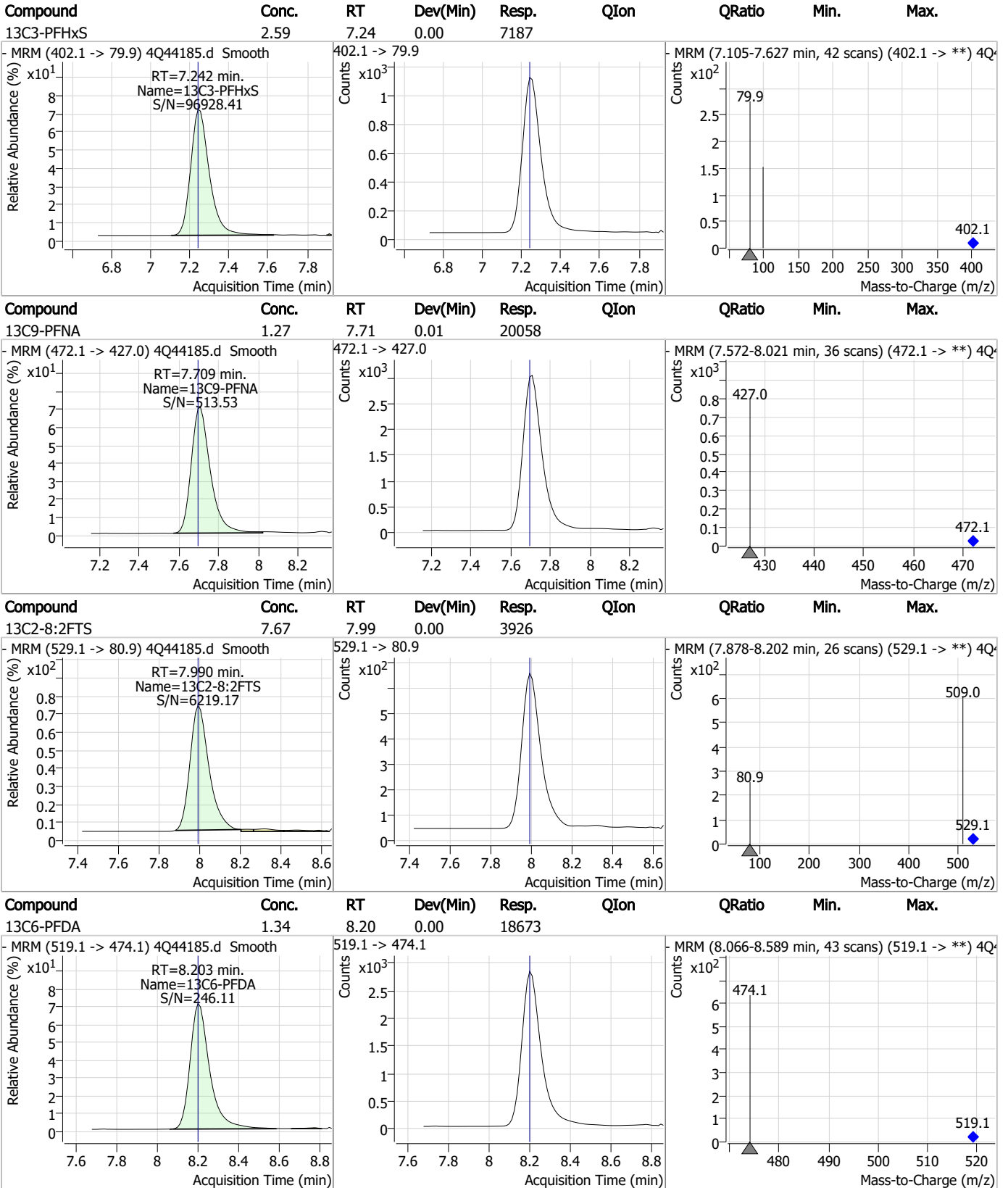
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Perfluorinated Compounds by LC/MS/MS



7.24
7

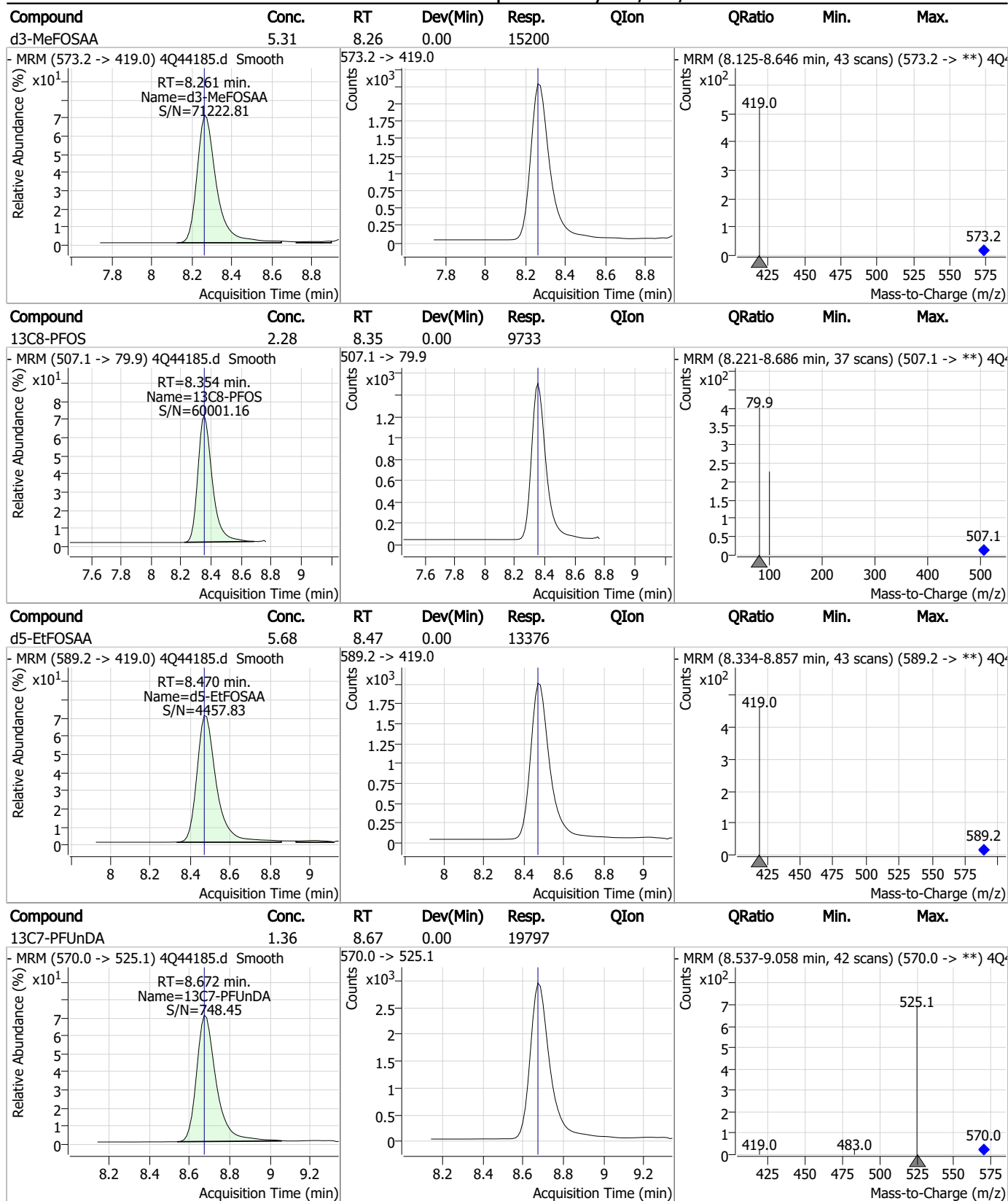
Perfluorinated Compounds by LC/MS/MS



7.2.4

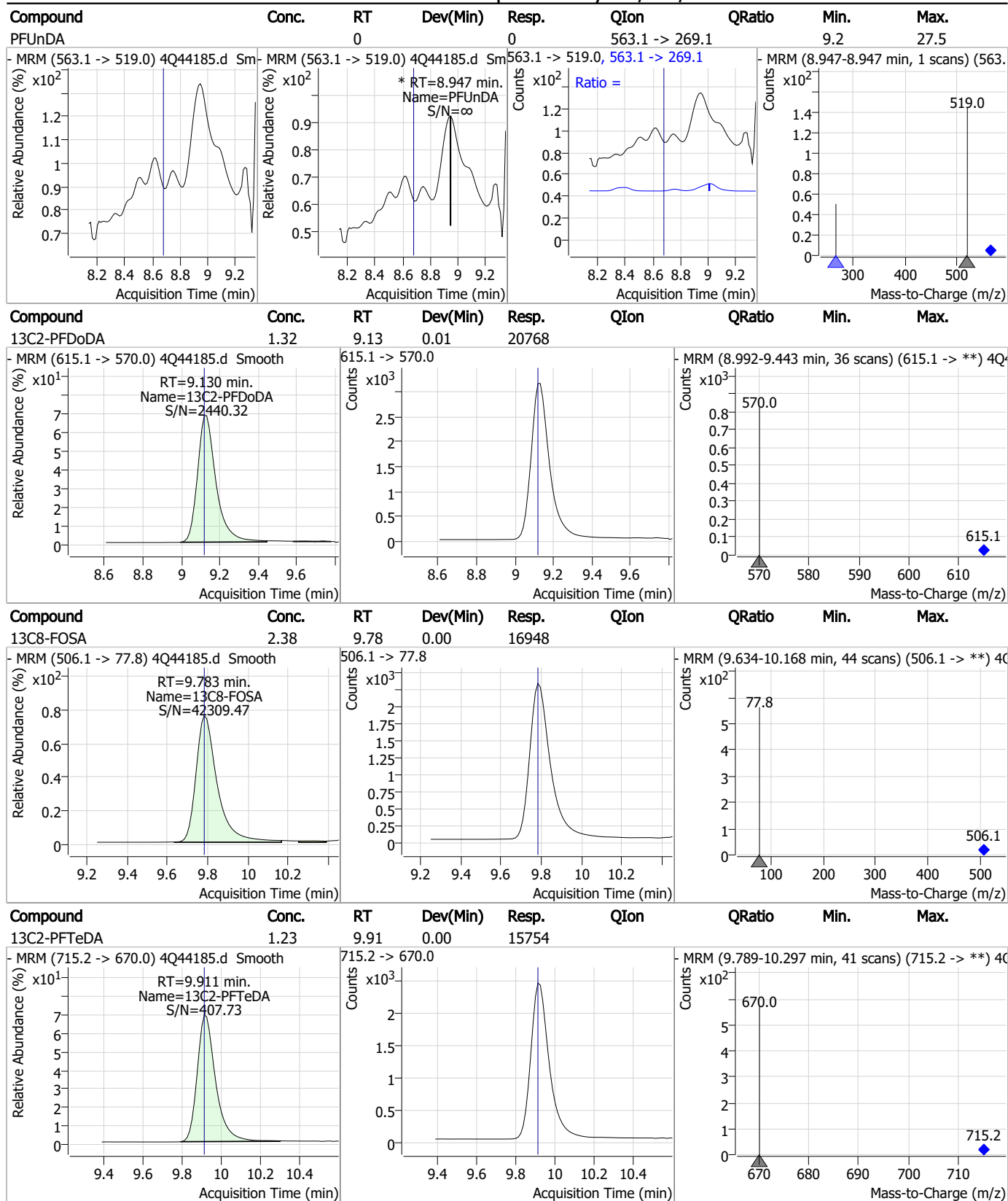
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Perfluorinated Compounds by LC/MS/MS



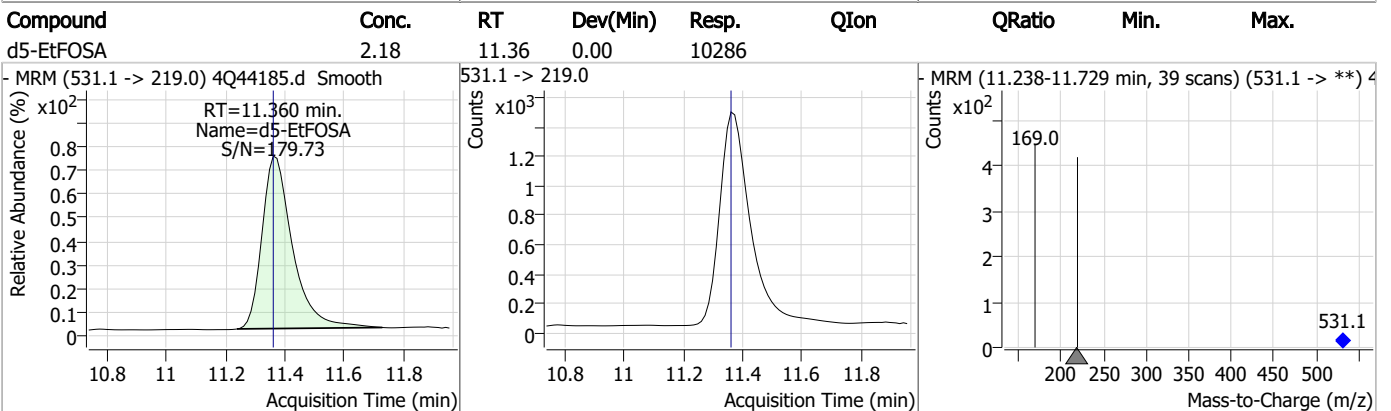
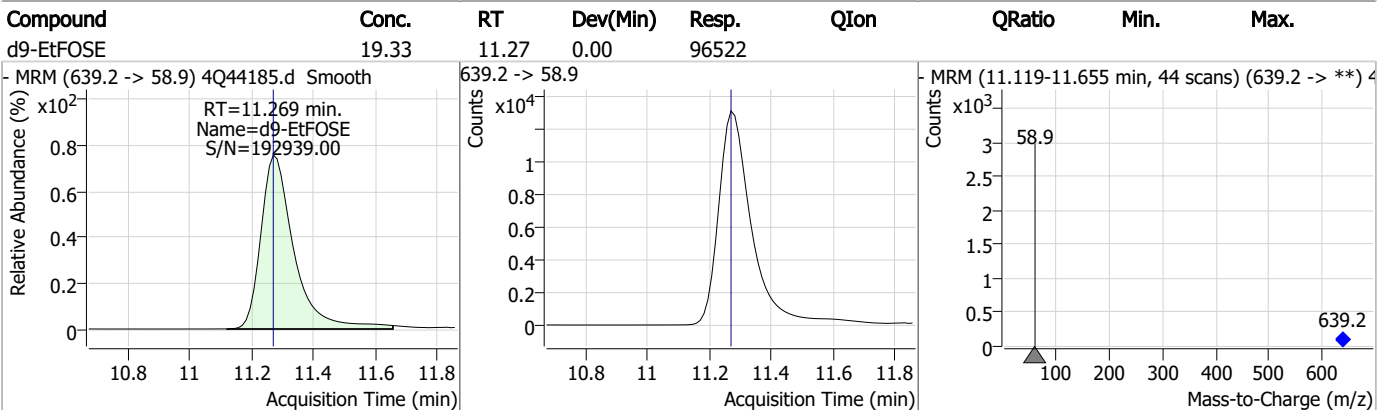
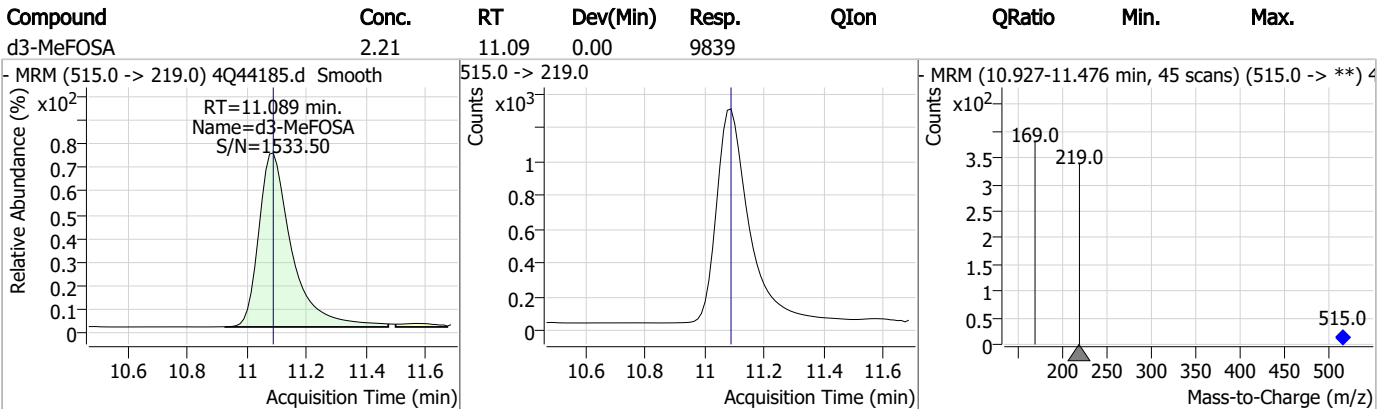
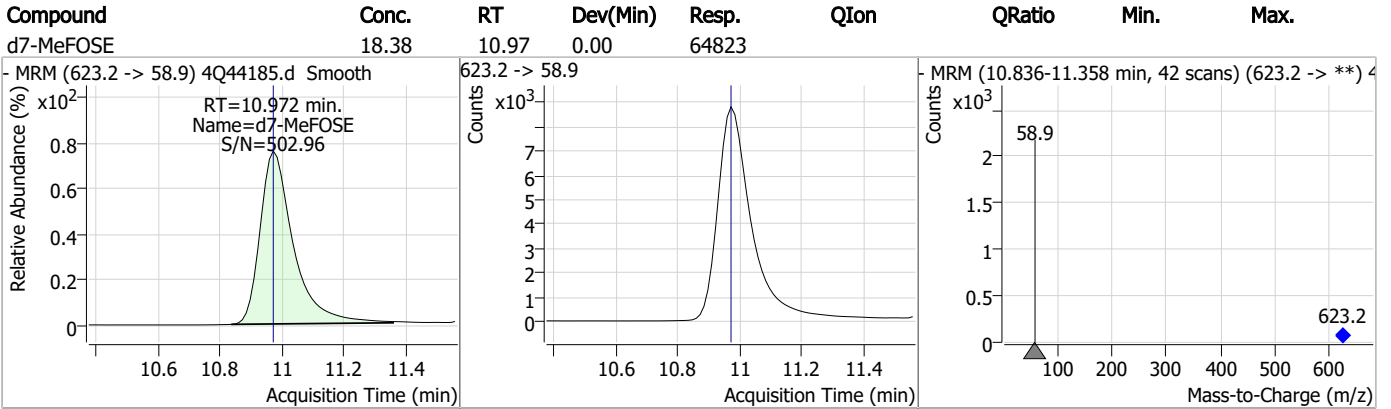
7.2.4
7

Perfluorinated Compounds by LC/MS/MS



7.2.4
7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44175.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 11:30:48 PM
 Sample Name : op96784-bs
 Vial : P3-D1
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96784,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	133972	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	67667	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	47916	2.50 µg/L	0.000
M4-PFHpA	6.504	367.1 -> 322.0	27399	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	42911	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	20329	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	18917	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	20398	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20983	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	14286	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	11695	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	11243	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	7284	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10019	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1236	5.00 µg/L	0.012
M2-6:2FTS	6.936	429.1 -> 80.9	2463	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	3854	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	15106	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	24981	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	12246	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	41367	25.00 µg/L	0.000
M9-EtFOSE	11.281	639.2 -> 58.9	61466	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	7753	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	6213	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	10029	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	64239	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4713	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	49121	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16339	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	23205	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	39034	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1236	6.45 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.0%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2463	7.13 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 142.6%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3854	7.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 143.0%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20983	1.33 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C2-PFTeDA	9.924	715.2 -> 670.0	14286	1.11 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.7%		
13C3-PFBS	5.464	302.1 -> 79.9	11243	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-PFHxS	7.254	402.1 -> 79.9	7284	2.49 µg/L	0.012

7.3.1
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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 = 99.7%	
13C4-PFBA	2.924	216.8 -> 171.9	133972	11.08 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 110.8%	
13C4-PFHpA	6.504	367.1 -> 322.0	27399	2.73 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.1%	
13C5-PFHxA	5.559	318.0 -> 273.0	47916	2.79 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.5%	
13C5-PFPeA	4.387	268.3 -> 223.0	67667	5.63 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.6%	
13C6-PFDA	8.216	519.1 -> 474.1	18917	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.2%	
13C7-PFUnDA	8.685	570.0 -> 525.1	20398	1.40 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C8-FOSA	9.796	506.1 -> 77.8	11695	1.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.4%	
13C8-PFOA	7.163	421.1 -> 376.0	42911	2.66 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C8-PFOS	8.354	507.1 -> 79.9	10019	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C9-PFNA	7.709	472.1 -> 427.0	20329	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.1%	
d3-MeFOSAA	8.273	573.2 -> 419.0	15106	5.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 119.3%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	24981	9.73 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
d3-MeFOSA	11.089	515.0 -> 219.0	6213	1.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 63.2%	
d5-EtFOSAA	8.483	589.2 -> 419.0	12246	5.87 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.5%	
d7-MeFOSE	10.972	623.2 -> 58.9	41367	13.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 53.0%	
d9-EtFOSE	11.281	639.2 -> 58.9	61466	13.91 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 55.6%	
d5-EtFOSA	11.373	531.1 -> 219.0	7753	1.85 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.2%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	17472	8.79 µg/L	96
		327.1 -> 80.9	7790		
6:2FTS	6.936	427.1 -> 407.0	20589	8.66 µg/L	98
		427.1 -> 80.9	8602		
8:2FTS	8.003	527.1 -> 507.0	20163	9.39 µg/L	92
		527.1 -> 80.8	7715		
EtFOSAA	8.483	584.2 -> 419.1	4882	2.08 µg/L	89
		584.2 -> 526.0	2905		
FOSA	9.786	498.1 -> 77.9	11029	2.25 µg/L	99
		498.1 -> 478.0	313		
MeFOSAA	8.274	570.1 -> 419.0	5334	2.03 µg/L	87
		570.1 -> 483.0	1311		
PFBA	2.920	212.8 -> 168.9	32120	8.95 µg/L	100
PFBS	5.453	298.7 -> 79.9	9106	1.97 µg/L	95
		298.7 -> 98.8	3558		
PFDA	8.216	512.9 -> 469.0	32894	2.29 µg/L	97
		512.9 -> 219.0	6906		
PFDoDA	9.131	613.1 -> 569.0	38026	2.26 µg/L	98
		613.1 -> 319.0	5002		
PFDS	9.294	599.0 -> 79.9	5334	2.15 µg/L	99

7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2733			
PFHpA	6.505	363.1 -> 319.0	40159	2.32	µg/L	99
		363.1 -> 169.0	6947			
PFHpS	7.836	449.0 -> 79.9	7906	2.19	µg/L	97
		449.0 -> 98.9	4295			
PFHxA	5.562	313.0 -> 269.0	41896	2.23	µg/L	99
		313.0 -> 118.9	1358			
PFHxS	7.255	398.7 -> 79.9	6641	2.22	µg/L	m 88
		398.7 -> 98.9	3260			
PFNA	7.709	463.0 -> 419.0	34718	2.30	µg/L	100
		463.0 -> 219.0	8780			
PFNS	8.848	548.8 -> 79.9	4788	2.19	µg/L	97
		548.8 -> 98.9	2218			
PFOA	7.164	413.0 -> 369.0	53900	2.18	µg/L	98
		413.0 -> 169.0	11043			
PFOS	8.355	498.9 -> 79.9	10921	2.23	µg/L	m 87
		498.9 -> 98.8	5514			
PFPeA	4.389	263.0 -> 219.0	74220	4.56	µg/L	100
PFPeS	6.531	349.1 -> 79.9	5273	2.06	µg/L	94
		349.1 -> 98.9	2600			
PFTeDA	9.924	713.1 -> 669.0	33068	2.36	µg/L	100
		713.1 -> 168.9	2790			
PFTrDA	9.541	663.0 -> 619.0	49308	2.19	µg/L	99
		663.0 -> 168.9	4712			
PFUnDA	8.685	563.1 -> 519.0	32006	2.31	µg/L	98
		563.1 -> 269.1	6086			
11CI-PF3OUdS	9.581	630.9 -> 450.9	41360	4.60	µg/L	98
		632.9 -> 452.9	12871			
9CI-PF3ONS	8.712	530.8 -> 351.0	56602	4.95	µg/L	100
		532.8 -> 353.0	16654			
ADONA	6.756	376.9 -> 250.9	121881	4.85	µg/L	100
		376.9 -> 84.8	32324			
HFPO-DA	5.928	284.9 -> 168.9	11389	4.77	µg/L	97
		284.9 -> 184.9	1304			
3:3FTCA	3.848	241.0 -> 177.0	6373	8.90	µg/L	98
		241.0 -> 117.0	631			
5:3FTCA	6.231	341.0 -> 237.1	144090	56.56	µg/L	100
		341.0 -> 217.0	98739			
7:3FTCA	7.686	441.0 -> 316.9	87685	66.24	µg/L	94
		441.0 -> 336.9	197866			
EtFOSA	11.375	526.0 -> 219.0	14959	4.61	µg/L	71
		526.0 -> 169.0	20990			
EtFOSE	11.295	630.0 -> 58.9	27135	11.40	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	11602	4.96	µg/L	m 76
		511.9 -> 169.0	17749			
MeFOSE	10.997	616.1 -> 58.9	18466	10.87	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	4363	1.97	µg/L	100
		699.1 -> 98.8	2479			
NFDHA	5.453	295.0 -> 201.0	5102	3.81	µg/L	95
		295.0 -> 84.9	1224			
PFMBA	4.791	279.0 -> 85.1	41096	4.52	µg/L	100
PFMPA	3.540	229.0 -> 84.9	39897	4.69	µg/L	100
PFEESA	5.997	314.8 -> 134.9	55837	3.93	µg/L	98
		314.8 -> 82.9	2018			

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

7.3.1
7

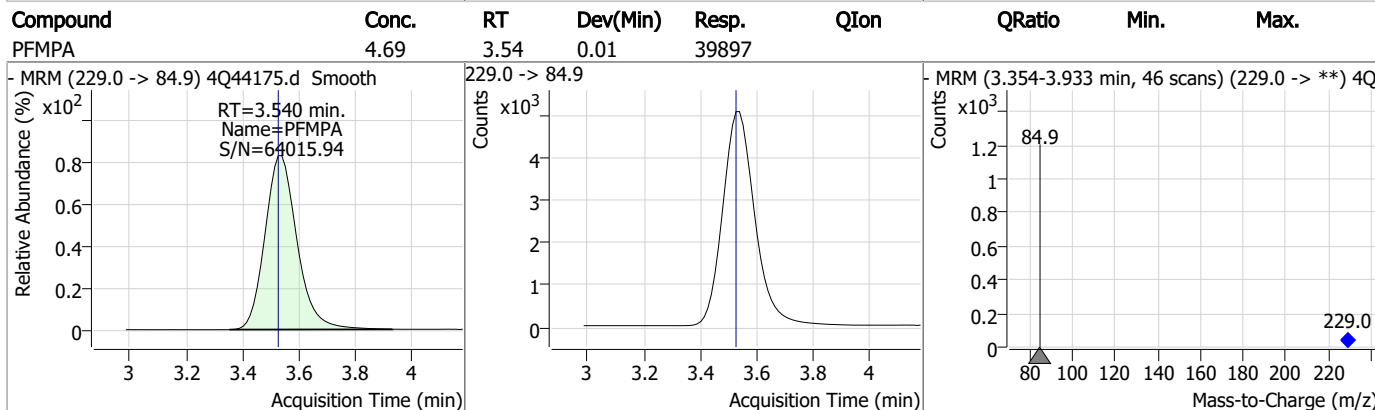
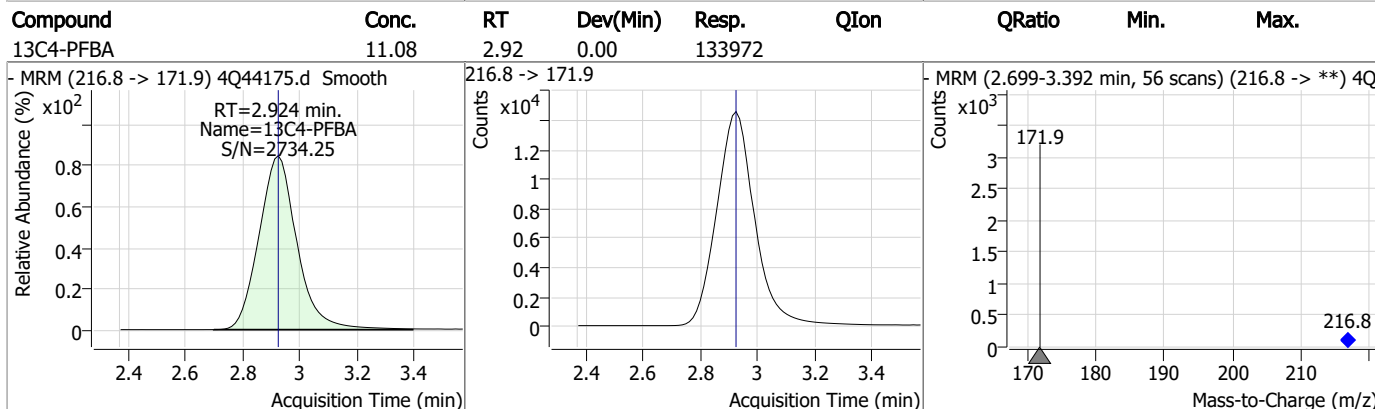
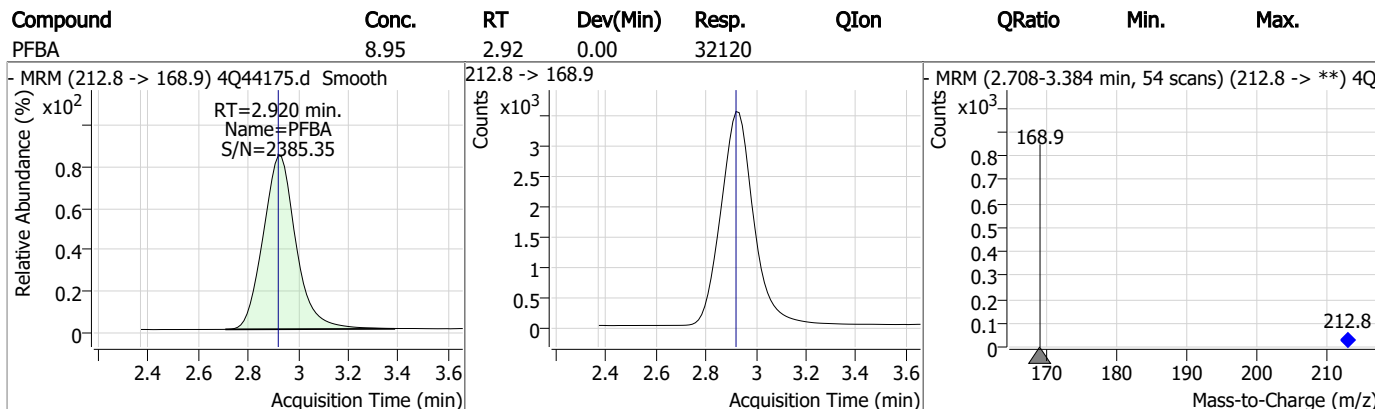
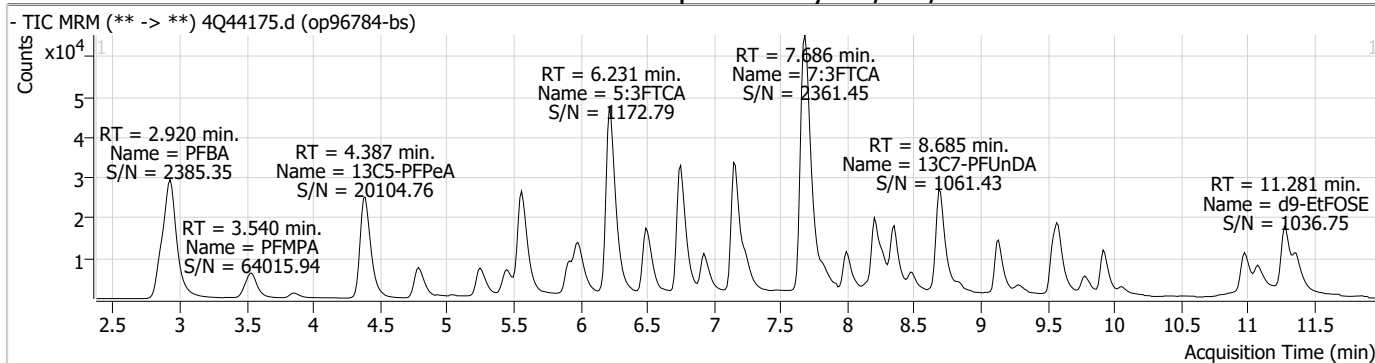
Perfluorinated Compounds by LC/MS/MS

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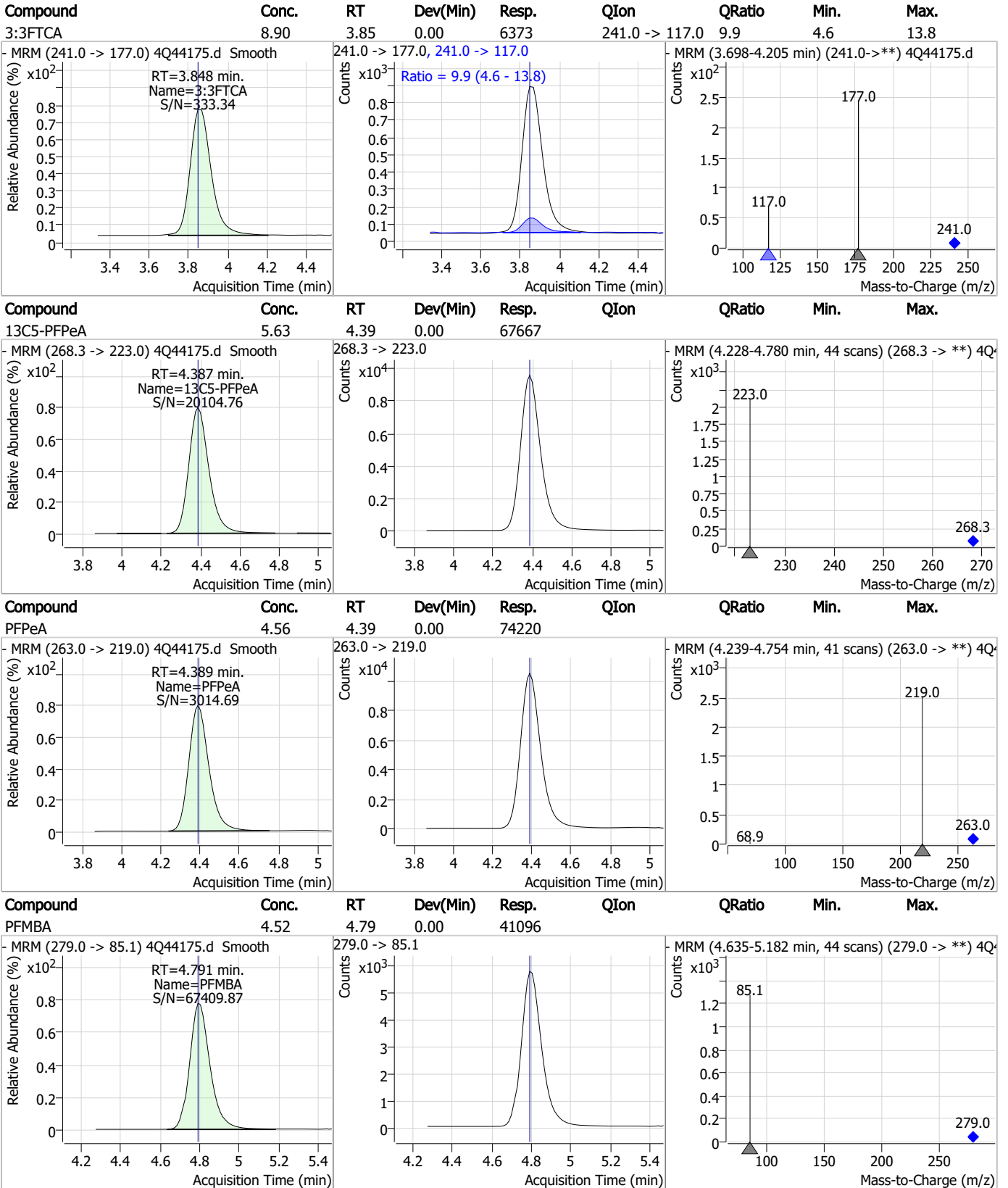
7.3.1

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

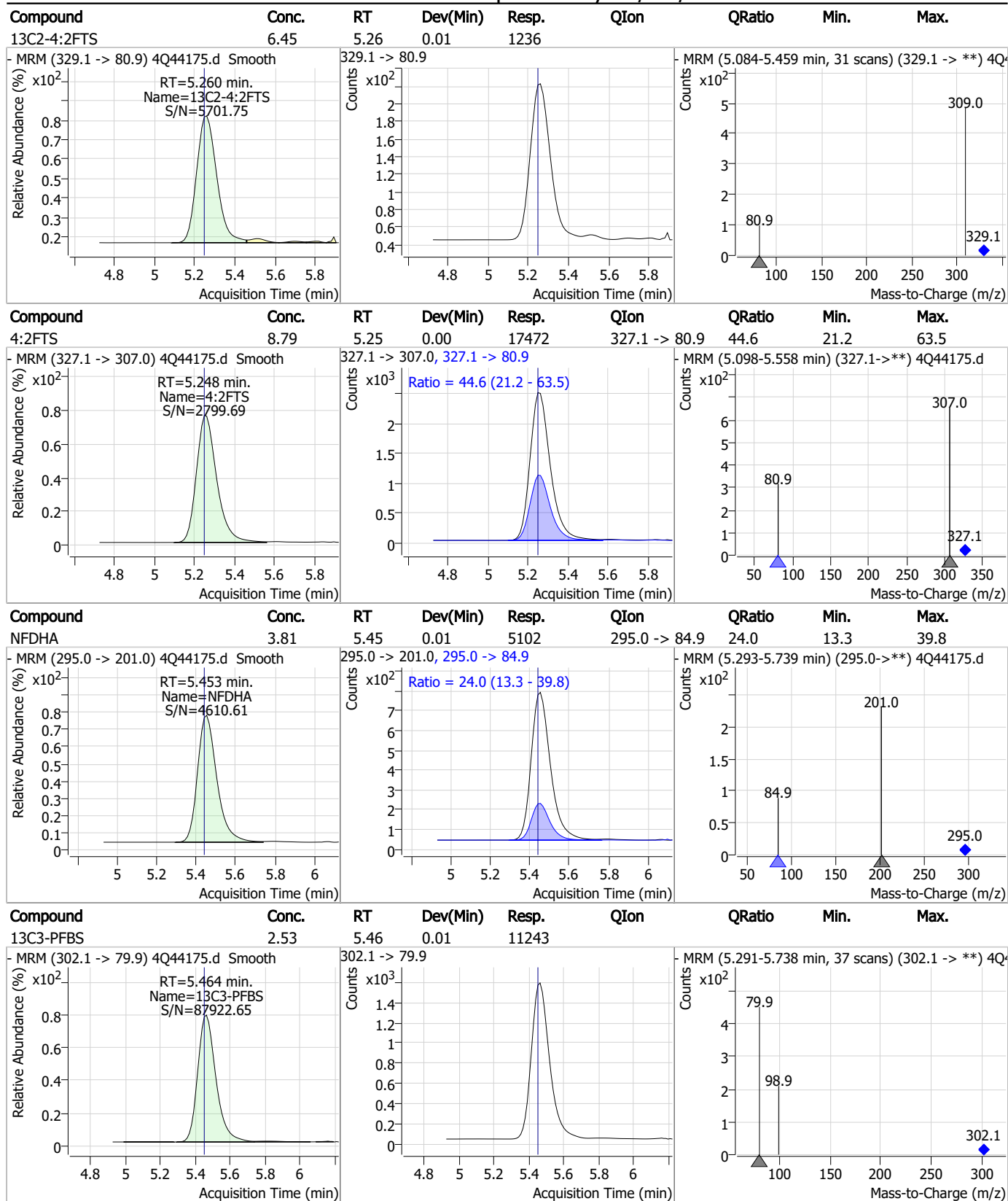


7.3.1

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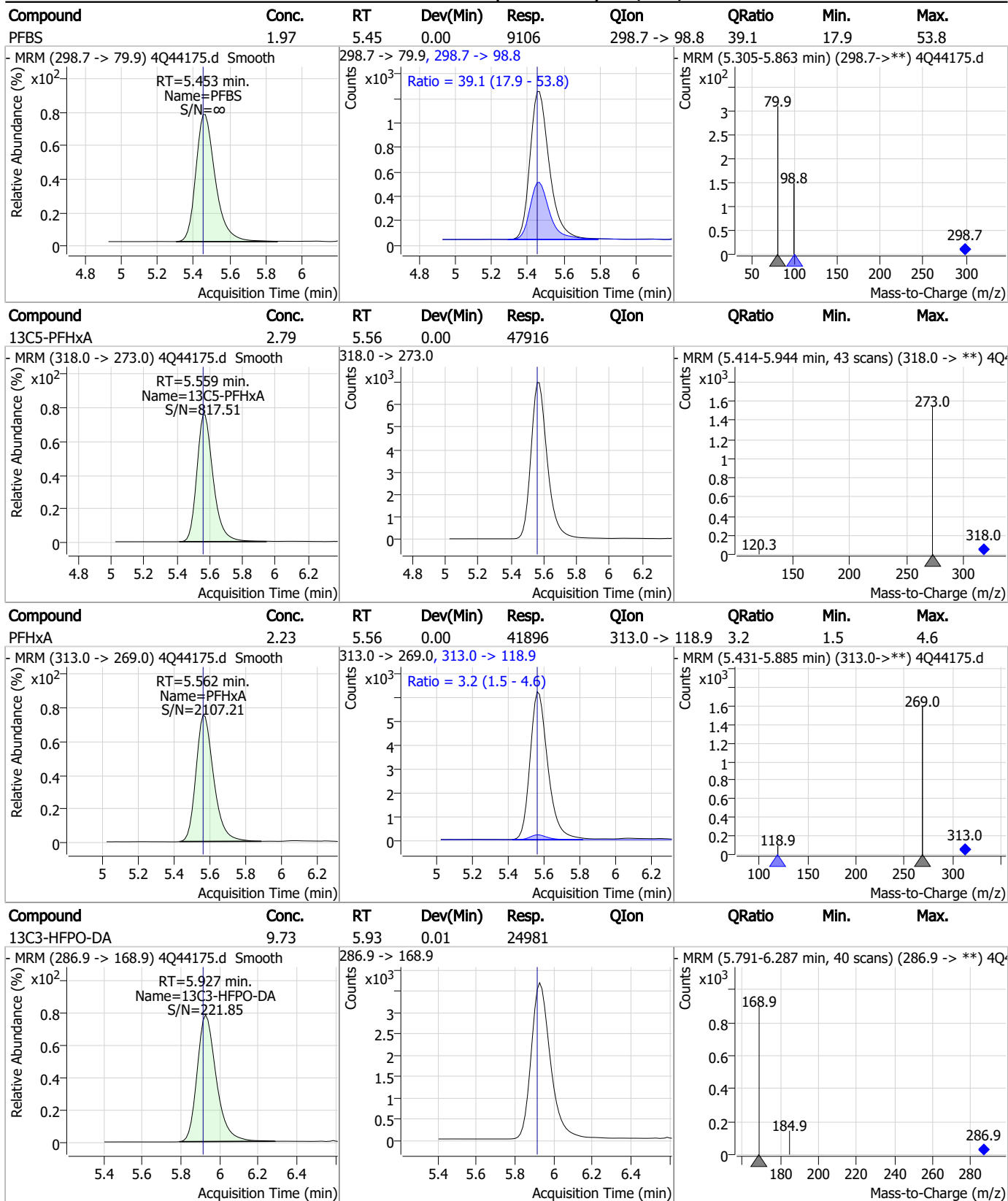


Perfluorinated Compounds by LC/MS/MS



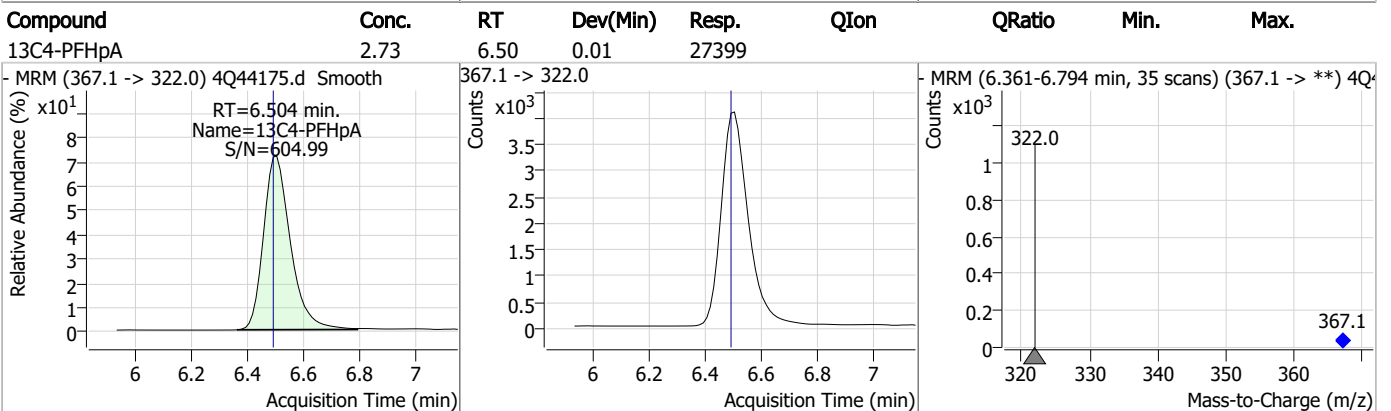
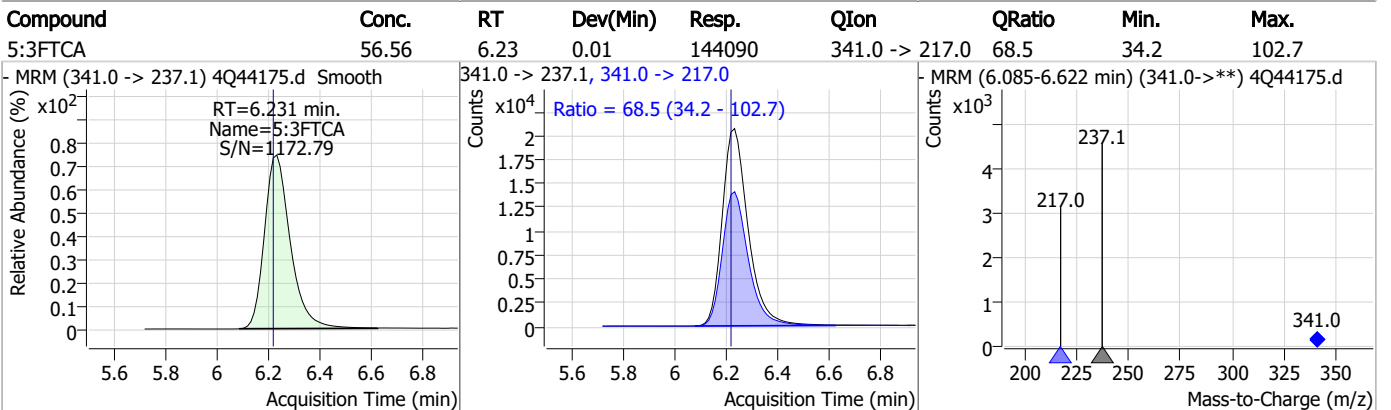
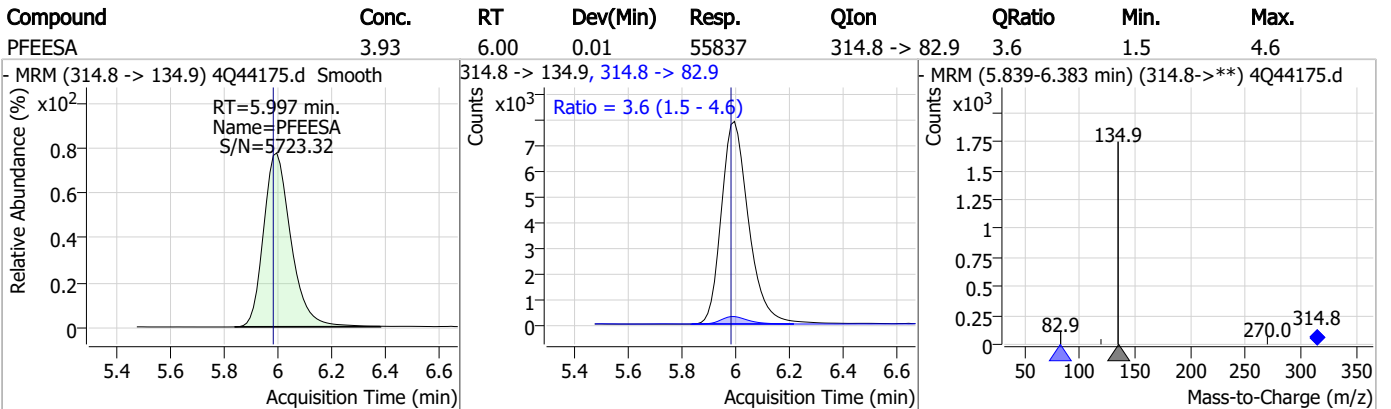
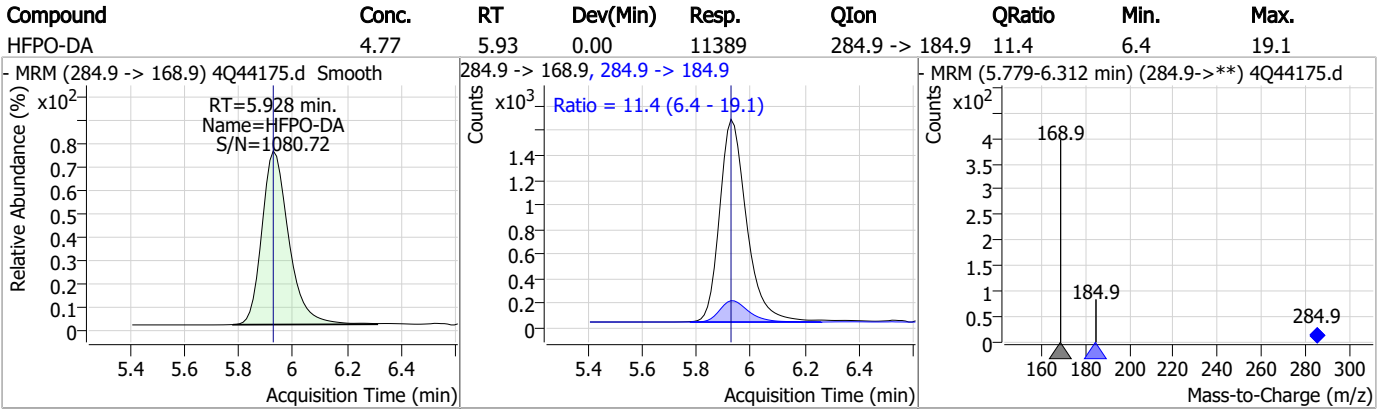
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Perfluorinated Compounds by LC/MS/MS

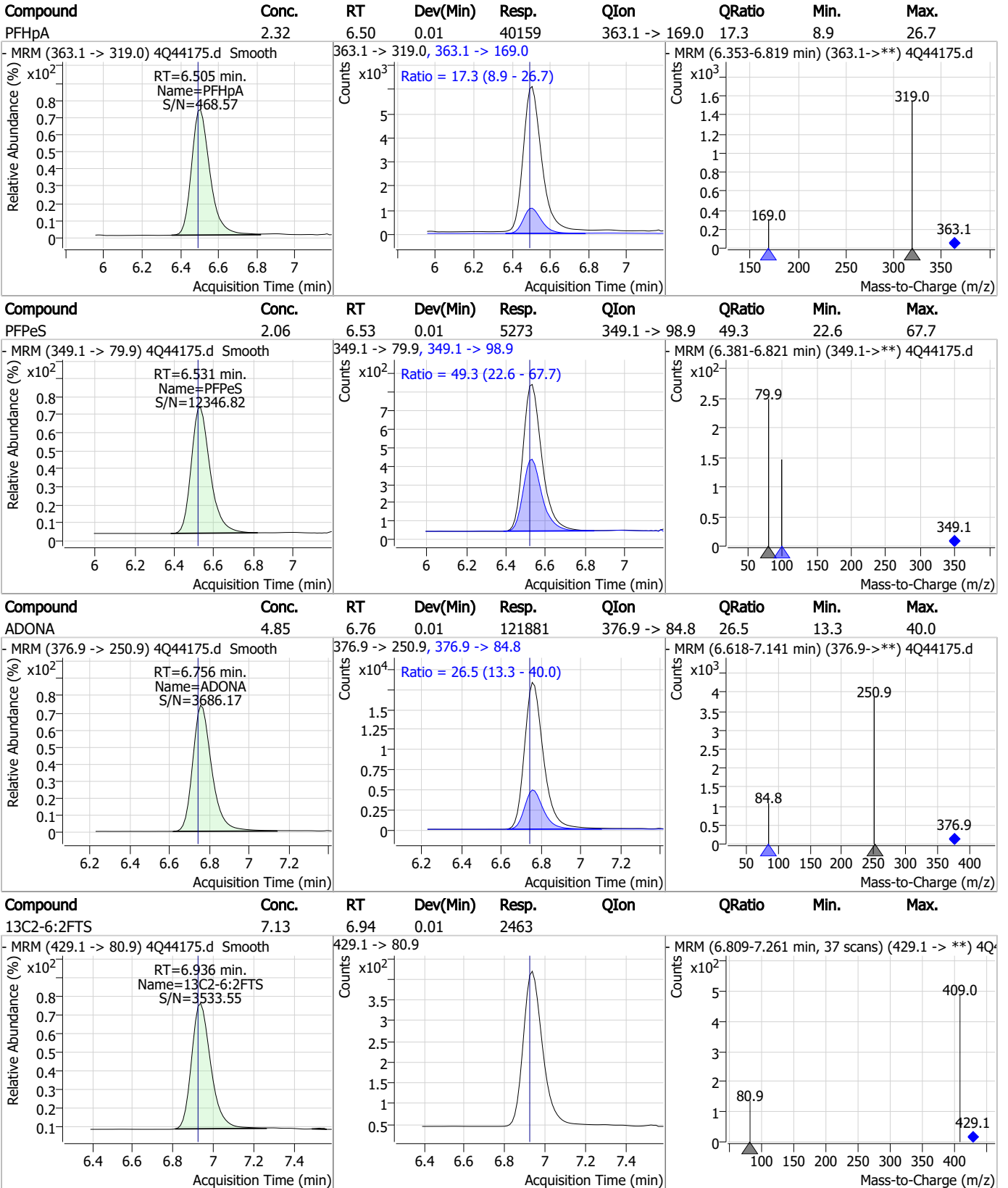


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

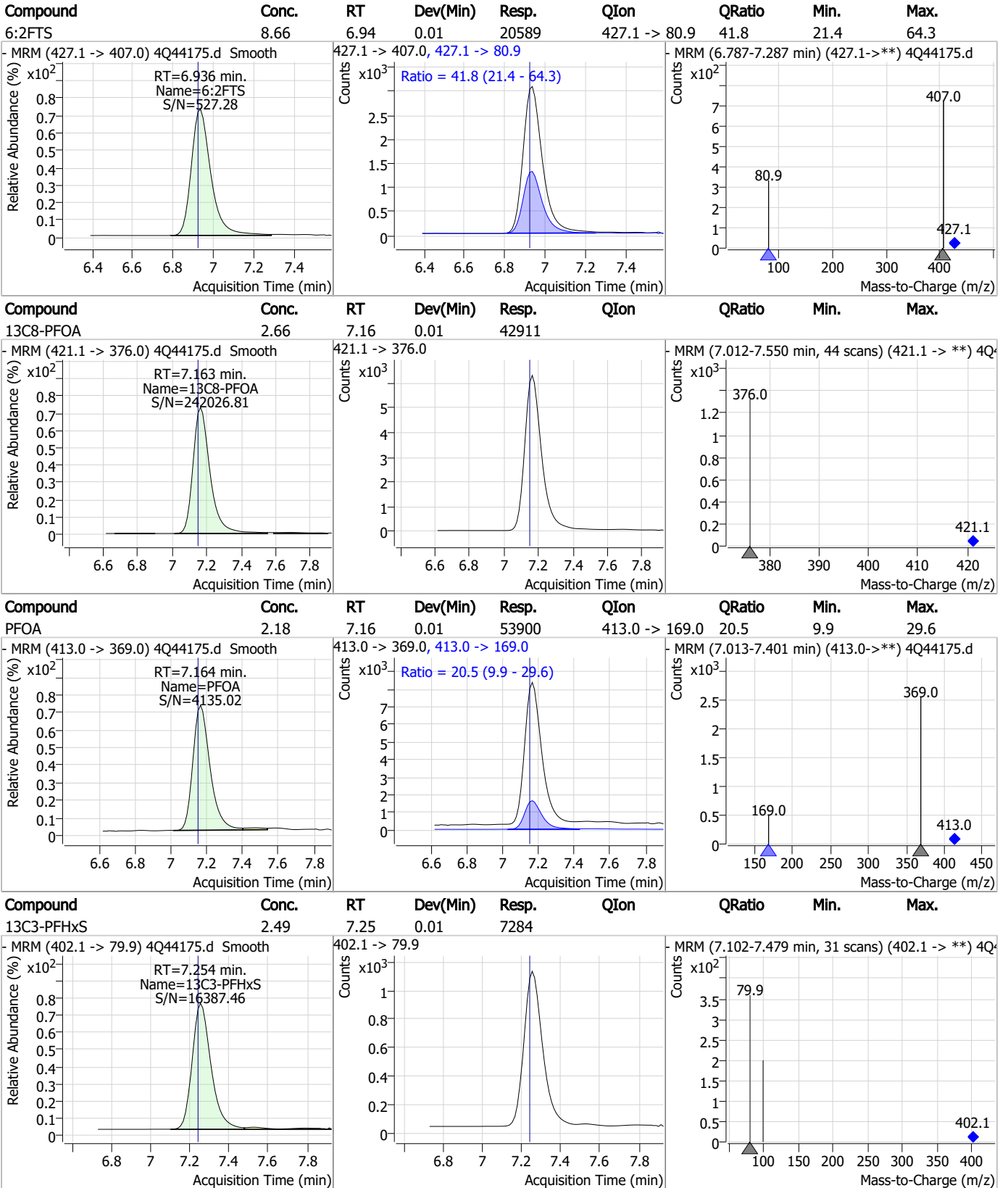


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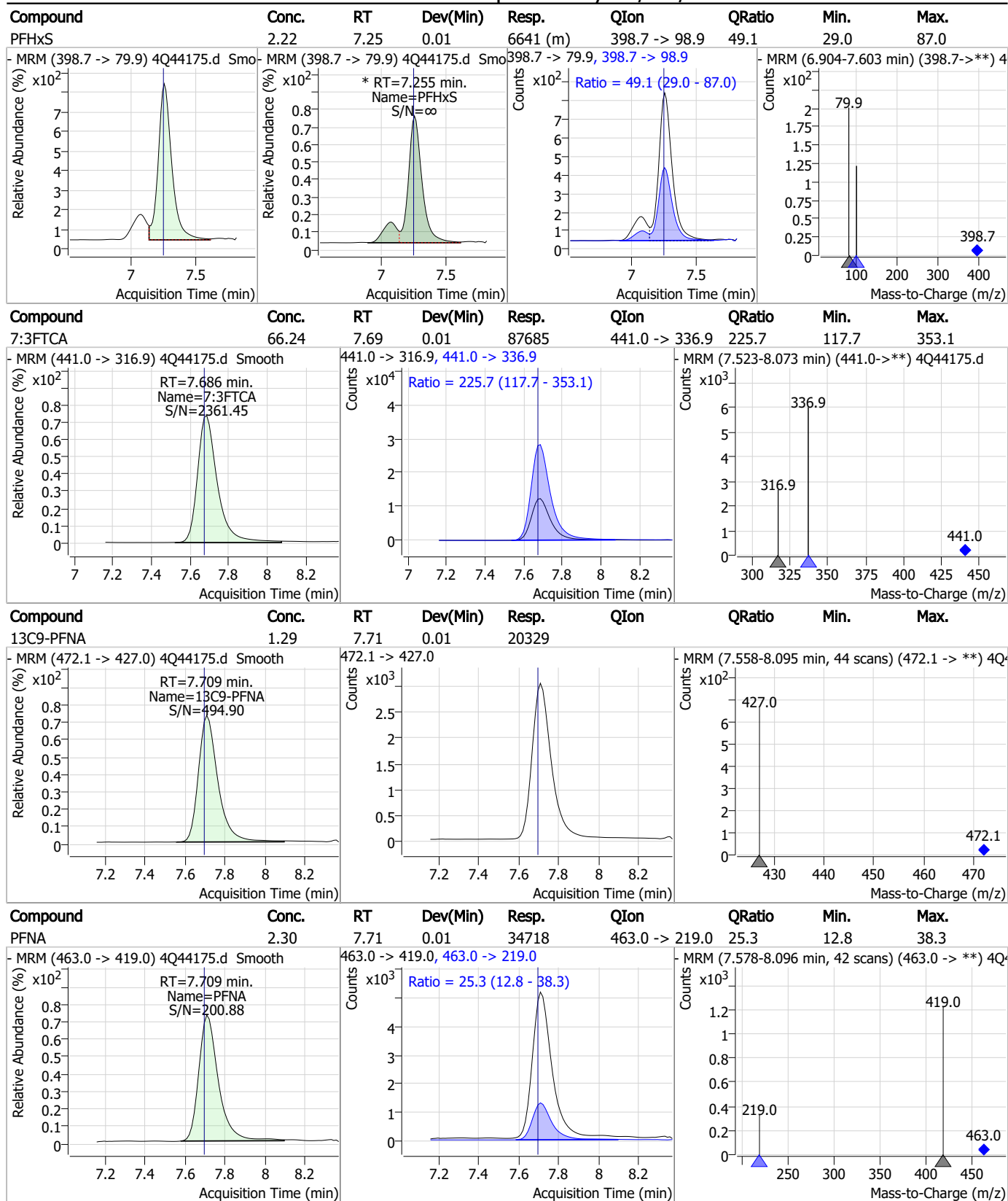
Perfluorinated Compounds by LC/MS/MS



7.3.1

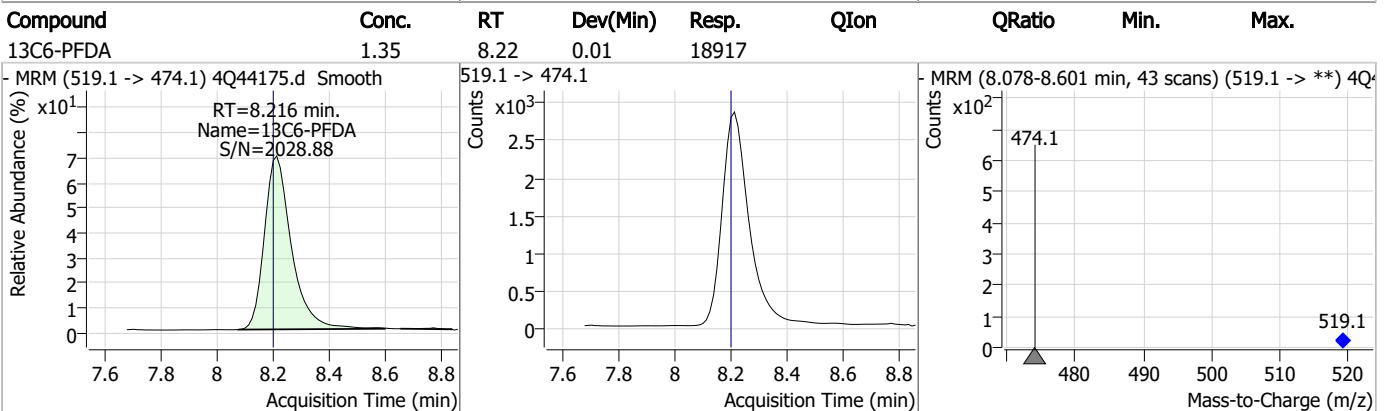
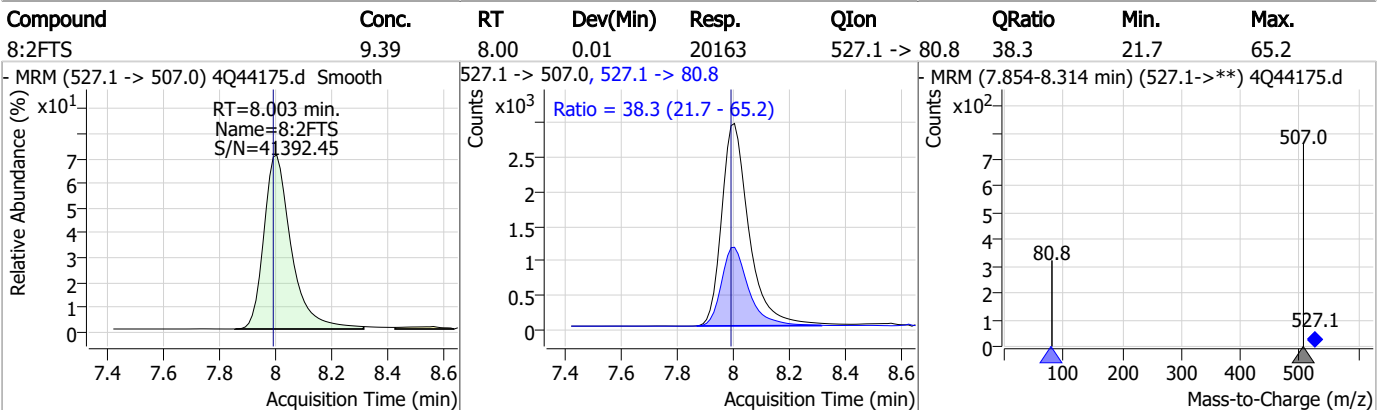
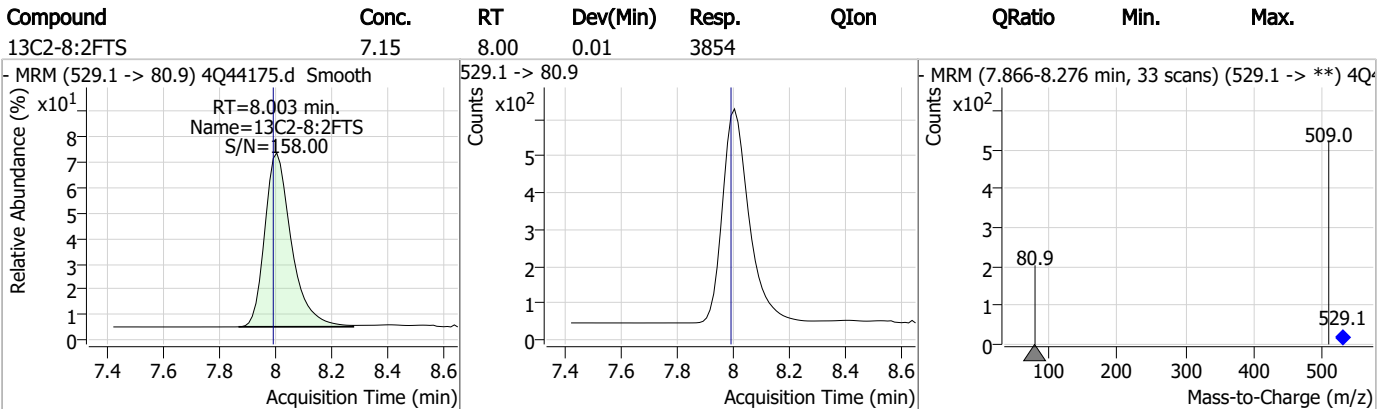
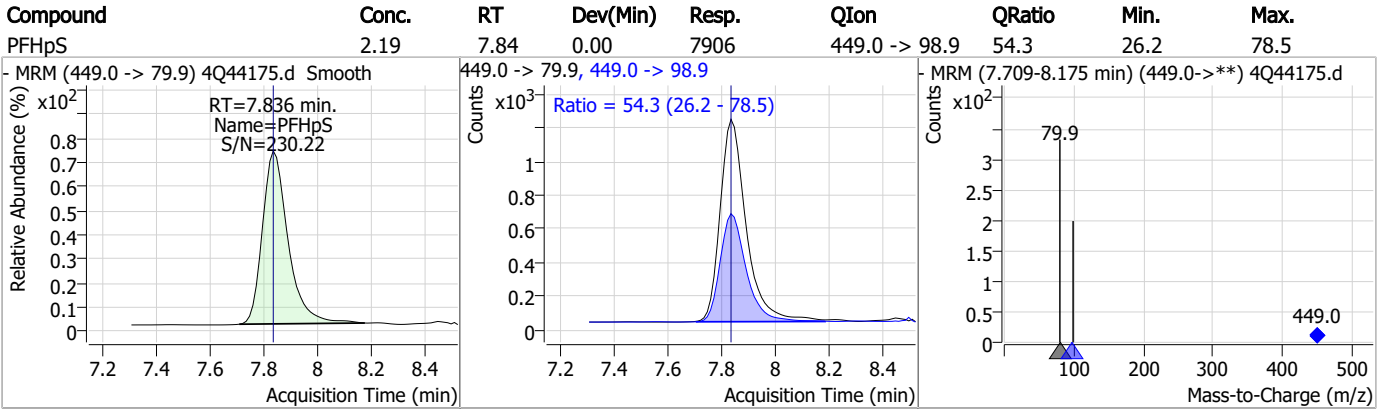
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Perfluorinated Compounds by LC/MS/MS

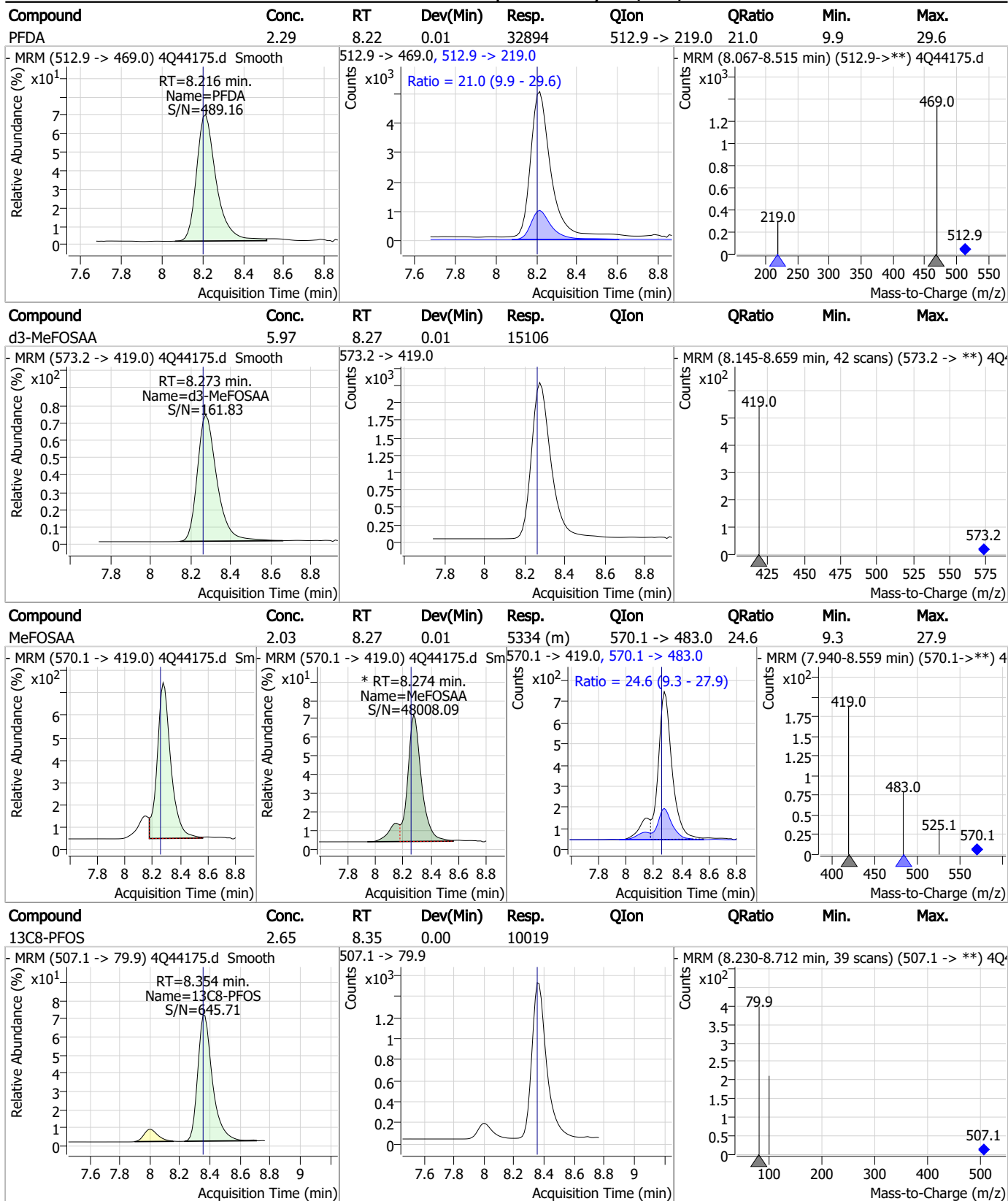


7.3.1
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Perfluorinated Compounds by LC/MS/MS

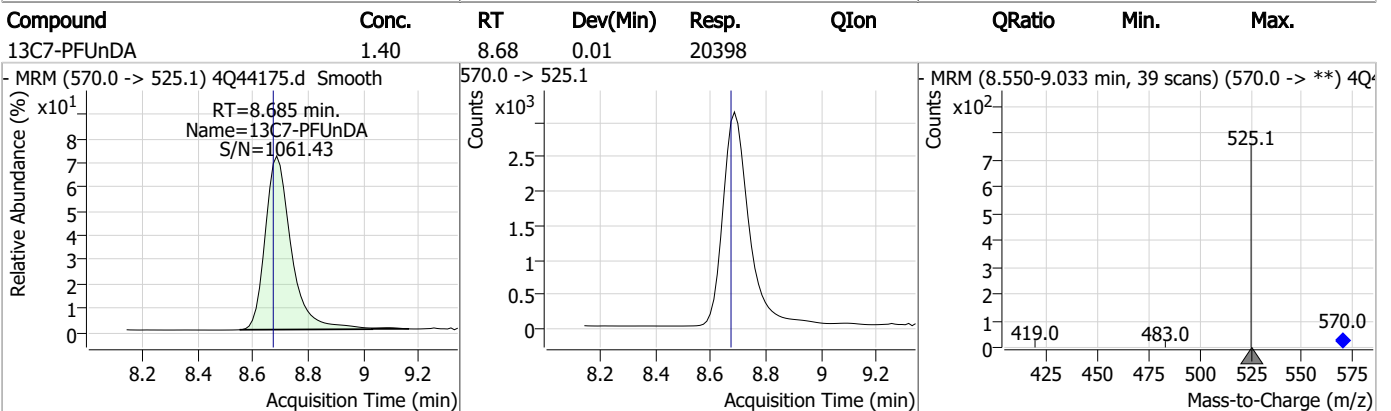
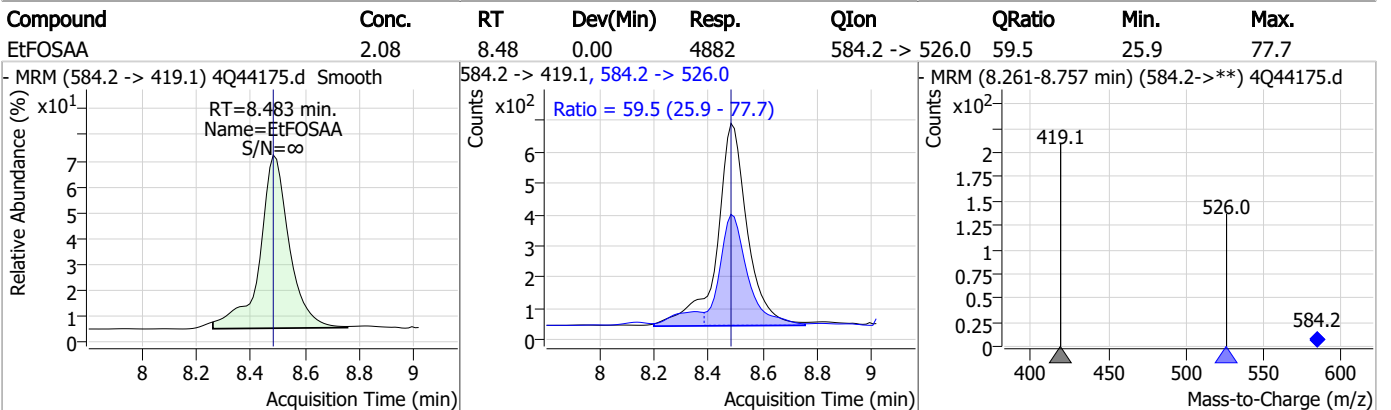
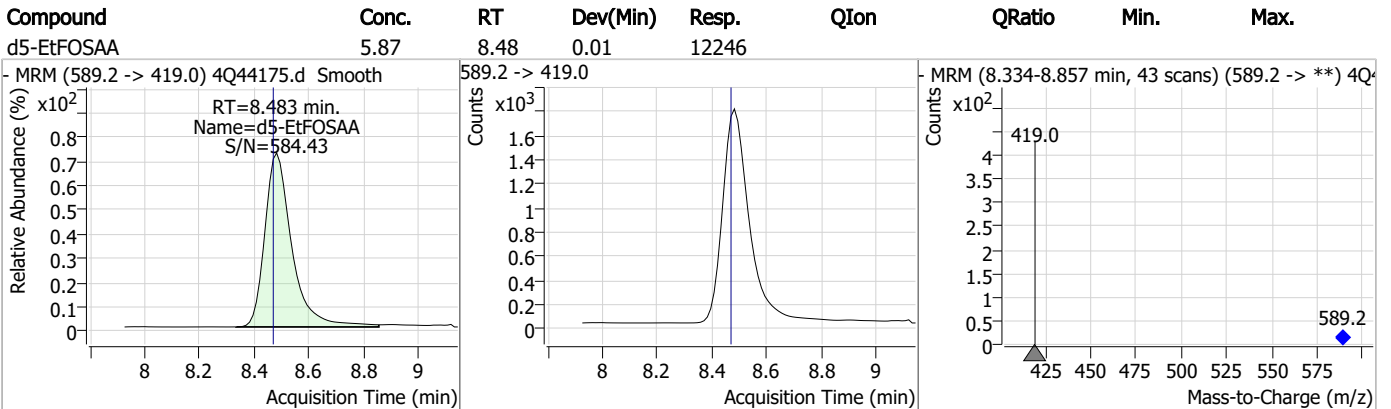
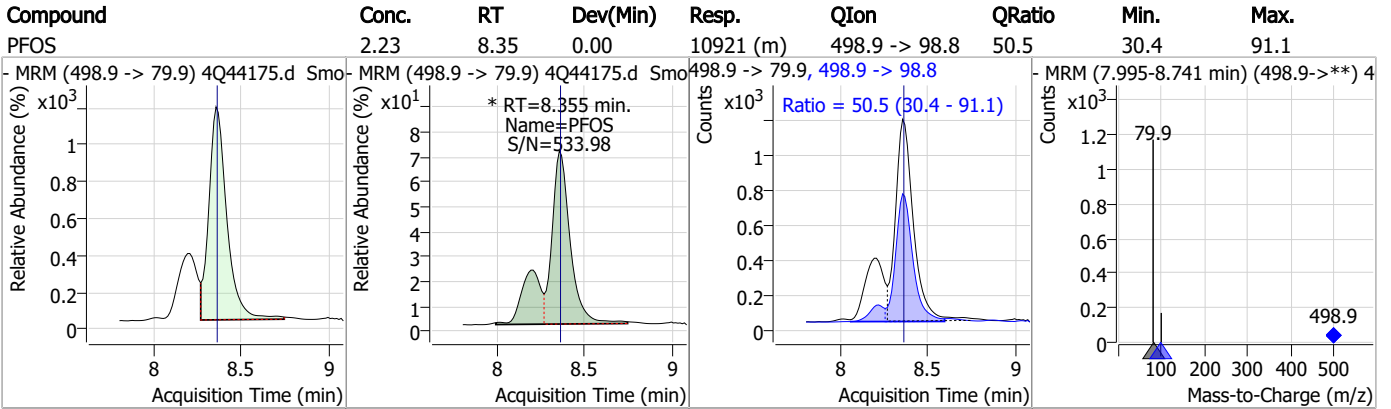


Perfluorinated Compounds by LC/MS/MS

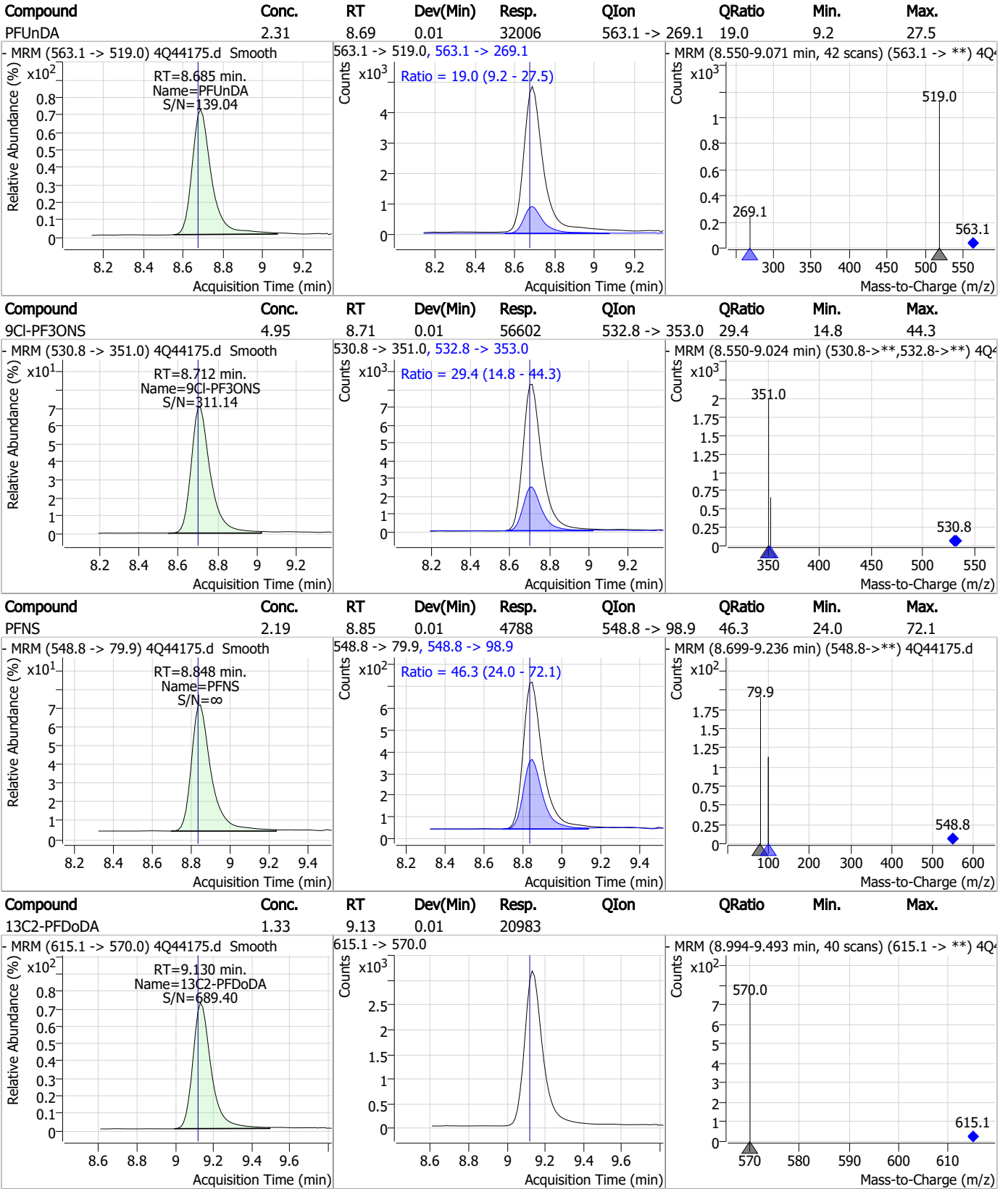


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

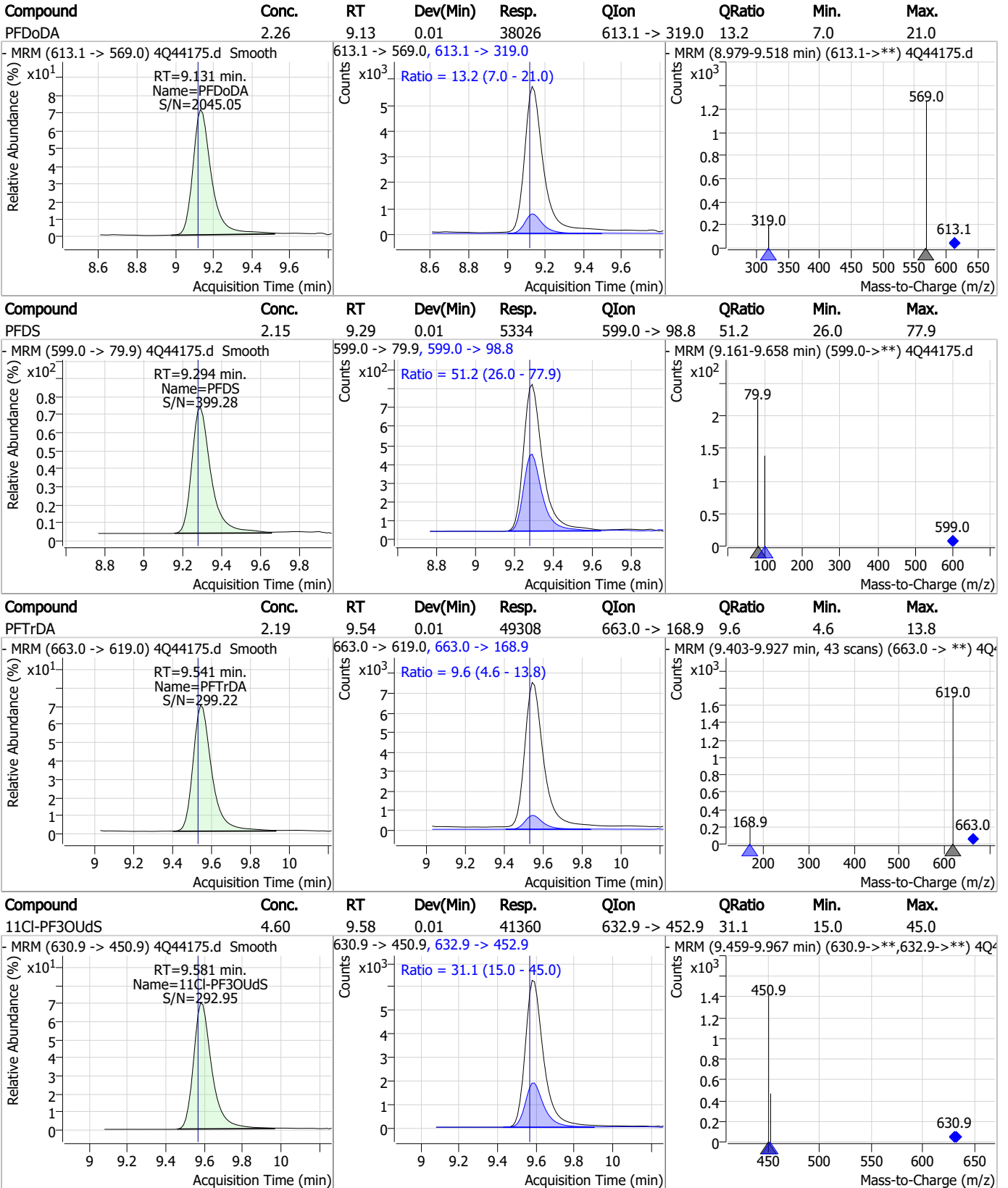


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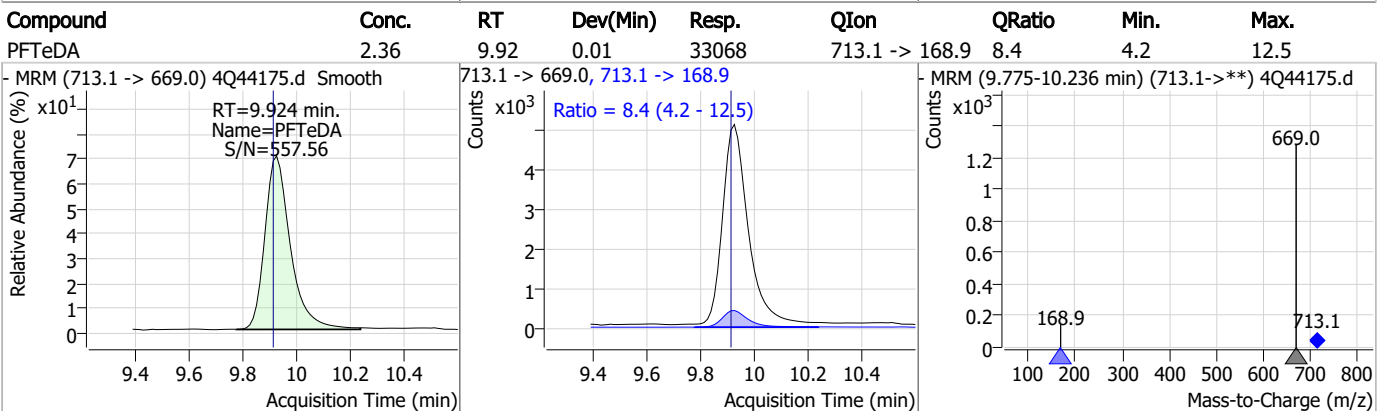
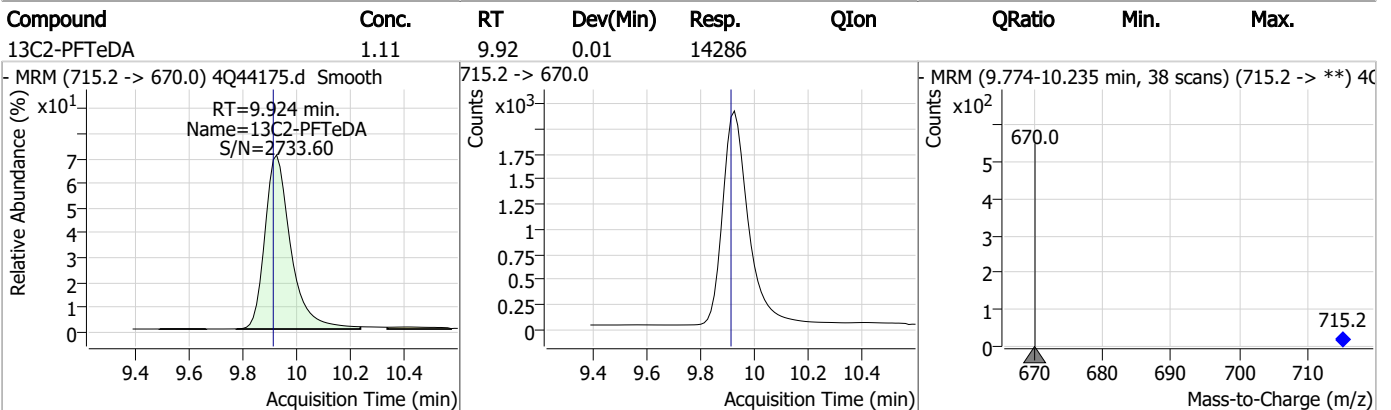
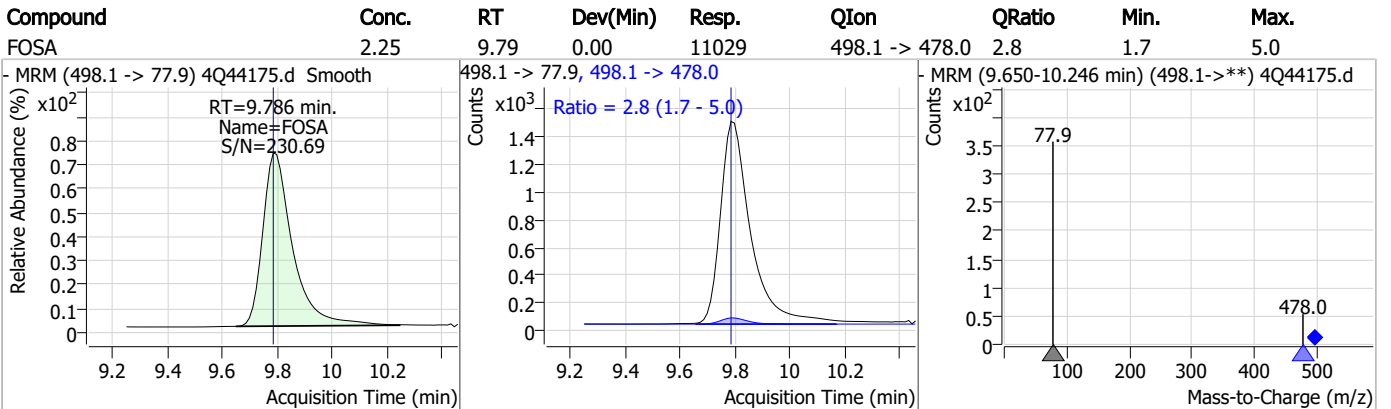
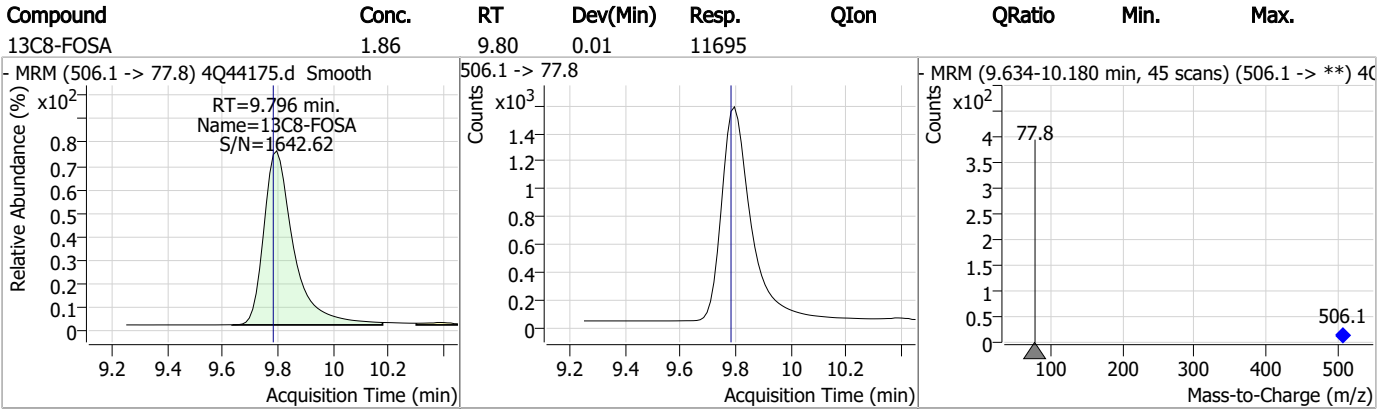


Perfluorinated Compounds by LC/MS/MS



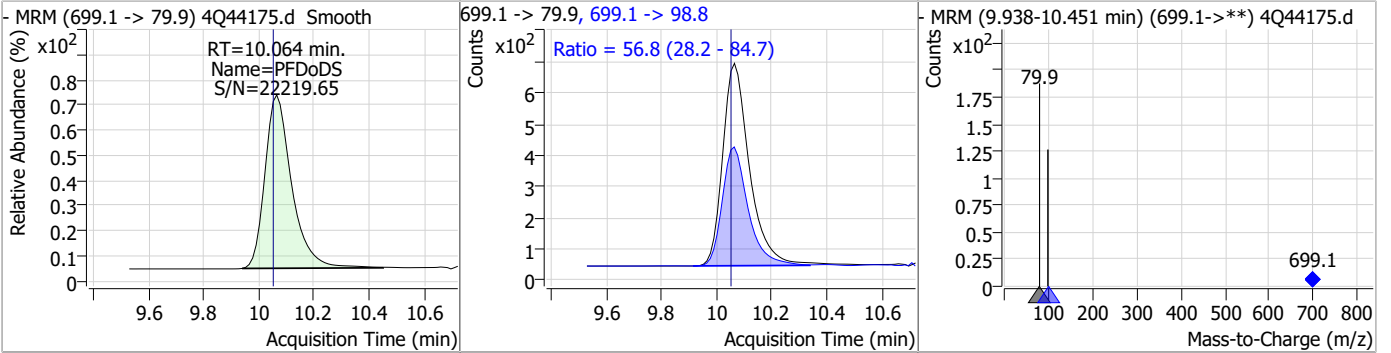
7.3.1
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Perfluorinated Compounds by LC/MS/MS

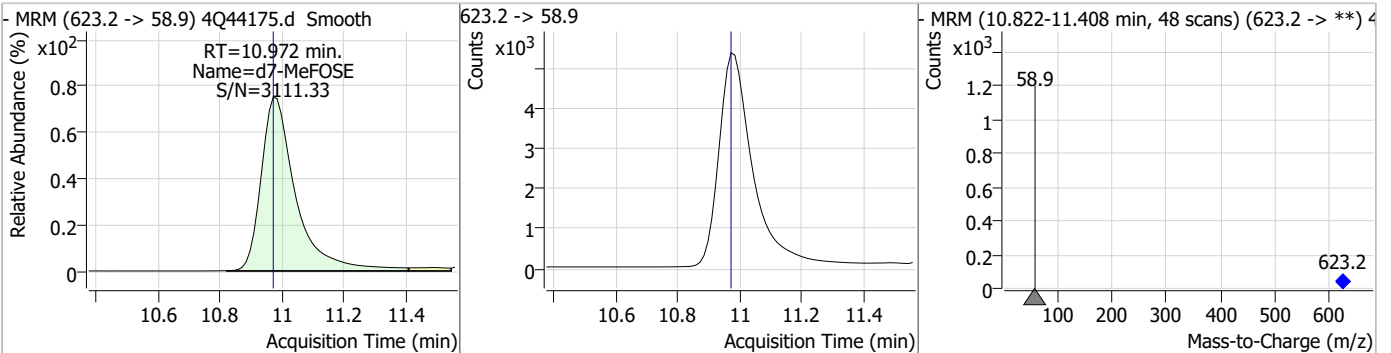


Perfluorinated Compounds by LC/MS/MS

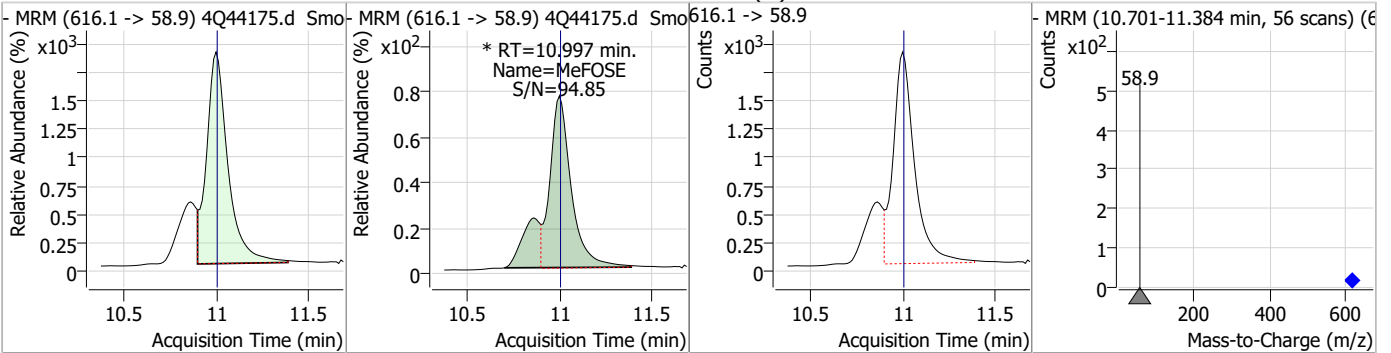
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.97	10.06	0.01	4363	699.1 -> 98.8	56.8	28.2	84.7



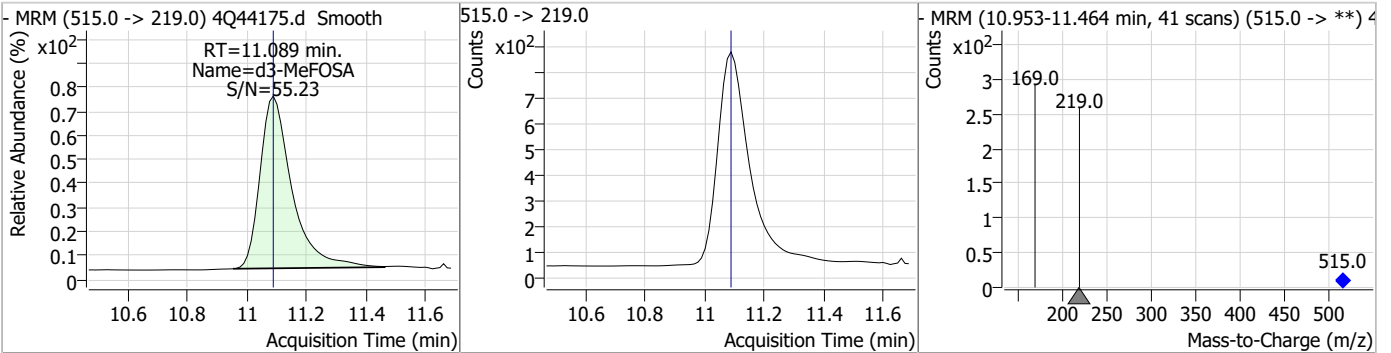
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	13.26	10.97	0.00	41367				



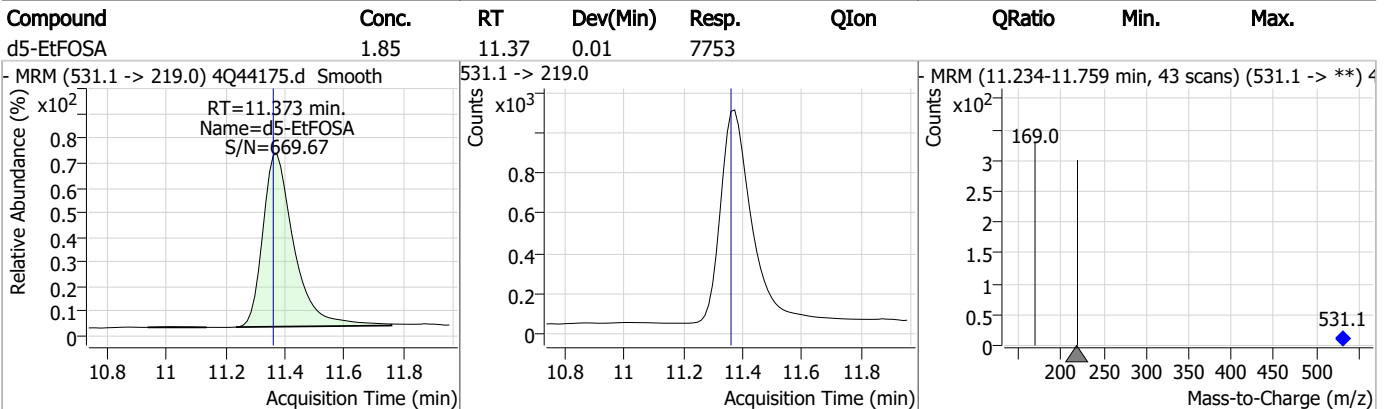
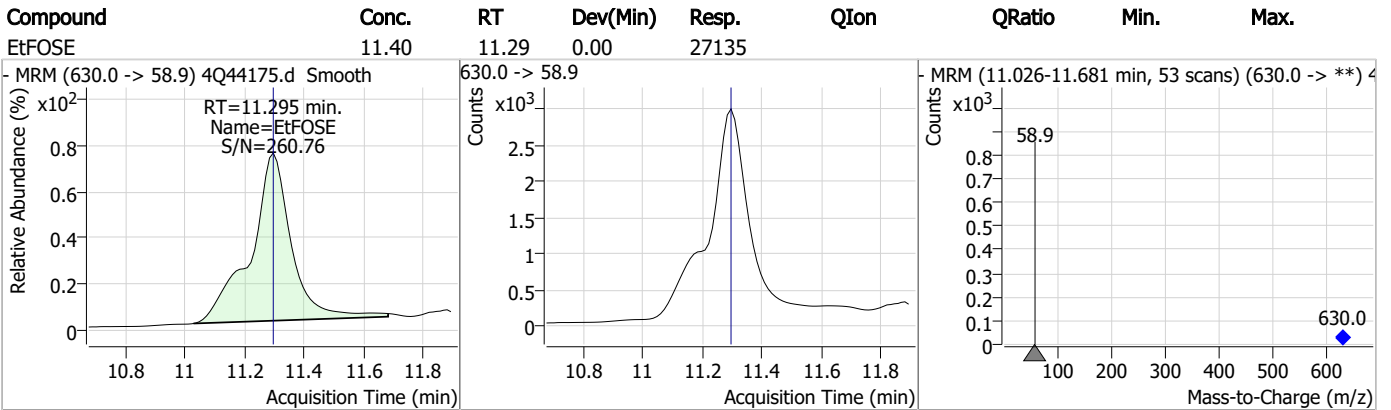
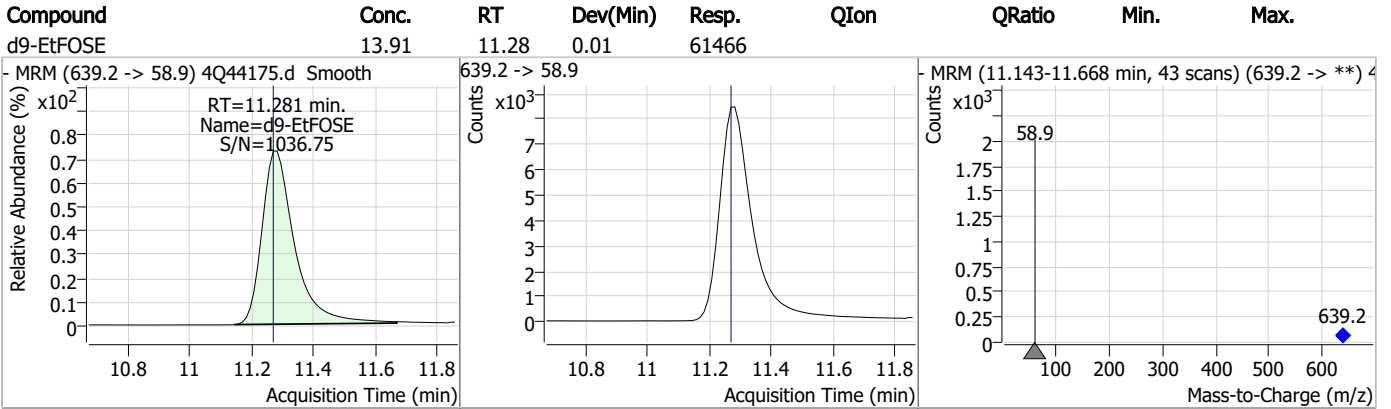
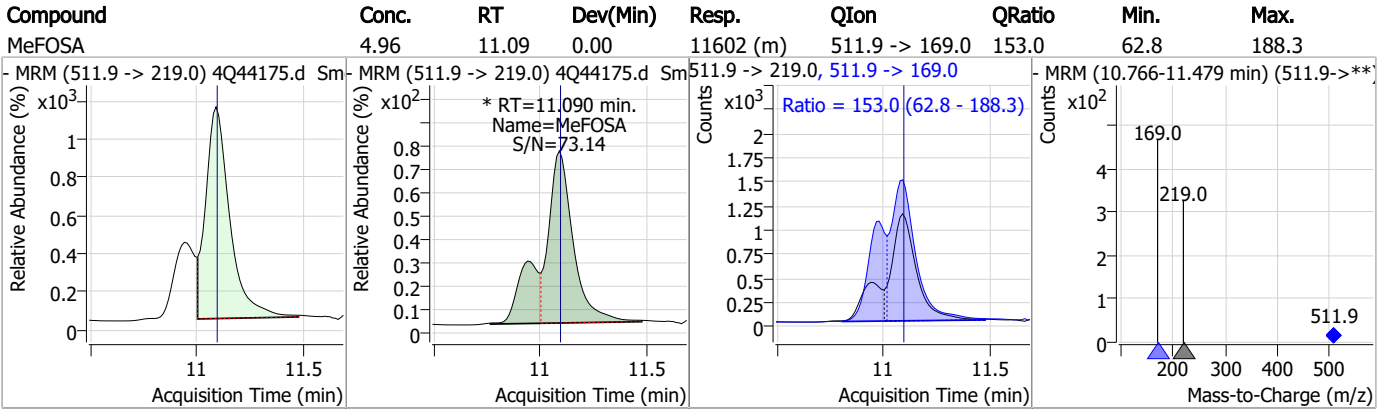
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	10.87	11.00	0.00	18466 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.58	11.09	0.00	6213				



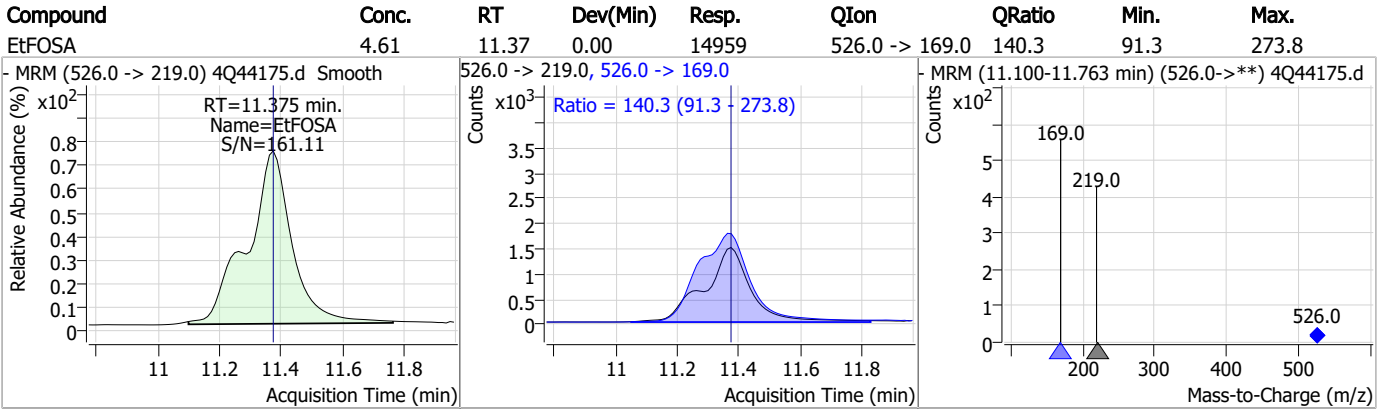
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: OP96784-BS Method: EPA DRAFT 1633
Lab FileID: 4Q44175.D Analyst approved: 05/10/23 11:10 Martha Valls
Injection Time: 05/09/23 23:30 Supervisor approved: 05/10/23 17:32 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	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 : 4Q44176.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 11:44:50 PM
 Sample Name : op96784-llbs:3
 Vial : P3-D2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96784,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	131015	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	67151	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	46544	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	27948	2.50 µg/L	0.000
M8-PFOA	7.163	421.1 -> 376.0	43192	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	21448	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	18854	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	18973	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20140	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	14856	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	11506	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11300	2.50 µg/L	0.000
M3-PFHxS	7.254	402.1 -> 79.9	7343	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10251	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1332	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2409	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	3443	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	14501	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	25142	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	11740	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	41050	25.00 µg/L	0.000
M9-EtFOSE	11.281	639.2 -> 58.9	65998	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	7572	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	6702	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	10122	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	62005	5.00 µg/L	-0.013
18O2-PFHxS	7.253	403.0 -> 83.9	4548	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	45864	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16106	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	22901	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	37437	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1332	7.21 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 144.1%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2409	7.23 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 144.6%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3443	6.62 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.4%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20140	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C2-PFTeDA	9.924	715.2 -> 670.0	14856	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C3-PFBS	5.452	302.1 -> 79.9	11300	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C3-PFHxS	7.254	402.1 -> 79.9	7343	2.60 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C4-PFBA	2.924	216.8 -> 171.9	131015	11.23 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C4-PFHpA	6.492	367.1 -> 322.0	27948	2.90 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	46544	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.9%	
13C5-PFPeA	4.387	268.3 -> 223.0	67151	5.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.5%	
13C6-PFDA	8.216	519.1 -> 474.1	18854	1.37 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.3%	
13C7-PFUnDA	8.685	570.0 -> 525.1	18973	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C8-FOSA	9.796	506.1 -> 77.8	11506	1.81 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.5%	
13C8-PFOA	7.163	421.1 -> 376.0	43192	2.87 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.7%	
13C8-PFOS	8.354	507.1 -> 79.9	10251	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C9-PFNA	7.709	472.1 -> 427.0	21448	1.38 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.2%	
d3-MeFOSAA	8.273	573.2 -> 419.0	14501	5.68 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.5%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	25142	10.21 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
d3-MeFOSA	11.089	515.0 -> 219.0	6702	1.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 67.5%	
d5-EtFOSAA	8.483	589.2 -> 419.0	11740	5.58 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.6%	
d7-MeFOSE	10.972	623.2 -> 58.9	41050	13.03 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 52.1%	
d9-EtFOSE	11.281	639.2 -> 58.9	65998	14.80 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 59.2%	
d5-EtFOSA	11.373	531.1 -> 219.0	7572	1.79 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 71.8%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	5090	2.38 µg/L	96
		327.1 -> 80.9	2292		
6:2FTS	6.936	427.1 -> 407.0	6023	2.59 µg/L	97
		427.1 -> 80.9	2717		
8:2FTS	8.003	527.1 -> 507.0	5723	2.98 µg/L	97
		527.1 -> 80.8	2582		
EtFOSAA	8.483	584.2 -> 419.1	1376	0.61 µg/L	m 95
		584.2 -> 526.0	760		
FOSA	9.786	498.1 -> 77.9	3471	0.72 µg/L	# 94
		498.1 -> 478.0	43		
MeFOSAA	8.274	570.1 -> 419.0	1772	0.70 µg/L	88
		570.1 -> 483.0	428		
PFBA	2.920	212.8 -> 168.9	9385	2.68 µg/L	100
PFBS	5.465	298.7 -> 79.9	2703	0.58 µg/L	88
		298.7 -> 98.8	1165		
PFDA	8.216	512.9 -> 469.0	9571	0.67 µg/L	98
		512.9 -> 219.0	1779		
PFDODA	9.131	613.1 -> 569.0	10421	0.64 µg/L	96
		613.1 -> 319.0	1649		
PFDS	9.294	599.0 -> 79.9	1577	0.62 µg/L	89

7.3.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	937			
PFHpA	6.505	363.1 -> 319.0	11857	0.67	µg/L	97
		363.1 -> 169.0	1952			
PFHpS	7.836	449.0 -> 79.9	2322	0.63	µg/L	97
		449.0 -> 98.9	1260			
PFHxA	5.562	313.0 -> 269.0	12197	0.67	µg/L	98
		313.0 -> 118.9	435			
PFHxS	7.255	398.7 -> 79.9	1943	0.65	µg/L	m 81
		398.7 -> 98.9	852			
PFNA	7.709	463.0 -> 419.0	10647	0.67	µg/L	94
		463.0 -> 219.0	2399			
PFNS	8.848	548.8 -> 79.9	1428	0.64	µg/L	99
		548.8 -> 98.9	672			
PFOA	7.164	413.0 -> 369.0	15666	0.63	µg/L	96
		413.0 -> 169.0	3366			
PFOS	8.355	498.9 -> 79.9	3220	0.64	µg/L	m 92
		498.9 -> 98.8	1761			
PFPeA	4.389	263.0 -> 219.0	21108	1.31	µg/L	100
PFPeS	6.531	349.1 -> 79.9	1563	0.61	µg/L	97
		349.1 -> 98.9	679			
PFTeDA	9.924	713.1 -> 669.0	9523	0.65	µg/L	99
		713.1 -> 168.9	831			
PFTrDA	9.541	663.0 -> 619.0	14673	0.68	µg/L	98
		663.0 -> 168.9	1432			
PFUnDA	8.685	563.1 -> 519.0	9953	0.77	µg/L	100
		563.1 -> 269.1	1820			
11CI-PF3OUdS	9.581	630.9 -> 450.9	11830	1.31	µg/L	97
		632.9 -> 452.9	3711			
9CI-PF3ONS	8.712	530.8 -> 351.0	15865	1.38	µg/L	99
		532.8 -> 353.0	4571			
ADONA	6.756	376.9 -> 250.9	35071	1.39	µg/L	99
		376.9 -> 84.8	9561			
HFPO-DA	5.928	284.9 -> 168.9	3306	1.38	µg/L	92
		284.9 -> 184.9	316			
3:3FTCA	3.848	241.0 -> 177.0	1784	2.51	µg/L	97
		241.0 -> 117.0	181			
5:3FTCA	6.231	341.0 -> 237.1	40645	16.43	µg/L	100
		341.0 -> 217.0	27868			
7:3FTCA	7.686	441.0 -> 316.9	24019	18.68	µg/L	92
		441.0 -> 336.9	59908			
EtFOSA	11.375	526.0 -> 219.0	4462	1.41	µg/L	m 63
		526.0 -> 169.0	5756			
EtFOSE	11.295	630.0 -> 58.9	7389	2.89	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	3554	1.41	µg/L	m 87
		511.9 -> 169.0	4984			
MeFOSE	10.997	616.1 -> 58.9	5999	3.56	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	1382	0.61	µg/L	98
		699.1 -> 98.8	756			
NFDHA	5.453	295.0 -> 201.0	1344	1.03	µg/L	99
		295.0 -> 84.9	348			
PFMBA	4.791	279.0 -> 85.1	12100	1.34	µg/L	100
PFMPA	3.528	229.0 -> 84.9	11679	1.38	µg/L	100
PFEESA	5.997	314.8 -> 134.9	16674	1.21	µg/L	96
		314.8 -> 82.9	712			

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

7.3.2
7

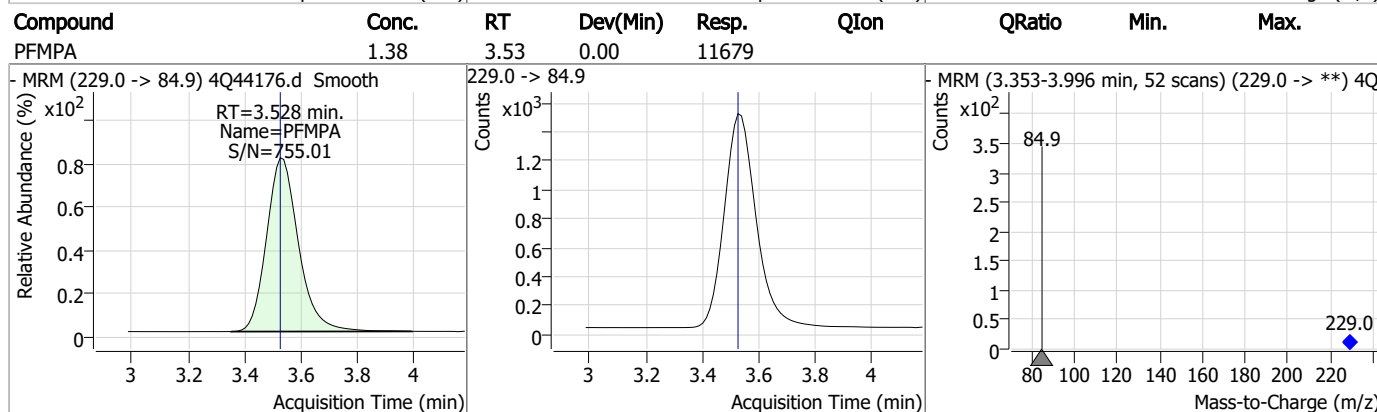
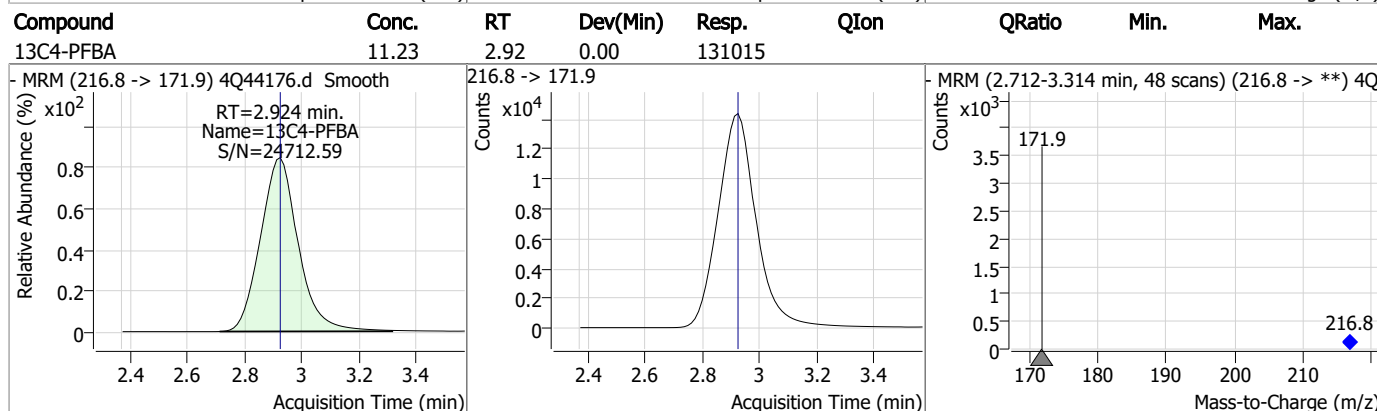
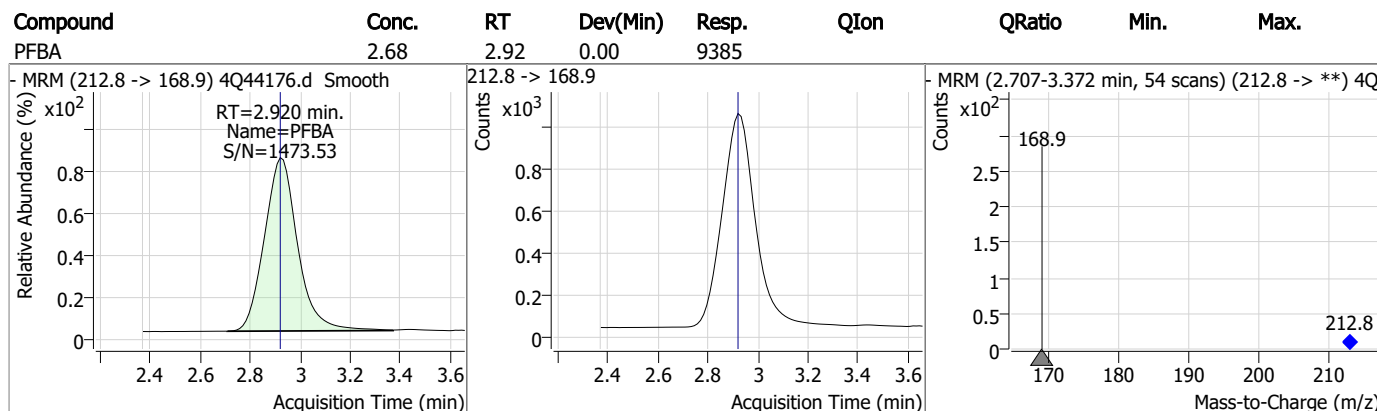
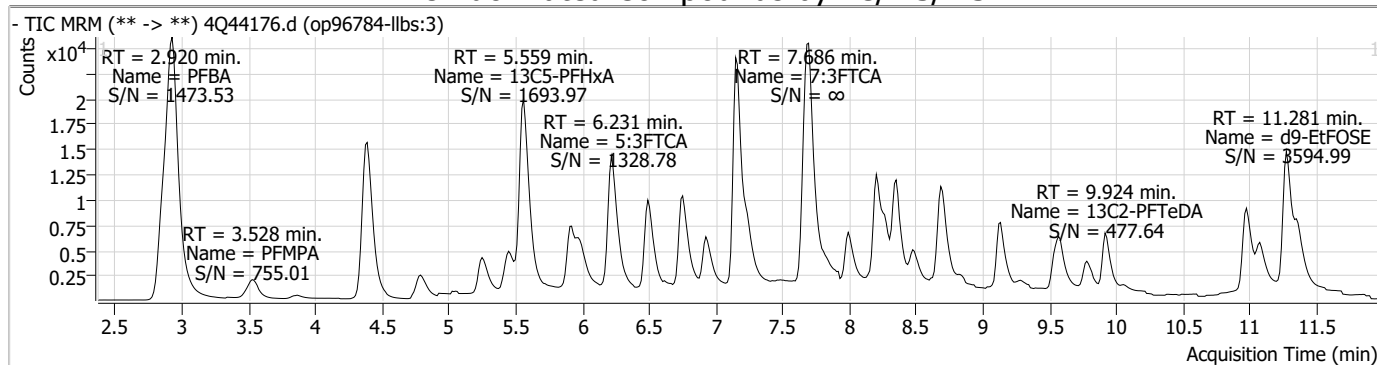
Perfluorinated Compounds by LC/MS/MS

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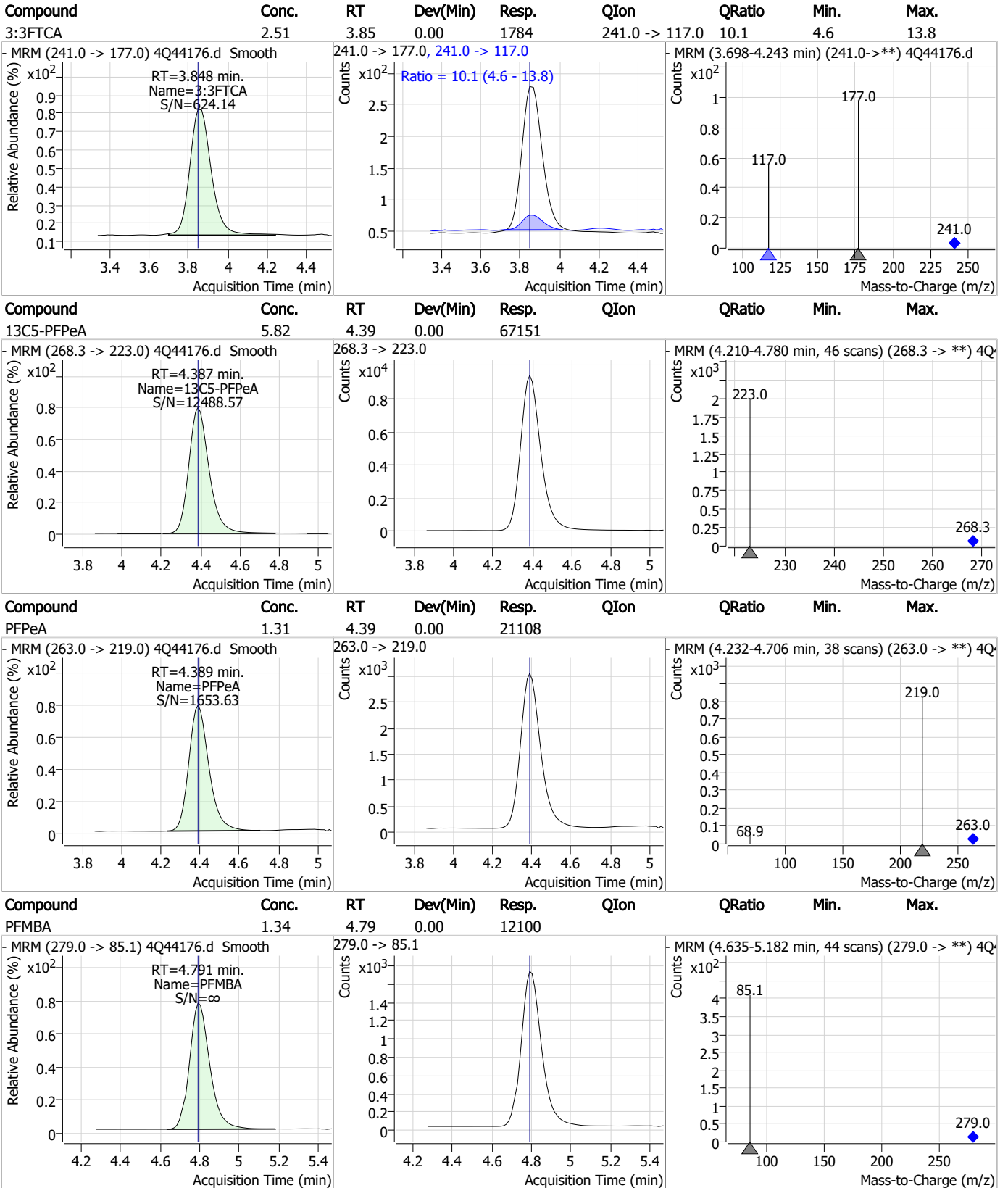
7.3.2

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Perfluorinated Compounds by LC/MS/MS

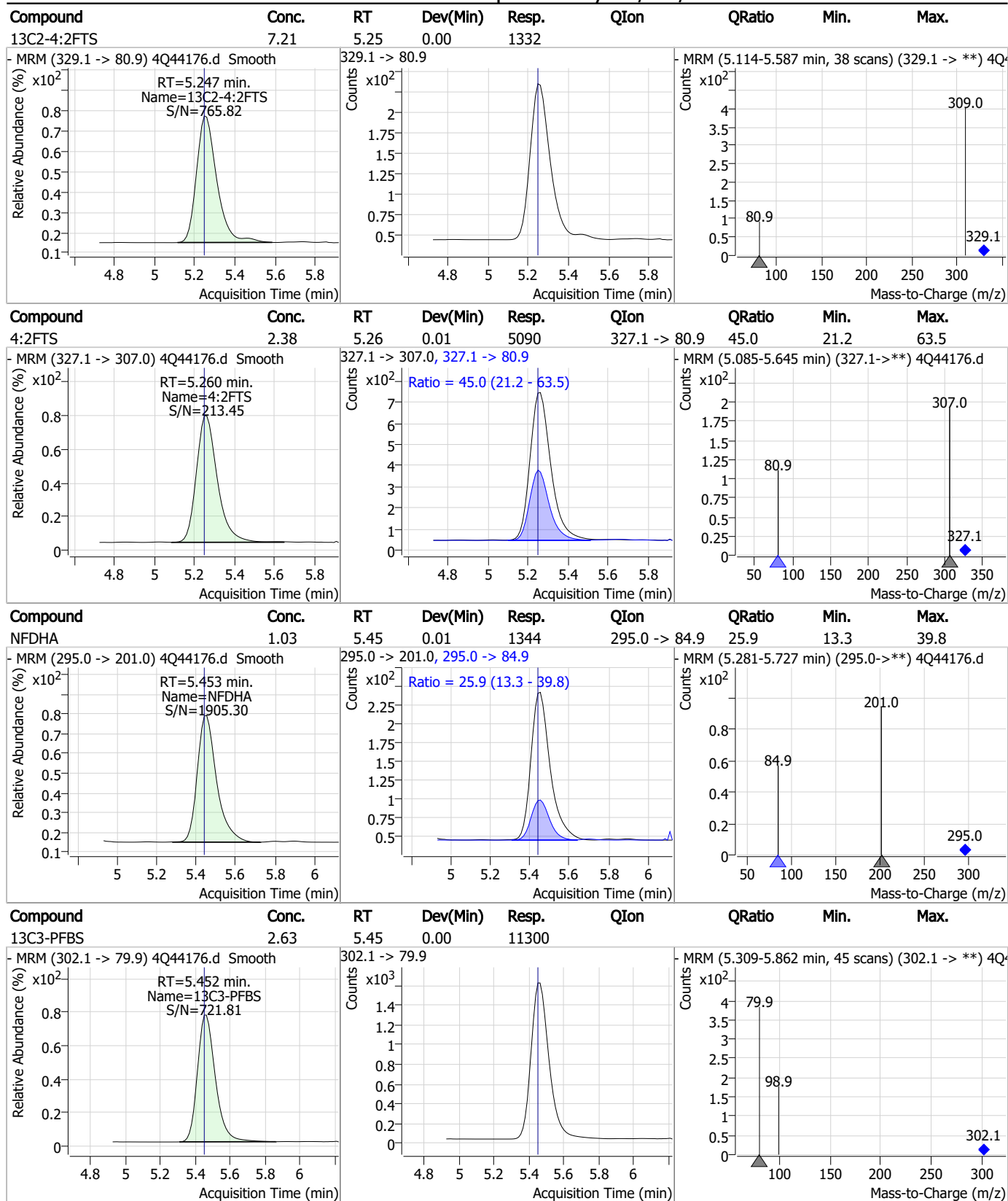


Perfluorinated Compounds by LC/MS/MS



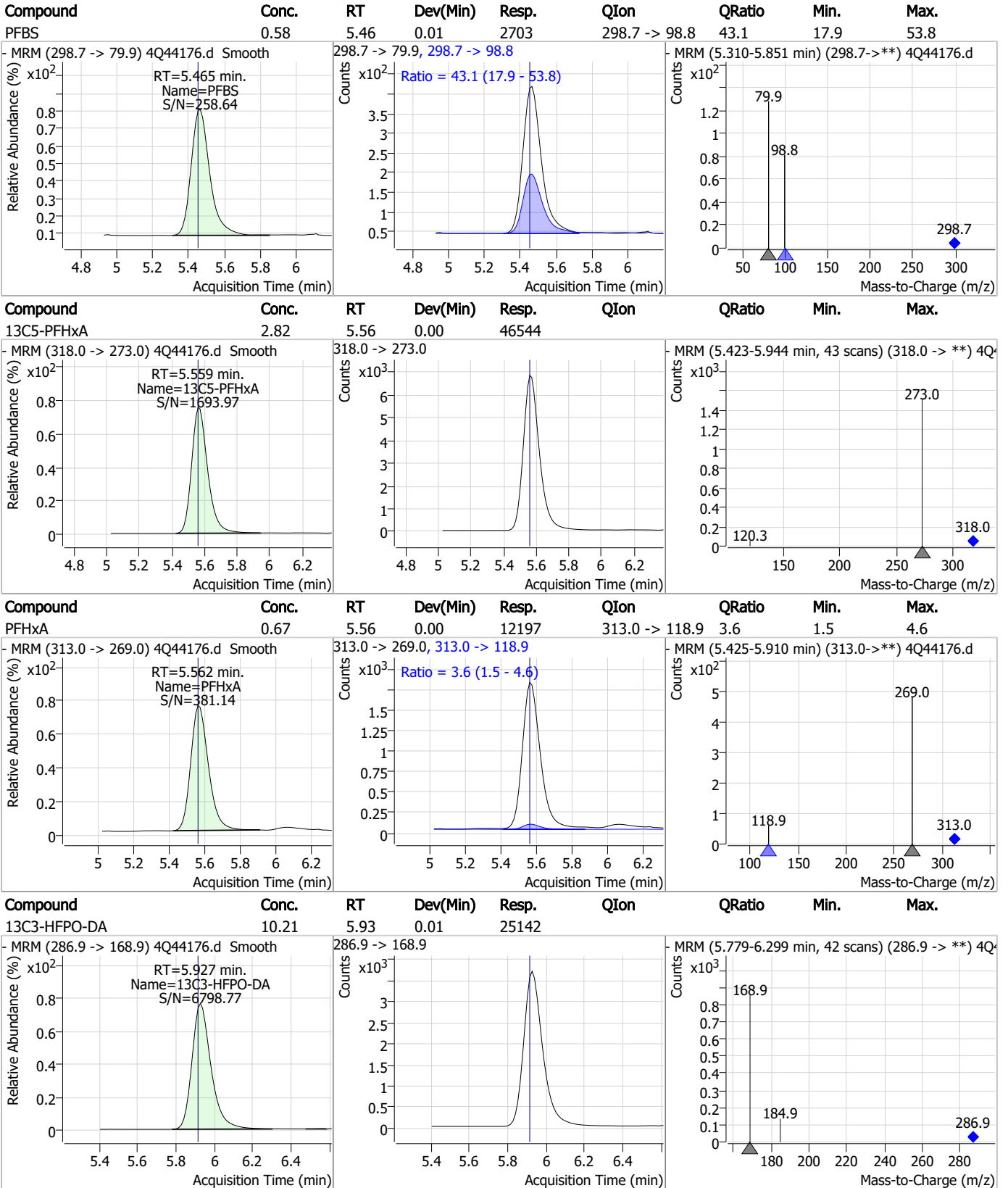
7.3.2 7

Perfluorinated Compounds by LC/MS/MS



7.3.2
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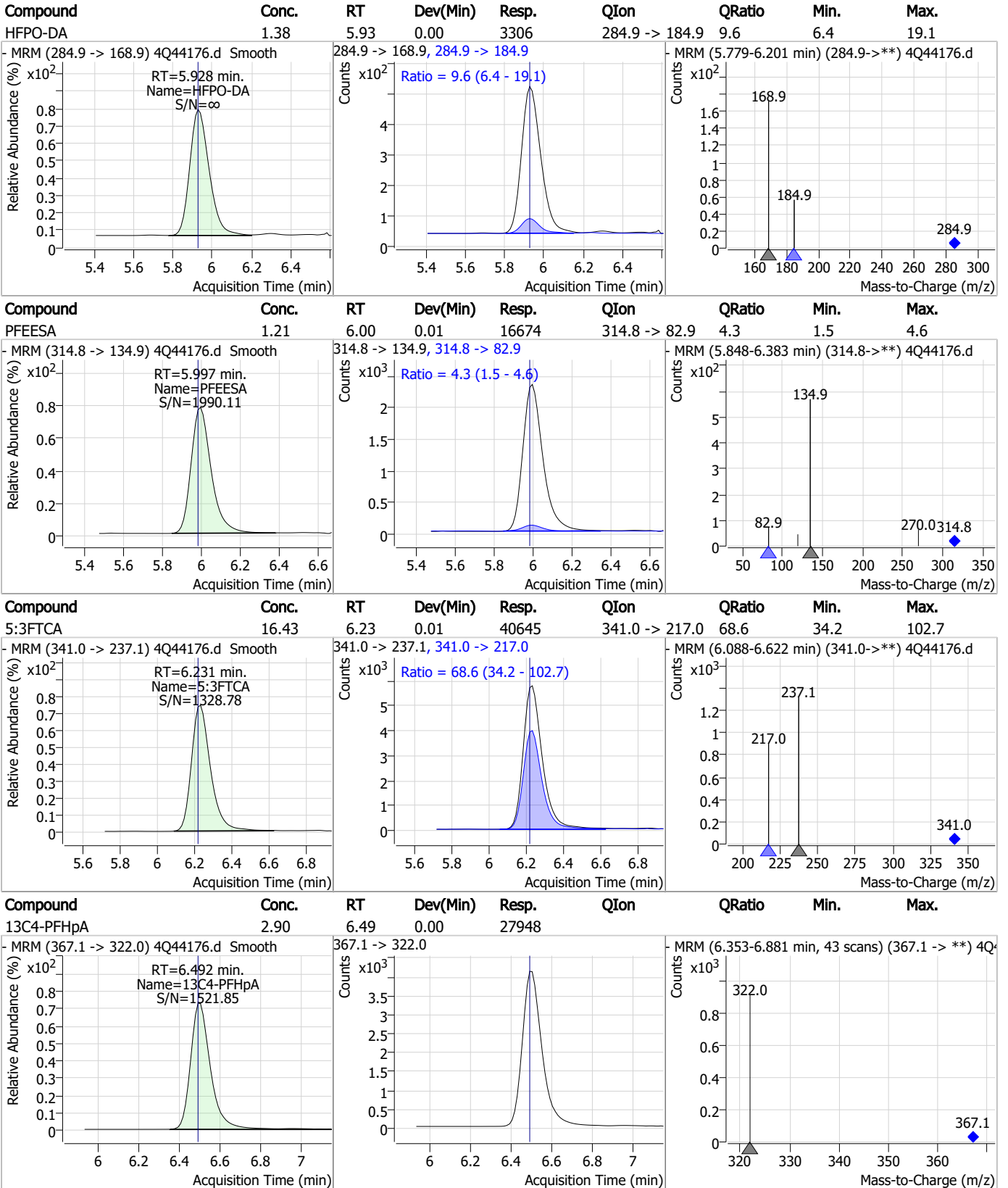
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

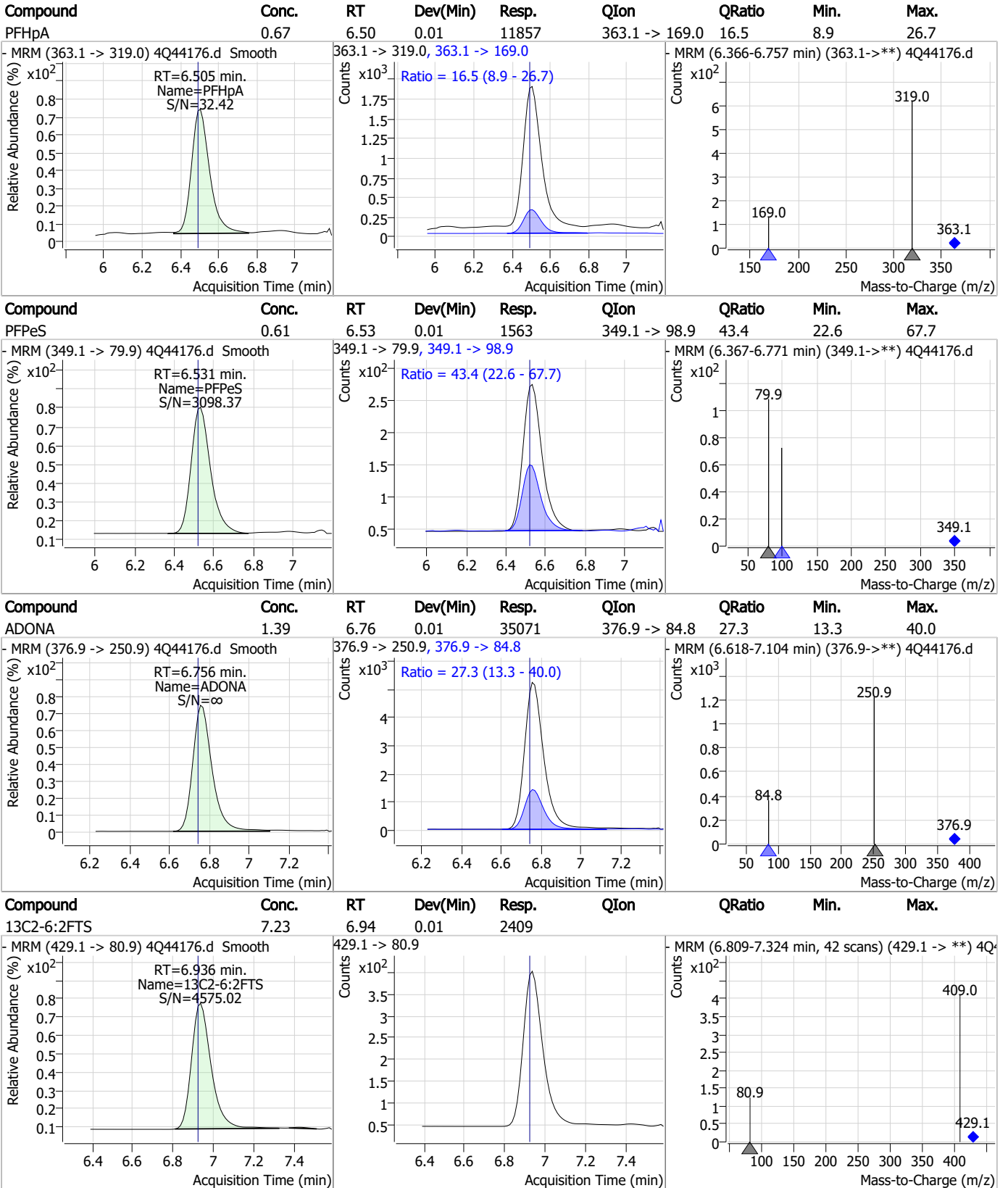


7.3.2

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Perfluorinated Compounds by LC/MS/MS

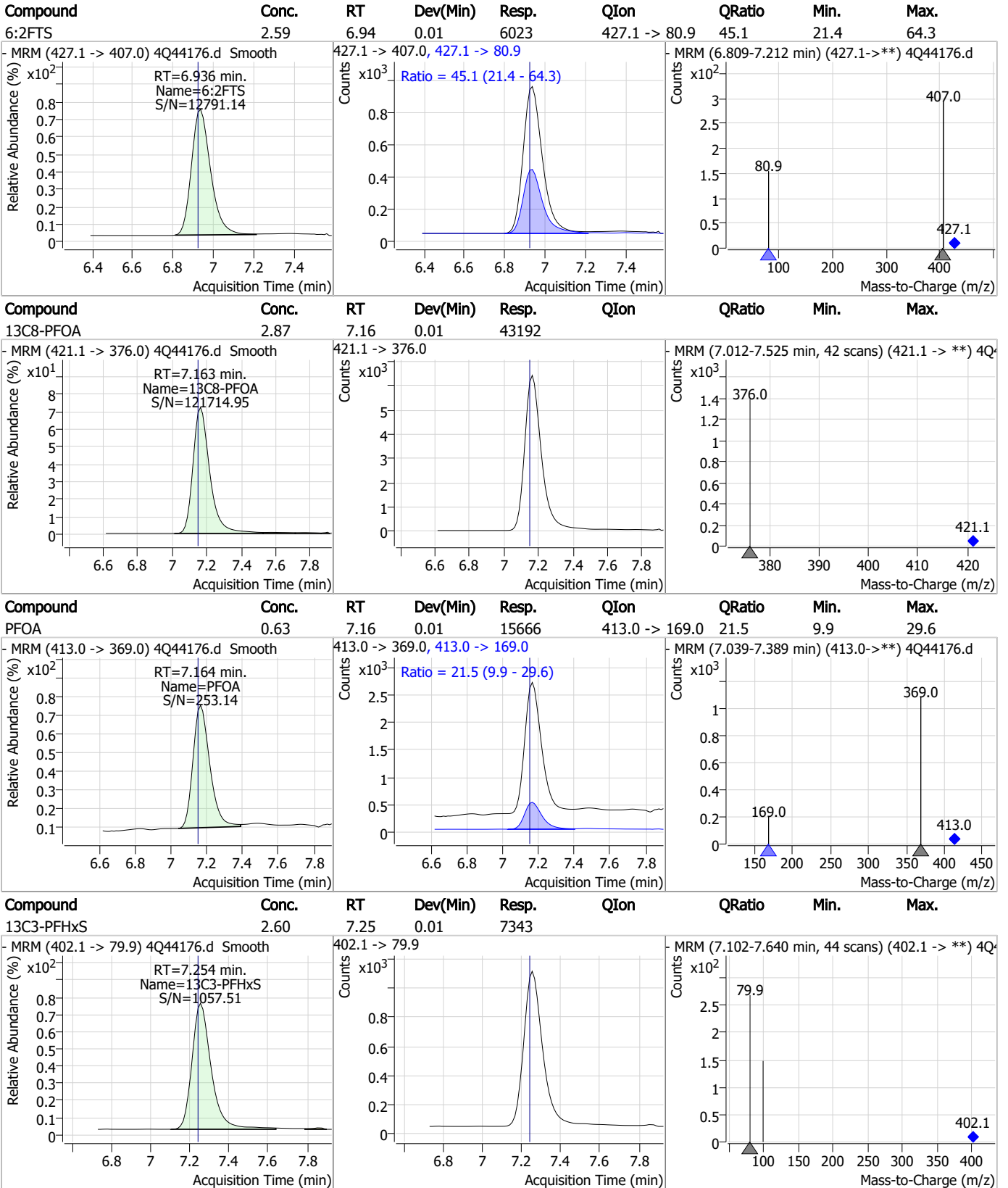


7.3.2

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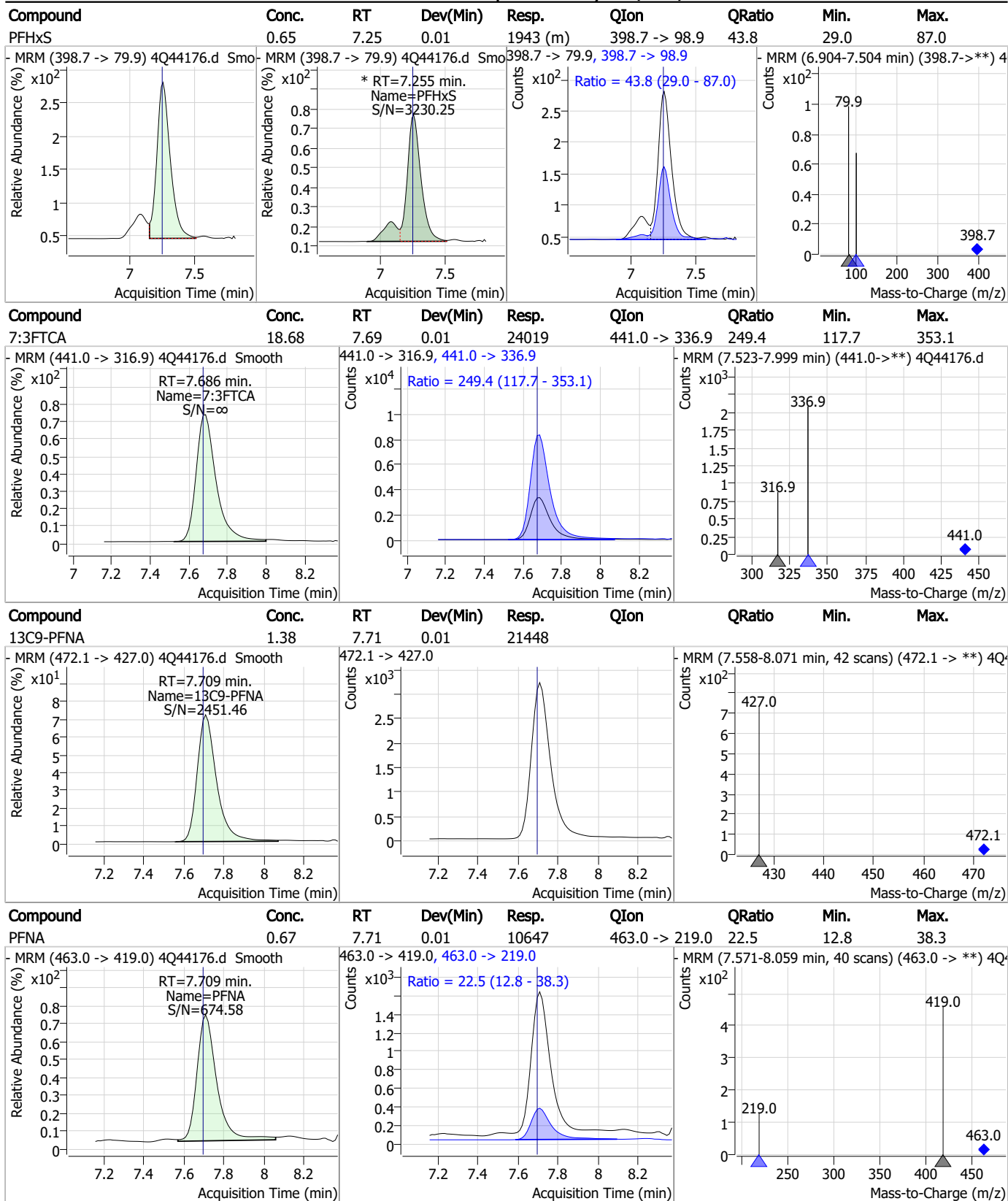
Perfluorinated Compounds by LC/MS/MS



7.3.2

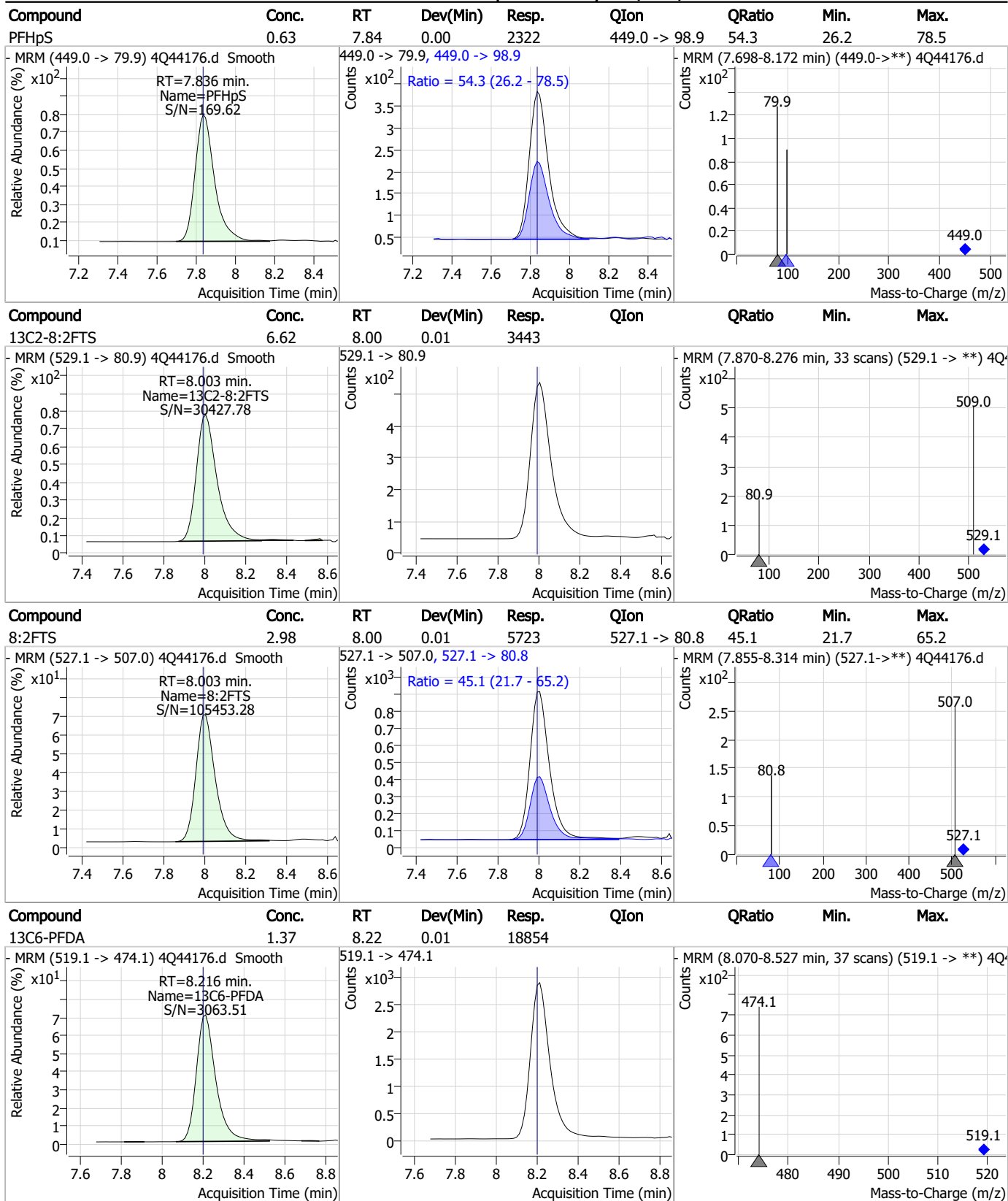
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Perfluorinated Compounds by LC/MS/MS



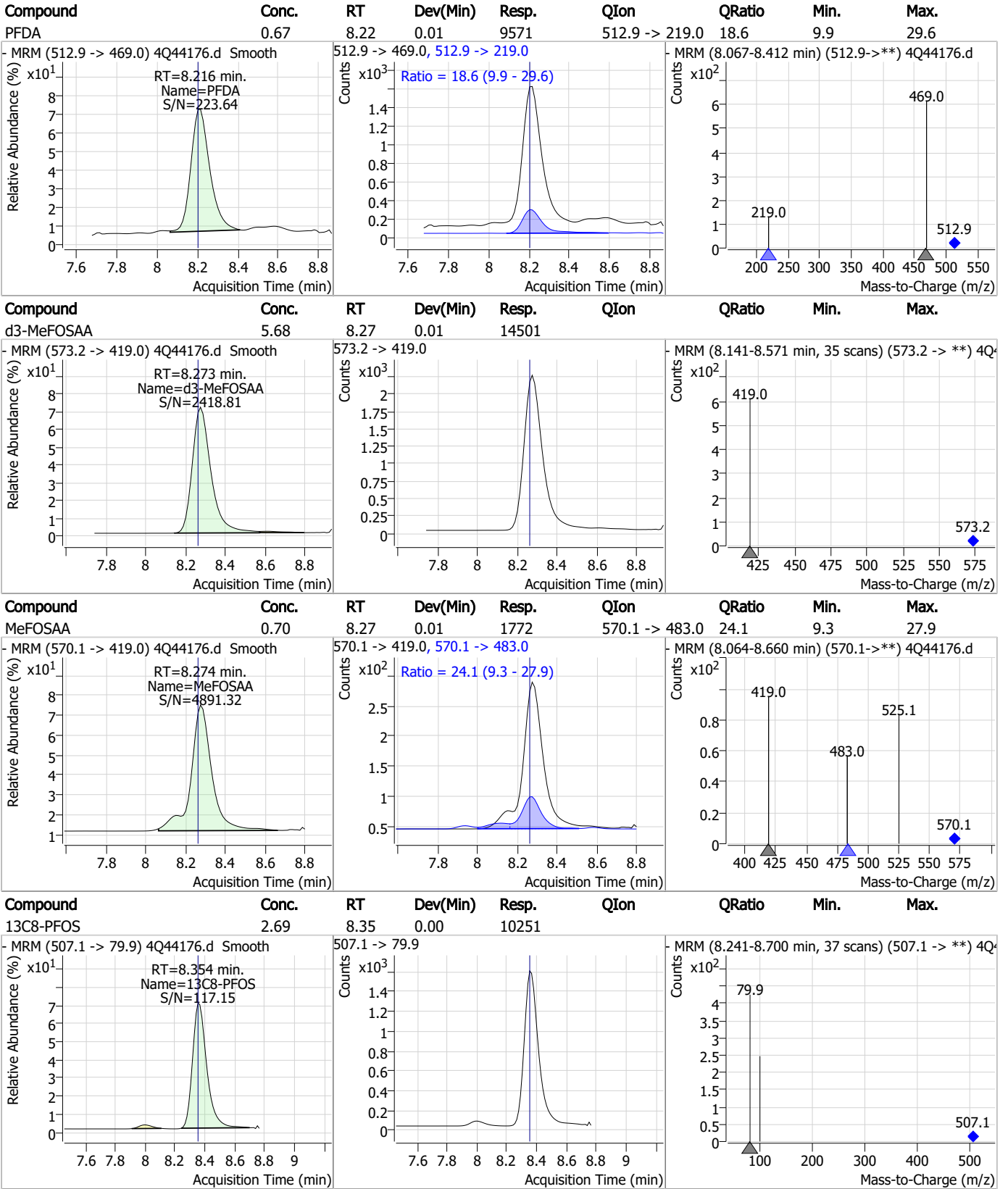
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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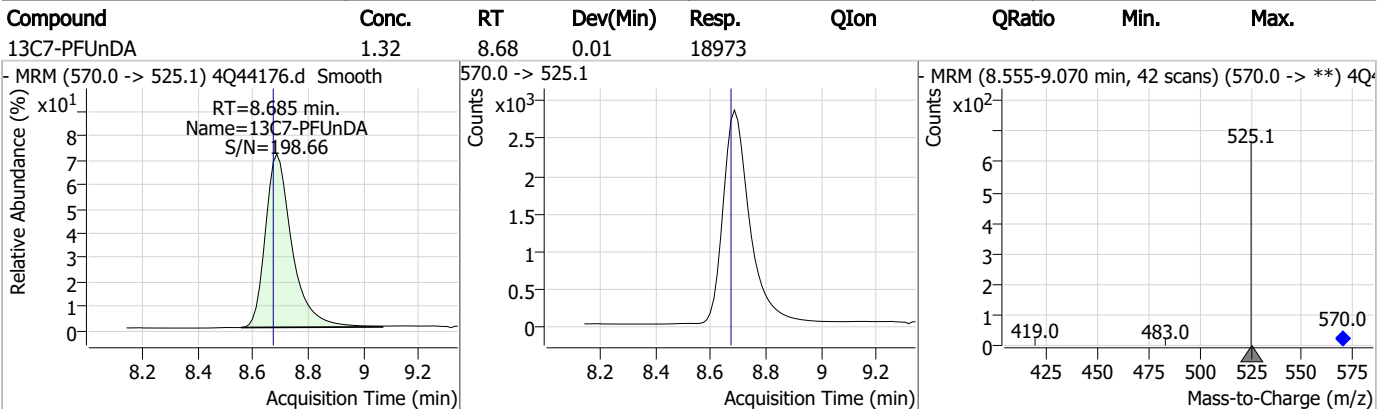
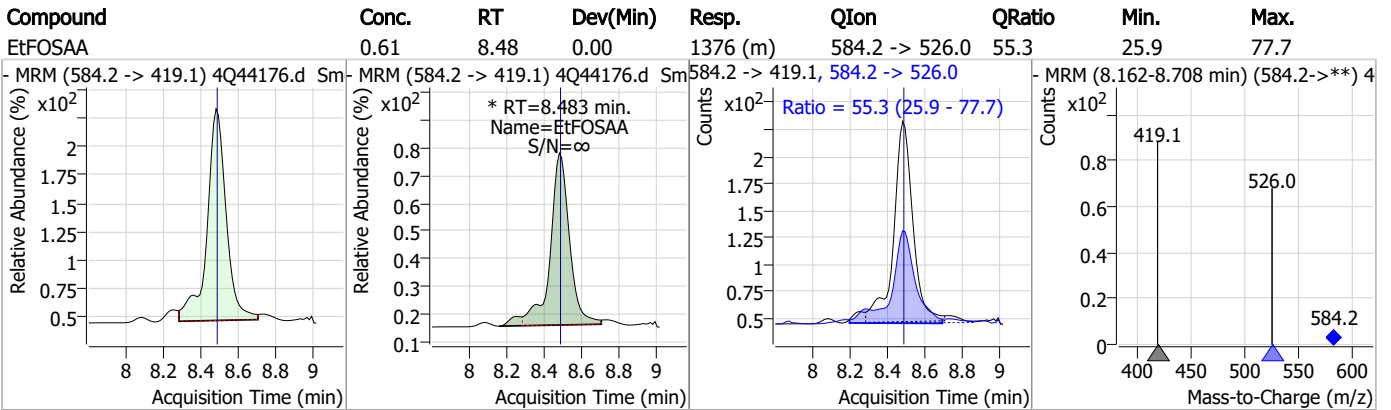
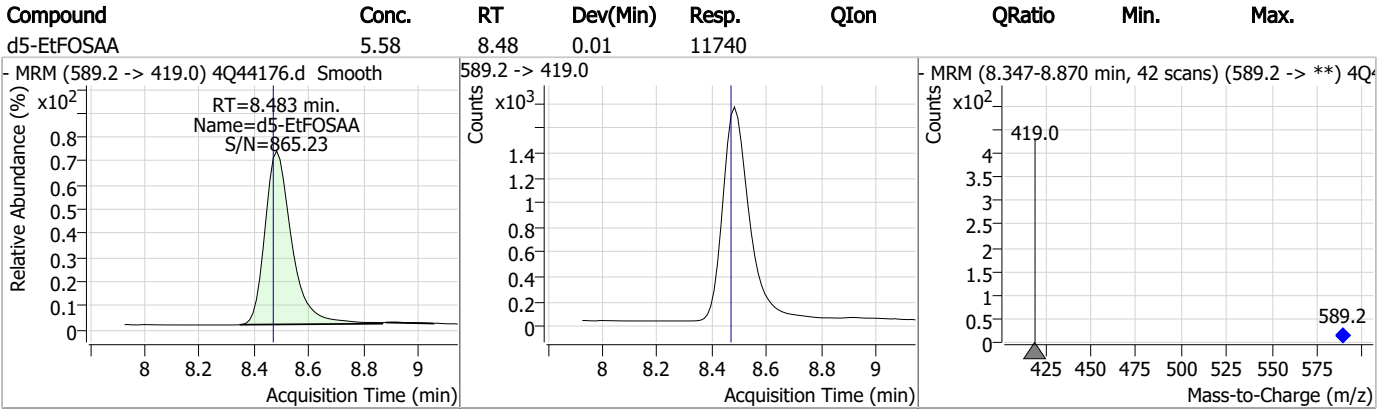
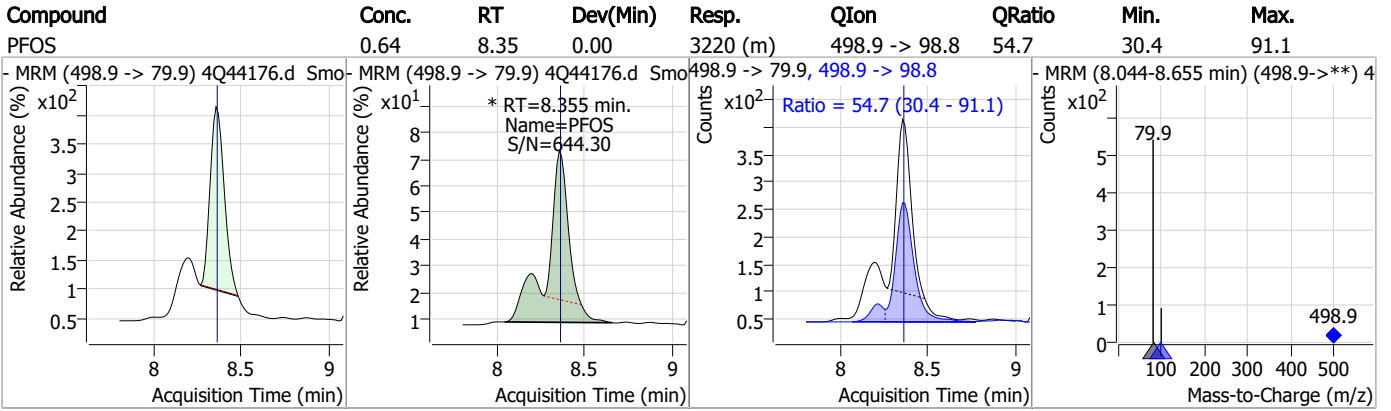
Perfluorinated Compounds by LC/MS/MS



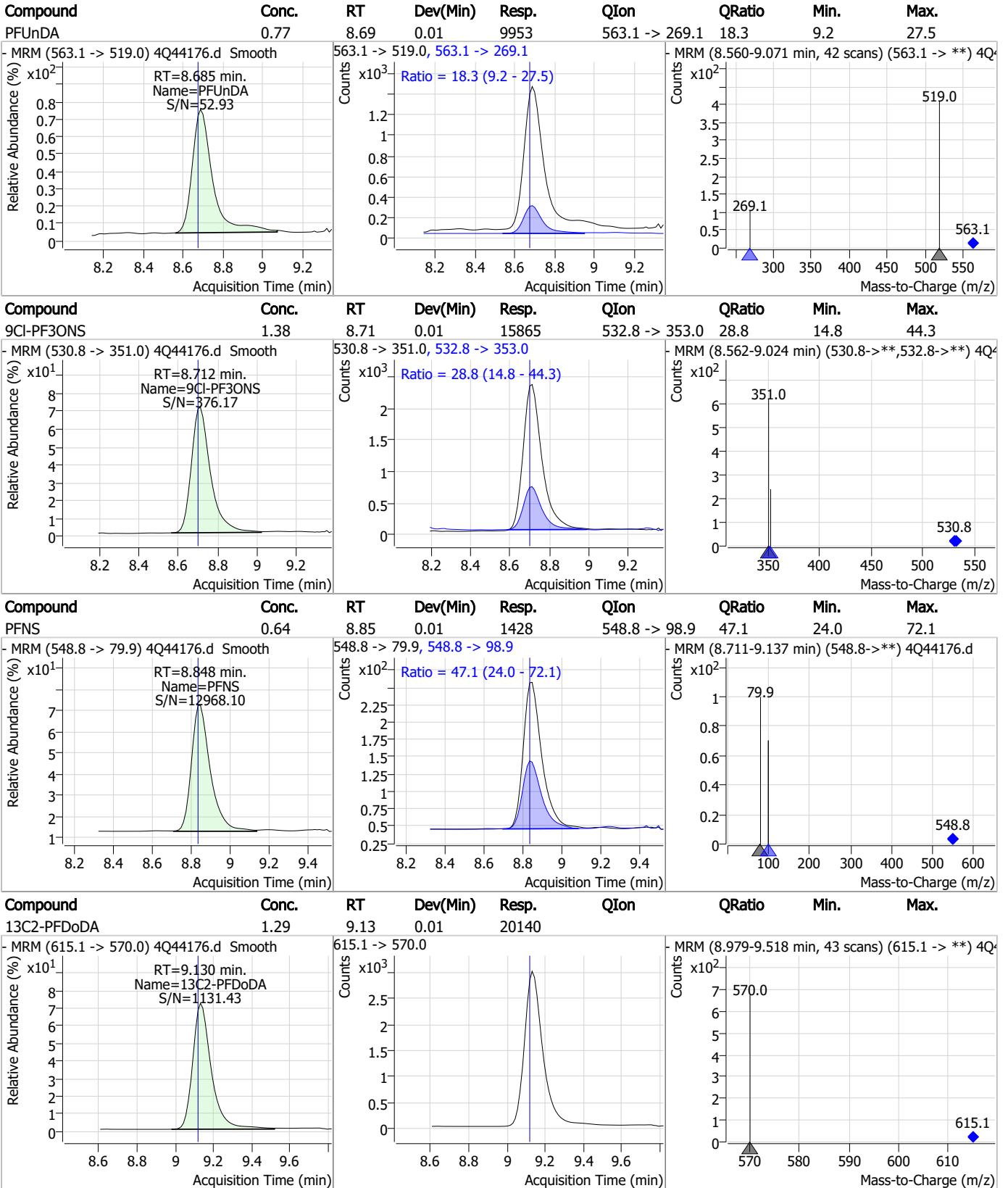
7.3.2

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Perfluorinated Compounds by LC/MS/MS



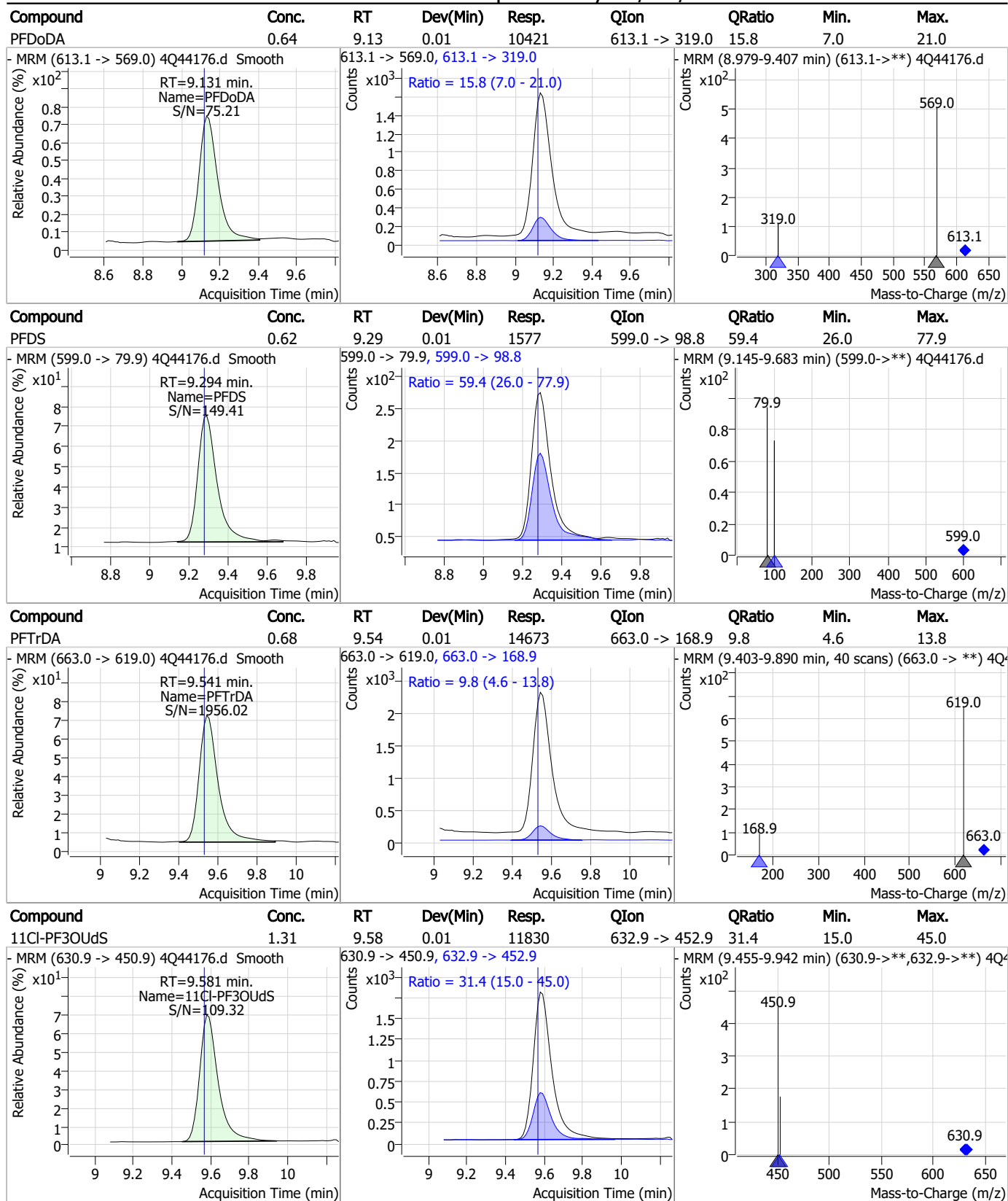
Perfluorinated Compounds by LC/MS/MS



7.3.2

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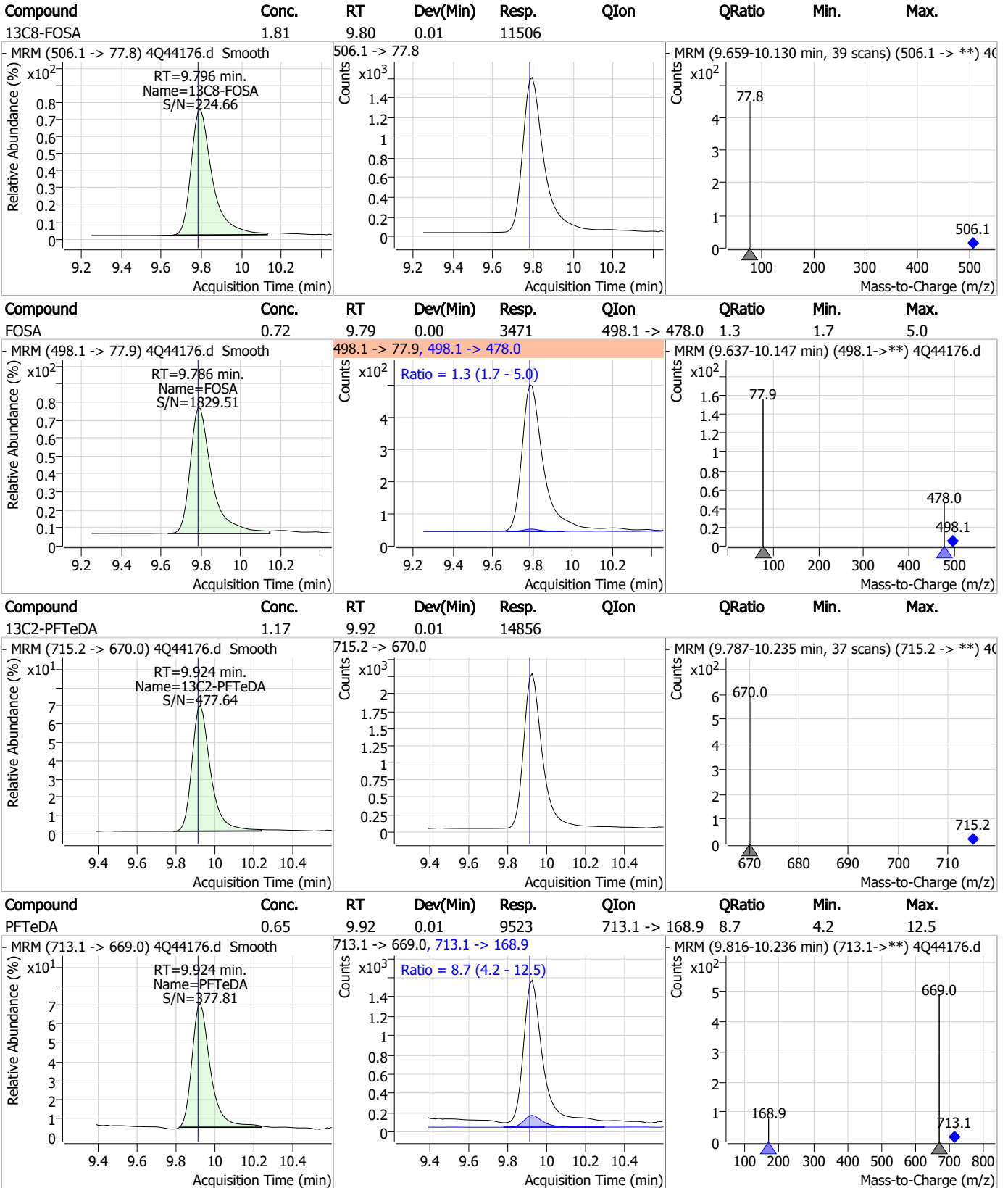
Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

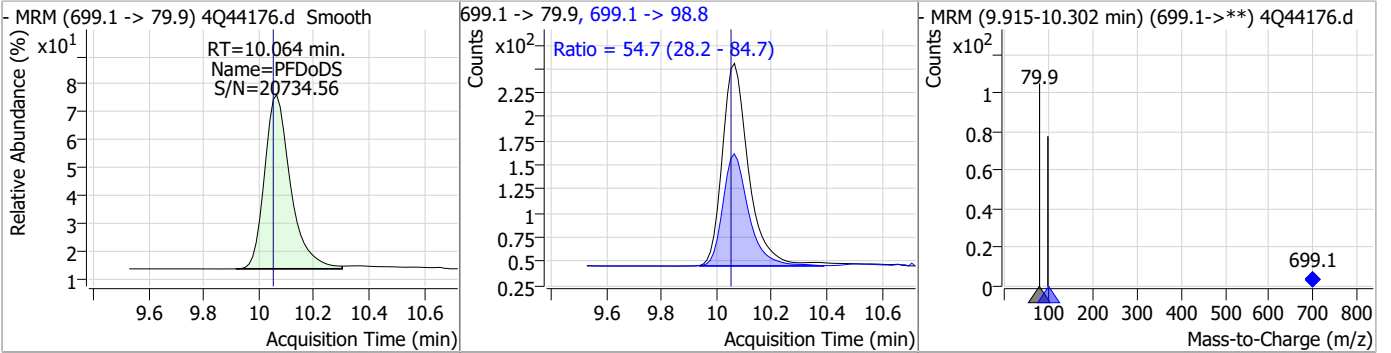


7.3.2

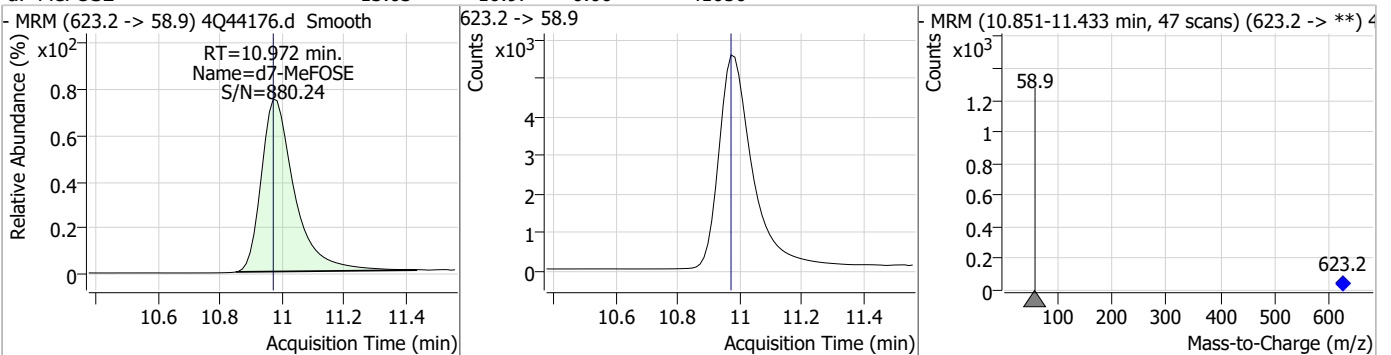
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Perfluorinated Compounds by LC/MS/MS

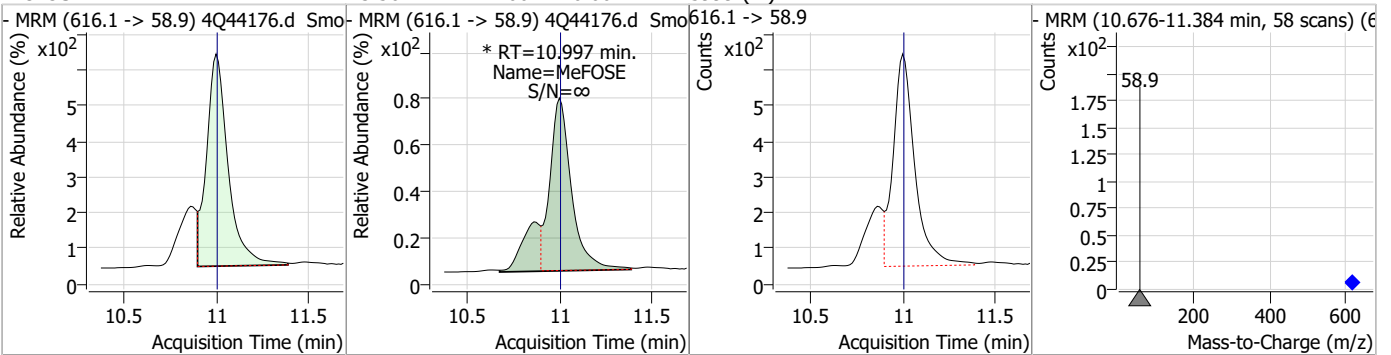
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.61	10.06	0.01	1382	699.1 -> 98.8	54.7	28.2	84.7



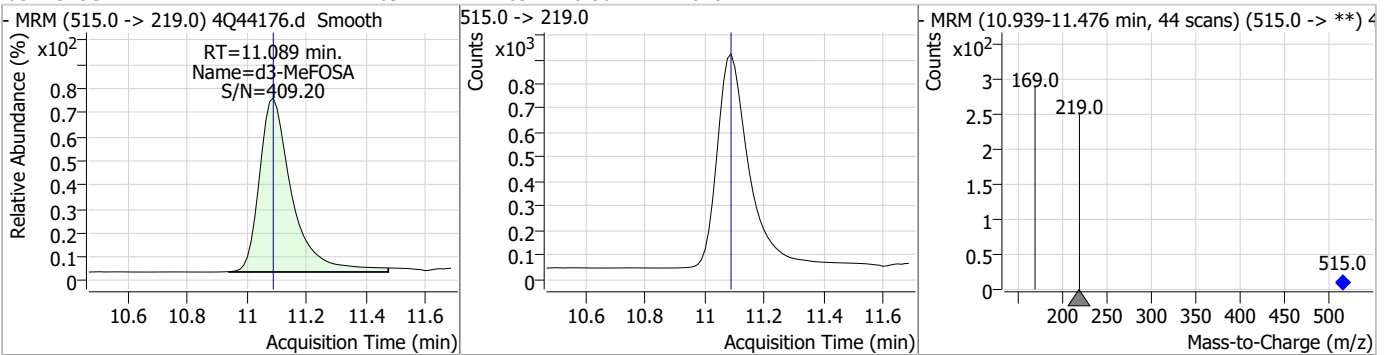
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	13.03	10.97	0.00	41050				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.56	11.00	0.00	5999 (m)				

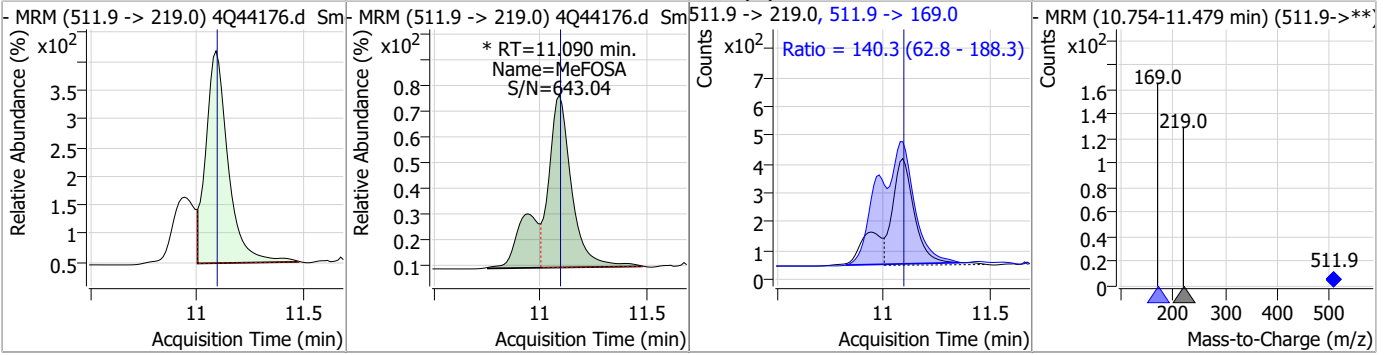


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.69	11.09	0.00	6702				

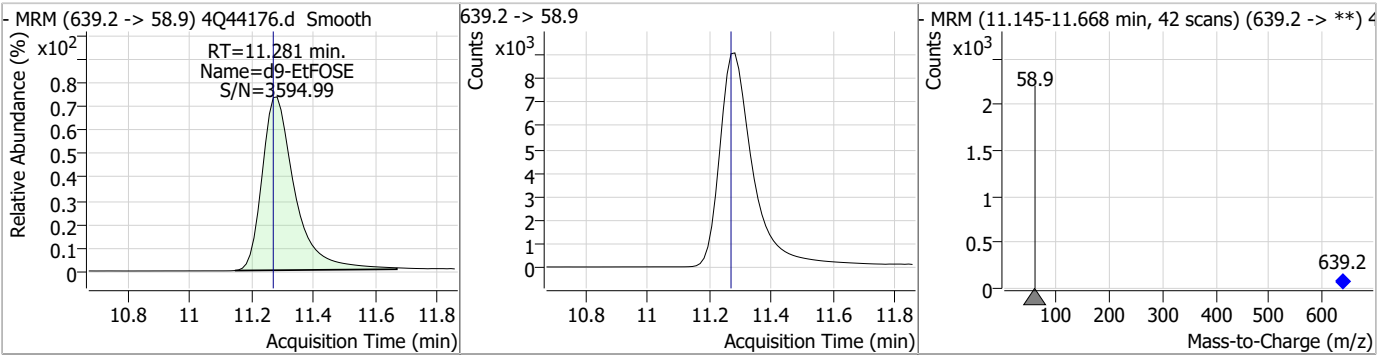


Perfluorinated Compounds by LC/MS/MS

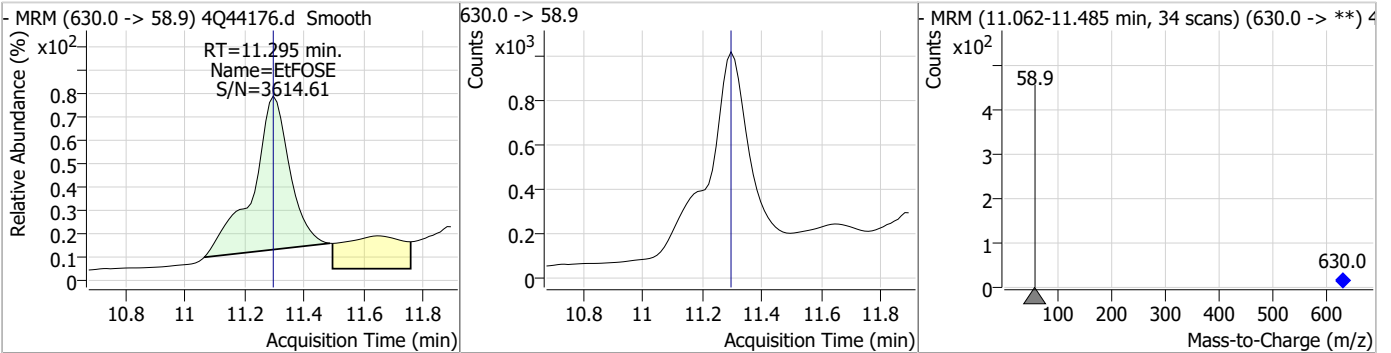
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.41	11.09	0.00	3554 (m)	511.9 -> 169.0	140.3	62.8	188.3



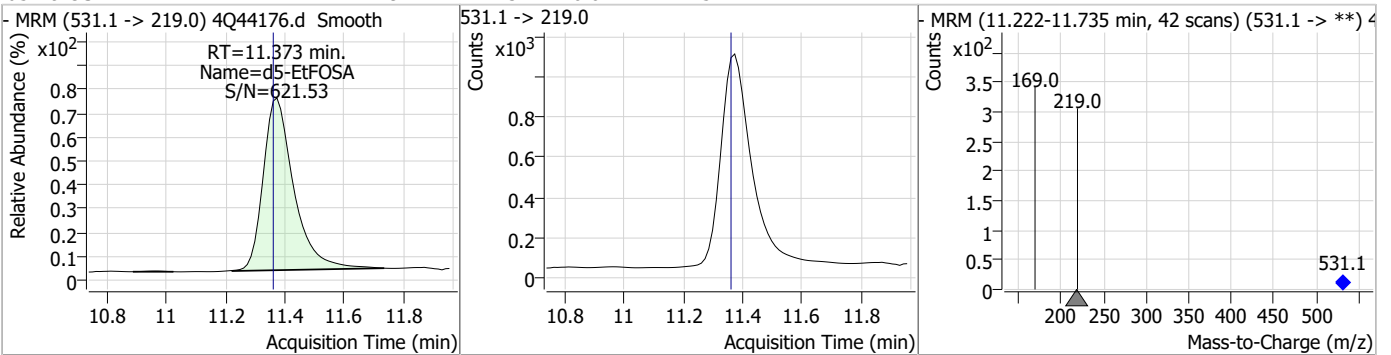
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	14.80	11.28	0.01	65998				



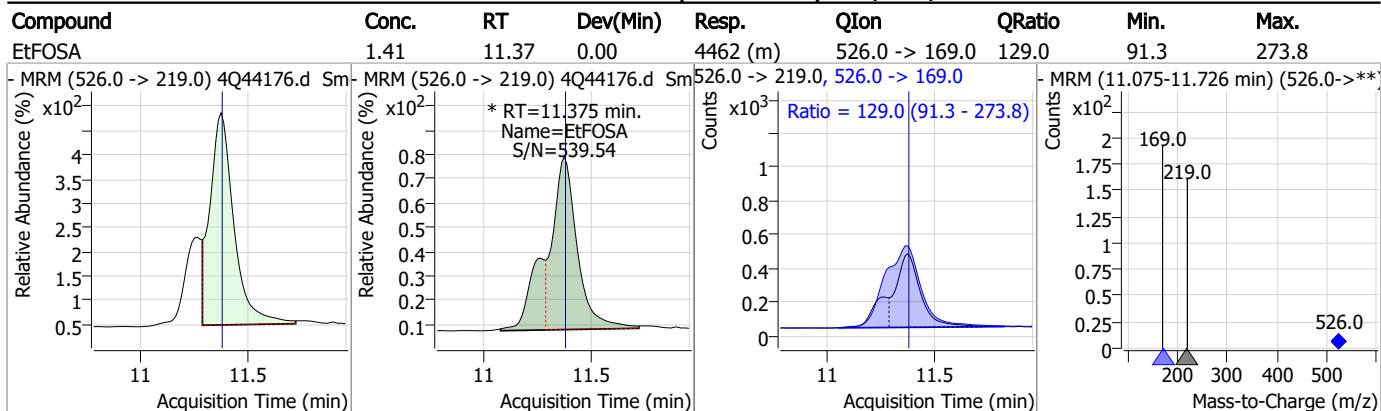
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	2.89	11.29	0.00	7389				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.79	11.37	0.01	7572				



Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Manual Integration Approval Summary

Sample Number: OP96784-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q44176.D Analyst approved: 05/10/23 11:10 Martha Valls
Injection Time: 05/09/23 23:44 Supervisor approved: 05/10/23 17:32 Norman Farmer

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
EtFOSA	4151-50-2		11.38	Split peak

7.3.2.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44180.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/10/2023 12:41:03 AM
 Sample Name : op96784-ms
 Vial : P3-D6
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96784,S4Q639,540,,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	51027	10.00 µg/L	-0.012
M5-PFPeA	4.362	268.3 -> 223.0	51793	5.00 µg/L	-0.025
M5-PFHxA	5.559	318.0 -> 273.0	47529	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	29442	2.50 µg/L	0.000
M8-PFOA	7.163	421.1 -> 376.0	43562	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	22534	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	19781	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	19152	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20003	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	10570	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	15343	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11842	2.50 µg/L	0.000
M3-PFHxS	7.254	402.1 -> 79.9	6833	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	8842	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1524	5.00 µg/L	-0.012
M2-6:2FTS	6.923	429.1 -> 80.9	2437	5.00 µg/L	0.000
M2-8:2FTS	8.003	529.1 -> 80.9	3005	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	15453	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	22257	10.00 µg/L	0.000
M5-EtFOSAA	8.483	589.2 -> 419.0	12424	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	55531	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	79825	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	8404	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	7831	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	9390	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	35455	5.00 µg/L	-0.013
18O2-PFHxS	7.253	403.0 -> 83.9	4144	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	46571	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	16385	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	23305	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	38041	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1524	9.05 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 181.0%		
13C2-6:2FTS	6.923	429.1 -> 80.9	2437	8.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 160.5%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3005	6.34 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.8%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20003	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C2-PFTeDA	9.924	715.2 -> 670.0	10570	0.82 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 65.5%		
13C3-PFBS	5.452	302.1 -> 79.9	11842	3.03 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 121.2%		
13C3-PFHxS	7.254	402.1 -> 79.9	6833	2.66 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 = 106.4%		
13C4-PFBA	2.911	216.8 -> 171.9	51027	7.65 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 76.5%		
13C4-PFHpA	6.492	367.1 -> 322.0	29442	3.01 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 120.3%		
13C5-PFHxA	5.559	318.0 -> 273.0	47529	2.84 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C5-PFPeA	4.362	268.3 -> 223.0	51793	4.42 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.4%		
13C6-PFDA	8.216	519.1 -> 474.1	19781	1.41 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 112.8%		
13C7-PFUnDA	8.685	570.0 -> 525.1	19152	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C8-FOSA	9.796	506.1 -> 77.8	15343	2.61 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C8-PFOA	7.163	421.1 -> 376.0	43562	2.85 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C8-PFOS	8.354	507.1 -> 79.9	8842	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C9-PFNA	7.709	472.1 -> 427.0	22534	1.42 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.8%		
d3-MeFOSAA	8.273	573.2 -> 419.0	15453	6.52 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.4%		
13C3-HFPO-DA	5.914	286.9 -> 168.9	22257	8.89 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 88.9%		
d3-MeFOSA	11.089	515.0 -> 219.0	7831	2.13 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.1%		
d5-EtFOSAA	8.483	589.2 -> 419.0	12424	6.37 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.3%		
d7-MeFOSE	10.972	623.2 -> 58.9	55531	19.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 76.0%		
d9-EtFOSE	11.269	639.2 -> 58.9	79825	19.30 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 77.2%		
d5-EtFOSA	11.373	531.1 -> 219.0	8404	2.15 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.9%		
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	21643	8.83 µg/L	97
		327.1 -> 80.9	9620		
6:2FTS	6.924	427.1 -> 407.0	22685	9.64 µg/L	92
		427.1 -> 80.9	8588		
8:2FTS	8.003	527.1 -> 507.0	18031	10.77 µg/L	93
		527.1 -> 80.8	7053		
EtFOSAA	8.483	584.2 -> 419.1	5136	2.15 µg/L	92
		584.2 -> 526.0	2938	m	
FOSA	9.786	498.1 -> 77.9	15453	2.40 µg/L	100
		498.1 -> 478.0	488		
MeFOSAA	8.274	570.1 -> 419.0	5477	2.03 µg/L	85
		570.1 -> 483.0	1395		
PFBA	2.920	212.8 -> 168.9	12676	9.28 µg/L	100
PFBS	5.453	298.7 -> 79.9	9278	1.91 µg/L	98
		298.7 -> 98.8	3424		
PFDA	8.216	512.9 -> 469.0	32596	2.17 µg/L	99
		512.9 -> 219.0	6619		
PFDODA	9.131	613.1 -> 569.0	34564	2.15 µg/L	96
		613.1 -> 319.0	5348		
PFDS	9.294	599.0 -> 79.9	4192	1.91 µg/L	99

7.4.1
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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	2153	2.32	µg/L	99
		363.1 -> 319.0	43247			
PFHpS	7.836	363.1 -> 169.0	7934	2.27	µg/L	91
		449.0 -> 79.9	7243			
PFHxA	5.550	449.0 -> 98.9	4270	2.32	µg/L	99
		313.0 -> 269.0	43230			
PFHxS	7.255	313.0 -> 118.9	1426	2.27	µg/L	m
		398.7 -> 79.9	6356			
PFNA	7.709	398.7 -> 98.9	3122	2.11	µg/L	100
		463.0 -> 419.0	35203			
PFNS	8.836	463.0 -> 219.0	9019	2.06	µg/L	90
		548.8 -> 79.9	3971			
PFOA	7.164	548.8 -> 98.9	2169	2.31	µg/L	100
		413.0 -> 369.0	58014			
PFOS	8.355	413.0 -> 169.0	11543	2.30	µg/L	m
		498.9 -> 79.9	9935			
PFPeA	4.377	498.9 -> 98.8	4577	5.87	µg/L	m
		263.0 -> 219.0	73164			
PFPeS	6.519	349.1 -> 79.9	5427	2.26	µg/L	96
		349.1 -> 98.9	2305			
PFTeDA	9.924	713.1 -> 669.0	23680	2.29	µg/L	97
		713.1 -> 168.9	2186			
PFTrDA	9.541	663.0 -> 619.0	39960	1.86	µg/L	99
		663.0 -> 168.9	3893			
PFUnDA	8.685	563.1 -> 519.0	30001	2.31	µg/L	93
		563.1 -> 269.1	6403			
11CI-PF3OUdS	9.581	630.9 -> 450.9	34434	4.30	µg/L	96
		632.9 -> 452.9	9663			
9CI-PF3ONS	8.700	530.8 -> 351.0	47518	4.66	µg/L	99
		532.8 -> 353.0	14277			
ADONA	6.756	376.9 -> 250.9	125619	5.61	µg/L	99
		376.9 -> 84.8	33008			
HFPO-DA	5.915	284.9 -> 168.9	10027	4.71	µg/L	96
		284.9 -> 184.9	1136			
3:3FTCA	3.867	241.0 -> 177.0	3588	6.55	µg/L	95
		241.0 -> 117.0	389			
5:3FTCA	6.217	341.0 -> 237.1	187004	74.01	µg/L	99
		341.0 -> 217.0	126920			
7:3FTCA	7.686	441.0 -> 316.9	110867	84.44	µg/L	98
		441.0 -> 336.9	264571			
EtFOSA	11.375	526.0 -> 219.0	16296	4.63	µg/L	m
		526.0 -> 169.0	23133			
EtFOSE	11.295	630.0 -> 58.9	32573	10.54	µg/L	100
		511.9 -> 219.0	14001			
MeFOSA	11.090	511.9 -> 169.0	20361	4.75	µg/L	m
		616.1 -> 58.9	26565			
MeFOSE	10.997	699.1 -> 79.9	2977	11.65	µg/L	m
		699.1 -> 98.8	1671			
PFDoDS	10.064	295.0 -> 201.0	2762	1.52	µg/L	100
		295.0 -> 84.9	687			
NFDHA	5.441	279.0 -> 85.1	38068	2.08	µg/L	97
		229.0 -> 84.9	22481			
PFMBA	4.778	314.8 -> 134.9	54350	3.45	µg/L	100
		314.8 -> 82.9	1876			
PFMPA	3.515			3.86	µg/L	99
PFEESA	5.984					

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

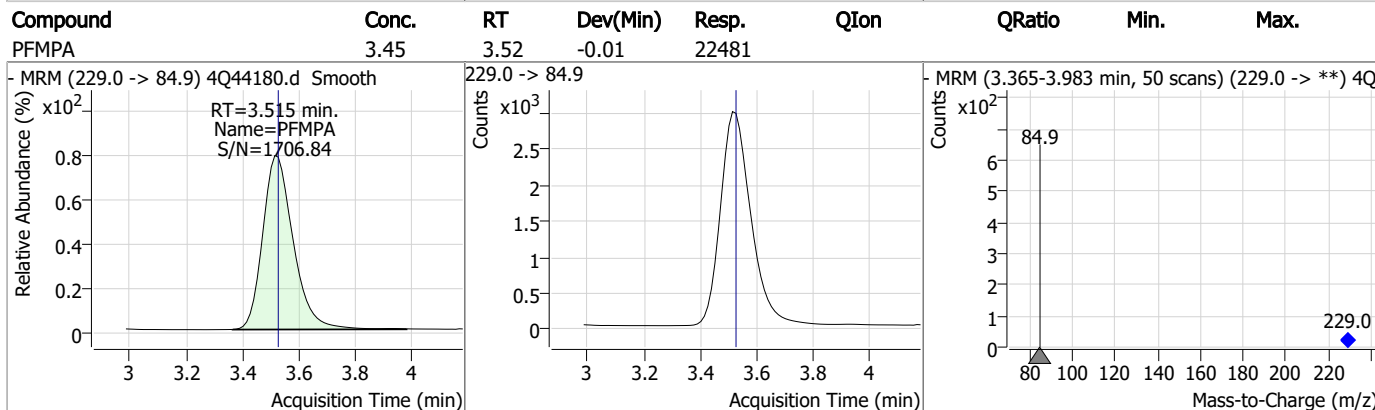
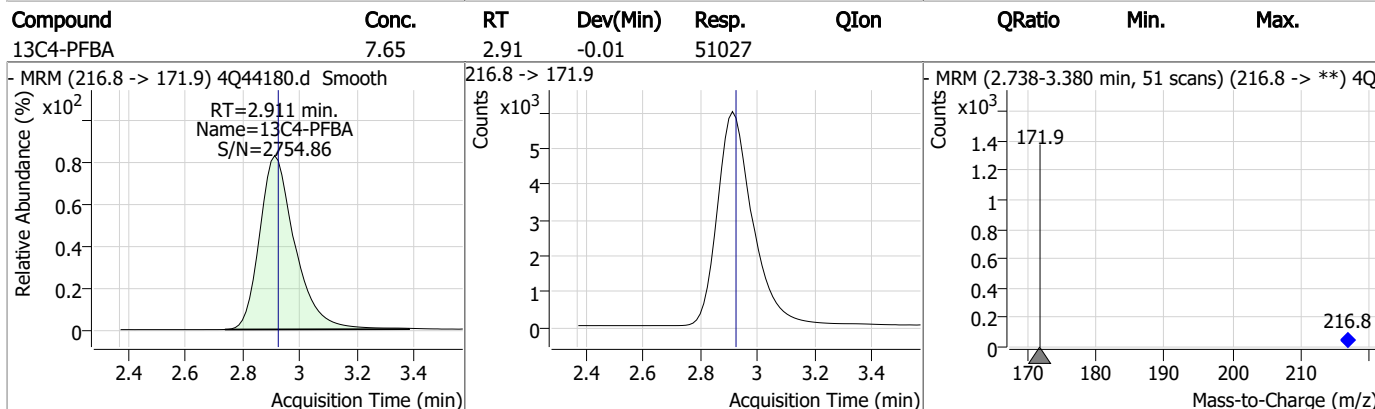
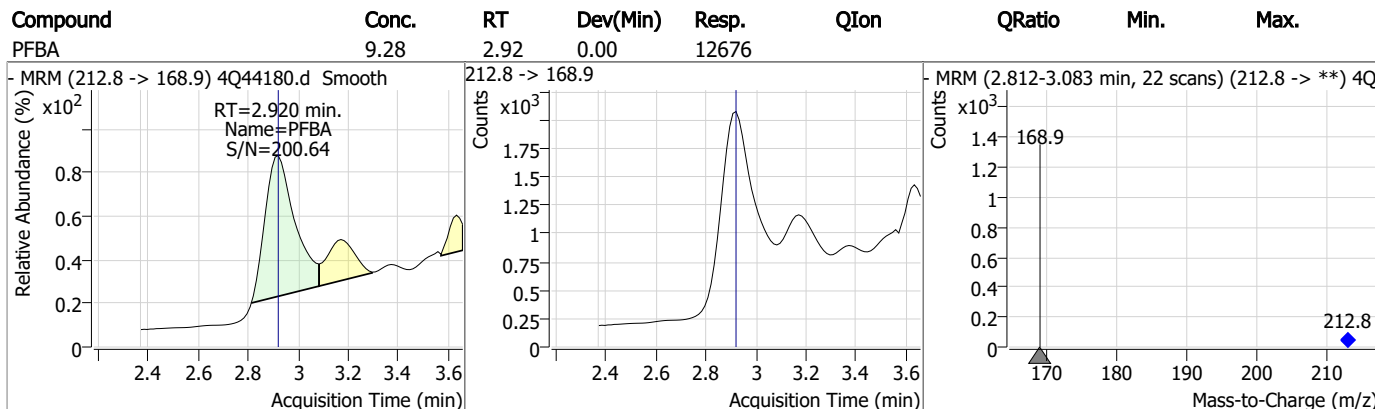
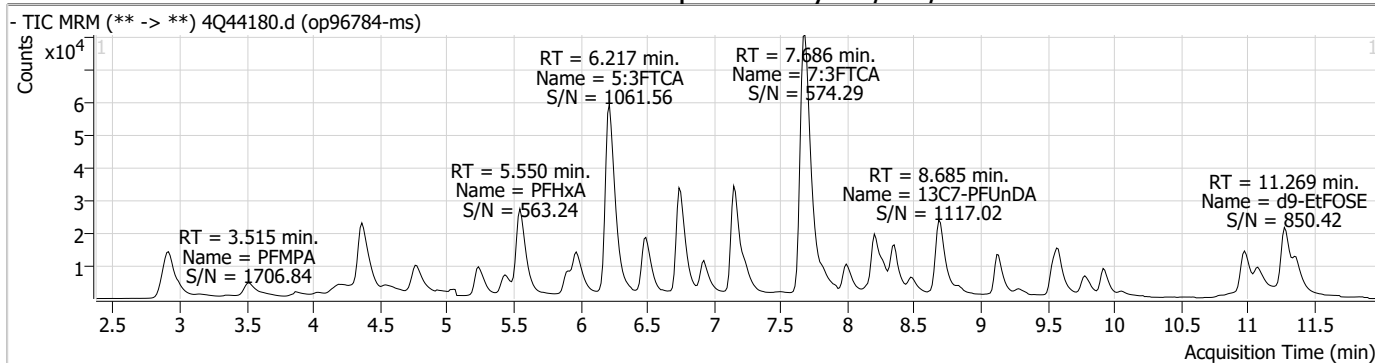
Perfluorinated Compounds by LC/MS/MS

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

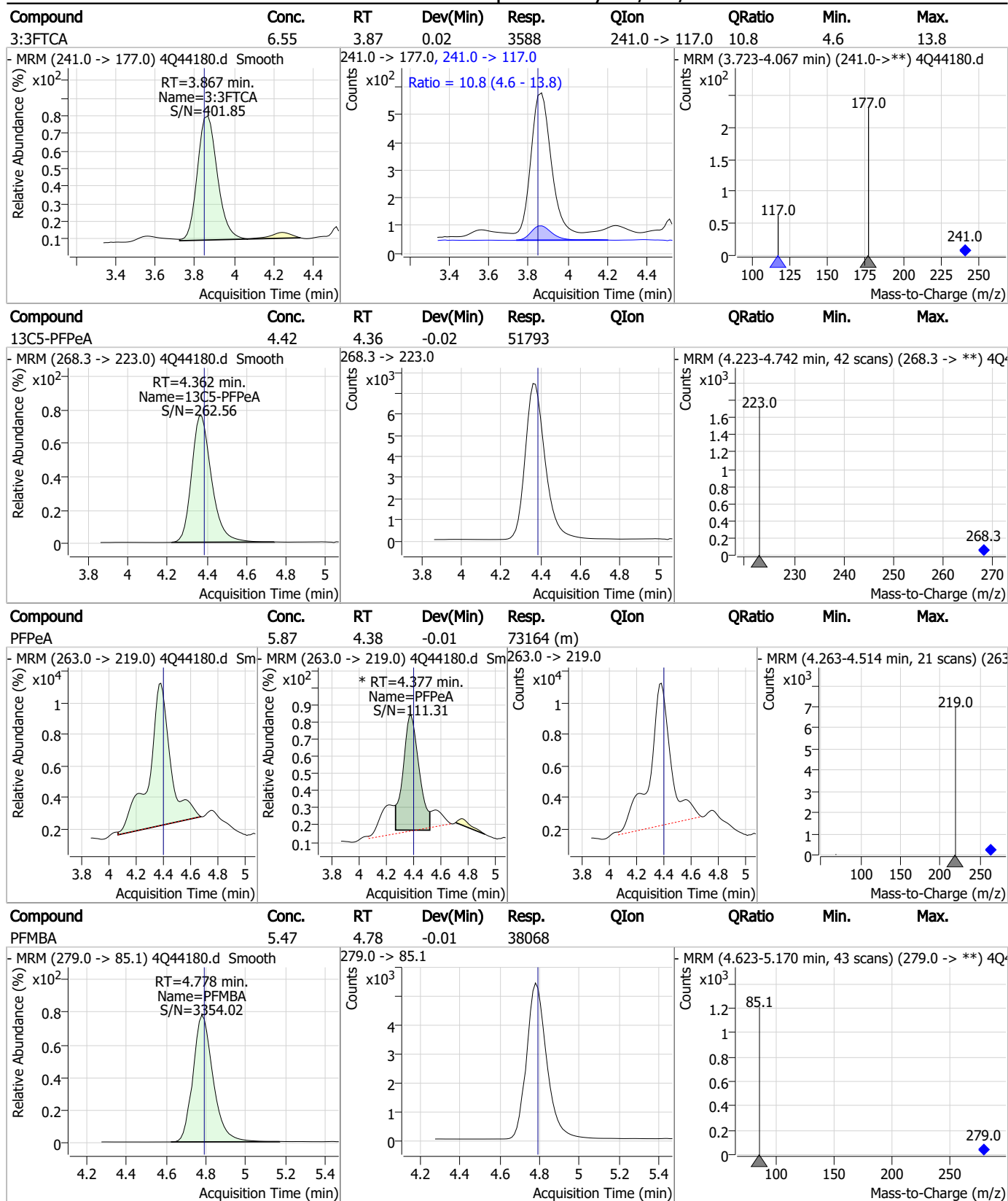
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Perfluorinated Compounds by LC/MS/MS



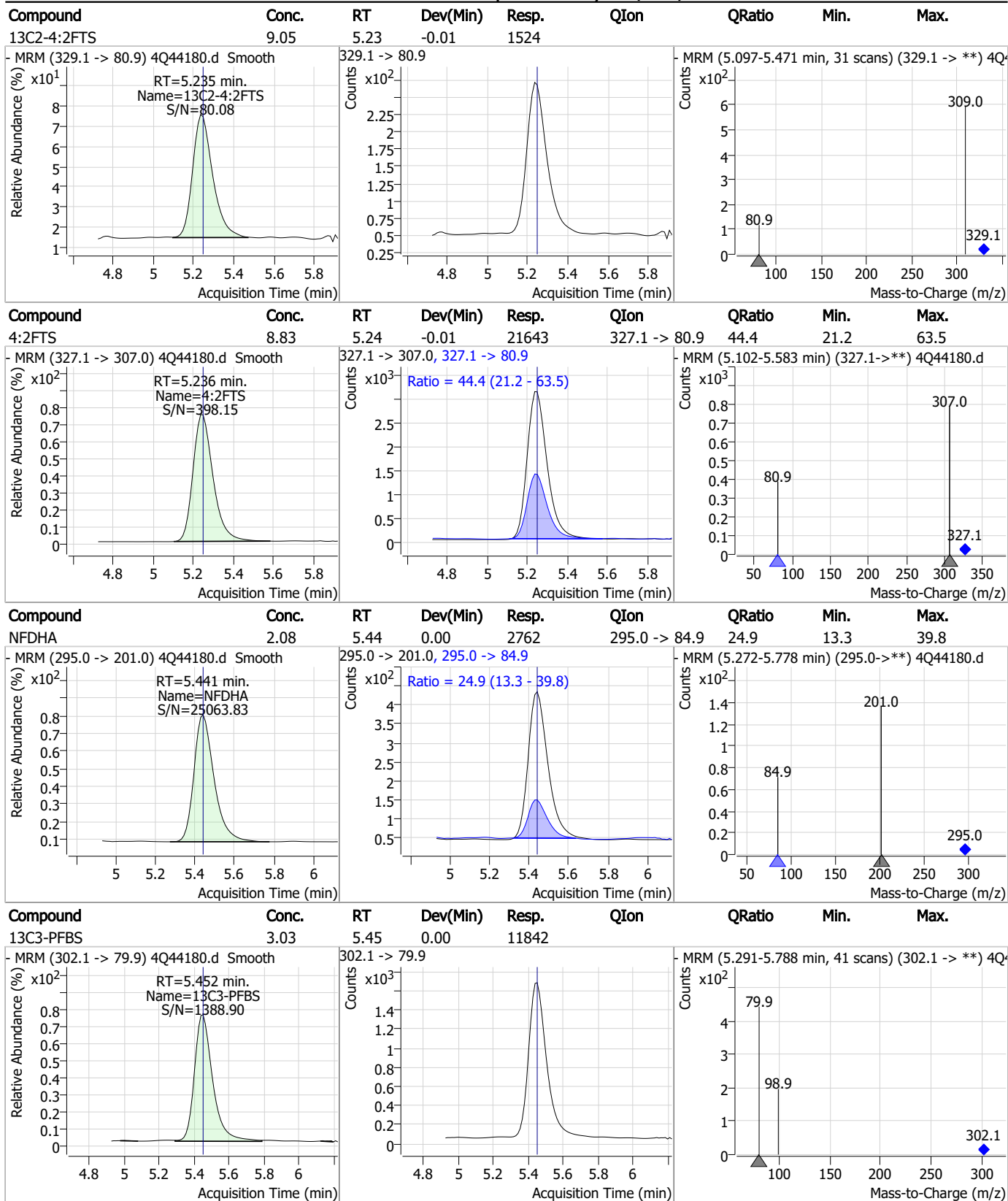
7.4.1
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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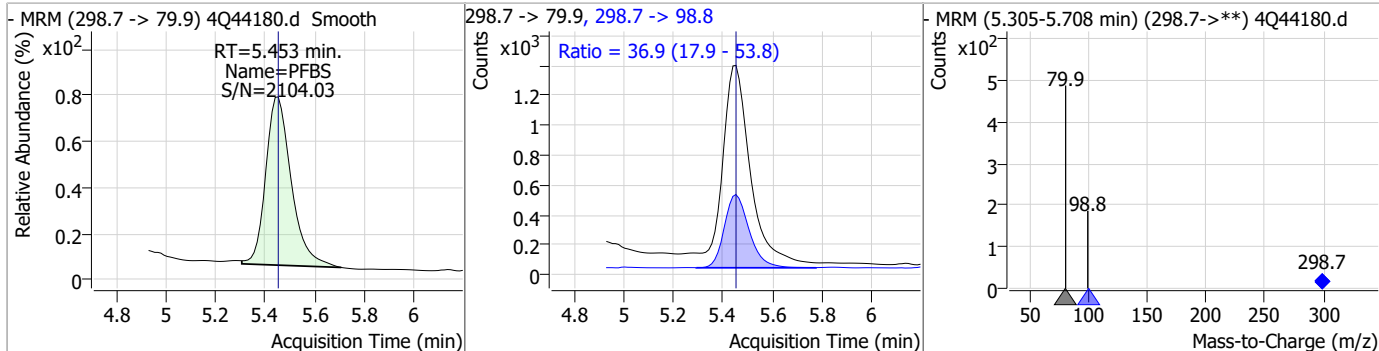
Perfluorinated Compounds by LC/MS/MS



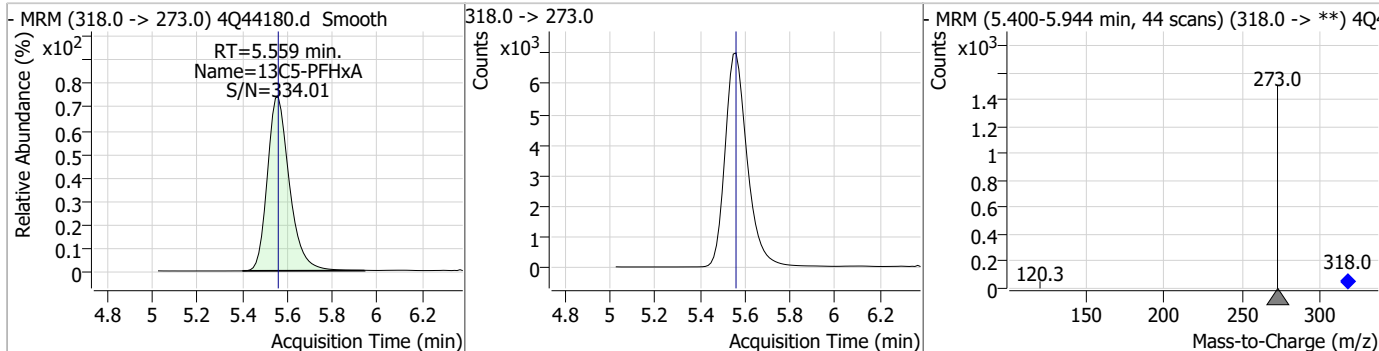
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Perfluorinated Compounds by LC/MS/MS

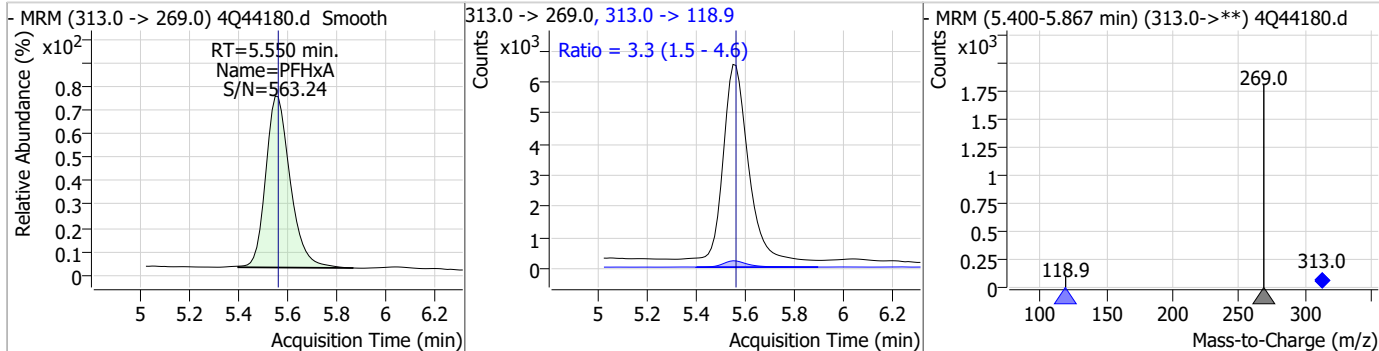
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.91	5.45	0.00	9278	298.7 -> 98.8	36.9	17.9	53.8



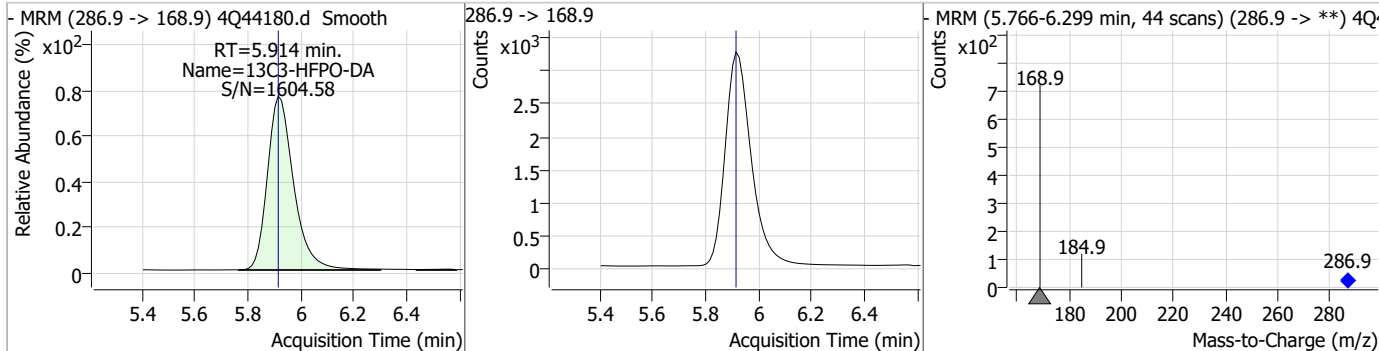
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.84	5.56	0.00	47529				



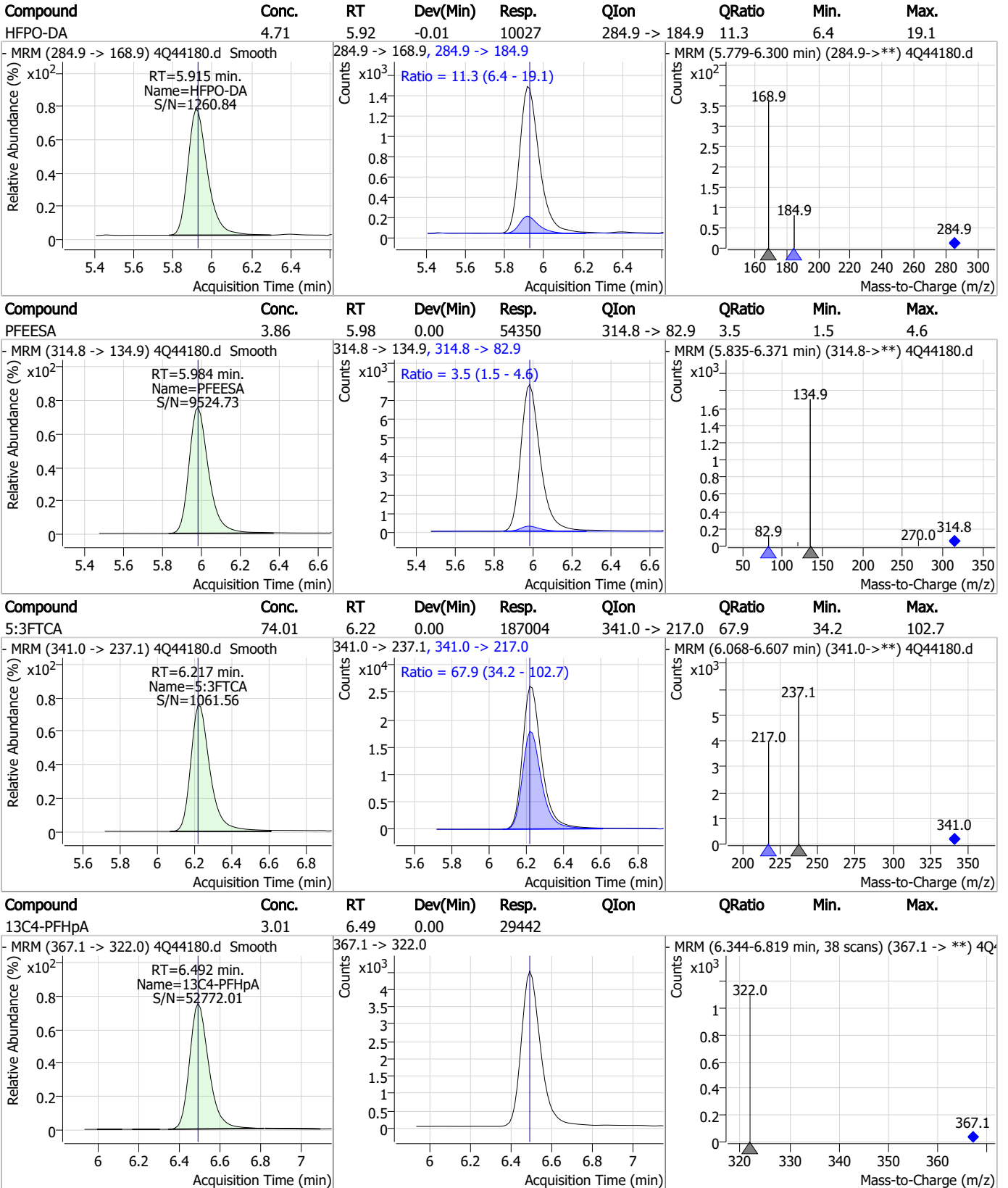
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.32	5.55	-0.01	43230	313.0 -> 118.9	3.3	1.5	4.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.89	5.91	0.00	22257				



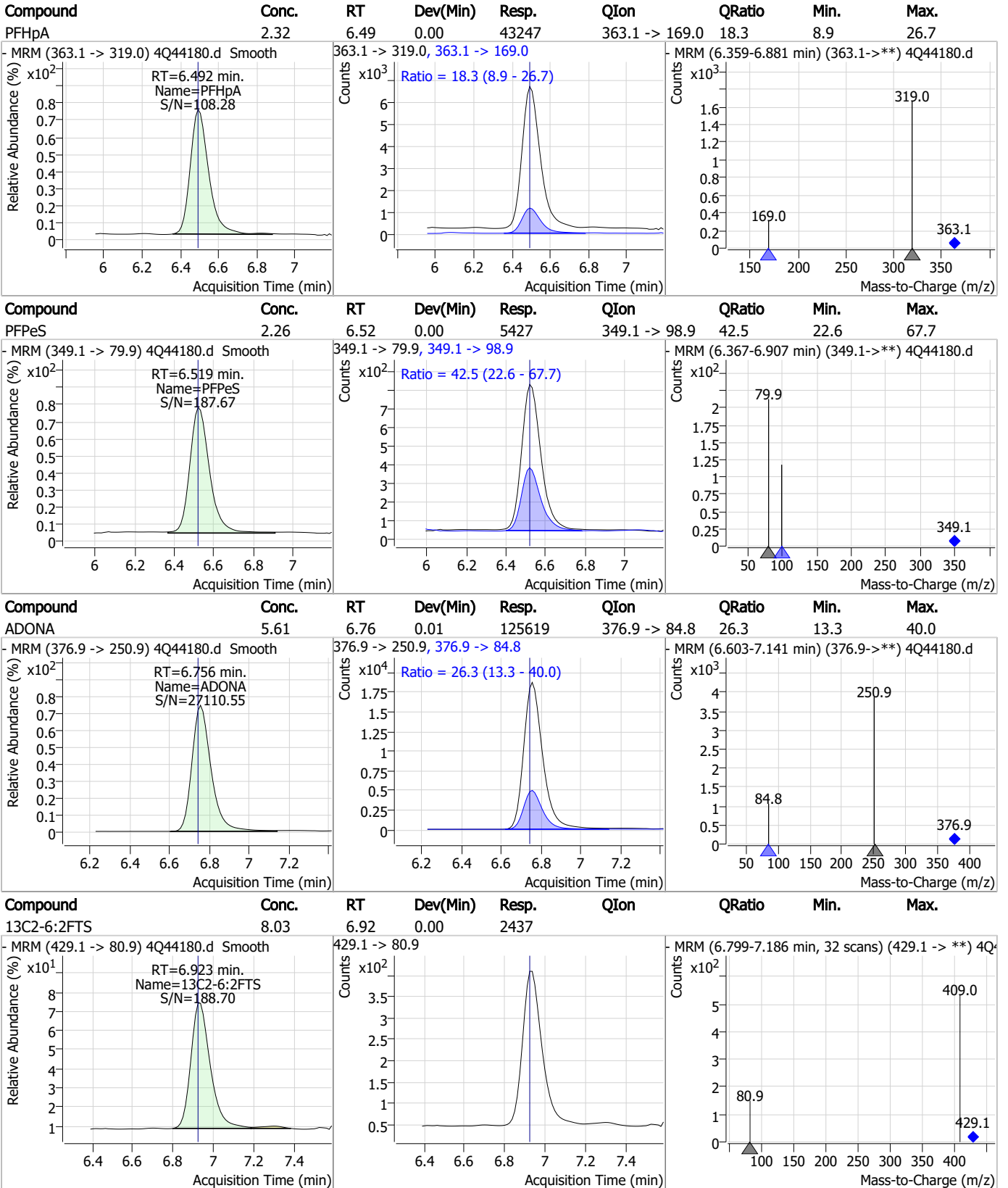
Perfluorinated Compounds by LC/MS/MS



7.4.1

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Perfluorinated Compounds by LC/MS/MS

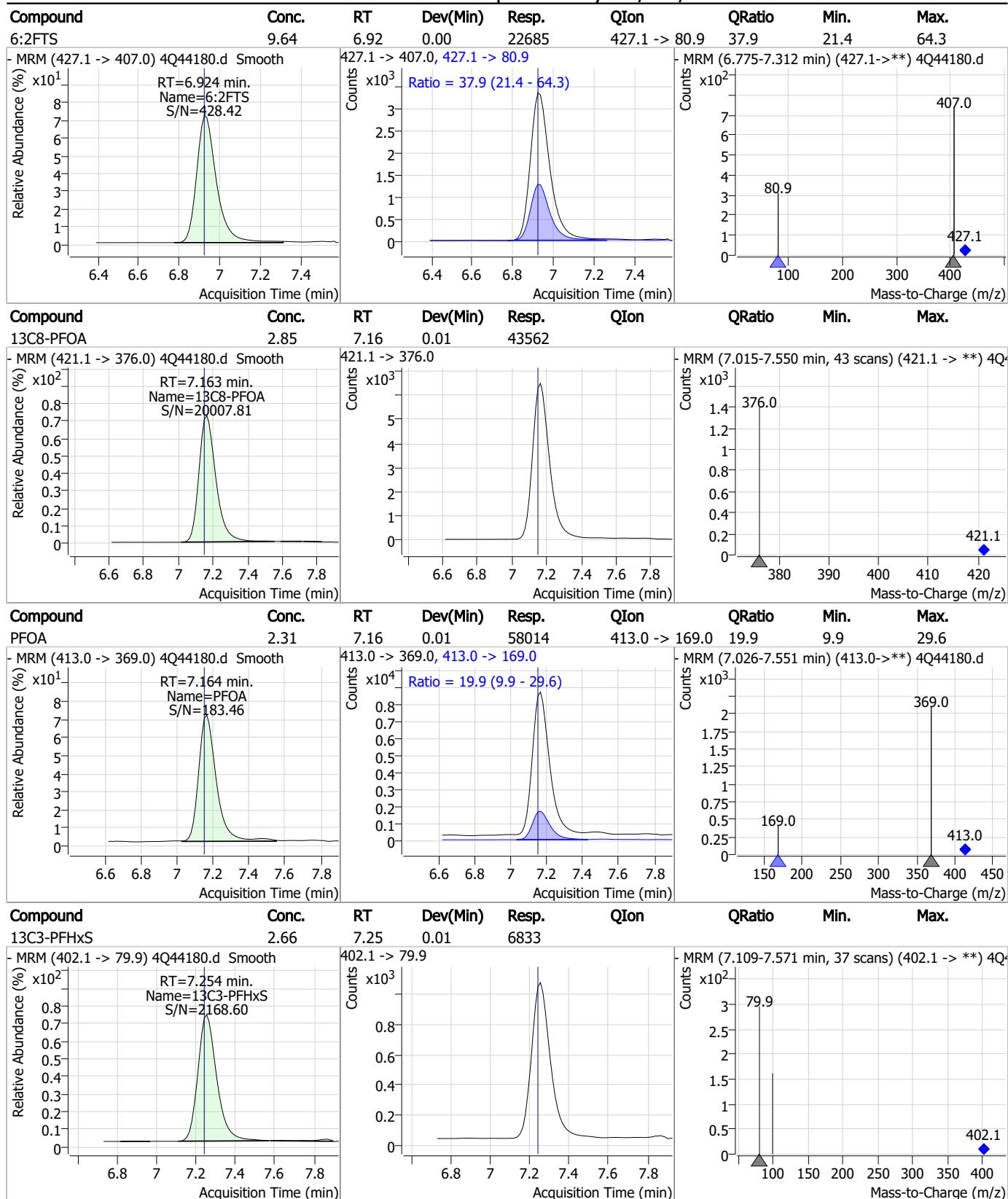


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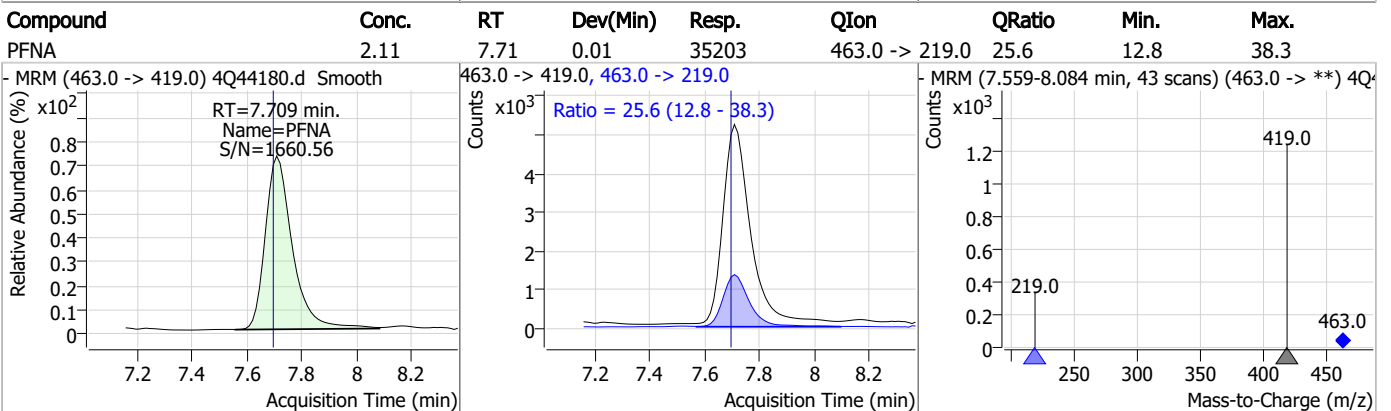
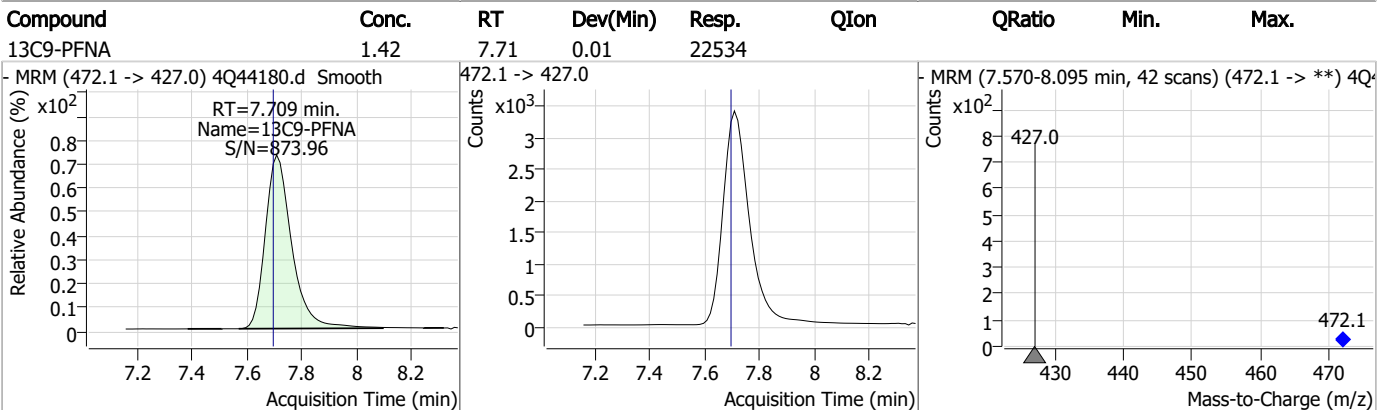
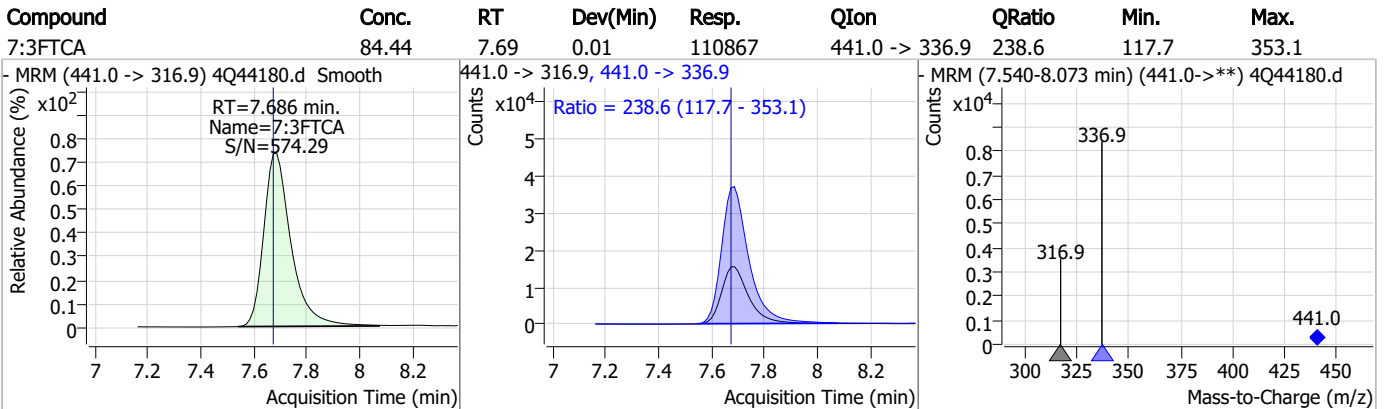
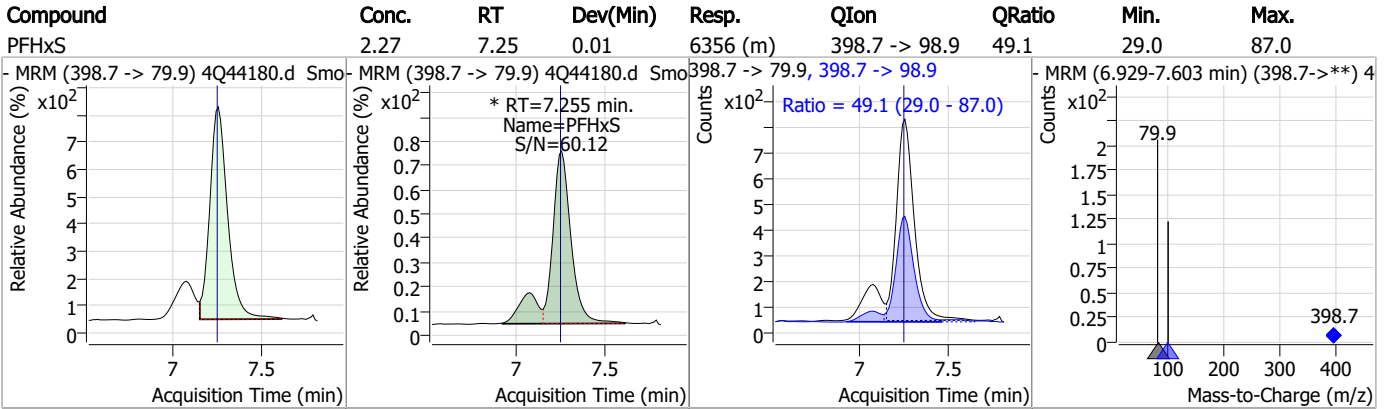


Perfluorinated Compounds by LC/MS/MS

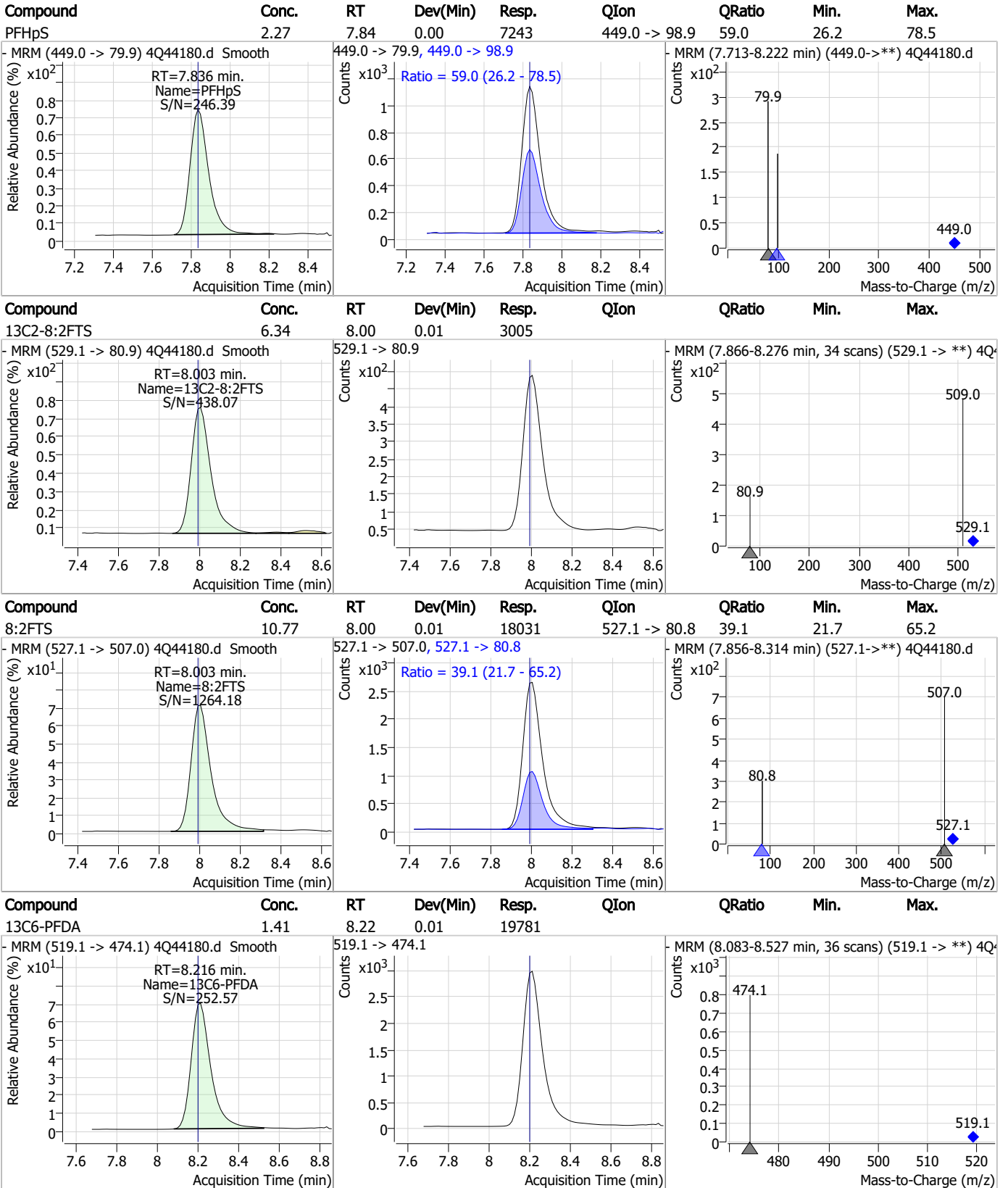


7.4.1
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Perfluorinated Compounds by LC/MS/MS



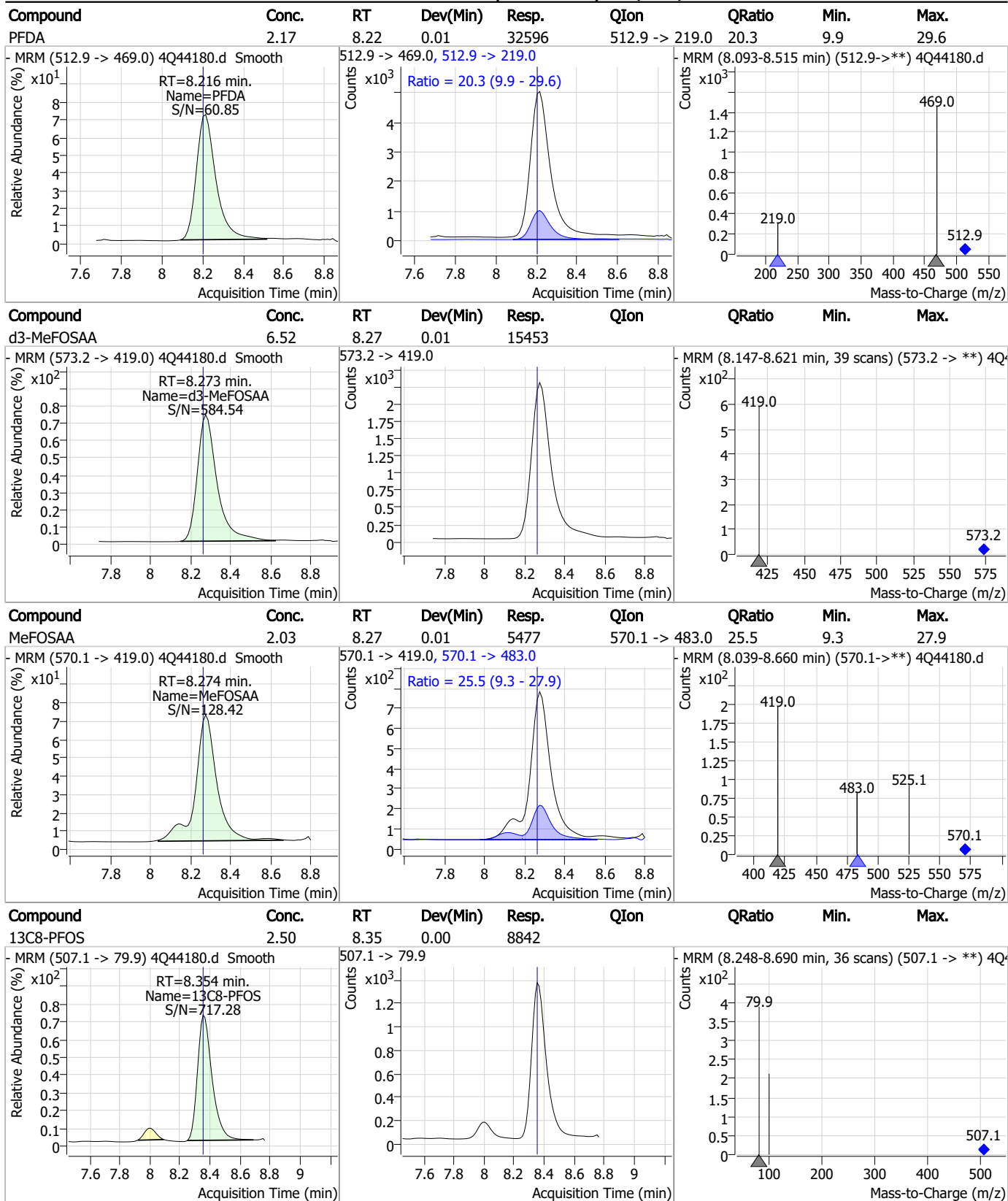
Perfluorinated Compounds by LC/MS/MS



7.4.1

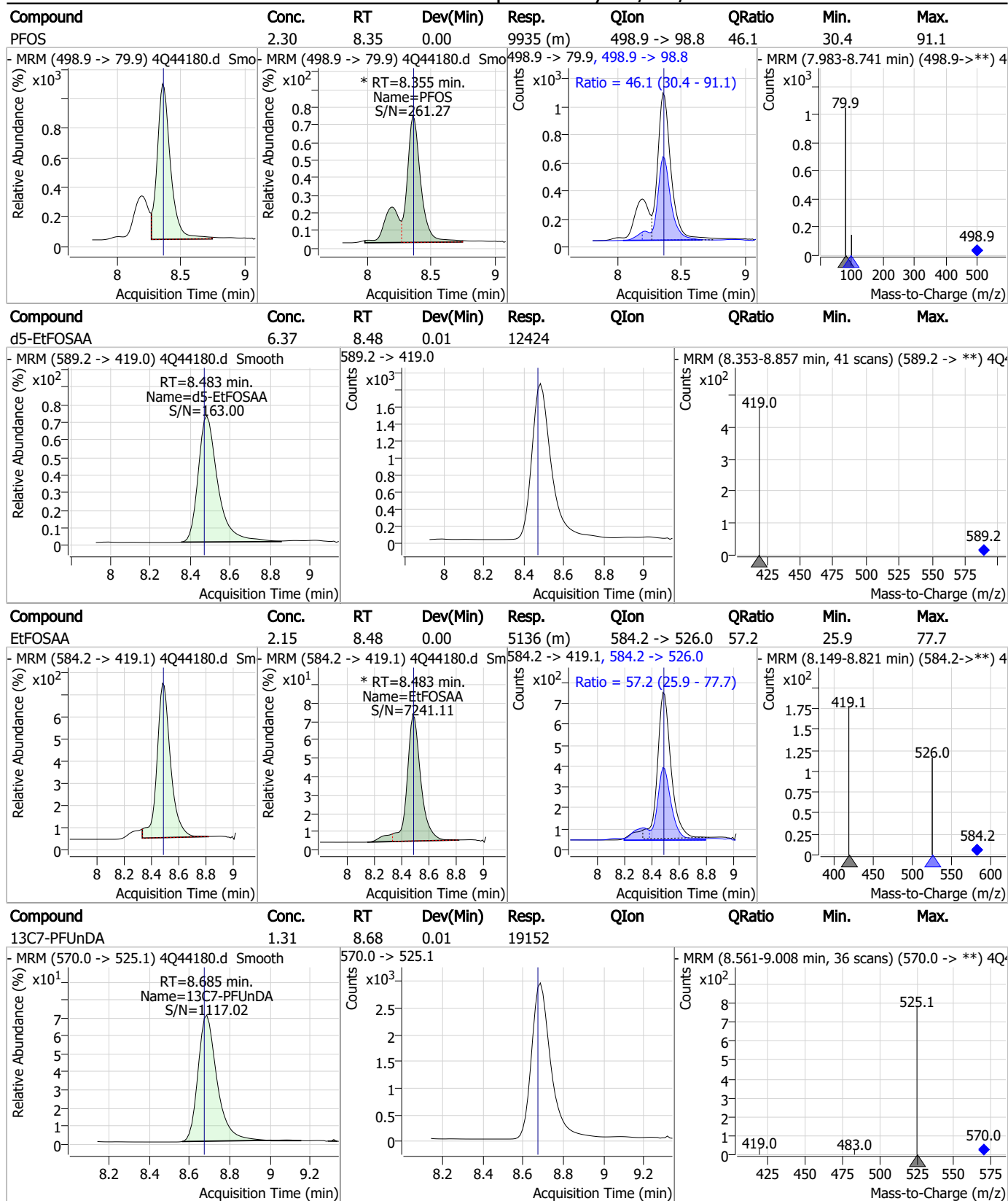
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Perfluorinated Compounds by LC/MS/MS



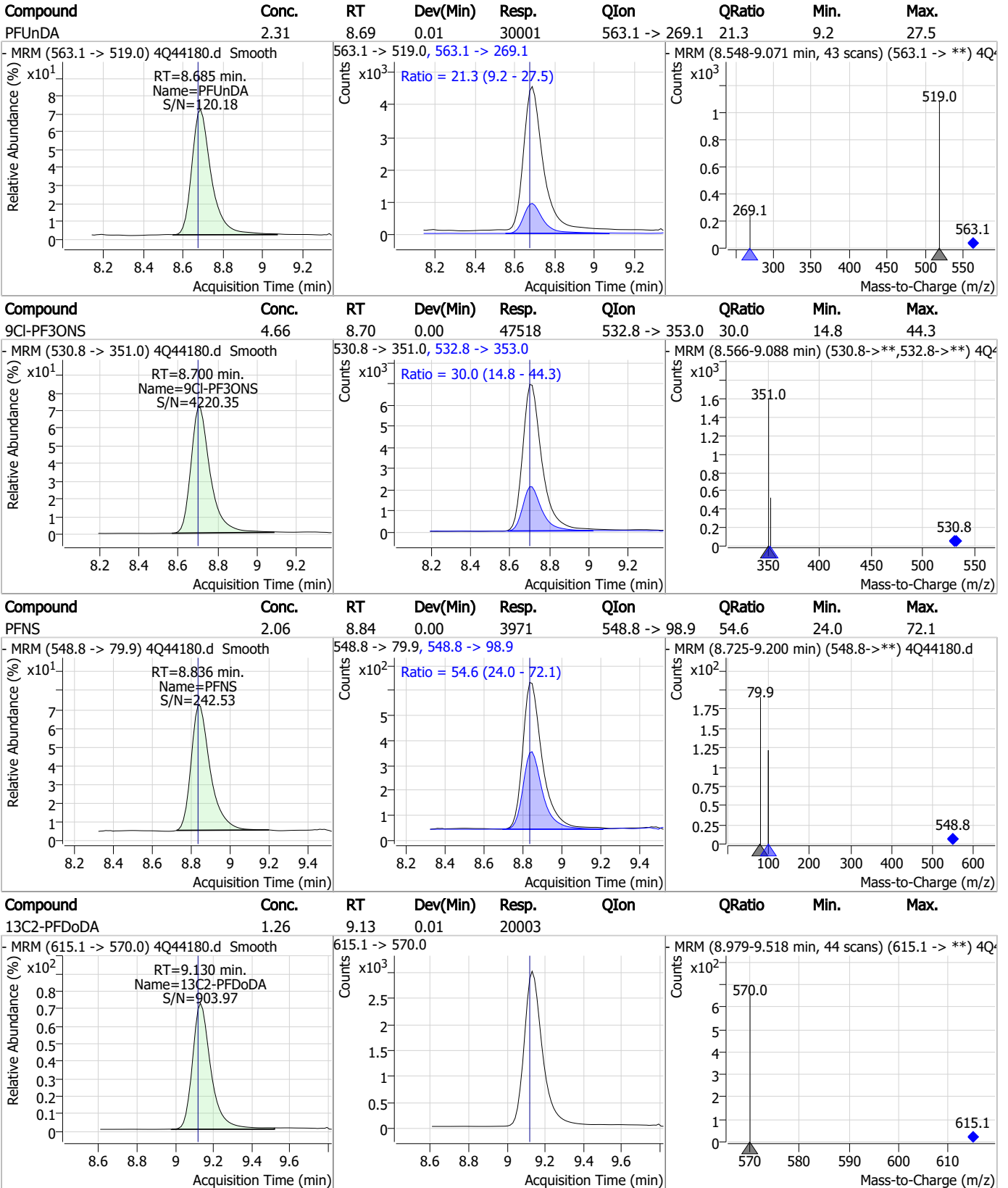
7.4.1
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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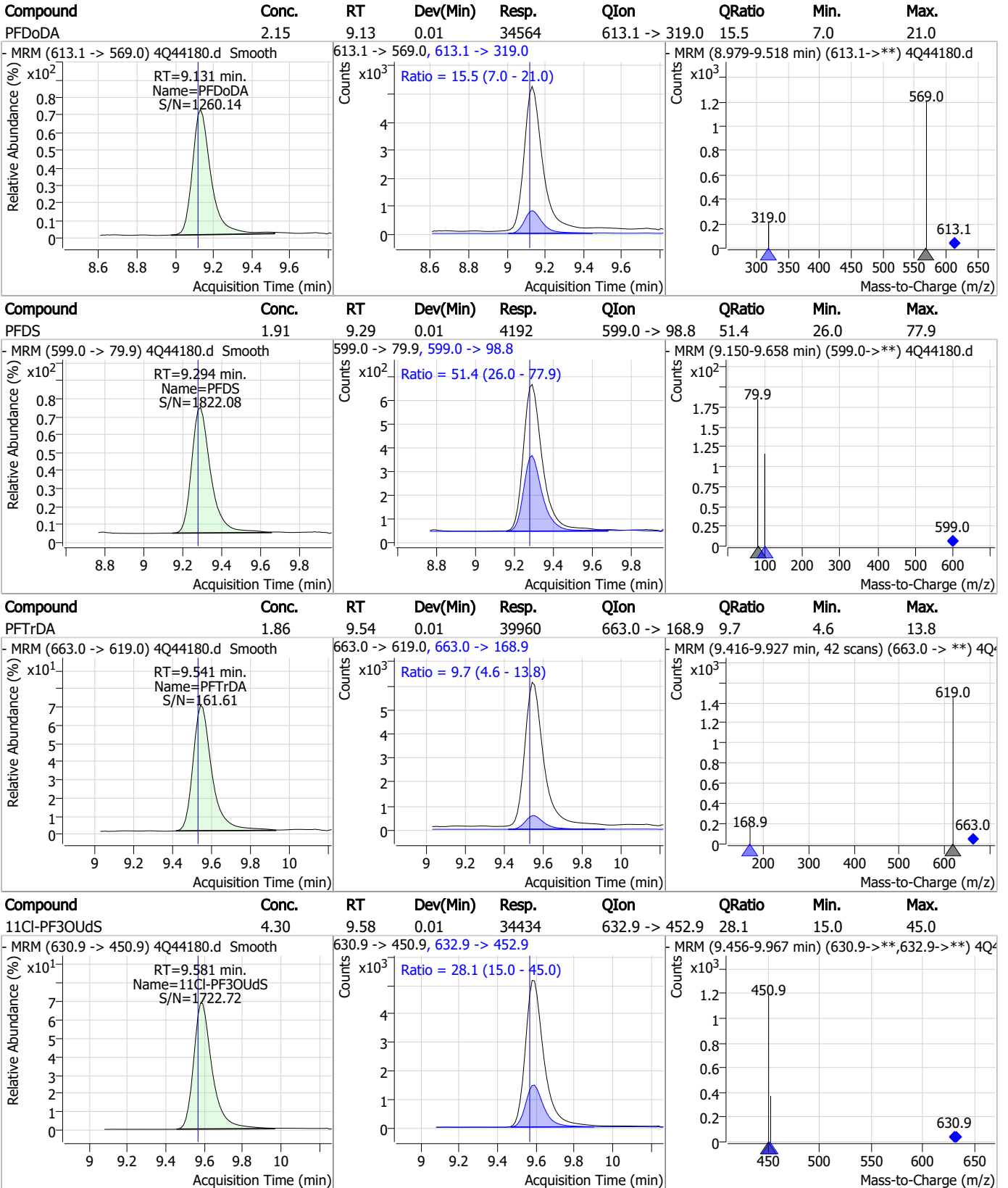
Perfluorinated Compounds by LC/MS/MS



7.4.1

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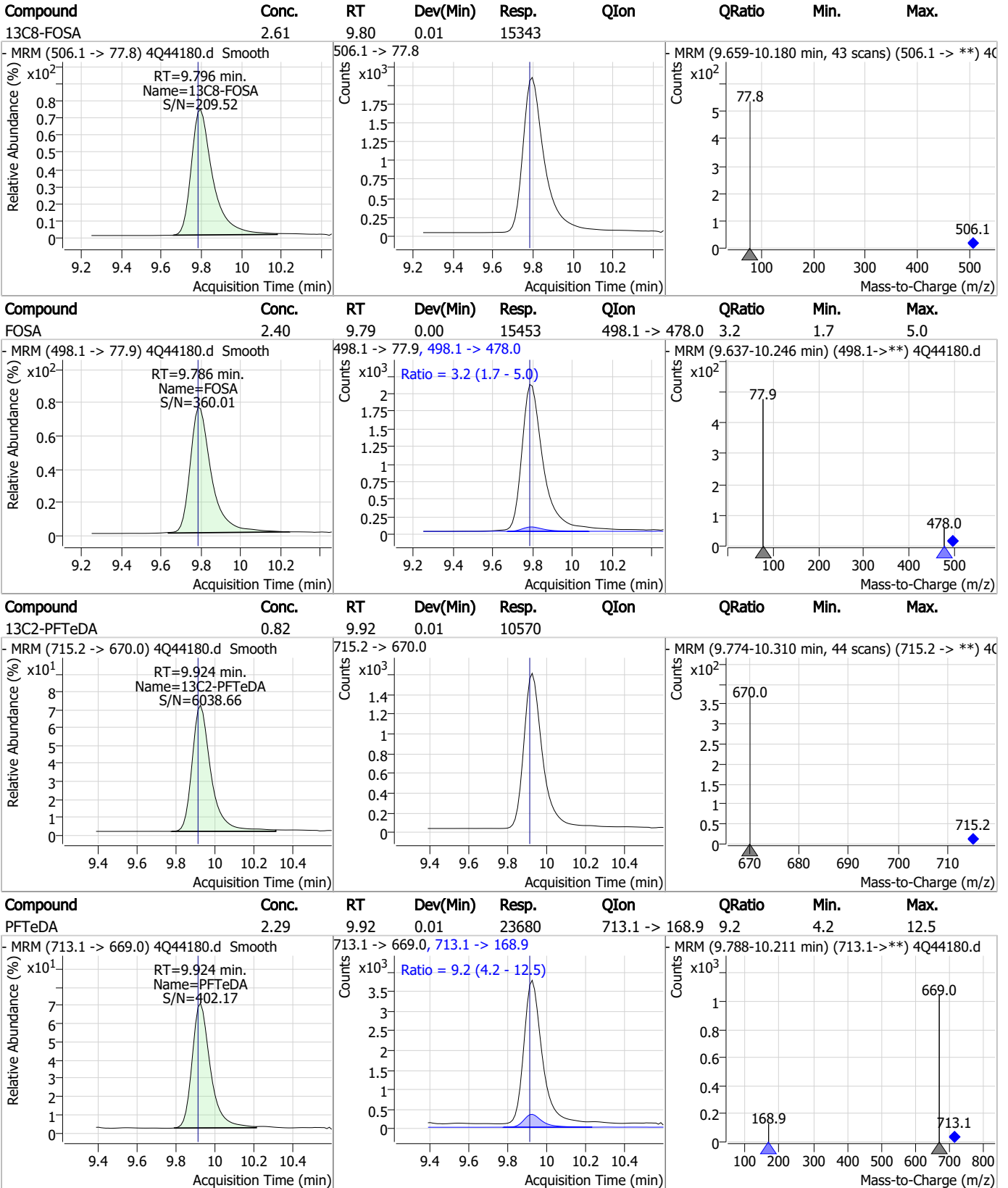
Perfluorinated Compounds by LC/MS/MS



7.4.1

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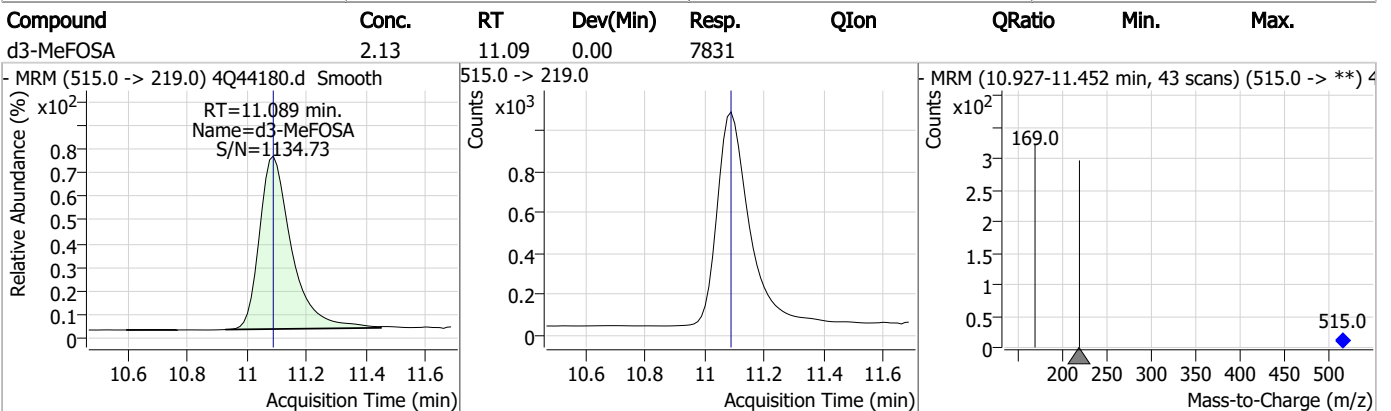
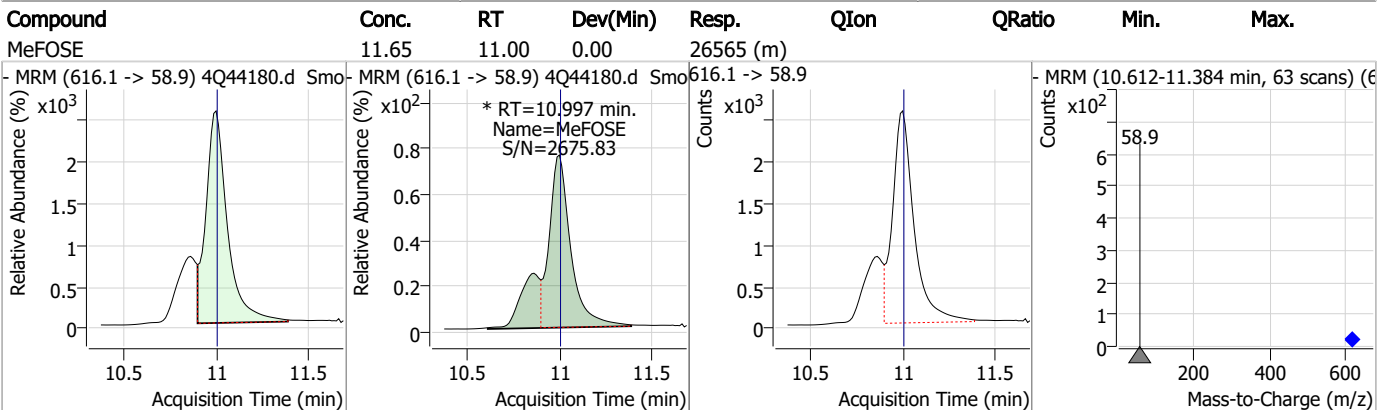
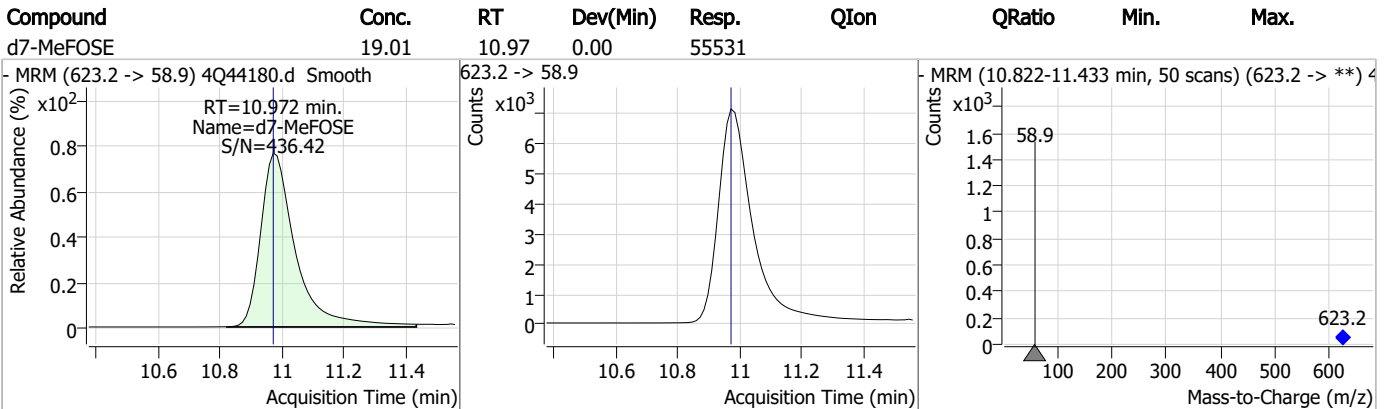
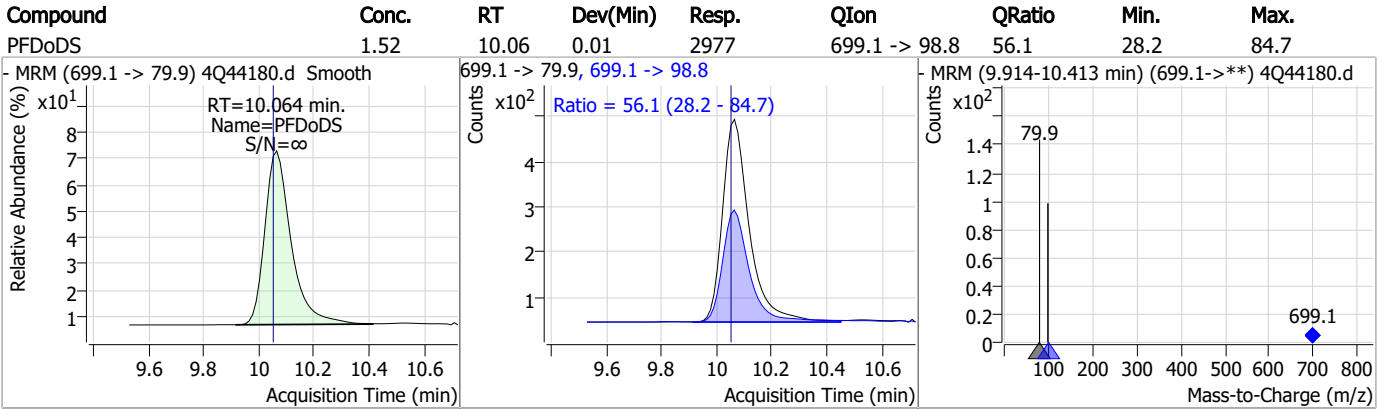
Perfluorinated Compounds by LC/MS/MS



7.4.1

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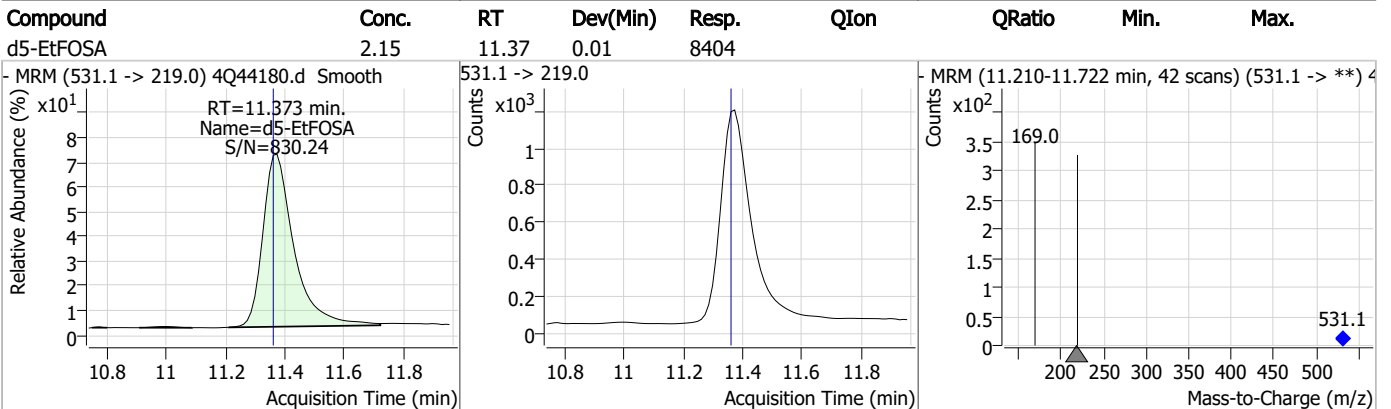
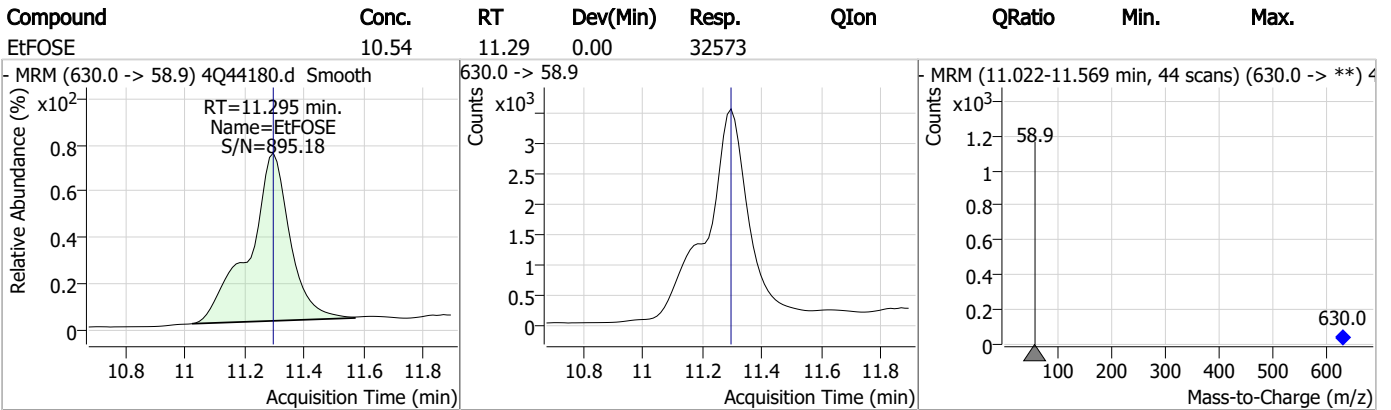
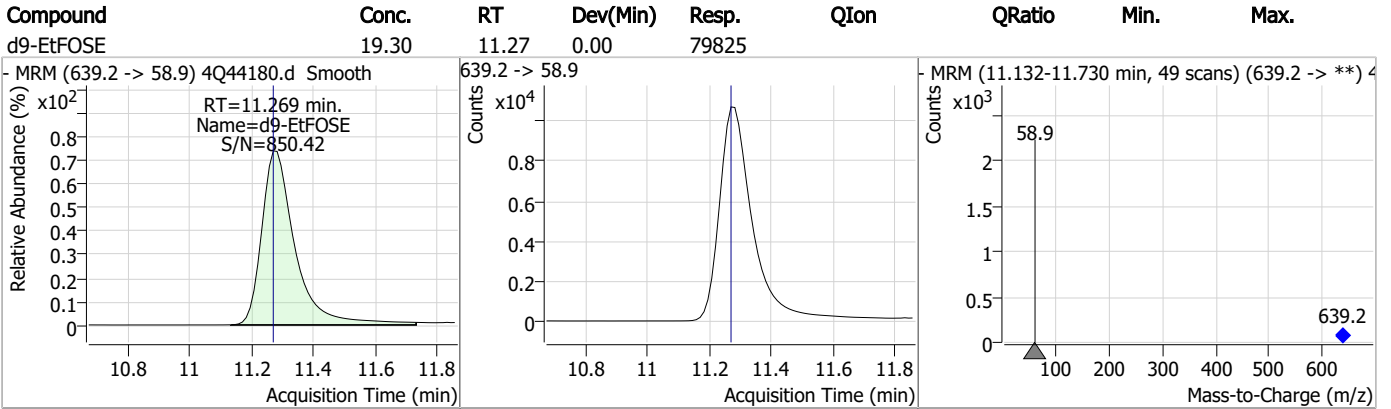
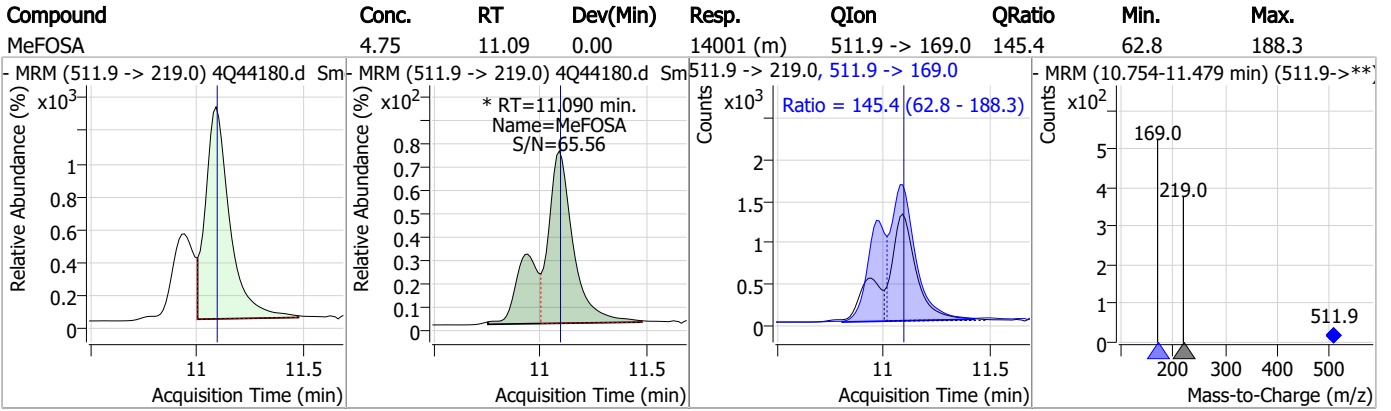
Perfluorinated Compounds by LC/MS/MS



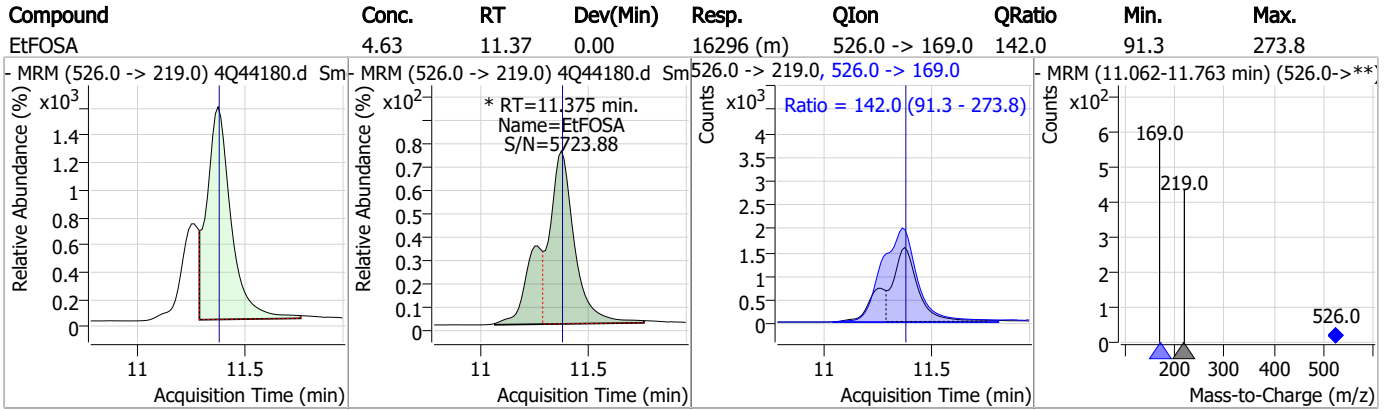
7.4.1

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP96784-MS Method: EPA DRAFT 1633
Lab FileID: 4Q44180.D Analyst approved: 05/10/23 11:51 Martha Valls
Injection Time: 05/10/23 00:41 Supervisor approved: 05/12/23 13:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanoic acid	2706-90-3		4.38	Poor instrument integration
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
EtFOSA	4151-50-2		11.38	Split peak

7.4.1.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44182.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/10/2023 1:09:12 AM
 Sample Name : op96784-dup
 Vial : P3-D8
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96784,S4Q639,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	45439	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	51713	5.00 µg/L	-0.012
M5-PFHxA	5.559	318.0 -> 273.0	49193	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	30624	2.50 µg/L	0.000
M8-PFOA	7.163	421.1 -> 376.0	44958	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	21799	1.25 µg/L	0.012
M6-PFDA	8.203	519.1 -> 474.1	19357	1.25 µg/L	0.000
M7-PFUnDA	8.685	570.0 -> 525.1	20535	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	20026	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	11395	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	15375	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11473	2.50 µg/L	0.000
M3-PFHxS	7.254	402.1 -> 79.9	6973	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10032	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1407	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2519	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	3233	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	15664	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	22036	10.00 µg/L	0.000
M5-EtFOSAA	8.483	589.2 -> 419.0	12706	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	49844	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	72034	25.00 µg/L	0.000
M5-EtFOSA	11.373	531.1 -> 219.0	7894	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	7901	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	10397	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	39068	5.00 µg/L	-0.013
18O2-PFHxS	7.253	403.0 -> 83.9	4721	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	51017	2.50 µg/L	0.014
13C2-PFDA	8.204	515.1 -> 470.1	16906	1.25 µg/L	0.000
13C5-PFNA	7.709	468.0 -> 423.0	23398	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	40149	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1407	7.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 146.6%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2519	7.28 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 145.6%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3233	5.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.8%		
13C2-PFDoDA	9.130	615.1 -> 570.0	20026	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C2-PFTeDA	9.924	715.2 -> 670.0	11395	0.85 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 68.4%		
13C3-PFBS	5.452	302.1 -> 79.9	11473	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C3-PFHxS	7.254	402.1 -> 79.9	6973	2.38 µg/L	0.012

7.5.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%		
13C4-PFBA	2.924	216.8 -> 171.9	45439	6.18	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 61.8%		
13C4-PFHpA	6.492	367.1 -> 322.0	30624	2.96	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.5%		
13C5-PFHxA	5.559	318.0 -> 273.0	49193	2.78	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.3%		
13C5-PFPeA	4.375	268.3 -> 223.0	51713	4.18	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 83.6%		
13C6-PFDA	8.203	519.1 -> 474.1	19357	1.34	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.9%		
13C7-PFUnDA	8.685	570.0 -> 525.1	20535	1.36	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.0%		
13C8-FOSA	9.796	506.1 -> 77.8	15375	2.36	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%		
13C8-PFOA	7.163	421.1 -> 376.0	44958	2.68	µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.3%		
13C8-PFOS	8.354	507.1 -> 79.9	10032	2.56	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%		
13C9-PFNA	7.709	472.1 -> 427.0	21799	1.37	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.6%		
d3-MeFOSAA	8.273	573.2 -> 419.0	15664	5.97	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 119.4%		
13C3-HFPO-DA	5.914	286.9 -> 168.9	22036	8.34	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 83.4%		
d3-MeFOSA	11.089	515.0 -> 219.0	7901	1.94	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.5%		
d5-EtFOSAA	8.483	589.2 -> 419.0	12706	5.88	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.6%		
d7-MeFOSE	10.972	623.2 -> 58.9	49844	15.41	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 61.6%		
d9-EtFOSE	11.269	639.2 -> 58.9	72034	15.73	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 62.9%		
d5-EtFOSA	11.373	531.1 -> 219.0	7894	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	6.936	427.1 -> 407.0	850	0.35 µg/L		88
		427.1 -> 80.9	301			
8:2FTS	-	527.1 -> 507.0	-	N.D.		
		527.1 -> 80.8				
EtFOSAA	-	584.2 -> 419.1	-	N.D.		
		584.2 -> 526.0				
FOSA	-	498.1 -> 77.9	-	N.D.		
		498.1 -> 478.0				
MeFOSAA	-	570.1 -> 419.0	-	N.D.		
		570.1 -> 483.0				
PFBA	3.171	212.8 -> 168.9	0	µg/L	m	1
PFBS	5.318	298.7 -> 79.9	0	µg/L	m	1
		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
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.505	599.0 -> 98.8				
		363.1 -> 319.0	851	0.04	µg/L #m	14
PFHpS	-	363.1 -> 169.0	475			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.550	449.0 -> 98.9				
		313.0 -> 269.0	0		µg/L m	1
PFHxS	-	313.0 -> 118.9	0			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.439	498.9 -> 98.8				
		263.0 -> 219.0	0		µg/L m	1
PFPeS	6.395	349.1 -> 79.9	0		µg/L m	1
		349.1 -> 98.9	0			
PFTeDA	9.924	713.1 -> 669.0	0		µg/L m	1
		713.1 -> 168.9	0			
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	3.561	241.0 -> 177.0	0		µg/L m	1
		241.0 -> 117.0	0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.681	630.0 -> 58.9	0		µg/L m	1
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.5.1
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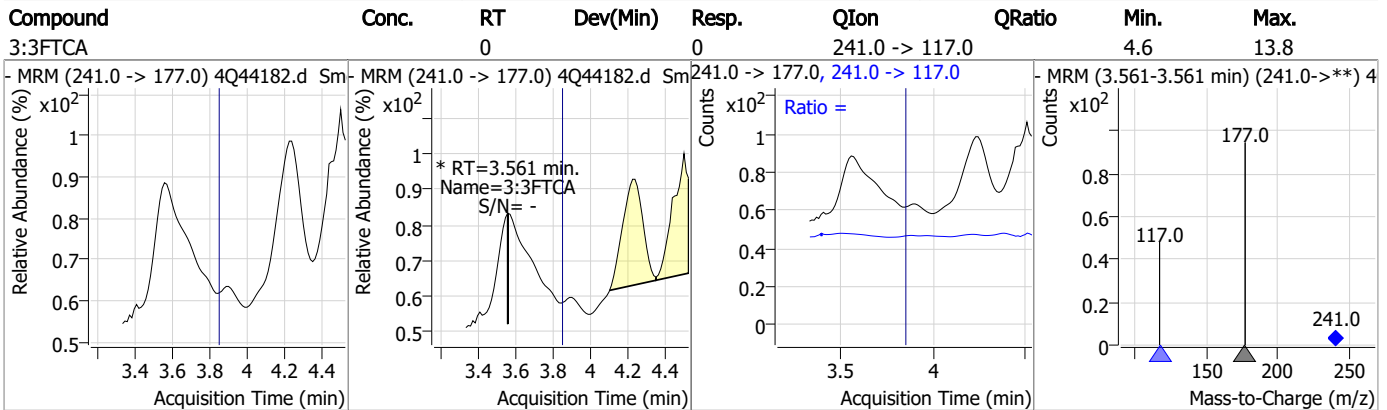
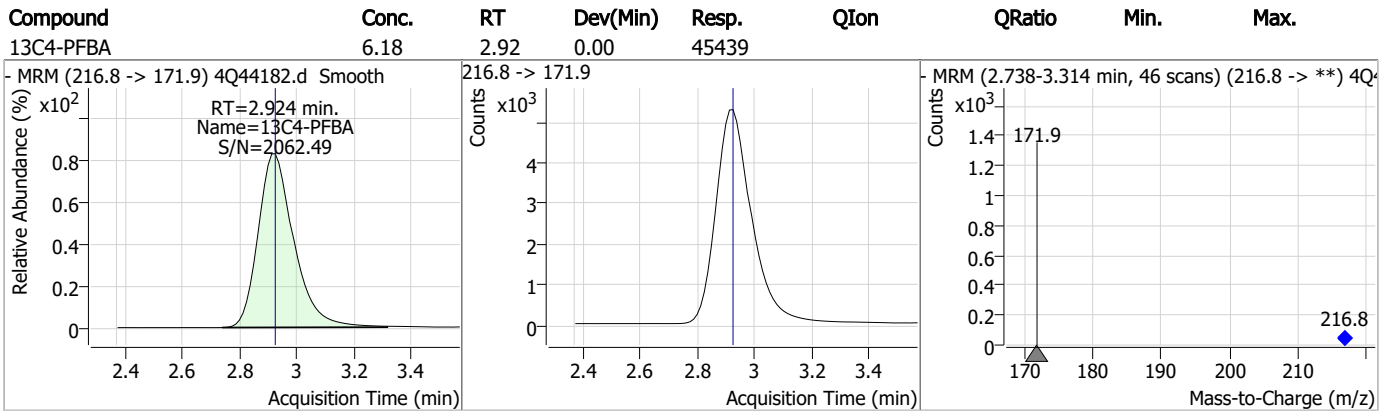
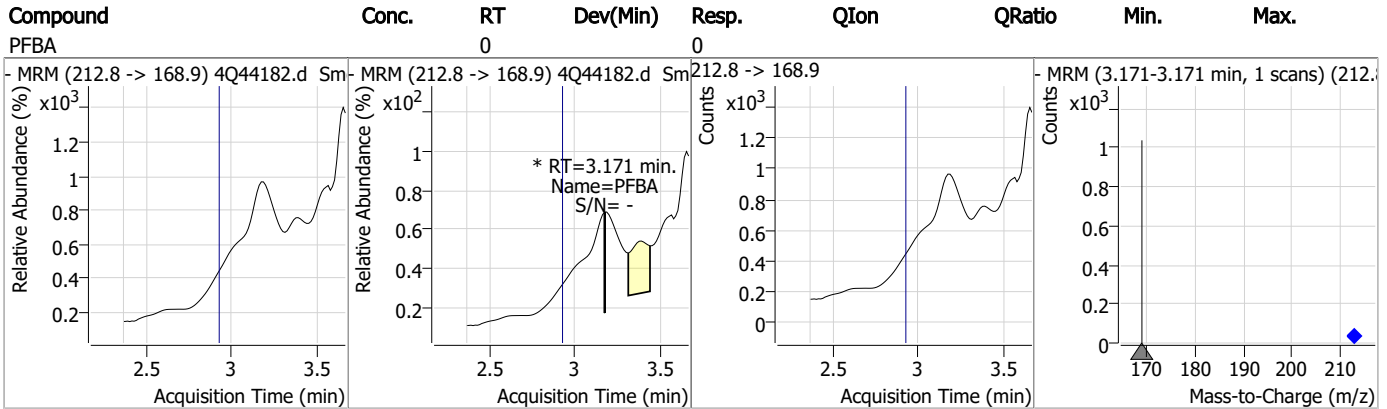
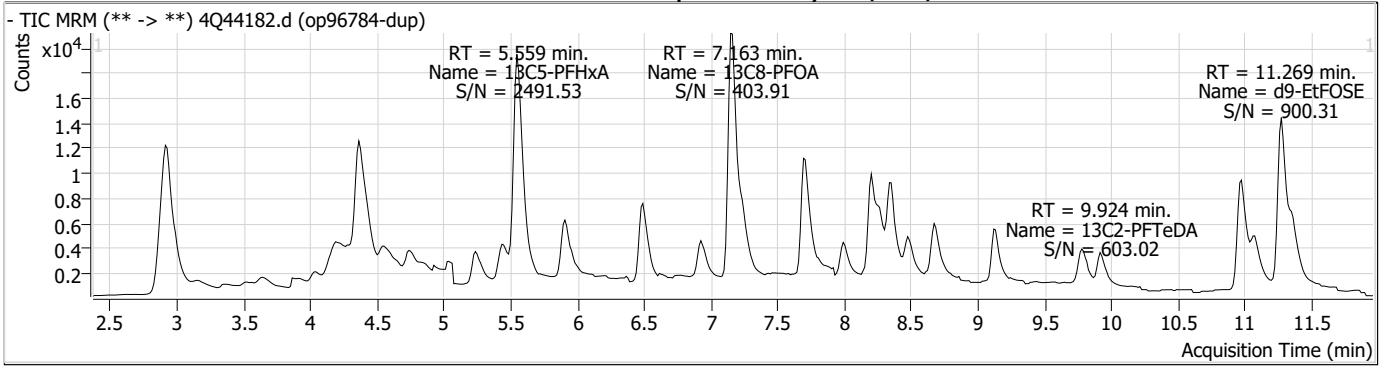
Perfluorinated Compounds by LC/MS/MS

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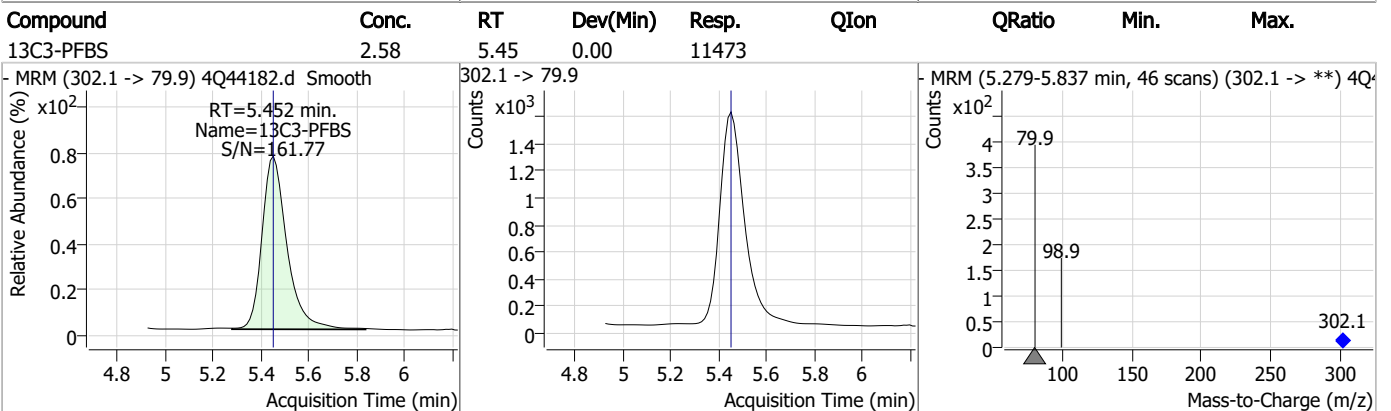
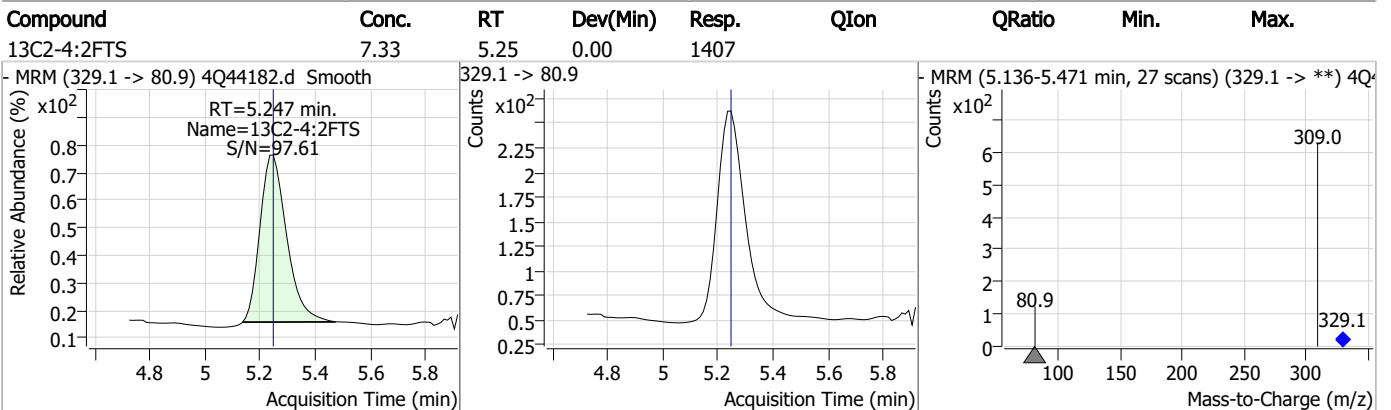
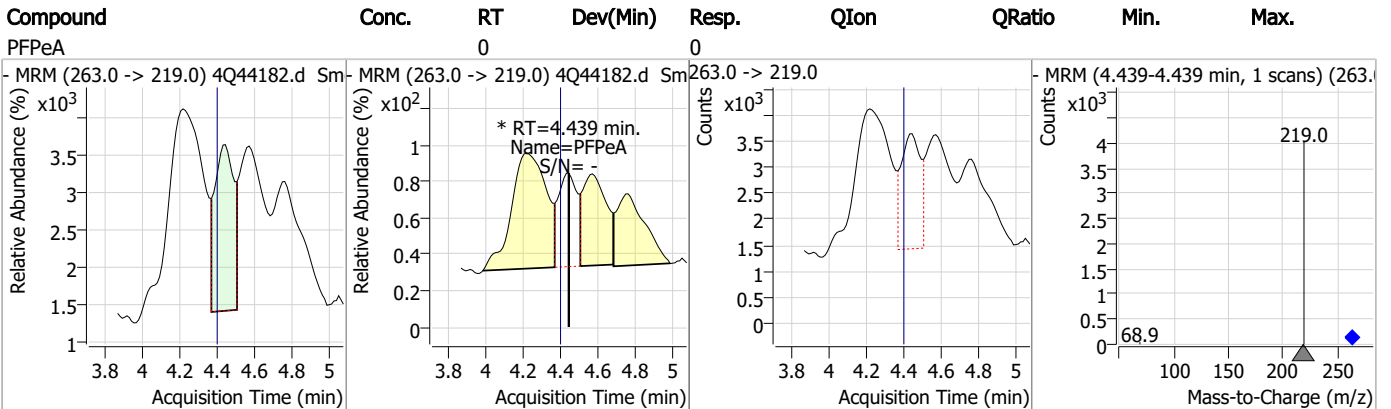
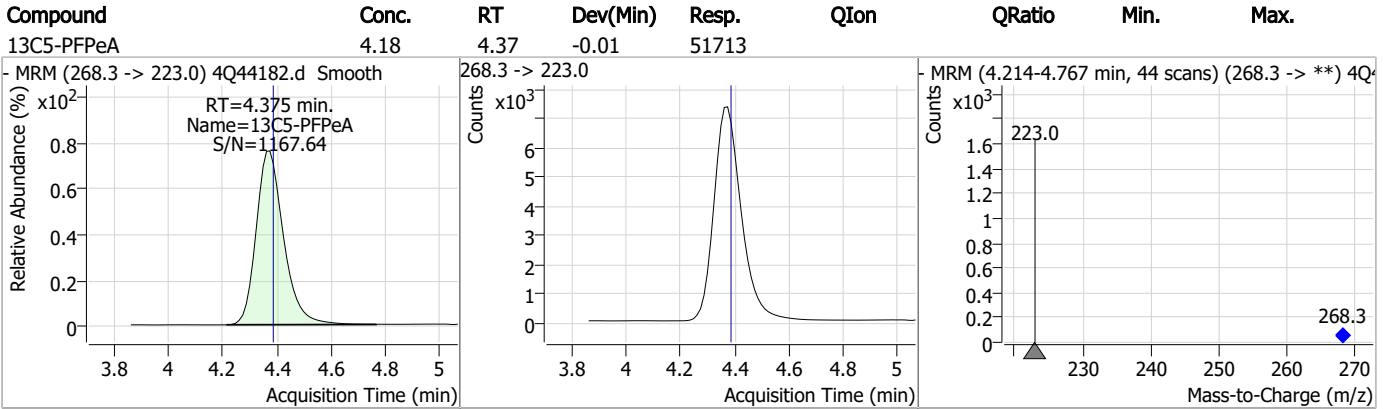
7.5.1

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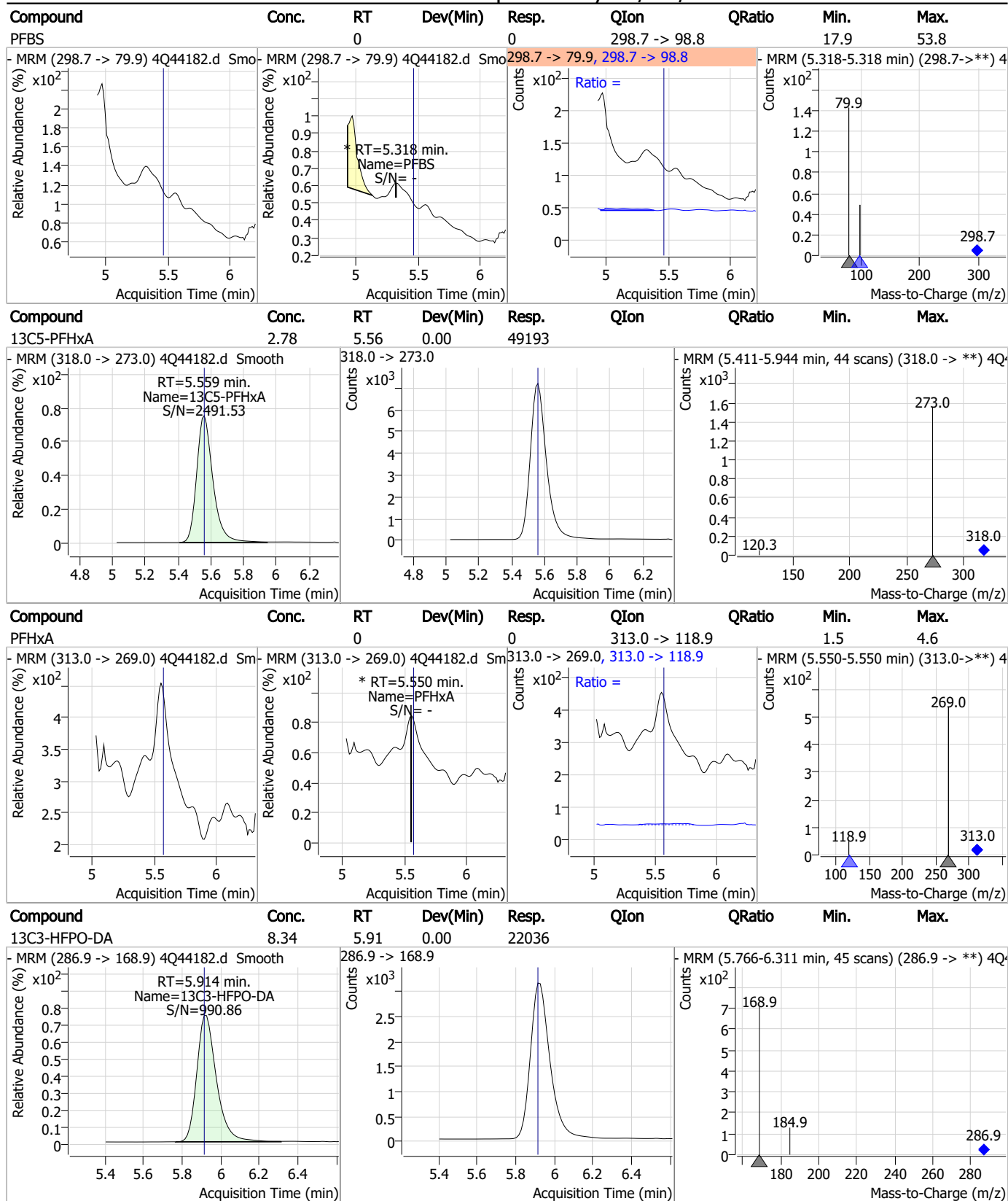
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



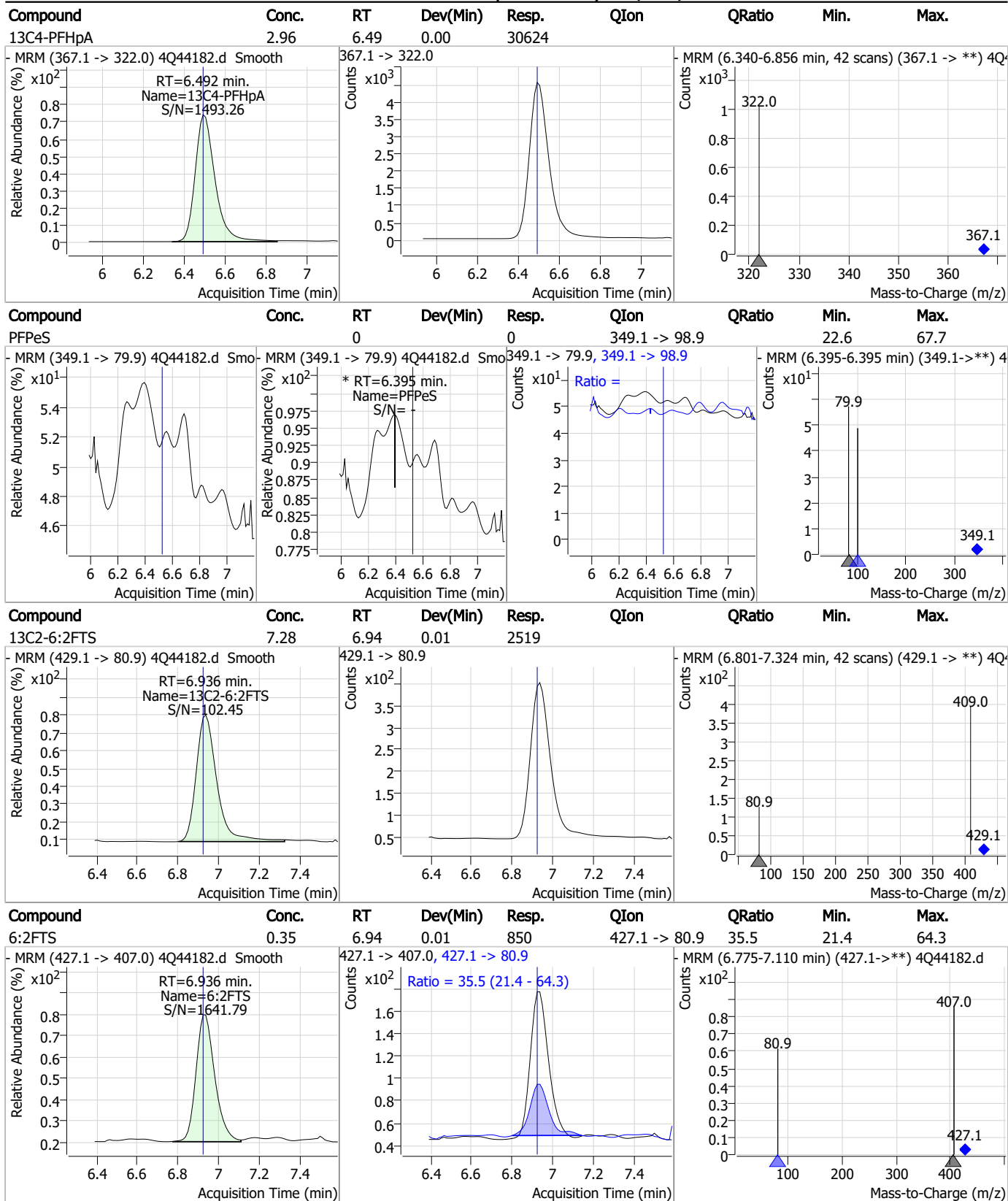
Perfluorinated Compounds by LC/MS/MS



7.5.1

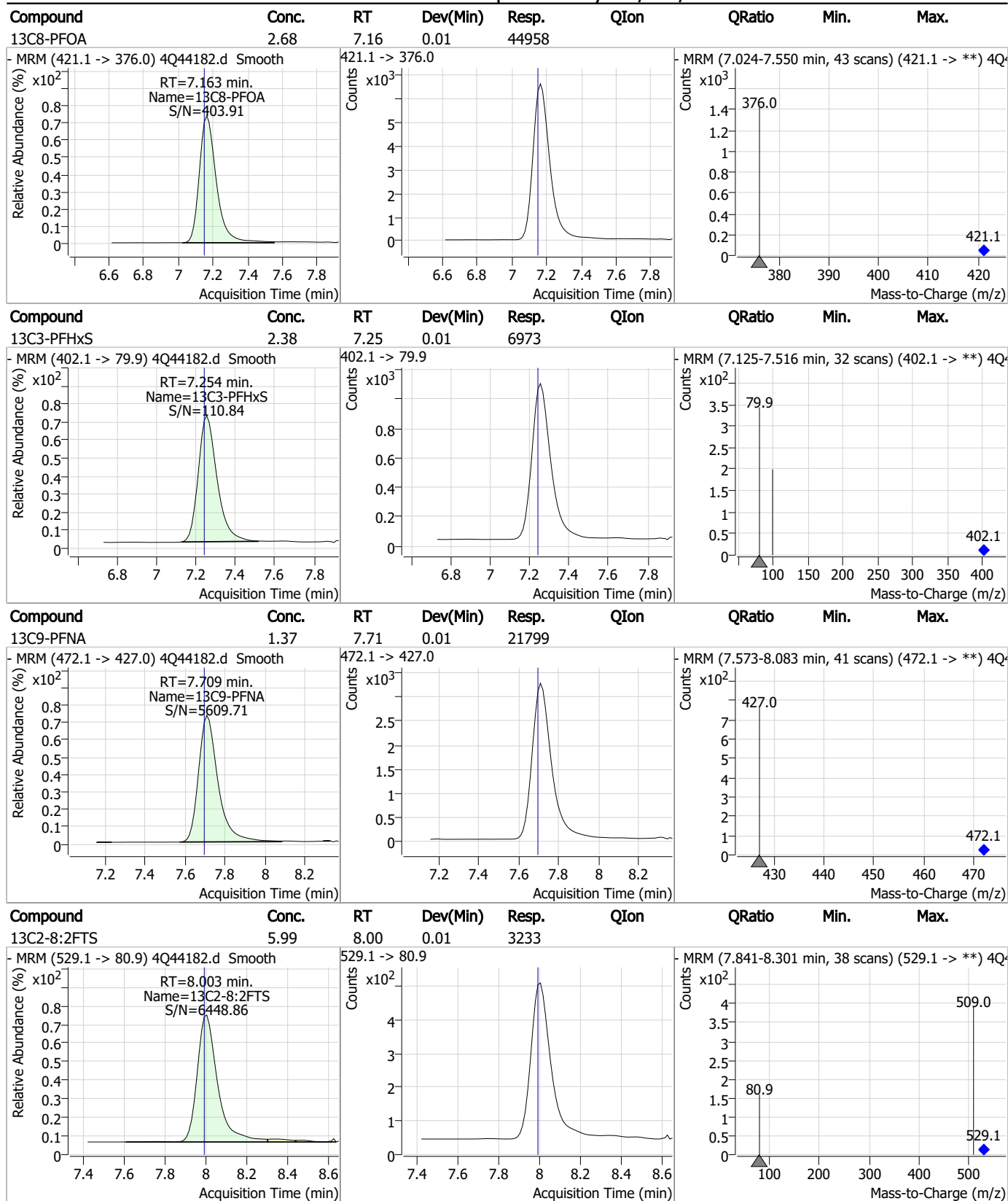
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Perfluorinated Compounds by LC/MS/MS



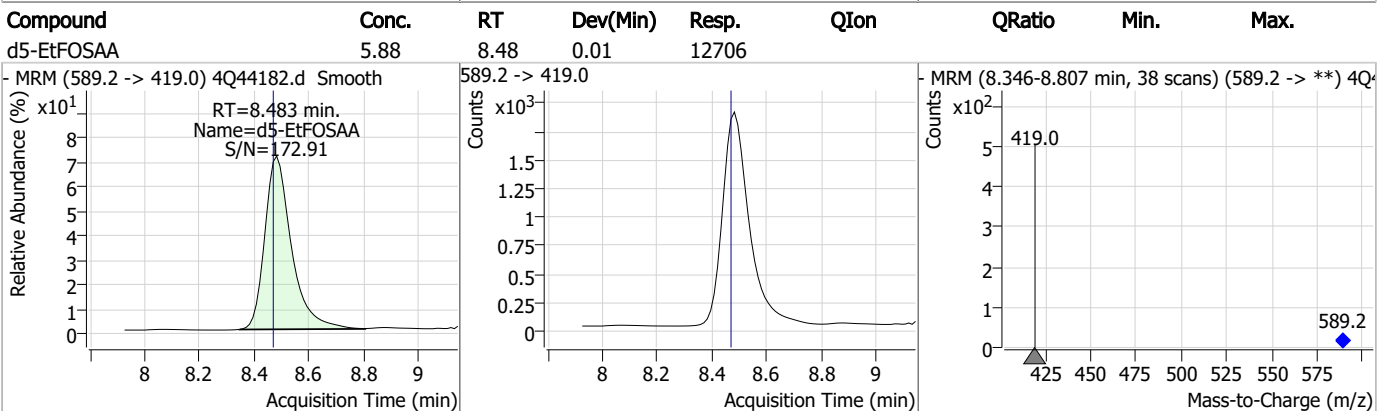
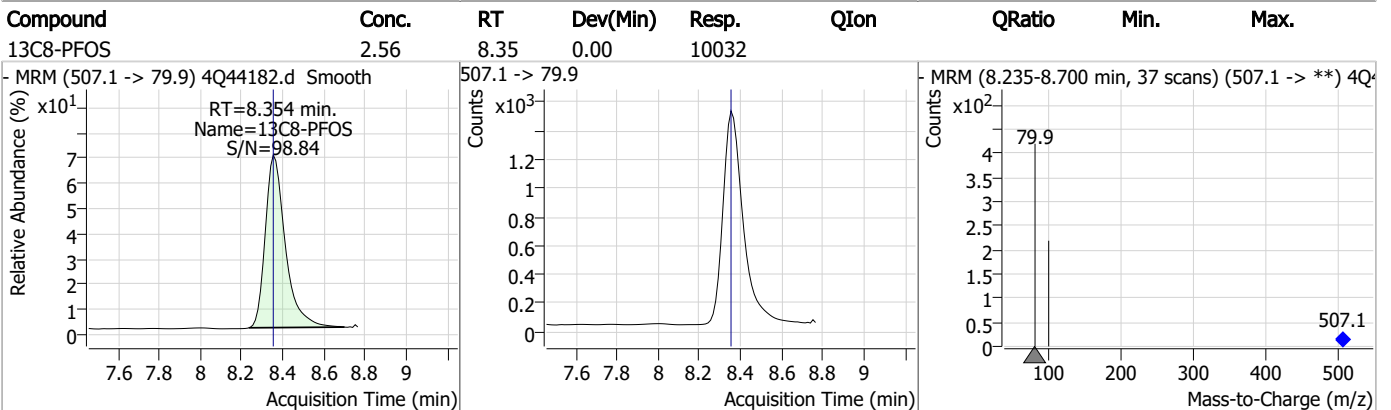
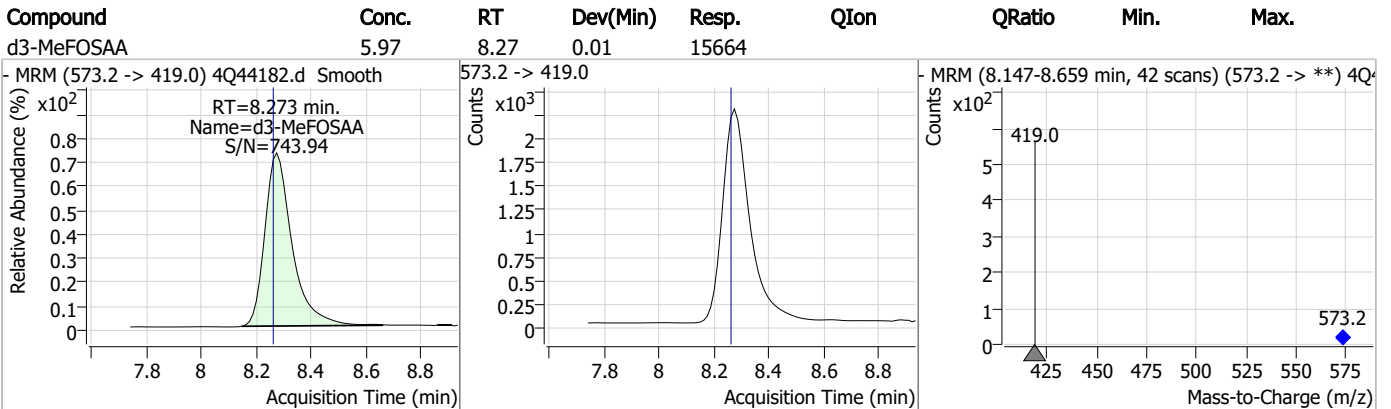
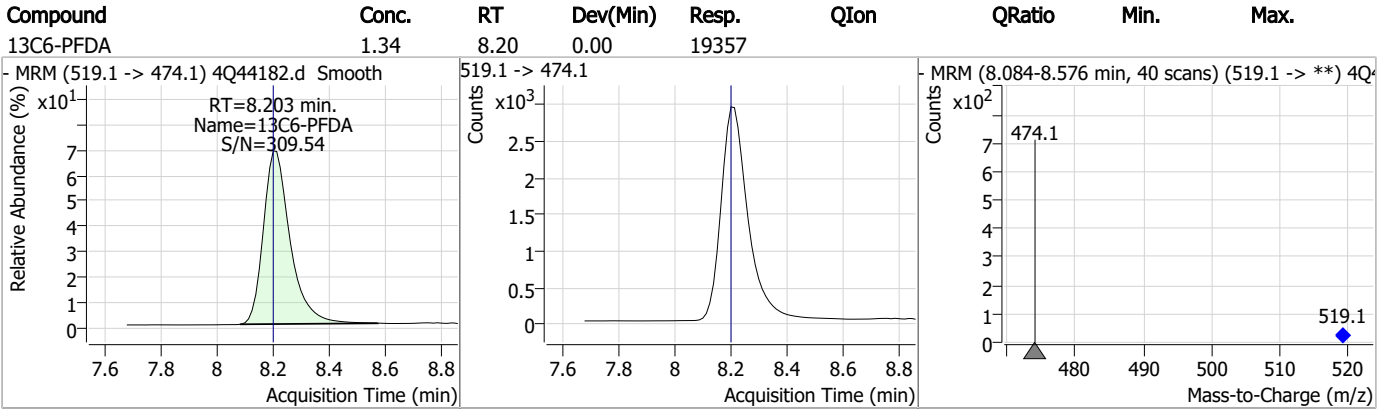
7.5.1
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Perfluorinated Compounds by LC/MS/MS



7.5.1
7

Perfluorinated Compounds by LC/MS/MS



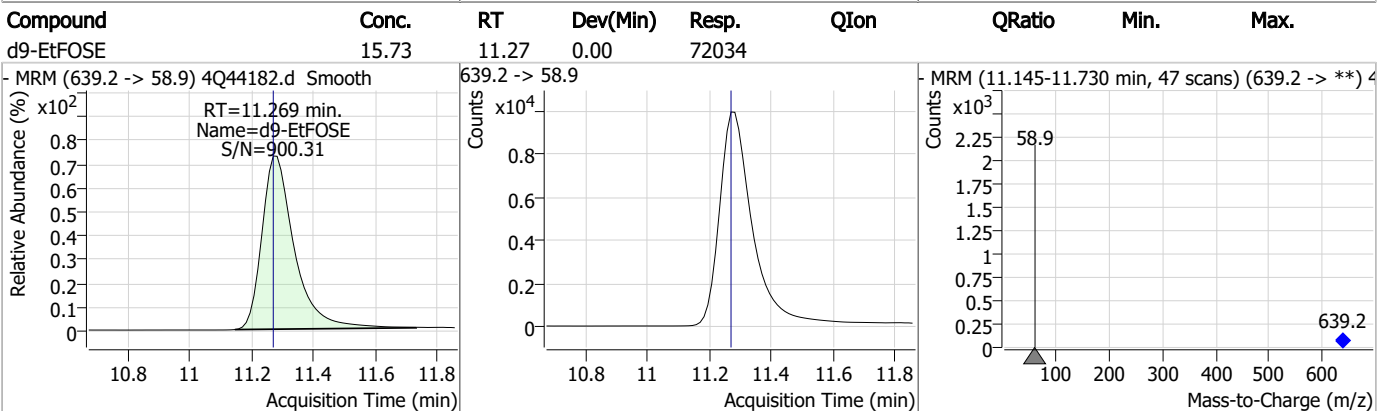
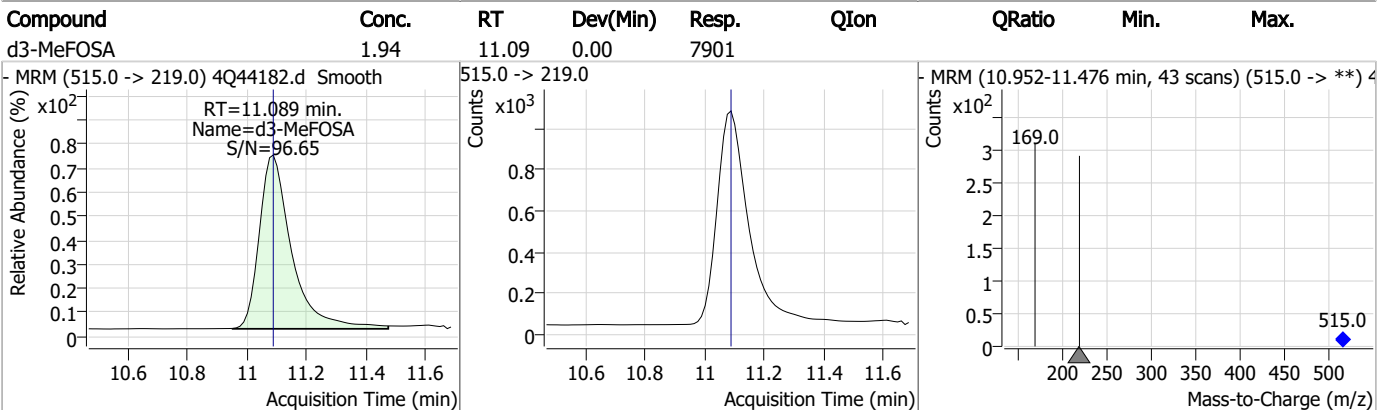
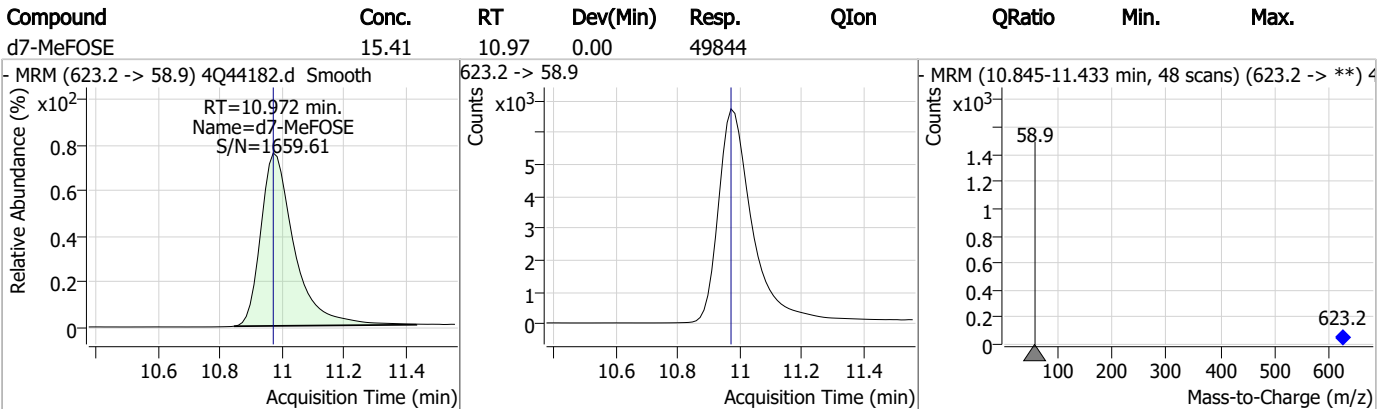
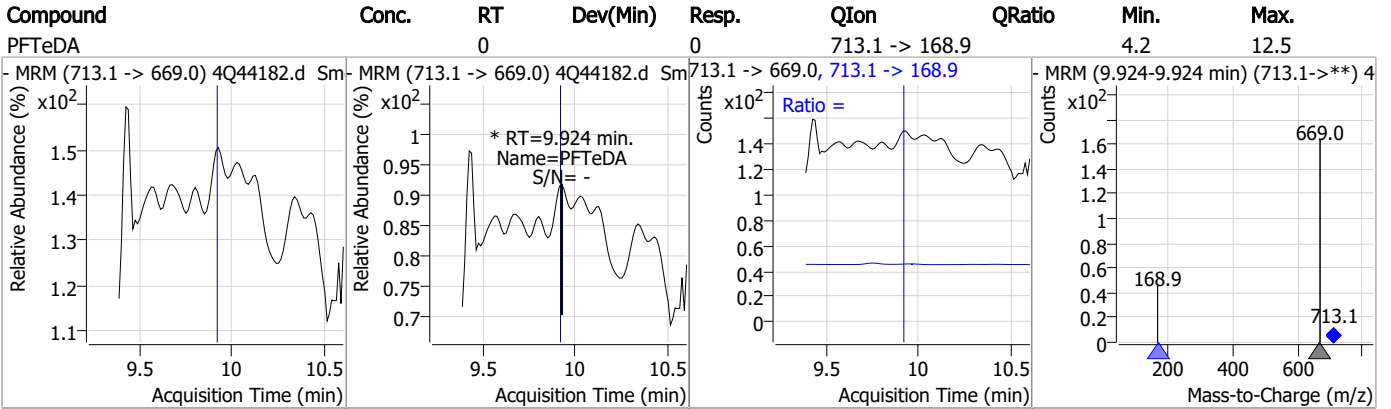
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.36	8.68	0.01	20535				
13C2-PFDoDA	1.22	9.13	0.01	20026				
13C8-FOSA	2.36	9.80	0.01	15375				
13C2-PFTeDA	0.85	9.92	0.01	11395				

7.5.1

7

Perfluorinated Compounds by LC/MS/MS

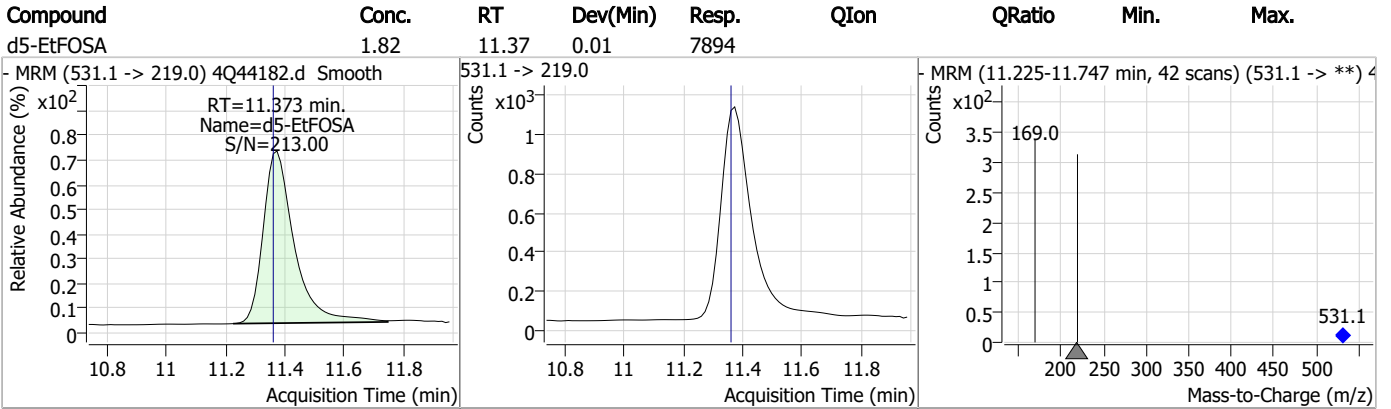
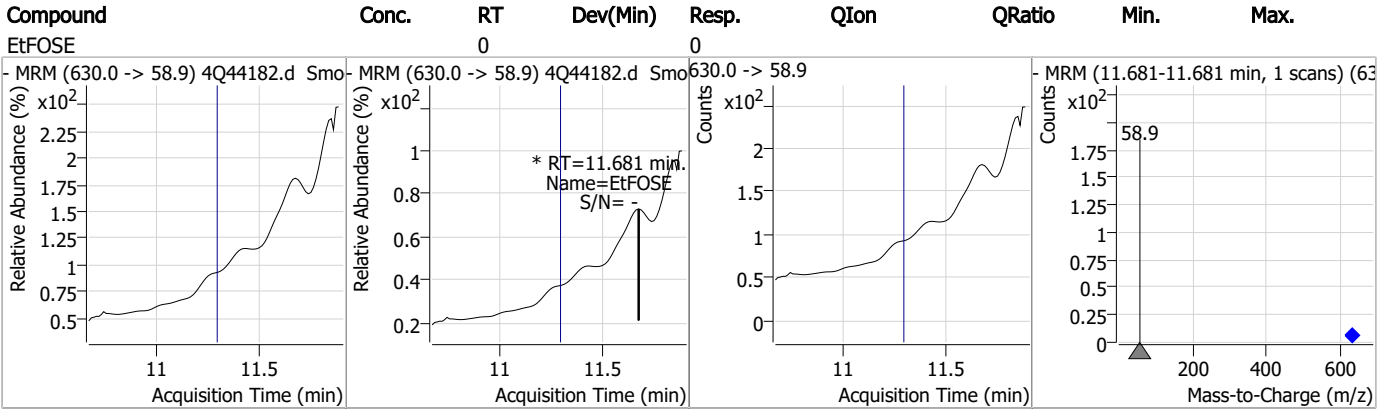


7.5.1

7



Perfluorinated Compounds by LC/MS/MS



7.5.1
7

Manual Integration Approval Summary

Sample Number: OP96784-DUP Method: EPA DRAFT 1633
Lab FileID: 4Q44182.D Analyst approved: 05/12/23 13:29 Natasha Gumtie
Injection Time: 05/10/23 01:09 Supervisor approved: 05/12/23 13:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.50	Poor instrument integration

7.5.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43881.d
 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

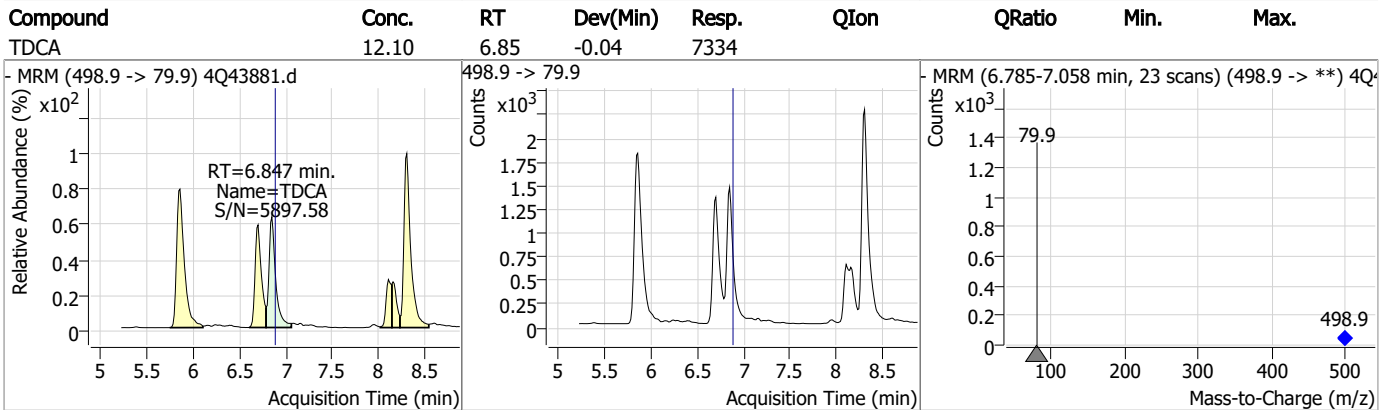
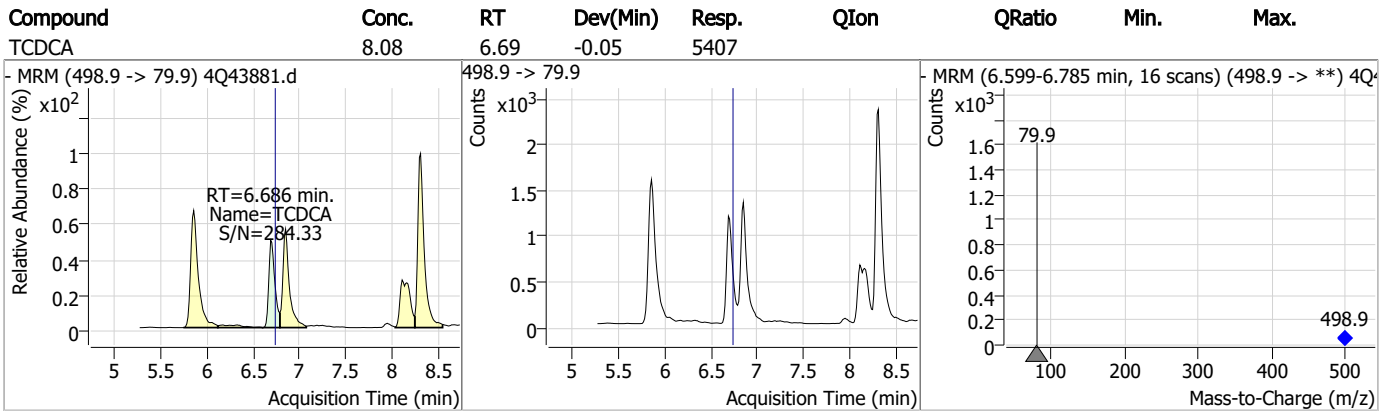
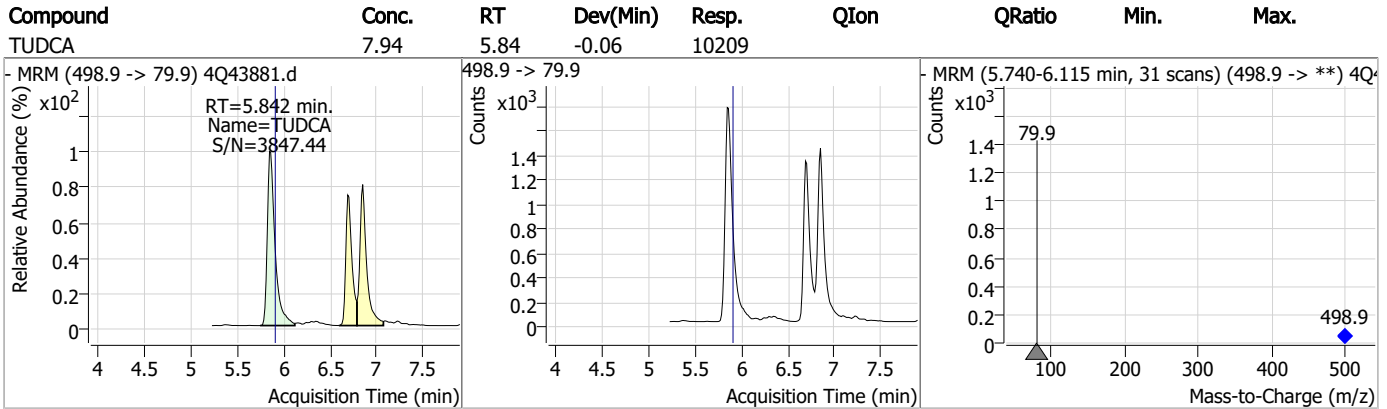
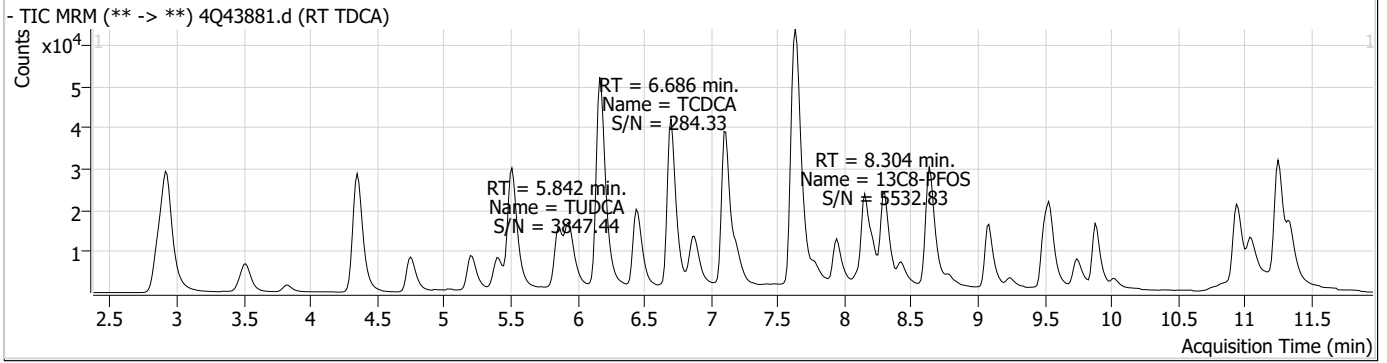
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.304	507.1 -> 79.9	14500	2.50	µg/L	-0.062	
13C4-PFOS	8.305	502.8 -> 79.9	17051	2.50	µg/L	-0.062	
System Monitoring Compounds							
13C8-PFOS	8.304	507.1 -> 79.9	14500	2.16	µg/L	-0.062	
Spiked Amount: 2.50	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

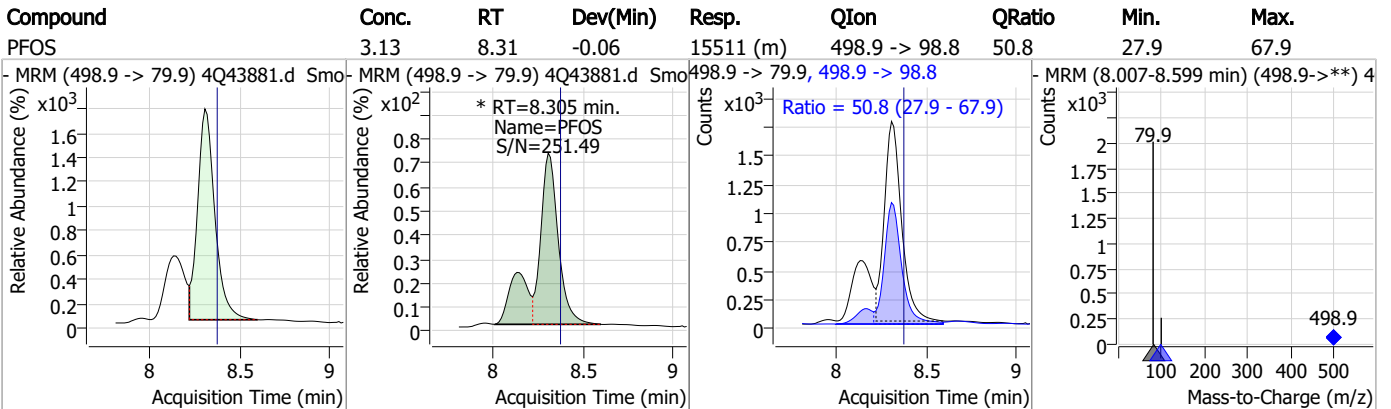
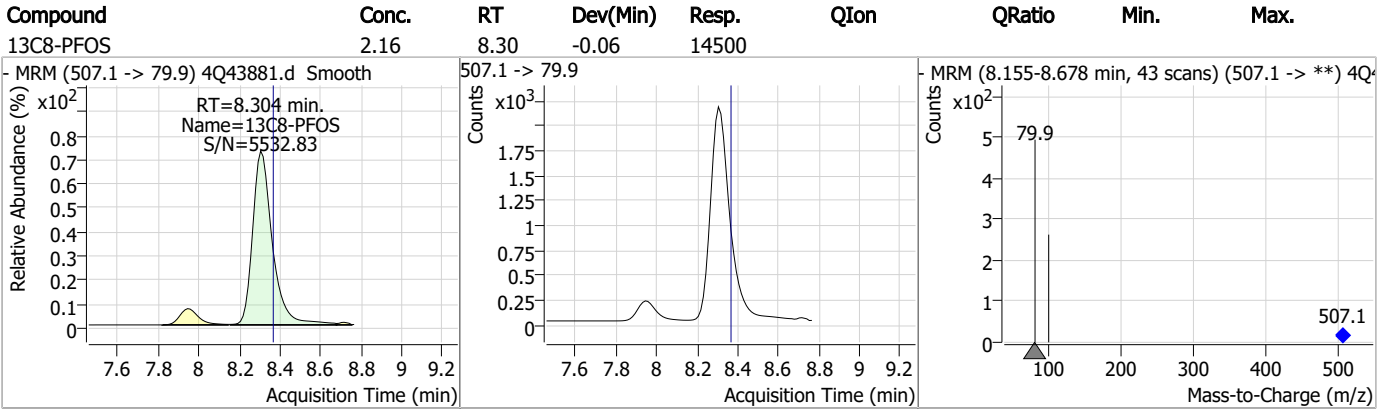
7.6.1

7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1
7



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

7.6.1.1

7

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

7.6.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 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

7.6.2
7

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
7

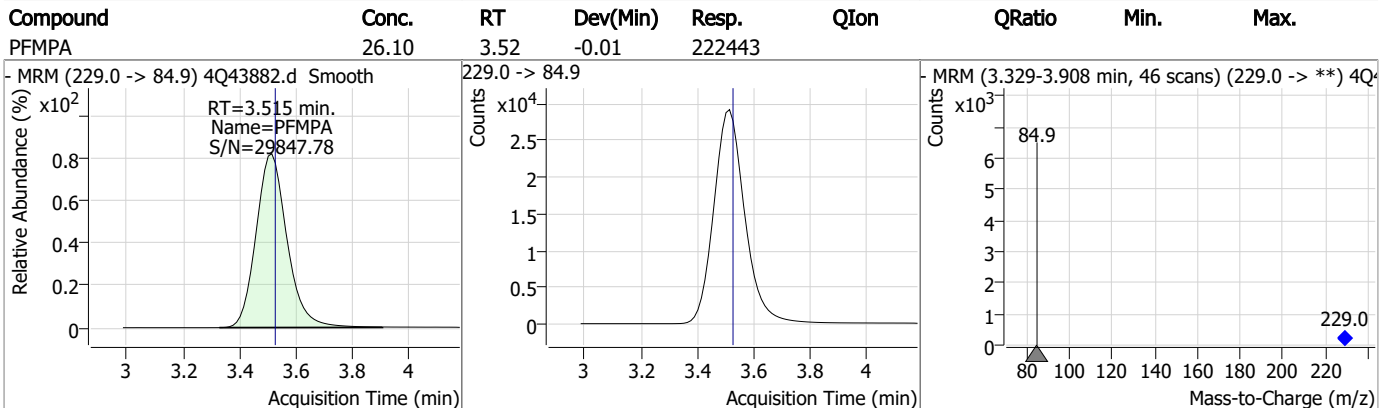
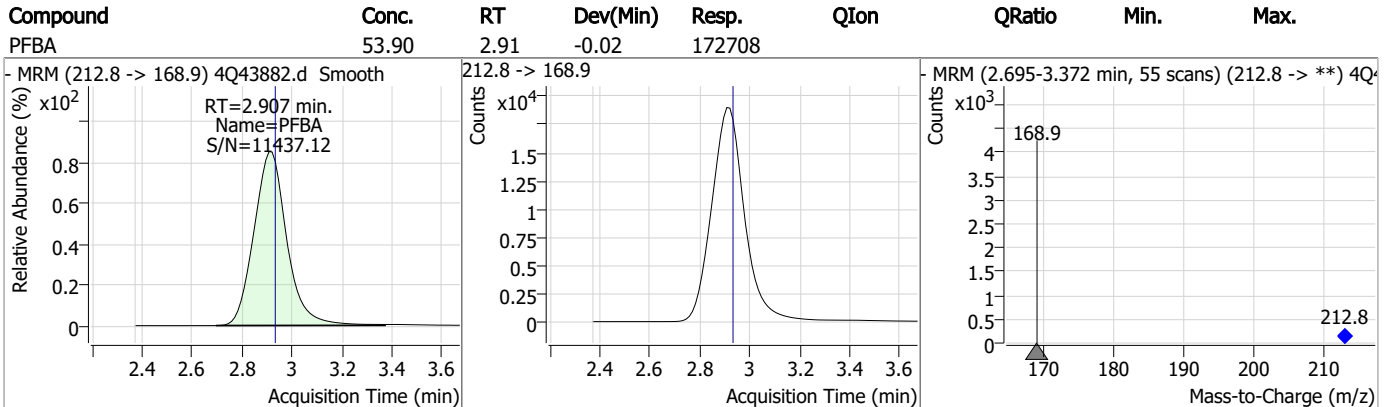
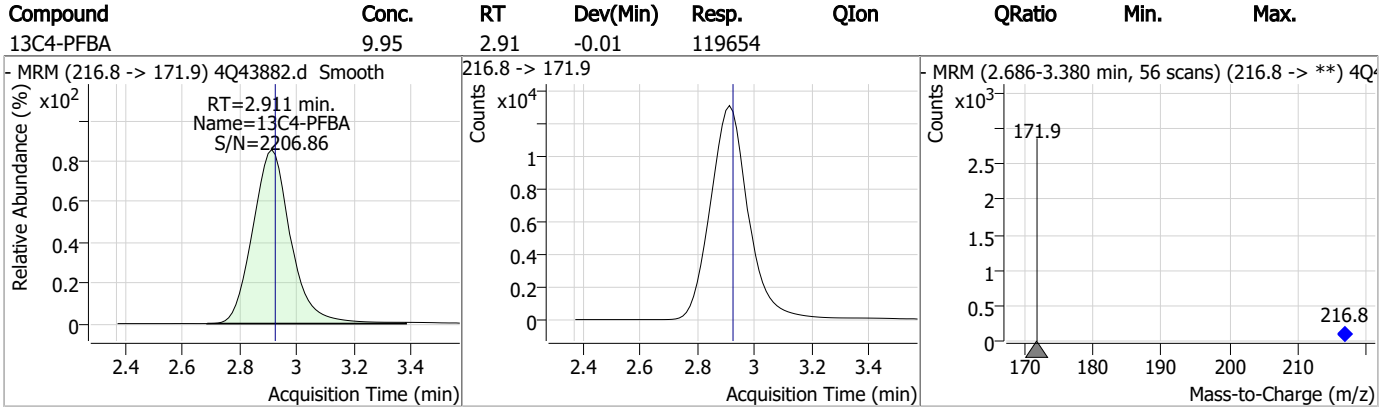
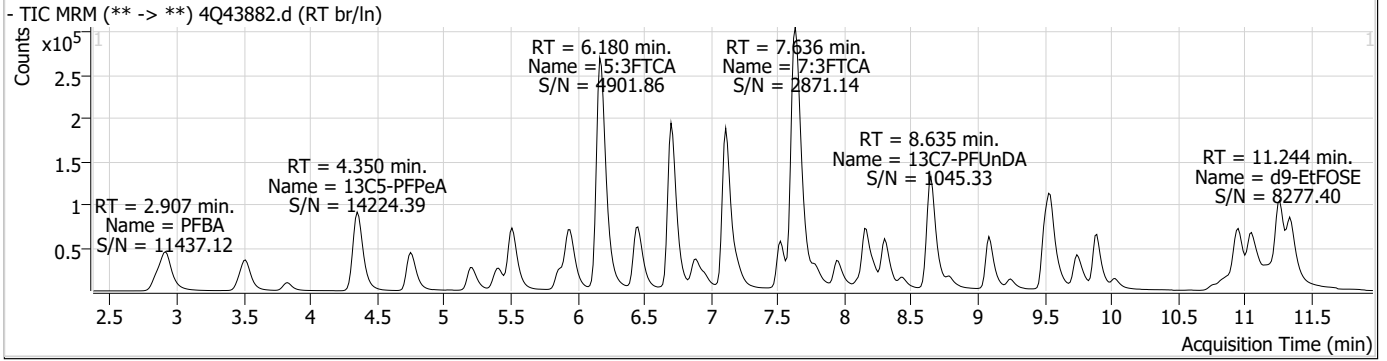
Perfluorinated Compounds by LC/MS/MS

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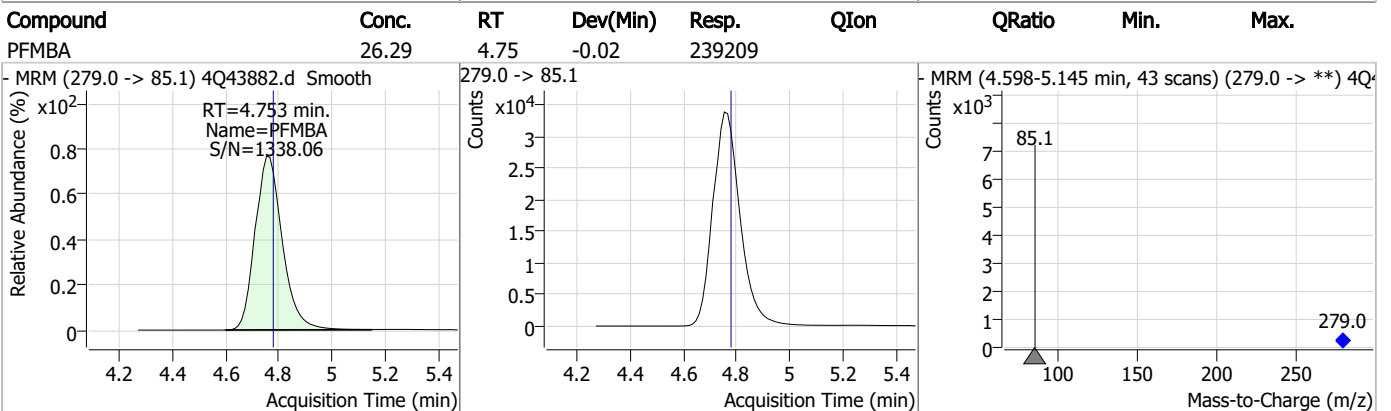
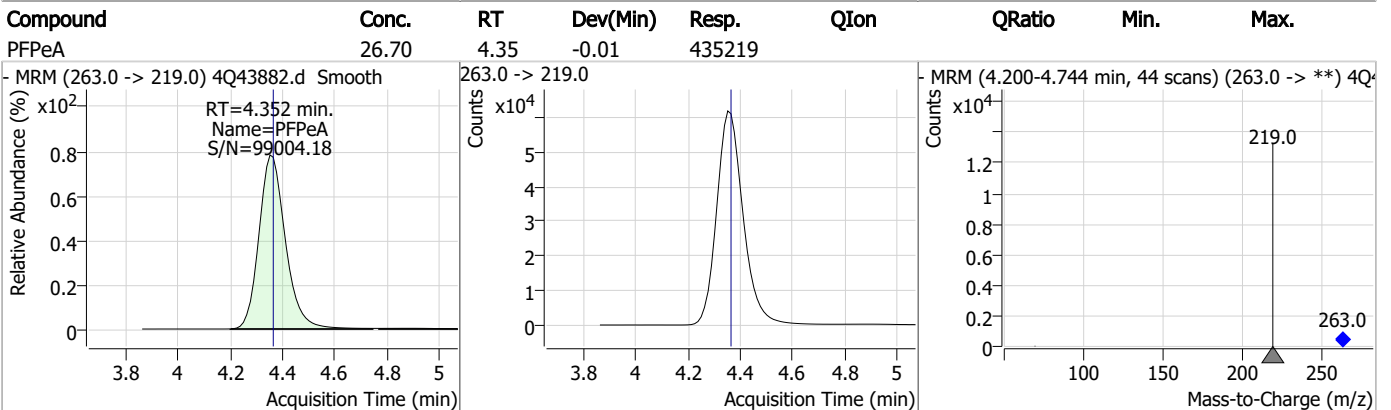
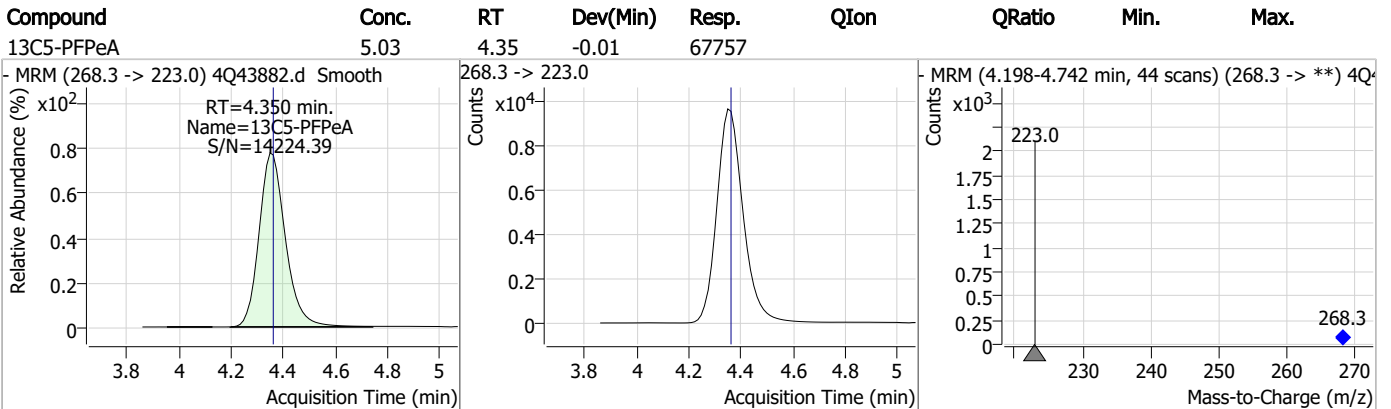
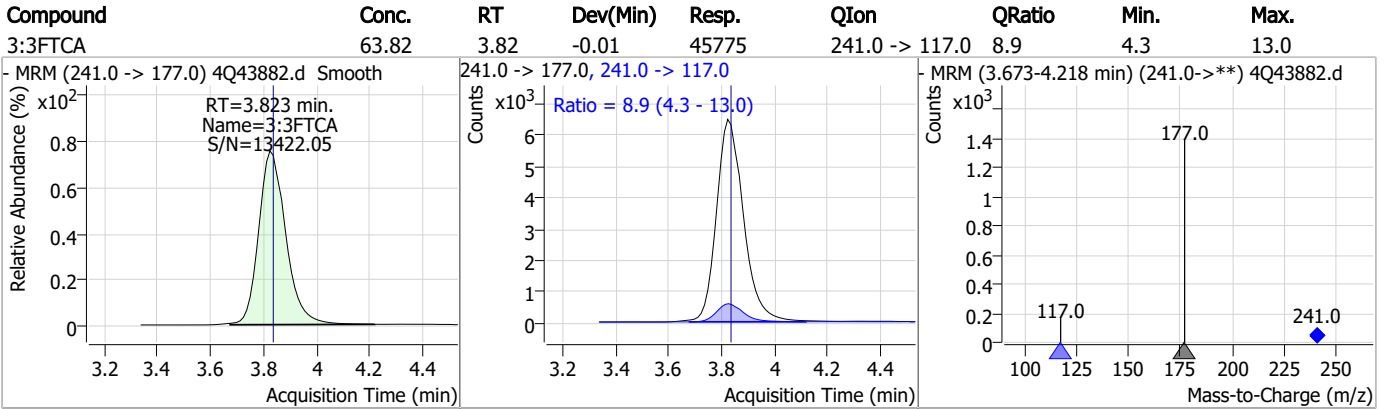
7.6.2

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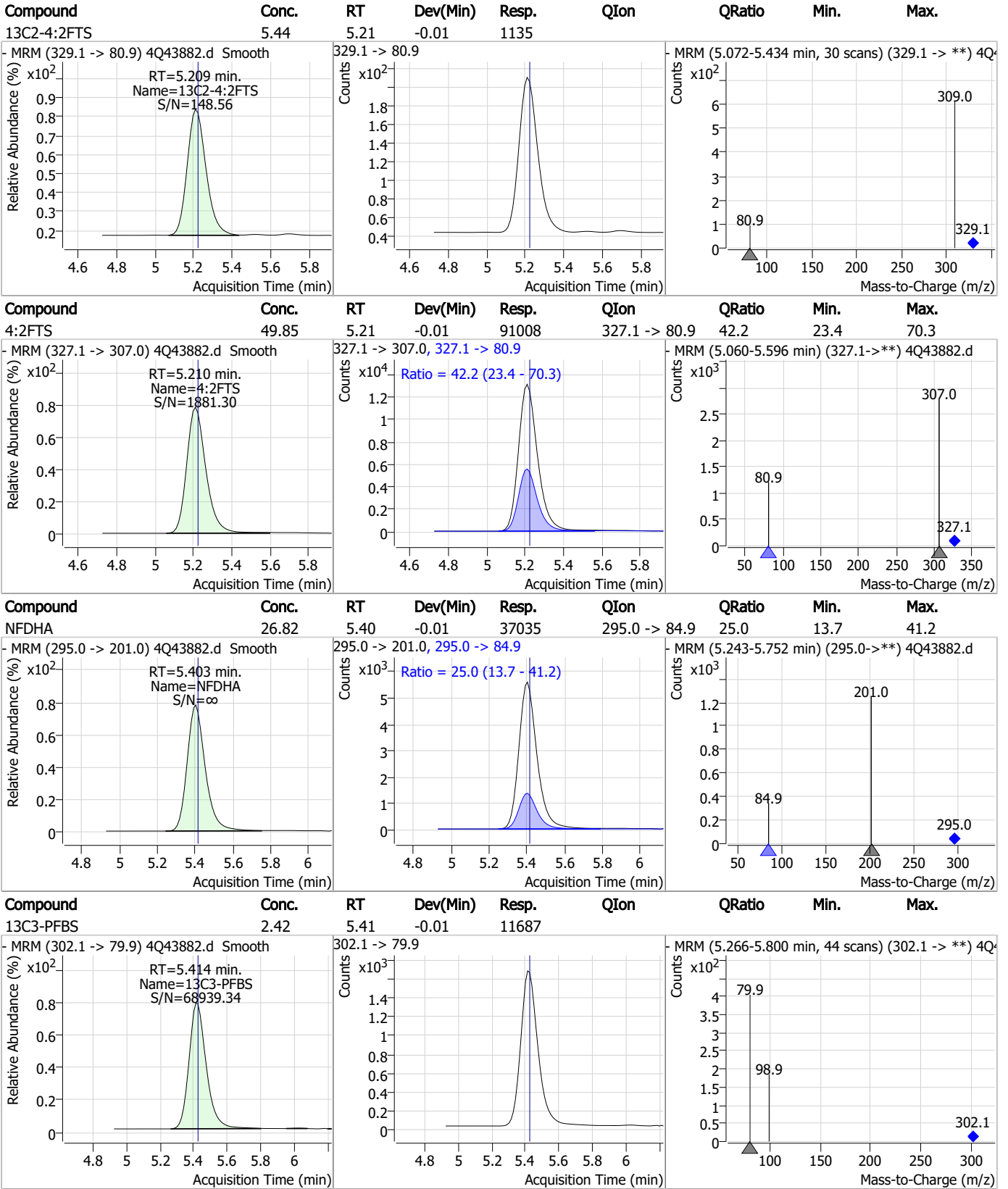
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



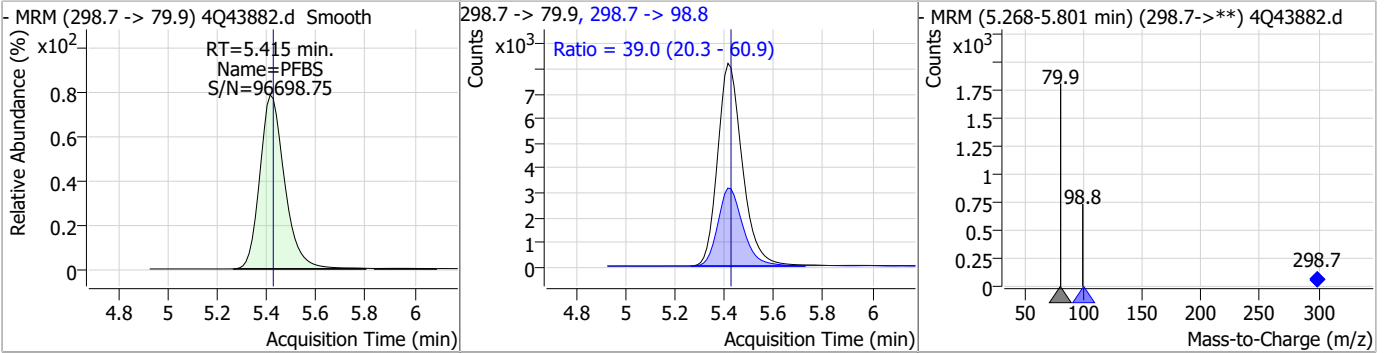
7.6.2

7

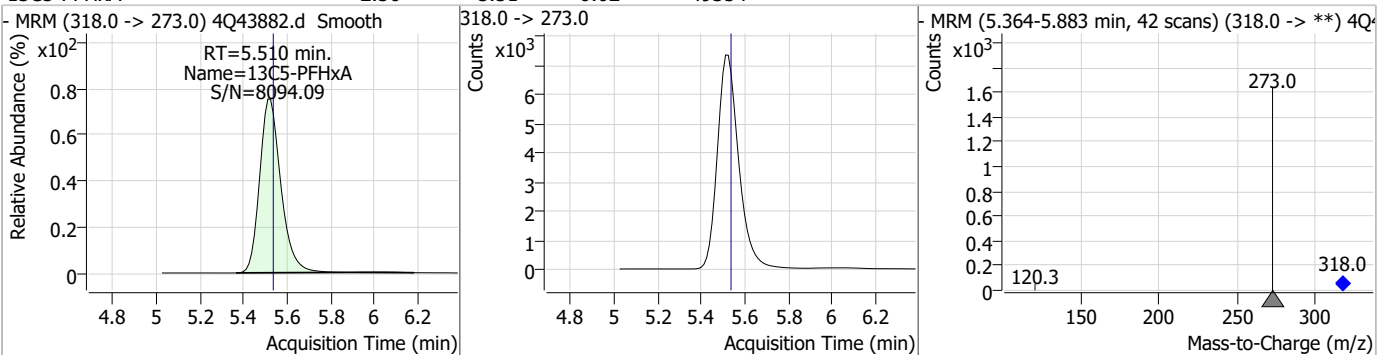


Perfluorinated Compounds by LC/MS/MS

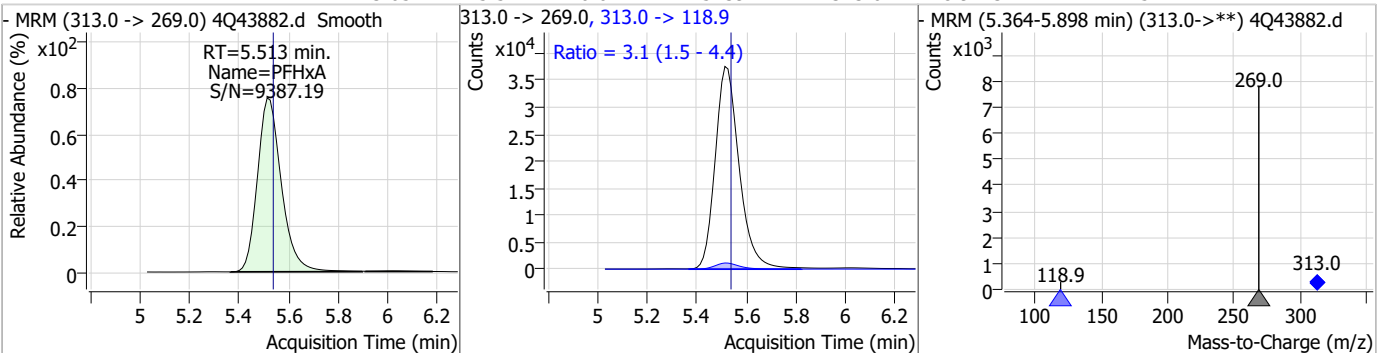
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	11.89	5.42	-0.01	57018	298.7 -> 98.8	39.0	20.3	60.9



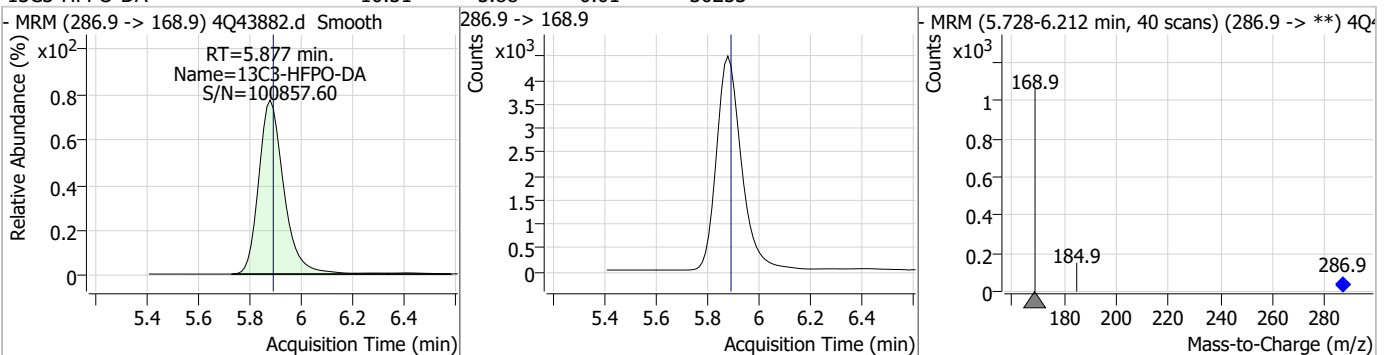
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.56	5.51	-0.02	49354				



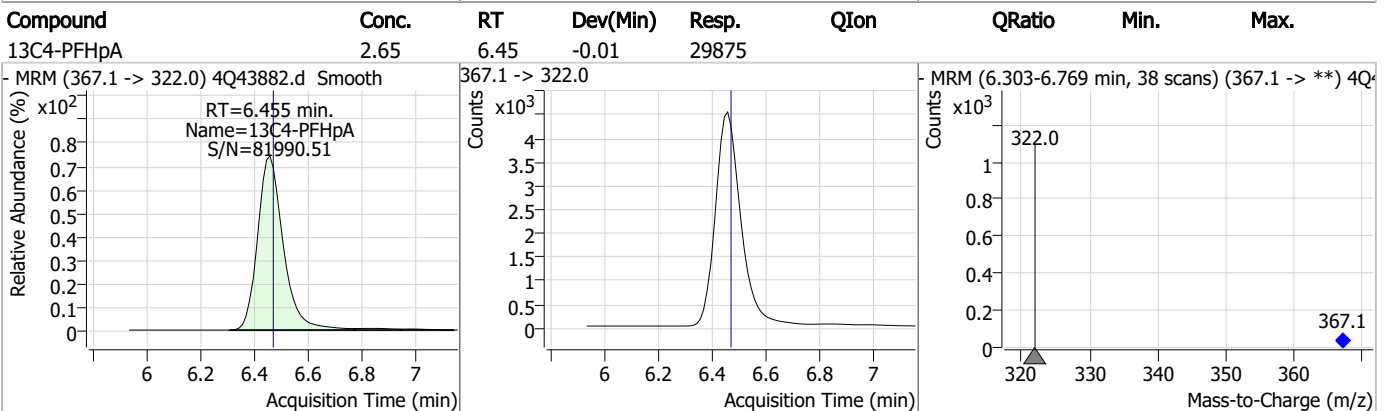
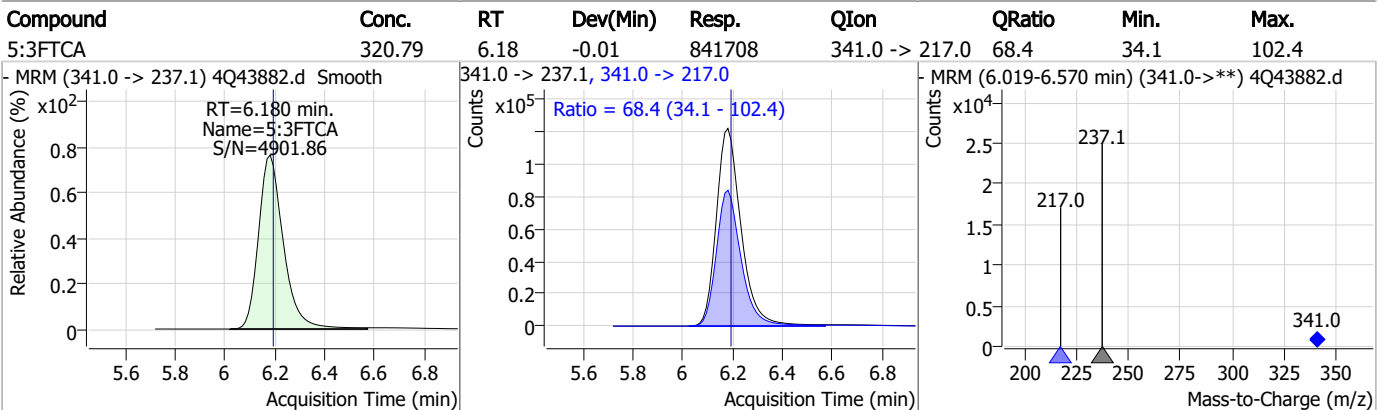
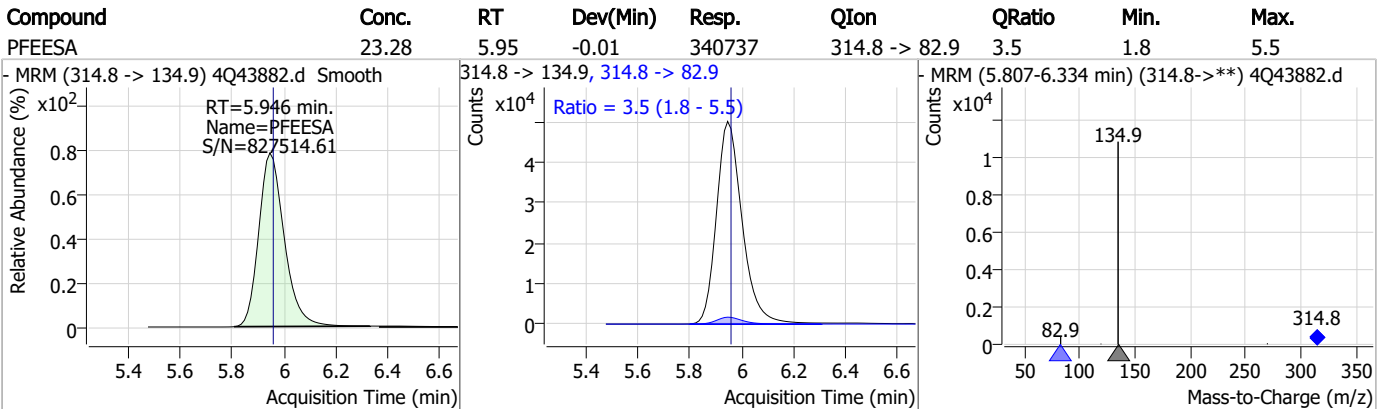
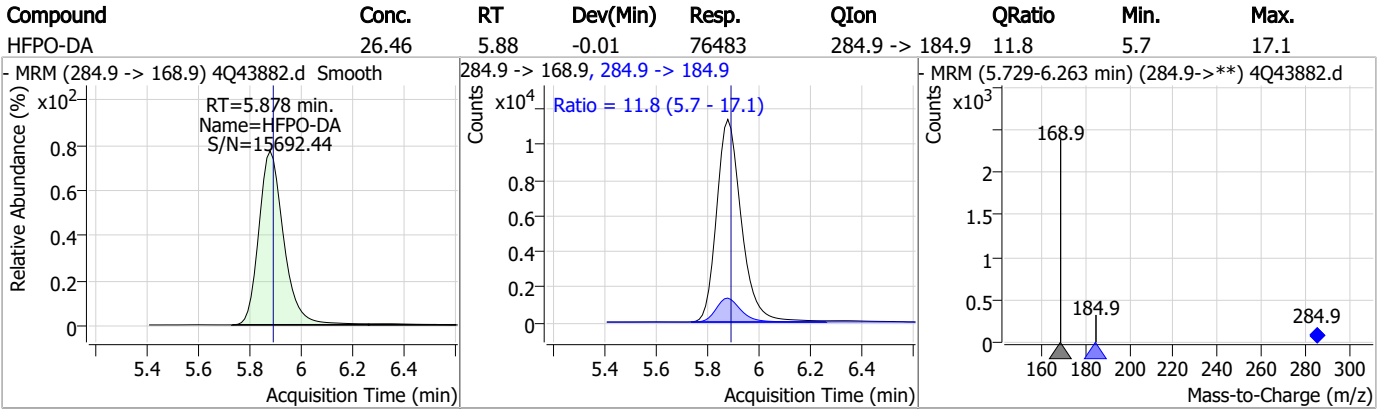
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	13.05	5.51	-0.02	252397	313.0 -> 118.9	3.1	1.5	4.4



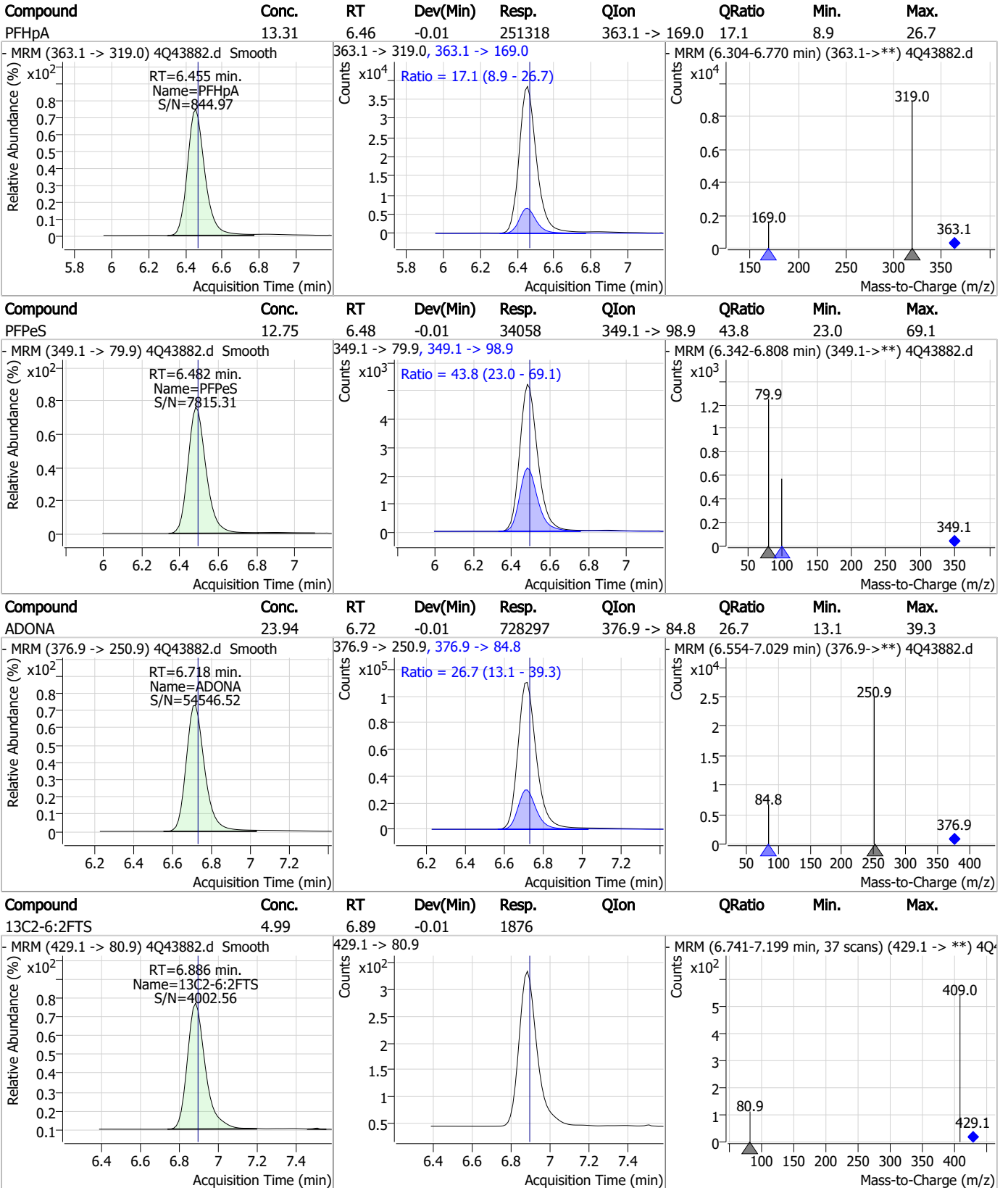
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.51	5.88	-0.01	30253				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

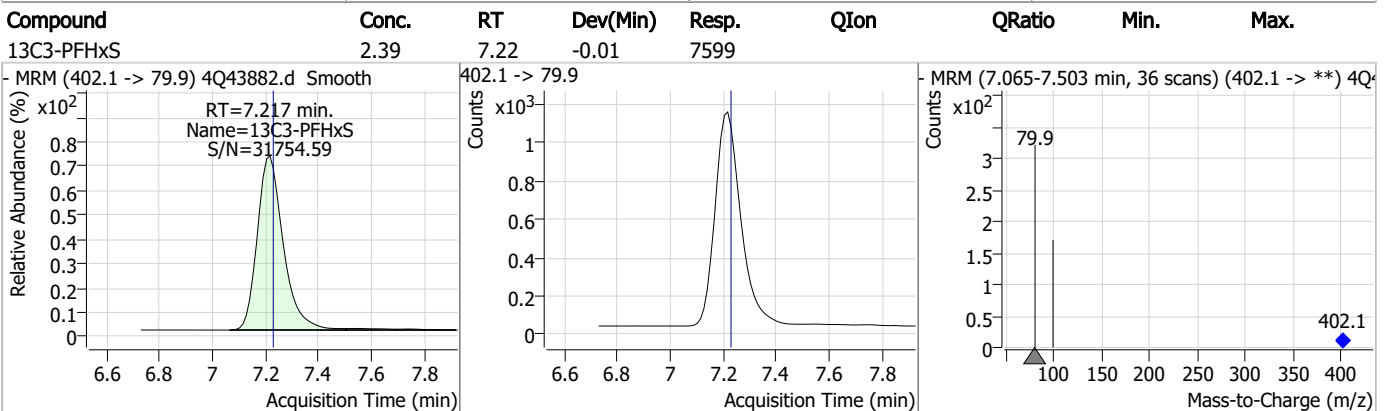
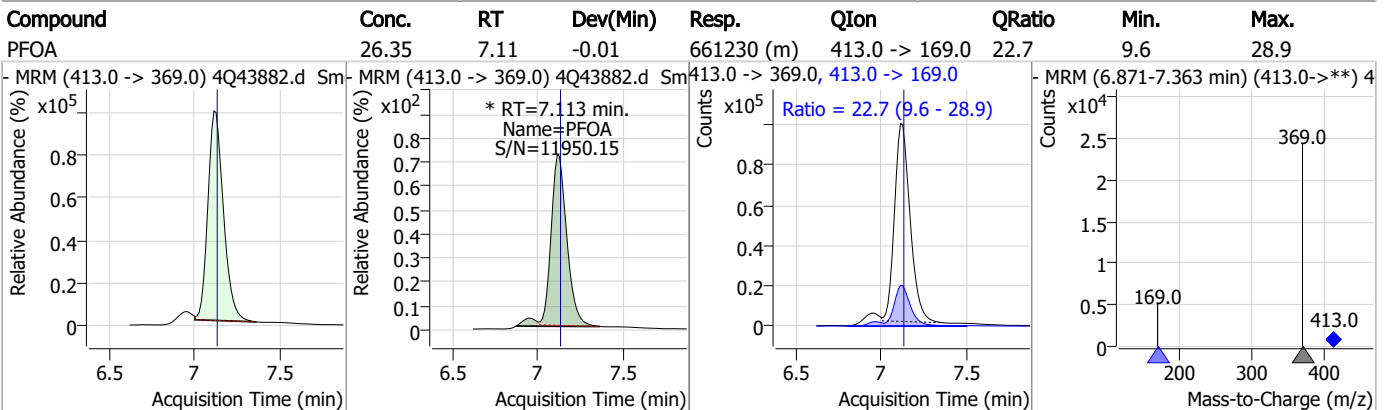
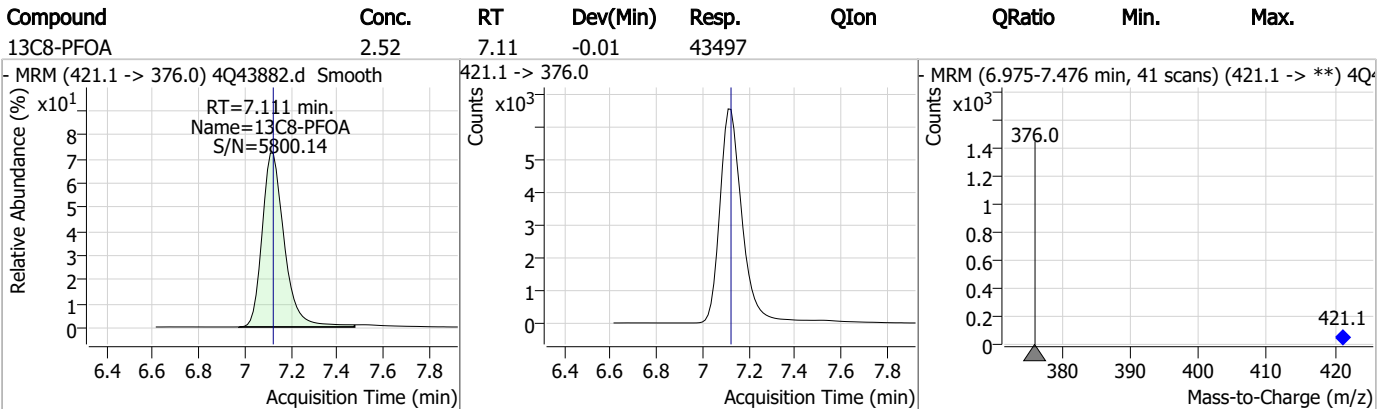
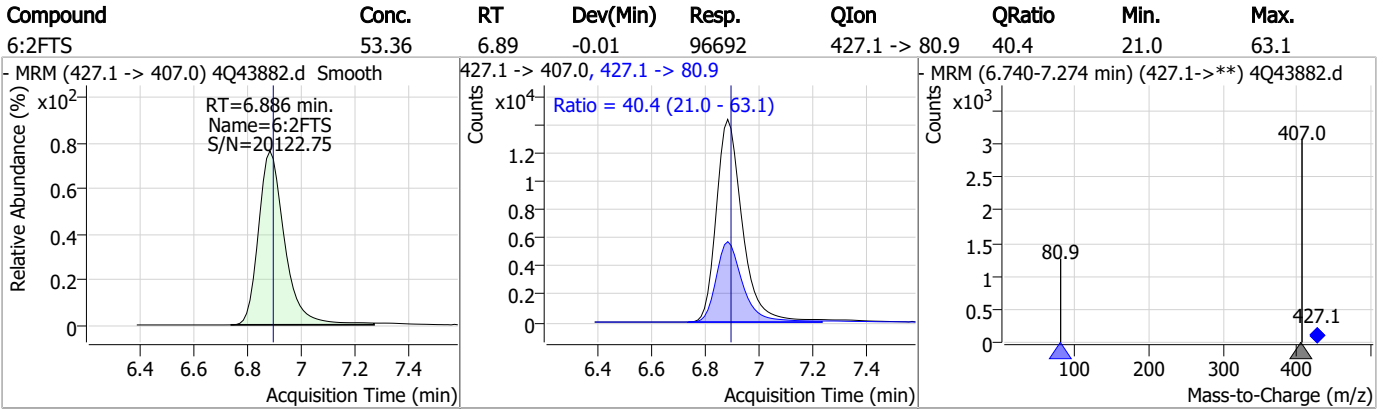


7.6.2

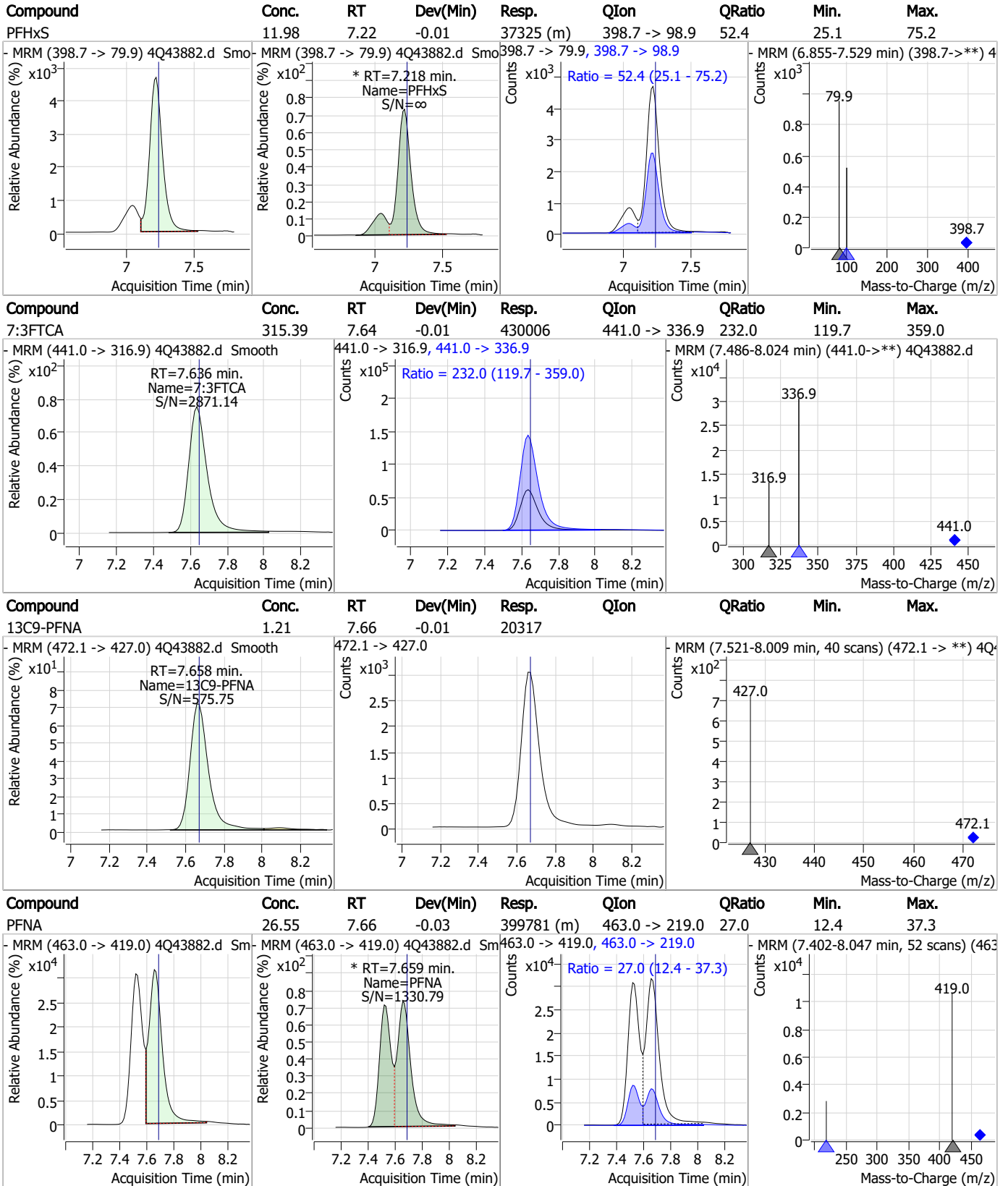
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Perfluorinated Compounds by LC/MS/MS



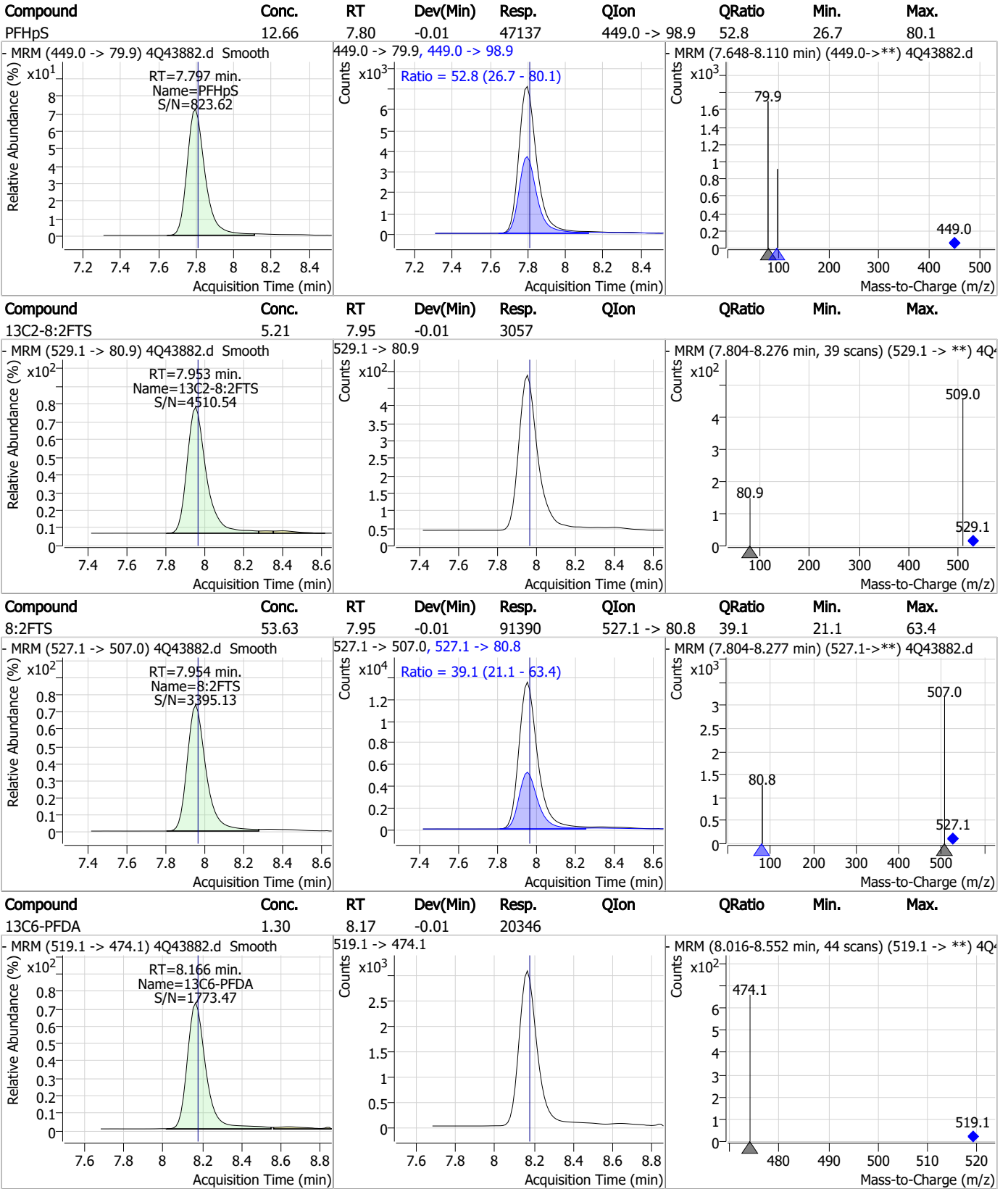
Perfluorinated Compounds by LC/MS/MS



7.6.2

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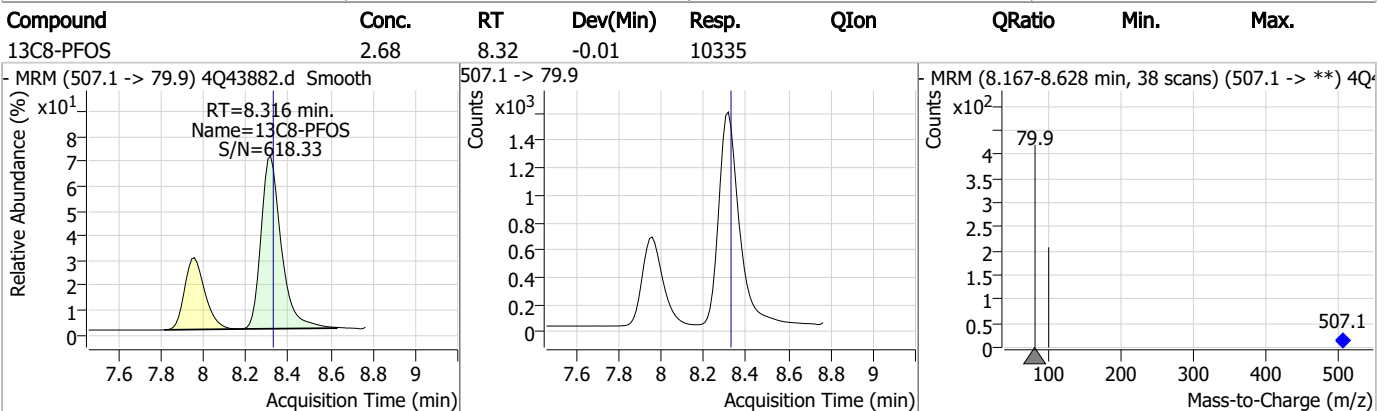
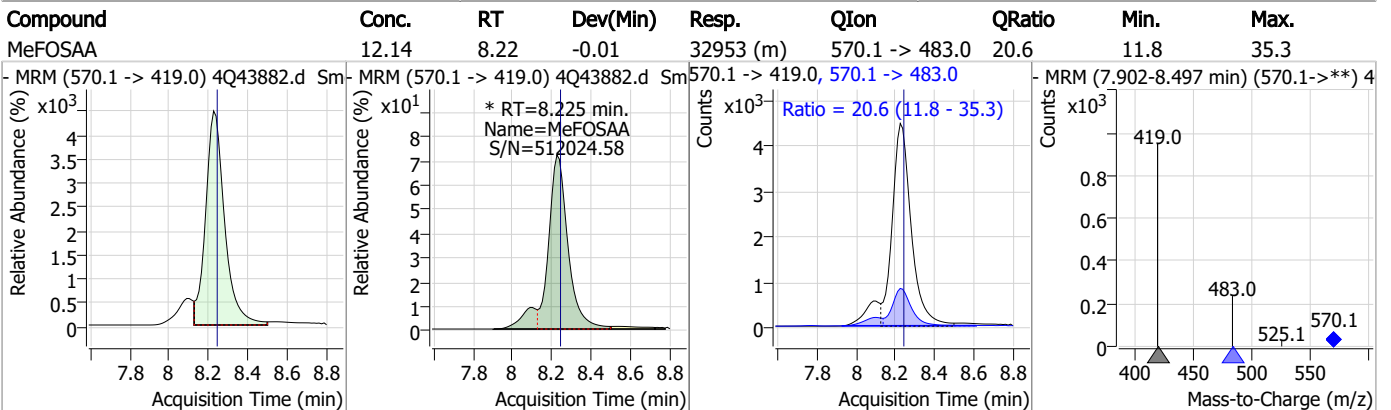
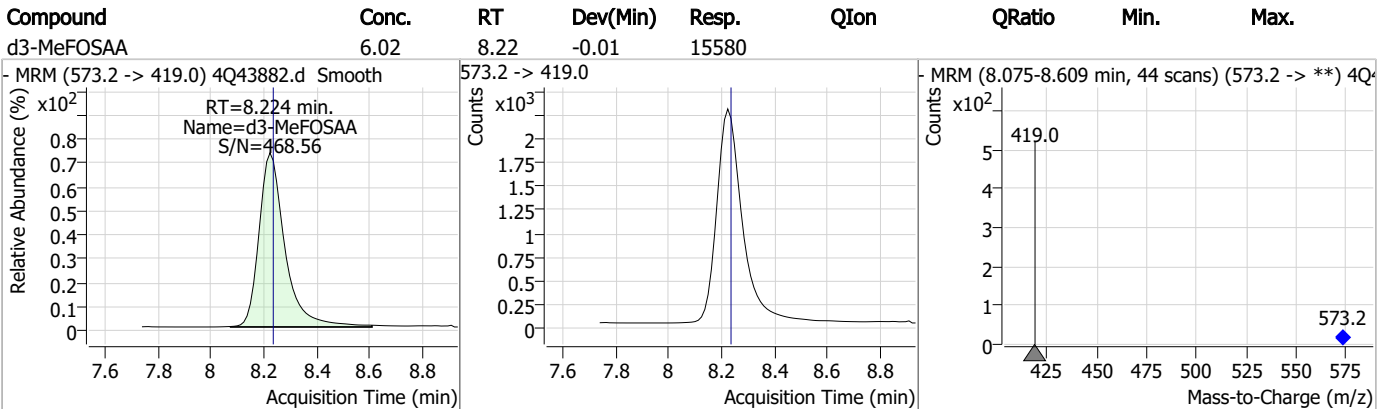
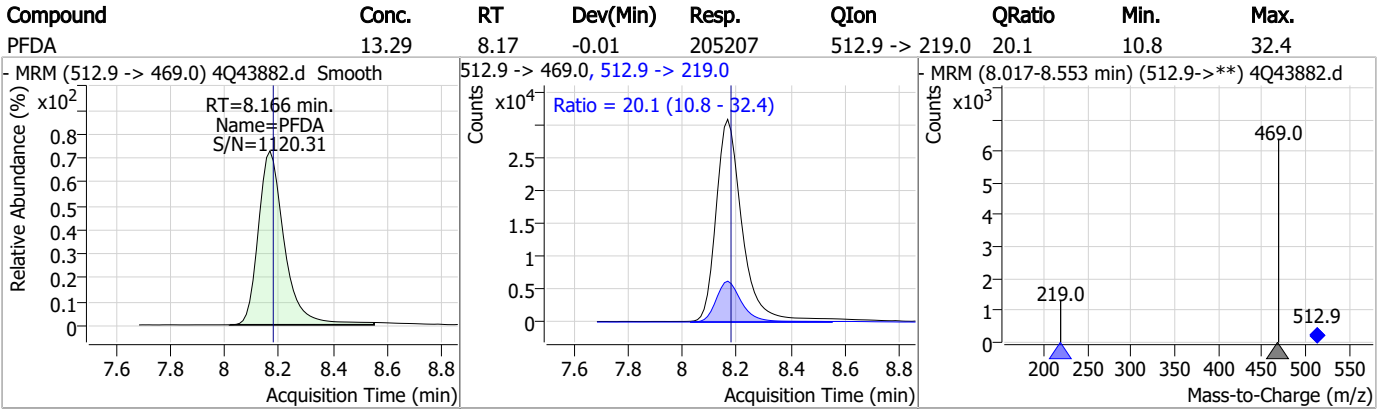
Perfluorinated Compounds by LC/MS/MS



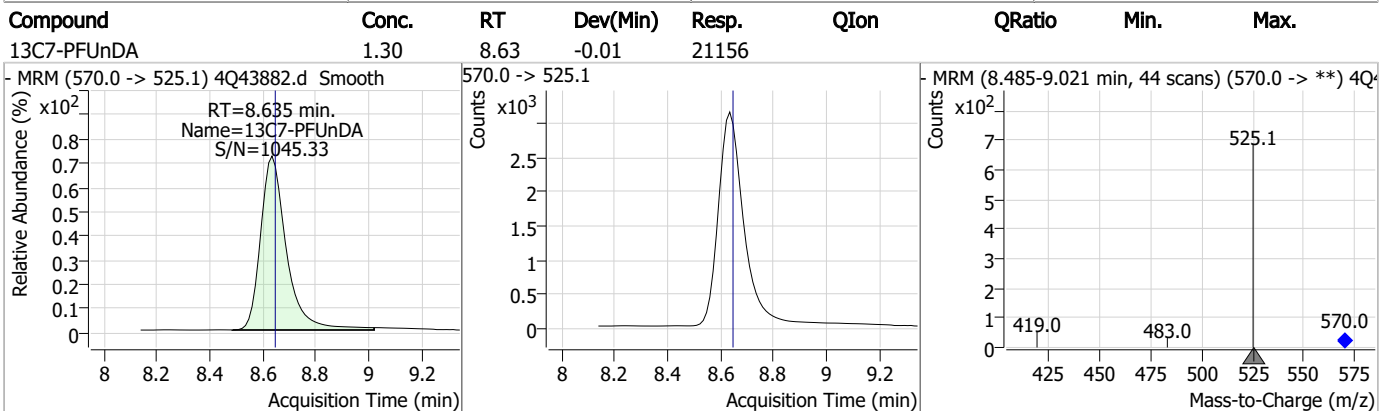
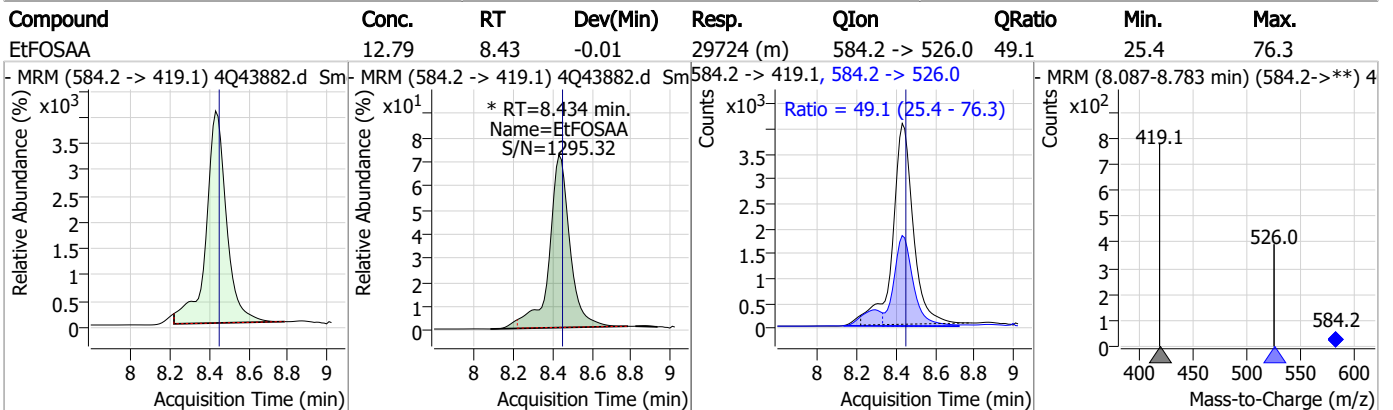
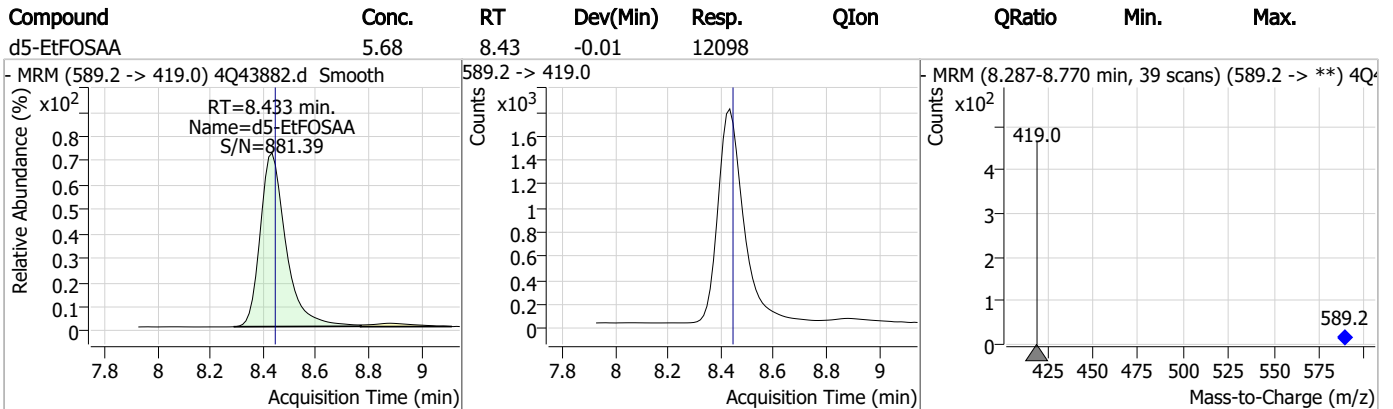
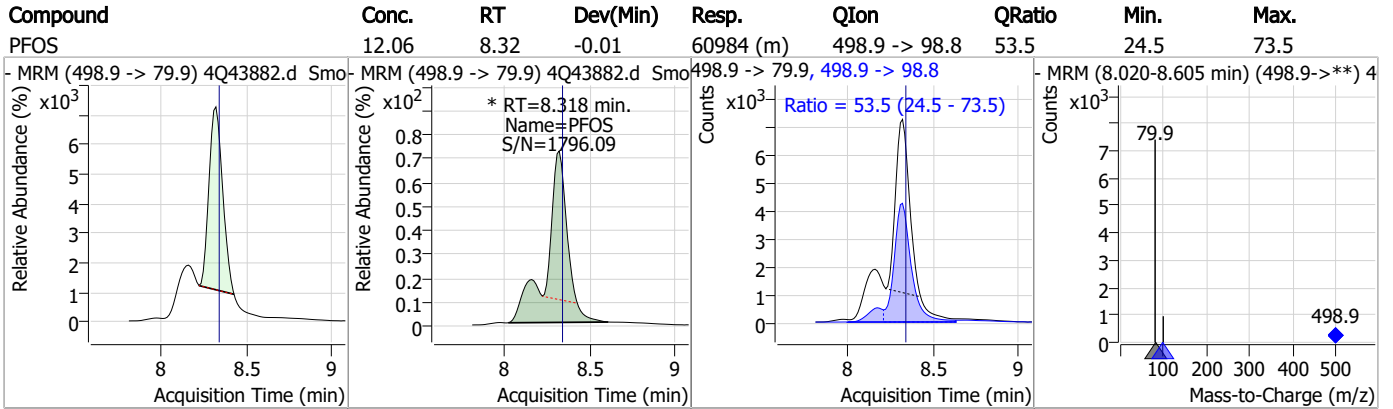
7.6.2

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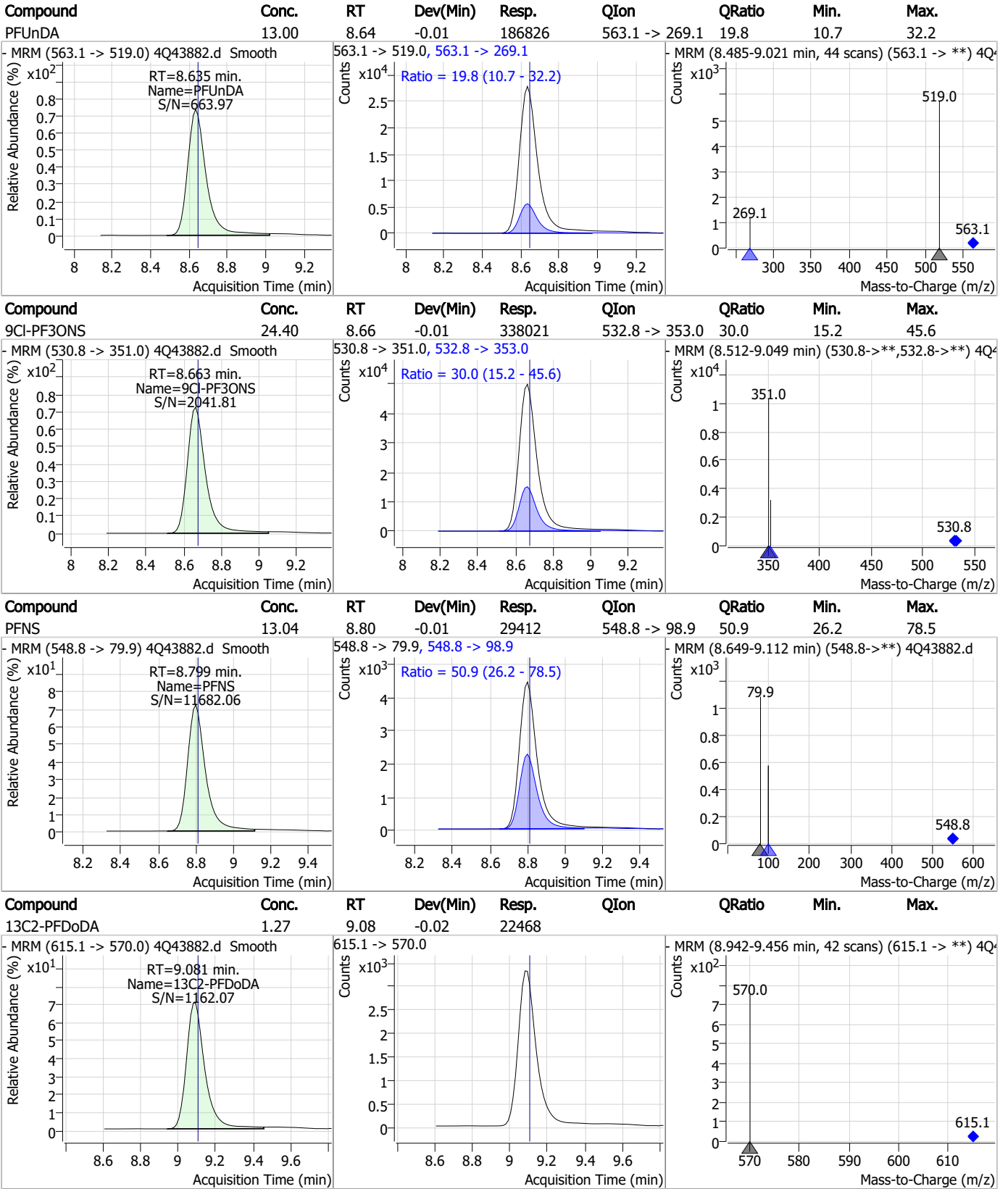
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



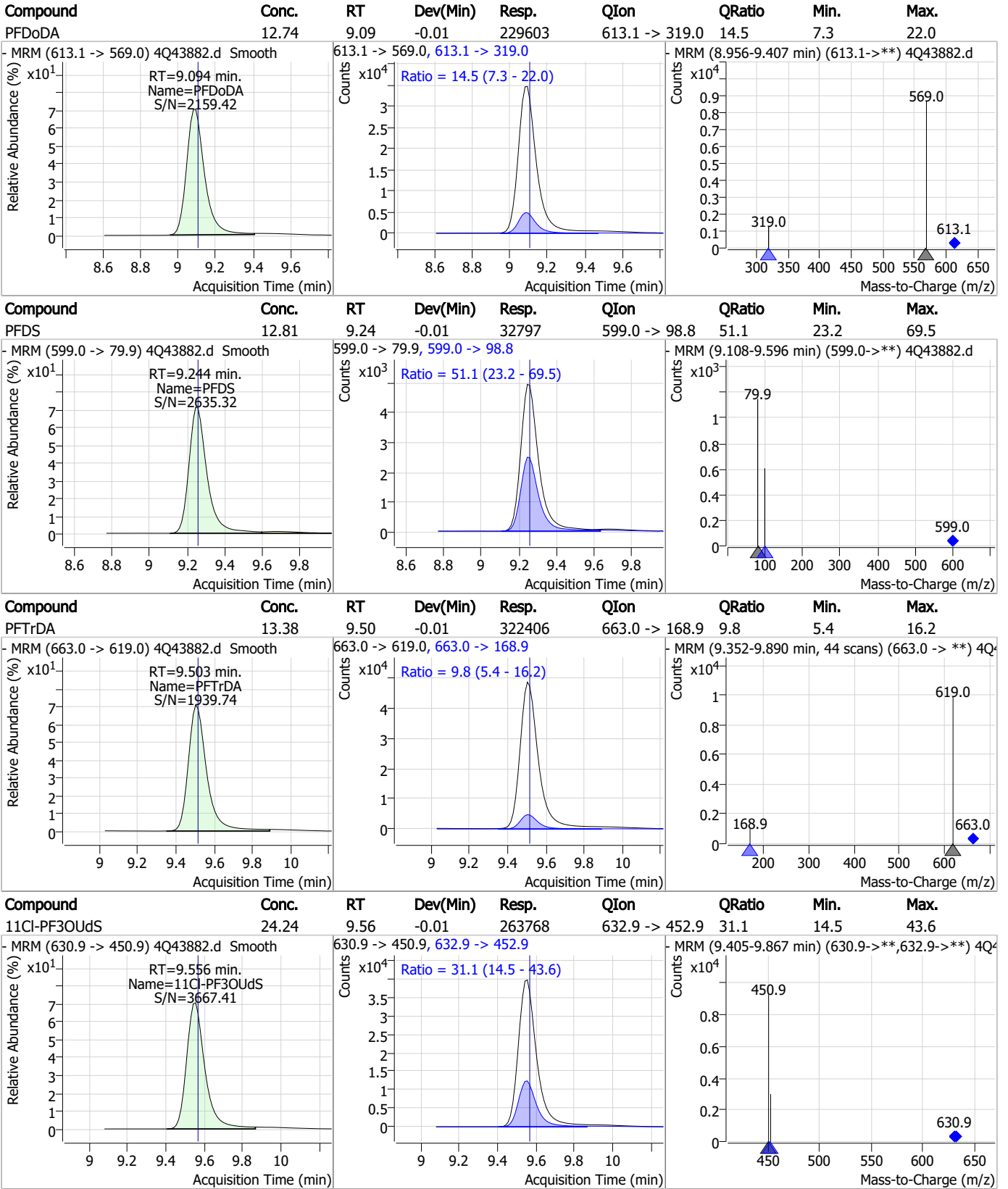
Perfluorinated Compounds by LC/MS/MS



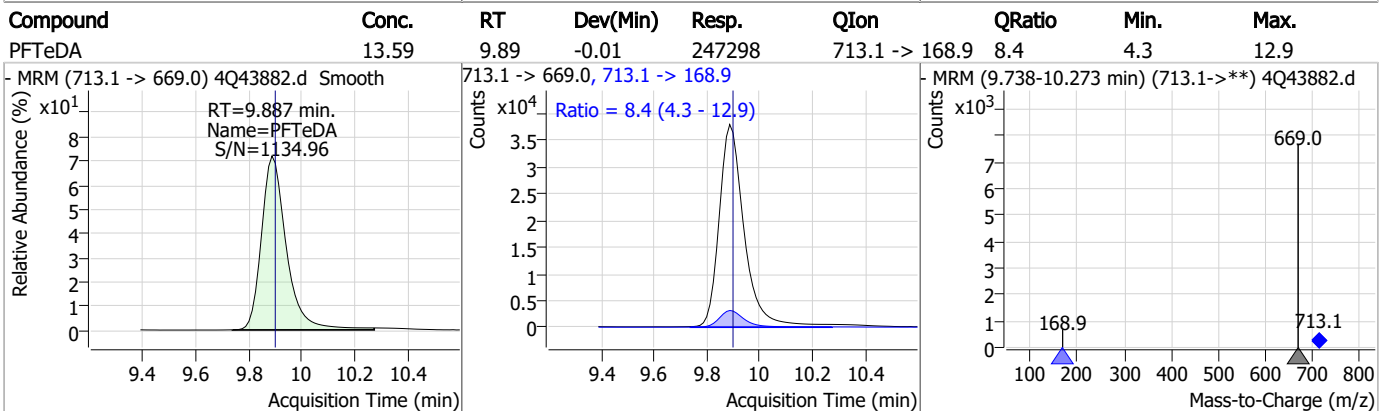
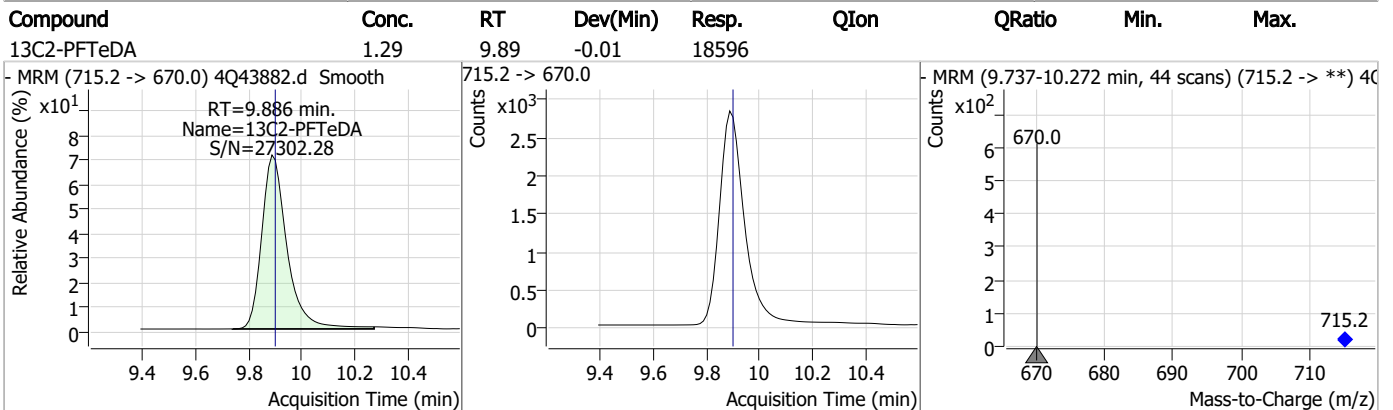
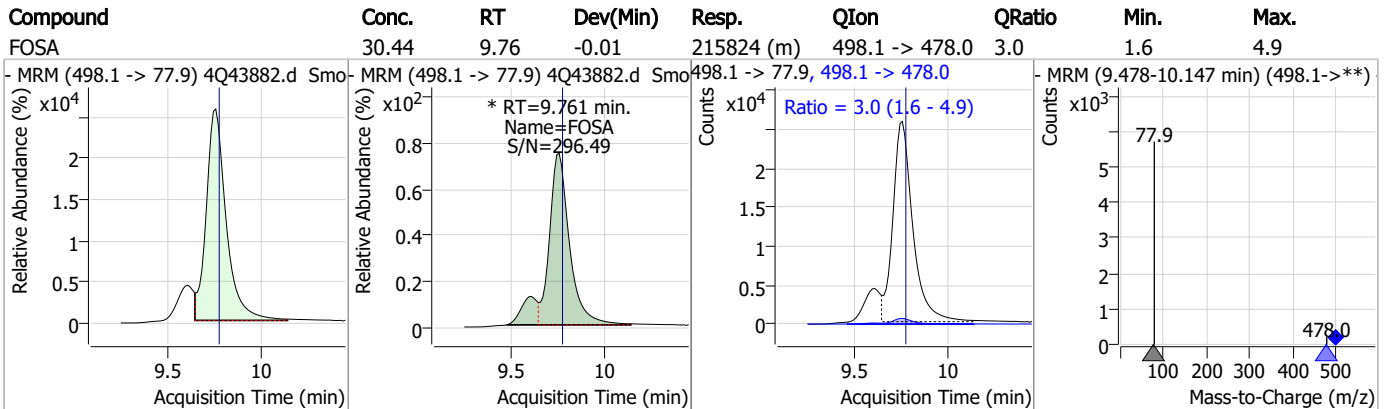
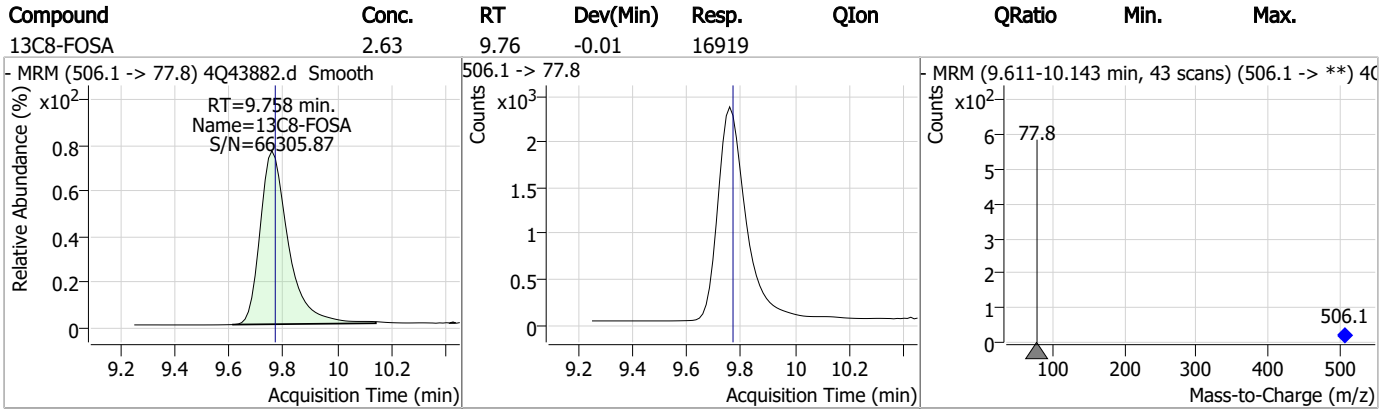
7.6.2

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Perfluorinated Compounds by LC/MS/MS

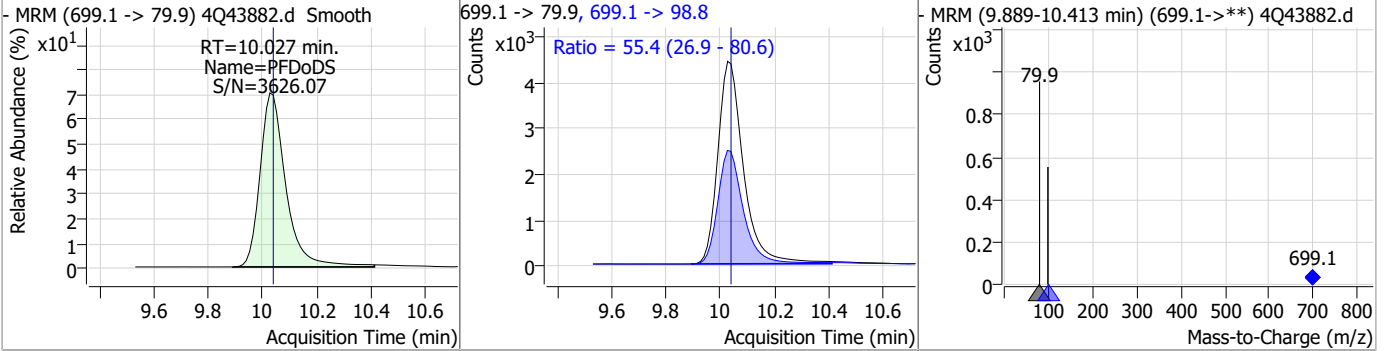


Perfluorinated Compounds by LC/MS/MS

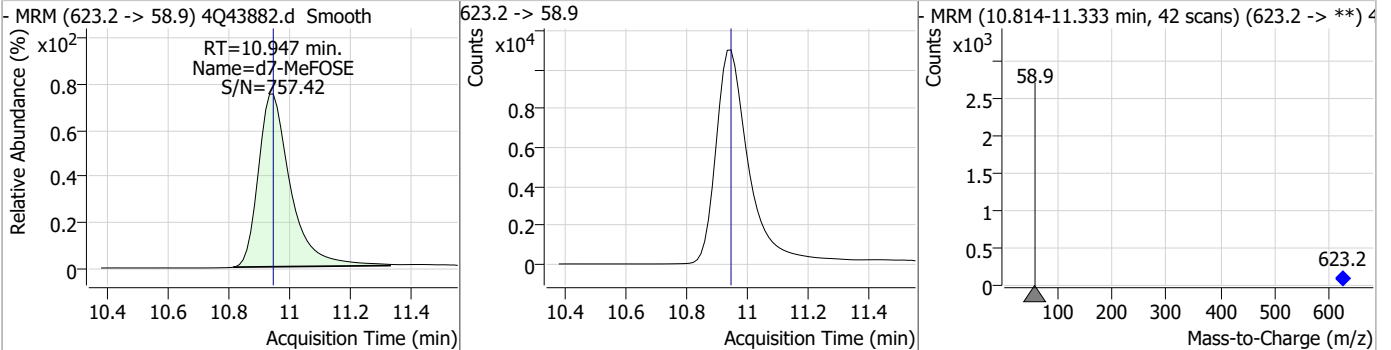


Perfluorinated Compounds by LC/MS/MS

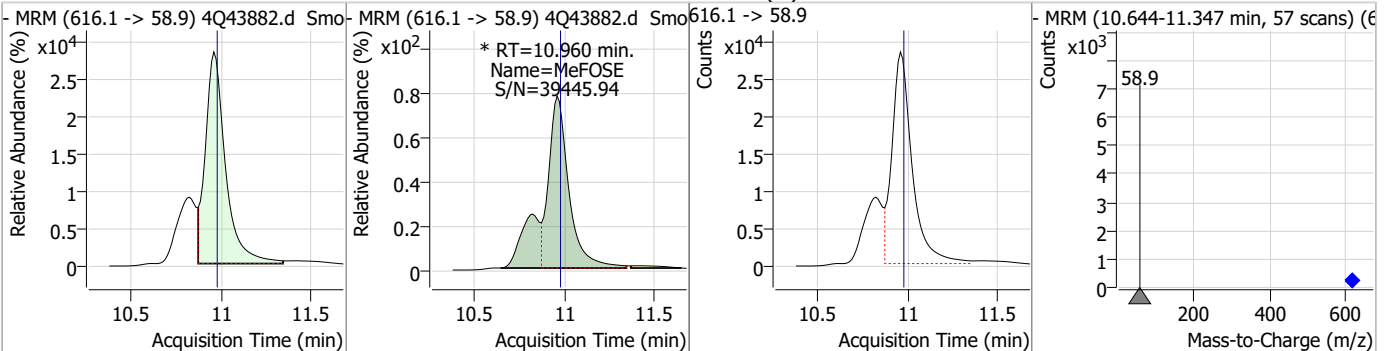
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	12.82	10.03	-0.01	29285	699.1 -> 98.8	55.4	26.9	80.6



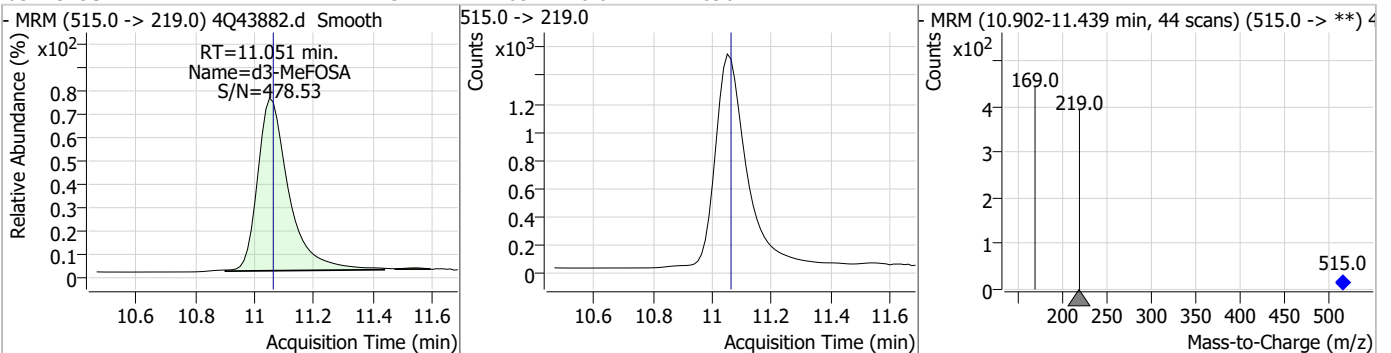
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.28	10.95	0.00	80643				



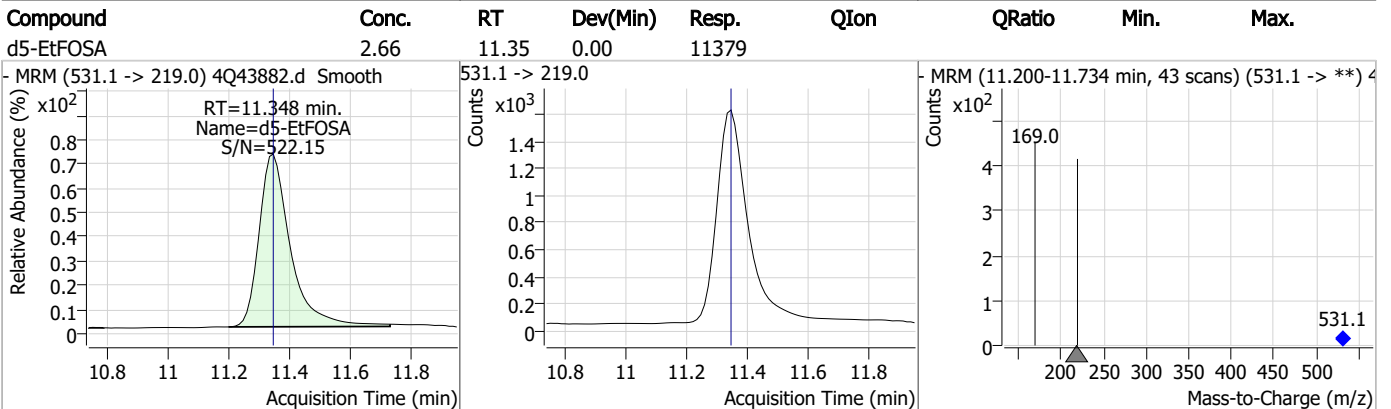
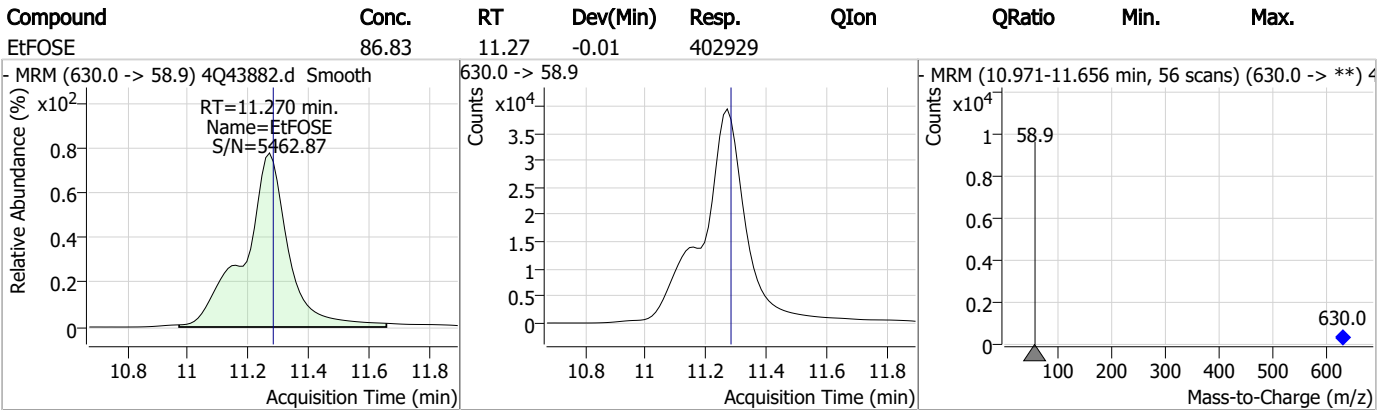
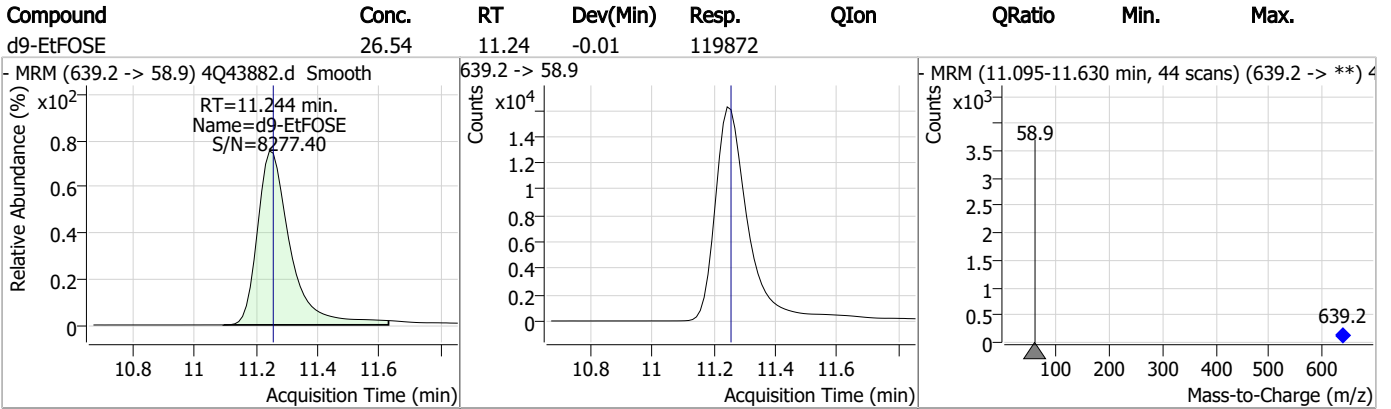
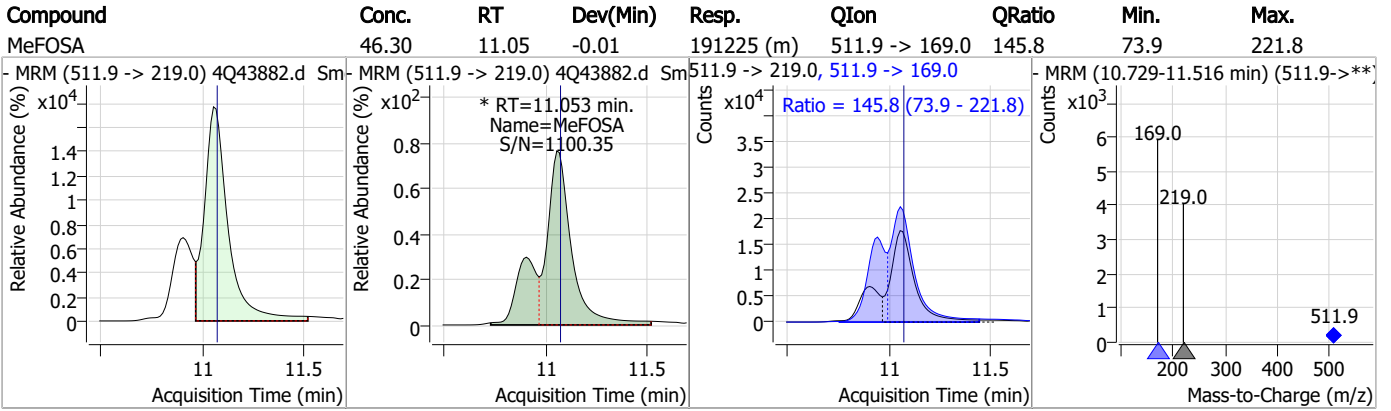
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	86.73	10.96	-0.01	287291 (m)				



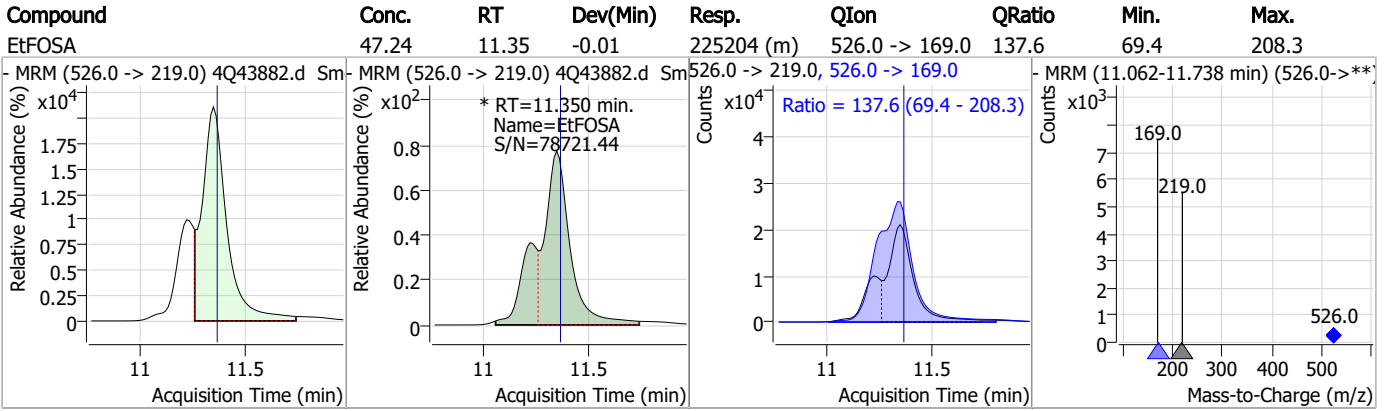
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.73	11.05	-0.01	10964				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S4Q634-RT Method: EPA DRAFT 1633
Lab FileID: 4Q43882.D Analyst approved: 05/04/23 11:23 Natasha Gumtie
Injection Time: 05/03/23 10:37 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

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44133.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 1:28:14 PM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q639 TDCA.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

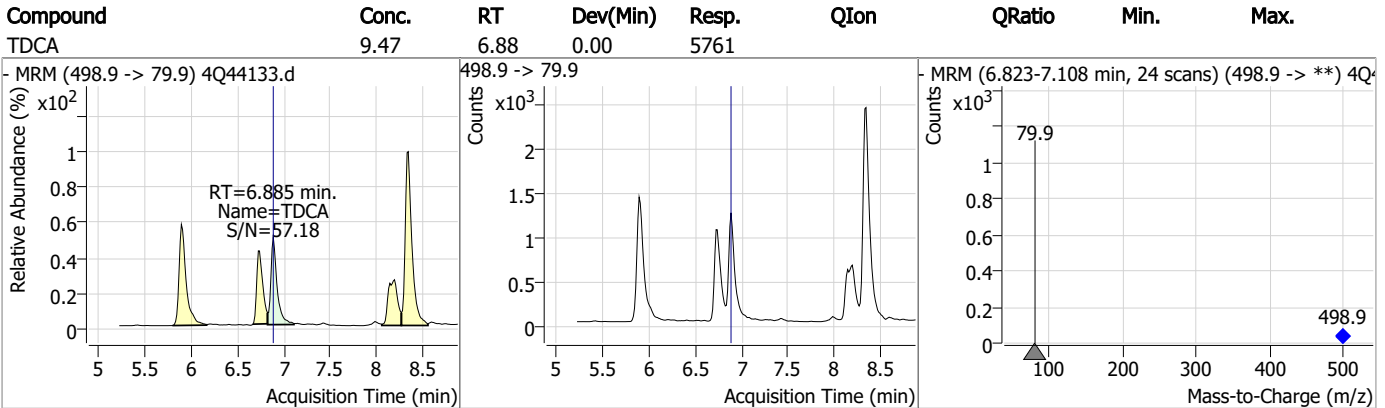
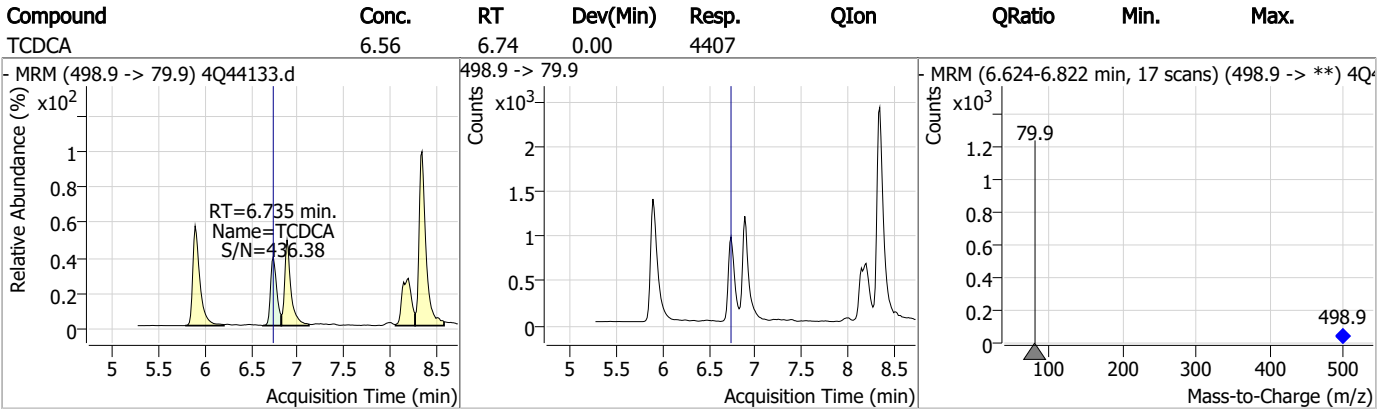
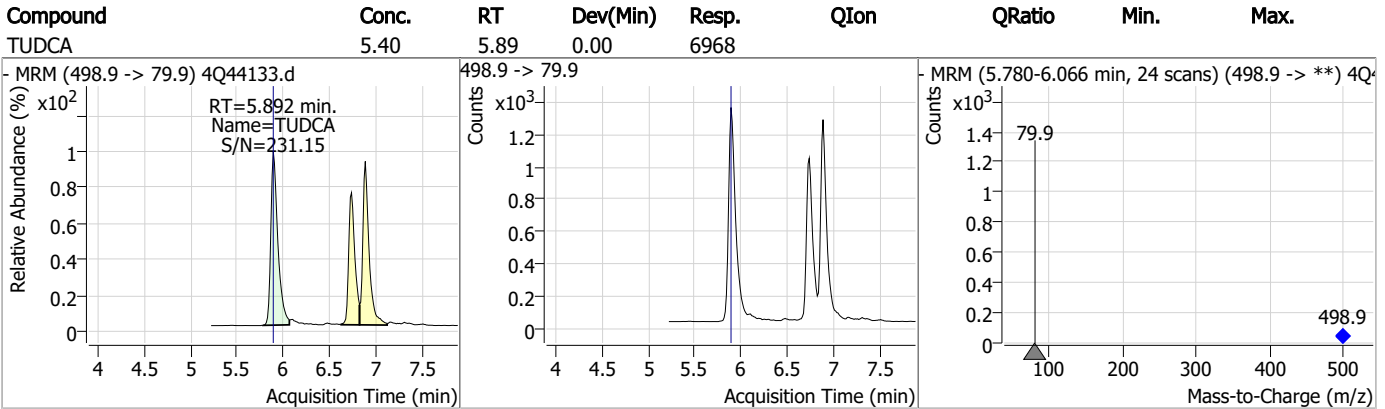
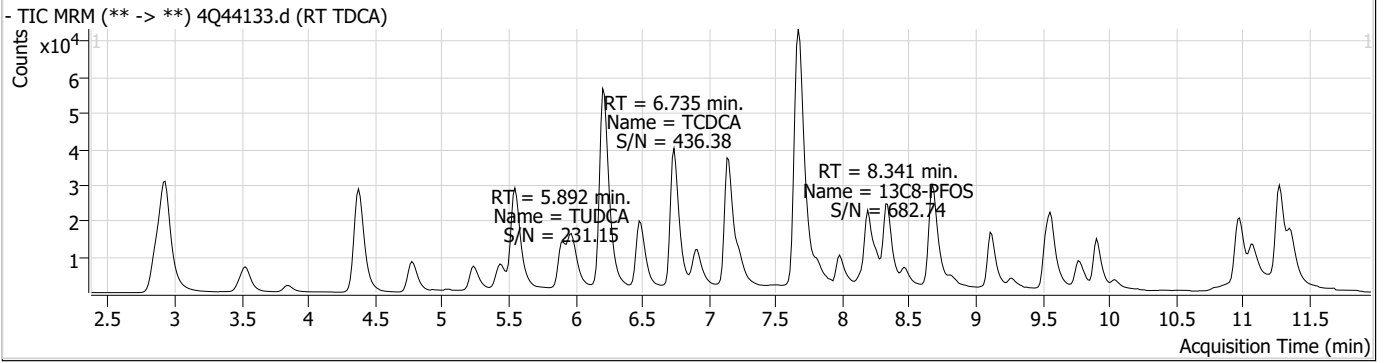
Compound	RT	Transition	Response	Conc. Units	Dev(Min)	QValue
Internal Standards						
M8-PFOS	8.341	507.1 -> 79.9	14559	2.50 µg/L	0.000	
13C4-PFOS	8.342	502.8 -> 79.9	15675	2.50 µg/L	0.000	
System Monitoring Compounds						
13C8-PFOS	8.341	507.1 -> 79.9	14559	2.36 µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.2%			
Target Compounds						
PFOS	8.343	498.9 -> 79.9 498.9 -> 98.8	17216 8109	3.46 µg/L	m	100
TCDCa	6.735	498.9 -> 79.9	4407	6.56 ng/ml		100
TDCA	6.885	498.9 -> 79.9	5761	9.47 ng/ml		100
TUDCA	5.892	498.9 -> 79.9	6968	5.40 ng/ml		100

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

7.6.3

7

Perfluorinated Compounds by LC/MS/MS

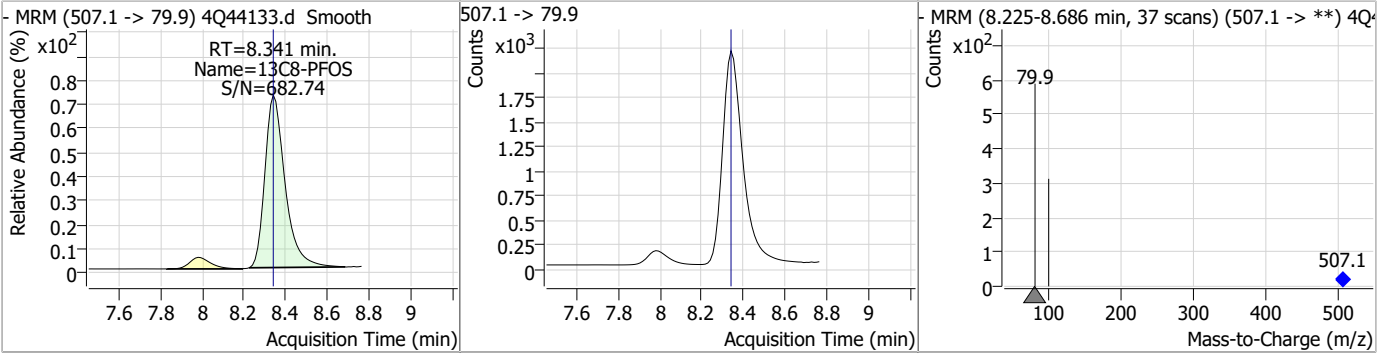


7.6.3
7

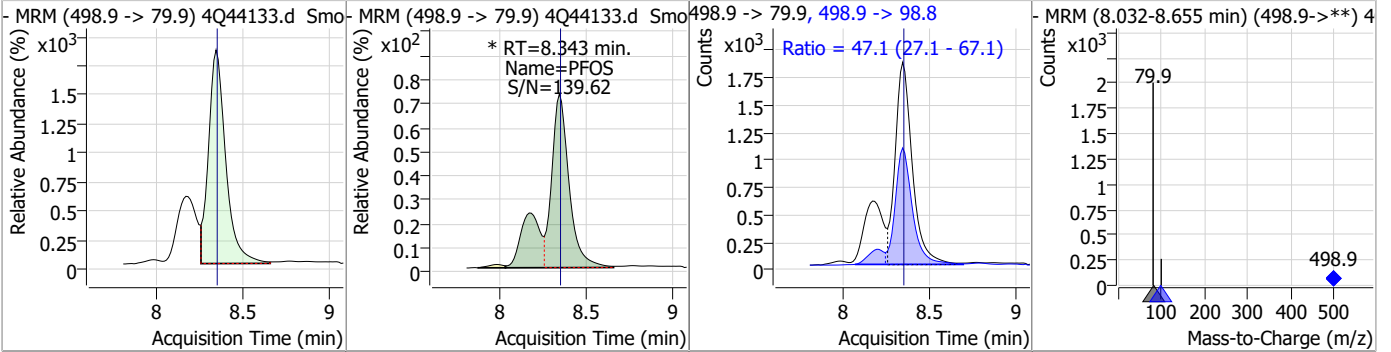


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.36	8.34	0.00	14559				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.46	8.34	0.00	17216 (m)	498.9 -> 98.8	47.1	27.1	67.1



7.6.3

7



Manual Integration Approval Summary

Sample Number: S4Q639-RT Method: EPA DRAFT 1633
Lab FileID: 4Q44133.D Analyst approved: 05/10/23 11:10 Martha Valls
Injection Time: 05/09/23 13:28 Supervisor approved: 05/10/23 17:21 Norman Farmer

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

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44134.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 1:42:17 PM
 Sample Name : RT br/ln
 Vial : P1-B2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	126170	10.00 µg/L	-0.012
M5-PFPeA	4.375	268.3 -> 223.0	69483	5.00 µg/L	-0.012
M5-PFHxA	5.559	318.0 -> 273.0	47203	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	28669	2.50 µg/L	0.000
M8-PFOA	7.148	421.1 -> 376.0	41049	2.50 µg/L	0.000
M9-PFNA	7.696	472.1 -> 427.0	20558	1.25 µg/L	0.000
M6-PFDA	8.203	519.1 -> 474.1	20151	1.25 µg/L	0.000
M7-PFUnDA	8.672	570.0 -> 525.1	19570	1.25 µg/L	0.000
M2-PFDoDA	9.118	615.1 -> 570.0	21690	1.25 µg/L	0.000
M2-PFTeDA	9.911	715.2 -> 670.0	16079	1.25 µg/L	0.000
M8-FOSA	9.783	506.1 -> 77.8	18380	2.50 µg/L	0.000
M3-PFBS	5.452	302.1 -> 79.9	11512	2.50 µg/L	0.000
M3-PFHxS	7.242	402.1 -> 79.9	7517	2.50 µg/L	0.000
M8-PFOS	8.341	507.1 -> 79.9	10850	2.50 µg/L	-0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1117	5.00 µg/L	0.000
M2-6:2FTS	6.923	429.1 -> 80.9	1749	5.00 µg/L	0.000
M2-8:2FTS	7.990	529.1 -> 80.9	2994	5.00 µg/L	0.000
M3-MeFOSAA	8.261	573.2 -> 419.0	13632	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	26832	10.00 µg/L	0.000
M5-EtFOSAA	8.470	589.2 -> 419.0	11716	5.00 µg/L	0.000
M7-MeFOSE	10.972	623.2 -> 58.9	71352	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	102479	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11496	2.50 µg/L	0.000
M3-MeFOSA	11.076	515.0 -> 219.0	10806	2.50 µg/L	-0.012
13C4-PFOS	8.342	502.8 -> 79.9	11784	2.50 µg/L	-0.012
13C3-PFBA	2.916	216.0 -> 172.0	67561	5.00 µg/L	-0.013
18O2-PFHxS	7.241	403.0 -> 83.9	5329	2.50 µg/L	0.000
13C4-PFOA	7.149	417.1 -> 372.0	50322	2.50 µg/L	0.000
13C2-PFDA	8.204	515.1 -> 470.1	17380	1.25 µg/L	0.000
13C5-PFNA	7.697	468.0 -> 423.0	23690	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	42830	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1117	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1749	4.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.6%		
13C2-8:2FTS	7.990	529.1 -> 80.9	2994	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C2-PFDoDA	9.118	615.1 -> 570.0	21690	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-PFTeDA	9.911	715.2 -> 670.0	16079	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C3-PFBS	5.452	302.1 -> 79.9	11512	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.6%		
13C3-PFHxS	7.242	402.1 -> 79.9	7517	2.28 µg/L	0.000

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 = 91.0%	
13C4-PFBA	2.911	216.8 -> 171.9	126170	9.92 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.492	367.1 -> 322.0	28669	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	47203	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C5-PFPeA	4.375	268.3 -> 223.0	69483	5.27 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C6-PFDA	8.203	519.1 -> 474.1	20151	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C7-PFUnDA	8.672	570.0 -> 525.1	19570	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-FOSA	9.783	506.1 -> 77.8	18380	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOA	7.148	421.1 -> 376.0	41049	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C8-PFOS	8.341	507.1 -> 79.9	10850	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C9-PFNA	7.696	472.1 -> 427.0	20558	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.1%	
d3-MeFOSAA	8.261	573.2 -> 419.0	13632	4.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.7%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	26832	9.52 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d3-MeFOSA	11.076	515.0 -> 219.0	10806	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.5%	
d5-EtFOSAA	8.470	589.2 -> 419.0	11716	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.7%	
d7-MeFOSE	10.972	623.2 -> 58.9	71352	19.46 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.8%	
d9-EtFOSE	11.269	639.2 -> 58.9	102479	19.74 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.0%	
d5-EtFOSA	11.360	531.1 -> 219.0	11496	2.34 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.6%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	81840	45.54 µg/L	99
		327.1 -> 80.9	33974		
6:2FTS	6.924	427.1 -> 407.0	89142	52.76 µg/L	96
		427.1 -> 80.9	36047		
8:2FTS	7.991	527.1 -> 507.0	83407	49.97 µg/L	98
		527.1 -> 80.8	35106		
EtFOSAA	8.471	584.2 -> 419.1	28676	12.74 µg/L	m 90
		584.2 -> 526.0	12905		
FOSA	9.786	498.1 -> 77.9	242817	31.53 µg/L	m 99
		498.1 -> 478.0	6996		
MeFOSAA	8.262	570.1 -> 419.0	29876	12.57 µg/L	m 94
		570.1 -> 483.0	6332		
PFBA	2.920	212.8 -> 168.9	180996	53.57 µg/L	100
PFBS	5.453	298.7 -> 79.9	53374	11.30 µg/L	96
		298.7 -> 98.8	20561		
PFDA	8.204	512.9 -> 469.0	188039	12.30 µg/L	99
		512.9 -> 219.0	38252		
PFDoDA	9.119	613.1 -> 569.0	225889	12.98 µg/L	100
		613.1 -> 319.0	31670		
PFDS	9.282	599.0 -> 79.9	31535	11.73 µg/L	98

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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	16858	13.09	µg/L	99
		363.1 -> 319.0	237258			
PFHpS	7.823	363.1 -> 169.0	41082	12.10	µg/L	98
		449.0 -> 79.9	47301			
PFHxA	5.550	449.0 -> 98.9	25377	13.10	µg/L	100
		313.0 -> 269.0	242218			
PFHxS	7.243	313.0 -> 118.9	7272	11.60	µg/L	m
		398.7 -> 79.9	35726			
PFNA	7.697	398.7 -> 98.9	18731	25.77	µg/L	m
		463.0 -> 419.0	392620			
PFNS	8.823	463.0 -> 219.0	104078	11.80	µg/L	94
		548.8 -> 79.9	27959			
PFOA	7.150	548.8 -> 98.9	14490	28.29	µg/L	m
		413.0 -> 369.0	670070			
PFOS	8.343	413.0 -> 169.0	141169	12.21	µg/L	m
		498.9 -> 79.9	64859			
PFPeA	4.377	498.9 -> 98.8	33145	25.64	µg/L	100
		263.0 -> 219.0	428622			
PFPeS	6.519	349.1 -> 79.9	33094	12.52	µg/L	96
		349.1 -> 98.9	14008			
PFTeDA	9.912	713.1 -> 669.0	215098	13.67	µg/L	100
		713.1 -> 168.9	17559			
PFTrDA	9.529	663.0 -> 619.0	293707	12.63	µg/L	98
		663.0 -> 168.9	29177			
PFUnDA	8.673	563.1 -> 519.0	179283	13.49	µg/L	99
		563.1 -> 269.1	33714			
11CI-PF3OUdS	9.568	630.9 -> 450.9	263464	27.30	µg/L	99
		632.9 -> 452.9	80126			
9CI-PF3ONS	8.687	530.8 -> 351.0	332037	27.02	µg/L	99
		532.8 -> 353.0	99748			
ADONA	6.743	376.9 -> 250.9	680078	25.20	µg/L	100
		376.9 -> 84.8	179974			
HFPO-DA	5.915	284.9 -> 168.9	68636	26.77	µg/L	97
		284.9 -> 184.9	7839			
3:3FTCA	3.848	241.0 -> 177.0	49717	67.59	µg/L	100
		241.0 -> 117.0	4646			
5:3FTCA	6.217	341.0 -> 237.1	904267	360.33	µg/L	99
		341.0 -> 217.0	627498			
7:3FTCA	7.673	441.0 -> 316.9	491619	377.02	µg/L	100
		441.0 -> 336.9	1160343			
EtFOSA	11.375	526.0 -> 219.0	215616	44.77	µg/L	m
		526.0 -> 169.0	307237			
EtFOSE	11.295	630.0 -> 58.9	322867	81.38	µg/L	100
		511.9 -> 219.0	180575			
MeFOSA	11.078	511.9 -> 169.0	268275	44.36	µg/L	m
		616.1 -> 58.9	251690			
MeFOSE	10.985	699.1 -> 79.9	28924	85.88	µg/L	m
		699.1 -> 98.8	16282			
PFDoDS	10.052	295.0 -> 201.0	27199	12.06	µg/L	100
		295.0 -> 84.9	6700			
NFDHA	5.441	279.0 -> 85.1	236941	20.60	µg/L	96
		229.0 -> 84.9	227706			
PFMBA	4.791	314.8 -> 134.9	325858	23.28	µg/L	99
		314.8 -> 82.9	11580			

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

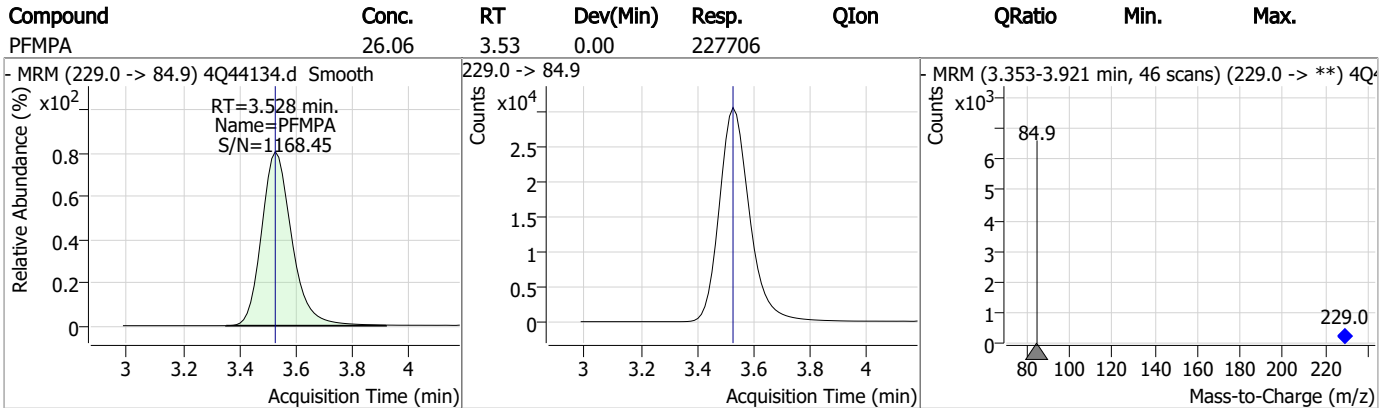
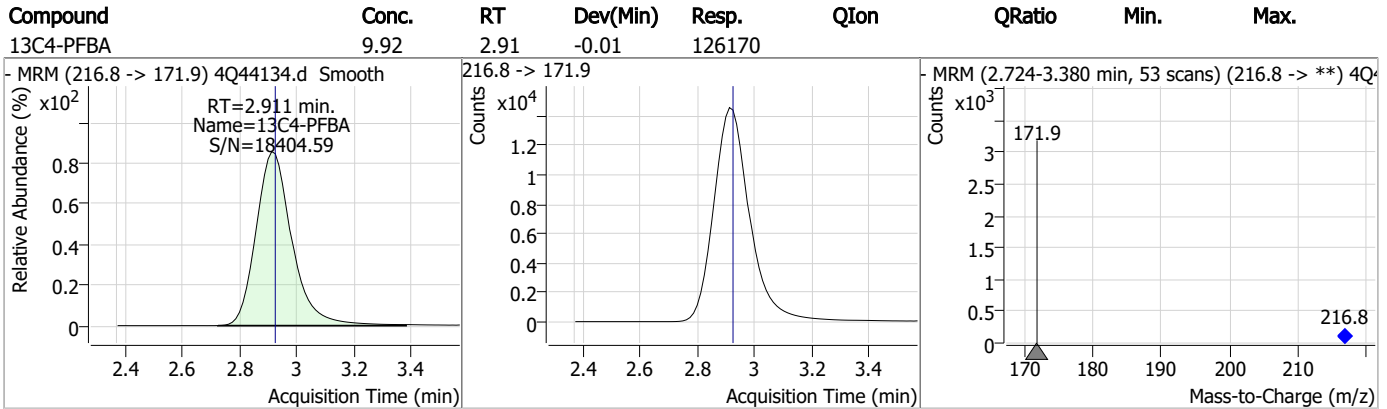
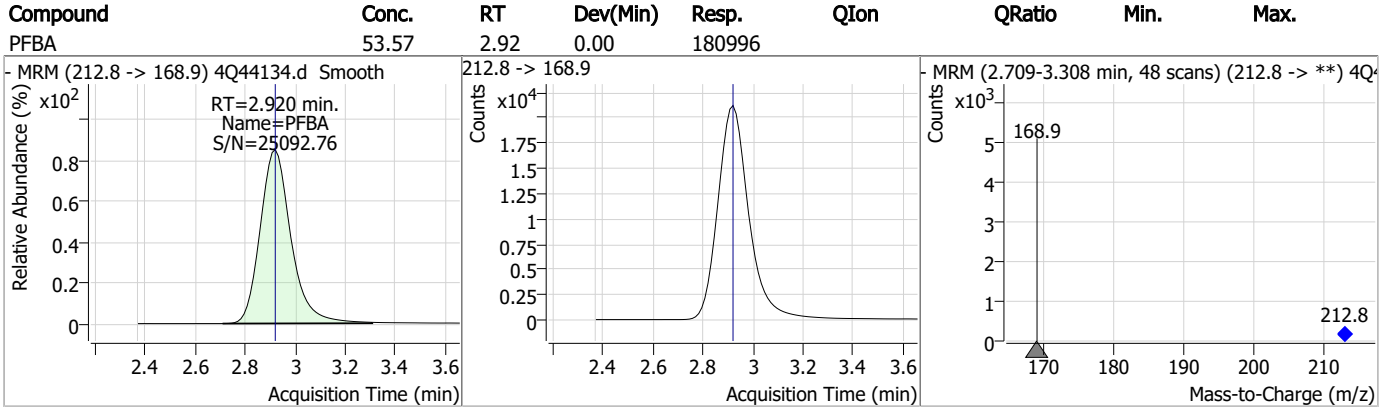
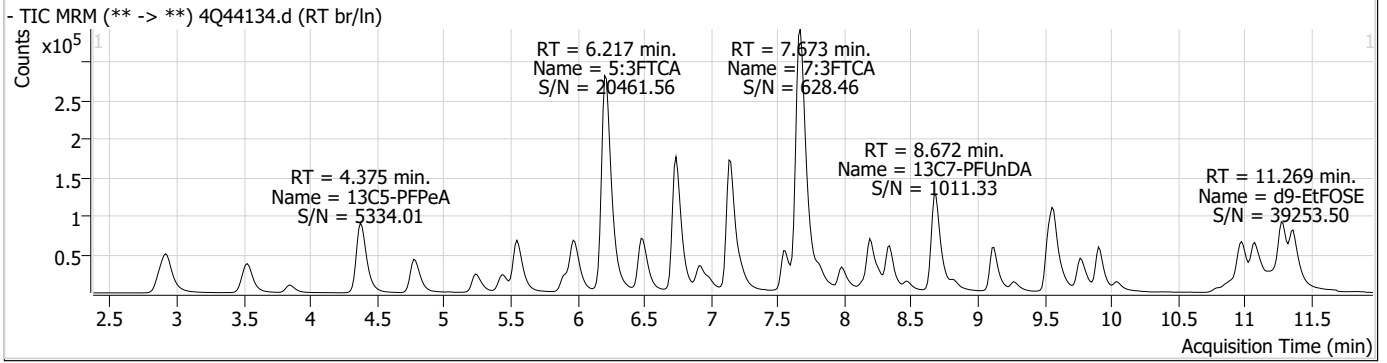
Perfluorinated Compounds by LC/MS/MS

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

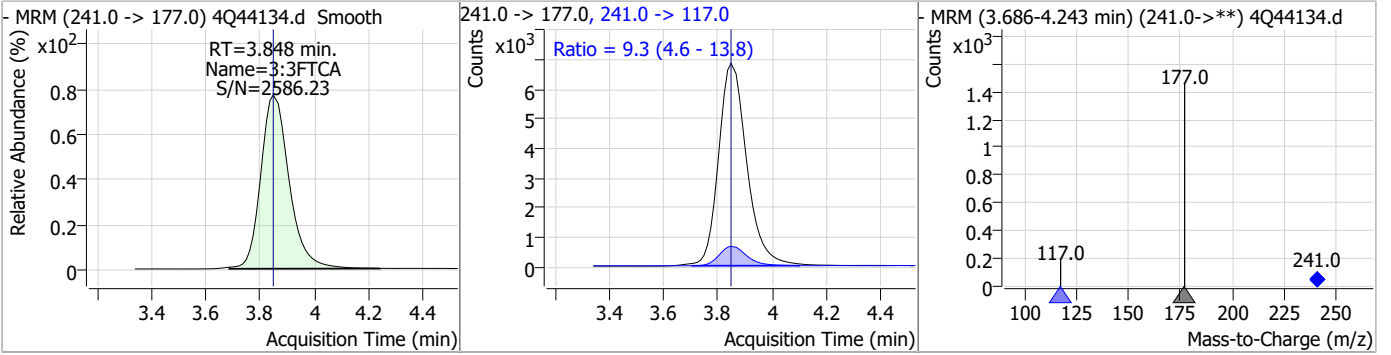
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Perfluorinated Compounds by LC/MS/MS

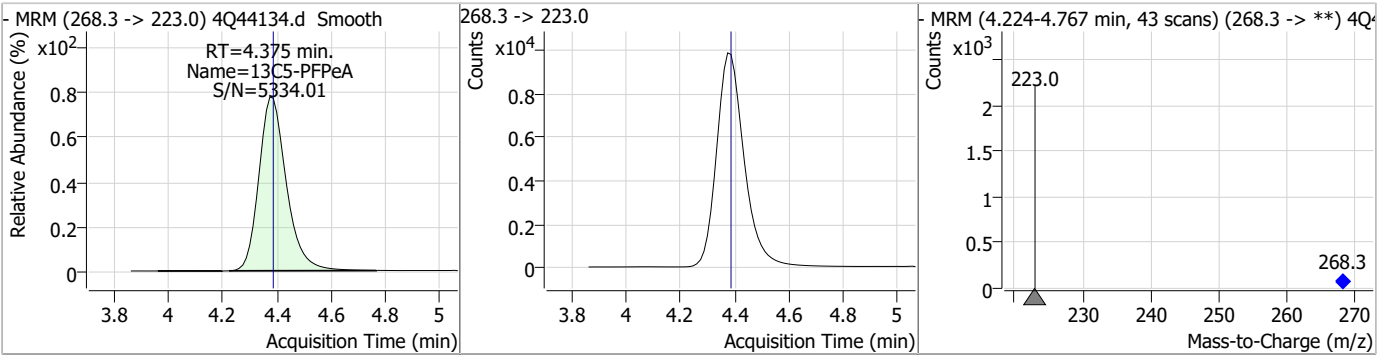


Perfluorinated Compounds by LC/MS/MS

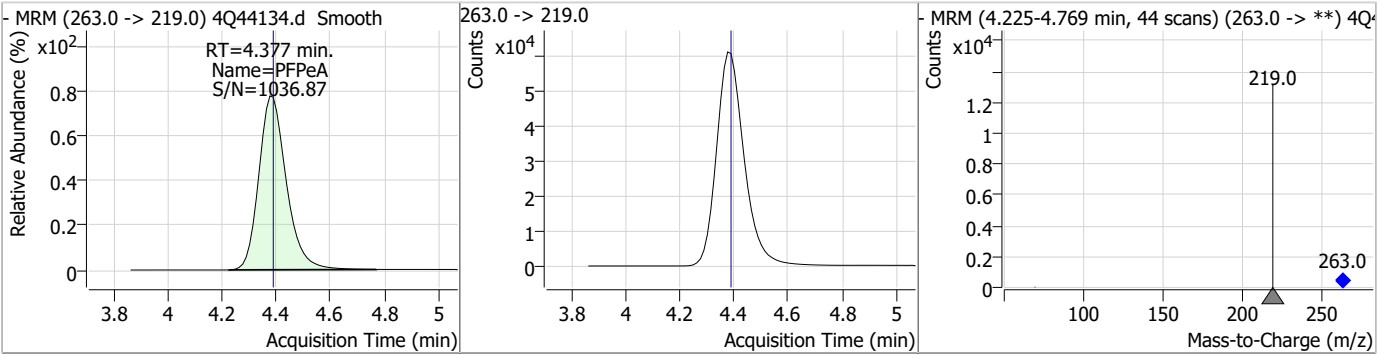
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	67.59	3.85	0.00	49717	241.0 -> 117.0	9.3	4.6	13.8



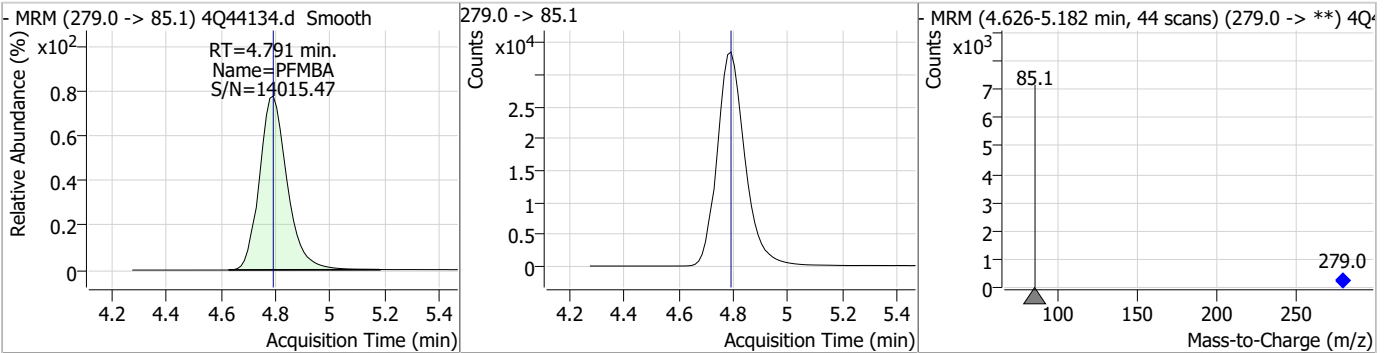
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.27	4.37	-0.01	69483				



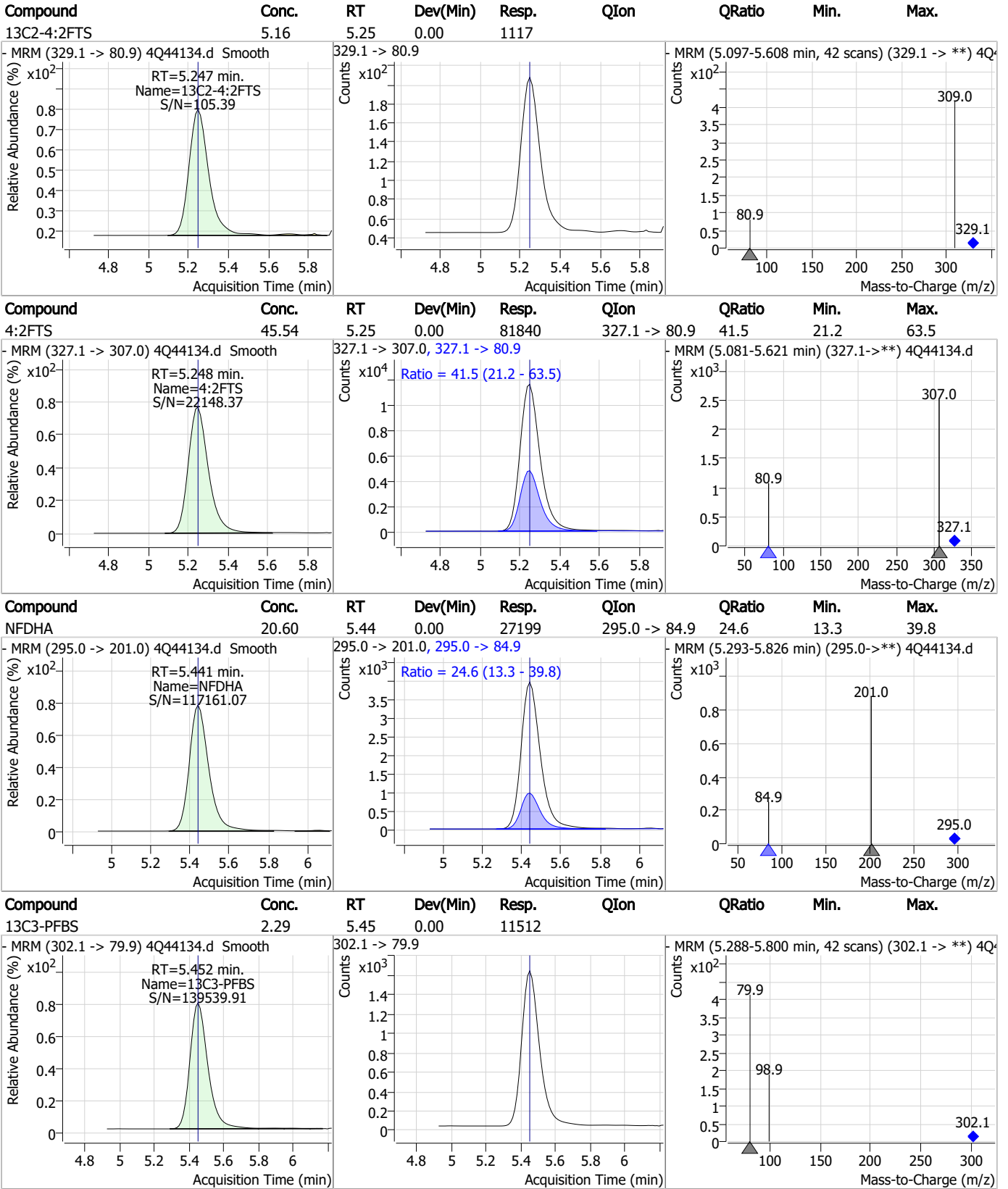
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	25.64	4.38	-0.01	428622				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	25.40	4.79	0.00	236941				



Perfluorinated Compounds by LC/MS/MS



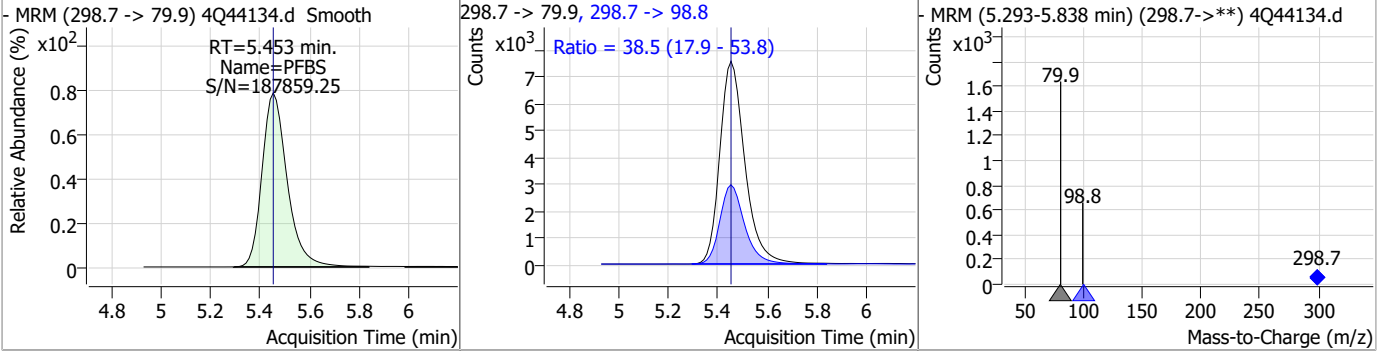
7.6.4

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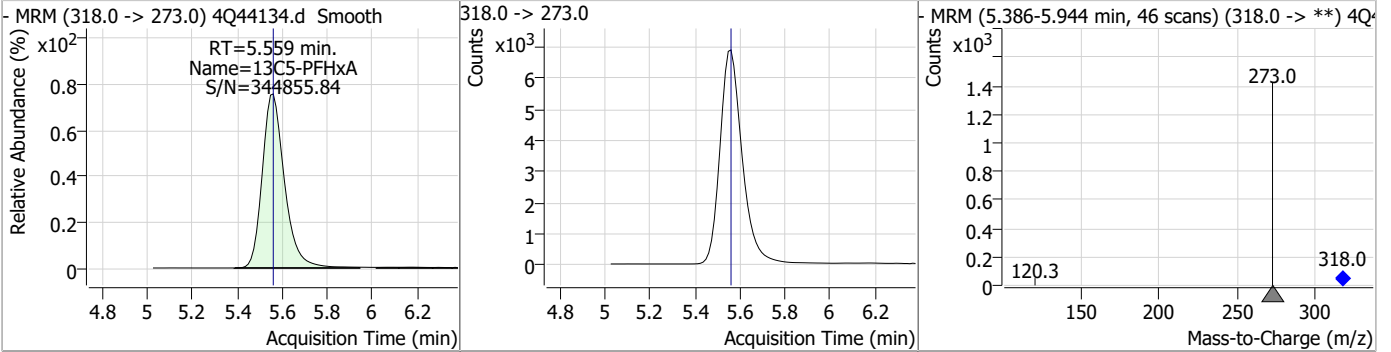


Perfluorinated Compounds by LC/MS/MS

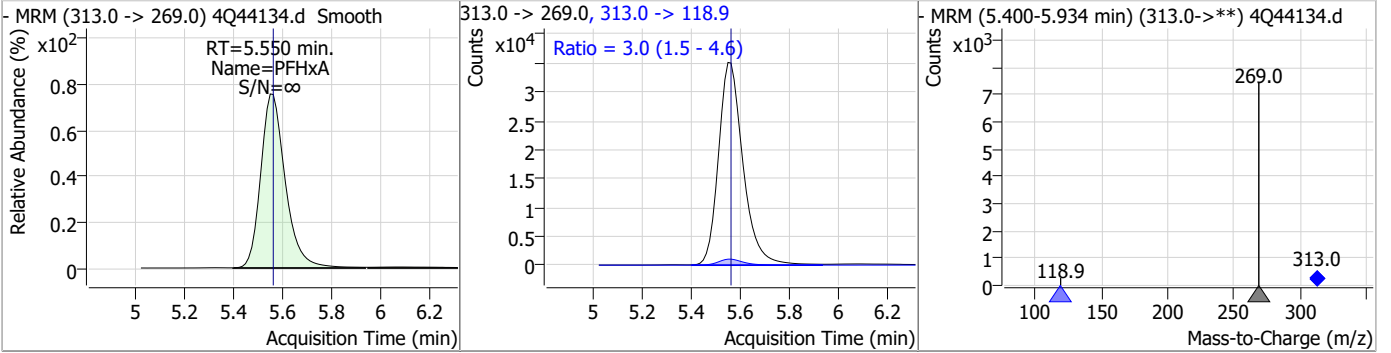
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	11.30	5.45	0.00	53374	298.7 -> 98.8	38.5	17.9	53.8



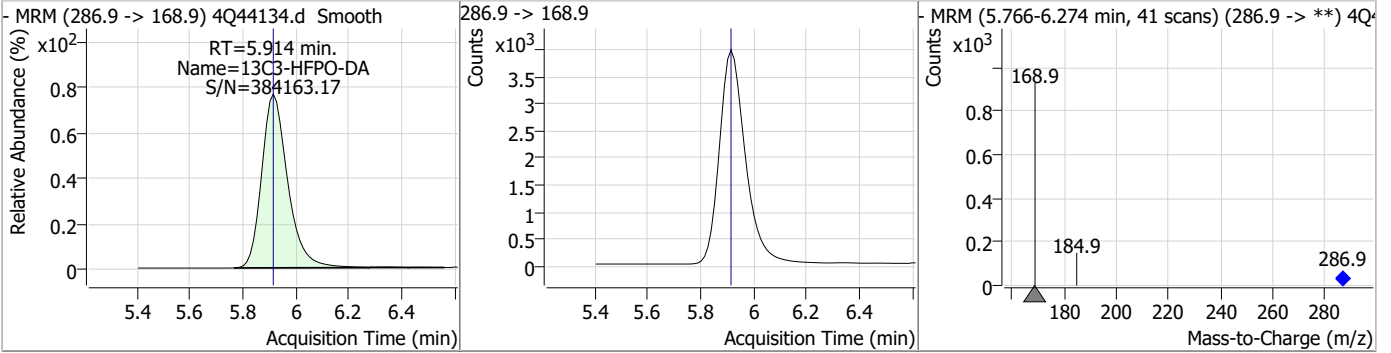
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.50	5.56	0.00	47203				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	13.10	5.55	-0.01	242218	313.0 -> 118.9	3.0	1.5	4.6

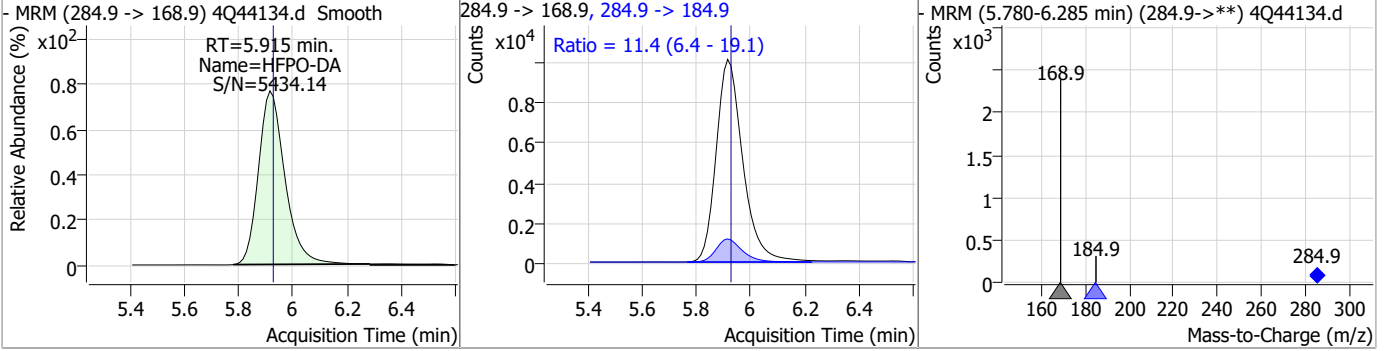


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.52	5.91	0.00	26832				

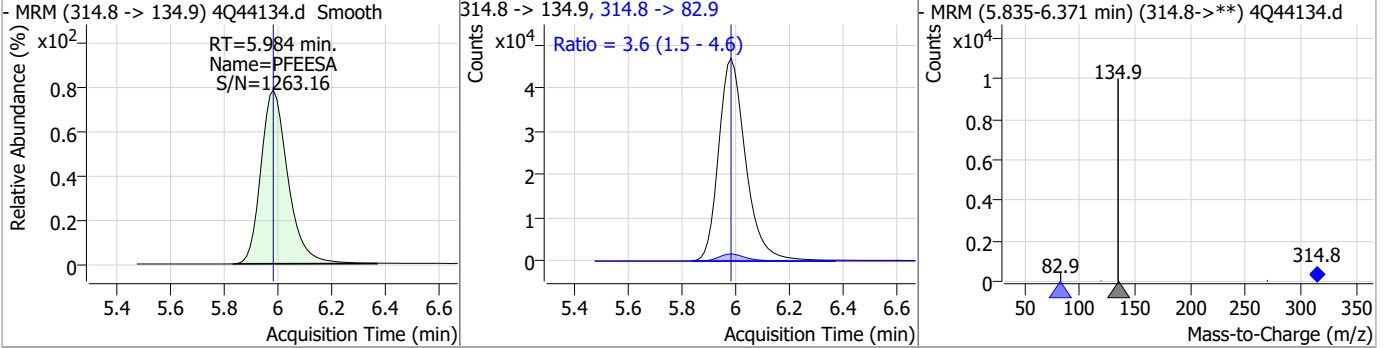


Perfluorinated Compounds by LC/MS/MS

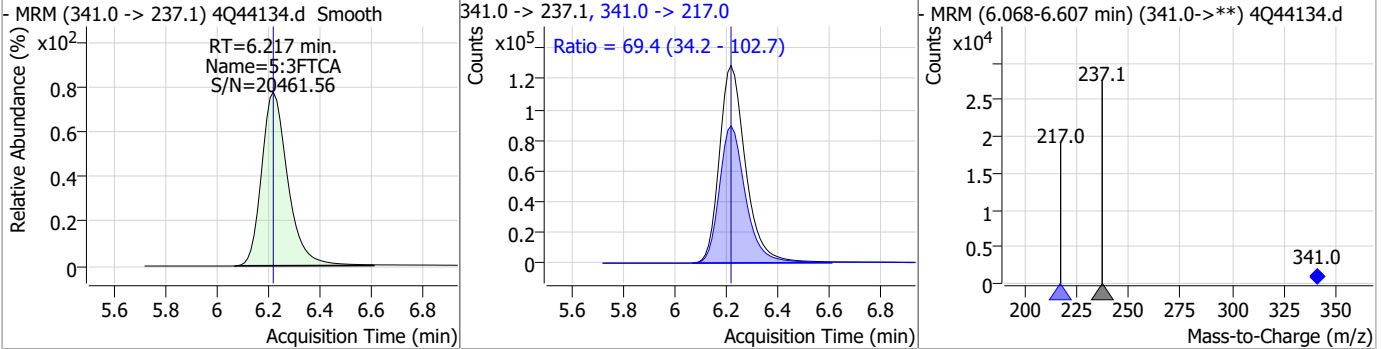
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	26.77	5.92	-0.01	68636	284.9 -> 184.9	11.4	6.4	19.1



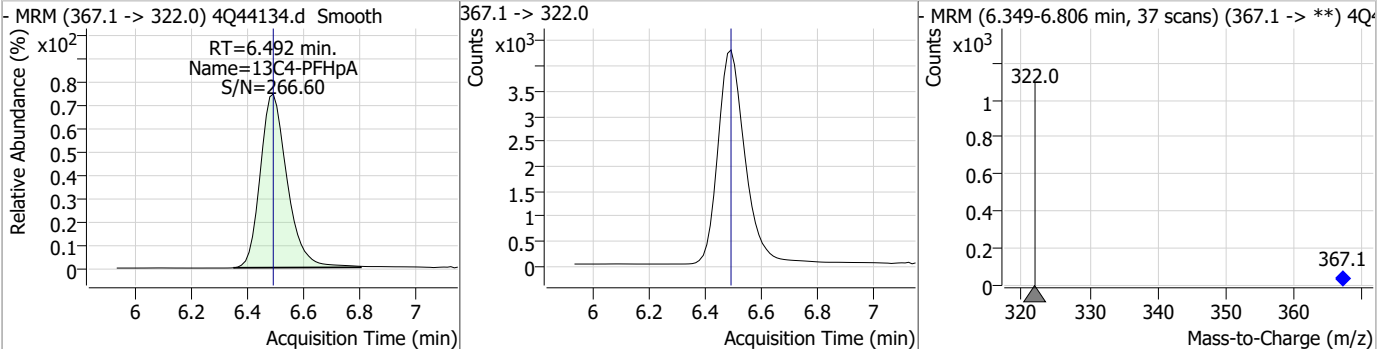
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	23.28	5.98	0.00	325858	314.8 -> 82.9	3.6	1.5	4.6



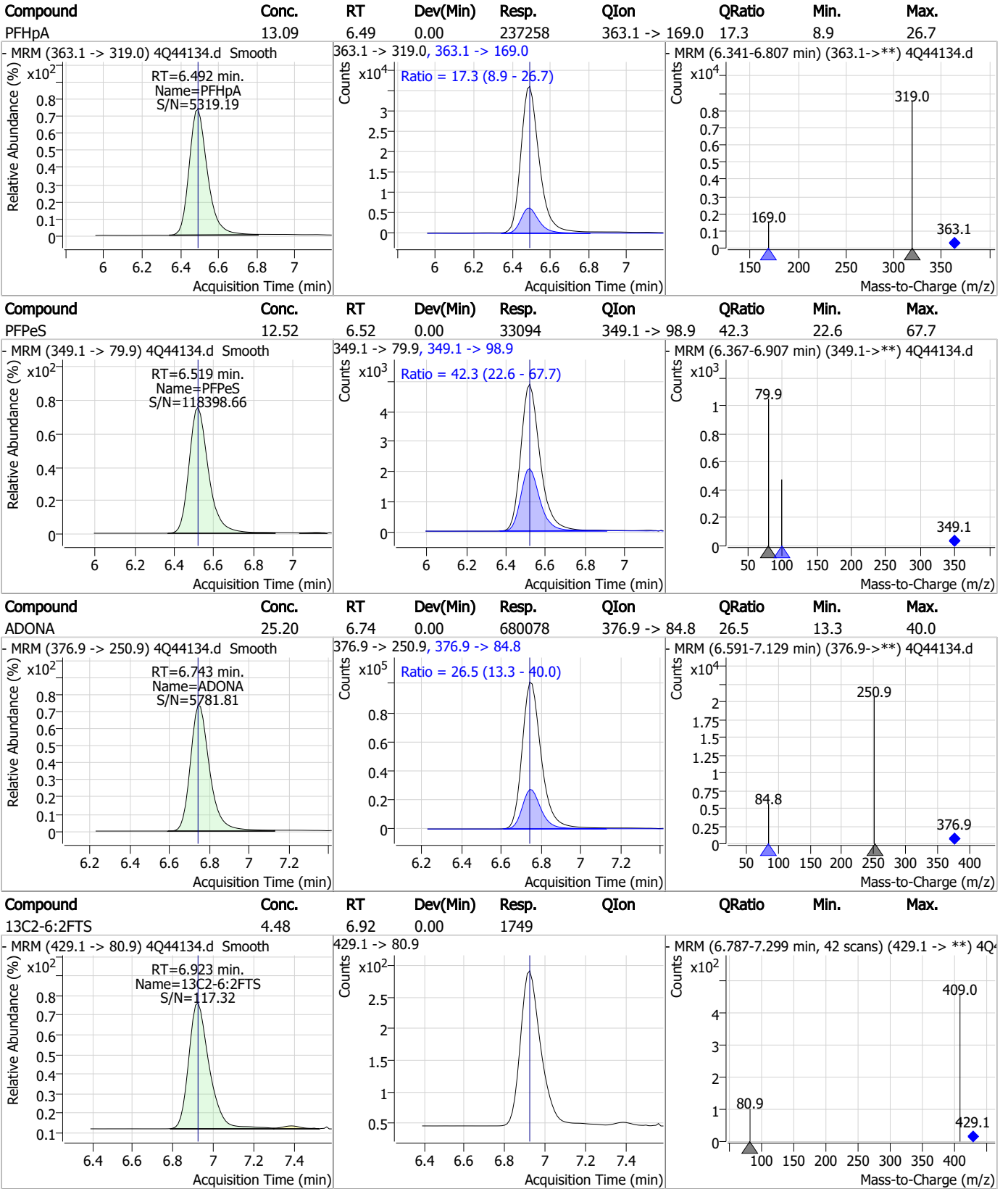
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	360.33	6.22	0.00	904267	341.0 -> 217.0	69.4	34.2	102.7



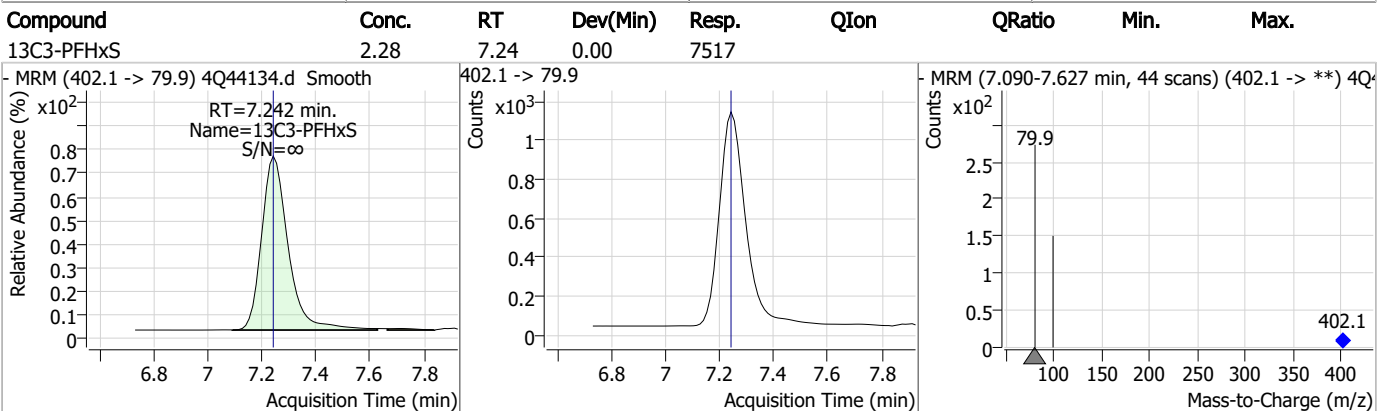
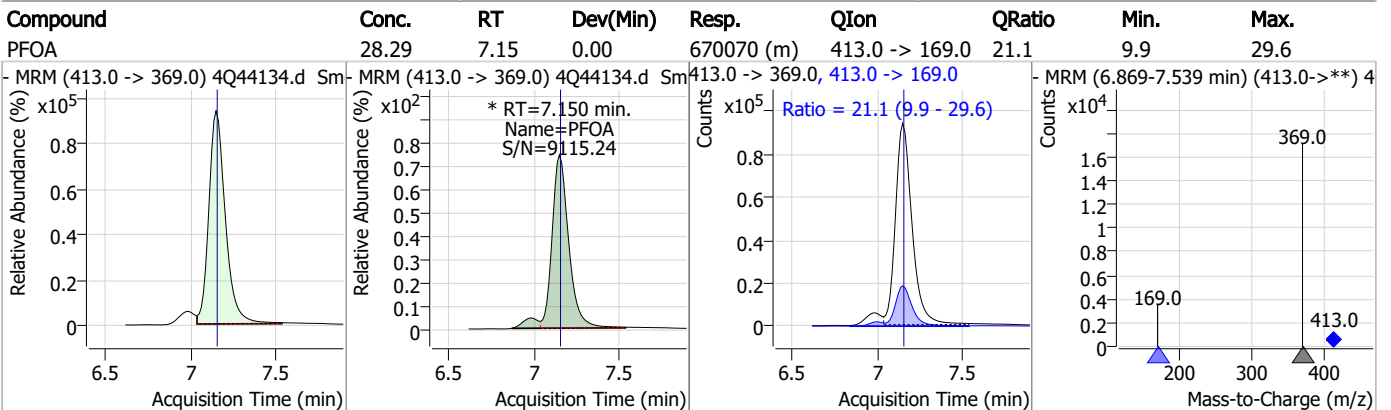
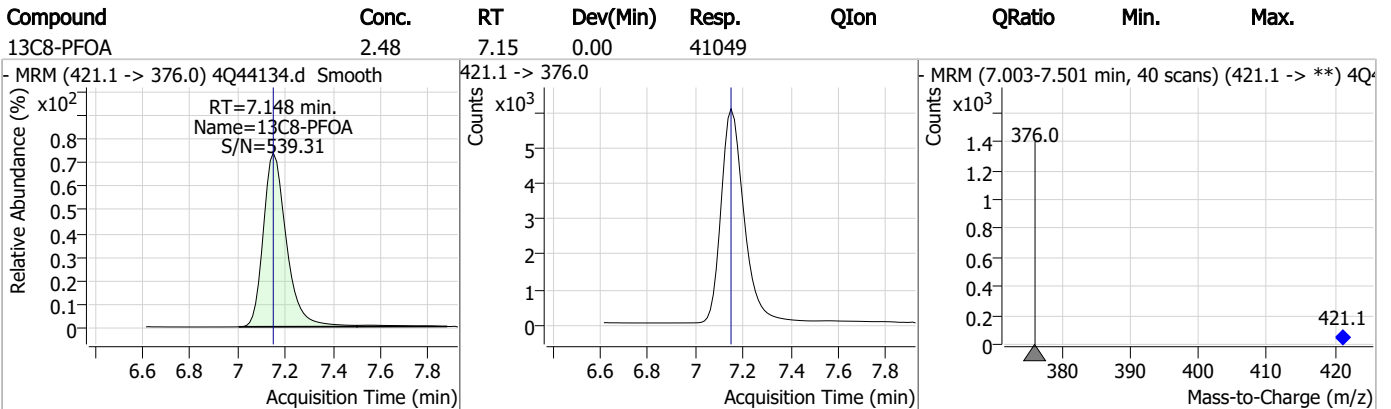
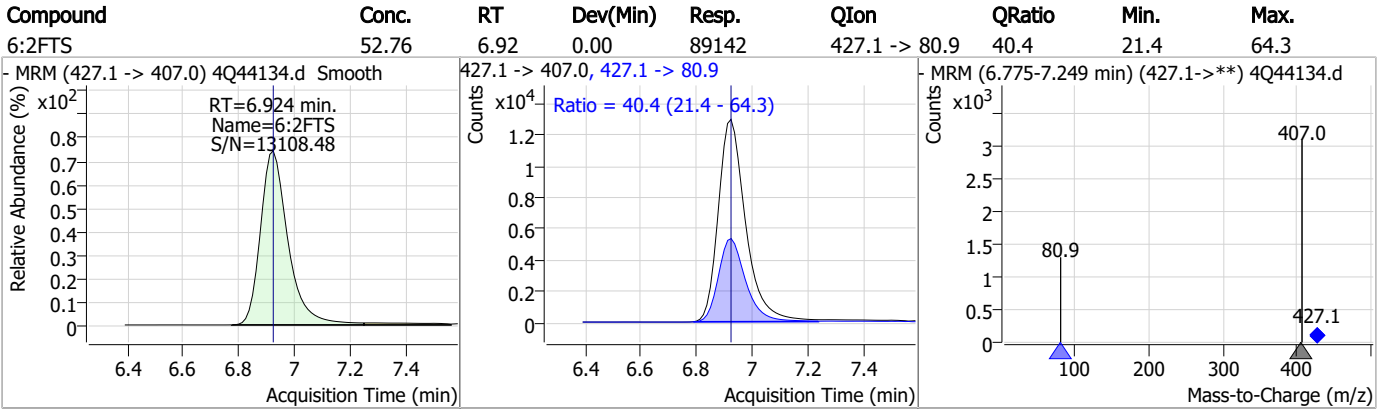
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.60	6.49	0.00	28669	367.1 -> 322.0			



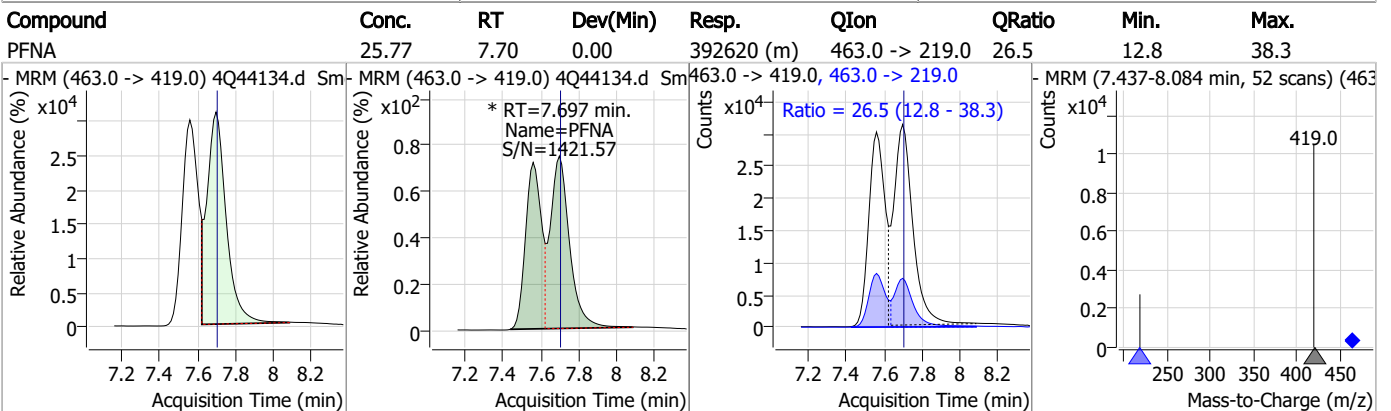
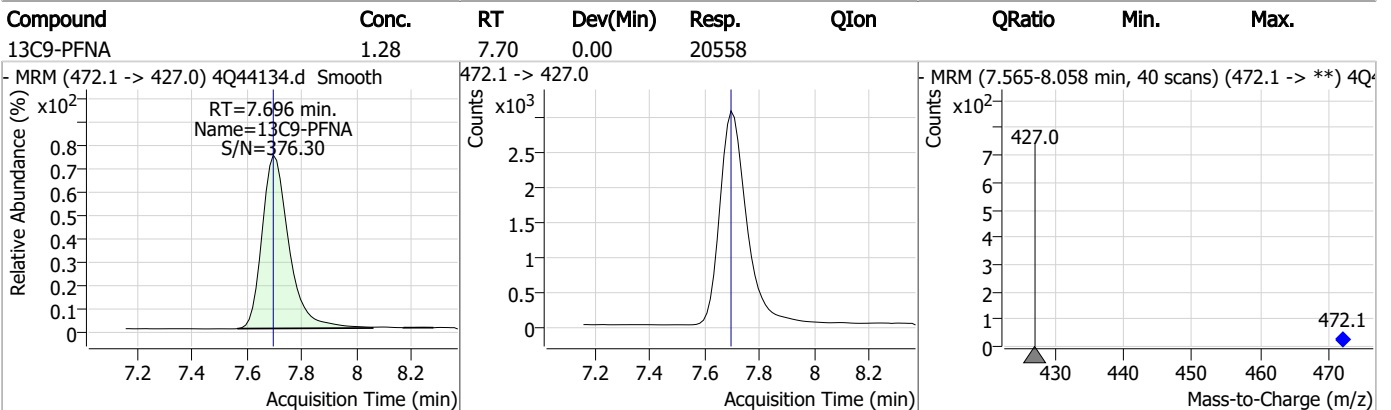
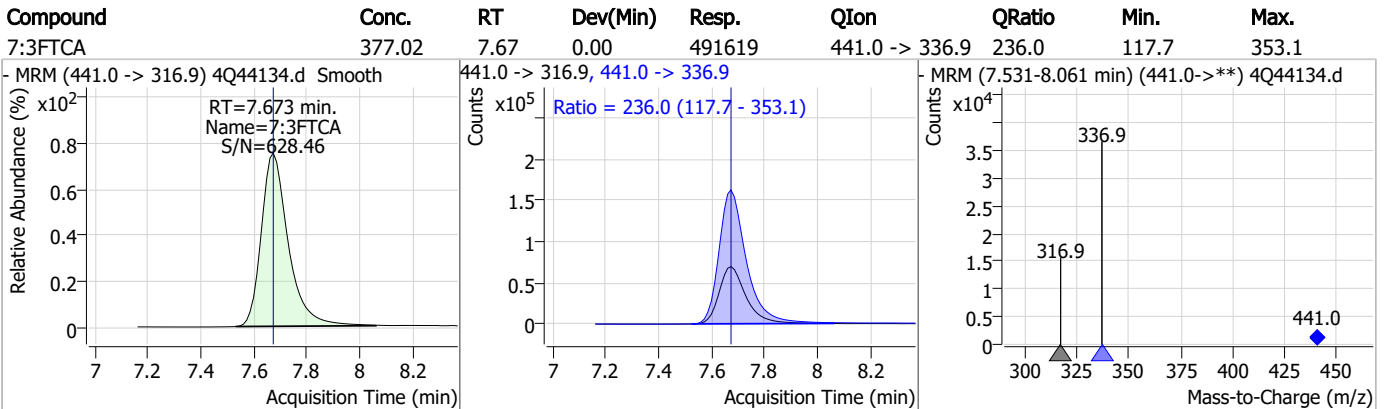
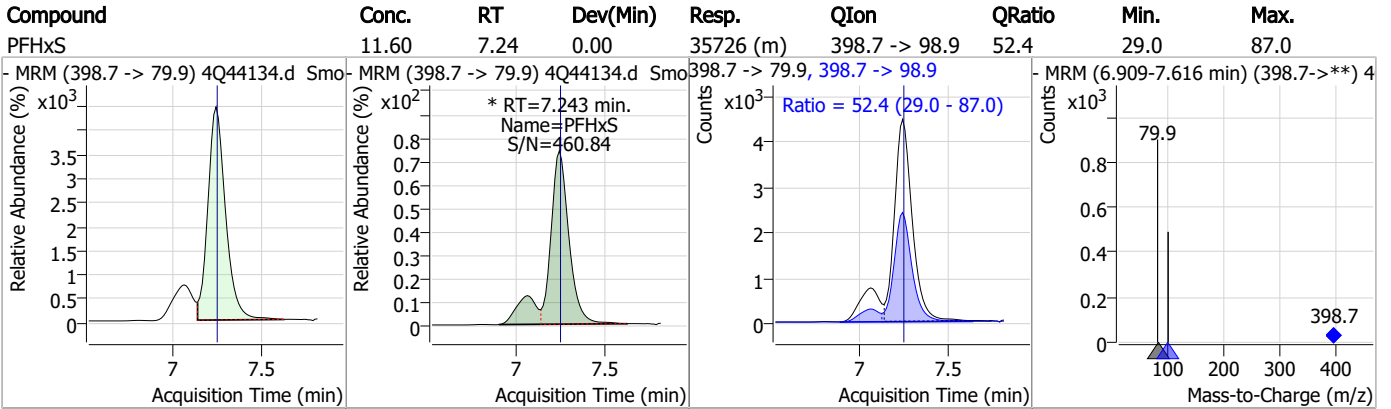
Perfluorinated Compounds by LC/MS/MS



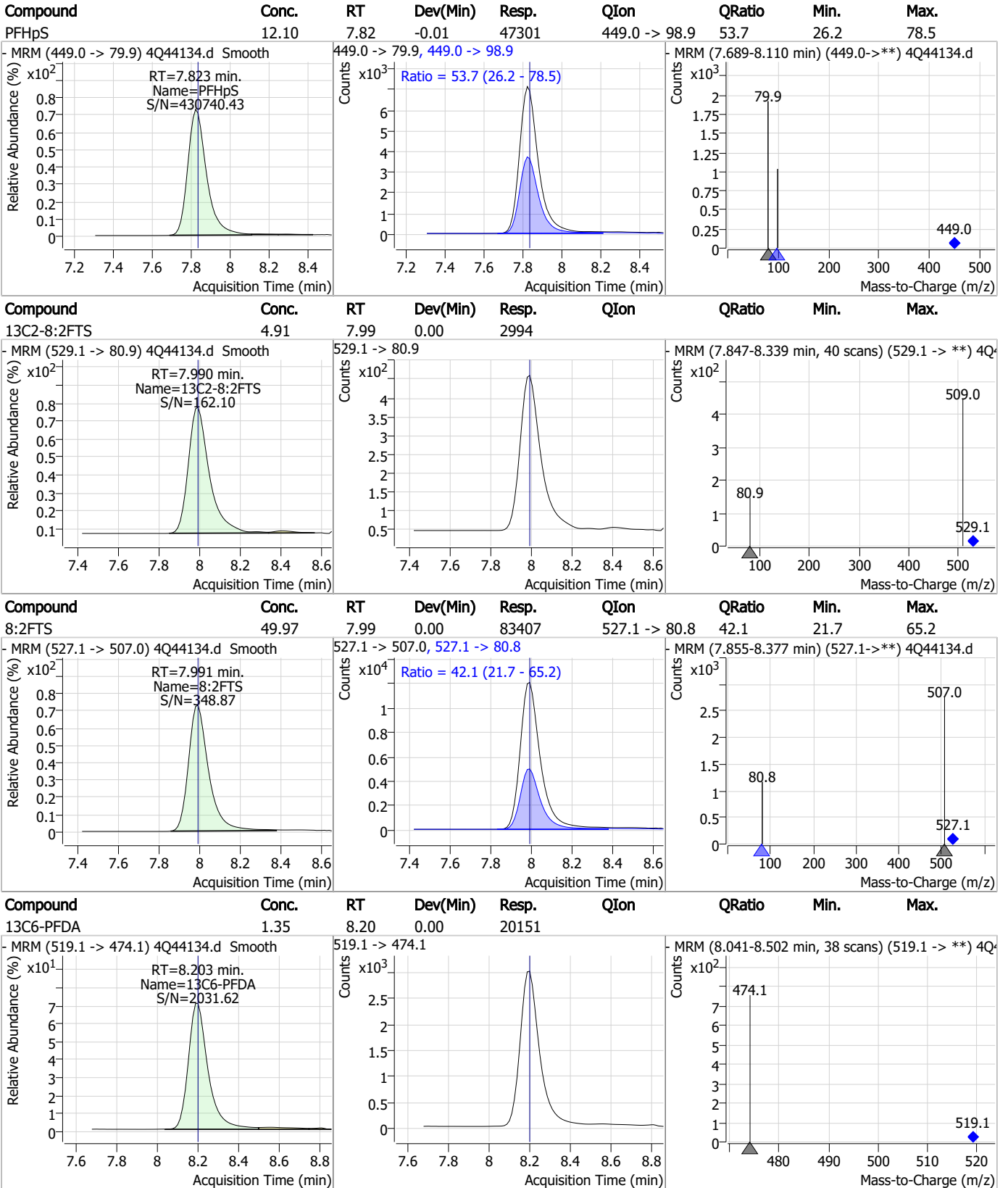
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



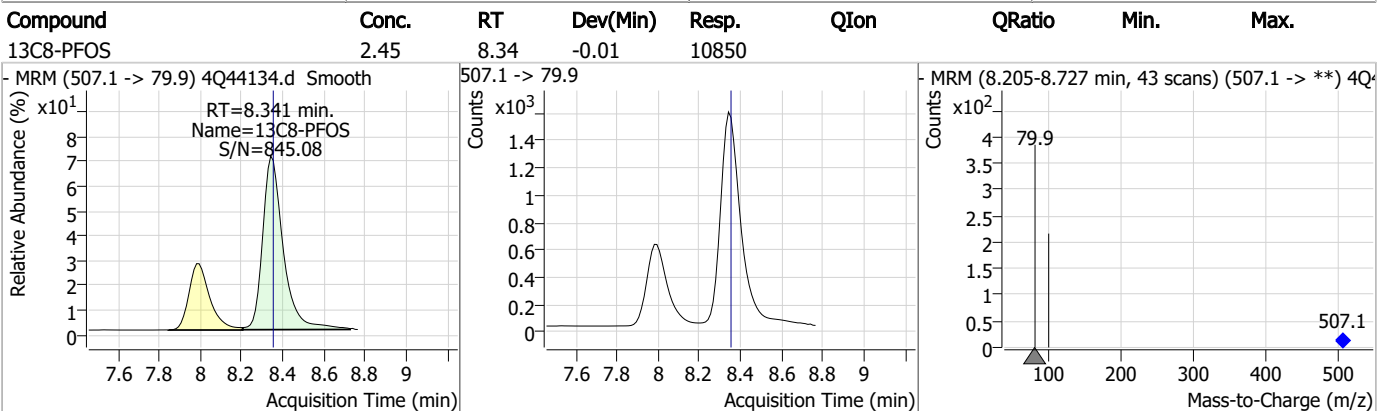
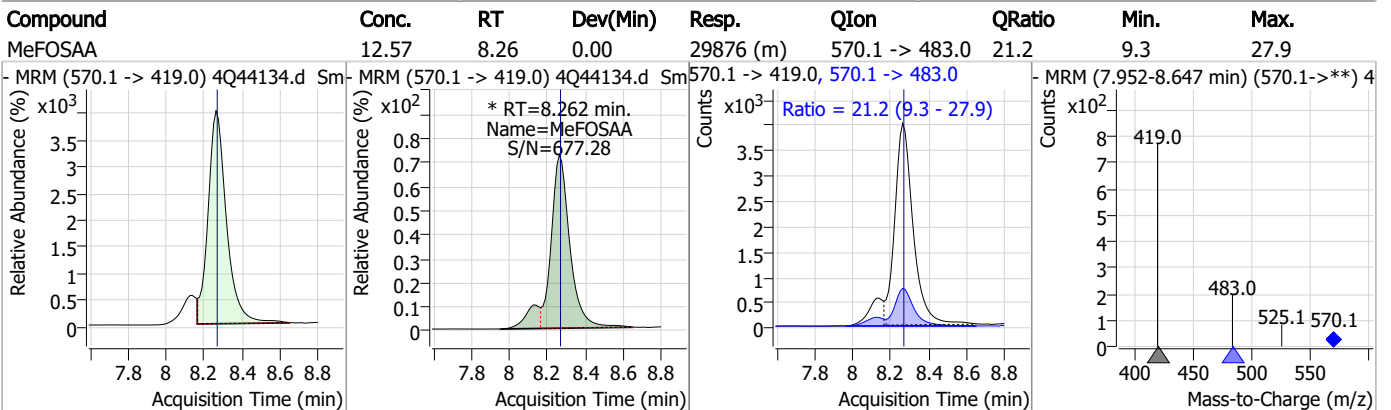
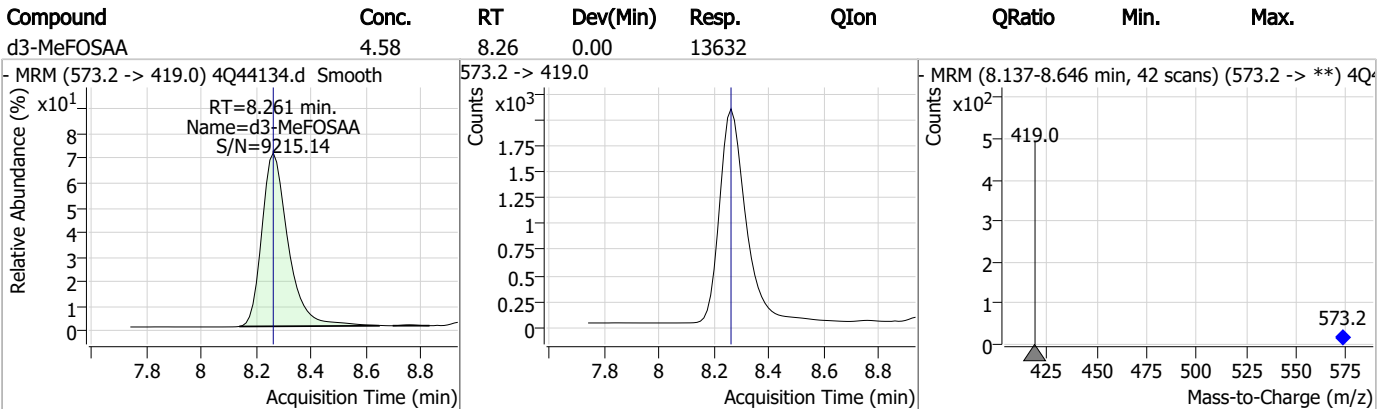
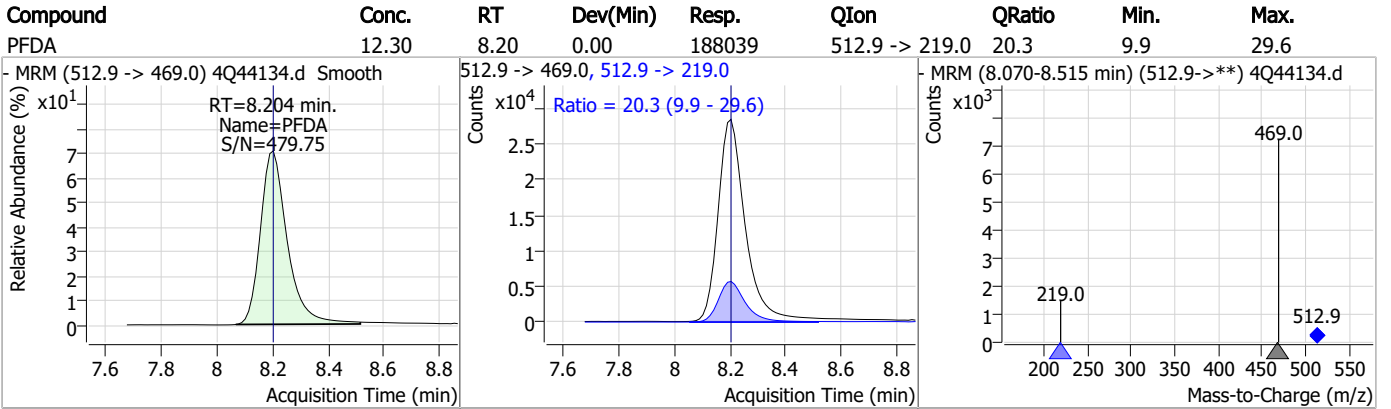
Perfluorinated Compounds by LC/MS/MS



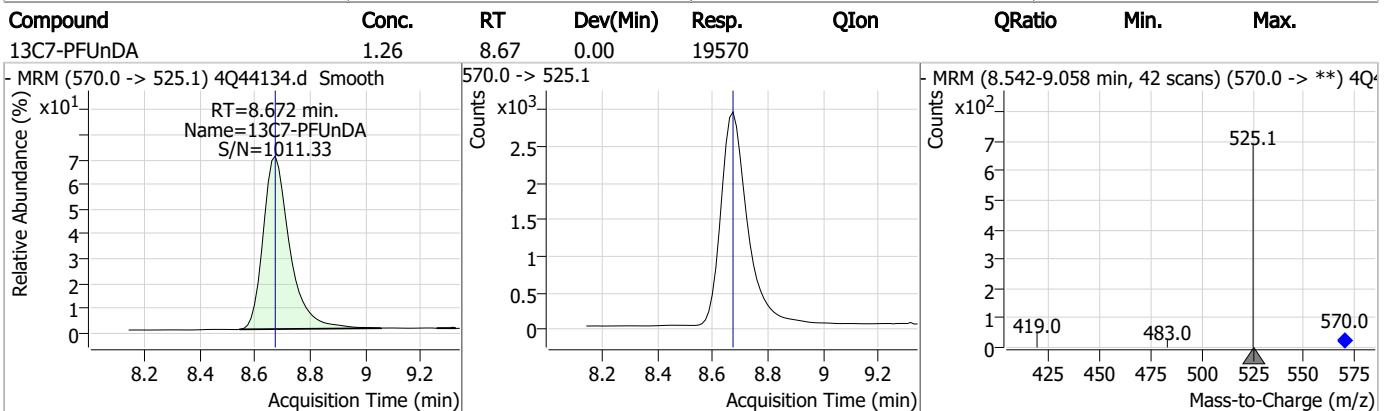
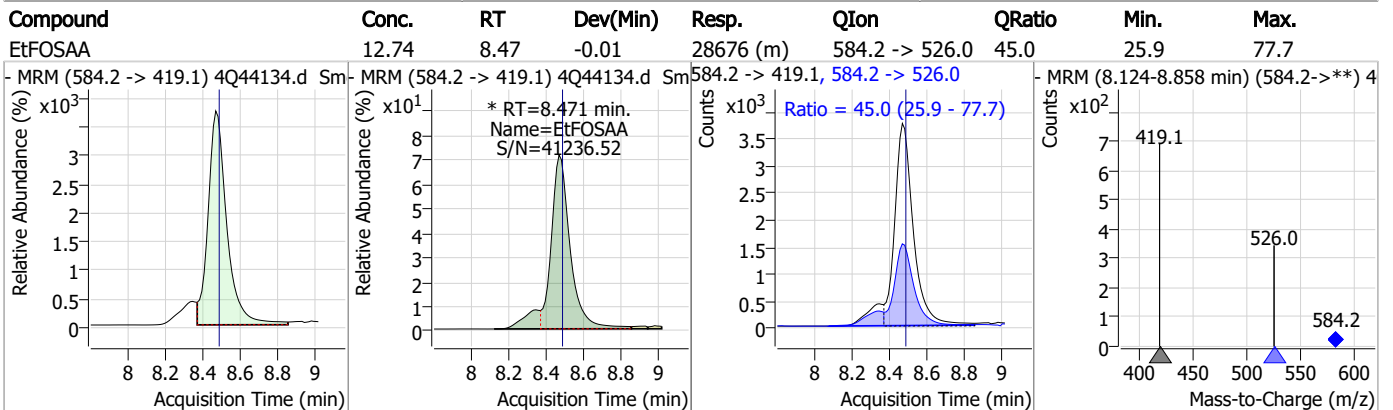
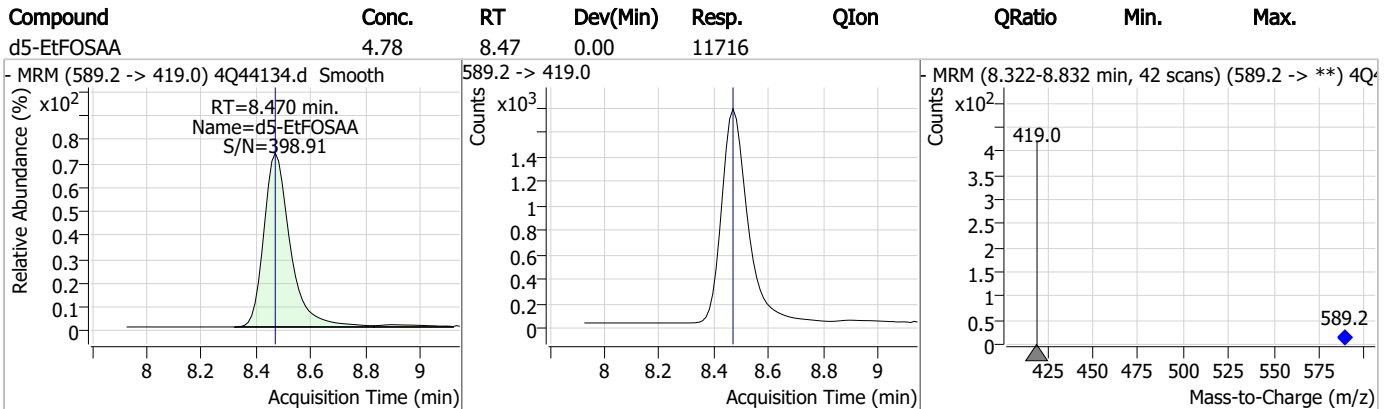
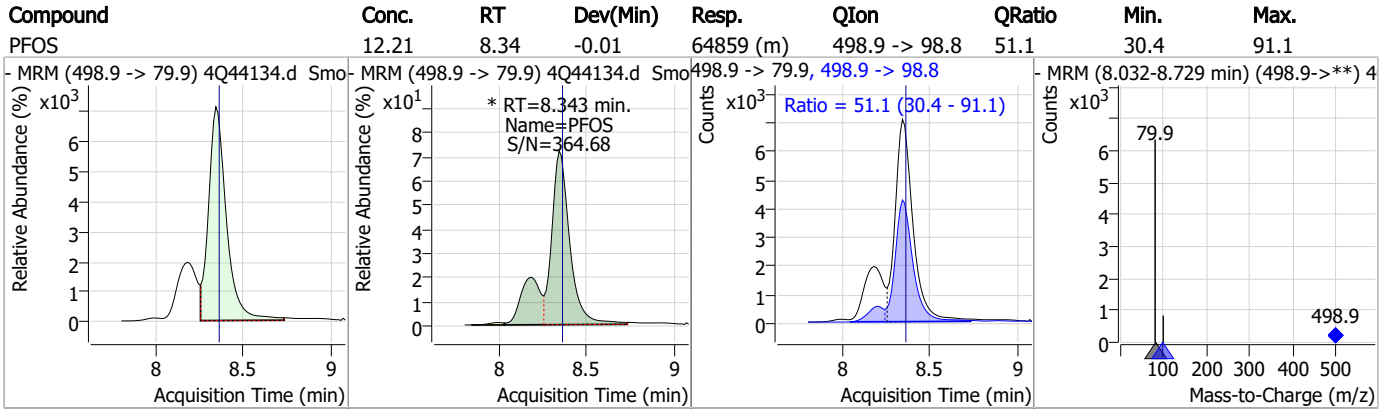
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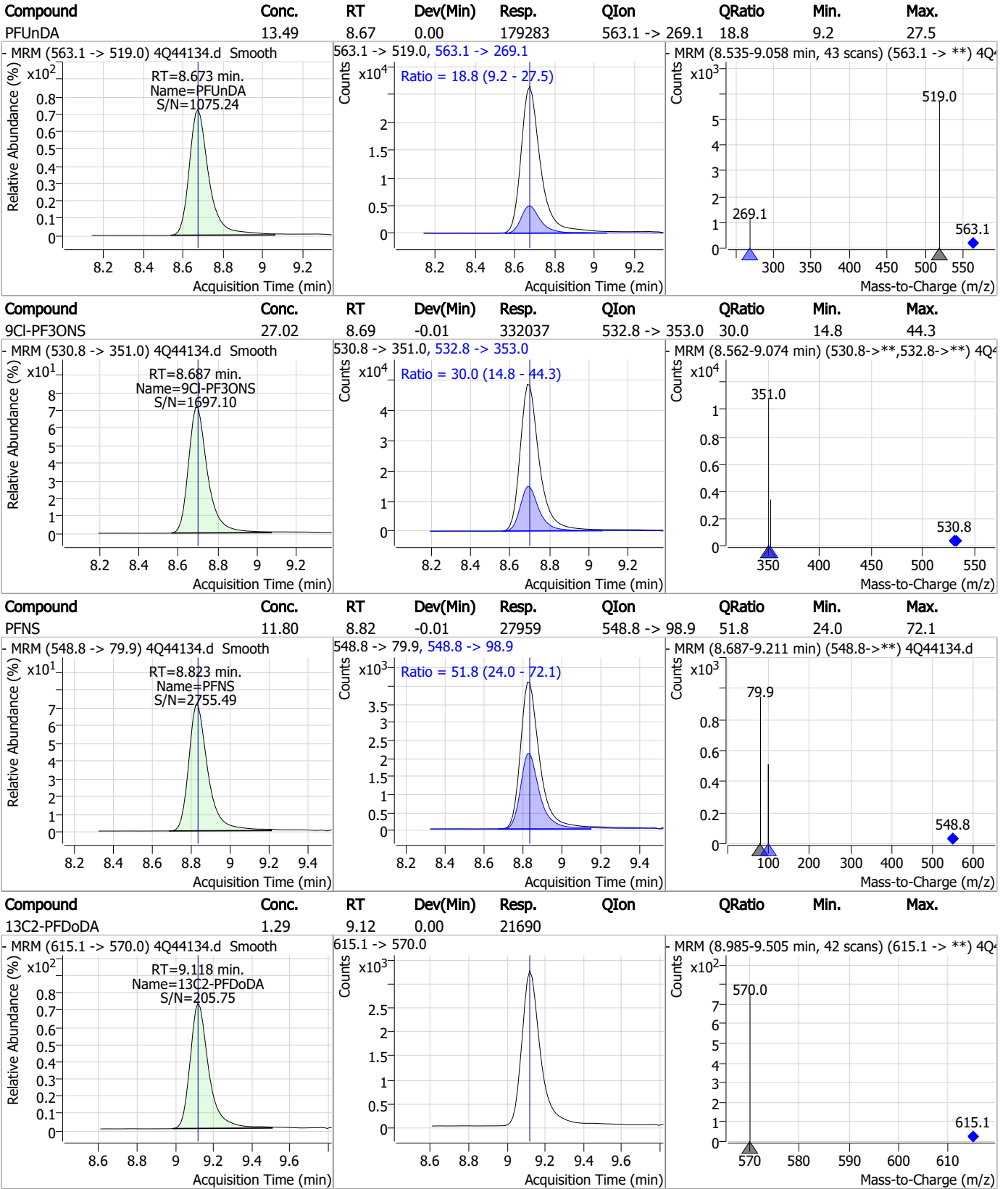
Perfluorinated Compounds by LC/MS/MS



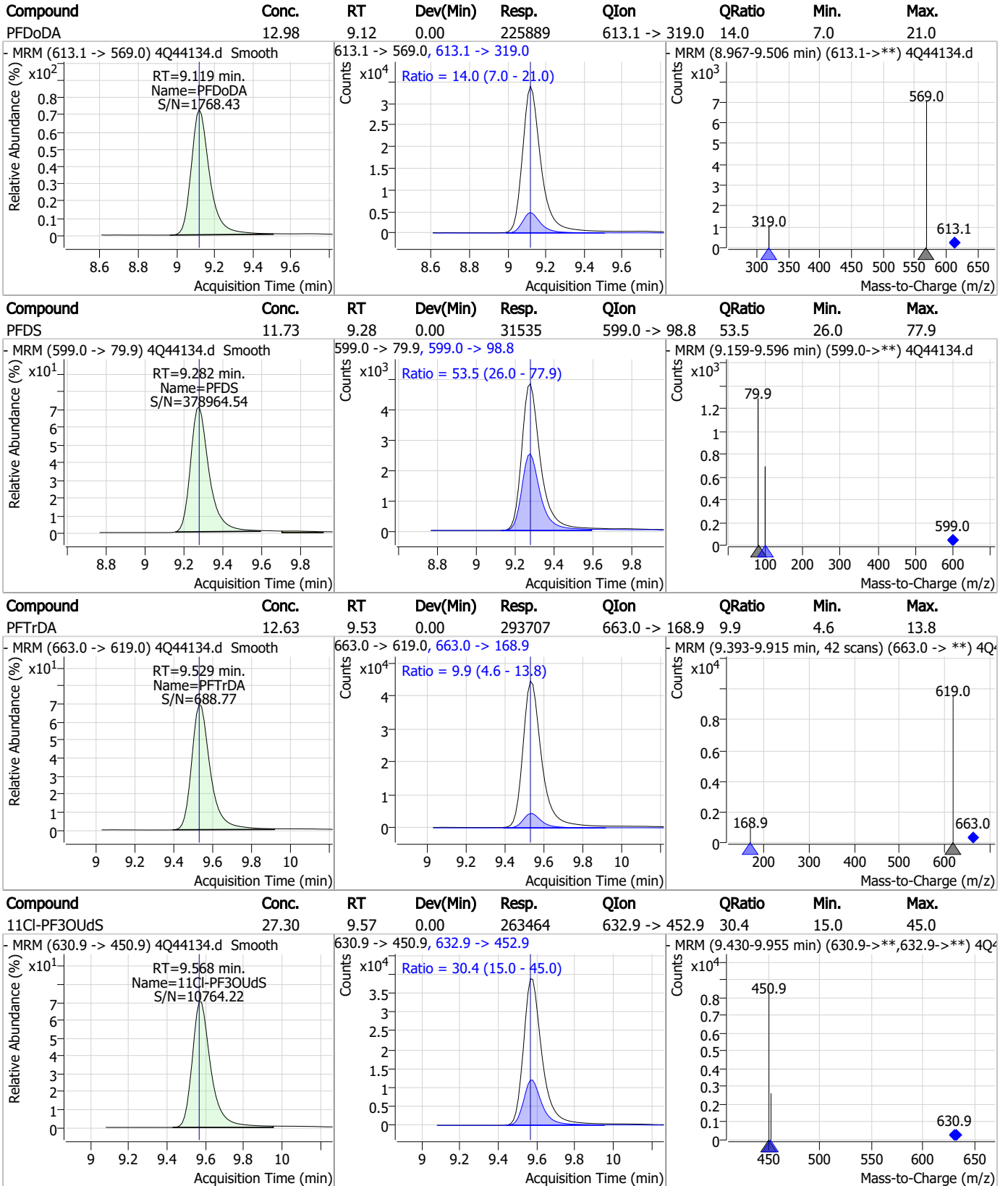
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

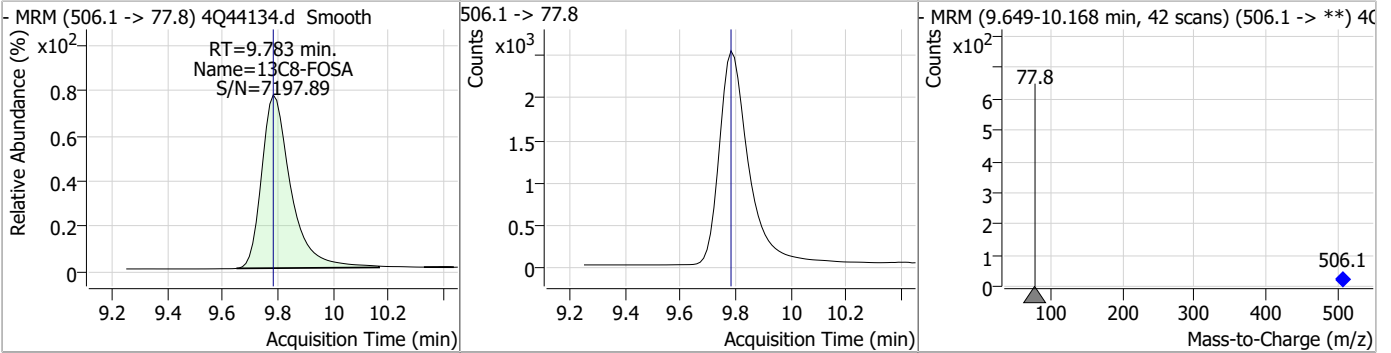


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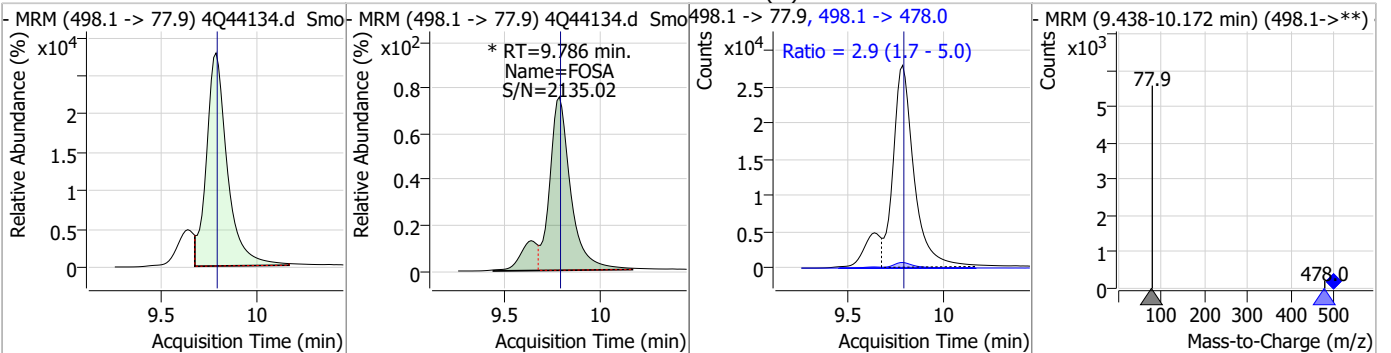


Perfluorinated Compounds by LC/MS/MS

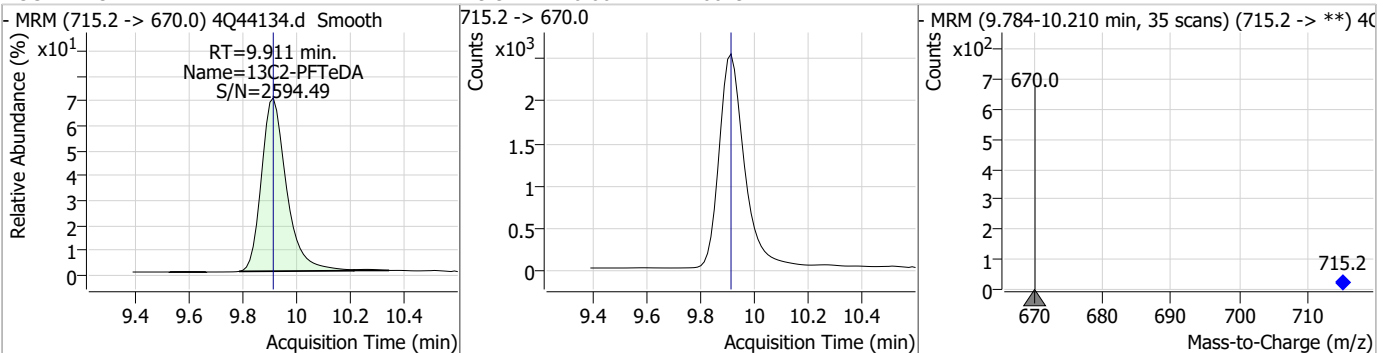
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.49	9.78	0.00	18380				



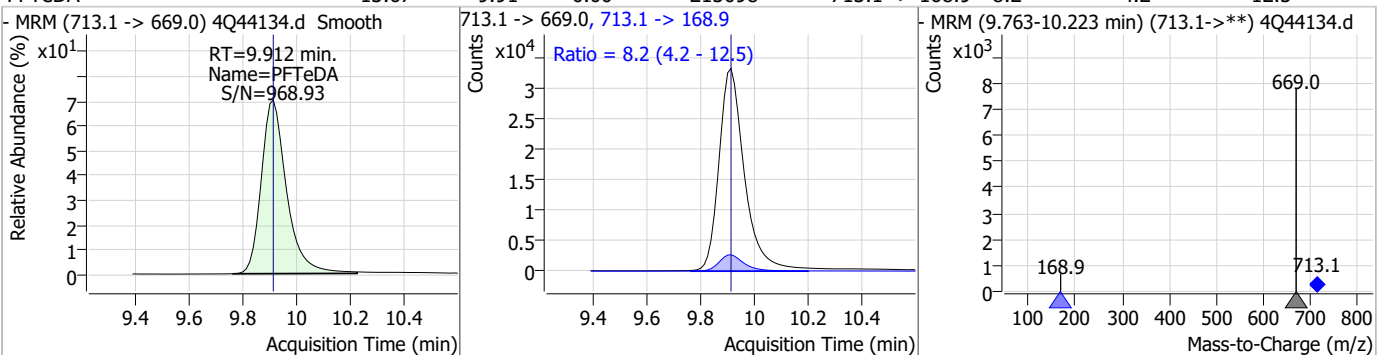
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	31.53	9.79	0.00	242817 (m)	498.1 -> 478.0	2.9	1.7	5.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.17	9.91	0.00	16079				

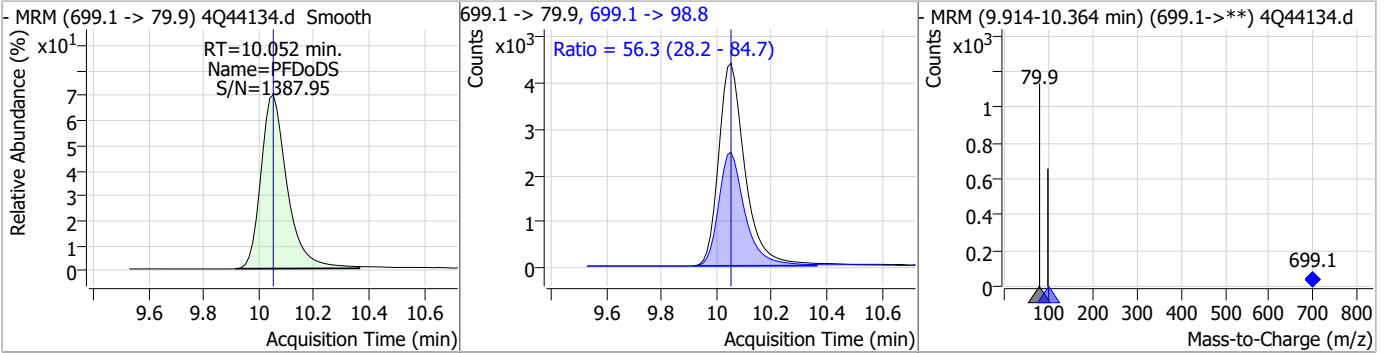


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	13.67	9.91	0.00	215098	713.1 -> 168.9	8.2	4.2	12.5

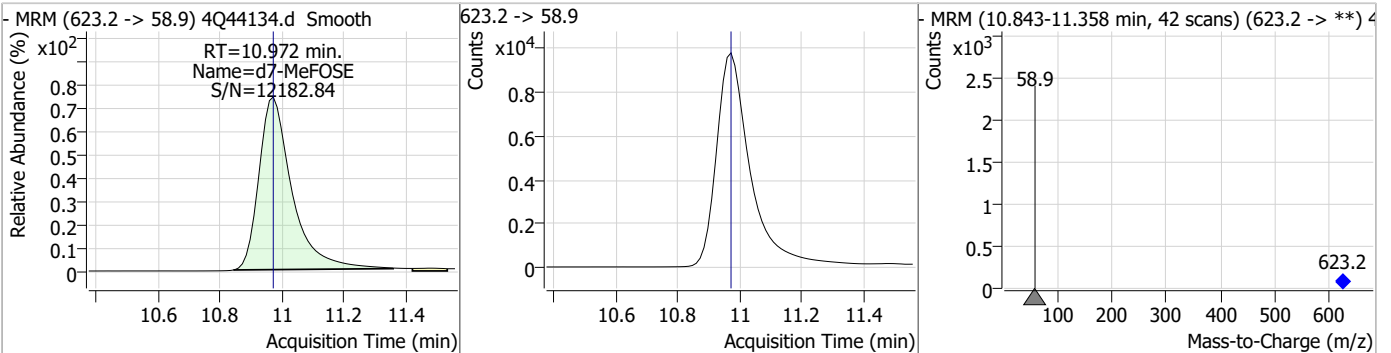


Perfluorinated Compounds by LC/MS/MS

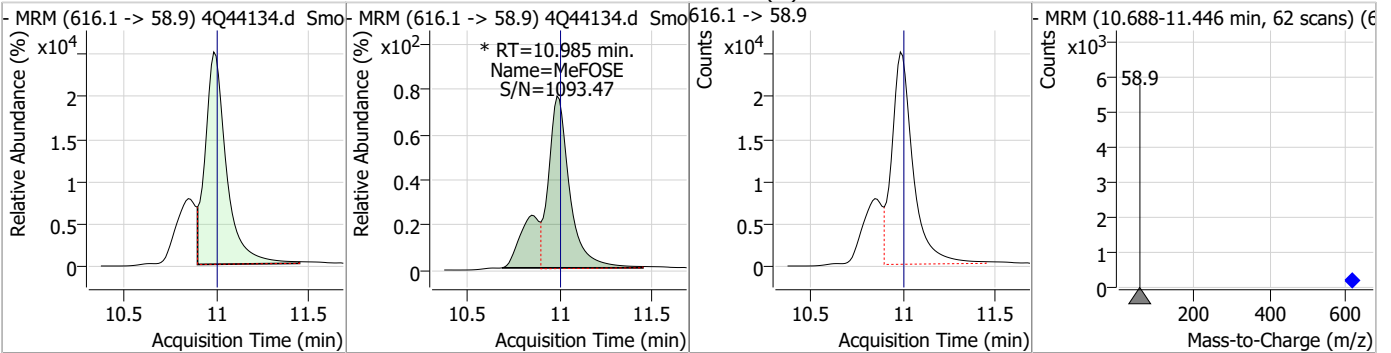
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	12.06	10.05	0.00	28924	699.1 -> 98.8	56.3	28.2	84.7



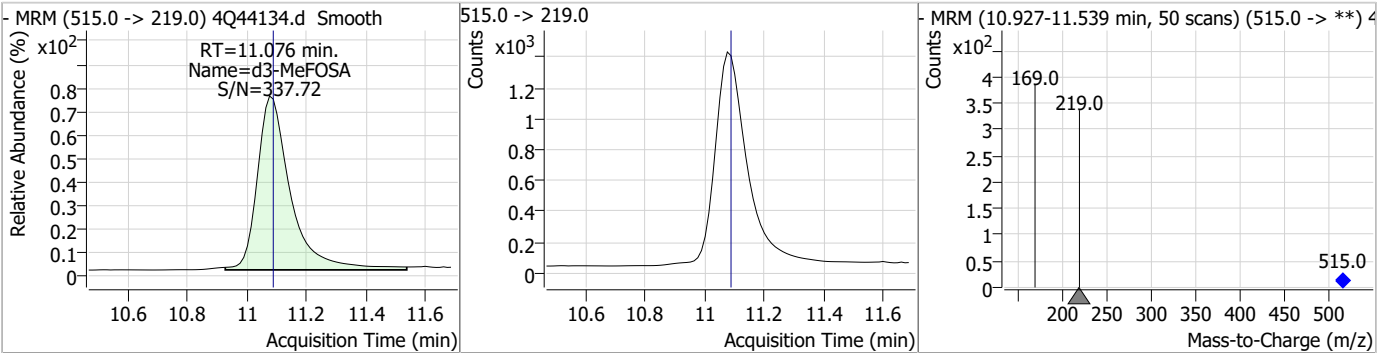
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.46	10.97	0.00	71352				



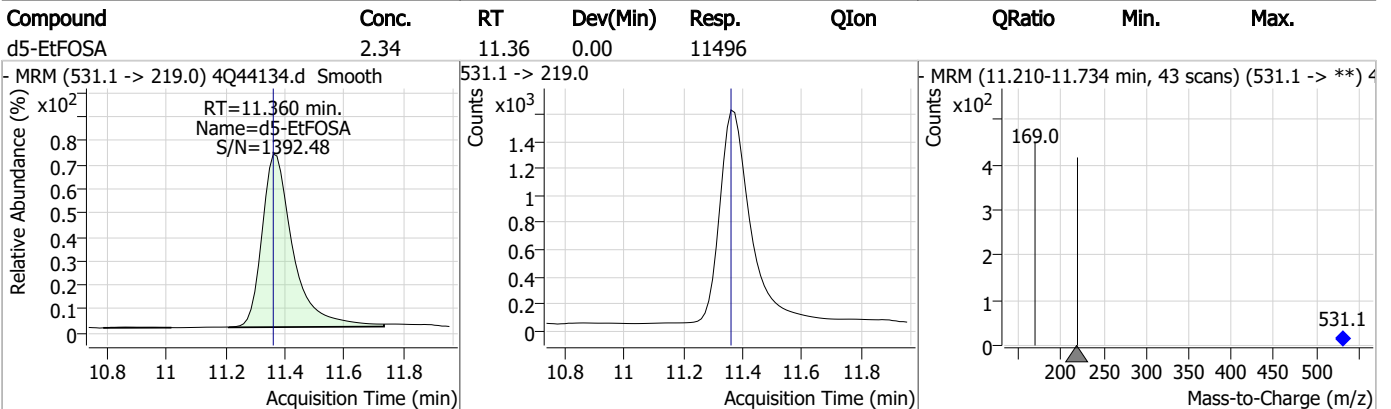
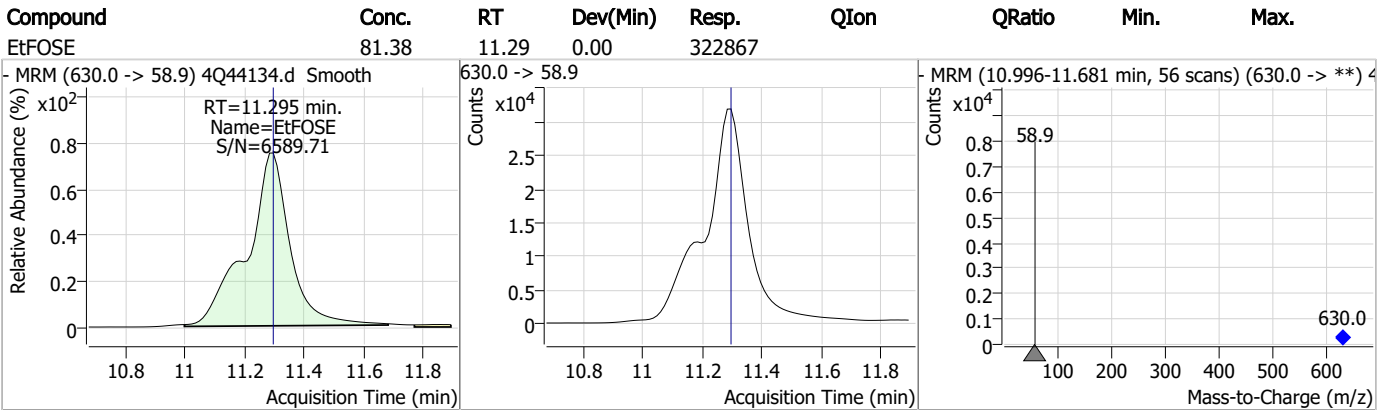
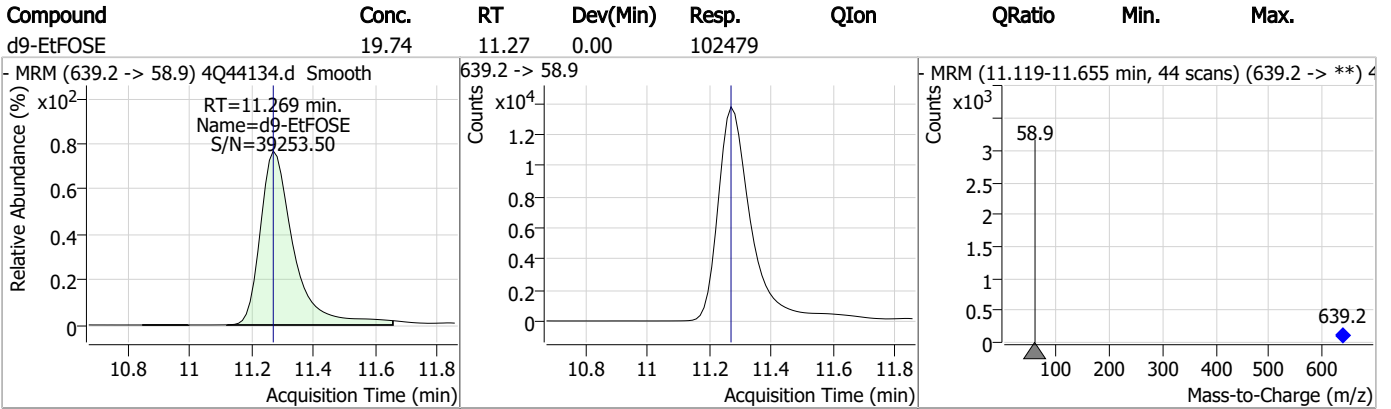
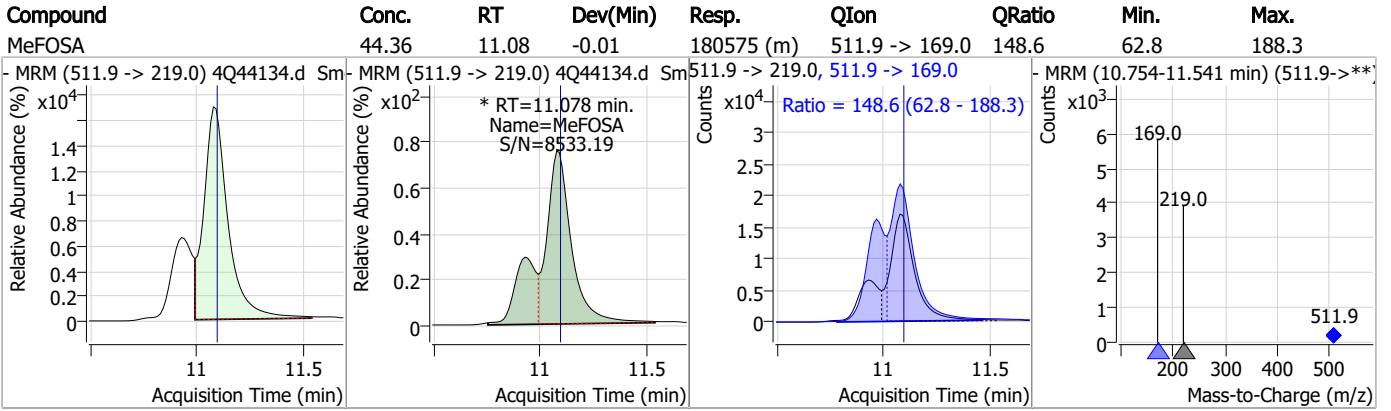
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	85.88	10.99	-0.01	251690 (m)				



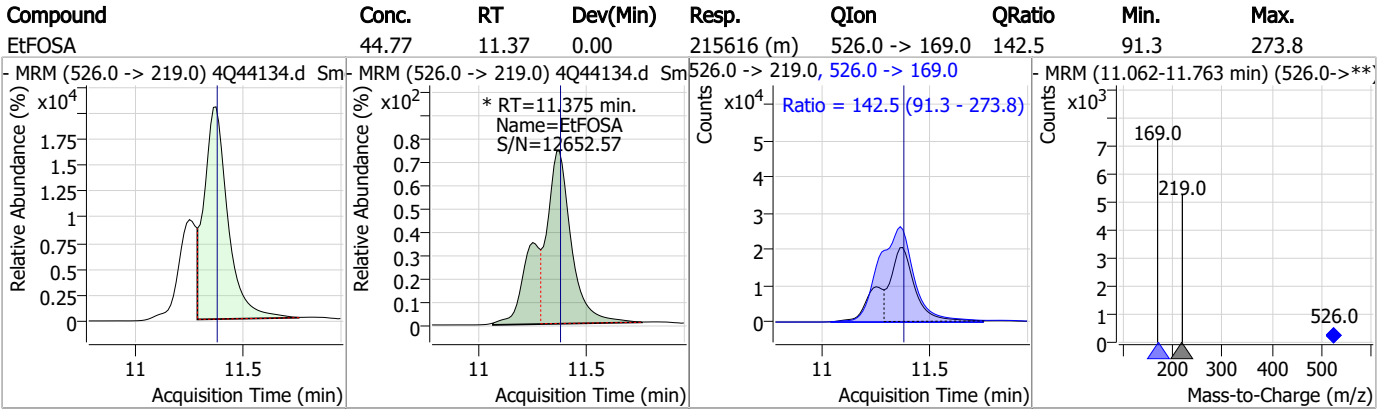
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.34	11.08	-0.01	10806				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.4

7

Manual Integration Approval Summary

Sample Number: S4Q639-RT Method: EPA DRAFT 1633
Lab FileID: 4Q44134.D Analyst approved: 05/10/23 11:10 Martha Valls
Injection Time: 05/09/23 13:42 Supervisor approved: 05/10/23 17:21 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.15	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
Perfluorononanoic acid	375-95-1		7.70	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
PFOSA	754-91-6		9.79	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.38	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

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

7.7.2
7



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

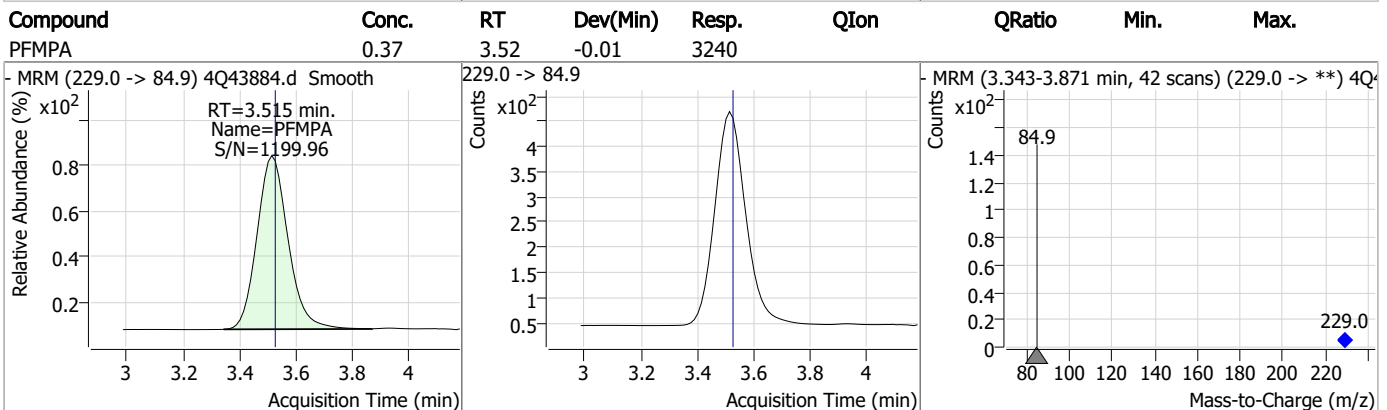
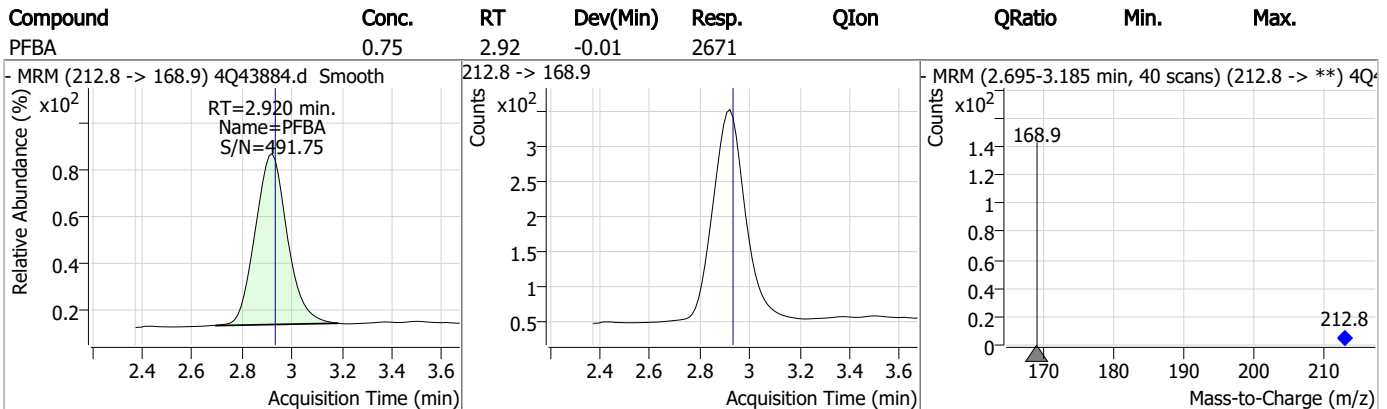
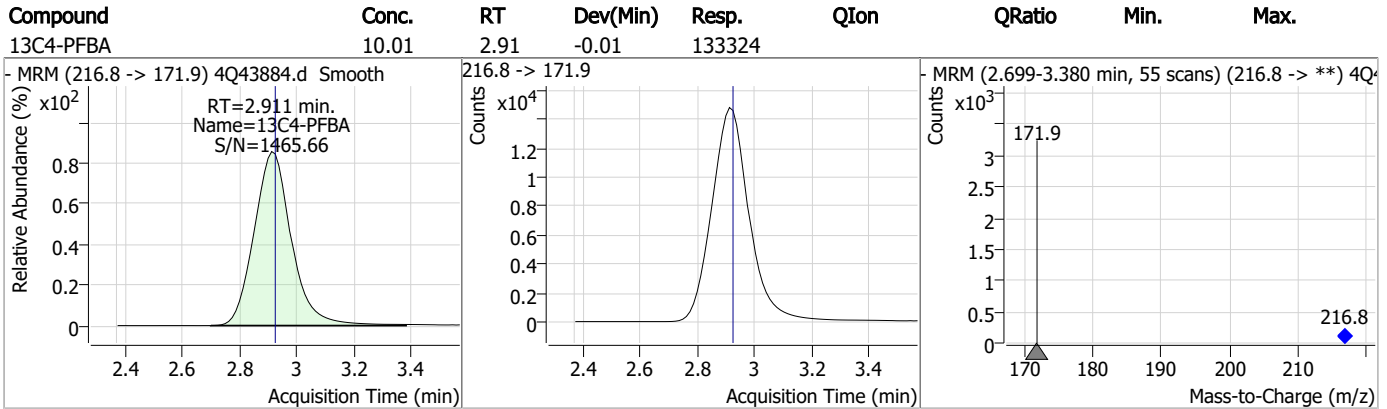
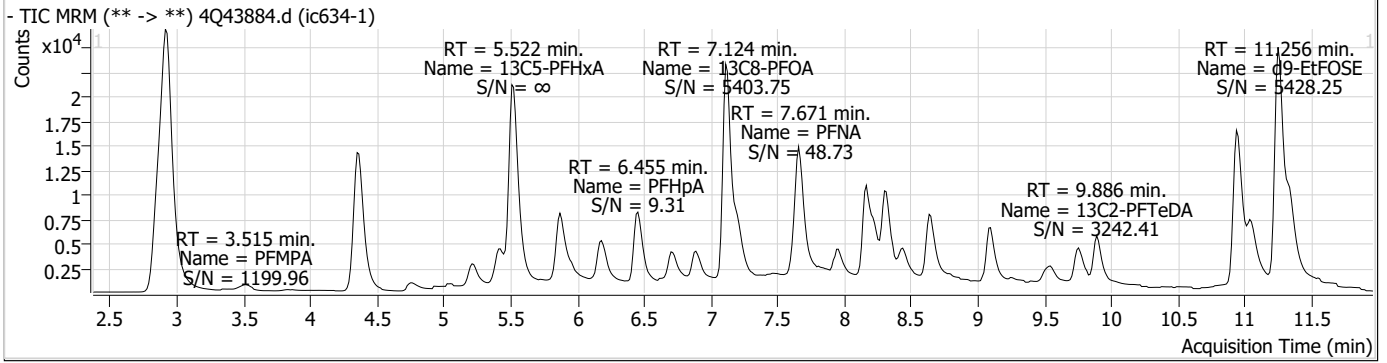
Perfluorinated Compounds by LC/MS/MS

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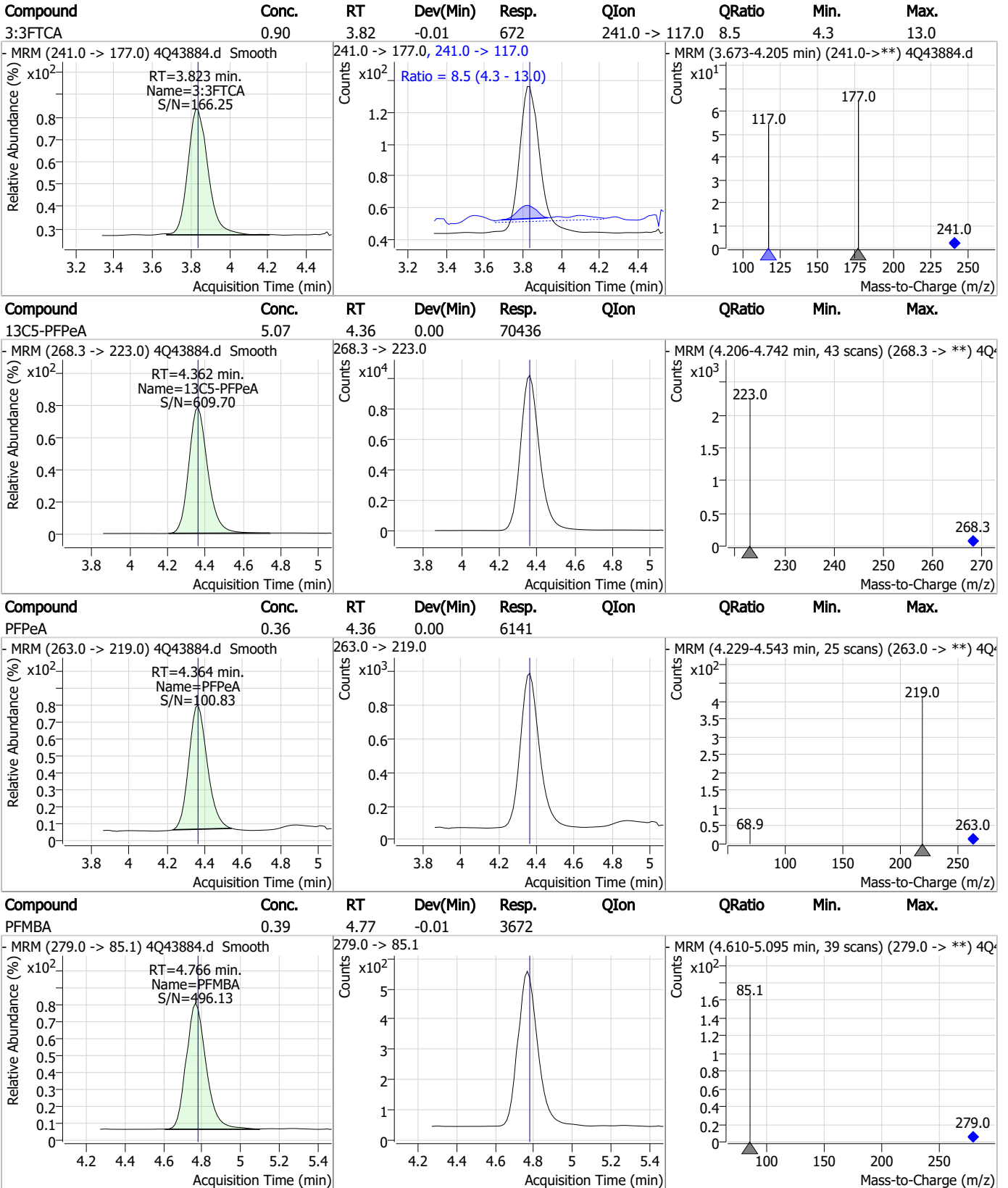
7.7.2
7



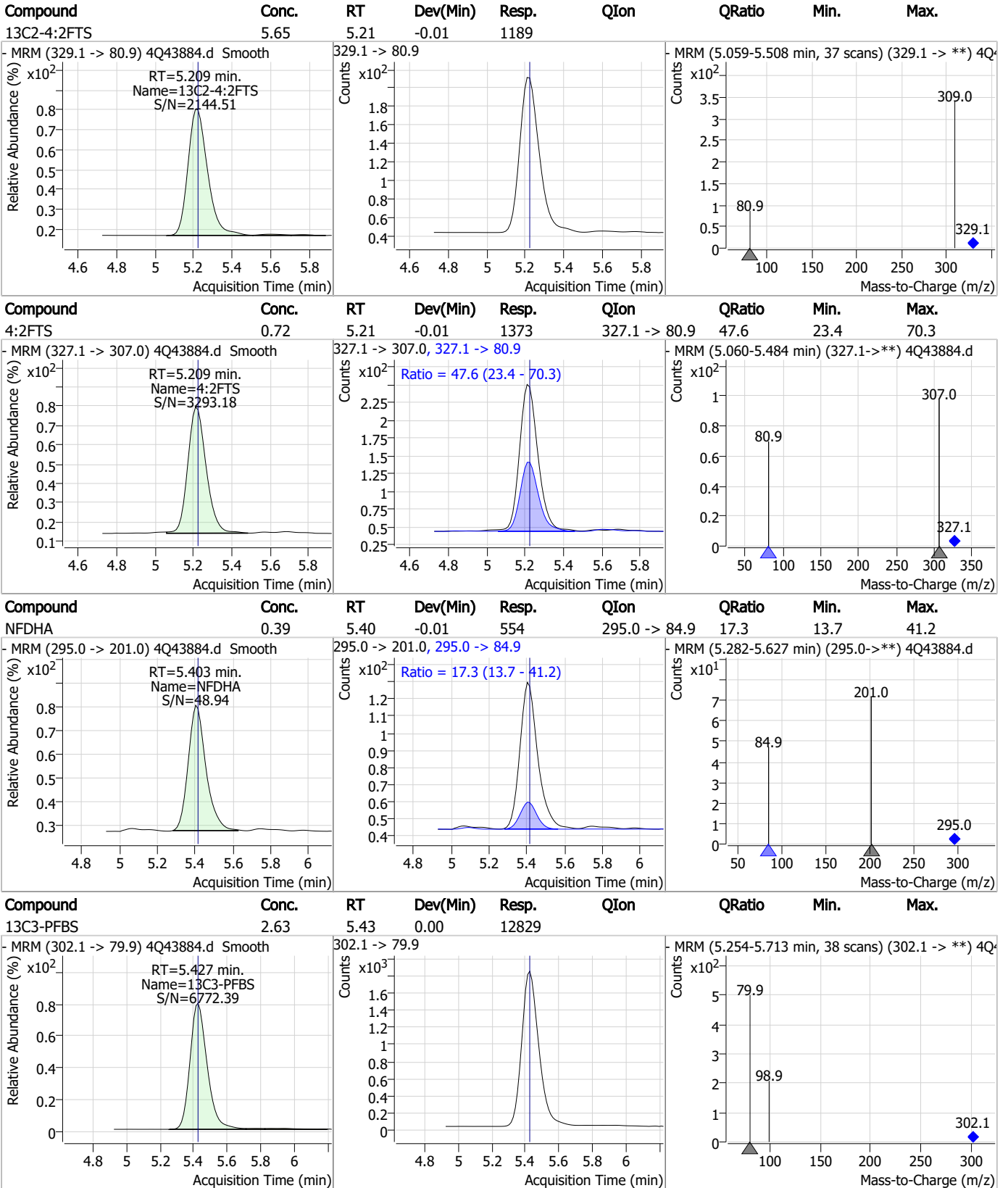
Perfluorinated Compounds by LC/MS/MS



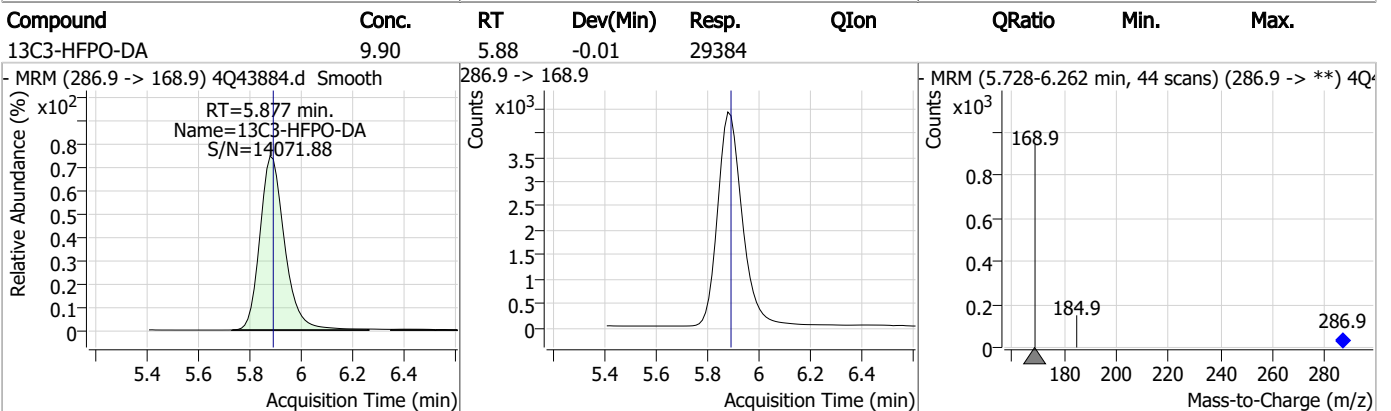
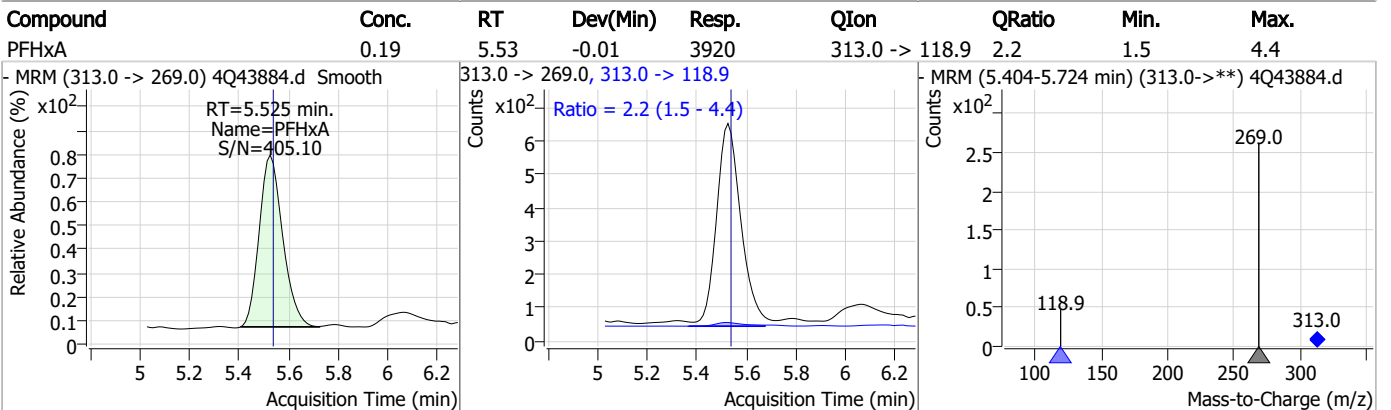
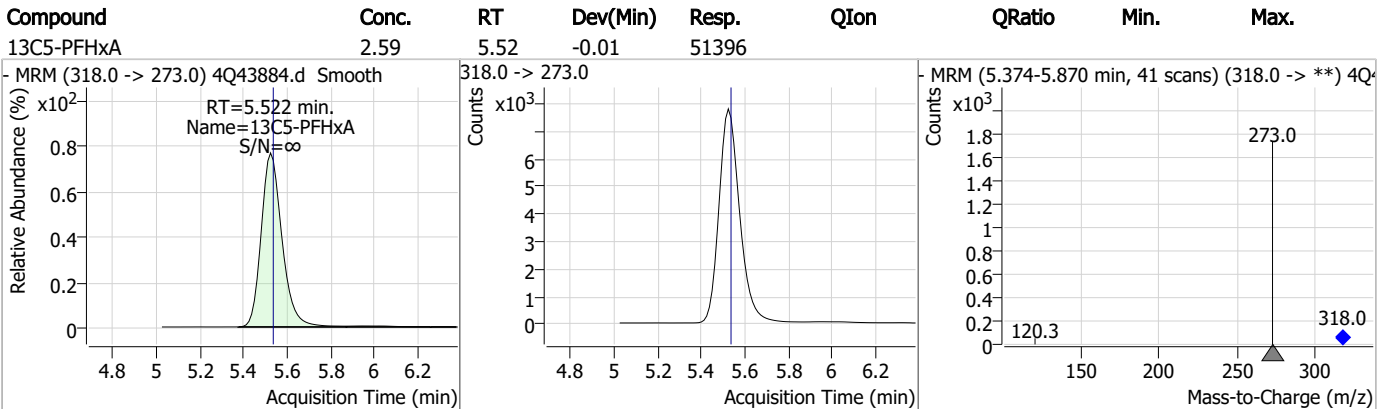
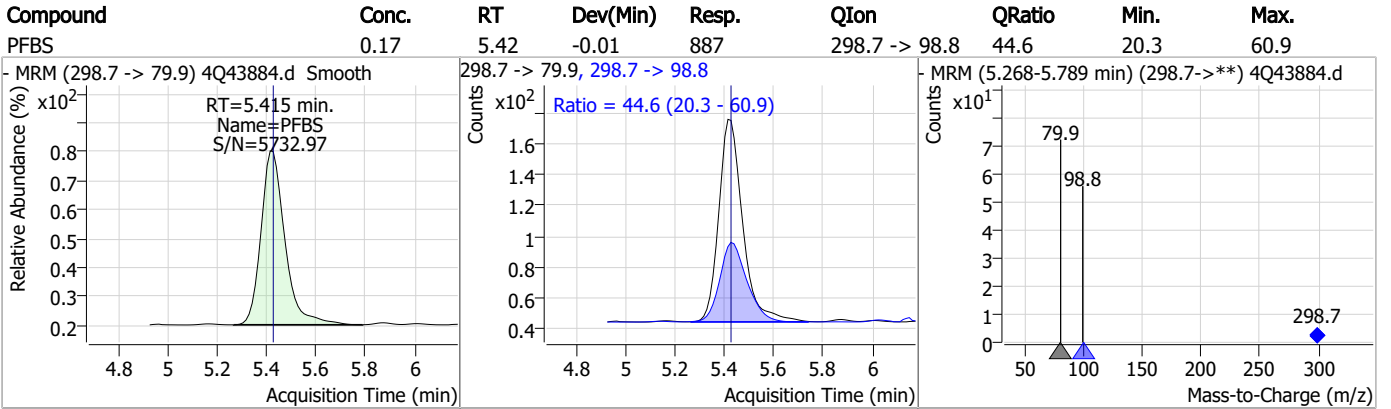
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



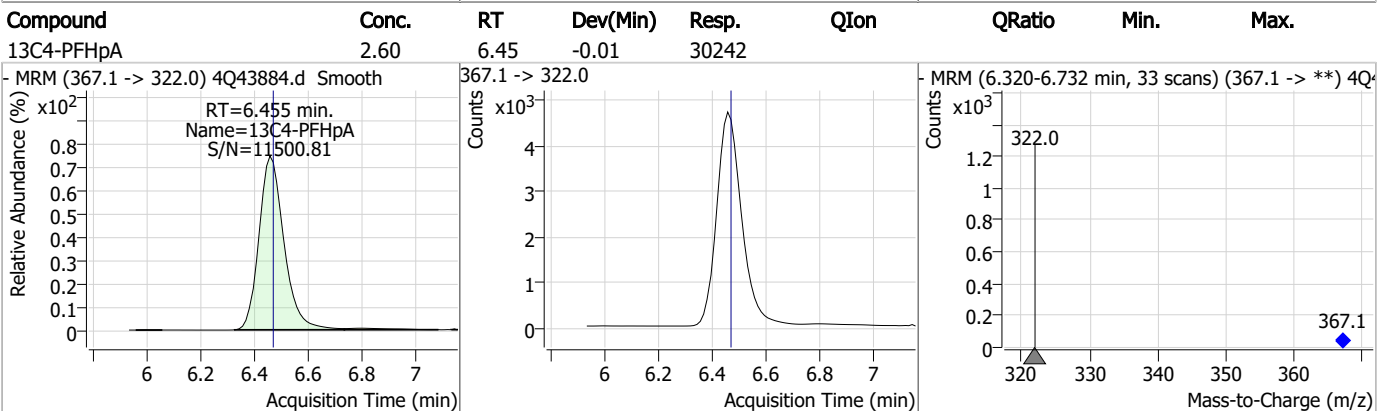
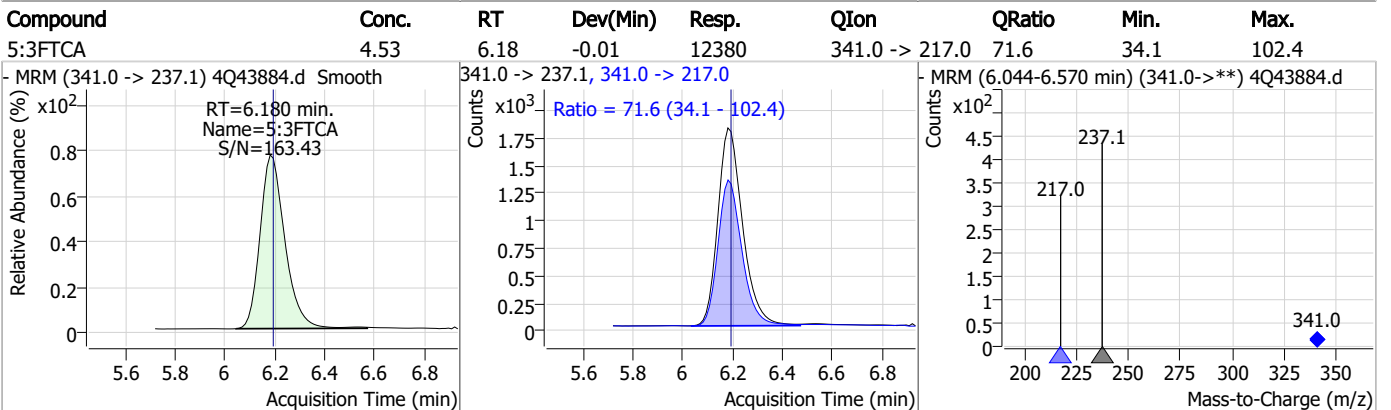
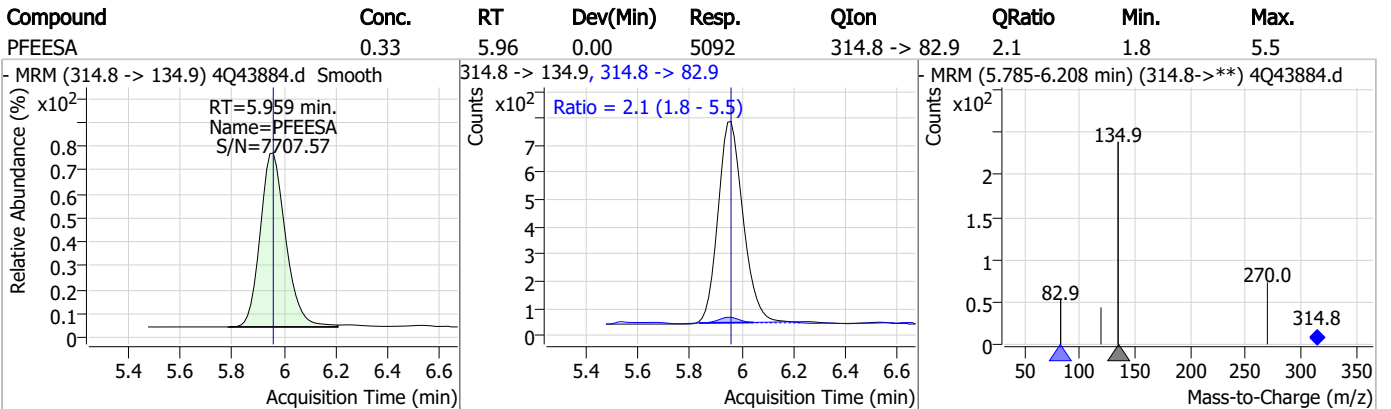
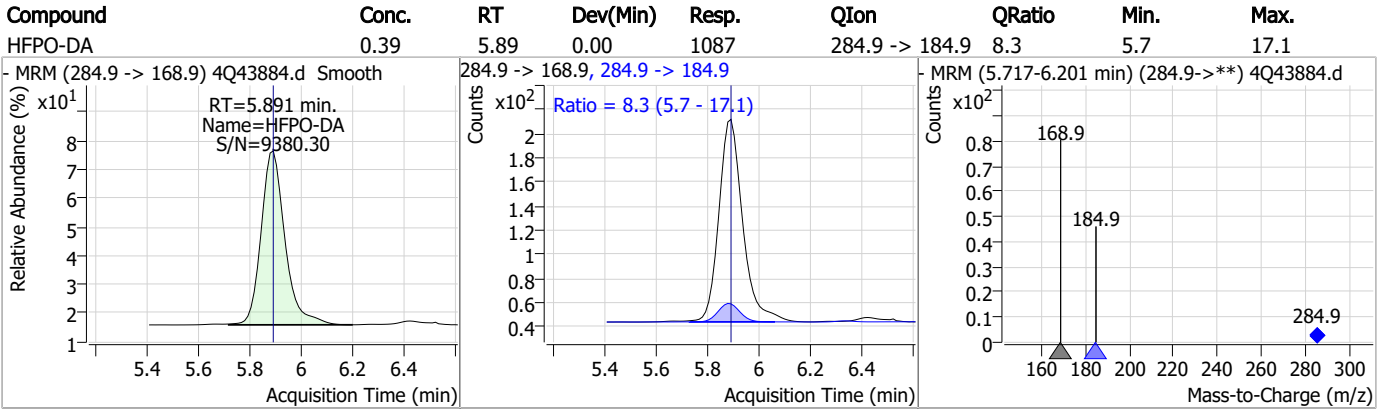
Perfluorinated Compounds by LC/MS/MS



7.7.2

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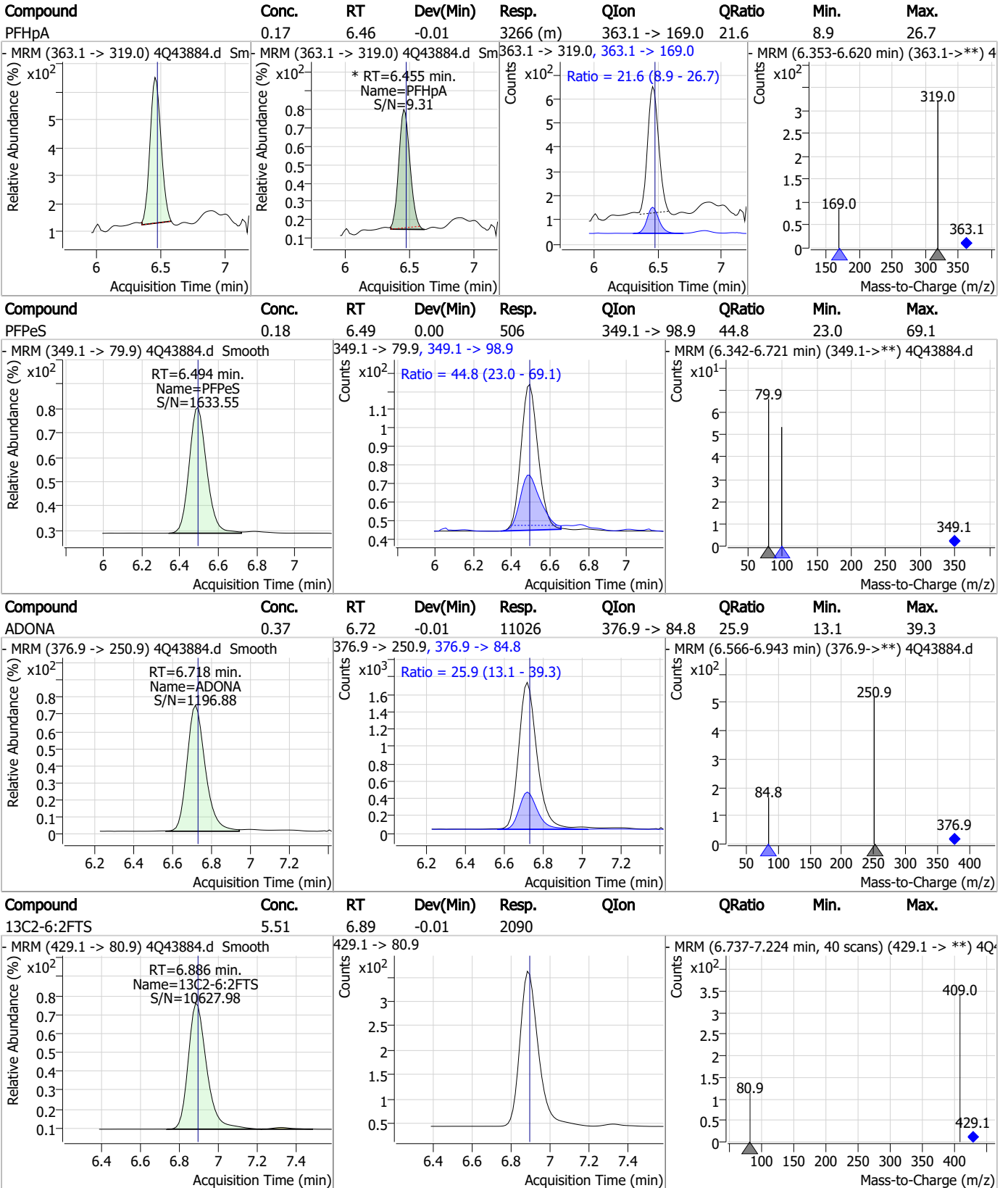
Perfluorinated Compounds by LC/MS/MS



7.7.2

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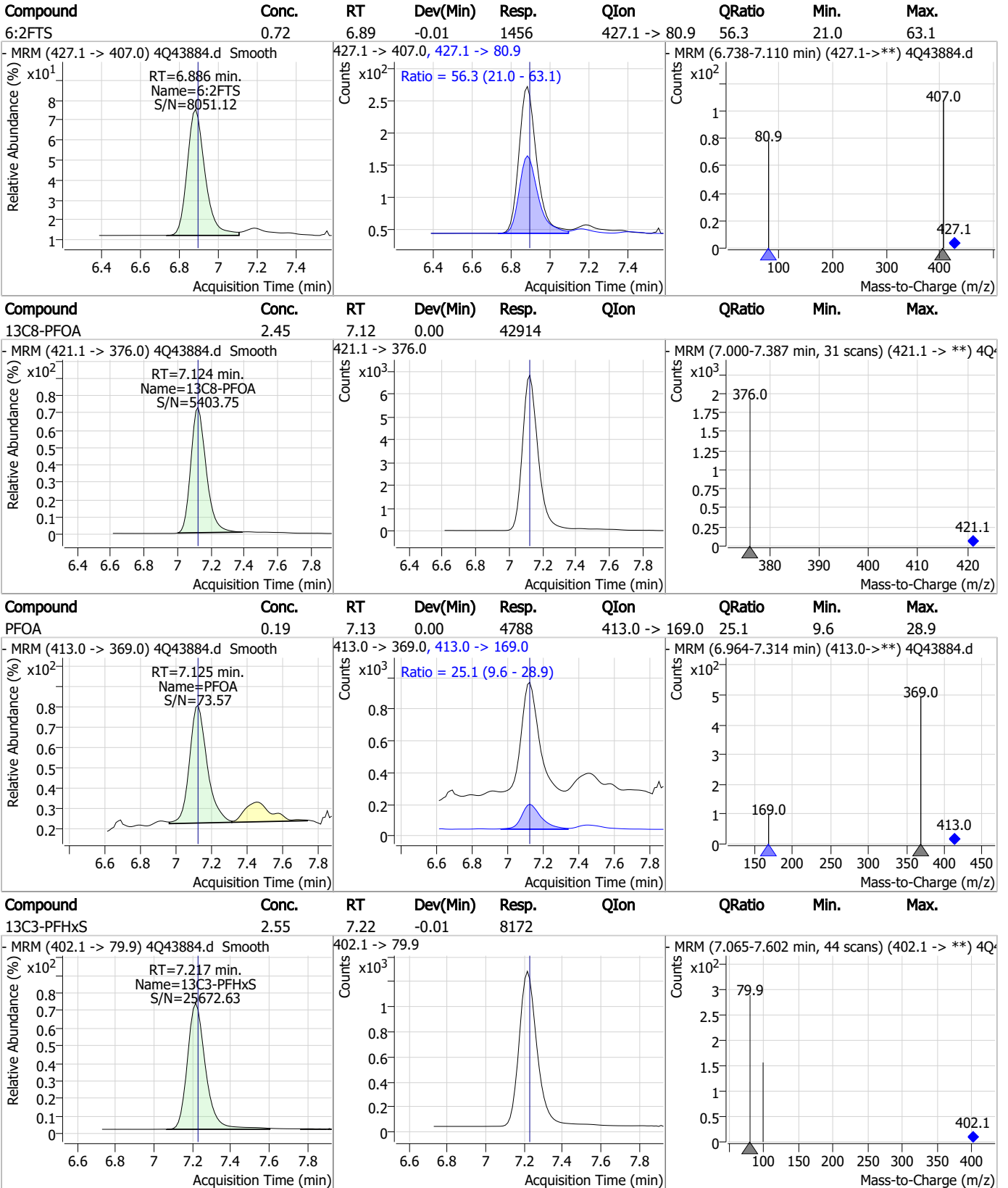
Perfluorinated Compounds by LC/MS/MS



7.7.2

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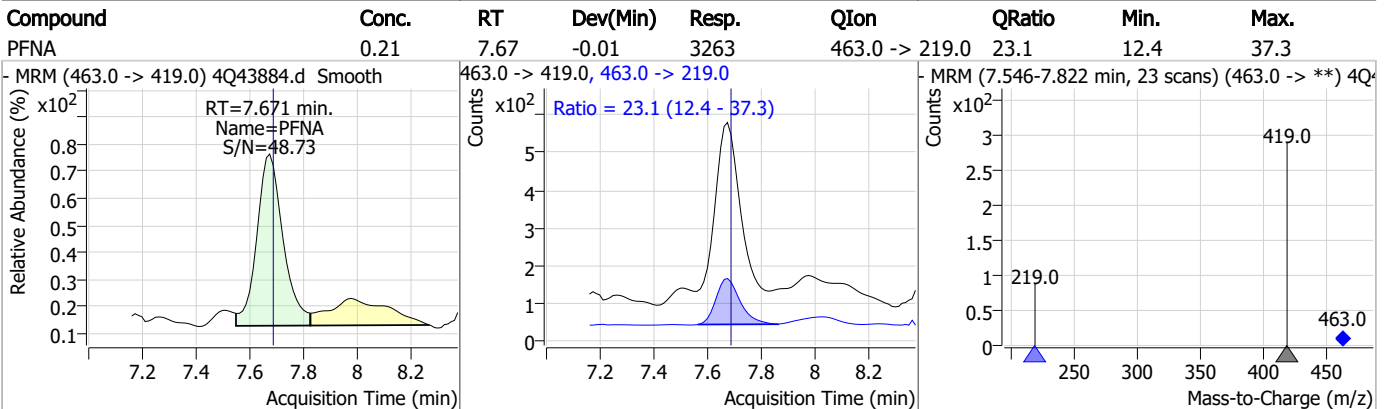
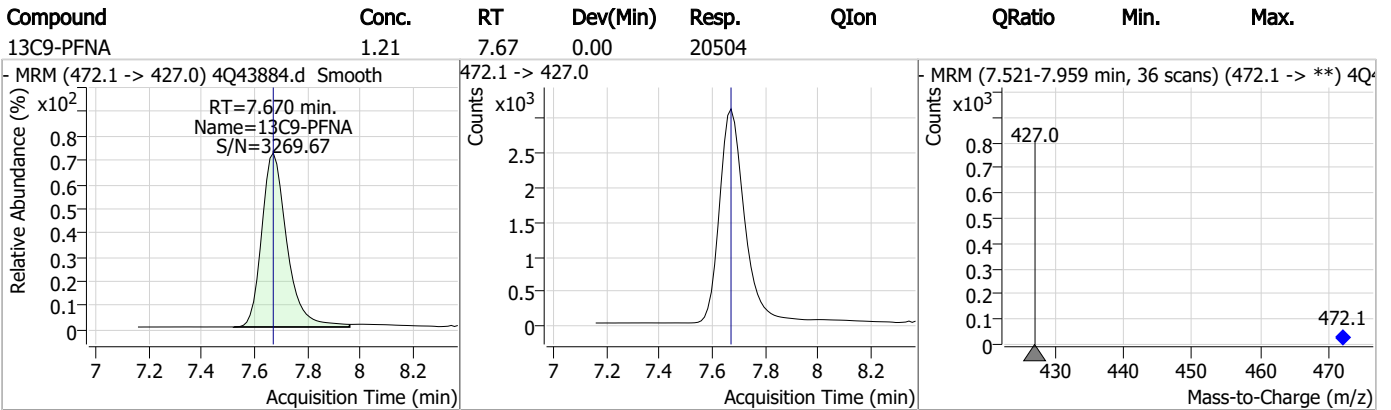
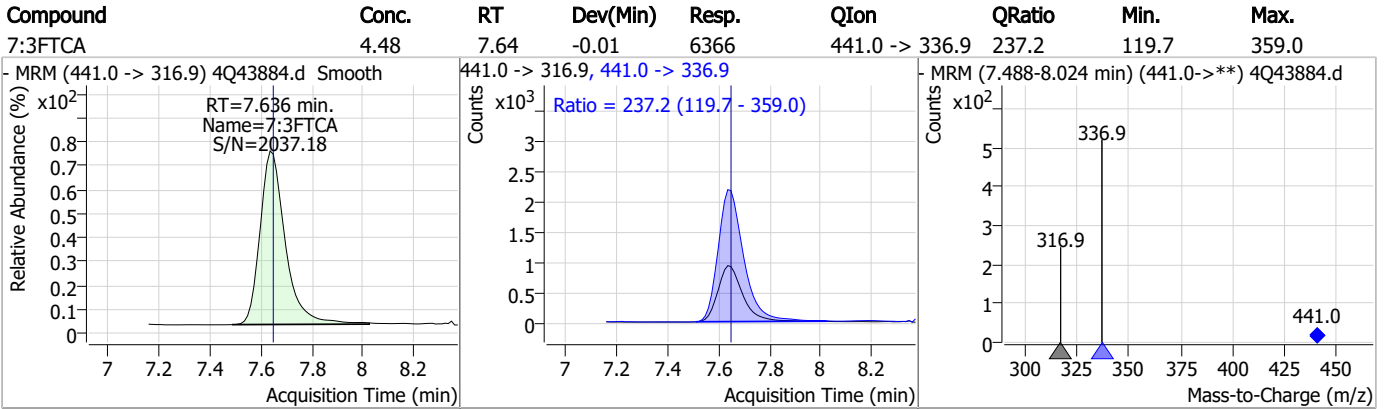
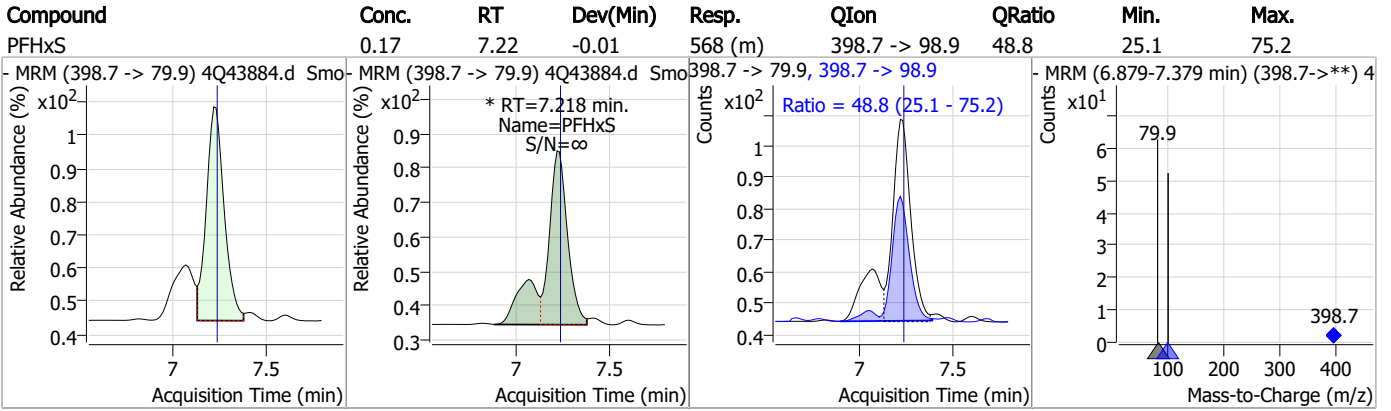
Perfluorinated Compounds by LC/MS/MS



7.7.2

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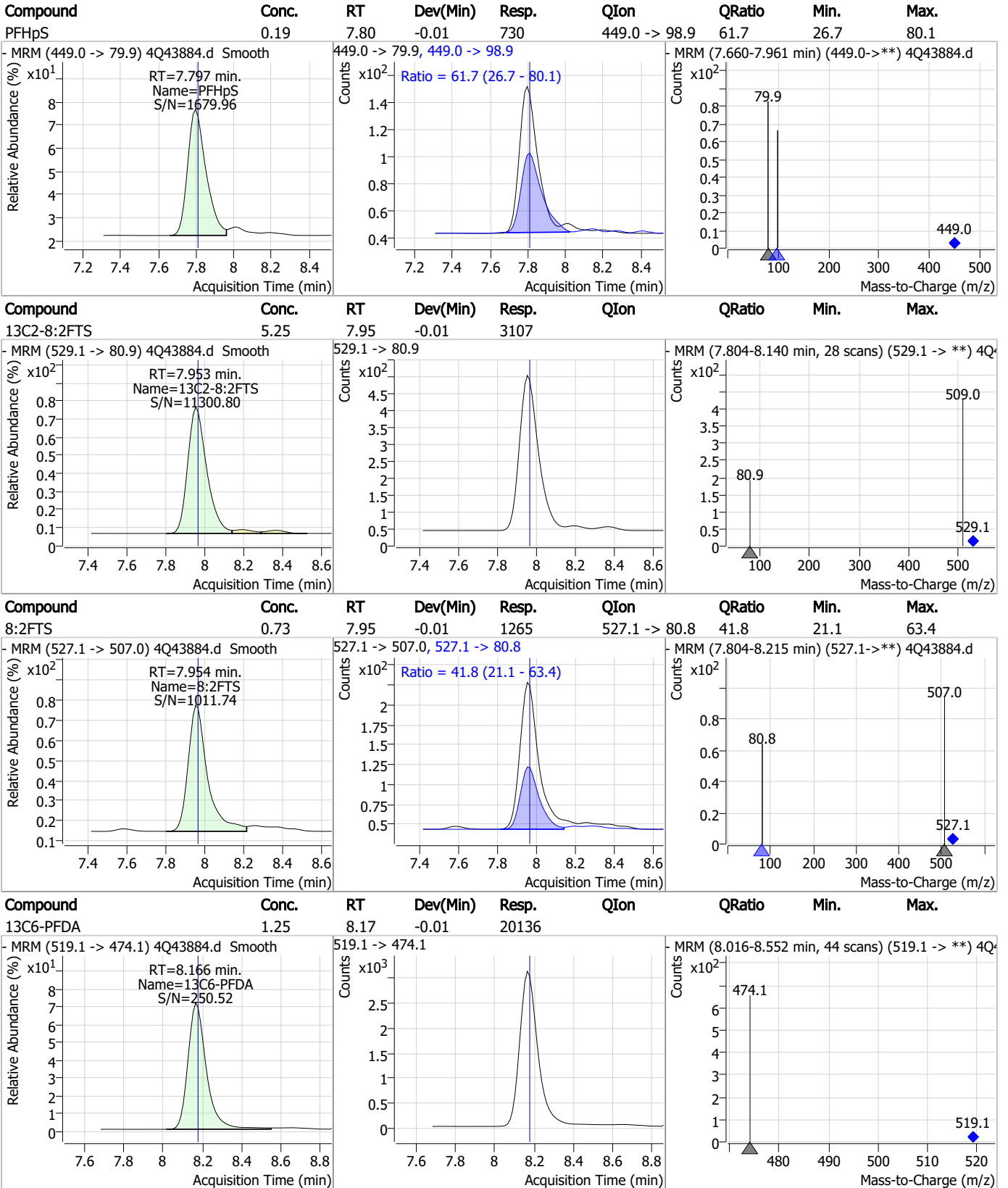
Perfluorinated Compounds by LC/MS/MS



7.7.2

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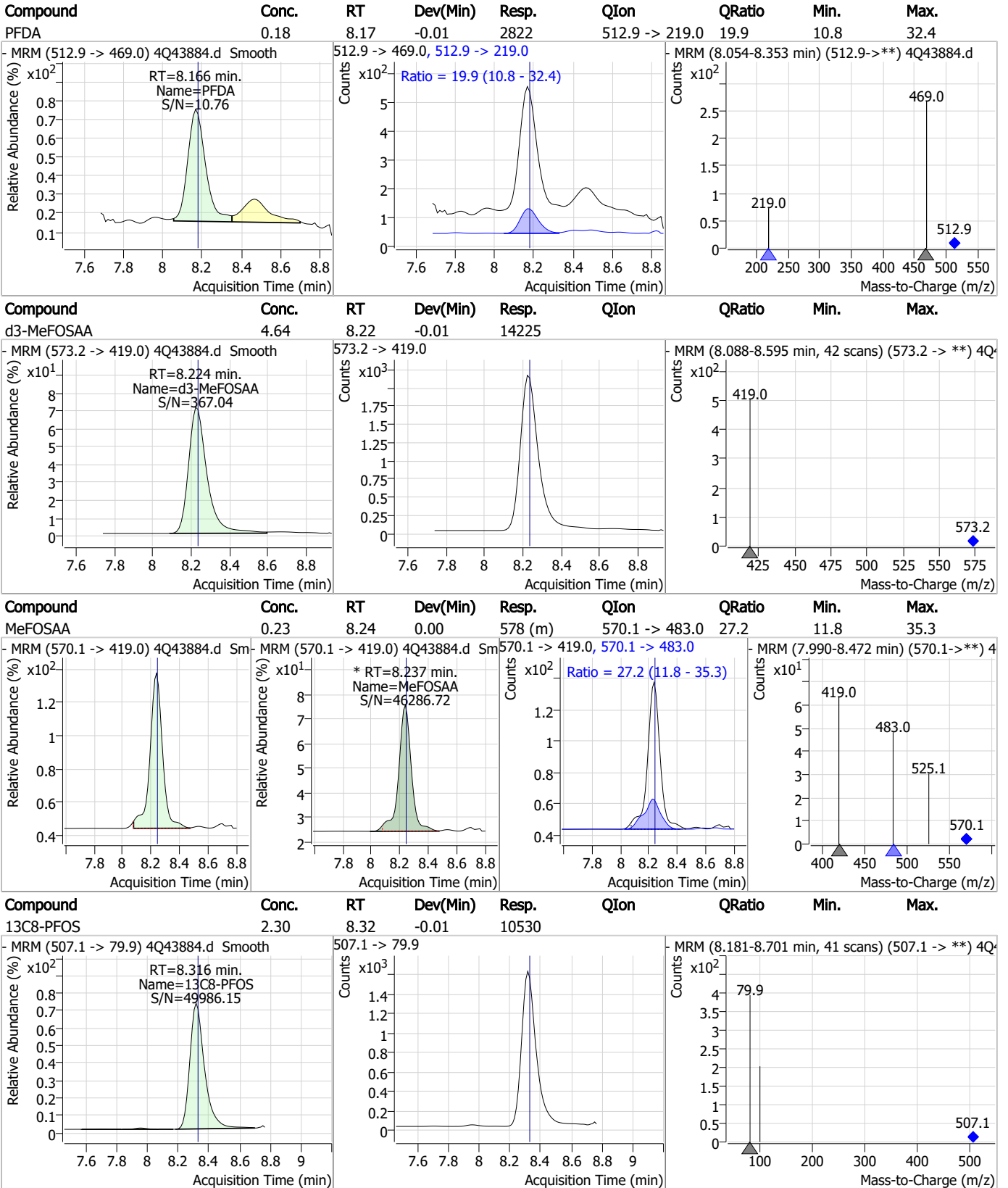
Perfluorinated Compounds by LC/MS/MS



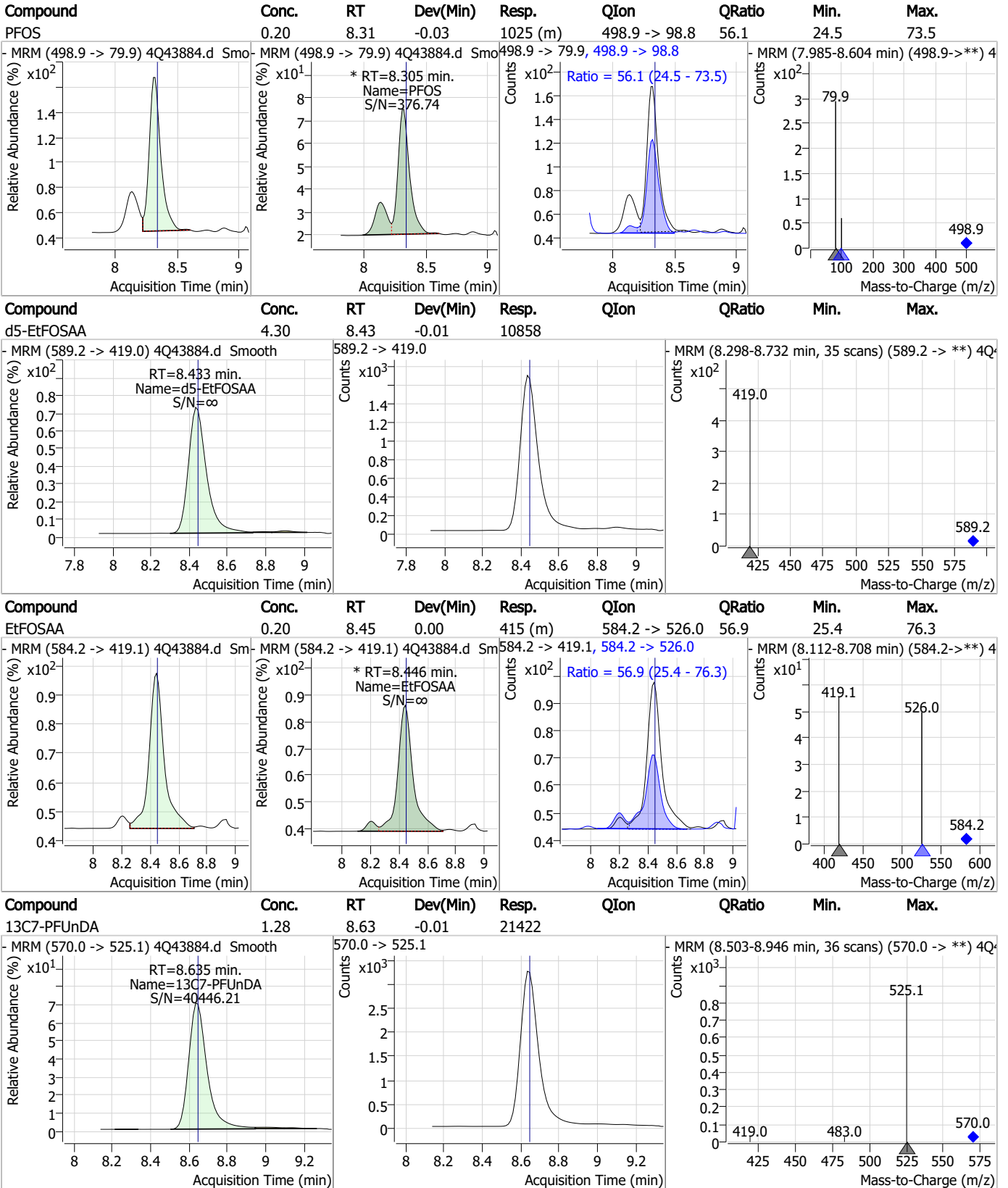
7.7.2
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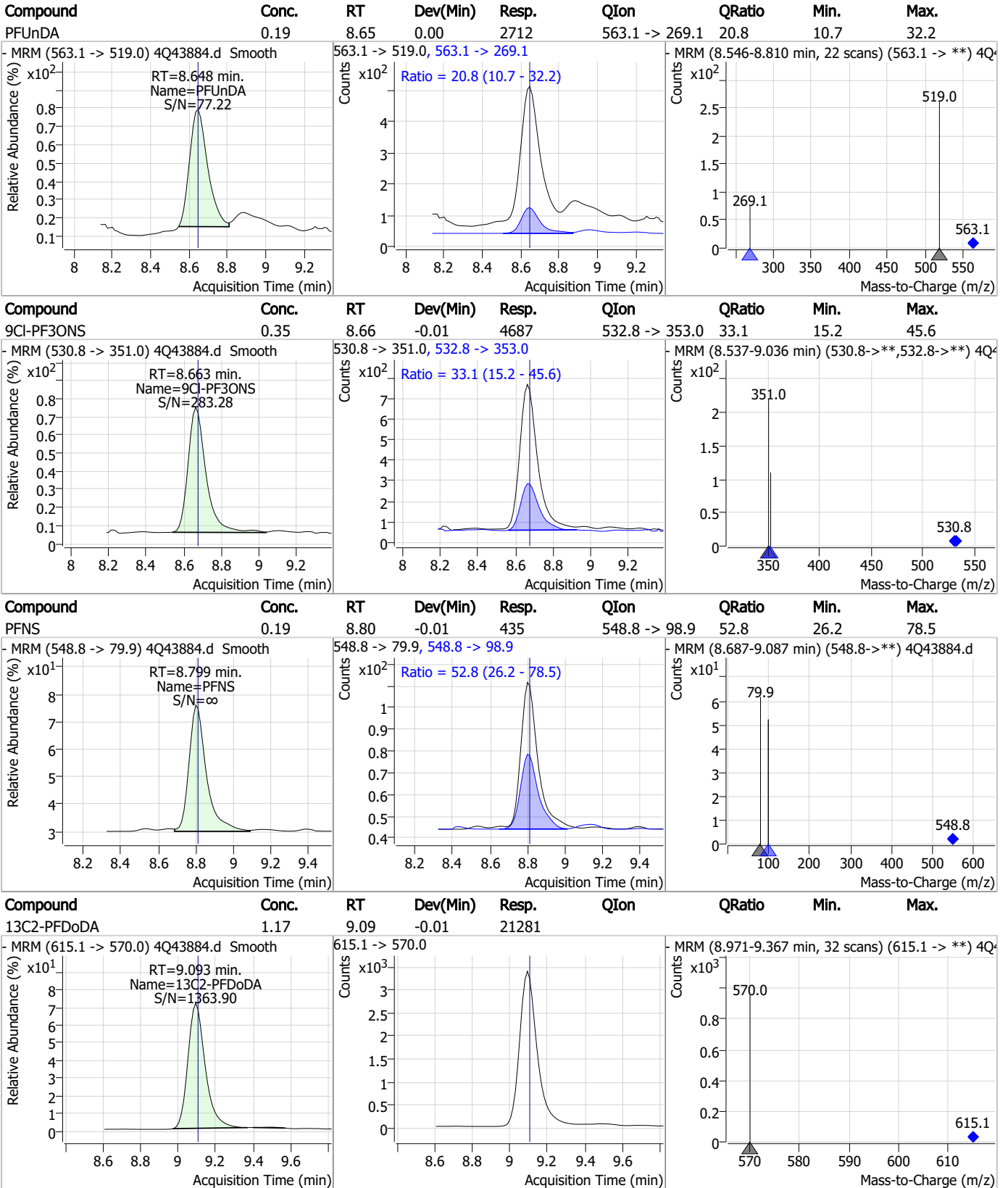
Perfluorinated Compounds by LC/MS/MS



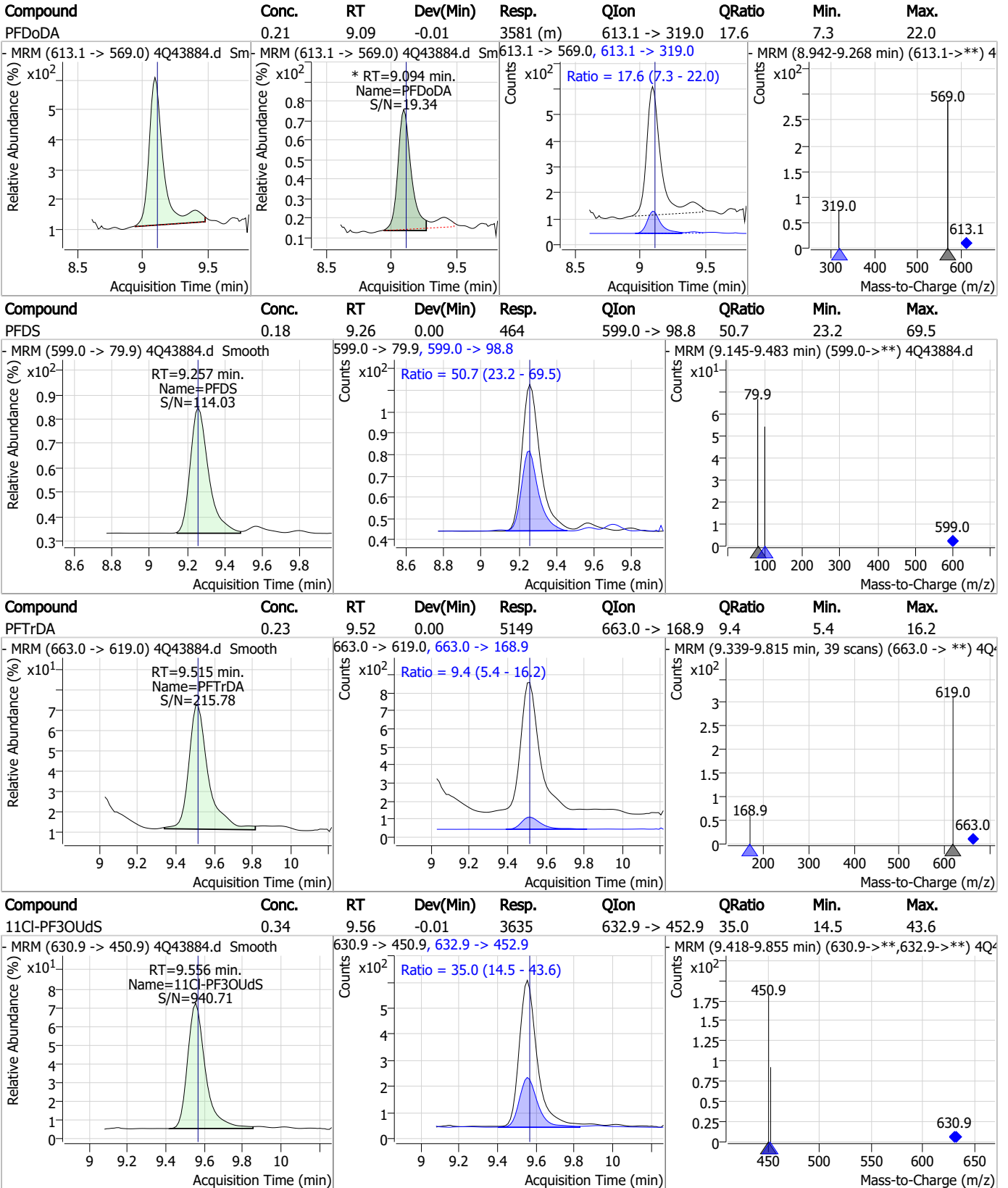
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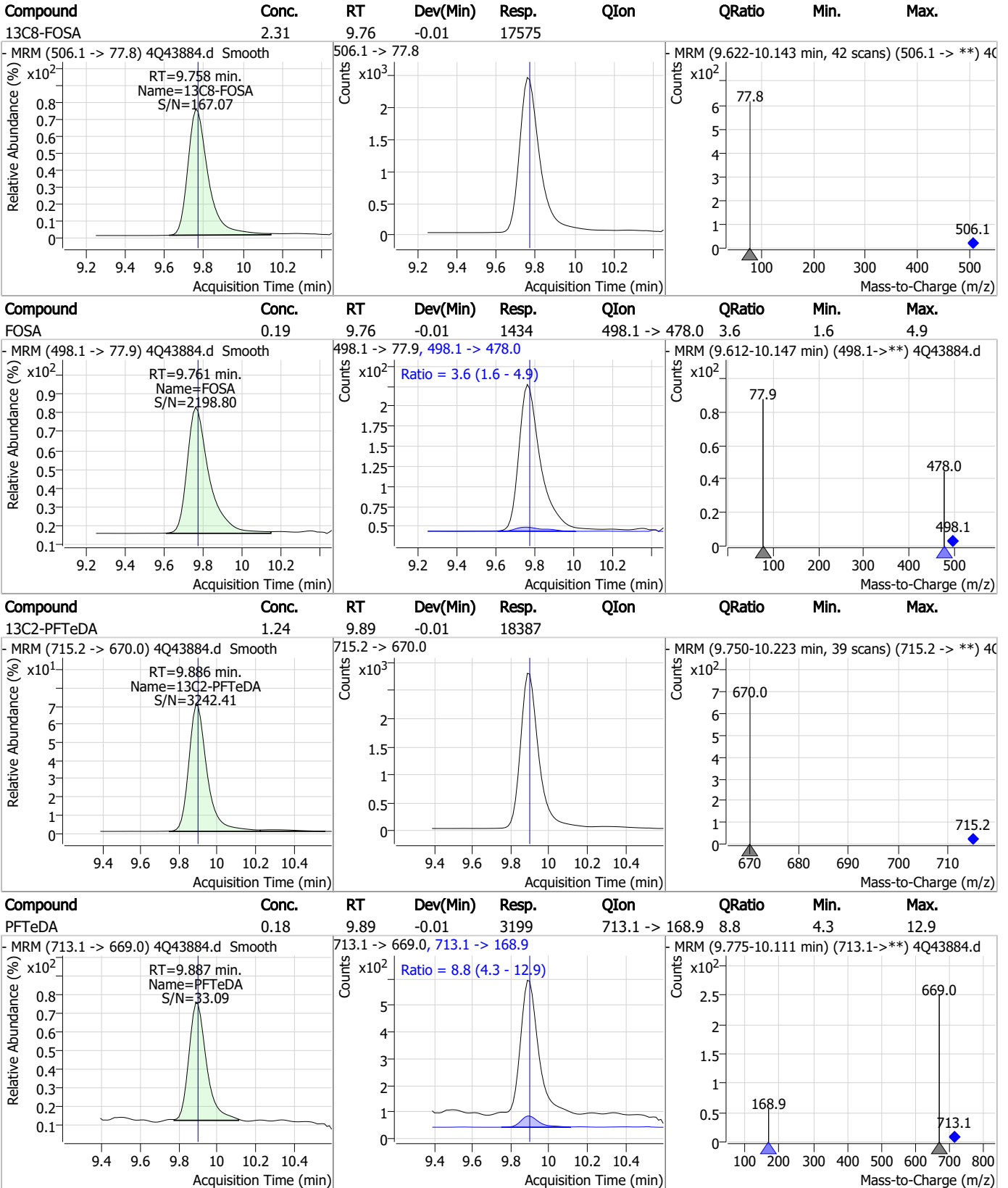
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



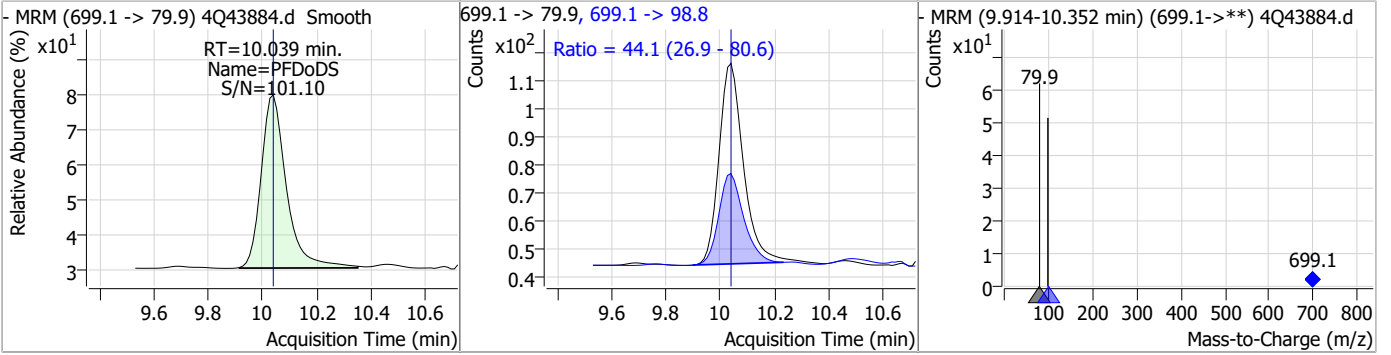
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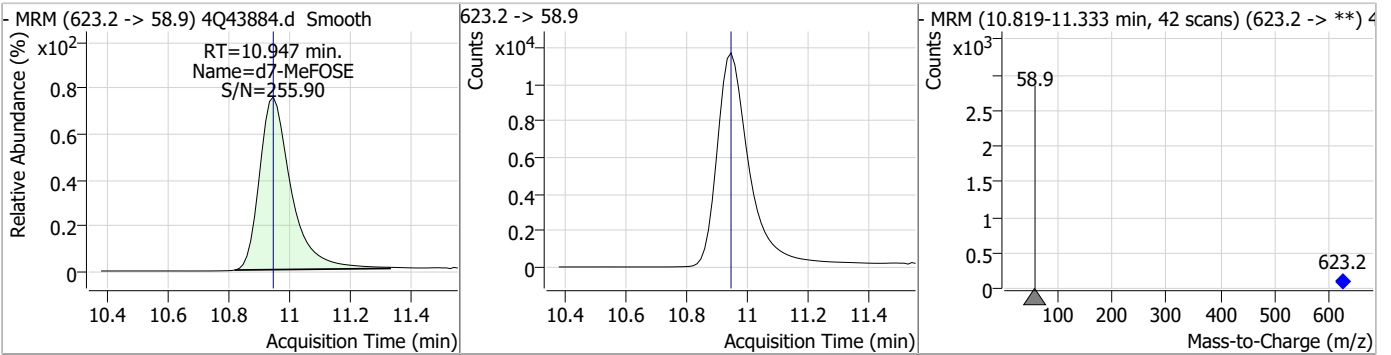


Perfluorinated Compounds by LC/MS/MS

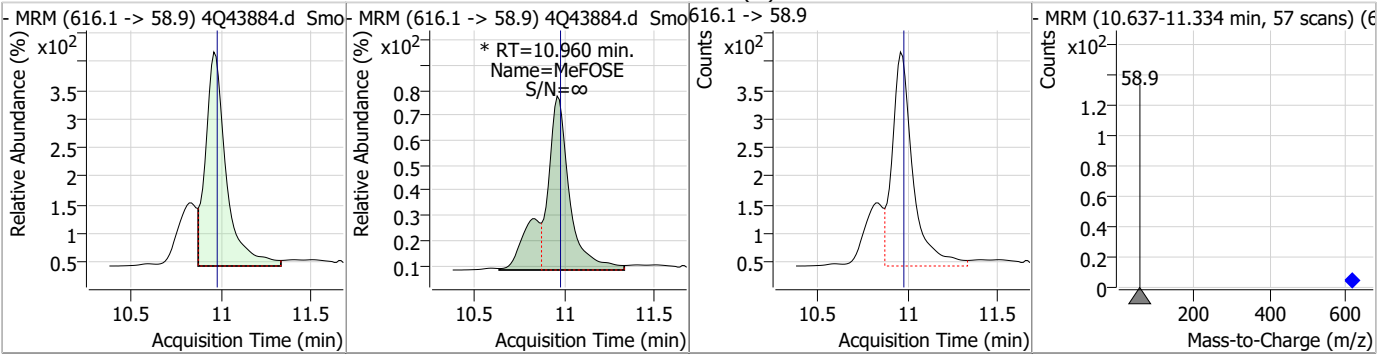
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.20	10.04	0.00	469	699.1 -> 98.8	44.1	26.9	80.6



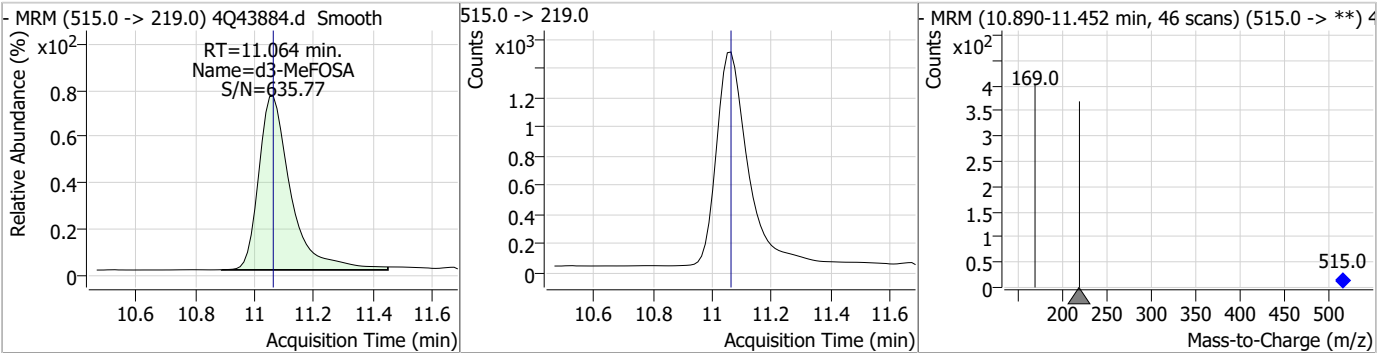
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.31	10.95	0.00	84284				



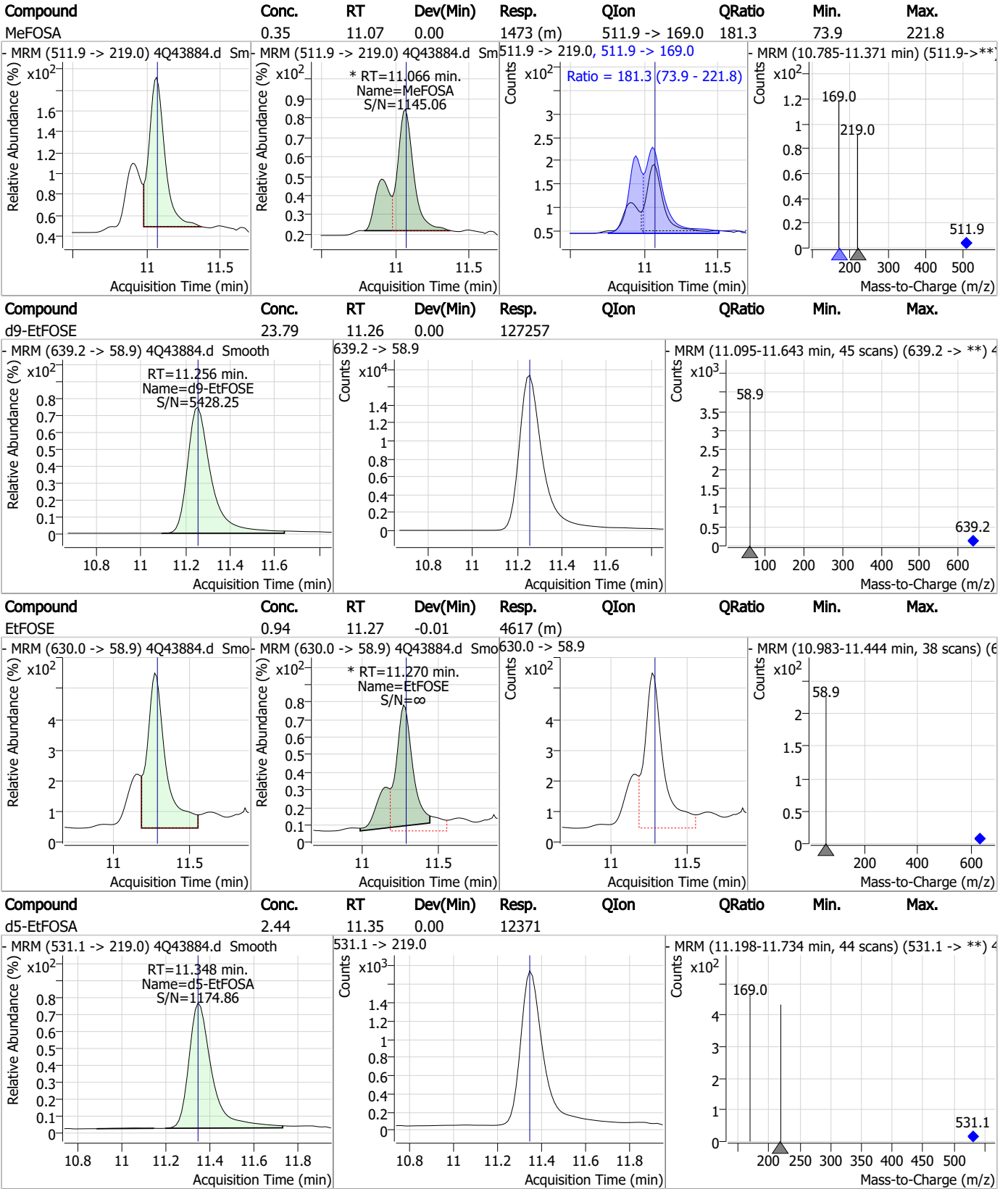
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.09	10.96	-0.01	3786 (m)				



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



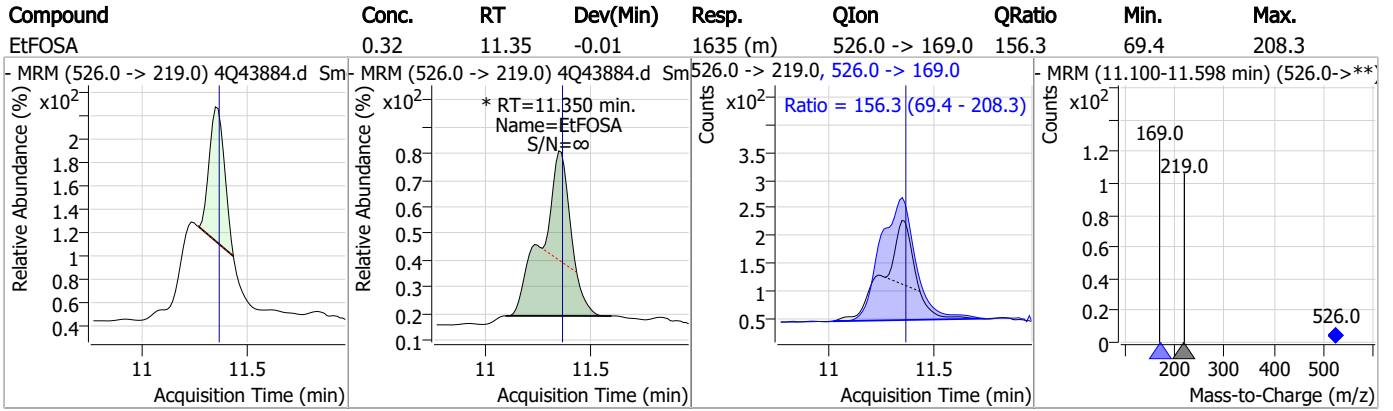
Perfluorinated Compounds by LC/MS/MS



7.7.2

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Perfluorinated Compounds by LC/MS/MS



7.7.2

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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
7

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

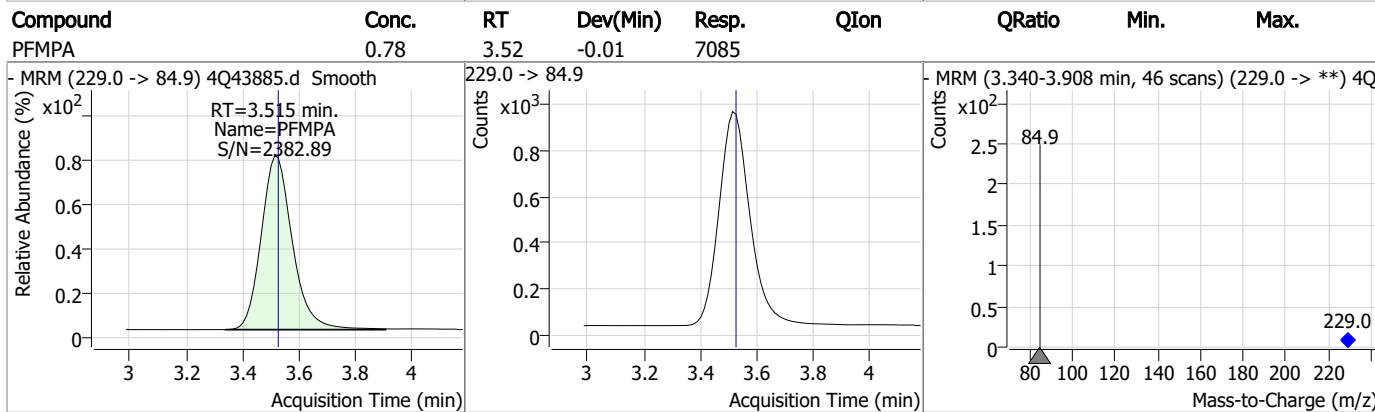
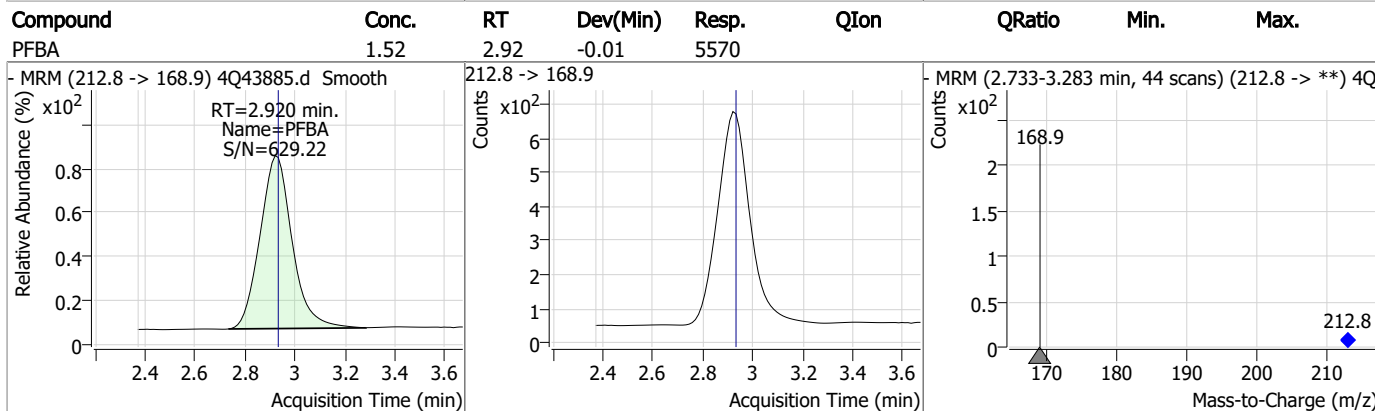
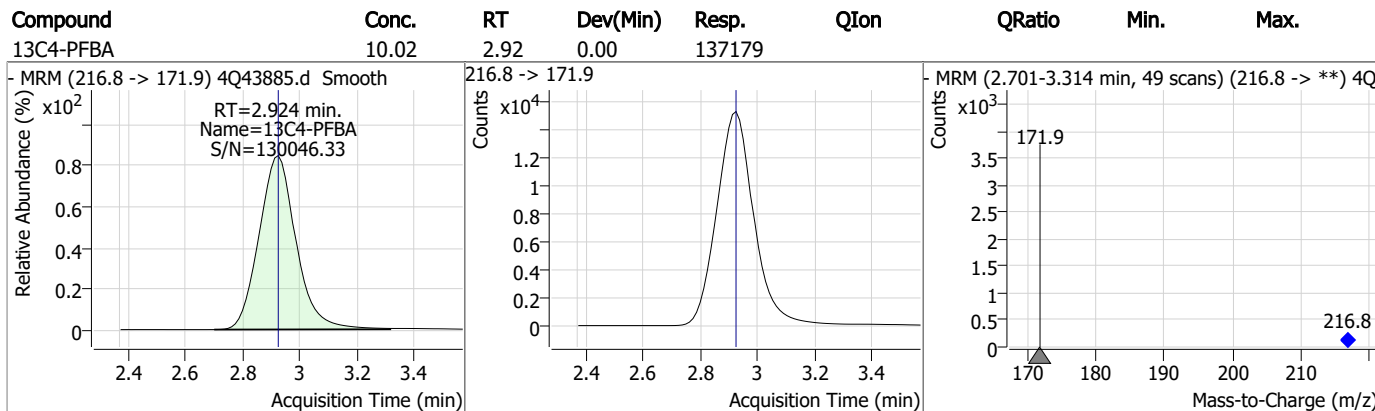
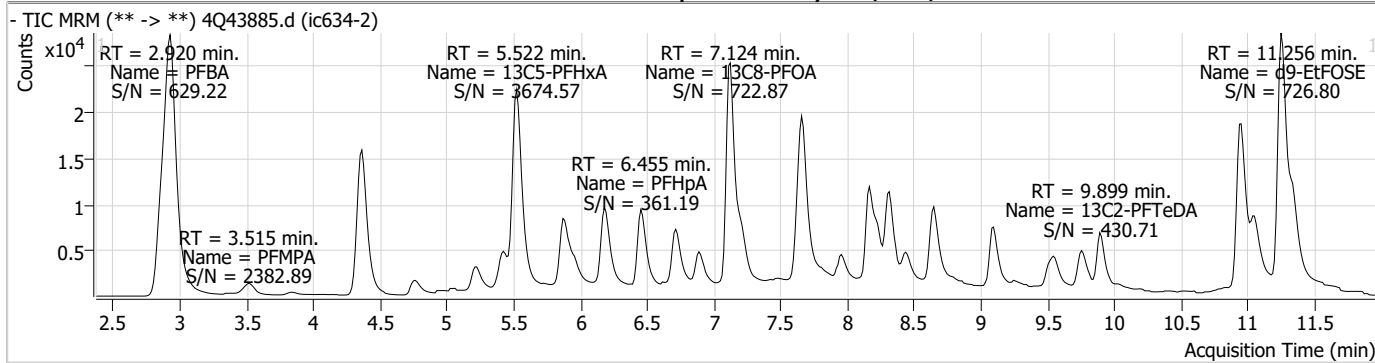
Perfluorinated Compounds by LC/MS/MS

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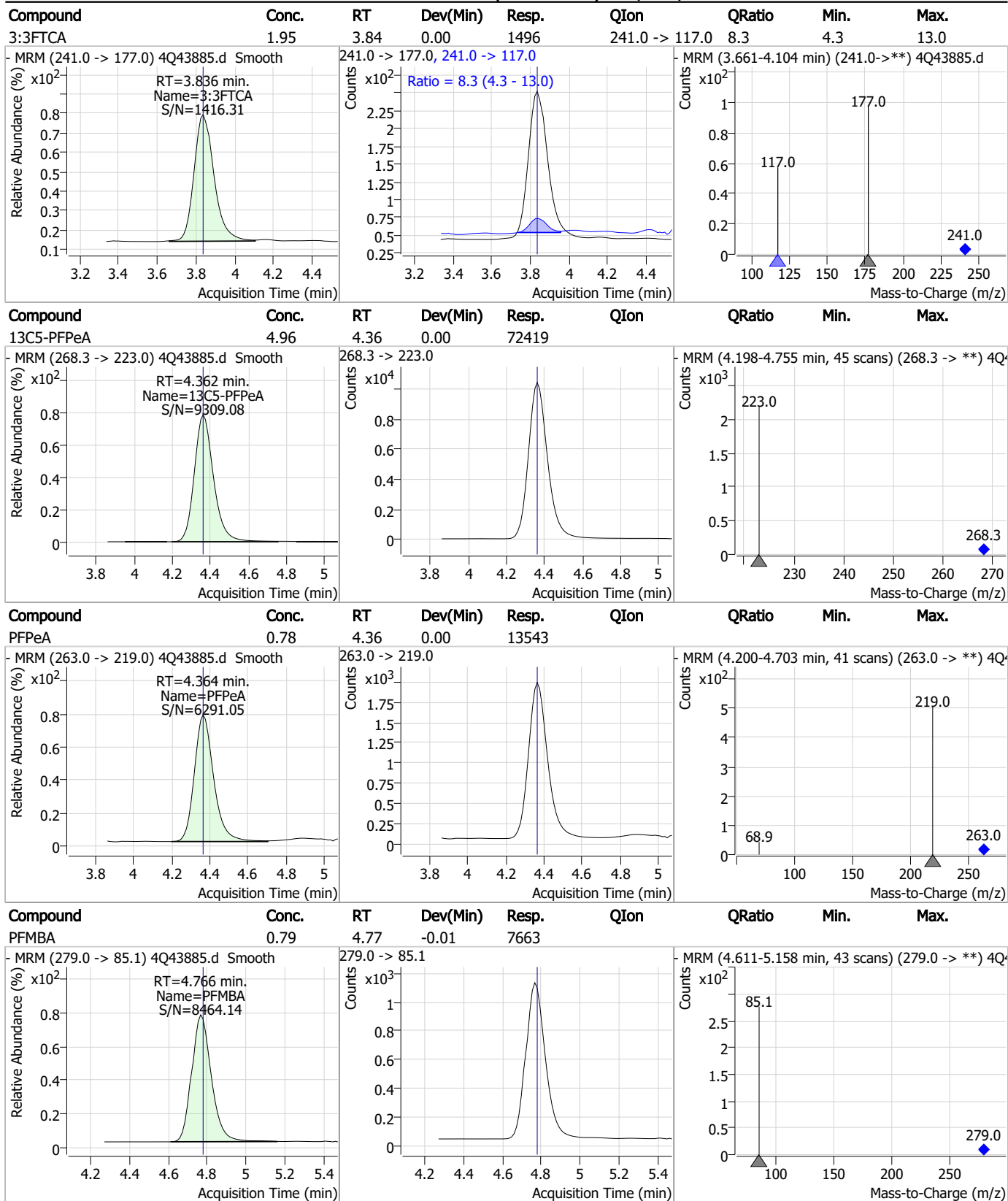
7.7.3

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Perfluorinated Compounds by LC/MS/MS

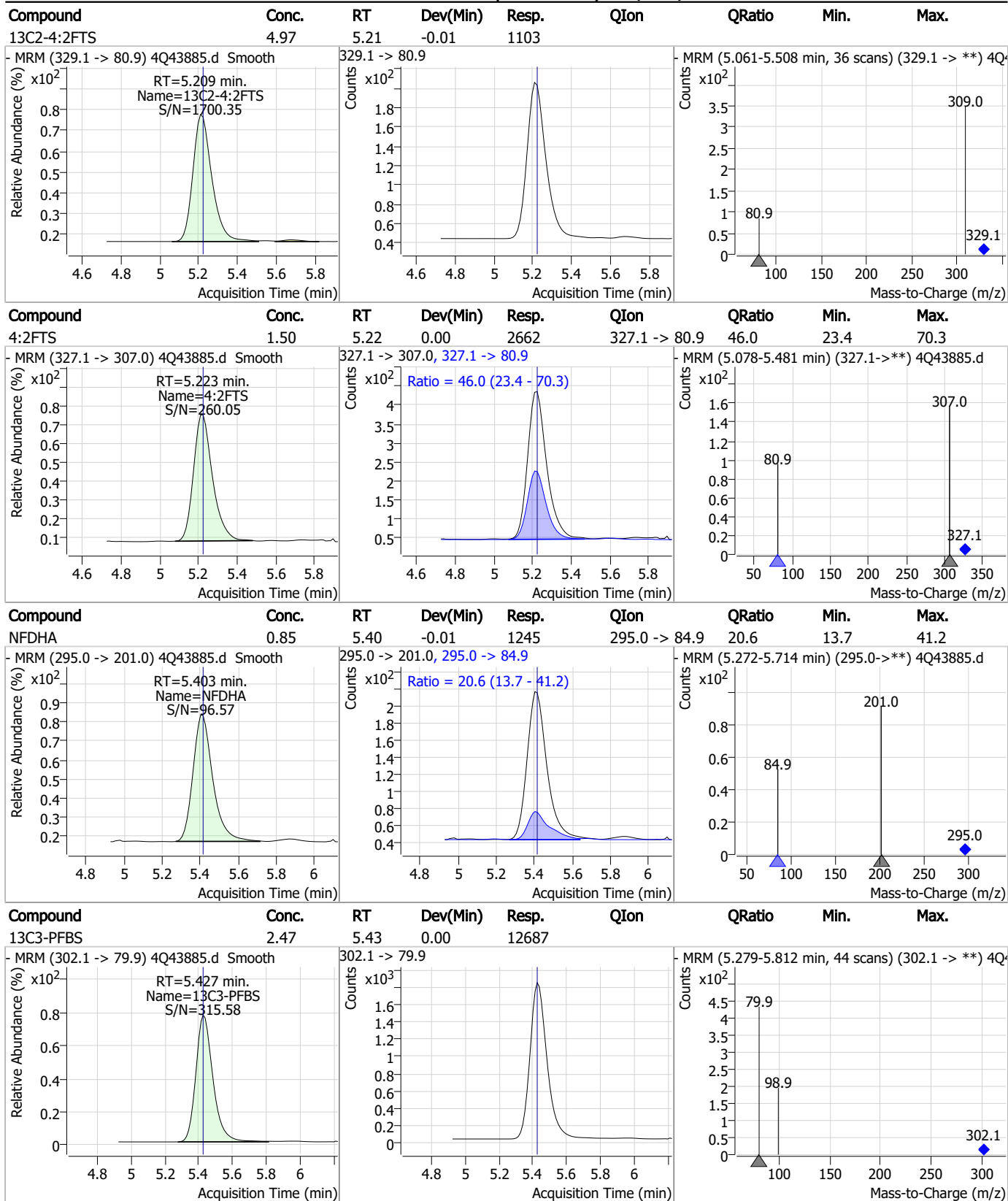


Perfluorinated Compounds by LC/MS/MS



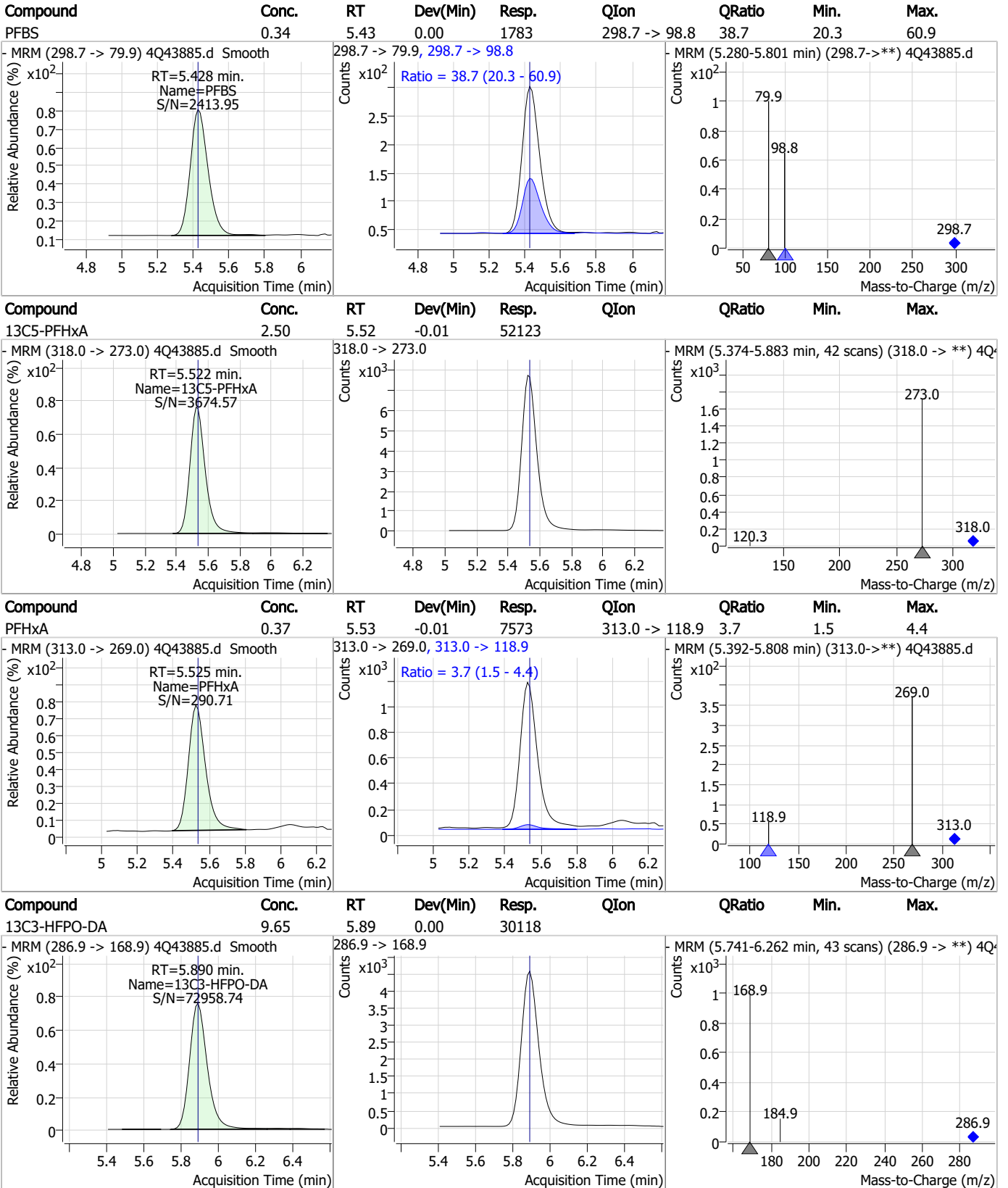
7.7.3
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Perfluorinated Compounds by LC/MS/MS

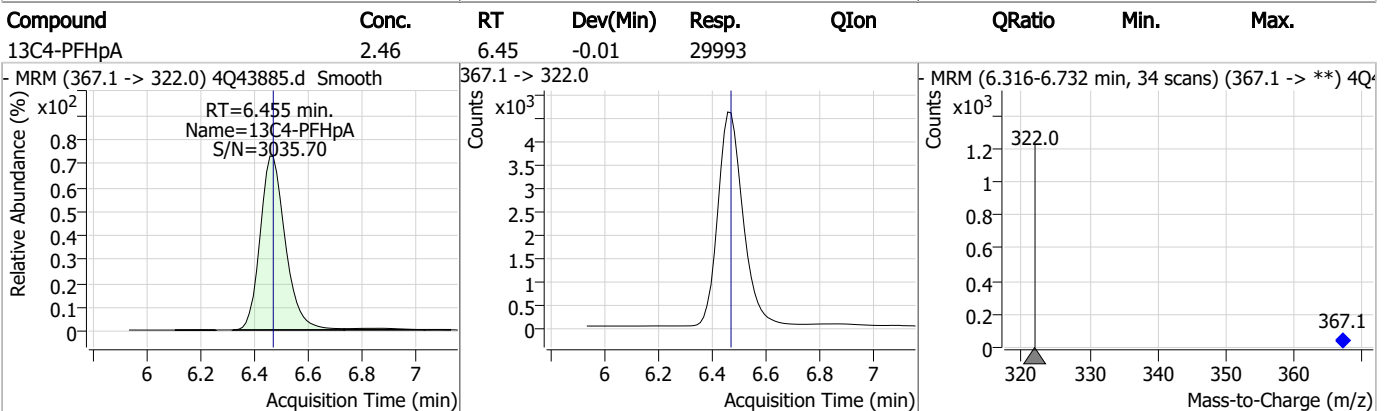
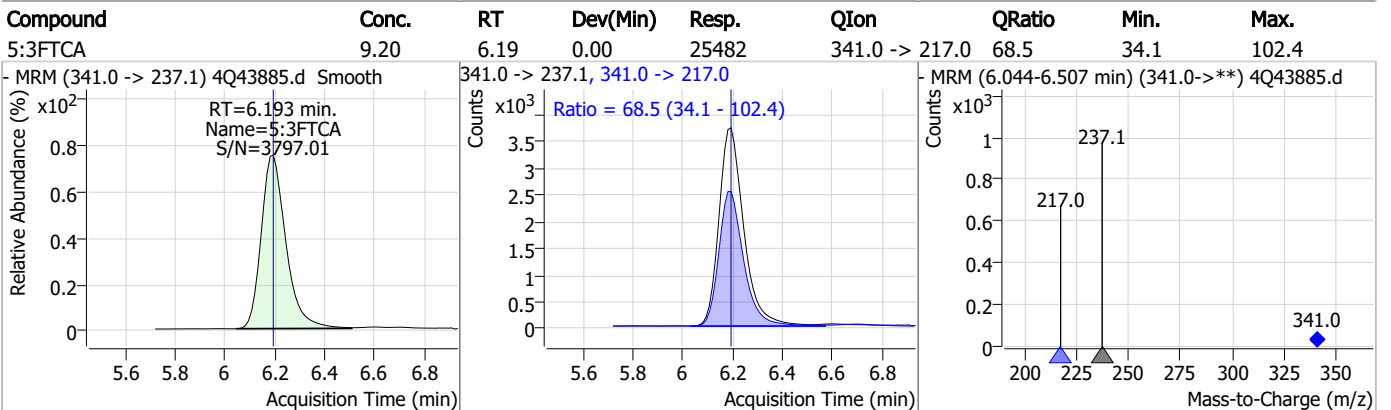
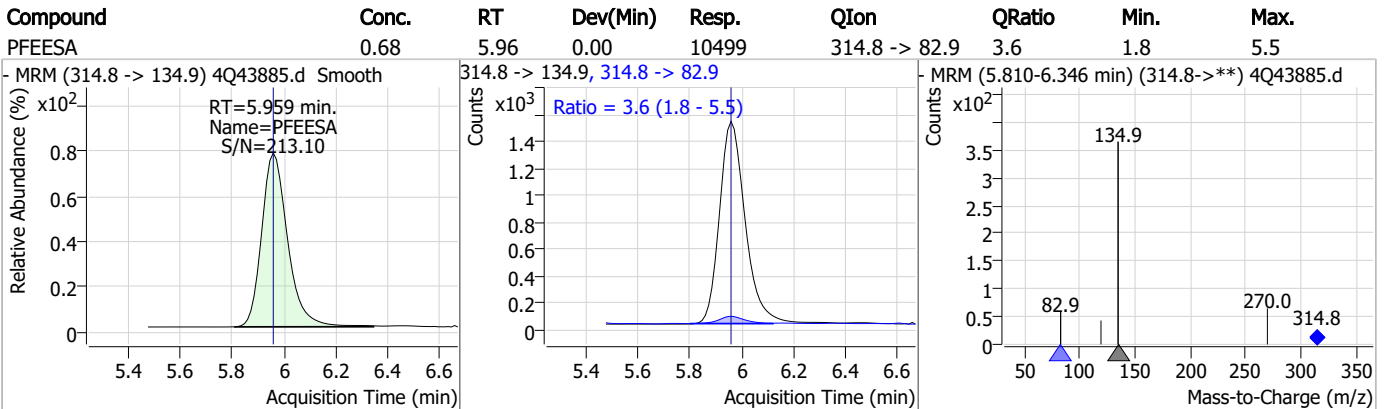
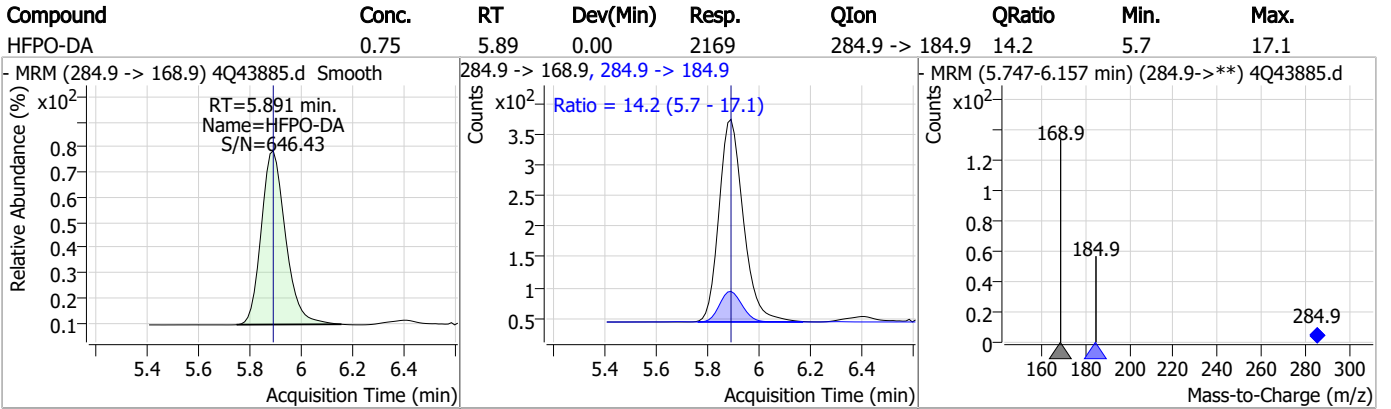


7.7.3
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Perfluorinated Compounds by LC/MS/MS



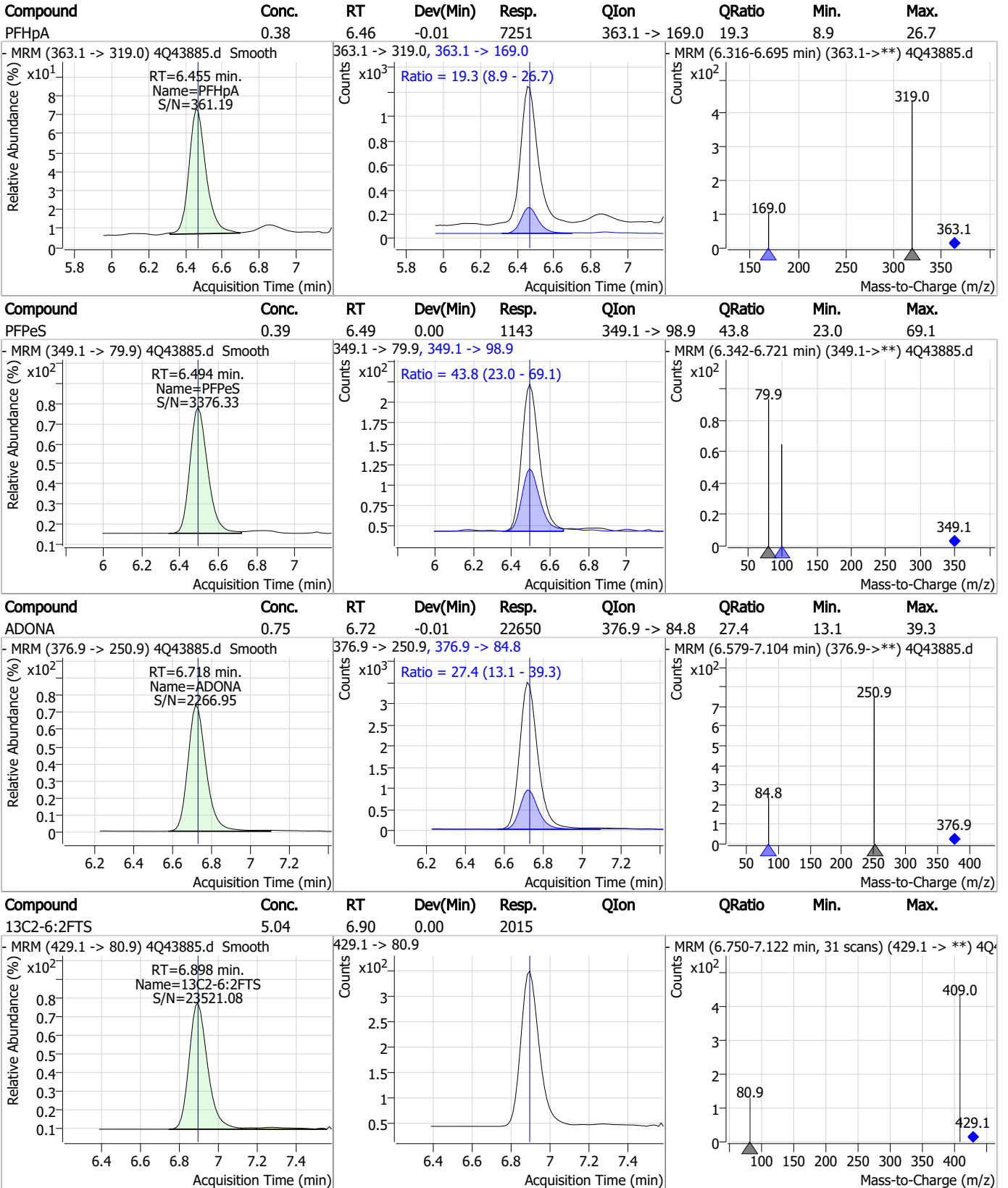
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS

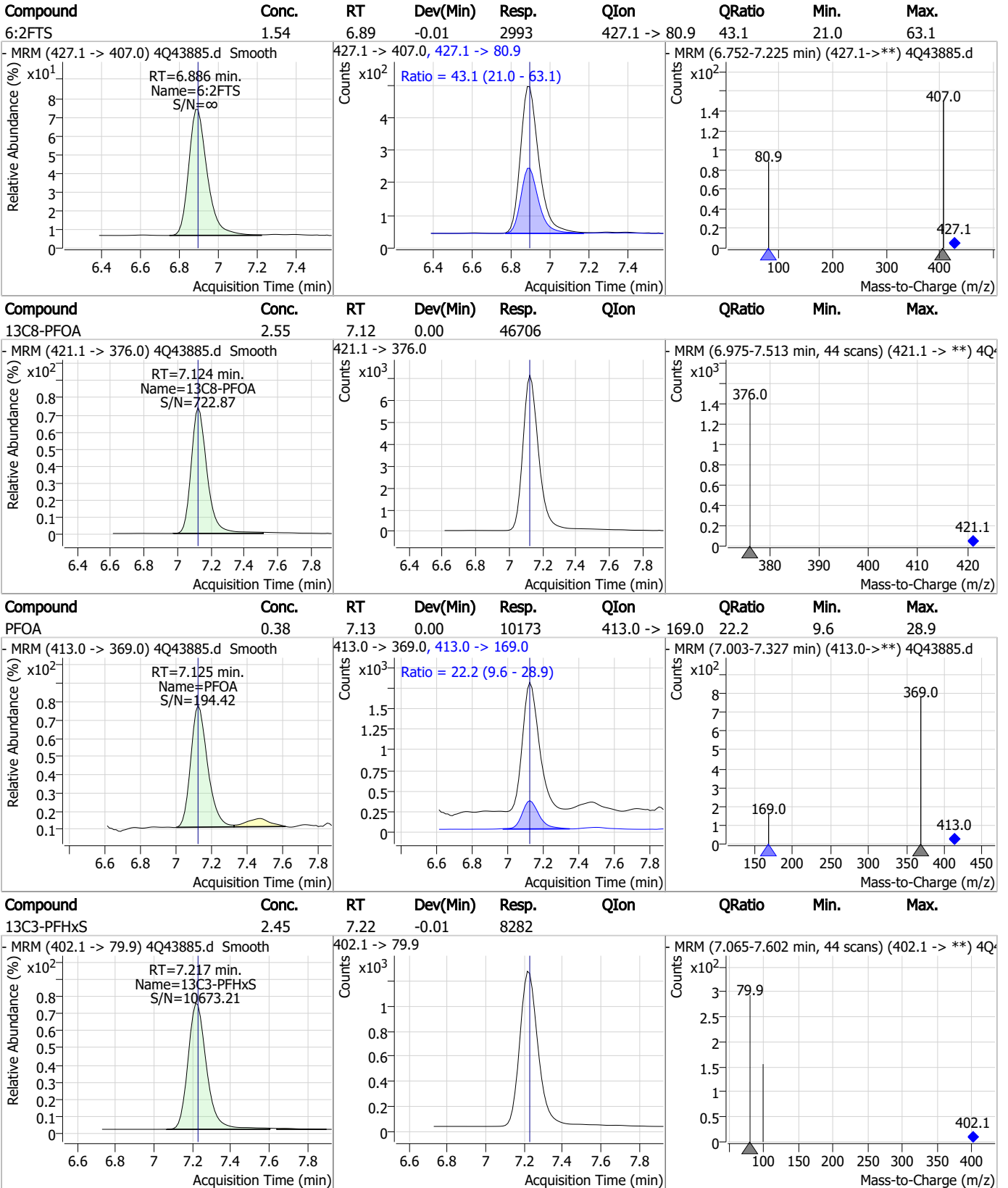


7.7.3

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Perfluorinated Compounds by LC/MS/MS

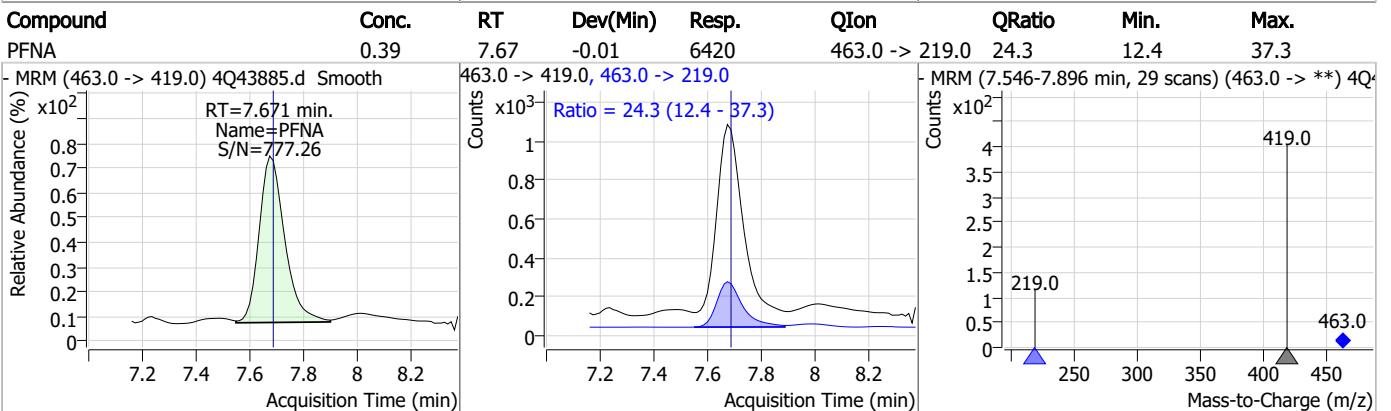
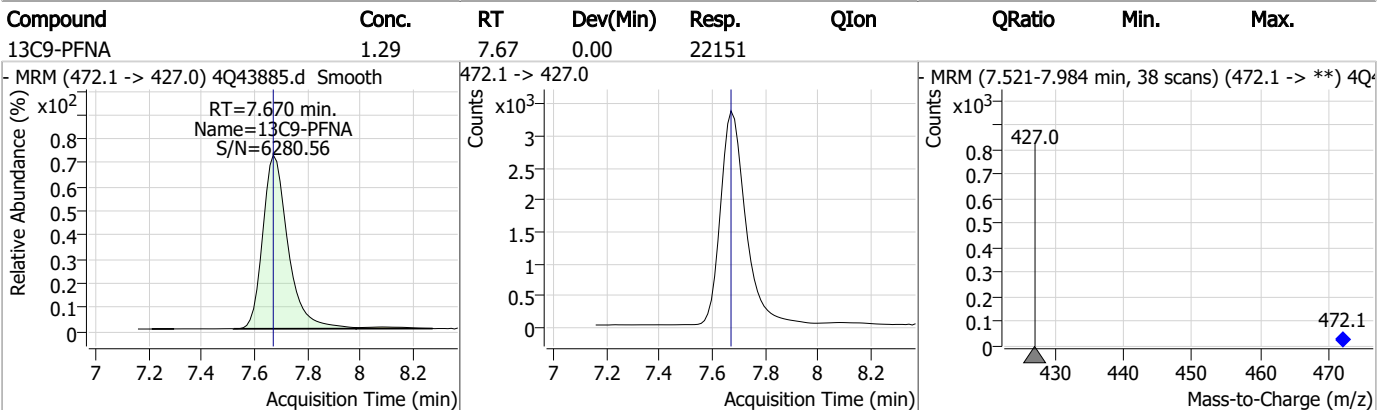
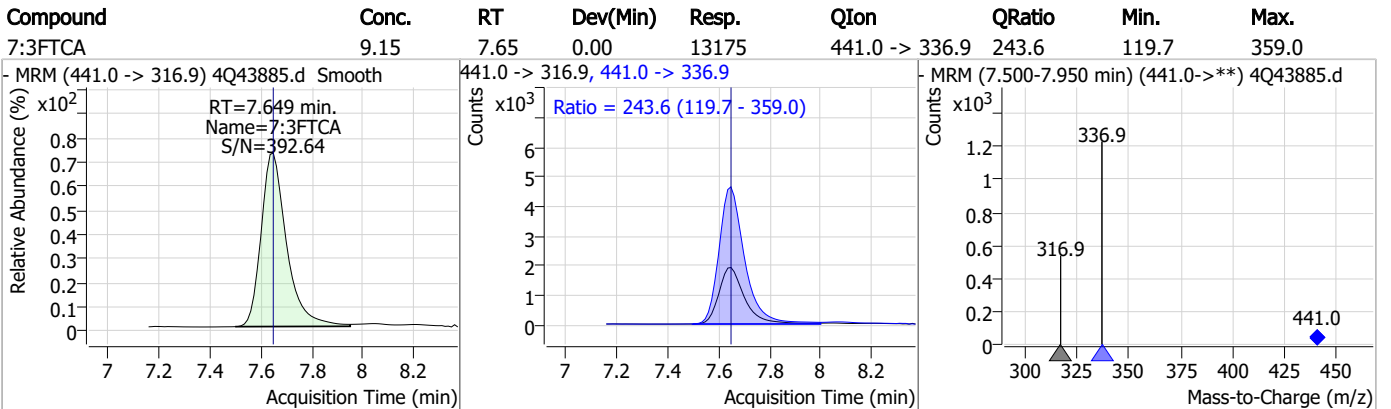
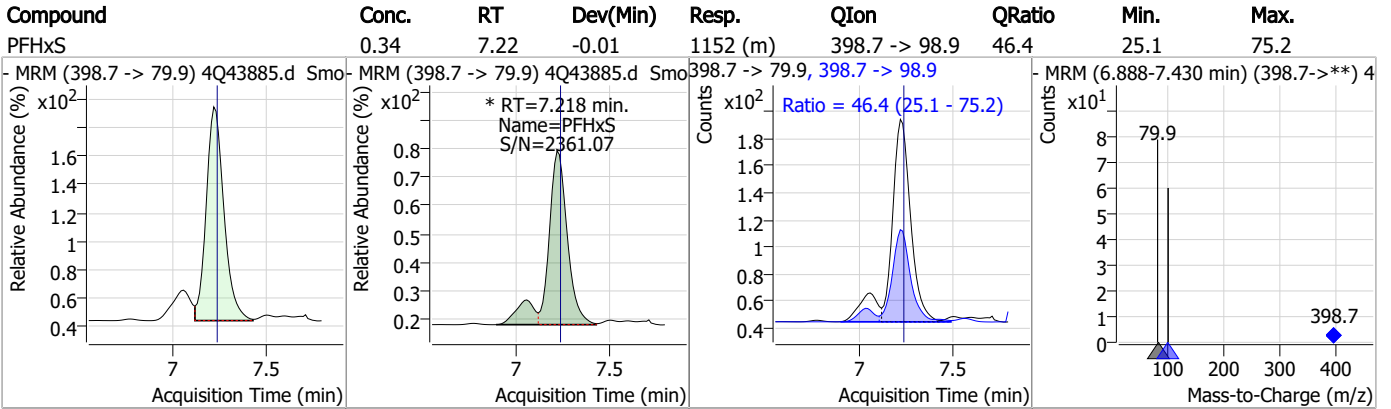


7.7.3

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Perfluorinated Compounds by LC/MS/MS

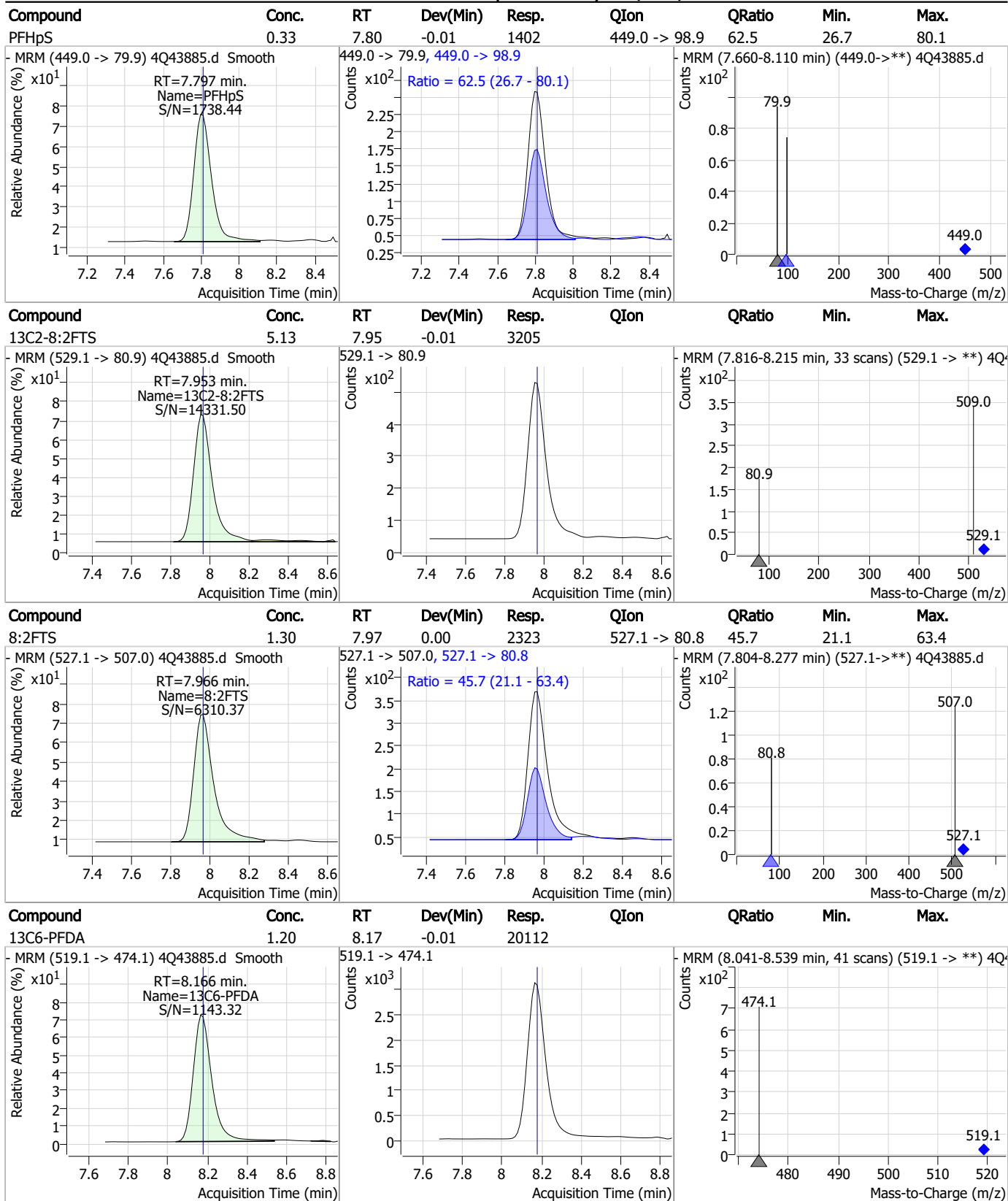


7.7.3

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Perfluorinated Compounds by LC/MS/MS

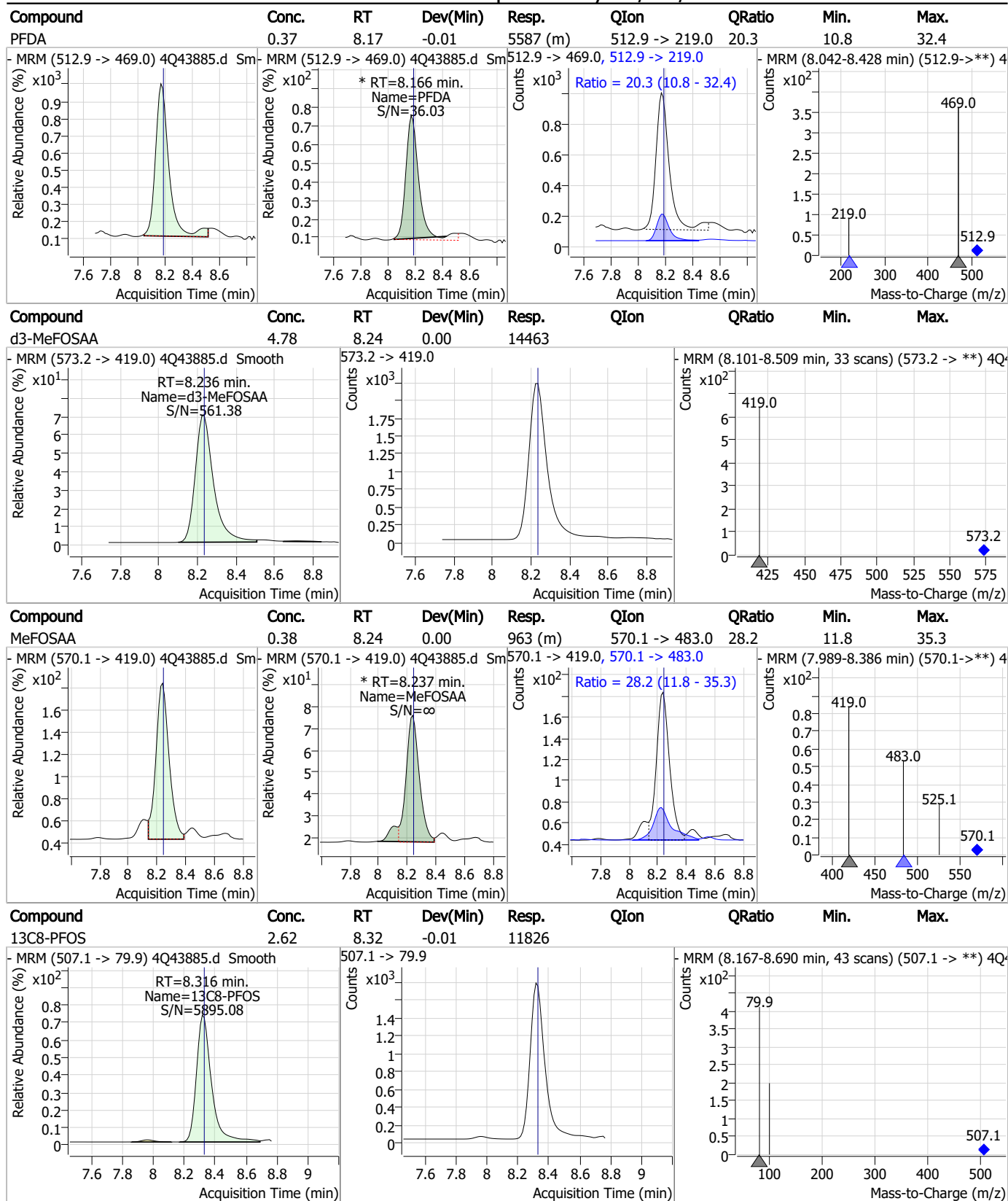


7.7.3

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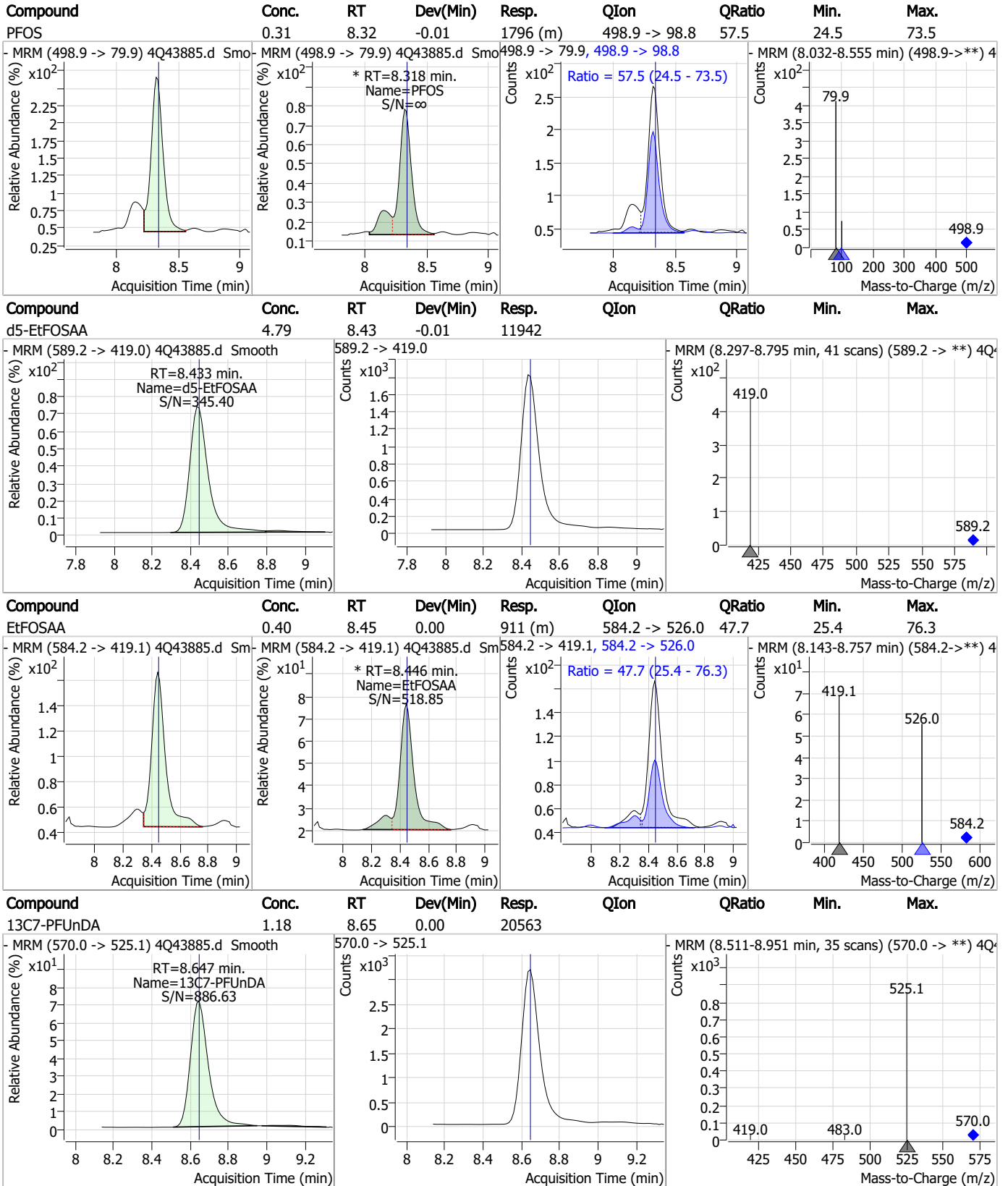
Perfluorinated Compounds by LC/MS/MS



7.7.3

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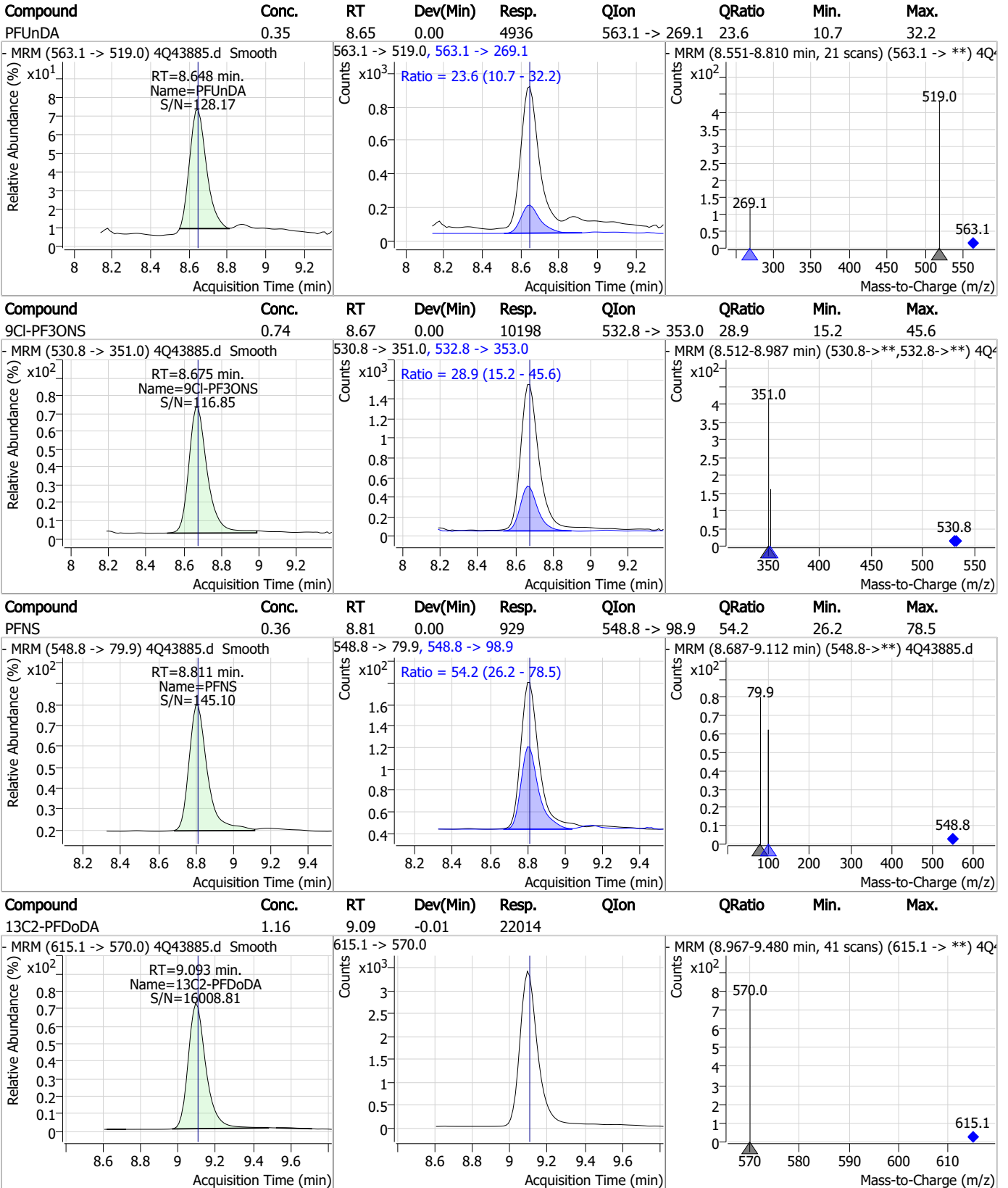
Perfluorinated Compounds by LC/MS/MS



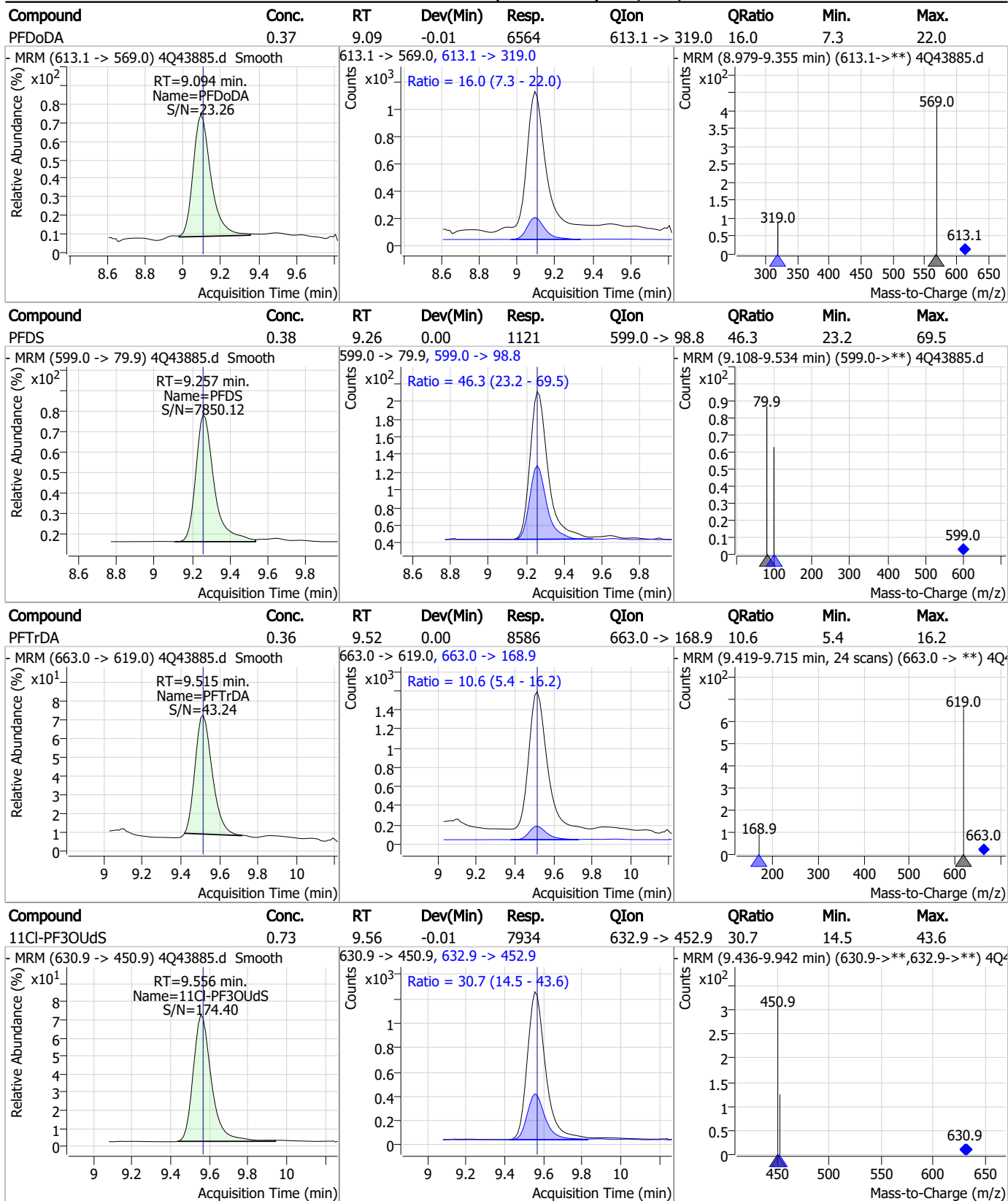
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Perfluorinated Compounds by LC/MS/MS

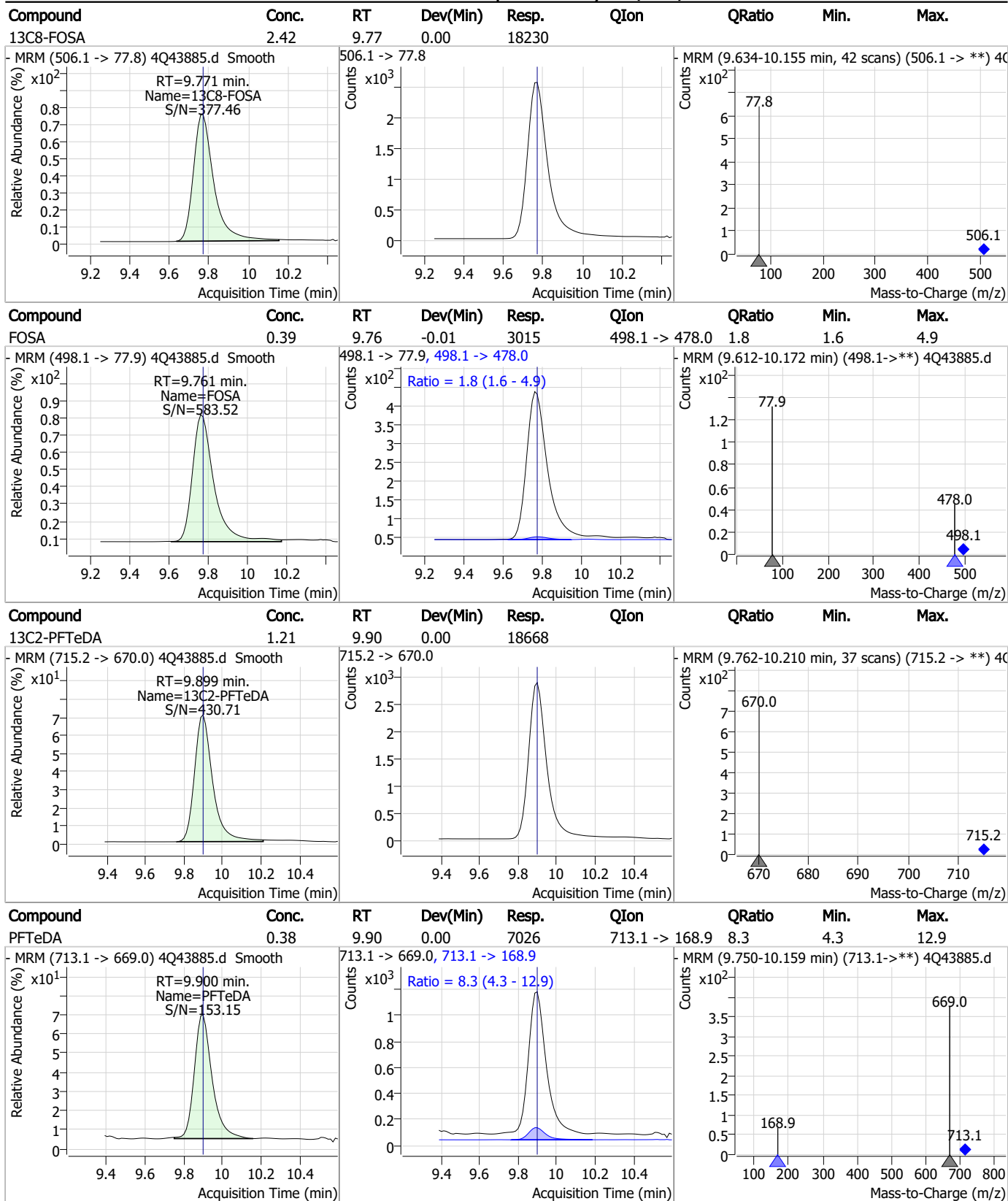


Perfluorinated Compounds by LC/MS/MS



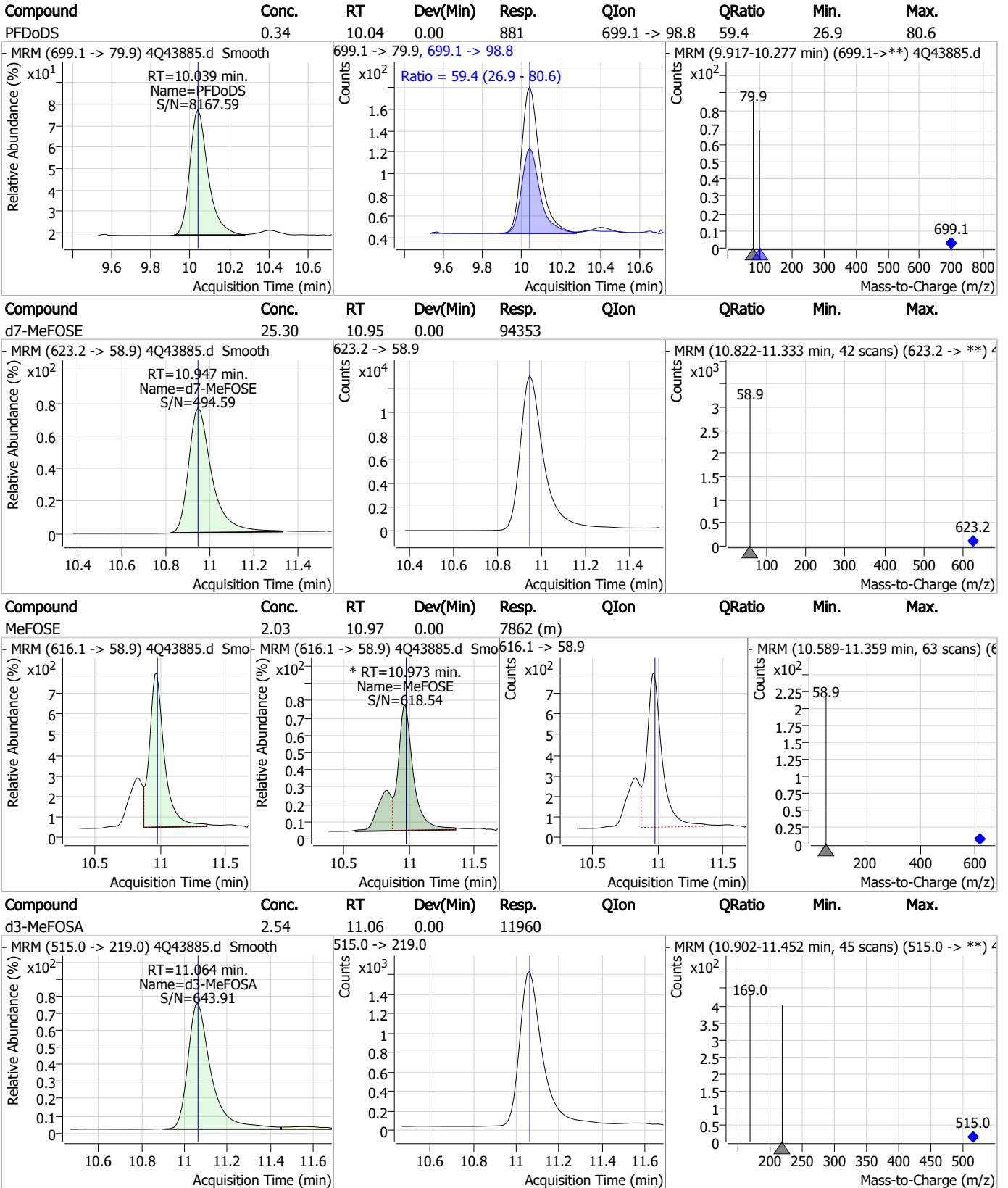
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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Perfluorinated Compounds by LC/MS/MS



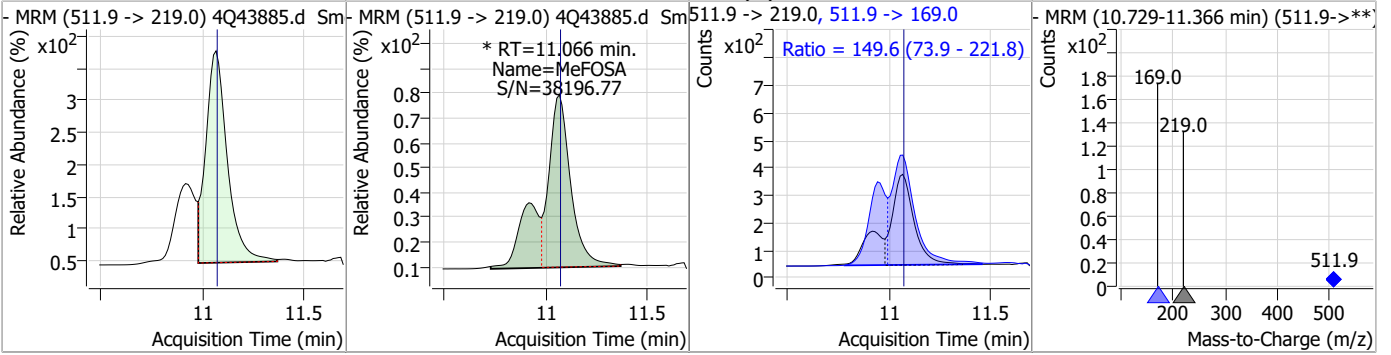
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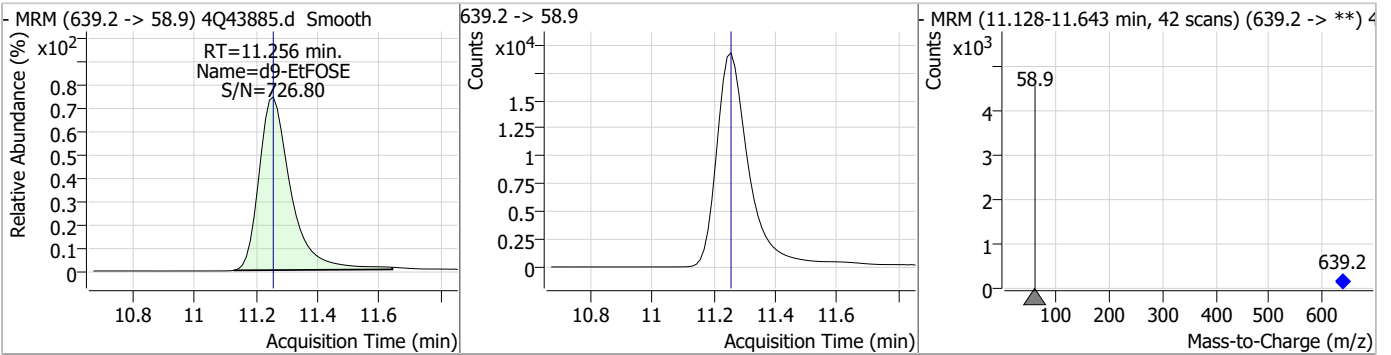


Perfluorinated Compounds by LC/MS/MS

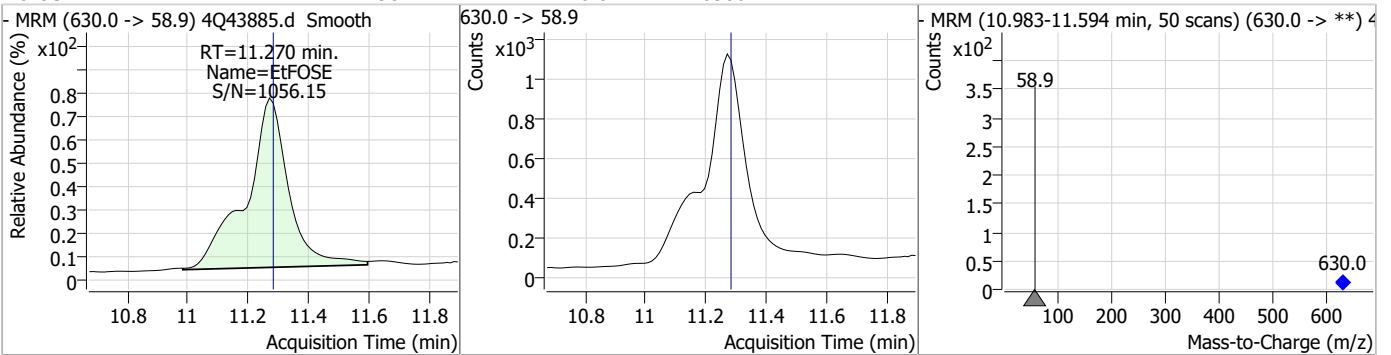
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.74	11.07	0.00	3333 (m)	511.9 -> 169.0	149.6	73.9	221.8



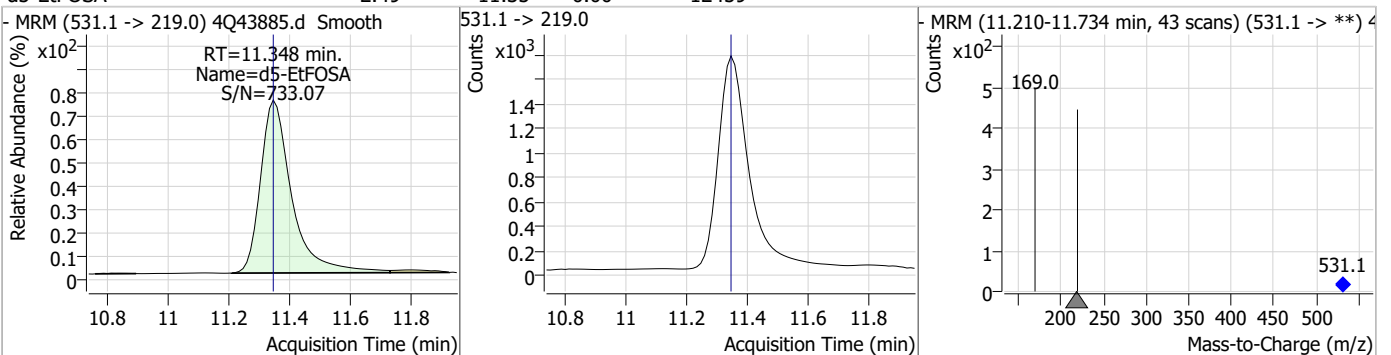
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.01	11.26	0.00	137343				



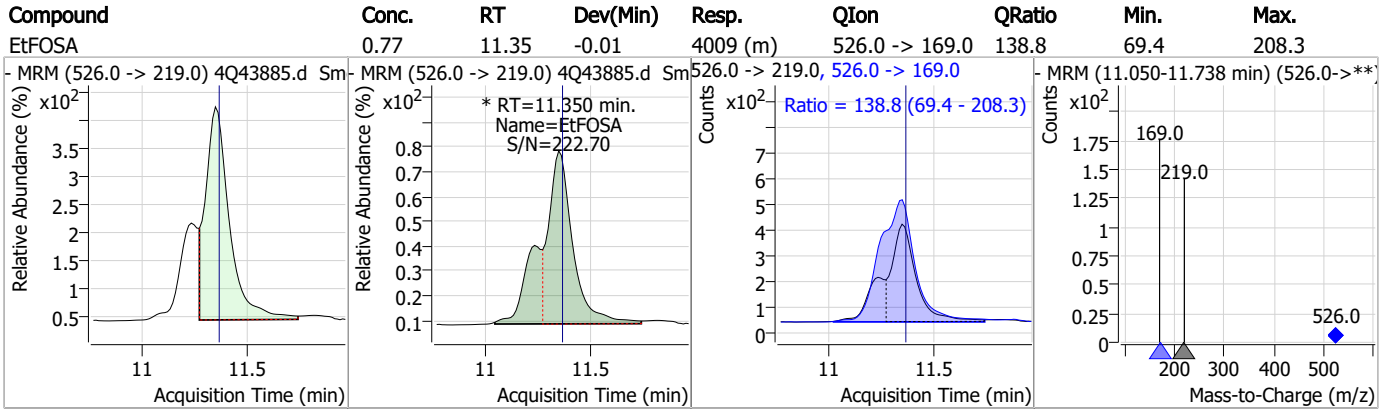
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	1.95	11.27	-0.01	10380				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	11.35	0.00	12459				



Perfluorinated Compounds by LC/MS/MS



7.7.3

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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

7.7.3.1
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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

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

7.7.4
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	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			
11Cl-PF3OUdS	9.556	630.9 -> 450.9	24933	2.30	µg/L	94
		632.9 -> 452.9	8060			
9Cl-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

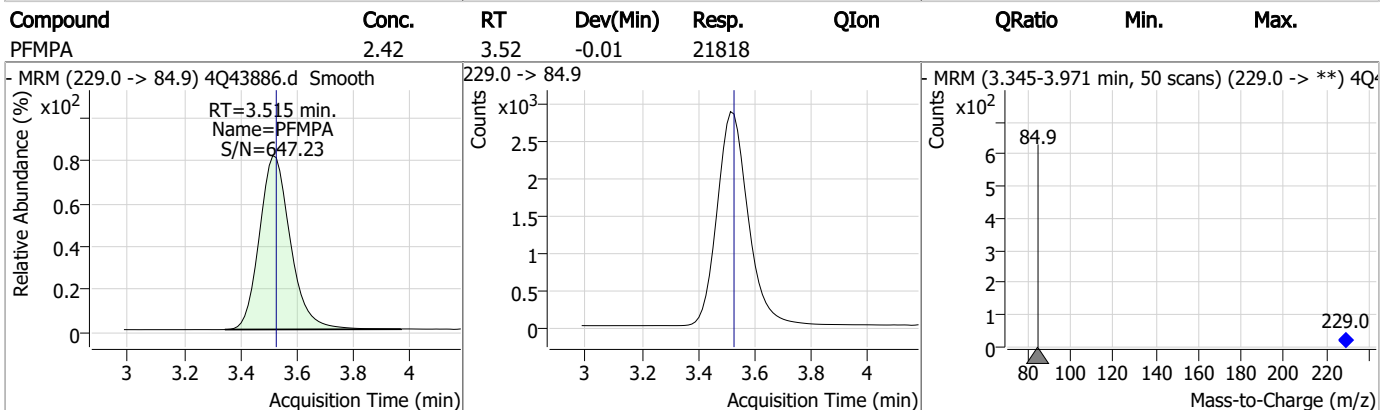
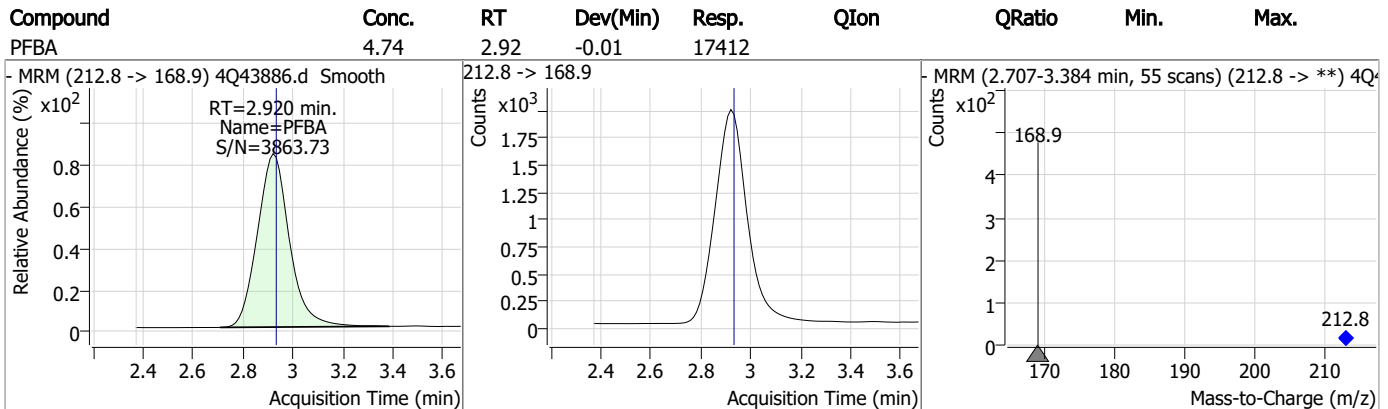
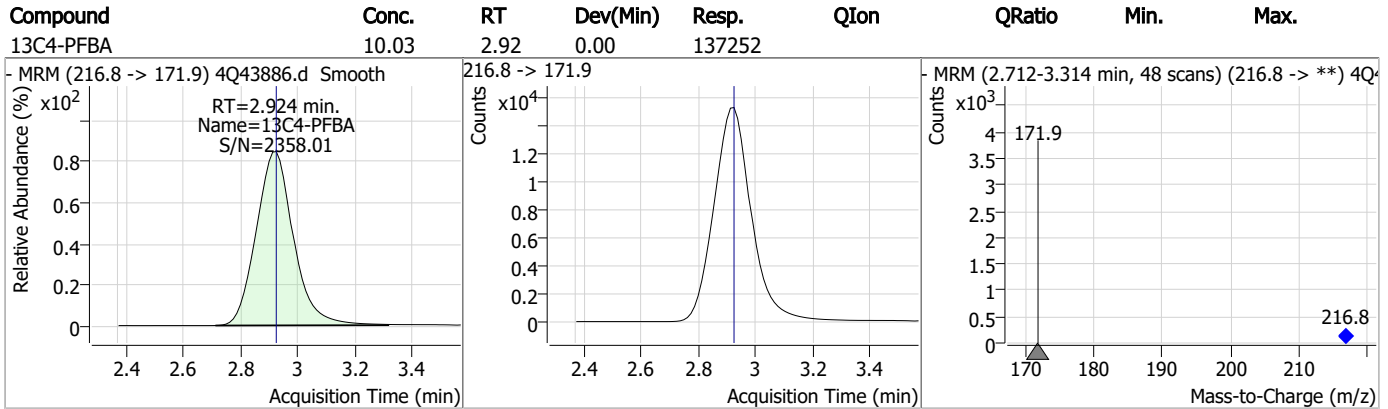
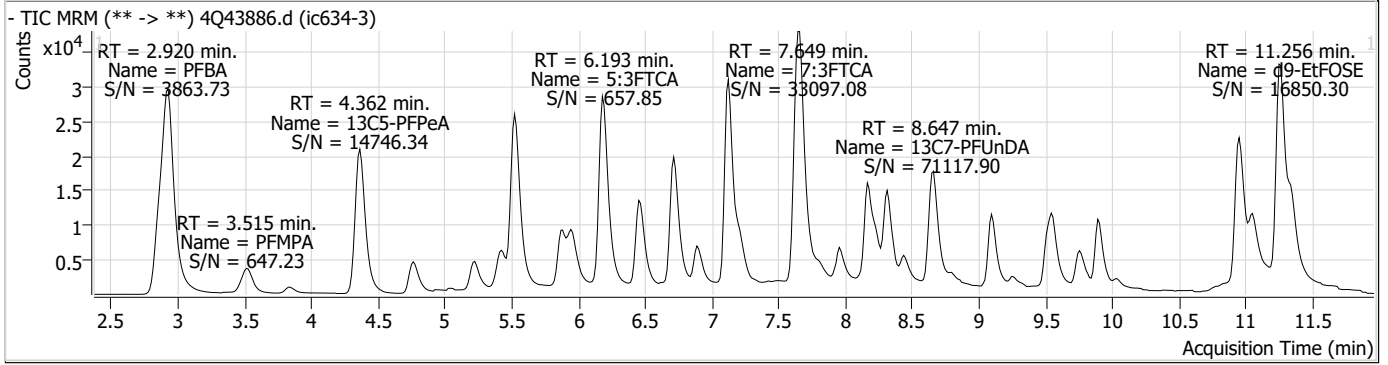
Perfluorinated Compounds by LC/MS/MS

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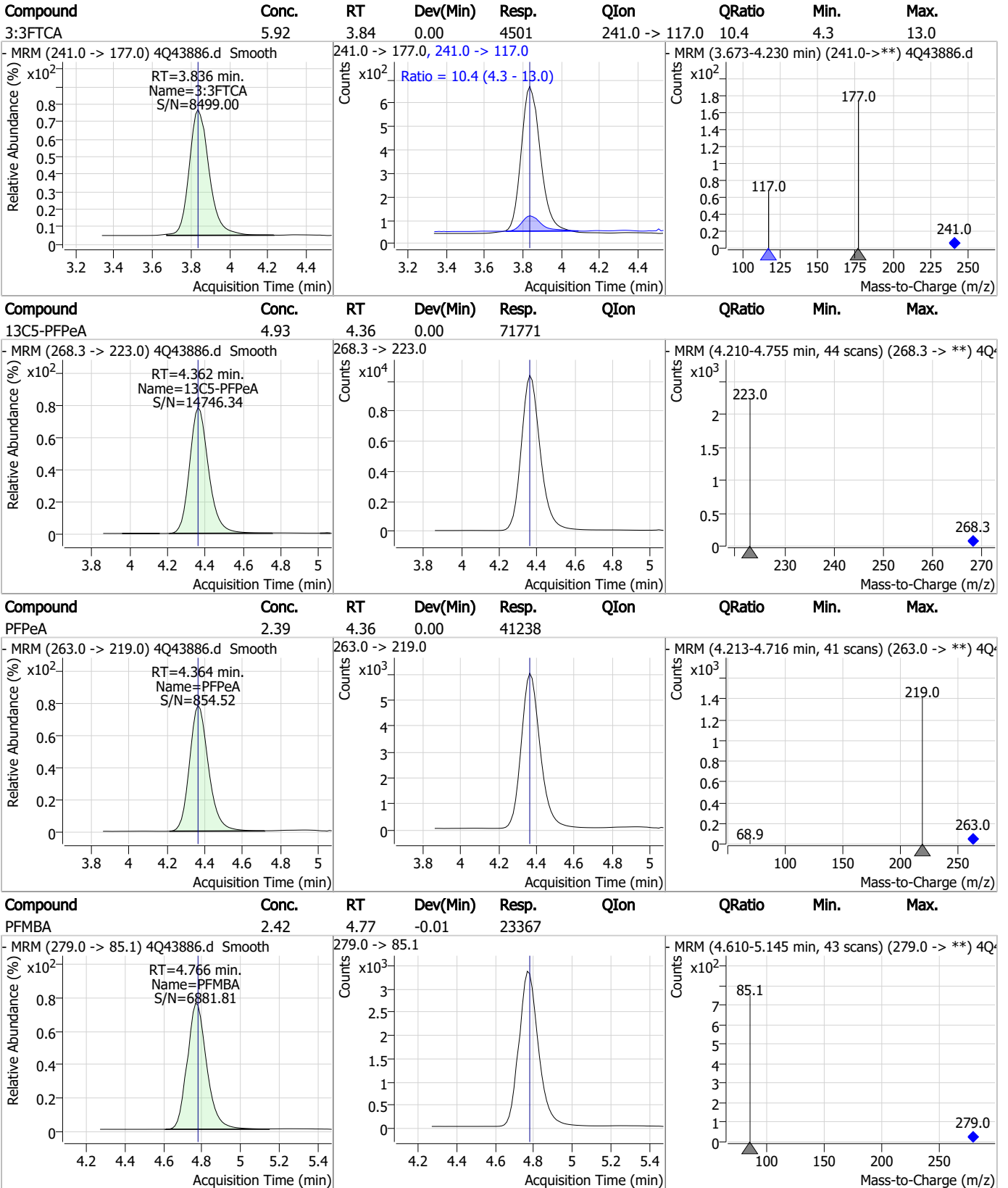
7.7.4

7

Perfluorinated Compounds by LC/MS/MS



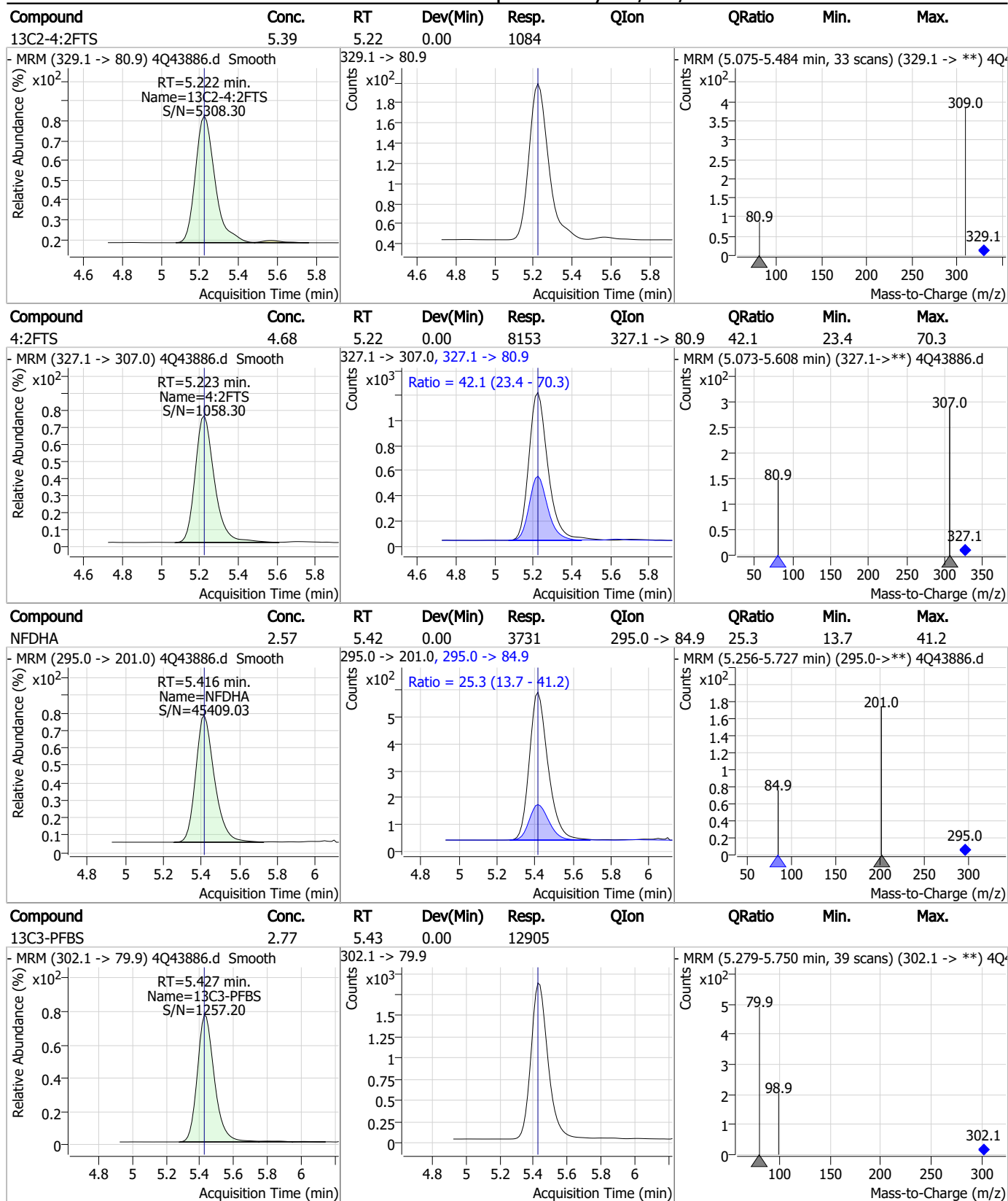
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Perfluorinated Compounds by LC/MS/MS

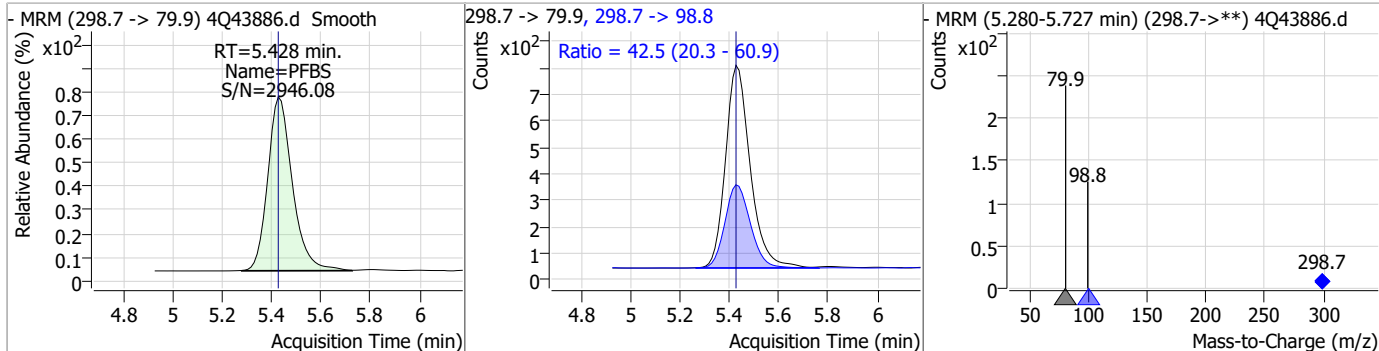


7.7.4

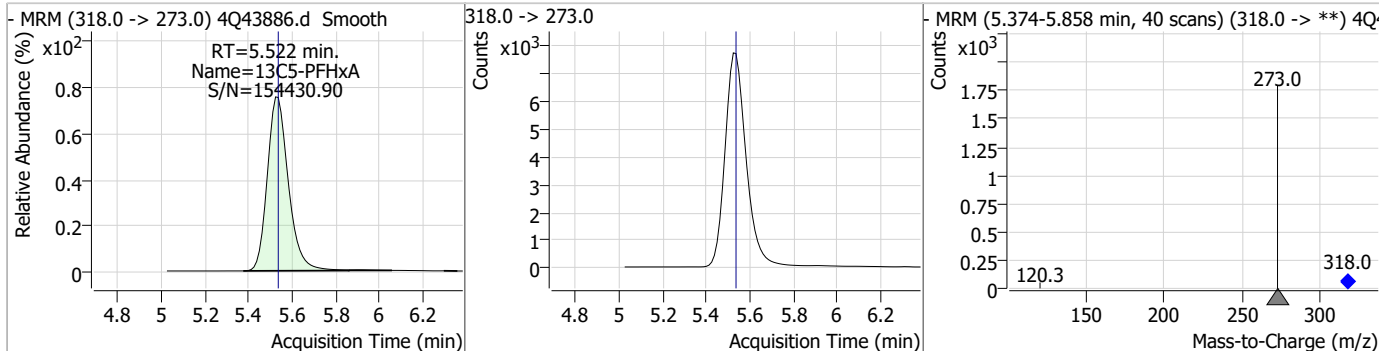
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Perfluorinated Compounds by LC/MS/MS

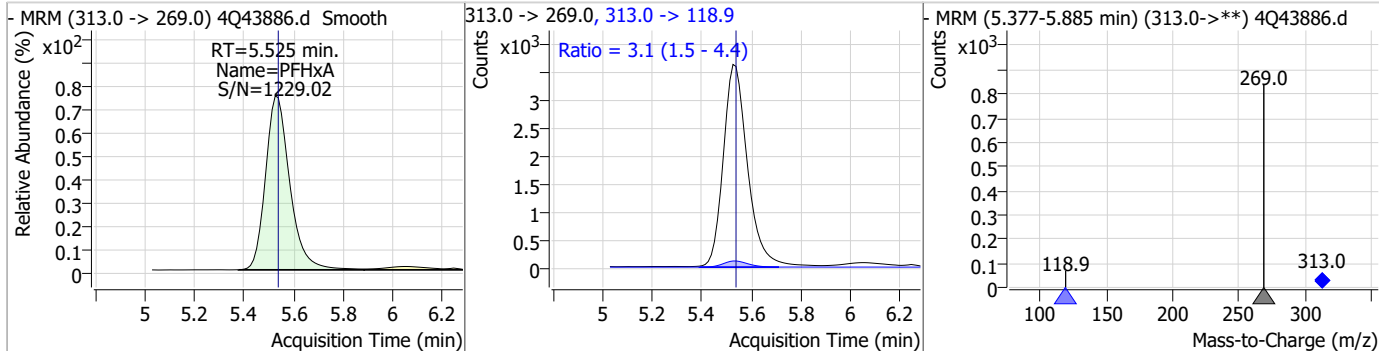
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.00	5.43	0.00	5301	298.7 -> 98.8	42.5	20.3	60.9



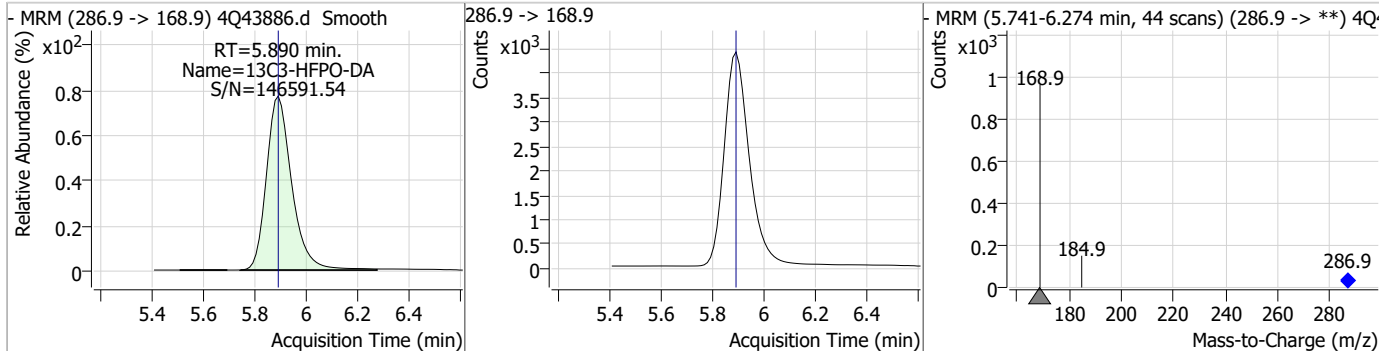
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.52	-0.01	51796				



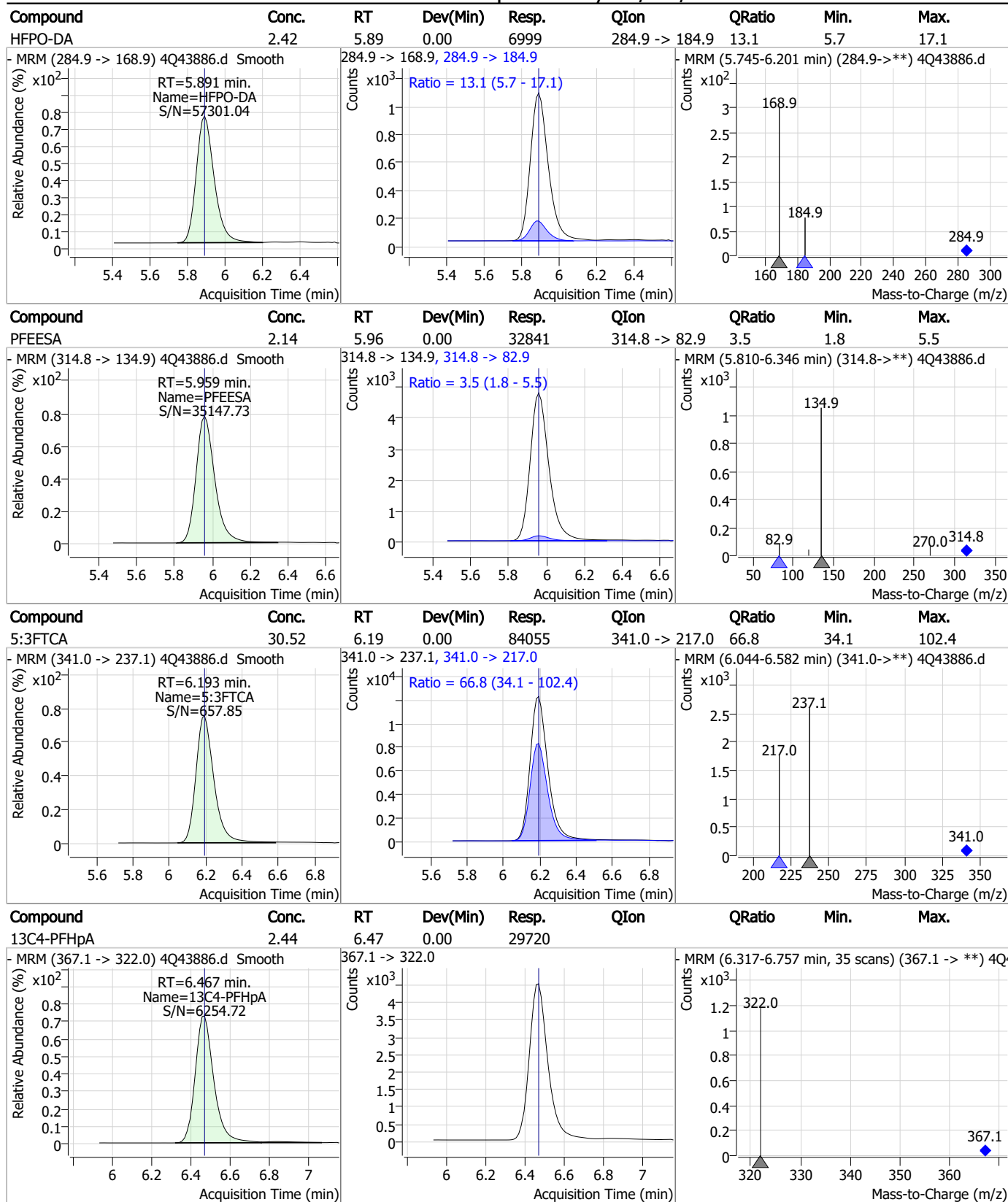
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.21	5.53	-0.01	24548	313.0 -> 118.9	3.1	1.5	4.4



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

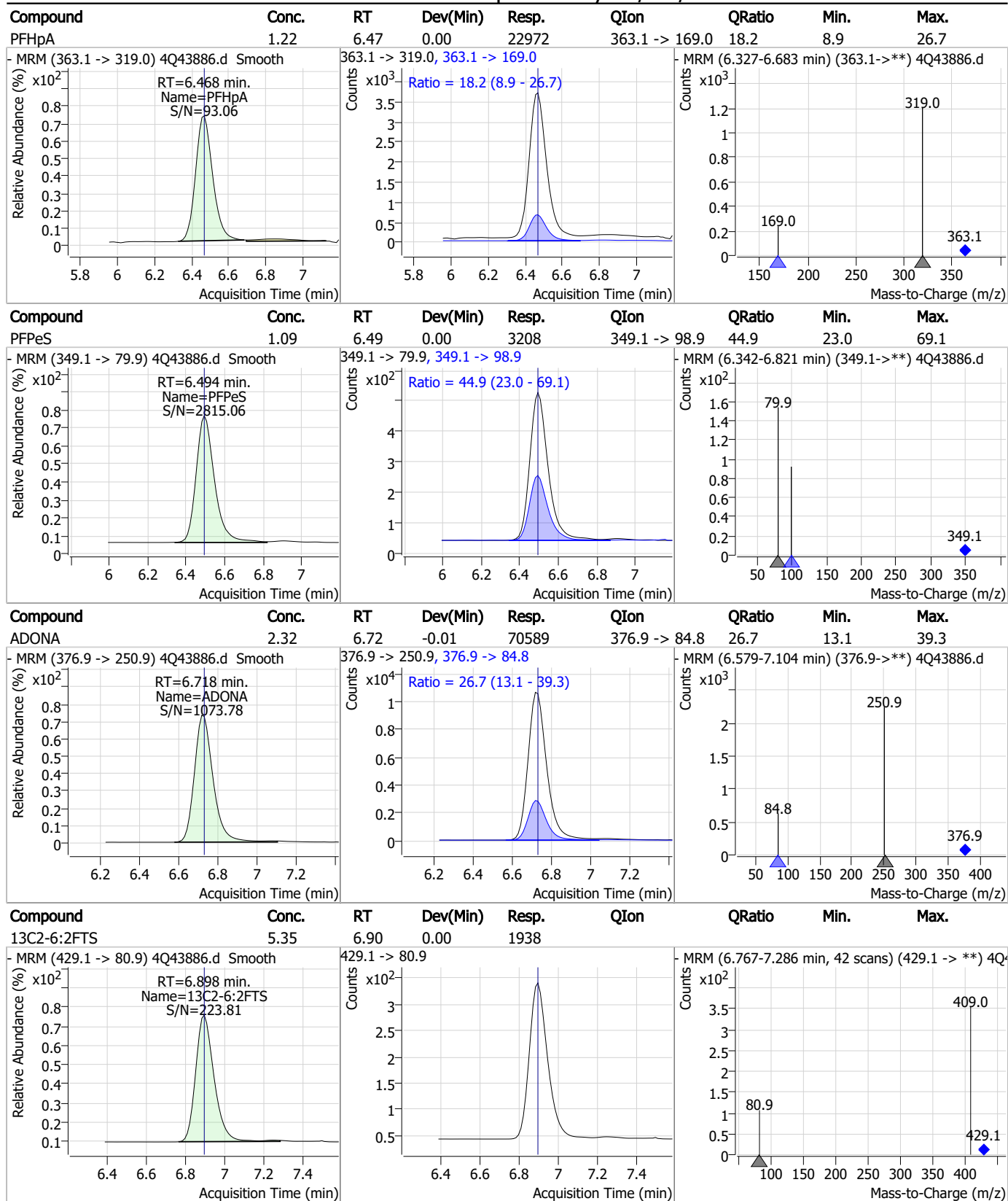


Perfluorinated Compounds by LC/MS/MS



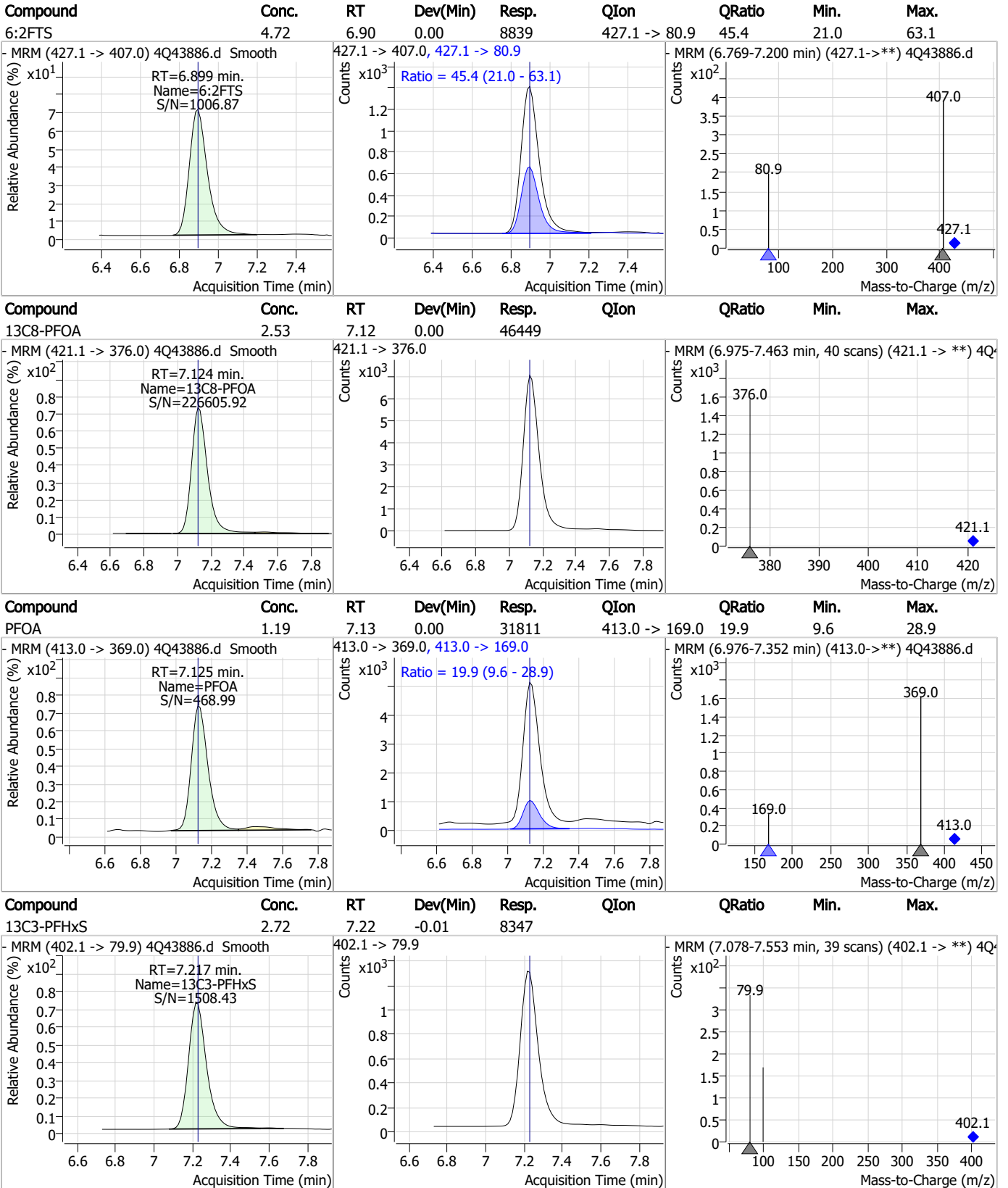
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS

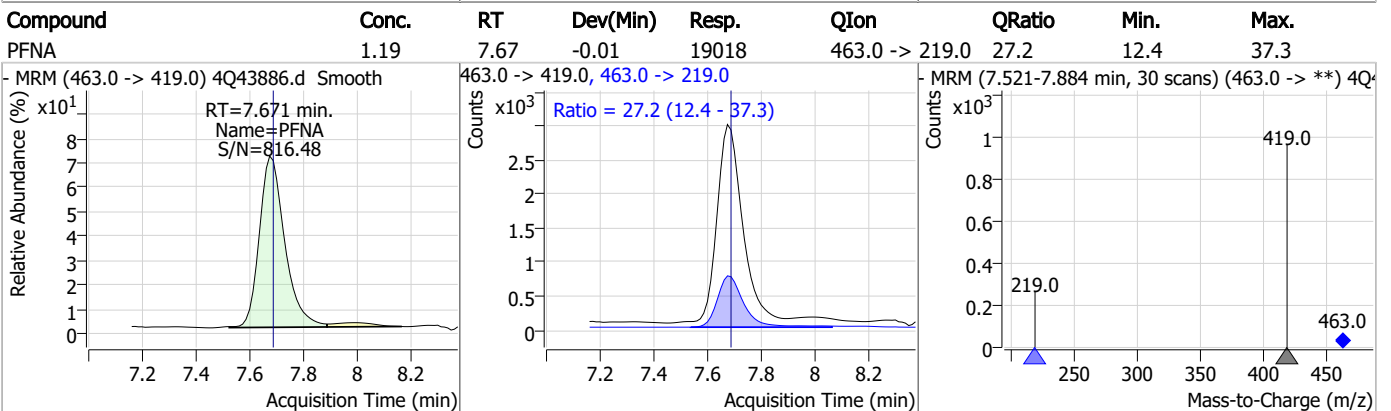
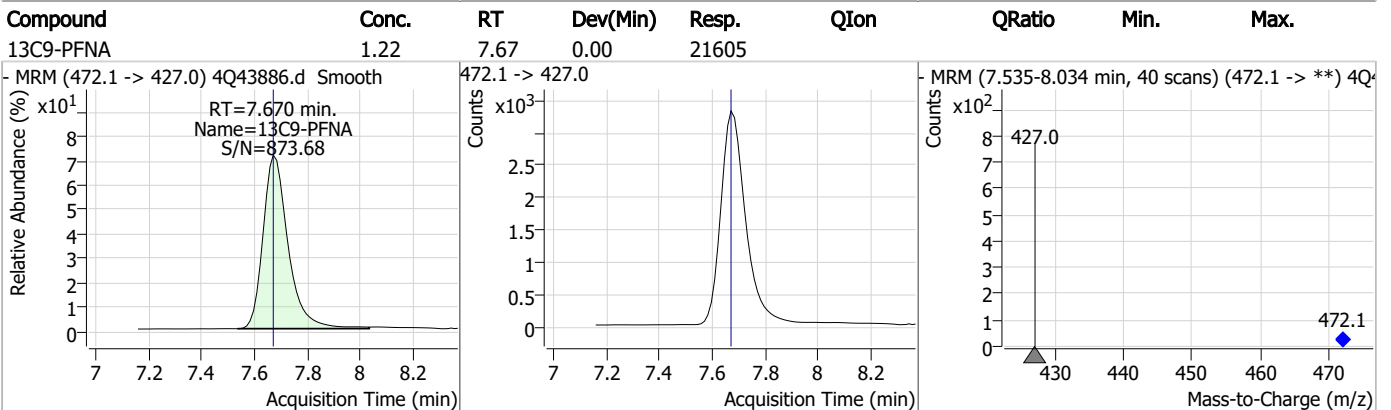
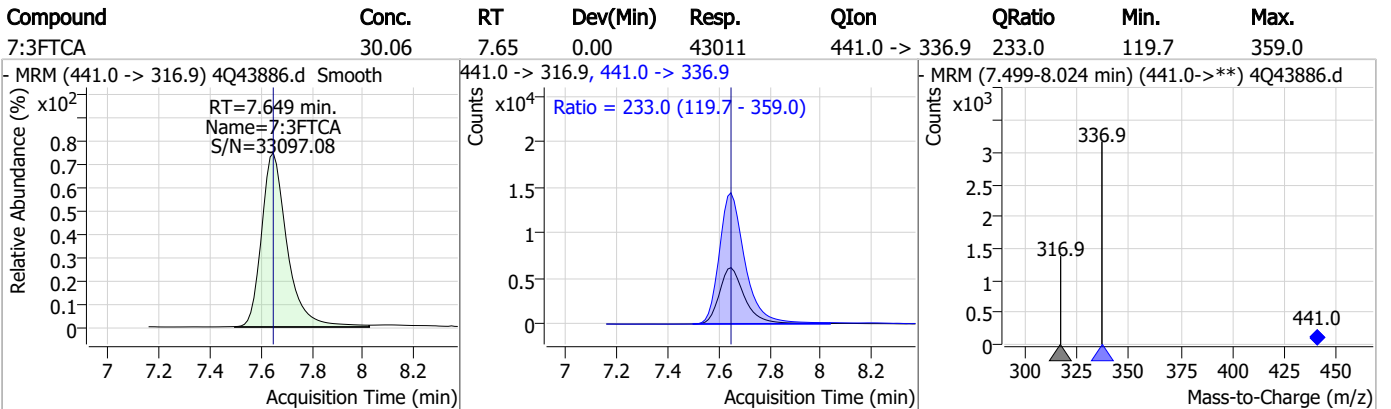
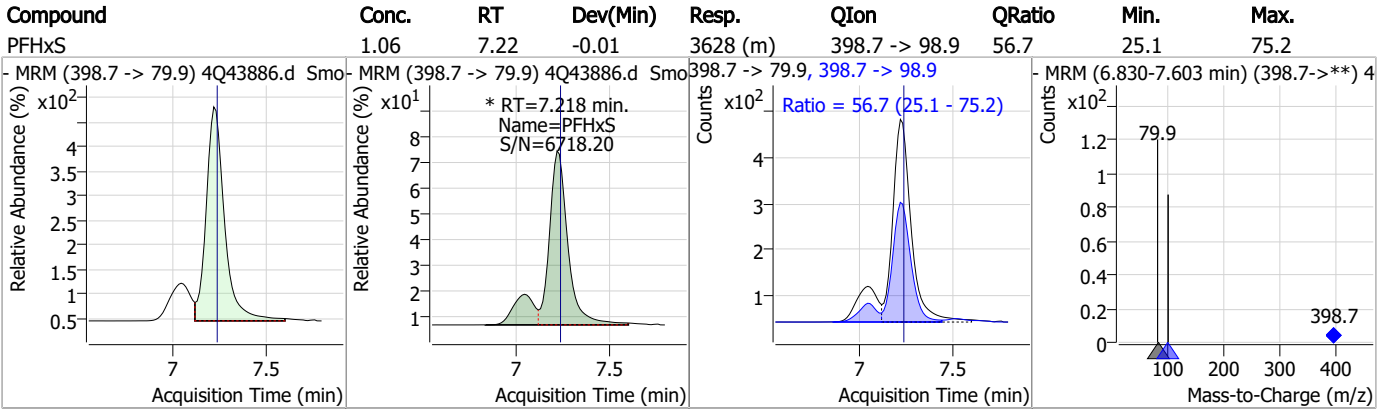


7.7.4

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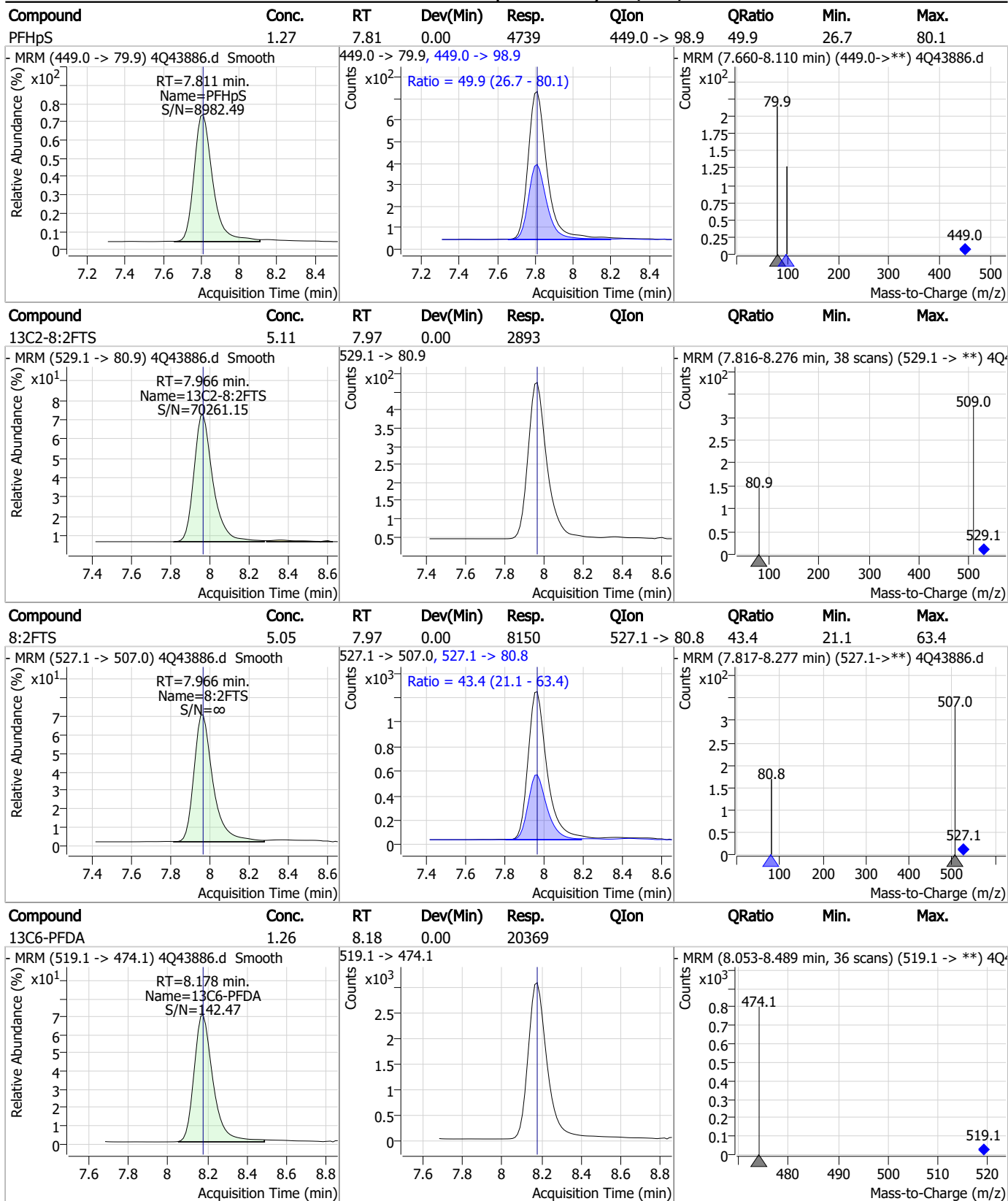
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Perfluorinated Compounds by LC/MS/MS

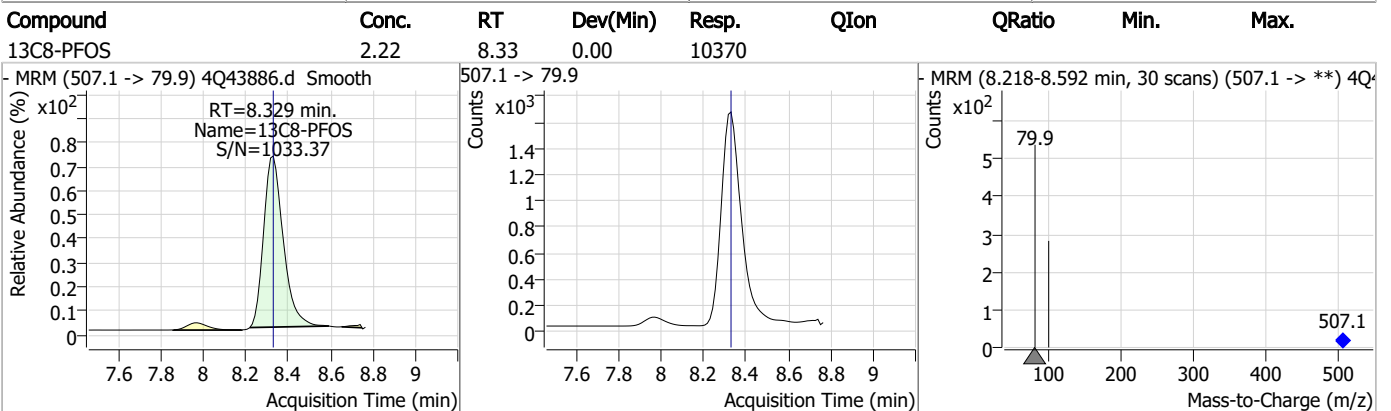
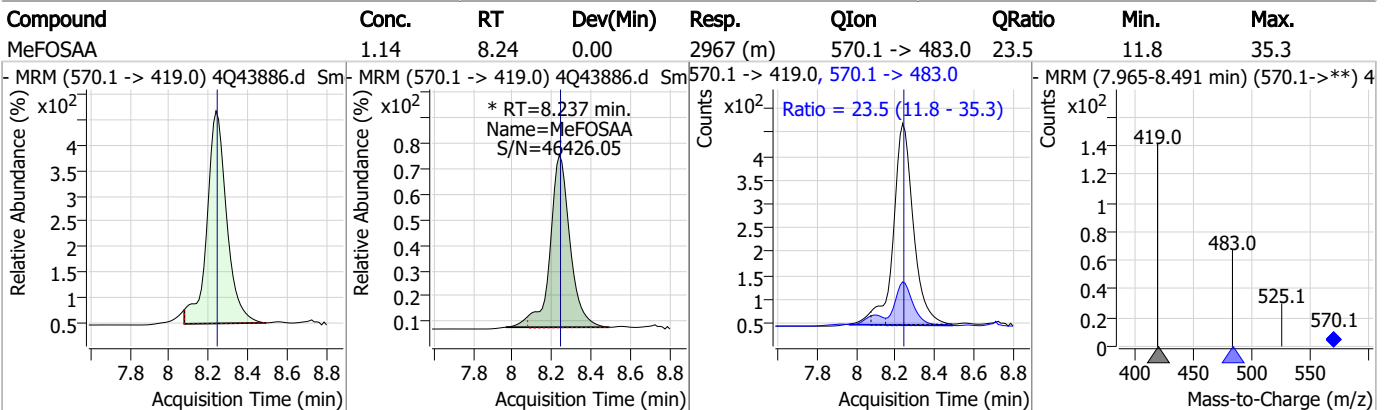
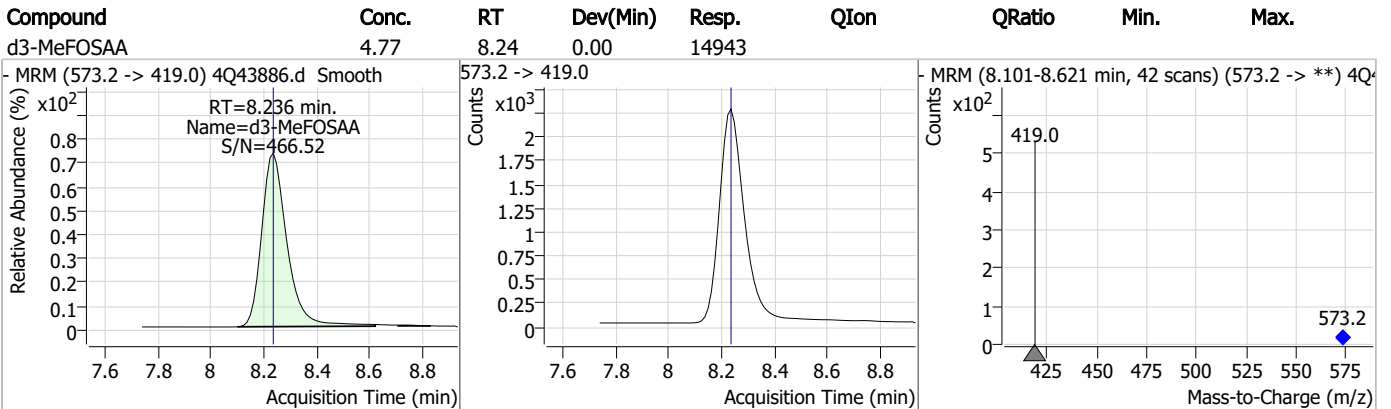
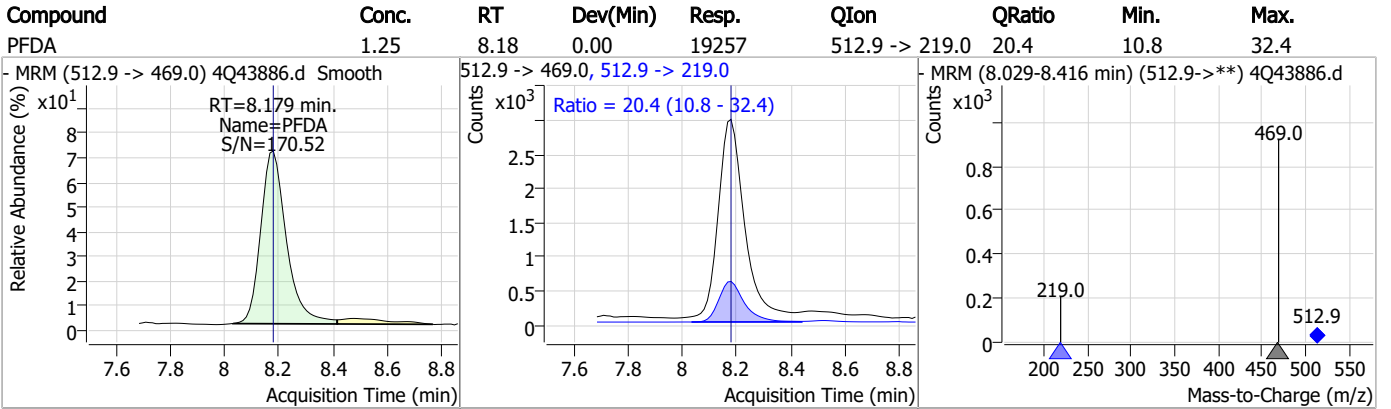


7.7.4

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Perfluorinated Compounds by LC/MS/MS

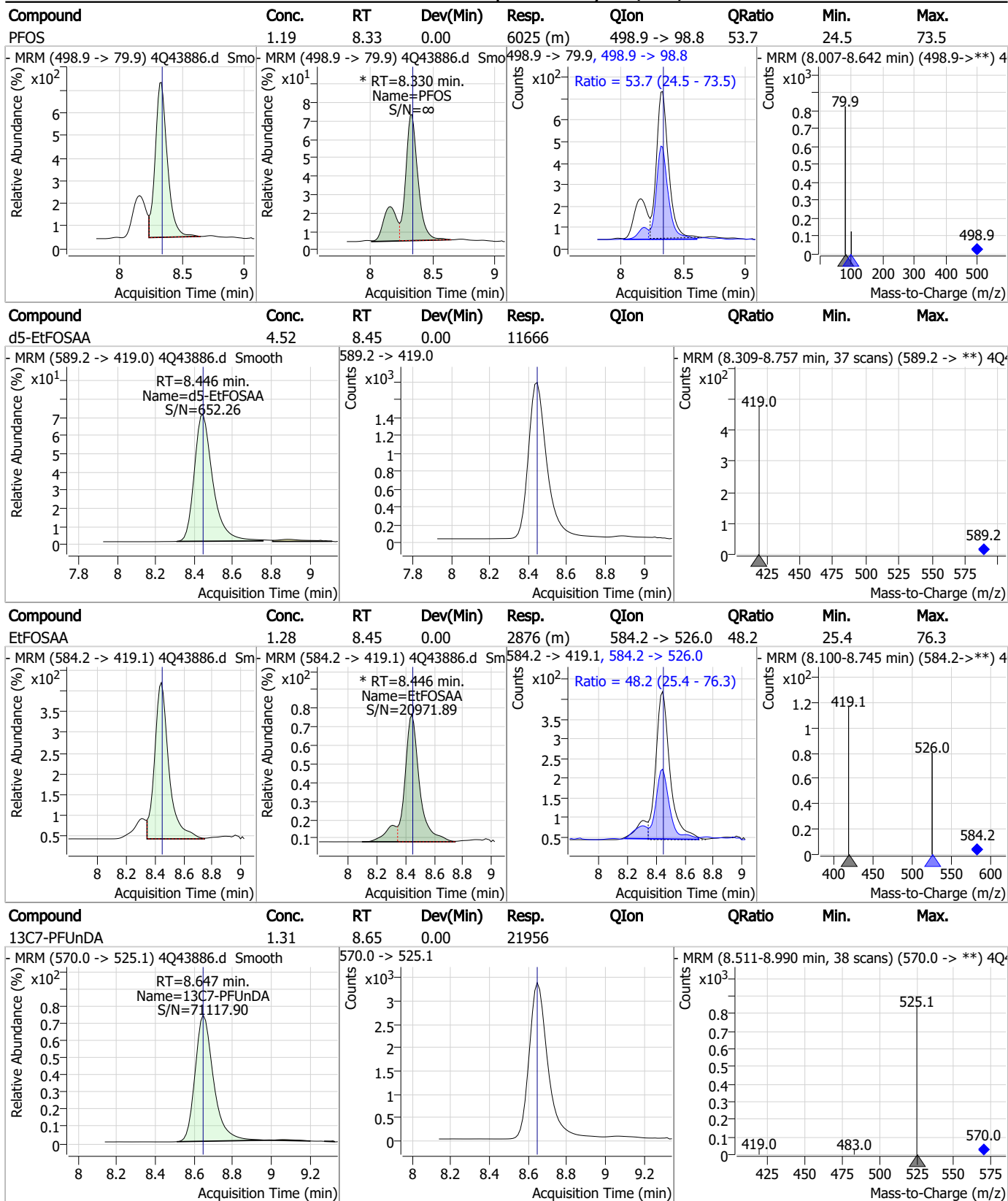


7.7.4

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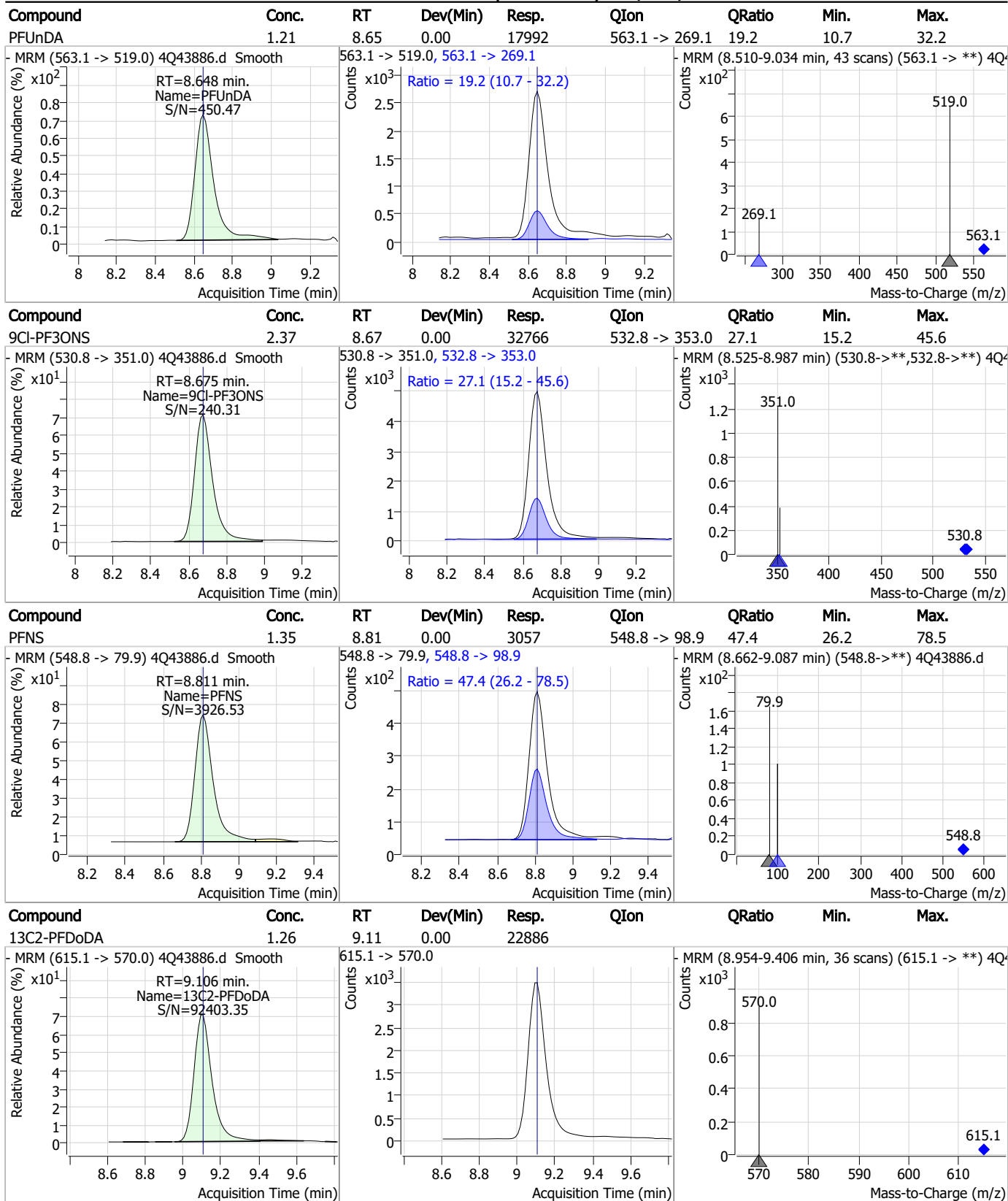


Perfluorinated Compounds by LC/MS/MS



7.7.4
7

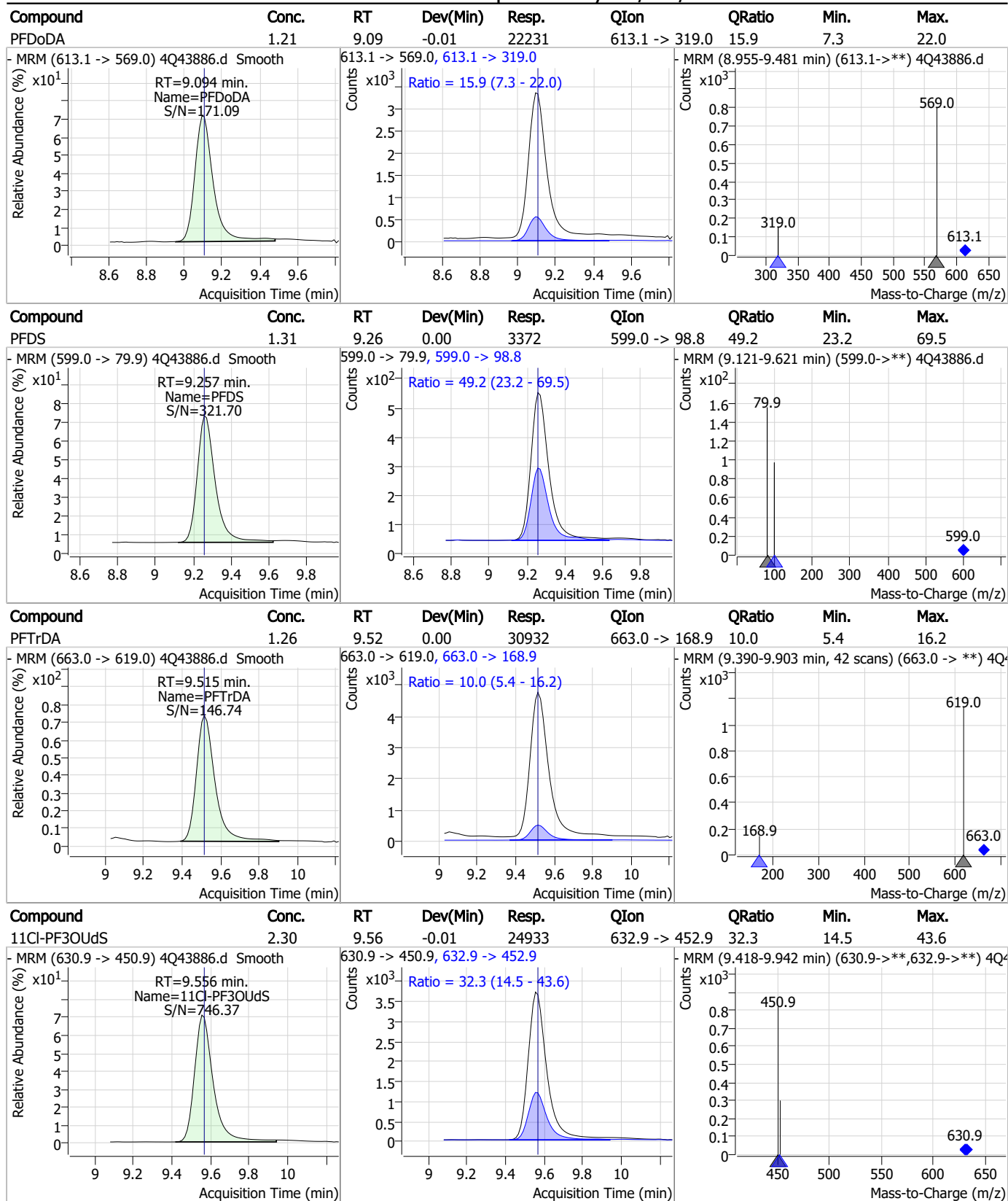
Perfluorinated Compounds by LC/MS/MS



7.7.4

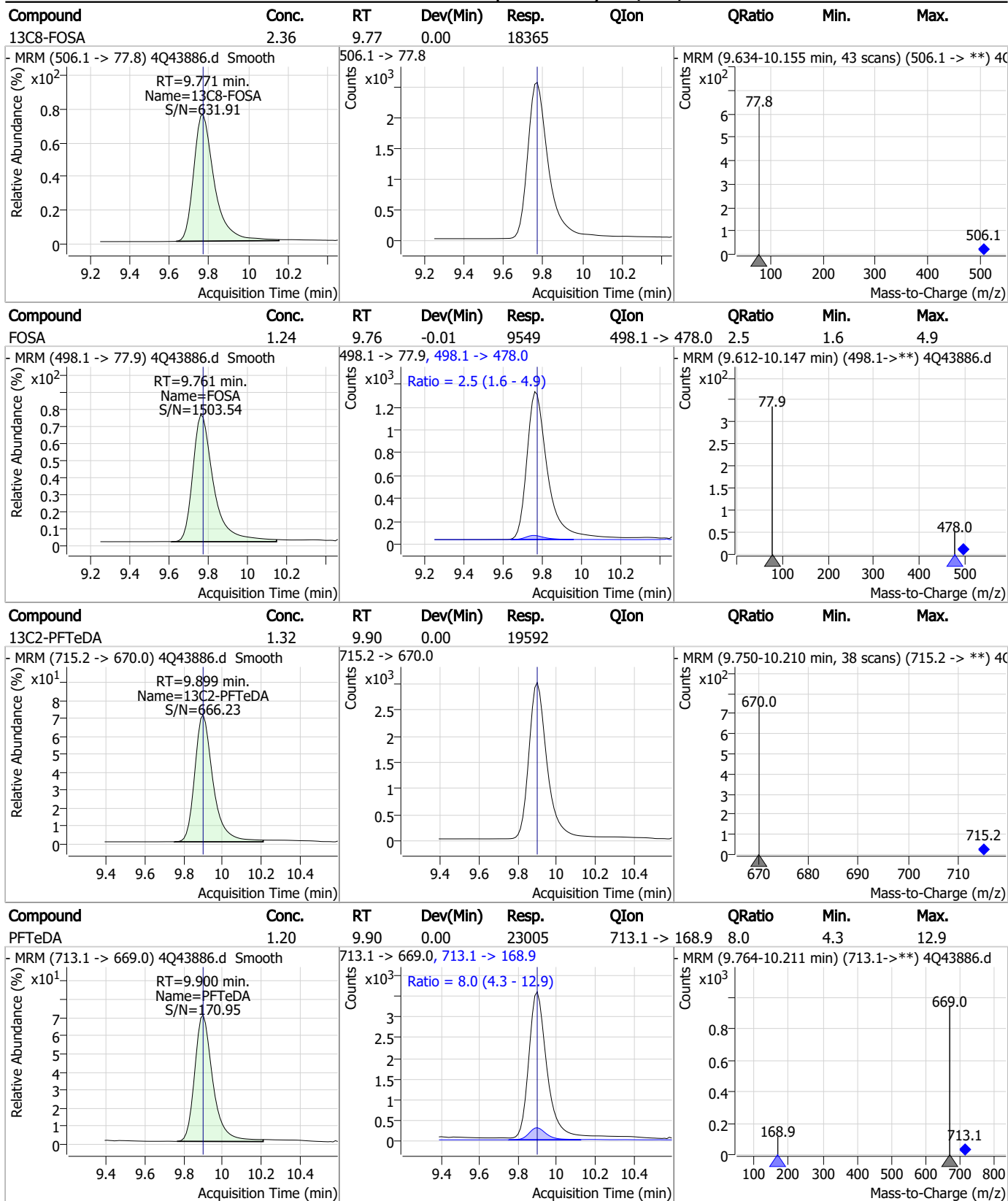
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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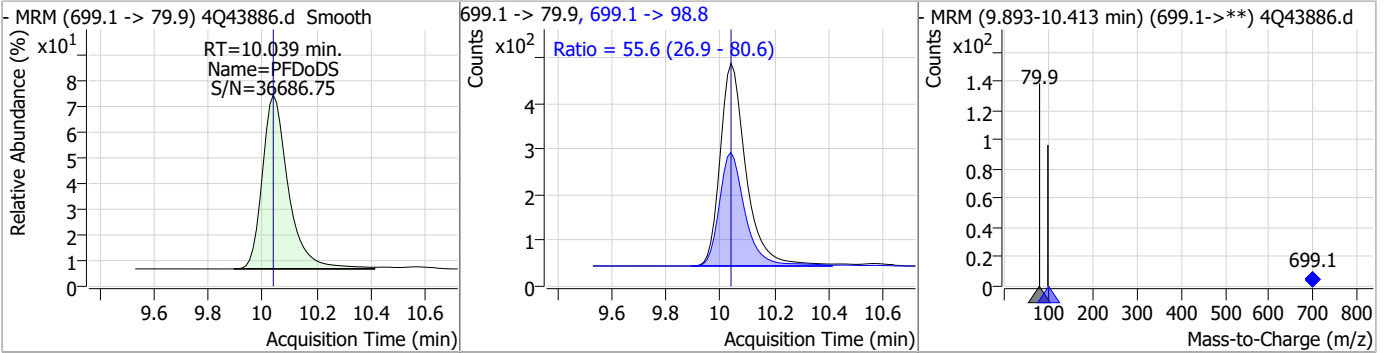
Perfluorinated Compounds by LC/MS/MS



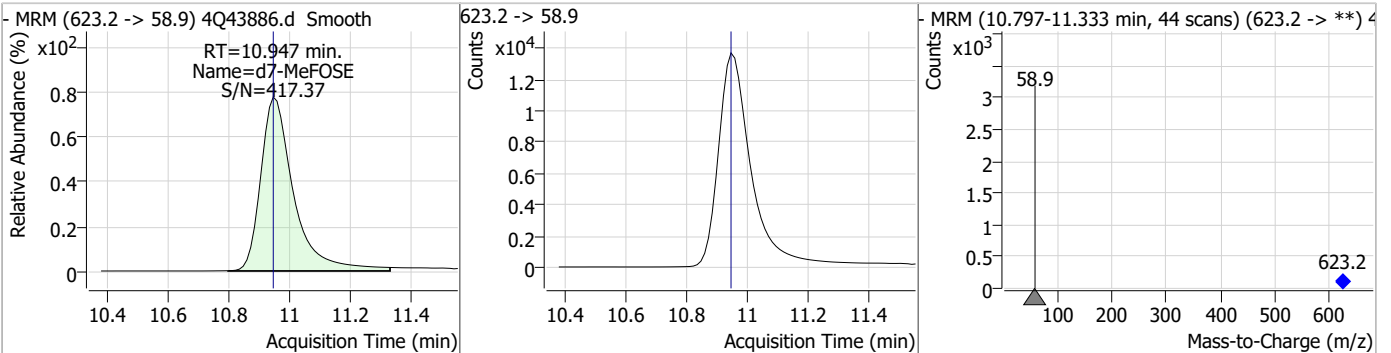
7.7.4
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Perfluorinated Compounds by LC/MS/MS

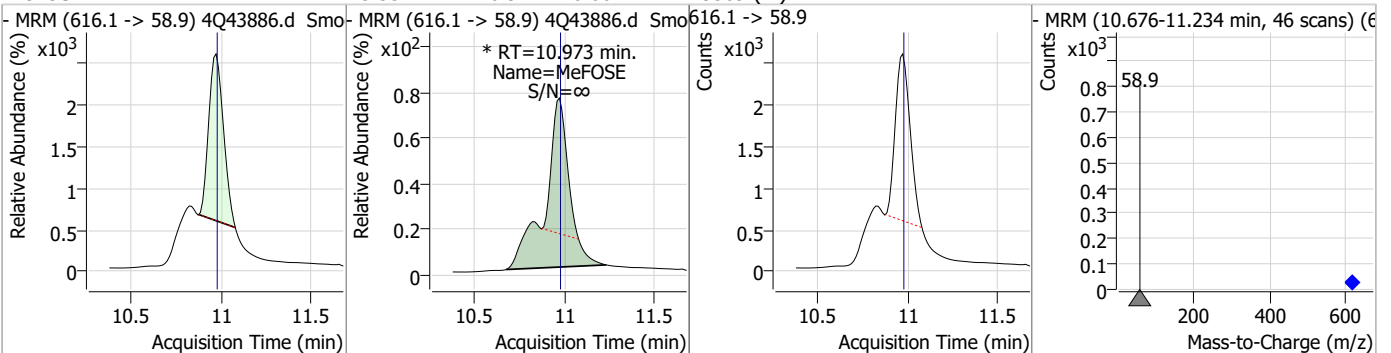
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	1.29	10.04	0.00	2960	699.1 -> 98.8	55.6	26.9	80.6



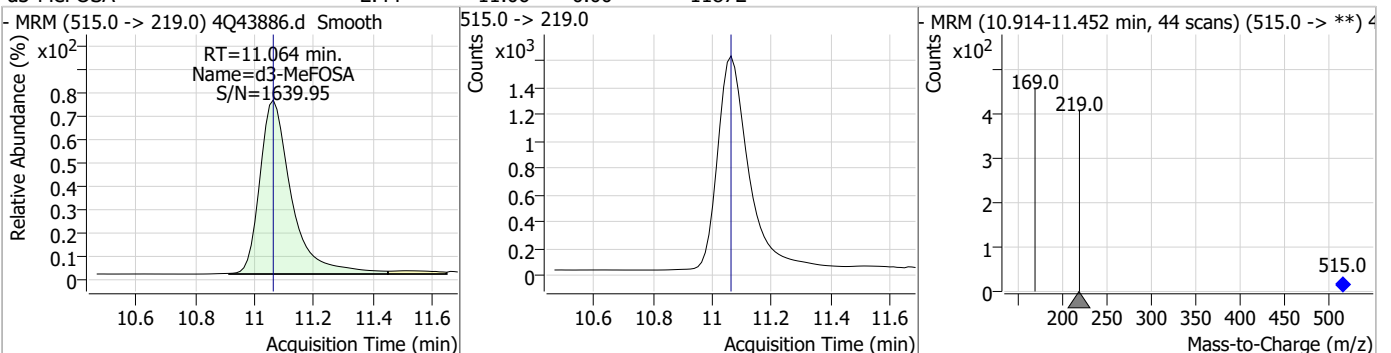
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.70	10.95	0.00	103075				



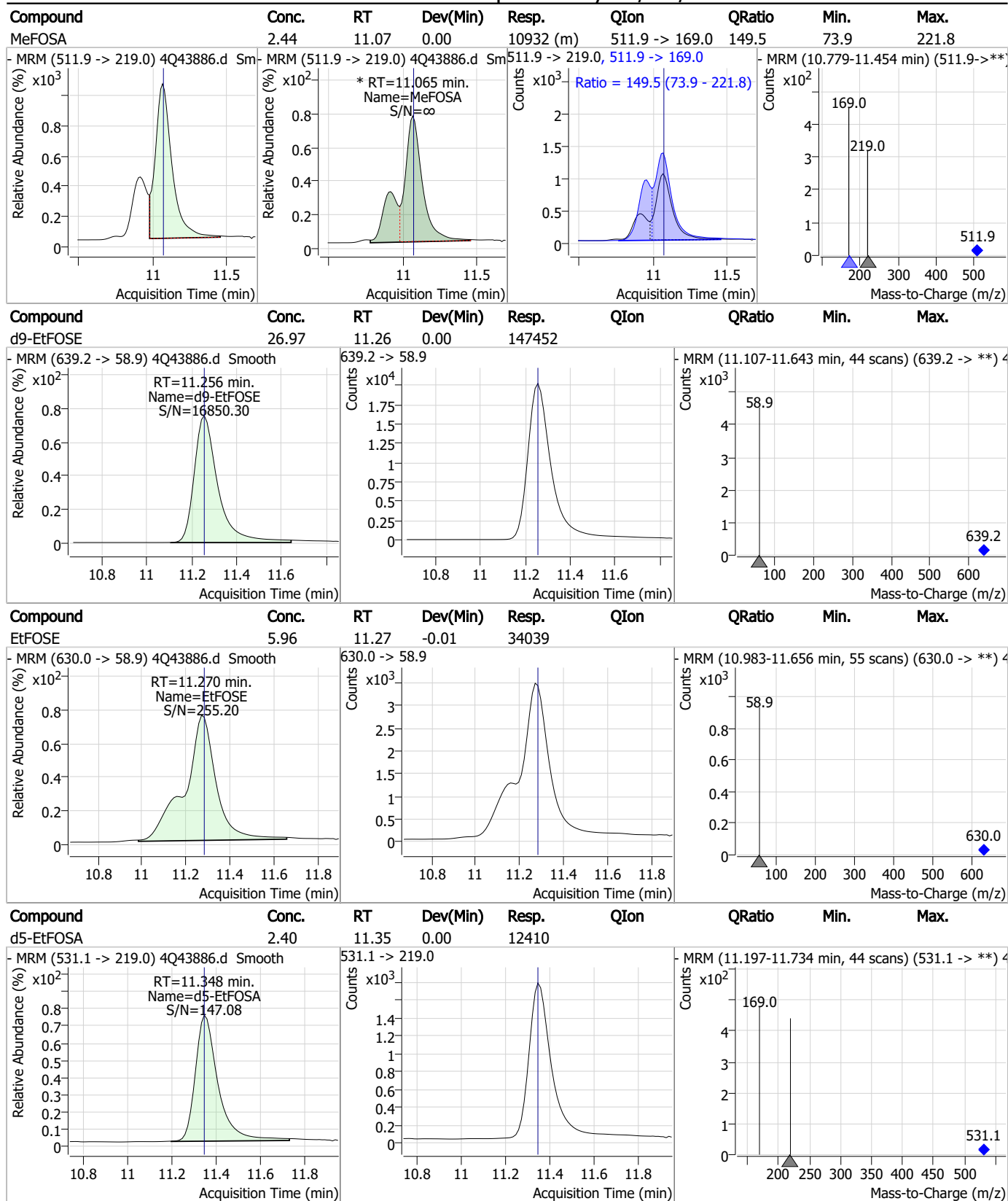
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	5.55	10.97	0.00	23509 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.44	11.06	0.00	11872				

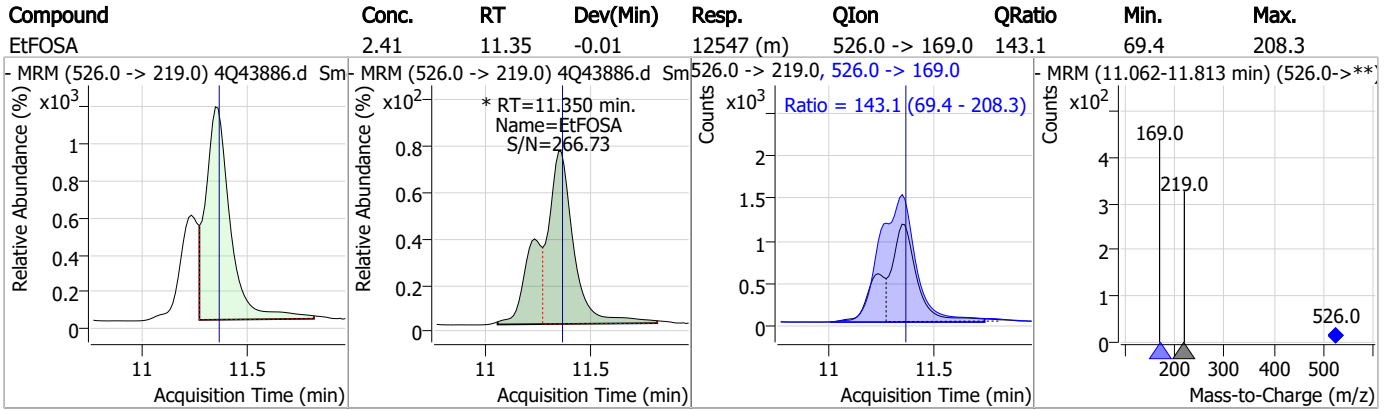


Perfluorinated Compounds by LC/MS/MS



7.7.4
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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

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
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
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

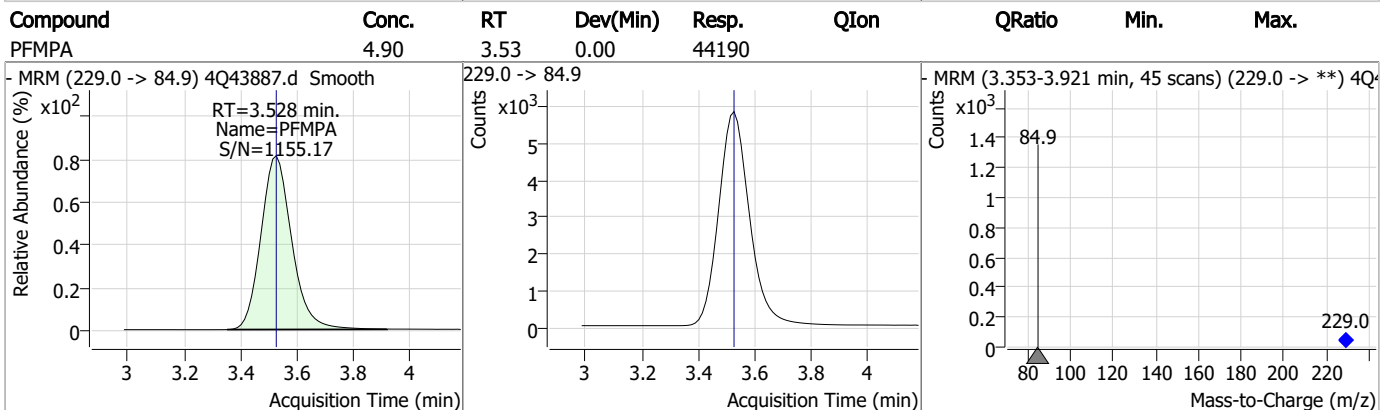
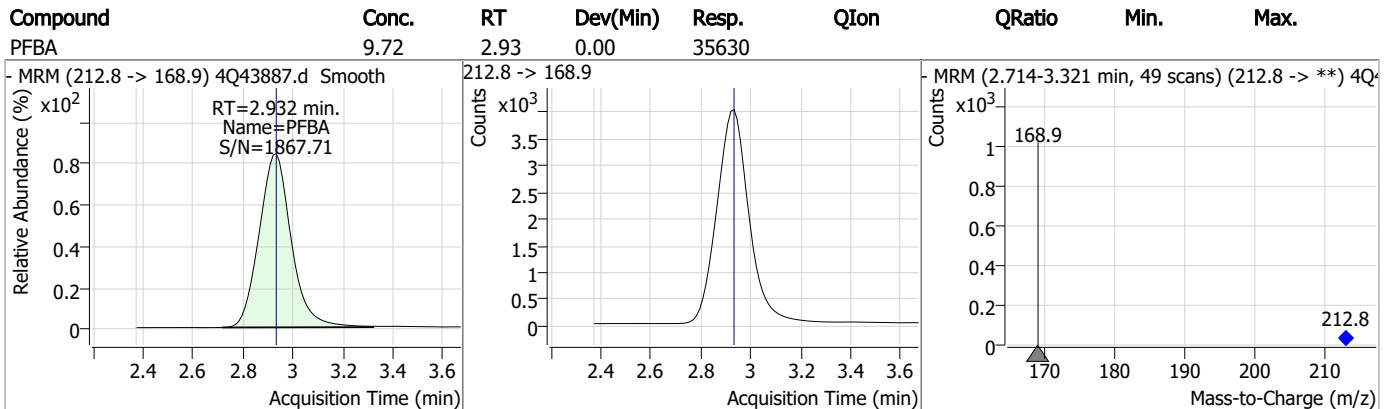
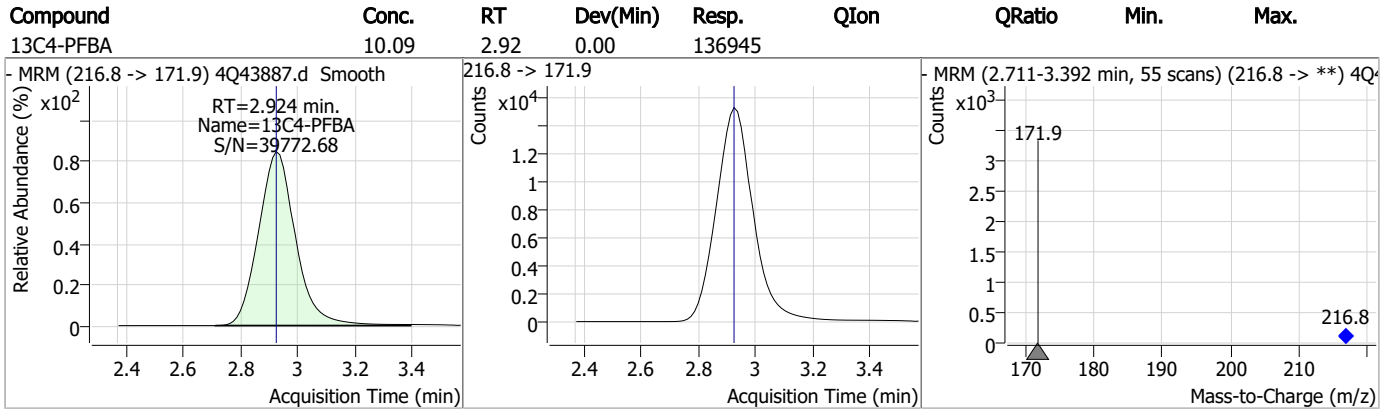
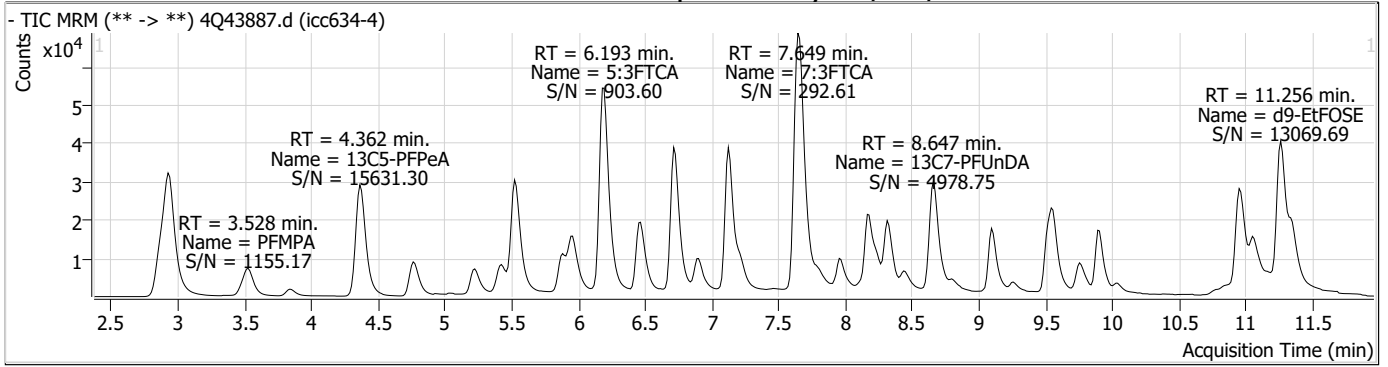
Perfluorinated Compounds by LC/MS/MS

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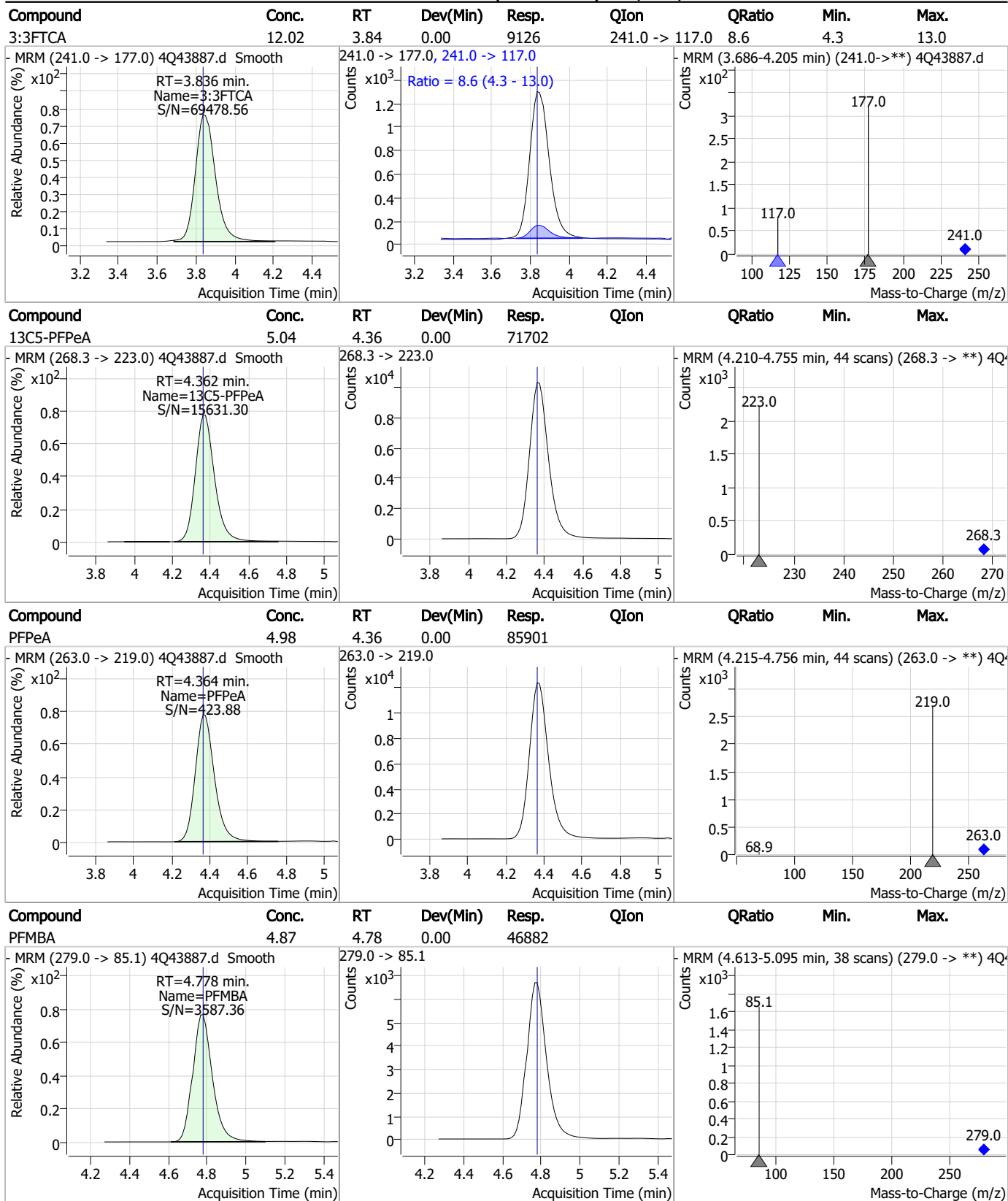
7.7.5

7

Perfluorinated Compounds by LC/MS/MS

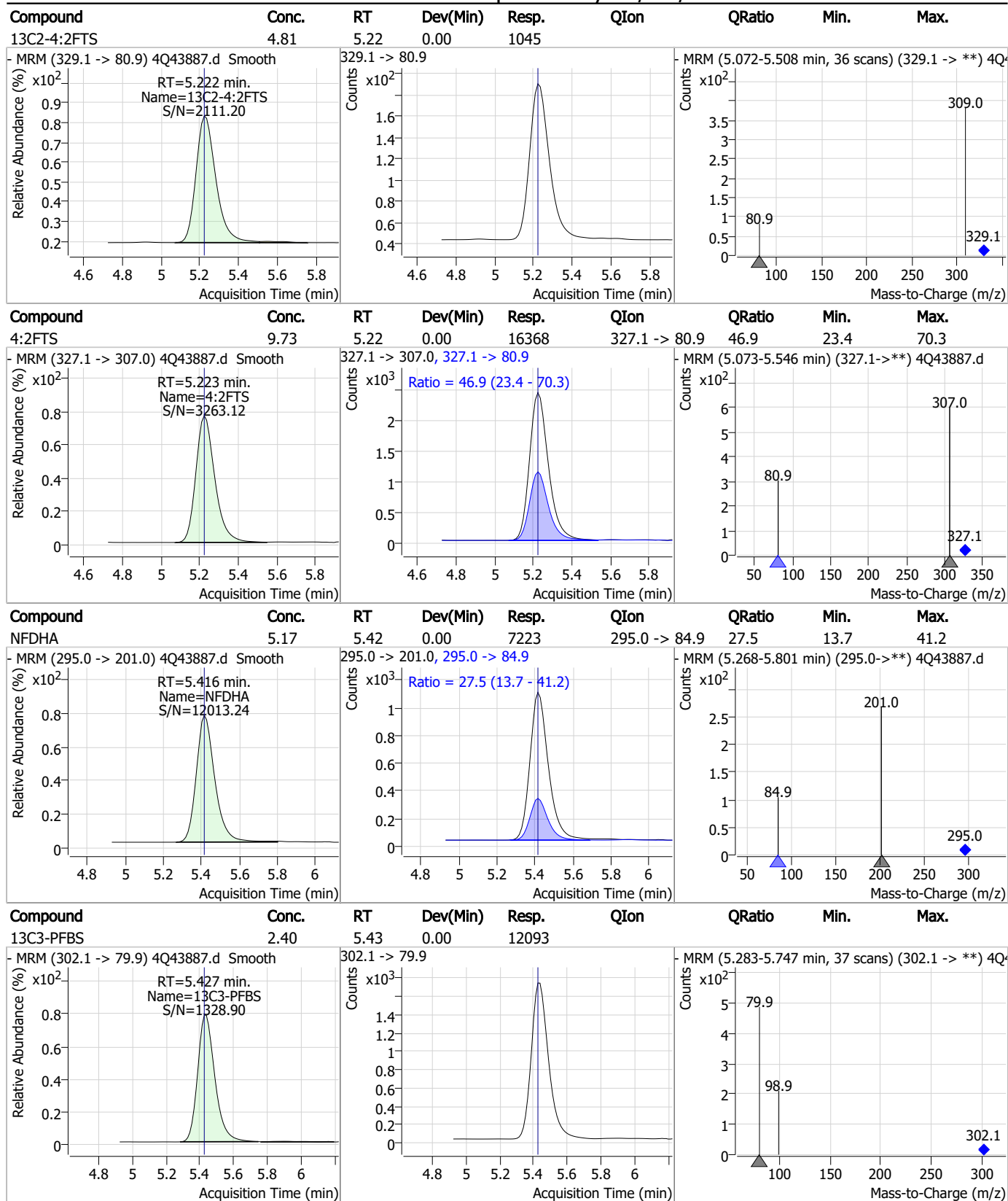


Perfluorinated Compounds by LC/MS/MS



7.7.5
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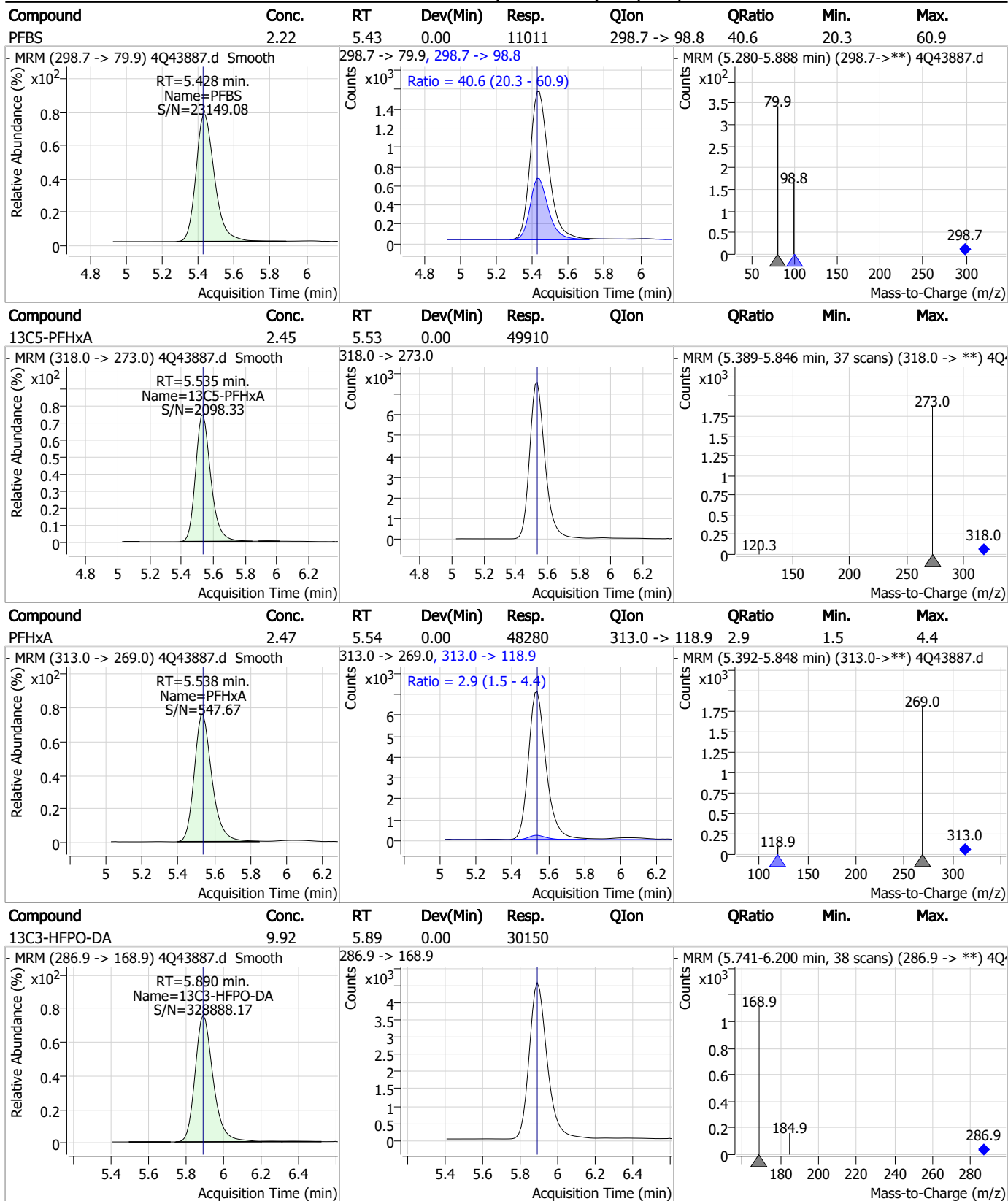
Perfluorinated Compounds by LC/MS/MS



7.7.5

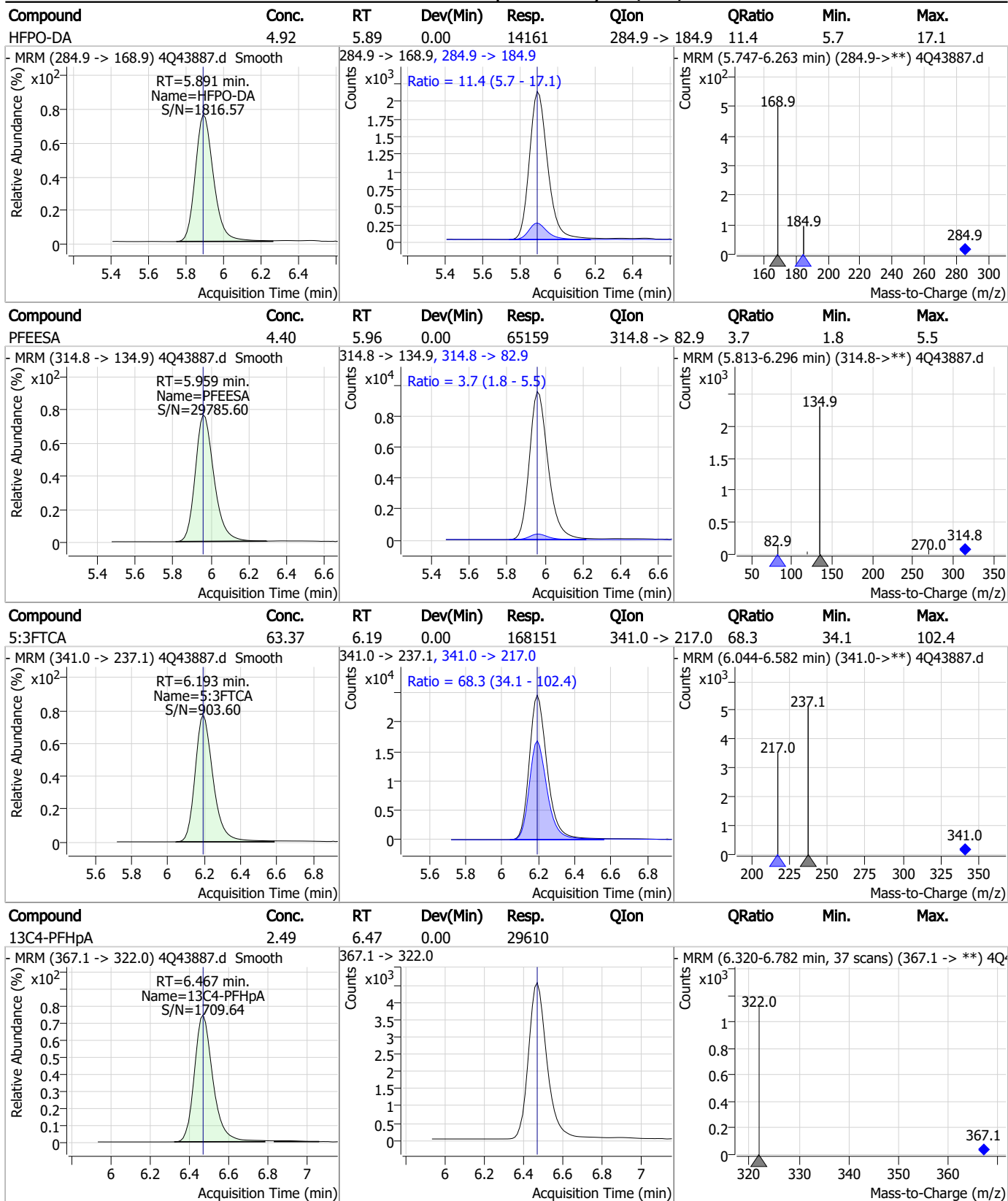
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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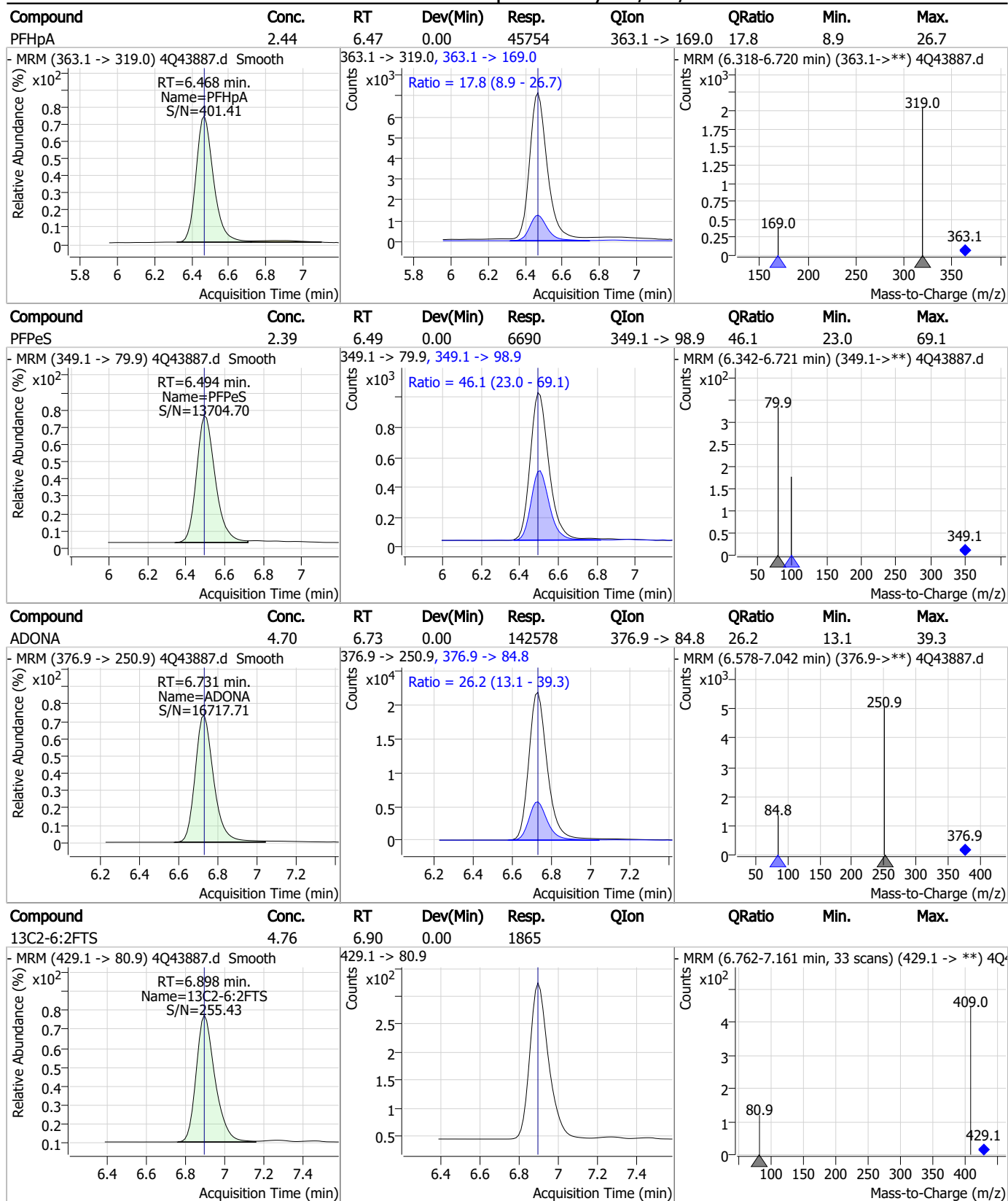
Perfluorinated Compounds by LC/MS/MS



7.7.5
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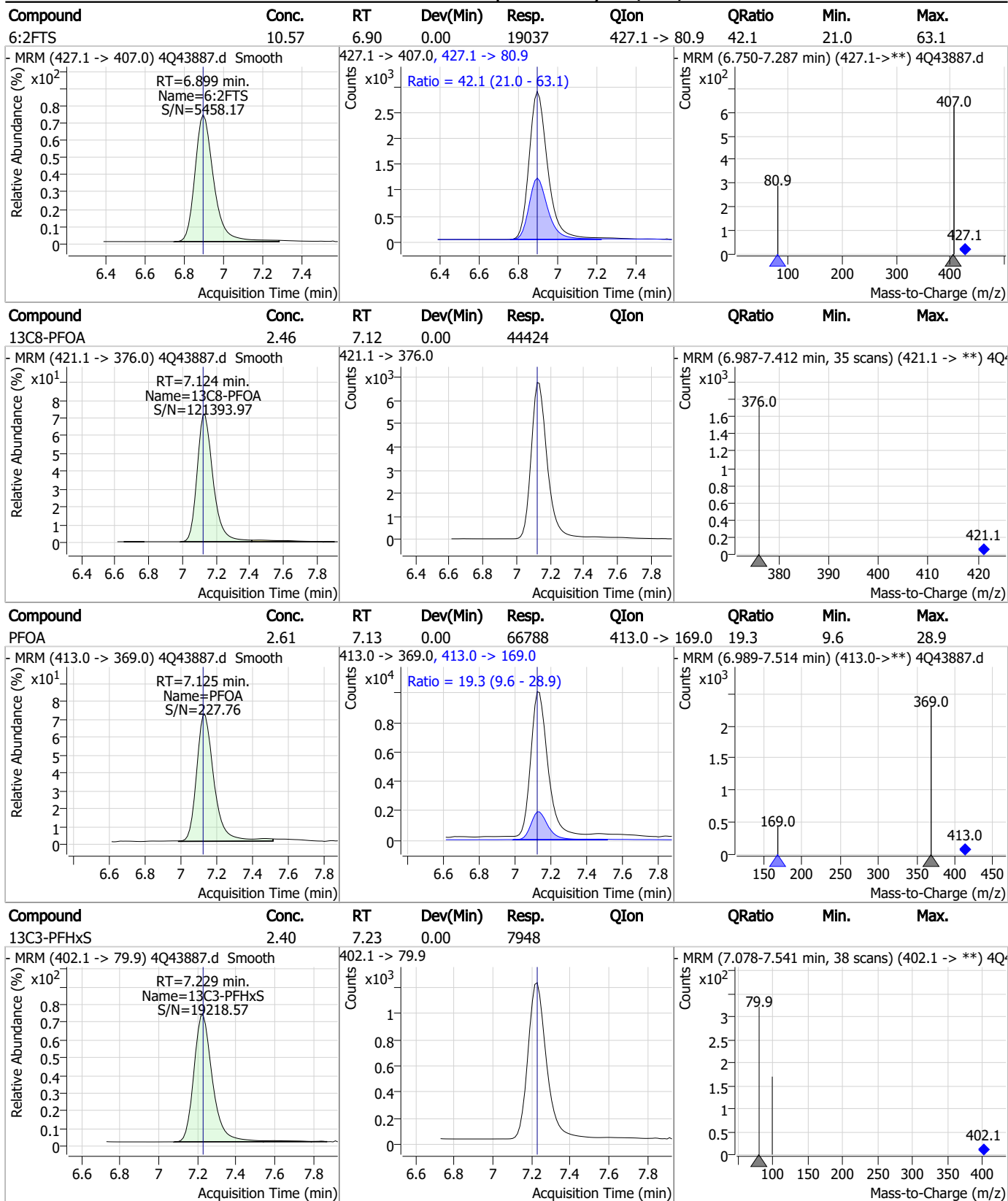


Perfluorinated Compounds by LC/MS/MS



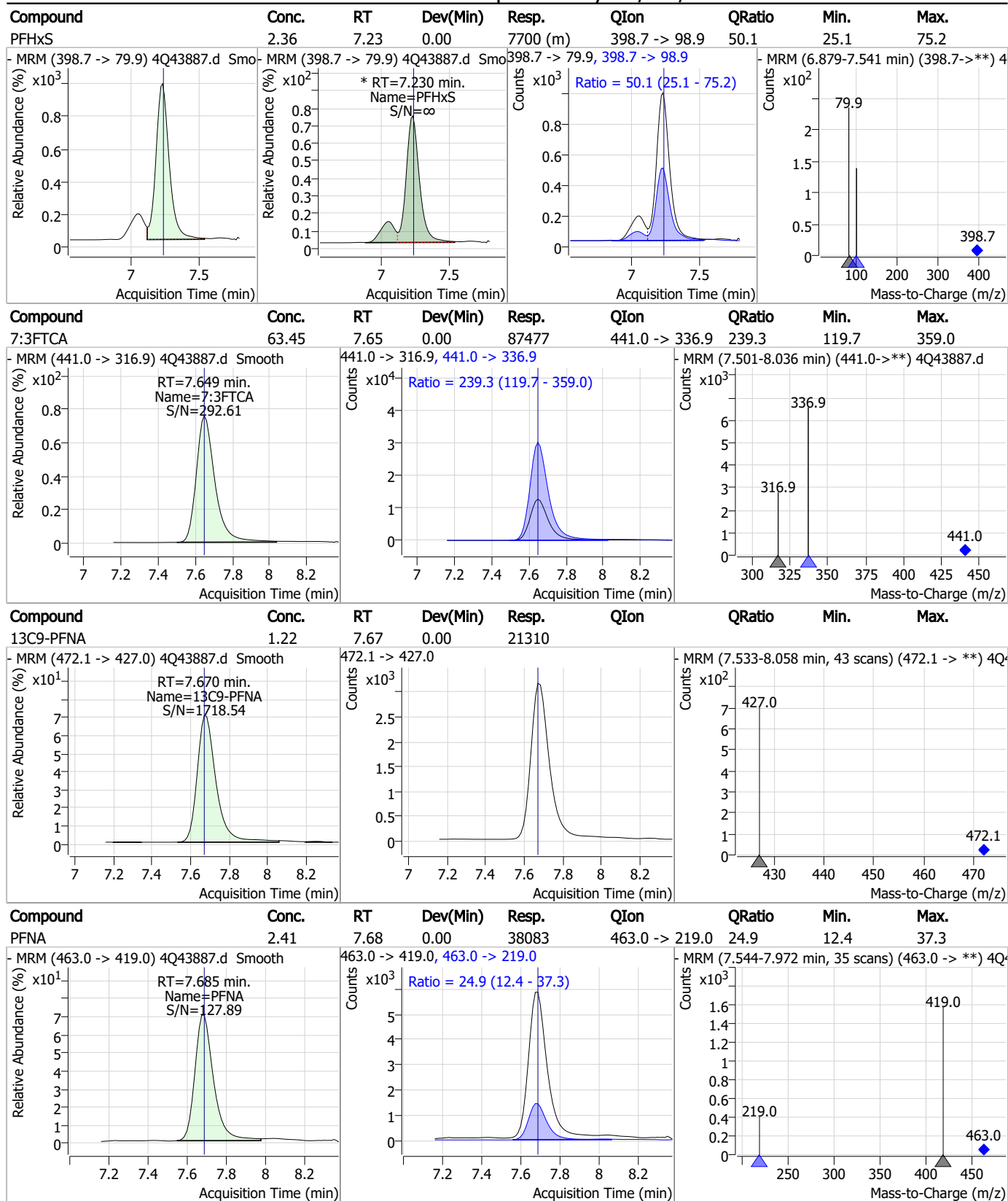
7.7.5
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Perfluorinated Compounds by LC/MS/MS



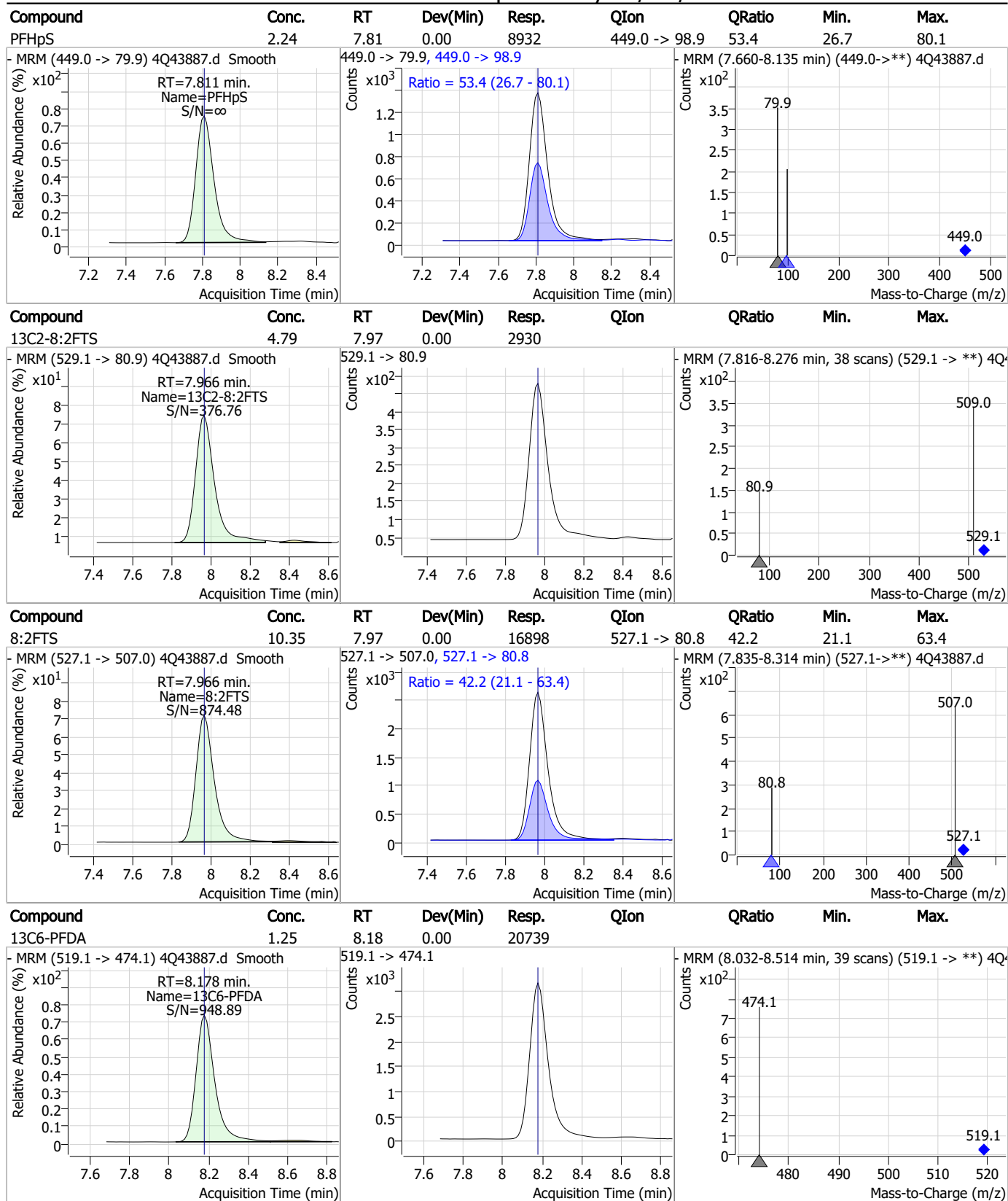
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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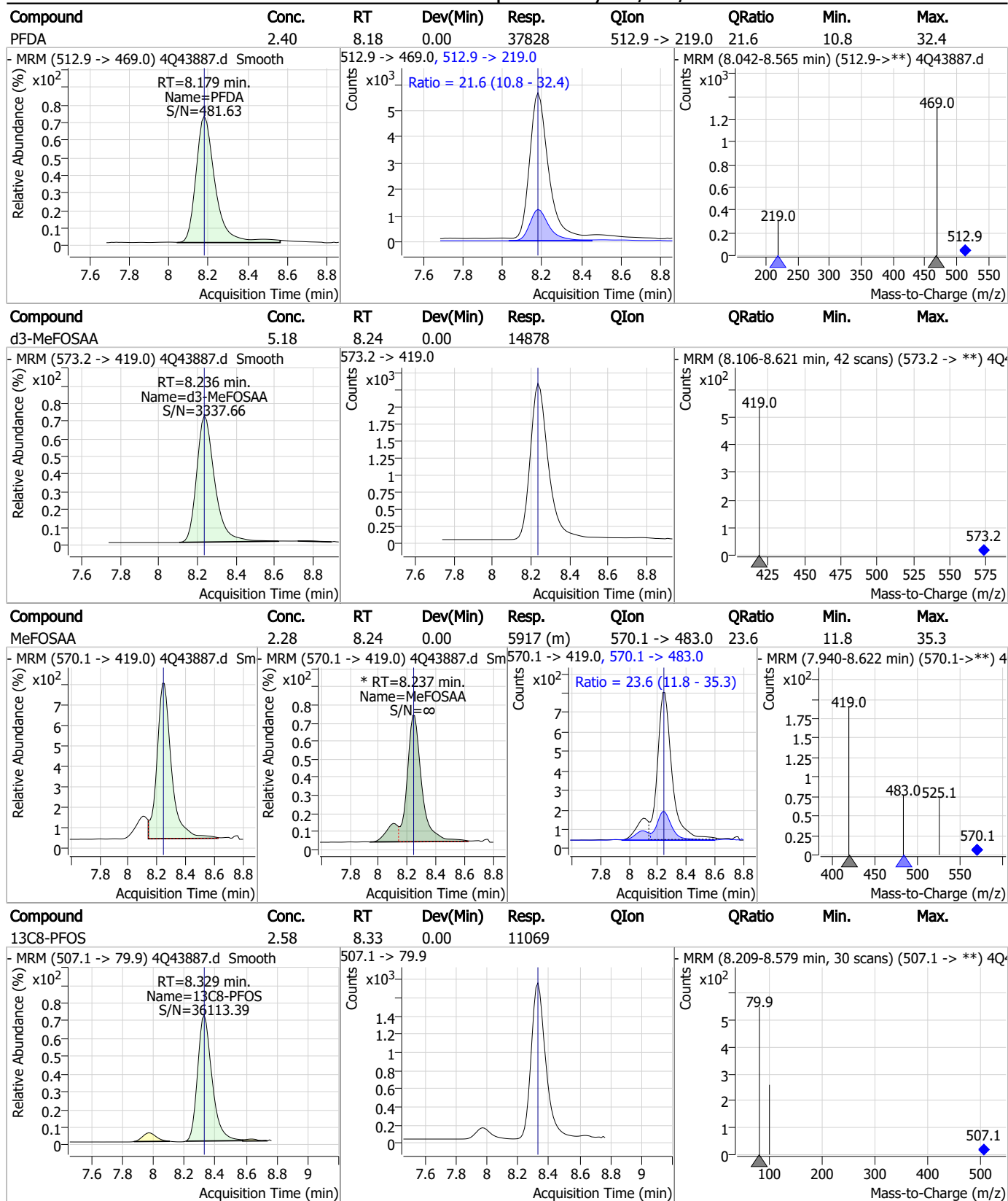
Perfluorinated Compounds by LC/MS/MS



7.7.5

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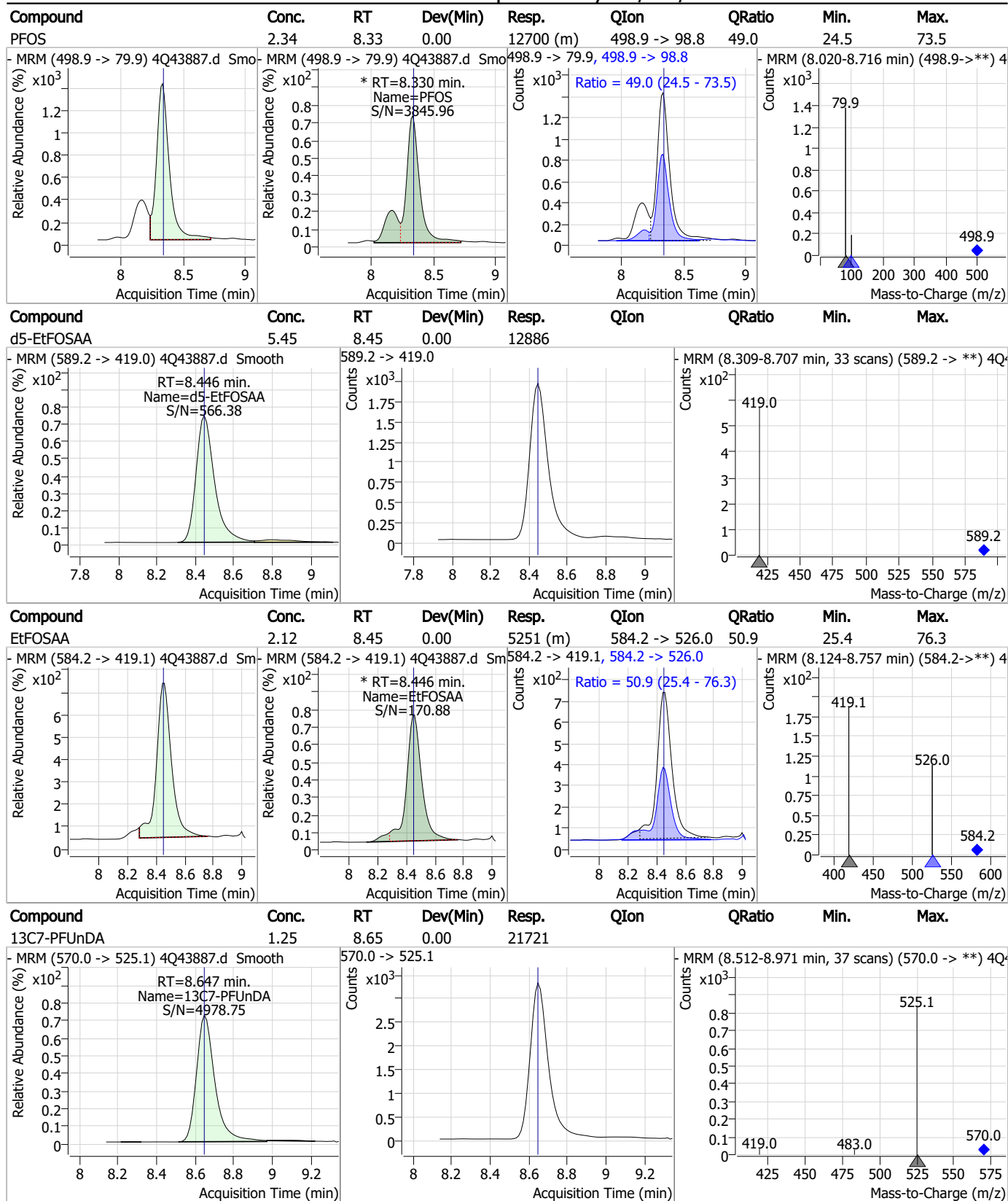
Perfluorinated Compounds by LC/MS/MS



7.7.5

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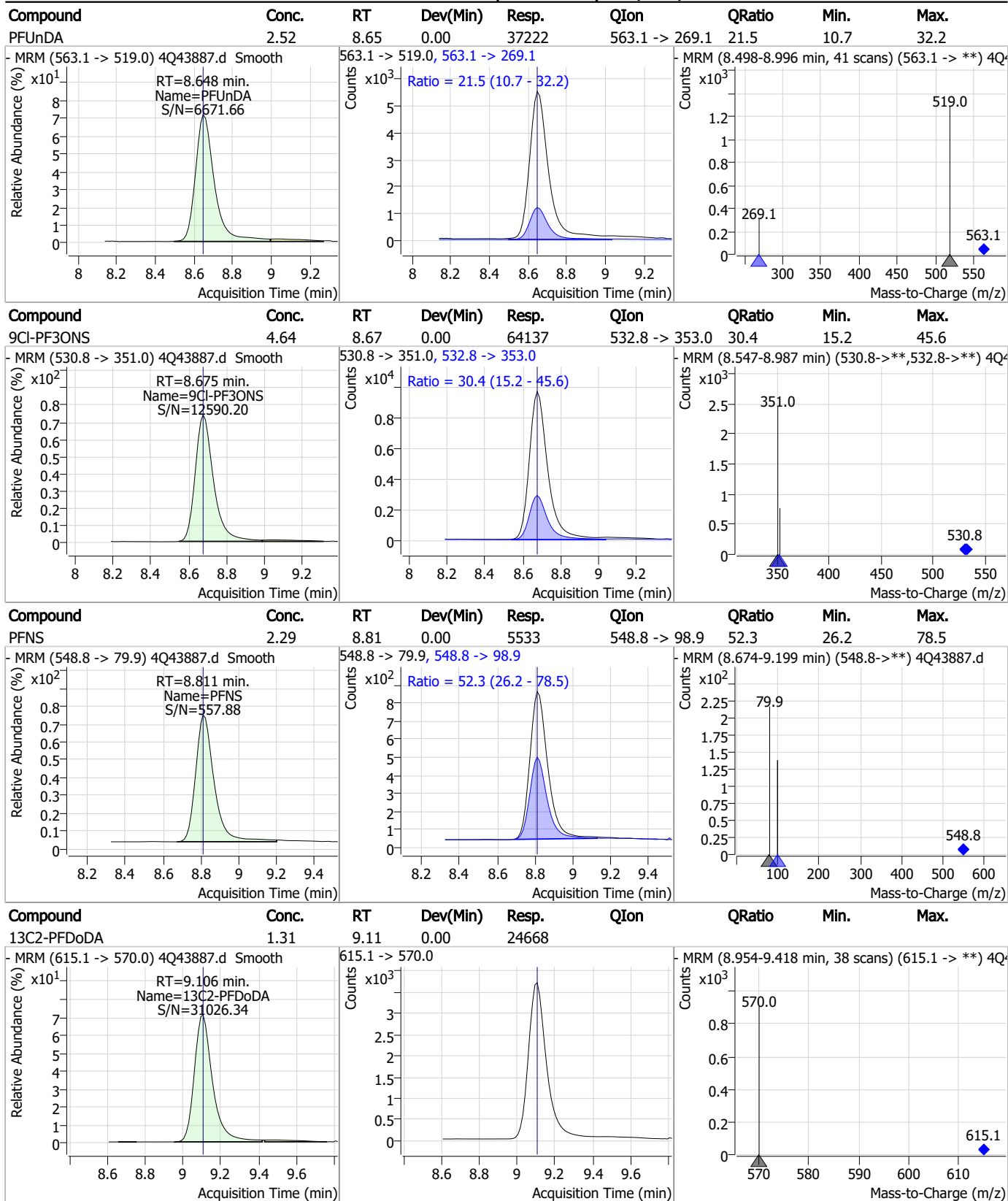
Perfluorinated Compounds by LC/MS/MS



7.7.5

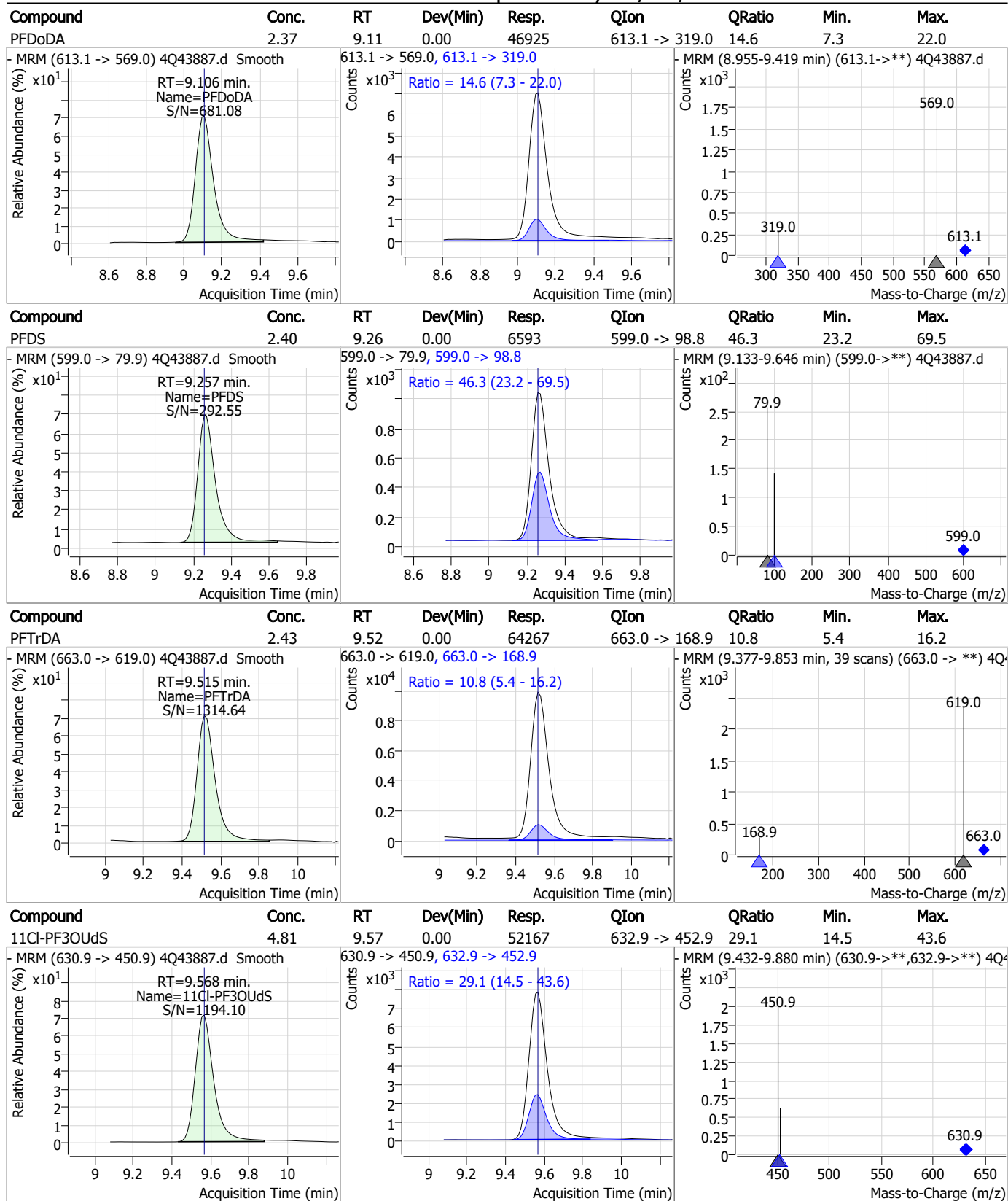
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Perfluorinated Compounds by LC/MS/MS



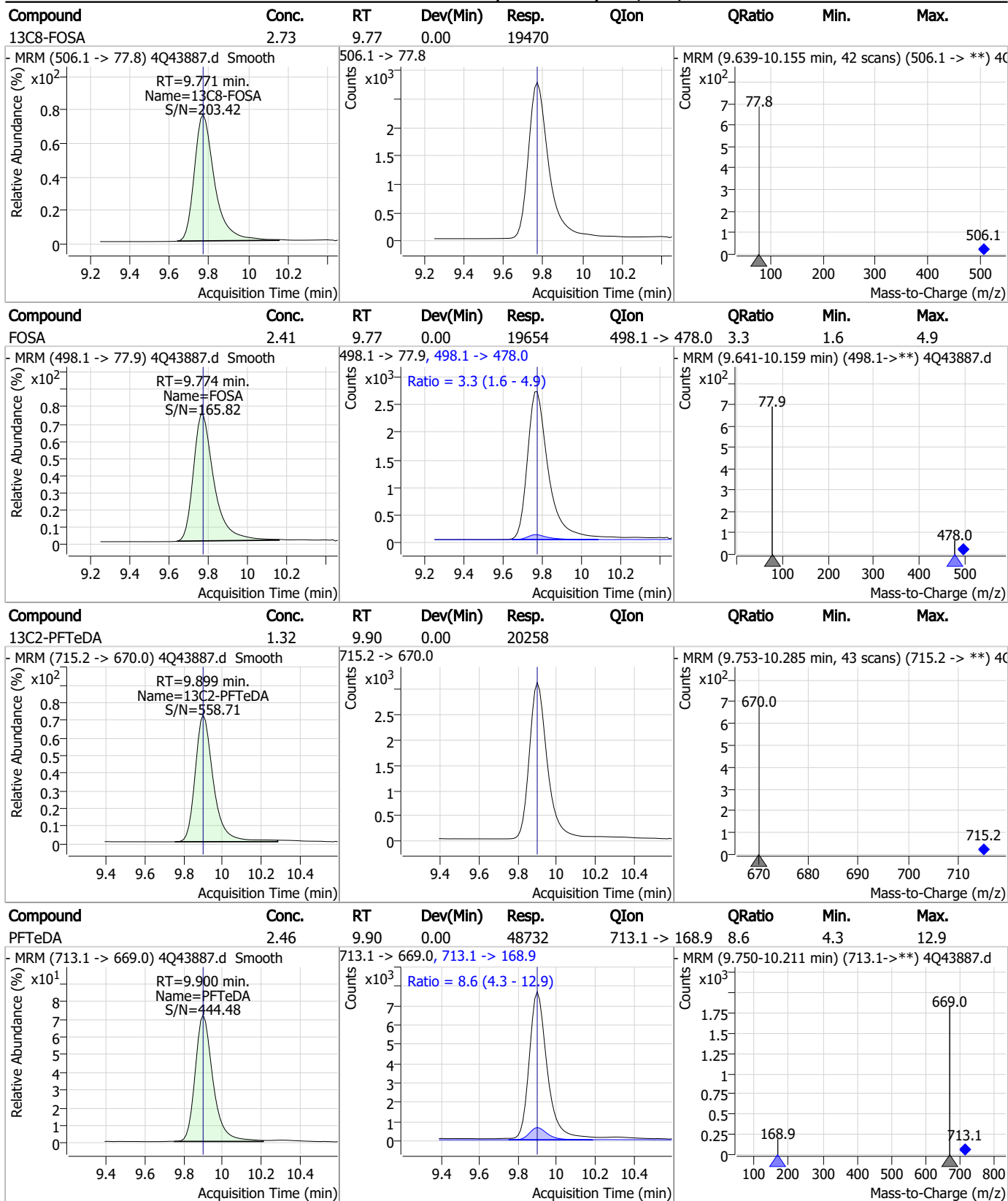
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
7

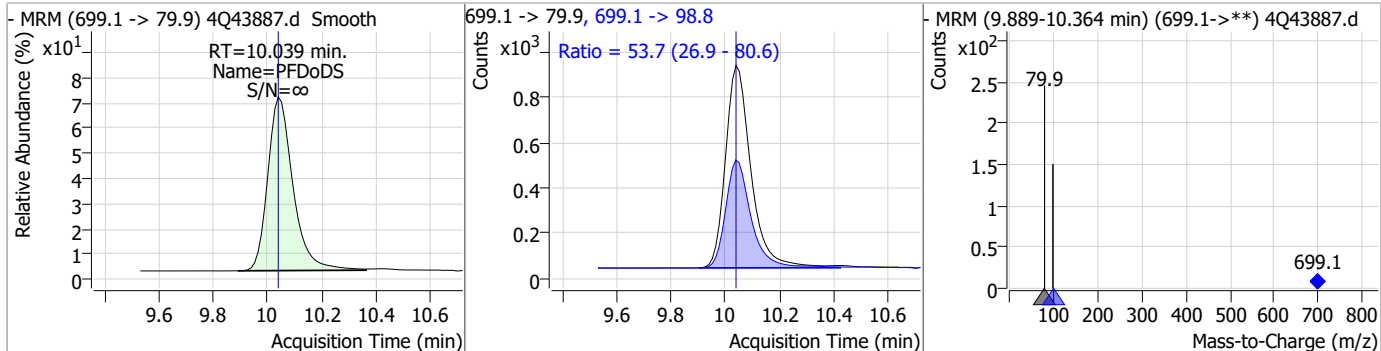
Perfluorinated Compounds by LC/MS/MS



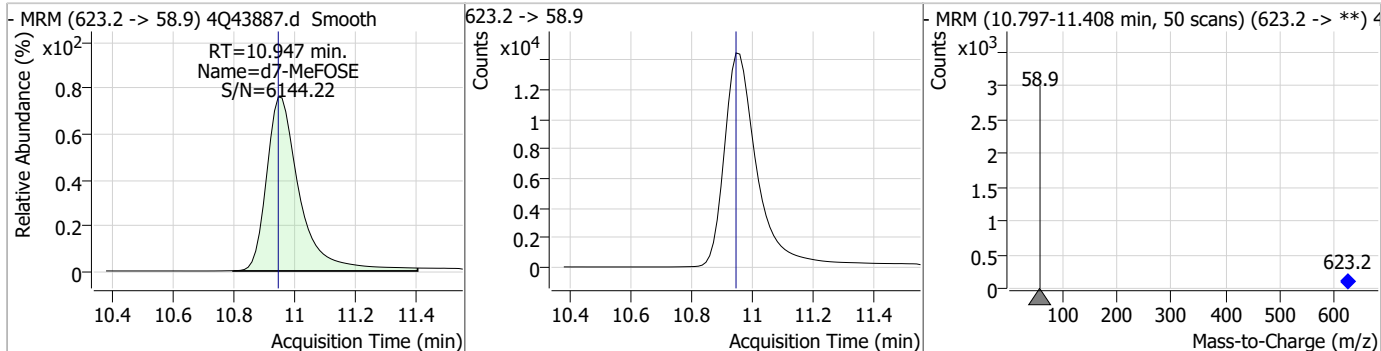
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Perfluorinated Compounds by LC/MS/MS

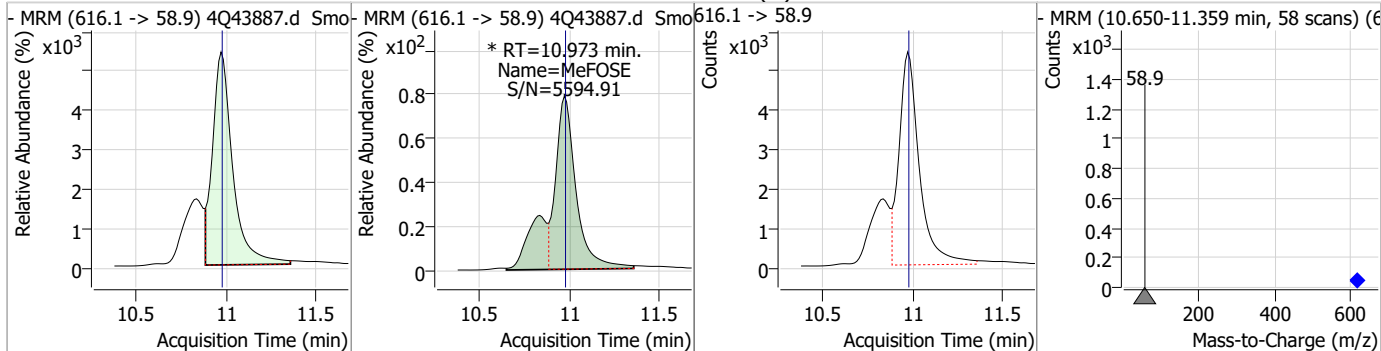
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.38	10.04	0.00	5823	699.1 -> 98.8	53.7	26.9	80.6



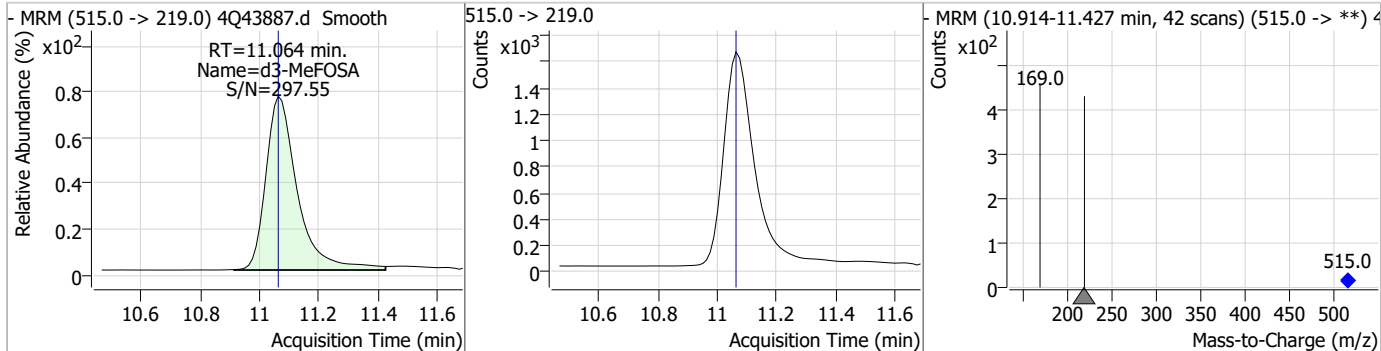
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	31.17	10.95	0.00	110308				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.37	10.97	0.00	56025 (m)				

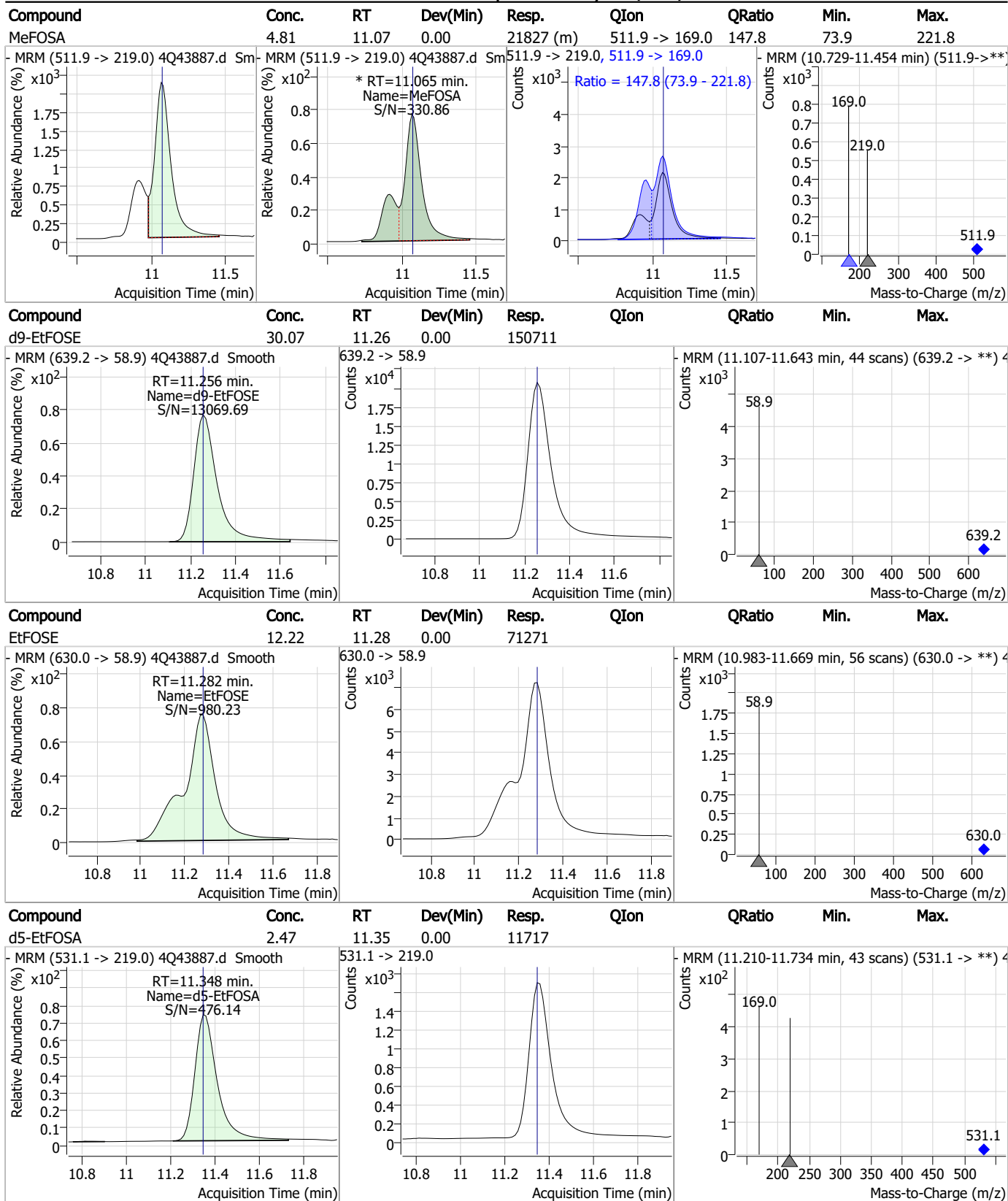


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.70	11.06	0.00	12050				



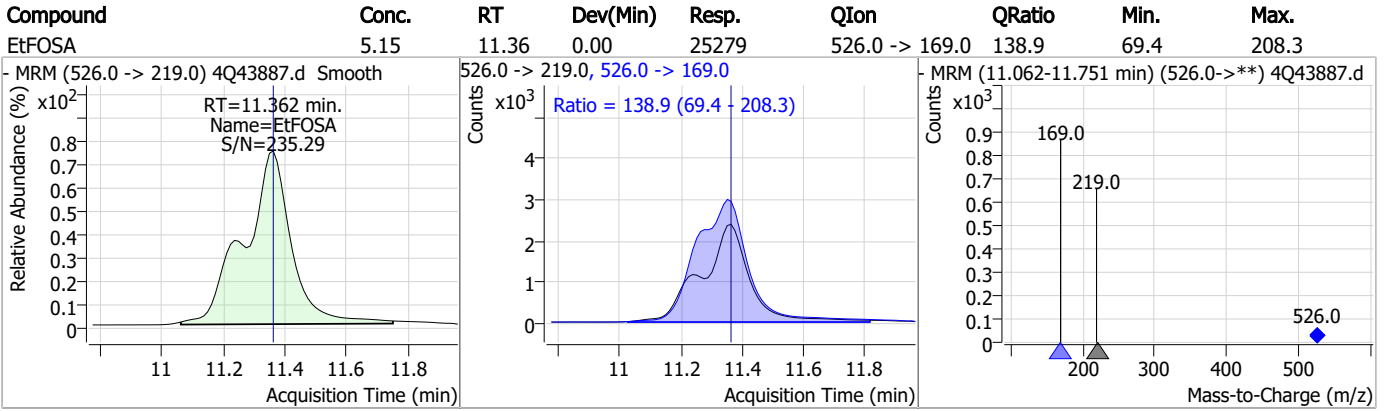
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5

7

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
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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	2.924	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

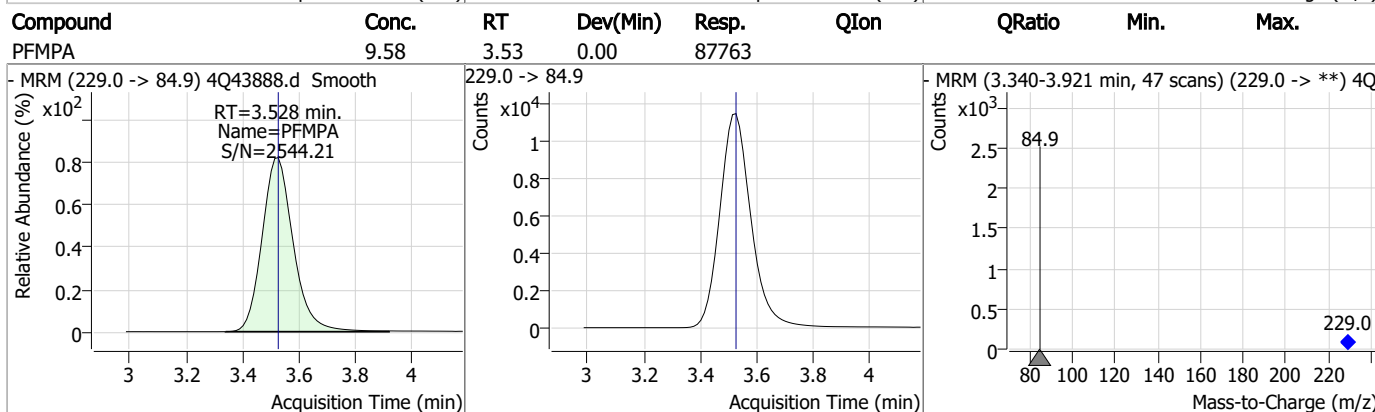
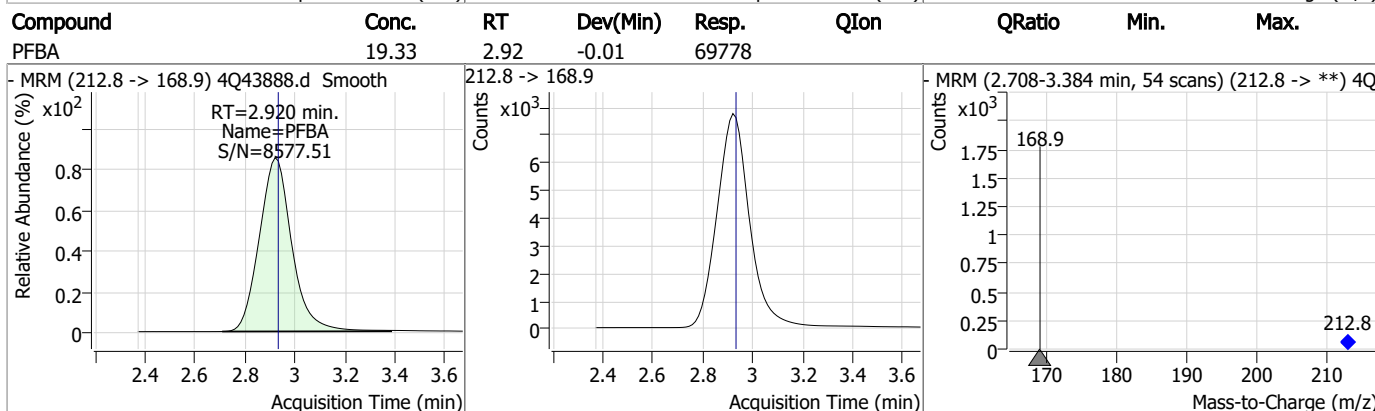
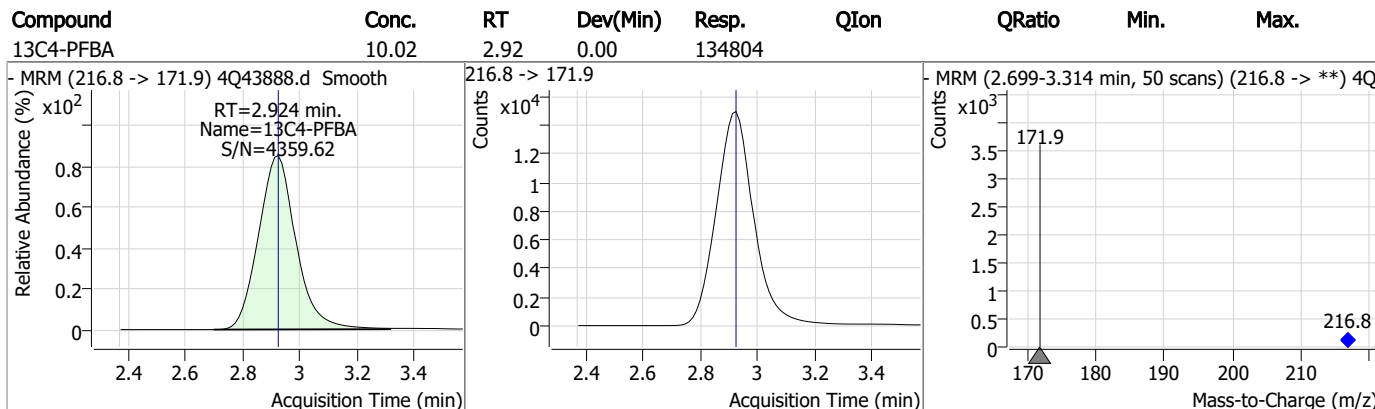
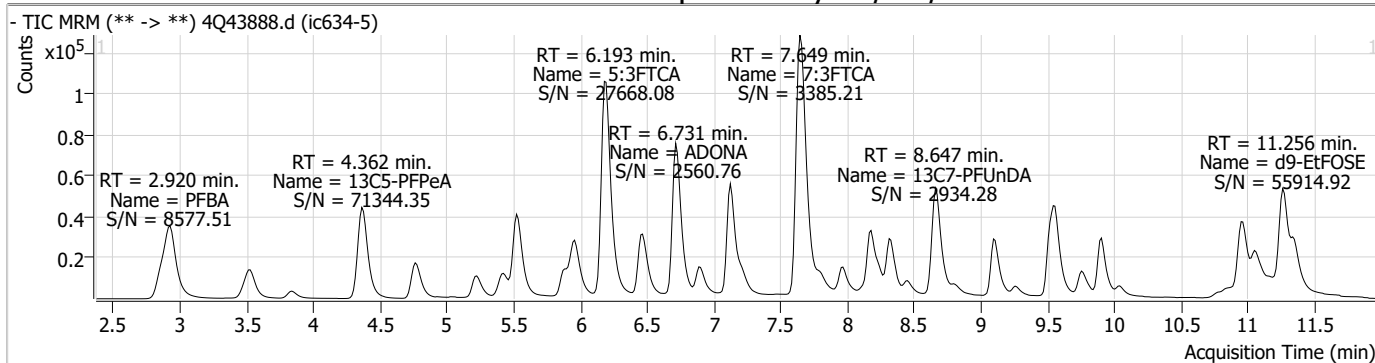
Perfluorinated Compounds by LC/MS/MS

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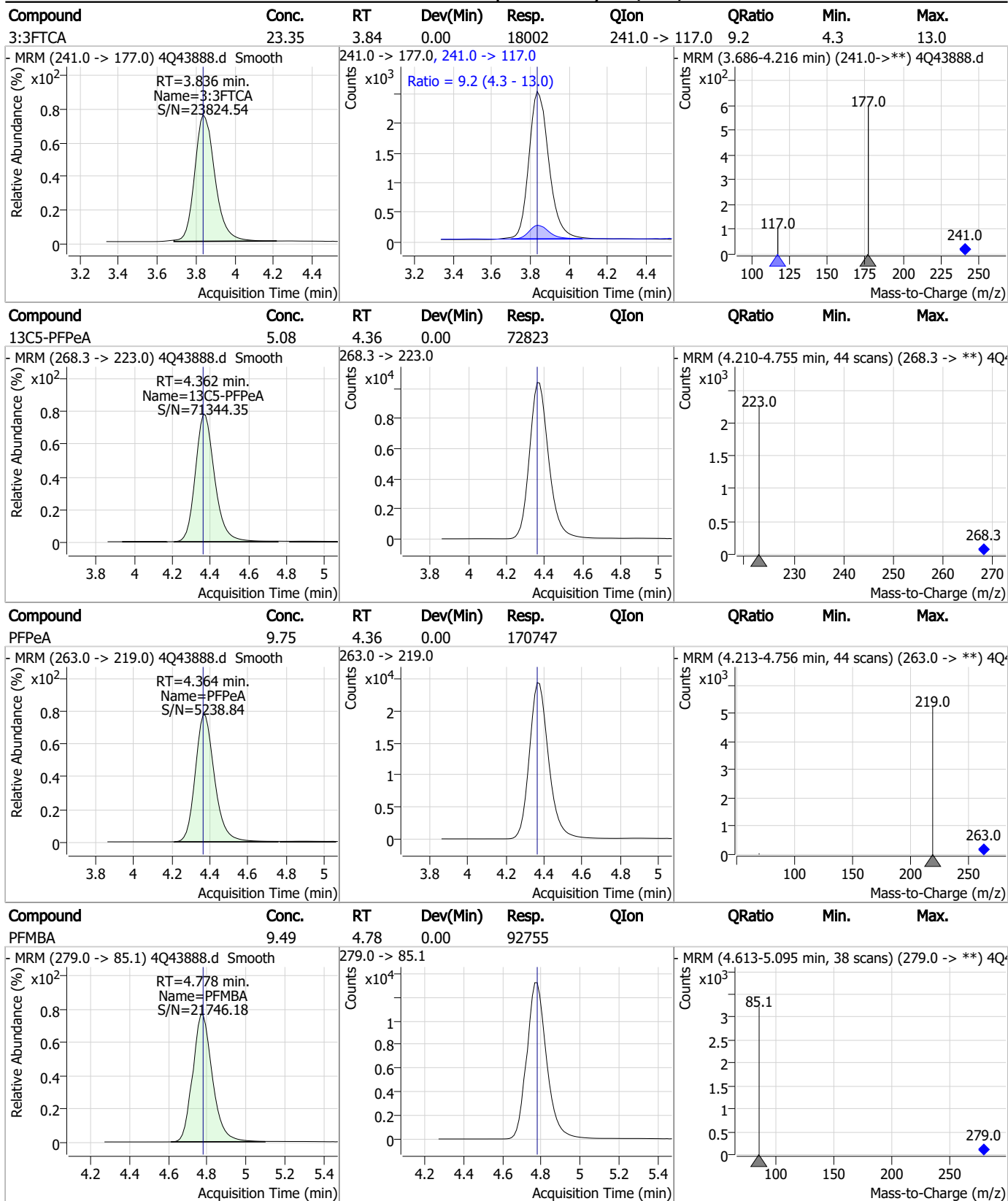
7.7.6

7

Perfluorinated Compounds by LC/MS/MS

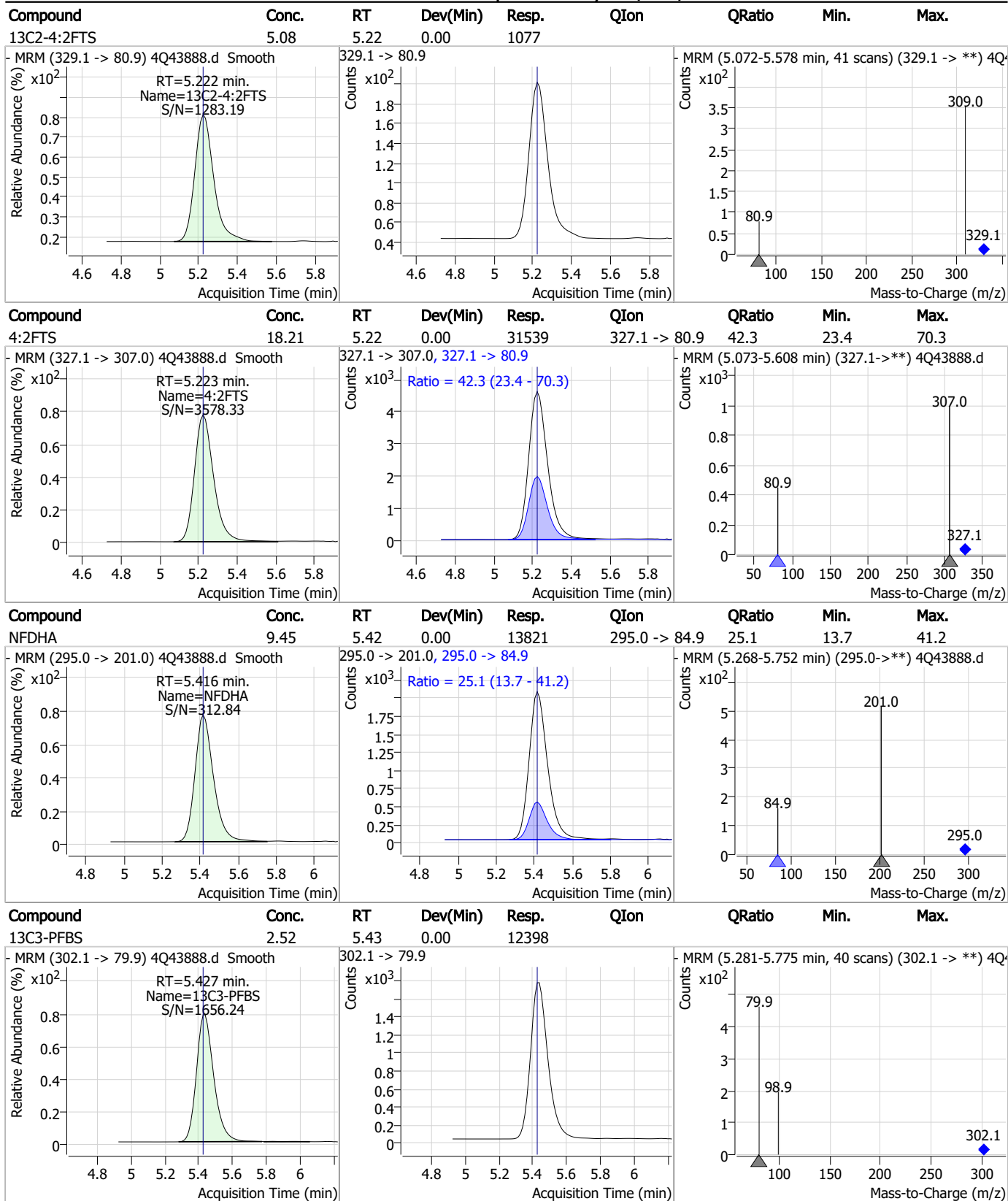


Perfluorinated Compounds by LC/MS/MS



7.7.6
7

Perfluorinated Compounds by LC/MS/MS

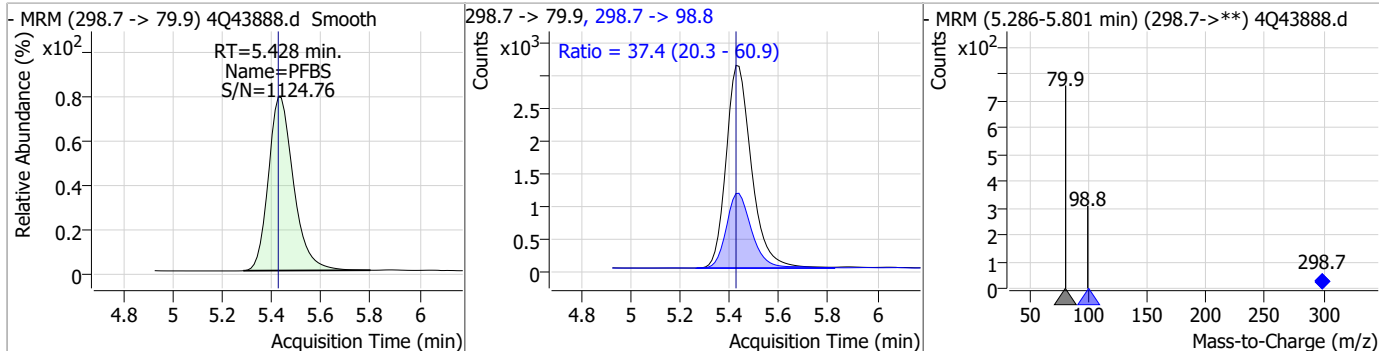


7.7.6
7

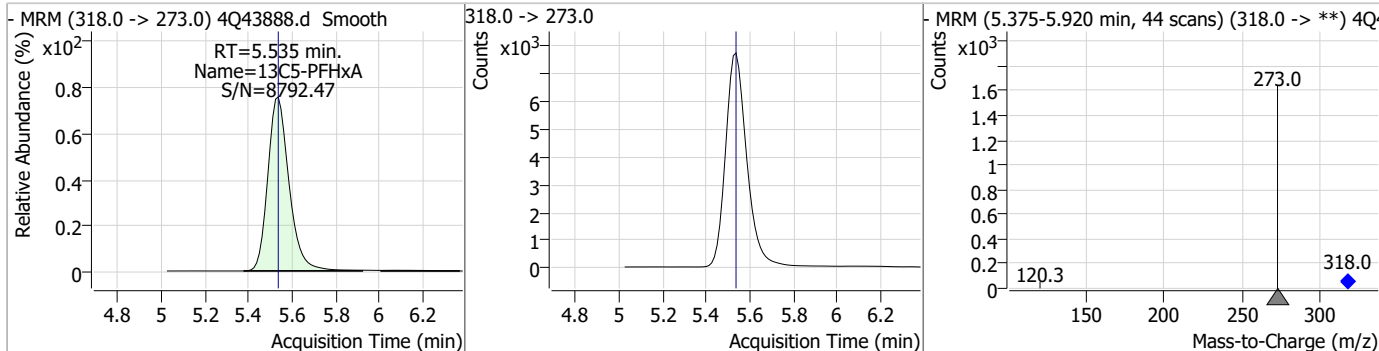


Perfluorinated Compounds by LC/MS/MS

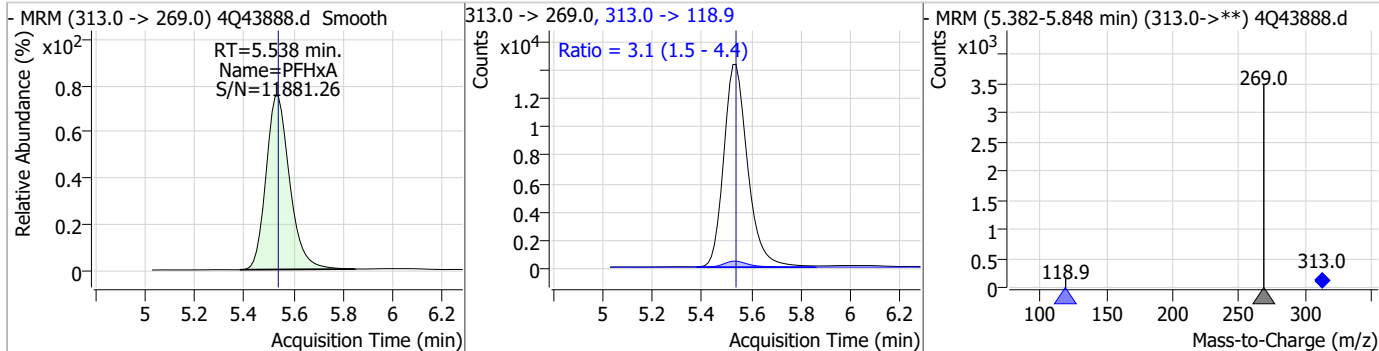
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.32	5.43	0.00	21965	298.7 -> 98.8	37.4	20.3	60.9



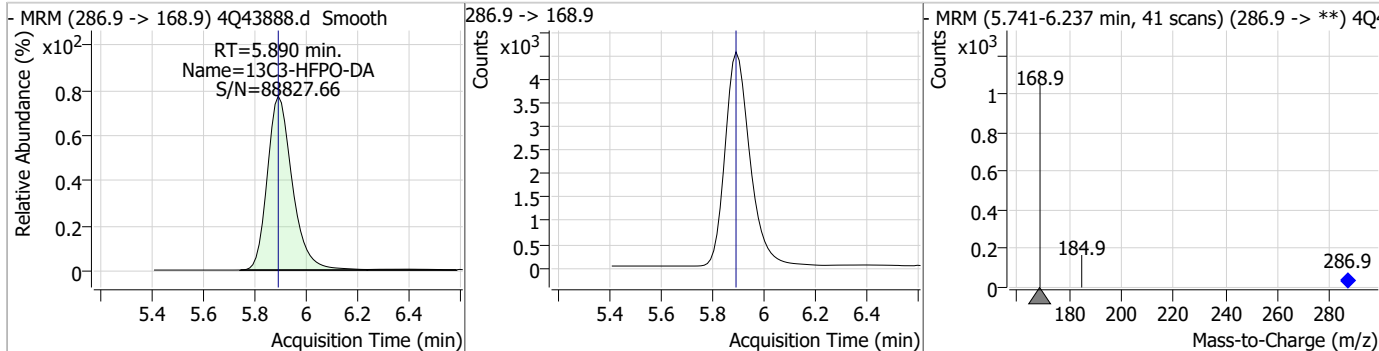
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.53	0.00	52258	318.0 -> 273.0			



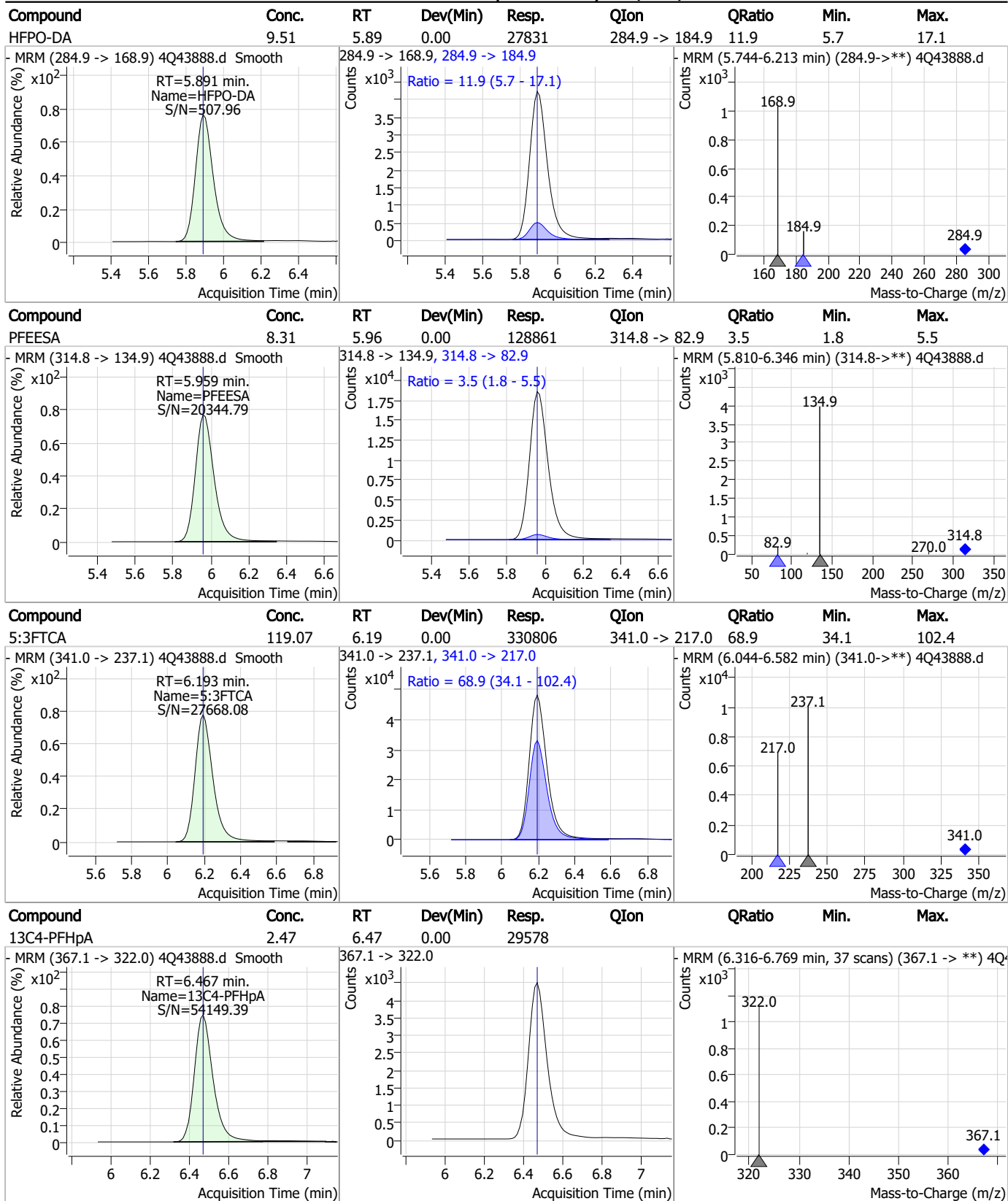
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.69	5.54	0.00	95984	313.0 -> 118.9	3.1	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.00	5.89	0.00	30622	286.9 -> 168.9			

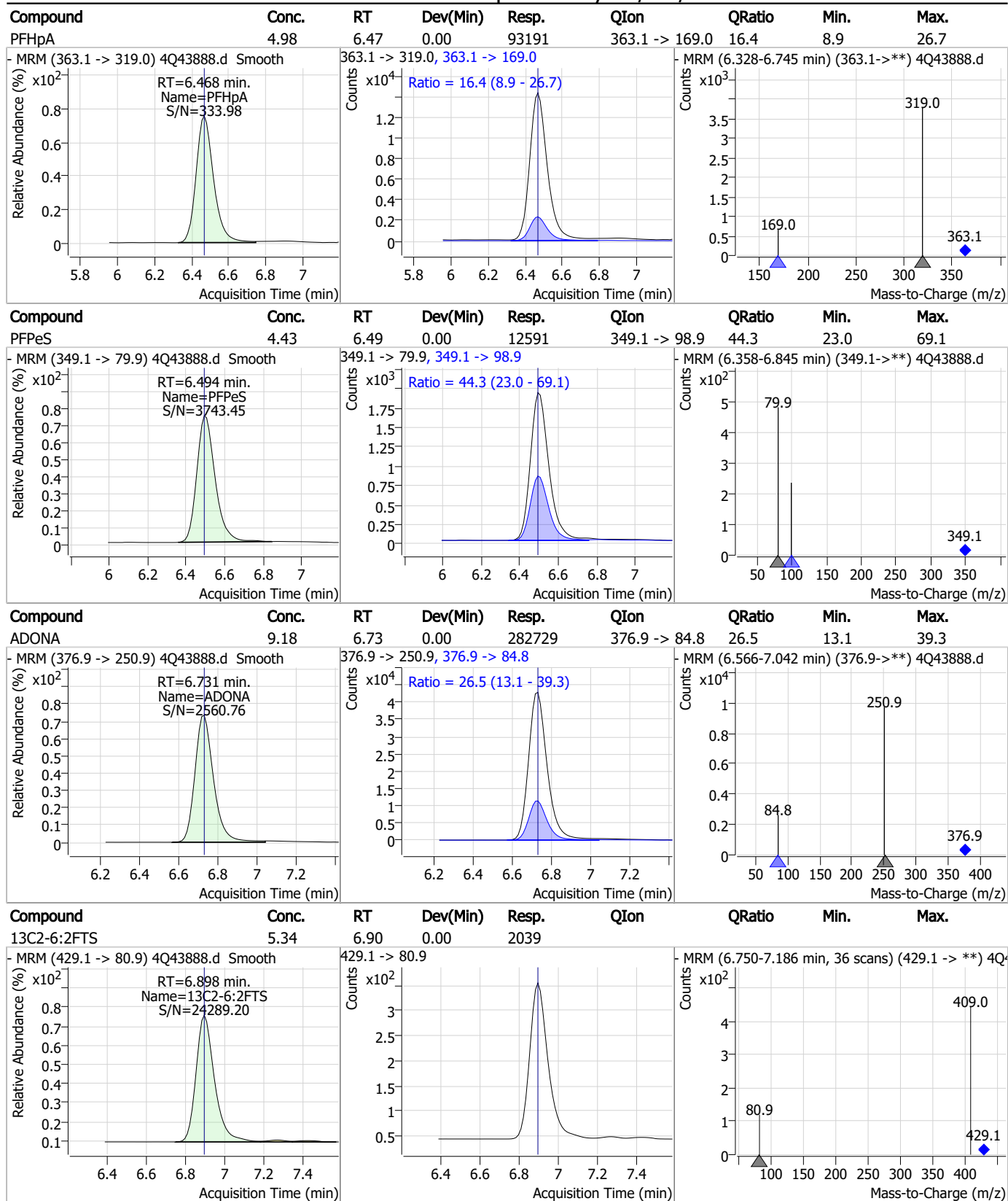


Perfluorinated Compounds by LC/MS/MS



7.7.6
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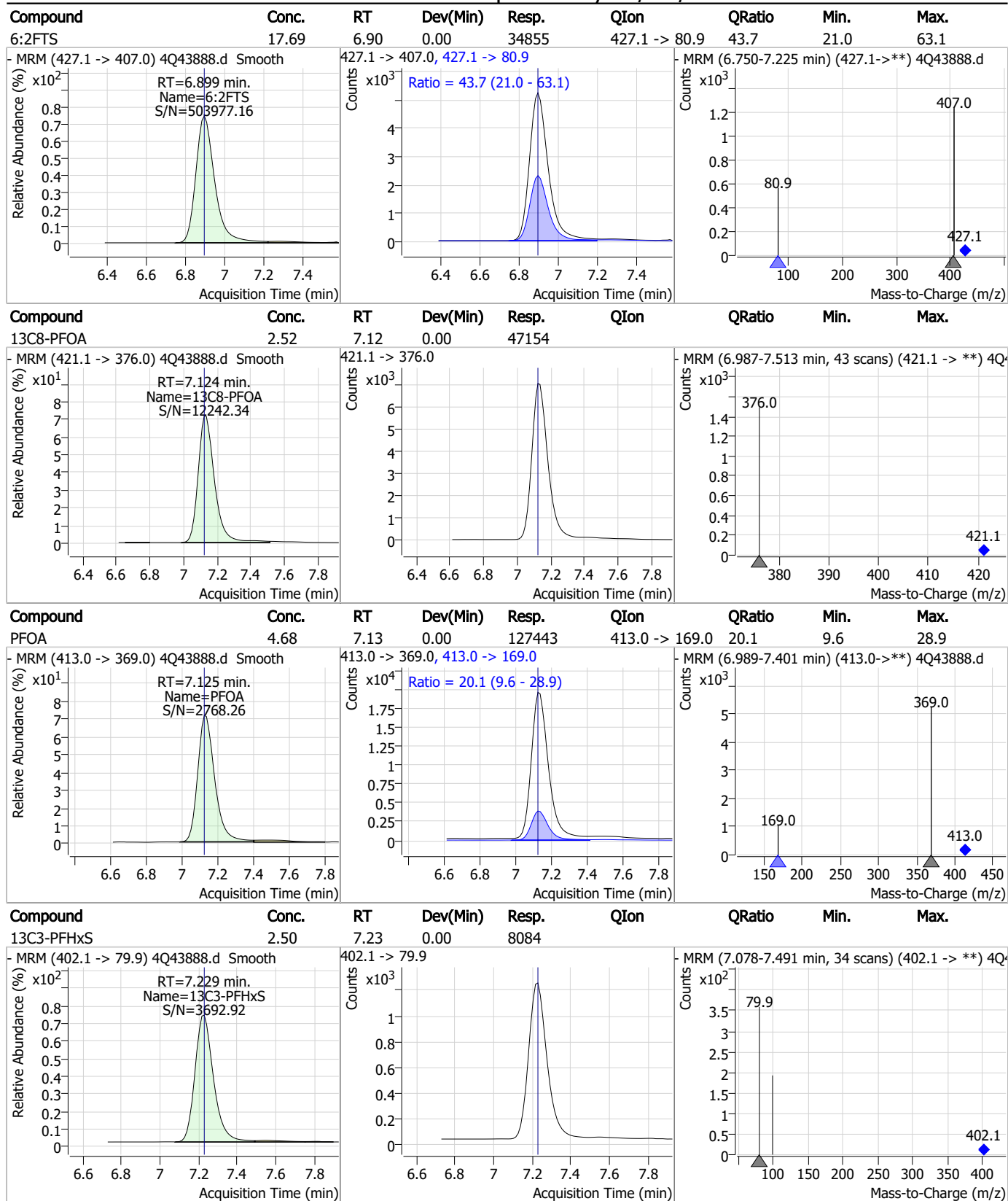
Perfluorinated Compounds by LC/MS/MS



7.7.6

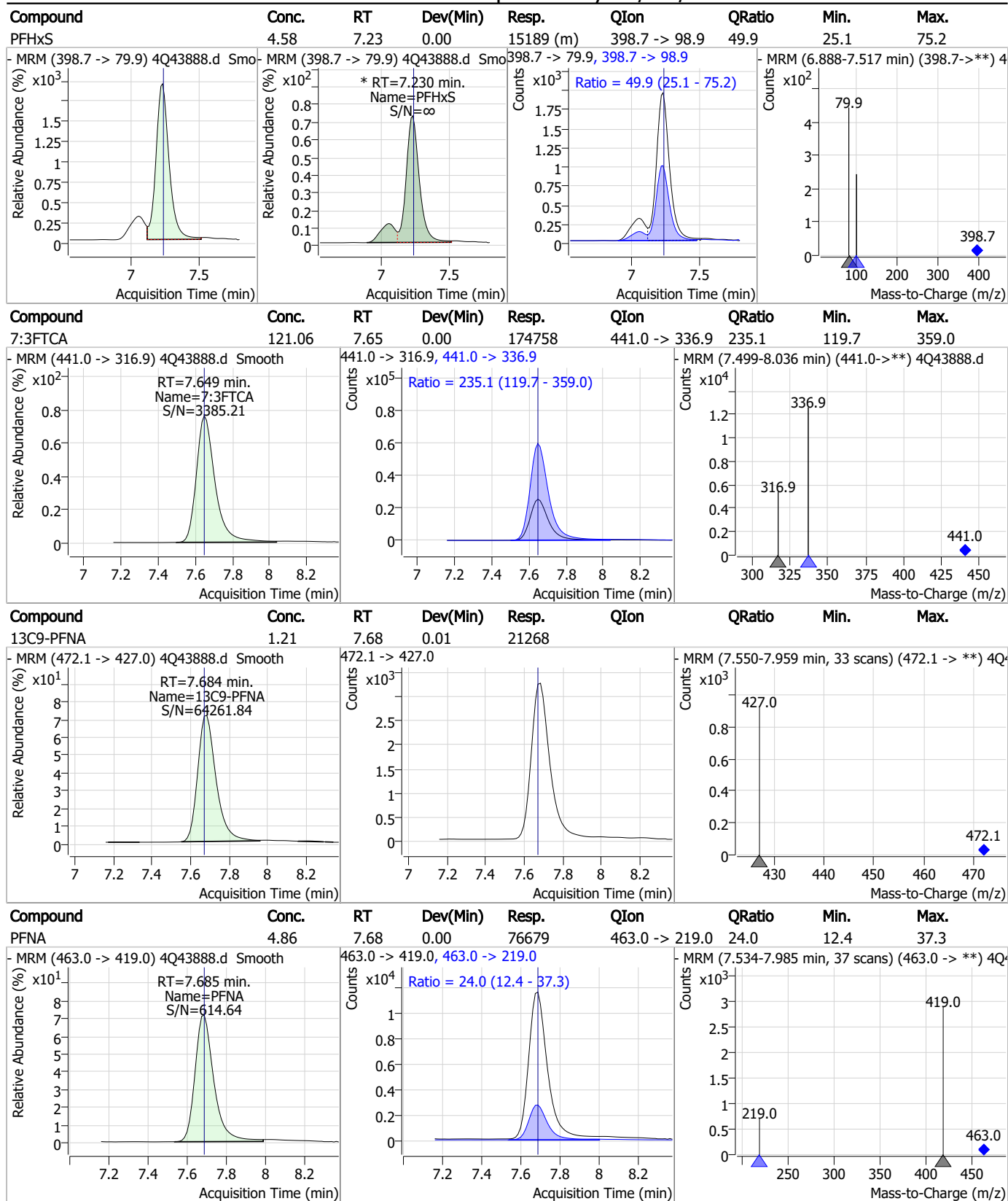
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Perfluorinated Compounds by LC/MS/MS



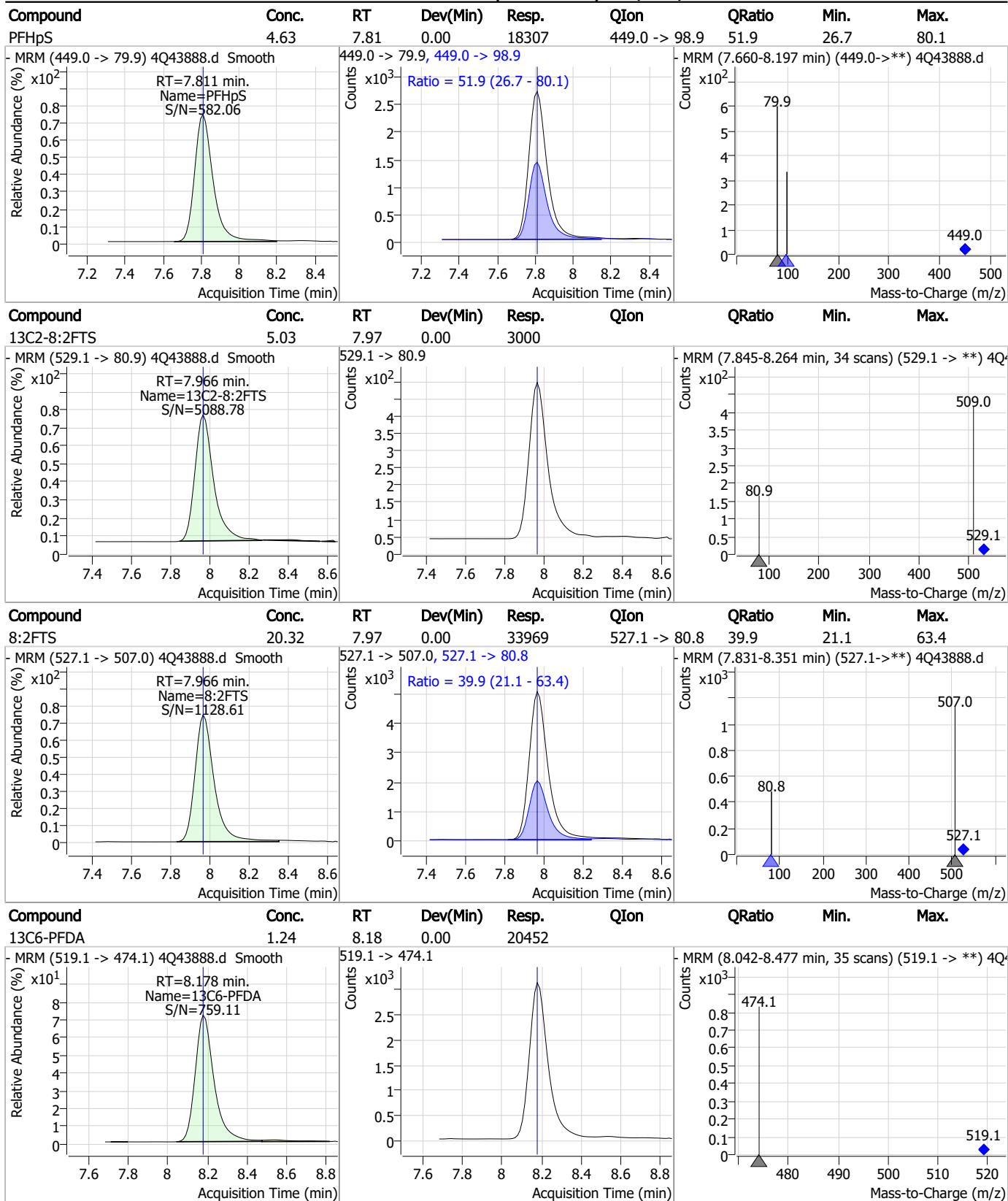
7.7.6
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Perfluorinated Compounds by LC/MS/MS



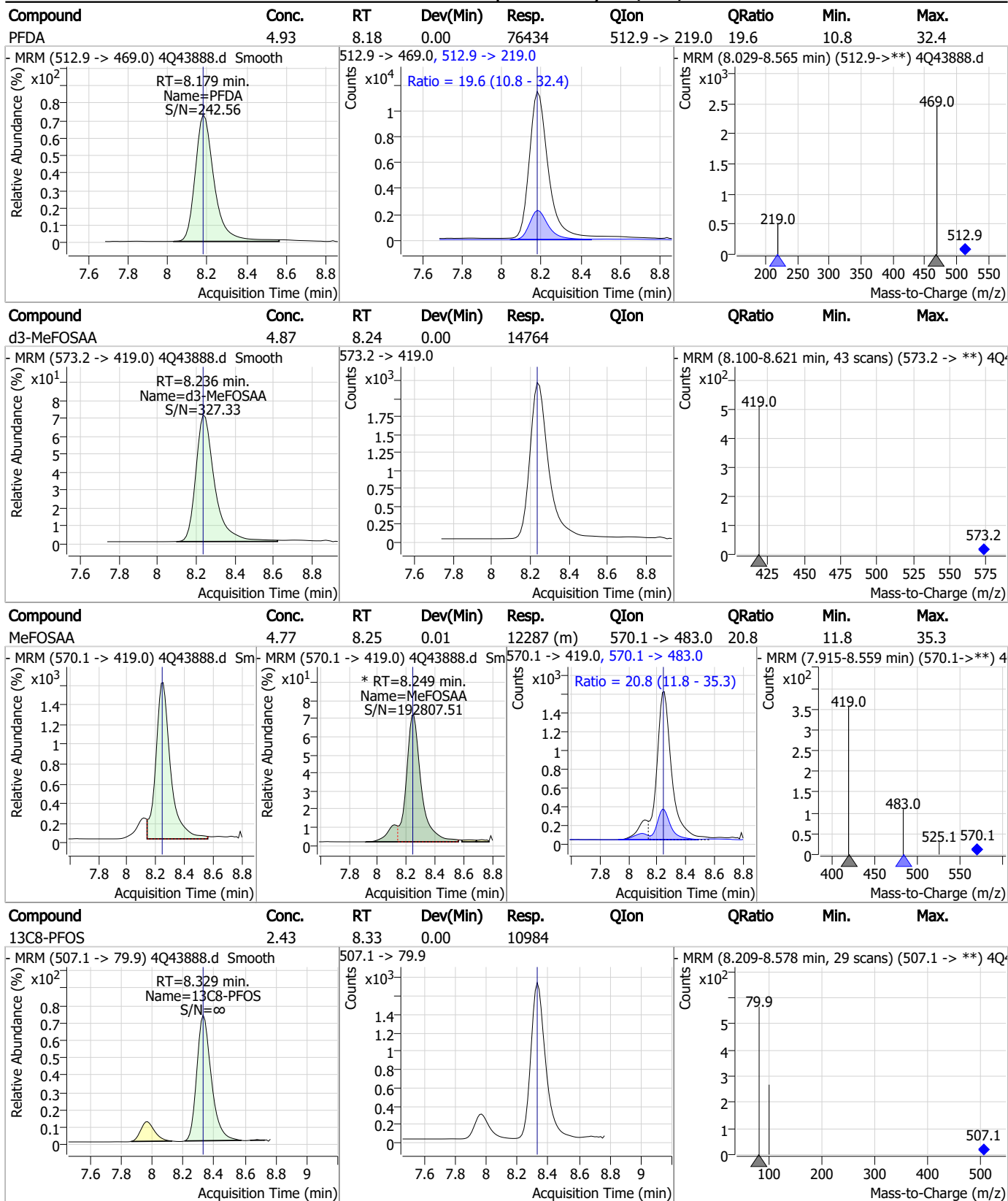
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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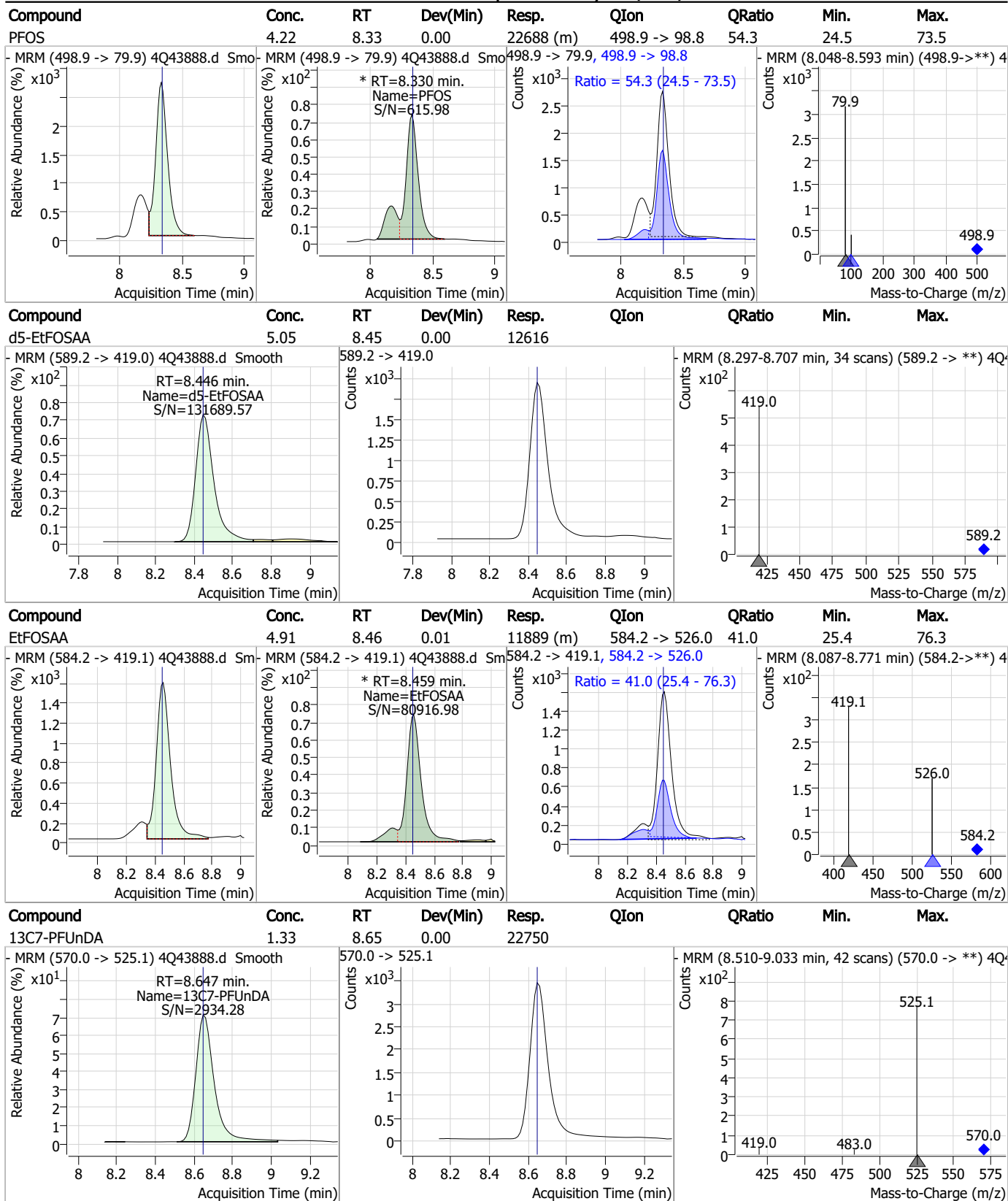
Perfluorinated Compounds by LC/MS/MS



7.7.6
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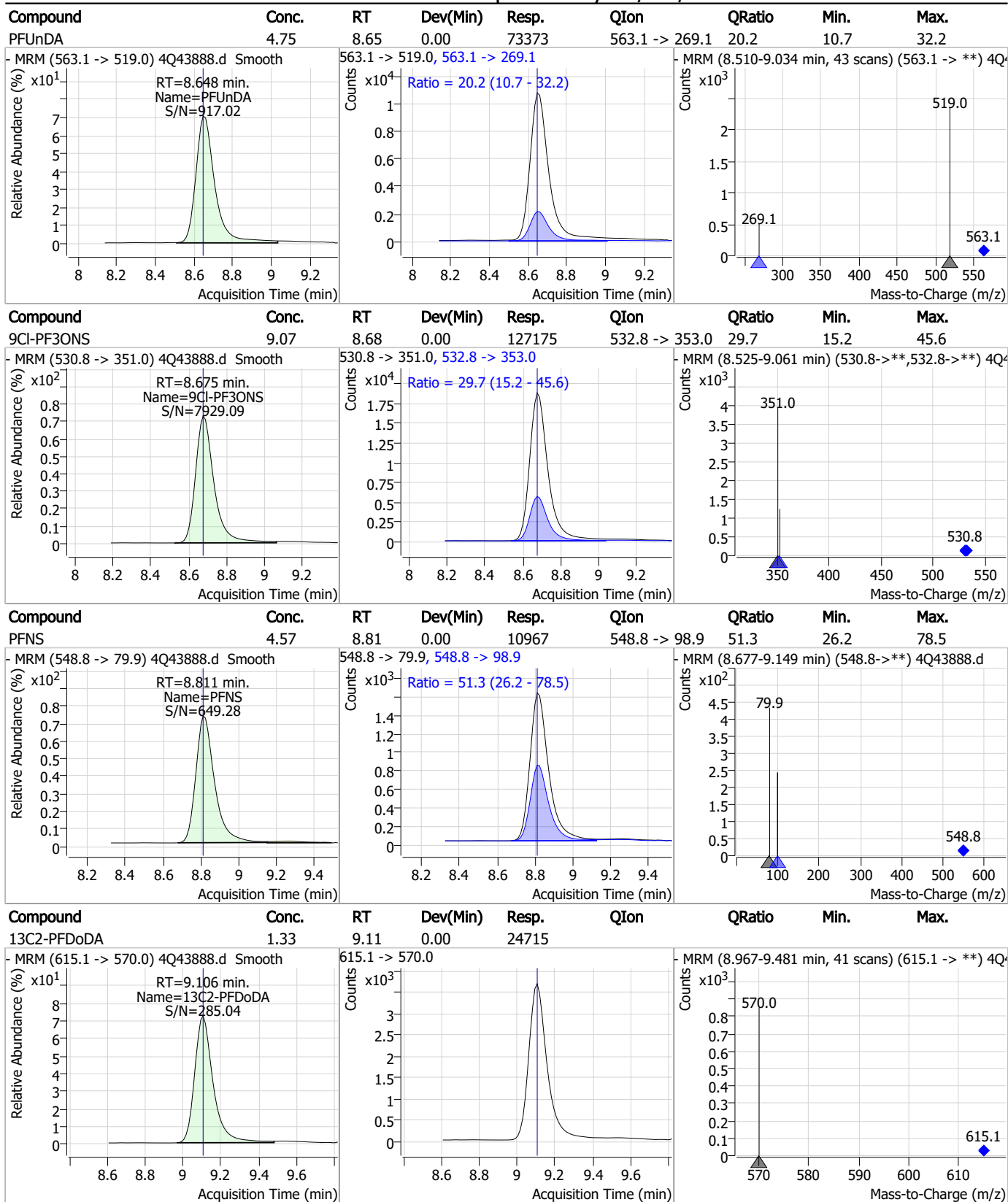
Perfluorinated Compounds by LC/MS/MS



7.7.6

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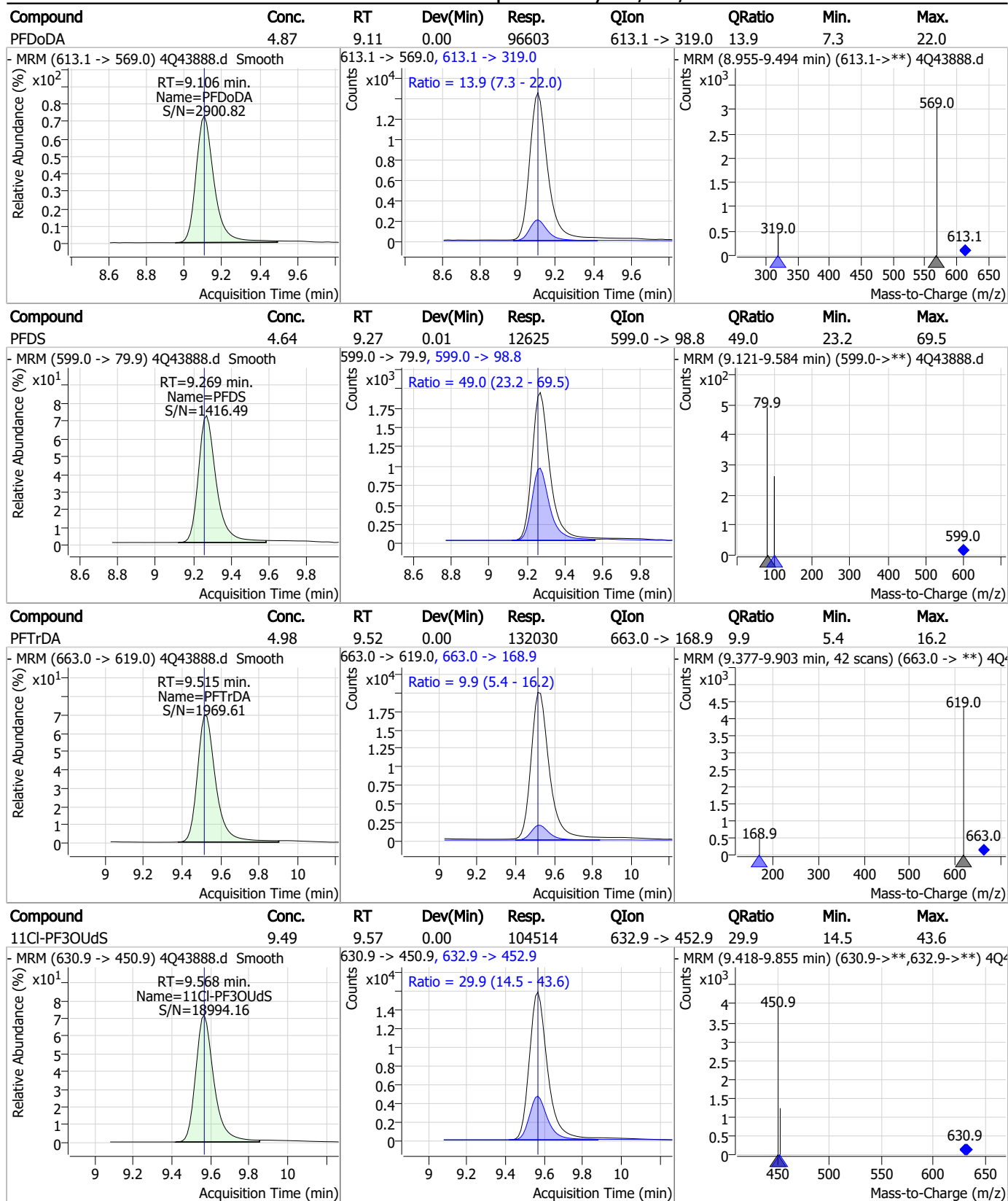
Perfluorinated Compounds by LC/MS/MS



7.7.6

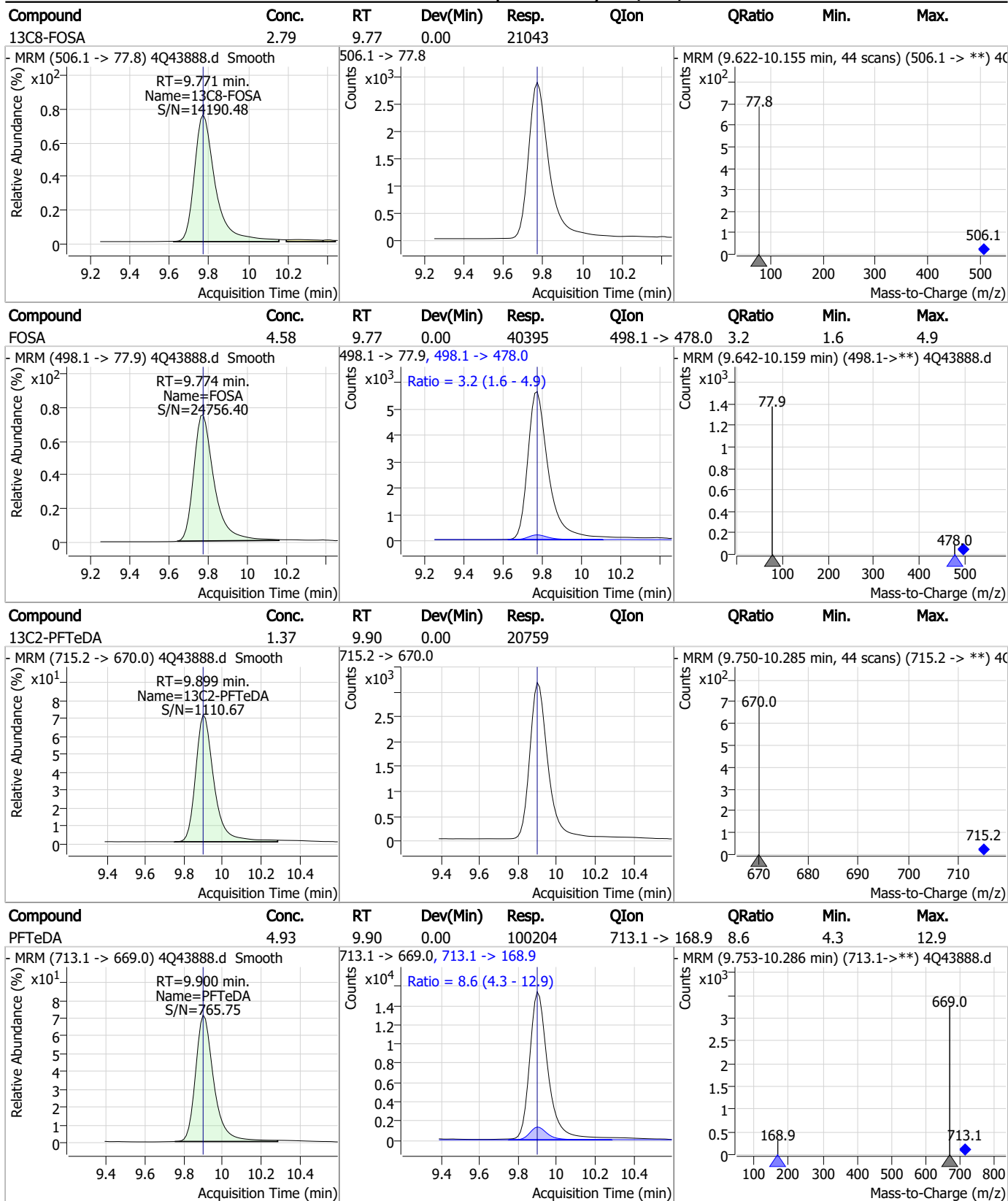
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Perfluorinated Compounds by LC/MS/MS



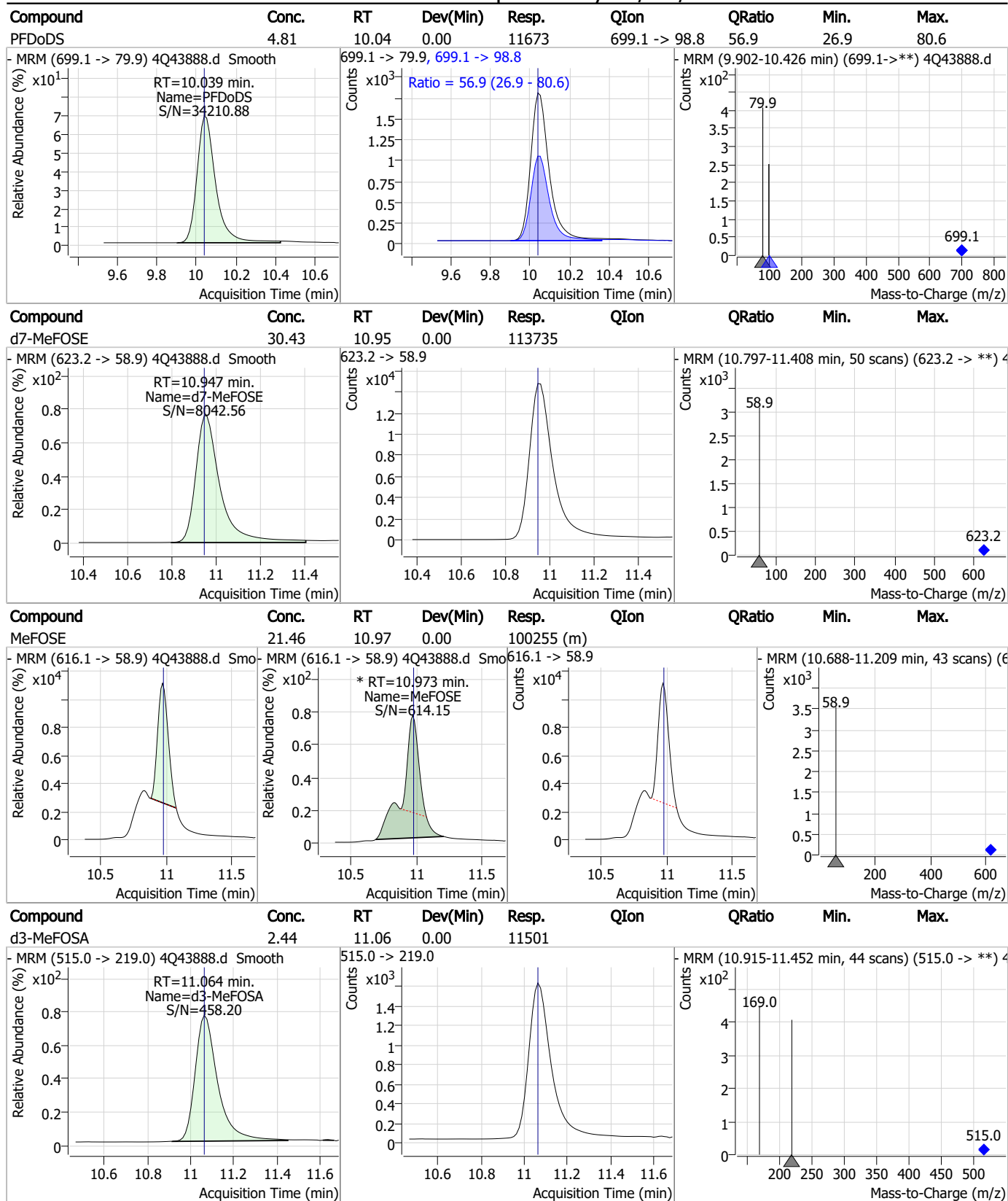
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
7

Perfluorinated Compounds by LC/MS/MS

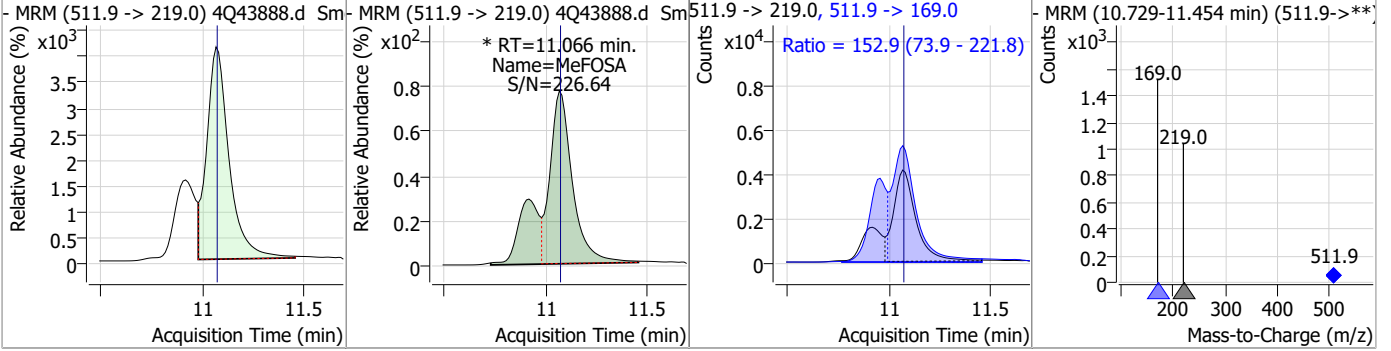


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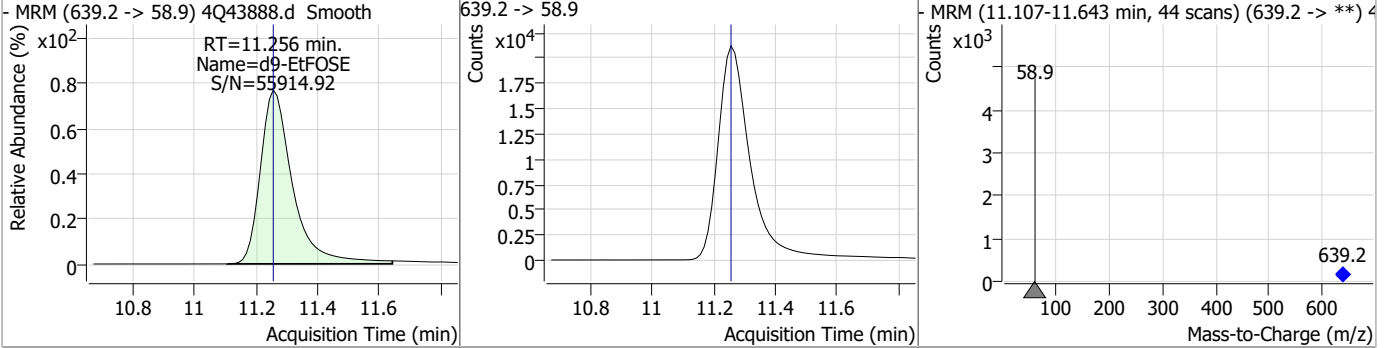
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Perfluorinated Compounds by LC/MS/MS

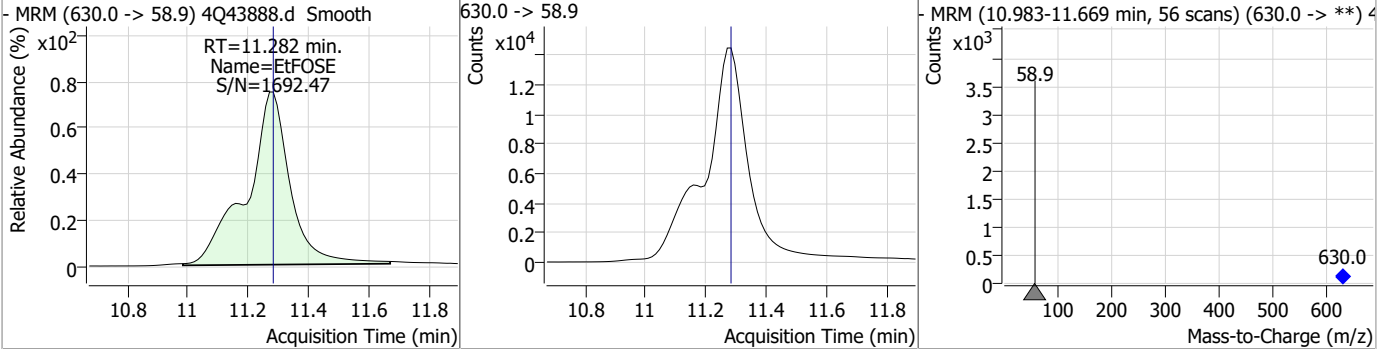
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	9.83	11.07	0.00	42597 (m)	511.9 -> 169.0	152.9	73.9	221.8



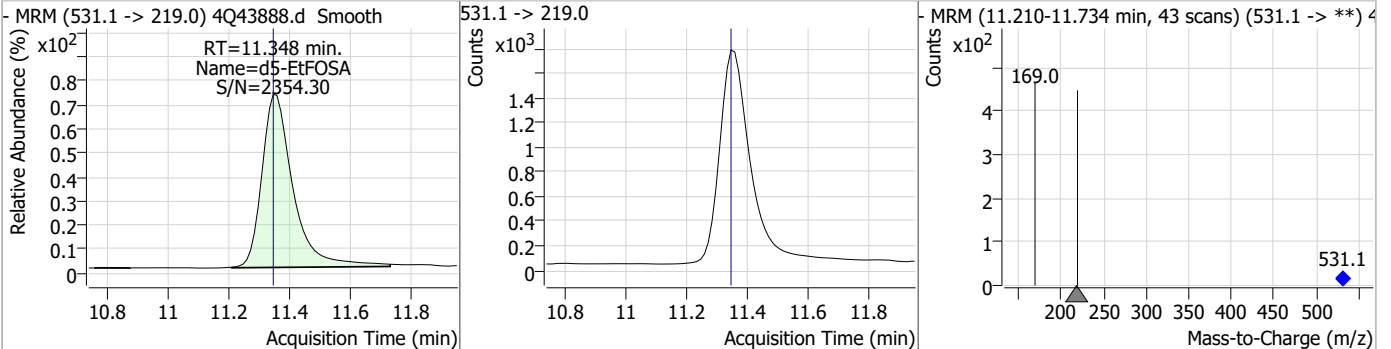
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	29.02	11.26	0.00	153598				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	24.12	11.28	0.00	143421				

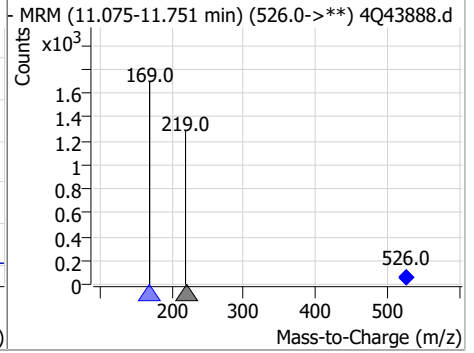
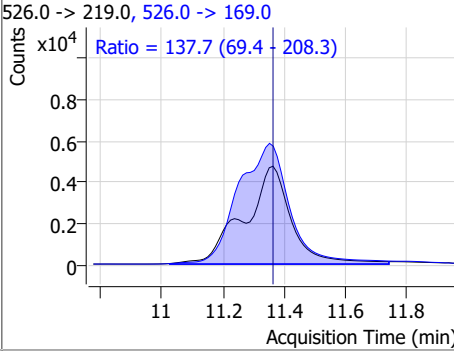
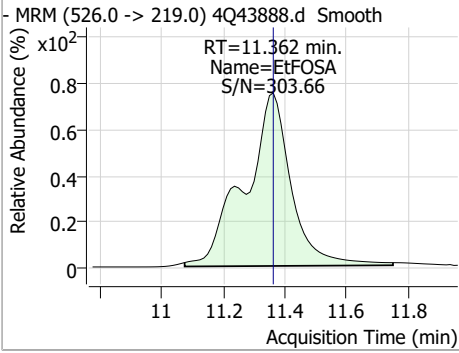


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.48	11.35	0.00	12423				



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

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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

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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 : 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

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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			

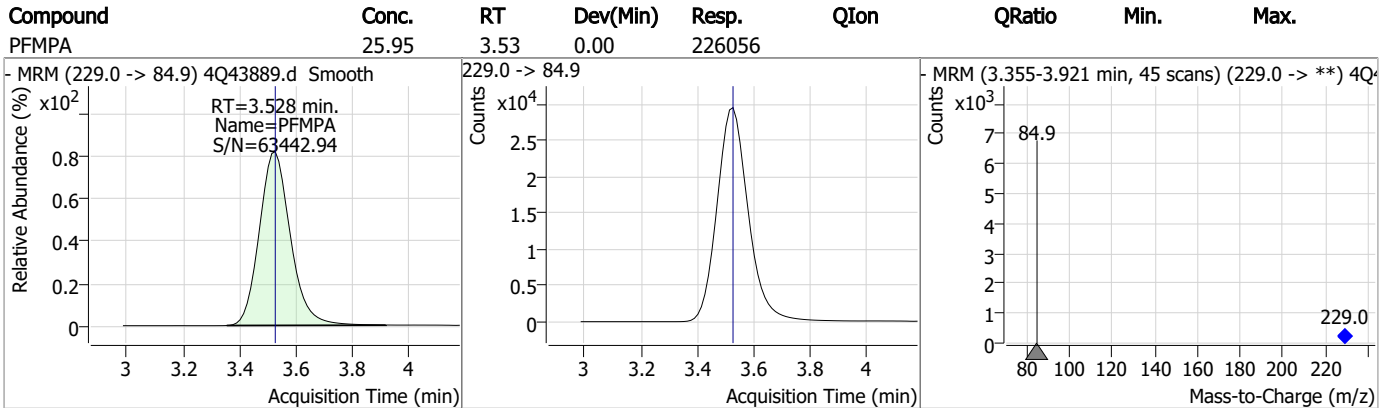
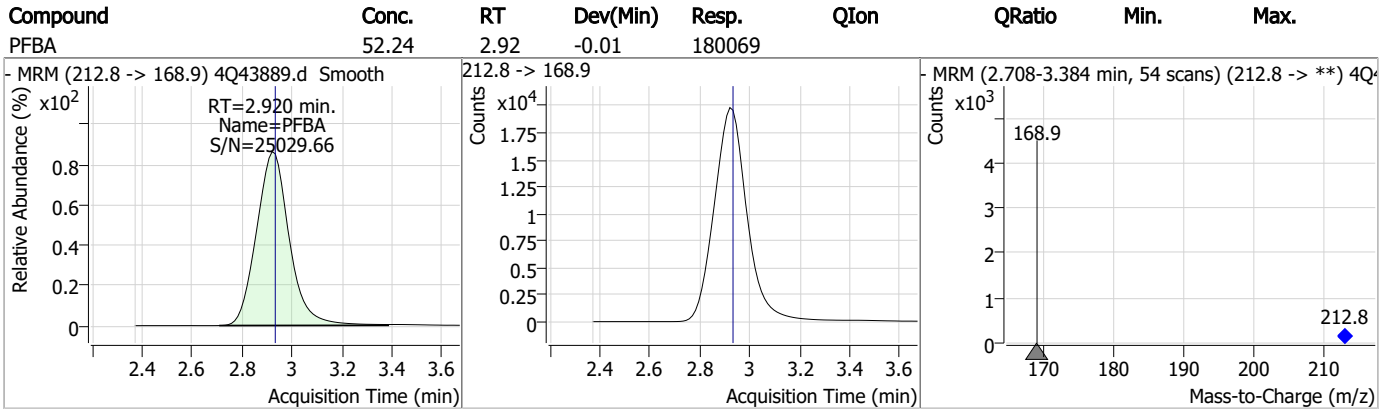
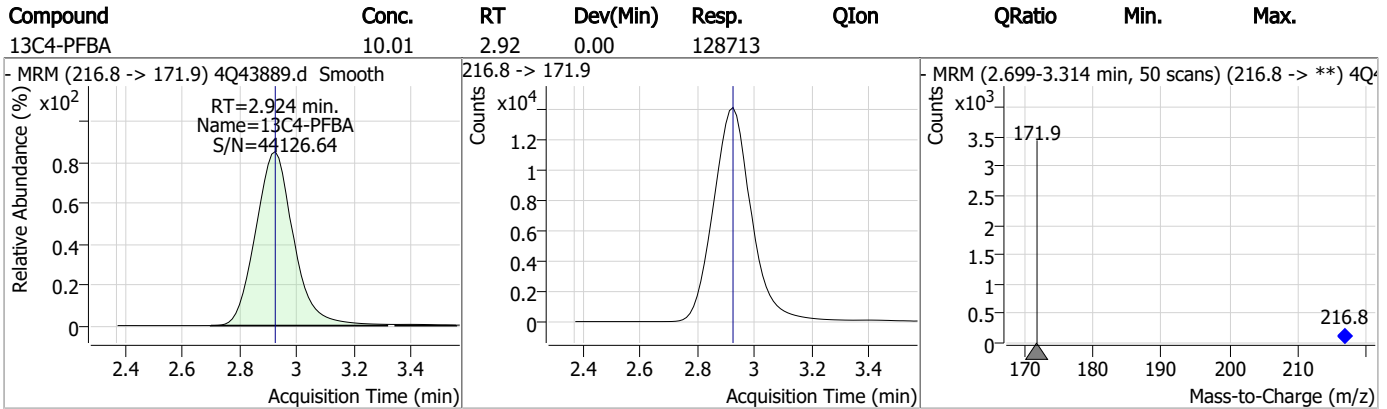
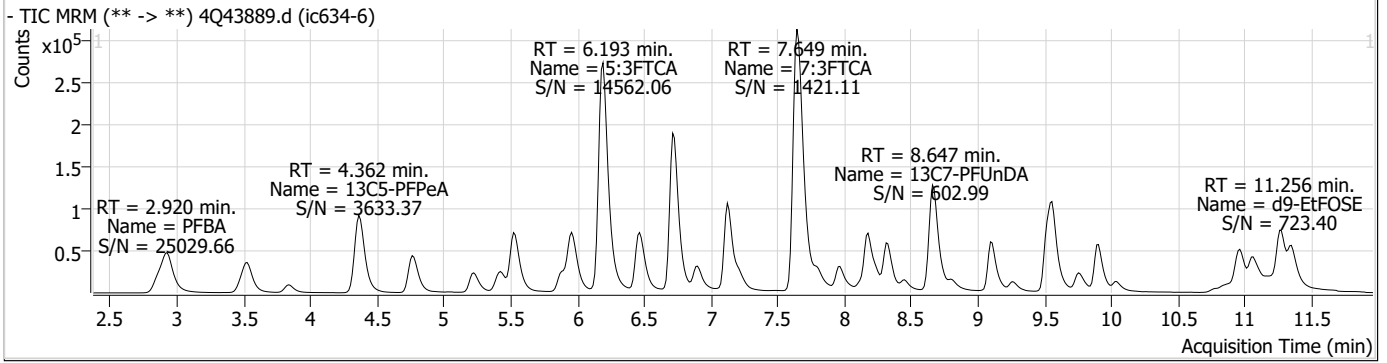
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

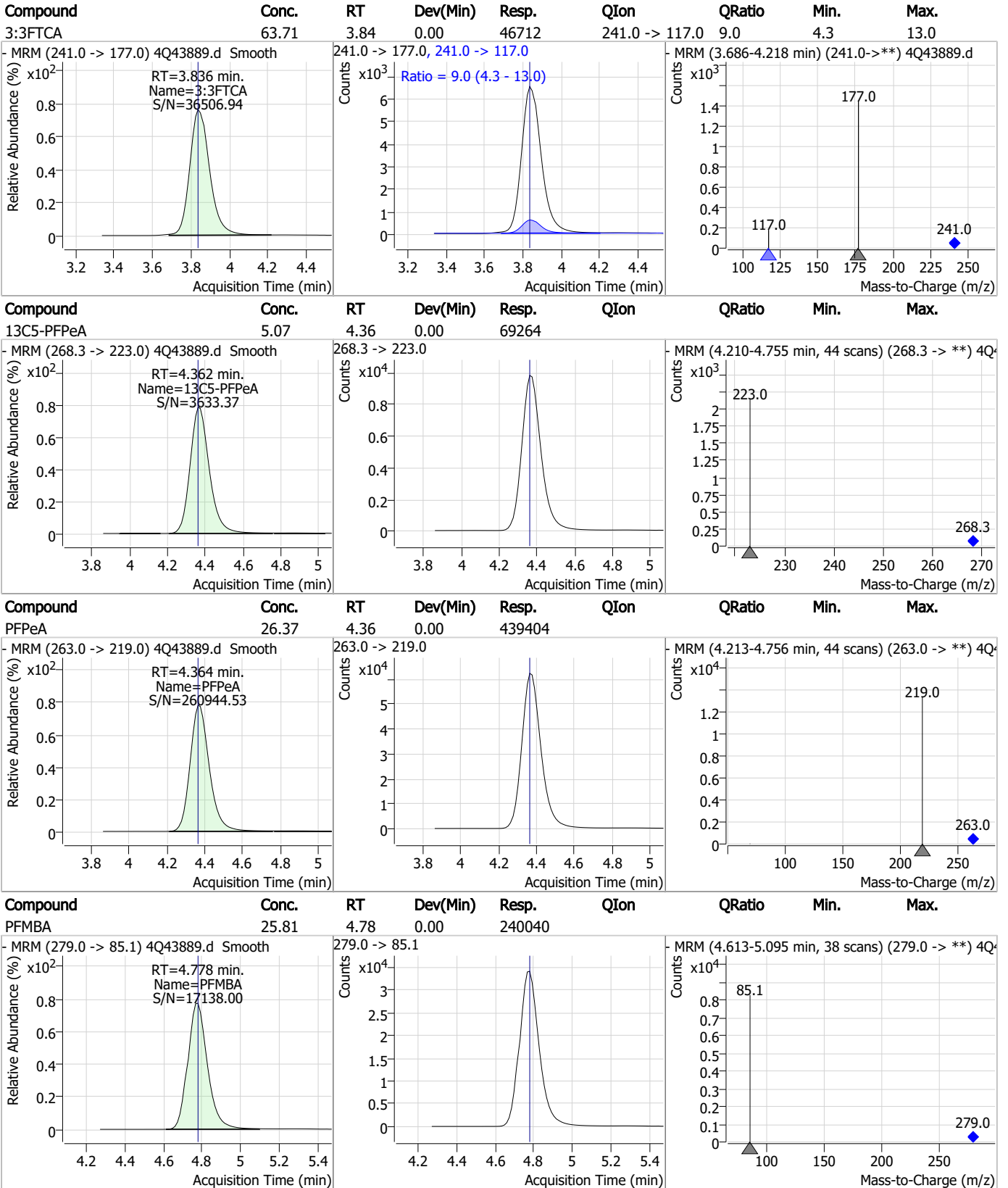
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.7
7

Perfluorinated Compounds by LC/MS/MS



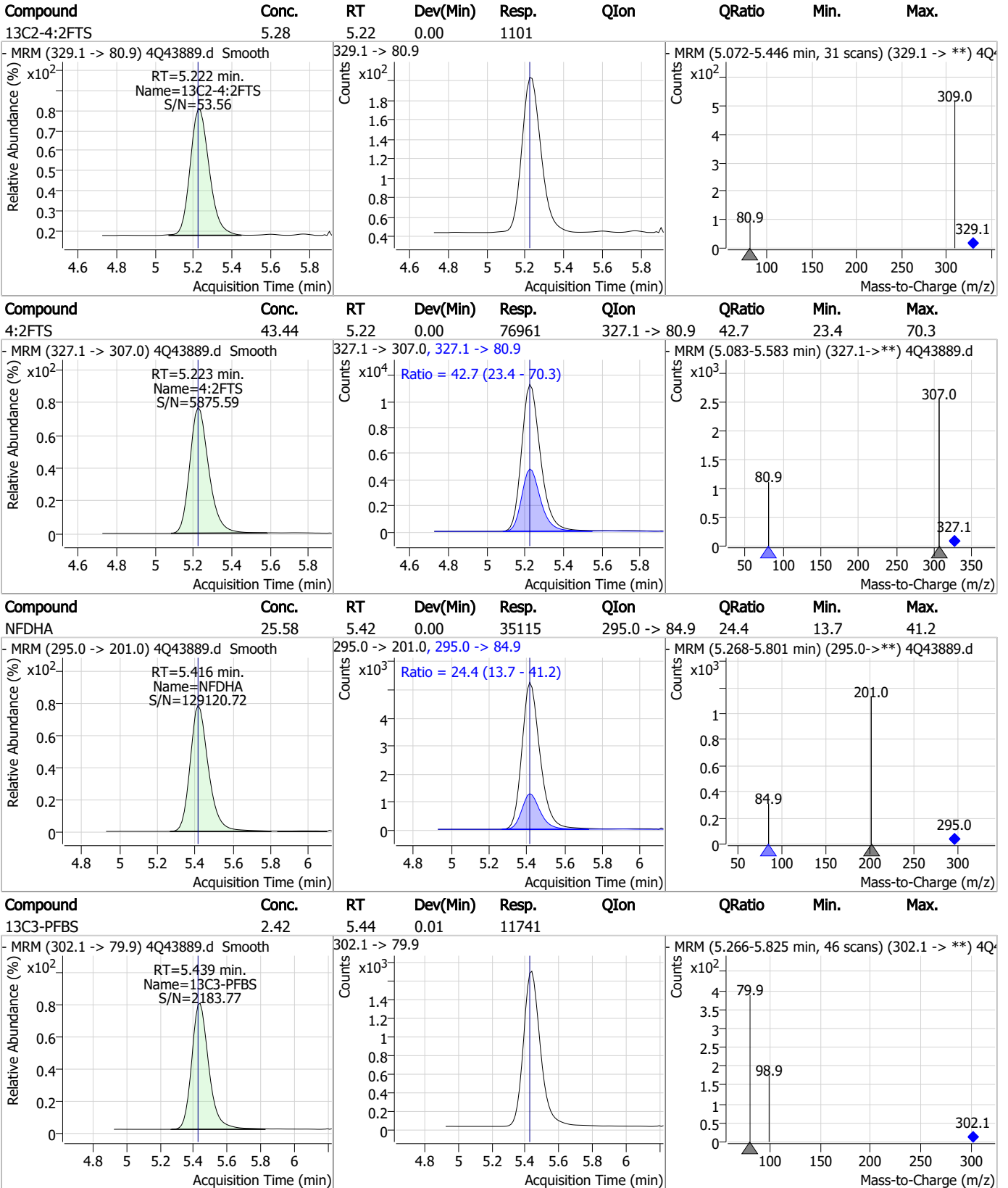
Perfluorinated Compounds by LC/MS/MS



7.7.7

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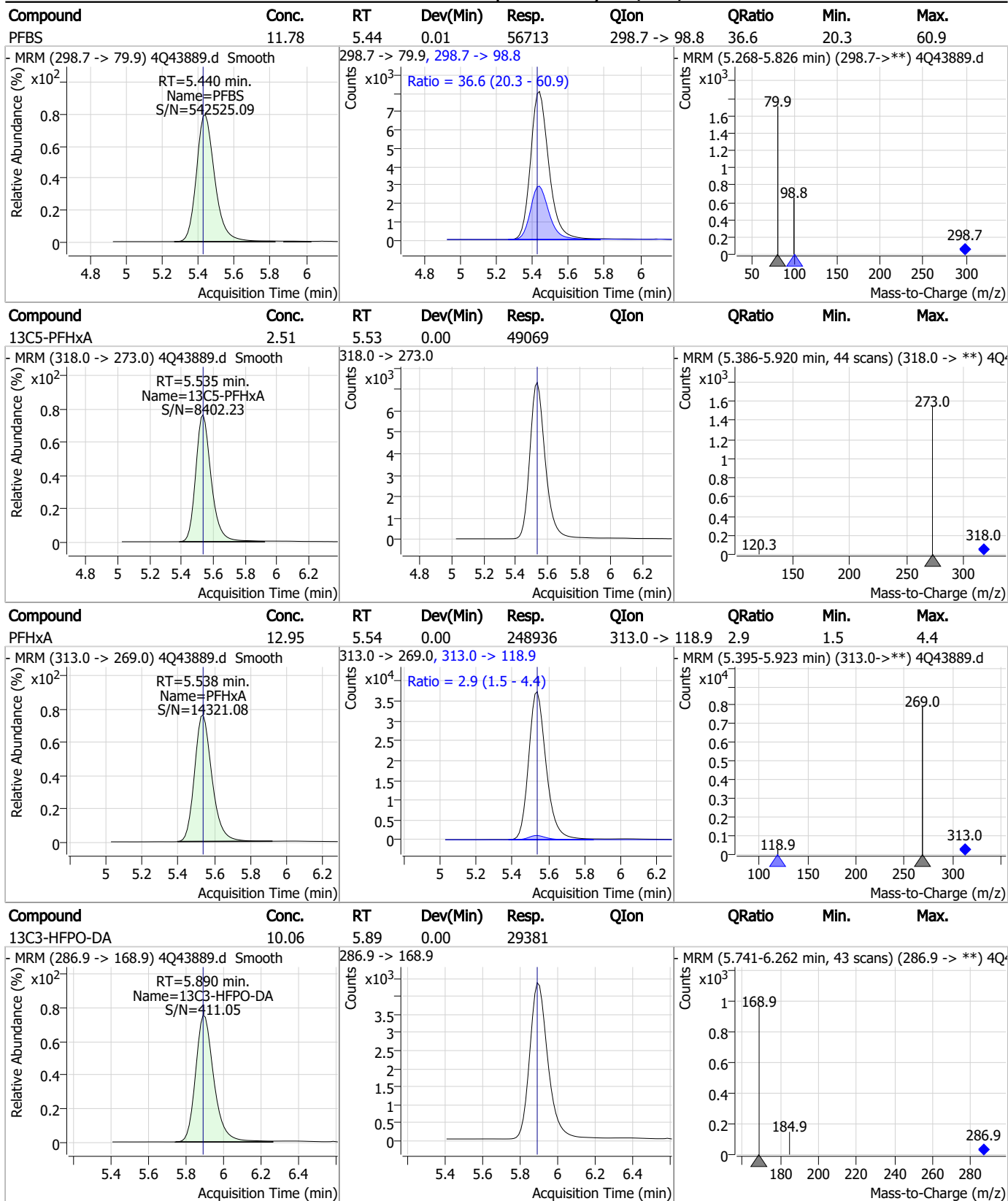
Perfluorinated Compounds by LC/MS/MS



7.7.7

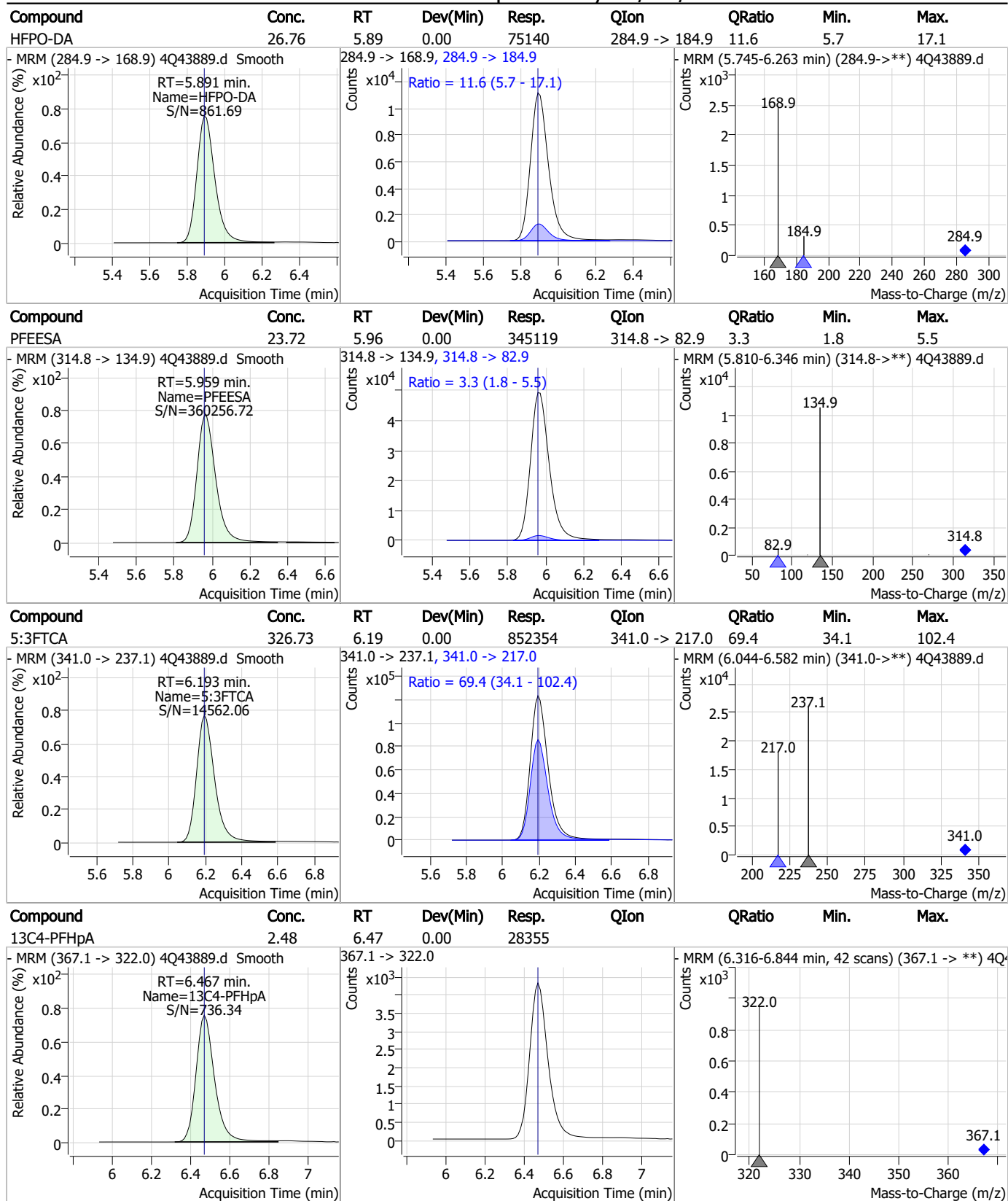
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Perfluorinated Compounds by LC/MS/MS



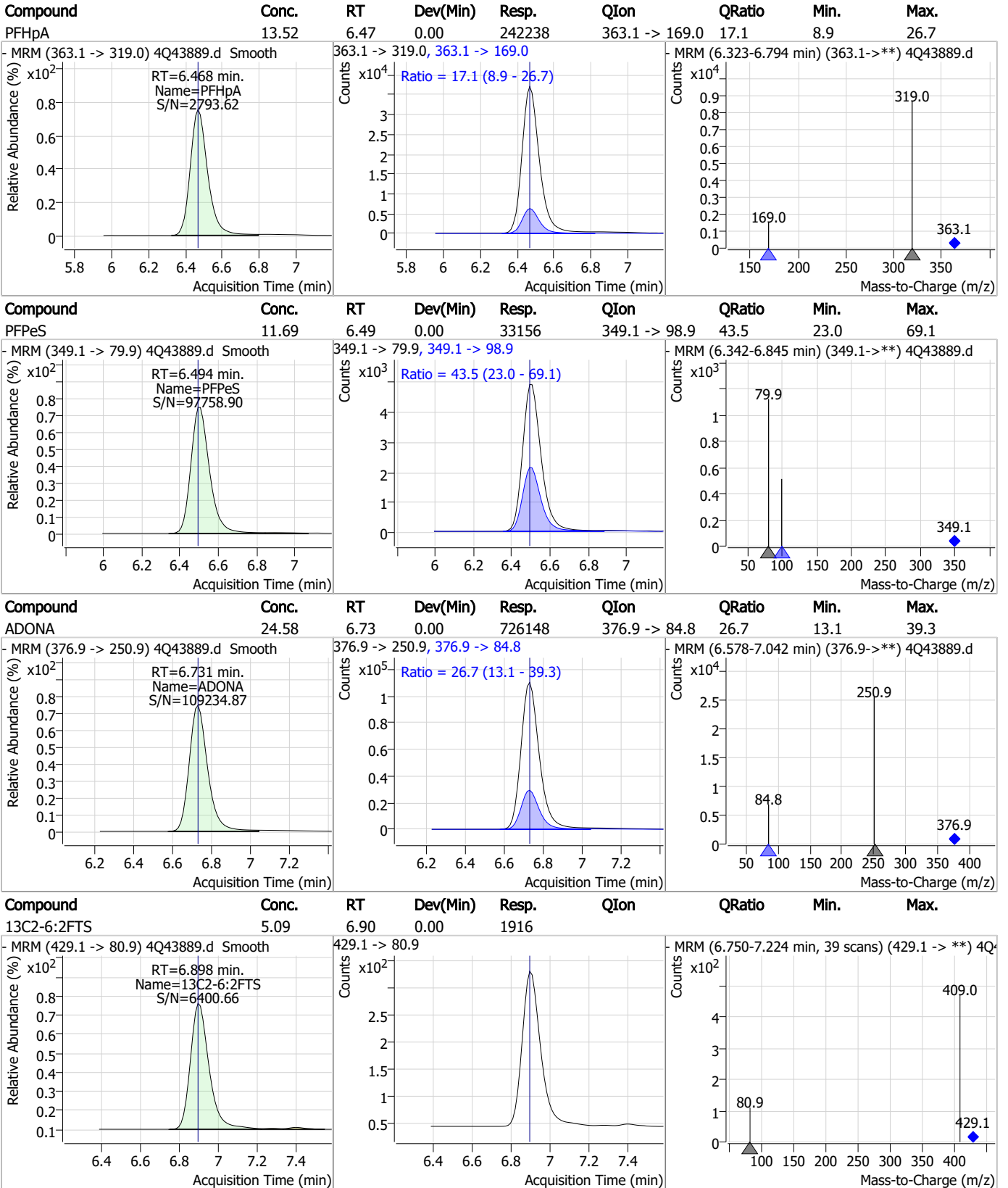
7.7.7
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Perfluorinated Compounds by LC/MS/MS



7.7.7
7

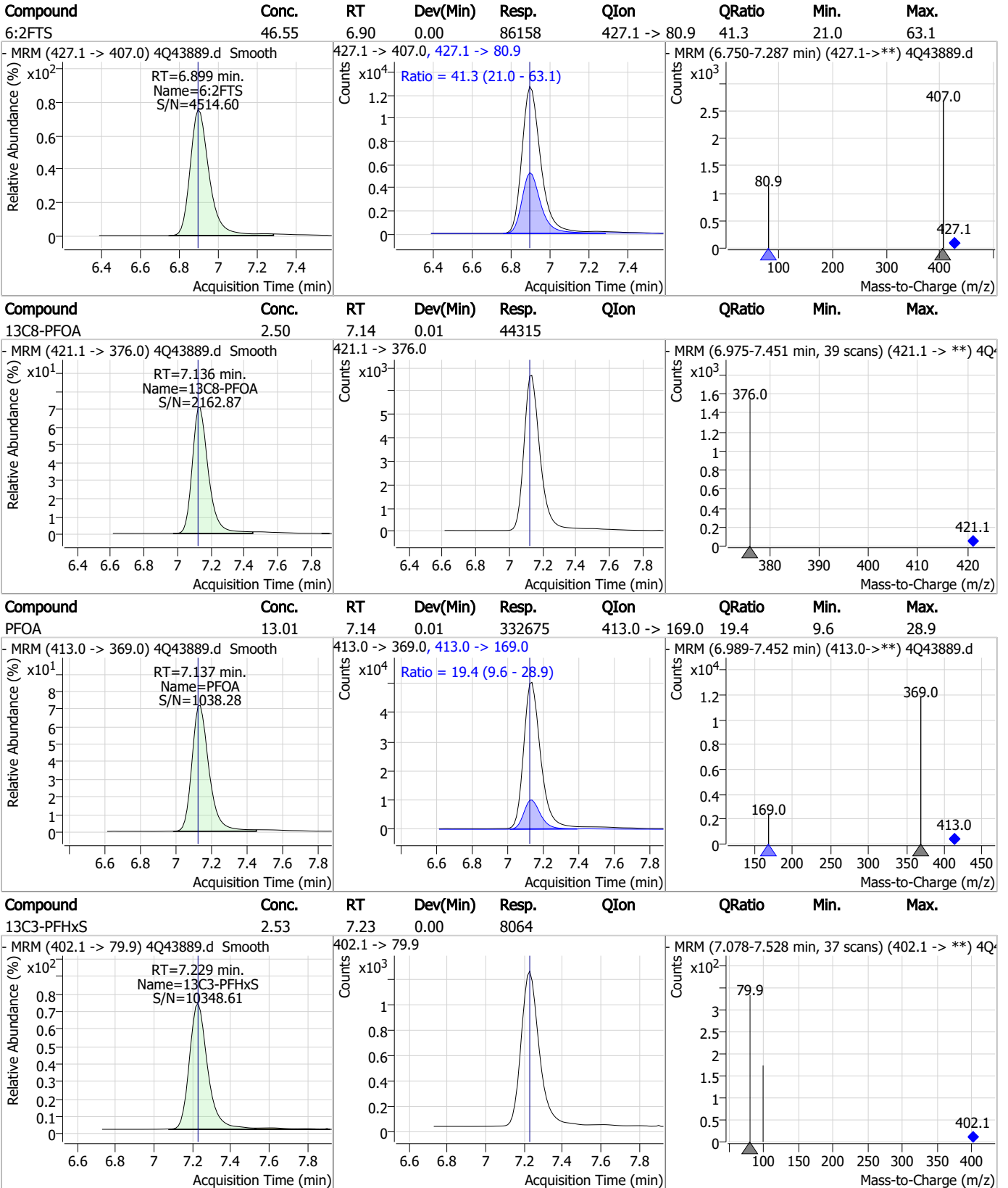
Perfluorinated Compounds by LC/MS/MS



7.7.7

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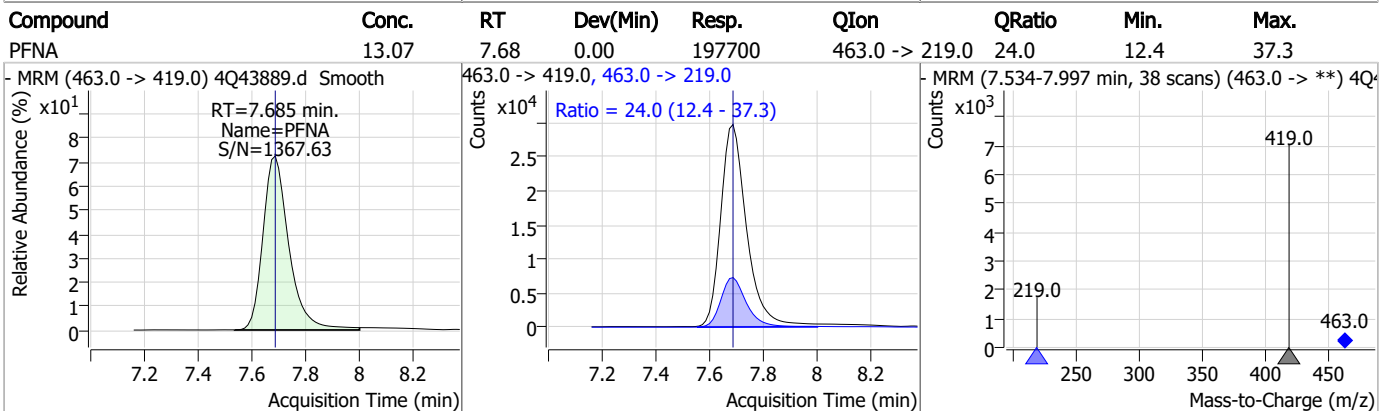
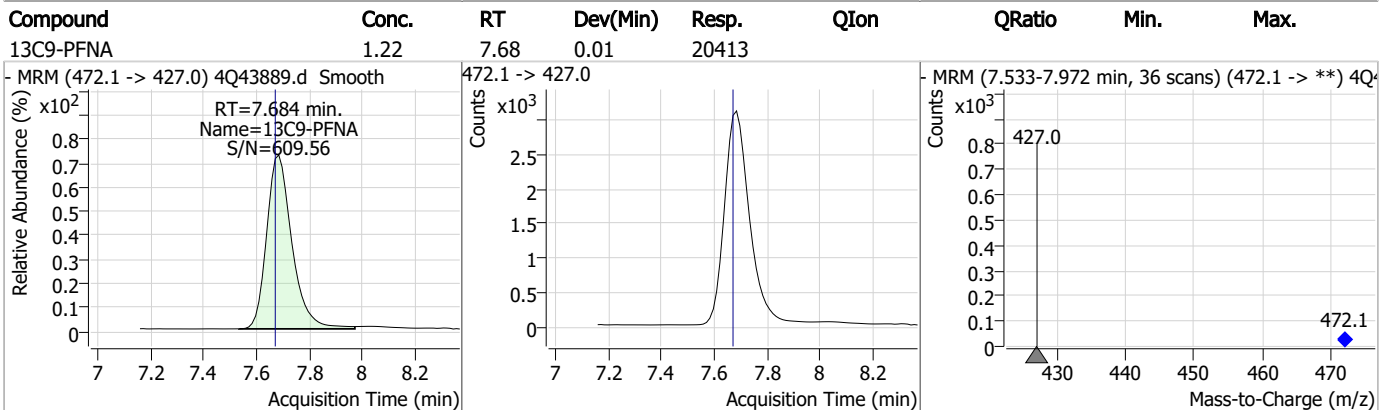
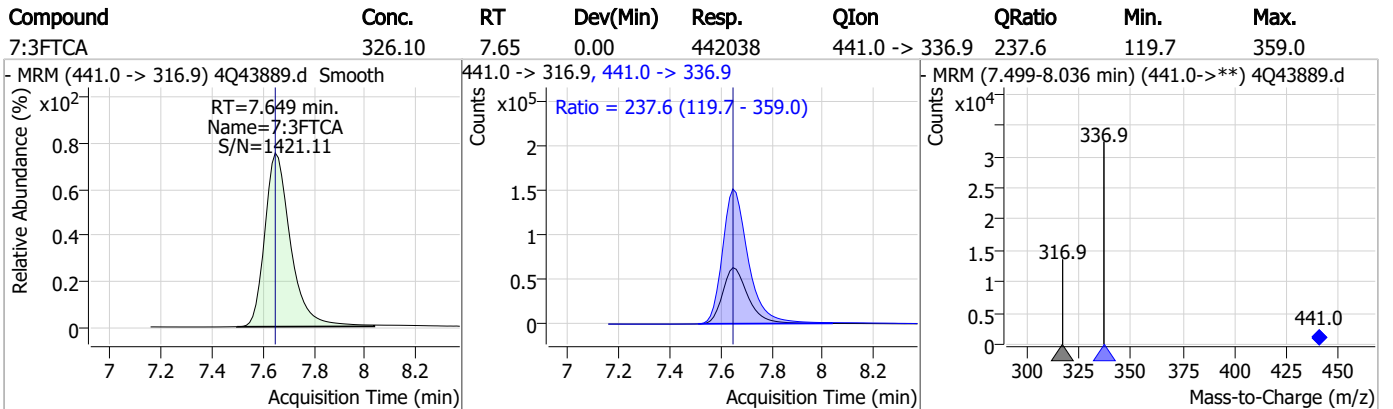
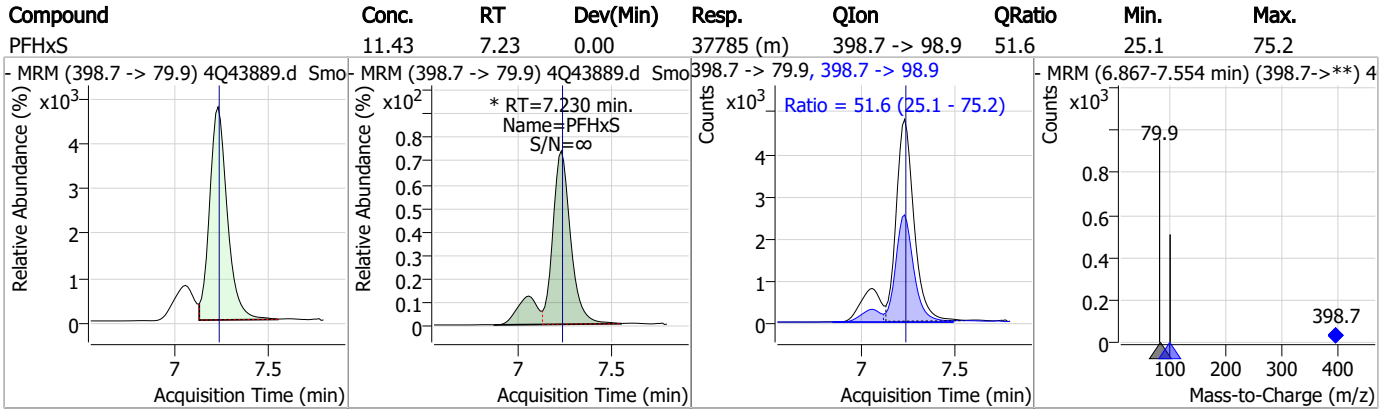
Perfluorinated Compounds by LC/MS/MS



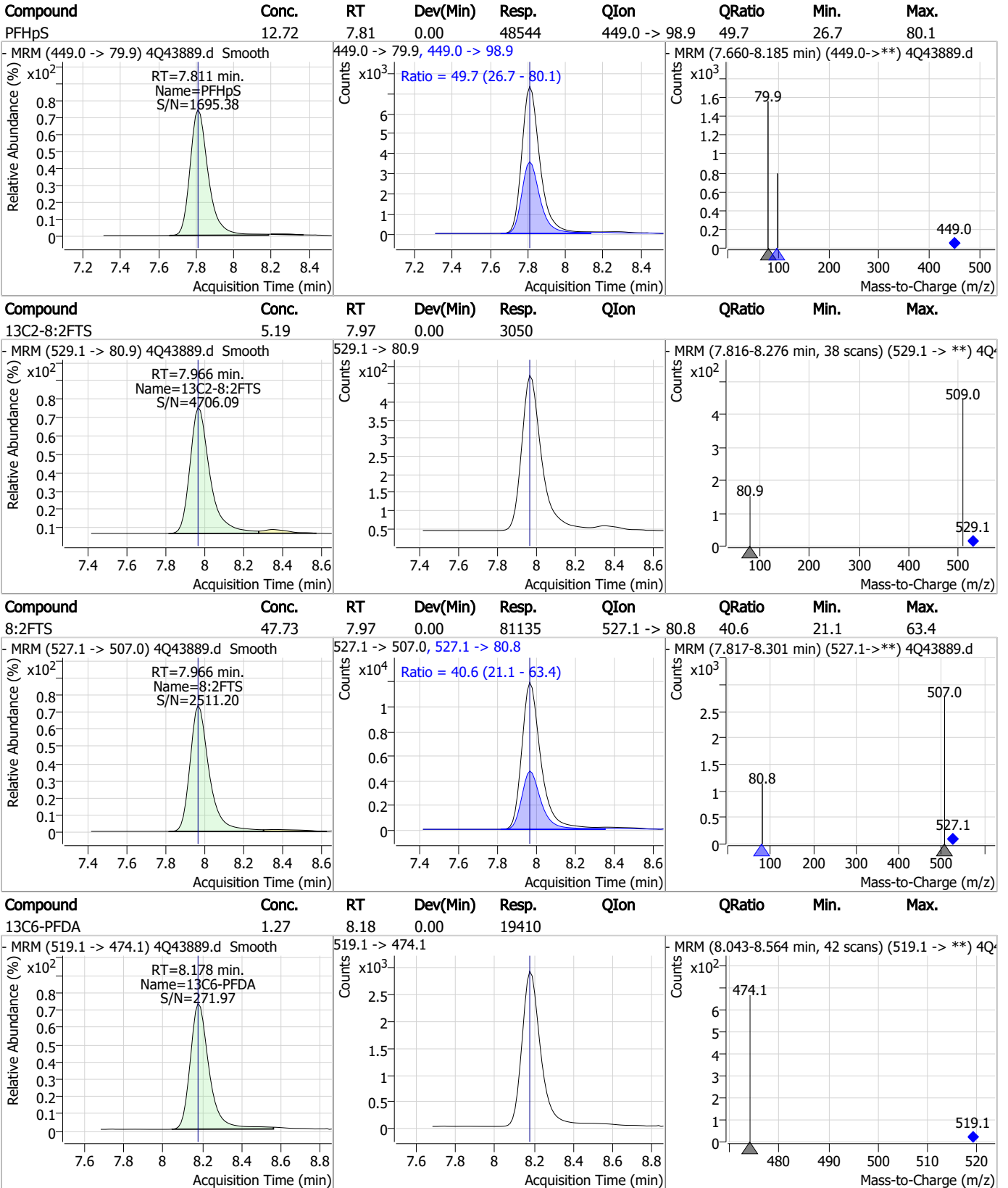
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Perfluorinated Compounds by LC/MS/MS

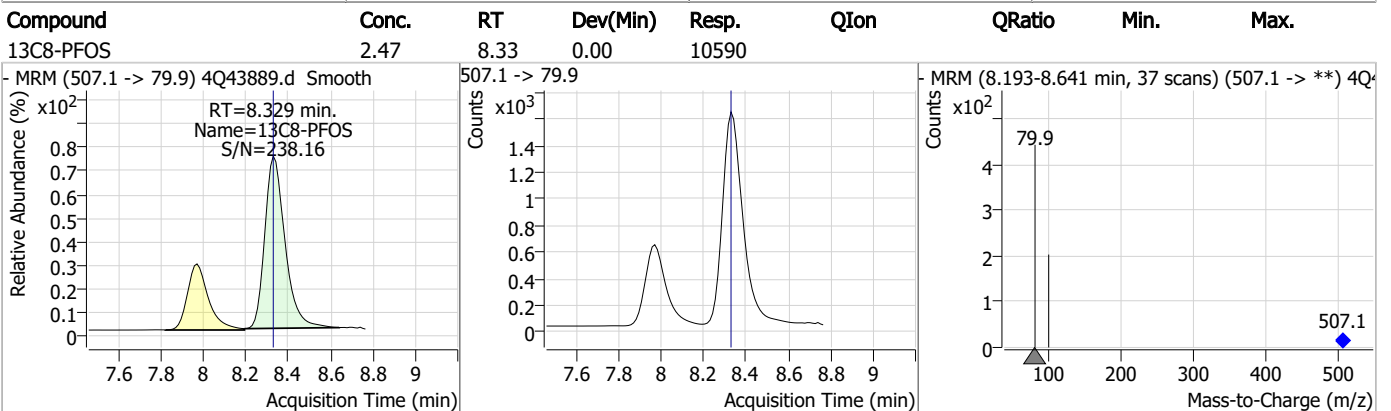
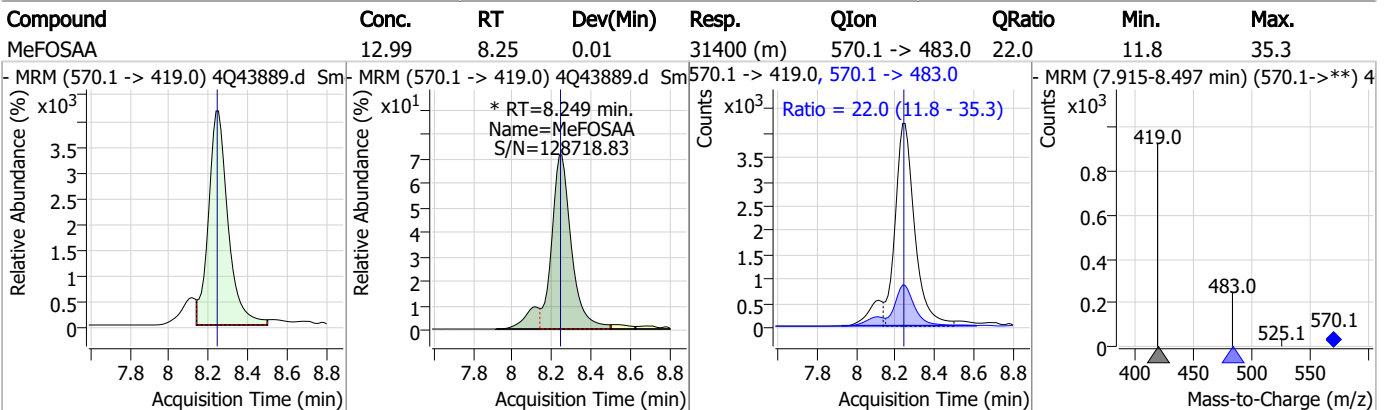
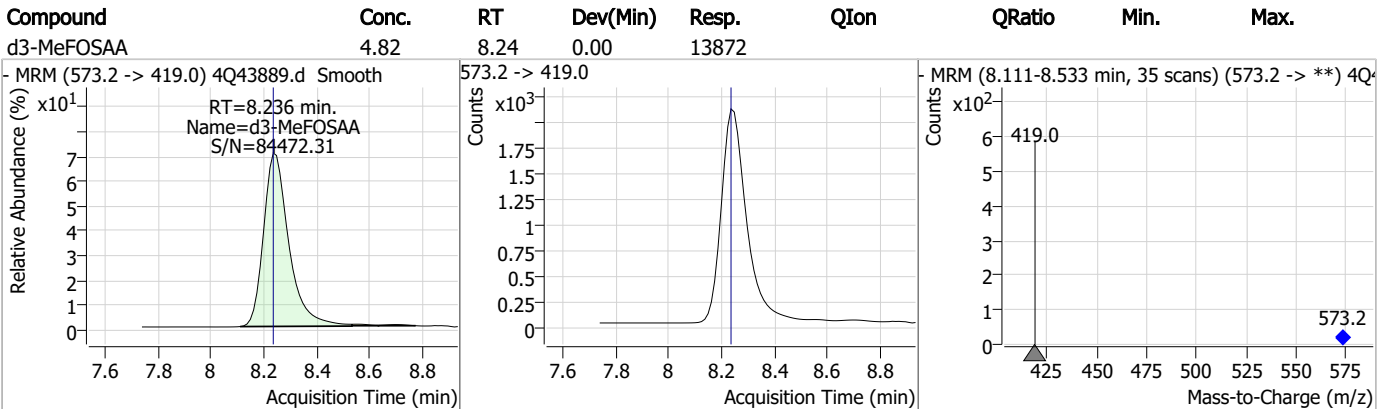
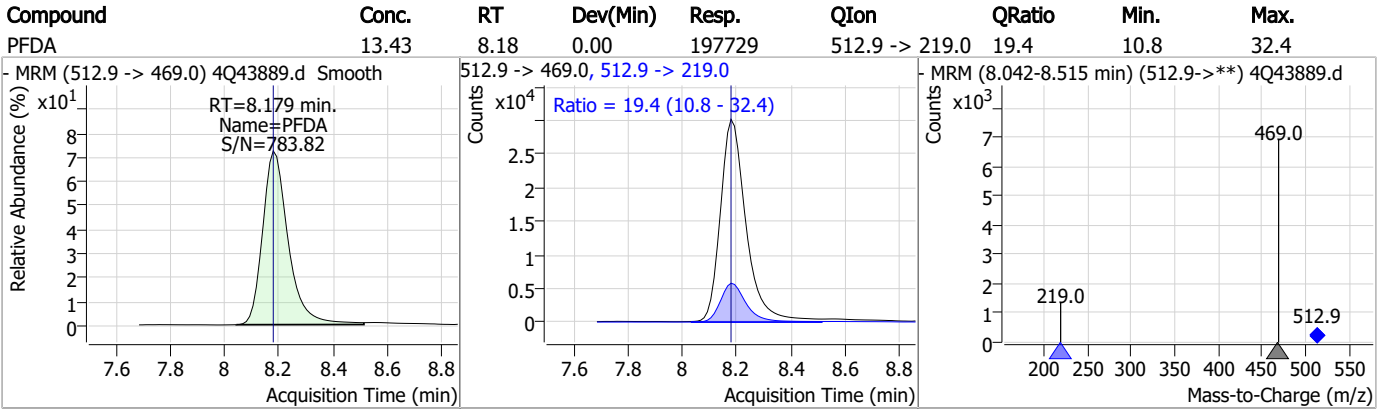


Perfluorinated Compounds by LC/MS/MS



7.7.7
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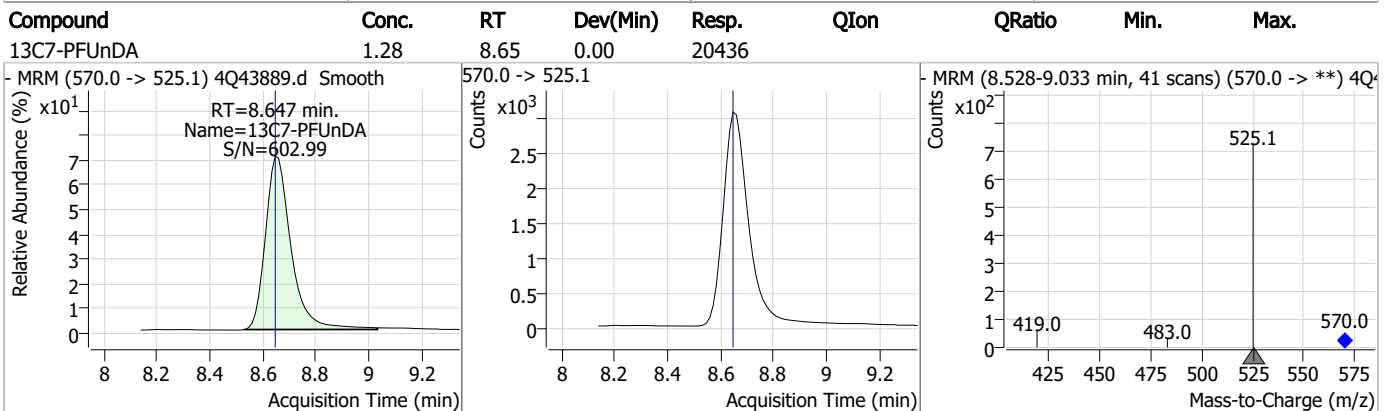
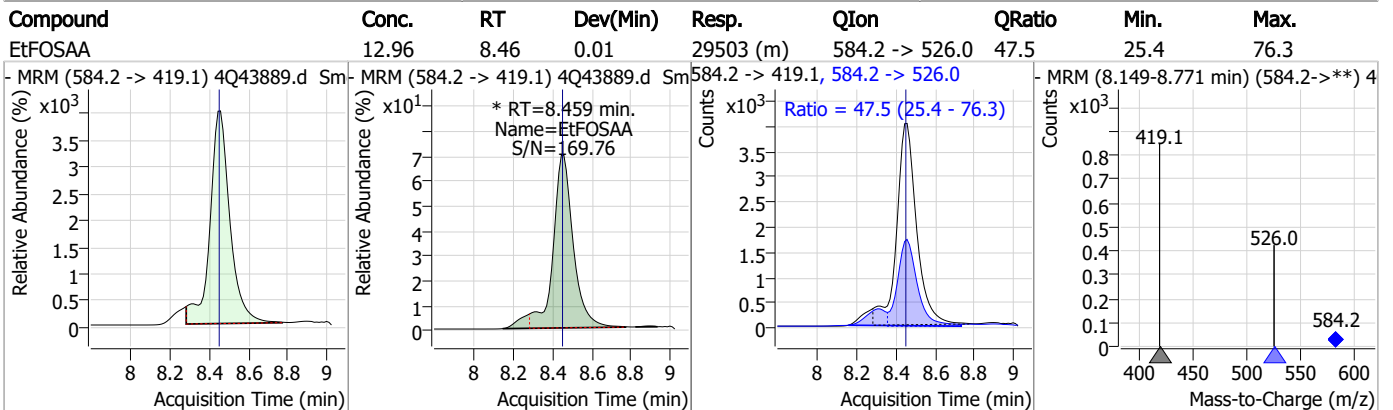
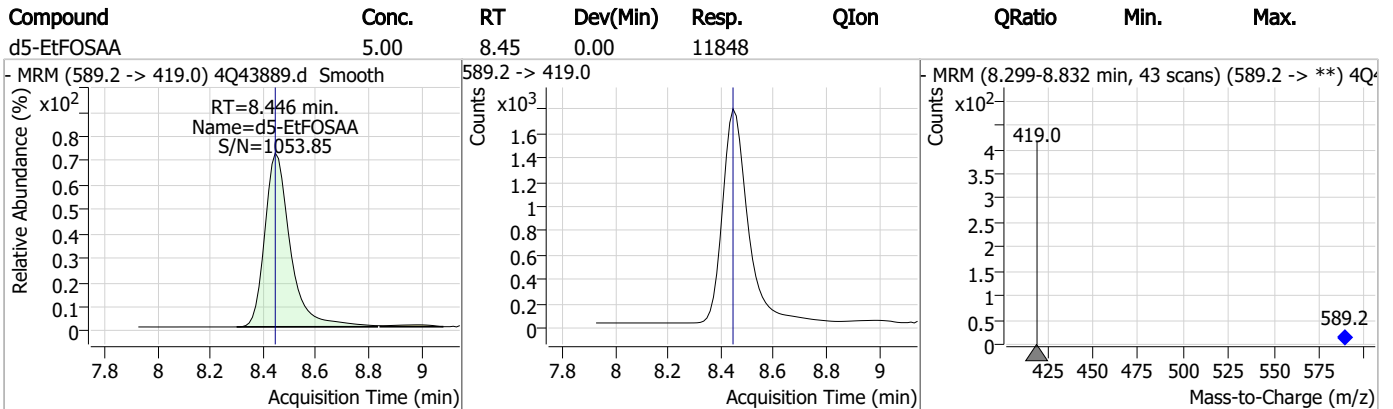
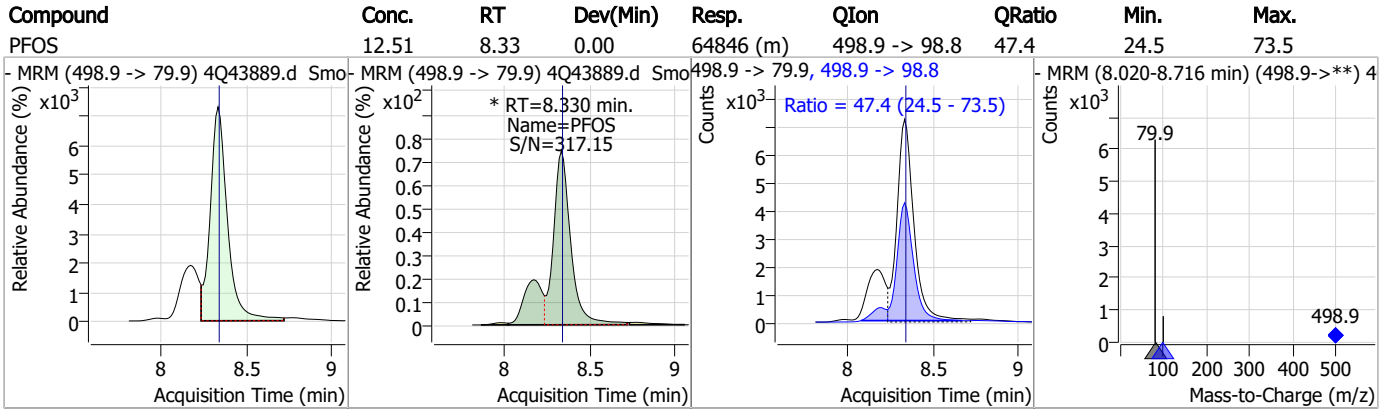
Perfluorinated Compounds by LC/MS/MS



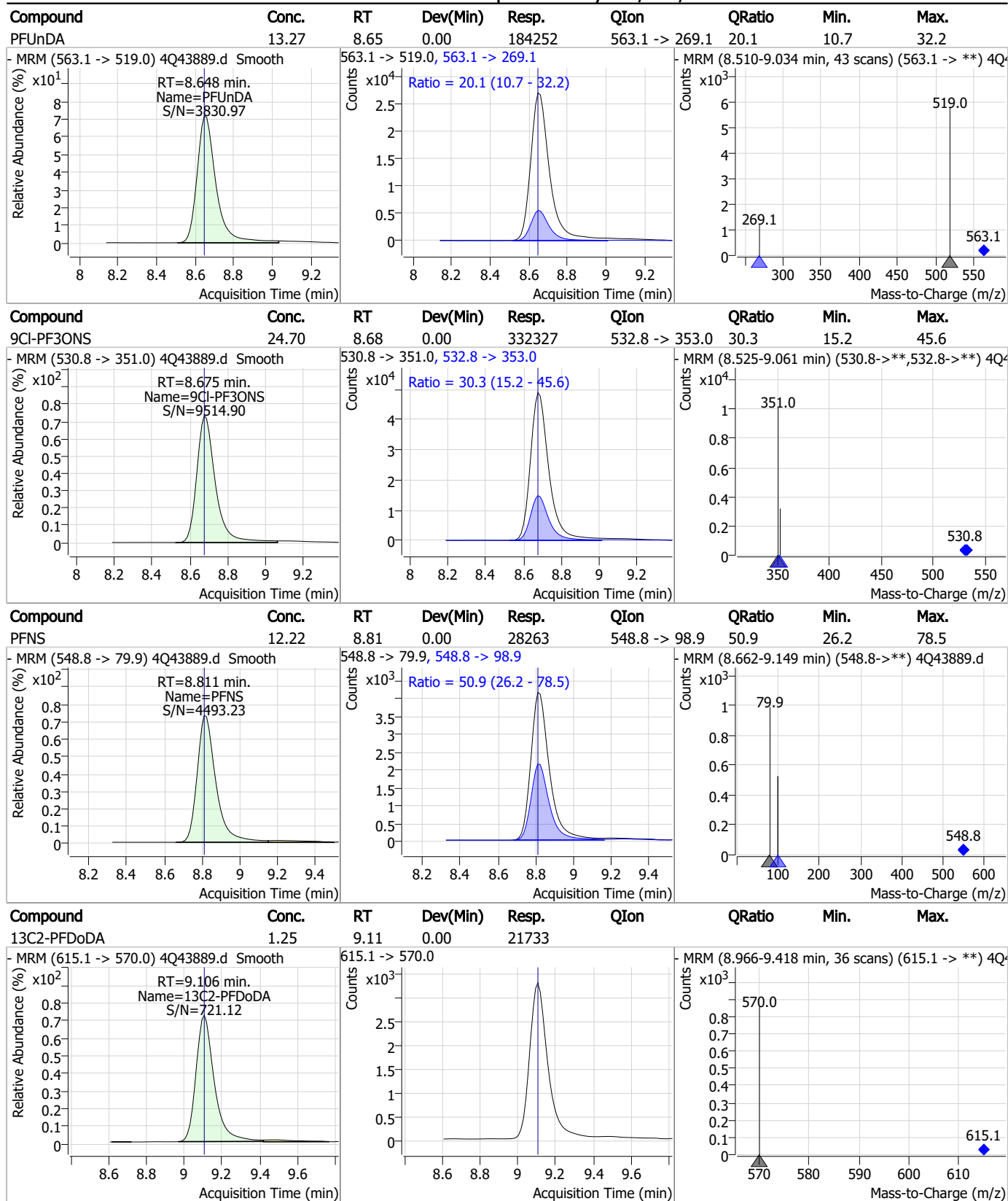
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Perfluorinated Compounds by LC/MS/MS

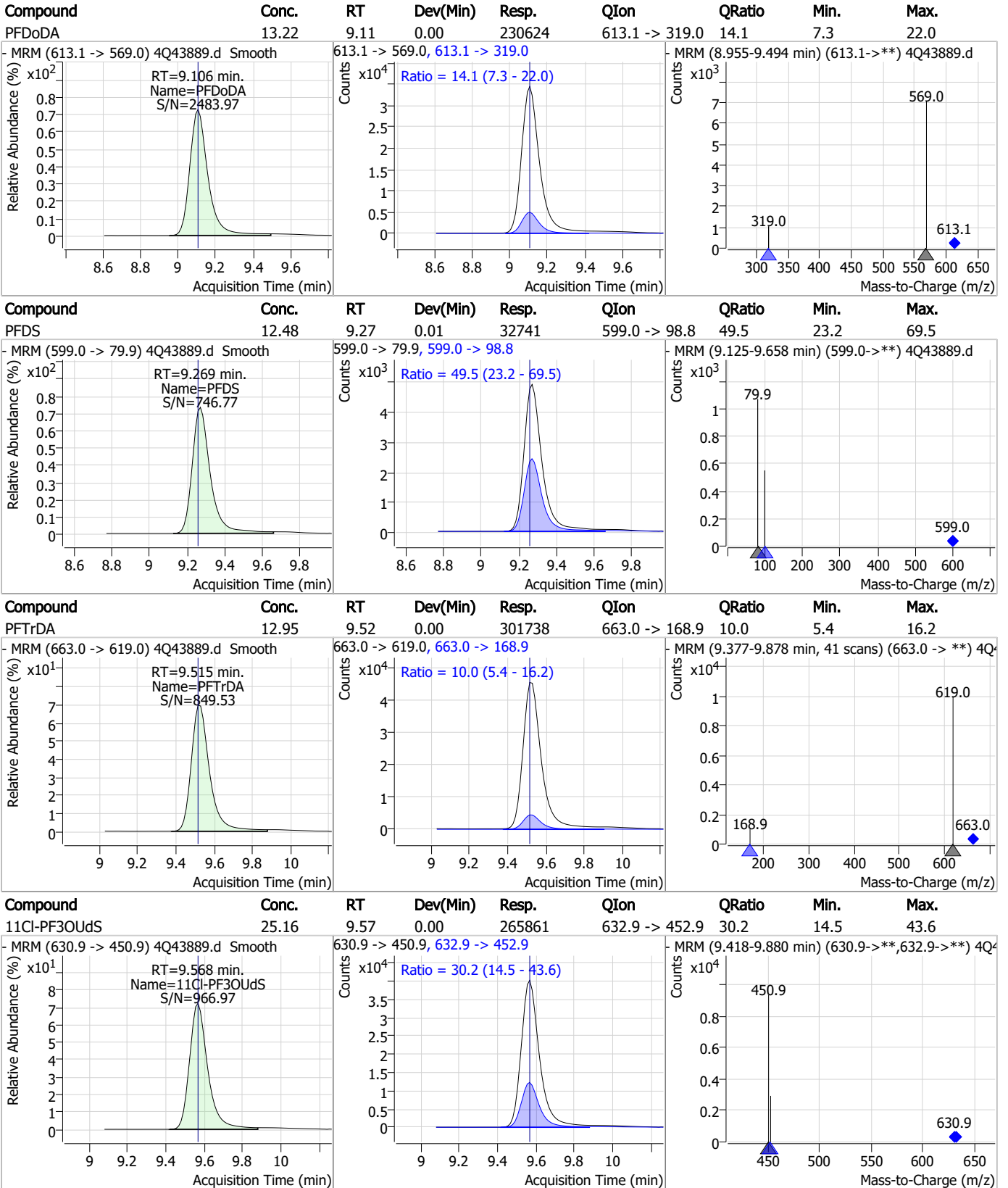


Perfluorinated Compounds by LC/MS/MS



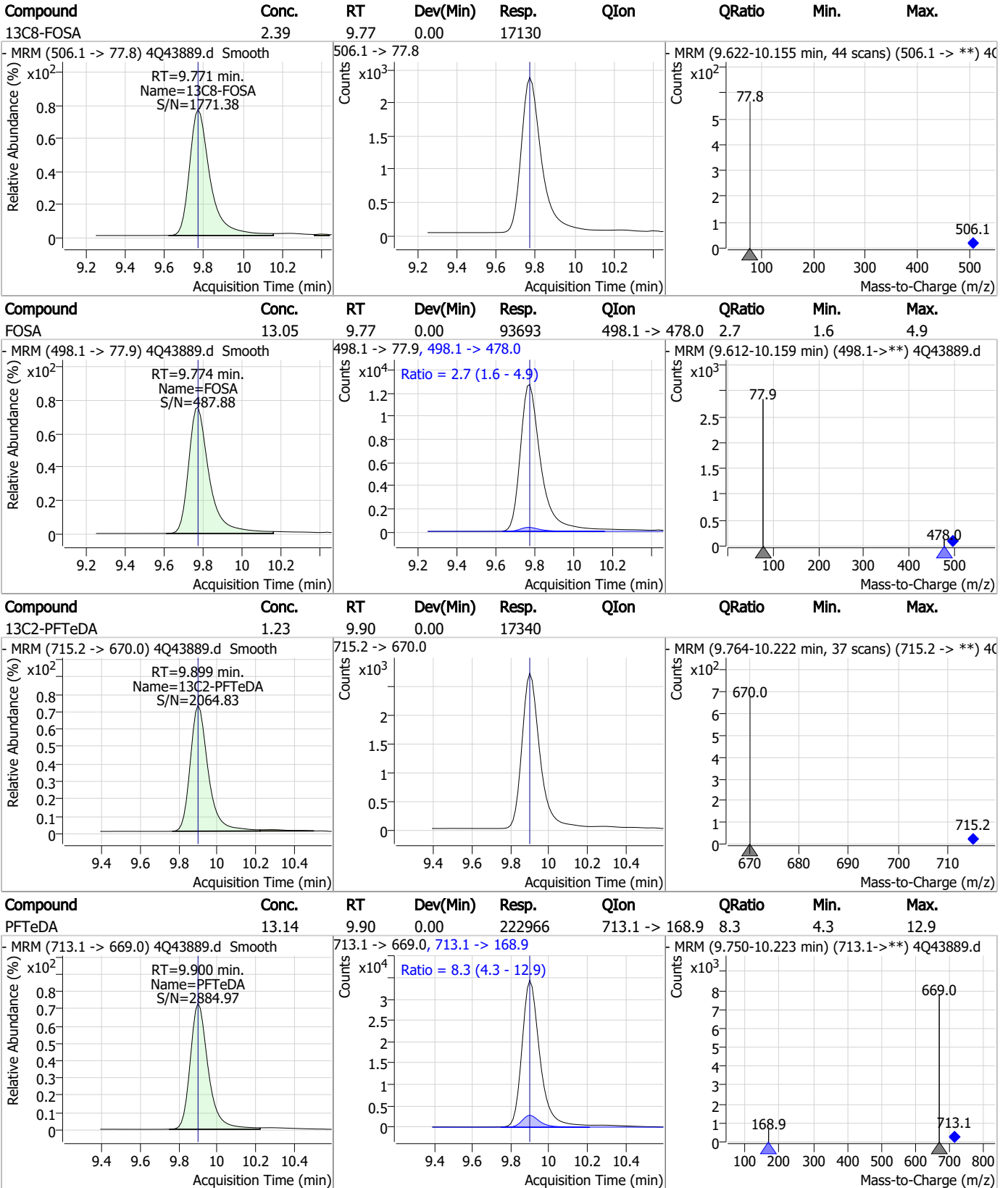
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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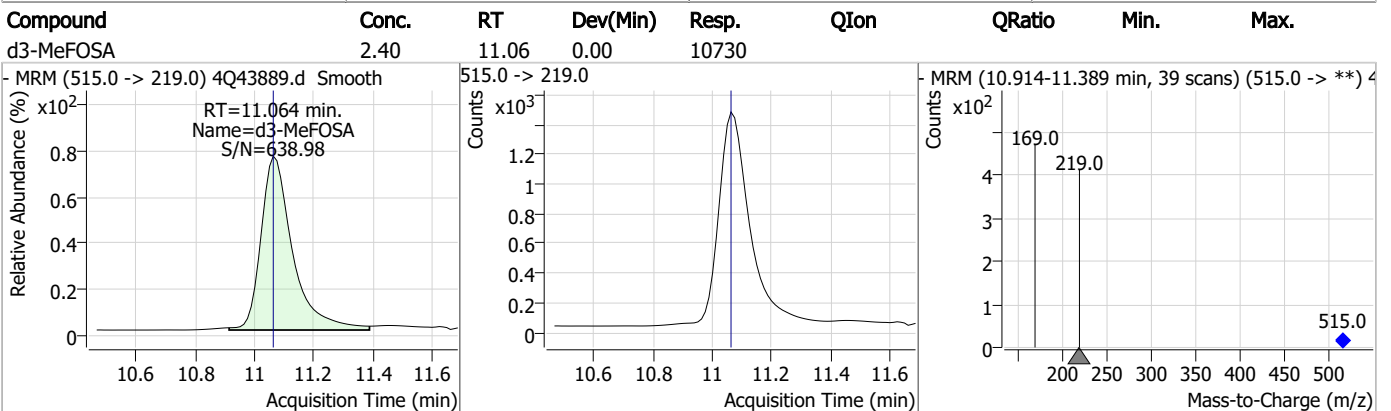
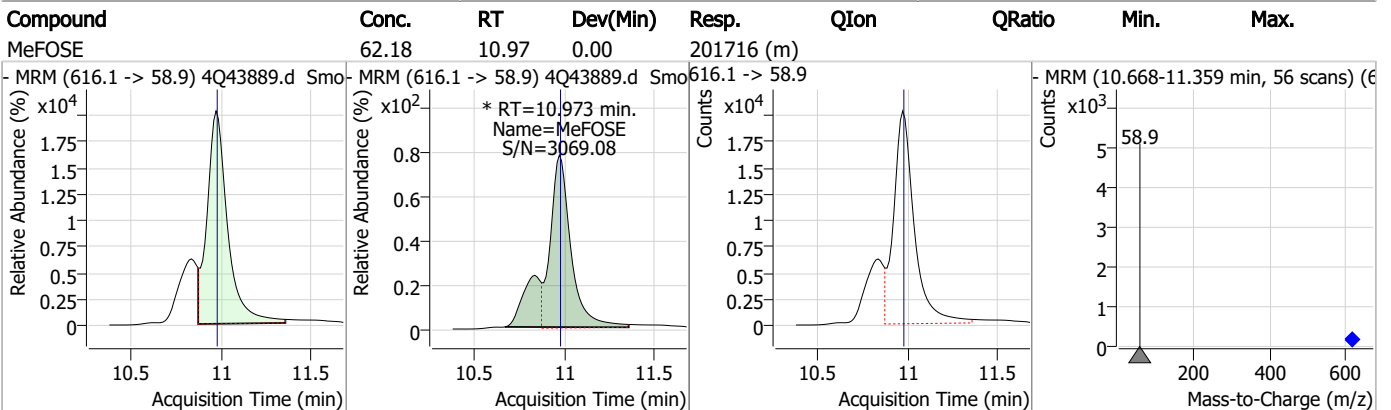
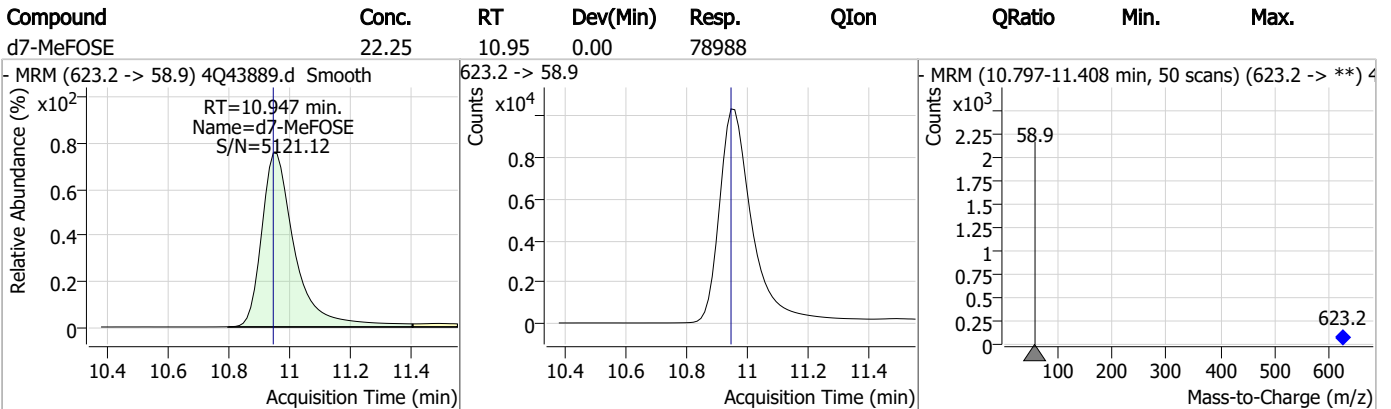
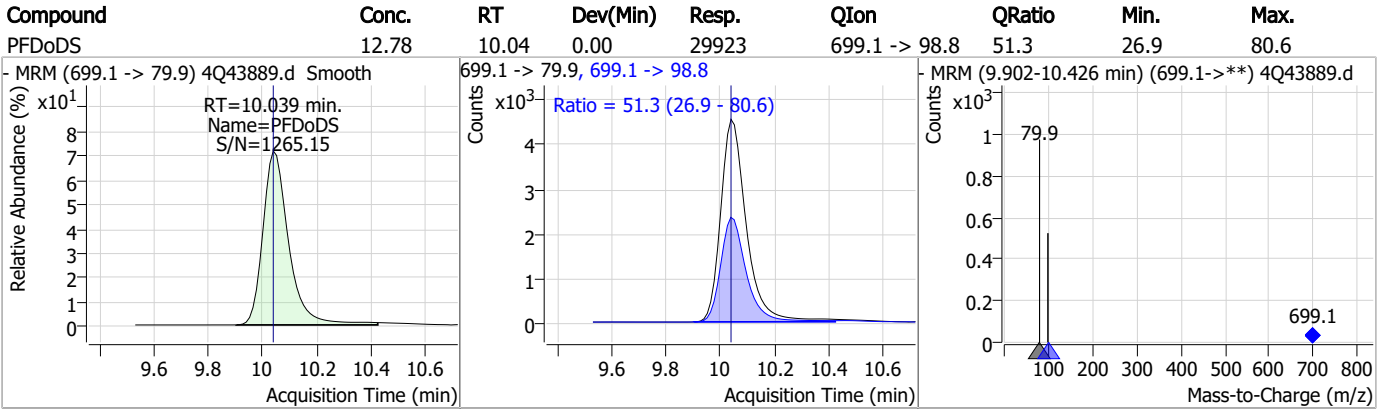
Perfluorinated Compounds by LC/MS/MS



7.7.7

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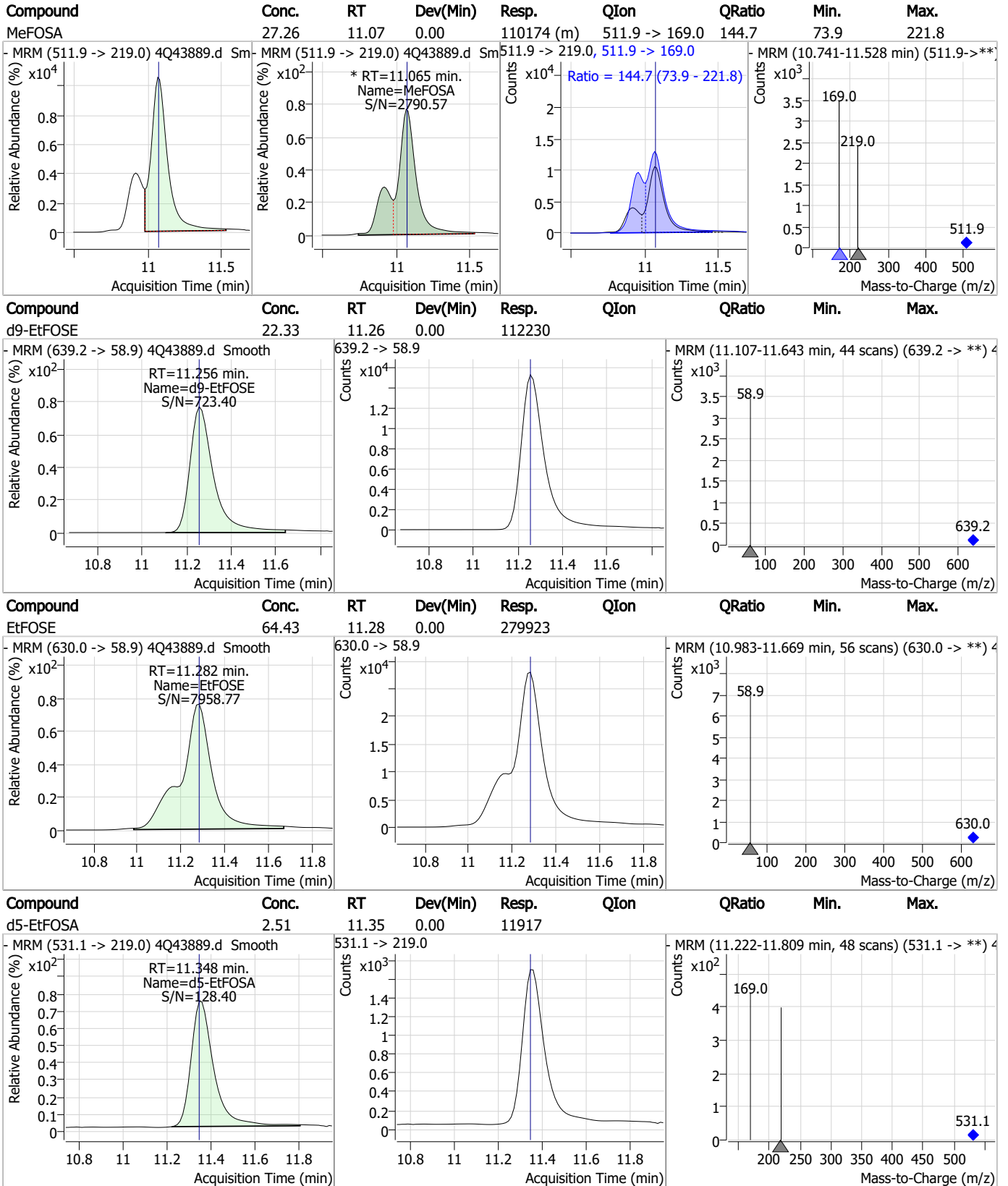
Perfluorinated Compounds by LC/MS/MS



7.7.7

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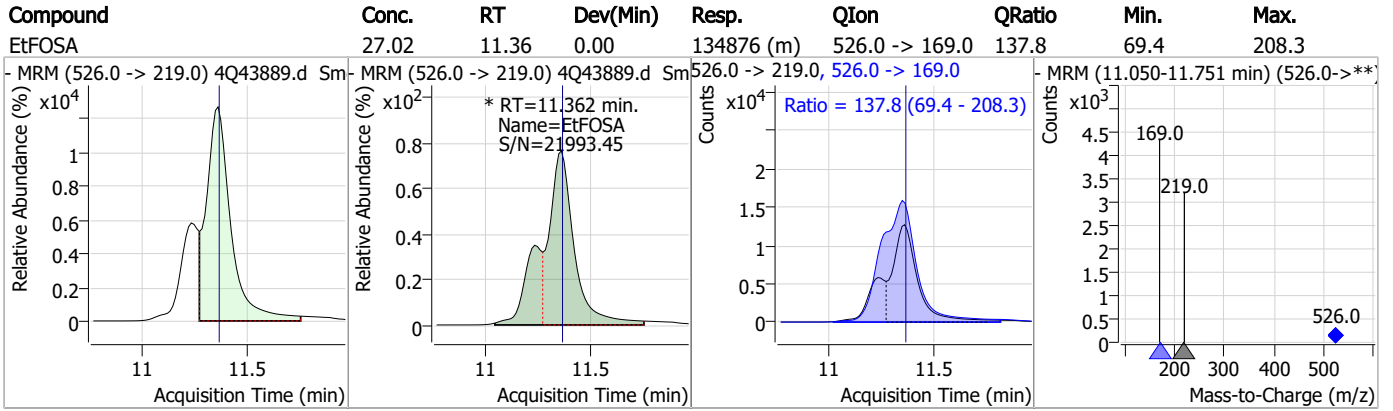
Perfluorinated Compounds by LC/MS/MS



7.7.7

7

Perfluorinated Compounds by LC/MS/MS



7.7.7

7

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
7

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

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

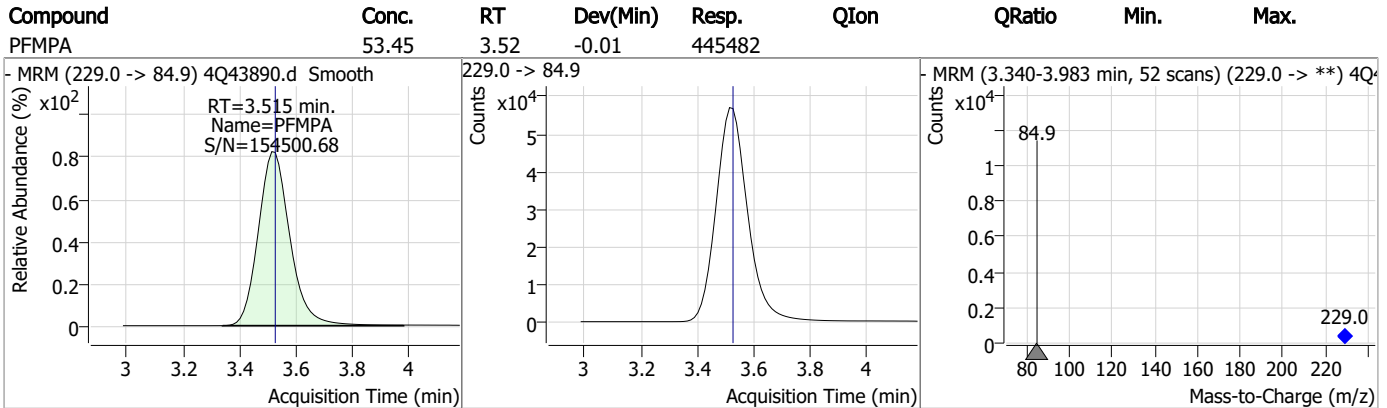
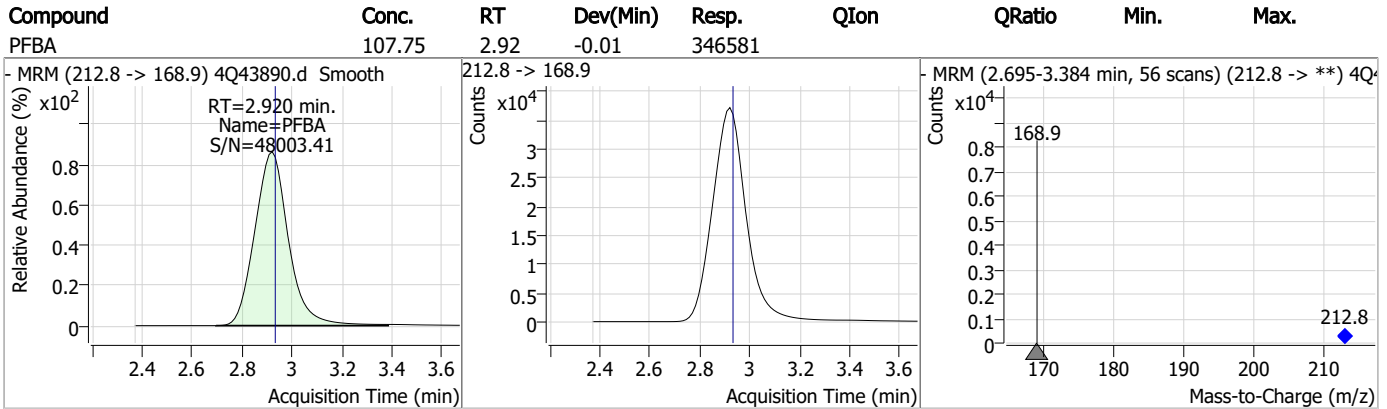
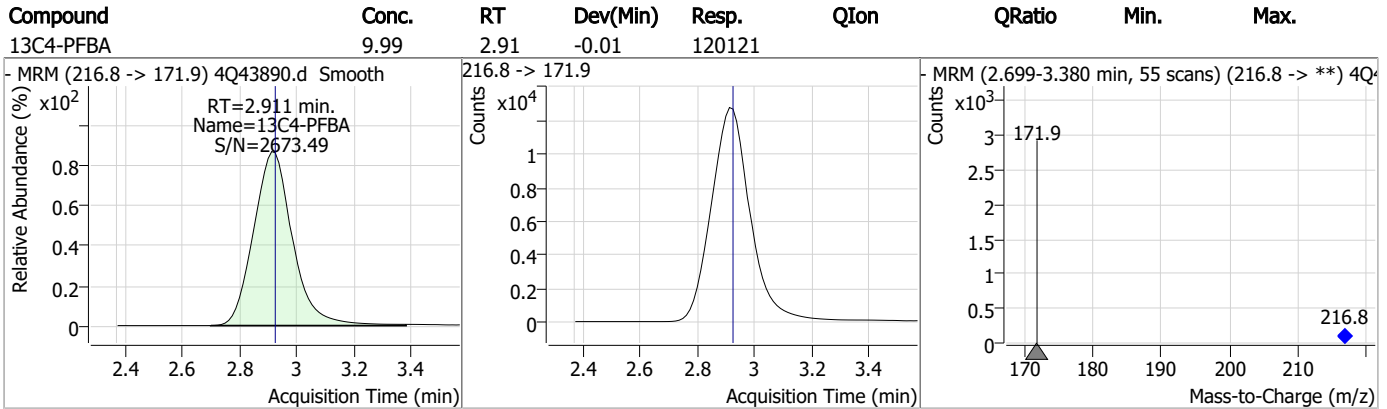
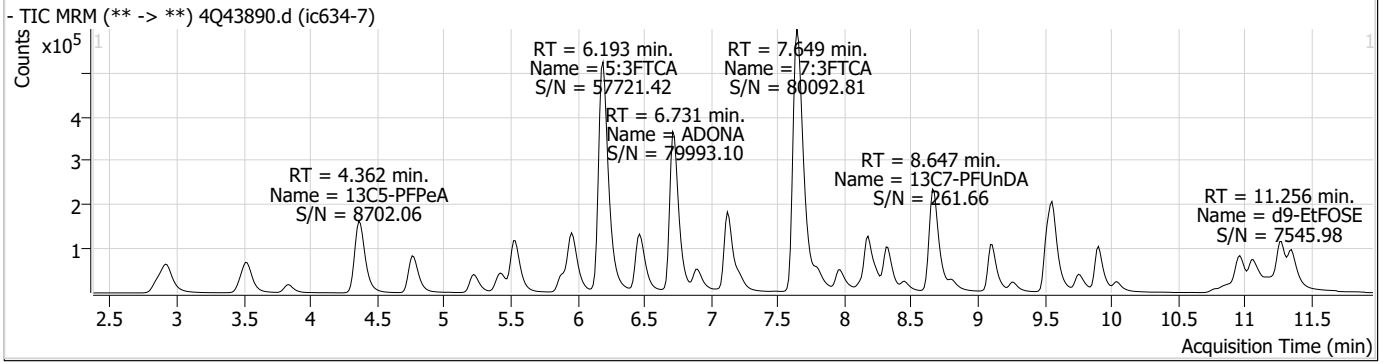
Perfluorinated Compounds by LC/MS/MS

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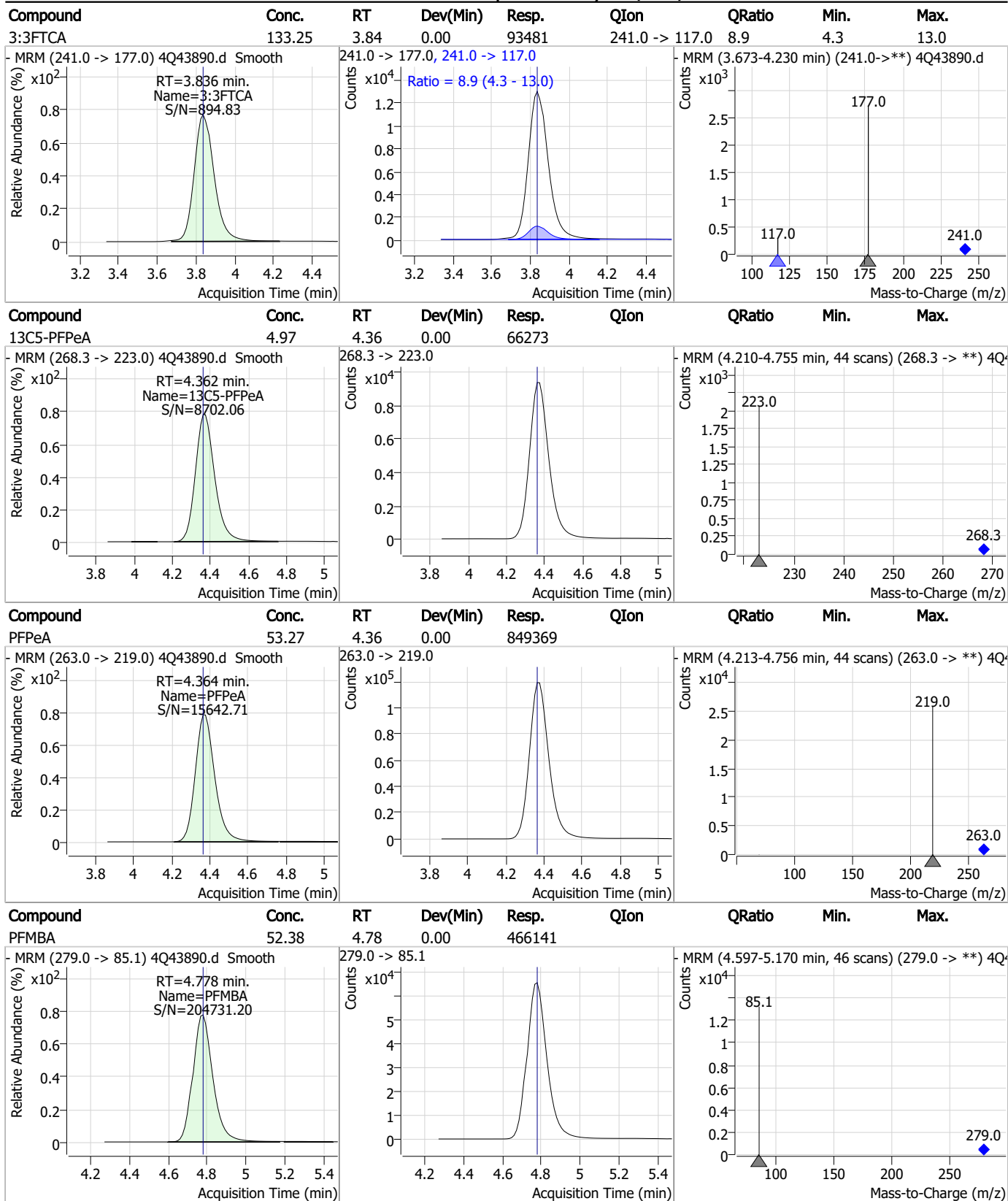
7.7.8
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Perfluorinated Compounds by LC/MS/MS

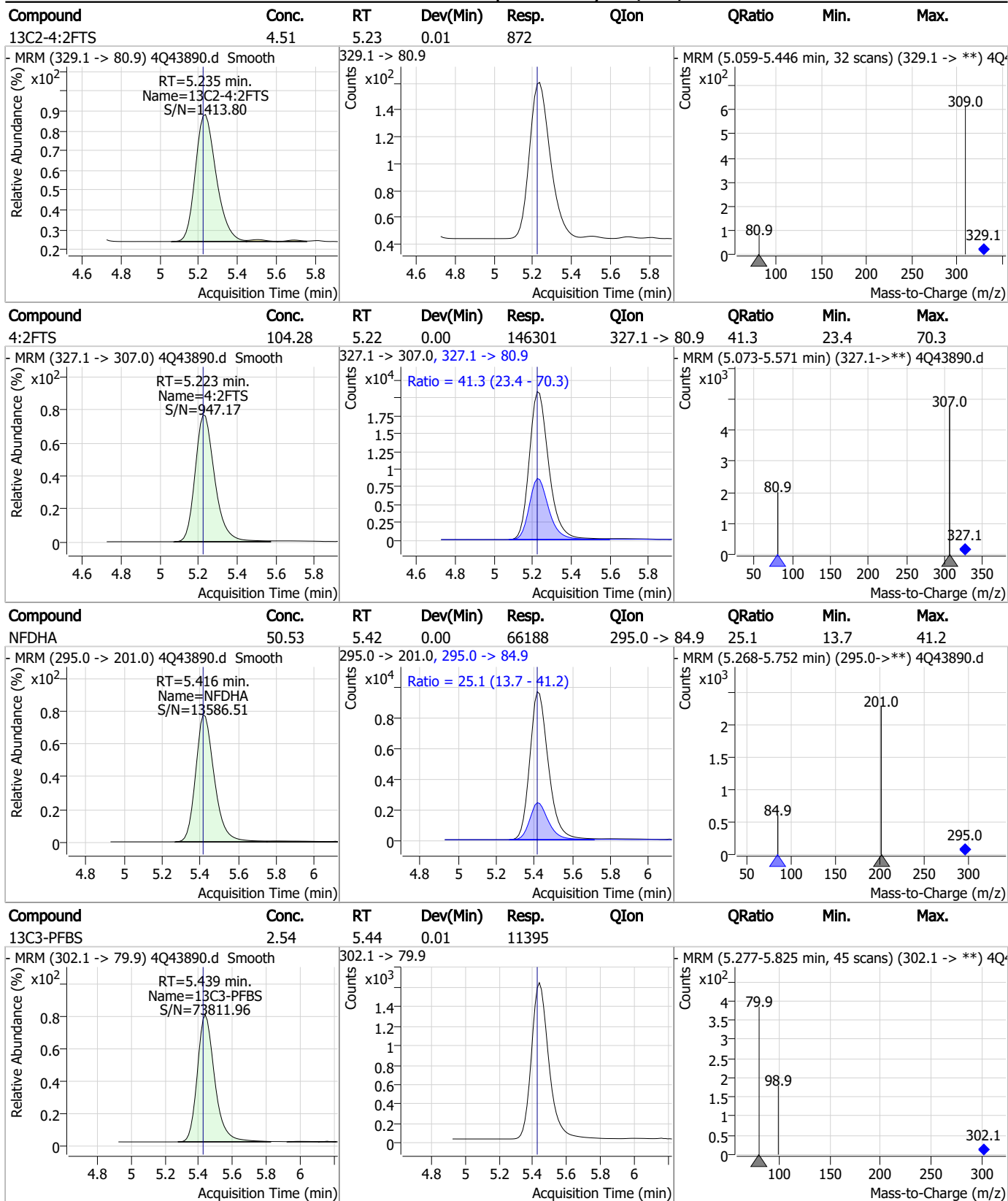


Perfluorinated Compounds by LC/MS/MS



7.7.8
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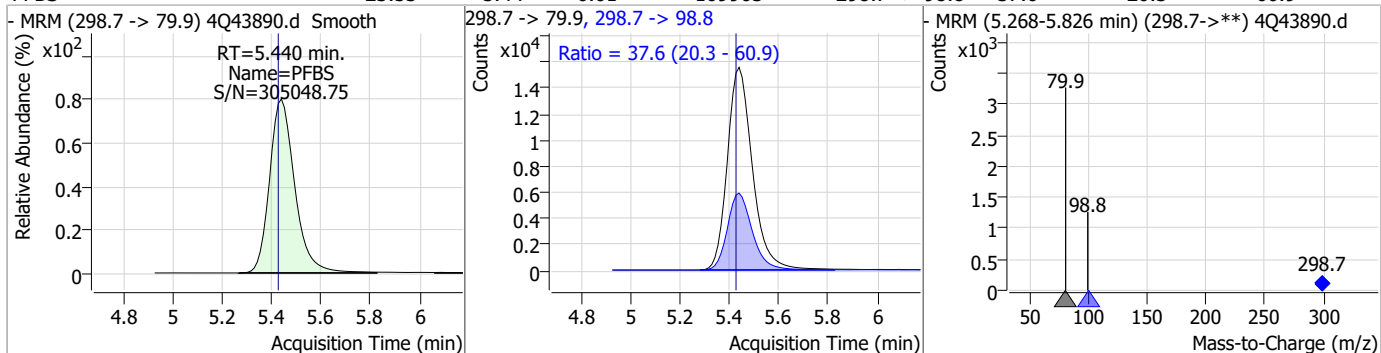
Perfluorinated Compounds by LC/MS/MS



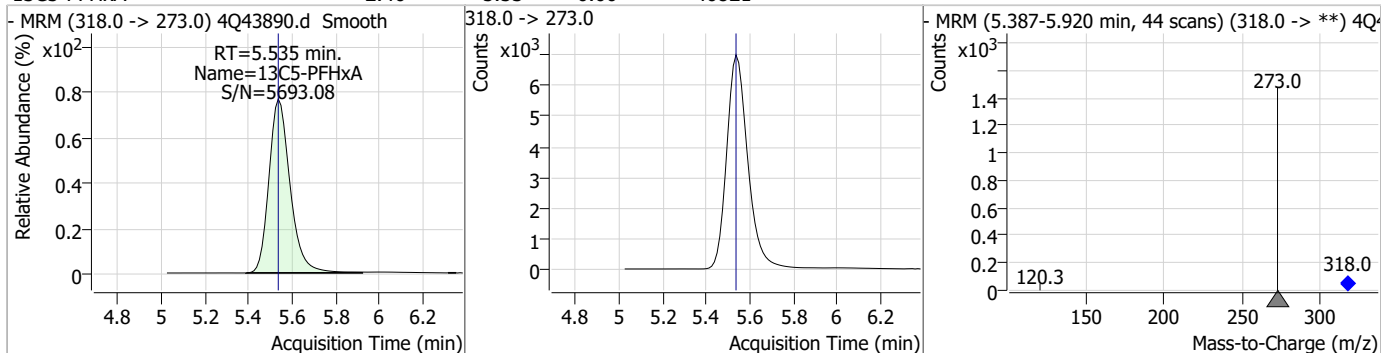
7.7.8
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Perfluorinated Compounds by LC/MS/MS

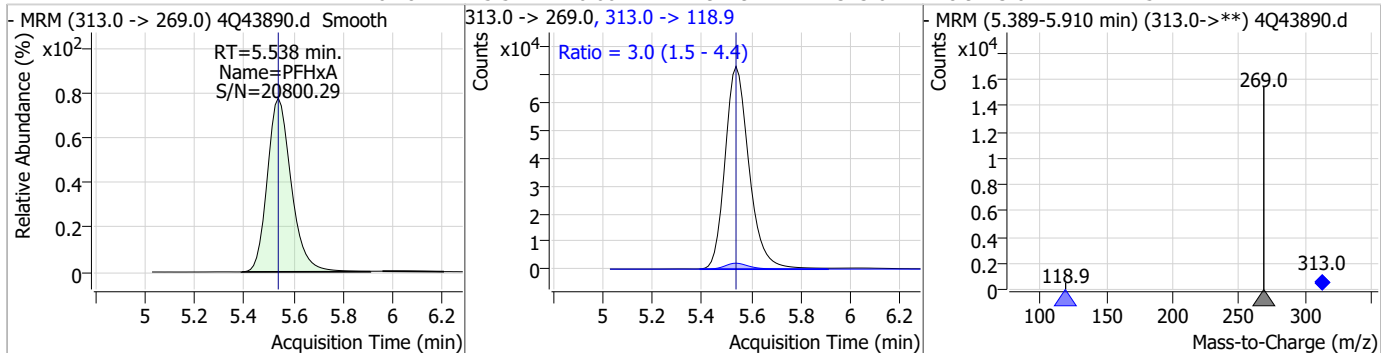
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	23.53	5.44	0.01	109963	298.7 -> 98.8	37.6	20.3	60.9



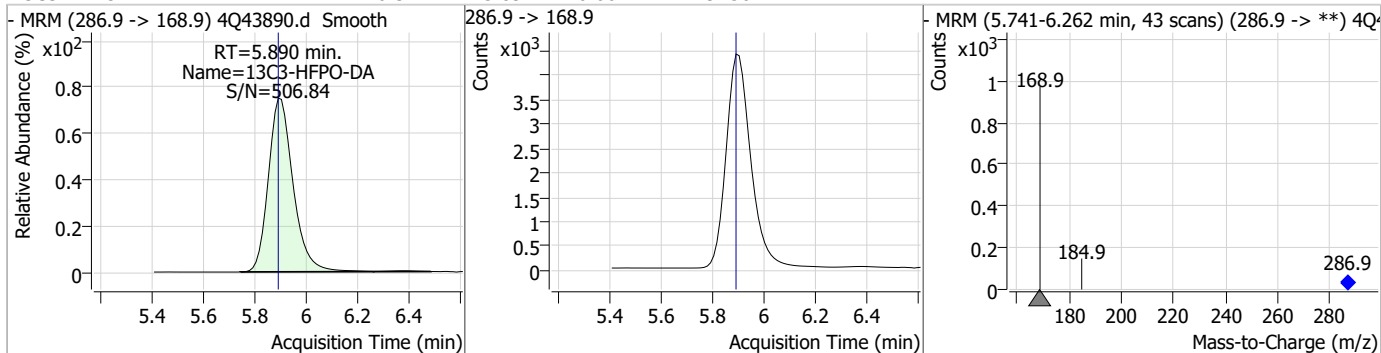
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.53	0.00	46821	318.0 -> 273.0	3.0	1.5	4.4



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

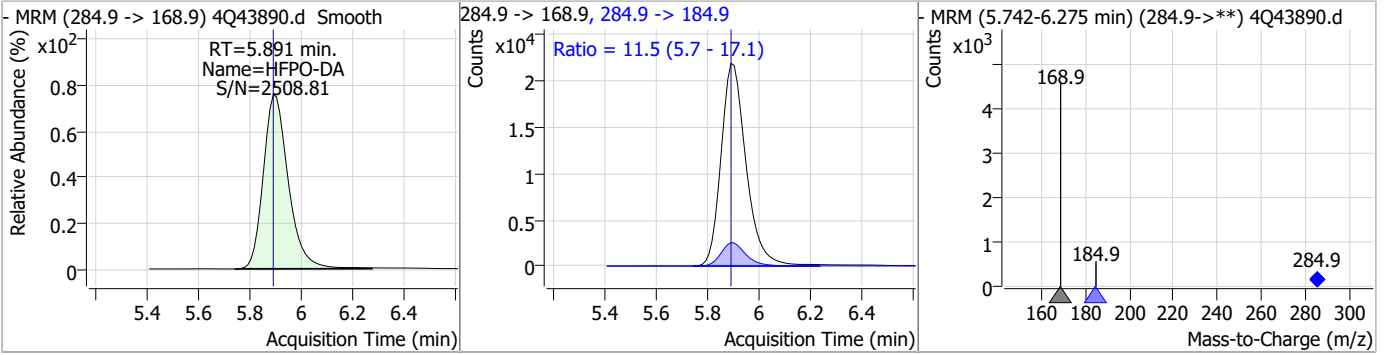


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.34	5.89	0.00	29456	286.9 -> 168.9	3.0	1.5	4.4

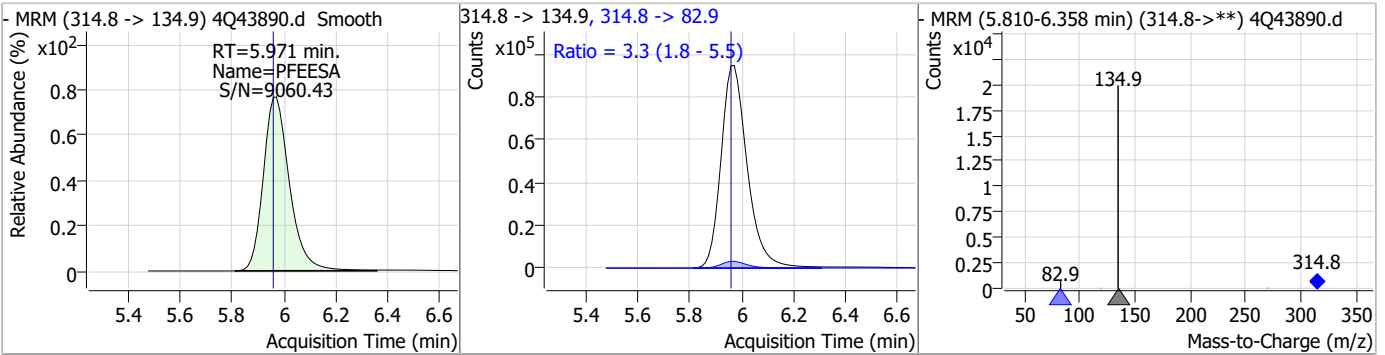


Perfluorinated Compounds by LC/MS/MS

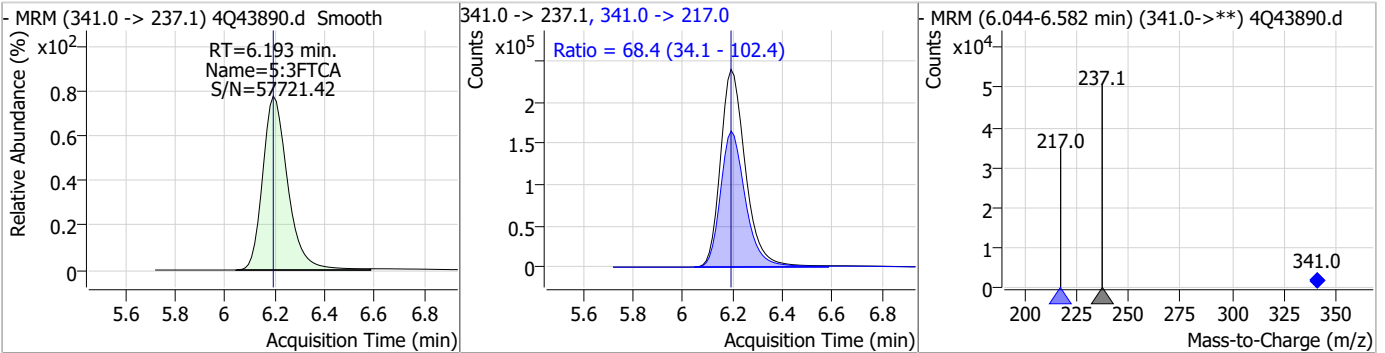
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	52.43	5.89	0.00	147577	284.9 -> 184.9	11.5	5.7	17.1



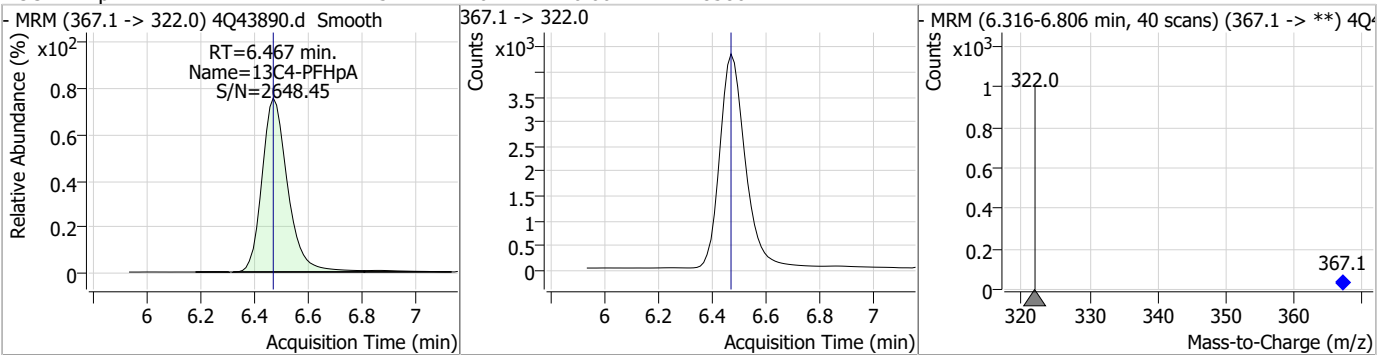
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	47.90	5.97	0.01	665147	314.8 -> 82.9	3.3	1.8	5.5



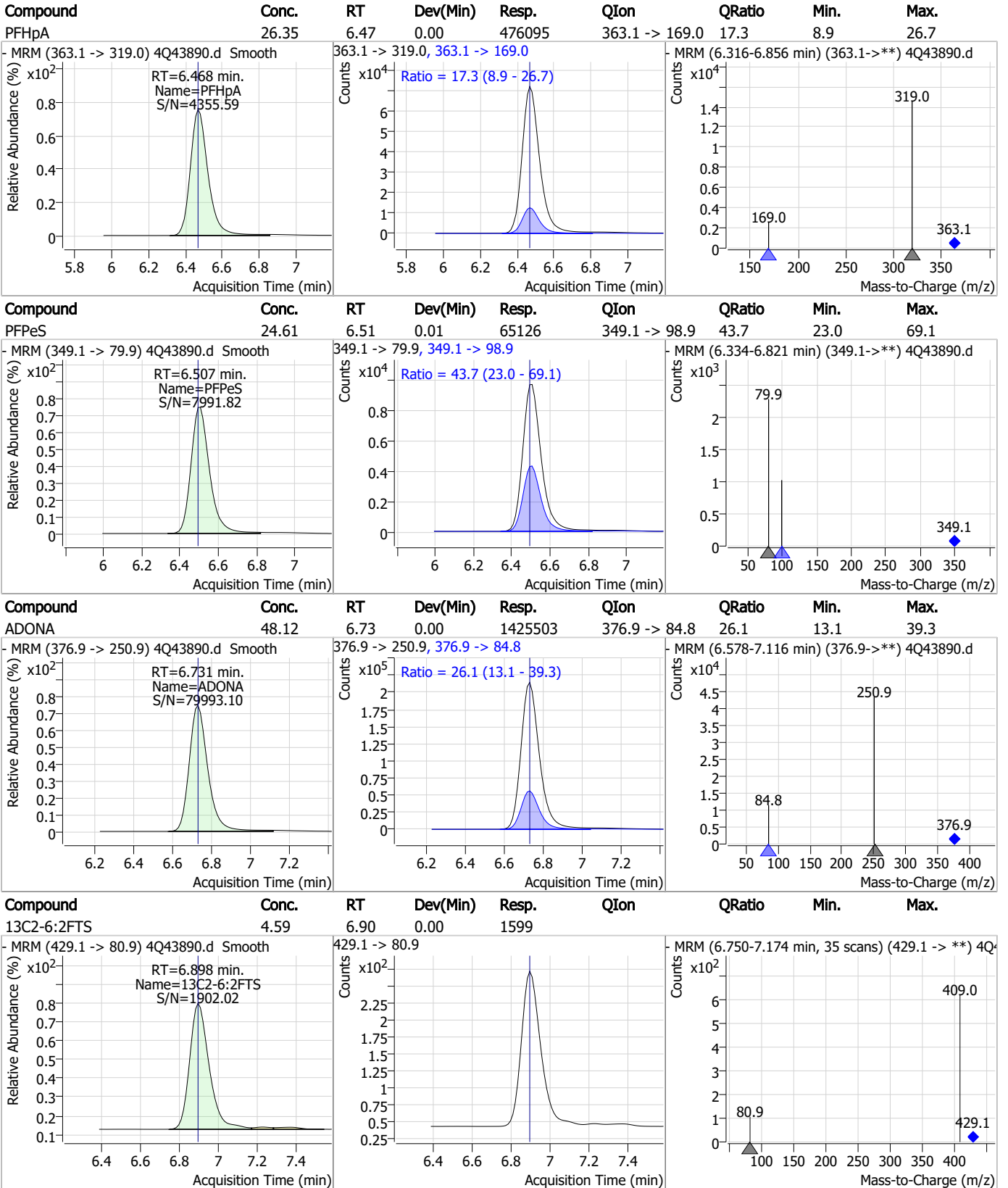
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	673.37	6.19	0.00	1676151	341.0 -> 217.0	68.4	34.1	102.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.57	6.47	0.00	28586				



Perfluorinated Compounds by LC/MS/MS

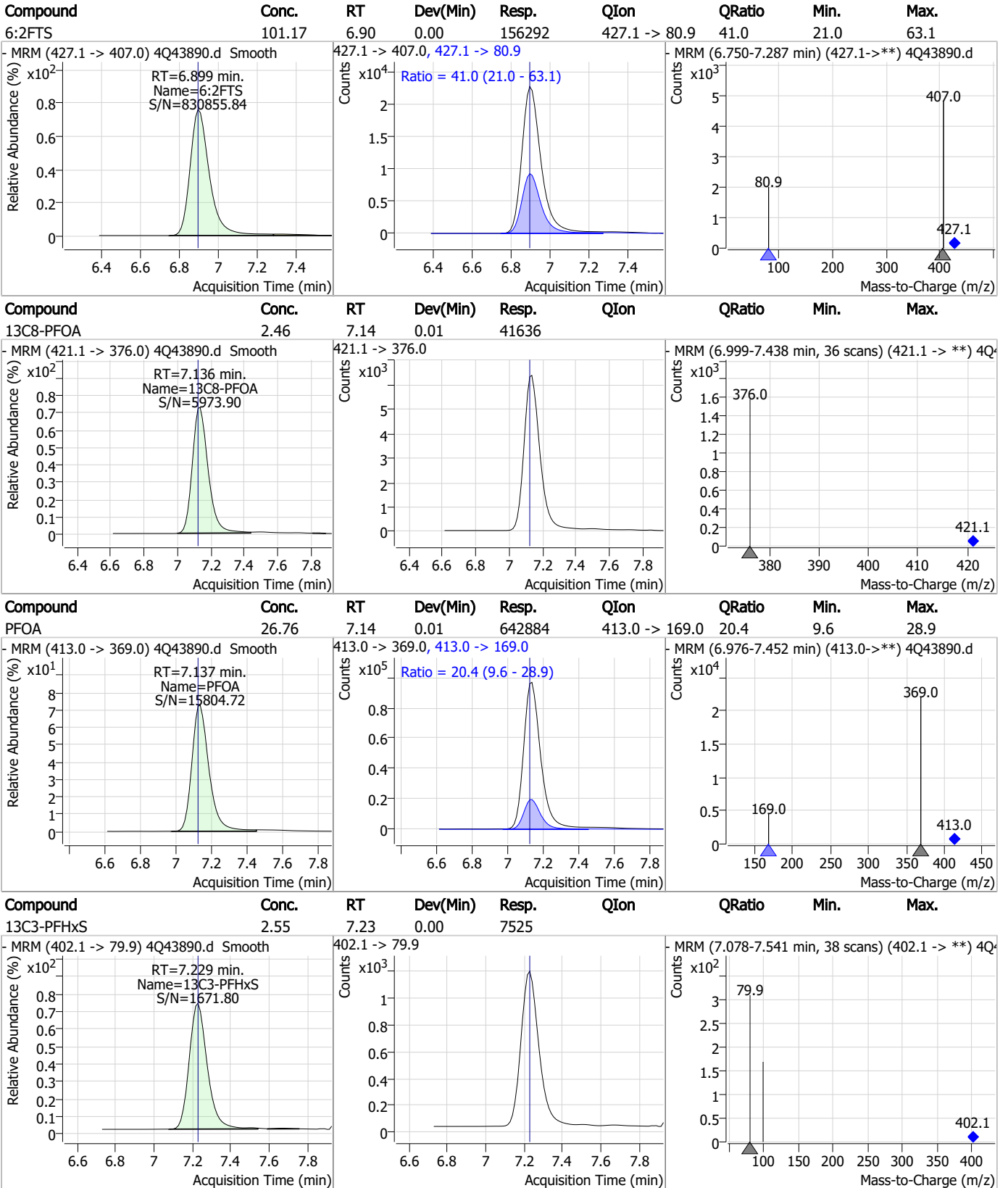


7.7.8

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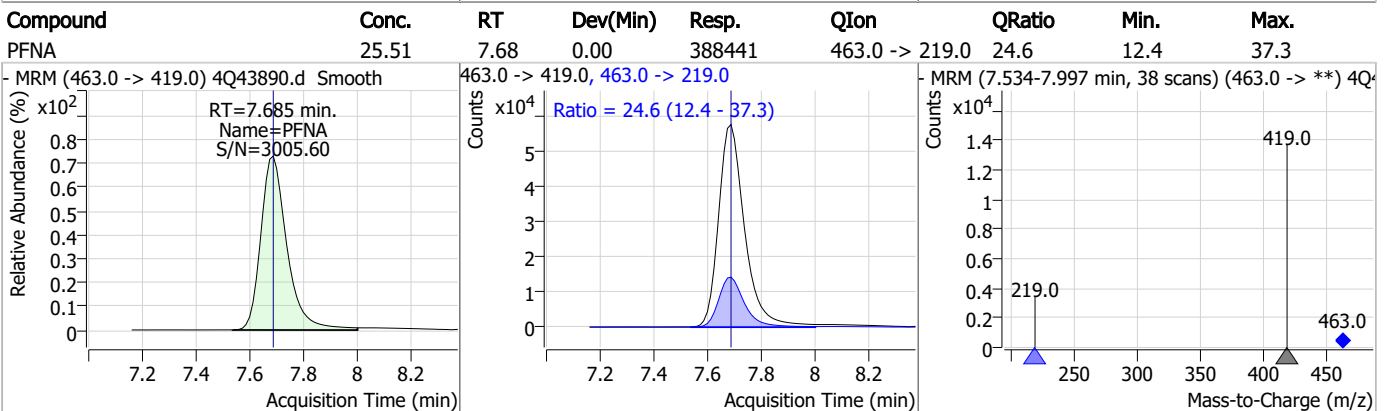
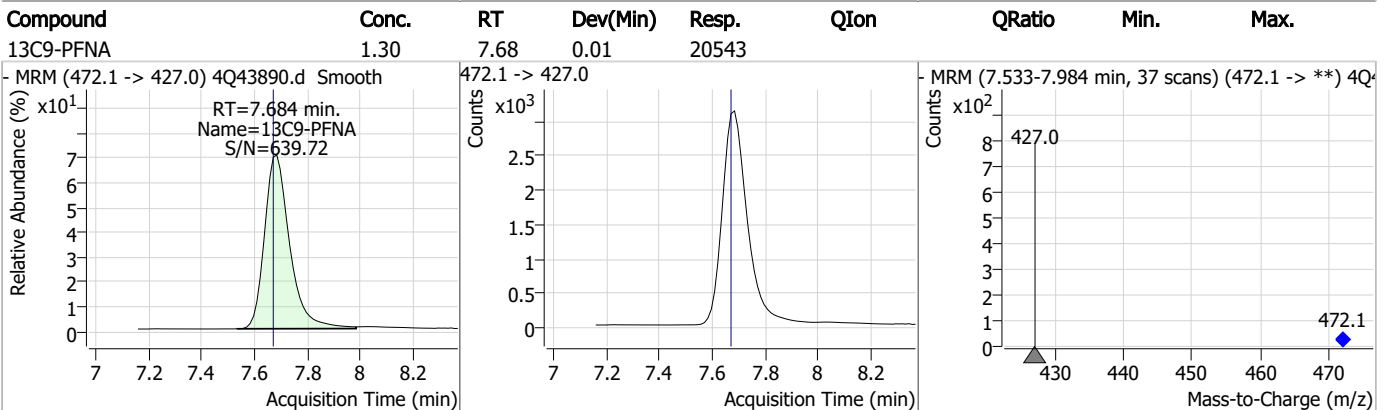
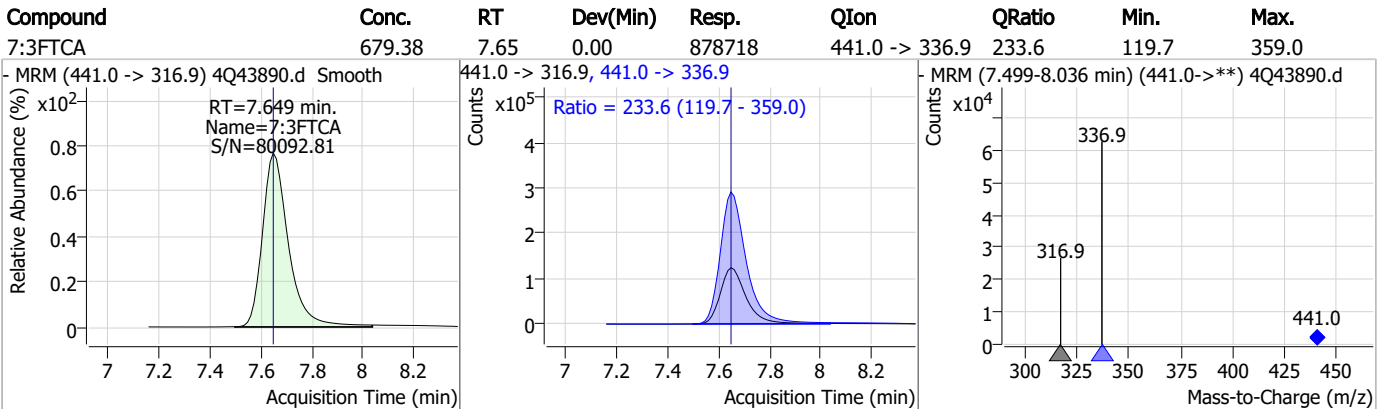
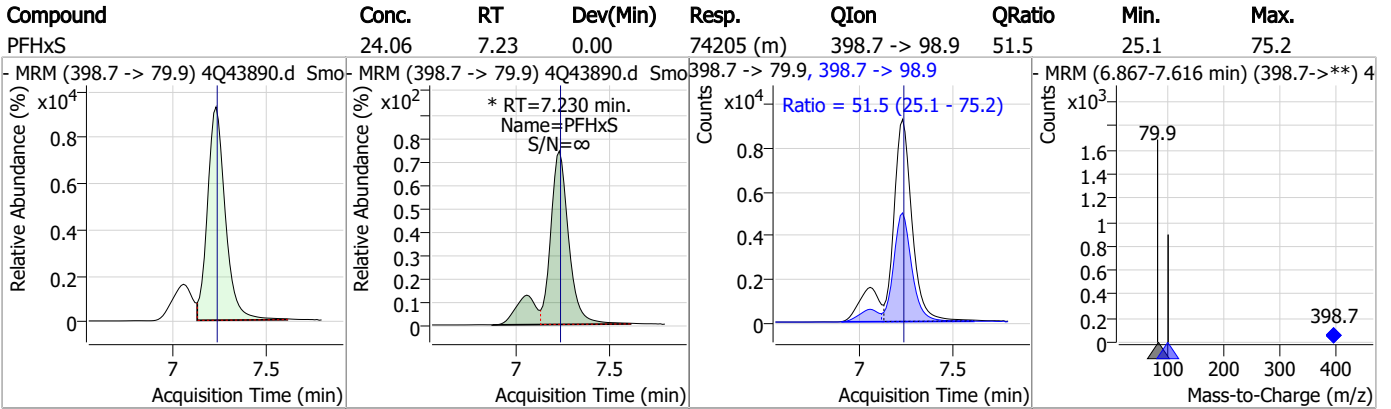


Perfluorinated Compounds by LC/MS/MS



7.7.8
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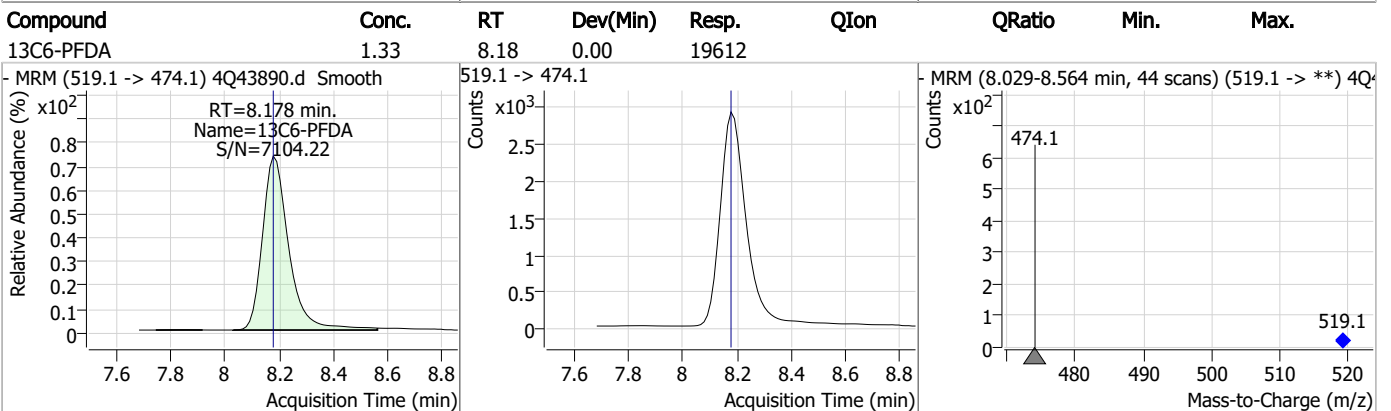
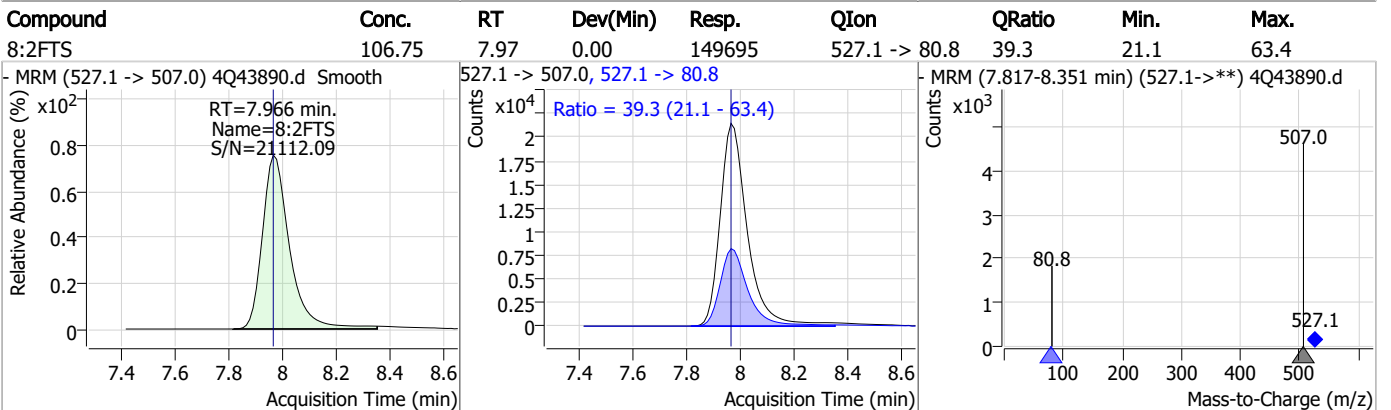
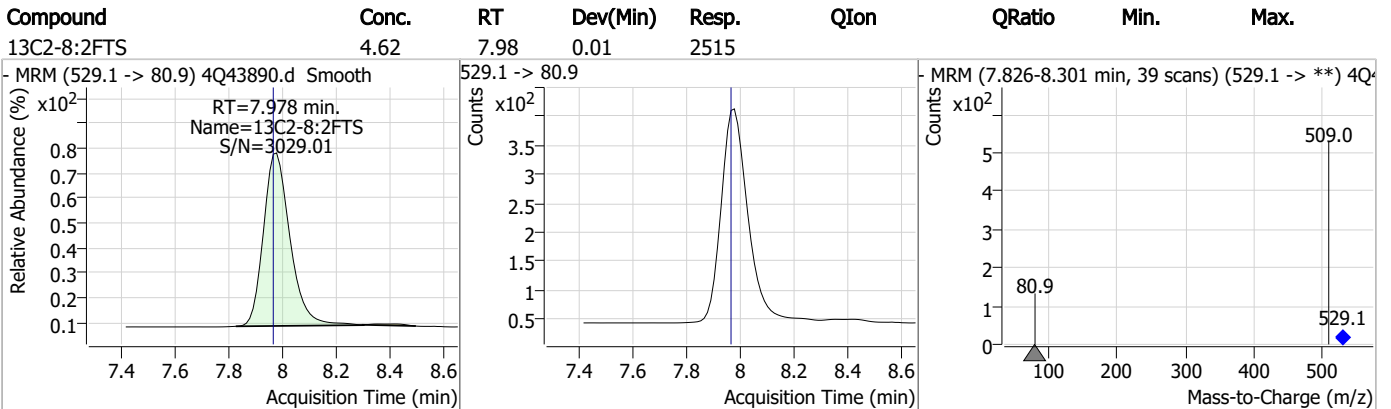
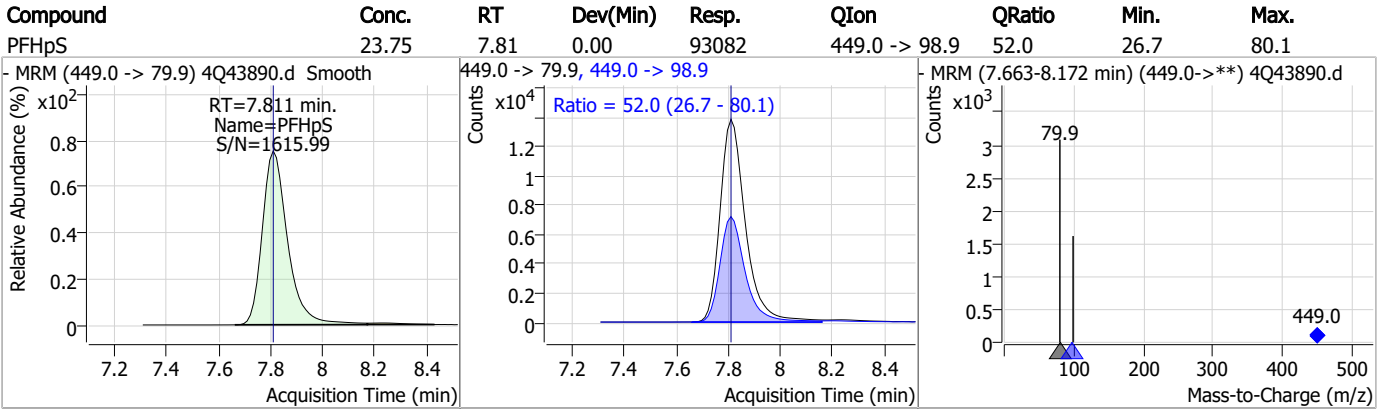
Perfluorinated Compounds by LC/MS/MS



7.7.8

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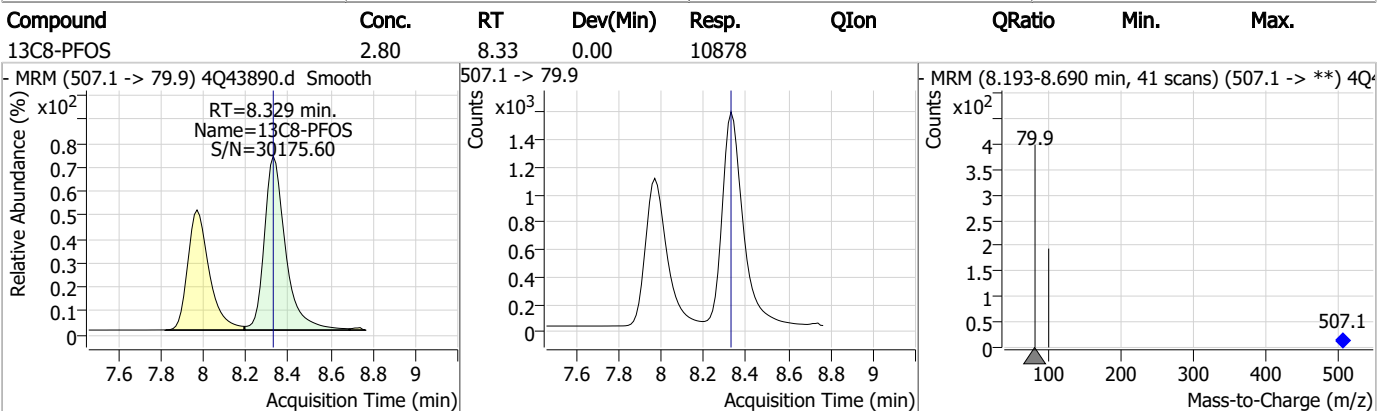
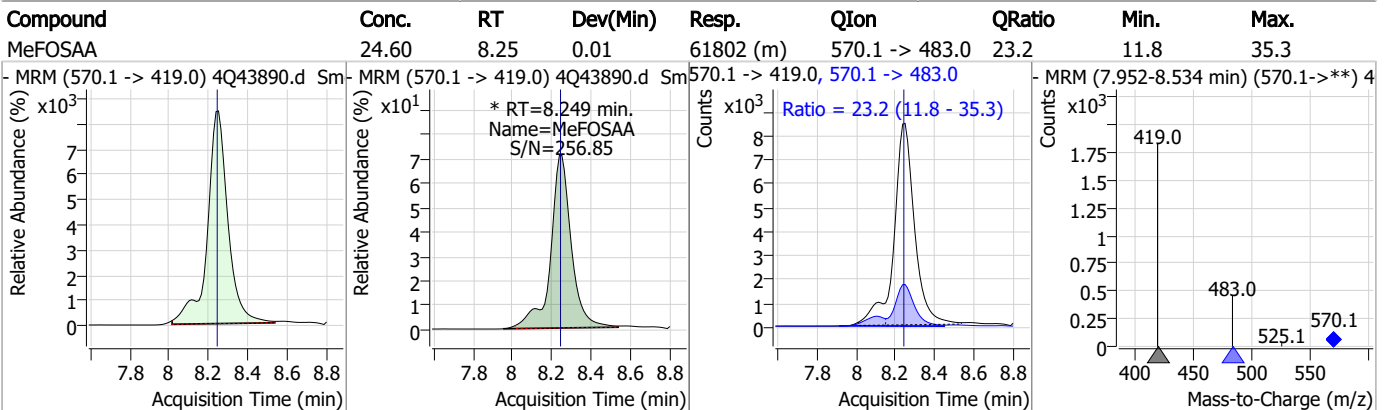
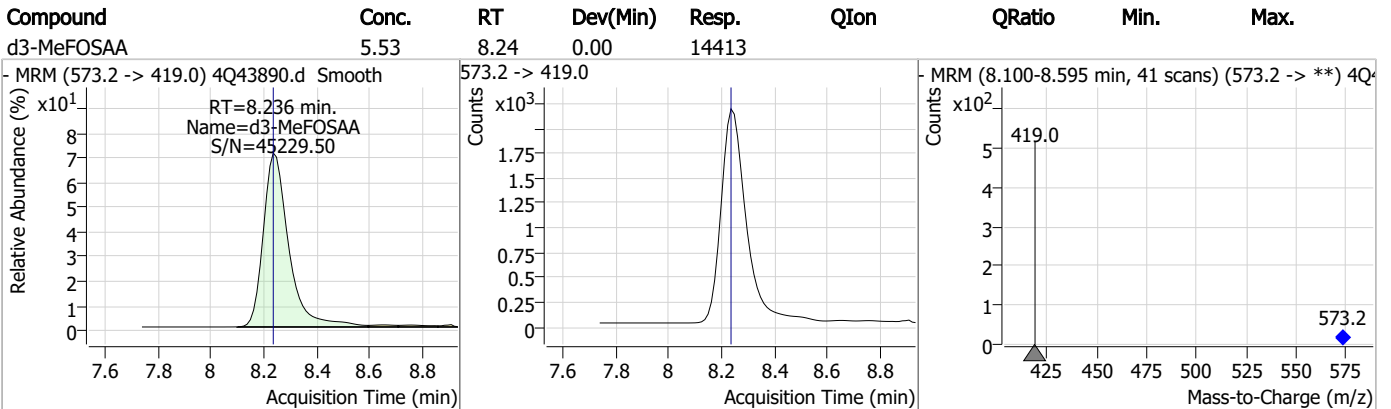
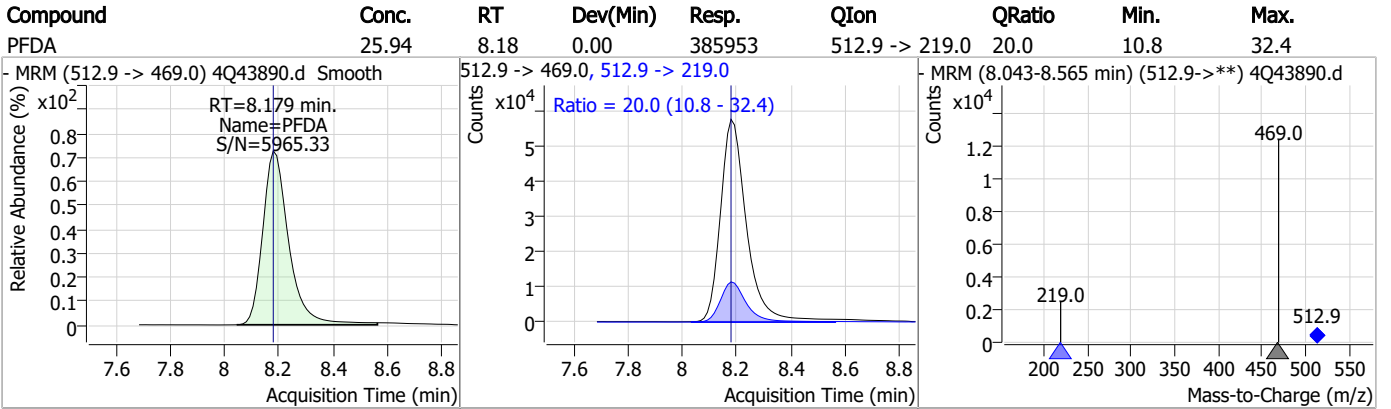
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

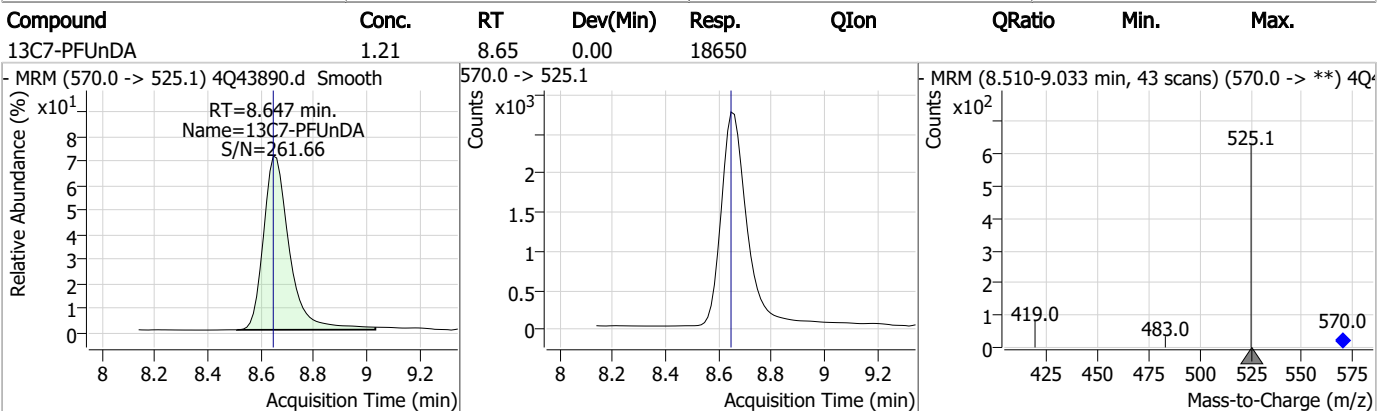
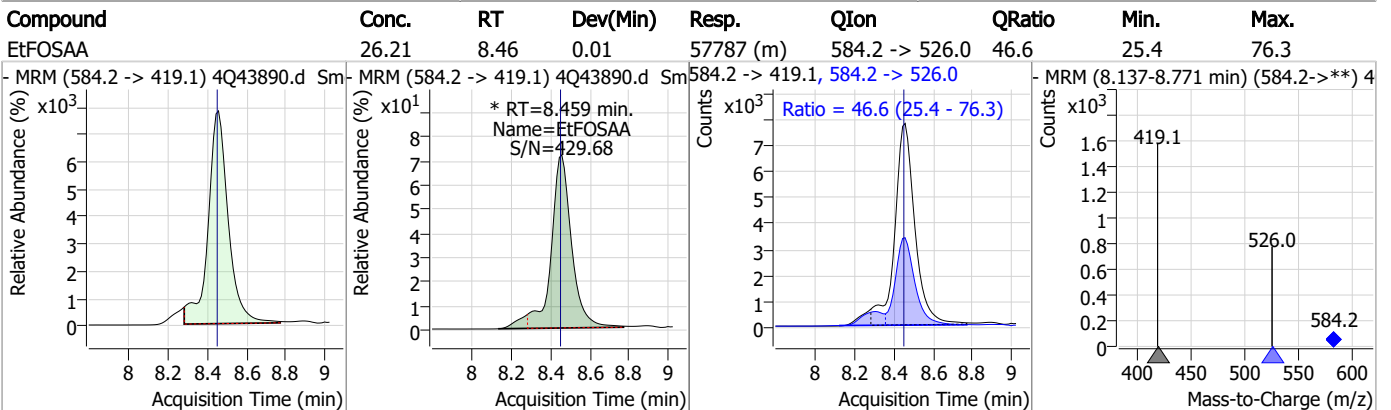
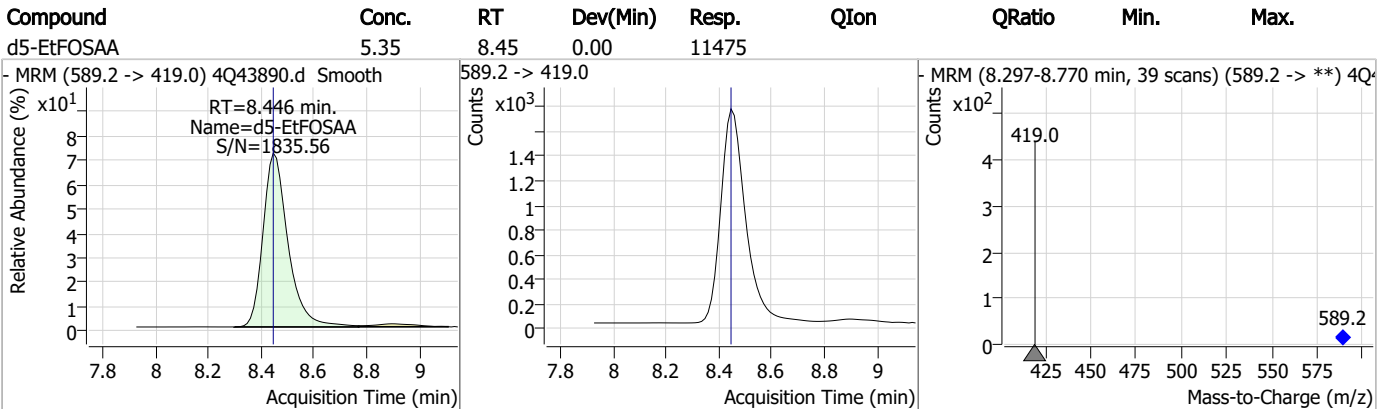
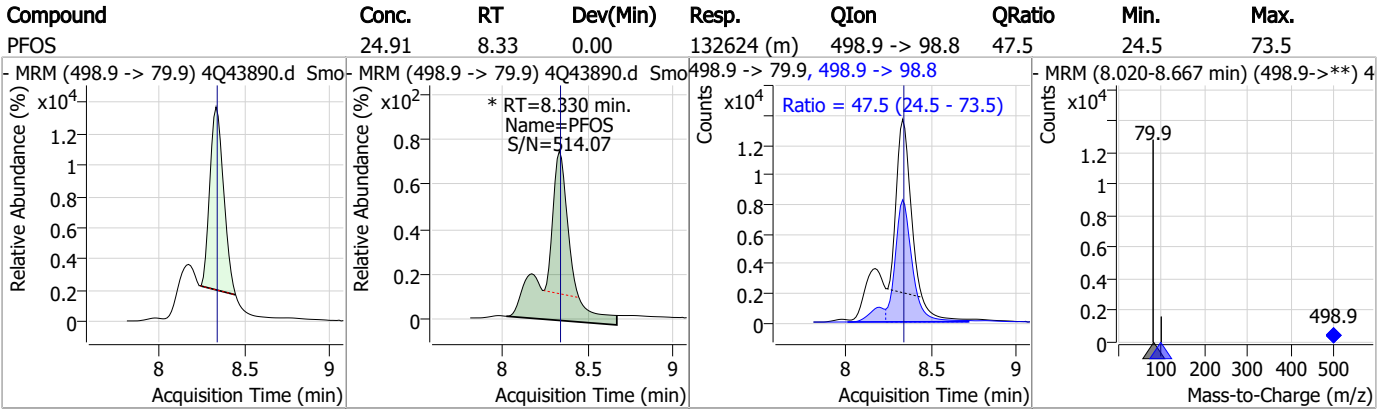


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Perfluorinated Compounds by LC/MS/MS

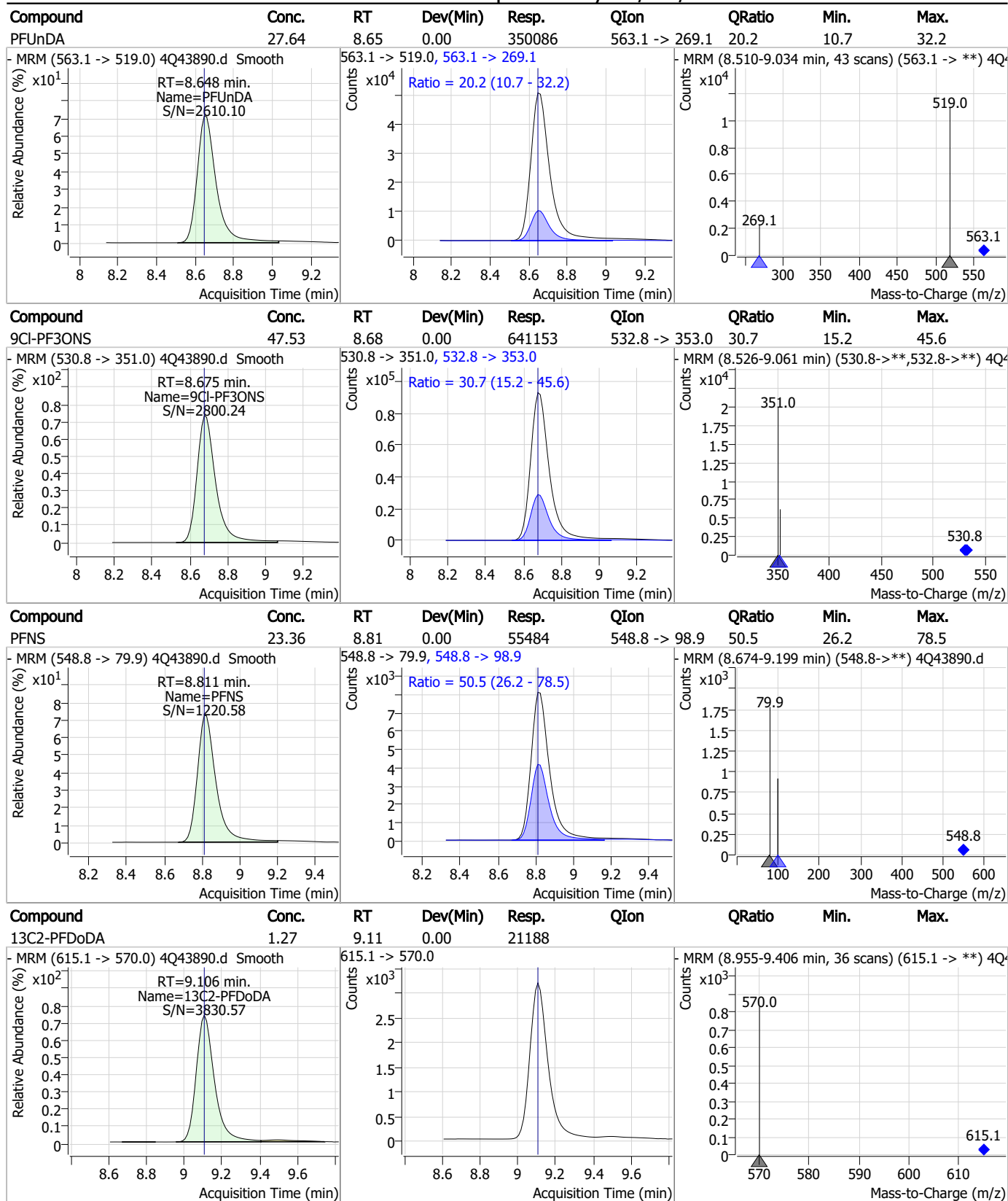


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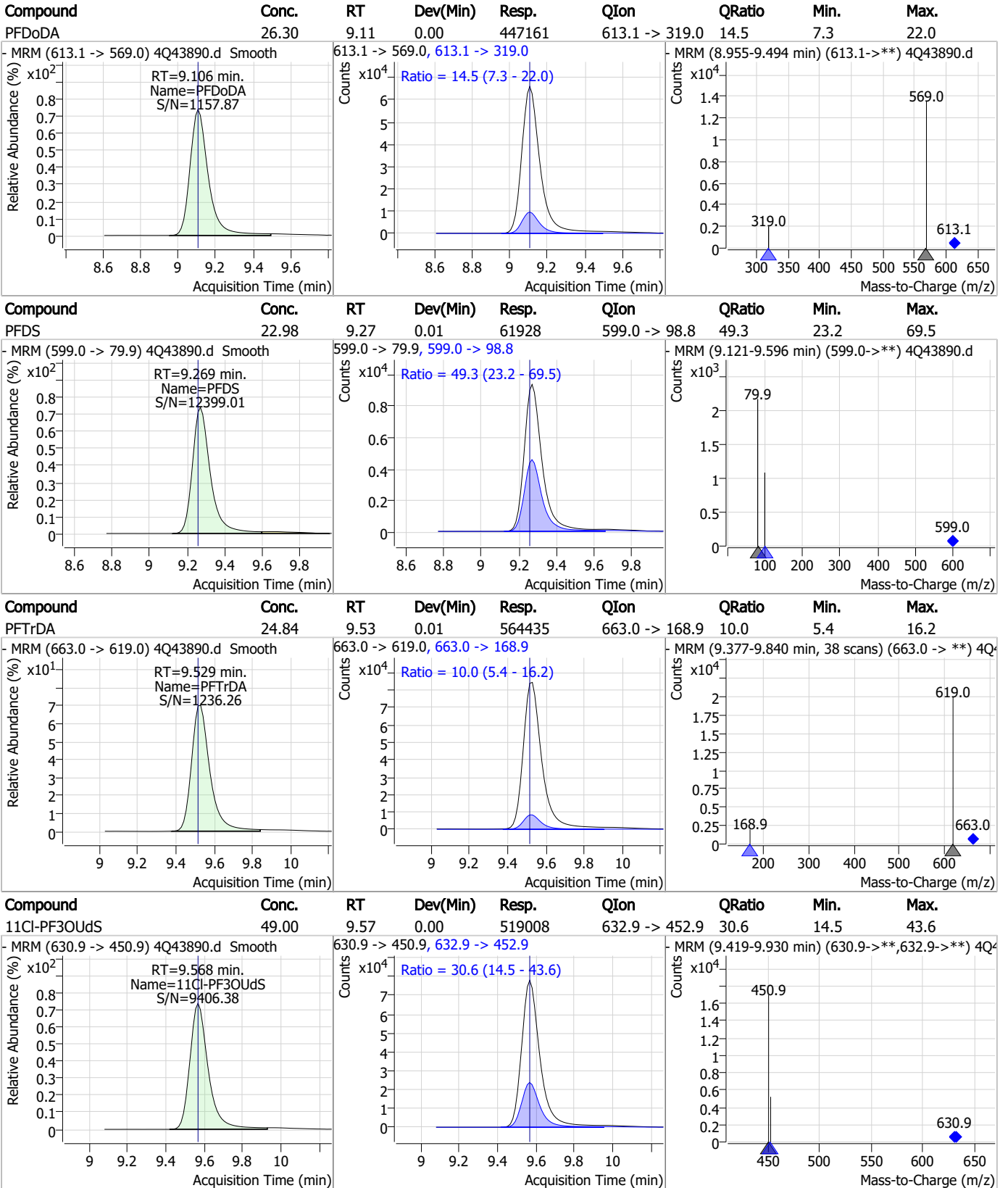
Perfluorinated Compounds by LC/MS/MS



7.7.8
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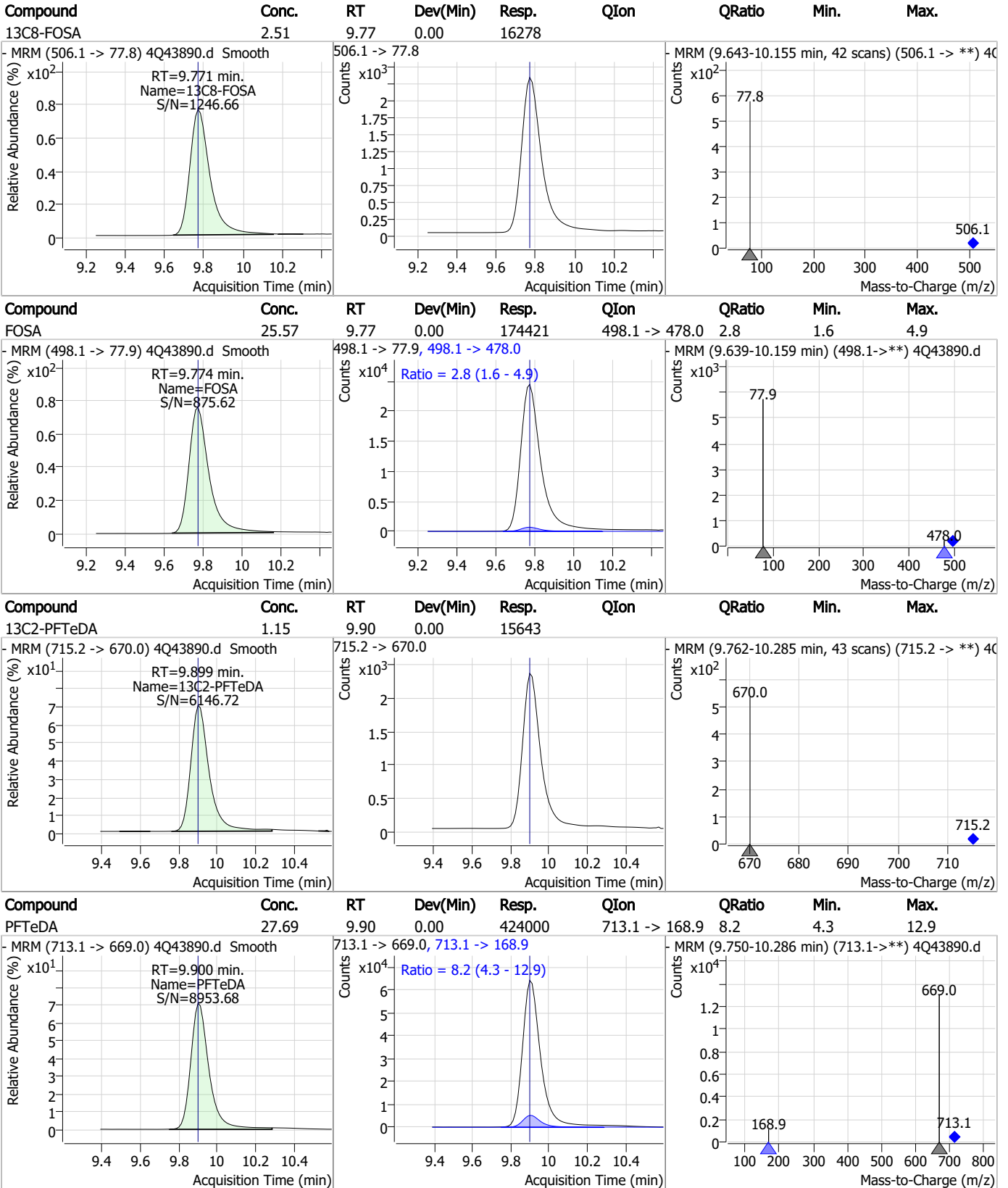


Perfluorinated Compounds by LC/MS/MS



7.7.8
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Perfluorinated Compounds by LC/MS/MS

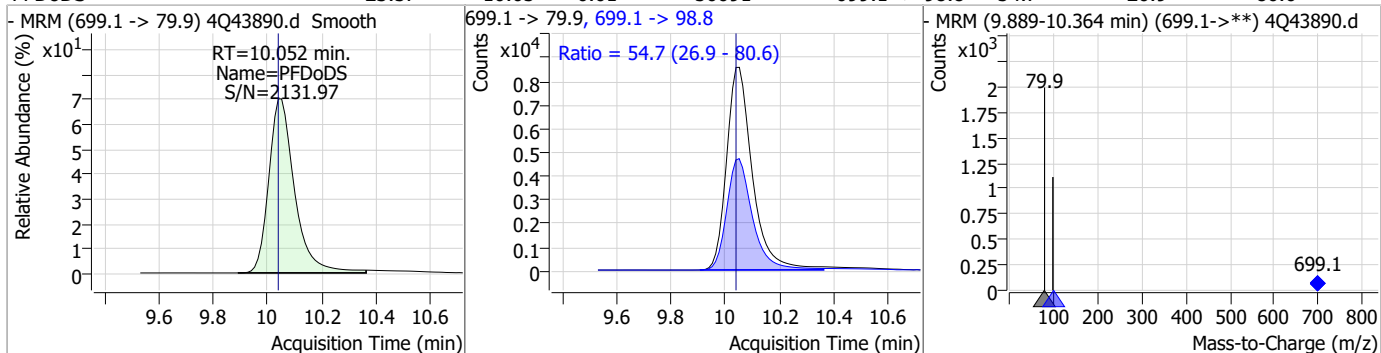


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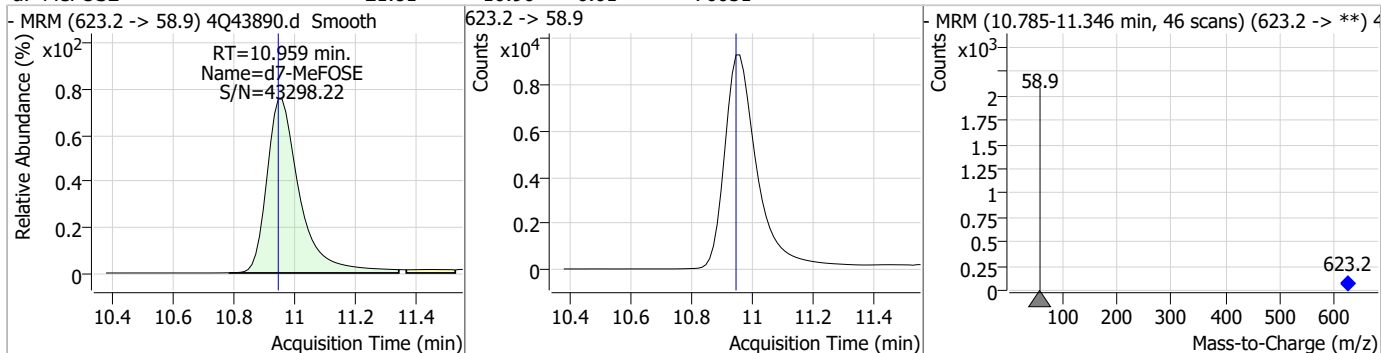
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Perfluorinated Compounds by LC/MS/MS

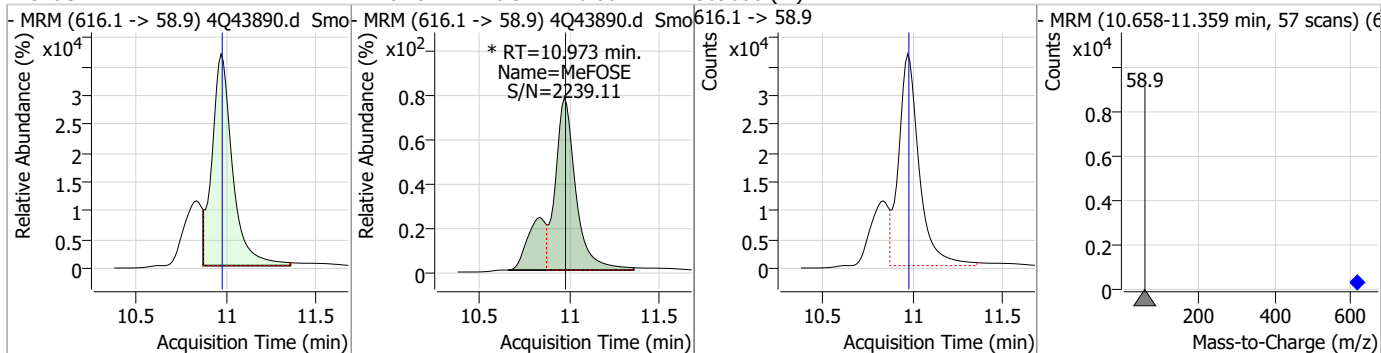
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	23.57	10.05	0.01	56691	699.1 -> 98.8	54.7	26.9	80.6



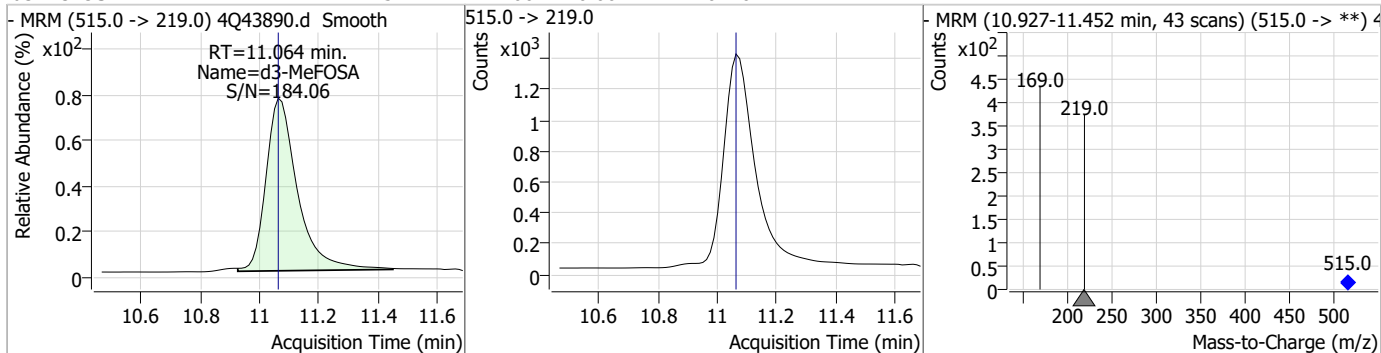
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	21.81	10.96	0.01	70051				



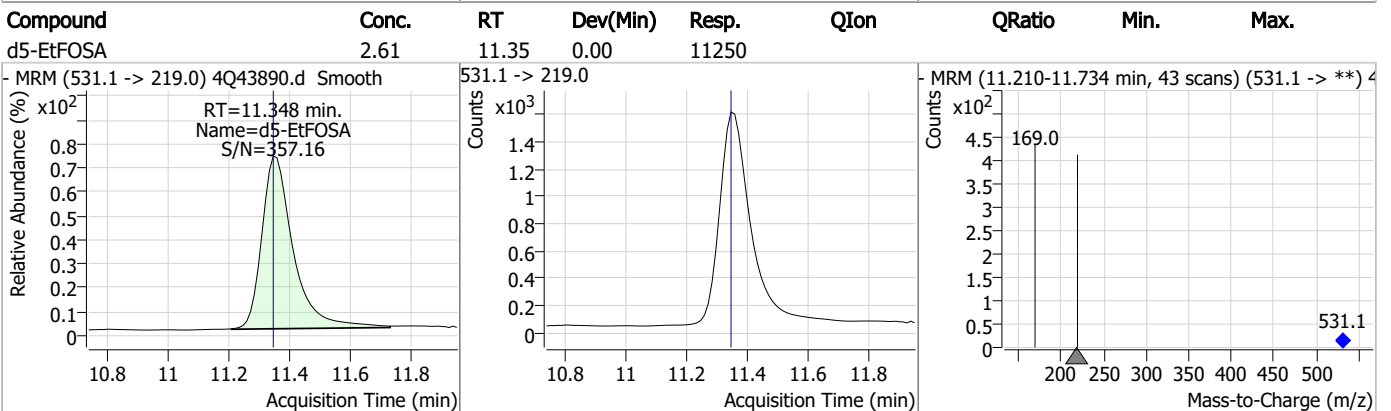
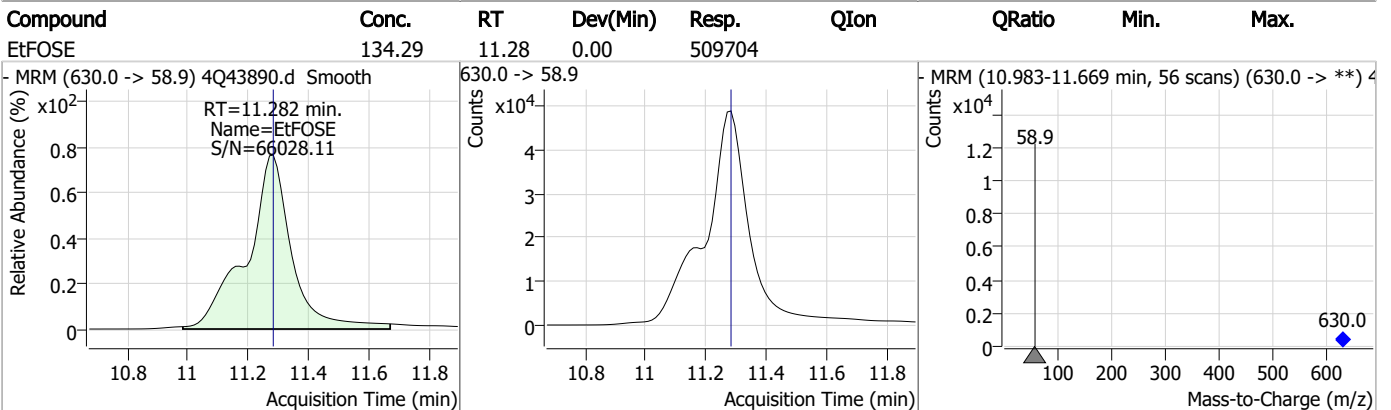
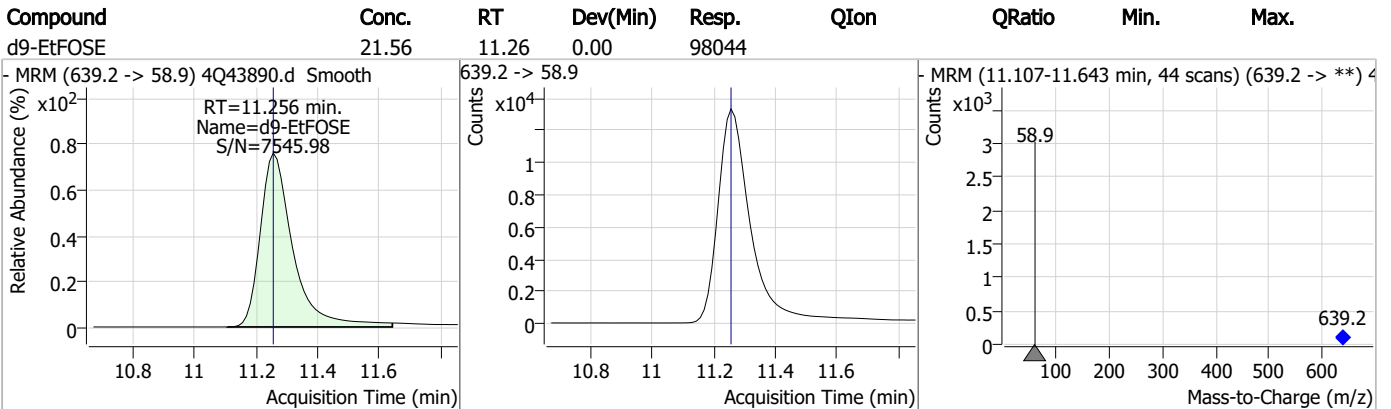
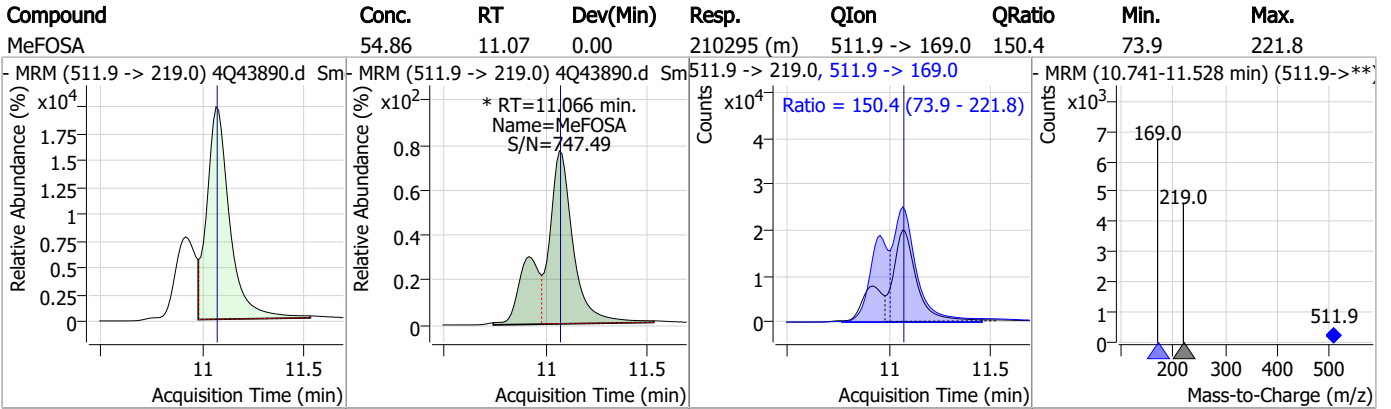
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	128.49	10.97	0.00	369686 (m)				



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



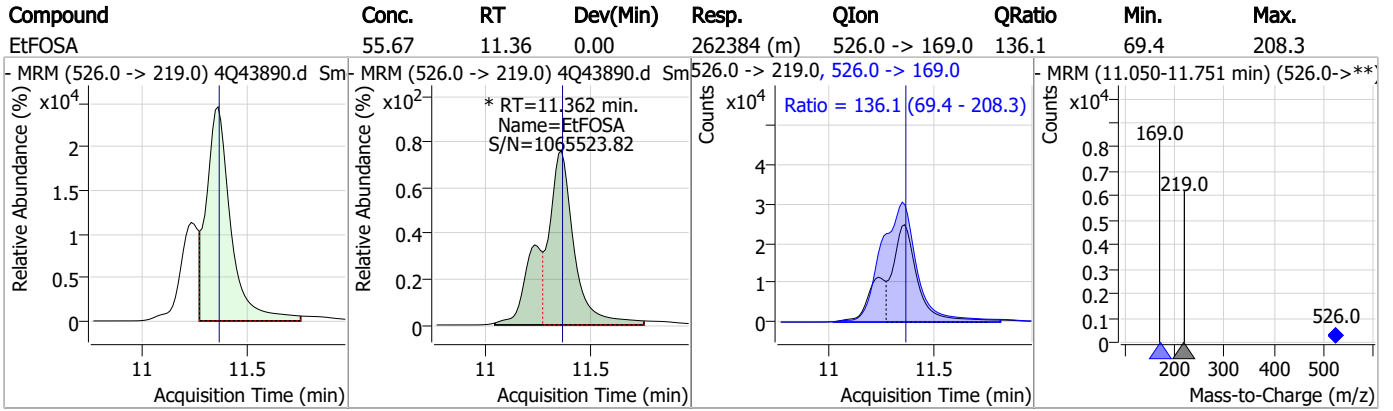
Perfluorinated Compounds by LC/MS/MS



7.7.8

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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: 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
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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	316462	233.64 µg/L	93
		327.1 -> 80.9	134287		
6:2FTS	6.899	427.1 -> 407.0	333858	227.27 µg/L	97
		427.1 -> 80.9	133307		
8:2FTS	7.966	527.1 -> 507.0	324709	217.87 µg/L	93
		527.1 -> 80.8	121732		
EtFOSAA	8.459	584.2 -> 419.1	145113	66.98 µg/L	m 92
		584.2 -> 526.0	66283		
FOSA	9.774	498.1 -> 77.9	438428	68.77 µg/L	98
		498.1 -> 478.0	11984		
MeFOSAA	8.249	570.1 -> 419.0	157123	67.37 µg/L	m 97
		570.1 -> 483.0	34451		
PFBA	2.920	212.8 -> 168.9	780608	277.27 µg/L	100
PFBS	5.440	298.7 -> 79.9	251571	60.03 µg/L	95
		298.7 -> 98.8	94993		
PFDA	8.179	512.9 -> 469.0	916605	69.12 µg/L	96
		512.9 -> 219.0	178851		
PFDoDA	9.106	613.1 -> 569.0	1058949	63.85 µg/L	100
		613.1 -> 319.0	155967		
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

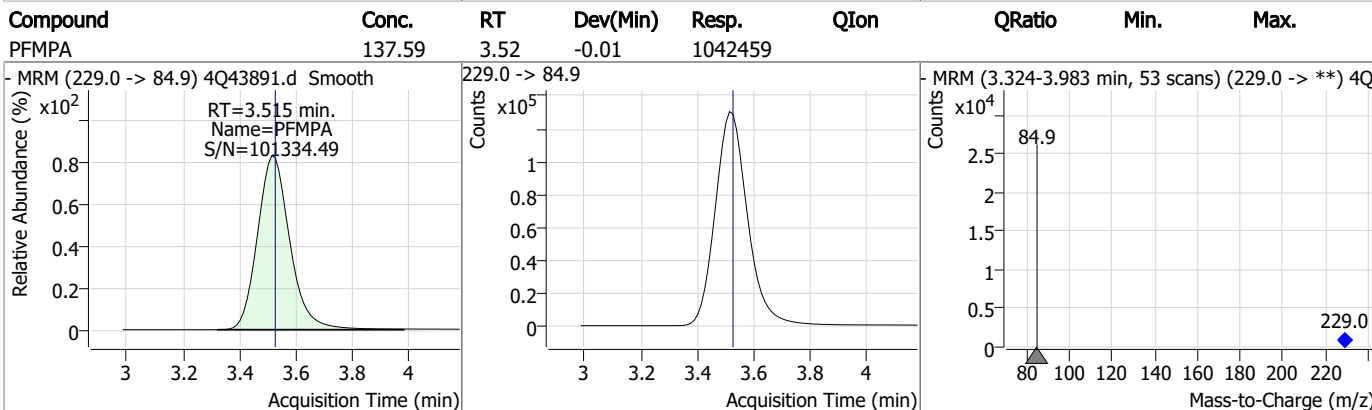
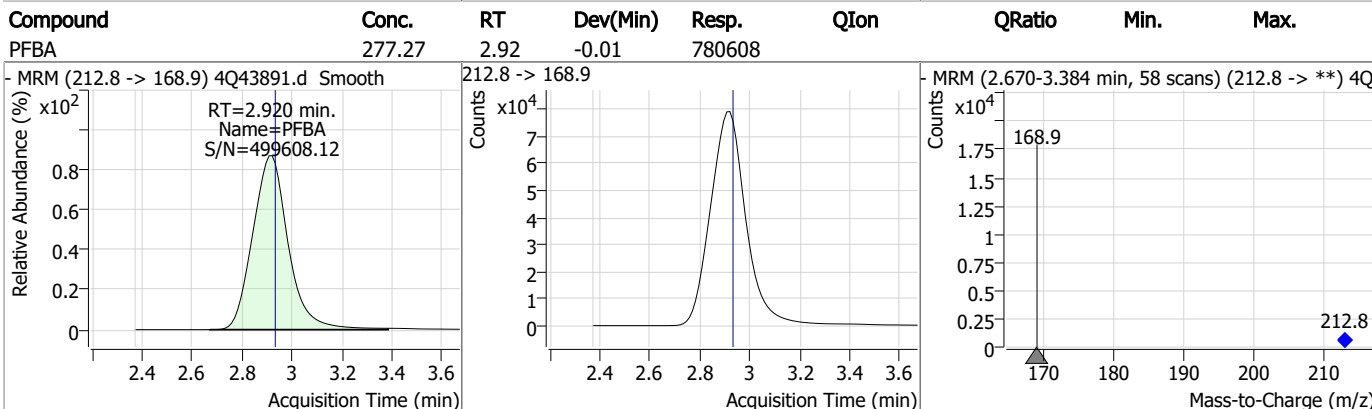
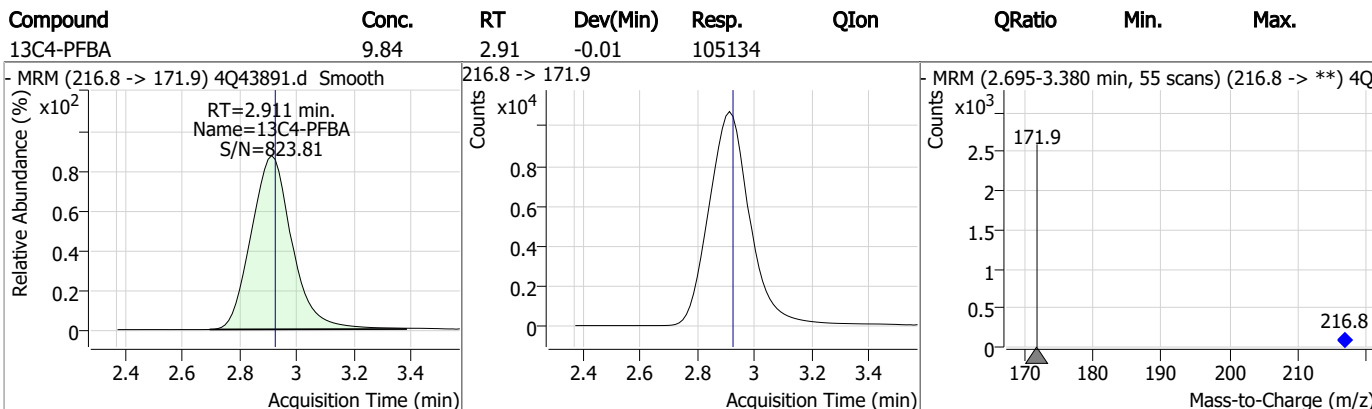
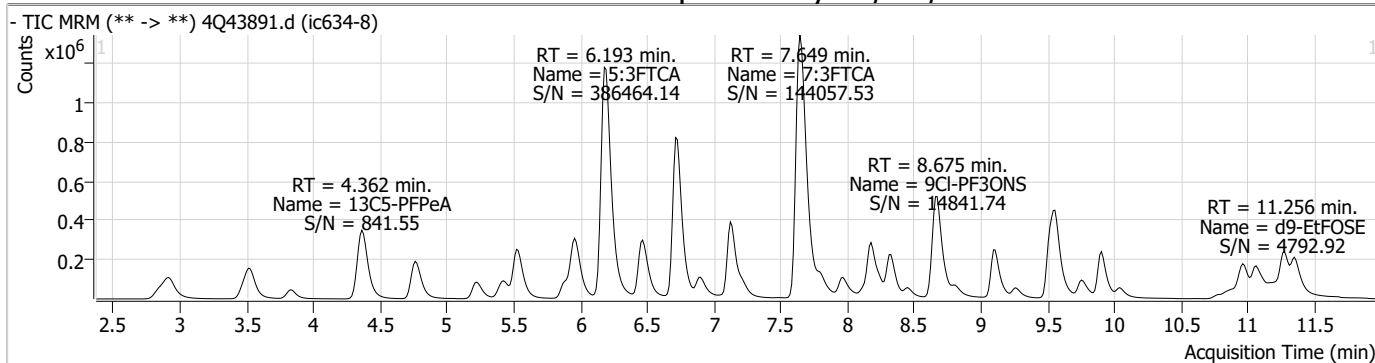
Perfluorinated Compounds by LC/MS/MS

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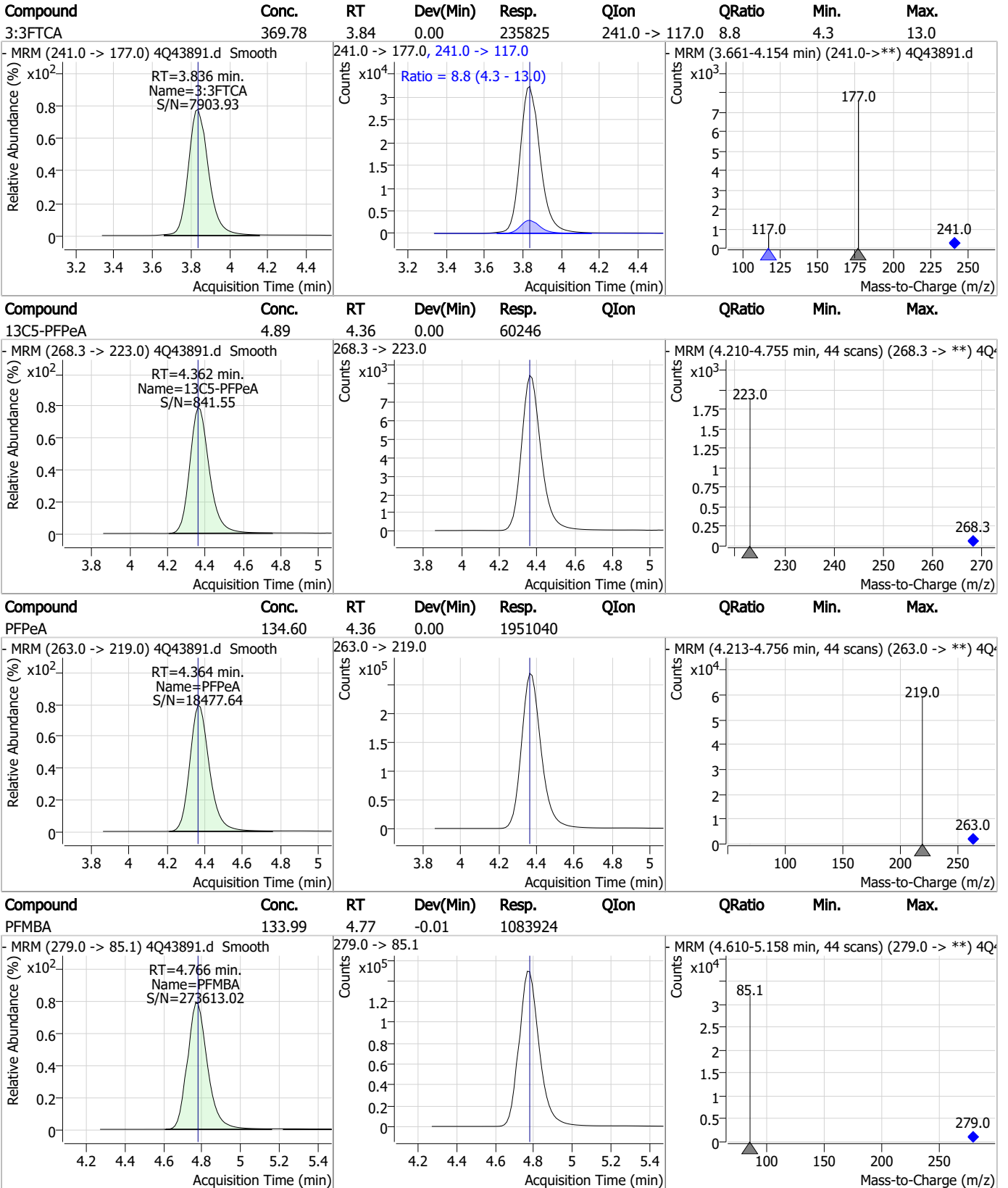
7.7.9

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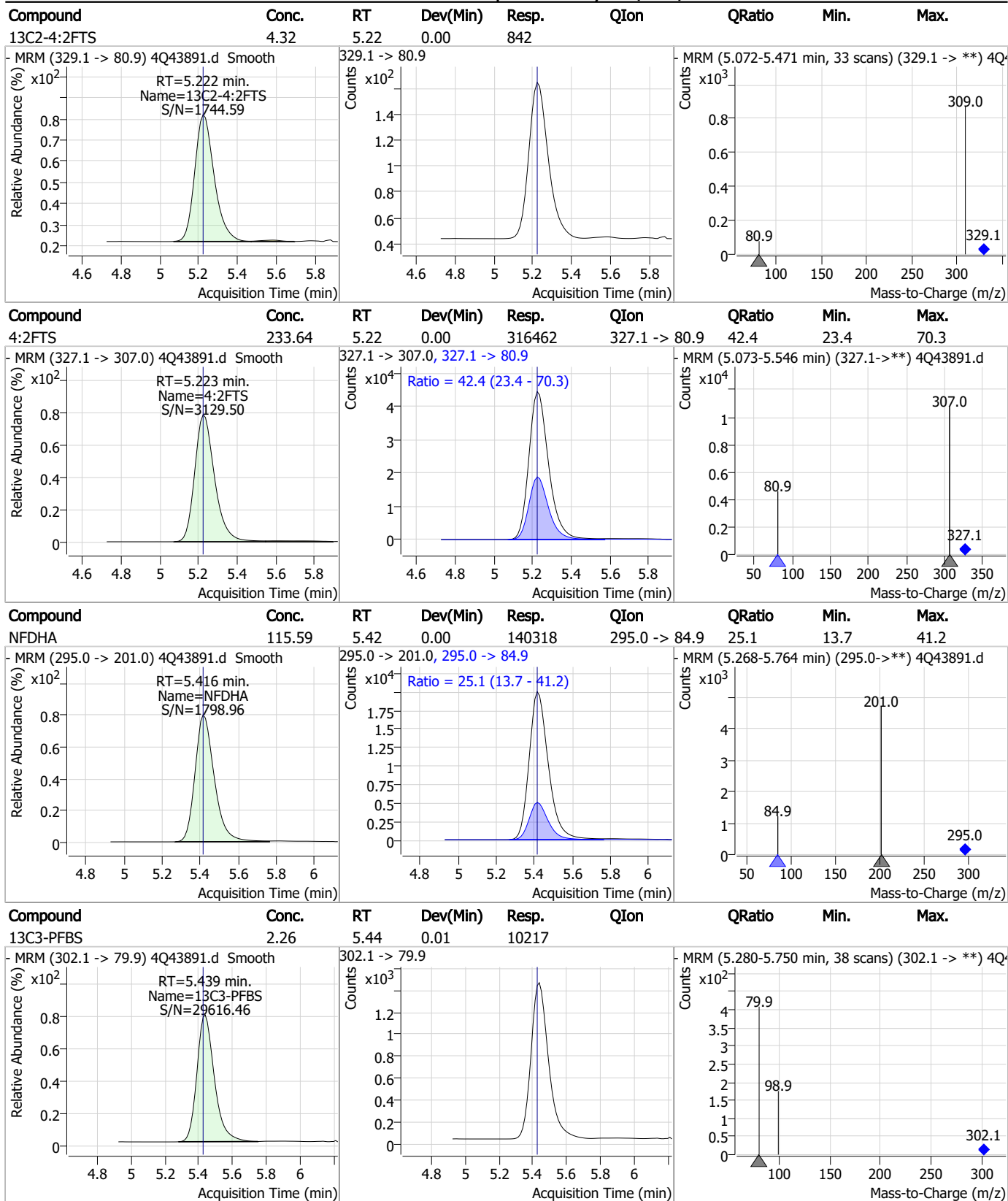
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



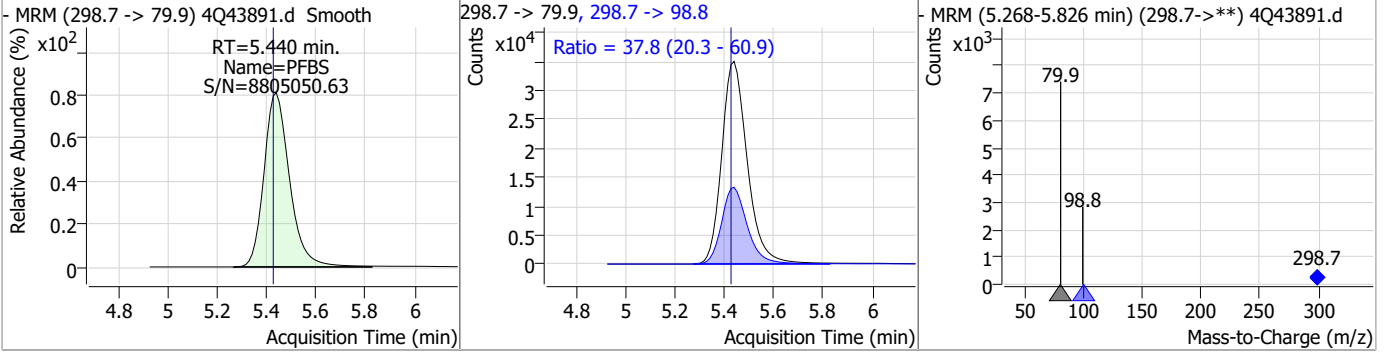
Perfluorinated Compounds by LC/MS/MS



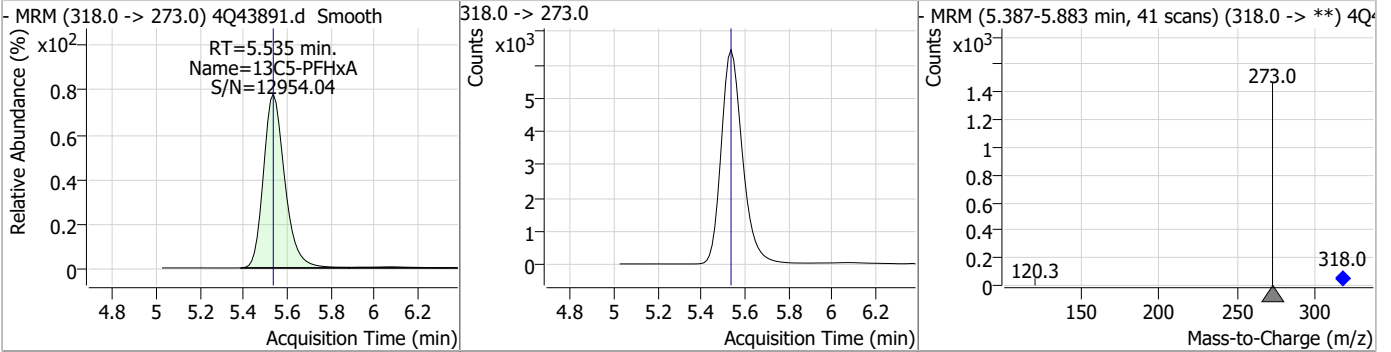
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Perfluorinated Compounds by LC/MS/MS

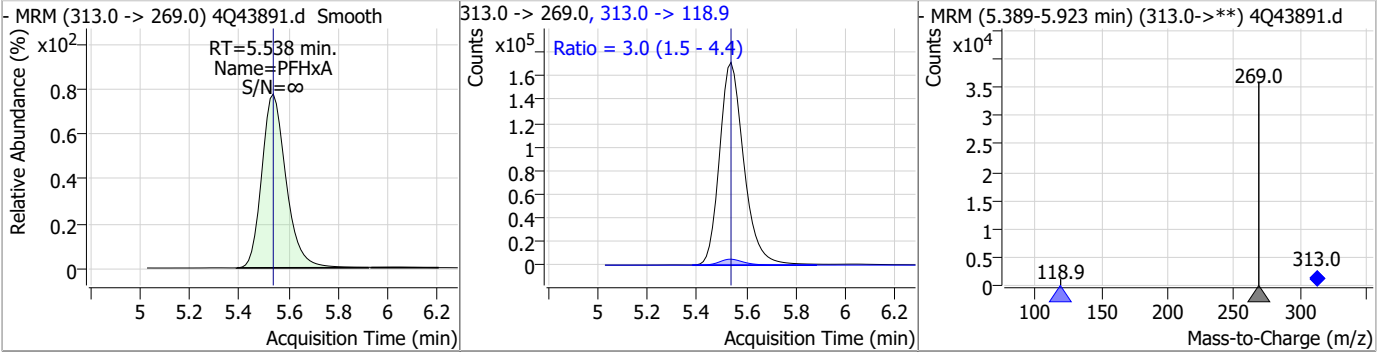
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	60.03	5.44	0.01	251571	298.7 -> 98.8	37.8	20.3	60.9



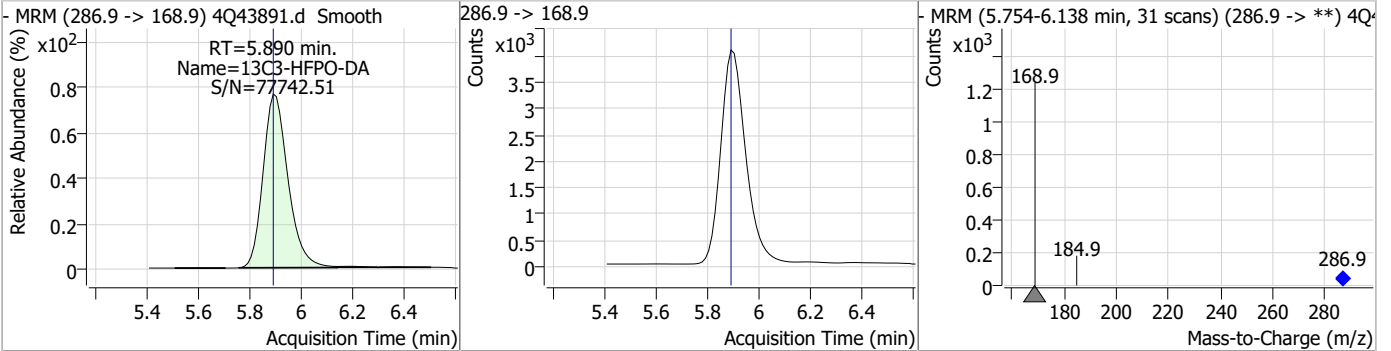
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.53	0.00	43396	318.0 -> 273.0			



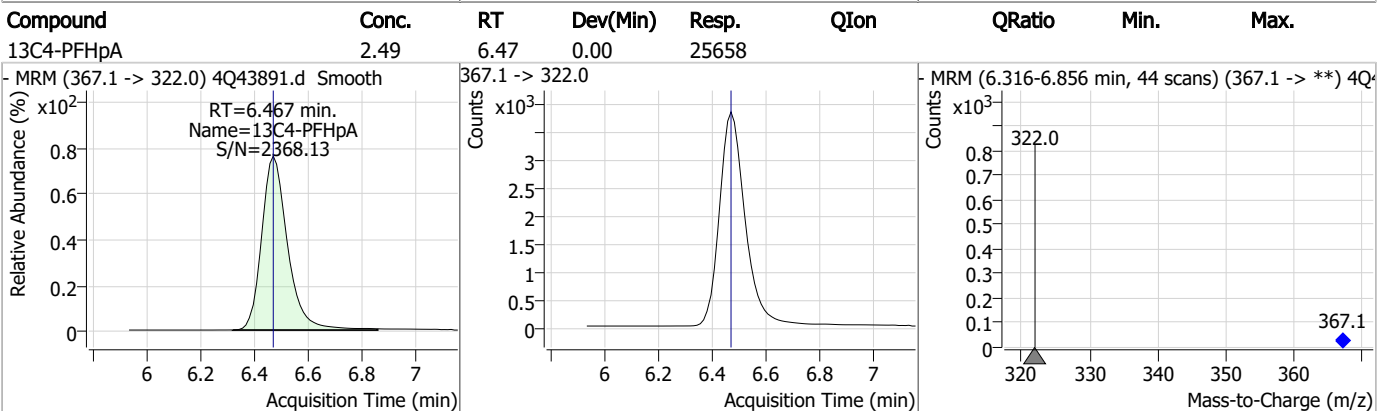
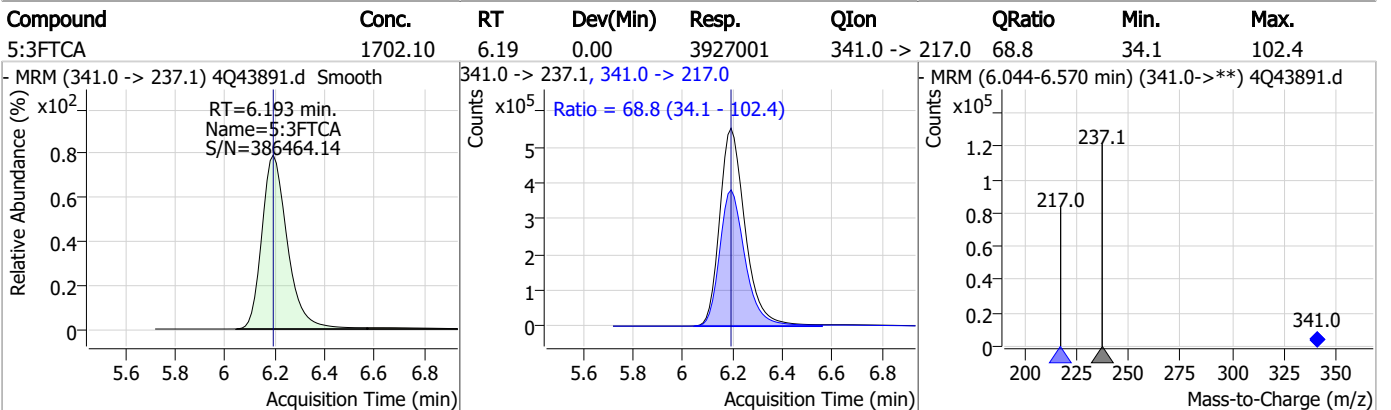
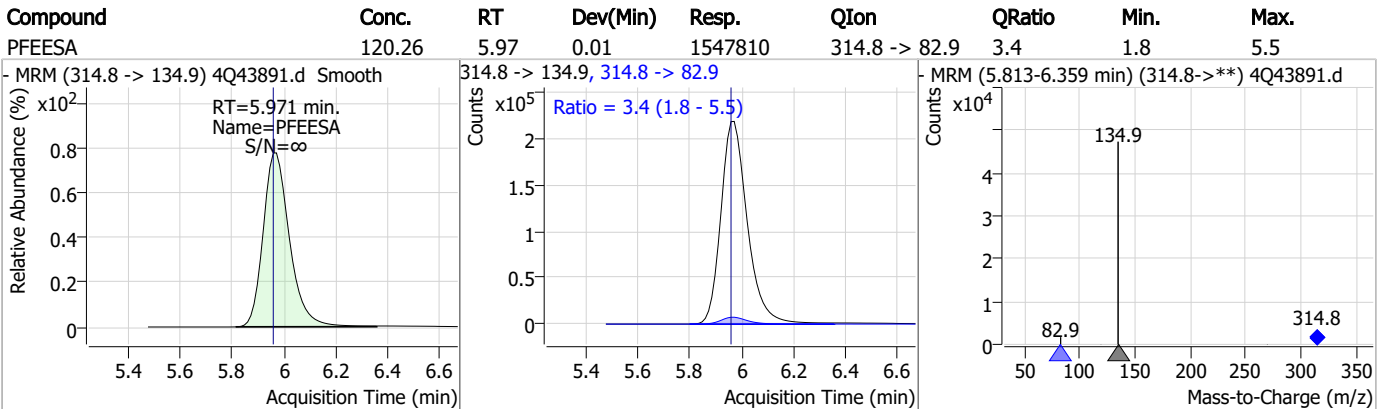
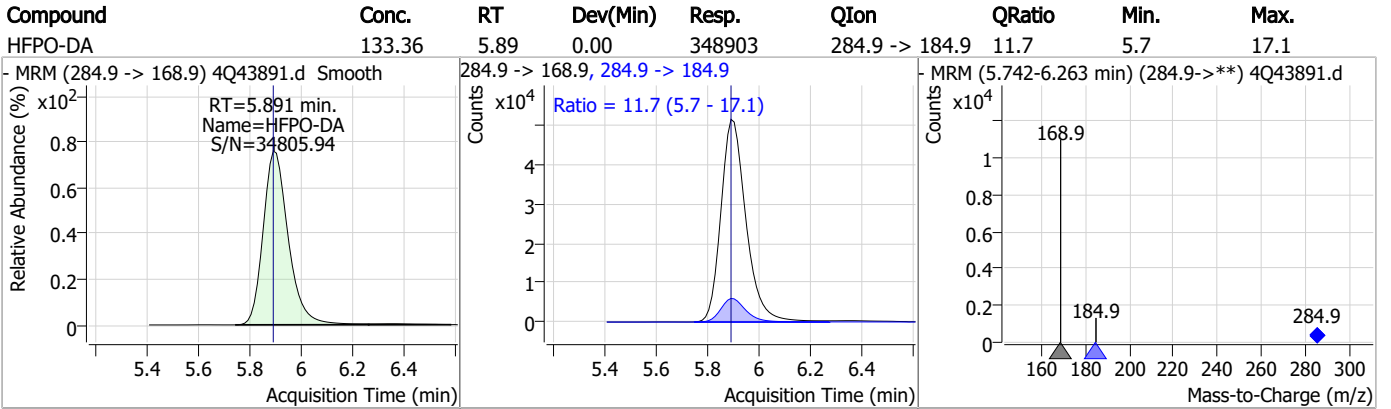
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	68.78	5.54	0.00	1169490	313.0 -> 118.9	3.0	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.40	5.89	0.00	27378	286.9 -> 168.9			



Perfluorinated Compounds by LC/MS/MS

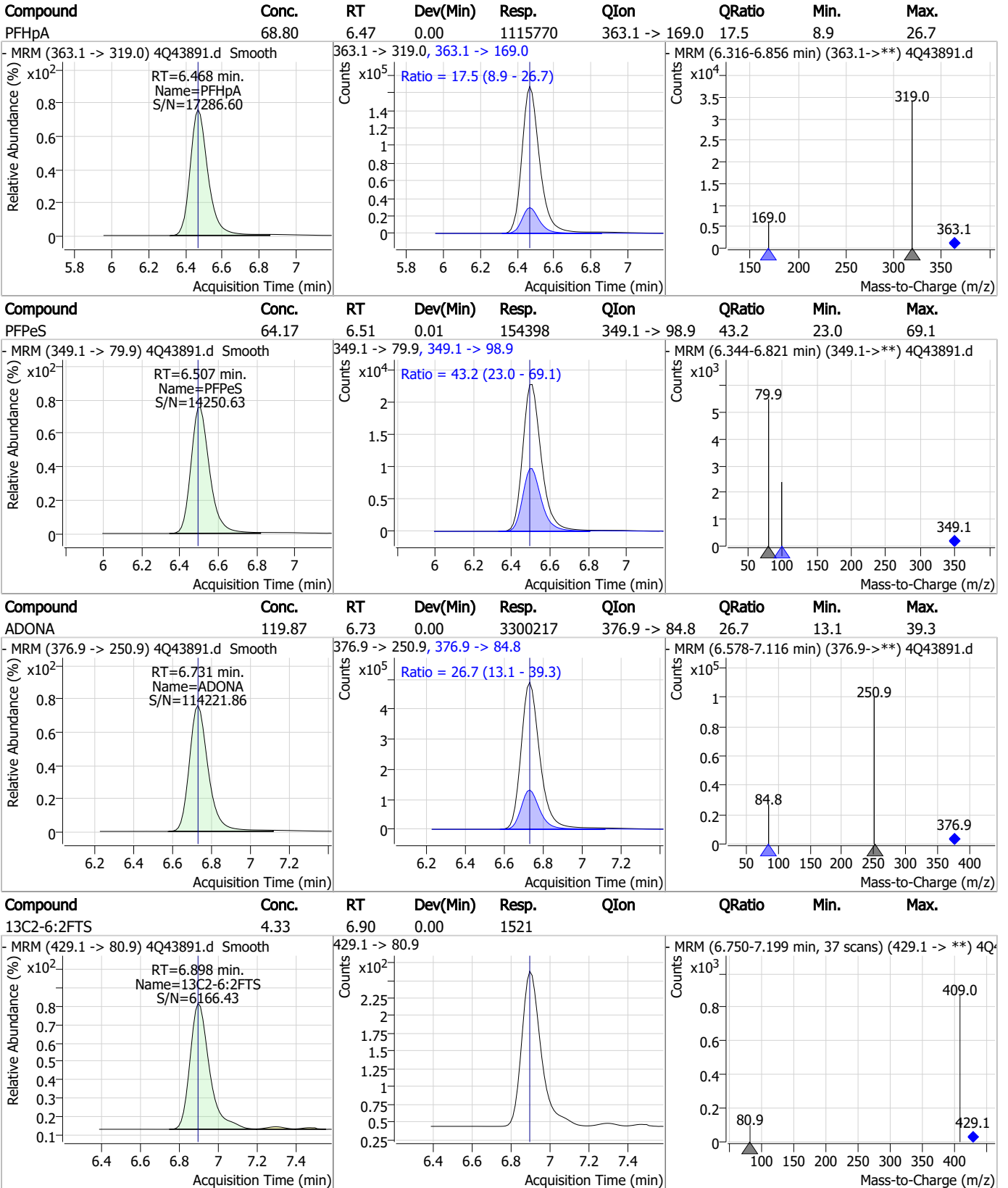


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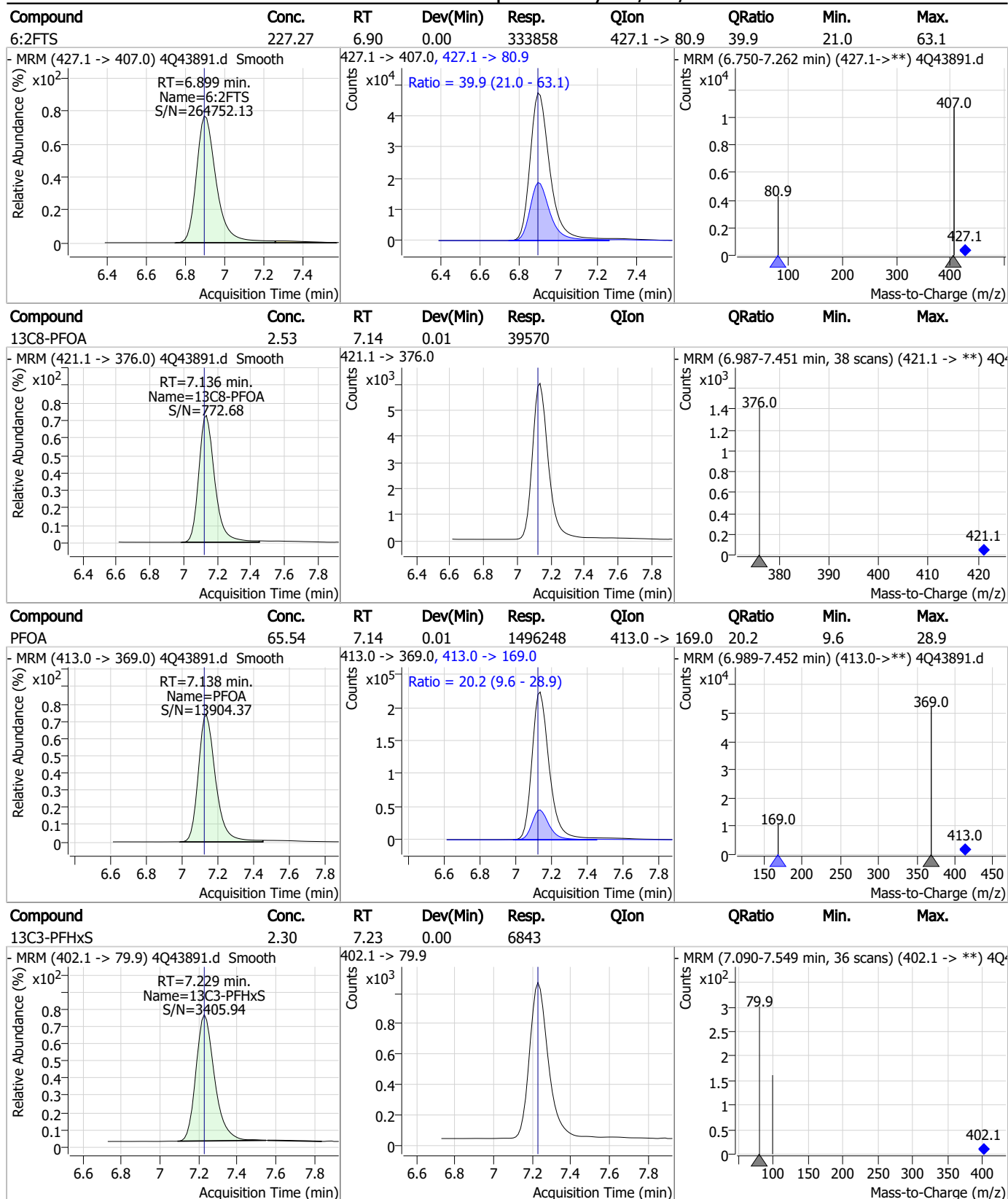
Perfluorinated Compounds by LC/MS/MS



7.7.9

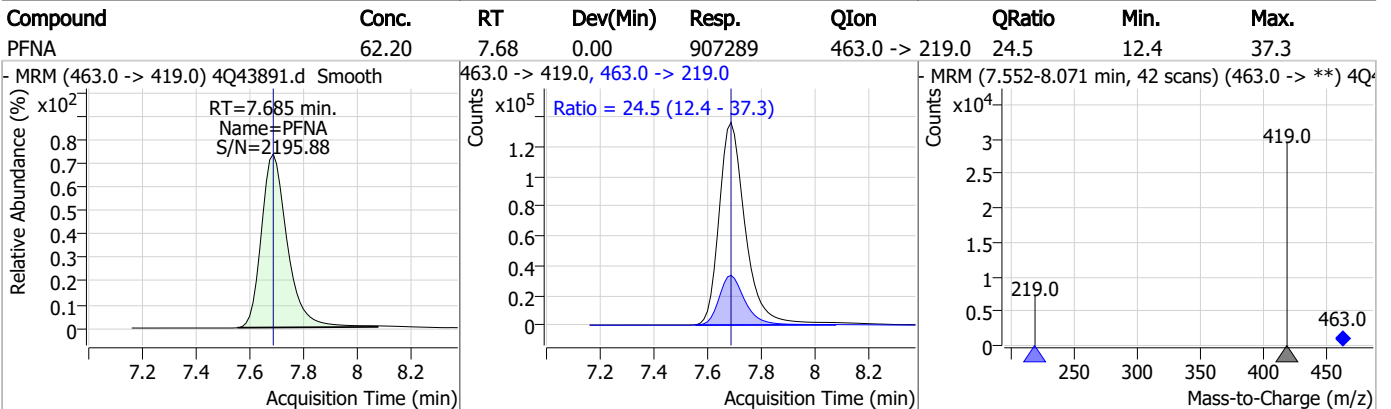
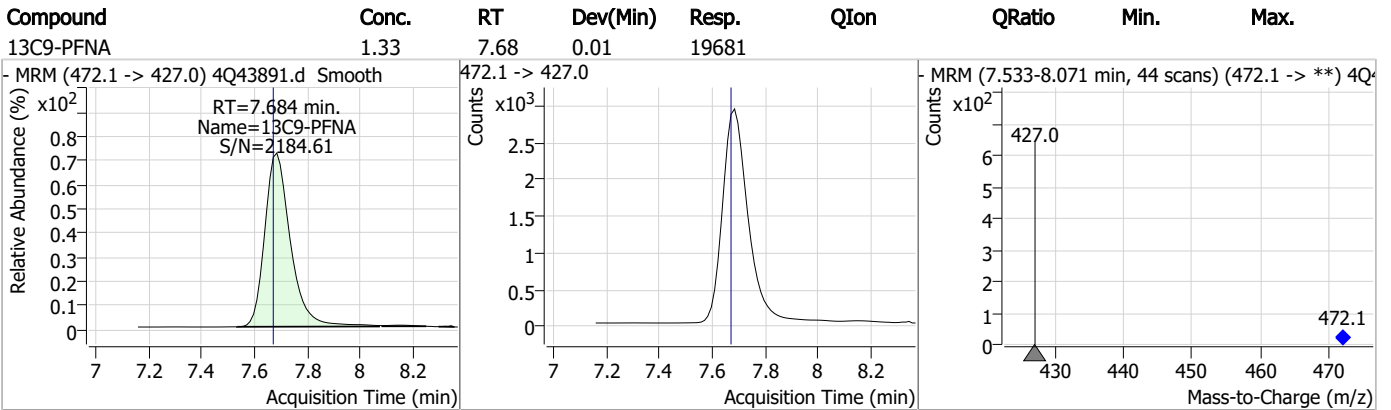
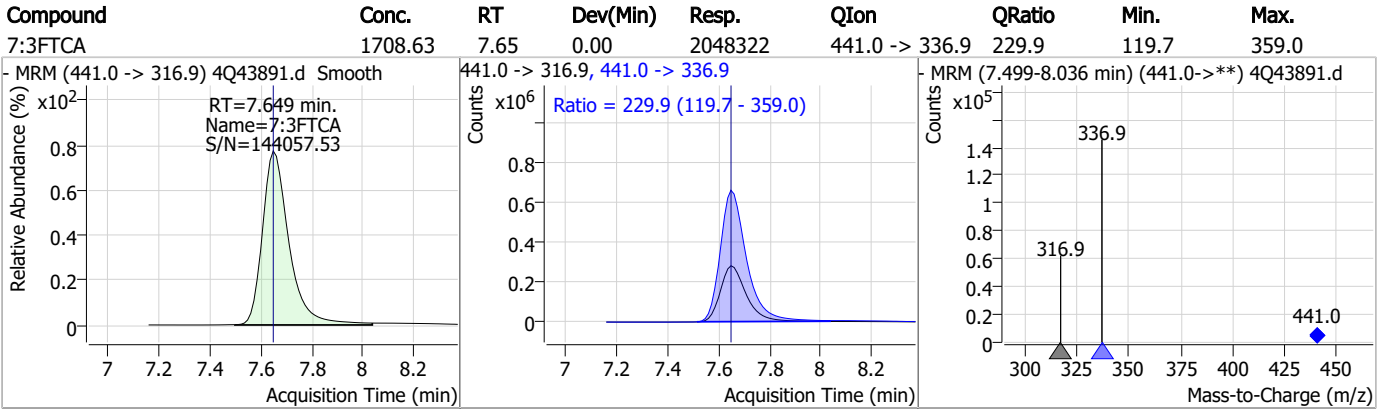
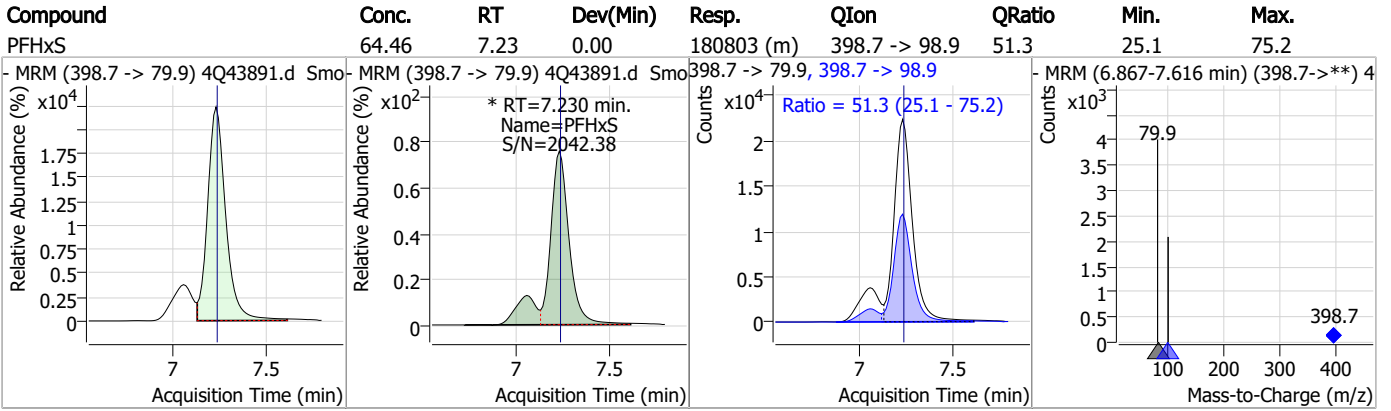
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Perfluorinated Compounds by LC/MS/MS



7.7.9

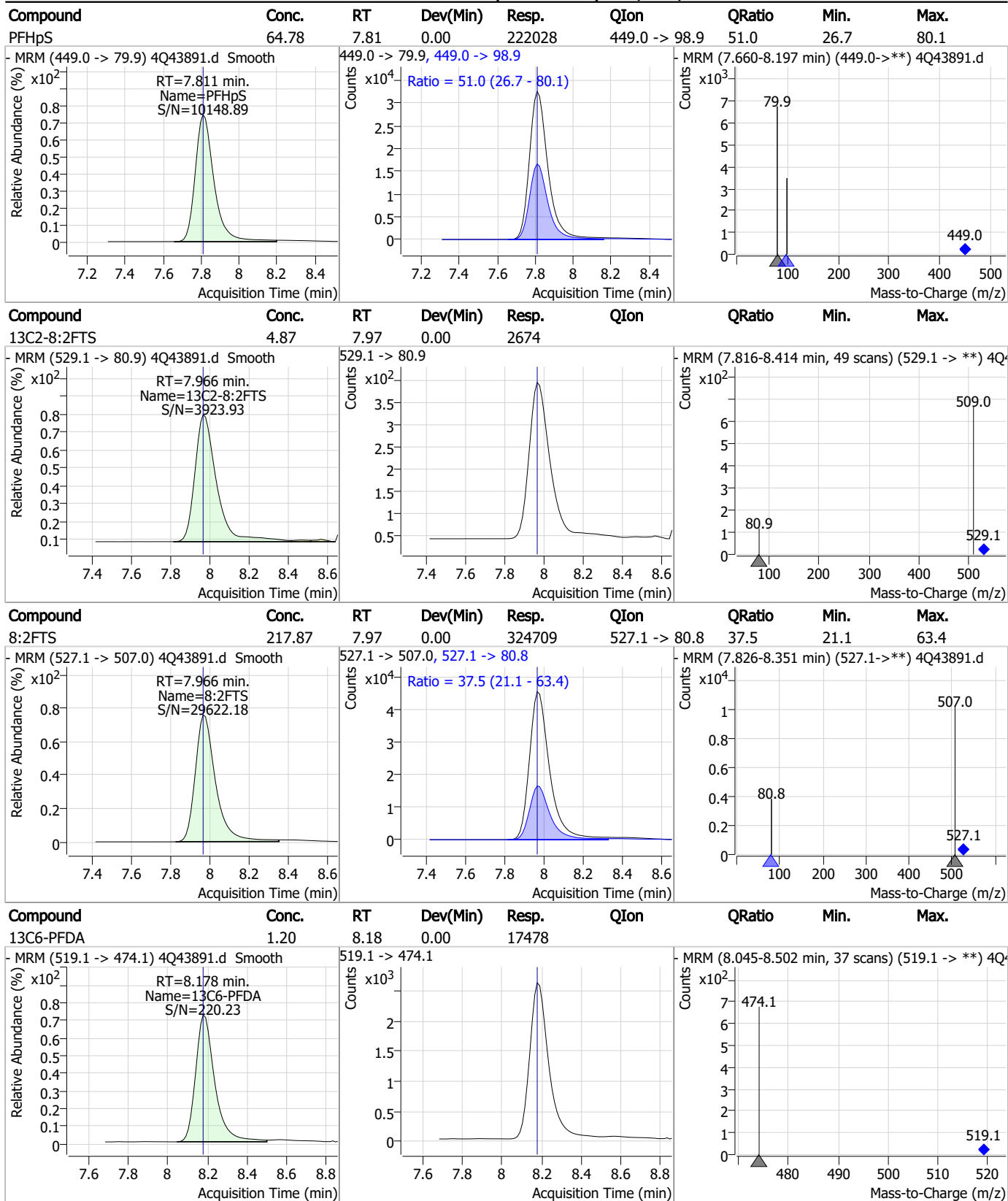
Perfluorinated Compounds by LC/MS/MS



7.7.9

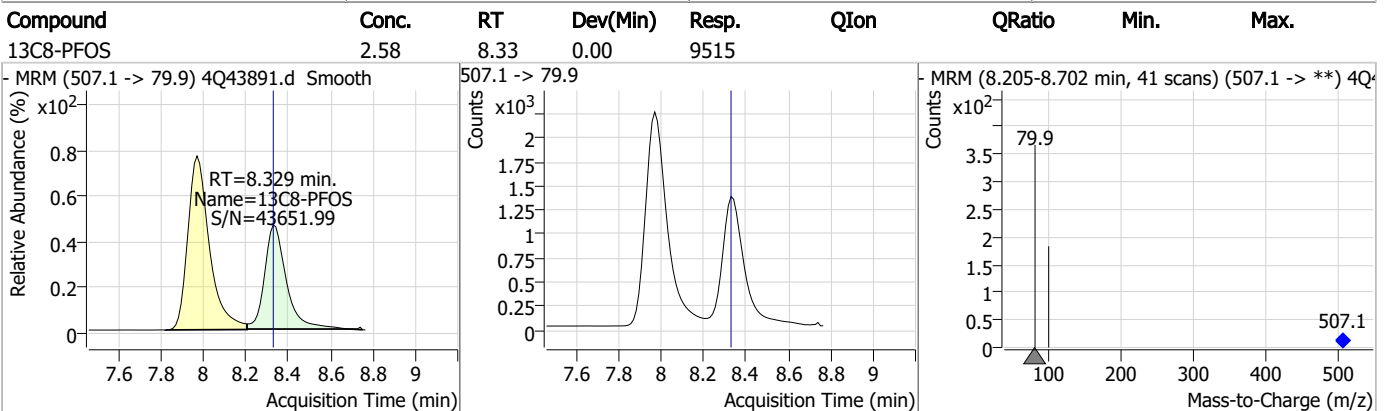
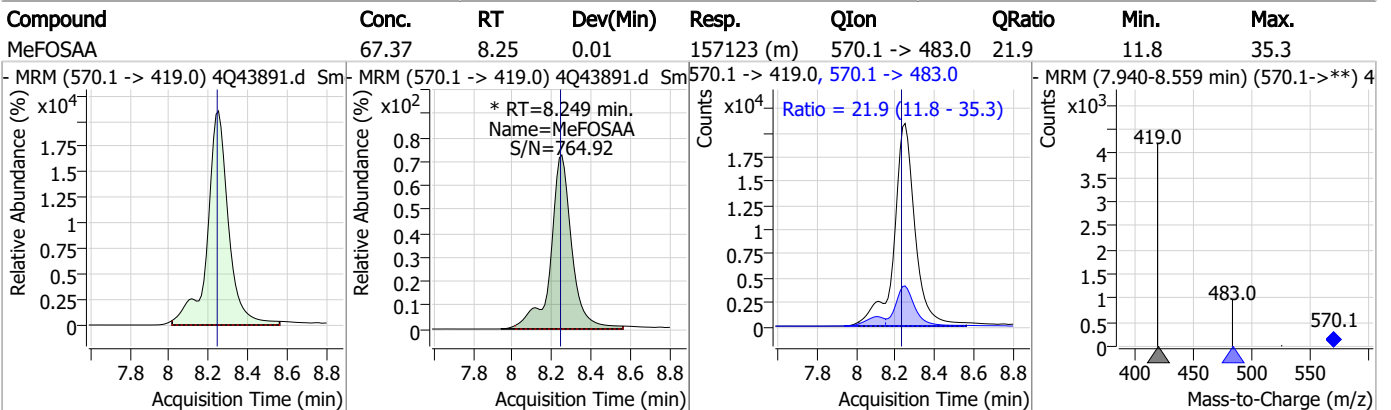
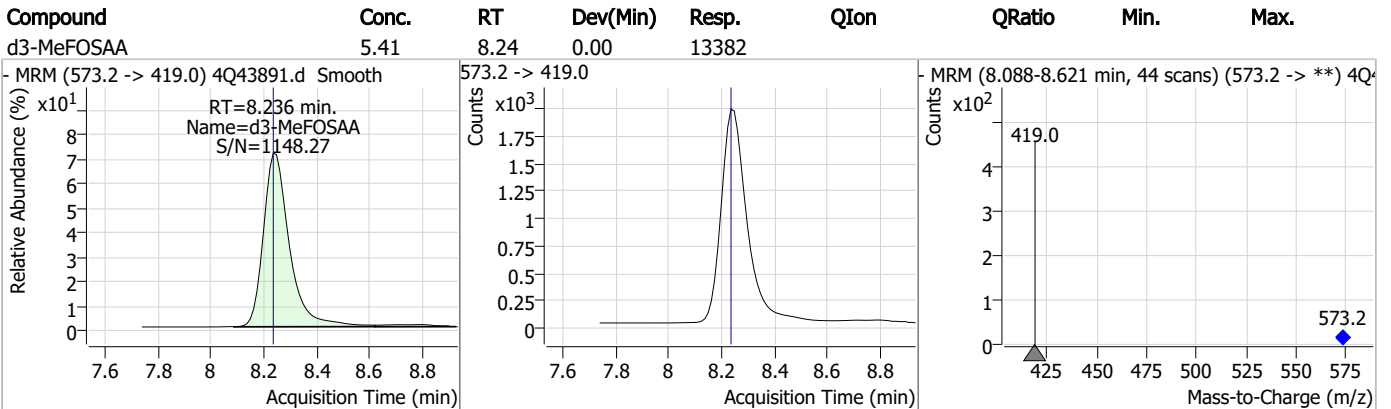
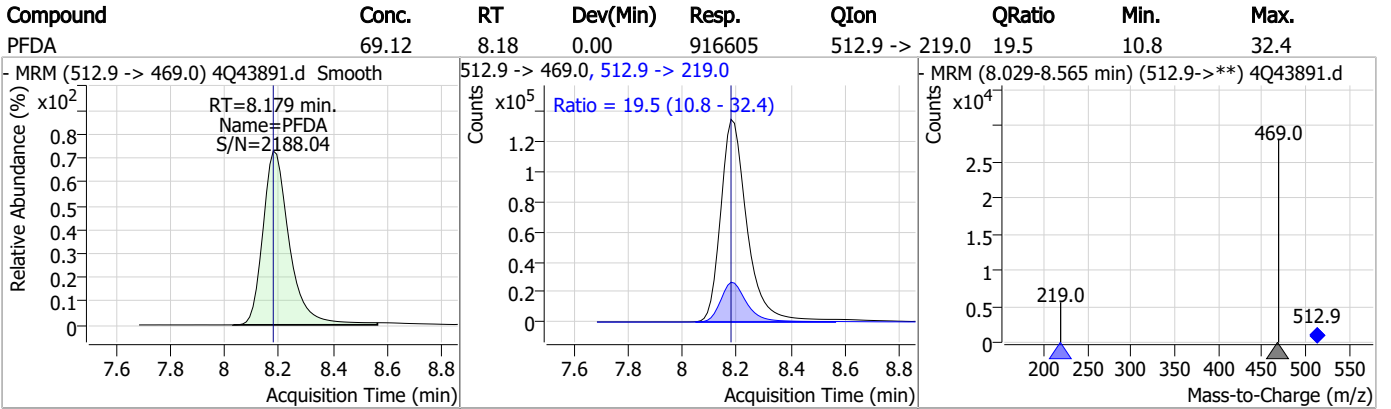
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Perfluorinated Compounds by LC/MS/MS

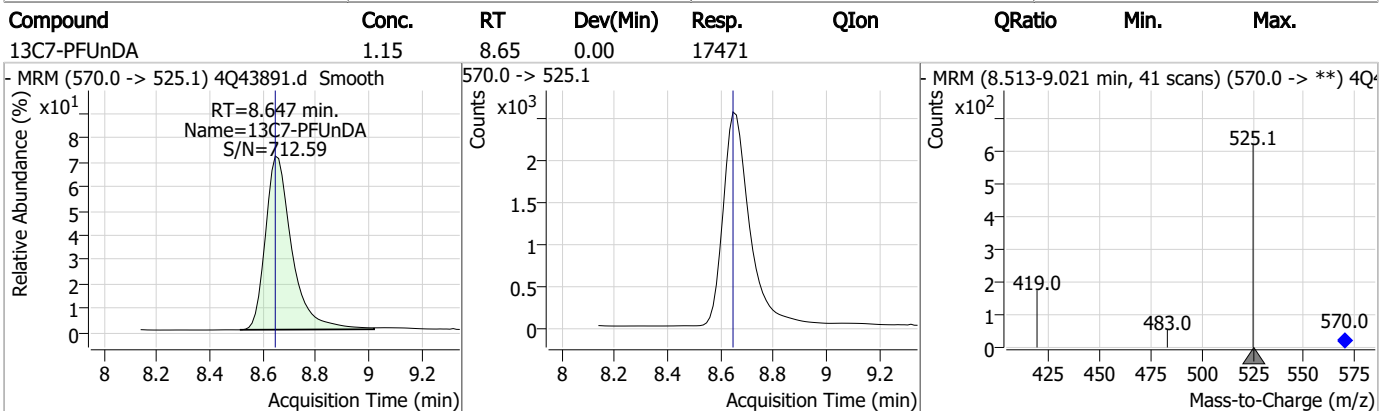
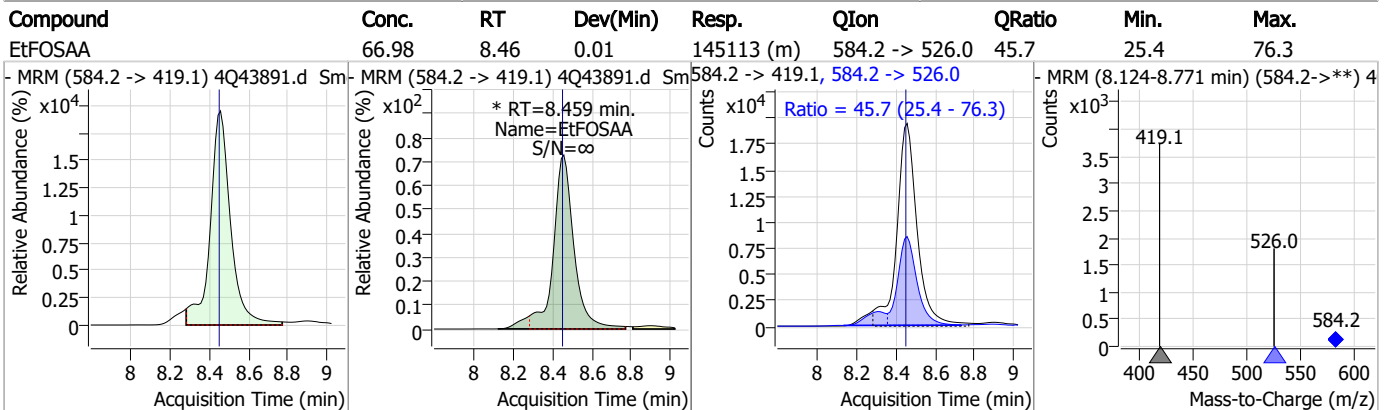
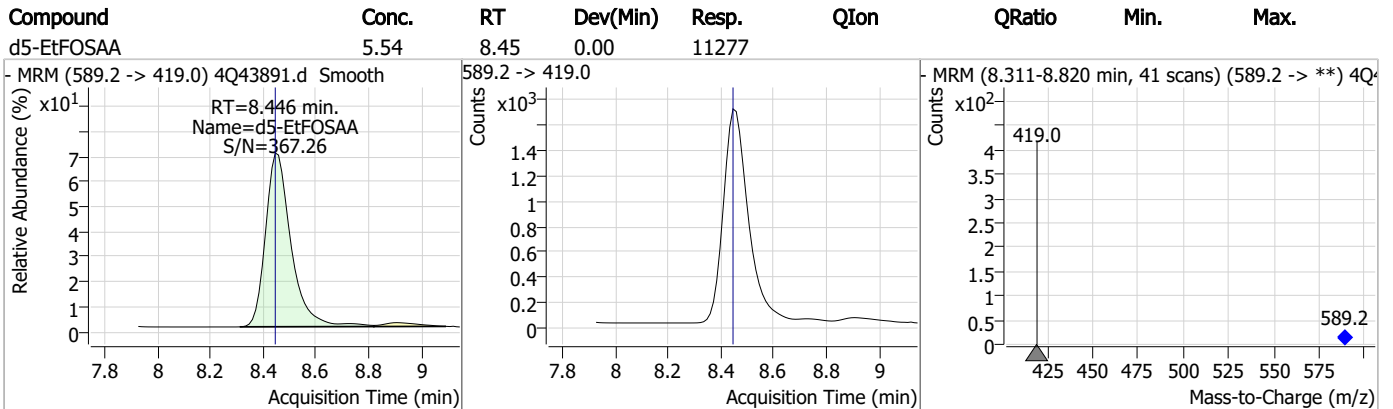
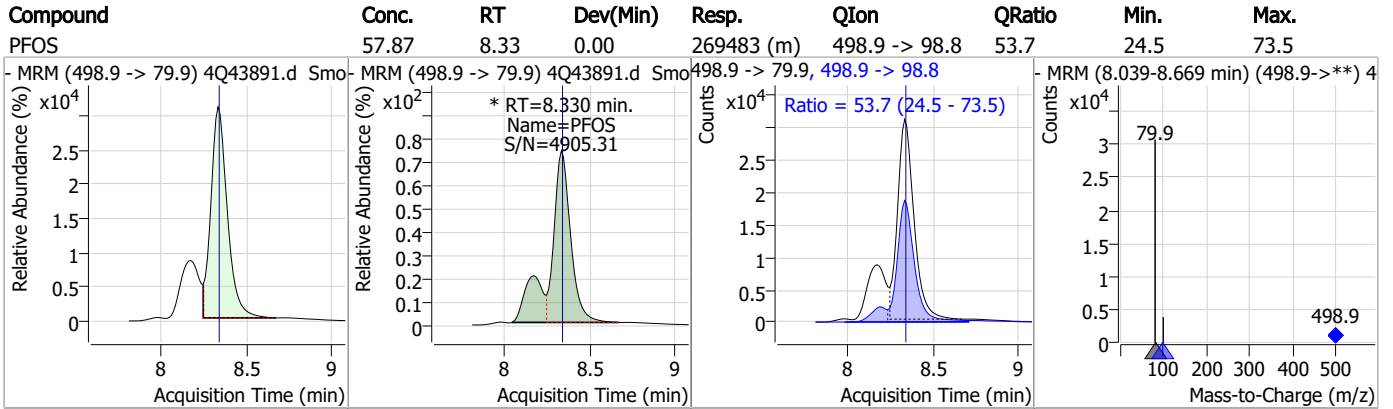


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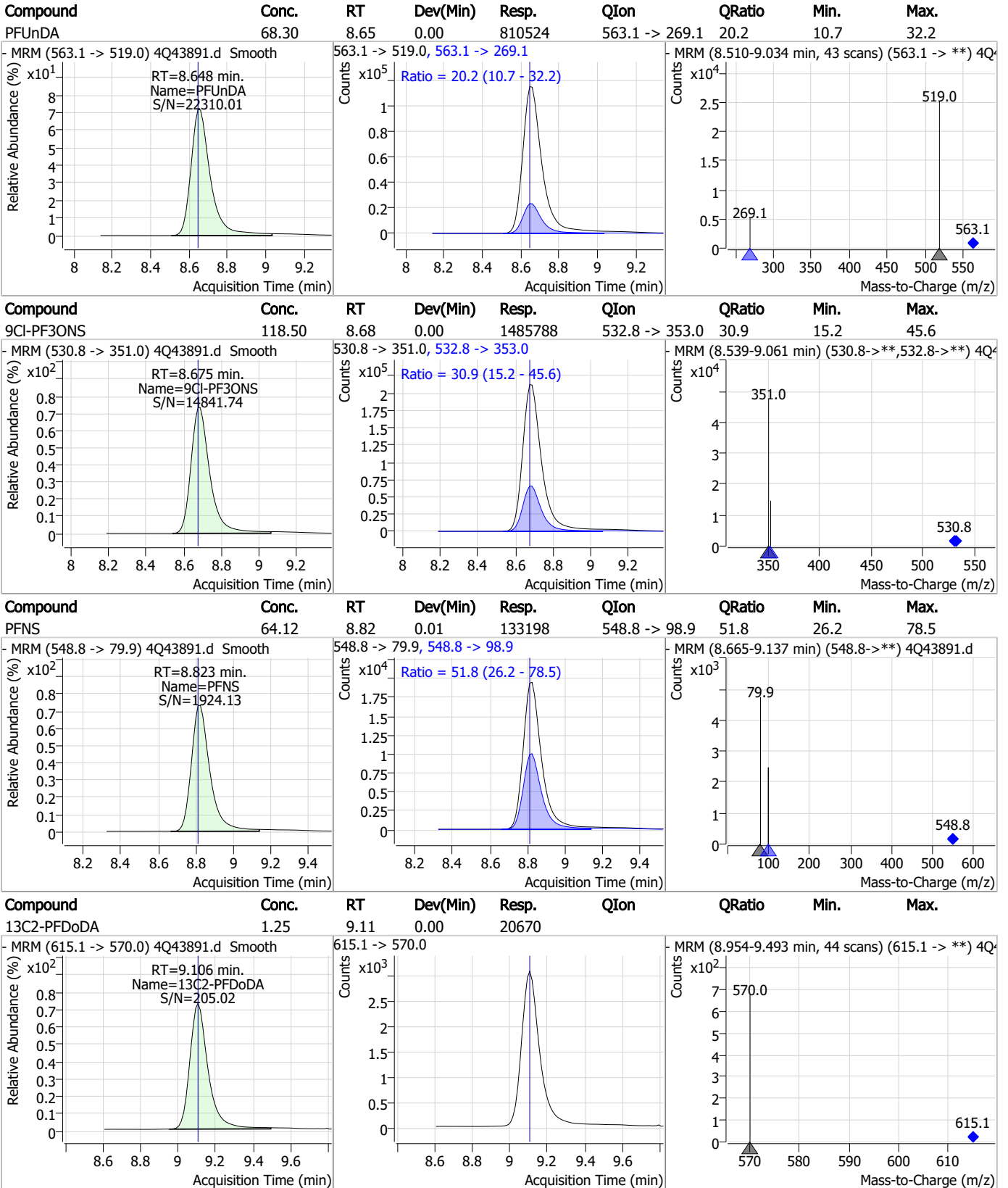
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



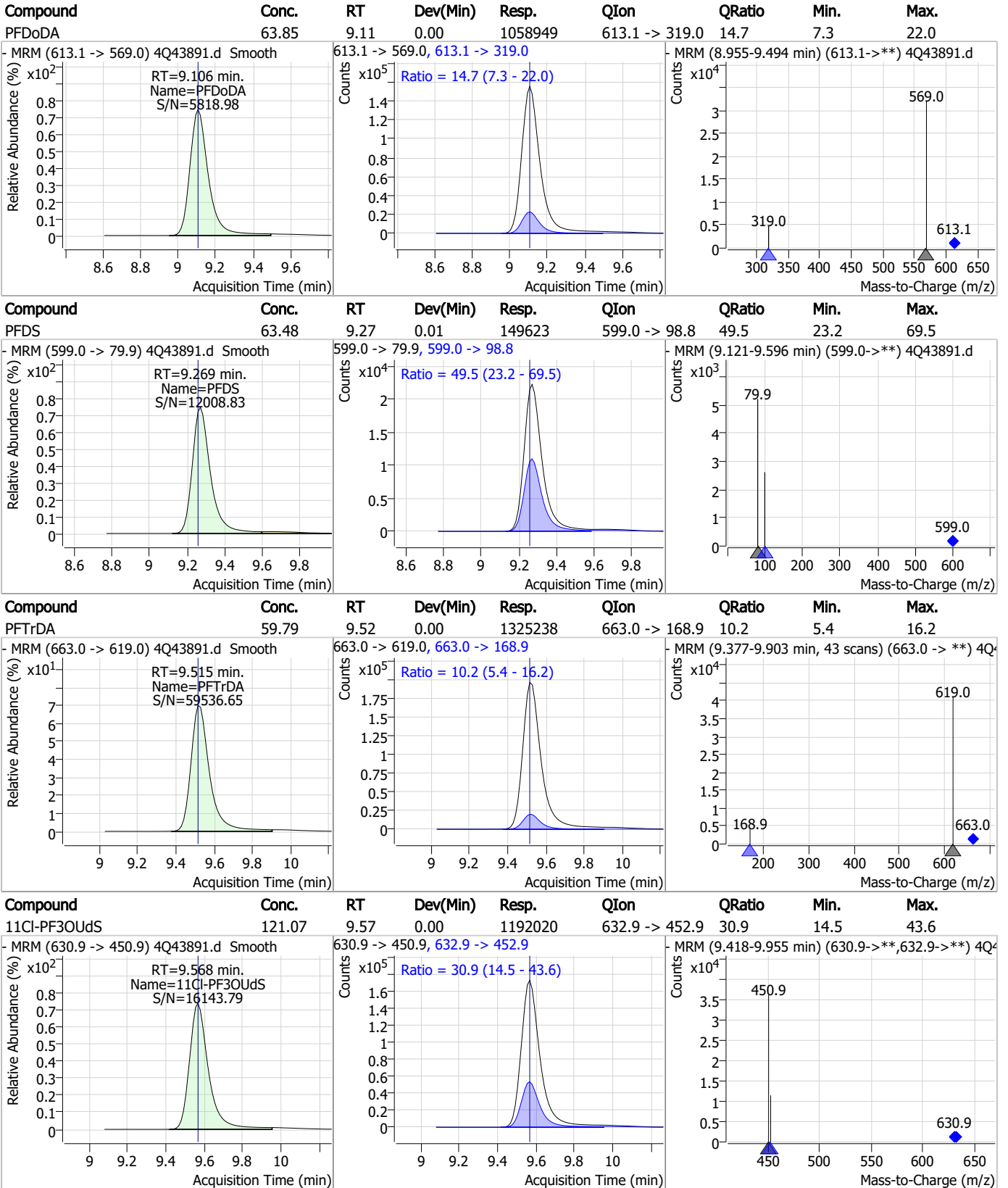
Perfluorinated Compounds by LC/MS/MS



7.7.9

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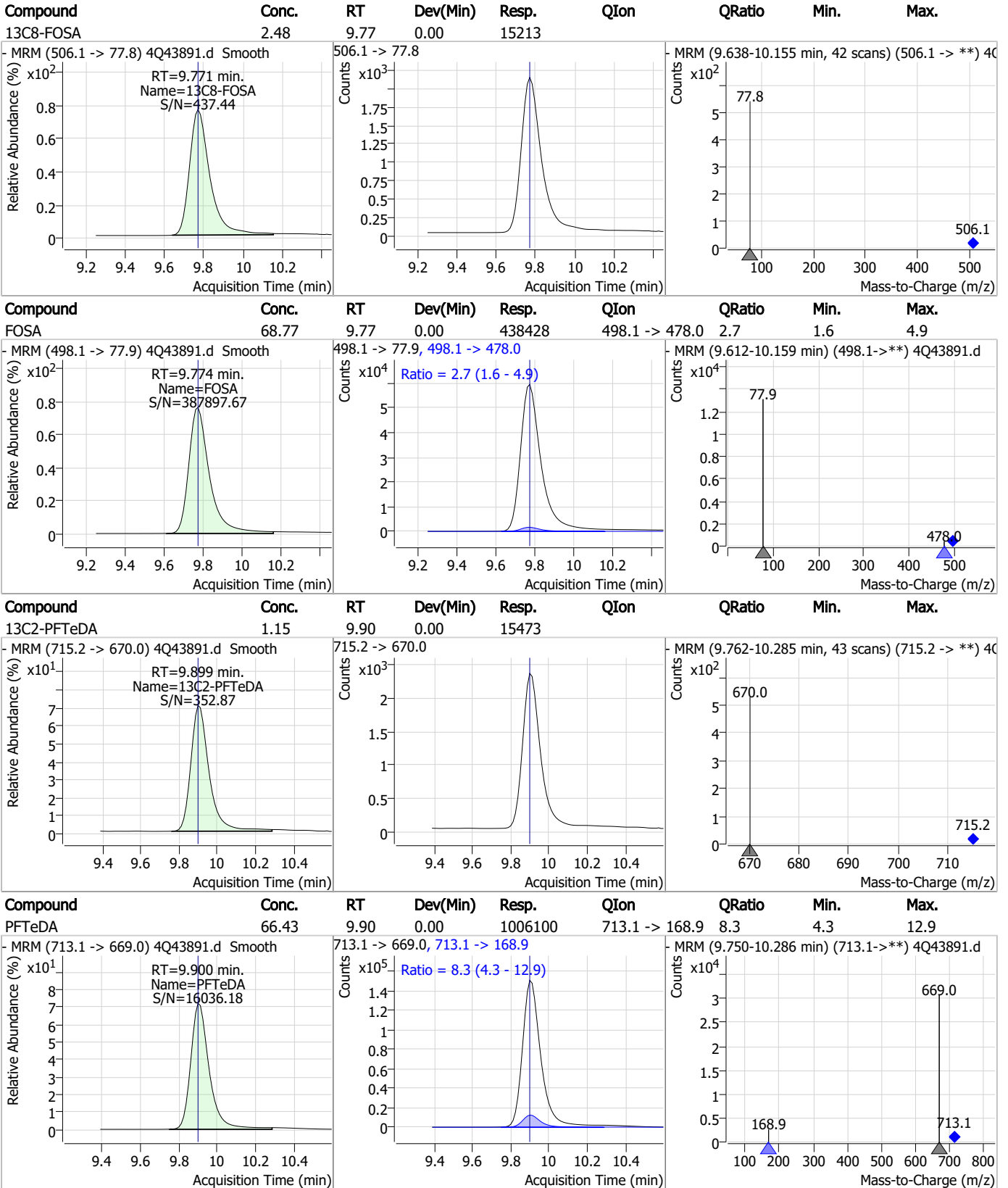
Perfluorinated Compounds by LC/MS/MS



7.7.9

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Perfluorinated Compounds by LC/MS/MS

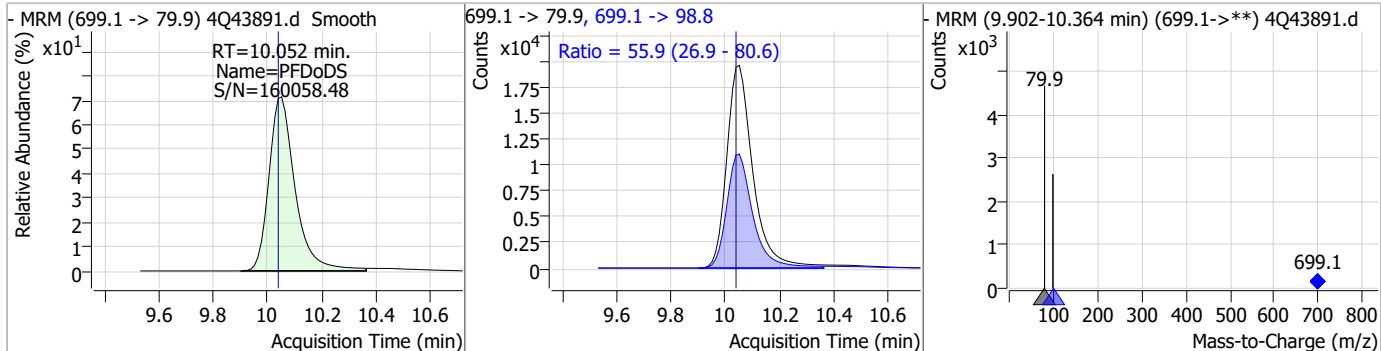


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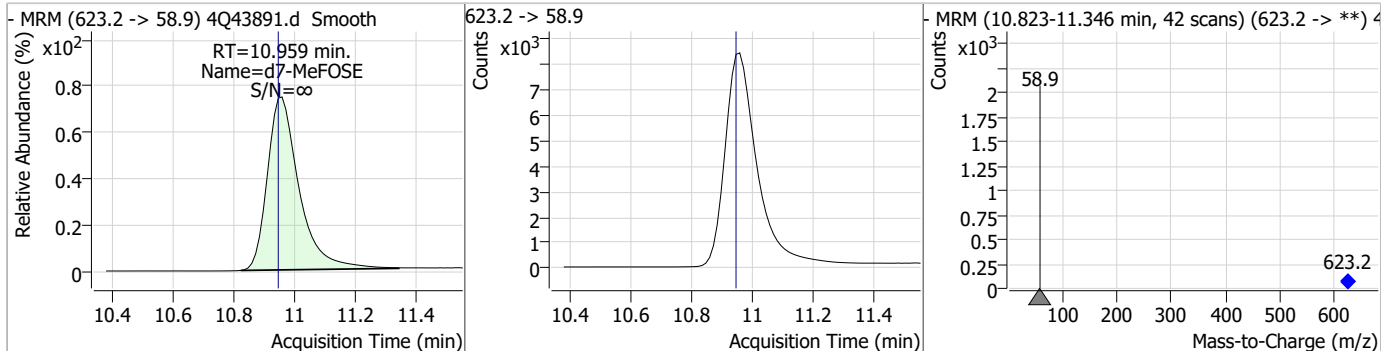
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Perfluorinated Compounds by LC/MS/MS

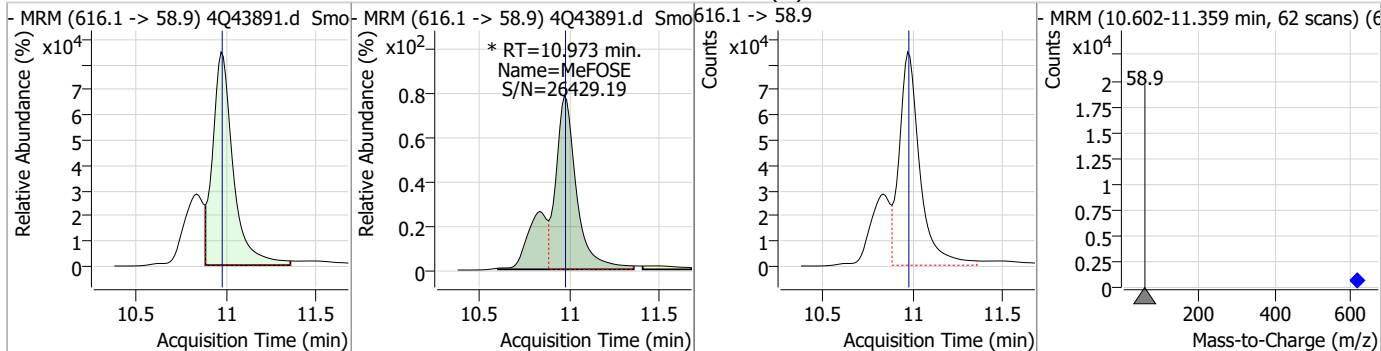
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	62.37	10.05	0.01	131199	699.1 -> 98.8	55.9	26.9	80.6



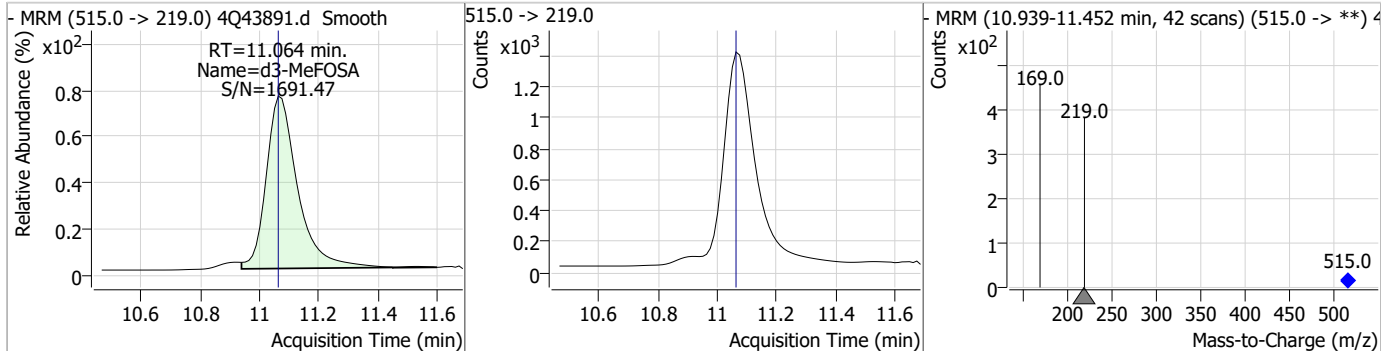
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.04	10.96	0.01	61091				



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

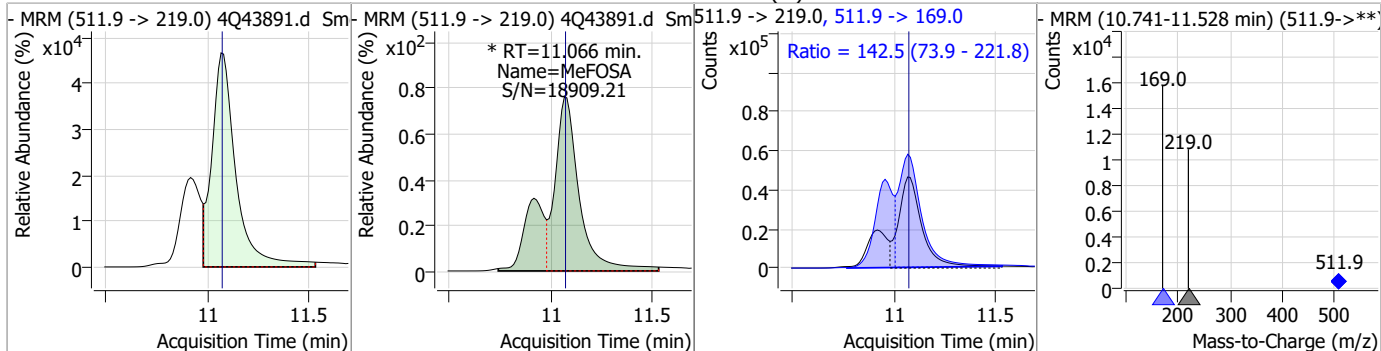


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.63	11.06	0.00	10104				

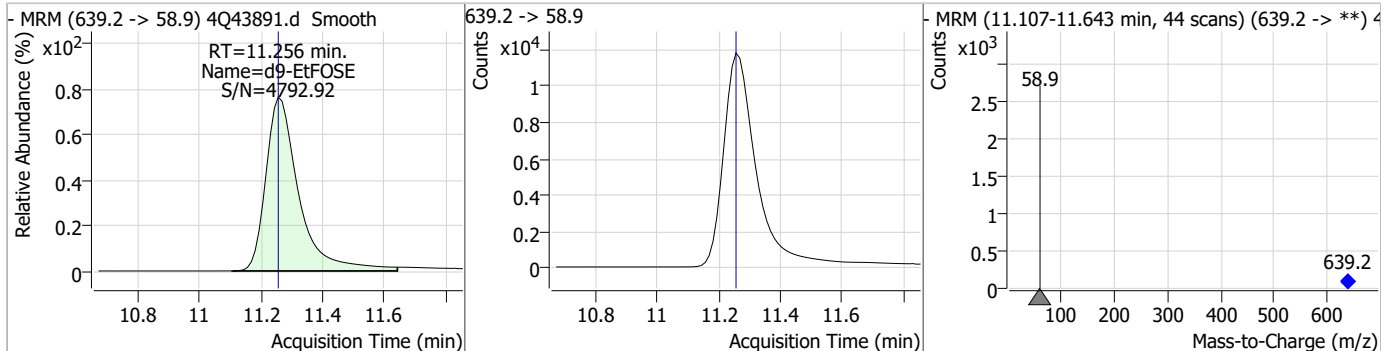


Perfluorinated Compounds by LC/MS/MS

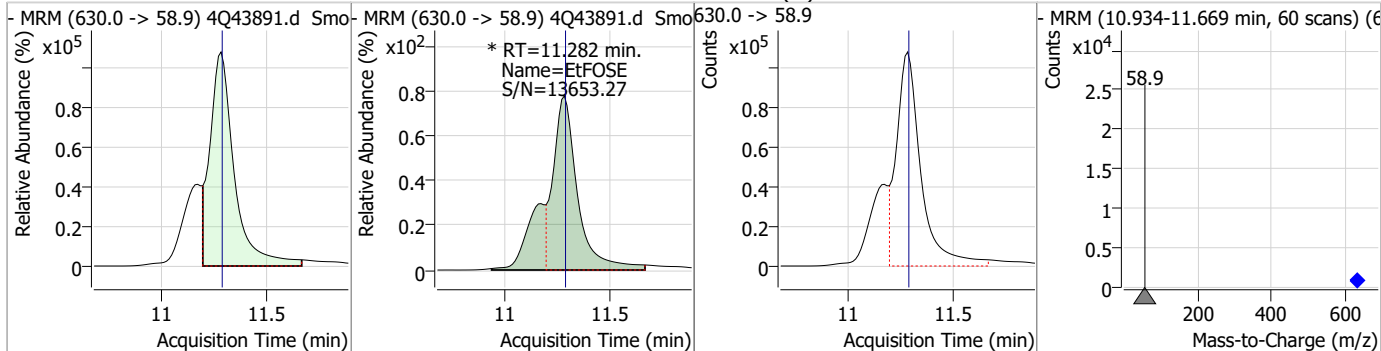
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	135.61	11.07	0.00	516182 (m)	511.9 -> 169.0	142.5	73.9	221.8



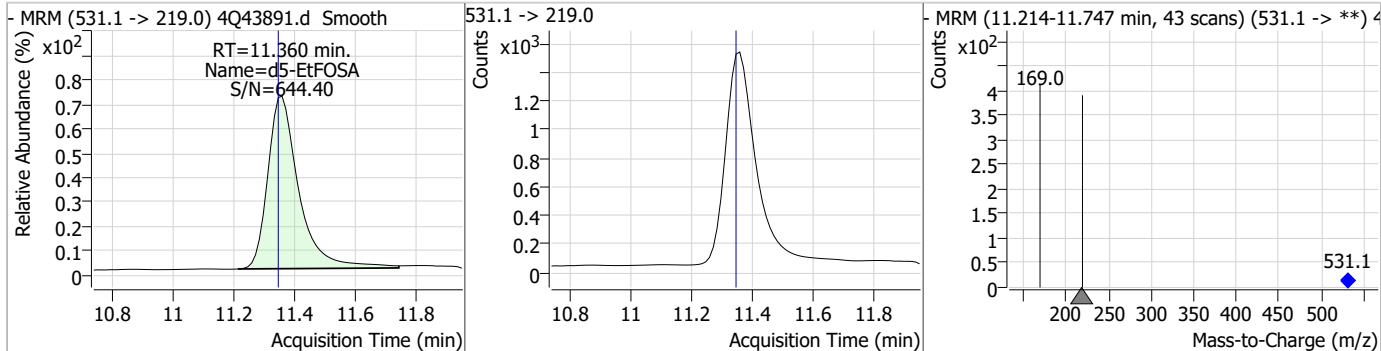
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.25	11.26	0.00	87409				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	339.18	11.28	0.00	1147731 (m)				

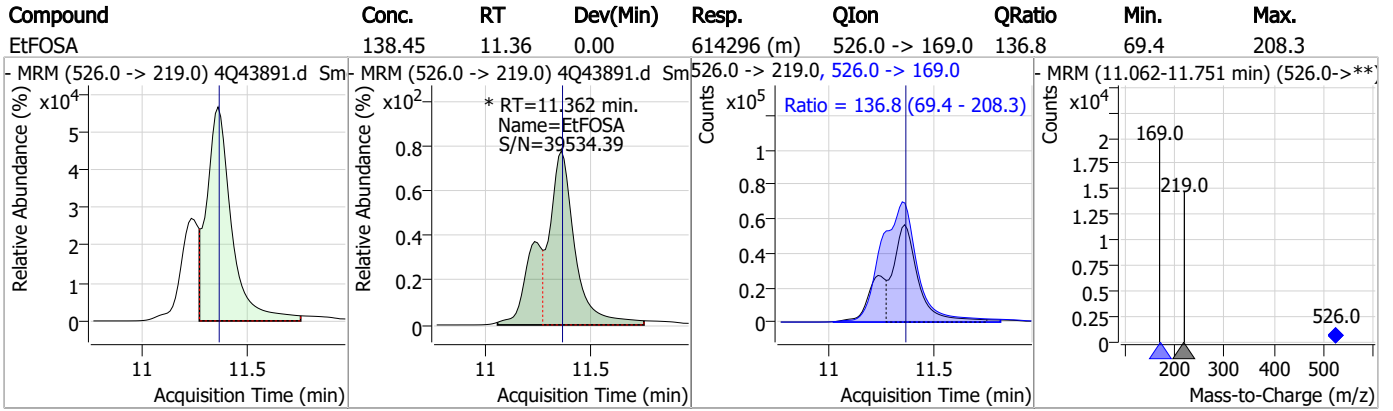


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.59	11.36	0.01	10591				



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

7.7.9.1
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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

7.7.10
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
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
7



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			
11Cl-PF3OUdS	9.568	630.9 -> 450.9	217826	20.96	µg/L	97
		632.9 -> 452.9	67365			
9Cl-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
MeFOSA	11.078	511.9 -> 219.0	79178	21.62	µg/L	76
		511.9 -> 169.0	93425			
MeFOSE	10.973	616.1 -> 58.9	304054	115.45	µg/L	100
PFDoDS	10.052	699.1 -> 79.9	43287	18.91	µg/L	99
		699.1 -> 98.8	23566			
NFDHA	5.428	295.0 -> 201.0	28746	22.22	µg/L	94
		295.0 -> 84.9	6982			
PFMBA	4.791	279.0 -> 85.1	189220	21.08	µg/L	100
PFMPA	3.553	229.0 -> 84.9	178659	21.25	µg/L	100
PFEESA	5.984	314.8 -> 134.9	262758	19.16	µg/L	98
		314.8 -> 82.9	8347			

7.7.10
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= Qualifier out of range, m = manually integrated, + = Area summed



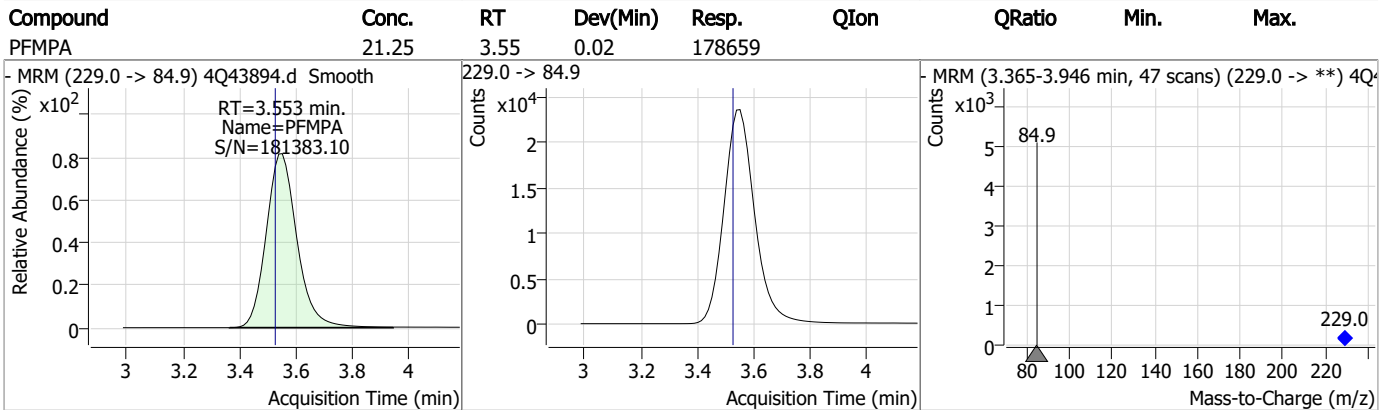
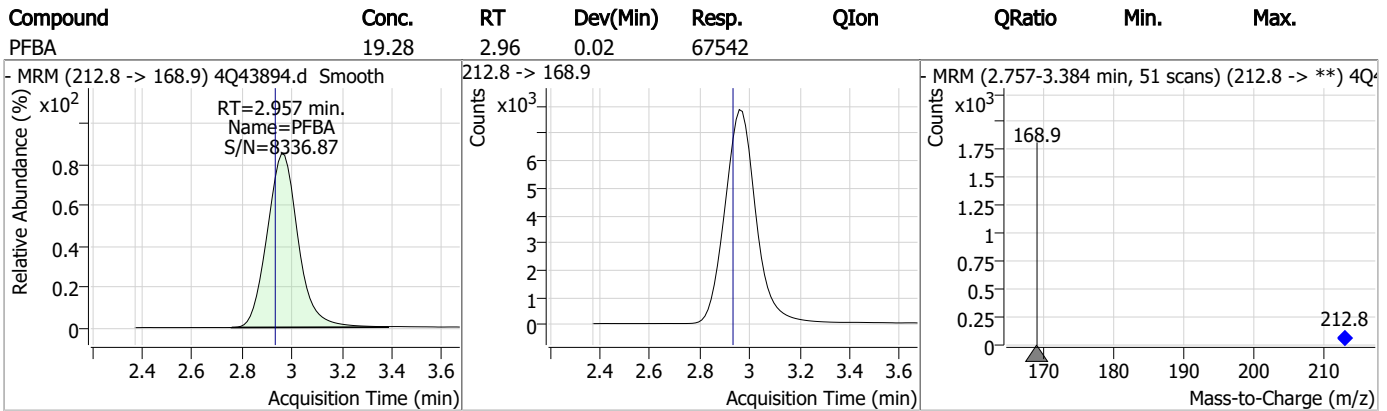
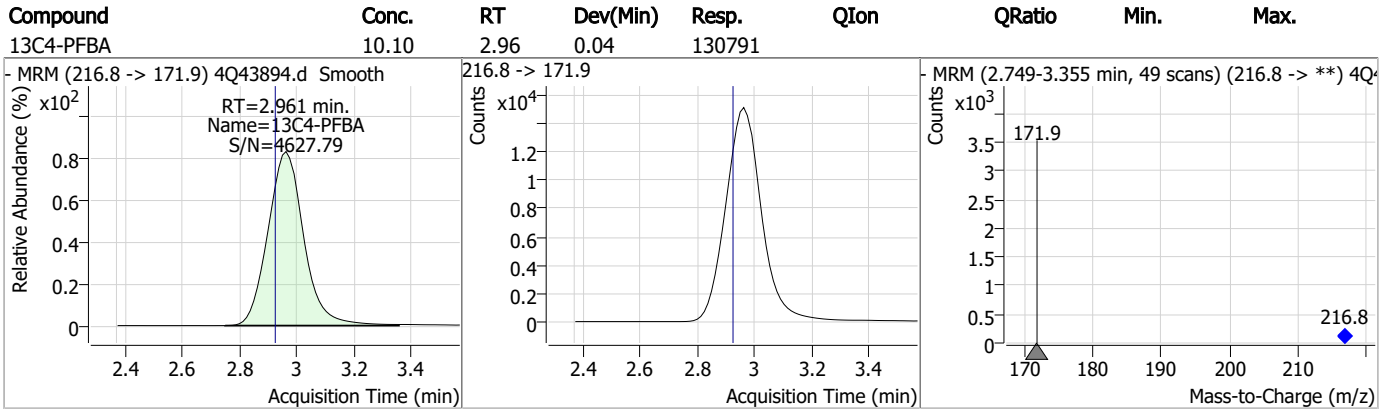
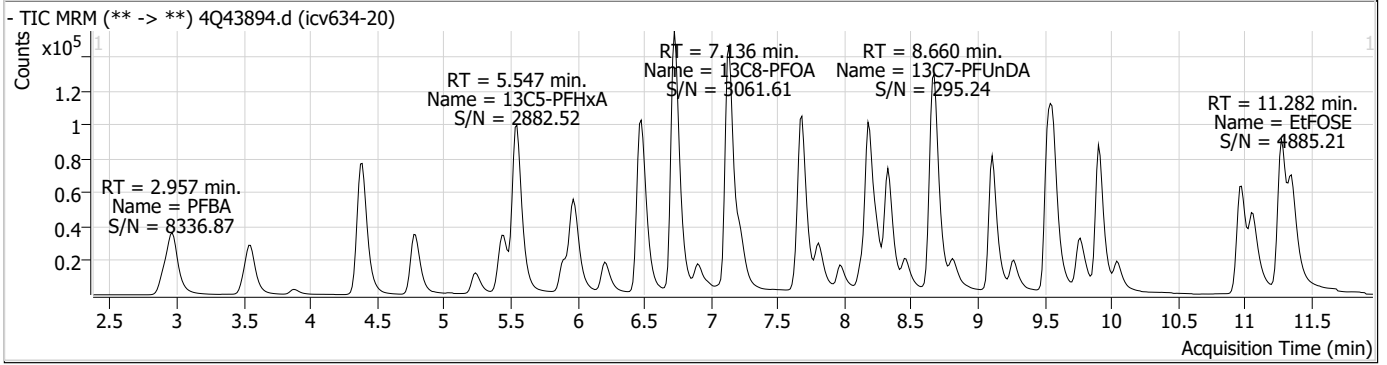
Perfluorinated Compounds by LC/MS/MS

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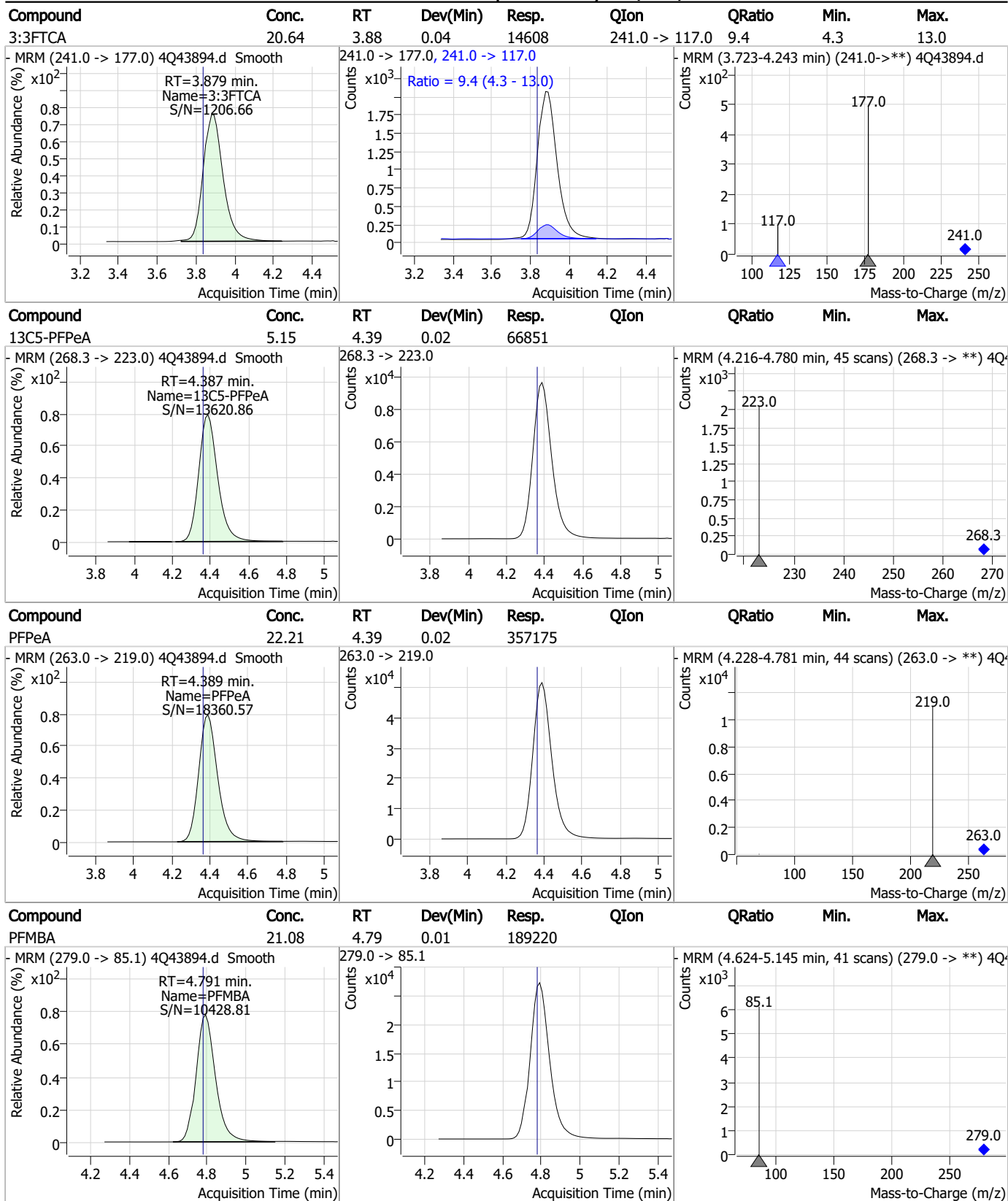
7.7.10

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Perfluorinated Compounds by LC/MS/MS

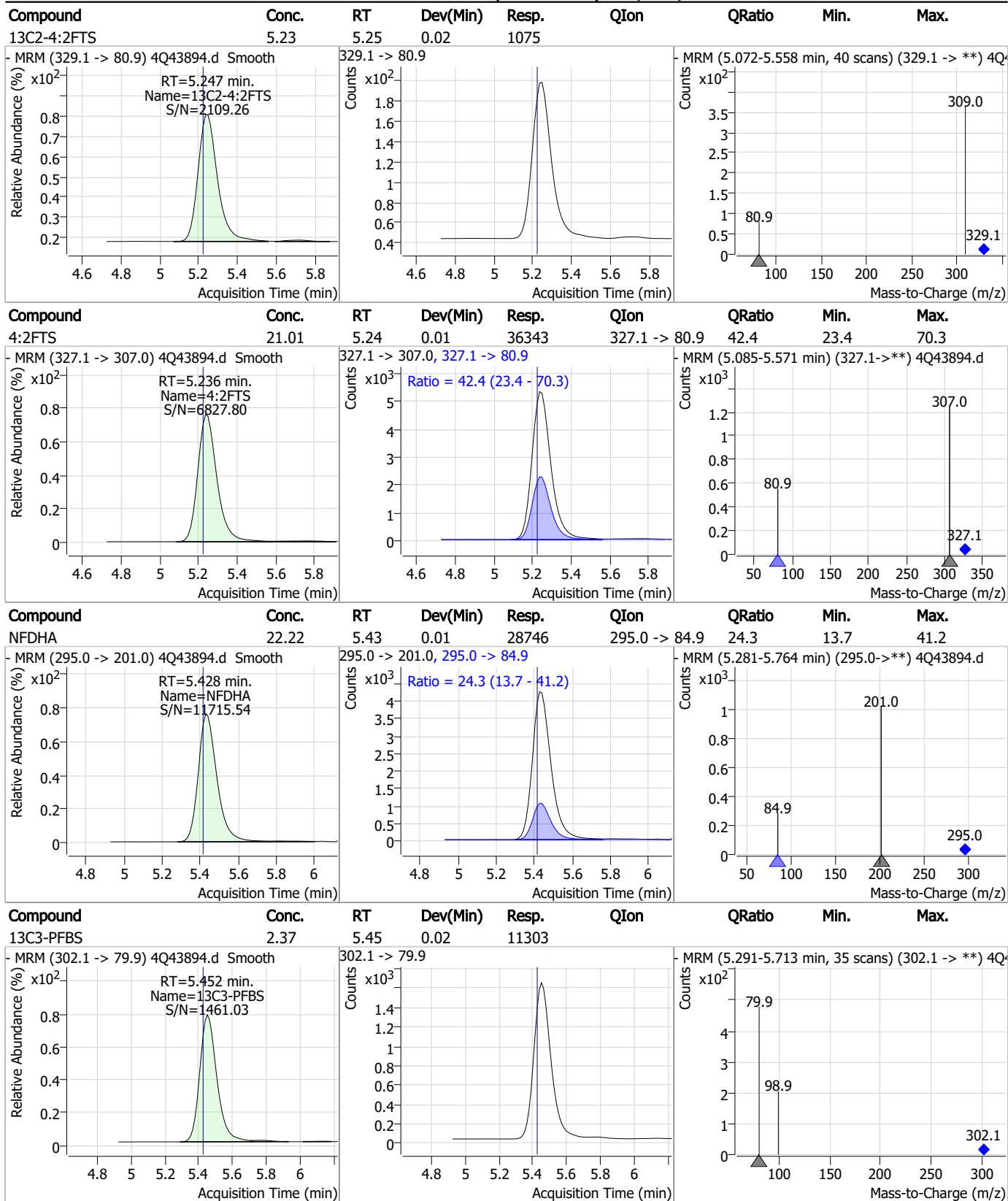


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS

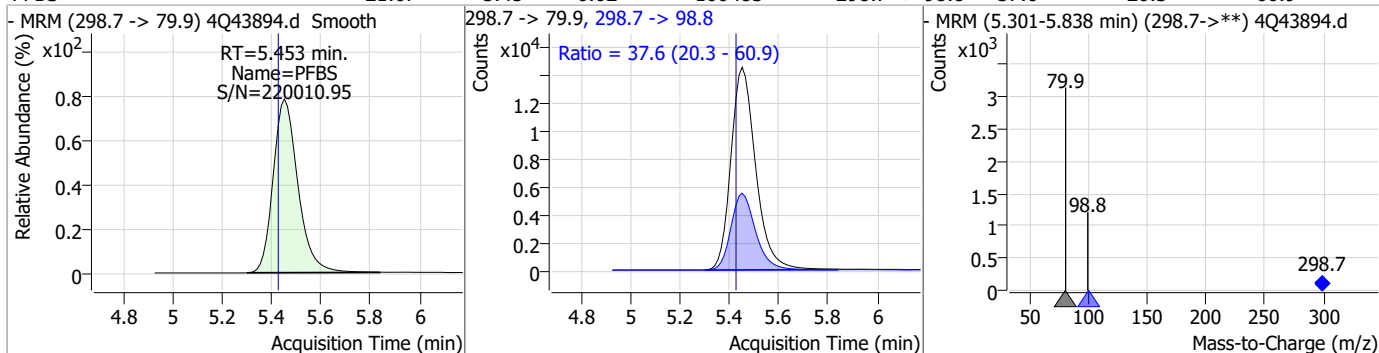


7.7.10 7

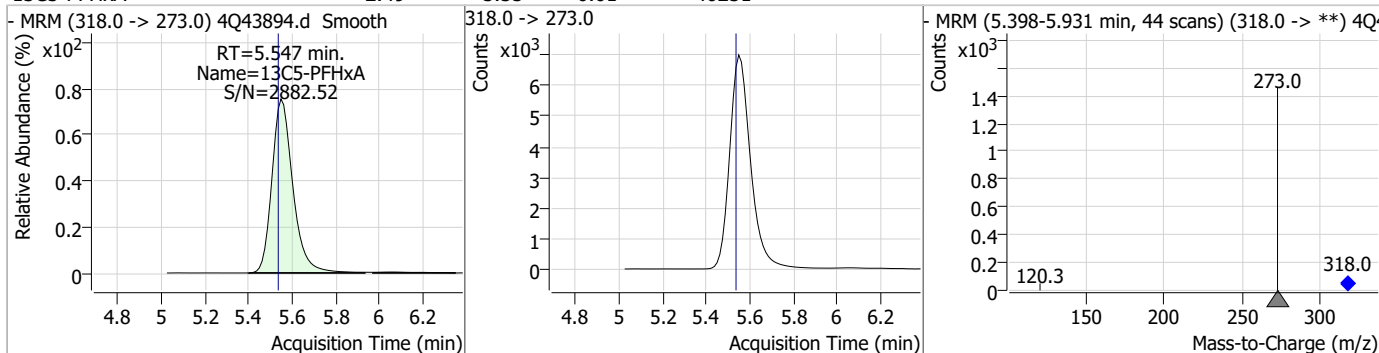


Perfluorinated Compounds by LC/MS/MS

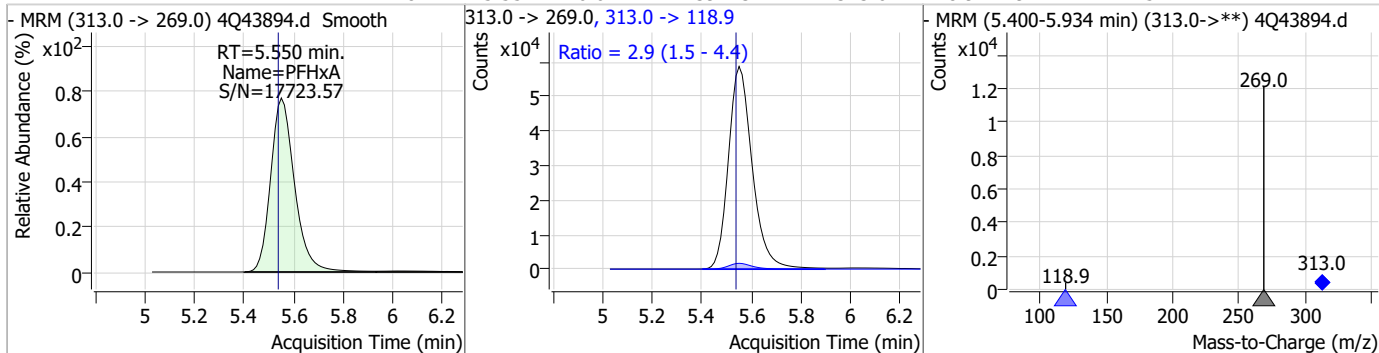
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	21.67	5.45	0.02	100483	298.7 -> 98.8	37.6	20.3	60.9



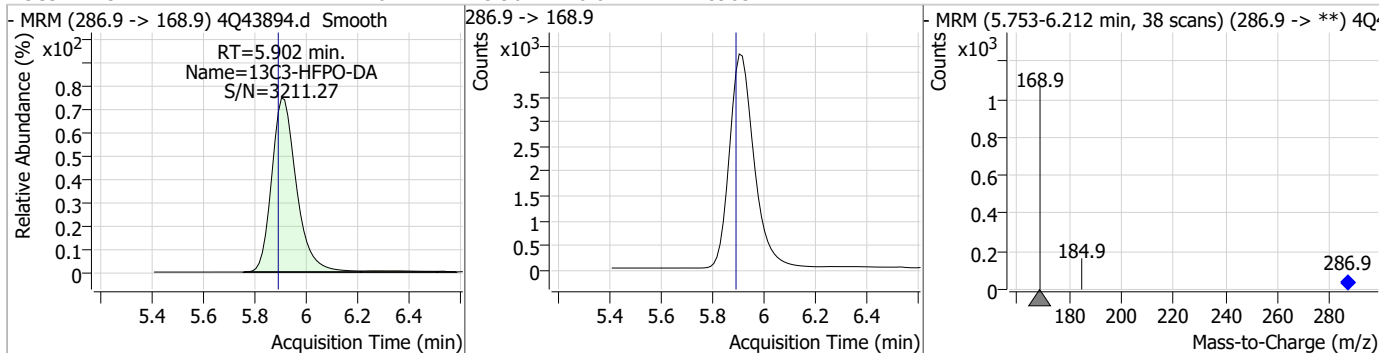
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.55	0.01	46251				



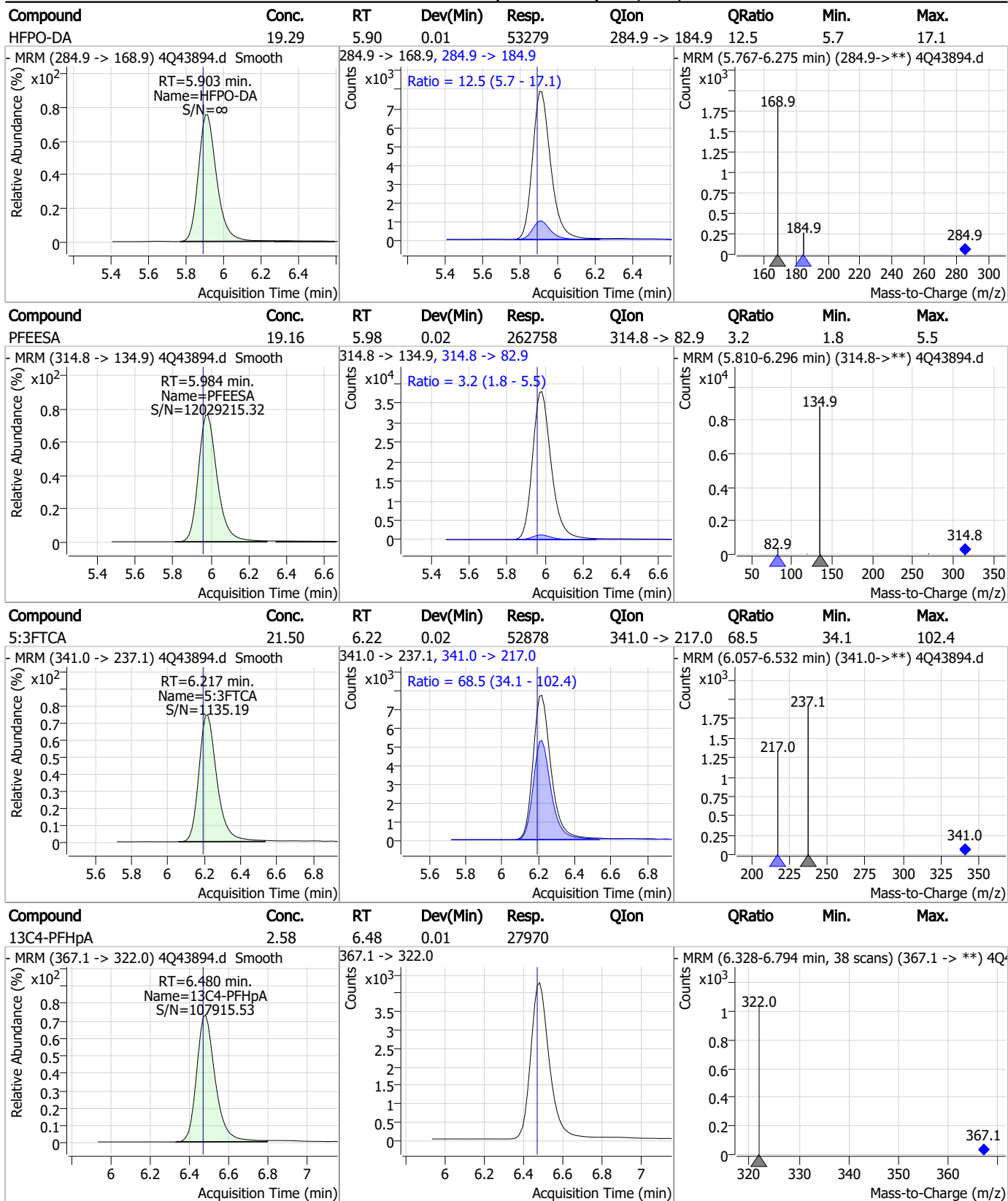
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	21.78	5.55	0.01	394737	313.0 -> 118.9	2.9	1.5	4.4



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

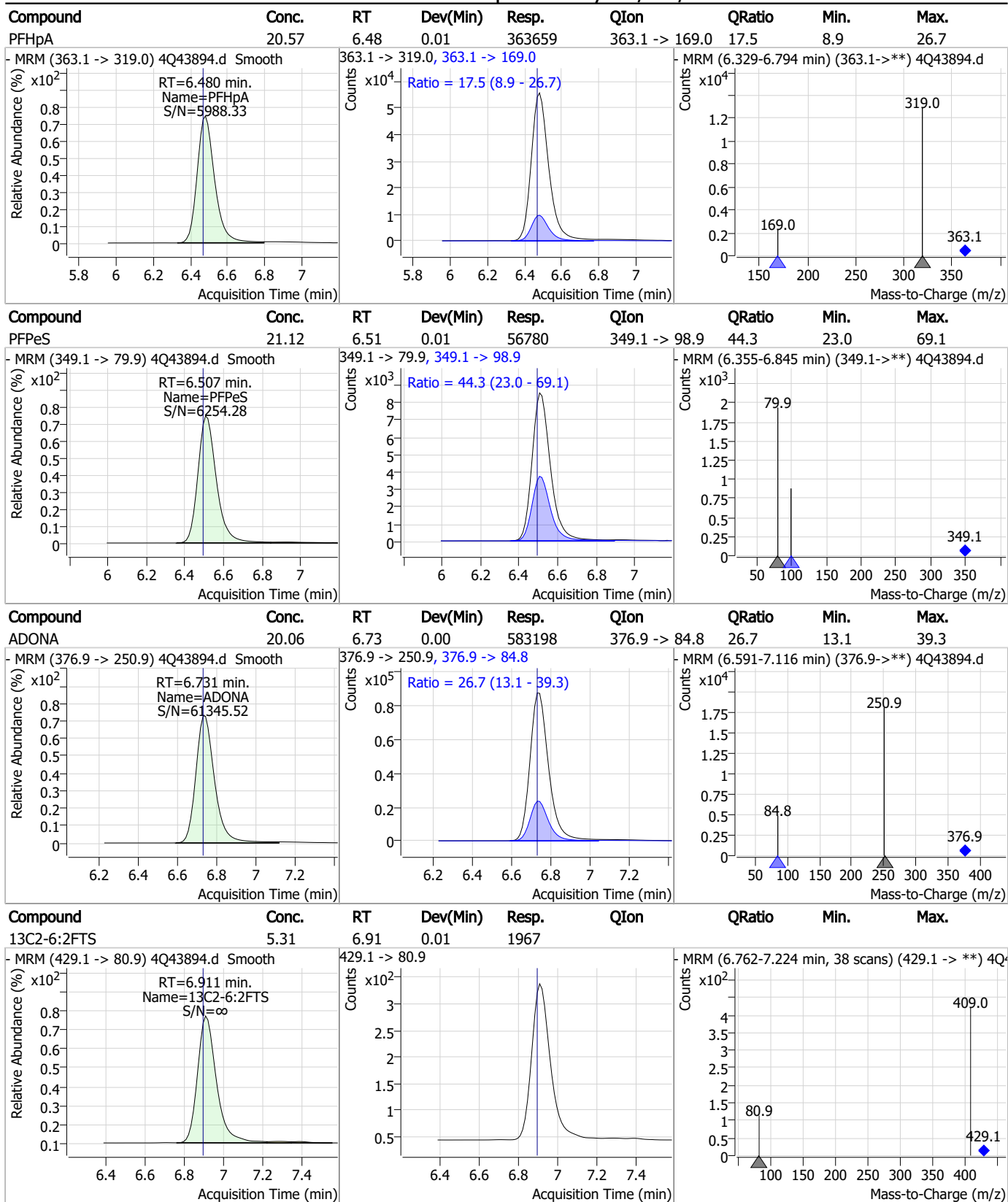


Perfluorinated Compounds by LC/MS/MS



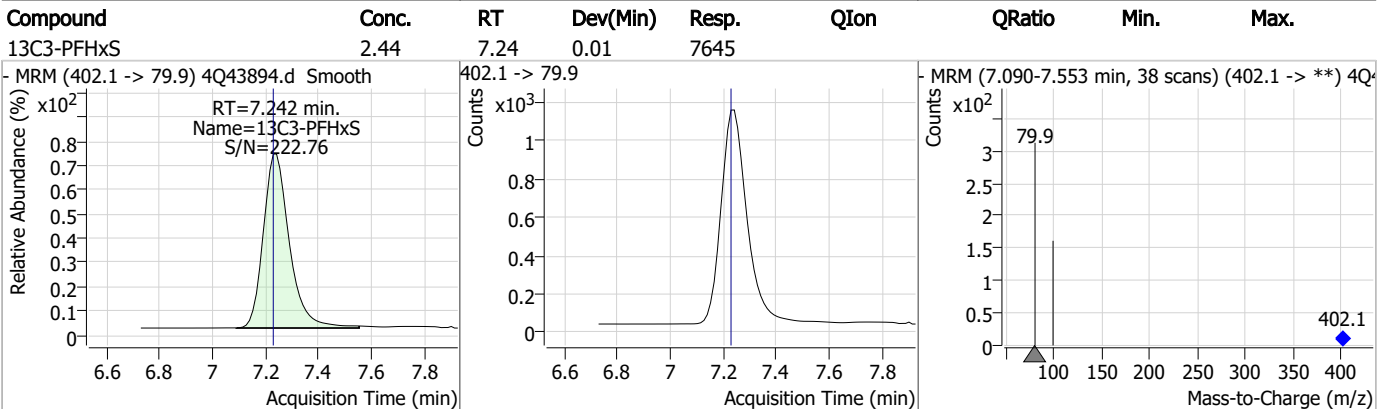
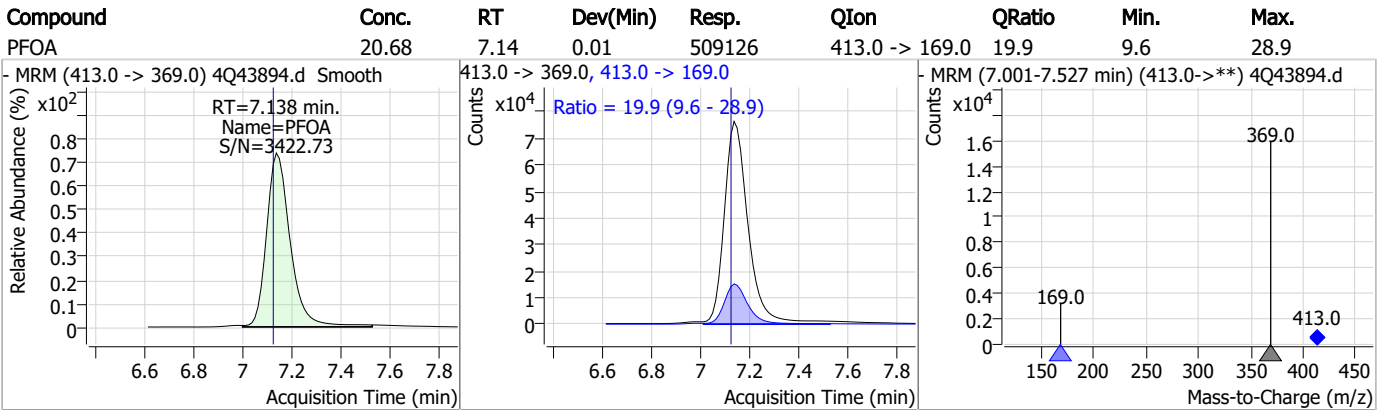
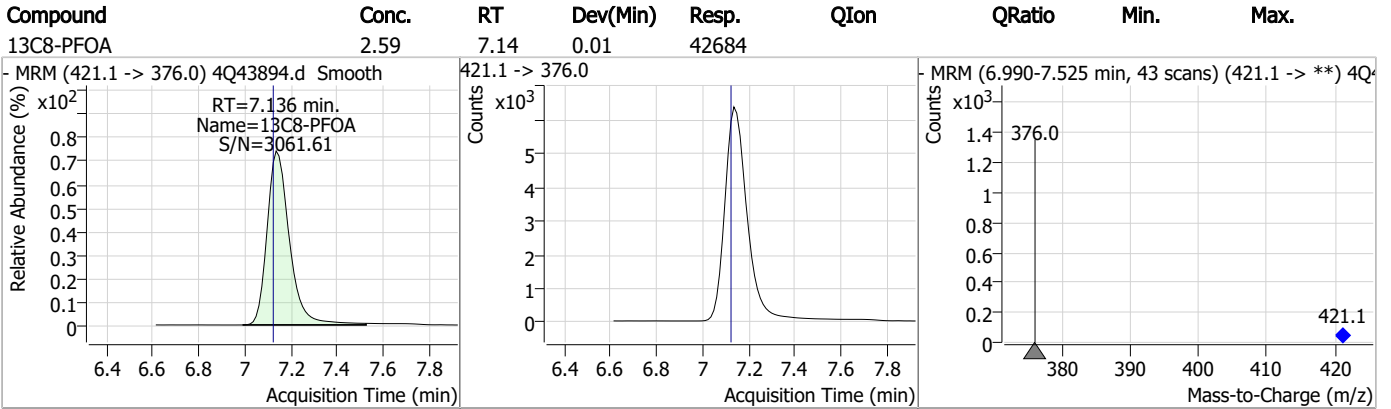
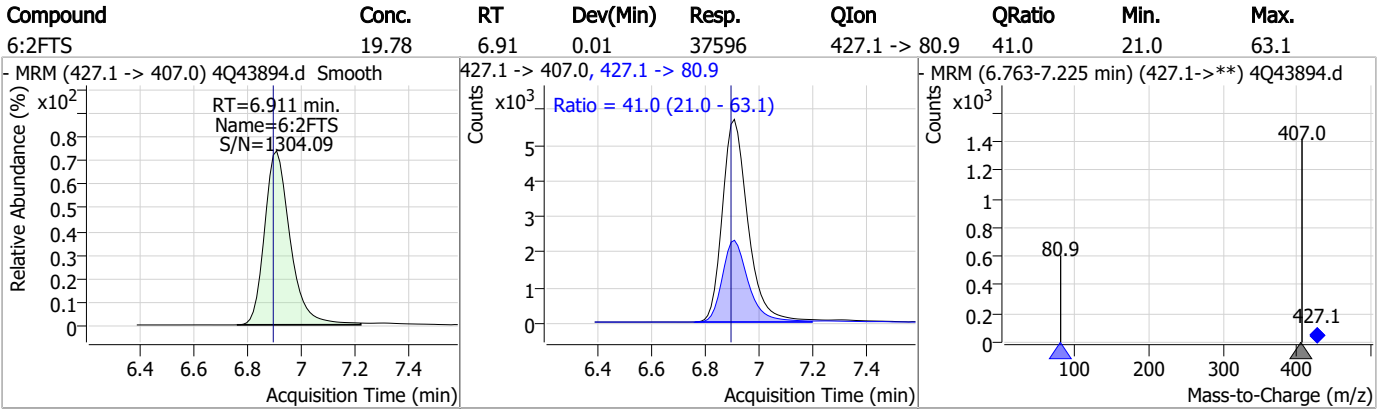
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



7.7.10
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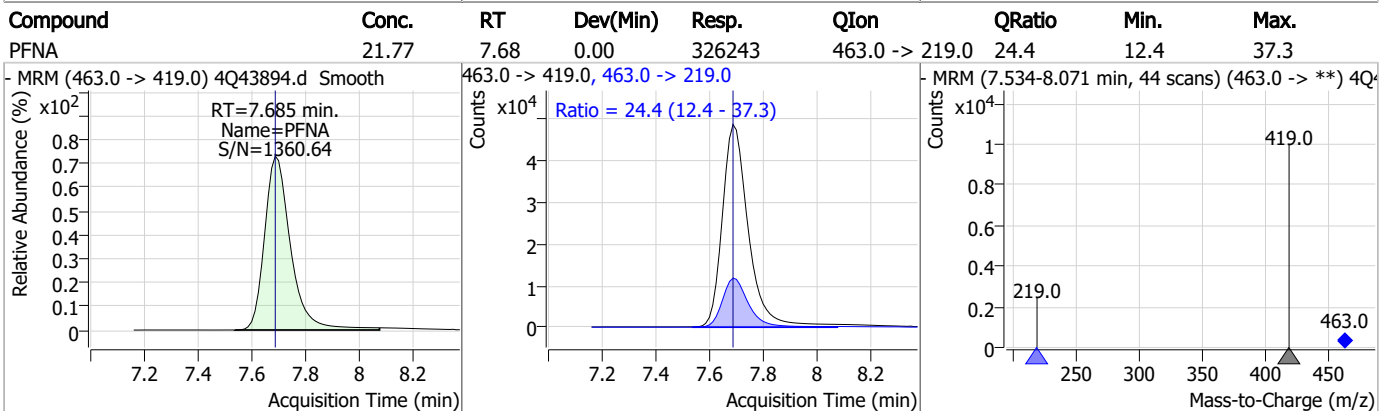
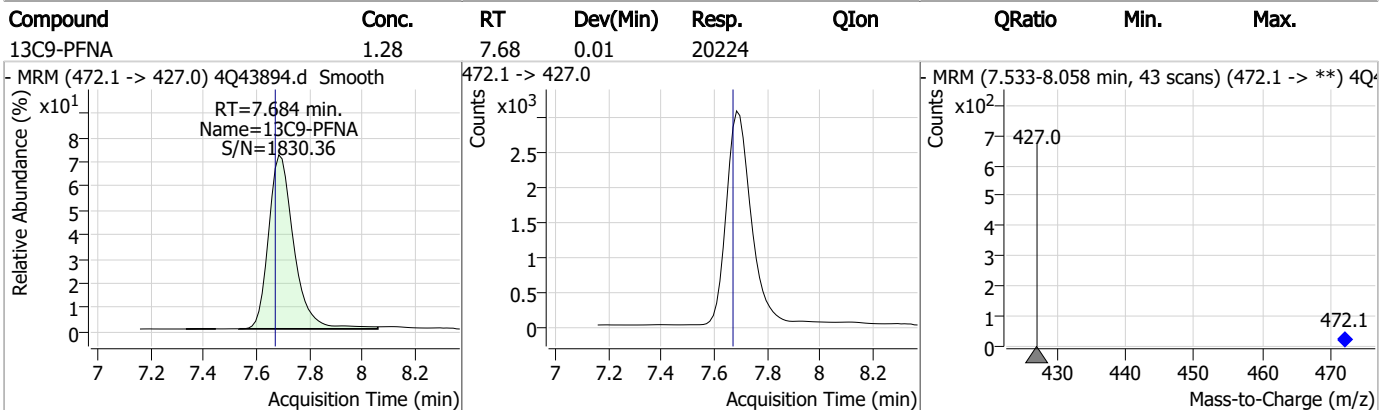
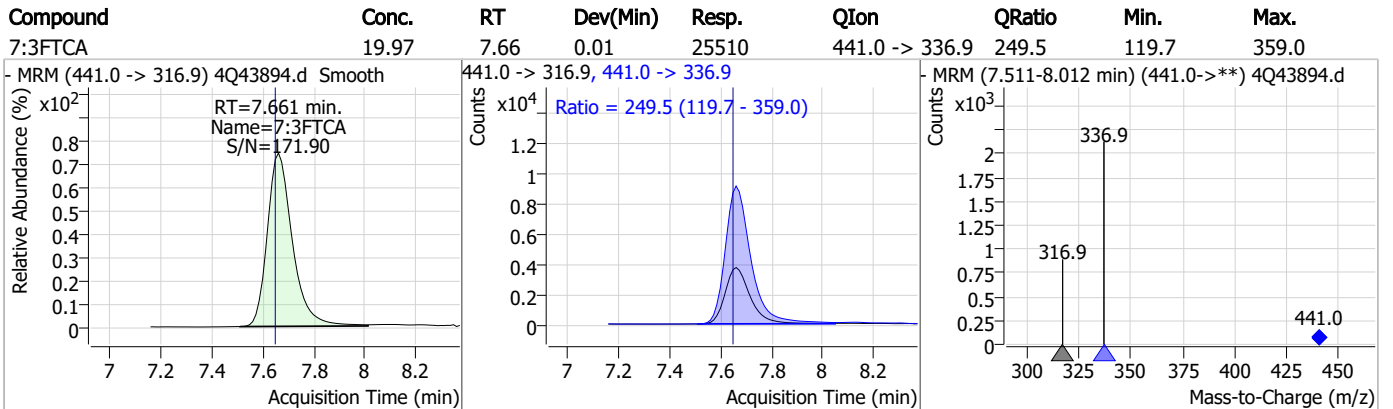
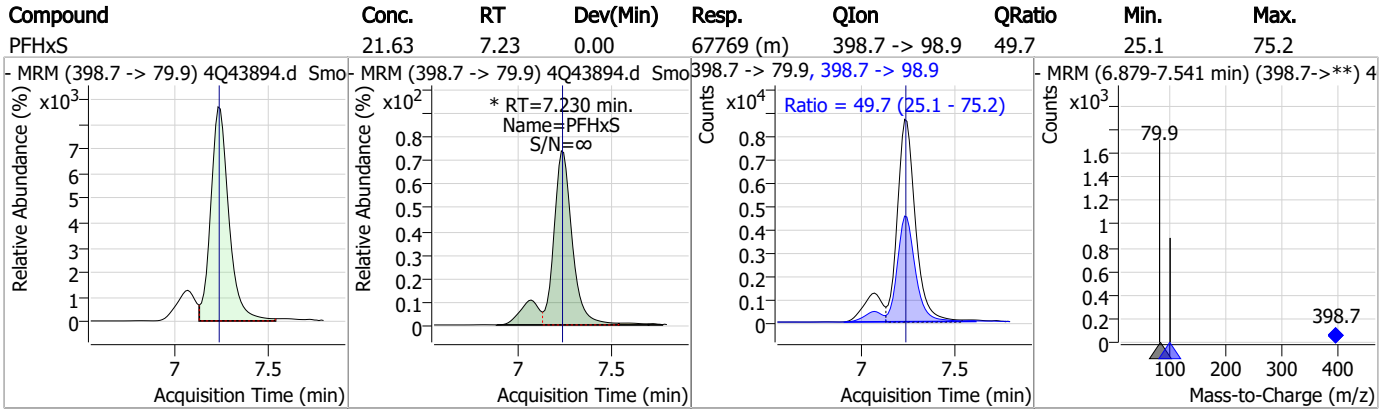
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

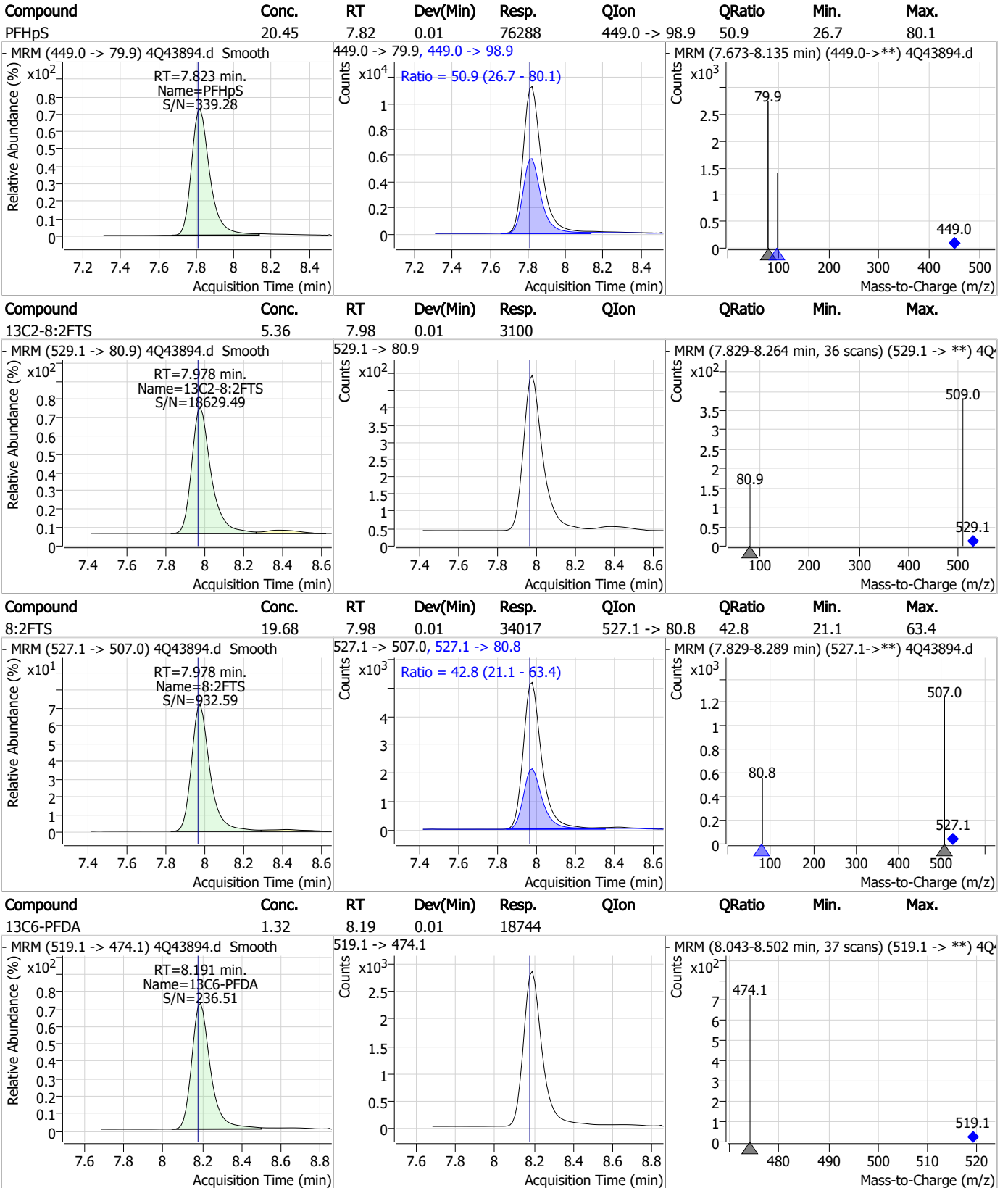


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS

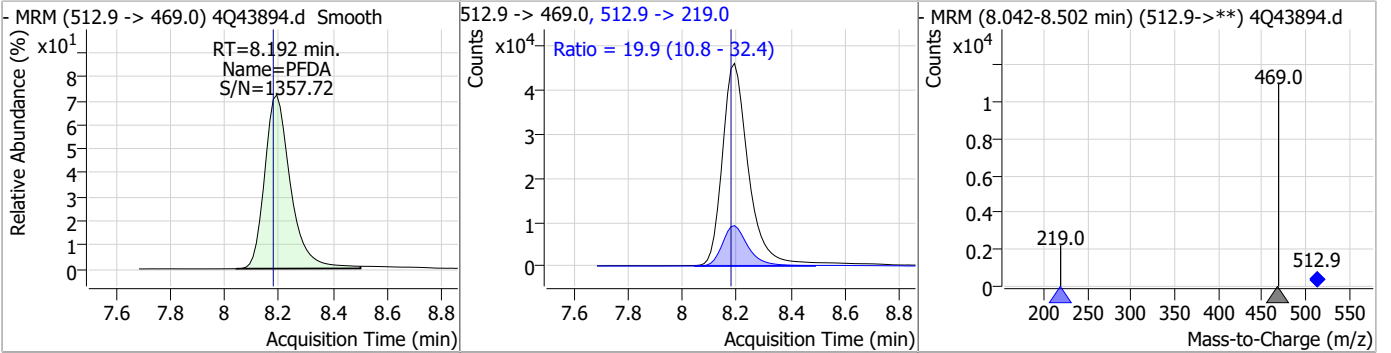


7.7.10 7

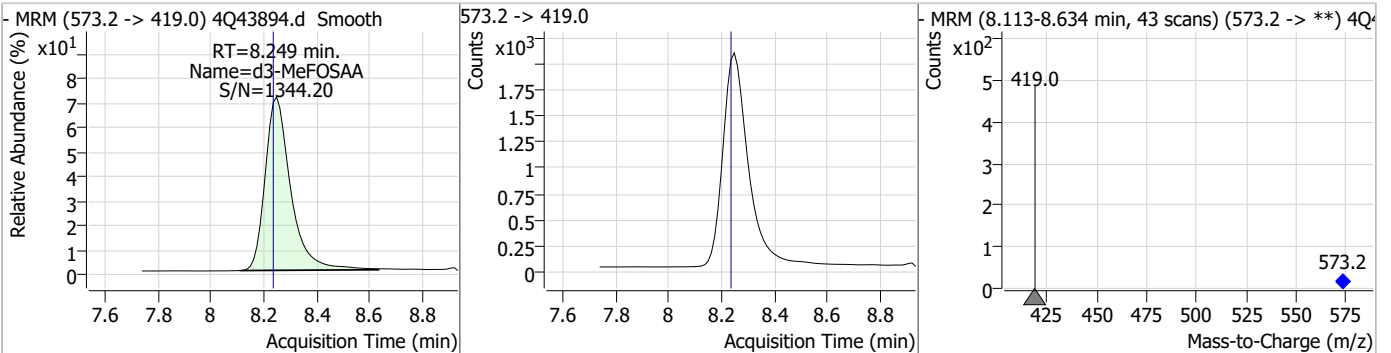


Perfluorinated Compounds by LC/MS/MS

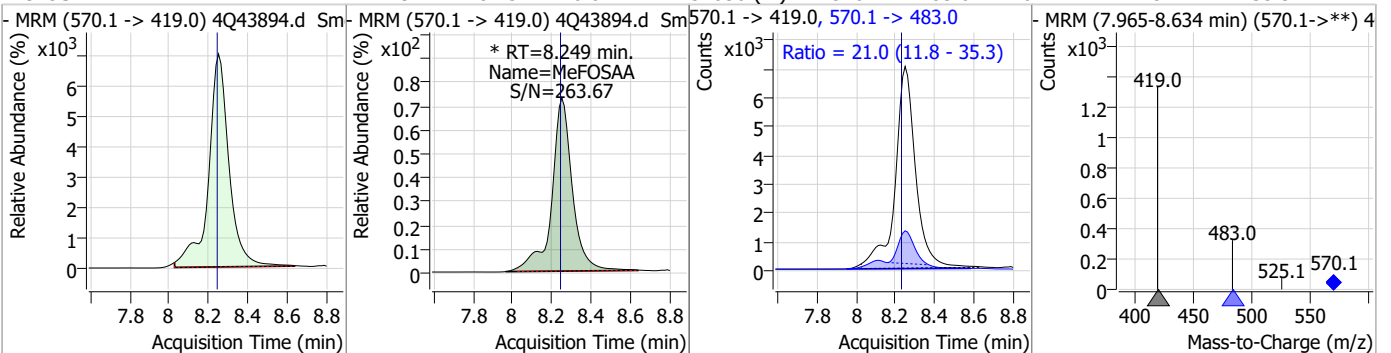
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	21.49	8.19	0.01	305610	512.9 -> 219.0	19.9	10.8	32.4



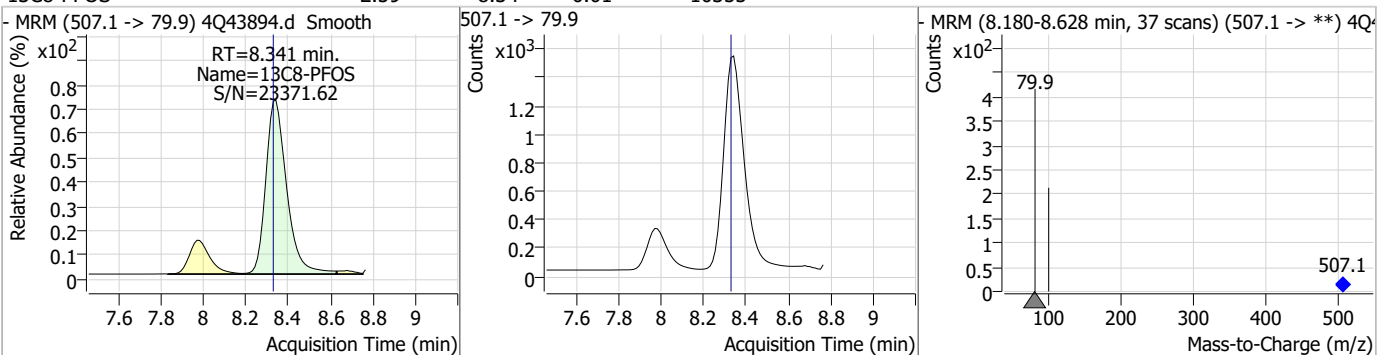
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.16	8.25	0.01	13820				



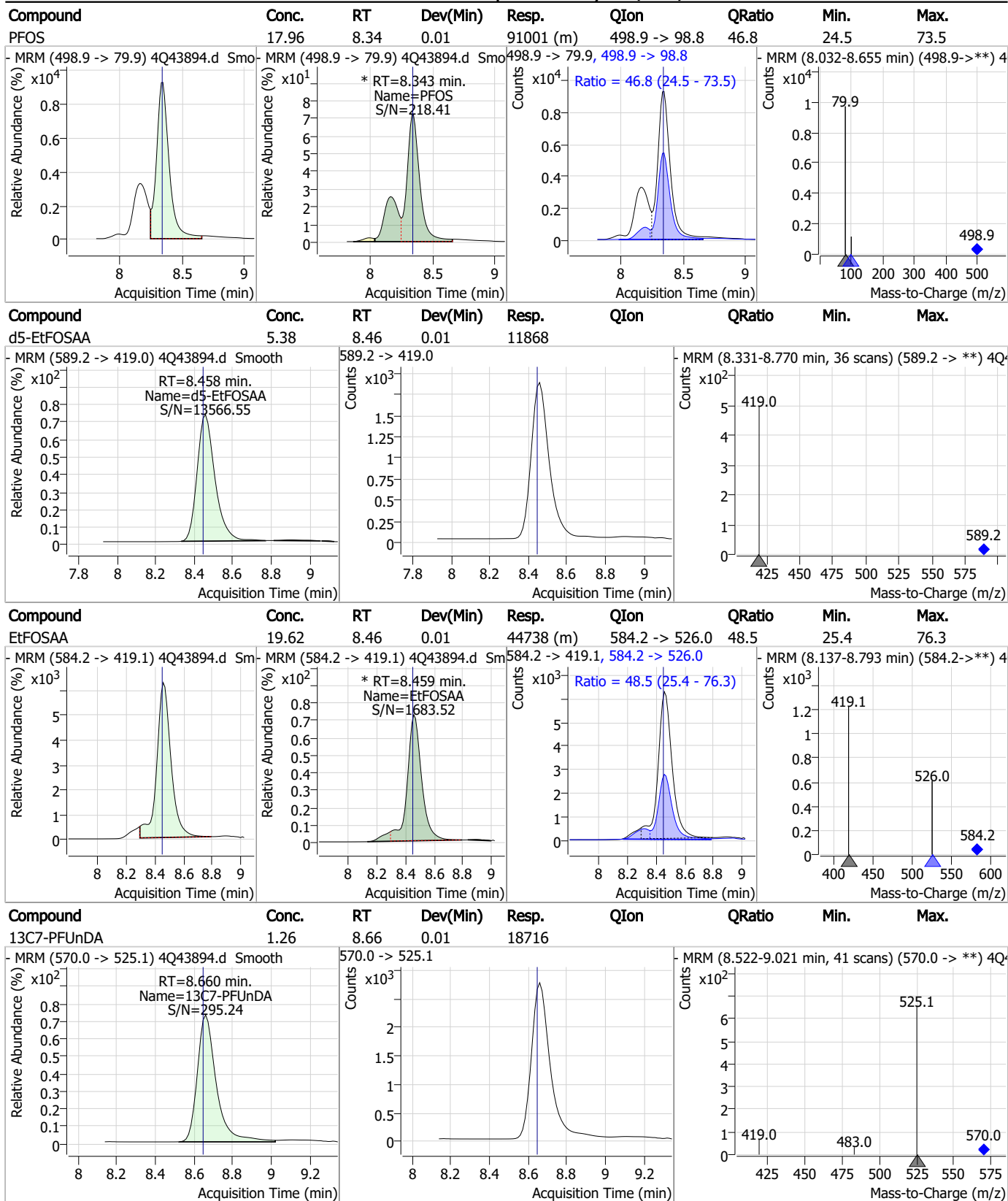
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	21.19	8.25	0.01	51036 (m)	570.1 -> 483.0	21.0	11.8	35.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.59	8.34	0.01	10355				

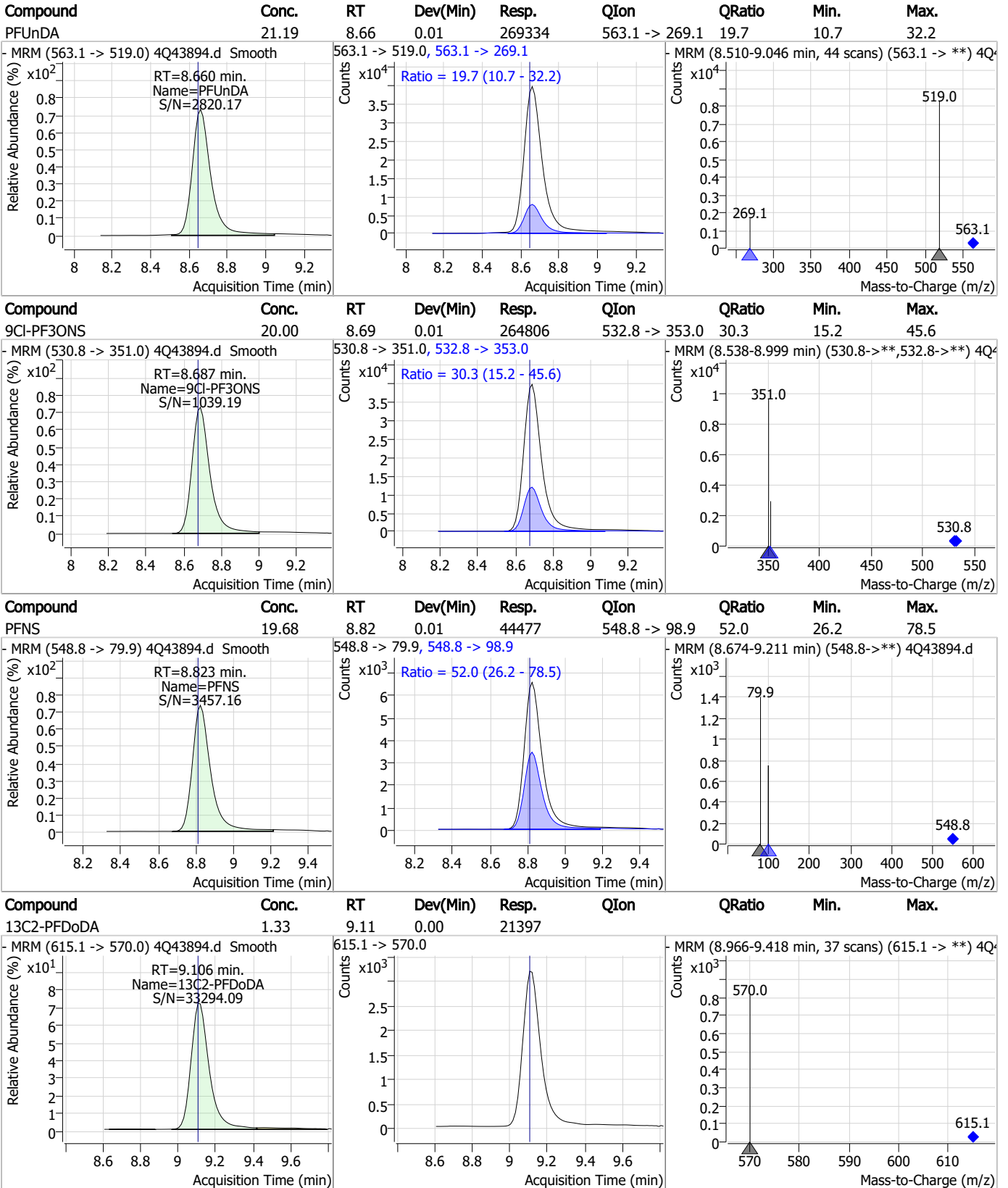


Perfluorinated Compounds by LC/MS/MS



7.7.10
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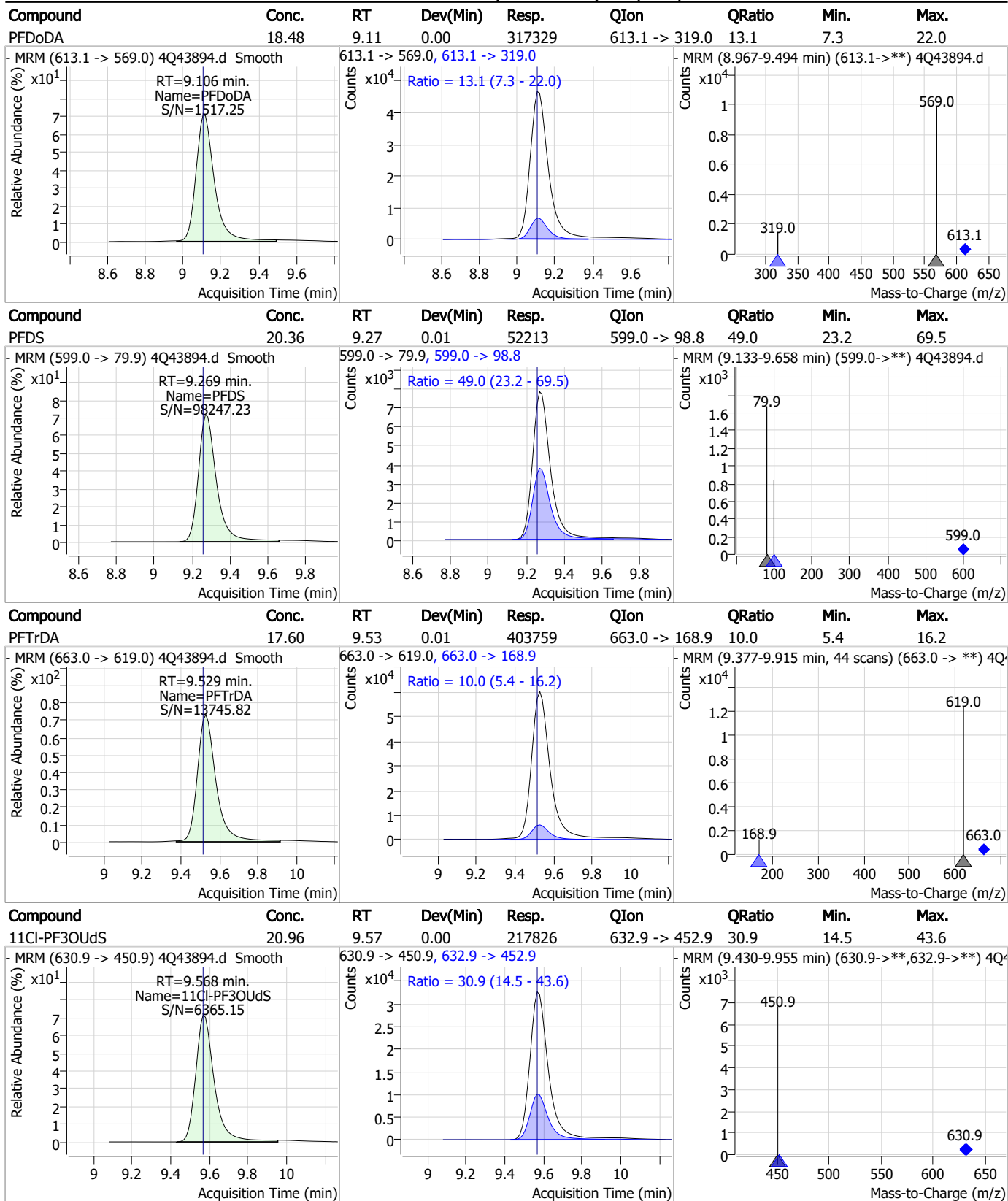
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

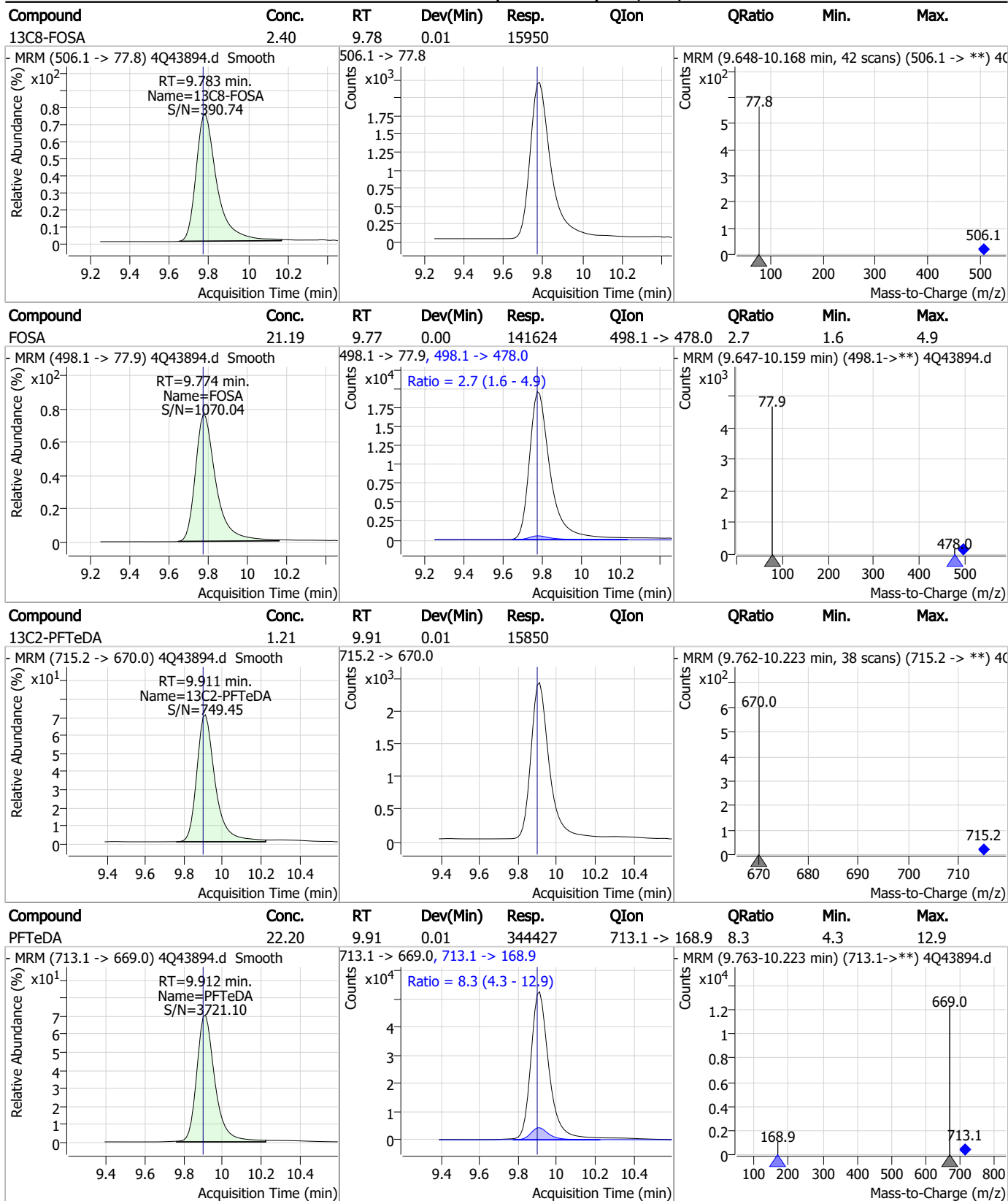


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS

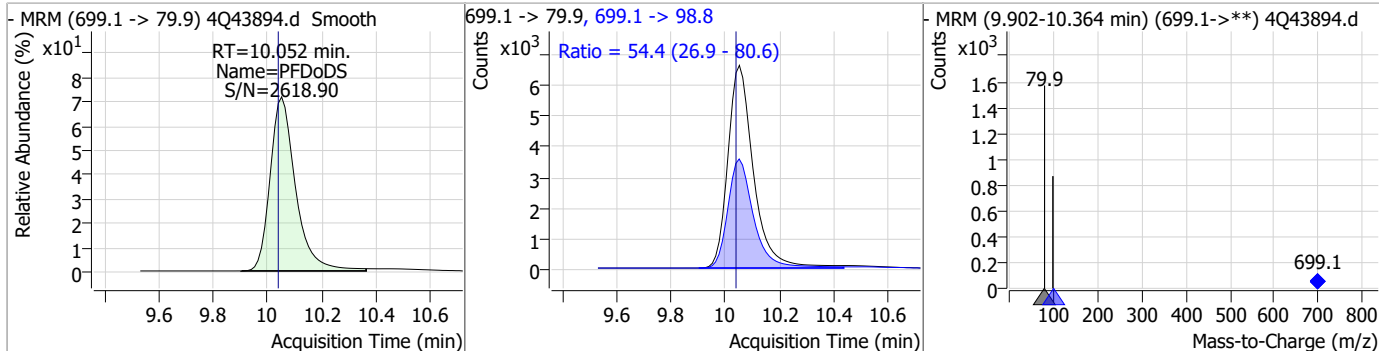


7.7.10 7

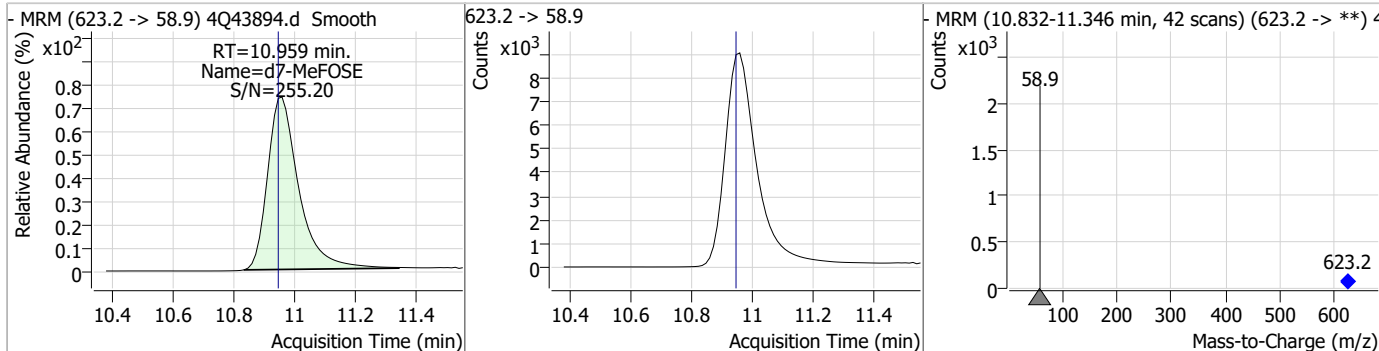


Perfluorinated Compounds by LC/MS/MS

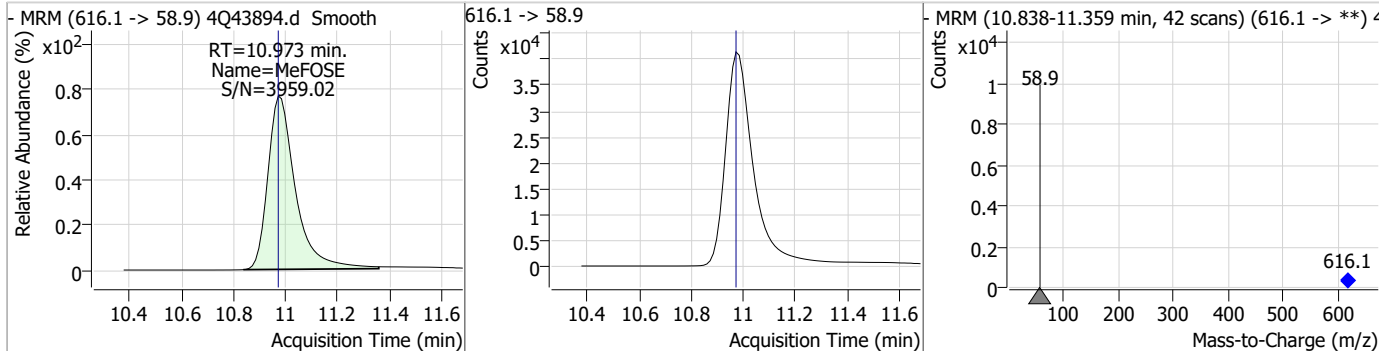
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	18.91	10.05	0.01	43287	699.1 -> 98.8	54.4	26.9	80.6



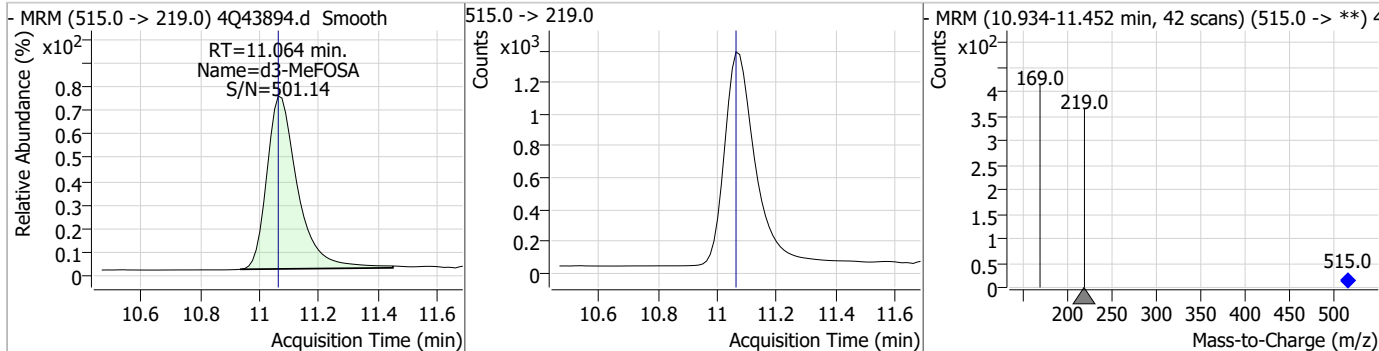
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.41	10.96	0.01	64121				



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



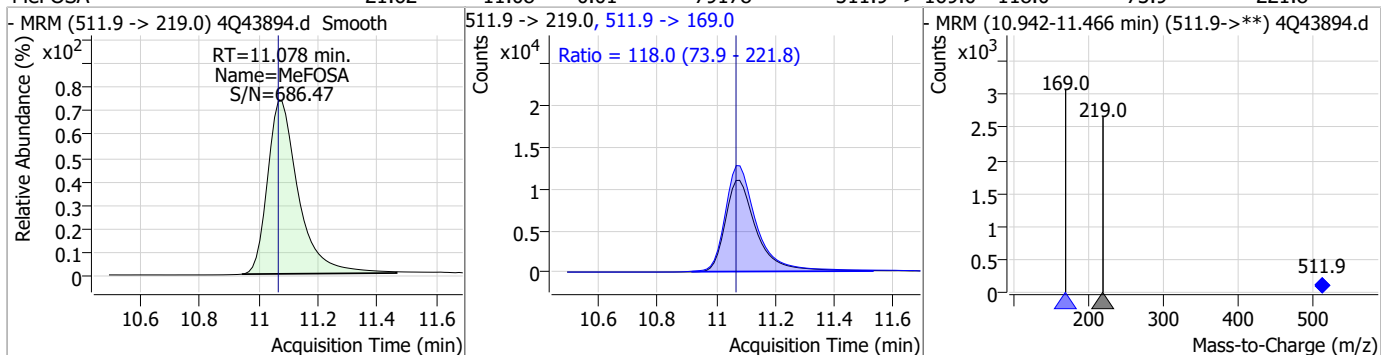
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.06	0.00	9720				



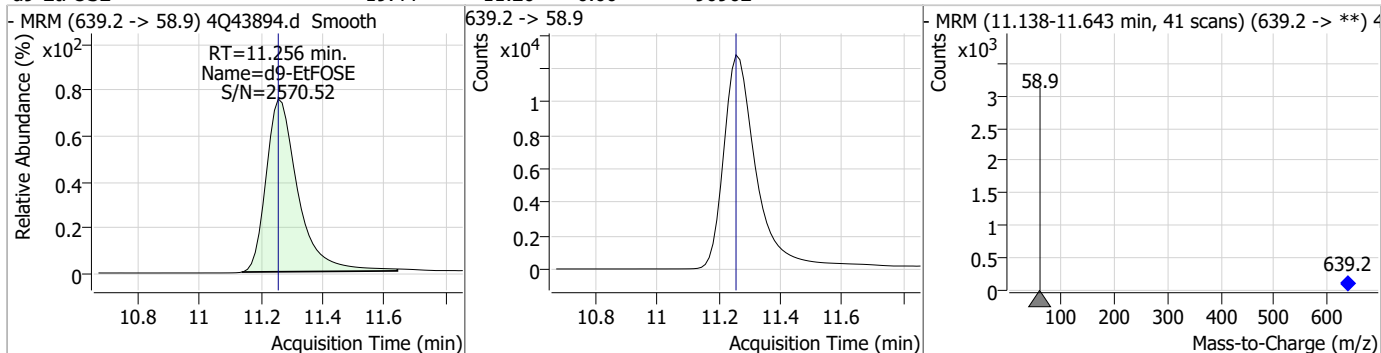
7.7.10
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Perfluorinated Compounds by LC/MS/MS

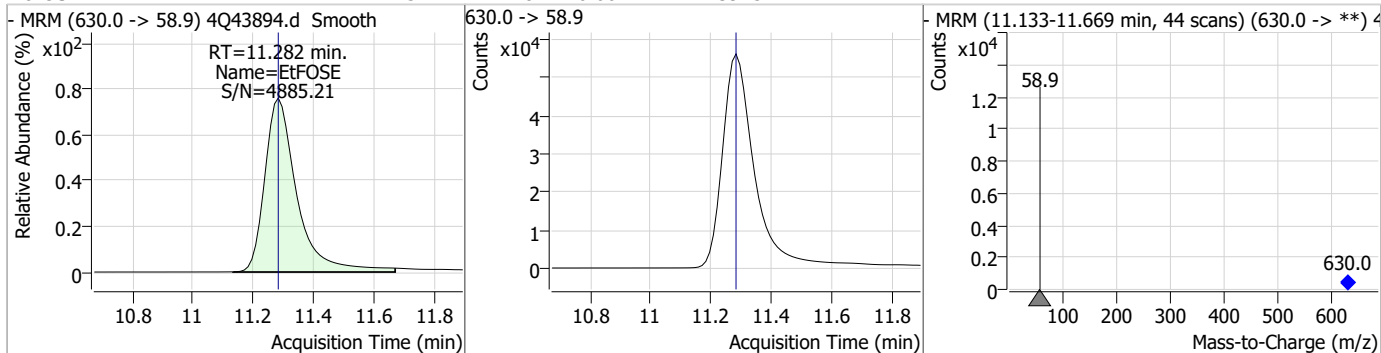
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	21.62	11.08	0.01	79178	511.9 -> 169.0	118.0	73.9	221.8



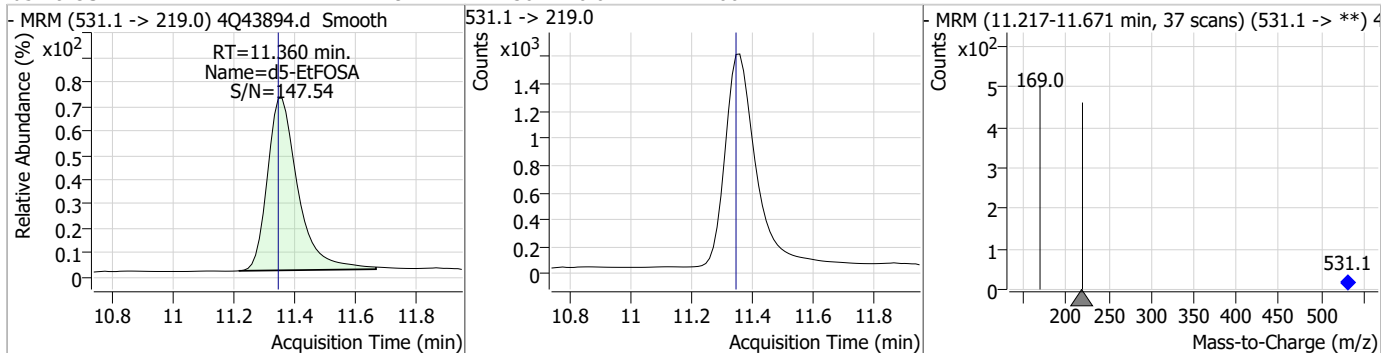
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.44	11.26	0.00	90962	639.2 -> 58.9			



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

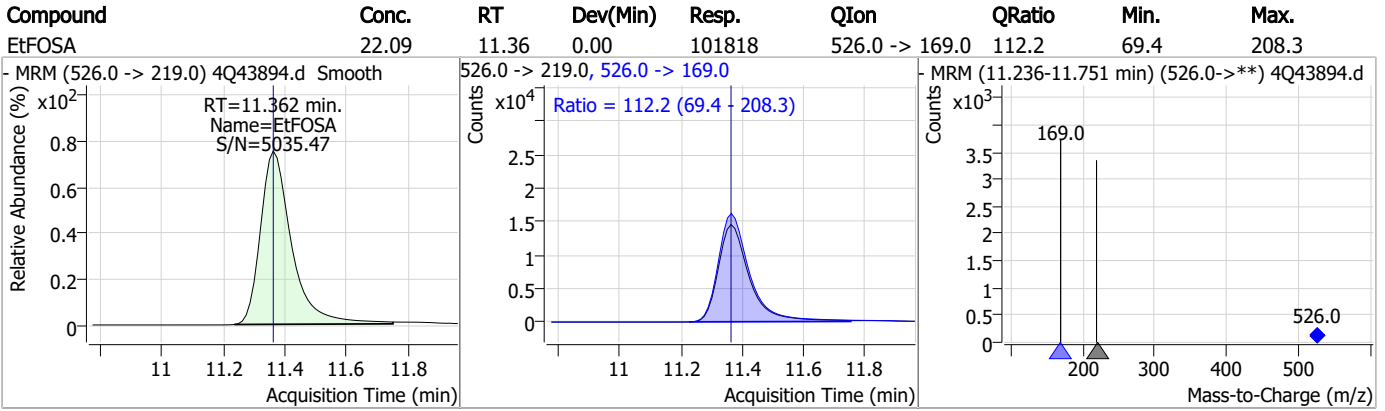


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	11.36	0.01	11004	531.1 -> 219.0			



7.7.10
7

Perfluorinated Compounds by LC/MS/MS



7.7.10
7

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

7.7.10.1

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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

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2952			
PFHpA	6.480	363.1 -> 319.0	45710	2.49	µg/L	100
		363.1 -> 169.0	8223			
PFHpS	7.823	449.0 -> 79.9	9547	2.29	µg/L	98
		449.0 -> 98.9	4967			
PFHxA	5.550	313.0 -> 269.0	46362	2.43	µg/L	99
		313.0 -> 118.9	1480			
PFHxS	7.243	398.7 -> 79.9	7386	2.25	µg/L	m 97
		398.7 -> 98.9	3843			
PFNA	7.685	463.0 -> 419.0	37870	2.42	µg/L	100
		463.0 -> 219.0	9515			
PFNS	8.823	548.8 -> 79.9	5473	2.16	µg/L	99
		548.8 -> 98.9	2902			
PFOA	7.137	413.0 -> 369.0	64985	2.44	µg/L	99
		413.0 -> 169.0	12350			
PFOS	8.343	498.9 -> 79.9	12171	2.14	µg/L	m 97
		498.9 -> 98.8	6199			
PFPeA	4.402	263.0 -> 219.0	82728	4.86	µg/L	100
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 98
		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 95
		511.9 -> 169.0	29592			
MeFOSE	10.973	616.1 -> 58.9	35294	11.97	µg/L	m 100
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

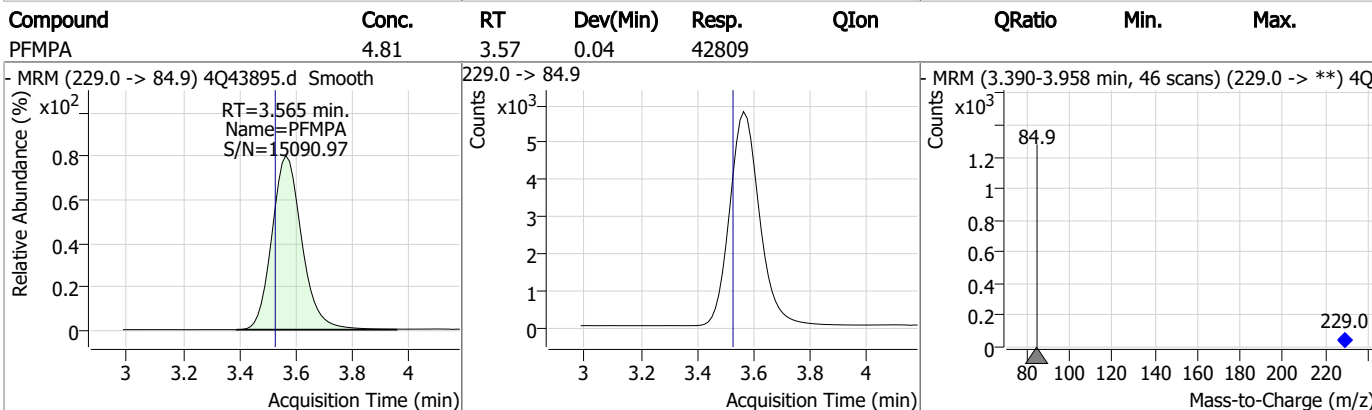
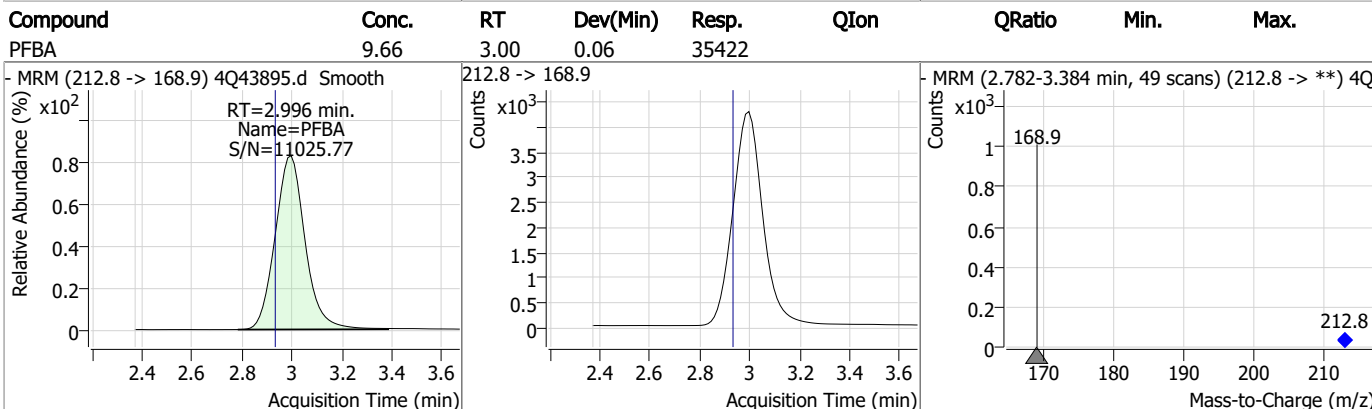
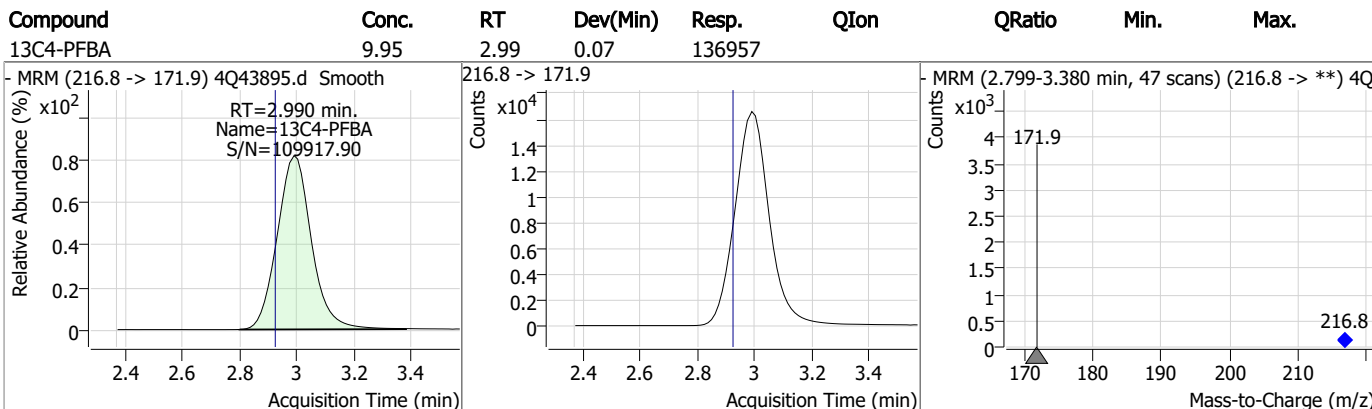
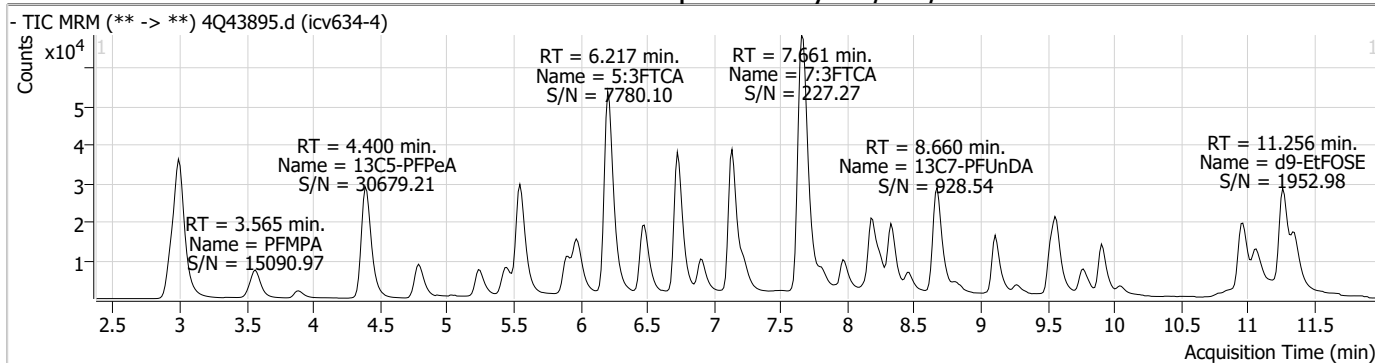
Perfluorinated Compounds by LC/MS/MS

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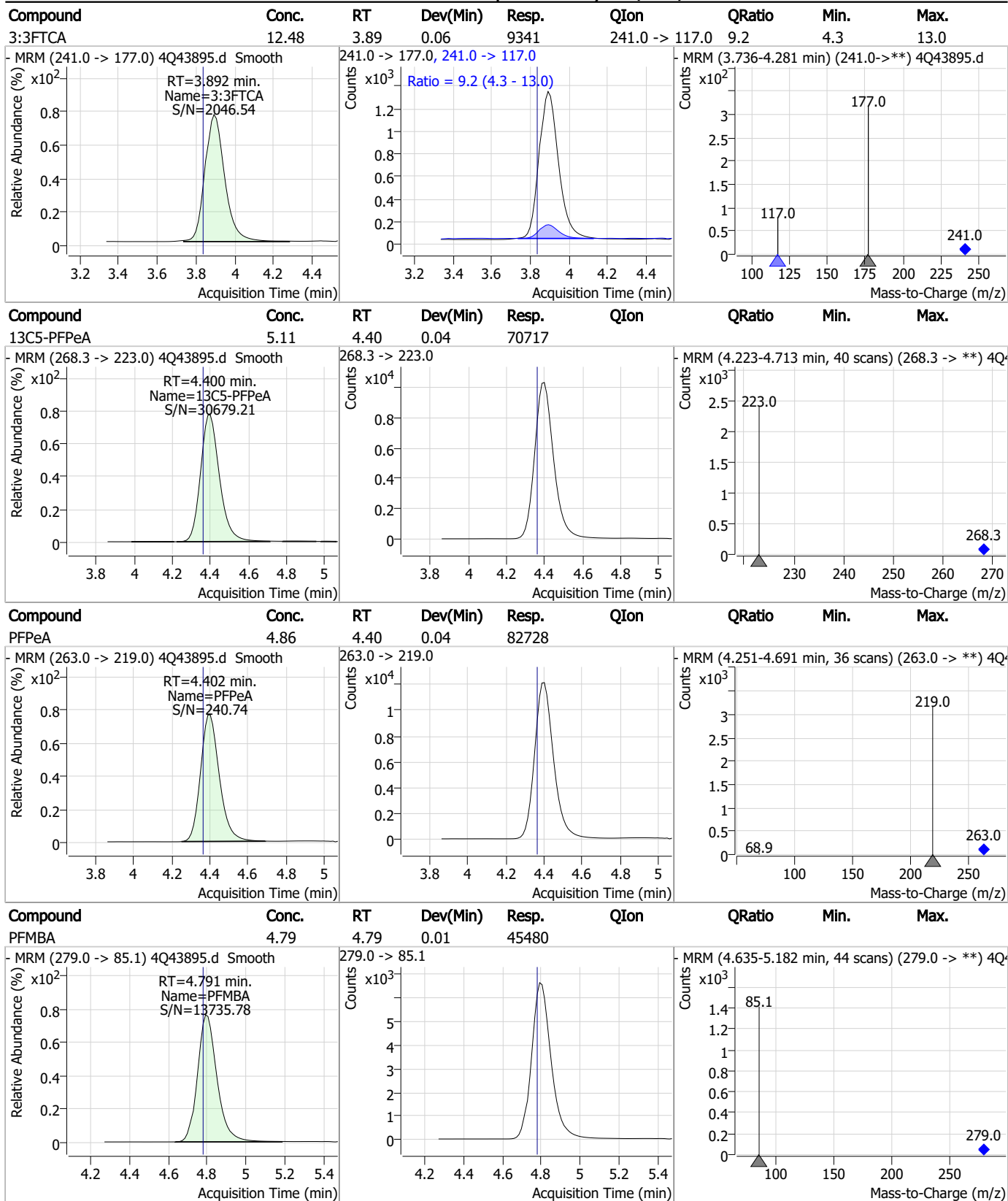
7.7.11

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Perfluorinated Compounds by LC/MS/MS

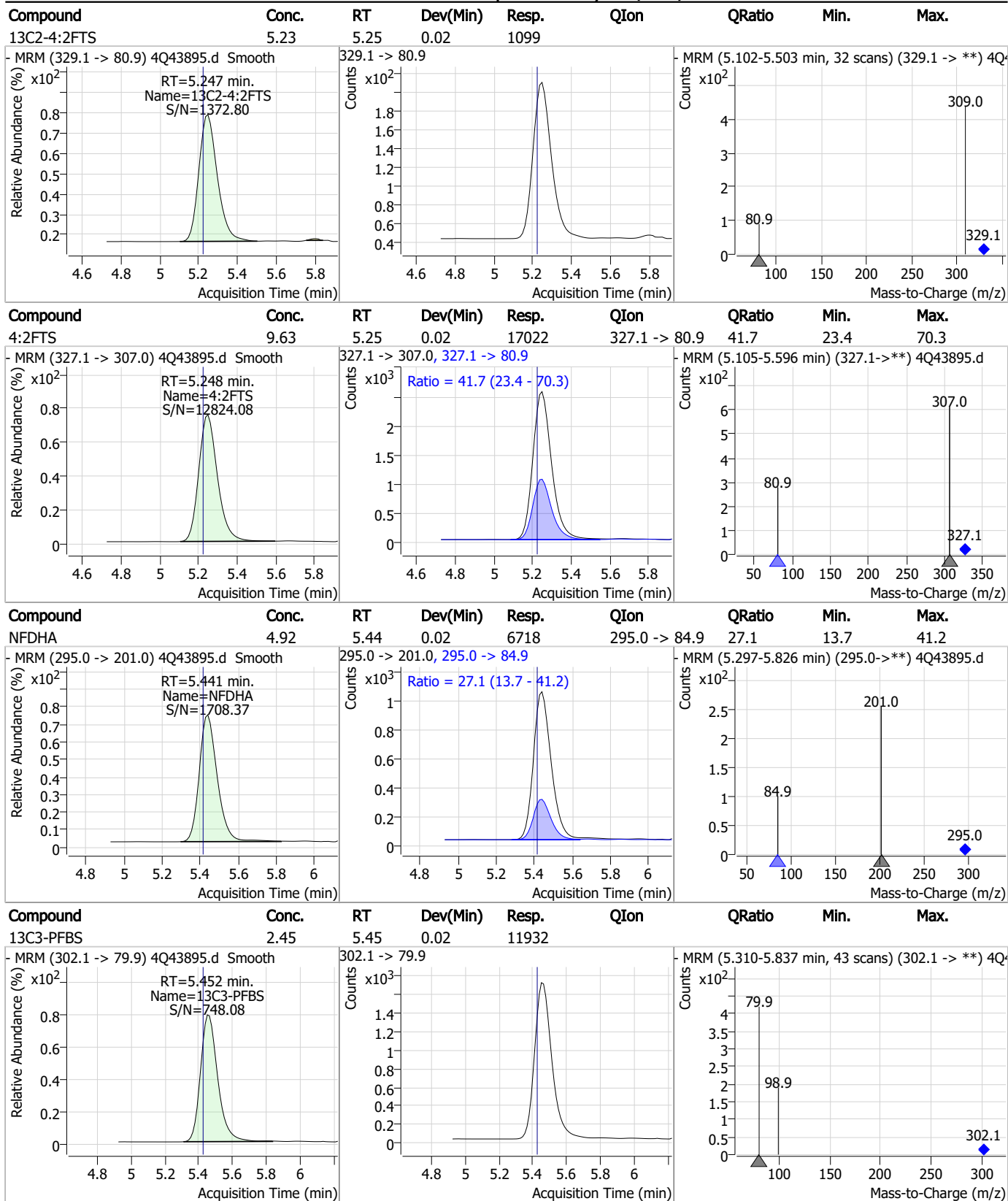


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

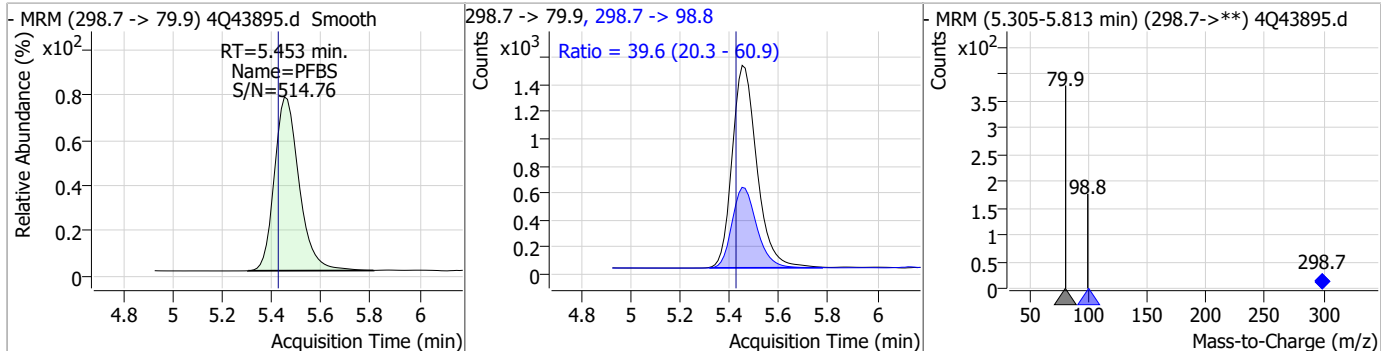


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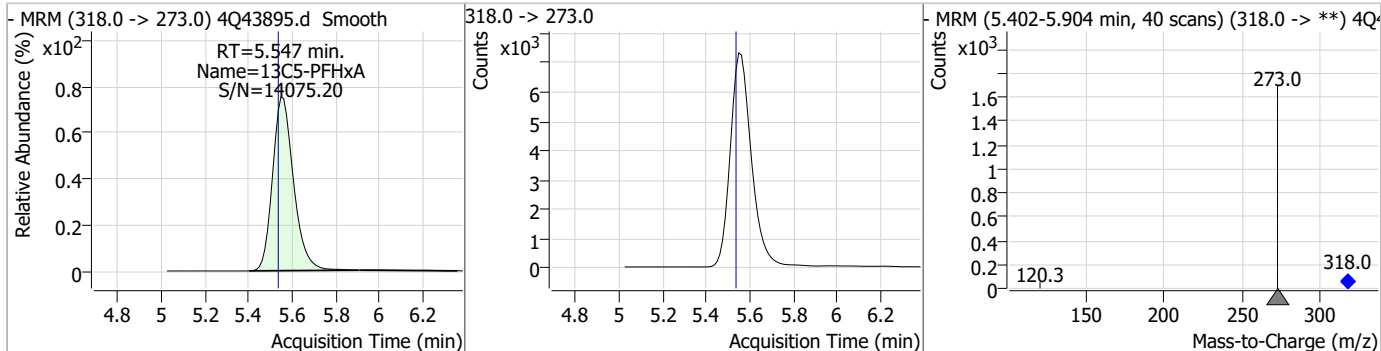


Perfluorinated Compounds by LC/MS/MS

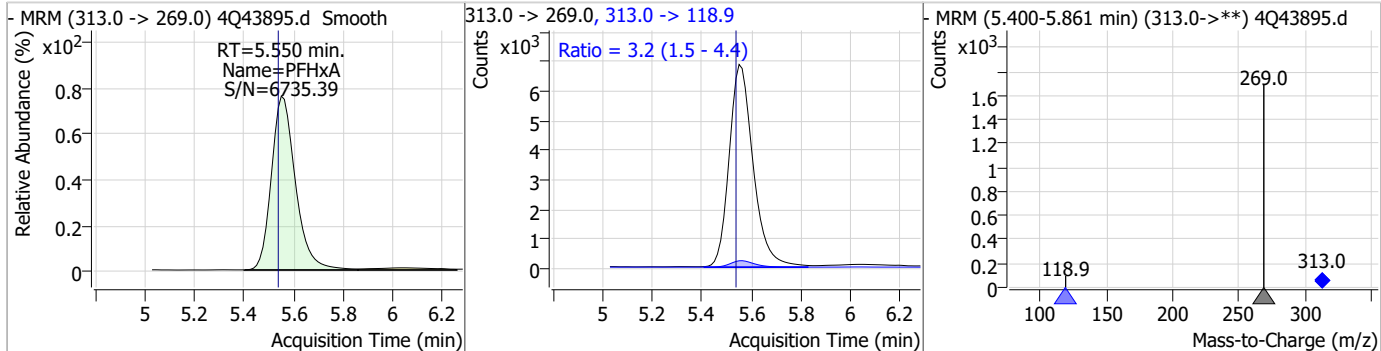
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.13	5.45	0.02	10405	298.7 -> 98.8	39.6	20.3	60.9



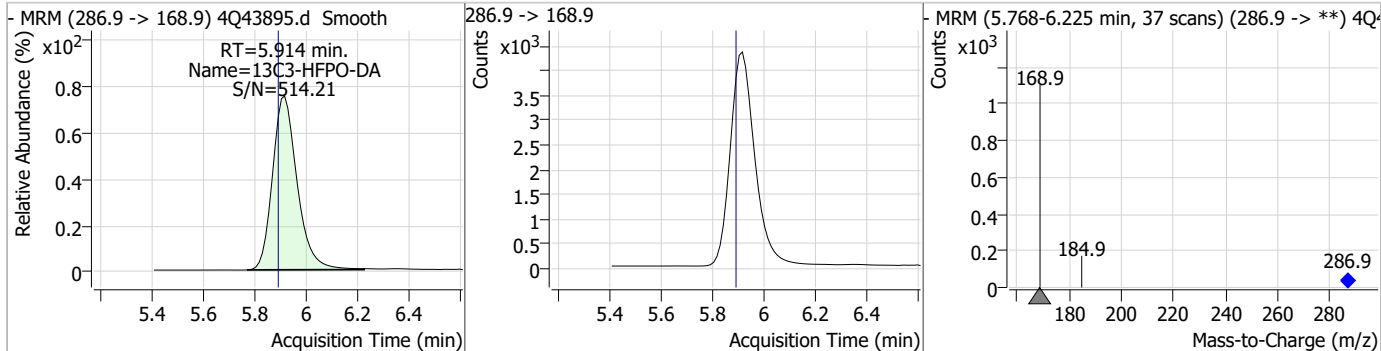
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.55	0.01	48764				



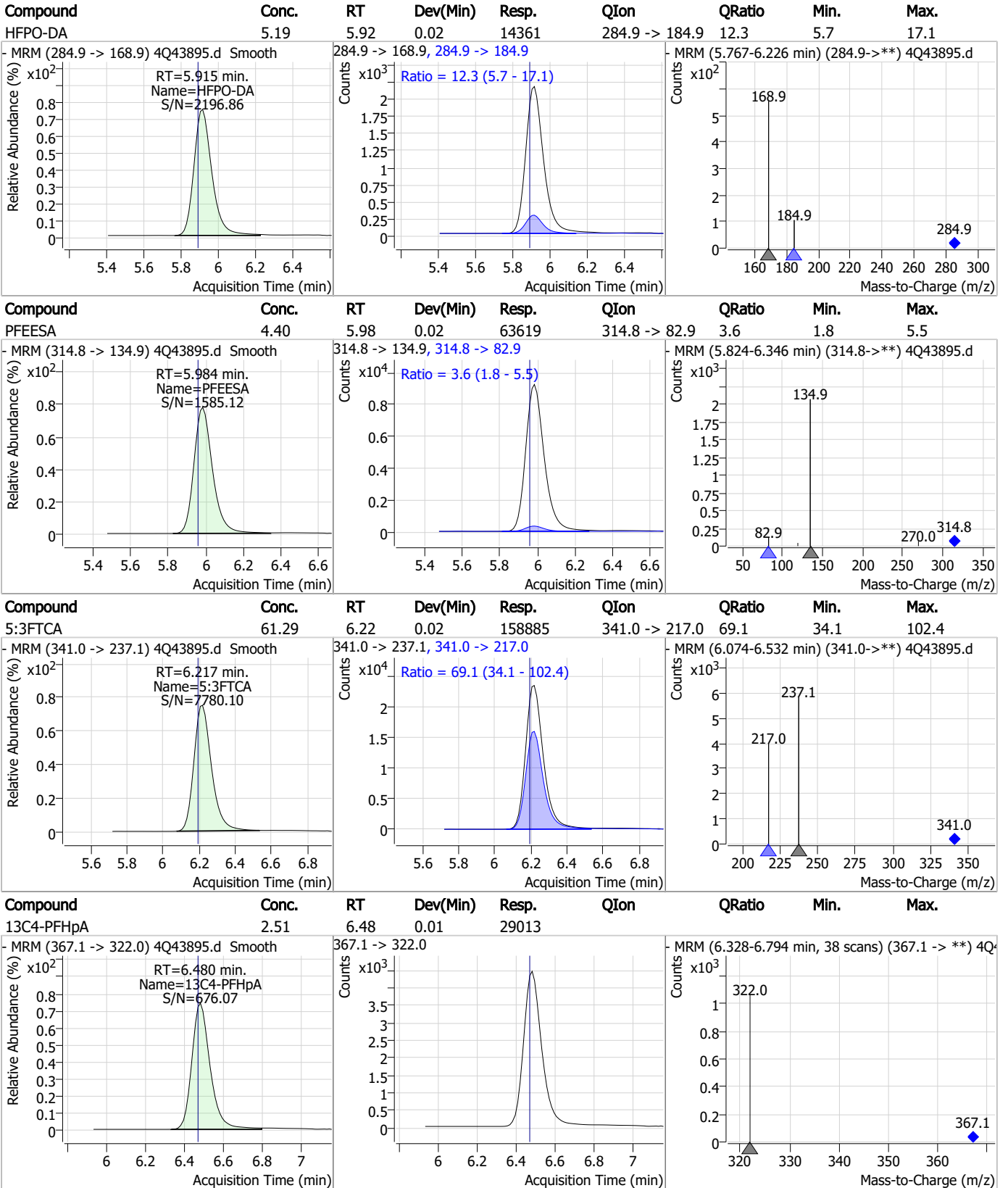
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.43	5.55	0.01	46362	313.0 -> 118.9	3.2	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.78	5.91	0.02	28932				



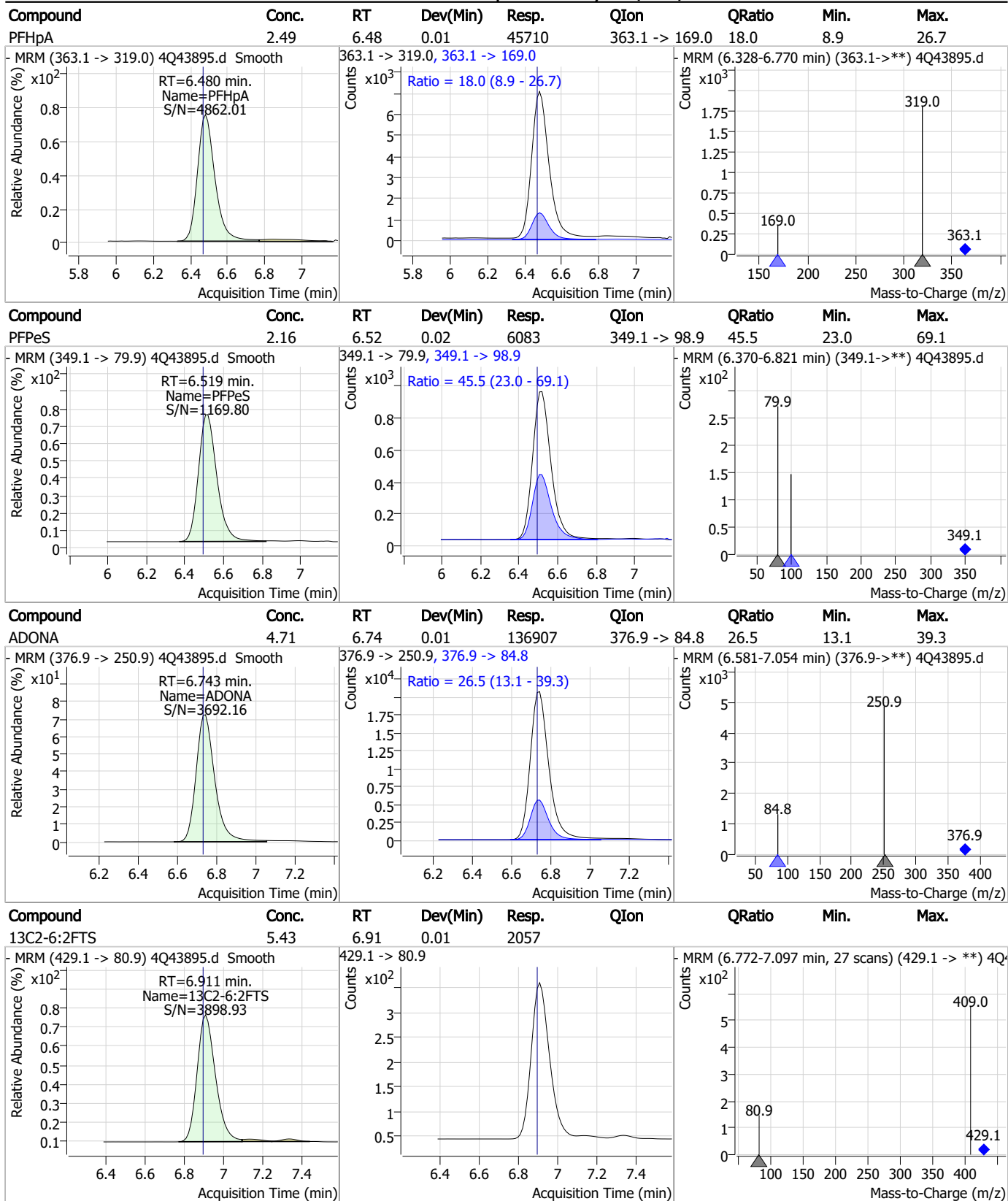
Perfluorinated Compounds by LC/MS/MS



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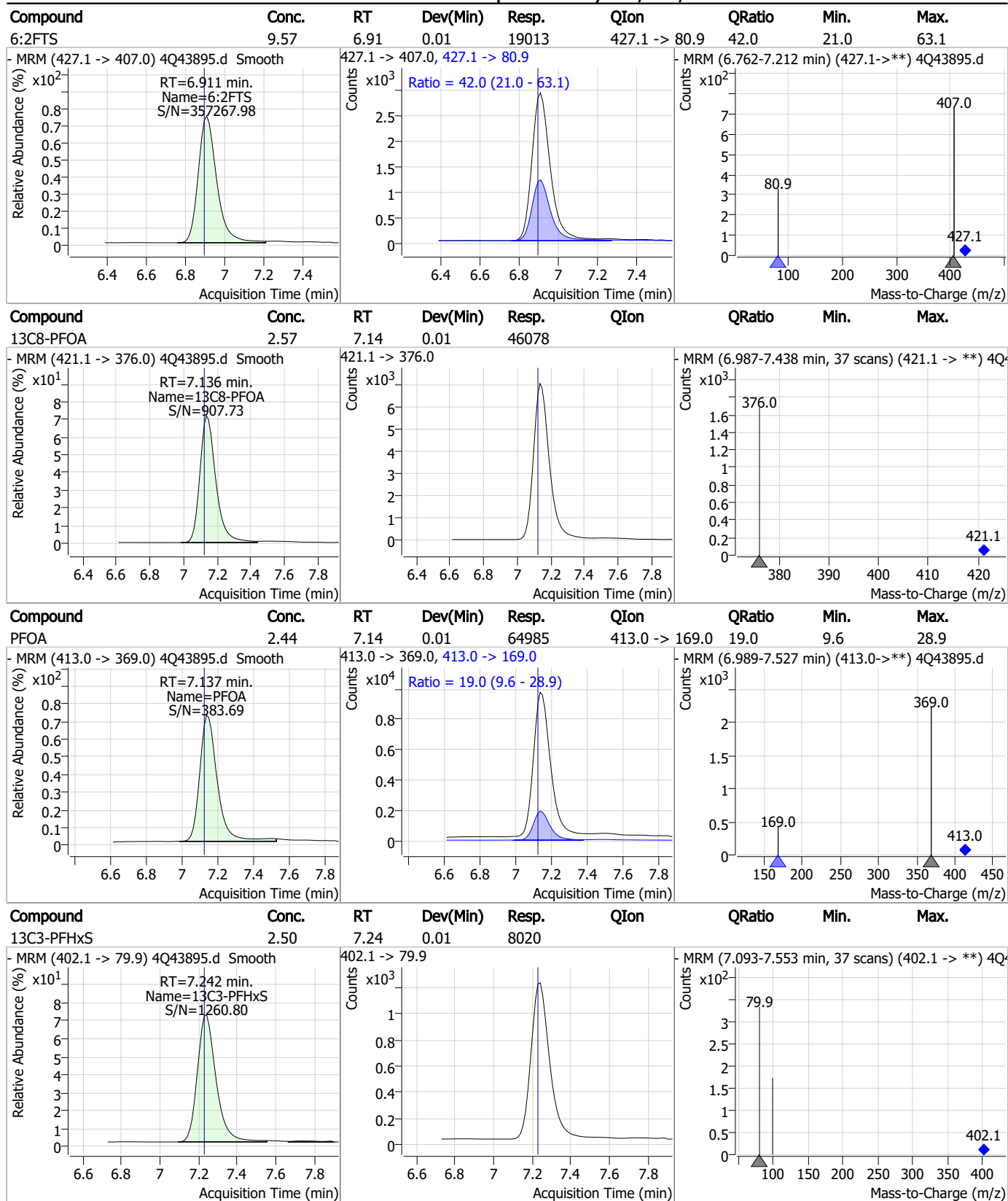
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

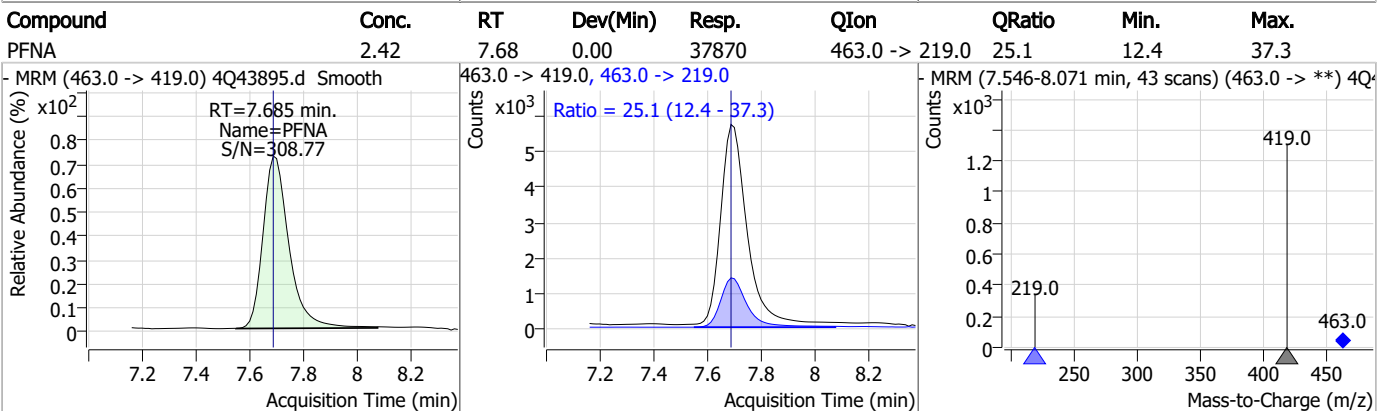
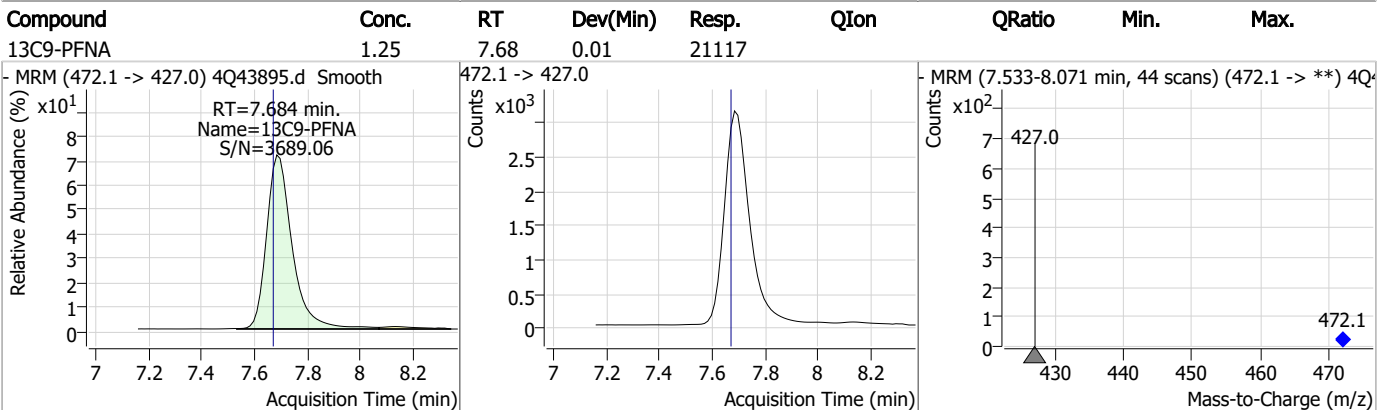
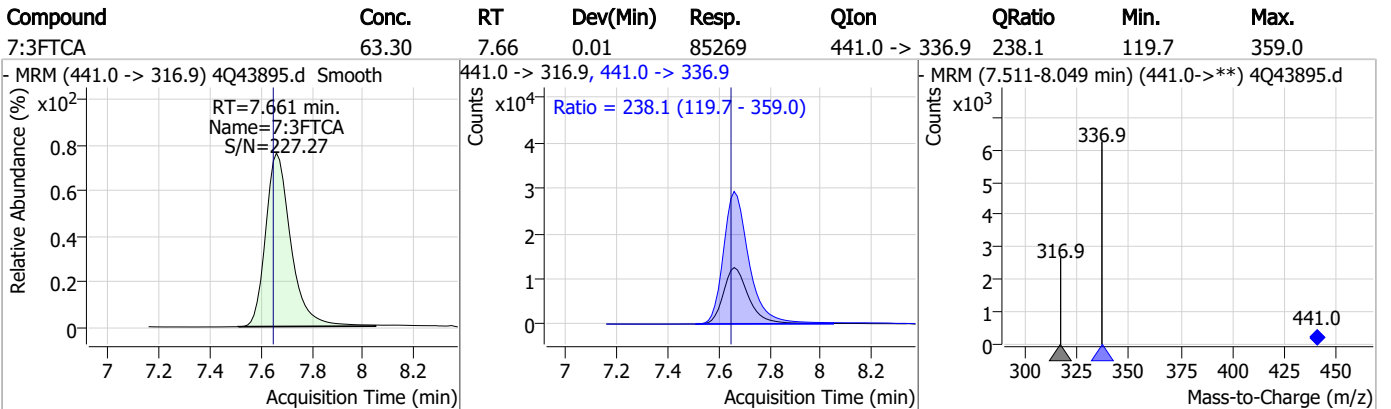
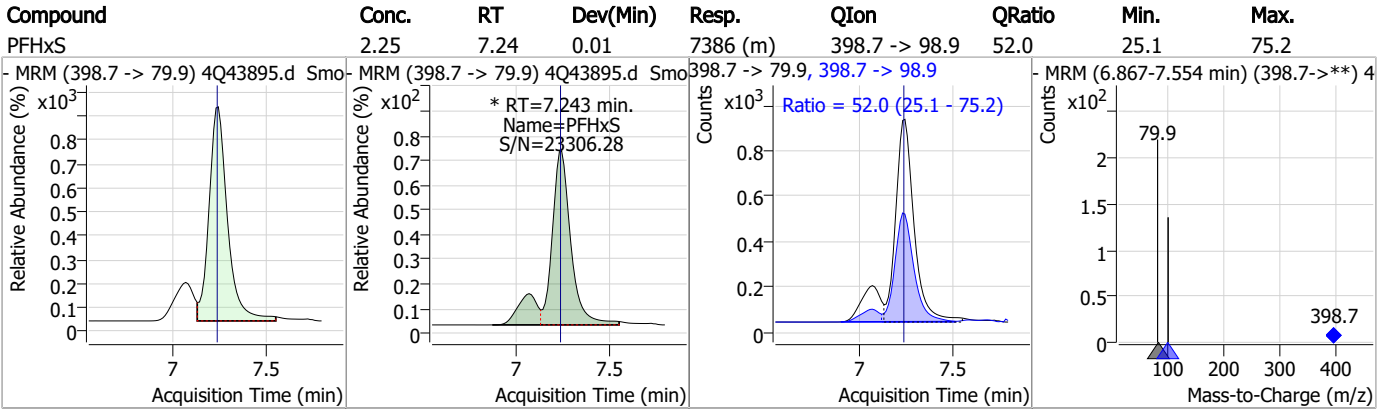


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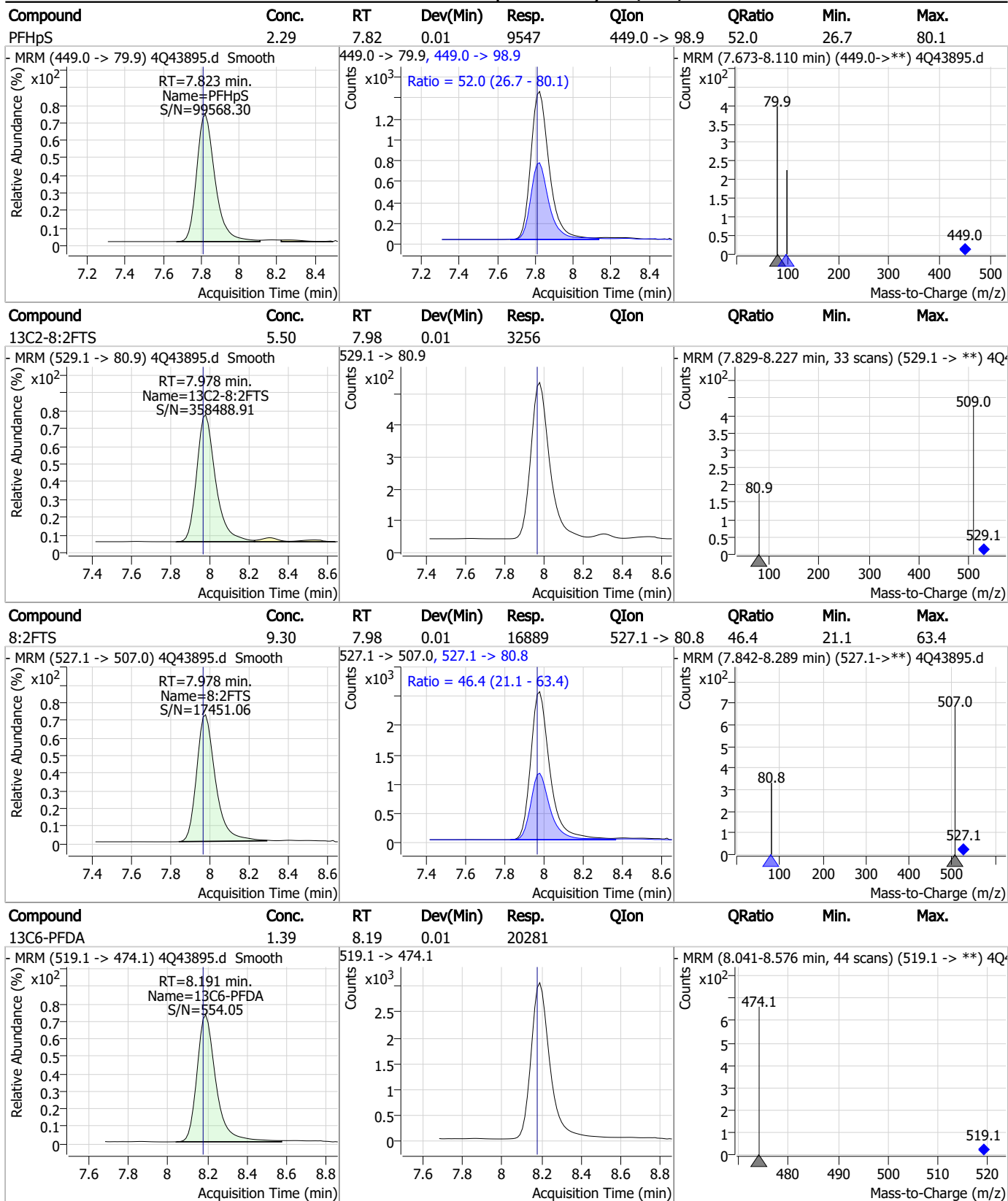
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Perfluorinated Compounds by LC/MS/MS



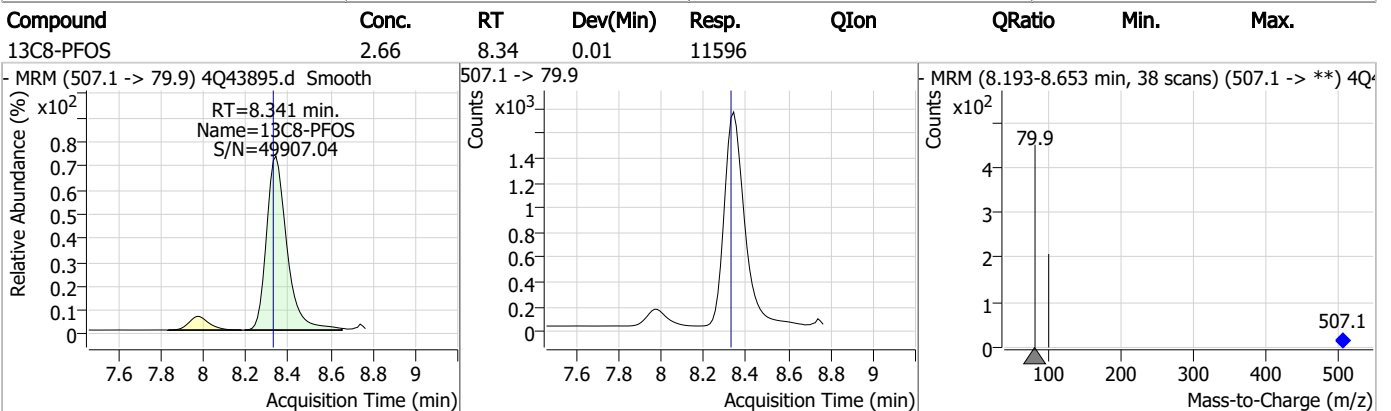
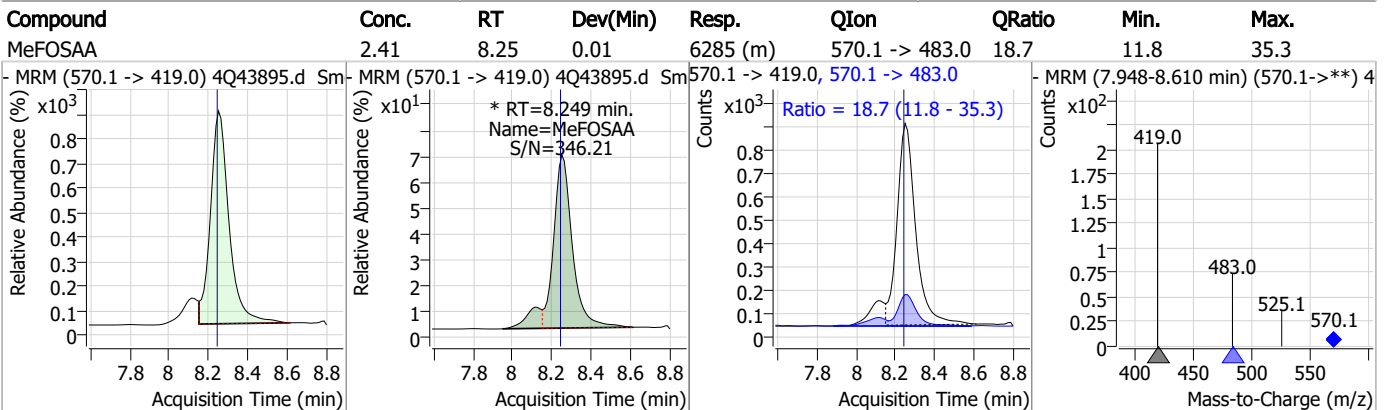
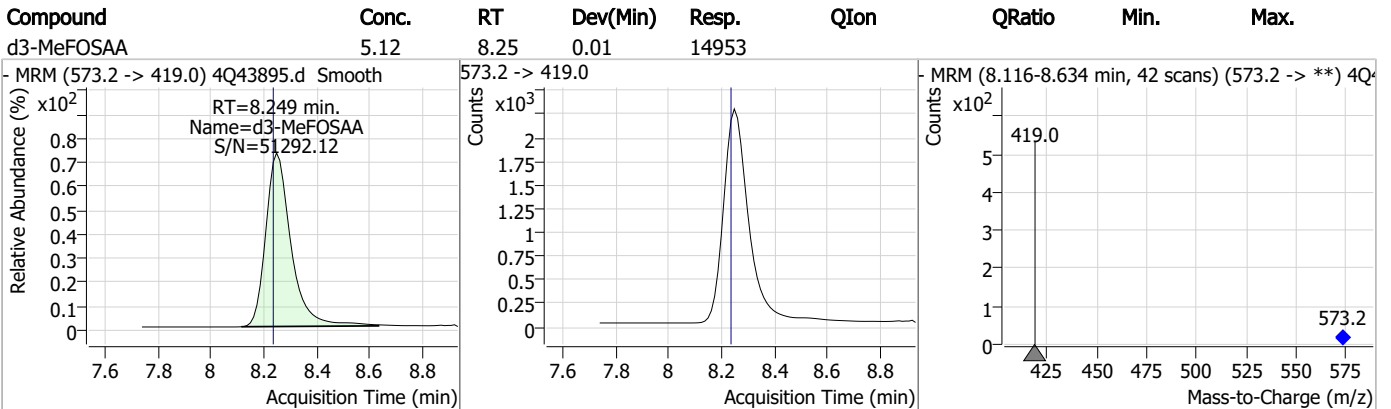
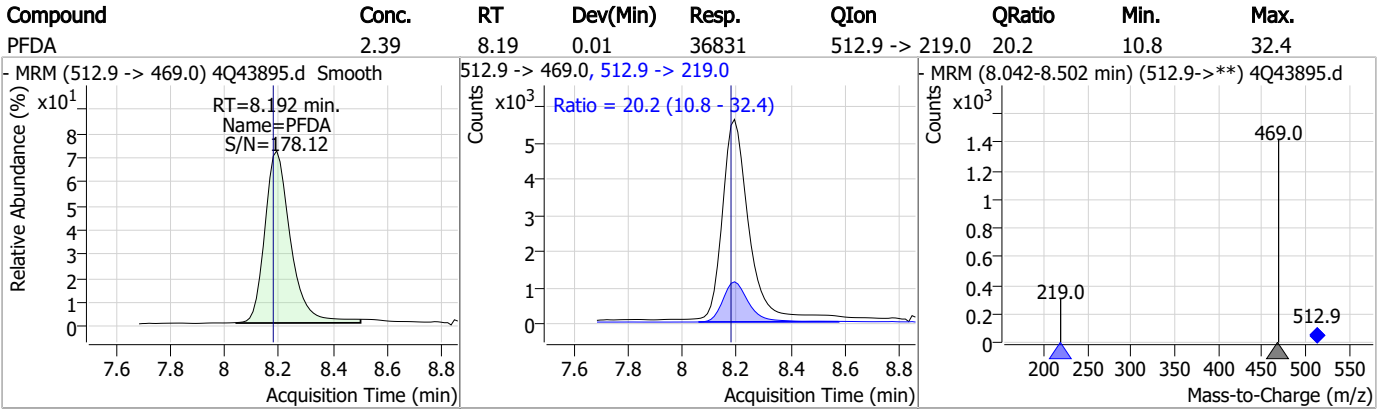
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



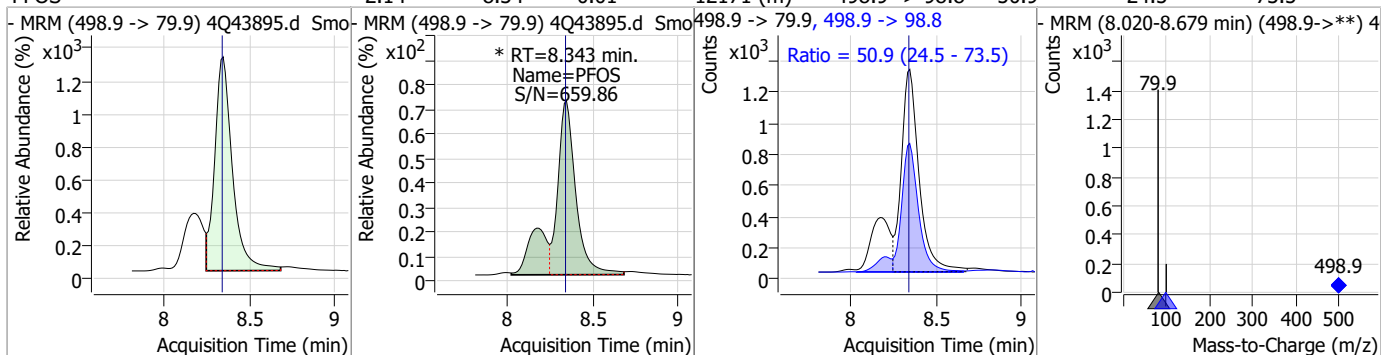
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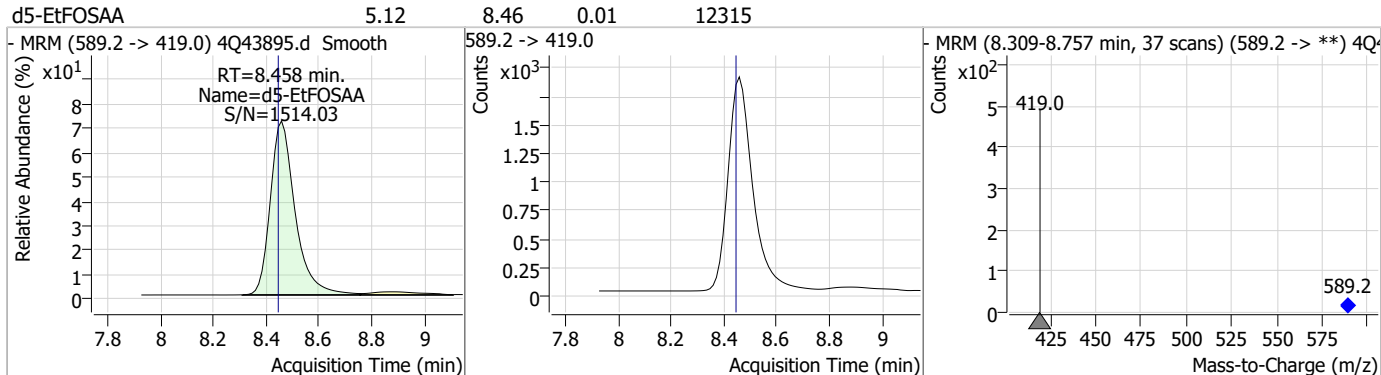


Perfluorinated Compounds by LC/MS/MS

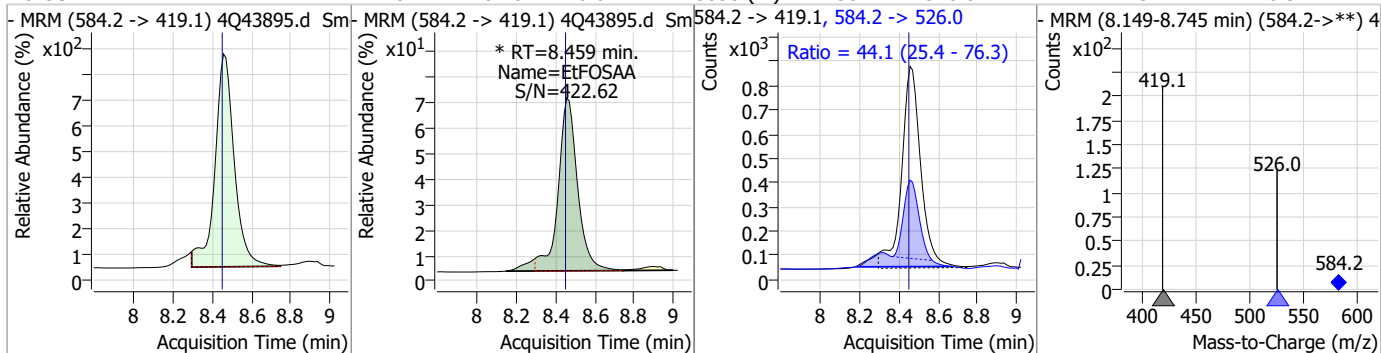
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.14	8.34	0.01	12171 (m)	498.9 -> 98.8	50.9	24.5	73.5



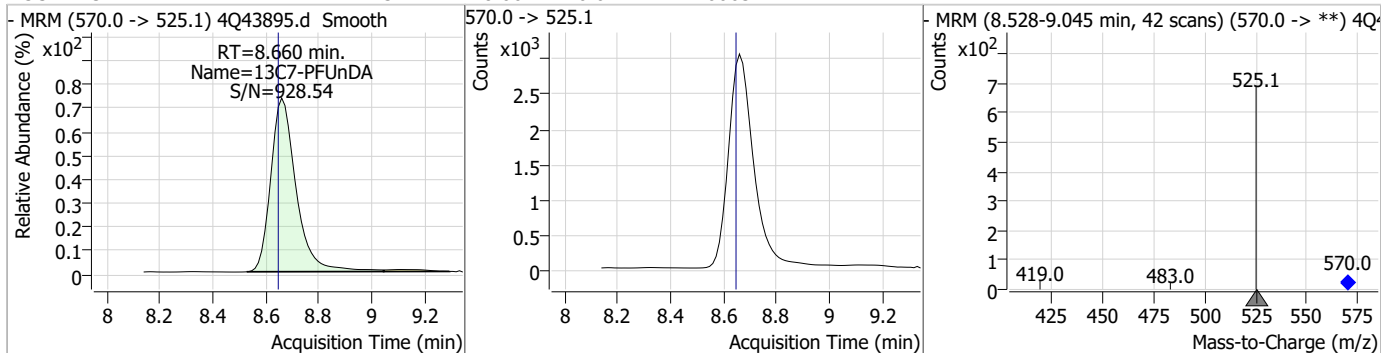
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.12	8.46	0.01	12315				



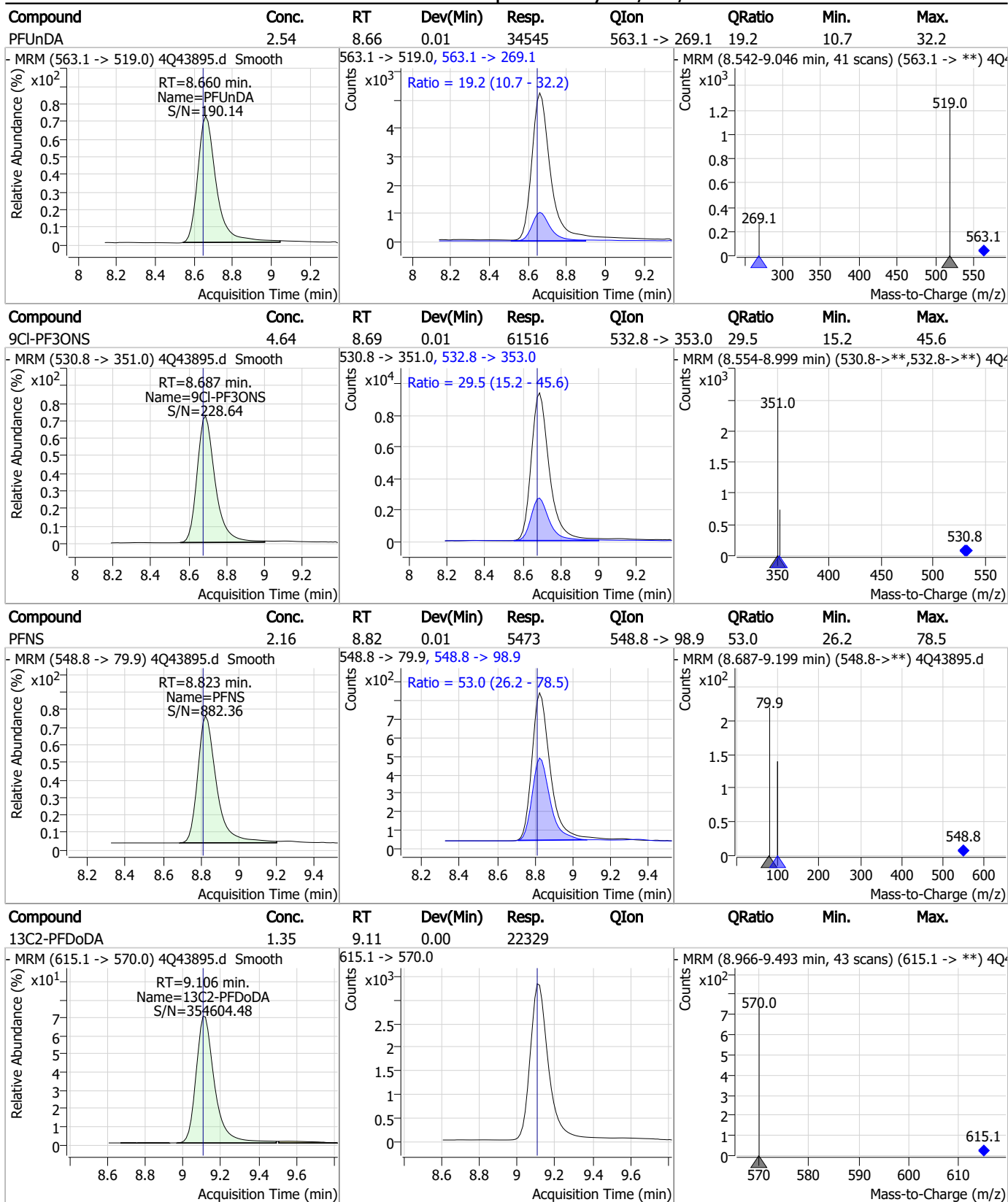
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.48	8.46	0.01	5858 (m)	584.2 -> 526.0	44.1	25.4	76.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.32	8.66	0.01	20063				



Perfluorinated Compounds by LC/MS/MS

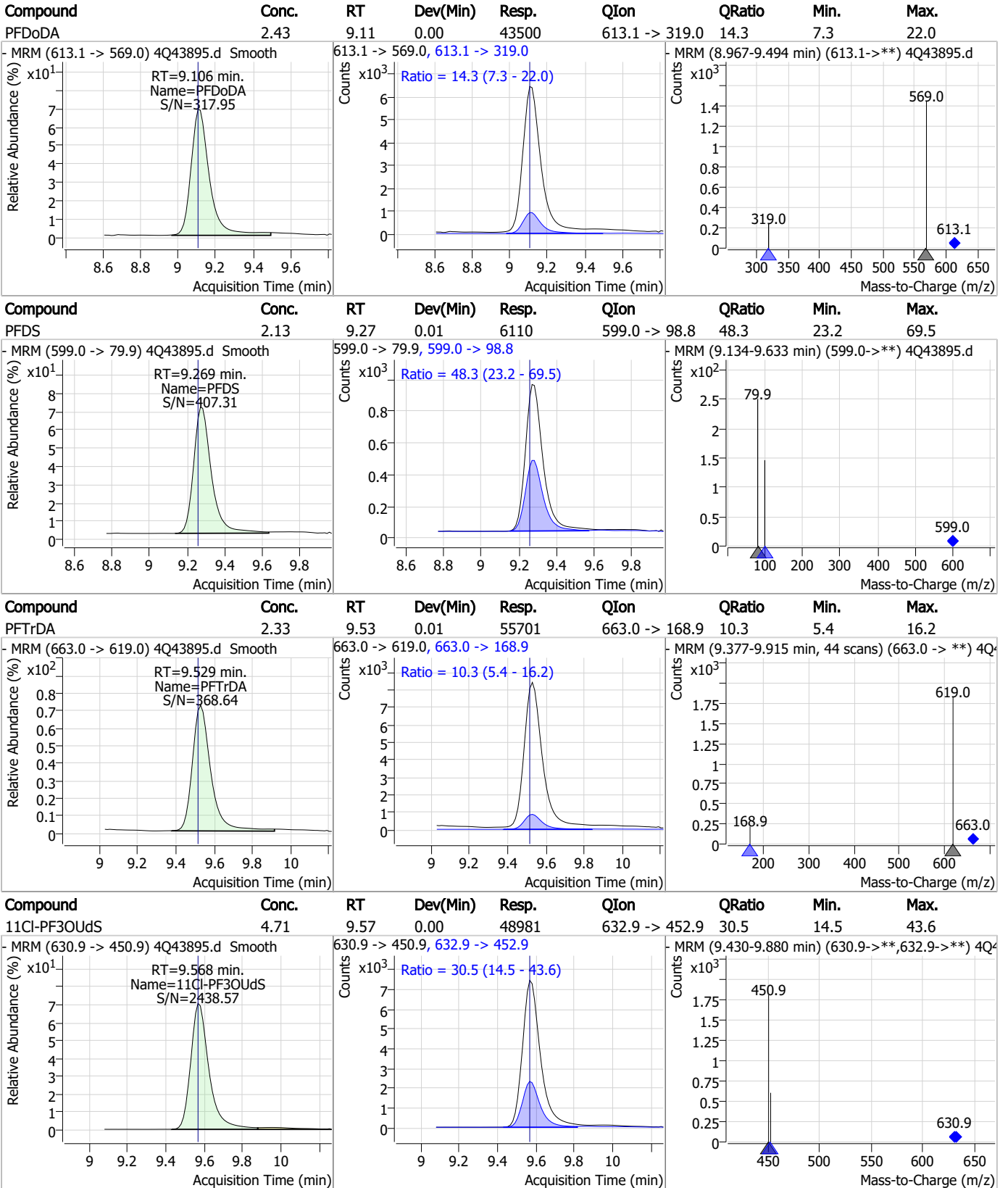


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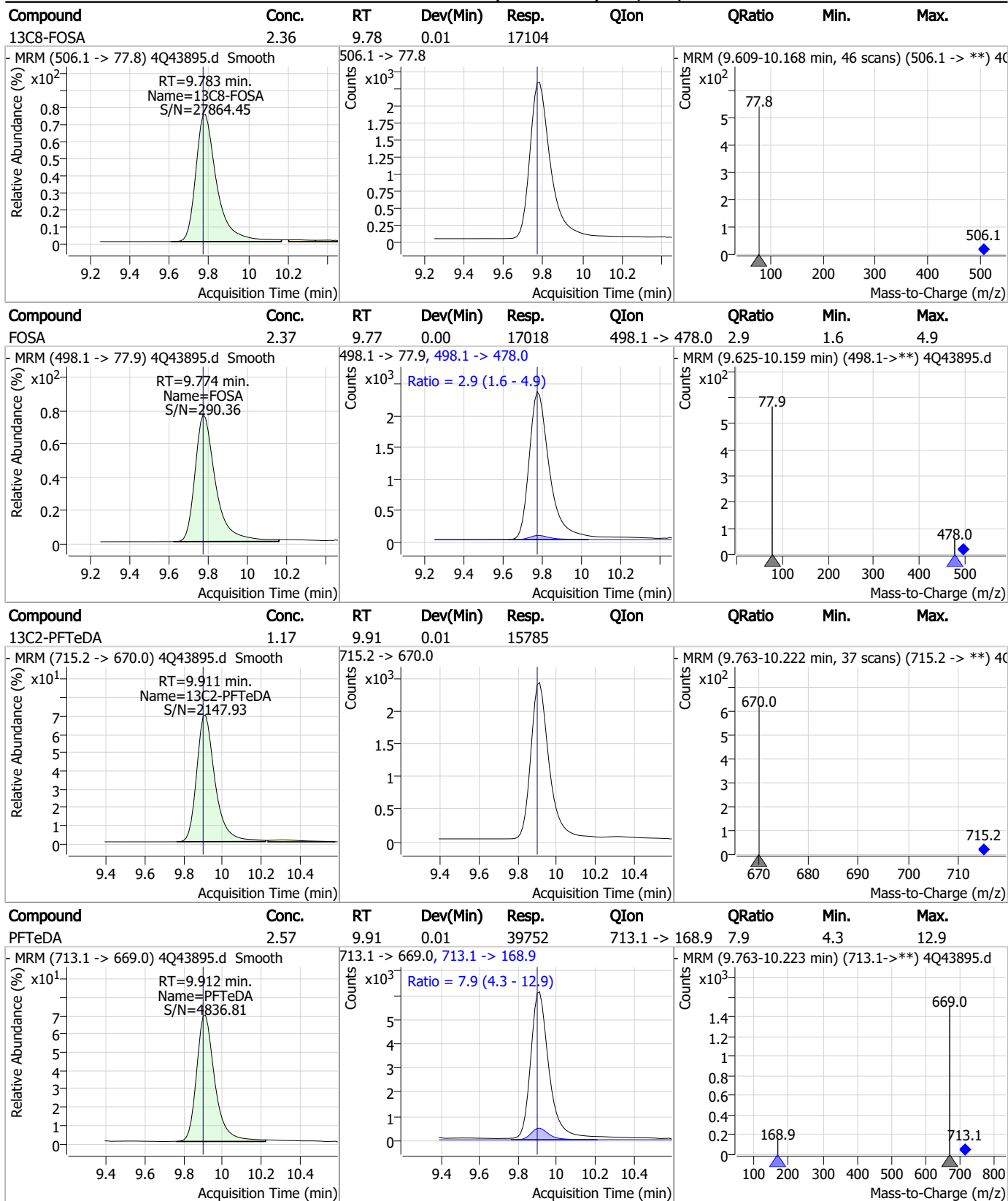
Perfluorinated Compounds by LC/MS/MS



7.7.11



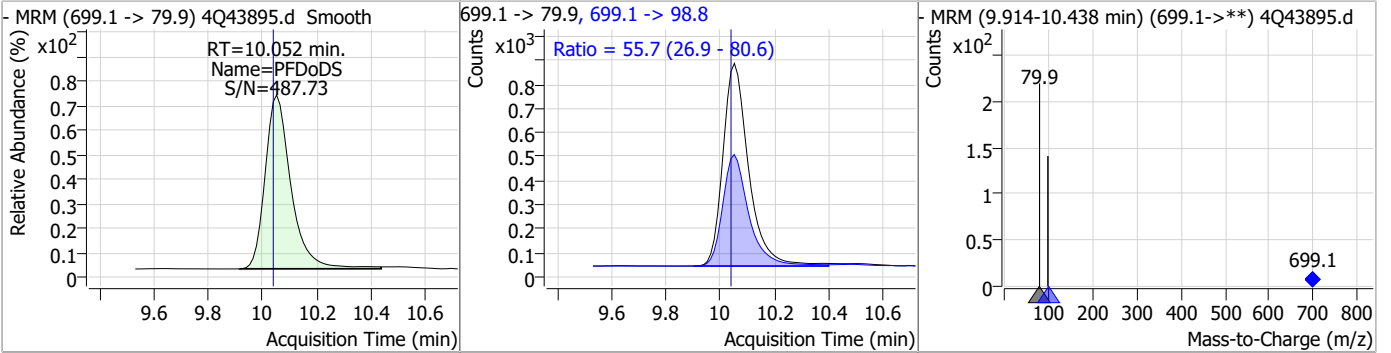
Perfluorinated Compounds by LC/MS/MS



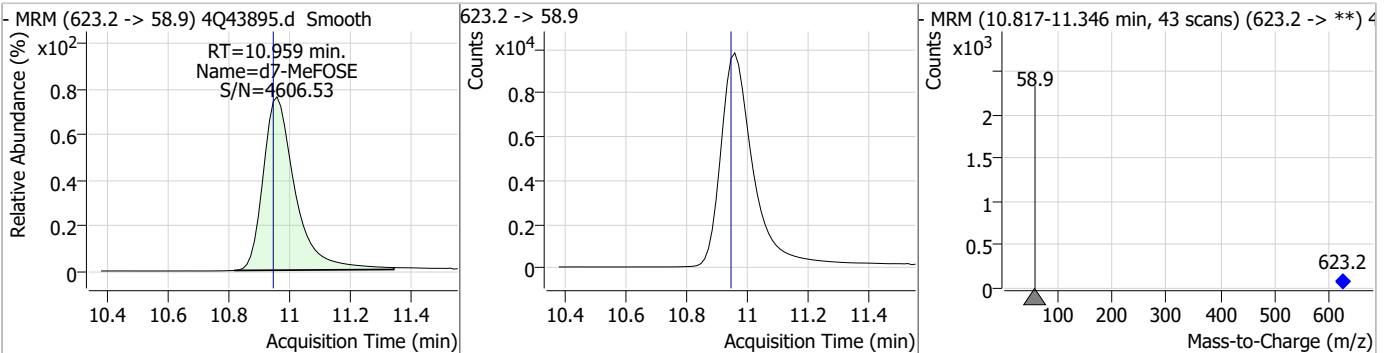
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Perfluorinated Compounds by LC/MS/MS

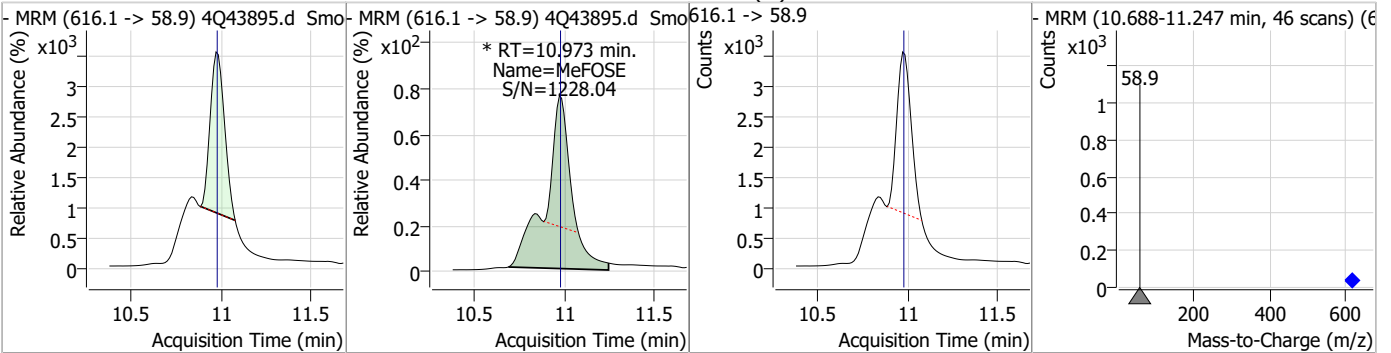
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.18	10.05	0.01	5598	699.1 -> 98.8	55.7	26.9	80.6



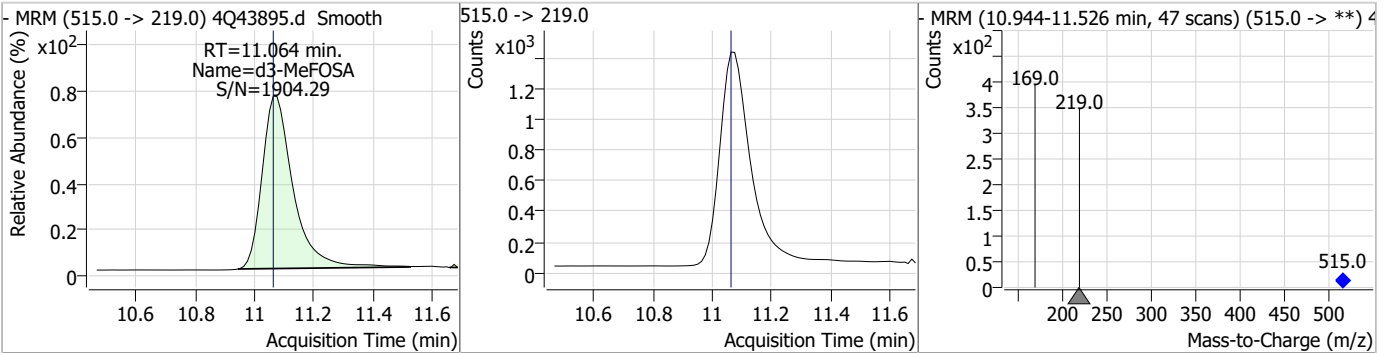
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.96	10.96	0.01	71810				



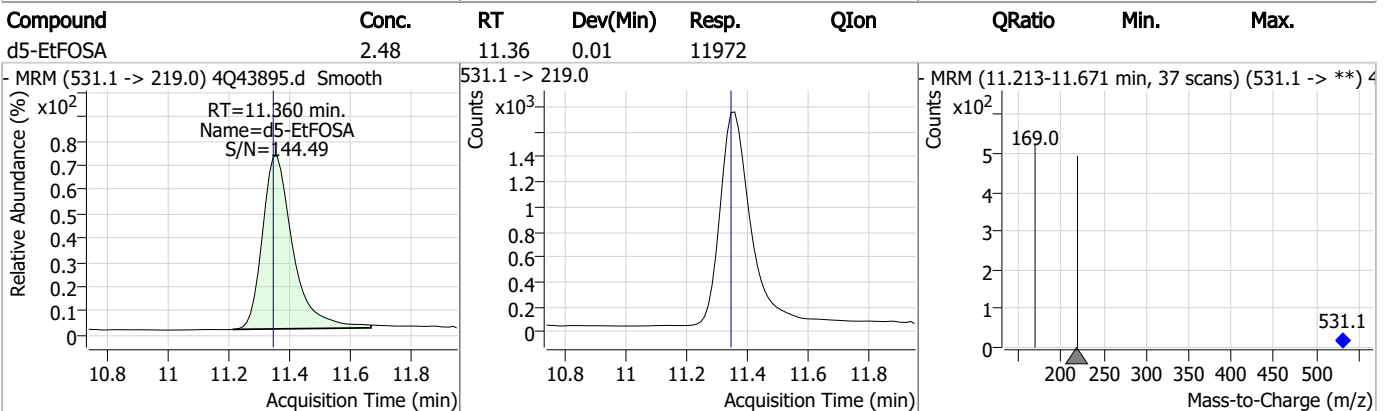
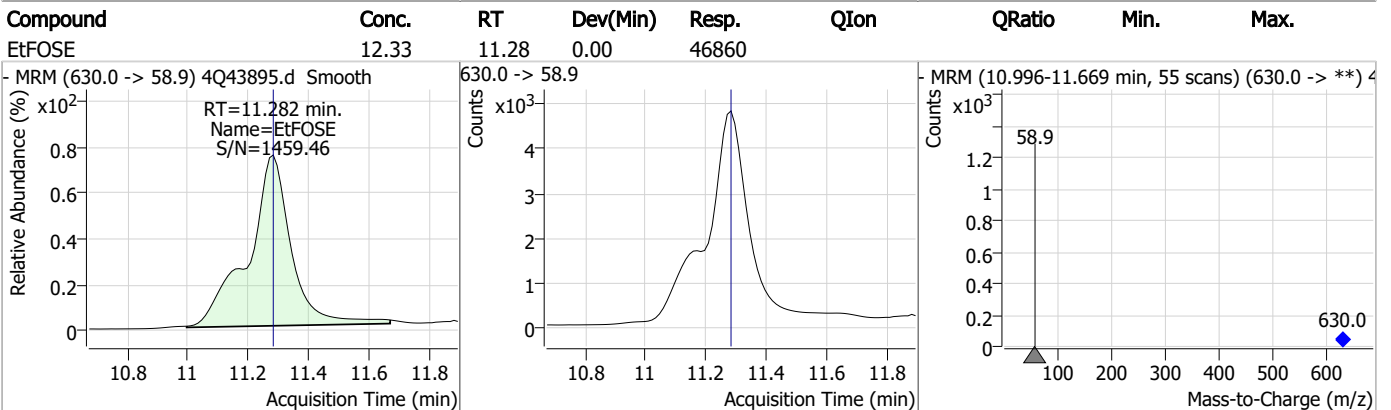
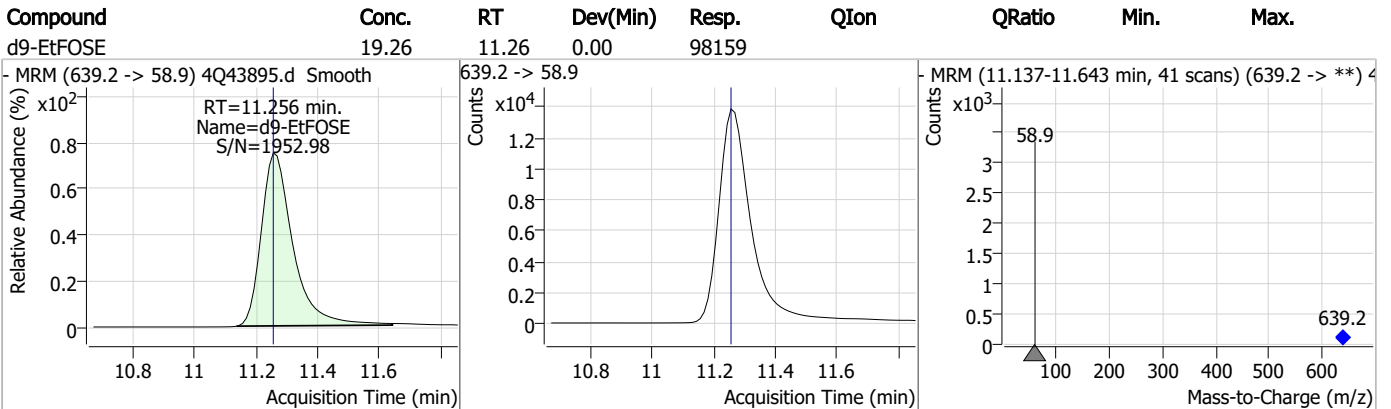
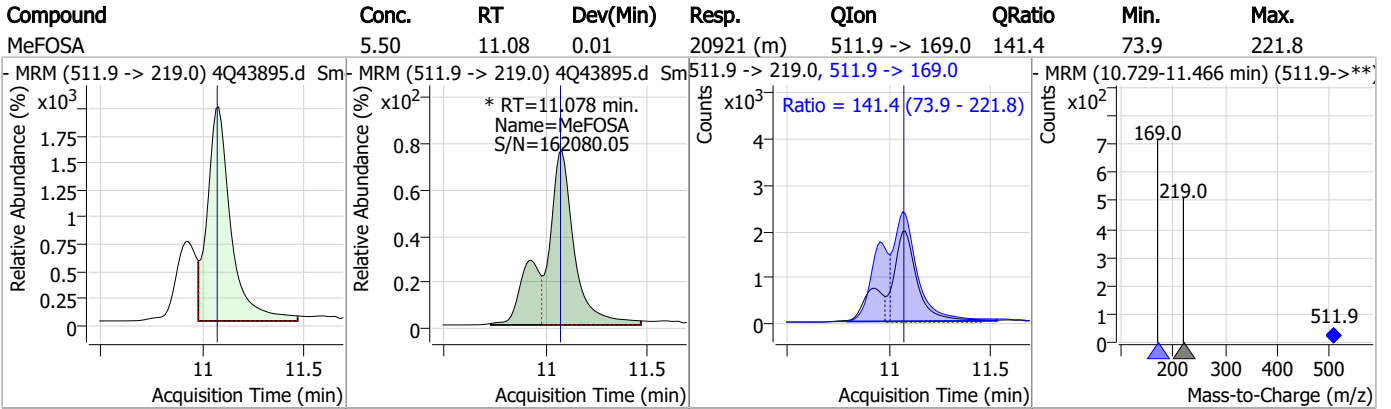
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.97	10.97	0.00	35294 (m)				



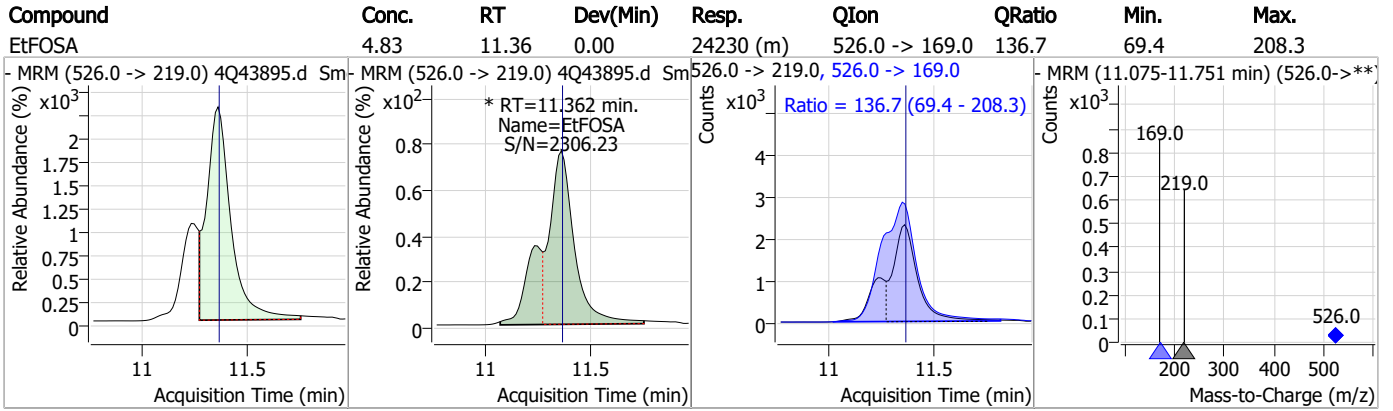
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.23	11.06	0.00	10103				



Perfluorinated Compounds by LC/MS/MS



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
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44172.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 10:48:37 PM
 Sample Name : cc634-4
 Vial : P1-A5
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	145502	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	75137	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	51844	2.50 µg/L	0.000
M4-PFHpA	6.504	367.1 -> 322.0	30984	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	47143	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	23990	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	20659	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	22931	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	24535	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	17882	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	21058	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	12632	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	7919	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10848	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1352	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2599	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	4113	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	16736	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	27330	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	14828	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	83126	25.00 µg/L	0.000
M9-EtFOSE	11.281	639.2 -> 58.9	112349	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	12423	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	11602	2.50 µg/L	0.000
13C4-PFOS	8.367	502.8 -> 79.9	12493	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	76073	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	5746	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	57582	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	19950	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	26686	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	47242	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1352	5.79 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.8%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2599	6.17 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.5%		
13C2-8:2FTS	8.003	529.1 -> 80.9	4113	6.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.2%		
13C2-PFDoDA	9.130	615.1 -> 570.0	24535	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C2-PFTeDA	9.924	715.2 -> 670.0	17882	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.0%		
13C3-PFBS	5.464	302.1 -> 79.9	12632	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C3-PFHxS	7.254	402.1 -> 79.9	7919	2.22 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 = 88.9%	
13C4-PFBA	2.924	216.8 -> 171.9	145502	10.16 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C4-PFHpA	6.504	367.1 -> 322.0	30984	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	5.559	318.0 -> 273.0	51844	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C5-PFPeA	4.387	268.3 -> 223.0	75137	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C6-PFDA	8.216	519.1 -> 474.1	20659	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C7-PFUnDA	8.685	570.0 -> 525.1	22931	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C8-FOSA	9.796	506.1 -> 77.8	21058	2.69 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C8-PFOA	7.163	421.1 -> 376.0	47143	2.49 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-PFOS	8.354	507.1 -> 79.9	10848	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C9-PFNA	7.709	472.1 -> 427.0	23990	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.8%	
d3-MeFOSAA	8.273	573.2 -> 419.0	16736	5.31 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	27330	8.79 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 87.9%	
d3-MeFOSA	11.089	515.0 -> 219.0	11602	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
d5-EtFOSAA	8.483	589.2 -> 419.0	14828	5.71 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.2%	
d7-MeFOSE	10.972	623.2 -> 58.9	83126	21.39 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 85.5%	
d9-EtFOSE	11.281	639.2 -> 58.9	112349	20.41 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.7%	
d5-EtFOSA	11.373	531.1 -> 219.0	12423	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	20314	9.34 µg/L	97
		327.1 -> 80.9	8921		
6:2FTS	6.936	427.1 -> 407.0	23386	9.32 µg/L	100
		427.1 -> 80.9	10079		
8:2FTS	8.003	527.1 -> 507.0	24140	10.53 µg/L	94
		527.1 -> 80.8	9515		
EtFOSAA	8.483	584.2 -> 419.1	6980	2.45 µg/L	m 94
		584.2 -> 526.0	3344		
FOSA	9.786	498.1 -> 77.9	21619	2.45 µg/L	99
		498.1 -> 478.0	636		
MeFOSAA	8.274	570.1 -> 419.0	7044	2.41 µg/L	100
		570.1 -> 483.0	1323		
PFBA	2.932	212.8 -> 168.9	37812	9.70 µg/L	100
PFBS	5.465	298.7 -> 79.9	10819	2.09 µg/L	92
		298.7 -> 98.8	4376		
PFDA	8.216	512.9 -> 469.0	39935	2.55 µg/L	99
		512.9 -> 219.0	8129		
PFDoDA	9.131	613.1 -> 569.0	47916	2.43 µg/L	99
		613.1 -> 319.0	6514		
PFDS	9.294	599.0 -> 79.9	6835	2.54 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3556			
PFHpA	6.505	363.1 -> 319.0	47386	2.42	µg/L	97
		363.1 -> 169.0	7796			
PFHpS	7.836	449.0 -> 79.9	9482	2.43	µg/L	98
		449.0 -> 98.9	5078			
PFHxA	5.562	313.0 -> 269.0	47677	2.35	µg/L	99
		313.0 -> 118.9	1645			
PFHxS	7.255	398.7 -> 79.9	7418	2.29	µg/L	m 94
		398.7 -> 98.9	3982			
PFNA	7.709	463.0 -> 419.0	41096	2.31	µg/L	99
		463.0 -> 219.0	10196			
PFNS	8.848	548.8 -> 79.9	5654	2.39	µg/L	92
		548.8 -> 98.9	3028			
PFOA	7.164	413.0 -> 369.0	64536	2.37	µg/L	98
		413.0 -> 169.0	13301			
PFOS	8.355	498.9 -> 79.9	12238	2.31	µg/L	m 92
		498.9 -> 98.8	6687			
PFPeA	4.389	263.0 -> 219.0	87124	4.82	µg/L	100
PFPeS	6.531	349.1 -> 79.9	6558	2.36	µg/L	99
		349.1 -> 98.9	2986			
PFTeDA	9.924	713.1 -> 669.0	43918	2.51	µg/L	100
		713.1 -> 168.9	3721			
PFTrDA	9.541	663.0 -> 619.0	64257	2.44	µg/L	99
		663.0 -> 168.9	6243			
PFUnDA	8.685	563.1 -> 519.0	37844	2.43	µg/L	95
		563.1 -> 269.1	7728			
11CI-PF3OUdS	9.593	630.9 -> 450.9	52398	5.33	µg/L	100
		632.9 -> 452.9	15813			
9CI-PF3ONS	8.712	530.8 -> 351.0	66873	5.34	µg/L	100
		532.8 -> 353.0	19807			
ADONA	6.756	376.9 -> 250.9	141880	5.16	µg/L	99
		376.9 -> 84.8	37506			
HFPO-DA	5.928	284.9 -> 168.9	13369	5.12	µg/L	97
		284.9 -> 184.9	1534			
3:3FTCA	3.867	241.0 -> 177.0	9983	12.55	µg/L	98
		241.0 -> 117.0	1002			
5:3FTCA	6.231	341.0 -> 237.1	188555	68.41	µg/L	99
		341.0 -> 217.0	127854			
7:3FTCA	7.686	441.0 -> 316.9	105449	73.63	µg/L	97
		441.0 -> 336.9	253736			
EtFOSA	11.375	526.0 -> 219.0	25444	4.89	µg/L	73
		526.0 -> 169.0	36708			
EtFOSE	11.295	630.0 -> 58.9	50636	11.64	µg/L	100
MeFOSA	11.090	511.9 -> 219.0	21539	4.93	µg/L	m 81
		511.9 -> 169.0	31620			
MeFOSE	10.997	616.1 -> 58.9	41287	12.09	µg/L	m 100
PFDoDS	10.064	699.1 -> 79.9	5764	2.40	µg/L	99
		699.1 -> 98.8	3292			
NFDHA	5.453	295.0 -> 201.0	5463	3.77	µg/L	98
		295.0 -> 84.9	1405			
PFMBA	4.791	279.0 -> 85.1	48299	4.79	µg/L	100
PFMPA	3.540	229.0 -> 84.9	45858	4.85	µg/L	100
PFEESA	5.997	314.8 -> 134.9	64982	4.23	µg/L	99
		314.8 -> 82.9	2181			

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

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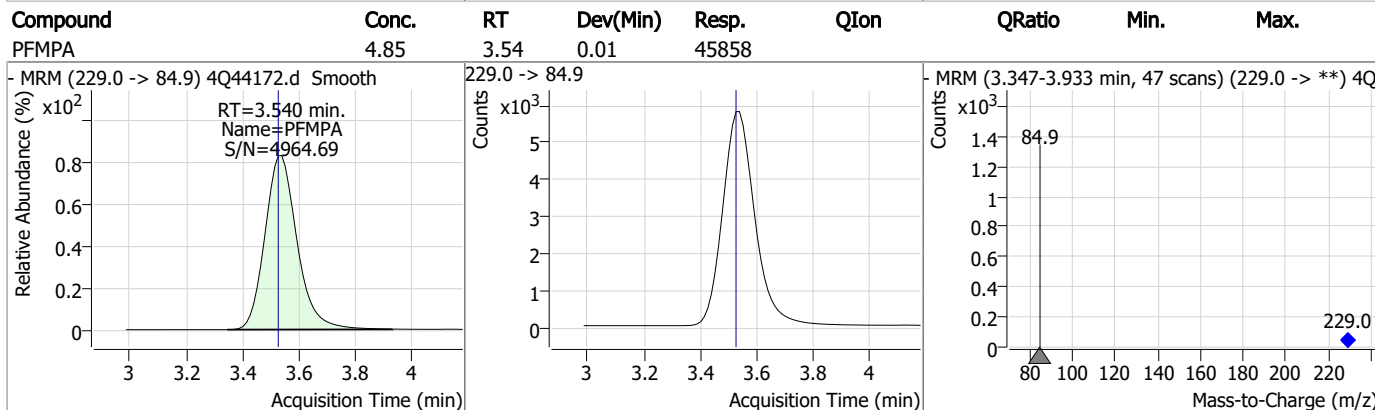
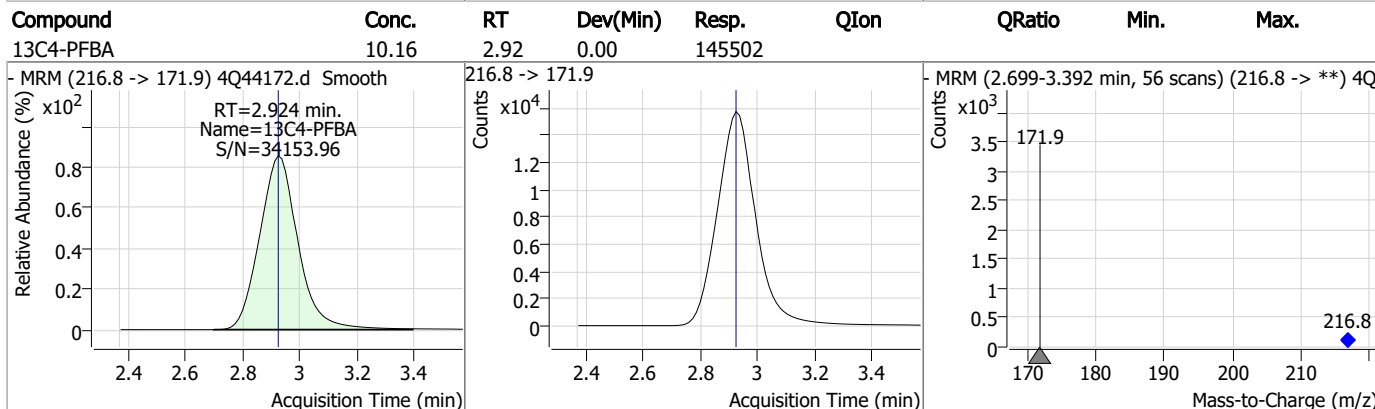
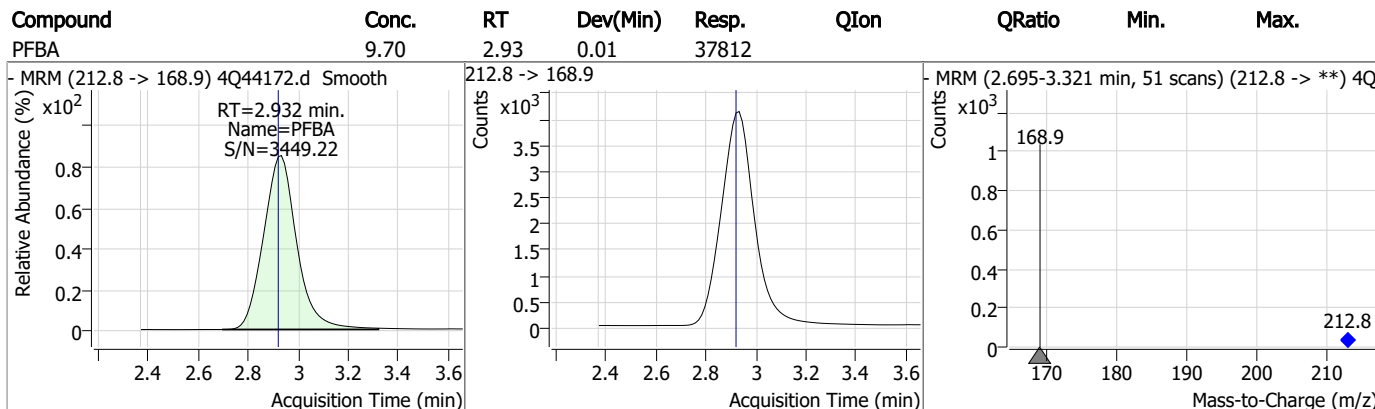
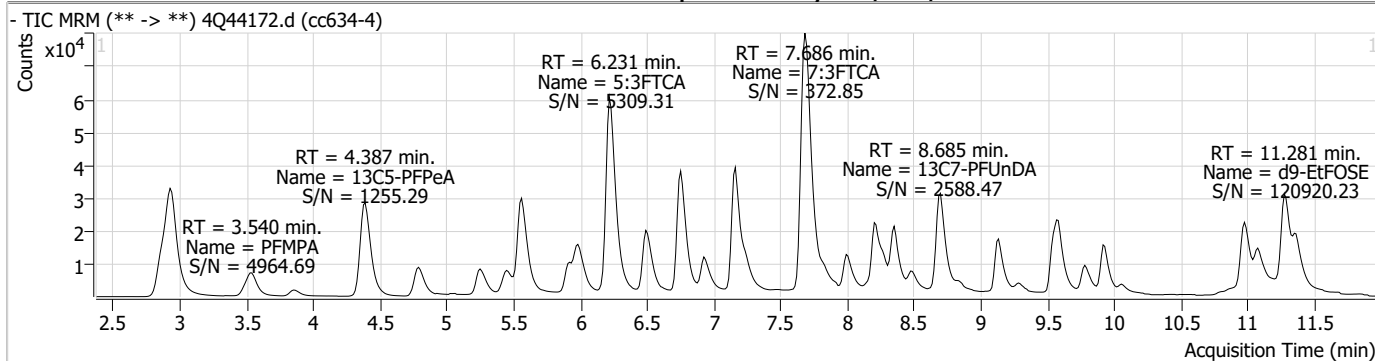
Perfluorinated Compounds by LC/MS/MS

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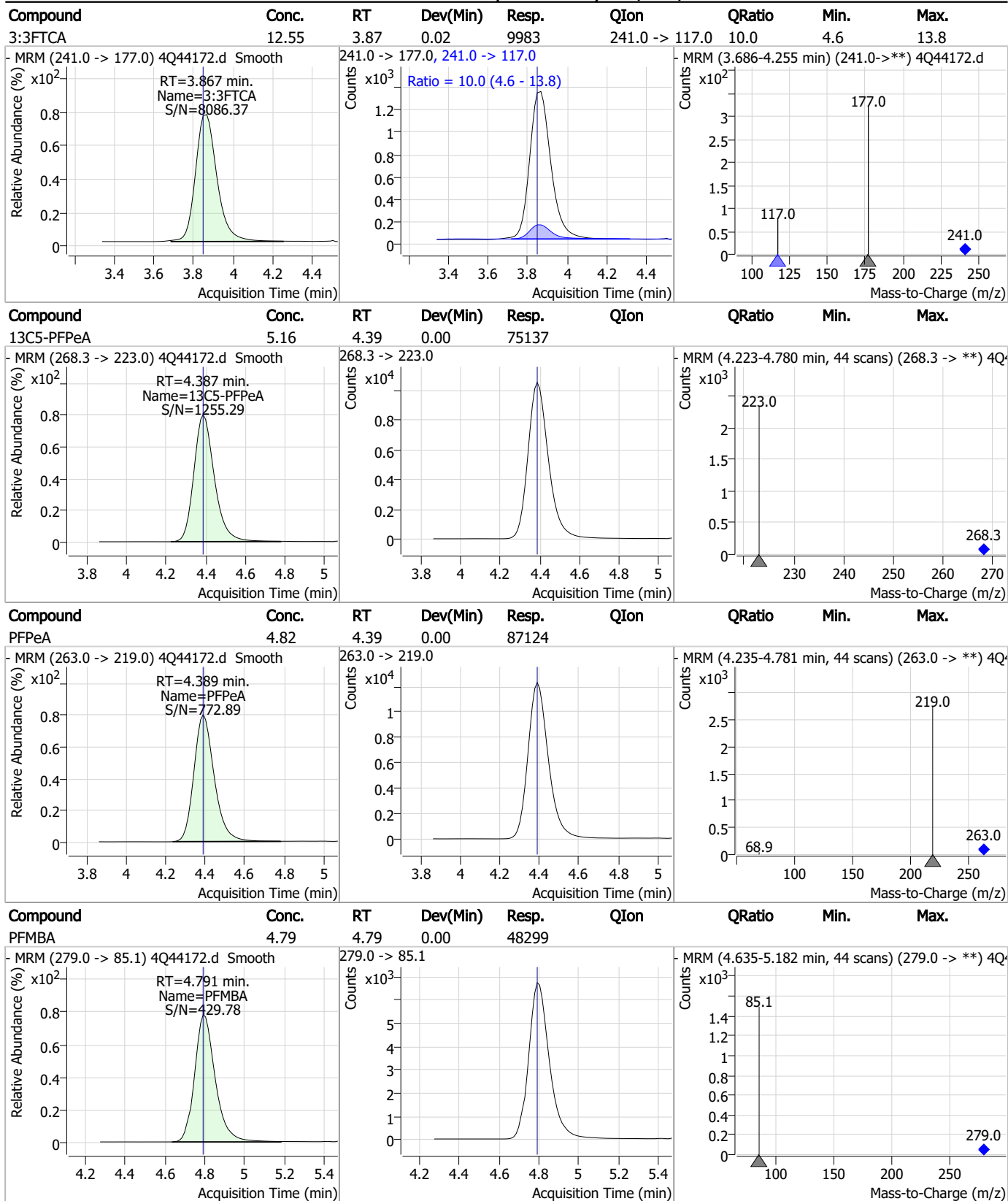
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Perfluorinated Compounds by LC/MS/MS

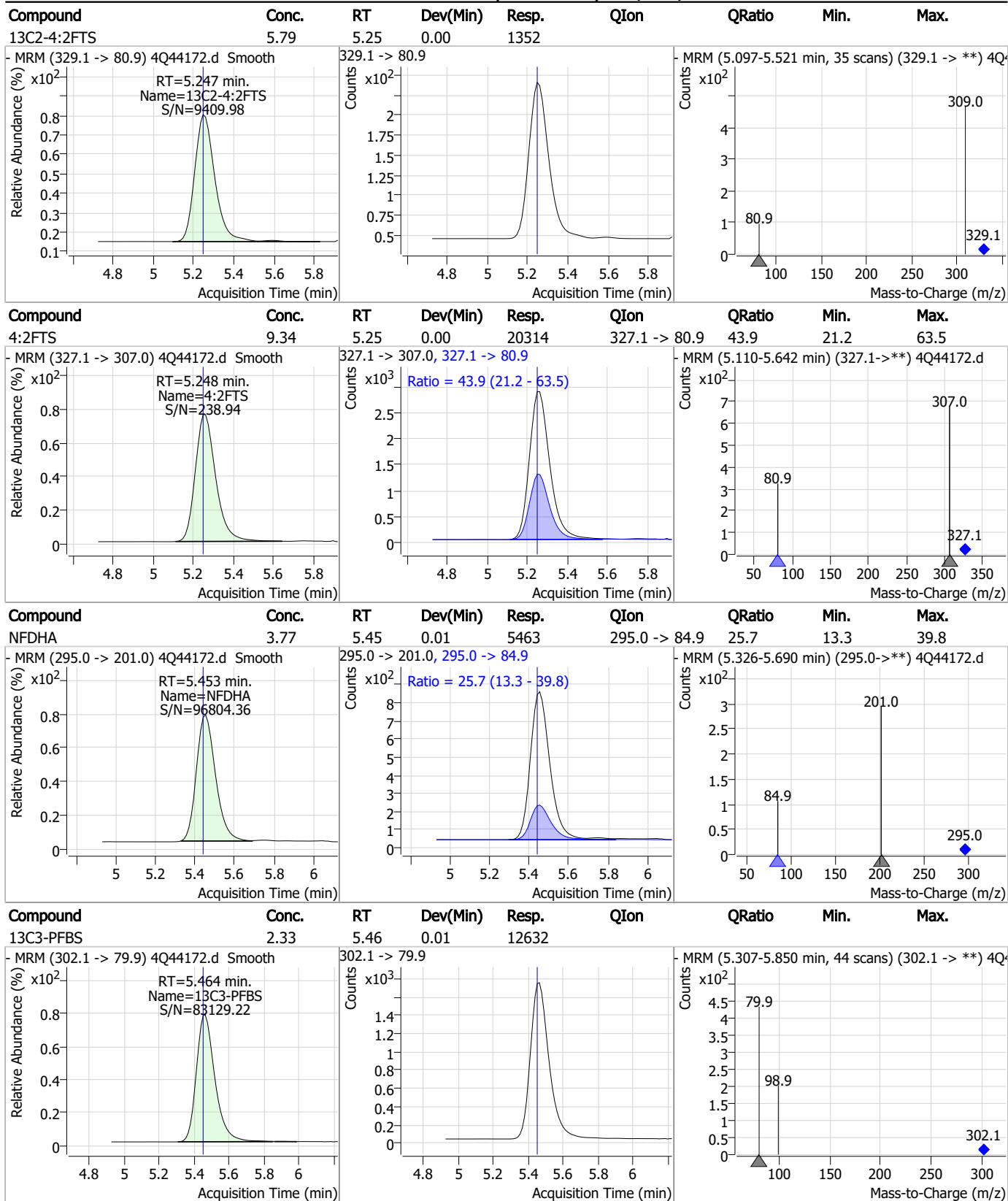


Perfluorinated Compounds by LC/MS/MS



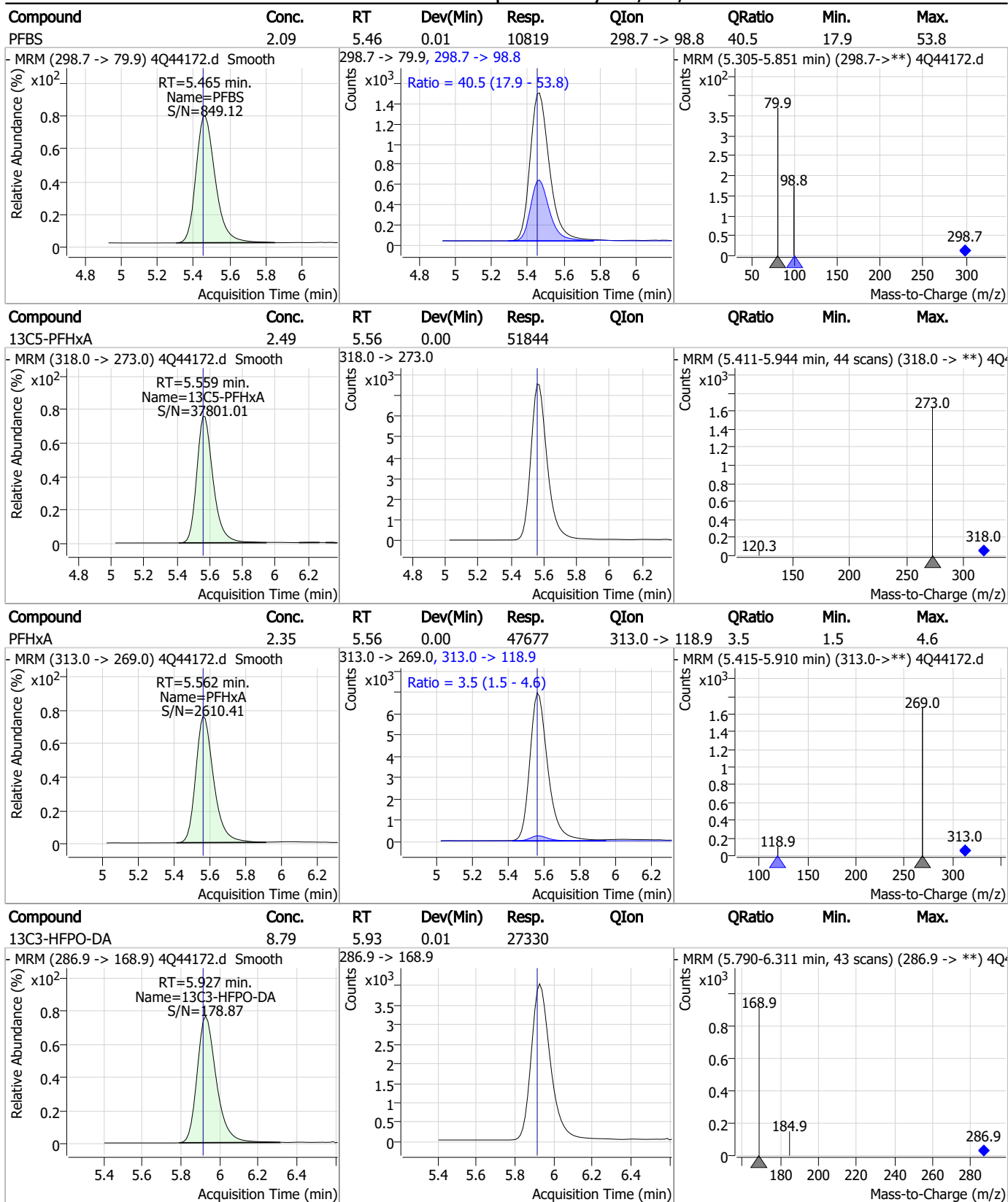
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Perfluorinated Compounds by LC/MS/MS



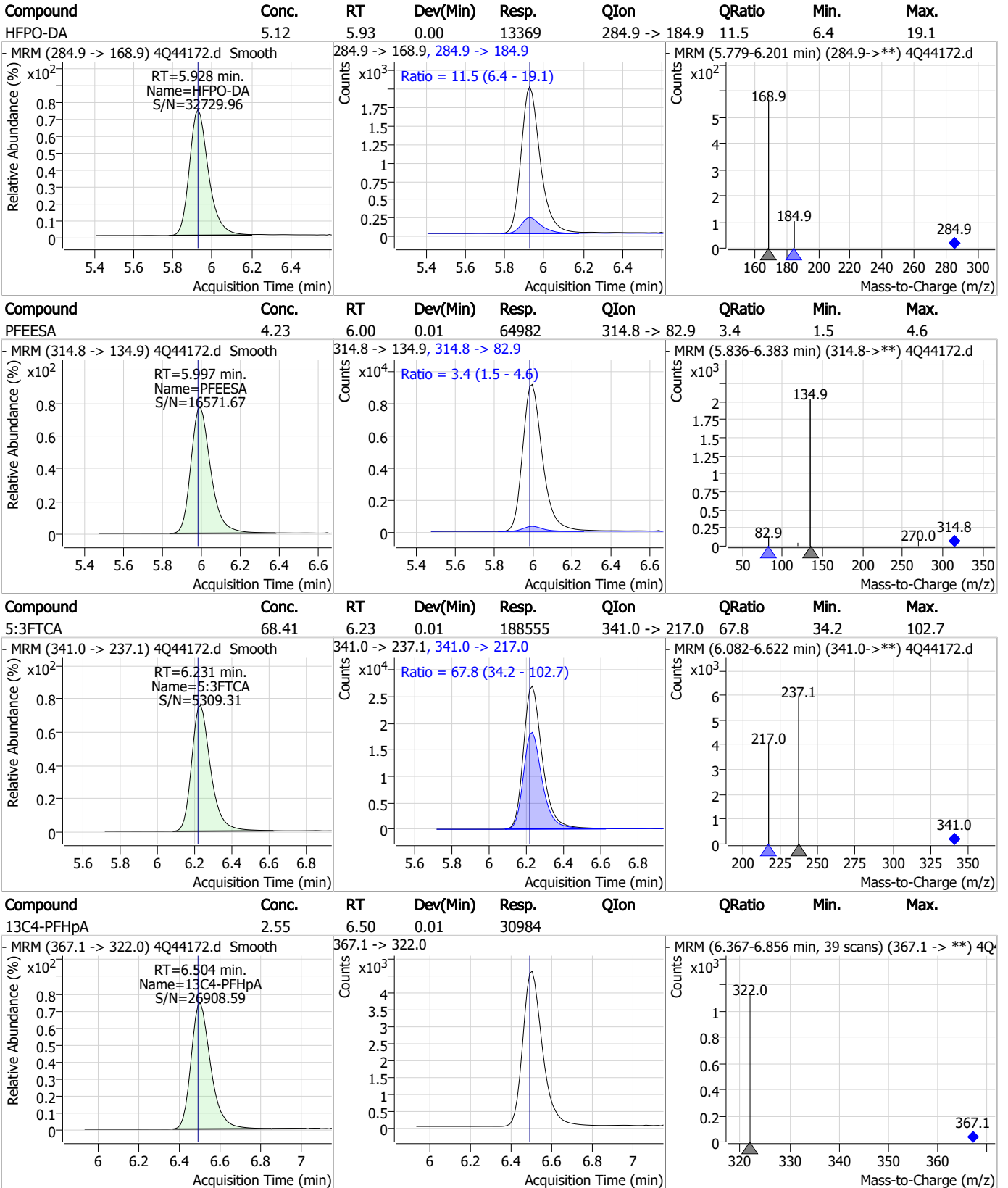
7.7.12
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Perfluorinated Compounds by LC/MS/MS



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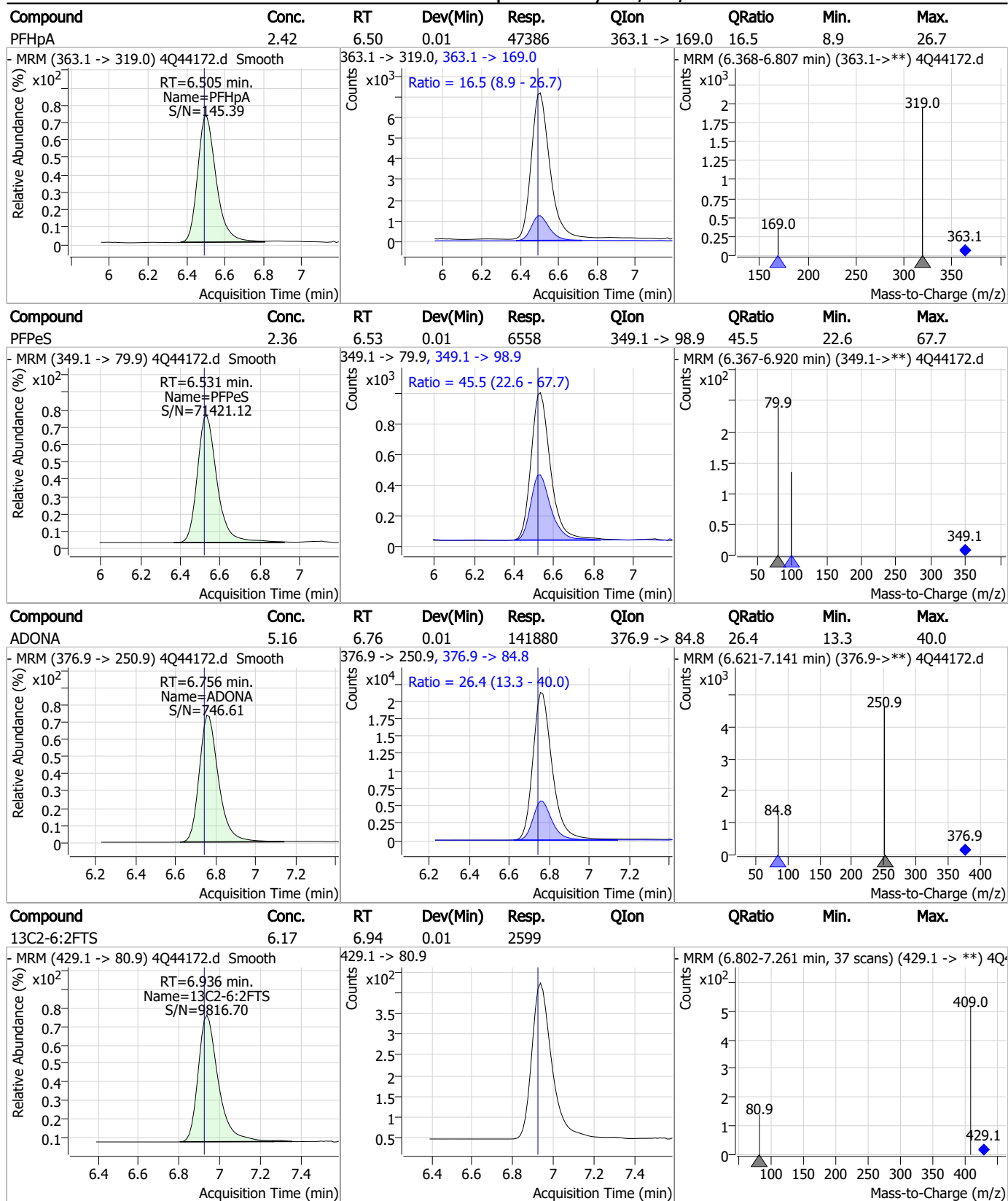
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



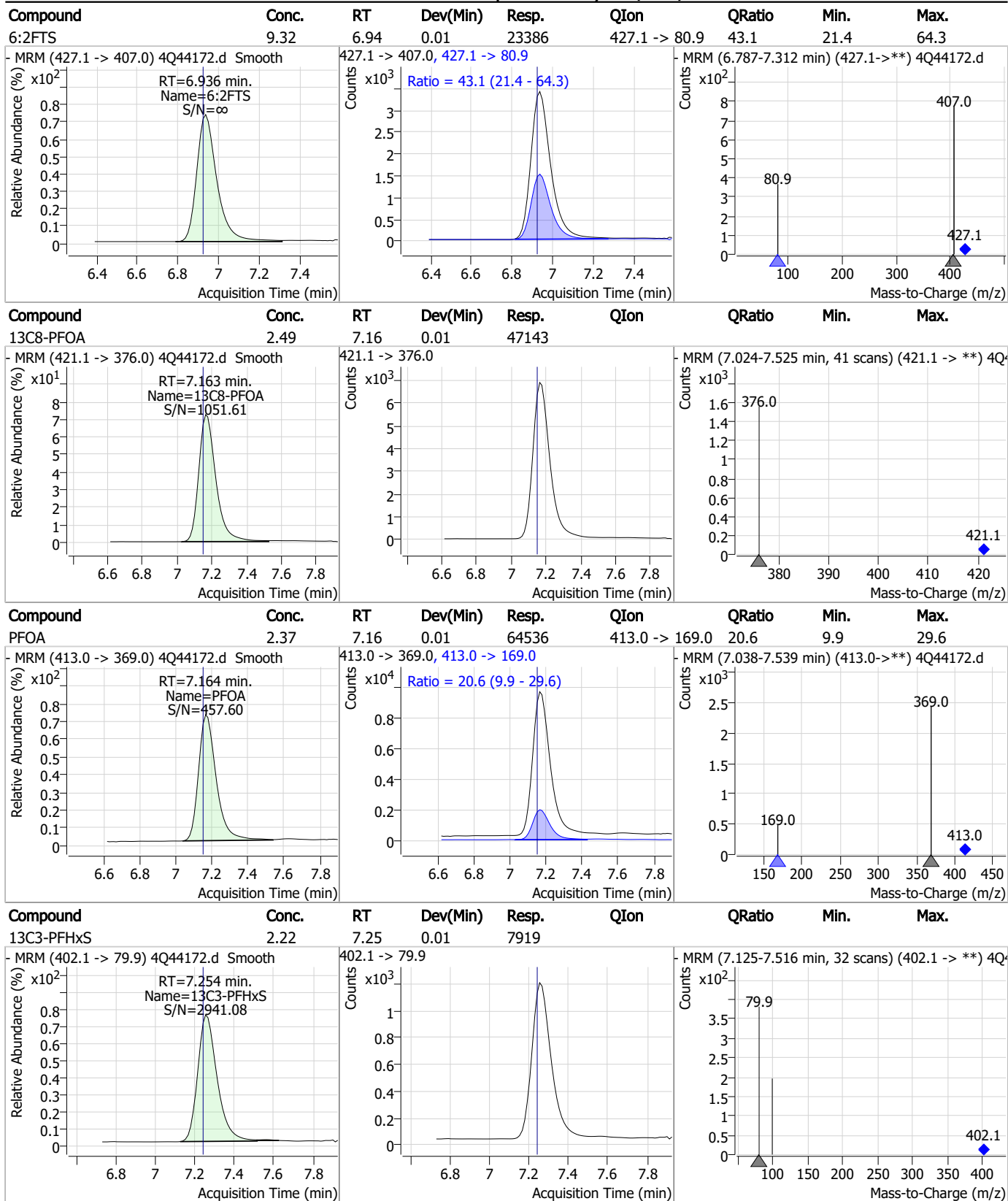
Perfluorinated Compounds by LC/MS/MS



7.7.12
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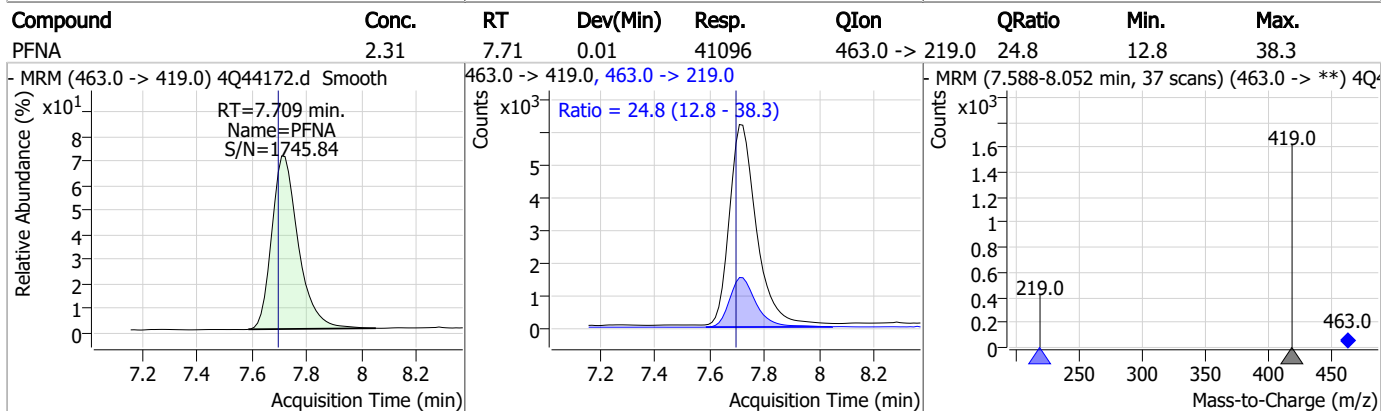
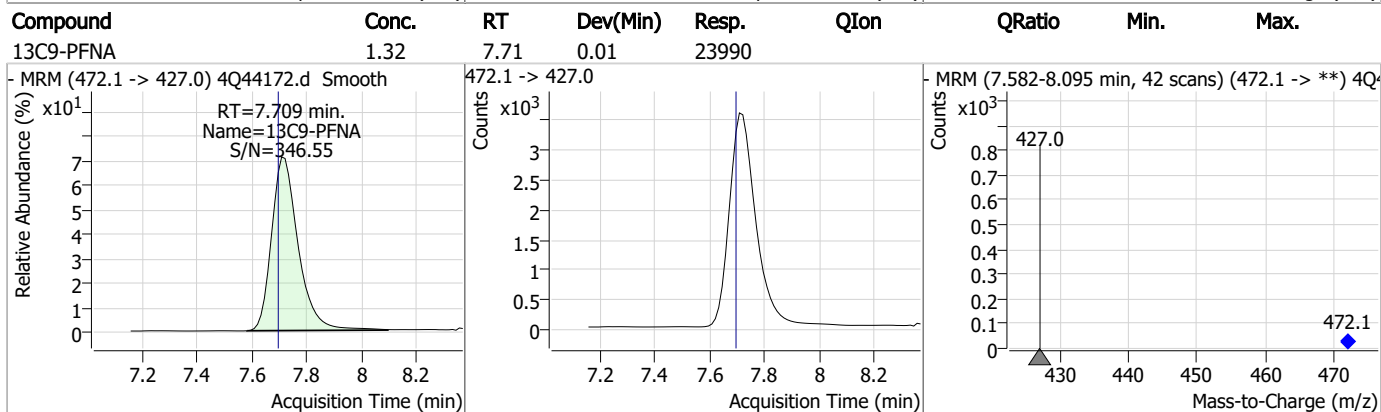
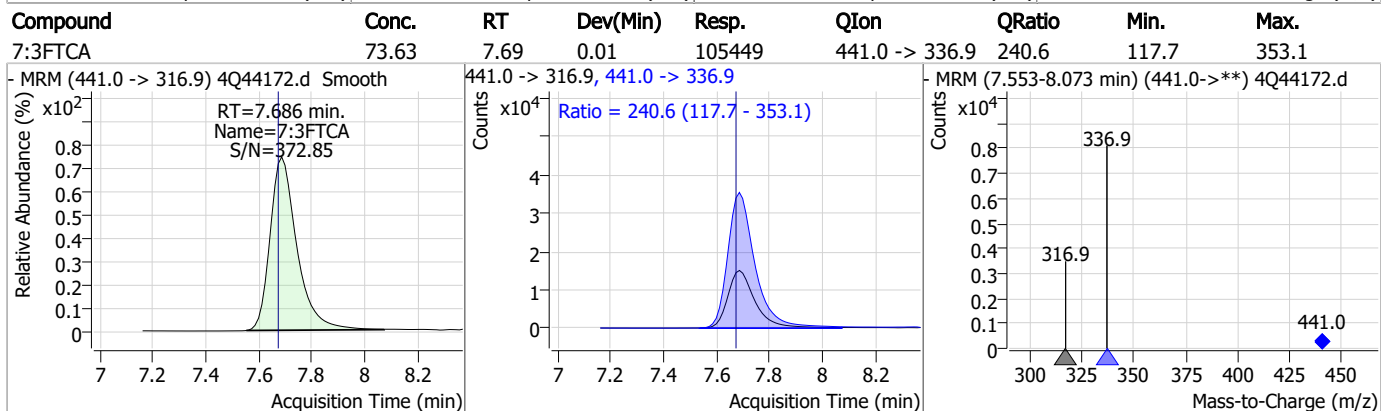
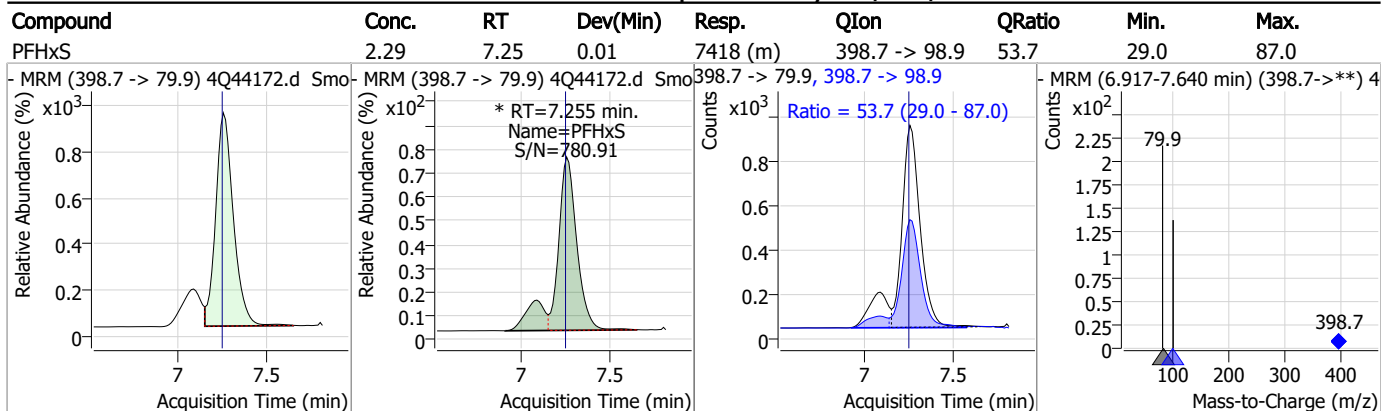


Perfluorinated Compounds by LC/MS/MS

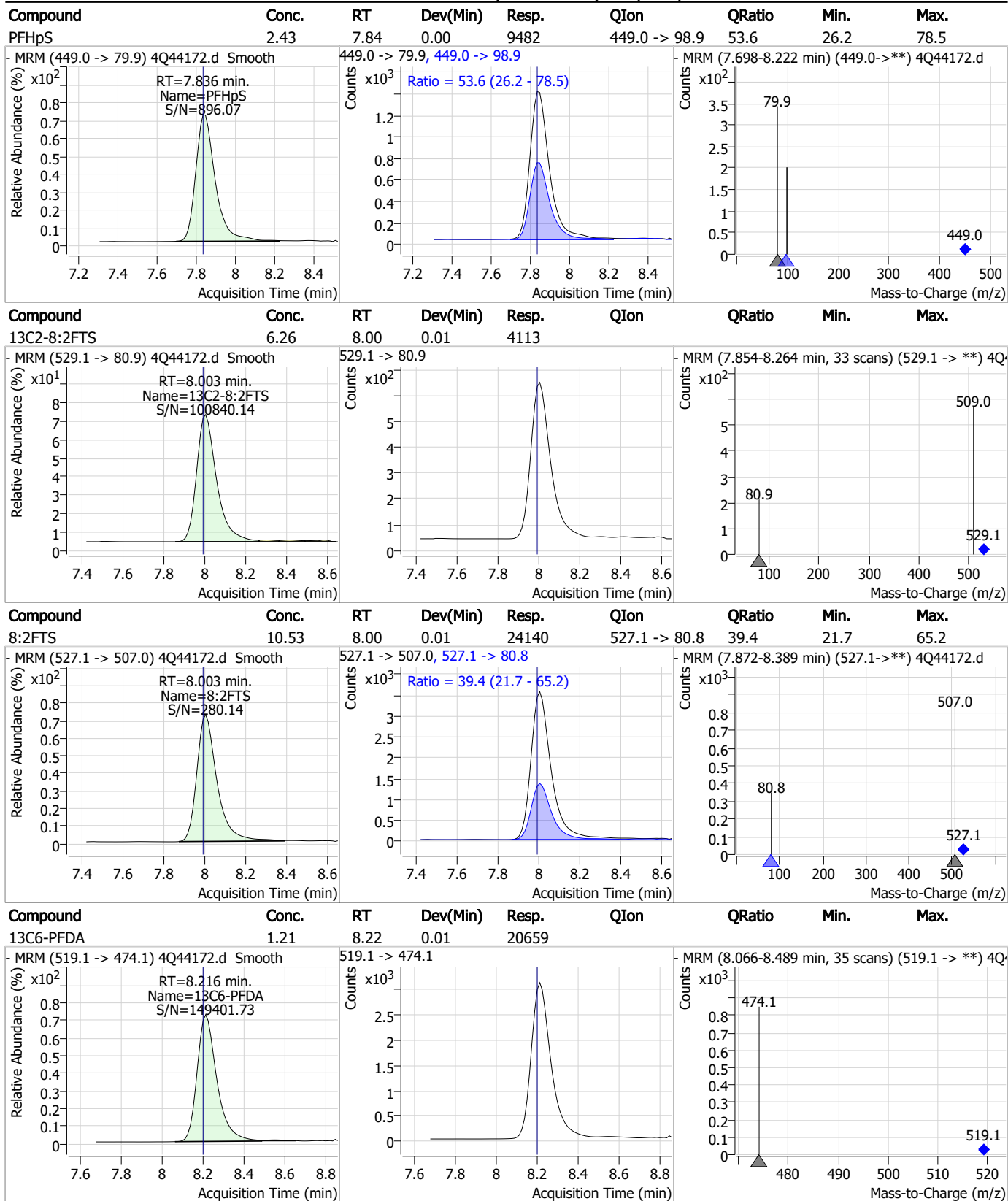


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Perfluorinated Compounds by LC/MS/MS



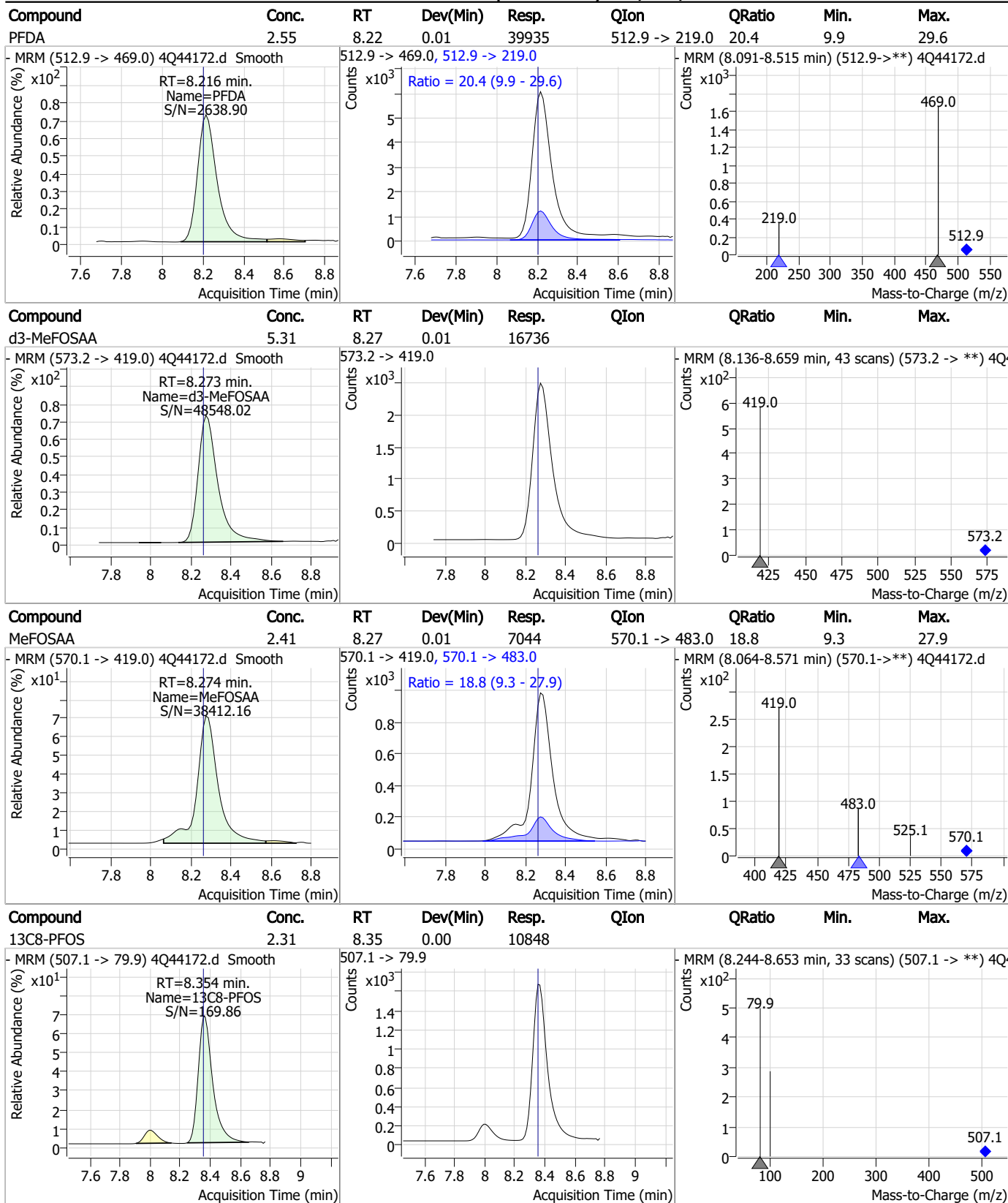
Perfluorinated Compounds by LC/MS/MS



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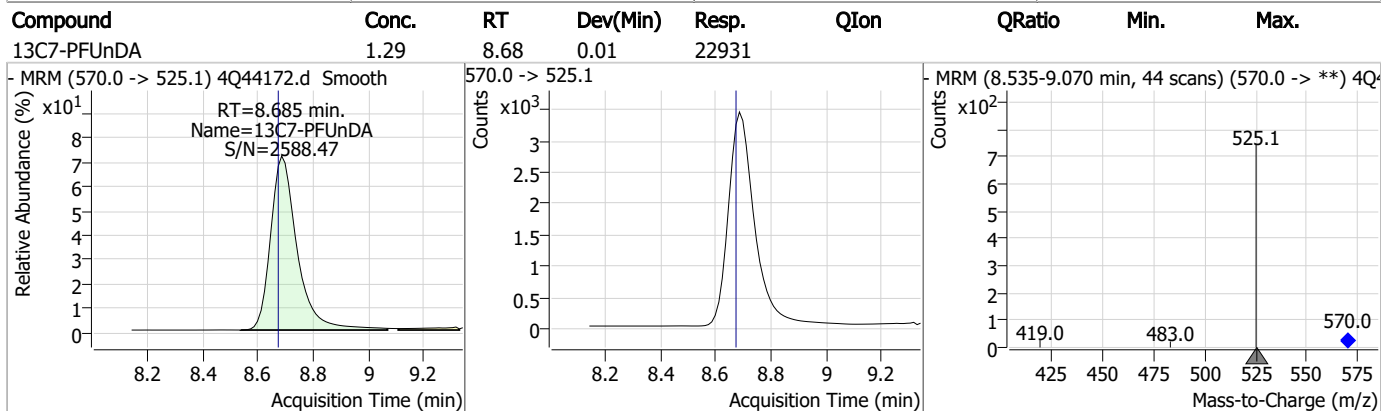
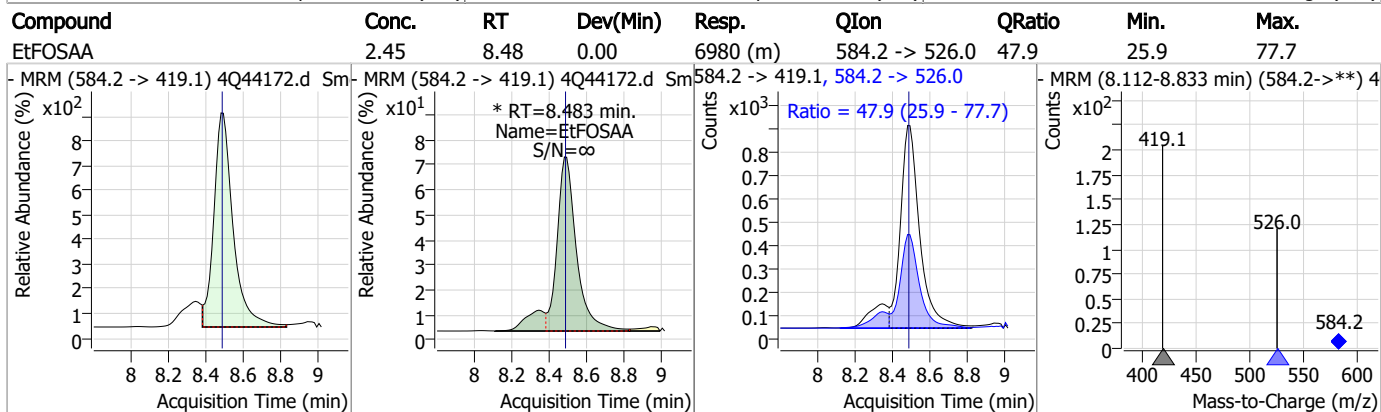
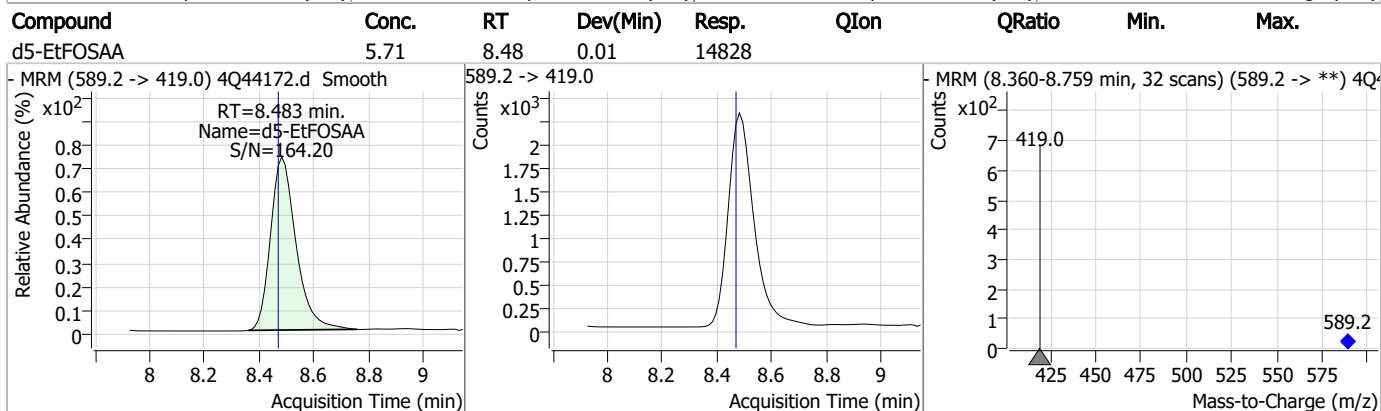
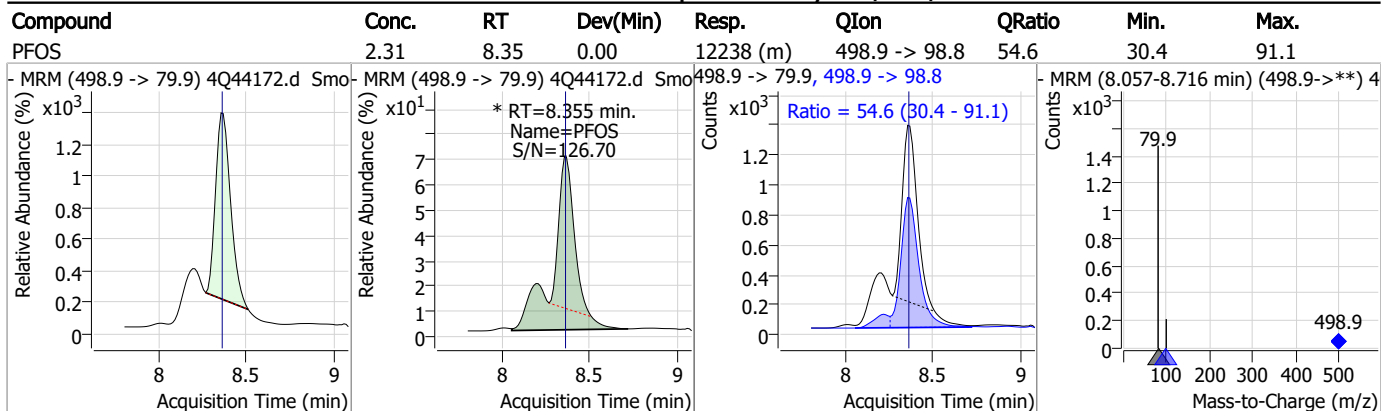
Perfluorinated Compounds by LC/MS/MS



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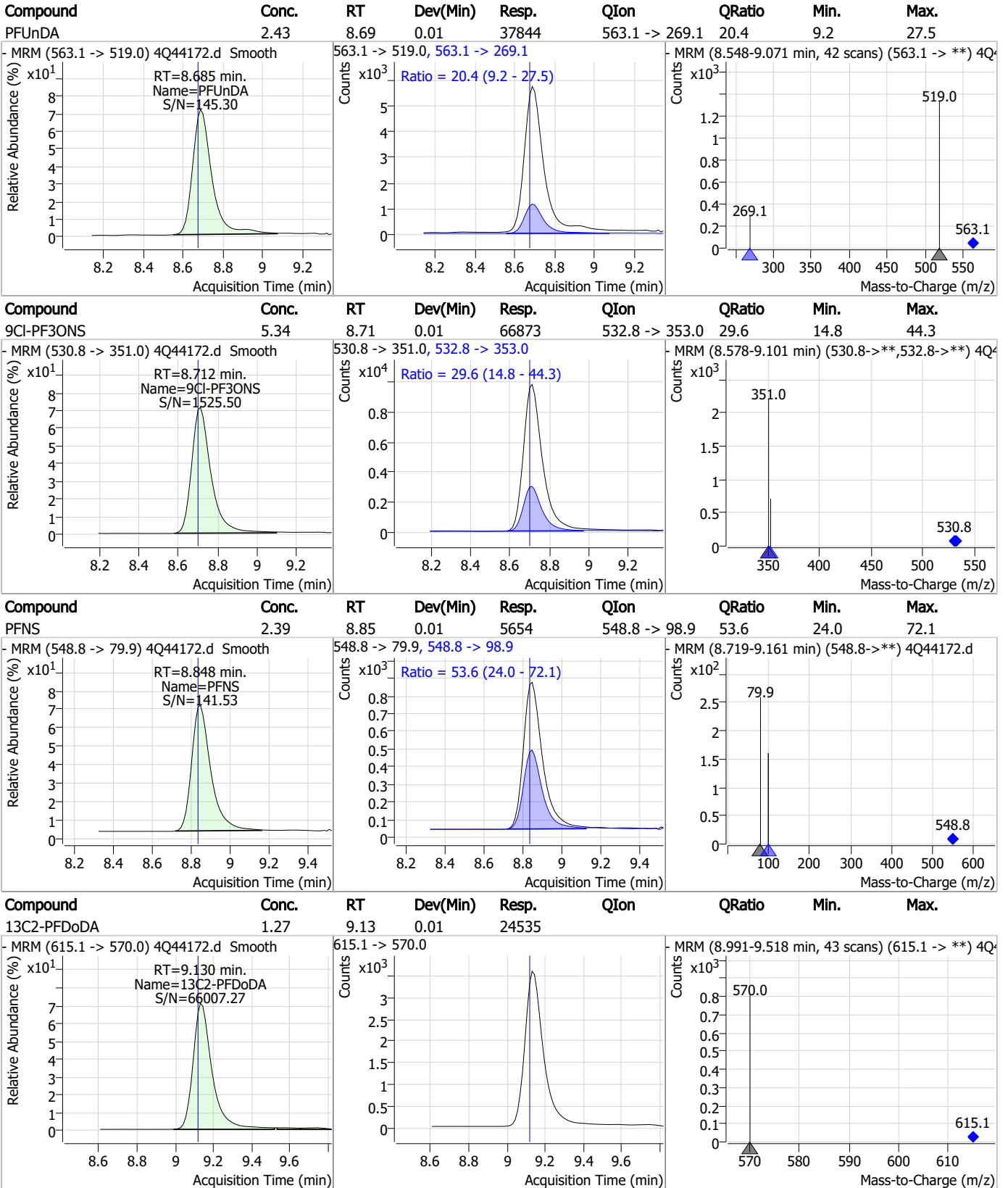


Perfluorinated Compounds by LC/MS/MS



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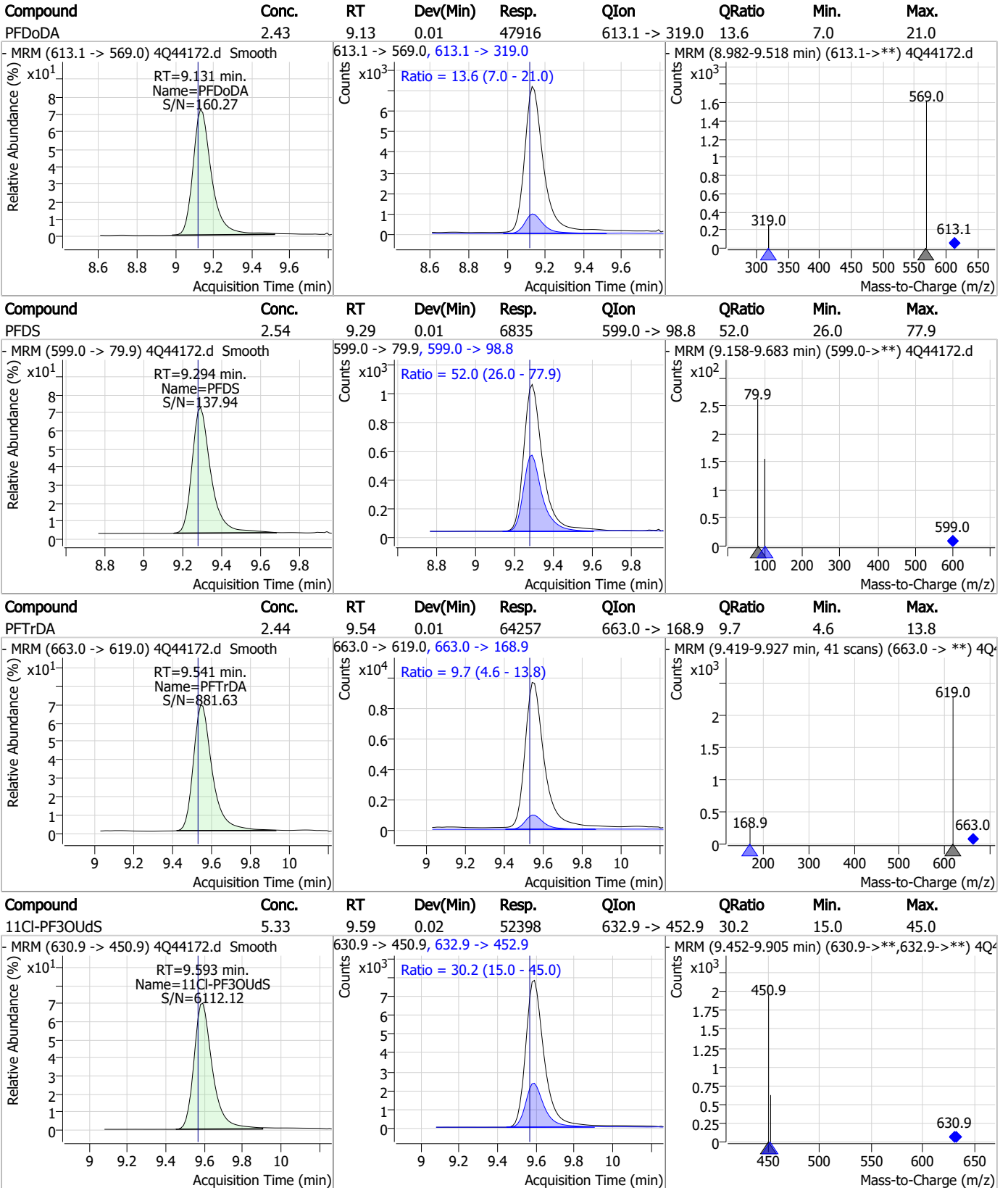
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



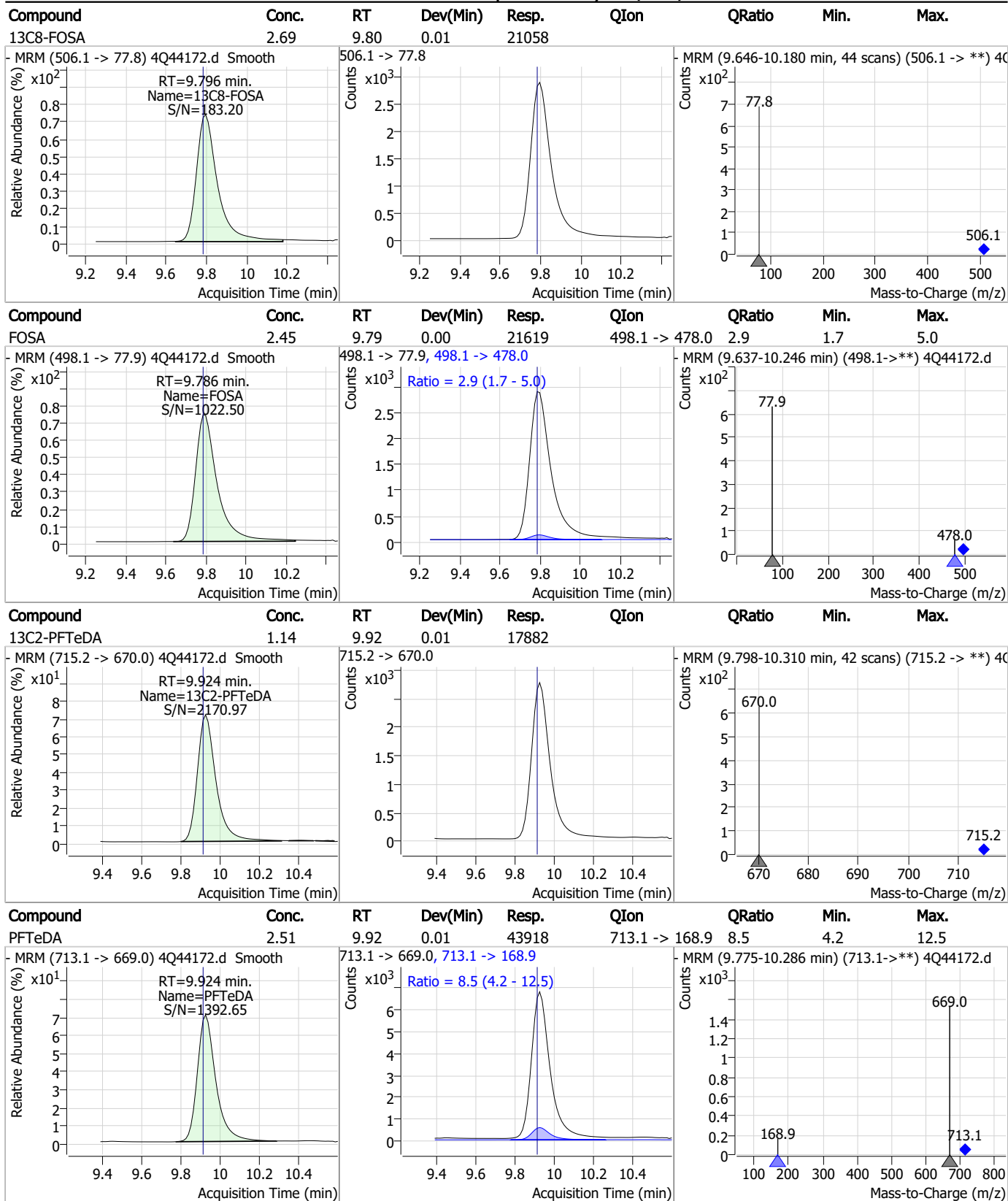
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



Perfluorinated Compounds by LC/MS/MS

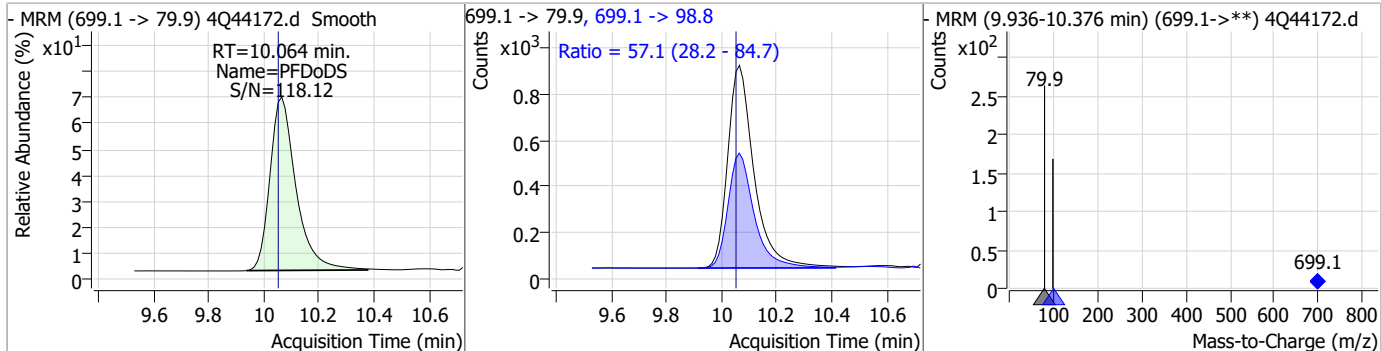


7.7.12
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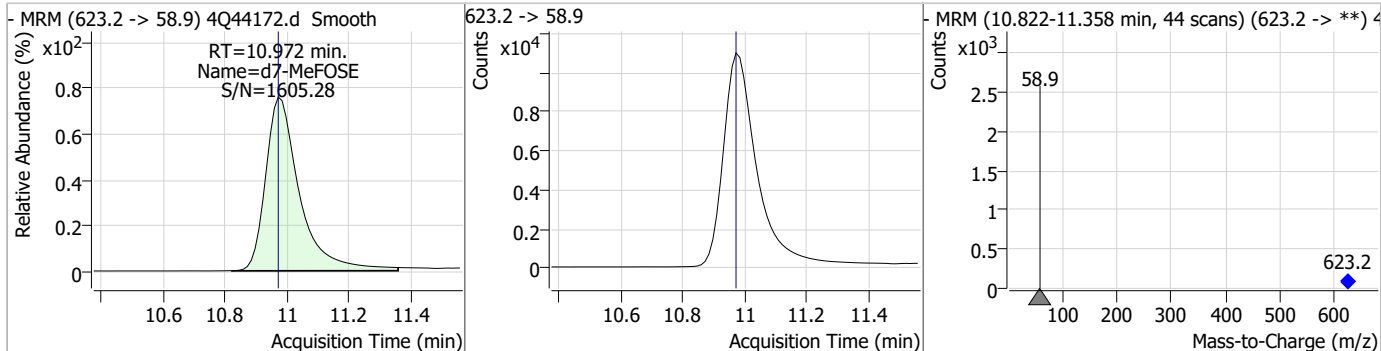


Perfluorinated Compounds by LC/MS/MS

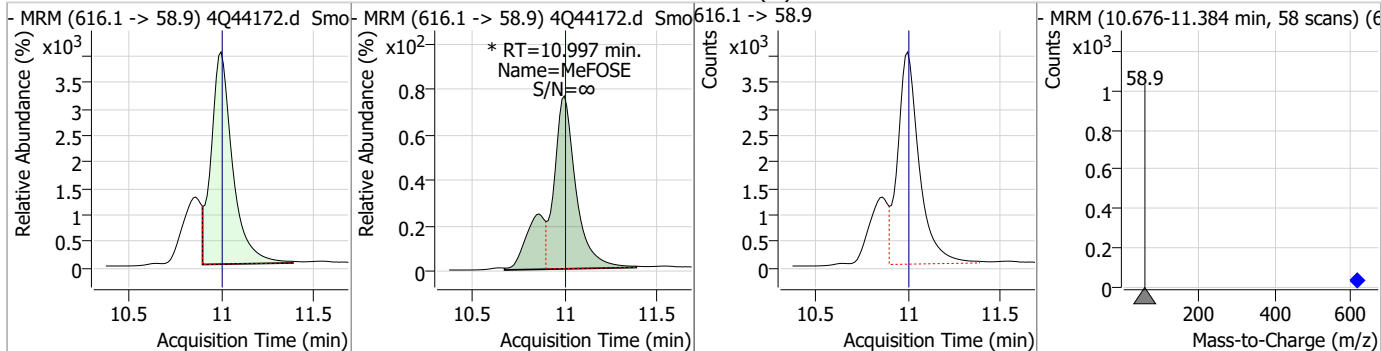
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.40	10.06	0.01	5764	699.1 -> 98.8	57.1	28.2	84.7



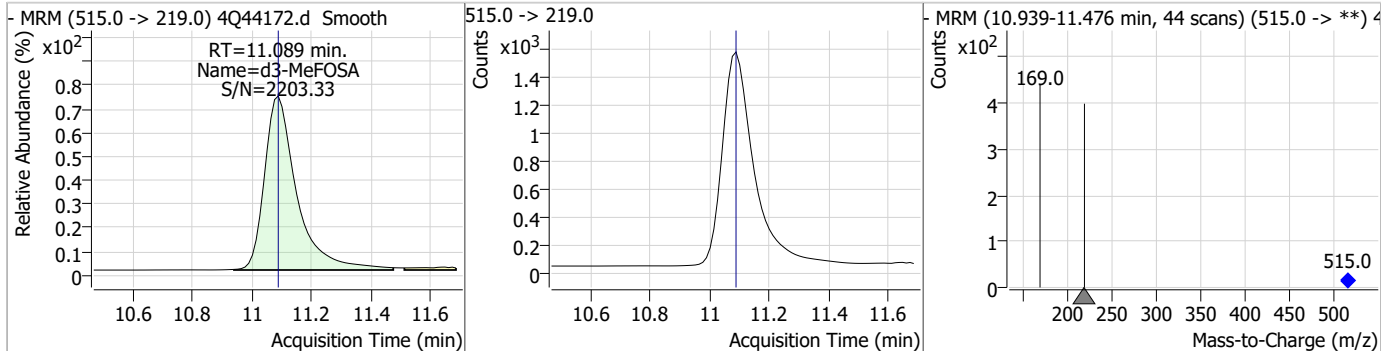
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	21.39	10.97	0.00	83126				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.09	11.00	0.00	41287 (m)				

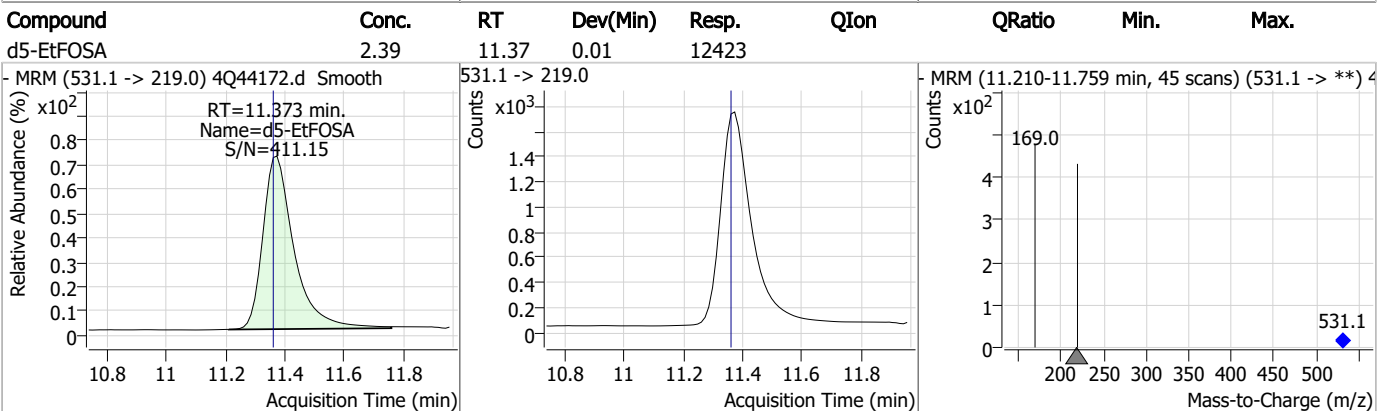
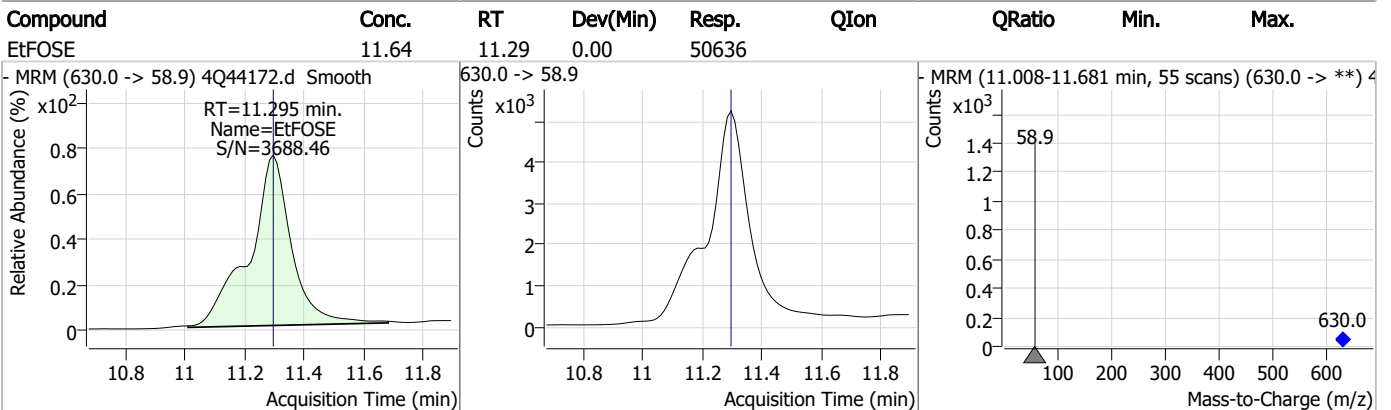
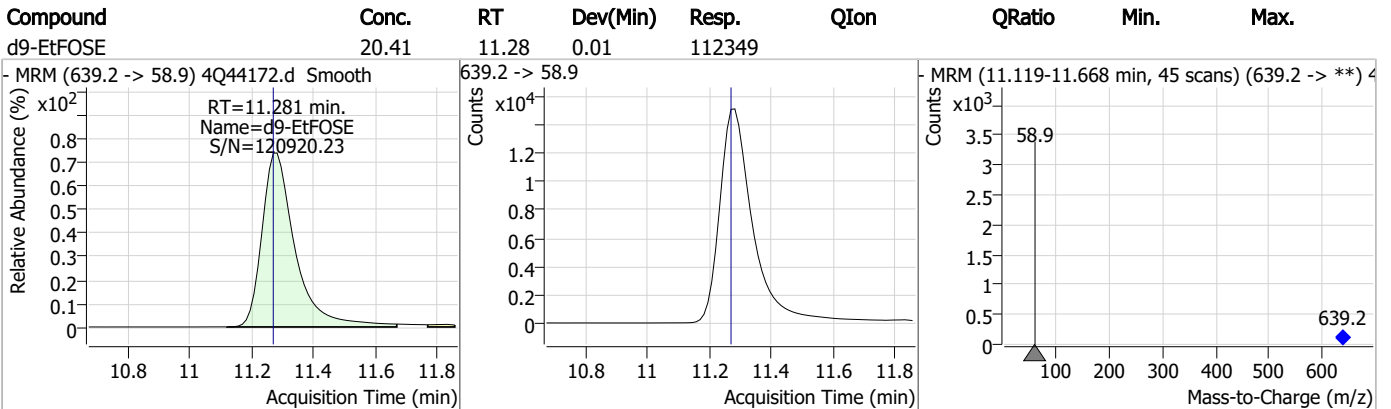
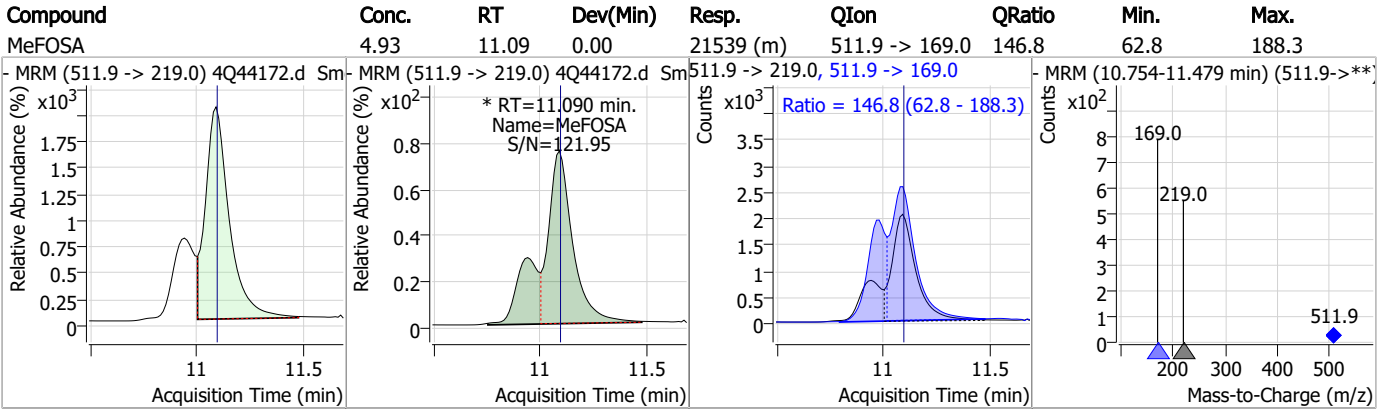


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.37	11.09	0.00	11602				



7.7.12
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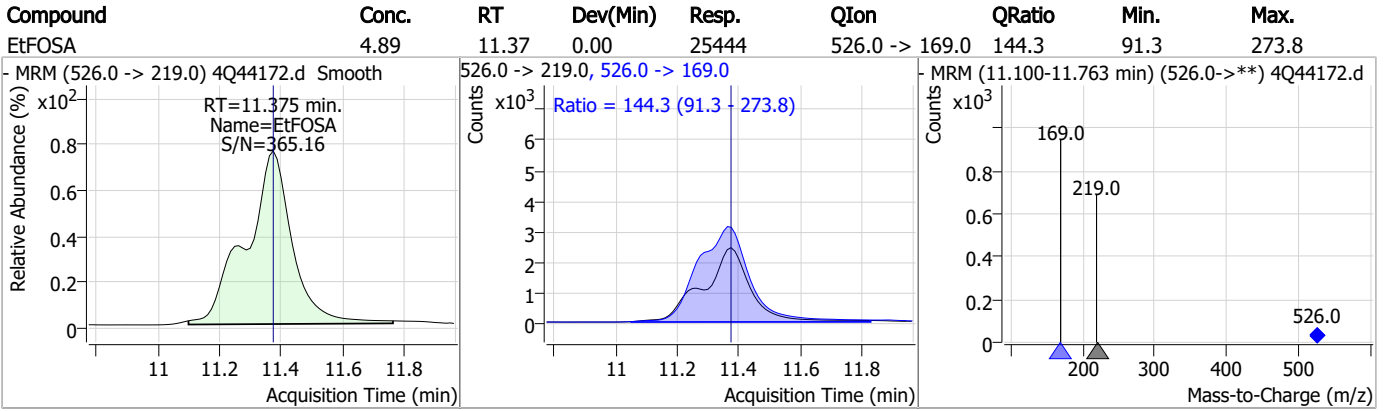
Perfluorinated Compounds by LC/MS/MS



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7



Perfluorinated Compounds by LC/MS/MS



7.7.12
7

Manual Integration Approval Summary

Sample Number: S4Q639-CC634 Method: EPA DRAFT 1633
Lab FileID: 4Q44172.D Analyst approved: 05/10/23 11:10 Martha Valls
Injection Time: 05/09/23 22:48 Supervisor approved: 05/10/23 17:27 Norman Farmer

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

7.7.12.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44173.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/9/2023 11:02:41 PM
 Sample Name : cc634-1.0LL
 Vial : P1-A2
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	147942	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	73737	5.00 µg/L	0.000
M5-PFHxA	5.572	318.0 -> 273.0	51910	2.50 µg/L	0.012
M4-PFHpA	6.504	367.1 -> 322.0	31482	2.50 µg/L	0.012
M8-PFOA	7.163	421.1 -> 376.0	47536	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	23712	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	21274	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	23314	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	23753	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	17182	1.25 µg/L	0.012
M8-FOSA	9.796	506.1 -> 77.8	21178	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	12133	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	8655	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	11523	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1388	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2531	5.00 µg/L	0.013
M2-8:2FTS	7.990	529.1 -> 80.9	4650	5.00 µg/L	0.000
M3-MeFOSAA	8.273	573.2 -> 419.0	16786	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	27619	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	15172	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	77640	25.00 µg/L	0.000
M9-EtFOSE	11.281	639.2 -> 58.9	108299	25.00 µg/L	0.012
M5-EtFOSA	11.373	531.1 -> 219.0	12139	2.50 µg/L	0.012
M3-MeFOSA	11.089	515.0 -> 219.0	11168	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	12531	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	78548	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	5387	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	58425	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	19821	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	27630	1.25 µg/L	0.012
13C2-PFHxA	5.573	315.1 -> 270.0	47997	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1388	6.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.8%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2531	6.41 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.2%		
13C2-8:2FTS	7.990	529.1 -> 80.9	4650	7.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 151.0%		
13C2-PFDoDA	9.130	615.1 -> 570.0	23753	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-PFTeDA	9.924	715.2 -> 670.0	17182	1.10 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.0%		
13C3-PFBS	5.464	302.1 -> 79.9	12133	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C3-PFHxS	7.254	402.1 -> 79.9	8655	2.59 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C4-PFBA	2.924	216.8 -> 171.9	147942	10.01 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.504	367.1 -> 322.0	31482	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	5.572	318.0 -> 273.0	51910	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFPeA	4.387	268.3 -> 223.0	73737	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C6-PFDA	8.216	519.1 -> 474.1	21274	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C7-PFUnDA	8.685	570.0 -> 525.1	23314	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-FOSA	9.796	506.1 -> 77.8	21178	2.69 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.8%	
13C8-PFOA	7.163	421.1 -> 376.0	47536	2.48 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C8-PFOS	8.354	507.1 -> 79.9	11523	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C9-PFNA	7.709	472.1 -> 427.0	23712	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
d3-MeFOSAA	8.273	573.2 -> 419.0	16786	5.31 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	27619	8.75 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 87.5%	
d3-MeFOSA	11.089	515.0 -> 219.0	11168	2.27 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.9%	
d5-EtFOSAA	8.483	589.2 -> 419.0	15172	5.82 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.5%	
d7-MeFOSE	10.972	623.2 -> 58.9	77640	19.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.7%	
d9-EtFOSE	11.281	639.2 -> 58.9	108299	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	12139	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.9%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	1728	0.77 µg/L	100
		327.1 -> 80.9	736		
6:2FTS	6.936	427.1 -> 407.0	1944	0.80 µg/L	99
		427.1 -> 80.9	825		
8:2FTS	7.991	527.1 -> 507.0	1674	0.65 µg/L	89
		527.1 -> 80.8	845		
EtFOSAA	8.483	584.2 -> 419.1	503	0.17 µg/L	m 82
		584.2 -> 526.0	323		
FOSA	9.786	498.1 -> 77.9	1943	0.22 µg/L	100
		498.1 -> 478.0	66		
MeFOSAA	8.274	570.1 -> 419.0	483	0.17 µg/L	#m 58
		570.1 -> 483.0	180		
PFBA	2.932	212.8 -> 168.9	2975	0.75 µg/L	100
PFBS	5.465	298.7 -> 79.9	1011	0.20 µg/L	96
		298.7 -> 98.8	341		
PFDA	8.216	512.9 -> 469.0	3023	0.19 µg/L	96
		512.9 -> 219.0	653		
PFDODA	9.131	613.1 -> 569.0	3736	0.20 µg/L	96
		613.1 -> 319.0	591		
PFDS	9.294	599.0 -> 79.9	546	0.19 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	284	0.16	µg/L	97
		363.1 -> 319.0	3249			
PFHpS	7.836	363.1 -> 169.0	620	0.16	µg/L	71
		449.0 -> 79.9	656			
PFHxA	5.575	449.0 -> 98.9	477	0.18	µg/L	98
		313.0 -> 269.0	3676			
PFHxS	7.255	313.0 -> 118.9	139	0.17	µg/L	m
		398.7 -> 79.9	593			
PFNA	7.709	398.7 -> 98.9	344	0.19	µg/L	93
		463.0 -> 419.0	3314			
PFNS	8.848	463.0 -> 219.0	722	0.18	µg/L	86
		548.8 -> 79.9	455			
PFOA	7.164	548.8 -> 98.9	261	0.18	µg/L	97
		413.0 -> 369.0	5026			
PFOS	8.355	413.0 -> 169.0	1060	0.19	µg/L	m
		498.9 -> 79.9	1079			
PFPeA	4.389	498.9 -> 98.8	545	0.39	µg/L	100
		263.0 -> 219.0	6870			
PFPeS	6.531	349.1 -> 79.9	495	0.16	µg/L	92
		349.1 -> 98.9	250			
PFTeDA	9.924	713.1 -> 669.0	3343	0.20	µg/L	94
		713.1 -> 168.9	353			
PFTrDA	9.541	663.0 -> 619.0	4563	0.18	µg/L	95
		663.0 -> 168.9	506			
PFUnDA	8.685	563.1 -> 519.0	3100	0.20	µg/L	95
		563.1 -> 269.1	638			
11Cl-PF3OUdS	9.593	630.9 -> 450.9	4075	0.41	µg/L	98
		632.9 -> 452.9	1176			
9Cl-PF3ONS	8.700	530.8 -> 351.0	4975	0.39	µg/L	88
		532.8 -> 353.0	1784			
ADONA	6.756	376.9 -> 250.9	10919	0.39	µg/L	99
		376.9 -> 84.8	2978			
HFPO-DA	5.928	284.9 -> 168.9	1147	0.43	µg/L	92
		284.9 -> 184.9	109			
3:3FTCA	3.867	241.0 -> 177.0	832	1.07	µg/L	99
		241.0 -> 117.0	81			
5:3FTCA	6.231	341.0 -> 237.1	14497	5.25	µg/L	95
		341.0 -> 217.0	9319			
7:3FTCA	7.686	441.0 -> 316.9	8056	5.62	µg/L	94
		441.0 -> 336.9	19820			
EtFOSA	11.375	526.0 -> 219.0	1984	0.39	µg/L	70
		526.0 -> 169.0	2779			
EtFOSE	11.295	630.0 -> 58.9	4186	1.00	µg/L	m
		511.9 -> 219.0	1710			
MeFOSA	11.090	511.9 -> 169.0	2622	0.41	µg/L	m
		616.1 -> 58.9	2986			
MeFOSE	10.997	699.1 -> 79.9	470	0.94	µg/L	m
		699.1 -> 98.8	267			
PFDoDS	10.064	295.0 -> 201.0	538	0.18	µg/L	100
		295.0 -> 84.9	82			
NFDHA	5.453	279.0 -> 85.1	3695	0.37	µg/L	78
		229.0 -> 84.9	3656			
PFMBA	4.791	314.8 -> 134.9	4952	0.39	µg/L	100
		314.8 -> 82.9	239			
PFMPA	3.540			0.32	µg/L	#
PFEESA	5.997			0.32	µg/L	#

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

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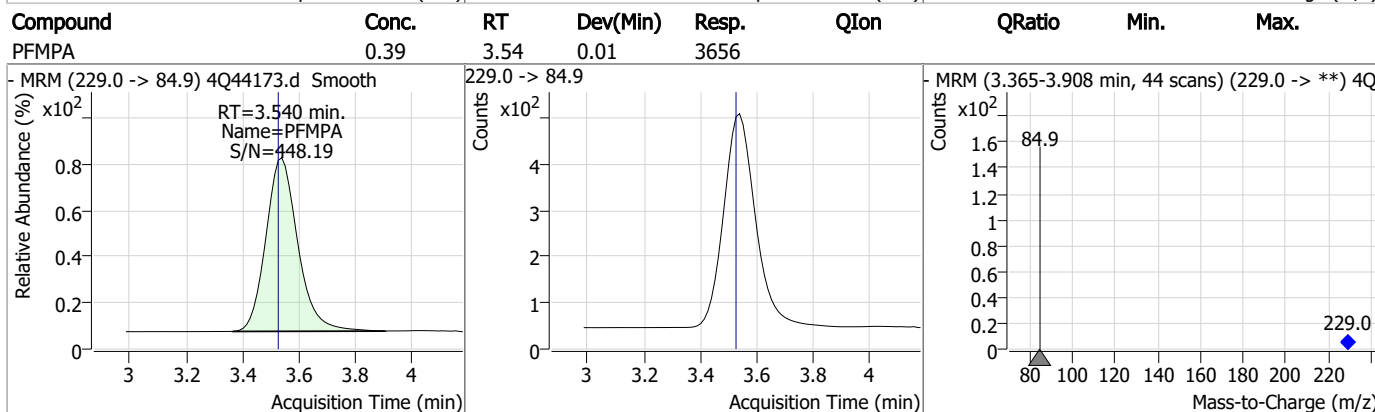
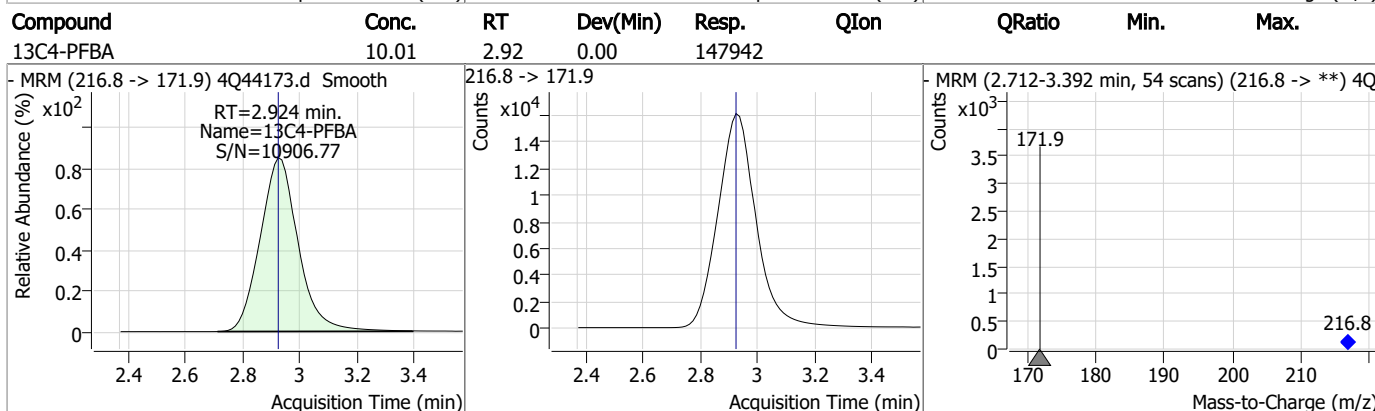
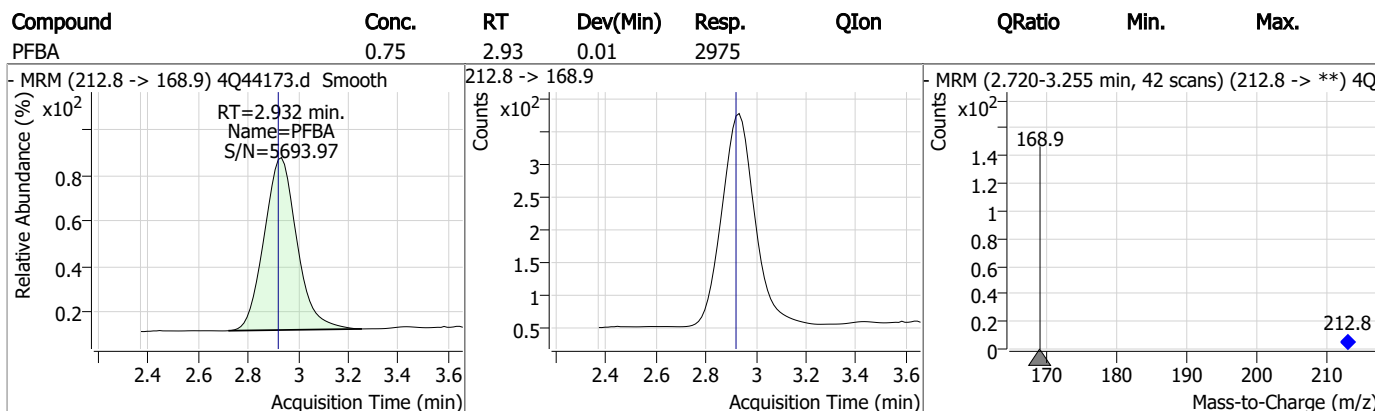
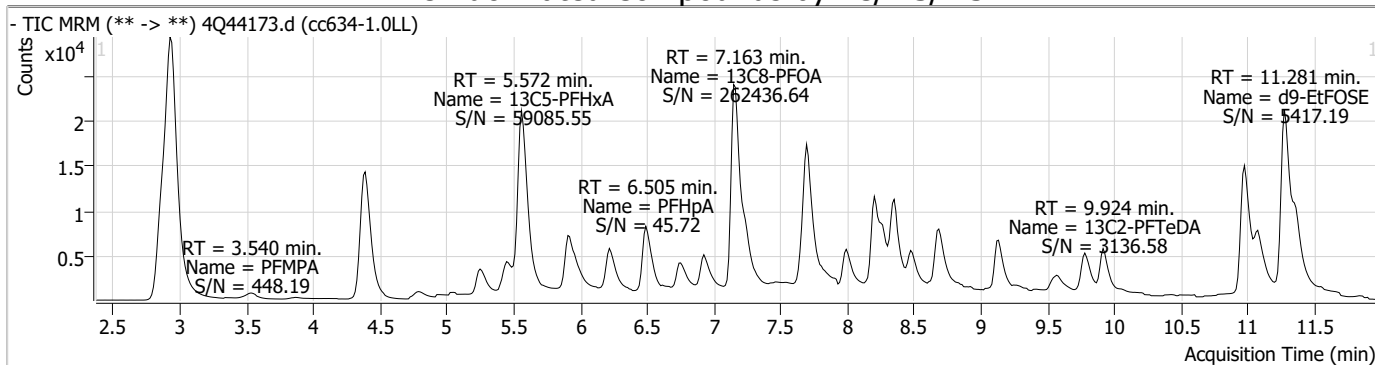
Perfluorinated Compounds by LC/MS/MS

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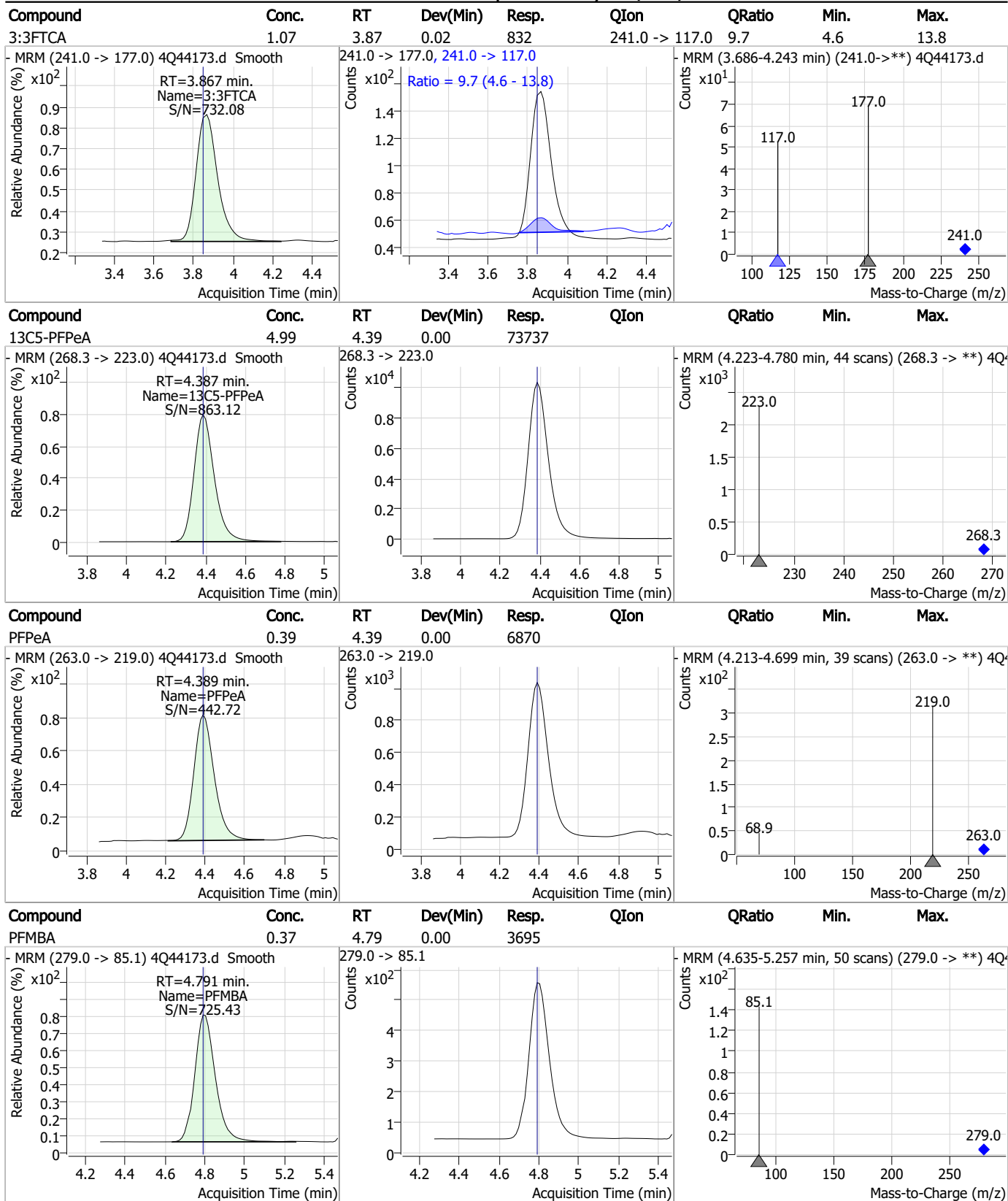
7.7.13

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Perfluorinated Compounds by LC/MS/MS

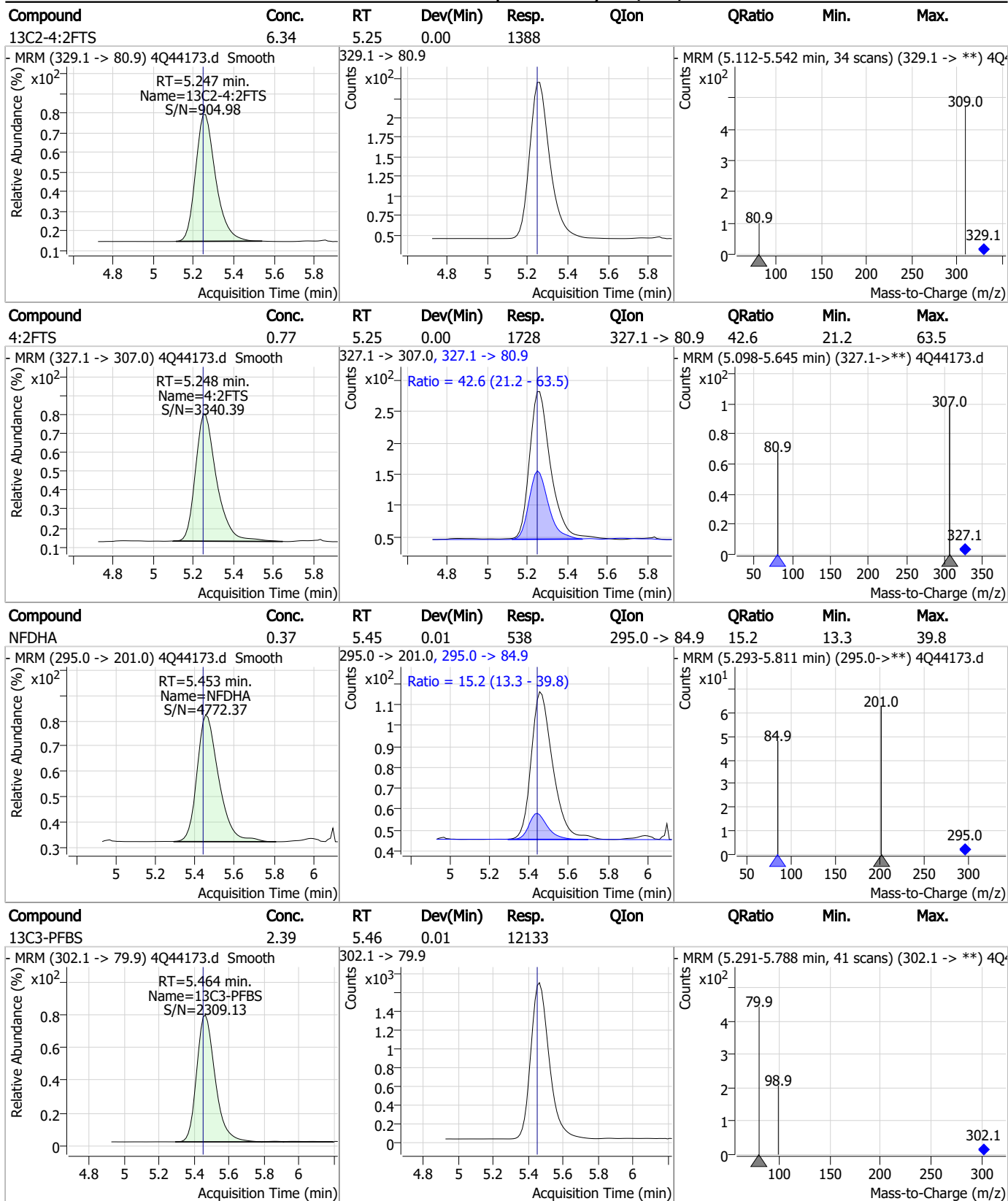


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

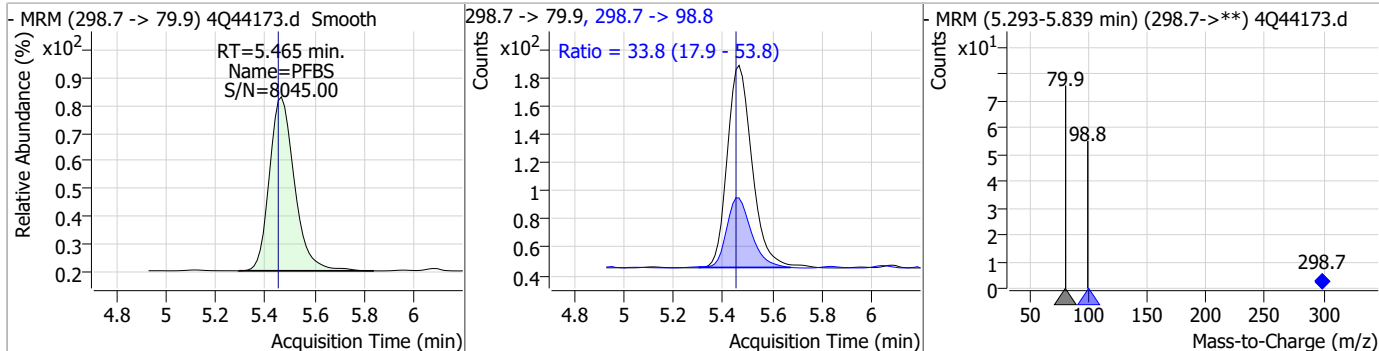


7.7.13

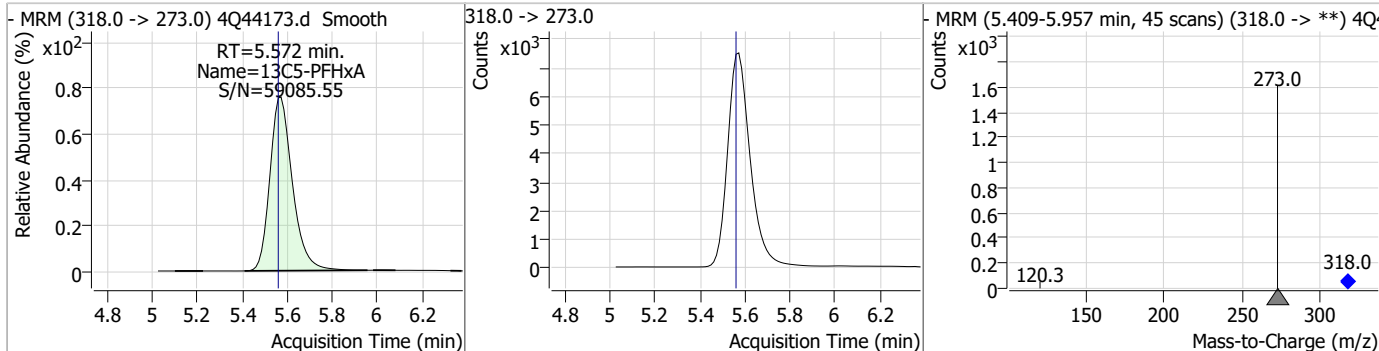
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Perfluorinated Compounds by LC/MS/MS

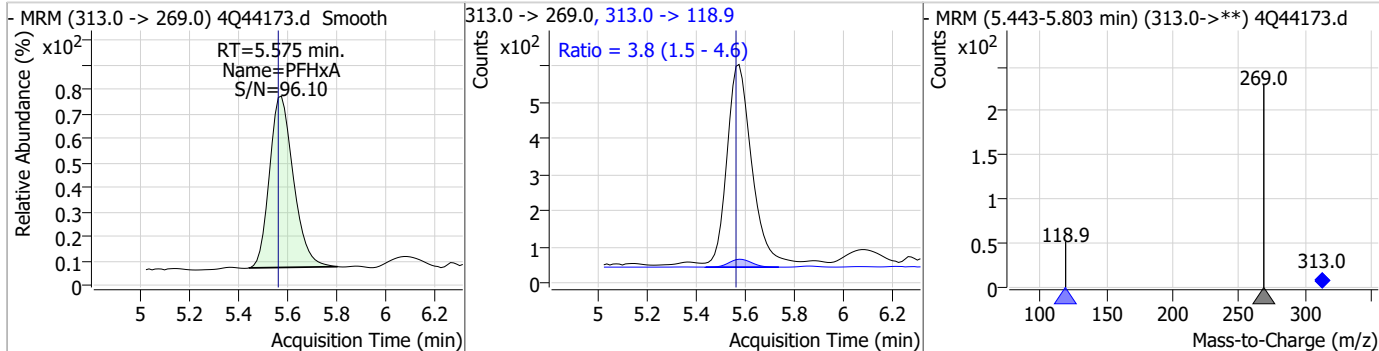
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.20	5.46	0.01	1011	298.7 -> 98.8	33.8	17.9	53.8



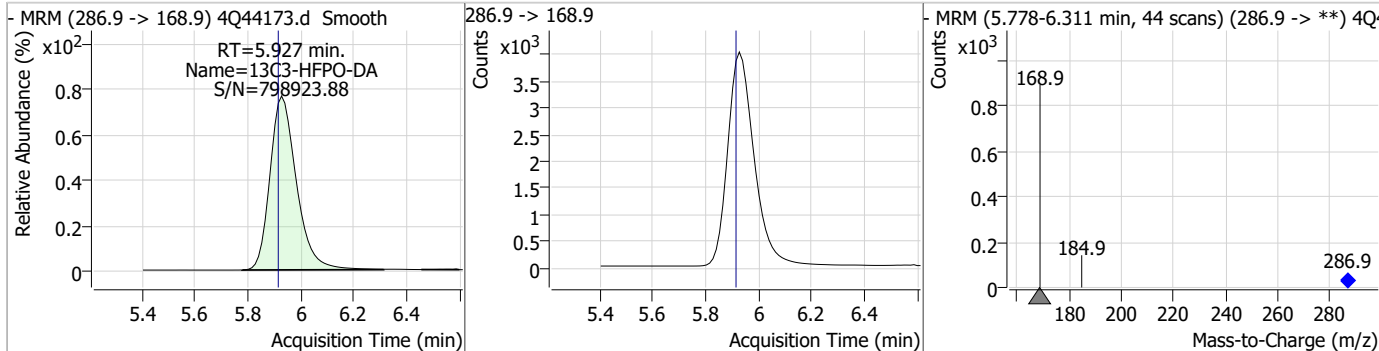
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.57	0.01	51910				



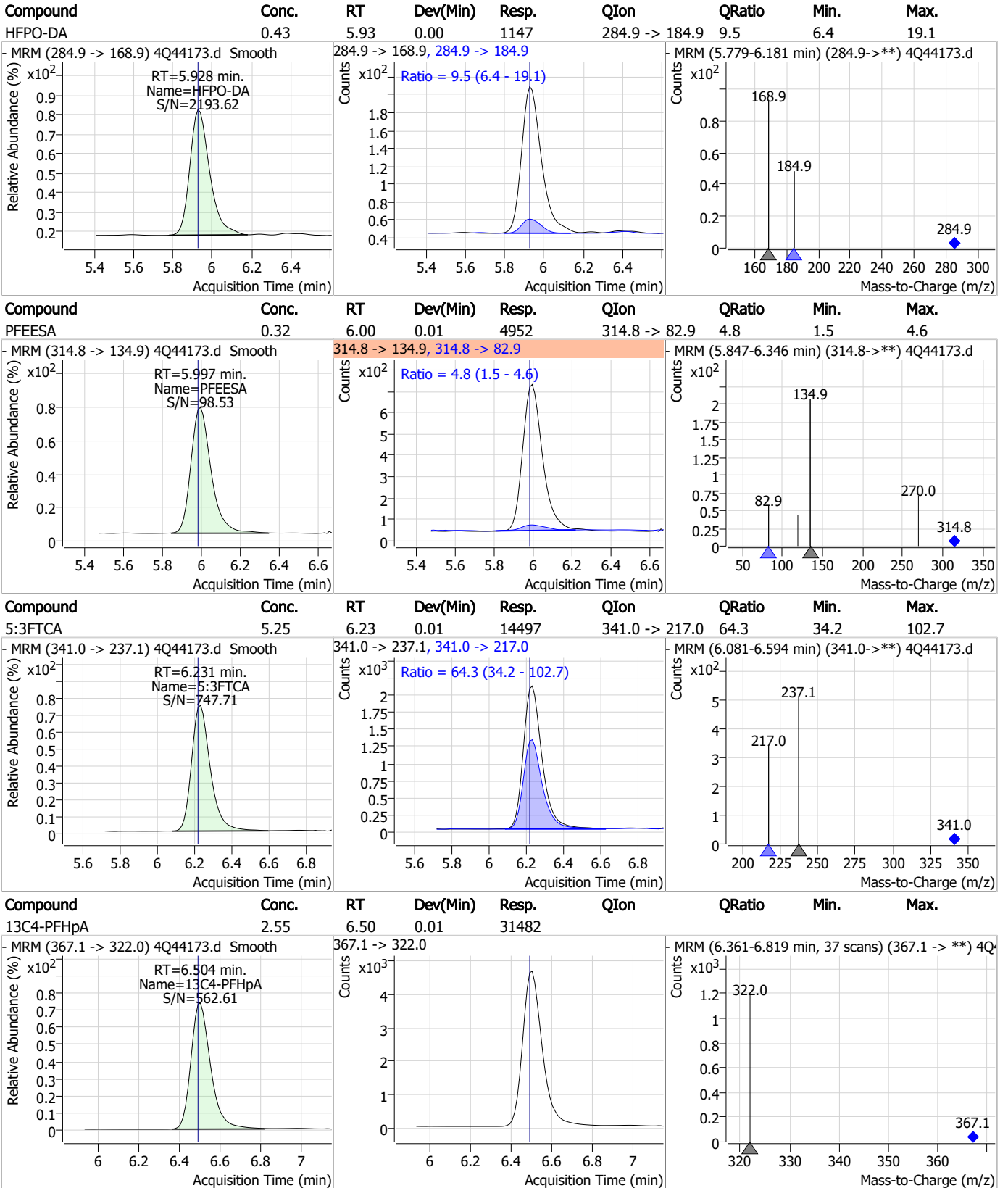
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.18	5.57	0.01	3676	313.0 -> 118.9	3.8	1.5	4.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.75	5.93	0.01	27619				



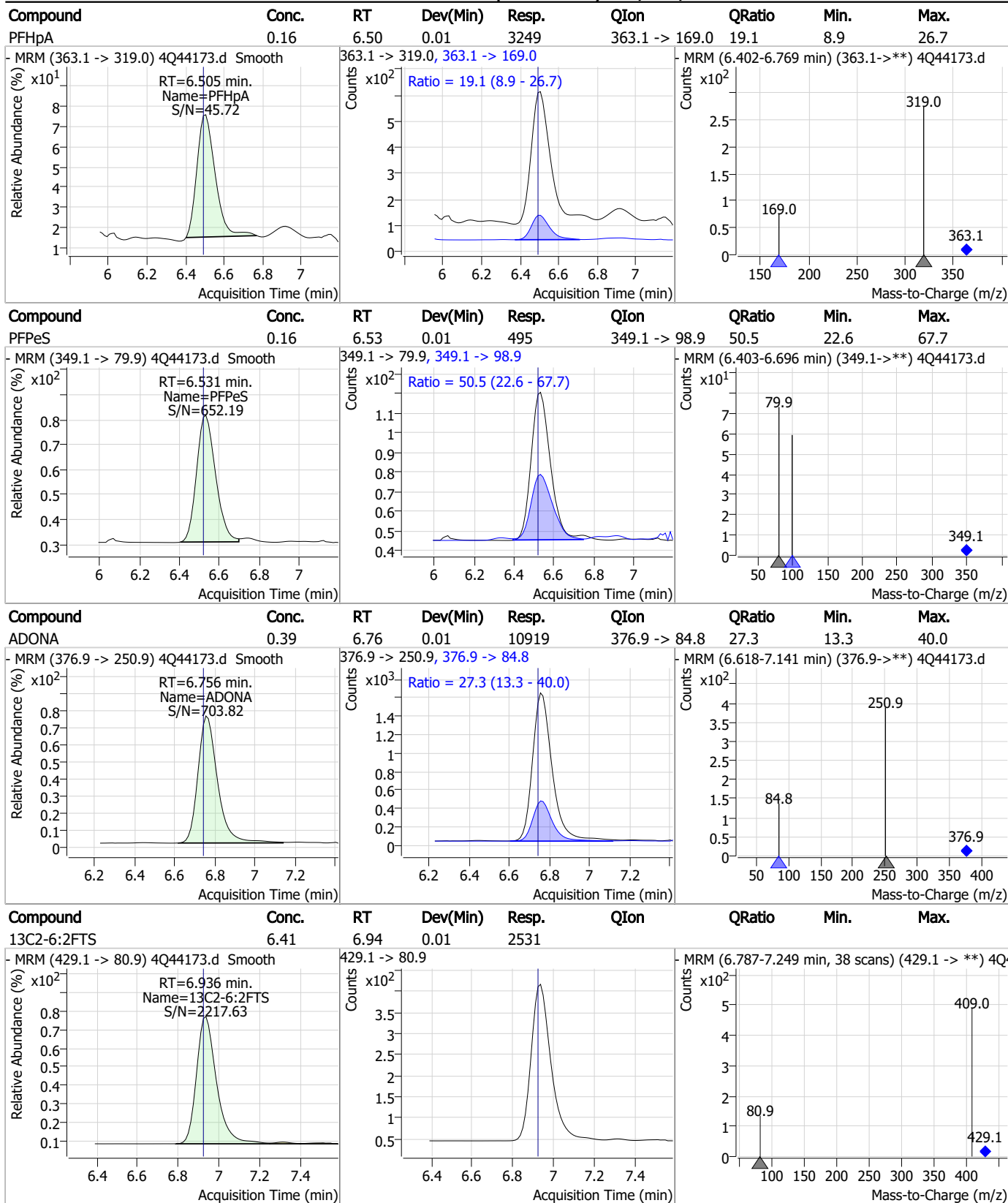
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

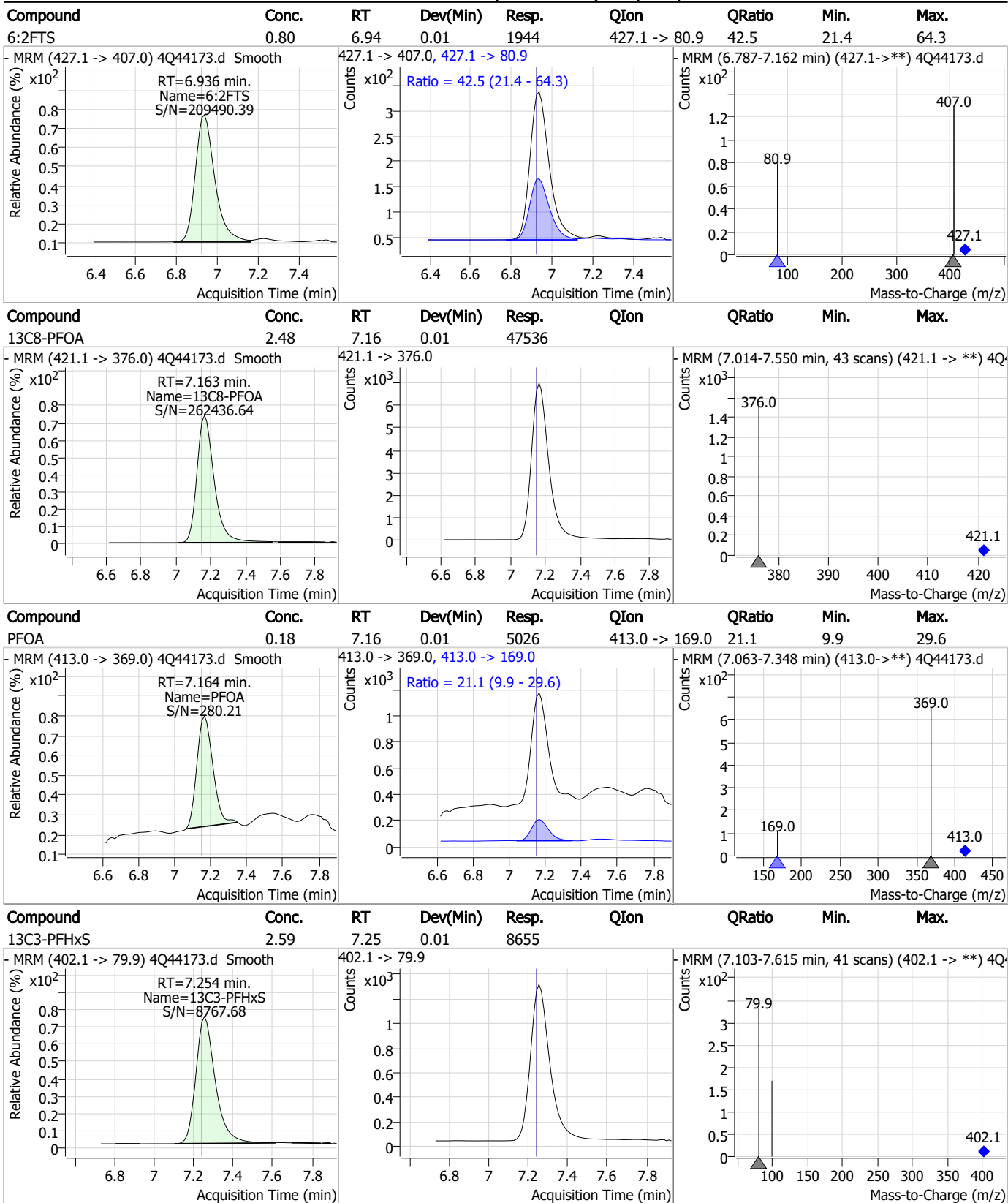


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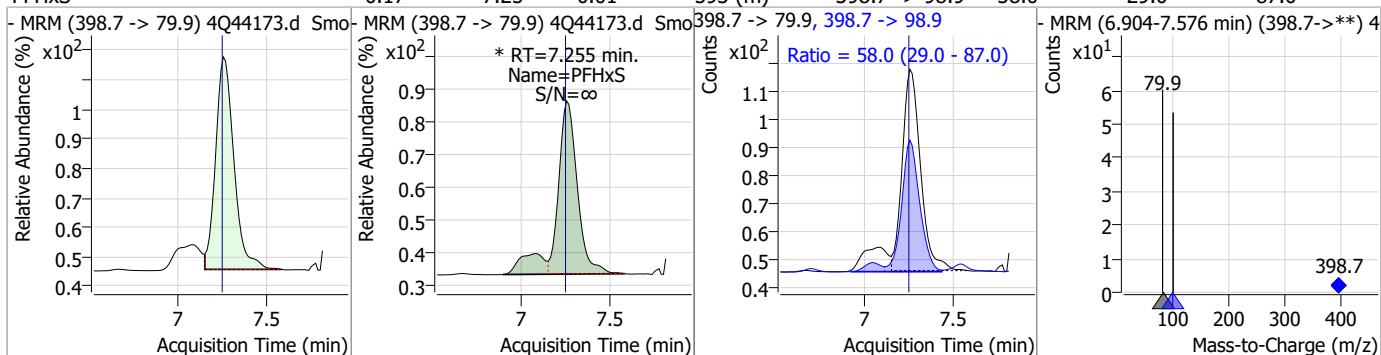
Perfluorinated Compounds by LC/MS/MS



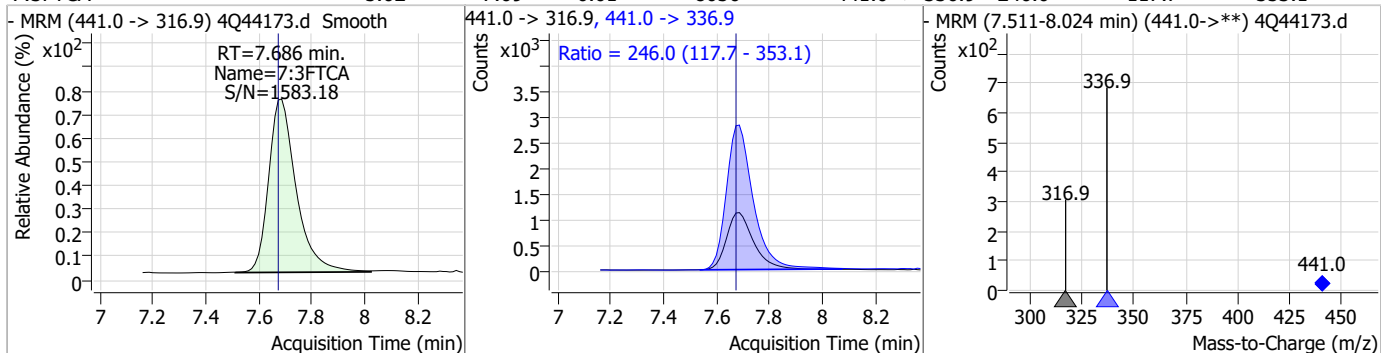
7.7.13
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Perfluorinated Compounds by LC/MS/MS

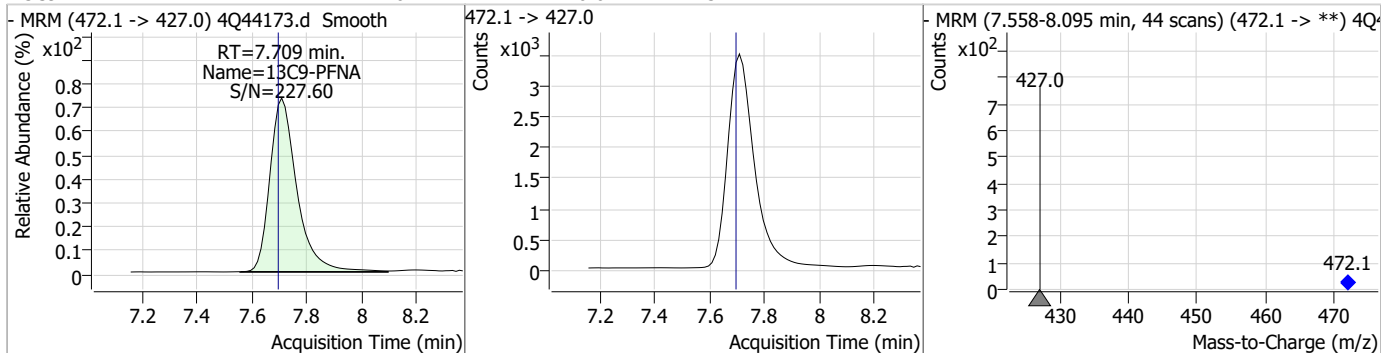
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.17	7.25	0.01	593 (m)	398.7 -> 98.9	58.0	29.0	87.0



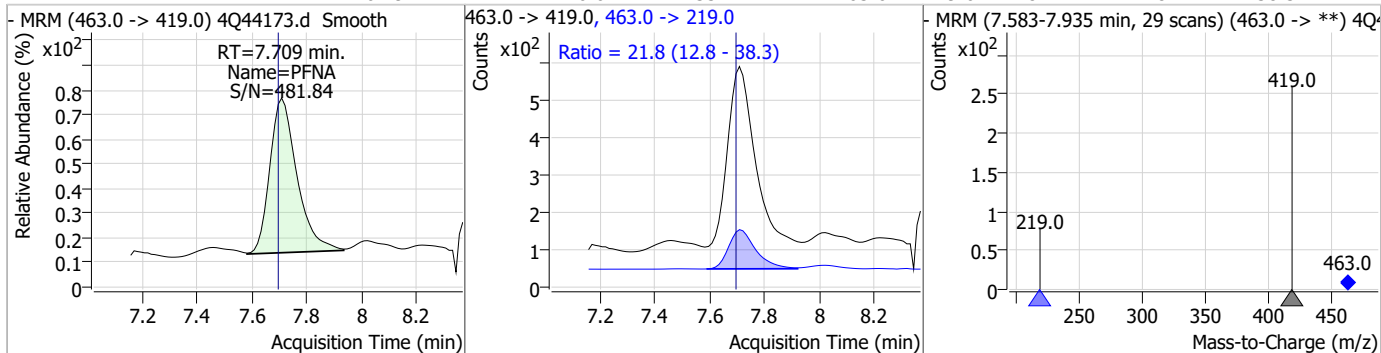
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	5.62	7.69	0.01	8056	441.0 -> 336.9	246.0	117.7	353.1



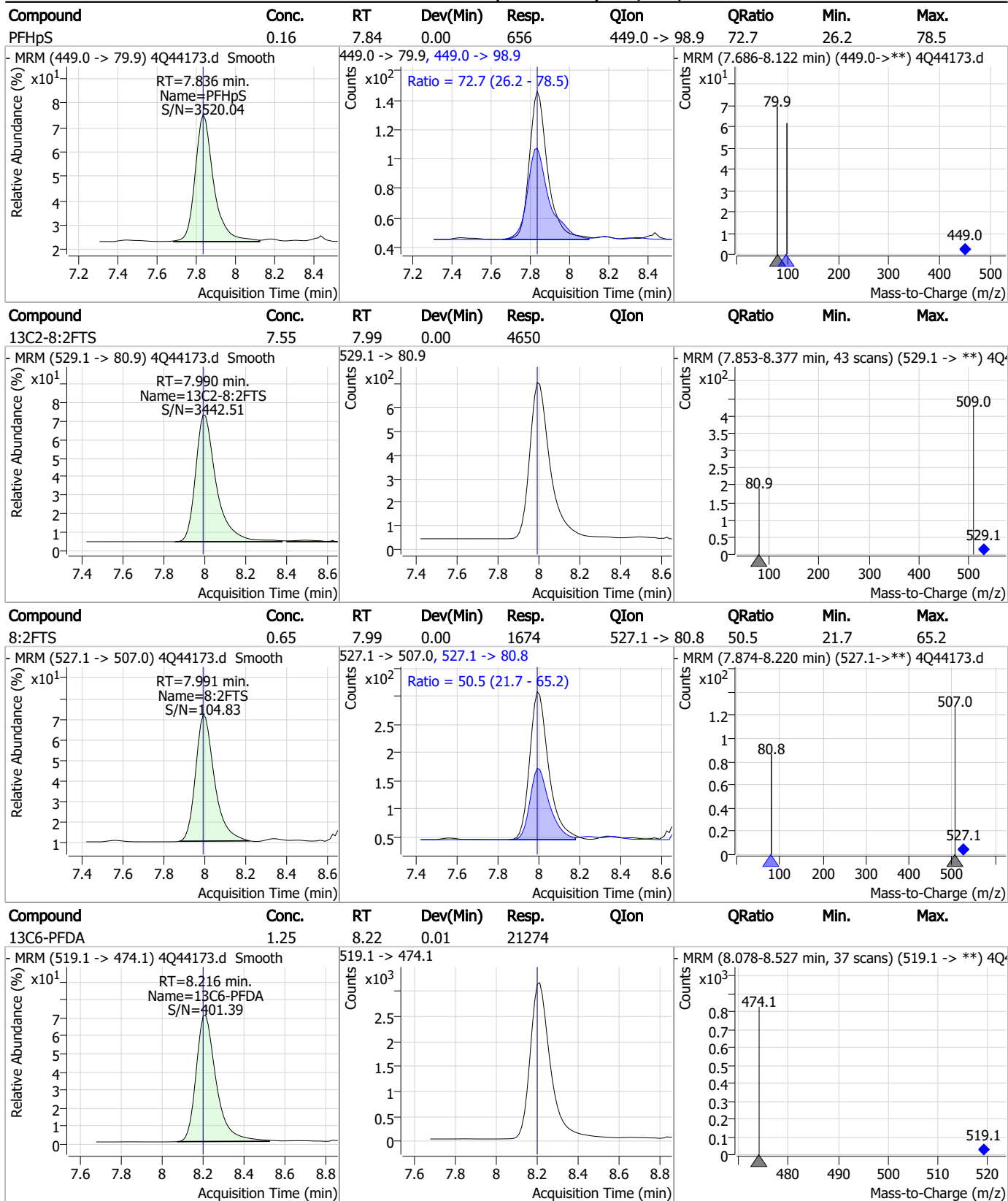
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.26	7.71	0.01	23712				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.19	7.71	0.01	3314	463.0 -> 219.0	21.8	12.8	38.3



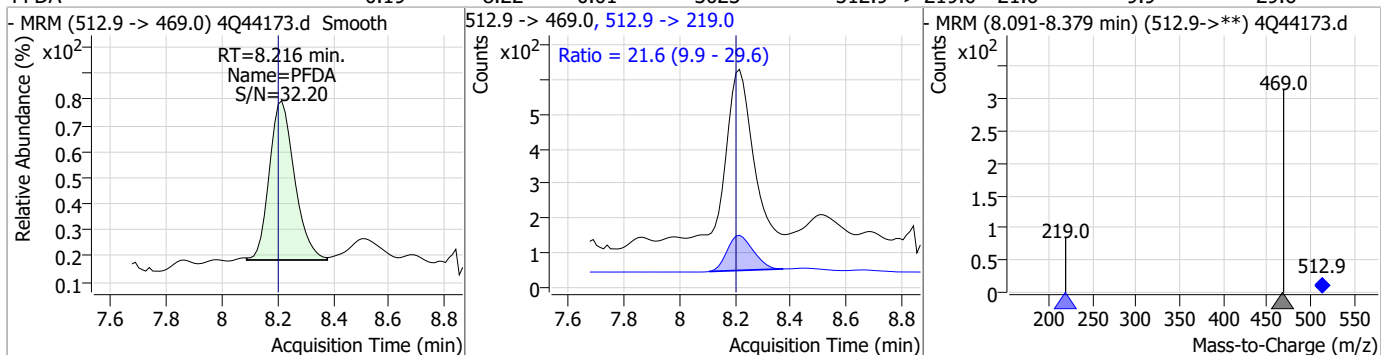
Perfluorinated Compounds by LC/MS/MS



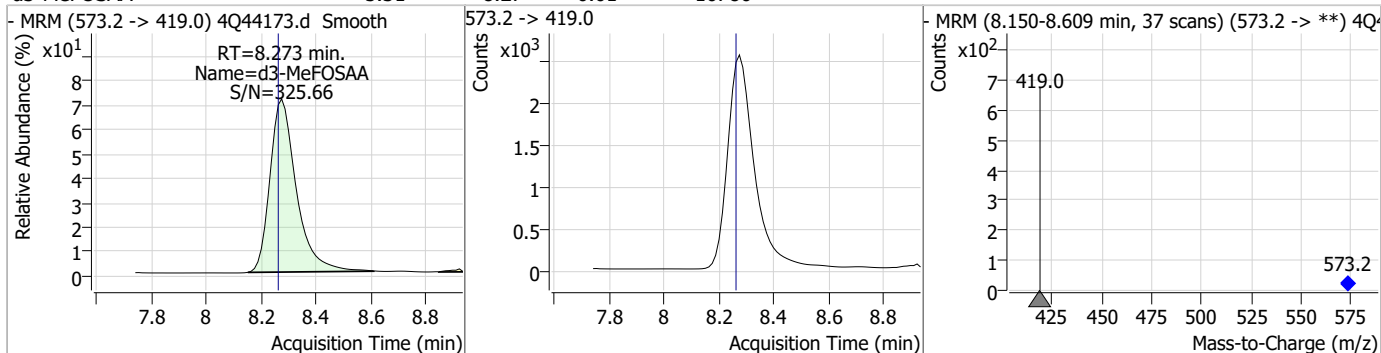
7.7.13
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Perfluorinated Compounds by LC/MS/MS

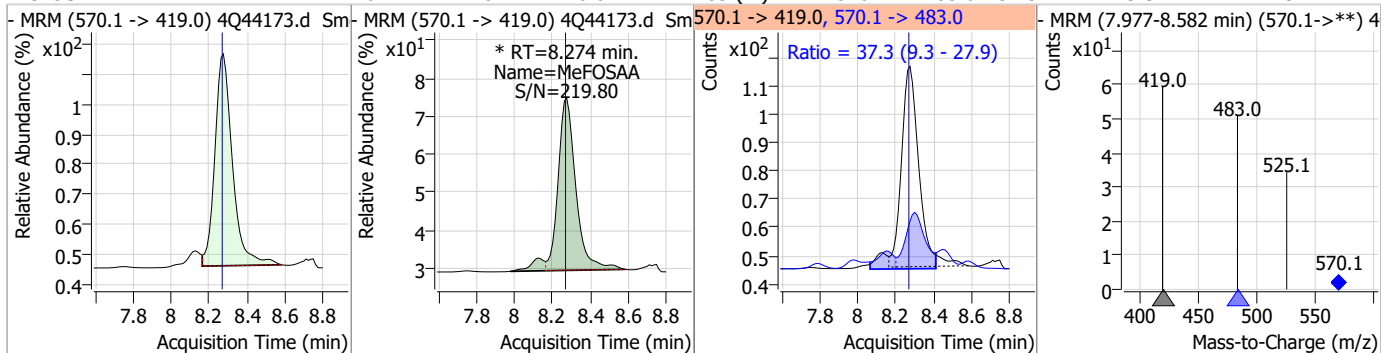
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.19	8.22	0.01	3023	512.9 -> 219.0	21.6	9.9	29.6



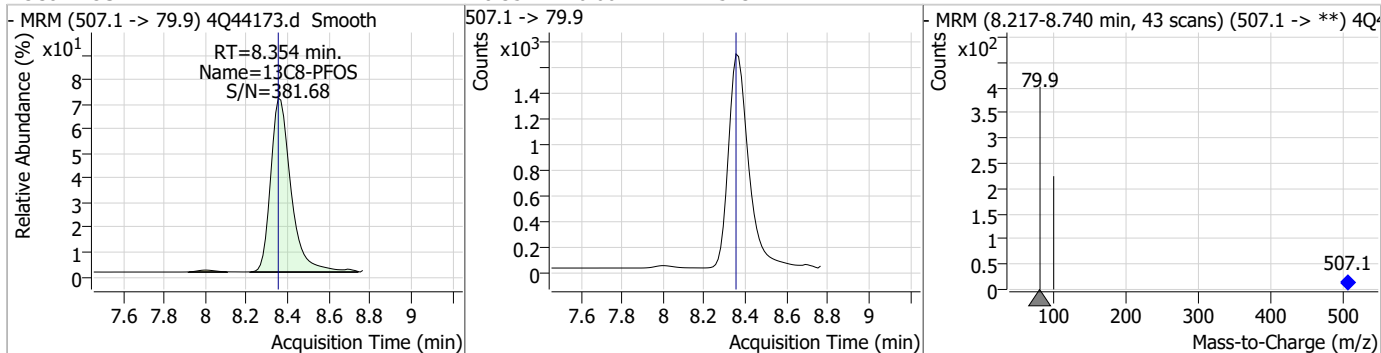
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.31	8.27	0.01	16786				



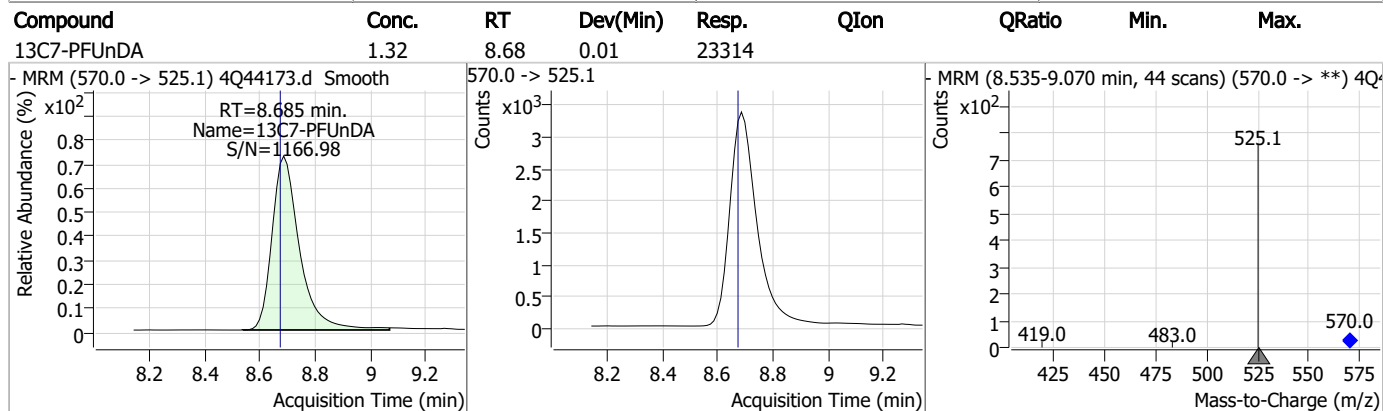
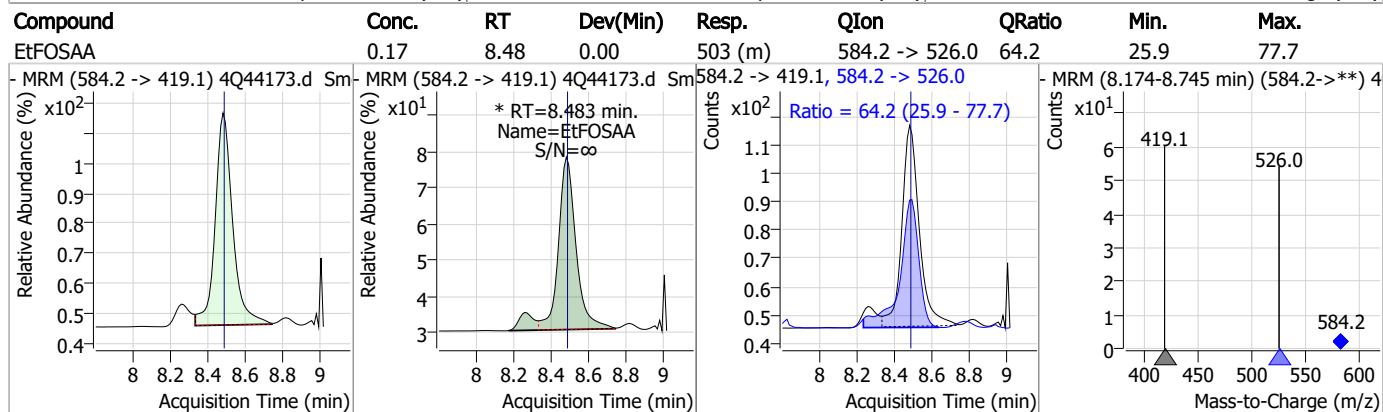
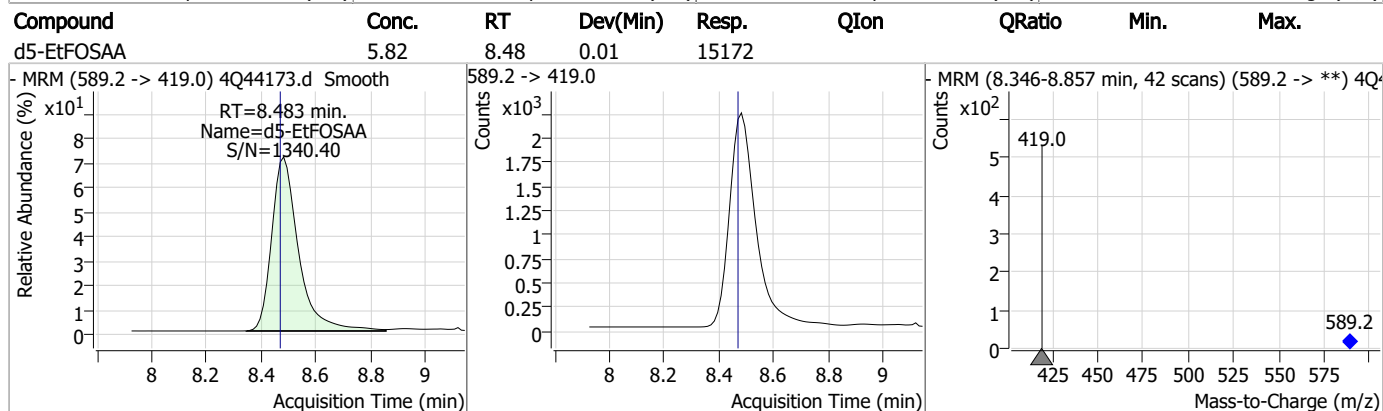
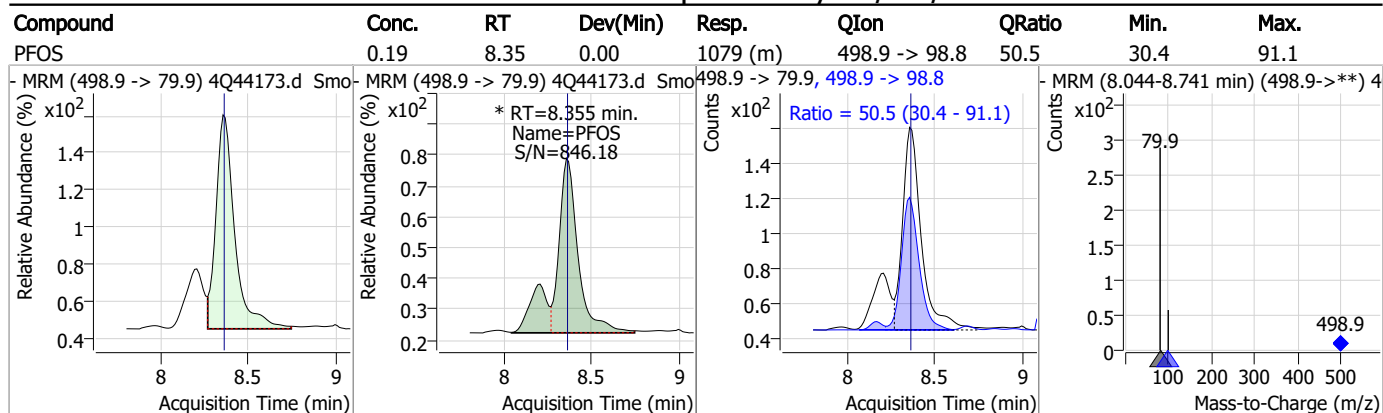
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.17	8.27	0.01	483 (m)	570.1 -> 483.0	37.3	9.3	27.9



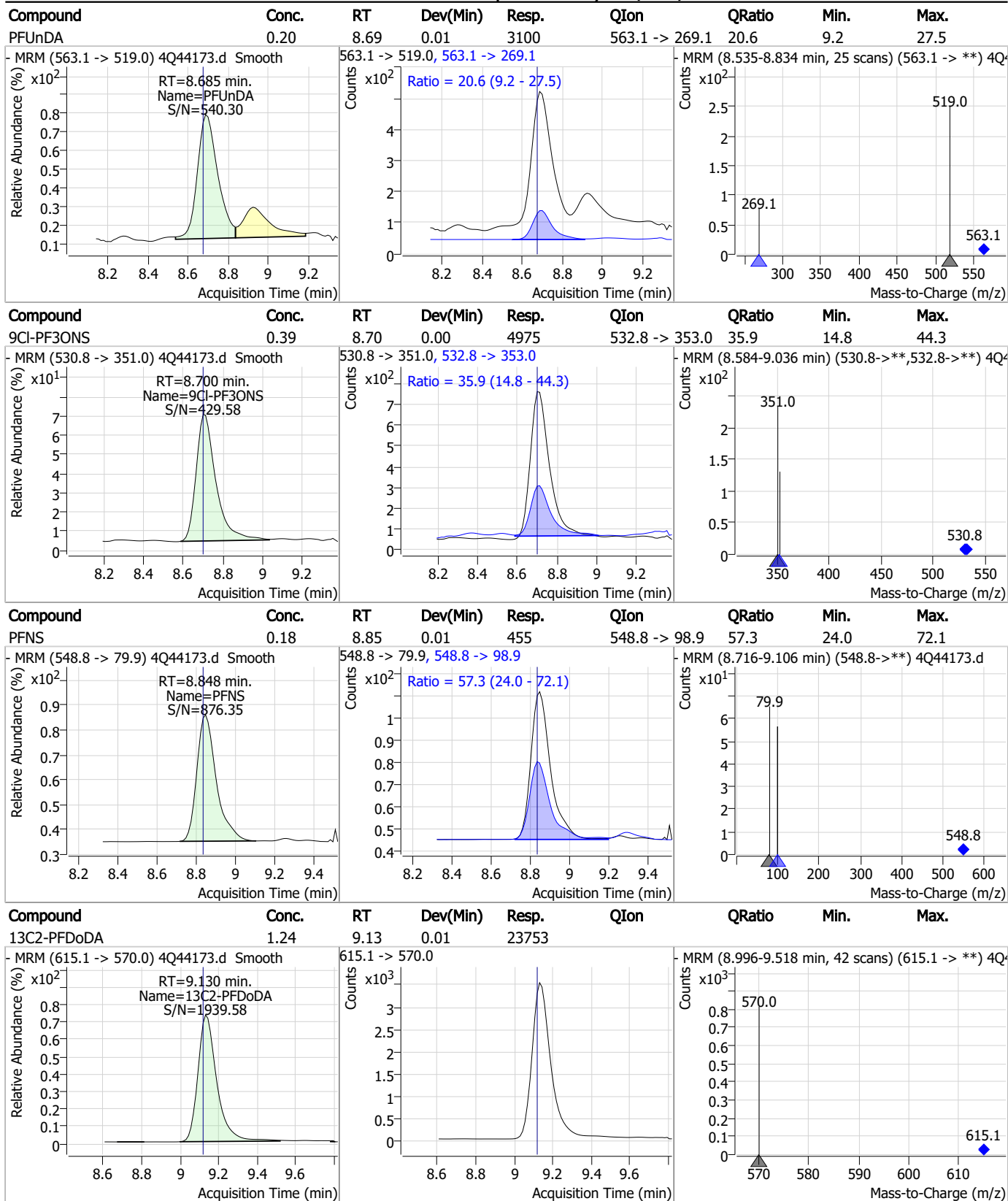
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.44	8.35	0.00	11523				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

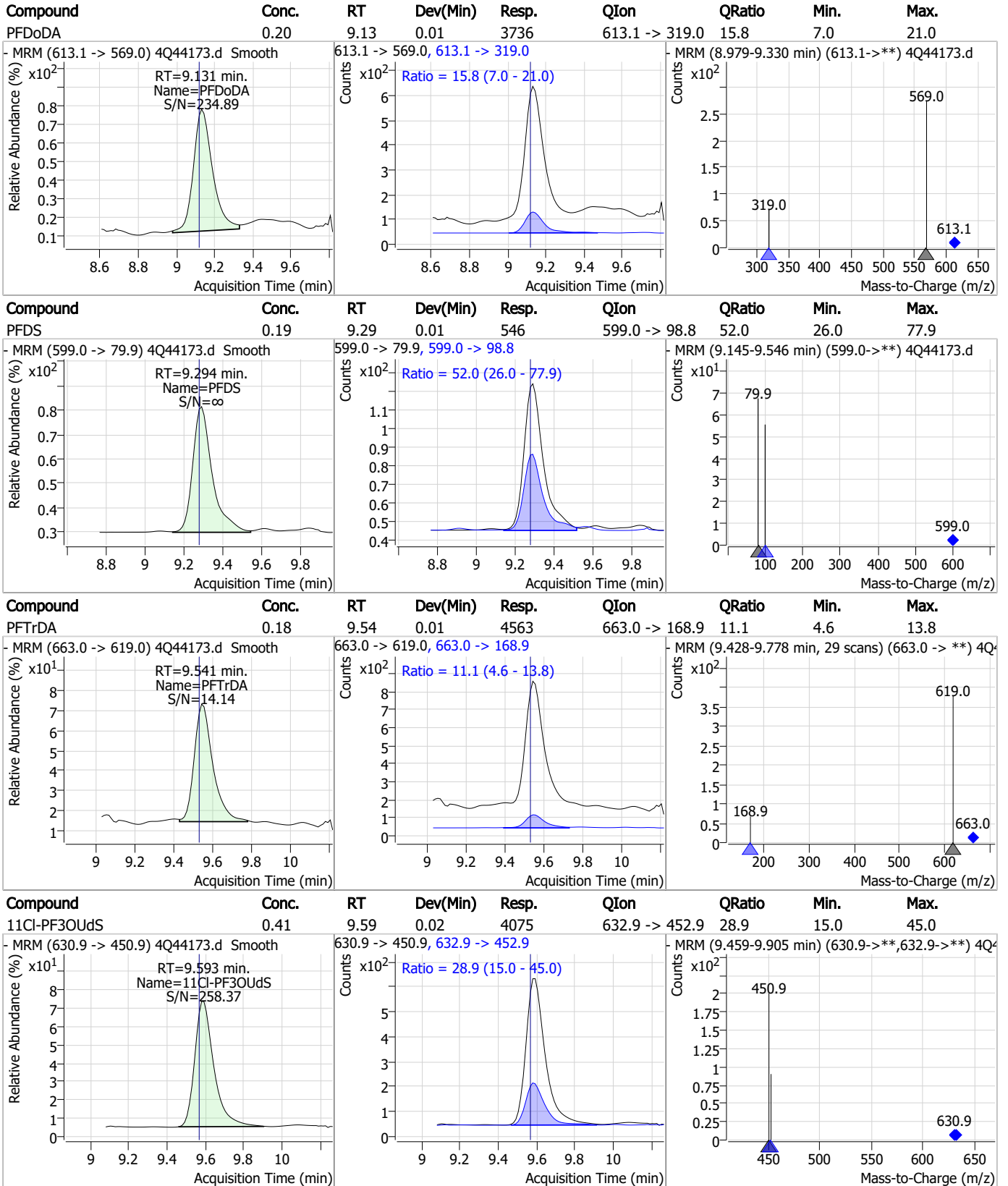


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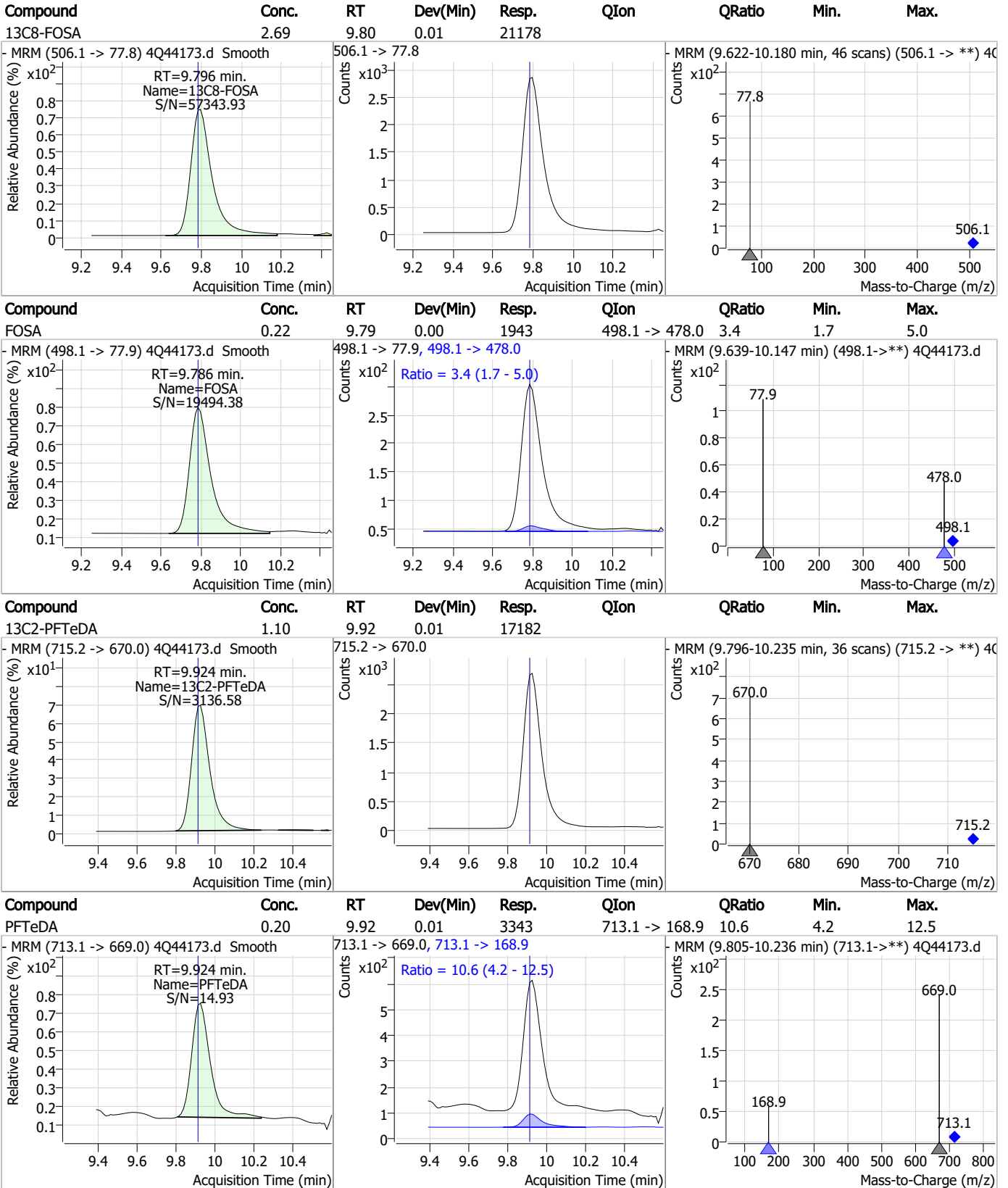
Perfluorinated Compounds by LC/MS/MS



7.7.13 7



Perfluorinated Compounds by LC/MS/MS

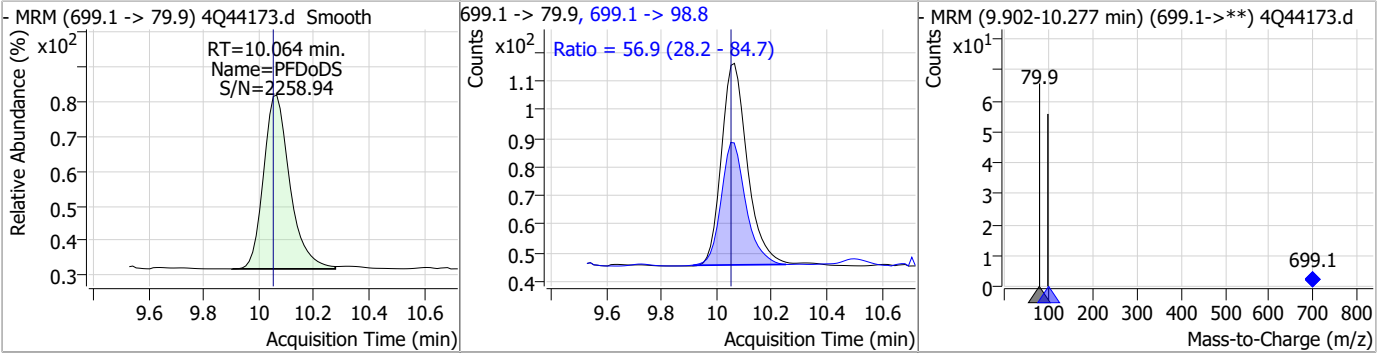


7.7.13 7

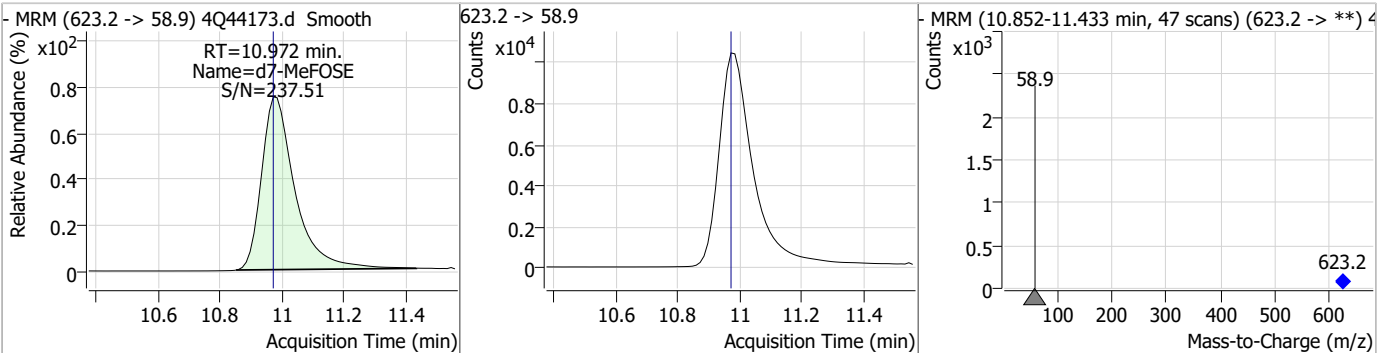


Perfluorinated Compounds by LC/MS/MS

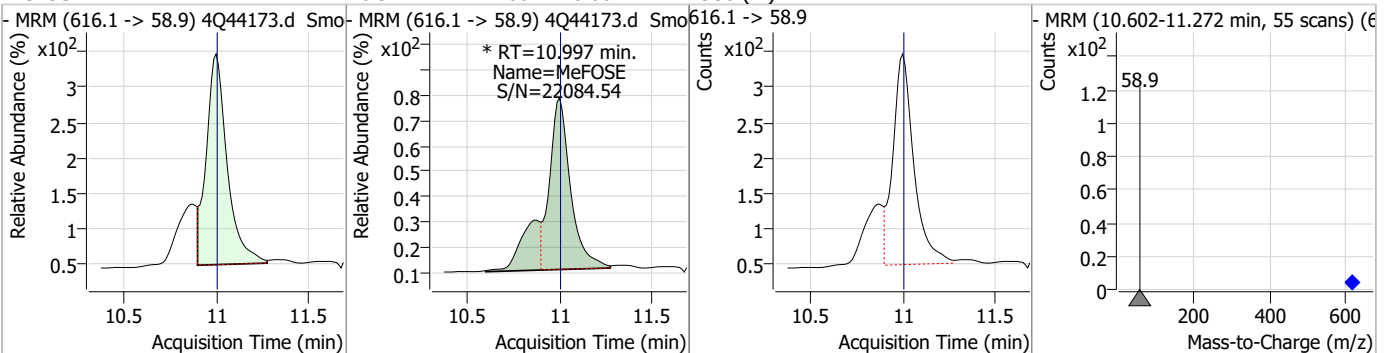
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.18	10.06	0.01	470	699.1 -> 98.8	56.9	28.2	84.7



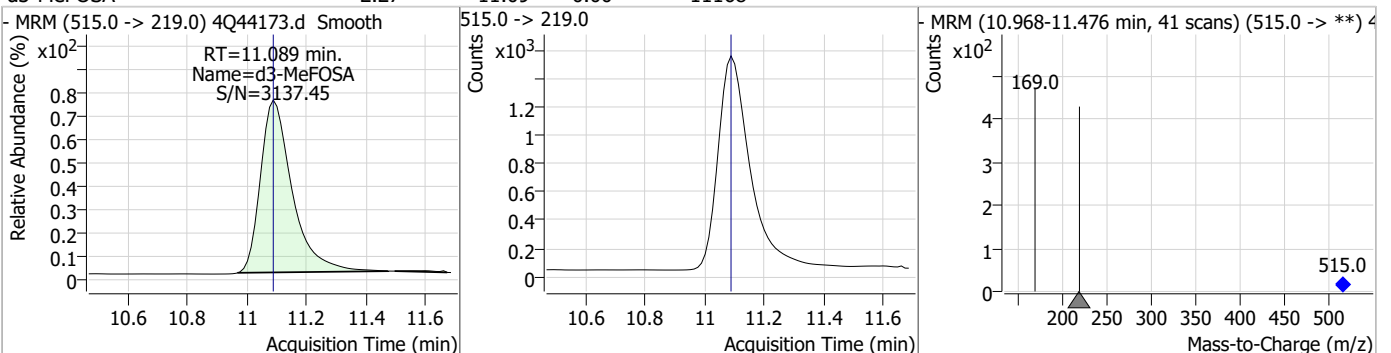
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.91	10.97	0.00	77640				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.94	11.00	0.00	2986 (m)				

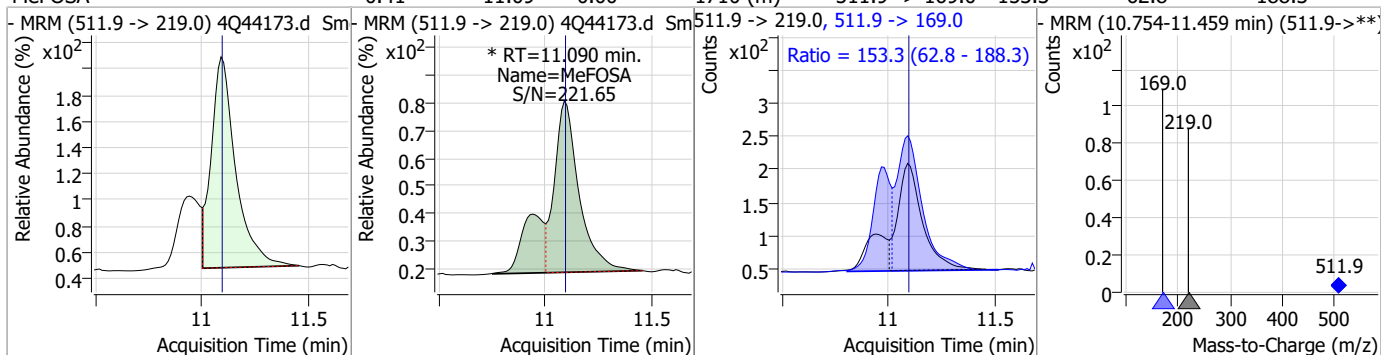


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.27	11.09	0.00	11168				

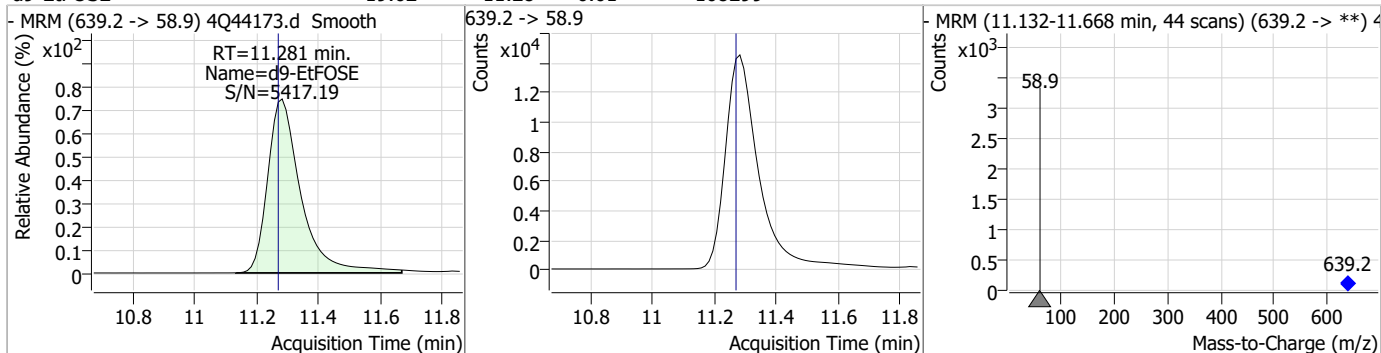


Perfluorinated Compounds by LC/MS/MS

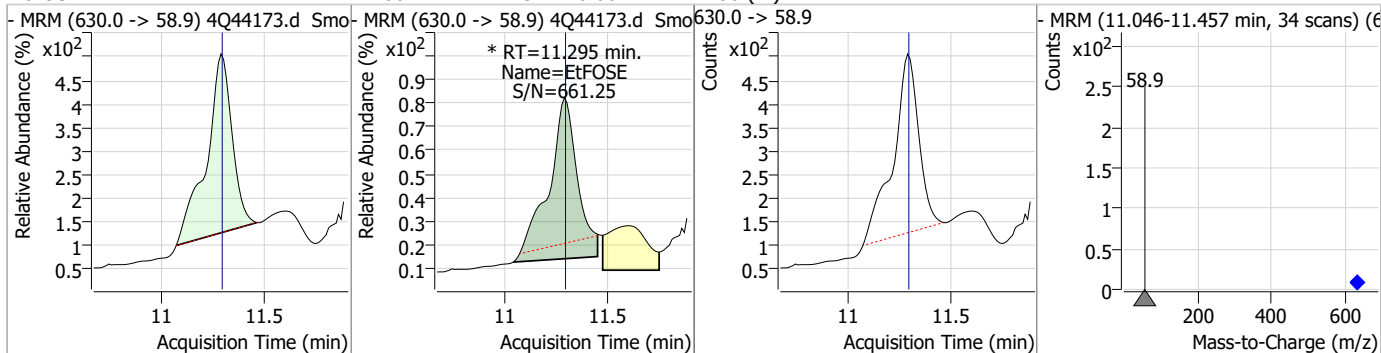
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.41	11.09	0.00	1710 (m)	511.9 -> 169.0	153.3	62.8	188.3



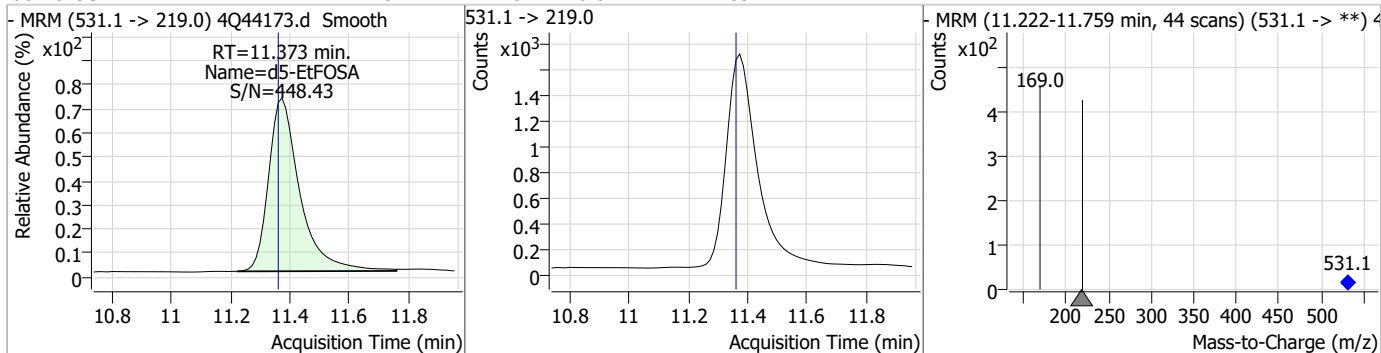
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.62	11.28	0.01	108299				



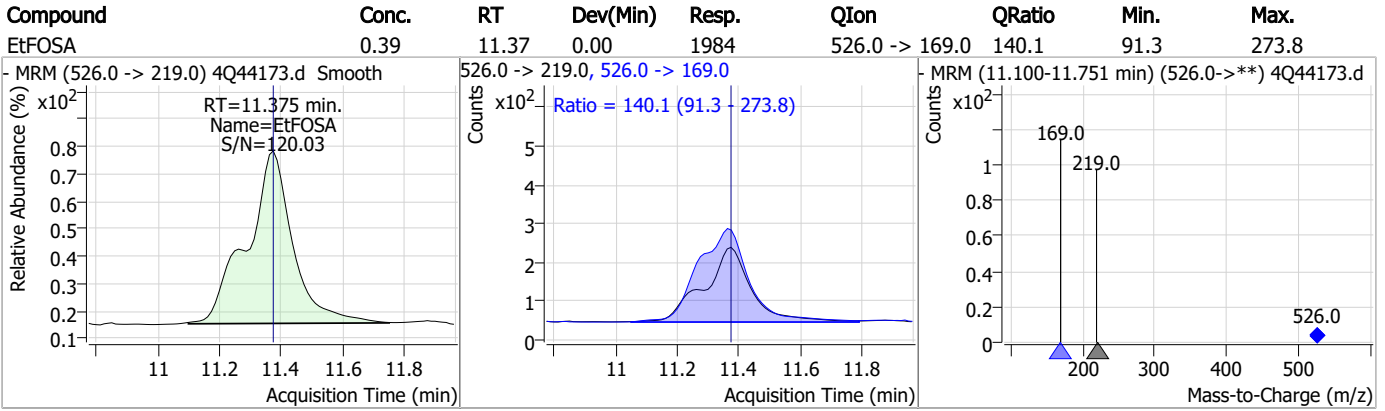
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	1.00	11.29	0.00	4186 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.32	11.37	0.01	12139				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q639-CC634 Method: EPA DRAFT 1633
Lab FileID: 4Q44173.D Analyst approved: 05/10/23 11:10 Martha Valls
Injection Time: 05/09/23 23:02 Supervisor approved: 05/10/23 17:27 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	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
EtFOSE	1691-99-2		11.29	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q44184.d
 Operator : marthav
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 5/10/2023 1:37:17 AM
 Sample Name : Ecc634-4
 Vial : P1-A5
 DA Method File : 1633_050323_S4Q634.quantmethod.xml
 Batch Name : s4q639.batch.bin
 Sample Information : OP96548,S4Q639,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	150446	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	73905	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	52735	2.50 µg/L	0.000
M4-PFHpA	6.492	367.1 -> 322.0	30698	2.50 µg/L	0.000
M8-PFOA	7.163	421.1 -> 376.0	46712	2.50 µg/L	0.014
M9-PFNA	7.709	472.1 -> 427.0	23446	1.25 µg/L	0.012
M6-PFDA	8.216	519.1 -> 474.1	20991	1.25 µg/L	0.012
M7-PFUnDA	8.685	570.0 -> 525.1	22501	1.25 µg/L	0.012
M2-PFDoDA	9.130	615.1 -> 570.0	24781	1.25 µg/L	0.012
M2-PFTeDA	9.924	715.2 -> 670.0	17581	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	19978	2.50 µg/L	0.000
M3-PFBS	5.464	302.1 -> 79.9	12438	2.50 µg/L	0.012
M3-PFHxS	7.254	402.1 -> 79.9	8480	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	11647	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1364	5.00 µg/L	0.000
M2-6:2FTS	6.936	429.1 -> 80.9	2659	5.00 µg/L	0.013
M2-8:2FTS	8.003	529.1 -> 80.9	3984	5.00 µg/L	0.012
M3-MeFOSAA	8.273	573.2 -> 419.0	17759	5.00 µg/L	0.012
M3-HFPO-DA	5.927	286.9 -> 168.9	27977	10.00 µg/L	0.012
M5-EtFOSAA	8.483	589.2 -> 419.0	13918	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	79813	25.00 µg/L	0.000
M9-EtFOSE	11.269	639.2 -> 58.9	110802	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	12217	2.50 µg/L	0.000
M3-MeFOSA	11.089	515.0 -> 219.0	11427	2.50 µg/L	0.000
13C4-PFOS	8.354	502.8 -> 79.9	12026	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	77579	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	5881	2.50 µg/L	0.012
13C4-PFOA	7.163	417.1 -> 372.0	59026	2.50 µg/L	0.014
13C2-PFDA	8.216	515.1 -> 470.1	19577	1.25 µg/L	0.012
13C5-PFNA	7.709	468.0 -> 423.0	28140	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	47284	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1364	5.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.1%		
13C2-6:2FTS	6.936	429.1 -> 80.9	2659	6.17 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.4%		
13C2-8:2FTS	8.003	529.1 -> 80.9	3984	5.92 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.5%		
13C2-PFDoDA	9.130	615.1 -> 570.0	24781	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C2-PFTeDA	9.924	715.2 -> 670.0	17581	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.1%		
13C3-PFBS	5.464	302.1 -> 79.9	12438	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.7%		
13C3-PFHxS	7.254	402.1 -> 79.9	8480	2.33 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 = 93.1%	
13C4-PFBA	2.924	216.8 -> 171.9	150446	10.31 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C4-PFHpA	6.492	367.1 -> 322.0	30698	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C5-PFHxA	5.559	318.0 -> 273.0	52735	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C5-PFPeA	4.387	268.3 -> 223.0	73905	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C6-PFDA	8.216	519.1 -> 474.1	20991	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C7-PFUnDA	8.685	570.0 -> 525.1	22501	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C8-FOSA	9.783	506.1 -> 77.8	19978	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C8-PFOA	7.163	421.1 -> 376.0	46712	2.41 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C8-PFOS	8.354	507.1 -> 79.9	11647	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C9-PFNA	7.709	472.1 -> 427.0	23446	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.1%	
d3-MeFOSAA	8.273	573.2 -> 419.0	17759	5.85 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.0%	
13C3-HFPO-DA	5.927	286.9 -> 168.9	27977	8.99 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d3-MeFOSA	11.089	515.0 -> 219.0	11427	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
d5-EtFOSAA	8.483	589.2 -> 419.0	13918	5.57 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.4%	
d7-MeFOSE	10.972	623.2 -> 58.9	79813	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	110802	20.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.7%	
d5-EtFOSA	11.360	531.1 -> 219.0	12217	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	20799	9.48 µg/L	99
		327.1 -> 80.9	8886		
6:2FTS	6.936	427.1 -> 407.0	25341	9.87 µg/L	95
		427.1 -> 80.9	10021		
8:2FTS	8.003	527.1 -> 507.0	24358	10.97 µg/L	91
		527.1 -> 80.8	9165		
EtFOSAA	8.483	584.2 -> 419.1	6877	2.57 µg/L	97
		584.2 -> 526.0	3406		
FOSA	9.786	498.1 -> 77.9	21136	2.52 µg/L	100
		498.1 -> 478.0	685		
MeFOSAA	8.274	570.1 -> 419.0	6992	2.26 µg/L	87
		570.1 -> 483.0	1721		
PFBA	2.920	212.8 -> 168.9	38432	9.54 µg/L	100
PFBS	5.453	298.7 -> 79.9	11113	2.18 µg/L	91
		298.7 -> 98.8	4555		
PFDA	8.216	512.9 -> 469.0	39839	2.50 µg/L	99
		512.9 -> 219.0	7629		
PFDODA	9.131	613.1 -> 569.0	48409	2.43 µg/L	100
		613.1 -> 319.0	6702		
PFDS	9.282	599.0 -> 79.9	6752	2.34 µg/L	96

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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	3315	2.51	µg/L	100
		363.1 -> 319.0	48767			
PFHpS	7.836	363.1 -> 169.0	8641	2.44	µg/L	98
		449.0 -> 79.9	10251			
PFHxA	5.562	449.0 -> 98.9	5218	2.33	µg/L	99
		313.0 -> 269.0	48078			
PFHxS	7.255	313.0 -> 118.9	1533	2.18	µg/L	96
		398.7 -> 79.9	7574			
PFNA	7.709	398.7 -> 98.9	4148	2.37	µg/L	97
		463.0 -> 419.0	41143			
PFNS	8.836	463.0 -> 219.0	9914	2.34	µg/L	93
		548.8 -> 79.9	5945			
PFOA	7.164	548.8 -> 98.9	3129	2.46	µg/L	99
		413.0 -> 369.0	66419			
PFOS	8.355	413.0 -> 169.0	13308	2.25	µg/L	84
		498.9 -> 79.9	12821			
PFPeA	4.389	498.9 -> 98.8	6204	5.02	µg/L	100
		263.0 -> 219.0	89329			
PFPeS	6.519	349.1 -> 79.9	6625	2.22	µg/L	98
		349.1 -> 98.9	2892			
PFTeDA	9.924	713.1 -> 669.0	43354	2.52	µg/L	99
		713.1 -> 168.9	3748			
PFTrDA	9.541	663.0 -> 619.0	65803	2.48	µg/L	98
		663.0 -> 168.9	6481			
PFUnDA	8.685	563.1 -> 519.0	38086	2.49	µg/L	96
		563.1 -> 269.1	7651			
11CI-PF3OUdS	9.581	630.9 -> 450.9	53809	5.35	µg/L	98
		632.9 -> 452.9	16666			
9CI-PF3ONS	8.700	530.8 -> 351.0	67580	5.27	µg/L	97
		532.8 -> 353.0	21001			
ADONA	6.756	376.9 -> 250.9	149722	5.32	µg/L	99
		376.9 -> 84.8	38977			
HFPO-DA	5.928	284.9 -> 168.9	13478	5.04	µg/L	99
		284.9 -> 184.9	1687			
3:3FTCA	3.848	241.0 -> 177.0	10235	13.08	µg/L	100
		241.0 -> 117.0	942			
5:3FTCA	6.231	341.0 -> 237.1	193491	69.01	µg/L	99
		341.0 -> 217.0	130328			
7:3FTCA	7.686	441.0 -> 316.9	108743	74.65	µg/L	100
		441.0 -> 336.9	255894			
EtFOSA	11.375	526.0 -> 219.0	26361	5.15	µg/L	67
		526.0 -> 169.0	35592			
EtFOSE	11.295	630.0 -> 58.9	50697	11.82	µg/L	100
		511.9 -> 219.0	21463			
MeFOSA	11.090	511.9 -> 169.0	31685	4.99	µg/L	81
		616.1 -> 58.9	39258			
MeFOSE	10.997	699.1 -> 79.9	5820	11.98	µg/L	100
		699.1 -> 98.8	3290			
PFDoDS	10.064	295.0 -> 201.0	5756	2.26	µg/L	100
		295.0 -> 84.9	1516			
NFDHA	5.441	279.0 -> 85.1	49583	3.90	µg/L	100
		229.0 -> 84.9	47049			
PFMBA	4.791	314.8 -> 134.9	66632	5.06	µg/L	100
		314.8 -> 82.9	2196			
PFMPA	3.528			4.26	µg/L	99
PFEESA	5.997					

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

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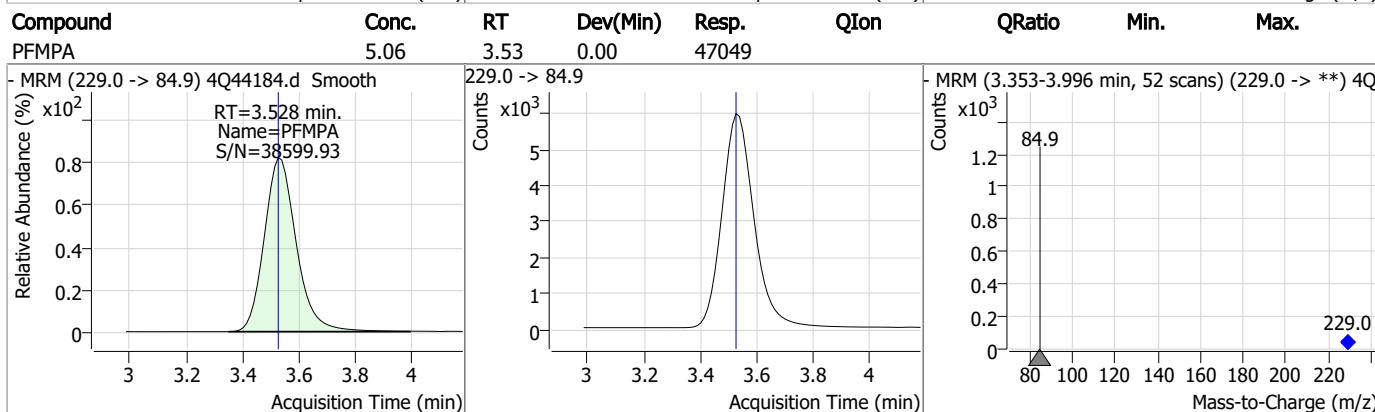
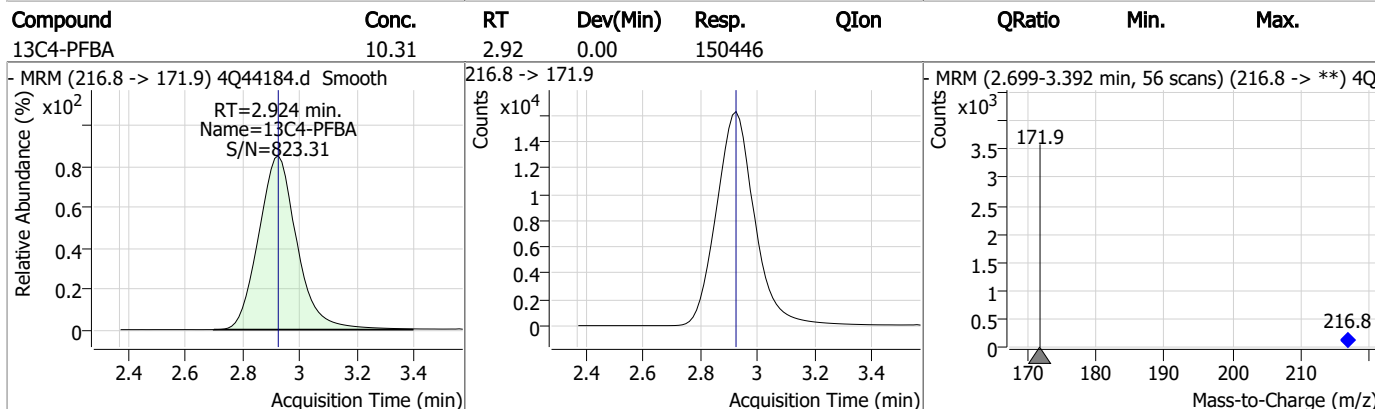
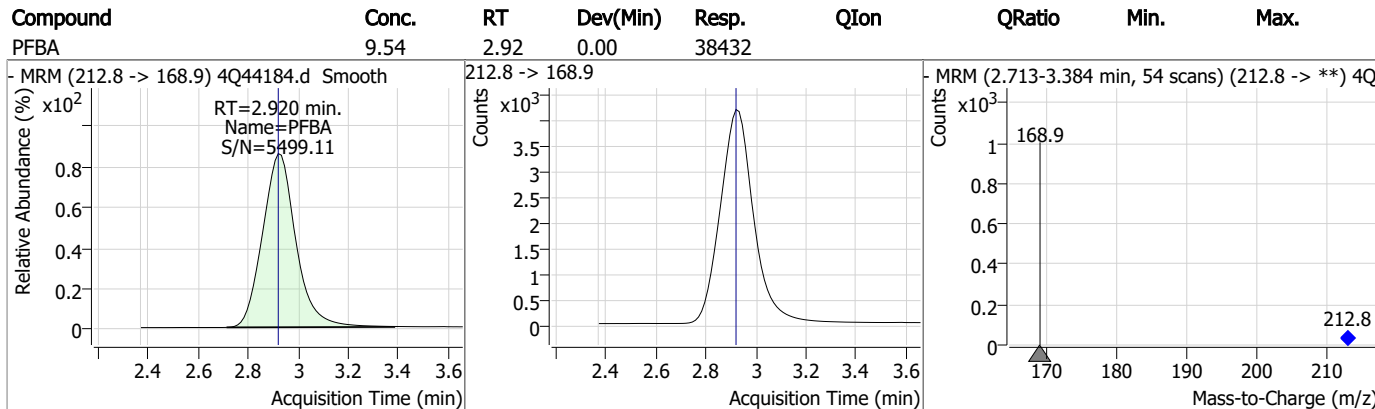
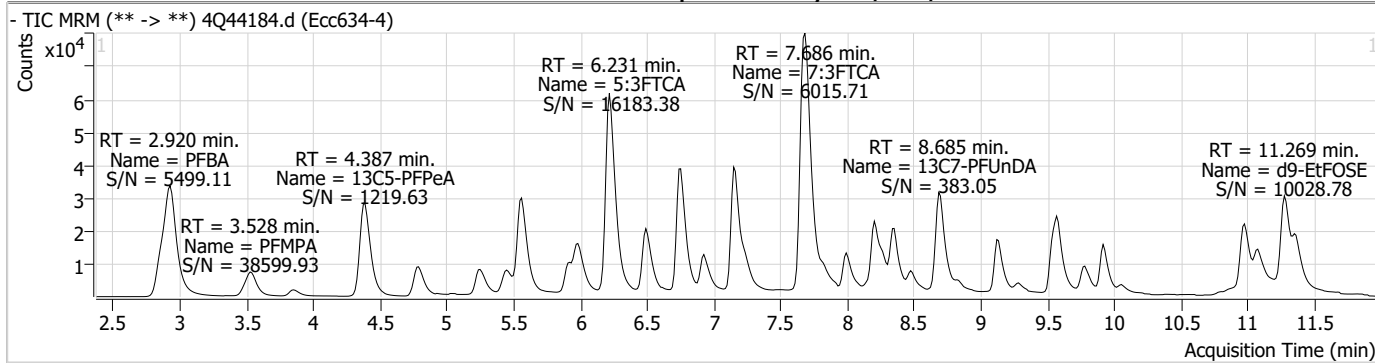
Perfluorinated Compounds by LC/MS/MS

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

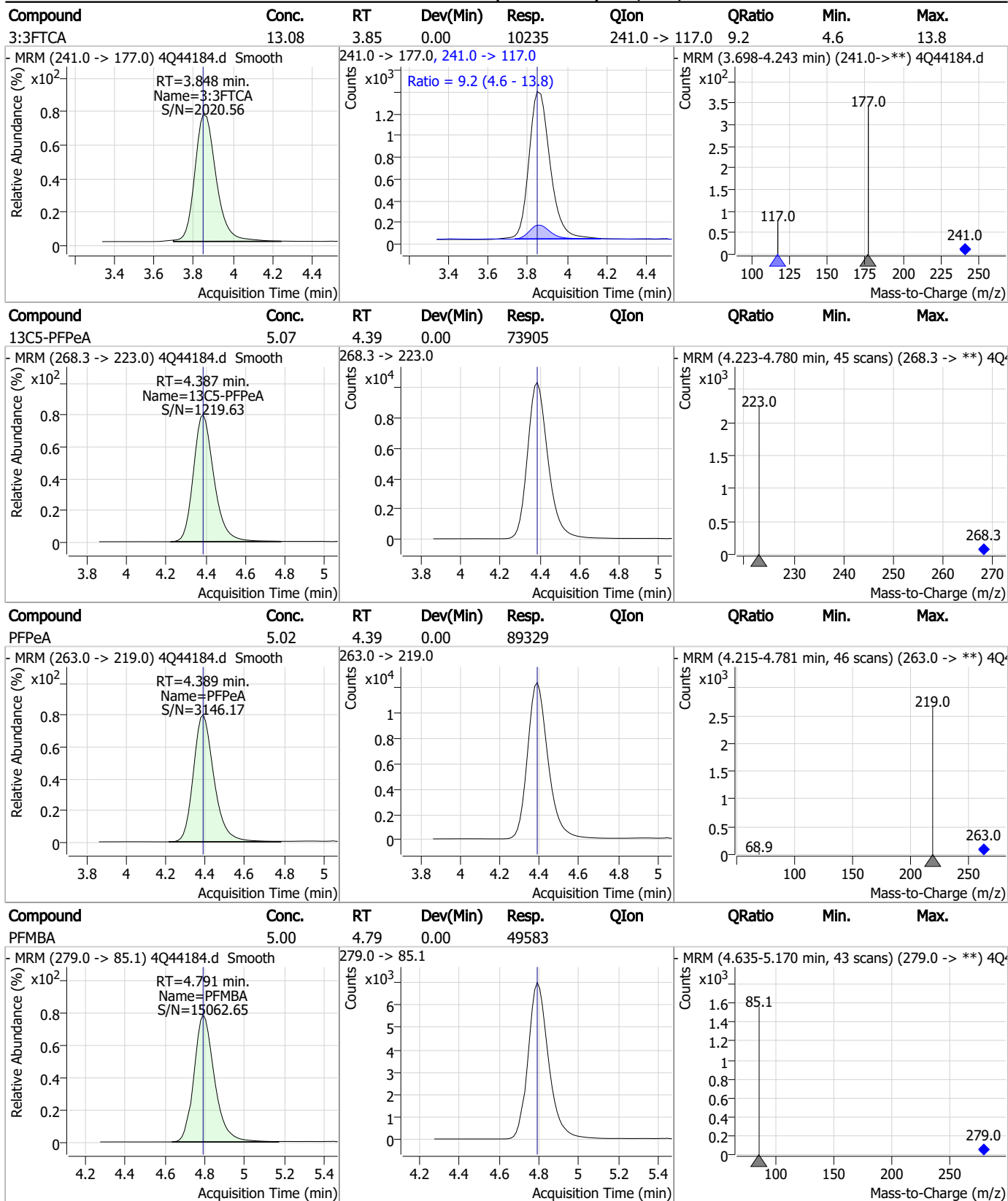
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Perfluorinated Compounds by LC/MS/MS



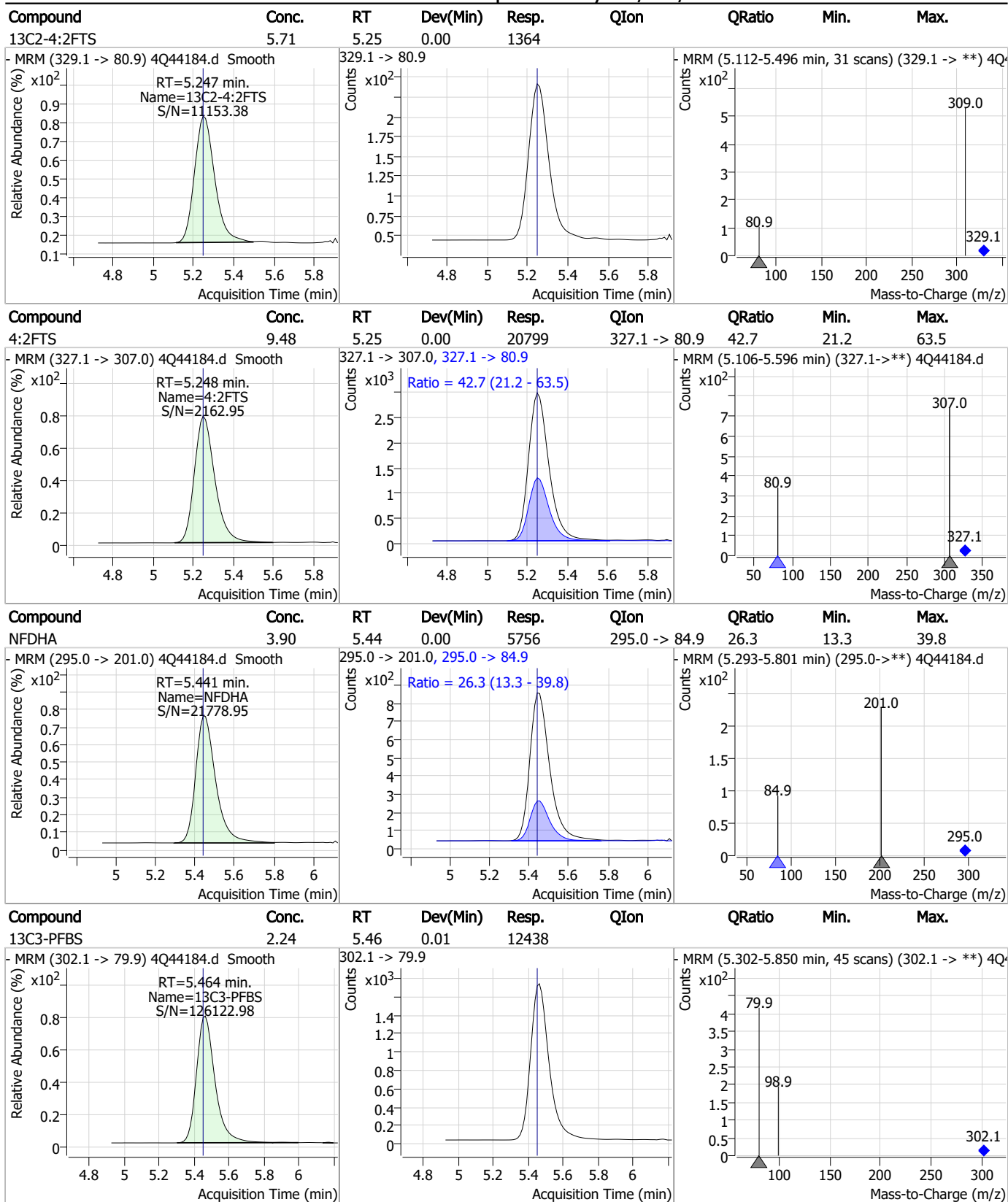
7.7.14
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Perfluorinated Compounds by LC/MS/MS



7.7.14

Perfluorinated Compounds by LC/MS/MS

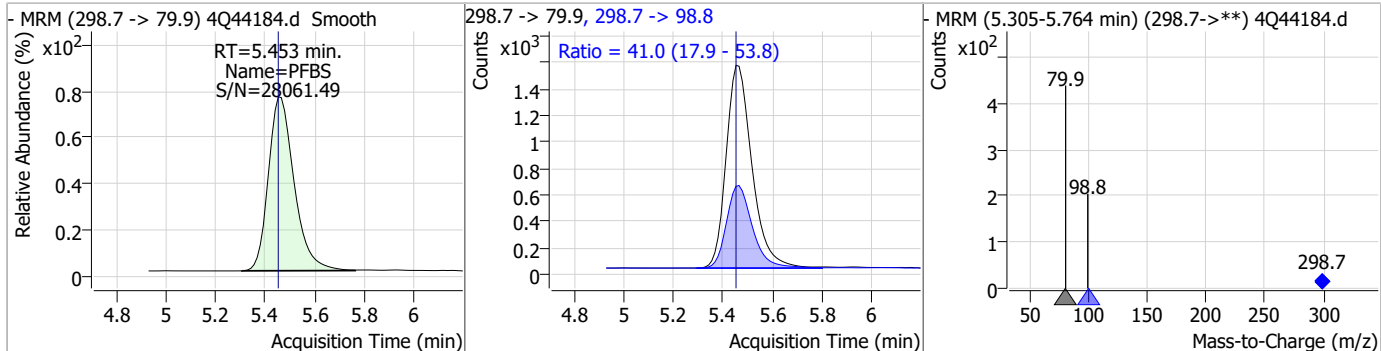


7.7.14

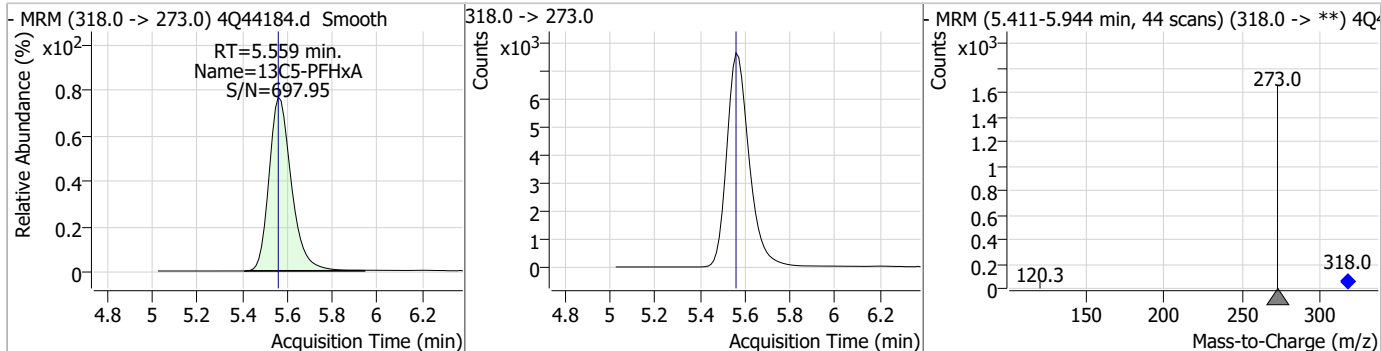


Perfluorinated Compounds by LC/MS/MS

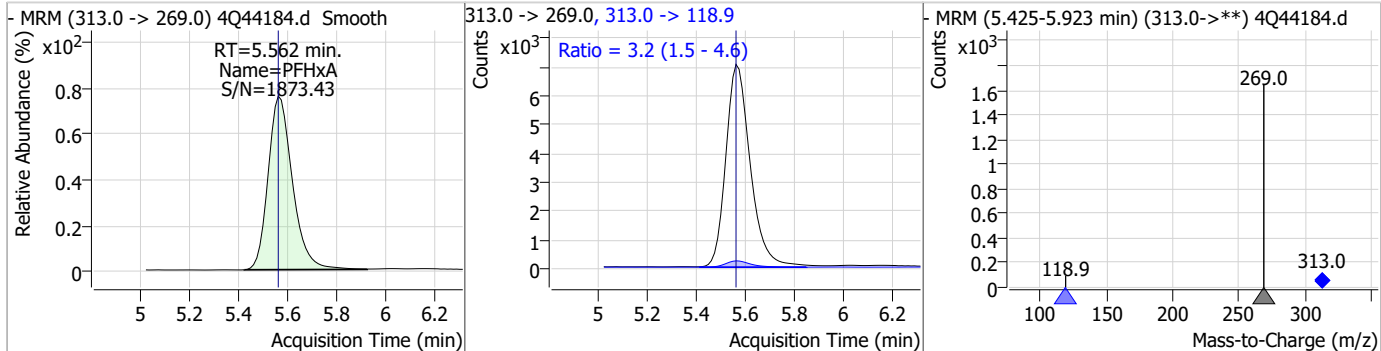
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.18	5.45	0.00	11113	298.7 -> 98.8	41.0	17.9	53.8



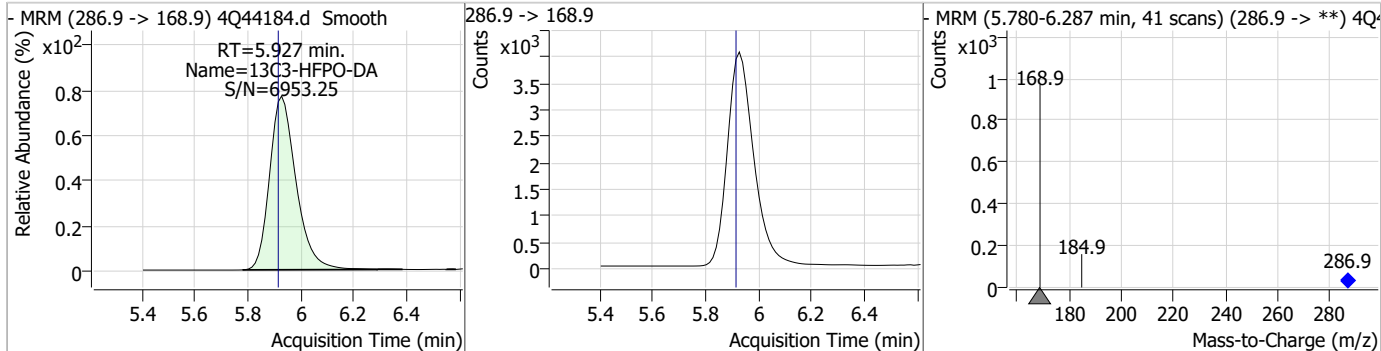
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.53	5.56	0.00	52735				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.33	5.56	0.00	48078	313.0 -> 118.9	3.2	1.5	4.6

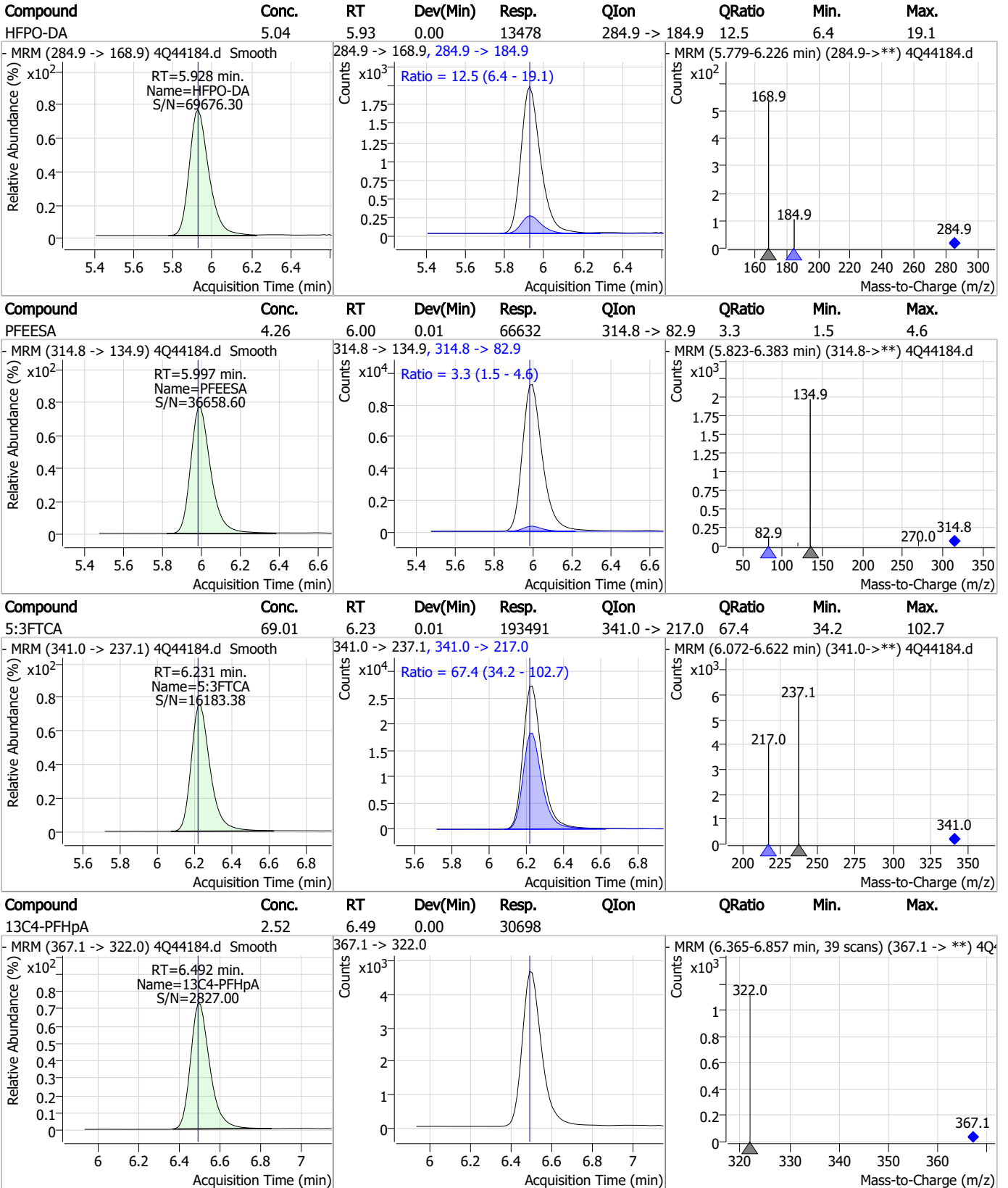


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.99	5.93	0.01	27977				



7.7.14
7

Perfluorinated Compounds by LC/MS/MS

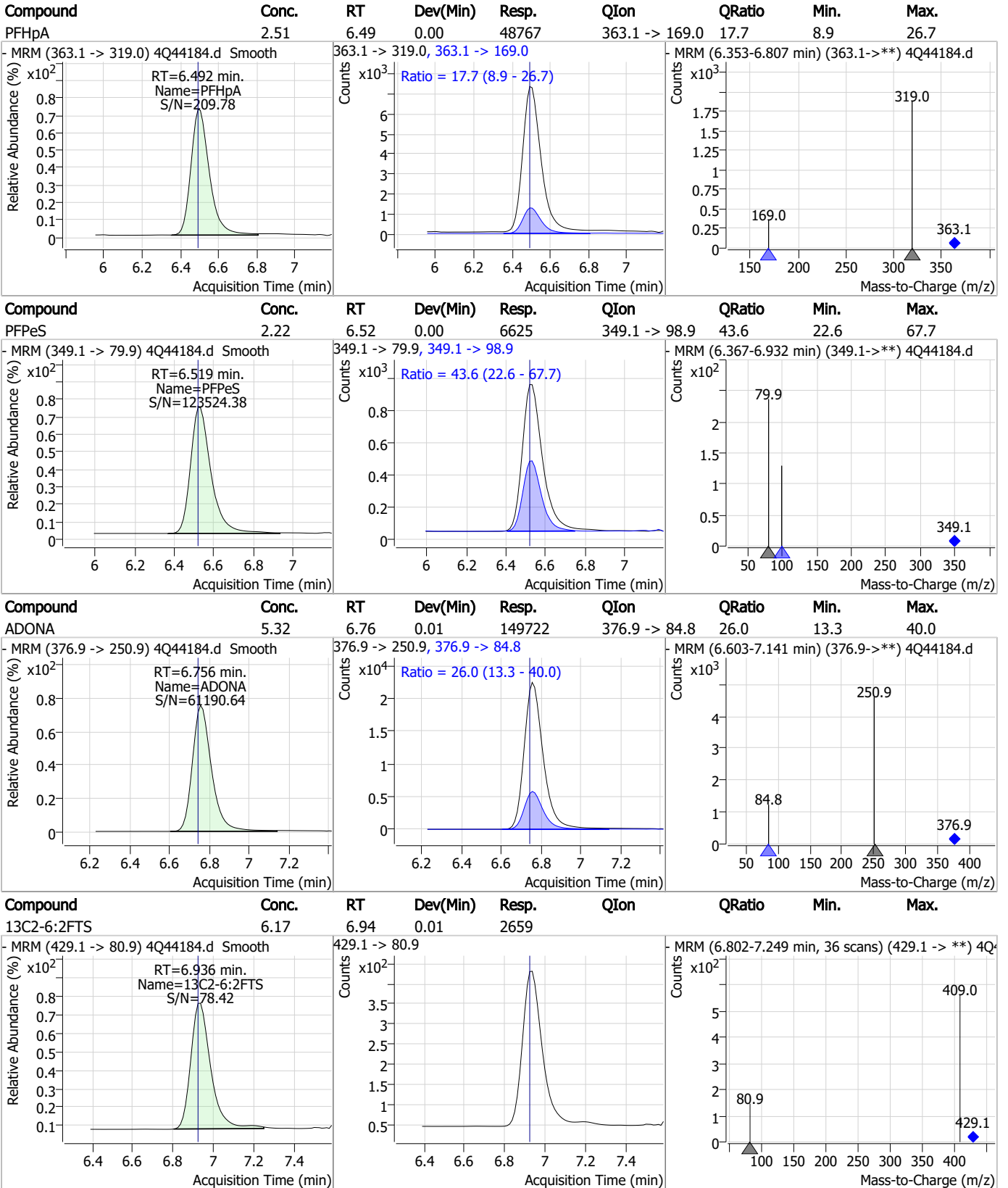


7.7.14

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Perfluorinated Compounds by LC/MS/MS

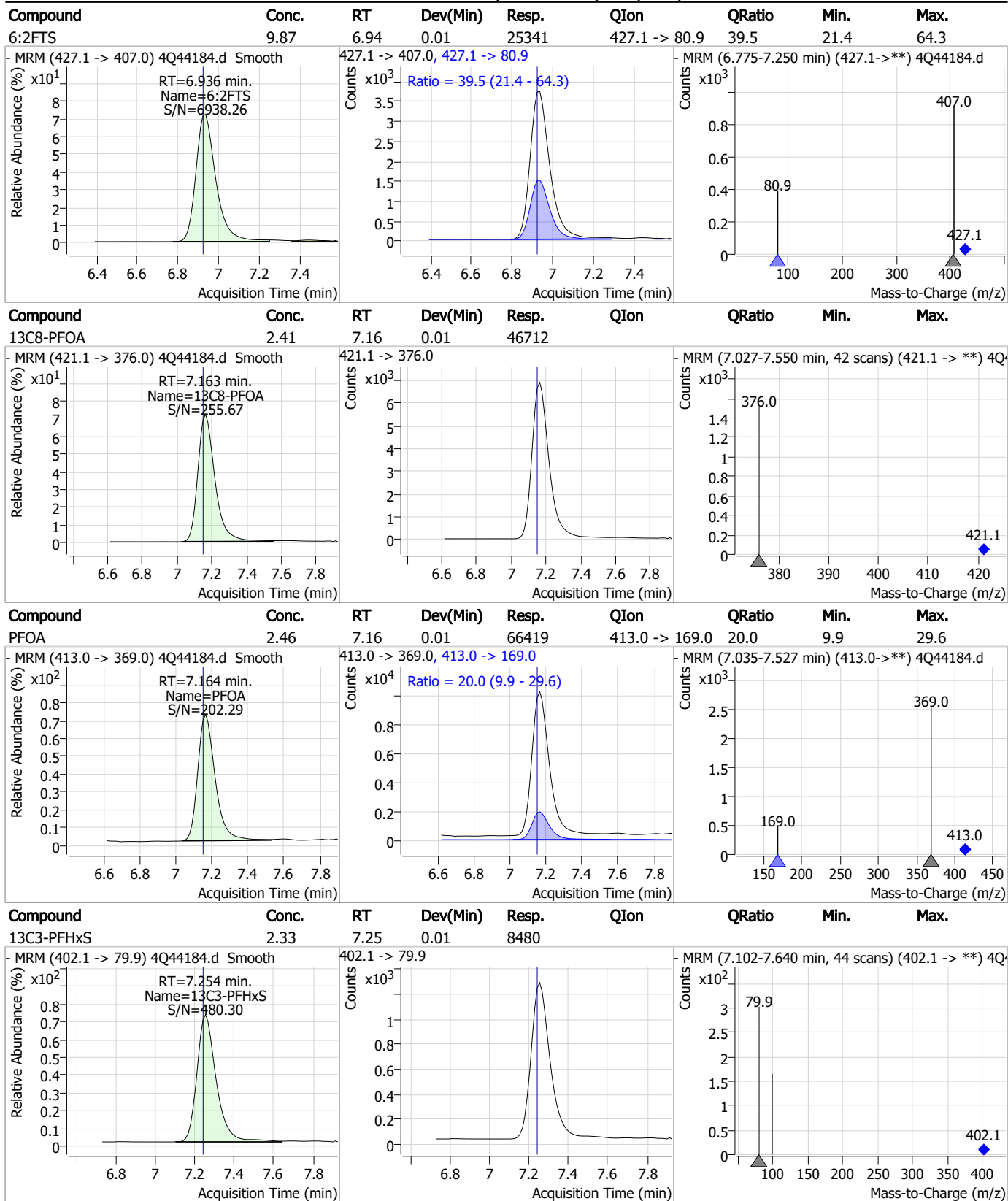


7.7.14

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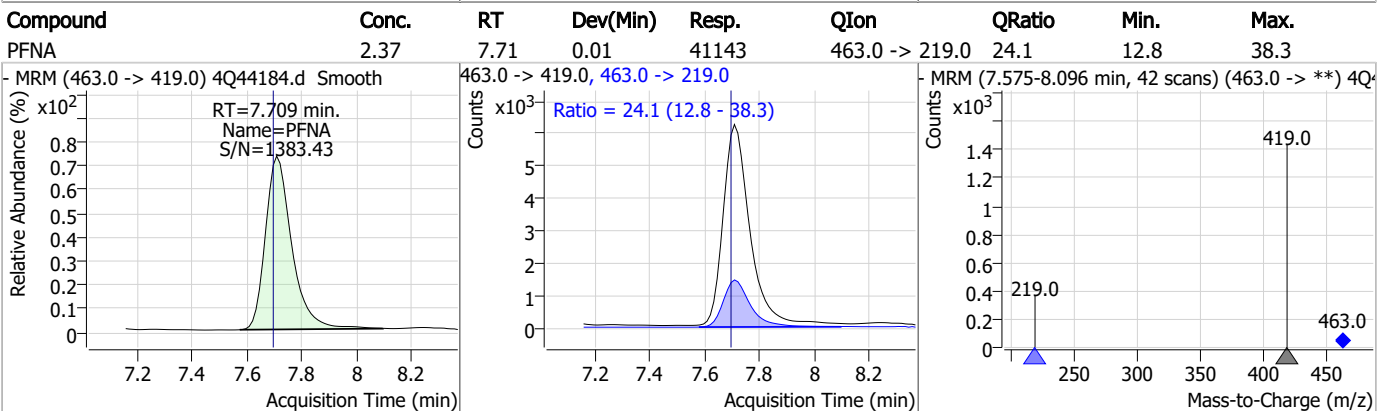
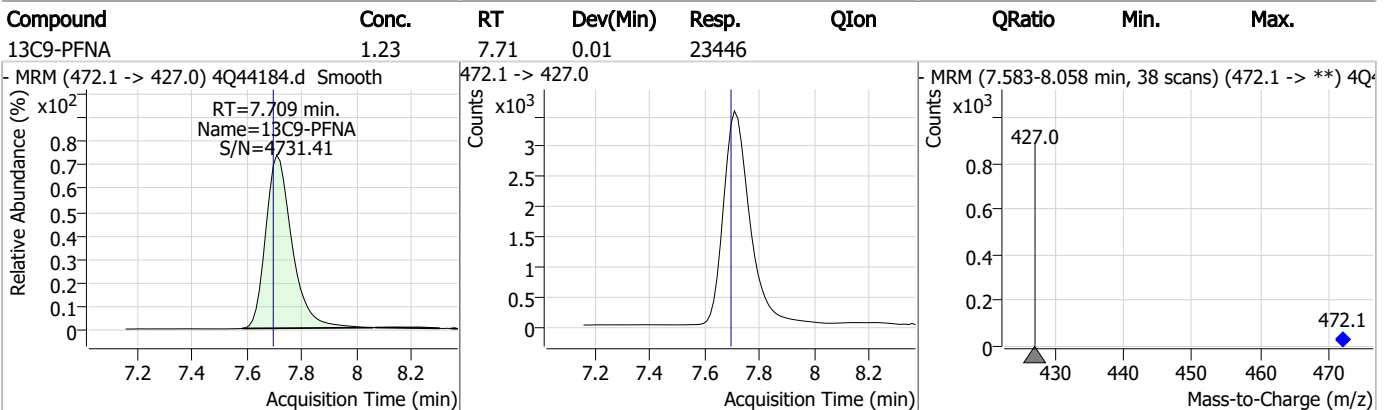
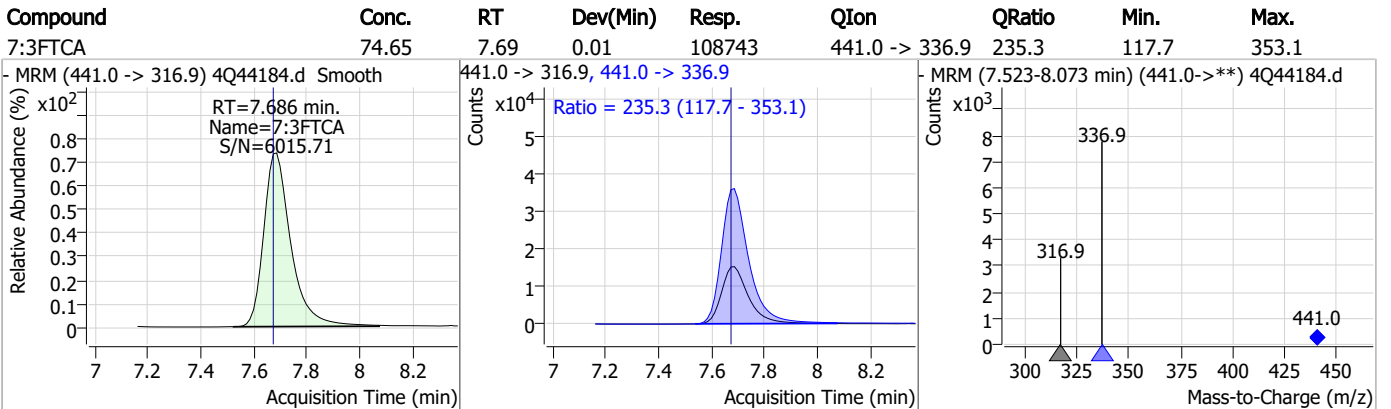
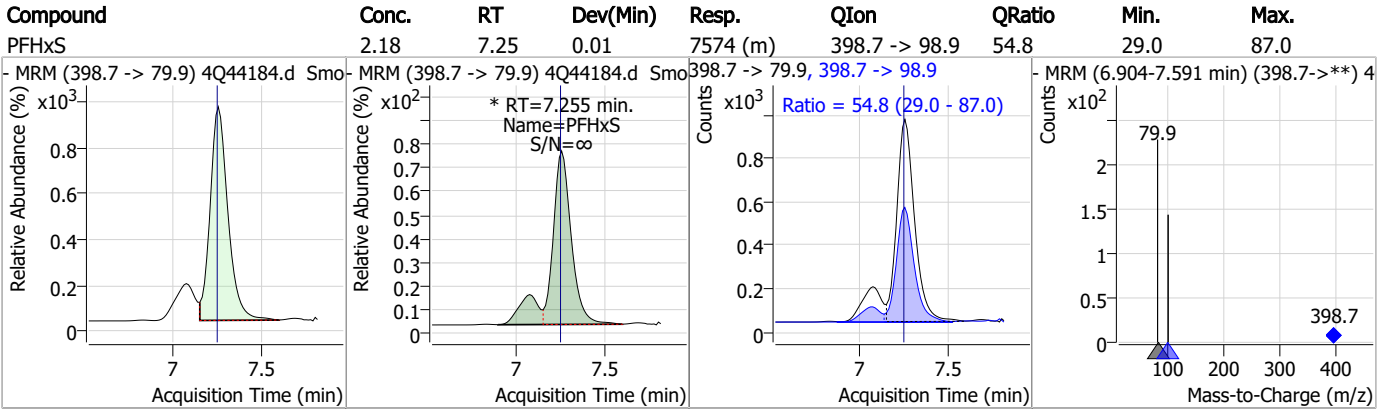
Perfluorinated Compounds by LC/MS/MS



7.7.14

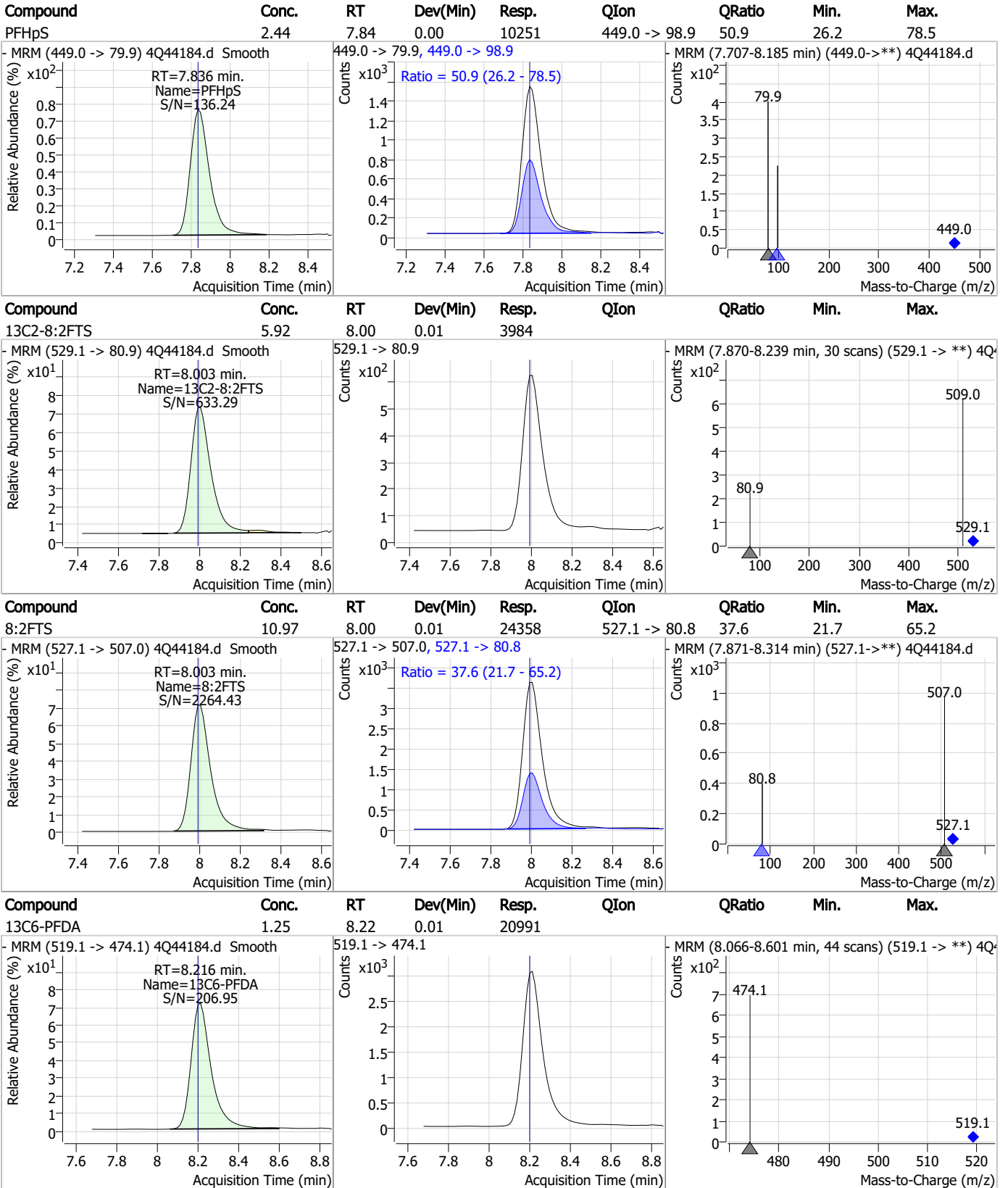


Perfluorinated Compounds by LC/MS/MS



7.7.14

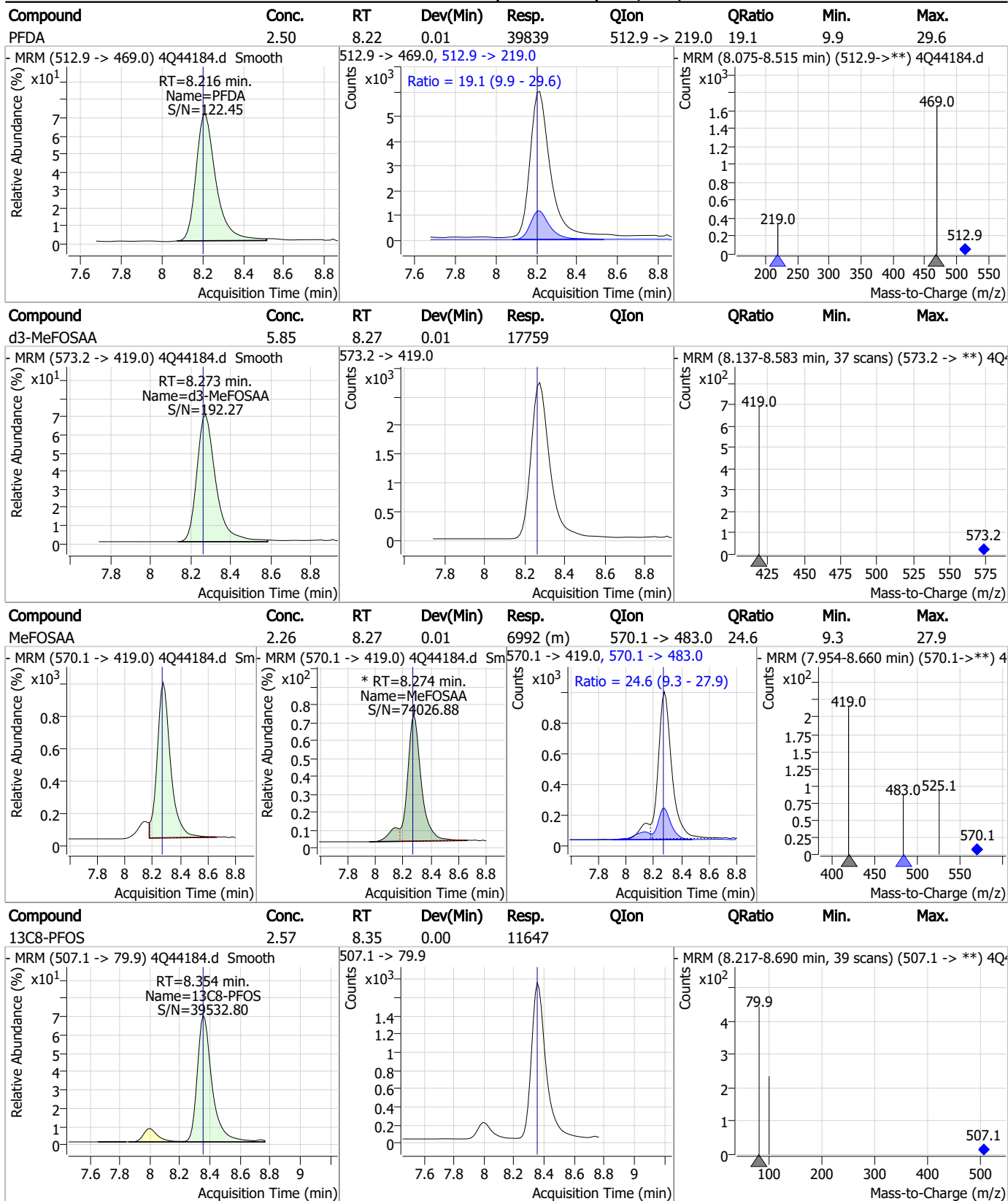
Perfluorinated Compounds by LC/MS/MS



7.7.14

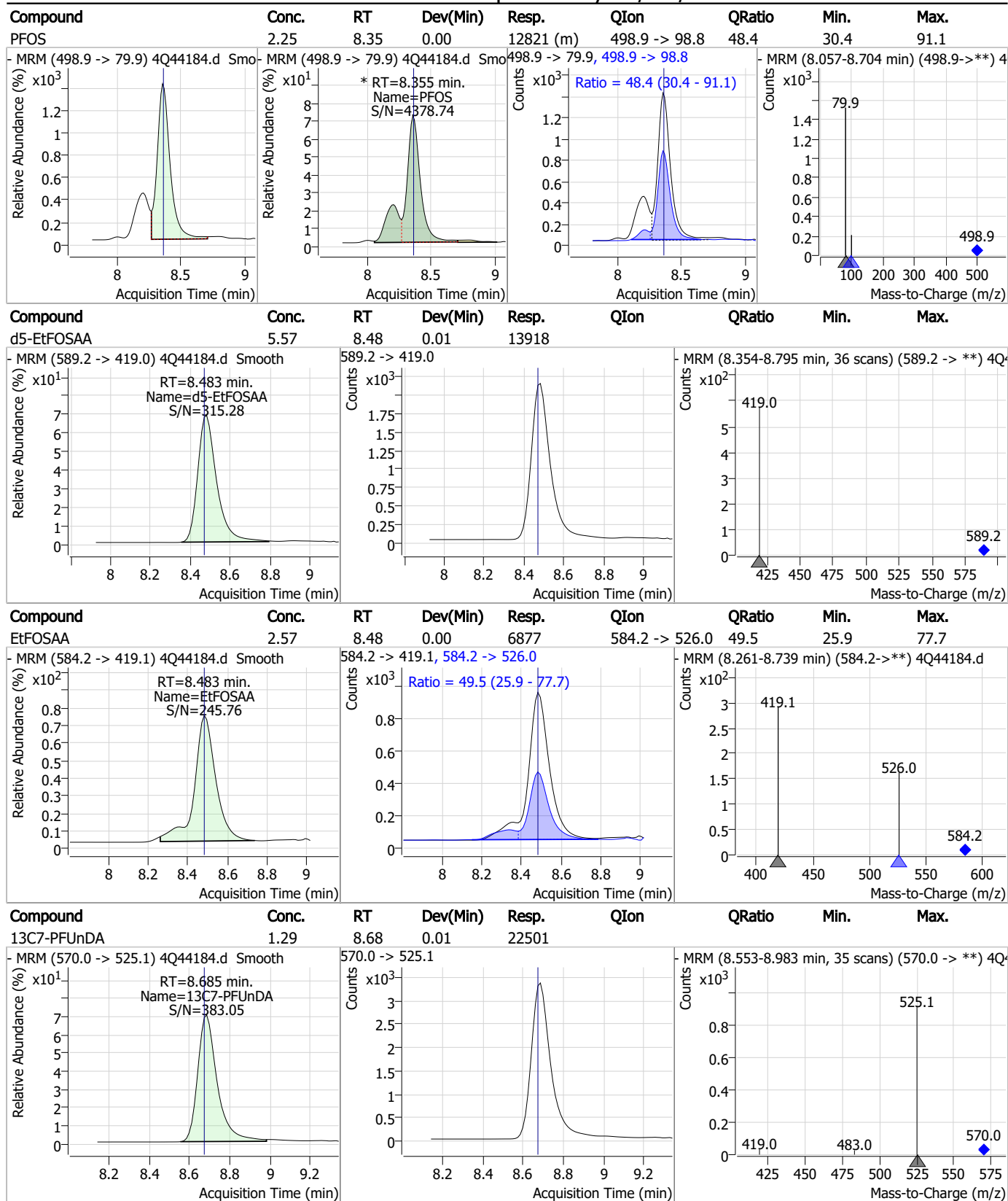


Perfluorinated Compounds by LC/MS/MS



7.7.14
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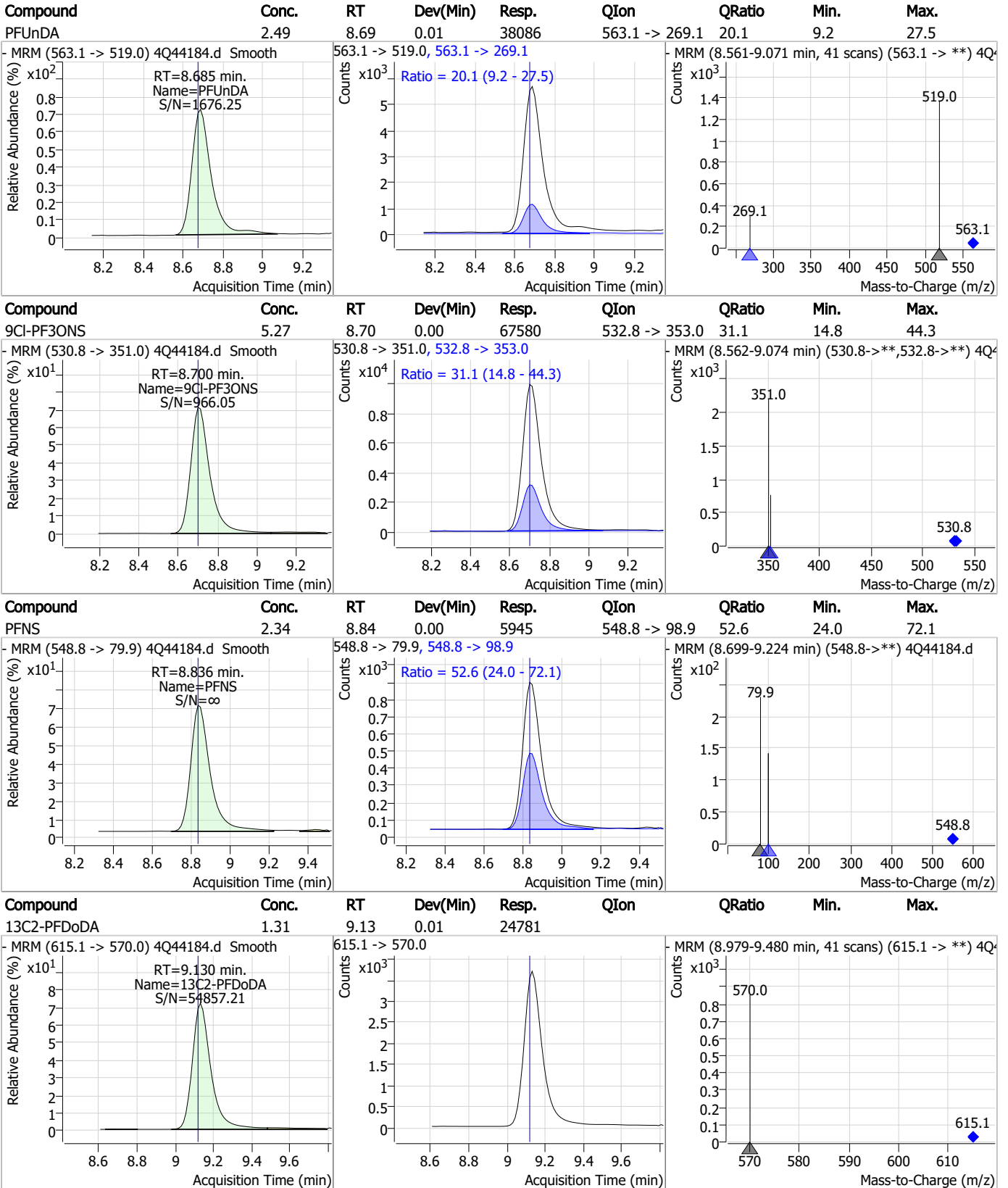
Perfluorinated Compounds by LC/MS/MS



7.7.14

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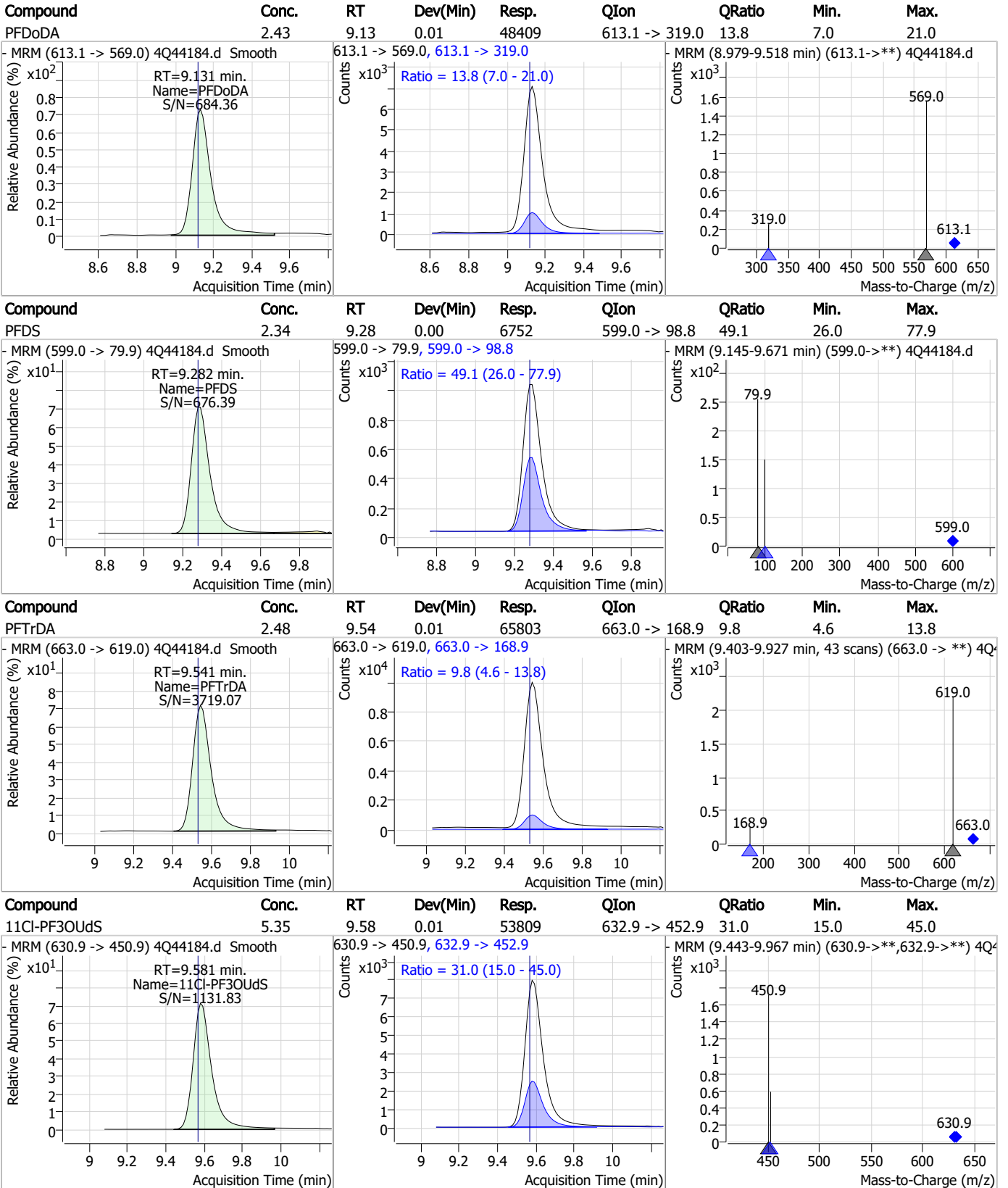
Perfluorinated Compounds by LC/MS/MS



7.7.14



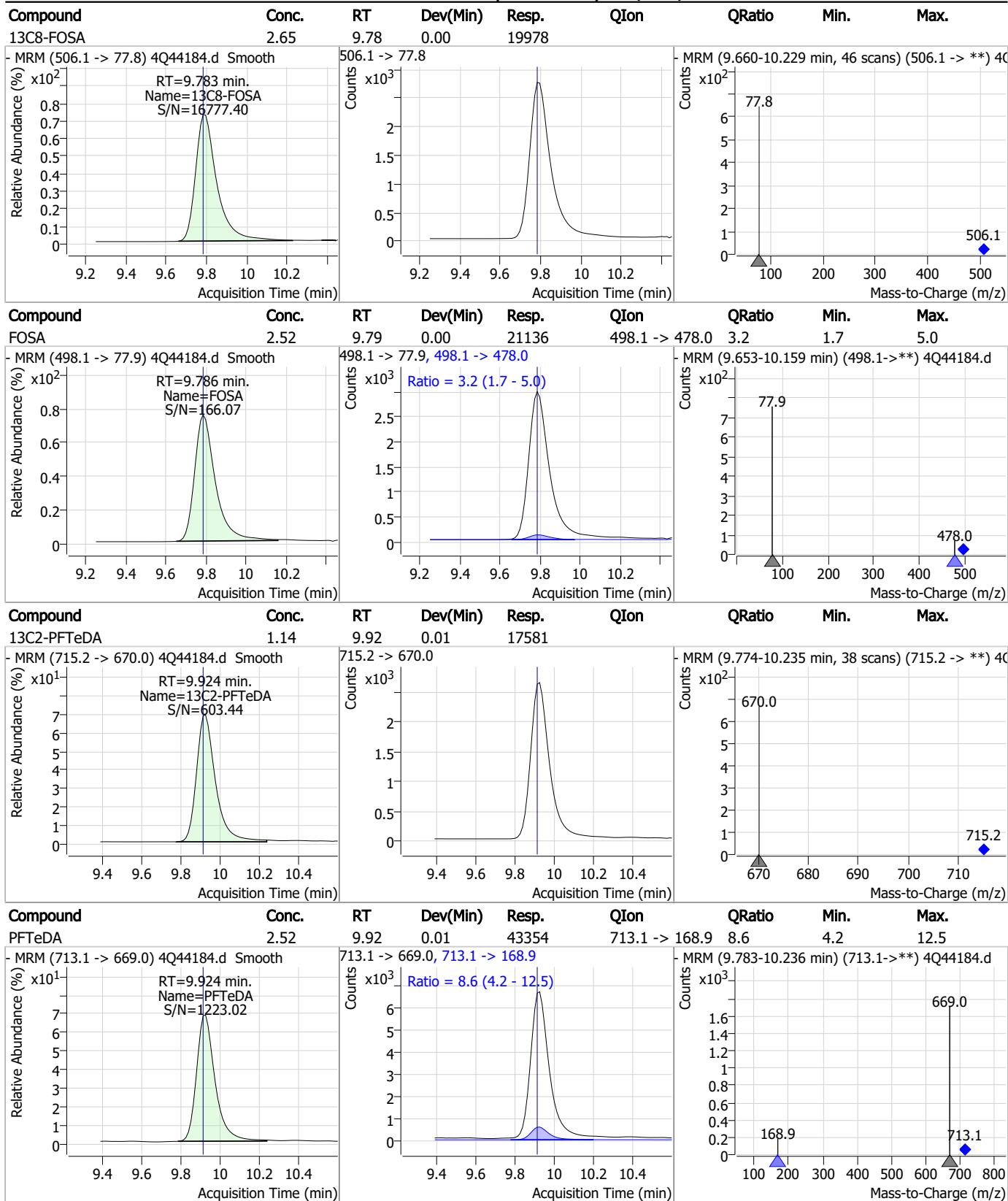
Perfluorinated Compounds by LC/MS/MS



7.7.14
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Perfluorinated Compounds by LC/MS/MS

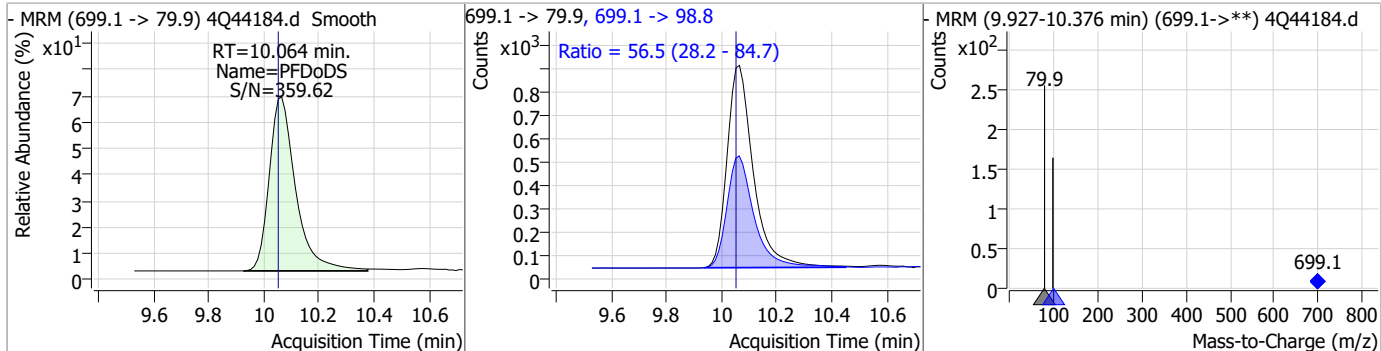


7.7.14

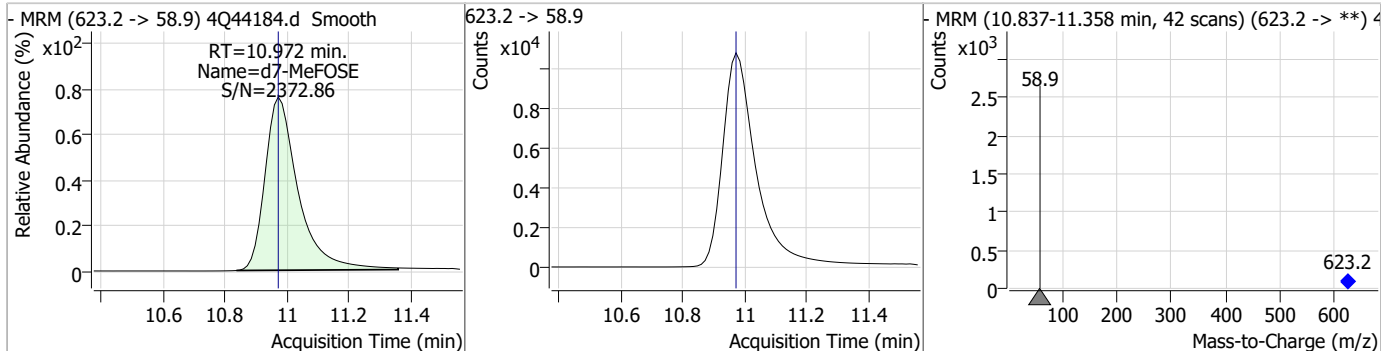


Perfluorinated Compounds by LC/MS/MS

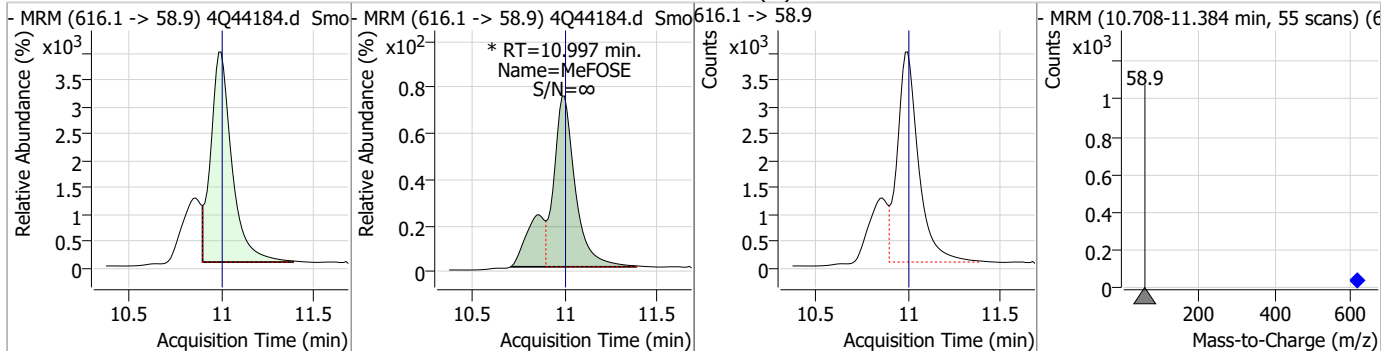
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.26	10.06	0.01	5820	699.1 -> 98.8	56.5	28.2	84.7



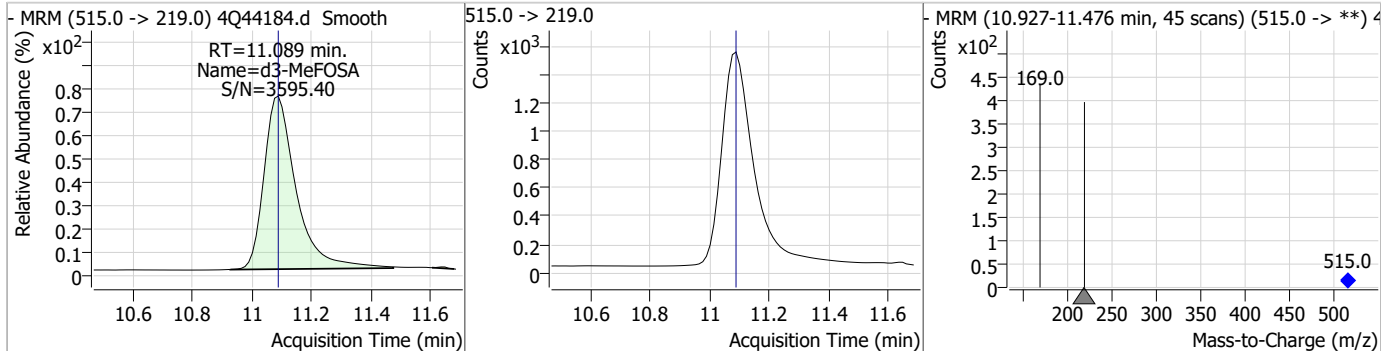
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	21.33	10.97	0.00	79813				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.98	11.00	0.00	39258 (m)				

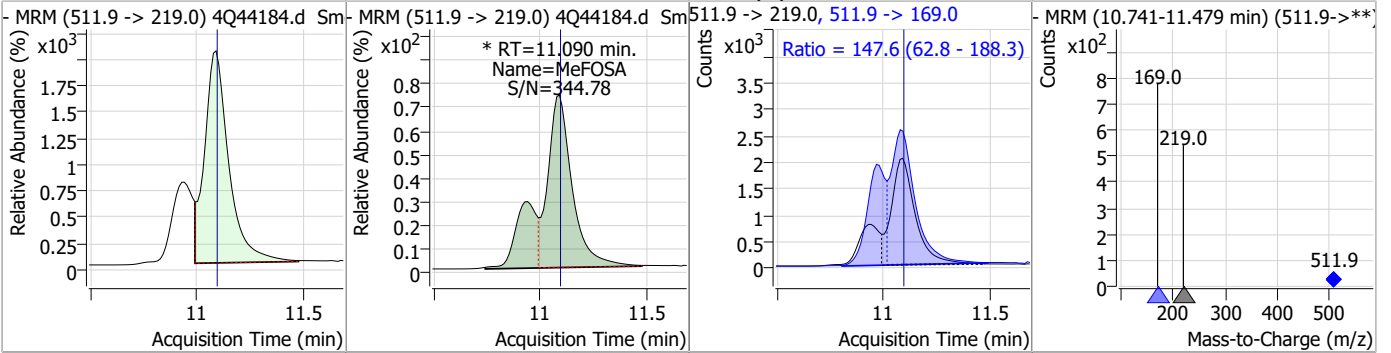


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.42	11.09	0.00	11427				

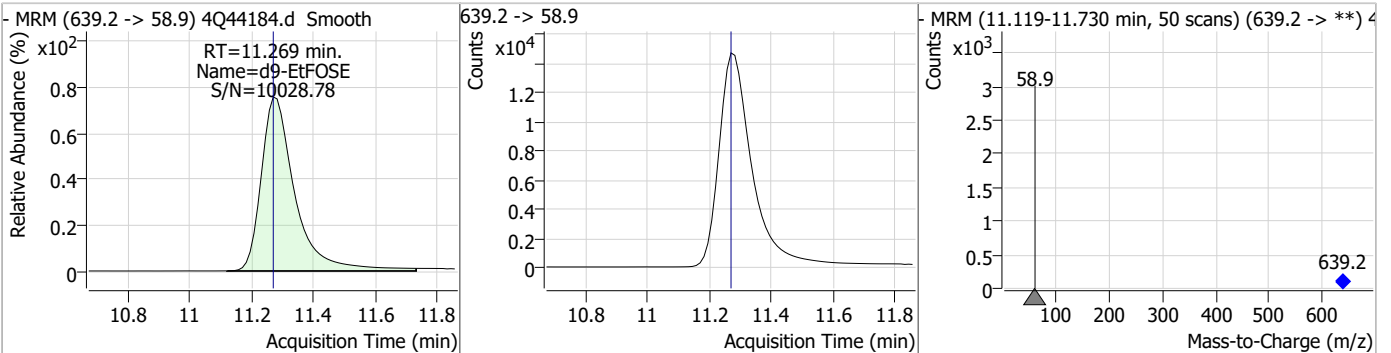


Perfluorinated Compounds by LC/MS/MS

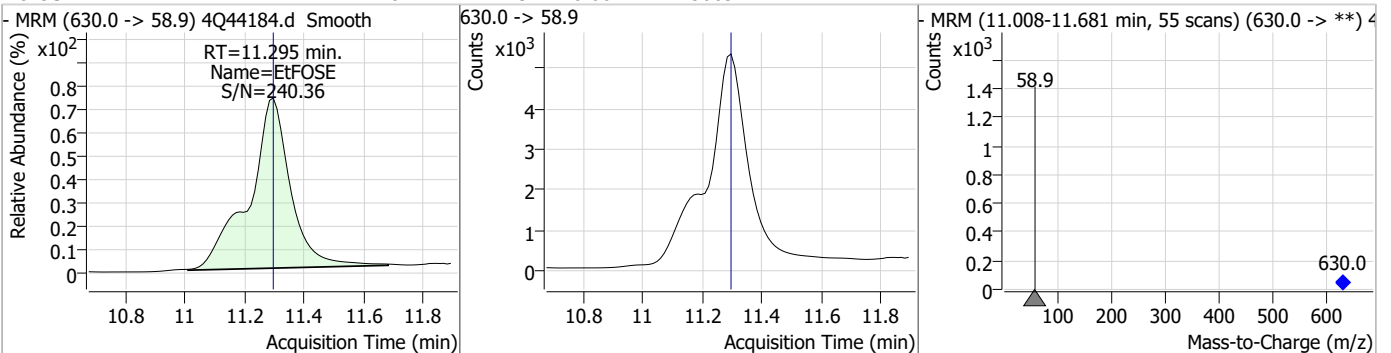
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.99	11.09	0.00	21463 (m)	511.9 -> 169.0	147.6	62.8	188.3



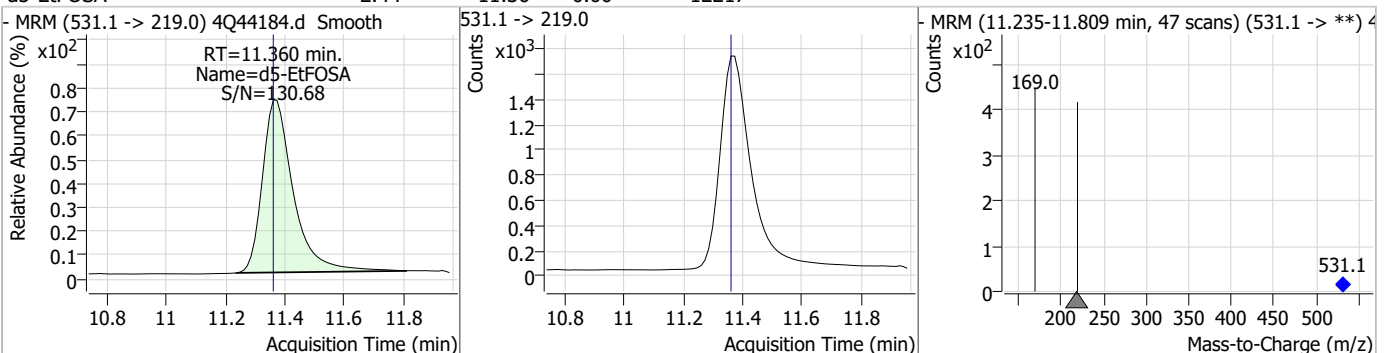
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.91	11.27	0.00	110802				



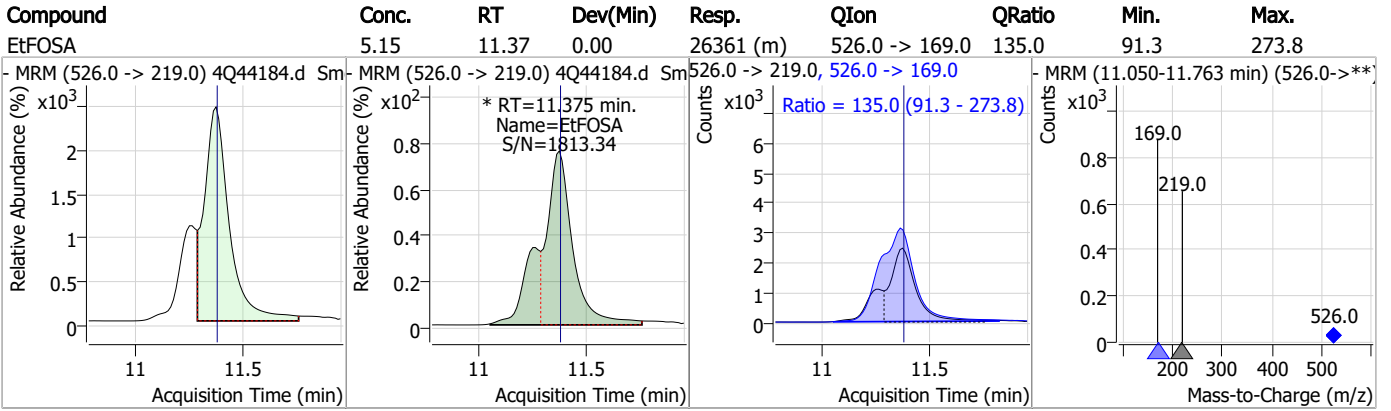
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.82	11.29	0.00	50697				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.44	11.36	0.00	12217				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q639-ECC634 Method: EPA DRAFT 1633
Lab FileID: 4Q44184.D Analyst approved: 05/10/23 11:10 Martha Valls
Injection Time: 05/10/23 01:37 Supervisor approved: 05/10/23 17:32 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	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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SGS ORLANDO

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

SGS ORLANDO

36	4Q43914.d	P1-D1	op96659-mb	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
37	4Q43915.d	P1-D2	jd63879-1	1633full_4Q.m	Sample		OP96659,S4Q634,60,,,5.0,1,water	✓
38	4Q43916.d	P1-D3	jd63879-1	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:	05/09/23
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:	S4Q639

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

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q44131.d	P1-A1	CCB	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
2	4Q44132.d	P1-A1	CCB	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
3	4Q44133.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
4	4Q44134.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
5	4Q44135.d	P1-A9	high std	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
6	4Q44136.d	P1-A1	iblk	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
7	4Q44137.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q639,500,,,5.0,1,water	✓
8	4Q44138.d	P1-A2	cc634-1.0LL	1633full_4Q.m	QC	1.6/500	OP96548,S4Q639,500,,,5.0,1,water	✓
9	4Q44139.d	P3-A1	op96746-bs	1633full_4Q.m	Sample		OP96746,S4Q639,500,,,5.0,1,water	✓
10	4Q44140.d	P3-A2	op96746-llbs:3	1633full_4Q.m	Sample		OP96746,S4Q639,500,,,5.0,1,water	✓
11	4Q44141.d	P3-A3	op96746-mb	1633full_4Q.m	Sample		OP96746,S4Q639,500,,,5.0,1,water	✓
12	4Q44142.d	P3-A4	FC5295-1	1633full_4Q.m	Sample		OP96746,S4Q639,68,,,5.0,1,water	rr10x
13	4Q44143.d	P3-A5	FC5295-3	1633full_4Q.m	Sample		OP96746,S4Q639,480,,,5.0,1,water	rr for co
14	4Q44144.d	P3-A6	FC5309-11	1633full_4Q.m	Sample		OP96746,S4Q639,570,,,5.0,1,water	✓
15	4Q44145.d	P3-A5	FC5295-3	1633full_4Q.m	Sample		OP96746,S4Q639,480,,,5.0,1,water	✓
16	4Q44146.d	P3-A7	FC5295-12	1633full_4Q.m	Sample		OP96746,S4Q639,68,,,5.0,1,water	to confirm
17	4Q44147.d	P3-C8	FC5295-12	1633full_4Q.m	Sample	50/500	OP96746,S4Q639,68,,,5.0,10,water	to confirm
18	4Q44148.d	P3-C7	FC5295-1	1633full_4Q.m	Sample	50/500	OP96746,S4Q639,68,,,5.0,10,water	✓
19	4Q44149.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q639,500,,,5.0,1,water	✓
20	4Q44150.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
21	4Q44151.d	P3-A8	FC5309-12	1633full_4Q.m	Sample		OP96746,S4Q639,570,,,5.0,1,water	✓
22	4Q44152.d	P3-A9	FC5309-13	1633full_4Q.m	Sample		OP96746,S4Q639,570,,,5.0,1,water	✓
23	4Q44153.d	P3-B1	FC5309-14	1633full_4Q.m	Sample		OP96746,S4Q639,570,,,5.0,1,water	✓
24	4Q44154.d	P3-B2	FC5325-1	1633full_4Q.m	Sample		OP96746,S4Q639,560,,,5.0,1,water	cf
25	4Q44155.d	P3-B3	FC5325-2	1633full_4Q.m	Sample		OP96746,S4Q639,560,,,5.0,1,water	cf
26	4Q44156.d	P3-B4	FC5325-3	1633full_4Q.m	Sample		OP96746,S4Q639,560,,,5.0,1,water	cf
27	4Q44157.d	P3-B5	FC5325-6	1633full_4Q.m	Sample		OP96746,S4Q639,560,,,5.0,1,water	cf
28	4Q44158.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q639,500,,,5.0,1,water	✓
29	4Q44159.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q639,500,,,5.0,1,water	✓
30	4Q44160.d	P3-B6	op96747-bs	1633full_4Q.m	Sample		OP96747,S4Q639,500,,,5.0,1,water	✓
31	4Q44161.d	P3-B7	op96747-llbs:3	1633full_4Q.m	Sample		OP96747,S4Q639,500,,,5.0,1,water	✓
32	4Q44162.d	P3-B8	op96747-mb	1633full_4Q.m	Sample		OP96747,S4Q639,500,,,5.0,1,water	✓
33	4Q44163.d	P3-B9	FC5818-1	1633full_4Q.m	Sample		OP96747,S4Q639,550,,,5.0,1,water	✓
34	4Q44164.d	P3-C1	FC5818-2	1633full_4Q.m	Sample		OP96747,S4Q639,530,,,5.0,1,water	✓
35	4Q44165.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q639,500,,,5.0,1,water	✓

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36	4Q44166.d	P1-A1	iccb	1633full_4Q.m	Sample	OP96548,S4Q639,500,,,5.0,1,water	✓
37	4Q44167.d	P3-C2	FC5818-3	1633full_4Q.m	Sample	OP96747,S4Q639,570,,,5.0,1,water	rf5x surr high. Pfba low
38	4Q44168.d	P3-C3	op96747-ms	1633full_4Q.m	Sample	OP96747,S4Q639,560,,,5.0,1,water	✓
39	4Q44169.d	P3-C4	FC5818-4	1633full_4Q.m	Sample	OP96747,S4Q639,530,,,5.0,1,water	✓
40	4Q44170.d	P3-C5	FC5818-5	1633full_4Q.m	Sample	OP96747,S4Q639,560,,,5.0,1,water	✓
41	4Q44171.d	P3-C6	op96747-dup	1633full_4Q.m	Sample	OP96747,S4Q639,560,,,5.0,1,water	✓
42	4Q44172.d	P1-A5	cc634-4	1633full_4Q.m	QC	OP96548,S4Q639,500,,,5.0,1,water	✓
43	4Q44173.d	P1-A2	cc634-1.0LL	1633full_4Q.m	QC	OP96548,S4Q639,500,,,5.0,1,water	✓
44	4Q44174.d	P1-A1	iccb	1633full_4Q.m	Sample	OP96548,S4Q639,500,,,5.0,1,water	✓
45	4Q44175.d	P3-D1	op96784-bs	1633full_4Q.m	Sample	OP96784,S4Q639,500,,,5.0,1,water	✓
46	4Q44176.d	P3-D2	op96784-llbs:3	1633full_4Q.m	Sample	OP96784,S4Q639,500,,,5.0,1,water	✓
47	4Q44177.d	P3-D3	op96784-mb	1633full_4Q.m	Sample	OP96784,S4Q639,500,,,5.0,1,water	✓
48	4Q44178.d	P3-D4	FC5861-1	1633full_4Q.m	Sample	OP96784,S4Q639,520,,,5.0,1,water	✓
49	4Q44179.d	P3-D5	FC5890-1	1633full_4Q.m	Sample	OP96784,S4Q639,550,,,5.0,1,water	✓
50	4Q44180.d	P3-D6	op96784-ms	1633full_4Q.m	Sample	OP96784,S4Q639,540,,,5.0,1,water	✓
51	4Q44181.d	P3-D7	FC5890-2	1633full_4Q.m	Sample	OP96784,S4Q639,550,,,5.0,1,water	✓
52	4Q44182.d	P3-D8	op96784-dup	1633full_4Q.m	Sample	OP96784,S4Q639,550,,,5.0,1,water	✓
53	4Q44183.d	P3-D9	FC5890-3	1633full_4Q.m	Sample	OP96784,S4Q639,530,,,5.0,1,water	✓
54	4Q44184.d	P1-A5	Ecc634-4	1633full_4Q.m	QC	OP96548,S4Q639,500,,,5.0,1,water	✓
55	4Q44185.d	P1-A1	iccb	1633full_4Q.m	Sample	OP96548,S4Q639,500,,,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				
		11642B	PFAC MXJ		9/14/26	3/23/24	4-20 ppm	312uL		312/1000 ppb				
LCMS 2099	537.1 Du std. (INTERNAL)	11070	MPF-PEA	Wellington Labs	07/06/25	04/06/24	50ppm	80uL	4mL	1.0ppm	2011MEHA 41, H2O	04/13/23	06/15/23	NG
		10438A	Mw:2 FTS		11/05/25	04/06/24		80uL		1.0ppm				NG
		10512B	d3-N-NECOAA		10/22/25	05/15/23		160uL		2.0ppm				NG
		10498A	M:PFOS		11/02/25	03/22/24		80uL		1.0ppm				NG
		11069	M:PFDA		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	160ppb	75% MeOH 5% H2O	4/11/23	7/24/23	MW
2101	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		50ppb				
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						

* B/C checked are normal

* tested & passed on 10/11/23

LCMS 2100 91B * 100% 100% 100%

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

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(1,000)



Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2095A-J	(10ppb) PFC ID SURF	A-J 11669	PFAC-2YES	Wellington Labs	01/15/23	03/28/24	1.0ppm	2.4mL	~50mL	0.5ppm	05/10/23	03/28/23	09/18/23	NS
↓	↓	11585	M2HFO-DA	↓	11/08/23	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
↓	↓	11431	d-N-METOSAM	↓	05/06/27	03/13/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
LCMS 2096A-B	1033 spike Cal cert.	11672	PFAC-MxH	Wellington Labs	8/15/27	3/23/24	1-4 ppm	250uL	4mL	0.25 1.25 2.50ppb	1033 MIX	3/30/23	9/13/23	MU
↓	↓	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	MU
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 metose	↓	10/28/23	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11494	br-N Effose	↓	10/17/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓					4/6/24								

* tested & used on 3/20/24

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

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2067	40 List Std. ADD-ON #1	10726A	10:2 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 PFP2PA		2/3/27	2/8/24								
		10685A	5:3 FTCA PFP2PA		11/11/25	8/23/23								
		11116 A	7:3 FTCA FHP2PA		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 3.6-08P2PA		3/31/25	10/18/23								
					NS 02/10/23									

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

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
* 2074 A-B LCMS	PFC SPIKE	11613	PROA-SD C8000MS	Absolute	11/09/27	02/23/24	1.0ppm	2mL	5mL	400ppb	95% MeOH 5% H2O	02/23/23	03/23/23	UG
↓	↓	10839	N-Me- FSA-M	Wellington Labs	08/23/26	09/23/23	50ppm	40uL	↓	↓	↓	↓	↓	NG
↓	↓	11850	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	(10 PPB) PFC ID SURF	11639	MPAC- 24ES	Wellington Labs	03/24/27	02/23/24	1.0ppm	2.4mL	~50 mL	0.5ppm	95% MeOH 5% H2O	02/23/23	02/23/23	NG
↓	↓	11585	N2HFO- DA	Wellington Labs	11/08/25	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
↓	↓	11385	A-N- NEFOSA-M	Wellington Labs	05/10/27	01/01/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
↓	↓	11250	FBSA-1	Wellington Labs	11/10/26	11/8/23	50ppm	80uL	4.0mL	1ppm	95% MeOH 5% H2O	2/17/23	5/19/26	MV
↓	↓	11249	FHSA-1	↓	2/29/26	11/3/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
↓	↓	11140	L-PFAS	↓	7/12/26	5/26/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
LCMS 2077A-B	1633 Solvent B	11387	Ammonium Acetate	Sigmall drich	---	1/25/24	99.9%	0.62g	4L	2mM	MA	2/28/23	4/28/23	MV
↓	↓	224870	HPLC water	Fisher	---	2/28/23	↓	3,800ml	↓	95%	↓	↓	↓	↓
↓	↓	220225	Acetonil trile	↓	---	2/20/24	↓	200mL	↓	5%	↓	↓	↓	↓
↓	↓	---	---	---	---	n/a	n/a	n/a	2/28/23	---	---	---	---	---
↓	↓	---	---	---	---	Continue next page 21	---	---	---	---	---	---	---	---

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

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2052	1633 prep mix	Lot: 221044	MeOH	Fisher	—	1/4/24	99.9%	92 mL	100 mL	92%	N/A	1/19/23	2/19/23	MV
↓	↓	Lot: 219481	NH4OH	↓	—	9/19/23	100%	3.3 mL	↓	1%	↓	↓	↓	↓
↓	↓	Lot: 224863	H2O	↓	—	1/17/24	100%	1.7 mL	↓	4%	↓	↓	↓	↓
↓	↓	Lot: 224297	Acetic ACID	↓	—	6/24	99.7%	0.625 mL	↓	.625%	↓	↓	↓	↓
LCMS 2053	(spike) Full list std	11568	PF6A 200 28	SGS standards	11/9/27	1/10/24	1.0 ppm	400 NL	4.0 mL	100 ppb	95% MeOH 5% H2O	12/4/23	3/21/23	MV
↓	↓	LCMS 1987	40 list add-on #1	↓	—	3/21/23	1.0 ppm	400 NL	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 1986	40 list add-on #2	↓	—	4/8/23	1.0 ppm	400 NL	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2054	FOSC std.	↓	—	7/24/23	5.0 ppm	400 NL	↓	500 ppb	↓	↓	↓	↓
LCMS 2054	FOSC std.	11336	N-Et-FOSE	Wellington	5/13/27	9/19/23	50 ppm	200 NL	2.0 mL	5 ppm	95% MeOH 5% H2O	12/4/23	7/24/23	MV
↓	↓	11338	N-ME FOSE	↓	5/13/27	9/19/23	50 ppm	200 NL	↓	↓	↓	↓	↓	↓
LCMS 2055	1633 Cal std.	10855	PFAC-MxH	Wellington	9/14/26	1/17/24	1-4 ppm	250 NL	4 mL	62.5 125 250 ppb	1633 MIX	1/24/23	7/24/23	MV
↓	↓	10853I	PFAC-MxI	↓	9/14/26	1/11/24	1-10 ppm	250 NL	↓	62.5 125 250 ppb	↓	↓	↓	↓
↓	↓	11579B	PFAC-MxF	↓	11/1/25	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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11494



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Revision#:9, Revised 2020-12-23

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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

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Revision#:9, Revised 2020-12-23

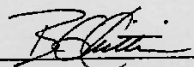
PFACMXJ:0921 (1 of 5)
rev1

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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)

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rec'd: 02/23/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

**Native PFAS
Solution/Mixture**

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

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, 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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Revision# 9, Revised 2020-12-23

PFACMXH0822 1 of 11
rev0

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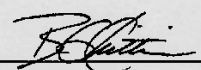
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Table A: PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

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	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		23
N-methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-ethylperfluorooctanesulfonamidoacetic acid ^a	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		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



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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.

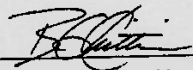
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Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

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)

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rec'd: 02/23/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic Acids and Sulfonate Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Revision# 9, Revised 2020-12-23

PFACMXG1122 (1 of 5)
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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: 
 B.G. Chittim, General Manager

Date: 12/09/2022
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

FPePA1120

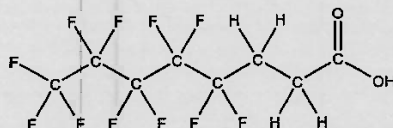
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

$C_8H_5F_{11}O_2$

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/11/2020

EXPIRY DATE: (mm/dd/yyyy)

11/11/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

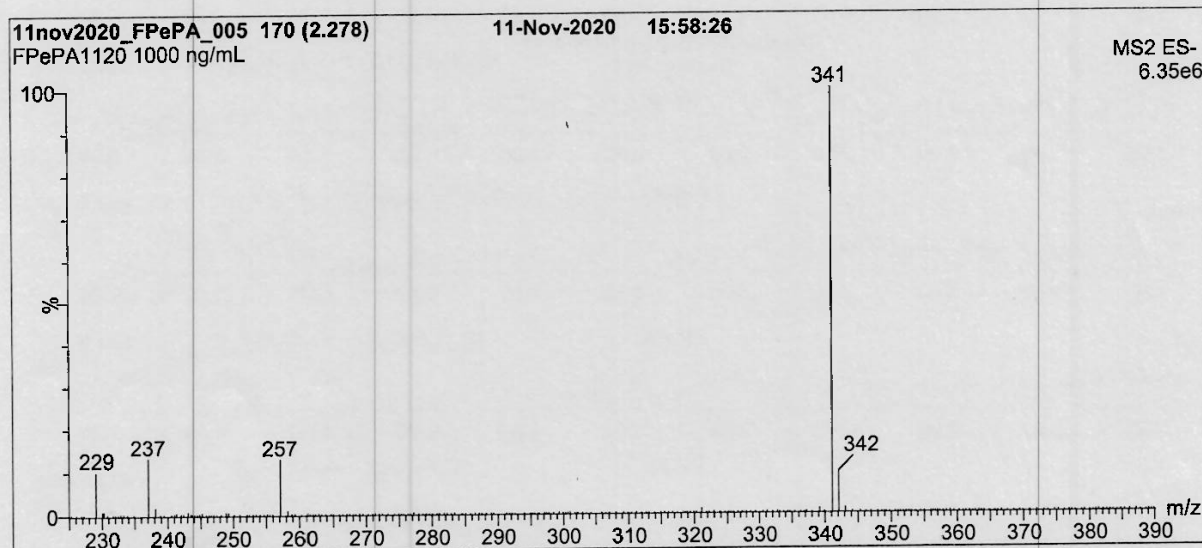
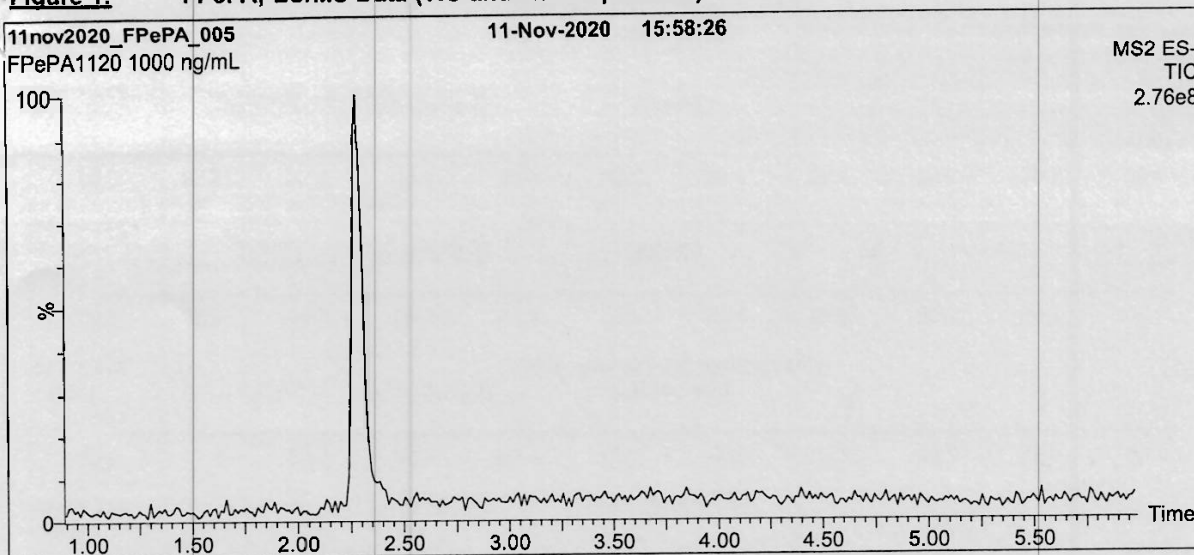
B.G. Chittim, General Manager

Date: 11/27/2020

(mm/dd/yyyy)

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



Conditions for Figure 1:

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

Chromatographic Conditions:

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

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

Flow: 300 μL/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 18.50
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (L/hr) = 1000

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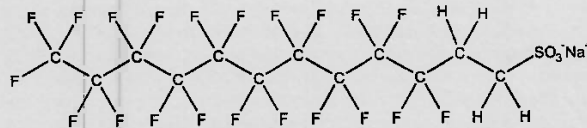


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

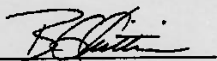
DOCUMENTATION/ DATA ATTACHED:

- 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
B.G. Chittim, General Manager (mm/dd/yyyy)

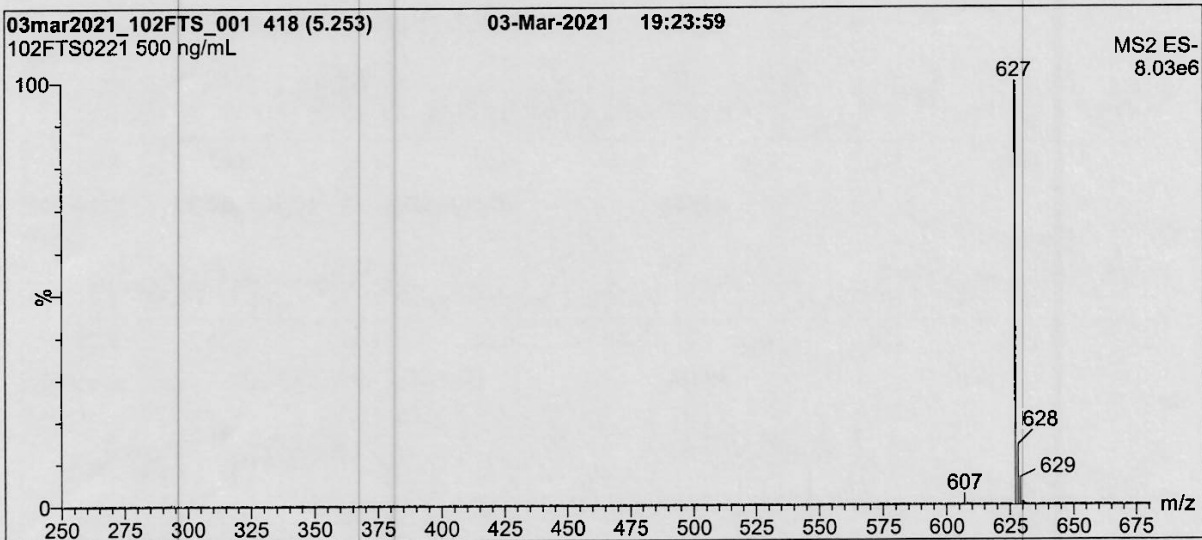
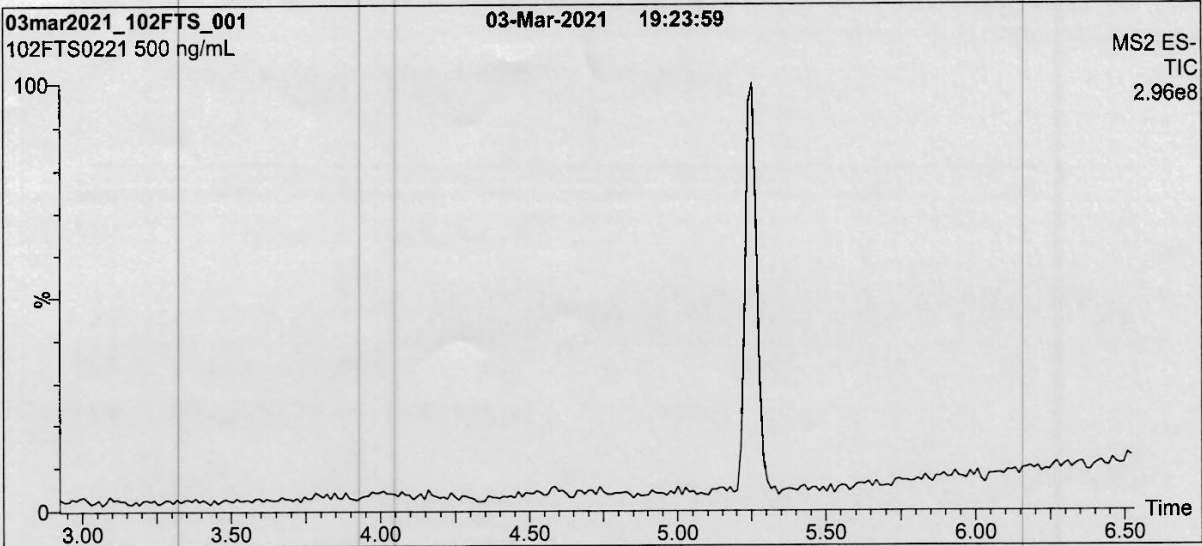
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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

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



Conditions for Figure 1:

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

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

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

Flow: 300 μ L/min

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

10762 A-B



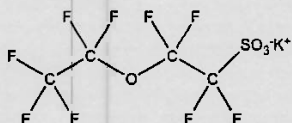
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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Potassium perfluoro(2-ethoxyethane)sulfonate

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



MOLECULAR FORMULA: C₄F₈SO₄K **MOLECULAR WEIGHT:** 354.19

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

44.6 ± 2.2 µg/ml (PFEESA acid)

44.5 ± 2.2 µg/ml (PFEESA anion)

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

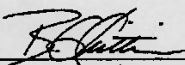
Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

B.G. Chittim, General Manager

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Form#:27, Issued 2004-11-10
Revision#:7, Revised 2020-01-09

7.9.1

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10763 A-B



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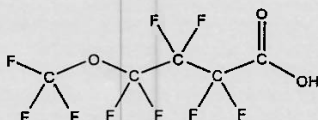
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-5-oxahexanoic acid

SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

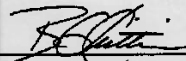
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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Revision#: 8, Revised 2020-09-10

PF5OHxA0320 (1 of 4)
rev1

7.9.1
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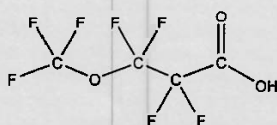
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

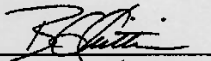
DOCUMENTATION/ DATA ATTACHED:

- 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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Revision#: 8, Revised 2020-09-10

PF4OPeA0320 (1 of 4)
rev1

7.9.1

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PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

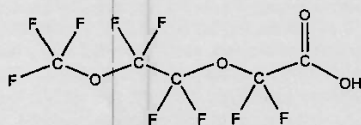
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager

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

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10829



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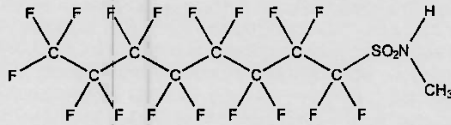
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPA
10/5/21

MOLECULAR FORMULA: C₈H₄F₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/03/2021
EXPIRY DATE: (mm/dd/yyyy) 08/03/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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Revision#:9, Revised 2020-12-23

NMeFOSA0721M (1 of 4)
rev0

7.9.1

7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

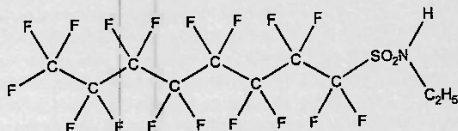
10837

LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:



CAS #: 4151-50-2

MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

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

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10

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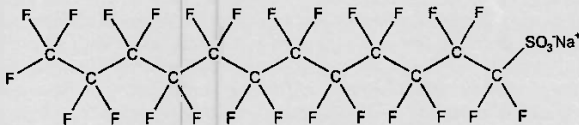
10840

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

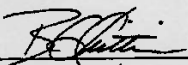
DOCUMENTATION/ DATA ATTACHED:

- 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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PRODUCT CODE:

PFODA

10847 NS 01/18/23

LOT NUMBER:

PFODA0821

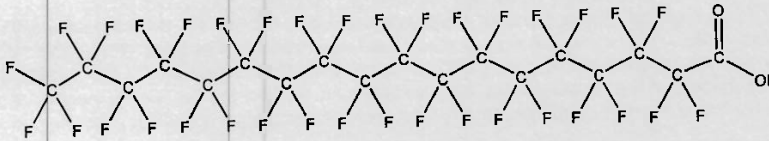
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

$C_{18}H_{35}O_2$

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

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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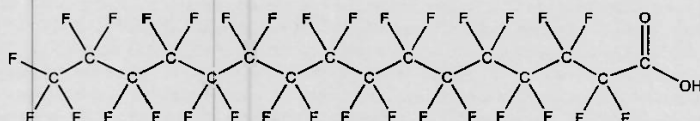


10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



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

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

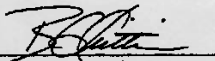
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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1116 A.B ^{mw}

1116B on the back mw



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

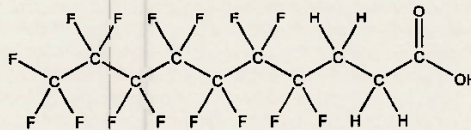
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

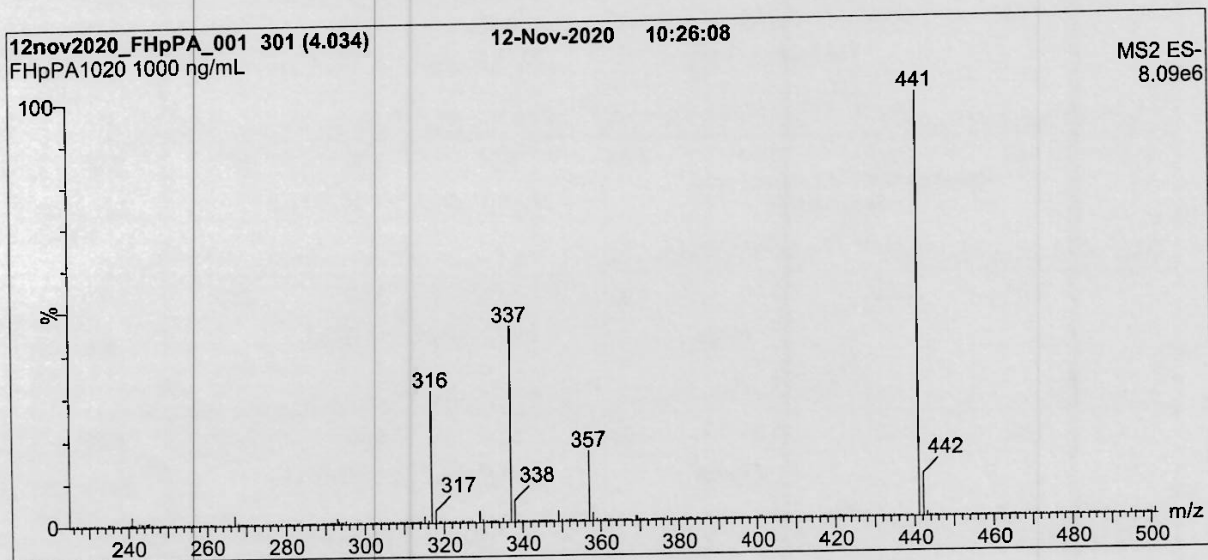
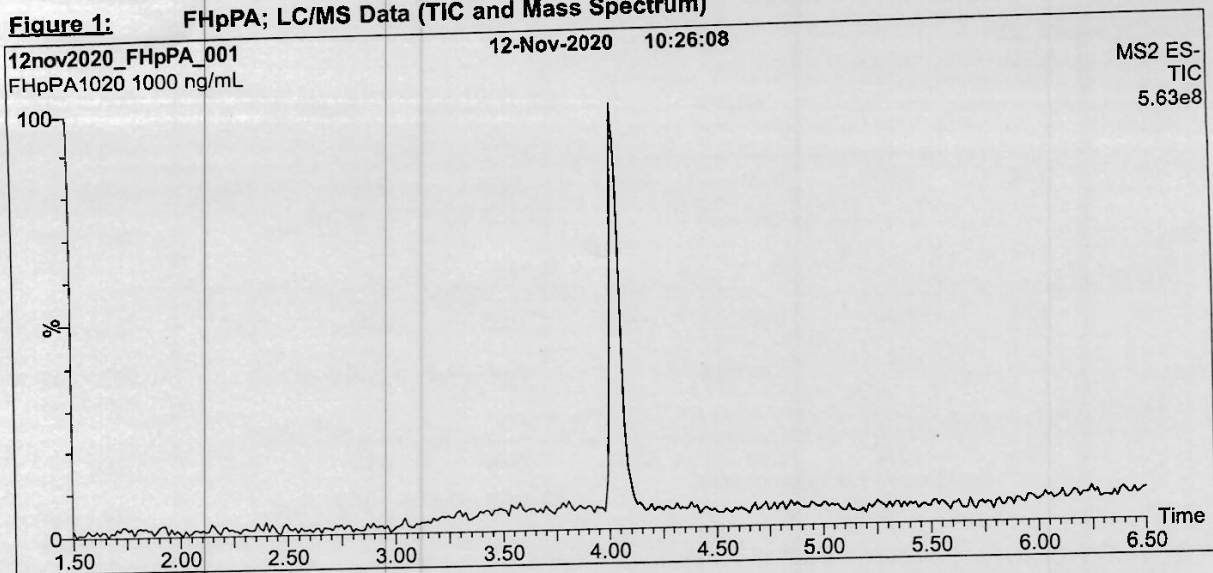
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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

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

FPrPA(3:3FTCA) 1116 B



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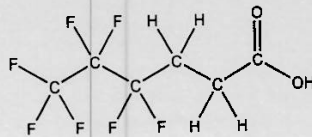
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPrPA0122

STRUCTURE:

CAS #: 356-02-5



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

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

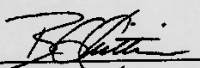
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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11140



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

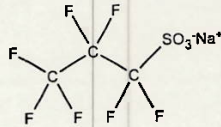
COMPOUND:

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.

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Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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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

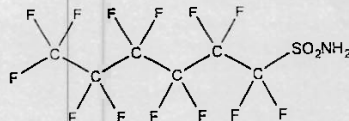
COMPOUND:

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:

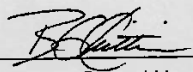
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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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

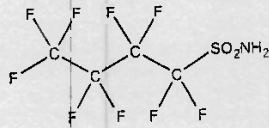
COMPOUND:

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 11/10/2021

(mm/dd/yyyy)

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

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

FBSA11211 (1 of 4)
rev0

11332



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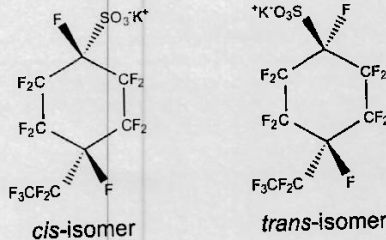
CERTIFICATE OF ANALYSIS DOCUMENTATION

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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11338



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

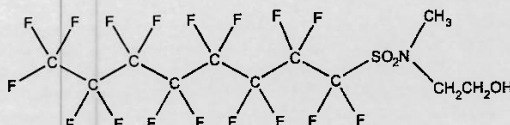
NMeFOSE0522M

COMPOUND:

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

STRUCTURE:**CAS #:**

24448-09-7

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

557.22

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

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

ADDITIONAL INFORMATION:

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

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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 (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₆ and C₈). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

MPFACHIFIS1122 (1 of 5)
rev0

7.9.1

7

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

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



11626
rec'd 01/26/23

CERTIFIED WEIGHT REPORT

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

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

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

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

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.)		
									Free Acid CAS#	OSHA PEL (TWA)	LD50
1. Perfluoro-n-butanoic acid (PFBA)	99542	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A
2. Perfluoro-n-pentanoic acid (PFPeA)	99543	050222	0.02	2.00	0.017	50.3	1.01	0.02	2706-90-3	N/A	N/A
3. Perfluorohexanoic acid (PFHxA)	99199	071122	0.02	2.00	0.017	50.2	1.00	0.02	307-24-4	N/A	N/A
4. Perfluoroheptanoic acid (PFHpA)	99197	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-85-9	N/A	N/A
5. Perfluorooctanoic acid (br-PFOA)*	99202	080522	0.02	2.00	0.017	50.2	1.00	0.02	335-67-1 (L)	N/A	ipr-rat 189mg/kg
6. Perfluorononanoic acid (PFNA)	99200	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-95-1	N/A	N/A
7. Perfluorodecanoic acid (PFDA)	99195	110922	0.02	2.00	0.017	50.0	1.00	0.02	335-76-2	N/A	rat 57mg/kg
8. Perfluoroundecanoic acid (PFUnA)	99205	071522	0.02	2.00	0.017	50.2	1.00	0.02	2058-94-8	N/A	N/A
9. Perfluorododecanoic acid (PFDoA)	99196	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A
10. Perfluorotridecanoic acid (PFTriDA)	99204	110922	0.02	2.00	0.017	50.1	1.00	0.02	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid (PFTeDA)	99203	033022	0.02	2.00	0.017	50.1	1.00	0.02	376-06-7	N/A	N/A
12. Perfluorooctanesulfonamide (FOSA)	3677	FOSA03221	0.02	2.00	0.017	50.0	1.00	0.05	2355-31-9 (L)	N/A	N/A
13. N-Methylperfluorooctanesulfonamidoacetic acid (br-NMeFOSAA)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
14. N-Ethylperfluorooctanesulfonamidoacetic acid (br-NEFOSAA)*	4163	brNEFOSAA1121	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	99194	080522	0.02	2.00	0.017	50.2	1.00	0.02	375-73-5	N/A	N/A
16. Perfluoro-1-pentanesulfonic acid (PFPeS)	99544	032422	0.02	2.00	0.017	50.1	1.00	0.02	2706-91-4	N/A	N/A
17. Perfluorohexanesulfonic acid (br-PFHxS)*	99198	071522	0.02	2.00	0.017	50.2	1.00	0.02	355-46-4 (L)	N/A	N/A
18. Perfluoro-1-heptanesulfonic acid (PFHpS)	3672	LPFHPS0822	0.021	2.10	0.017	47.6	1.00	0.05	375-92-8	N/A	N/A
19. Heptadecafluorooctanesulfonic acid (br-PFOS)*	99201	033022	0.02	2.00	0.017	50.1	1.00	0.02	1763-23-1 (L)	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid (PFNS)	3957	LPFNS1021	0.021	2.10	0.017	48.0	1.01	0.05	68259-12-1	N/A	N/A
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPFDS0222	0.021	2.10	0.017	48.2	1.01	0.05	335-77-3	N/A	N/A
22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	65271	080522	0.02	2.00	0.017	50.2	1.00	0.05	757124-72-4	N/A	N/A
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	65272	071522	0.02	2.00	0.017	50.2	1.00	0.05	29189-87-2	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	3662	82FTS0822	0.021	2.10	0.017	47.9	1.01	0.05	39108-34-4	N/A	N/A
25. 2-(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	46.6	1.00	0.05	756426-56-1	N/A	N/A
28. Dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA)	4103	NaDONA0922	0.021	2.12	0.017	47.1	1.00	0.05	919005-14-4	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	080522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	ipr-rat 189mg/kg
Perfluorooctanoic acid (branched isomer)*	99202	080522	0.02	2.00	0.004	0.6	0.01	0.001	335-67-1 (L)	N/A	ipr-rat 189mg/kg
Perfluorohexanesulfonic acid (linear)*	99198	071522	0.02	2.00	0.017	44.2	0.88	0.02	355-46-4 (L)	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	99198	071522	0.02	2.00	0.017	6.0	0.12	0.0021	355-46-4 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (linear)*	99201	033022	0.02	2.00	0.017	38.1	0.76	0.02	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	7.5	0.15	0.003	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	4.0	0.08	0.002	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	0.5	0.010	0.0002	1763-23-1 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	36.0	0.72	0.04	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	6.5	0.13	0.011	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	5.0	0.10	0.005	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA0422	0.02	2.00	0.017	2.5	0.05	0.0009	2355-31-9 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSAA1121	0.02	2.00	0.017	36.6	0.73	0.04	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	7.7	0.15	0.009	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	6.3	0.11	0.005	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1121	0.02	2.00	0.017	0.4	0.007	0.0006	2991-50-6 (L)	N/A	N/A

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

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

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

7.9.1
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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.

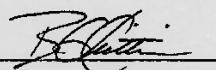
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Table A: MPFAC-HIF-ES; Components and Concentrations (ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

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

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 05/08/23 10:30
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (OSM) List 4c

Date/Time: 5/9/23 14:00
Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch# OP96784 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 96784 MB		500	7	N/A	25		5	AL	
OP 96784 BS		500	7			200			
OP 96784 LLBS		500	7			60			
FC 5861-1	2	520	6						
FC 5890-1	2	550							
	2	550							
	3	530	6	N/A	25		5	AL	
OP FC5890-1 MS	3	540	6	N/A	25	200		AL	
OP FC5890-2 DUP	3	550	6	N/A	25			AL	

Comments:

EIS (SURR) ID: 11777F-H Conc: 250-5000 ng/ml Exp. Date: 05/01/24 Inj. By: GH Ver. By: DBL
 SPIKE.1 ID: LMS 2112A Conc: VARIED Exp. Date: 10/28/23 Inj. By: GH Ver. By: DBL
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11776I-J Conc: 250-1000 ng/ml Exp. Date: 5/9/24 Inj. By: MU Ver. By: PR

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 PF 384 SPE Lot # 0723430-02
 Water Lot# OP96255 0.3M Formic Acid PF 384 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF 386 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: Daniella Vachus
Accepted By: MU

Date: 05/08/23
Date: 5/9/23

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