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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC2741

Sampling Date: 02/15/23



Report to:

AECOM, Inc
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Total number of pages in report: 683



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: FC2741

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC2741-1	02/15/23	12:10 NT	02/16/23	AQ	Ground Water	AF-RHMW225401-WGN01B-2302W2

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC2741

Site: N6274223F0104 RH Fire Suppression System

Report Date: 2/24/2023 1:49:07 PM

On 02/16/2023, 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 5.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC2741 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: OP95527

Sample(s) FC2520-6MS, FC2520-6MSD were used as the QC samples indicated.

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: FC2741
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 02/15/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC2741-1 AF-RHMW225401-WGN01B-2302W2

Perfluoropentanoic acid	1.7 J	9.3	1.9	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	1.1 J	4.6	0.93	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.94 J	4.6	0.93	ng/l	EPA DRAFT 1633
Perfluorooctanoic acid	1.5 J	4.6	0.93	ng/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.76 J	4.6	0.93	ng/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.3 J	4.6	1.9	ng/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.4 J	4.6	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-2302W2		
Lab Sample ID:	FC2741-1	Date Sampled:	02/15/23
Matrix:	AQ - Ground Water	Date Received:	02/16/23
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	4Q41096.D	1	02/23/23 01:31	AL	02/20/23 09:00	OP95527	S4Q587
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.7 U	19	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.7	9.3	1.9	0.87	ng/l	J
307-24-4	Perfluorohexanoic acid	1.1	4.6	0.93	0.46	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.94	4.6	0.93	0.46	ng/l	J
335-67-1	Perfluorooctanoic acid	1.5	4.6	0.93	0.46	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	4.6	1.9	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	0.93 U	4.6	0.93	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	4.6	1.9	0.56	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	4.6	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	4.6	1.9	0.78	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.93 U	4.6	0.93	0.46	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.76	4.6	0.93	0.46	ng/l	J
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.3	4.6	1.9	0.65	ng/l	J
375-92-8	Perfluoroheptanesulfonic acid	0.93 U	4.6	0.93	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.4	4.6	1.9	0.50	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	1.9 U	4.6	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	4.6	1.9	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.8	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	4.6	1.9	0.62	ng/l	
31506-32-8	MeFOSA	1.9 U	4.6	1.9	0.93	ng/l	
4151-50-2	EtFOSA	1.9 U	4.6	1.9	0.93	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW225401-WGN01B-2302W2		
Lab Sample ID:	FC2741-1	Date Sampled:	02/15/23
Matrix:	AQ - Ground Water	Date Received:	02/16/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	9.3 U	46	9.3	4.1	ng/l	
1691-99-2	EtFOSE	19 U	46	19	6.9	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.7 U	19	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	19	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.9 U	9.3	1.9	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.3 U	23	9.3	4.2	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	120	19	8.1	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	120	19	7.3	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	106%		20-150%
	13C5-PFPeA	100%		20-150%
	13C5-PFHxA	105%		20-150%
	13C4-PFHpA	102%		20-150%
	13C8-PFOA	101%		20-150%
	13C9-PFNA	103%		20-150%
	13C6-PFDA	98%		20-150%
	13C7-PFUnDA	101%		20-150%
	13C2-PFDoDA	83%		20-150%
	13C2-PFTeDA	74%		20-150%
	13C3-PFBS	97%		20-150%
	13C3-PFHxS	99%		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-2302W2	
Lab Sample ID:	FC2741-1	Date Sampled: 02/15/23
Matrix:	AQ - Ground Water	Date Received: 02/16/23
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	92%		20-150%
	13C8-FOSA	97%		20-150%
	d3-MeFOSA	90%		20-150%
	d5-EtFOSA	91%		20-150%
	d3-MeFOSAA	87%		20-150%
	d5-EtFOSAA	90%		20-150%
	d7-MeFOSE	88%		20-150%
	d9-EtFOSE	91%		20-150%
	13C2-4:2FTS	109%		20-150%
	13C2-6:2FTS	105%		20-150%
	13C2-8:2FTS	114%		20-150%
	13C3-HFPO-DA	109%		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

FC2741
SGS - ORLANDO JOB # :

COC #: 2302W2AFSG07
PAGE 1 OF 1

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes				
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System		<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">PFAS EPA Draft 1633</div> <div style="margin-left: 20px; text-align: center;"> <p><i>2/15/23</i></p> </div> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe				
Address: 1001 Bishop St. Ste 1600		Street																
City: Honolulu State: HI Zip: 96813		City: Honolulu State: Hawaii																
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 60697810																
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #																
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order #																
Sampler(s) Name(s) (Printed) Sampler 1: <i>Wook Park</i> Sampler 2: <i>Christina Womack</i>																		
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION										LAB USE ONLY			
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NH ₄ Cl	HNO ₃	H ₂ SO ₄	NH ₄ OH	DI WATER		MEDI		
1	AF-RHMW225401-WGN01B-2302W2	2/15/23	12:10	<i>NT</i>	GW	3		X										
Turnaround Time (Business days)		Data Deliverable Information				Comments / Remarks												
10 Day (Business) Approved By: / Date: 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA INITIAL ASSESSMENT) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWC 016-24825323 <i>28</i>												
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>Christina Womack (AECOM)</i>	Date Time: <i>1:00</i> <i>2/15/23</i>	Received By/Affiliation 2 <i>Wook Park AECOM</i>	Relinquished By/Affiliation 3 <i>Wook Park AECOM</i>	Date Time: <i>1:30</i> <i>2/15/23</i>	Received By/Affiliation 4 <i>Wook Park AECOM</i>													
Relinquished by/Affiliation 5	Date Time: <i>1:40</i> <i>2/16/23</i>	Received By/Affiliation 6 <i>Wook Park</i>	Relinquished By/Affiliation 7	Date Time: 8	Received By/Affiliation													
Lab Use Only: Cooler Temperature (s) Celsius (corrected): <i>5.0</i>		http://www.sgs.com/en/terms-and-conditions																

PFAS_COCs_ALL.xls Rev 031318

FC2741: Chain of Custody

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SGS Sample Receipt Summary

Job Number: FC2741

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 2/16/2023 2:00:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-24825323

Therm ID: IR 1;

Therm CF: 0.2;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (5.0);

Cooler Temps (Corrected) °C: Cooler 1: (5.2);

Cooler Information

Y or N

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

Trip Blank Information

Y or N

N/A

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

Sample Information

Y or N

N/A

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

Misc. Information

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

Number of 5035 Field Kits: _____

Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315

pH 10-12 219813A

Other: (Specify) _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: CARLOSD

Date: 2/16/2023 2:00:00 PM

Reviewer: CD

Date: 2/17/2023

FC2741: Chain of Custody

Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FC2741
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 02/15/23

QC Sample ID	CAS#	Analyte	Sample Result Type	Result Type	Units	Limits
--------------	------	---------	--------------------	-------------	-------	--------

No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC2741

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: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-IBLK	4Q41065.D	1	02/22/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

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

Instrument Blank

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-IBLK	4Q41065.D	1	02/22/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	101% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	97% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	105% 20-150%
	13C8-PFOS	104% 20-150%
	13C8-FOSA	102% 20-150%
	d3-MeFOSA	102% 20-150%
	d5-EtFOSA	103% 20-150%
	d3-MeFOSAA	106% 20-150%
	d5-EtFOSAA	103% 20-150%
	d7-MeFOSE	102% 20-150%
	d9-EtFOSE	101% 20-150%
	13C2-4:2FTS	122% 20-150%
	13C2-6:2FTS	121% 20-150%
	13C2-8:2FTS	122% 20-150%
	13C3-HFPO-DA	96% 20-150%

6.1.1
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Continuing Calibration Blank

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-ICCB	4Q41092.D	1	02/23/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

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

Continuing Calibration Blank

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-ICCB	4Q41092.D	1	02/23/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	96% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	98% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	97% 20-150%
	13C7-PFUnDA	103% 20-150%
	13C2-PFDoDA	93% 20-150%
	13C2-PFTeDA	92% 20-150%
	13C3-PFBS	105% 20-150%
	13C3-PFHxS	110% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	104% 20-150%
	d3-MeFOSA	95% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	104% 20-150%
	d5-EtFOSAA	101% 20-150%
	d7-MeFOSE	102% 20-150%
	d9-EtFOSE	102% 20-150%
	13C2-4:2FTS	114% 20-150%
	13C2-6:2FTS	125% 20-150%
	13C2-8:2FTS	139% 20-150%
	13C3-HFPO-DA	100% 20-150%

Method Blank Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-MB	4Q41076.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

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

Method Blank Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-MB	4Q41076.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	98% 20-150%
	13C5-PFPeA	96% 20-150%
	13C5-PFHxA	93% 20-150%
	13C4-PFHpA	95% 20-150%
	13C8-PFOA	95% 20-150%
	13C9-PFNA	91% 20-150%
	13C6-PFDA	89% 20-150%
	13C7-PFUnDA	80% 20-150%
	13C2-PFDoDA	73% 20-150%
	13C2-PFTeDA	67% 20-150%
	13C3-PFBS	93% 20-150%
	13C3-PFHxS	103% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	90% 20-150%
	d3-MeFOSA	84% 20-150%
	d5-EtFOSA	85% 20-150%
	d3-MeFOSAA	95% 20-150%
	d5-EtFOSAA	83% 20-150%
	d7-MeFOSE	82% 20-150%
	d9-EtFOSE	83% 20-150%
	13C2-4:2FTS	115% 20-150%
	13C2-6:2FTS	103% 20-150%
	13C2-8:2FTS	104% 20-150%
	13C3-HFPO-DA	93% 20-150%

Continuing Calibration Blank

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-ICCB	4Q41073.D	1	02/22/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95527-BS, OP95527-LLBS, OP95527-MB

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

Continuing Calibration Blank

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-ICCB	4Q41073.D	1	02/22/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95527-BS, OP95527-LLBS, OP95527-MB

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	98% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	99% 20-150%
	13C7-PFUnDA	106% 20-150%
	13C2-PFDoDA	94% 20-150%
	13C2-PFTeDA	93% 20-150%
	13C3-PFBS	104% 20-150%
	13C3-PFHxS	100% 20-150%
	13C8-PFOS	94% 20-150%
	13C8-FOSA	94% 20-150%
	d3-MeFOSAA	99% 20-150%
	d5-EtFOSAA	95% 20-150%
	13C2-4:2FTS	132% 20-150%
	13C2-6:2FTS	119% 20-150%
	13C2-8:2FTS	124% 20-150%

6.1.4

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Continuing Calibration Blank

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-ICCB	4Q41083.D	1	02/22/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95527-MS, OP95527-MSD

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

Continuing Calibration Blank

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q587-ICCB	4Q41083.D	1	02/22/23	AL	n/a	n/a	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95527-MS, OP95527-MSD

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	103% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	99% 20-150%
	13C6-PFDA	95% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	89% 20-150%
	13C3-PFBS	95% 20-150%
	13C3-PFHxS	96% 20-150%
	13C8-PFOS	98% 20-150%
	13C8-FOSA	98% 20-150%
	d3-MeFOSAA	106% 20-150%
	d5-EtFOSAA	99% 20-150%
	13C2-4:2FTS	115% 20-150%
	13C2-6:2FTS	109% 20-150%
	13C2-8:2FTS	122% 20-150%

Blank Spike Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-LLBS	4Q41075.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.04	0.0468	117	40-150
2706-90-3	Perfluoropentanoic acid	0.02	0.0245	123	40-150
307-24-4	Perfluorohexanoic acid	0.01	0.0113	113	40-150
375-85-9	Perfluoroheptanoic acid	0.01	0.0121	121	40-150
335-67-1	Perfluorooctanoic acid	0.01	0.0116	116	40-150
375-95-1	Perfluorononanoic acid	0.01	0.0122	122	40-150
335-76-2	Perfluorodecanoic acid	0.01	0.0112	112	40-150
2058-94-8	Perfluoroundecanoic acid	0.01	0.0112	112	40-150
307-55-1	Perfluorododecanoic acid	0.01	0.0124	124	40-150
72629-94-8	Perfluorotridecanoic acid	0.01	0.0112	112	40-150
376-06-7	Perfluorotetradecanoic acid	0.01	0.0122	122	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00887	0.0103	116	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00941	0.0106	113	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00914	0.0093	102	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00953	0.010	105	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00928	0.0094	101	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00962	0.0104	108	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00965	0.0098	102	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0097	0.0084	87	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0375	0.0443	118	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.038	0.0446	117	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0384	0.0470	122	40-150
754-91-6	PFOSA	0.01	0.0111	111	40-150
31506-32-8	MeFOSA	0.01	0.0111	111	40-150
4151-50-2	EtFOSA	0.01	0.0108	108	40-150
2355-31-9	MeFOSAA	0.01	0.0136	136	40-150
2991-50-6	EtFOSAA	0.01	0.0125	125	40-150
24448-09-7	MeFOSE	0.1	0.116	116	40-150
1691-99-2	EtFOSE	0.1	0.110	110	40-150
13252-13-6	HFPO-DA (GenX)	0.04	0.0444	111	40-150
919005-14-4	ADONA	0.0378	0.0488	129	40-150
377-73-1	PFMPA	0.02	0.0241	121	40-150
863090-89-5	PFMBA	0.02	0.0249	125	40-150
151772-58-6	NFDHA	0.02	0.0256	128	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0374	0.0482	129	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0378	0.0419	111	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-LLBS	4Q41075.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0178	0.0203	114	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.05	0.0587	117	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.25	0.356	142	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.25	0.307	123	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	98%	20-150%
	13C5-PFPeA	92%	20-150%
	13C5-PFHxA	95%	20-150%
	13C4-PFHpA	92%	20-150%
	13C8-PFOA	93%	20-150%
	13C9-PFNA	92%	20-150%
	13C6-PFDA	91%	20-150%
	13C7-PFUnDA	87%	20-150%
	13C2-PFDoDA	75%	20-150%
	13C2-PFTeDA	66%	20-150%
	13C3-PFBS	97%	20-150%
	13C3-PFHxS	97%	20-150%
	13C8-PFOS	96%	20-150%
	13C8-FOSA	96%	20-150%
	d3-MeFOSA	85%	20-150%
	d5-EtFOSA	81%	20-150%
	d3-MeFOSAA	96%	20-150%
	d5-EtFOSAA	89%	20-150%
	d7-MeFOSE	83%	20-150%
	d9-EtFOSE	86%	20-150%
	13C2-4:2FTS	112%	20-150%
	13C2-6:2FTS	108%	20-150%
	13C2-8:2FTS	113%	20-150%
	13C3-HFPO-DA	95%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-BS	4Q41074.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.120	120	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0620	124	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0283	113	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0308	123	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0299	120	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0308	123	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0304	122	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0295	118	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0296	118	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0306	122	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0300	120	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0268	121	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0278	118	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0237	104	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0260	109	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0235	101	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0281	117	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0264	109	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0243	100	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.110	117	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.126	133	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.111	116	40-150
754-91-6	PFOSA	0.025	0.0302	121	40-150
31506-32-8	MeFOSA	0.025	0.0295	118	40-150
4151-50-2	EtFOSA	0.025	0.0259	104	40-150
2355-31-9	MeFOSAA	0.025	0.0300	120	40-150
2991-50-6	EtFOSAA	0.025	0.0297	119	40-150
24448-09-7	MeFOSE	0.25	0.296	118	40-150
1691-99-2	EtFOSE	0.25	0.290	116	40-150
13252-13-6	HFPO-DA (GenX)	0.1	0.130	130	40-150
919005-14-4	ADONA	0.0945	0.133	141	40-150
377-73-1	PFMPA	0.05	0.0602	120	40-150
863090-89-5	PFMBA	0.05	0.0629	126	40-150
151772-58-6	NFDHA	0.05	0.0645	129	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0935	0.135	144	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0945	0.123	130	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-BS	4Q41074.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0557	125	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.143	114	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.881	141	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.801	128	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	110%	20-150%
	13C5-PFPeA	106%	20-150%
	13C5-PFHxA	106%	20-150%
	13C4-PFHpA	103%	20-150%
	13C8-PFOA	105%	20-150%
	13C9-PFNA	108%	20-150%
	13C6-PFDA	103%	20-150%
	13C7-PFUnDA	96%	20-150%
	13C2-PFDoDA	86%	20-150%
	13C2-PFTeDA	80%	20-150%
	13C3-PFBS	99%	20-150%
	13C3-PFHxS	108%	20-150%
	13C8-PFOS	104%	20-150%
	13C8-FOSA	106%	20-150%
	d3-MeFOSA	93%	20-150%
	d5-EtFOSA	91%	20-150%
	d3-MeFOSAA	113%	20-150%
	d5-EtFOSAA	97%	20-150%
	d7-MeFOSE	92%	20-150%
	d9-EtFOSE	93%	20-150%
	13C2-4:2FTS	119%	20-150%
	13C2-6:2FTS	105%	20-150%
	13C2-8:2FTS	129%	20-150%
	13C3-HFPO-DA	100%	20-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-MS	4Q41085.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587
OP95527-MSD	4Q41086.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587
FC2520-6	4Q41084.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

CAS No.	Compound	FC2520-6 ug/l	Spike Q	ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0122	J	0.0877	0.117	119	0.0877	0.114	116	3	40-150/30
2706-90-3	Perfluoropentanoic acid	0.0041	J	0.0439	0.0606	129	0.0439	0.0584	124	4	40-150/30
307-24-4	Perfluorohexanoic acid	0.0011	J	0.0219	0.0256	112	0.0219	0.0247	108	4	40-150/30
375-85-9	Perfluoroheptanoic acid	0.0044	U	0.0219	0.0275	125	0.0219	0.0258	118	6	40-150/30
335-67-1	Perfluorooctanoic acid	0.0044	U	0.0219	0.0258	118	0.0219	0.0252	115	2	40-150/30
375-95-1	Perfluorononanoic acid	0.0044	U	0.0219	0.0264	120	0.0219	0.0246	112	7	40-150/30
335-76-2	Perfluorodecanoic acid	0.0044	U	0.0219	0.0268	122	0.0219	0.0265	121	1	40-150/30
2058-94-8	Perfluoroundecanoic acid	0.0044	U	0.0219	0.0261	119	0.0219	0.0249	114	5	40-150/30
307-55-1	Perfluorododecanoic acid	0.0044	U	0.0219	0.0288	131	0.0219	0.0277	126	4	40-150/30
72629-94-8	Perfluorotridecanoic acid	0.0044	U	0.0219	0.0280	128	0.0219	0.0278	127	1	40-150/30
376-06-7	Perfluorotetradecanoic acid	0.0044	U	0.0219	0.0286	130	0.0219	0.0284	130	1	40-150/30
375-73-5	Perfluorobutanesulfonic acid	0.0044	U	0.0195	0.0243	125	0.0195	0.0236	121	3	40-150/30
2706-91-4	Perfluoropentanesulfonic acid	0.0044	U	0.0206	0.0248	120	0.0206	0.0235	114	5	40-150/30
355-46-4	Perfluorohexanesulfonic acid	0.0044	U	0.02	0.0231	115	0.02	0.0227	113	2	40-150/30
375-92-8	Perfluoroheptanesulfonic acid	0.0044	U	0.0209	0.0230	110	0.0209	0.0258	123	11	40-150/30
1763-23-1	Perfluorooctanesulfonic acid	0.00083	J	0.0204	0.0210	99	0.0204	0.0223	105	6	40-150/30
68259-12-1	Perfluorononanesulfonic acid	0.0044	U	0.0211	0.0234	111	0.0211	0.0279	132	18	40-150/30
335-77-3	Perfluorodecanesulfonic acid	0.0044	U	0.0212	0.0205	97	0.0212	0.0213	101	4	40-150/30
79780-39-5	Perfluorododecanesulfonic aci	0.0044	U	0.0213	0.0186	87	0.0213	0.0224	105	19	40-150/30
757124-72-44:2	Fluorotelomer sulfonate	0.018	U	0.0822	0.103	125	0.0822	0.0897	109	14	40-150/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.018	U	0.0833	0.102	122	0.0833	0.0996	120	2	40-150/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018	U	0.0842	0.103	122	0.0842	0.0947	112	8	40-150/30
754-91-6	PFOSA	0.00061	J	0.0219	0.0276	123	0.0219	0.0267	119	3	40-150/30
31506-32-8	MeFOSA	0.0044	U	0.0219	0.0264	120	0.0219	0.0227	104	15	40-150/30
4151-50-2	EtFOSA	0.0044	U	0.0219	0.0239	109	0.0219	0.0232	106	3	40-150/30
2355-31-9	MeFOSAA	0.0044	U	0.0219	0.0292	133	0.0219	0.0256	117	13	40-150/30
2991-50-6	EtFOSAA	0.0044	U	0.0219	0.0273	124	0.0219	0.0276	126	1	40-150/30
24448-09-7	MeFOSE	0.044	U	0.219	0.265	121	0.219	0.254	116	4	40-150/30
1691-99-2	EtFOSE	0.044	U	0.219	0.268	122	0.219	0.259	118	3	40-150/30
13252-13-6	HFPO-DA (GenX)	0.018	U	0.0877	0.105	120	0.0877	0.100	114	5	40-150/30
919005-14-4	ADONA	0.018	U	0.0829	0.0980	118	0.0829	0.0976	118	0	40-150/30
377-73-1	PFMPA	0.0088	U	0.0439	0.0543	124	0.0439	0.0533	122	2	40-150/30
863090-89-5	PFMBA	0.0088	U	0.0439	0.0565	129	0.0439	0.0540	123	5	40-150/30
151772-58-6	NFDHA	0.0088	U	0.0439	0.0566	129	0.0439	0.0547	125	3	40-150/30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.018	U	0.082	0.0929	113	0.082	0.0938	114	1	40-150/30
763051-92-911	Cl-PF3OUdS (F-53B Minor)	0.018	U	0.0829	0.0784	95	0.0829	0.0779	94	1	40-150/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95527-MS	4Q41085.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587
OP95527-MSD	4Q41086.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587
FC2520-6	4Q41084.D	1	02/22/23	AL	02/20/23	OP95527	S4Q587

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC2741-1

CAS No.	Compound	FC2520-6 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
113507-82-7	PFEESA	0.0088 U	0.039	0.0468	120	0.039	0.0458	117	2	40-150/30
356-02-5	3:3 Fluorotelomer carboxylate	0.022 U	0.11	0.128	117	0.11	0.123	112	4	40-150/30
914637-49-35:3	Fluorotelomer carboxylate	0.11 U	0.548	0.682	124	0.548	0.670	122	2	40-150/30
812-70-4	7:3 Fluorotelomer carboxylate	0.11 U	0.548	0.677	123	0.548	0.668	122	1	40-150/30

CAS No.	ID Standard Recoveries	MS	MSD	FC2520-6	Limits
	13C4-PFBA	105%	102%	108%	20-150%
	13C5-PFPeA	98%	99%	106%	20-150%
	13C5-PFHxA	102%	102%	105%	20-150%
	13C4-PFHpA	97%	100%	104%	20-150%
	13C8-PFOA	96%	97%	105%	20-150%
	13C9-PFNA	92%	90%	104%	20-150%
	13C6-PFDA	96%	90%	89%	20-150%
	13C7-PFUnDA	87%	84%	85%	20-150%
	13C2-PFDoDA	71%	69%	68%	20-150%
	13C2-PFTeDA	72%	72%	67%	20-150%
	13C3-PFBS	99%	101%	99%	20-150%
	13C3-PFHxS	100%	96%	100%	20-150%
	13C8-PFOS	102%	79%	89%	20-150%
	13C8-FOSA	104%	86%	96%	20-150%
	d3-MeFOSA	82%	77%		20-150%
	d5-EtFOSA	79%	73%		20-150%
	d3-MeFOSAA	92%	81%	88%	20-150%
	d5-EtFOSAA	84%	74%	81%	20-150%
	d7-MeFOSE	84%	75%		20-150%
	d9-EtFOSE	85%	75%		20-150%
	13C2-4:2FTS	106%	114%	119%	20-150%
	13C2-6:2FTS	102%	104%	111%	20-150%
	13C2-8:2FTS	110%	112%	118%	20-150%
	13C3-HFPO-DA	110%	108%		20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q587-CC587	Injection Date:	02/22/23
Lab File ID:	4Q41072.D	Injection Time:	19:54
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	80734	3.15	51967	5.55	48076	7.06	20295	7.60	15566	8.08
Check Std ^c	92462	3.17	57455	5.56	52038	7.06	23131	7.60	17282	8.07
Upper Limit ^d	161468	3.57	103934	5.96	96152	7.46	40590	8.00	31132	8.47
Lower Limit ^e	24220	2.77	15590	5.16	14423	6.66	6089	7.20	4670	7.67

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
S4Q587-ICCB	85924	3.14	54351	5.55	50809	7.08	22072	7.60	16390	8.07	1
OP95527-BS	73102	3.19	43225	5.56	39641	7.06	16276	7.60	14715	8.08	1
OP95527-LLBS	81398	3.17	48697	5.56	45628	7.08	19044	7.60	16814	8.09	1
OP95527-MB	84211	3.17	50279	5.56	46723	7.06	20249	7.60	17695	8.09	1
ZZZZZZ	76989	3.18	45861	5.56	43563	7.08	18303	7.61	14232	8.09	1
ZZZZZZ	80402	3.18	46543	5.56	45488	7.08	19105	7.60	14261	8.09	1
ZZZZZZ	80766	3.18	47675	5.56	45543	7.08	20056	7.60	14894	8.08	1
ZZZZZZ	75005	3.18	43003	5.56	40675	7.06	18257	7.60	14322	8.08	1
ZZZZZZ	75451	3.18	45157	5.56	43299	7.08	18086	7.60	13737	8.08	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: S4Q587-ICC587 4Q41060.D 02/22/23 17:05. 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.

6.4.1
6

Injection Standard Area Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q587-CC587	Injection Date:	02/22/23
Lab File ID:	4Q41072.D	Injection Time:	19:54
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5066	7.18	9054	8.24
Check Std ^c	5436	7.18	10449	8.23
Upper Limit ^d	10132	7.58	18108	8.63
Lower Limit ^e	1520	6.78	2716	7.83

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q587-ICCB	5023	7.18	9904	8.23	1
OP95527-BS	4304	7.18	8216	8.23	1
OP95527-LLBS	4620	7.18	8888	8.24	1
OP95527-MB	4775	7.18	9597	8.24	1
ZZZZZZ	4354	7.19	8910	8.24	1
ZZZZZZ	5061	7.19	8780	8.24	1
ZZZZZZ	4879	7.18	9076	8.24	1
ZZZZZZ	4144	7.18	8994	8.23	1
ZZZZZZ	4318	7.18	8769	8.24	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q587-ICC587 4Q41060.D 02/22/23 17:05. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time + 0.4 minutes of check standard.
- (e) Lower Limit = -70% of initial standard area; Retention time -0.4 minutes of check standard.

Injection Standard Area Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q587-CC587	Injection Date:	02/22/23
Lab File ID:	4Q41082.D	Injection Time:	22:14
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	80734	3.15	51967	5.55	48076	7.06	20295	7.60	15566	8.08
Check Std ^c	91372	3.15	57748	5.56	50708	7.06	22499	7.60	17641	8.08
Upper Limit ^d	161468	3.55	103934	5.96	96152	7.46	40590	8.00	31132	8.48
Lower Limit ^e	24220	2.75	15590	5.16	14423	6.66	6089	7.20	4670	7.68

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
S4Q587-ICCB	85543	3.14	53275	5.55	50452	7.06	21140	7.60	16592	8.08	1
FC2520-6	77129	3.18	45545	5.56	42775	7.08	17409	7.60	15008	8.08	1
OP95527-MS	77128	3.19	45599	5.56	42819	7.06	19122	7.60	13957	8.08	1
OP95527-MSD	78852	3.17	46499	5.56	44246	7.06	18948	7.60	14616	8.08	1
ZZZZZZ	77247	3.18	45430	5.57	41822	7.06	18247	7.60	13812	8.08	1
ZZZZZZ	75389	3.18	42577	5.56	41535	7.06	18025	7.60	13443	8.08	1
ZZZZZZ	79773	3.19	45837	5.56	43898	7.06	18560	7.60	14008	8.08	1
ZZZZZZ	79041	3.18	46484	5.56	43523	7.08	18127	7.60	14523	8.09	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: S4Q587-ICC587 4Q41060.D 02/22/23 17:05. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -70% of initial standard area; Retention time -0.4 minutes of check standard.

Injection Standard Area Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q587-CC587	Injection Date:	02/22/23
Lab File ID:	4Q41082.D	Injection Time:	22:14
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5066	7.18	9054	8.24
Check Std ^c	5288	7.18	10346	8.23
Upper Limit ^d	10132	7.58	18108	8.63
Lower Limit ^e	1520	6.78	2716	7.83

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q587-ICCB	5383	7.18	9786	8.23	1
FC2520-6	4707	7.19	8633	8.24	1
OP95527-MS	4567	7.18	7878	8.24	1
OP95527-MSD	4562	7.18	9306	8.24	1
ZZZZZZ	4406	7.18	8564	8.24	1
ZZZZZZ	4269	7.18	8726	8.24	1
ZZZZZZ	4381	7.18	8735	8.24	1
ZZZZZZ	4456	7.18	9087	8.24	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q587-ICC587 4Q41060.D 02/22/23 17:05. 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.

6.4.2
6

Injection Standard Area Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q587-CC587	Injection Date:	02/23/23
Lab File ID:	4Q41091.D	Injection Time:	00:21
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	80734	3.15	51967	5.55	48076	7.06	20295	7.60	15566	8.08
Check Std ^c	90542	3.14	56317	5.56	54028	7.06	21882	7.60	17118	8.08
Upper Limit ^d	161468	3.54	103934	5.96	96152	7.46	40590	8.00	31132	8.48
Lower Limit ^e	24220	2.74	15590	5.16	14423	6.66	6089	7.20	4670	7.68

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
S4Q587-ICCB	87315	3.15	54873	5.55	50567	7.06	21397	7.60	16806	8.08	1
ZZZZZZ	77166	3.18	46363	5.56	41573	7.06	17678	7.60	14486	8.08	1
ZZZZZZ	80173	3.18	46618	5.56	43945	7.06	18623	7.60	14373	8.08	1
ZZZZZZ	78187	3.18	45000	5.56	43616	7.08	18341	7.61	15089	8.09	1
FC2741-1	79112	3.18	46538	5.56	43766	7.08	18517	7.60	14569	8.09	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: S4Q587-ICC587 4Q41060.D 02/22/23 17:05. 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.

6.4.3
6

Injection Standard Area Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q587-CC587	Injection Date:	02/23/23
Lab File ID:	4Q41091.D	Injection Time:	00:21
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5066	7.18	9054	8.24
Check Std ^c	5139	7.18	9710	8.23
Upper Limit ^d	10132	7.58	18108	8.63
Lower Limit ^e	1520	6.78	2716	7.83

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q587-ICCB	4931	7.18	9535	8.23	1
ZZZZZZ	4576	7.18	8577	8.24	1
ZZZZZZ	4506	7.18	8957	8.23	1
ZZZZZZ	4625	7.19	9243	8.24	1
FC2741-1	4655	7.18	8765	8.24	1

IS 6 = 1802-PFHXS
 IS 7 = 13C4-PFOS

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q587-ICC587 4Q41060.D 02/22/23 17:05. 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.

6.4.3
6

TDCA Retention Time Check

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q587-RT	Injection Date:	02/22/23
Lab File ID:	4Q41054.D	Injection Time:	15:41
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.219	--	--
TDCA	6.747	1.472	1.000
TCDCA	6.586	1.633	1.000
TUDCA	5.755	2.464	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
S4Q587-IC587	4Q41056.D	02/22/23	16:09	00:28	Mass Calibration Verification
S4Q587-IC587	4Q41057.D	02/22/23	16:23	00:42	Initial cal 1
S4Q587-IC587	4Q41058.D	02/22/23	16:37	00:56	Initial cal 2
S4Q587-IC587	4Q41059.D	02/22/23	16:51	01:10	Initial cal 3
S4Q587-ICC587	4Q41060.D	02/22/23	17:05	01:24	Initial cal 4
S4Q587-IC587	4Q41061.D	02/22/23	17:19	01:38	Initial cal 5
S4Q587-IC587	4Q41062.D	02/22/23	17:34	01:53	Initial cal 6
S4Q587-IC587	4Q41063.D	02/22/23	17:48	02:07	Initial cal 7
S4Q587-IC587	4Q41064.D	02/22/23	18:02	02:21	Initial cal 8
S4Q587-IBLK	4Q41065.D	02/22/23	18:16	02:35	Instrument Blank
S4Q587-IBLK	4Q41065.D	02/22/23	18:16	02:35	Instrument Blank
S4Q587-ICV587	4Q41066.D	02/22/23	18:30	02:49	Initial cal verification 20
S4Q587-ICV587	4Q41067.D	02/22/23	18:44	03:03	Initial cal verification 20
S4Q587-CC587	4Q41068.D	02/22/23	18:58	03:17	Continuing cal 4
S4Q587-CC587	4Q41069.D	02/22/23	19:12	03:31	Continuing cal 1.0LL
ZZZZZZ	4Q41071.D	02/22/23	19:40	03:59	(unrelated sample)
S4Q587-CC587	4Q41072.D	02/22/23	19:54	04:13	Continuing cal 4
S4Q587-ICCB	4Q41073.D	02/22/23	20:08	04:27	Continuing Calibration Blank
OP95527-BS	4Q41074.D	02/22/23	20:22	04:41	Blank Spike
OP95527-LLBS	4Q41075.D	02/22/23	20:36	04:55	Blank Spike
OP95527-MB	4Q41076.D	02/22/23	20:50	05:09	Method Blank
ZZZZZZ	4Q41077.D	02/22/23	21:04	05:23	(unrelated sample)
ZZZZZZ	4Q41078.D	02/22/23	21:18	05:37	(unrelated sample)
ZZZZZZ	4Q41079.D	02/22/23	21:32	05:51	(unrelated sample)
ZZZZZZ	4Q41080.D	02/22/23	21:46	06:05	(unrelated sample)
ZZZZZZ	4Q41081.D	02/22/23	22:00	06:19	(unrelated sample)
S4Q587-CC587	4Q41082.D	02/22/23	22:14	06:33	Continuing cal 4
S4Q587-ICCB	4Q41083.D	02/22/23	22:29	06:48	Continuing Calibration Blank
FC2520-6	4Q41084.D	02/22/23	22:43	07:02	(used for QC only; not part of job FC2741)
OP95527-MS	4Q41085.D	02/22/23	22:57	07:16	Matrix Spike
OP95527-MSD	4Q41086.D	02/22/23	23:11	07:30	Matrix Spike Duplicate
ZZZZZZ	4Q41087.D	02/22/23	23:25	07:44	(unrelated sample)
ZZZZZZ	4Q41088.D	02/22/23	23:39	07:58	(unrelated sample)
ZZZZZZ	4Q41089.D	02/22/23	23:53	08:12	(unrelated sample)

TDCA Retention Time Check

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q587-RT	Injection Date:	02/22/23
Lab File ID:	4Q41054.D	Injection Time:	15:41
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q41090.D	02/23/23	00:07	08:26	(unrelated sample)
S4Q587-CC587	4Q41091.D	02/23/23	00:21	08:40	Continuing cal 4
S4Q587-ICCB	4Q41092.D	02/23/23	00:35	08:54	Continuing Calibration Blank
ZZZZZZ	4Q41093.D	02/23/23	00:49	09:08	(unrelated sample)
ZZZZZZ	4Q41094.D	02/23/23	01:03	09:22	(unrelated sample)
ZZZZZZ	4Q41095.D	02/23/23	01:17	09:36	(unrelated sample)
FC2741-1	4Q41096.D	02/23/23	01:31	09:50	AF-RHMW225401-WGN01B-2302W2
S4Q587-CC587	4Q41097.D	02/23/23	01:45	10:04	Continuing cal 4
S4Q587-CC587	4Q41098.D	02/23/23	01:59	10:18	Continuing cal 1.0LL
S4Q587-ICCB	4Q41099.D	02/23/23	02:13	10:32	Continuing Calibration Blank
OP95538-BS	4Q41100.D	02/23/23	02:27	10:46	Blank Spike
OP95538-LLBS	4Q41101.D	02/23/23	02:41	11:00	Blank Spike
OP95538-MB	4Q41102.D	02/23/23	02:55	11:14	Method Blank
ZZZZZZ	4Q41103.D	02/23/23	03:09	11:28	(unrelated sample)
ZZZZZZ	4Q41104.D	02/23/23	03:24	11:43	(unrelated sample)
ZZZZZZ	4Q41105.D	02/23/23	03:38	11:57	(unrelated sample)
ZZZZZZ	4Q41106.D	02/23/23	03:52	12:11	(unrelated sample)
ZZZZZZ	4Q41107.D	02/23/23	04:06	12:25	(unrelated sample)

6.5.1
6

Ion Ratio Summary

Job Number: FC2741
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q587 Method: EPA DRAFT 1633

Lab Sample ID	Lab File ID	Ion Ratios						
		PFPeA	PFHxA	PFHpA	PFOA	PFBS	PFHxS	PFOS
S4Q587-ICC587	4Q41060.D	0	2.7	16.7	19.5	38.3	51.9	49.1
FC2741-1	4Q41096.D	0	2.6	17.5	14.1	27.1	52.1	35.5

6.6.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC2741
 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
FC2741-1	4Q41096.D	106	100	105	102	101	103	98	101
OP95527-BS	4Q41074.D	110	106	106	103	105	108	103	96
OP95527-LLBS	4Q41075.D	98	92	95	92	93	92	91	87
OP95527-MB	4Q41076.D	98	96	93	95	95	91	89	80
OP95527-MS	4Q41085.D	105	98	102	97	96	92	96	87
OP95527-MSD	4Q41086.D	102	99	102	100	97	90	90	84
S4Q587-IBLK	4Q41065.D	100	97	100	100	104	101	101	104
S4Q587-ICCB	4Q41092.D	101	96	99	98	101	98	97	103
S4Q587-ICCB	4Q41073.D	100	97	99	98	100	96	99	106
S4Q587-ICCB	4Q41083.D	100	103	101	101	99	99	95	104

Isotope Dilution Standards **Recovery Limits**

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

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC2741
 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
FC2741-1	4Q41096.D	83	74	97	99	92	97	90	91
OP95527-BS	4Q41074.D	86	80	99	108	104	106	93	91
OP95527-LLBS	4Q41075.D	75	66	97	97	96	96	85	81
OP95527-MB	4Q41076.D	73	67	93	103	91	90	84	85
OP95527-MS	4Q41085.D	71	72	99	100	102	104	82	79
OP95527-MSD	4Q41086.D	69	72	101	96	79	86	77	73
S4Q587-IBLK	4Q41065.D	97	97	103	105	104	102	102	103
S4Q587-ICCB	4Q41092.D	93	92	105	110	98	104	95	99
S4Q587-ICCB	4Q41073.D	94	93	104	100	94	94		
S4Q587-ICCB	4Q41083.D	97	89	95	96	98	98		

Isotope Dilution Standards **Recovery Limits**

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

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC2741
 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
FC2741-1	4Q41096.D	87	90	88	91	109	105	114	109
OP95527-BS	4Q41074.D	113	97	92	93	119	105	129	100
OP95527-LLBS	4Q41075.D	96	89	83	86	112	108	113	95
OP95527-MB	4Q41076.D	95	83	82	83	115	103	104	93
OP95527-MS	4Q41085.D	92	84	84	85	106	102	110	110
OP95527-MSD	4Q41086.D	81	74	75	75	114	104	112	108
S4Q587-IBLK	4Q41065.D	106	103	102	101	122	121	122	96
S4Q587-ICCB	4Q41092.D	104	101	102	102	114	125	139	100
S4Q587-ICCB	4Q41073.D	99	95			132	119	124	
S4Q587-ICCB	4Q41083.D	106	99			115	109	122	

Isotope Dilution Standards

Recovery Limits

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

6.7.1

6

Initial Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICC587
 Lab FileID: 4Q41060.D

Initial Calibration Report

Method Path	D:\MassHunter\methods											
Method File	1633_022223_S4Q587.quantmethod.xml											
Batch Name	D:\MassHunter\Data\022223_1633_S4Q587\QuantResults\S4Q587.batch.bin											
Last Calib Update	2/23/2023 9:41:09 AM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
1	D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d	Avg RF	0.2147	0.2125	0.2279	0.2194	0.2422	0.2568	0.2598	0.2624	0.2370	8.843
2	D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d	Avg RF	0.4379	0.4209	0.4633	0.4527	0.5036	0.5431	0.5629	0.5839	0.4960	12.393
3	D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d	Avg RF	0.0575	0.0589	0.0636	0.0628	0.0685	0.0759	0.0796	0.0872	0.0692	15.394
4	D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d	Avg RF	1.0284	1.0099	1.1420	1.1274	1.2210	1.2893	1.3001	1.2882	1.1758	9.946
5	D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d	Avg RF	0.5333	0.5425	0.5830	0.5895	0.6437	0.6885	0.6982	0.7179	0.6246	11.576
6	D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d	Avg RF	0.0288	0.0348	0.0330	0.0328	0.0349	0.0356	0.0345	0.0283	0.0328	8.590
7	D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d	Avg RF	0.8964	0.7480	0.8220	0.8973	0.8934	0.8806	0.8806	0.8948	0.8642	6.145
8	D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d	Avg RF	0.4958	0.5132	0.5475	0.5512	0.5841	0.6511	0.6547	0.6747	0.5840	11.744
I M4-PFBA		Avg RF	0.1181	0.1190	0.1282	0.1295	0.1353	0.1440	0.1401	0.1333	0.1309	7.036
T PFBA		Avg RF	0.0466	0.0492	0.0519	0.0528	0.0564	0.0573	0.0554	0.0520	0.0527	6.893
I M5-PFHXA		Avg RF	1.2698	1.1842	1.2407	1.2490	1.3750	1.4475	1.4448	1.4288	1.3300	7.946
T PFHXA		Avg RF	1.1838	1.0998	1.1285	1.0954	1.1412	1.2285	1.2792	1.2994	1.1820	6.722
I M8-PFOA		Avg RF	0.6924	0.7129	0.7176	0.7053	0.7625	0.8078	0.8357	0.8440	0.7598	8.118
T PFOA		Avg RF	0.8269	0.7748	0.8126	0.7586	0.8443	0.9028	0.9461	0.9612	0.8534	8.887
I M9-PFNA		Avg RF	0.7438	0.7291	0.6520	0.6244	0.6574	0.7076	0.7361	0.7048	0.6944	6.378
T PFNA		Avg RF										
I M6-PFDA		Avg RF										
T PFDA		Avg RF										
I M7-PFUDA		Avg RF										
T PFUDA		Avg RF										
I M2-PFDODA		Avg RF										

Initial Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICC587
 Lab FileID: 4Q41060.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.7510	0.7499	0.8447	0.7668	0.8555	0.9296	0.9247	0.9553	0.8472	9.948
T PFTfDA	Avg RF	0.8856	0.8911	1.0337	0.9852	1.0767	1.1802	1.1680	1.1861	1.0508	11.758
I M2-PFTeDA	Avg RF	0.8205	0.7525	0.8441	0.8124	0.8787	0.9639	0.9670	0.9192	0.8698	8.793
T PFTeDA	Avg RF	1.2939	1.1691	1.2710	1.2236	1.3608	1.4480	1.4106	1.4525	1.3287	7.962
I M8-FOSA	Avg RF	0.7863	0.9024	0.9806	0.9506	1.0466	1.1261	1.0893	1.1176	0.9999	11.825
T FOSA	Avg RF	0.6815	0.6766	0.8029	0.7550	0.8363	0.8657	0.8181	0.9125	0.7936	10.607
I M3-PFBS	Avg RF	1.1895	0.8964	0.9125	0.9984	1.0070	1.0722	1.0531	1.1322	1.0327	9.773
T PFBS	Avg RF	0.7650	0.7530	0.7124	0.6856	0.8200	0.7952	0.8118	0.8029	0.7682	6.358
I M3-PFHxS	Avg RF	1.4476	1.1310	1.1142	0.9634	1.1002	1.0679	1.0945	1.1238	1.1303	12.282
T PFHxS	Avg RF	0.5048	0.4693	0.5931	0.4715	0.5475	0.5812	0.5615	0.5745	0.5379	9.193
I M8-PFOS	Avg RF	0.6195	0.6008	0.5704	0.5423	0.6236	0.6246	0.6806	0.7157	0.6222	8.949
T PFOS	Avg RF	0.5415	0.4437	0.4709	0.4132	0.4868	0.5102	0.5423	0.5696	0.4973	10.783
I M2-4:2FTS	Avg RF	8.2728	6.9979	8.0003	7.5379	7.8011	8.5244	8.6332	7.8959	7.9579	6.724
T 4:2FTS	Avg RF	4.3113	4.0499	4.6656	4.2195	4.9920	5.0124	4.2201	4.3428	4.4767	8.219
I M2-6:2FTS	Avg RF	2.2508	2.7198	2.2988	2.6028	2.8949	2.7647	2.6899	2.4515	2.5841	8.888
T 6:2FTS	Avg RF	0.6636	0.5289	0.6729	0.6818	0.6940	0.7499	0.7179	0.7527	0.6827	10.344
I M3-8:2FTS	Avg RF	0.7430	0.7259	0.7998	0.7848	0.8297	0.8915	0.9162	0.8784	0.8212	8.524
T 8:2FTS	Avg RF	5.3195	5.0680	5.6895	5.6973	5.9189	6.1753	6.2053	6.0180	5.7615	7.018
I M3-MeFOSAA	Avg RF	2.9931	2.9153	3.2628	3.2349	3.3515	3.3353	3.2261	2.8440	3.1454	6.288
T MeFOSAA	Avg RF	2.2462	2.2099	2.5185	2.5532	2.7004	2.8989	2.9380	2.6865	2.5939	10.376
I M3-HFO-DA	Avg RF	0.6514	0.8414	0.9049	0.8008	0.7817	0.9290	0.9699	0.9177	0.8496	12.169
T HFO-DA	Avg RF	0.9542	0.9786	1.0637	0.9815	1.0819	1.1238	1.1164	1.0944	1.0493	6.442
I M7-MeFOSE	Avg RF	0.8894	0.9190	0.9409	0.9367	1.0323	1.0810	1.0818	1.0060	0.9859	7.574
T MeFOSE	Avg RF	0.8894	0.9190	0.9409	0.9367	1.0323	1.0810	1.0818	1.0060	0.9859	7.574

Generated at 9:41 AM on 2/23/2023

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Initial Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICC587
 Lab FileID: 4Q41060.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	0.8345	0.9731	1.0192	1.0923	1.0436	1.1014	1.1775	1.1338	1.0469	10.275
I M3-MeFOSA											
T MeFOSA	Avg RF	0.8249	0.8095	0.9209	0.9105	0.9458	1.0109	0.9636	0.9714	0.9197	7.670
I 13C4-PFOS											
S d3-MeFOSAA	Linear	1.0747	1.1530	1.1376	1.1444	1.0464	1.0926	1.1162	1.0395	1.1006	4.017
S 13C8-PFOS	Linear	0.9660	1.0330	1.0002	1.0312	0.9461	1.0168	1.0120	0.9960	1.0002	3.063
S d5-EFOSAA	Linear	0.8564	0.9201	0.8322	0.8717	0.8843	0.8146	0.8279	0.8575	0.8581	3.986
S 13C8-FOSA	Linear	0.9252	1.0059	0.9310	0.9082	0.8626	0.8828	0.9213	0.9508	0.9235	4.703
S d7-MeFOSE	Linear	0.3044	0.3211	0.3074	0.3126	0.2951	0.3046	0.3027	0.2903	0.3048	3.142
S d3-MeFOSA	Linear	0.6704	0.7819	0.6971	0.6688	0.6756	0.7245	0.7414	0.7780	0.7172	6.493
S d9-EFOSE	Linear	0.3742	0.3923	0.3790	0.3876	0.3632	0.3789	0.3731	0.3810	0.3786	2.368
S d5-EFOSA	Linear	0.8714	0.8377	0.8049	0.7658	0.8042	0.8369	0.8012	0.8379	0.8200	3.947
I 13C3-PFBA											
S 13C4-PFBA	Linear	0.8327	0.8293	0.8278	0.8272	0.8188	0.8343	0.8294	0.8269	0.8283	0.562
I 1802-PFHXS											
S 13C2-4:2FTS	Linear	0.1484	0.1678	0.1448	0.1435	0.1396	0.1235	0.1148	0.1005	0.1354	15.740
S 13C3-PFBS	Linear	2.3120	2.3534	2.3549	2.2940	2.2214	2.2433	2.4449	2.2649	2.3111	3.132
S 13C2-6:2FTS	Linear	0.2599	0.2541	0.2274	0.2397	0.2000	0.1910	0.2074	0.1546	0.2168	16.345
S 13C3-PFHXS	Linear	1.4452	1.4945	1.4333	1.3294	1.3127	1.3387	1.4995	1.3645	1.4022	5.361
S 13C2-8:2FTS	Linear	0.4120	0.3674	0.3779	0.3013	0.2879	0.3147	0.3009	0.2495	0.3265	16.562
I 13C4-PFOA											
S 13C8-PFOA	Linear	0.8247	0.8279	0.8398	0.8447	0.8247	0.8664	0.8176	0.8328	0.8348	1.849
I 13C2-PFDA											
S 13C6-PFDA	Linear	1.0159	1.0138	1.0284	1.0662	1.0989	1.0572	1.0496	0.9072	1.0296	5.534
S 13C7-PFUDA	Linear	1.4032	1.3398	1.3344	1.3958	1.4390	1.3162	1.2581	1.0923	1.3224	8.238
S 13C2-PFDODA	Linear	1.2691	1.2685	1.2344	1.3295	1.4009	1.2953	1.3782	1.2638	1.3050	4.539
S 13C2-PFTEA	Linear	1.0313	1.0473	1.0357	1.1301	1.2180	1.1865	1.2366	1.2030	1.1361	7.644
I 13C5-PFNA											
S 13C9-PFNA	Linear	0.8566	0.8692	0.9045	0.8584	0.8422	0.8100	0.8326	0.8362	0.8512	3.323
I 13C2-PFHXA											
S 13C5-PPFA	Linear	0.7317	0.7429	0.7403	0.7189	0.7099	0.6867	0.6830	0.6353	0.7061	5.157
S 13C5-PFHXA	Linear	1.1036	1.0995	1.1266	1.0952	1.1101	1.0761	1.1082	1.0626	1.0977	1.837
S 13C3-HFPO-DA	Linear	0.1642	0.1651	0.1656	0.1612	0.1659	0.1642	0.1611	0.1540	0.1627	2.427
S 13C4-PFHFA	Linear	0.6273	0.6435	0.6566	0.6383	0.6381	0.6216	0.6392	0.6291	0.6367	1.705

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

Initial Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICC587
 Lab FileID: 4Q41060.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PBBA	Linear	$y = 0.828303 * x$	
S 13C5-PFPeA	Linear	$y = 0.706068 * x$	
S 13C2-4:2FTS	Linear	$y = 0.135358 * x$	
S 13C3-PFBS	Linear	$y = 2.311132 * x$	
S 13C5-PFHxA	Linear	$y = 1.097731 * x$	
S 13C3-HFPO-DA	Linear	$y = 0.162665 * x$	
S 13C4-PFHpA	Linear	$y = 0.636714 * x$	
S 13C2-6:2FTS	Linear	$y = 0.216785 * x$	
S 13C8-PFOA	Linear	$y = 0.834822 * x$	
S 13C3-PFHxS	Linear	$y = 1.402222 * x$	
S 13C9-PFNA	Linear	$y = 0.851235 * x$	
S 13C2-8:2FTS	Linear	$y = 0.326450 * x$	
S 13C6-PEDA	Linear	$y = 1.029629 * x$	
S d3-MeFOSAA	Linear	$y = 1.100551 * x$	
S 13C8-PFOS	Linear	$y = 1.000154 * x$	
S d5-EFOSAA	Linear	$y = 0.858089 * x$	
S 13C7-PFUInDA	Linear	$y = 1.322358 * x$	
S 13C2-PFDODA	Linear	$y = 1.304959 * x$	
S 13C8-FOSA	Linear	$y = 0.923463 * x$	
S 13C2-PFTeDA	Linear	$y = 1.136058 * x$	
S d7-MeFOSE	Linear	$y = 0.304785 * x$	
S d3-MeFOSA	Linear	$y = 0.717202 * x$	
S d9-EFOSE	Linear	$y = 0.378649 * x$	
S d5-EFOSA	Linear	$y = 0.819995 * x$	

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

Initial Calibration Verification

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICV587
 Lab FileID: 4Q41066.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41066
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.378	7.6	107.6
13C2-6:2FTS	5.000	5.489	9.8	109.8
13C2-8:2FTS	5.000	5.709	14.2	114.2
13C2-PFDoDA	1.250	1.188	-5.0	95.0
13C2-PFTeDA	1.250	1.188	-4.9	95.1
13C3-PFBS	2.500	2.626	5.0	105.0
13C3-PFHxS	2.500	2.462	-1.5	98.5
13C4-PFBA	10.000	9.928	-0.7	99.3
13C4-PFHpA	2.500	2.489	-0.4	99.6
13C5-PFHxA	2.500	2.527	1.1	101.1
13C5-PFPeA	5.000	4.956	-0.9	99.1
13C6-PFDA	1.250	1.278	2.2	102.2
13C7-PFUnDA	1.250	1.262	1.0	101.0
13C8-FOSA	2.500	2.522	0.9	100.9
13C8-PFOA	2.500	2.498	-0.1	99.9
13C8-PFOS	2.500	2.471	-1.2	98.8
13C9-PFNA	1.250	1.247	-0.3	99.7
4:2FTS	9.375	9.604	2.4	102.4
6:2FTS	9.500	9.599	1.0	101.0
8:2FTS	9.600	10.026	4.4	104.4
d3-MeFOSAA	5.000	4.799	-4.0	96.0
EtFOSAA	2.500	2.360	-5.6	94.4
FOSA	2.500	2.378	-4.9	95.1
MeFOSAA	2.500	2.541	1.7	101.7
PFBA	10.000	9.850	-1.5	98.5
PFBS	2.218	2.175	-1.9	98.1
PFDA	2.500	2.496	-0.2	99.8
PFDoDA	2.500	2.536	1.4	101.4
PFDS	2.413	2.229	-7.6	92.4
PFHpA	2.500	2.438	-2.5	97.5
PFHpS	2.383	2.364	-0.8	99.2
PFHxA	2.500	2.328	-6.9	93.1
PFHxS	2.285	2.177	-4.7	95.3
PFNA	2.500	2.360	-5.6	94.4
PFNS	2.405	2.392	-0.5	99.5
PFOA	2.500	2.346	-6.2	93.8
PFOS	2.320	2.140	-7.8	92.2

Initial Calibration Verification

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICV587
 Lab FileID: 4Q41066.D

PFPeA	5.000	5.119	2.4	102.4
PFPeS	2.353	2.208	-6.2	93.8
PFTeDA	2.500	2.453	-1.9	98.1
PFTTrDA	2.500	2.497	-0.1	99.9
PFUnDA	2.500	2.307	-7.7	92.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	9.450	9.376	-0.8	99.2
13C3-HFPO-DA	10.000	10.168	1.7	101.7
9C1-PF3ONS	9.350	9.957	6.5	106.5
ADONA	9.450	9.510	0.6	100.6
HFPO-DA	10.000	9.967	-0.3	99.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.144	-2.7	97.3
5:3FTCA	62.400	63.323	1.5	101.5
7:3FTCA	62.400	63.794	2.2	102.2
d3-MeFOSA	2.500	2.341	-6.3	93.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.430	-2.8	97.2
EtFOSE	25.000	24.887	-0.5	99.5
MeFOSA	2.500	2.517	0.7	100.7
MeFOSE	25.000	24.568	-1.7	98.3
PFDoDS	2.425	2.165	-10.7	89.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.826	-3.5	96.5
d7-MeFOSE	25.000	24.823	-0.7	99.3
d9-EtFOSE	25.000	24.105	-3.6	96.4
d5-EtFOSA	2.500	2.462	-1.5	98.5
NFDHA	5.000	5.161	3.2	103.2
PFMBA	5.000	4.994	-0.1	99.9
PFMPA	5.000	4.966	-0.7	99.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.288	-3.6	96.4

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICV587
 Lab FileID: 4Q41067.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41067
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.534	-9.3	90.7
13C2-6:2FTS	5.000	5.589	11.8	111.8
13C2-8:2FTS	5.000	5.784	15.7	115.7
13C2-PFDoDA	1.250	1.245	-0.4	99.6
13C2-PFTeDA	1.250	1.305	4.4	104.4
13C3-PFBS	2.500	2.463	-1.5	98.5
13C3-PFHxS	2.500	2.548	1.9	101.9
13C4-PFBA	10.000	9.992	-0.1	99.9
13C4-PFHpA	2.500	2.457	-1.7	98.3
13C5-PFHxA	2.500	2.422	-3.1	96.9
13C5-PFPeA	5.000	4.856	-2.9	97.1
13C6-PFDA	1.250	1.158	-7.3	92.7
13C7-PFUnDA	1.250	1.250	0.0	100.0
13C8-FOSA	2.500	2.371	-5.1	94.9
13C8-PFOA	2.500	2.522	0.9	100.9
13C8-PFOS	2.500	2.378	-4.9	95.1
13C9-PFNA	1.250	1.239	-0.8	99.2
4:2FTS	20.000	25.538	27.7	127.7
6:2FTS	20.000	20.656	3.3	103.3
8:2FTS	20.000	21.828	9.1	109.1
d3-MeFOSAA	5.000	4.744	-5.1	94.9
EtFOSAA	20.000	21.231	6.2	106.2
FOSA	20.000	22.138	10.7	110.7
MeFOSAA	20.000	22.786	13.9	113.9
PFBA	20.000	20.691	3.5	103.5
PFBS	20.000	23.589	17.9	117.9
PFDA	20.000	23.427	17.1	117.1
PFDoDA	20.000	19.122	-4.4	95.6
PFDS	20.000	22.112	10.6	110.6
PFHpA	20.000	21.841	9.2	109.2
PFHpS	20.000	22.333	11.7	111.7
PFHxA	20.000	21.356	6.8	106.8
PFHxS	20.000	21.169	5.8	105.8
PFNA	20.000	23.102	15.5	115.5
PFNS	20.000	22.683	13.4	113.4
PFOA	20.000	21.214	6.1	106.1
PFOS	20.000	16.952	-15.2	84.8

Initial Calibration Verification

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-ICV587
 Lab FileID: 4Q41067.D

PFPeA	20.000	23.828	19.1	119.1
PFPeS	20.000	22.858	14.3	114.3
PFTeDA	20.000	23.785	18.9	118.9
PFTTrDA	20.000	20.716	3.6	103.6
PFUnDA	20.000	19.812	-0.9	99.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	23.864	19.3	119.3
13C3-HFPO-DA	10.000	10.278	2.8	102.8
9C1-PF3ONS	20.000	22.222	11.1	111.1
ADONA	20.000	22.842	14.2	114.2
HFPO-DA	20.000	22.063	10.3	110.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	21.117	5.6	105.6
5:3FTCA	20.000	22.402	12.0	112.0
7:3FTCA	20.000	19.668	-1.7	98.3
d3-MeFOSA	2.500	2.426	-3.0	97.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	20.564	2.8	102.8
EtFOSE	100.000	100.253	0.3	100.3
MeFOSA	20.000	21.060	5.3	105.3
MeFOSE	100.000	92.308	-7.7	92.3
PFDoDS	20.000	19.231	-3.8	96.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.735	-5.3	94.7
d7-MeFOSE	25.000	24.685	-1.3	98.7
d9-EtFOSE	25.000	24.187	-3.3	96.7
d5-EtFOSA	2.500	2.373	-5.1	94.9
NFDHA	20.000	22.402	12.0	112.0
PFMBA	20.000	21.986	9.9	109.9
PFMPA	20.000	22.095	10.5	110.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	20.000	19.648	-1.8	98.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41068.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41068
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.886	-2.3	97.7
13C2-6:2FTS	5.000	5.323	6.5	106.5
13C2-8:2FTS	5.000	4.914	-1.7	98.3
13C2-PFDoDA	1.250	1.223	-2.1	97.9
13C2-PFTeDA	1.250	1.197	-4.2	95.8
13C3-PFBS	2.500	2.554	2.2	102.2
13C3-PFHxS	2.500	2.447	-2.1	97.9
13C4-PFBA	10.000	10.016	0.2	100.2
13C4-PFHpA	2.500	2.431	-2.8	97.2
13C5-PFHxA	2.500	2.469	-1.2	98.8
13C5-PFPeA	5.000	4.854	-2.9	97.1
13C6-PFDA	1.250	1.243	-0.6	99.4
13C7-PFUnDA	1.250	1.319	5.6	105.6
13C8-FOSA	2.500	2.499	-0.1	99.9
13C8-PFOA	2.500	2.380	-4.8	95.2
13C8-PFOS	2.500	2.477	-0.9	99.1
13C9-PFNA	1.250	1.284	2.7	102.7
4:2FTS	9.375	9.710	3.6	103.6
6:2FTS	9.500	9.518	0.2	100.2
8:2FTS	9.600	8.905	-7.2	92.8
d3-MeFOSAA	5.000	4.967	-0.7	99.3
EtFOSAA	2.500	2.233	-10.7	89.3
FOSA	2.500	2.384	-4.6	95.4
MeFOSAA	2.500	2.459	-1.7	98.3
PFBA	10.000	9.306	-6.9	93.1
PFBS	2.218	2.000	-9.8	90.2
PFDA	2.500	2.436	-2.6	97.4
PFDoDA	2.500	2.334	-6.7	93.3
PFDS	2.413	2.331	-3.4	96.6
PFHpA	2.500	2.341	-6.4	93.6
PFHpS	2.383	2.233	-6.3	93.7
PFHxA	2.500	2.611	4.4	104.4
PFHxS	2.285	1.979	-13.4	86.6
PFNA	2.500	2.296	-8.2	91.8
PFNS	2.405	2.230	-7.3	92.7
PFOA	2.500	2.369	-5.2	94.8
PFOS	2.320	2.141	-7.7	92.3

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41068.D

PFPeA	5.000	4.899	-2.0	98.0
PFPeS	2.353	2.119	-10.0	90.0
PFTeDA	2.500	2.349	-6.0	94.0
PFTTrDA	2.500	2.435	-2.6	97.4
PFUnDA	2.500	2.274	-9.1	90.9
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	9.450	8.958	-5.2	94.8
13C3-HFPO-DA	10.000	9.994	-0.1	99.9
9C1-PF3ONS	9.350	9.242	-1.2	98.8
ADONA	9.450	9.093	-3.8	96.2
HFPO-DA	10.000	9.386	-6.1	93.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.756	-5.8	94.2
5:3FTCA	62.400	59.972	-3.9	96.1
7:3FTCA	62.400	60.673	-2.8	97.2
d3-MeFOSA	2.500	2.238	-10.5	89.5
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.602	4.1	104.1
EtFOSE	25.000	23.736	-5.1	94.9
MeFOSA	2.500	2.637	5.5	105.5
MeFOSE	25.000	23.553	-5.8	94.2
PFDoDS	2.425	2.264	-6.7	93.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.358	7.2	107.2
d7-MeFOSE	25.000	25.623	2.5	102.5
d9-EtFOSE	25.000	25.049	0.2	100.2
d5-EtFOSA	2.500	2.315	-7.4	92.6
NFDHA	5.000	4.893	-2.1	97.9
PFMBA	5.000	4.839	-3.2	96.8
PFMPA	5.000	4.663	-6.7	93.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.050	-9.0	91.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41069.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41069
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.748	15.0	115.0
13C2-6:2FTS	5.000	5.770	15.4	115.4
13C2-8:2FTS	5.000	6.335	26.7	126.7
13C2-PFDoDA	1.250	1.223	-2.1	97.9
13C2-PFTeDA	1.250	1.197	-4.3	95.7
13C3-PFBS	2.500	2.467	-1.3	98.7
13C3-PFHxS	2.500	2.462	-1.5	98.5
13C4-PFBA	10.000	10.166	1.7	101.7
13C4-PFHpA	2.500	2.460	-1.6	98.4
13C5-PFHxA	2.500	2.546	1.9	101.9
13C5-PFPeA	5.000	5.214	4.3	104.3
13C6-PFDA	1.250	1.232	-1.5	98.5
13C7-PFUnDA	1.250	1.275	2.0	102.0
13C8-FOSA	2.500	2.520	0.8	100.8
13C8-PFOA	2.500	2.476	-1.0	99.0
13C8-PFOS	2.500	2.519	0.8	100.8
13C9-PFNA	1.250	1.309	4.7	104.7
4:2FTS	0.750	0.632	-15.7	84.3
6:2FTS	0.760	0.780	2.7	102.7
8:2FTS	0.768	0.722	-6.0	94.0
d3-MeFOSAA	5.000	5.232	4.6	104.6
EtFOSAA	0.200	0.190	-5.2	94.8
FOSA	0.200	0.195	-2.6	97.4
MeFOSAA	0.200	0.218	9.0	109.0
PFBA	0.800	0.724	-9.5	90.5
PFBS	0.177	0.135	-23.6	76.4
PFDA	0.200	0.170	-15.1	84.9
PFDoDA	0.200	0.188	-6.1	93.9
PFDS	0.193	0.171	-11.6	88.4
PFHpA	0.200	0.186	-7.1	92.9
PFHpS	0.191	0.196	2.4	102.4
PFHxA	0.200	0.185	-7.3	92.7
PFHxS	0.183	0.170	-7.4	92.6
PFNA	0.200	0.199	-0.7	99.3
PFNS	0.192	0.184	-4.0	96.0
PFOA	0.200	0.168	-16.0	84.0
PFOS	0.186	0.209	12.5	112.5

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41069.D

PFPeA	0.400	0.367	-8.3	91.7
PFPeS	0.188	0.162	-13.8	86.2
PFTeDA	0.200	0.215	7.5	107.5
PFTTrDA	0.200	0.181	-9.7	90.3
PFUnDA	0.200	0.219	9.3	109.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.756	0.695	-8.1	91.9
13C3-HFPO-DA	10.000	10.178	1.8	101.8
9C1-PF3ONS	0.748	0.667	-10.8	89.2
ADONA	0.756	0.681	-9.9	90.1
HFPO-DA	0.800	0.679	-15.1	84.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.846	-15.3	84.7
5:3FTCA	4.992	4.350	-12.9	87.1
7:3FTCA	4.992	4.853	-2.8	97.2
d3-MeFOSA	2.500	2.456	-1.8	98.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.176	-12.0	88.0
EtFOSE	2.000	1.861	-7.0	93.0
MeFOSA	0.200	0.174	-12.9	87.1
MeFOSE	2.000	1.859	-7.1	92.9
PFDoDS	0.194	0.191	-1.6	98.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.085	1.7	101.7
d7-MeFOSE	25.000	26.241	5.0	105.0
d9-EtFOSE	25.000	25.669	2.7	102.7
d5-EtFOSA	2.500	2.605	4.2	104.2
NFDHA	0.400	0.415	3.7	103.7
PFMBA	0.400	0.349	-12.8	87.2
PFMPA	0.400	0.351	-12.2	87.8
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.318	-10.7	89.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41072.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41072
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.452	9.0	109.0
13C2-6:2FTS	5.000	5.000	0.0	100.0
13C2-8:2FTS	5.000	4.601	-8.0	92.0
13C2-PFDoDA	1.250	1.226	-1.9	98.1
13C2-PFTeDA	1.250	1.149	-8.1	91.9
13C3-PFBS	2.500	2.576	3.0	103.0
13C3-PFHxS	2.500	2.484	-0.6	99.4
13C4-PFBA	10.000	10.179	1.8	101.8
13C4-PFHpA	2.500	2.438	-2.5	97.5
13C5-PFHxA	2.500	2.498	-0.1	99.9
13C5-PFPeA	5.000	4.935	-1.3	98.7
13C6-PFDA	1.250	1.185	-5.2	94.8
13C7-PFUnDA	1.250	1.294	3.5	103.5
13C8-FOSA	2.500	2.294	-8.2	91.8
13C8-PFOA	2.500	2.498	-0.1	99.9
13C8-PFOS	2.500	2.280	-8.8	91.2
13C9-PFNA	1.250	1.179	-5.7	94.3
4:2FTS	9.375	8.700	-7.2	92.8
6:2FTS	9.500	9.995	5.2	105.2
8:2FTS	9.600	9.752	1.6	101.6
d3-MeFOSAA	5.000	4.828	-3.4	96.6
EtFOSAA	2.500	2.239	-10.5	89.5
FOSA	2.500	2.347	-6.1	93.9
MeFOSAA	2.500	2.209	-11.6	88.4
PFBA	10.000	9.223	-7.8	92.2
PFBS	2.218	2.141	-3.5	96.5
PFDA	2.500	2.408	-3.7	96.3
PFDoDA	2.500	2.391	-4.3	95.7
PFDS	2.413	2.313	-4.1	95.9
PFHpA	2.500	2.337	-6.5	93.5
PFHpS	2.383	2.350	-1.4	98.6
PFHxA	2.500	2.503	0.1	100.1
PFHxS	2.285	2.110	-7.7	92.3
PFNA	2.500	2.285	-8.6	91.4
PFNS	2.405	2.282	-5.1	94.9
PFOA	2.500	2.372	-5.1	94.9
PFOS	2.320	2.161	-6.8	93.2

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41072.D

PFPeA	5.000	4.796	-4.1	95.9
PFPeS	2.353	2.206	-6.3	93.7
PFTeDA	2.500	2.392	-4.3	95.7
PFTTrDA	2.500	2.362	-5.5	94.5
PFUnDA	2.500	2.224	-11.0	89.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	9.450	9.170	-3.0	97.0
13C3-HFPO-DA	10.000	9.977	-0.2	99.8
9C1-PF3ONS	9.350	9.250	-1.1	98.9
ADONA	9.450	8.996	-4.8	95.2
HFPO-DA	10.000	9.535	-4.6	95.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.381	-8.8	91.2
5:3FTCA	62.400	59.645	-4.4	95.6
7:3FTCA	62.400	61.172	-2.0	98.0
d3-MeFOSA	2.500	2.139	-14.4	85.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.390	-4.4	95.6
EtFOSE	25.000	24.269	-2.9	97.1
MeFOSA	2.500	2.544	1.8	101.8
MeFOSE	25.000	24.361	-2.6	97.4
PFDoDS	2.425	2.386	-1.6	98.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.901	-2.0	98.0
d7-MeFOSE	25.000	23.660	-5.4	94.6
d9-EtFOSE	25.000	23.815	-4.7	95.3
d5-EtFOSA	2.500	2.286	-8.6	91.4
NFDHA	5.000	5.265	5.3	105.3
PFMBA	5.000	4.812	-3.8	96.2
PFMPA	5.000	4.557	-8.9	91.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.096	-8.0	92.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41082.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41082
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.941	18.8	118.8
13C2-6:2FTS	5.000	5.480	9.6	109.6
13C2-8:2FTS	5.000	4.736	-5.3	94.7
13C2-PFDoDA	1.250	1.195	-4.4	95.6
13C2-PFTeDA	1.250	1.131	-9.5	90.5
13C3-PFBS	2.500	2.633	5.3	105.3
13C3-PFHxS	2.500	2.539	1.6	101.6
13C4-PFBA	10.000	10.093	0.9	100.9
13C4-PFHpA	2.500	2.453	-1.9	98.1
13C5-PFHxA	2.500	2.484	-0.6	99.4
13C5-PFPeA	5.000	4.826	-3.5	96.5
13C6-PFDA	1.250	1.243	-0.5	99.5
13C7-PFUnDA	1.250	1.258	0.7	100.7
13C8-FOSA	2.500	2.435	-2.6	97.4
13C8-PFOA	2.500	2.621	4.8	104.8
13C8-PFOS	2.500	2.385	-4.6	95.4
13C9-PFNA	1.250	1.215	-2.8	97.2
4:2FTS	9.375	8.483	-9.5	90.5
6:2FTS	9.500	9.748	2.6	102.6
8:2FTS	9.600	9.980	4.0	104.0
d3-MeFOSAA	5.000	4.986	-0.3	99.7
EtFOSAA	2.500	2.281	-8.7	91.3
FOSA	2.500	2.326	-7.0	93.0
MeFOSAA	2.500	2.366	-5.4	94.6
PFBA	10.000	9.344	-6.6	93.4
PFBS	2.218	2.111	-4.8	95.2
PFDA	2.500	2.307	-7.7	92.3
PFDoDA	2.500	2.370	-5.2	94.8
PFDS	2.413	2.311	-4.2	95.8
PFHpA	2.500	2.360	-5.6	94.4
PFHpS	2.383	2.174	-8.8	91.2
PFHxA	2.500	2.539	1.5	101.5
PFHxS	2.285	2.188	-4.3	95.7
PFNA	2.500	2.335	-6.6	93.4
PFNS	2.405	2.389	-0.7	99.3
PFOA	2.500	2.202	-11.9	88.1
PFOS	2.320	2.094	-9.8	90.2

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41082.D

PFPeA	5.000	4.921	-1.6	98.4
PFPeS	2.353	2.160	-8.2	91.8
PFTeDA	2.500	2.446	-2.2	97.8
PFTTrDA	2.500	2.351	-6.0	94.0
PFUnDA	2.500	2.217	-11.3	88.7
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	9.450	9.331	-1.3	98.7
13C3-HFPO-DA	10.000	9.706	-2.9	97.1
9C1-PF3ONS	9.350	9.395	0.5	100.5
ADONA	9.450	9.153	-3.1	96.9
HFPO-DA	10.000	9.735	-2.7	97.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.595	-7.1	92.9
5:3FTCA	62.400	60.238	-3.5	96.5
7:3FTCA	62.400	60.458	-3.1	96.9
d3-MeFOSA	2.500	2.179	-12.8	87.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.501	0.0	100.0
EtFOSE	25.000	24.250	-3.0	97.0
MeFOSA	2.500	2.507	0.3	100.3
MeFOSE	25.000	23.884	-4.5	95.5
PFDODS	2.425	2.175	-10.3	89.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.859	-2.8	97.2
d7-MeFOSE	25.000	24.230	-3.1	96.9
d9-EtFOSE	25.000	24.238	-3.0	97.0
d5-EtFOSA	2.500	2.277	-8.9	91.1
NFDHA	5.000	4.998	0.0	100.0
PFMBA	5.000	4.860	-2.8	97.2
PFMPA	5.000	4.754	-4.9	95.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.210	-5.4	94.6

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41091.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41091
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.693	13.9	113.9
13C2-6:2FTS	5.000	5.391	7.8	107.8
13C2-8:2FTS	5.000	5.120	2.4	102.4
13C2-PFDoDA	1.250	1.230	-1.6	98.4
13C2-PFTeDA	1.250	1.224	-2.1	97.9
13C3-PFBS	2.500	2.697	7.9	107.9
13C3-PFHxS	2.500	2.665	6.6	106.6
13C4-PFBA	10.000	9.921	-0.8	99.2
13C4-PFHpA	2.500	2.506	0.2	100.2
13C5-PFHxA	2.500	2.549	2.0	102.0
13C5-PFPeA	5.000	4.961	-0.8	99.2
13C6-PFDA	1.250	1.207	-3.4	96.6
13C7-PFUnDA	1.250	1.251	0.1	100.1
13C8-FOSA	2.500	2.678	7.1	107.1
13C8-PFOA	2.500	2.444	-2.2	97.8
13C8-PFOS	2.500	2.585	3.4	103.4
13C9-PFNA	1.250	1.285	2.8	102.8
4:2FTS	9.375	9.390	0.2	100.2
6:2FTS	9.500	9.918	4.4	104.4
8:2FTS	9.600	9.304	-3.1	96.9
d3-MeFOSAA	5.000	5.095	1.9	101.9
EtFOSAA	2.500	2.321	-7.2	92.8
FOSA	2.500	2.271	-9.2	90.8
MeFOSAA	2.500	2.369	-5.2	94.8
PFBA	10.000	9.403	-6.0	94.0
PFBS	2.218	2.170	-2.2	97.8
PFDA	2.500	2.371	-5.1	94.9
PFDoDA	2.500	2.339	-6.4	93.6
PFDS	2.413	2.130	-11.7	88.3
PFHpA	2.500	2.325	-7.0	93.0
PFHpS	2.383	2.281	-4.3	95.7
PFHxA	2.500	2.590	3.6	103.6
PFHxS	2.285	2.022	-11.5	88.5
PFNA	2.500	2.256	-9.8	90.2
PFNS	2.405	2.327	-3.3	96.7
PFOA	2.500	2.267	-9.3	90.7
PFOS	2.320	2.090	-9.9	90.1

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41091.D

PFPeA	5.000	4.900	-2.0	98.0
PFPeS	2.353	2.145	-8.9	91.1
PFTeDA	2.500	2.347	-6.1	93.9
PFTrDA	2.500	2.399	-4.0	96.0
PFUnDA	2.500	2.354	-5.8	94.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	9.450	8.744	-7.5	92.5
13C3-HFPO-DA	10.000	10.561	5.6	105.6
9C1-PF3ONS	9.350	9.100	-2.7	97.3
ADONA	9.450	8.835	-6.5	93.5
HFPO-DA	10.000	9.550	-4.5	95.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.469	-8.1	91.9
5:3FTCA	62.400	60.001	-3.8	96.2
7:3FTCA	62.400	59.922	-4.0	96.0
d3-MeFOSA	2.500	2.371	-5.2	94.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.494	-0.3	99.7
EtFOSE	25.000	24.768	-0.9	99.1
MeFOSA	2.500	2.530	1.2	101.2
MeFOSE	25.000	23.667	-5.3	94.7
PFDoDS	2.425	2.173	-10.4	89.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.999	0.0	100.0
d7-MeFOSE	25.000	25.999	4.0	104.0
d9-EtFOSE	25.000	24.823	-0.7	99.3
d5-EtFOSA	2.500	2.348	-6.1	93.9
NFDHA	5.000	4.992	-0.2	99.8
PFMBA	5.000	4.781	-4.4	95.6
PFMPA	5.000	4.757	-4.9	95.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.092	-8.0	92.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41097.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41097
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.945	18.9	118.9
13C2-6:2FTS	5.000	5.261	5.2	105.2
13C2-8:2FTS	5.000	5.222	4.4	104.4
13C2-PFDoDA	1.250	1.232	-1.4	98.6
13C2-PFTeDA	1.250	1.233	-1.3	98.7
13C3-PFBS	2.500	2.716	8.6	108.6
13C3-PFHxS	2.500	2.562	2.5	102.5
13C4-PFBA	10.000	9.931	-0.7	99.3
13C4-PFHpA	2.500	2.495	-0.2	99.8
13C5-PFHxA	2.500	2.448	-2.1	97.9
13C5-PFPeA	5.000	5.030	0.6	100.6
13C6-PFDA	1.250	1.196	-4.3	95.7
13C7-PFUnDA	1.250	1.280	2.4	102.4
13C8-FOSA	2.500	2.509	0.3	100.3
13C8-PFOA	2.500	2.473	-1.1	98.9
13C8-PFOS	2.500	2.447	-2.1	97.9
13C9-PFNA	1.250	1.283	2.6	102.6
4:2FTS	9.375	9.187	-2.0	98.0
6:2FTS	9.500	10.971	15.5	115.5
8:2FTS	9.600	10.177	6.0	106.0
d3-MeFOSAA	5.000	5.135	2.7	102.7
EtFOSAA	2.500	2.273	-9.1	90.9
FOSA	2.500	2.301	-8.0	92.0
MeFOSAA	2.500	2.222	-11.1	88.9
PFBA	10.000	9.344	-6.6	93.4
PFBS	2.218	2.083	-6.1	93.9
PFDA	2.500	2.425	-3.0	97.0
PFDoDA	2.500	2.272	-9.1	90.9
PFDS	2.413	2.215	-8.2	91.8
PFHpA	2.500	2.359	-5.6	94.4
PFHpS	2.383	2.125	-10.8	89.2
PFHxA	2.500	2.585	3.4	103.4
PFHxS	2.285	2.103	-8.0	92.0
PFNA	2.500	2.231	-10.7	89.3
PFNS	2.405	2.307	-4.1	95.9
PFOA	2.500	2.355	-5.8	94.2
PFOS	2.320	2.094	-9.8	90.2

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41097.D

PFPeA	5.000	4.820	-3.6	96.4
PFPeS	2.353	2.381	1.2	101.2
PFTeDA	2.500	2.426	-3.0	97.0
PFTTrDA	2.500	2.431	-2.8	97.2
PFUnDA	2.500	2.236	-10.6	89.4
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	9.450	8.861	-6.2	93.8
13C3-HFPO-DA	10.000	10.230	2.3	102.3
9C1-PF3ONS	9.350	8.855	-5.3	94.7
ADONA	9.450	8.948	-5.3	94.7
HFPO-DA	10.000	9.400	-6.0	94.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.273	-9.7	90.3
5:3FTCA	62.400	61.933	-0.7	99.3
7:3FTCA	62.400	61.252	-1.8	98.2
d3-MeFOSA	2.500	2.168	-13.3	86.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.491	-0.4	99.6
EtFOSE	25.000	23.654	-5.4	94.6
MeFOSA	2.500	2.766	10.7	110.7
MeFOSE	25.000	23.415	-6.3	93.7
PFDoDS	2.425	2.069	-14.7	85.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.046	0.9	100.9
d7-MeFOSE	25.000	24.950	-0.2	99.8
d9-EtFOSE	25.000	24.229	-3.1	96.9
d5-EtFOSA	2.500	2.320	-7.2	92.8
NFDHA	5.000	5.564	11.3	111.3
PFMBA	5.000	4.780	-4.4	95.6
PFMPA	5.000	4.688	-6.2	93.8
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.202	-5.6	94.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41098.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022223_1633_S4Q587\s4q587.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022223_1633_S4Q587\4Q41057.d
 2:D:\MassHunter\Data\022223_1633_S4Q587\4Q41058.d
 3:D:\MassHunter\Data\022223_1633_S4Q587\4Q41059.d
 4:D:\MassHunter\Data\022223_1633_S4Q587\4Q41060.d
 5:D:\MassHunter\Data\022223_1633_S4Q587\4Q41061.d
 6:D:\MassHunter\Data\022223_1633_S4Q587\4Q41062.d
 7:D:\MassHunter\Data\022223_1633_S4Q587\4Q41063.d
 8:D:\MassHunter\Data\022223_1633_S4Q587\4Q41064.d

Data File: 4Q41098
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.675	13.5	113.5
13C2-6:2FTS	5.000	5.662	13.2	113.2
13C2-8:2FTS	5.000	5.968	19.4	119.4
13C2-PFDoDA	1.250	1.102	-11.9	88.1
13C2-PFTeDA	1.250	1.170	-6.4	93.6
13C3-PFBS	2.500	2.445	-2.2	97.8
13C3-PFHxS	2.500	2.489	-0.4	99.6
13C4-PFBA	10.000	10.104	1.0	101.0
13C4-PFHpA	2.500	2.512	0.5	100.5
13C5-PFHxA	2.500	2.469	-1.3	98.7
13C5-PFPeA	5.000	5.067	1.3	101.3
13C6-PFDA	1.250	1.212	-3.0	97.0
13C7-PFUnDA	1.250	1.215	-2.8	97.2
13C8-FOSA	2.500	2.443	-2.3	97.7
13C8-PFOA	2.500	2.609	4.4	104.4
13C8-PFOS	2.500	2.490	-0.4	99.6
13C9-PFNA	1.250	1.220	-2.4	97.6
4:2FTS	0.750	0.617	-17.7	82.3
6:2FTS	0.760	0.717	-5.7	94.3
8:2FTS	0.768	0.710	-7.5	92.5
d3-MeFOSAA	5.000	4.980	-0.4	99.6
EtFOSAA	0.200	0.193	-3.5	96.5
FOSA	0.200	0.211	5.6	105.6
MeFOSAA	0.200	0.181	-9.4	90.6
PFBA	0.800	0.733	-8.4	91.6
PFBS	0.177	0.176	-0.7	99.3
PFDA	0.200	0.181	-9.5	90.5
PFDoDA	0.200	0.185	-7.7	92.3
PFDS	0.193	0.156	-19.3	80.7
PFHpA	0.200	0.164	-18.1	81.9
PFHpS	0.191	0.233	22.1	122.1
PFHxA	0.200	0.190	-4.8	95.2
PFHxS	0.183	0.157	-14.0	86.0
PFNA	0.200	0.194	-3.1	96.9
PFNS	0.192	0.151	-21.2	78.8
PFOA	0.200	0.202	1.0	101.0
PFOS	0.186	0.215	15.8	115.8

Continuing Calibration Summary

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q587-CC587
 Lab FileID: 4Q41098.D

PFPeA	0.400	0.363	-9.3	90.7
PFPeS	0.188	0.175	-7.1	92.9
PFTeDA	0.200	0.163	-18.3	81.7
PFTrDA	0.200	0.186	-6.8	93.2
PFUnDA	0.200	0.198	-0.8	99.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.756	0.657	-13.1	86.9
13C3-HFPO-DA	10.000	9.990	-0.1	99.9
9C1-PF3ONS	0.748	0.726	-2.9	97.1
ADONA	0.756	0.644	-14.8	85.2
HFPO-DA	0.800	0.798	-0.3	99.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.852	-14.7	85.3
5:3FTCA	4.992	4.657	-6.7	93.3
7:3FTCA	4.992	5.019	0.5	100.5
d3-MeFOSA	2.500	2.286	-8.6	91.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.203	1.3	101.3
EtFOSE	2.000	1.887	-5.6	94.4
MeFOSA	0.200	0.194	-3.1	96.9
MeFOSE	2.000	1.847	-7.6	92.4
PFDoDS	0.194	0.183	-5.7	94.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.926	-1.5	98.5
d7-MeFOSE	25.000	24.409	-2.4	97.6
d9-EtFOSE	25.000	23.970	-4.1	95.9
d5-EtFOSA	2.500	2.491	-0.3	99.7
NFDHA	0.400	0.391	-2.2	97.8
PFMBA	0.400	0.365	-8.7	91.3
PFMPA	0.400	0.353	-11.9	88.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.300	-15.6	84.4

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q587	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q587-RT	4Q41054.D	02/22/23 15:41	n/a	Retention Time Marker
S4Q587-RT	4Q41055.D	02/22/23 15:55	n/a	Retention Time Marker
S4Q587-IC587	4Q41056.D	02/22/23 16:09	n/a	Mass Calibration Verification
S4Q587-IC587	4Q41057.D	02/22/23 16:23	n/a	Initial cal 1
S4Q587-IC587	4Q41058.D	02/22/23 16:37	n/a	Initial cal 2
S4Q587-IC587	4Q41059.D	02/22/23 16:51	n/a	Initial cal 3
S4Q587-ICC587	4Q41060.D	02/22/23 17:05	n/a	Initial cal 4
S4Q587-IC587	4Q41061.D	02/22/23 17:19	n/a	Initial cal 5
S4Q587-IC587	4Q41062.D	02/22/23 17:34	n/a	Initial cal 6
S4Q587-IC587	4Q41063.D	02/22/23 17:48	n/a	Initial cal 7
S4Q587-IC587	4Q41064.D	02/22/23 18:02	n/a	Initial cal 8
S4Q587-IBLK	4Q41065.D	02/22/23 18:16	n/a	Instrument Blank
S4Q587-IBLK	4Q41065.D	02/22/23 18:16	n/a	Instrument Blank
S4Q587-ICV587	4Q41066.D	02/22/23 18:30	n/a	Initial cal verification 20
S4Q587-ICV587	4Q41067.D	02/22/23 18:44	n/a	Initial cal verification 20
S4Q587-CC587	4Q41068.D	02/22/23 18:58	n/a	Continuing cal 4
S4Q587-CC587	4Q41069.D	02/22/23 19:12	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q41071.D	02/22/23 19:40	OP95295	(unrelated sample)
S4Q587-CC587	4Q41072.D	02/22/23 19:54	n/a	Continuing cal 4
S4Q587-ICCB	4Q41073.D	02/22/23 20:08	n/a	Continuing Calibration Blank
OP95527-BS	4Q41074.D	02/22/23 20:22	OP95527	Blank Spike
OP95527-LLBS	4Q41075.D	02/22/23 20:36	OP95527	Blank Spike
OP95527-MB	4Q41076.D	02/22/23 20:50	OP95527	Method Blank
ZZZZZZ	4Q41077.D	02/22/23 21:04	OP95527	(unrelated sample)
ZZZZZZ	4Q41078.D	02/22/23 21:18	OP95527	(unrelated sample)
ZZZZZZ	4Q41079.D	02/22/23 21:32	OP95527	(unrelated sample)
ZZZZZZ	4Q41080.D	02/22/23 21:46	OP95527	(unrelated sample)
ZZZZZZ	4Q41081.D	02/22/23 22:00	OP95527	(unrelated sample)
S4Q587-CC587	4Q41082.D	02/22/23 22:14	n/a	Continuing cal 4
S4Q587-ICCB	4Q41083.D	02/22/23 22:29	n/a	Continuing Calibration Blank
FC2520-6	4Q41084.D	02/22/23 22:43	OP95527	(used for QC only; not part of job FC2741)
OP95527-MS	4Q41085.D	02/22/23 22:57	OP95527	Matrix Spike
OP95527-MSD	4Q41086.D	02/22/23 23:11	OP95527	Matrix Spike Duplicate
ZZZZZZ	4Q41087.D	02/22/23 23:25	OP95527	(unrelated sample)
ZZZZZZ	4Q41088.D	02/22/23 23:39	OP95527	(unrelated sample)
ZZZZZZ	4Q41089.D	02/22/23 23:53	OP95527	(unrelated sample)
ZZZZZZ	4Q41090.D	02/23/23 00:07	OP95527	(unrelated sample)
S4Q587-CC587	4Q41091.D	02/23/23 00:21	n/a	Continuing cal 4
S4Q587-ICCB	4Q41092.D	02/23/23 00:35	n/a	Continuing Calibration Blank
ZZZZZZ	4Q41093.D	02/23/23 00:49	OP95527	(unrelated sample)
ZZZZZZ	4Q41094.D	02/23/23 01:03	OP95527	(unrelated sample)
ZZZZZZ	4Q41095.D	02/23/23 01:17	OP95527	(unrelated sample)
FC2741-1	4Q41096.D	02/23/23 01:31	OP95527	AF-RHMW225401-WGN01B-2302W2
S4Q587-CC587	4Q41097.D	02/23/23 01:45	n/a	Continuing cal 4
S4Q587-CC587	4Q41098.D	02/23/23 01:59	n/a	Continuing cal 1.0LL
S4Q587-ICCB	4Q41099.D	02/23/23 02:13	n/a	Continuing Calibration Blank

Run Sequence Report

Job Number: FC2741
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q587	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
OP95538-BS	4Q41100.D	02/23/23 02:27	OP95538	Blank Spike
OP95538-LLBS	4Q41101.D	02/23/23 02:41	OP95538	Blank Spike
OP95538-MB	4Q41102.D	02/23/23 02:55	OP95538	Method Blank
ZZZZZZ	4Q41103.D	02/23/23 03:09	OP95538	(unrelated sample)
ZZZZZZ	4Q41104.D	02/23/23 03:24	OP95538	(unrelated sample)
ZZZZZZ	4Q41105.D	02/23/23 03:38	OP95538	(unrelated sample)
ZZZZZZ	4Q41106.D	02/23/23 03:52	OP95538	(unrelated sample)
ZZZZZZ	4Q41107.D	02/23/23 04:06	OP95538	(unrelated sample)
S4Q587-CC587	4Q41109.D	02/23/23 04:34	n/a	Continuing cal 4
S4Q587-CC587	4Q41110.D	02/23/23 04:48	n/a	Continuing cal 1.0LL
S4Q587-ICCB	4Q41111.D	02/23/23 05:02	n/a	Continuing Calibration Blank
OP95477-BS	4Q41112.D	02/23/23 05:16	OP95477	Blank Spike
OP95477-LLBS	4Q41113.D	02/23/23 05:30	OP95477	Blank Spike
OP95477-MB	4Q41114.D	02/23/23 05:44	OP95477	Method Blank
ZZZZZZ	4Q41115.D	02/23/23 05:58	OP95477	(unrelated sample)
ZZZZZZ	4Q41116.D	02/23/23 06:12	OP95477	(unrelated sample)
ZZZZZZ	4Q41117.D	02/23/23 06:26	OP95477	(unrelated sample)
ZZZZZZ	4Q41118.D	02/23/23 06:40	OP95477	(unrelated sample)
FC2453-5	4Q41119.D	02/23/23 06:54	OP95477	(used for QC only; not part of job FC2741)
OP95477-MS	4Q41120.D	02/23/23 07:08	OP95477	Matrix Spike
S4Q587-CC587	4Q41121.D	02/23/23 07:22	n/a	Continuing cal 4
S4Q587-ICCB	4Q41122.D	02/23/23 07:36	n/a	Continuing Calibration Blank
FC2453-6	4Q41123.D	02/23/23 07:51	OP95477	(used for QC only; not part of job FC2741)
OP95477-DUP	4Q41124.D	02/23/23 08:05	OP95477	Duplicate
ZZZZZZ	4Q41125.D	02/23/23 08:19	OP95477	(unrelated sample)
ZZZZZZ	4Q41126.D	02/23/23 08:33	OP95477	(unrelated sample)
ZZZZZZ	4Q41127.D	02/23/23 08:47	OP95477	(unrelated sample)
ZZZZZZ	4Q41128.D	02/23/23 09:01	OP95477	(unrelated sample)
FC2386-1	4Q41130.D	02/23/23 09:29	OP95331	(used for QC only; not part of job FC2741)
OP95331-MS	4Q41131.D	02/23/23 09:43	OP95331	Matrix Spike
S4Q587-ECC587	4Q41132.D	02/23/23 09:57	n/a	Ending cal 4
S4Q587-ICCB	4Q41133.D	02/23/23 10:11	n/a	Continuing Calibration Blank

MS Semi-volatiles

Raw Data

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Norman Farmer
 02/24/23 10:54

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41096.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/23/2023 1:31:38 AM
 Sample Name : fc2741-1
 Vial : P4-E1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95527,S4Q587,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.177	216.8 -> 171.9	139422	10.00 µg/L	0.025
M5-PFPeA	4.512	268.3 -> 223.0	65857	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	53389	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	30368	2.50 µg/L	0.000
M8-PFOA	7.076	421.1 -> 376.0	36787	2.50 µg/L	0.014
M9-PFNA	7.596	472.1 -> 427.0	16240	1.25 µg/L	0.000
M6-PFDA	8.091	519.1 -> 474.1	14756	1.25 µg/L	0.012
M7-PFUnDA	8.536	570.0 -> 525.1	19381	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	15798	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	12175	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	7858	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	10463	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	6456	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	8028	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1371	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2119	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3480	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	16745	5.00 µg/L	0.000
M3-HFPO-DA	5.877	286.9 -> 168.9	32915	10.00 µg/L	0.000
M5-EtFOSAA	8.359	589.2 -> 419.0	13472	5.00 µg/L	0.012
M7-MeFOSE	10.648	623.2 -> 58.9	23534	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	30076	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	6562	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	5654	2.50 µg/L	0.012
13C4-PFOS	8.243	502.8 -> 79.9	8765	2.50 µg/L	0.000
13C3-PFBA	3.180	216.0 -> 172.0	79112	5.00 µg/L	0.025
18O2-PFHxS	7.178	403.0 -> 83.9	4655	2.50 µg/L	0.000
13C4-PFOA	7.077	417.1 -> 372.0	43766	2.50 µg/L	0.014
13C2-PFDA	8.091	515.1 -> 470.1	14569	1.25 µg/L	0.012
13C5-PFNA	7.596	468.0 -> 423.0	18517	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	46538	2.50 µg/L	0.012

System Monitoring Compounds

13C2-4:2FTS	5.260	329.1 -> 80.9	1371	5.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.8%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2119	5.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3480	5.72 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.5%		
13C2-PFDoDA	8.968	615.1 -> 570.0	15798	1.04 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.1%		
13C2-PFTeDA	9.736	715.2 -> 670.0	12175	0.92 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 73.6%		
13C3-PFBS	5.501	302.1 -> 79.9	10463	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.179	402.1 -> 79.9	6456	2.47 µg/L	0.000

7.1.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C4-PFBA	3.177	216.8 -> 171.9	139422	10.64 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C4-PFHpA	6.417	367.1 -> 322.0	30368	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	53389	2.61 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C5-PFPeA	4.512	268.3 -> 223.0	65857	5.01 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C6-PFDA	8.091	519.1 -> 474.1	14756	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C7-PFUnDA	8.536	570.0 -> 525.1	19381	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C8-FOSA	9.670	506.1 -> 77.8	7858	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C8-PFOA	7.076	421.1 -> 376.0	36787	2.52 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C8-PFOS	8.242	507.1 -> 79.9	8028	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.6%	
13C9-PFNA	7.596	472.1 -> 427.0	16240	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
d3-MeFOSAA	8.148	573.2 -> 419.0	16745	4.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.8%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	32915	10.87 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.7%	
d3-MeFOSA	10.765	515.0 -> 219.0	5654	2.25 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.9%	
d5-EtFOSAA	8.359	589.2 -> 419.0	13472	4.48 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.6%	
d7-MeFOSE	10.648	623.2 -> 58.9	23534	22.02 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.1%	
d9-EtFOSE	10.970	639.2 -> 58.9	30076	22.65 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.6%	
d5-EtFOSA	11.085	531.1 -> 219.0	6562	2.28 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.3%	

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	5.515	298.7 -> 79.9	342	0.08 µg/L	m 82
		298.7 -> 98.8	93		
PFDA	8.403	512.9 -> 469.0	0	µg/L	m 1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.417	599.0 -> 98.8				
		363.1 -> 319.0	1636	0.10 µg/L	m	98
PFHpS	-	363.1 -> 169.0	287			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.562	449.0 -> 98.9				
		313.0 -> 269.0	2275	0.12 µg/L		100
PFHxS	7.192	313.0 -> 118.9	58			
		398.7 -> 79.9	361	0.14 µg/L	m	95
PFNA	-	398.7 -> 98.9	188			
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	7.078	548.8 -> 98.9				
		413.0 -> 369.0	2830	0.16 µg/L	m	88
PFOS	8.243	413.0 -> 169.0	398			
		498.9 -> 79.9	552	0.15 µg/L	m	69
PFPeA	4.514	498.9 -> 98.8	196			
		263.0 -> 219.0	2856	0.18 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	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEESA	-					

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

7.1.1
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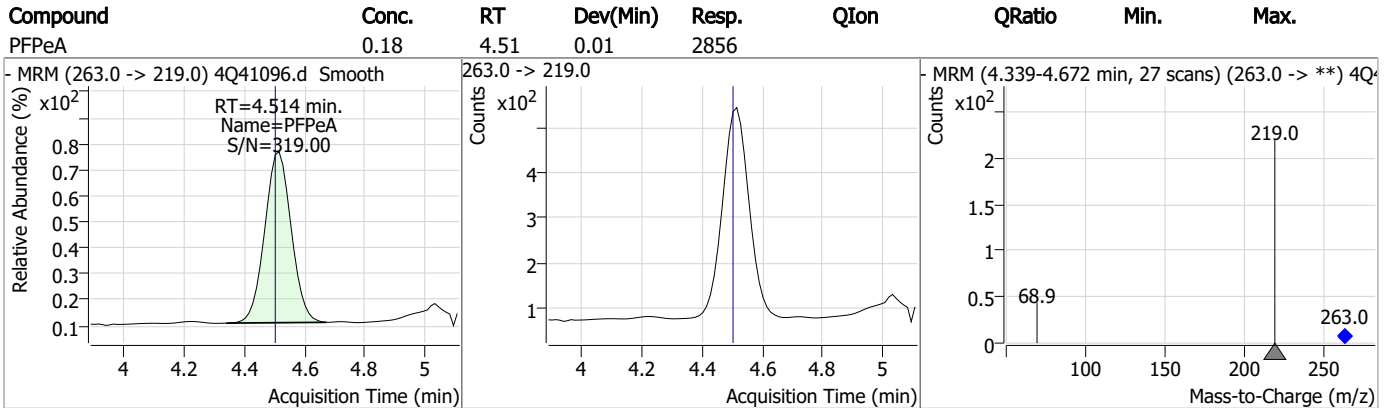
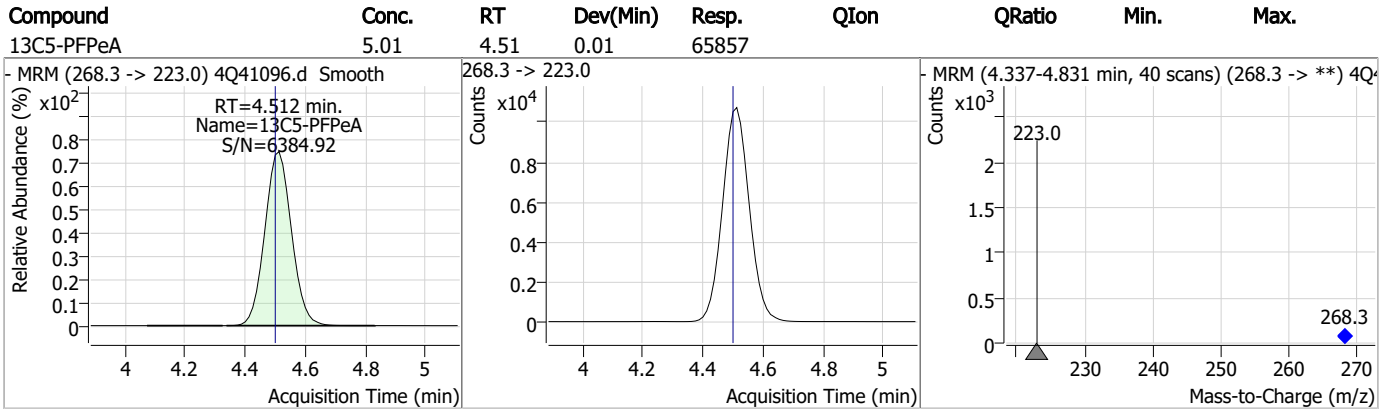
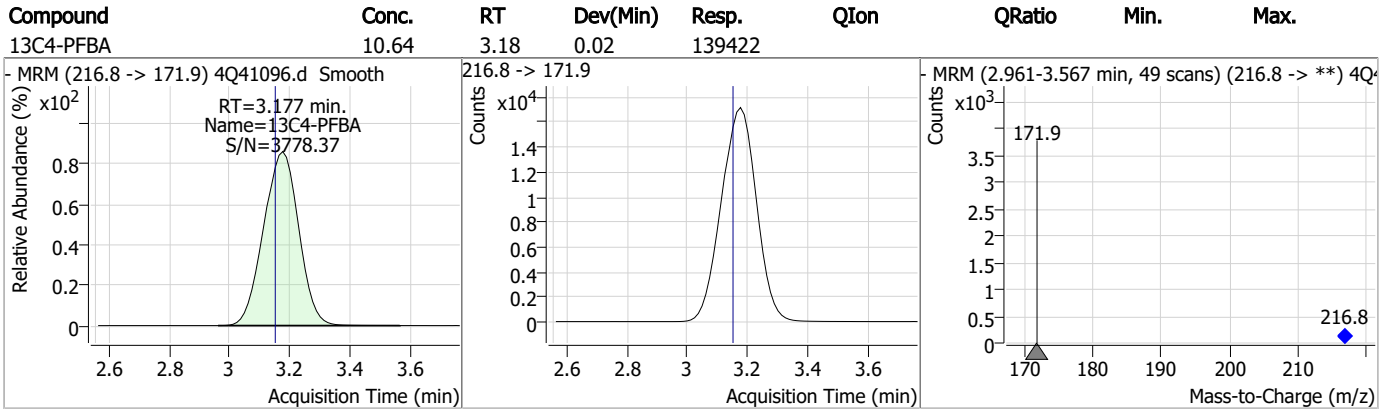
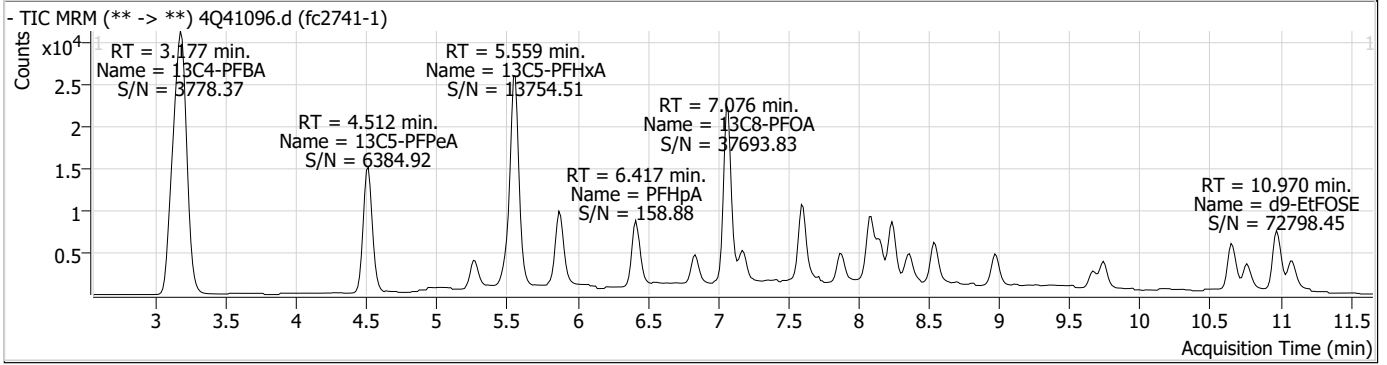
Perfluorinated Compounds by LC/MS/MS

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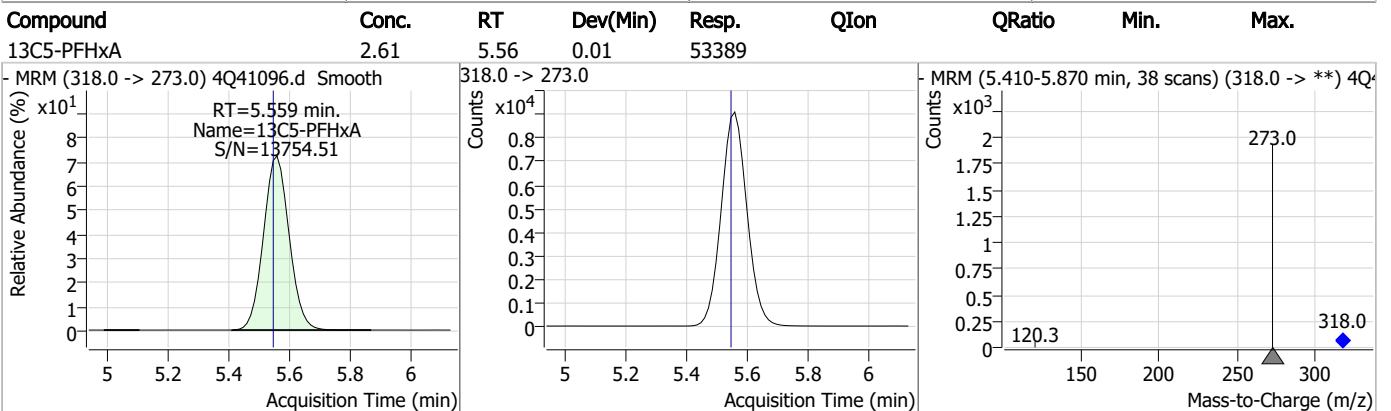
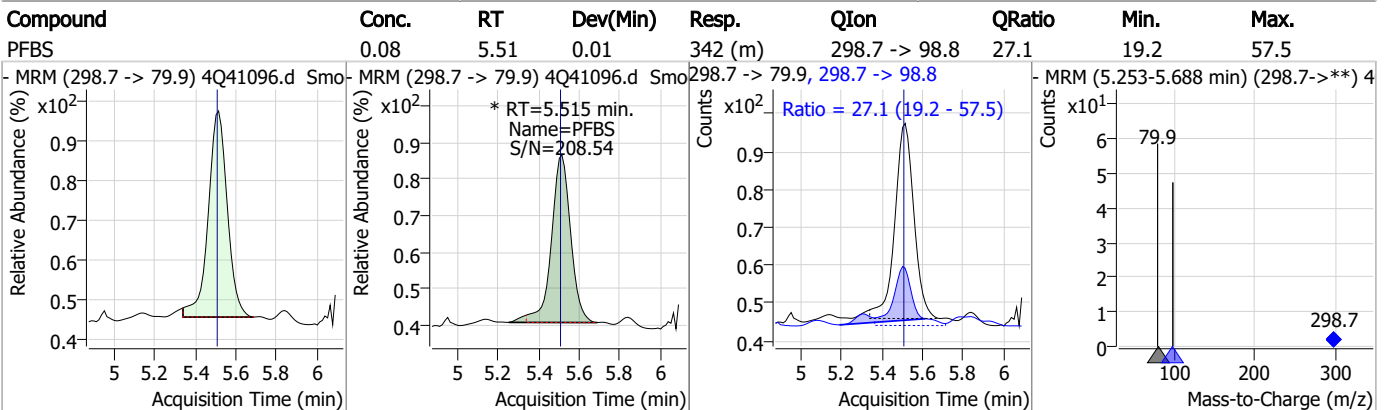
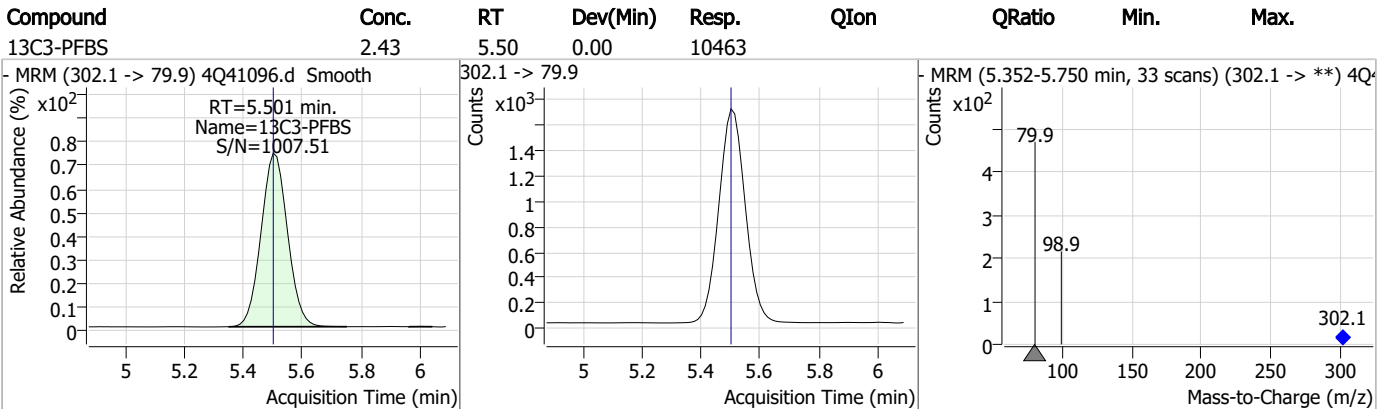
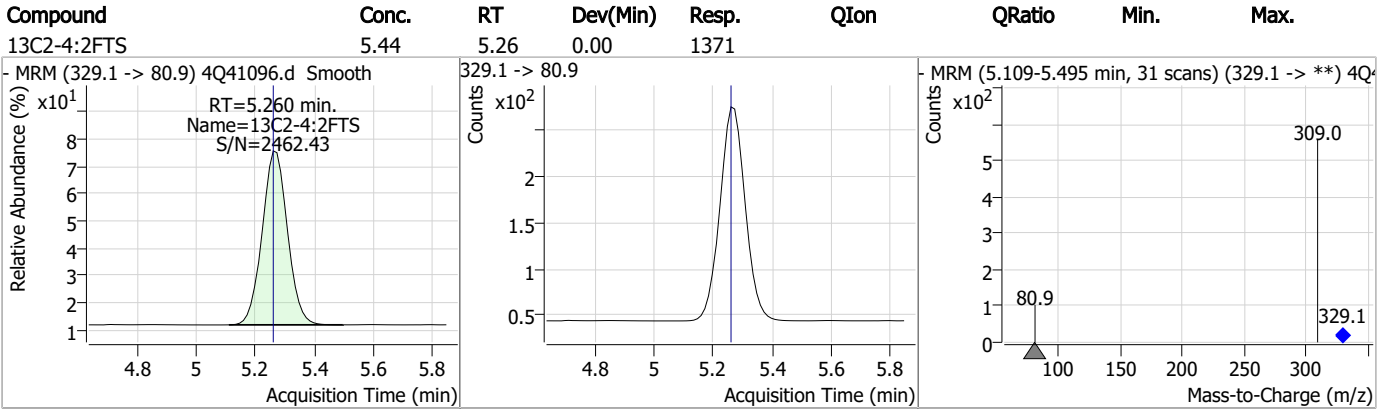
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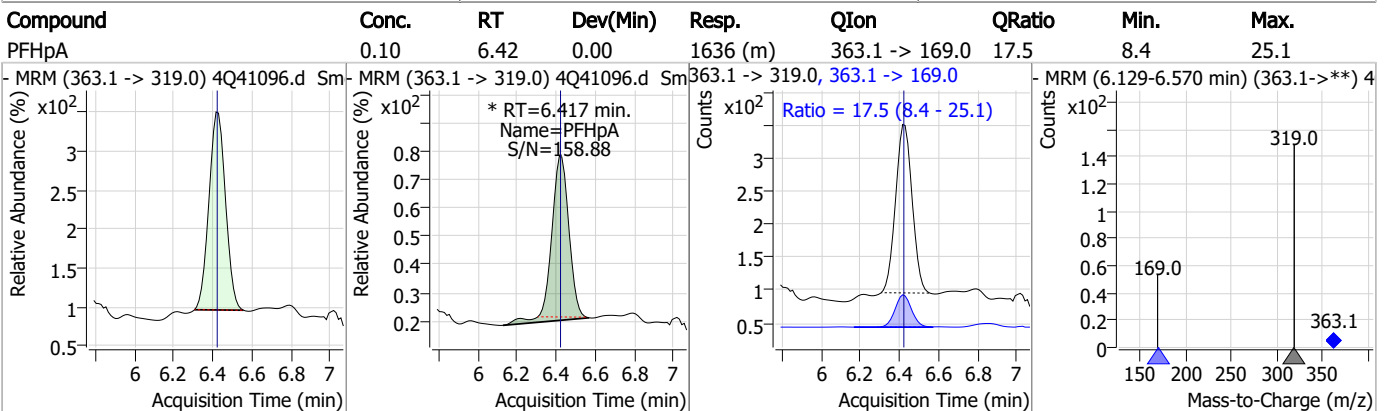
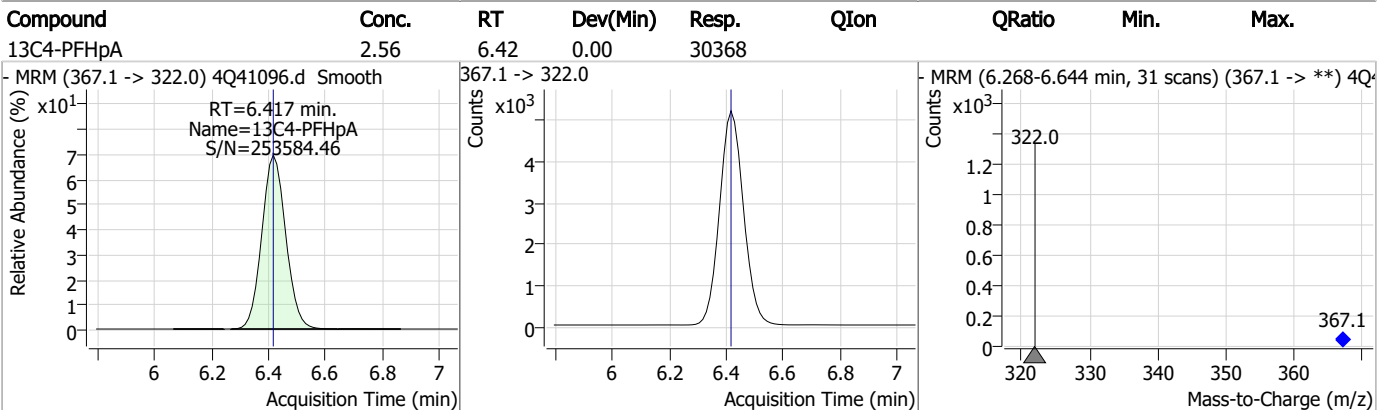
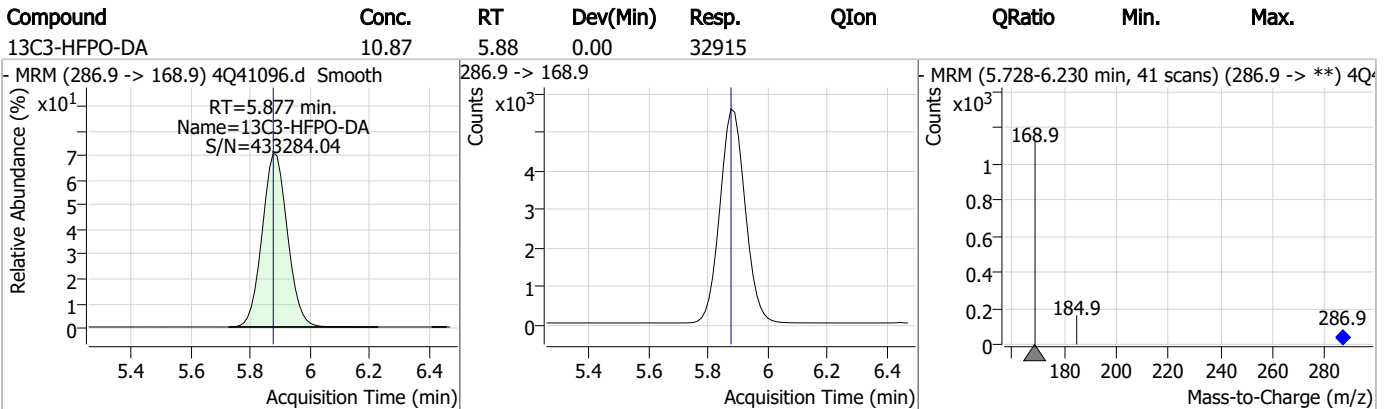
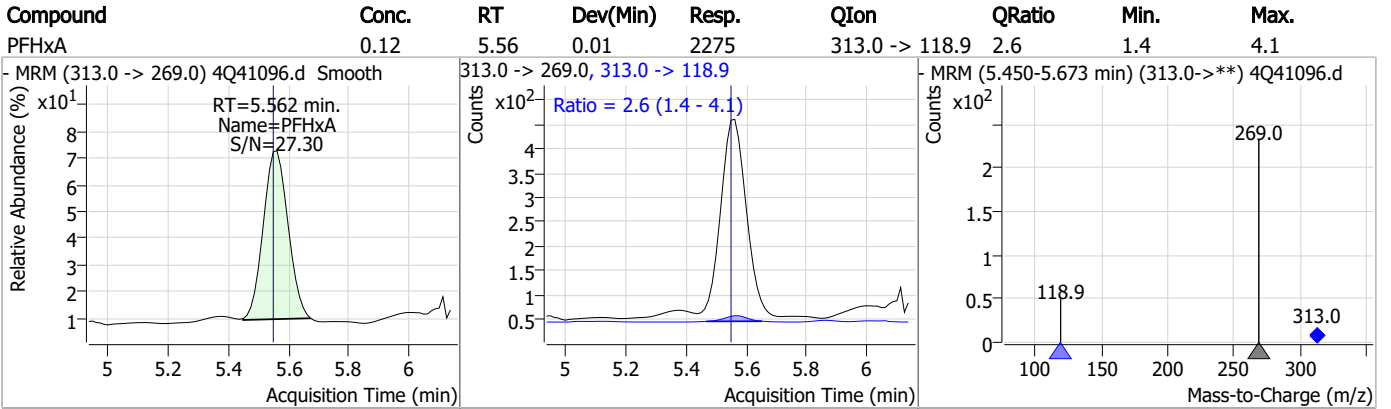
Perfluorinated Compounds by LC/MS/MS



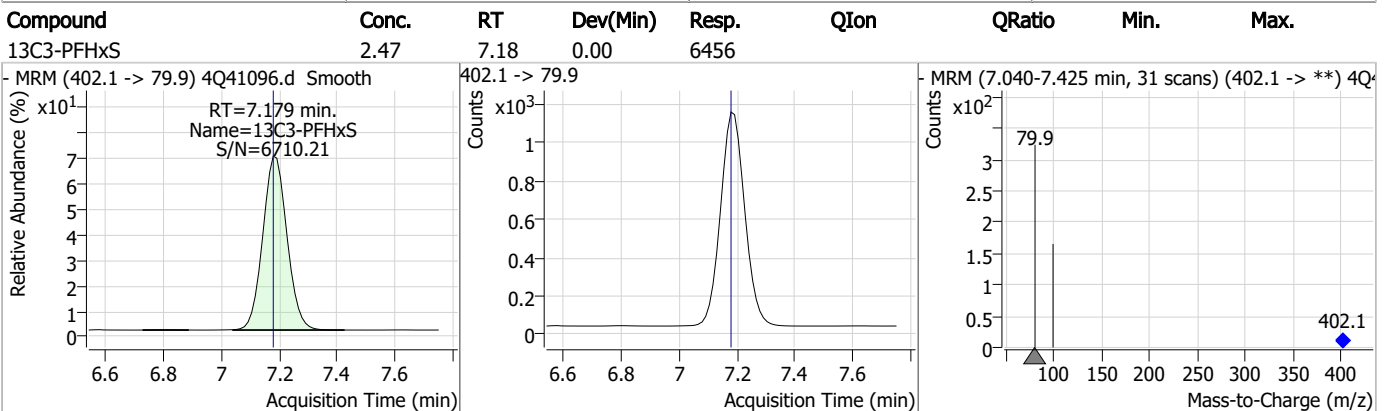
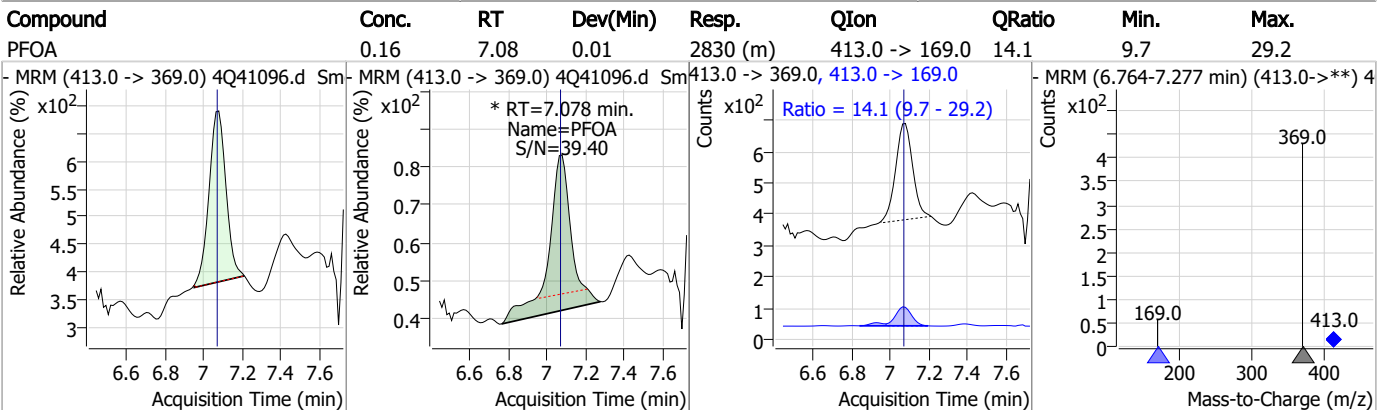
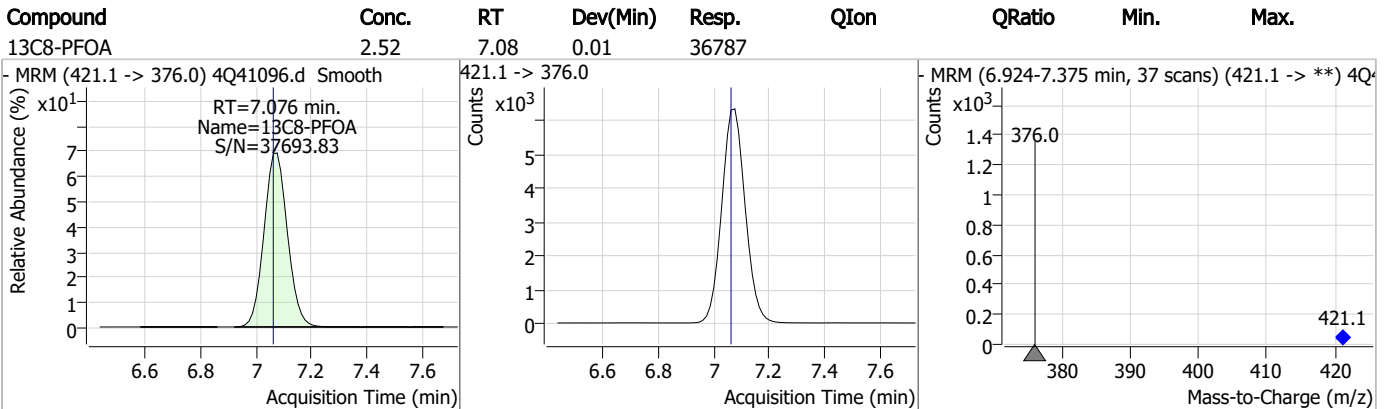
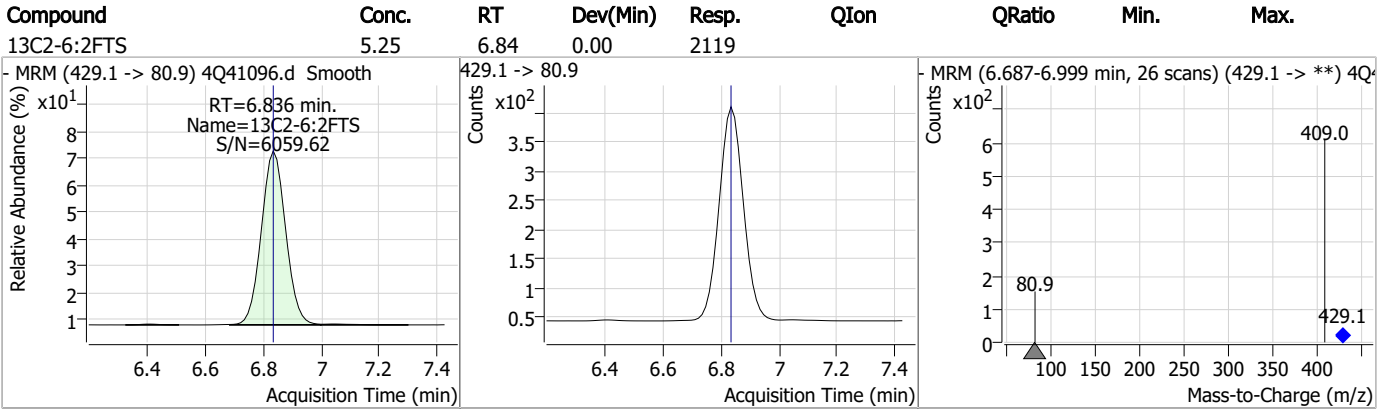
Perfluorinated Compounds by LC/MS/MS



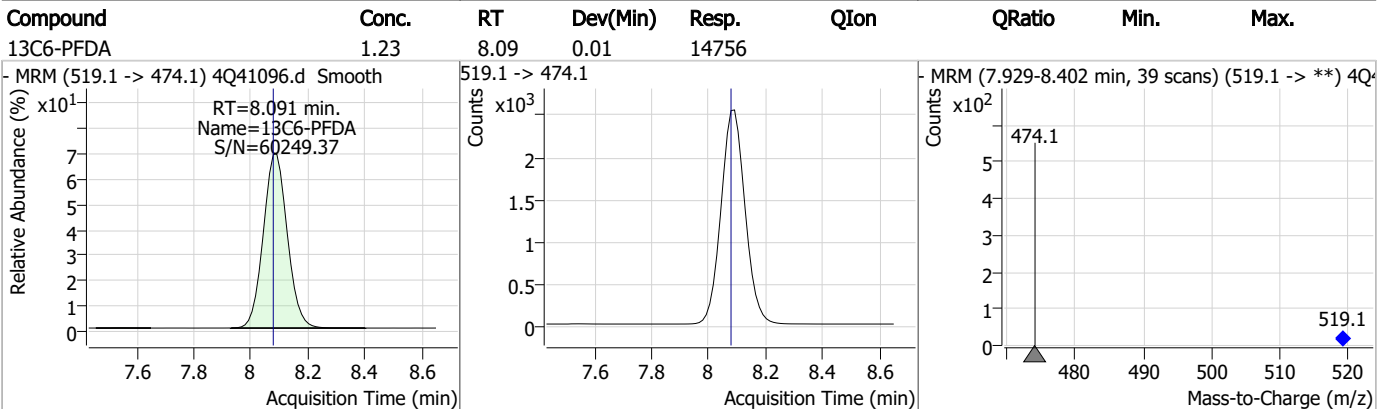
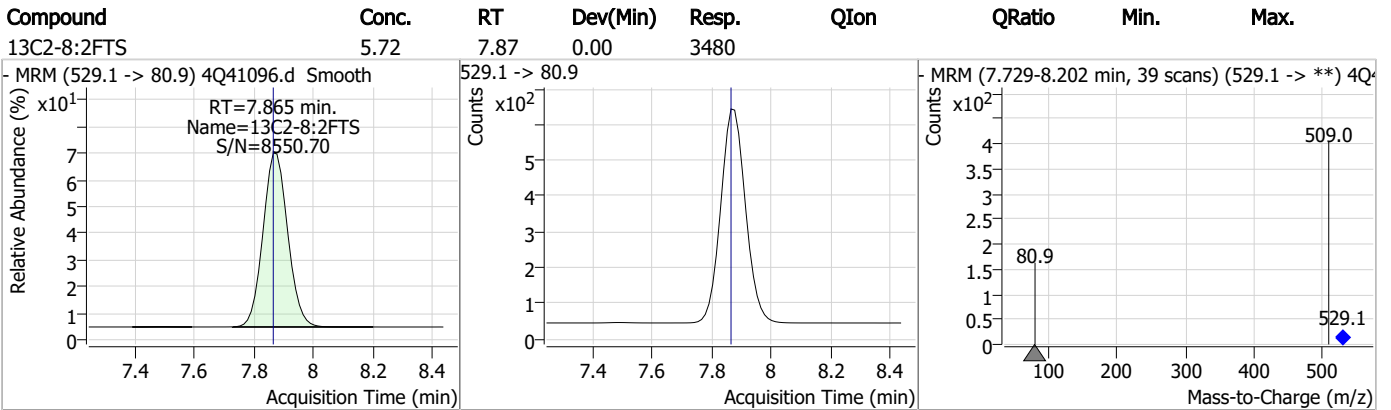
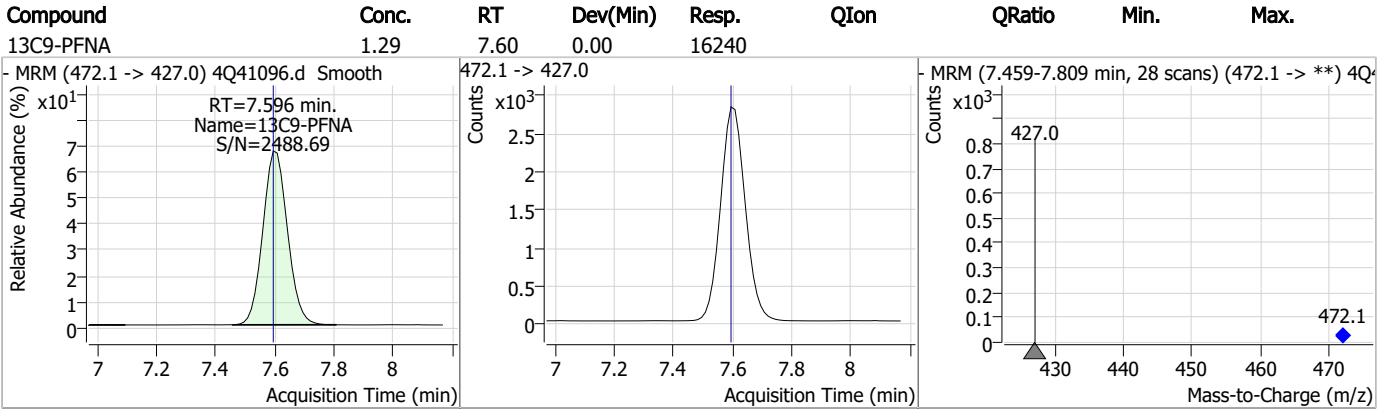
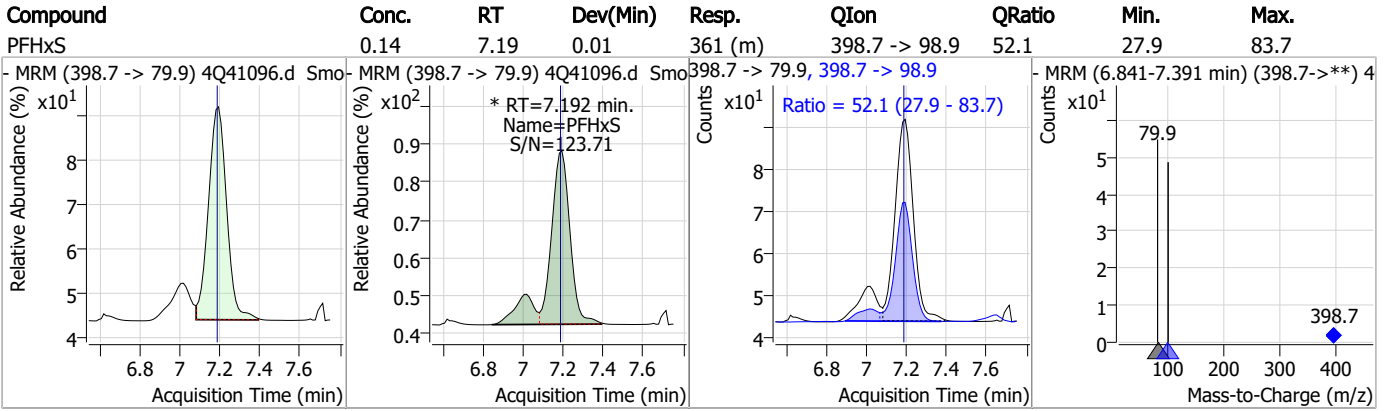
Perfluorinated Compounds by LC/MS/MS



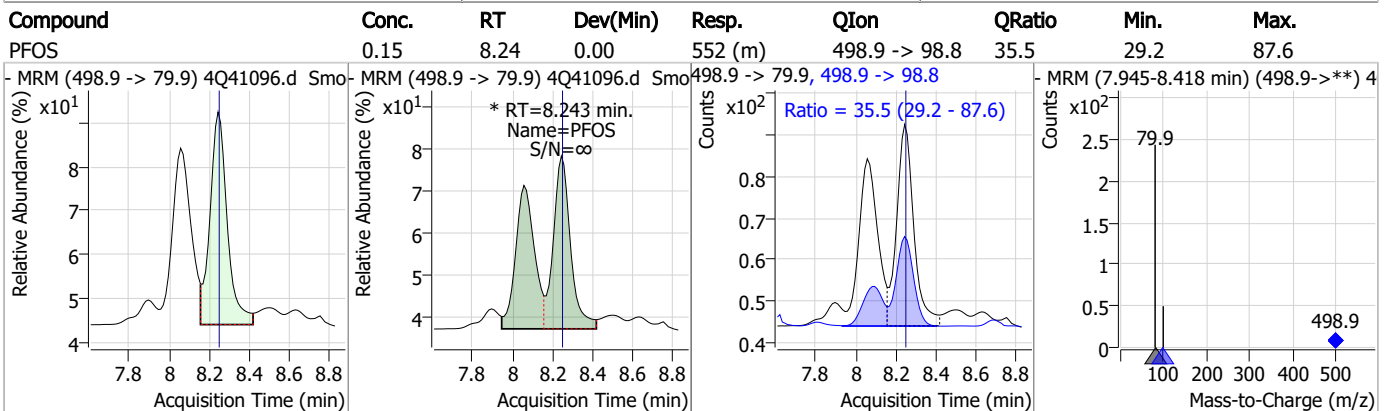
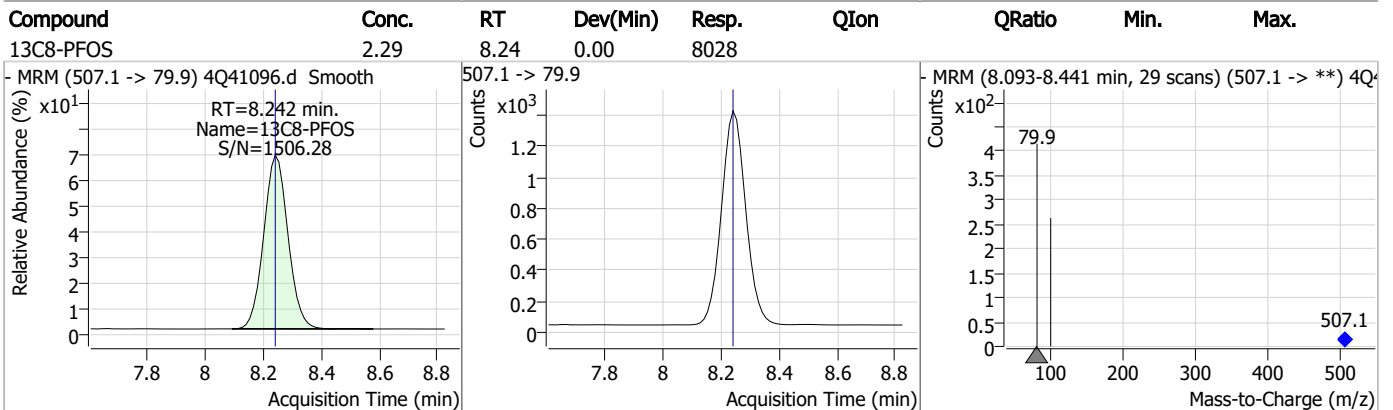
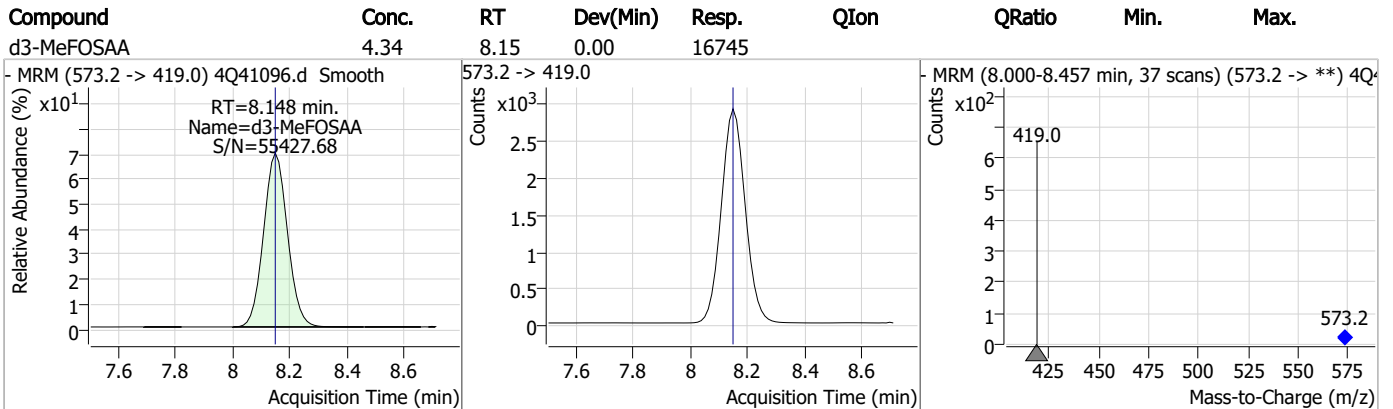
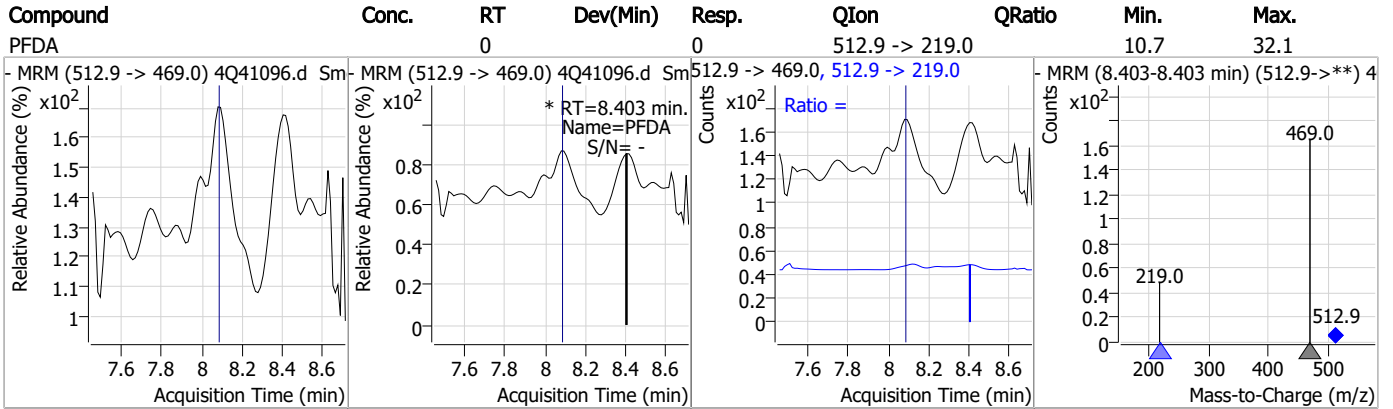
Perfluorinated Compounds by LC/MS/MS



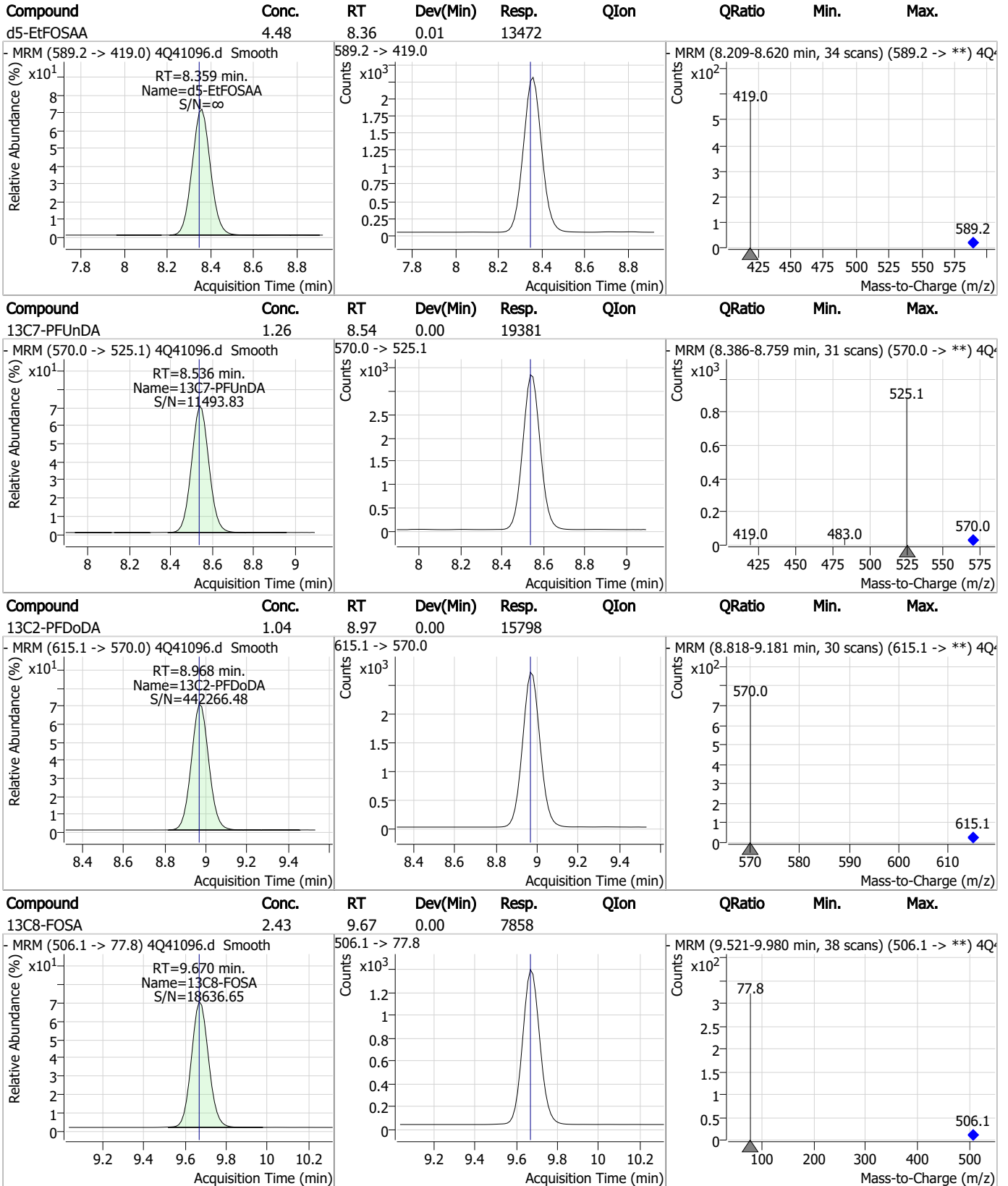
Perfluorinated Compounds by LC/MS/MS



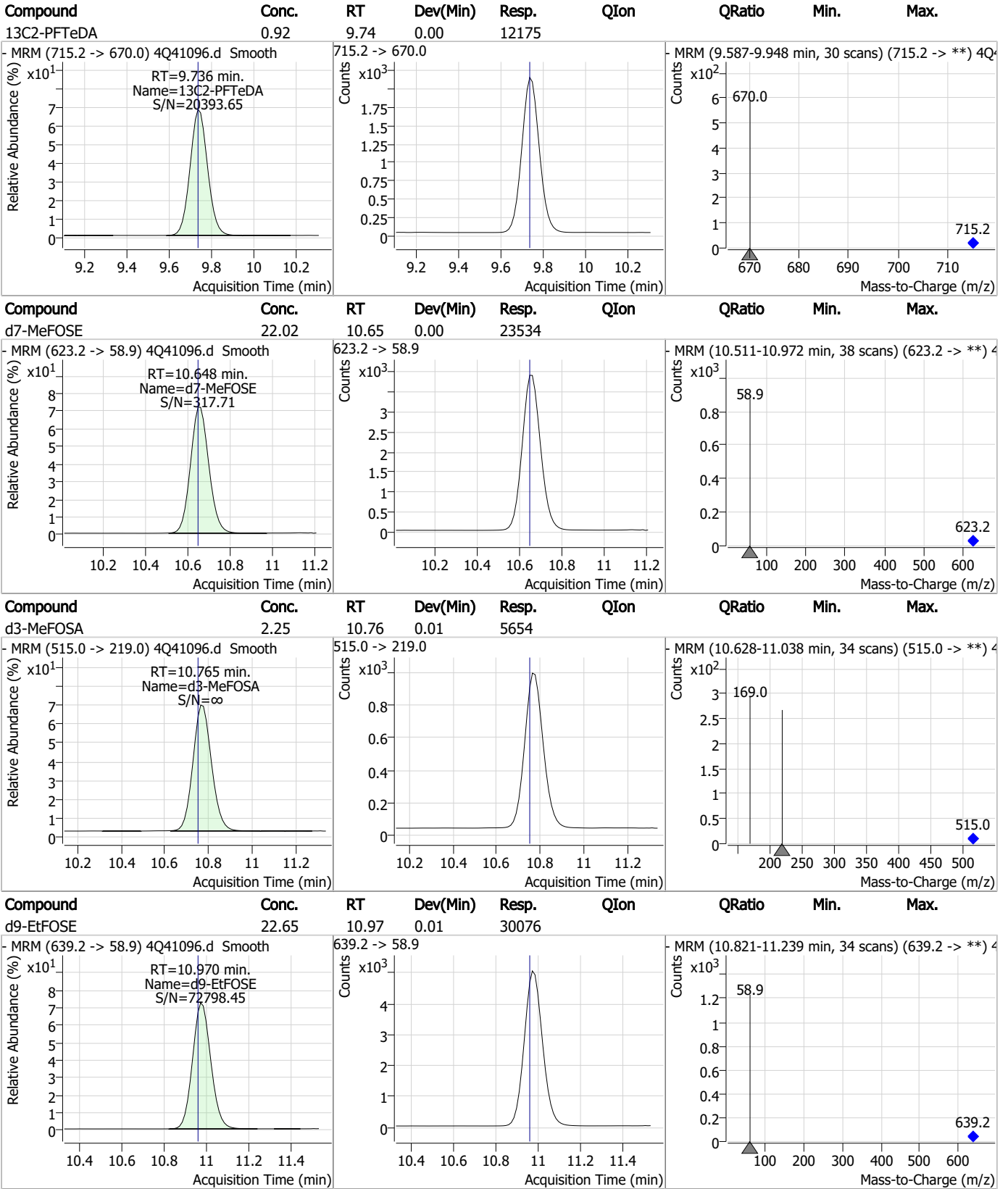
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

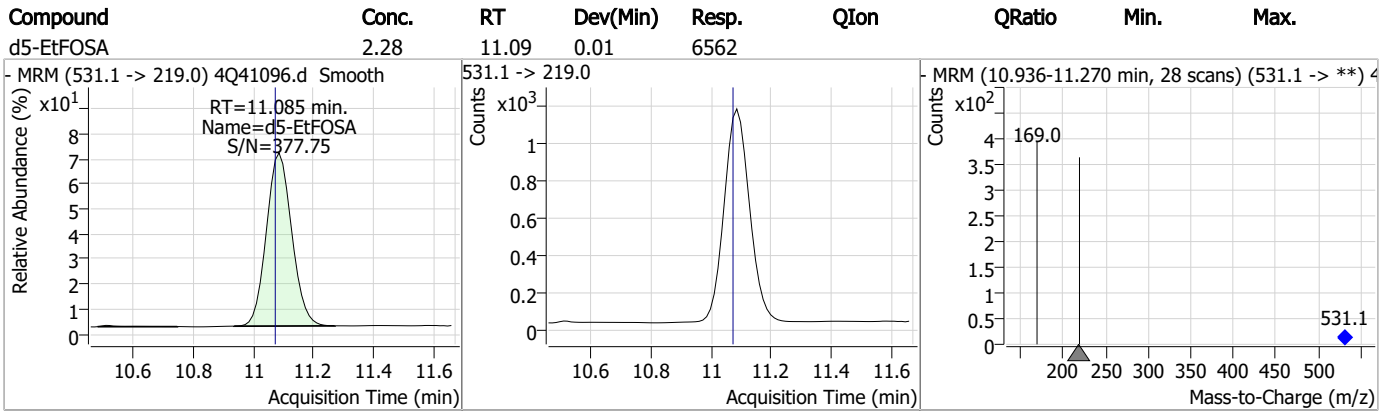


Perfluorinated Compounds by LC/MS/MS



7.1.1
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Perfluorinated Compounds by LC/MS/MS



7.1.1
7

Manual Integration Approval Summary

Sample Number: FC2741-1 Method: EPA DRAFT 1633
Lab FileID: 4Q41096.D Analyst approved: 02/23/23 14:29 Anna Ludwig
Injection Time: 02/23/23 01:31 Supervisor approved: 02/24/23 10:54 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanesulfonic acid	375-73-5		5.51	Split peak
Perfluoroheptanoic acid	375-85-9		6.42	Split peak
Perfluorooctanoic acid	335-67-1		7.08	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak

7.1.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41076.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 8:50:46 PM
 Sample Name : op95527-mb
 Vial : P4-C3
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95527,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.177	216.8 -> 171.9	137225	10.00 µg/L	0.025
M5-PFPeA	4.512	268.3 -> 223.0	67814	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	51058	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	30313	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	37092	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	15635	1.25 µg/L	0.000
M6-PFDA	8.091	519.1 -> 474.1	16243	1.25 µg/L	0.012
M7-PFUnDA	8.548	570.0 -> 525.1	18719	1.25 µg/L	0.012
M2-PFDoDA	8.980	615.1 -> 570.0	16832	1.25 µg/L	0.012
M2-PFTeDA	9.749	715.2 -> 670.0	13507	1.25 µg/L	0.012
M8-FOSA	9.682	506.1 -> 77.8	7954	2.50 µg/L	0.012
M3-PFBS	5.501	302.1 -> 79.9	10237	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	6920	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	8765	2.50 µg/L	0.000
M2-4:2FTS	5.272	329.1 -> 80.9	1486	5.00 µg/L	0.012
M2-6:2FTS	6.836	429.1 -> 80.9	2138	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3240	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	20077	5.00 µg/L	0.000
M3-HFPO-DA	5.877	286.9 -> 168.9	30274	10.00 µg/L	0.000
M5-EtFOSAA	8.359	589.2 -> 419.0	13696	5.00 µg/L	0.012
M7-MeFOSE	10.648	623.2 -> 58.9	24041	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	30192	25.00 µg/L	0.012
M5-EtFOSA	11.073	531.1 -> 219.0	6672	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	5786	2.50 µg/L	0.012
13C4-PFOS	8.243	502.8 -> 79.9	9597	2.50 µg/L	0.000
13C3-PFBA	3.168	216.0 -> 172.0	84211	5.00 µg/L	0.012
18O2-PFHxS	7.178	403.0 -> 83.9	4775	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	46723	2.50 µg/L	0.000
13C2-PFDA	8.091	515.1 -> 470.1	17695	1.25 µg/L	0.012
13C5-PFNA	7.596	468.0 -> 423.0	20249	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	50279	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	1486	5.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.0%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2138	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3240	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C2-PFDoDA	8.980	615.1 -> 570.0	16832	0.91 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 72.9%		
13C2-PFTeDA	9.749	715.2 -> 670.0	13507	0.84 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 67.2%		
13C3-PFBS	5.501	302.1 -> 79.9	10237	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C3-PFHxS	7.179	402.1 -> 79.9	6920	2.58 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 = 103.4%	
13C4-PFBA	3.177	216.8 -> 171.9	137225	9.84 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C4-PFHpA	6.417	367.1 -> 322.0	30313	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C5-PFHxA	5.559	318.0 -> 273.0	51058	2.31 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.5%	
13C5-PFPeA	4.512	268.3 -> 223.0	67814	4.78 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C6-PFDA	8.091	519.1 -> 474.1	16243	1.11 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.2%	
13C7-PFUnDA	8.548	570.0 -> 525.1	18719	1.00 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 80.0%	
13C8-FOSA	9.682	506.1 -> 77.8	7954	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.7%	
13C8-PFOA	7.062	421.1 -> 376.0	37092	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C8-PFOS	8.242	507.1 -> 79.9	8765	2.28 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.3%	
13C9-PFNA	7.596	472.1 -> 427.0	15635	1.13 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.7%	
d3-MeFOSAA	8.148	573.2 -> 419.0	20077	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	30274	9.25 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.5%	
d3-MeFOSA	10.765	515.0 -> 219.0	5786	2.10 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.1%	
d5-EtFOSAA	8.359	589.2 -> 419.0	13696	4.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 83.2%	
d7-MeFOSE	10.648	623.2 -> 58.9	24041	20.55 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.2%	
d9-EtFOSE	10.970	639.2 -> 58.9	30192	20.77 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.1%	
d5-EtFOSA	11.073	531.1 -> 219.0	6672	2.12 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.8%	

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	8.403	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.2.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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	7.221	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.051	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.212	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.1
7

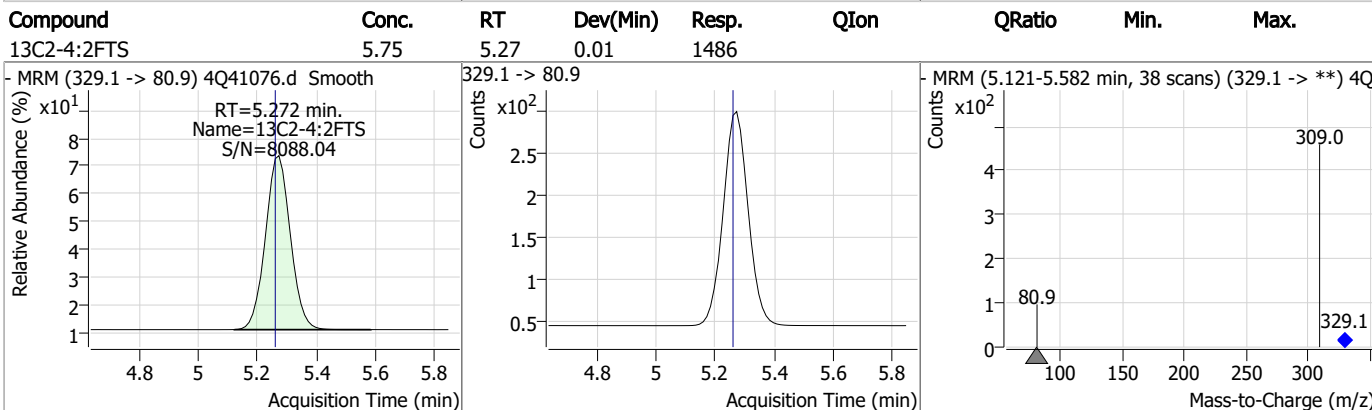
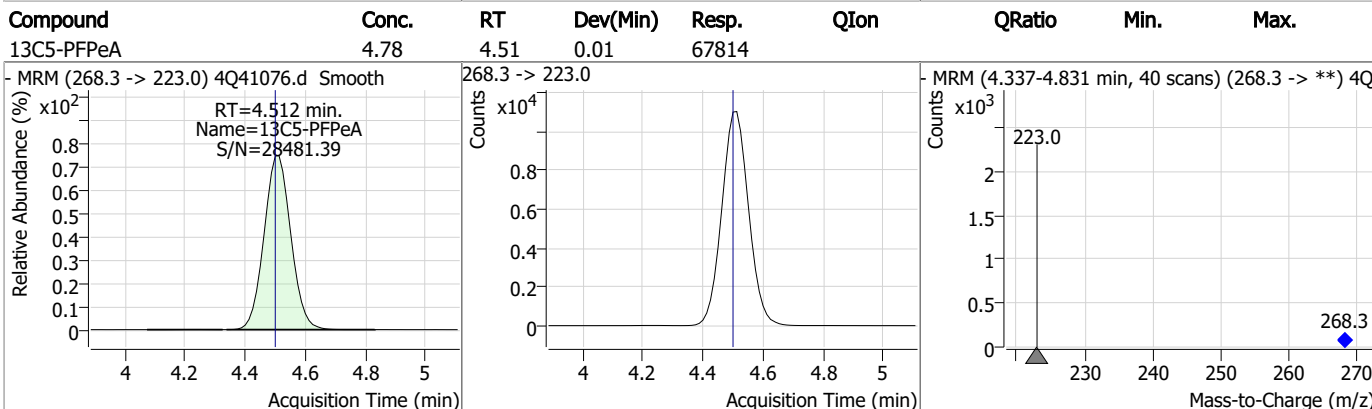
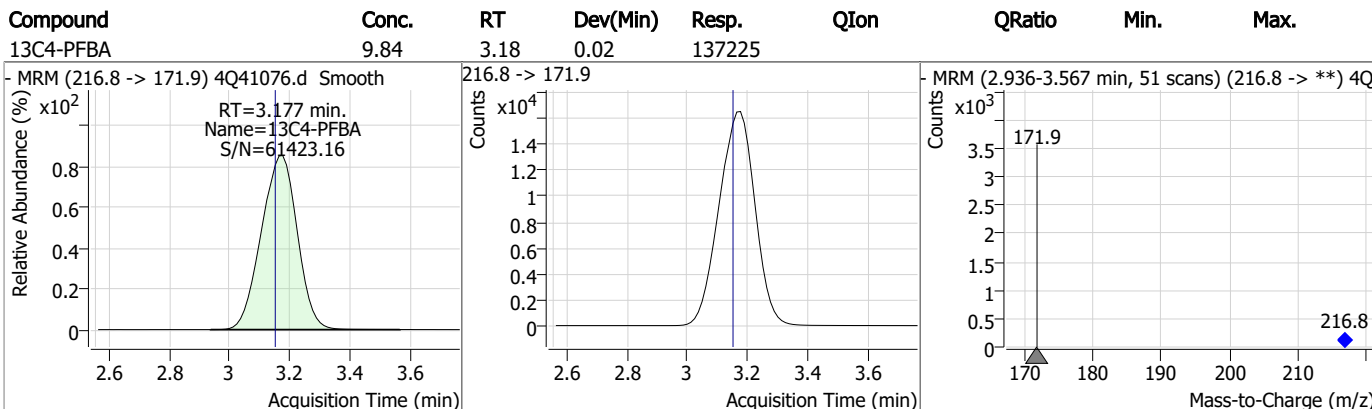
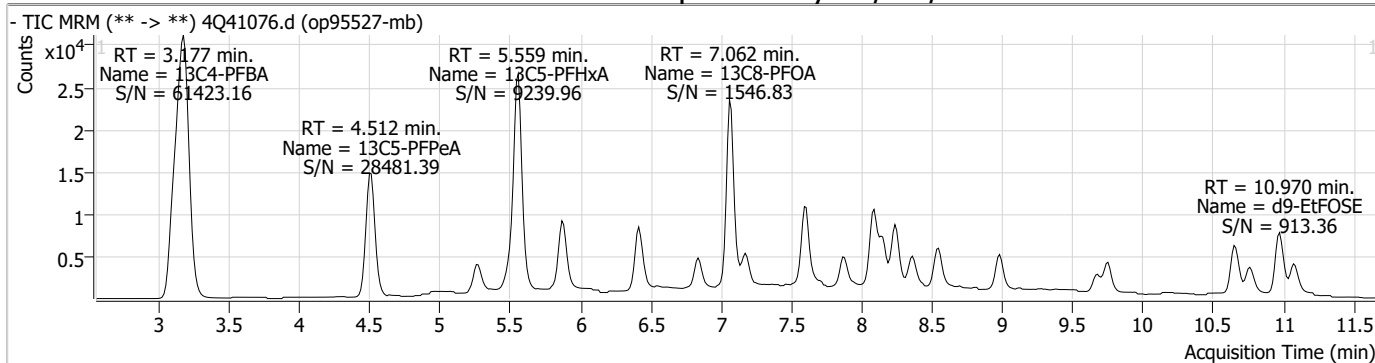
Perfluorinated Compounds by LC/MS/MS

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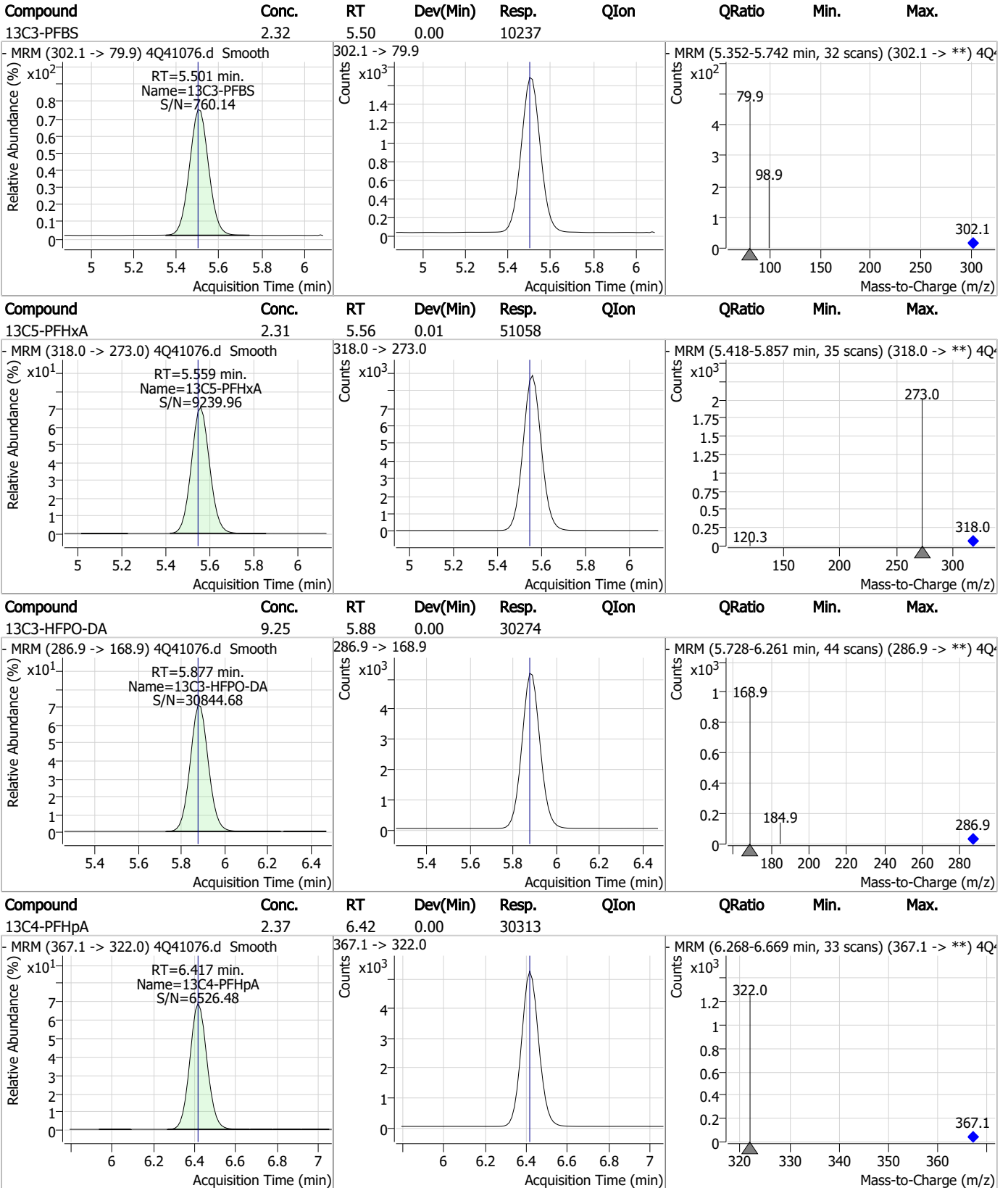
7.2.1

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Perfluorinated Compounds by LC/MS/MS



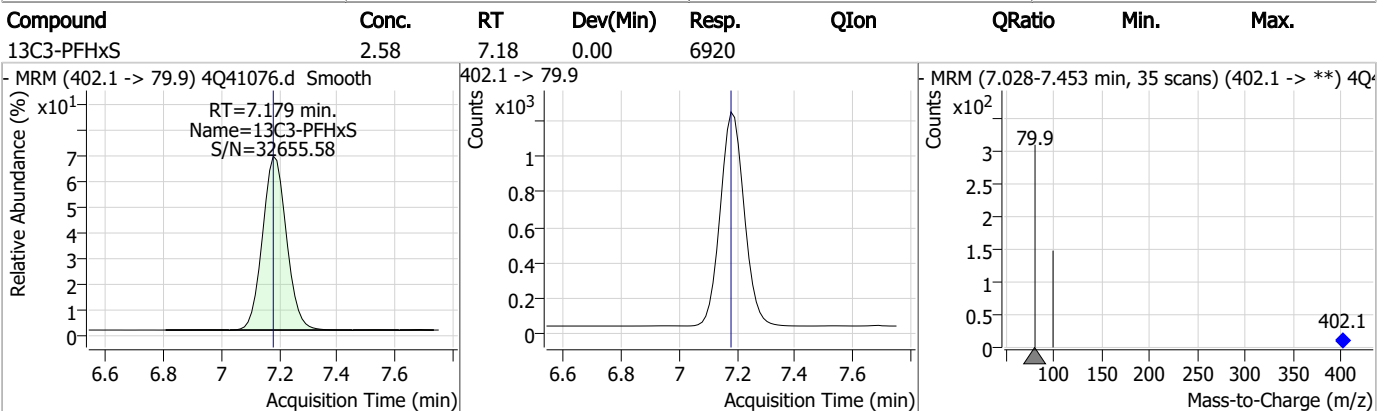
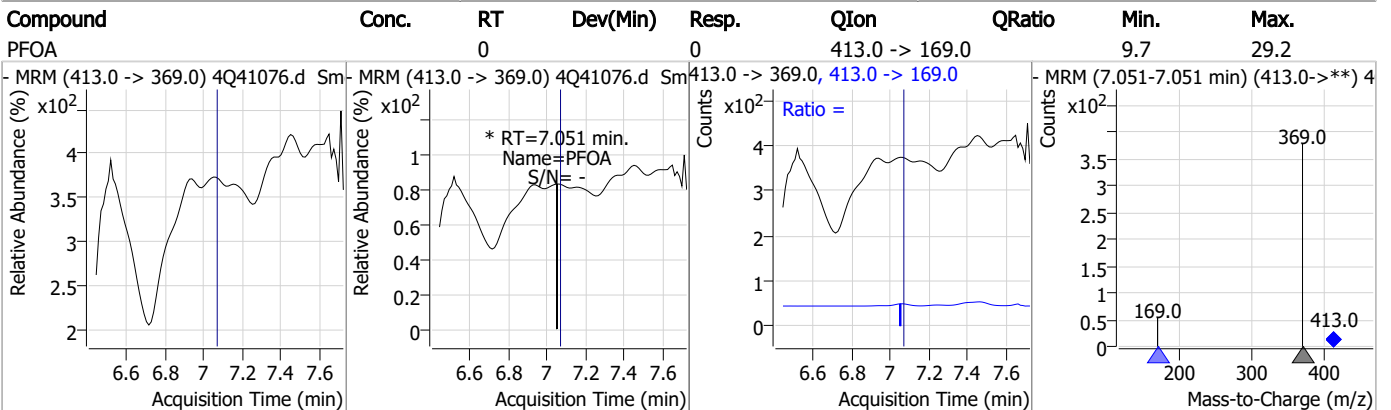
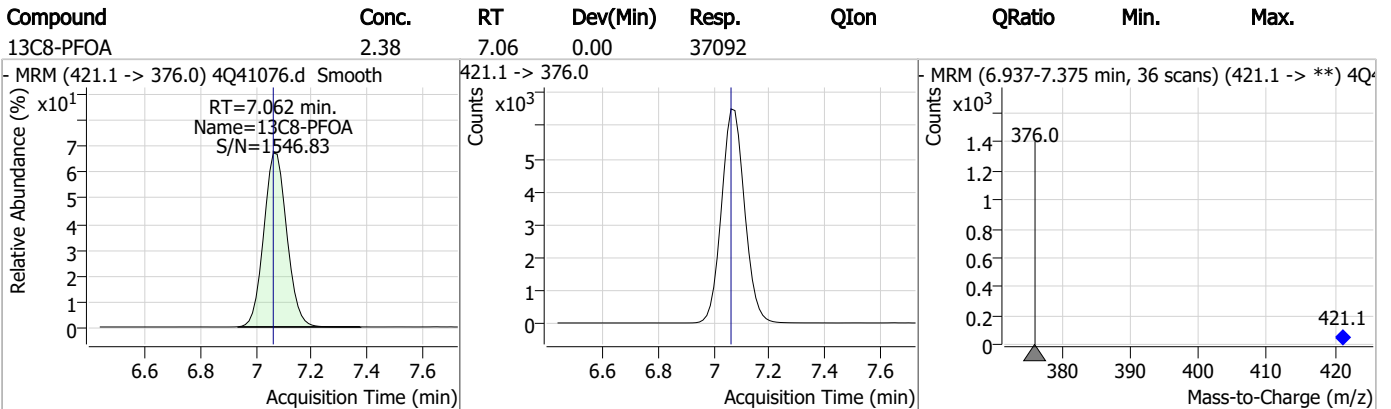
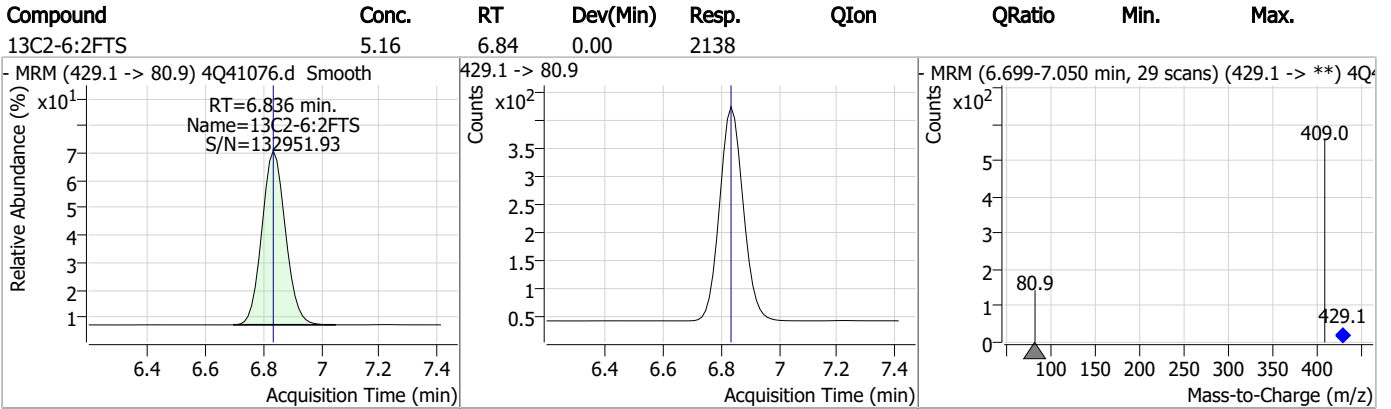
Perfluorinated Compounds by LC/MS/MS



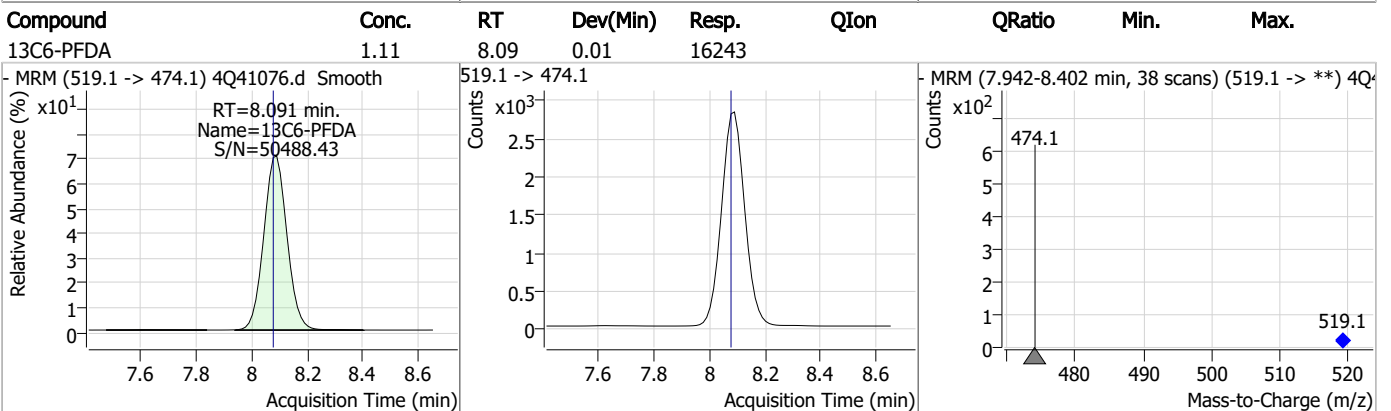
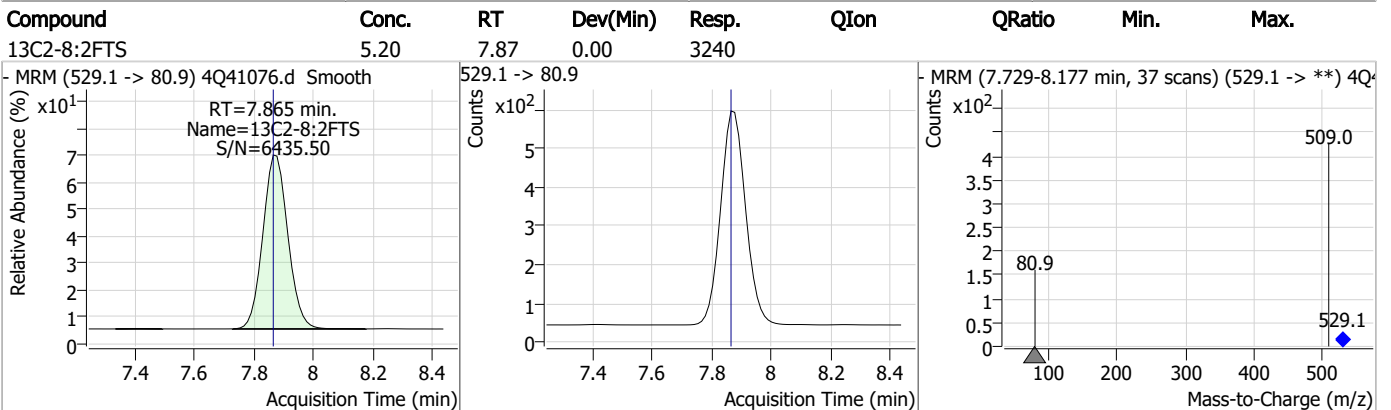
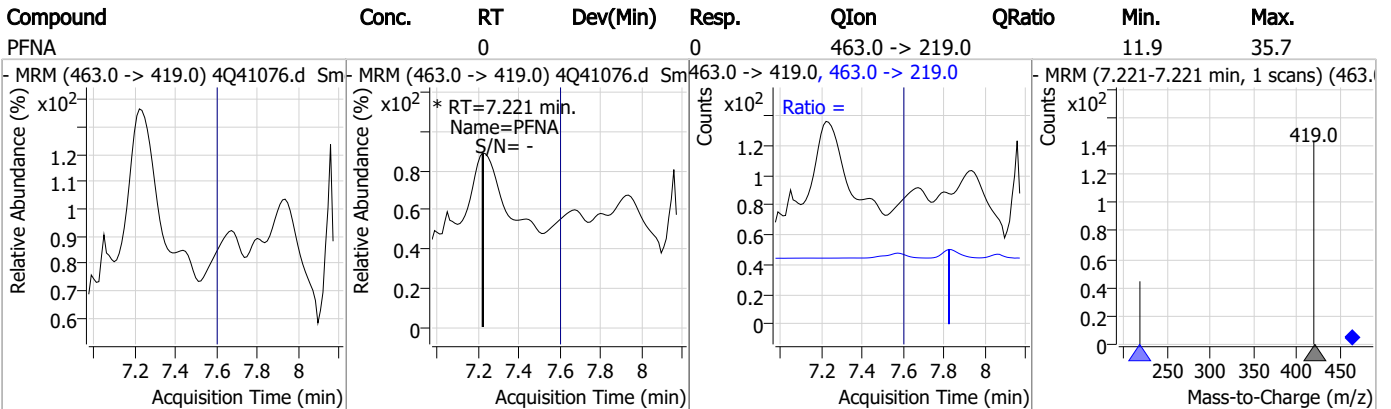
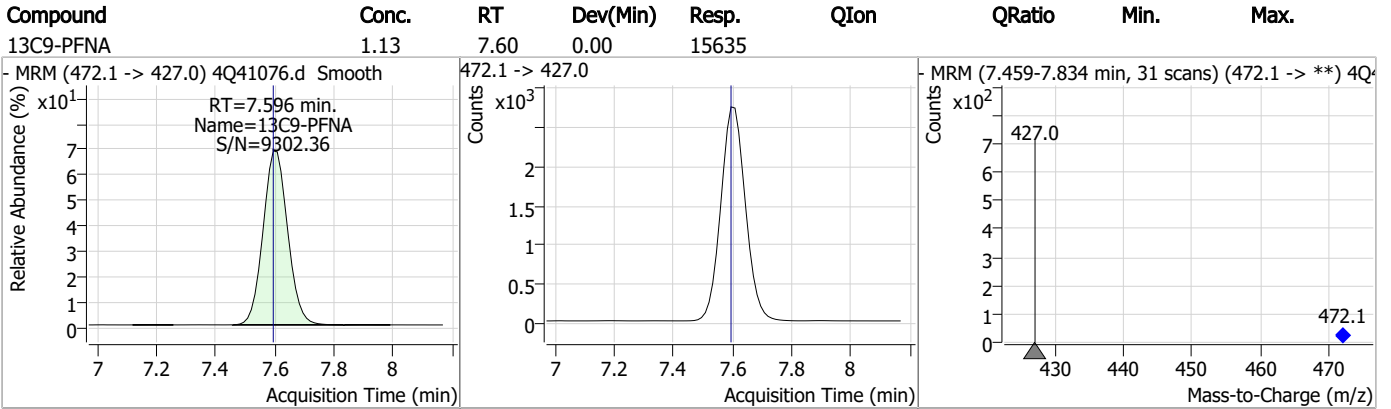
7.2.1

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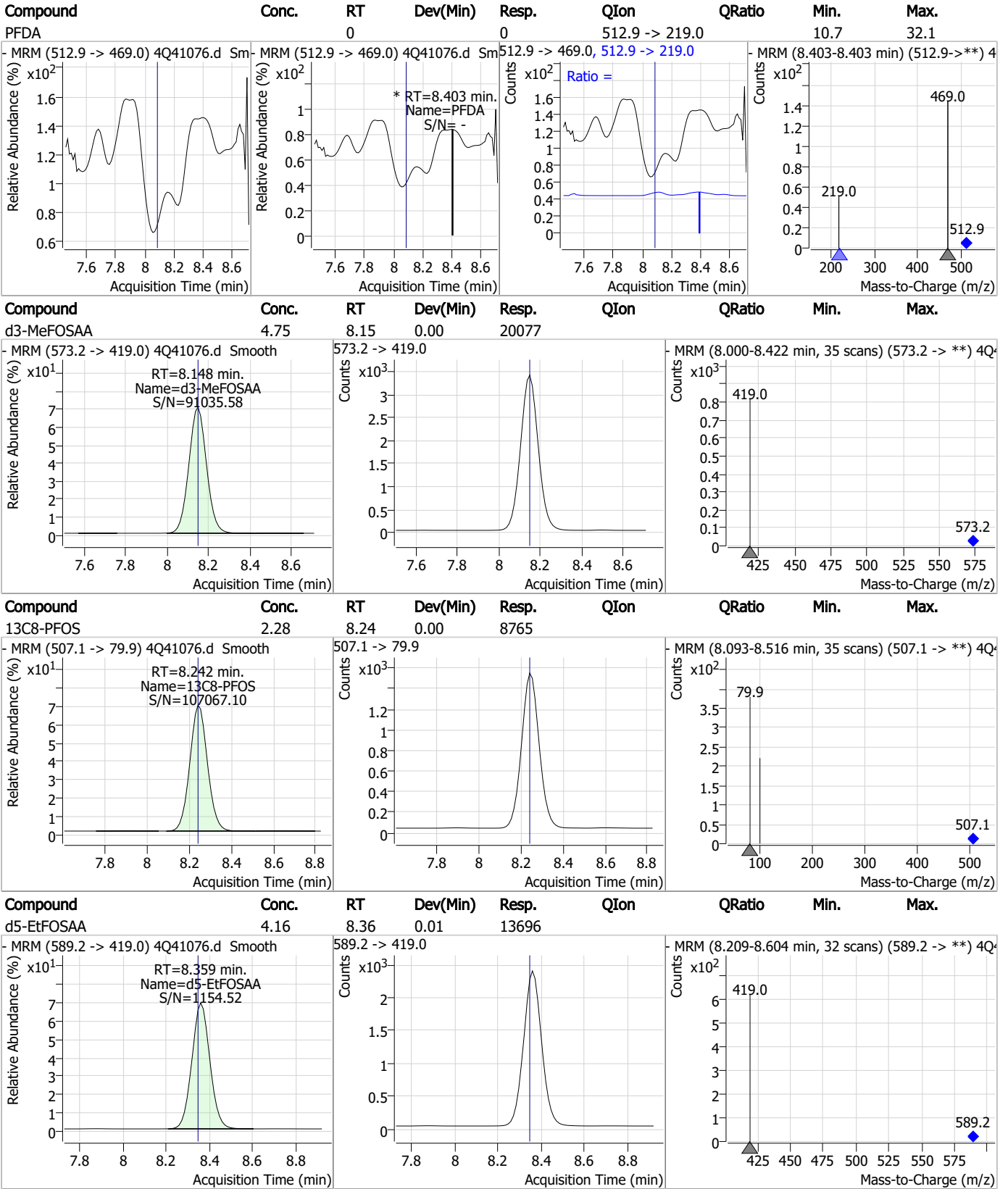
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

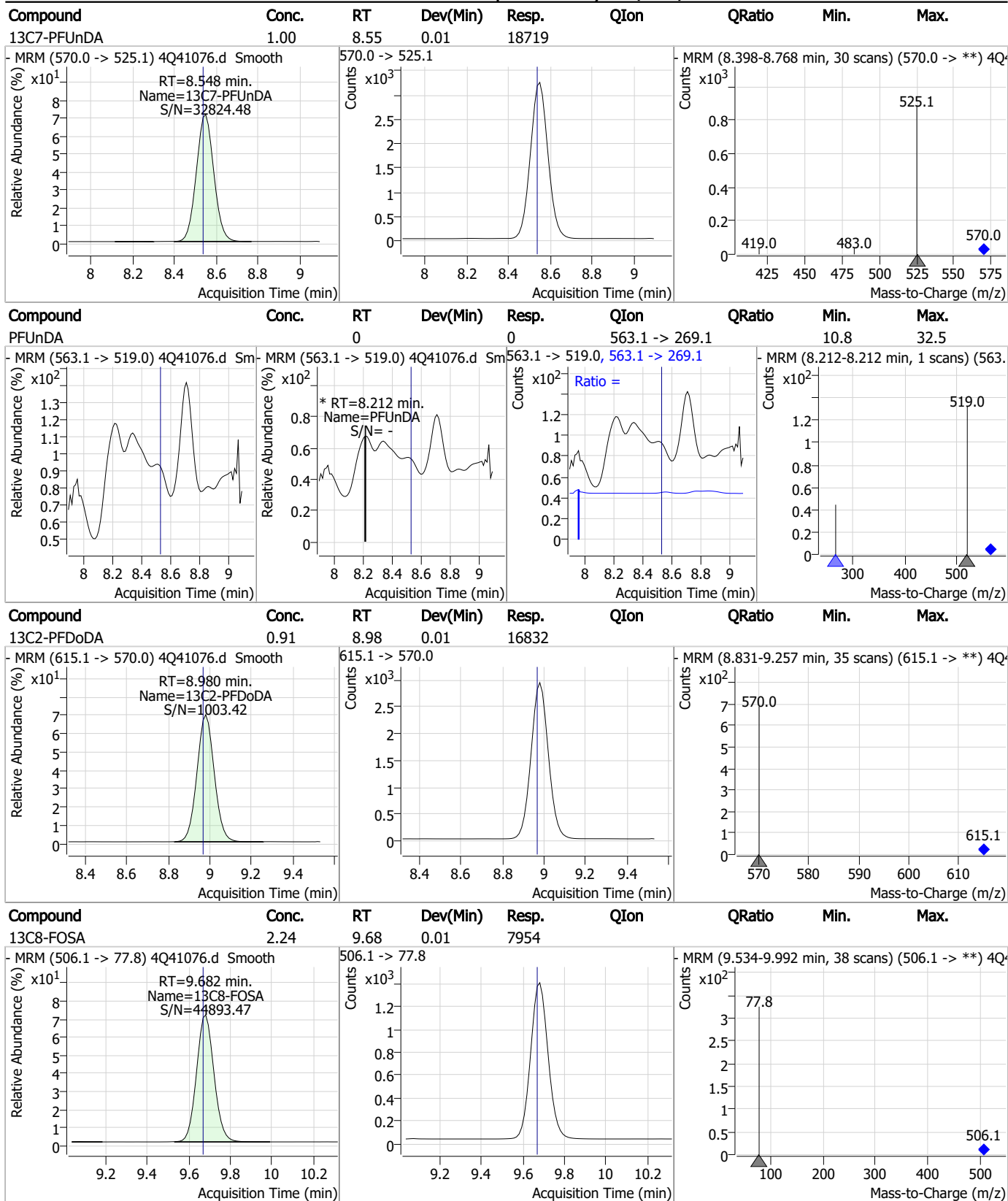


7.2.1

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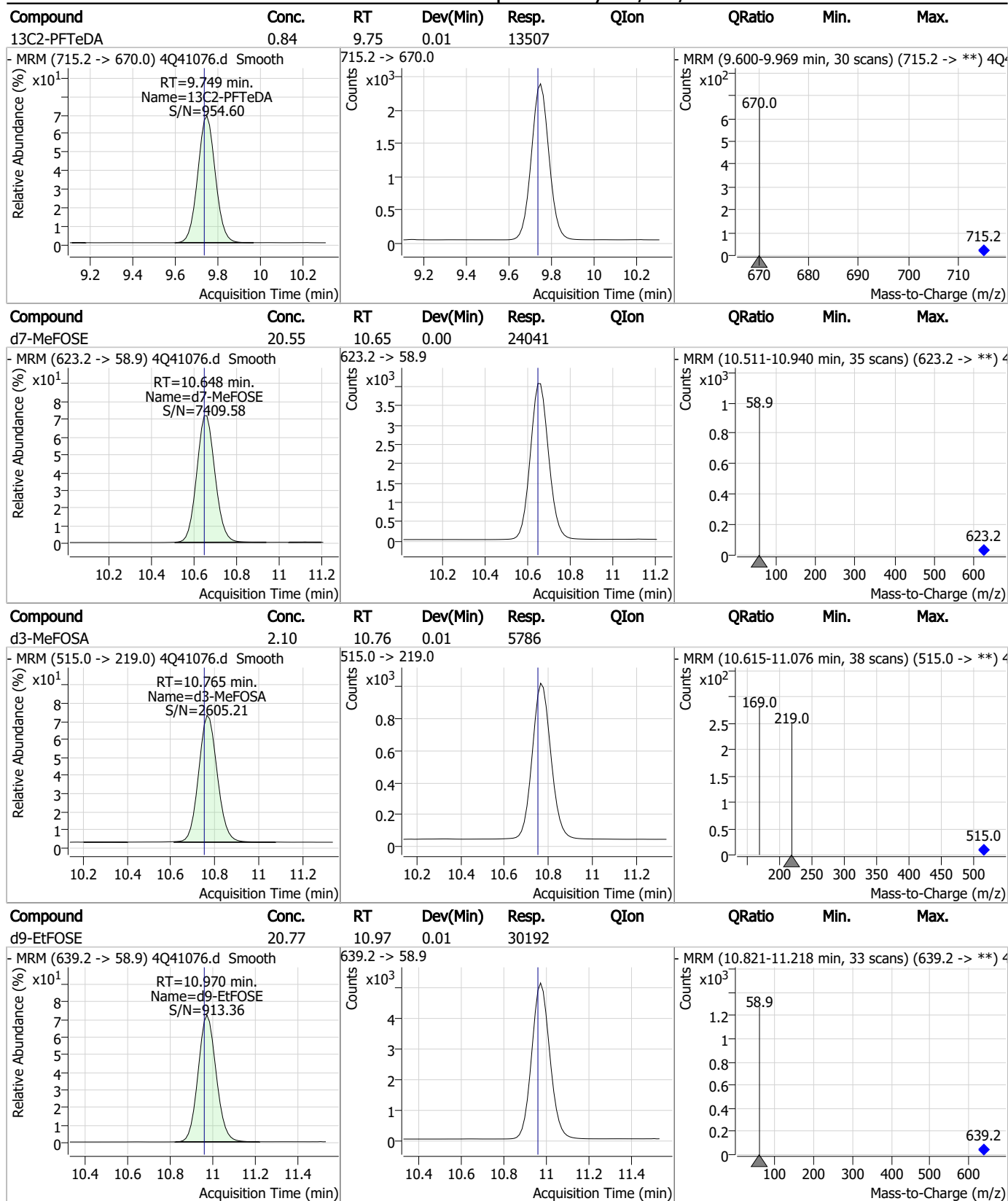


Perfluorinated Compounds by LC/MS/MS



7.2.1
7

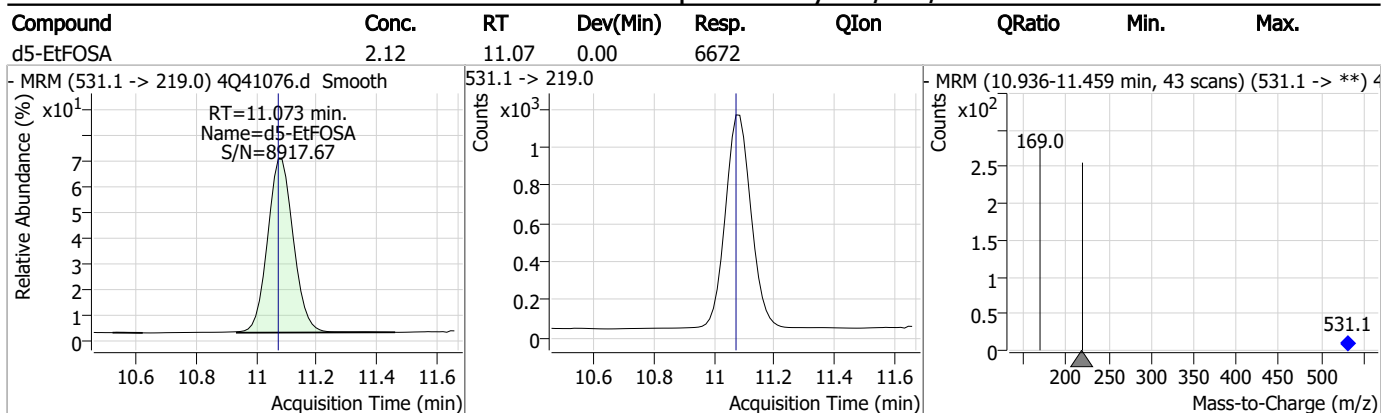
Perfluorinated Compounds by LC/MS/MS



7.2.1
7



Perfluorinated Compounds by LC/MS/MS



7.2.1

7

Perfluorinated Compounds by LC/MS/MS

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 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 6:16:13 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	140496	10.00 µg/L	-0.013
M5-PFPeA	4.500	268.3 -> 223.0	72937	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	58611	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	33904	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	42382	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	17381	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	16819	1.25 µg/L	0.000
M7-PFUnDA	8.548	570.0 -> 525.1	22364	1.25 µg/L	0.012
M2-PFDoDA	8.980	615.1 -> 570.0	20613	1.25 µg/L	0.012
M2-PFTeDA	9.749	715.2 -> 670.0	17858	1.25 µg/L	0.012
M8-FOSA	9.670	506.1 -> 77.8	8688	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	11824	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7339	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	9574	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1645	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2615	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3961	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	21567	5.00 µg/L	0.000
M3-HFPO-DA	5.877	286.9 -> 168.9	33379	10.00 µg/L	0.000
M5-EtFOSAA	8.359	589.2 -> 419.0	16278	5.00 µg/L	0.012
M7-MeFOSE	10.648	623.2 -> 58.9	28710	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	35364	25.00 µg/L	0.012
M5-EtFOSA	11.073	531.1 -> 219.0	7782	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	6758	2.50 µg/L	0.012
13C4-PFOS	8.243	502.8 -> 79.9	9209	2.50 µg/L	0.000
13C3-PFBA	3.143	216.0 -> 172.0	84918	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	4978	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	48891	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16226	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	20316	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	53415	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1645	6.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.1%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2615	6.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.2%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3961	6.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.9%		
13C2-PFDoDA	8.980	615.1 -> 570.0	20613	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C2-PFTeDA	9.749	715.2 -> 670.0	17858	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C3-PFBS	5.501	302.1 -> 79.9	11824	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C3-PFHxS	7.179	402.1 -> 79.9	7339	2.63 µg/L	0.000

7.2.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C4-PFBA	3.139	216.8 -> 171.9	140496	9.99 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.417	367.1 -> 322.0	33904	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C5-PFHxA	5.546	318.0 -> 273.0	58611	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFPeA	4.500	268.3 -> 223.0	72937	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C6-PFDA	8.079	519.1 -> 474.1	16819	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C7-PFUnDA	8.548	570.0 -> 525.1	22364	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C8-FOSA	9.670	506.1 -> 77.8	8688	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-PFOA	7.062	421.1 -> 376.0	42382	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOS	8.242	507.1 -> 79.9	9574	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C9-PFNA	7.596	472.1 -> 427.0	17381	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
d3-MeFOSAA	8.148	573.2 -> 419.0	21567	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	33379	9.60 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.0%	
d3-MeFOSA	10.765	515.0 -> 219.0	6758	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
d5-EtFOSAA	8.359	589.2 -> 419.0	16278	5.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.0%	
d7-MeFOSE	10.648	623.2 -> 58.9	28710	25.57 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
d9-EtFOSE	10.970	639.2 -> 58.9	35364	25.35 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
d5-EtFOSA	11.073	531.1 -> 219.0	7782	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	

7.2.2
7

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



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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	7.063	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	8.243	413.0 -> 169.0	0	µg/L	m	1
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	0	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.710	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1				
11CI-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9CI-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

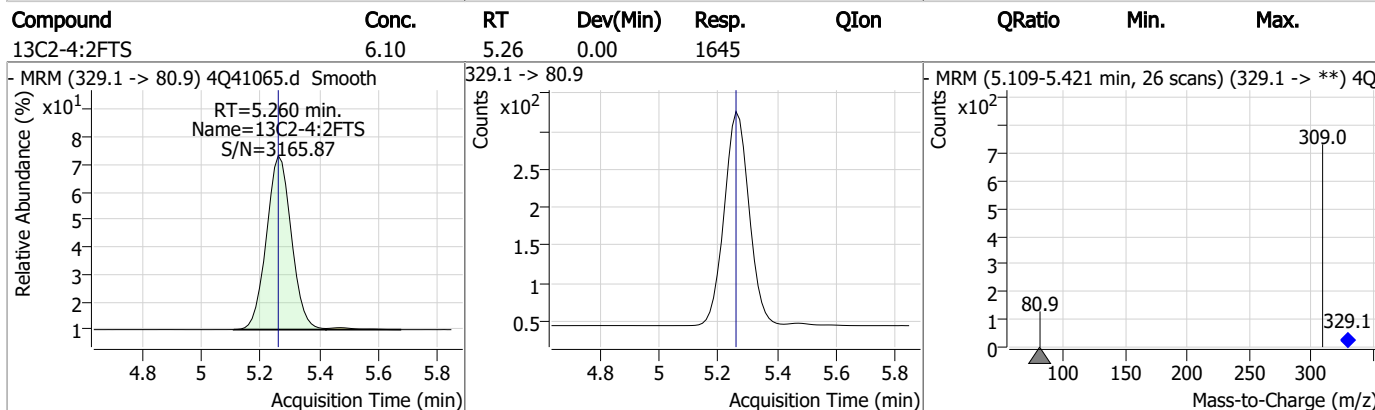
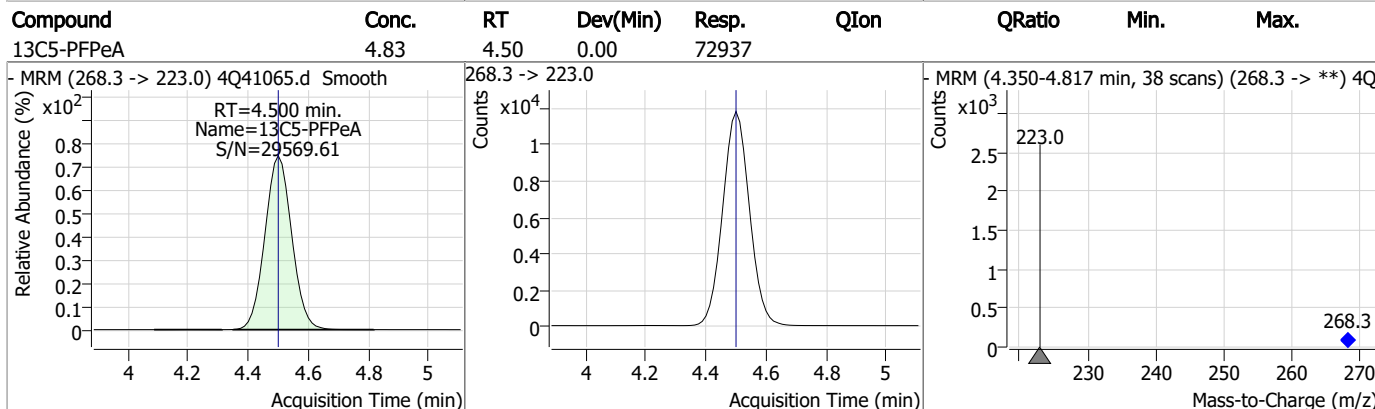
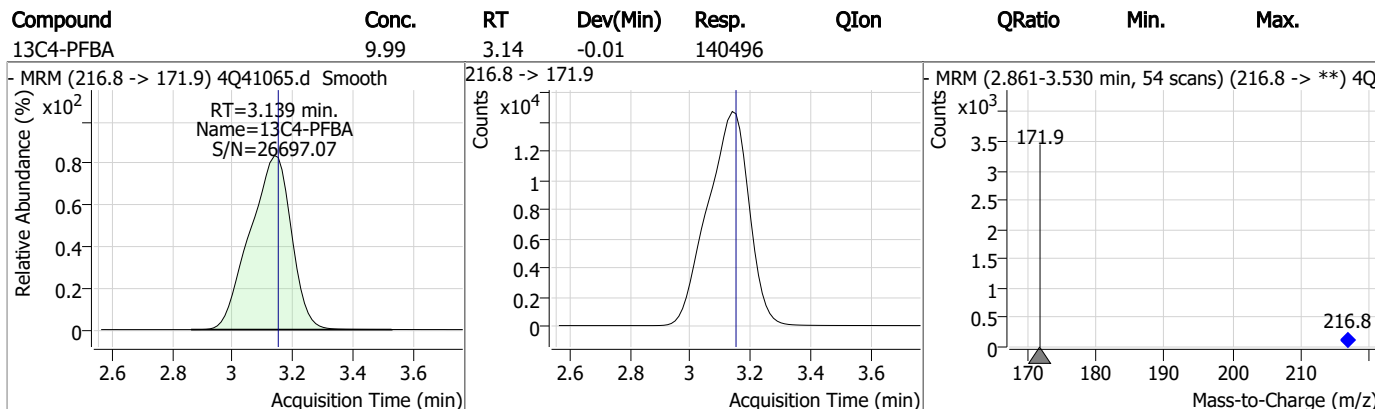
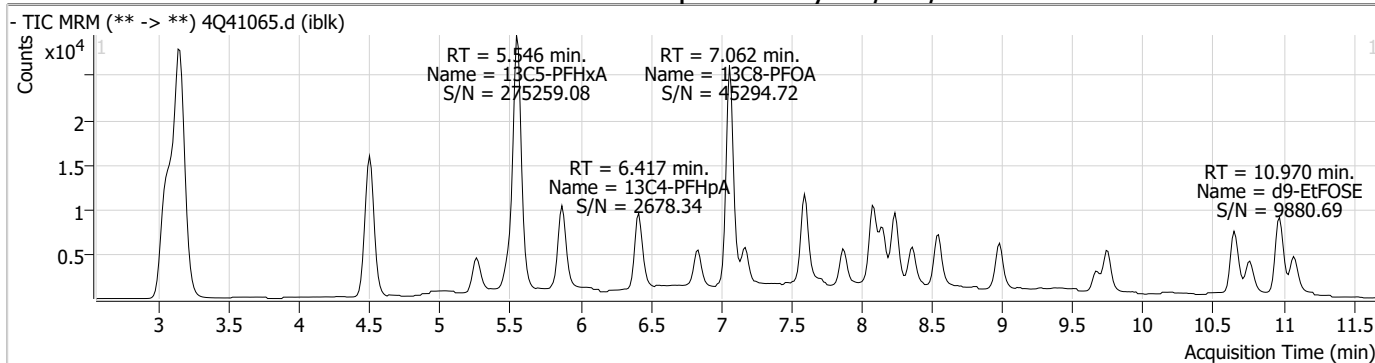
Perfluorinated Compounds by LC/MS/MS

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

7

Perfluorinated Compounds by LC/MS/MS



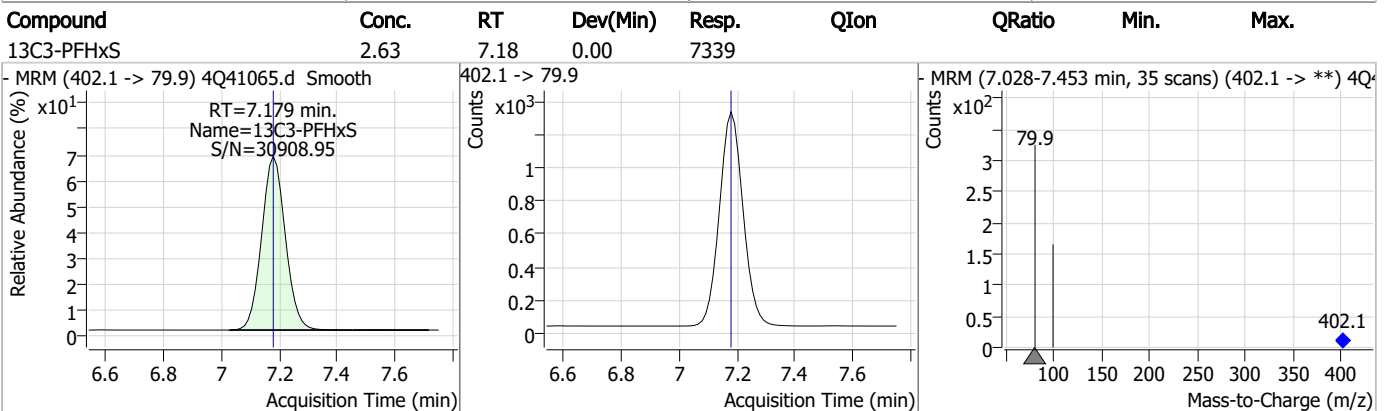
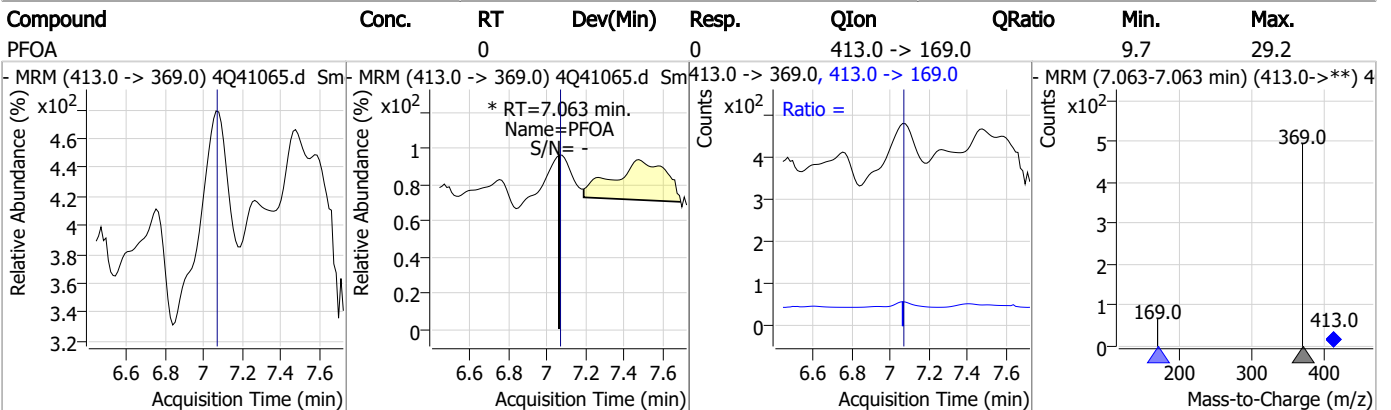
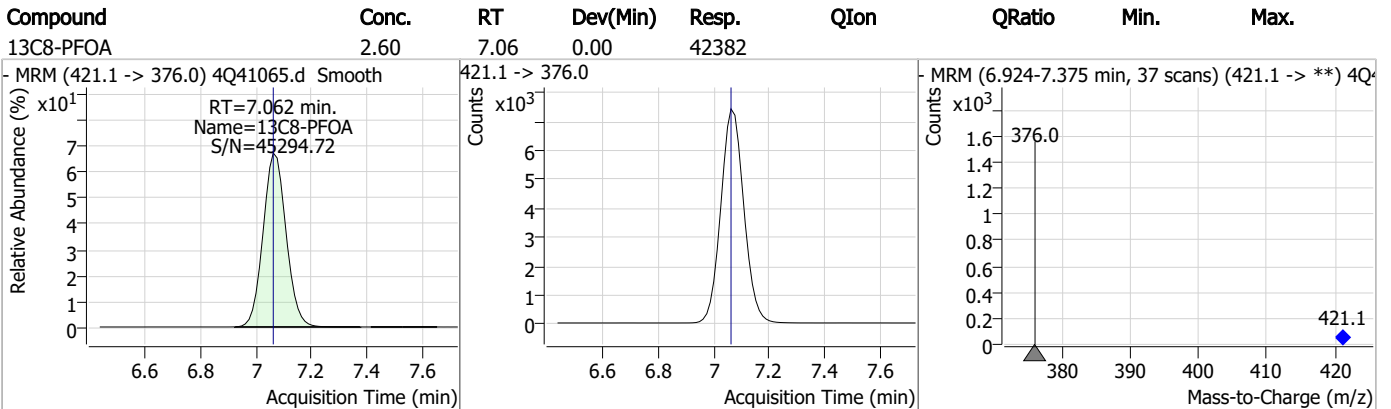
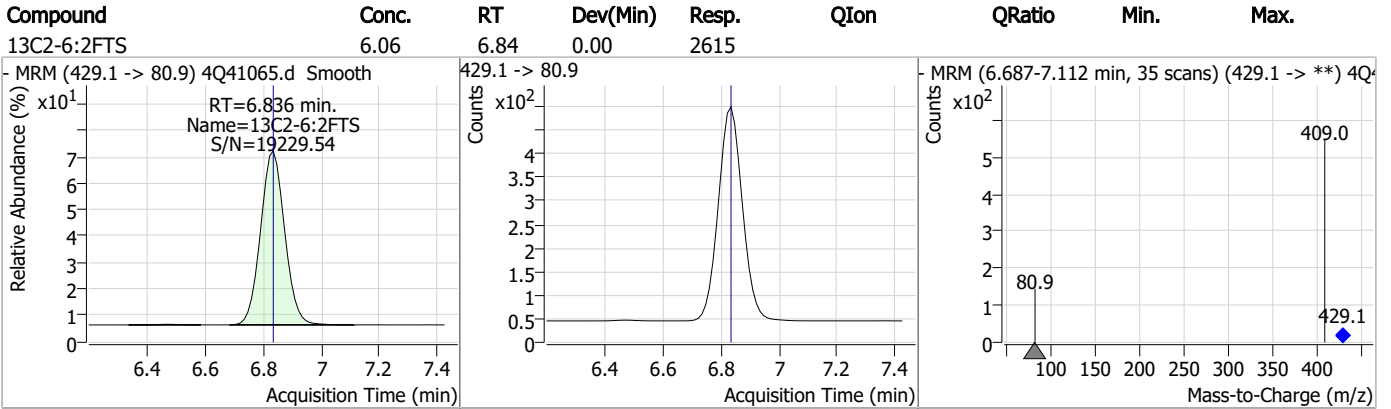
7.2.2
7

Perfluorinated Compounds by LC/MS/MS

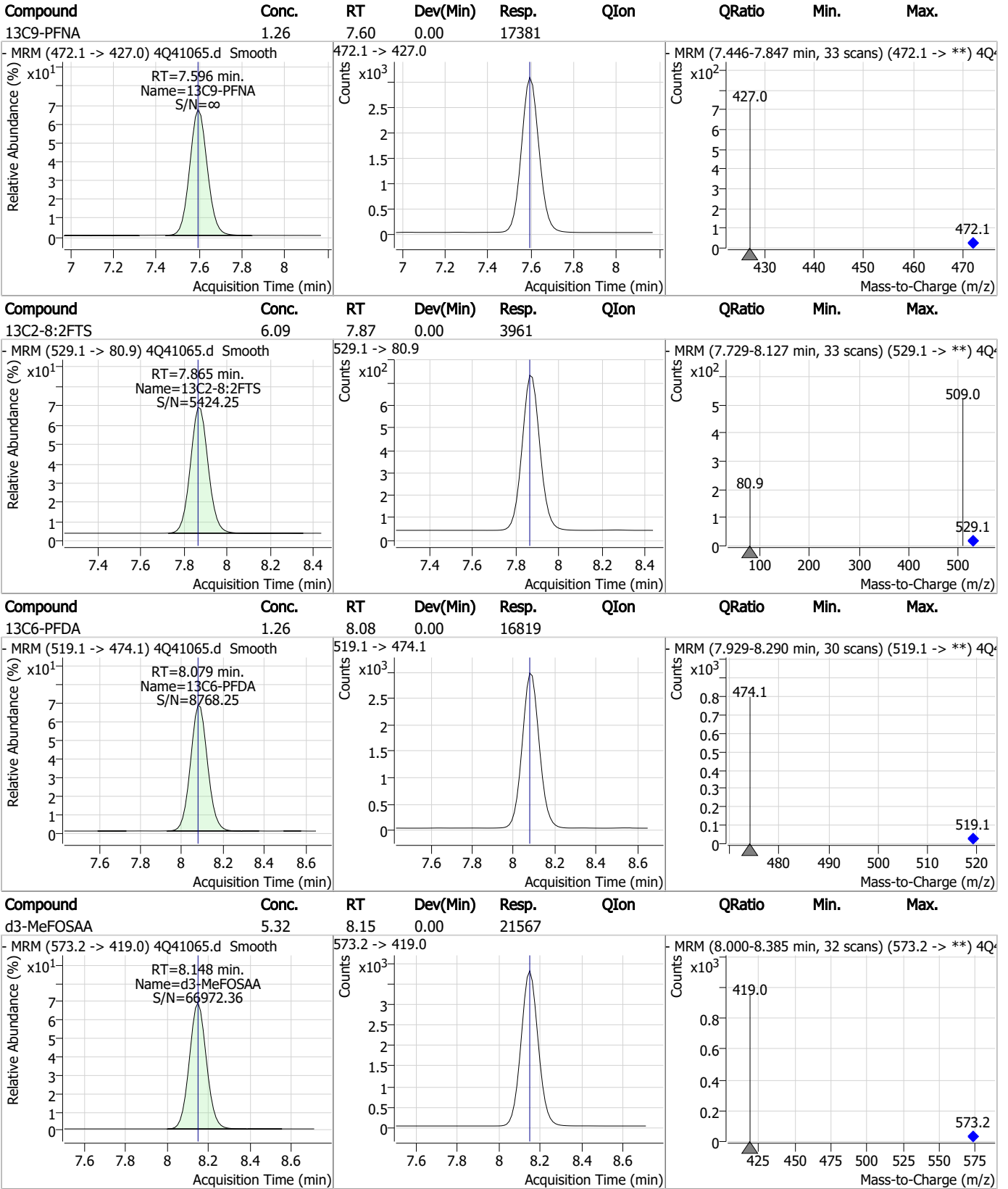
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.57	5.50	0.00	11824				
<p>MRM (302.1 -> 79.9) 4Q41065.d Smooth RT=5.501 min. Name=13C3-PFBS S/N=12764.60</p>			<p>302.1 -> 79.9</p>			<p>MRM (5.327-5.812 min, 40 scans) (302.1 -> **) 4Q</p>		
13C5-PFHxA	2.50	5.55	0.00	58611				
<p>MRM (318.0 -> 273.0) 4Q41065.d Smooth RT=5.546 min. Name=13C5-PFHxA S/N=275259.08</p>			<p>318.0 -> 273.0</p>			<p>MRM (5.410-5.833 min, 35 scans) (318.0 -> **) 4Q</p>		
13C3-HFPO-DA	9.60	5.88	0.00	33379				
<p>MRM (286.9 -> 168.9) 4Q41065.d Smooth RT=5.877 min. Name=13C3-HFPO-DA S/N=622931.30</p>			<p>286.9 -> 168.9</p>			<p>MRM (5.728-6.161 min, 36 scans) (286.9 -> **) 4Q</p>		
13C4-PFHpA	2.49	6.42	0.00	33904				
<p>MRM (367.1 -> 322.0) 4Q41065.d Smooth RT=6.417 min. Name=13C4-PFHpA S/N=2678.34</p>			<p>367.1 -> 322.0</p>			<p>MRM (6.268-6.669 min, 33 scans) (367.1 -> **) 4Q</p>		

7.2.2
7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

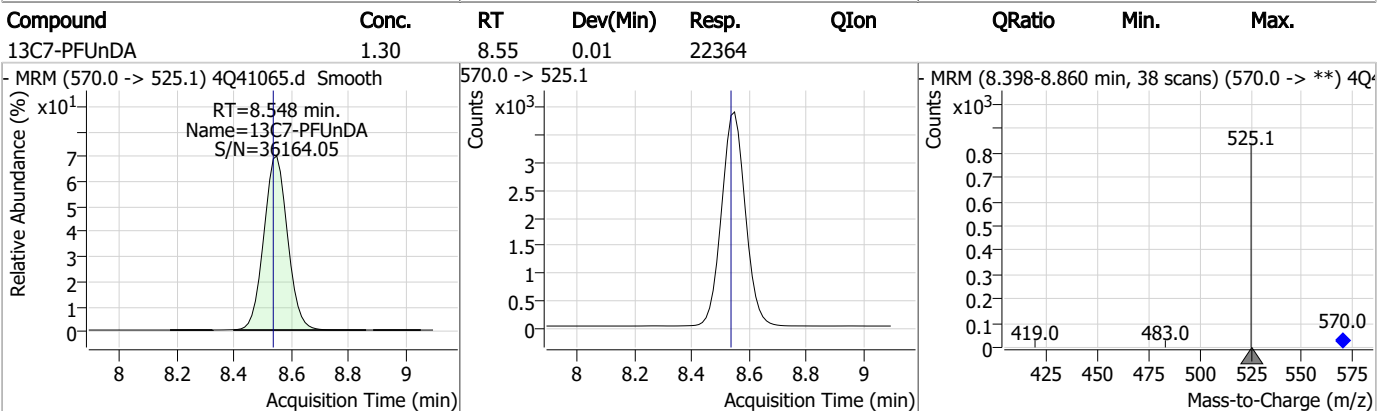
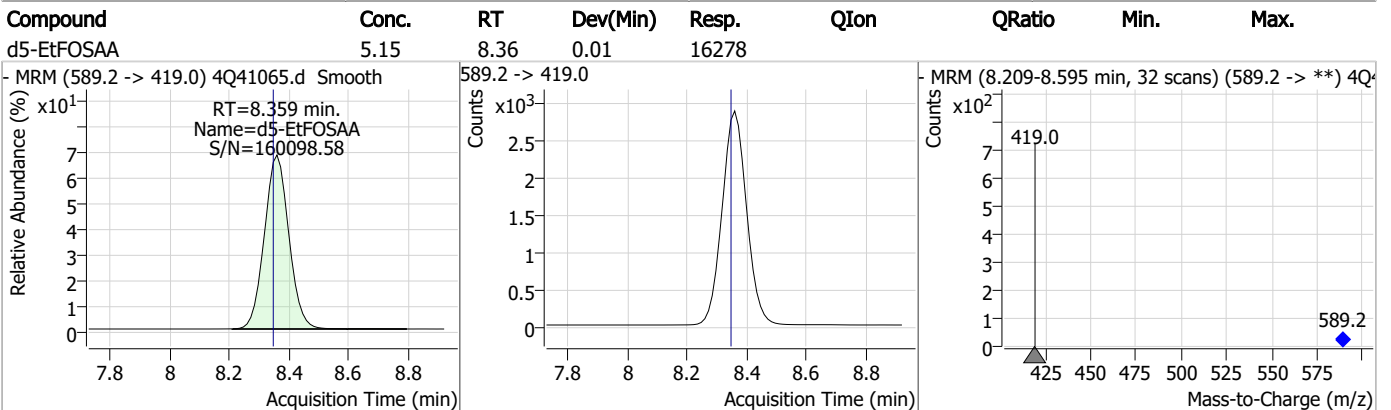
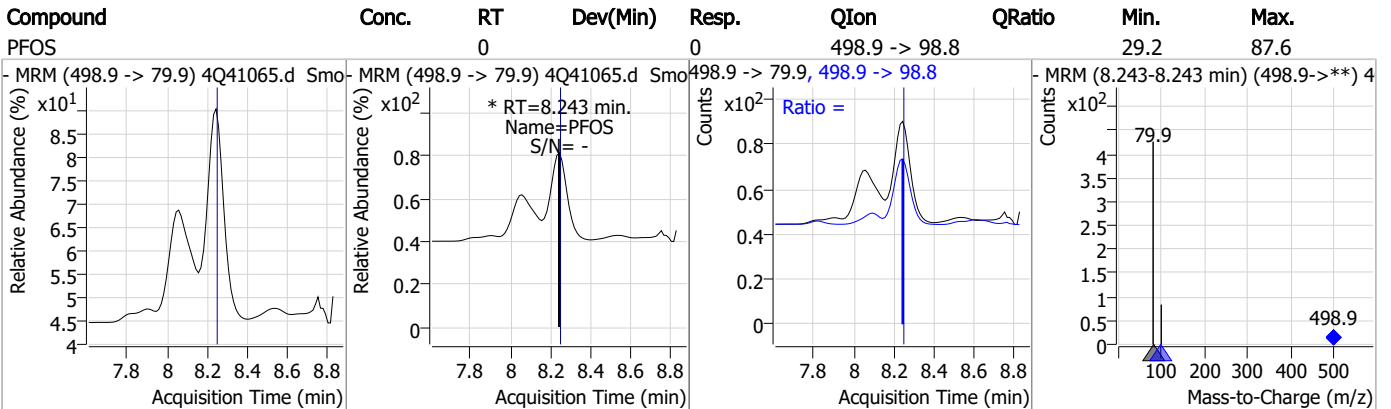
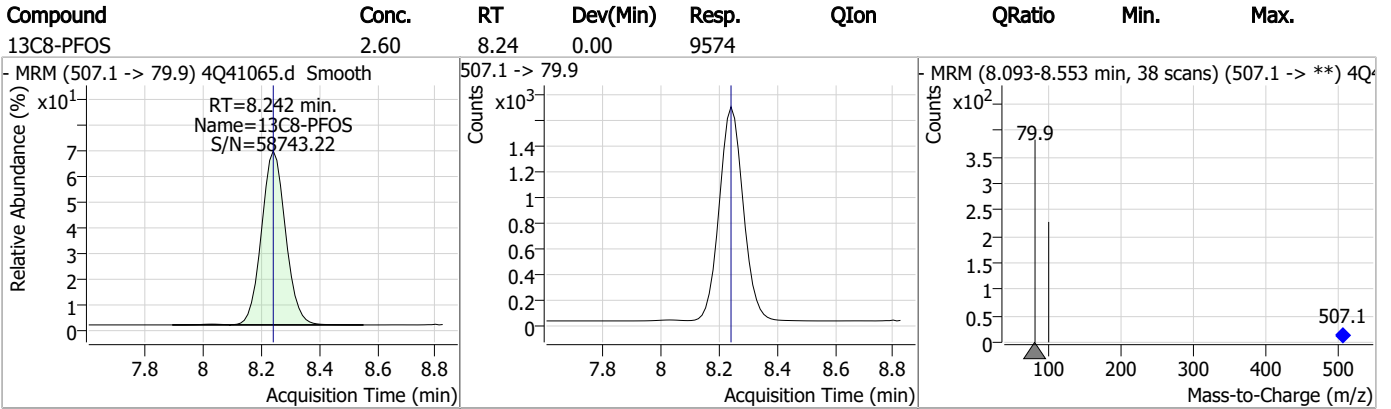


7.2.2

7



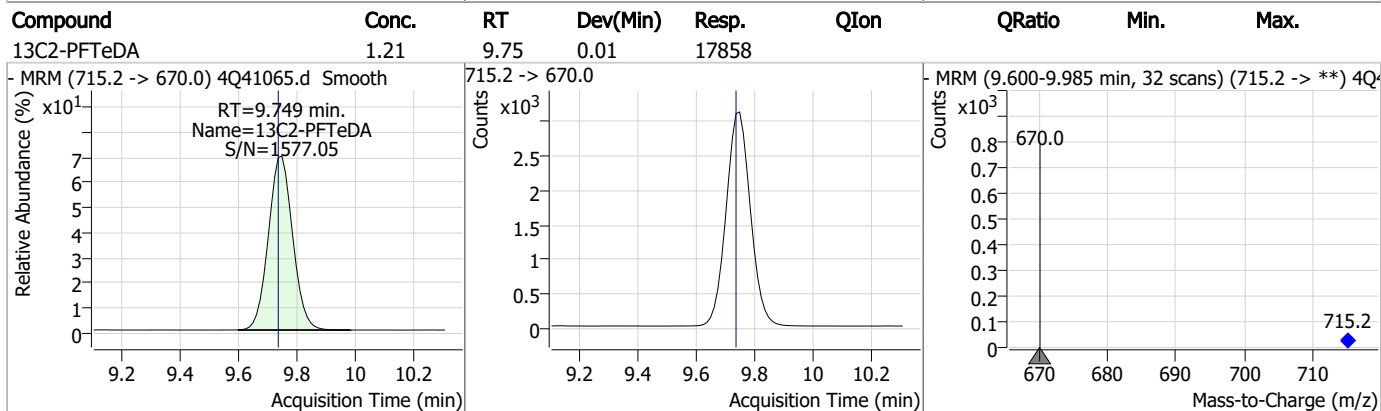
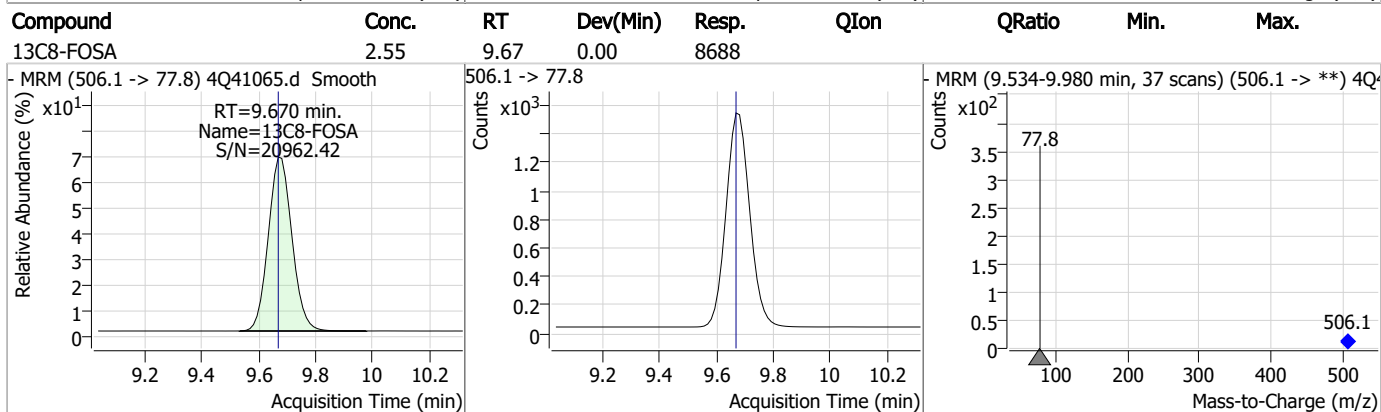
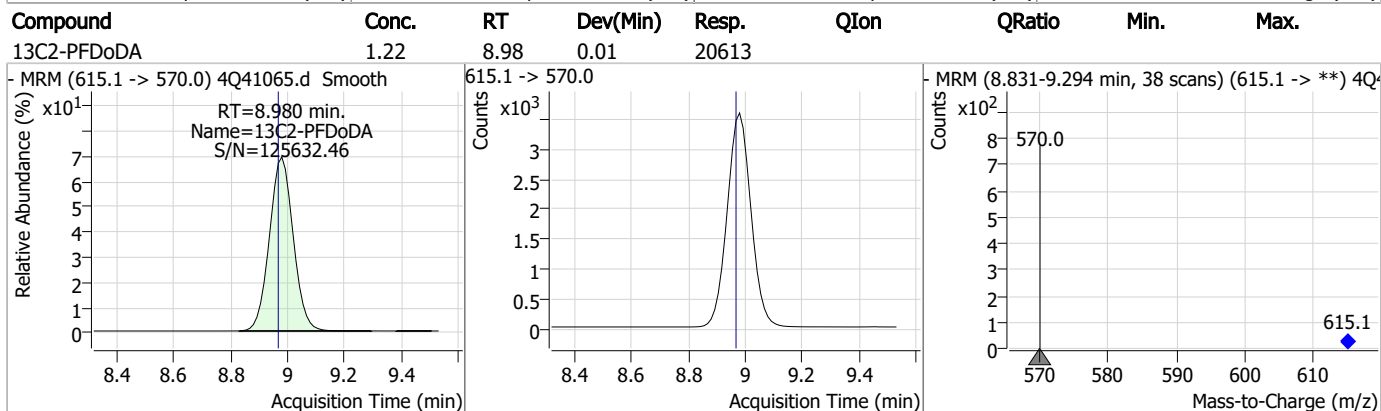
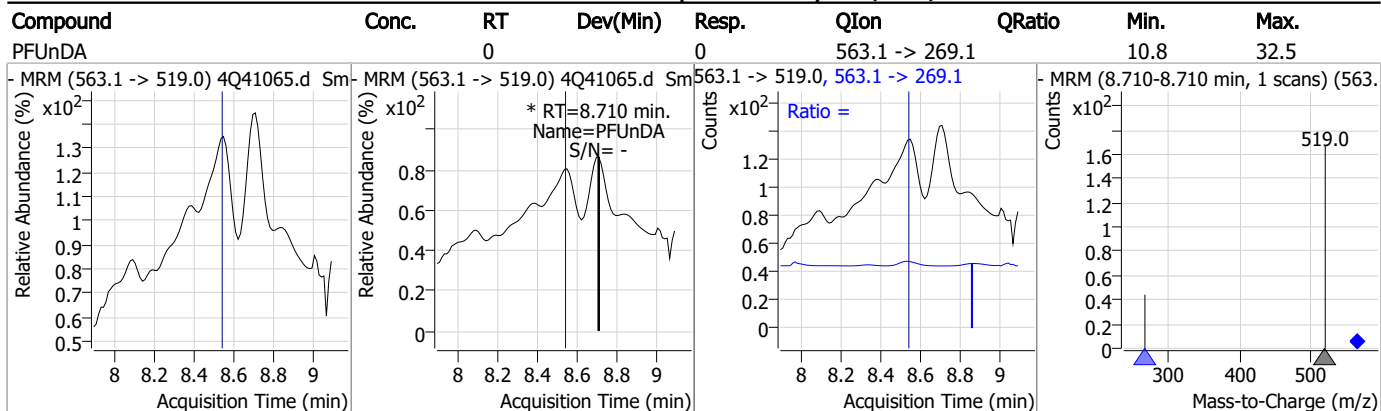
Perfluorinated Compounds by LC/MS/MS



7.2.2

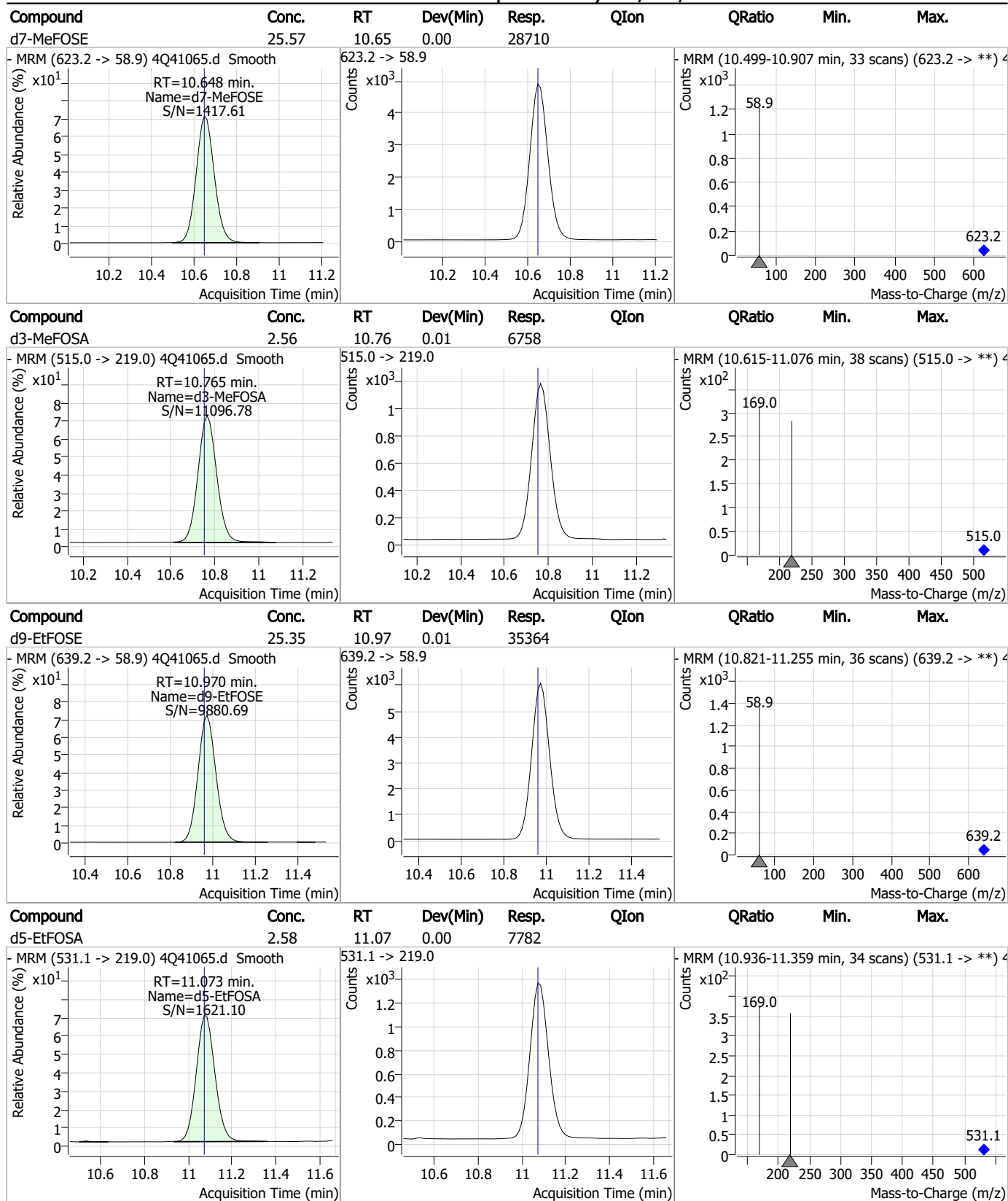
7

Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41092.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/23/2023 12:35:26 AM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	146033	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	74708	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	59698	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	34352	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	42660	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	17769	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	16722	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	22800	1.25 µg/L	-0.012
M2-PFDoDA	8.955	615.1 -> 570.0	20353	1.25 µg/L	-0.012
M2-PFTeDA	9.736	715.2 -> 670.0	17632	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	9144	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	11986	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7623	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9341	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1518	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2673	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	4477	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	21753	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	35597	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	16523	5.00 µg/L	0.000
M7-MeFOSE	10.661	623.2 -> 58.9	29761	25.00 µg/L	0.012
M9-EtFOSE	10.983	639.2 -> 58.9	36814	25.00 µg/L	0.025
M5-EtFOSA	11.085	531.1 -> 219.0	7705	2.50 µg/L	0.012
M3-MeFOSA	10.777	515.0 -> 219.0	6501	2.50 µg/L	0.025
13C4-PFOS	8.230	502.8 -> 79.9	9535	2.50 µg/L	-0.012
13C3-PFBA	3.155	216.0 -> 172.0	87315	5.00 µg/L	0.000
18O2-PFHxS	7.178	403.0 -> 83.9	4931	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	50567	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16806	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	21397	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	54873	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1518	5.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.7%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2673	6.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.0%		
13C2-8:2FTS	7.865	529.1 -> 80.9	4477	6.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.1%		
13C2-PFDoDA	8.955	615.1 -> 570.0	20353	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C2-PFTeDA	9.736	715.2 -> 670.0	17632	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.4%		
13C3-PFBS	5.501	302.1 -> 79.9	11986	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.2%		
13C3-PFHxS	7.179	402.1 -> 79.9	7623	2.76 µg/L	0.000

7.2.3
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.3%	
13C4-PFBA	3.152	216.8 -> 171.9	146033	10.10 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.417	367.1 -> 322.0	34352	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFHxA	5.546	318.0 -> 273.0	59698	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFPeA	4.500	268.3 -> 223.0	74708	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C6-PFDA	8.079	519.1 -> 474.1	16722	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C7-PFUnDA	8.523	570.0 -> 525.1	22800	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-FOSA	9.670	506.1 -> 77.8	9144	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOA	7.062	421.1 -> 376.0	42660	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOS	8.230	507.1 -> 79.9	9341	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C9-PFNA	7.596	472.1 -> 427.0	17769	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSAA	8.136	573.2 -> 419.0	21753	5.18 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	35597	9.97 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSA	10.777	515.0 -> 219.0	6501	2.38 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
d5-EtFOSAA	8.346	589.2 -> 419.0	16523	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d7-MeFOSE	10.661	623.2 -> 58.9	29761	25.60 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d9-EtFOSE	10.983	639.2 -> 58.9	36814	25.49 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
d5-EtFOSA	11.085	531.1 -> 219.0	7705	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.403	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.2.3
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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	8.673	563.1 -> 519.0	0		µg/L	m
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.3
7

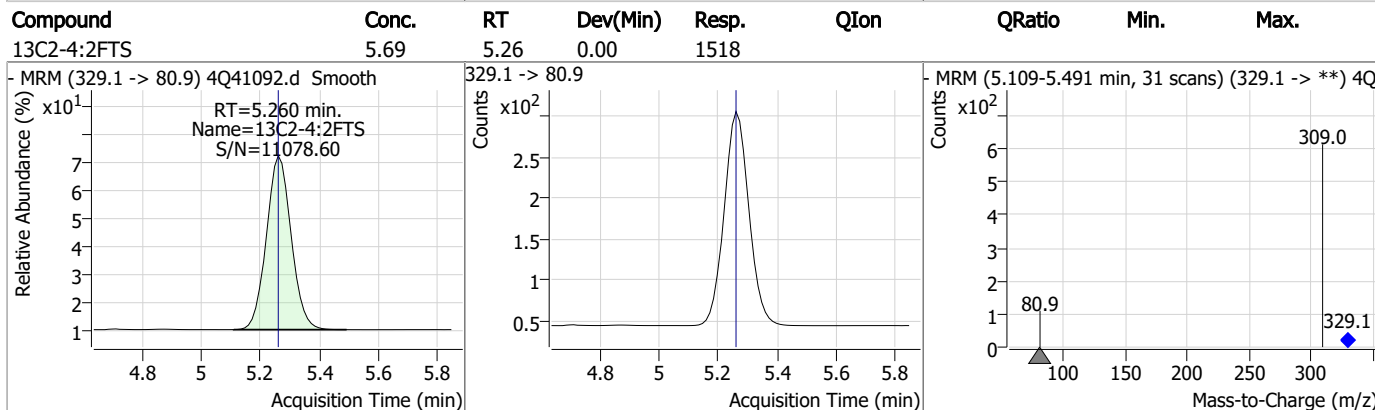
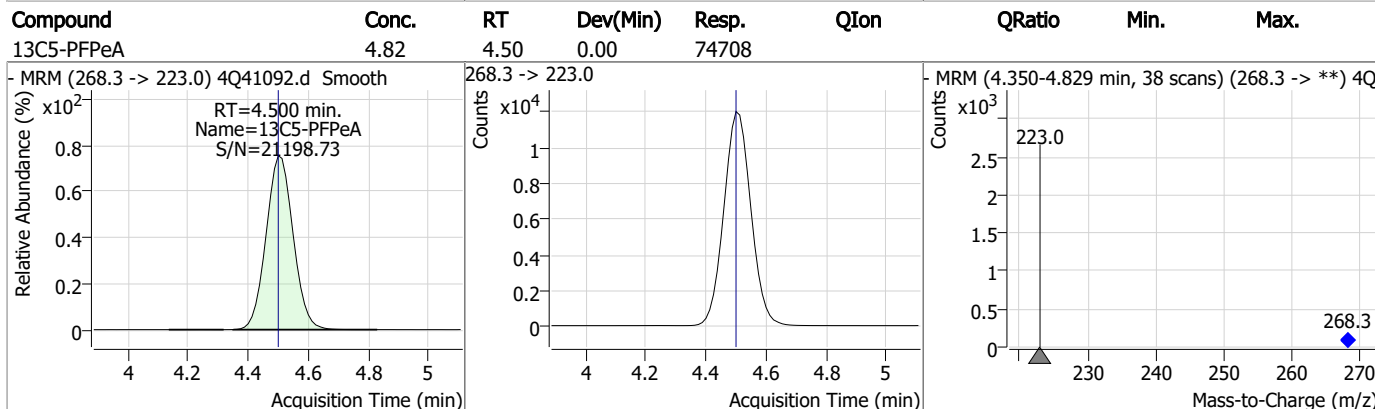
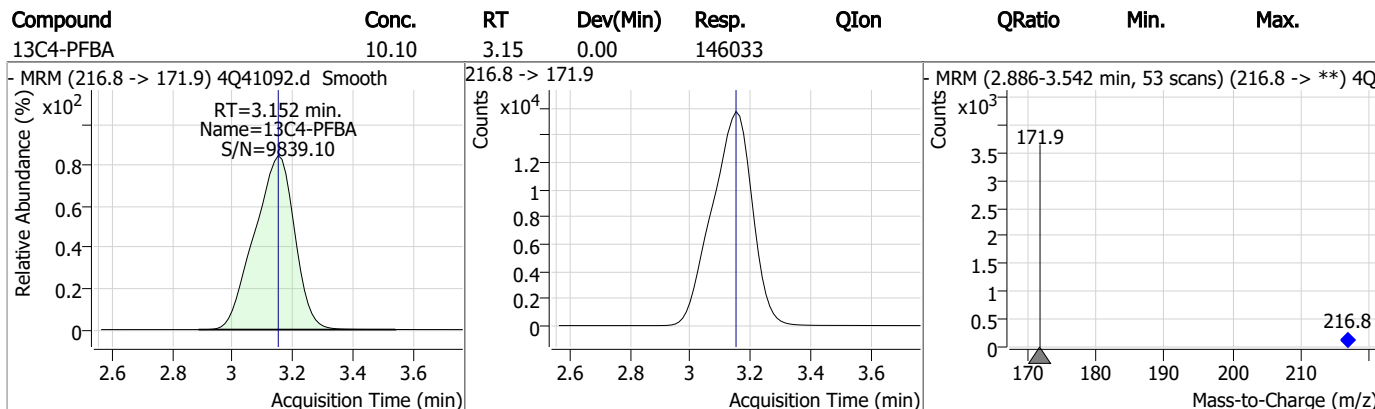
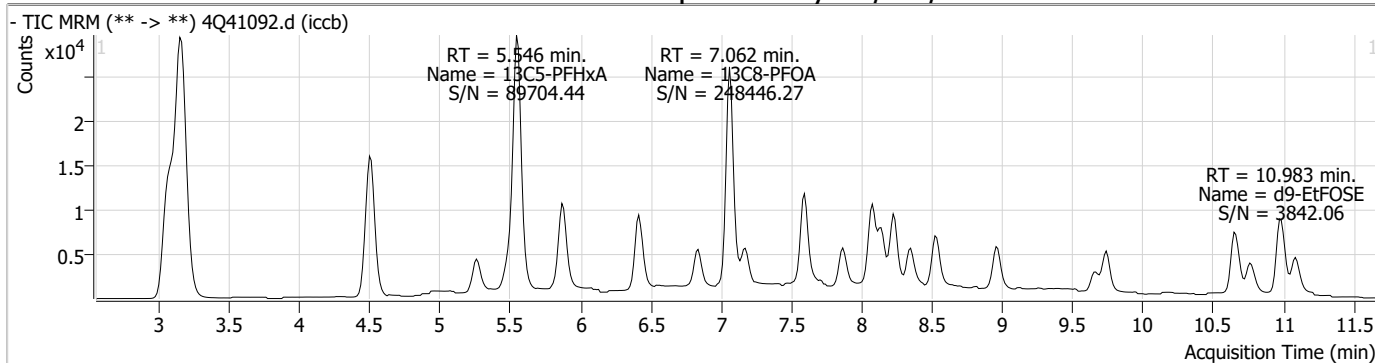
Perfluorinated Compounds by LC/MS/MS

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

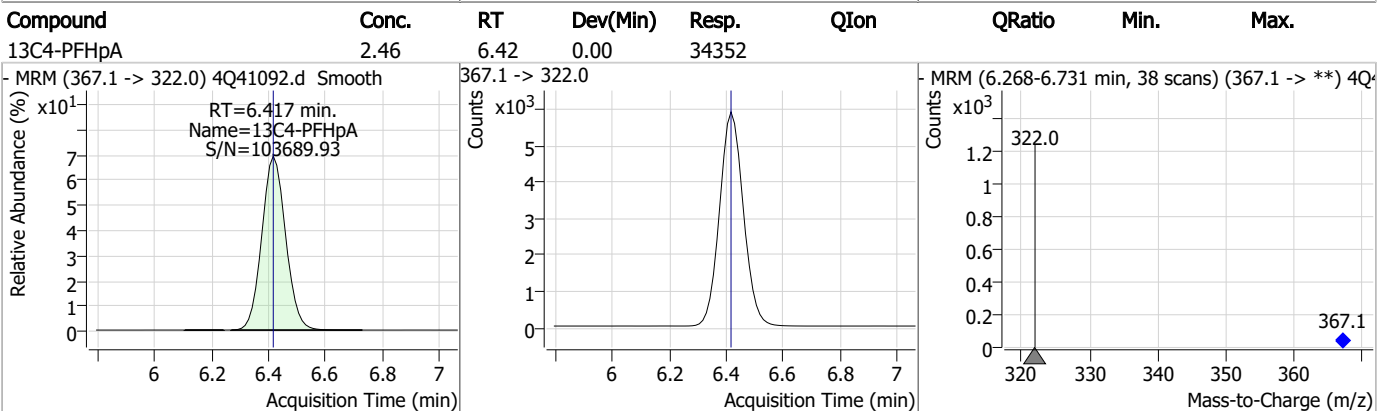
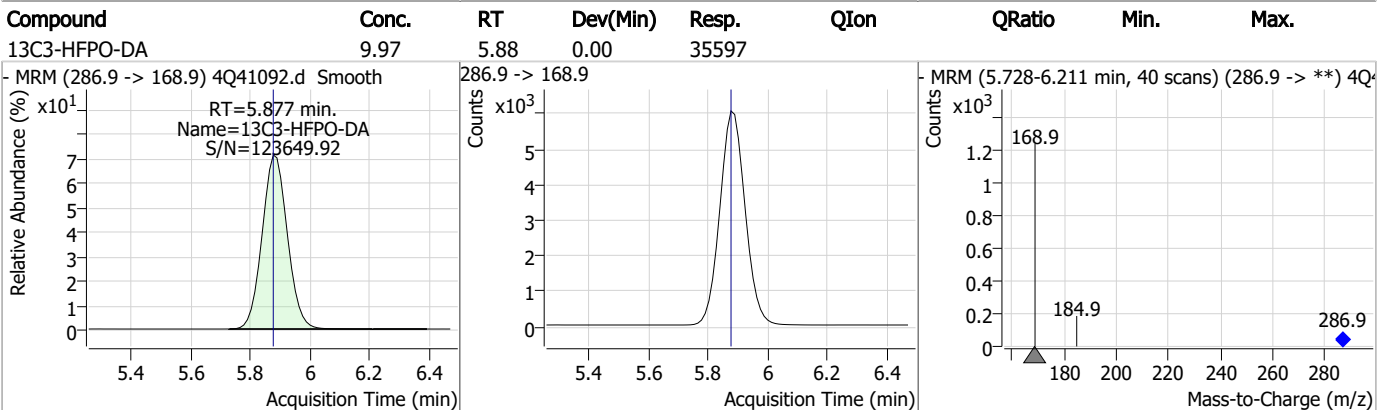
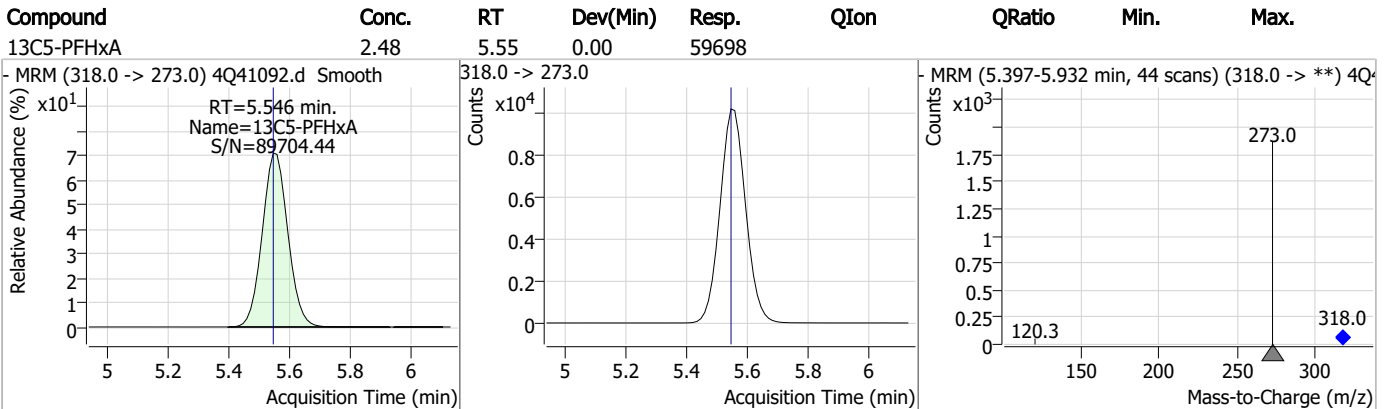
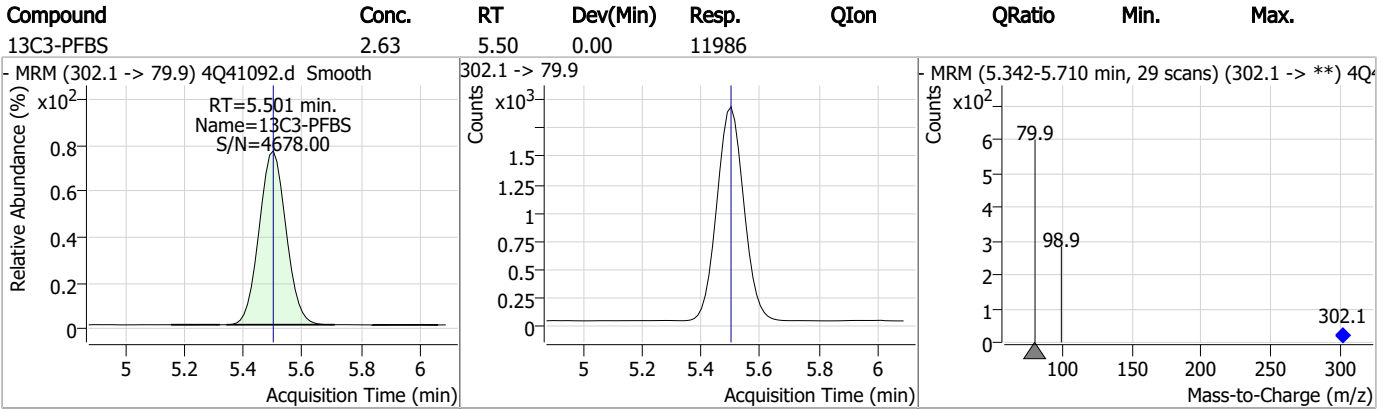
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Perfluorinated Compounds by LC/MS/MS

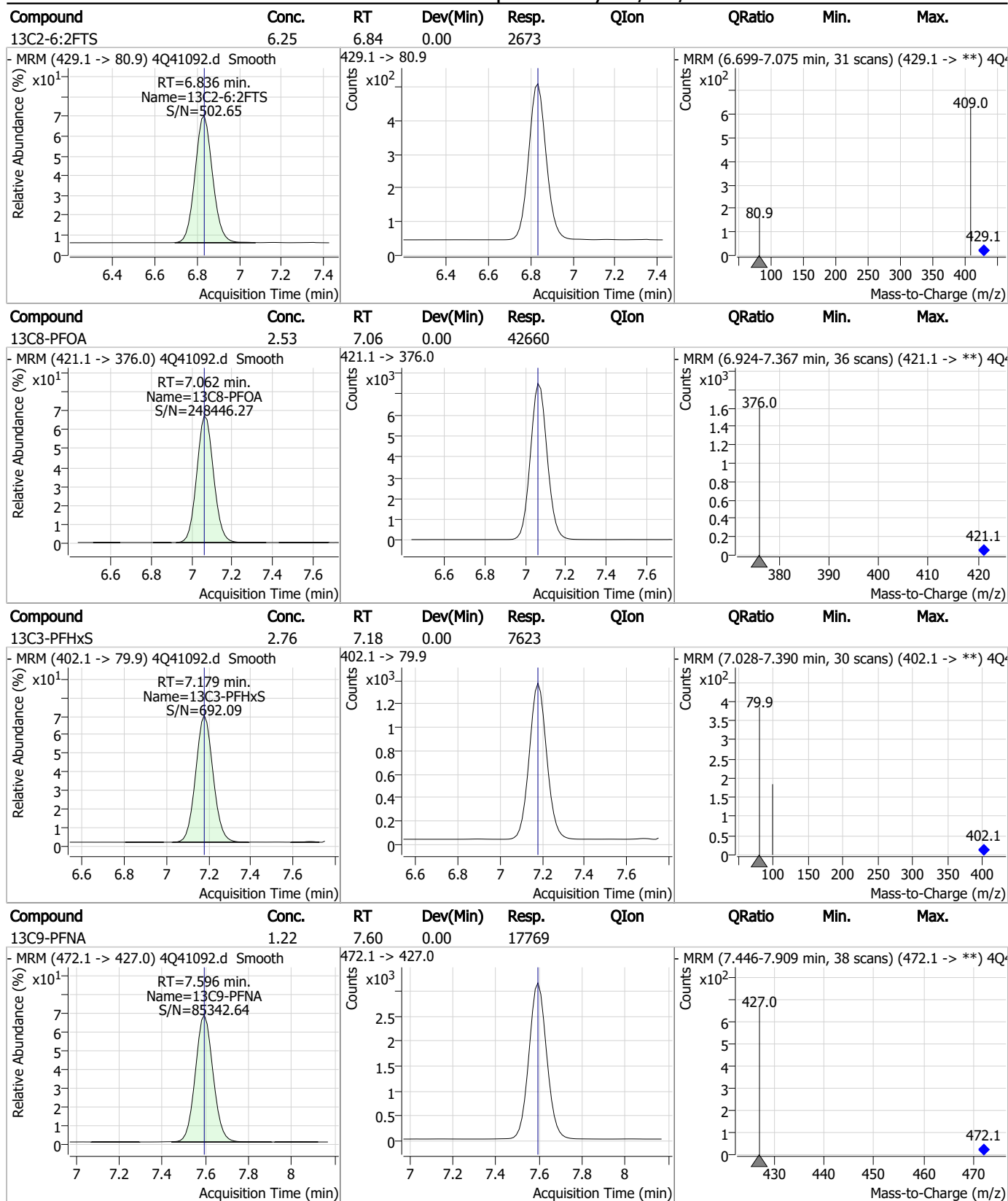


7.2.3
7

Perfluorinated Compounds by LC/MS/MS



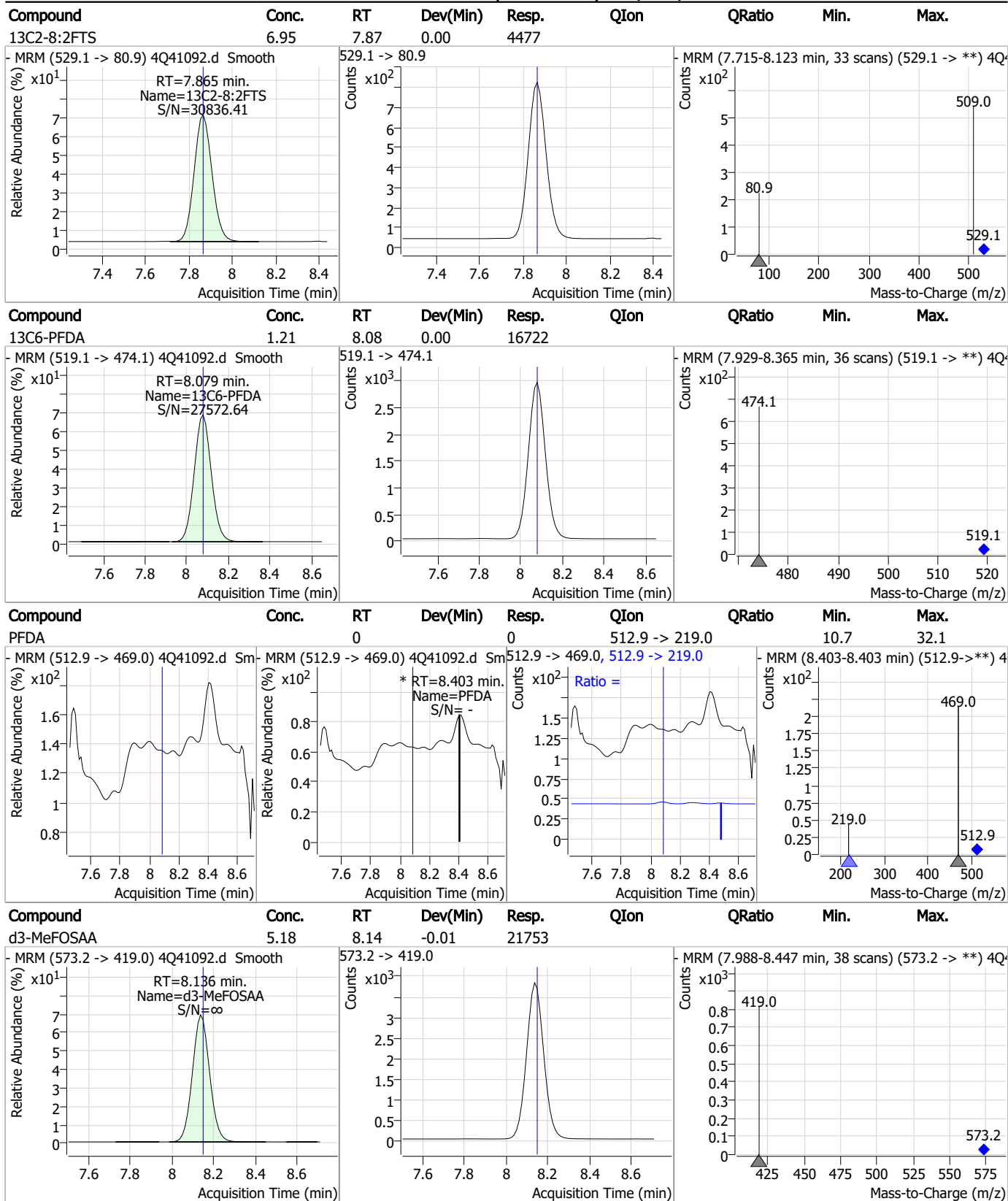
Perfluorinated Compounds by LC/MS/MS



7.2.3
7

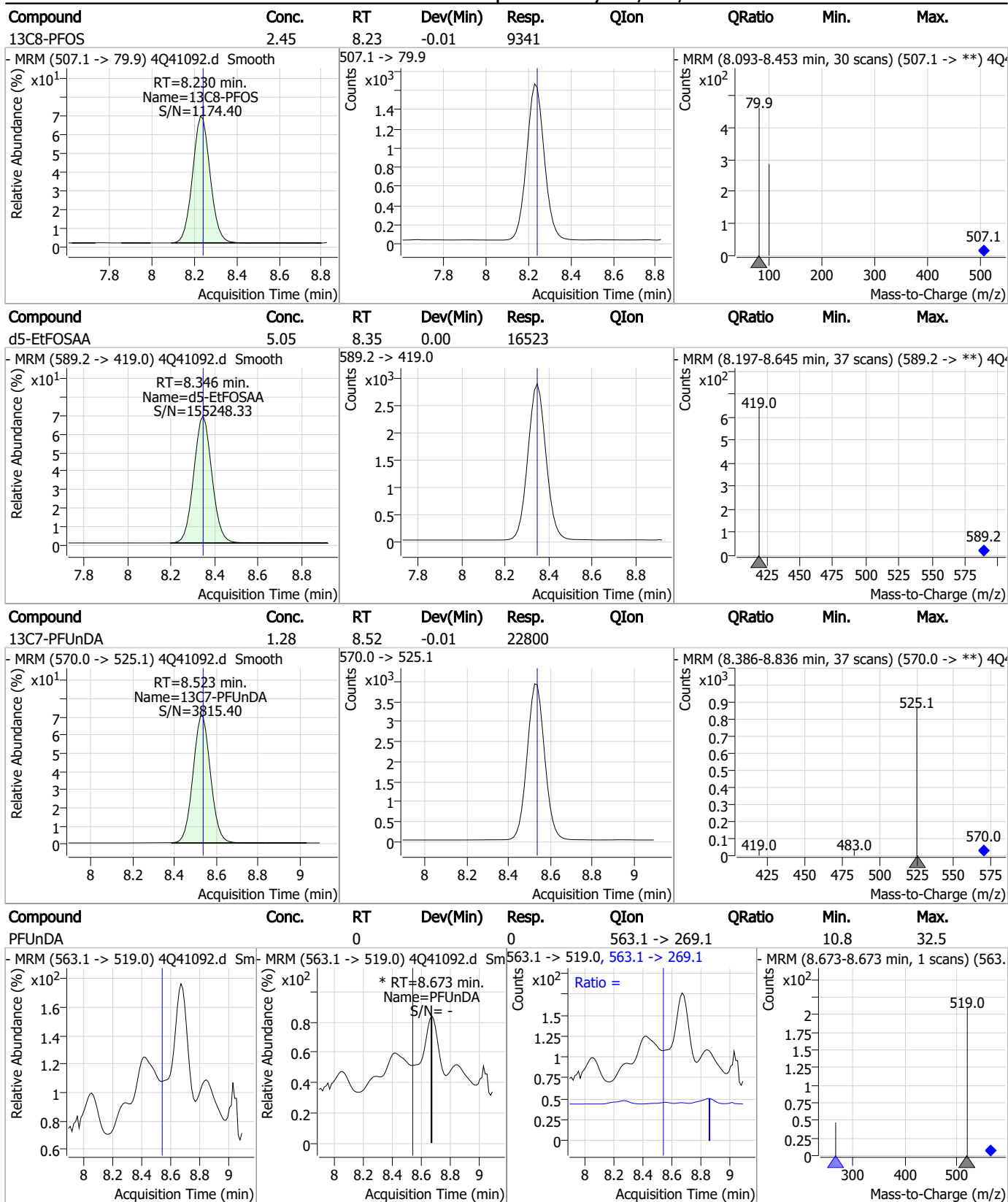


Perfluorinated Compounds by LC/MS/MS



7.2.3
7

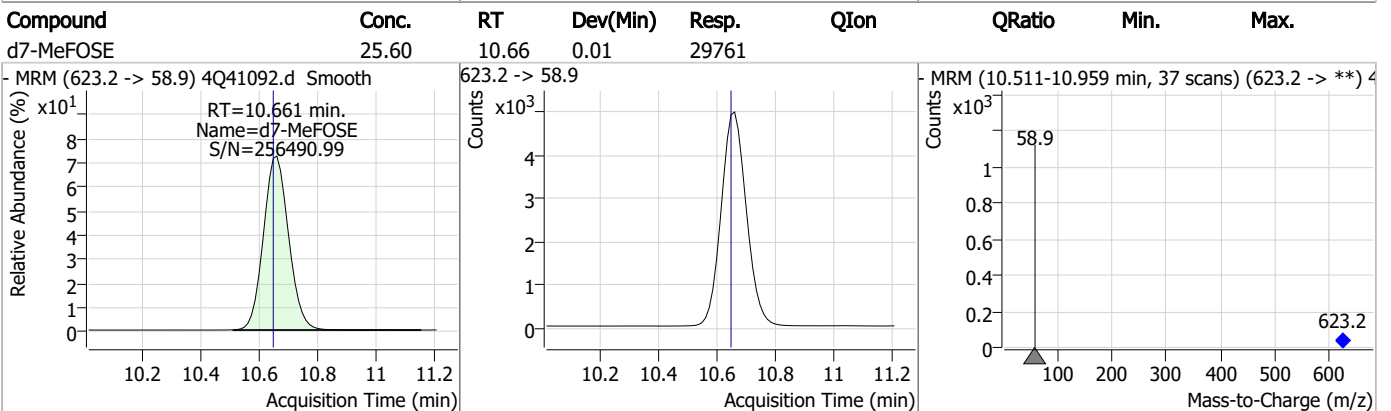
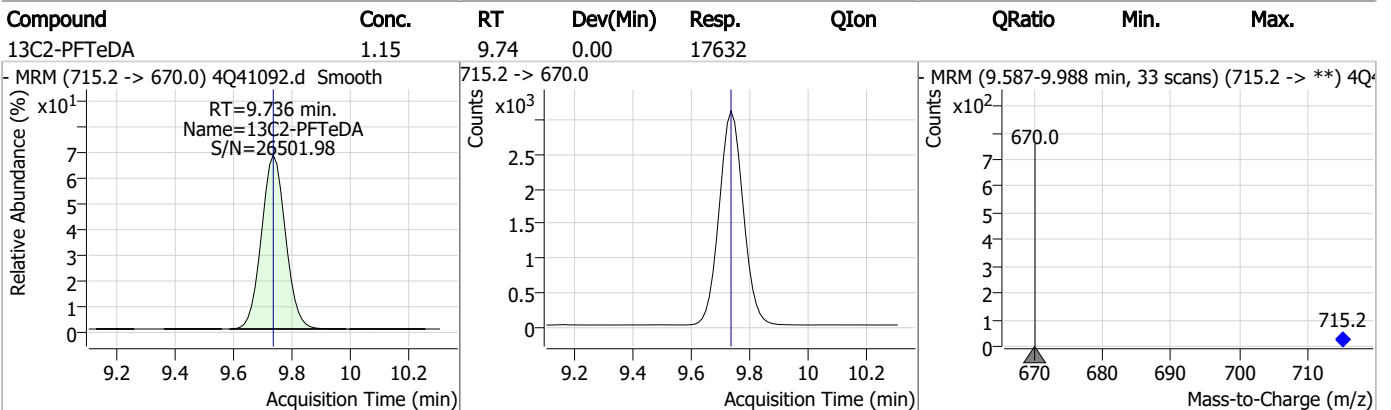
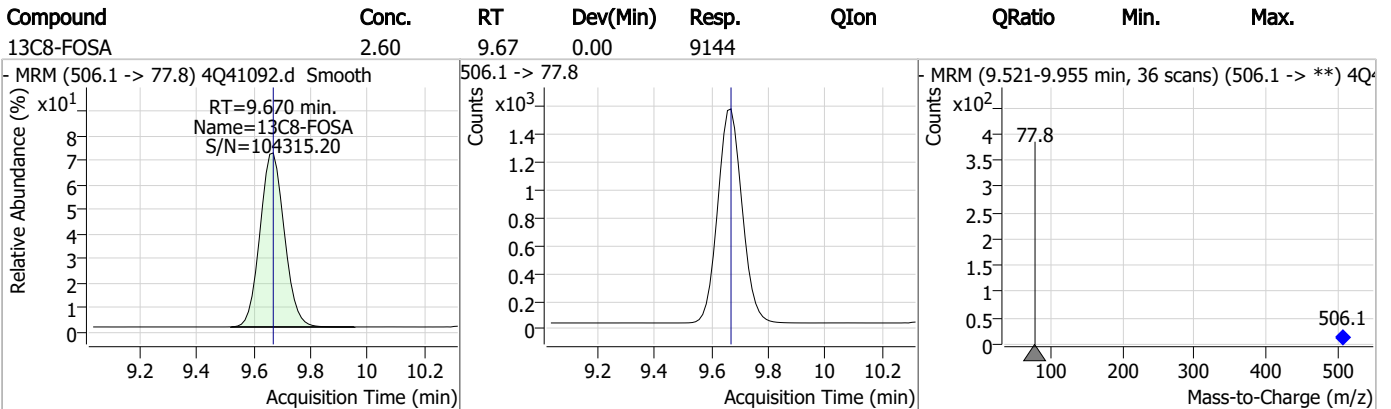
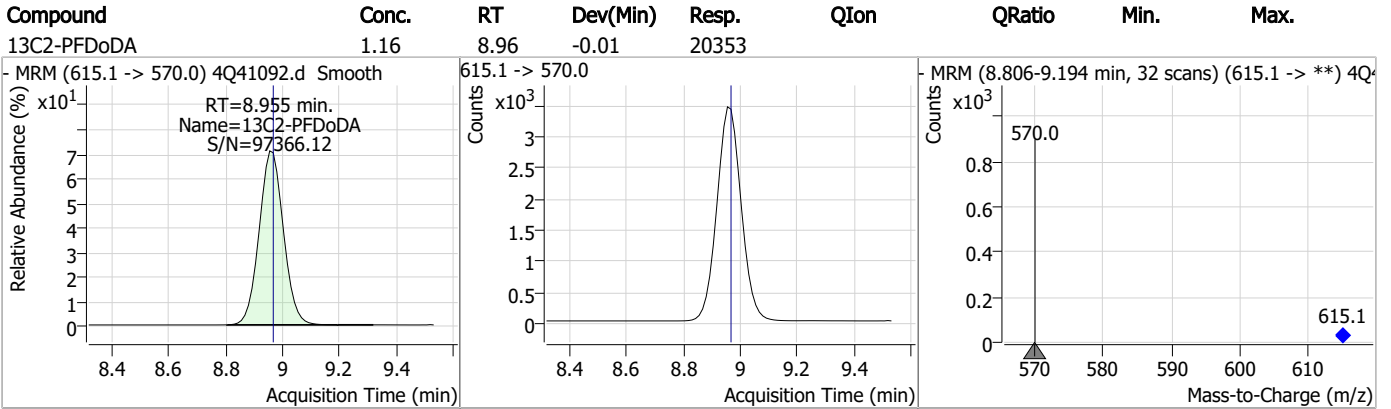
Perfluorinated Compounds by LC/MS/MS



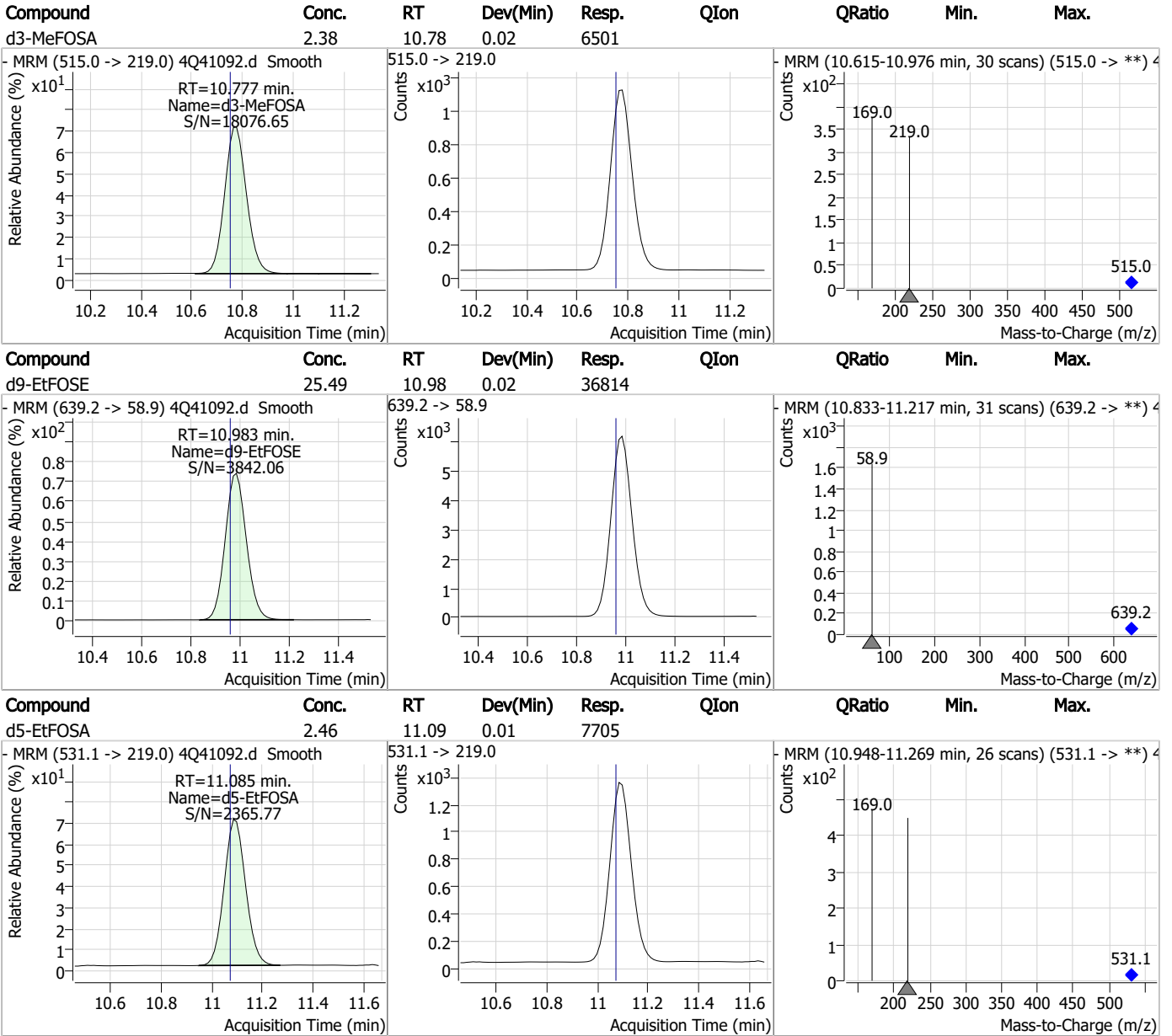
7.2.3
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.3

7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41073.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 8:08:40 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	142854	10.00 µg/L	-0.013
M5-PFPeA	4.500	268.3 -> 223.0	74540	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	59281	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	33868	2.50 µg/L	0.000
M8-PFOA	7.076	421.1 -> 376.0	42290	2.50 µg/L	0.014
M9-PFNA	7.596	472.1 -> 427.0	17988	1.25 µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	16772	1.25 µg/L	-0.013
M7-PFUnDA	8.523	570.0 -> 525.1	23063	1.25 µg/L	-0.012
M2-PFDoDA	8.955	615.1 -> 570.0	20170	1.25 µg/L	-0.012
M2-PFTeDA	9.724	715.2 -> 670.0	17326	1.25 µg/L	-0.012
M8-FOSA	9.657	506.1 -> 77.8	8623	2.50 µg/L	-0.012
M3-PFBS	5.501	302.1 -> 79.9	12114	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7072	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9341	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1801	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2595	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	4063	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	21543	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	34945	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	16136	5.00 µg/L	0.000
M7-MeFOSE	10.636	623.2 -> 58.9	29263	25.00 µg/L	-0.012
M9-EtFOSE	10.958	639.2 -> 58.9	36027	25.00 µg/L	0.000
M5-EtFOSA	11.073	531.1 -> 219.0	7760	2.50 µg/L	0.000
M3-MeFOSA	10.752	515.0 -> 219.0	6628	2.50 µg/L	0.000
13C4-PFOS	8.230	502.8 -> 79.9	9904	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	85924	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	5023	2.50 µg/L	0.000
13C4-PFOA	7.077	417.1 -> 372.0	50809	2.50 µg/L	0.014
13C2-PFDA	8.066	515.1 -> 470.1	16390	1.25 µg/L	-0.013
13C5-PFNA	7.596	468.0 -> 423.0	22072	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	54351	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1801	6.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.4%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2595	5.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.1%		
13C2-8:2FTS	7.865	529.1 -> 80.9	4063	6.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.9%		
13C2-PFDoDA	8.955	615.1 -> 570.0	20170	1.18 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C2-PFTeDA	9.724	715.2 -> 670.0	17326	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.0%		
13C3-PFBS	5.501	302.1 -> 79.9	12114	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFHxS	7.179	402.1 -> 79.9	7072	2.51 µg/L	0.000

7.24
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C4-PFBA	3.139	216.8 -> 171.9	142854	10.04	µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C4-PFHpA	6.417	367.1 -> 322.0	33868	2.45	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%		
13C5-PFHxA	5.546	318.0 -> 273.0	59281	2.48	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%		
13C5-PFPeA	4.500	268.3 -> 223.0	74540	4.86	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.1%		
13C6-PFDA	8.066	519.1 -> 474.1	16772	1.24	µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%		
13C7-PFUnDA	8.523	570.0 -> 525.1	23063	1.33	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.4%		
13C8-FOSA	9.657	506.1 -> 77.8	8623	2.36	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%		
13C8-PFOA	7.076	421.1 -> 376.0	42290	2.49	µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C8-PFOS	8.230	507.1 -> 79.9	9341	2.36	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%		
13C9-PFNA	7.596	472.1 -> 427.0	17988	1.20	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.7%		
d3-MeFOSAA	8.136	573.2 -> 419.0	21543	4.94	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.8%		
13C3-HFPO-DA	5.877	286.9 -> 168.9	34945	9.88	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%		
d3-MeFOSA	10.752	515.0 -> 219.0	6628	2.33	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%		
d5-EtFOSAA	8.346	589.2 -> 419.0	16136	4.75	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.9%		
d7-MeFOSE	10.636	623.2 -> 58.9	29263	24.24	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.9%		
d9-EtFOSE	10.958	639.2 -> 58.9	36027	24.02	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.1%		
d5-EtFOSA	11.073	531.1 -> 219.0	7760	2.39	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%		

Target Compounds	RT	Transition	Response	Conc.	Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.		
		327.1 -> 80.9				
6:2FTS	-	427.1 -> 407.0	-	N.D.		
		427.1 -> 80.9				
8:2FTS	-	527.1 -> 507.0	-	N.D.		
		527.1 -> 80.8				
EtFOSAA	-	584.2 -> 419.1	-	N.D.		
		584.2 -> 526.0				
FOSA	-	498.1 -> 77.9	-	N.D.		
		498.1 -> 478.0				
MeFOSAA	-	570.1 -> 419.0	-	N.D.		
		570.1 -> 483.0				
PFBA	-	212.8 -> 168.9	-	N.D.		
PFBS	-	298.7 -> 79.9	-	N.D.		
		298.7 -> 98.8				
PFDA	8.428	512.9 -> 469.0	0	µg/L	m	1
		512.9 -> 219.0	0			
PFDODA	-	613.1 -> 569.0	-	N.D.		
		613.1 -> 319.0				
PFDS	-	599.0 -> 79.9	-	N.D.		



7.2.4
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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	8.703	413.0 -> 169.0	0	µg/L	m	1
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.165	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9				
PFTrDA	9.778	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.24
7

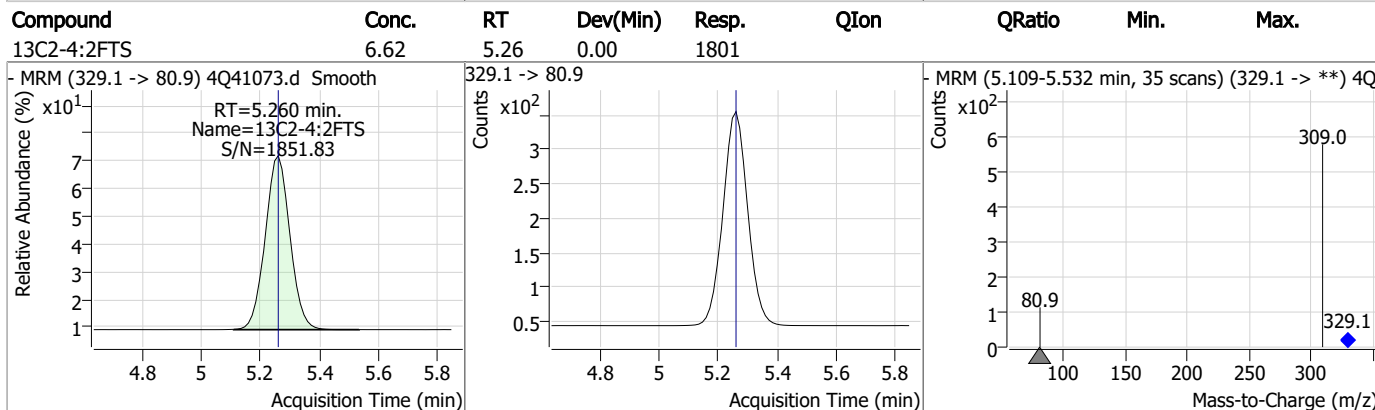
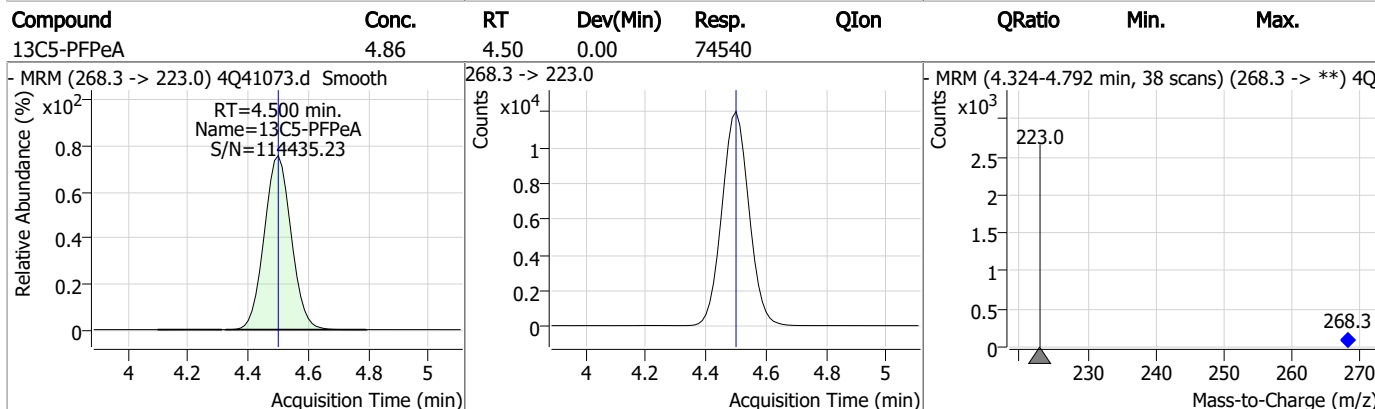
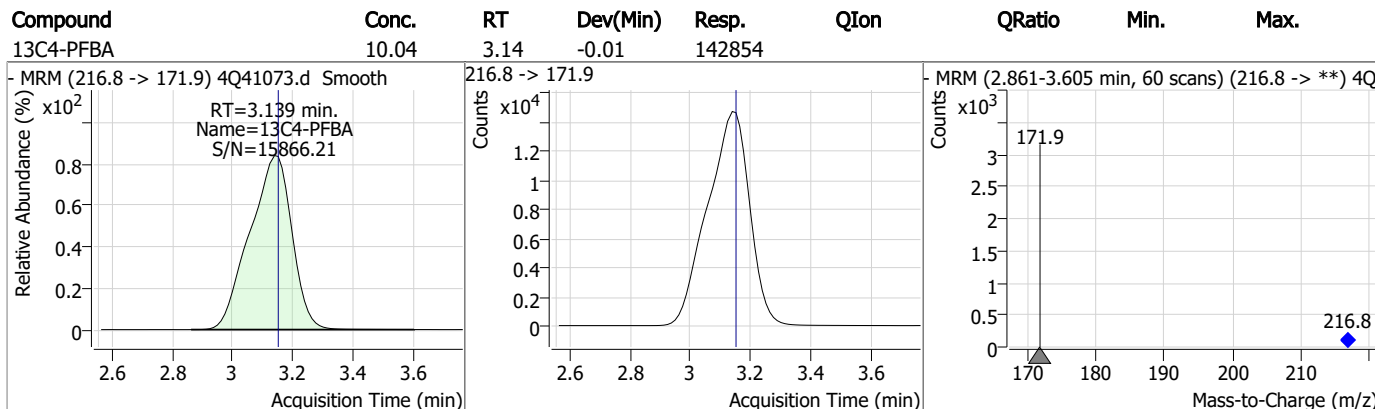
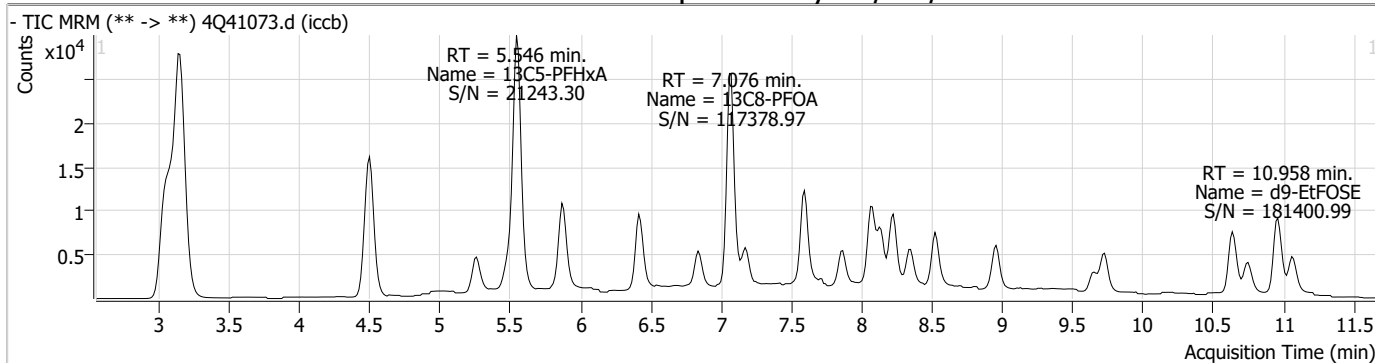
Perfluorinated Compounds by LC/MS/MS

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

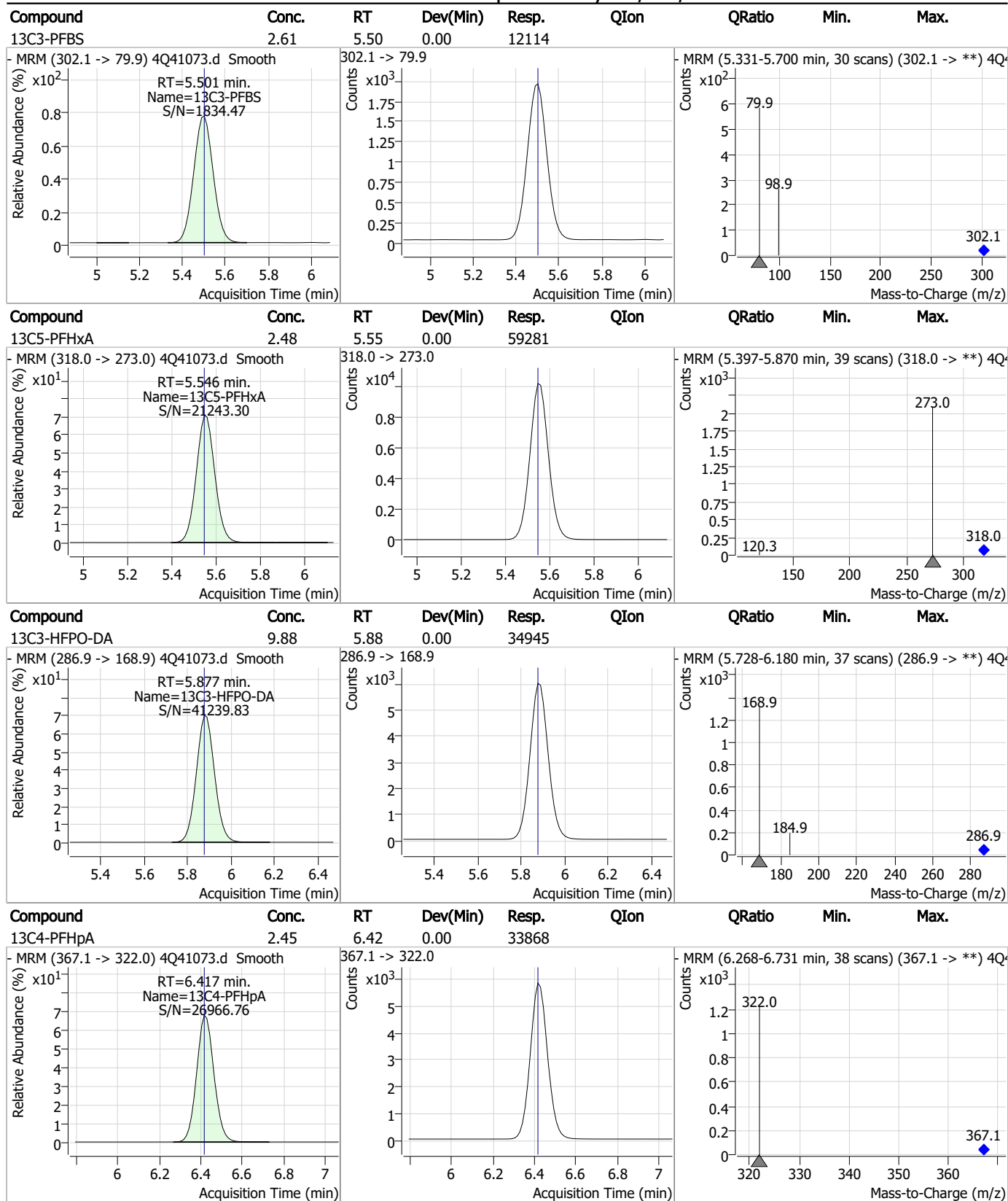
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Perfluorinated Compounds by LC/MS/MS



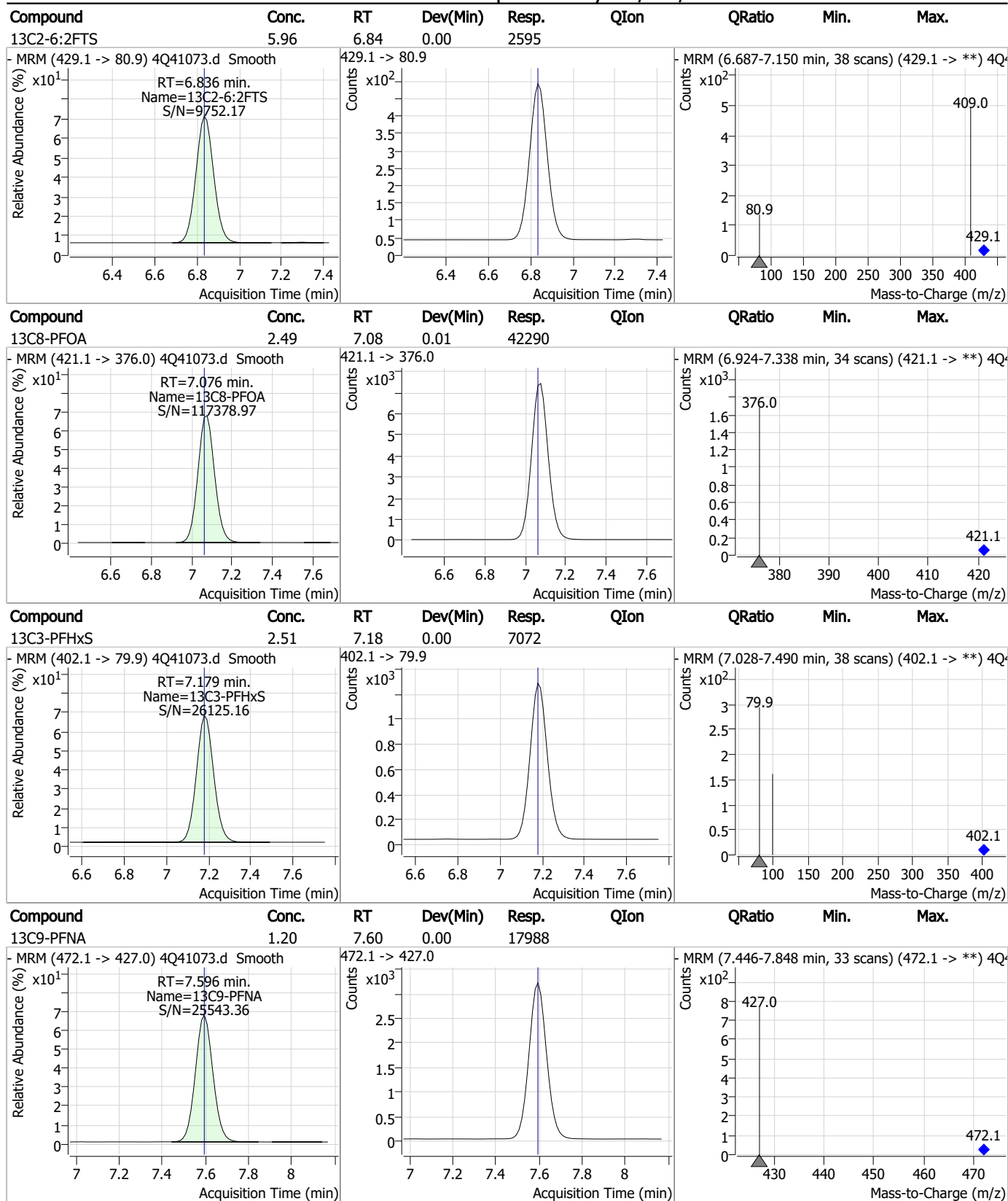
7.2.4
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Perfluorinated Compounds by LC/MS/MS



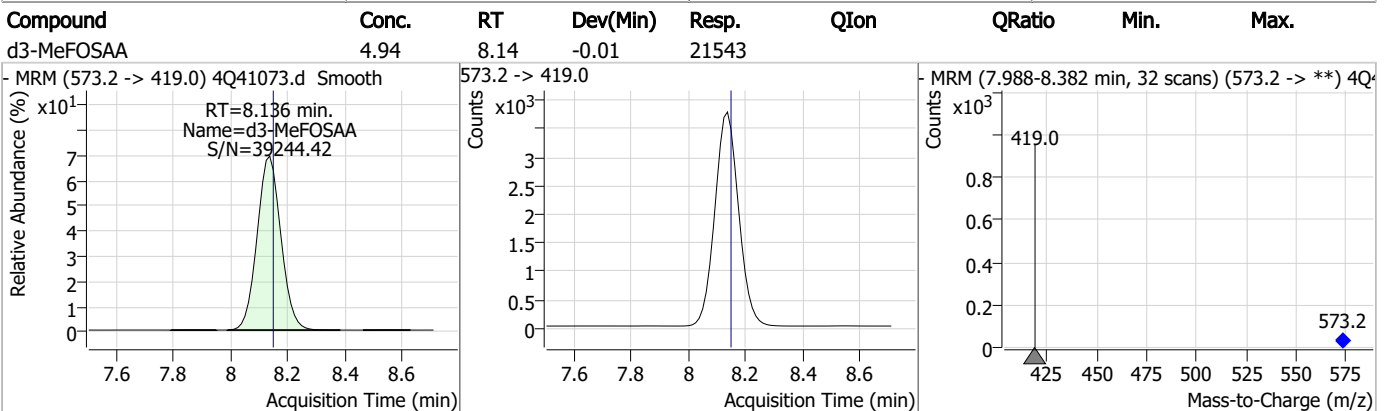
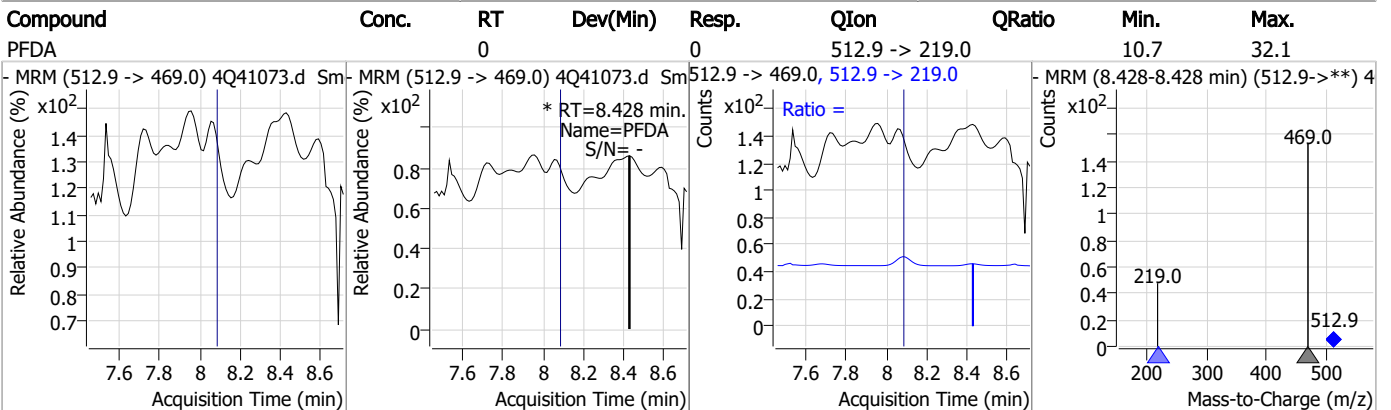
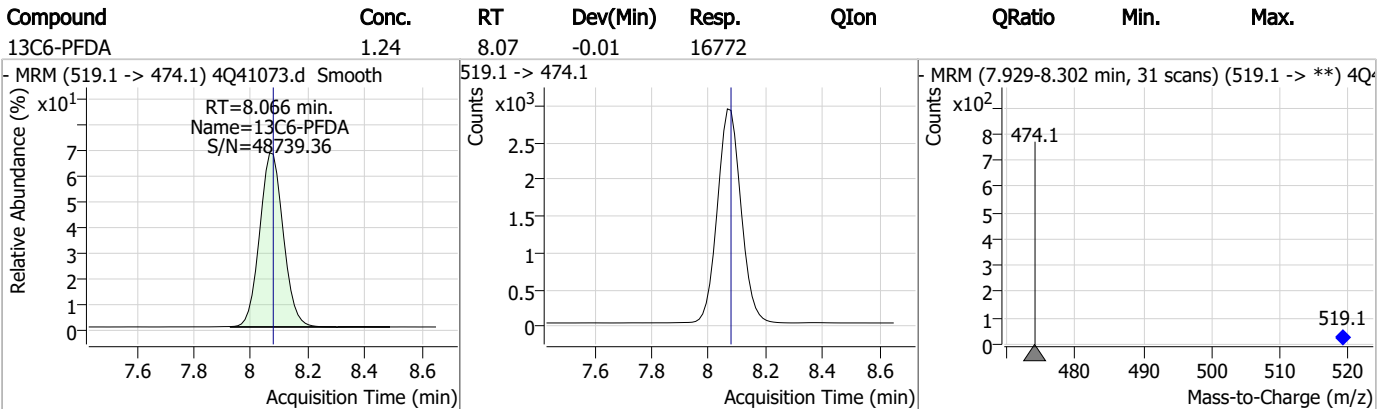
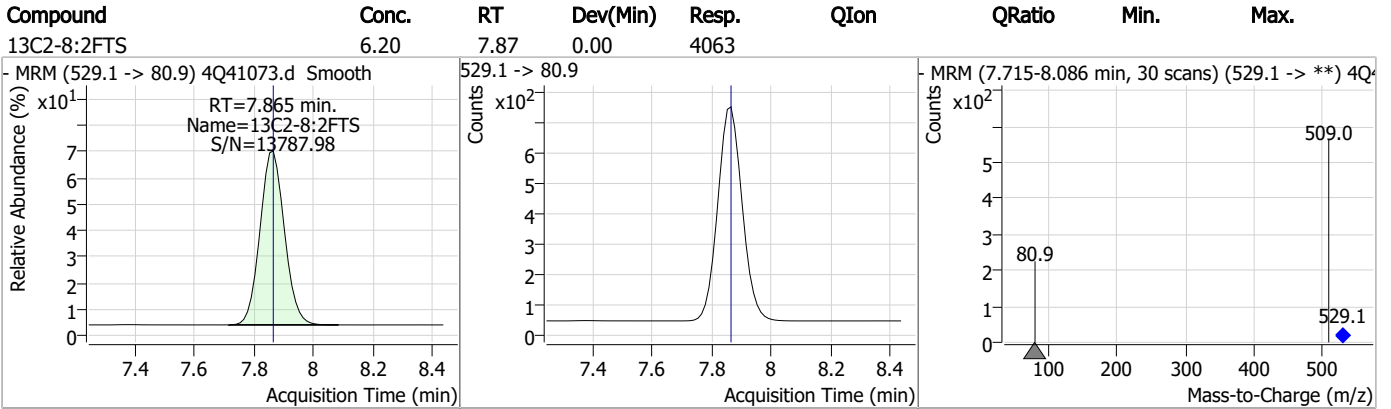
7.2.4
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Perfluorinated Compounds by LC/MS/MS

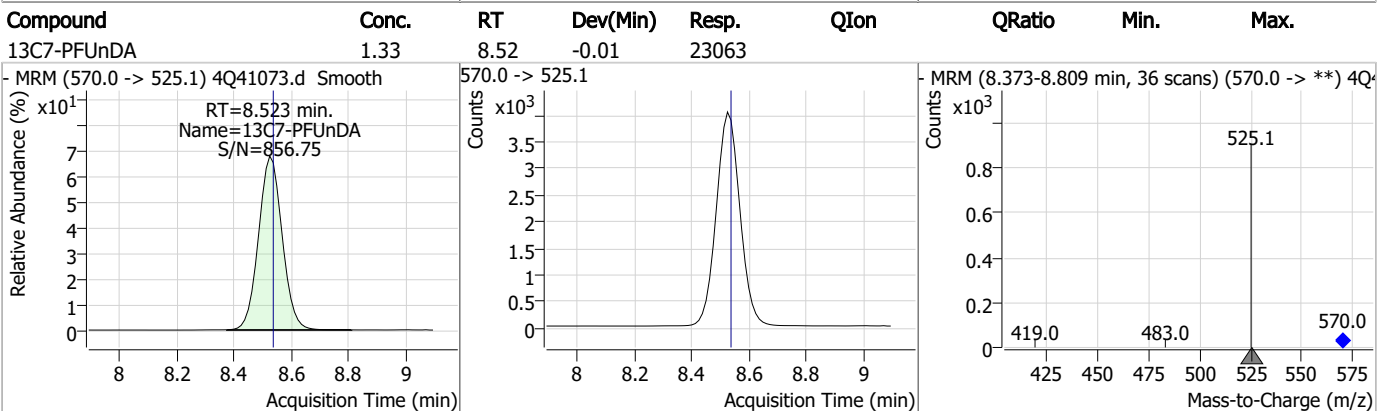
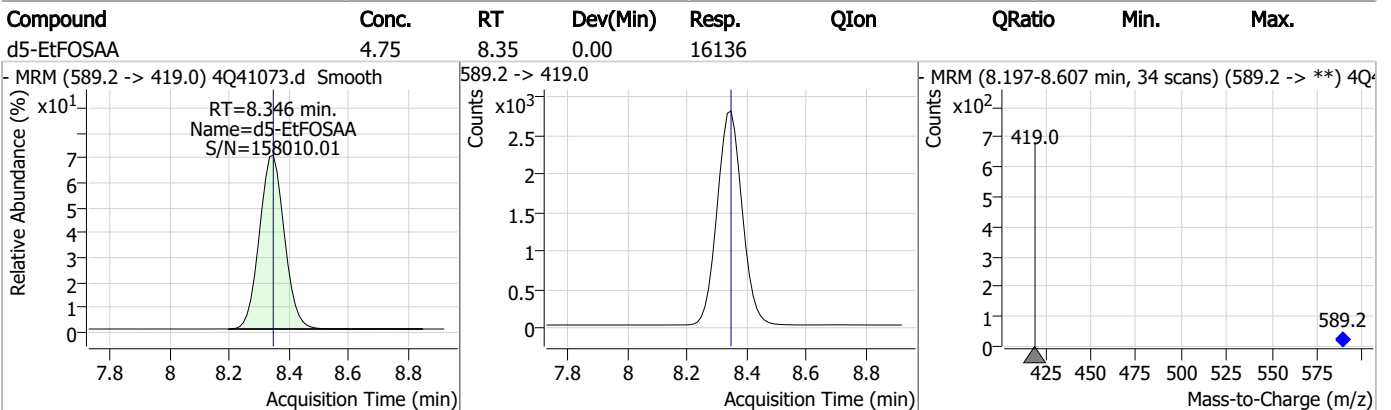
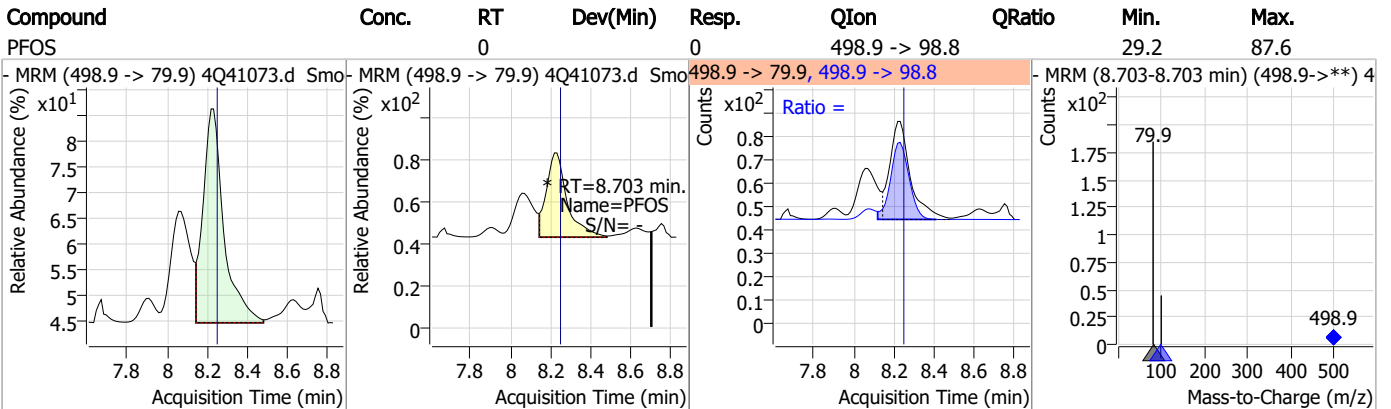
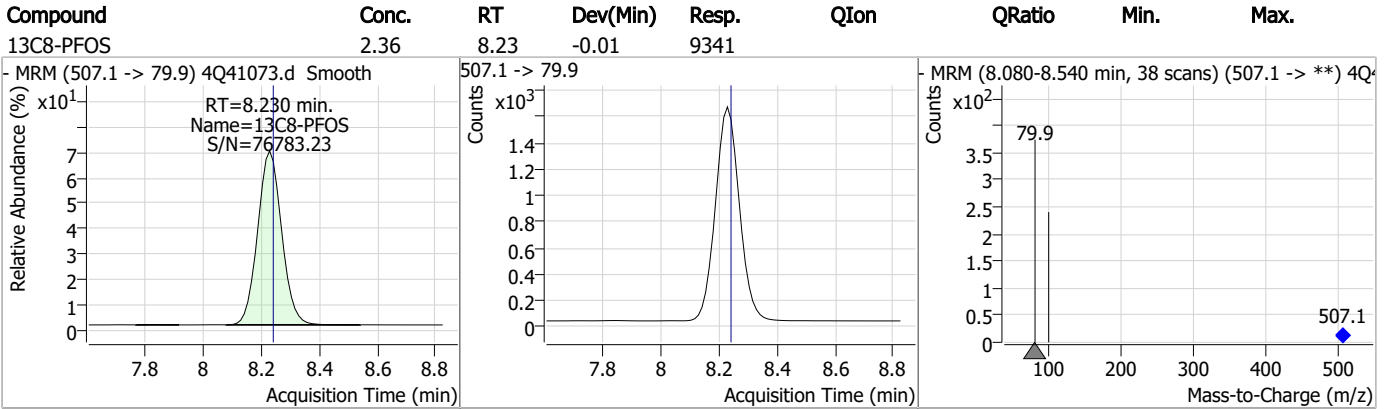


7.2.4
7

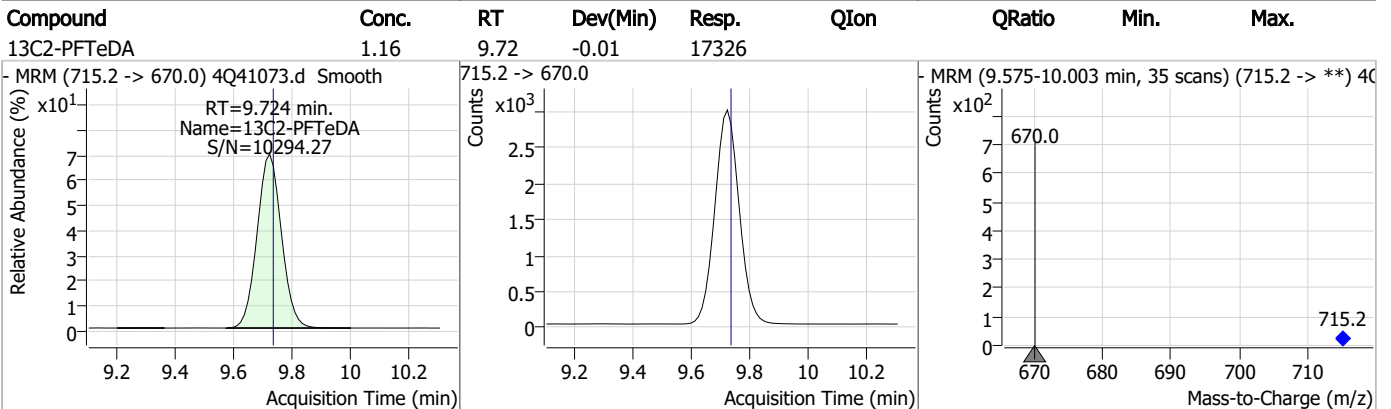
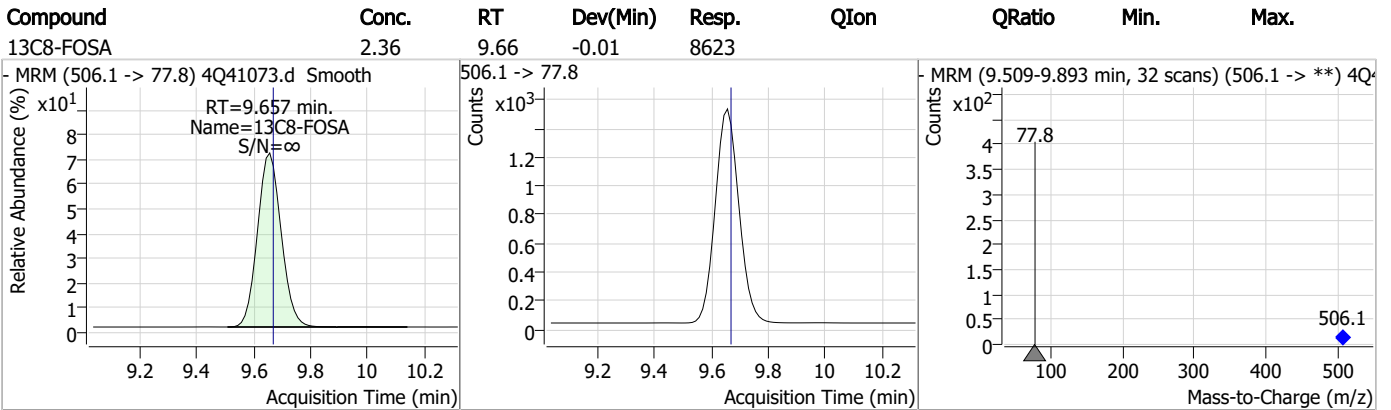
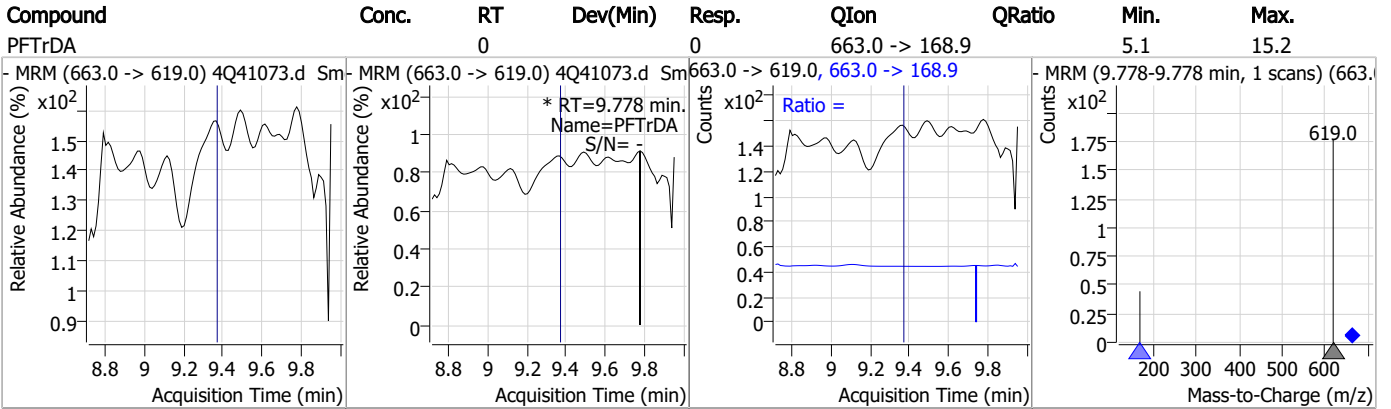
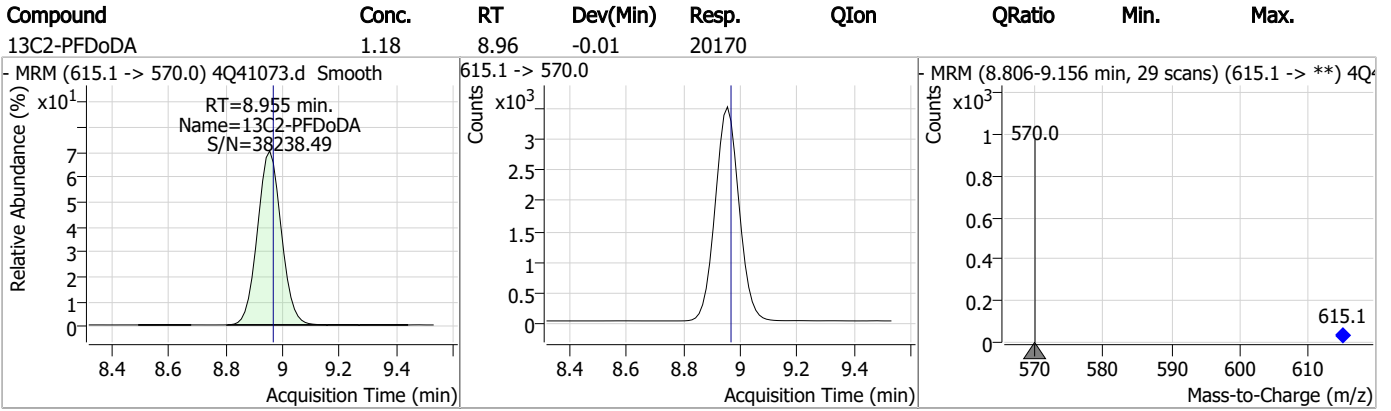
Perfluorinated Compounds by LC/MS/MS



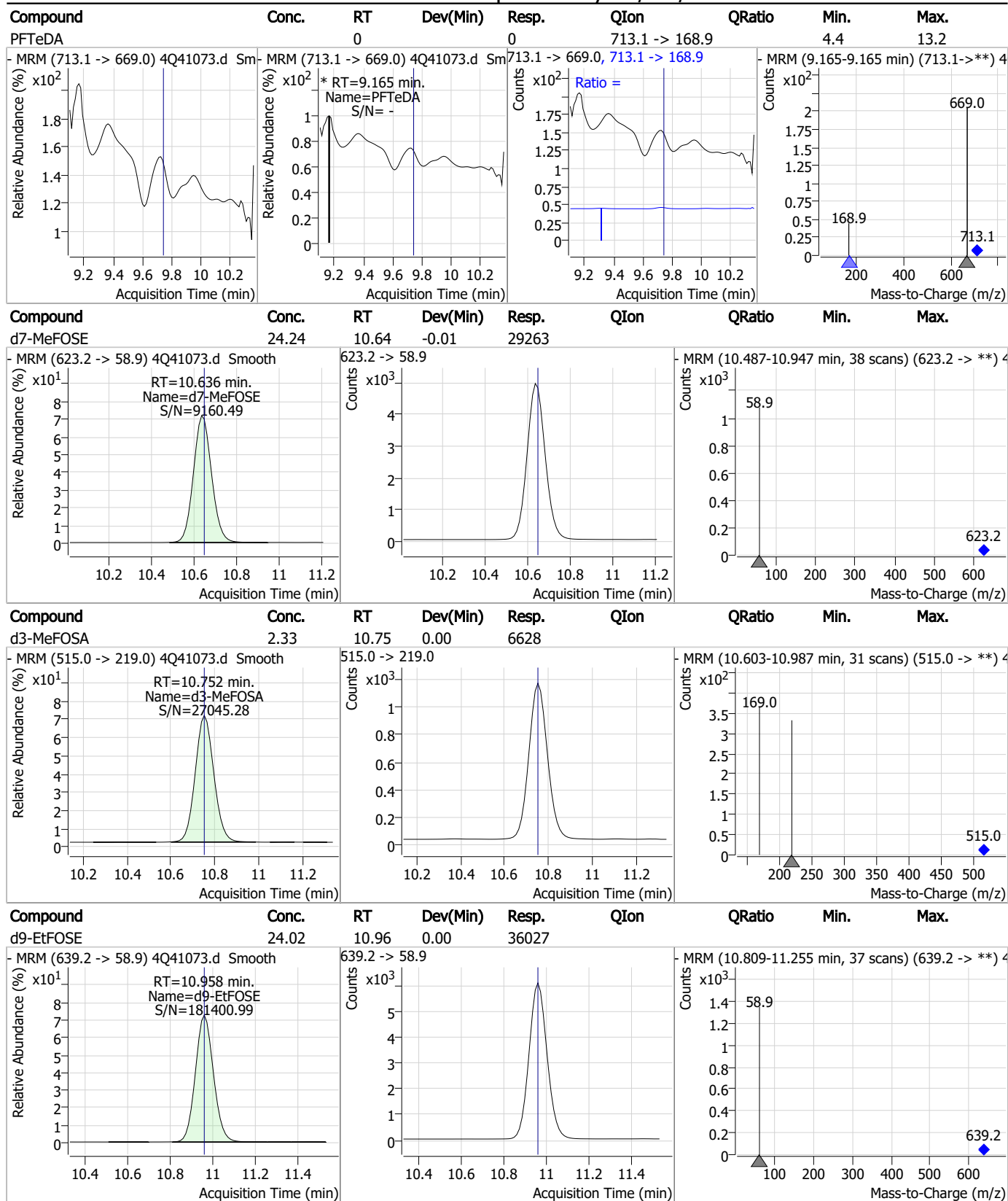
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



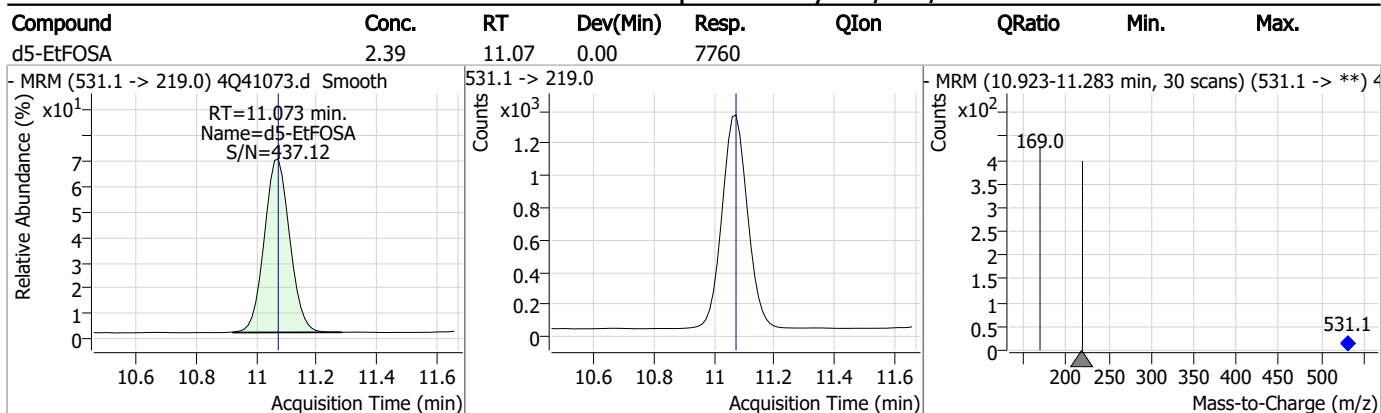
Perfluorinated Compounds by LC/MS/MS



7.2.4
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Perfluorinated Compounds by LC/MS/MS



7.2.4

7

Perfluorinated Compounds by LC/MS/MS

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 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 10:29:01 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	141390	10.00 µg/L	-0.013
M5-PFPeA	4.500	268.3 -> 223.0	77121	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	59204	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	34274	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	41665	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	17871	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	16270	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	22894	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	21061	1.25 µg/L	0.000
M2-PFTeDA	9.749	715.2 -> 670.0	16836	1.25 µg/L	0.012
M8-FOSA	9.670	506.1 -> 77.8	8812	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	11832	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7266	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	9596	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1681	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2532	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	4299	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	22871	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	34994	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	16709	5.00 µg/L	0.000
M7-MeFOSE	10.661	623.2 -> 58.9	29571	25.00 µg/L	0.012
M9-EtFOSE	10.970	639.2 -> 58.9	36155	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	7652	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	6758	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	9786	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	85543	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	5383	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	50452	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16592	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	21140	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	53275	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1681	5.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.4%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2532	5.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.5%		
13C2-8:2FTS	7.865	529.1 -> 80.9	4299	6.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.3%		
13C2-PFDoDA	8.968	615.1 -> 570.0	21061	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C2-PFTeDA	9.749	715.2 -> 670.0	16836	1.12 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.3%		
13C3-PFBS	5.501	302.1 -> 79.9	11832	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C3-PFHxS	7.179	402.1 -> 79.9	7266	2.41 µg/L	0.000

7.2.5
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C4-PFBA	3.139	216.8 -> 171.9	141390	9.98 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.417	367.1 -> 322.0	34274	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C5-PFHxA	5.546	318.0 -> 273.0	59204	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C5-PFPeA	4.500	268.3 -> 223.0	77121	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C6-PFDA	8.079	519.1 -> 474.1	16270	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C7-PFUnDA	8.536	570.0 -> 525.1	22894	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C8-FOSA	9.670	506.1 -> 77.8	8812	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C8-PFOA	7.062	421.1 -> 376.0	41665	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOS	8.242	507.1 -> 79.9	9596	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C9-PFNA	7.596	472.1 -> 427.0	17871	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSAA	8.136	573.2 -> 419.0	22871	5.31 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	34994	10.10 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d3-MeFOSA	10.765	515.0 -> 219.0	6758	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
d5-EtFOSAA	8.346	589.2 -> 419.0	16709	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
d7-MeFOSE	10.661	623.2 -> 58.9	29571	24.79 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d9-EtFOSE	10.970	639.2 -> 58.9	36155	24.39 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
d5-EtFOSA	11.085	531.1 -> 219.0	7652	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.626	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.25
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.513	713.1 -> 669.0	0	µg/L	m	1
PFTrDA	9.528	713.1 -> 168.9	0	µg/L	m	1
		663.0 -> 619.0				
PFUnDA	8.685	663.0 -> 168.9	0	µg/L	m	1
		563.1 -> 519.0				
11Cl-PF3OUdS	-	563.1 -> 269.1	-	N.D.		
		630.9 -> 450.9				
9Cl-PF3ONS	-	632.9 -> 452.9	-	N.D.		
		530.8 -> 351.0				
ADONA	-	532.8 -> 353.0	-	N.D.		
		376.9 -> 250.9				
HFPO-DA	-	376.9 -> 84.8	-	N.D.		
		284.9 -> 168.9				
3:3FTCA	-	284.9 -> 184.9	-	N.D.		
		241.0 -> 177.0				
5:3FTCA	-	241.0 -> 117.0	-	N.D.		
		341.0 -> 237.1				
7:3FTCA	-	341.0 -> 217.0	-	N.D.		
		441.0 -> 316.9				
EtFOSA	-	441.0 -> 336.9	-	N.D.		
		526.0 -> 219.0				
EtFOSE	-	526.0 -> 169.0	-	N.D.		
		630.0 -> 58.9				
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

7.2.5
7

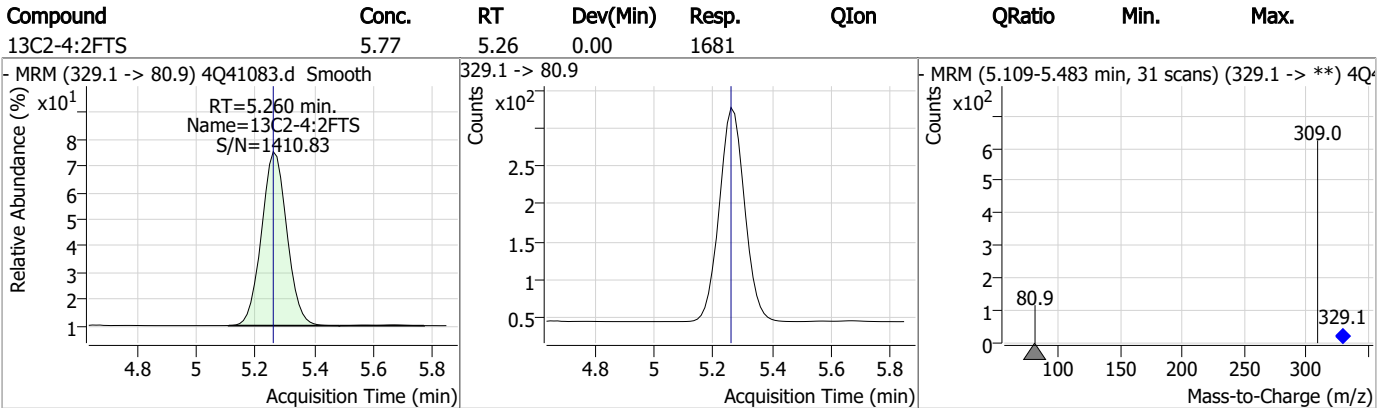
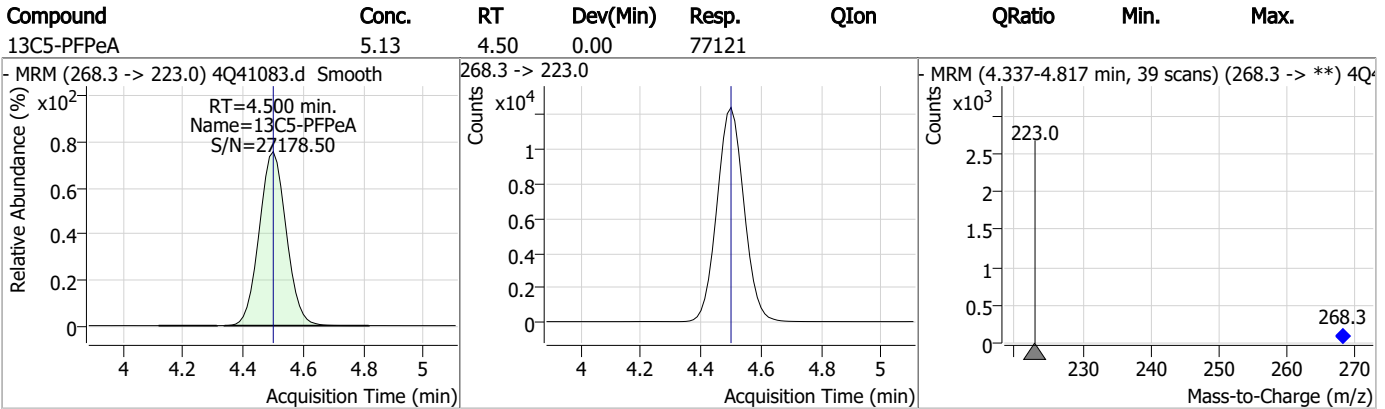
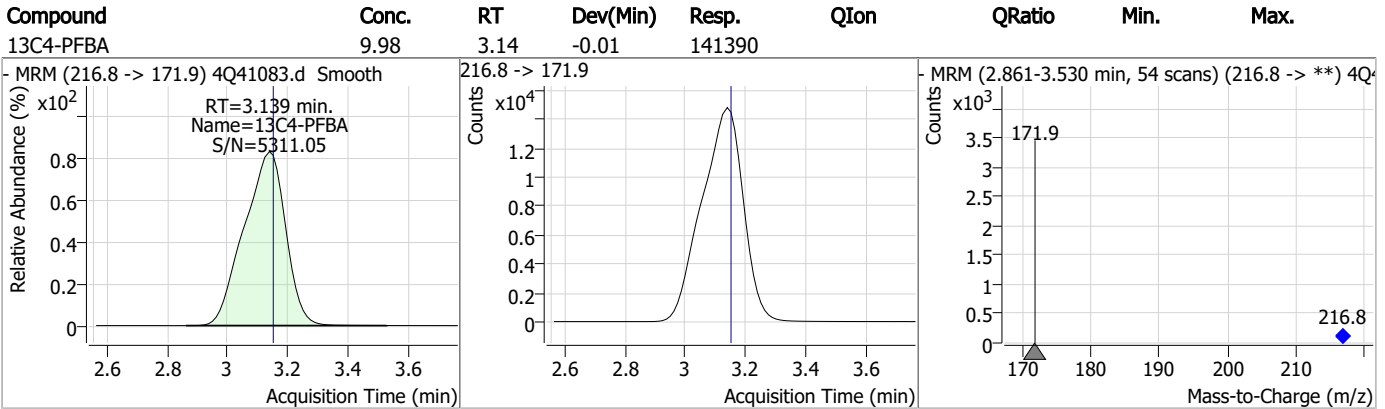
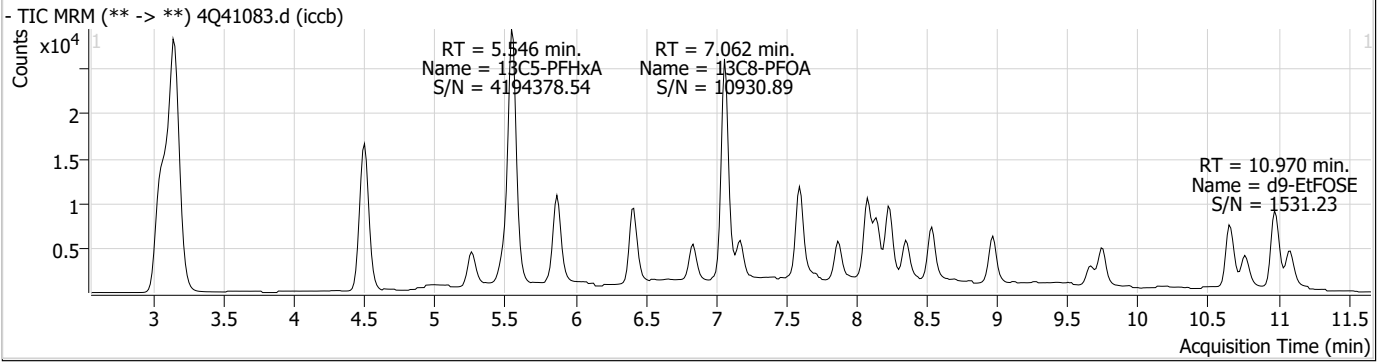
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.5

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Perfluorinated Compounds by LC/MS/MS

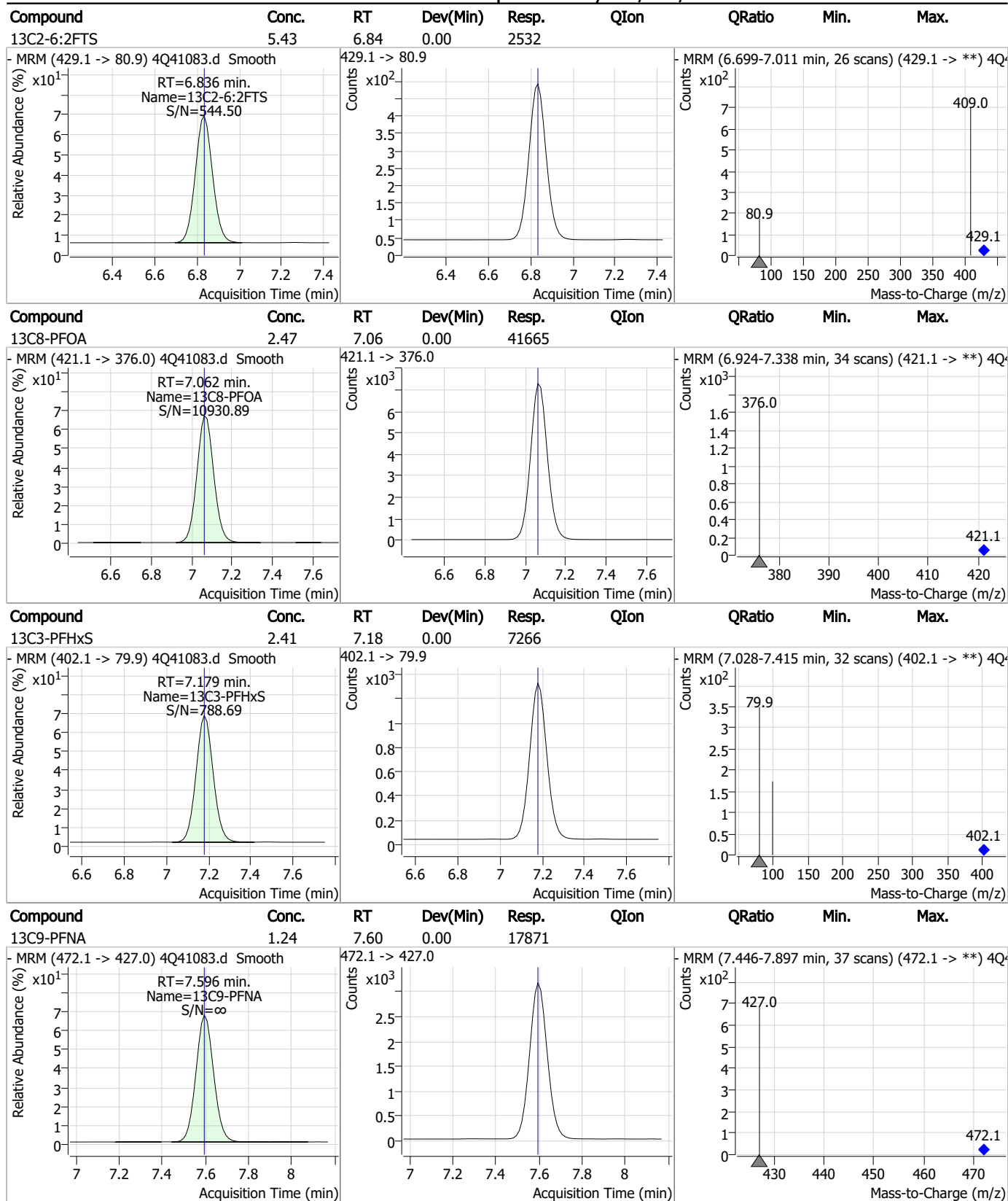


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.38	5.50	0.00	11832				
<p>MRM (302.1 -> 79.9) 4Q41083.d Smooth RT=5.501 min. Name=13C3-PFBS S/N=2159.19</p>			<p>302.1 -> 79.9</p>			<p>MRM (5.327-5.800 min, 39 scans) (302.1 -> **) 4Q</p>		
13C5-PFHxA	2.53	5.55	0.00	59204				
<p>MRM (318.0 -> 273.0) 4Q41083.d Smooth RT=5.546 min. Name=13C5-PFHxA S/N=4194378.54</p>			<p>318.0 -> 273.0</p>			<p>MRM (5.397-5.793 min, 32 scans) (318.0 -> **) 4Q</p>		
13C3-HFPO-DA	10.10	5.88	0.00	34994				
<p>MRM (286.9 -> 168.9) 4Q41083.d Smooth RT=5.877 min. Name=13C3-HFPO-DA S/N=199518.79</p>			<p>286.9 -> 168.9</p>			<p>MRM (5.728-6.100 min, 31 scans) (286.9 -> **) 4Q</p>		
13C4-PFHpA	2.53	6.42	0.00	34274				
<p>MRM (367.1 -> 322.0) 4Q41083.d Smooth RT=6.417 min. Name=13C4-PFHpA S/N=94271.11</p>			<p>367.1 -> 322.0</p>			<p>MRM (6.268-6.731 min, 38 scans) (367.1 -> **) 4Q</p>		

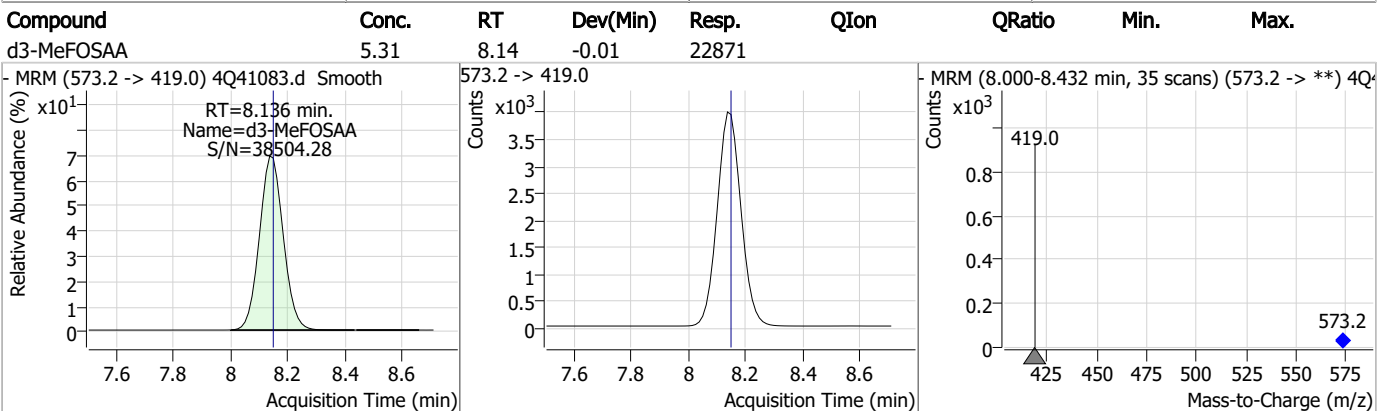
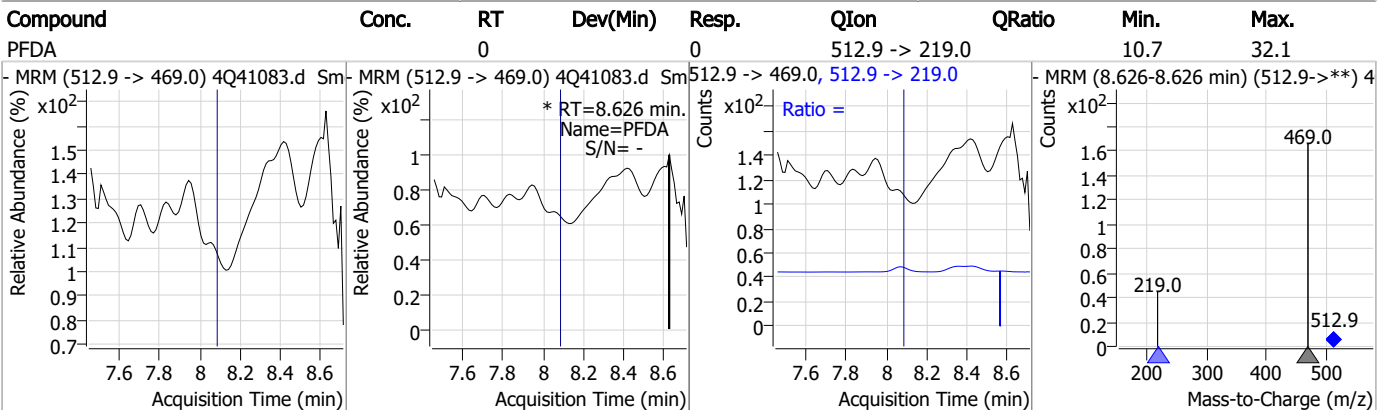
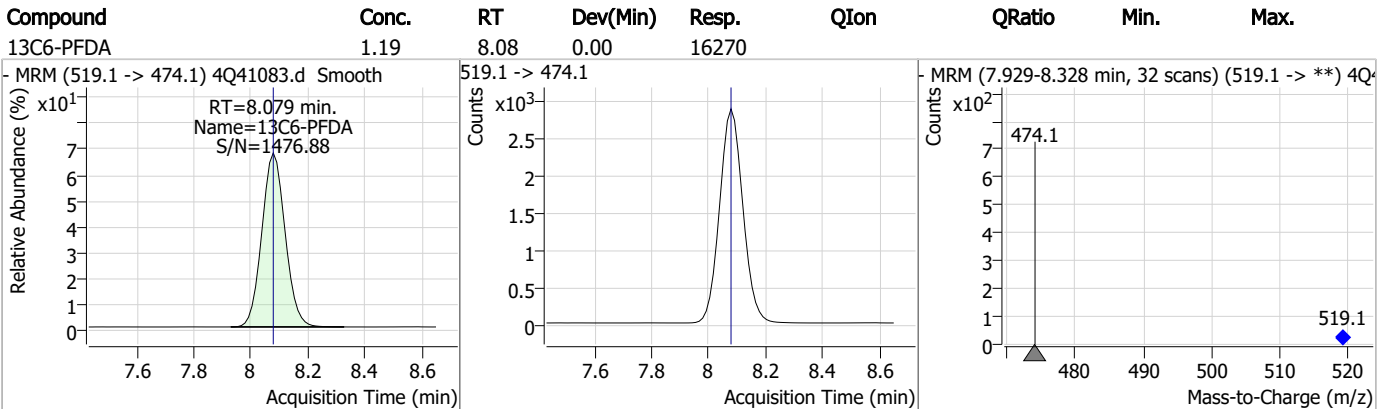
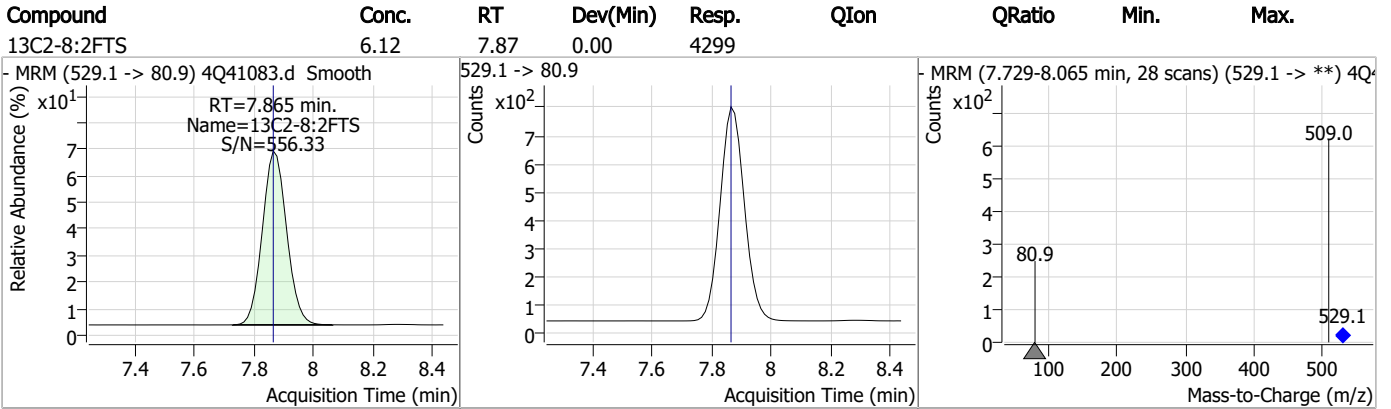
7.25
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Perfluorinated Compounds by LC/MS/MS

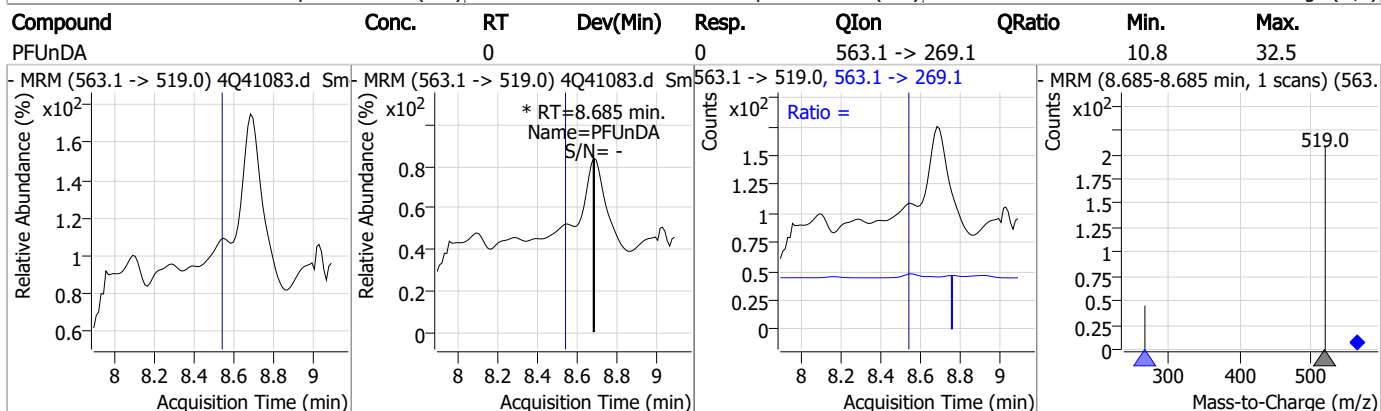
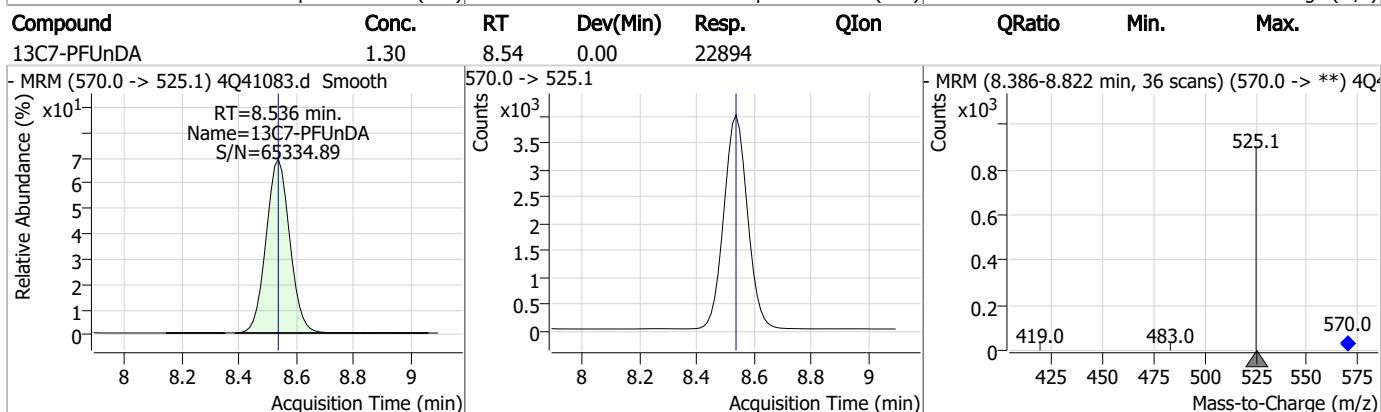
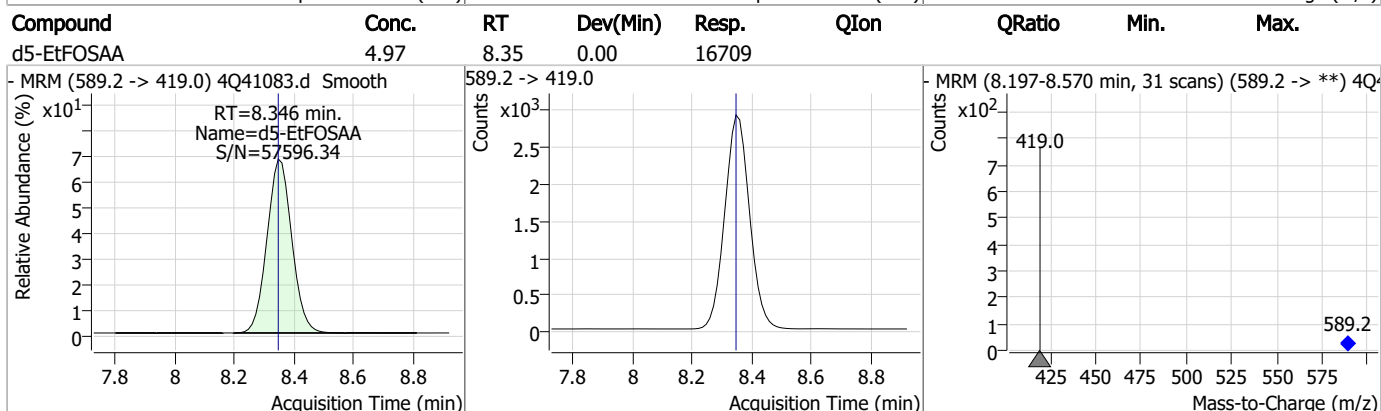
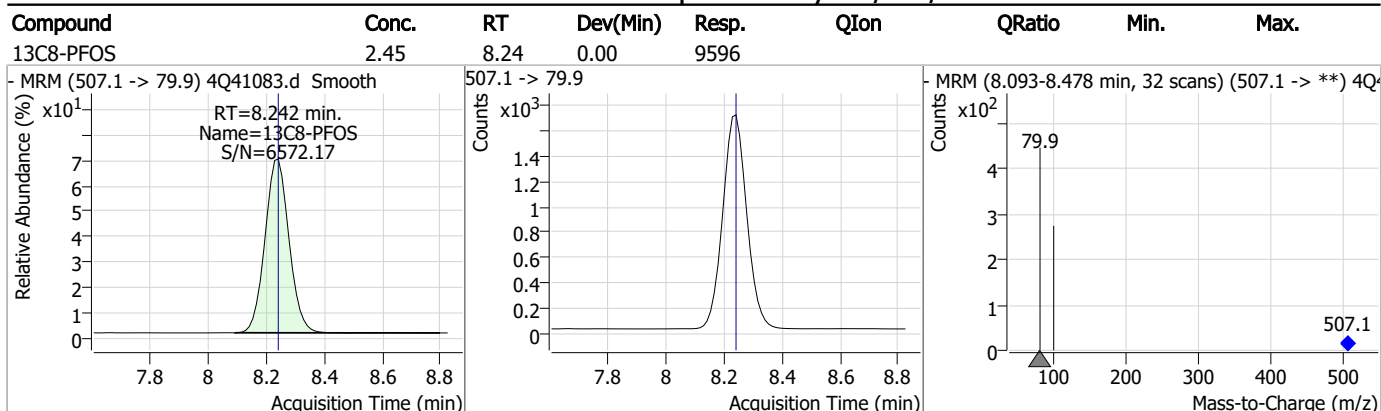


7.25
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Perfluorinated Compounds by LC/MS/MS

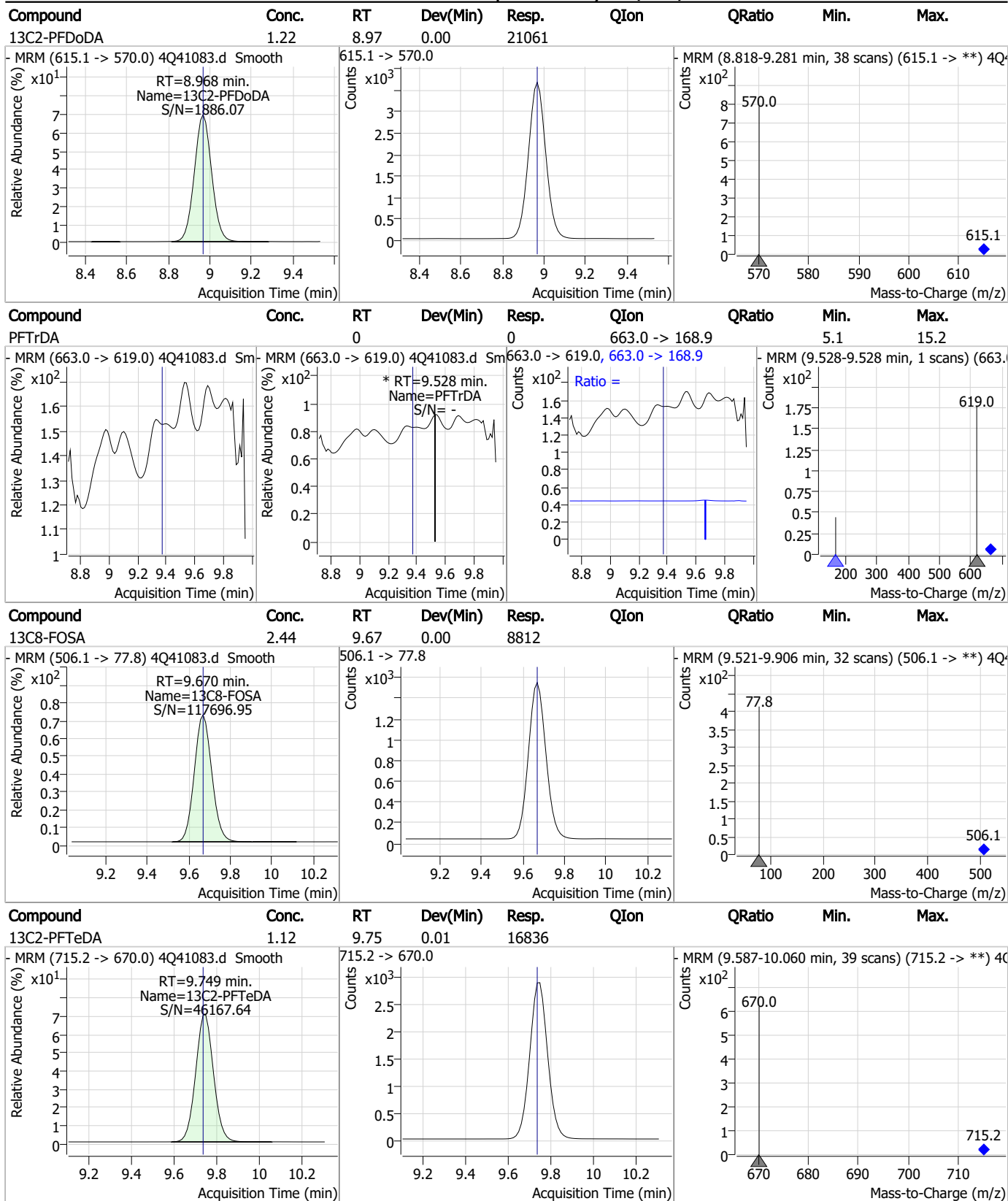


Perfluorinated Compounds by LC/MS/MS



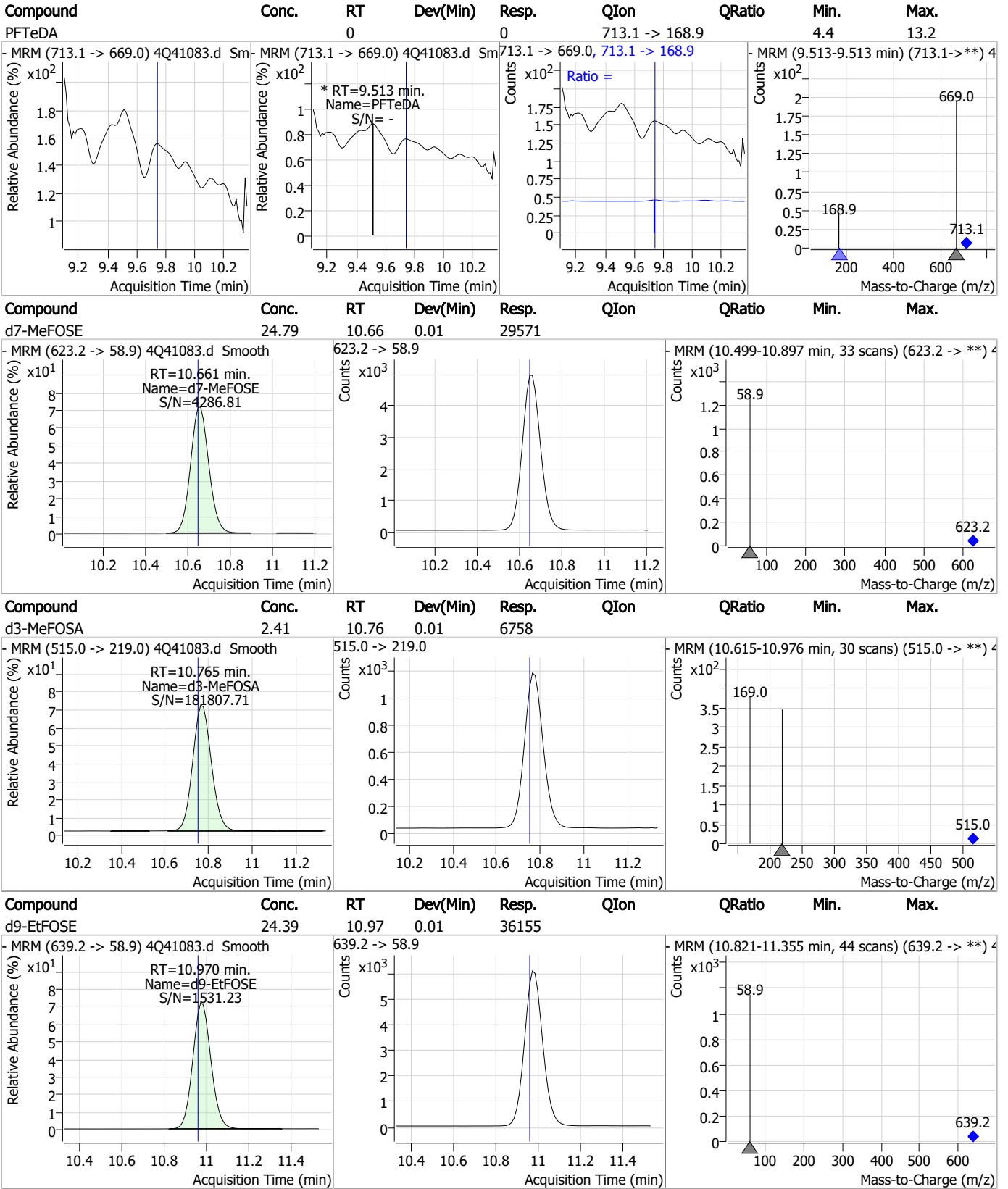
7.25
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Perfluorinated Compounds by LC/MS/MS

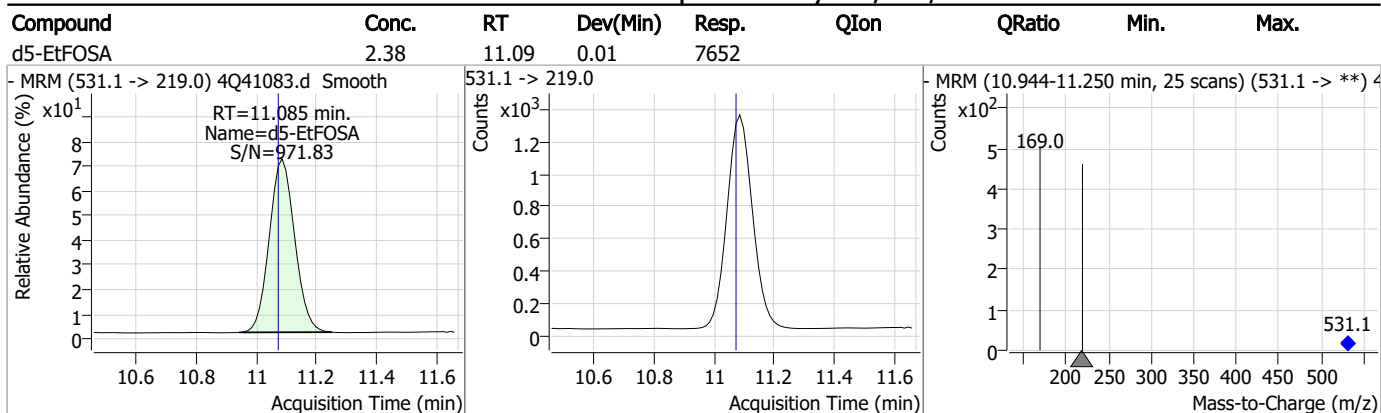


7.25
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.5
7

Perfluorinated Compounds by LC/MS/MS

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 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 8:22:44 PM
 Sample Name : op95527-bs
 Vial : P4-C1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95527,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.189	216.8 -> 171.9	133028	10.00 µg/L	0.037
M5-PFPeA	4.524	268.3 -> 223.0	64833	5.00 µg/L	0.025
M5-PFHxA	5.559	318.0 -> 273.0	50259	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	28433	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	34757	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	14944	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	15587	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	18649	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	16597	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	13305	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	8012	2.50 µg/L	0.000
M3-PFBS	5.514	302.1 -> 79.9	9867	2.50 µg/L	0.012
M3-PFHxS	7.179	402.1 -> 79.9	6532	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	8573	2.50 µg/L	-0.012
M2-4:2FTS	5.272	329.1 -> 80.9	1383	5.00 µg/L	0.012
M2-6:2FTS	6.836	429.1 -> 80.9	1969	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3622	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	20462	5.00 µg/L	-0.012
M3-HFPO-DA	5.889	286.9 -> 168.9	28198	10.00 µg/L	0.012
M5-EtFOSAA	8.346	589.2 -> 419.0	13679	5.00 µg/L	0.000
M7-MeFOSE	10.636	623.2 -> 58.9	23049	25.00 µg/L	-0.012
M9-EtFOSE	10.958	639.2 -> 58.9	29016	25.00 µg/L	0.000
M5-EtFOSA	11.073	531.1 -> 219.0	6118	2.50 µg/L	0.000
M3-MeFOSA	10.752	515.0 -> 219.0	5483	2.50 µg/L	0.000
13C4-PFOS	8.230	502.8 -> 79.9	8216	2.50 µg/L	-0.012
13C3-PFBA	3.193	216.0 -> 172.0	73102	5.00 µg/L	0.037
18O2-PFHxS	7.178	403.0 -> 83.9	4304	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	39641	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	14715	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	16276	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	43225	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	1383	5.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.7%		
13C2-6:2FTS	6.836	429.1 -> 80.9	1969	5.27 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3622	6.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.9%		
13C2-PFDoDA	8.968	615.1 -> 570.0	16597	1.08 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.4%		
13C2-PFTeDA	9.736	715.2 -> 670.0	13305	0.99 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.6%		
13C3-PFBS	5.514	302.1 -> 79.9	9867	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C3-PFHxS	7.179	402.1 -> 79.9	6532	2.71 µg/L	0.000

7.31
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.2%	
13C4-PFBA	3.189	216.8 -> 171.9	133028	10.98 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.8%	
13C4-PFHpA	6.417	367.1 -> 322.0	28433	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFHxA	5.559	318.0 -> 273.0	50259	2.65 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.9%	
13C5-PFPeA	4.524	268.3 -> 223.0	64833	5.31 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C6-PFDA	8.079	519.1 -> 474.1	15587	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C7-PFUnDA	8.536	570.0 -> 525.1	18649	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-FOSA	9.670	506.1 -> 77.8	8012	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-PFOA	7.062	421.1 -> 376.0	34757	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C8-PFOS	8.230	507.1 -> 79.9	8573	2.61 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C9-PFNA	7.596	472.1 -> 427.0	14944	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.9%	
d3-MeFOSAA	8.136	573.2 -> 419.0	20462	5.66 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.1%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	28198	10.03 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d3-MeFOSA	10.752	515.0 -> 219.0	5483	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.0%	
d5-EtFOSAA	8.346	589.2 -> 419.0	13679	4.85 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d7-MeFOSE	10.636	623.2 -> 58.9	23049	23.01 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 92.0%	
d9-EtFOSE	10.958	639.2 -> 58.9	29016	23.32 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.3%	
d5-EtFOSA	11.073	531.1 -> 219.0	6118	2.27 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.8%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	24275	11.03 µg/L	97
		327.1 -> 80.9	8784		
6:2FTS	6.836	427.1 -> 407.0	22141	12.56 µg/L	99
		427.1 -> 80.9	7977		
8:2FTS	7.866	527.1 -> 507.0	20782	11.10 µg/L	98
		527.1 -> 80.8	6120		
EtFOSAA	8.360	584.2 -> 419.1	6910	2.97 µg/L	m 85
		584.2 -> 526.0	3389		
FOSA	9.661	498.1 -> 77.9	12863	3.02 µg/L	97
		498.1 -> 478.0	452		
MeFOSAA	8.137	570.1 -> 419.0	8392	3.00 µg/L	# 82
		570.1 -> 483.0	1814		
PFBA	3.196	212.8 -> 168.9	37737	11.97 µg/L	100
PFBS	5.515	298.7 -> 79.9	10560	2.68 µg/L	97
		298.7 -> 98.8	4246		
PFDA	8.079	512.9 -> 469.0	32336	3.04 µg/L	95
		512.9 -> 219.0	6181		
PFDoDA	8.968	613.1 -> 569.0	33240	2.96 µg/L	98
		613.1 -> 319.0	5644		
PFDS	9.133	599.0 -> 79.9	5639	2.64 µg/L	97

7.3.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.430	599.0 -> 98.8	2636	3.08	µg/L	98
		363.1 -> 319.0	46539			
PFHpS	7.736	363.1 -> 169.0	8104	2.60	µg/L	92
		449.0 -> 79.9	6848			
PFHxA	5.562	449.0 -> 98.9	4148	2.83	µg/L	99
		313.0 -> 269.0	49185			
PFHxS	7.180	313.0 -> 118.9	1476	2.37	µg/L	96
		398.7 -> 79.9	6404			
PFNA	7.596	398.7 -> 98.9	3408	3.08	µg/L	98
		463.0 -> 419.0	28015			
PFNS	8.699	463.0 -> 219.0	6931	2.81	µg/L	95
		548.8 -> 79.9	5177			
PFOA	7.063	548.8 -> 98.9	2822	2.99	µg/L	99
		413.0 -> 369.0	49096			
PFOS	8.231	413.0 -> 169.0	9872	2.35	µg/L	83
		498.9 -> 79.9	9124			
PFPeA	4.527	498.9 -> 98.8	4178	6.20	µg/L	100
		263.0 -> 219.0	94507			
PFPeS	6.484	349.1 -> 79.9	5771	2.78	µg/L	99
		349.1 -> 98.9	2715			
PFTeDA	9.737	713.1 -> 669.0	27740	3.00	µg/L	99
		713.1 -> 168.9	2547			
PFTrDA	9.366	663.0 -> 619.0	42704	3.06	µg/L	97
		663.0 -> 168.9	4725			
PFUnDA	8.536	563.1 -> 519.0	30571	2.95	µg/L	96
		563.1 -> 269.1	6035			
11CI-PF3OUdS	9.418	630.9 -> 450.9	90051	12.31	µg/L	98
		632.9 -> 452.9	26652			
9CI-PF3ONS	8.575	530.8 -> 351.0	119411	13.46	µg/L	100
		532.8 -> 353.0	36662			
ADONA	6.681	376.9 -> 250.9	216791	13.34	µg/L	100
		376.9 -> 84.8	37276			
HFPO-DA	5.890	284.9 -> 168.9	30126	13.01	µg/L	98
		284.9 -> 184.9	3463			
3:3FTCA	4.192	241.0 -> 177.0	12843	14.30	µg/L	100
		241.0 -> 117.0	1126			
5:3FTCA	6.345	341.0 -> 237.1	232040	88.15	µg/L	100
		341.0 -> 217.0	164805			
7:3FTCA	7.723	441.0 -> 316.9	84840	80.08	µg/L	98
		441.0 -> 336.9	198337			
EtFOSA	11.074	526.0 -> 219.0	6645	2.59	µg/L	96
		526.0 -> 169.0	7207			
EtFOSE	10.984	630.0 -> 58.9	33181	29.00	µg/L	100
		511.9 -> 219.0	5940			
MeFOSA	10.754	511.9 -> 169.0	6489	2.94	µg/L	94
		616.1 -> 58.9	28611			
MeFOSE	10.662	699.1 -> 79.9	4136	29.57	µg/L	100
		699.1 -> 98.8	2179			
PFDoDS	9.864	295.0 -> 201.0	4254	2.43	µg/L	97
		295.0 -> 84.9	979			
NFDHA	5.465	279.0 -> 85.1	50950	6.45	µg/L	97
		229.0 -> 84.9	38733			
PFMBA	4.881	314.8 -> 134.9	65358	6.02	µg/L	100
		314.8 -> 82.9	2199			
PFMPA	3.752			5.57	µg/L	99
PFEESA	5.983					

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

7.3.1
7

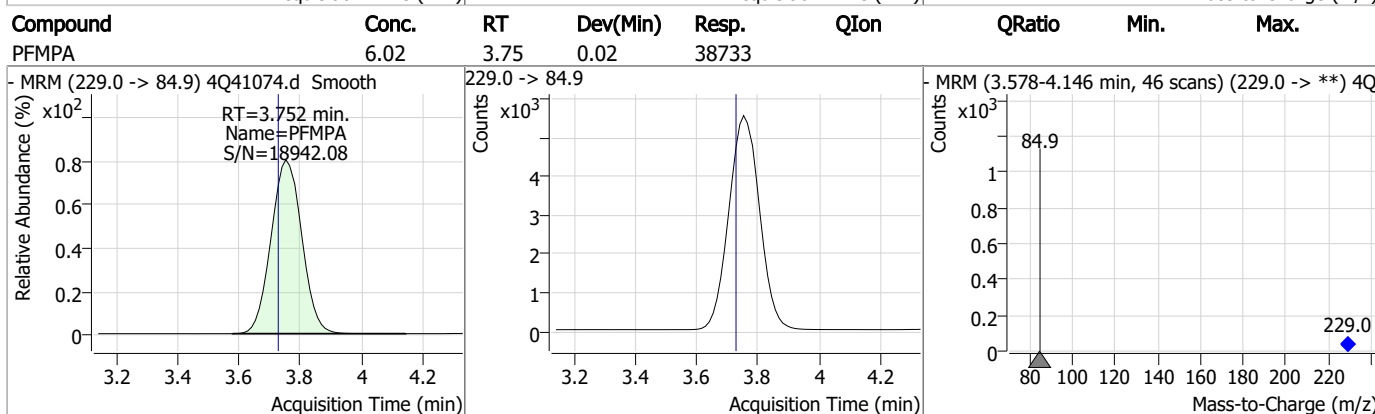
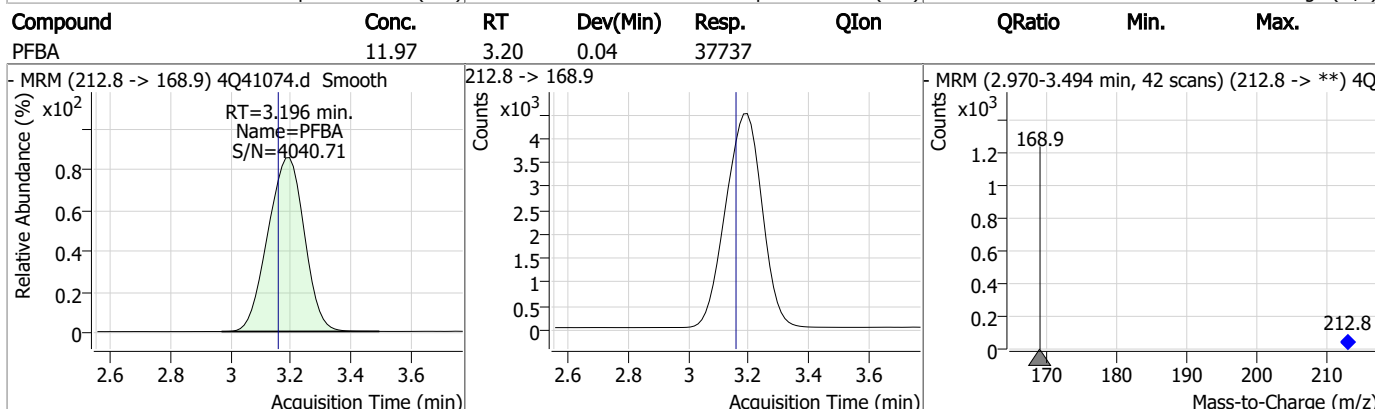
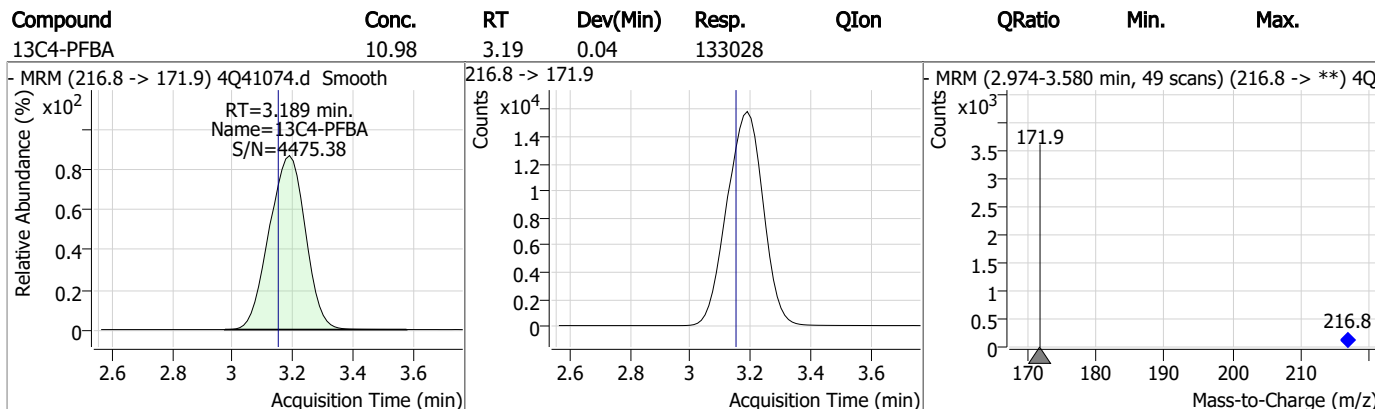
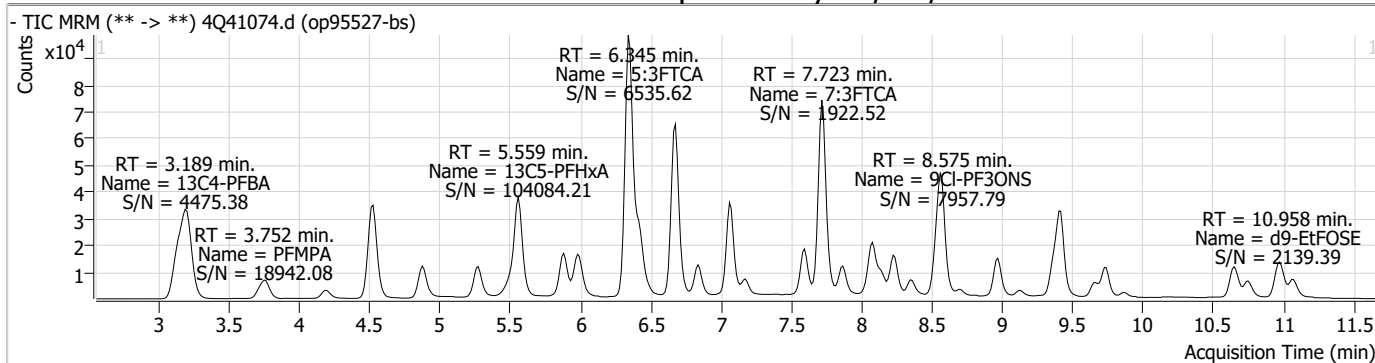
Perfluorinated Compounds by LC/MS/MS

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

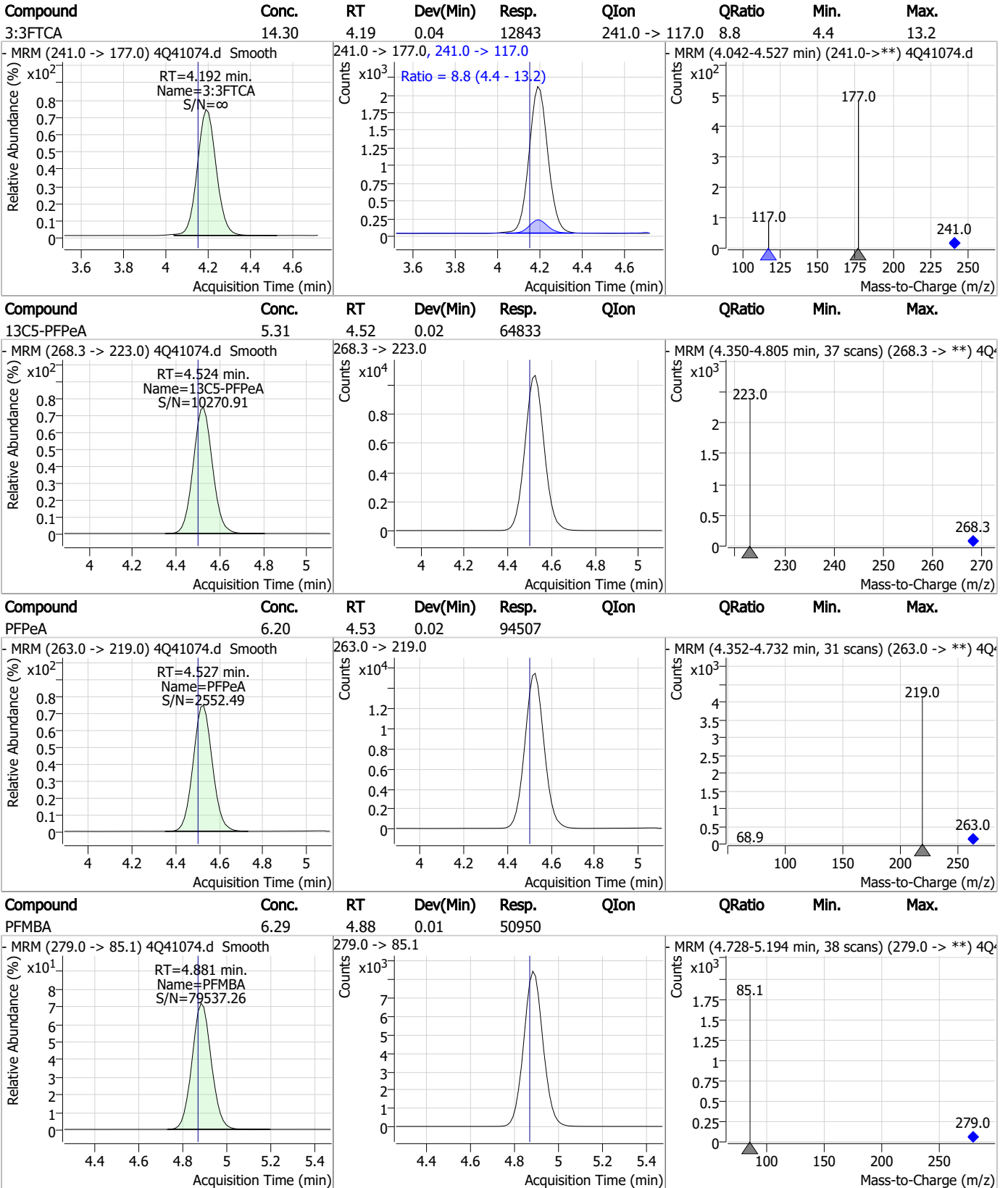
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Perfluorinated Compounds by LC/MS/MS

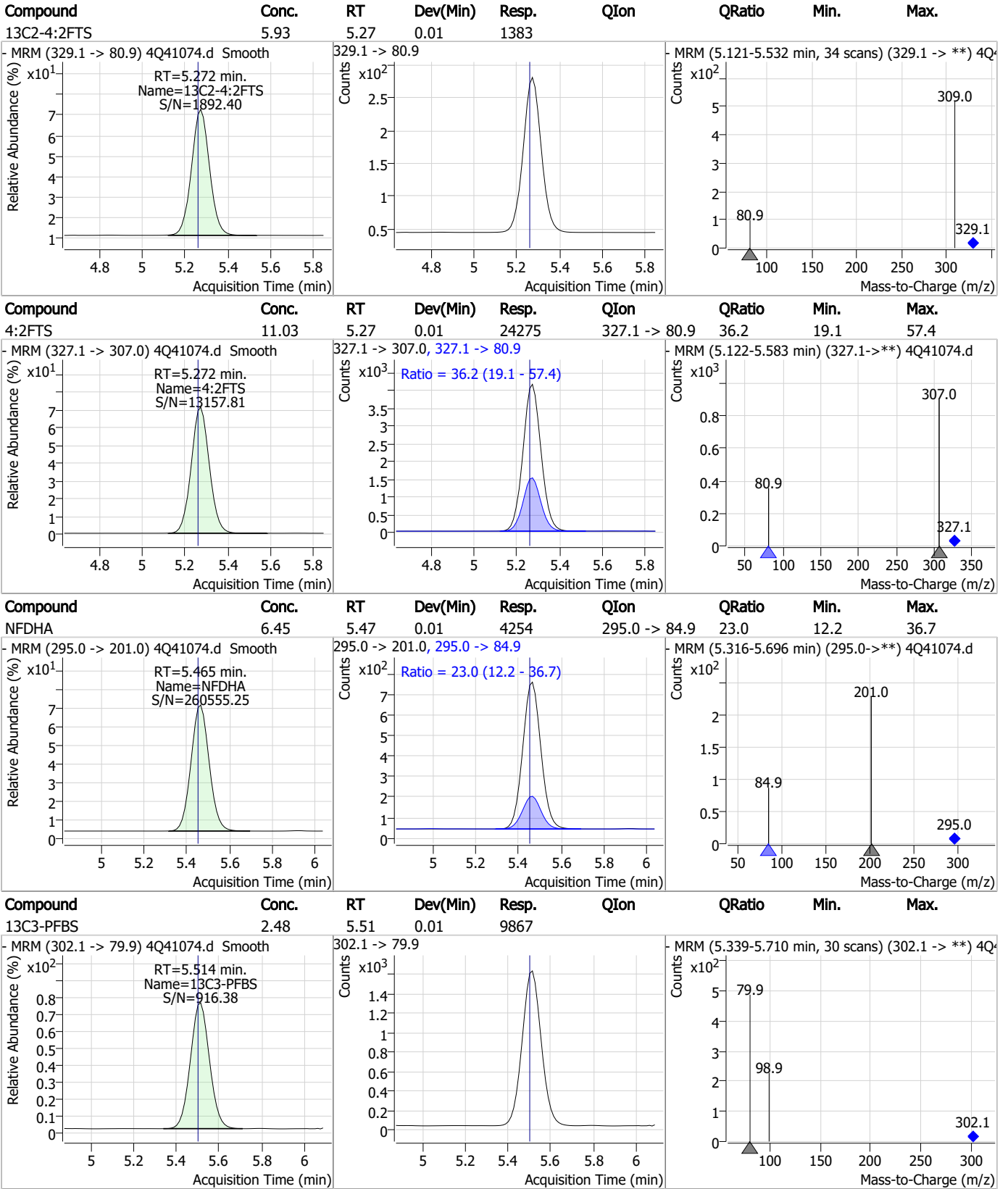


7.3.1
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

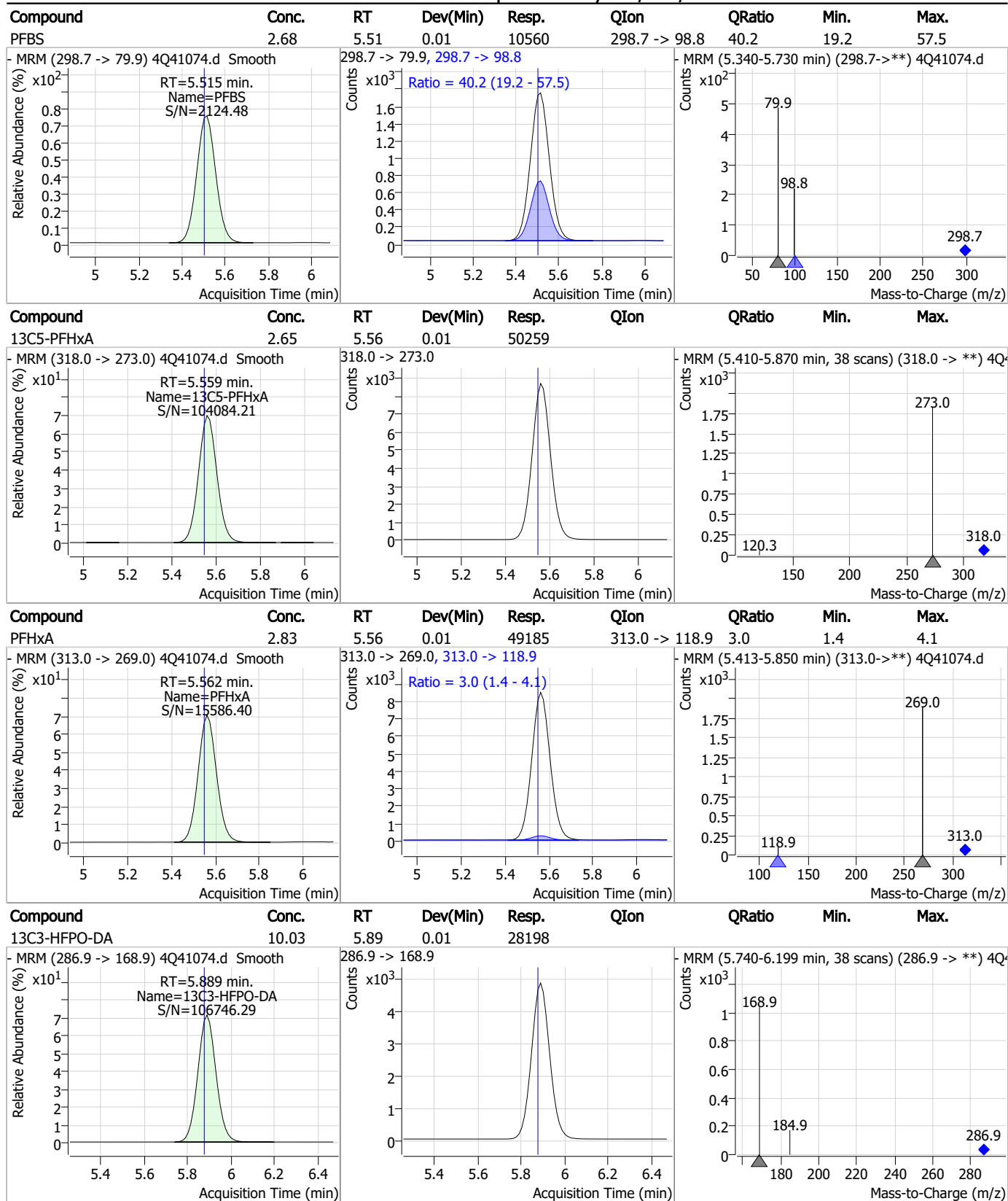


7.3.1

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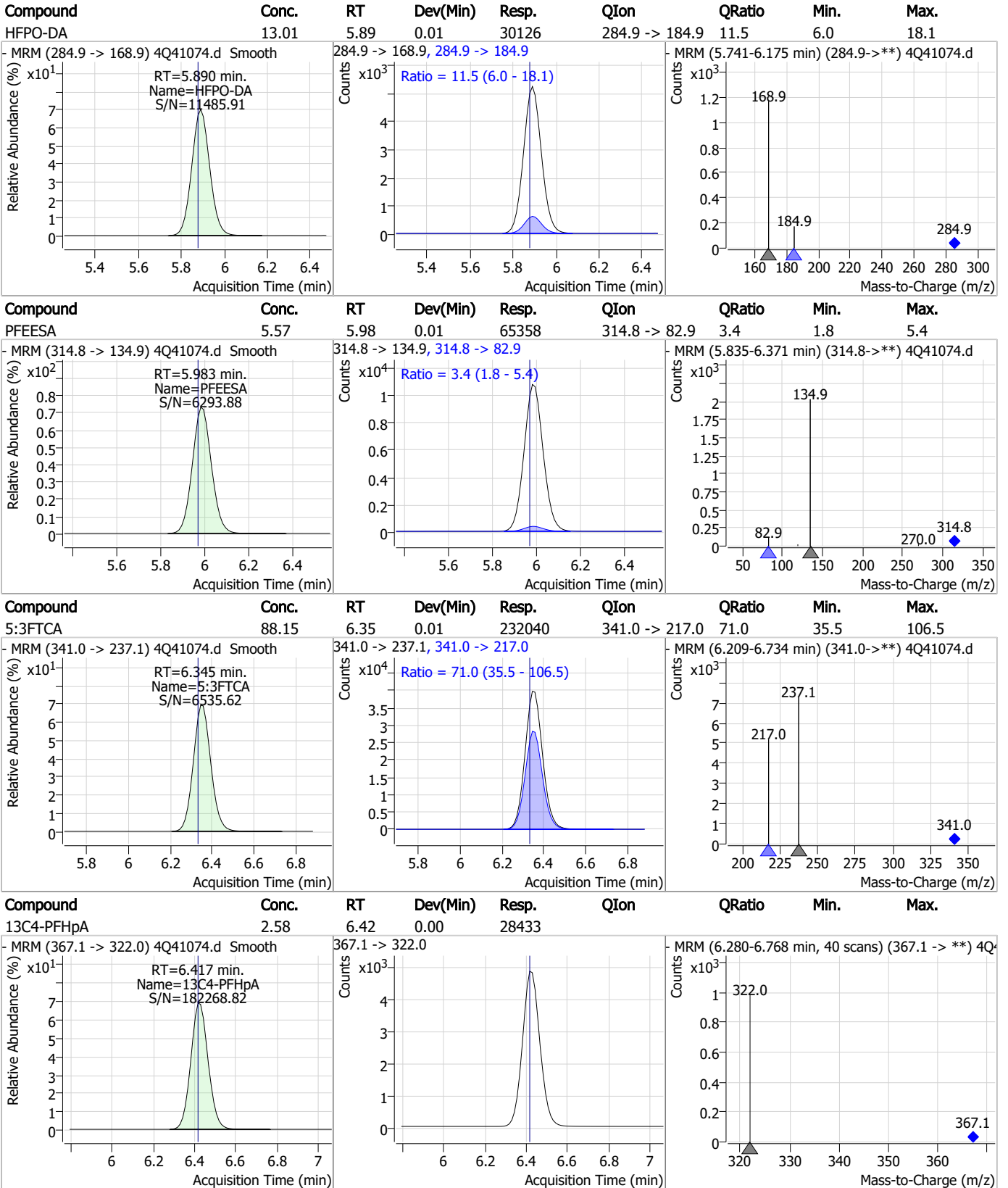
Perfluorinated Compounds by LC/MS/MS



7.3.1
7



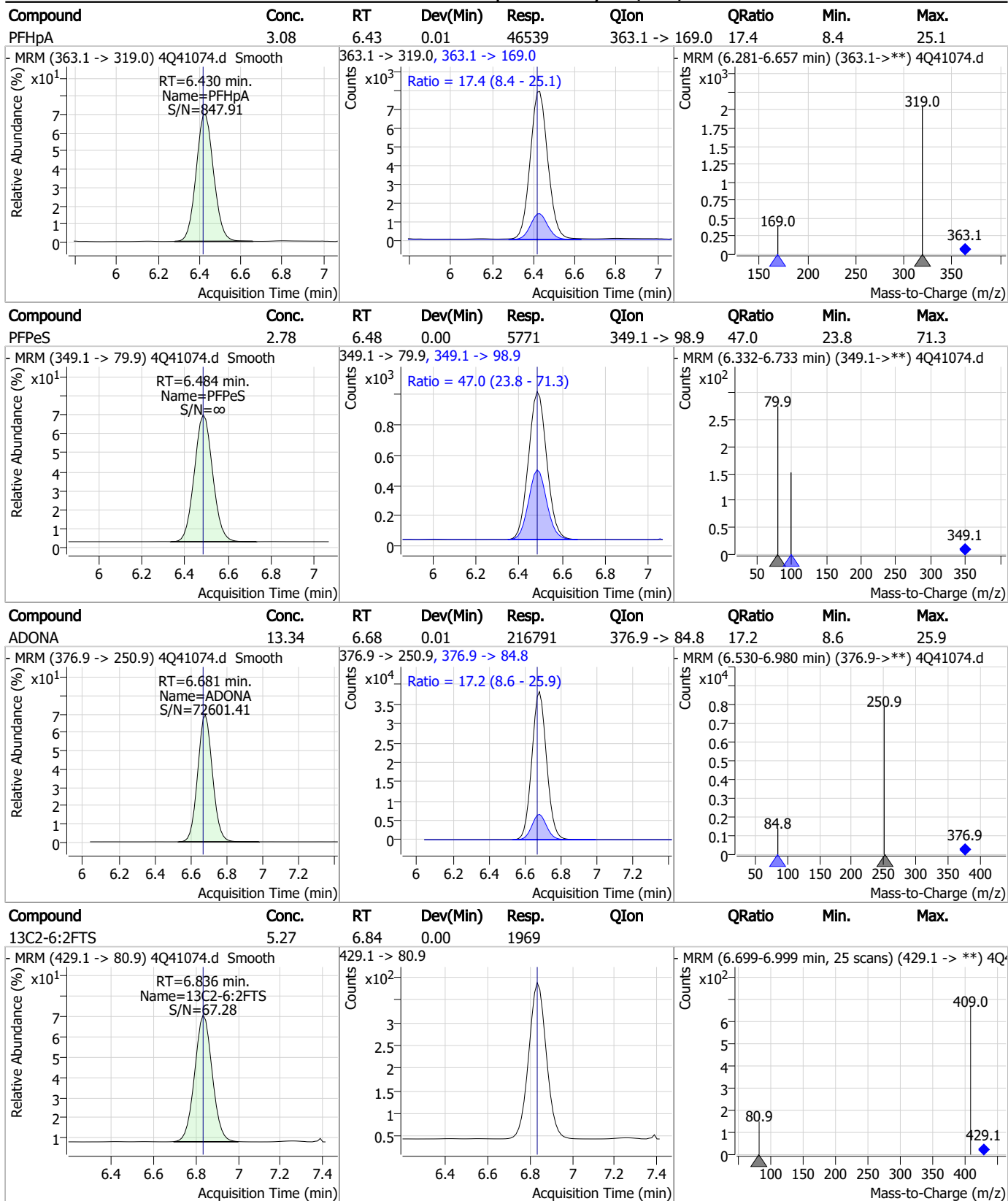
Perfluorinated Compounds by LC/MS/MS



7.3.1

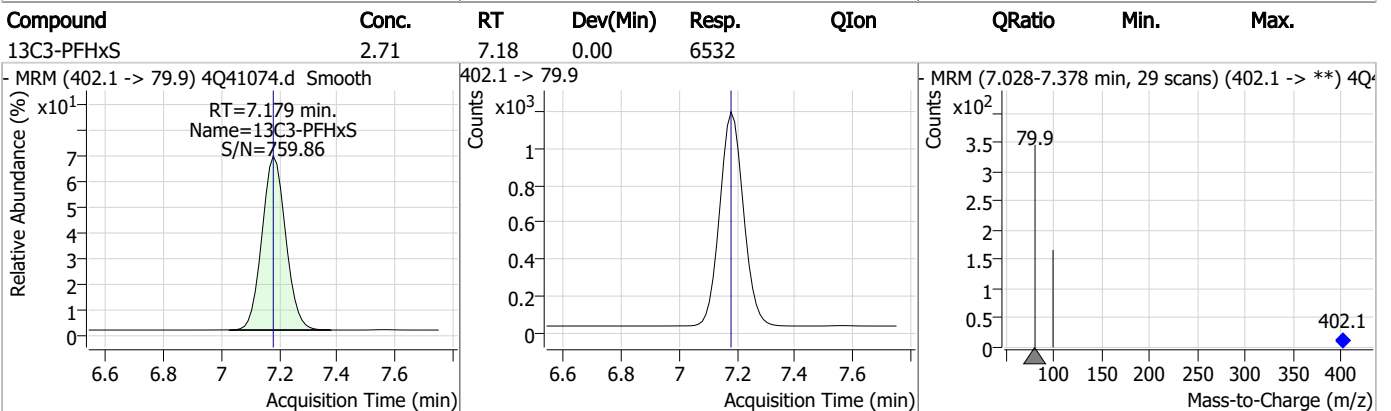
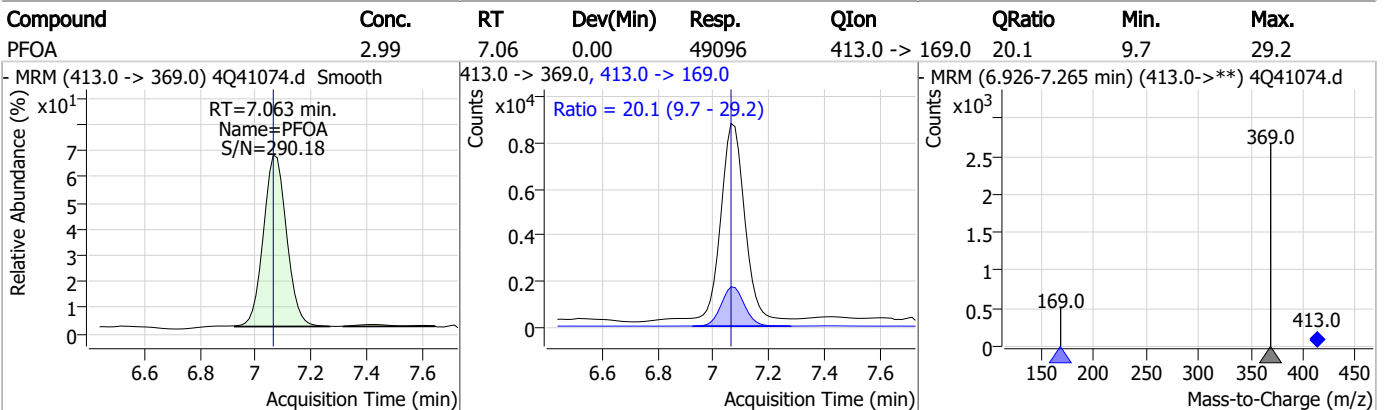
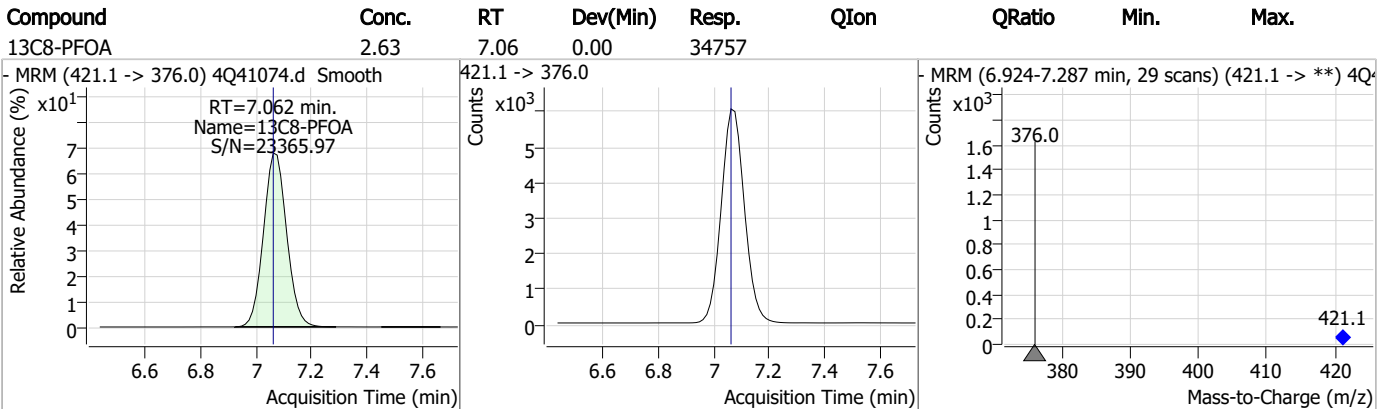
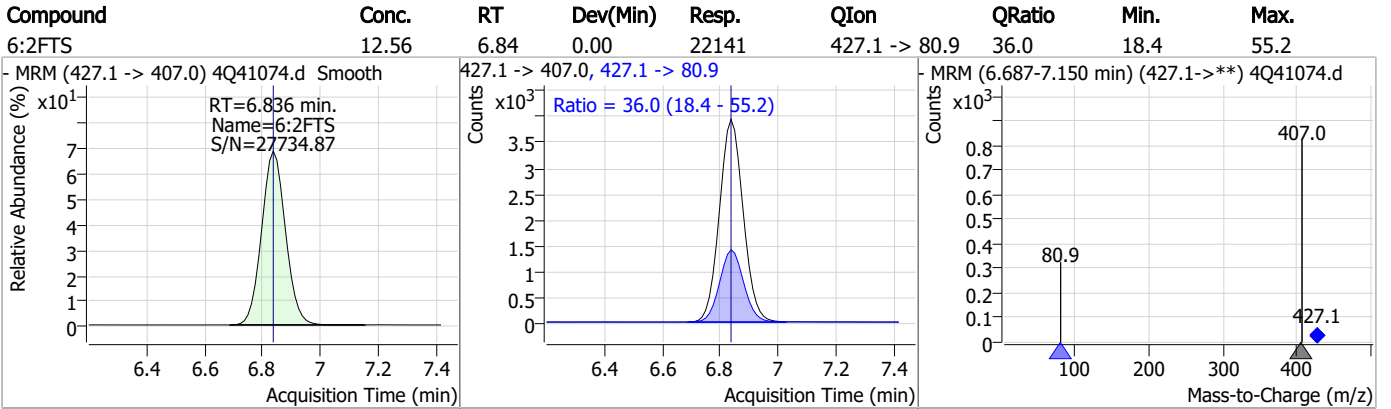
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Perfluorinated Compounds by LC/MS/MS



7.3.1
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Perfluorinated Compounds by LC/MS/MS

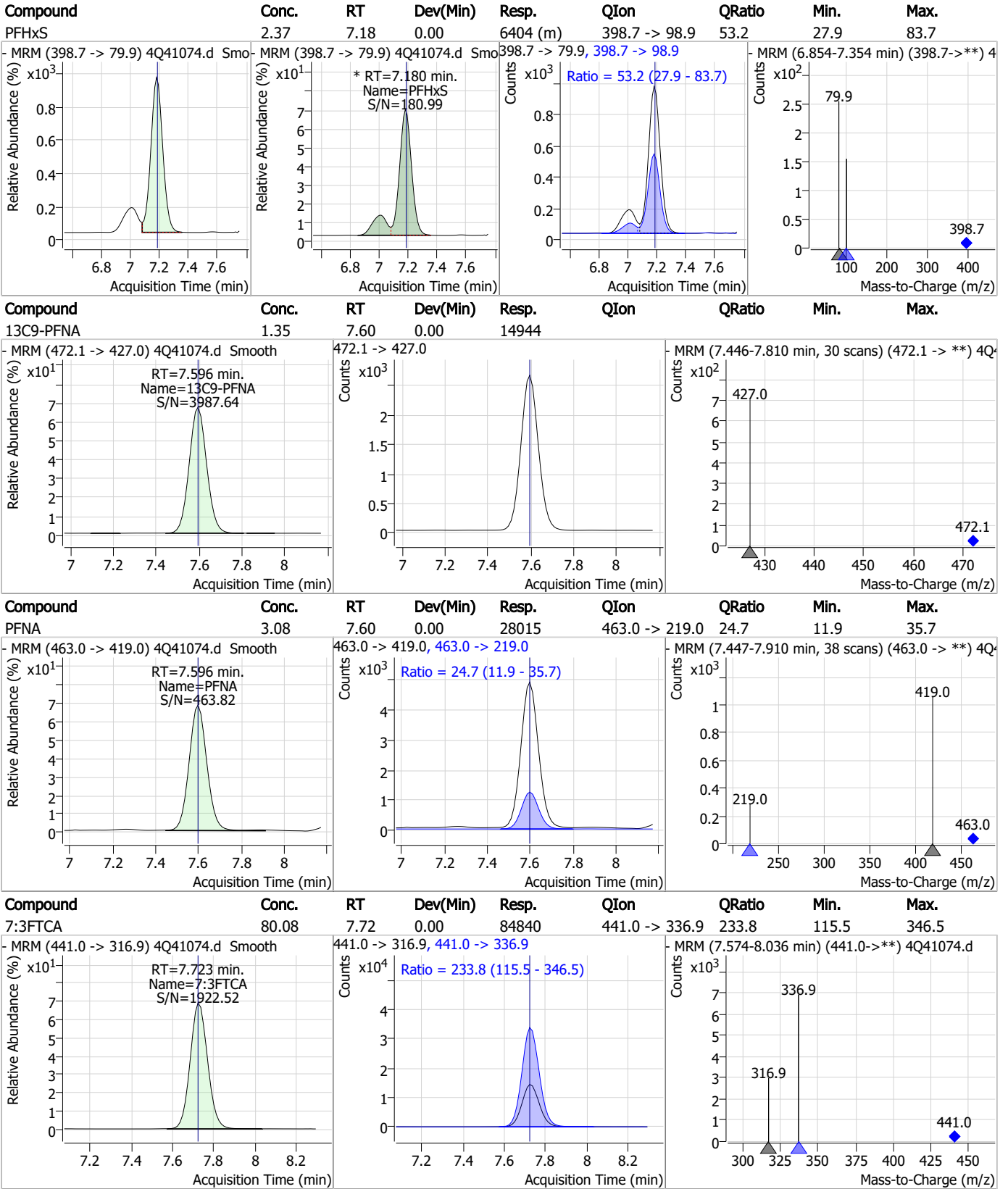


7.3.1

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Perfluorinated Compounds by LC/MS/MS

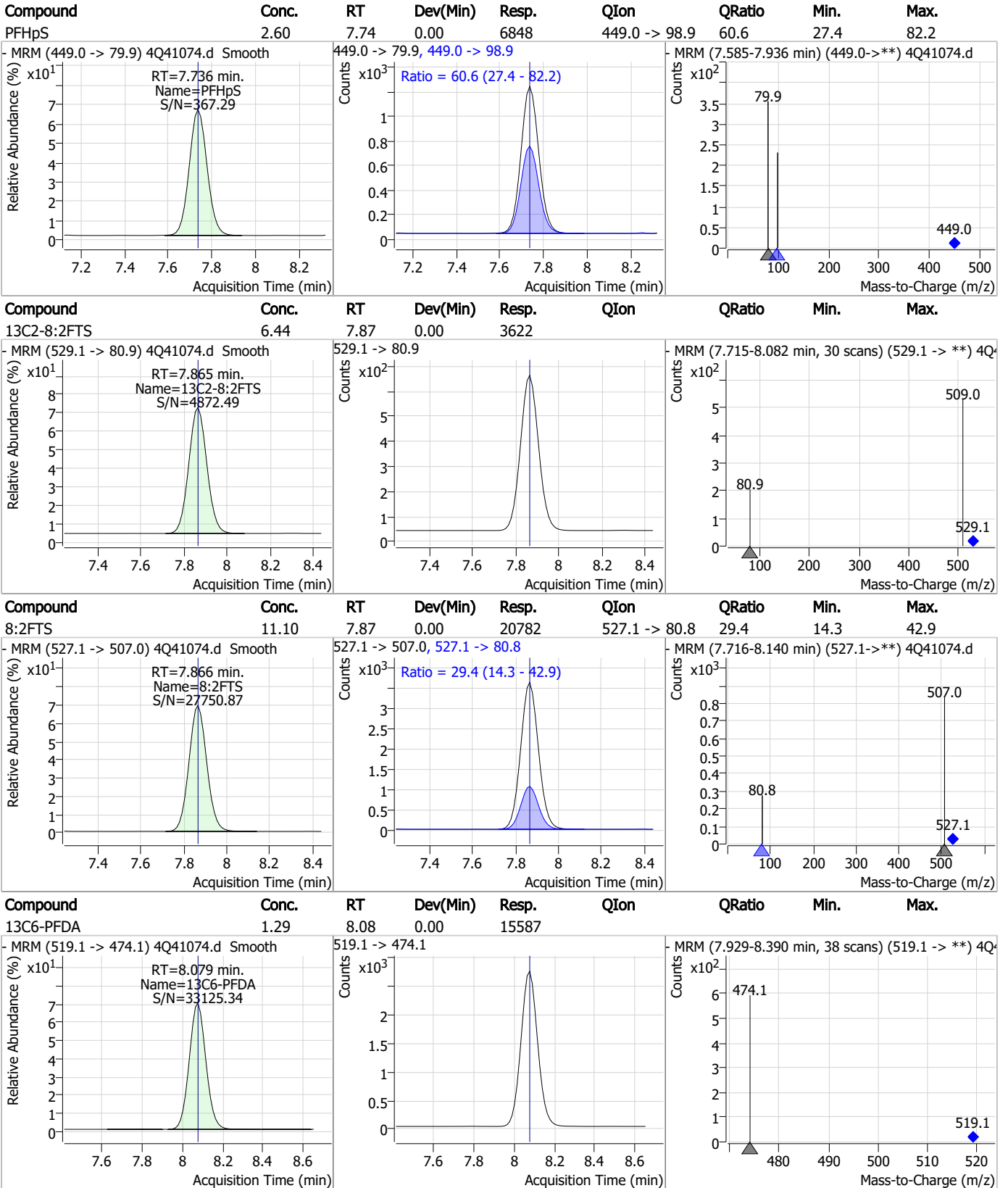


7.3.1

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Perfluorinated Compounds by LC/MS/MS

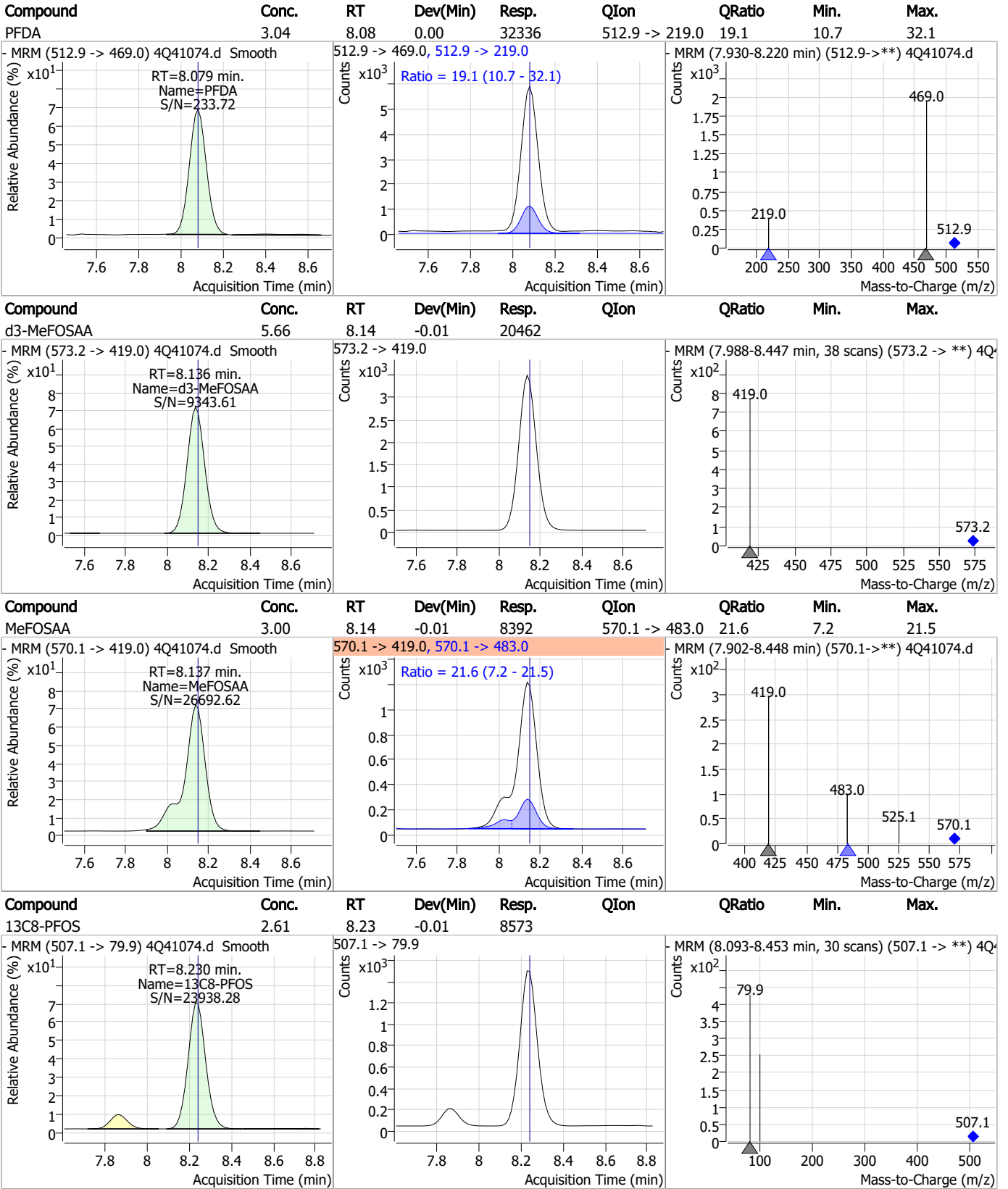


7.3.1

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Perfluorinated Compounds by LC/MS/MS

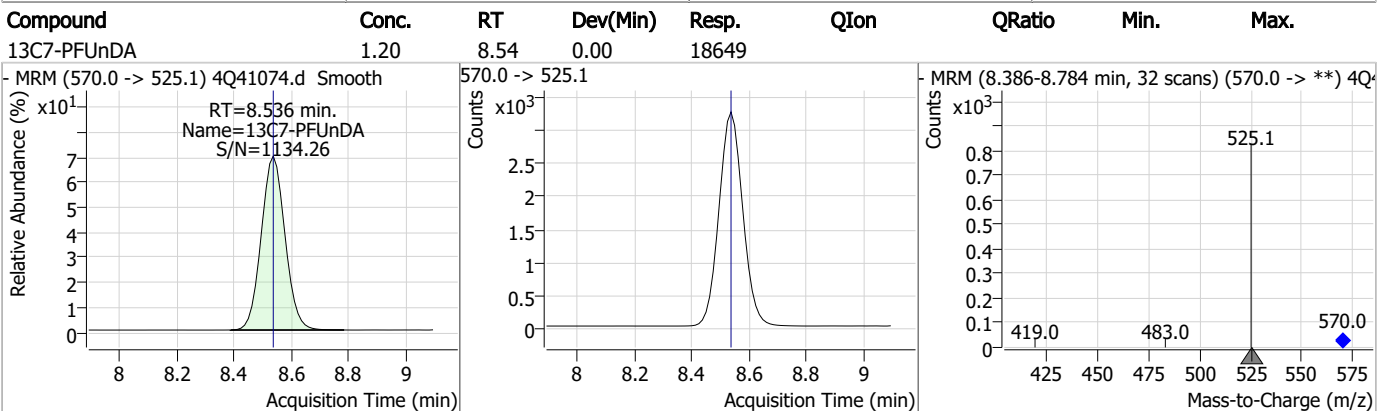
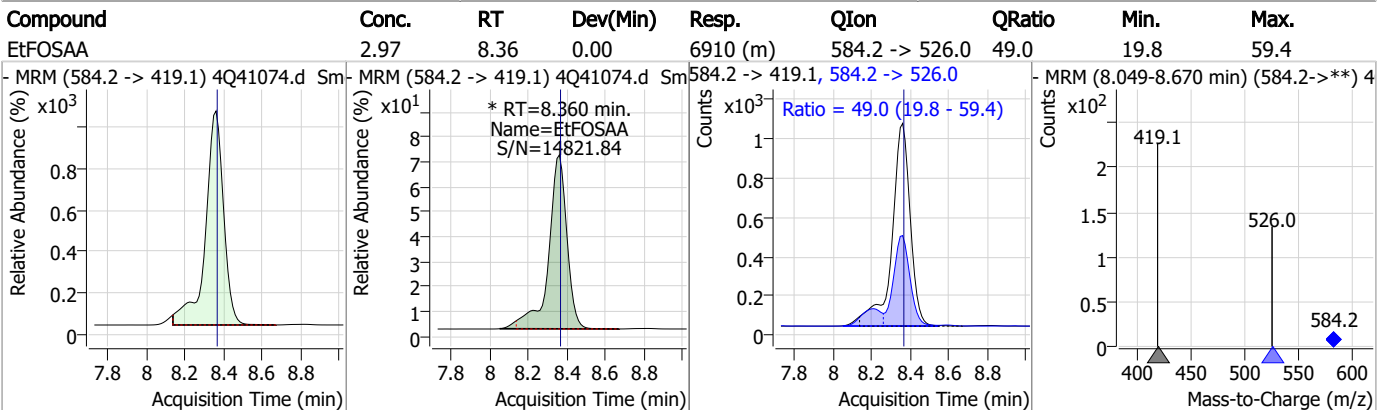
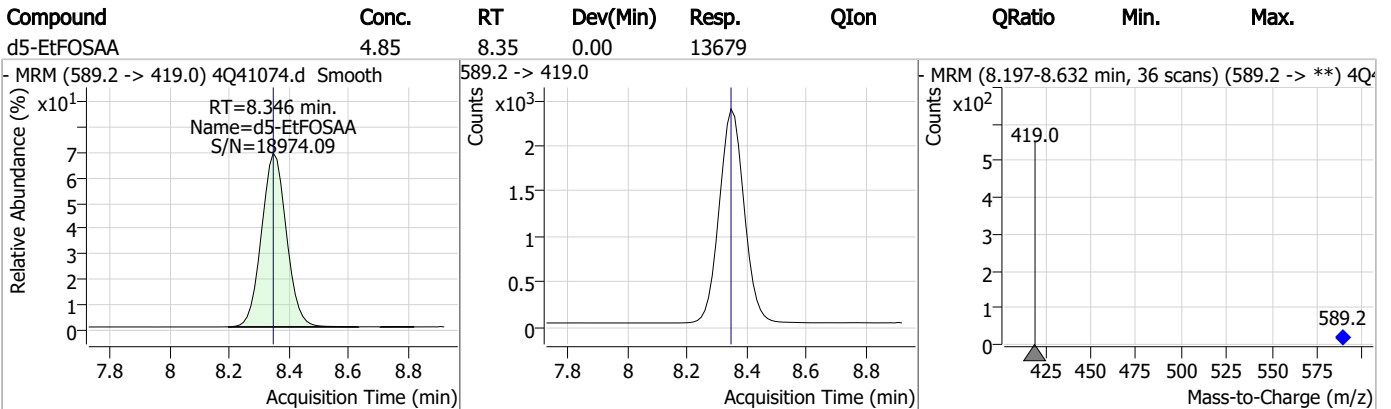
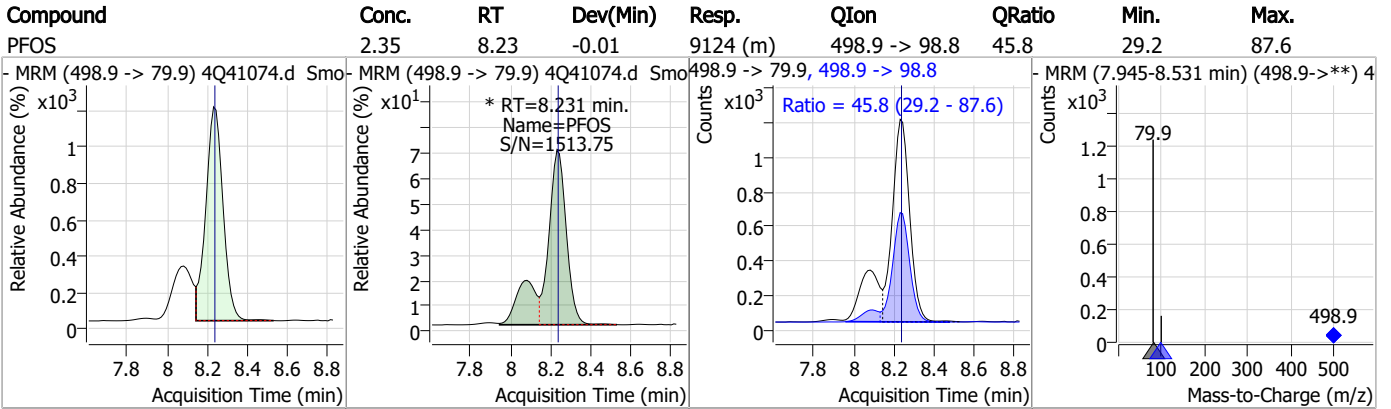


7.3.1

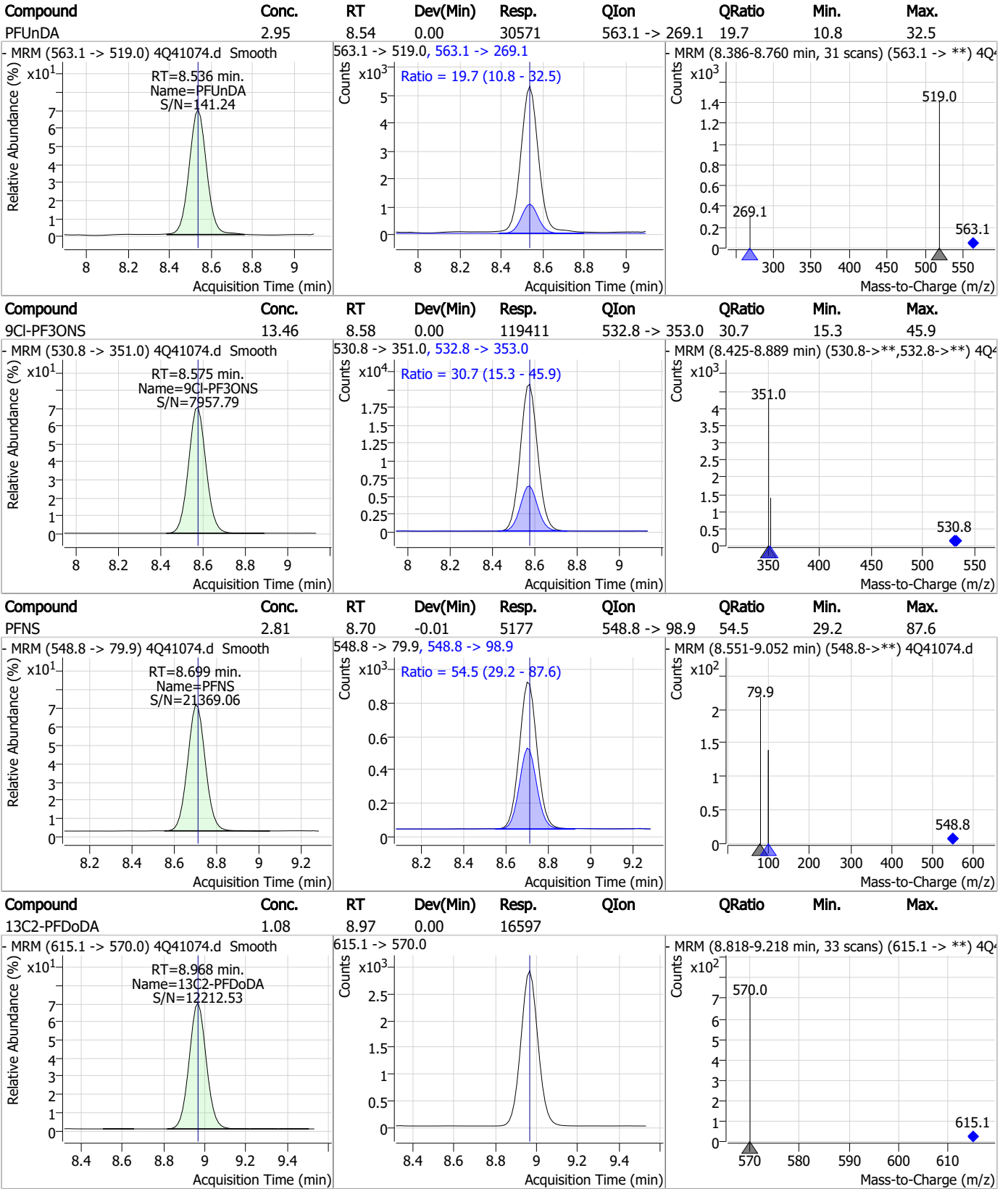
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

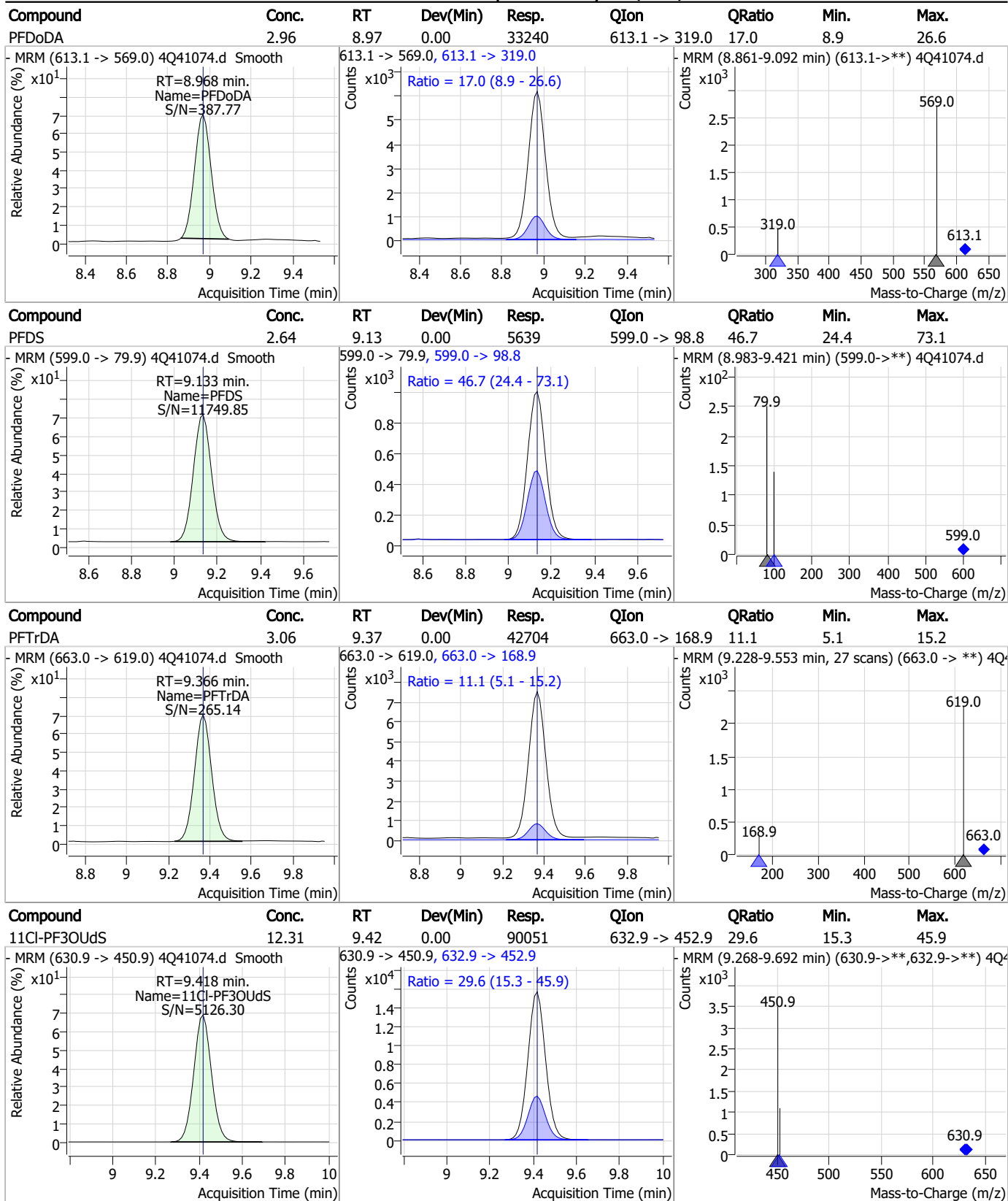


7.3.1

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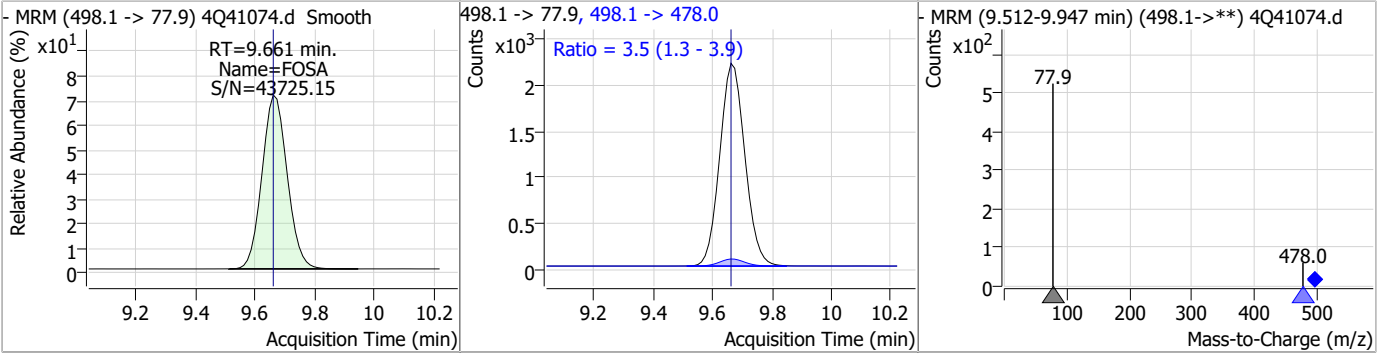
Perfluorinated Compounds by LC/MS/MS



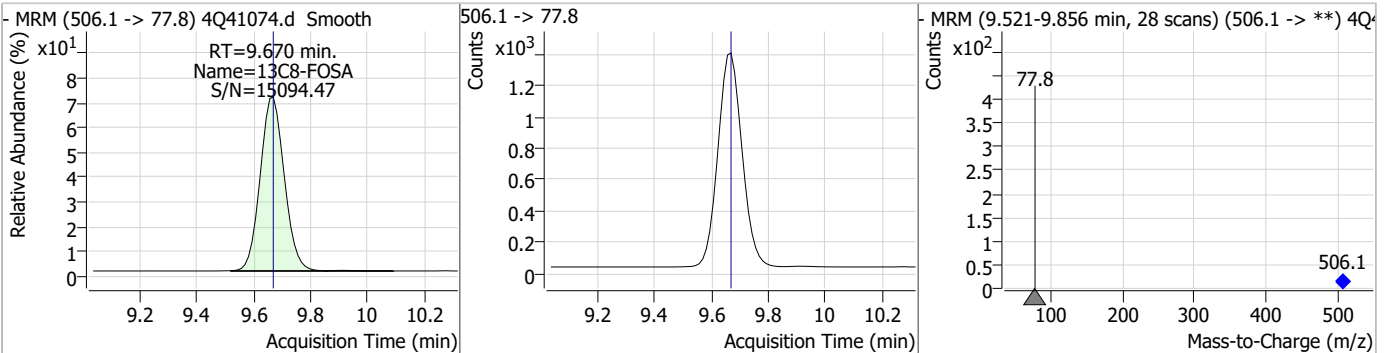
7.3.1
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Perfluorinated Compounds by LC/MS/MS

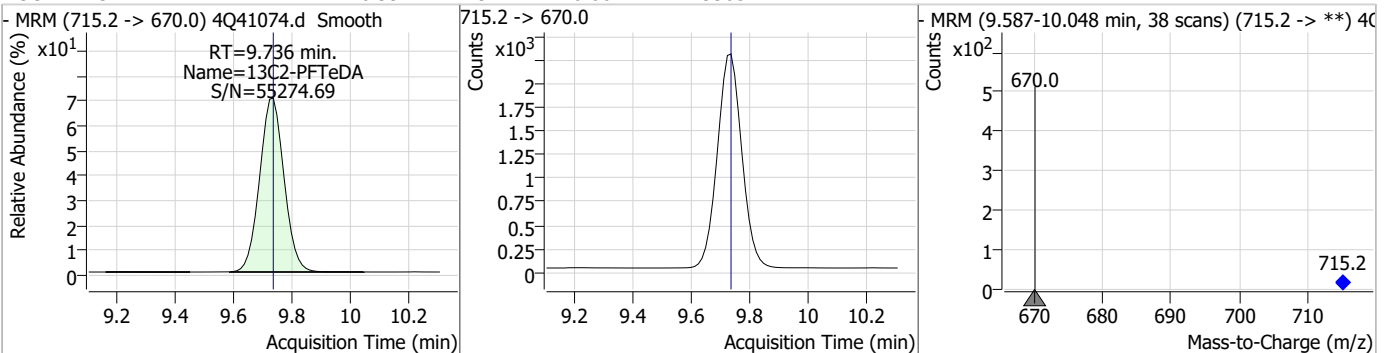
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	3.02	9.66	0.00	12863	498.1 -> 478.0	3.5	1.3	3.9



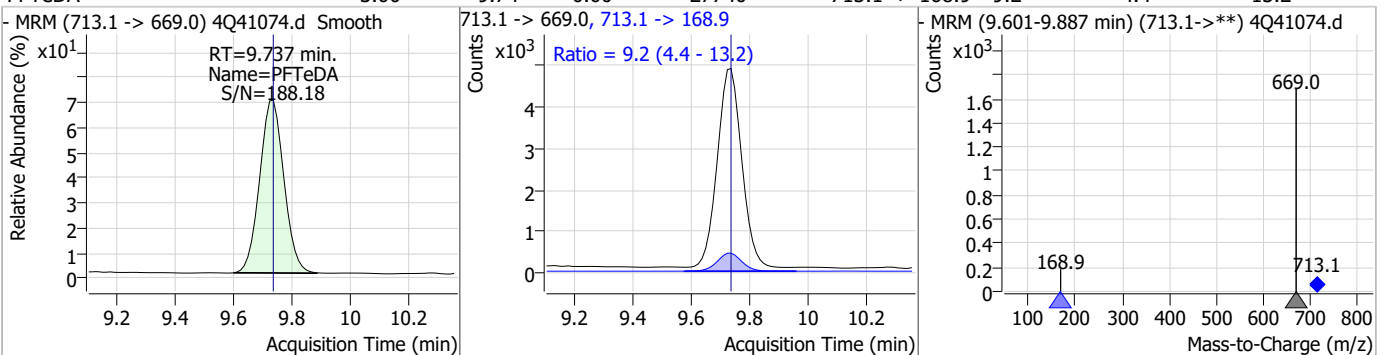
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.64	9.67	0.00	8012				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	0.99	9.74	0.00	13305				

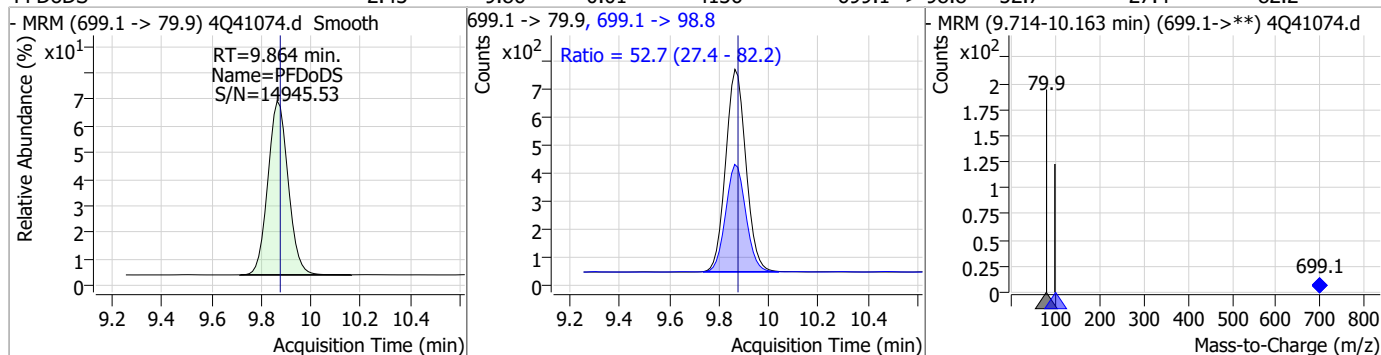


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	3.00	9.74	0.00	27740	713.1 -> 168.9	9.2	4.4	13.2

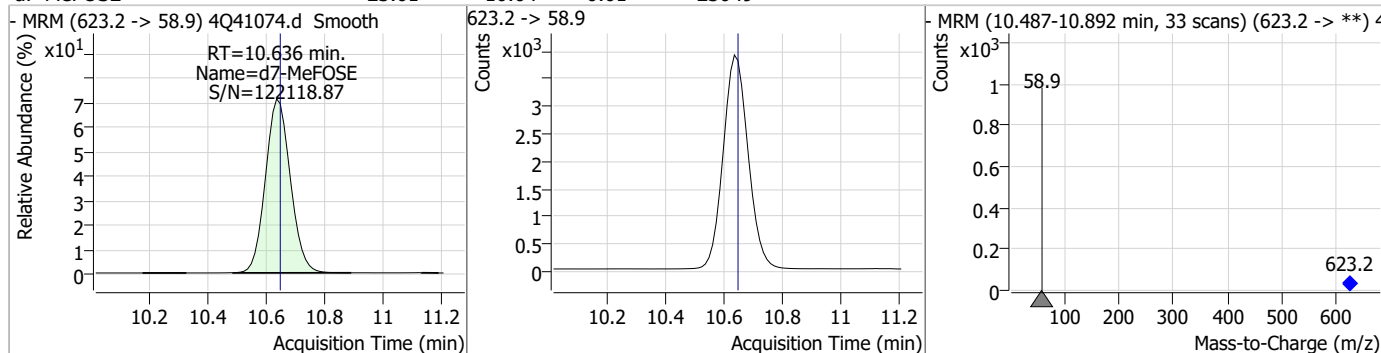


Perfluorinated Compounds by LC/MS/MS

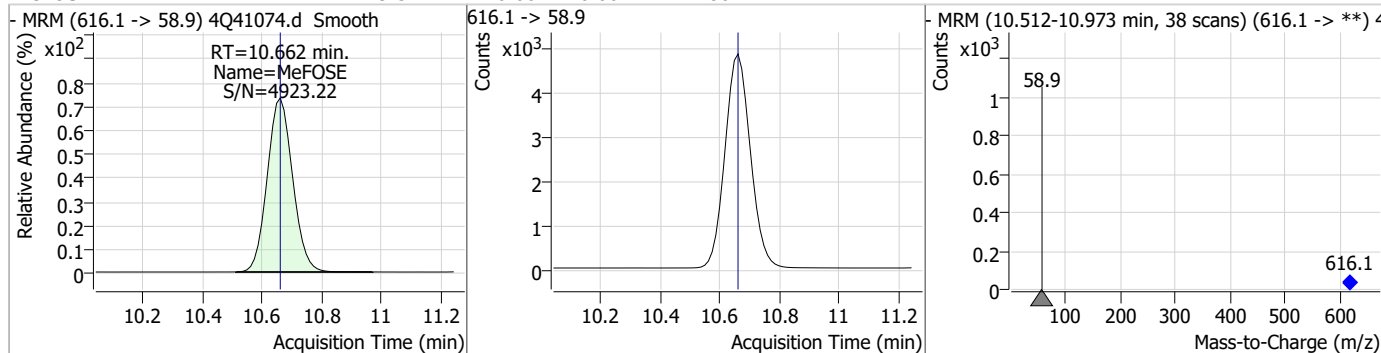
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDS	2.43	9.86	-0.01	4136	699.1 -> 98.8	52.7	27.4	82.2



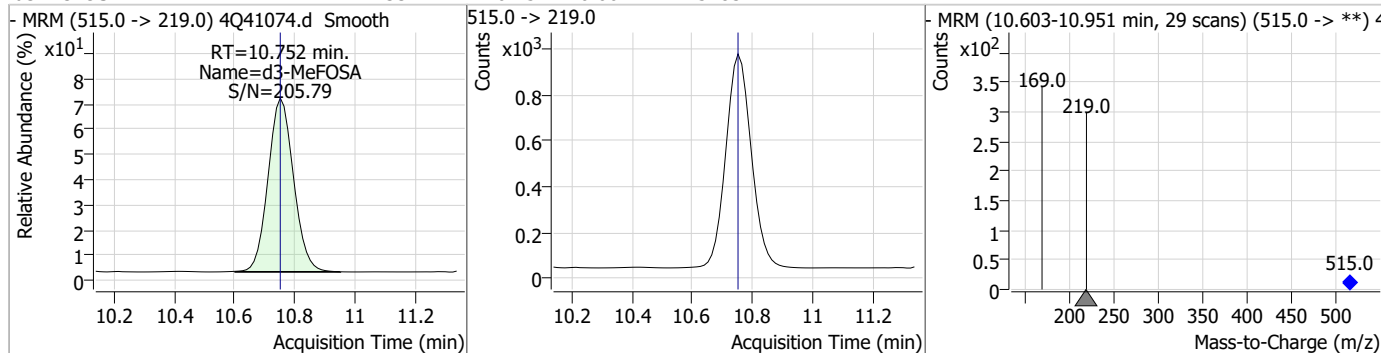
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.01	10.64	-0.01	23049				



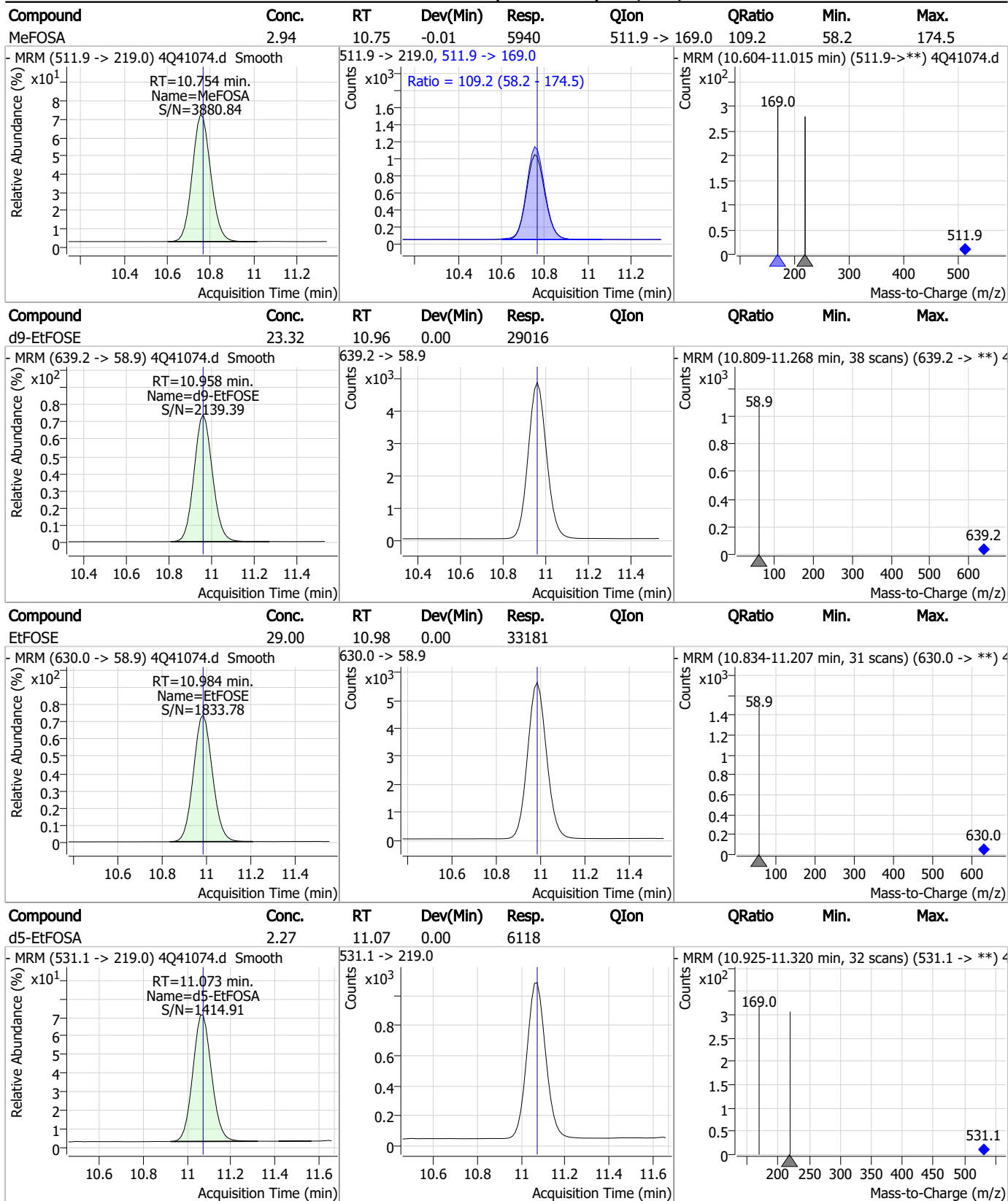
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	29.57	10.66	0.00	28611				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	10.75	0.00	5483				

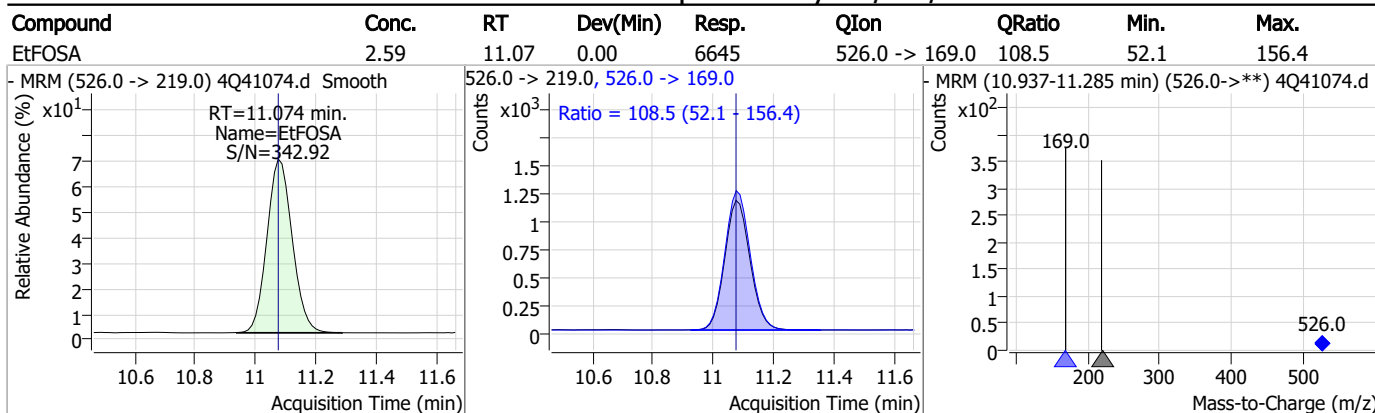


Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Perfluorinated Compounds by LC/MS/MS



7.3.1

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Manual Integration Approval Summary

Sample Number: OP95527-BS Method: EPA DRAFT 1633
Lab FileID: 4Q41074.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 20:22 Supervisor approved: 02/24/23 10:54 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.36	Split peak

7.3.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41075.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 8:36:45 PM
 Sample Name : op95527-llbs:3
 Vial : P4-C2
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95527,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.177	216.8 -> 171.9	132468	10.00 µg/L	0.025
M5-PFPeA	4.512	268.3 -> 223.0	63579	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	50529	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	28420	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	35570	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	14867	1.25 µg/L	0.000
M6-PFDA	8.091	519.1 -> 474.1	15770	1.25 µg/L	0.012
M7-PFUnDA	8.548	570.0 -> 525.1	19429	1.25 µg/L	0.012
M2-PFDoDA	8.980	615.1 -> 570.0	16544	1.25 µg/L	0.012
M2-PFTeDA	9.749	715.2 -> 670.0	12551	1.25 µg/L	0.012
M8-FOSA	9.682	506.1 -> 77.8	7853	2.50 µg/L	0.012
M3-PFBS	5.501	302.1 -> 79.9	10327	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	6278	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	8497	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1396	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2154	5.00 µg/L	0.000
M2-8:2FTS	7.878	529.1 -> 80.9	3411	5.00 µg/L	0.012
M3-MeFOSAA	8.148	573.2 -> 419.0	18741	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	30195	10.00 µg/L	0.012
M5-EtFOSAA	8.359	589.2 -> 419.0	13508	5.00 µg/L	0.012
M7-MeFOSE	10.661	623.2 -> 58.9	22615	25.00 µg/L	0.012
M9-EtFOSE	10.970	639.2 -> 58.9	29093	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	5921	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	5431	2.50 µg/L	0.012
13C4-PFOS	8.243	502.8 -> 79.9	8888	2.50 µg/L	0.000
13C3-PFBA	3.168	216.0 -> 172.0	81398	5.00 µg/L	0.012
18O2-PFHxS	7.178	403.0 -> 83.9	4620	2.50 µg/L	0.000
13C4-PFOA	7.077	417.1 -> 372.0	45628	2.50 µg/L	0.014
13C2-PFDA	8.091	515.1 -> 470.1	16814	1.25 µg/L	0.012
13C5-PFNA	7.596	468.0 -> 423.0	19044	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	48697	2.50 µg/L	0.012

System Monitoring Compounds

13C2-4:2FTS	5.260	329.1 -> 80.9	1396	5.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.6%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2154	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C2-8:2FTS	7.878	529.1 -> 80.9	3411	5.65 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.1%		
13C2-PFDoDA	8.980	615.1 -> 570.0	16544	0.94 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.4%		
13C2-PFTeDA	9.749	715.2 -> 670.0	12551	0.82 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 65.7%		
13C3-PFBS	5.501	302.1 -> 79.9	10327	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C3-PFHxS	7.179	402.1 -> 79.9	6278	2.42 µg/L	0.000

7.32
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C4-PFBA	3.177	216.8 -> 171.9	132468	9.82 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C4-PFHpA	6.417	367.1 -> 322.0	28420	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.7%	
13C5-PFHxA	5.559	318.0 -> 273.0	50529	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C5-PFPeA	4.512	268.3 -> 223.0	63579	4.62 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.5%	
13C6-PFDA	8.091	519.1 -> 474.1	15770	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.1%	
13C7-PFUnDA	8.548	570.0 -> 525.1	19429	1.09 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.4%	
13C8-FOSA	9.682	506.1 -> 77.8	7853	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.7%	
13C8-PFOA	7.062	421.1 -> 376.0	35570	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
13C8-PFOS	8.242	507.1 -> 79.9	8497	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C9-PFNA	7.596	472.1 -> 427.0	14867	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.7%	
d3-MeFOSAA	8.148	573.2 -> 419.0	18741	4.79 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	30195	9.53 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
d3-MeFOSA	10.765	515.0 -> 219.0	5431	2.13 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.2%	
d5-EtFOSAA	8.359	589.2 -> 419.0	13508	4.43 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.6%	
d7-MeFOSE	10.661	623.2 -> 58.9	22615	20.87 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.5%	
d9-EtFOSE	10.970	639.2 -> 58.9	29093	21.61 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.4%	
d5-EtFOSA	11.085	531.1 -> 219.0	5921	2.03 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.2%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	9836	4.43 µg/L	99
		327.1 -> 80.9	3795		
6:2FTS	6.836	427.1 -> 407.0	8597	4.46 µg/L	97
		427.1 -> 80.9	3318		
8:2FTS	7.878	527.1 -> 507.0	8285	4.70 µg/L	100
		527.1 -> 80.8	2350		
EtFOSAA	8.372	584.2 -> 419.1	2879	1.25 µg/L	m 86
		584.2 -> 526.0	1394		
FOSA	9.686	498.1 -> 77.9	4643	1.11 µg/L	99
		498.1 -> 478.0	135		
MeFOSAA	8.149	570.1 -> 419.0	3471	1.36 µg/L	89
		570.1 -> 483.0	662		
PFBA	3.171	212.8 -> 168.9	14676	4.68 µg/L	100
PFBS	5.502	298.7 -> 79.9	4245	1.03 µg/L	96
		298.7 -> 98.8	1721		
PFDA	8.092	512.9 -> 469.0	12014	1.12 µg/L	98
		512.9 -> 219.0	2461		
PFDODA	8.981	613.1 -> 569.0	13951	1.24 µg/L	98
		613.1 -> 319.0	2323		
PFDS	9.146	599.0 -> 79.9	2082	0.98 µg/L	97

7.3.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.417	599.0 -> 98.8	1059	1.21	µg/L	100
		363.1 -> 319.0	18318			
PFHpS	7.748	363.1 -> 169.0	3097	1.00	µg/L	92
		449.0 -> 79.9	2600			
PFHxA	5.562	449.0 -> 98.9	1566	1.13	µg/L	99
		313.0 -> 269.0	19752			
PFHxS	7.180	313.0 -> 118.9	617	0.93	µg/L	97
		398.7 -> 79.9	2422			
PFNA	7.610	398.7 -> 98.9	1300	1.22	µg/L	97
		463.0 -> 419.0	11052			
PFNS	8.711	463.0 -> 219.0	2452	1.04	µg/L	100
		548.8 -> 79.9	1908			
PFOA	7.063	548.8 -> 98.9	1109	1.16	µg/L	100
		413.0 -> 369.0	19480			
PFOS	8.243	413.0 -> 169.0	3834	0.94	µg/L	83
		498.9 -> 79.9	3629			
PFPeA	4.514	498.9 -> 98.8	1658	2.45	µg/L	100
		263.0 -> 219.0	36697			
PFPeS	6.484	349.1 -> 79.9	2117	1.06	µg/L	97
		349.1 -> 98.9	968			
PFTeDA	9.750	713.1 -> 669.0	10625	1.22	µg/L	97
		713.1 -> 168.9	1064			
PFTrDA	9.379	663.0 -> 619.0	15616	1.12	µg/L	97
		663.0 -> 168.9	1754			
PFUnDA	8.548	563.1 -> 519.0	12094	1.12	µg/L	99
		563.1 -> 269.1	2668			
11CI-PF3OUdS	9.430	630.9 -> 450.9	32807	4.19	µg/L	100
		632.9 -> 452.9	10040			
9CI-PF3ONS	8.588	530.8 -> 351.0	45812	4.82	µg/L	98
		532.8 -> 353.0	14456			
ADONA	6.681	376.9 -> 250.9	84892	4.88	µg/L	98
		376.9 -> 84.8	15246			
HFPO-DA	5.890	284.9 -> 168.9	11015	4.44	µg/L	99
		284.9 -> 184.9	1365			
3:3FTCA	4.192	241.0 -> 177.0	5168	5.87	µg/L	98
		241.0 -> 117.0	424			
5:3FTCA	6.345	341.0 -> 237.1	94123	35.56	µg/L	99
		341.0 -> 217.0	67682			
7:3FTCA	7.737	441.0 -> 316.9	32653	30.66	µg/L	94
		441.0 -> 336.9	78473			
EtFOSA	11.087	526.0 -> 219.0	2667	1.08	µg/L	100
		526.0 -> 169.0	2773			
EtFOSE	10.996	630.0 -> 58.9	12664	11.04	µg/L	100
		511.9 -> 219.0	2215			
MeFOSA	10.779	511.9 -> 169.0	2417	1.11	µg/L	93
		616.1 -> 58.9	11008			
MeFOSE	10.674	699.1 -> 79.9	1415	11.60	µg/L	100
		699.1 -> 98.8	798			
PFDoDS	9.889	295.0 -> 201.0	1697	0.84	µg/L	98
		295.0 -> 84.9	376			
NFDHA	5.453	279.0 -> 85.1	19748	2.56	µg/L	95
		229.0 -> 84.9	15220			
PFMBA	4.881	314.8 -> 134.9	23963	2.41	µg/L	100
		314.8 -> 82.9	759			
PFMPA	3.740			2.03	µg/L	99
PFEESA	5.983					

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

7.3.2
7

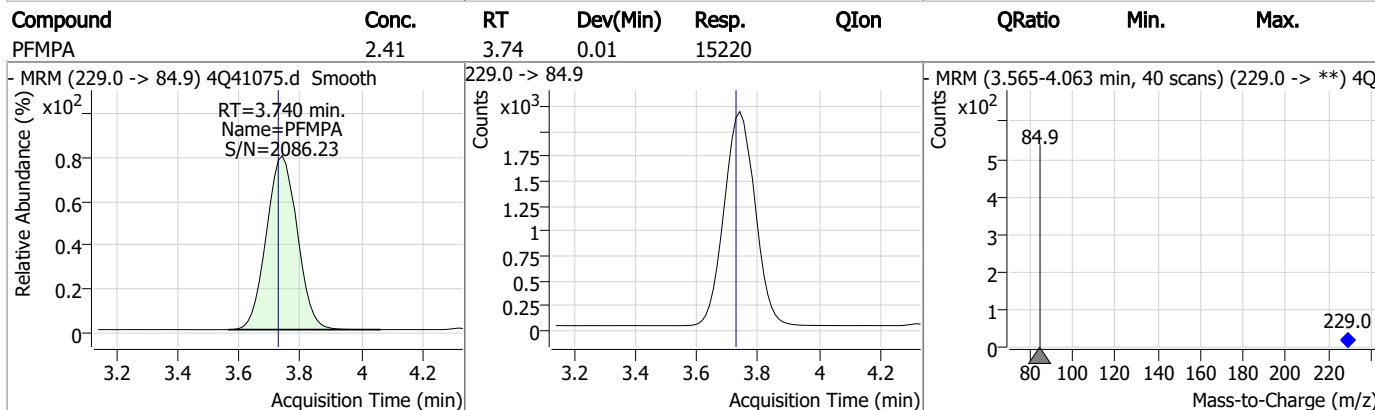
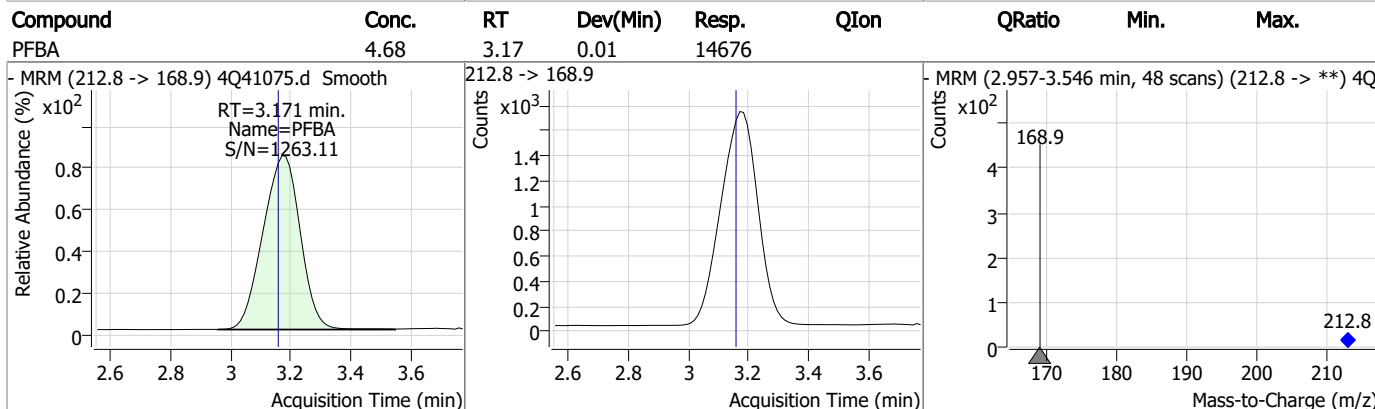
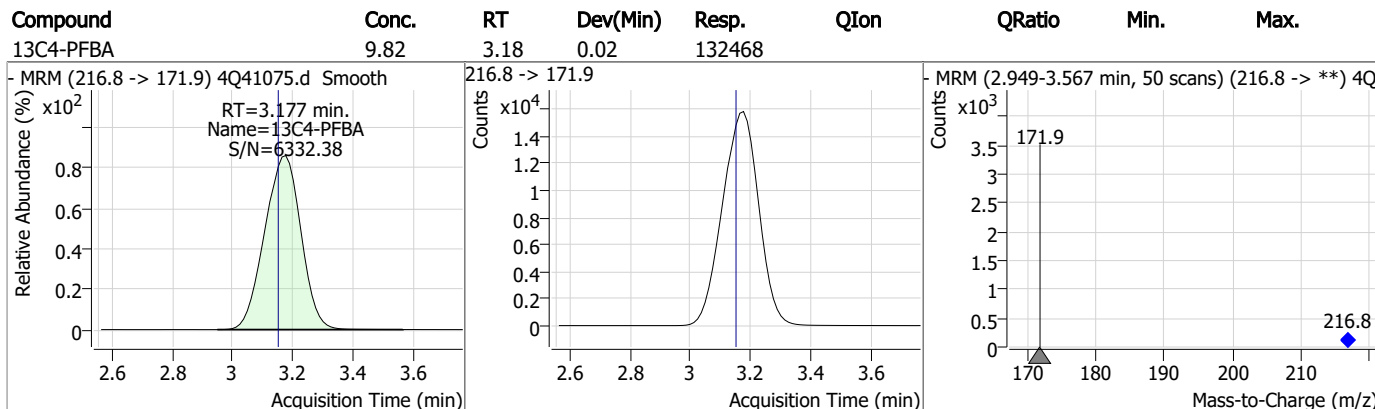
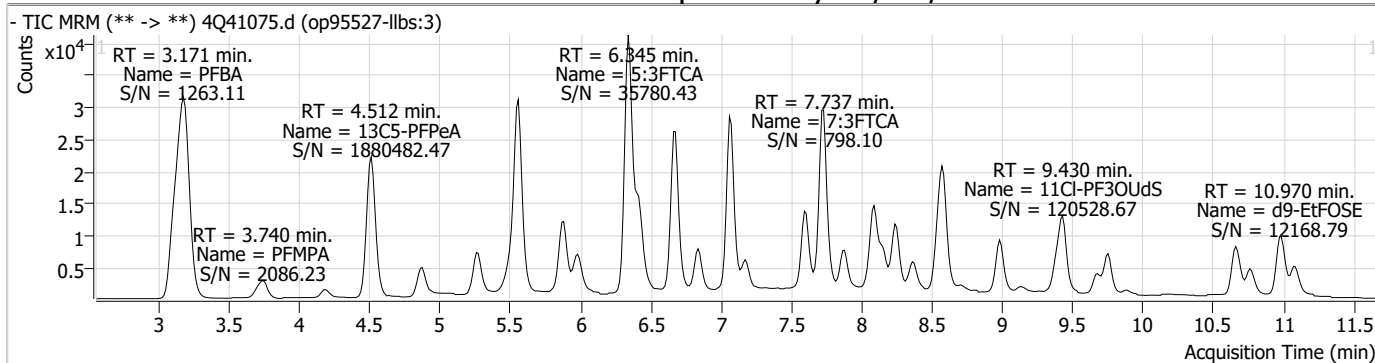
Perfluorinated Compounds by LC/MS/MS

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

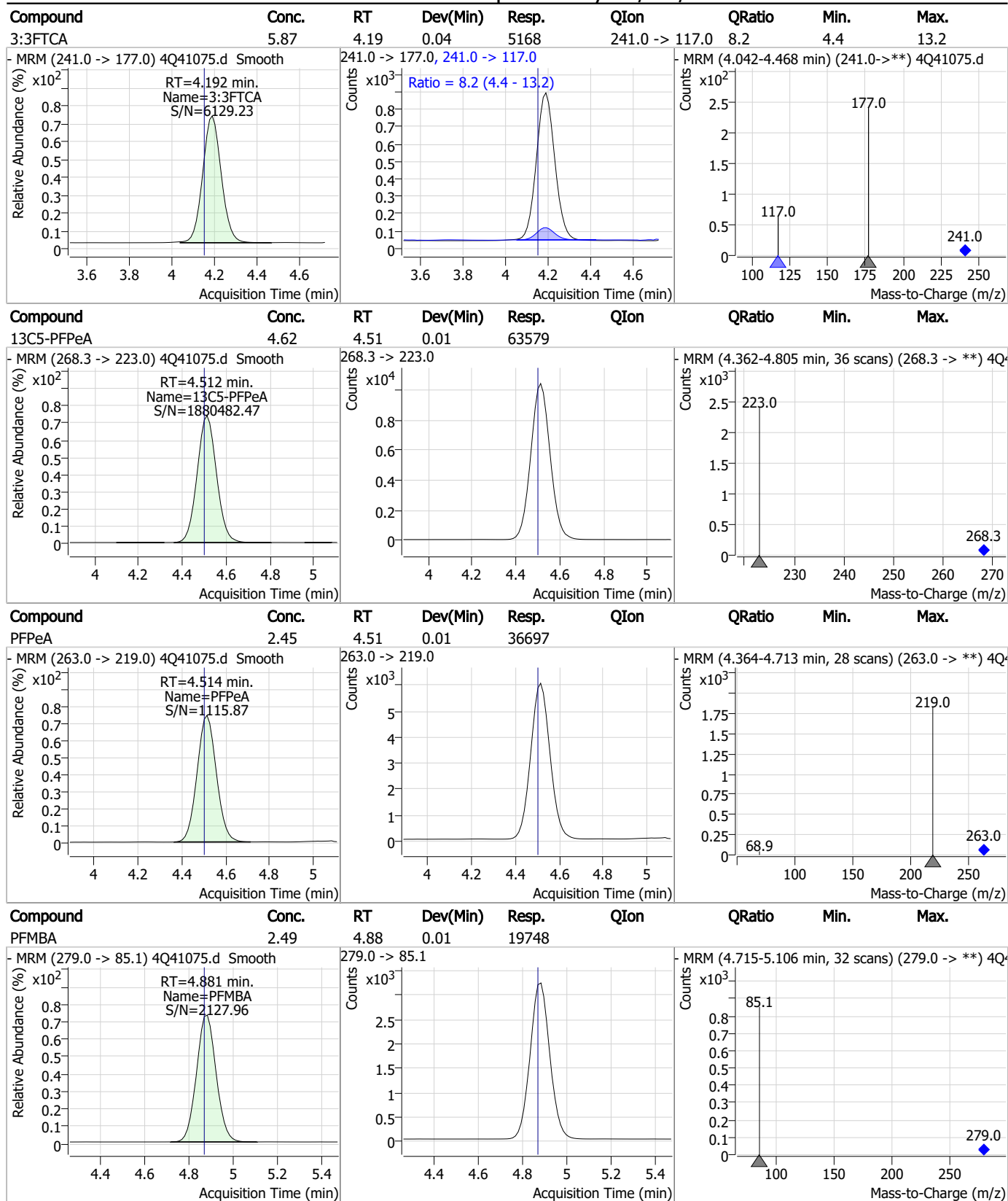
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Perfluorinated Compounds by LC/MS/MS



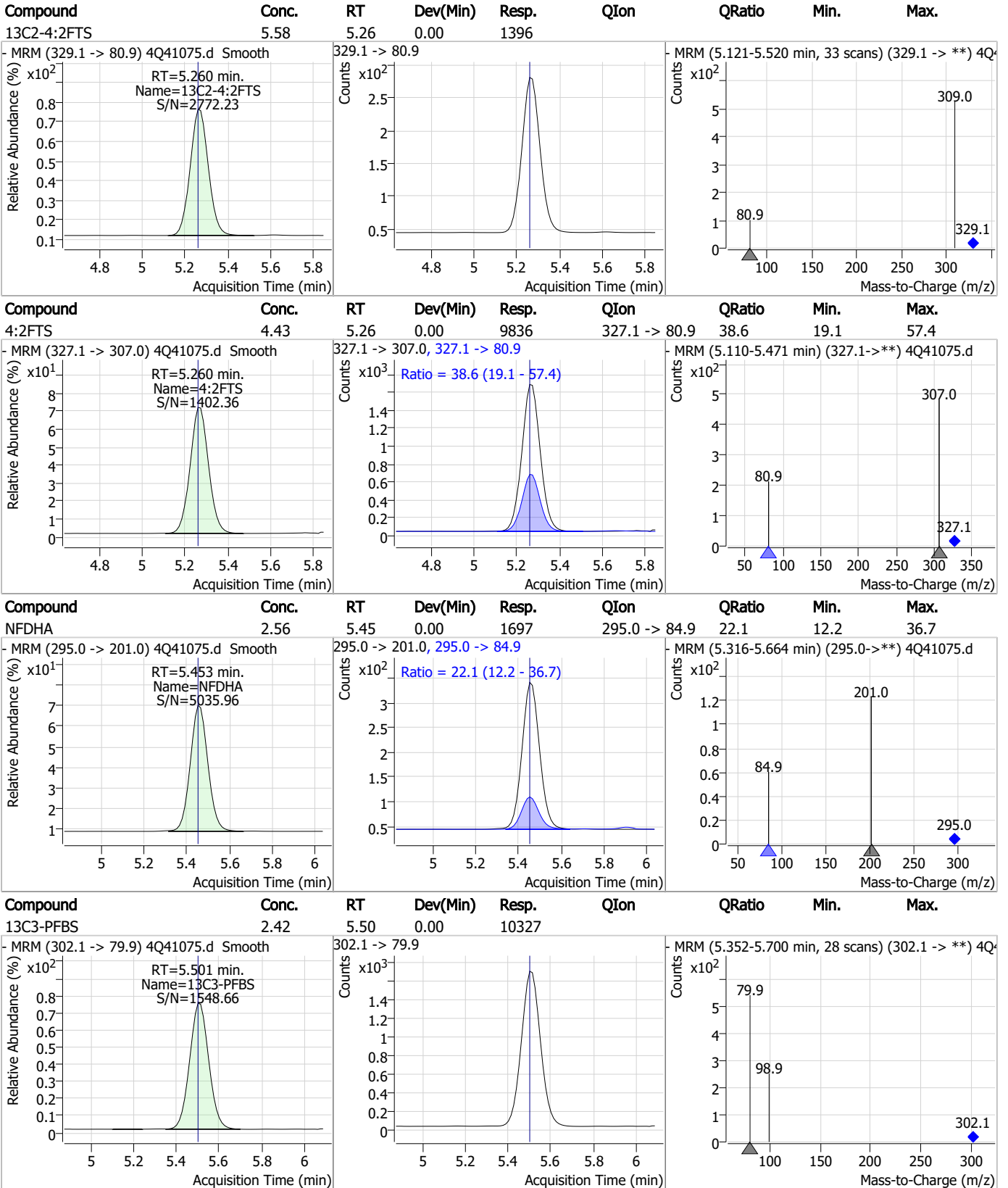
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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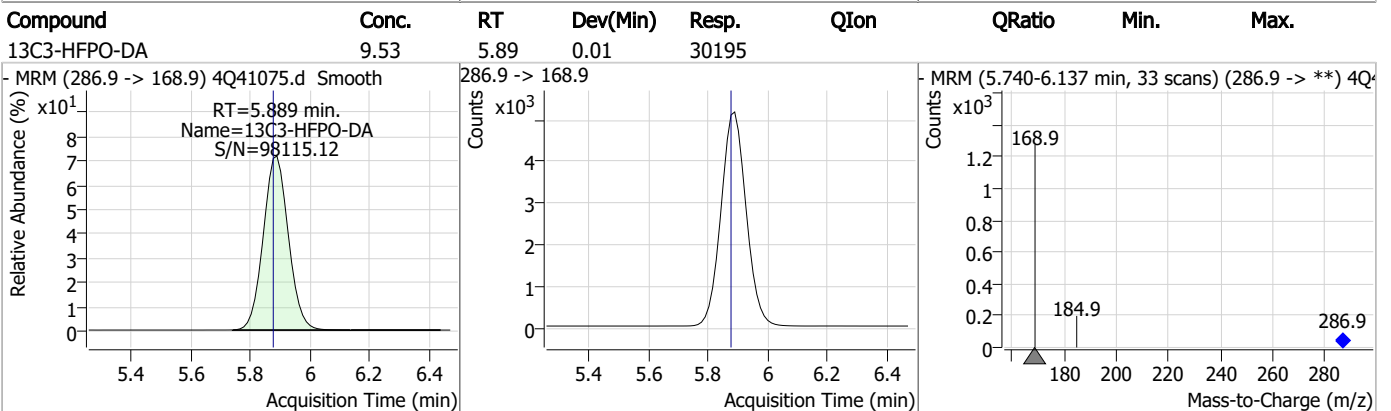
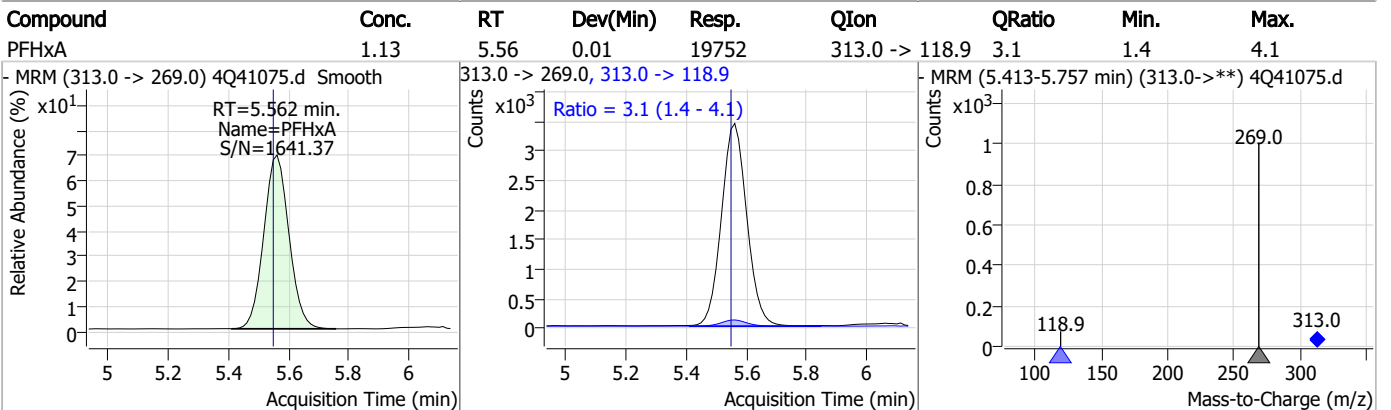
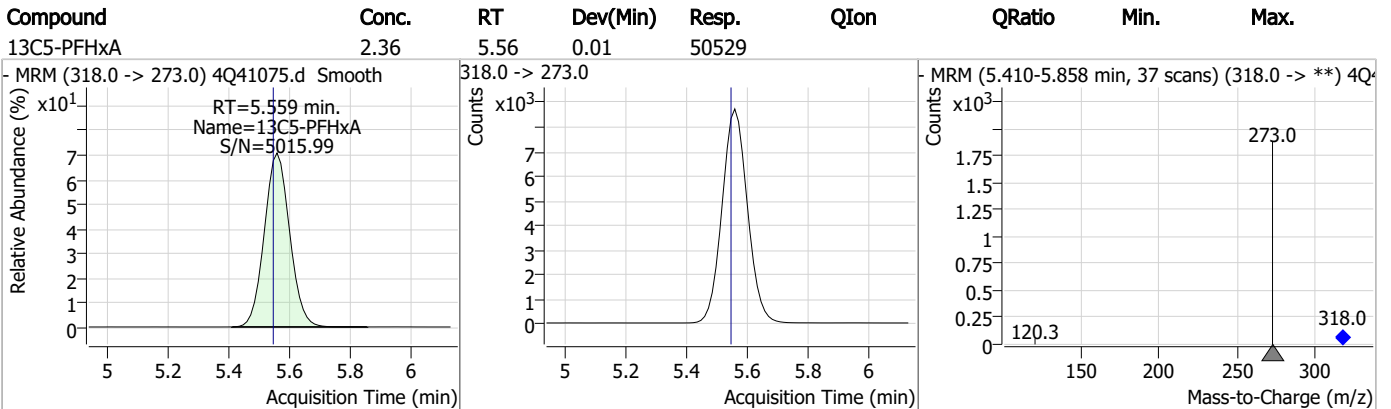
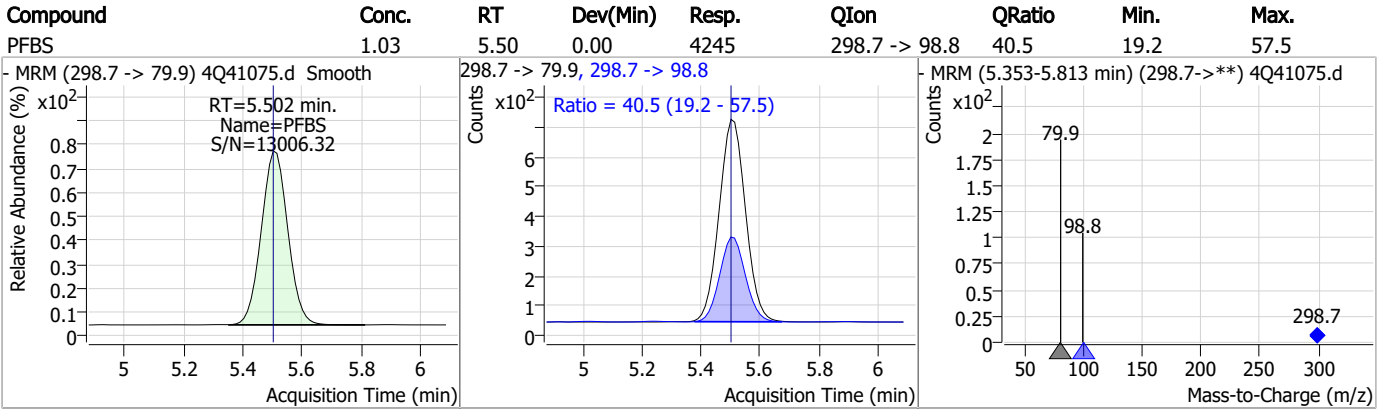
Perfluorinated Compounds by LC/MS/MS



7.3.2

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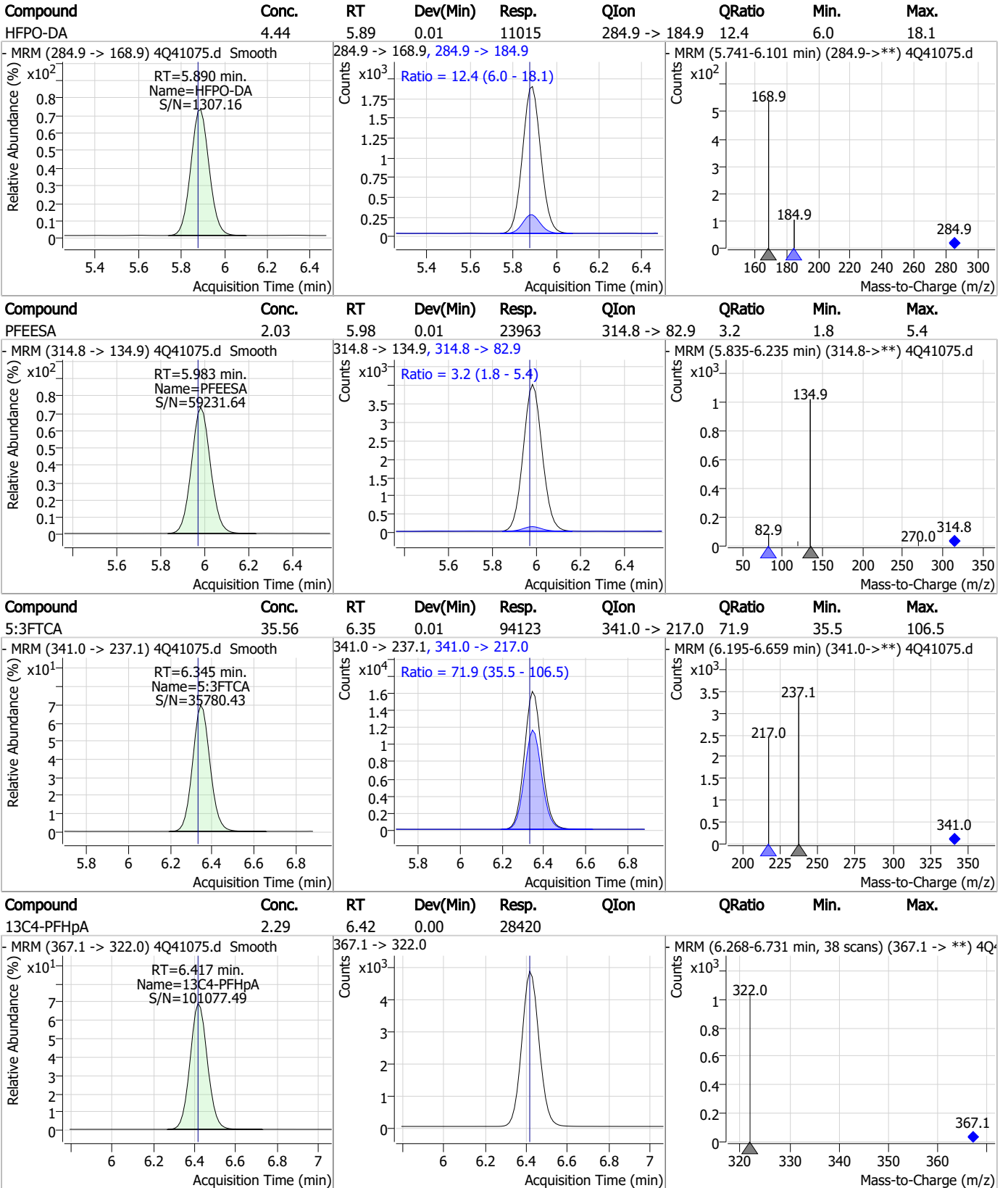
Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

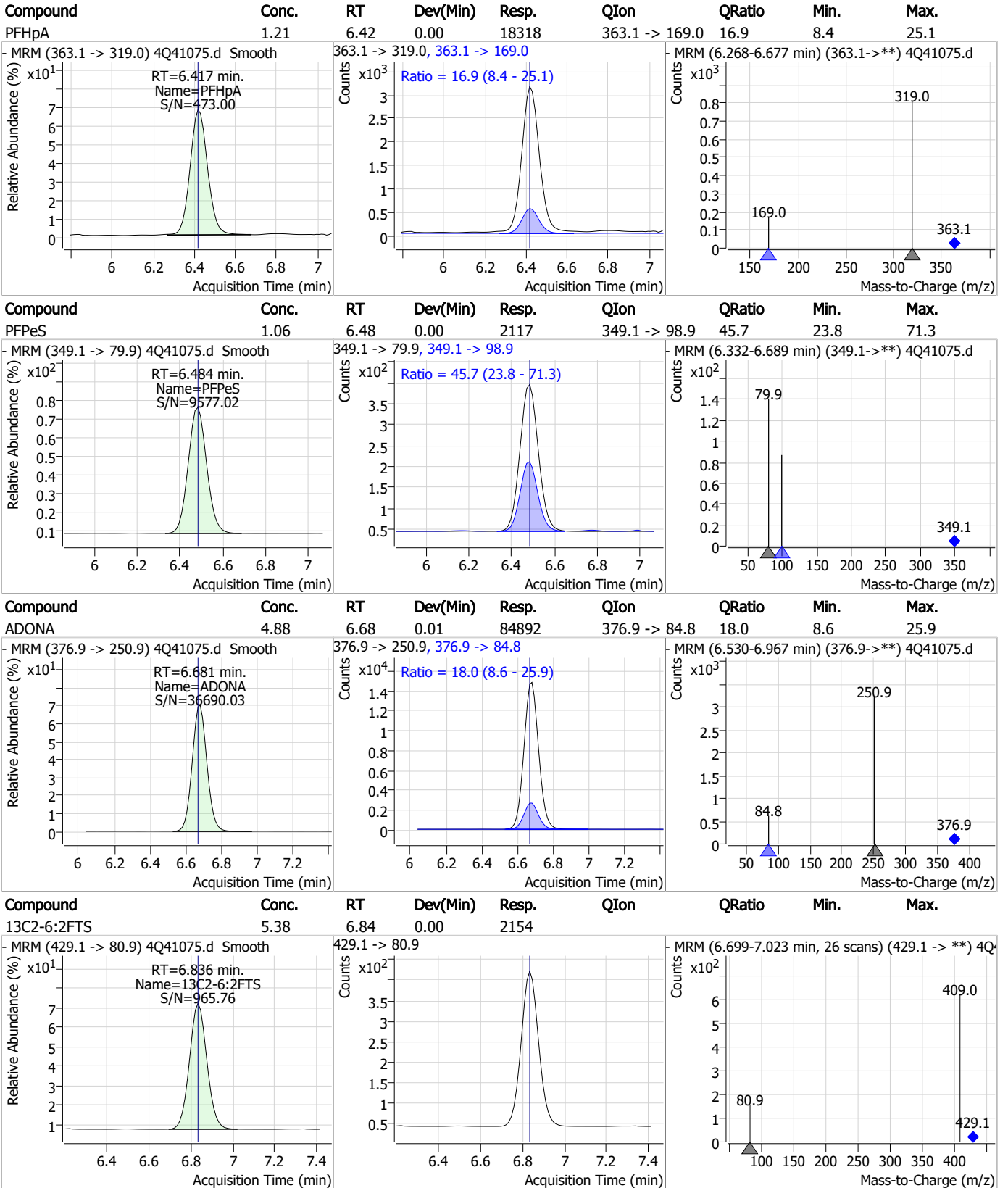


7.3.2

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Perfluorinated Compounds by LC/MS/MS

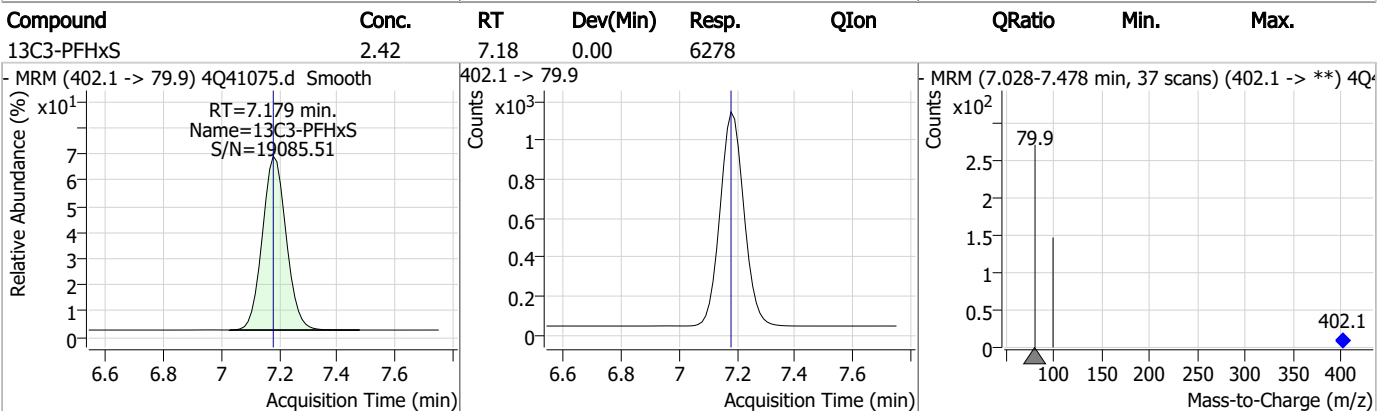
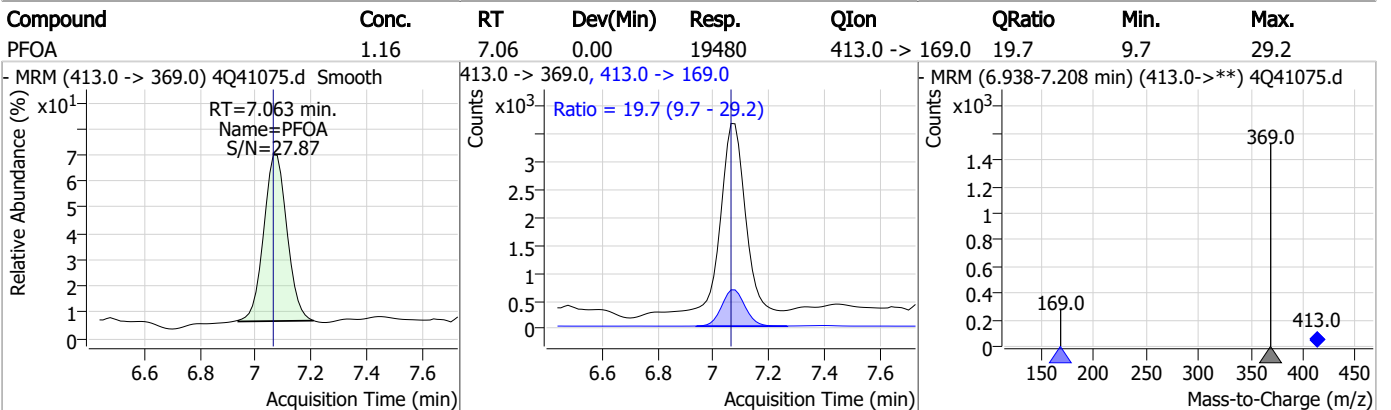
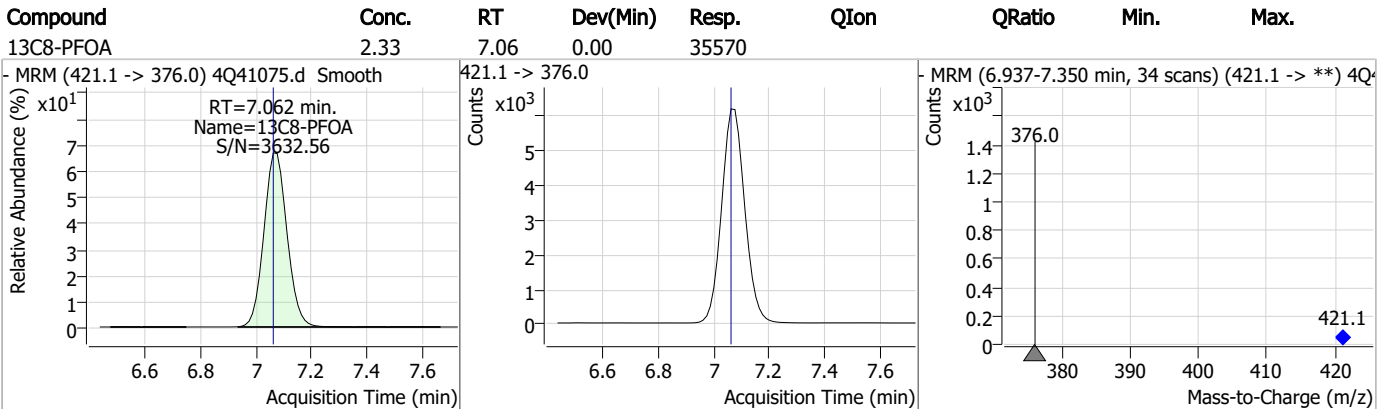
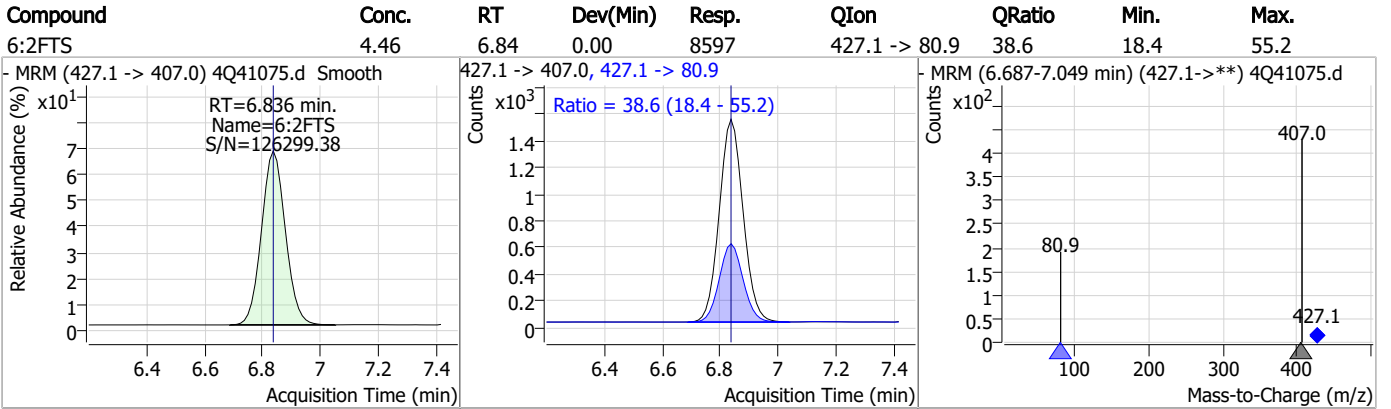


7.3.2

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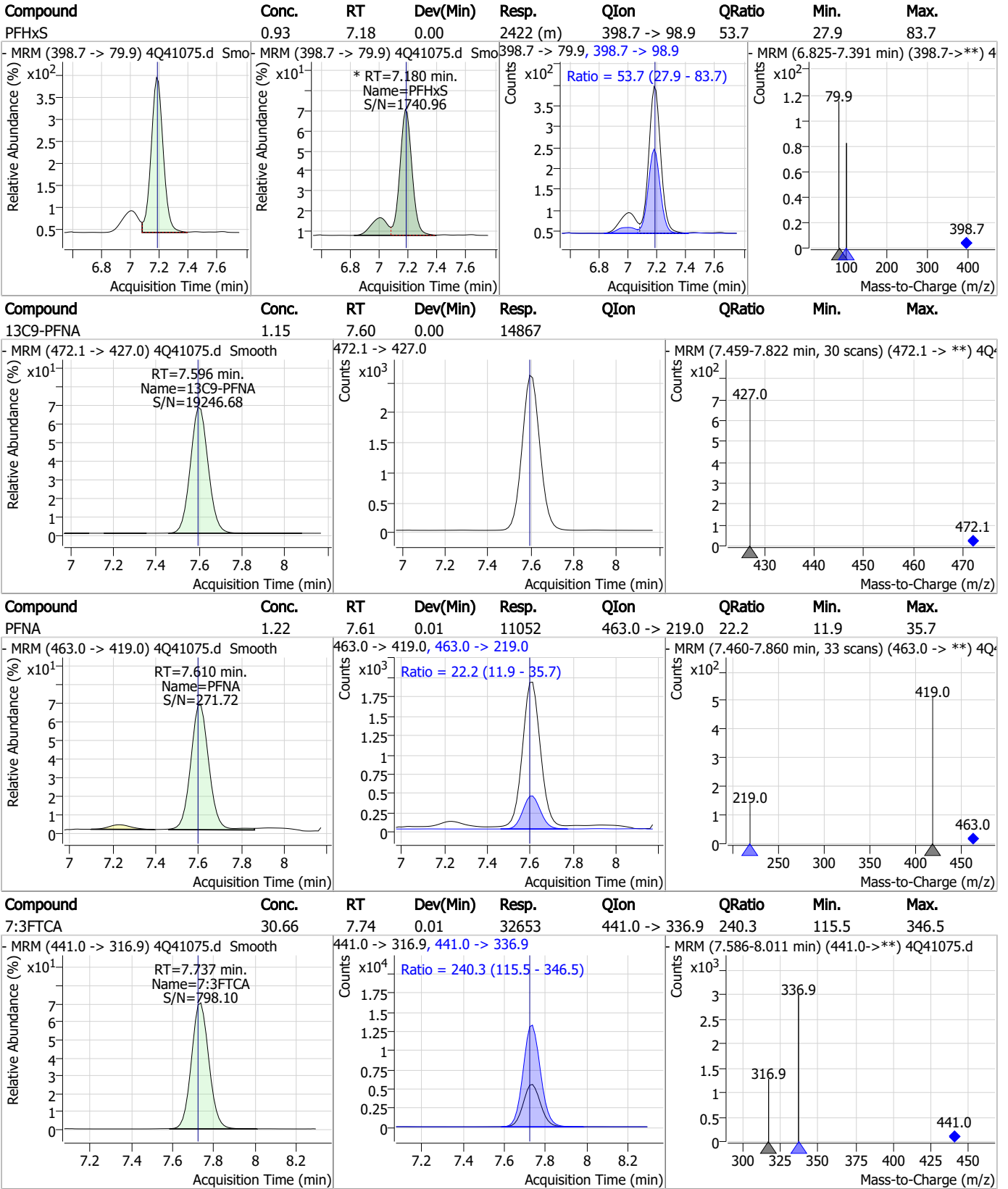
Perfluorinated Compounds by LC/MS/MS



7.3.2

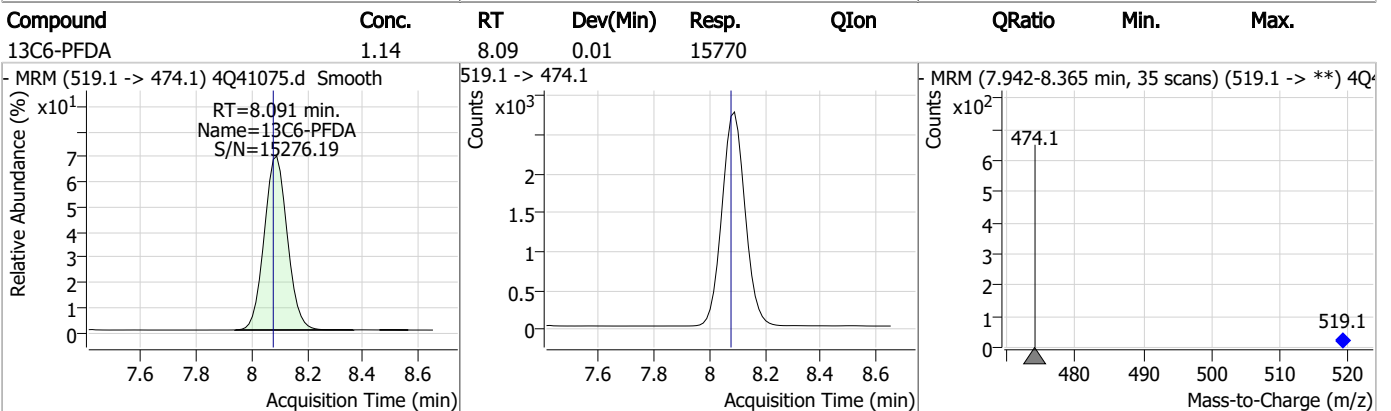
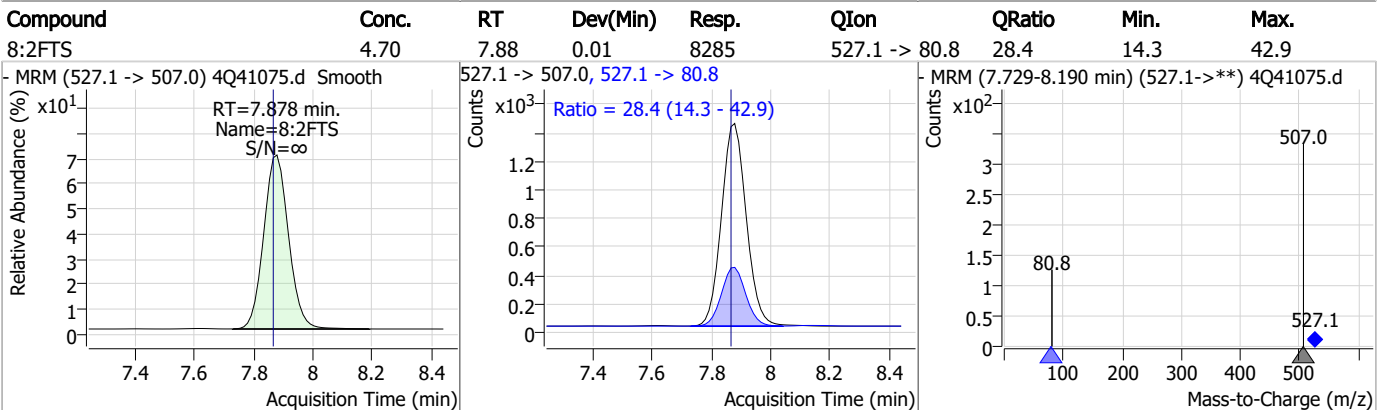
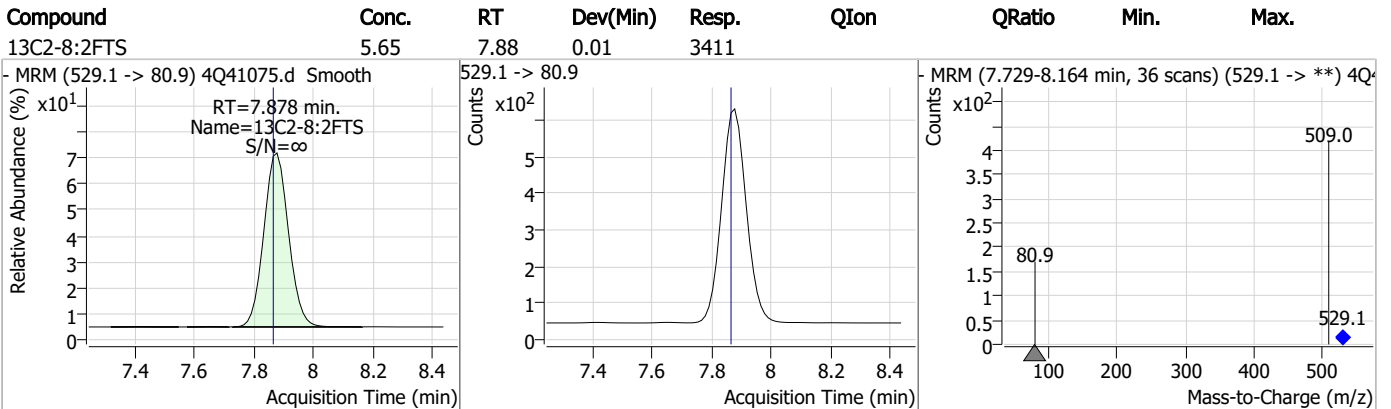
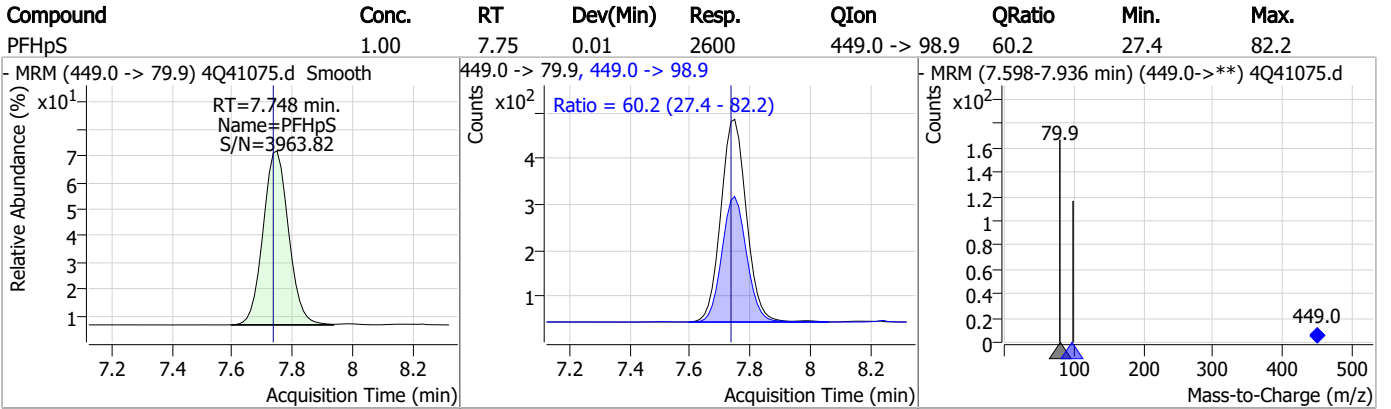
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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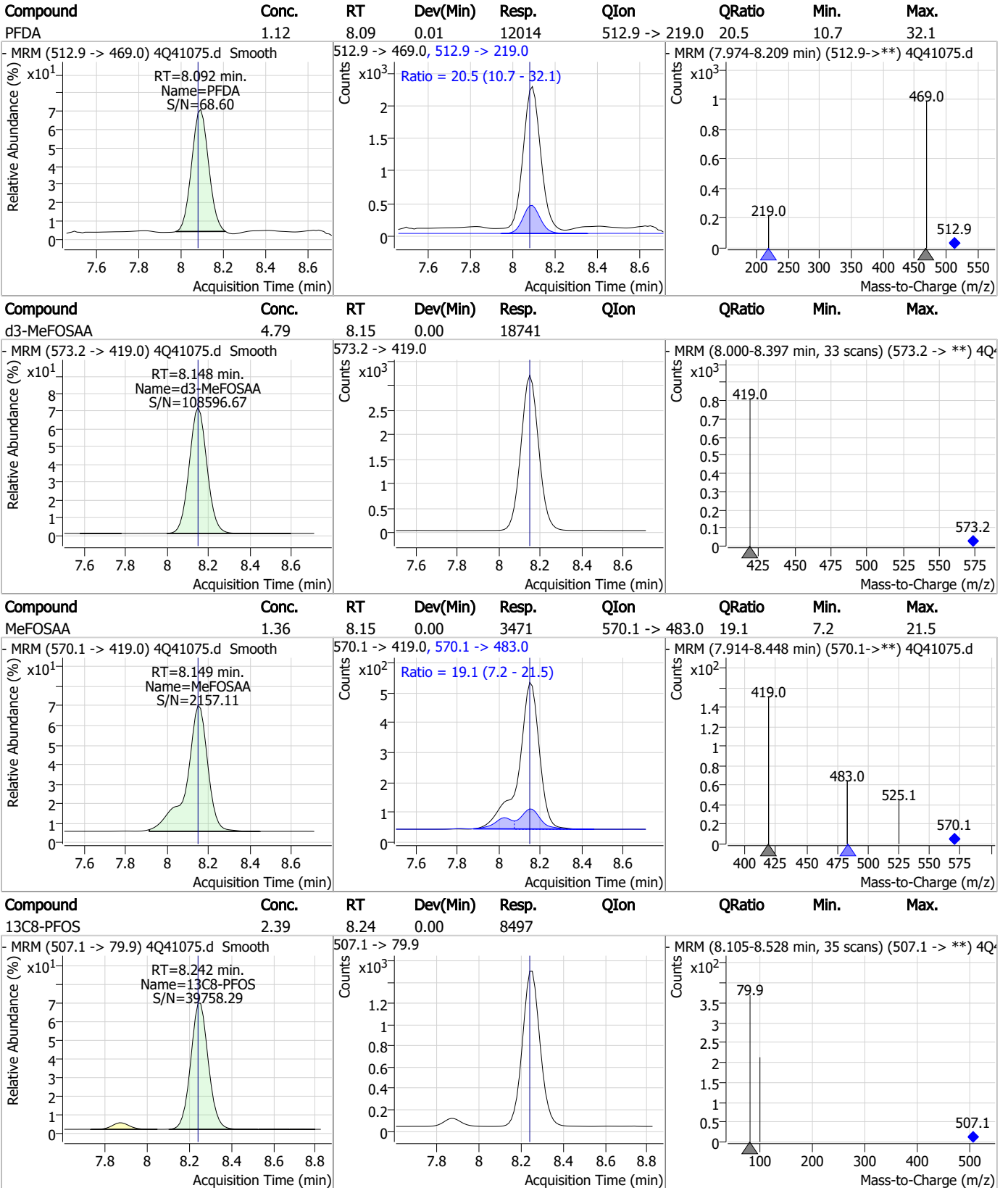
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

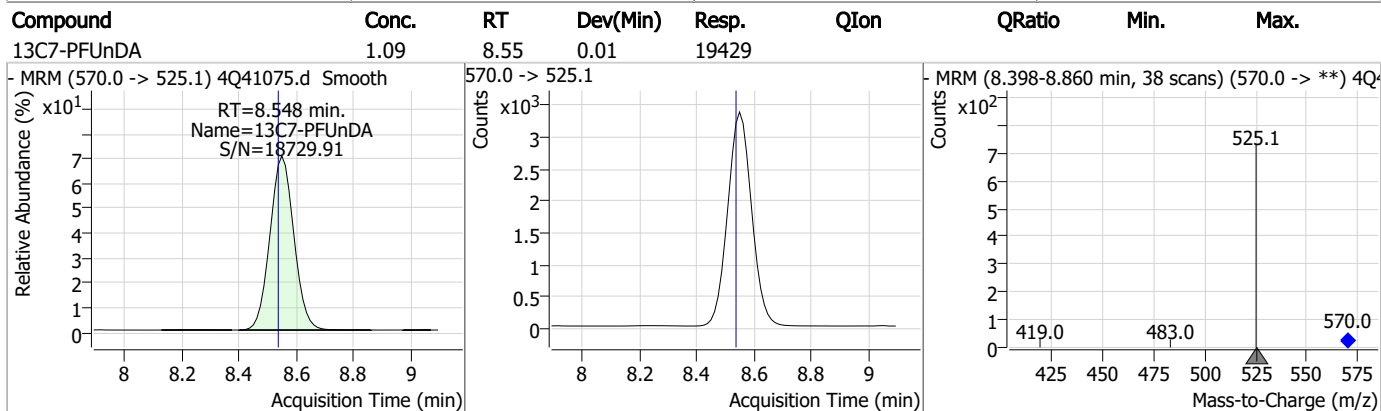
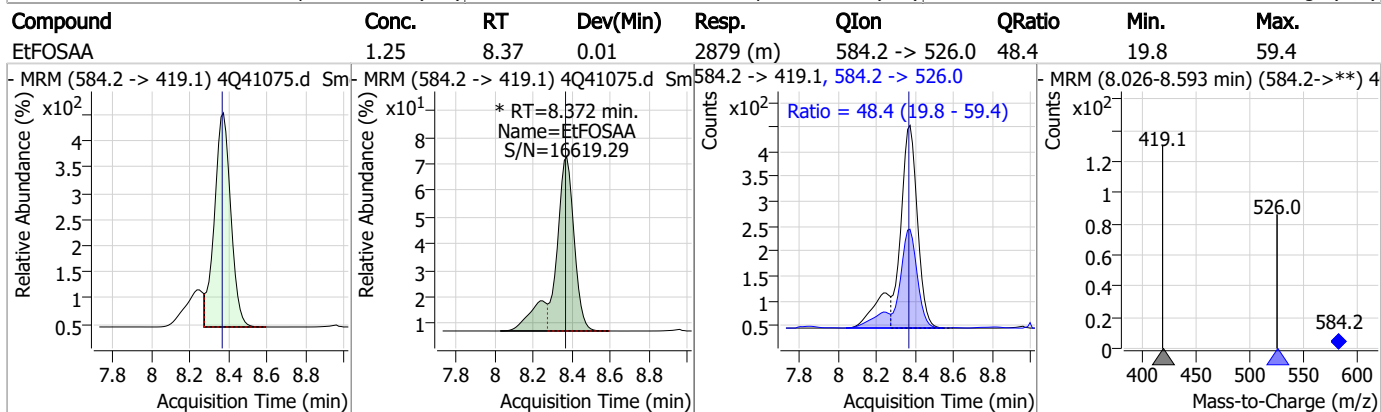
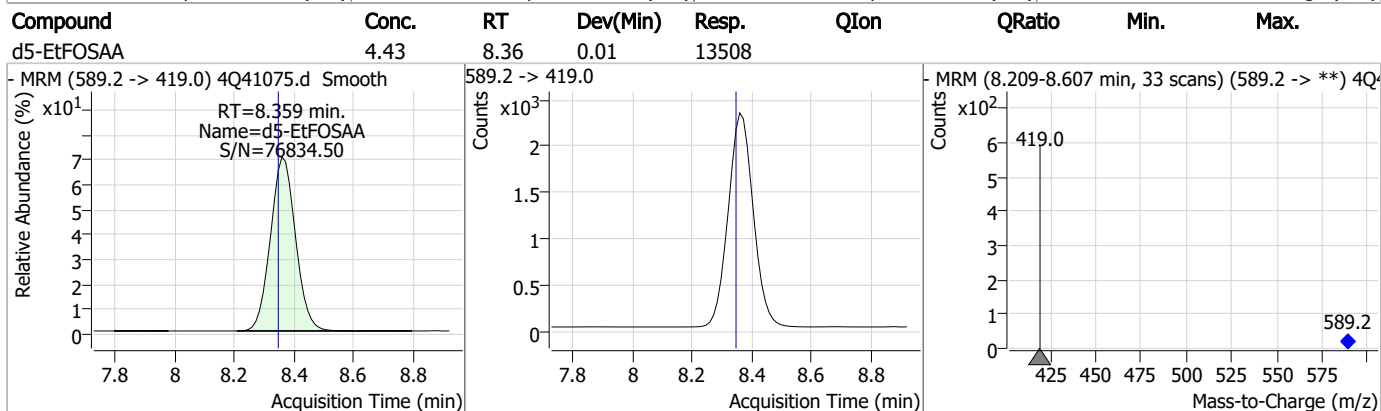
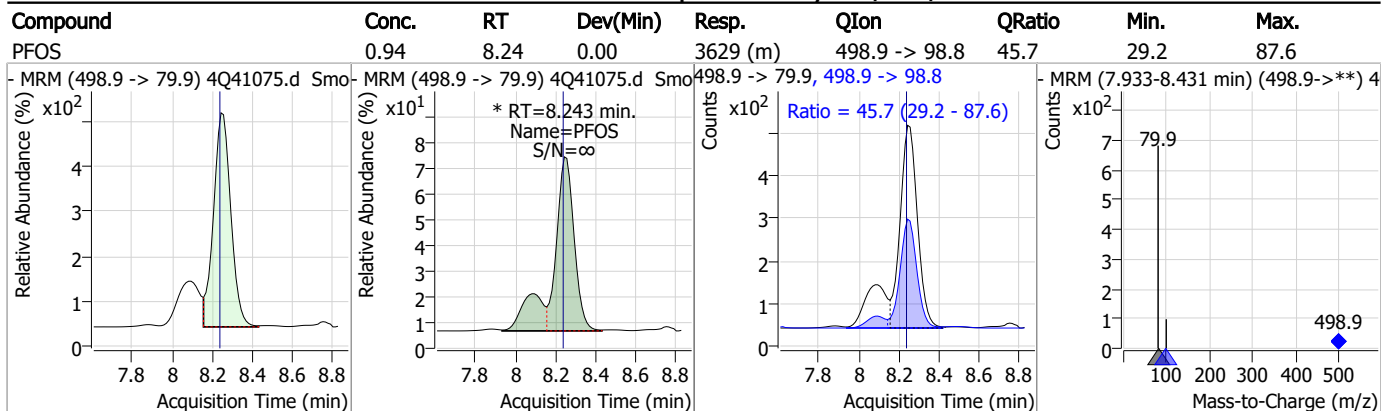


7.3.2

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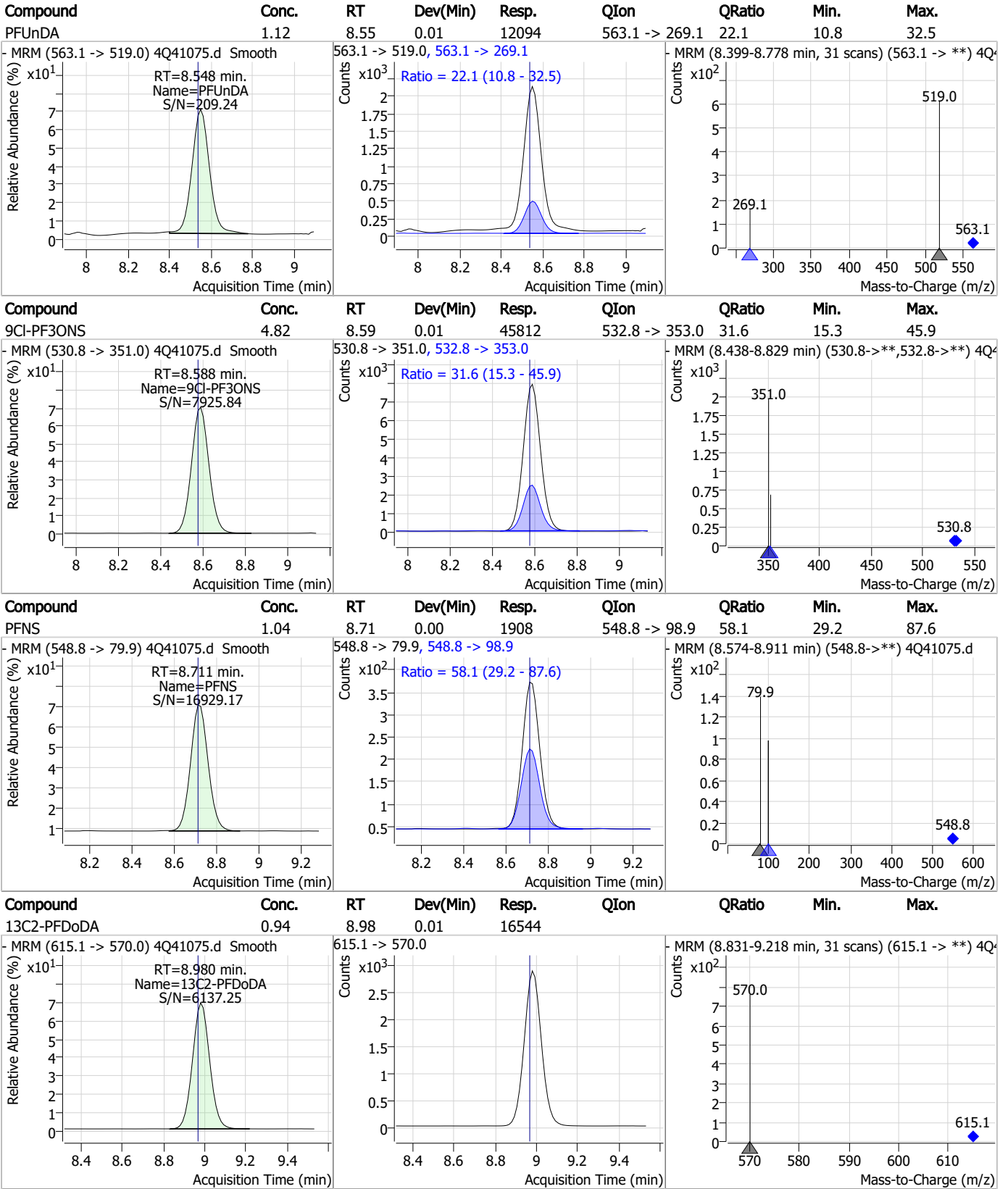


Perfluorinated Compounds by LC/MS/MS



7.3.2
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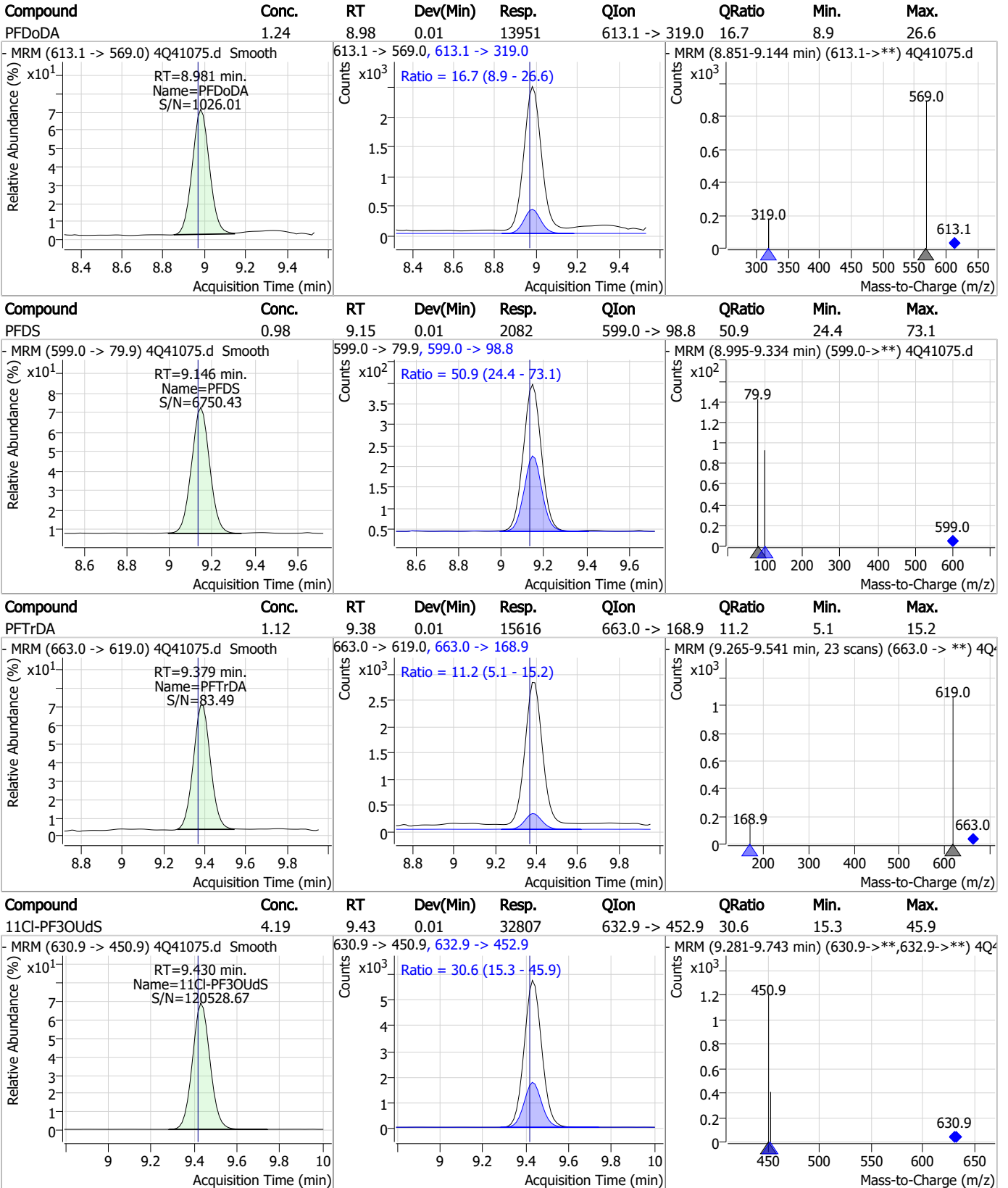
Perfluorinated Compounds by LC/MS/MS



7.3.2

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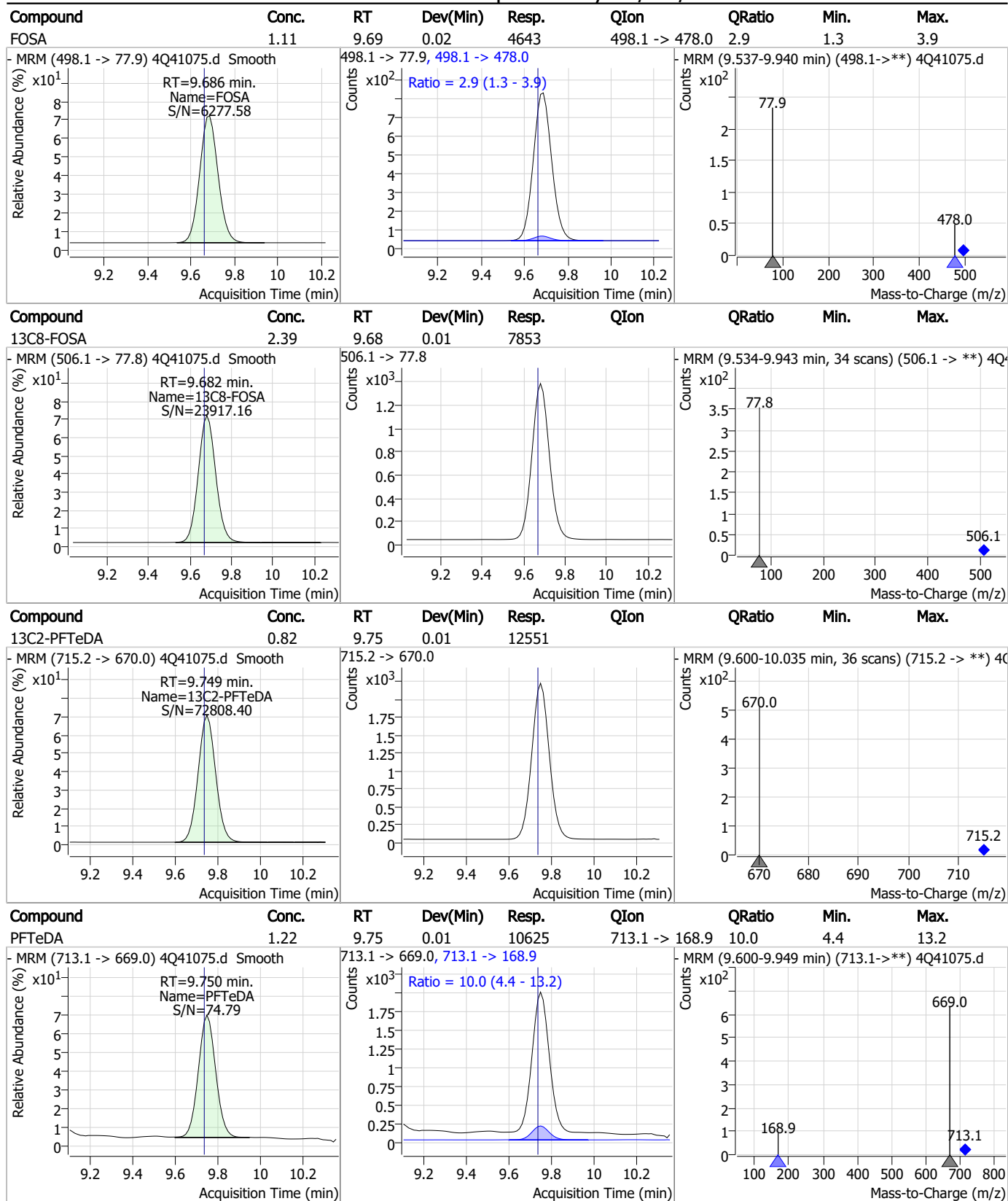
Perfluorinated Compounds by LC/MS/MS



7.3.2

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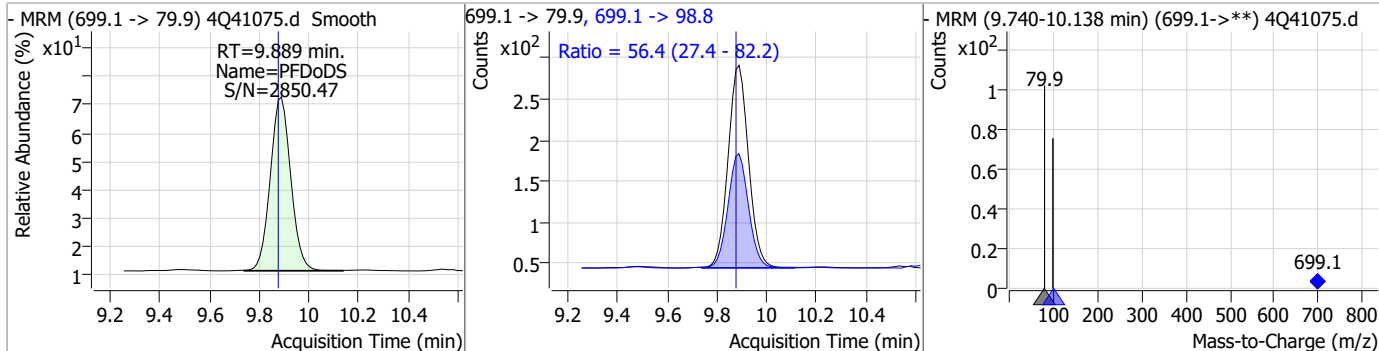
Perfluorinated Compounds by LC/MS/MS



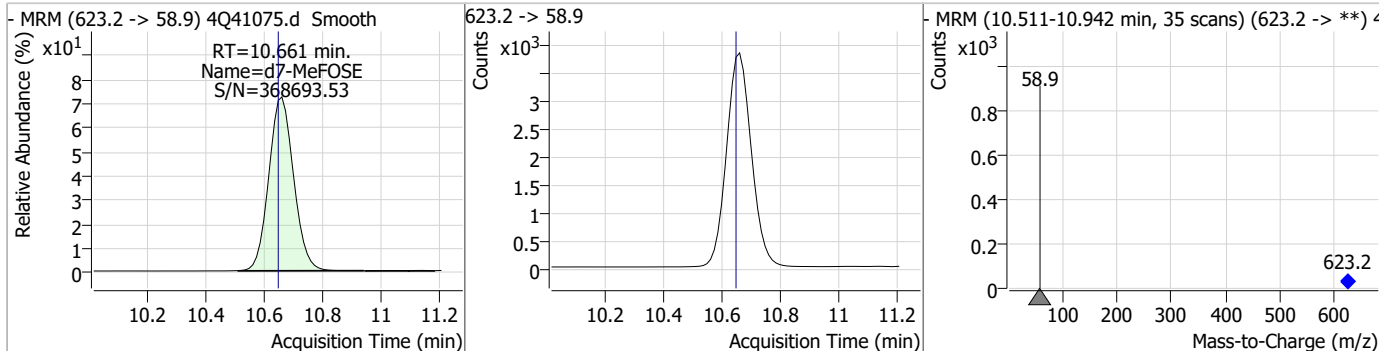
7.3.2
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Perfluorinated Compounds by LC/MS/MS

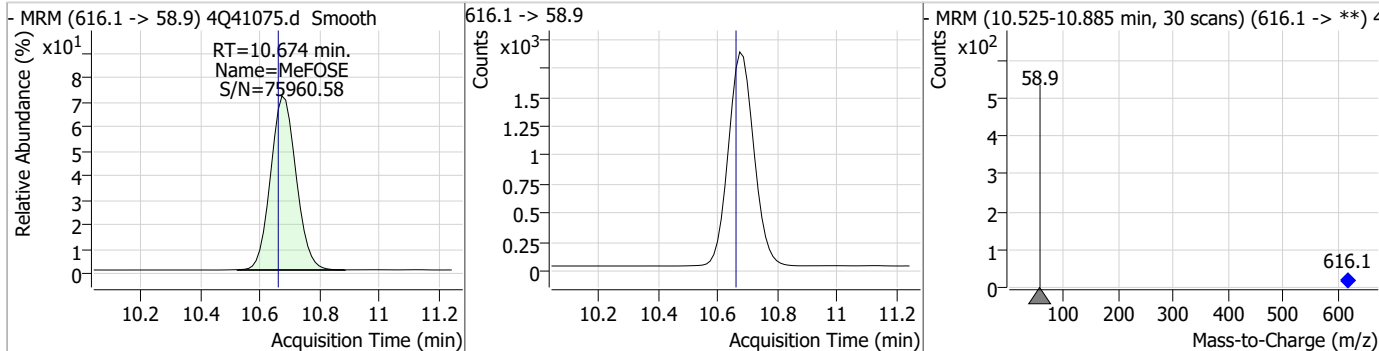
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.84	9.89	0.01	1415	699.1 -> 98.8	56.4	27.4	82.2



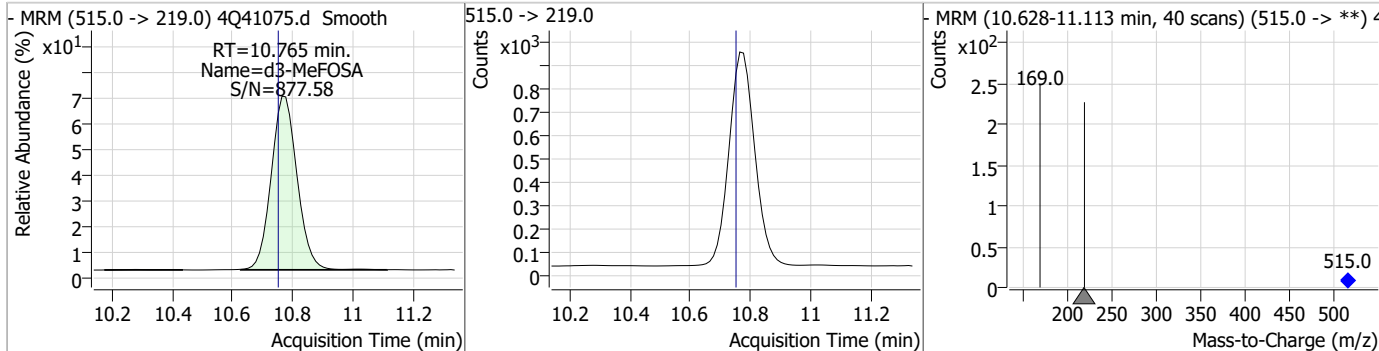
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.87	10.66	0.01	22615	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.60	10.67	0.01	11008	616.1 -> 58.9			

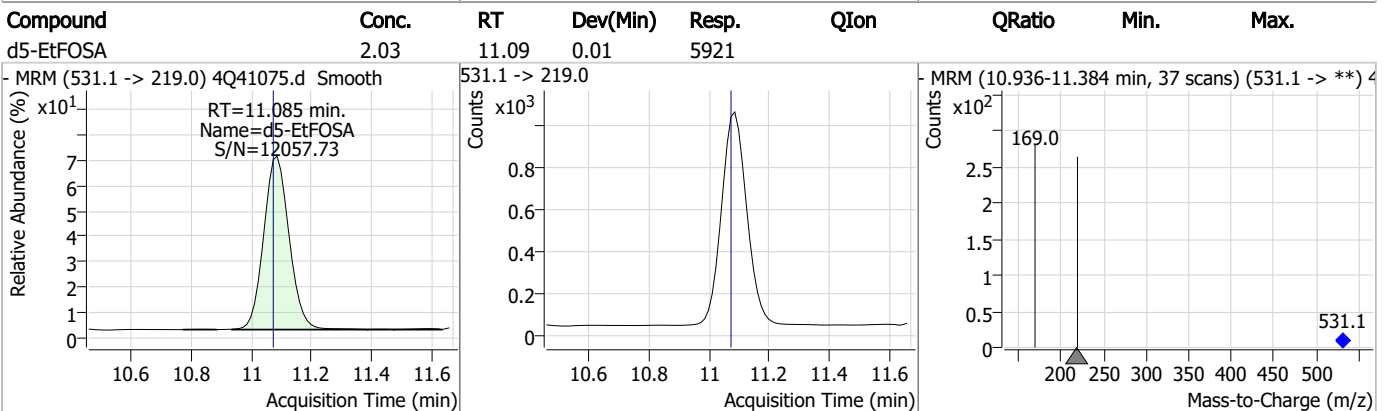
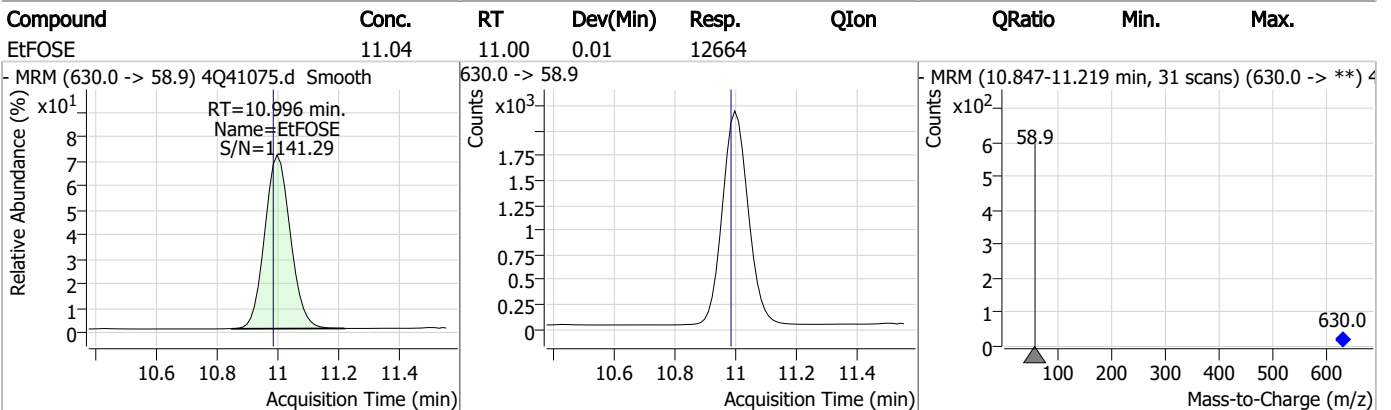
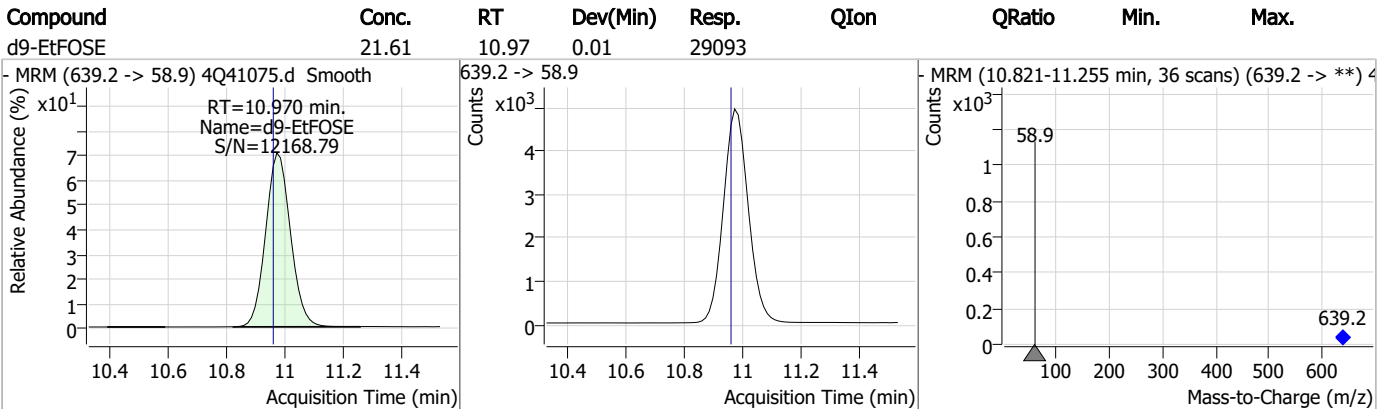
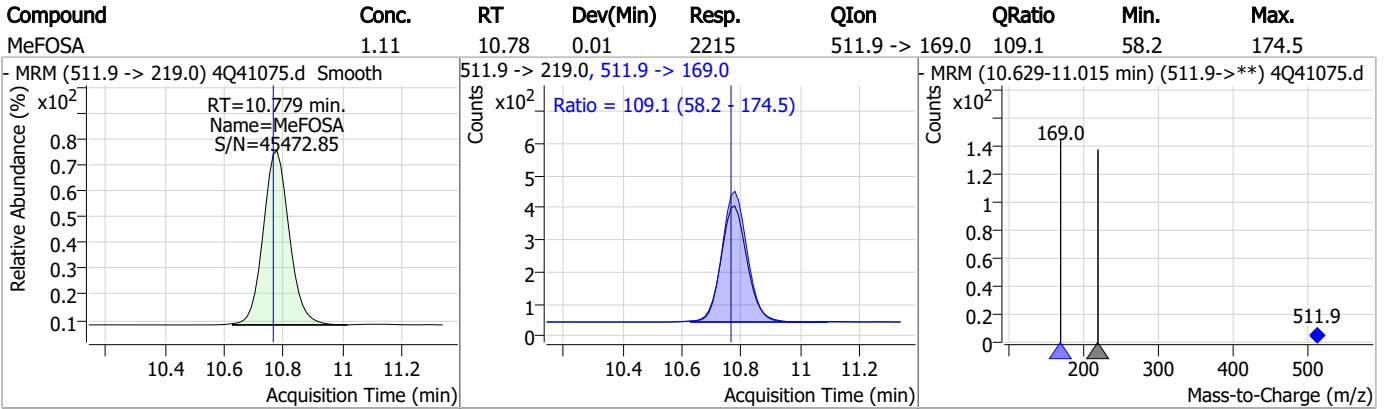


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.13	10.76	0.01	5431	515.0 -> 219.0			



7.3.2
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Perfluorinated Compounds by LC/MS/MS



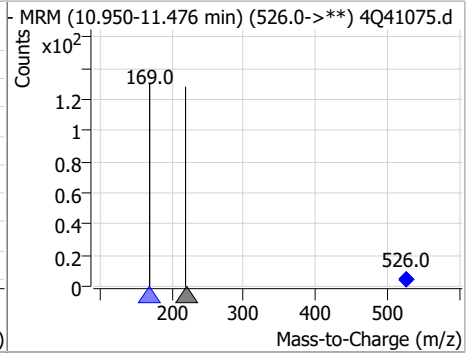
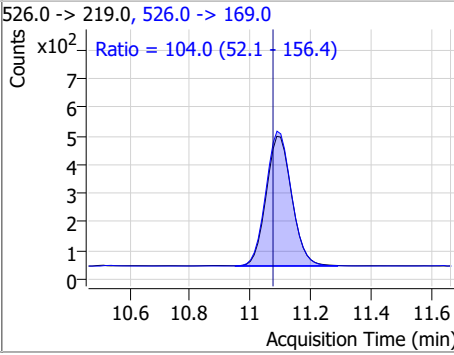
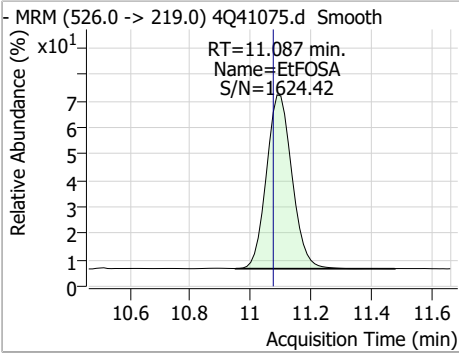
7.3.2

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	1.08	11.09	0.01	2667	526.0 -> 169.0	104.0	52.1	156.4



7.3.2

7

Manual Integration Approval Summary

Sample Number: OP95527-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q41075.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 20:36 Supervisor approved: 02/24/23 10:54 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.37	Split peak

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41085.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 10:57:08 PM
 Sample Name : op95527-ms
 Vial : P4-D1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95527,S4Q587,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.189	216.8 -> 171.9	134016	10.00 µg/L	0.037
M5-PFPeA	4.524	268.3 -> 223.0	63342	5.00 µg/L	0.025
M5-PFHxA	5.559	318.0 -> 273.0	51194	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	28250	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	34388	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	15038	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	13780	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	16130	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	12851	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	11374	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	7556	2.50 µg/L	0.000
M3-PFBS	5.514	302.1 -> 79.9	10478	2.50 µg/L	0.012
M3-PFHxS	7.179	402.1 -> 79.9	6377	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	7999	2.50 µg/L	0.000
M2-4:2FTS	5.272	329.1 -> 80.9	1305	5.00 µg/L	0.012
M2-6:2FTS	6.836	429.1 -> 80.9	2020	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3290	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	15983	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	32683	10.00 µg/L	0.012
M5-EtFOSAA	8.346	589.2 -> 419.0	11370	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	20107	25.00 µg/L	0.000
M9-EtFOSE	10.958	639.2 -> 58.9	25312	25.00 µg/L	0.000
M5-EtFOSA	11.073	531.1 -> 219.0	5082	2.50 µg/L	0.000
M3-MeFOSA	10.752	515.0 -> 219.0	4654	2.50 µg/L	0.000
13C4-PFOS	8.243	502.8 -> 79.9	7878	2.50 µg/L	0.000
13C3-PFBA	3.193	216.0 -> 172.0	77128	5.00 µg/L	0.037
18O2-PFHxS	7.178	403.0 -> 83.9	4567	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	42819	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	13957	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	19122	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	45599	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	1305	5.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2020	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3290	5.52 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.4%		
13C2-PFDoDA	8.968	615.1 -> 570.0	12851	0.88 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 70.6%		
13C2-PFTeDA	9.736	715.2 -> 670.0	11374	0.90 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 71.7%		
13C3-PFBS	5.514	302.1 -> 79.9	10478	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C3-PFHxS	7.179	402.1 -> 79.9	6377	2.49 µg/L	0.000



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C4-PFBA	3.189	216.8 -> 171.9	134016	10.49 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C4-PFHpA	6.417	367.1 -> 322.0	28250	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C5-PFHxA	5.559	318.0 -> 273.0	51194	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C5-PFPeA	4.524	268.3 -> 223.0	63342	4.92 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C6-PFDA	8.079	519.1 -> 474.1	13780	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C7-PFUnDA	8.536	570.0 -> 525.1	16130	1.09 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.4%	
13C8-FOSA	9.670	506.1 -> 77.8	7556	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C8-PFOA	7.062	421.1 -> 376.0	34388	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C8-PFOS	8.242	507.1 -> 79.9	7999	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C9-PFNA	7.596	472.1 -> 427.0	15038	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.4%	
d3-MeFOSAA	8.148	573.2 -> 419.0	15983	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	32683	11.02 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 110.2%	
d3-MeFOSA	10.752	515.0 -> 219.0	4654	2.06 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 82.4%	
d5-EtFOSAA	8.346	589.2 -> 419.0	11370	4.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 84.1%	
d7-MeFOSE	10.648	623.2 -> 58.9	20107	20.93 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.7%	
d9-EtFOSE	10.958	639.2 -> 58.9	25312	21.21 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.9%	
d5-EtFOSA	11.073	531.1 -> 219.0	5082	1.97 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.7%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	24333	11.72 µg/L	98
		327.1 -> 80.9	8956		
6:2FTS	6.836	427.1 -> 407.0	21128	11.68 µg/L	99
		427.1 -> 80.9	7939		
8:2FTS	7.866	527.1 -> 507.0	19903	11.70 µg/L	97
		527.1 -> 80.8	6035		
EtFOSAA	8.360	584.2 -> 419.1	6003	3.11 µg/L	m 92
		584.2 -> 526.0	2684		
FOSA	9.673	498.1 -> 77.9	12640	3.15 µg/L	99
		498.1 -> 478.0	371		
MeFOSAA	8.149	570.1 -> 419.0	7274	3.33 µg/L	m 94
		570.1 -> 483.0	1241		
PFBA	3.196	212.8 -> 168.9	42215	13.29 µg/L	100
PFBS	5.515	298.7 -> 79.9	11593	2.77 µg/L	97
		298.7 -> 98.8	4257		
PFDA	8.079	512.9 -> 469.0	28721	3.05 µg/L	98
		512.9 -> 219.0	6388		
PFDODA	8.968	613.1 -> 569.0	28596	3.28 µg/L	98
		613.1 -> 319.0	4811		
PFDS	9.133	599.0 -> 79.9	4662	2.34 µg/L	99

7.4.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2252			
PFHpA	6.417	363.1 -> 319.0	47085	3.13	µg/L	98
		363.1 -> 169.0	8177			
PFHpS	7.736	449.0 -> 79.9	6432	2.62	µg/L	94
		449.0 -> 98.9	3788			
PFHxA	5.562	313.0 -> 269.0	51632	2.92	µg/L	100
		313.0 -> 118.9	1363			
PFHxS	7.180	398.7 -> 79.9	6945	2.64	µg/L	m 98
		398.7 -> 98.9	3790			
PFNA	7.596	463.0 -> 419.0	27465	3.00	µg/L	99
		463.0 -> 219.0	6714			
PFNS	8.711	548.8 -> 79.9	4600	2.67	µg/L	94
		548.8 -> 98.9	2471			
PFOA	7.063	413.0 -> 369.0	47887	2.95	µg/L	100
		413.0 -> 169.0	9412			
PFOS	8.243	498.9 -> 79.9	8643	2.39	µg/L	m 84
		498.9 -> 98.8	4039			
PFPeA	4.527	263.0 -> 219.0	102900	6.91	µg/L	100
PFPeS	6.484	349.1 -> 79.9	5723	2.83	µg/L	96
		349.1 -> 98.9	2558			
PFTeDA	9.737	713.1 -> 669.0	25805	3.26	µg/L	98
		713.1 -> 168.9	2071			
PFTrDA	9.379	663.0 -> 619.0	34443	3.19	µg/L	96
		663.0 -> 168.9	3965			
PFUnDA	8.536	563.1 -> 519.0	26641	2.97	µg/L	97
		563.1 -> 269.1	5355			
11CI-PF3OUdS	9.418	630.9 -> 450.9	75732	8.93	µg/L	98
		632.9 -> 452.9	22532			
9CI-PF3ONS	8.575	530.8 -> 351.0	108838	10.59	µg/L	100
		532.8 -> 353.0	33444			
ADONA	6.668	376.9 -> 250.9	210389	11.17	µg/L	98
		376.9 -> 84.8	37917			
HFPO-DA	5.890	284.9 -> 168.9	32128	11.97	µg/L	100
		284.9 -> 184.9	3939			
3:3FTCA	4.204	241.0 -> 177.0	12762	14.55	µg/L	100
		241.0 -> 117.0	1100			
5:3FTCA	6.345	341.0 -> 237.1	208385	77.71	µg/L	97
		341.0 -> 217.0	152801			
7:3FTCA	7.723	441.0 -> 316.9	83305	77.20	µg/L	99
		441.0 -> 336.9	193499			
EtFOSA	11.087	526.0 -> 219.0	5795	2.72	µg/L	94
		526.0 -> 169.0	6372			
EtFOSE	10.983	630.0 -> 58.9	30455	30.51	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	5159	3.01	µg/L	100
		511.9 -> 169.0	6023			
MeFOSE	10.662	616.1 -> 58.9	25449	30.16	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	3367	2.12	µg/L	95
		699.1 -> 98.8	1969			
NFDHA	5.465	295.0 -> 201.0	4336	6.45	µg/L	94
		295.0 -> 84.9	920			
PFMBA	4.881	279.0 -> 85.1	50946	6.44	µg/L	100
PFMPA	3.752	229.0 -> 84.9	38873	6.19	µg/L	100
PFEESA	5.983	314.8 -> 134.9	63749	5.33	µg/L	99
		314.8 -> 82.9	2145			

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

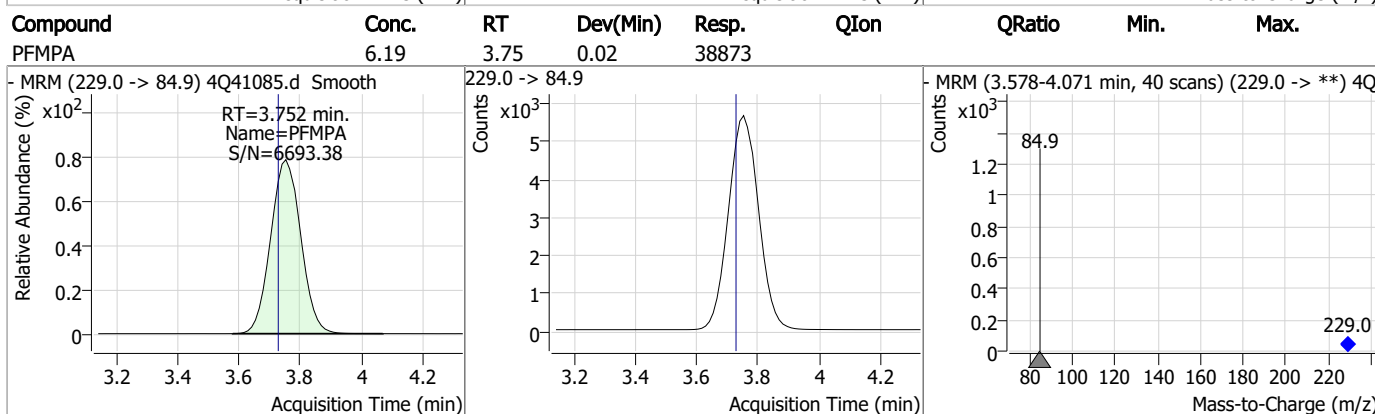
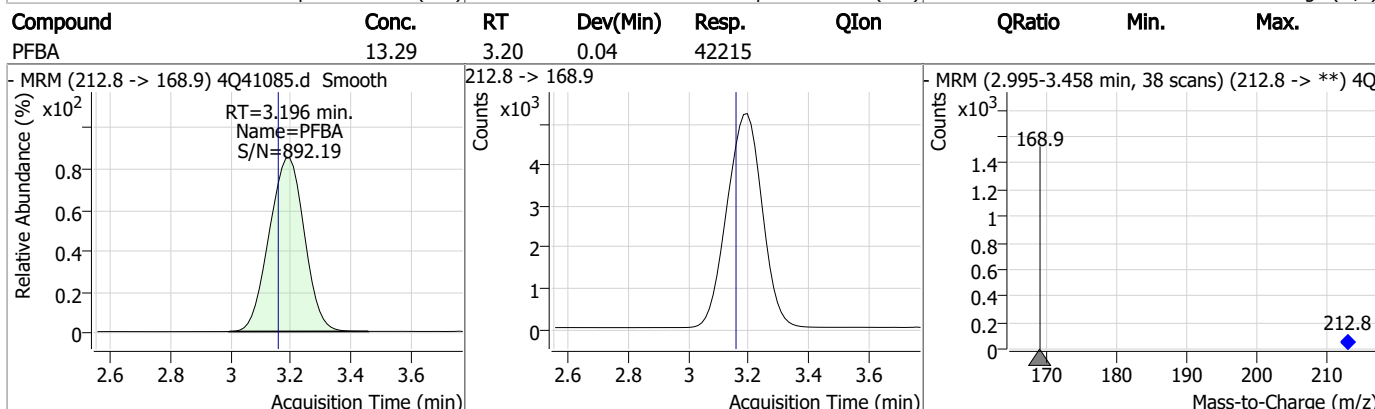
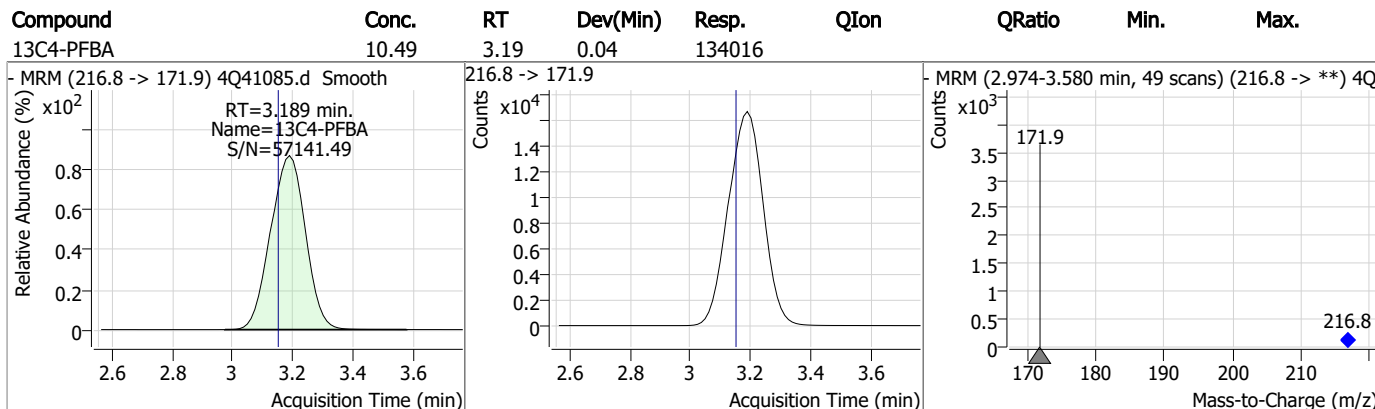
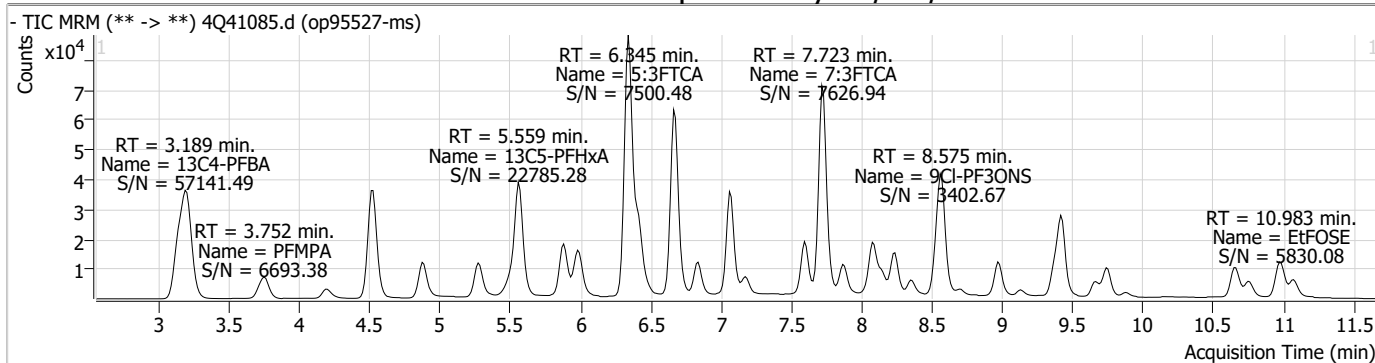
Perfluorinated Compounds by LC/MS/MS

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

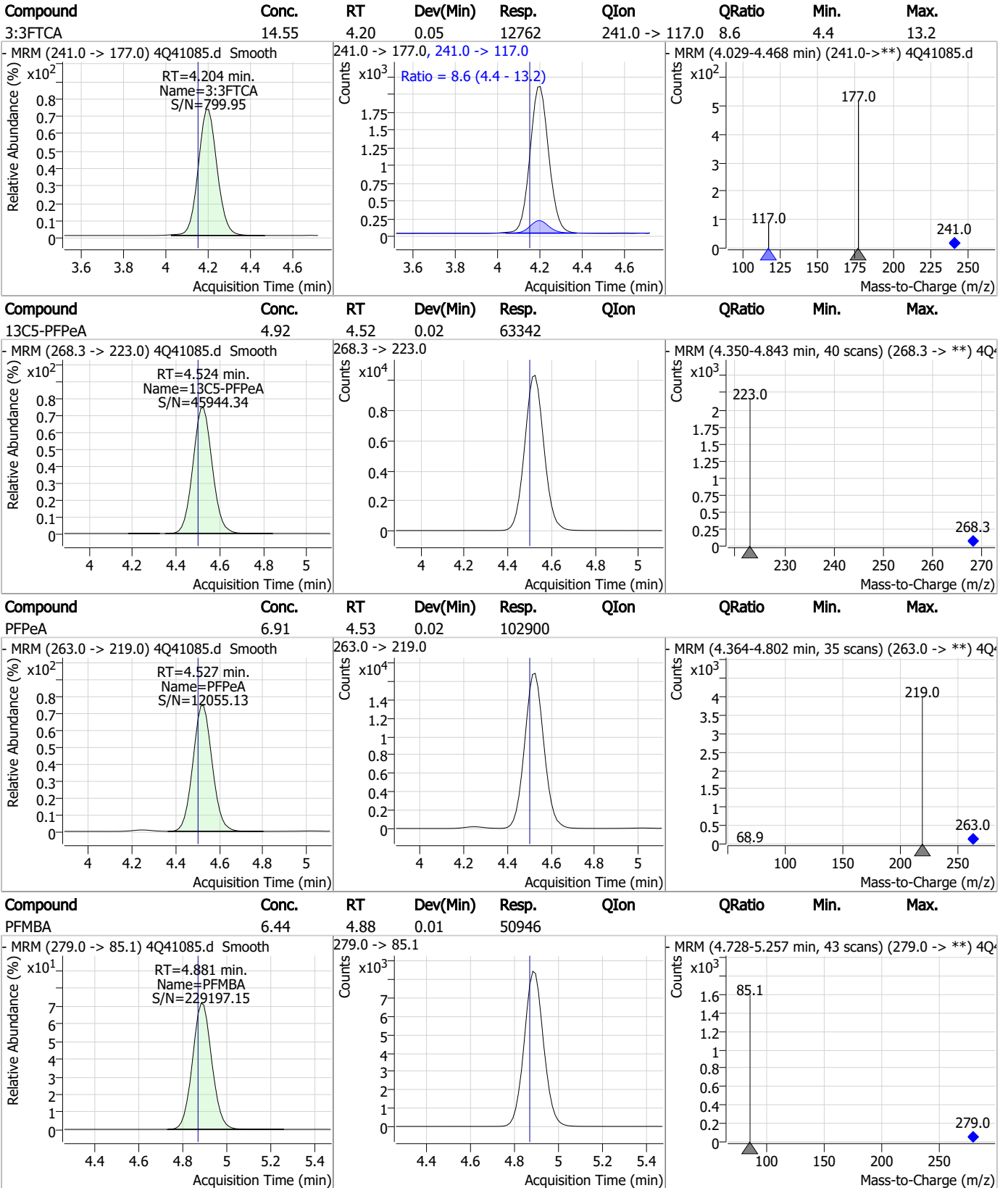
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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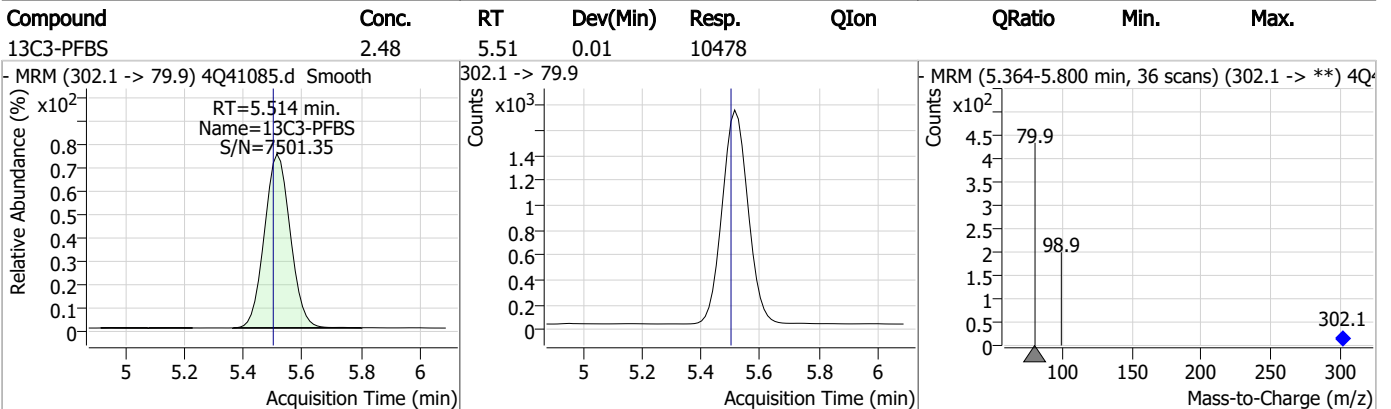
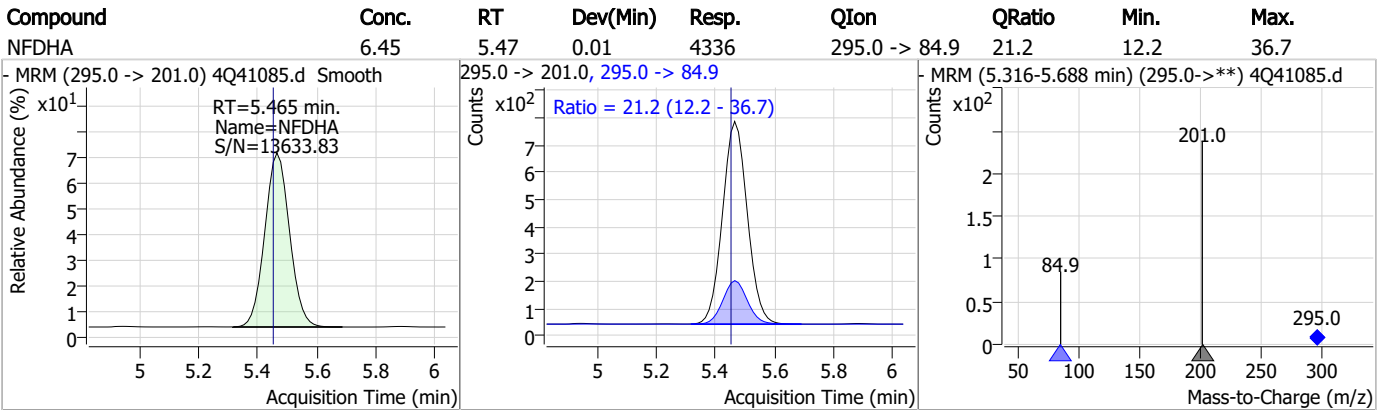
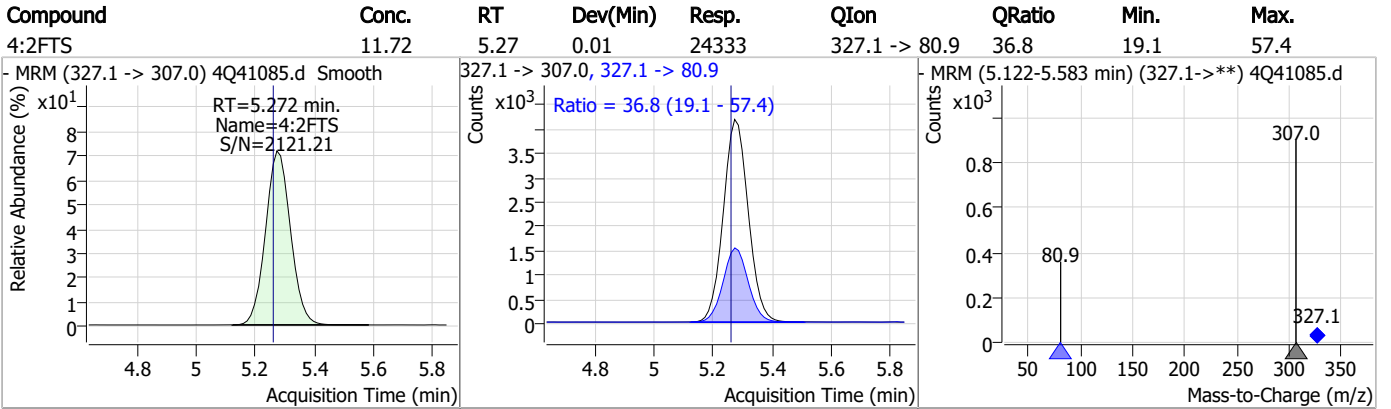
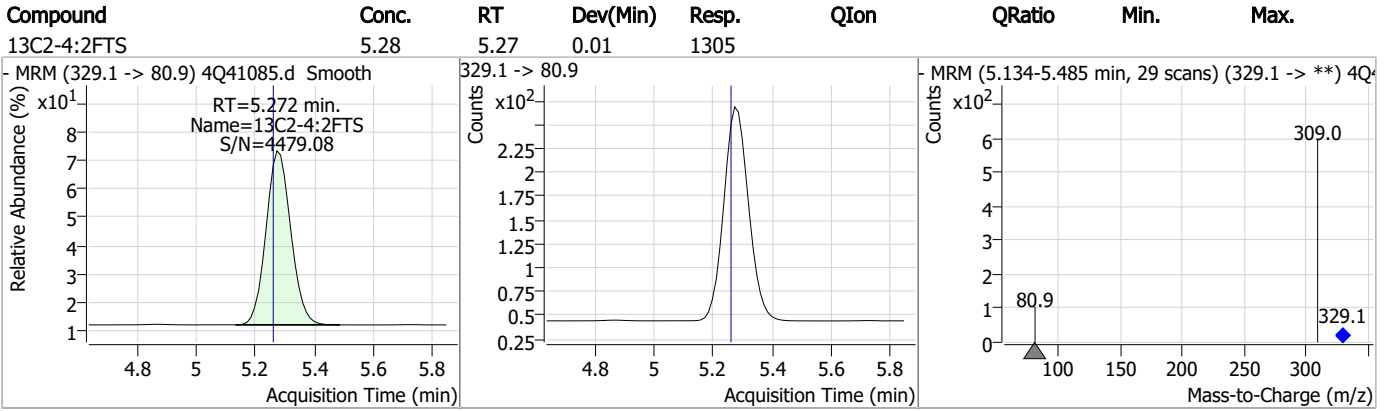
Perfluorinated Compounds by LC/MS/MS



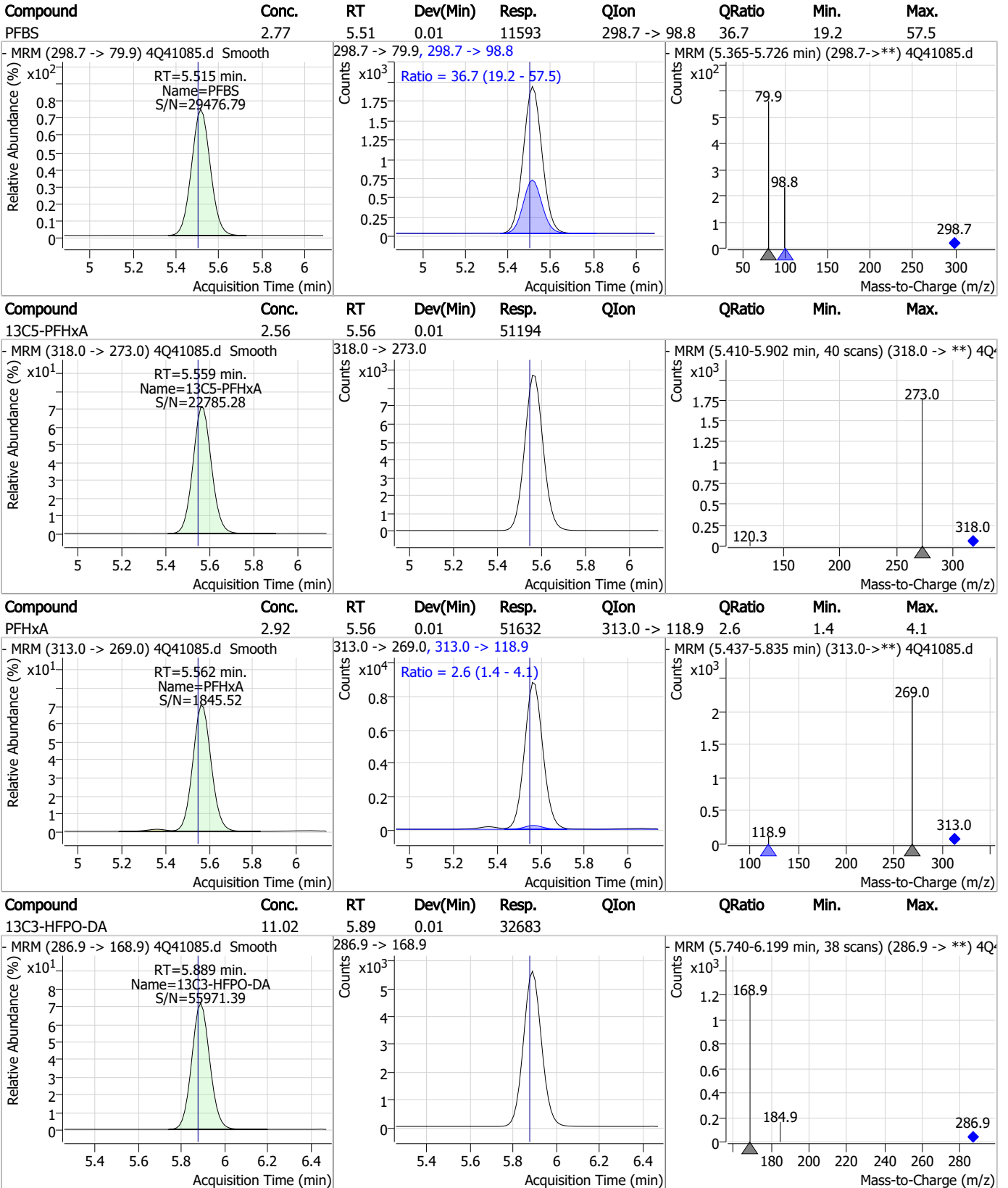
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

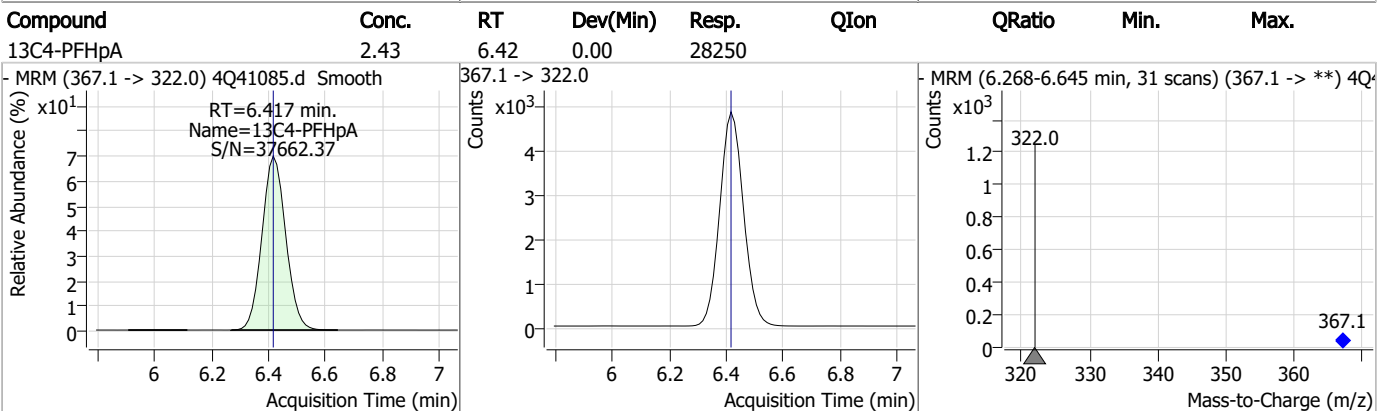
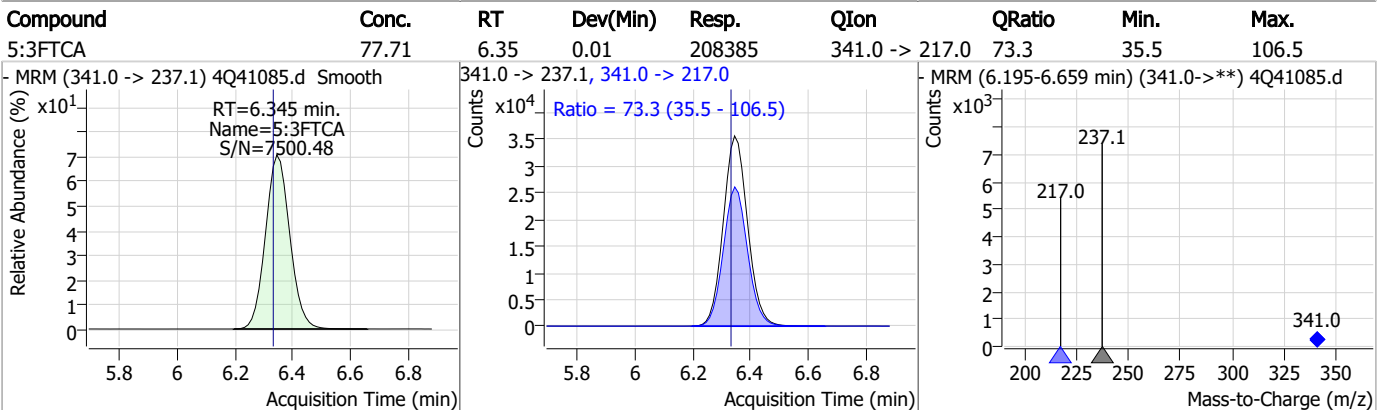
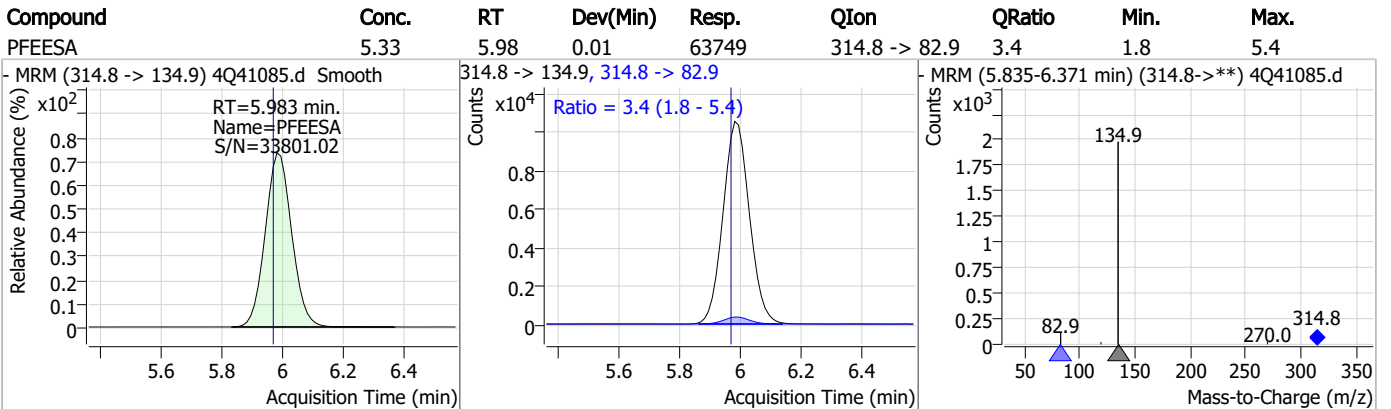
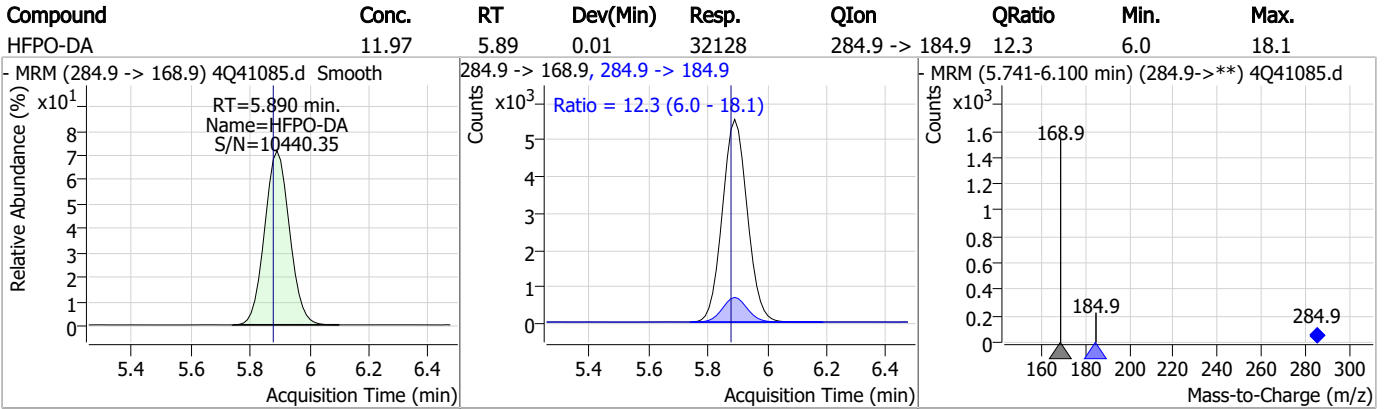


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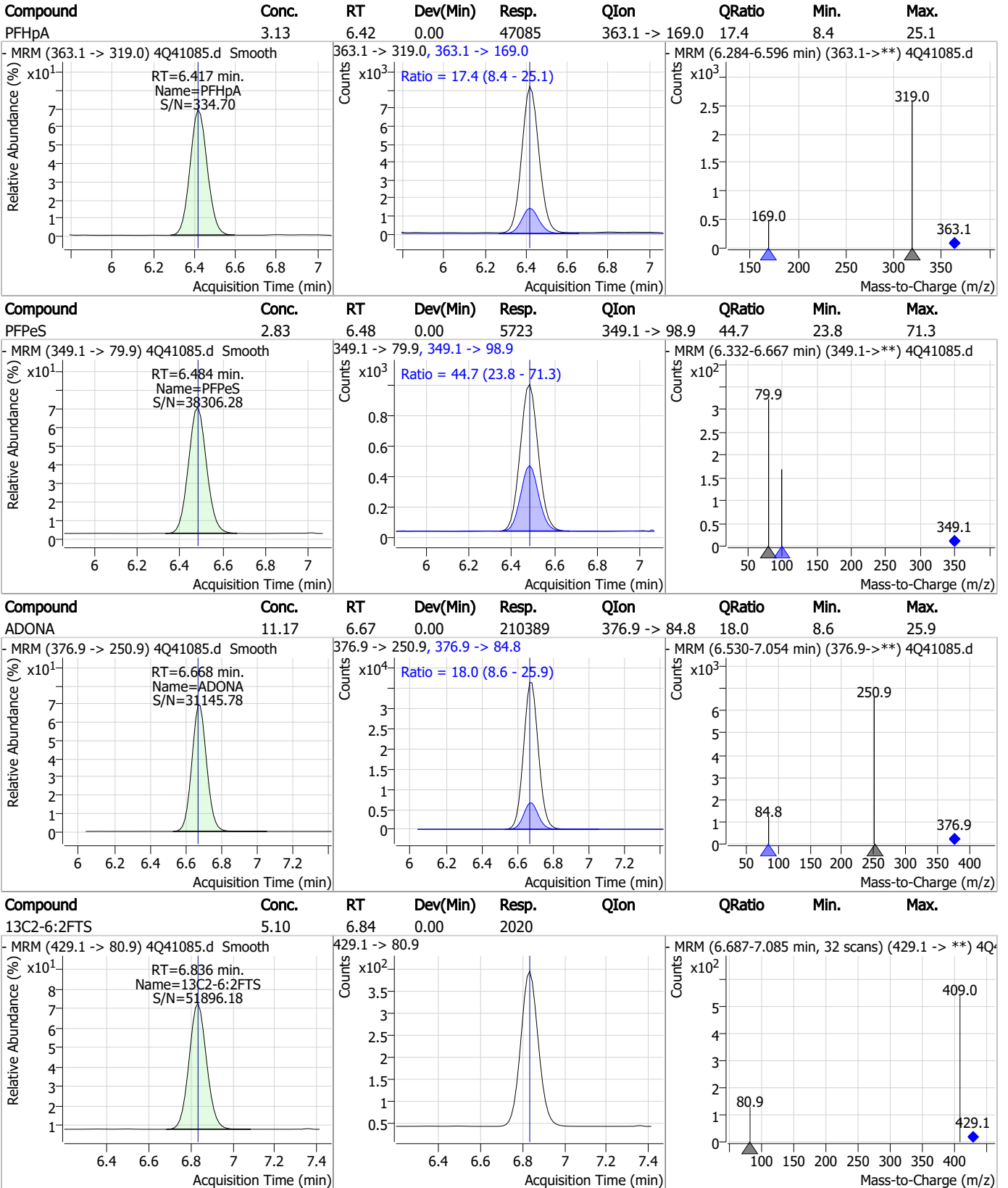
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

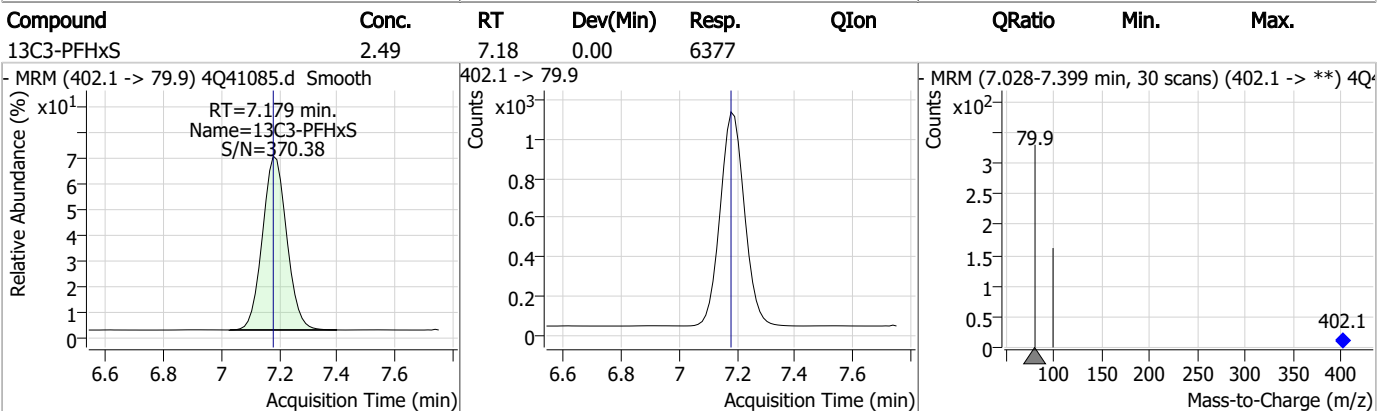
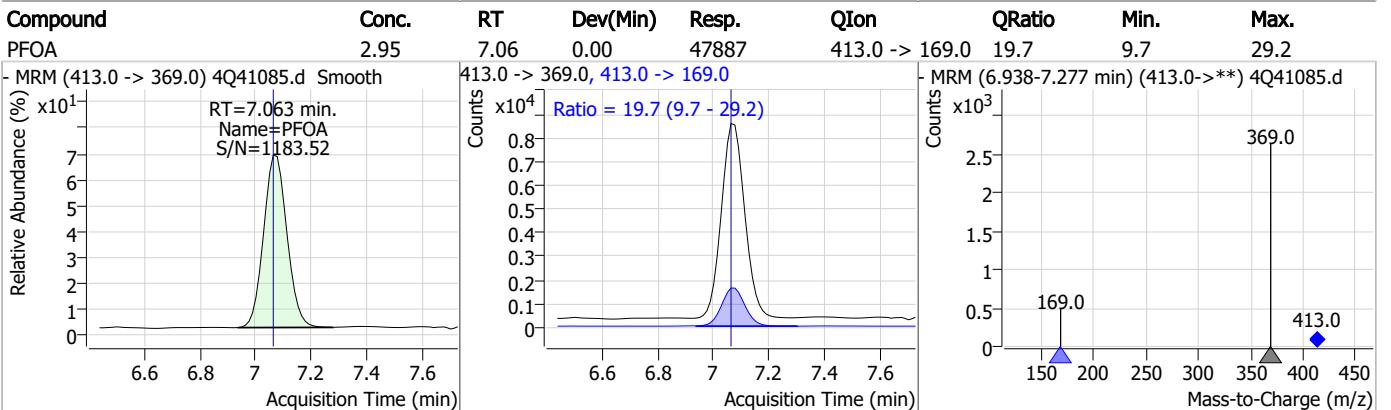
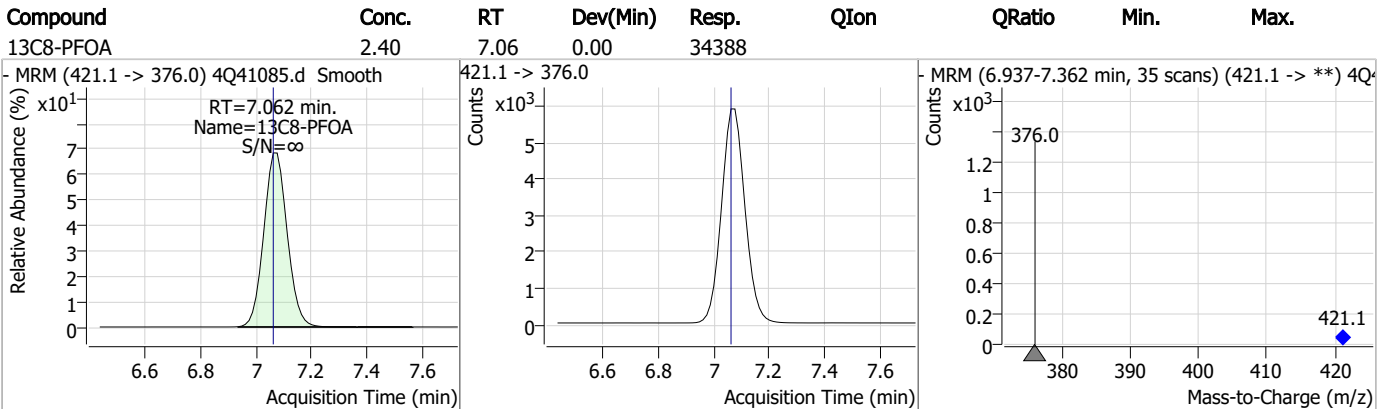
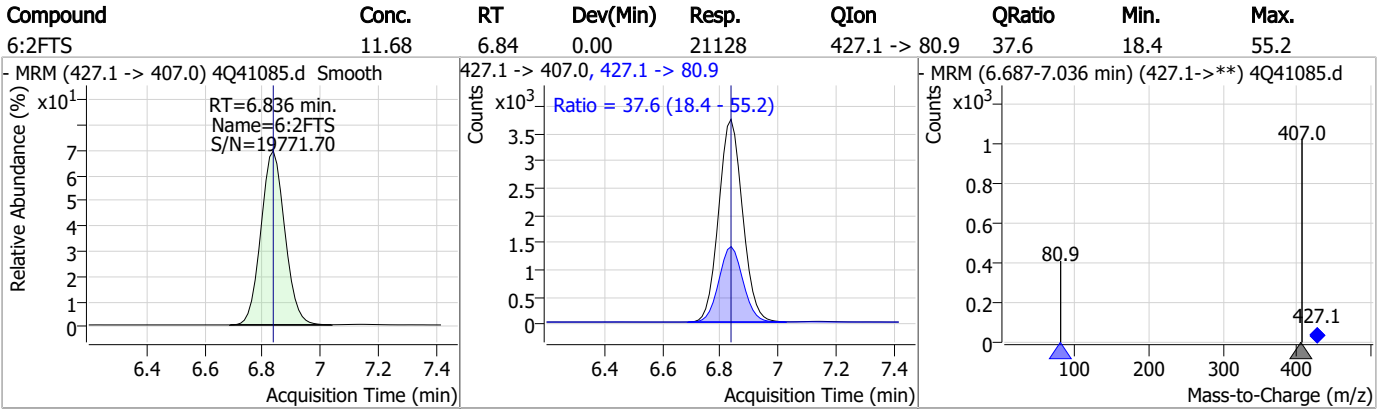


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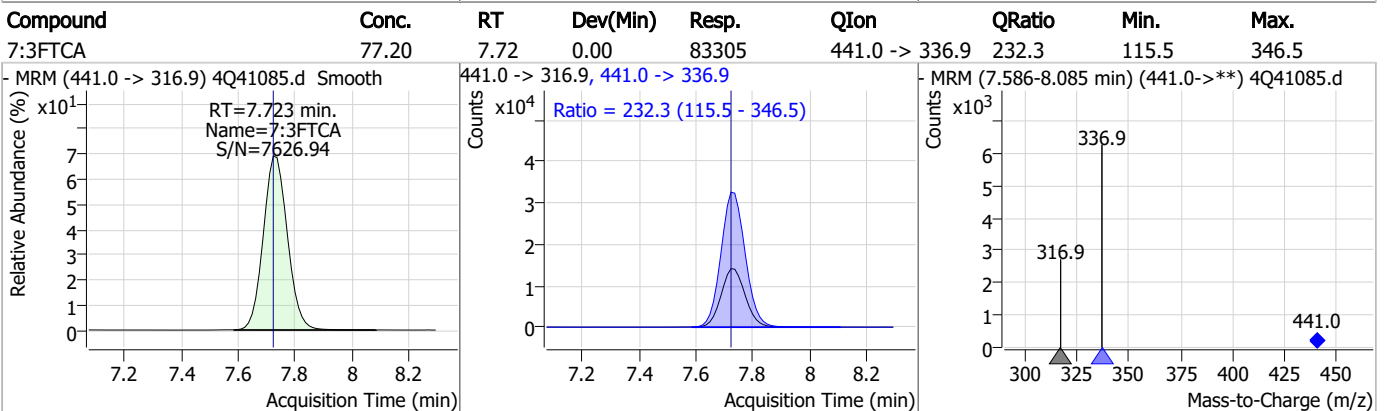
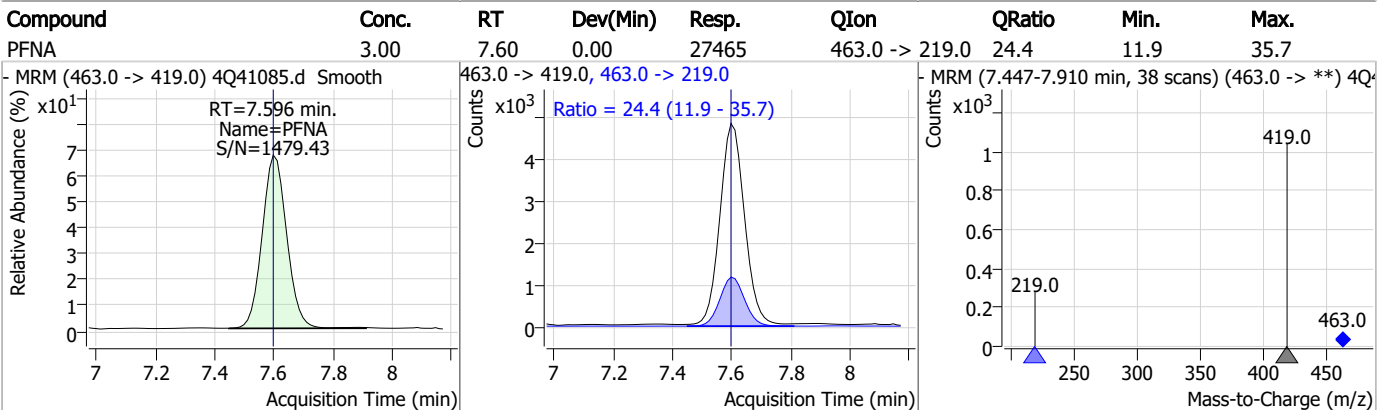
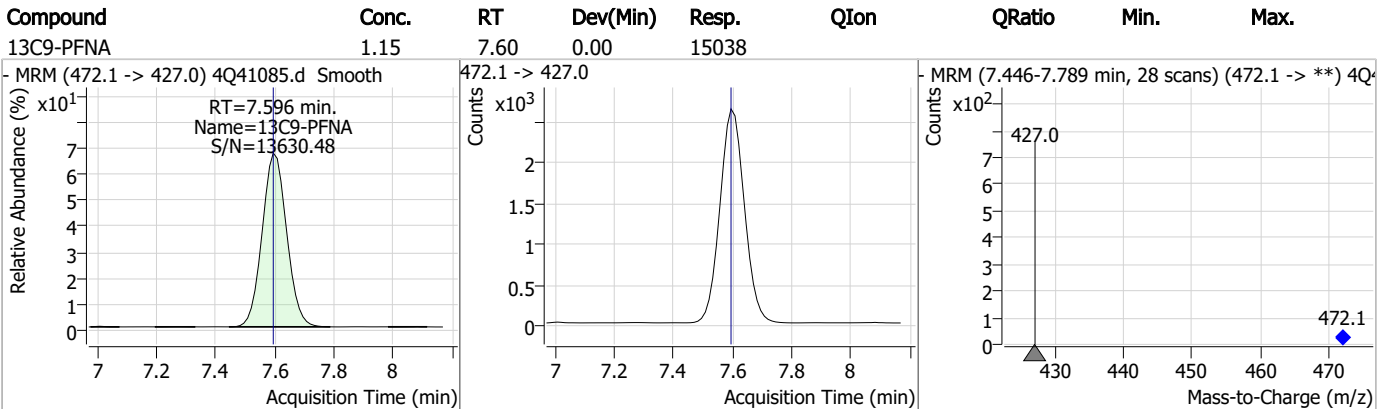
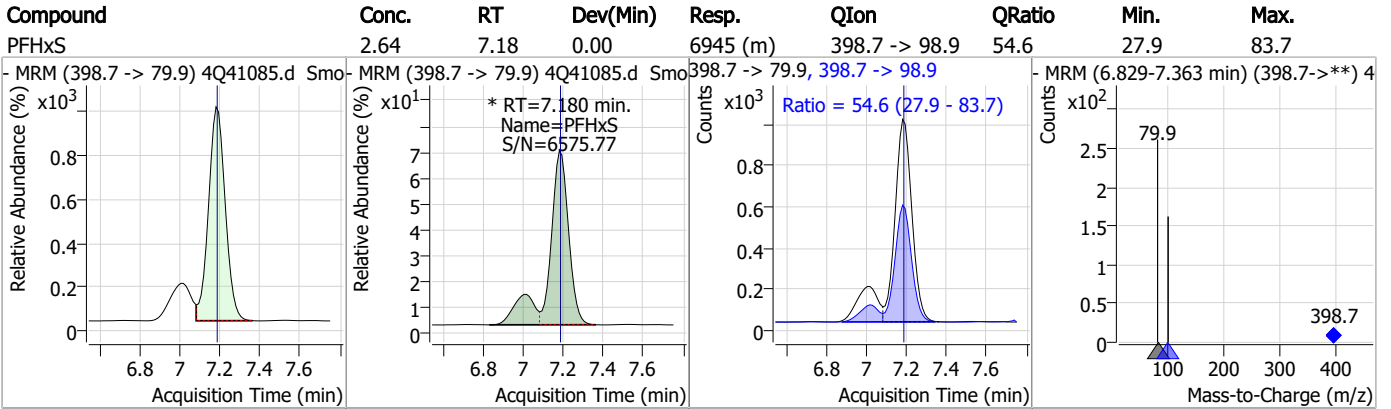
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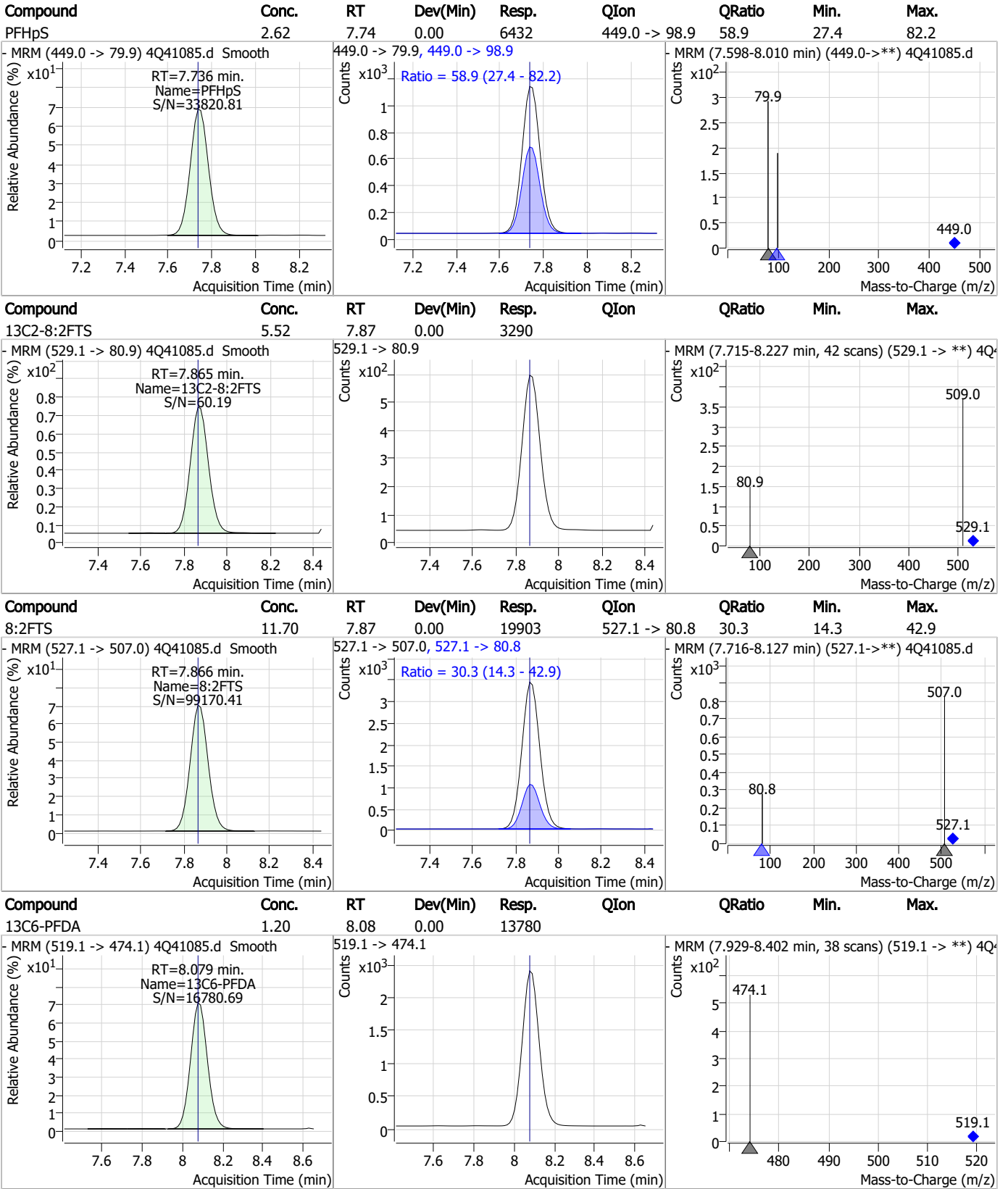
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

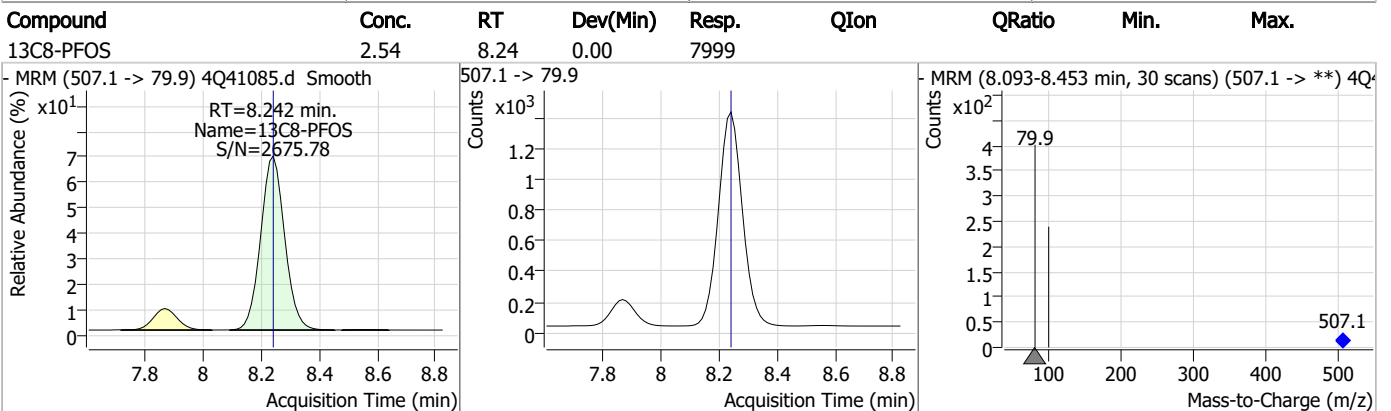
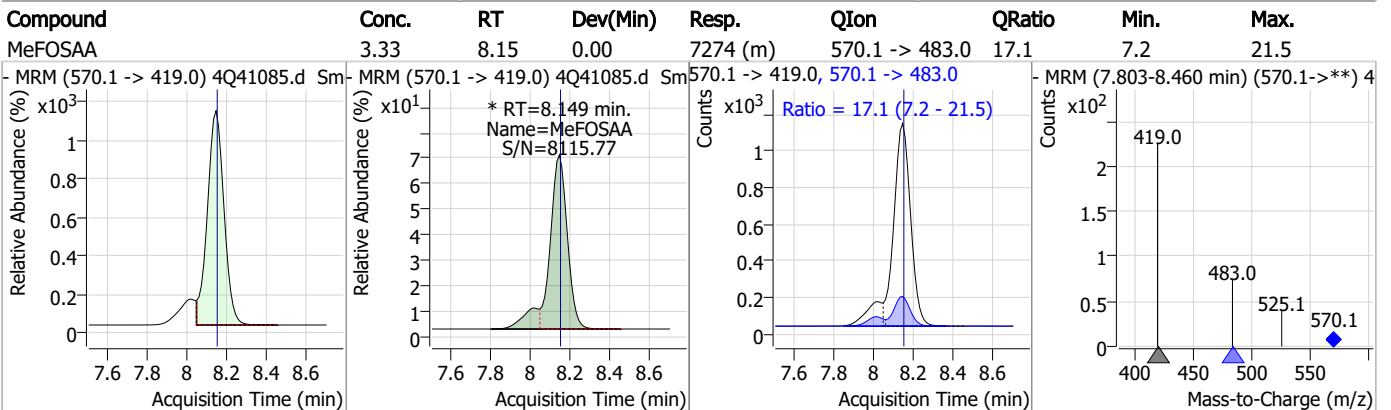
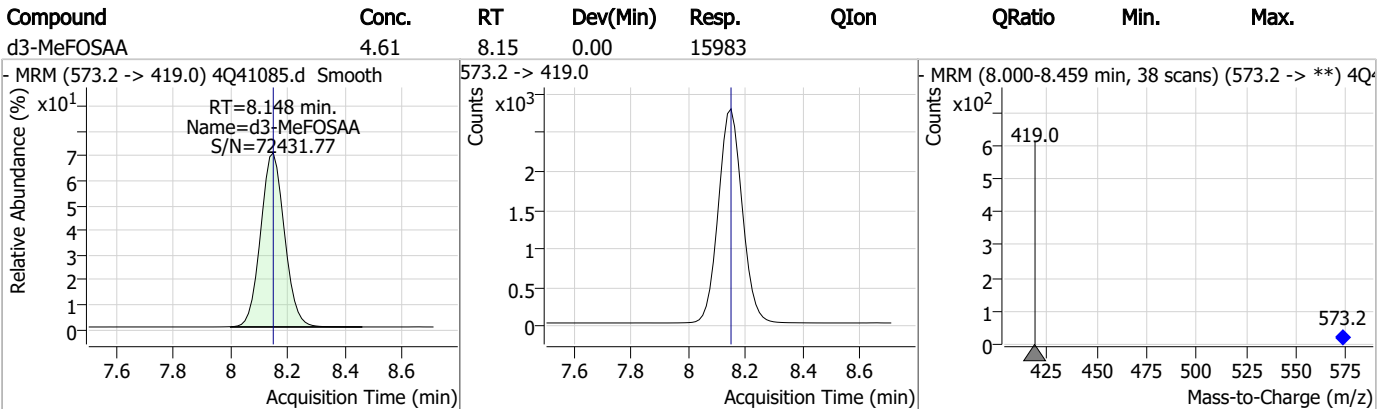
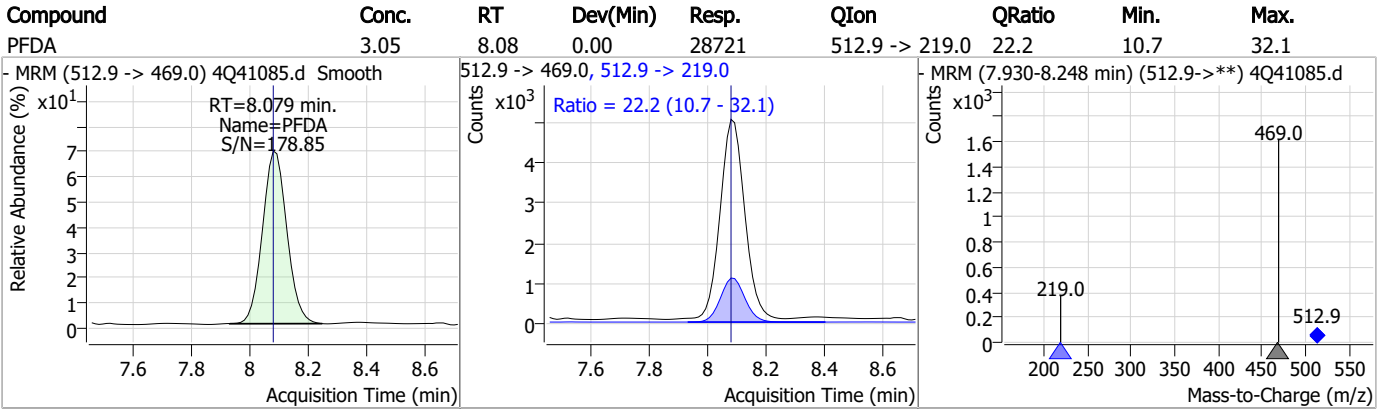


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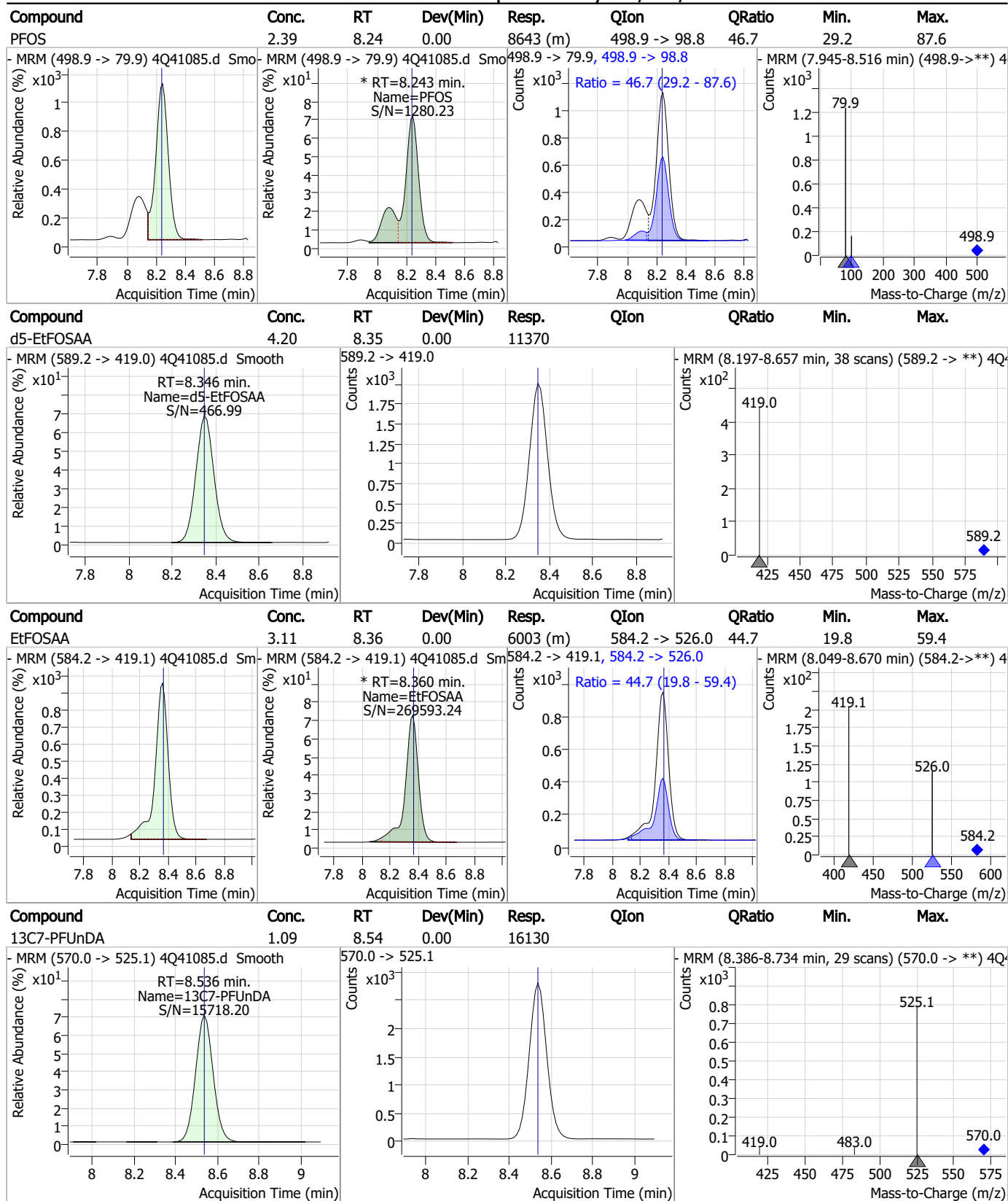
Perfluorinated Compounds by LC/MS/MS



7.4.1

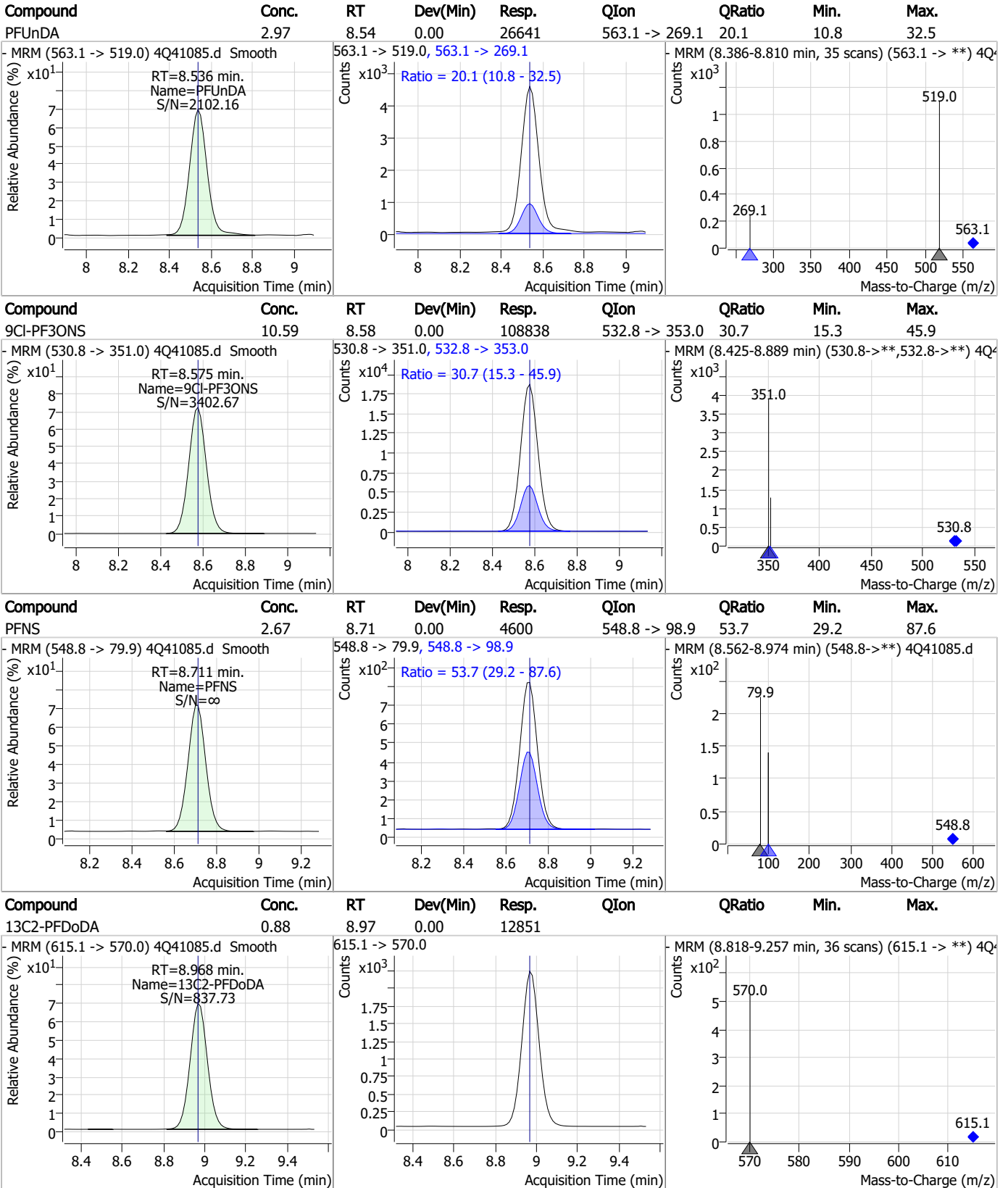
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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Perfluorinated Compounds by LC/MS/MS

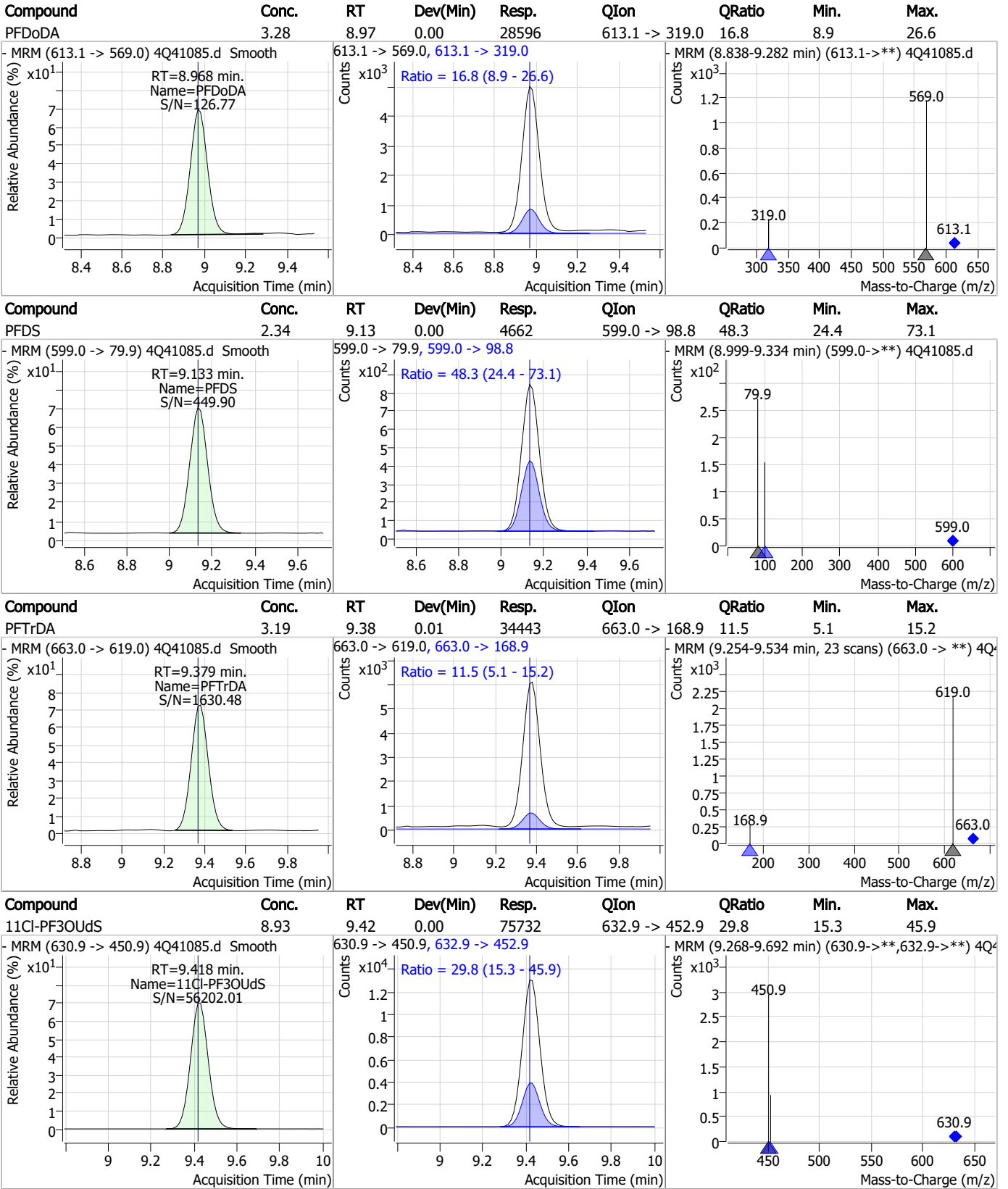


7.4.1

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Perfluorinated Compounds by LC/MS/MS



7.4.1

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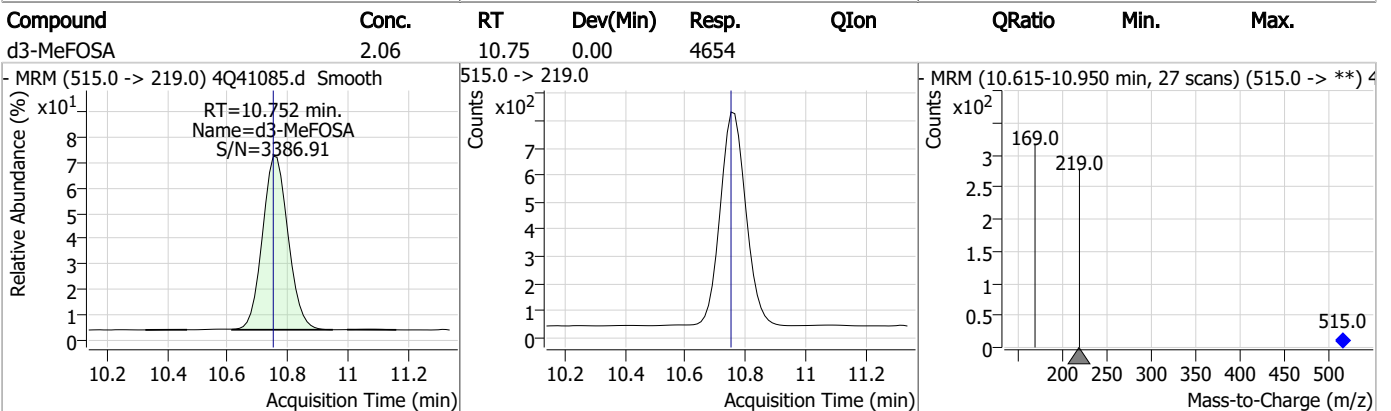
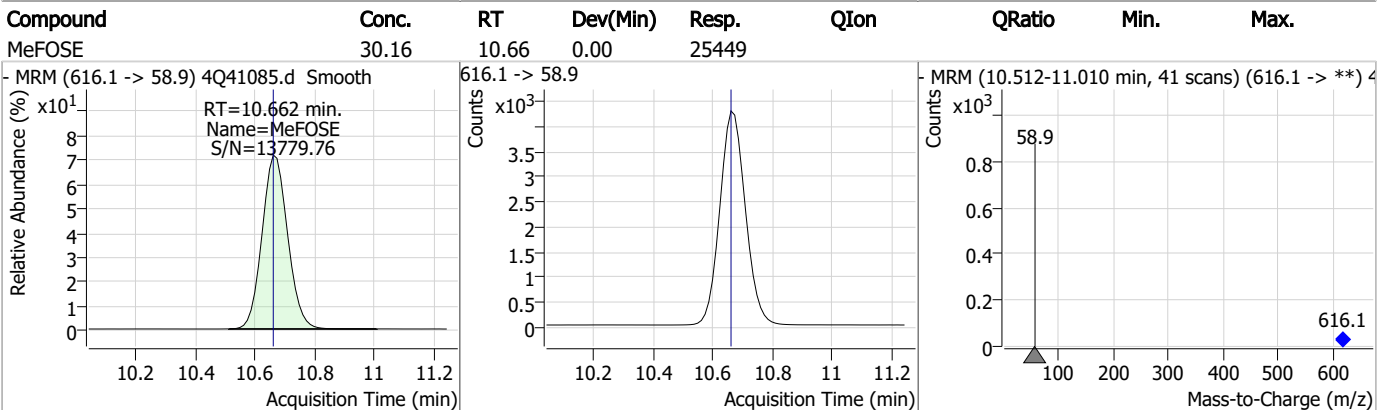
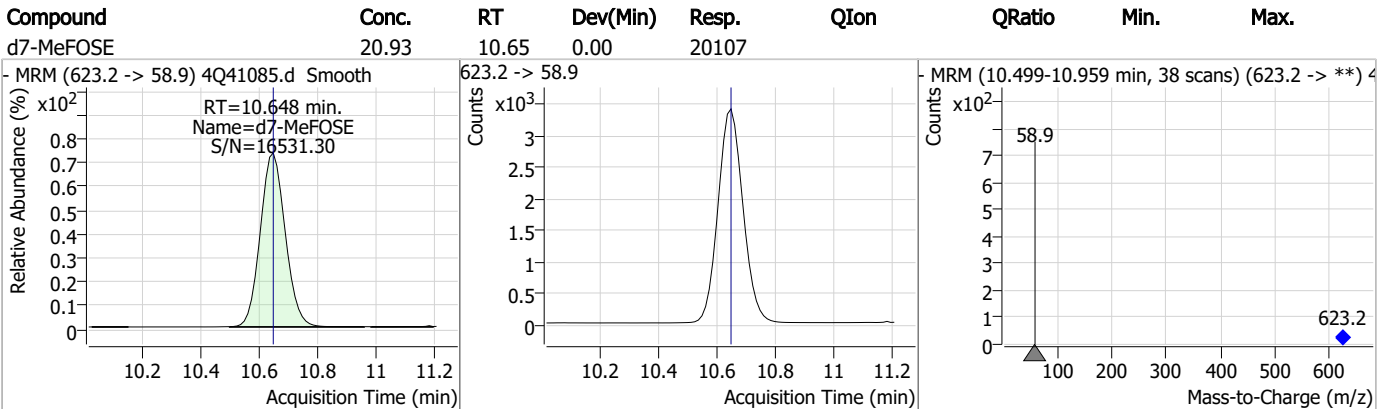
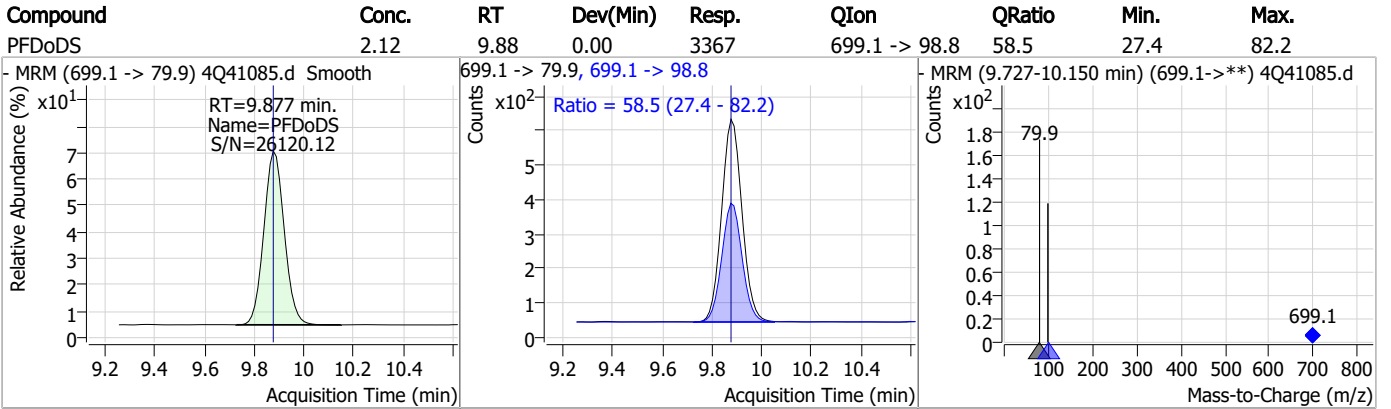


Perfluorinated Compounds by LC/MS/MS

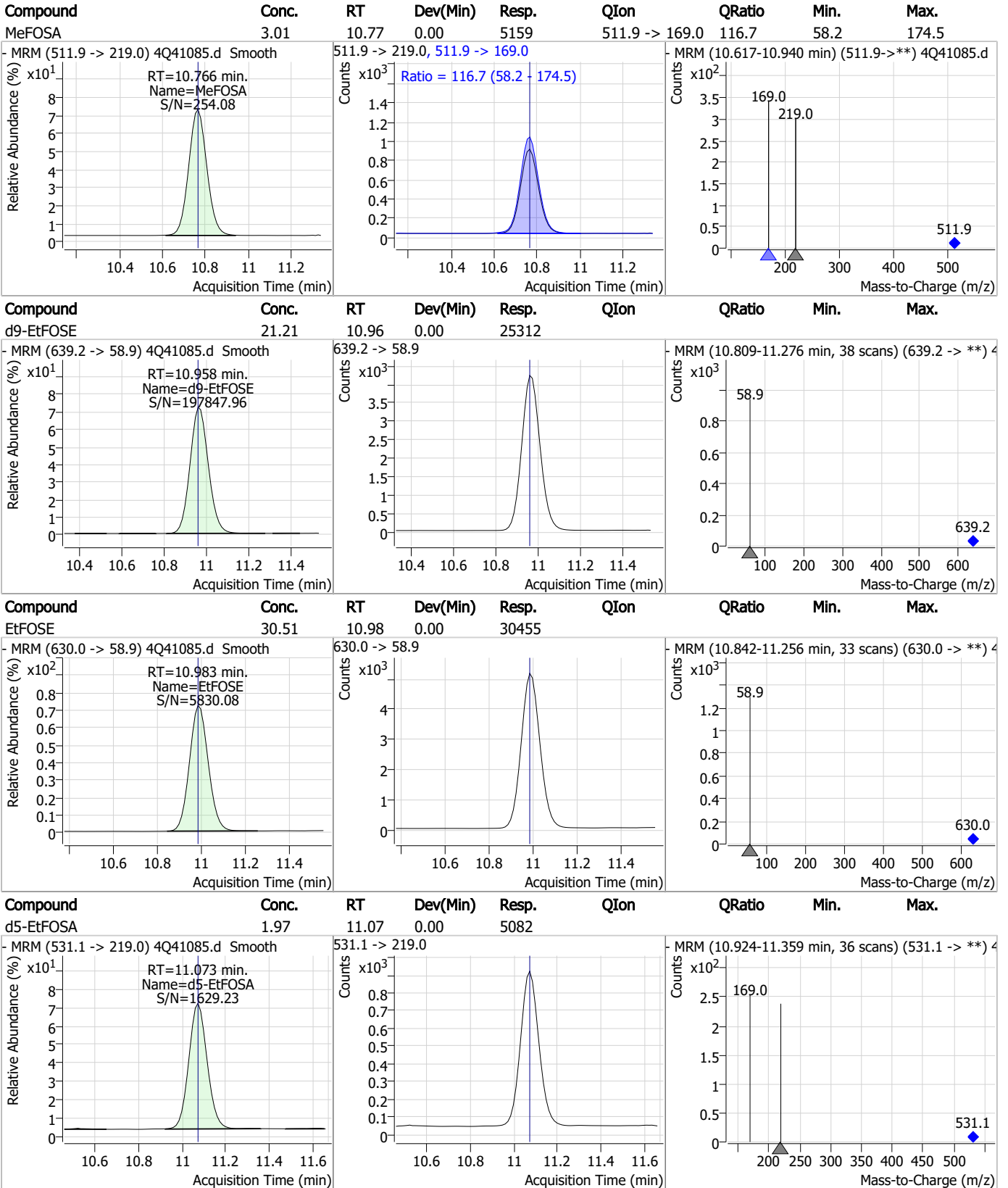
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	3.15	9.67	0.01	12640	498.1 -> 478.0	2.9	1.3	3.9
13C8-FOSA	2.60	9.67	0.00	7556	506.1 -> 77.8			
13C2-PFTeDA	0.90	9.74	0.00	11374	715.2 -> 670.0			
PFTeDA	3.26	9.74	0.00	25805	713.1 -> 168.9	8.0	4.4	13.2

7.4.1
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



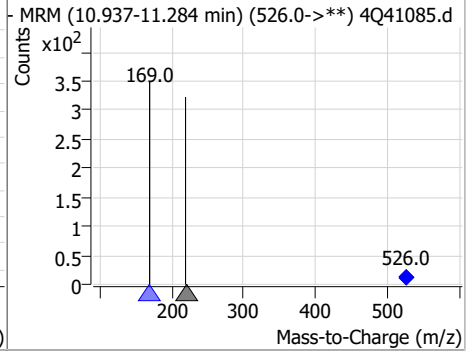
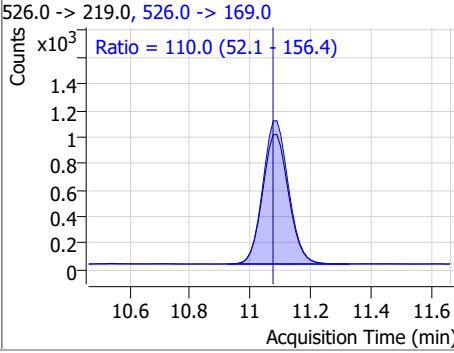
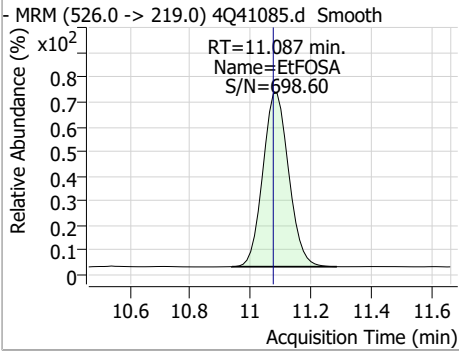
7.4.1

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.72	11.09	0.01	5795	526.0 -> 169.0	110.0	52.1	156.4



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP95527-MS Method: EPA DRAFT 1633
Lab FileID: 4Q41085.D Analyst approved: 02/23/23 14:29 Anna Ludwig
Injection Time: 02/22/23 22:57 Supervisor approved: 02/24/23 10:54 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.36	Split peak

7.4.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41086.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 11:11:09 PM
 Sample Name : op95527-msd
 Vial : P4-D2
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95527,S4Q587,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.177	216.8 -> 171.9	133519	10.00 µg/L	0.025
M5-PFPeA	4.512	268.3 -> 223.0	64838	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	52075	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	29561	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	35908	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	14582	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	13488	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	16294	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	13209	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	11943	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	7386	2.50 µg/L	0.000
M3-PFBS	5.514	302.1 -> 79.9	10608	2.50 µg/L	0.012
M3-PFHxS	7.179	402.1 -> 79.9	6141	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	7363	2.50 µg/L	0.000
M2-4:2FTS	5.272	329.1 -> 80.9	1406	5.00 µg/L	0.012
M2-6:2FTS	6.836	429.1 -> 80.9	2051	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3348	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	16658	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	32532	10.00 µg/L	0.012
M5-EtFOSAA	8.359	589.2 -> 419.0	11821	5.00 µg/L	0.012
M7-MeFOSE	10.648	623.2 -> 58.9	21223	25.00 µg/L	0.000
M9-EtFOSE	10.958	639.2 -> 58.9	26257	25.00 µg/L	0.000
M5-EtFOSA	11.073	531.1 -> 219.0	5538	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	5167	2.50 µg/L	0.012
13C4-PFOS	8.243	502.8 -> 79.9	9306	2.50 µg/L	0.000
13C3-PFBA	3.168	216.0 -> 172.0	78852	5.00 µg/L	0.012
18O2-PFHxS	7.178	403.0 -> 83.9	4562	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	44246	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	14616	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	18948	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	46499	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	1406	5.69 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.8%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2051	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3348	5.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C2-PFDoDA	8.968	615.1 -> 570.0	13209	0.87 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.3%		
13C2-PFTeDA	9.736	715.2 -> 670.0	11943	0.90 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 71.9%		
13C3-PFBS	5.514	302.1 -> 79.9	10608	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C3-PFHxS	7.179	402.1 -> 79.9	6141	2.40 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 = 96.0%	
13C4-PFBA	3.177	216.8 -> 171.9	133519	10.22 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C4-PFHpA	6.417	367.1 -> 322.0	29561	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFHxA	5.559	318.0 -> 273.0	52075	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C5-PFPeA	4.512	268.3 -> 223.0	64838	4.94 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C6-PFDA	8.079	519.1 -> 474.1	13488	1.12 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.6%	
13C7-PFUnDA	8.536	570.0 -> 525.1	16294	1.05 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 84.3%	
13C8-FOSA	9.670	506.1 -> 77.8	7386	2.15 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.9%	
13C8-PFOA	7.062	421.1 -> 376.0	35908	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C8-PFOS	8.242	507.1 -> 79.9	7363	1.98 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.1%	
13C9-PFNA	7.596	472.1 -> 427.0	14582	1.13 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.4%	
d3-MeFOSAA	8.148	573.2 -> 419.0	16658	4.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 81.3%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	32532	10.75 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.5%	
d3-MeFOSA	10.765	515.0 -> 219.0	5167	1.94 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.4%	
d5-EtFOSAA	8.359	589.2 -> 419.0	11821	3.70 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 74.0%	
d7-MeFOSE	10.648	623.2 -> 58.9	21223	18.71 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.8%	
d9-EtFOSE	10.958	639.2 -> 58.9	26257	18.63 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.5%	
d5-EtFOSA	11.073	531.1 -> 219.0	5538	1.81 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.6%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	22885	10.23 µg/L	100
		327.1 -> 80.9	8771		
6:2FTS	6.836	427.1 -> 407.0	20852	11.36 µg/L	97
		427.1 -> 80.9	8003		
8:2FTS	7.866	527.1 -> 507.0	18690	10.80 µg/L	92
		527.1 -> 80.8	6099		
EtFOSAA	8.360	584.2 -> 419.1	6313	3.14 µg/L	m 99
		584.2 -> 526.0	2541		
FOSA	9.673	498.1 -> 77.9	11970	3.05 µg/L	98
		498.1 -> 478.0	396		
MeFOSAA	8.149	570.1 -> 419.0	6646	2.92 µg/L	#m 82
		570.1 -> 483.0	1458		
PFBA	3.171	212.8 -> 168.9	41268	13.04 µg/L	100
PFBS	5.515	298.7 -> 79.9	11413	2.69 µg/L	96
		298.7 -> 98.8	4125		
PFDA	8.079	512.9 -> 469.0	27830	3.02 µg/L	98
		512.9 -> 219.0	6244		
PFDODA	8.981	613.1 -> 569.0	28225	3.15 µg/L	95
		613.1 -> 319.0	4396		
PFDS	9.133	599.0 -> 79.9	4447	2.43 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2314			
PFHpA	6.417	363.1 -> 319.0	46232	2.94	µg/L	98
		363.1 -> 169.0	8031			
PFHpS	7.736	449.0 -> 79.9	6666	2.95	µg/L	98
		449.0 -> 98.9	3733			
PFHxA	5.562	313.0 -> 269.0	50673	2.82	µg/L	99
		313.0 -> 118.9	1516			
PFHxS	7.180	398.7 -> 79.9	6576	2.59	µg/L	m 96
		398.7 -> 98.9	3473			
PFNA	7.596	463.0 -> 419.0	24843	2.80	µg/L	96
		463.0 -> 219.0	6435			
PFNS	8.711	548.8 -> 79.9	5046	3.18	µg/L	87
		548.8 -> 98.9	2455			
PFOA	7.063	413.0 -> 369.0	48729	2.87	µg/L	100
		413.0 -> 169.0	9445			
PFOS	8.243	498.9 -> 79.9	8451	2.54	µg/L	m 92
		498.9 -> 98.8	4429			
PFPeA	4.514	263.0 -> 219.0	101461	6.65	µg/L	100
PFPeS	6.484	349.1 -> 79.9	5228	2.68	µg/L	96
		349.1 -> 98.9	2631			
PFTeDA	9.737	713.1 -> 669.0	26897	3.24	µg/L	99
		713.1 -> 168.9	2232			
PFTrDA	9.379	663.0 -> 619.0	35249	3.17	µg/L	97
		663.0 -> 168.9	3930			
PFUnDA	8.536	563.1 -> 519.0	25677	2.84	µg/L	99
		563.1 -> 269.1	5392			
11CI-PF3OUdS	9.418	630.9 -> 450.9	74940	8.88	µg/L	99
		632.9 -> 452.9	22681			
9CI-PF3ONS	8.575	530.8 -> 351.0	109428	10.69	µg/L	97
		532.8 -> 353.0	31540			
ADONA	6.668	376.9 -> 250.9	208509	11.12	µg/L	99
		376.9 -> 84.8	36668			
HFPO-DA	5.890	284.9 -> 168.9	30545	11.43	µg/L	98
		284.9 -> 184.9	3438			
3:3FTCA	4.192	241.0 -> 177.0	12586	14.02	µg/L	99
		241.0 -> 117.0	1055			
5:3FTCA	6.345	341.0 -> 237.1	208216	76.34	µg/L	99
		341.0 -> 217.0	150289			
7:3FTCA	7.723	441.0 -> 316.9	83545	76.11	µg/L	99
		441.0 -> 336.9	194882			
EtFOSA	11.087	526.0 -> 219.0	6144	2.65	µg/L	99
		526.0 -> 169.0	6468			
EtFOSE	10.984	630.0 -> 58.9	30567	29.52	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	4918	2.59	µg/L	95
		511.9 -> 169.0	5969			
MeFOSE	10.662	616.1 -> 58.9	25790	28.95	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	3732	2.55	µg/L	97
		699.1 -> 98.8	1960			
NFDHA	5.465	295.0 -> 201.0	4267	6.24	µg/L	95
		295.0 -> 84.9	941			
PFMBA	4.881	279.0 -> 85.1	49823	6.15	µg/L	100
PFMPA	3.740	229.0 -> 84.9	39073	6.07	µg/L	100
PFEESA	5.983	314.8 -> 134.9	63460	5.22	µg/L	99
		314.8 -> 82.9	2045			

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

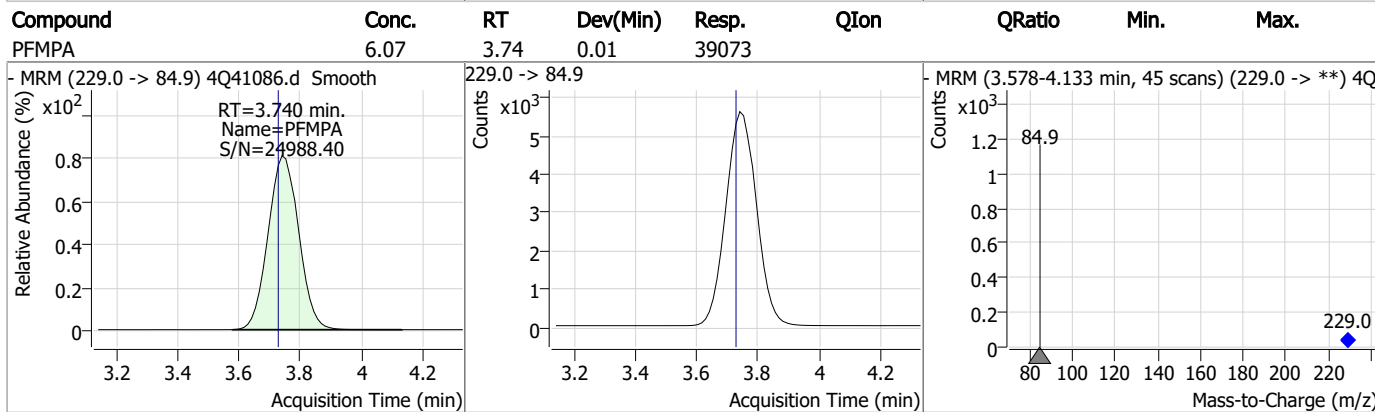
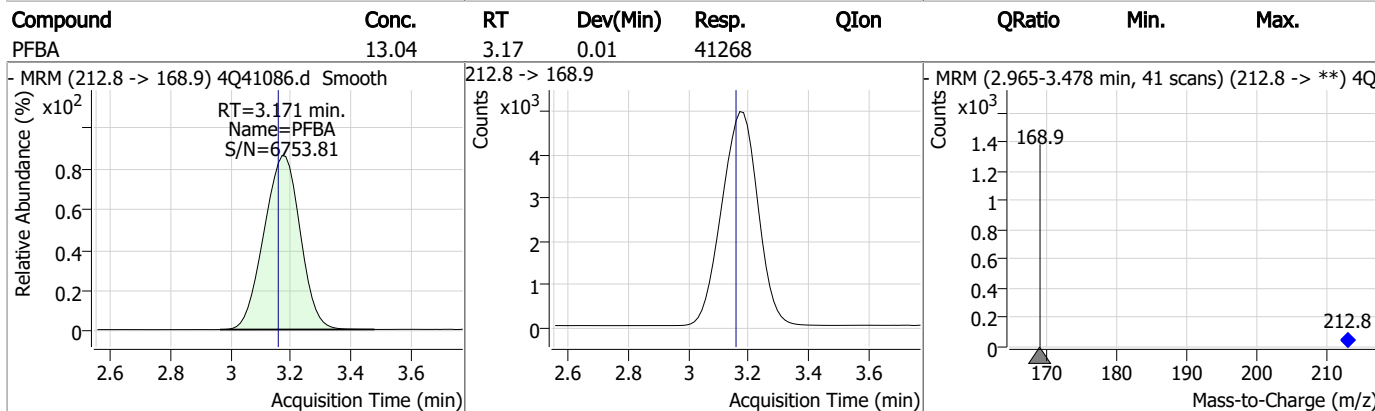
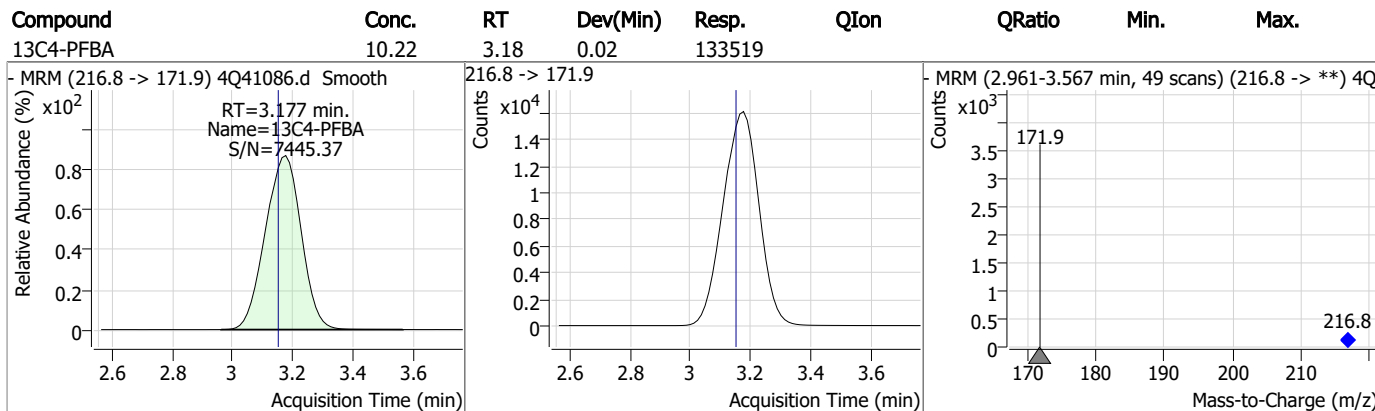
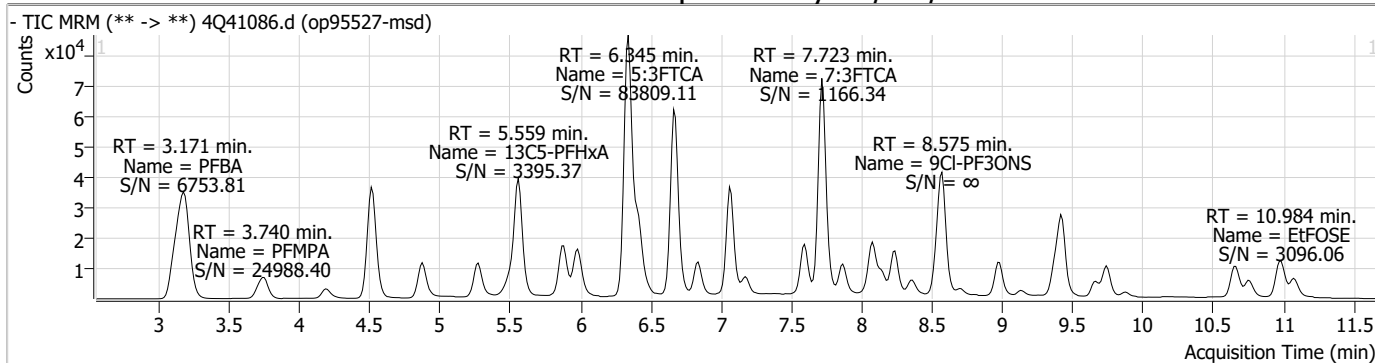
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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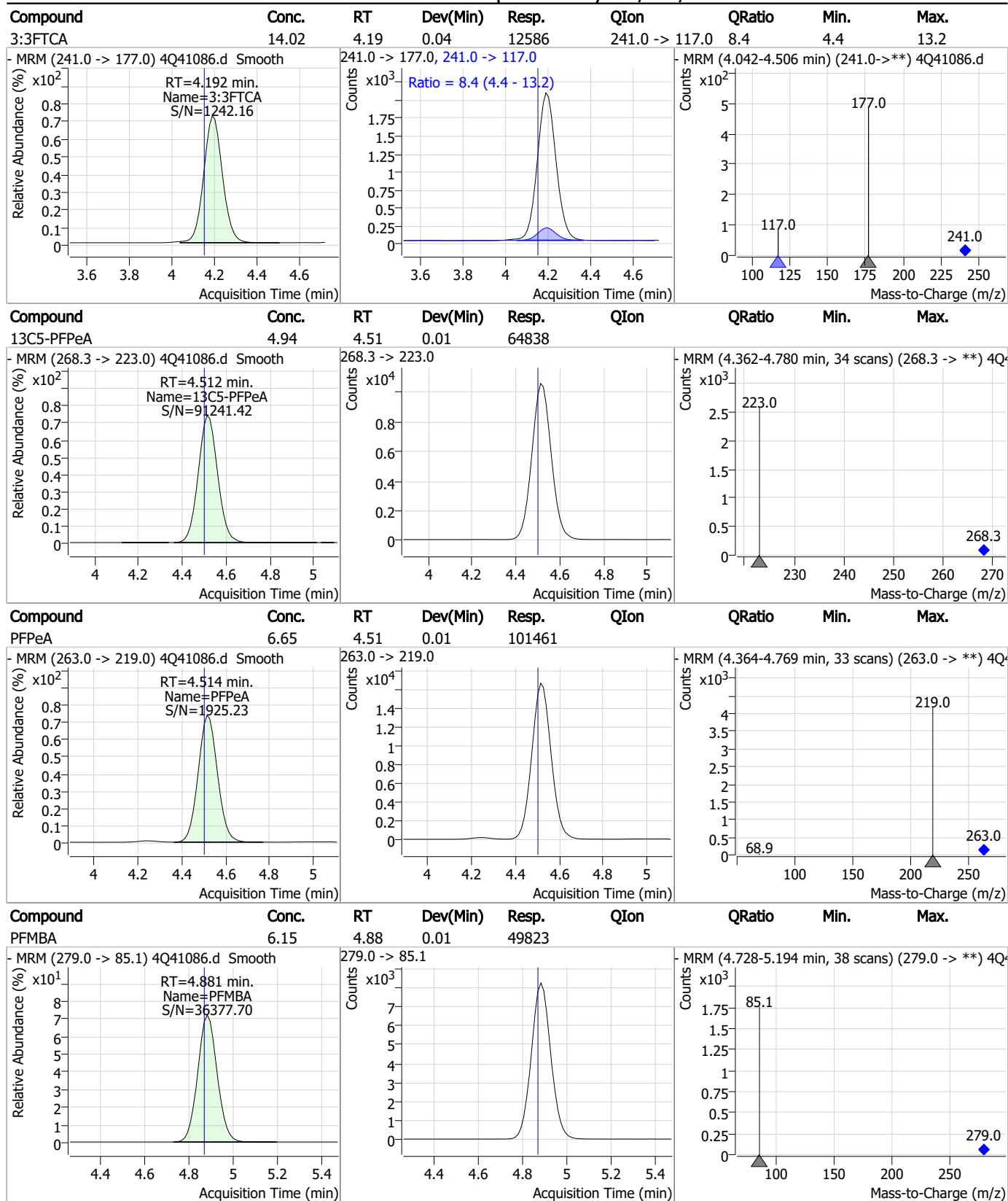
7.4.2
7



Perfluorinated Compounds by LC/MS/MS

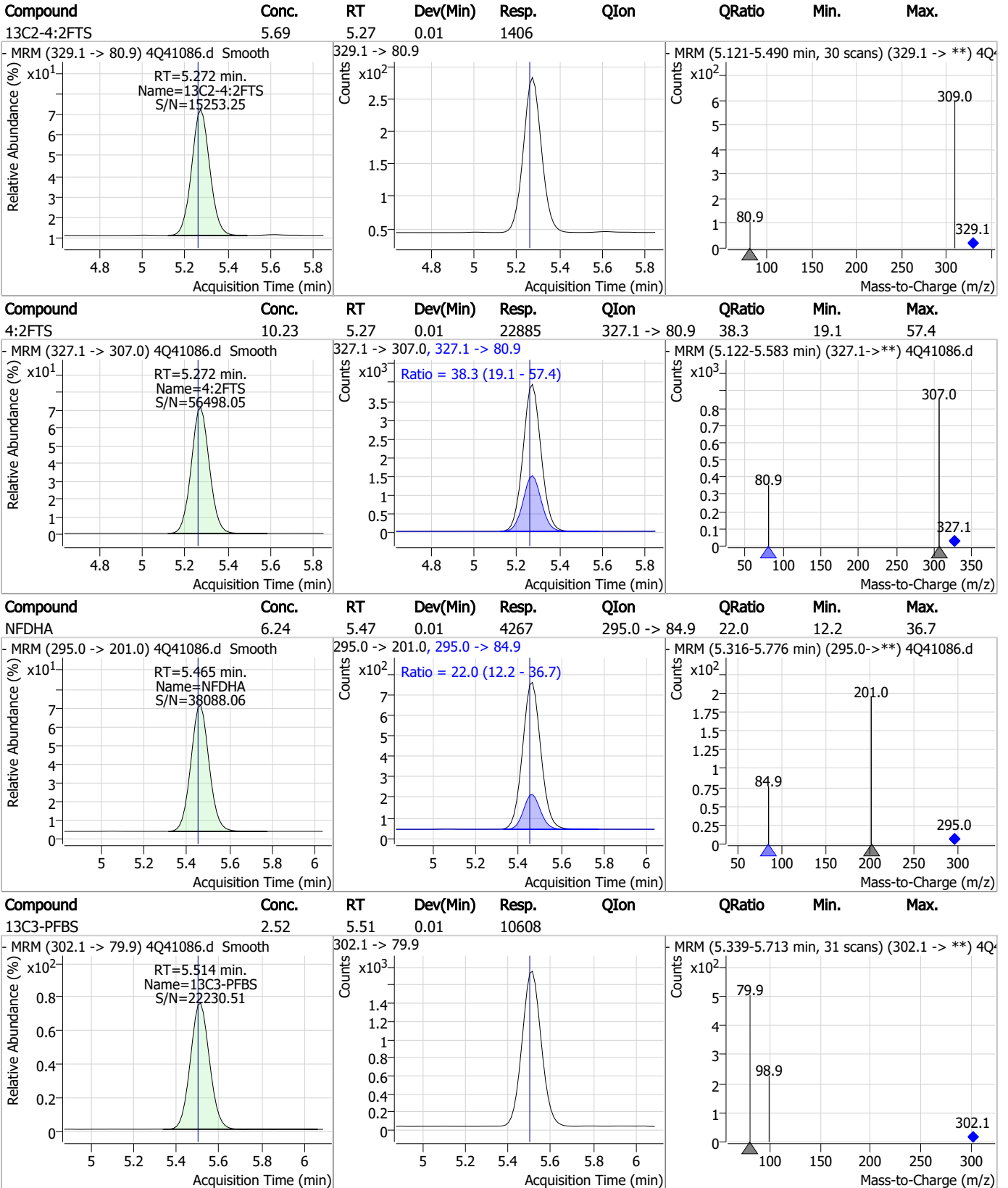


Perfluorinated Compounds by LC/MS/MS



7.4.2
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Perfluorinated Compounds by LC/MS/MS



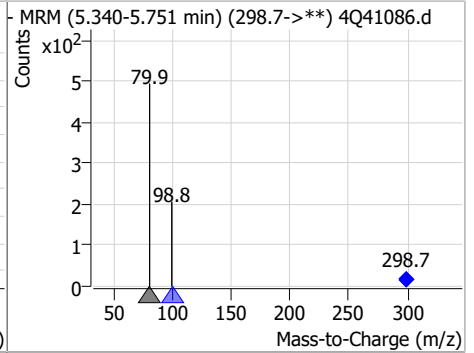
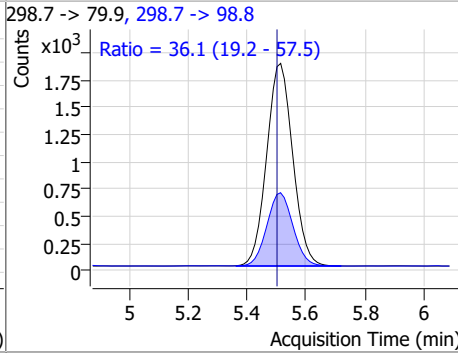
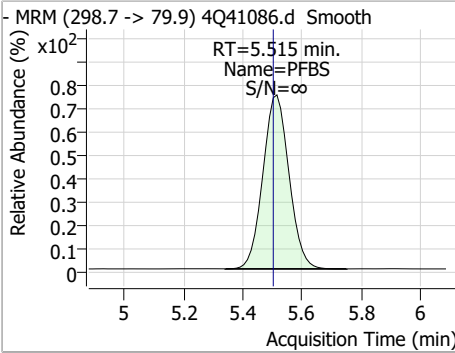
7.4.2

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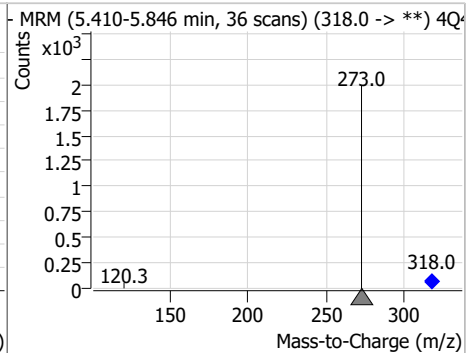
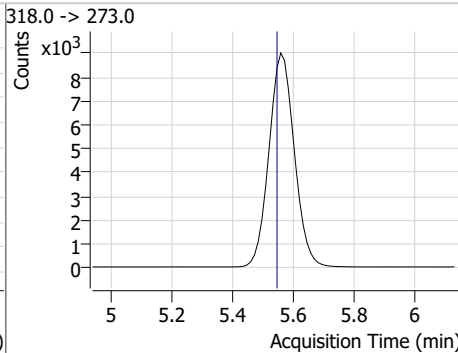
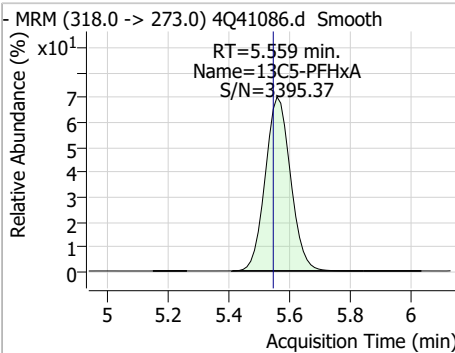


Perfluorinated Compounds by LC/MS/MS

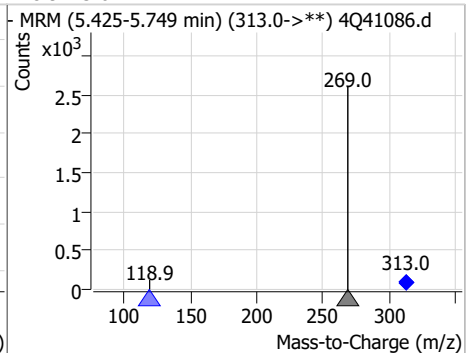
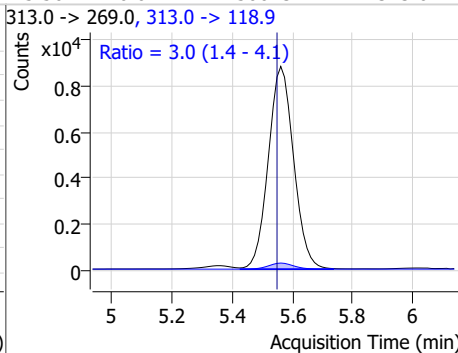
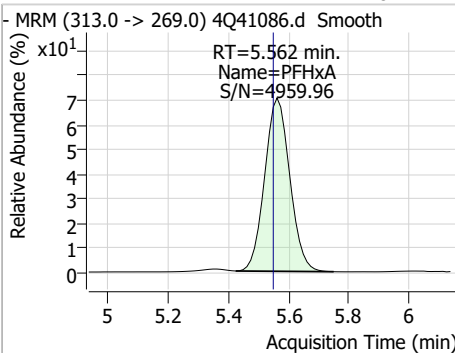
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.69	5.51	0.01	11413	298.7 -> 98.8	36.1	19.2	57.5



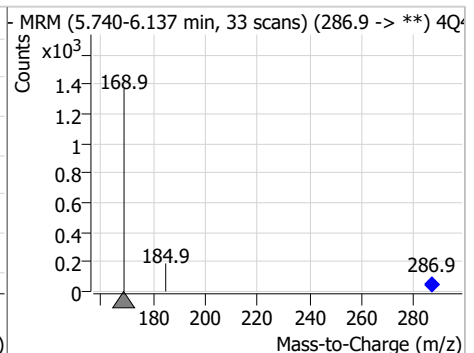
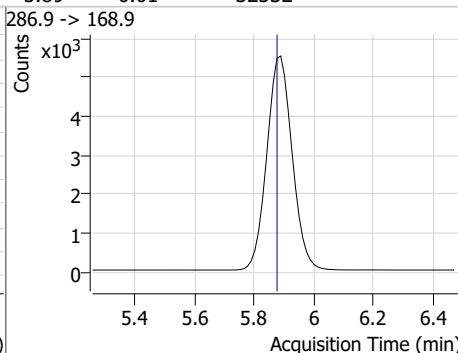
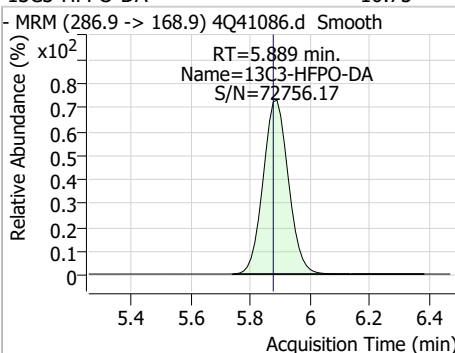
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.56	0.01	52075				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.82	5.56	0.01	50673	313.0 -> 118.9	3.0	1.4	4.1

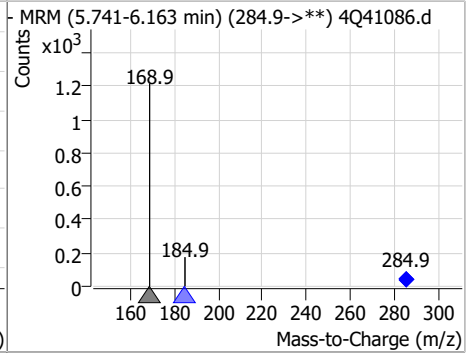
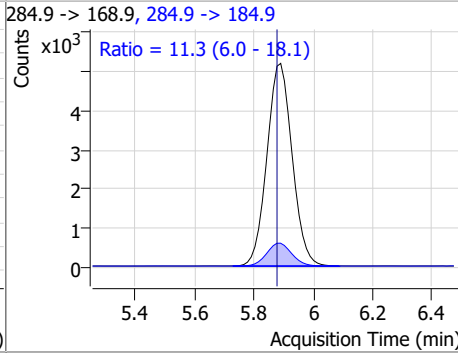
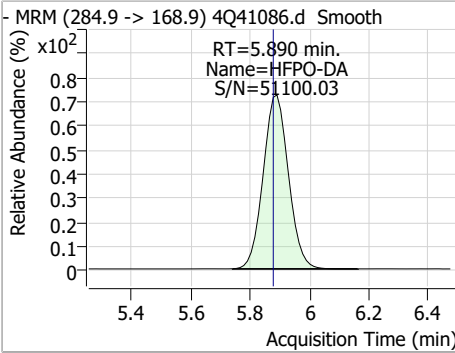


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.75	5.89	0.01	32532				

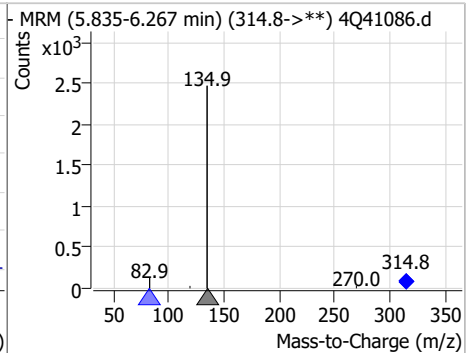
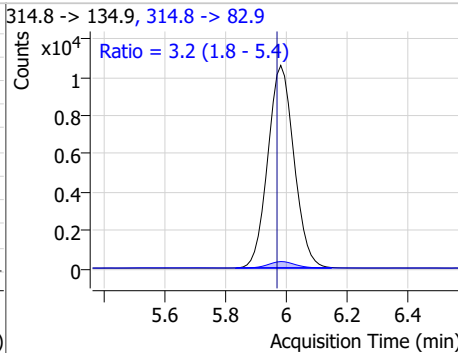
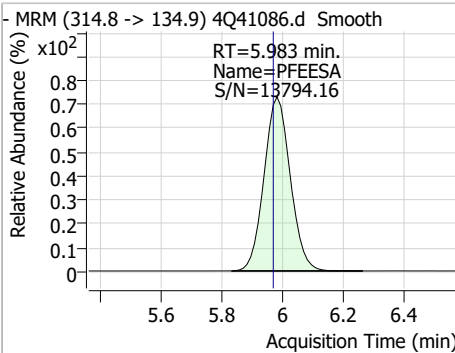


Perfluorinated Compounds by LC/MS/MS

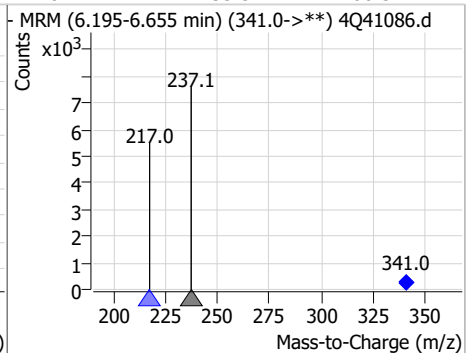
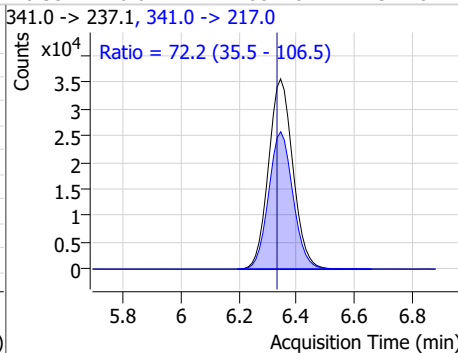
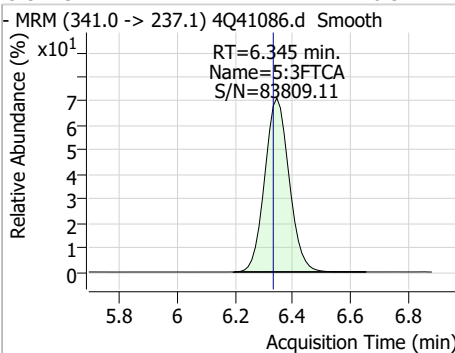
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	11.43	5.89	0.01	30545	284.9 -> 184.9	11.3	6.0	18.1



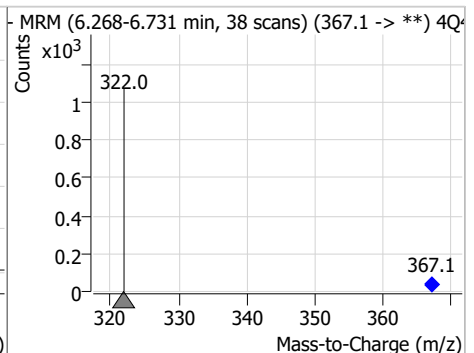
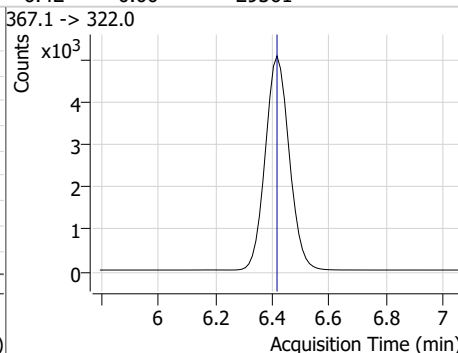
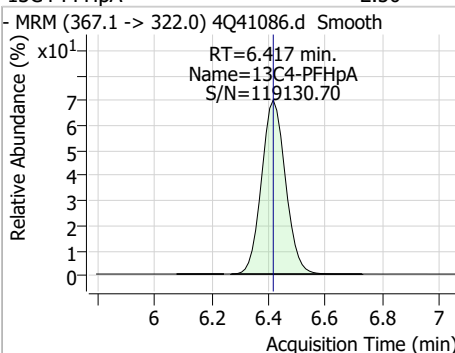
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	5.22	5.98	0.01	63460	314.8 -> 82.9	3.2	1.8	5.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	76.34	6.35	0.01	208216	341.0 -> 217.0	72.2	35.5	106.5



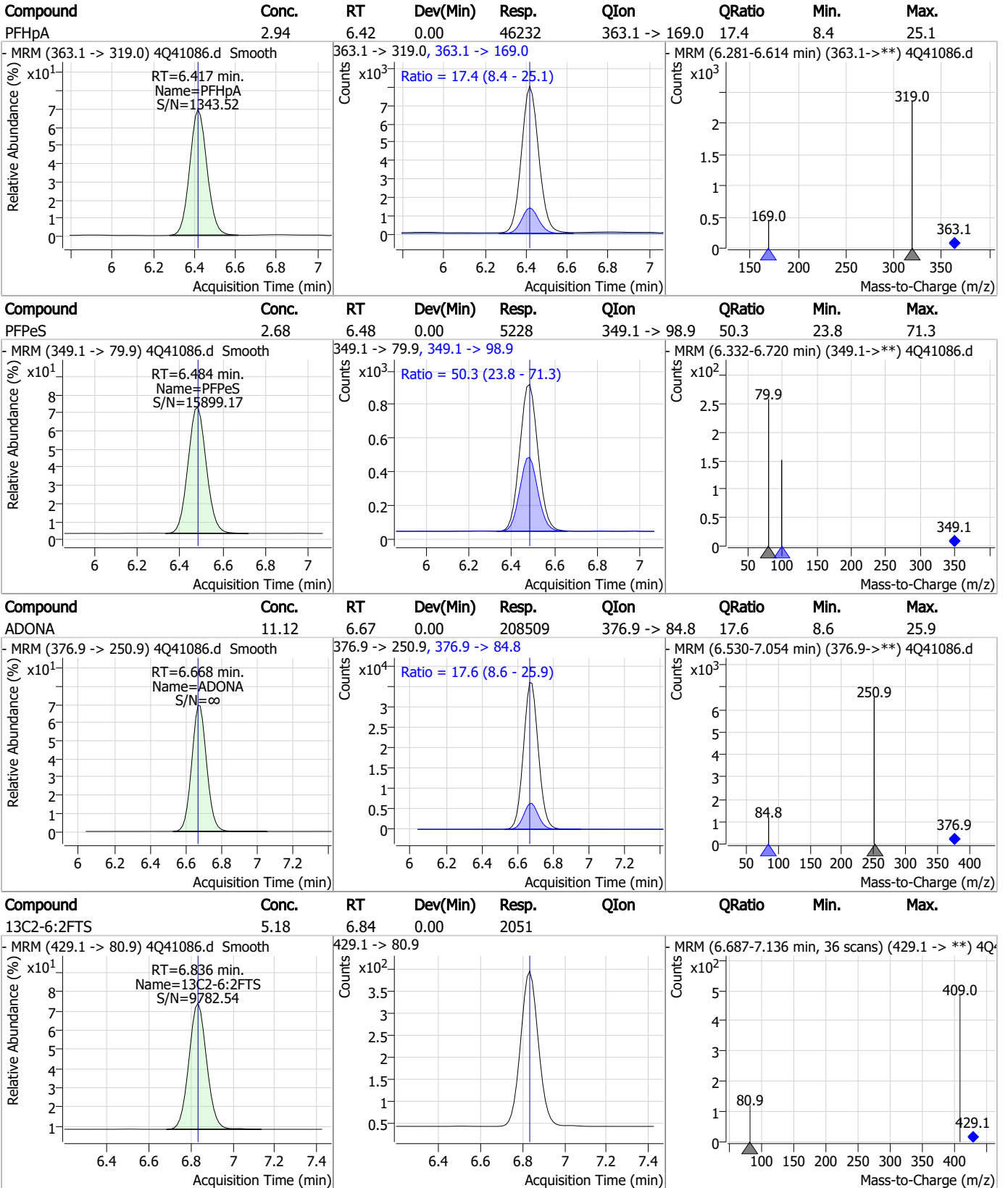
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.50	6.42	0.00	29561	367.1 -> 322.0			



7.4.2

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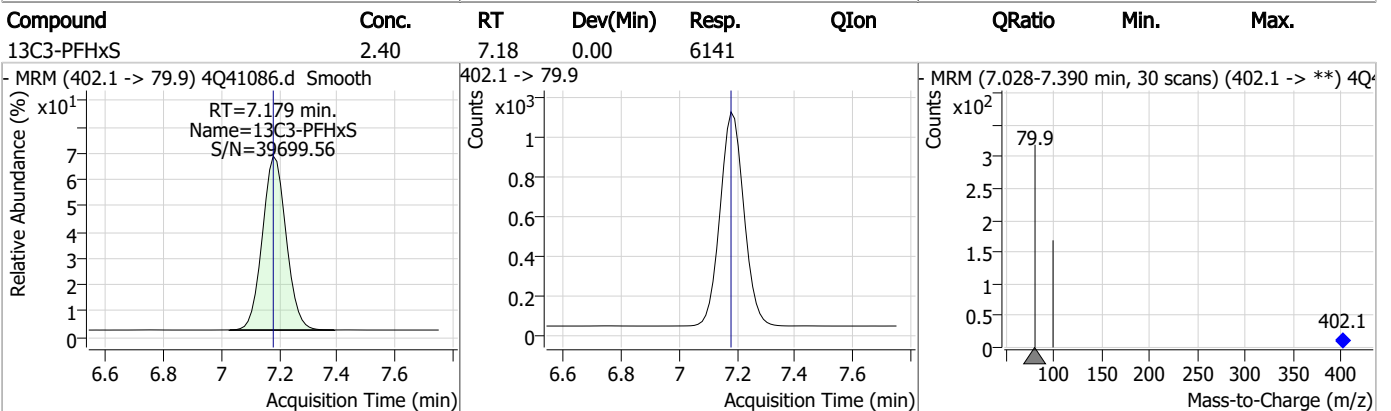
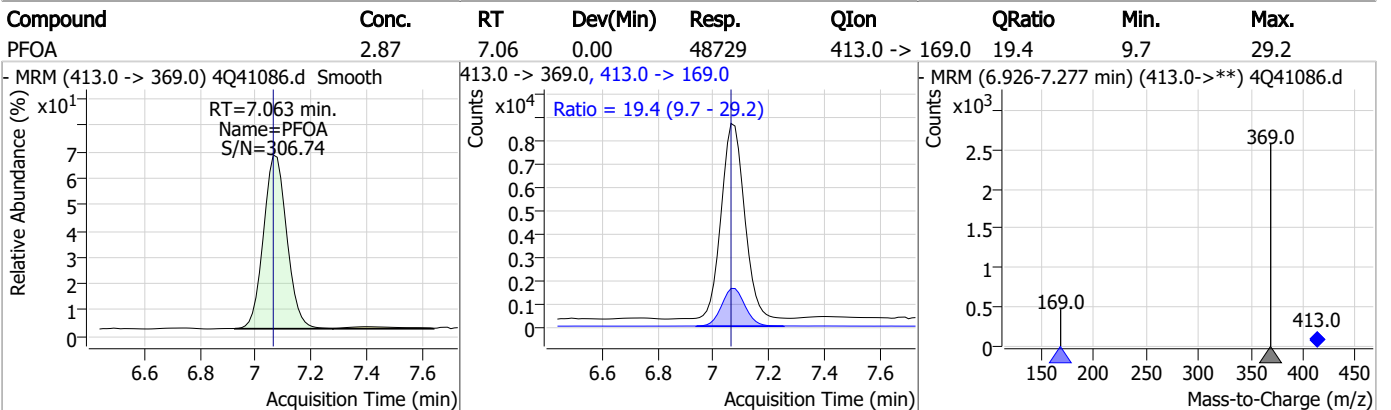
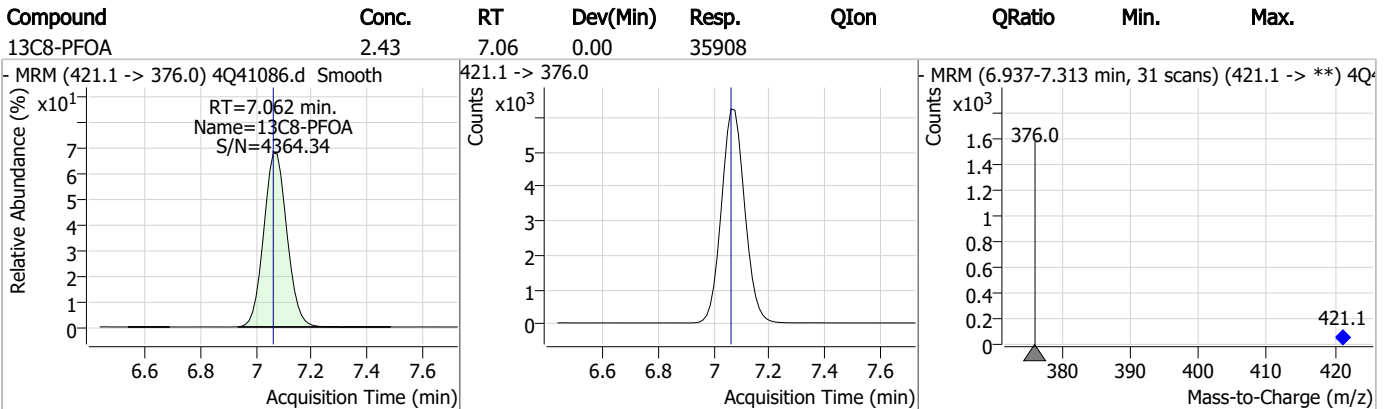
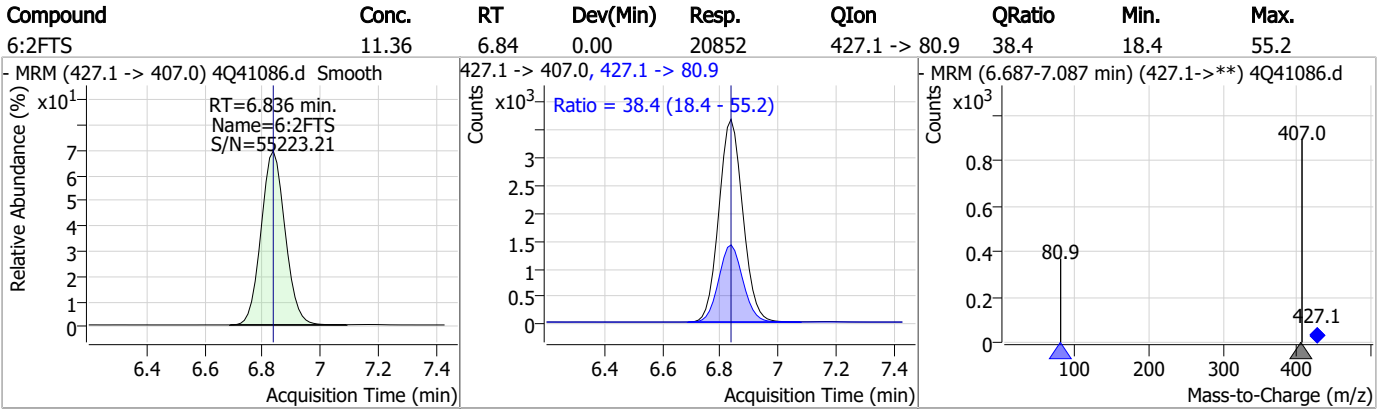
Perfluorinated Compounds by LC/MS/MS



7.4.2

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Perfluorinated Compounds by LC/MS/MS

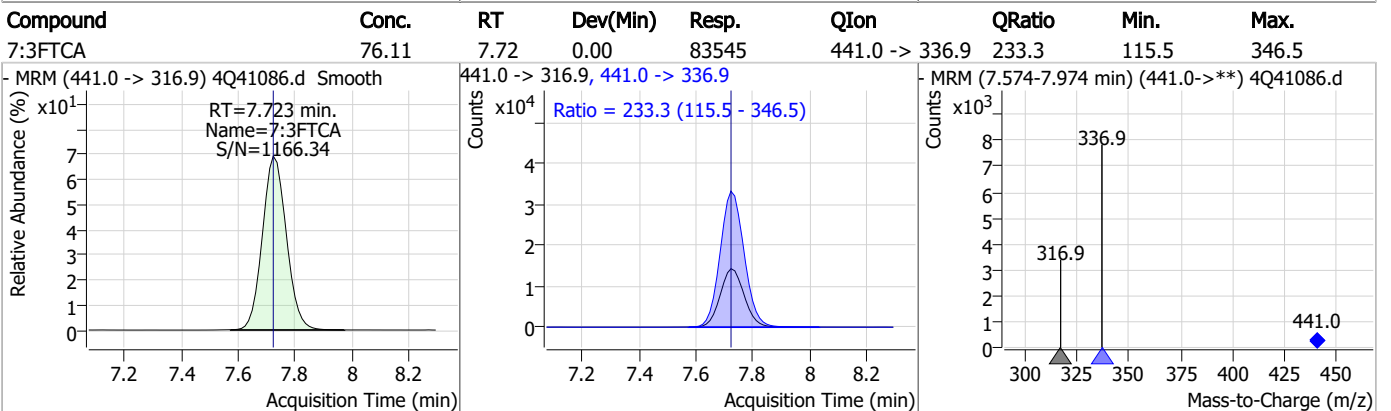
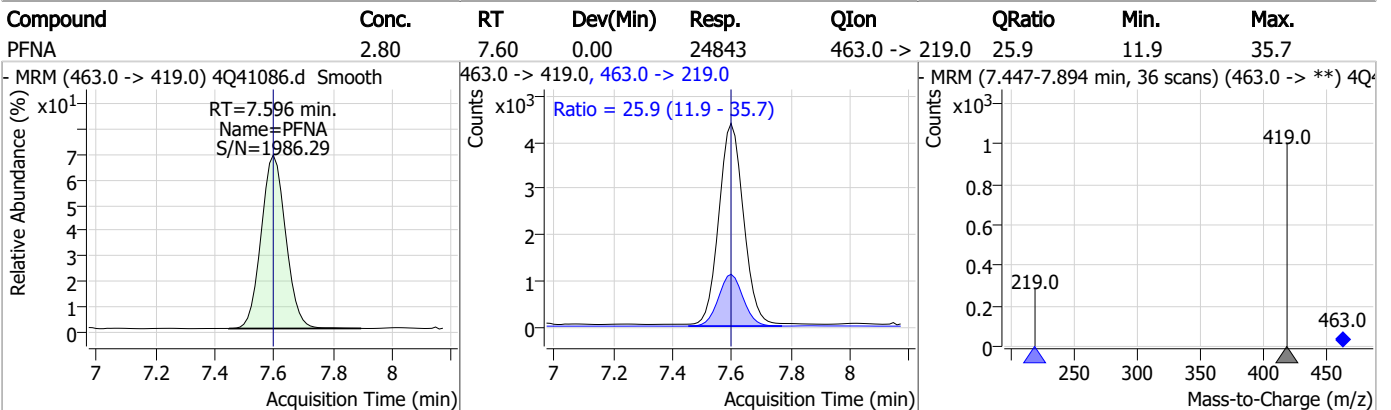
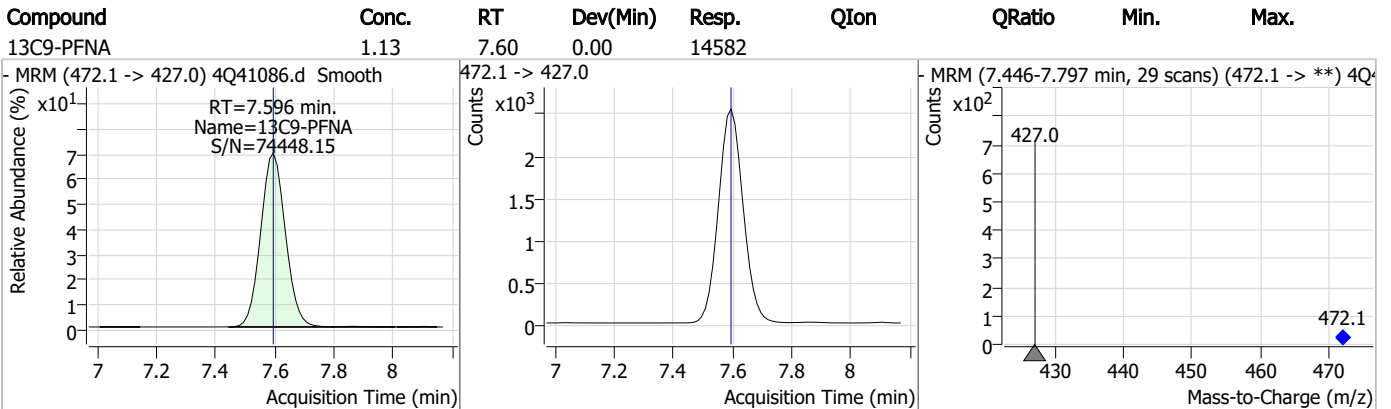
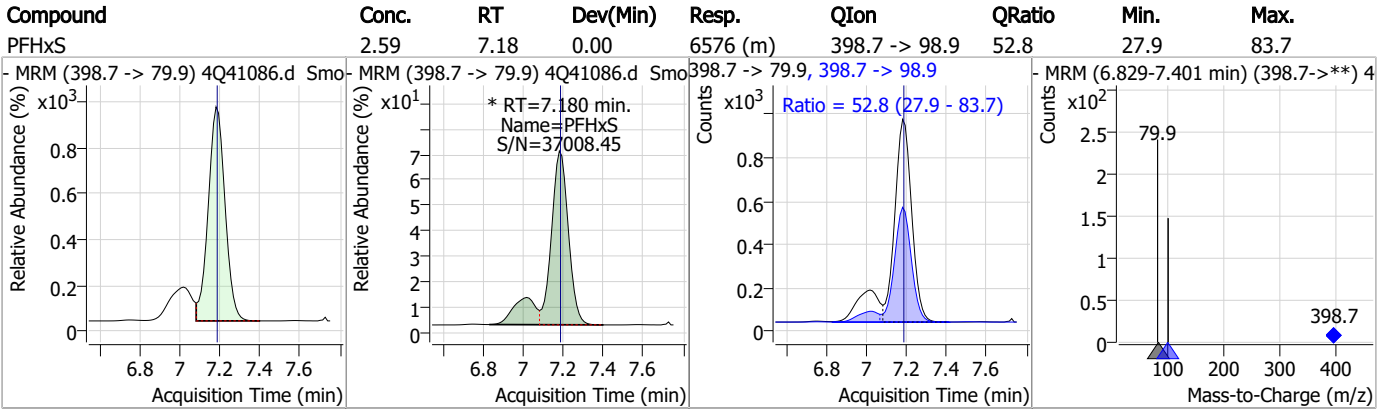


7.4.2

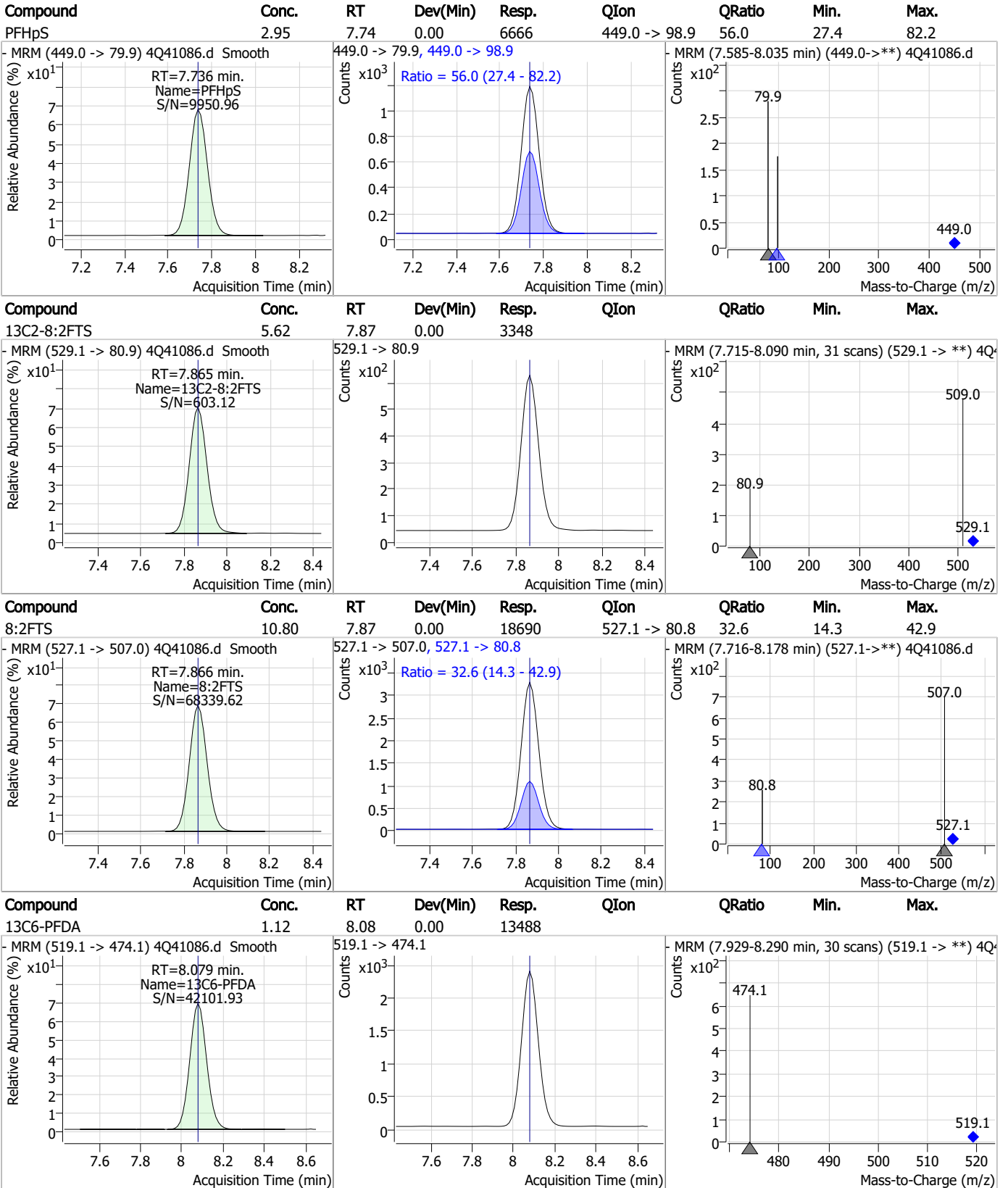
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Perfluorinated Compounds by LC/MS/MS



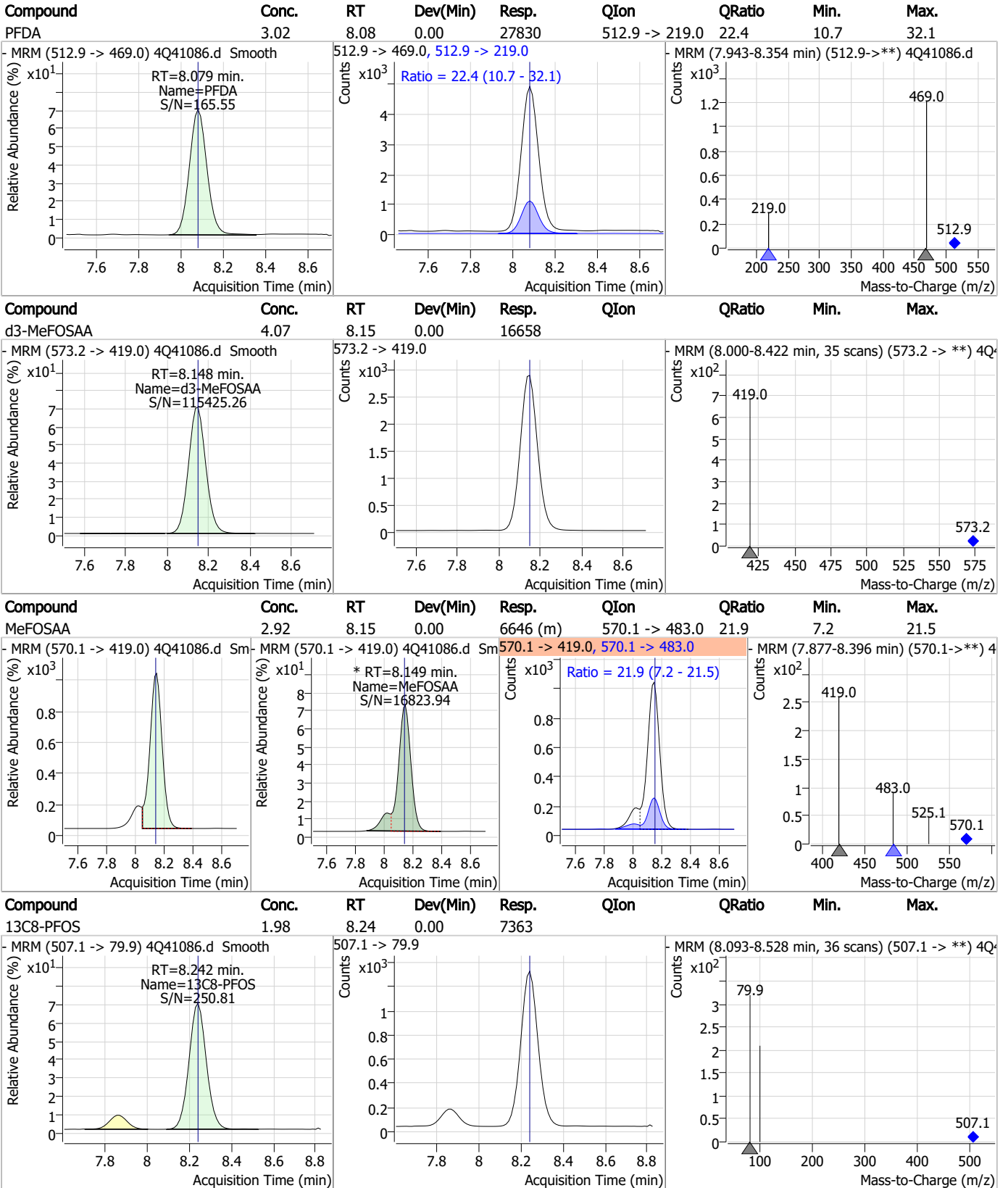
Perfluorinated Compounds by LC/MS/MS



7.4.2

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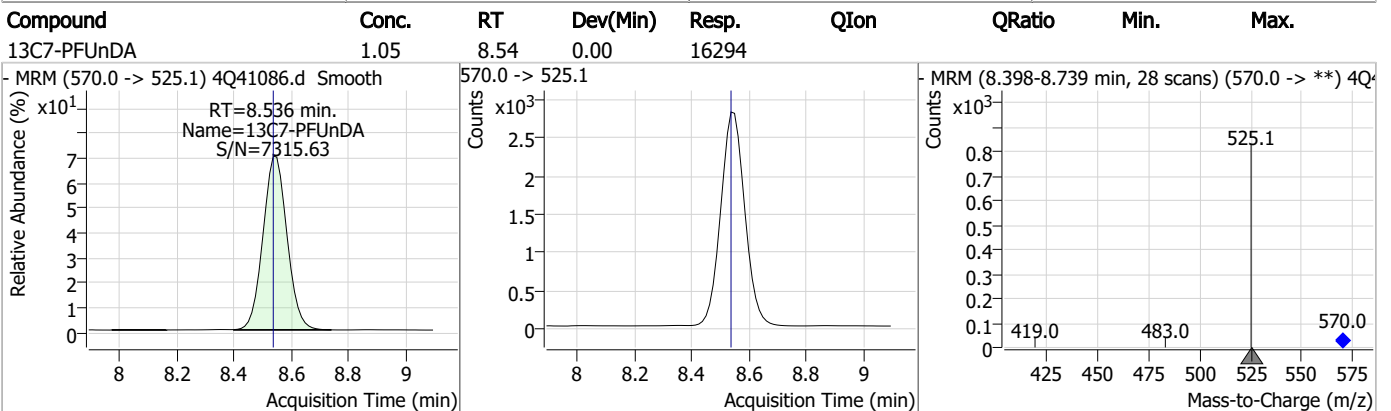
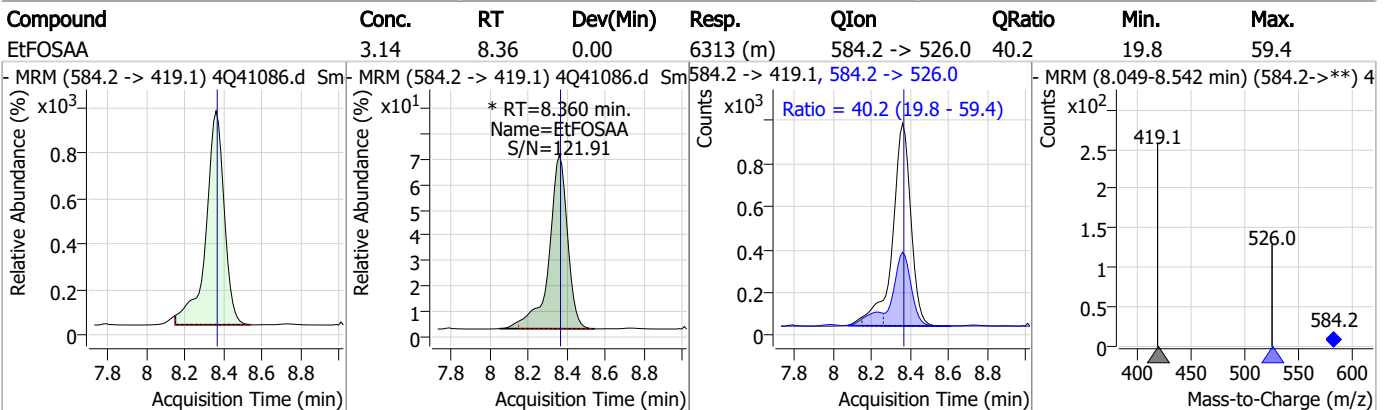
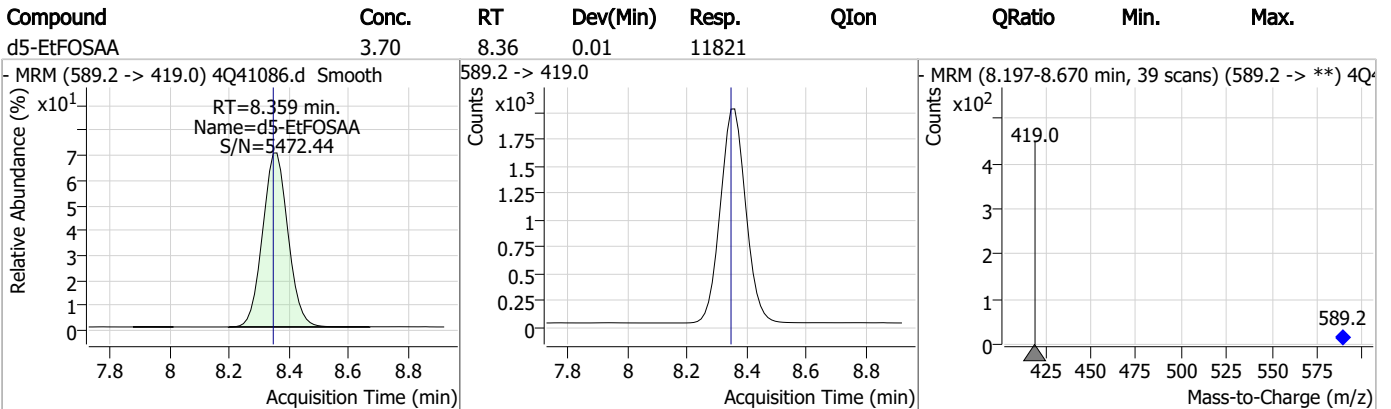
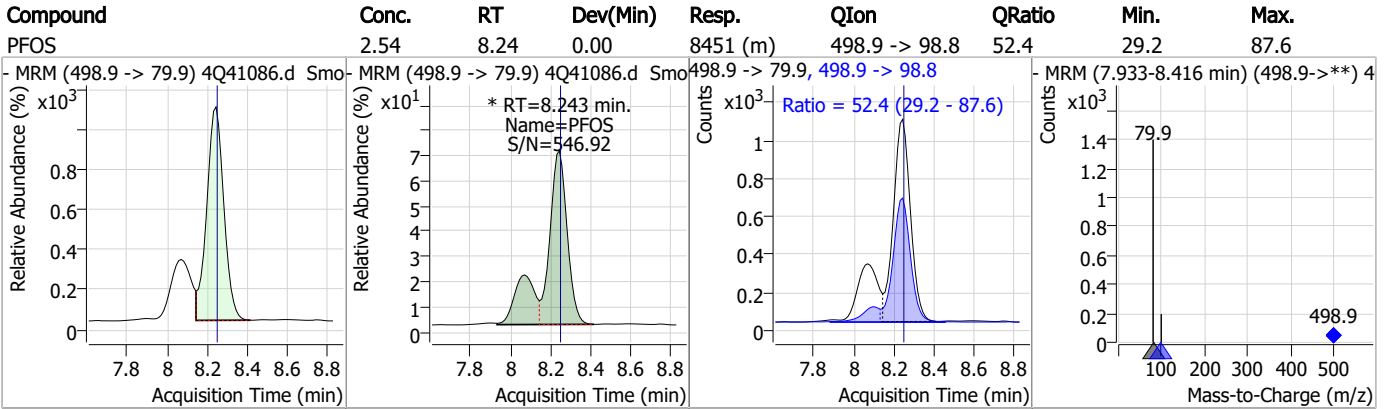
Perfluorinated Compounds by LC/MS/MS



7.4.2

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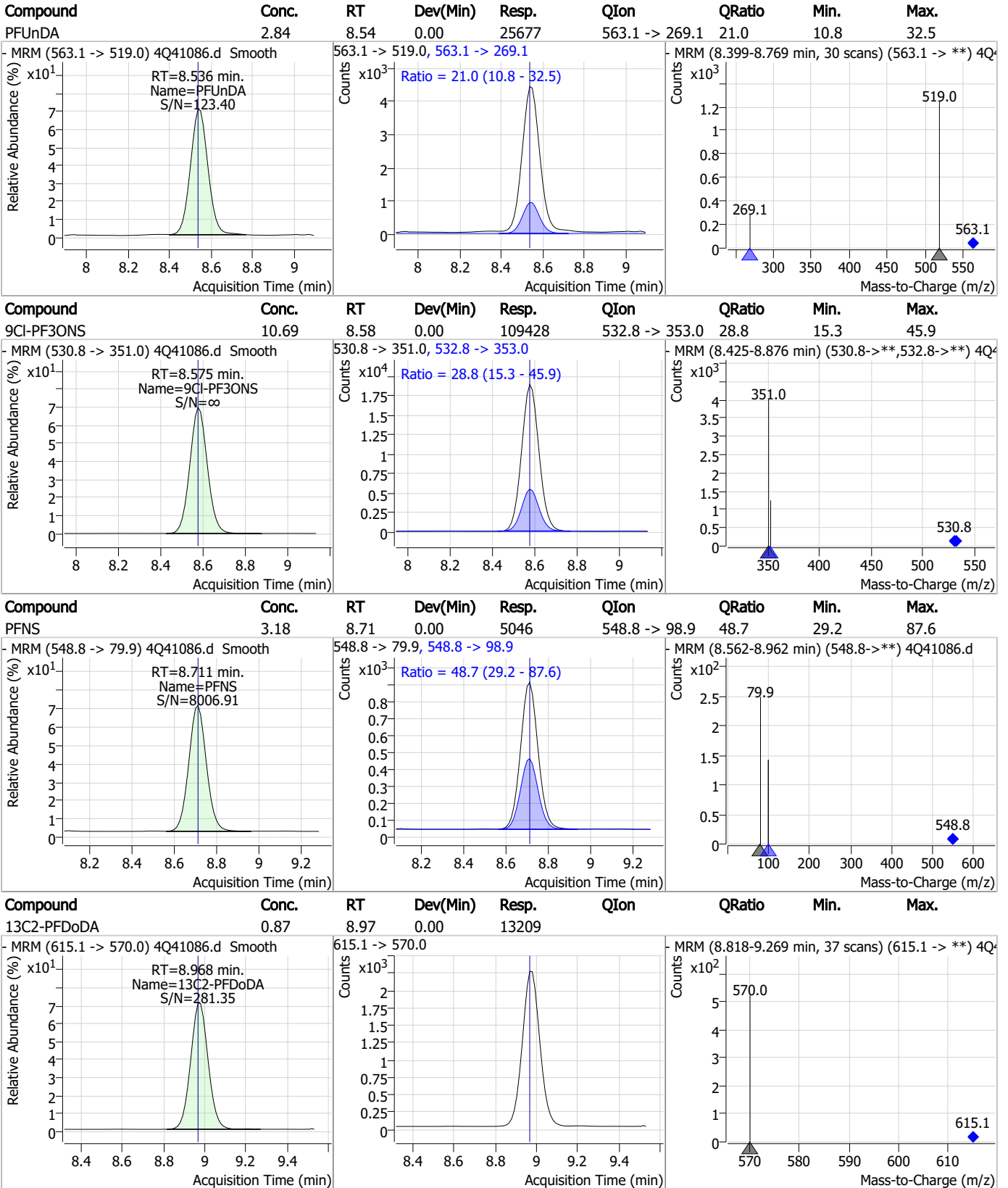
Perfluorinated Compounds by LC/MS/MS



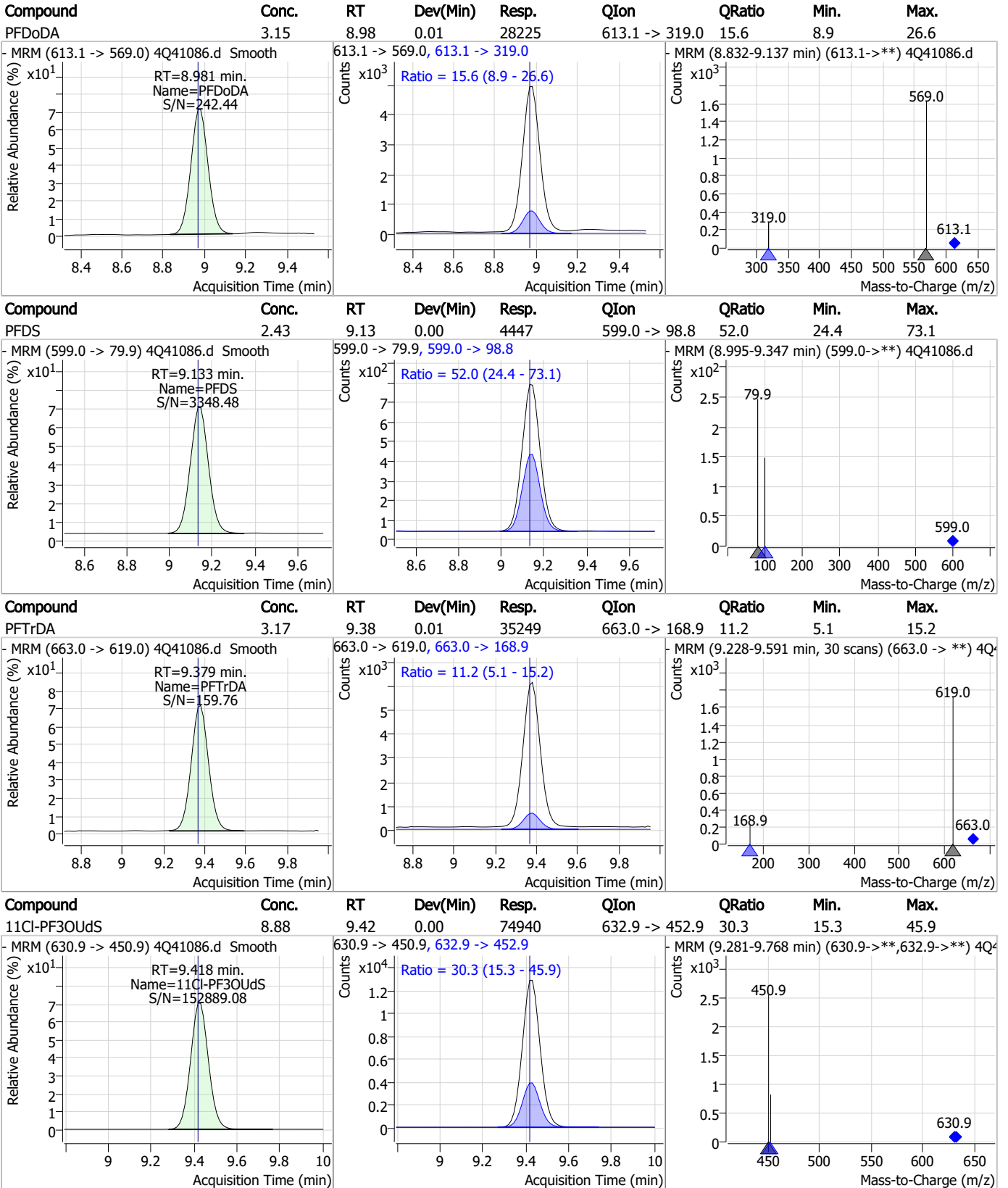
7.4.2

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Perfluorinated Compounds by LC/MS/MS

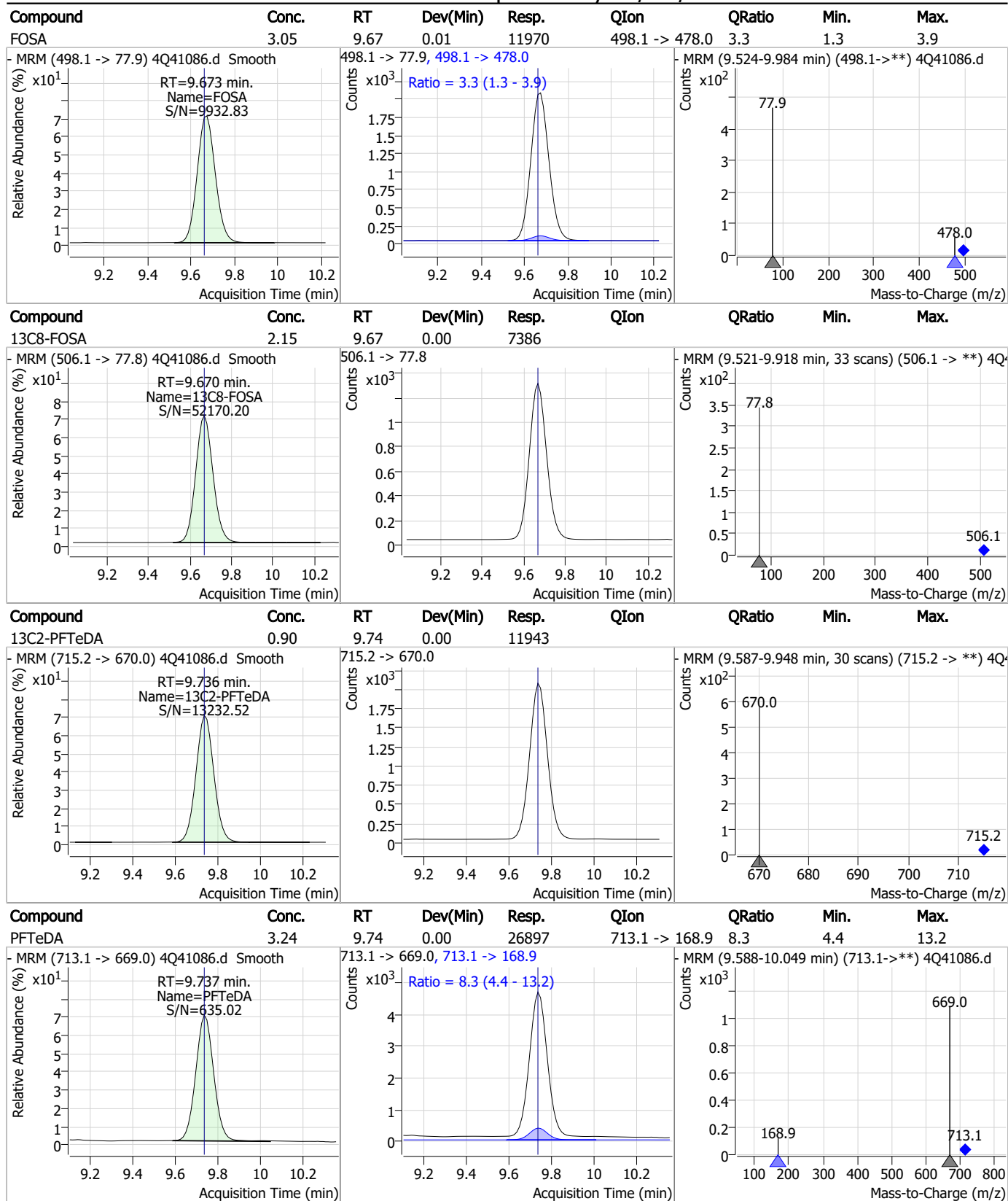


Perfluorinated Compounds by LC/MS/MS



7.4.2
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Perfluorinated Compounds by LC/MS/MS

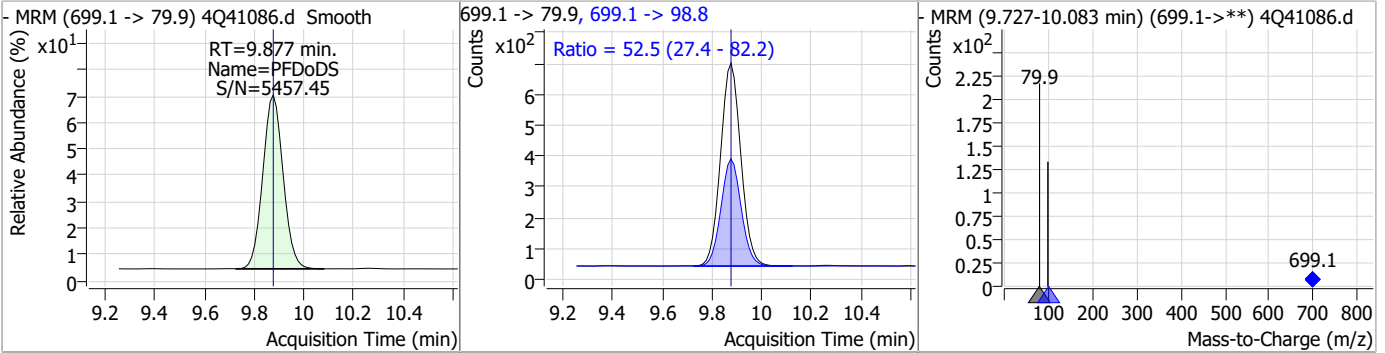


7.4.2

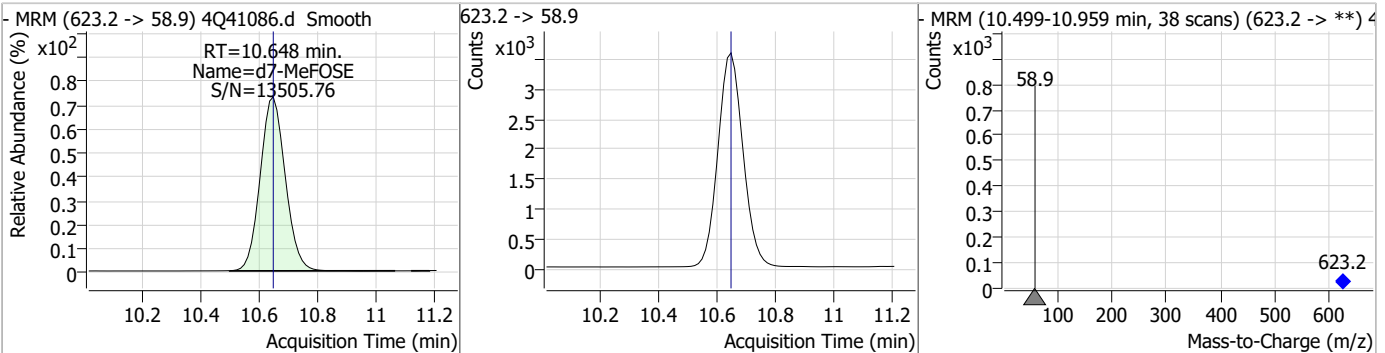
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Perfluorinated Compounds by LC/MS/MS

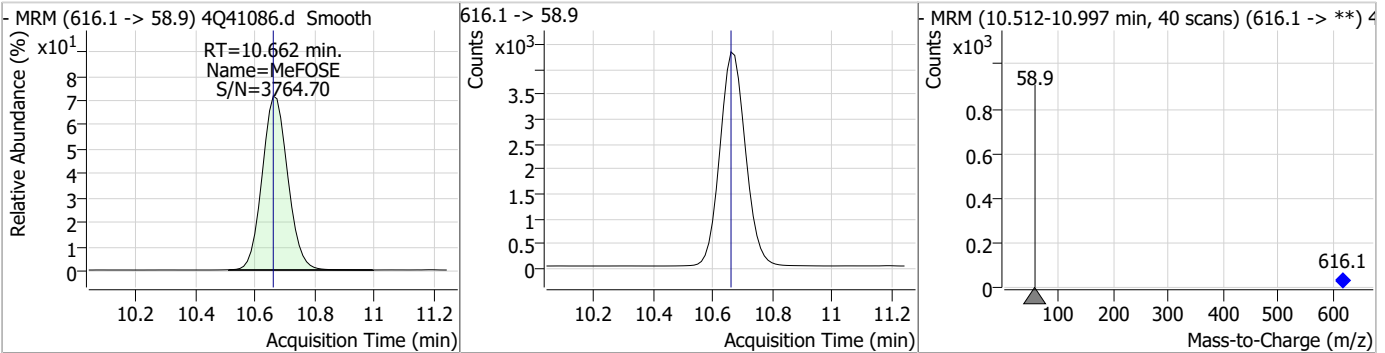
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.55	9.88	0.00	3732	699.1 -> 98.8	52.5	27.4	82.2



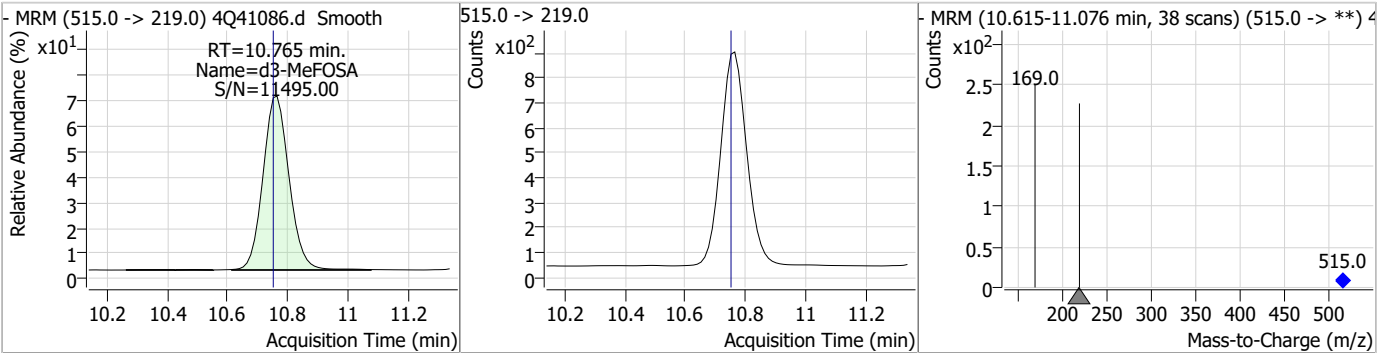
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	18.71	10.65	0.00	21223				



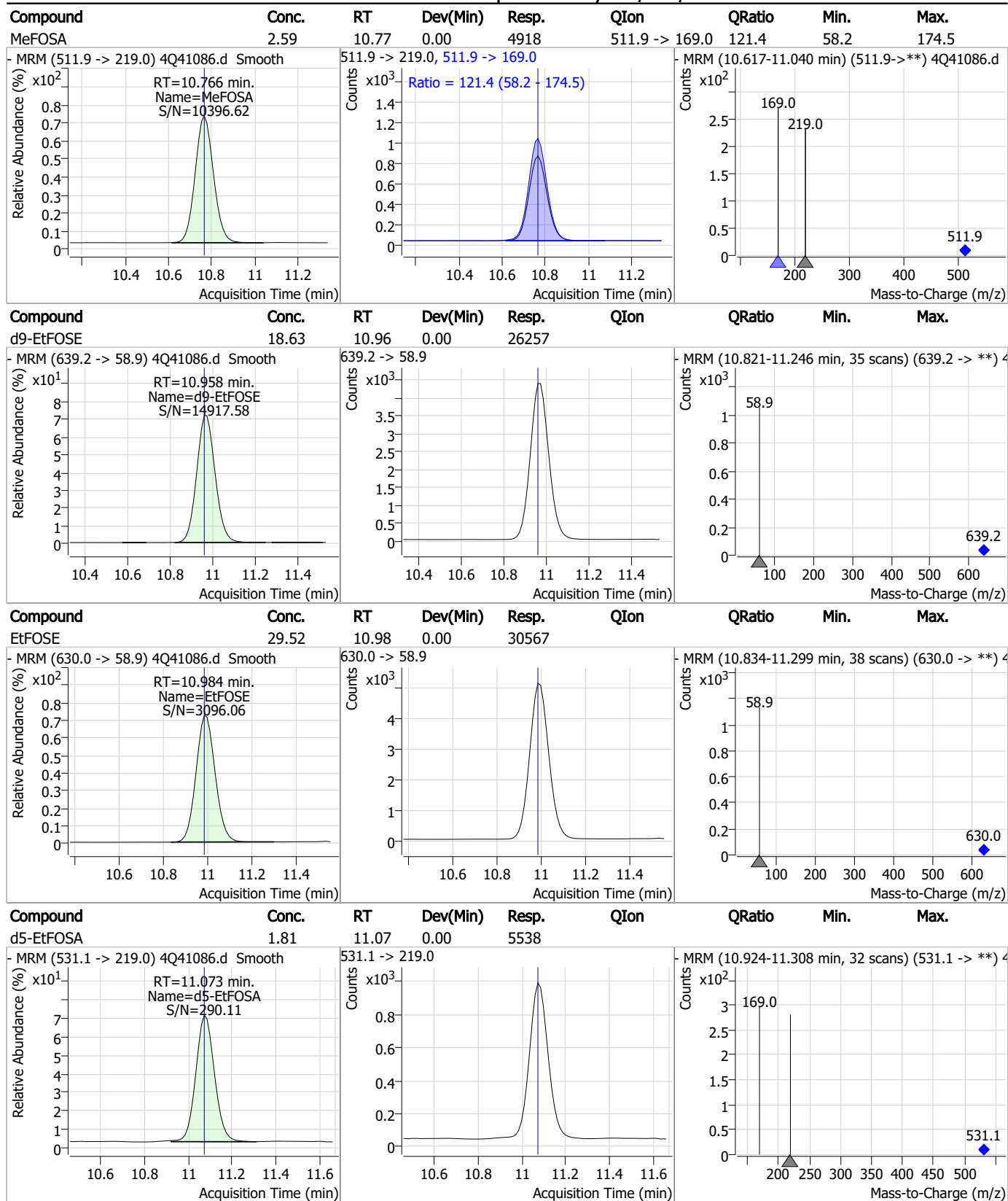
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	28.95	10.66	0.00	25790				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.94	10.76	0.01	5167				

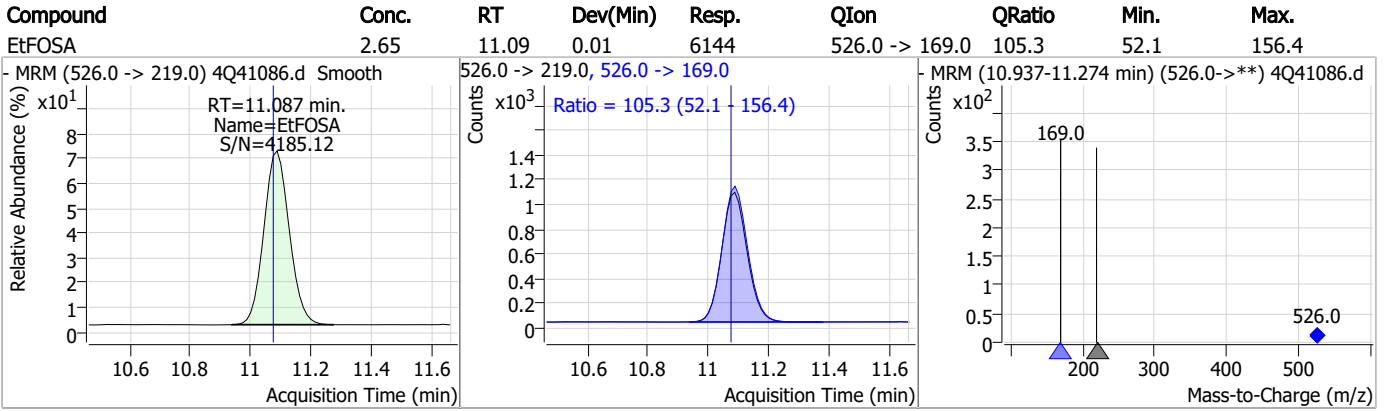


Perfluorinated Compounds by LC/MS/MS



7.4.2
7

Perfluorinated Compounds by LC/MS/MS



7.4.2

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Manual Integration Approval Summary

Sample Number: OP95527-MSD Method: EPA DRAFT 1633
Lab FileID: 4Q41086.D Analyst approved: 02/23/23 14:29 Anna Ludwig
Injection Time: 02/22/23 23:11 Supervisor approved: 02/24/23 10:54 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.36	Split peak

7.4.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41054.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 3:41:38 PM
 Sample Name : RT tdca
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q587_TDCA.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

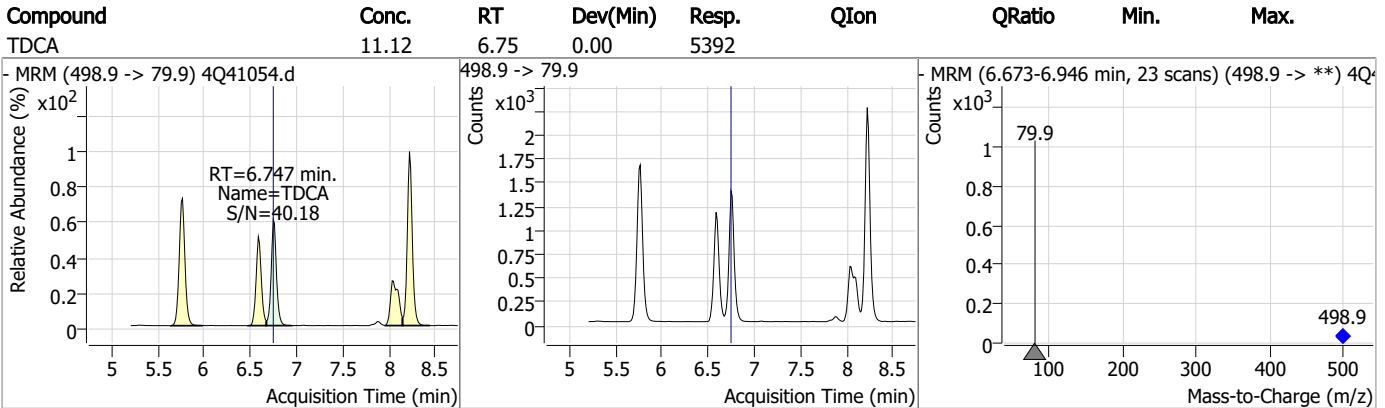
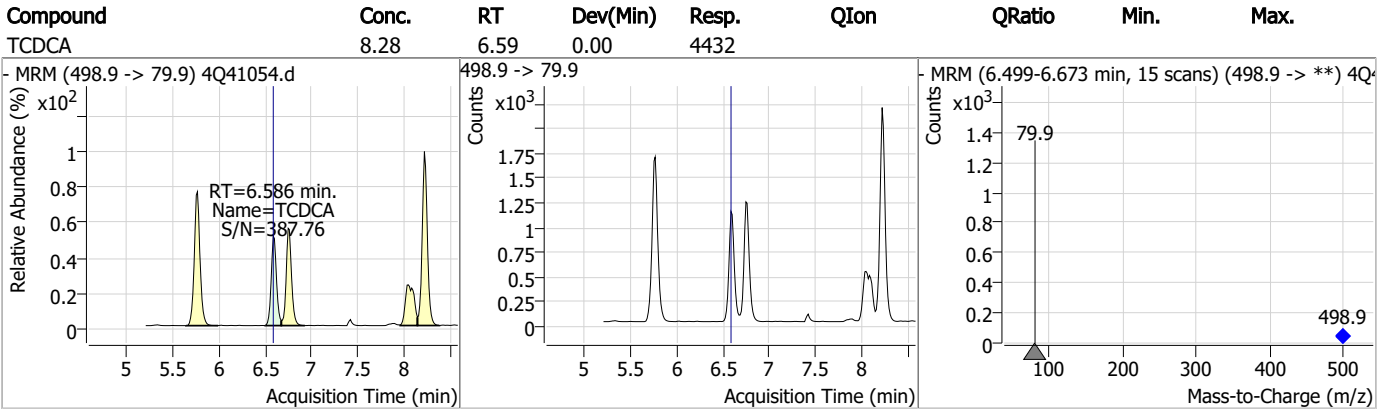
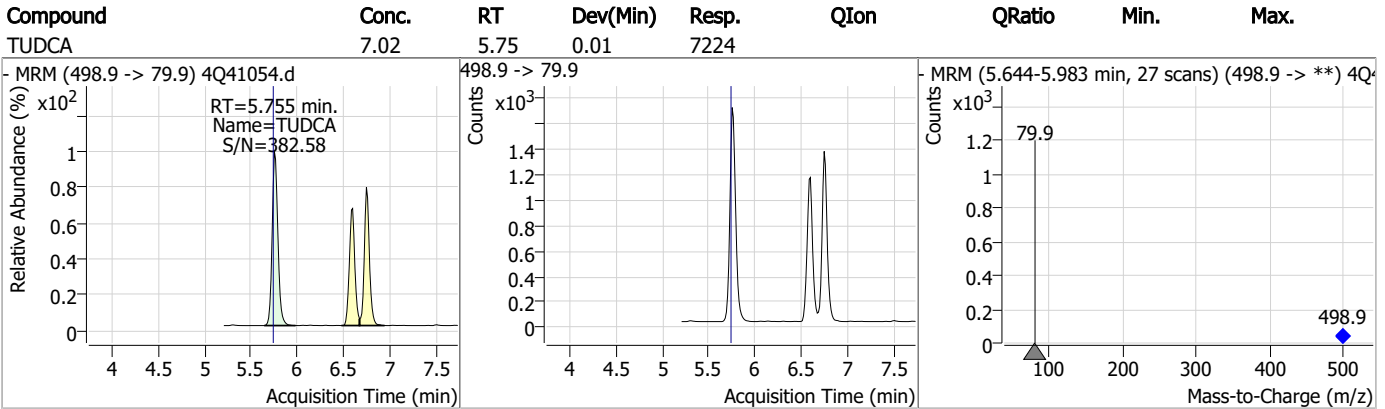
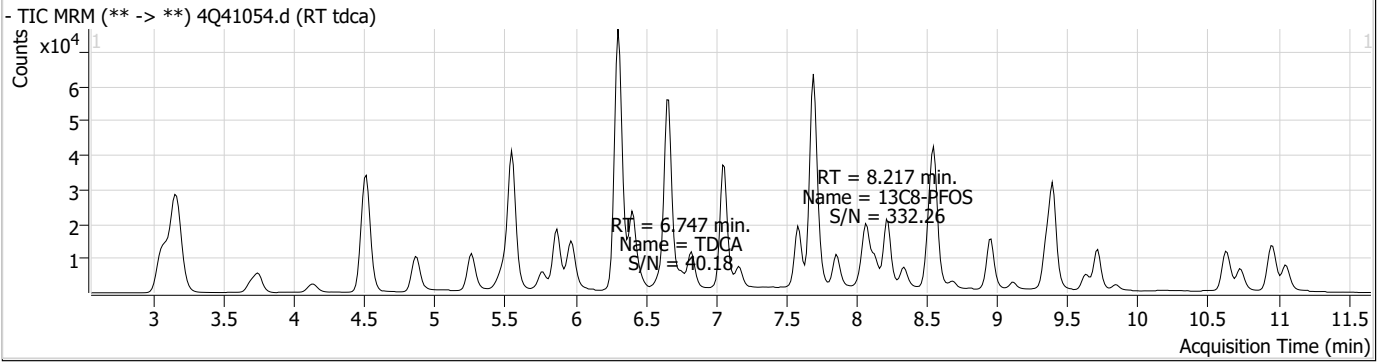
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.217	507.1 -> 79.9	11603	2.50	µg/L	0.000	
13C4-PFOS	8.218	502.8 -> 79.9	11757	2.50	µg/L	0.000	
System Monitoring Compounds							
13C8-PFOS	8.217	507.1 -> 79.9	11603	2.50	µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%				
Target Compounds							
PFOS	8.219	498.9 -> 79.9 498.9 -> 98.8	11870 5303	2.99	µg/L m	90	
TCDCa	6.586	498.9 -> 79.9	4432	8.28	ng/ml	100	
TDCA	6.747	498.9 -> 79.9	5392	11.12	ng/ml	100	
TUDCA	5.755	498.9 -> 79.9	7224	7.02	ng/ml	100	

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

7.5.1

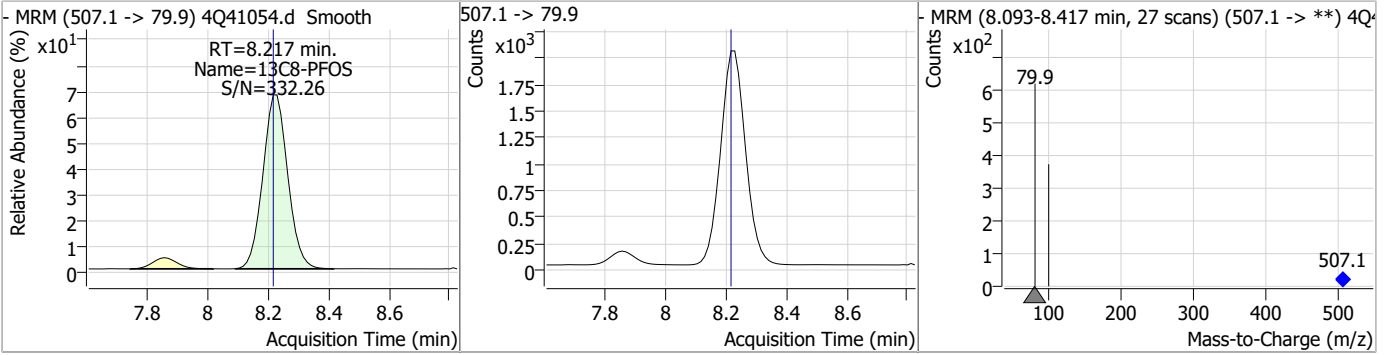
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Perfluorinated Compounds by LC/MS/MS

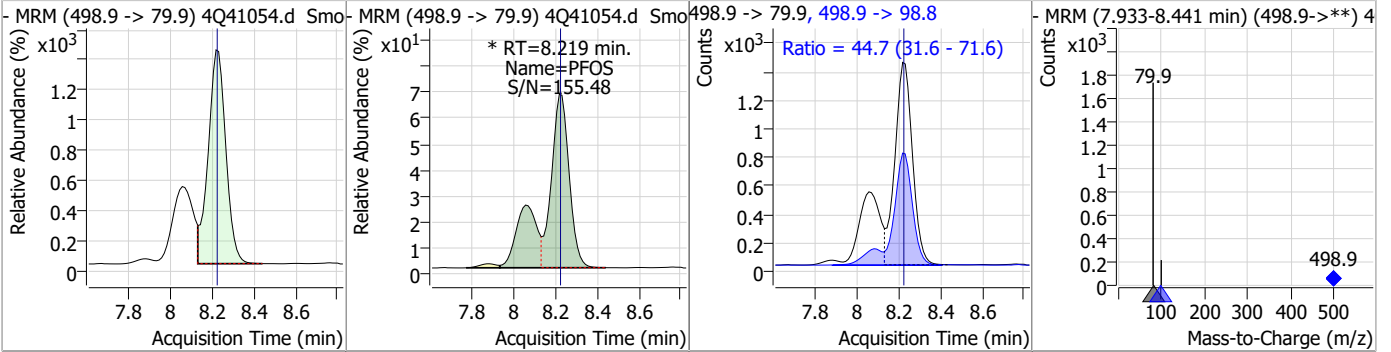


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.50	8.22	0.00	11603				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.99	8.22	0.00	11870 (m)	498.9 -> 98.8	44.7	31.6	71.6



7.5.1

7



Manual Integration Approval Summary

Sample Number: S4Q587-RT Method: EPA DRAFT 1633
Lab FileID: 4Q41054.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 15:41 Supervisor approved: 02/24/23 10:47 Norman Farmer

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

7.5.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41055.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 3:55:41 PM
 Sample Name : RT br_ln
 Vial : P1-B4
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.164	216.8 -> 171.9	127704	10.00 µg/L	0.012
M5-PFPeA	4.512	268.3 -> 223.0	73007	5.00 µg/L	0.012
M5-PFHxA	5.546	318.0 -> 273.0	54941	2.50 µg/L	0.000
M4-PFHpA	6.405	367.1 -> 322.0	32092	2.50 µg/L	-0.012
M8-PFOA	7.050	421.1 -> 376.0	37531	2.50 µg/L	-0.012
M9-PFNA	7.583	472.1 -> 427.0	16125	1.25 µg/L	-0.012
M6-PFDA	8.053	519.1 -> 474.1	15152	1.25 µg/L	-0.025
M7-PFUnDA	8.511	570.0 -> 525.1	20213	1.25 µg/L	-0.025
M2-PFDoDA	8.943	615.1 -> 570.0	19333	1.25 µg/L	-0.025
M2-PFTeDA	9.699	715.2 -> 670.0	15803	1.25 µg/L	-0.037
M8-FOSA	9.632	506.1 -> 77.8	7342	2.50 µg/L	-0.037
M3-PFBS	5.501	302.1 -> 79.9	11713	2.50 µg/L	0.000
M3-PFHxS	7.167	402.1 -> 79.9	6853	2.50 µg/L	-0.012
M8-PFOS	8.217	507.1 -> 79.9	8469	2.50 µg/L	-0.025
M2-4:2FTS	5.260	329.1 -> 80.9	1167	5.00 µg/L	0.000
M2-6:2FTS	6.823	429.1 -> 80.9	2018	5.00 µg/L	-0.012
M2-8:2FTS	7.841	529.1 -> 80.9	3093	5.00 µg/L	-0.025
M3-MeFOSAA	8.123	573.2 -> 419.0	19012	5.00 µg/L	-0.025
M3-HFPO-DA	5.877	286.9 -> 168.9	33202	10.00 µg/L	0.000
M5-EtFOSAA	8.322	589.2 -> 419.0	14561	5.00 µg/L	-0.025
M7-MeFOSE	10.623	623.2 -> 58.9	24959	25.00 µg/L	-0.025
M9-EtFOSE	10.945	639.2 -> 58.9	29997	25.00 µg/L	-0.012
M5-EtFOSA	11.048	531.1 -> 219.0	6649	2.50 µg/L	-0.025
M3-MeFOSA	10.740	515.0 -> 219.0	5933	2.50 µg/L	-0.012
13C4-PFOS	8.218	502.8 -> 79.9	8828	2.50 µg/L	-0.025
13C3-PFBA	3.168	216.0 -> 172.0	77655	5.00 µg/L	0.012
18O2-PFHxS	7.166	403.0 -> 83.9	4629	2.50 µg/L	-0.012
13C4-PFOA	7.050	417.1 -> 372.0	43396	2.50 µg/L	-0.012
13C2-PFDA	8.054	515.1 -> 470.1	15952	1.25 µg/L	-0.025
13C5-PFNA	7.584	468.0 -> 423.0	19230	1.25 µg/L	-0.012
13C2-PFHxA	5.547	315.1 -> 270.0	51071	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1167	4.66 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.1%		
13C2-6:2FTS	6.823	429.1 -> 80.9	2018	5.03 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-8:2FTS	7.841	529.1 -> 80.9	3093	5.12 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-PFDoDA	8.943	615.1 -> 570.0	19333	1.16 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C2-PFTeDA	9.699	715.2 -> 670.0	15803	1.09 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.2%		
13C3-PFBS	5.501	302.1 -> 79.9	11713	2.74 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C3-PFHxS	7.167	402.1 -> 79.9	6853	2.64 µg/L	-0.012

7.52
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 = 105.6%	
13C4-PFBA	3.164	216.8 -> 171.9	127704	9.93 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C4-PFHpA	6.405	367.1 -> 322.0	32092	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C5-PFHxA	5.546	318.0 -> 273.0	54941	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFPeA	4.512	268.3 -> 223.0	73007	5.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C6-PFDA	8.053	519.1 -> 474.1	15152	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C7-PFUnDA	8.511	570.0 -> 525.1	20213	1.20 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-FOSA	9.632	506.1 -> 77.8	7342	2.95 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.1%	
13C8-PFOA	7.050	421.1 -> 376.0	37531	2.59 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C8-PFOS	8.217	507.1 -> 79.9	8469	2.40 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C9-PFNA	7.583	472.1 -> 427.0	16125	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
d3-MeFOSAA	8.123	573.2 -> 419.0	19012	4.89 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	33202	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d3-MeFOSA	10.740	515.0 -> 219.0	5933	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
d5-EtFOSAA	8.322	589.2 -> 419.0	14561	4.81 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.1%	
d7-MeFOSE	10.623	623.2 -> 58.9	24959	23.19 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 92.8%	
d9-EtFOSE	10.945	639.2 -> 58.9	29997	22.43 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.7%	
d5-EtFOSA	11.048	531.1 -> 219.0	6649	2.30 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.8%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	92281	49.69 µg/L	99
		327.1 -> 80.9	34421		
6:2FTS	6.824	427.1 -> 407.0	82210	45.50 µg/L	99
		427.1 -> 80.9	29697		
8:2FTS	7.841	527.1 -> 507.0	77207	48.30 µg/L	98
		527.1 -> 80.8	22866		
EtFOSAA	8.335	584.2 -> 419.1	32761	13.24 µg/L	m 98
		584.2 -> 526.0	13476		
FOSA	9.636	498.1 -> 77.9	120184	30.80 µg/L	m 99
		498.1 -> 478.0	3543		
MeFOSAA	8.124	570.1 -> 419.0	33552	12.93 µg/L	85
		570.1 -> 483.0	6956		
PFBA	3.158	212.8 -> 168.9	155022	51.23 µg/L	100
PFBS	5.502	298.7 -> 79.9	53498	11.42 µg/L	96
		298.7 -> 98.8	19159		
PFDA	8.054	512.9 -> 469.0	130857	12.65 µg/L	98
		512.9 -> 219.0	26865		
PFDoDA	8.944	613.1 -> 569.0	167872	12.81 µg/L	95
		613.1 -> 319.0	26191		
PFDS	9.108	599.0 -> 79.9	26513	12.58 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.405	599.0 -> 98.8	12952	12.90	µg/L	98
		363.1 -> 319.0	220176			
PFHpS	7.723	363.1 -> 169.0	38270	12.46	µg/L	99
		449.0 -> 79.9	32428			
PFHxA	5.549	449.0 -> 98.9	17548	12.33	µg/L	100
		313.0 -> 269.0	234202			
PFHxS	7.168	313.0 -> 118.9	6582	10.85	µg/L	99
		398.7 -> 79.9	30717			
PFNA	7.447	398.7 -> 98.9	16809	26.42	µg/L	94
		463.0 -> 419.0	258922			
PFNS	8.674	463.0 -> 219.0	69685	12.18	µg/L	95
		548.8 -> 79.9	22189			
PFOA	7.051	548.8 -> 98.9	12136	27.37	µg/L	98
		413.0 -> 369.0	485673			
PFOS	8.219	413.0 -> 169.0	98077	11.26	µg/L	85
		498.9 -> 79.9	43128			
PFPeA	4.514	498.9 -> 98.8	20366	25.16	µg/L	100
		263.0 -> 219.0	431914			
PFPeS	6.470	349.1 -> 79.9	26244	12.06	µg/L	97
		349.1 -> 98.9	11982			
PFTeDA	9.700	713.1 -> 669.0	146270	13.30	µg/L	99
		713.1 -> 168.9	12305			
PFTrDA	9.342	663.0 -> 619.0	212030	13.05	µg/L	100
		663.0 -> 168.9	21645			
PFUnDA	8.511	563.1 -> 519.0	134895	12.01	µg/L	97
		563.1 -> 269.1	26937			
11Cl-PF3OUdS	9.393	630.9 -> 450.9	414495	48.13	µg/L	100
		632.9 -> 452.9	126771			
9Cl-PF3ONS	8.550	530.8 -> 351.0	492595	47.17	µg/L	100
		532.8 -> 353.0	151956			
ADONA	6.656	376.9 -> 250.9	886895	46.36	µg/L	98
		376.9 -> 84.8	160751			
HFPO-DA	5.878	284.9 -> 168.9	142578	52.29	µg/L	99
		284.9 -> 184.9	16644			
3:3FTCA	4.142	241.0 -> 177.0	58824	58.18	µg/L	99
		241.0 -> 117.0	4888			
5:3FTCA	6.320	341.0 -> 237.1	888092	308.62	µg/L	99
		341.0 -> 217.0	639679			
7:3FTCA	7.699	441.0 -> 316.9	356894	308.17	µg/L	99
		441.0 -> 336.9	816332			
EtFOSA	11.062	526.0 -> 219.0	90059	32.34	µg/L	84
		526.0 -> 169.0	108680			
EtFOSE	10.971	630.0 -> 58.9	167589	141.67	µg/L	100
		511.9 -> 219.0	69597			
MeFOSA	10.741	511.9 -> 169.0	91236	31.89	µg/L	86
		616.1 -> 58.9	146924			
MeFOSE	10.637	699.1 -> 79.9	20829	140.25	µg/L	100
		699.1 -> 98.8	11430			
PFDoDS	9.839	295.0 -> 201.0	21103	12.37	µg/L	100
		295.0 -> 84.9	4671			
NFDHA	5.453	279.0 -> 85.1	229971	29.25	µg/L	95
		229.0 -> 84.9	177452			
PFMBA	4.881	314.8 -> 134.9	298388	25.22	µg/L	100
		314.8 -> 82.9	9183			
PFMPA	3.740			24.50	µg/L	100
PFEESA	5.971			23.25	µg/L	98

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

7.5.2
7

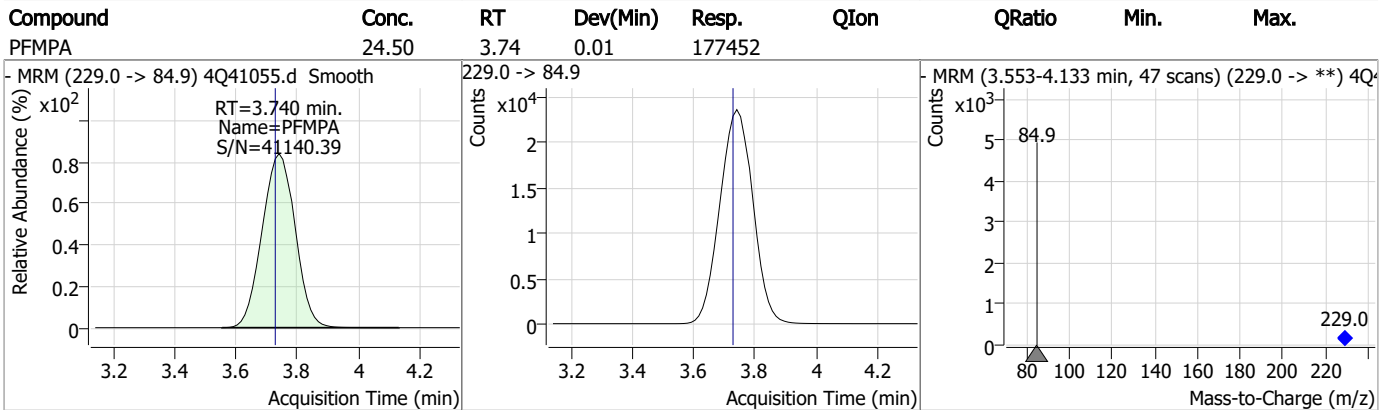
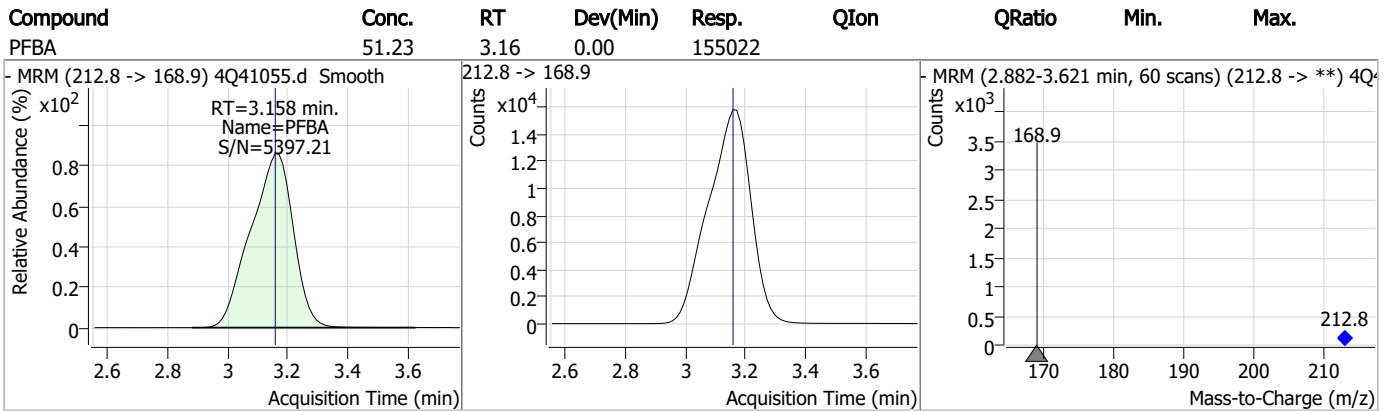
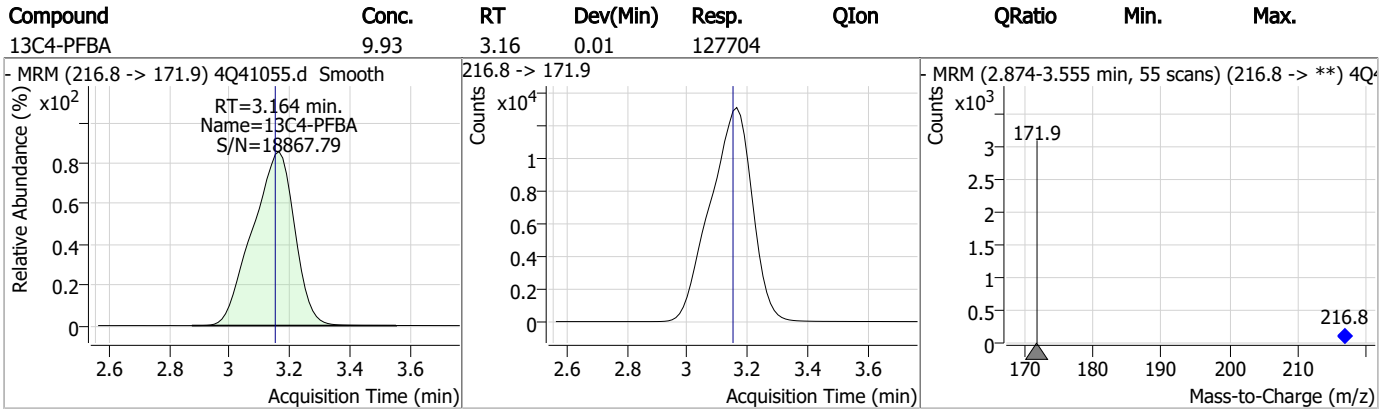
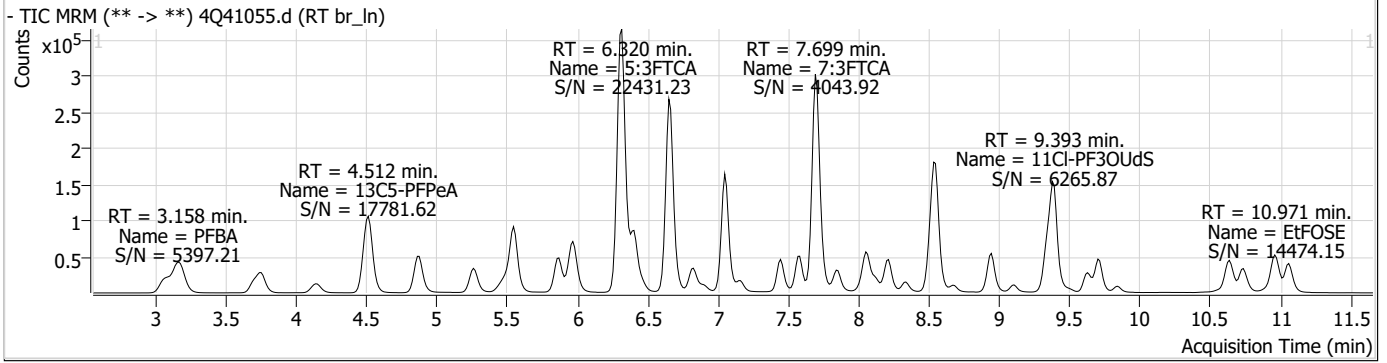
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.5.2

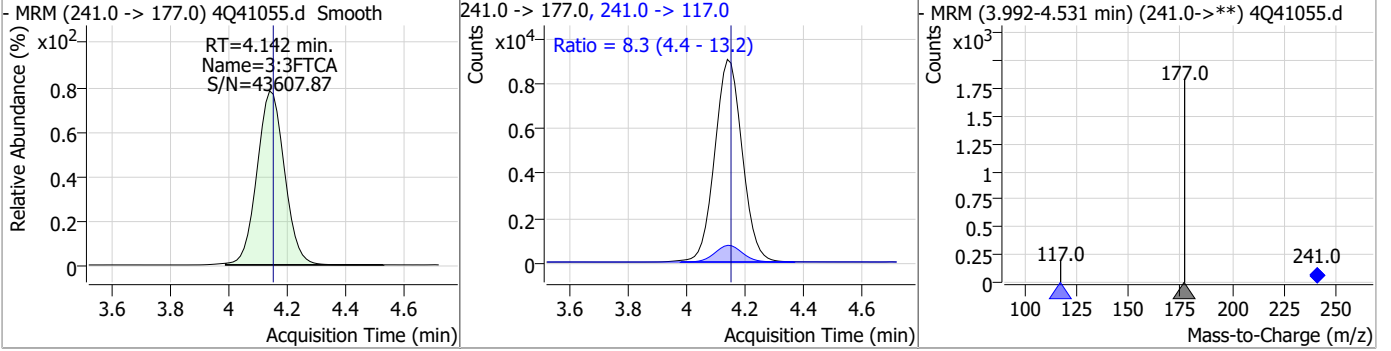
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Perfluorinated Compounds by LC/MS/MS

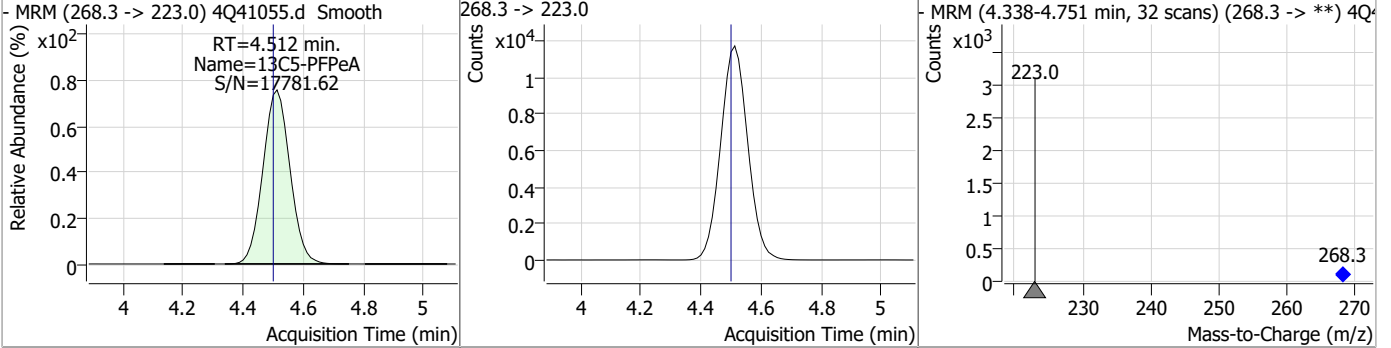


Perfluorinated Compounds by LC/MS/MS

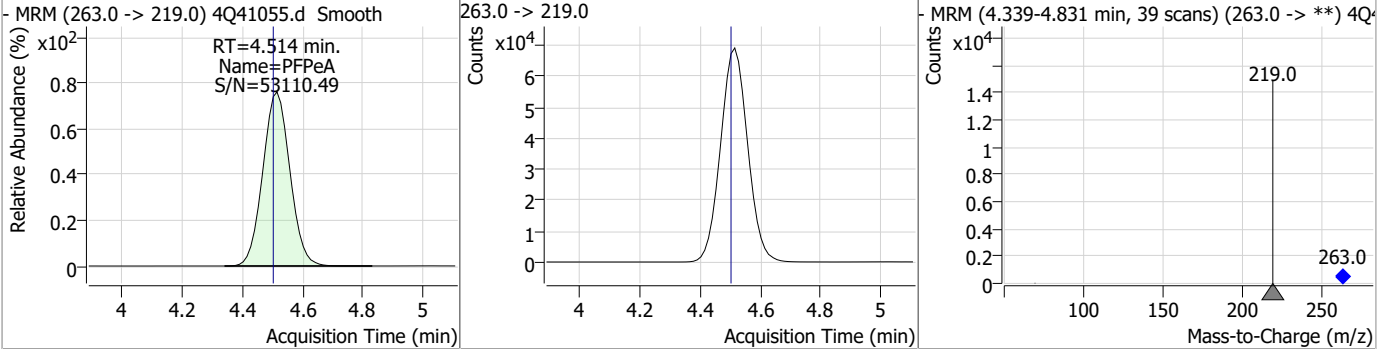
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	58.18	4.14	-0.01	58824	241.0 -> 117.0	8.3	4.4	13.2



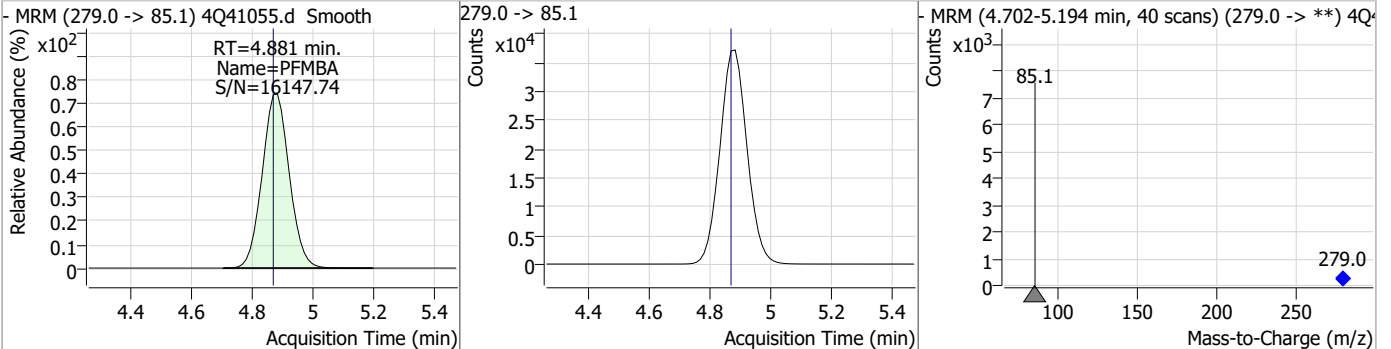
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.06	4.51	0.01	73007				



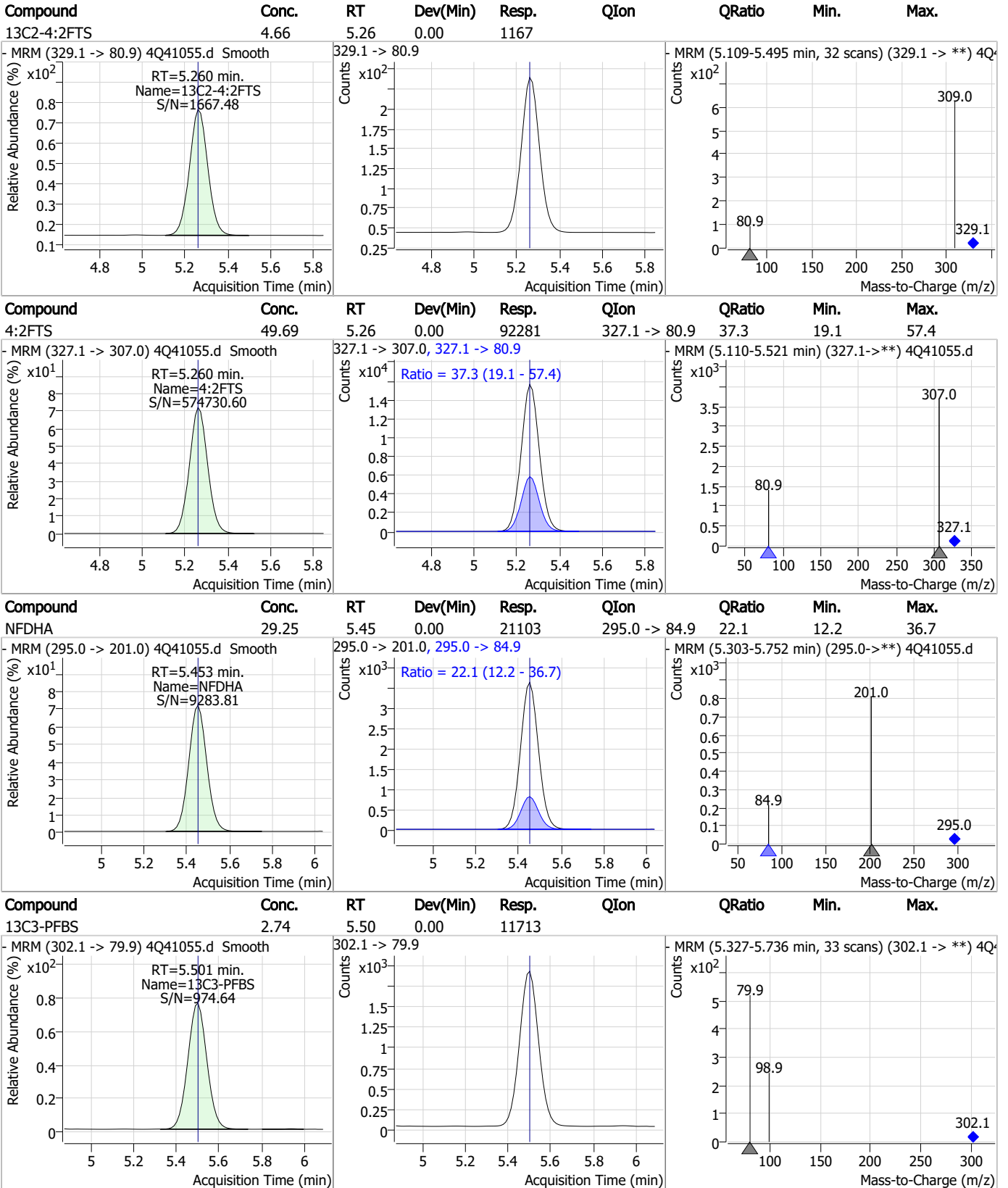
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	25.16	4.51	0.01	431914				



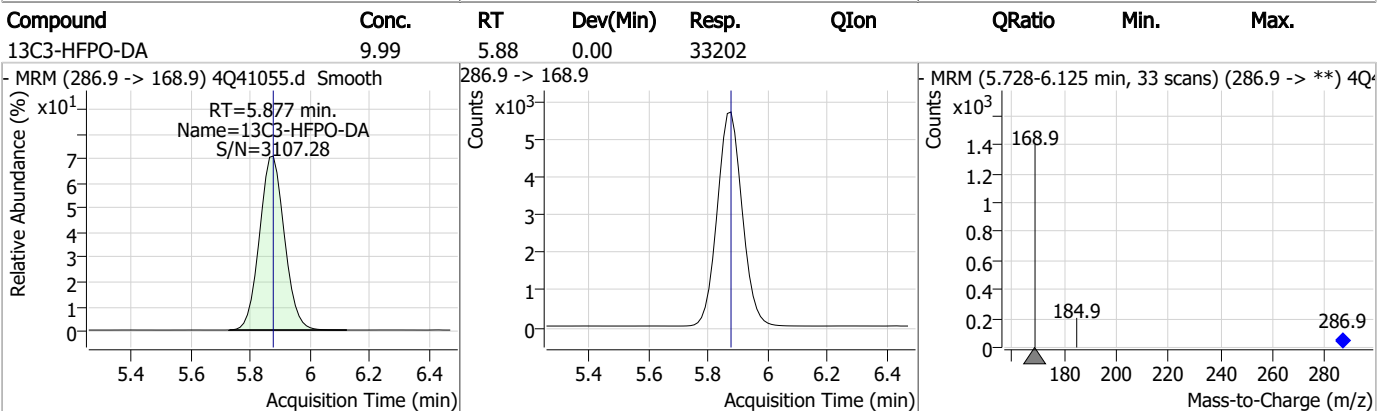
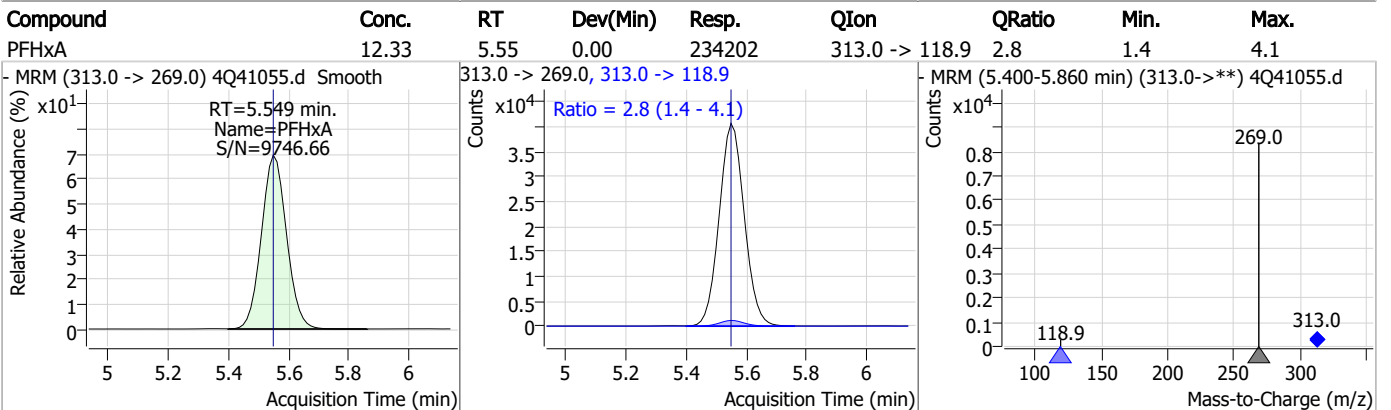
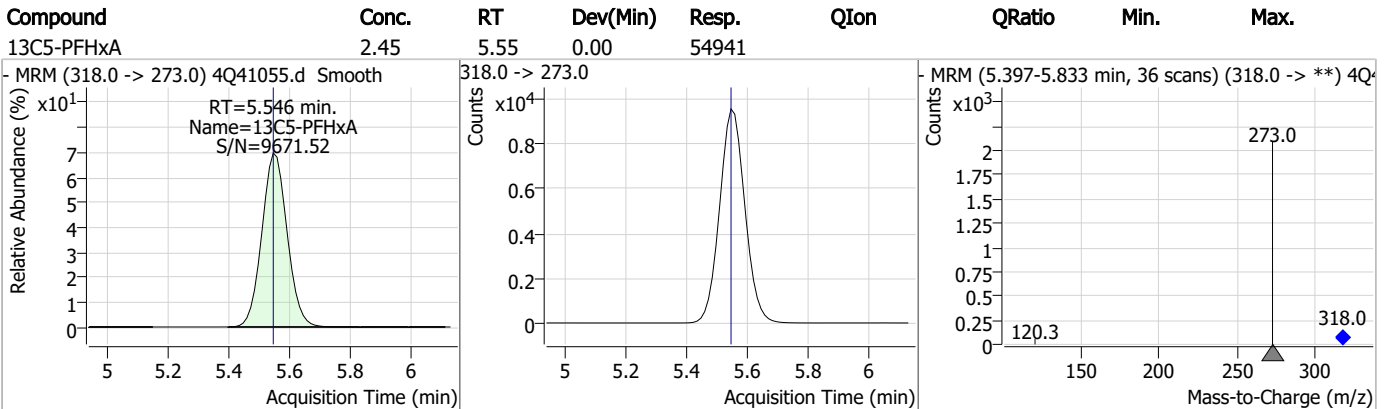
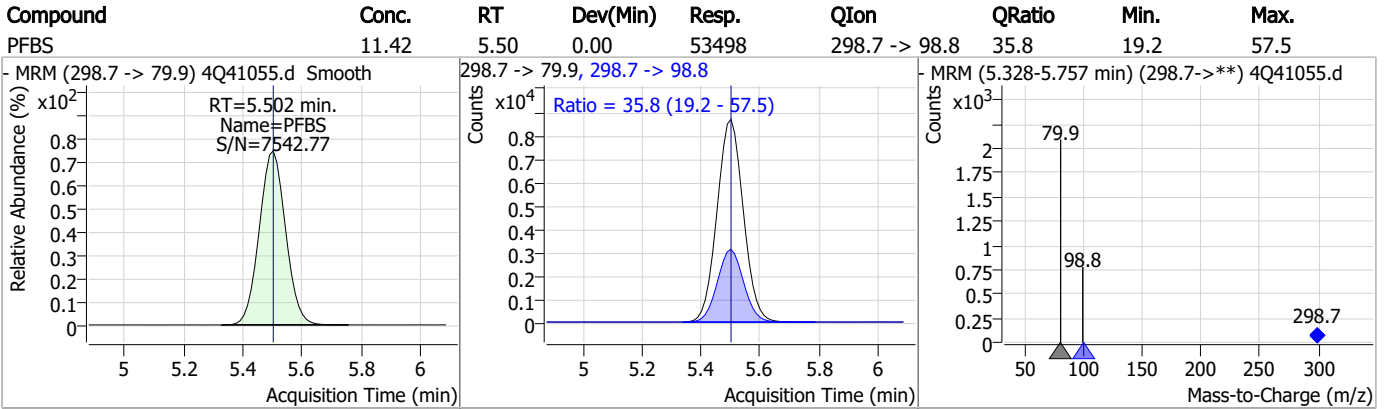
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	25.22	4.88	0.01	229971				



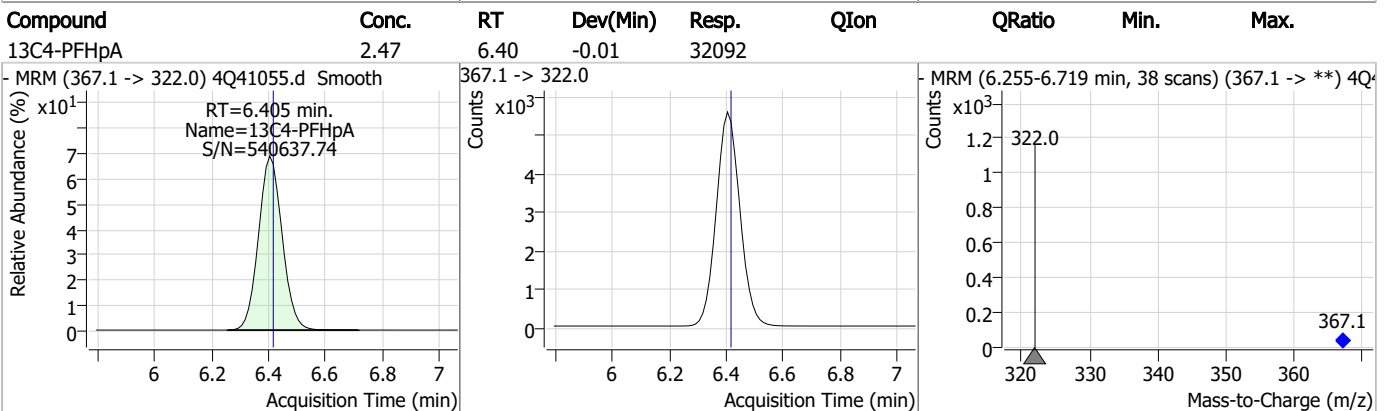
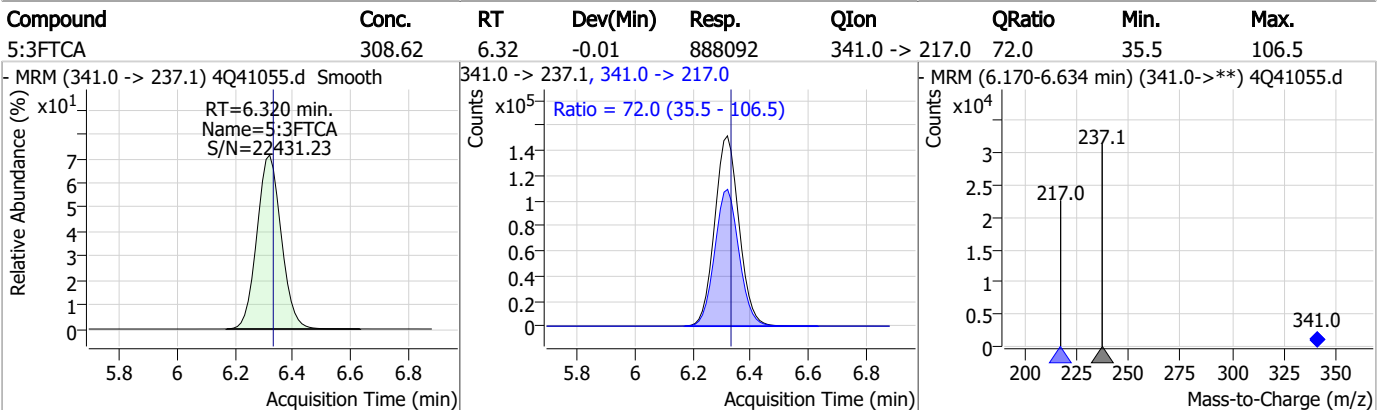
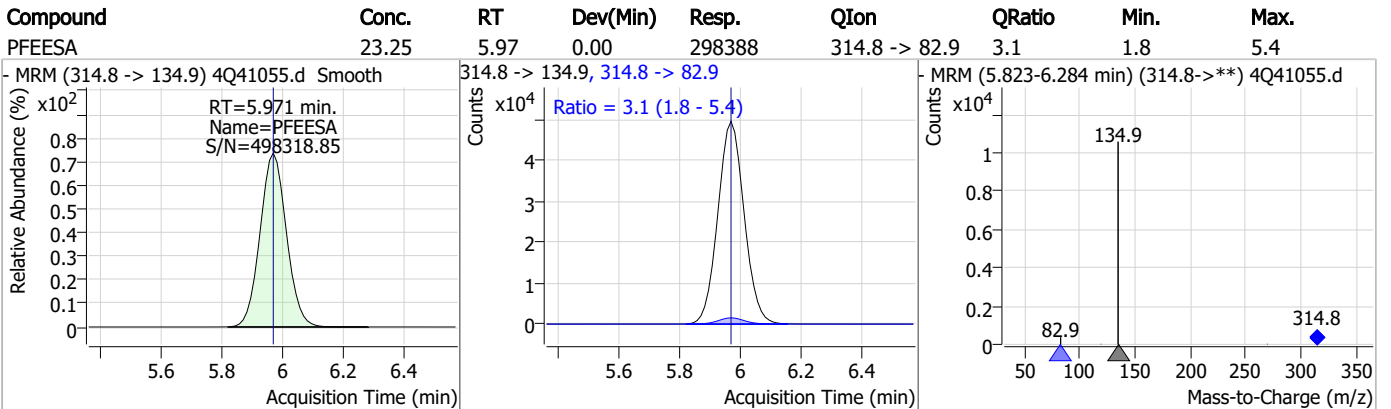
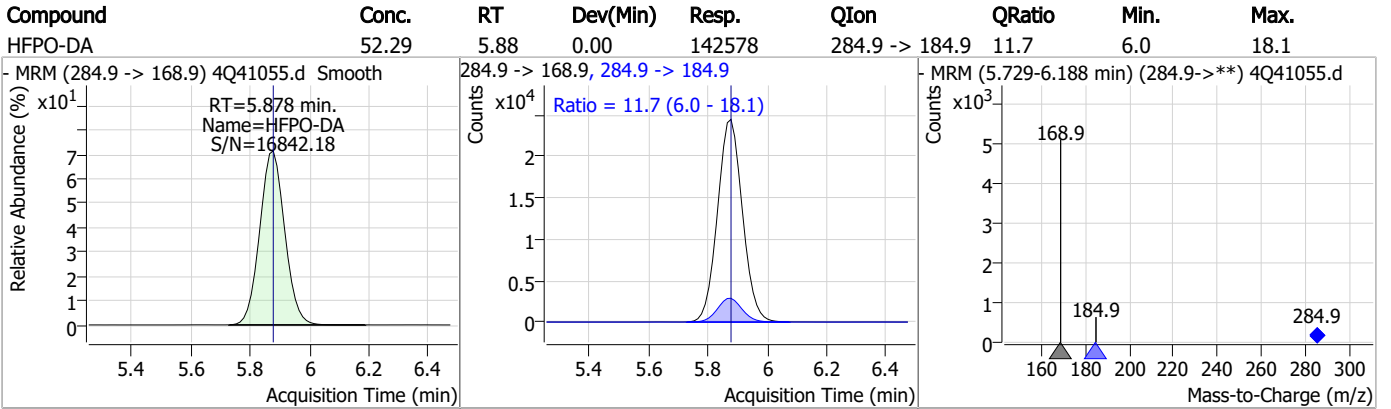
Perfluorinated Compounds by LC/MS/MS



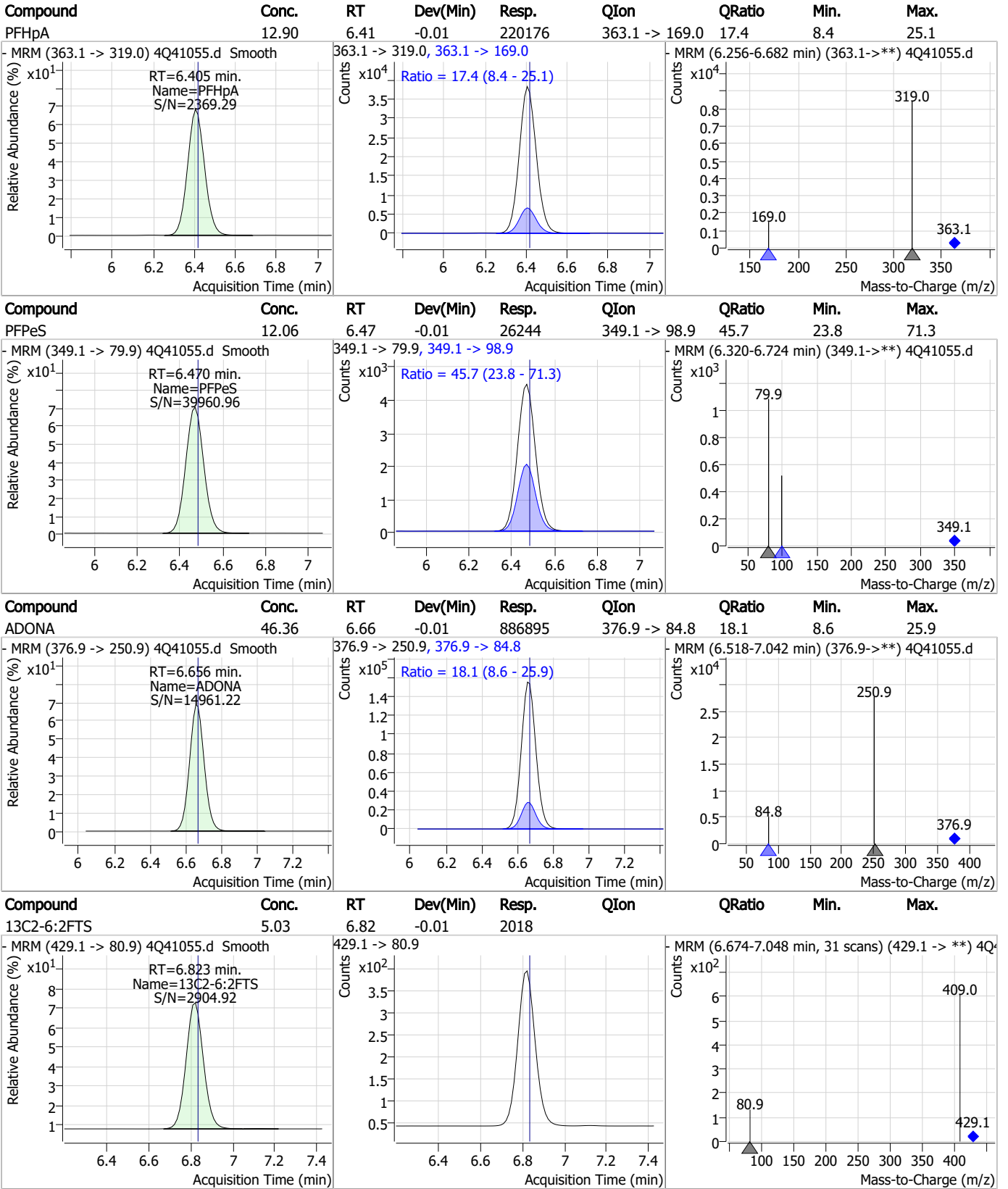
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



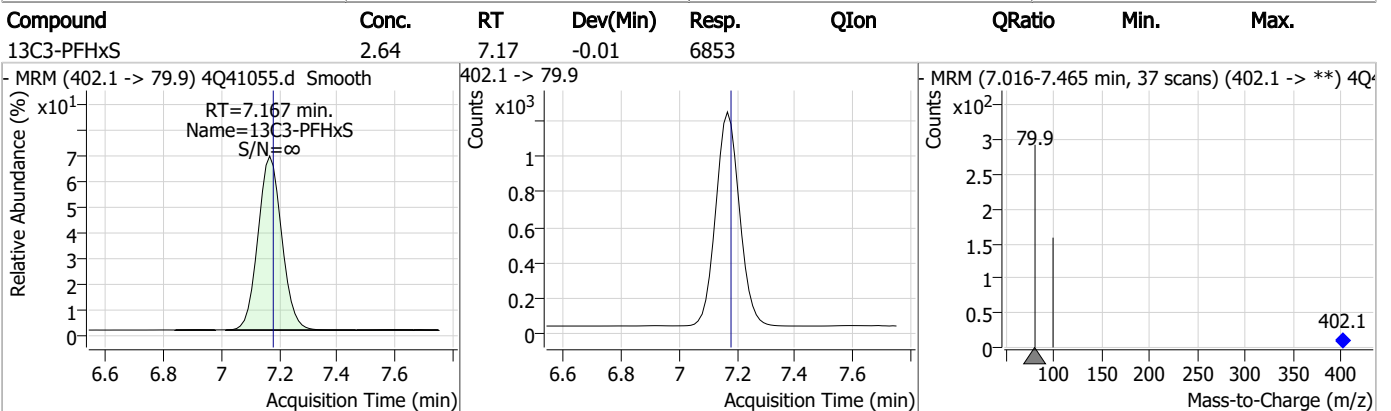
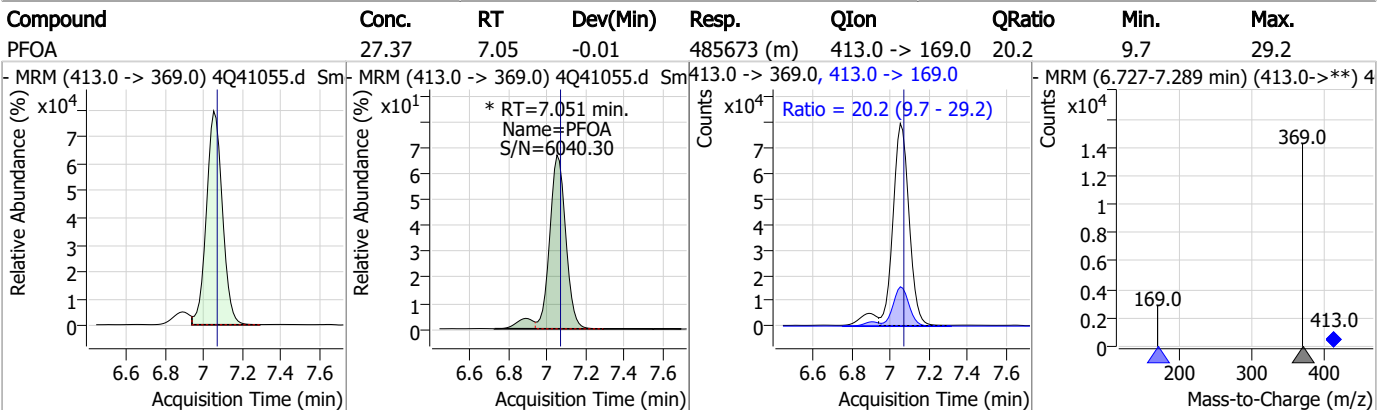
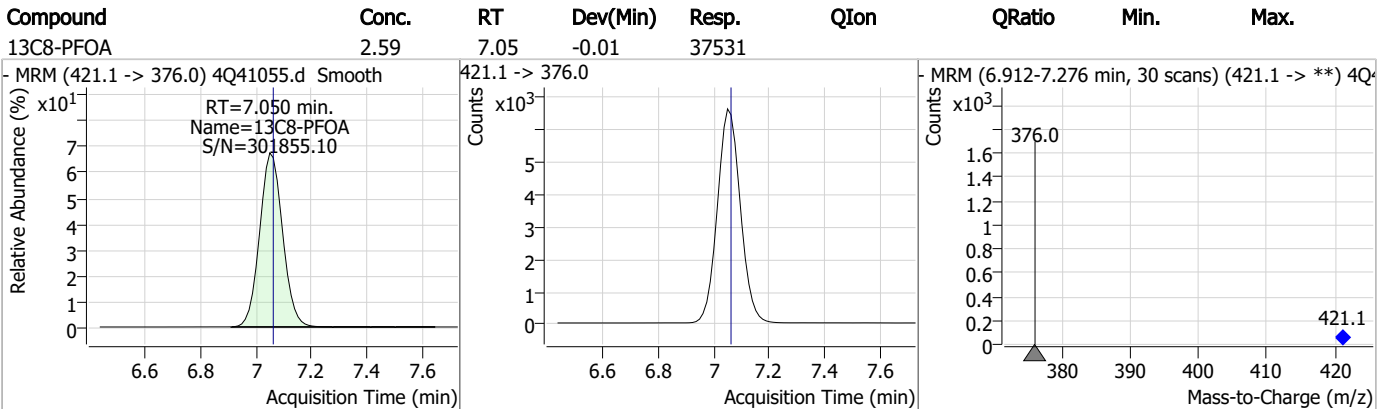
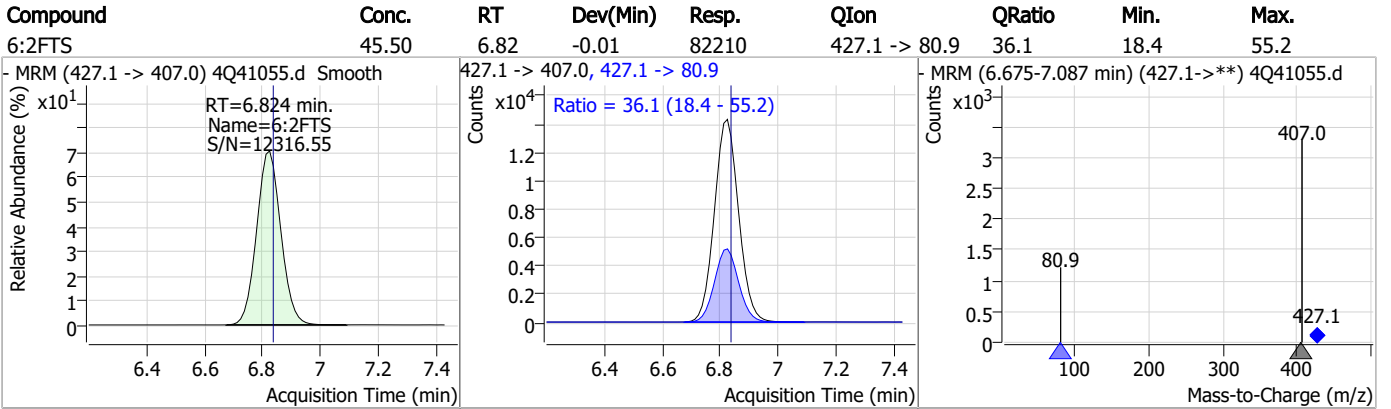
Perfluorinated Compounds by LC/MS/MS



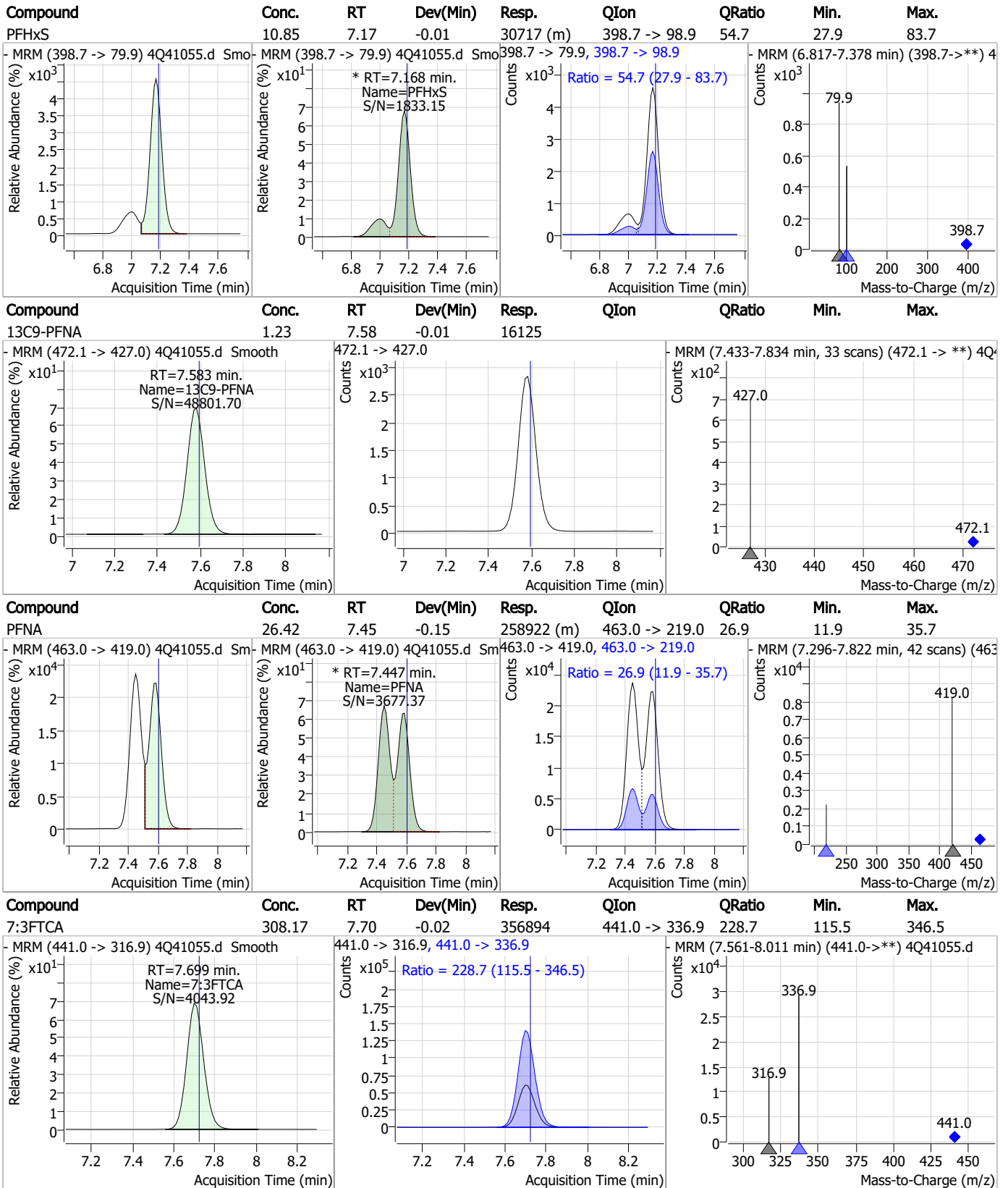
7.5.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

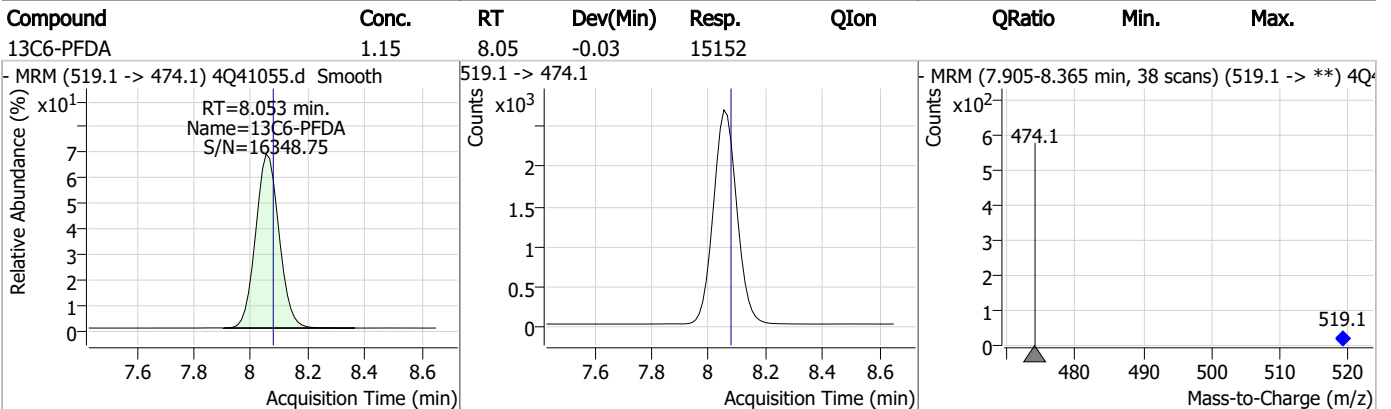
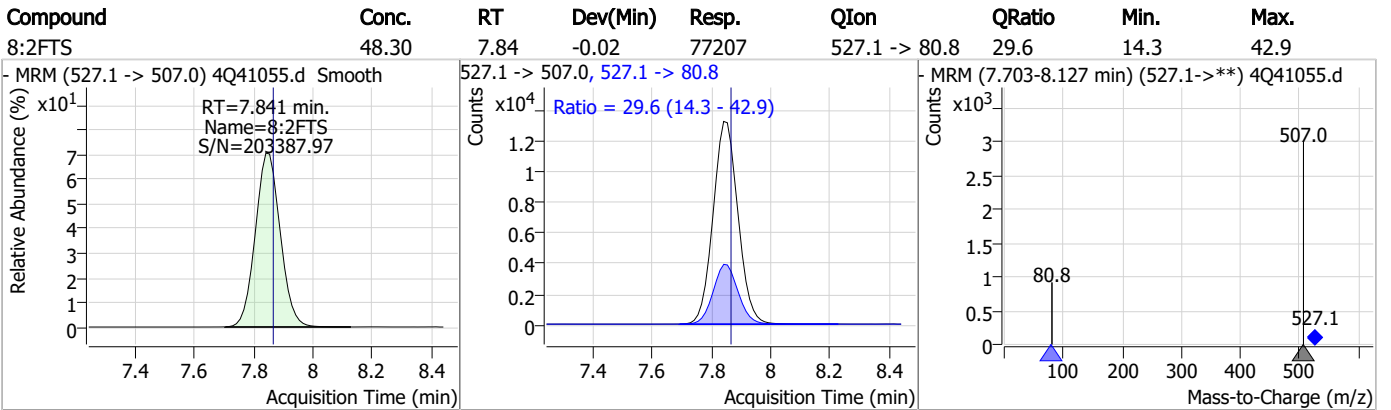
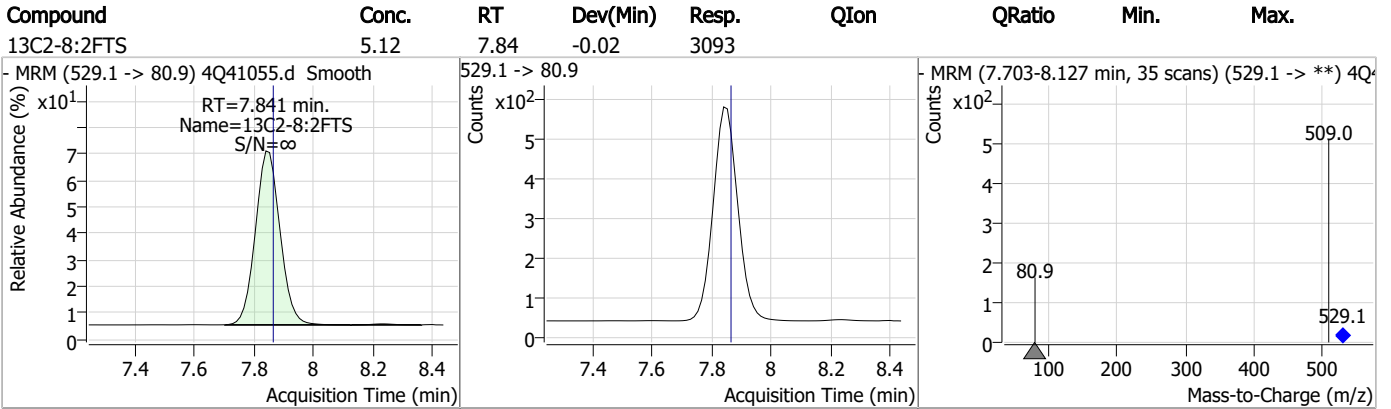
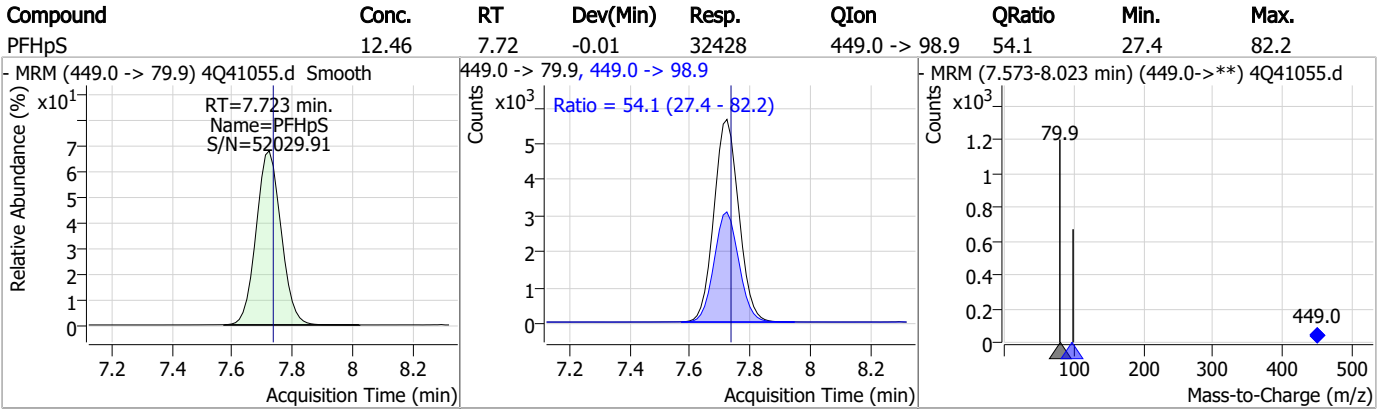


7.5.2

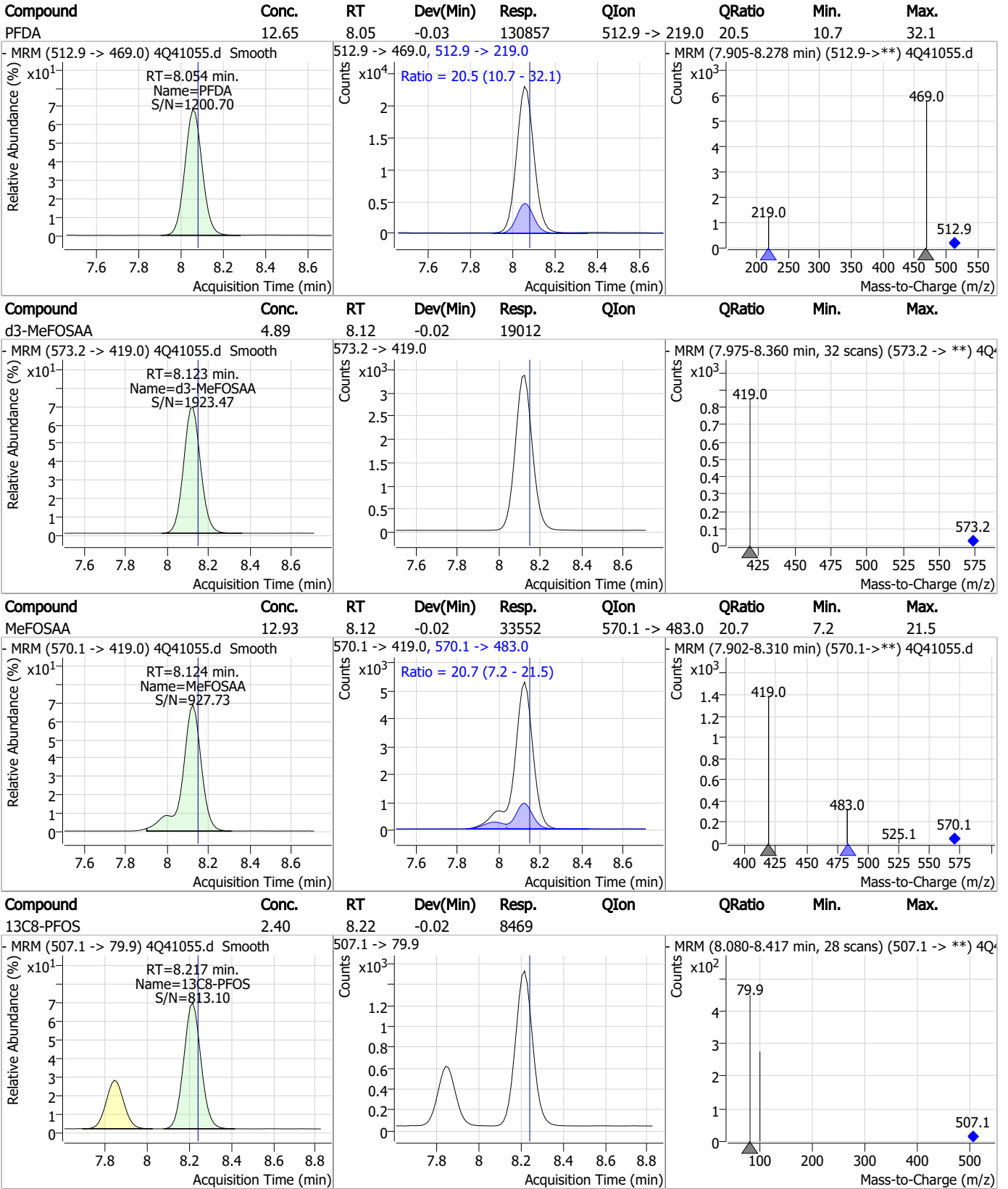
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Perfluorinated Compounds by LC/MS/MS



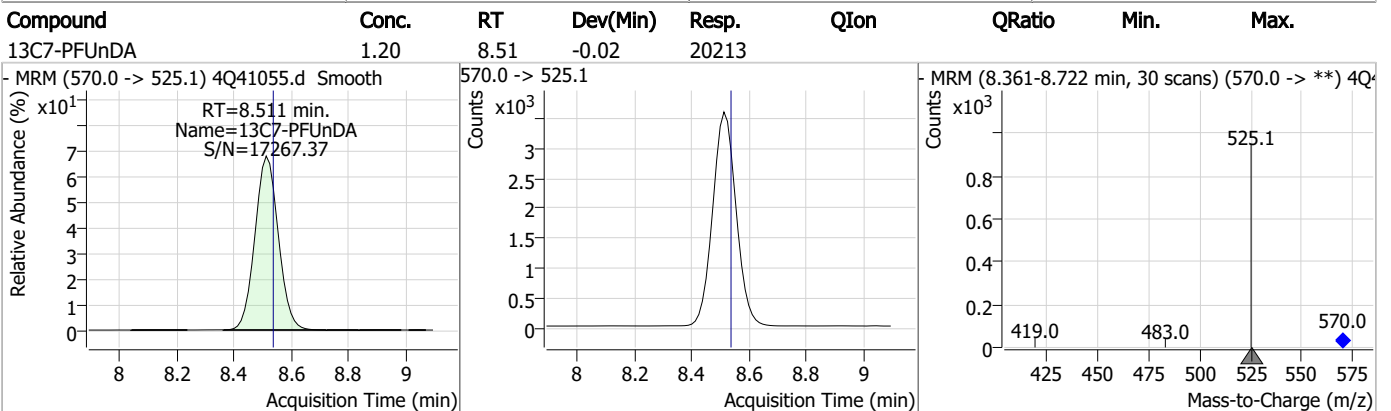
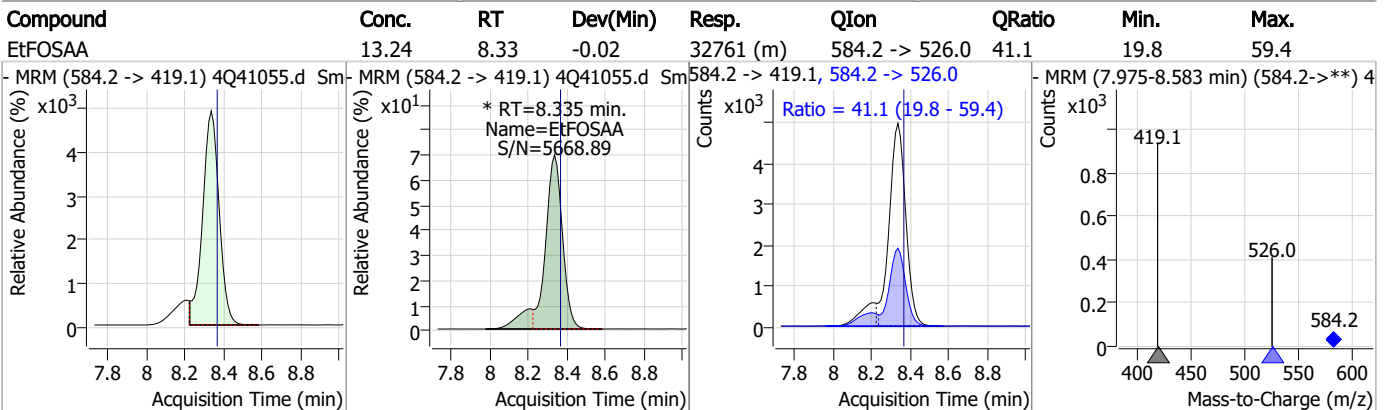
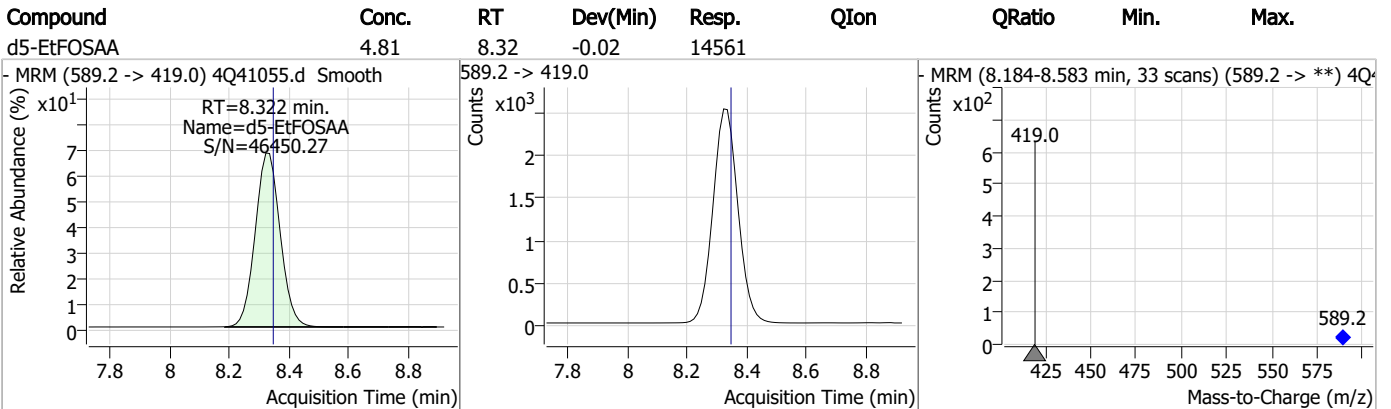
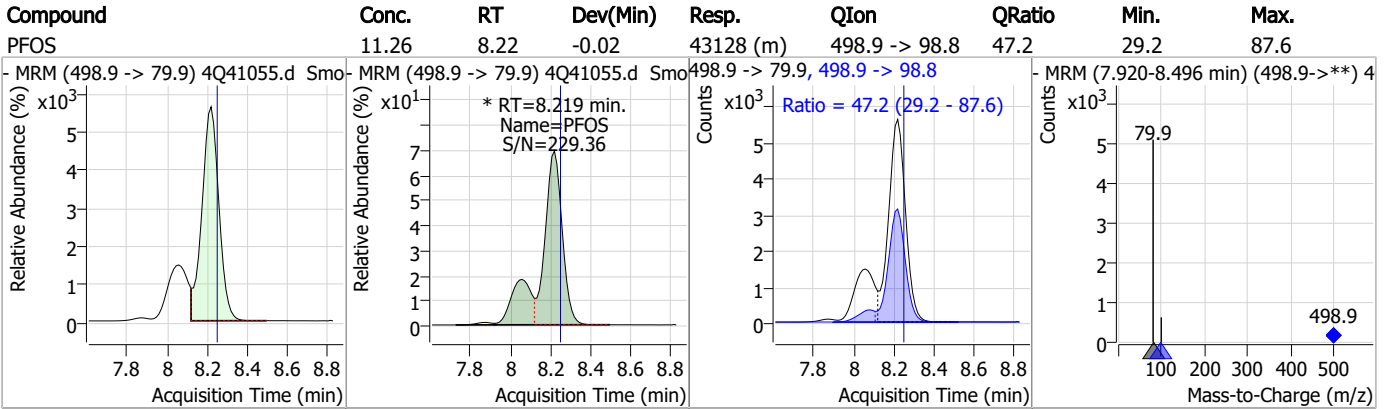
Perfluorinated Compounds by LC/MS/MS



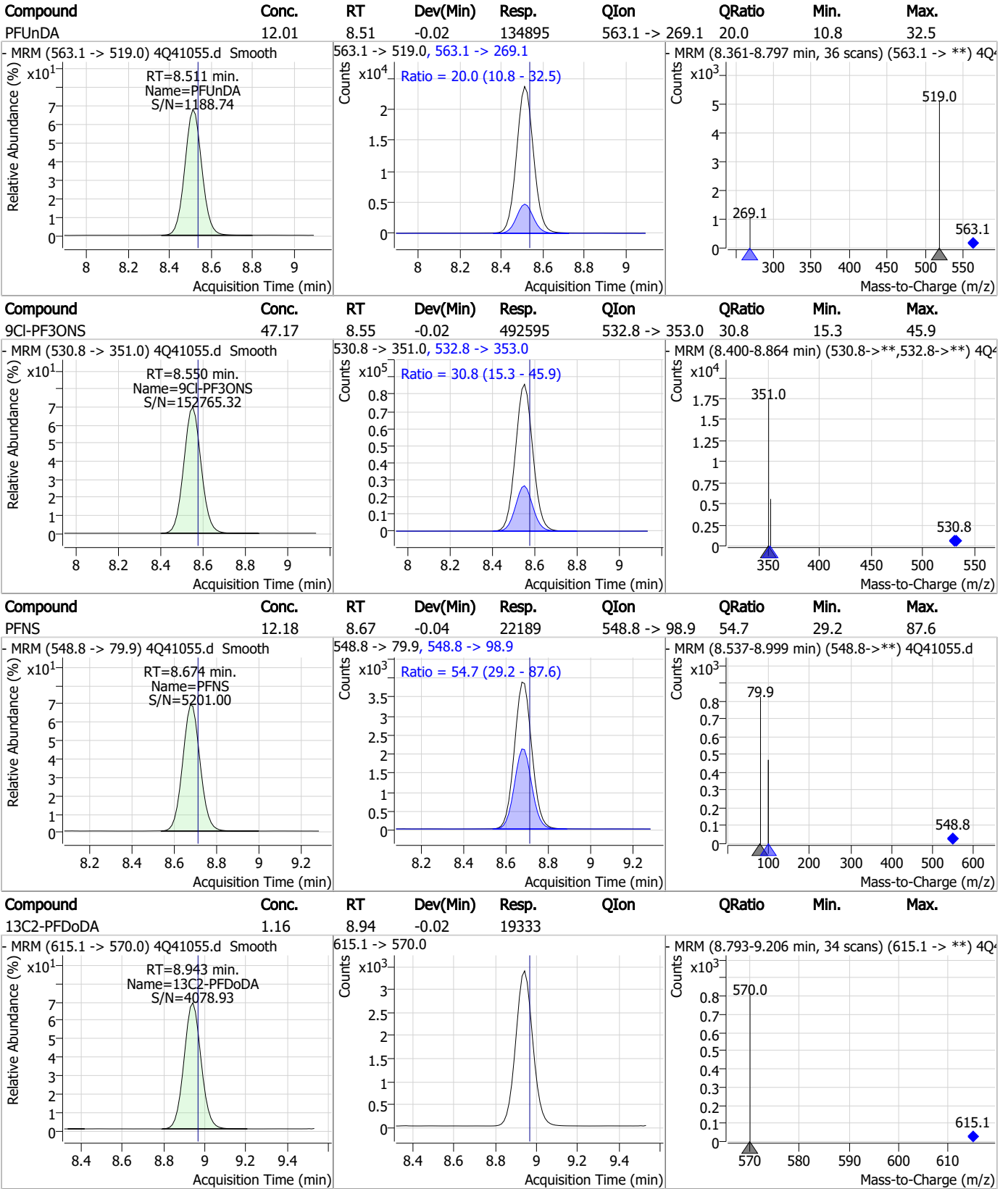
7.5.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

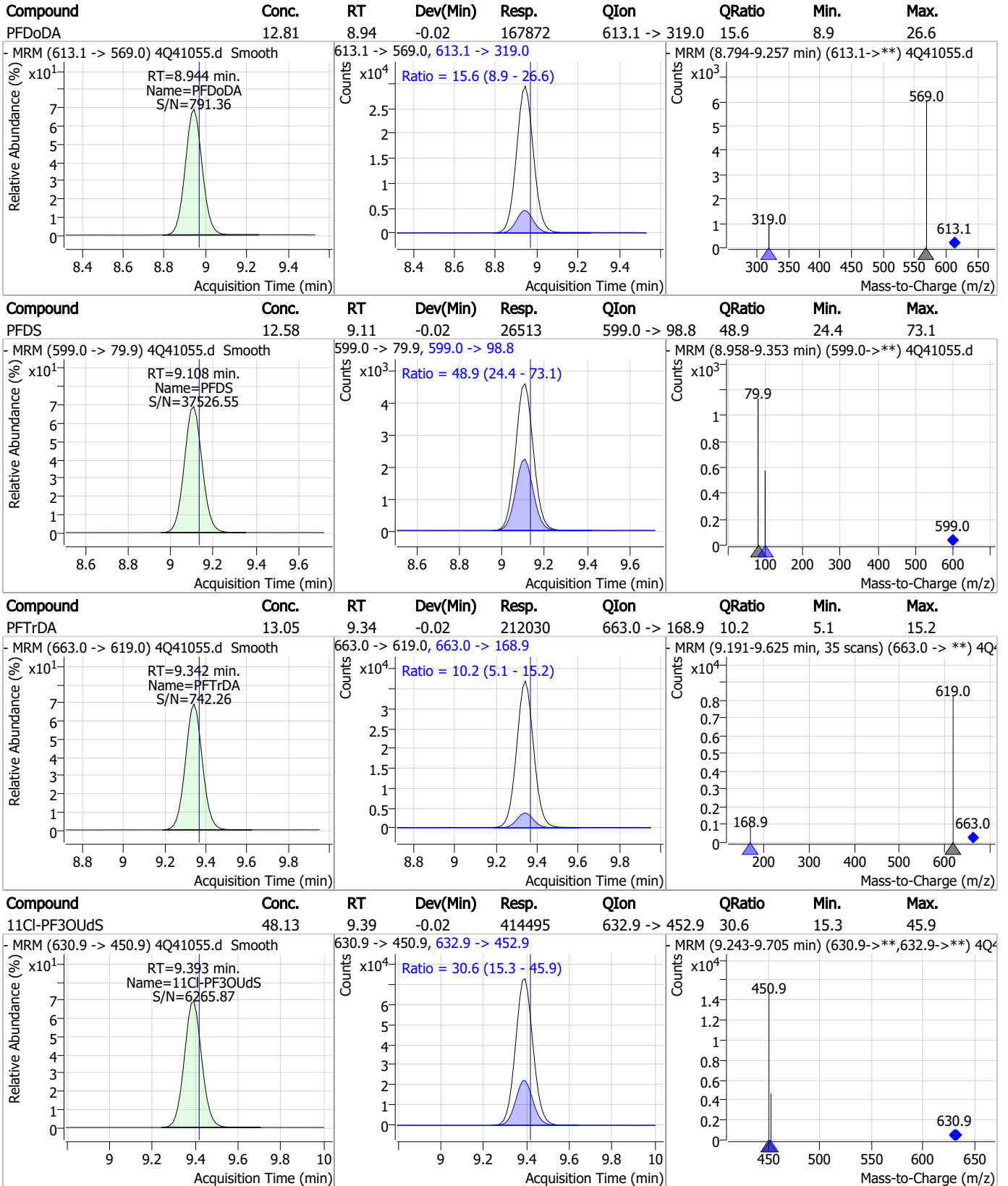


7.5.2

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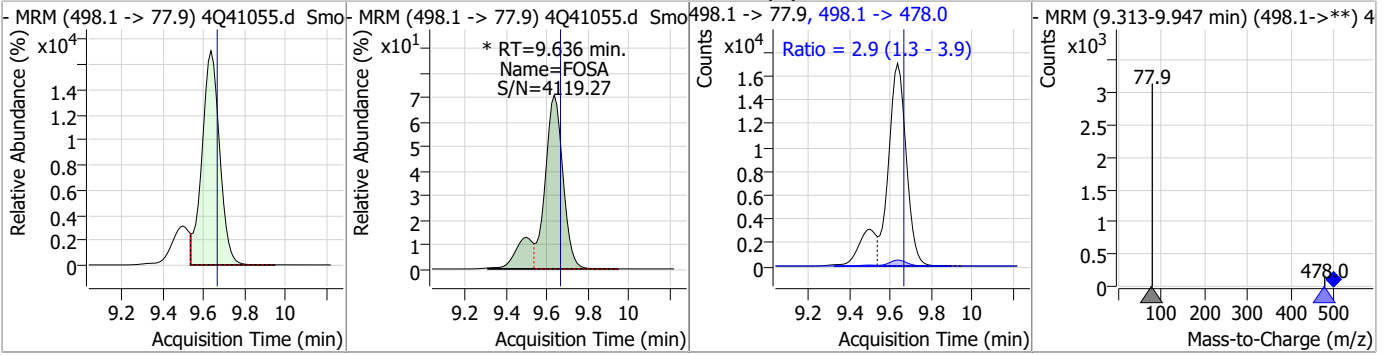


Perfluorinated Compounds by LC/MS/MS

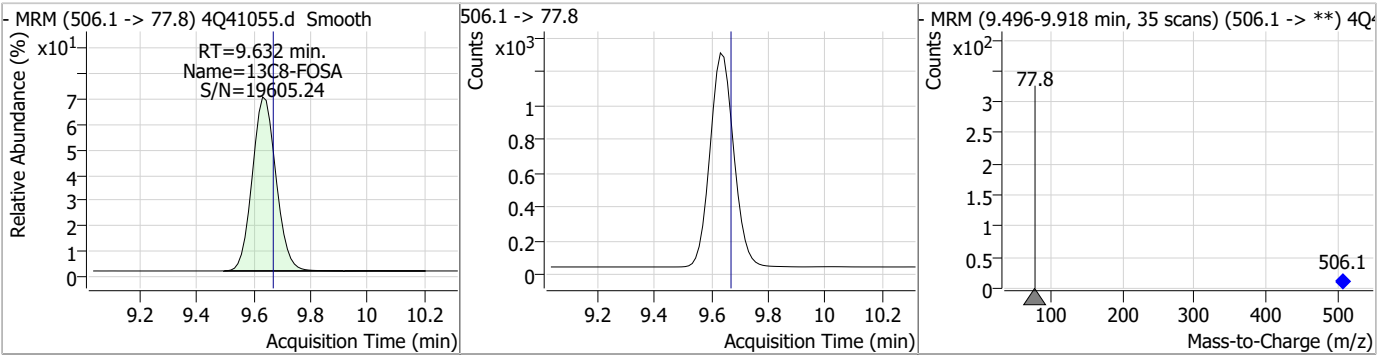


Perfluorinated Compounds by LC/MS/MS

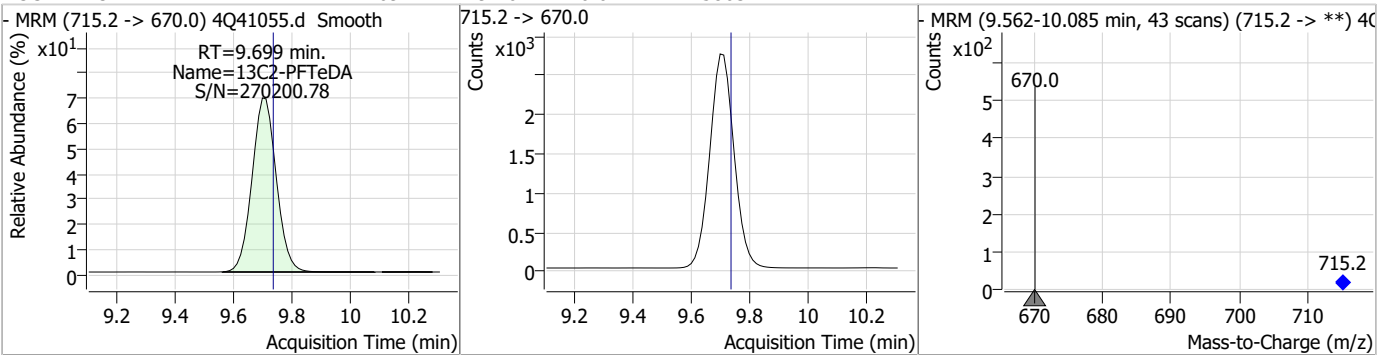
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	30.80	9.64	-0.02	120184 (m)	498.1 -> 478.0	2.9	1.3	3.9



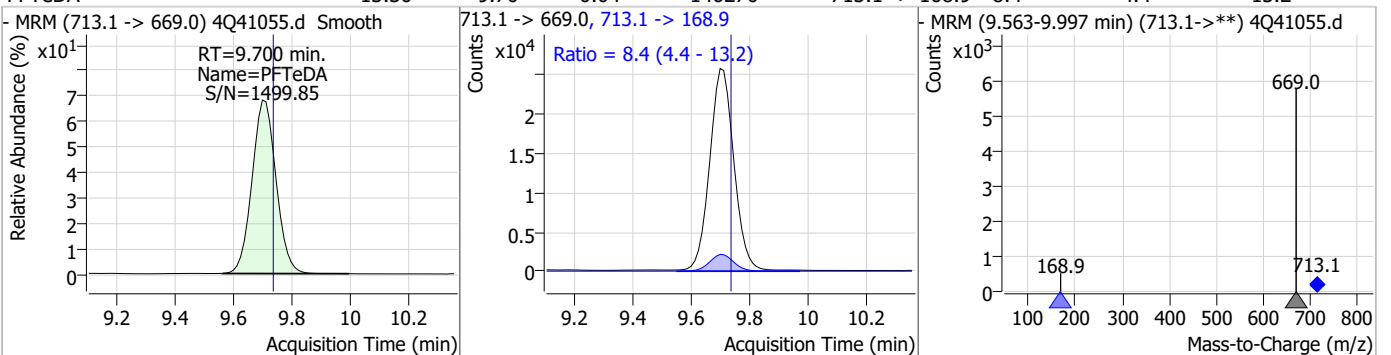
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.25	9.63	-0.04	7342				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.09	9.70	-0.04	15803				

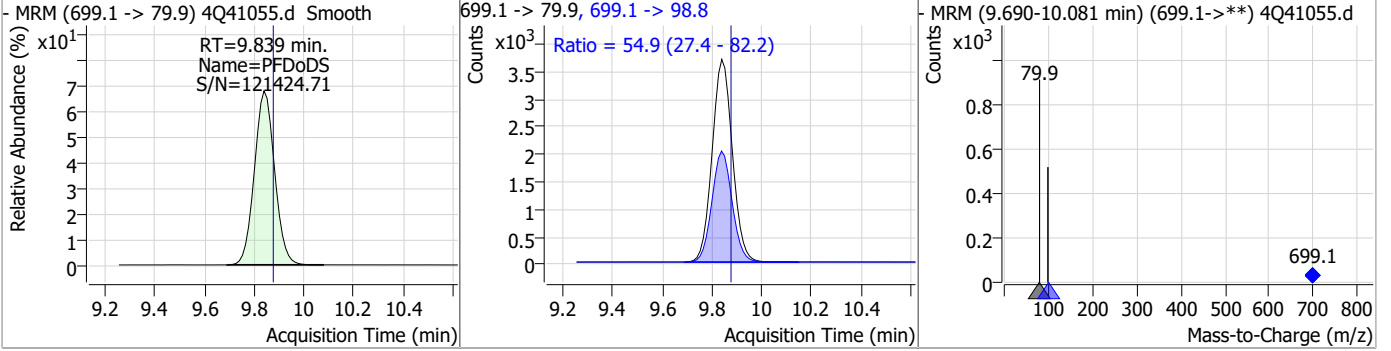


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	13.30	9.70	-0.04	146270	713.1 -> 168.9	8.4	4.4	13.2

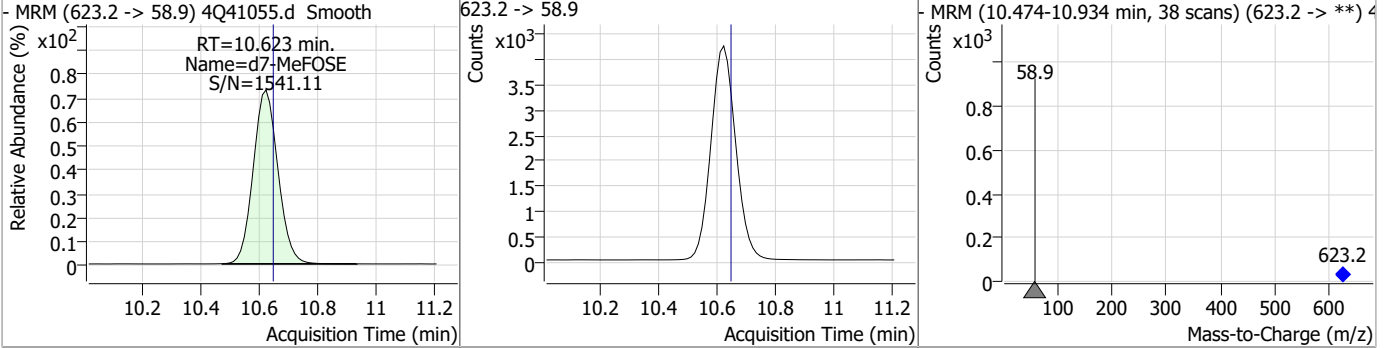


Perfluorinated Compounds by LC/MS/MS

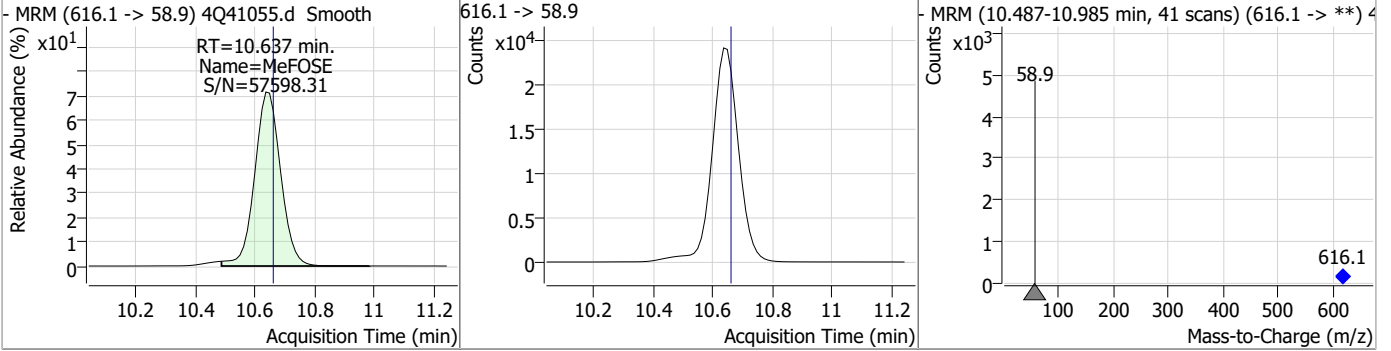
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	12.37	9.84	-0.04	20829	699.1 -> 98.8	54.9	27.4	82.2



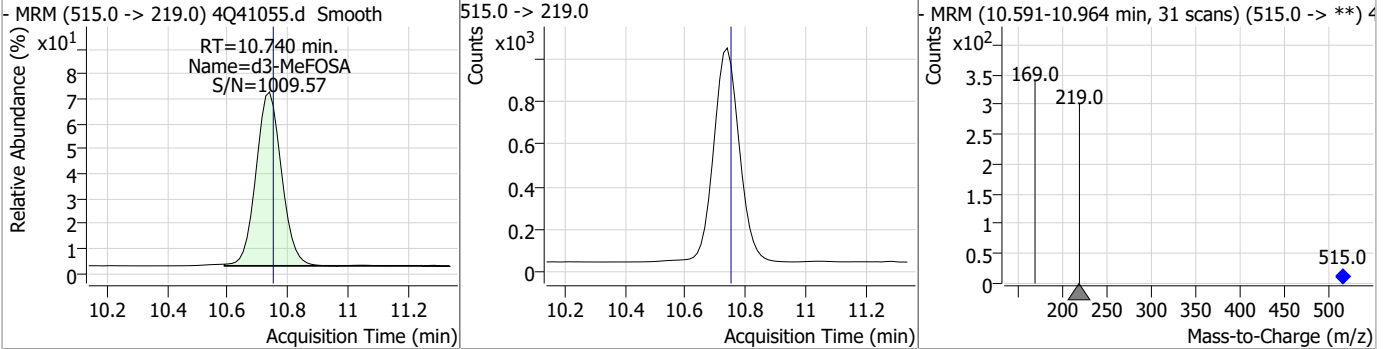
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.19	10.62	-0.02	24959				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	140.25	10.64	-0.02	146924				



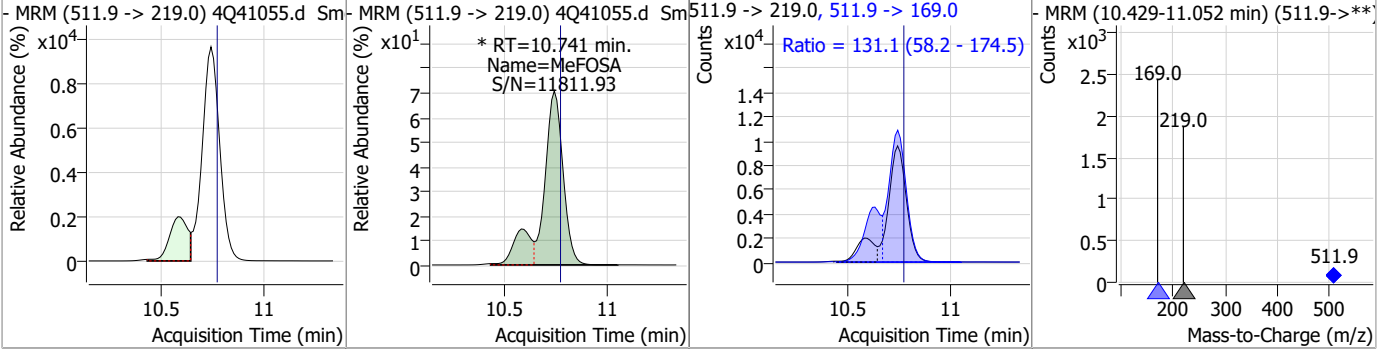
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.34	10.74	-0.01	5933				



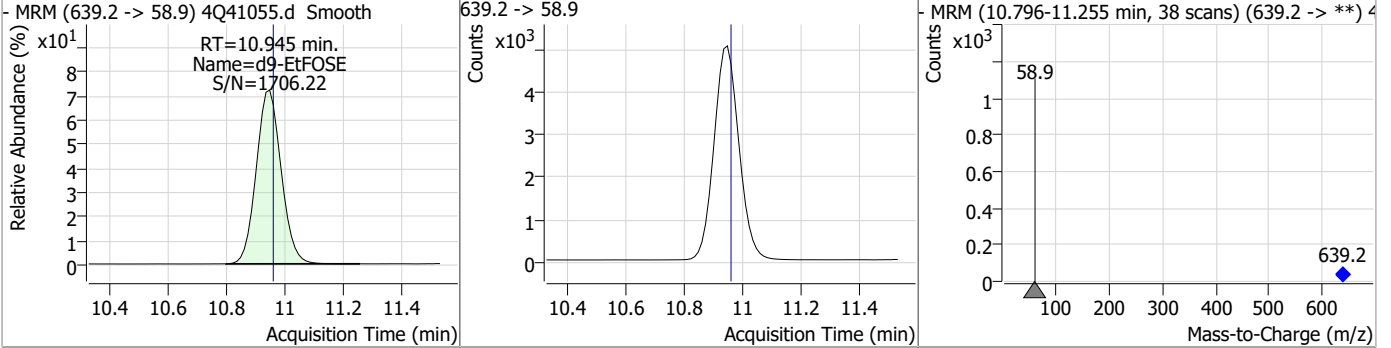
7.5.2
7

Perfluorinated Compounds by LC/MS/MS

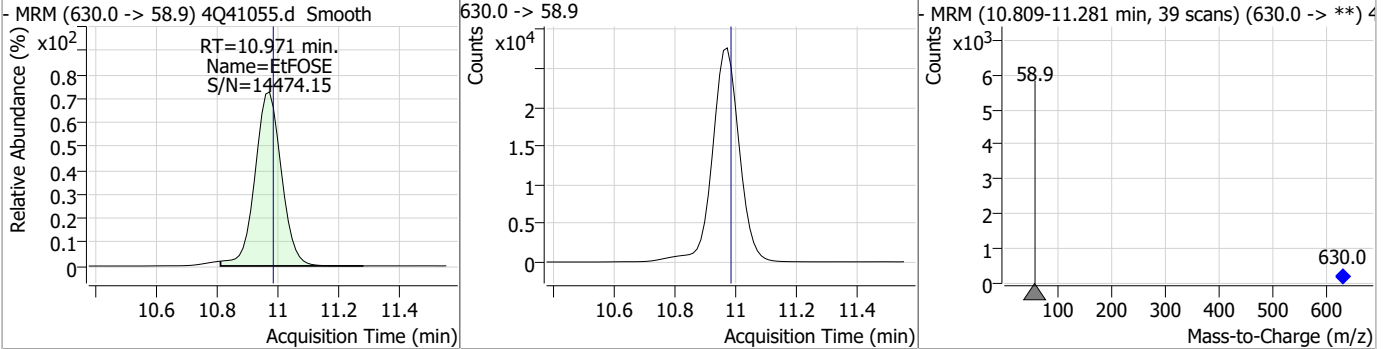
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	31.89	10.74	-0.02	69597 (m)	511.9 -> 169.0	131.1	58.2	174.5



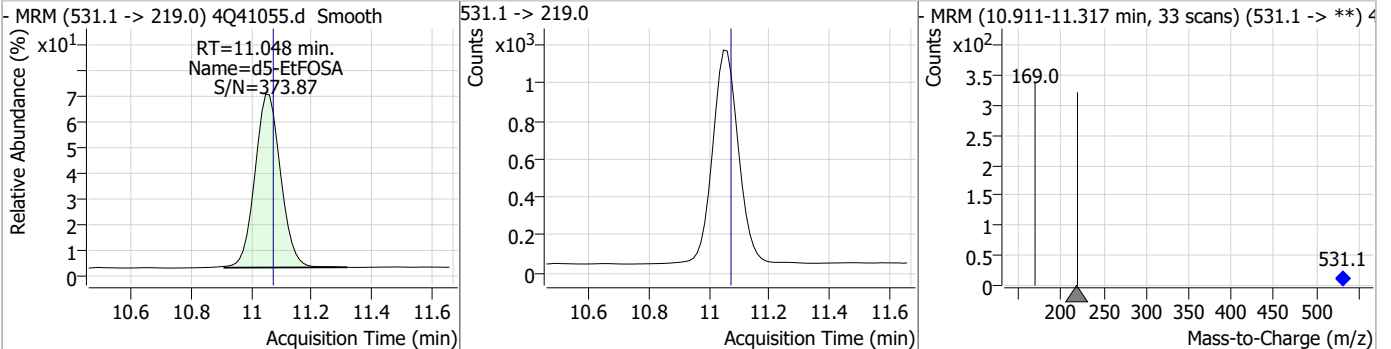
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.43	10.95	-0.01	29997				



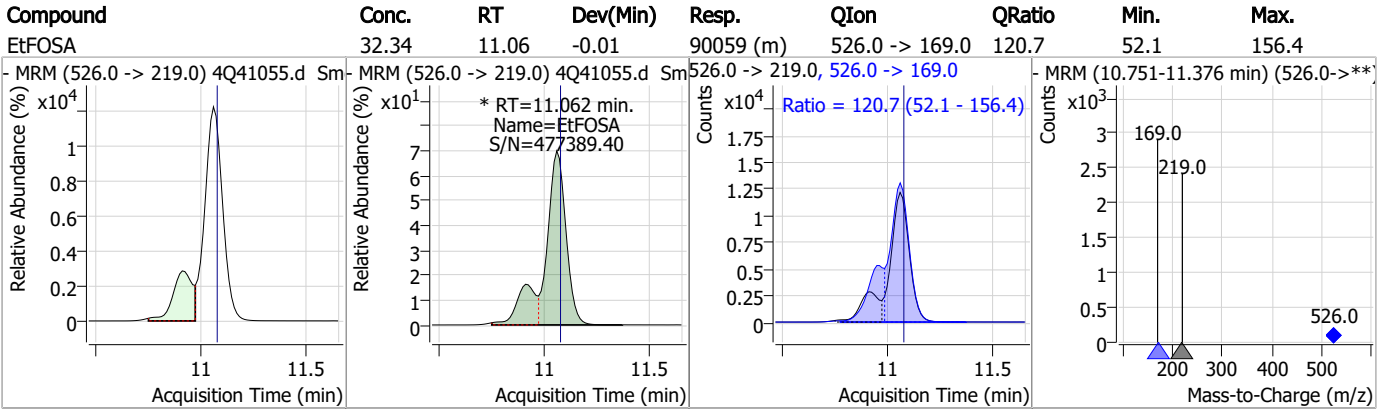
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	141.67	10.97	-0.01	167589				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.30	11.05	-0.02	6649				



Perfluorinated Compounds by LC/MS/MS



7.5.2

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Manual Integration Approval Summary

Sample Number: S4Q587-RT Method: EPA DRAFT 1633
Lab FileID: 4Q41055.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 15:55 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.05	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.17	Split peak
Perfluorononanoic acid	375-95-1		7.45	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.34	Split peak
PFOSA	754-91-6		9.64	Split peak
MeFOSA	31506-32-8		10.74	Split peak
EtFOSA	4151-50-2		11.06	Split peak

7.5.2.1
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 13 February 2023 12:08:05
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.62E+0 [R] (Torr); 3.50E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	4000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	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	112.96	-0.03	Pass	0.70	0.67	-0.03	Pass	168913
302.00	301.99	-0.01	Pass	0.70	0.69	-0.01	Pass	296625
601.98	601.99	0.01	Pass	0.70	0.74	0.04	Pass	404576
1033.99	1033.99	0.00	Pass	0.70	0.74	0.04	Pass	533578
1633.95	1633.91	-0.04	Pass	0.70	0.72	0.02	Pass	1156184
2233.91	2233.86	-0.05	Pass	0.70	0.75	0.05	Pass	759336

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.14	0.14	Pass	0.70	0.57	-0.13	Pass	43796
112.99	113.01	0.02	Pass	0.70	0.67	-0.03	Pass	151037
302.00	302.01	0.01	Pass	0.70	0.66	-0.04	Pass	226575
601.98	601.98	0.00	Pass	0.70	0.67	-0.03	Pass	251288
1033.99	1033.90	-0.09	Pass	0.70	0.69	-0.01	Pass	206859
1633.95	1633.68	-0.27	Adjust	0.70	0.80	0.10	Pass	297816
2233.91	2233.62	-0.29	Pass	0.70	0.90	0.20	Adjust	221118

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.94	-0.05	Pass	1.20	1.12	-0.08	Pass	218688
302.00	301.92	-0.08	Pass	1.20	1.34	0.14	Pass	373007
601.98	601.98	0.00	Pass	1.20	1.38	0.18	Pass	689165
1033.99	1033.99	0.00	Pass	1.20	1.41	0.21	Pass	1116494
1633.95	1633.91	-0.04	Pass	1.20	1.29	0.09	Pass	2911878
2233.91	2233.80	-0.11	Pass	1.20	1.15	-0.05	Pass	1718286

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.16	0.16	Pass	1.20	1.03	-0.17	Pass	59717
112.99	113.04	0.05	Pass	1.20	1.15	-0.05	Pass	205020
302.00	302.01	0.01	Pass	1.20	1.40	0.20	Pass	329190
601.98	602.00	0.02	Pass	1.20	1.51	0.31	Pass	503435
1033.99	1033.94	-0.05	Pass	1.20	1.61	0.41	Pass	403587
1633.95	1633.68	-0.27	Pass	1.20	1.63	0.43	Pass	781823
2233.91	2233.54	-0.37	Pass	1.20	1.52	0.32	Pass	491767

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.93	-0.06	Pass	2.50	2.39	-0.11	Pass	307538
302.00	301.88	-0.12	Pass	2.50	2.62	0.12	Pass	476856
601.98	602.03	0.05	Pass	2.50	2.64	0.14	Pass	1064120
1033.99	1034.05	0.06	Pass	2.50	2.70	0.20	Pass	2061775
1633.95	1633.91	-0.04	Pass	2.50	2.78	0.28	Pass	6887221
2233.91	2233.86	-0.05	Pass	2.50	2.74	0.24	Pass	5753551

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.15	0.15	Pass	2.50	2.26	-0.24	Pass	77349
112.99	113.04	0.05	Pass	2.50	2.42	-0.08	Pass	277191
302.00	302.02	0.02	Pass	2.50	2.62	0.12	Pass	436943
601.98	601.97	-0.01	Pass	2.50	2.78	0.28	Pass	683350
1033.99	1033.91	-0.08	Pass	2.50	2.85	0.35	Pass	627524
1633.95	1633.67	-0.28	Pass	2.50	2.83	0.33	Pass	1296283
2233.91	2233.40	-0.51	Pass	2.50	2.68	0.18	Pass	1010571

7.6.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41057.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 4:23:46 PM
 Sample Name : ic587-1
 Vial : P1-A2
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	138770	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	77451	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	58408	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	33198	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	40752	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	18086	1.25 µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	16338	1.25 µg/L	-0.013
M7-PFUnDA	8.523	570.0 -> 525.1	22568	1.25 µg/L	-0.012
M2-PFDoDA	8.955	615.1 -> 570.0	20410	1.25 µg/L	-0.012
M2-PFTeDA	9.724	715.2 -> 670.0	16587	1.25 µg/L	-0.012
M8-FOSA	9.657	506.1 -> 77.8	8596	2.50 µg/L	-0.012
M3-PFBS	5.501	302.1 -> 79.9	11573	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7234	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	8974	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1485	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2602	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	4124	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	19969	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	34765	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	15913	5.00 µg/L	0.000
M7-MeFOSE	10.636	623.2 -> 58.9	28284	25.00 µg/L	-0.012
M9-EtFOSE	10.958	639.2 -> 58.9	34768	25.00 µg/L	0.000
M5-EtFOSA	11.060	531.1 -> 219.0	8096	2.50 µg/L	-0.012
M3-MeFOSA	10.752	515.0 -> 219.0	6228	2.50 µg/L	0.000
13C4-PFOS	8.230	502.8 -> 79.9	9290	2.50 µg/L	-0.012
13C3-PFBA	3.155	216.0 -> 172.0	83326	5.00 µg/L	0.000
18O2-PFHxS	7.178	403.0 -> 83.9	5006	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	49413	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16083	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	21114	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	52925	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1485	5.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2602	6.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.9%		
13C2-8:2FTS	7.865	529.1 -> 80.9	4124	6.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.2%		
13C2-PFDoDA	8.955	615.1 -> 570.0	20410	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-PFTeDA	9.724	715.2 -> 670.0	16587	1.13 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.8%		
13C3-PFBS	5.501	302.1 -> 79.9	11573	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C3-PFHxS	7.179	402.1 -> 79.9	7234	2.58 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 = 103.1%	
13C4-PFBA	3.152	216.8 -> 171.9	138770	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	6.417	367.1 -> 322.0	33198	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFHxA	5.546	318.0 -> 273.0	58408	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C5-PFPeA	4.500	268.3 -> 223.0	77451	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C6-PFDA	8.066	519.1 -> 474.1	16338	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C7-PFUnDA	8.523	570.0 -> 525.1	22568	1.33 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C8-FOSA	9.657	506.1 -> 77.8	8596	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOA	7.062	421.1 -> 376.0	40752	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-PFOS	8.230	507.1 -> 79.9	8974	2.41 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C9-PFNA	7.596	472.1 -> 427.0	18086	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.6%	
d3-MeFOSAA	8.136	573.2 -> 419.0	19969	4.88 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	34765	10.10 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d3-MeFOSA	10.752	515.0 -> 219.0	6228	2.34 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.5%	
d5-EtFOSAA	8.346	589.2 -> 419.0	15913	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
d7-MeFOSE	10.636	623.2 -> 58.9	28284	24.97 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d9-EtFOSE	10.958	639.2 -> 58.9	34768	24.71 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
d5-EtFOSA	11.060	531.1 -> 219.0	8096	2.66 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.3%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	1843	0.78 µg/L	94
		327.1 -> 80.9	632		
6:2FTS	6.836	427.1 -> 407.0	1705	0.73 µg/L	94
		427.1 -> 80.9	567		
8:2FTS	7.866	527.1 -> 507.0	1426	0.67 µg/L	84
		527.1 -> 80.8	527		
EtFOSAA	8.347	584.2 -> 419.1	415	0.15 µg/L	m 95
		584.2 -> 526.0	178		
FOSA	9.661	498.1 -> 77.9	890	0.19 µg/L	98
		498.1 -> 478.0	17		
MeFOSAA	8.137	570.1 -> 419.0	530	0.19 µg/L	m 98
		570.1 -> 483.0	71		
PFBA	3.158	212.8 -> 168.9	2383	0.72 µg/L	100
PFBS	5.502	298.7 -> 79.9	644	0.14 µg/L	81
		298.7 -> 98.8	319		
PFDA	8.067	512.9 -> 469.0	2162	0.19 µg/L	98
		512.9 -> 219.0	447		
PFDODA	8.968	613.1 -> 569.0	2453	0.18 µg/L	95
		613.1 -> 319.0	379		
PFDS	9.121	599.0 -> 79.9	429	0.19 µg/L	94

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	192			
PFHpA	6.417	363.1 -> 319.0	3372	0.19	µg/L	96
		363.1 -> 169.0	620			
PFHpS	7.736	449.0 -> 79.9	525	0.19	µg/L	76
		449.0 -> 98.9	196			
PFHxA	5.549	313.0 -> 269.0	4189	0.21	µg/L	99
		313.0 -> 118.9	122			
PFHxS	7.180	398.7 -> 79.9	630	0.21	µg/L	m 97
		398.7 -> 98.9	337			
PFNA	7.596	463.0 -> 419.0	2004	0.18	µg/L	83
		463.0 -> 219.0	649			
PFNS	8.699	548.8 -> 79.9	348	0.18	µg/L	97
		548.8 -> 98.9	195			
PFOA	7.063	413.0 -> 369.0	3859	0.20	µg/L	95
		413.0 -> 169.0	663			
PFOS	8.231	498.9 -> 79.9	967	0.24	µg/L	m 80
		498.9 -> 98.8	419			
PFPeA	4.502	263.0 -> 219.0	6372	0.35	µg/L	100
PFPeS	6.484	349.1 -> 79.9	371	0.16	µg/L	# 63
		349.1 -> 98.9	268			
PFTeDA	9.725	713.1 -> 669.0	2177	0.19	µg/L	95
		713.1 -> 168.9	234			
PFTrDA	9.366	663.0 -> 619.0	2892	0.17	µg/L	100
		663.0 -> 168.9	293			
PFUnDA	8.524	563.1 -> 519.0	2686	0.21	µg/L	96
		563.1 -> 269.1	525			
11Cl-PF3OUdS	9.418	630.9 -> 450.9	5904	0.65	µg/L	99
		632.9 -> 452.9	1848			
9Cl-PF3ONS	8.563	530.8 -> 351.0	7783	0.71	µg/L	99
		532.8 -> 353.0	2403			
ADONA	6.668	376.9 -> 250.9	13981	0.70	µg/L	99
		376.9 -> 84.8	2482			
HFPO-DA	5.878	284.9 -> 168.9	2066	0.72	µg/L	94
		284.9 -> 184.9	299			
3:3FTCA	4.142	241.0 -> 177.0	889	0.83	µg/L	100
		241.0 -> 117.0	77			
5:3FTCA	6.333	341.0 -> 237.1	13772	4.50	µg/L	99
		341.0 -> 217.0	9715			
7:3FTCA	7.723	441.0 -> 316.9	5439	4.42	µg/L	88
		441.0 -> 336.9	13634			
EtFOSA	11.074	526.0 -> 219.0	540	0.16	µg/L	95
		526.0 -> 169.0	594			
EtFOSE	10.984	630.0 -> 58.9	2474	1.80	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	411	0.18	µg/L	82
		511.9 -> 169.0	561			
MeFOSE	10.662	616.1 -> 58.9	2159	1.82	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	377	0.21	µg/L	81
		699.1 -> 98.8	155			
NFDHA	5.453	295.0 -> 201.0	269	0.35	µg/L	95
		295.0 -> 84.9	73			
PFMBA	4.867	279.0 -> 85.1	3304	0.34	µg/L	100
PFMPA	3.727	229.0 -> 84.9	2713	0.35	µg/L	100
PFEESA	5.971	314.8 -> 134.9	4124	0.30	µg/L	99
		314.8 -> 82.9	129			

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

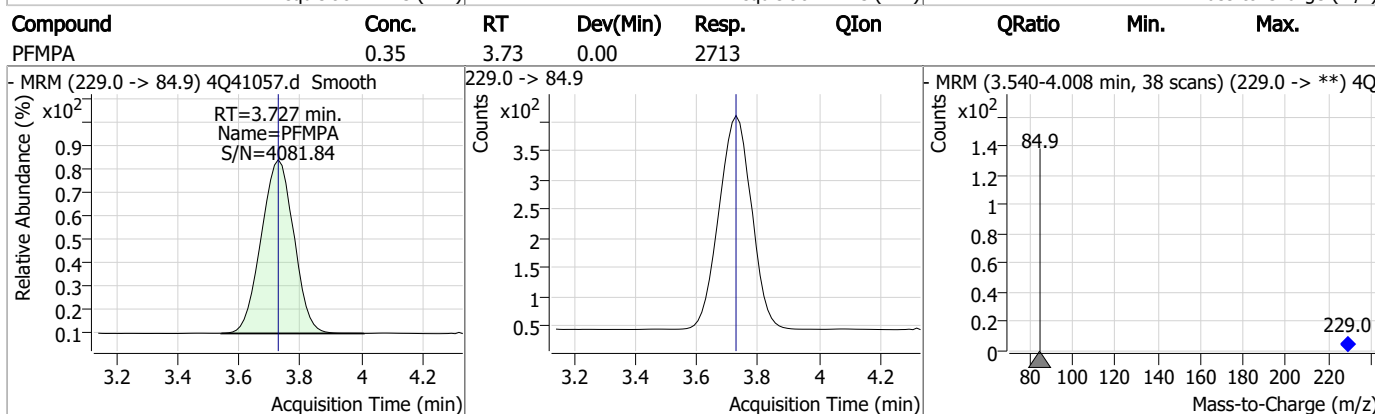
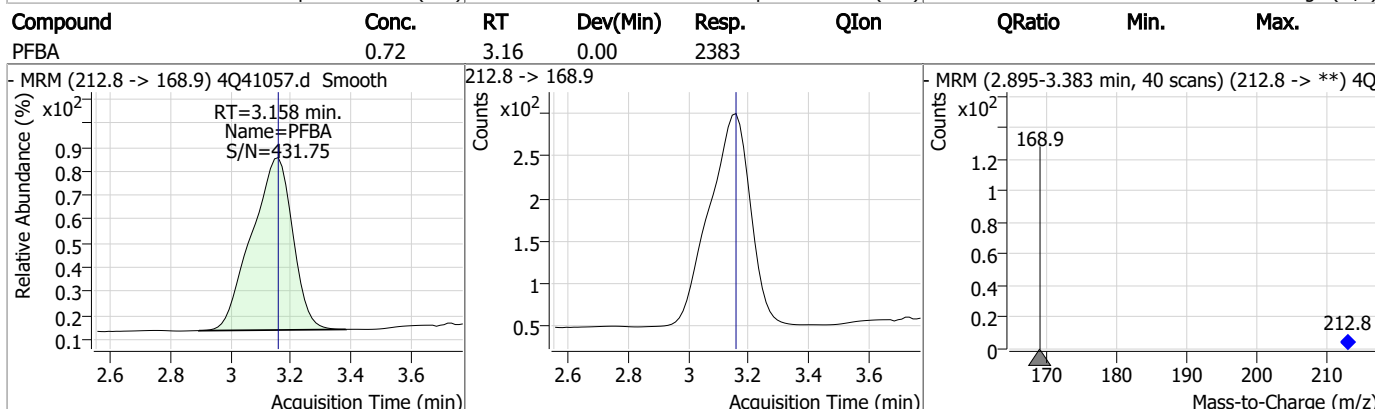
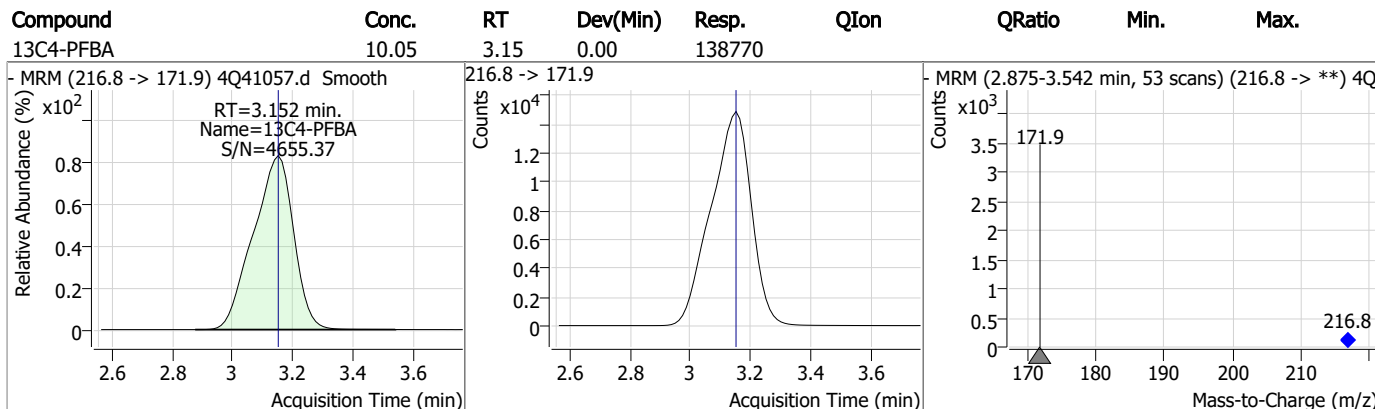
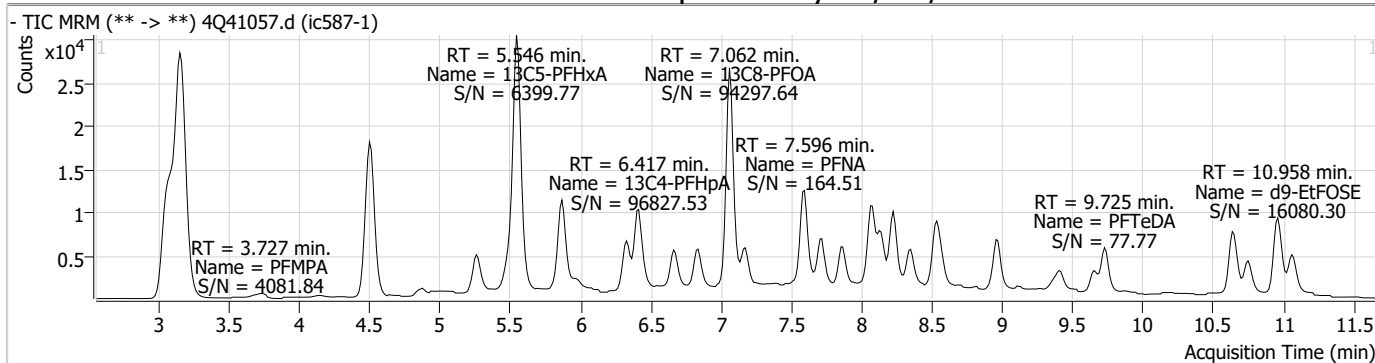
Perfluorinated Compounds by LC/MS/MS

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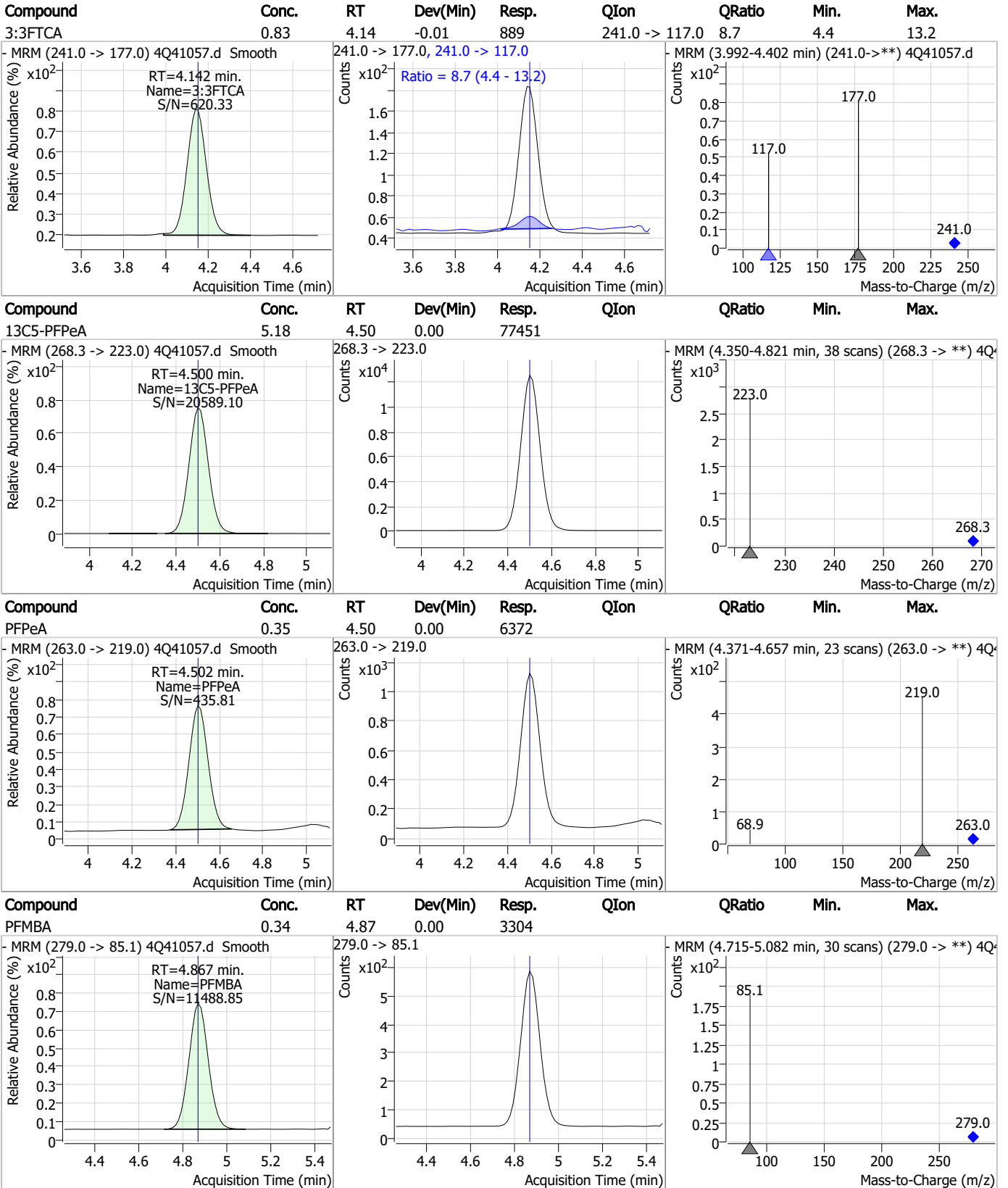


Perfluorinated Compounds by LC/MS/MS



7.6.2
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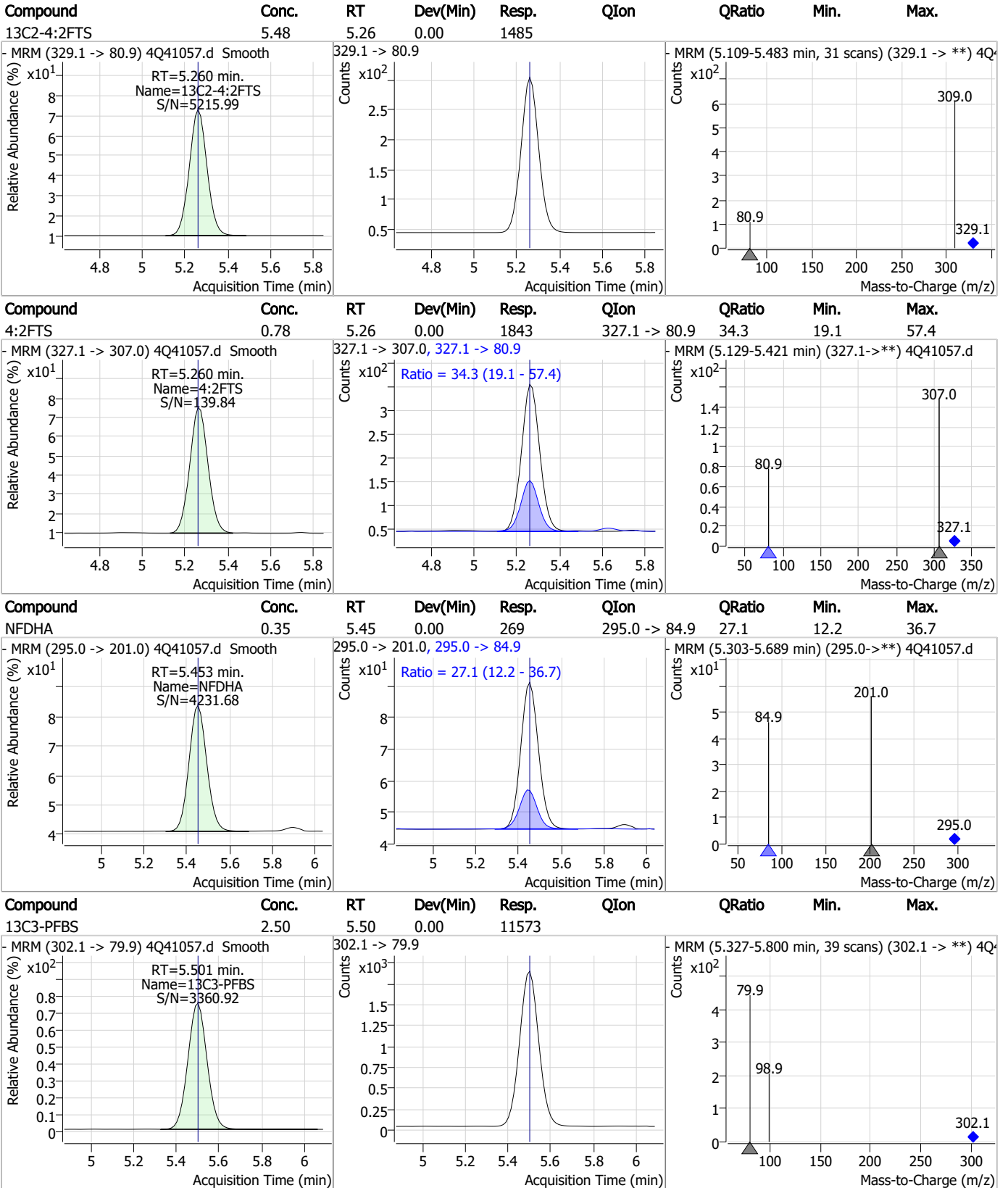
Perfluorinated Compounds by LC/MS/MS



7.6.2

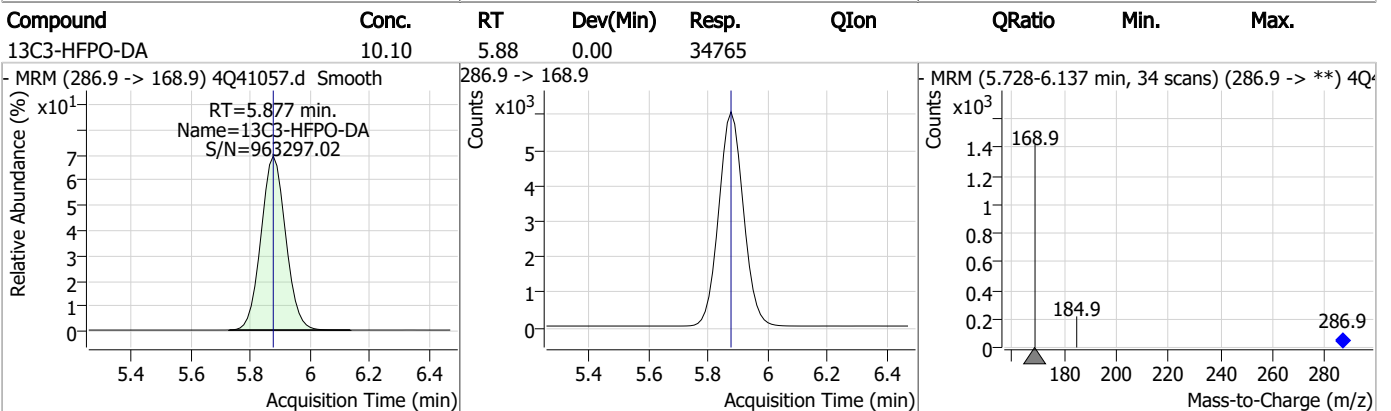
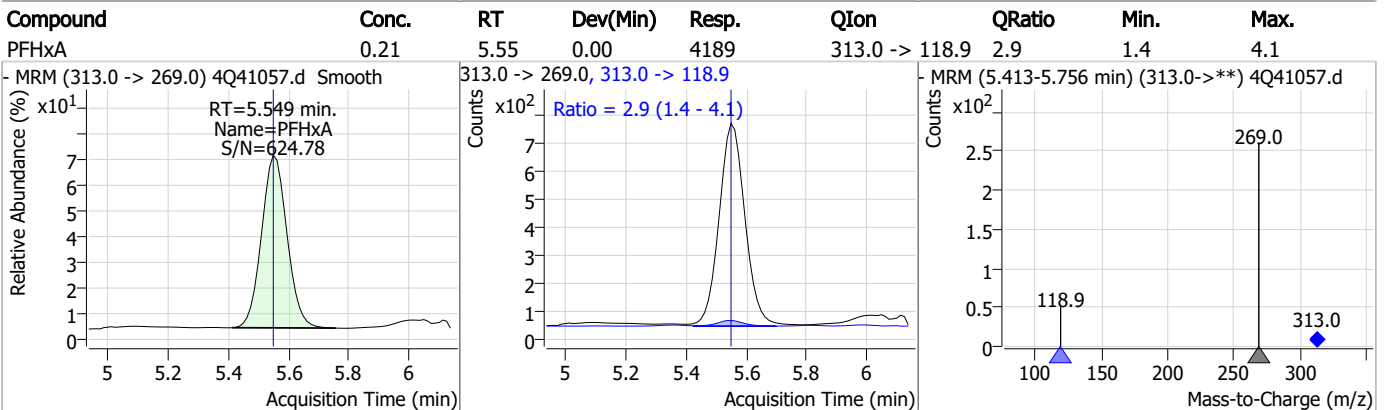
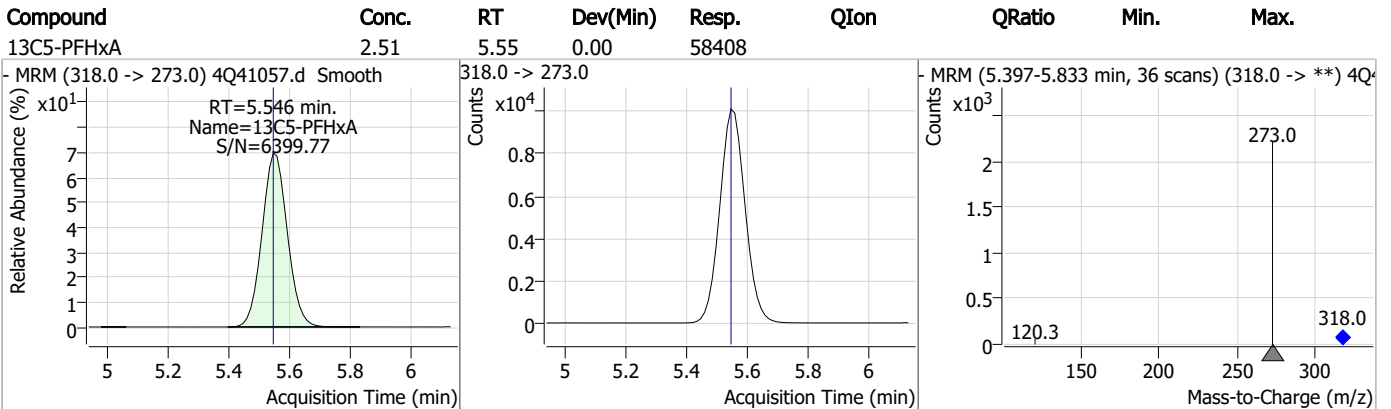
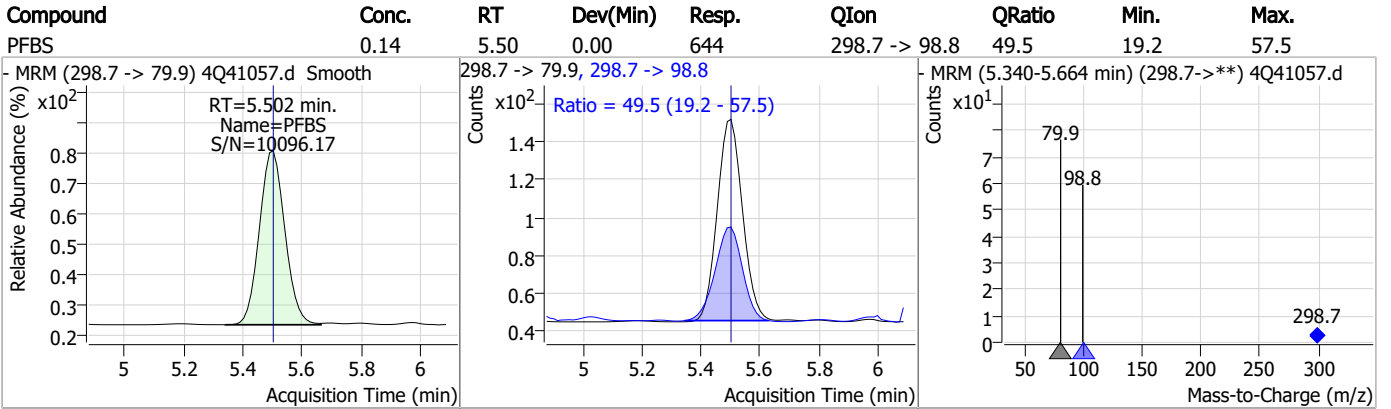
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Perfluorinated Compounds by LC/MS/MS



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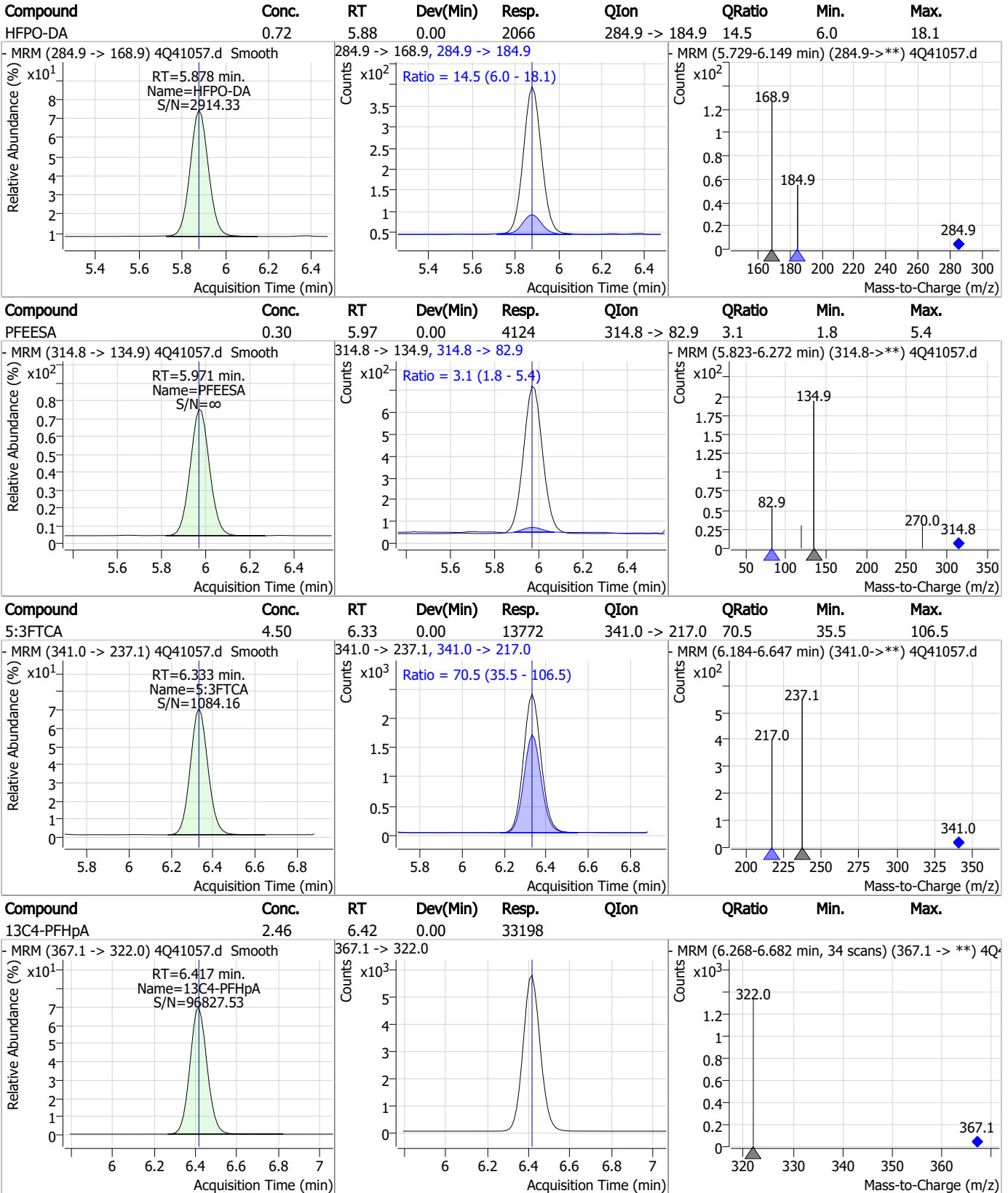
Perfluorinated Compounds by LC/MS/MS



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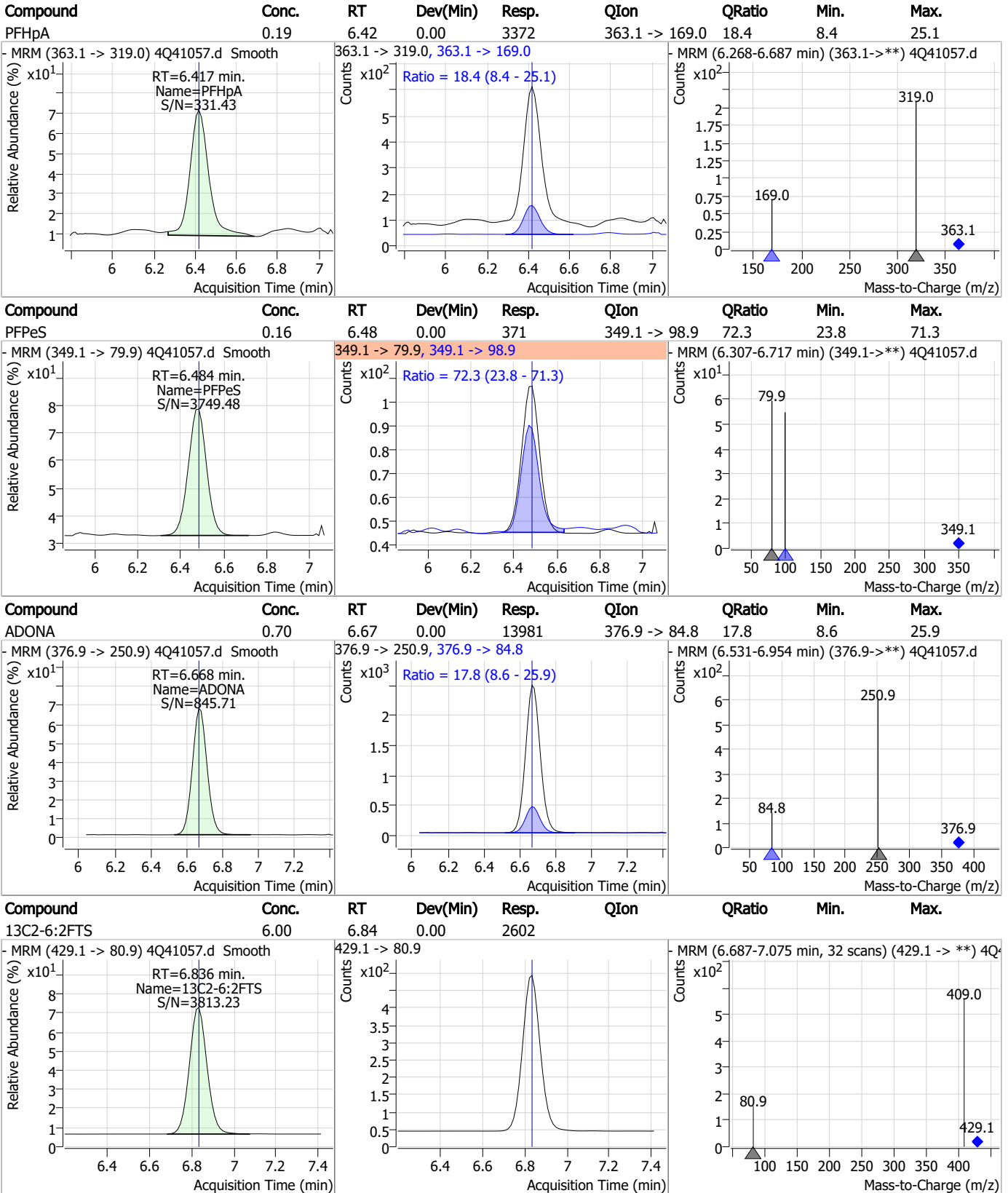
Perfluorinated Compounds by LC/MS/MS



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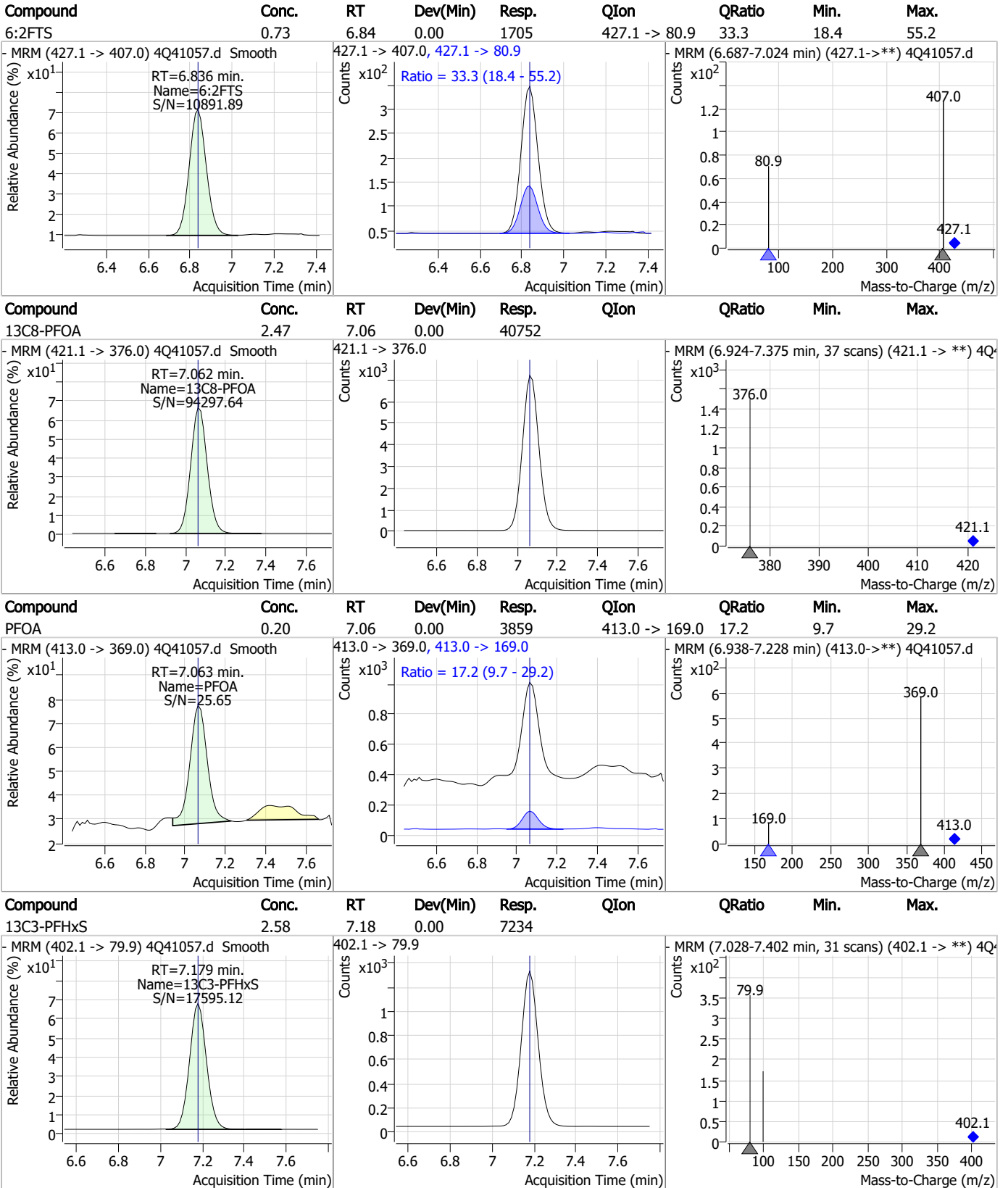
Perfluorinated Compounds by LC/MS/MS



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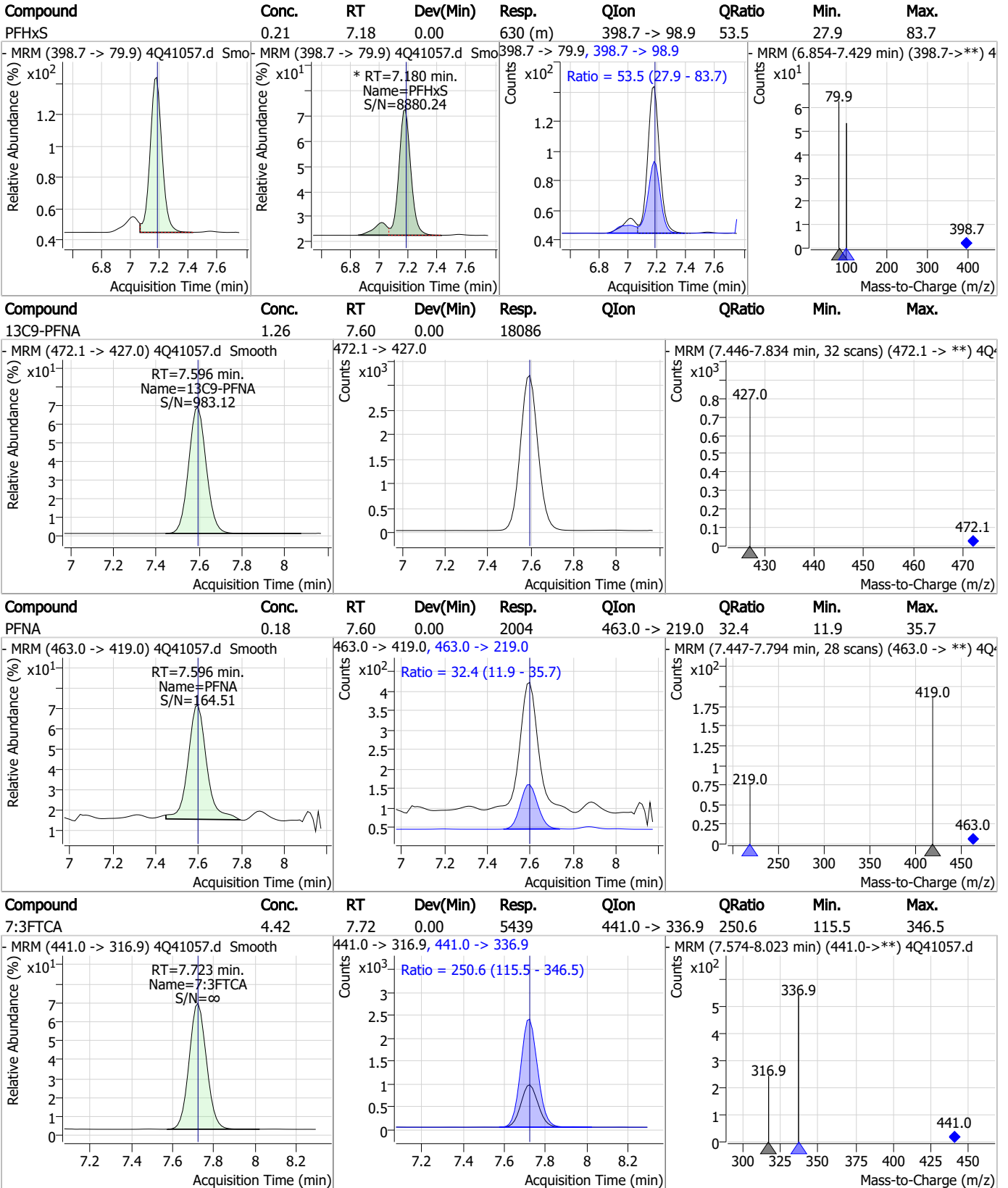
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

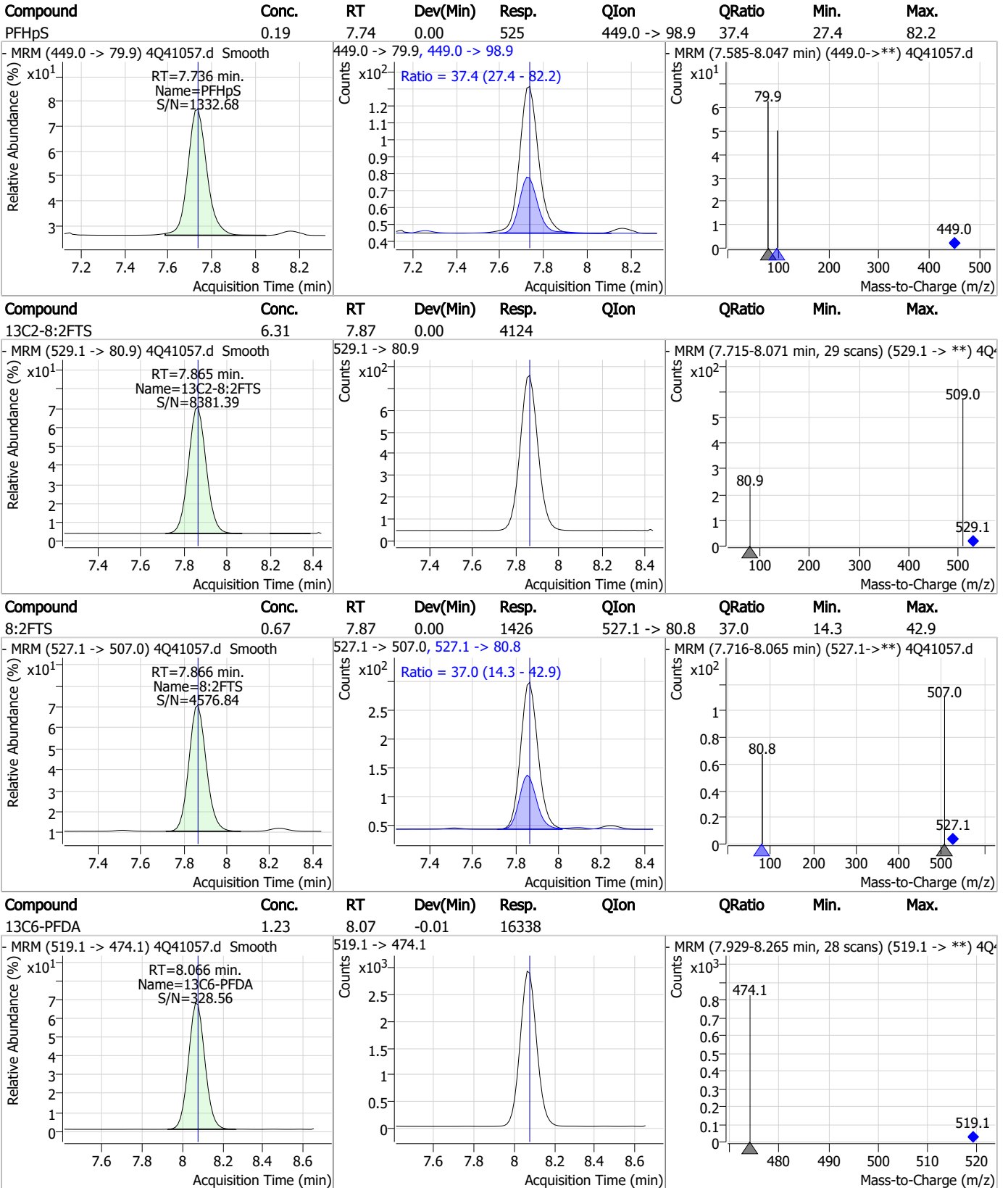


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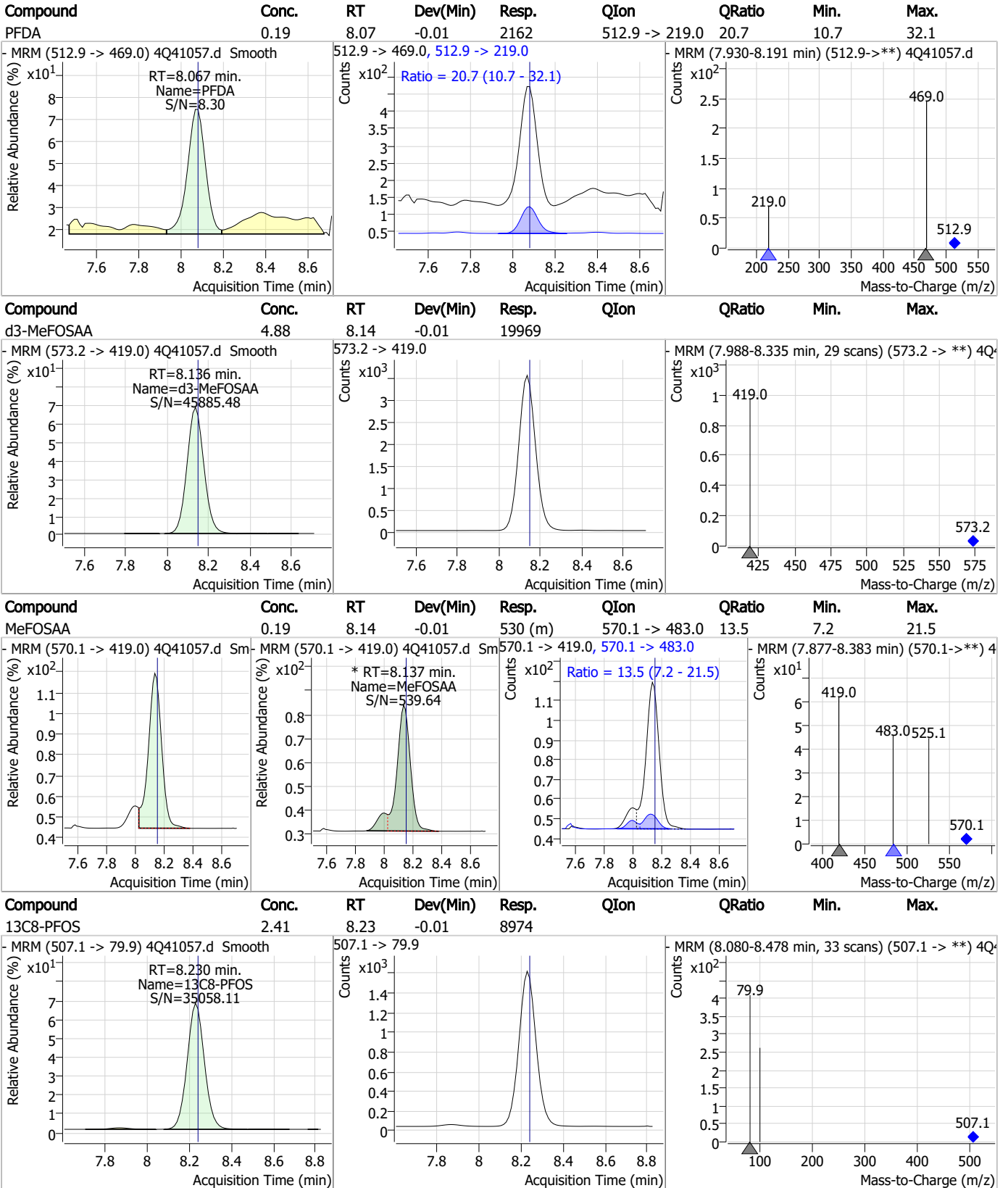
Perfluorinated Compounds by LC/MS/MS



7.6.2

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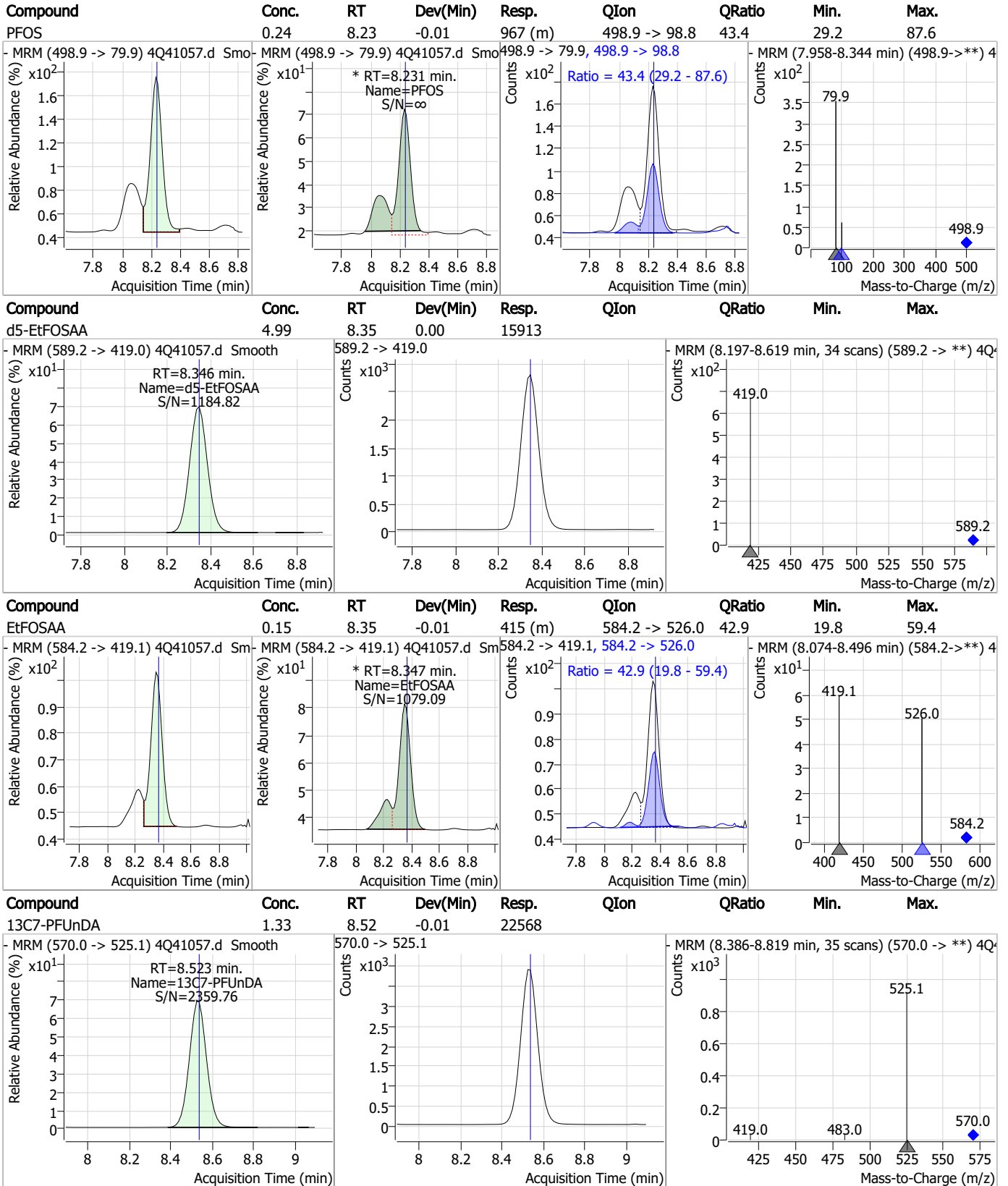
Perfluorinated Compounds by LC/MS/MS



7.6.2

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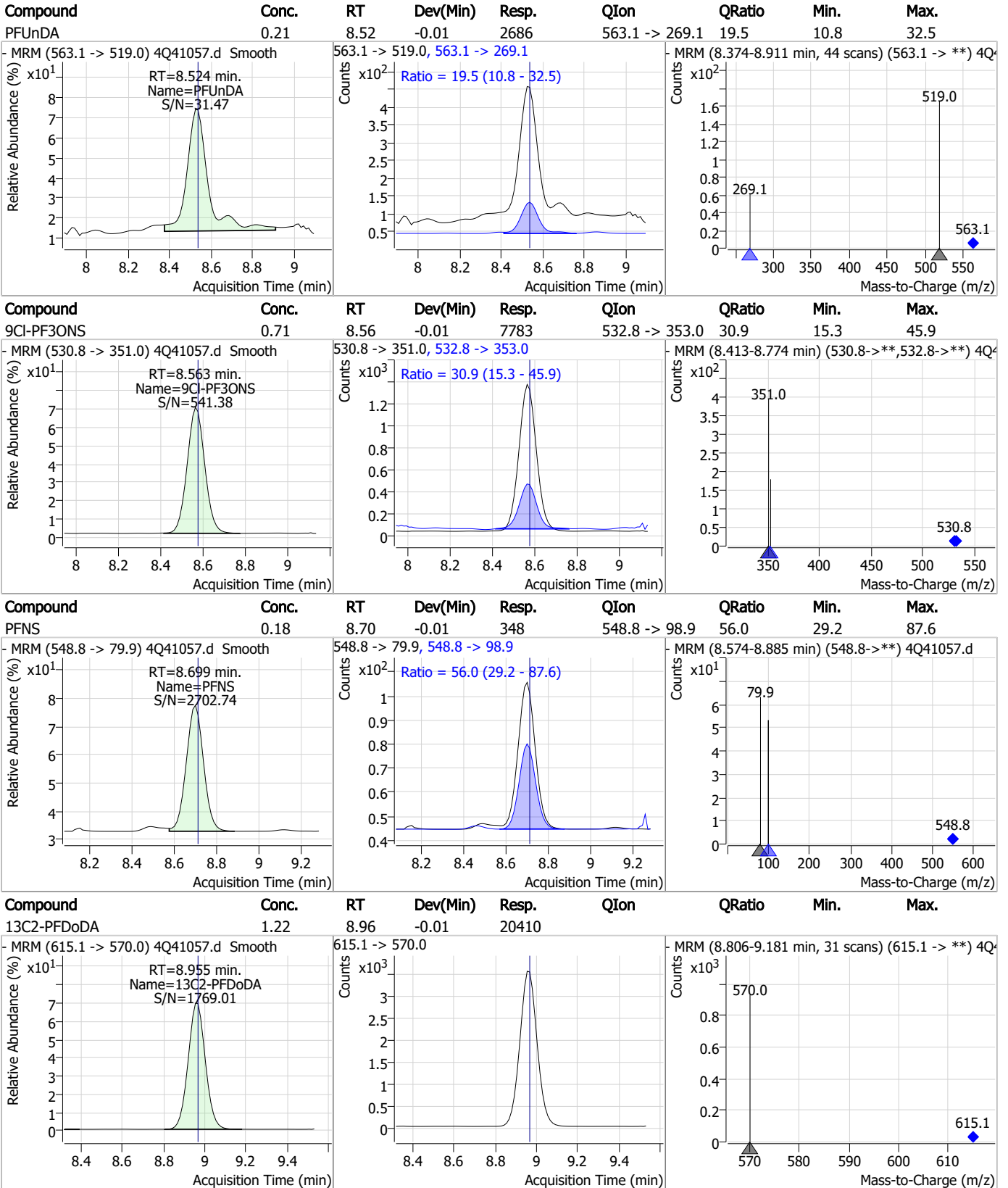
Perfluorinated Compounds by LC/MS/MS



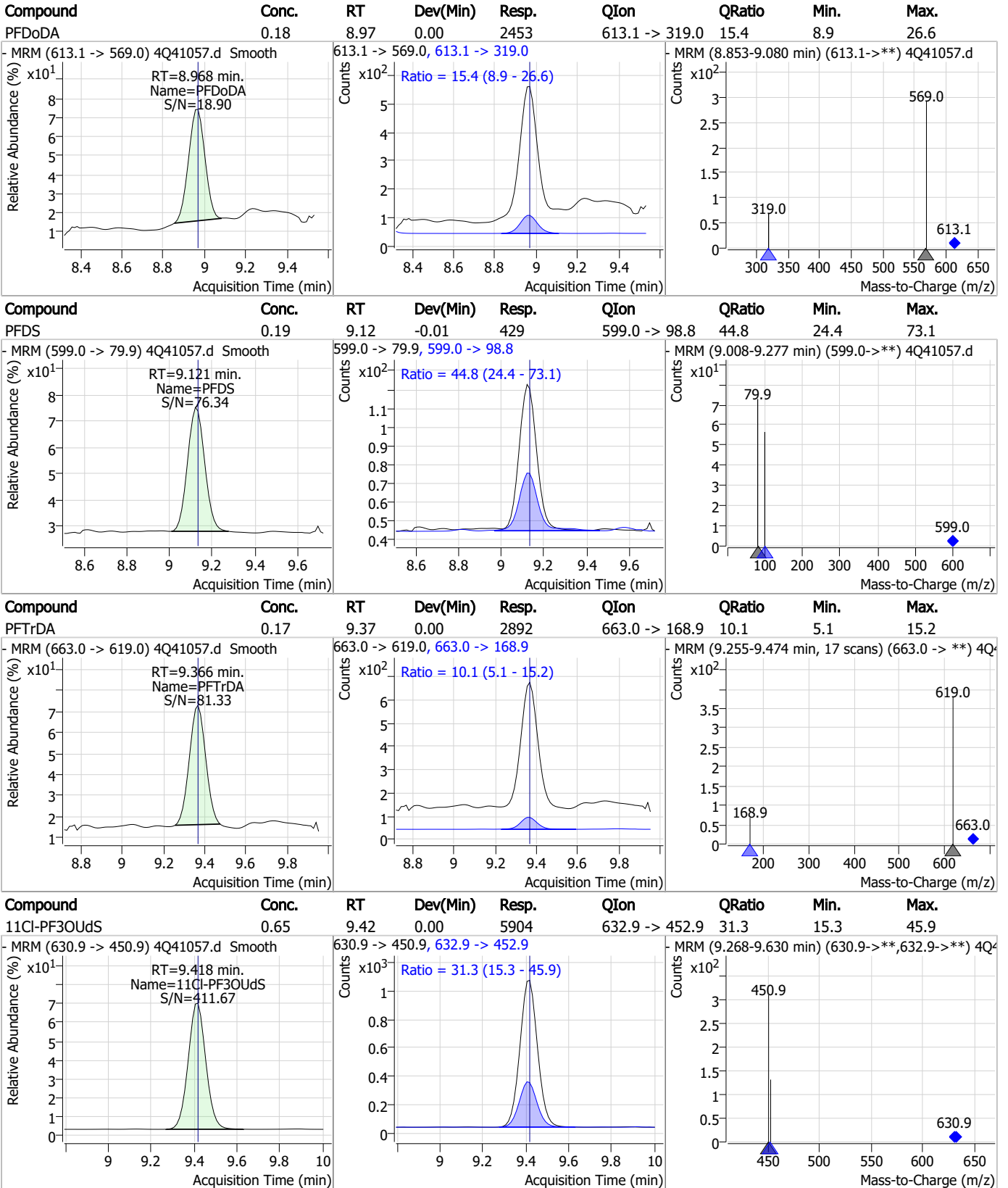
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

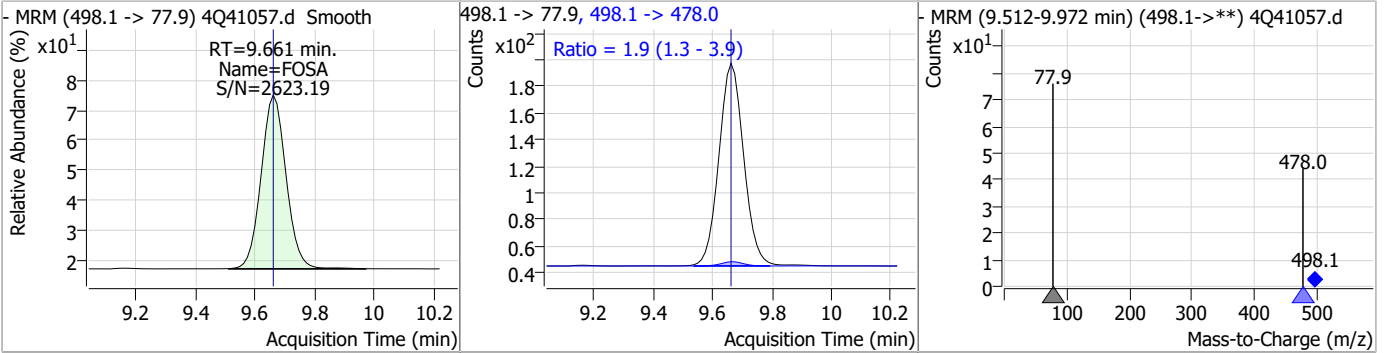


7.6.2
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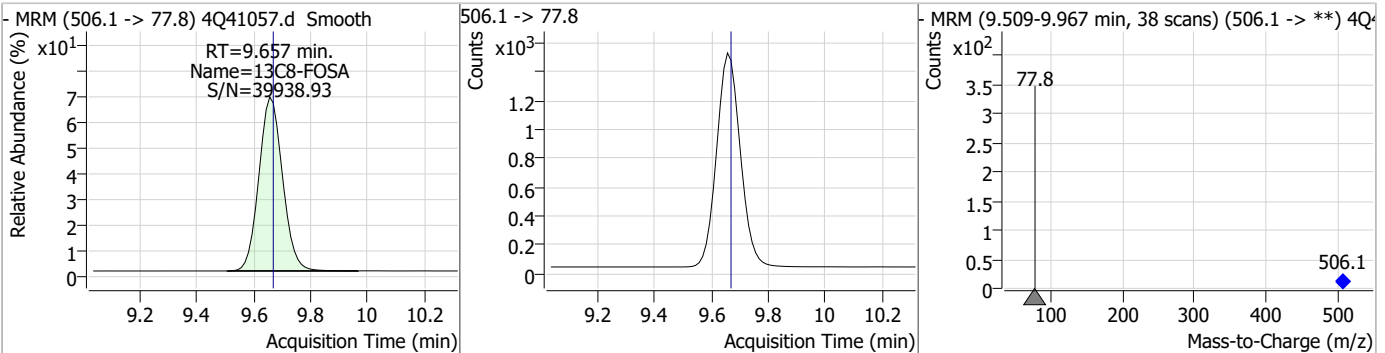


Perfluorinated Compounds by LC/MS/MS

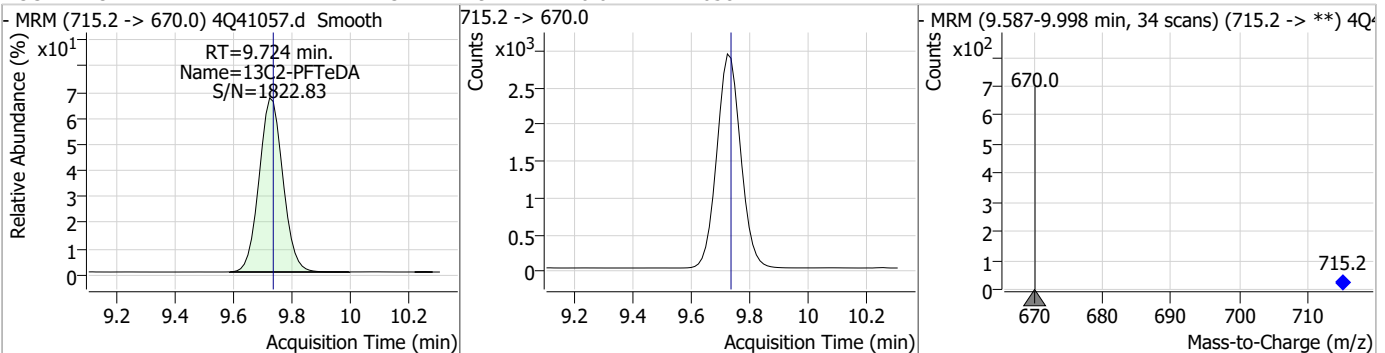
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.19	9.66	0.00	890	498.1 -> 478.0	1.9	1.3	3.9



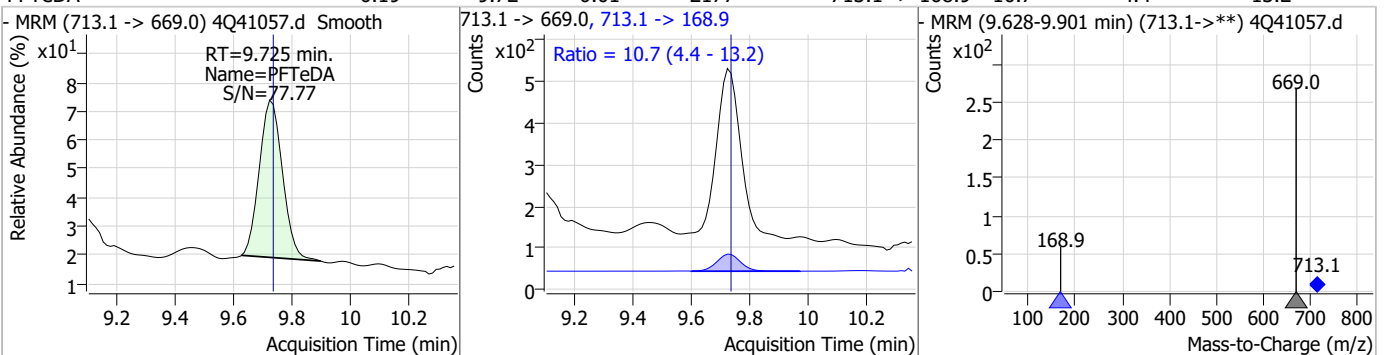
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.50	9.66	-0.01	8596				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.13	9.72	-0.01	16587				

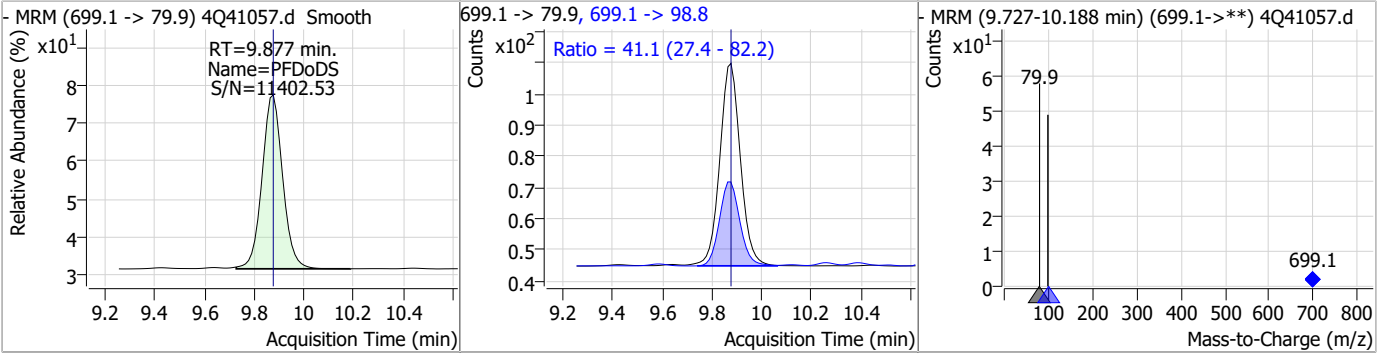


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.19	9.72	-0.01	2177	713.1 -> 168.9	10.7	4.4	13.2

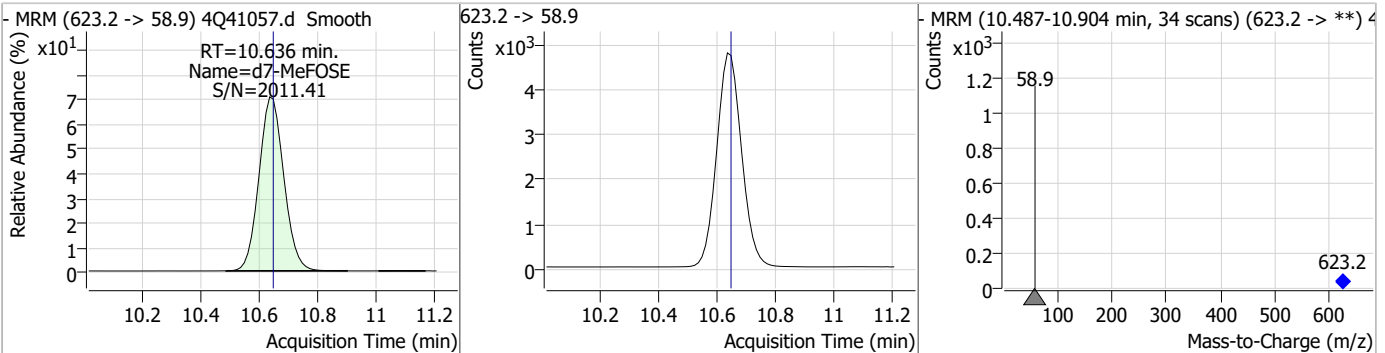


Perfluorinated Compounds by LC/MS/MS

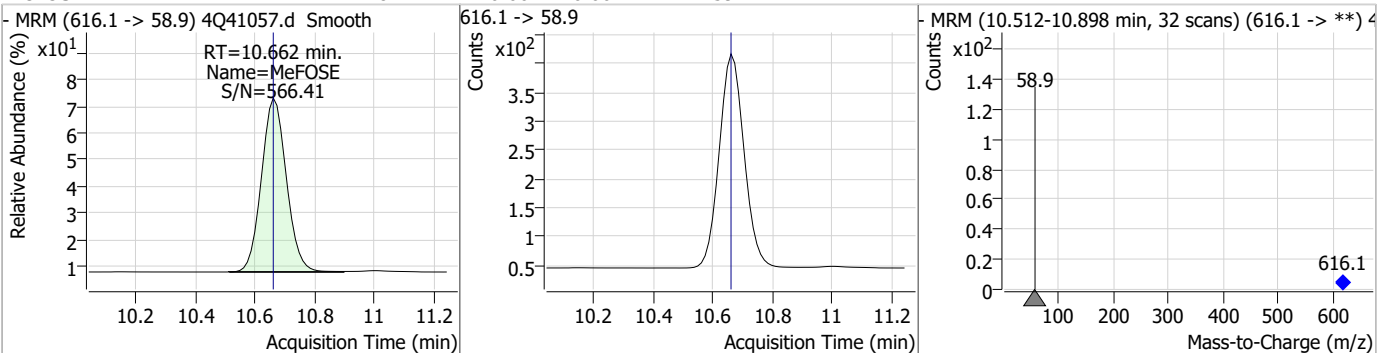
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.21	9.88	0.00	377	699.1 -> 98.8	41.1	27.4	82.2



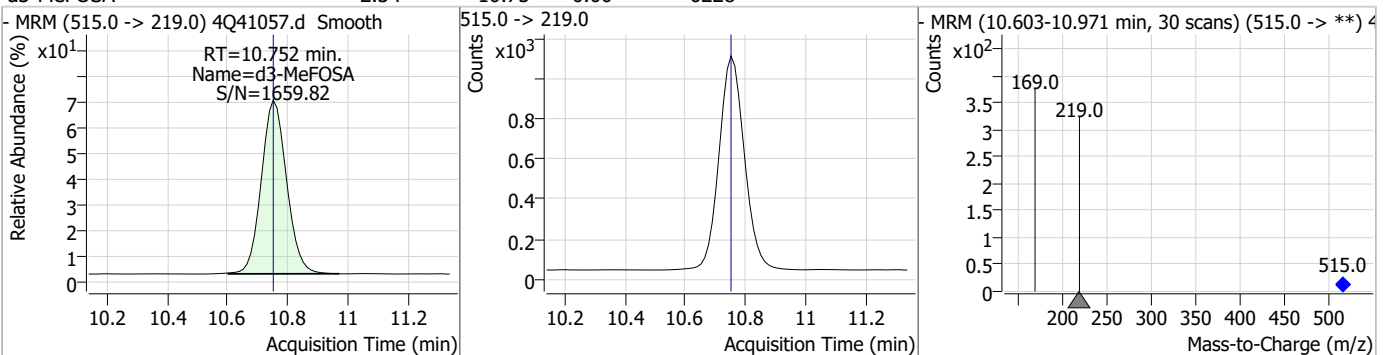
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.97	10.64	-0.01	28284				



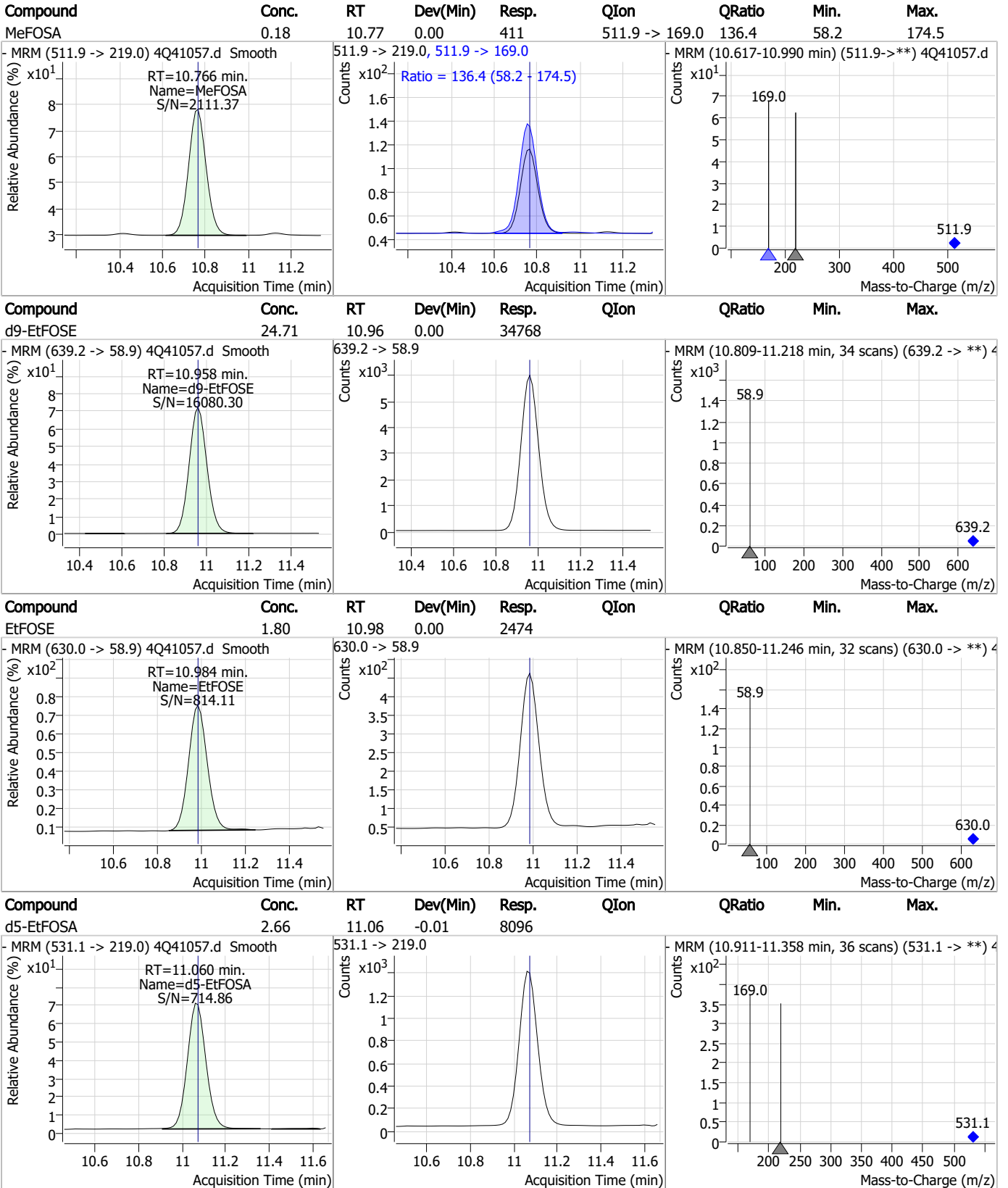
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.82	10.66	0.00	2159				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.34	10.75	0.00	6228				



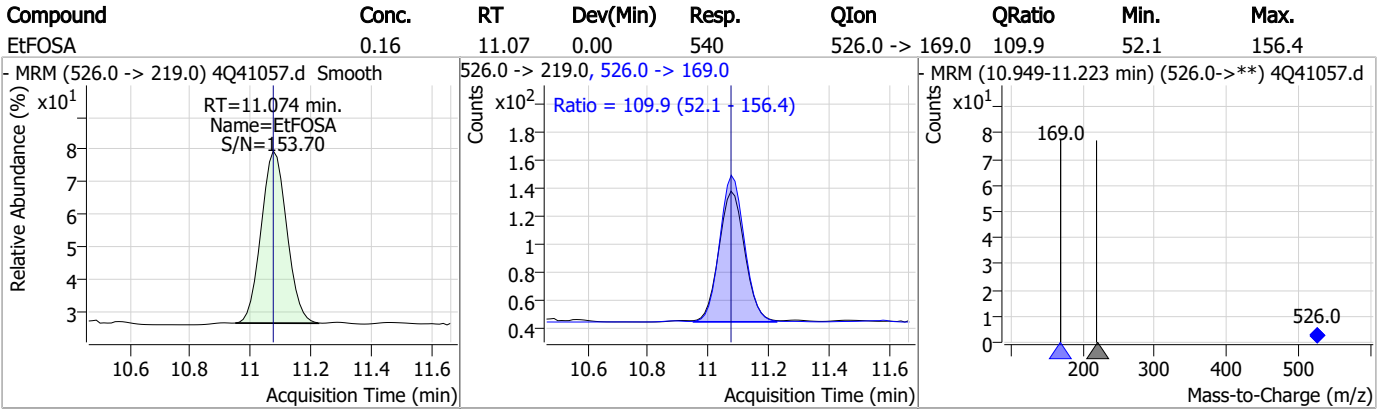
Perfluorinated Compounds by LC/MS/MS



7.6.2

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Perfluorinated Compounds by LC/MS/MS



7.6.2

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Manual Integration Approval Summary

Sample Number: S4Q587-IC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41057.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 16:23 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.14	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

7.6.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41058.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 4:37:47 PM
 Sample Name : ic587-2
 Vial : P1-A3
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	138367	10.00 µg/L	-0.013
M5-PFPeA	4.500	268.3 -> 223.0	79219	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	58625	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	34310	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	41404	2.50 µg/L	0.000
M9-PFNA	7.583	472.1 -> 427.0	18248	1.25 µg/L	-0.012
M6-PFDA	8.066	519.1 -> 474.1	16892	1.25 µg/L	-0.013
M7-PFUnDA	8.523	570.0 -> 525.1	22324	1.25 µg/L	-0.012
M2-PFDoDA	8.955	615.1 -> 570.0	21136	1.25 µg/L	-0.012
M2-PFTeDA	9.736	715.2 -> 670.0	17450	1.25 µg/L	0.000
M8-FOSA	9.657	506.1 -> 77.8	9001	2.50 µg/L	-0.012
M3-PFBS	5.501	302.1 -> 79.9	11934	2.50 µg/L	0.000
M3-PFHxS	7.167	402.1 -> 79.9	7578	2.50 µg/L	-0.012
M8-PFOS	8.230	507.1 -> 79.9	9244	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1702	5.00 µg/L	0.000
M2-6:2FTS	6.823	429.1 -> 80.9	2577	5.00 µg/L	-0.012
M2-8:2FTS	7.865	529.1 -> 80.9	3726	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	20635	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	35214	10.00 µg/L	0.000
M5-EtFOSAA	8.334	589.2 -> 419.0	16467	5.00 µg/L	-0.012
M7-MeFOSE	10.636	623.2 -> 58.9	28732	25.00 µg/L	-0.012
M9-EtFOSE	10.958	639.2 -> 58.9	35108	25.00 µg/L	0.000
M5-EtFOSA	11.060	531.1 -> 219.0	7496	2.50 µg/L	-0.012
M3-MeFOSA	10.752	515.0 -> 219.0	6997	2.50 µg/L	0.000
13C4-PFOS	8.230	502.8 -> 79.9	8949	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	83428	5.00 µg/L	-0.013
18O2-PFHxS	7.166	403.0 -> 83.9	5071	2.50 µg/L	-0.012
13C4-PFOA	7.062	417.1 -> 372.0	50010	2.50 µg/L	0.000
13C2-PFDA	8.066	515.1 -> 470.1	16662	1.25 µg/L	-0.013
13C5-PFNA	7.584	468.0 -> 423.0	20994	1.25 µg/L	-0.012
13C2-PFHxA	5.560	315.1 -> 270.0	53318	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1702	6.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.0%		
13C2-6:2FTS	6.823	429.1 -> 80.9	2577	5.86 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.2%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3726	5.63 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.6%		
13C2-PFDoDA	8.955	615.1 -> 570.0	21136	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-PFTeDA	9.736	715.2 -> 670.0	17450	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C3-PFBS	5.501	302.1 -> 79.9	11934	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C3-PFHxS	7.167	402.1 -> 79.9	7578	2.66 µg/L	-0.012

7.6.3
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C4-PFBA	3.139	216.8 -> 171.9	138367	10.01 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.417	367.1 -> 322.0	34310	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C5-PFHxA	5.559	318.0 -> 273.0	58625	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFPeA	4.500	268.3 -> 223.0	79219	5.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C6-PFDA	8.066	519.1 -> 474.1	16892	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C7-PFUnDA	8.523	570.0 -> 525.1	22324	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-FOSA	9.657	506.1 -> 77.8	9001	2.72 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.9%	
13C8-PFOA	7.062	421.1 -> 376.0	41404	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C8-PFOS	8.230	507.1 -> 79.9	9244	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C9-PFNA	7.583	472.1 -> 427.0	18248	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.1%	
d3-MeFOSAA	8.136	573.2 -> 419.0	20635	5.24 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	35214	10.15 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
d3-MeFOSA	10.752	515.0 -> 219.0	6997	2.73 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.0%	
d5-EtFOSAA	8.334	589.2 -> 419.0	16467	5.36 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.2%	
d7-MeFOSE	10.636	623.2 -> 58.9	28732	26.34 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.3%	
d9-EtFOSE	10.958	639.2 -> 58.9	35108	25.90 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d5-EtFOSA	11.060	531.1 -> 219.0	7496	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	4467	1.65 µg/L	98
		327.1 -> 80.9	1762		
6:2FTS	6.824	427.1 -> 407.0	3966	1.72 µg/L	95
		427.1 -> 80.9	1566		
8:2FTS	7.866	527.1 -> 507.0	3892	2.02 µg/L	99
		527.1 -> 80.8	1137		
EtFOSAA	8.335	584.2 -> 419.1	1385	0.50 µg/L	m 100
		584.2 -> 526.0	552		
FOSA	9.661	498.1 -> 77.9	2105	0.44 µg/L	97
		498.1 -> 478.0	74		
MeFOSAA	8.137	570.1 -> 419.0	1091	0.39 µg/L	#m 65
		570.1 -> 483.0	315		
PFBA	3.146	212.8 -> 168.9	5881	1.79 µg/L	100
PFBS	5.502	298.7 -> 79.9	1913	0.40 µg/L	99
		298.7 -> 98.8	721		
PFDA	8.067	512.9 -> 469.0	5235	0.45 µg/L	95
		512.9 -> 219.0	996		
PFDODA	8.956	613.1 -> 569.0	6340	0.44 µg/L	94
		613.1 -> 319.0	948		
PFDS	9.121	599.0 -> 79.9	1073	0.47 µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	495			
PFHpA	6.417	363.1 -> 319.0	8126	0.45	µg/L	96
		363.1 -> 169.0	1486			
PFHpS	7.736	449.0 -> 79.9	1328	0.47	µg/L	95
		449.0 -> 98.9	776			
PFHxA	5.549	313.0 -> 269.0	8771	0.43	µg/L	99
		313.0 -> 118.9	278			
PFHxS	7.168	398.7 -> 79.9	1242	0.40	µg/L	m 92
		398.7 -> 98.9	620			
PFNA	7.584	463.0 -> 419.0	5204	0.47	µg/L	96
		463.0 -> 219.0	1351			
PFNS	8.686	548.8 -> 79.9	835	0.42	µg/L	100
		548.8 -> 98.9	489			
PFOA	7.063	413.0 -> 369.0	9107	0.47	µg/L	98
		413.0 -> 169.0	1697			
PFOS	8.231	498.9 -> 79.9	1941	0.46	µg/L	m 87
		498.9 -> 98.8	943			
PFPeA	4.502	263.0 -> 219.0	16001	0.86	µg/L	100
PFPeS	6.470	349.1 -> 79.9	966	0.40	µg/L	97
		349.1 -> 98.9	437			
PFTeDA	9.737	713.1 -> 669.0	5252	0.43	µg/L	99
		713.1 -> 168.9	451			
PFTrDA	9.366	663.0 -> 619.0	7534	0.42	µg/L	91
		663.0 -> 168.9	1016			
PFUnDA	8.524	563.1 -> 519.0	6511	0.53	µg/L	90
		563.1 -> 269.1	1093			
11Cl-PF3OUdS	9.418	630.9 -> 450.9	14707	1.61	µg/L	97
		632.9 -> 452.9	4708			
9Cl-PF3ONS	8.550	530.8 -> 351.0	19197	1.73	µg/L	99
		532.8 -> 353.0	5939			
ADONA	6.668	376.9 -> 250.9	33729	1.66	µg/L	96
		376.9 -> 84.8	6431			
HFPO-DA	5.878	284.9 -> 168.9	5112	1.77	µg/L	99
		284.9 -> 184.9	646			
3:3FTCA	4.142	241.0 -> 177.0	2328	2.12	µg/L	99
		241.0 -> 117.0	200			
5:3FTCA	6.333	341.0 -> 237.1	34840	11.35	µg/L	99
		341.0 -> 217.0	24510			
7:3FTCA	7.711	441.0 -> 316.9	14402	11.65	µg/L	100
		441.0 -> 336.9	33334			
EtFOSA	11.074	526.0 -> 219.0	1459	0.46	µg/L	89
		526.0 -> 169.0	1682			
EtFOSE	10.983	630.0 -> 58.9	6453	4.66	µg/L	100
MeFOSA	10.754	511.9 -> 219.0	1133	0.44	µg/L	94
		511.9 -> 169.0	1241			
MeFOSE	10.661	616.1 -> 58.9	5624	4.66	µg/L	100
PFDoDS	9.864	699.1 -> 79.9	796	0.43	µg/L	100
		699.1 -> 98.8	438			
NFDHA	5.453	295.0 -> 201.0	816	1.06	µg/L	84
		295.0 -> 84.9	134			
PFMBA	4.867	279.0 -> 85.1	8596	0.87	µg/L	100
PFMPA	3.727	229.0 -> 84.9	6668	0.85	µg/L	100
PFEESA	5.971	314.8 -> 134.9	10710	0.78	µg/L	99
		314.8 -> 82.9	364			

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

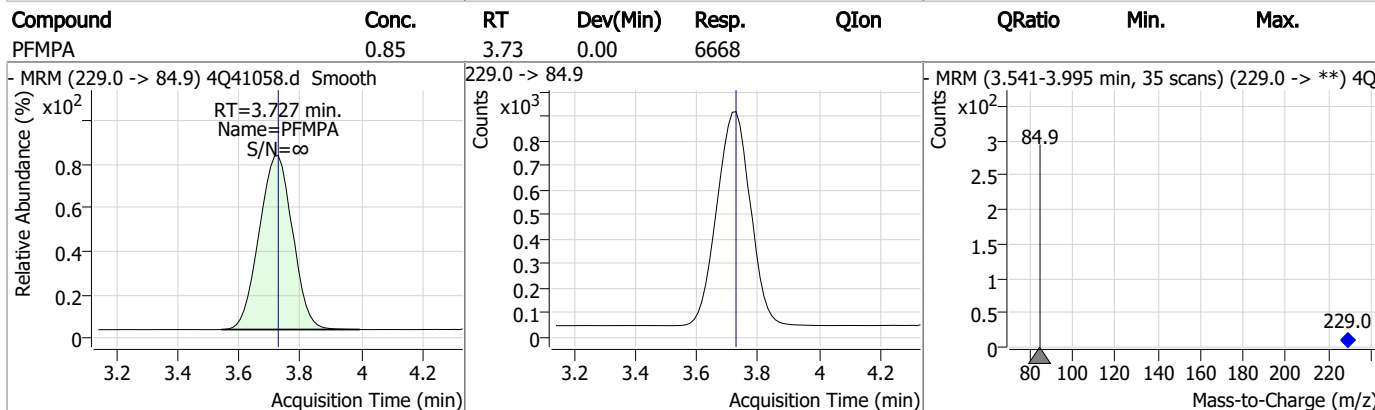
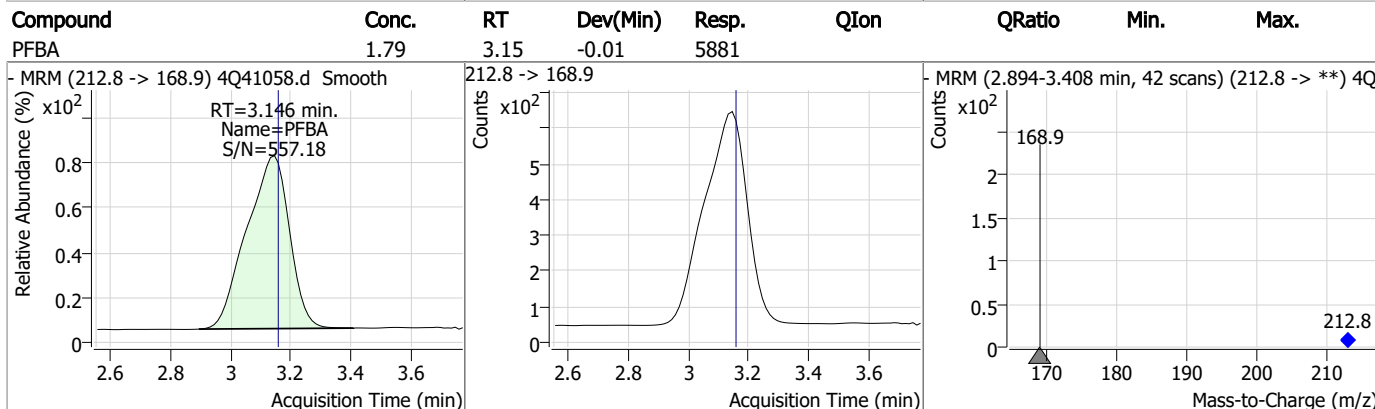
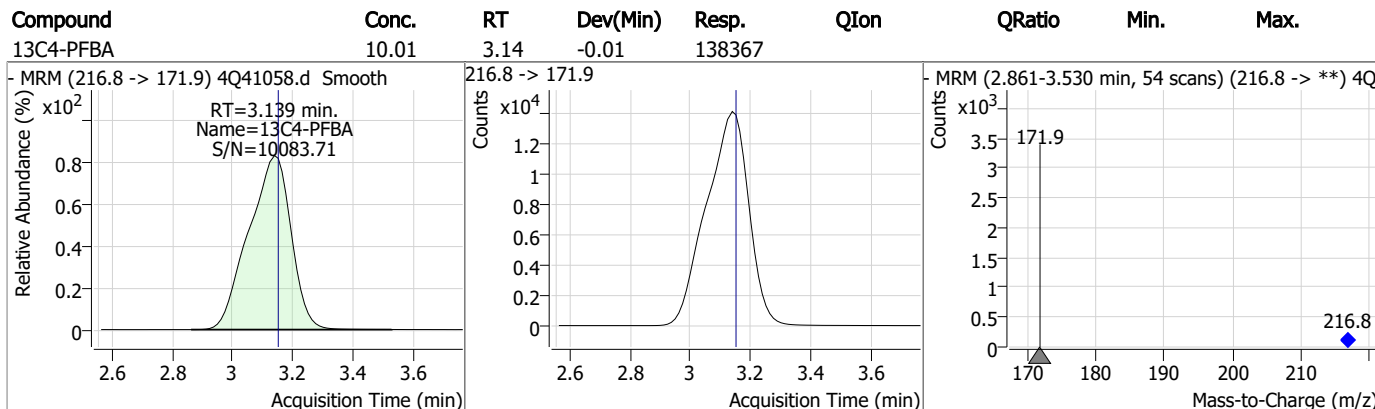
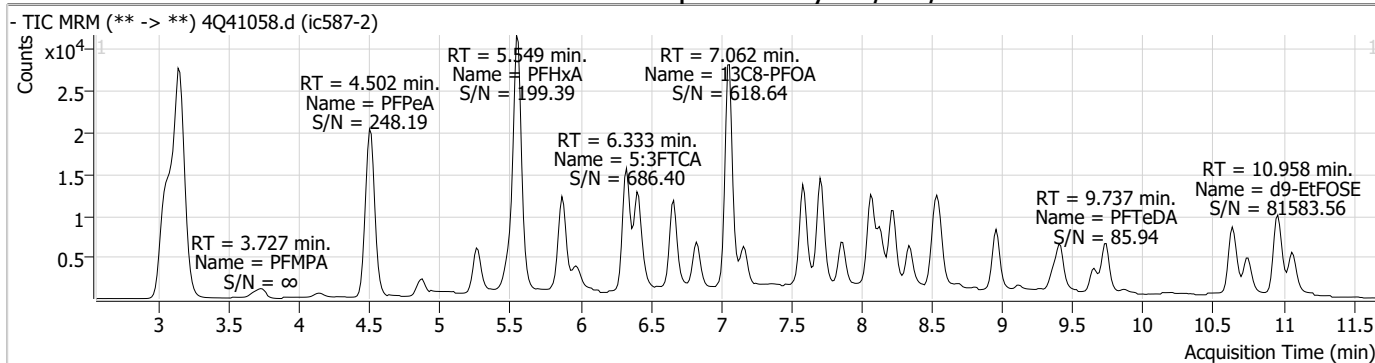
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.3

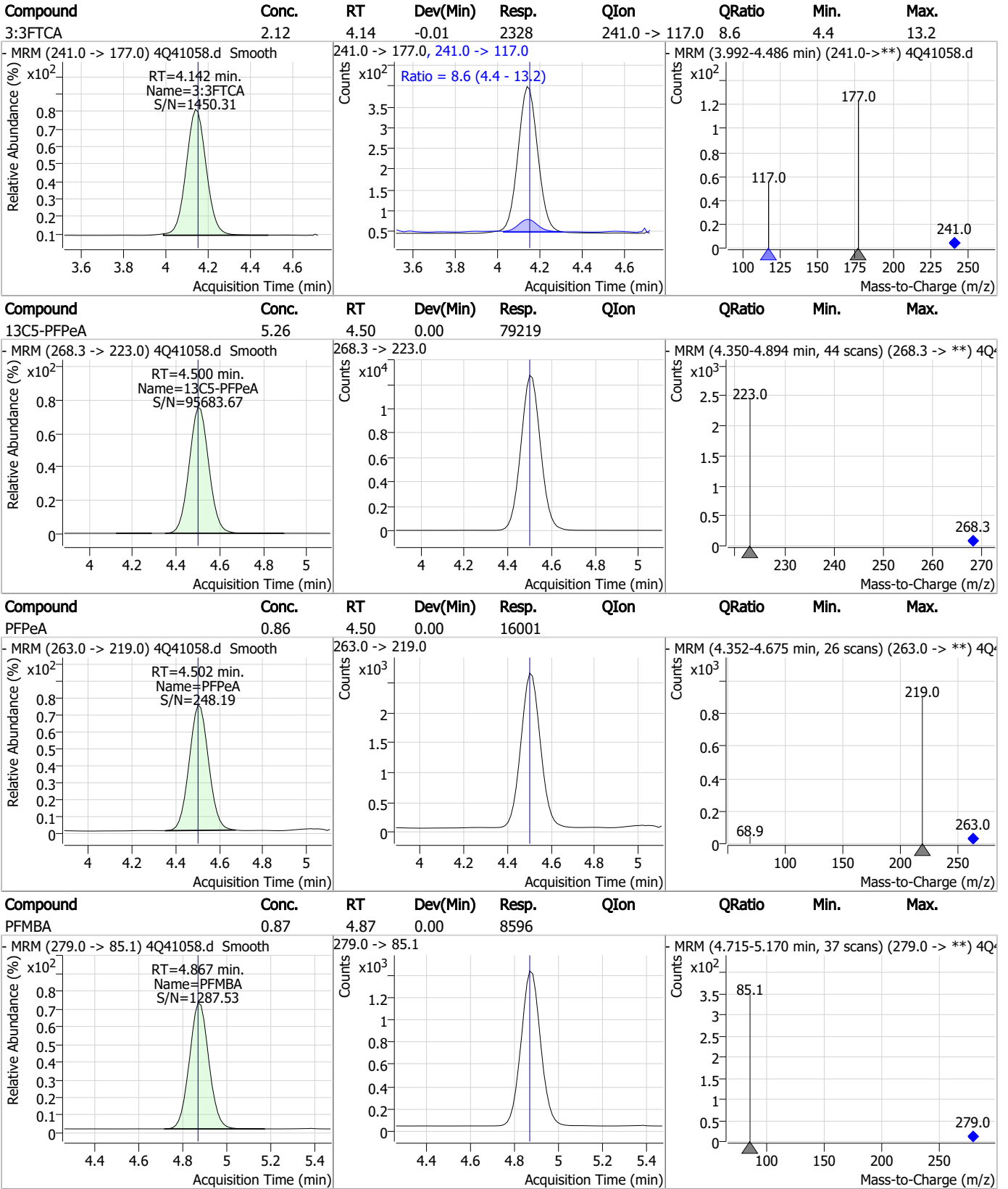
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Perfluorinated Compounds by LC/MS/MS



7.6.3
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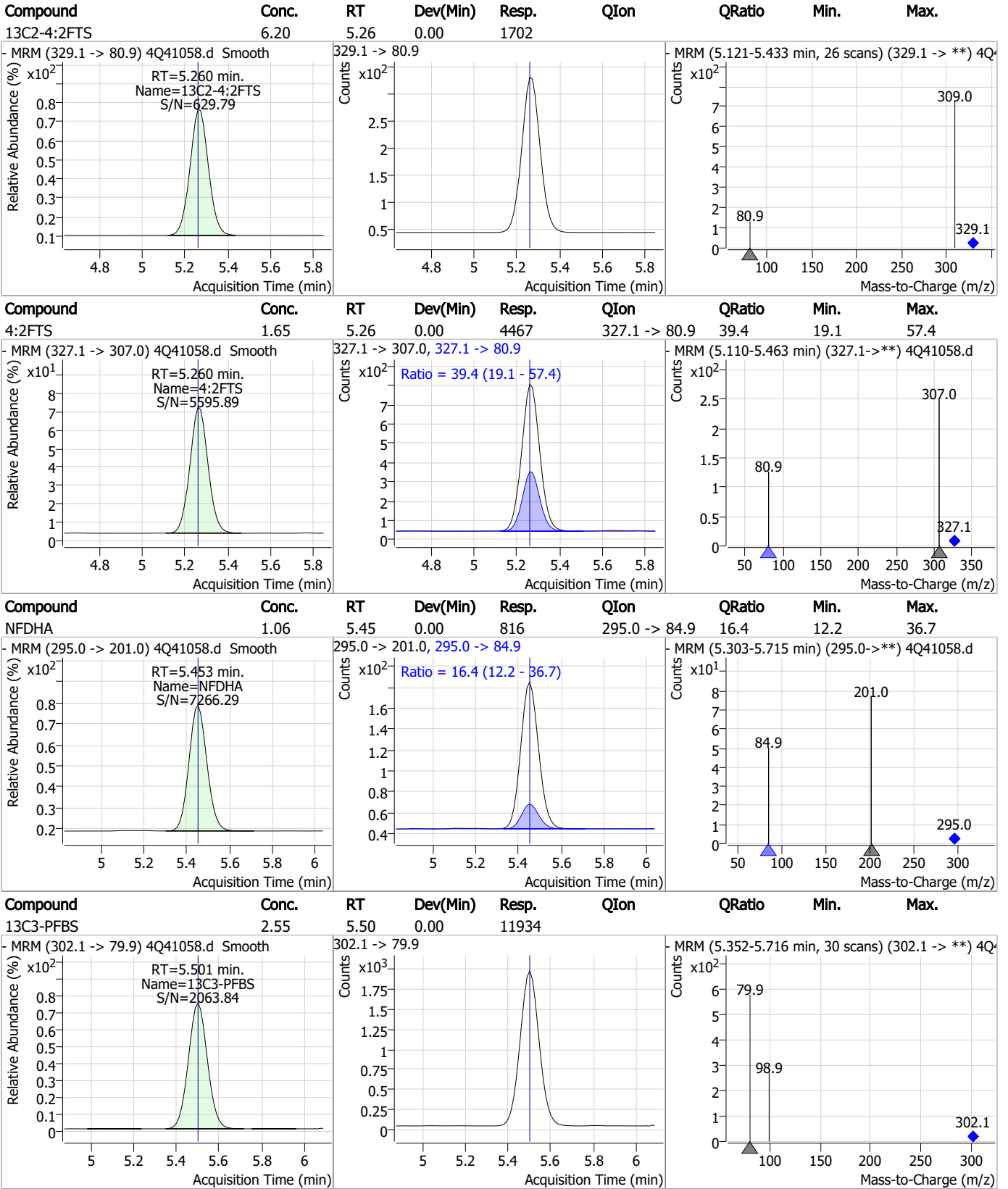
Perfluorinated Compounds by LC/MS/MS



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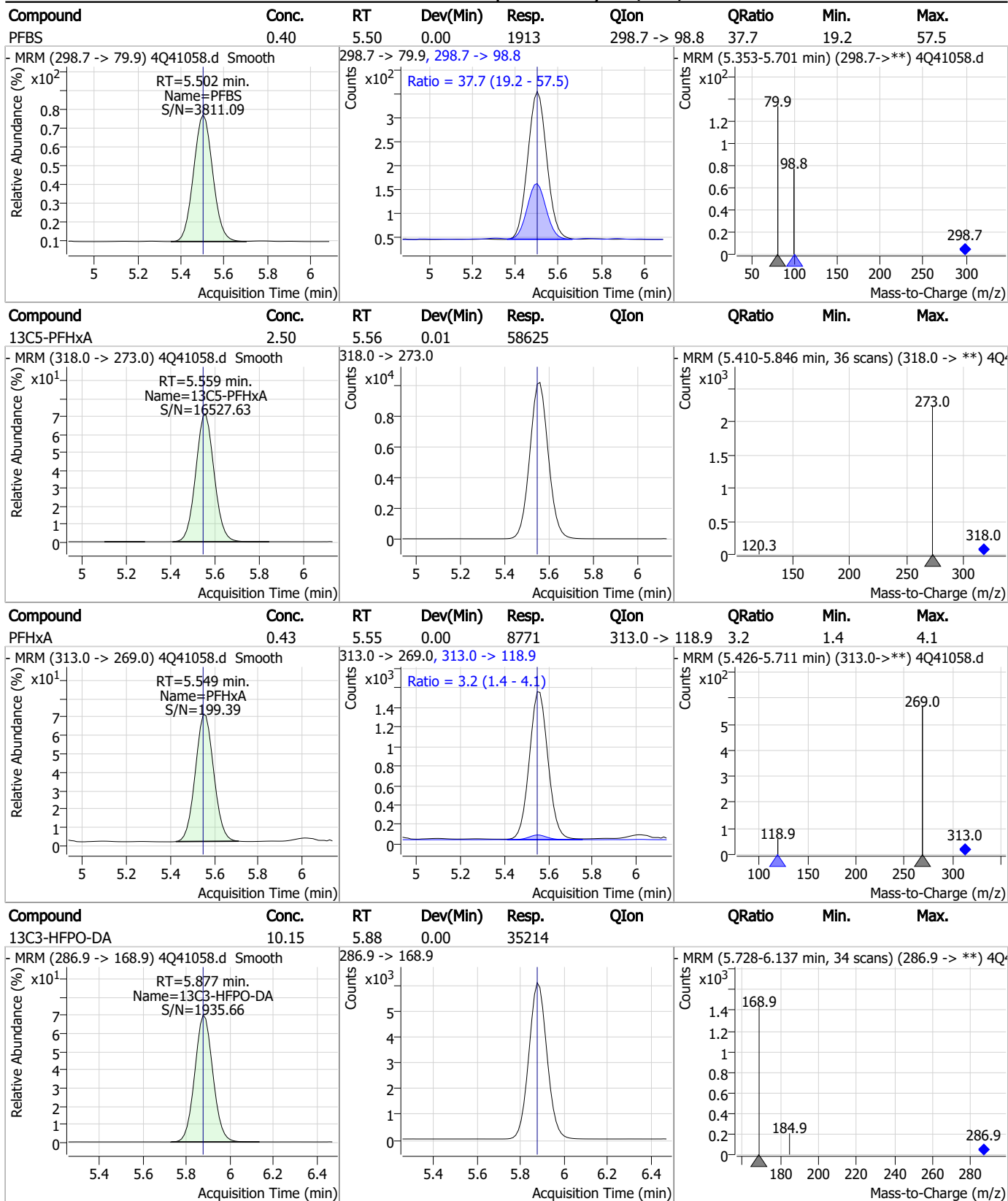
Perfluorinated Compounds by LC/MS/MS



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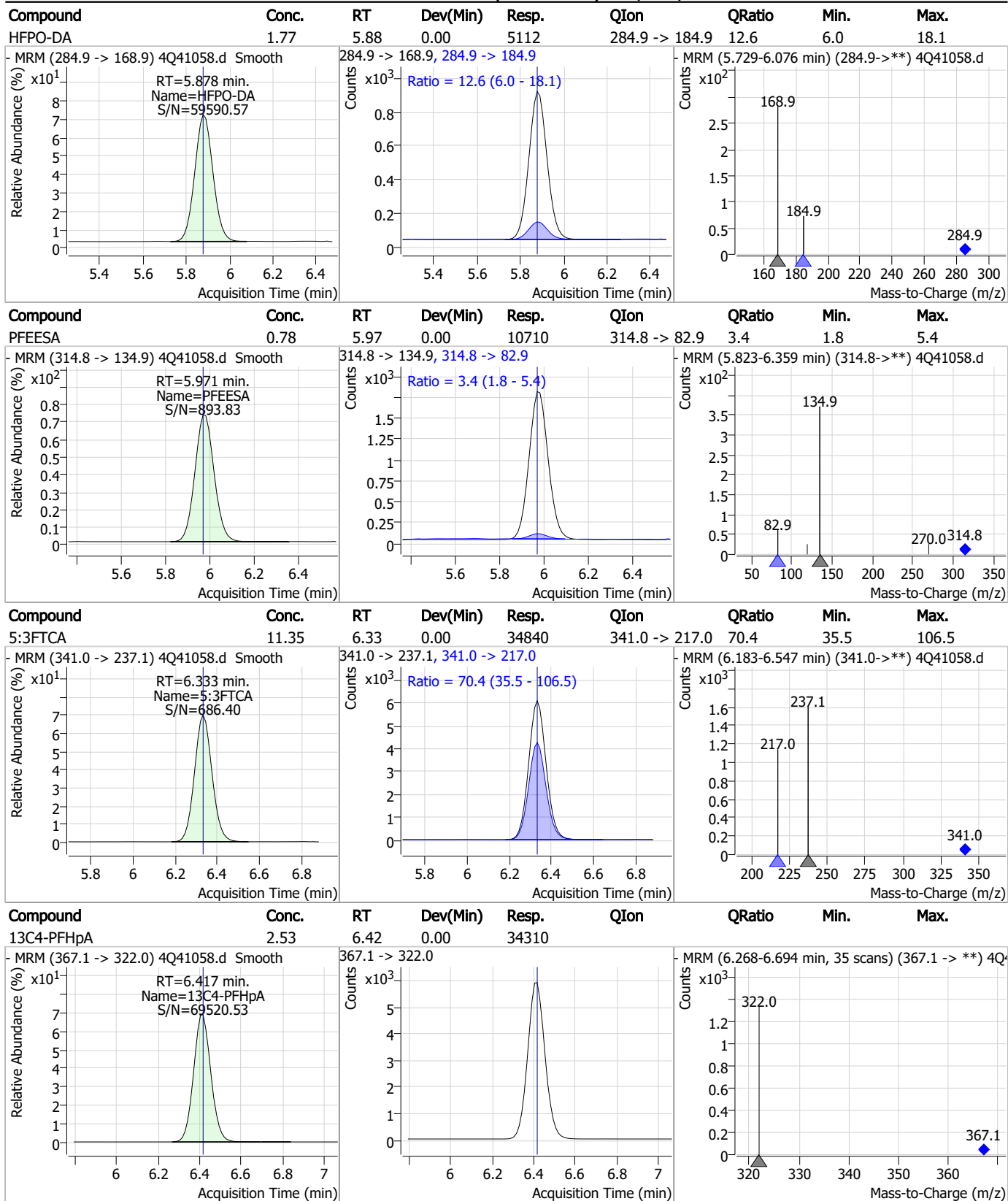
Perfluorinated Compounds by LC/MS/MS



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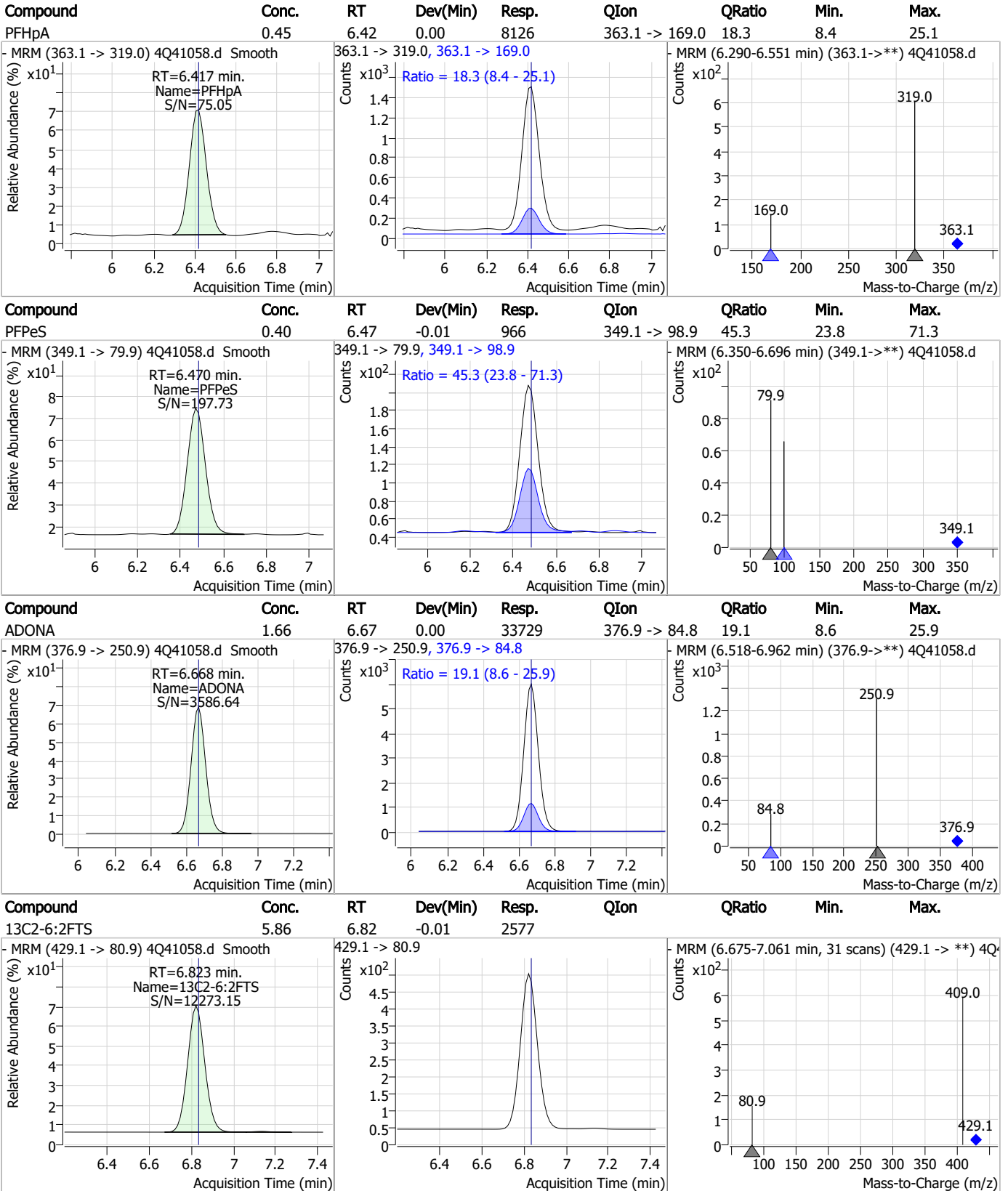
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Perfluorinated Compounds by LC/MS/MS



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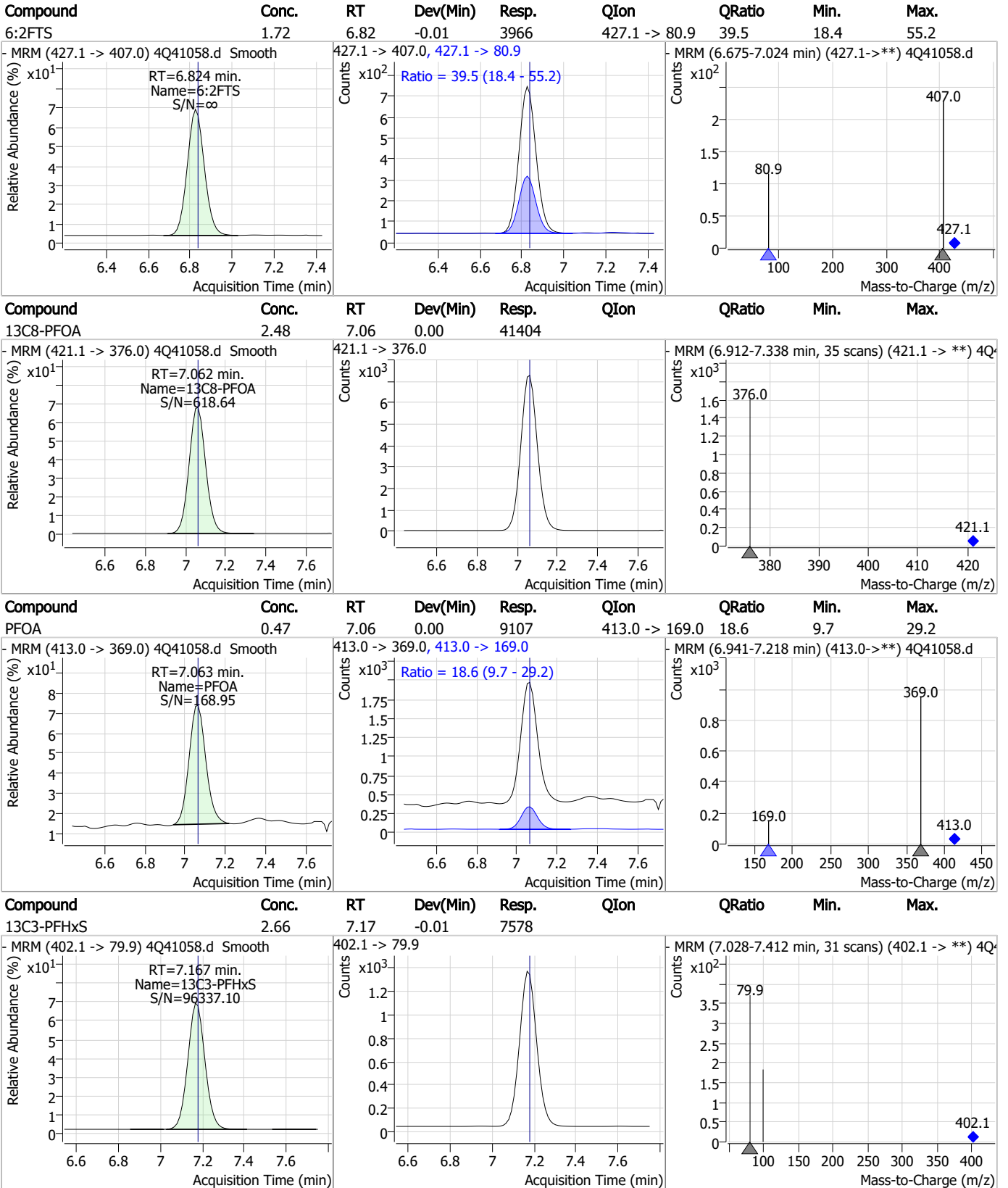
Perfluorinated Compounds by LC/MS/MS



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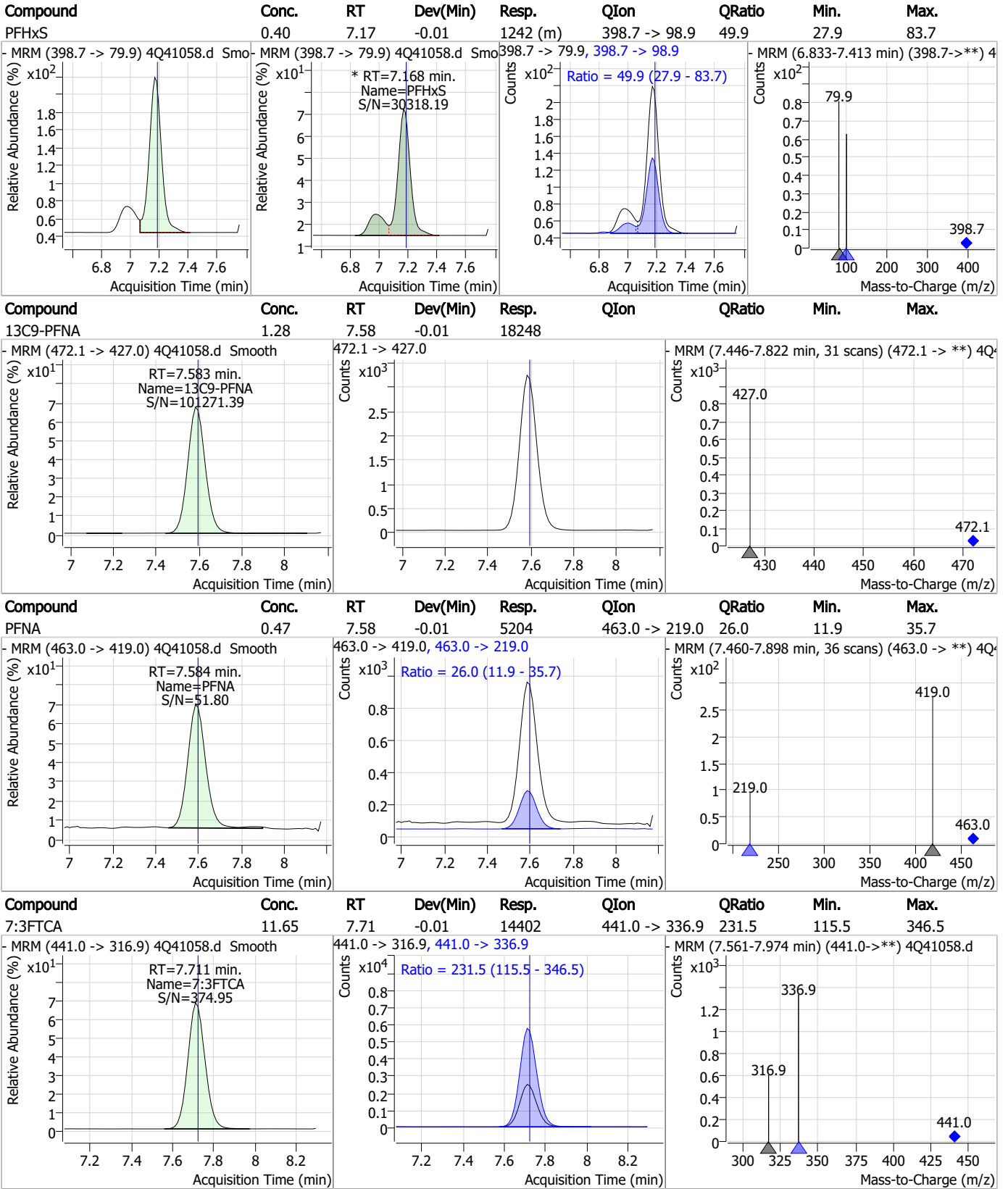
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

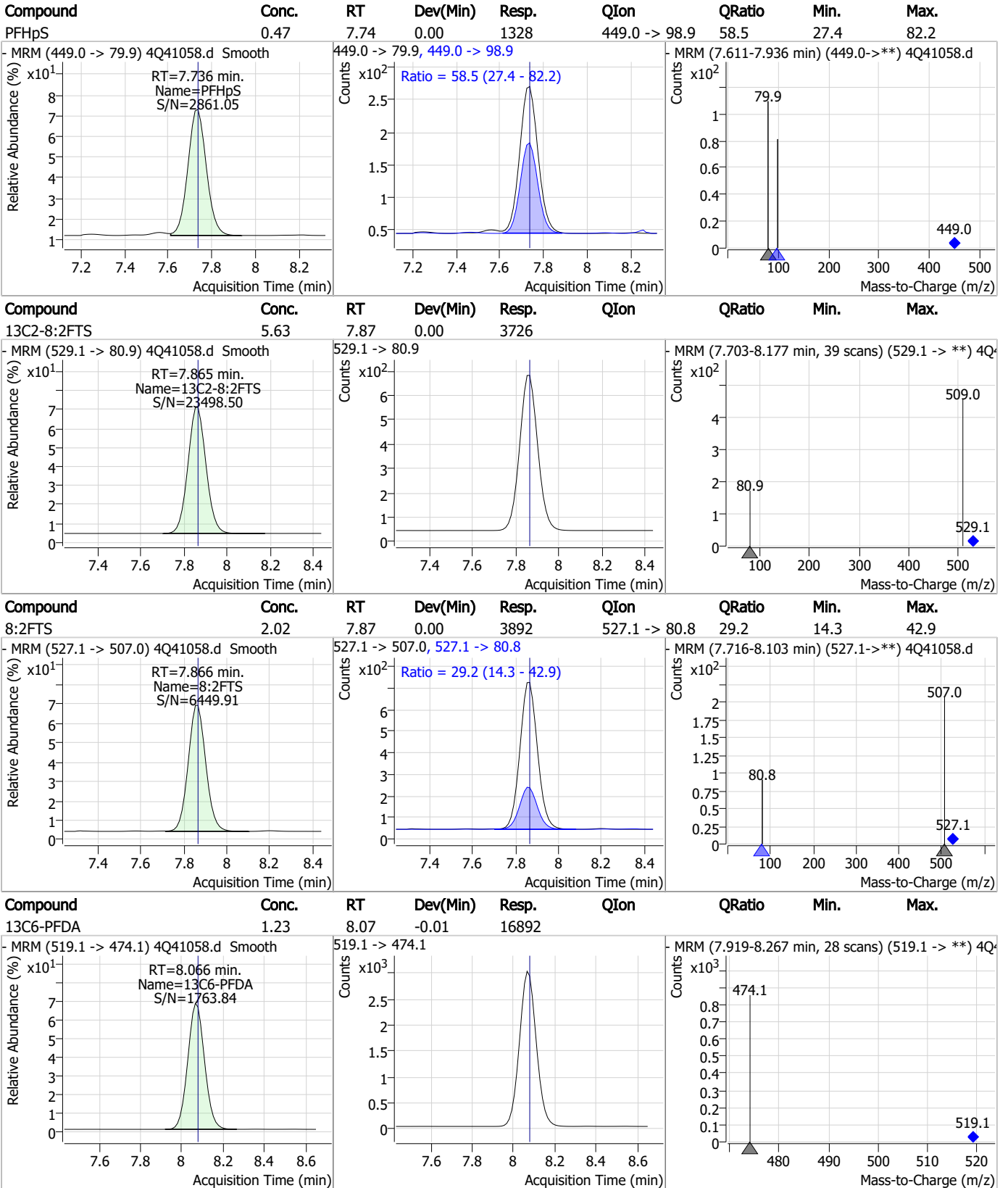


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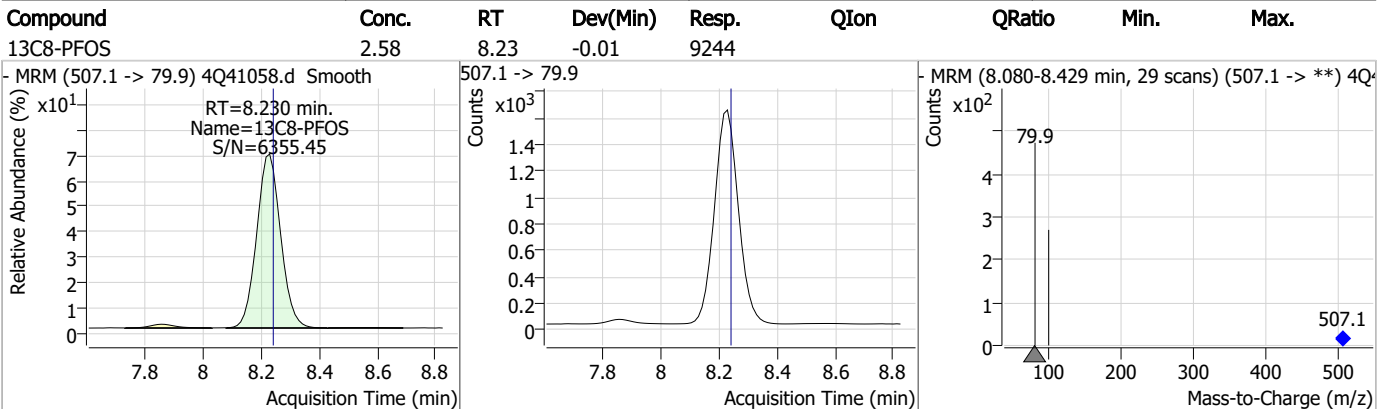
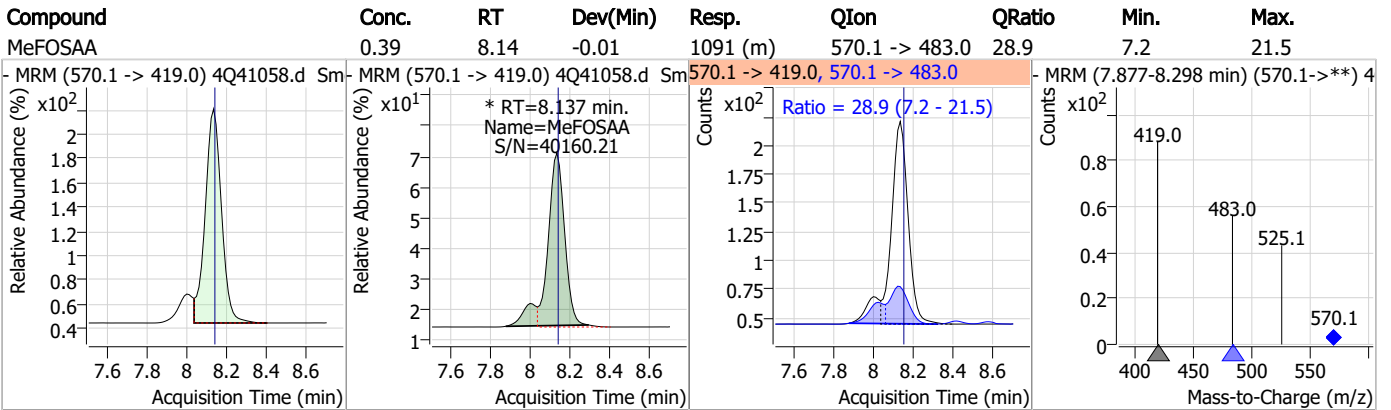
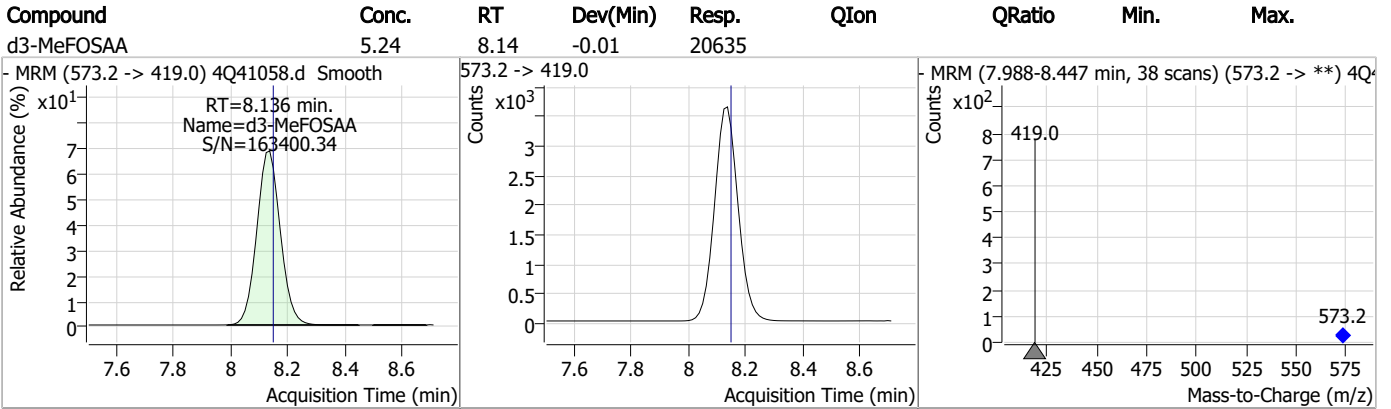
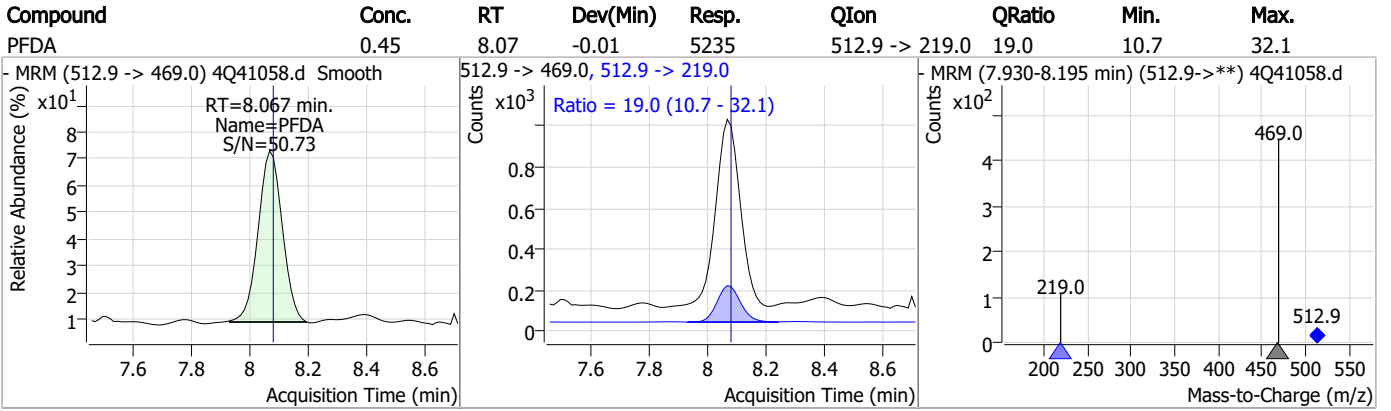
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

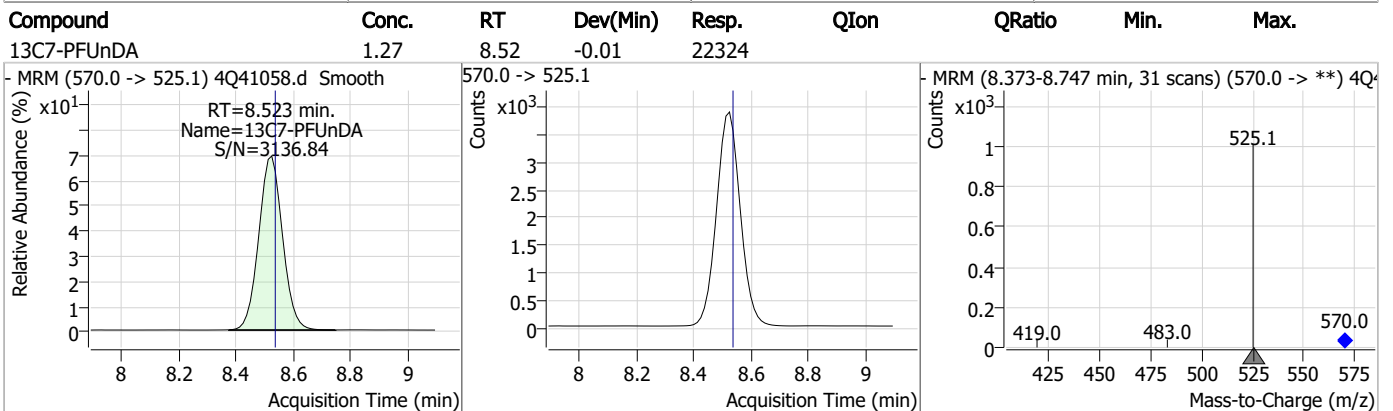
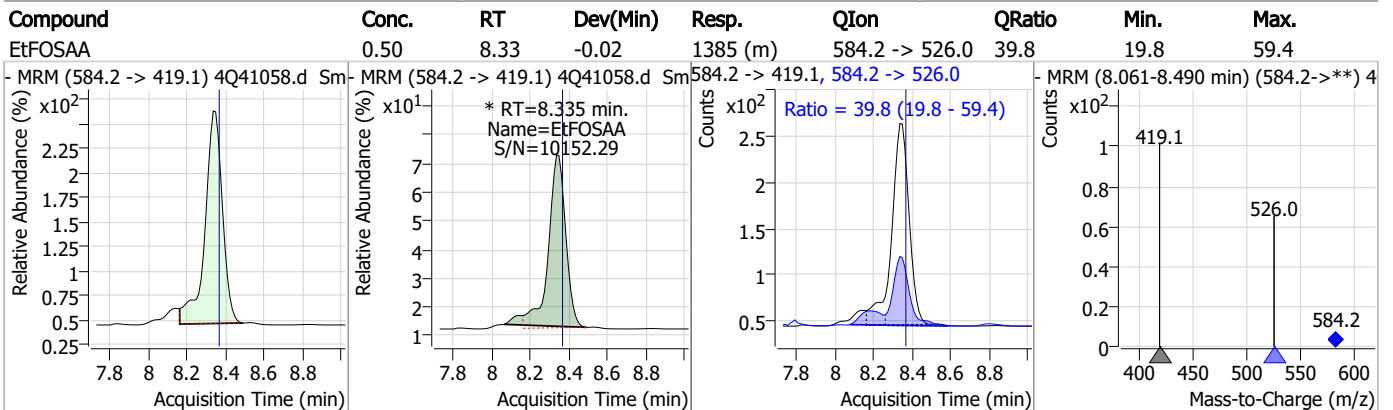
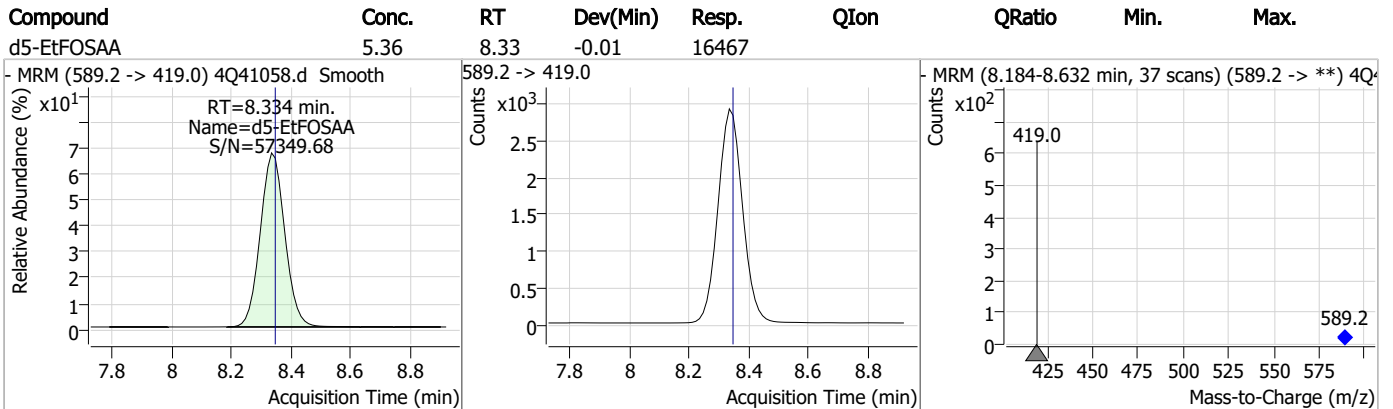
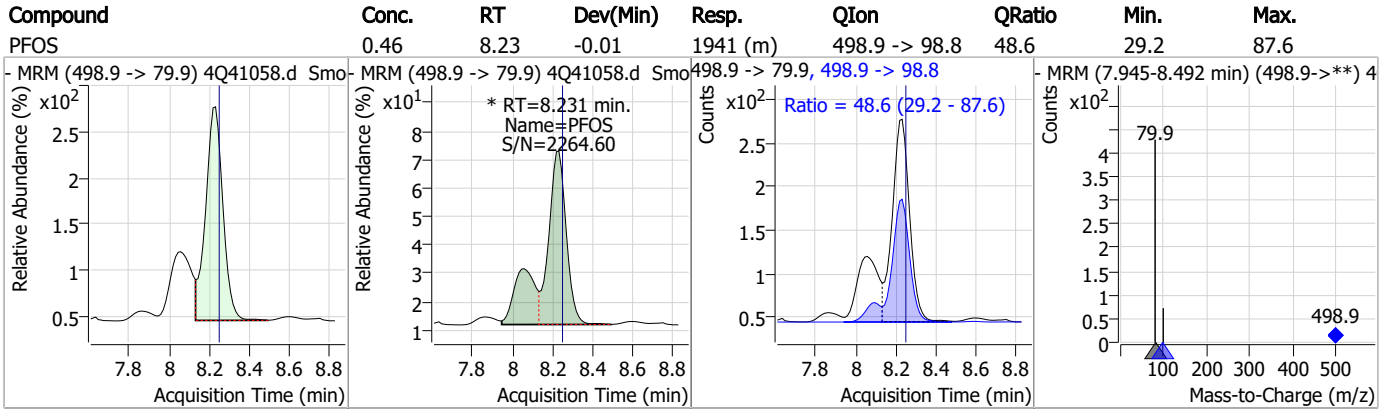


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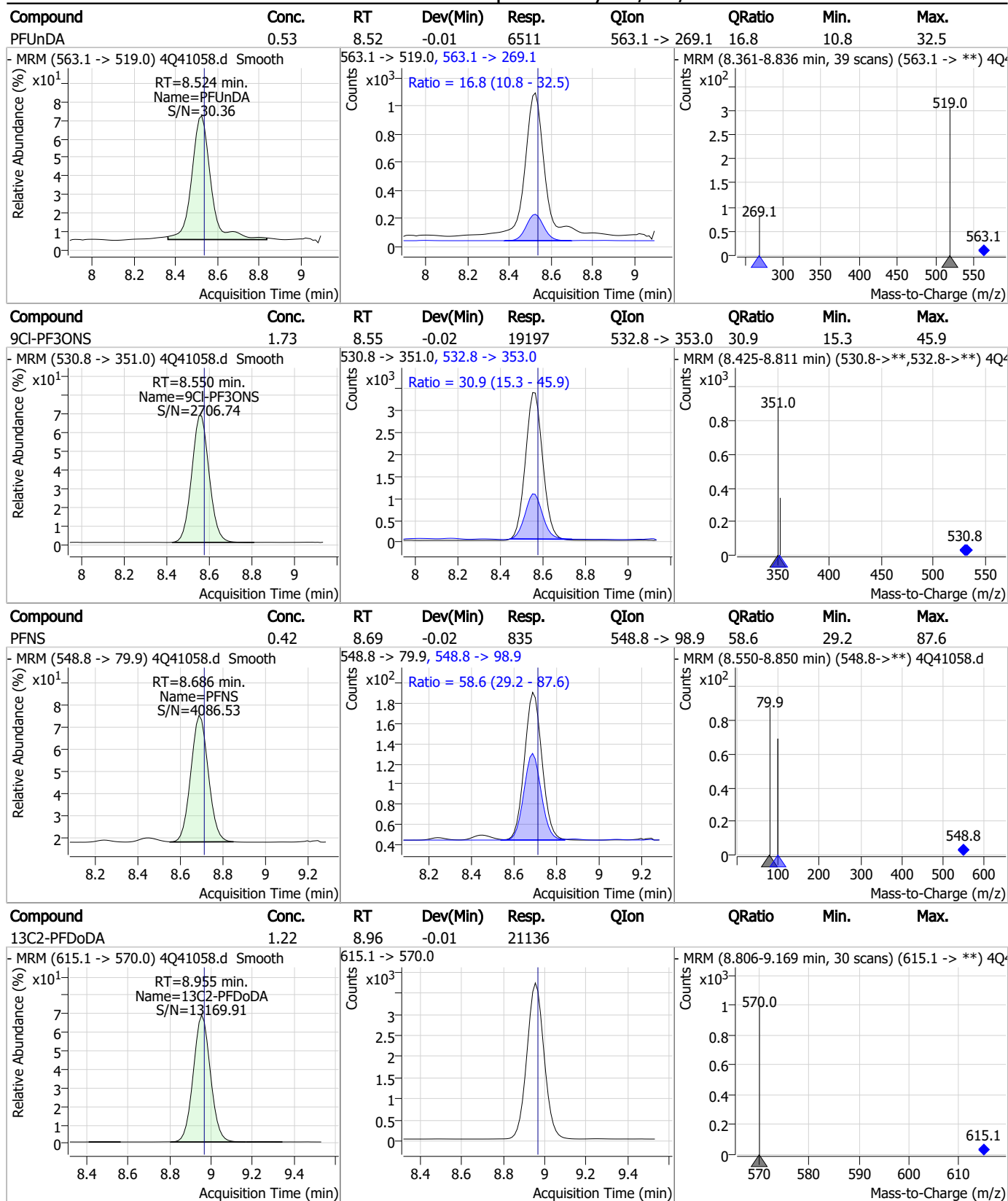
Perfluorinated Compounds by LC/MS/MS



7.6.3

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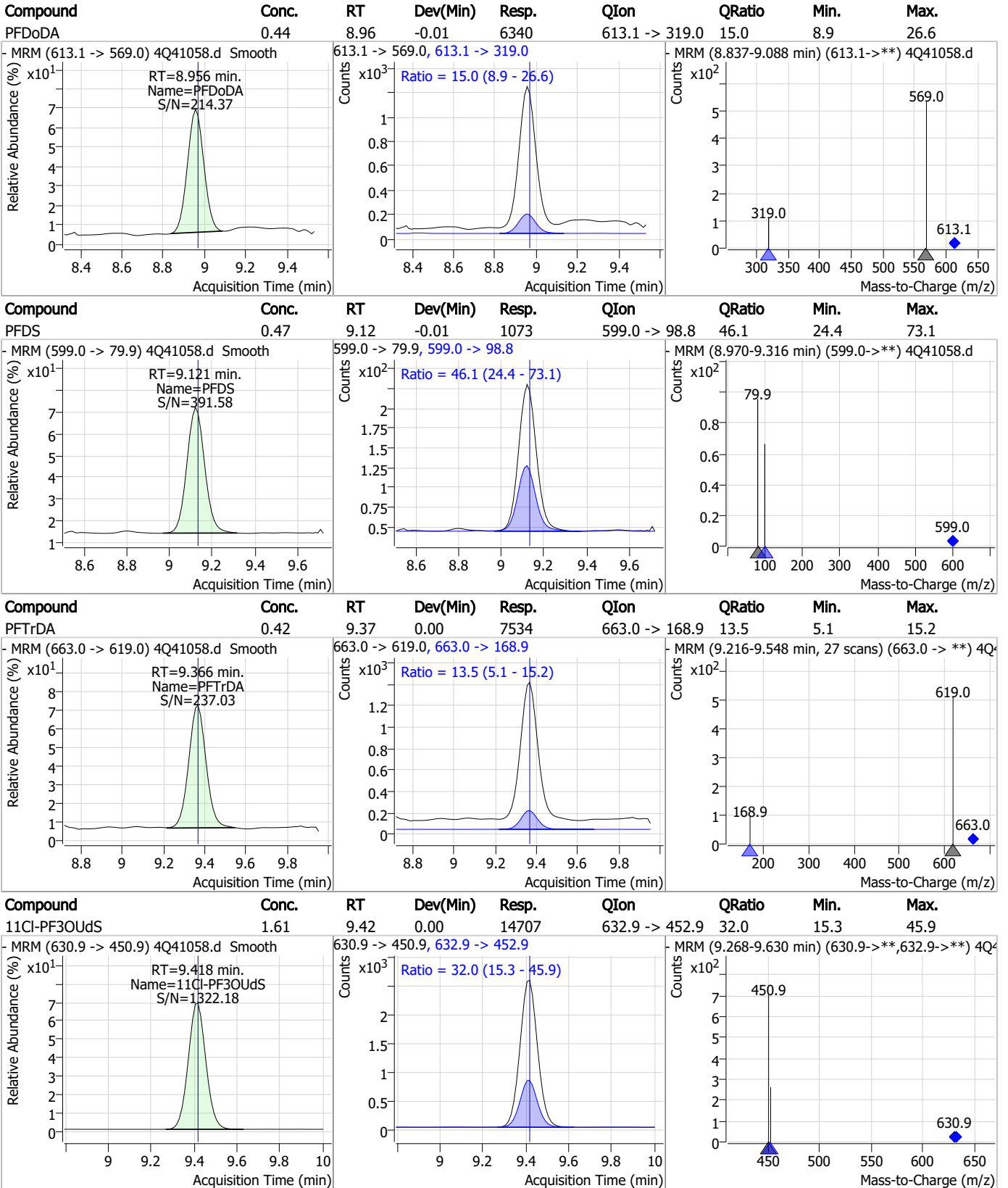
Perfluorinated Compounds by LC/MS/MS



7.6.3

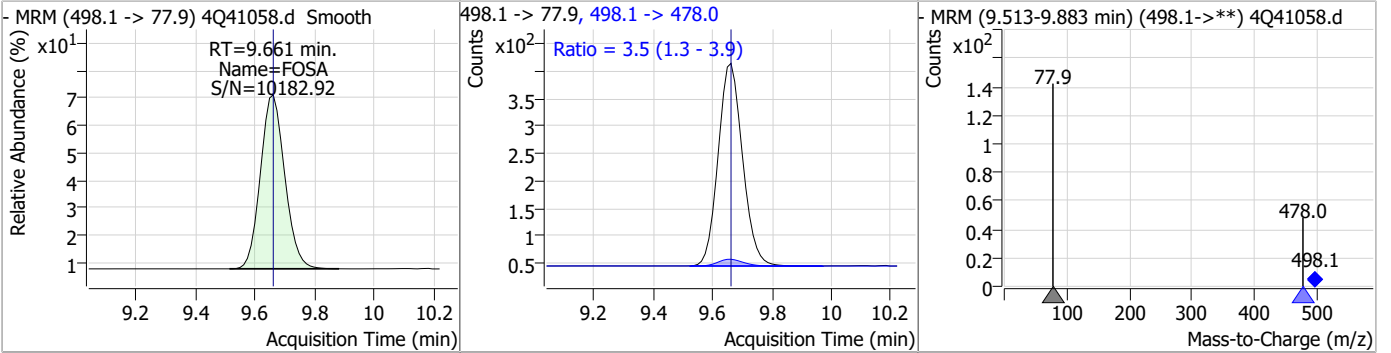
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Perfluorinated Compounds by LC/MS/MS

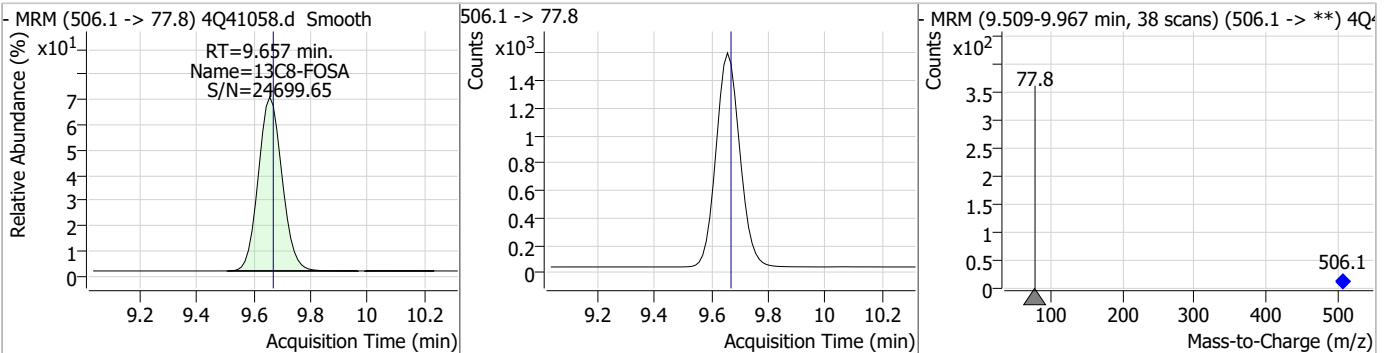


Perfluorinated Compounds by LC/MS/MS

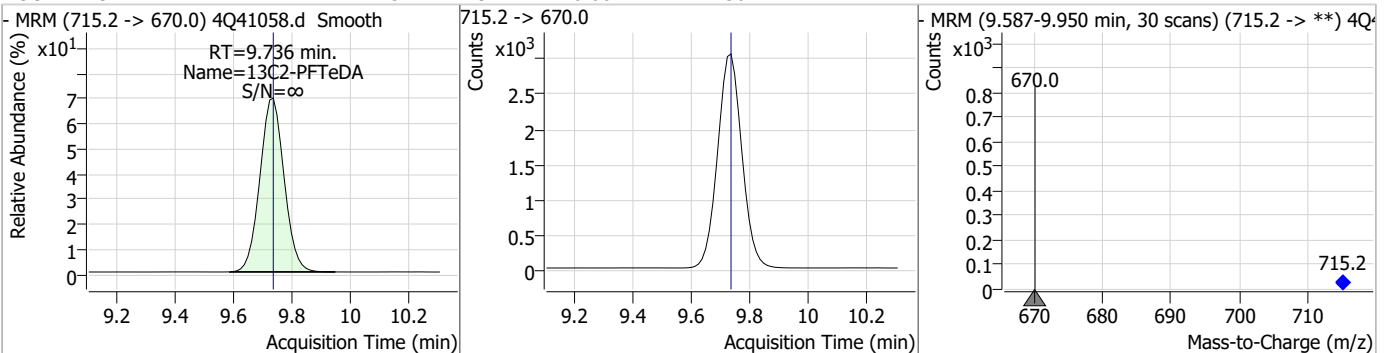
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.44	9.66	0.00	2105	498.1 -> 478.0	3.5	1.3	3.9



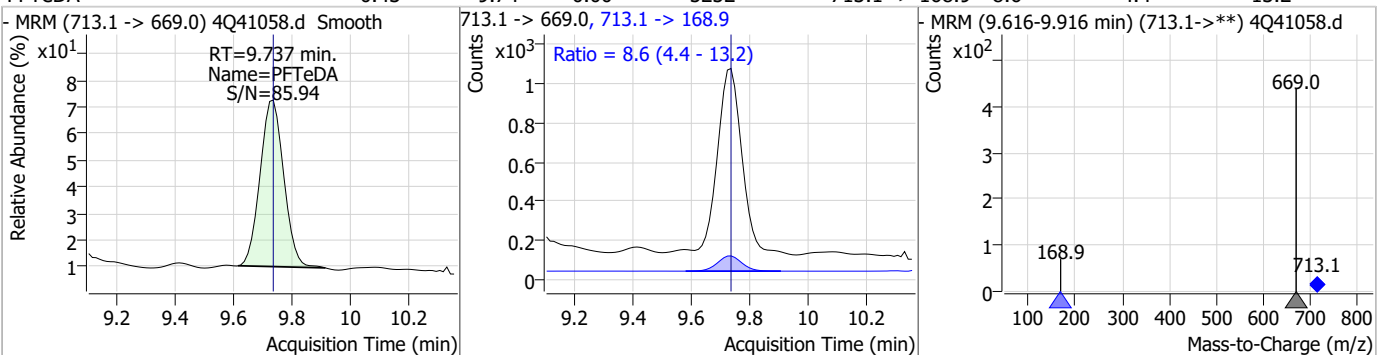
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.72	9.66	-0.01	9001				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.15	9.74	0.00	17450				

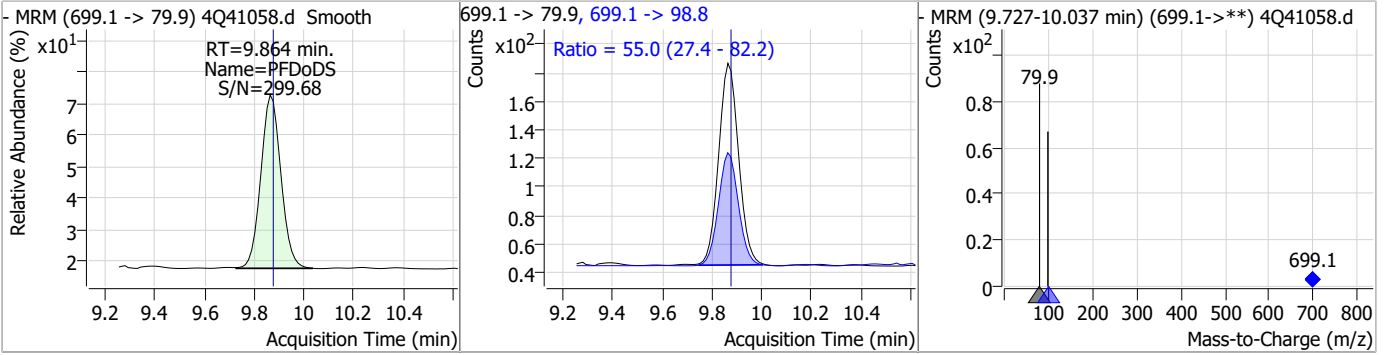


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.43	9.74	0.00	5252	713.1 -> 168.9	8.6	4.4	13.2

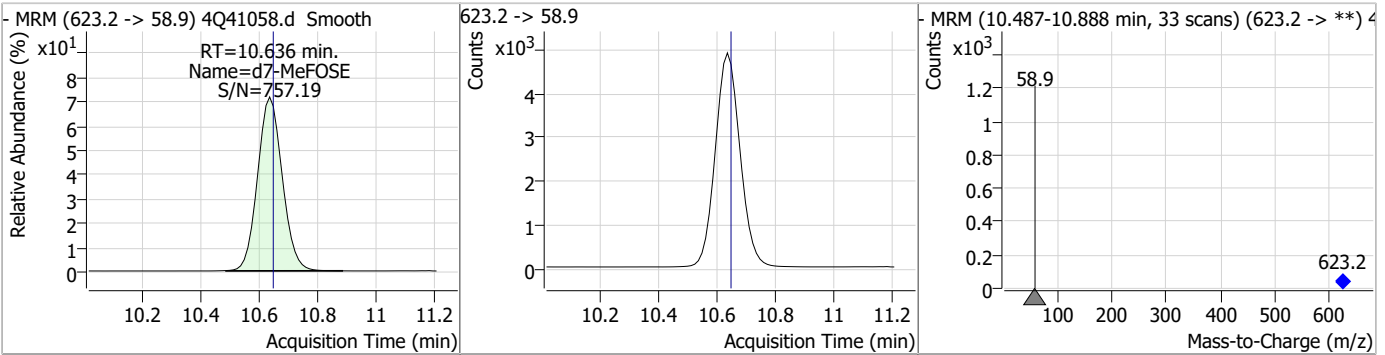


Perfluorinated Compounds by LC/MS/MS

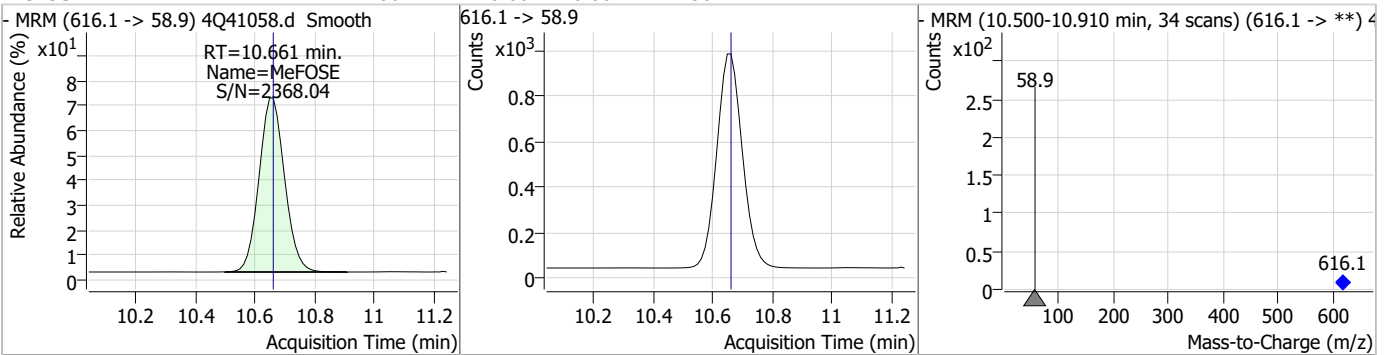
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDS	0.43	9.86	-0.01	796	699.1 -> 98.8	55.0	27.4	82.2



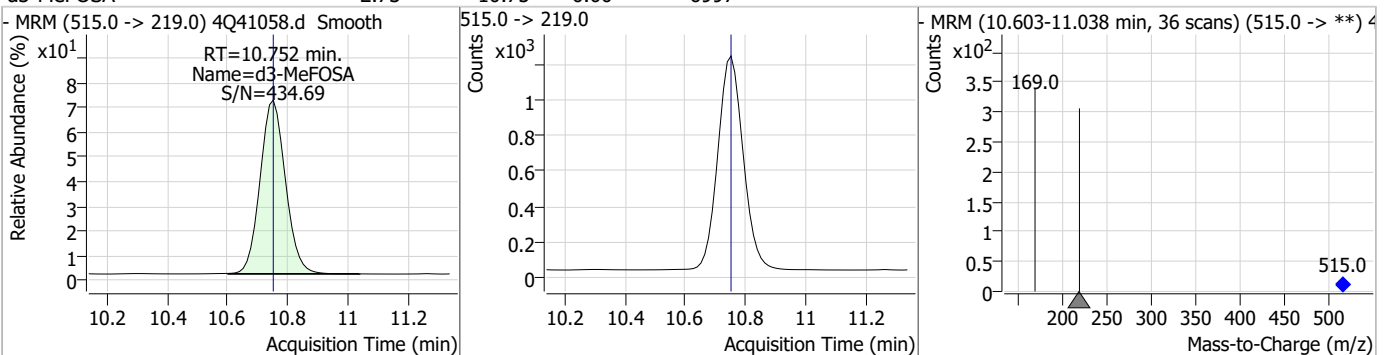
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.34	10.64	-0.01	28732				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	4.66	10.66	0.00	5624				

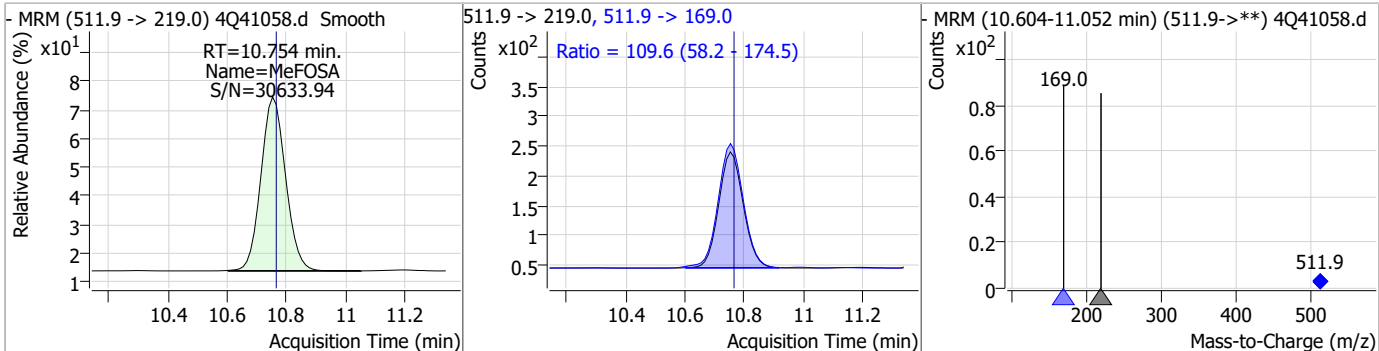


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.73	10.75	0.00	6997				

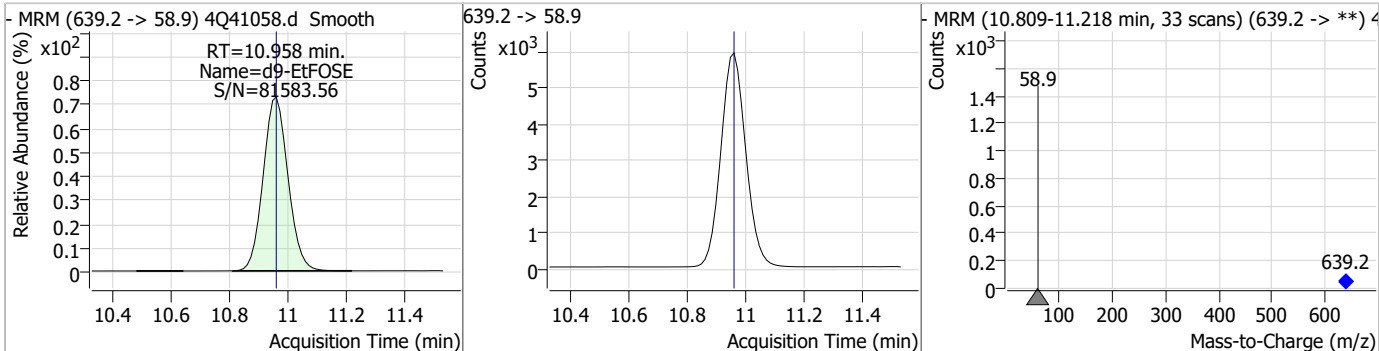


Perfluorinated Compounds by LC/MS/MS

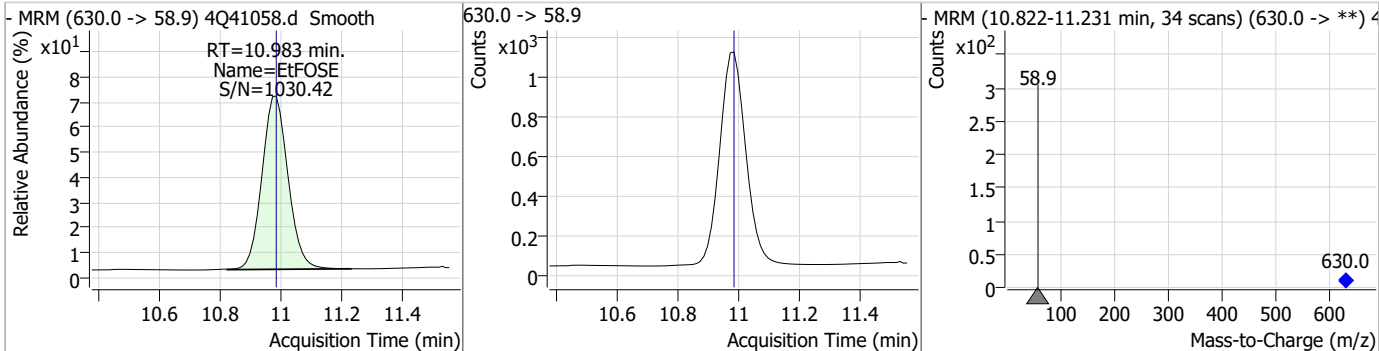
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.44	10.75	-0.01	1133	511.9 -> 169.0	109.6	58.2	174.5



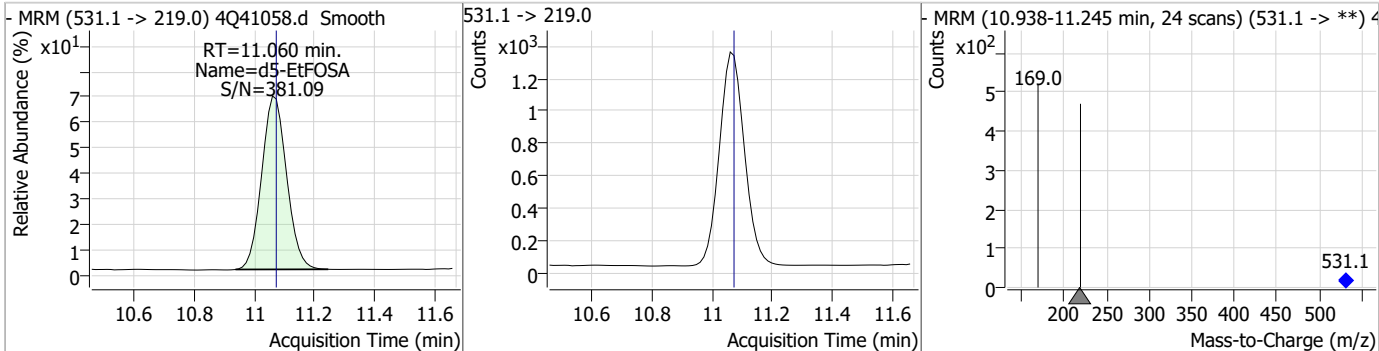
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.90	10.96	0.00	35108				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	4.66	10.98	0.00	6453				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.55	11.06	-0.01	7496				

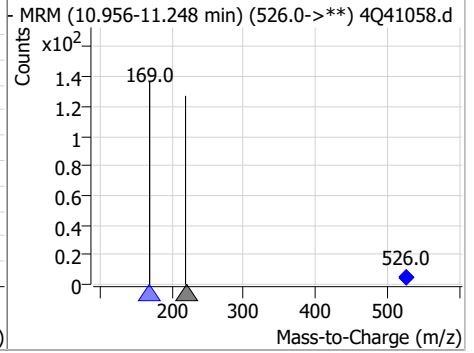
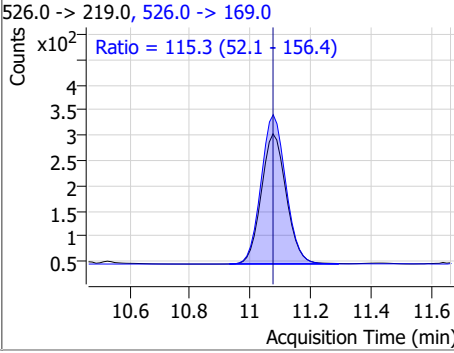
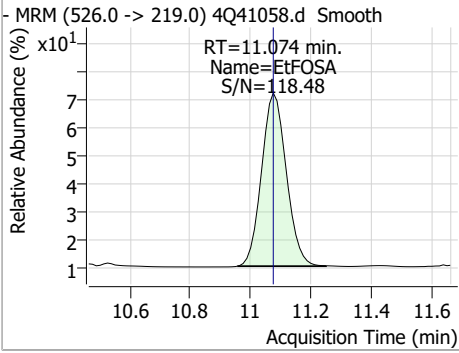


7.6.3
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.46	11.07	0.00	1459	526.0 -> 169.0	115.3	52.1	156.4



7.6.3

7

Manual Integration Approval Summary

Sample Number: S4Q587-IC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41058.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 16:37 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.17	Split peak
MeFOSAA	2355-31-9		8.14	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.34	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41059.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 4:51:52 PM
 Sample Name : ic587-3
 Vial : P1-A4
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	143918	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	78880	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	60021	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	34979	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	42166	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	18834	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	17145	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	22246	1.25 µg/L	-0.012
M2-PFDoDA	8.955	615.1 -> 570.0	20579	1.25 µg/L	-0.012
M2-PFTeDA	9.736	715.2 -> 670.0	17268	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	8850	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12368	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7527	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9508	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1521	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2388	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3969	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	21629	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	35289	10.00 µg/L	0.000
M5-EtFOSAA	8.347	589.2 -> 419.0	15821	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	29226	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	36023	25.00 µg/L	0.012
M5-EtFOSA	11.073	531.1 -> 219.0	7652	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	6626	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	9506	2.50 µg/L	-0.012
13C3-PFBA	3.155	216.0 -> 172.0	86926	5.00 µg/L	0.000
18O2-PFHxS	7.178	403.0 -> 83.9	5252	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	50210	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16672	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	20821	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	53275	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1521	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2388	5.24 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3969	5.79 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.7%		
13C2-PFDoDA	8.955	615.1 -> 570.0	20579	1.18 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-PFTeDA	9.736	715.2 -> 670.0	17268	1.14 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.2%		
13C3-PFBS	5.501	302.1 -> 79.9	12368	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C3-PFHxS	7.179	402.1 -> 79.9	7527	2.56 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 = 102.2%	
13C4-PFBA	3.152	216.8 -> 171.9	143918	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.417	367.1 -> 322.0	34979	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C5-PFHxA	5.546	318.0 -> 273.0	60021	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C5-PFPeA	4.500	268.3 -> 223.0	78880	5.24 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C6-PFDA	8.079	519.1 -> 474.1	17145	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C7-PFUnDA	8.523	570.0 -> 525.1	22246	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-FOSA	9.670	506.1 -> 77.8	8850	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-PFOA	7.062	421.1 -> 376.0	42166	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C8-PFOS	8.230	507.1 -> 79.9	9508	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C9-PFNA	7.596	472.1 -> 427.0	18834	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.3%	
d3-MeFOSAA	8.136	573.2 -> 419.0	21629	5.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	35289	10.18 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
d3-MeFOSA	10.765	515.0 -> 219.0	6626	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
d5-EtFOSAA	8.347	589.2 -> 419.0	15821	4.85 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d7-MeFOSE	10.648	623.2 -> 58.9	29226	25.22 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d9-EtFOSE	10.970	639.2 -> 58.9	36023	25.02 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d5-EtFOSA	11.073	531.1 -> 219.0	7652	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	11407	4.71 µg/L	98
		327.1 -> 80.9	4485		
6:2FTS	6.836	427.1 -> 407.0	10585	4.95 µg/L	97
		427.1 -> 80.9	4056		
8:2FTS	7.866	527.1 -> 507.0	8759	4.27 µg/L	91
		527.1 -> 80.8	2913		
EtFOSAA	8.347	584.2 -> 419.1	3579	1.33 µg/L	95
		584.2 -> 526.0	1313		
FOSA	9.661	498.1 -> 77.9	5624	1.20 µg/L	98
		498.1 -> 478.0	183		
MeFOSAA	8.137	570.1 -> 419.0	3638	1.23 µg/L	92
		570.1 -> 483.0	641		
PFBA	3.158	212.8 -> 168.9	16396	4.81 µg/L	100
PFBS	5.502	298.7 -> 79.9	5380	1.09 µg/L	99
		298.7 -> 98.8	2081		
PFDA	8.079	512.9 -> 469.0	13931	1.19 µg/L	99
		512.9 -> 219.0	2941		
PFDODA	8.956	613.1 -> 569.0	17383	1.25 µg/L	96
		613.1 -> 319.0	2796		
PFDS	9.121	599.0 -> 79.9	2616	1.11 µg/L	94

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1383			
PFHpA	6.417	363.1 -> 319.0	21700	1.17	µg/L	98
		363.1 -> 169.0	3782			
PFHpS	7.736	449.0 -> 79.9	3227	1.10	µg/L	88
		449.0 -> 98.9	2059			
PFHxA	5.549	313.0 -> 269.0	24669	1.19	µg/L	100
		313.0 -> 118.9	698			
PFHxS	7.180	398.7 -> 79.9	3140	1.01	µg/L	m 97
		398.7 -> 98.9	1675			
PFNA	7.597	463.0 -> 419.0	13516	1.18	µg/L	97
		463.0 -> 219.0	3398			
PFNS	8.686	548.8 -> 79.9	2714	1.33	µg/L	94
		548.8 -> 98.9	1473			
PFOA	7.063	413.0 -> 369.0	23792	1.19	µg/L	99
		413.0 -> 169.0	4703			
PFOS	8.231	498.9 -> 79.9	4915	1.14	µg/L	m 80
		498.9 -> 98.8	2144			
PFPeA	4.502	263.0 -> 219.0	45040	2.43	µg/L	100
PFPeS	6.470	349.1 -> 79.9	2843	1.19	µg/L	98
		349.1 -> 98.9	1318			
PFTeDA	9.737	713.1 -> 669.0	14576	1.21	µg/L	97
		713.1 -> 168.9	1441			
PFTrDA	9.366	663.0 -> 619.0	21273	1.23	µg/L	98
		663.0 -> 168.9	2311			
PFUnDA	8.524	563.1 -> 519.0	14504	1.17	µg/L	97
		563.1 -> 269.1	2929			
11CI-PF3OUdS	9.418	630.9 -> 450.9	41993	4.59	µg/L	98
		632.9 -> 452.9	13210			
9CI-PF3ONS	8.563	530.8 -> 351.0	53827	4.85	µg/L	99
		532.8 -> 353.0	16671			
ADONA	6.668	376.9 -> 250.9	94867	4.67	µg/L	99
		376.9 -> 84.8	17026			
HFPO-DA	5.878	284.9 -> 168.9	14112	4.87	µg/L	96
		284.9 -> 184.9	1912			
3:3FTCA	4.154	241.0 -> 177.0	6256	5.73	µg/L	99
		241.0 -> 117.0	521			
5:3FTCA	6.333	341.0 -> 237.1	96043	30.55	µg/L	99
		341.0 -> 217.0	69158			
7:3FTCA	7.723	441.0 -> 316.9	38851	30.71	µg/L	97
		441.0 -> 336.9	91681			
EtFOSA	11.087	526.0 -> 219.0	3899	1.22	µg/L	94
		526.0 -> 169.0	4295			
EtFOSE	10.984	630.0 -> 58.9	16948	11.93	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	3051	1.25	µg/L	97
		511.9 -> 169.0	3446			
MeFOSE	10.674	616.1 -> 58.9	15543	12.67	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	2172	1.15	µg/L	97
		699.1 -> 98.8	1241			
NFDHA	5.453	295.0 -> 201.0	1979	2.51	µg/L	100
		295.0 -> 84.9	485			
PFMBA	4.867	279.0 -> 85.1	22992	2.33	µg/L	100
PFMPA	3.727	229.0 -> 84.9	18272	2.33	µg/L	100
PFEESA	5.971	314.8 -> 134.9	29249	2.09	µg/L	99
		314.8 -> 82.9	1118			

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

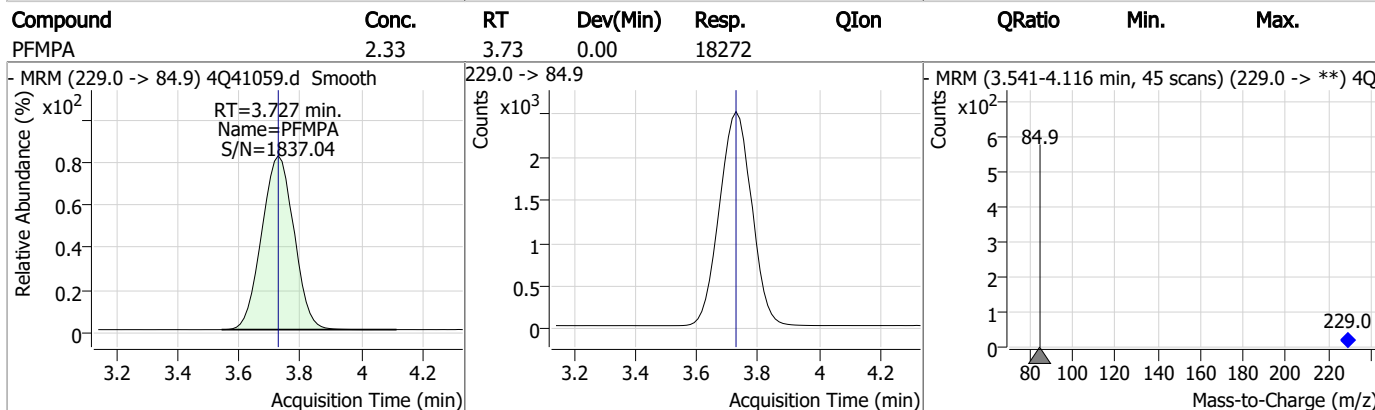
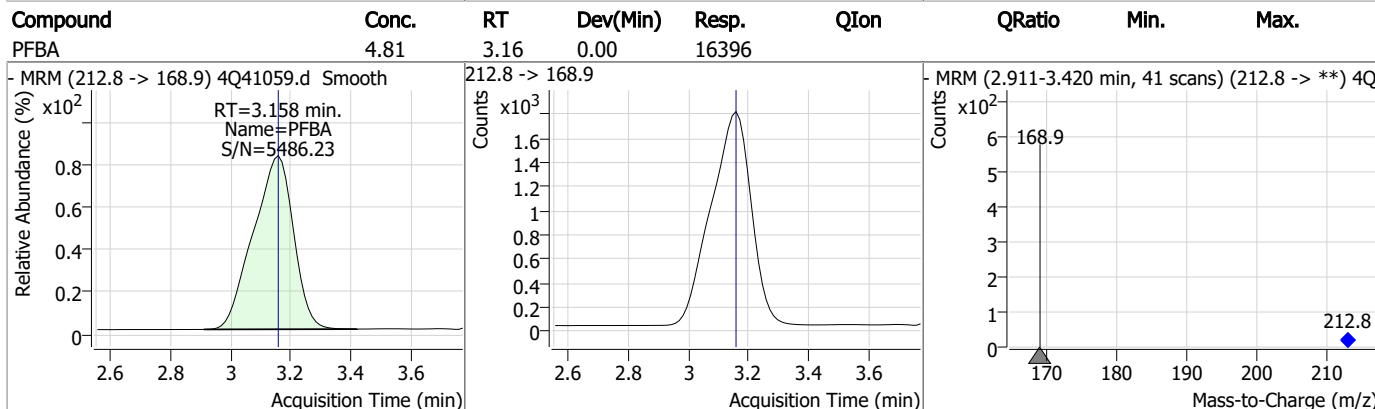
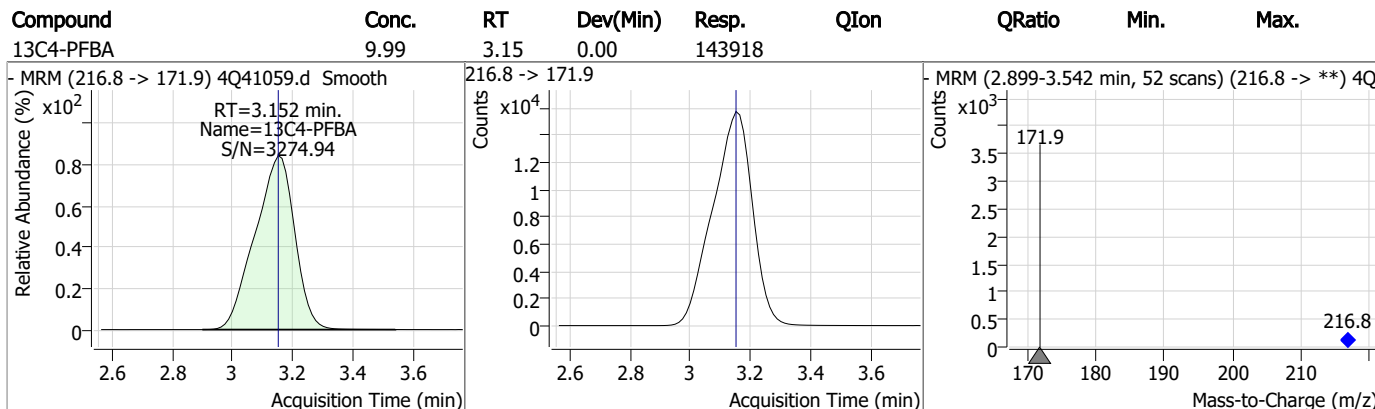
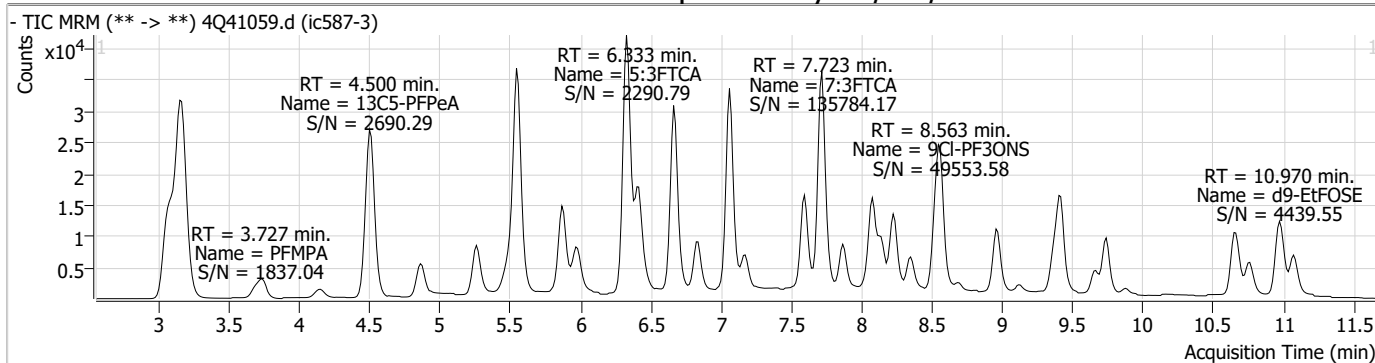
Perfluorinated Compounds by LC/MS/MS

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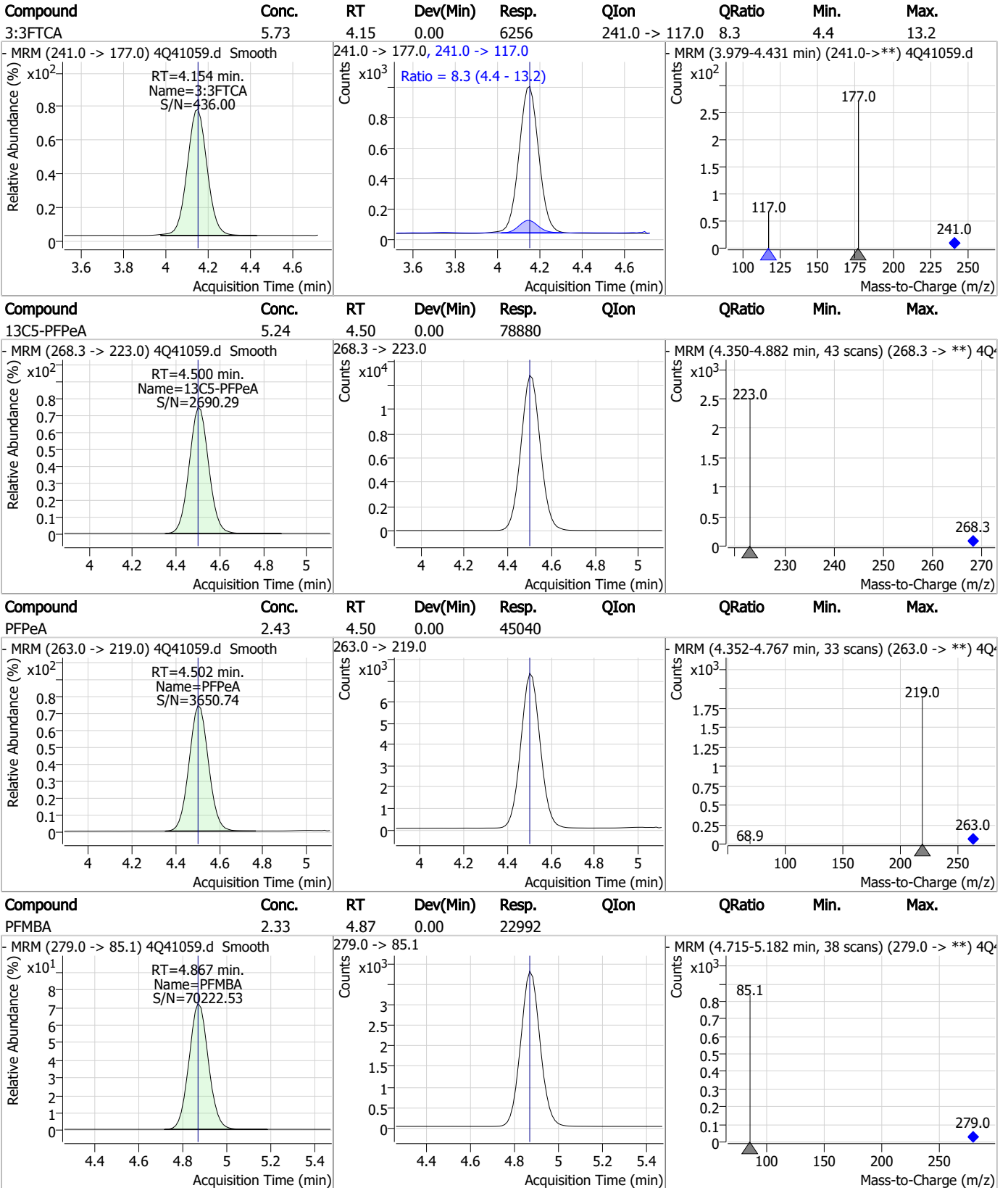
7.6.4

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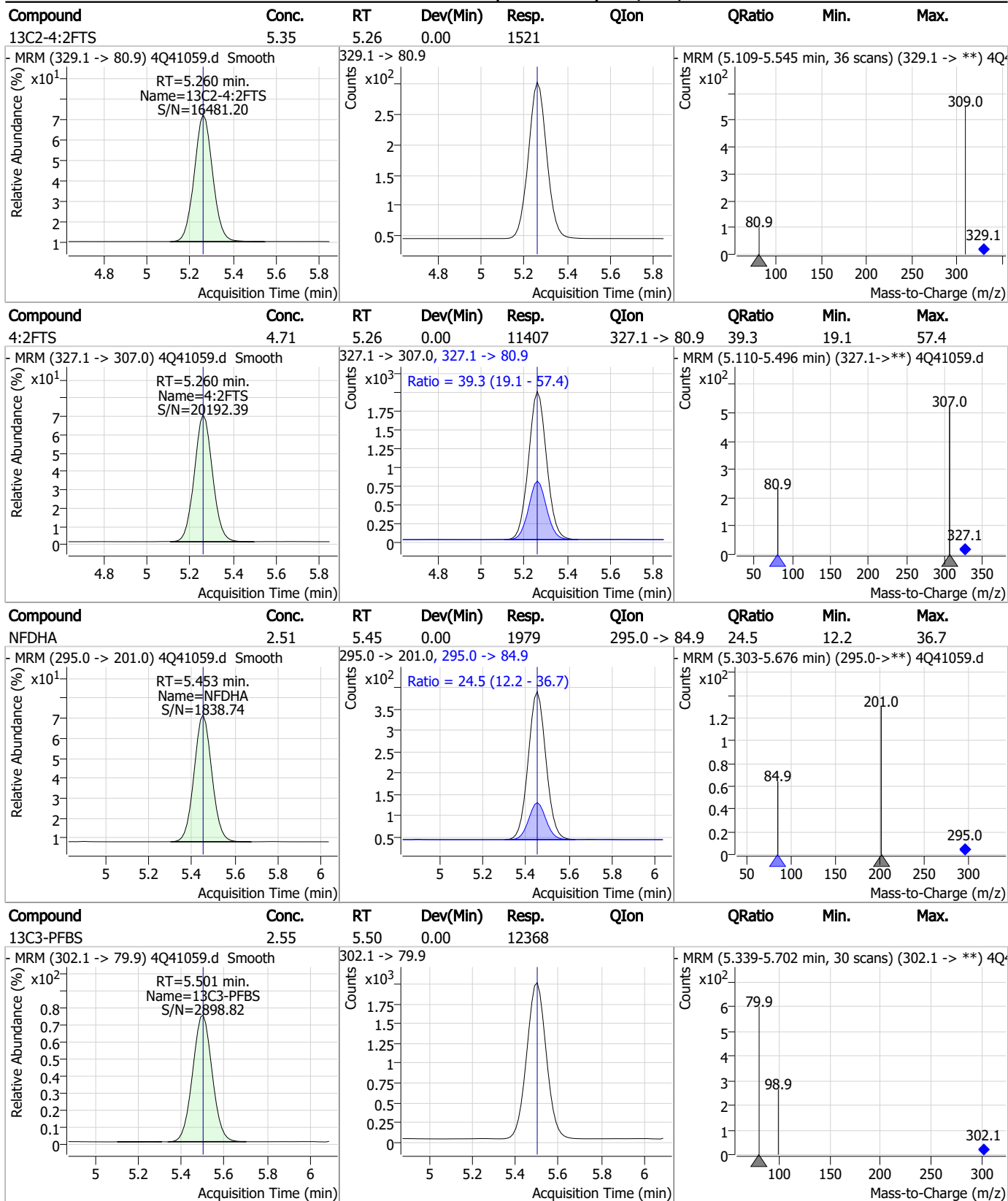
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



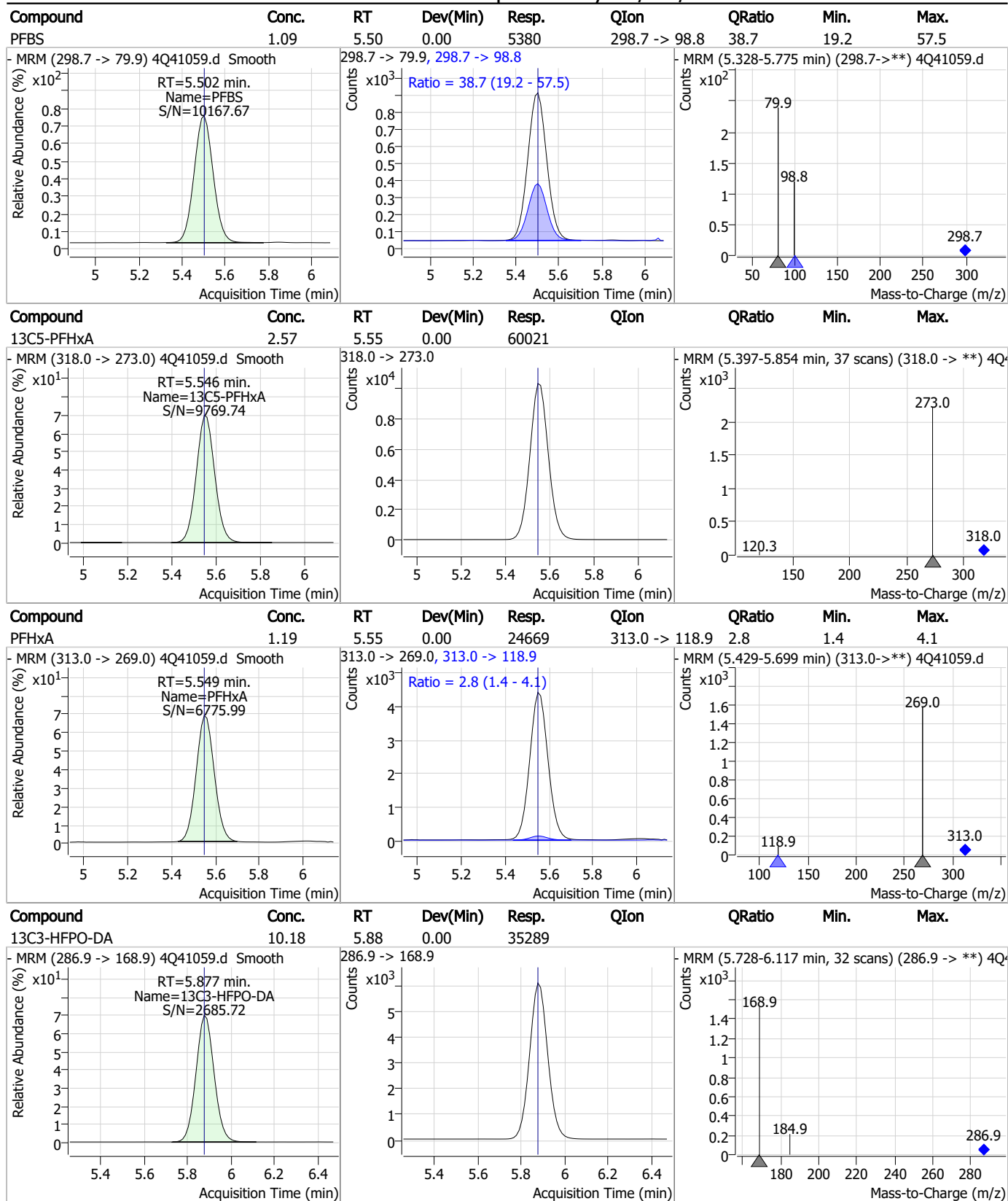
Perfluorinated Compounds by LC/MS/MS



7.6.4

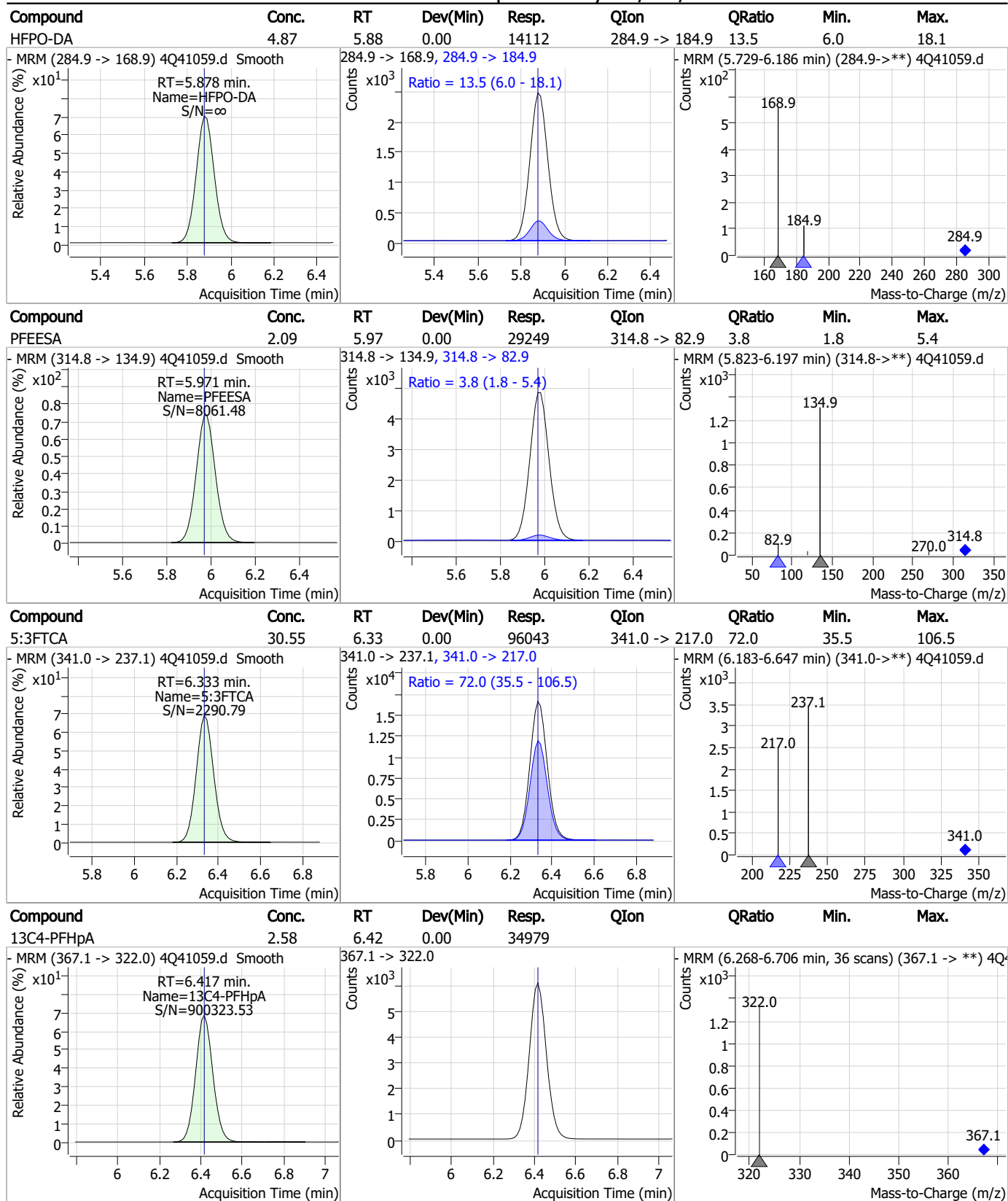
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Perfluorinated Compounds by LC/MS/MS



7.6.4
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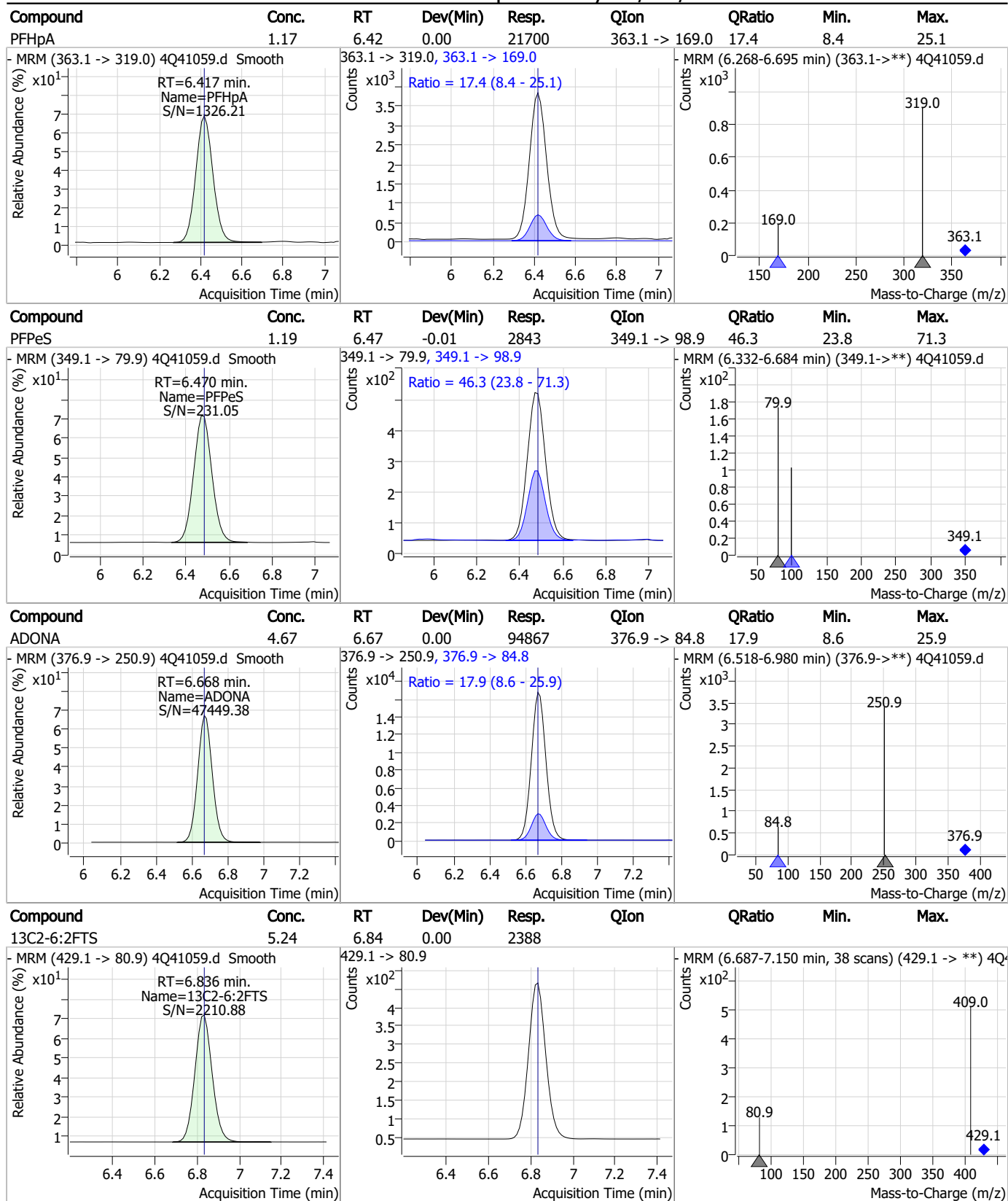
Perfluorinated Compounds by LC/MS/MS



7.6.4

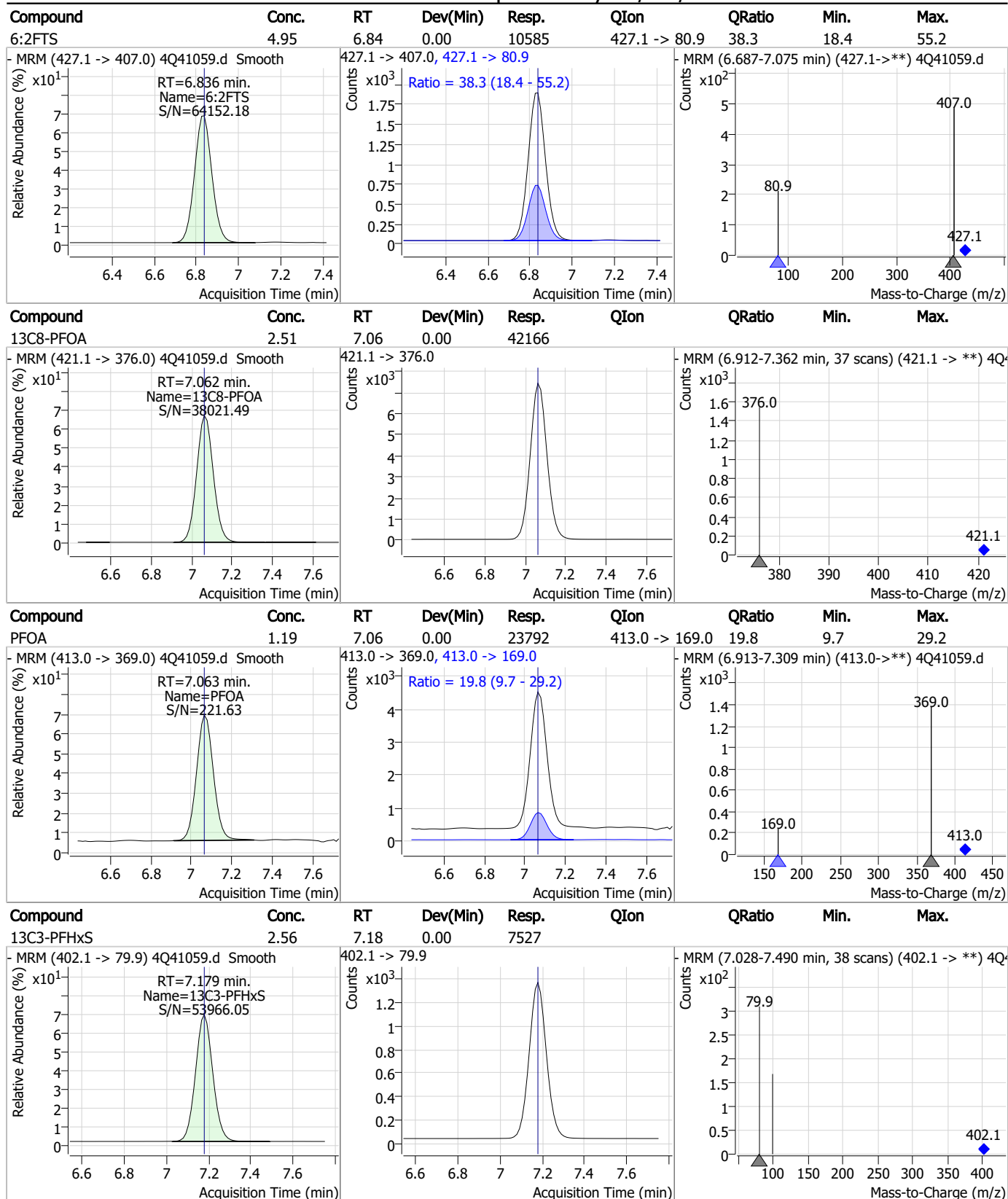
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Perfluorinated Compounds by LC/MS/MS



7.6.4
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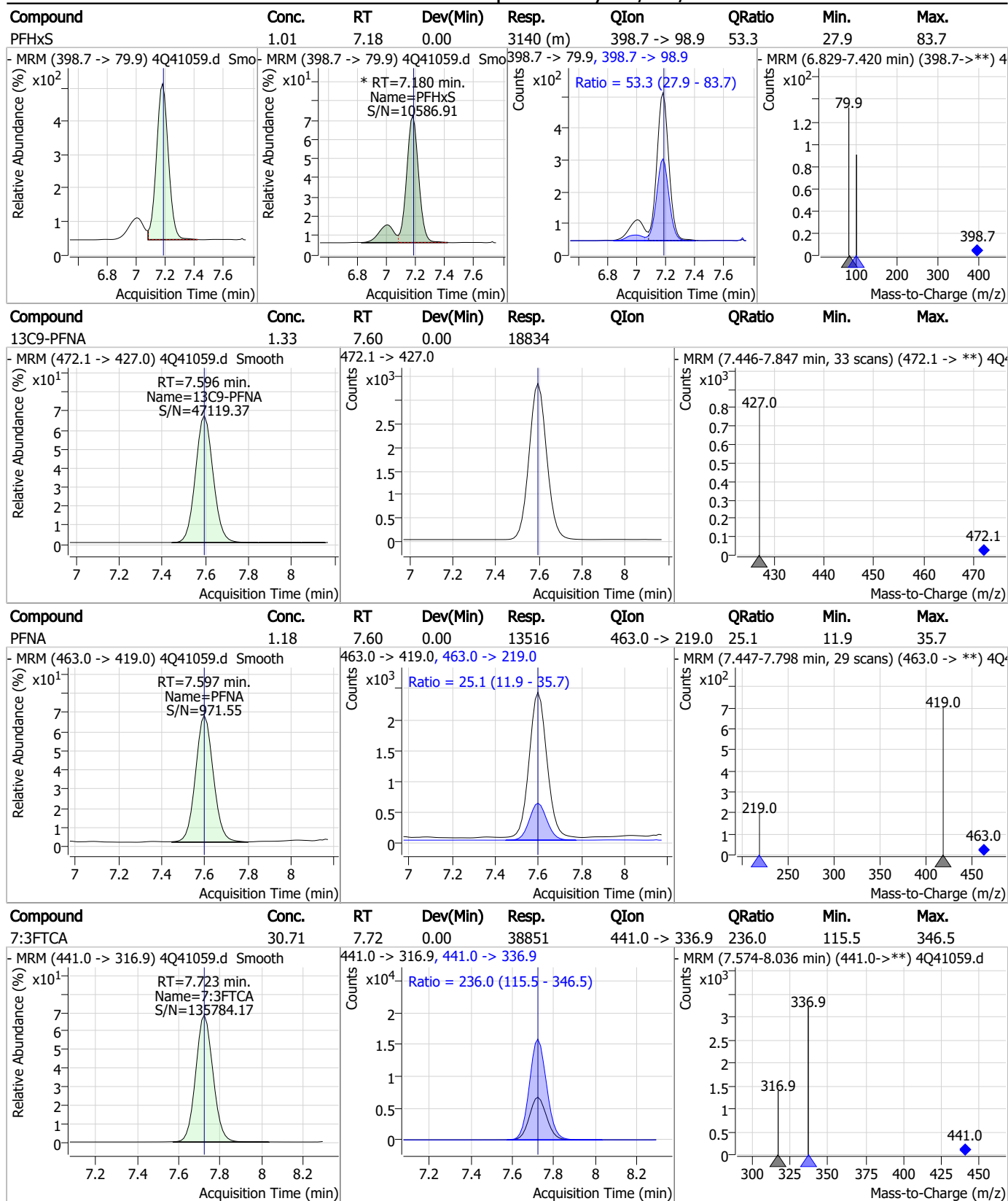
Perfluorinated Compounds by LC/MS/MS



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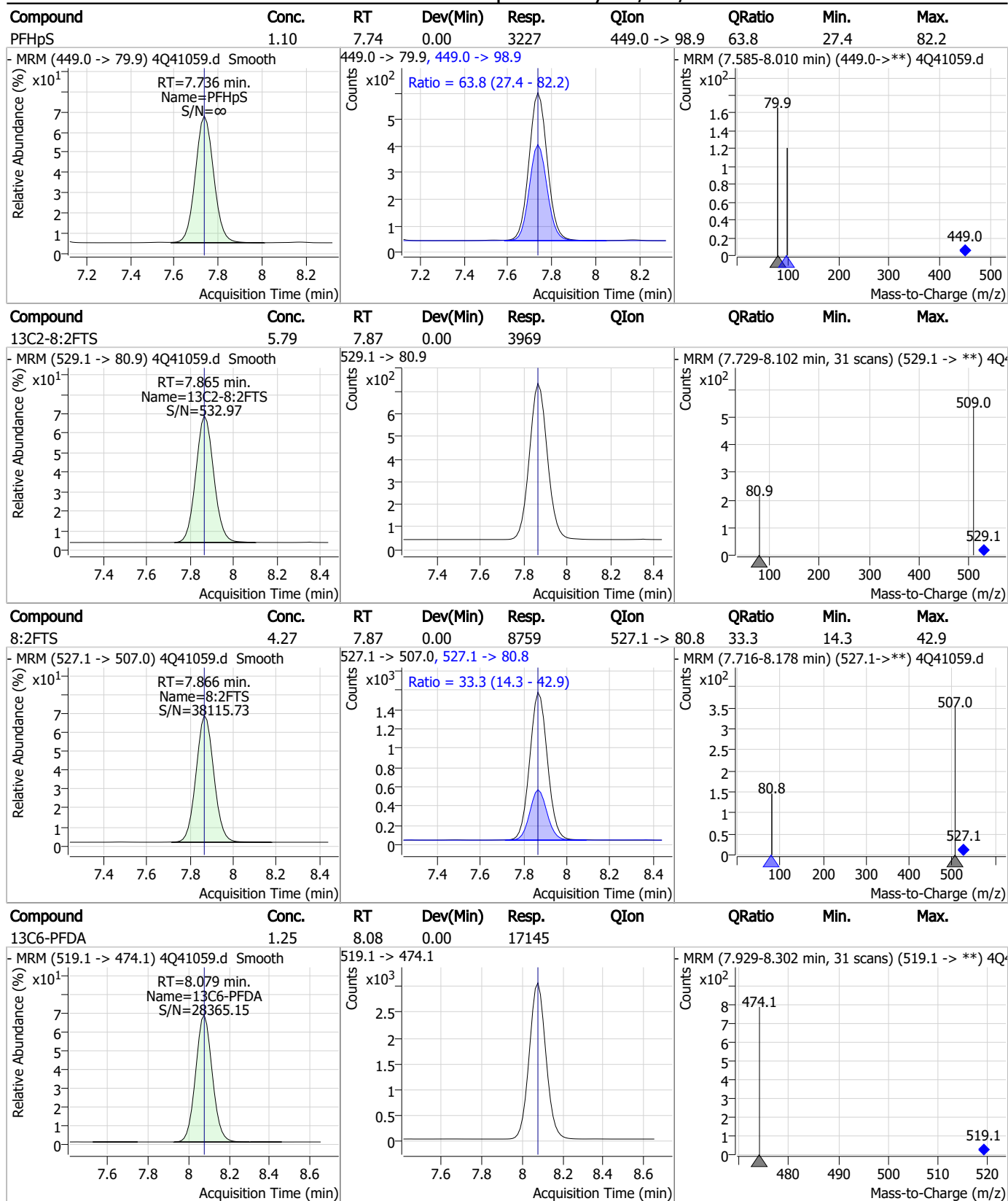
Perfluorinated Compounds by LC/MS/MS



7.6.4

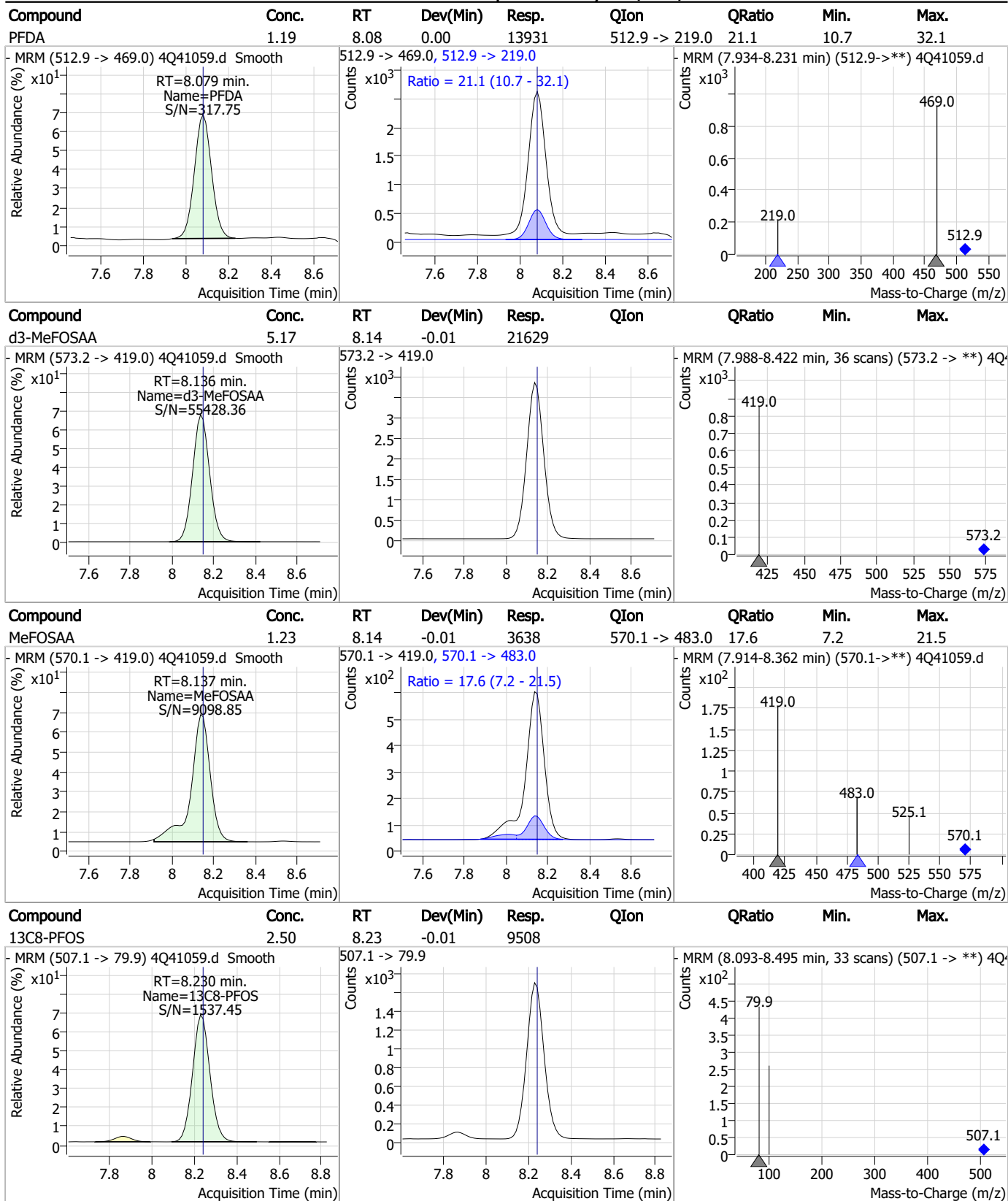
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Perfluorinated Compounds by LC/MS/MS

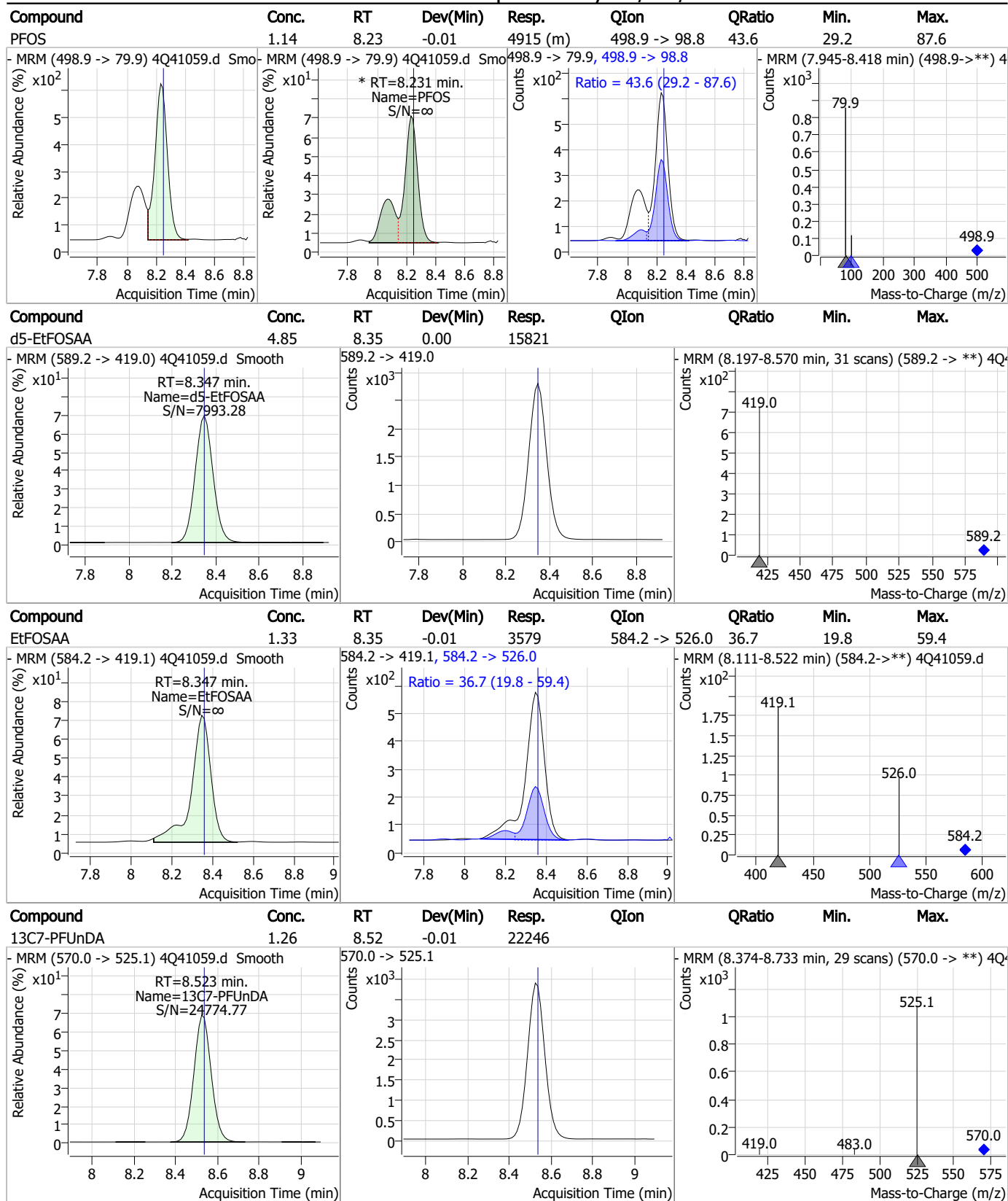


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Perfluorinated Compounds by LC/MS/MS



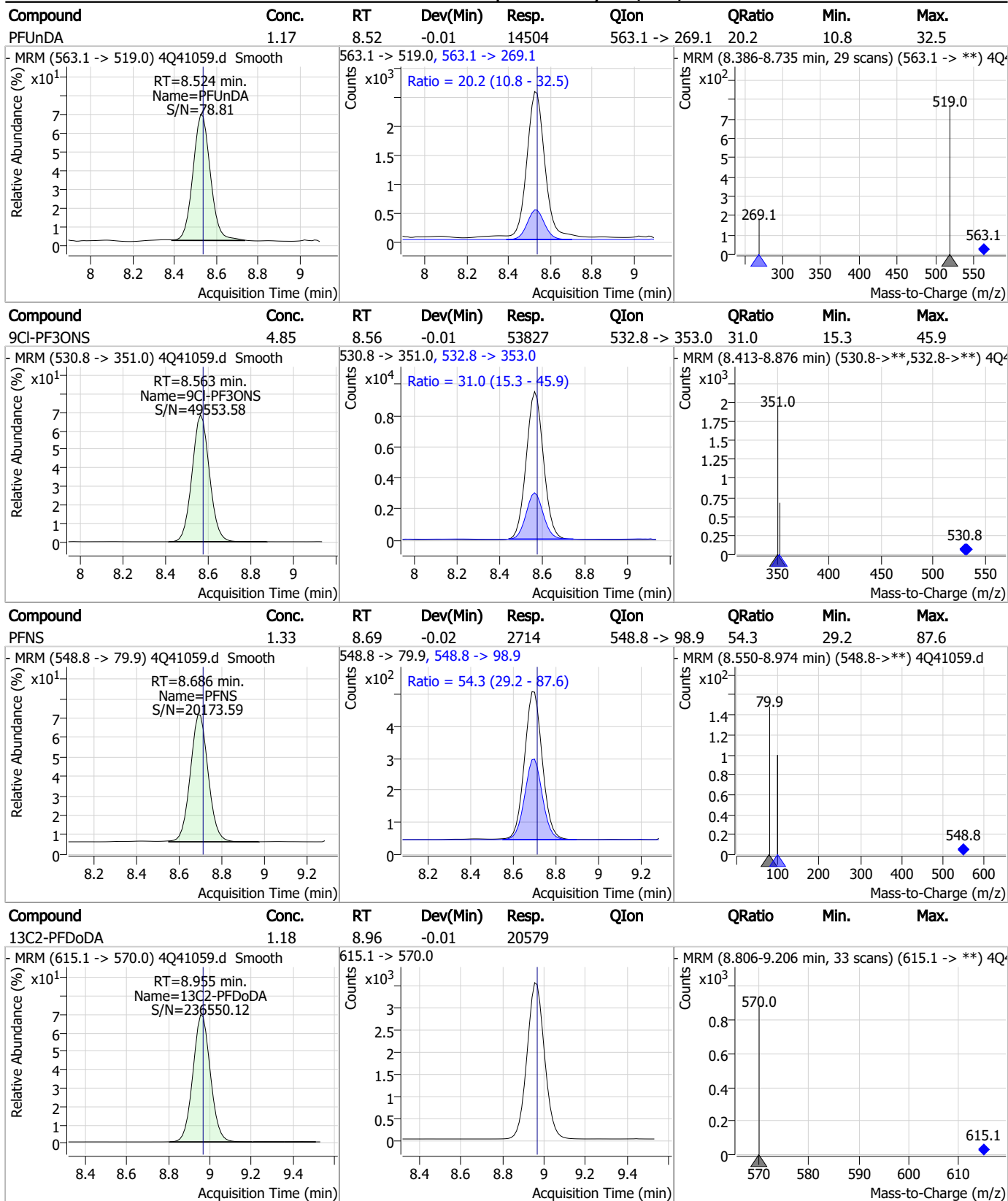
Perfluorinated Compounds by LC/MS/MS



7.6.4

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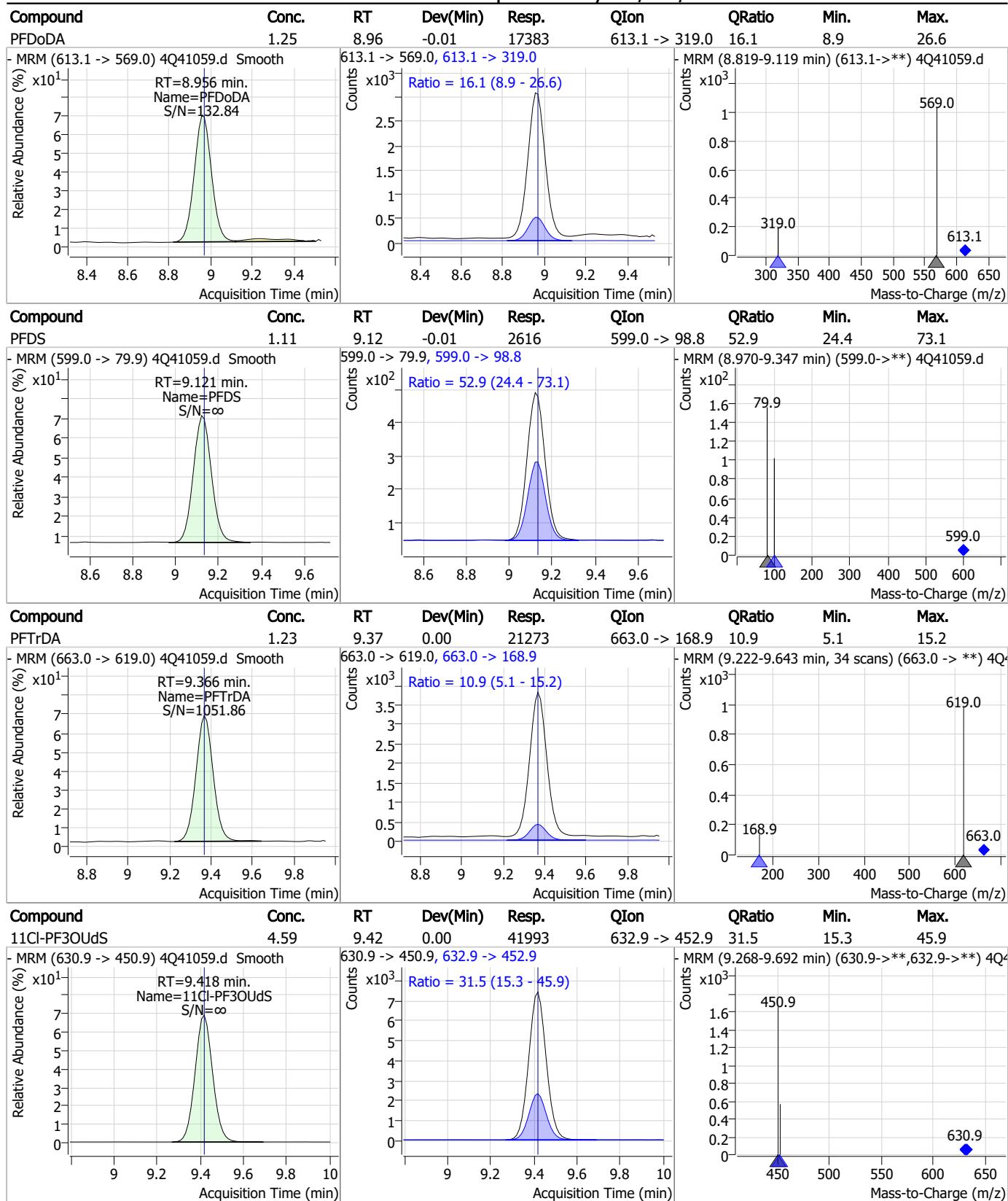
Perfluorinated Compounds by LC/MS/MS



7.6.4

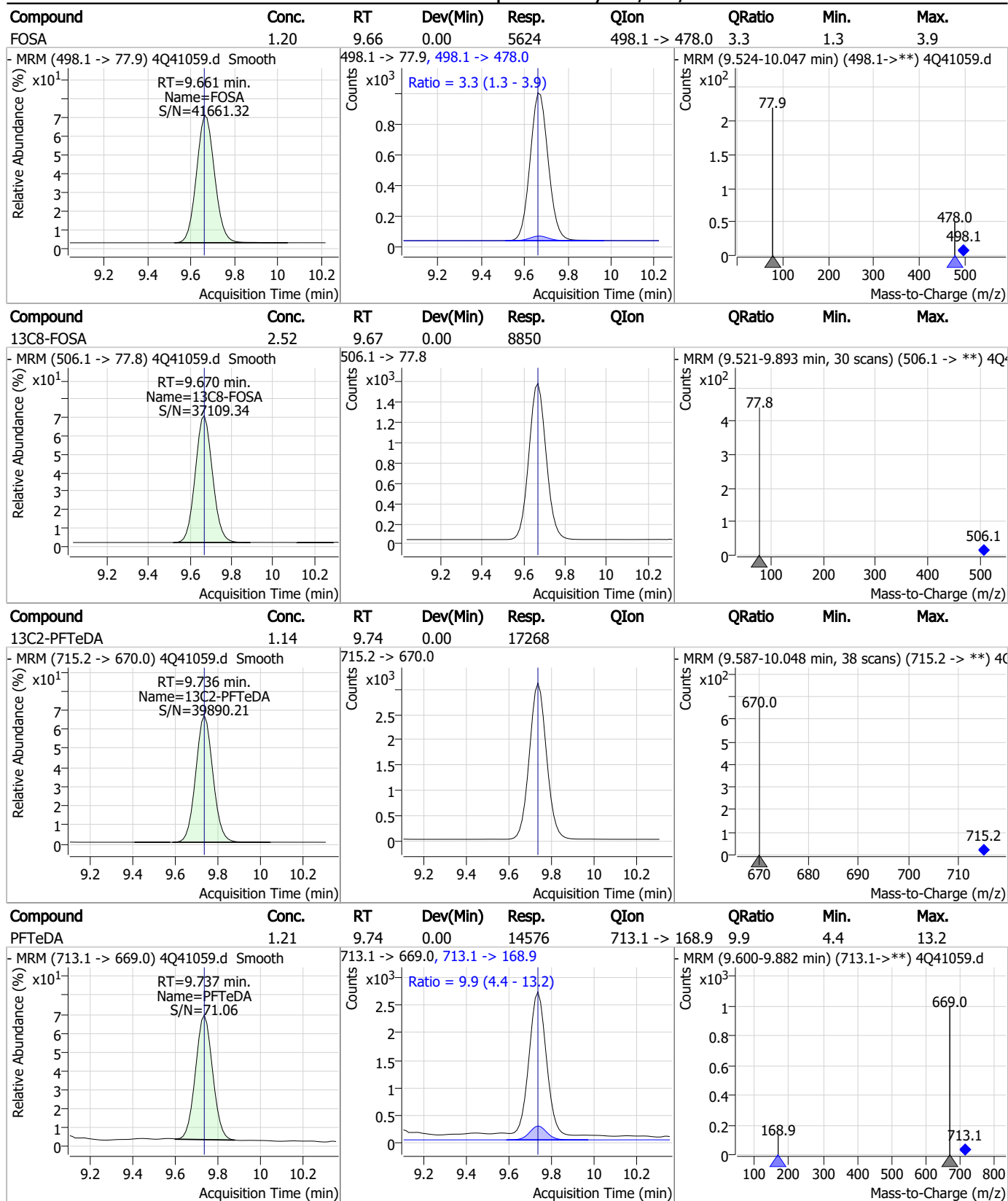
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Perfluorinated Compounds by LC/MS/MS



7.6.4
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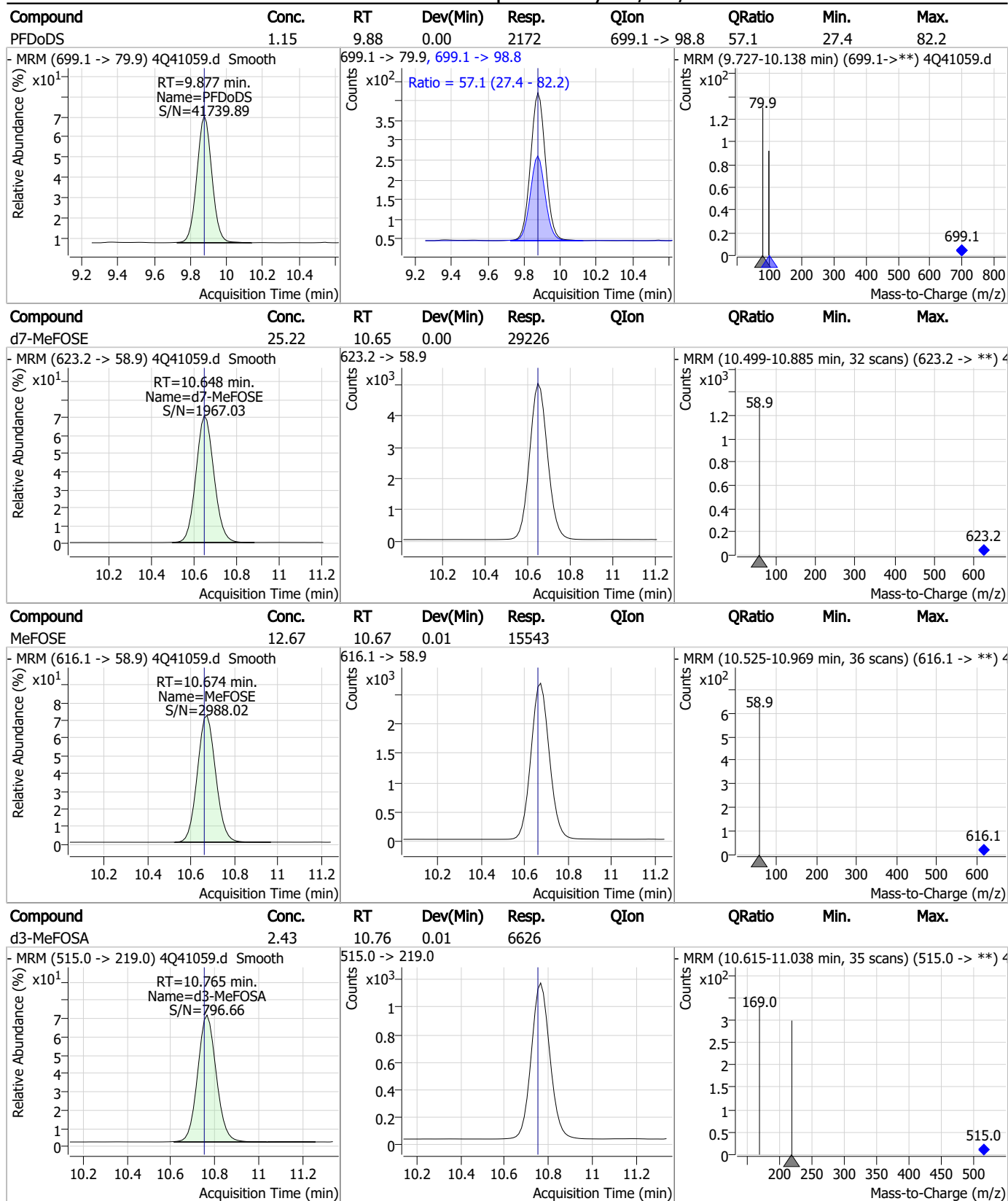
Perfluorinated Compounds by LC/MS/MS



7.6.4

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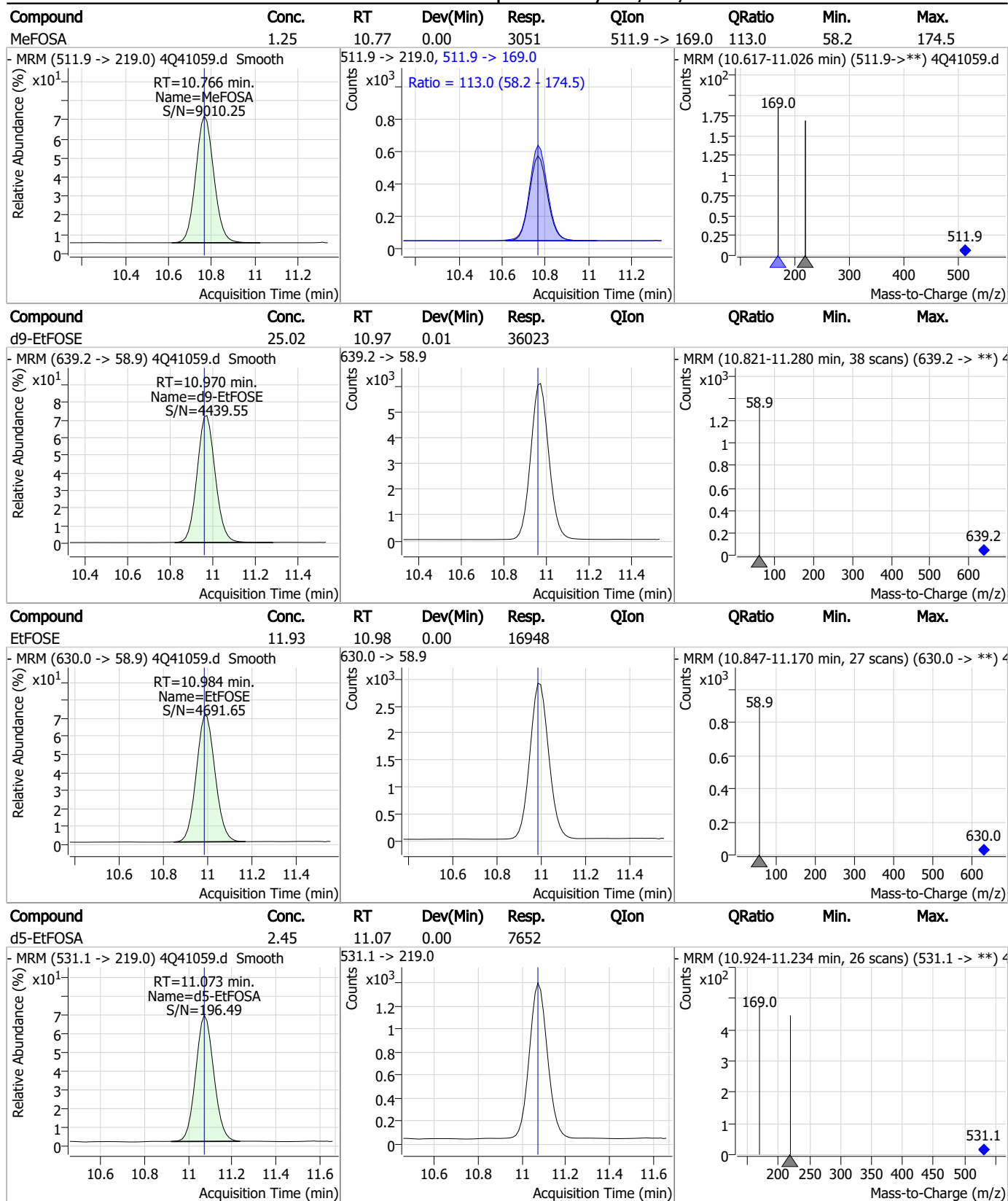
Perfluorinated Compounds by LC/MS/MS



7.6.4

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Perfluorinated Compounds by LC/MS/MS

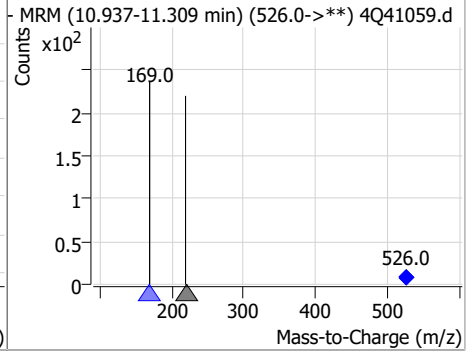
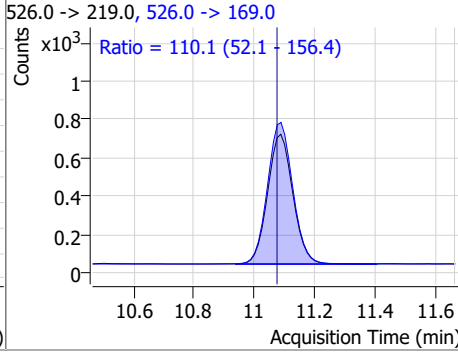
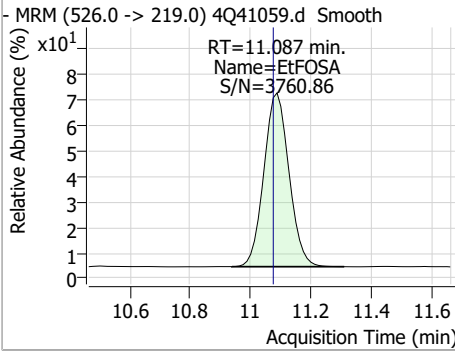


7.6.4

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	1.22	11.09	0.01	3899	526.0 -> 169.0	110.1	52.1	156.4



7.6.4

7

Manual Integration Approval Summary

Sample Number: S4Q587-IC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41059.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 16:51 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak

7.6.4.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/24/23 10:47

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41060.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 5:05:56 PM
 Sample Name : icc587-4
 Vial : P1-A5
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	149365	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	80442	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	61275	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	35711	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	44495	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	18348	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	17958	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	23510	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	22393	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	19034	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	8977	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12560	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7279	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	10193	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1571	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2625	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3300	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	22624	5.00 µg/L	0.000
M3-HFPO-DA	5.877	286.9 -> 168.9	36083	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	17232	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	30899	25.00 µg/L	0.000
M9-EtFOSE	10.958	639.2 -> 58.9	38310	25.00 µg/L	0.000
M5-EtFOSA	11.073	531.1 -> 219.0	7569	2.50 µg/L	0.000
M3-MeFOSA	10.752	515.0 -> 219.0	6610	2.50 µg/L	0.000
13C4-PFOS	8.243	502.8 -> 79.9	9884	2.50 µg/L	0.000
13C3-PFBA	3.155	216.0 -> 172.0	90283	5.00 µg/L	0.000
18O2-PFHxS	7.178	403.0 -> 83.9	5475	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	52678	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16843	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	21374	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	55950	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1571	5.30 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2625	5.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.6%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3300	4.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C2-PFDoDA	8.968	615.1 -> 570.0	22393	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-PFTeDA	9.736	715.2 -> 670.0	19034	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C3-PFBS	5.501	302.1 -> 79.9	12560	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C3-PFHxS	7.179	402.1 -> 79.9	7279	2.37 µg/L	0.000

7.65
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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	3.152	216.8 -> 171.9	149365	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.417	367.1 -> 322.0	35711	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFHxA	5.546	318.0 -> 273.0	61275	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFPeA	4.500	268.3 -> 223.0	80442	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C6-PFDA	8.079	519.1 -> 474.1	17958	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C7-PFUnDA	8.536	570.0 -> 525.1	23510	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-FOSA	9.670	506.1 -> 77.8	8977	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C8-PFOA	7.062	421.1 -> 376.0	44495	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C8-PFOS	8.242	507.1 -> 79.9	10193	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C9-PFNA	7.596	472.1 -> 427.0	18348	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
d3-MeFOSAA	8.148	573.2 -> 419.0	22624	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	36083	9.91 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSA	10.752	515.0 -> 219.0	6610	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
d5-EtFOSAA	8.346	589.2 -> 419.0	17232	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d7-MeFOSE	10.648	623.2 -> 58.9	30899	25.64 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
d9-EtFOSE	10.958	639.2 -> 58.9	38310	25.59 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d5-EtFOSA	11.073	531.1 -> 219.0	7569	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	22211	8.88 µg/L	100
		327.1 -> 80.9	8492		
6:2FTS	6.836	427.1 -> 407.0	21043	8.95 µg/L	100
		427.1 -> 80.9	7746		
8:2FTS	7.866	527.1 -> 507.0	16489	9.67 µg/L	100
		527.1 -> 80.8	4715		
EtFOSAA	8.360	584.2 -> 419.1	6899	2.36 µg/L	m 92
		584.2 -> 526.0	3058		
FOSA	9.661	498.1 -> 77.9	10984	2.30 µg/L	100
		498.1 -> 478.0	285		
MeFOSAA	8.149	570.1 -> 419.0	7712	2.50 µg/L	m 94
		570.1 -> 483.0	1300		
PFBA	3.158	212.8 -> 168.9	32778	9.26 µg/L	100
PFBS	5.502	298.7 -> 79.9	10593	2.11 µg/L	100
		298.7 -> 98.8	4061		
PFDA	8.079	512.9 -> 469.0	27246	2.22 µg/L	100
		512.9 -> 219.0	5839		
PFDODA	8.968	613.1 -> 569.0	34342	2.26 µg/L	100
		613.1 -> 319.0	6086		
PFDS	9.133	599.0 -> 79.9	5335	2.10 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2600			
PFHpA	6.417	363.1 -> 319.0	44602	2.35	µg/L	100
		363.1 -> 169.0	7466			
PFHpS	7.736	449.0 -> 79.9	6661	2.13	µg/L	100
		449.0 -> 98.9	3650			
PFHxA	5.549	313.0 -> 269.0	54980	2.60	µg/L	100
		313.0 -> 118.9	1505			
PFHxS	7.180	398.7 -> 79.9	6642	2.21	µg/L	m 95
		398.7 -> 98.9	3447			
PFNA	7.596	463.0 -> 419.0	25882	2.32	µg/L	100
		463.0 -> 219.0	6156			
PFNS	8.711	548.8 -> 79.9	4624	2.11	µg/L	100
		548.8 -> 98.9	2700			
PFOA	7.063	413.0 -> 369.0	48738	2.32	µg/L	100
		413.0 -> 169.0	9494			
PFOS	8.243	498.9 -> 79.9	9113	1.98	µg/L	m 88
		498.9 -> 98.8	4474			
PFPeA	4.502	263.0 -> 219.0	90687	4.79	µg/L	100
PFPeS	6.484	349.1 -> 79.9	5173	2.24	µg/L	100
		349.1 -> 98.9	2458			
PFTeDA	9.737	713.1 -> 669.0	30929	2.34	µg/L	100
		713.1 -> 168.9	2716			
PFTrDA	9.366	663.0 -> 619.0	44121	2.34	µg/L	100
		663.0 -> 168.9	4468			
PFUnDA	8.536	563.1 -> 519.0	29361	2.25	µg/L	100
		563.1 -> 269.1	6356			
11CI-PF3OUdS	9.418	630.9 -> 450.9	87060	9.30	µg/L	100
		632.9 -> 452.9	26653			
9CI-PF3ONS	8.575	530.8 -> 351.0	109139	9.62	µg/L	100
		532.8 -> 353.0	33375			
ADONA	6.668	376.9 -> 250.9	194273	9.34	µg/L	100
		376.9 -> 84.8	33566			
HFPO-DA	5.878	284.9 -> 168.9	28319	9.56	µg/L	100
		284.9 -> 184.9	3420			
3:3FTCA	4.154	241.0 -> 177.0	12610	11.32	µg/L	100
		241.0 -> 117.0	1114			
5:3FTCA	6.333	341.0 -> 237.1	198128	61.73	µg/L	100
		341.0 -> 217.0	140721			
7:3FTCA	7.723	441.0 -> 316.9	80740	62.51	µg/L	100
		441.0 -> 336.9	186491			
EtFOSA	11.074	526.0 -> 219.0	8268	2.61	µg/L	100
		526.0 -> 169.0	8620			
EtFOSE	10.983	630.0 -> 58.9	35885	23.75	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	6019	2.48	µg/L	100
		511.9 -> 169.0	7000			
MeFOSE	10.662	616.1 -> 58.9	30329	23.39	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	4085	2.01	µg/L	100
		699.1 -> 98.8	2239			
NFDHA	5.453	295.0 -> 201.0	4022	5.00	µg/L	100
		295.0 -> 84.9	983			
PFMBA	4.867	279.0 -> 85.1	47424	4.72	µg/L	100
PFMPA	3.727	229.0 -> 84.9	36413	4.56	µg/L	100
PFEESA	5.971	314.8 -> 134.9	60119	4.20	µg/L	100
		314.8 -> 82.9	2164			

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

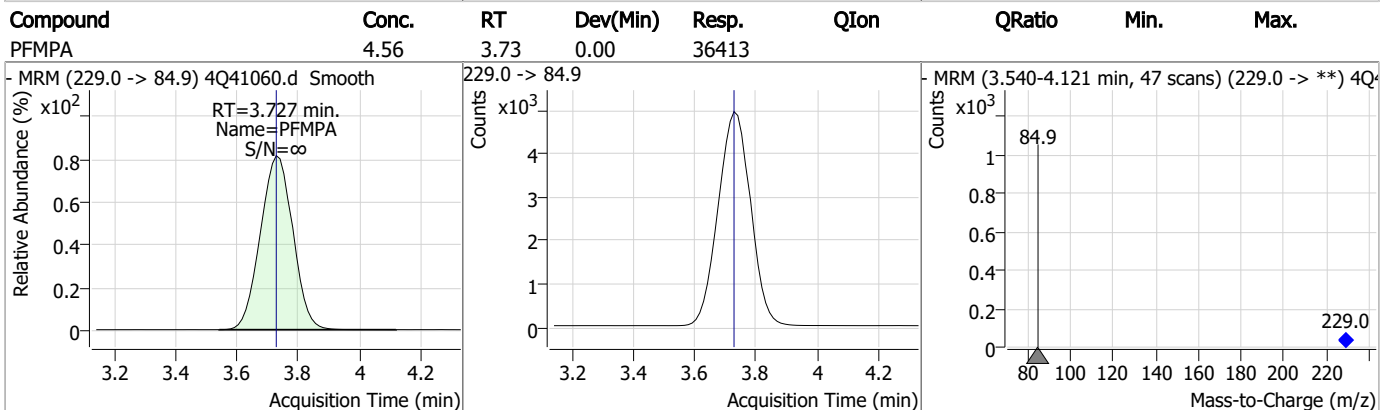
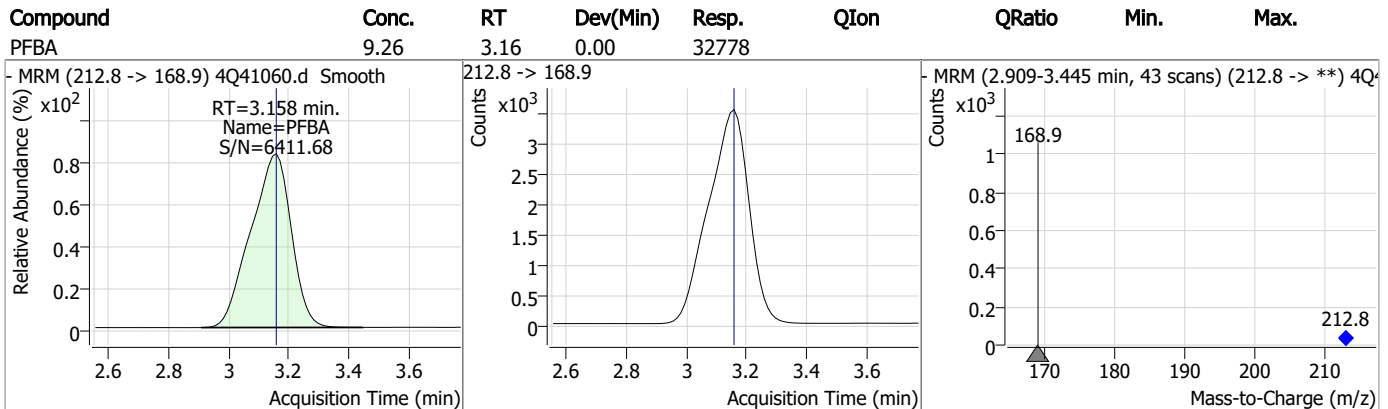
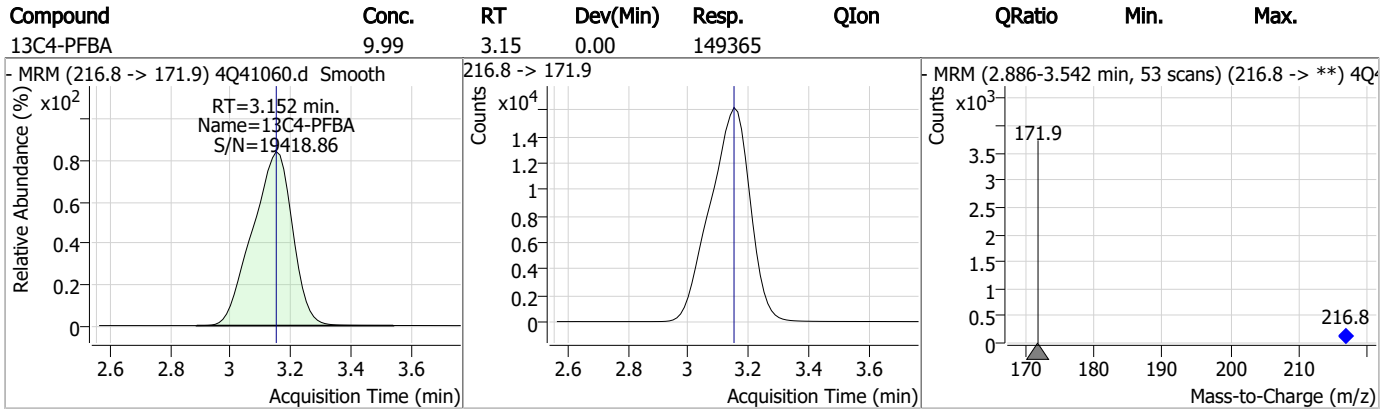
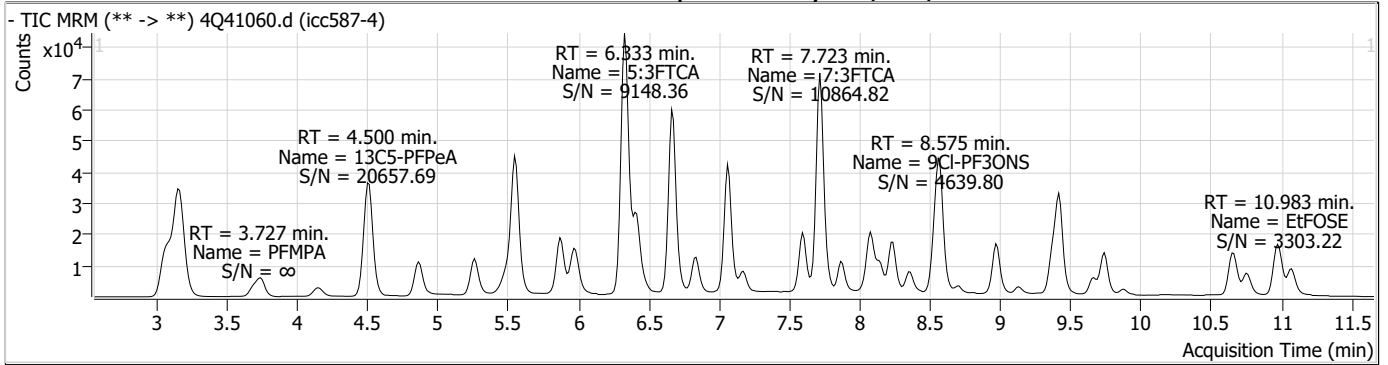
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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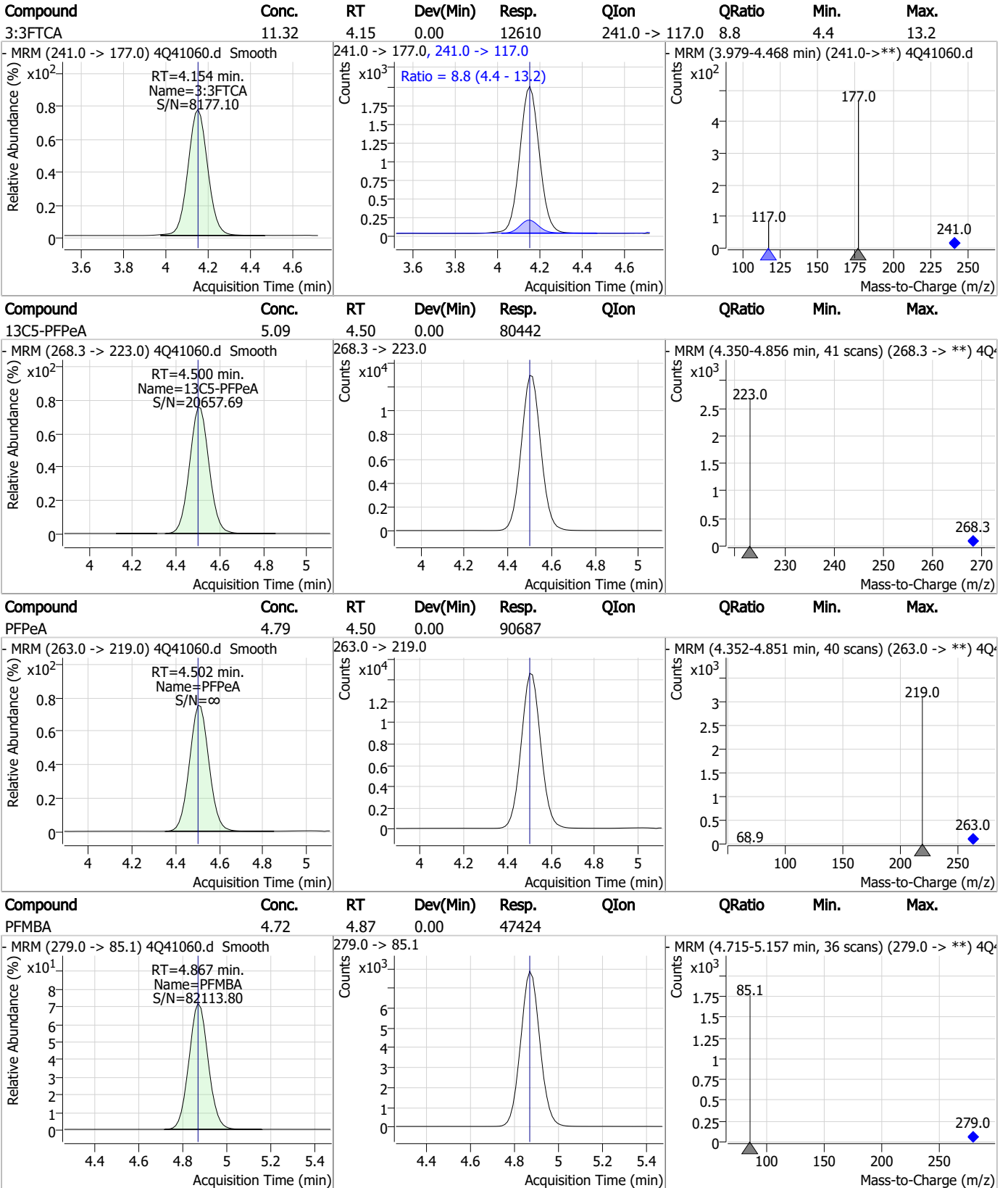
7.6.5
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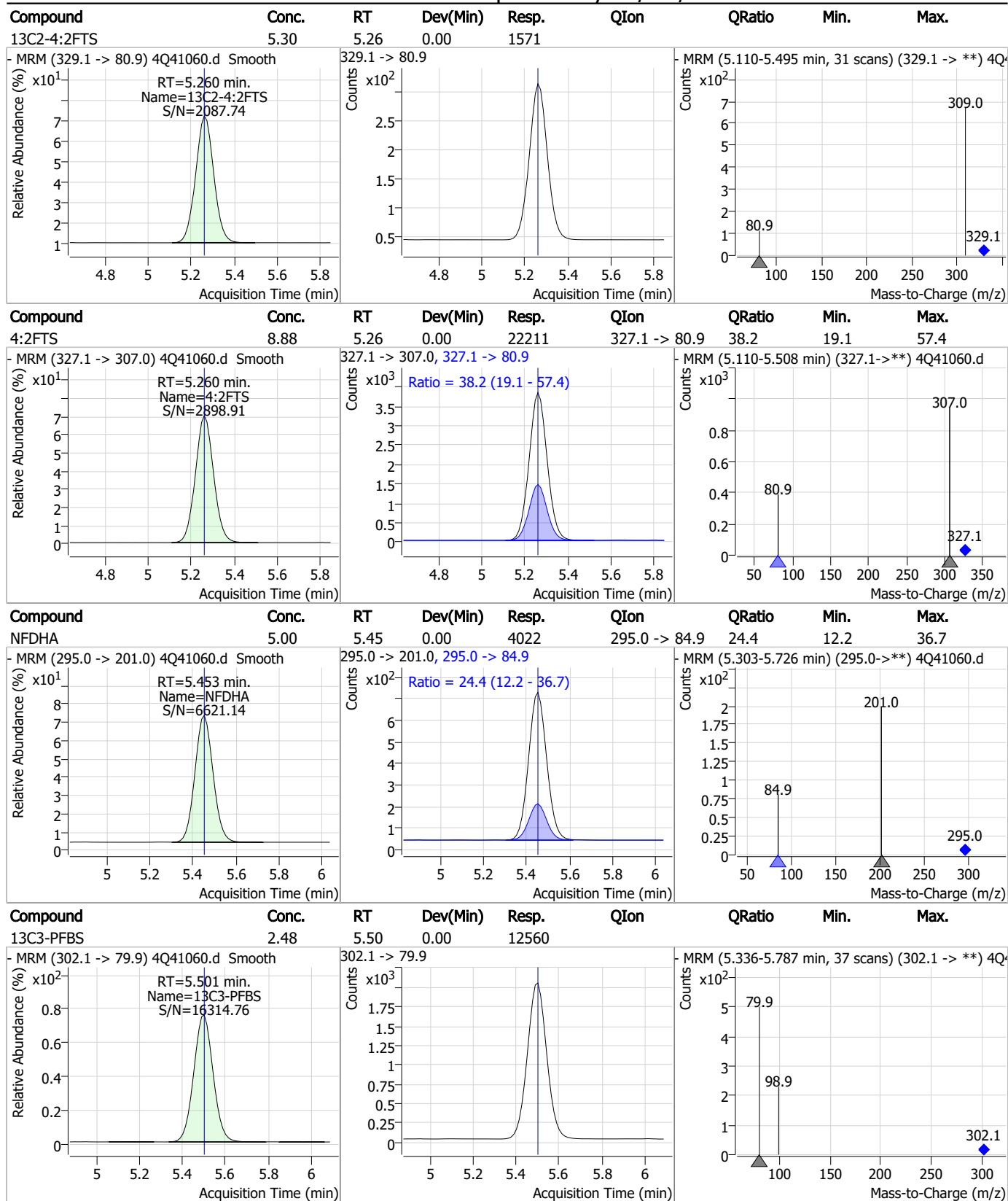
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



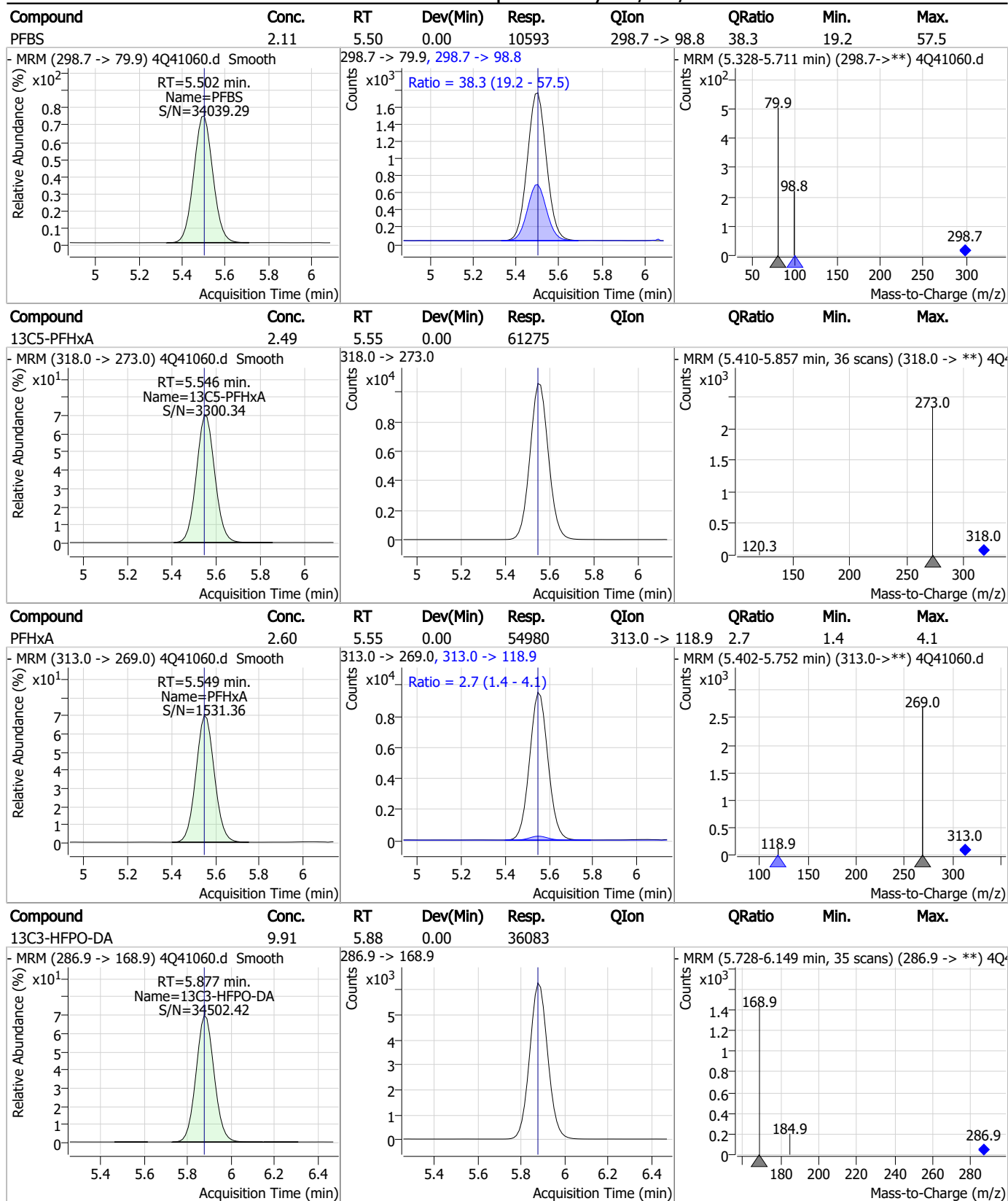
Perfluorinated Compounds by LC/MS/MS



7.6.5

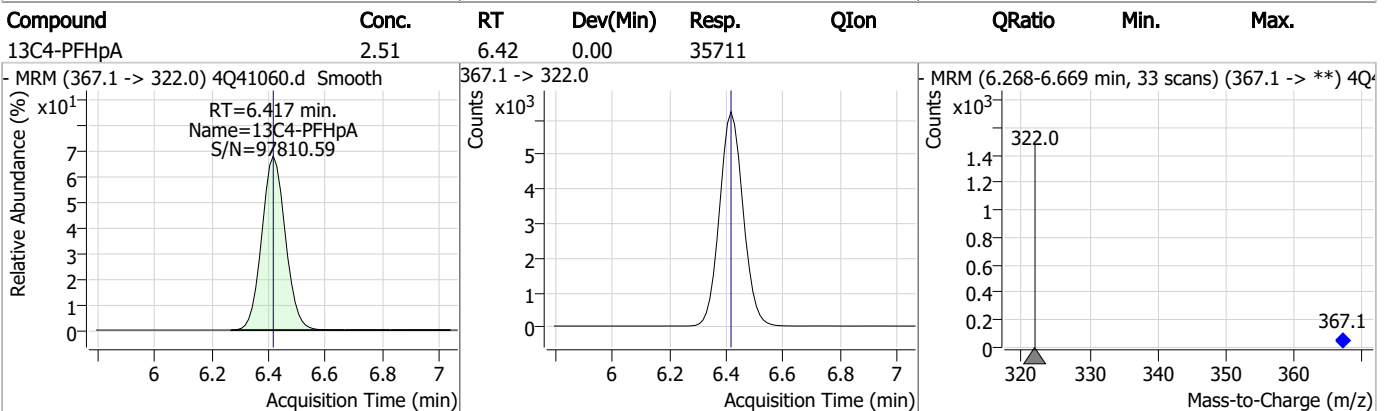
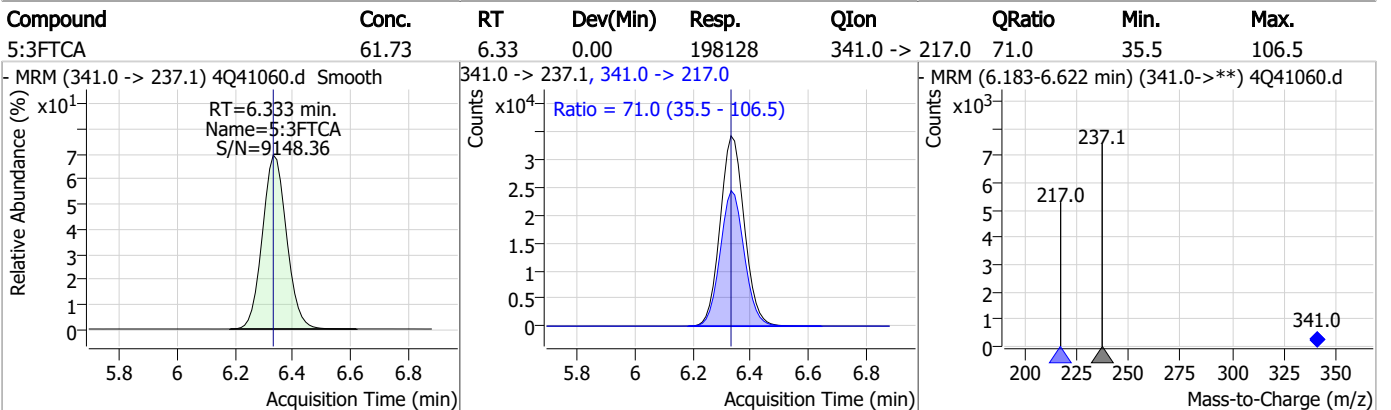
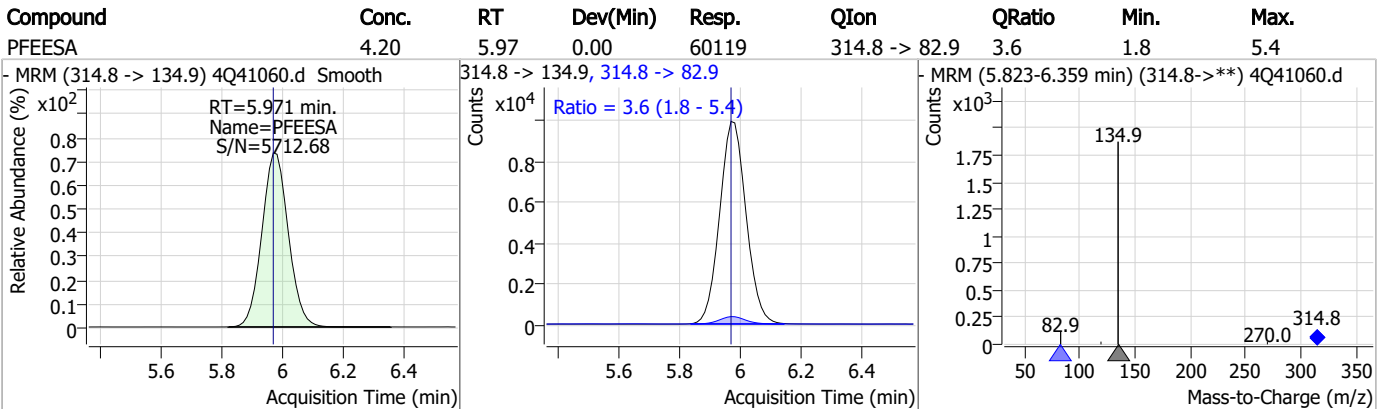
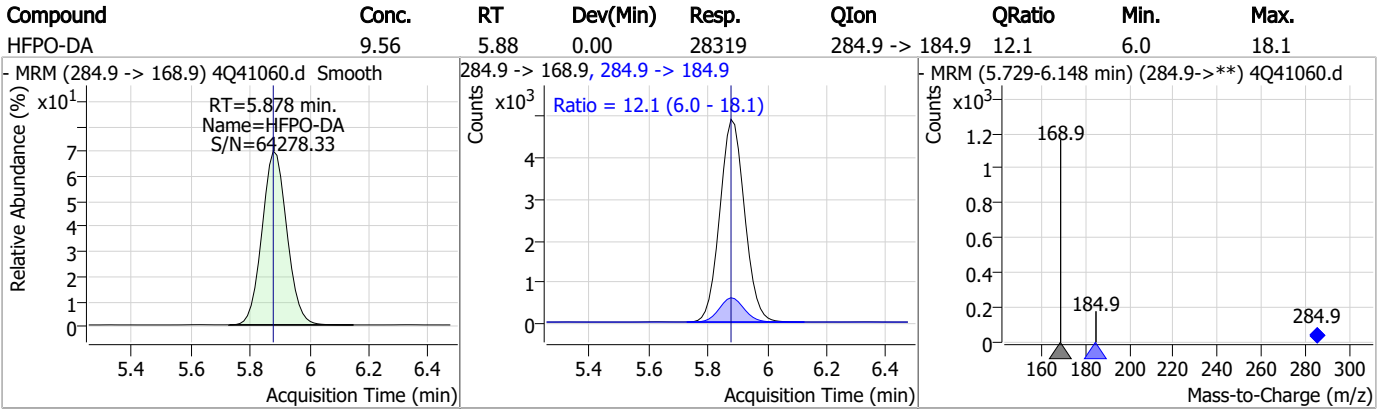
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Perfluorinated Compounds by LC/MS/MS



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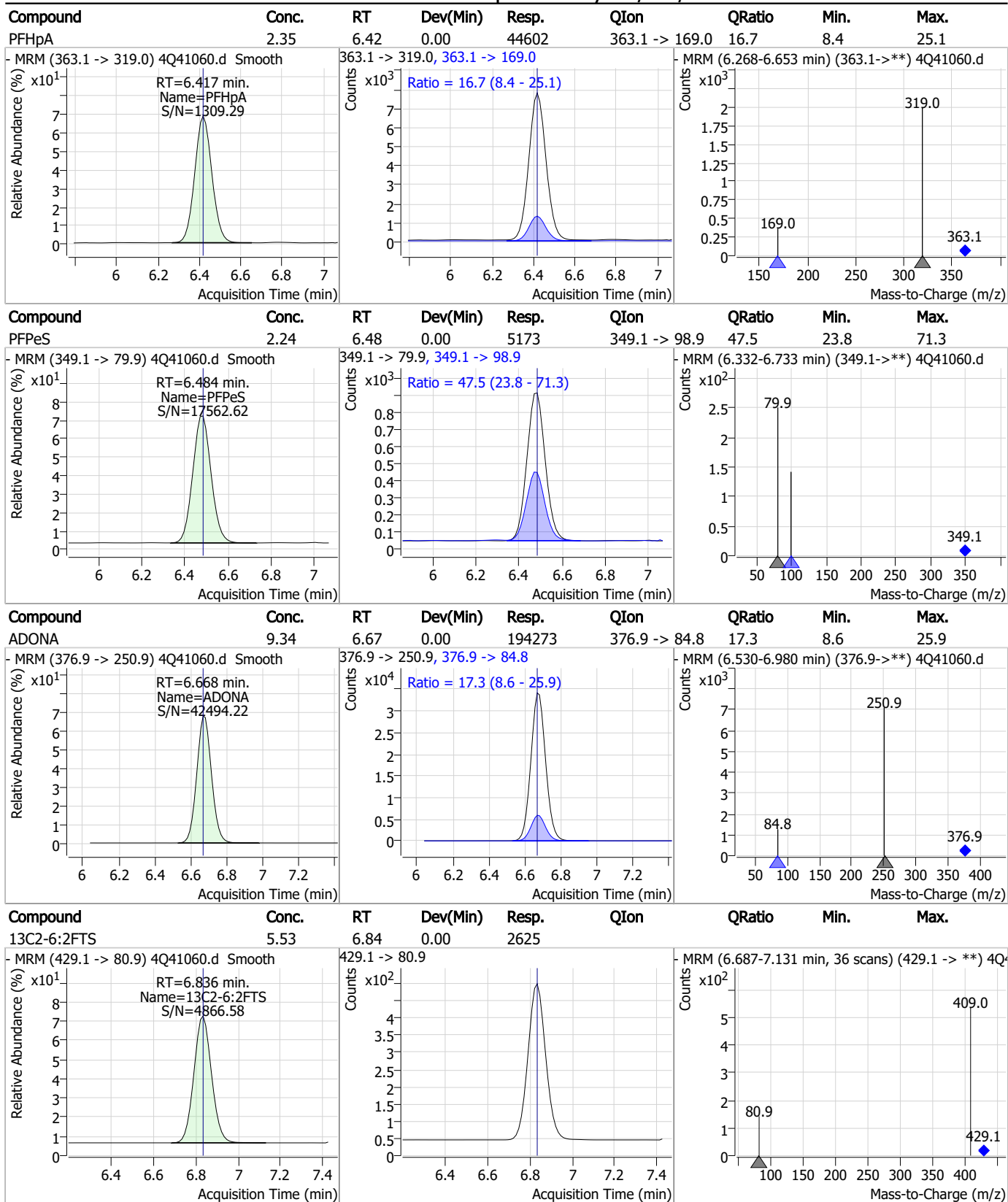
Perfluorinated Compounds by LC/MS/MS



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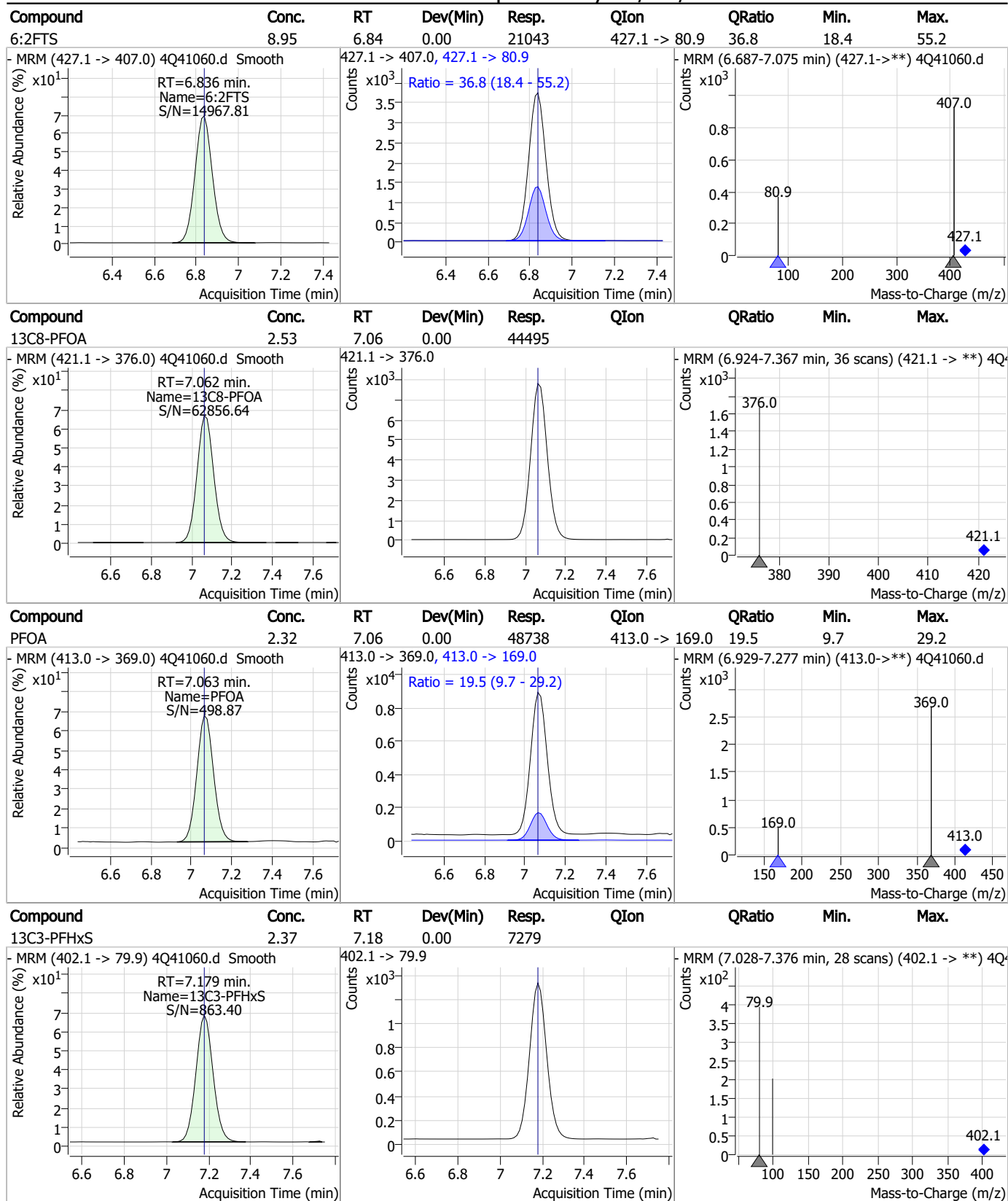
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Perfluorinated Compounds by LC/MS/MS



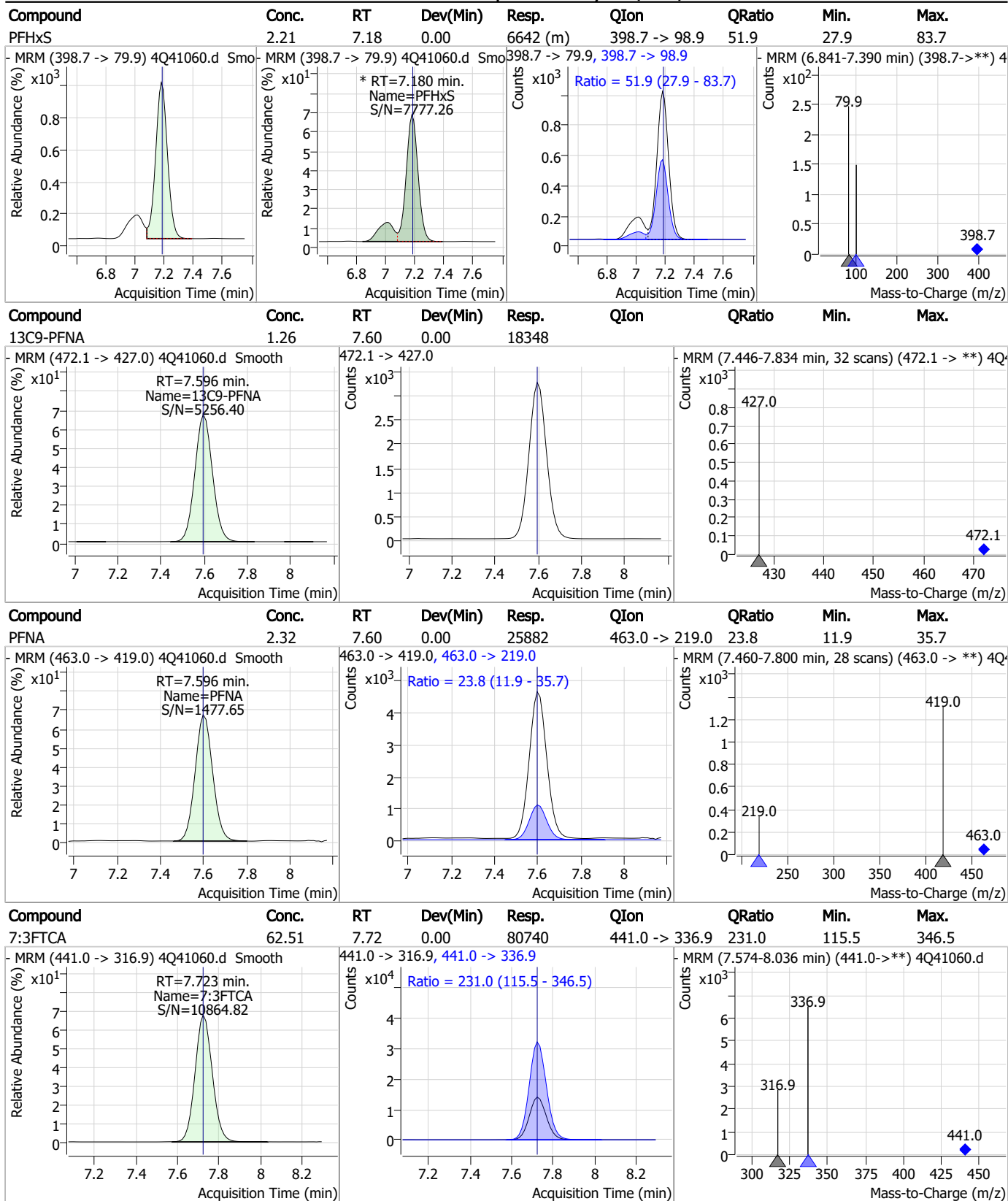
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Perfluorinated Compounds by LC/MS/MS



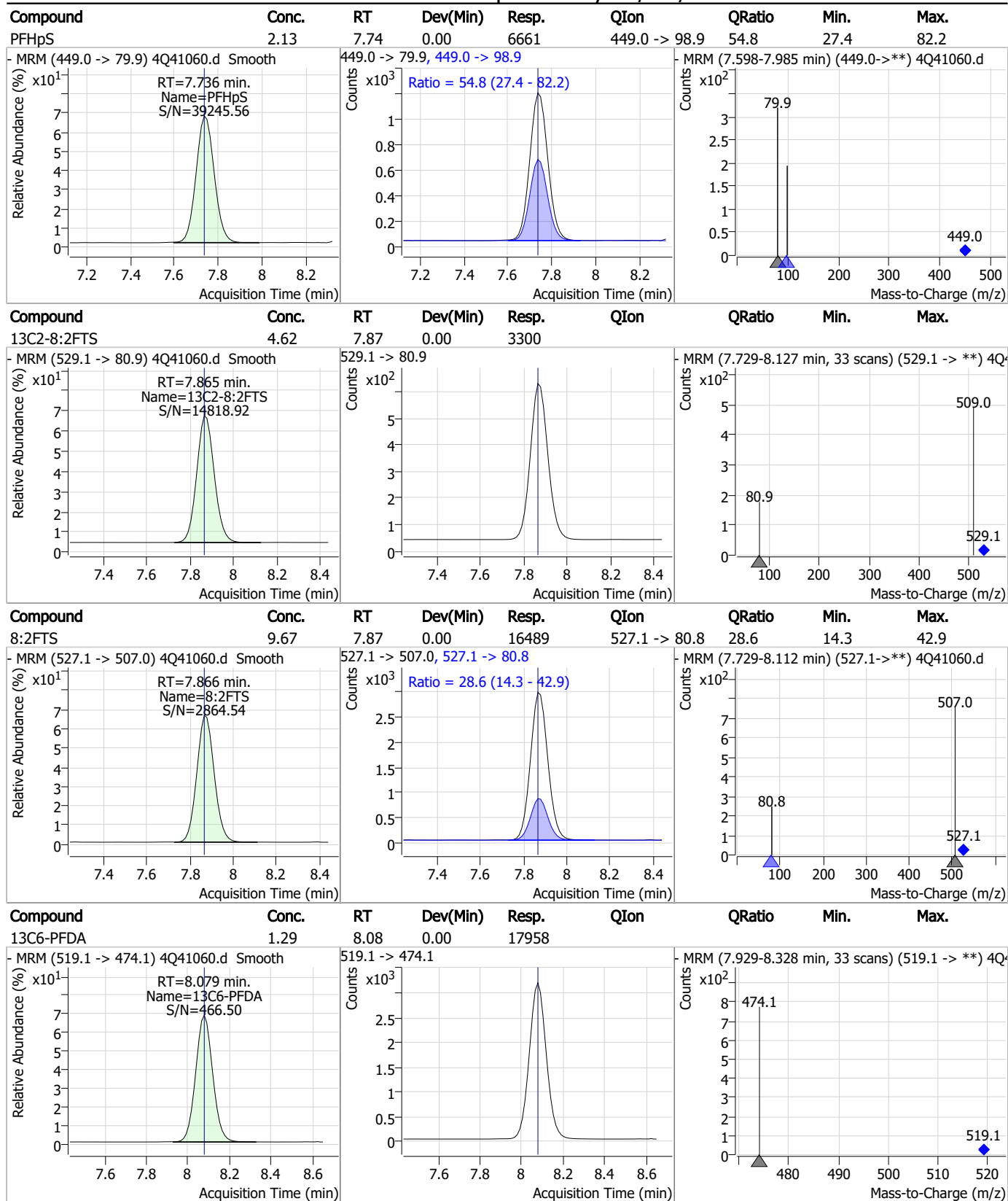
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Perfluorinated Compounds by LC/MS/MS



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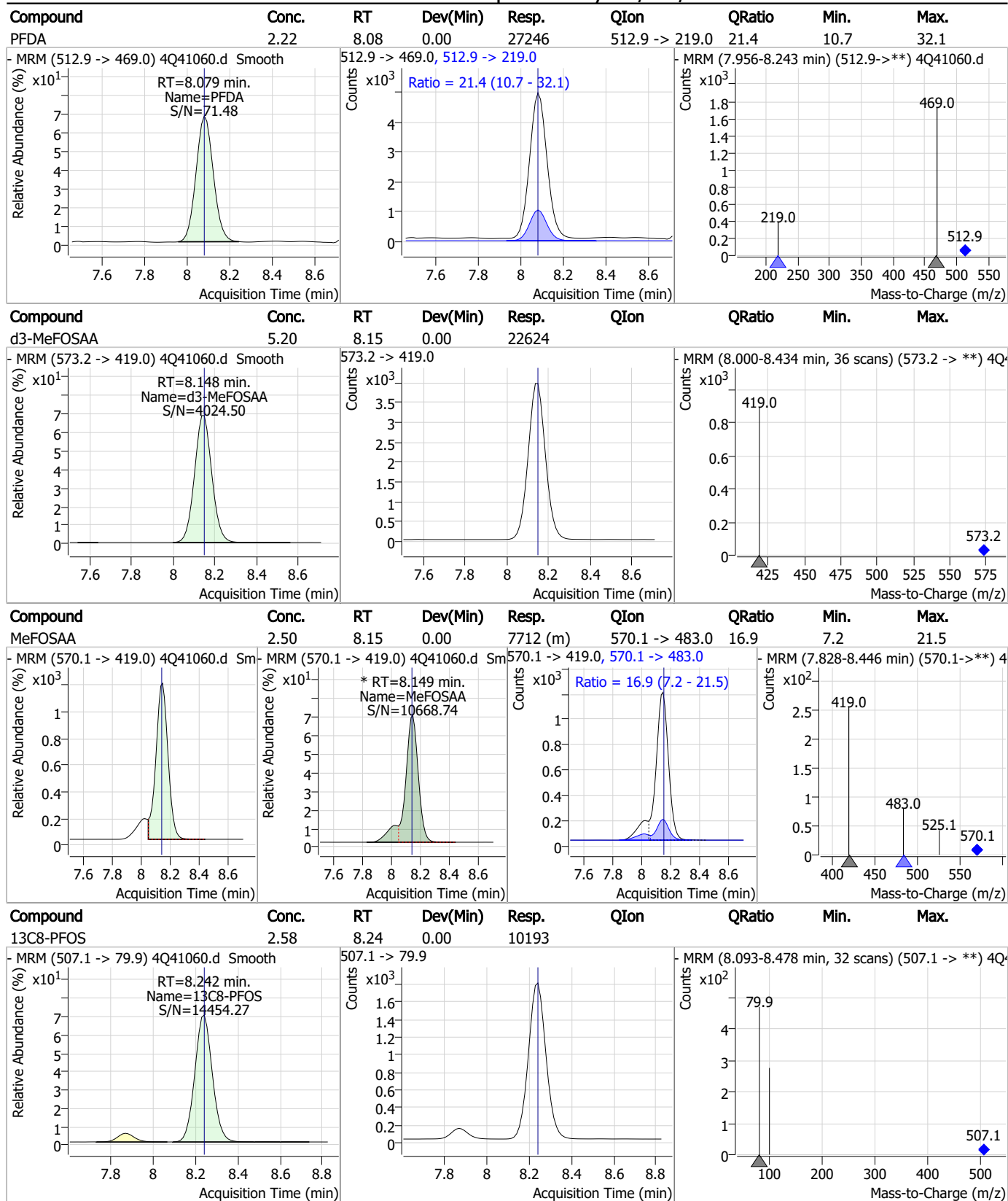
Perfluorinated Compounds by LC/MS/MS



7.6.5
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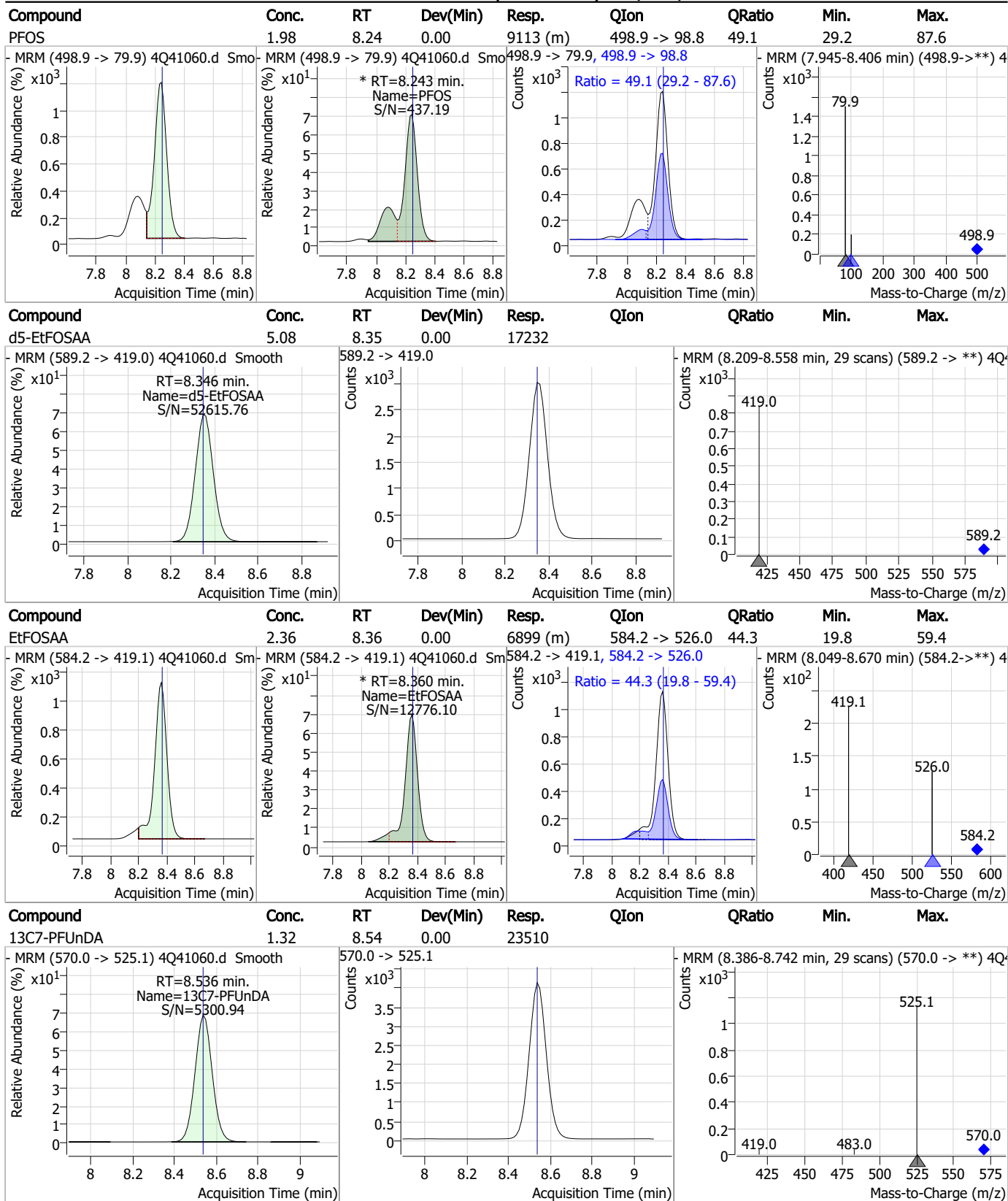
Perfluorinated Compounds by LC/MS/MS



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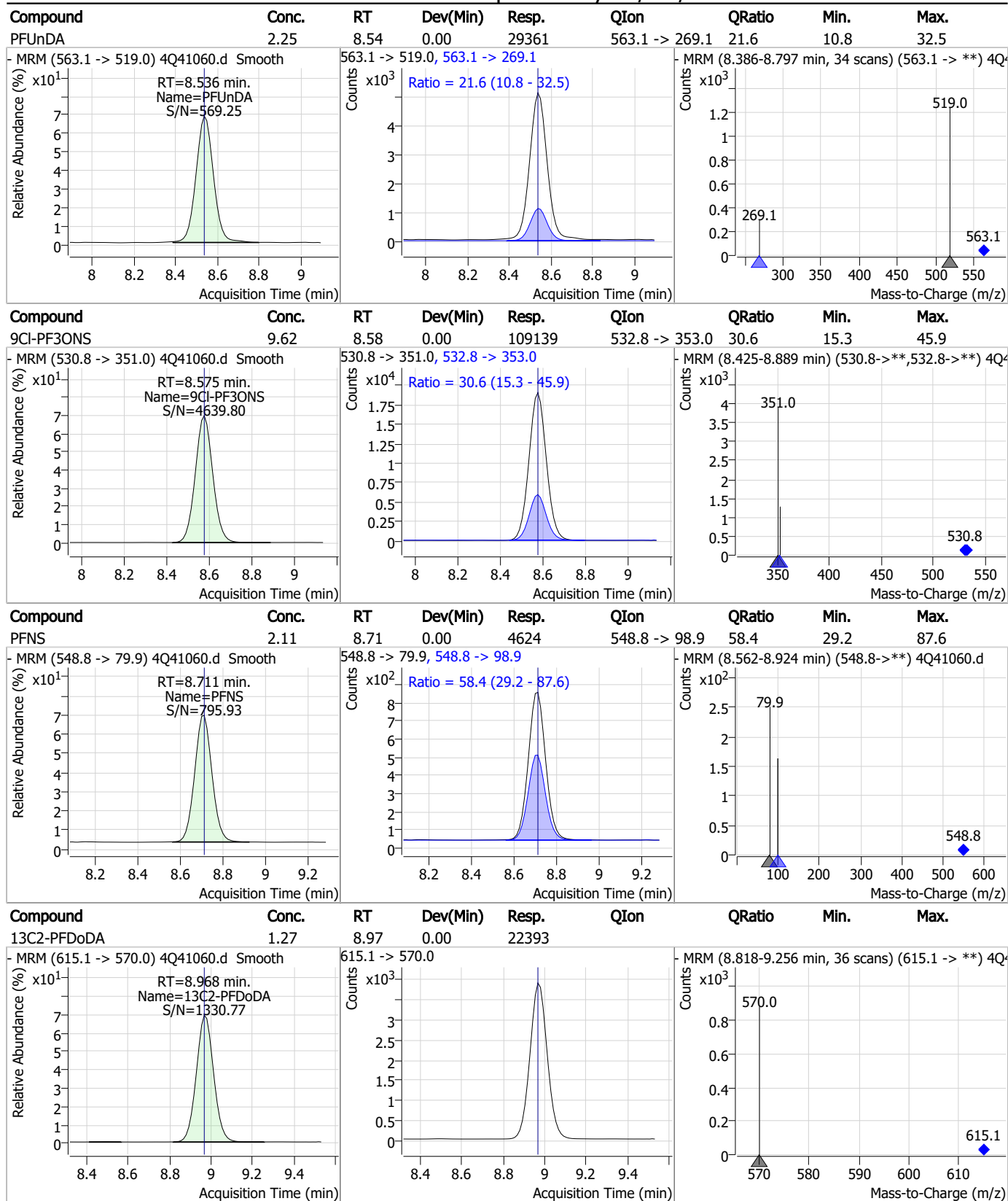
Perfluorinated Compounds by LC/MS/MS



7.6.5

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Perfluorinated Compounds by LC/MS/MS

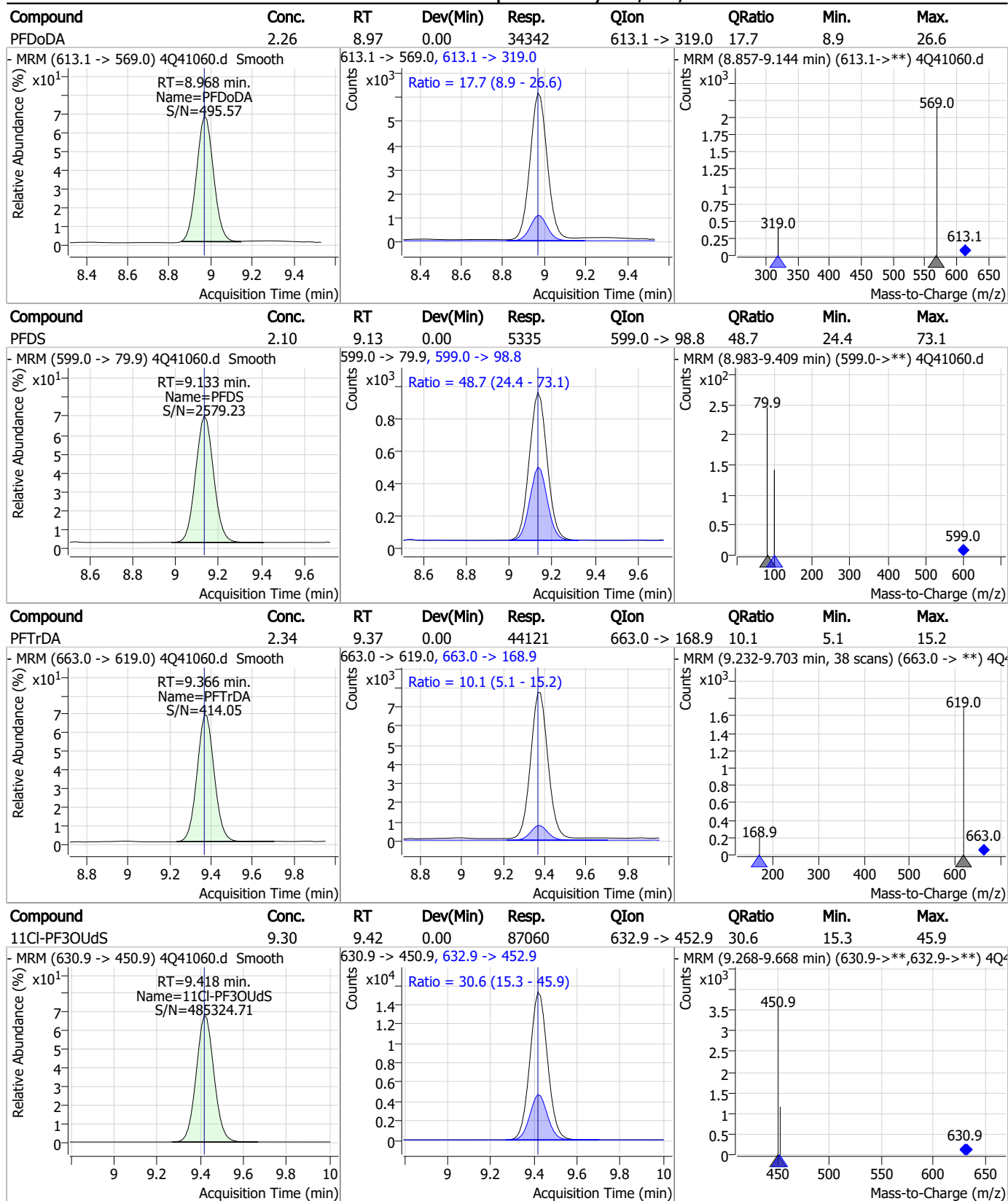


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Perfluorinated Compounds by LC/MS/MS

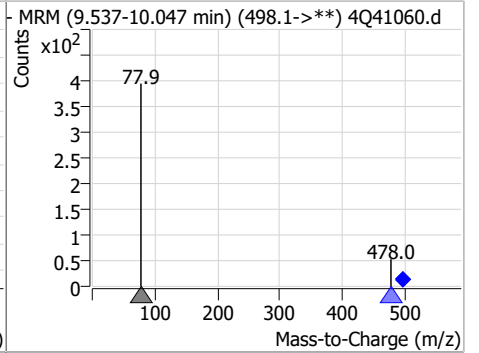
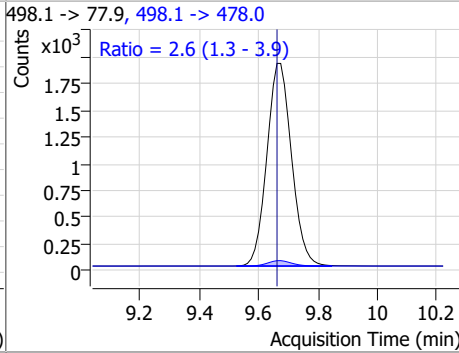
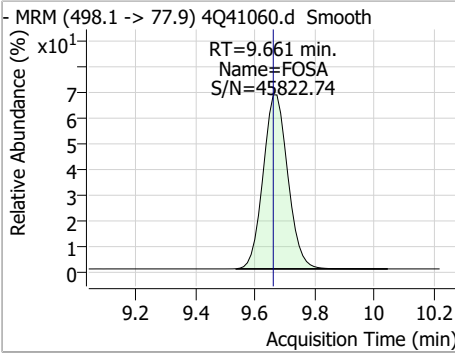


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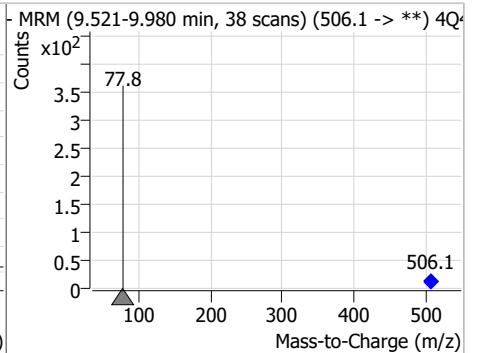
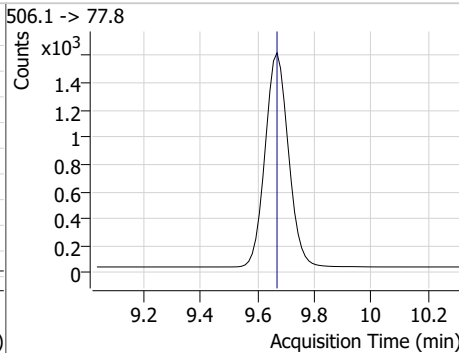
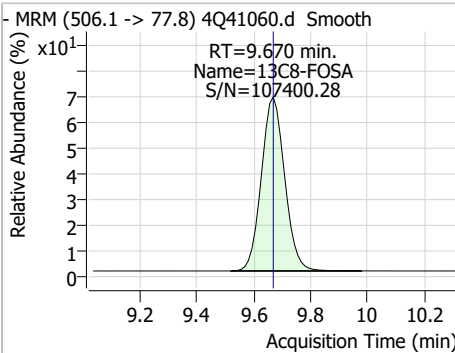
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Perfluorinated Compounds by LC/MS/MS

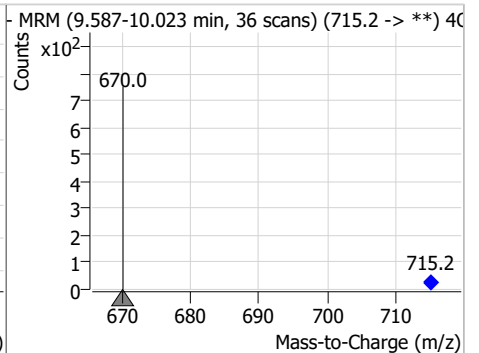
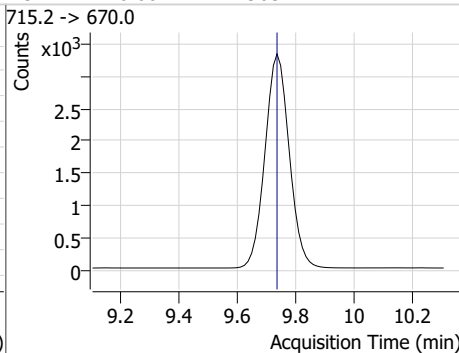
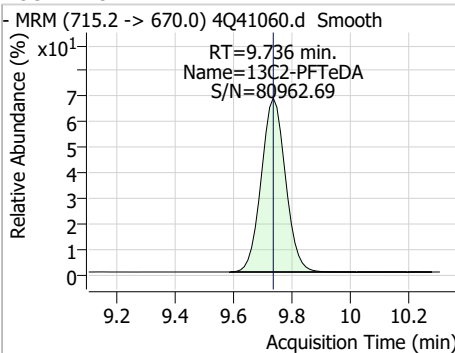
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.30	9.66	0.00	10984	498.1 -> 478.0	2.6	1.3	3.9



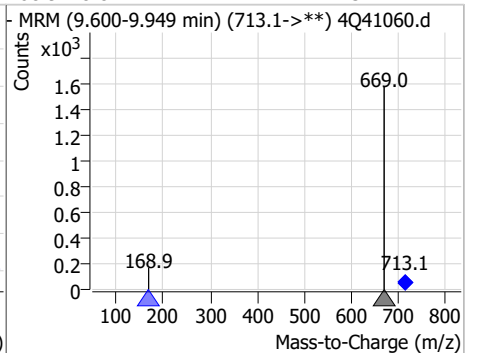
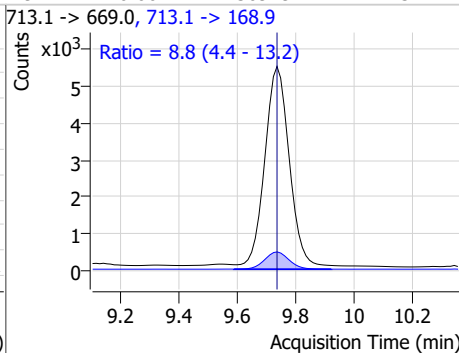
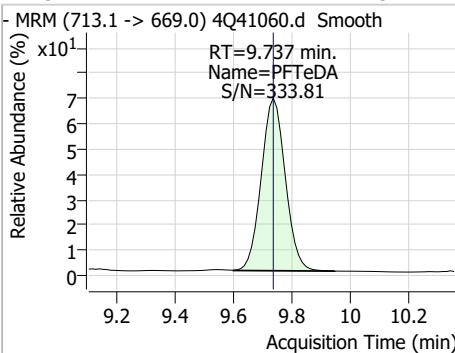
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.46	9.67	0.00	8977				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.24	9.74	0.00	19034				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.34	9.74	0.00	30929	713.1 -> 168.9	8.8	4.4	13.2

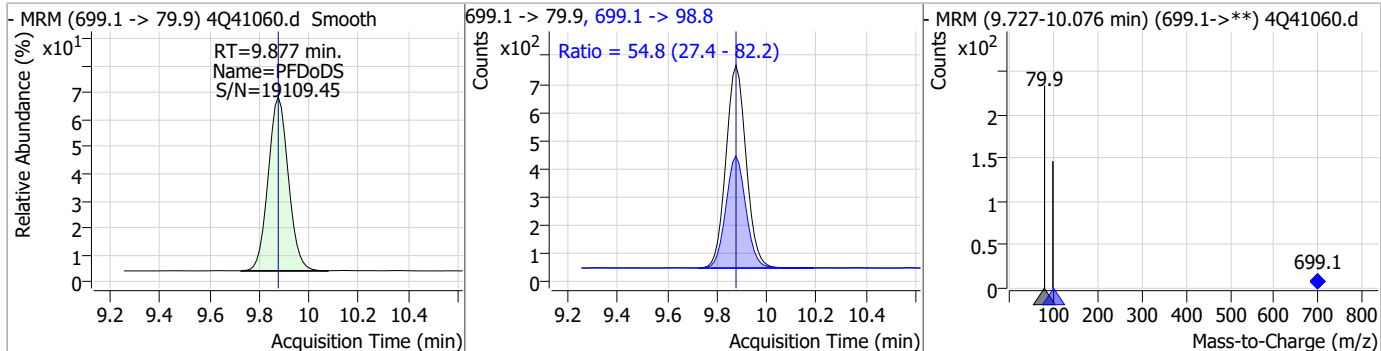


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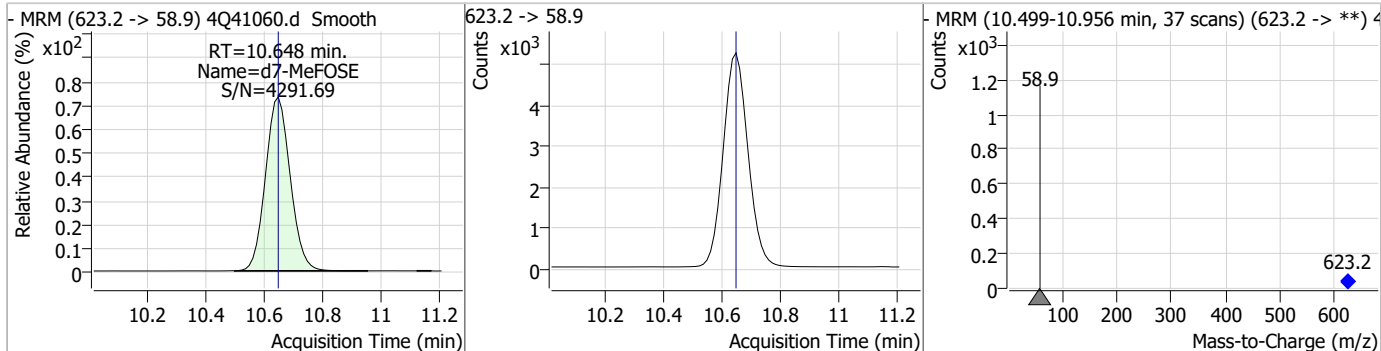
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Perfluorinated Compounds by LC/MS/MS

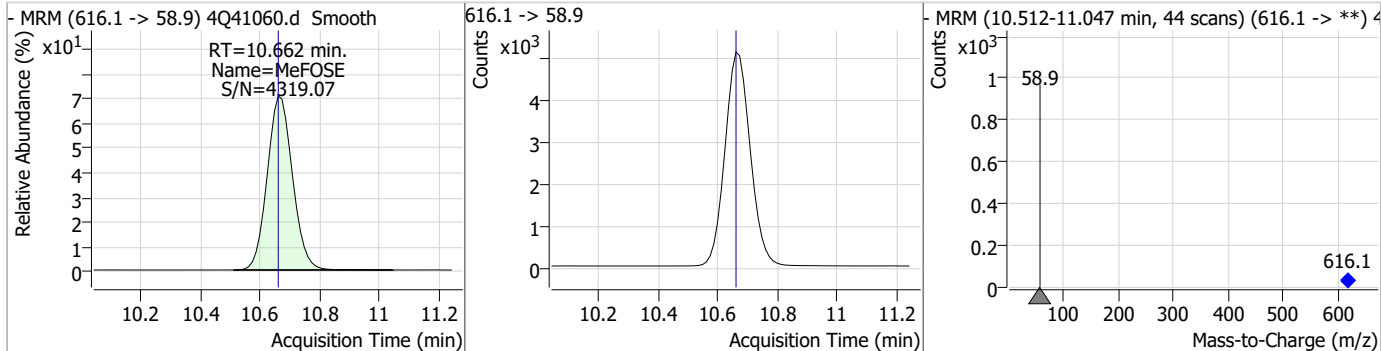
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.01	9.88	0.00	4085	699.1 -> 98.8	54.8	27.4	82.2



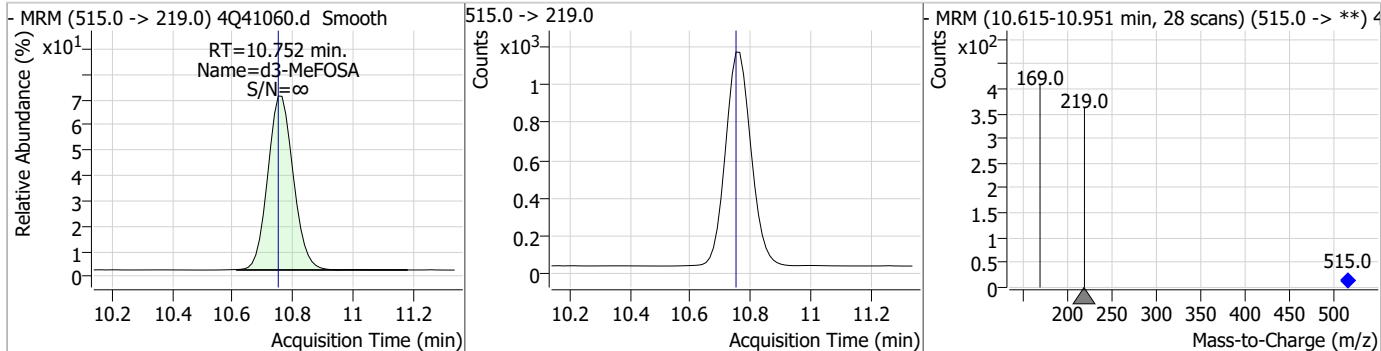
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.64	10.65	0.00	30899				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.39	10.66	0.00	30329				

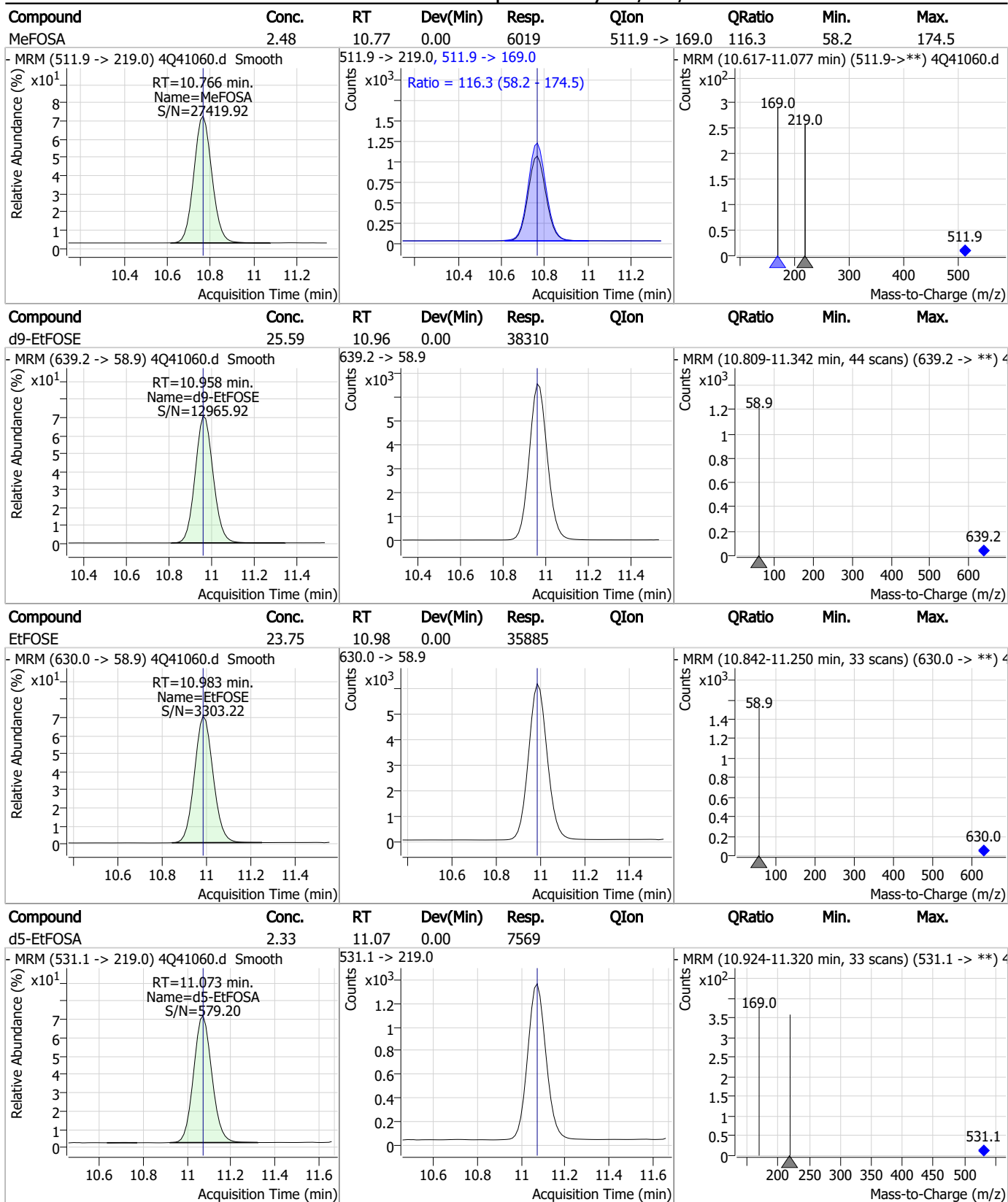


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	10.75	0.00	6610				



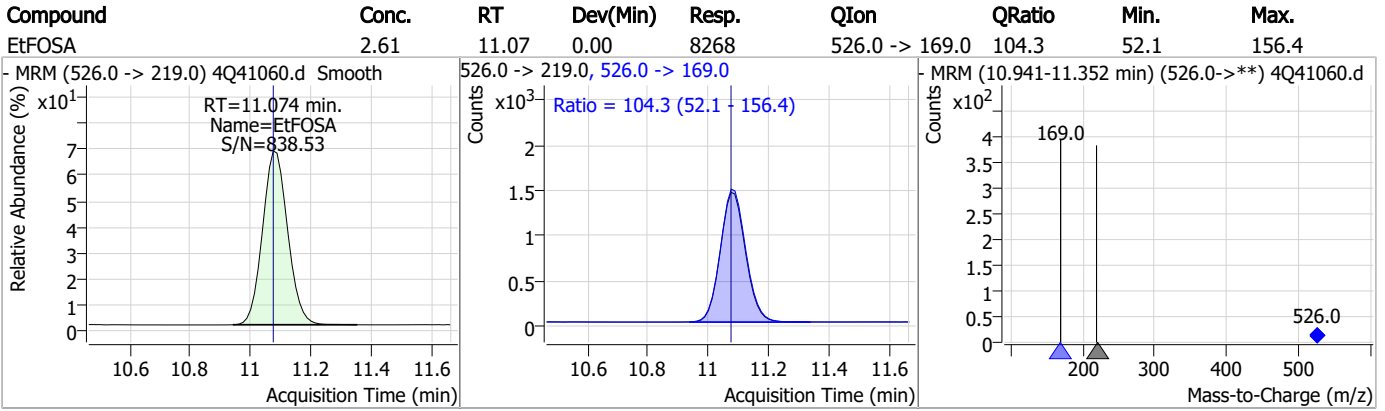
7.6.5
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Perfluorinated Compounds by LC/MS/MS



7.6.5
7

Perfluorinated Compounds by LC/MS/MS



7.6.5

7

Manual Integration Approval Summary

Sample Number: S4Q587-ICC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41060.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 17:05 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.36	Split peak

7.6.5.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/24/23 10:47

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41061.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 5:19:57 PM
 Sample Name : ic587-5
 Vial : P1-A6
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.124	216.8 -> 171.9	134073	10.00 µg/L	-0.028
M5-PFPeA	4.500	268.3 -> 223.0	74836	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	58516	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	33636	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	40940	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	17165	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	16710	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	21881	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	21302	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	18520	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	8303	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	11857	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7006	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9106	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1490	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2135	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3073	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	20143	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	34973	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	17024	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	28406	25.00 µg/L	0.000
M9-EtFOSE	10.958	639.2 -> 58.9	34955	25.00 µg/L	0.000
M5-EtFOSA	11.073	531.1 -> 219.0	7741	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	6503	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	9626	2.50 µg/L	-0.012
13C3-PFBA	3.128	216.0 -> 172.0	81874	5.00 µg/L	-0.027
18O2-PFHxS	7.178	403.0 -> 83.9	5337	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	49641	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	15206	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	20380	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	52711	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1490	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2135	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3073	4.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.2%		
13C2-PFDoDA	8.968	615.1 -> 570.0	21302	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-PFTeDA	9.736	715.2 -> 670.0	18520	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C3-PFBS	5.501	302.1 -> 79.9	11857	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C3-PFHxS	7.179	402.1 -> 79.9	7006	2.34 µg/L	0.000

7.6.6
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C4-PFBA	3.124	216.8 -> 171.9	134073	9.88 µg/L	-0.028
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C4-PFHpA	6.417	367.1 -> 322.0	33636	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C5-PFHxA	5.559	318.0 -> 273.0	58516	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C5-PFPeA	4.500	268.3 -> 223.0	74836	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C6-PFDA	8.079	519.1 -> 474.1	16710	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C7-PFUnDA	8.536	570.0 -> 525.1	21881	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.8%		
13C8-FOSA	9.670	506.1 -> 77.8	8303	2.34 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.4%		
13C8-PFOA	7.062	421.1 -> 376.0	40940	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C8-PFOS	8.230	507.1 -> 79.9	9106	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C9-PFNA	7.596	472.1 -> 427.0	17165	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
d3-MeFOSAA	8.136	573.2 -> 419.0	20143	4.75 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C3-HFPO-DA	5.877	286.9 -> 168.9	34973	10.20 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.0%		
d3-MeFOSA	10.765	515.0 -> 219.0	6503	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.2%		
d5-EtFOSAA	8.346	589.2 -> 419.0	17024	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.1%		
d7-MeFOSE	10.648	623.2 -> 58.9	28406	24.21 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
d9-EtFOSE	10.958	639.2 -> 58.9	34955	23.98 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
d5-EtFOSA	11.073	531.1 -> 219.0	7741	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.1%		
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	43593	18.38 µg/L	99
		327.1 -> 80.9	16879		
6:2FTS	6.836	427.1 -> 407.0	40507	21.19 µg/L	95
		427.1 -> 80.9	13821		
8:2FTS	7.866	527.1 -> 507.0	34164	21.51 µg/L	98
		527.1 -> 80.8	9355		
EtFOSAA	8.347	584.2 -> 419.1	13308	4.60 µg/L	m 94
		584.2 -> 526.0	5725		
FOSA	9.661	498.1 -> 77.9	22597	5.12 µg/L	98
		498.1 -> 478.0	744		
MeFOSAA	8.137	570.1 -> 419.0	13980	5.08 µg/L	m 86
		570.1 -> 483.0	2843		
PFBA	3.132	212.8 -> 168.9	64957	20.45 µg/L	100
PFBS	5.502	298.7 -> 79.9	22014	4.64 µg/L	95
		298.7 -> 98.8	7817		
PFDA	8.079	512.9 -> 469.0	56433	4.95 µg/L	97
		512.9 -> 219.0	11319		
PFDODA	8.968	613.1 -> 569.0	72894	5.05 µg/L	96
		613.1 -> 319.0	11546		
PFDS	9.133	599.0 -> 79.9	10960	4.84 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	5256			
PFHpA	6.417	363.1 -> 319.0	92500	5.17	µg/L	99
		363.1 -> 169.0	15794			
PFHpS	7.736	449.0 -> 79.9	14232	5.09	µg/L	97
		449.0 -> 98.9	7509			
PFHxA	5.549	313.0 -> 269.0	104561	5.17	µg/L	99
		313.0 -> 118.9	3009			
PFHxS	7.180	398.7 -> 79.9	12897	4.46	µg/L	m 96
		398.7 -> 98.9	6811			
PFNA	7.596	463.0 -> 419.0	52350	5.02	µg/L	96
		463.0 -> 219.0	13406			
PFNS	8.699	548.8 -> 79.9	9592	4.90	µg/L	97
		548.8 -> 98.9	5386			
PFOA	7.063	413.0 -> 369.0	93437	4.83	µg/L	99
		413.0 -> 169.0	18734			
PFOS	8.231	498.9 -> 79.9	18595	4.52	µg/L	m 83
		498.9 -> 98.8	8461			
PFPeA	4.502	263.0 -> 219.0	182745	10.38	µg/L	100
PFPeS	6.484	349.1 -> 79.9	11027	4.96	µg/L	94
		349.1 -> 98.9	4803			
PFTeDA	9.737	713.1 -> 669.0	65092	5.05	µg/L	99
		713.1 -> 168.9	5481			
PFTrDA	9.366	663.0 -> 619.0	91748	5.12	µg/L	99
		663.0 -> 168.9	9571			
PFUnDA	8.536	563.1 -> 519.0	57538	4.73	µg/L	98
		563.1 -> 269.1	11770			
11CI-PF3OUdS	9.418	630.9 -> 450.9	178492	19.68	µg/L	98
		632.9 -> 452.9	52954			
9CI-PF3ONS	8.563	530.8 -> 351.0	219187	19.93	µg/L	99
		532.8 -> 353.0	67878			
ADONA	6.668	376.9 -> 250.9	391237	19.42	µg/L	99
		376.9 -> 84.8	70075			
HFPO-DA	5.878	284.9 -> 168.9	58032	20.21	µg/L	99
		284.9 -> 184.9	6883			
3:3FTCA	4.129	241.0 -> 177.0	25590	24.69	µg/L	98
		241.0 -> 117.0	2078			
5:3FTCA	6.333	341.0 -> 237.1	395115	128.92	µg/L	99
		341.0 -> 217.0	284483			
7:3FTCA	7.723	441.0 -> 316.9	164783	133.60	µg/L	95
		441.0 -> 336.9	366959			
EtFOSA	11.087	526.0 -> 219.0	16157	4.98	µg/L	95
		526.0 -> 169.0	17701			
EtFOSE	10.983	630.0 -> 58.9	72168	52.35	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	12302	5.14	µg/L	100
		511.9 -> 169.0	14245			
MeFOSE	10.661	616.1 -> 58.9	61466	51.55	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	8600	4.75	µg/L	99
		699.1 -> 98.8	4620			
NFDHA	5.453	295.0 -> 201.0	8162	10.62	µg/L	92
		295.0 -> 84.9	1652			
PFMBA	4.867	279.0 -> 85.1	96345	10.31	µg/L	100
PFMPA	3.715	229.0 -> 84.9	75375	10.15	µg/L	100
PFEESA	5.971	314.8 -> 134.9	121671	8.90	µg/L	98
		314.8 -> 82.9	3709			

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

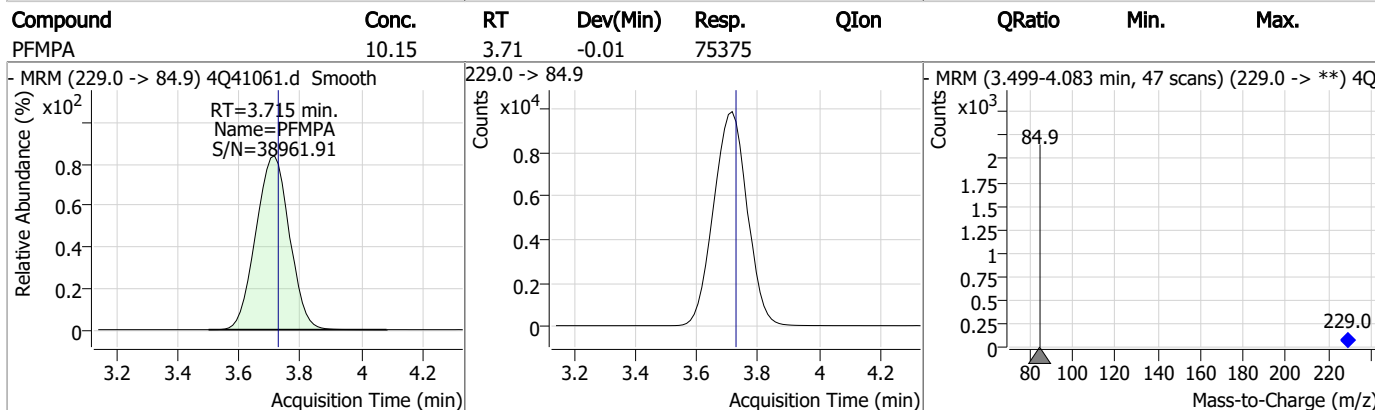
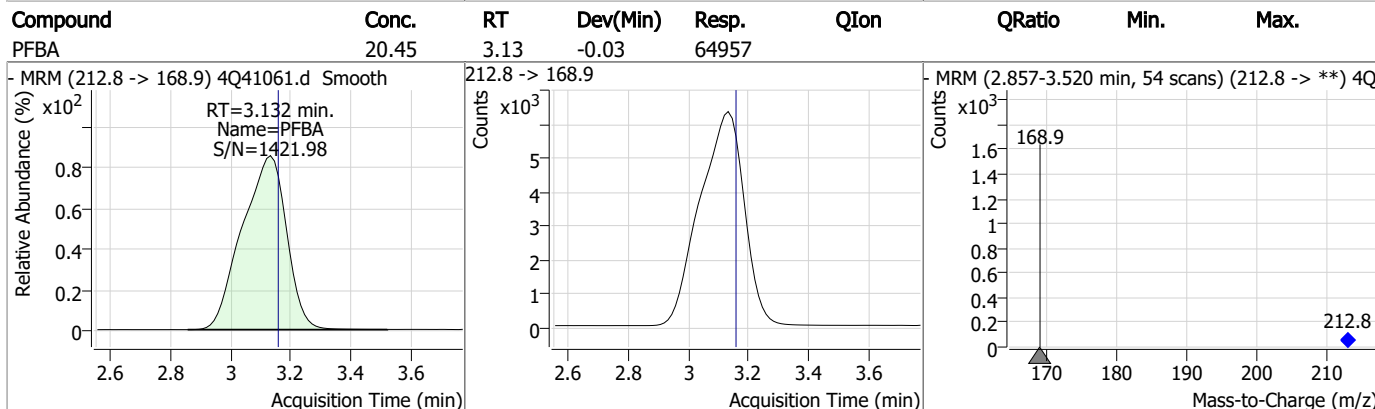
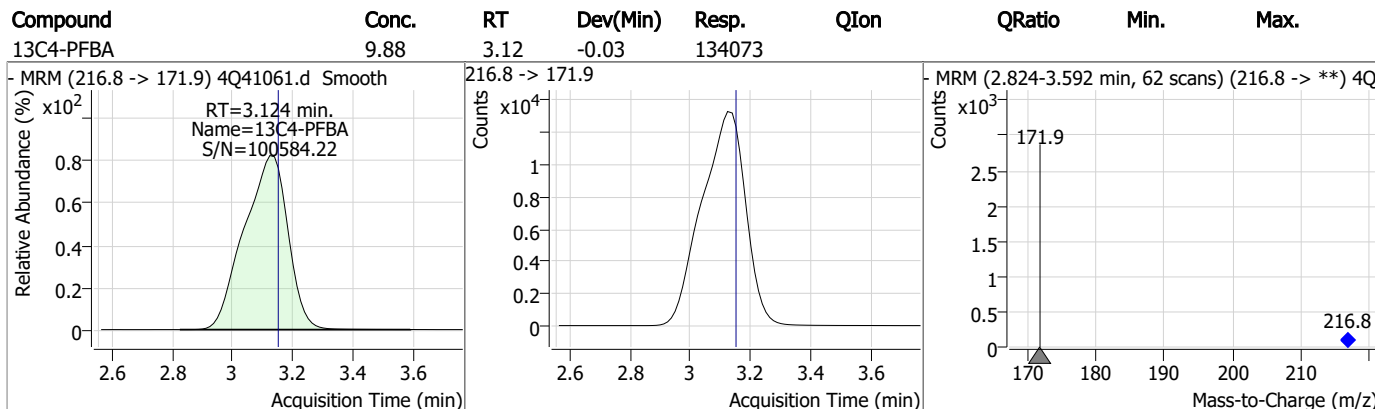
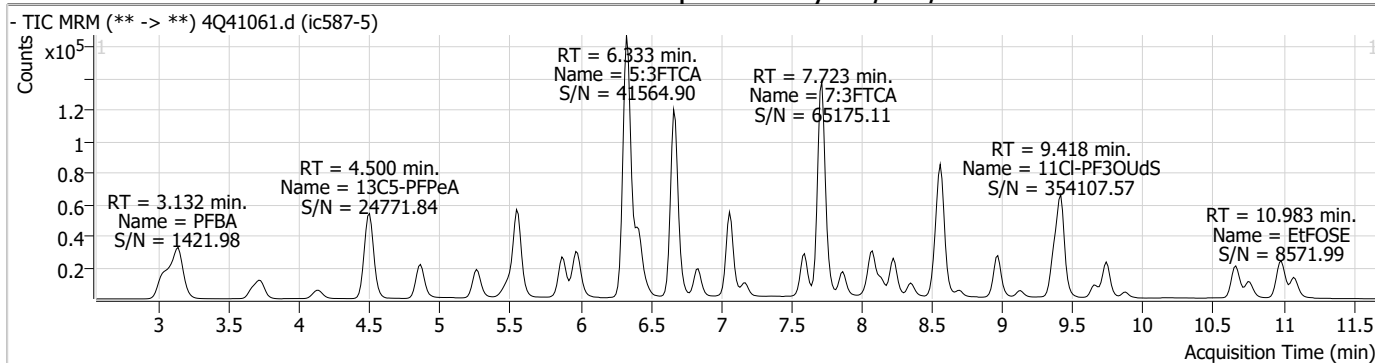
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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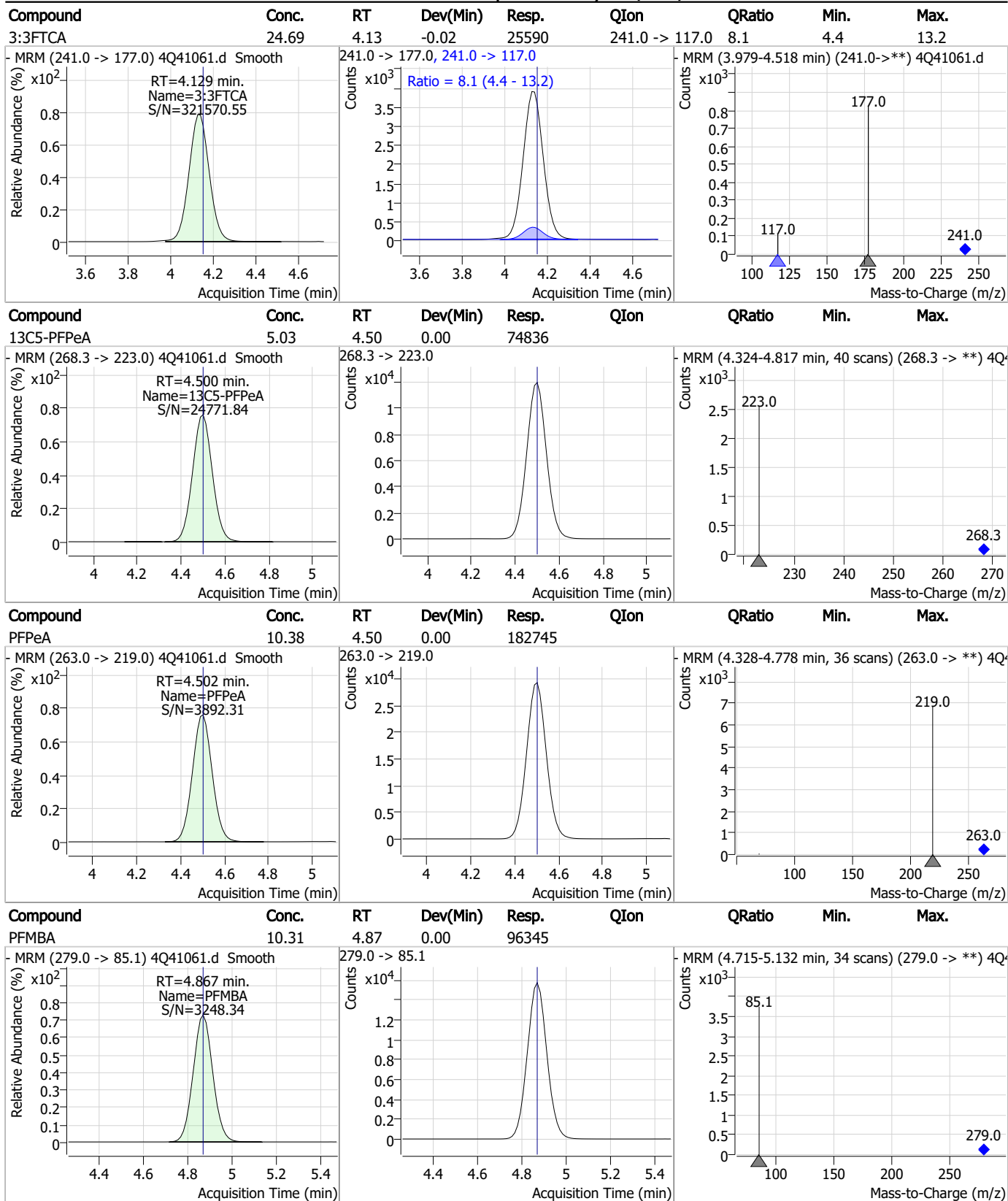
7.6.6

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Perfluorinated Compounds by LC/MS/MS

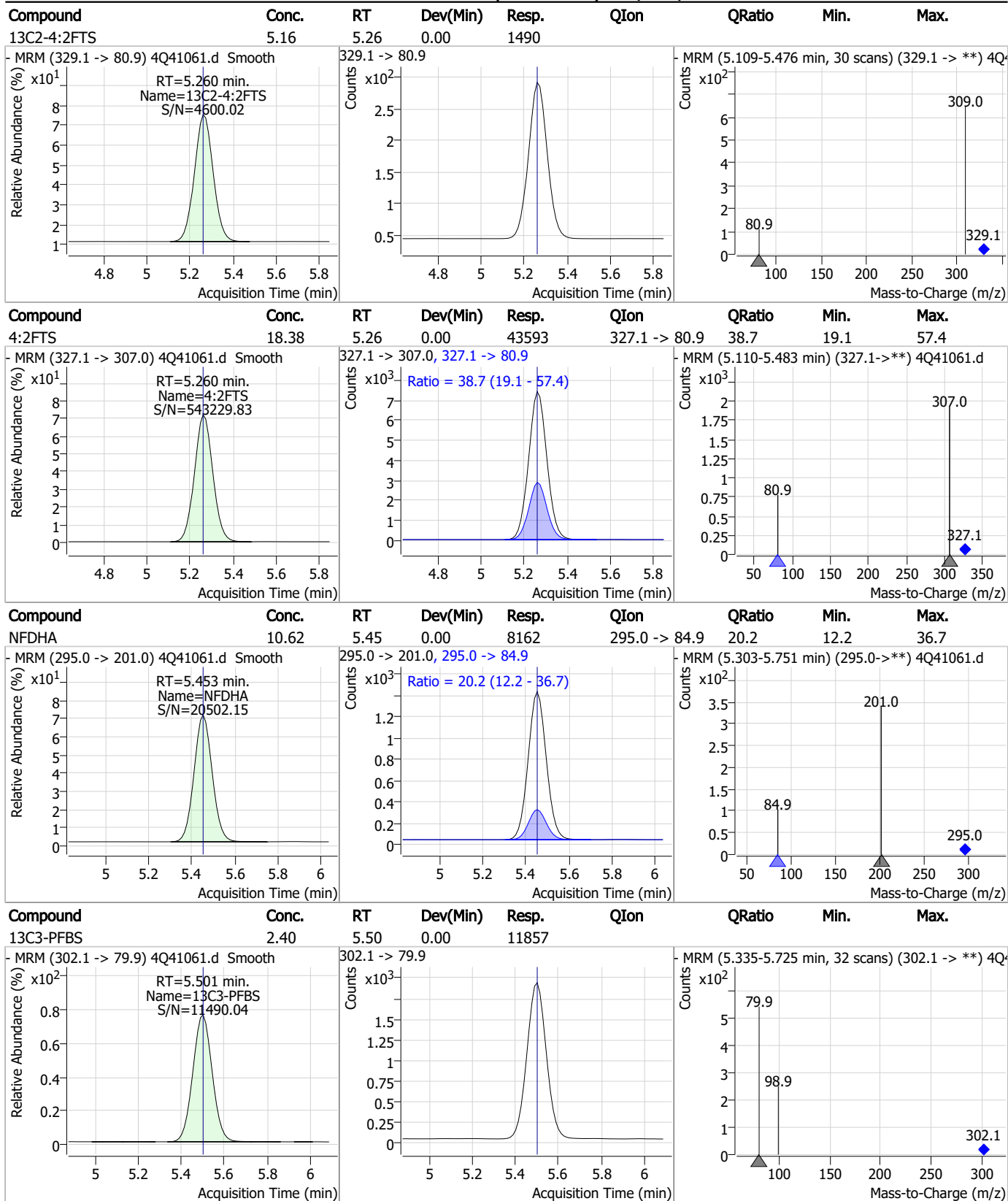


Perfluorinated Compounds by LC/MS/MS



7.6.6
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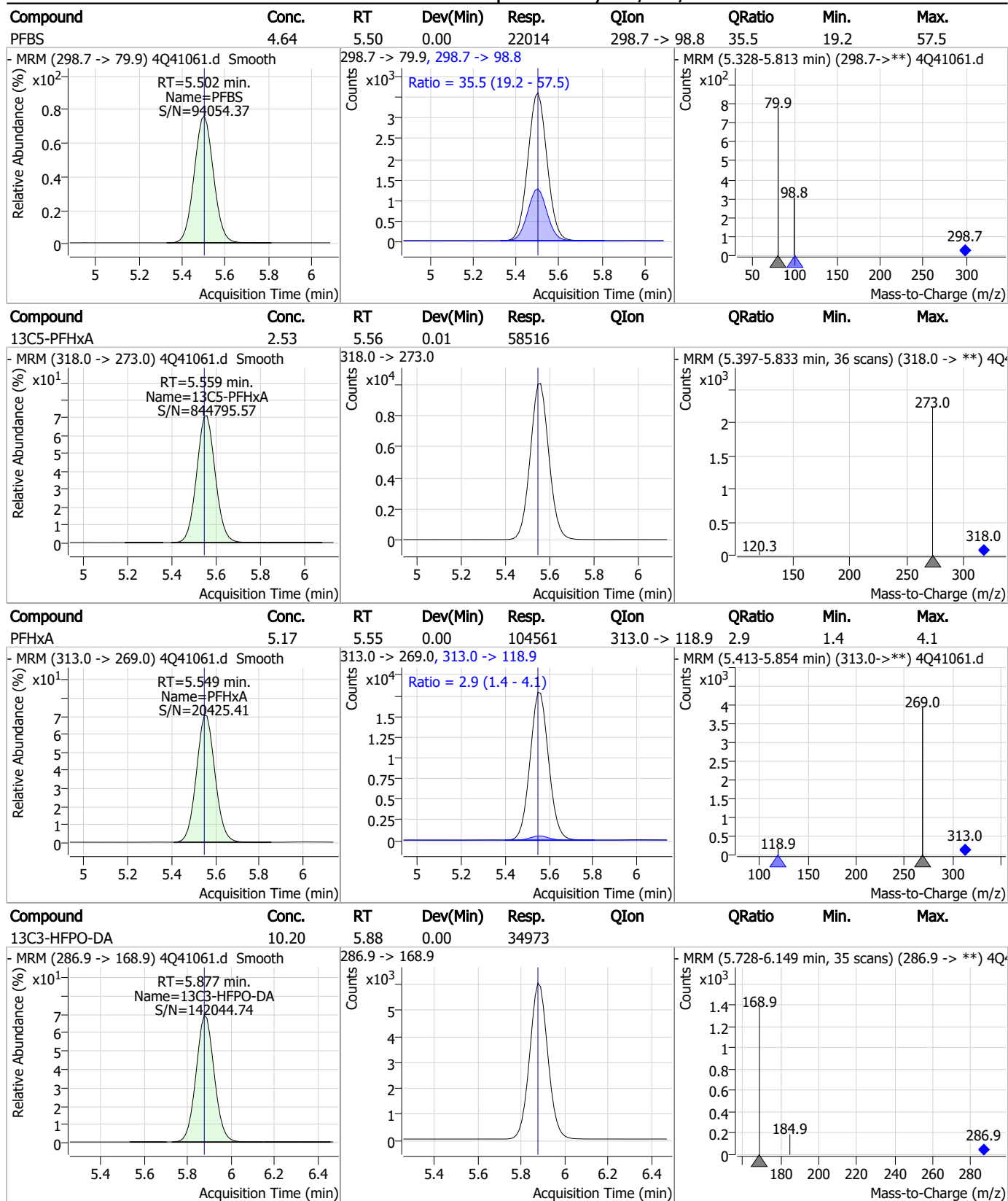
Perfluorinated Compounds by LC/MS/MS



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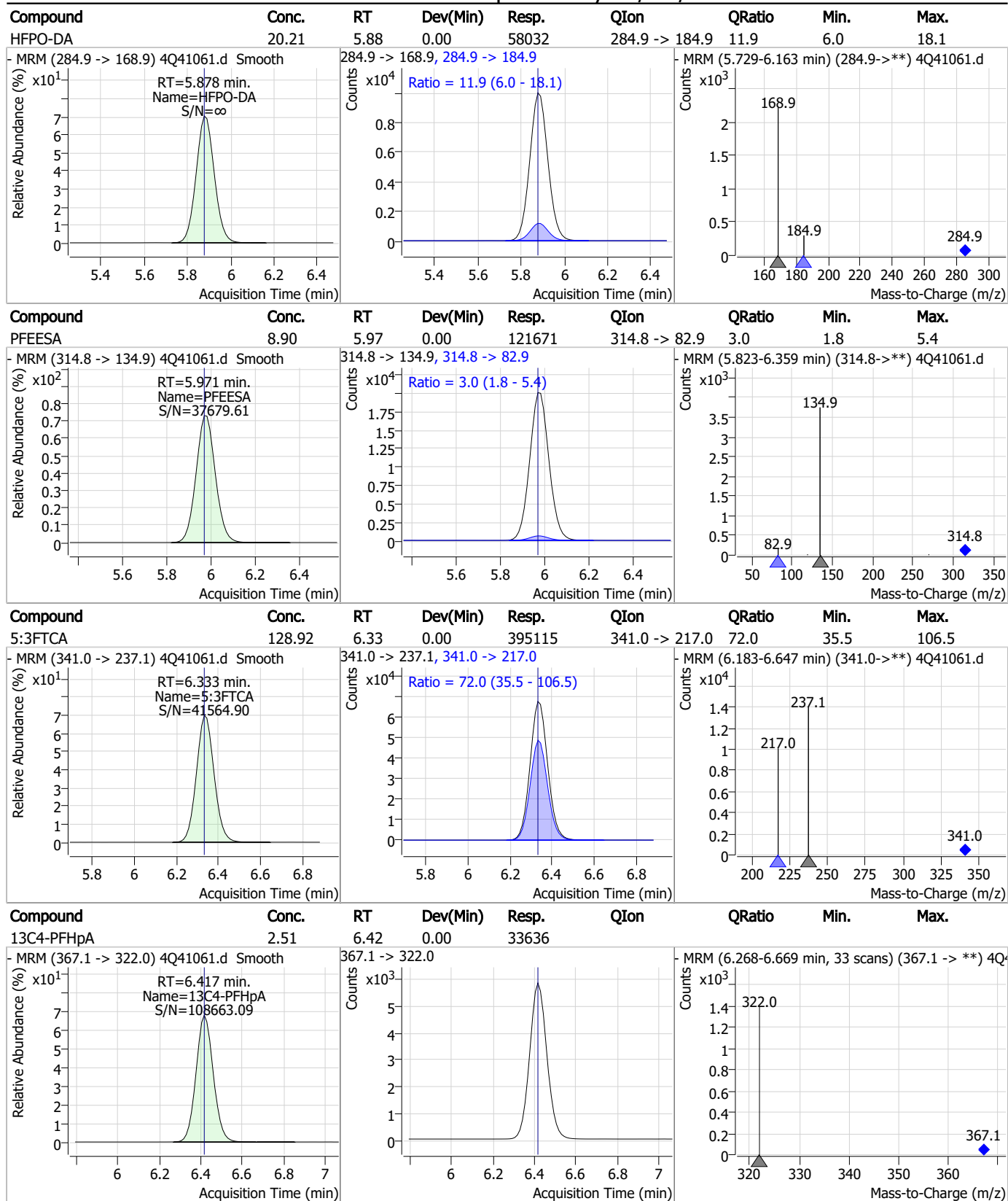
Perfluorinated Compounds by LC/MS/MS



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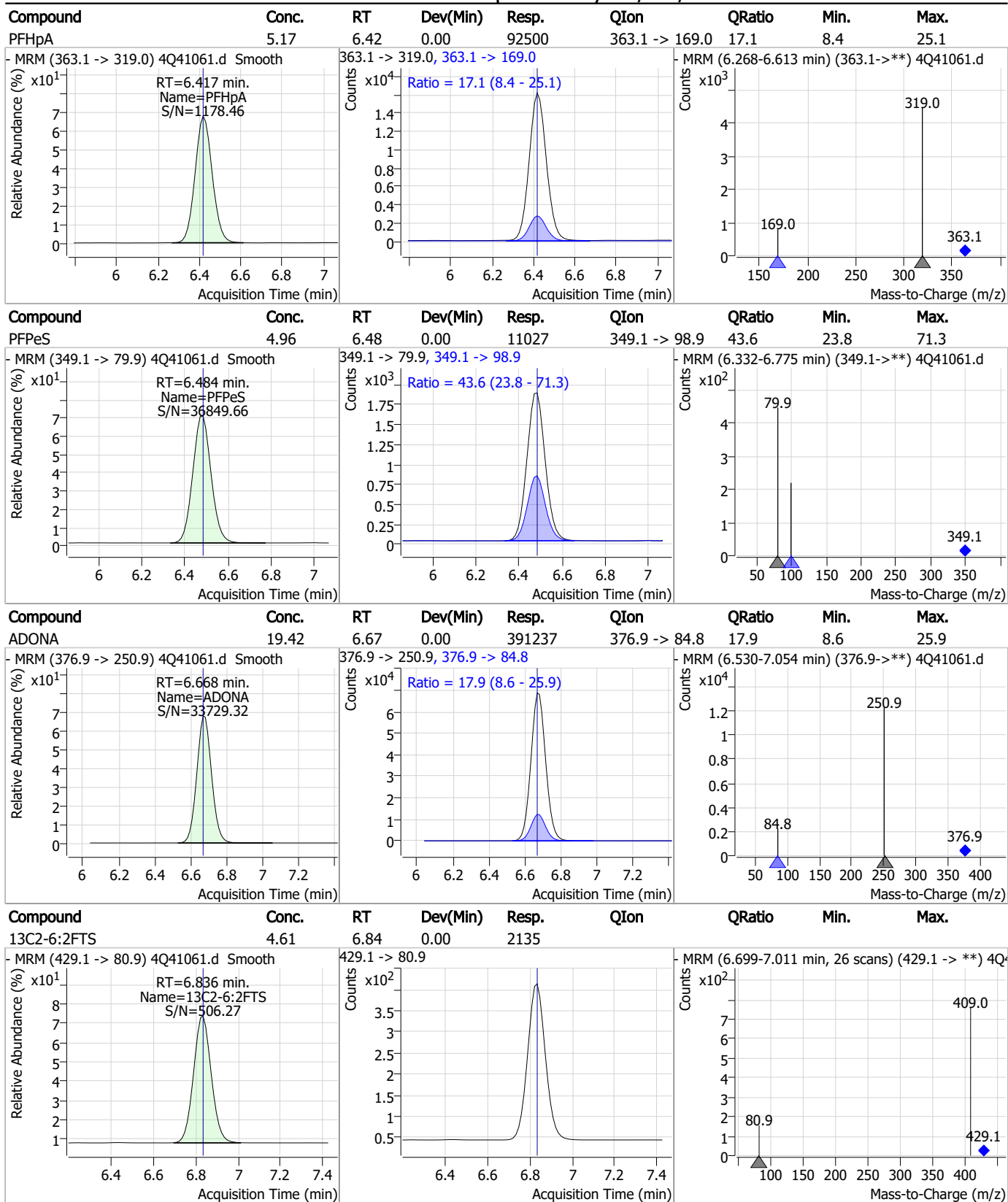
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Perfluorinated Compounds by LC/MS/MS



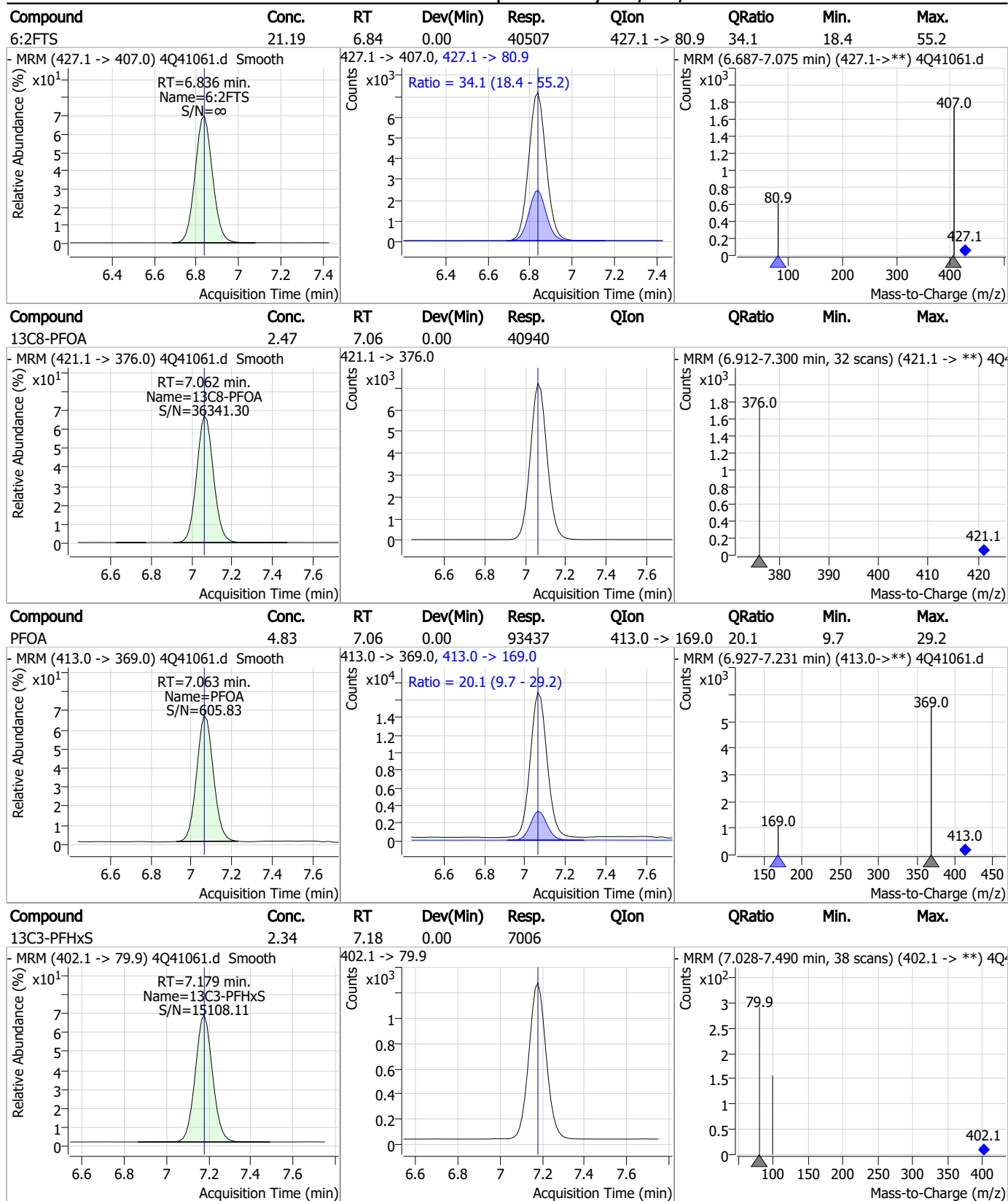
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Perfluorinated Compounds by LC/MS/MS



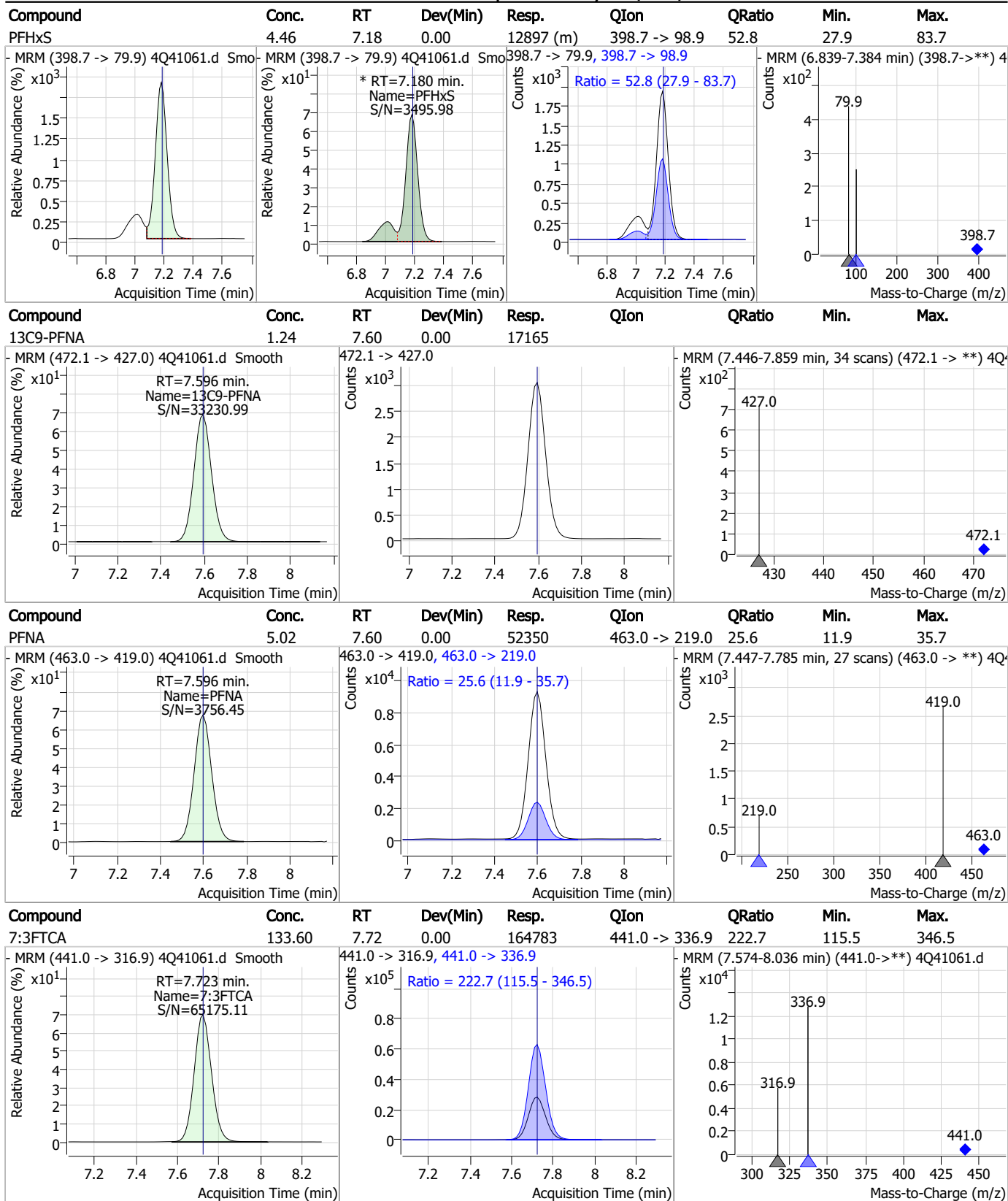
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Perfluorinated Compounds by LC/MS/MS



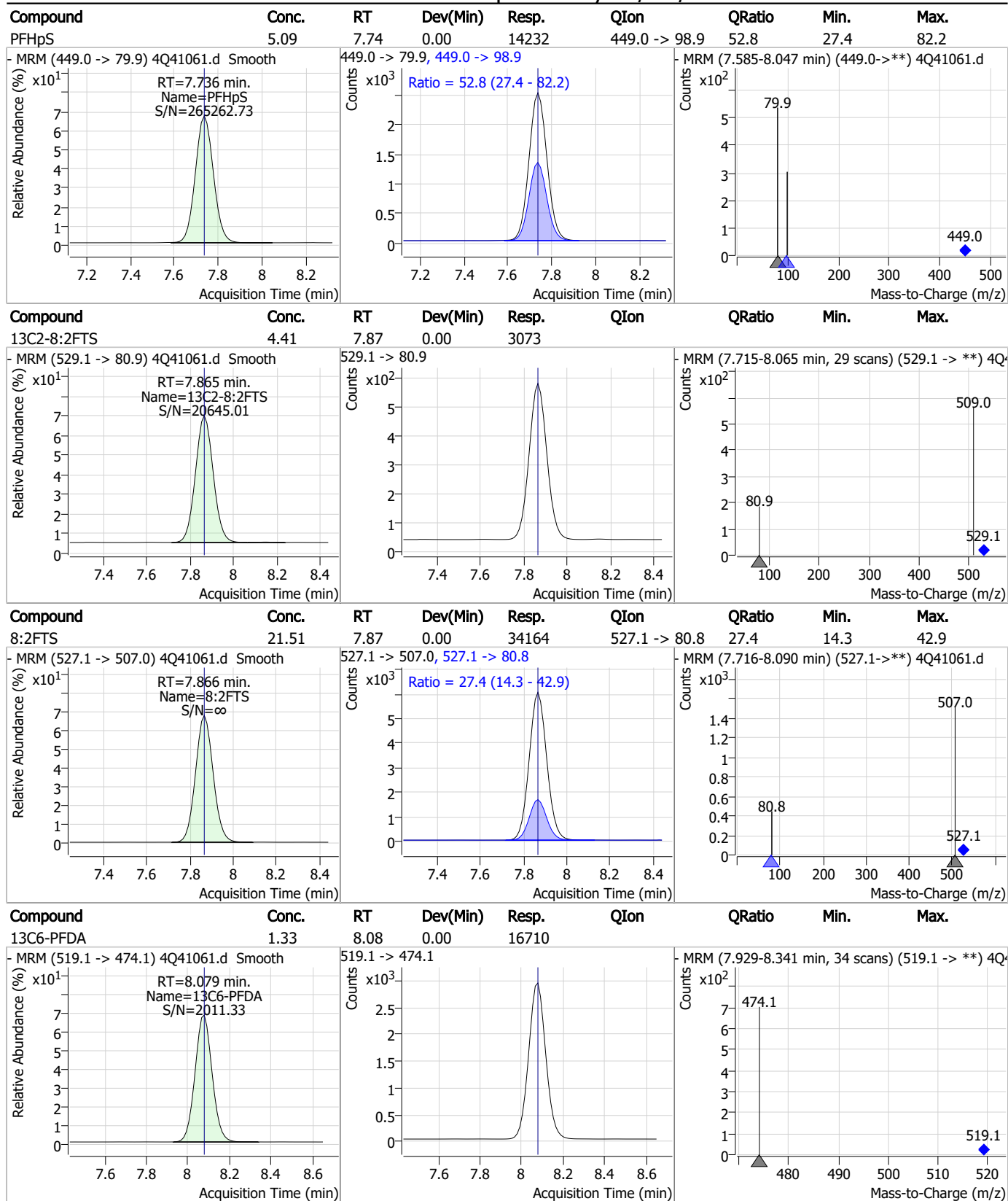
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Perfluorinated Compounds by LC/MS/MS



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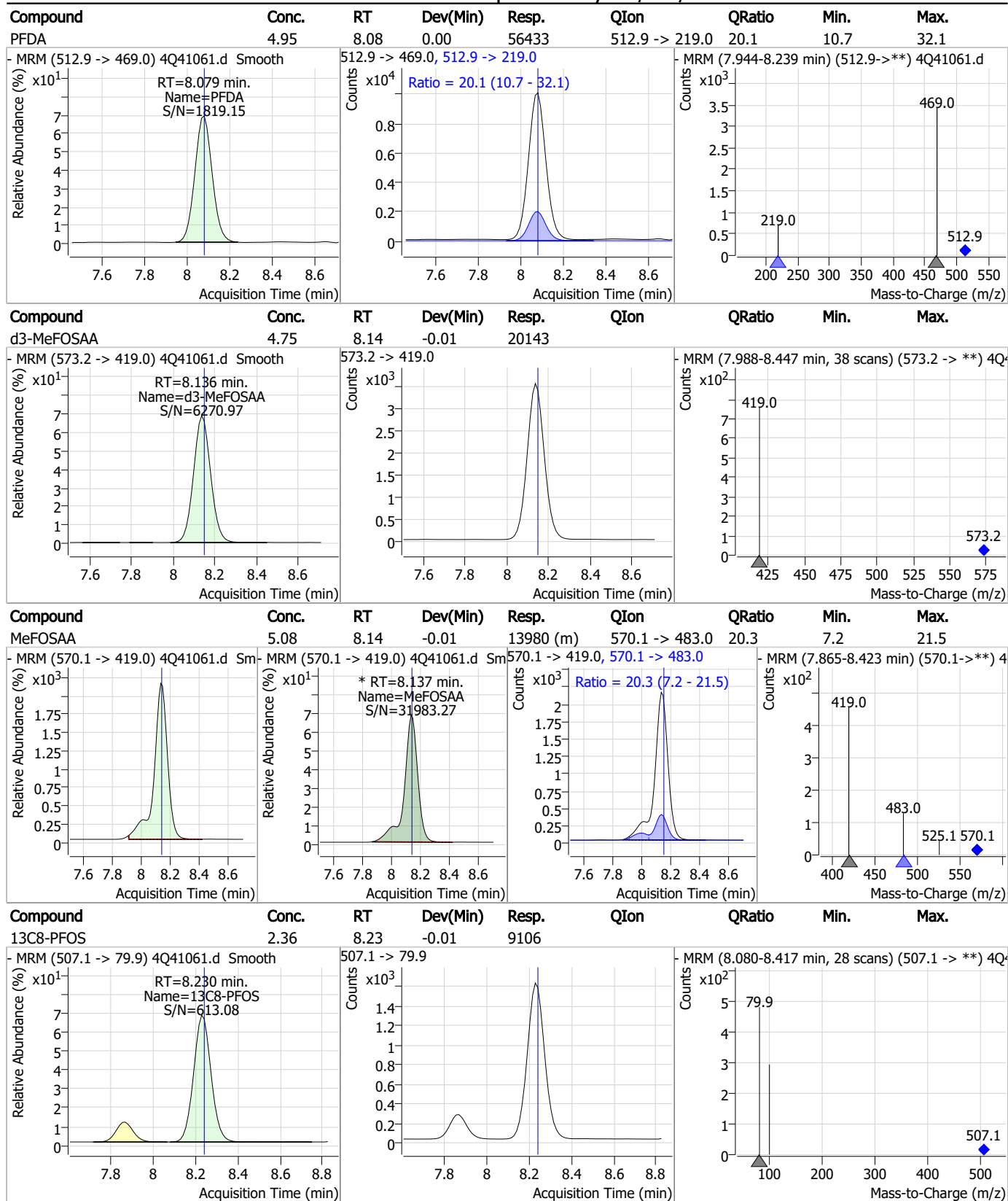
Perfluorinated Compounds by LC/MS/MS



7.6.6

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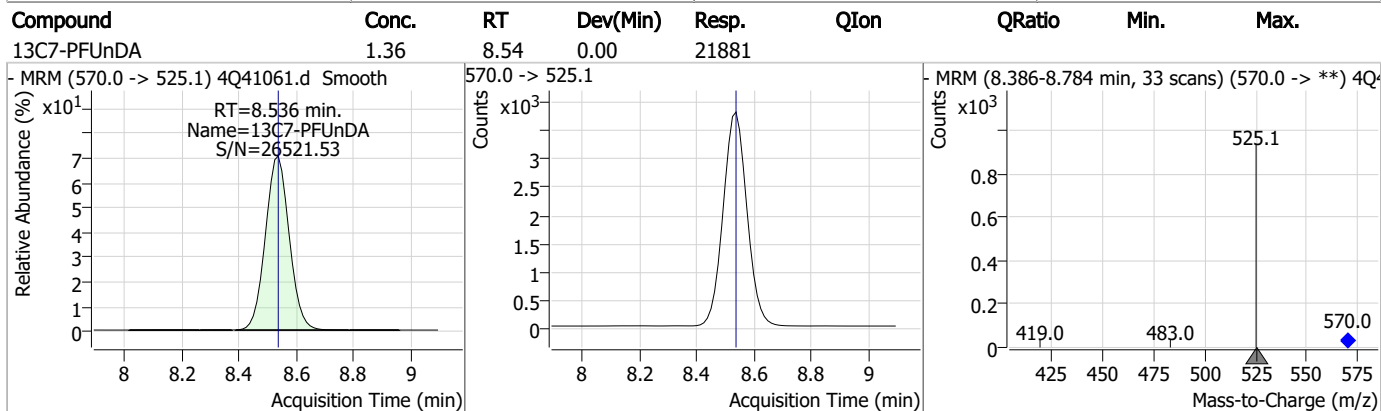
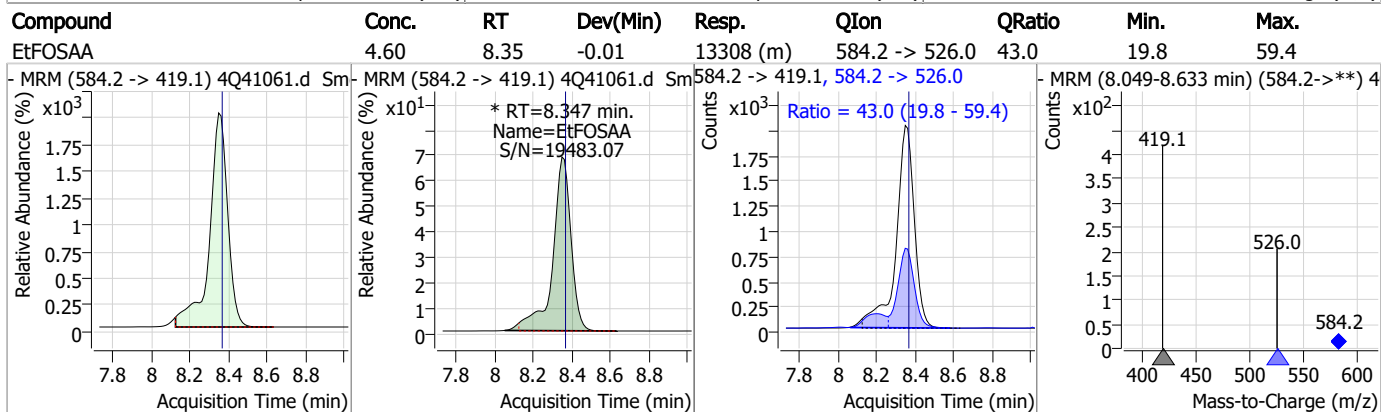
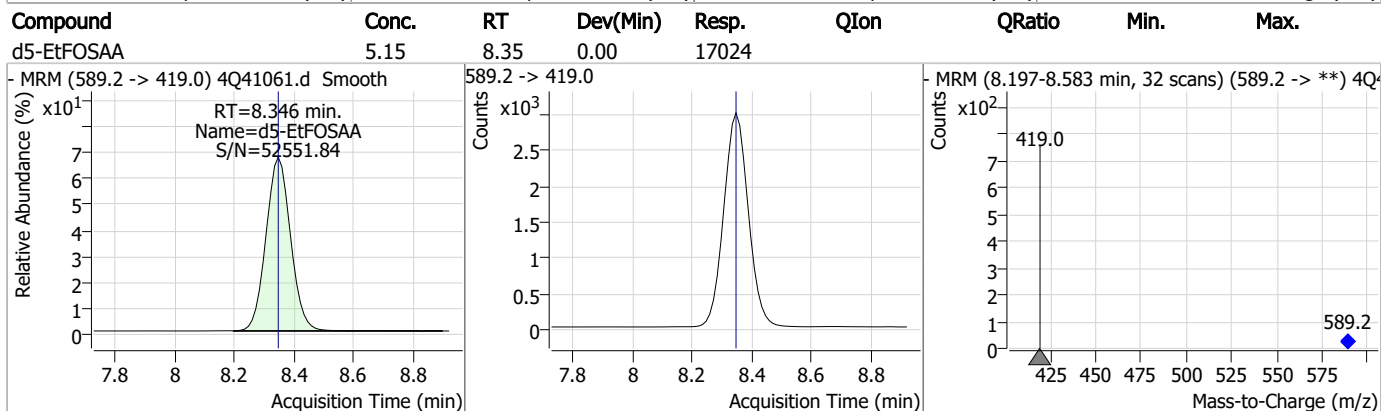
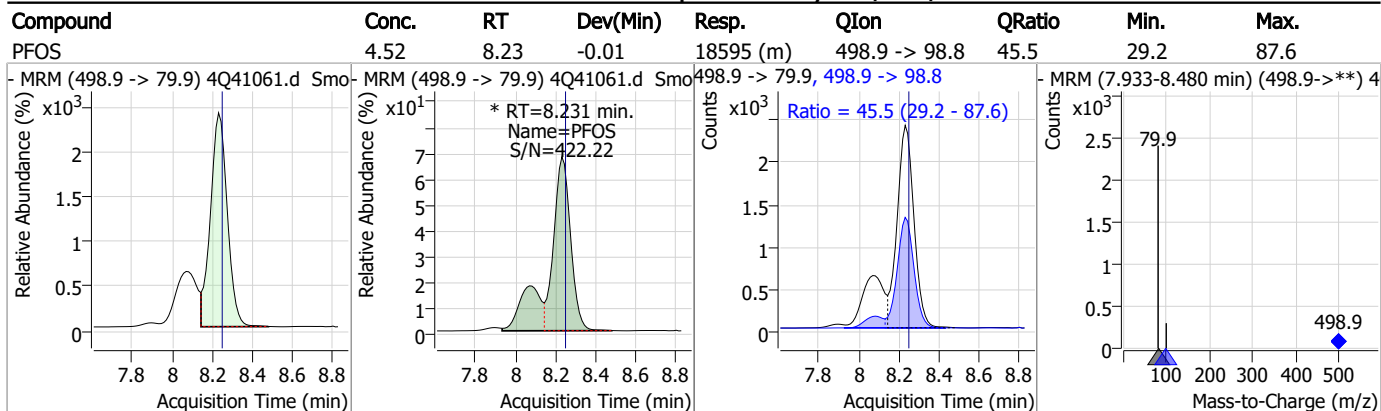
Perfluorinated Compounds by LC/MS/MS



7.6.6

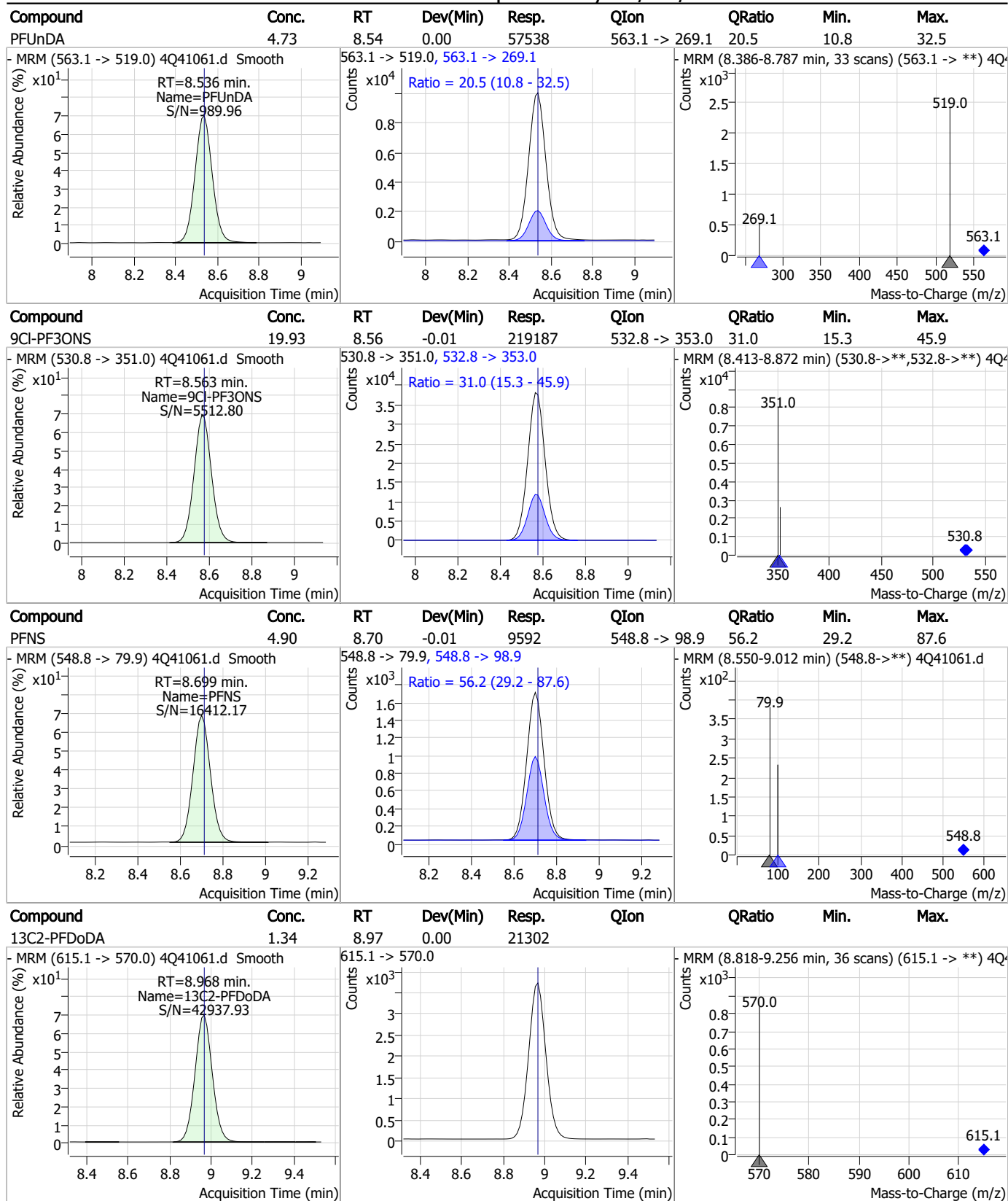
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Perfluorinated Compounds by LC/MS/MS



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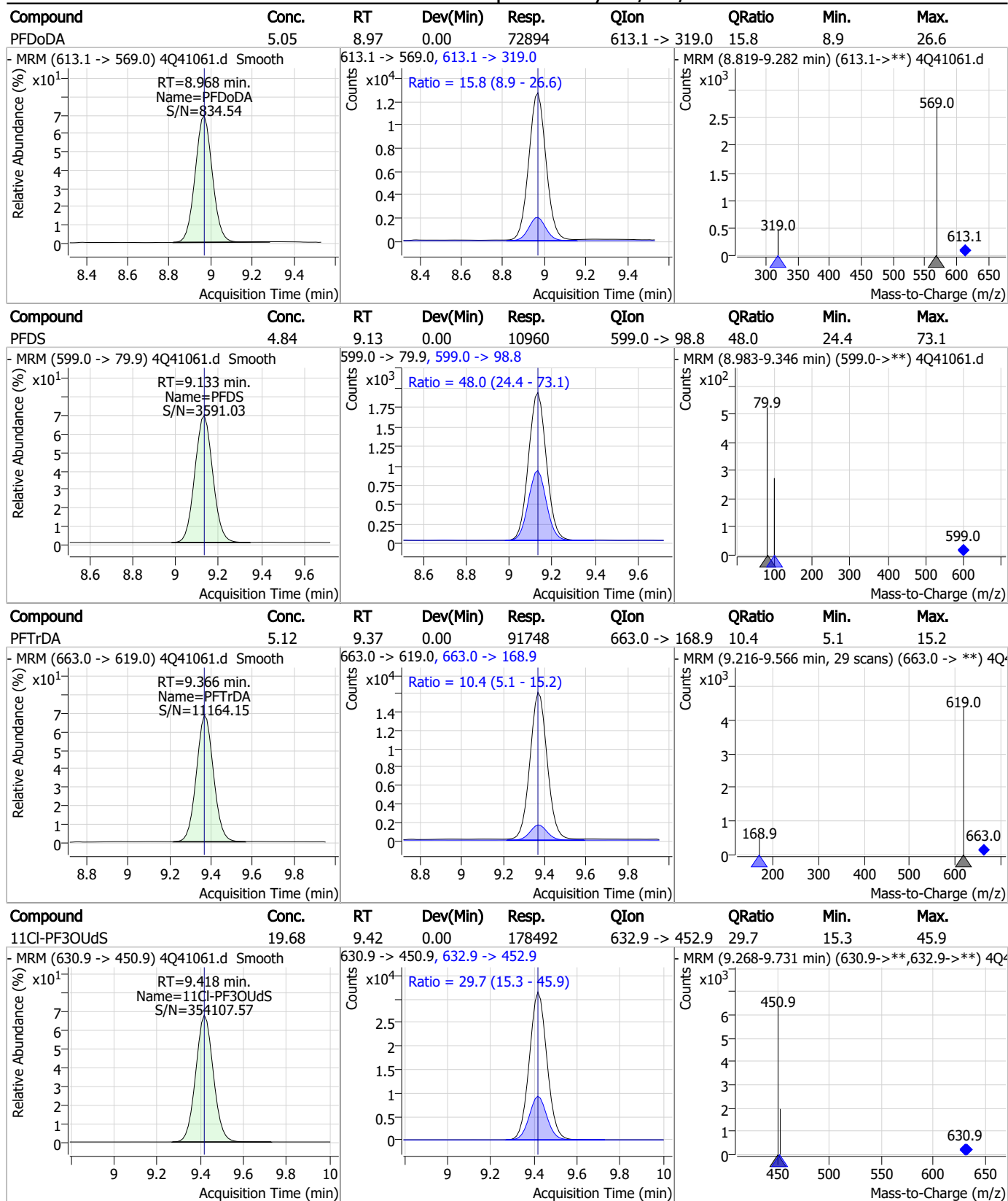
Perfluorinated Compounds by LC/MS/MS



7.6.6

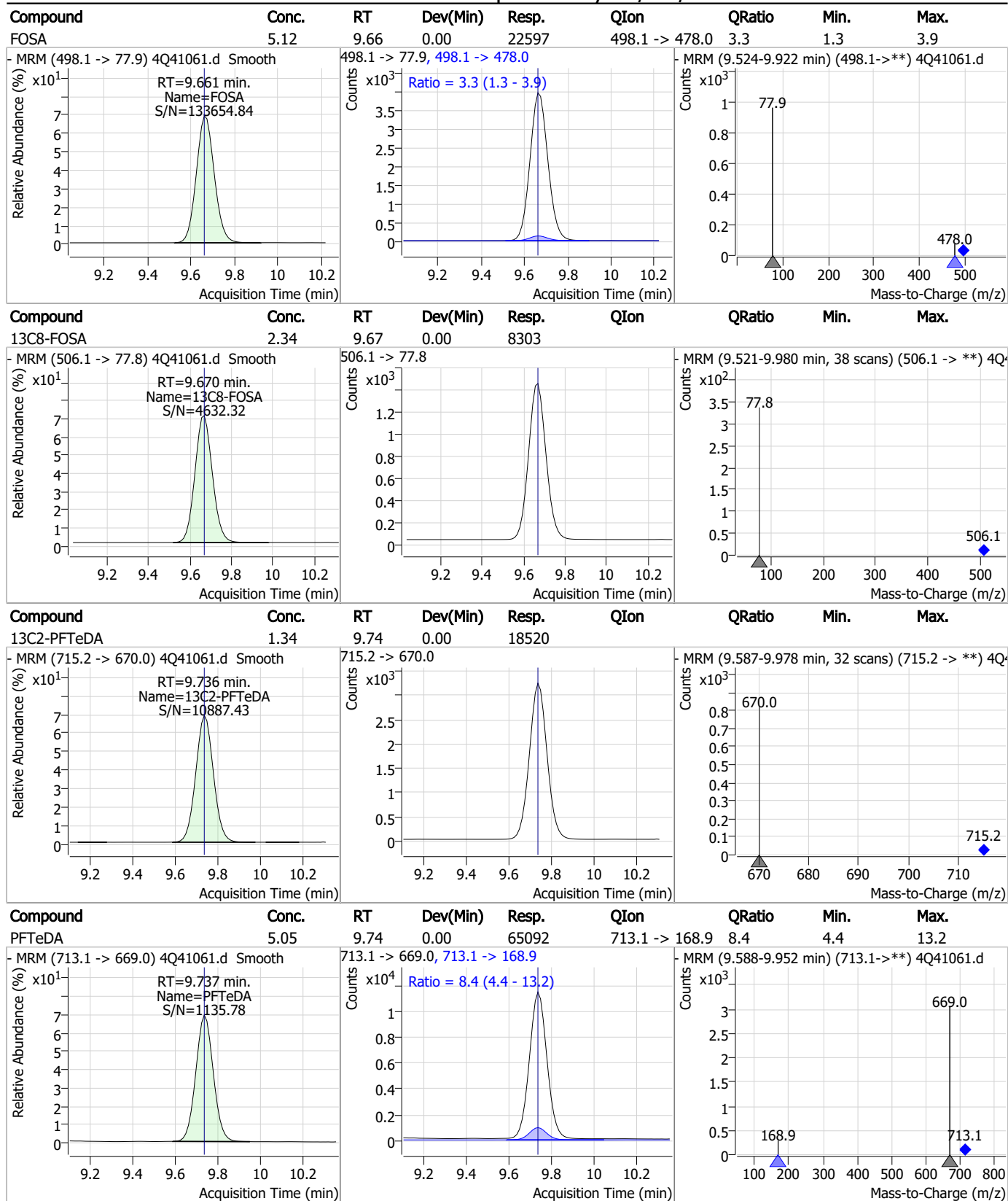
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Perfluorinated Compounds by LC/MS/MS



7.6.6
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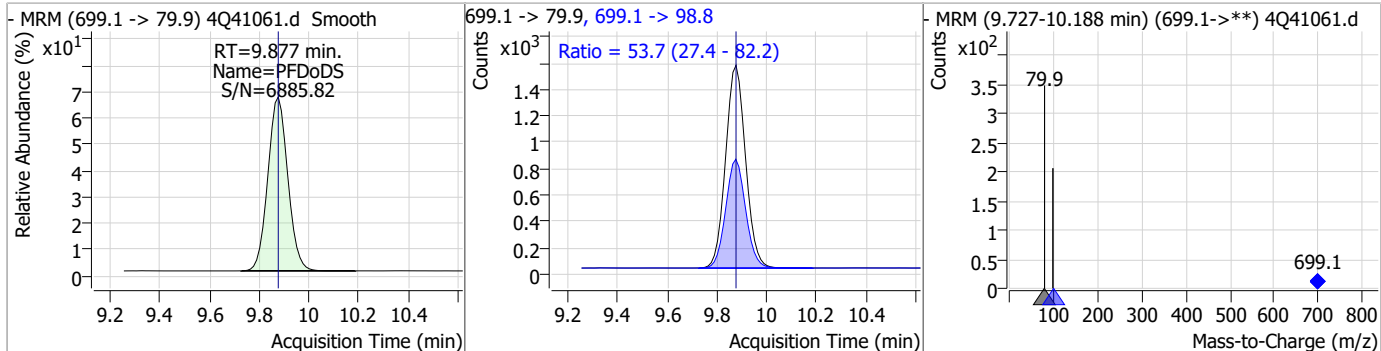
Perfluorinated Compounds by LC/MS/MS



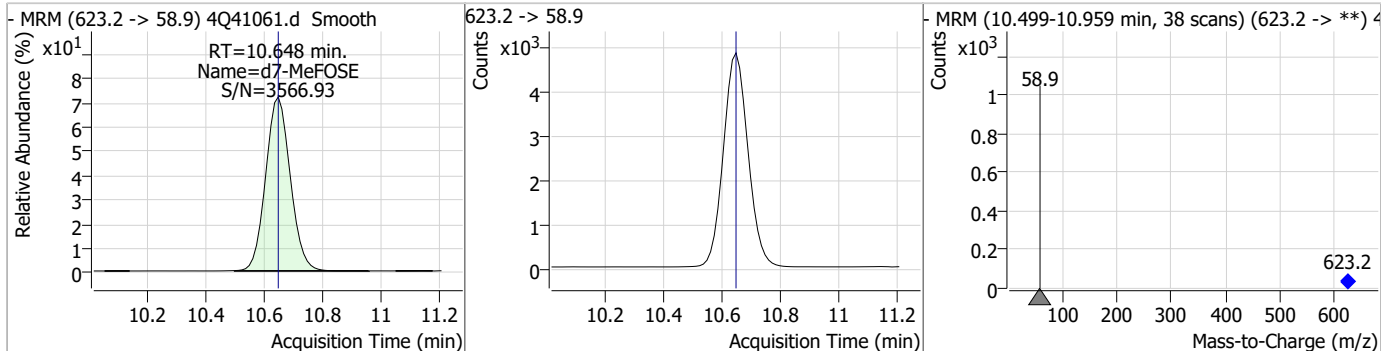
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Perfluorinated Compounds by LC/MS/MS

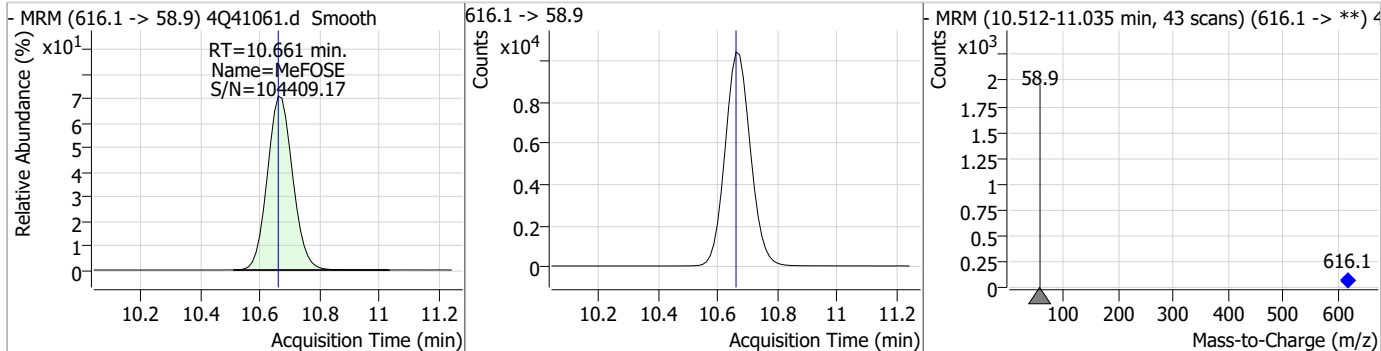
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	4.75	9.88	0.00	8600	699.1 -> 98.8	53.7	27.4	82.2



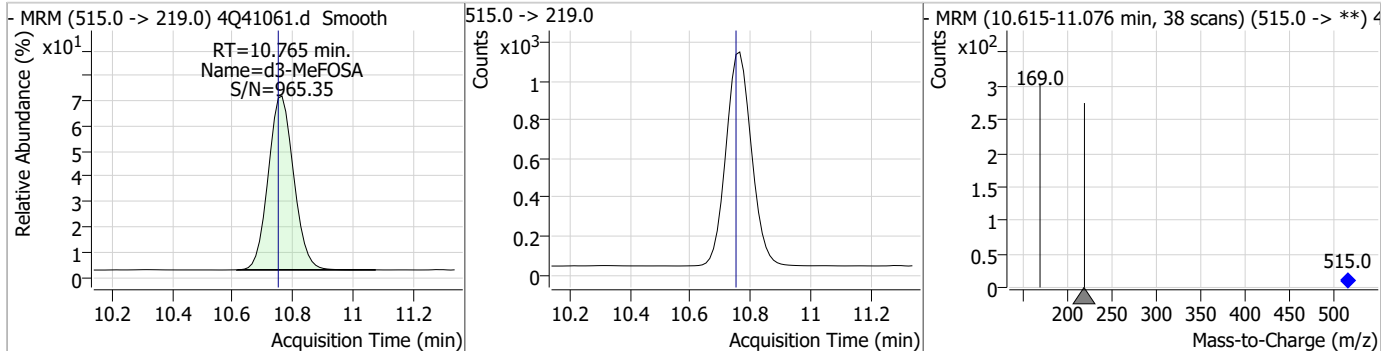
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.21	10.65	0.00	28406				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	51.55	10.66	0.00	61466				

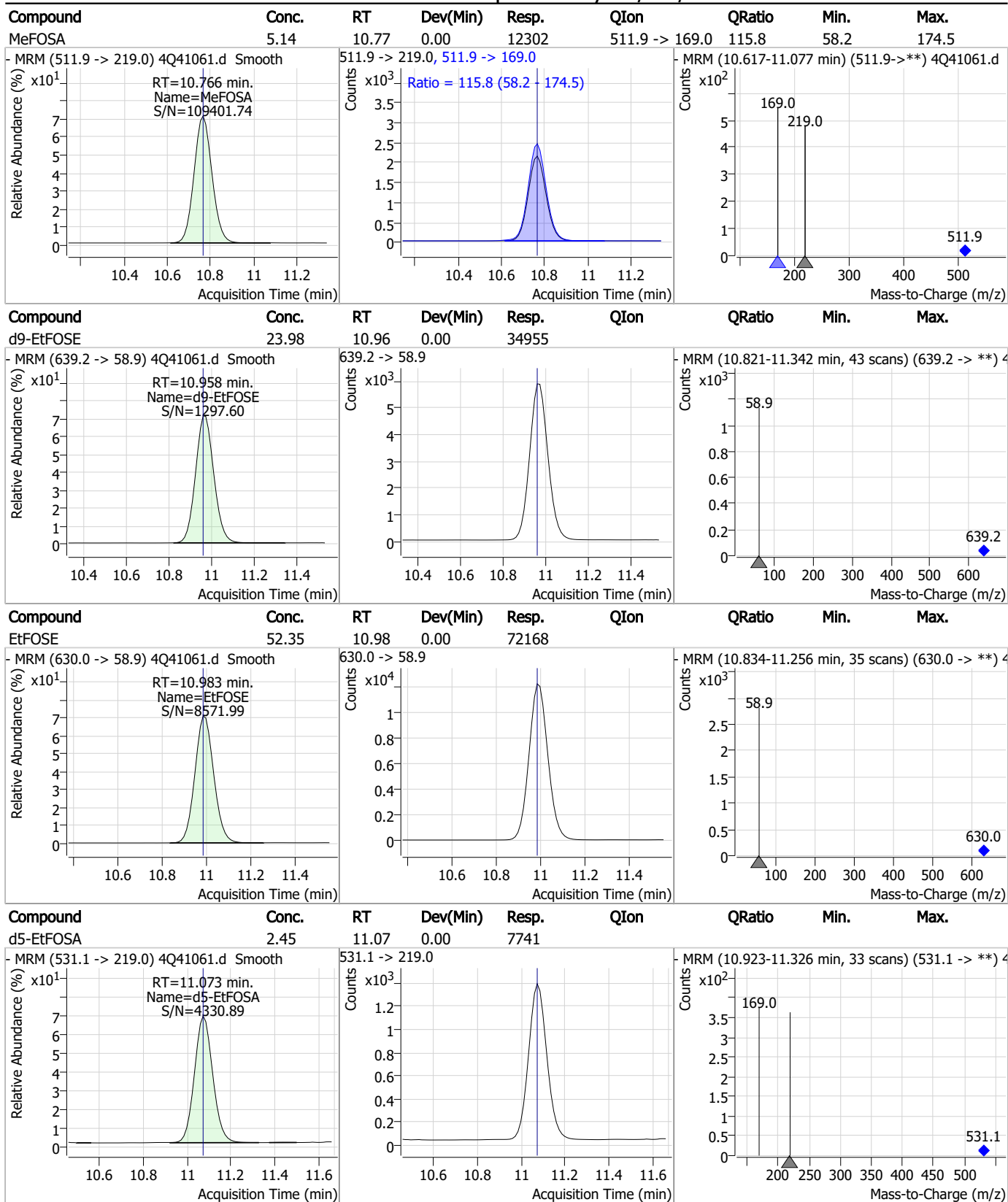


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.36	10.76	0.01	6503				



7.6.6
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Perfluorinated Compounds by LC/MS/MS



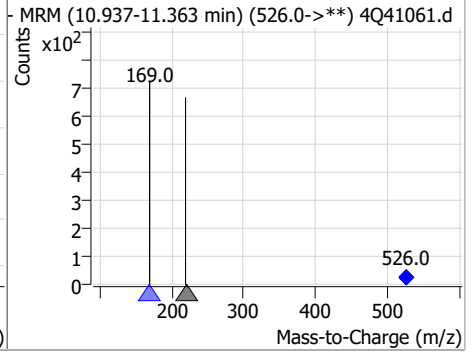
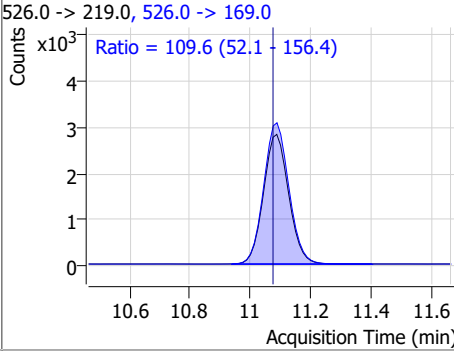
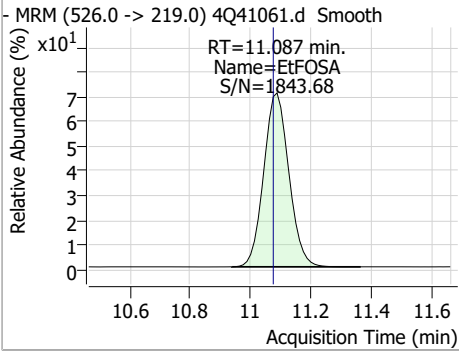
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.98	11.09	0.01	16157	526.0 -> 169.0	109.6	52.1	156.4



7.6.6
7

Manual Integration Approval Summary

Sample Number: S4Q587-IC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41061.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 17:19 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.14	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

7.6.6.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 02/24/23 10:47

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41062.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 5:34:02 PM
 Sample Name : ic587-6
 Vial : P1-A7
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	134058	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	70800	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	55475	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	32048	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	39878	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	16749	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	16006	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	19929	1.25 µg/L	-0.012
M2-PFDoDA	8.955	615.1 -> 570.0	19612	1.25 µg/L	-0.012
M2-PFTeDA	9.736	715.2 -> 670.0	17964	1.25 µg/L	0.000
M8-FOSA	9.657	506.1 -> 77.8	7844	2.50 µg/L	-0.012
M3-PFBS	5.501	302.1 -> 79.9	11394	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	6800	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9035	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1254	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	1941	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3197	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	19417	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	33856	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	14477	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	27066	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	33669	25.00 µg/L	0.012
M5-EtFOSA	11.073	531.1 -> 219.0	7436	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	6438	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	8886	2.50 µg/L	-0.012
13C3-PFBA	3.155	216.0 -> 172.0	80340	5.00 µg/L	0.000
18O2-PFHxS	7.178	403.0 -> 83.9	5079	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	46029	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	15141	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	20678	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	51554	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1254	4.56 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.2%		
13C2-6:2FTS	6.836	429.1 -> 80.9	1941	4.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.1%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3197	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C2-PFDoDA	8.955	615.1 -> 570.0	19612	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-PFTeDA	9.736	715.2 -> 670.0	17964	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFBS	5.501	302.1 -> 79.9	11394	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C3-PFHxS	7.179	402.1 -> 79.9	6800	2.39 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C4-PFBA	3.152	216.8 -> 171.9	134058	10.07 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C4-PFHpA	6.417	367.1 -> 322.0	32048	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C5-PFHxA	5.546	318.0 -> 273.0	55475	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFPeA	4.500	268.3 -> 223.0	70800	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C6-PFDA	8.079	519.1 -> 474.1	16006	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.523	570.0 -> 525.1	19929	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-FOSA	9.657	506.1 -> 77.8	7844	2.39 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C8-PFOA	7.062	421.1 -> 376.0	39878	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOS	8.230	507.1 -> 79.9	9035	2.54 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C9-PFNA	7.596	472.1 -> 427.0	16749	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%	
d3-MeFOSAA	8.136	573.2 -> 419.0	19417	4.96 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	33856	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d3-MeFOSA	10.765	515.0 -> 219.0	6438	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
d5-EtFOSAA	8.346	589.2 -> 419.0	14477	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
d7-MeFOSE	10.648	623.2 -> 58.9	27066	24.98 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d9-EtFOSE	10.970	639.2 -> 58.9	33669	25.02 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d5-EtFOSA	11.073	531.1 -> 219.0	7436	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	100239	50.21 µg/L	98
		327.1 -> 80.9	37157		
6:2FTS	6.836	427.1 -> 407.0	92405	53.18 µg/L	100
		427.1 -> 80.9	33929		
8:2FTS	7.866	527.1 -> 507.0	84844	51.35 µg/L	98
		527.1 -> 80.8	25140		
EtFOSAA	8.347	584.2 -> 419.1	33624	13.67 µg/L	m 92
		584.2 -> 526.0	14934		
FOSA	9.661	498.1 -> 77.9	56789	13.62 µg/L	99
		498.1 -> 478.0	1760		
MeFOSAA	8.149	570.1 -> 419.0	36401	13.73 µg/L	m 88
		570.1 -> 483.0	7063		
PFBA	3.158	212.8 -> 168.9	172118	54.18 µg/L	100
PFBS	5.502	298.7 -> 79.9	56907	12.49 µg/L	94
		298.7 -> 98.8	19896		
PFDA	8.079	512.9 -> 469.0	144512	13.22 µg/L	97
		512.9 -> 219.0	29052		
PFDoDA	8.956	613.1 -> 569.0	182307	13.72 µg/L	96
		613.1 -> 319.0	28897		
PFDS	9.121	599.0 -> 79.9	27231	12.11 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	13560			
PFHpA	6.417	363.1 -> 319.0	231941	13.60	µg/L	99
		363.1 -> 169.0	39965			
PFHpS	7.736	449.0 -> 79.9	34239	12.33	µg/L	96
		449.0 -> 98.9	17839			
PFHxA	5.549	313.0 -> 269.0	244257	12.74	µg/L	99
		313.0 -> 118.9	7251			
PFHxS	7.180	398.7 -> 79.9	33317	11.86	µg/L	m 97
		398.7 -> 98.9	17897			
PFNA	7.596	463.0 -> 419.0	135292	13.29	µg/L	97
		463.0 -> 219.0	33886			
PFNS	8.686	548.8 -> 79.9	25260	12.99	µg/L	92
		548.8 -> 98.9	13156			
PFOA	7.063	413.0 -> 369.0	244949	12.99	µg/L	100
		413.0 -> 169.0	47719			
PFOS	8.231	498.9 -> 79.9	44771	10.96	µg/L	m 83
		498.9 -> 98.8	20555			
PFPeA	4.502	263.0 -> 219.0	456401	27.41	µg/L	100
PFPeS	6.484	349.1 -> 79.9	27696	12.83	µg/L	98
		349.1 -> 98.9	12737			
PFTeDA	9.737	713.1 -> 669.0	173145	13.85	µg/L	99
		713.1 -> 168.9	14434			
PFTrDA	9.366	663.0 -> 619.0	231465	14.04	µg/L	99
		663.0 -> 168.9	24422			
PFUnDA	8.524	563.1 -> 519.0	141014	12.74	µg/L	97
		563.1 -> 269.1	28769			
11Cl-PF3OUdS	9.406	630.9 -> 450.9	463733	52.81	µg/L	100
		632.9 -> 452.9	142206			
9Cl-PF3ONS	8.563	530.8 -> 351.0	527896	49.57	µg/L	98
		532.8 -> 353.0	166130			
ADONA	6.681	376.9 -> 250.9	987846	50.64	µg/L	99
		376.9 -> 84.8	175685			
HFPO-DA	5.878	284.9 -> 168.9	150919	54.29	µg/L	98
		284.9 -> 184.9	17093			
3:3FTCA	4.154	241.0 -> 177.0	67071	68.40	µg/L	98
		241.0 -> 117.0	5511			
5:3FTCA	6.333	341.0 -> 237.1	996834	343.07	µg/L	99
		341.0 -> 217.0	718615			
7:3FTCA	7.723	441.0 -> 316.9	396530	339.11	µg/L	100
		441.0 -> 336.9	915881			
EtFOSA	11.087	526.0 -> 219.0	40951	13.15	µg/L	96
		526.0 -> 169.0	44591			
EtFOSE	10.996	630.0 -> 58.9	181981	137.06	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	32540	13.74	µg/L	97
		511.9 -> 169.0	36736			
MeFOSE	10.674	616.1 -> 58.9	152082	133.87	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	22356	12.44	µg/L	98
		699.1 -> 98.8	11919			
NFDHA	5.453	295.0 -> 201.0	19750	27.11	µg/L	94
		295.0 -> 84.9	4187			
PFMBA	4.867	279.0 -> 85.1	243721	27.56	µg/L	100
PFMPA	3.727	229.0 -> 84.9	192252	27.37	µg/L	100
PFEESA	5.983	314.8 -> 134.9	321459	24.80	µg/L	99
		314.8 -> 82.9	10397			

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

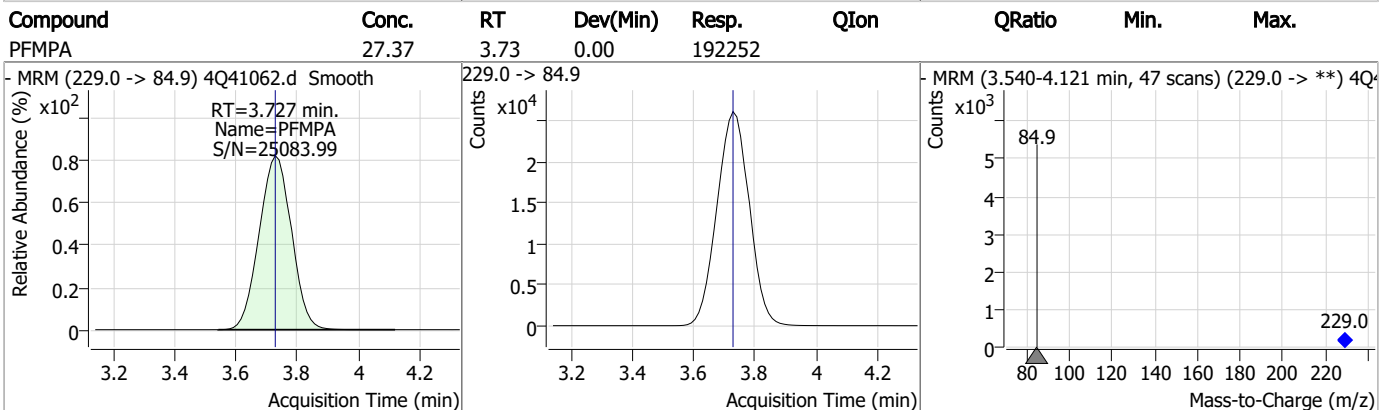
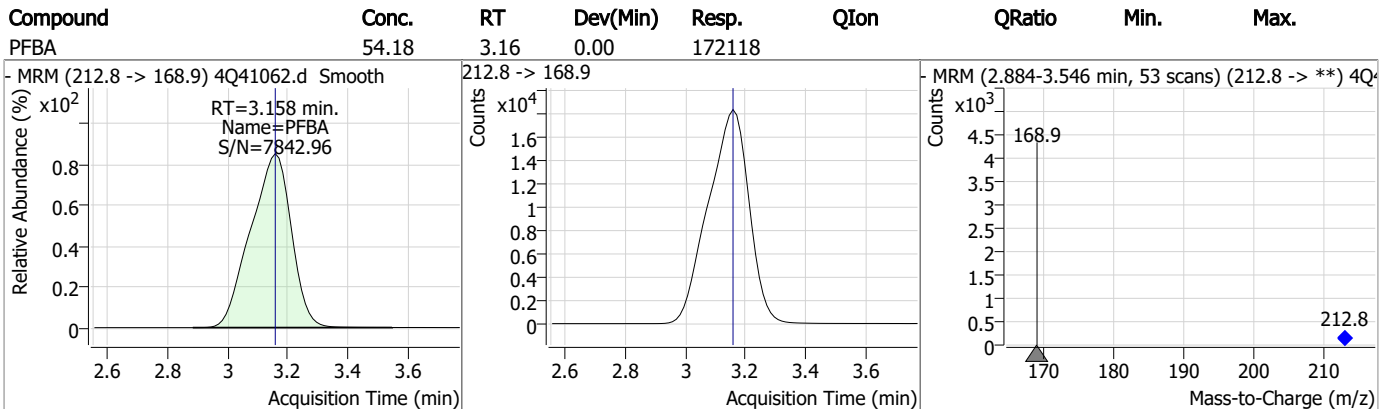
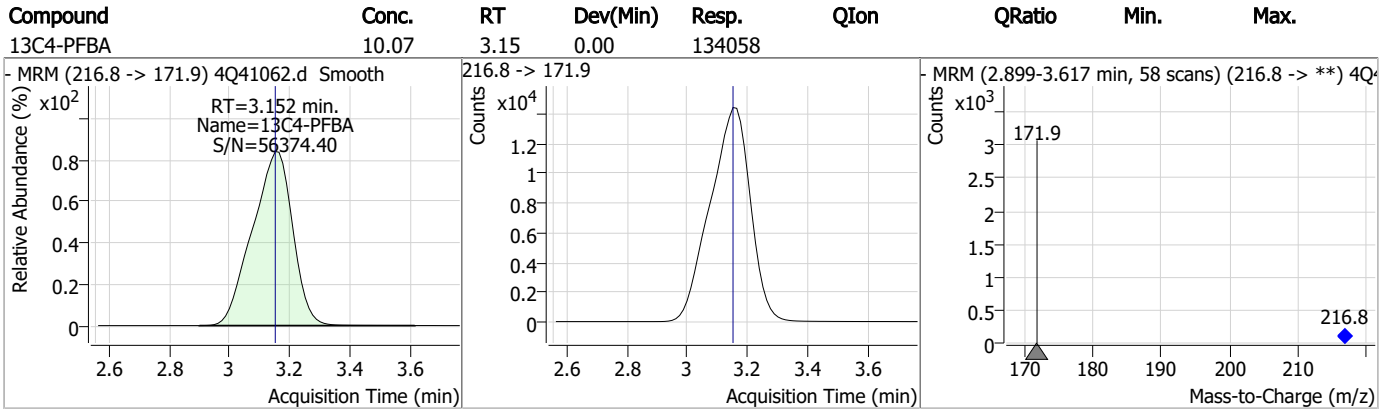
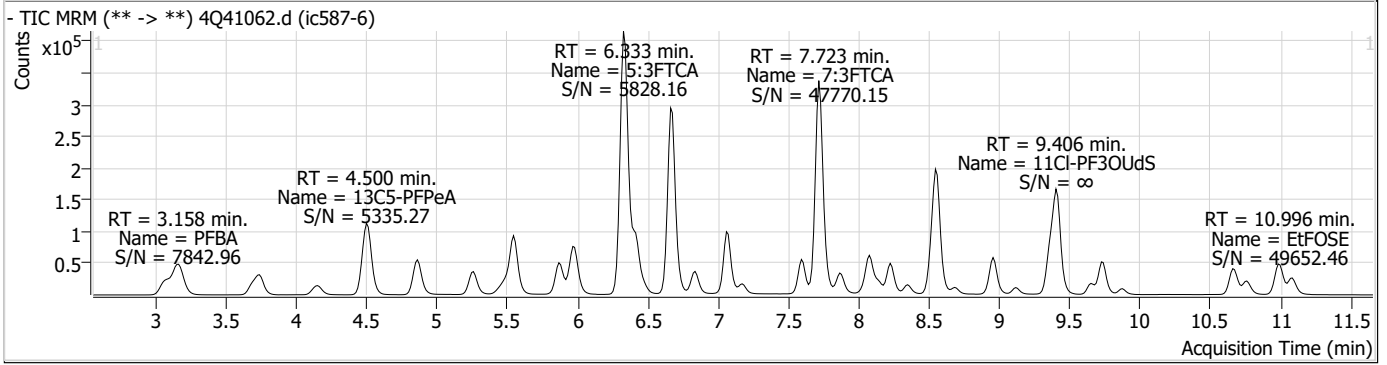
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.7

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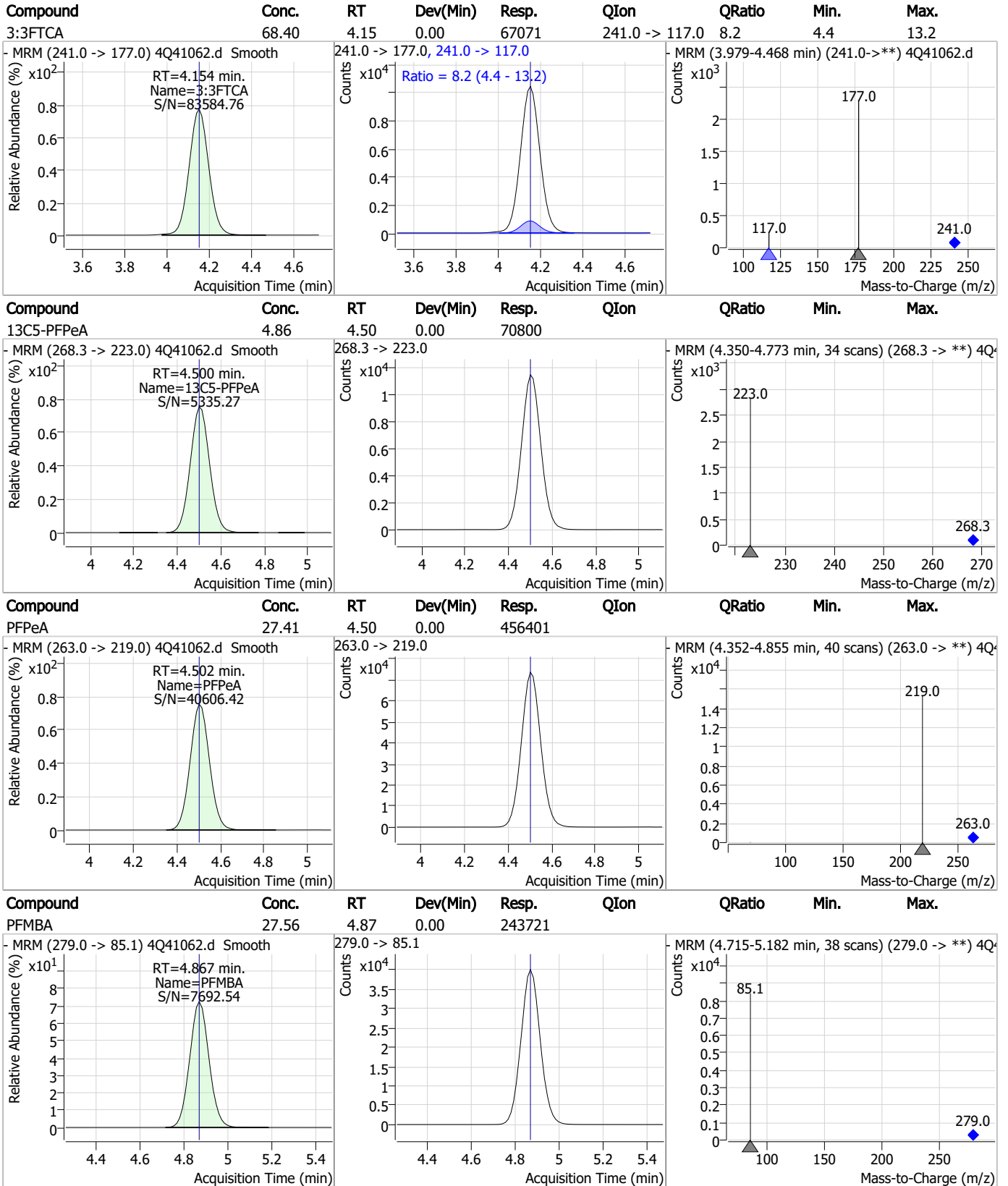
Perfluorinated Compounds by LC/MS/MS



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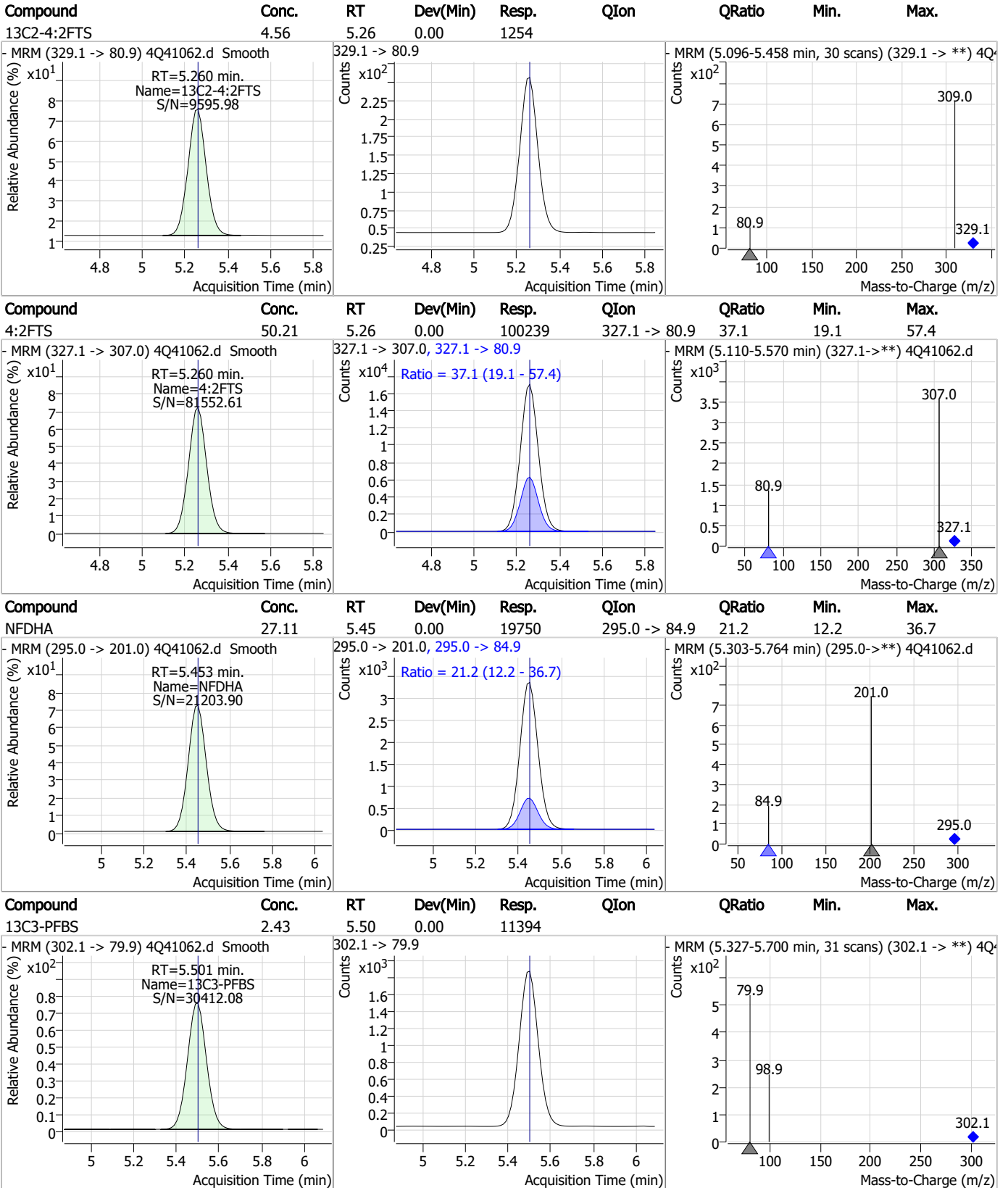
Perfluorinated Compounds by LC/MS/MS



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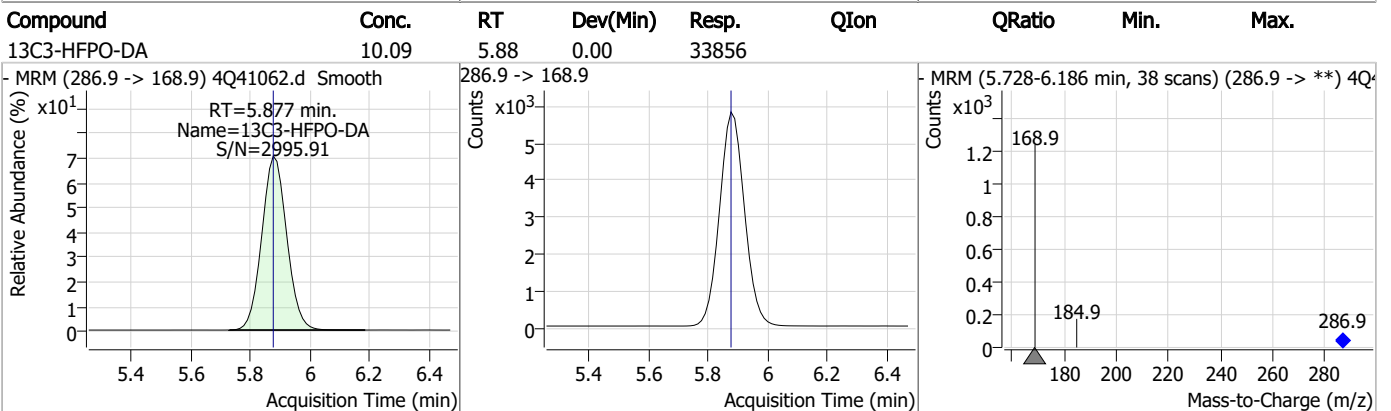
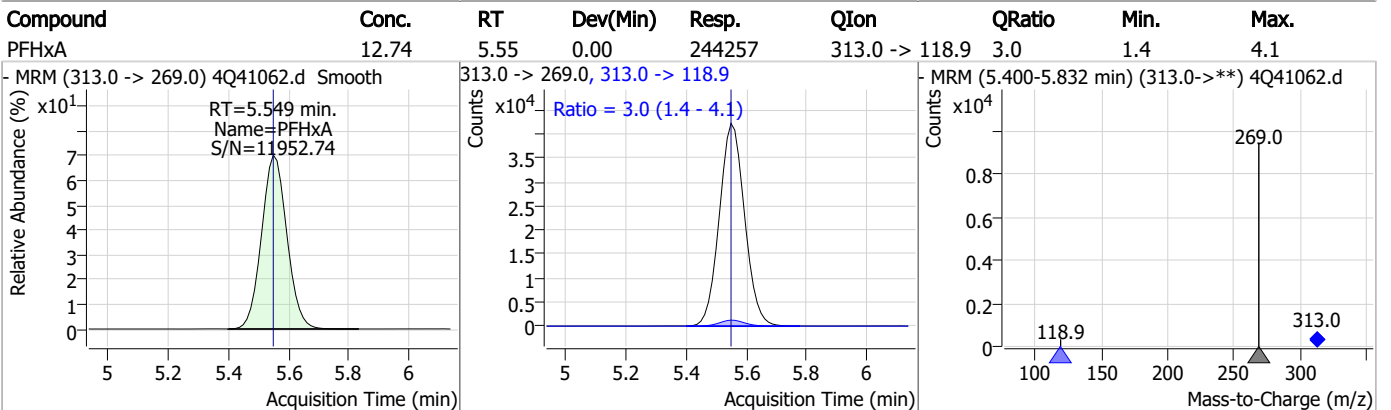
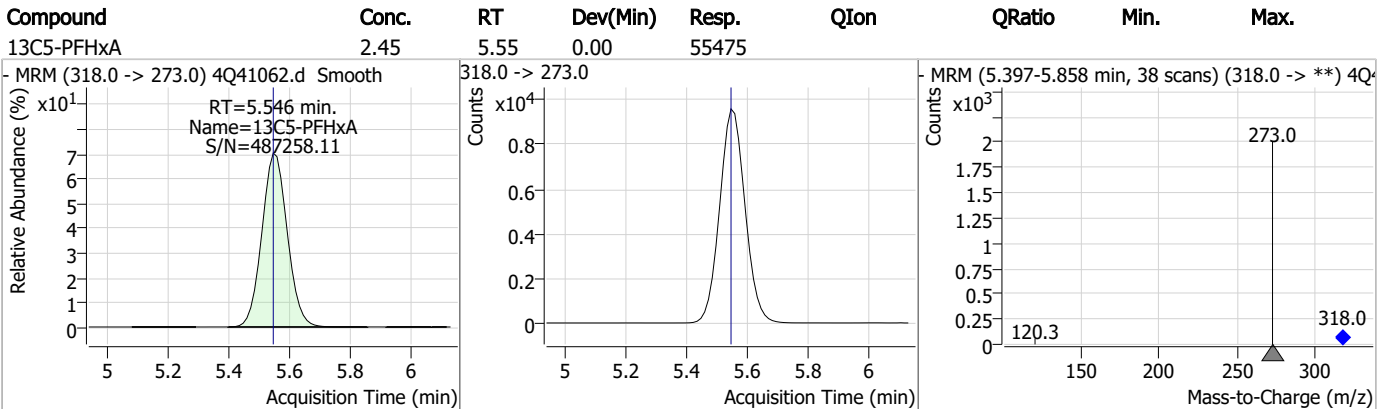
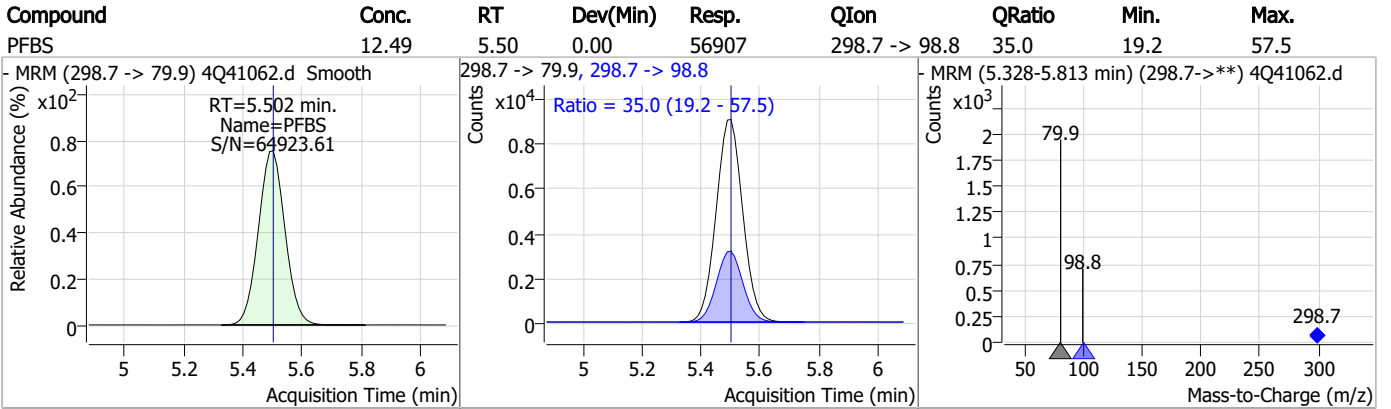
Perfluorinated Compounds by LC/MS/MS



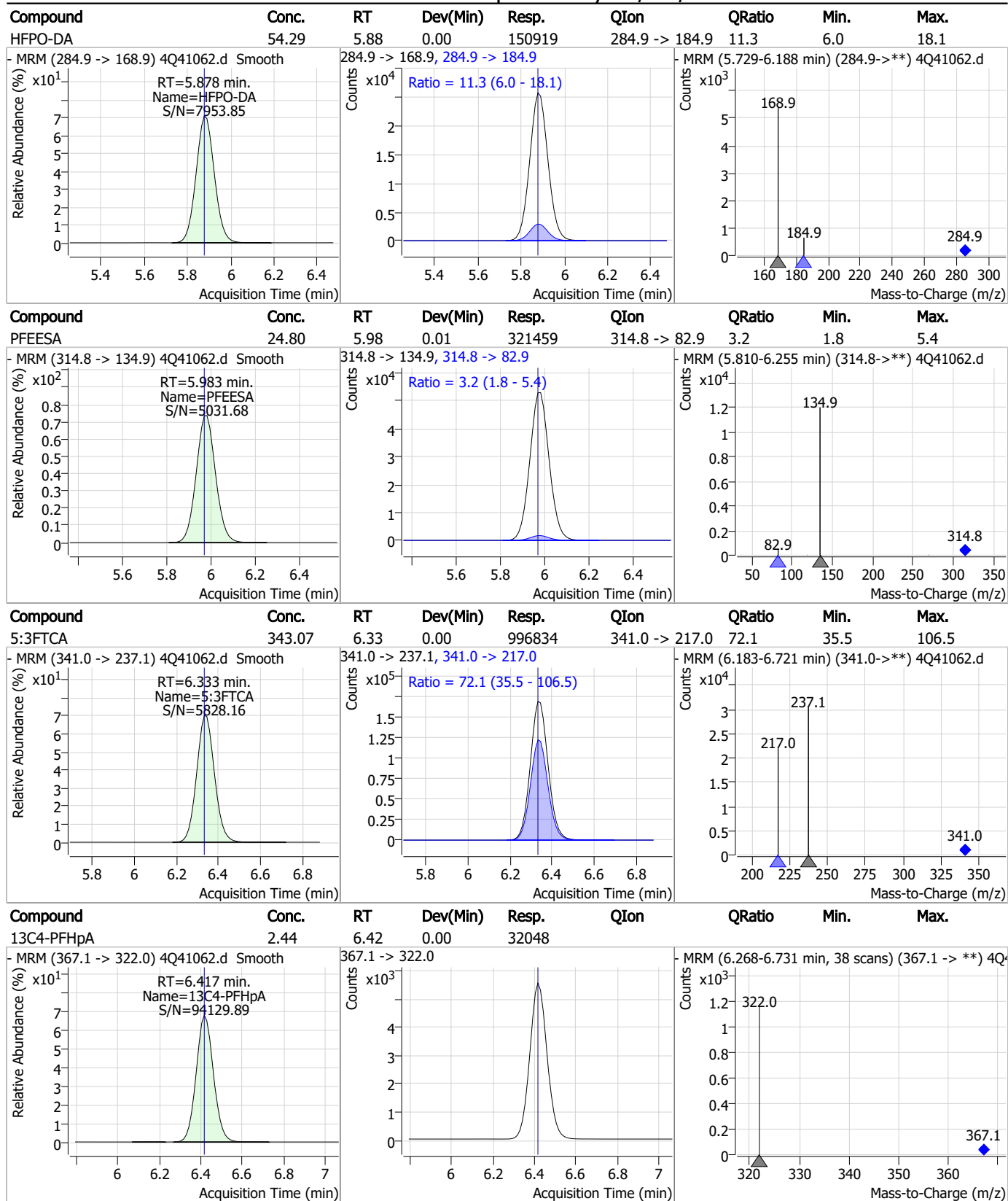
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Perfluorinated Compounds by LC/MS/MS

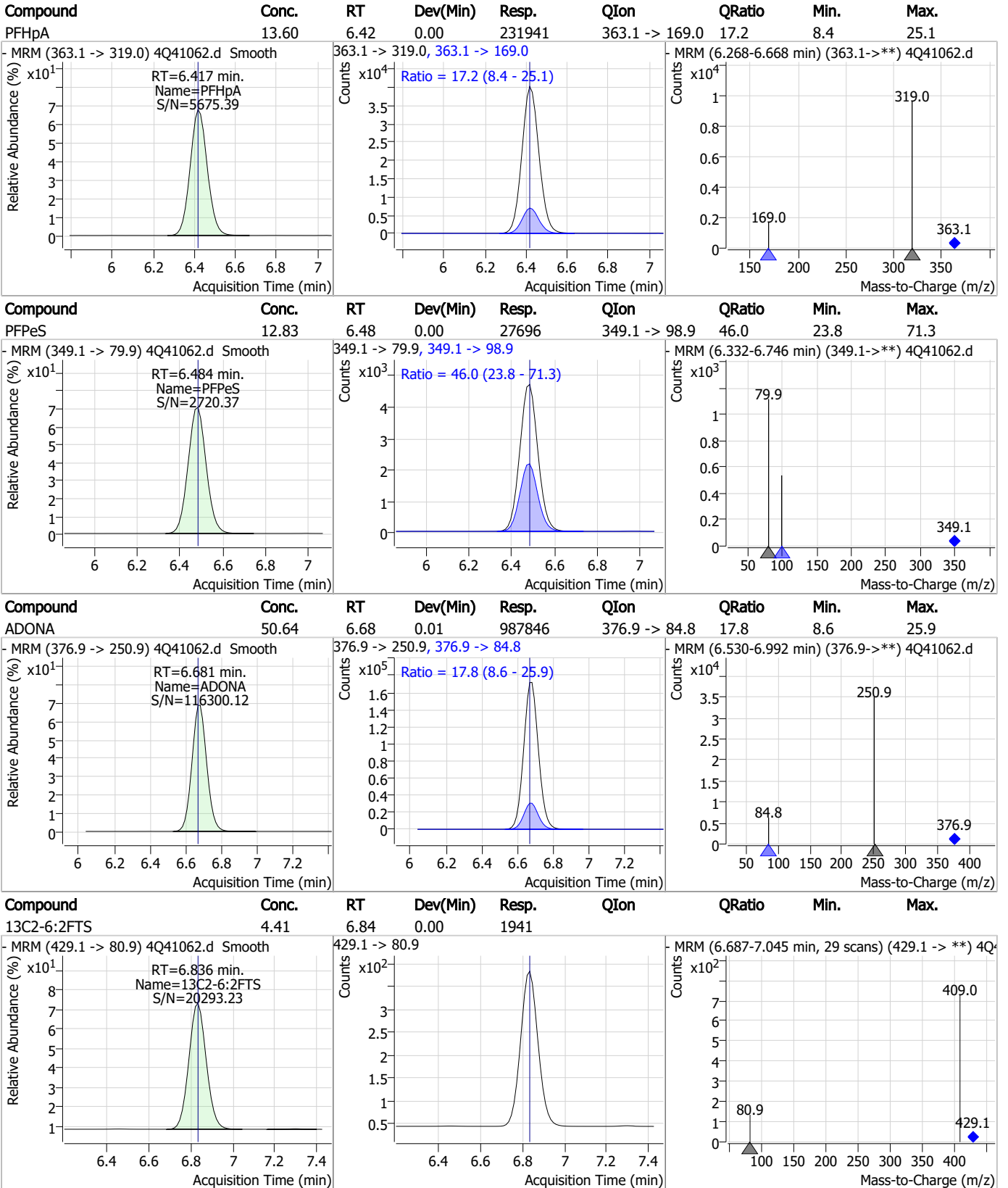


Perfluorinated Compounds by LC/MS/MS



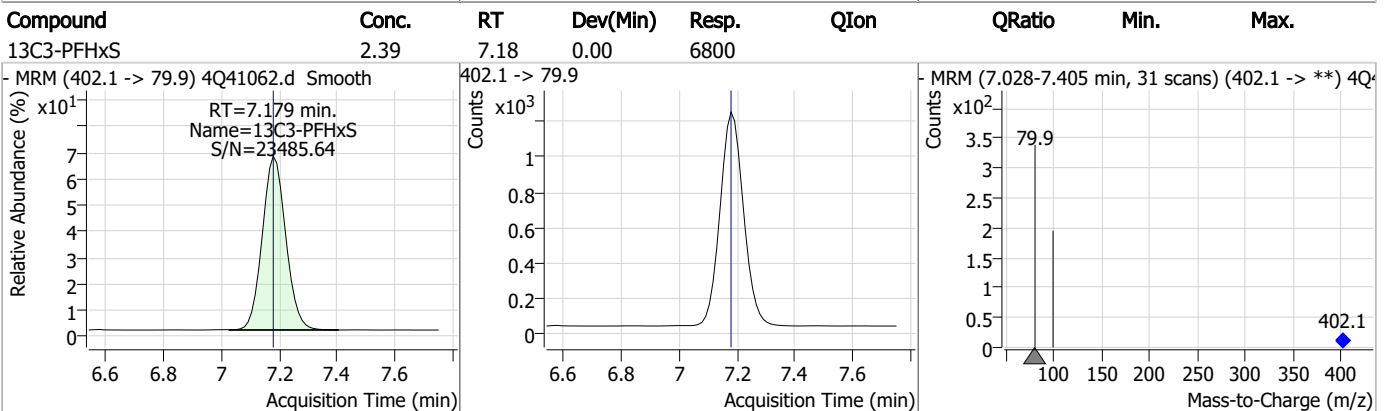
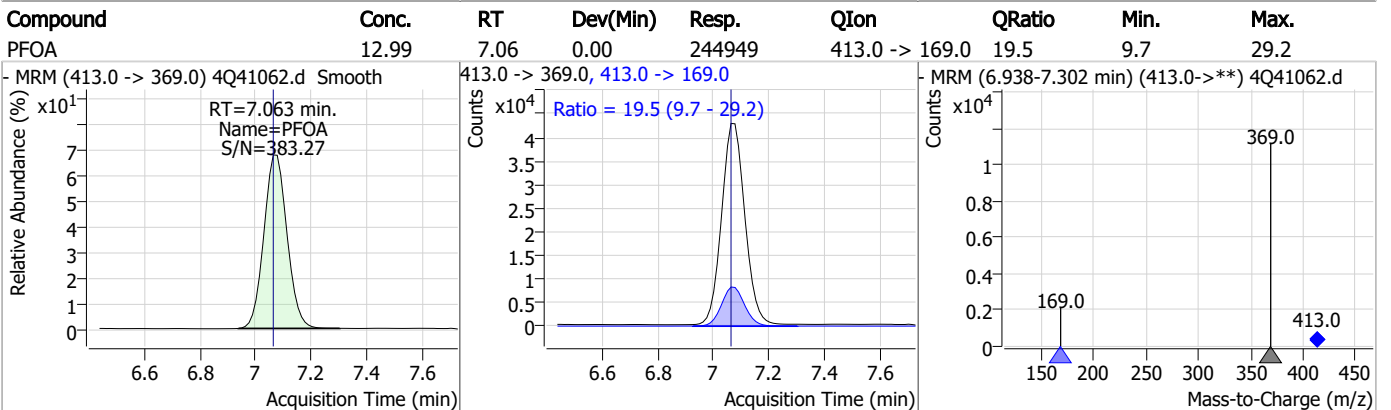
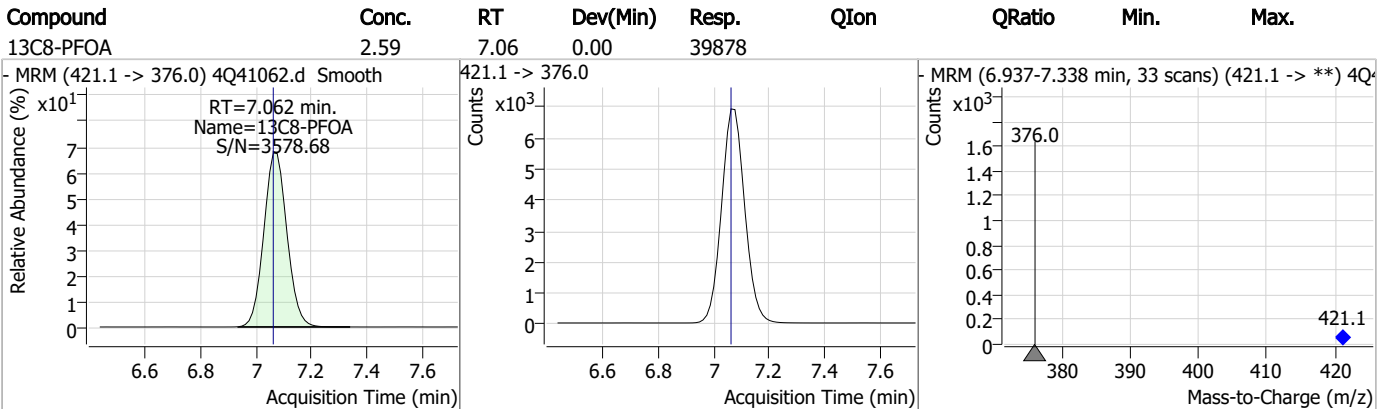
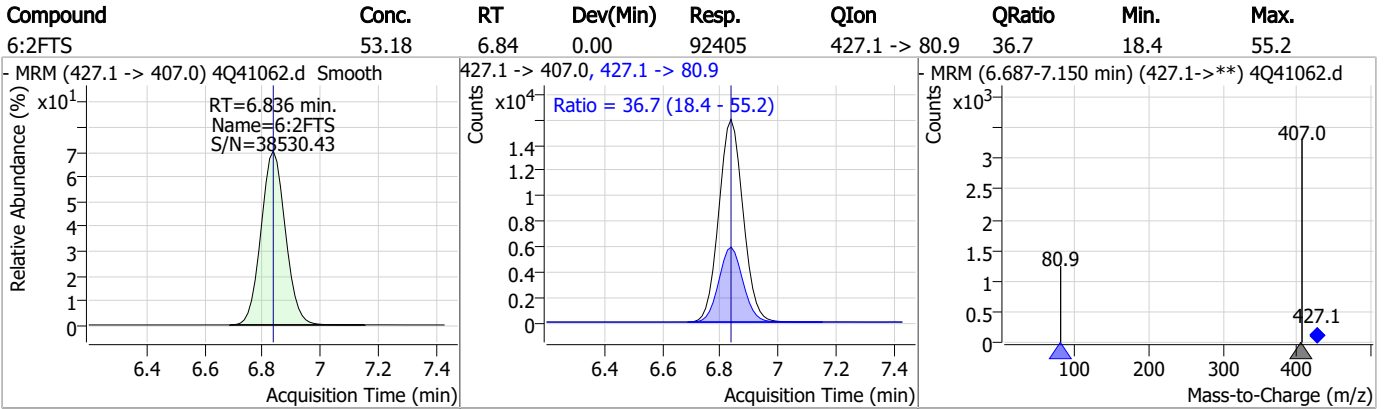
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Perfluorinated Compounds by LC/MS/MS



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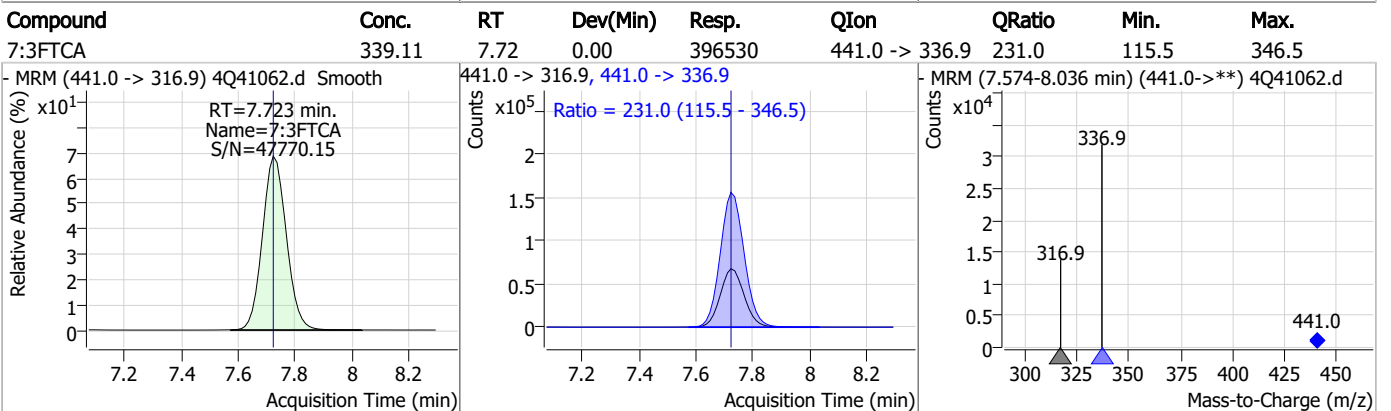
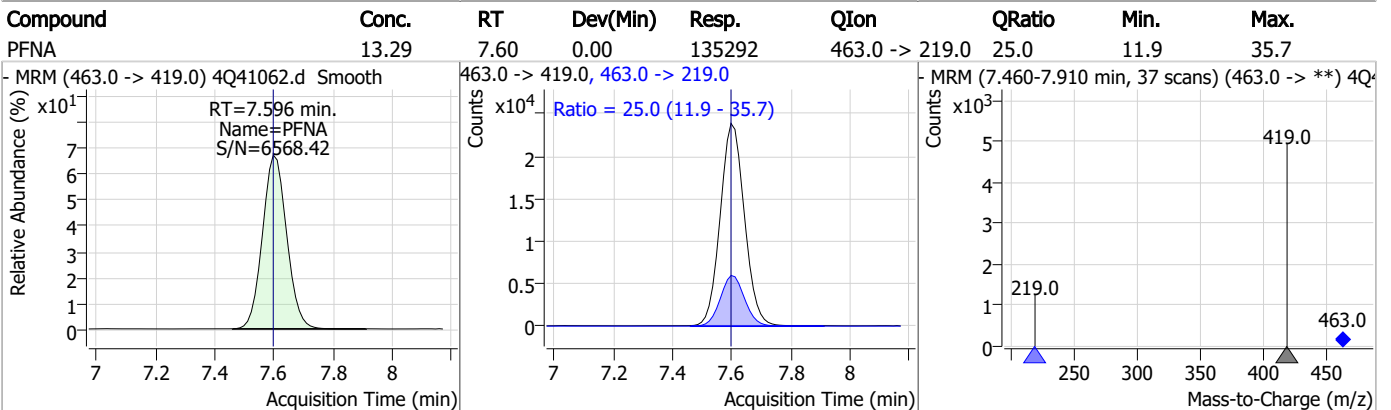
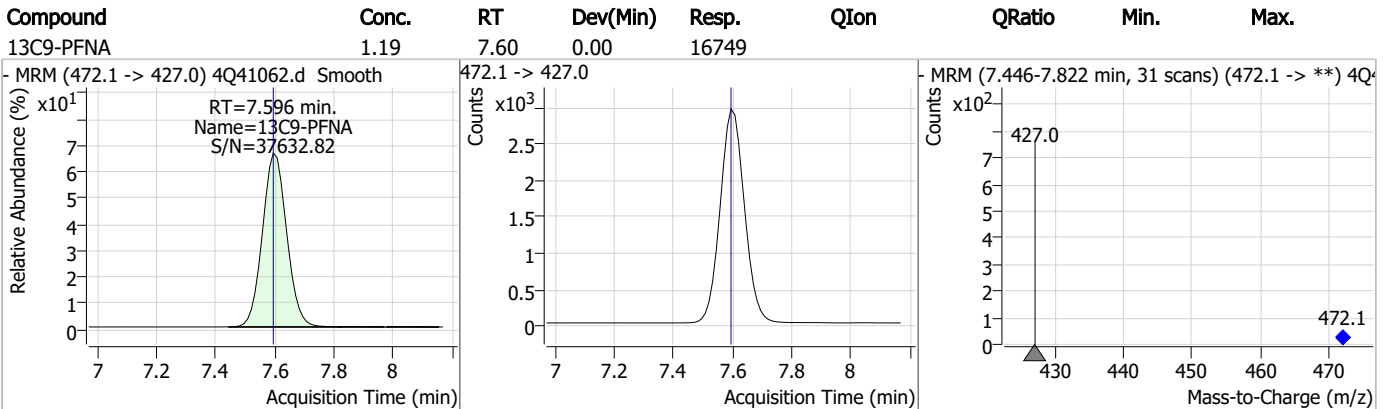
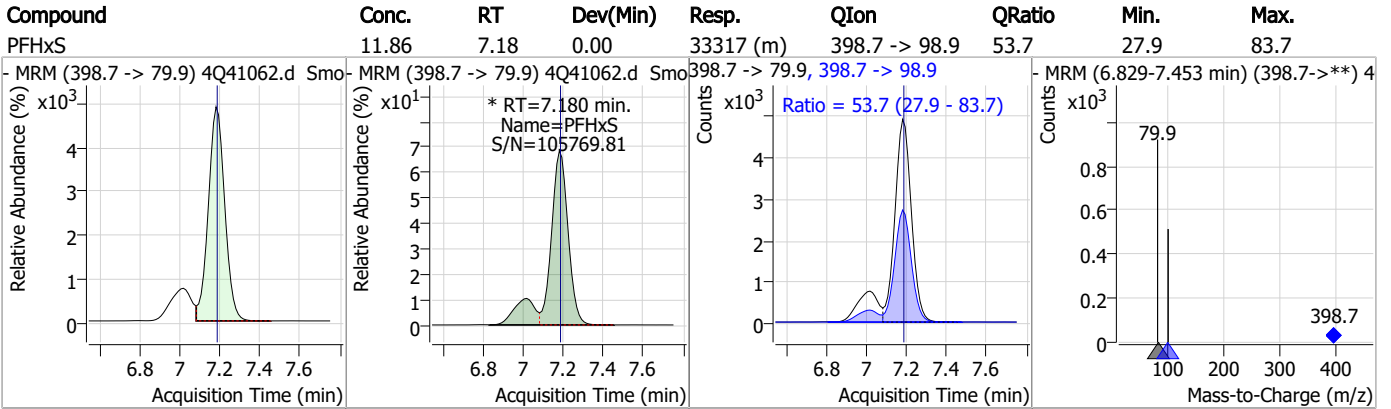
Perfluorinated Compounds by LC/MS/MS



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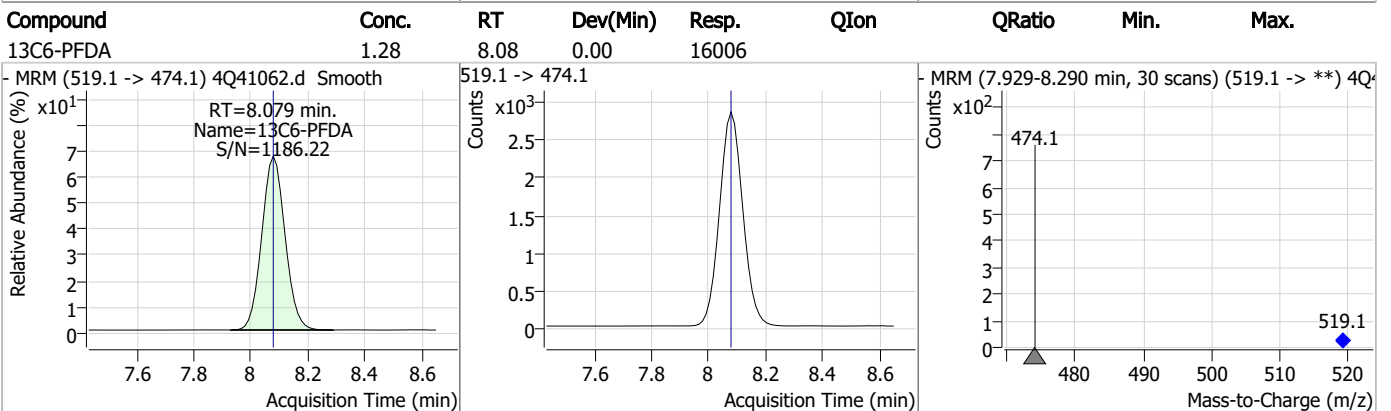
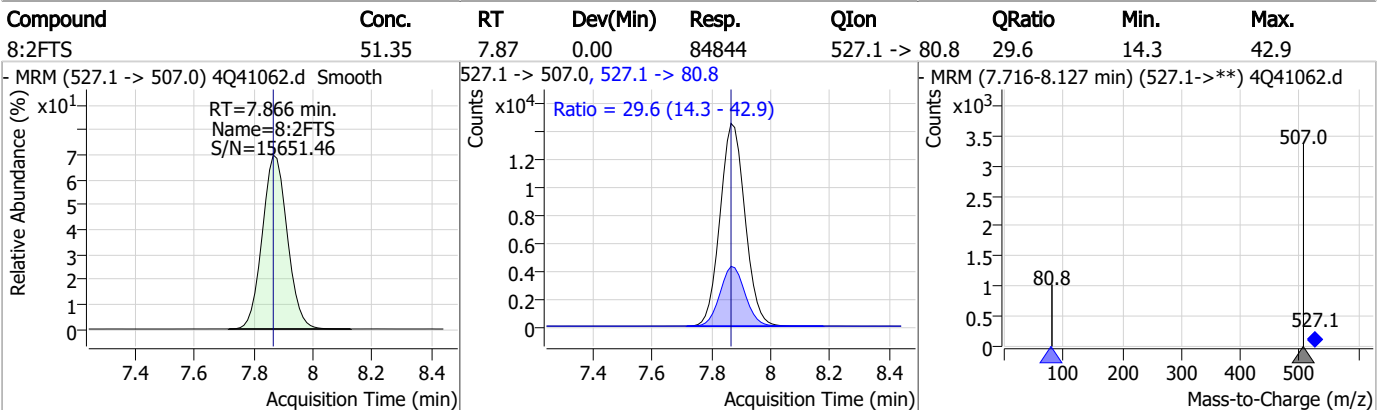
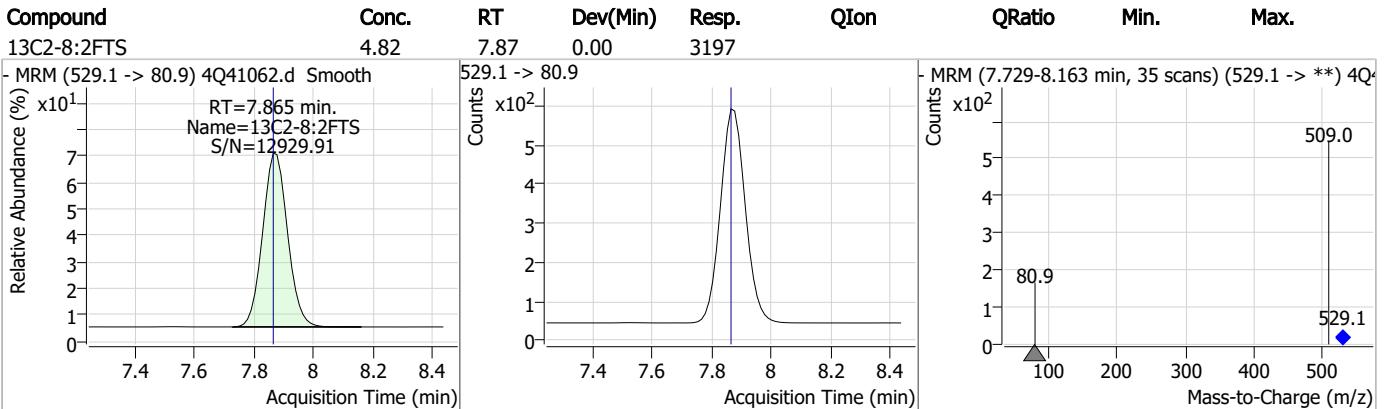
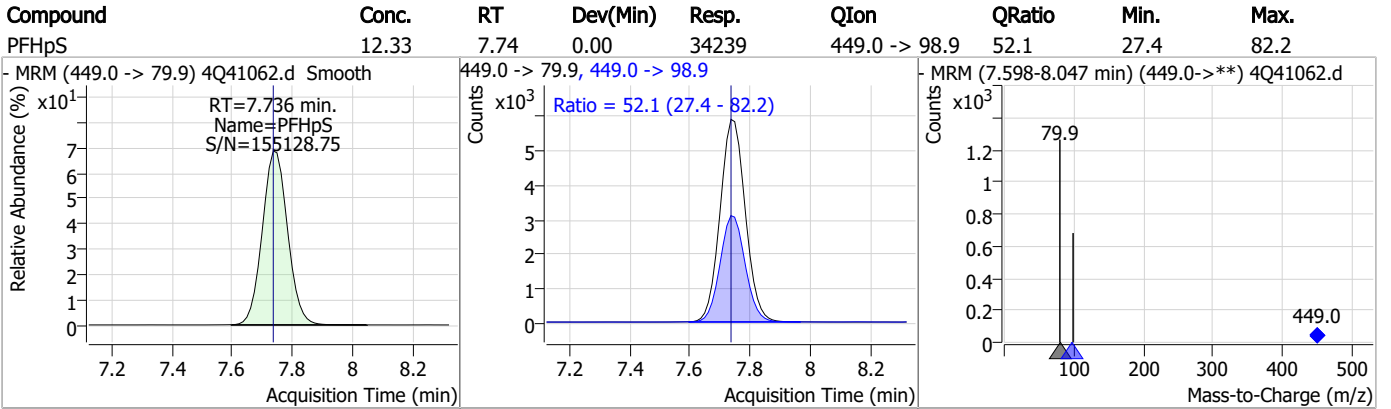
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Perfluorinated Compounds by LC/MS/MS

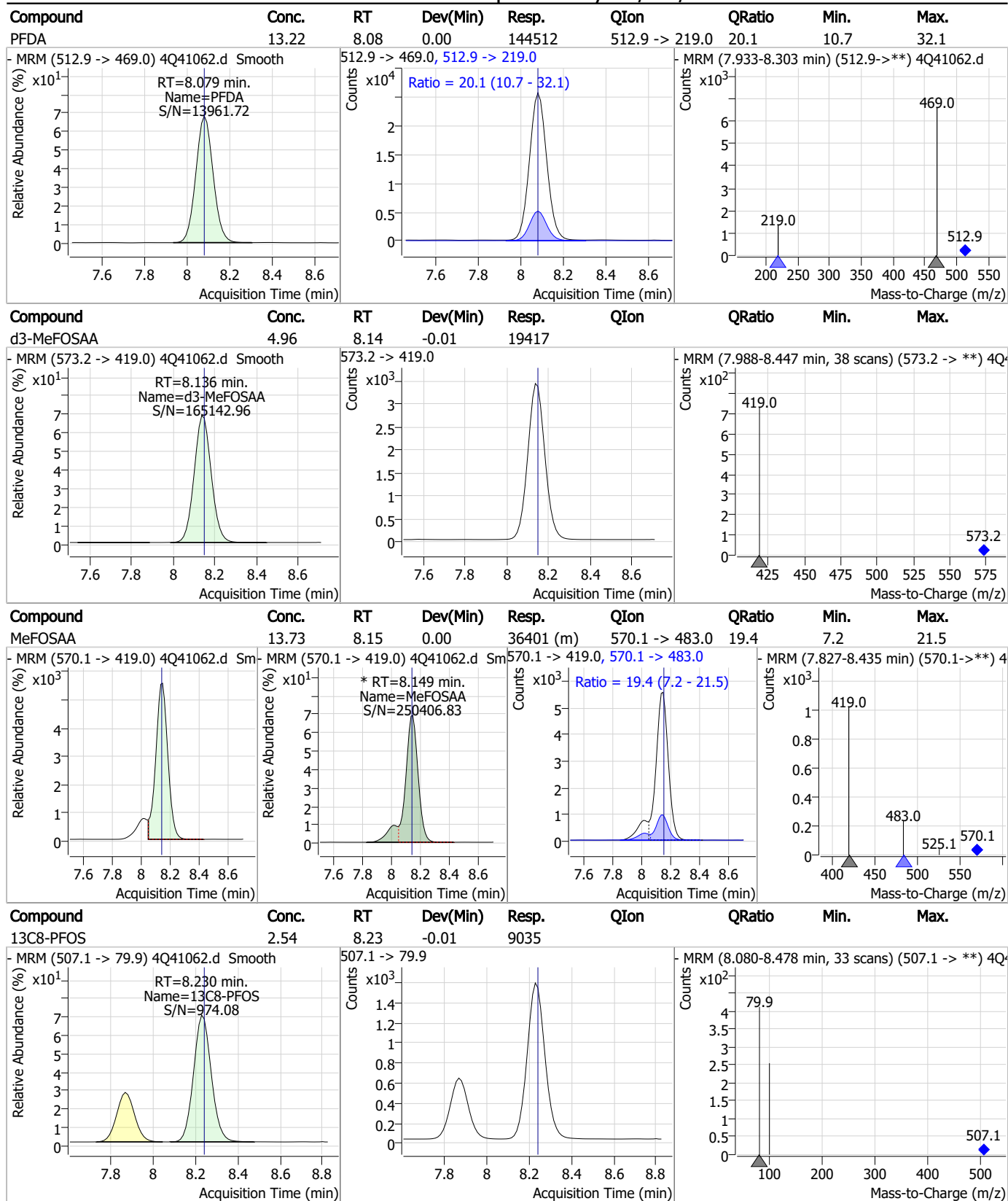


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Perfluorinated Compounds by LC/MS/MS

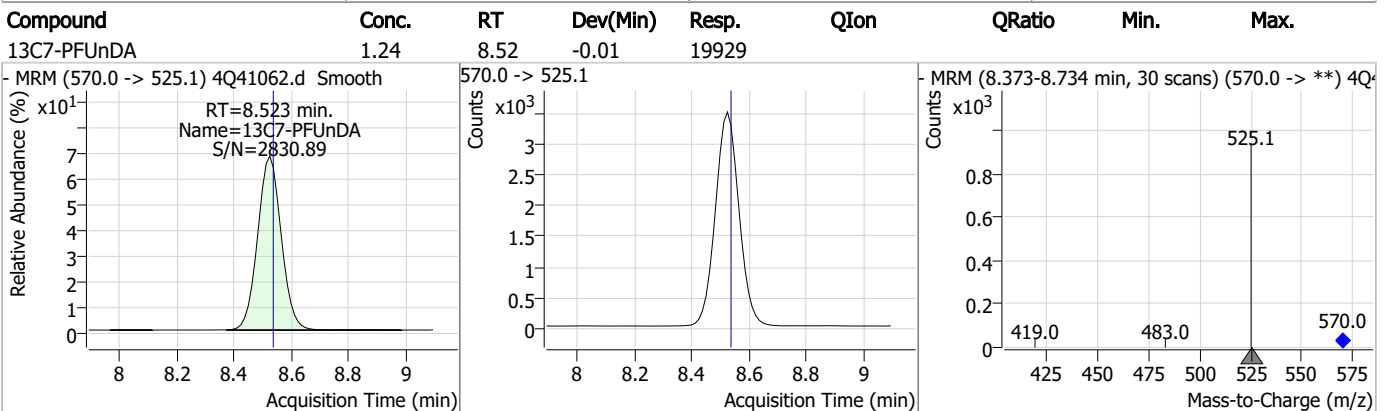
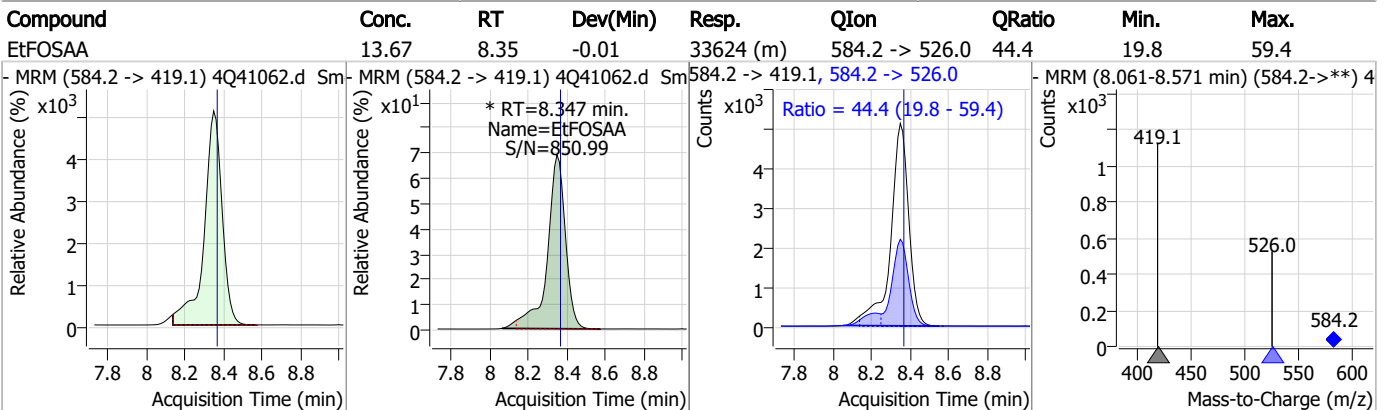
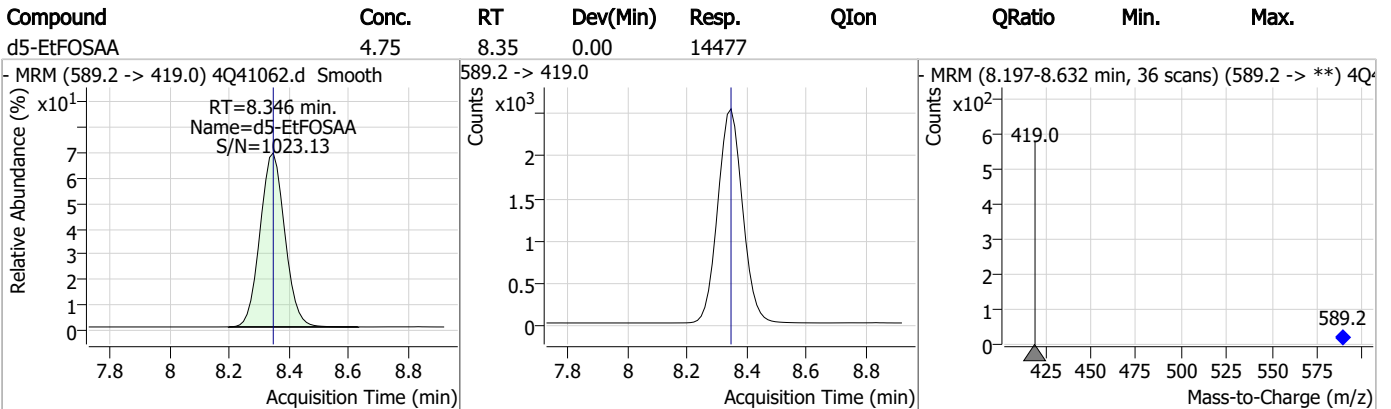
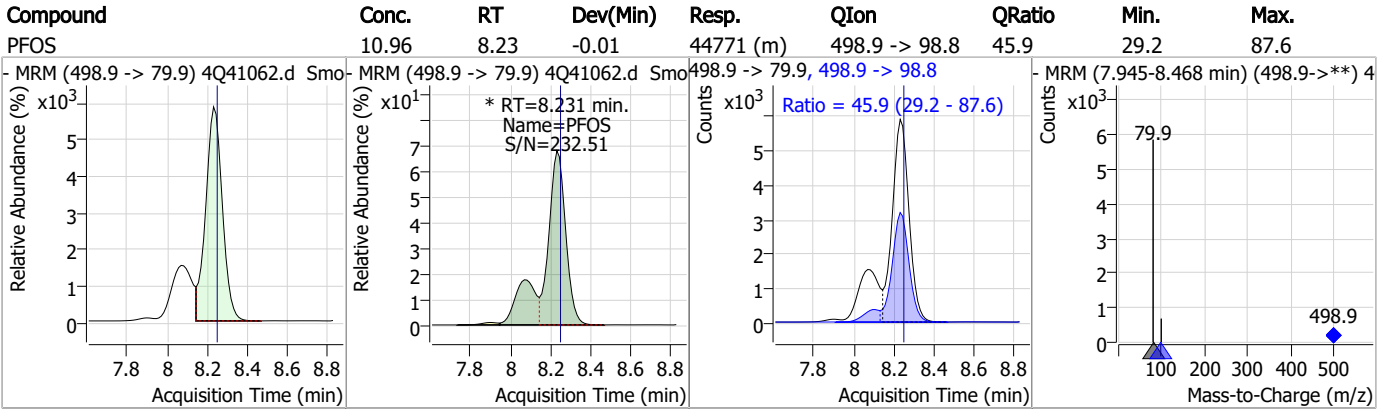


Perfluorinated Compounds by LC/MS/MS

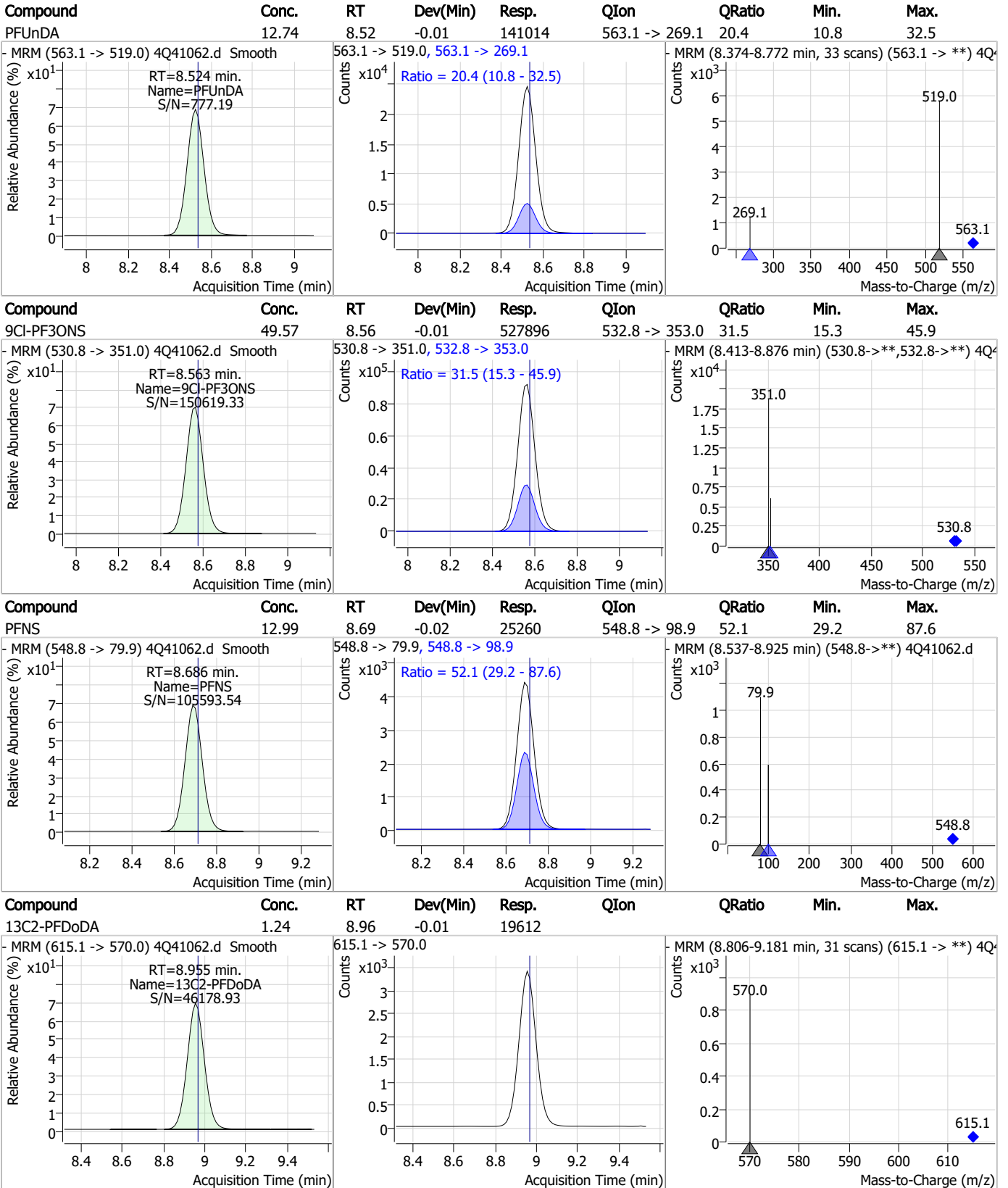


7.6.7
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Perfluorinated Compounds by LC/MS/MS



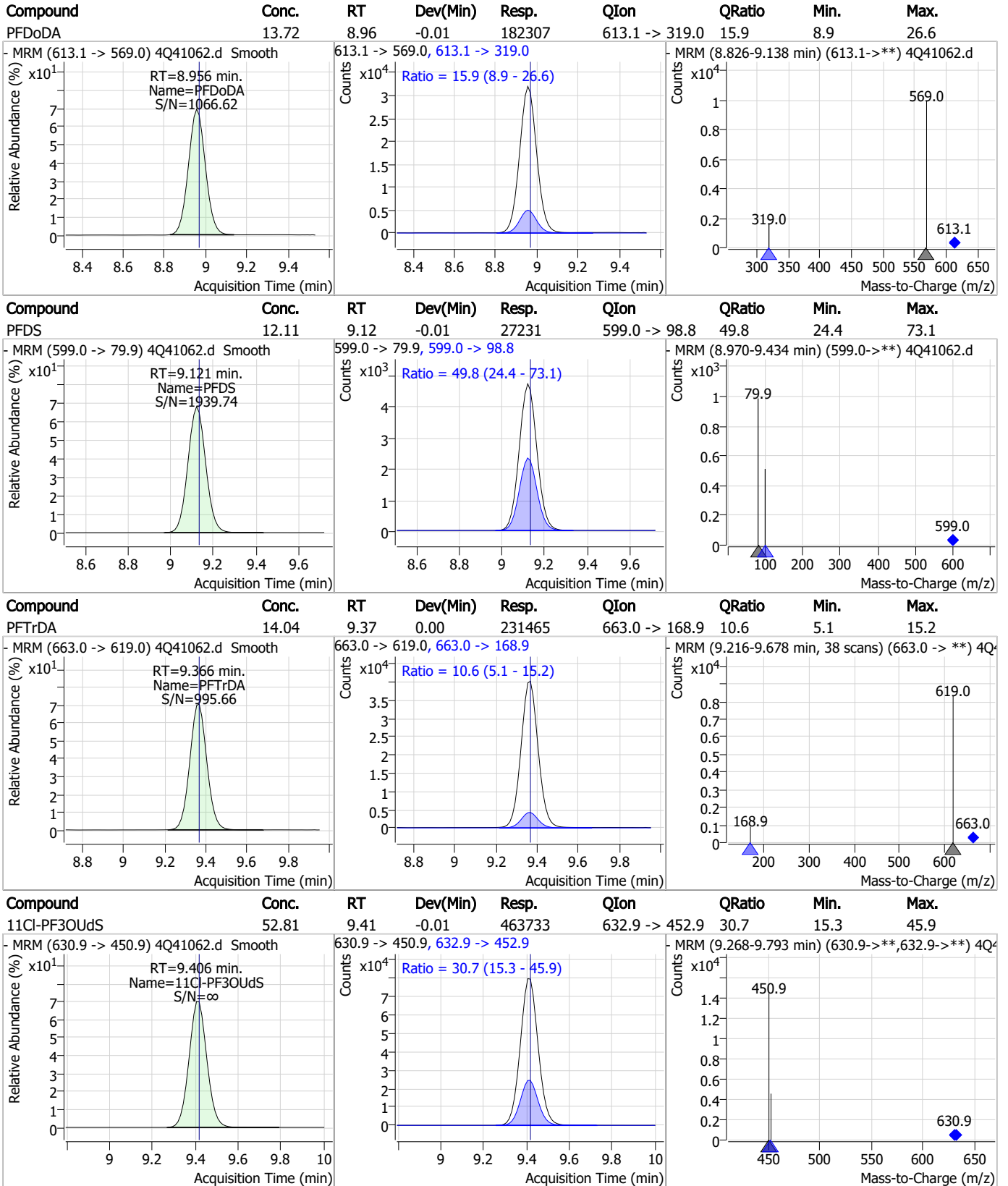
Perfluorinated Compounds by LC/MS/MS



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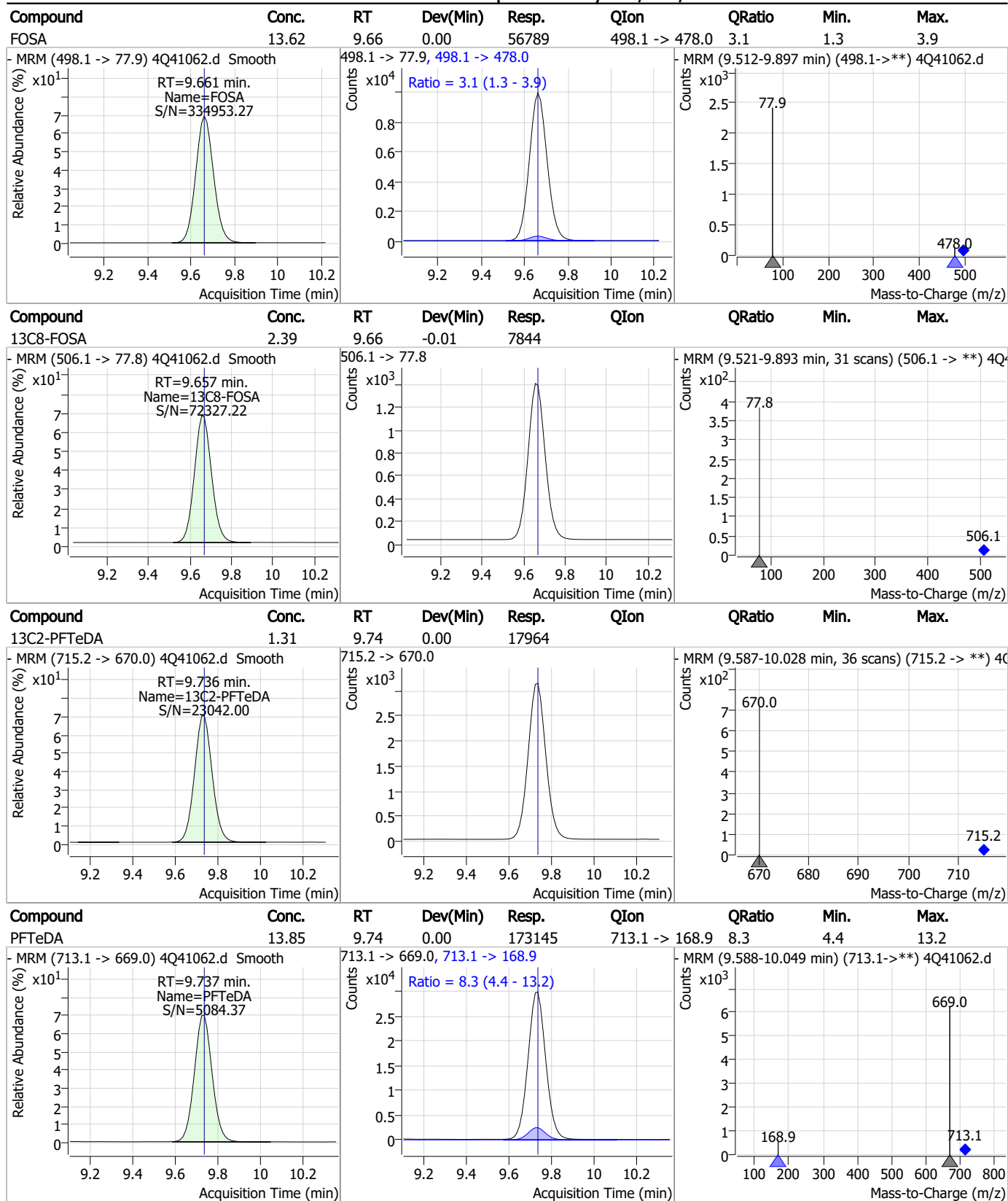
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Perfluorinated Compounds by LC/MS/MS



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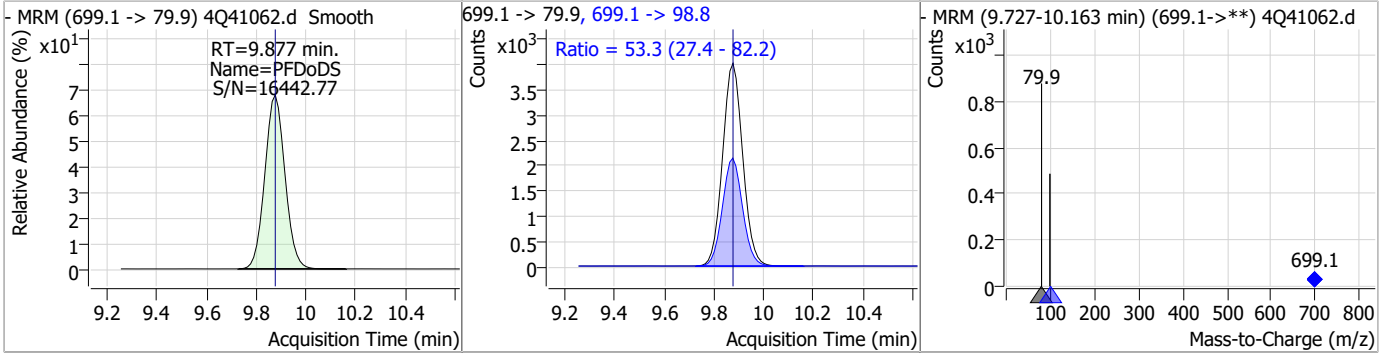
Perfluorinated Compounds by LC/MS/MS



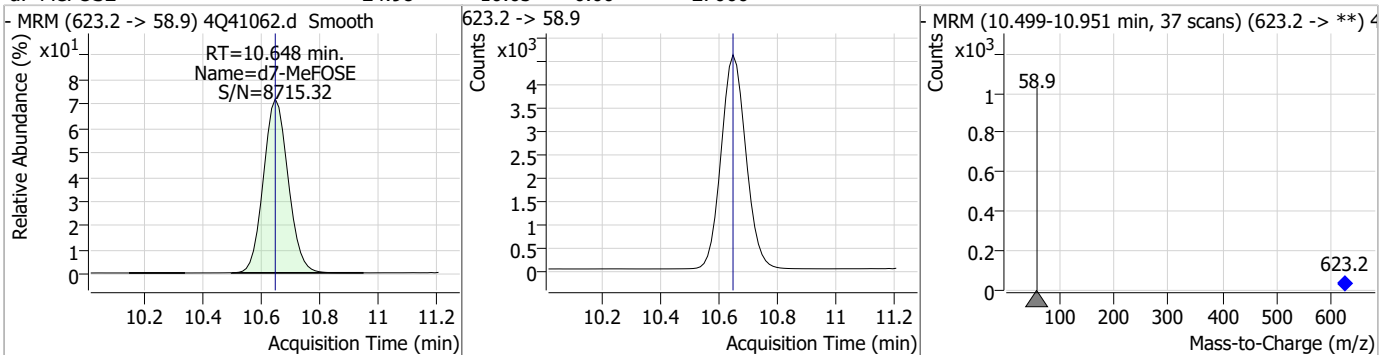
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Perfluorinated Compounds by LC/MS/MS

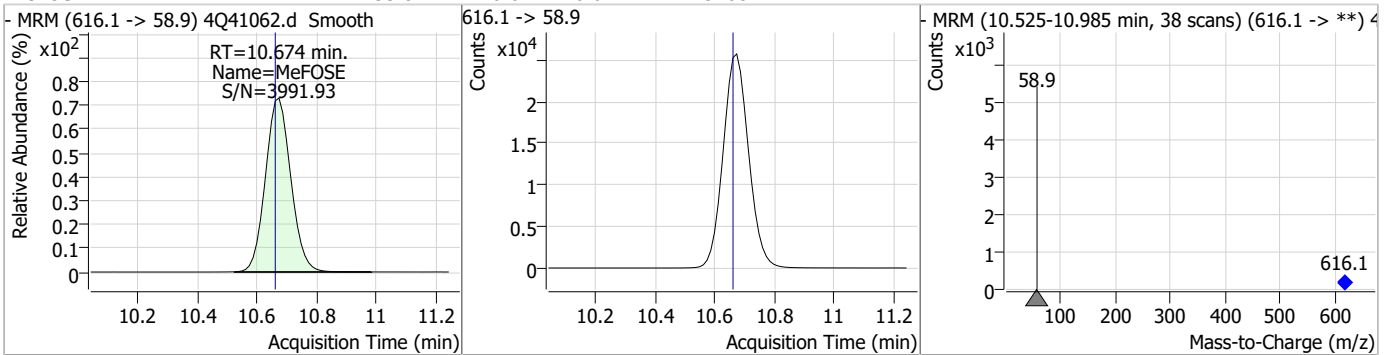
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	12.44	9.88	0.00	22356	699.1 -> 98.8	53.3	27.4	82.2



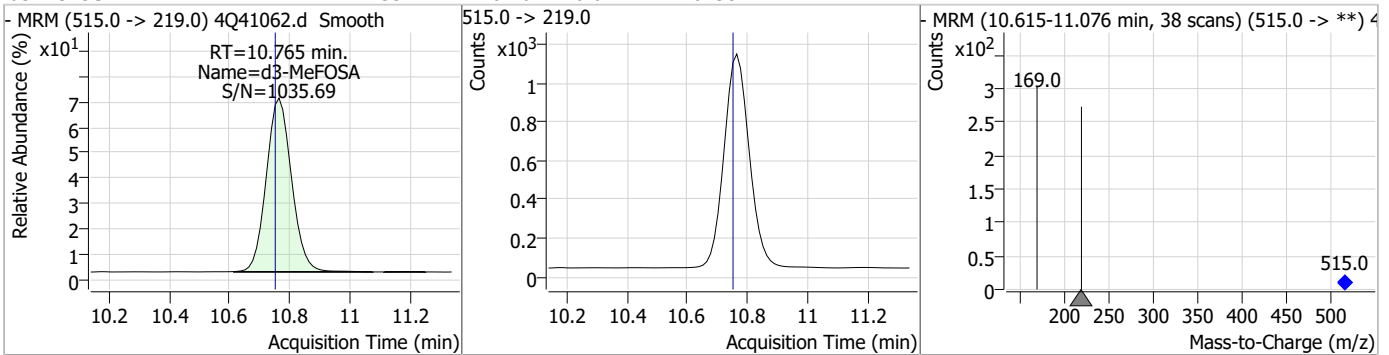
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.98	10.65	0.00	27066				



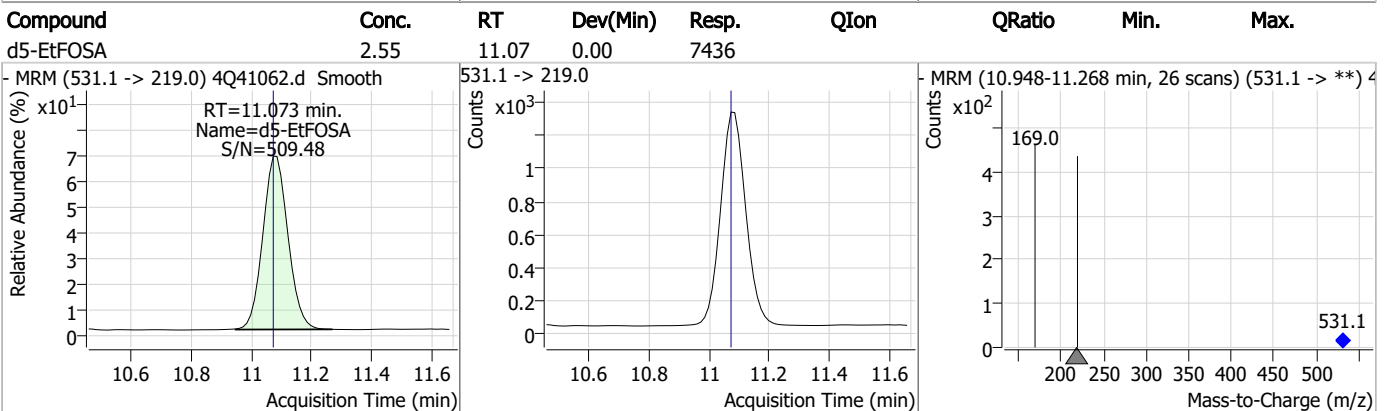
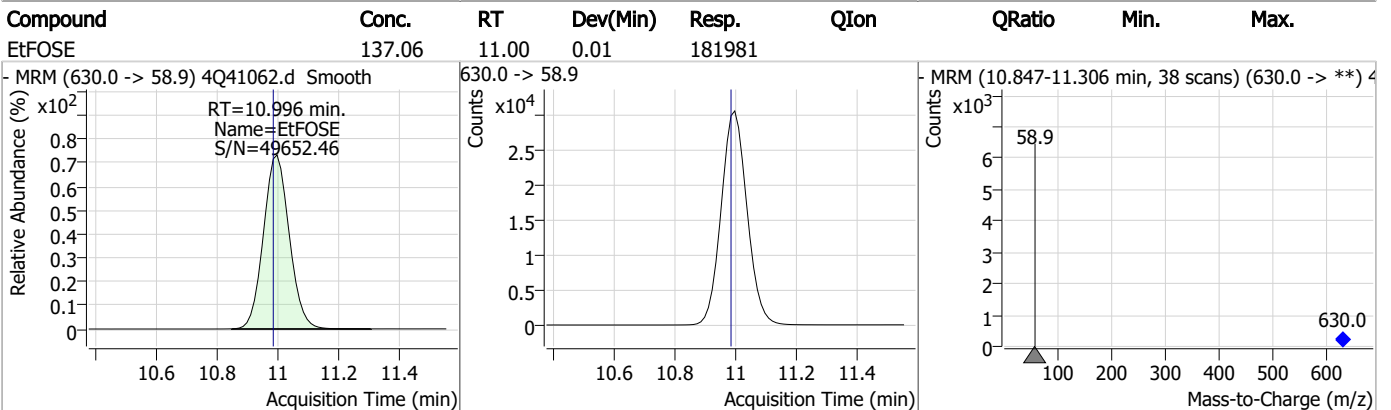
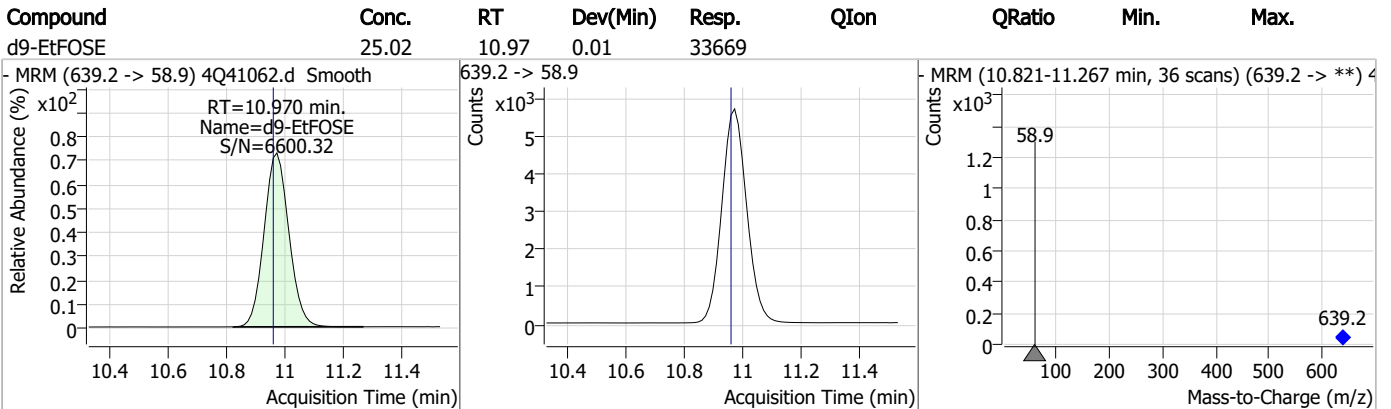
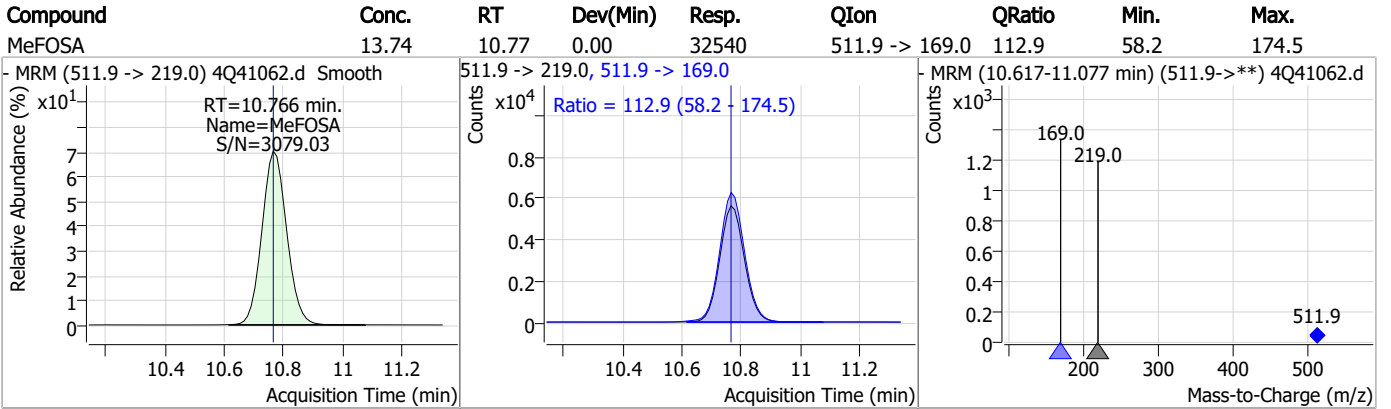
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	133.87	10.67	0.01	152082				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.53	10.76	0.01	6438				



Perfluorinated Compounds by LC/MS/MS



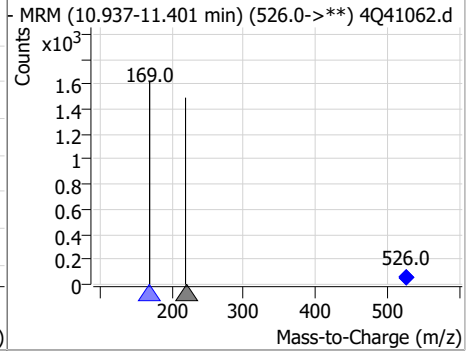
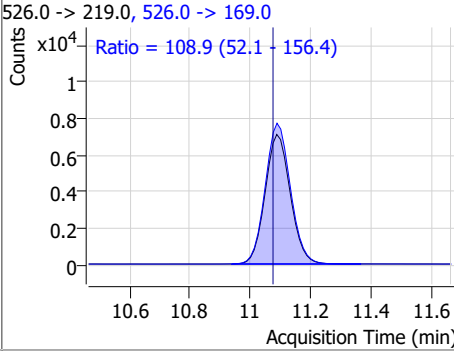
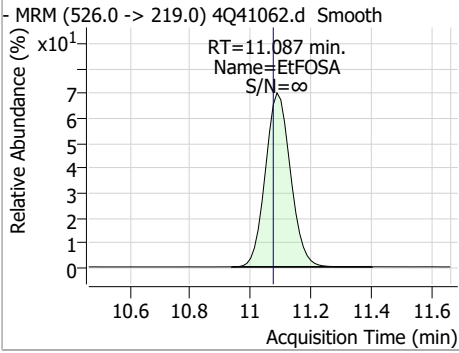
7.6.7

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	13.15	11.09	0.01	40951	526.0 -> 169.0	108.9	52.1	156.4



7.6.7
7

Manual Integration Approval Summary

Sample Number: S4Q587-IC587
Lab FileID: 4Q41062.D
Injection Time: 02/22/23 17:34

Method: EPA DRAFT 1633
Analyst approved: 02/23/23 14:24 Anna Ludwig
Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

7.6.7.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
02/24/23 10:47

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41063.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 5:48:06 PM
 Sample Name : ic587-7
 Vial : P1-A8
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	123326	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	67000	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	54359	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	31354	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	37086	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	15846	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	14781	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	17718	1.25 µg/L	0.000
M2-PFDoDA	8.980	615.1 -> 570.0	19410	1.25 µg/L	0.012
M2-PFTeDA	9.736	715.2 -> 670.0	17416	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	7828	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	11381	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	6980	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	8599	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1069	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	1931	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	2801	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	18969	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	31613	10.00 µg/L	0.000
M5-EtFOSAA	8.347	589.2 -> 419.0	14069	5.00 µg/L	0.000
M7-MeFOSE	10.661	623.2 -> 58.9	25722	25.00 µg/L	0.012
M9-EtFOSE	10.970	639.2 -> 58.9	31700	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	6808	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	6300	2.50 µg/L	0.012
13C4-PFOS	8.243	502.8 -> 79.9	8497	2.50 µg/L	0.000
13C3-PFBA	3.143	216.0 -> 172.0	74345	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	4655	2.50 µg/L	0.000
13C4-PFOA	7.063	417.1 -> 372.0	45357	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	14083	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	19032	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	49051	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1069	4.24 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.8%		
13C2-6:2FTS	6.836	429.1 -> 80.9	1931	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C2-8:2FTS	7.865	529.1 -> 80.9	2801	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C2-PFDoDA	8.980	615.1 -> 570.0	19410	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C2-PFTeDA	9.736	715.2 -> 670.0	17416	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C3-PFBS	5.501	302.1 -> 79.9	11381	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C3-PFHxS	7.179	402.1 -> 79.9	6980	2.67 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.9%	
13C4-PFBA	3.152	216.8 -> 171.9	123326	10.01 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.417	367.1 -> 322.0	31354	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFHxA	5.559	318.0 -> 273.0	54359	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C5-PFPeA	4.500	268.3 -> 223.0	67000	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C6-PFDA	8.079	519.1 -> 474.1	14781	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C7-PFUnDA	8.536	570.0 -> 525.1	17718	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C8-FOSA	9.670	506.1 -> 77.8	7828	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-PFOA	7.062	421.1 -> 376.0	37086	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C8-PFOS	8.242	507.1 -> 79.9	8599	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C9-PFNA	7.596	472.1 -> 427.0	15846	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.8%	
d3-MeFOSAA	8.136	573.2 -> 419.0	18969	5.07 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	31613	9.91 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSA	10.765	515.0 -> 219.0	6300	2.58 µg/L	m 0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
d5-EtFOSAA	8.347	589.2 -> 419.0	14069	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
d7-MeFOSE	10.661	623.2 -> 58.9	25722	24.83 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
d9-EtFOSE	10.970	639.2 -> 58.9	31700	24.63 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
d5-EtFOSA	11.085	531.1 -> 219.0	6808	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	173034	101.71 µg/L	98
		327.1 -> 80.9	64191		
6:2FTS	6.836	427.1 -> 407.0	154856	89.55 µg/L	99
		427.1 -> 80.9	56044		
8:2FTS	7.866	527.1 -> 507.0	144668	99.93 µg/L	99
		527.1 -> 80.8	41764		
EtFOSAA	8.360	584.2 -> 419.1	68227	28.54 µg/L	m 96
		584.2 -> 526.0	28503		
FOSA	9.673	498.1 -> 77.9	110427	26.54 µg/L	99
		498.1 -> 478.0	3323		
MeFOSAA	8.149	570.1 -> 419.0	68087	26.29 µg/L	m 88
		570.1 -> 483.0	13212		
PFBA	3.146	212.8 -> 168.9	320441	109.65 µg/L	100
PFBS	5.502	298.7 -> 79.9	109967	24.16 µg/L	97
		298.7 -> 98.8	39982		
PFDA	8.079	512.9 -> 469.0	279682	27.71 µg/L	96
		512.9 -> 219.0	55003		
PFDoDA	8.981	613.1 -> 569.0	358957	27.29 µg/L	96
		613.1 -> 319.0	57435		
PFDS	9.133	599.0 -> 79.9	56476	26.39 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	26609			
PFHpA	6.418	363.1 -> 319.0	453002	27.16	µg/L	98
		363.1 -> 169.0	79610			
PFHpS	7.736	449.0 -> 79.9	66526	25.18	µg/L	100
		449.0 -> 98.9	36244			
PFHxA	5.549	313.0 -> 269.0	478707	25.48	µg/L	100
		313.0 -> 118.9	13629			
PFHxS	7.180	398.7 -> 79.9	67188	23.30	µg/L	m 96
		398.7 -> 98.9	35338			
PFNA	7.596	463.0 -> 419.0	264834	27.50	µg/L	97
		463.0 -> 219.0	66806			
PFNS	8.711	548.8 -> 79.9	46448	25.10	µg/L	98
		548.8 -> 98.9	26296			
PFOA	7.063	413.0 -> 369.0	474414	27.06	µg/L	100
		413.0 -> 169.0	92572			
PFOS	8.231	498.9 -> 79.9	87339	22.46	µg/L	m 84
		498.9 -> 98.8	40604			
PFPeA	4.502	263.0 -> 219.0	871037	55.29	µg/L	100
PFPeS	6.470	349.1 -> 79.9	53735	24.25	µg/L	98
		349.1 -> 98.9	26371			
PFTeDA	9.737	713.1 -> 669.0	336810	27.79	µg/L	99
		713.1 -> 168.9	28309			
PFTrDA	9.379	663.0 -> 619.0	453428	27.79	µg/L	99
		663.0 -> 168.9	47863			
PFUnDA	8.536	563.1 -> 519.0	260848	26.50	µg/L	98
		563.1 -> 269.1	53610			
11Cl-PF3OUdS	9.430	630.9 -> 450.9	877720	107.03	µg/L	99
		632.9 -> 452.9	272404			
9Cl-PF3ONS	8.575	530.8 -> 351.0	953584	95.90	µg/L	99
		532.8 -> 353.0	295679			
ADONA	6.668	376.9 -> 250.9	1853808	101.78	µg/L	98
		376.9 -> 84.8	334818			
HFPO-DA	5.878	284.9 -> 168.9	289638	111.57	µg/L	98
		284.9 -> 184.9	33204			
3:3FTCA	4.142	241.0 -> 177.0	133182	143.53	µg/L	98
		241.0 -> 117.0	10557			
5:3FTCA	6.333	341.0 -> 237.1	1900706	667.58	µg/L	99
		341.0 -> 217.0	1368017			
7:3FTCA	7.723	441.0 -> 316.9	752106	656.39	µg/L	99
		441.0 -> 336.9	1729987			
EtFOSA	11.087	526.0 -> 219.0	80160	28.12	µg/L	96
		526.0 -> 169.0	87145			
EtFOSE	10.996	630.0 -> 58.9	342938	274.33	µg/L	100
MeFOSA	10.779	511.9 -> 219.0	60702	26.19	µg/L	99
		511.9 -> 169.0	69883			
MeFOSE	10.674	616.1 -> 58.9	287153	265.98	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	45231	26.45	µg/L	98
		699.1 -> 98.8	24274			
NFDHA	5.453	295.0 -> 201.0	37503	52.54	µg/L	92
		295.0 -> 84.9	7752			
PFMBA	4.867	279.0 -> 85.1	467761	55.89	µg/L	100
PFMPA	3.727	229.0 -> 84.9	377153	56.74	µg/L	100
PFEESA	5.971	314.8 -> 134.9	633483	49.88	µg/L	99
		314.8 -> 82.9	21108			

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

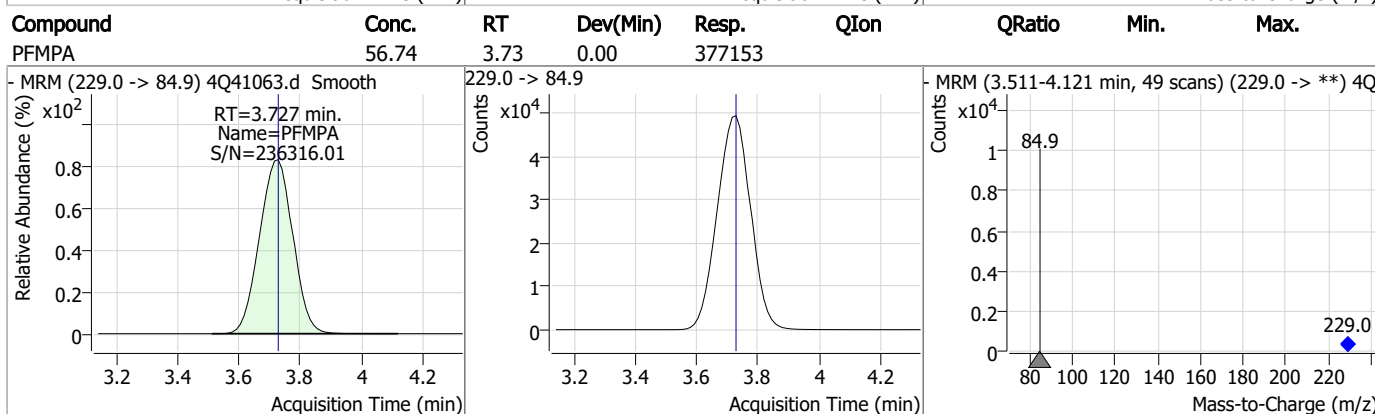
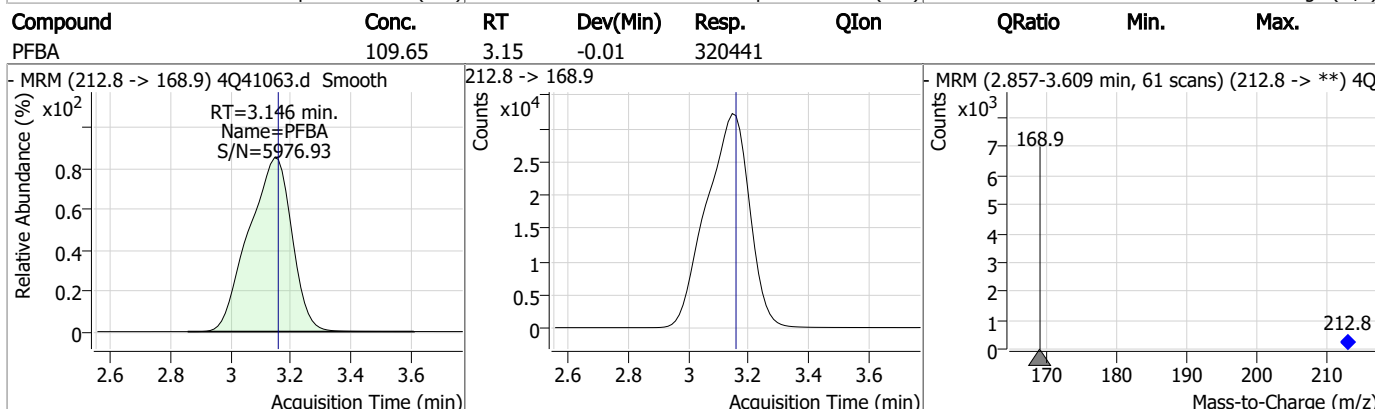
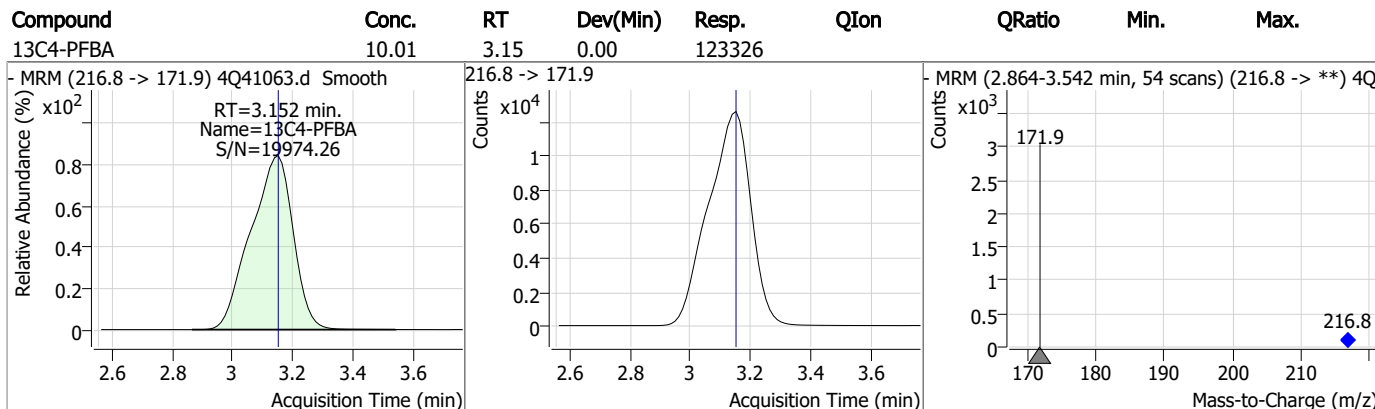
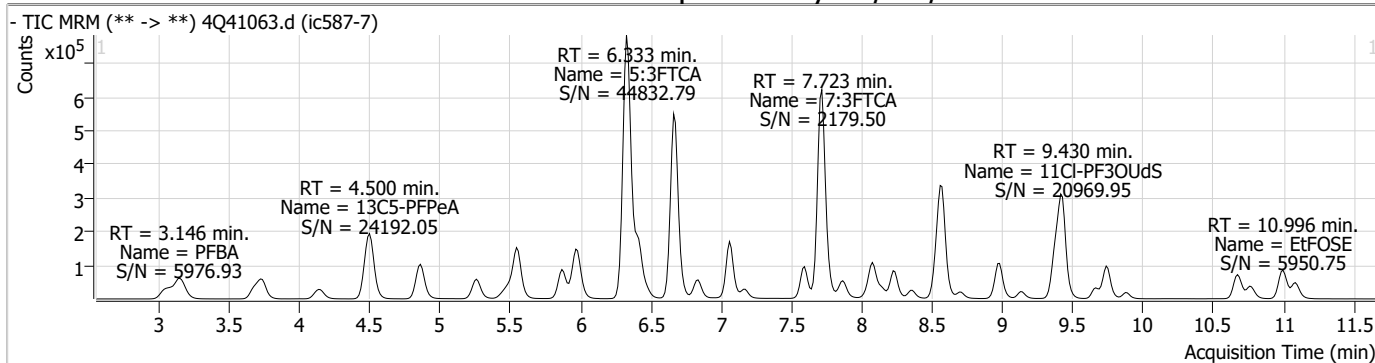
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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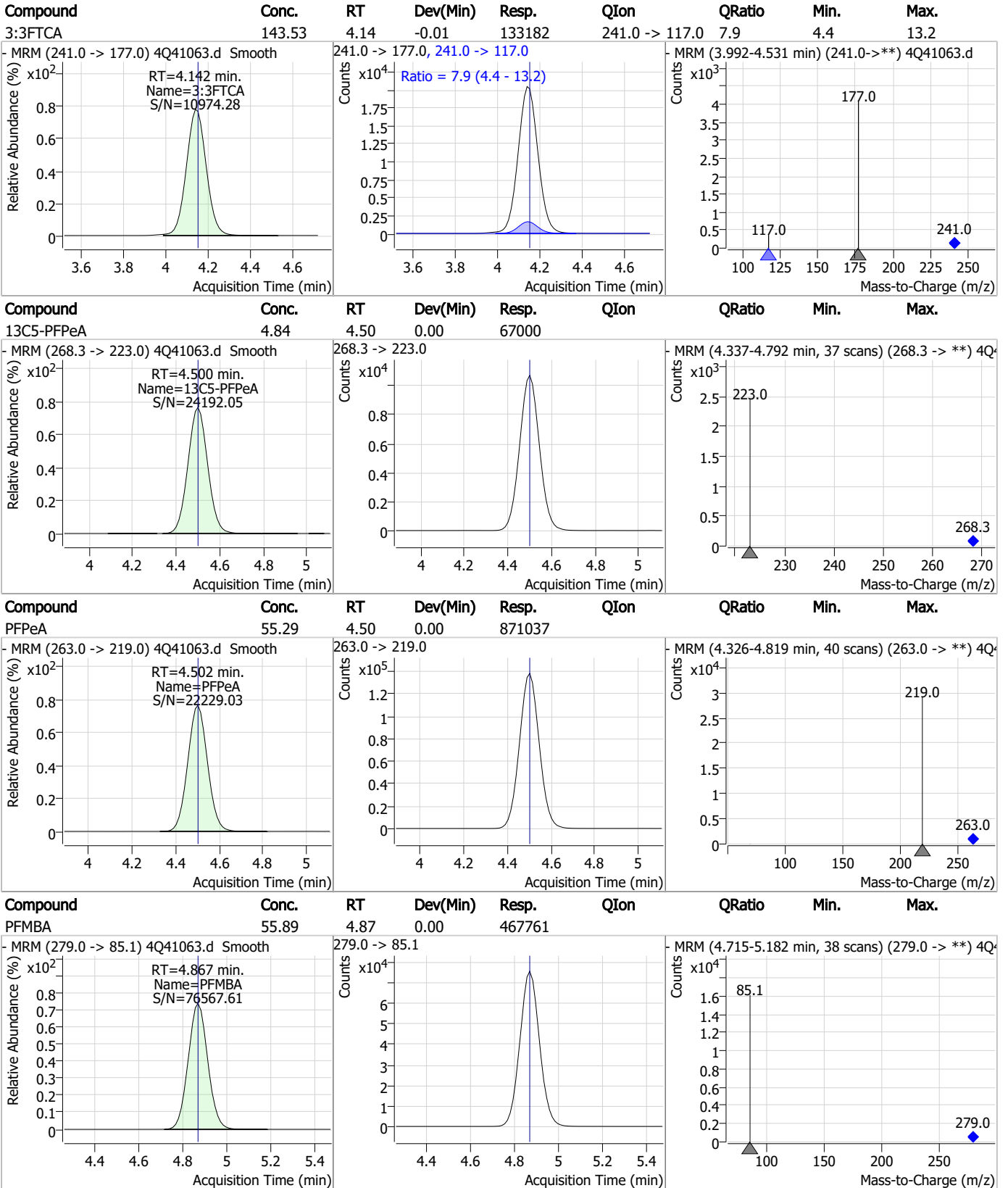
7.6.8

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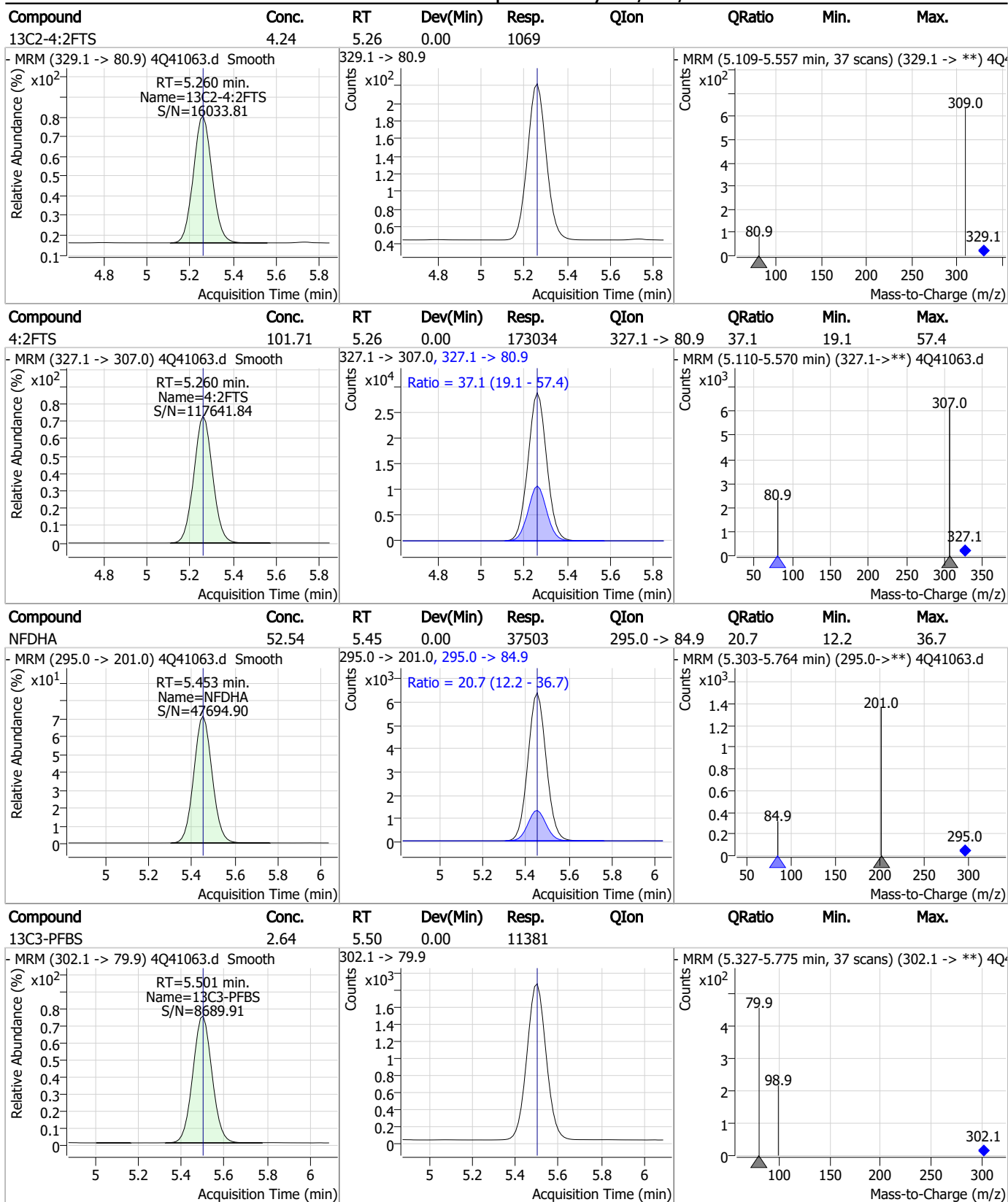
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

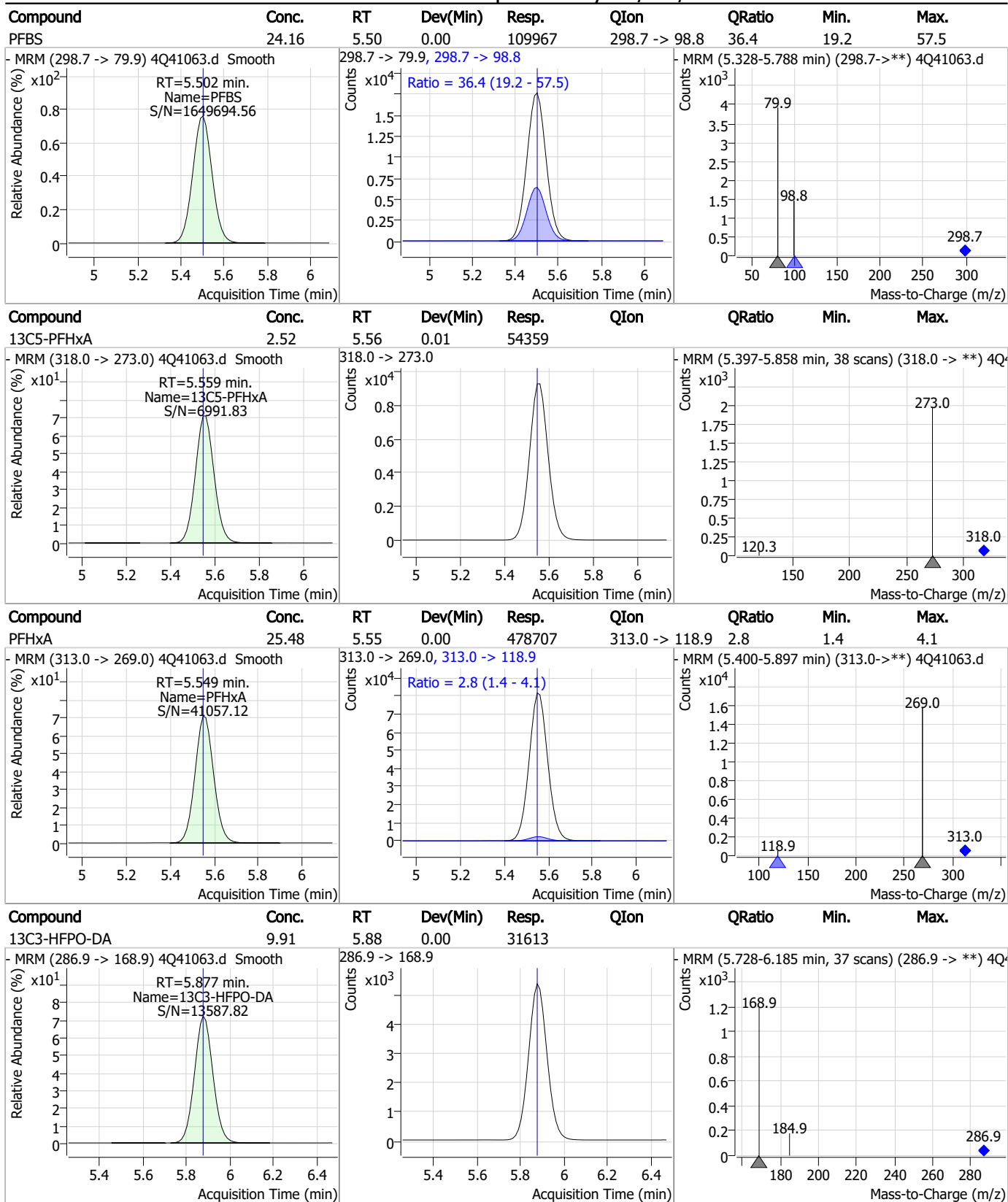


Perfluorinated Compounds by LC/MS/MS



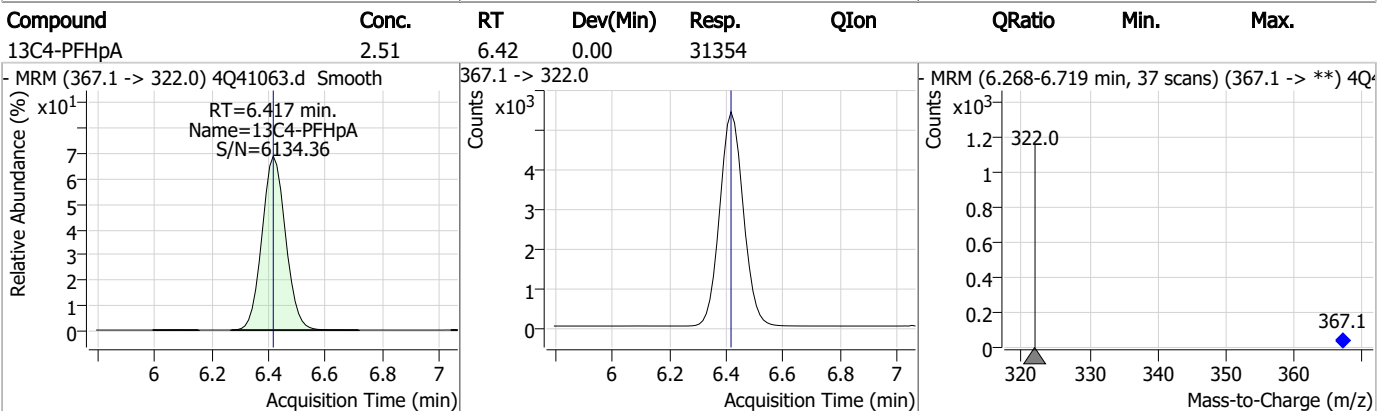
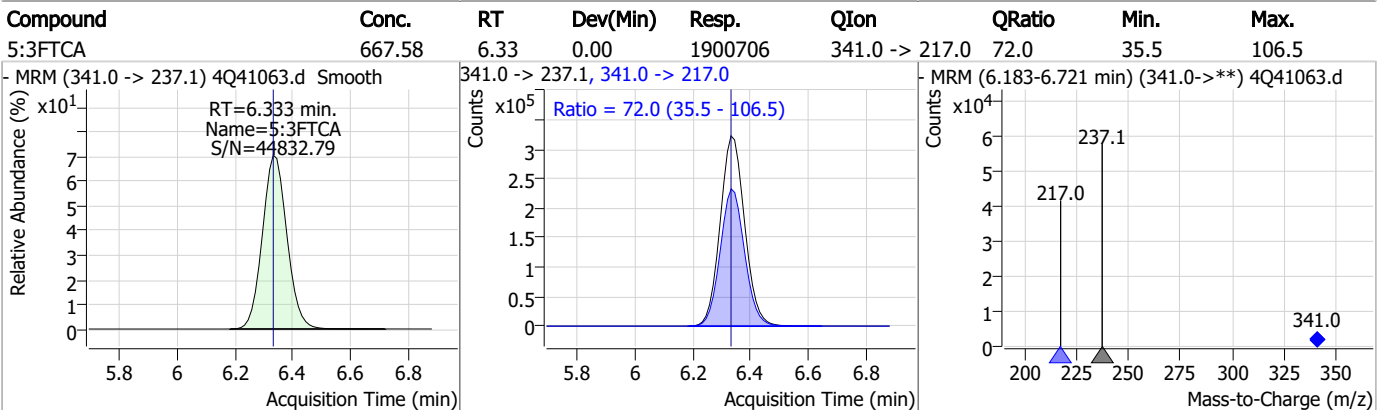
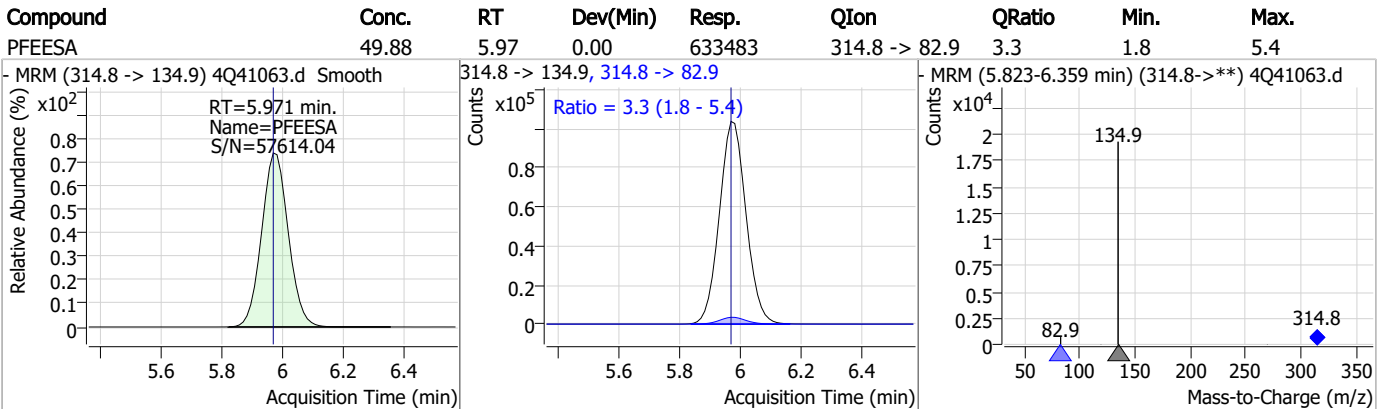
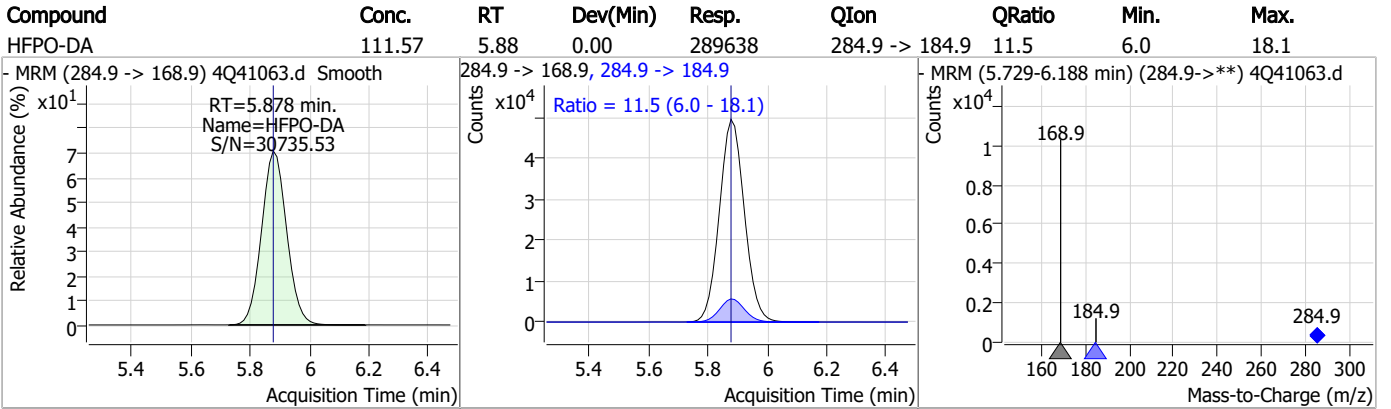
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Perfluorinated Compounds by LC/MS/MS



7.6.8
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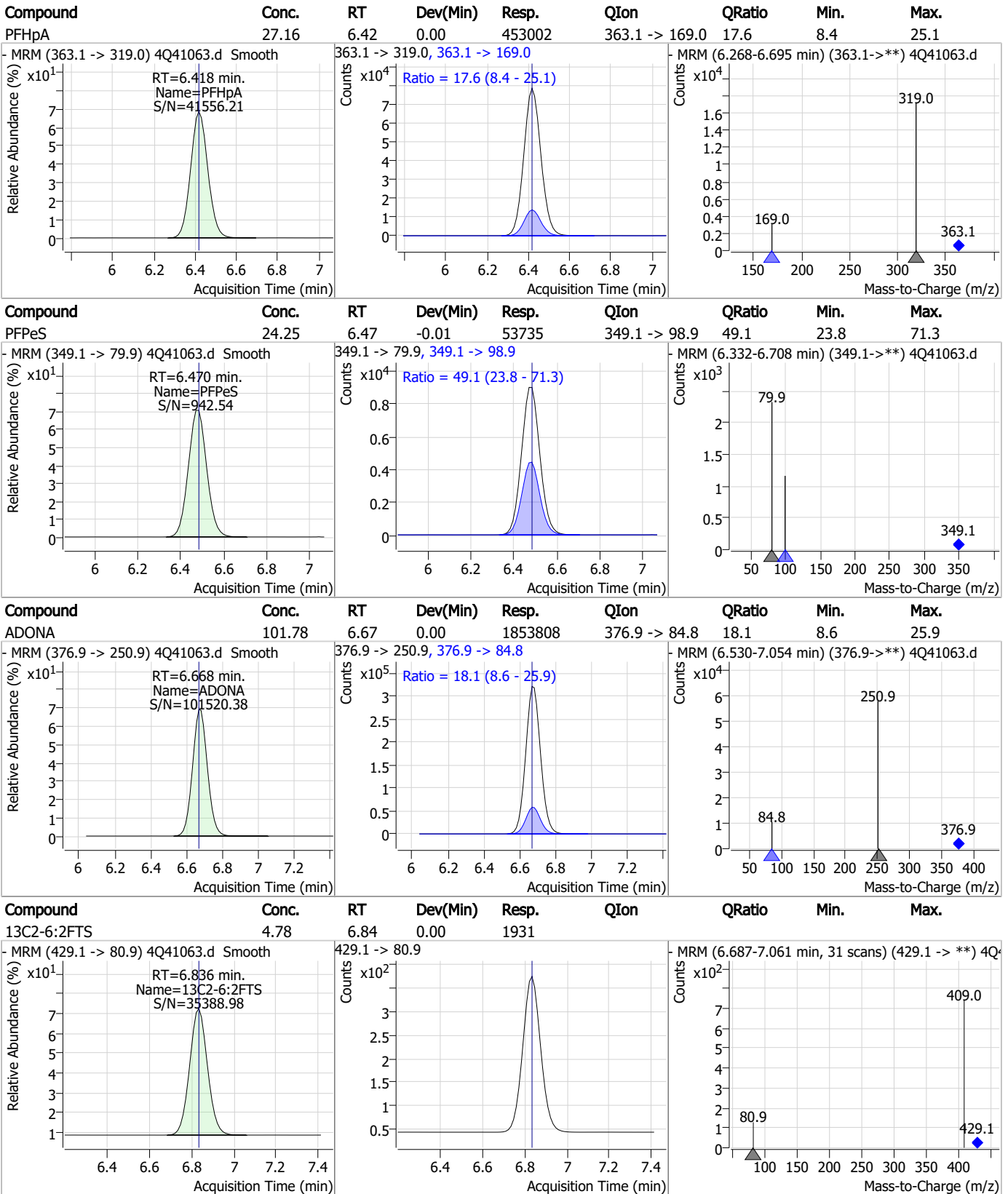
Perfluorinated Compounds by LC/MS/MS



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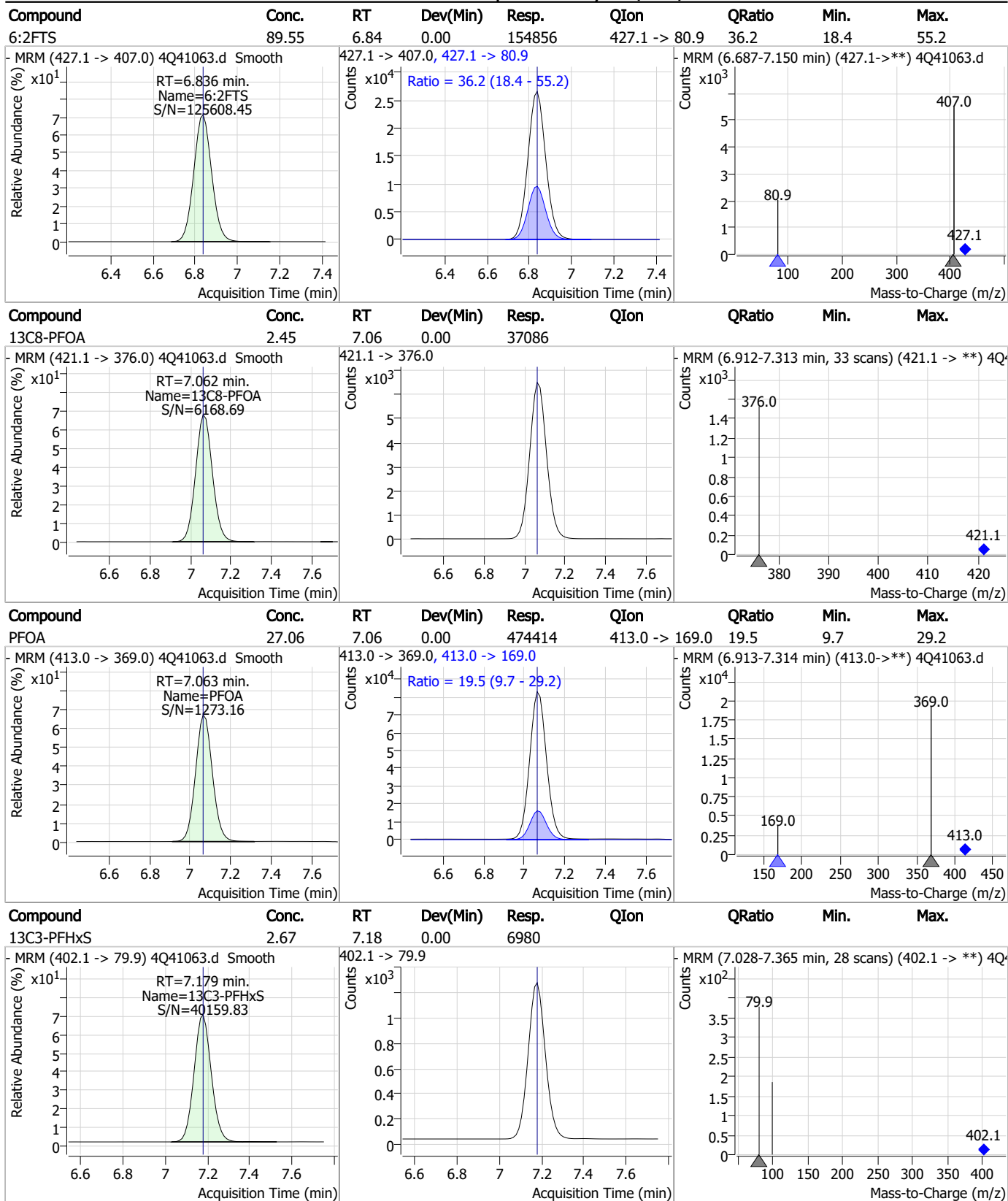
Perfluorinated Compounds by LC/MS/MS



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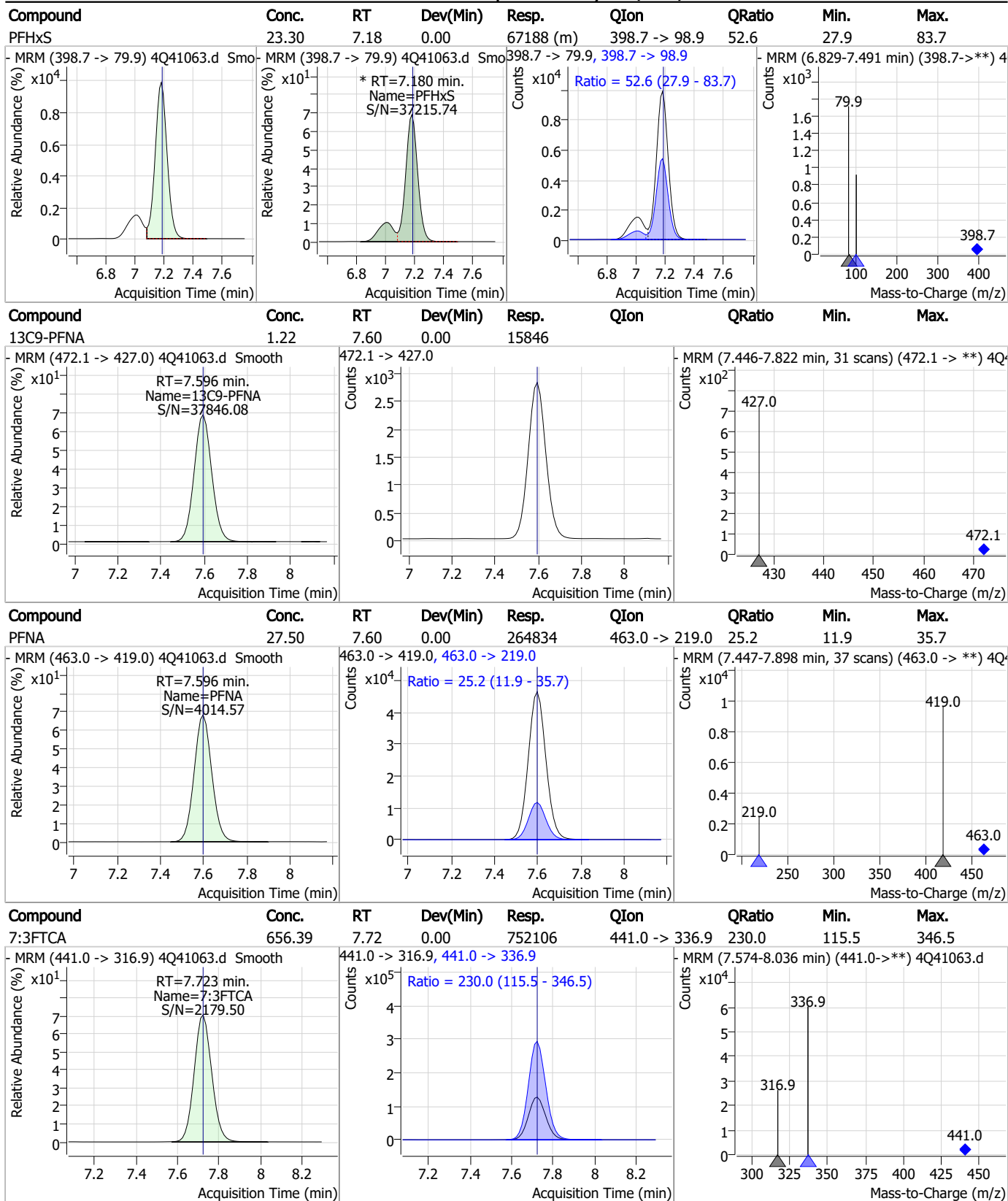
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Perfluorinated Compounds by LC/MS/MS



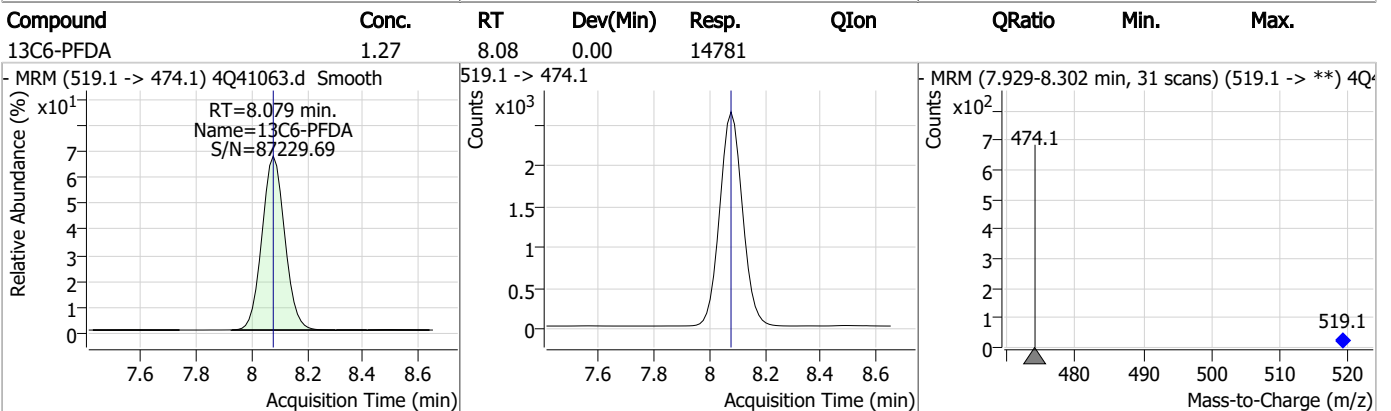
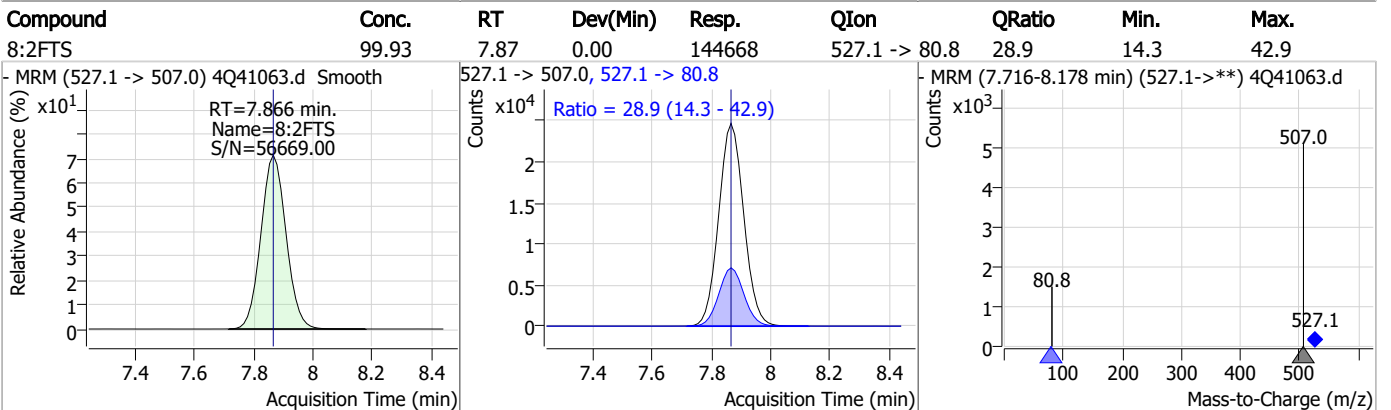
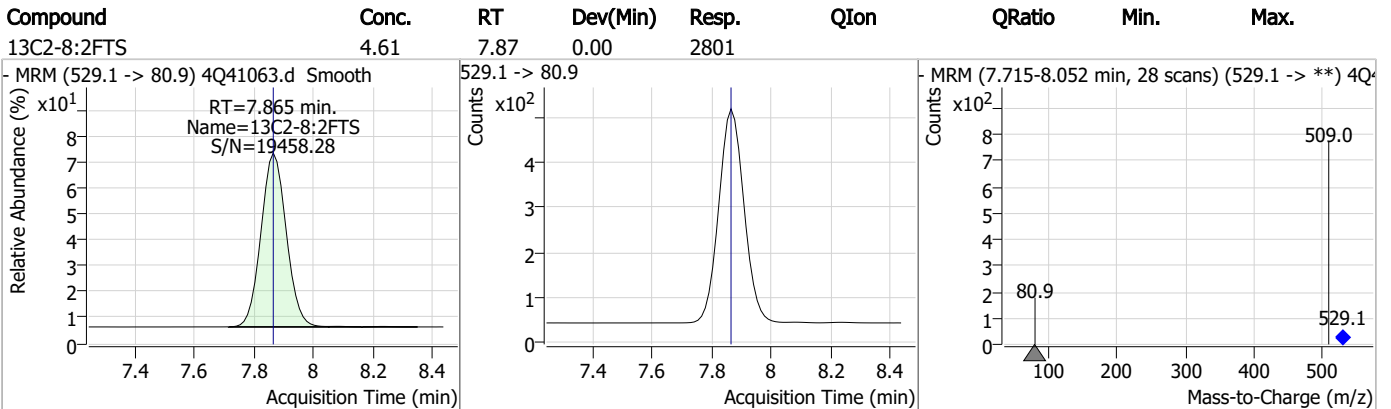
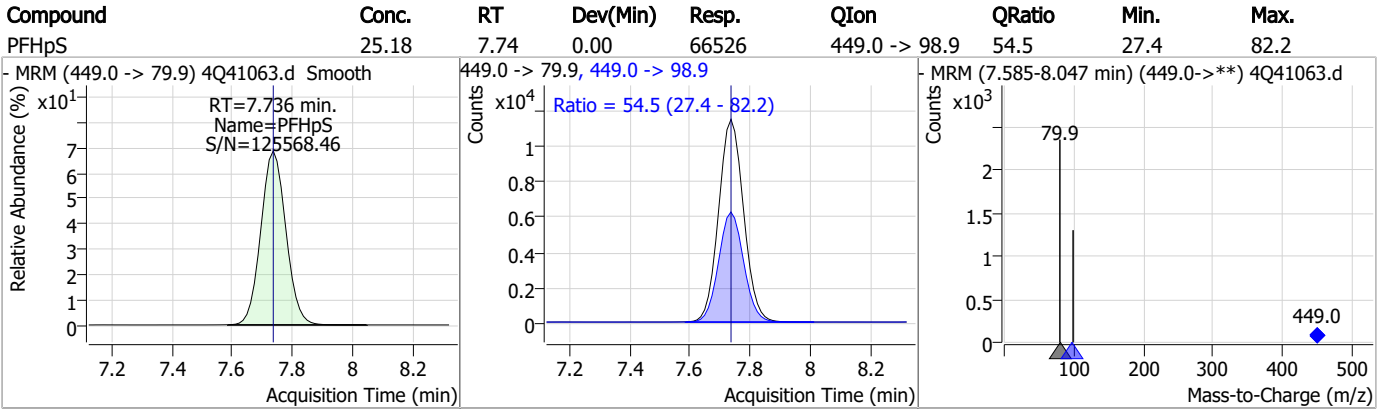
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Perfluorinated Compounds by LC/MS/MS



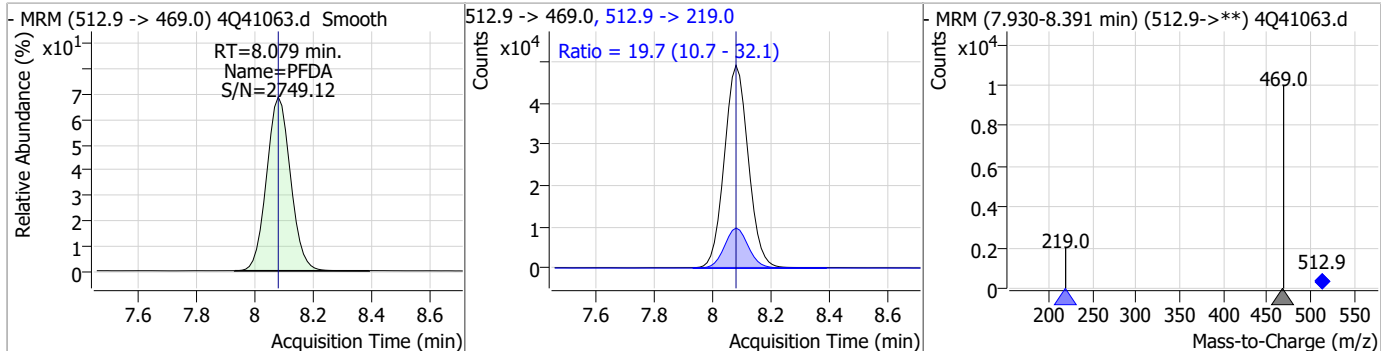
7.6.8
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Perfluorinated Compounds by LC/MS/MS

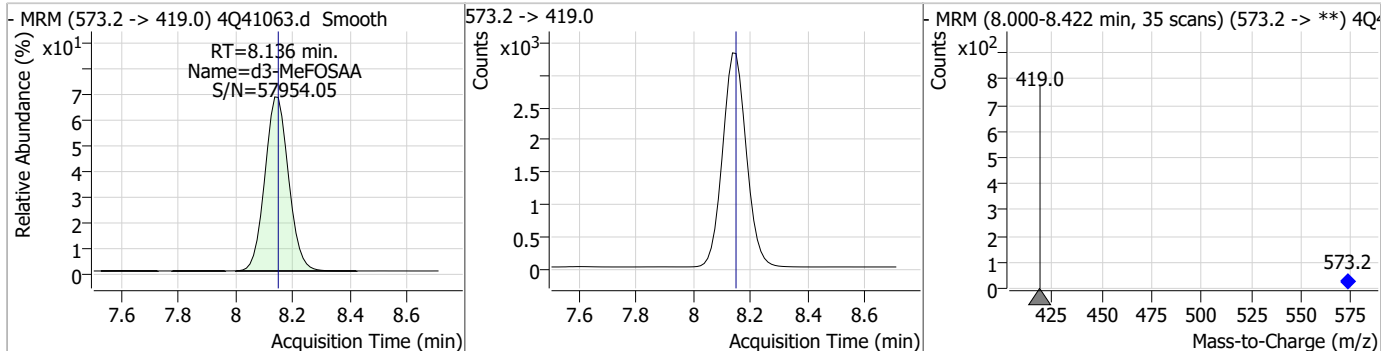


Perfluorinated Compounds by LC/MS/MS

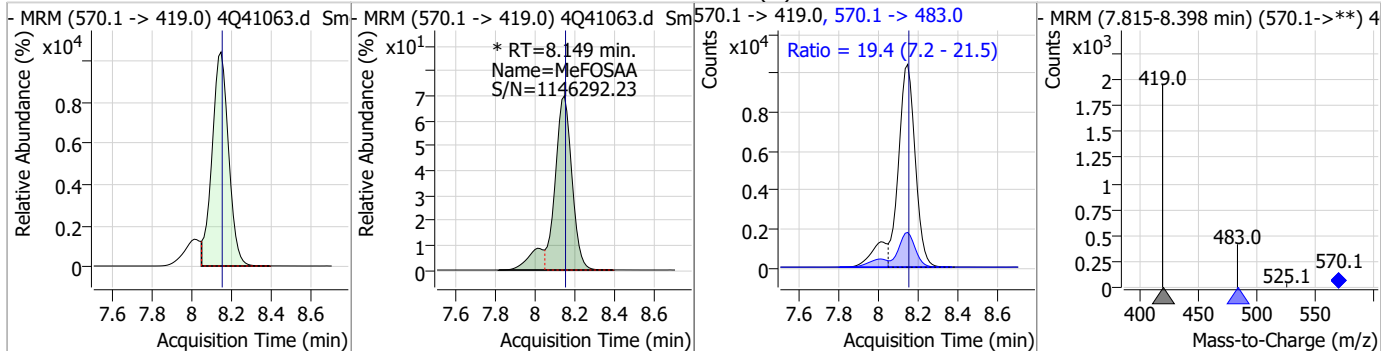
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	27.71	8.08	0.00	279682	512.9 -> 219.0	19.7	10.7	32.1



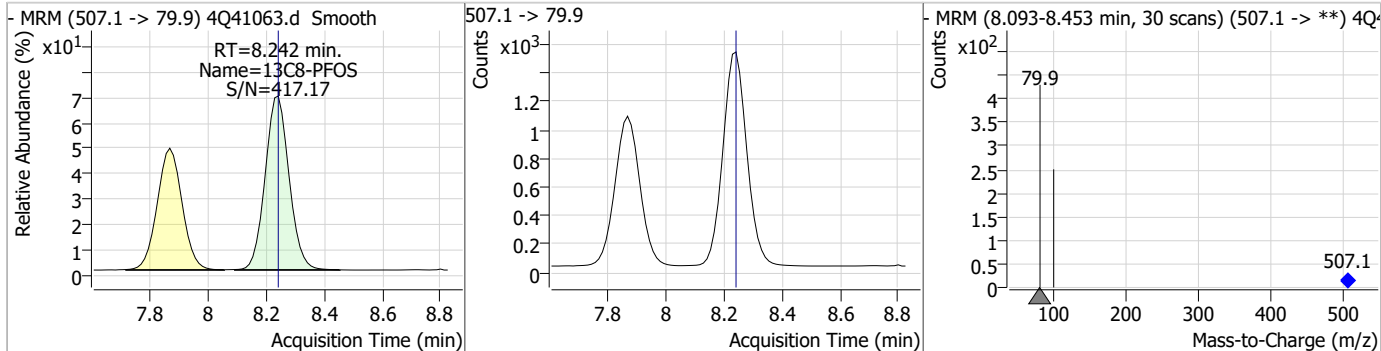
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.07	8.14	-0.01	18969				



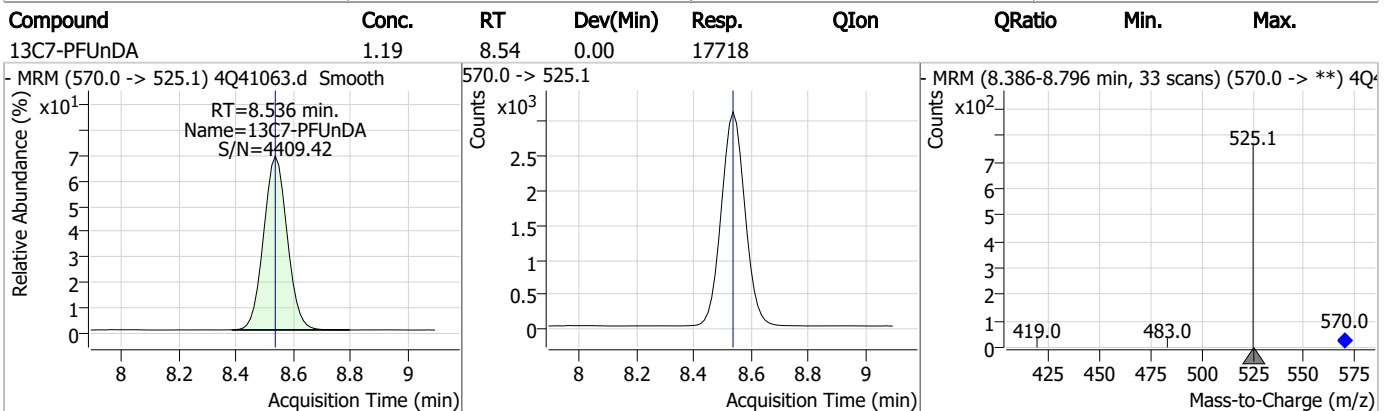
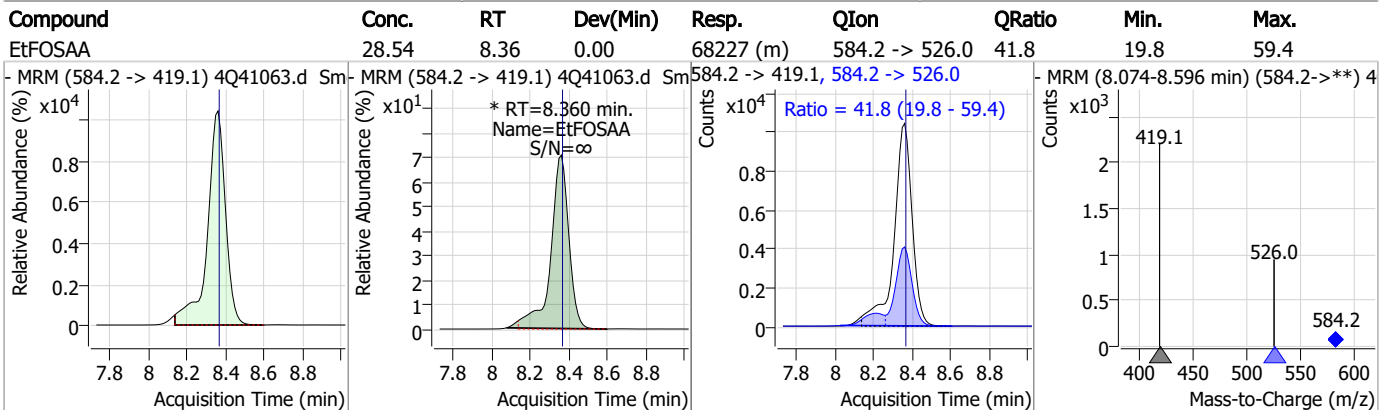
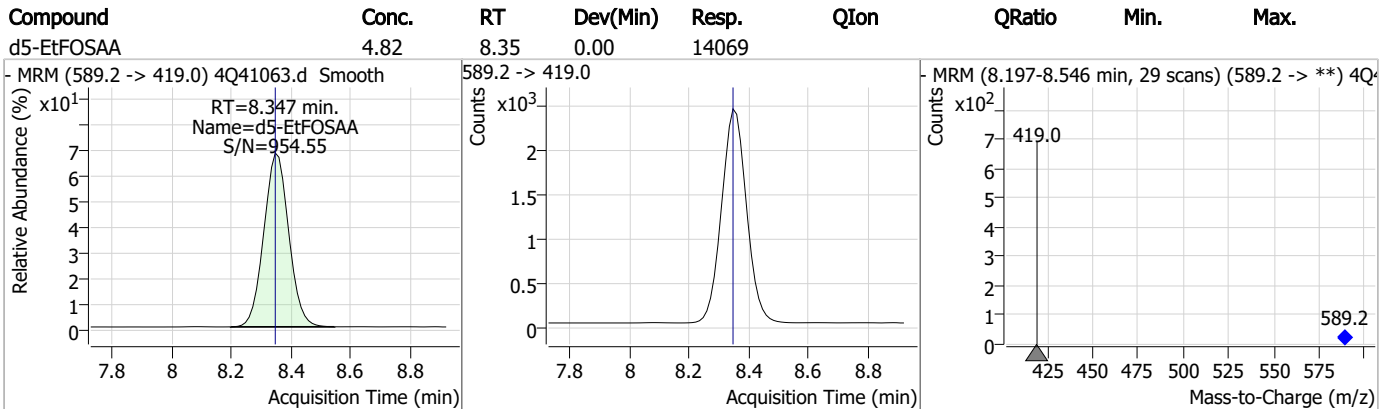
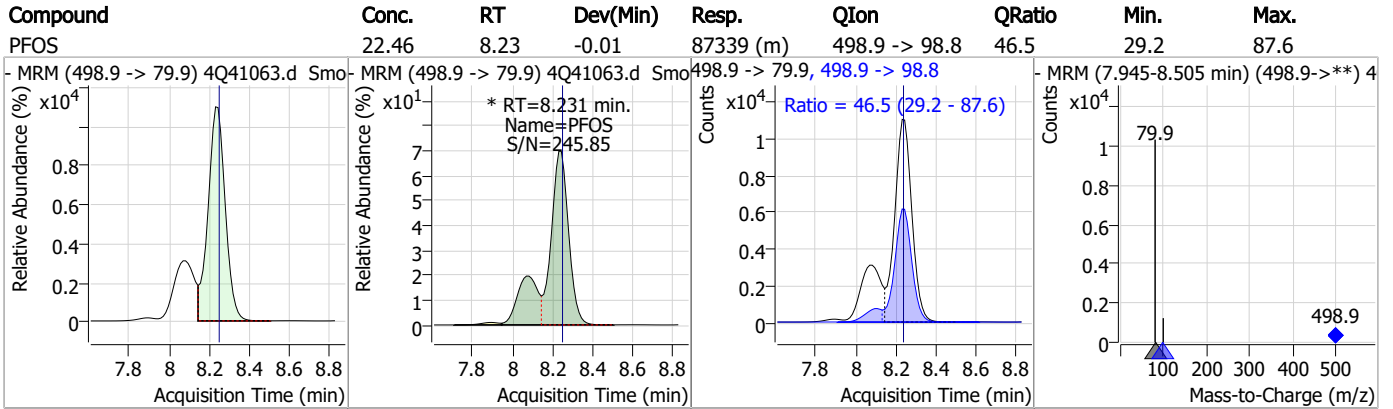
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	26.29	8.15	0.00	68087 (m)	570.1 -> 483.0	19.4	7.2	21.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.53	8.24	0.00	8599				

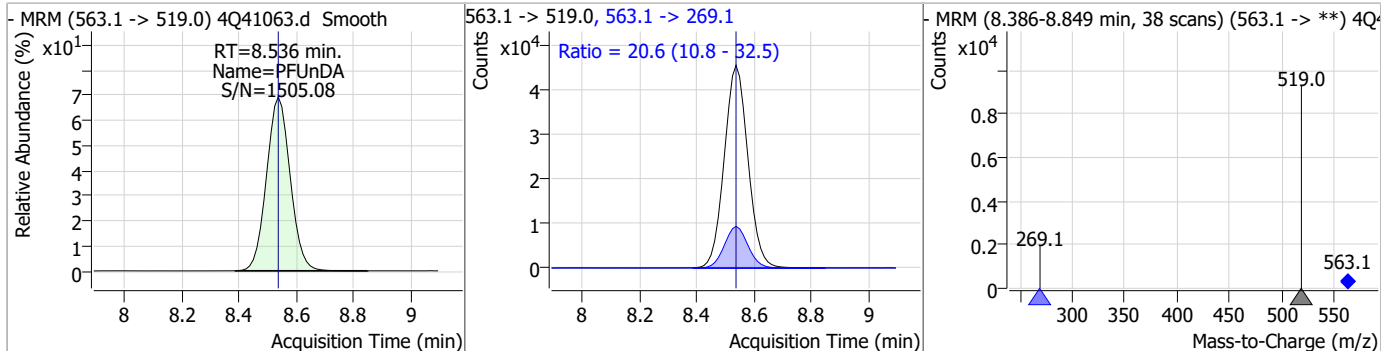


Perfluorinated Compounds by LC/MS/MS

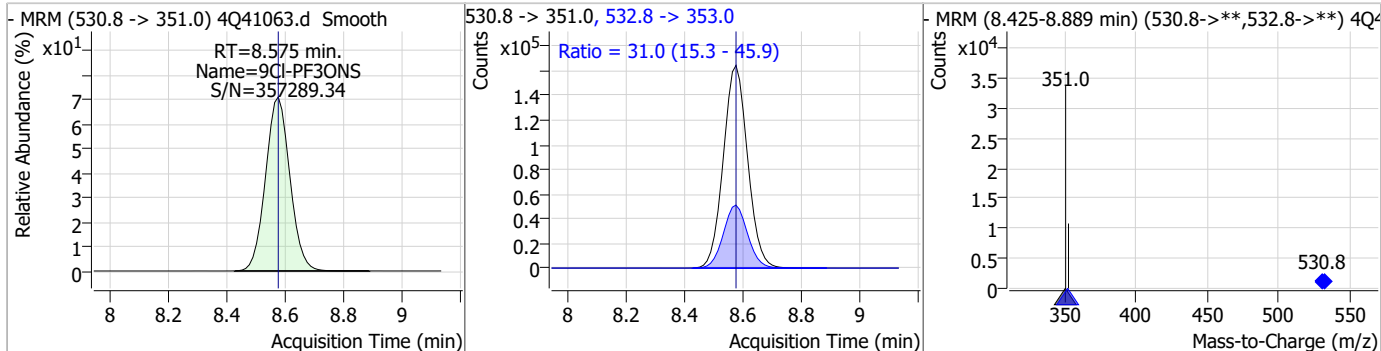


Perfluorinated Compounds by LC/MS/MS

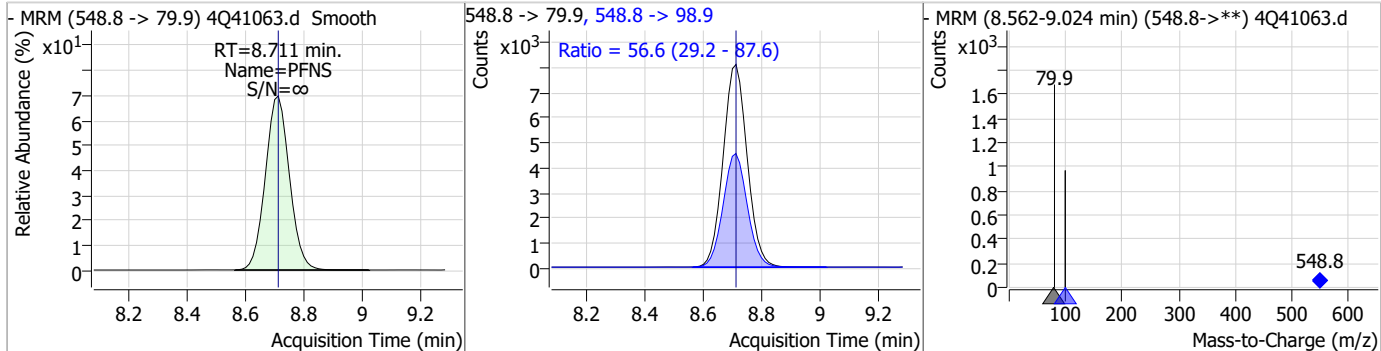
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	26.50	8.54	0.00	260848	563.1 -> 269.1	20.6	10.8	32.5



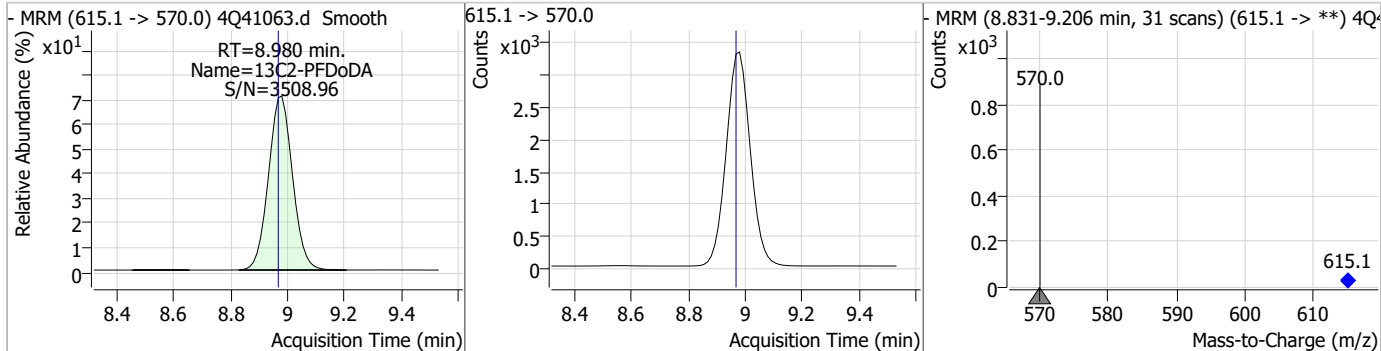
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	95.90	8.58	0.00	953584	532.8 -> 353.0	31.0	15.3	45.9



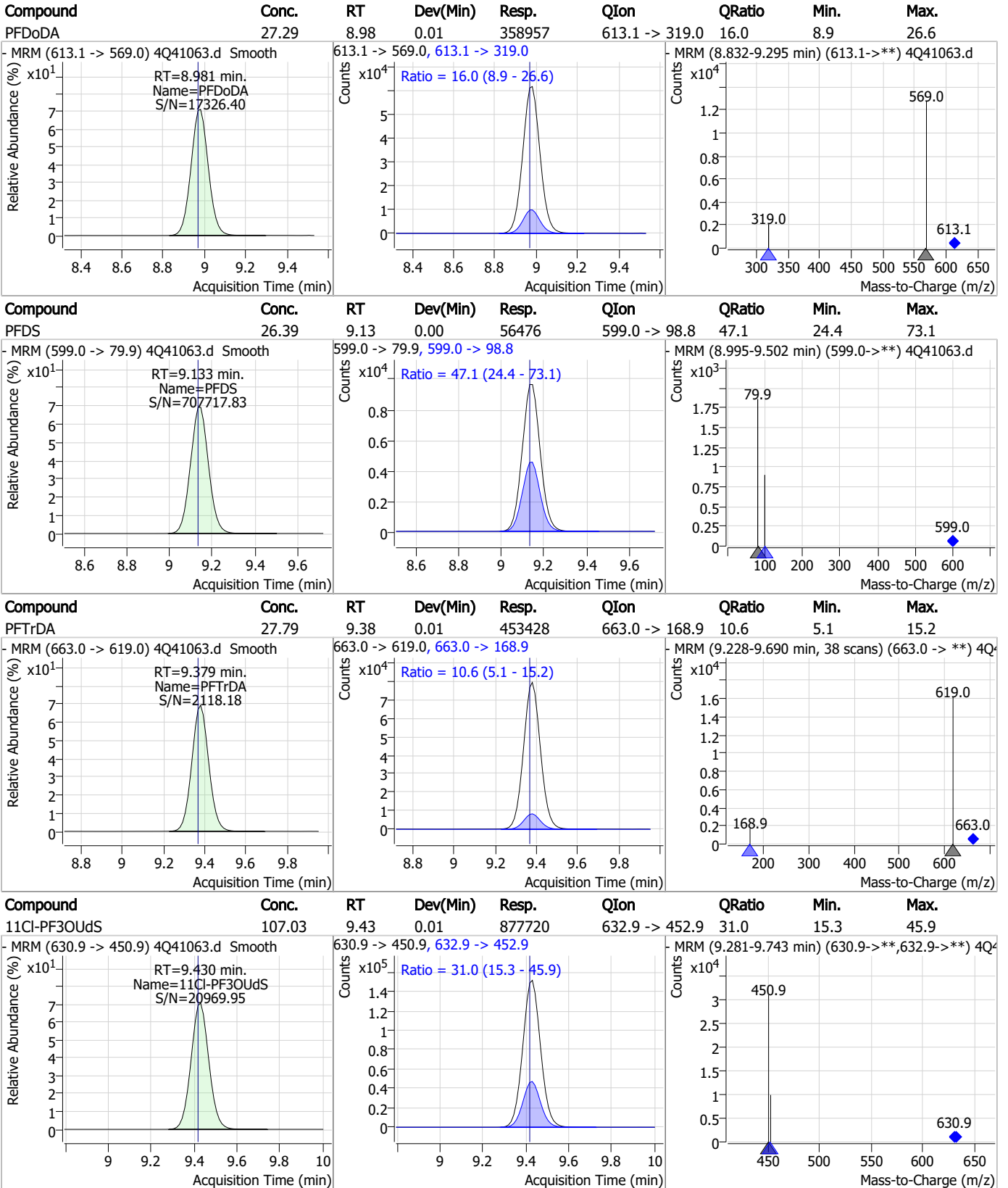
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	25.10	8.71	0.00	46448	548.8 -> 98.9	56.6	29.2	87.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.32	8.98	0.01	19410	615.1 -> 570.0			



Perfluorinated Compounds by LC/MS/MS

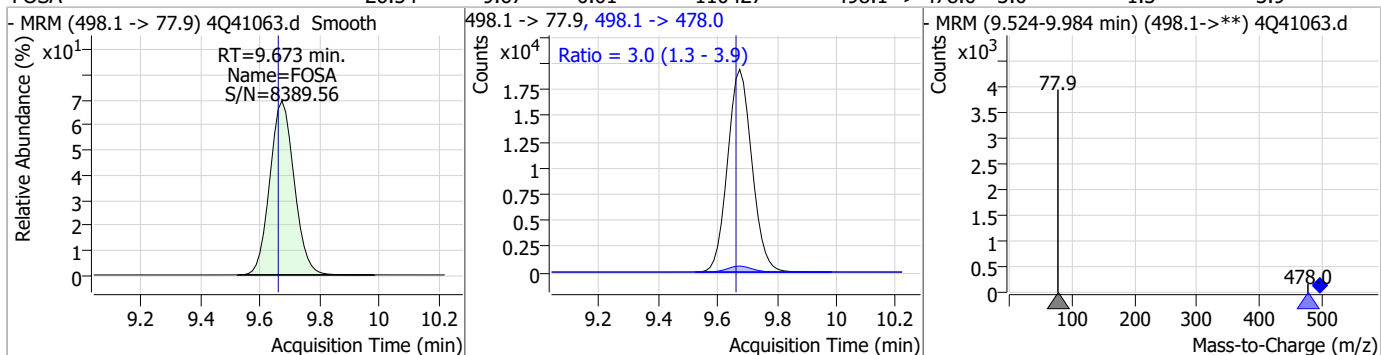


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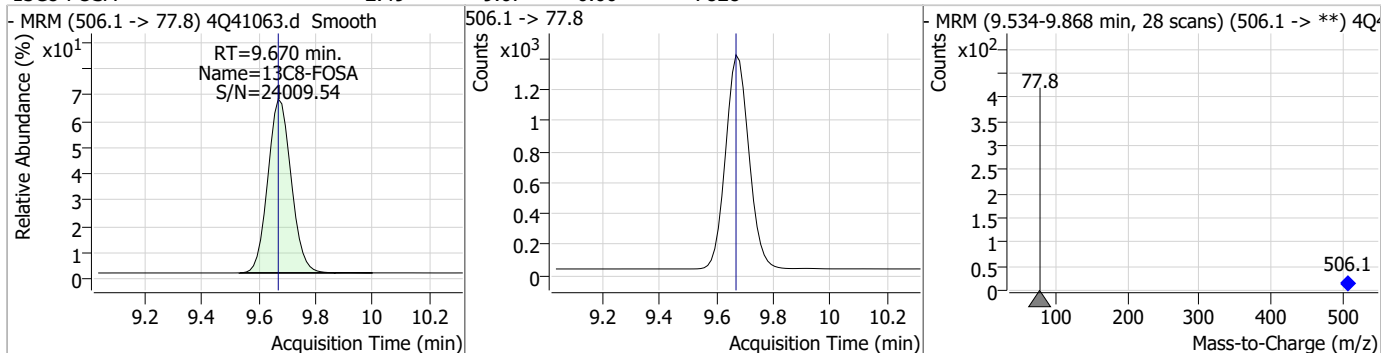
7

Perfluorinated Compounds by LC/MS/MS

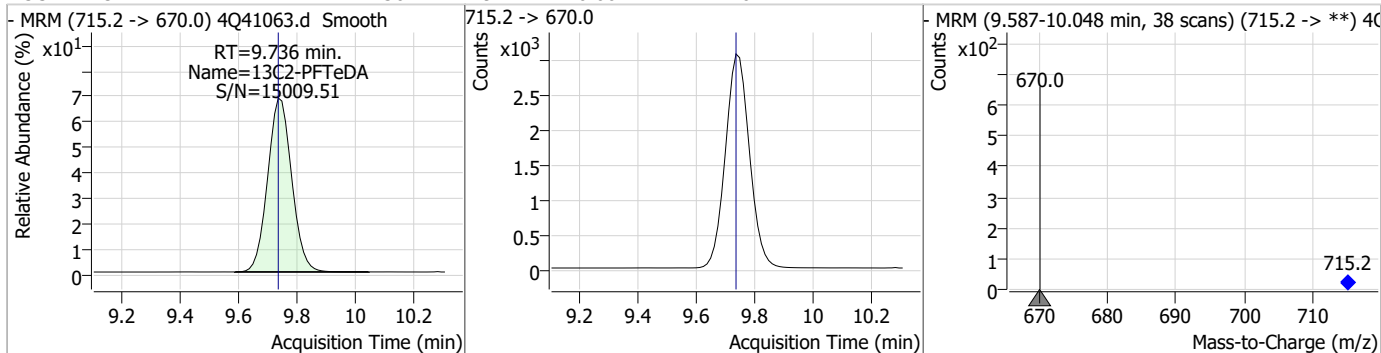
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	26.54	9.67	0.01	110427	498.1 -> 478.0	3.0	1.3	3.9



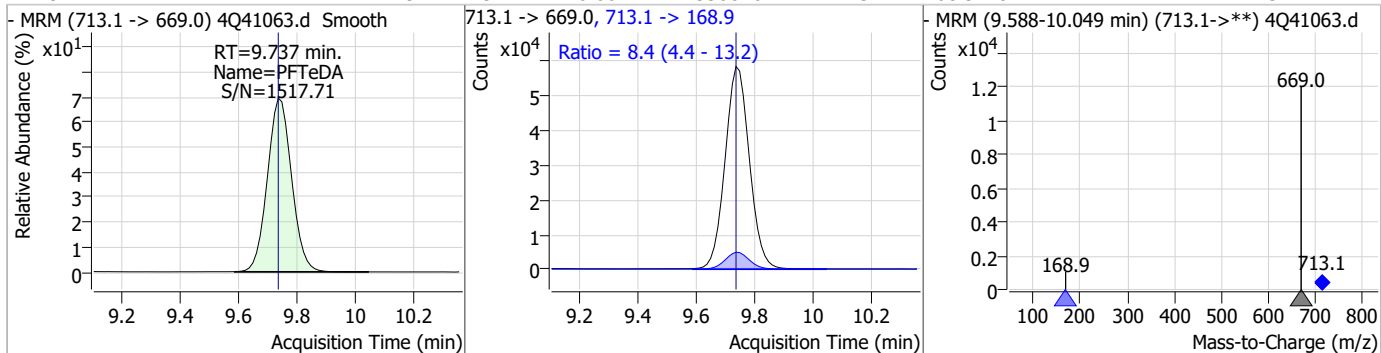
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.49	9.67	0.00	7828				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.36	9.74	0.00	17416				

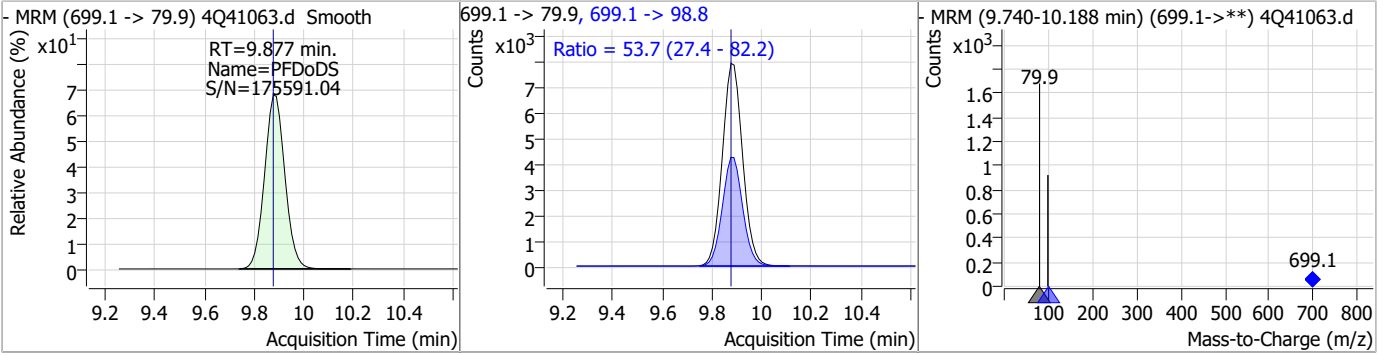


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	27.79	9.74	0.00	336810	713.1 -> 168.9	8.4	4.4	13.2

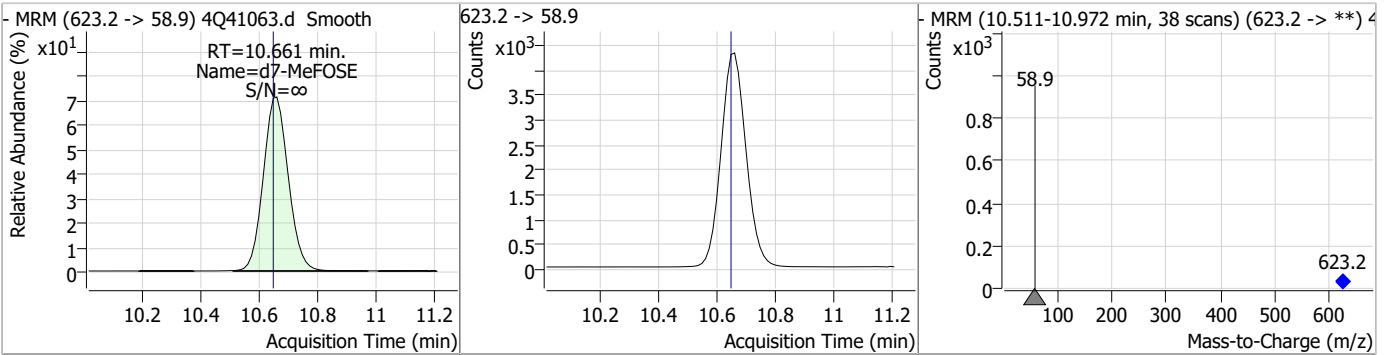


Perfluorinated Compounds by LC/MS/MS

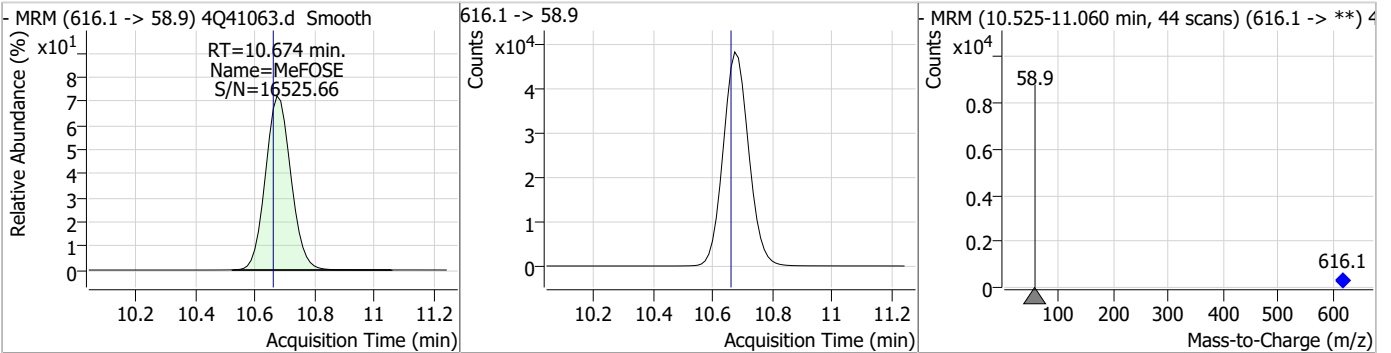
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	26.45	9.88	0.00	45231	699.1 -> 98.8	53.7	27.4	82.2



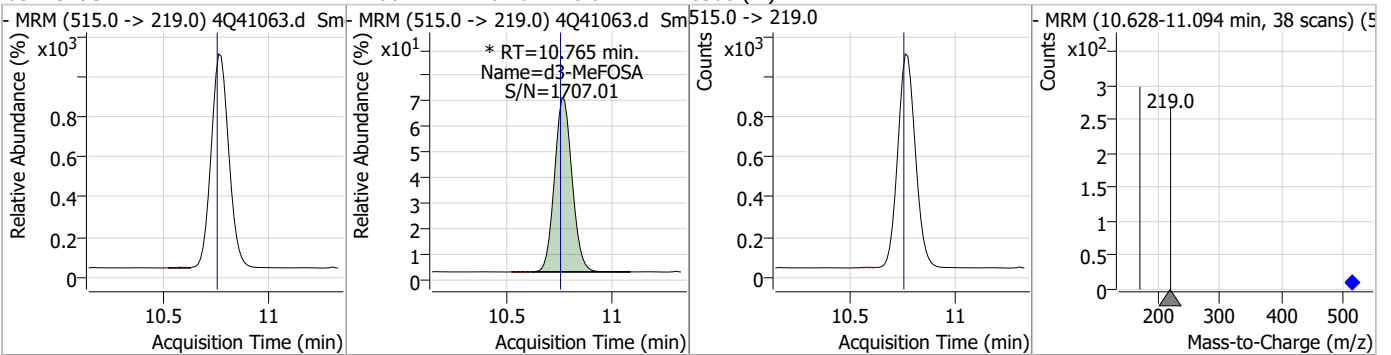
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.83	10.66	0.01	25722				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	265.98	10.67	0.01	287153				

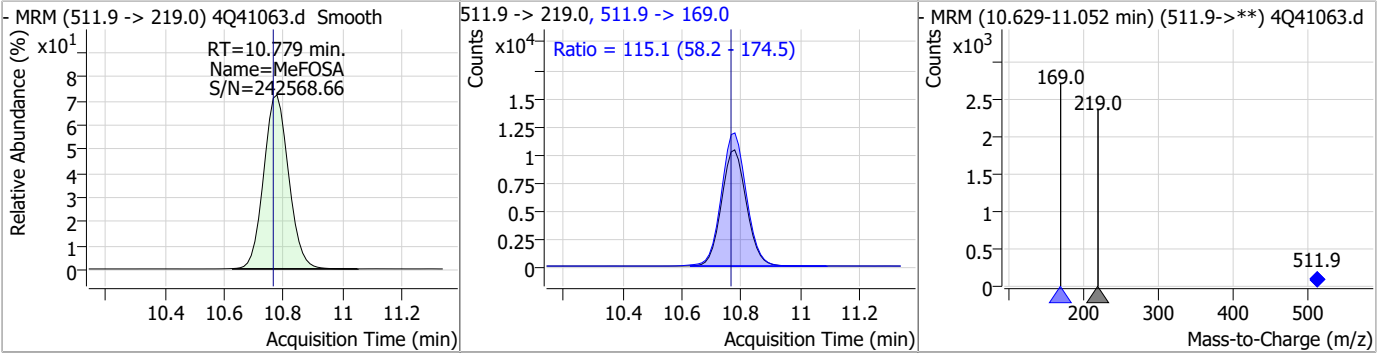


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.58	10.76	0.01	6300 (m)				

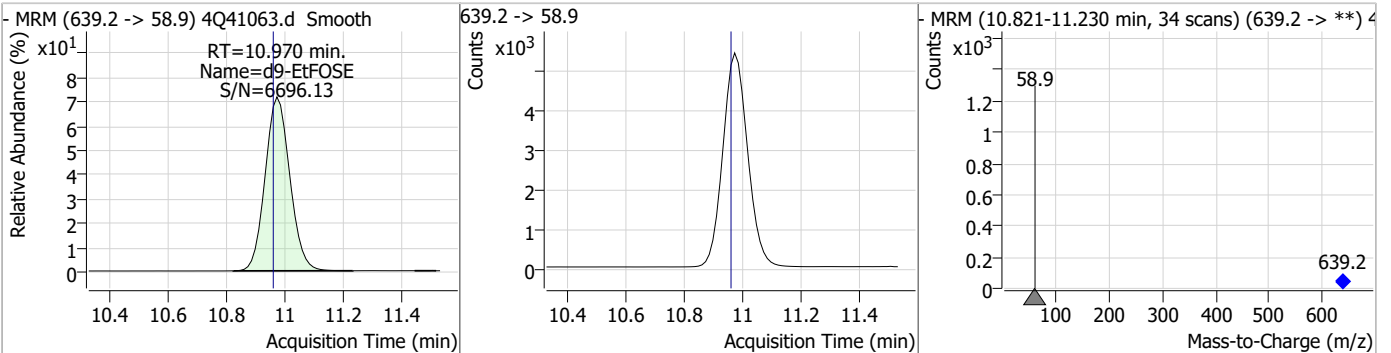


Perfluorinated Compounds by LC/MS/MS

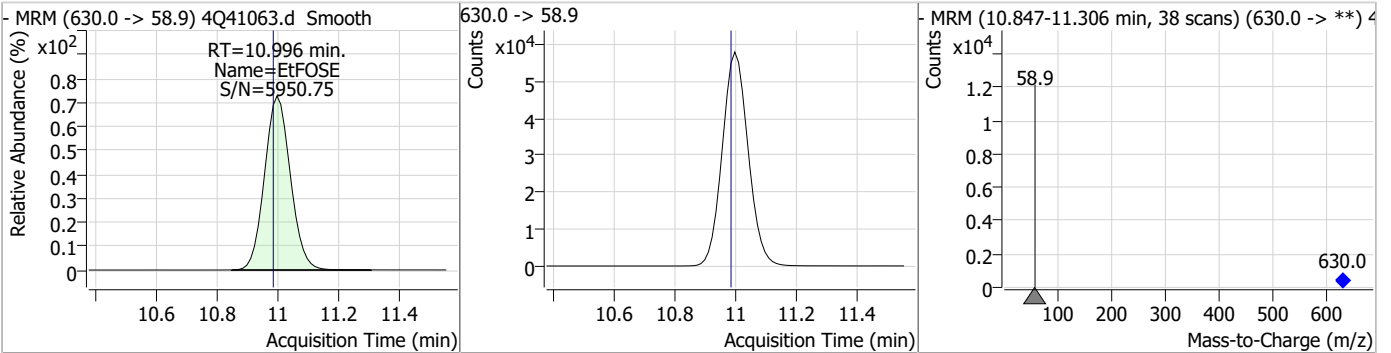
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	26.19	10.78	0.01	60702	511.9 -> 169.0	115.1	58.2	174.5



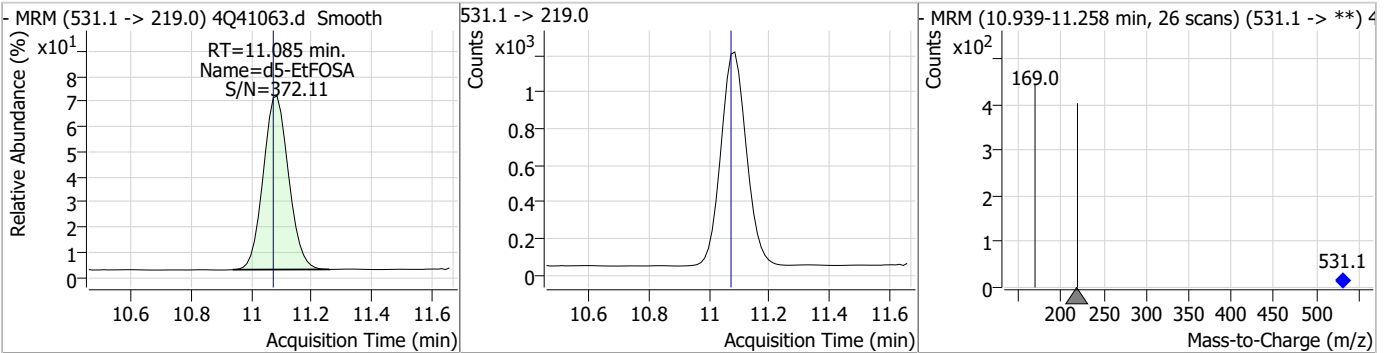
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.63	10.97	0.01	31700				



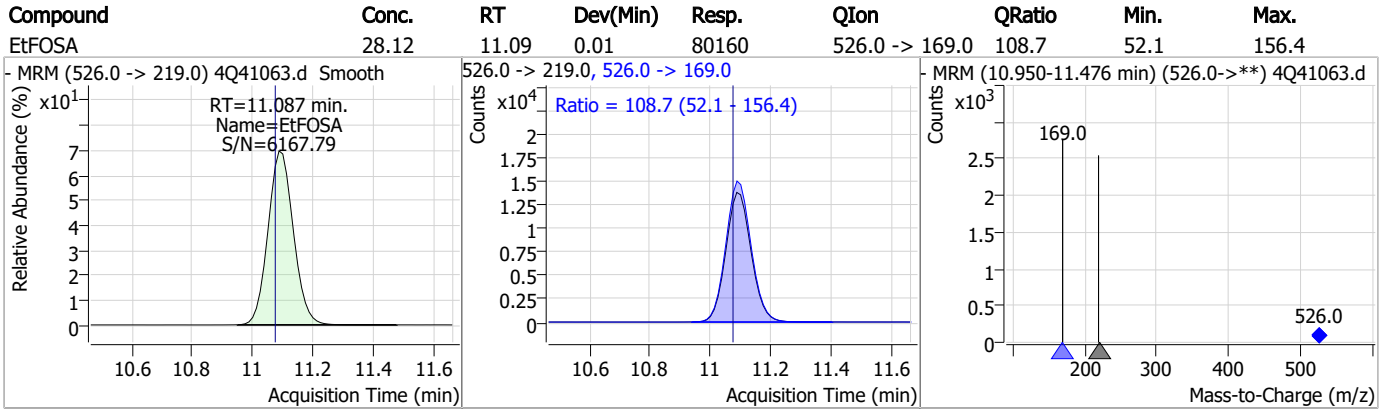
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	274.33	11.00	0.01	342938				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.44	11.09	0.01	6808				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q587-IC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41063.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 17:48 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.36	Split peak
d3-MeFOSA			10.77	Poor instrument integration

7.6.8.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41064.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 6:02:10 PM
 Sample Name : ic587-8
 Vial : P1-A9
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	108082	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	59659	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	49892	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	29540	2.50 µg/L	0.000
M8-PFOA	7.076	421.1 -> 376.0	34365	2.50 µg/L	0.014
M9-PFNA	7.596	472.1 -> 427.0	15022	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	12550	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	15112	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	17484	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	16643	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	7414	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	10538	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	6349	2.50 µg/L	0.000
M8-PFOS	8.242	507.1 -> 79.9	7766	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	935	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	1439	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	2322	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	16211	5.00 µg/L	0.000
M3-HFPO-DA	5.877	286.9 -> 168.9	28923	10.00 µg/L	0.000
M5-EtFOSAA	8.359	589.2 -> 419.0	13373	5.00 µg/L	0.012
M7-MeFOSE	10.648	623.2 -> 58.9	22634	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	29704	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	6533	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	6066	2.50 µg/L	0.012
13C4-PFOS	8.243	502.8 -> 79.9	7797	2.50 µg/L	0.000
13C3-PFBA	3.155	216.0 -> 172.0	65351	5.00 µg/L	0.000
18O2-PFHxS	7.190	403.0 -> 83.9	4653	2.50 µg/L	0.012
13C4-PFOA	7.077	417.1 -> 372.0	41267	2.50 µg/L	0.014
13C2-PFDA	8.079	515.1 -> 470.1	13835	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	17964	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	46954	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	935	3.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 74.2%		
13C2-6:2FTS	6.836	429.1 -> 80.9	1439	3.57 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 71.3%		
13C2-8:2FTS	7.865	529.1 -> 80.9	2322	3.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 76.4%		
13C2-PFDoDA	8.968	615.1 -> 570.0	17484	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C2-PFTeDA	9.736	715.2 -> 670.0	16643	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C3-PFBS	5.501	302.1 -> 79.9	10538	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFHxS	7.179	402.1 -> 79.9	6349	2.43 µg/L	0.000



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C4-PFBA	3.152	216.8 -> 171.9	108082	9.98 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.417	367.1 -> 322.0	29540	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C5-PFHxA	5.559	318.0 -> 273.0	49892	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C5-PFPeA	4.500	268.3 -> 223.0	59659	4.50 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.0%	
13C6-PFDA	8.079	519.1 -> 474.1	12550	1.10 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 88.1%	
13C7-PFUnDA	8.536	570.0 -> 525.1	15112	1.03 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 82.6%	
13C8-FOSA	9.670	506.1 -> 77.8	7414	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C8-PFOA	7.076	421.1 -> 376.0	34365	2.49 µg/L	0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-PFOS	8.242	507.1 -> 79.9	7766	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C9-PFNA	7.596	472.1 -> 427.0	15022	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.2%	
d3-MeFOSAA	8.148	573.2 -> 419.0	16211	4.72 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	28923	9.47 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
d3-MeFOSA	10.765	515.0 -> 219.0	6066	2.71 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.5%	
d5-EtFOSAA	8.359	589.2 -> 419.0	13373	5.00 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d7-MeFOSE	10.648	623.2 -> 58.9	22634	23.81 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d9-EtFOSE	10.970	639.2 -> 58.9	29704	25.15 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
d5-EtFOSA	11.085	531.1 -> 219.0	6533	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	346050	232.55 µg/L	99
		327.1 -> 80.9	130368		
6:2FTS	6.836	427.1 -> 407.0	296814	230.40 µg/L	99
		427.1 -> 80.9	108021		
8:2FTS	7.878	527.1 -> 507.0	273245	227.68 µg/L	99
		527.1 -> 80.8	79542		
EtFOSAA	8.360	584.2 -> 419.1	153414	67.51 µg/L	m 95
		584.2 -> 526.0	65290		
FOSA	9.673	498.1 -> 77.9	269201	68.32 µg/L	99
		498.1 -> 478.0	8029		
MeFOSAA	8.149	570.1 -> 419.0	152524	68.91 µg/L	m 87
		570.1 -> 483.0	30098		
PFBA	3.158	212.8 -> 168.9	708939	276.80 µg/L	100
PFBS	5.502	298.7 -> 79.9	261159	61.96 µg/L	98
		298.7 -> 98.8	96882		
PFDA	8.079	512.9 -> 469.0	603179	70.40 µg/L	97
		512.9 -> 219.0	120999		
PFDoDA	8.968	613.1 -> 569.0	835102	70.47 µg/L	96
		613.1 -> 319.0	131603		
PFDS	9.133	599.0 -> 79.9	134102	69.38 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.417	599.0 -> 98.8	65045	67.14	µg/L	98
		363.1 -> 319.0	1055174			
PFHpS	7.748	363.1 -> 169.0	184927	62.25	µg/L	99
		449.0 -> 79.9	148568			
PFHxA	5.549	449.0 -> 98.9	82137	64.72	µg/L	99
		313.0 -> 269.0	1116078			
PFHxS	7.180	313.0 -> 118.9	32289	62.63	µg/L	96
		398.7 -> 79.9	164242			
PFNA	7.596	398.7 -> 98.9	87441	69.43	µg/L	98
		463.0 -> 419.0	633912			
PFNS	8.699	463.0 -> 219.0	156217	64.21	µg/L	93
		548.8 -> 79.9	107308			
PFOA	7.078	548.8 -> 98.9	57277	68.71	µg/L	100
		413.0 -> 369.0	1116335			
PFOS	8.243	413.0 -> 169.0	218152	57.66	µg/L	83
		498.9 -> 79.9	202476			
PFPeA	4.502	498.9 -> 98.8	91908	136.95	µg/L	100
		263.0 -> 219.0	1921302			
PFPeS	6.484	349.1 -> 79.9	136291	67.63	µg/L	98
		349.1 -> 98.9	63103			
PFTeDA	9.737	713.1 -> 669.0	764916	66.05	µg/L	99
		713.1 -> 168.9	65732			
PFTrDA	9.366	663.0 -> 619.0	1036899	70.55	µg/L	98
		663.0 -> 168.9	111679			
PFUnDA	8.536	563.1 -> 519.0	532524	63.43	µg/L	97
		563.1 -> 269.1	107063			
11Cl-PF3OUdS	9.418	630.9 -> 450.9	1835737	244.68	µg/L	99
		632.9 -> 452.9	571830			
9Cl-PF3ONS	8.575	530.8 -> 351.0	1922765	211.35	µg/L	99
		532.8 -> 353.0	603384			
ADONA	6.681	376.9 -> 250.9	4112182	246.77	µg/L	99
		376.9 -> 84.8	729314			
HFPO-DA	5.878	284.9 -> 168.9	635160	267.42	µg/L	99
		284.9 -> 184.9	74113			
3:3FTCA	4.154	241.0 -> 177.0	324667	392.94	µg/L	98
		241.0 -> 117.0	26053			
5:3FTCA	6.345	341.0 -> 237.1	4150429	1588.27	µg/L	99
		341.0 -> 217.0	2987133			
7:3FTCA	7.723	441.0 -> 316.9	1617337	1537.90	µg/L	99
		441.0 -> 336.9	3720648			
EtFOSA	11.087	526.0 -> 219.0	185189	67.69	µg/L	94
		526.0 -> 169.0	204007			
EtFOSE	10.996	630.0 -> 58.9	747076	637.76	µg/L	100
		511.9 -> 219.0	147318			
MeFOSA	10.779	511.9 -> 169.0	166453	66.01	µg/L	97
		616.1 -> 58.9	619232			
MeFOSE	10.674	699.1 -> 79.9	107280	651.83	µg/L	100
		699.1 -> 98.8	58675			
PFDoDS	9.877	295.0 -> 201.0	70521	69.45	µg/L	100
		295.0 -> 84.9	16003			
NFDHA	5.453	279.0 -> 85.1	1070697	107.65	µg/L	97
		229.0 -> 84.9	870935			
PFMBA	4.867	314.8 -> 134.9	1498007	143.67	µg/L	100
		314.8 -> 82.9	48447			
PFMPA	3.727			147.15	µg/L	100
PFEESA	5.983			128.52	µg/L	99

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

7.6.9
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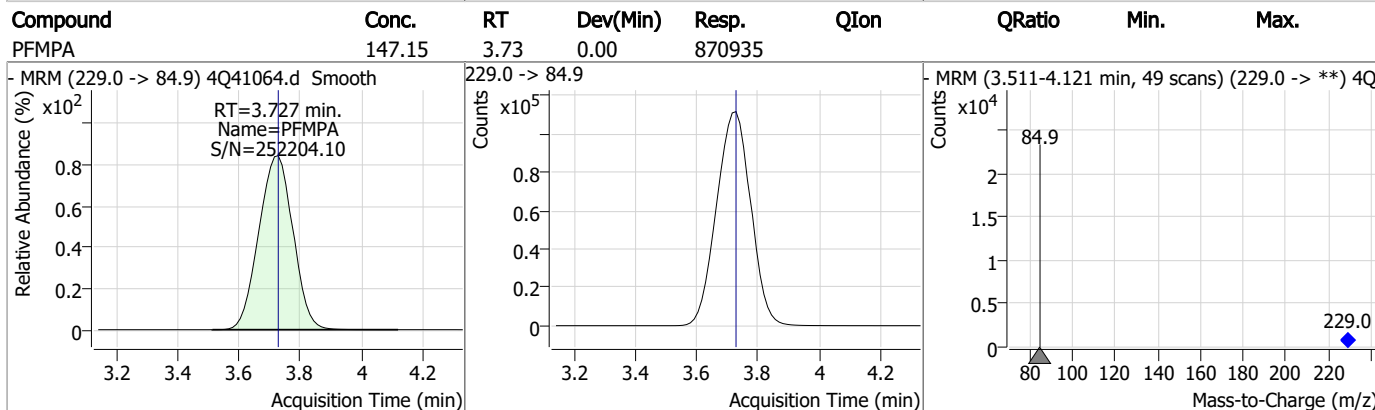
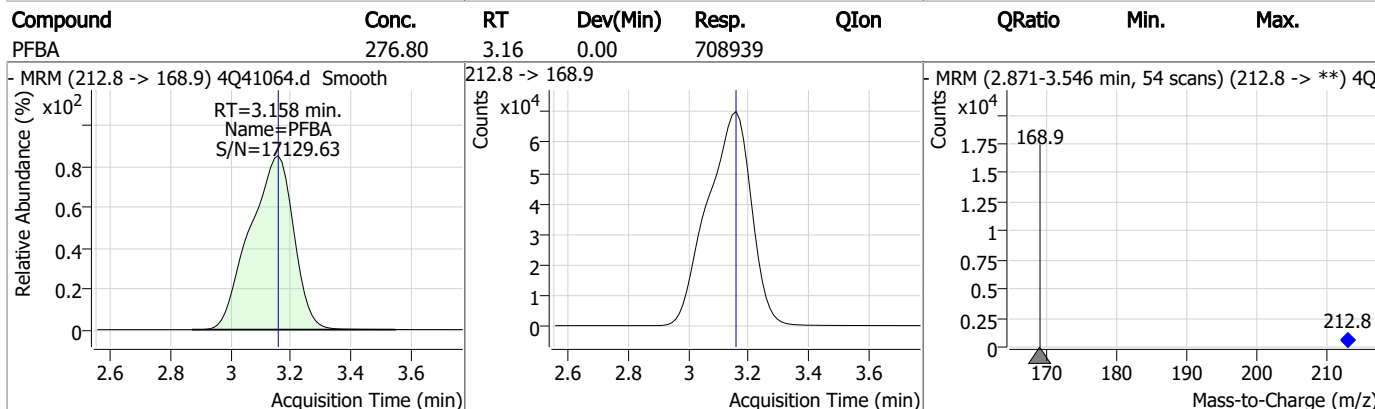
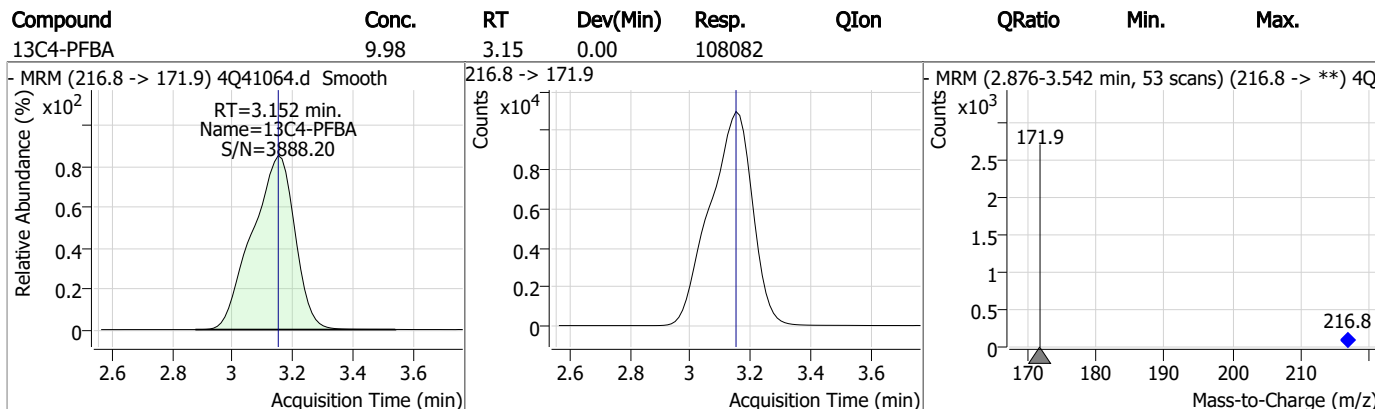
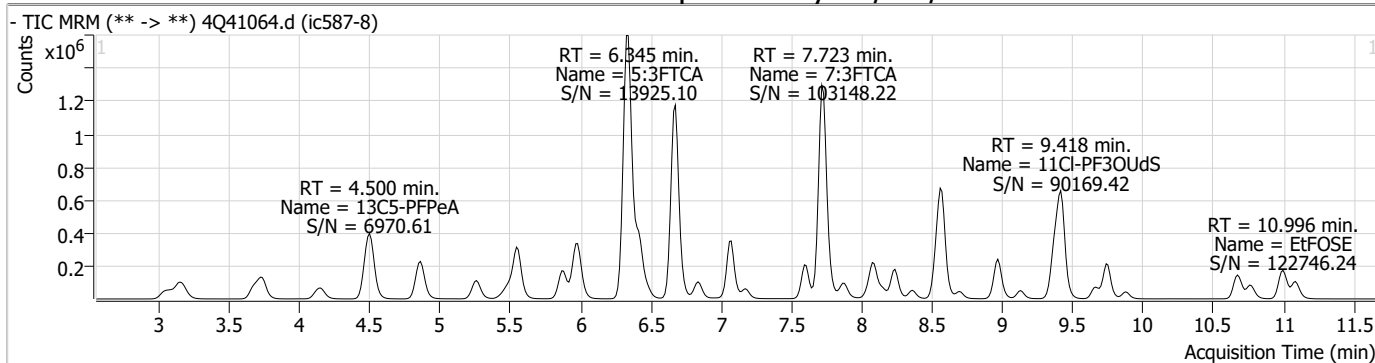
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.9

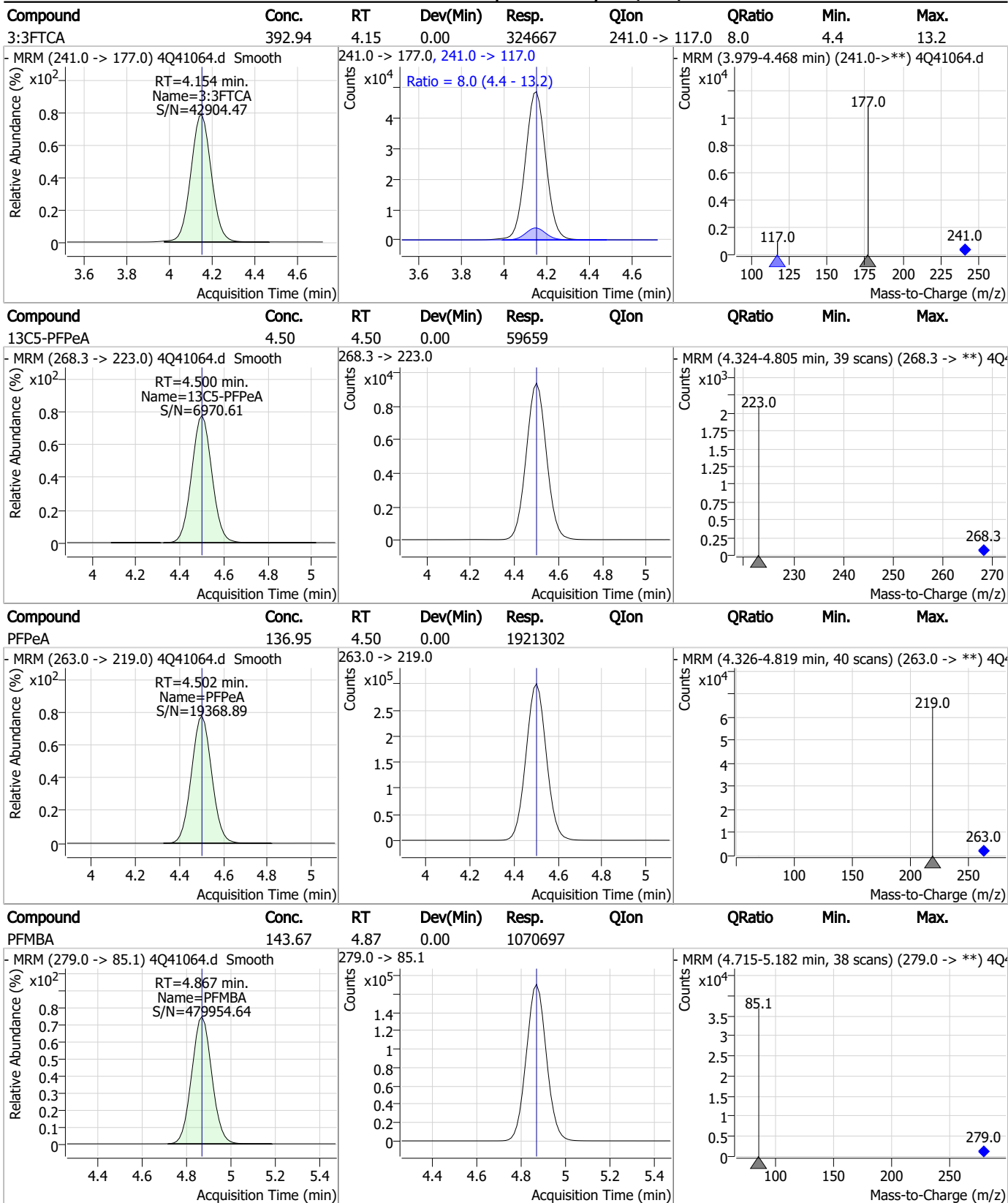
7

Perfluorinated Compounds by LC/MS/MS



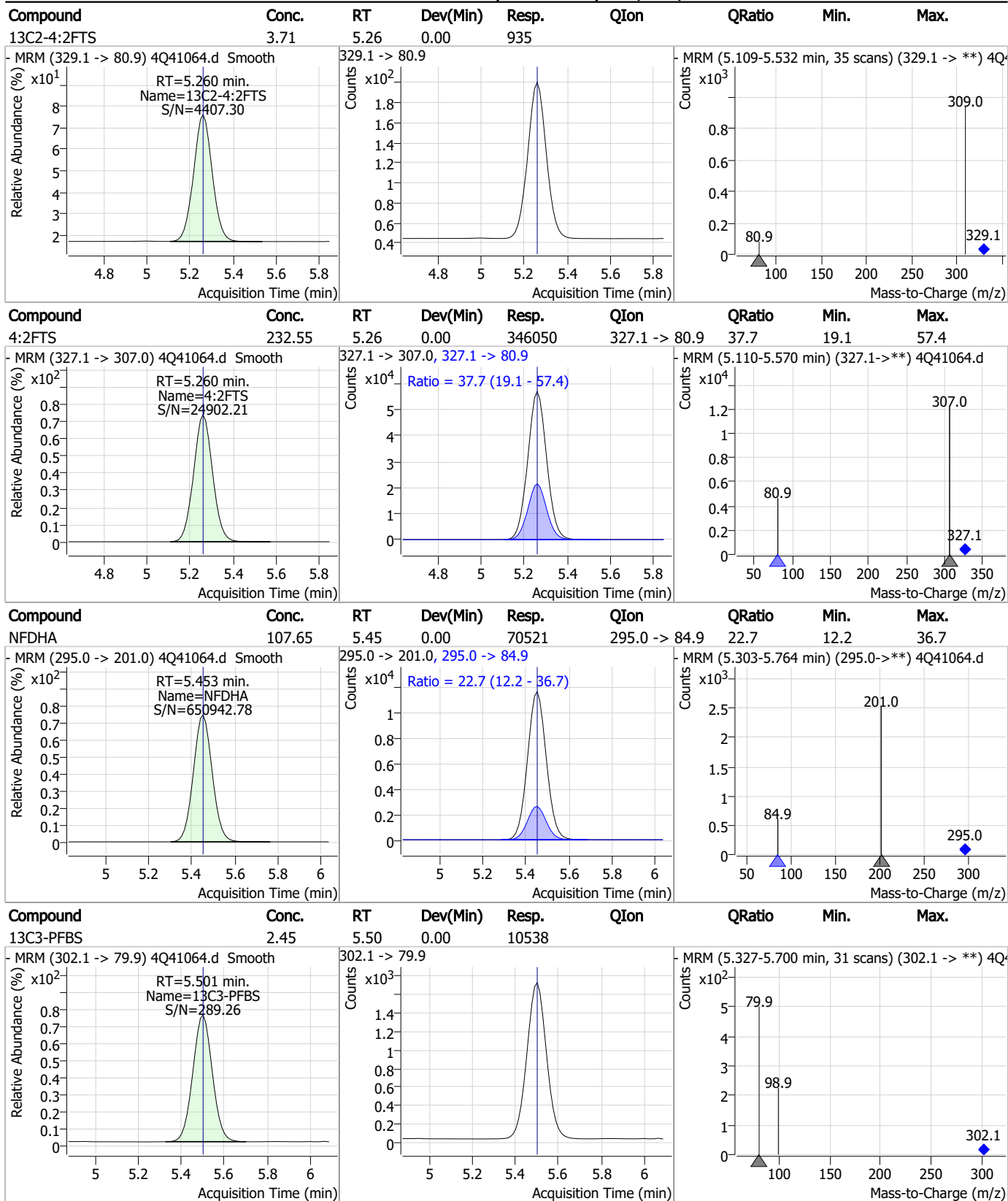
7.6.9
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

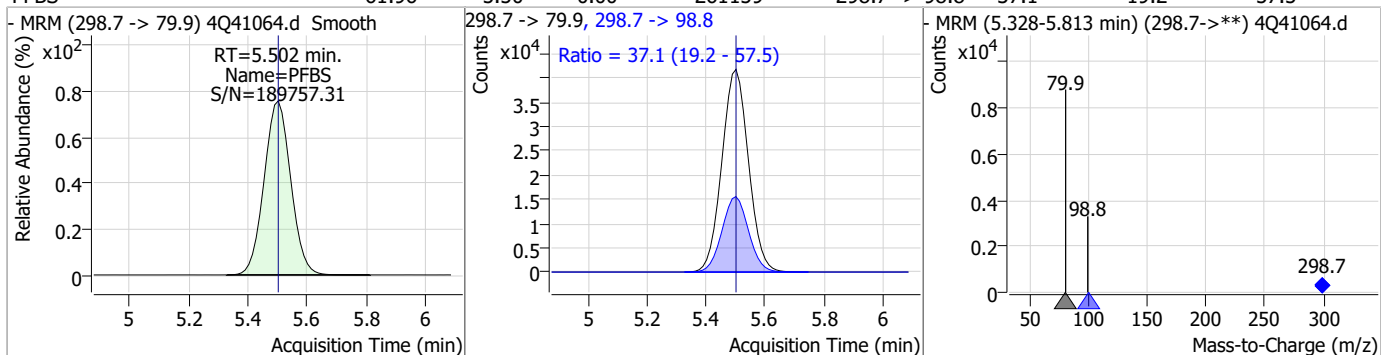


7.6.9
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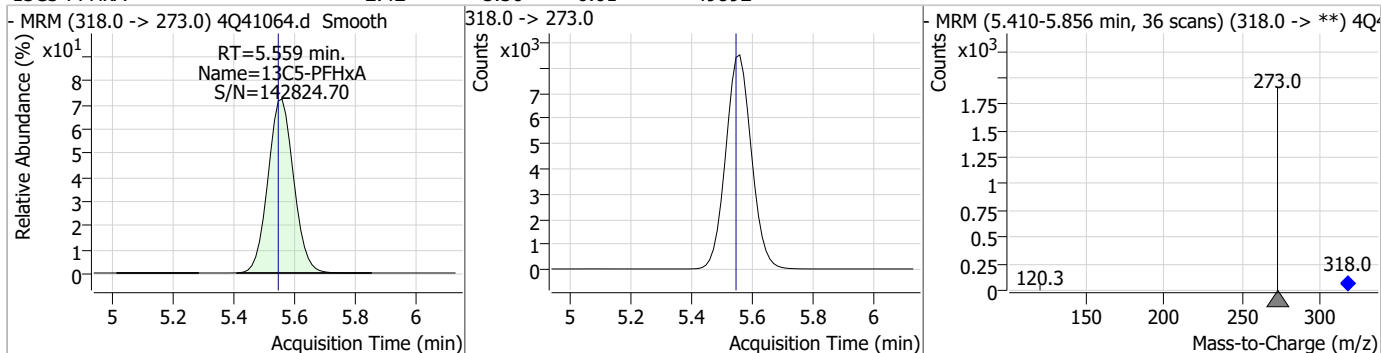


Perfluorinated Compounds by LC/MS/MS

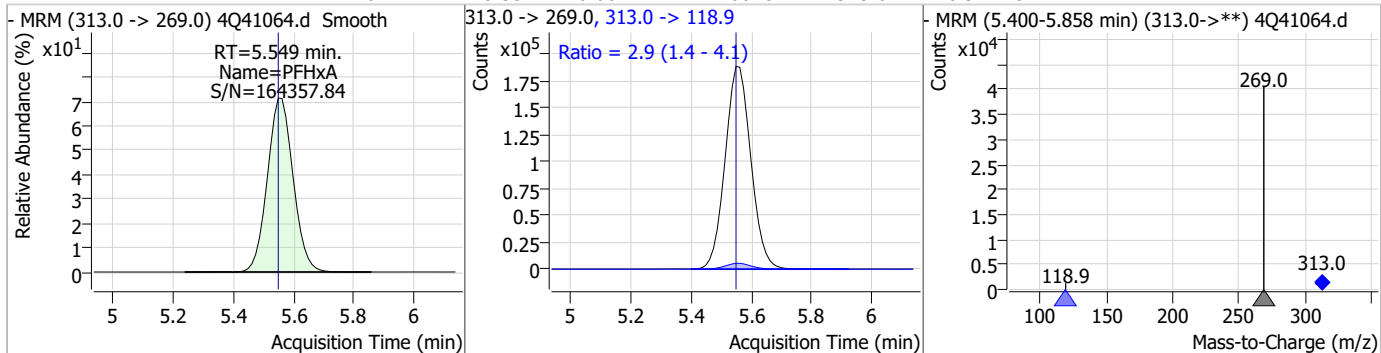
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	61.96	5.50	0.00	261159	298.7 -> 98.8	37.1	19.2	57.5



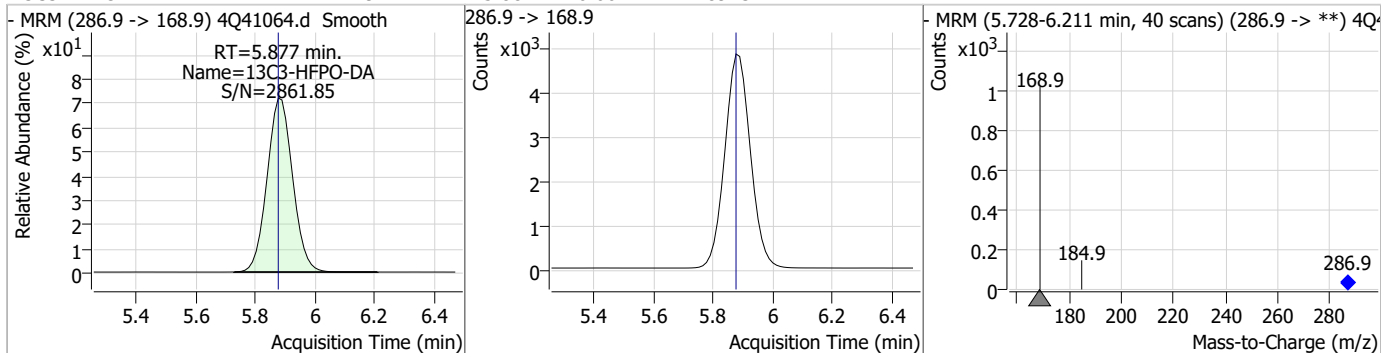
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.42	5.56	0.01	49892	318.0 -> 273.0			



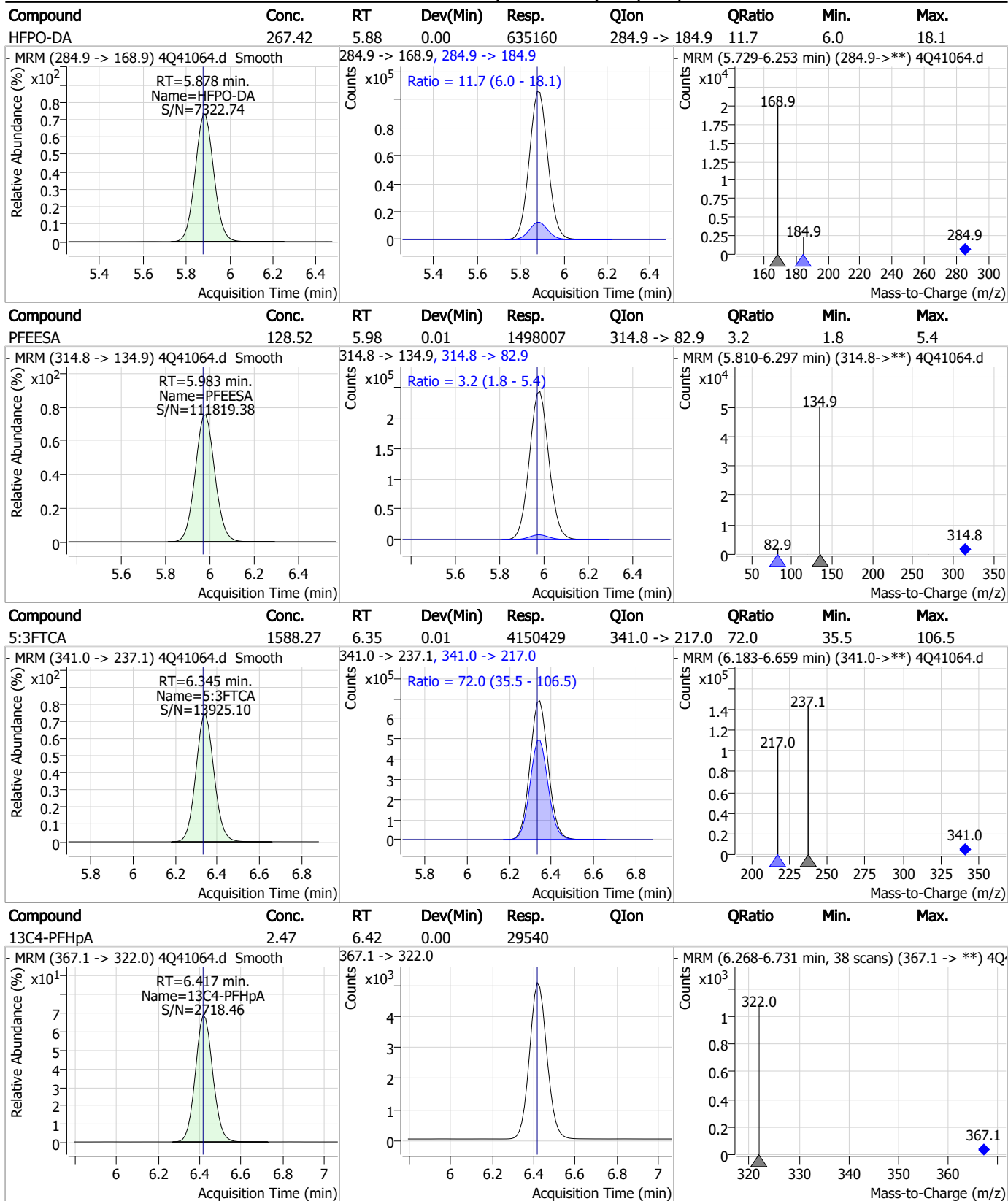
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	64.72	5.55	0.00	1116078	313.0 -> 118.9	2.9	1.4	4.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.47	5.88	0.00	28923	286.9 -> 168.9			

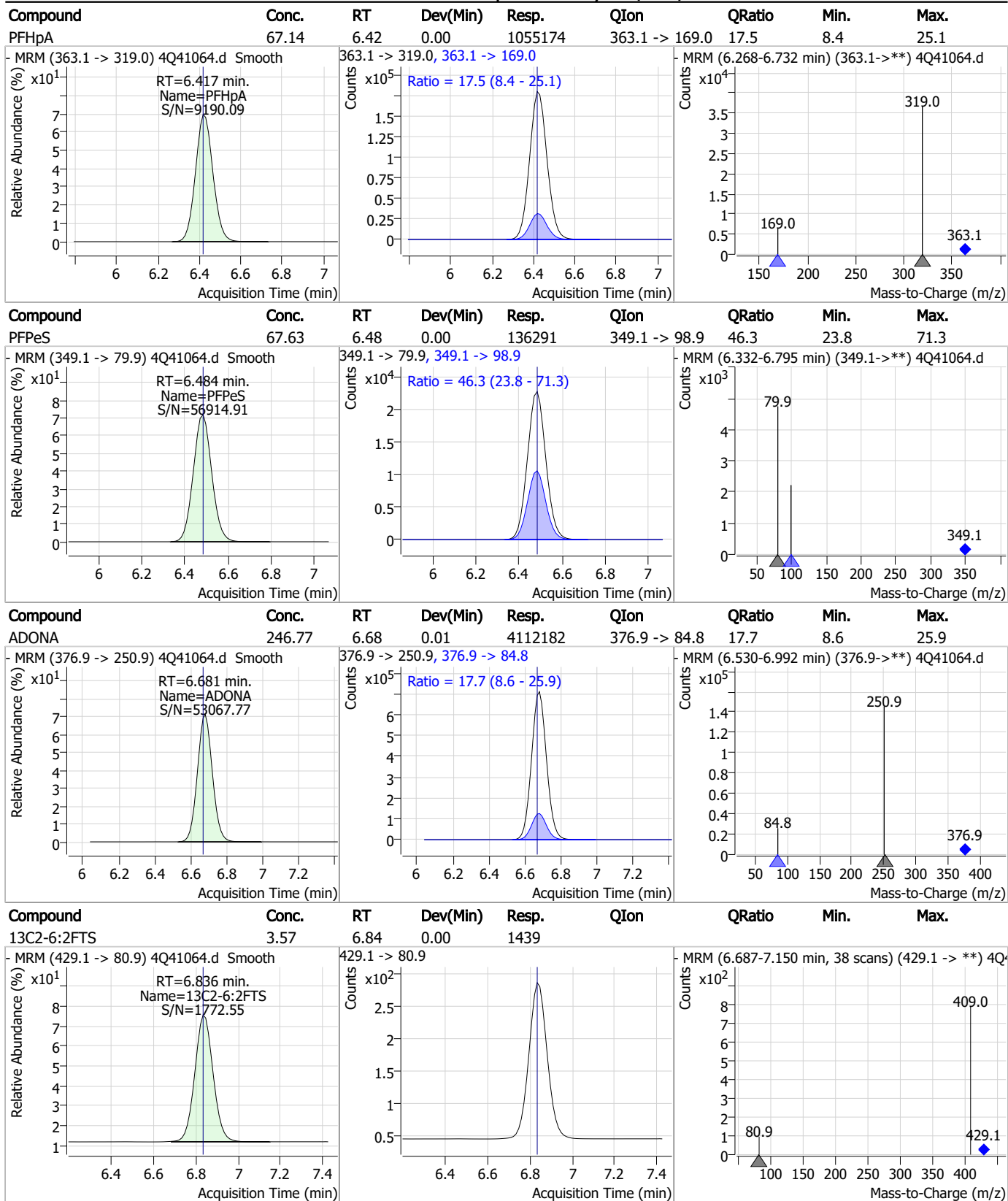


Perfluorinated Compounds by LC/MS/MS



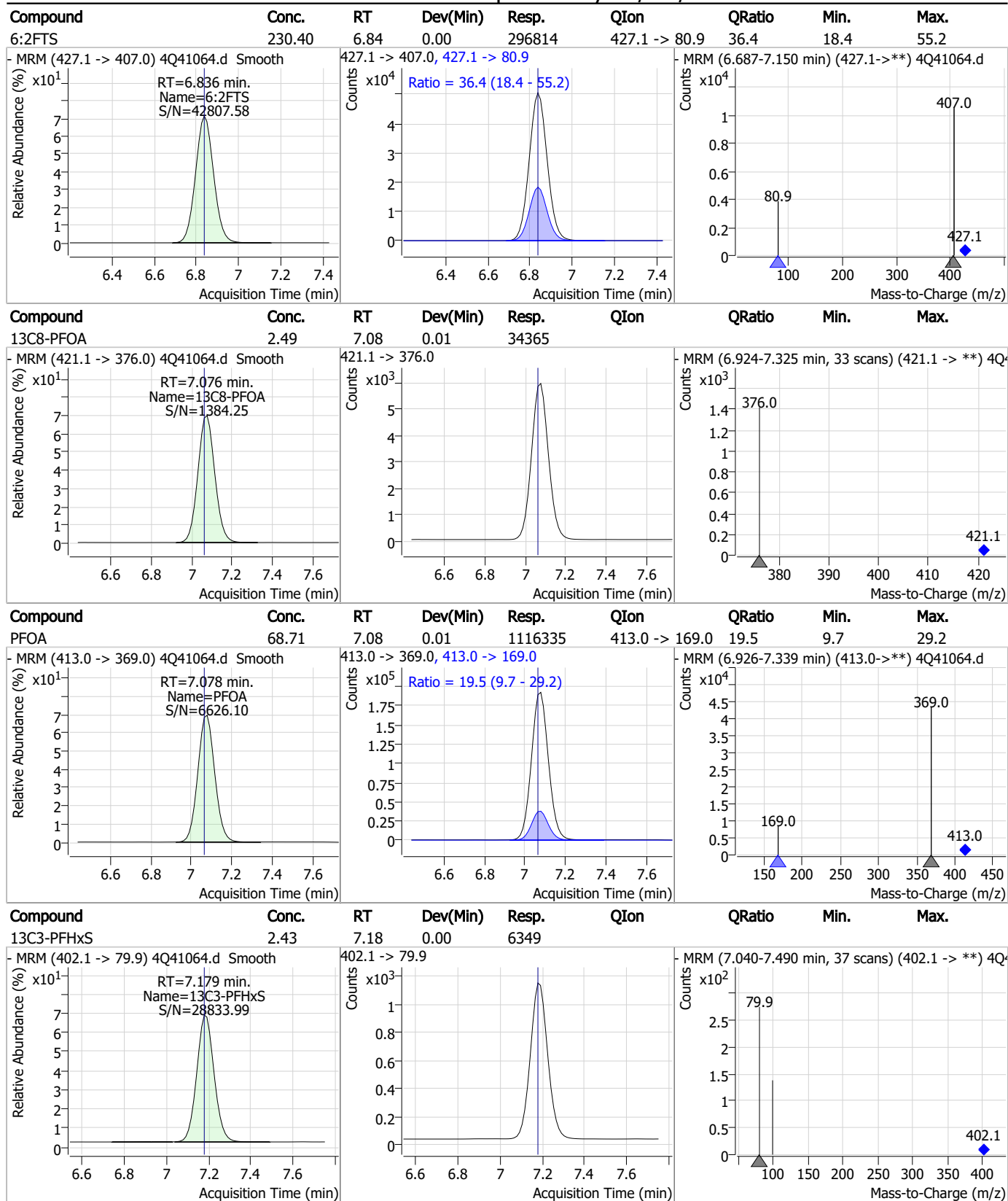
7.6.9
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Perfluorinated Compounds by LC/MS/MS



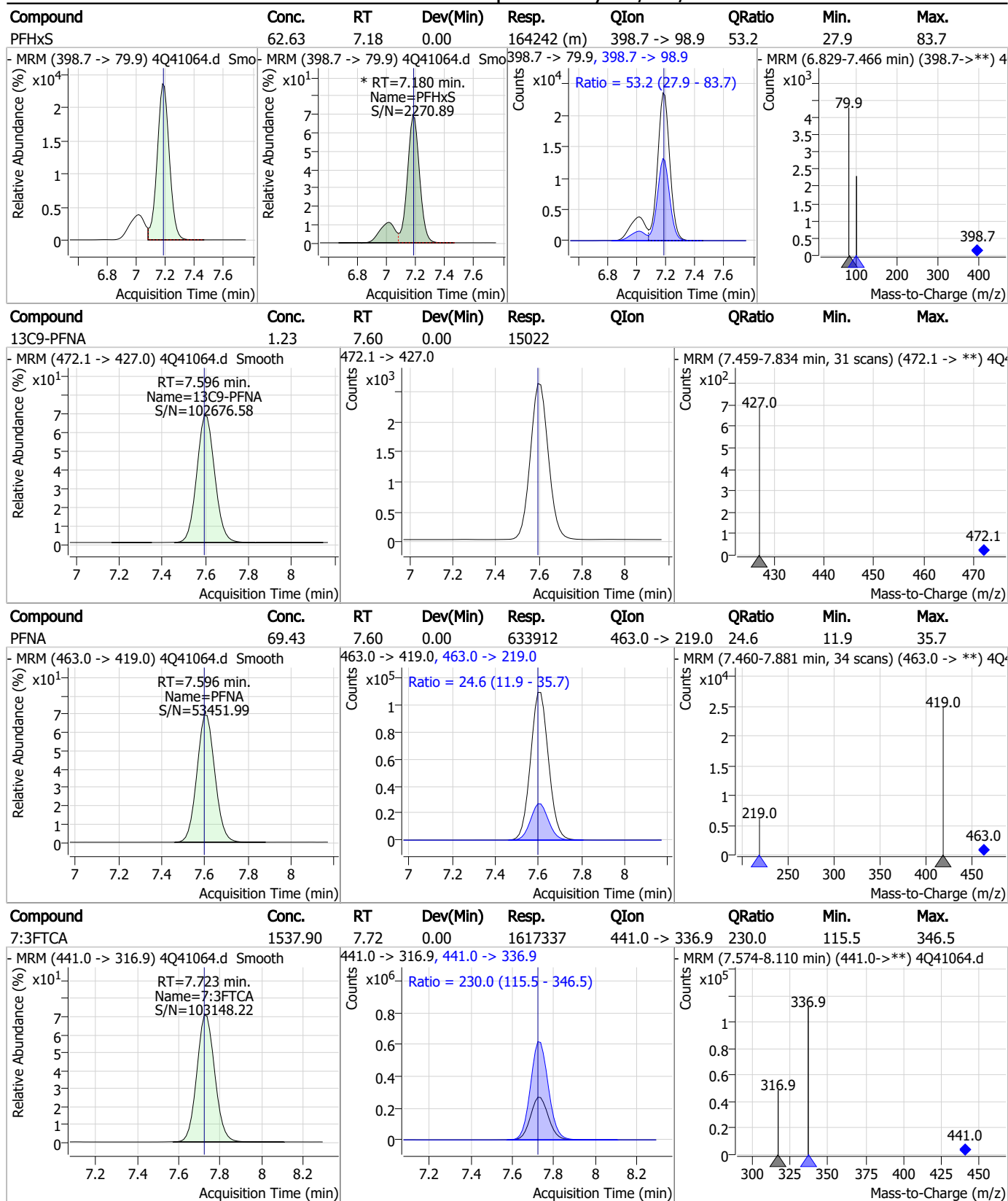
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Perfluorinated Compounds by LC/MS/MS



7.6.9

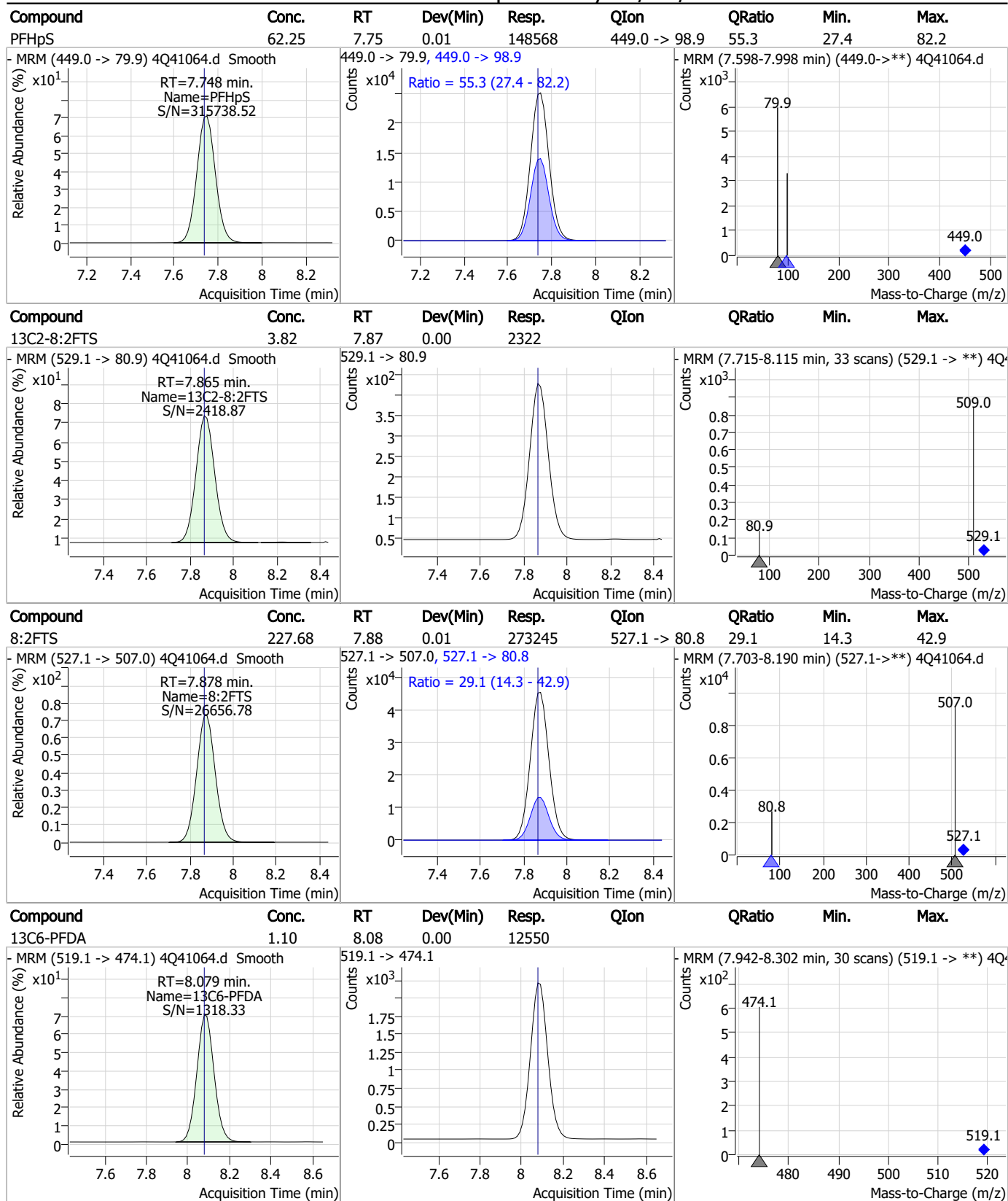
Perfluorinated Compounds by LC/MS/MS



7.6.9

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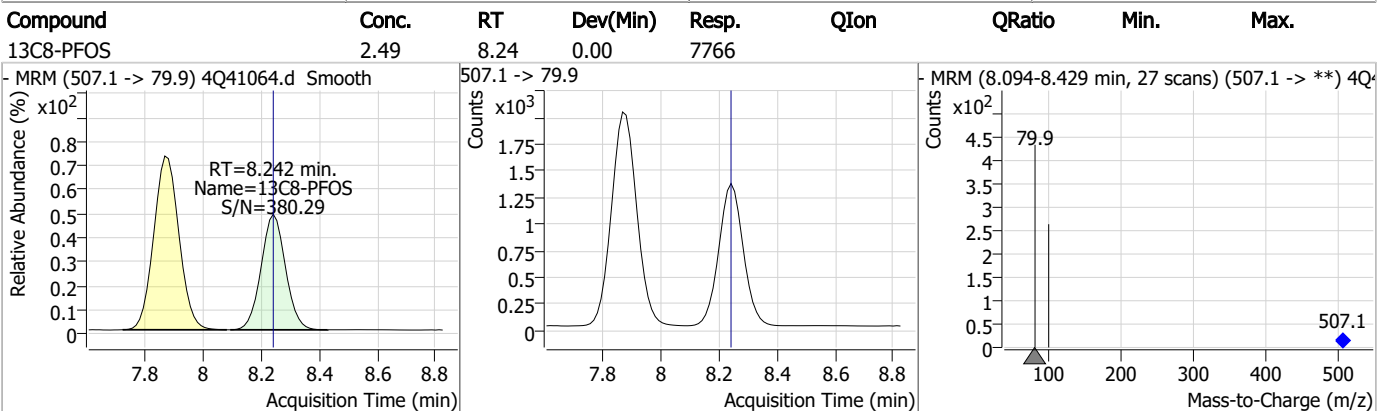
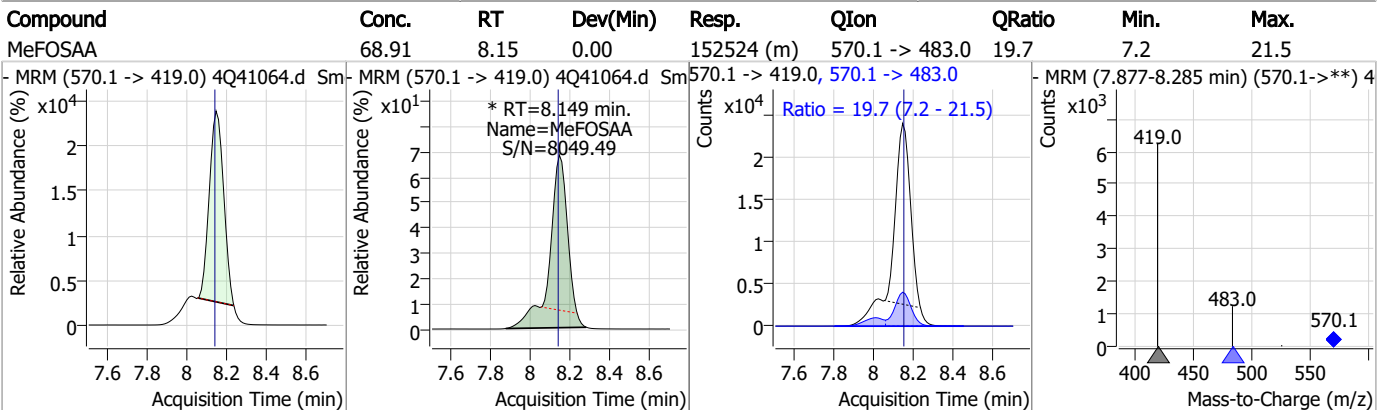
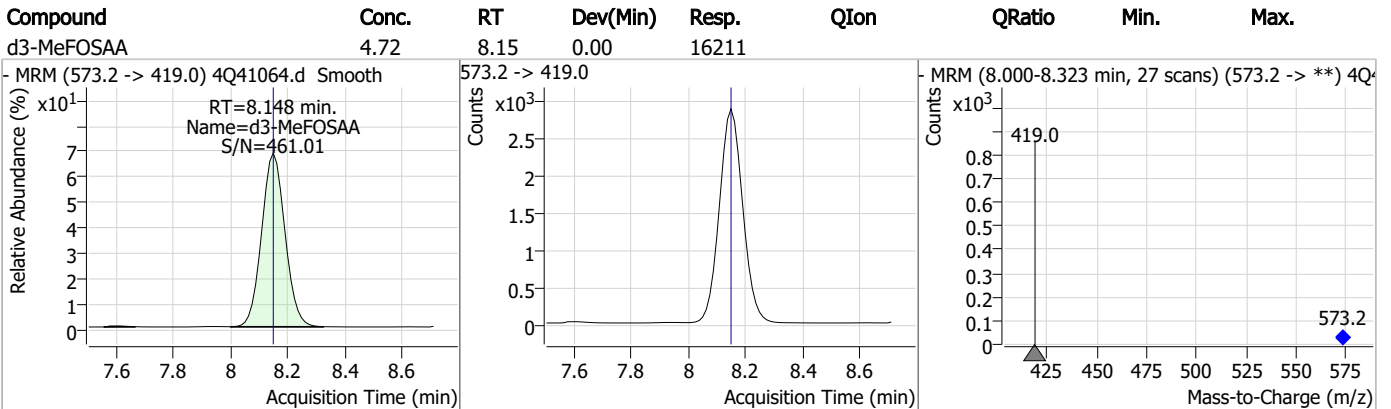
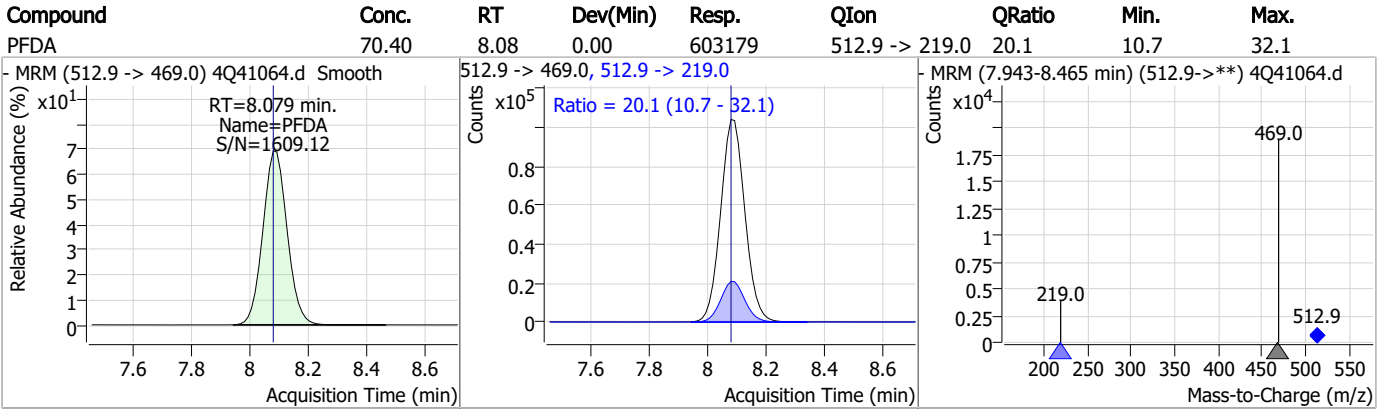
Perfluorinated Compounds by LC/MS/MS



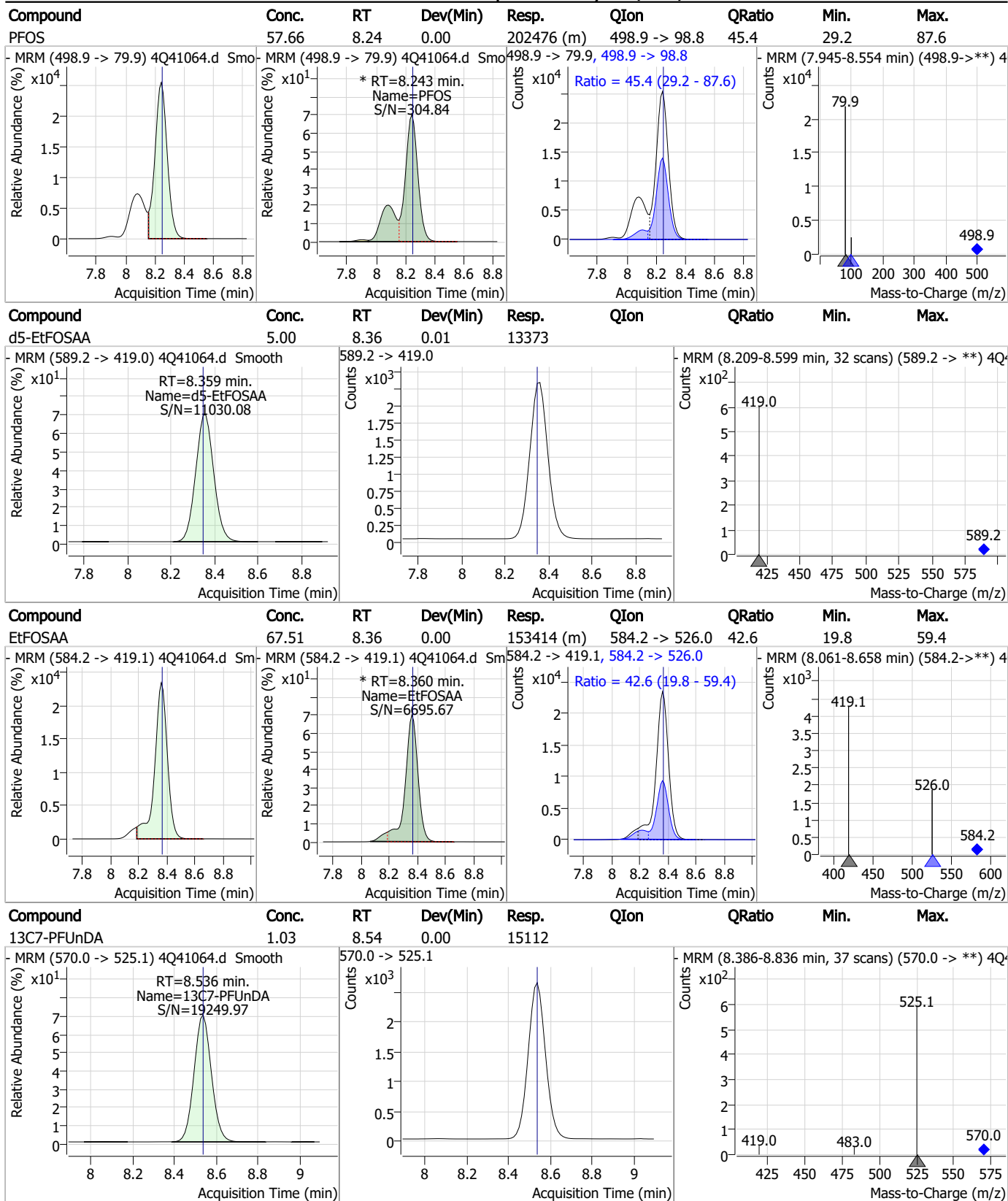
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Perfluorinated Compounds by LC/MS/MS

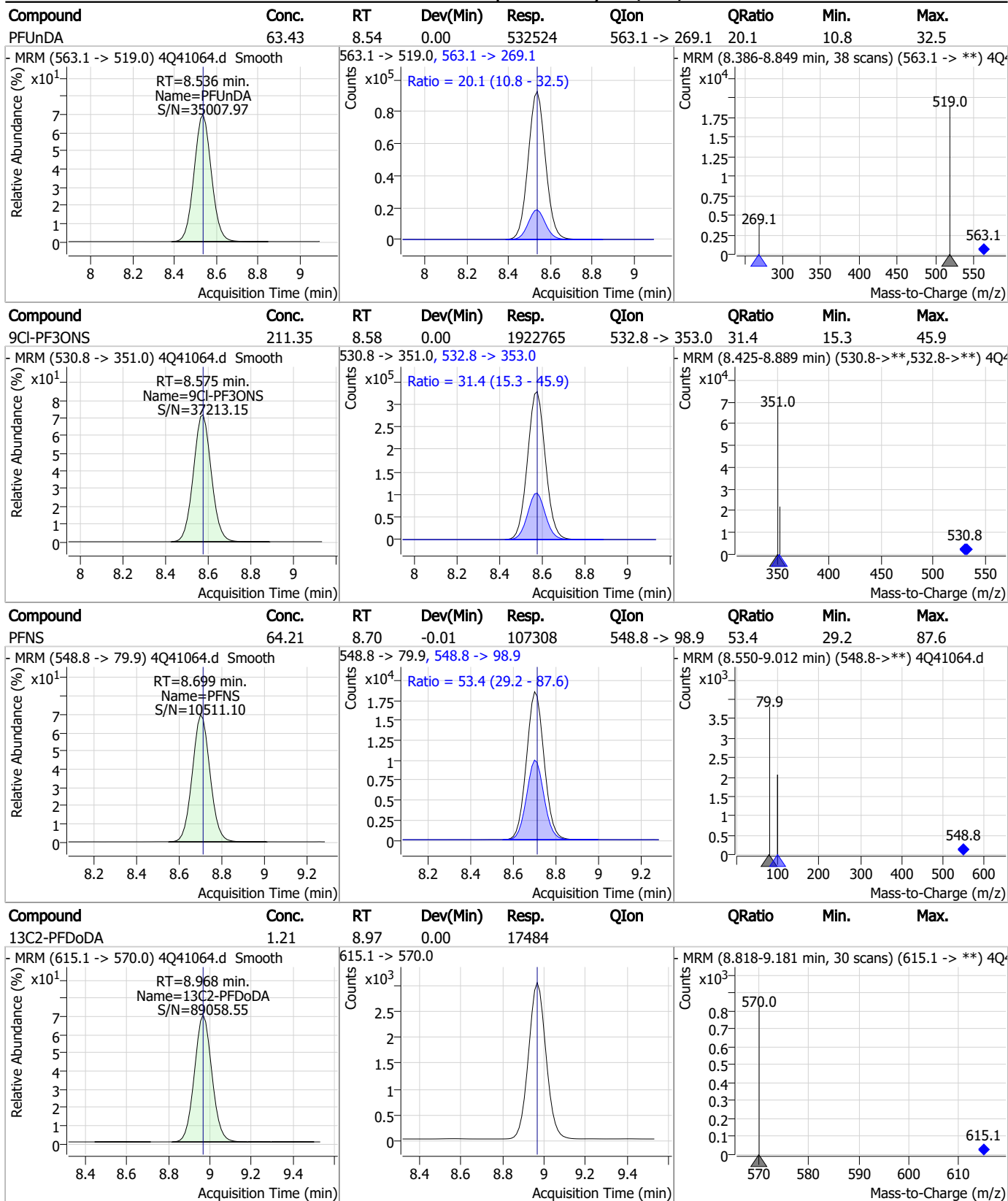


Perfluorinated Compounds by LC/MS/MS



7.6.9
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Perfluorinated Compounds by LC/MS/MS



7.6.9

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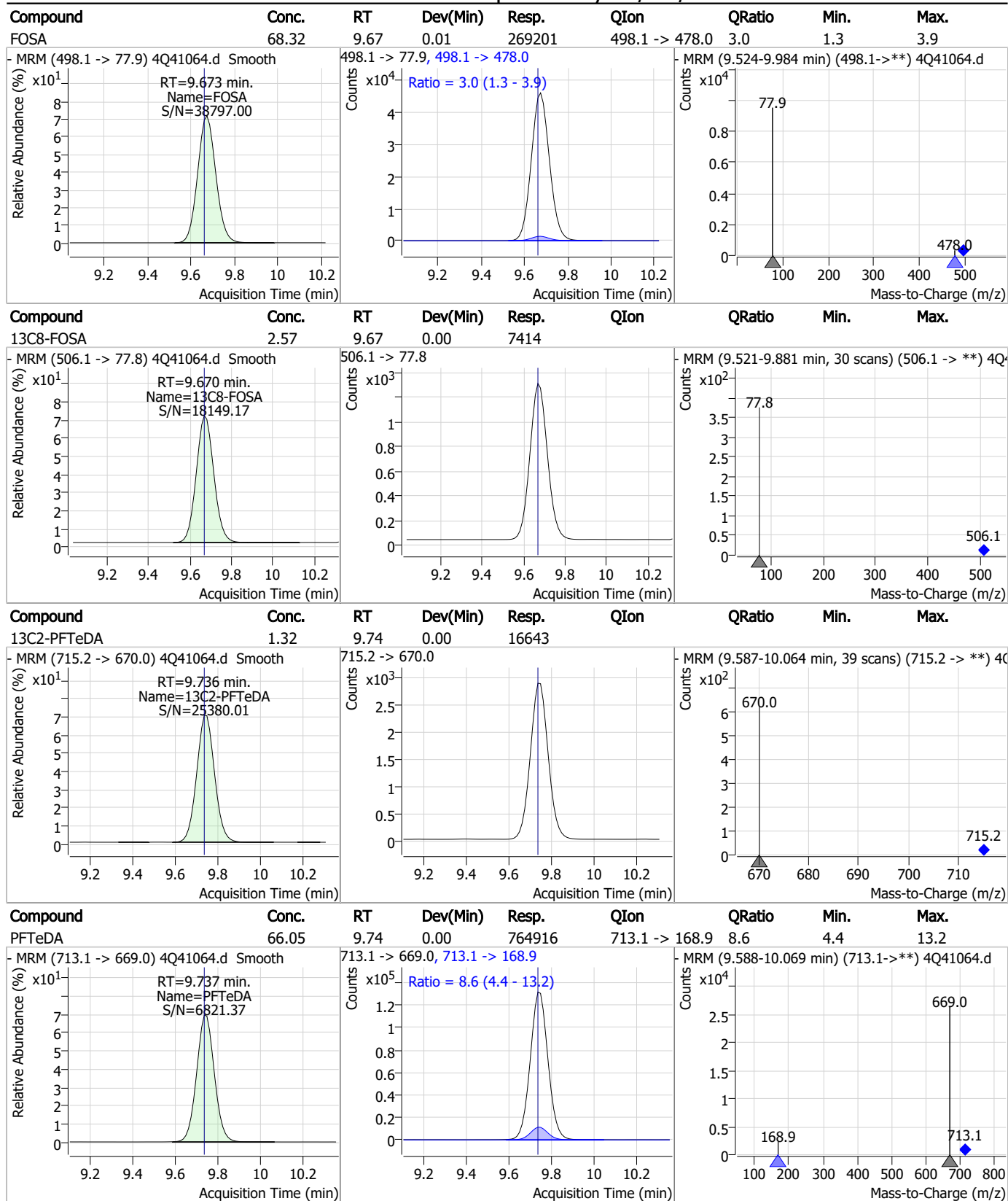
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	70.47	8.97	0.00	835102	613.1 -> 319.0	15.8	8.9	26.6
PFDS	69.38	9.13	0.00	134102	599.0 -> 98.8	48.5	24.4	73.1
PFTrDA	70.55	9.37	0.00	1036899	663.0 -> 168.9	10.8	5.1	15.2
11CI-PF3OUds	244.68	9.42	0.00	1835737	632.9 -> 452.9	31.1	15.3	45.9

7.6.9

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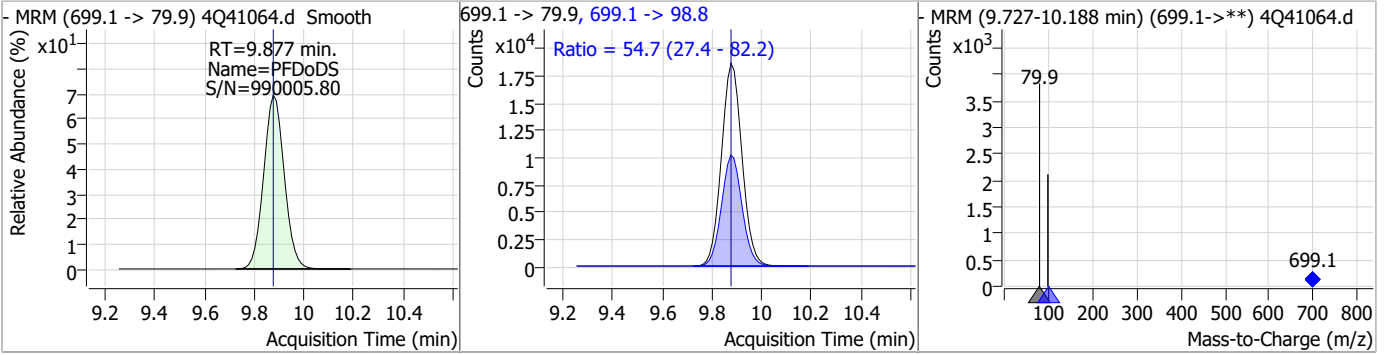
Perfluorinated Compounds by LC/MS/MS



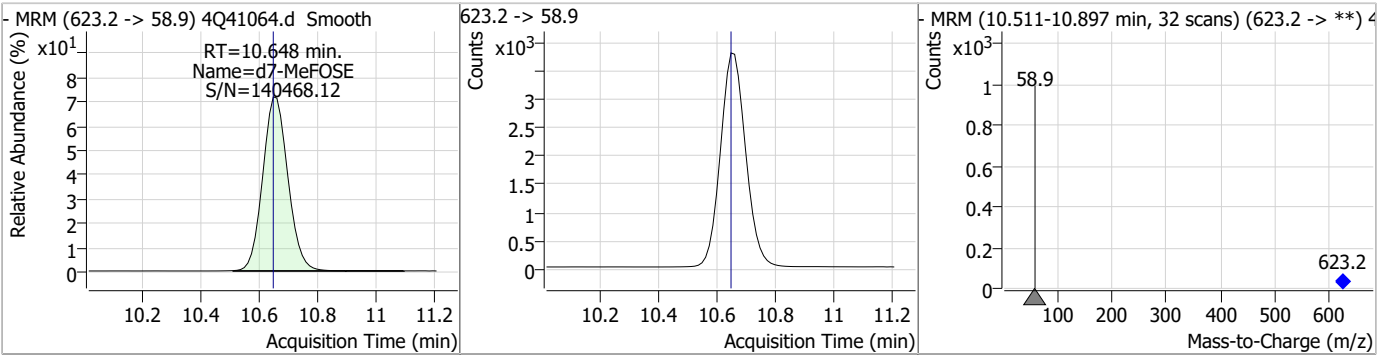
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Perfluorinated Compounds by LC/MS/MS

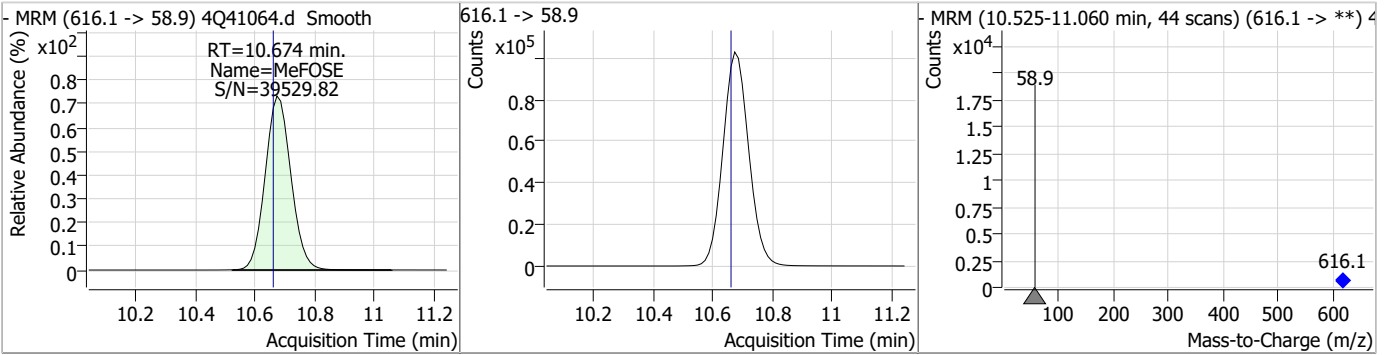
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	69.45	9.88	0.00	107280	699.1 -> 98.8	54.7	27.4	82.2



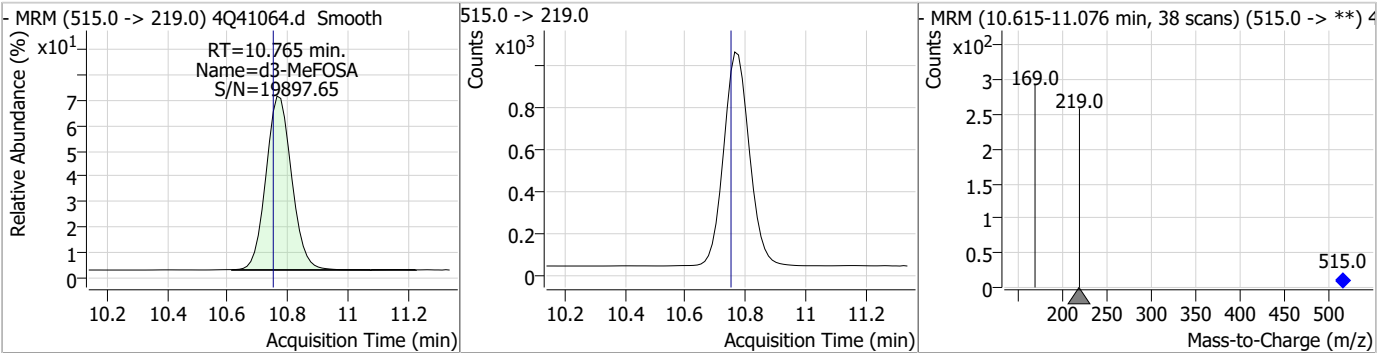
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.81	10.65	0.00	22634				



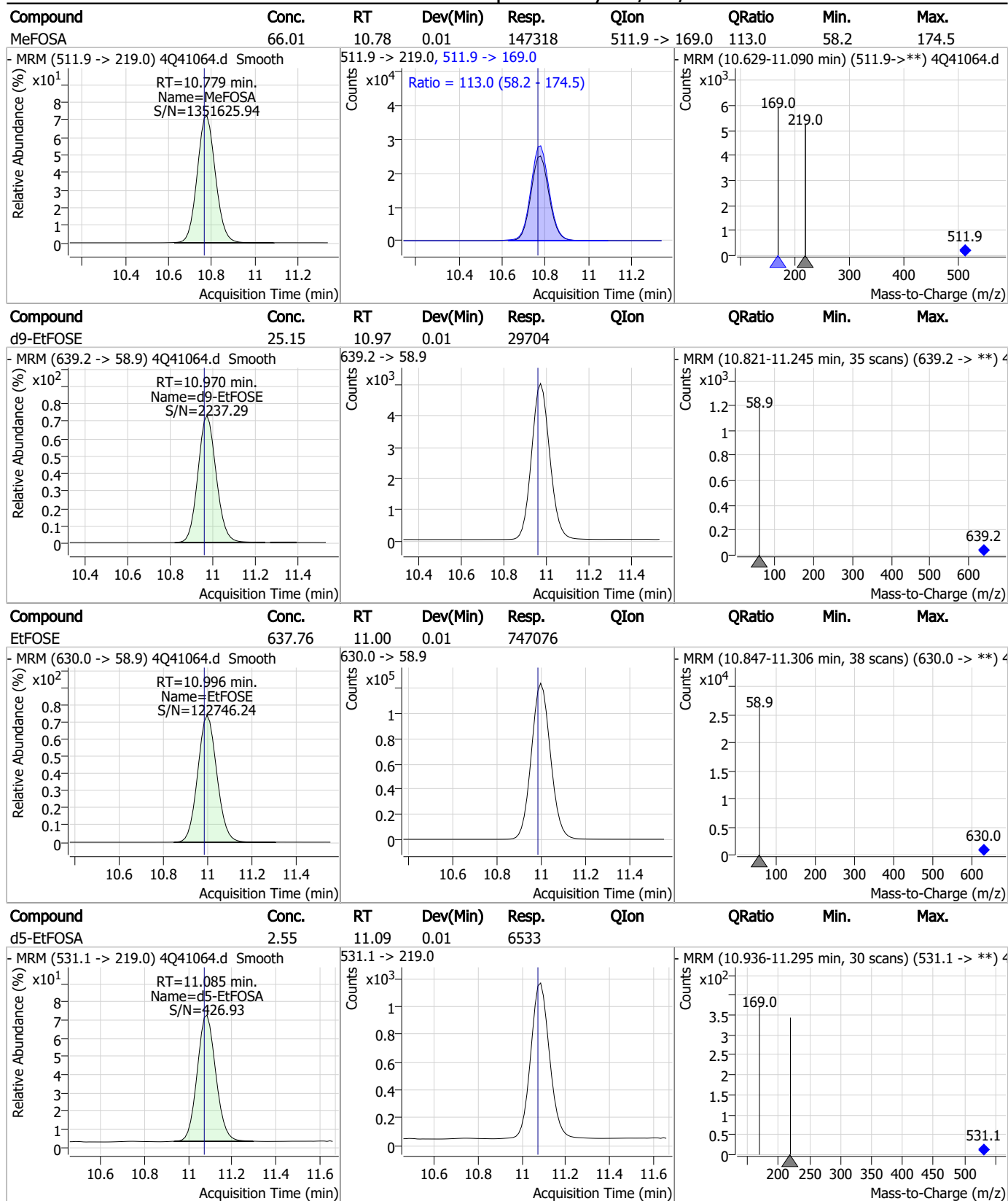
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	651.83	10.67	0.01	619232				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.71	10.76	0.01	6066				



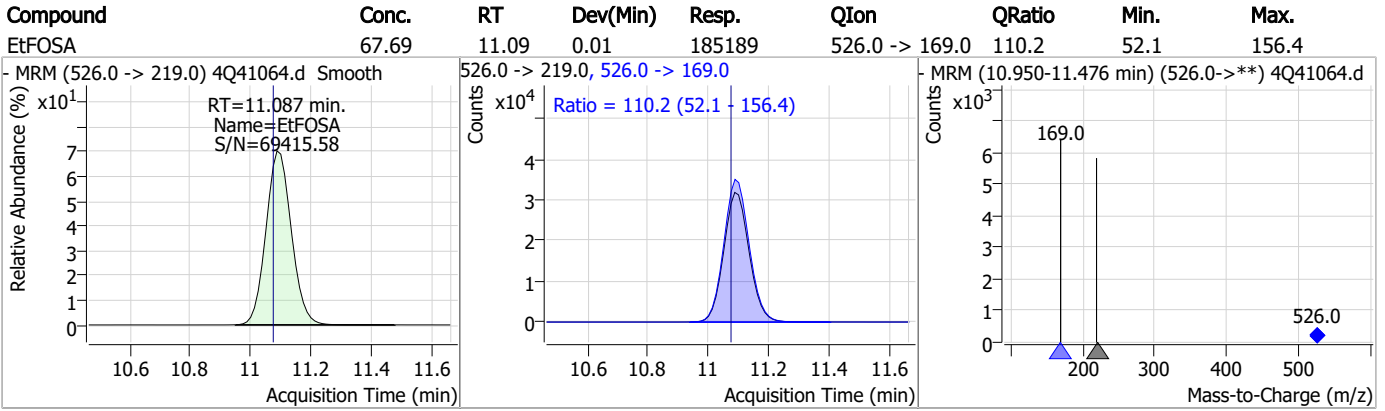
Perfluorinated Compounds by LC/MS/MS



7.6.9
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Perfluorinated Compounds by LC/MS/MS



7.6.9

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Manual Integration Approval Summary

Sample Number: S4Q587-IC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41064.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 18:02 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.24	Split peak
EtFOSAA	2991-50-6		8.36	Split peak

7.6.9.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41066.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 6:30:14 PM
 Sample Name : icv587-20
 Vial : P1-B1
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	137416	10.00 µg/L	-0.013
M5-PFPeA	4.500	268.3 -> 223.0	74222	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	58832	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	33622	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	41309	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	17985	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	17321	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	21974	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	20403	1.25 µg/L	0.000
M2-PFTeDA	9.749	715.2 -> 670.0	17770	1.25 µg/L	0.012
M8-FOSA	9.670	506.1 -> 77.8	9000	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12399	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7053	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9551	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1487	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2431	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3808	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	20413	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	35084	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	16006	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	29243	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	35280	25.00 µg/L	0.012
M5-EtFOSA	11.073	531.1 -> 219.0	7803	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	6491	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	9663	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	83550	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	5108	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	49515	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16454	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	21181	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	53031	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1487	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2431	5.49 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.8%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3808	5.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.2%		
13C2-PFDoDA	8.968	615.1 -> 570.0	20403	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C2-PFTeDA	9.749	715.2 -> 670.0	17770	1.19 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C3-PFBS	5.501	302.1 -> 79.9	12399	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C3-PFHxS	7.179	402.1 -> 79.9	7053	2.46 µg/L	0.000

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7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C4-PFBA	3.139	216.8 -> 171.9	137416	9.93 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C4-PFHpA	6.417	367.1 -> 322.0	33622	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.546	318.0 -> 273.0	58832	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C5-PFPeA	4.500	268.3 -> 223.0	74222	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C6-PFDA	8.079	519.1 -> 474.1	17321	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C7-PFUnDA	8.536	570.0 -> 525.1	21974	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-FOSA	9.670	506.1 -> 77.8	9000	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOA	7.062	421.1 -> 376.0	41309	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-PFOS	8.230	507.1 -> 79.9	9551	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C9-PFNA	7.596	472.1 -> 427.0	17985	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSAA	8.136	573.2 -> 419.0	20413	4.80 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	35084	10.17 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
d3-MeFOSA	10.765	515.0 -> 219.0	6491	2.34 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
d5-EtFOSAA	8.346	589.2 -> 419.0	16006	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
d7-MeFOSE	10.648	623.2 -> 58.9	29243	24.82 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
d9-EtFOSE	10.970	639.2 -> 58.9	35280	24.11 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
d5-EtFOSA	11.073	531.1 -> 219.0	7803	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	22735	9.60 µg/L	98
		327.1 -> 80.9	9007		
6:2FTS	6.836	427.1 -> 407.0	20896	9.60 µg/L	99
		427.1 -> 80.9	7836		
8:2FTS	7.866	527.1 -> 507.0	19734	10.03 µg/L	98
		527.1 -> 80.8	5426		
EtFOSAA	8.360	584.2 -> 419.1	6417	2.36 µg/L	m 85
		584.2 -> 526.0	3142		
FOSA	9.673	498.1 -> 77.9	11375	2.38 µg/L	99
		498.1 -> 478.0	334		
MeFOSAA	8.149	570.1 -> 419.0	7083	2.54 µg/L	m 85
		570.1 -> 483.0	1451		
PFBA	3.132	212.8 -> 168.9	32073	9.85 µg/L	100
PFBS	5.502	298.7 -> 79.9	10787	2.17 µg/L	96
		298.7 -> 98.8	3890		
PFDA	8.079	512.9 -> 469.0	29512	2.50 µg/L	93
		512.9 -> 219.0	5274		
PFDODA	8.968	613.1 -> 569.0	35063	2.54 µg/L	95
		613.1 -> 319.0	5451		
PFDS	9.133	599.0 -> 79.9	5299	2.23 µg/L	94

7.6.10
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.417	599.0 -> 98.8	2795	2.44	µg/L	100
		363.1 -> 319.0	43605			
PFHpS	7.736	363.1 -> 169.0	7311	2.36	µg/L	91
		449.0 -> 79.9	6937			
PFHxA	5.549	449.0 -> 98.9	3330	2.33	µg/L	99
		313.0 -> 269.0	47352			
PFHxS	7.180	313.0 -> 118.9	1383	2.18	µg/L	98
		398.7 -> 79.9	6342			
PFNA	7.596	398.7 -> 98.9	3625	2.36	µg/L	98
		463.0 -> 419.0	25803			
PFNS	8.699	463.0 -> 219.0	6347	2.39	µg/L	94
		548.8 -> 79.9	4915			
PFOA	7.063	548.8 -> 98.9	2632	2.35	µg/L	100
		413.0 -> 369.0	45814			
PFOS	8.231	413.0 -> 169.0	8975	2.14	µg/L	79
		498.9 -> 79.9	9239			
PFPeA	4.502	498.9 -> 98.8	3968	5.12	µg/L	100
		263.0 -> 219.0	89346			
PFPeS	6.470	349.1 -> 79.9	4942	2.21	µg/L	96
		349.1 -> 98.9	2489			
PFTeDA	9.750	713.1 -> 669.0	30326	2.45	µg/L	100
		713.1 -> 168.9	2696			
PFTrDA	9.379	663.0 -> 619.0	42832	2.50	µg/L	98
		663.0 -> 168.9	4689			
PFUnDA	8.536	563.1 -> 519.0	28159	2.31	µg/L	100
		563.1 -> 269.1	6136			
11CI-PF3OUdS	9.430	630.9 -> 450.9	85325	9.38	µg/L	100
		632.9 -> 452.9	26008			
9CI-PF3ONS	8.575	530.8 -> 351.0	109883	9.96	µg/L	100
		532.8 -> 353.0	33519			
ADONA	6.668	376.9 -> 250.9	192228	9.51	µg/L	98
		376.9 -> 84.8	34722			
HFPO-DA	5.878	284.9 -> 168.9	28716	9.97	µg/L	96
		284.9 -> 184.9	3041			
3:3FTCA	4.142	241.0 -> 177.0	12483	12.14	µg/L	97
		241.0 -> 117.0	944			
5:3FTCA	6.333	341.0 -> 237.1	195128	63.32	µg/L	100
		341.0 -> 217.0	138404			
7:3FTCA	7.723	441.0 -> 316.9	79112	63.79	µg/L	99
		441.0 -> 336.9	183942			
EtFOSA	11.087	526.0 -> 219.0	7941	2.43	µg/L	98
		526.0 -> 169.0	8440			
EtFOSE	10.996	630.0 -> 58.9	34625	24.89	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	6010	2.52	µg/L	96
		511.9 -> 169.0	7280			
MeFOSE	10.674	616.1 -> 58.9	30154	24.57	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	4113	2.17	µg/L	95
		699.1 -> 98.8	2405			
NFDHA	5.453	295.0 -> 201.0	3987	5.16	µg/L	100
		295.0 -> 84.9	979			
PFMBA	4.867	279.0 -> 85.1	46303	4.99	µg/L	100
PFMPA	3.715	229.0 -> 84.9	36570	4.97	µg/L	100
PFEESA	5.971	314.8 -> 134.9	58940	4.29	µg/L	99
		314.8 -> 82.9	1890			

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



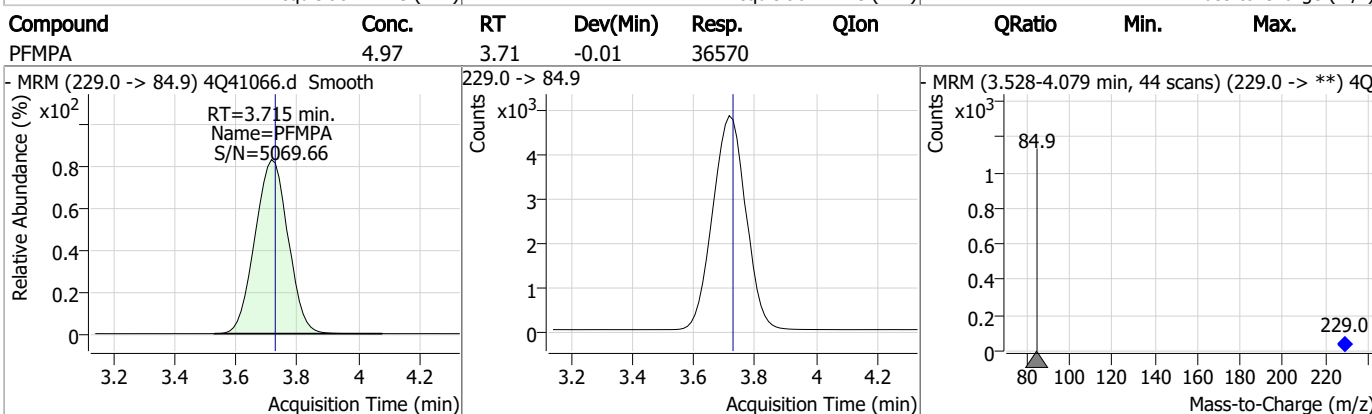
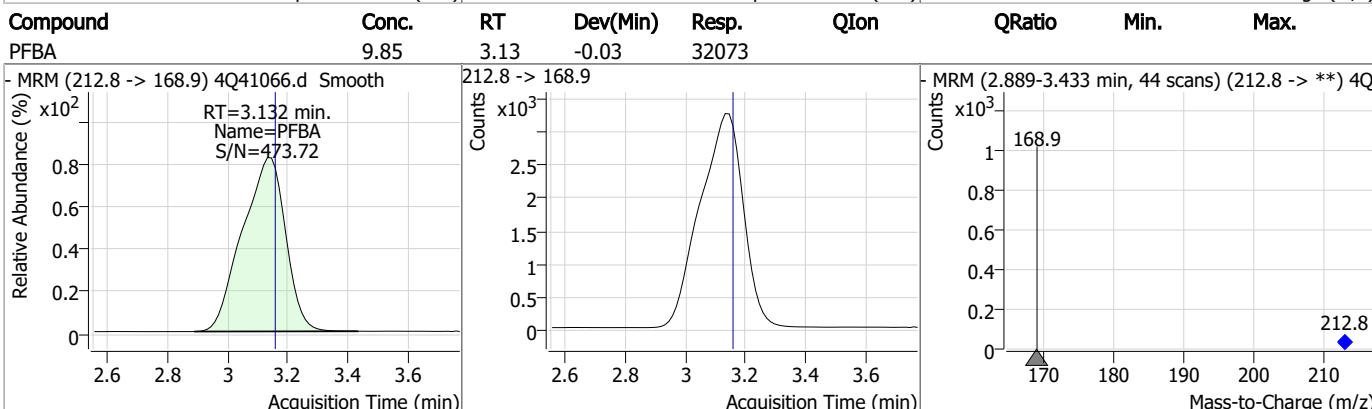
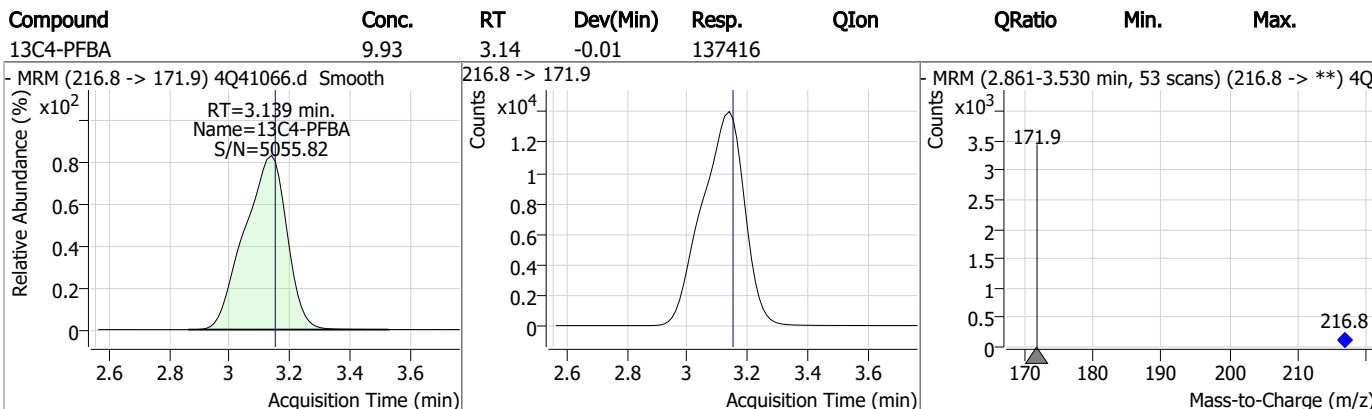
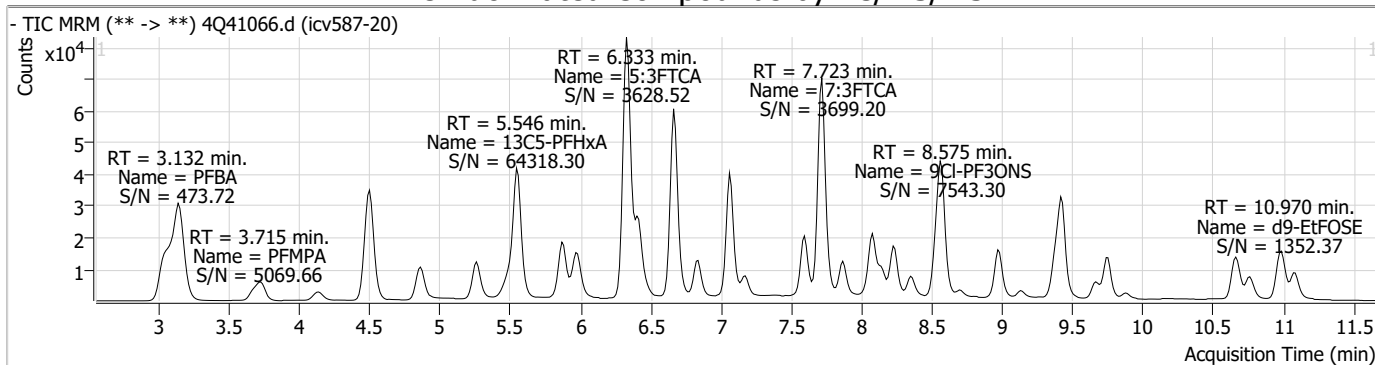
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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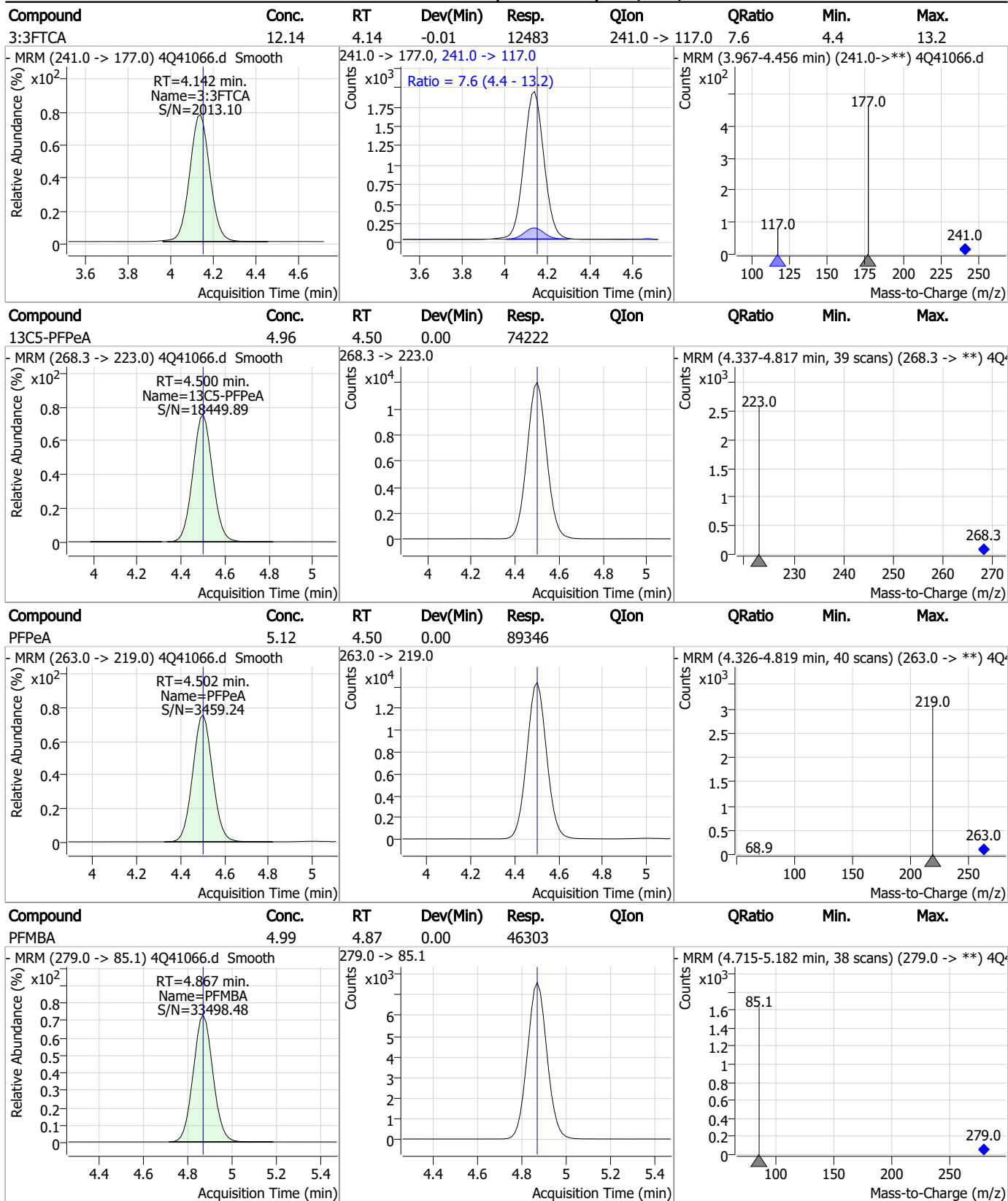
7.6.10

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Perfluorinated Compounds by LC/MS/MS

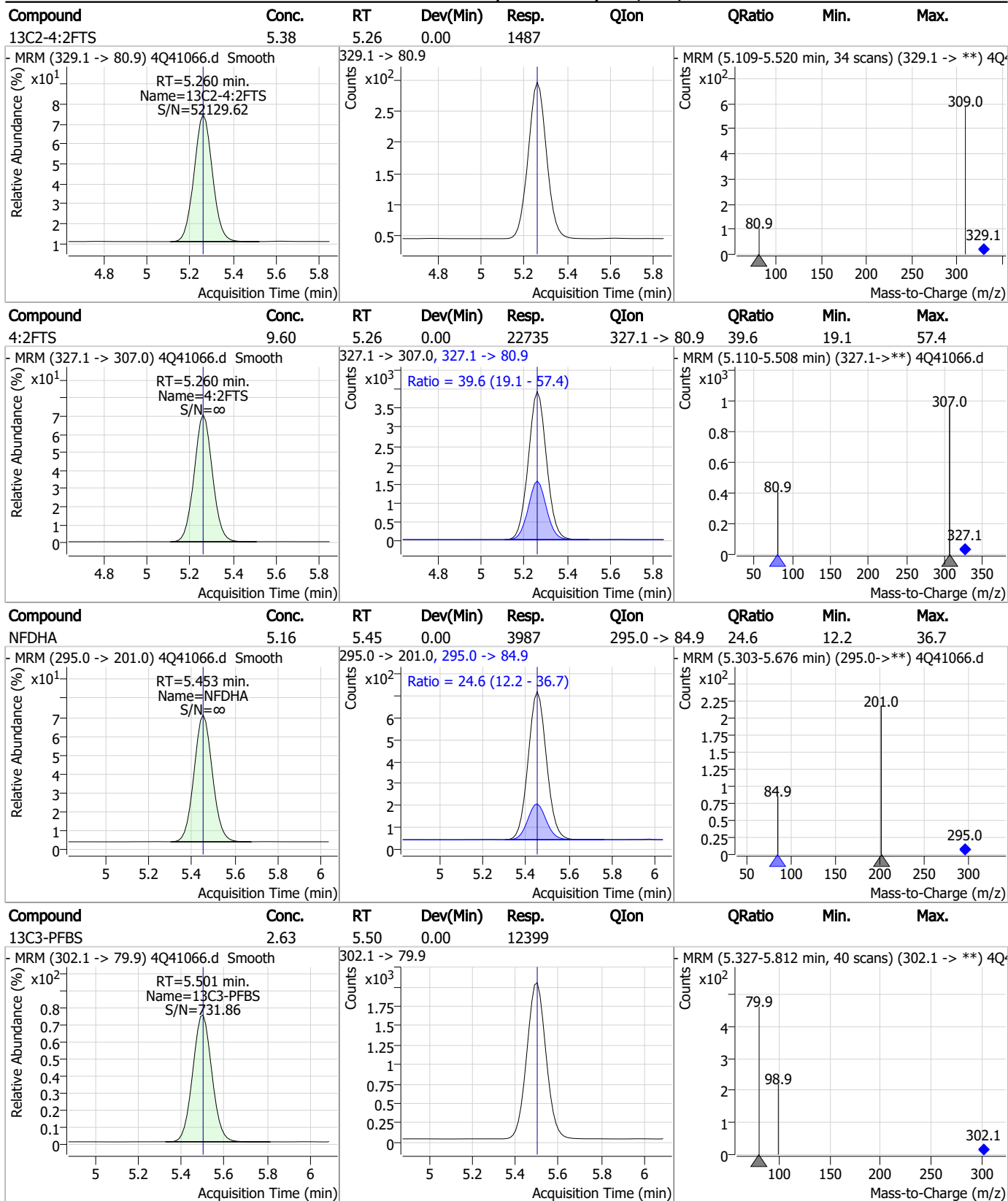


Perfluorinated Compounds by LC/MS/MS



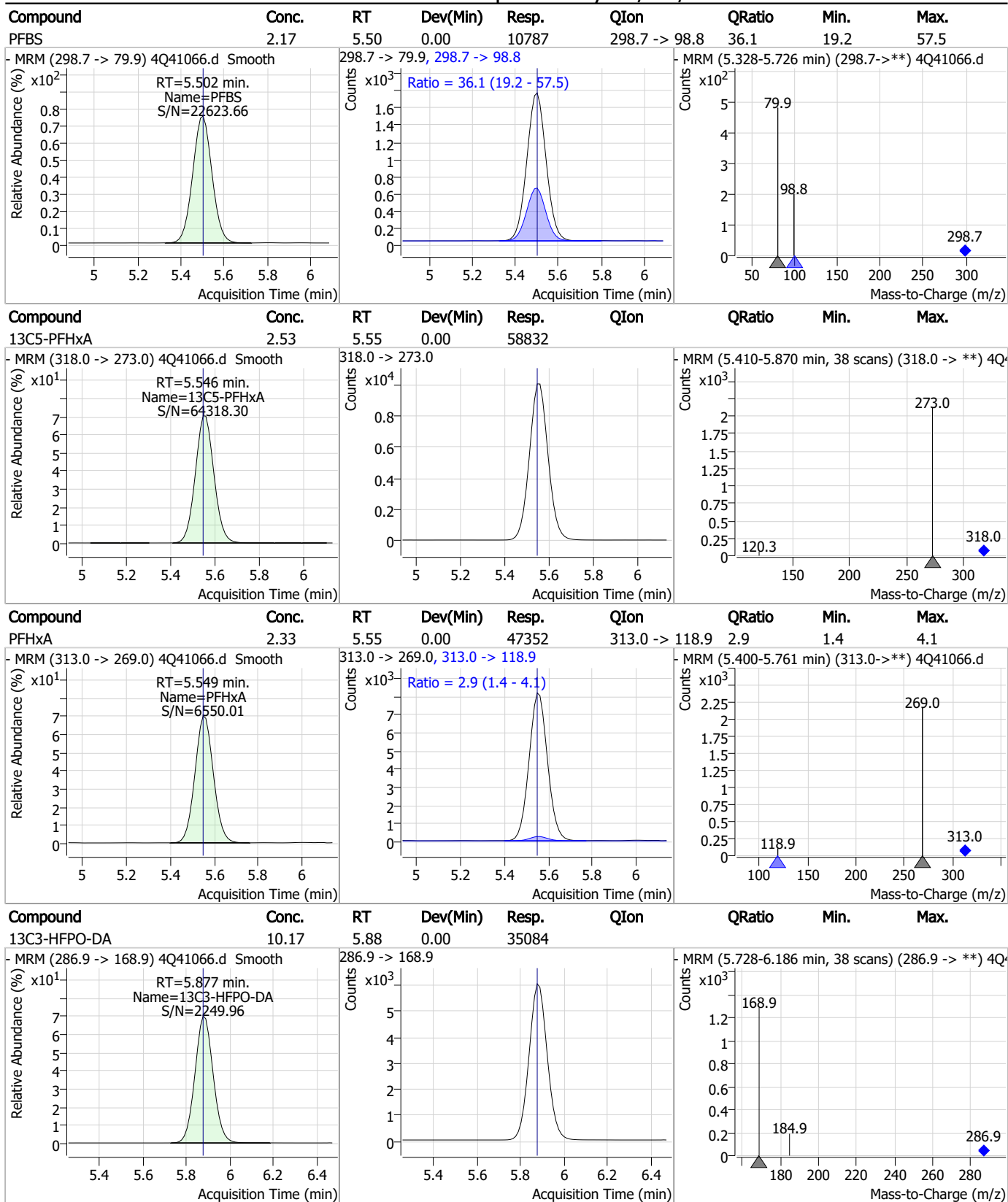
7.6-10
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Perfluorinated Compounds by LC/MS/MS



7.6.10
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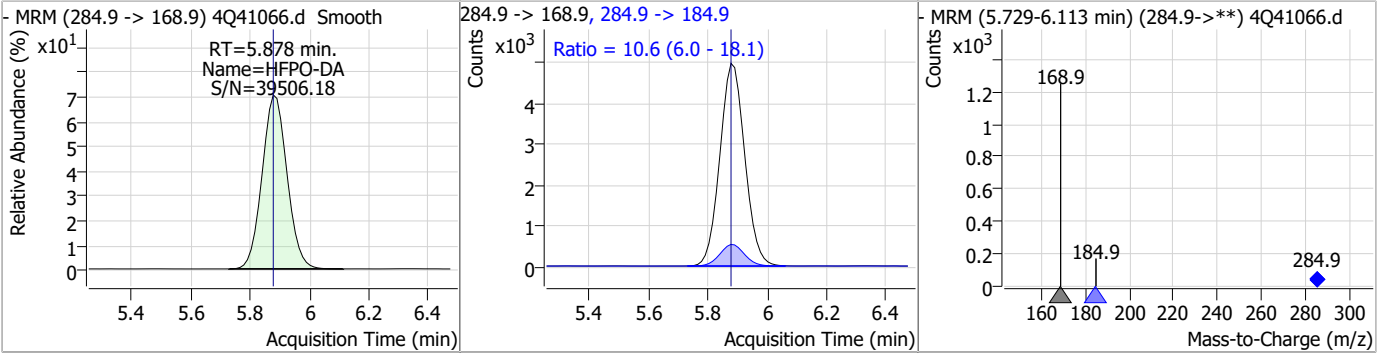
Perfluorinated Compounds by LC/MS/MS



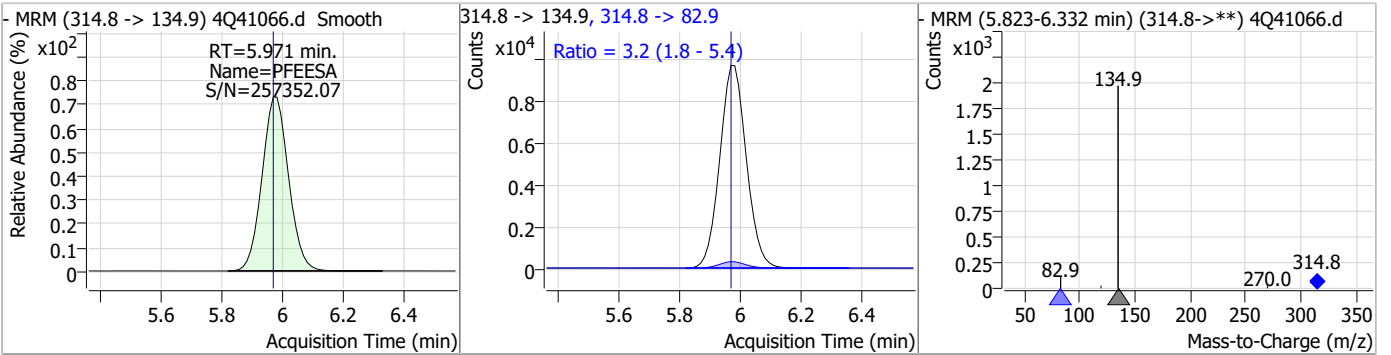
7.6.10
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Perfluorinated Compounds by LC/MS/MS

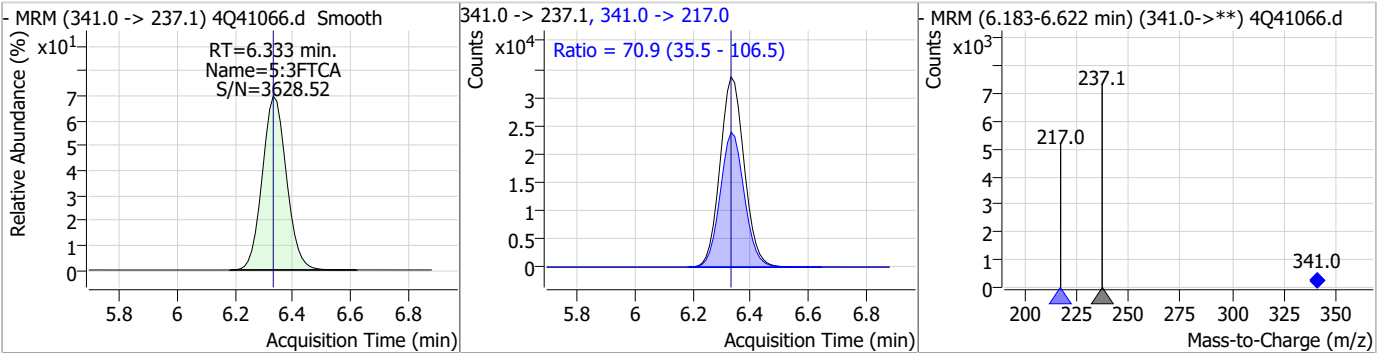
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.97	5.88	0.00	28716	284.9 -> 184.9	10.6	6.0	18.1



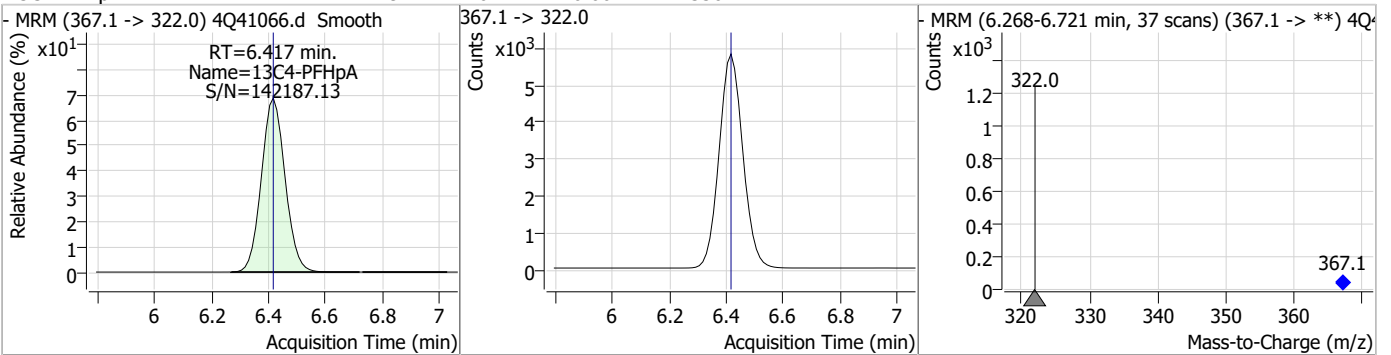
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.29	5.97	0.00	58940	314.8 -> 82.9	3.2	1.8	5.4



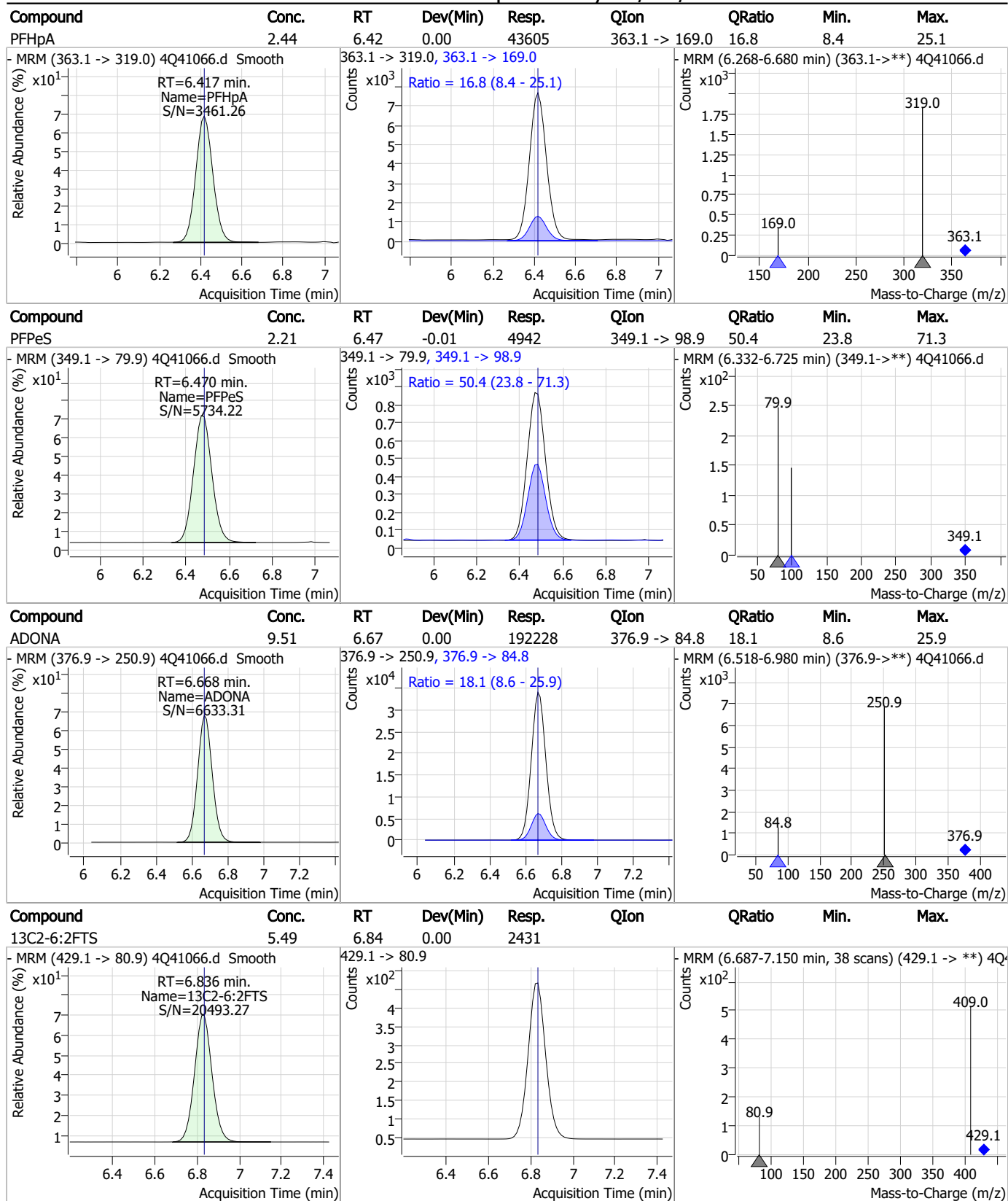
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	63.32	6.33	0.00	195128	341.0 -> 217.0	70.9	35.5	106.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.49	6.42	0.00	33622	367.1 -> 322.0	-	-	-



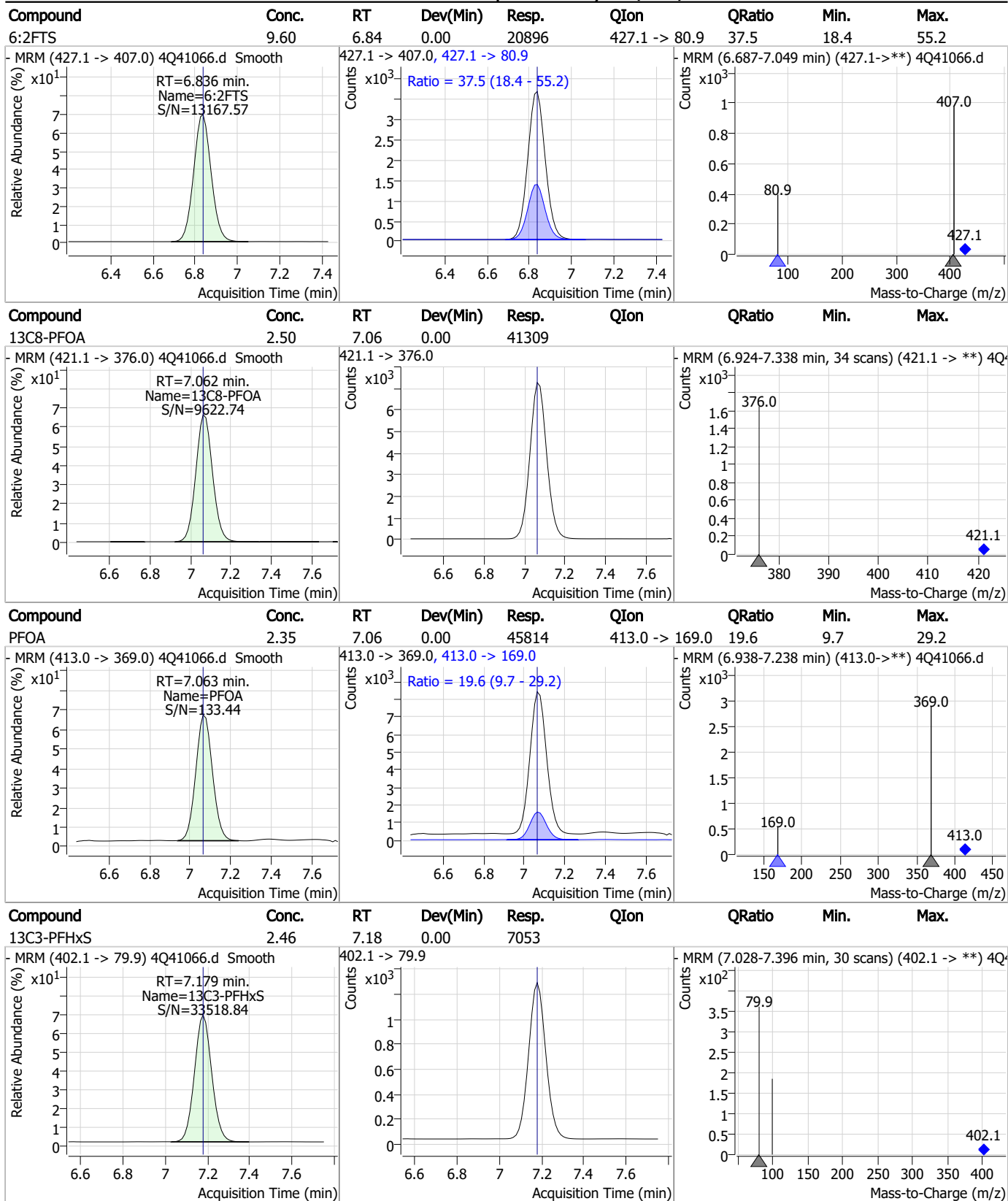
Perfluorinated Compounds by LC/MS/MS



7.6.10 7

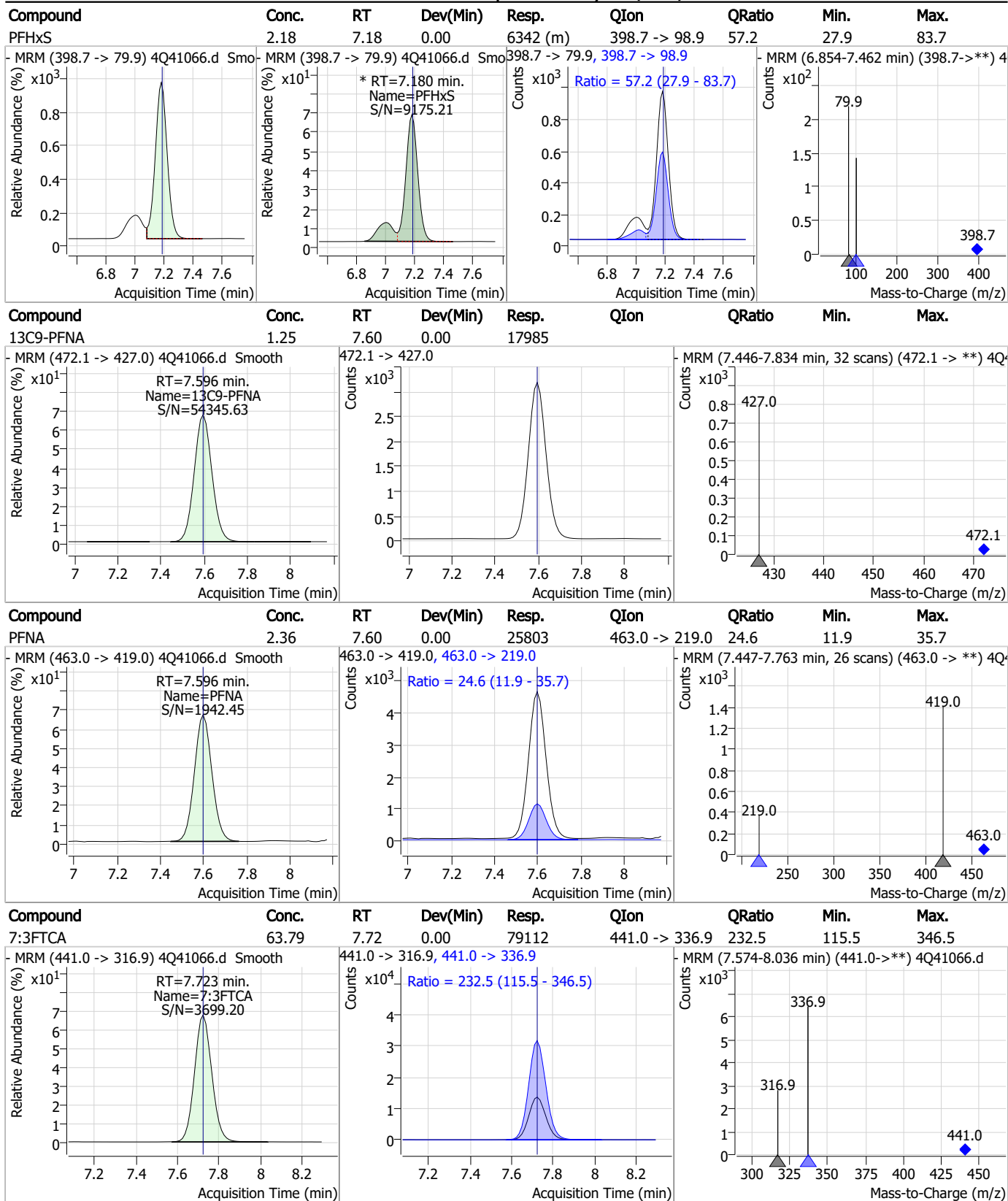


Perfluorinated Compounds by LC/MS/MS



7.6.10 7

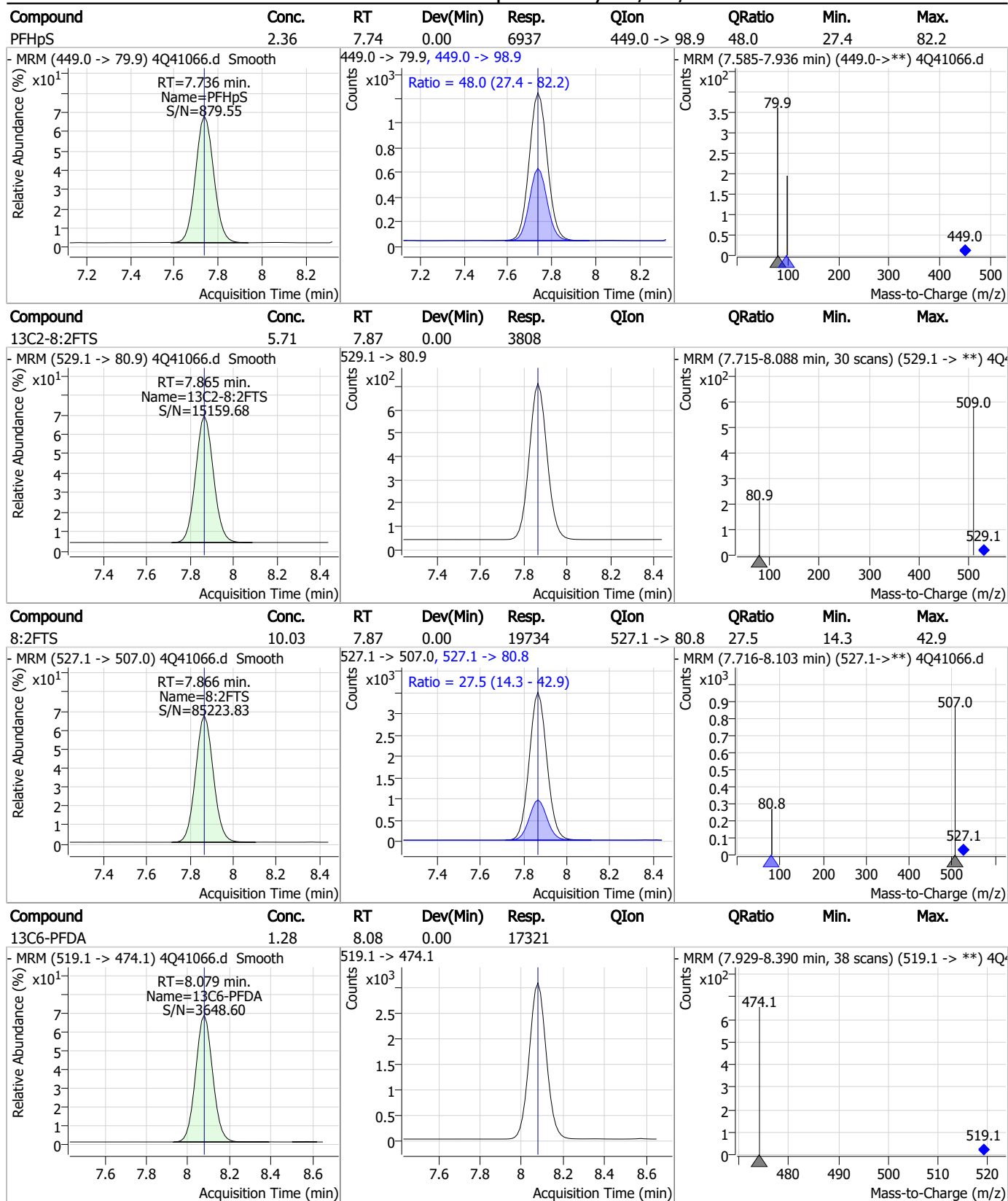
Perfluorinated Compounds by LC/MS/MS



7.6.10
7

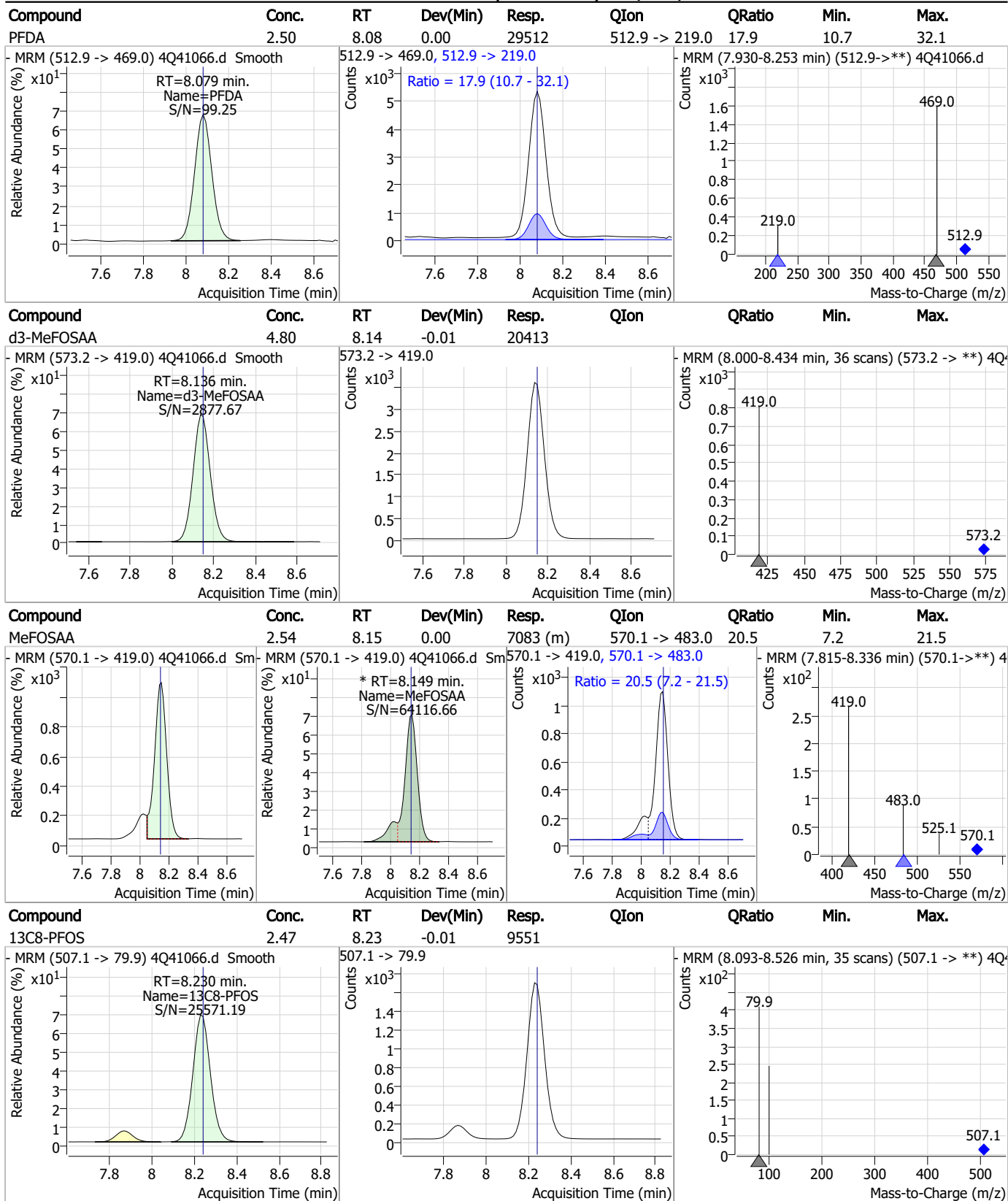


Perfluorinated Compounds by LC/MS/MS



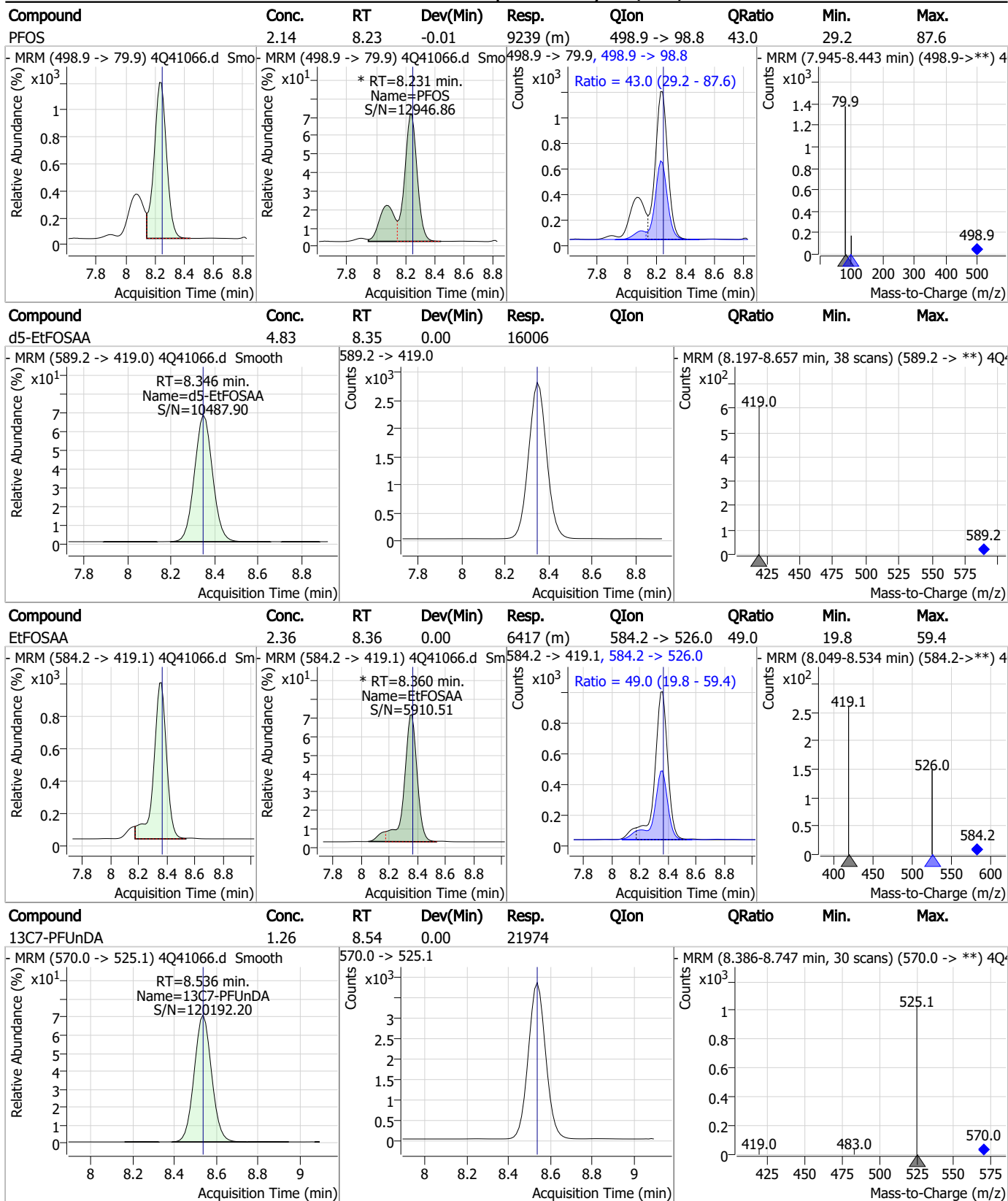
7.6-10
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Perfluorinated Compounds by LC/MS/MS



7.6.10
7

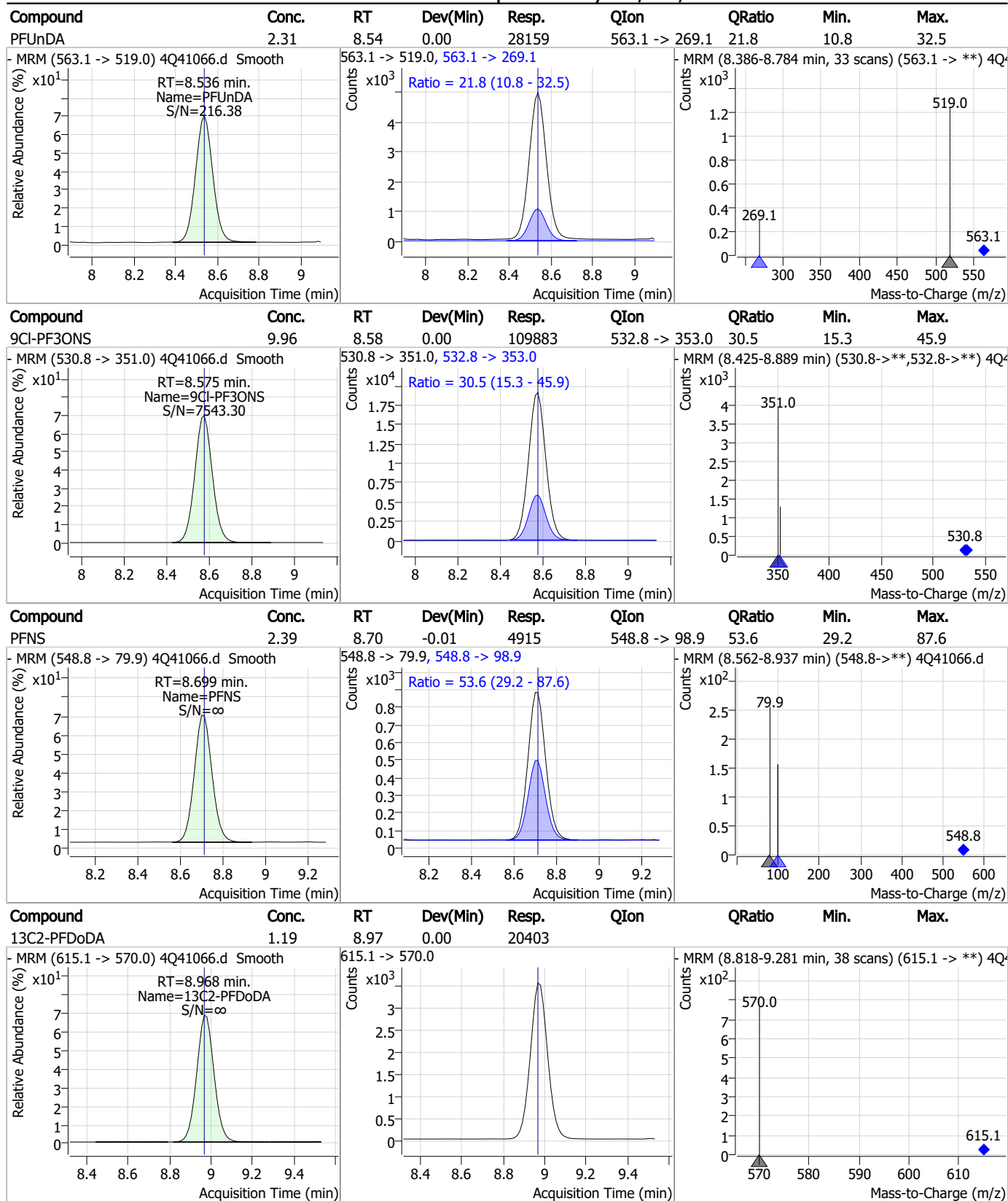
Perfluorinated Compounds by LC/MS/MS



7.6.10
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Perfluorinated Compounds by LC/MS/MS

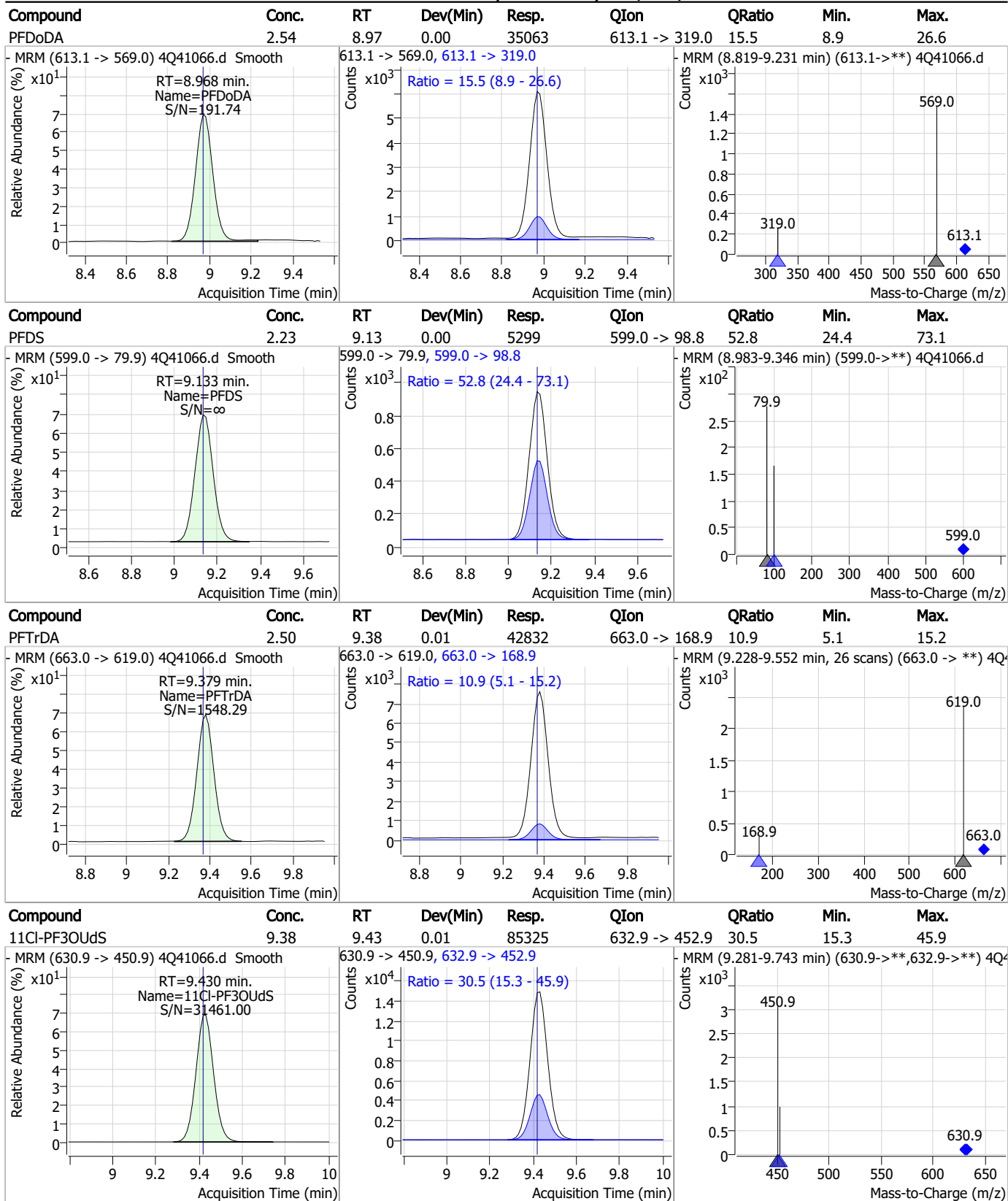


7.6.10

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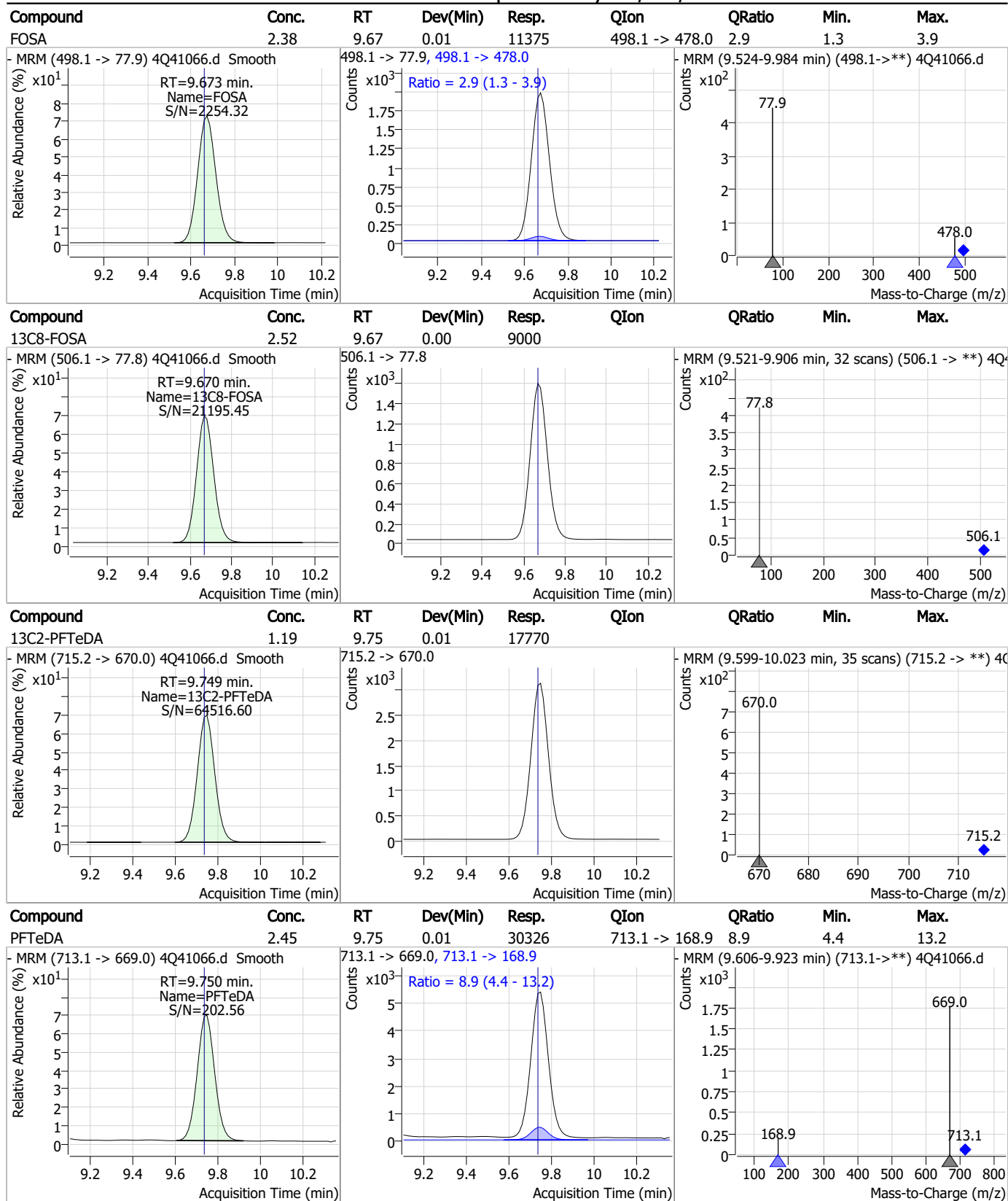


Perfluorinated Compounds by LC/MS/MS



7.6.10 7

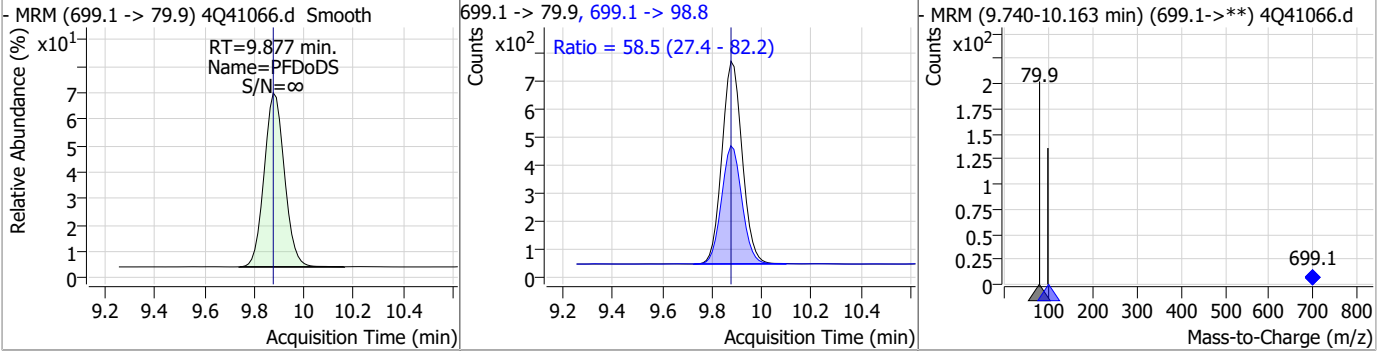
Perfluorinated Compounds by LC/MS/MS



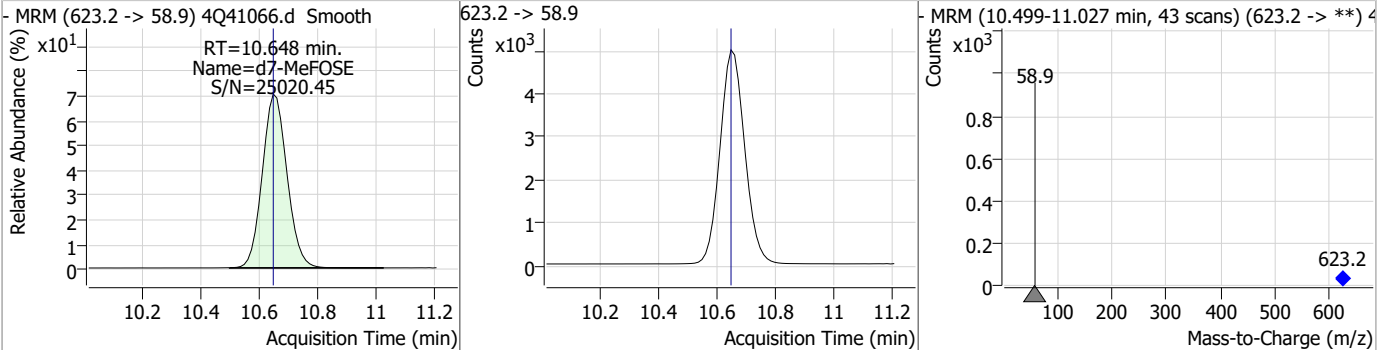
7.6.10 7

Perfluorinated Compounds by LC/MS/MS

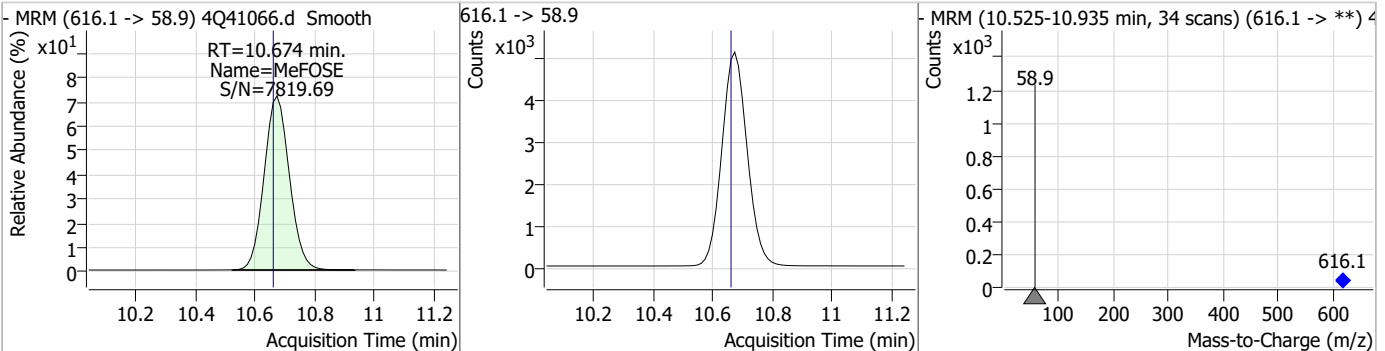
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.17	9.88	0.00	4113	699.1 -> 98.8	58.5	27.4	82.2



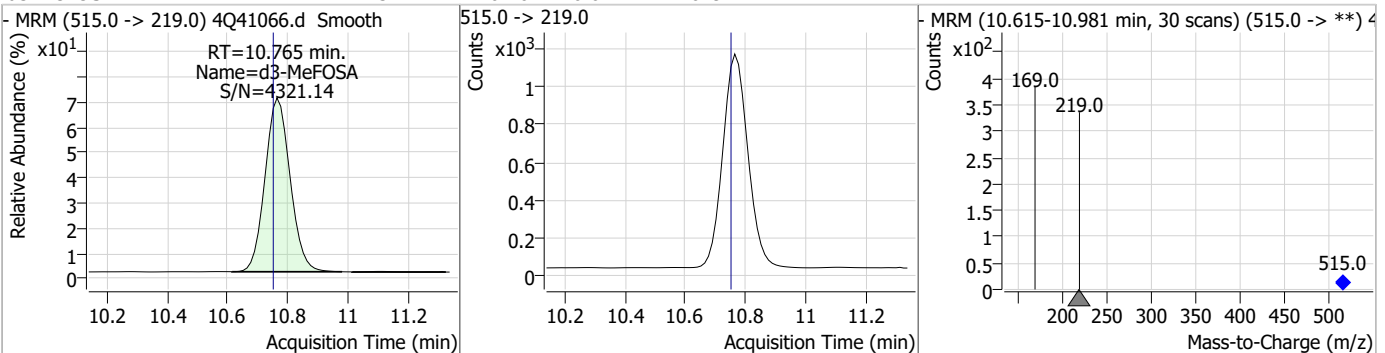
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.82	10.65	0.00	29243				



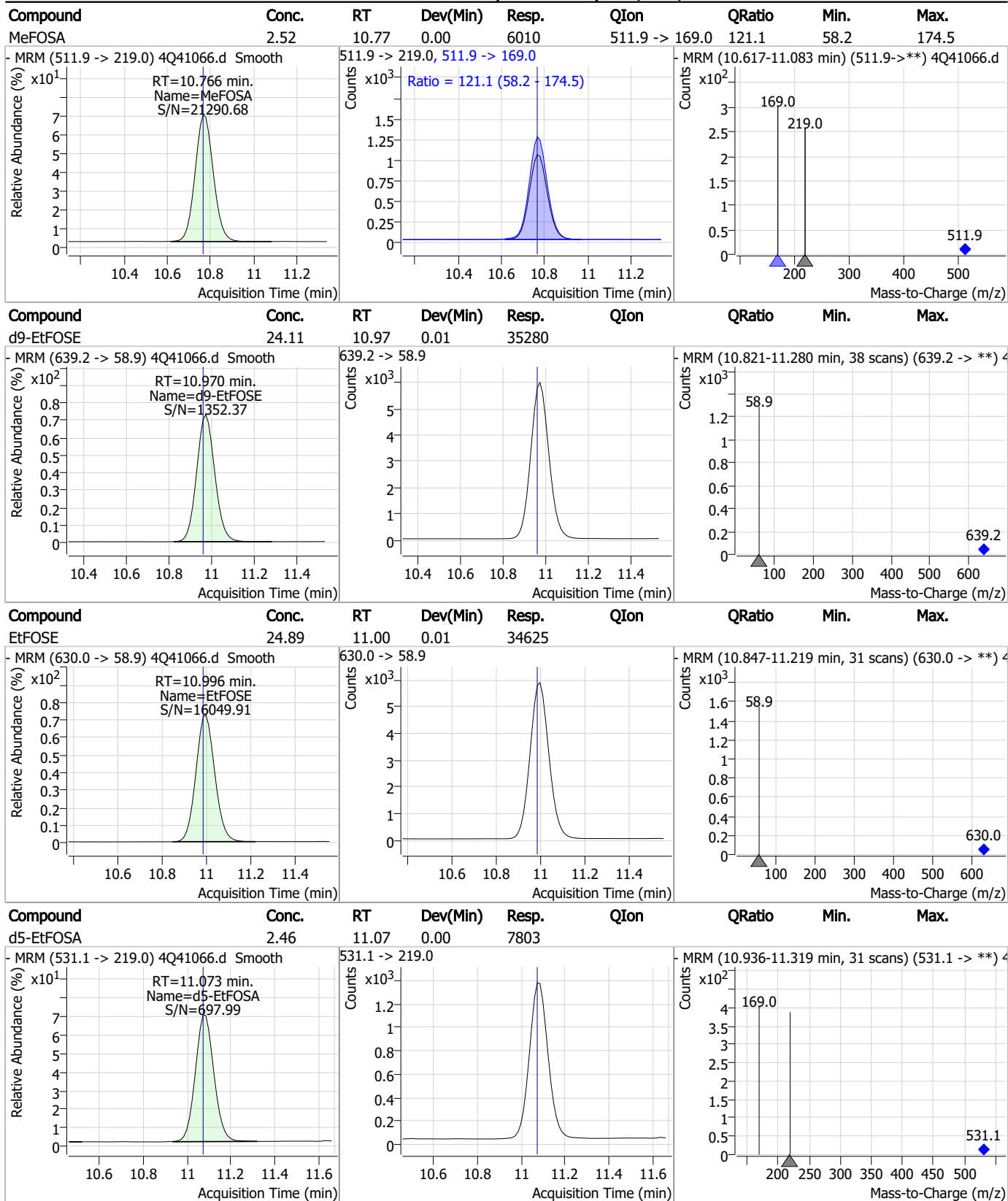
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	24.57	10.67	0.01	30154				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.34	10.76	0.01	6491				

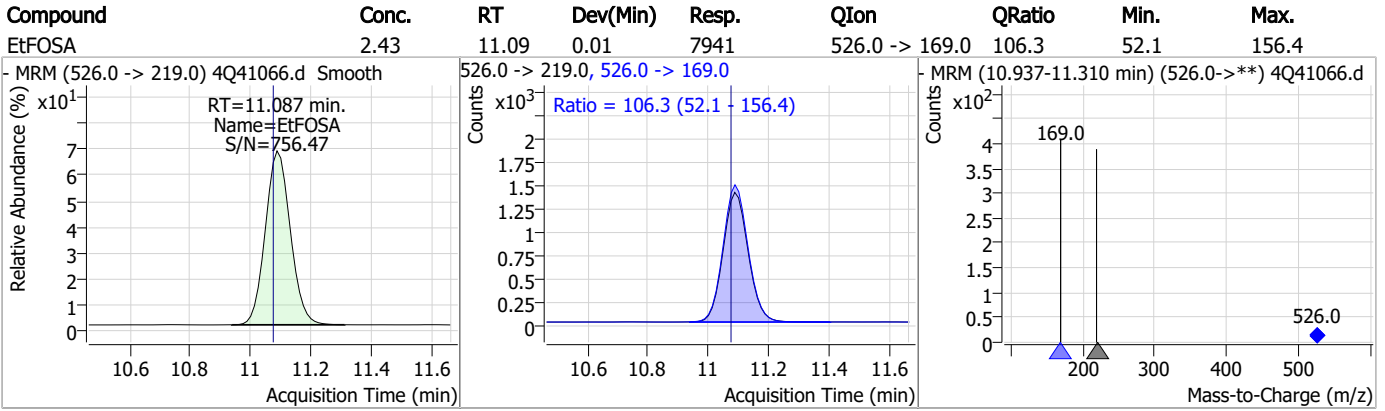


Perfluorinated Compounds by LC/MS/MS



7.6.10
7

Perfluorinated Compounds by LC/MS/MS



7.6.10
7



Manual Integration Approval Summary

Sample Number: S4Q587-ICV587 Method: EPA DRAFT 1633
Lab FileID: 4Q41066.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 18:30 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.36	Split peak

7.6.10.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41067.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 6:44:17 PM
 Sample Name : icv587-20
 Vial : P1-B2
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	135769	10.00 µg/L	-0.012
M5-PFPeA	4.500	268.3 -> 223.0	70428	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	54613	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	32136	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	39147	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	16838	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	14389	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	19942	1.25 µg/L	-0.012
M2-PFDoDA	8.968	615.1 -> 570.0	19596	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	17890	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	8017	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	11225	2.50 µg/L	-0.012
M3-PFHxS	7.179	402.1 -> 79.9	7044	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	8707	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1210	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2389	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3723	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	19113	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	34338	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	14876	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	27545	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	33531	25.00 µg/L	0.012
M5-EtFOSA	11.073	531.1 -> 219.0	7124	2.50 µg/L	0.000
M3-MeFOSA	10.765	515.0 -> 219.0	6371	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	9153	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	82019	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	4929	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	46479	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	15082	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	19951	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	51348	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1210	4.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.7%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2389	5.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.8%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3723	5.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.7%		
13C2-PFDoDA	8.968	615.1 -> 570.0	19596	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-PFTeDA	9.736	715.2 -> 670.0	17890	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFBS	5.489	302.1 -> 79.9	11225	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C3-PFHxS	7.179	402.1 -> 79.9	7044	2.55 µg/L	0.000

7.6.11
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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 = 101.9%	
13C4-PFBA	3.139	216.8 -> 171.9	135769	9.99 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.417	367.1 -> 322.0	32136	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFHxA	5.546	318.0 -> 273.0	54613	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C5-PFPeA	4.500	268.3 -> 223.0	70428	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C6-PFDA	8.079	519.1 -> 474.1	14389	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.7%	
13C7-PFUnDA	8.523	570.0 -> 525.1	19942	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-FOSA	9.670	506.1 -> 77.8	8017	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C8-PFOA	7.062	421.1 -> 376.0	39147	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOS	8.230	507.1 -> 79.9	8707	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C9-PFNA	7.596	472.1 -> 427.0	16838	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.2%	
d3-MeFOSAA	8.136	573.2 -> 419.0	19113	4.74 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	34338	10.28 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d3-MeFOSA	10.765	515.0 -> 219.0	6371	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
d5-EtFOSAA	8.346	589.2 -> 419.0	14876	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
d7-MeFOSE	10.648	623.2 -> 58.9	27545	24.68 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d9-EtFOSE	10.970	639.2 -> 58.9	33531	24.19 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
d5-EtFOSA	11.073	531.1 -> 219.0	7124	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	49177	25.54 µg/L	98
		327.1 -> 80.9	18155		
6:2FTS	6.836	427.1 -> 407.0	44176	20.66 µg/L	99
		427.1 -> 80.9	16108		
8:2FTS	7.866	527.1 -> 507.0	41995	21.83 µg/L	99
		527.1 -> 80.8	11785		
EtFOSAA	8.347	584.2 -> 419.1	53665	21.23 µg/L	m 94
		584.2 -> 526.0	23324		
FOSA	9.661	498.1 -> 77.9	94332	22.14 µg/L	99
		498.1 -> 478.0	2832		
MeFOSAA	8.137	570.1 -> 419.0	59465	22.79 µg/L	m 88
		570.1 -> 483.0	11419		
PFBA	3.146	212.8 -> 168.9	66568	20.69 µg/L	100
PFBS	5.502	298.7 -> 79.9	105906	23.59 µg/L	97
		298.7 -> 98.8	38937		
PFDA	8.079	512.9 -> 469.0	230143	23.43 µg/L	98
		512.9 -> 219.0	47209		
PFDoDA	8.968	613.1 -> 569.0	253961	19.12 µg/L	96
		613.1 -> 319.0	40510		
PFDS	9.133	599.0 -> 79.9	47915	22.11 µg/L	100

7.6.11
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	23318			
PFHpA	6.417	363.1 -> 319.0	373389	21.84	µg/L	98
		363.1 -> 169.0	65060			
PFHpS	7.736	449.0 -> 79.9	59755	22.33	µg/L	96
		449.0 -> 98.9	30901			
PFHxA	5.549	313.0 -> 269.0	403159	21.36	µg/L	100
		313.0 -> 118.9	11351			
PFHxS	7.180	398.7 -> 79.9	61592	21.17	µg/L	m 98
		398.7 -> 98.9	33320			
PFNA	7.596	463.0 -> 419.0	236440	23.10	µg/L	98
		463.0 -> 219.0	58677			
PFNS	8.699	548.8 -> 79.9	42498	22.68	µg/L	96
		548.8 -> 98.9	23426			
PFOA	7.063	413.0 -> 369.0	392633	21.21	µg/L	100
		413.0 -> 169.0	76282			
PFOS	8.231	498.9 -> 79.9	66733	16.95	µg/L	m 80
		498.9 -> 98.8	29139			
PFPeA	4.502	263.0 -> 219.0	394627	23.83	µg/L	100
PFPeS	6.484	349.1 -> 79.9	51109	22.86	µg/L	98
		349.1 -> 98.9	23702			
PFTeDA	9.737	713.1 -> 669.0	296081	23.79	µg/L	99
		713.1 -> 168.9	24754			
PFTrDA	9.366	663.0 -> 619.0	341267	20.72	µg/L	98
		663.0 -> 168.9	36951			
PFUnDA	8.524	563.1 -> 519.0	219489	19.81	µg/L	97
		563.1 -> 269.1	43775			
11Cl-PF3OUdS	9.418	630.9 -> 450.9	212560	23.86	µg/L	100
		632.9 -> 452.9	65269			
9Cl-PF3ONS	8.563	530.8 -> 351.0	240007	22.22	µg/L	100
		532.8 -> 353.0	73544			
ADONA	6.668	376.9 -> 250.9	451893	22.84	µg/L	99
		376.9 -> 84.8	80489			
HFPO-DA	5.878	284.9 -> 168.9	62211	22.06	µg/L	100
		284.9 -> 184.9	7415			
3:3FTCA	4.142	241.0 -> 177.0	20597	21.12	µg/L	98
		241.0 -> 117.0	1654			
5:3FTCA	6.333	341.0 -> 237.1	64080	22.40	µg/L	100
		341.0 -> 217.0	45335			
7:3FTCA	7.723	441.0 -> 316.9	22641	19.67	µg/L	88
		441.0 -> 336.9	56769			
EtFOSA	11.087	526.0 -> 219.0	61350	20.56	µg/L	94
		526.0 -> 169.0	67573			
EtFOSE	10.996	630.0 -> 58.9	132565	100.25	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	49356	21.06	µg/L	96
		511.9 -> 169.0	55503			
MeFOSE	10.674	616.1 -> 58.9	106721	92.31	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	33306	19.23	µg/L	98
		699.1 -> 98.8	18727			
NFDHA	5.453	295.0 -> 201.0	16065	22.40	µg/L	94
		295.0 -> 84.9	3461			
PFMBA	4.867	279.0 -> 85.1	193420	21.99	µg/L	100
PFMPA	3.715	229.0 -> 84.9	154378	22.10	µg/L	100
PFEESA	5.971	314.8 -> 134.9	250682	19.65	µg/L	99
		314.8 -> 82.9	8101			

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



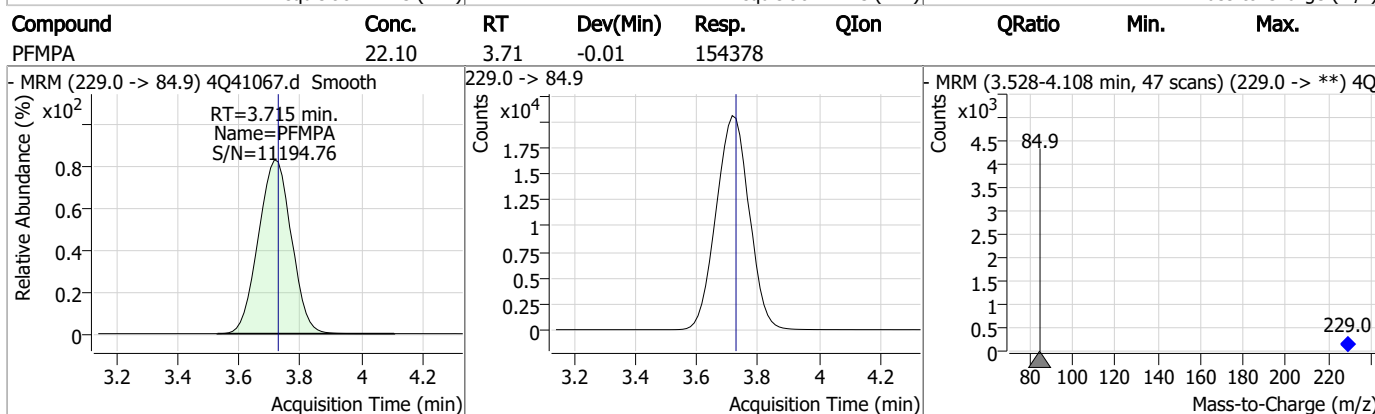
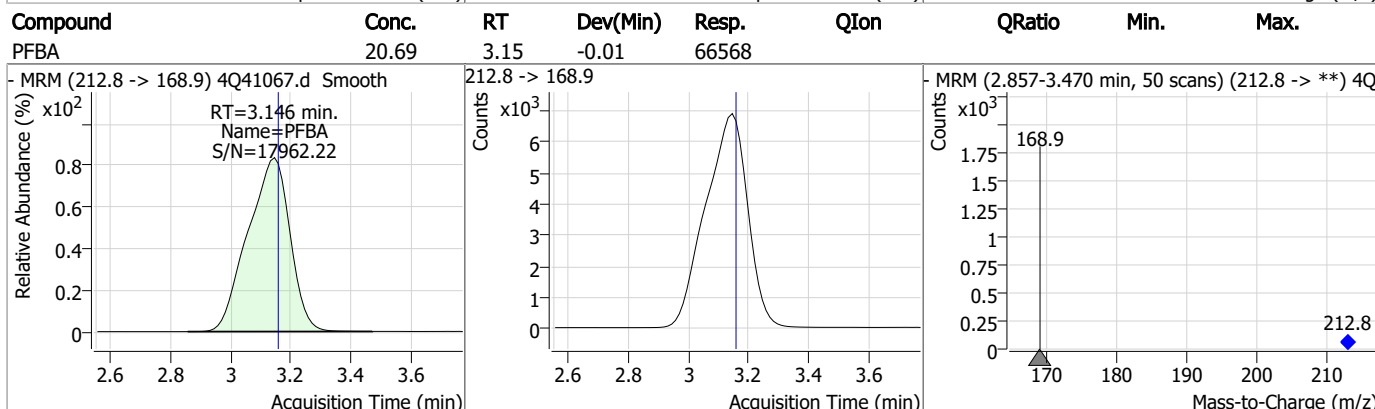
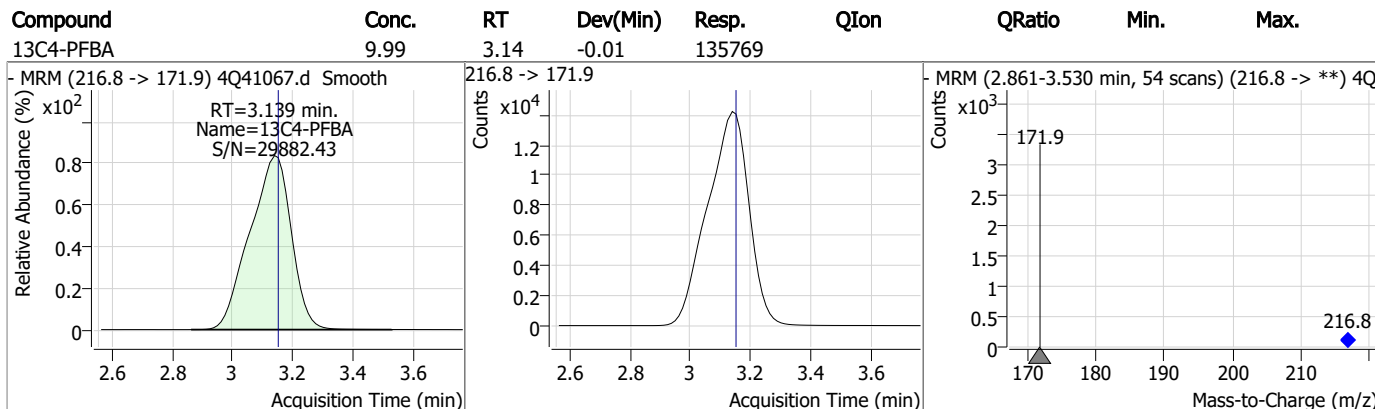
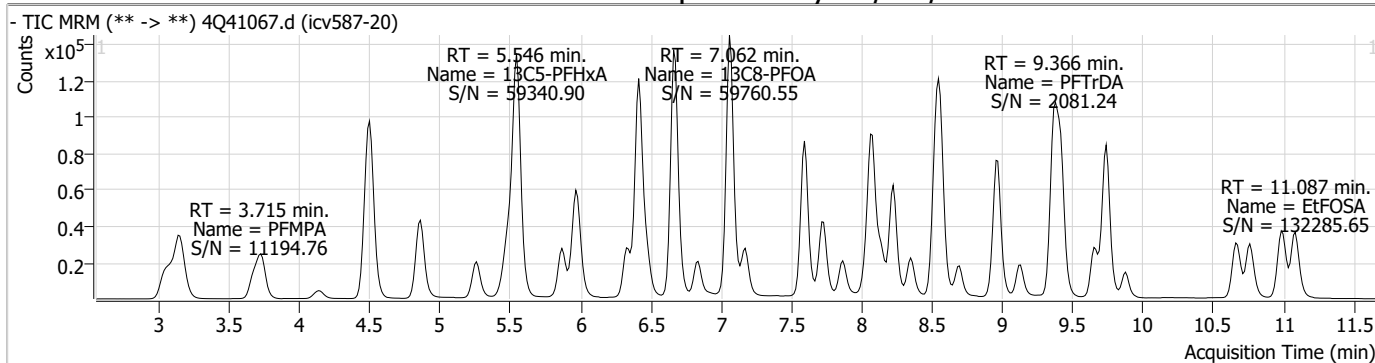
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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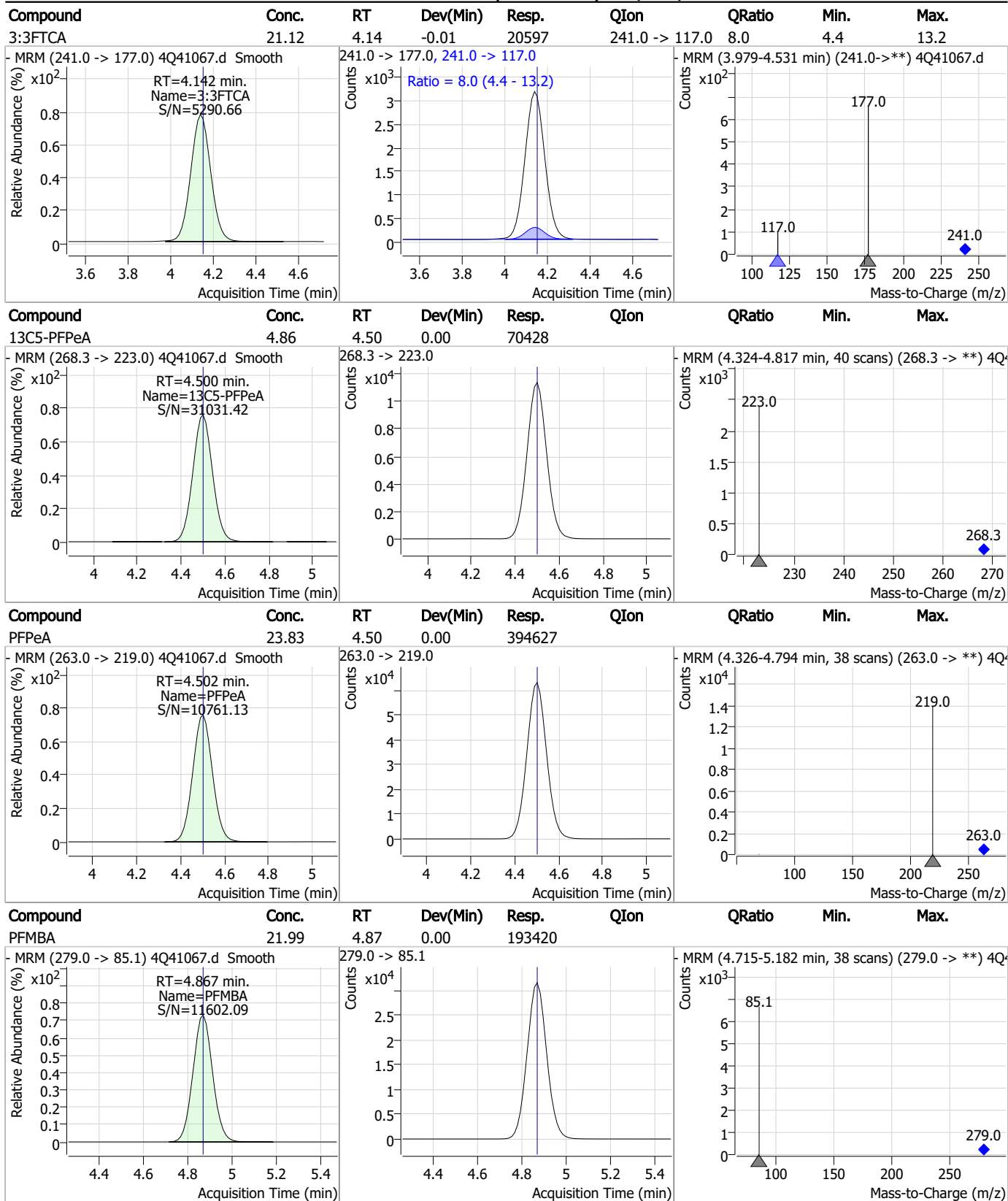
7.6.11

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Perfluorinated Compounds by LC/MS/MS



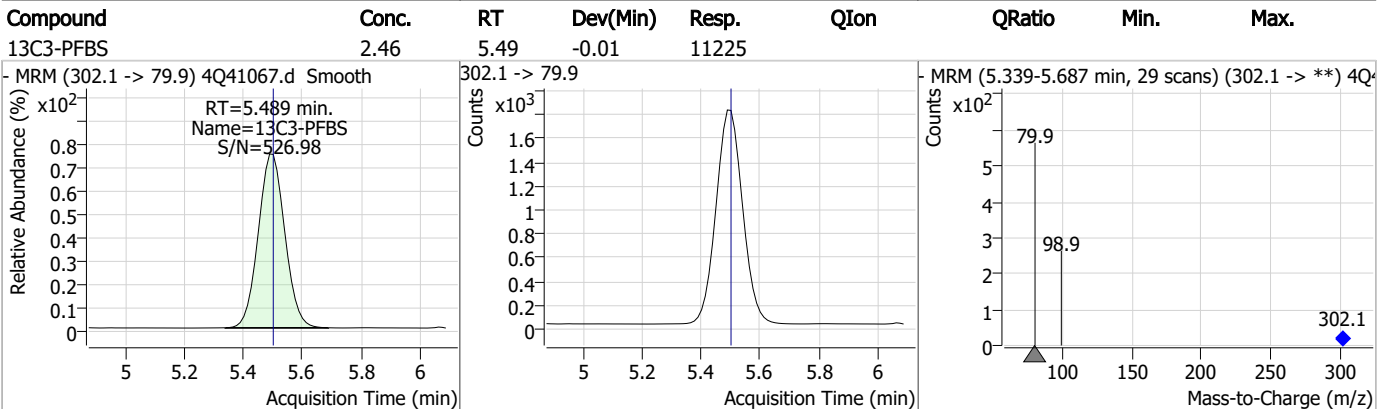
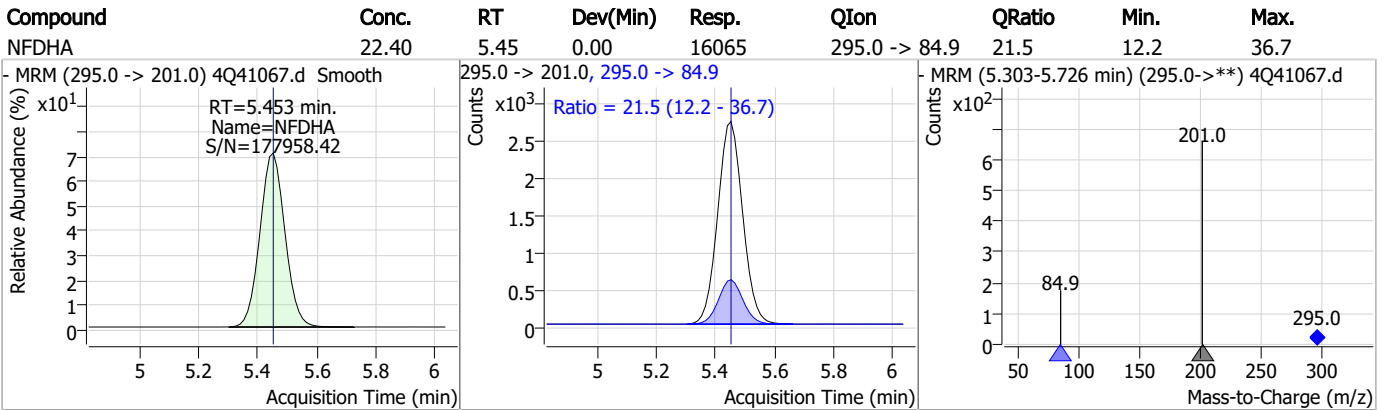
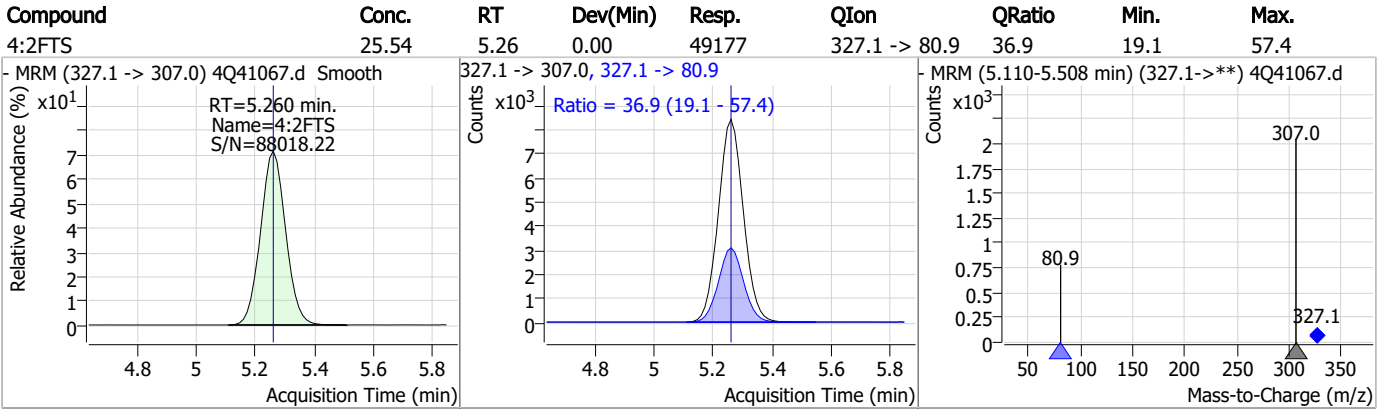
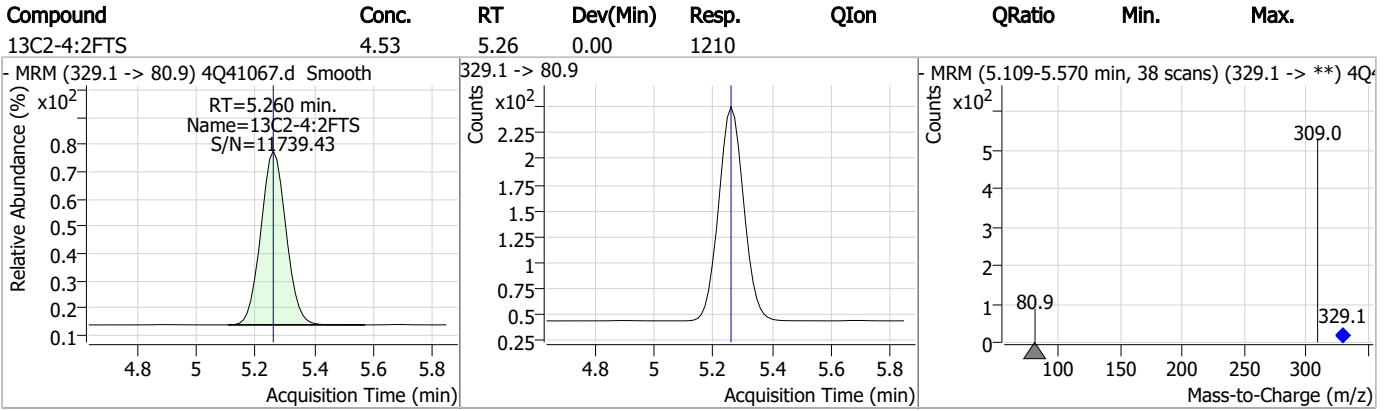
Perfluorinated Compounds by LC/MS/MS



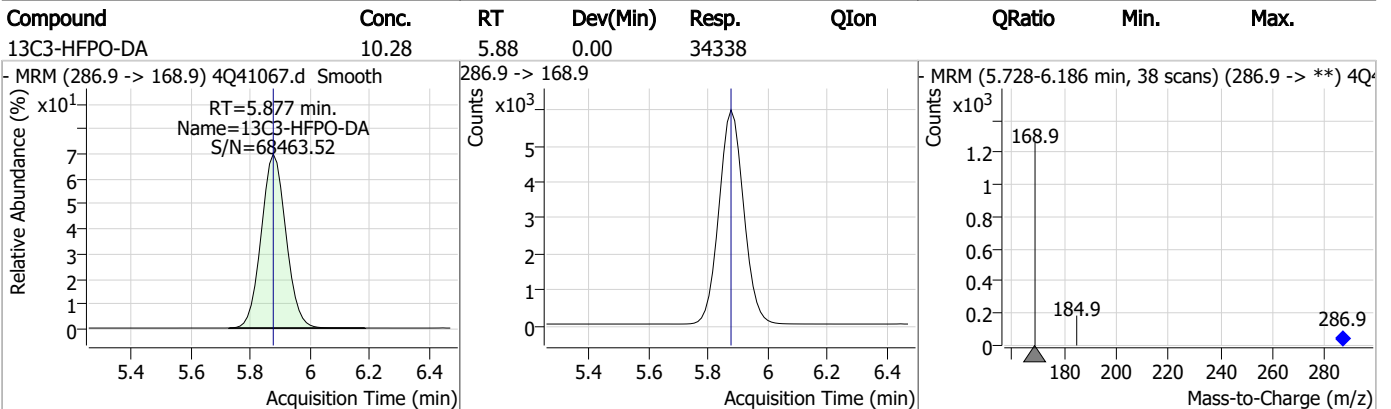
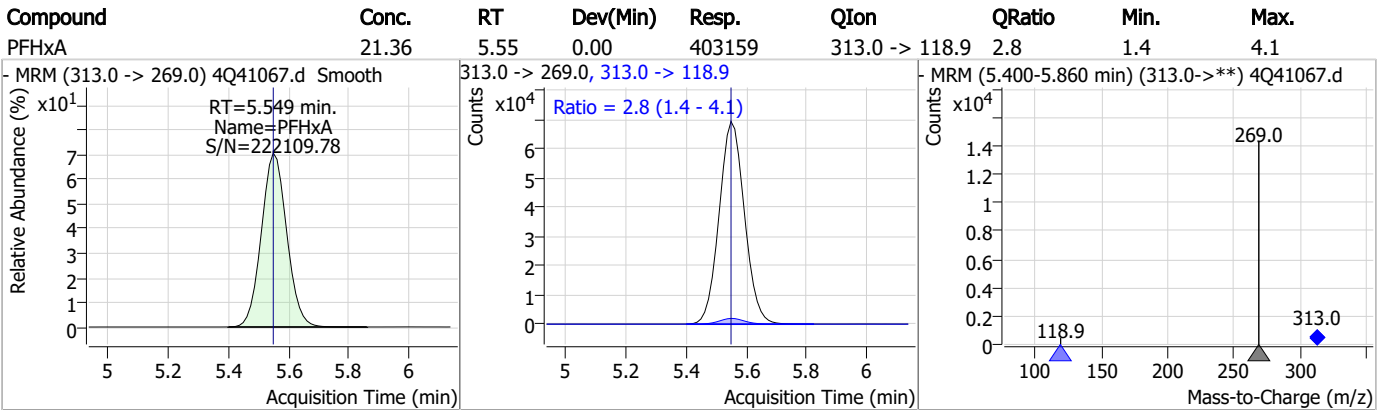
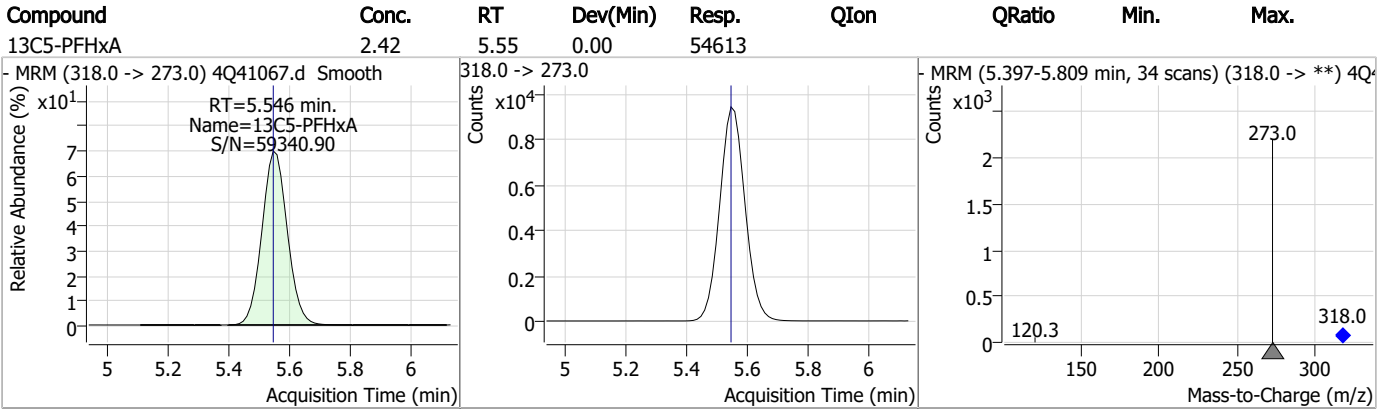
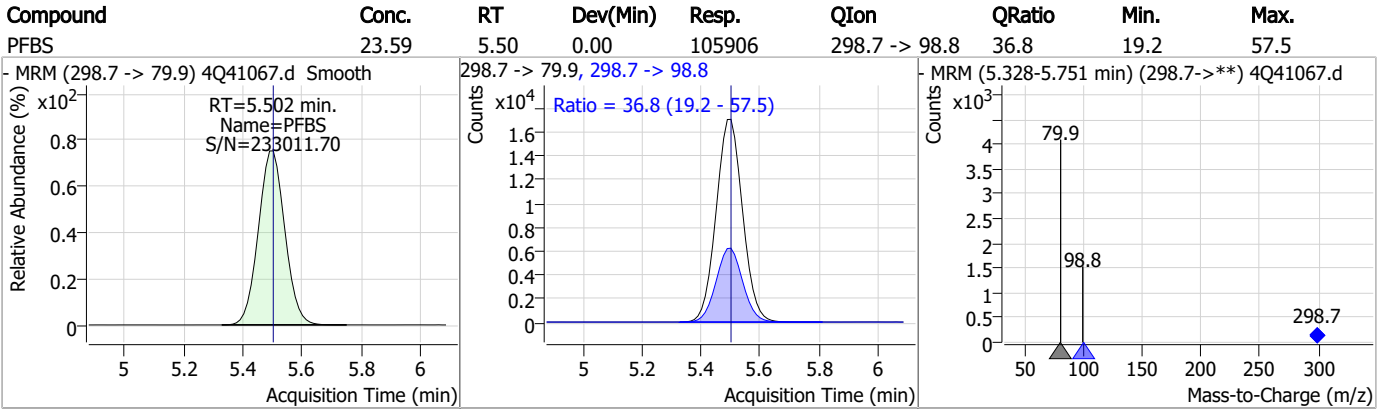
7.6.11

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

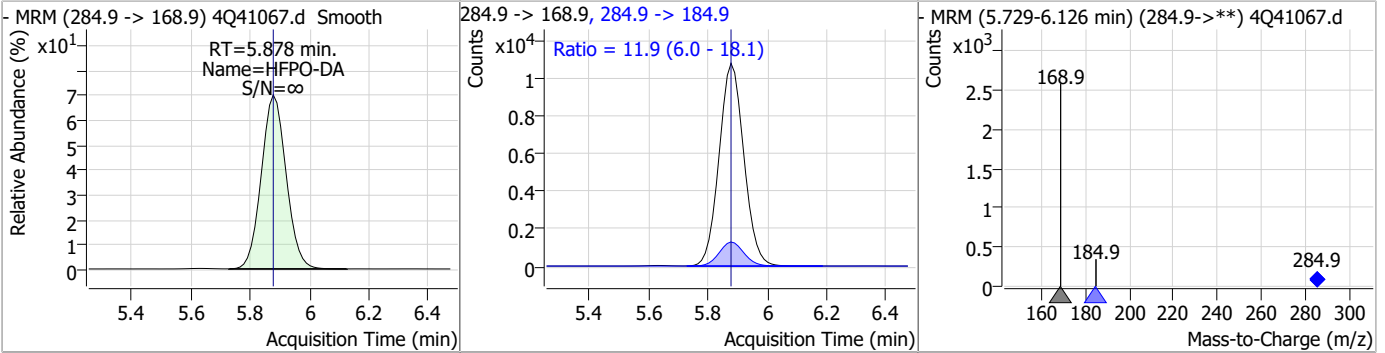


7.6.11
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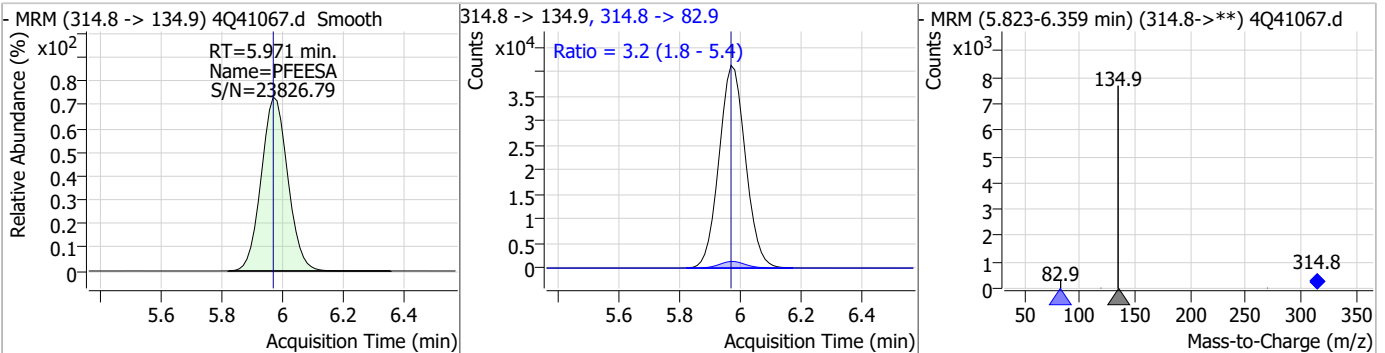


Perfluorinated Compounds by LC/MS/MS

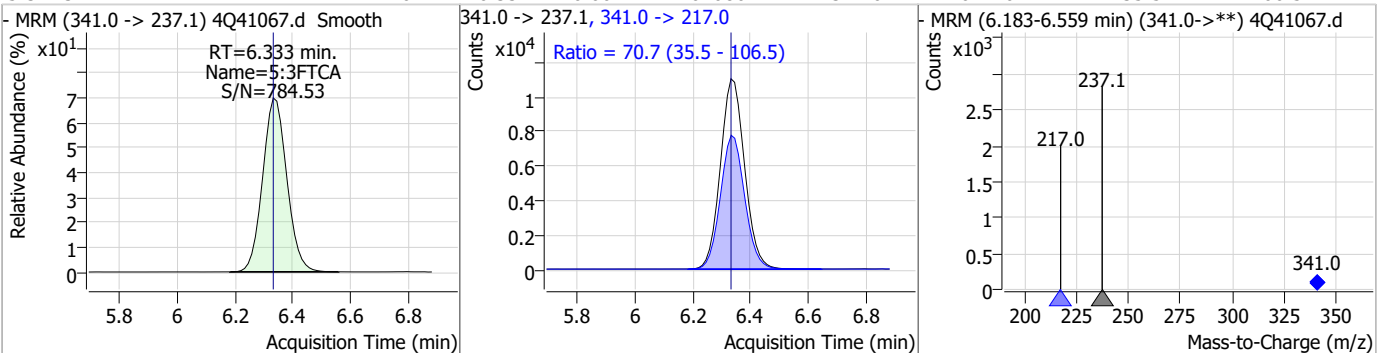
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	22.06	5.88	0.00	62211	284.9 -> 184.9	11.9	6.0	18.1



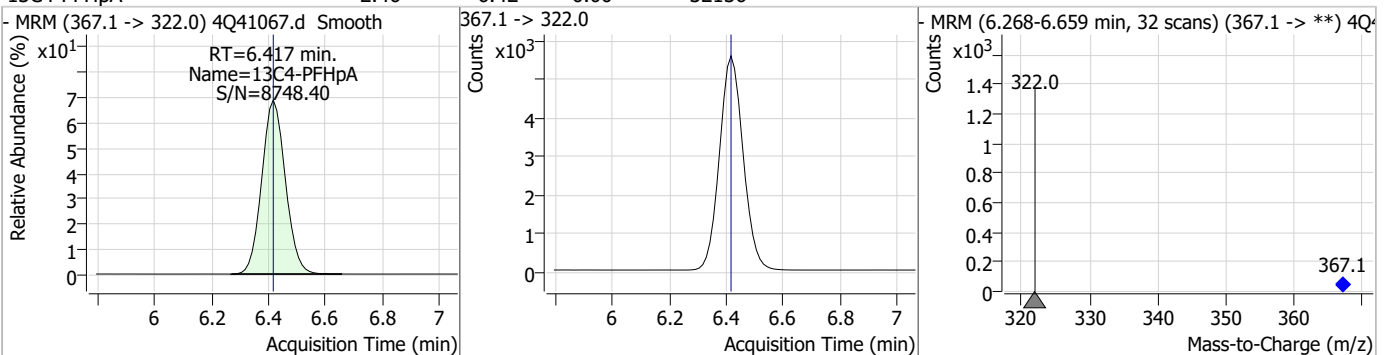
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	19.65	5.97	0.00	250682	314.8 -> 82.9	3.2	1.8	5.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	22.40	6.33	0.00	64080	341.0 -> 217.0	70.7	35.5	106.5

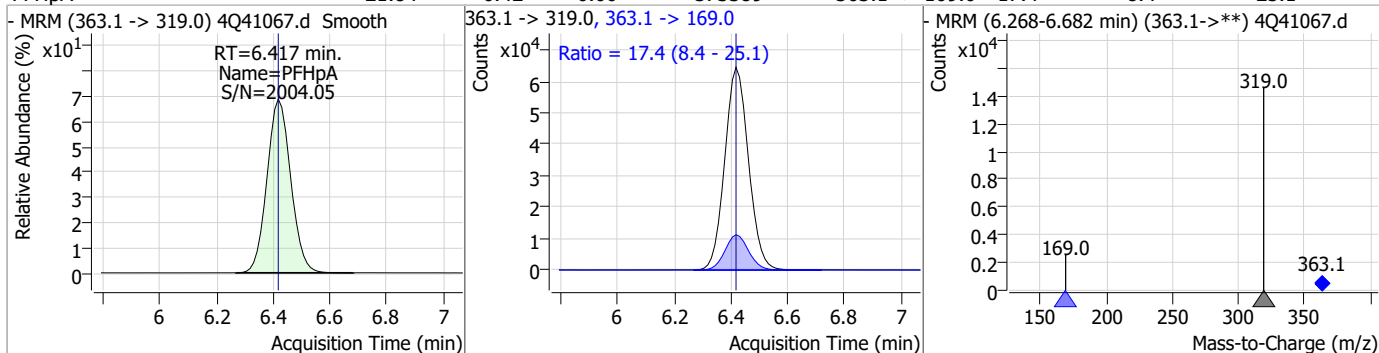


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.46	6.42	0.00	32136	367.1 -> 322.0	-	-	-

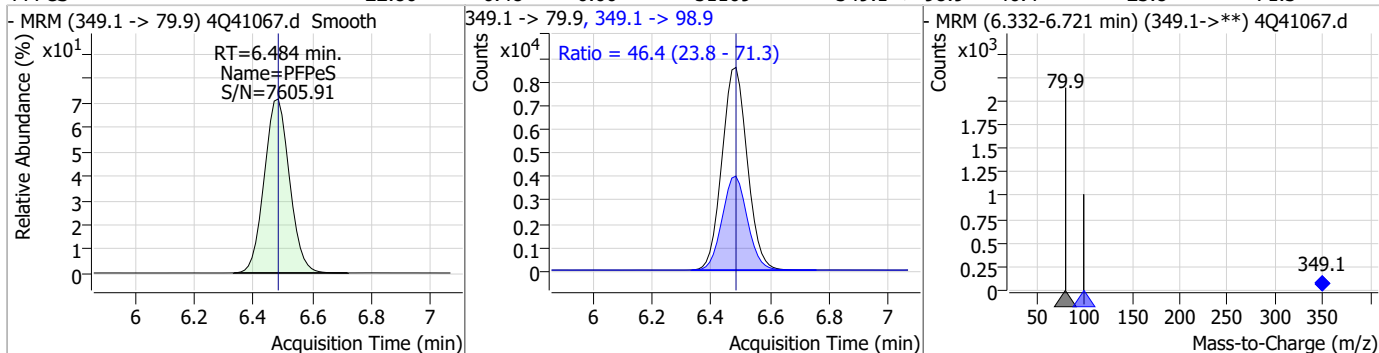


Perfluorinated Compounds by LC/MS/MS

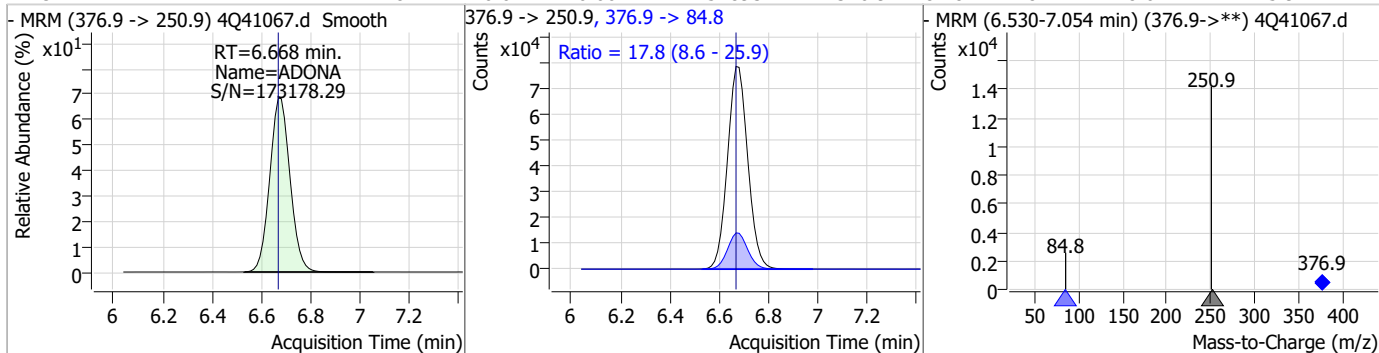
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	21.84	6.42	0.00	373389	363.1 -> 169.0	17.4	8.4	25.1



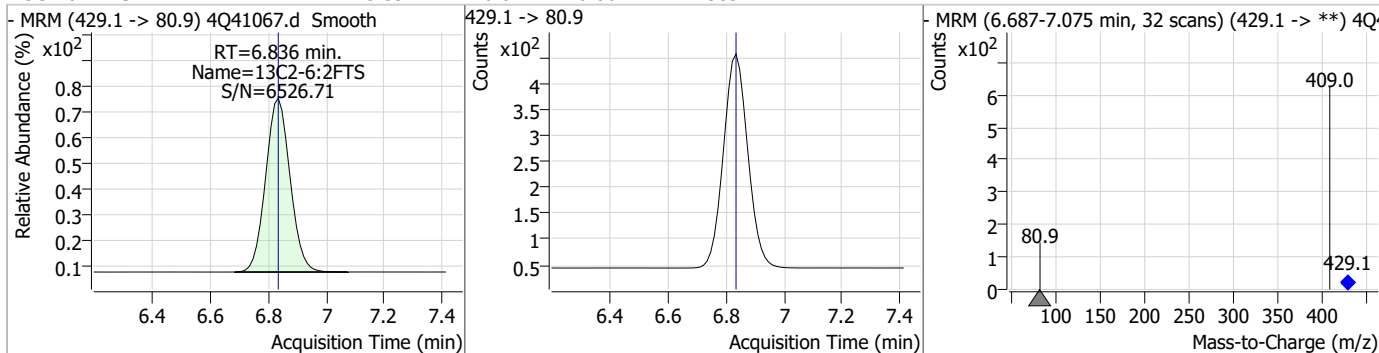
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	22.86	6.48	0.00	51109	349.1 -> 98.9	46.4	23.8	71.3



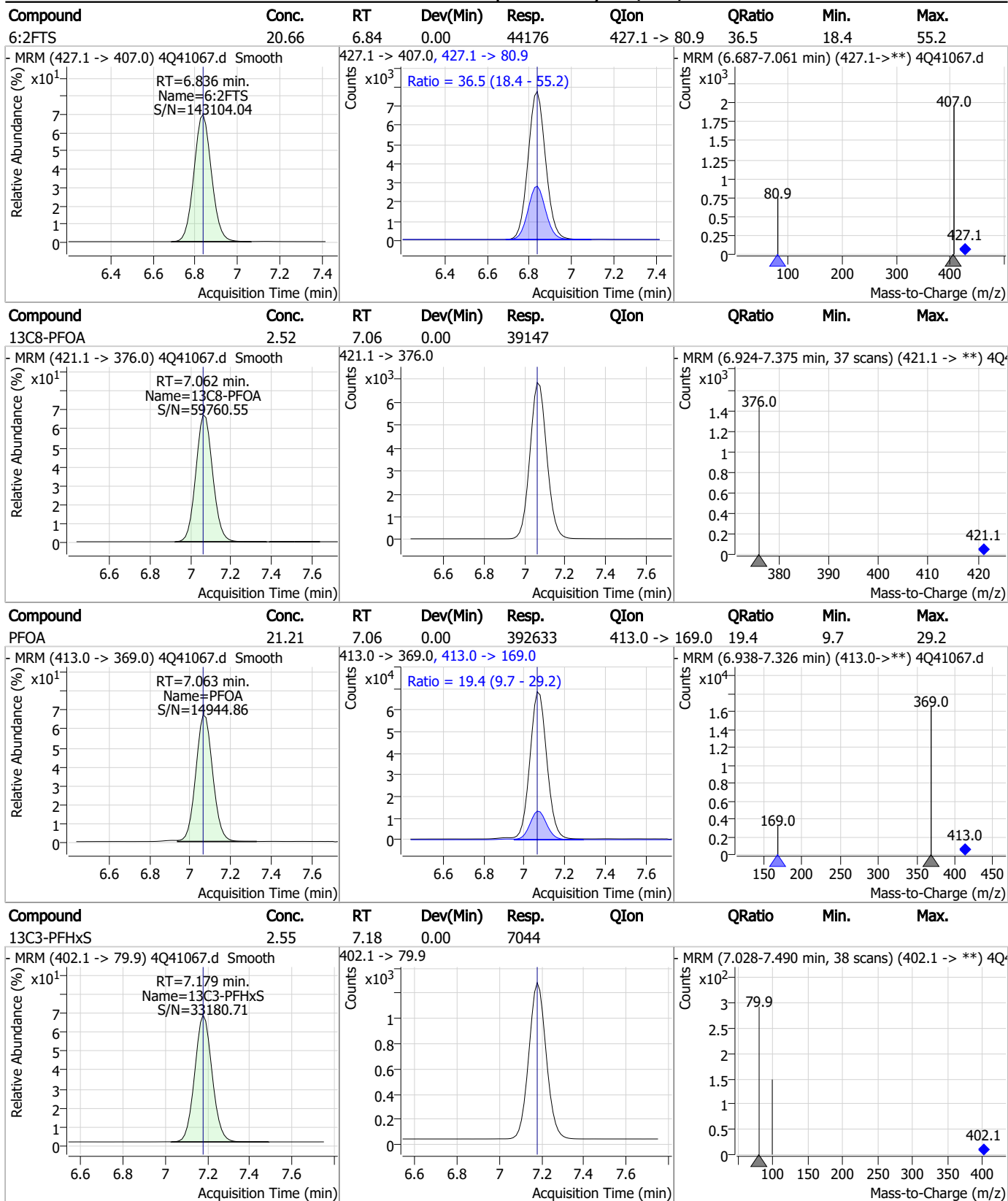
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	22.84	6.67	0.00	451893	376.9 -> 84.8	17.8	8.6	25.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.59	6.84	0.00	2389	429.1 -> 80.9			



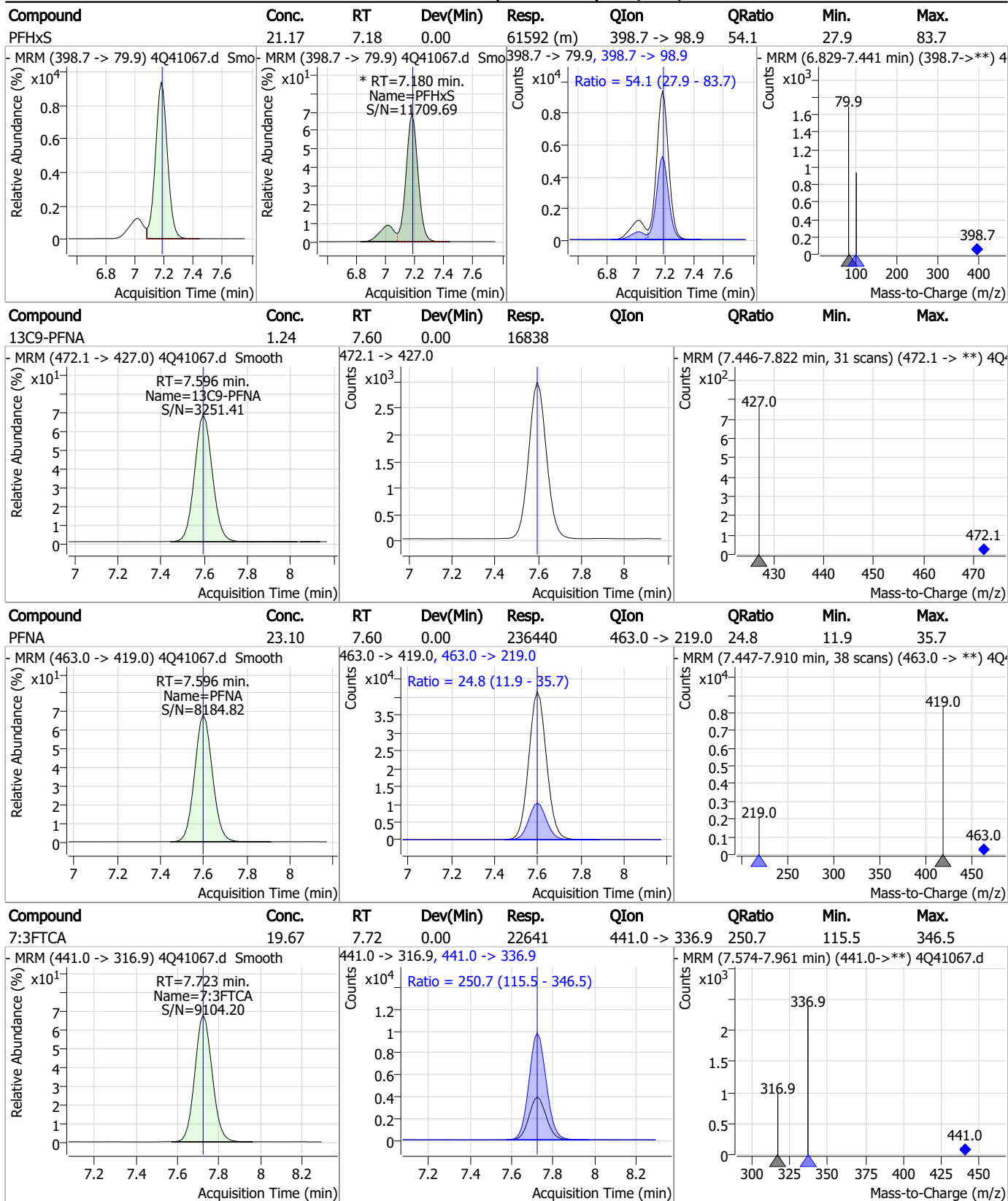
Perfluorinated Compounds by LC/MS/MS



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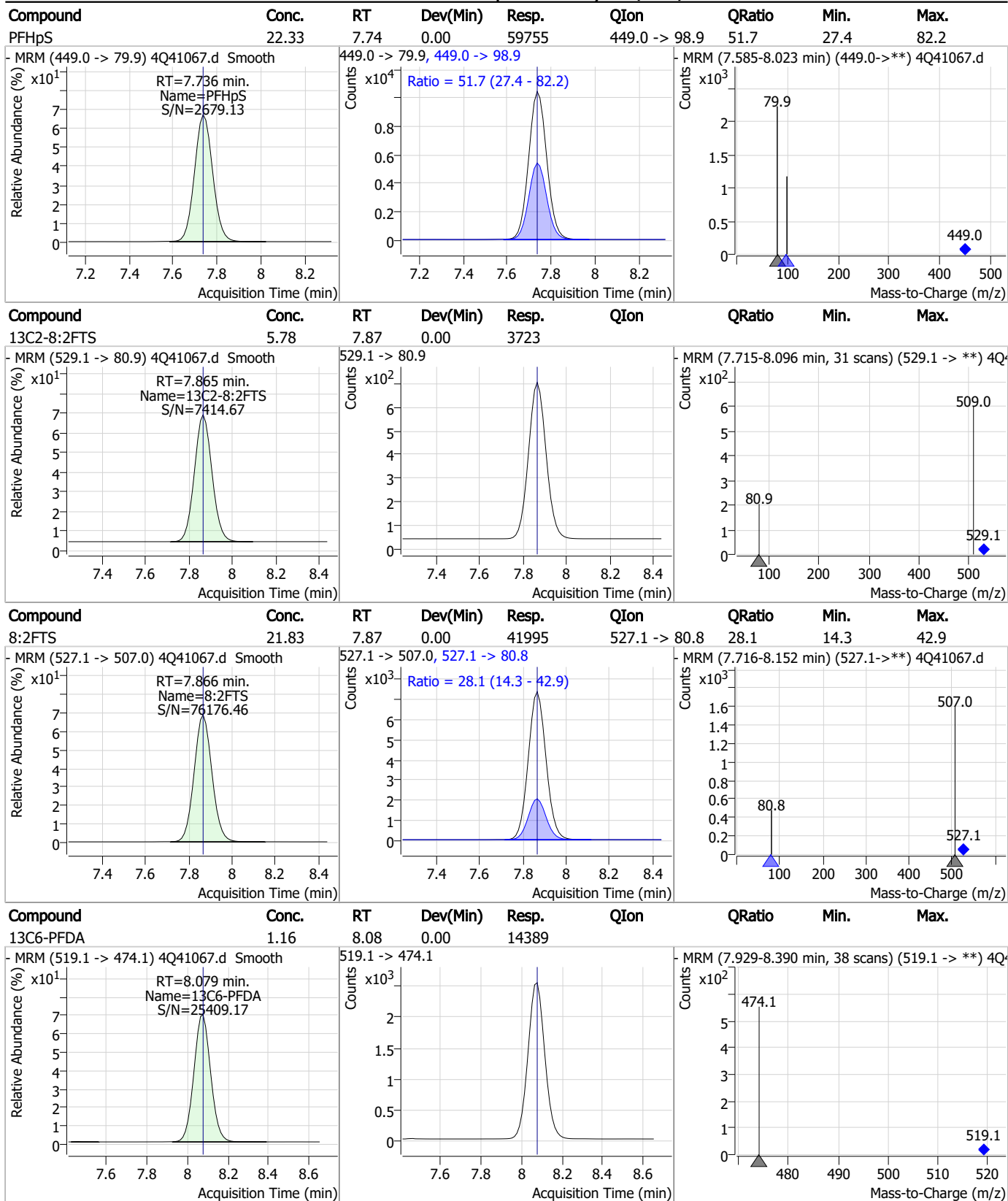
Perfluorinated Compounds by LC/MS/MS



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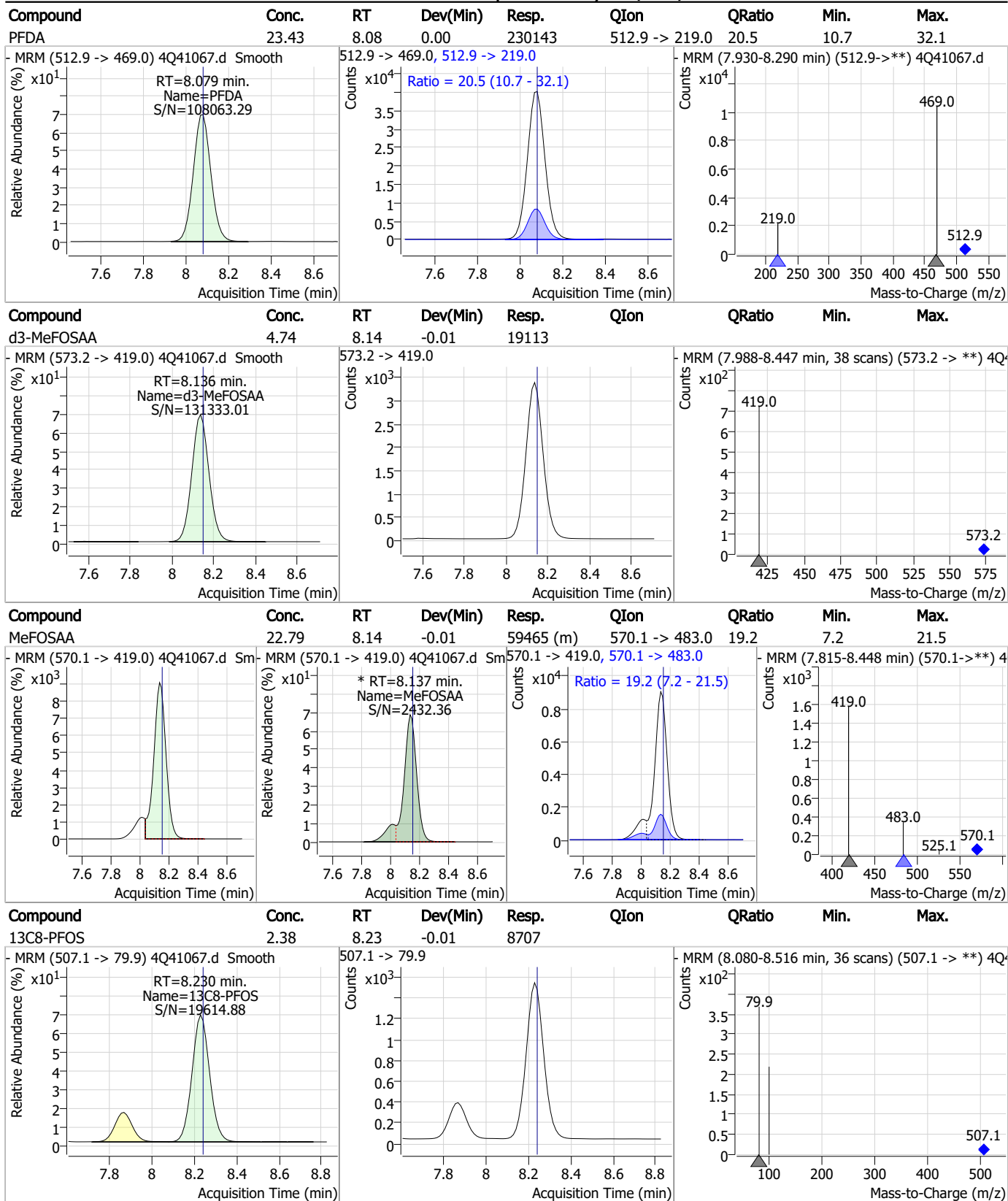
Perfluorinated Compounds by LC/MS/MS



7.6.11

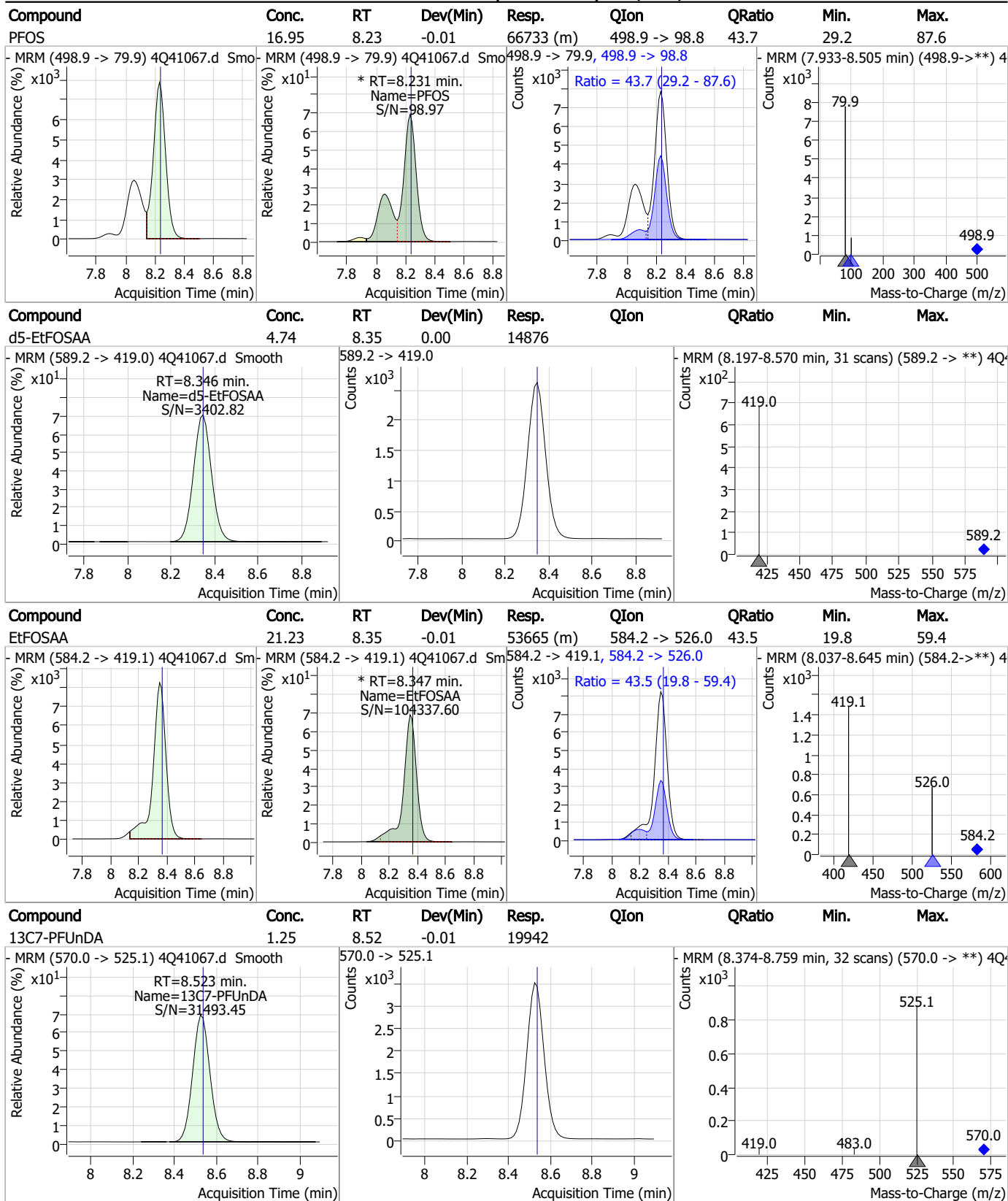
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

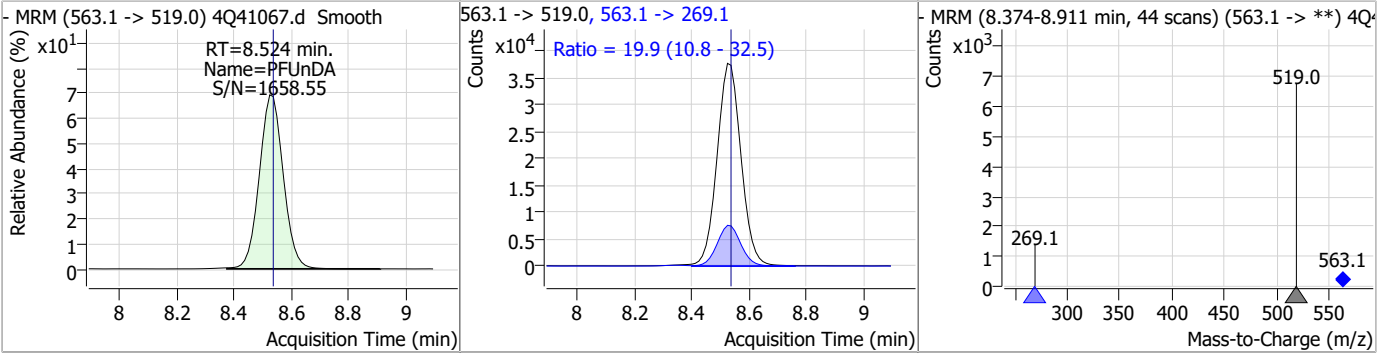


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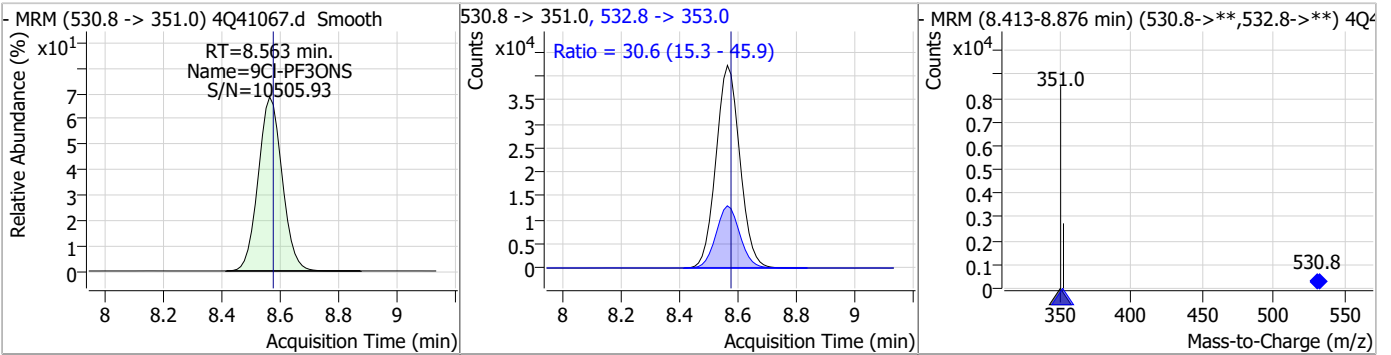
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Perfluorinated Compounds by LC/MS/MS

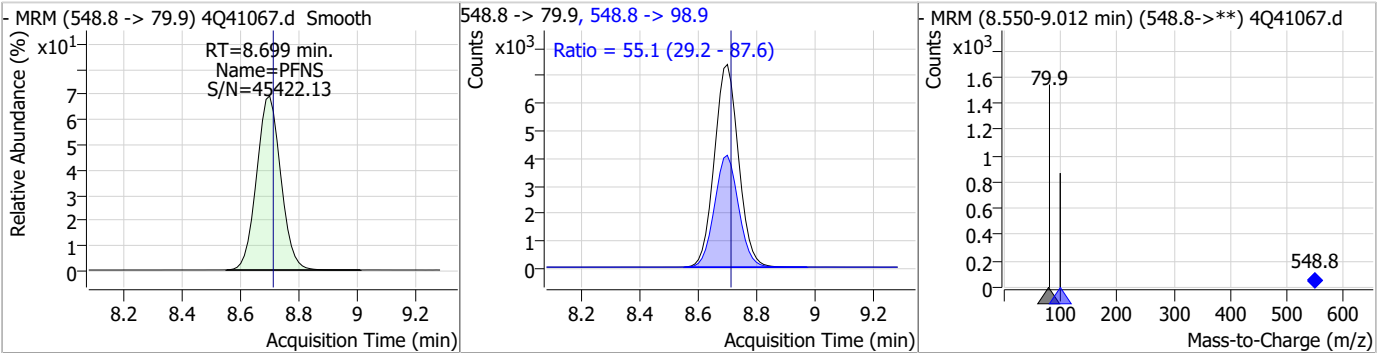
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.81	8.52	-0.01	219489	563.1 -> 269.1	19.9	10.8	32.5



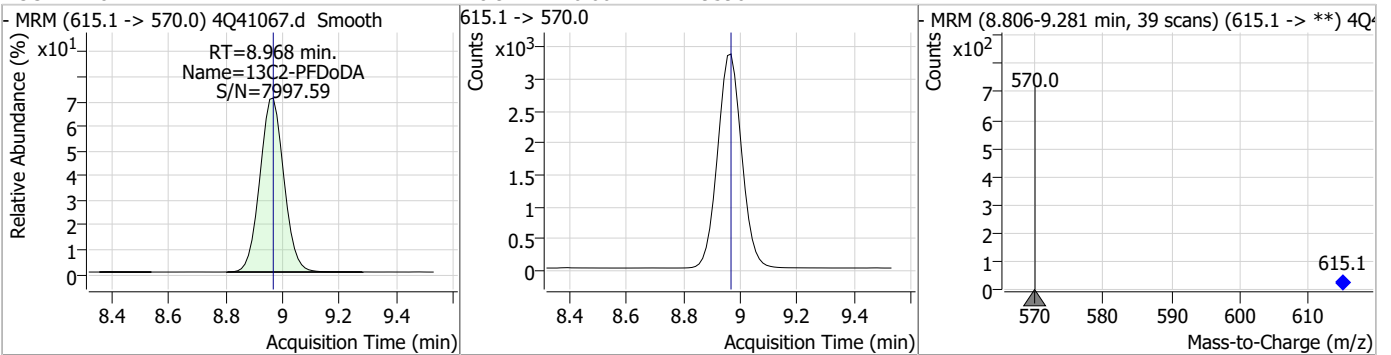
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	22.22	8.56	-0.01	240007	532.8 -> 353.0	30.6	15.3	45.9



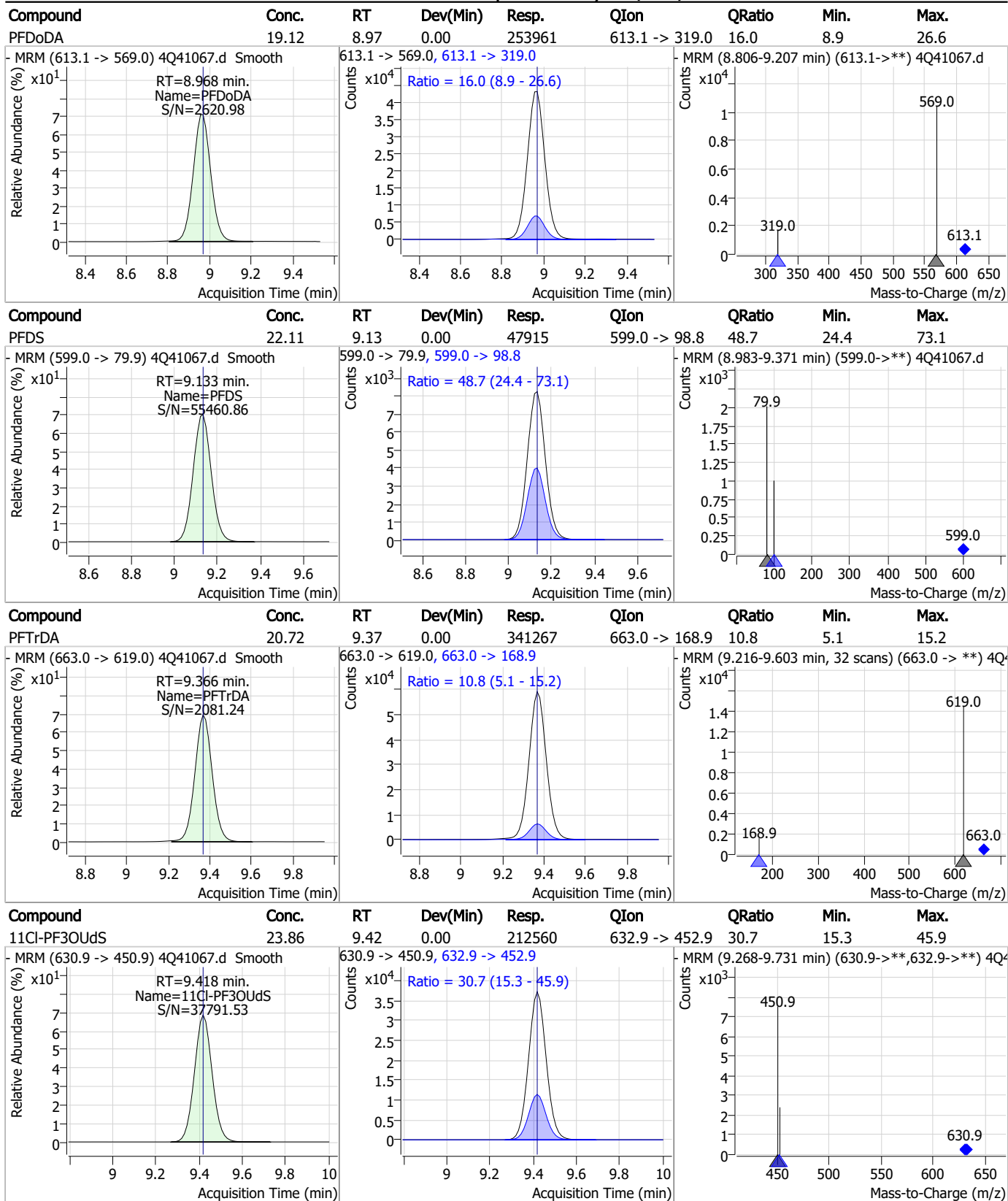
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	22.68	8.70	-0.01	42498	548.8 -> 98.9	55.1	29.2	87.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.24	8.97	0.00	19596	615.1 -> 570.0			



Perfluorinated Compounds by LC/MS/MS

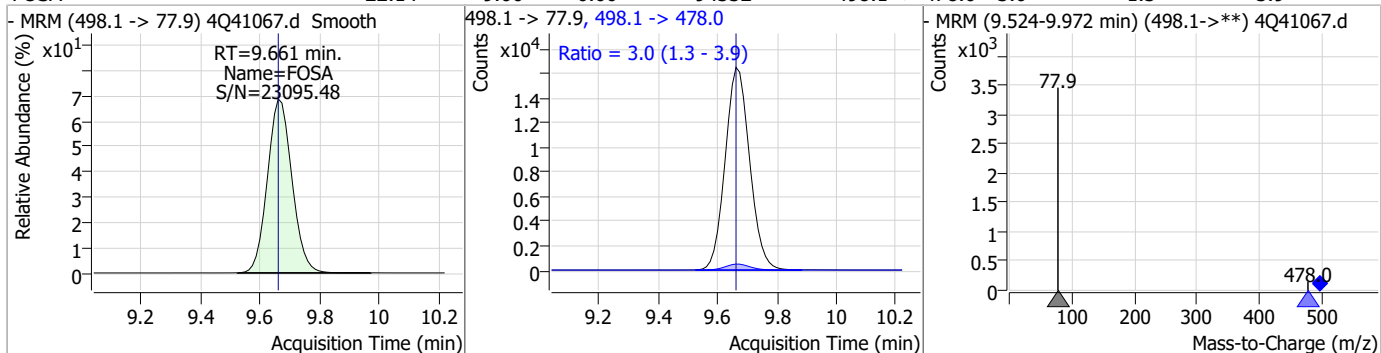


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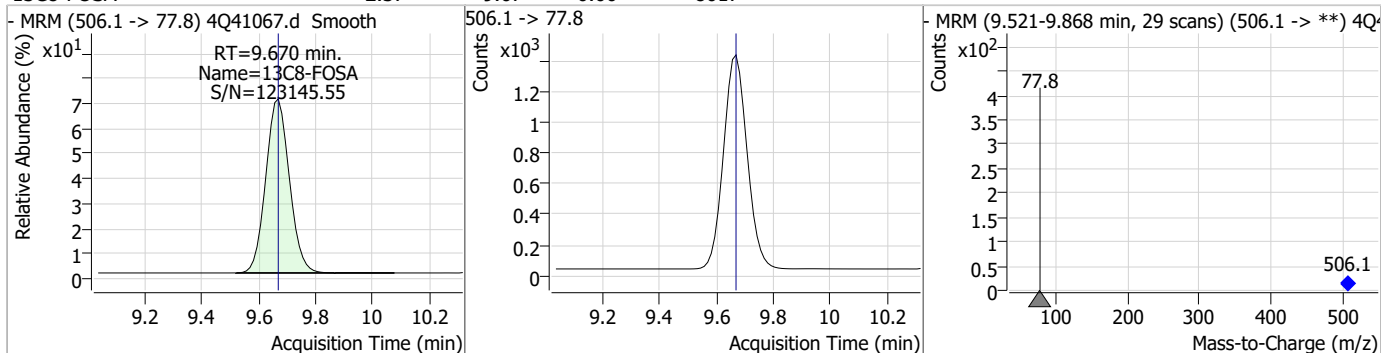
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Perfluorinated Compounds by LC/MS/MS

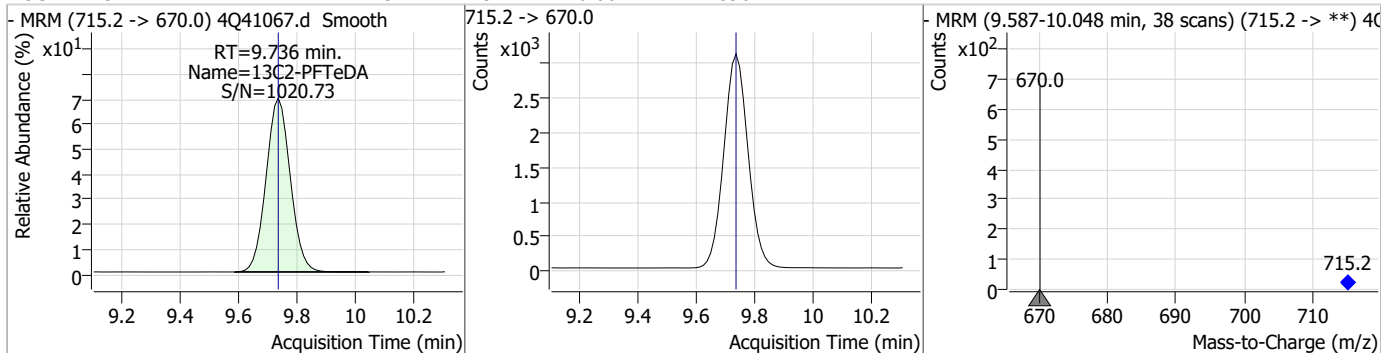
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	22.14	9.66	0.00	94332	498.1 -> 478.0	3.0	1.3	3.9



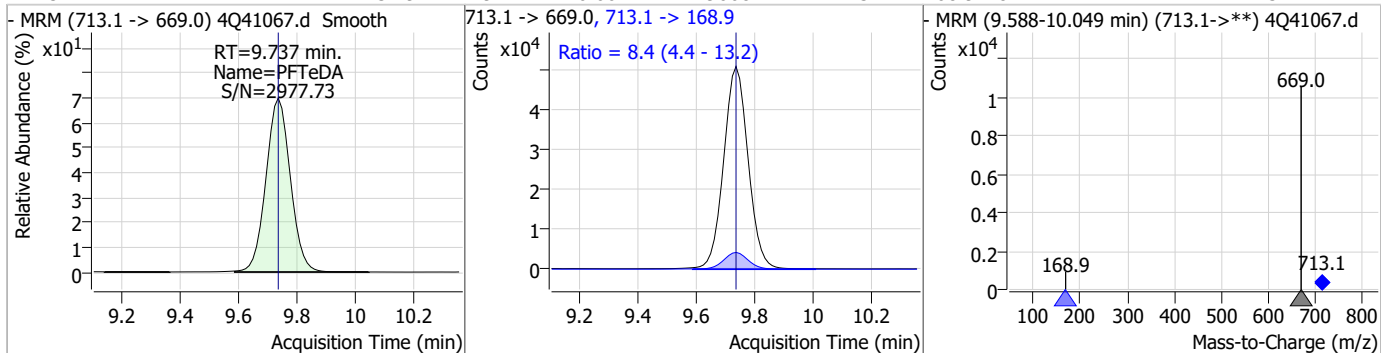
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.37	9.67	0.00	8017				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.31	9.74	0.00	17890				



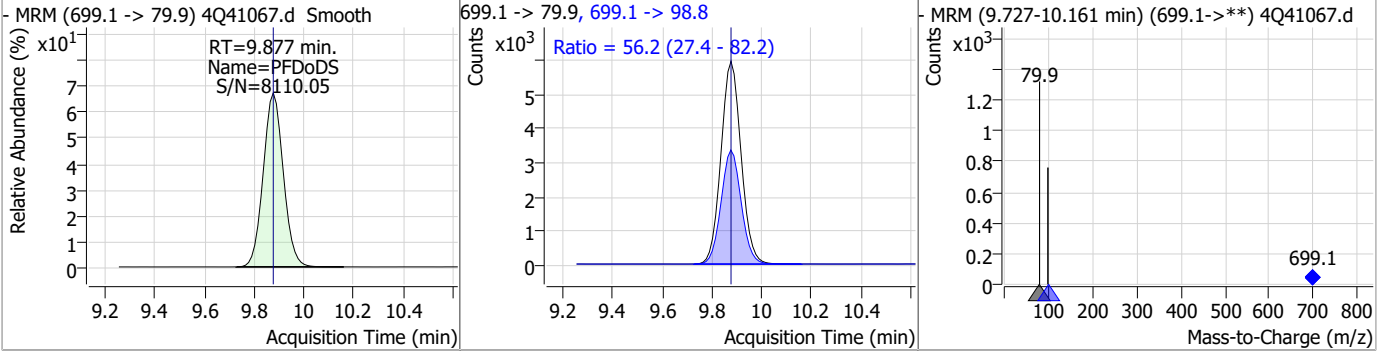
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	23.79	9.74	0.00	296081	713.1 -> 168.9	8.4	4.4	13.2



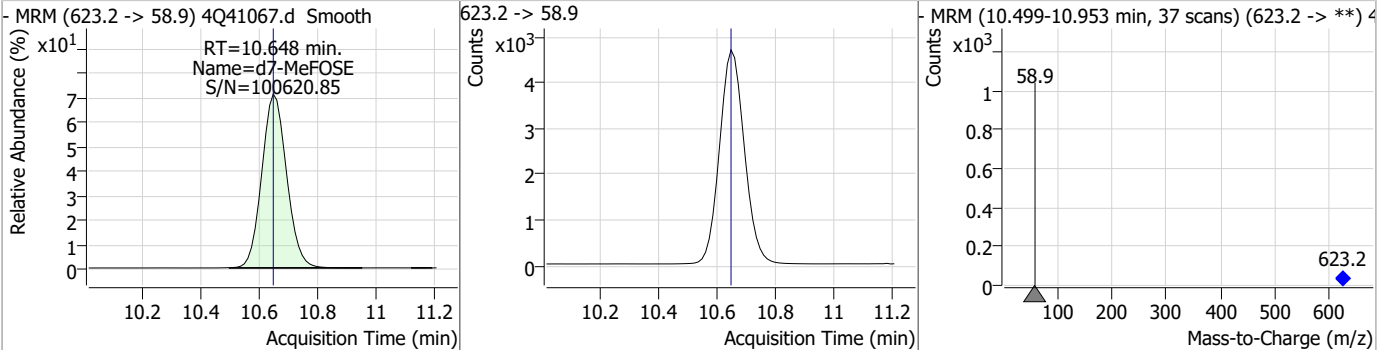
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Perfluorinated Compounds by LC/MS/MS

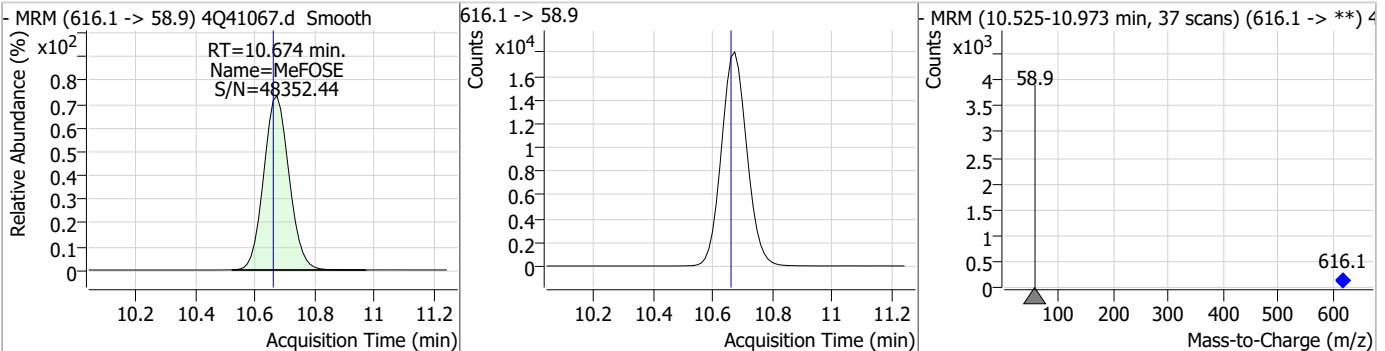
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	19.23	9.88	0.00	33306	699.1 -> 98.8	56.2	27.4	82.2



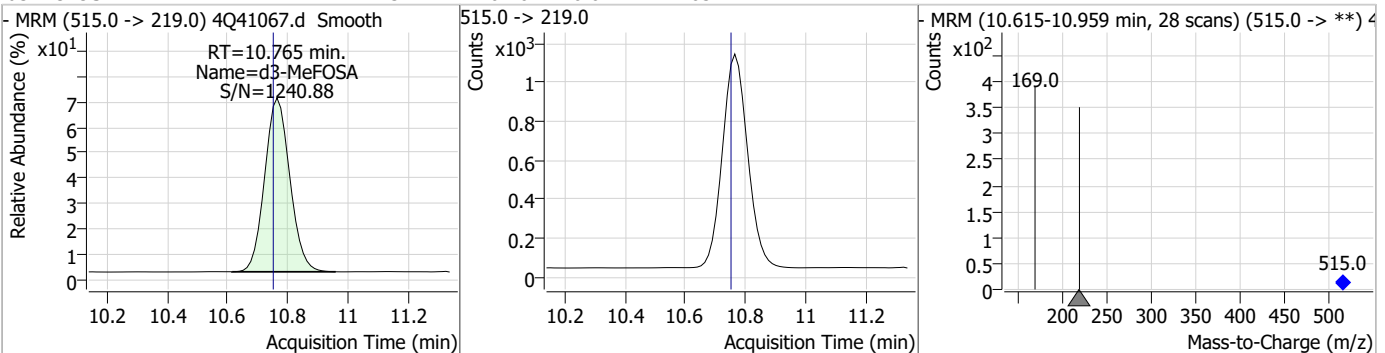
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.68	10.65	0.00	27545				



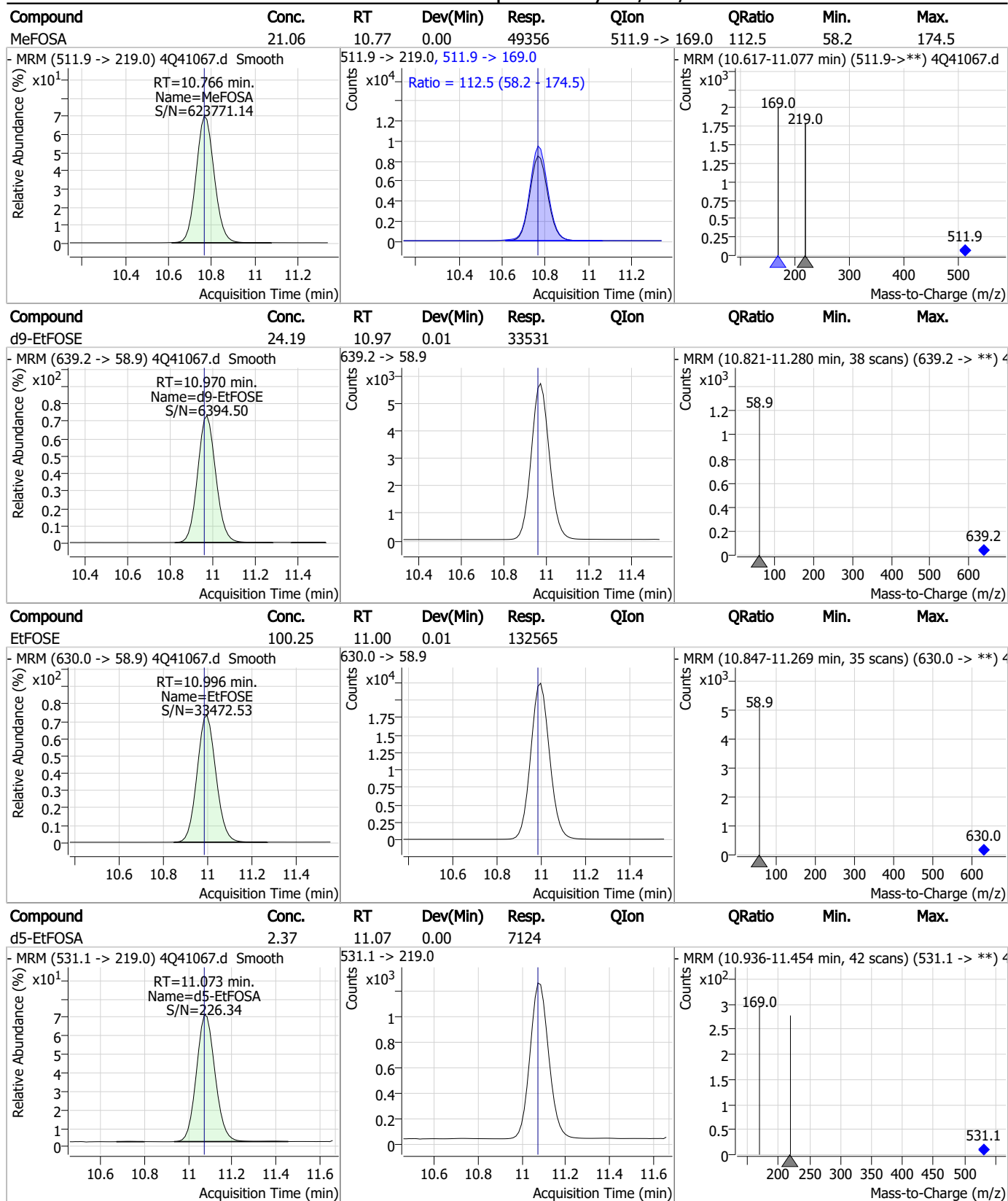
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	92.31	10.67	0.01	106721				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.43	10.76	0.01	6371				



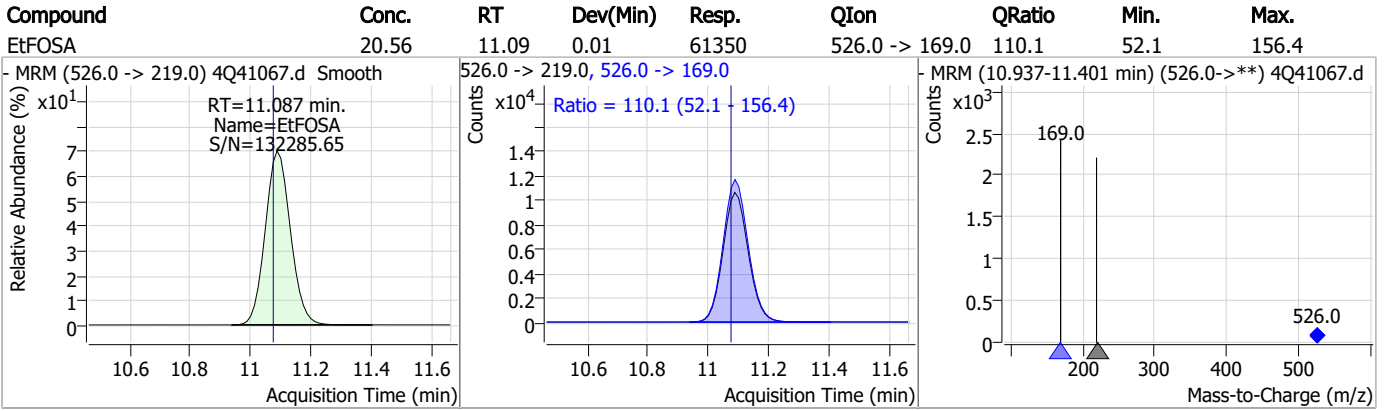
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q587-ICV587 Method: EPA DRAFT 1633
Lab FileID: 4Q41067.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 18:44 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.14	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41068.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 6:58:20 PM
 Sample Name : cc587-4
 Vial : P1-A5
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	147712	10.00 µg/L	-0.013
M5-PFPeA	4.500	268.3 -> 223.0	78081	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	61750	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	35260	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	42337	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	18302	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	17231	1.25 µg/L	0.000
M7-PFUnDA	8.536	570.0 -> 525.1	23494	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	21497	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	18314	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	9004	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12976	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7543	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9668	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1454	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2537	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3526	5.00 µg/L	0.000
M3-MeFOSAA	8.148	573.2 -> 419.0	21331	5.00 µg/L	0.000
M3-HFPO-DA	5.877	286.9 -> 168.9	37038	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	17941	5.00 µg/L	0.000
M7-MeFOSE	10.661	623.2 -> 58.9	30477	25.00 µg/L	0.012
M9-EtFOSE	10.983	639.2 -> 58.9	37015	25.00 µg/L	0.025
M5-EtFOSA	11.085	531.1 -> 219.0	7409	2.50 µg/L	0.012
M3-MeFOSA	10.777	515.0 -> 219.0	6264	2.50 µg/L	0.025
13C4-PFOS	8.230	502.8 -> 79.9	9756	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	89020	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	5496	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	53264	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	16831	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	20934	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	56960	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1454	4.89 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2537	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3526	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C2-PFDoDA	8.968	615.1 -> 570.0	21497	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C2-PFTeDA	9.736	715.2 -> 670.0	18314	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C3-PFBS	5.501	302.1 -> 79.9	12976	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFHxS	7.179	402.1 -> 79.9	7543	2.45 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C4-PFBA	3.139	216.8 -> 171.9	147712	10.02 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.417	367.1 -> 322.0	35260	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C5-PFHxA	5.546	318.0 -> 273.0	61750	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C5-PFPeA	4.500	268.3 -> 223.0	78081	4.85 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C6-PFDA	8.079	519.1 -> 474.1	17231	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C7-PFUnDA	8.536	570.0 -> 525.1	23494	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-FOSA	9.670	506.1 -> 77.8	9004	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-PFOA	7.062	421.1 -> 376.0	42337	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C8-PFOS	8.230	507.1 -> 79.9	9668	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C9-PFNA	7.596	472.1 -> 427.0	18302	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
d3-MeFOSAA	8.148	573.2 -> 419.0	21331	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	37038	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d3-MeFOSA	10.777	515.0 -> 219.0	6264	2.24 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.5%	
d5-EtFOSAA	8.346	589.2 -> 419.0	17941	5.36 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.2%	
d7-MeFOSE	10.661	623.2 -> 58.9	30477	25.62 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
d9-EtFOSE	10.983	639.2 -> 58.9	37015	25.05 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
d5-EtFOSA	11.085	531.1 -> 219.0	7409	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.6%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	22469	9.71 µg/L	97
		327.1 -> 80.9	8956		
6:2FTS	6.836	427.1 -> 407.0	21619	9.52 µg/L	98
		427.1 -> 80.9	7660		
8:2FTS	7.866	527.1 -> 507.0	16230	8.91 µg/L	96
		527.1 -> 80.8	4948		
EtFOSAA	8.347	584.2 -> 419.1	6809	2.23 µg/L	m 90
		584.2 -> 526.0	3097		
FOSA	9.673	498.1 -> 77.9	11410	2.38 µg/L	99
		498.1 -> 478.0	331		
MeFOSAA	8.149	570.1 -> 419.0	7161	2.46 µg/L	m 88
		570.1 -> 483.0	1390		
PFBA	3.146	212.8 -> 168.9	32572	9.31 µg/L	100
PFBS	5.502	298.7 -> 79.9	10382	2.00 µg/L	99
		298.7 -> 98.8	4064		
PFDA	8.079	512.9 -> 469.0	28660	2.44 µg/L	98
		512.9 -> 219.0	5886		
PFDoDA	8.968	613.1 -> 569.0	33998	2.33 µg/L	98
		613.1 -> 319.0	5735		
PFDS	9.133	599.0 -> 79.9	5607	2.33 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	2732			
PFHpA	6.417	363.1 -> 319.0	43913	2.34	µg/L	98
		363.1 -> 169.0	7754			
PFHpS	7.736	449.0 -> 79.9	6633	2.23	µg/L	95
		449.0 -> 98.9	3412			
PFHxA	5.549	313.0 -> 269.0	55722	2.61	µg/L	99
		313.0 -> 118.9	1689			
PFHxS	7.180	398.7 -> 79.9	6165	1.98	µg/L	m 99
		398.7 -> 98.9	3373			
PFNA	7.596	463.0 -> 419.0	25537	2.30	µg/L	98
		463.0 -> 219.0	6346			
PFNS	8.699	548.8 -> 79.9	4640	2.23	µg/L	95
		548.8 -> 98.9	2541			
PFOA	7.063	413.0 -> 369.0	47422	2.37	µg/L	100
		413.0 -> 169.0	9281			
PFOS	8.231	498.9 -> 79.9	9359	2.14	µg/L	m 82
		498.9 -> 98.8	4191			
PFPeA	4.502	263.0 -> 219.0	89951	4.90	µg/L	100
PFPeS	6.484	349.1 -> 79.9	5073	2.12	µg/L	98
		349.1 -> 98.9	2354			
PFTeDA	9.737	713.1 -> 669.0	29936	2.35	µg/L	99
		713.1 -> 168.9	2745			
PFTrDA	9.379	663.0 -> 619.0	44003	2.43	µg/L	98
		663.0 -> 168.9	4745			
PFUnDA	8.536	563.1 -> 519.0	29675	2.27	µg/L	98
		563.1 -> 269.1	6110			
11CI-PF3OUdS	9.430	630.9 -> 450.9	86067	8.96	µg/L	99
		632.9 -> 452.9	26062			
9CI-PF3ONS	8.563	530.8 -> 351.0	107665	9.24	µg/L	99
		532.8 -> 353.0	33373			
ADONA	6.681	376.9 -> 250.9	194038	9.09	µg/L	98
		376.9 -> 84.8	34992			
HFPO-DA	5.878	284.9 -> 168.9	28548	9.39	µg/L	97
		284.9 -> 184.9	3165			
3:3FTCA	4.142	241.0 -> 177.0	12713	11.76	µg/L	98
		241.0 -> 117.0	1045			
5:3FTCA	6.333	341.0 -> 237.1	193965	59.97	µg/L	98
		341.0 -> 217.0	140462			
7:3FTCA	7.723	441.0 -> 316.9	78973	60.67	µg/L	97
		441.0 -> 336.9	186117			
EtFOSA	11.099	526.0 -> 219.0	8073	2.60	µg/L	99
		526.0 -> 169.0	8497			
EtFOSE	11.008	630.0 -> 58.9	34647	23.74	µg/L	100
MeFOSA	10.779	511.9 -> 219.0	6077	2.64	µg/L	97
		511.9 -> 169.0	6898			
MeFOSE	10.686	616.1 -> 58.9	30128	23.55	µg/L	100
PFDoDS	9.889	699.1 -> 79.9	4353	2.26	µg/L	99
		699.1 -> 98.8	2427			
NFDHA	5.453	295.0 -> 201.0	3968	4.89	µg/L	100
		295.0 -> 84.9	970			
PFMBA	4.867	279.0 -> 85.1	47197	4.84	µg/L	100
PFMPA	3.715	229.0 -> 84.9	36119	4.66	µg/L	100
PFEESA	5.983	314.8 -> 134.9	58421	4.05	µg/L	100
		314.8 -> 82.9	2081			

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



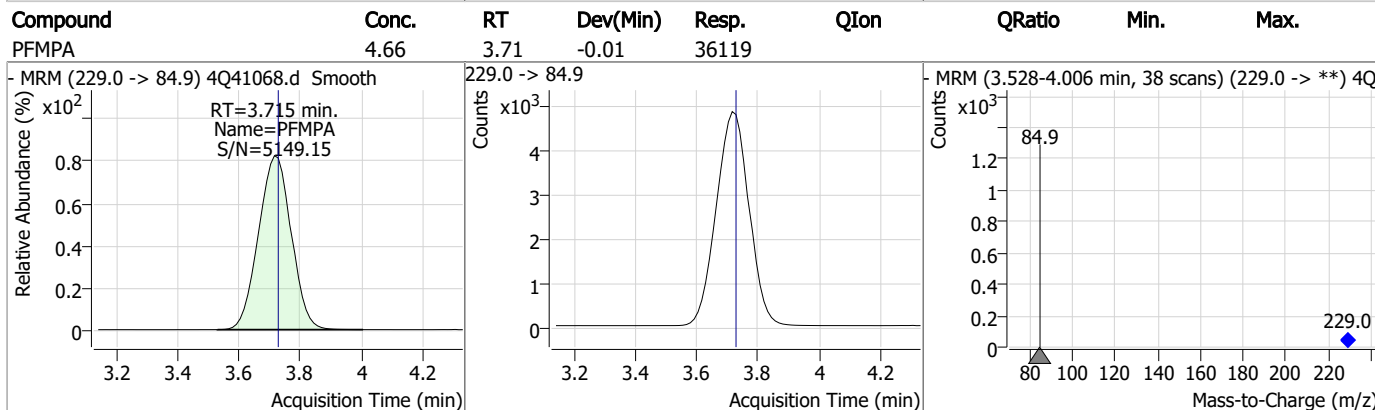
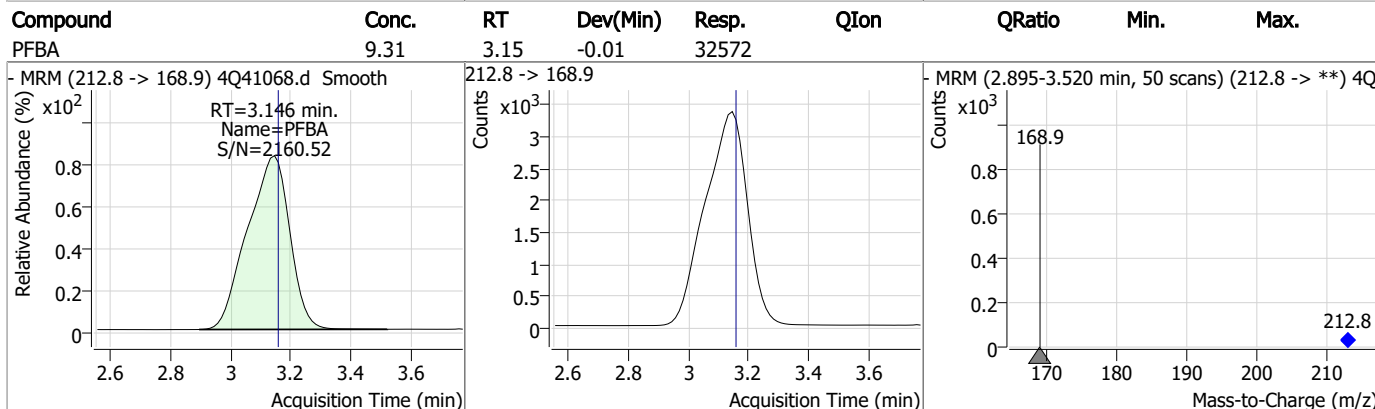
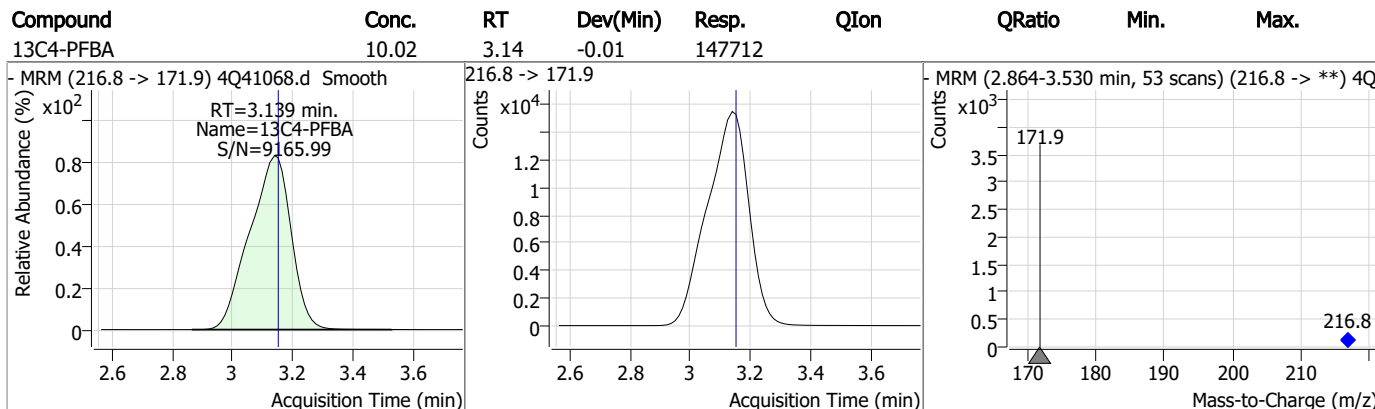
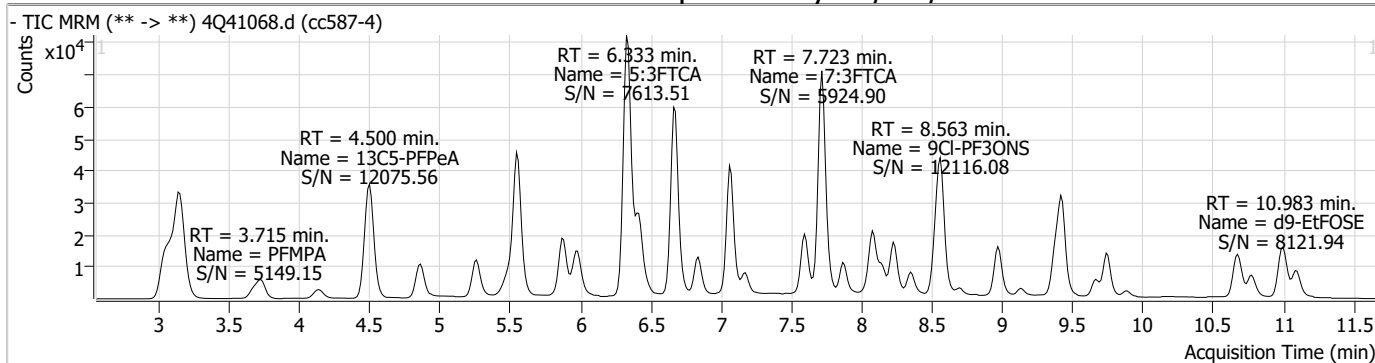
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.12

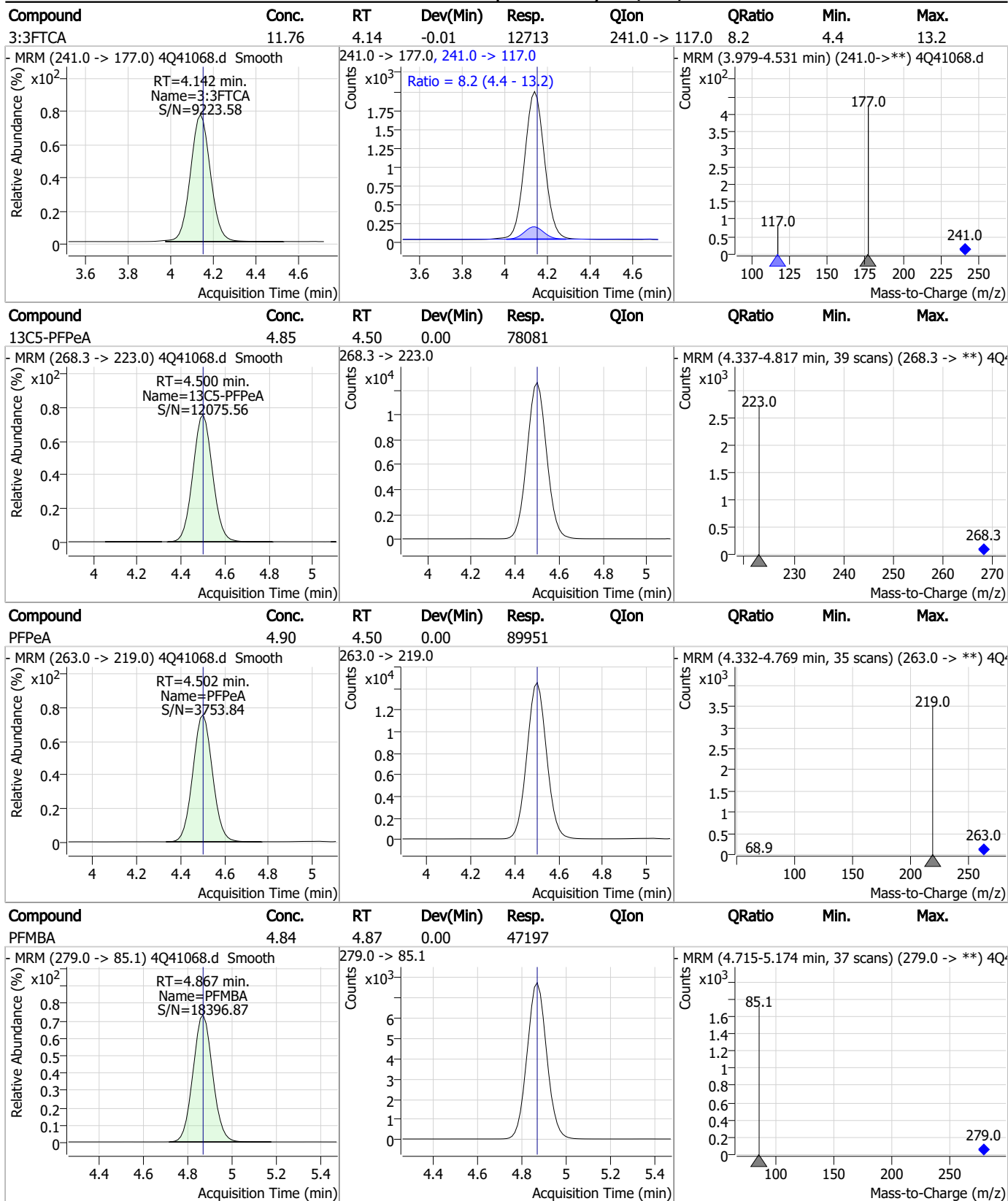
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Perfluorinated Compounds by LC/MS/MS



7.6.12
7

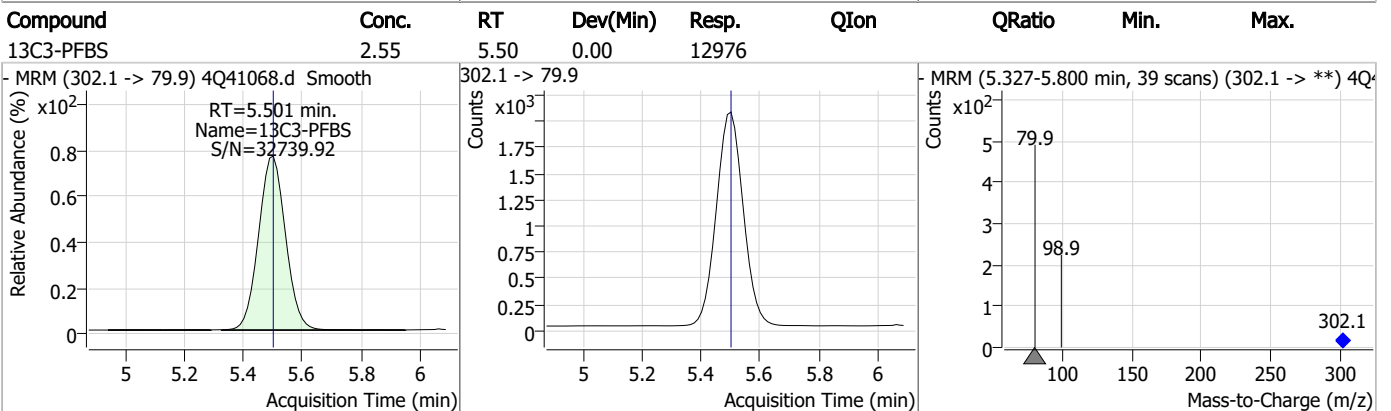
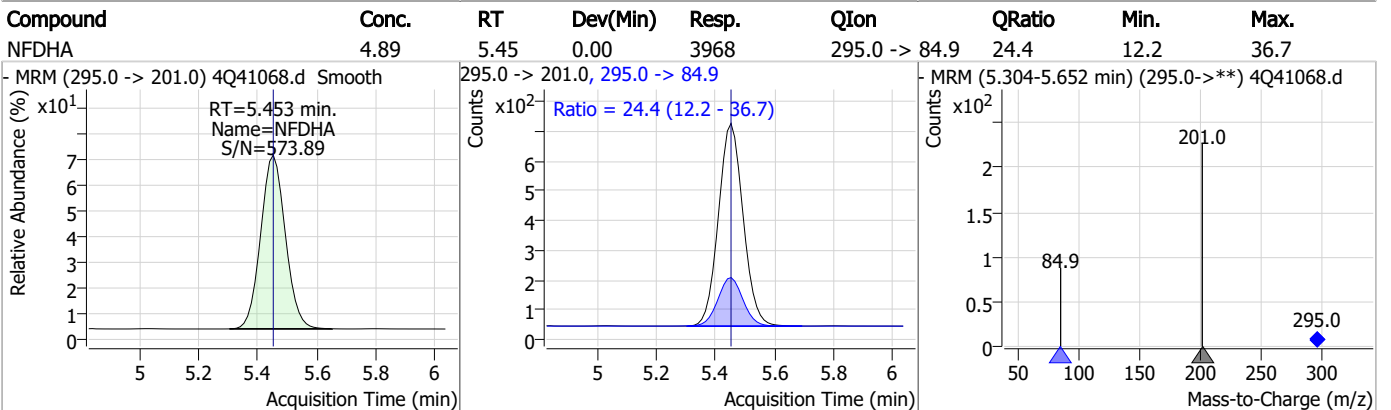
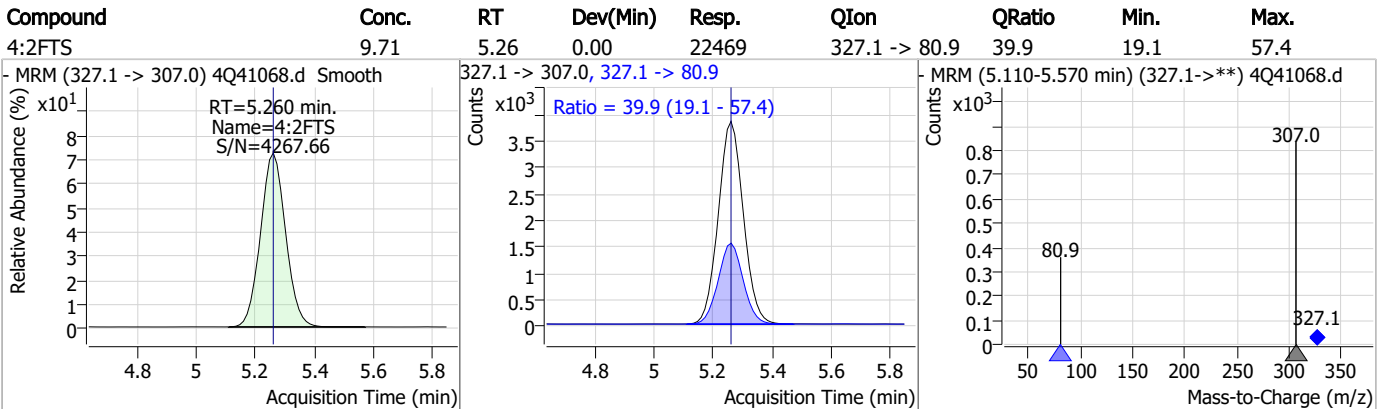
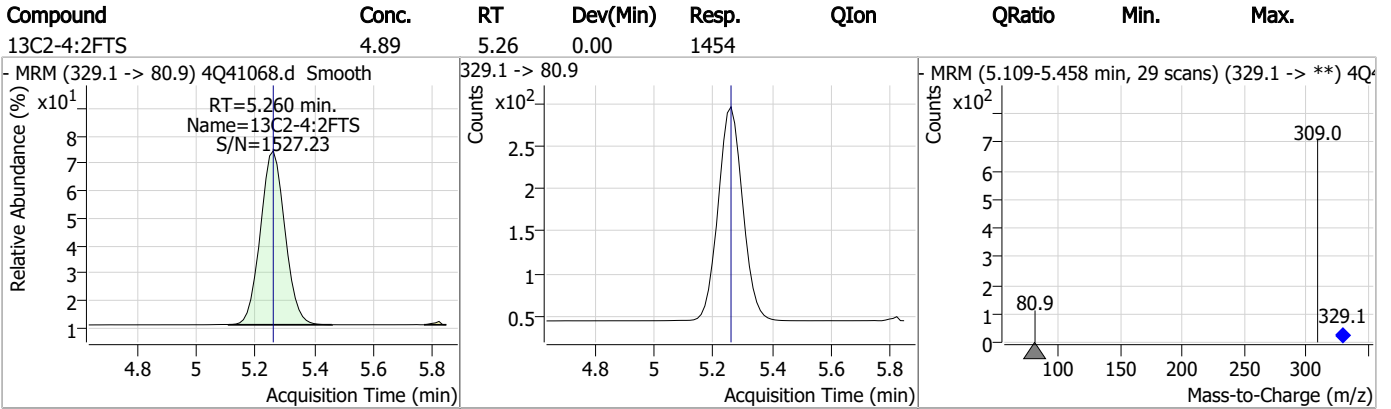
Perfluorinated Compounds by LC/MS/MS



7.6.12

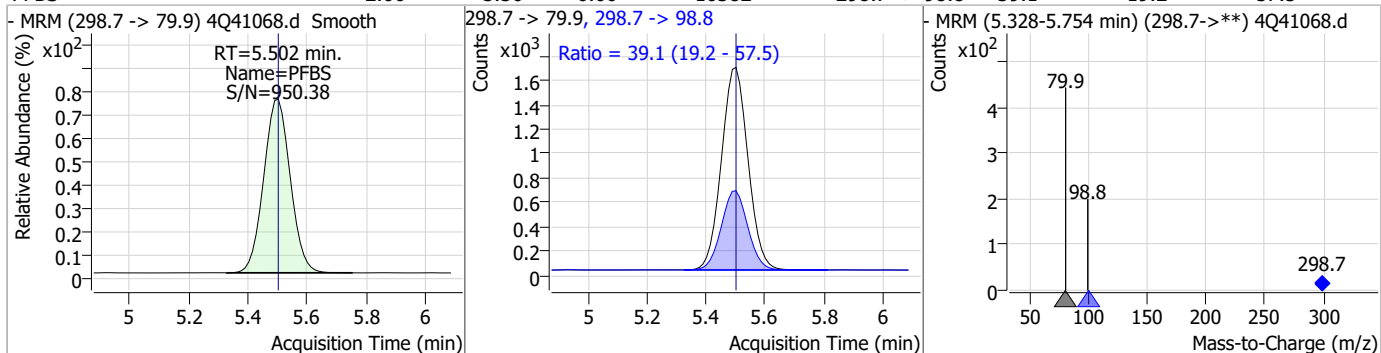
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Perfluorinated Compounds by LC/MS/MS

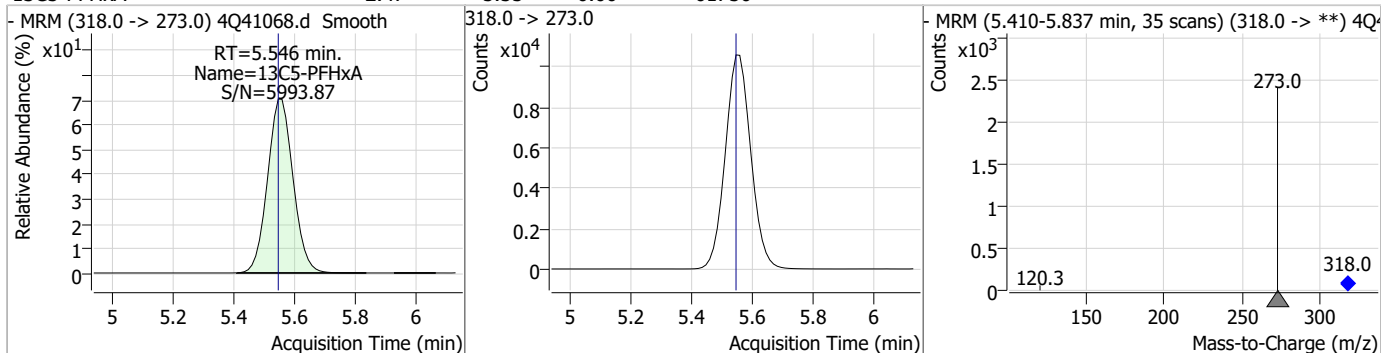


Perfluorinated Compounds by LC/MS/MS

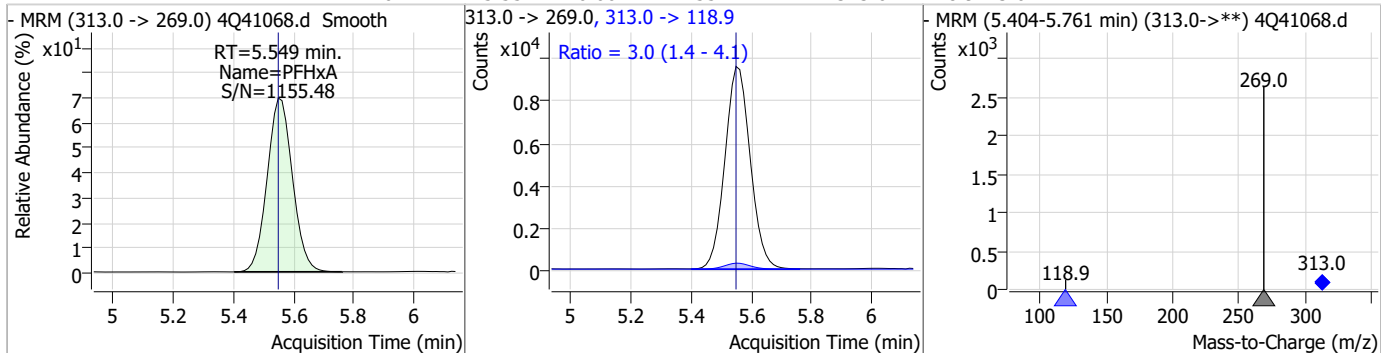
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.00	5.50	0.00	10382	298.7 -> 98.8	39.1	19.2	57.5



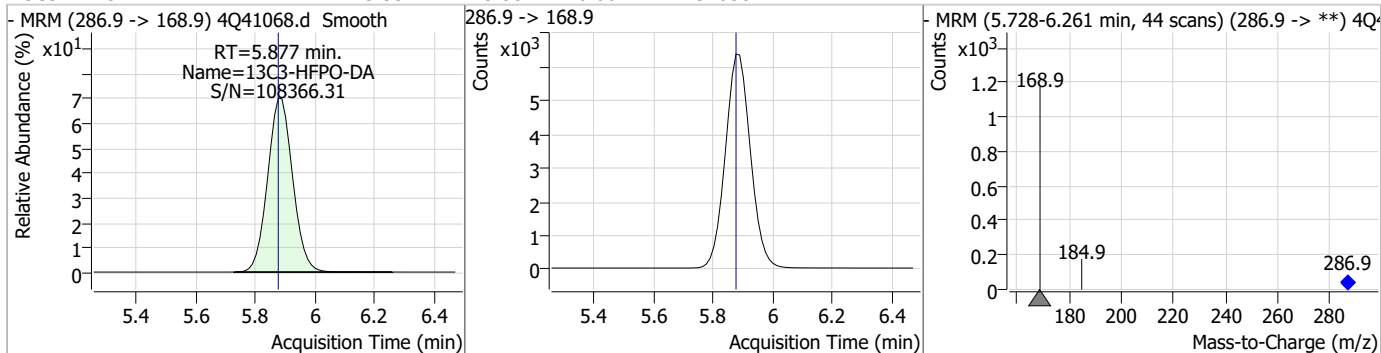
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.47	5.55	0.00	61750	318.0 -> 273.0			



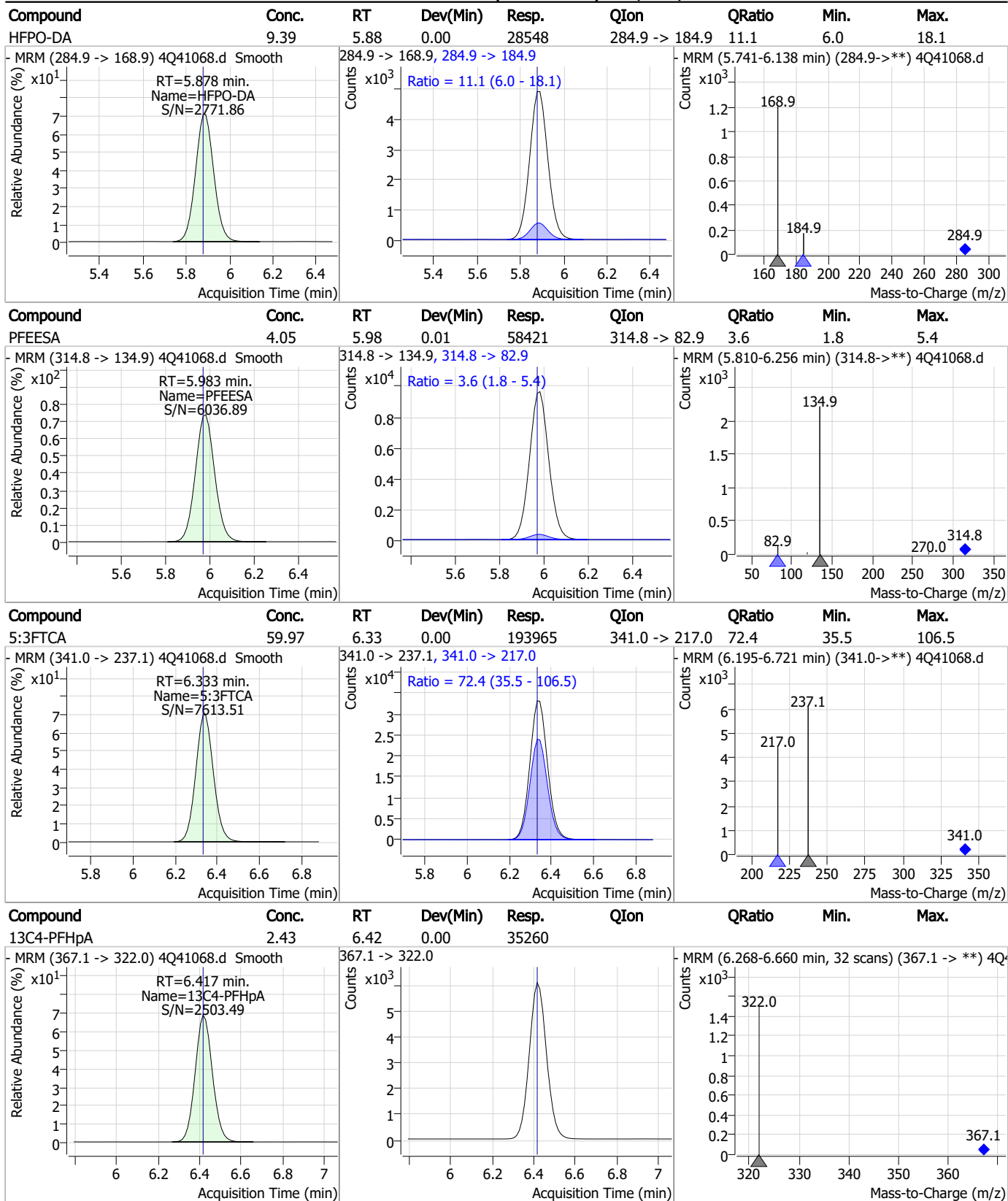
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.61	5.55	0.00	55722	313.0 -> 118.9	3.0	1.4	4.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.99	5.88	0.00	37038	286.9 -> 168.9			



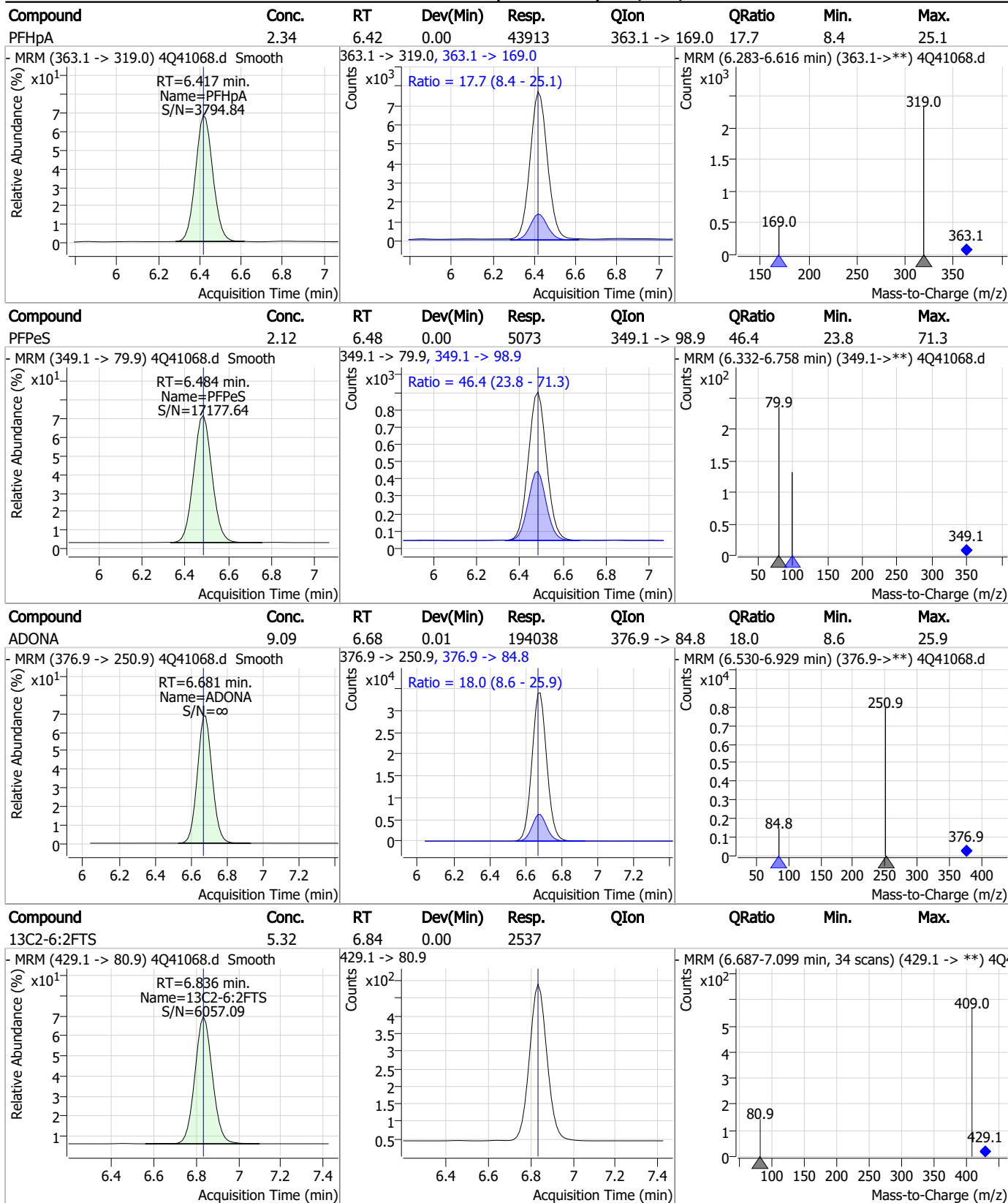
Perfluorinated Compounds by LC/MS/MS



7.6.12

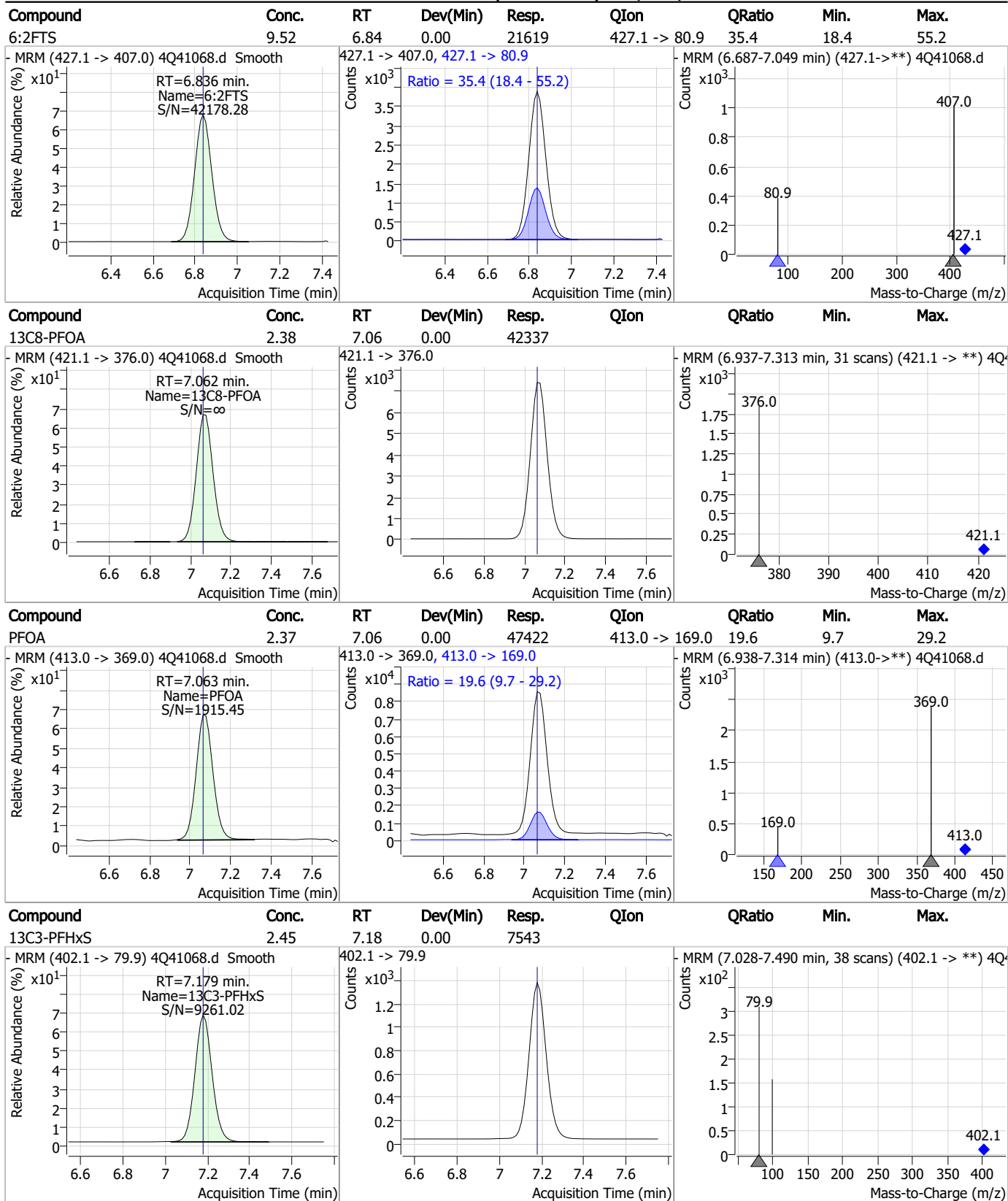
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Perfluorinated Compounds by LC/MS/MS



7.6.12 7

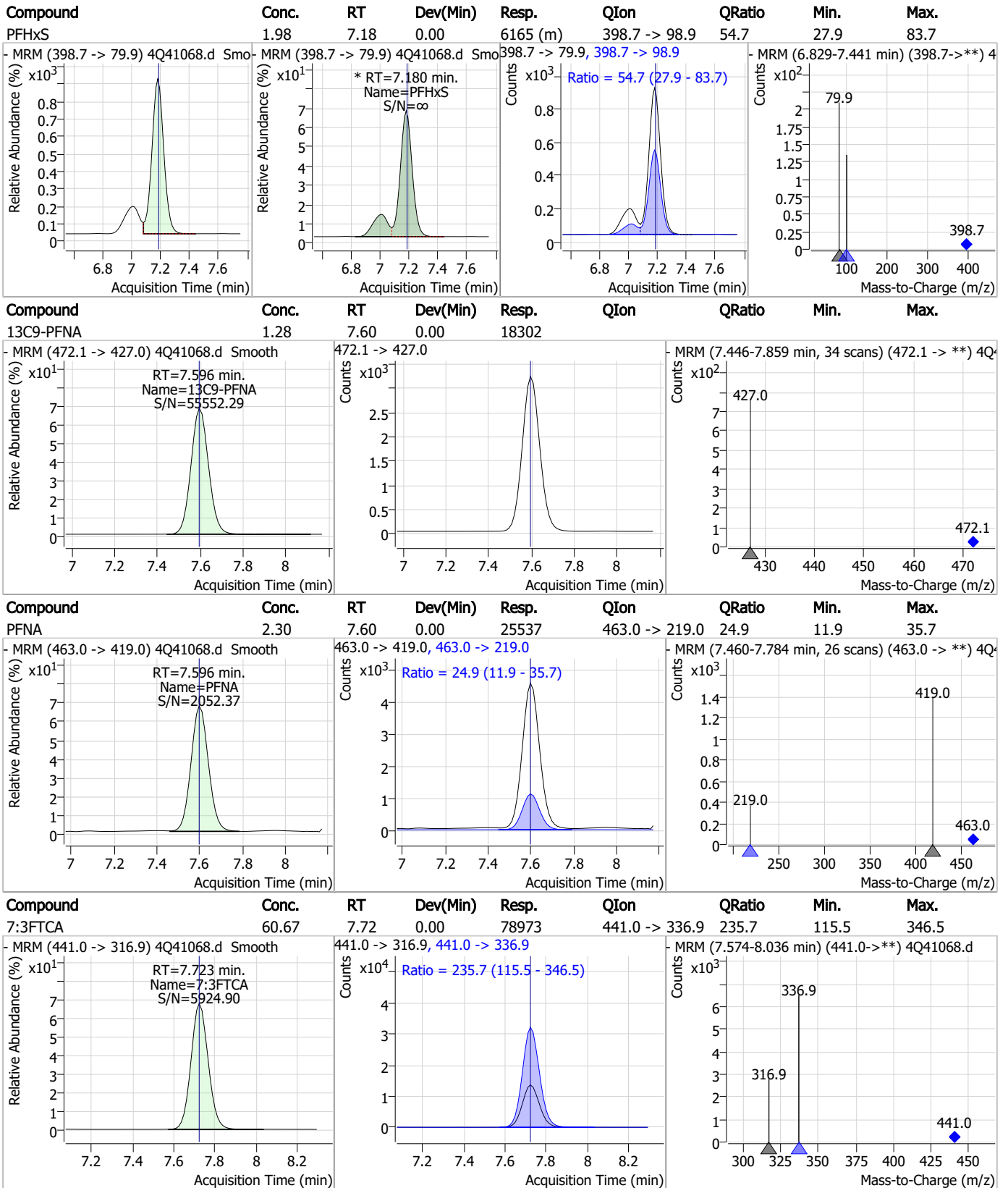
Perfluorinated Compounds by LC/MS/MS



7.6.12

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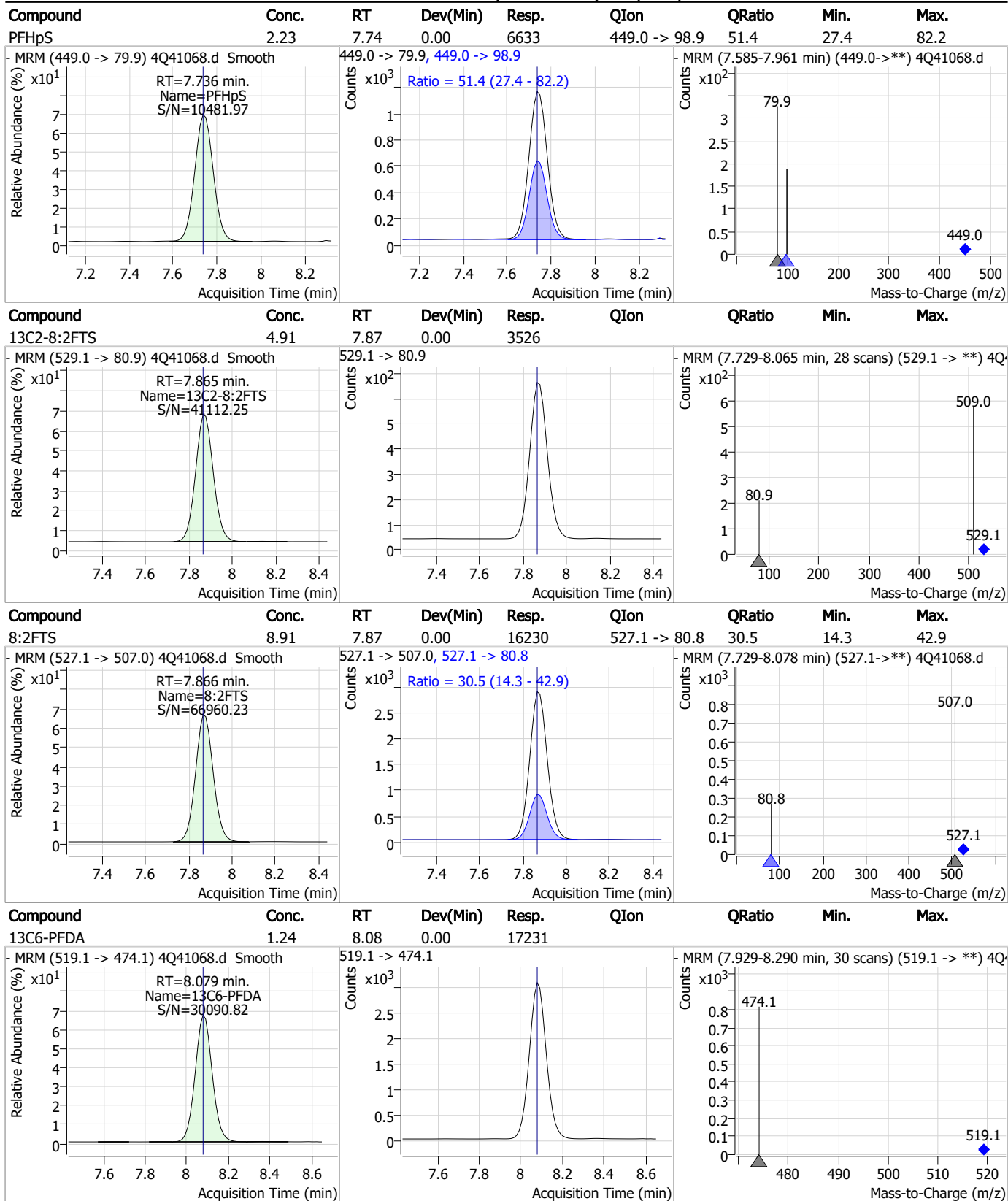
Perfluorinated Compounds by LC/MS/MS



7.6.12
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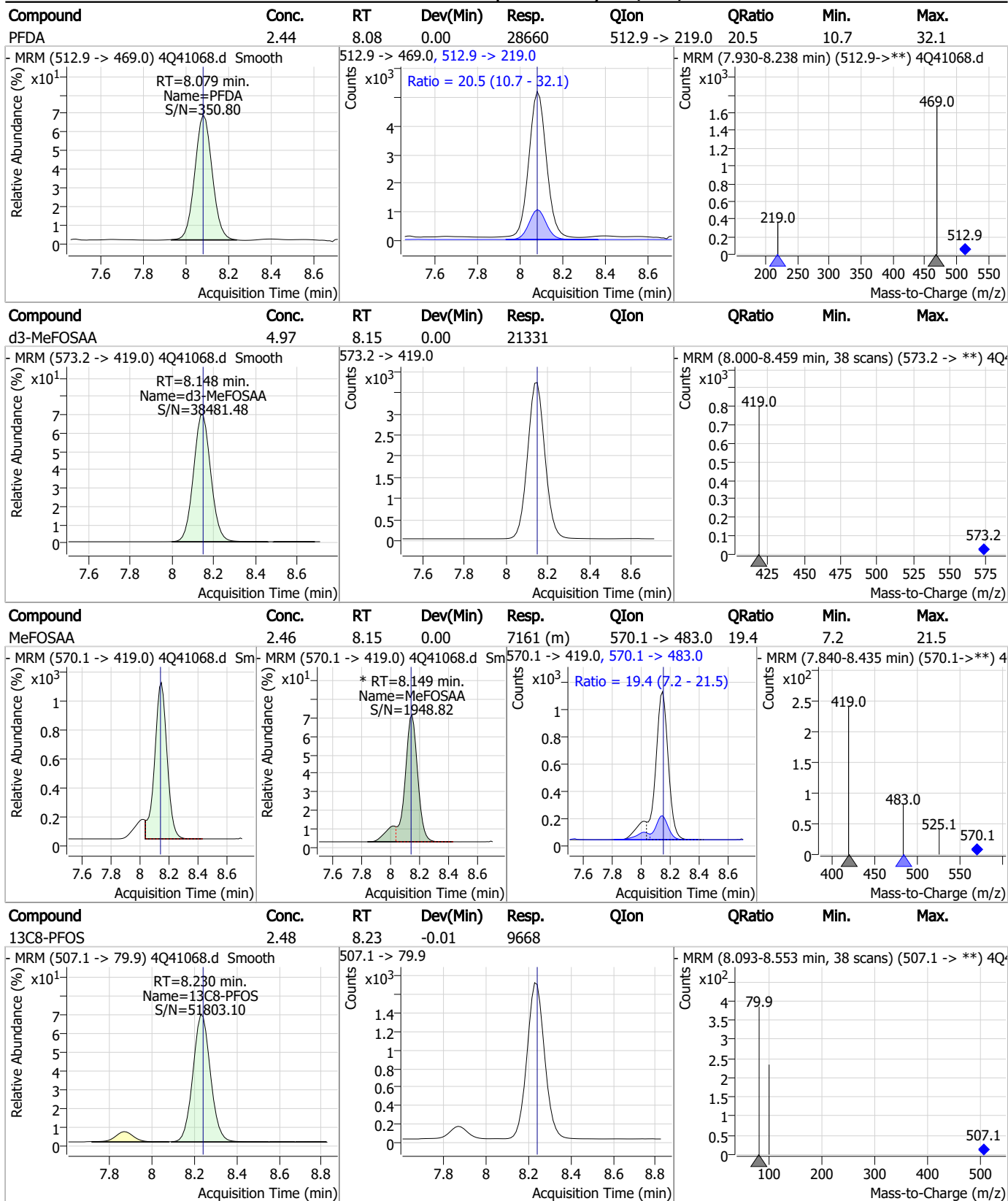
Perfluorinated Compounds by LC/MS/MS



7.6.12

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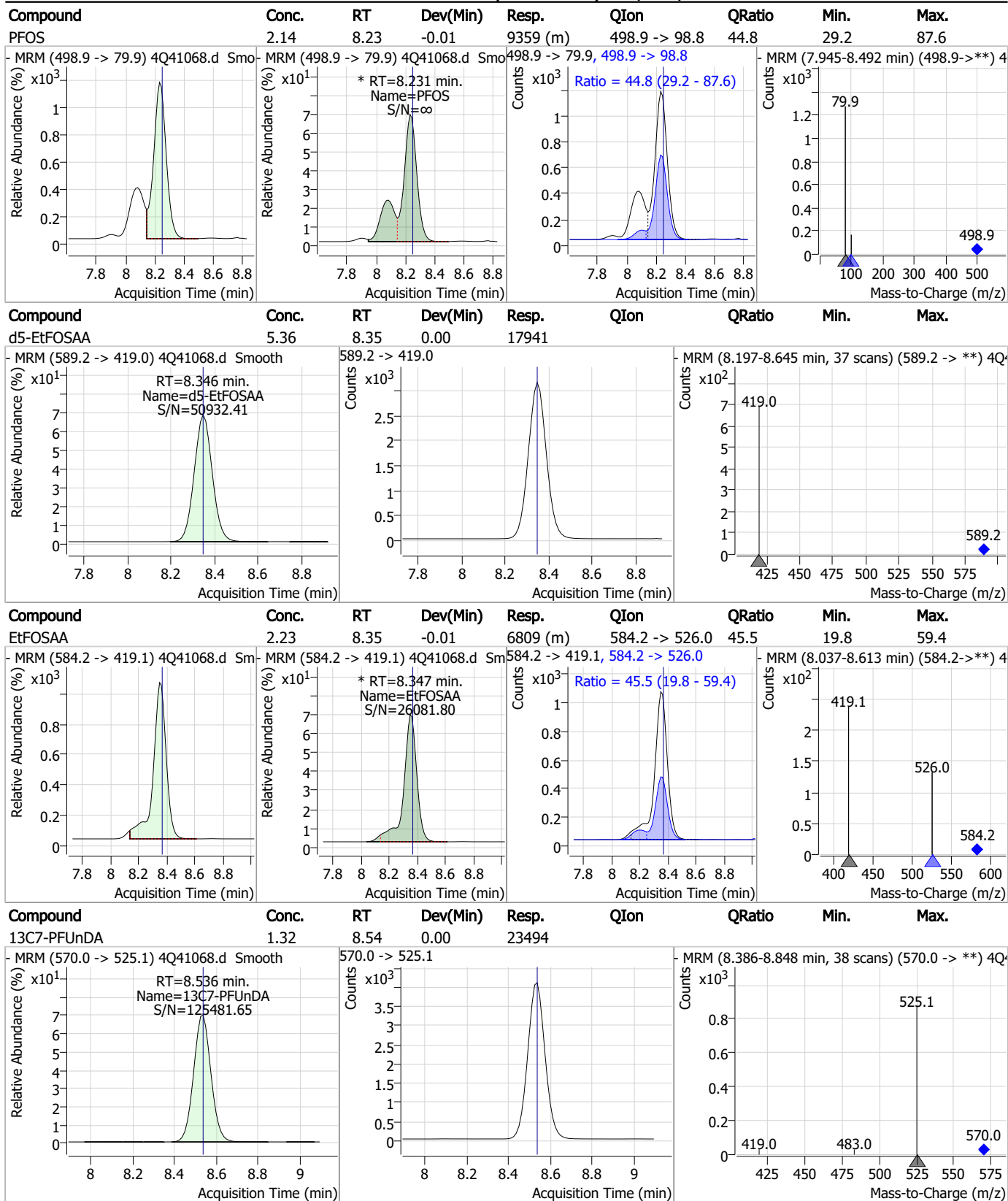
Perfluorinated Compounds by LC/MS/MS



7.6.12
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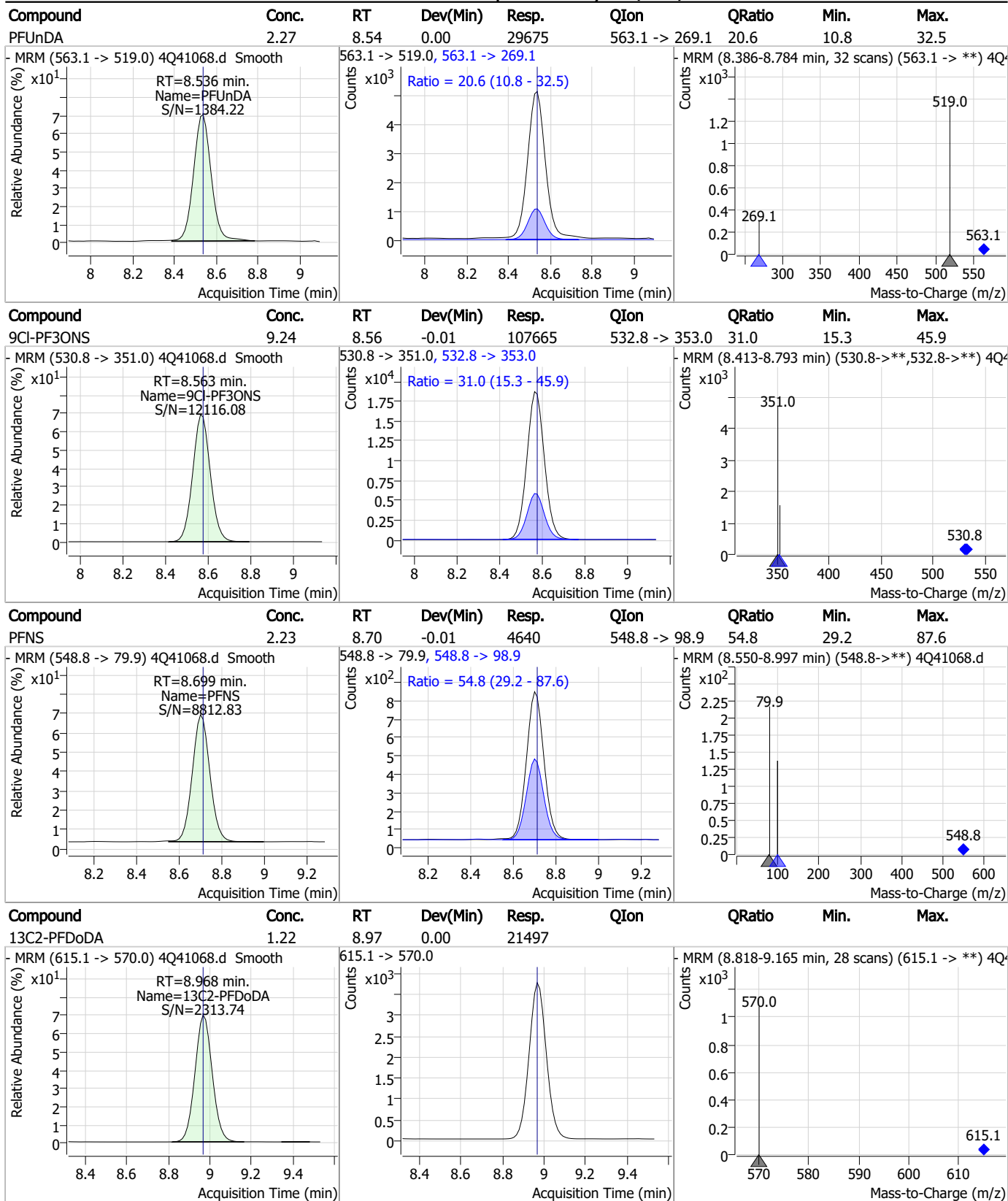


Perfluorinated Compounds by LC/MS/MS



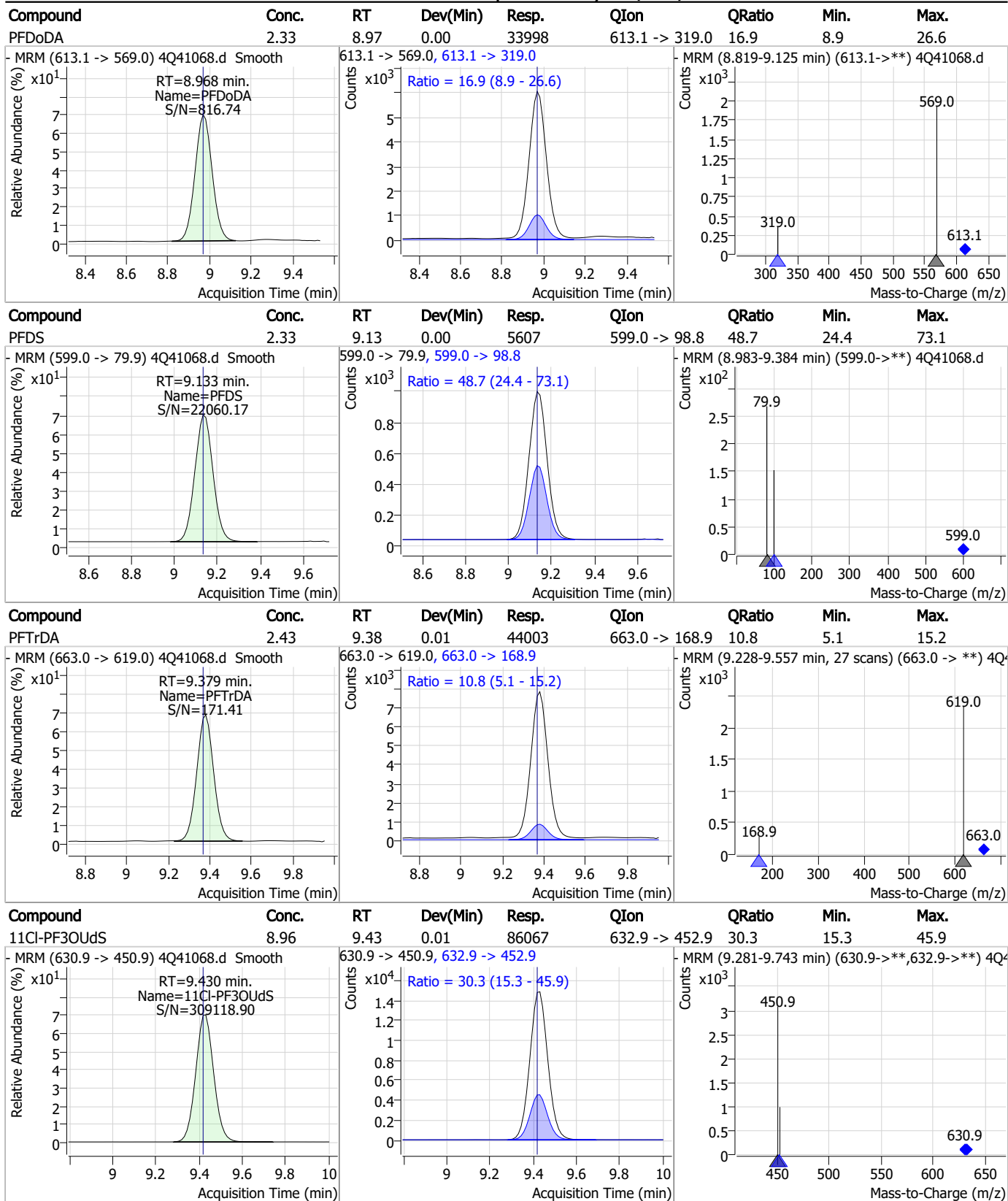
7.6.12
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Perfluorinated Compounds by LC/MS/MS



7.6.12
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Perfluorinated Compounds by LC/MS/MS

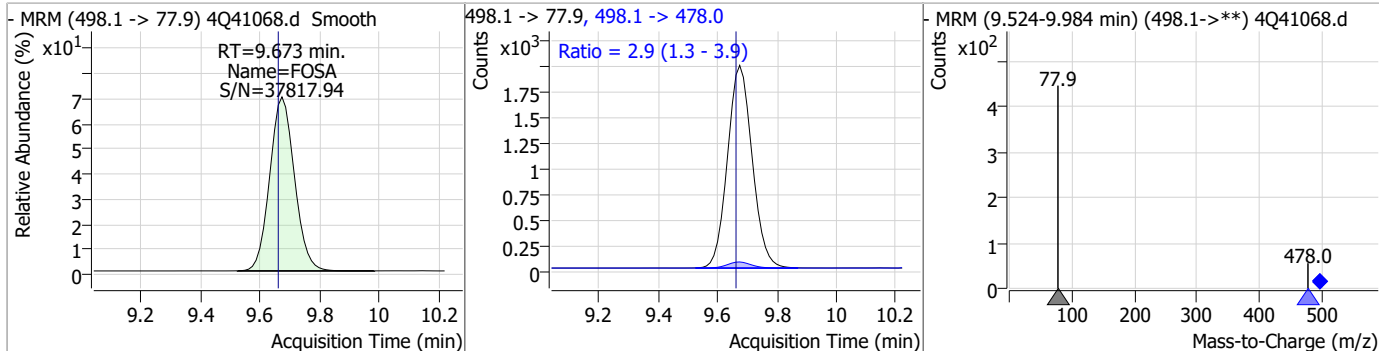


7.6.12 7

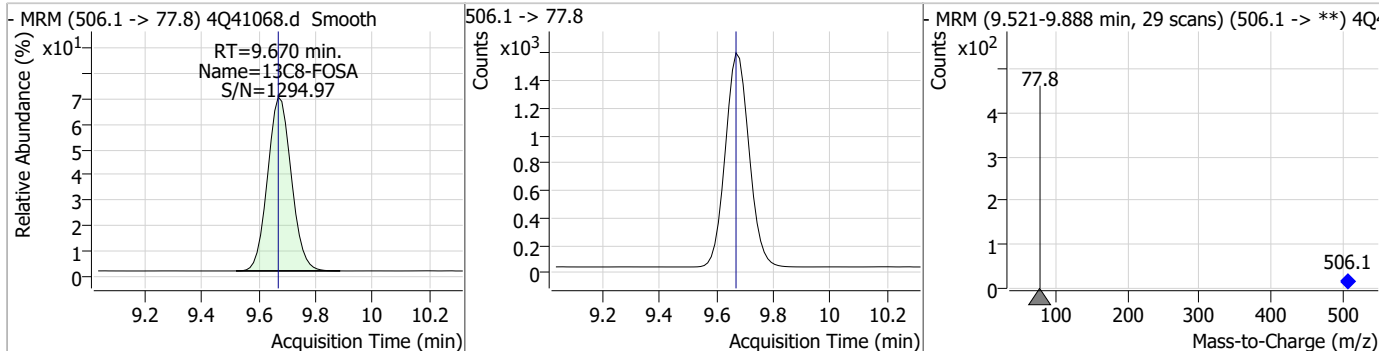


Perfluorinated Compounds by LC/MS/MS

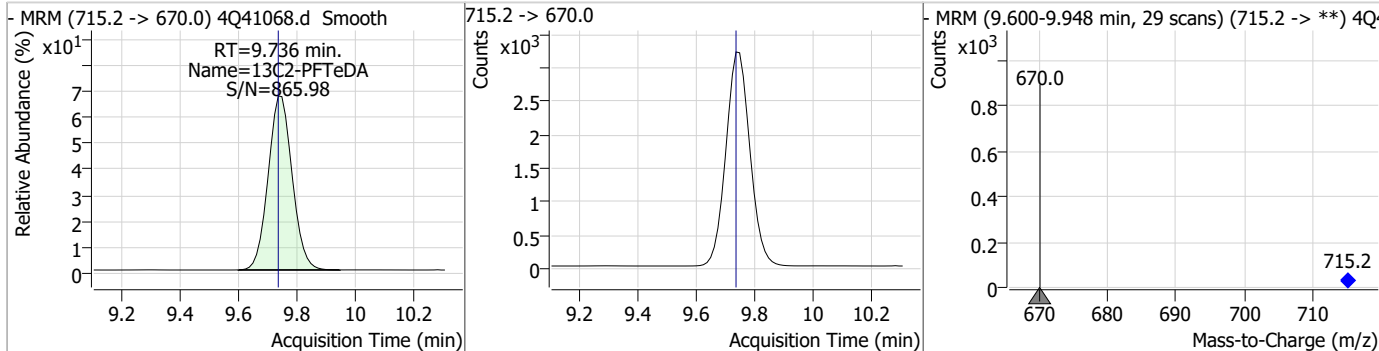
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.38	9.67	0.01	11410	498.1 -> 478.0	2.9	1.3	3.9



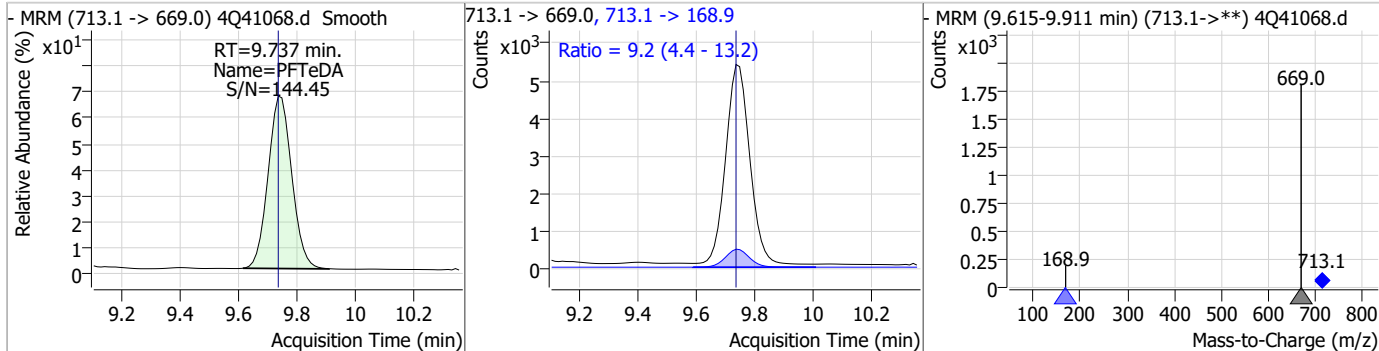
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.50	9.67	0.00	9004				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.20	9.74	0.00	18314				



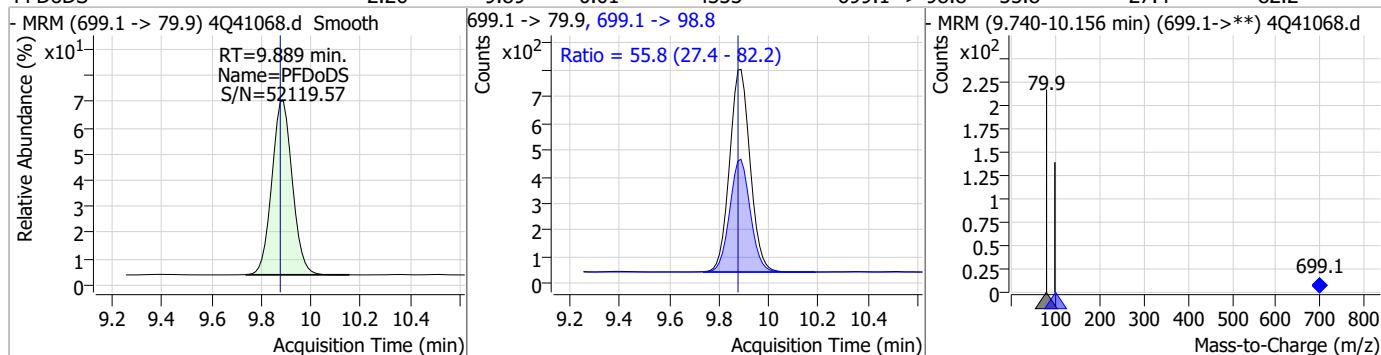
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.35	9.74	0.00	29936	713.1 -> 168.9	9.2	4.4	13.2



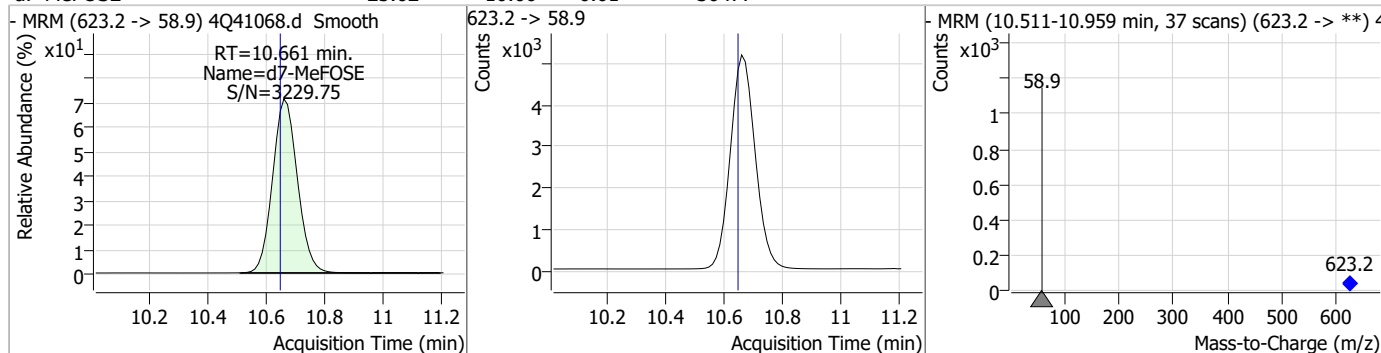
7.6.12
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Perfluorinated Compounds by LC/MS/MS

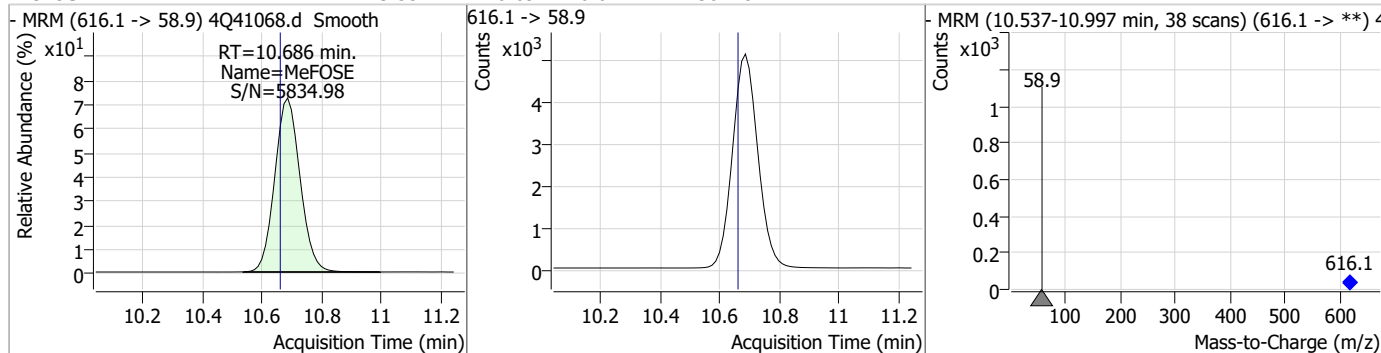
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.26	9.89	0.01	4353	699.1 -> 98.8	55.8	27.4	82.2



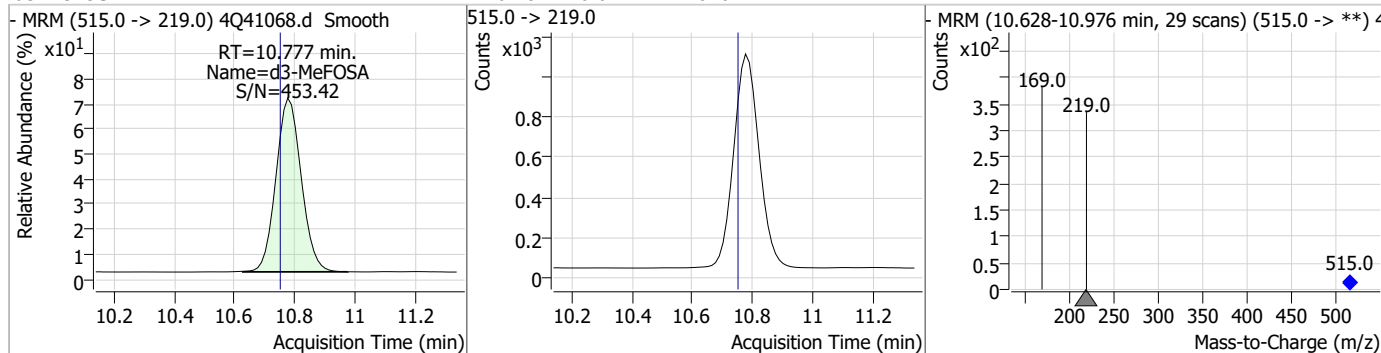
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.62	10.66	0.01	30477				



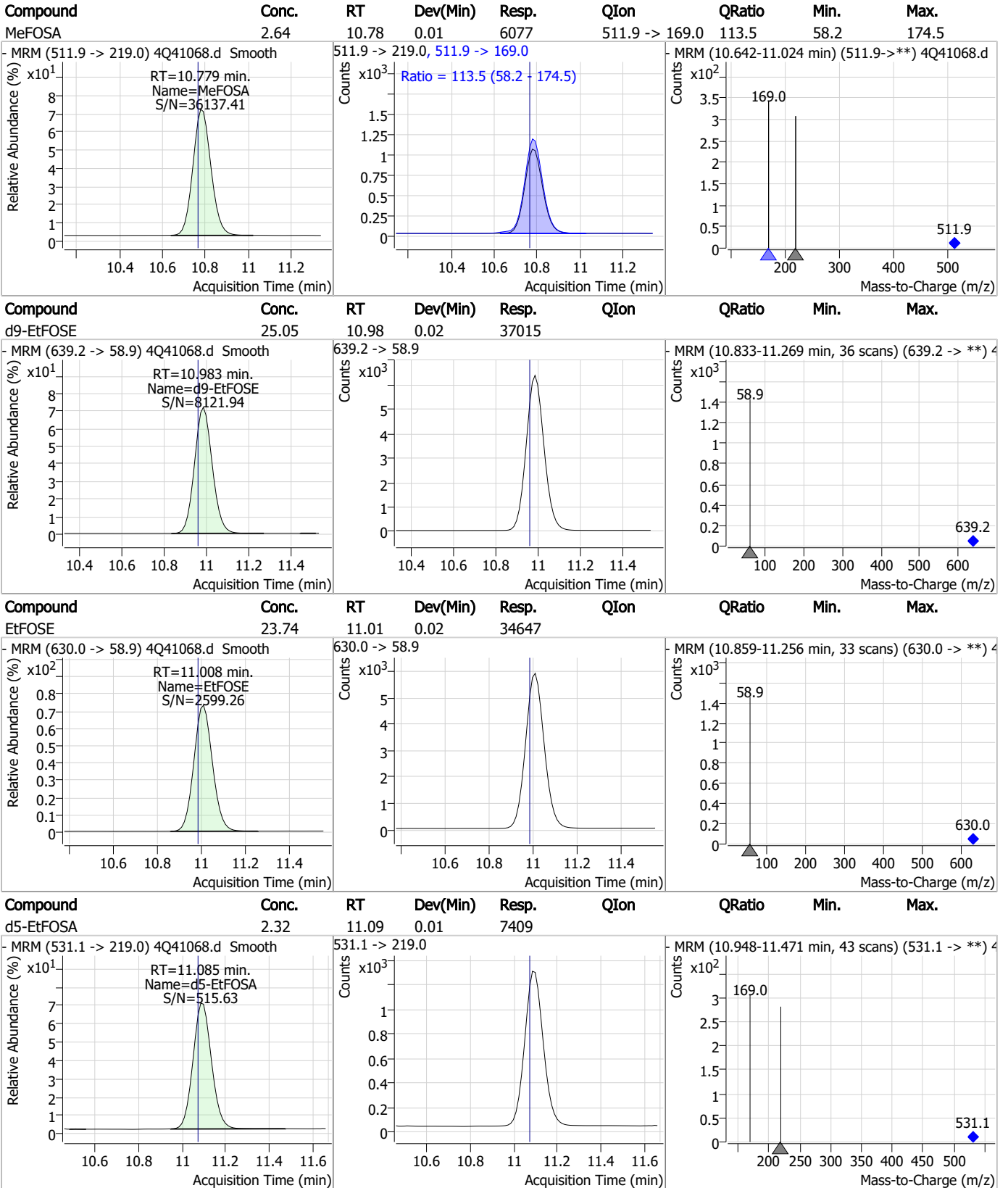
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.55	10.69	0.02	30128				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.24	10.78	0.02	6264				



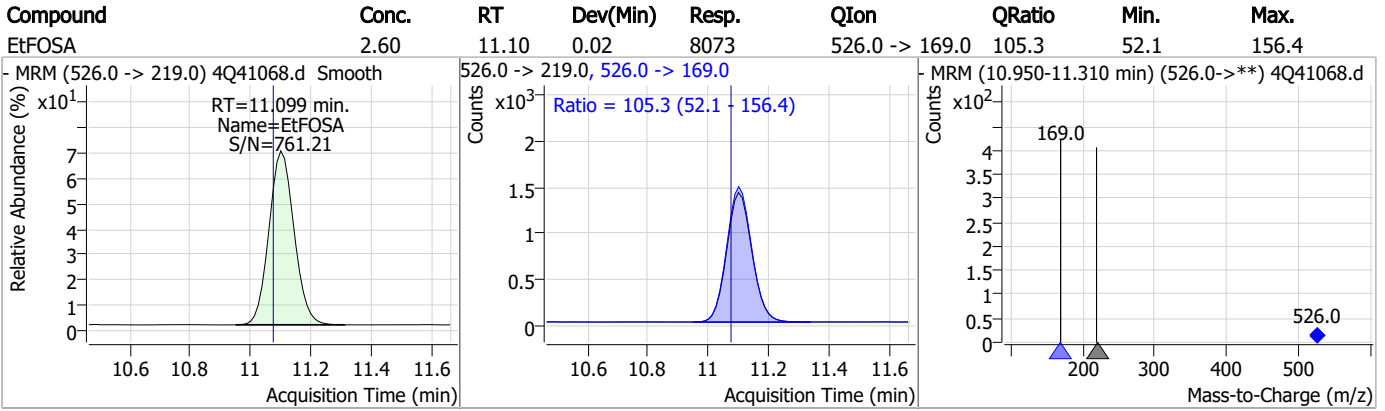
Perfluorinated Compounds by LC/MS/MS



7.6.12 7



Perfluorinated Compounds by LC/MS/MS



7.6.12
7

Manual Integration Approval Summary

Sample Number: S4Q587-CC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41068.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 18:58 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

7.6.12.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41069.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 7:12:24 PM
 Sample Name : cc587-1.0LL
 Vial : P1-A2
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.164	216.8 -> 171.9	143042	10.00 µg/L	0.012
M5-PFPeA	4.512	268.3 -> 223.0	76604	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	58162	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	32585	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	41013	2.50 µg/L	0.000
M9-PFNA	7.583	472.1 -> 427.0	18258	1.25 µg/L	-0.012
M6-PFDA	8.066	519.1 -> 474.1	16166	1.25 µg/L	-0.013
M7-PFUnDA	8.511	570.0 -> 525.1	21487	1.25 µg/L	-0.025
M2-PFDoDA	8.943	615.1 -> 570.0	20350	1.25 µg/L	-0.025
M2-PFTeDA	9.711	715.2 -> 670.0	17330	1.25 µg/L	-0.025
M8-FOSA	9.645	506.1 -> 77.8	8353	2.50 µg/L	-0.025
M3-PFBS	5.501	302.1 -> 79.9	11817	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7156	2.50 µg/L	0.000
M8-PFOS	8.217	507.1 -> 79.9	9045	2.50 µg/L	-0.025
M2-4:2FTS	5.260	329.1 -> 80.9	1613	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2593	5.00 µg/L	0.000
M2-8:2FTS	7.853	529.1 -> 80.9	4287	5.00 µg/L	-0.012
M3-MeFOSAA	8.124	573.2 -> 419.0	20671	5.00 µg/L	-0.025
M3-HFPO-DA	5.889	286.9 -> 168.9	34451	10.00 µg/L	0.012
M5-EtFOSAA	8.334	589.2 -> 419.0	15663	5.00 µg/L	-0.012
M7-MeFOSE	10.623	623.2 -> 58.9	28710	25.00 µg/L	-0.025
M9-EtFOSE	10.945	639.2 -> 58.9	34891	25.00 µg/L	-0.012
M5-EtFOSA	11.048	531.1 -> 219.0	7669	2.50 µg/L	-0.025
M3-MeFOSA	10.740	515.0 -> 219.0	6323	2.50 µg/L	-0.012
13C4-PFOS	8.218	502.8 -> 79.9	8974	2.50 µg/L	-0.025
13C3-PFBA	3.168	216.0 -> 172.0	84936	5.00 µg/L	0.012
18O2-PFHxS	7.178	403.0 -> 83.9	5182	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	49611	2.50 µg/L	0.000
13C2-PFDA	8.066	515.1 -> 470.1	15934	1.25 µg/L	-0.013
13C5-PFNA	7.584	468.0 -> 423.0	20477	1.25 µg/L	-0.012
13C2-PFHxA	5.560	315.1 -> 270.0	52020	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1613	5.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.0%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2593	5.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.4%		
13C2-8:2FTS	7.853	529.1 -> 80.9	4287	6.34 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.7%		
13C2-PFDoDA	8.943	615.1 -> 570.0	20350	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C2-PFTeDA	9.711	715.2 -> 670.0	17330	1.20 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C3-PFBS	5.501	302.1 -> 79.9	11817	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-PFHxS	7.179	402.1 -> 79.9	7156	2.46 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 = 98.5%		
13C4-PFBA	3.164	216.8 -> 171.9	143042	10.17 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C4-PFHpA	6.417	367.1 -> 322.0	32585	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C5-PFHxA	5.559	318.0 -> 273.0	58162	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C5-PFPeA	4.512	268.3 -> 223.0	76604	5.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C6-PFDA	8.066	519.1 -> 474.1	16166	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C7-PFUnDA	8.511	570.0 -> 525.1	21487	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C8-FOSA	9.645	506.1 -> 77.8	8353	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C8-PFOA	7.062	421.1 -> 376.0	41013	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C8-PFOS	8.217	507.1 -> 79.9	9045	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C9-PFNA	7.583	472.1 -> 427.0	18258	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
d3-MeFOSAA	8.124	573.2 -> 419.0	20671	5.23 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.6%		
13C3-HFPO-DA	5.889	286.9 -> 168.9	34451	10.18 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
d3-MeFOSA	10.740	515.0 -> 219.0	6323	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
d5-EtFOSAA	8.334	589.2 -> 419.0	15663	5.08 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
d7-MeFOSE	10.623	623.2 -> 58.9	28710	26.24 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
d9-EtFOSE	10.945	639.2 -> 58.9	34891	25.67 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
d5-EtFOSA	11.048	531.1 -> 219.0	7669	2.61 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	1623	0.63 µg/L	96
		327.1 -> 80.9	655		
6:2FTS	6.836	427.1 -> 407.0	1812	0.78 µg/L	100
		427.1 -> 80.9	663		
8:2FTS	7.853	527.1 -> 507.0	1599	0.72 µg/L	95
		527.1 -> 80.8	415		
EtFOSAA	8.335	584.2 -> 419.1	504	0.19 µg/L	m 85
		584.2 -> 526.0	245		
FOSA	9.649	498.1 -> 77.9	865	0.19 µg/L	99
		498.1 -> 478.0	24		
MeFOSAA	8.124	570.1 -> 419.0	615	0.22 µg/L	#m 56
		570.1 -> 483.0	201		
PFBA	3.171	212.8 -> 168.9	2455	0.72 µg/L	100
PFBS	5.502	298.7 -> 79.9	640	0.14 µg/L	85
		298.7 -> 98.8	303		
PFDA	8.067	512.9 -> 469.0	1874	0.17 µg/L	96
		512.9 -> 219.0	370		
PFDODA	8.944	613.1 -> 569.0	2590	0.19 µg/L	95
		613.1 -> 319.0	398		
PFDS	9.108	599.0 -> 79.9	384	0.17 µg/L	86

7.6.13
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	223			
PFHpA	6.417	363.1 -> 319.0	3220	0.19	µg/L	96
		363.1 -> 169.0	600			
PFHpS	7.723	449.0 -> 79.9	544	0.20	µg/L	94
		449.0 -> 98.9	276			
PFHxA	5.562	313.0 -> 269.0	3726	0.19	µg/L	99
		313.0 -> 118.9	116			
PFHxS	7.180	398.7 -> 79.9	501	0.17	µg/L	m 98
		398.7 -> 98.9	271			
PFNA	7.584	463.0 -> 419.0	2205	0.20	µg/L	91
		463.0 -> 219.0	428			
PFNS	8.674	548.8 -> 79.9	359	0.18	µg/L	90
		548.8 -> 98.9	237			
PFOA	7.063	413.0 -> 369.0	3258	0.17	µg/L	90
		413.0 -> 169.0	790			
PFOS	8.219	498.9 -> 79.9	856	0.21	µg/L	m 88
		498.9 -> 98.8	421			
PFPeA	4.514	263.0 -> 219.0	6609	0.37	µg/L	100
PFPeS	6.484	349.1 -> 79.9	368	0.16	µg/L	85
		349.1 -> 98.9	212			
PFTeDA	9.712	713.1 -> 669.0	2594	0.22	µg/L	98
		713.1 -> 168.9	211			
PFTrDA	9.354	663.0 -> 619.0	3090	0.18	µg/L	95
		663.0 -> 168.9	367			
PFUnDA	8.511	563.1 -> 519.0	2608	0.22	µg/L	90
		563.1 -> 269.1	442			
11Cl-PF3OUdS	9.393	630.9 -> 450.9	6211	0.69	µg/L	99
		632.9 -> 452.9	1936			
9Cl-PF3ONS	8.550	530.8 -> 351.0	7232	0.67	µg/L	94
		532.8 -> 353.0	2454			
ADONA	6.668	376.9 -> 250.9	13521	0.68	µg/L	94
		376.9 -> 84.8	2713			
HFPO-DA	5.890	284.9 -> 168.9	1921	0.68	µg/L	93
		284.9 -> 184.9	281			
3:3FTCA	4.154	241.0 -> 177.0	897	0.85	µg/L	96
		241.0 -> 117.0	93			
5:3FTCA	6.345	341.0 -> 237.1	13251	4.35	µg/L	96
		341.0 -> 217.0	9869			
7:3FTCA	7.711	441.0 -> 316.9	5950	4.85	µg/L	93
		441.0 -> 336.9	13047			
EtFOSA	11.062	526.0 -> 219.0	565	0.18	µg/L	100
		526.0 -> 169.0	591			
EtFOSE	10.959	630.0 -> 58.9	2560	1.86	µg/L	100
MeFOSA	10.741	511.9 -> 219.0	405	0.17	µg/L	85
		511.9 -> 169.0	538			
MeFOSE	10.649	616.1 -> 58.9	2240	1.86	µg/L	100
PFDoDS	9.852	699.1 -> 79.9	343	0.19	µg/L	96
		699.1 -> 98.8	179			
NFDHA	5.453	295.0 -> 201.0	317	0.41	µg/L	94
		295.0 -> 84.9	86			
PFMBA	4.867	279.0 -> 85.1	3337	0.35	µg/L	100
PFMPA	3.740	229.0 -> 84.9	2670	0.35	µg/L	100
PFEESA	5.983	314.8 -> 134.9	4320	0.32	µg/L	98
		314.8 -> 82.9	184			

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

7.6.13
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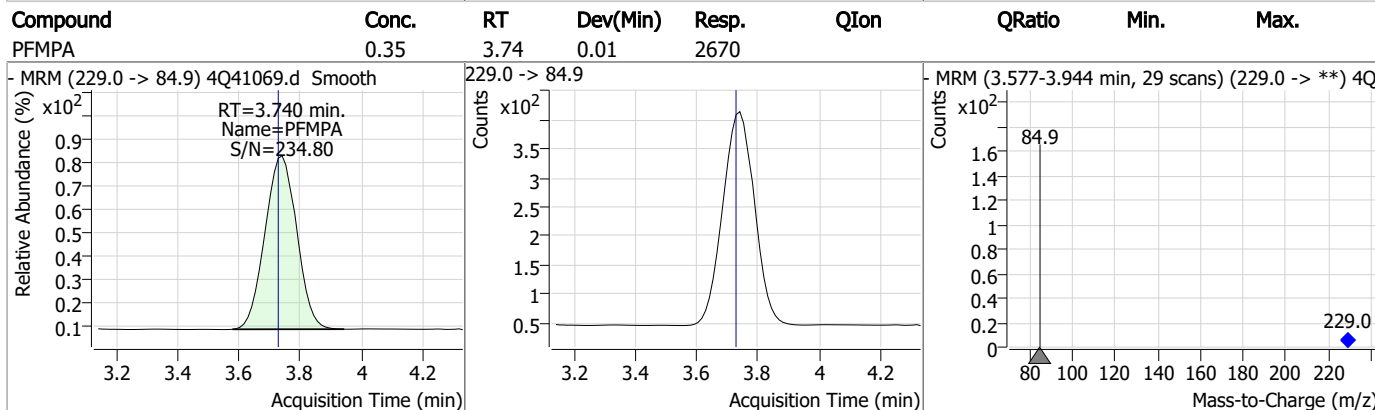
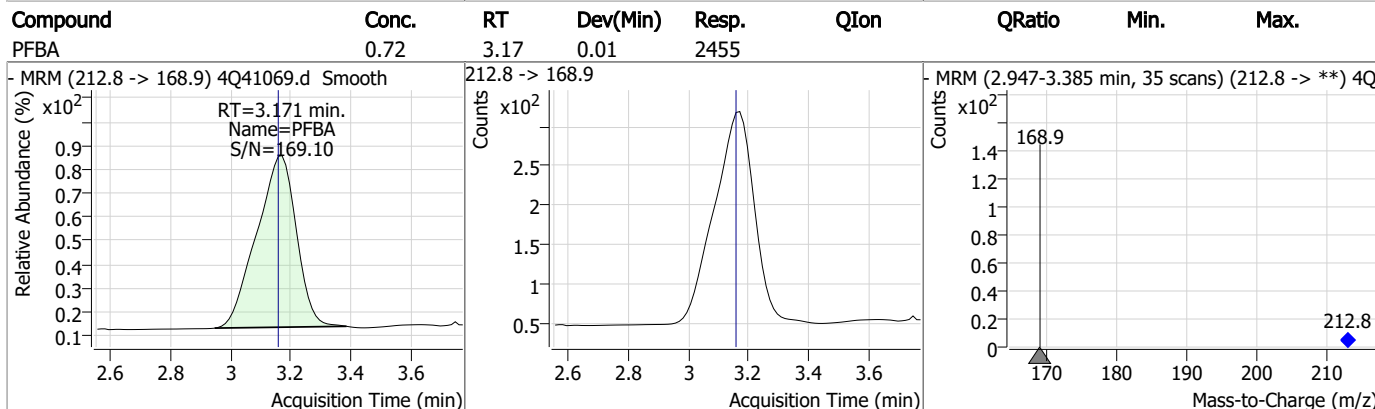
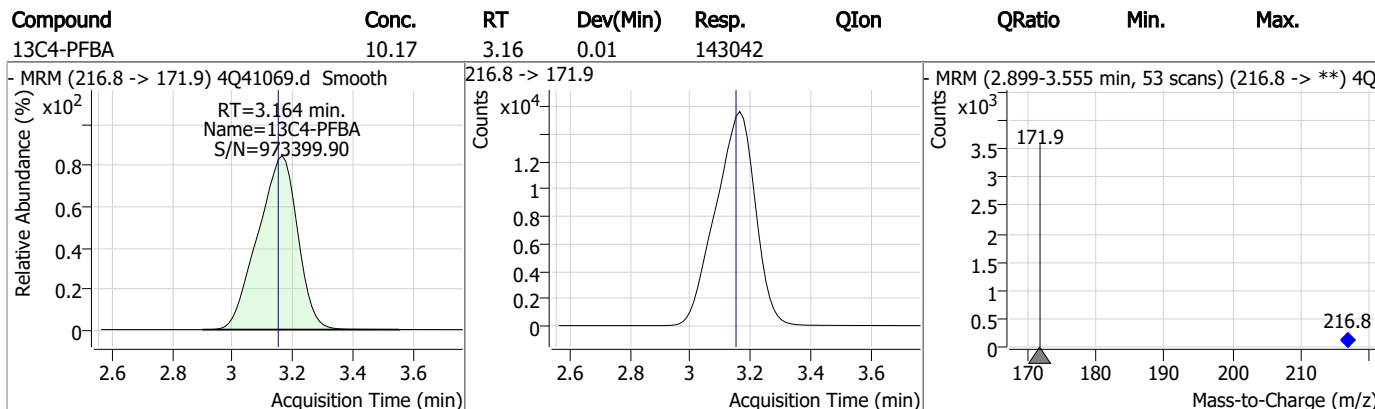
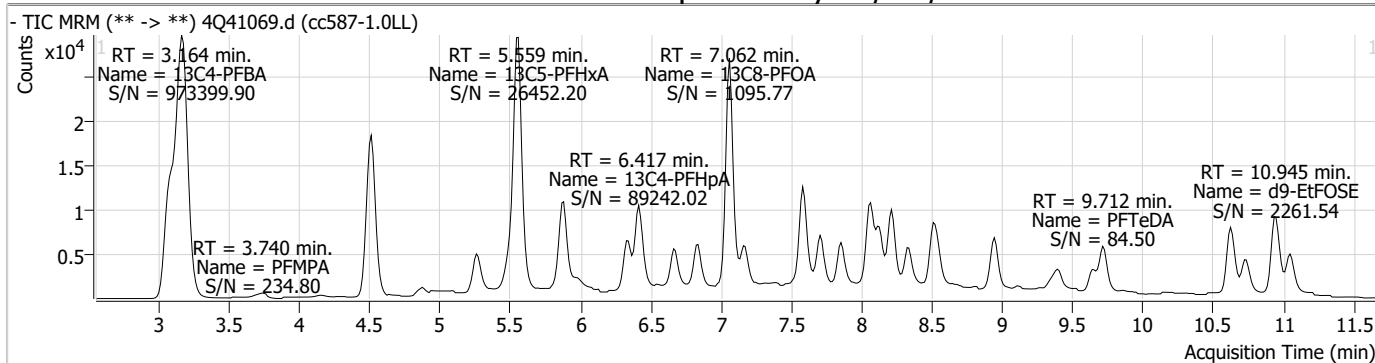
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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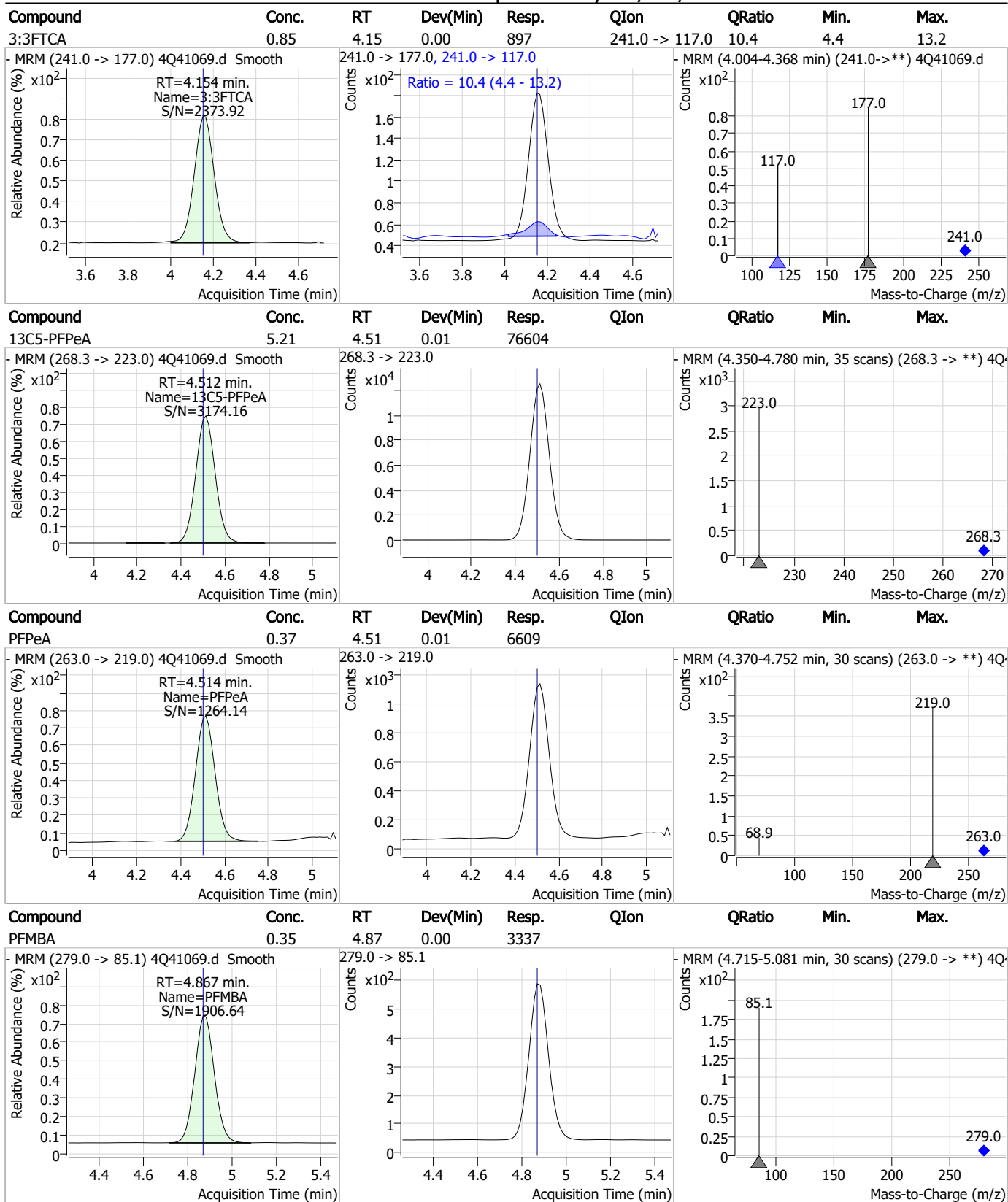
7.6.13

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Perfluorinated Compounds by LC/MS/MS



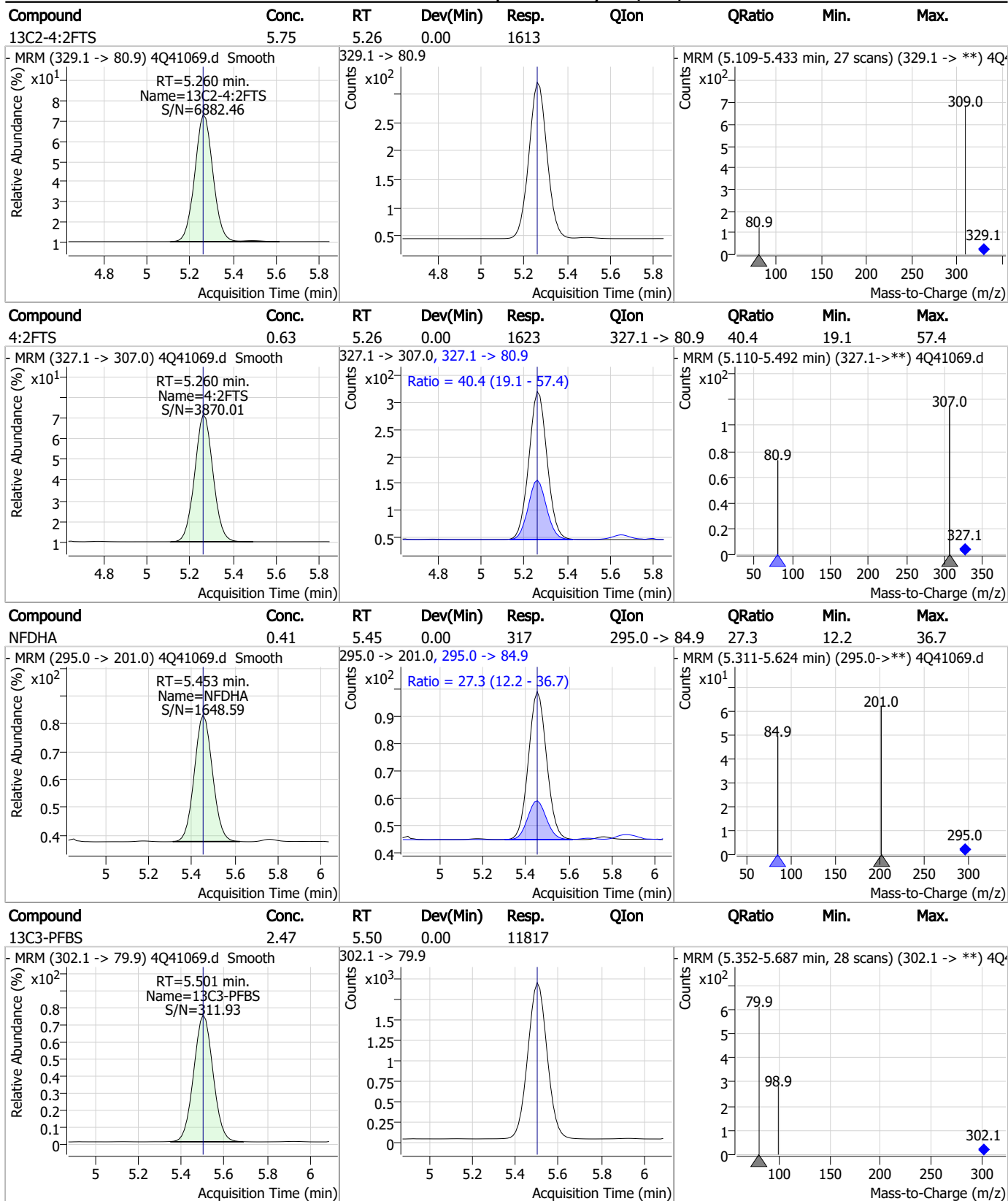
Perfluorinated Compounds by LC/MS/MS



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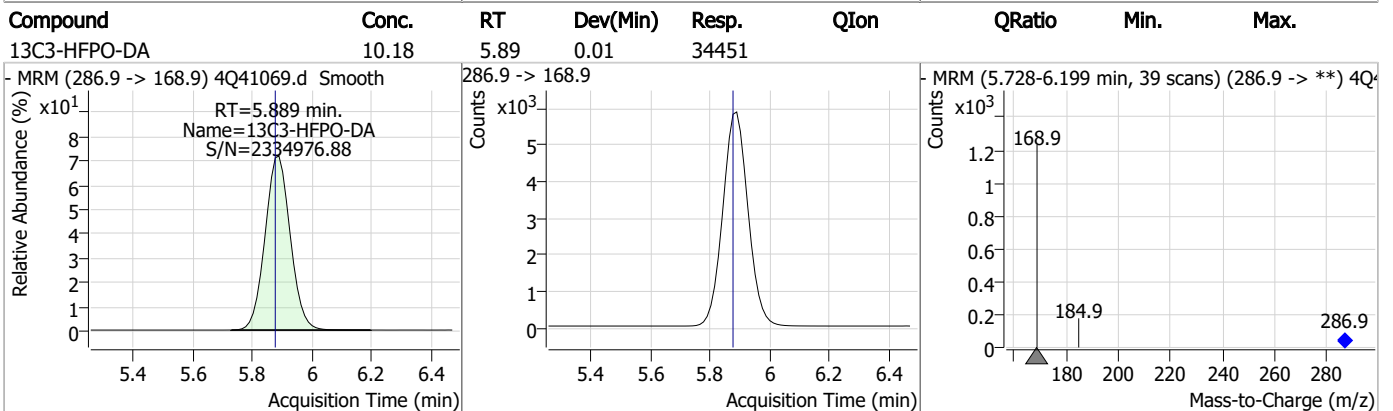
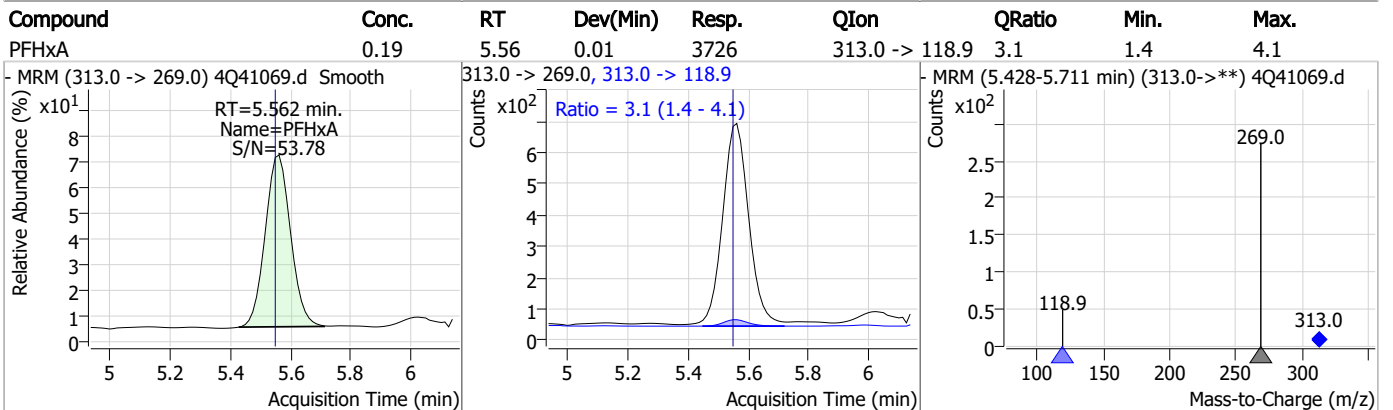
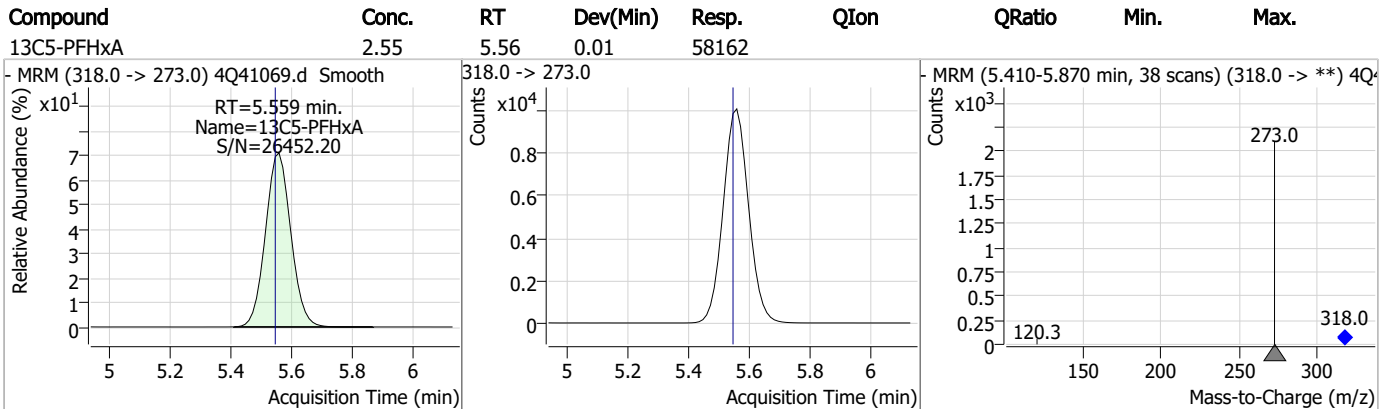
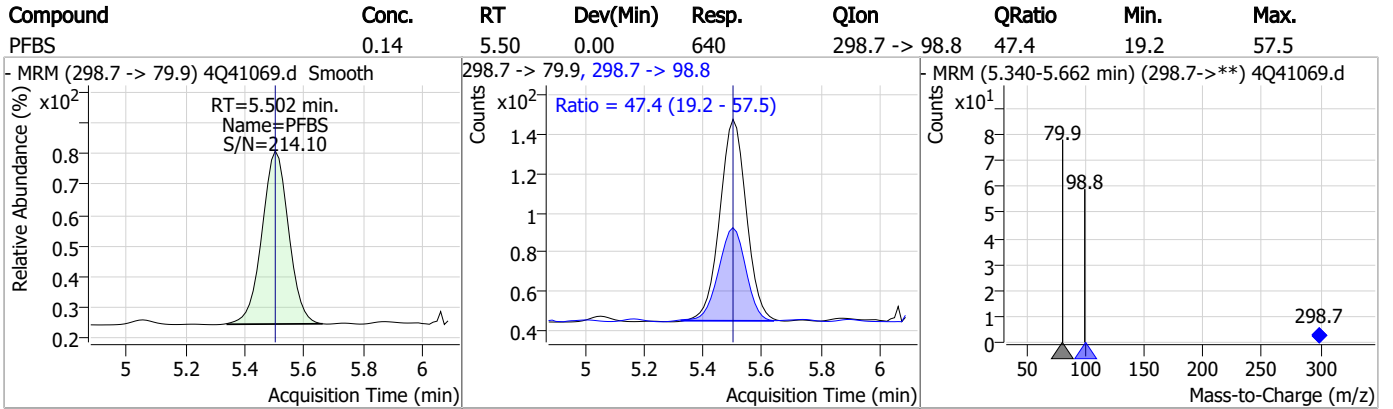
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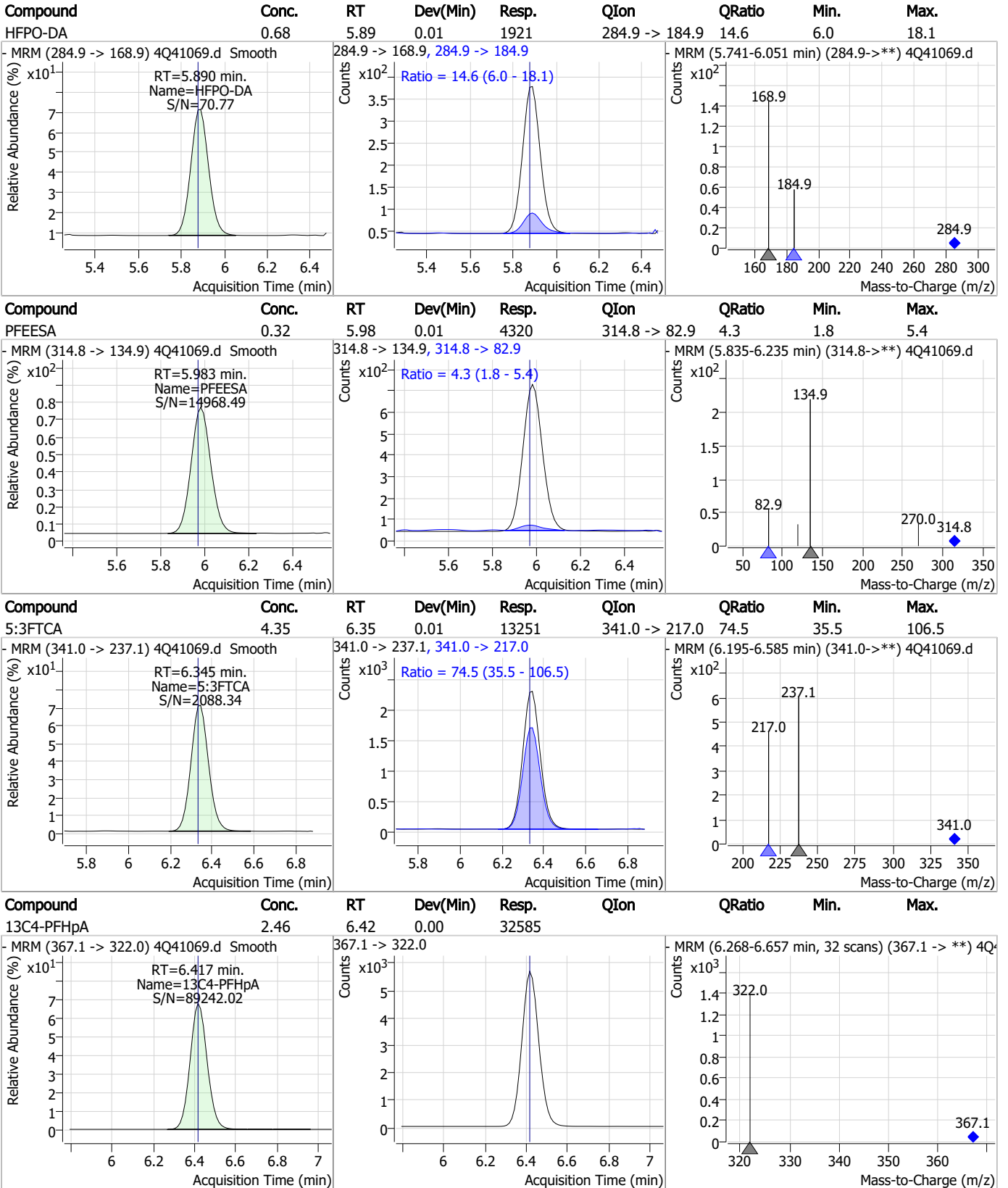
Perfluorinated Compounds by LC/MS/MS



7.6.13
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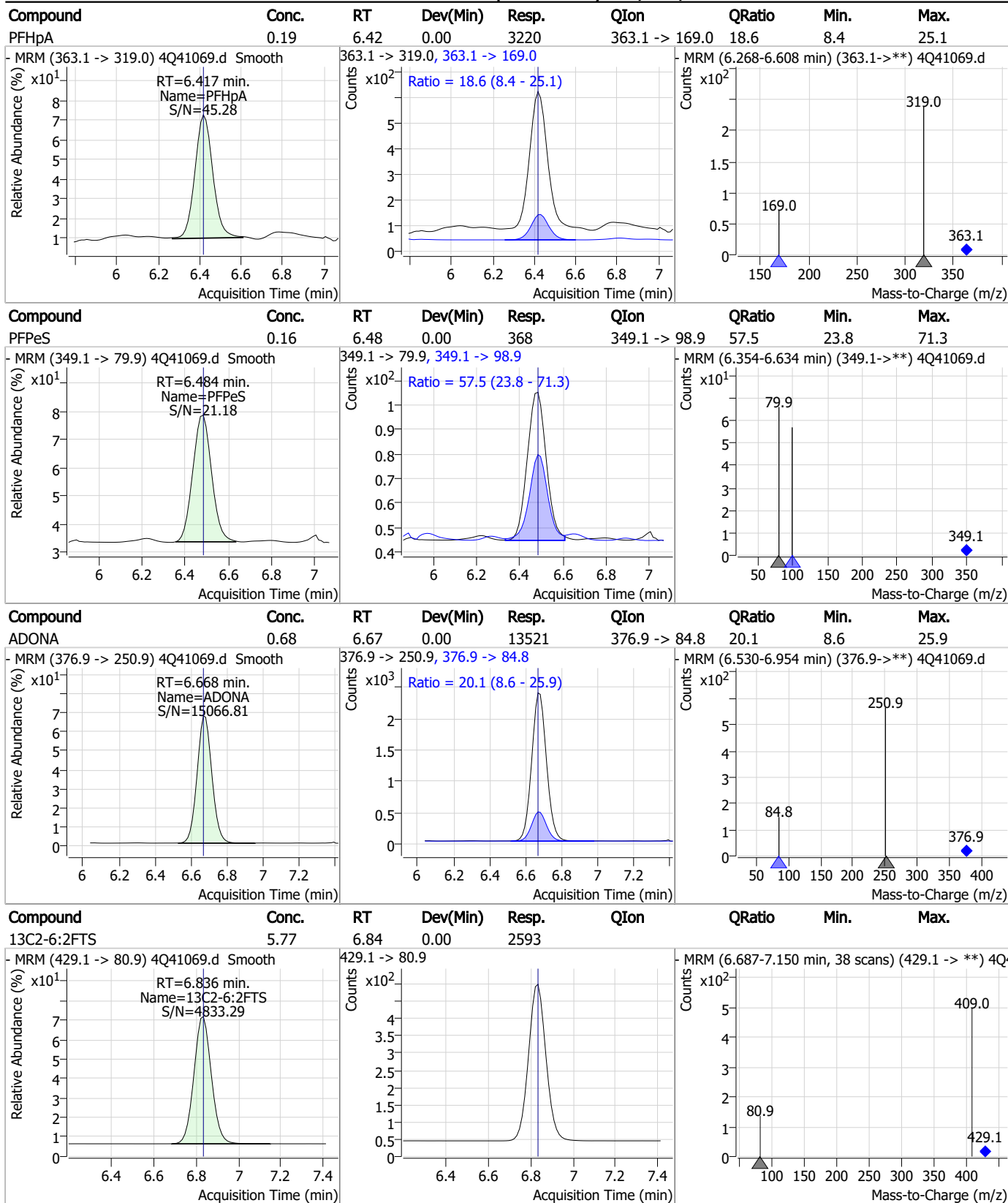
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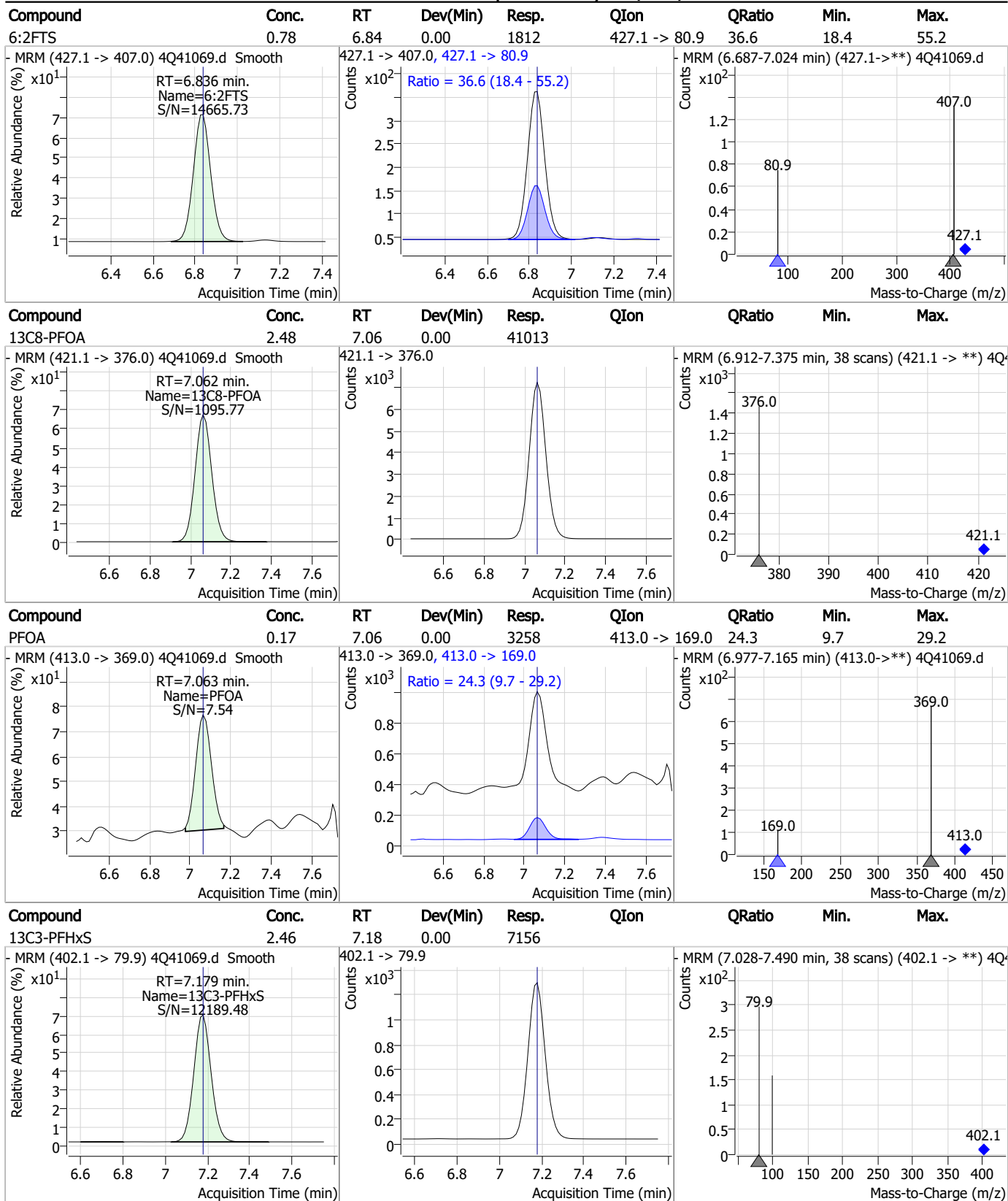
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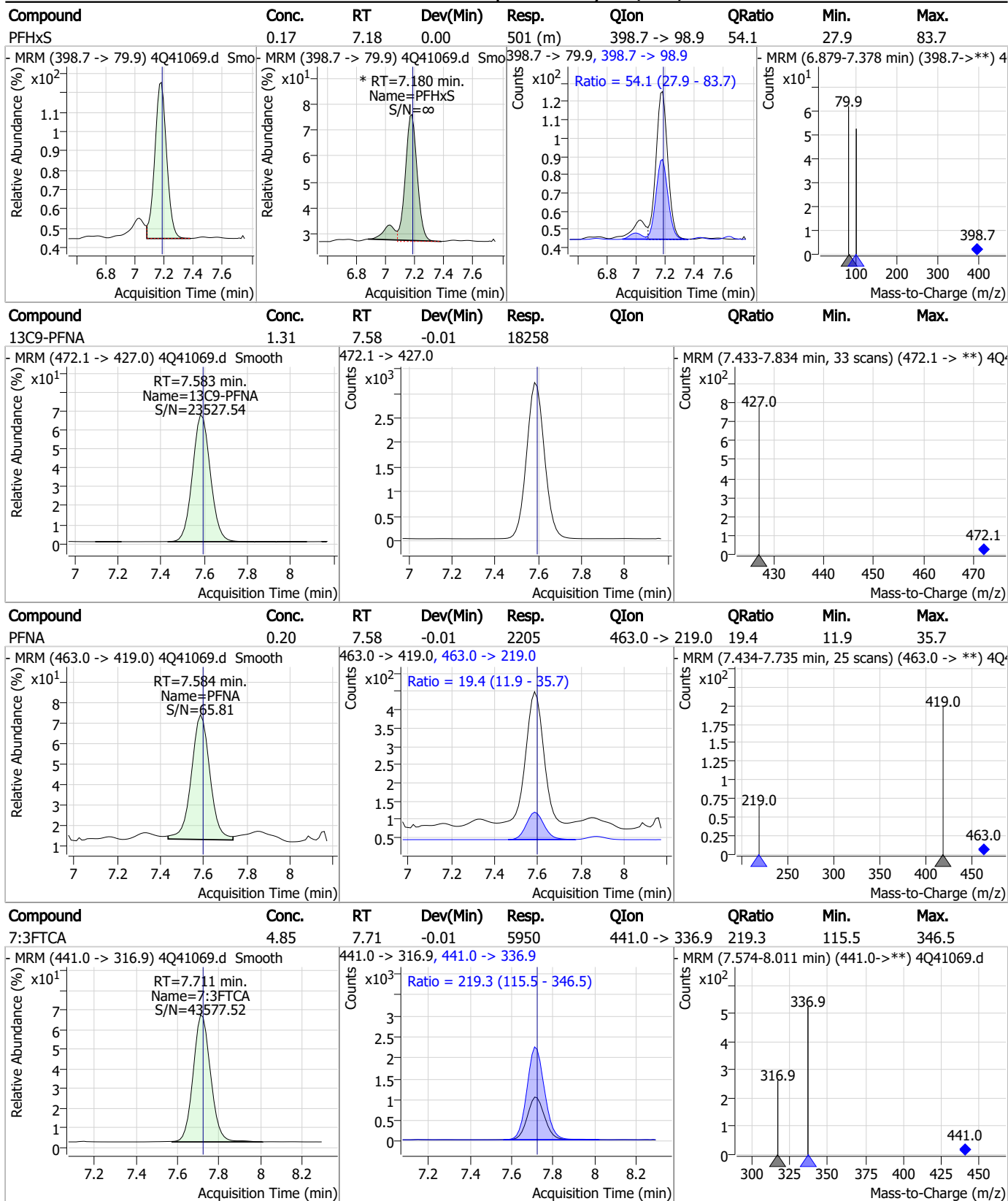
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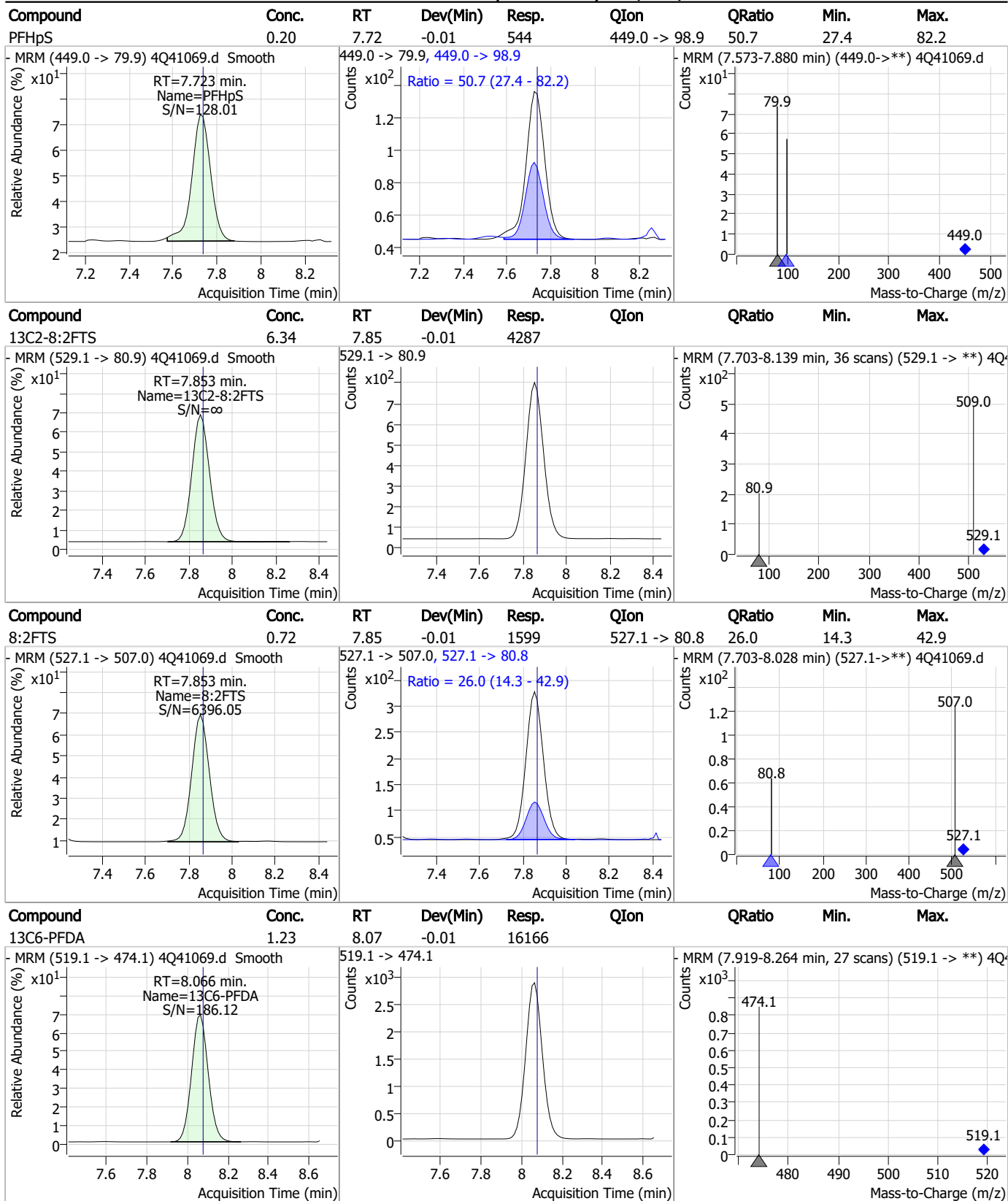
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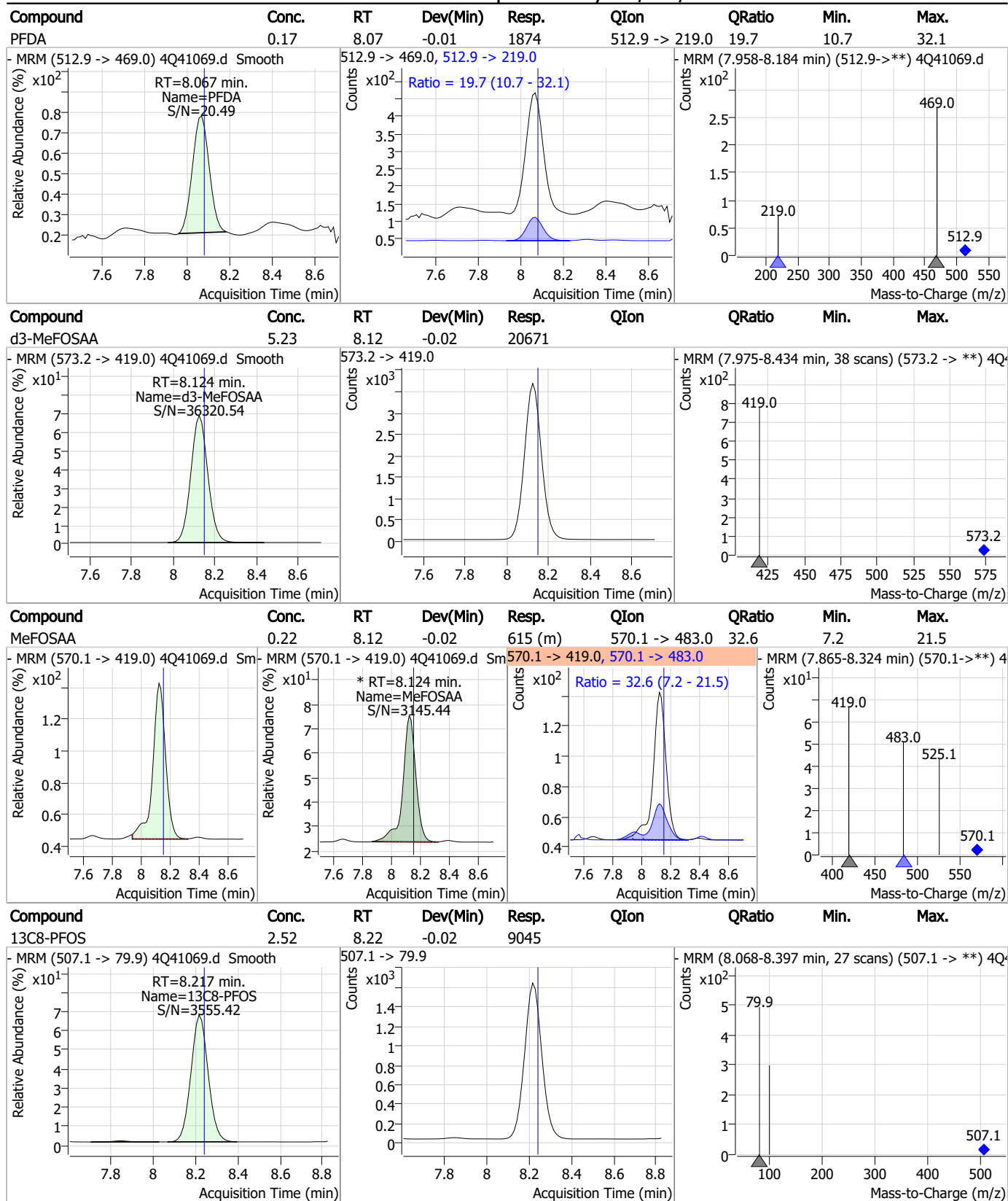
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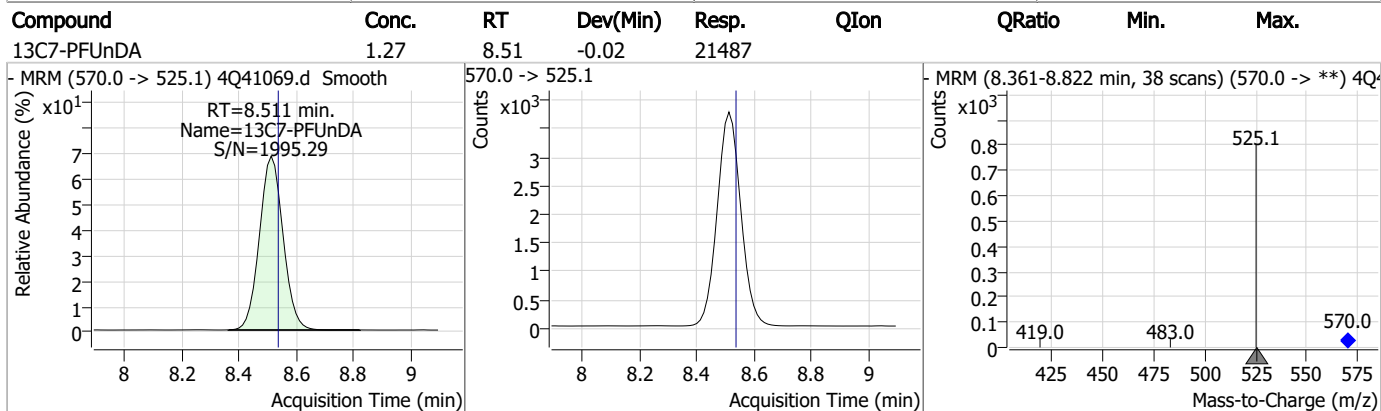
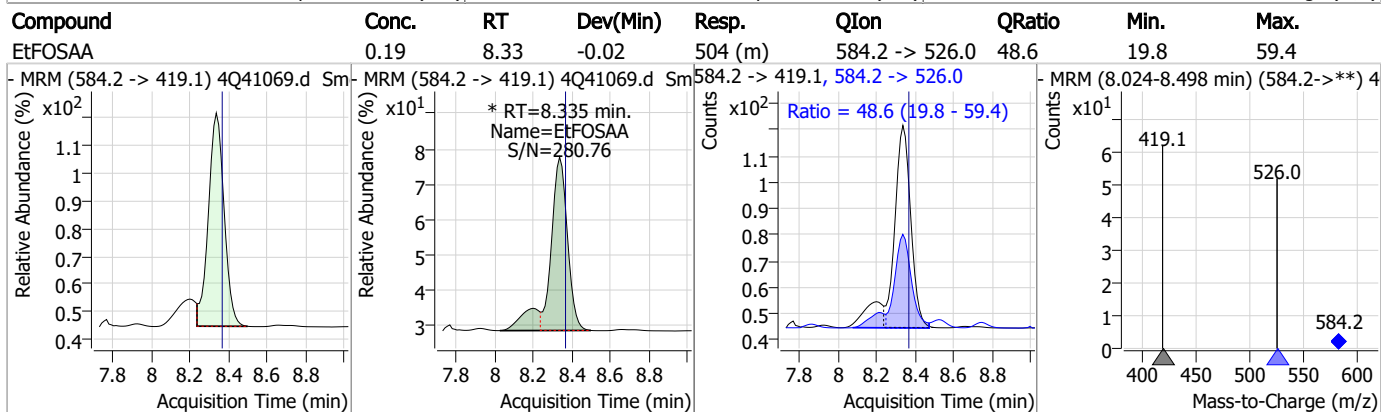
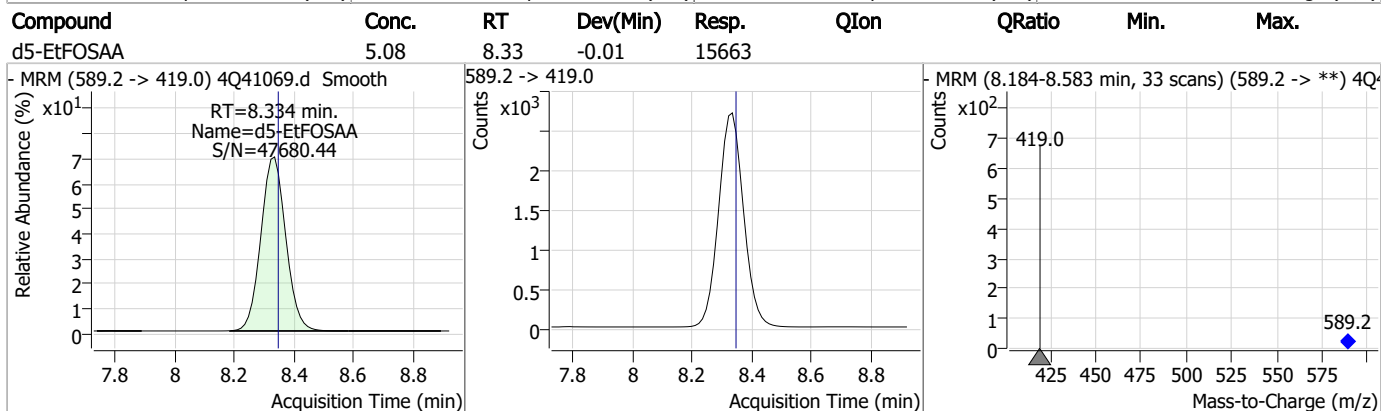
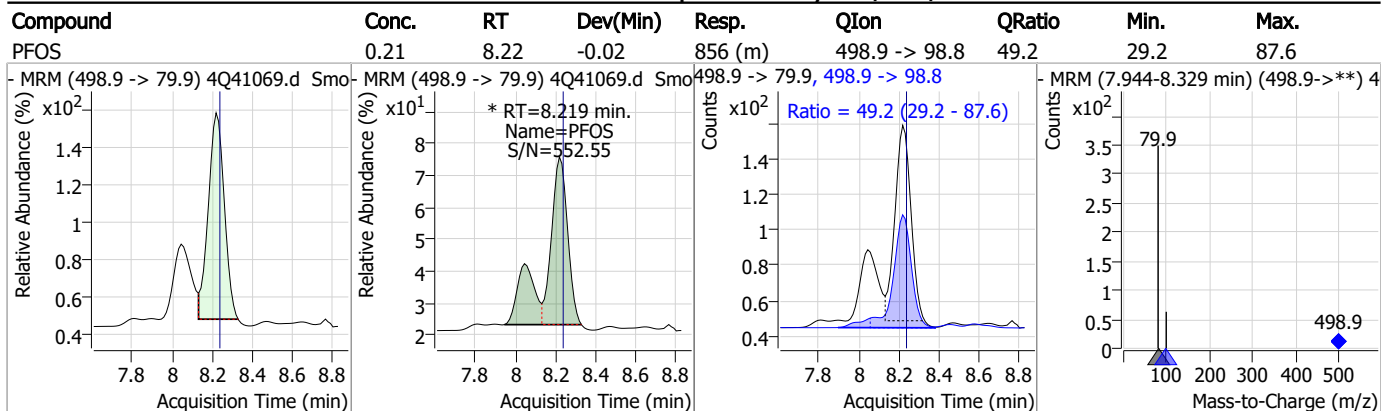
Perfluorinated Compounds by LC/MS/MS



7.6.13

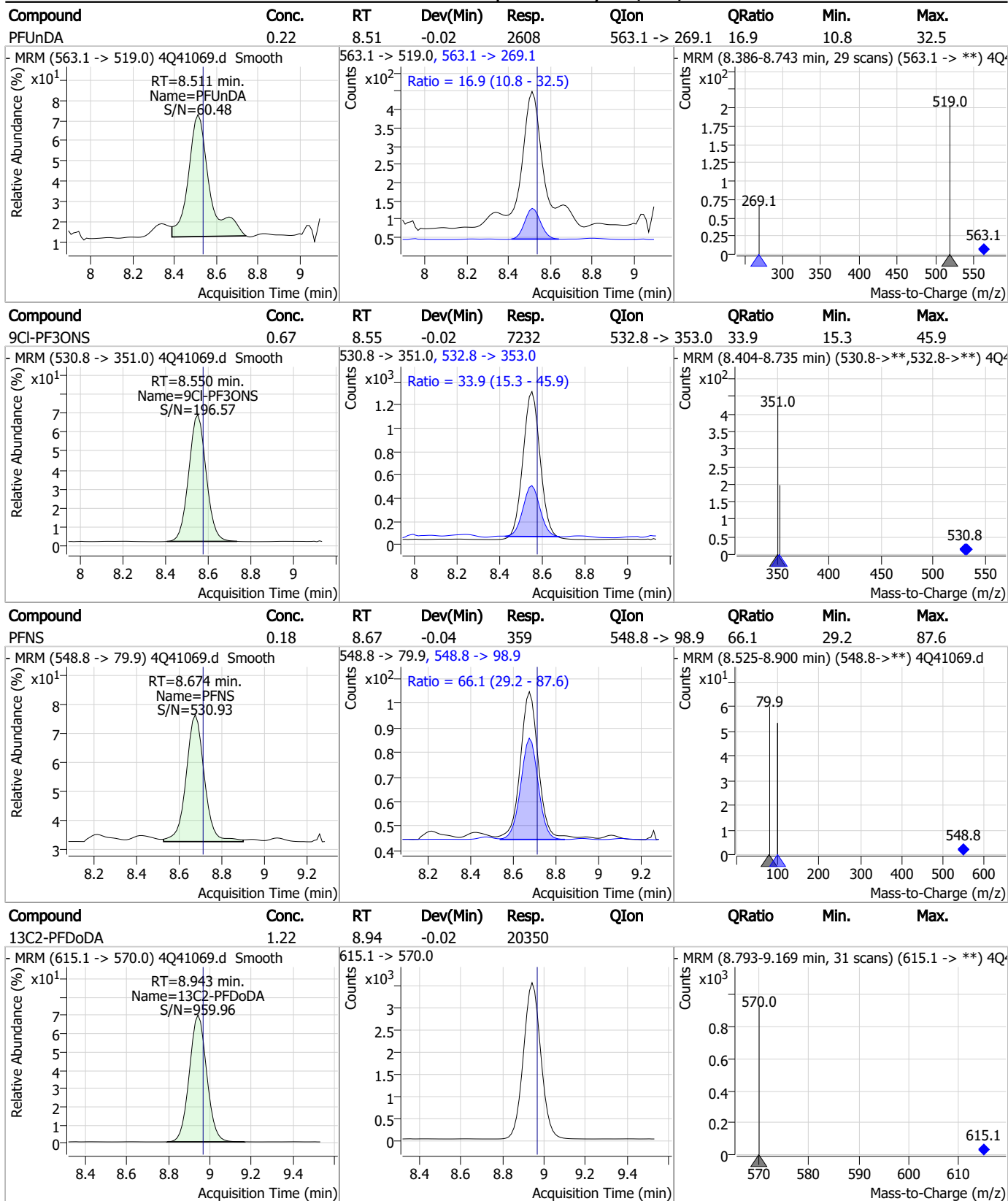
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Perfluorinated Compounds by LC/MS/MS



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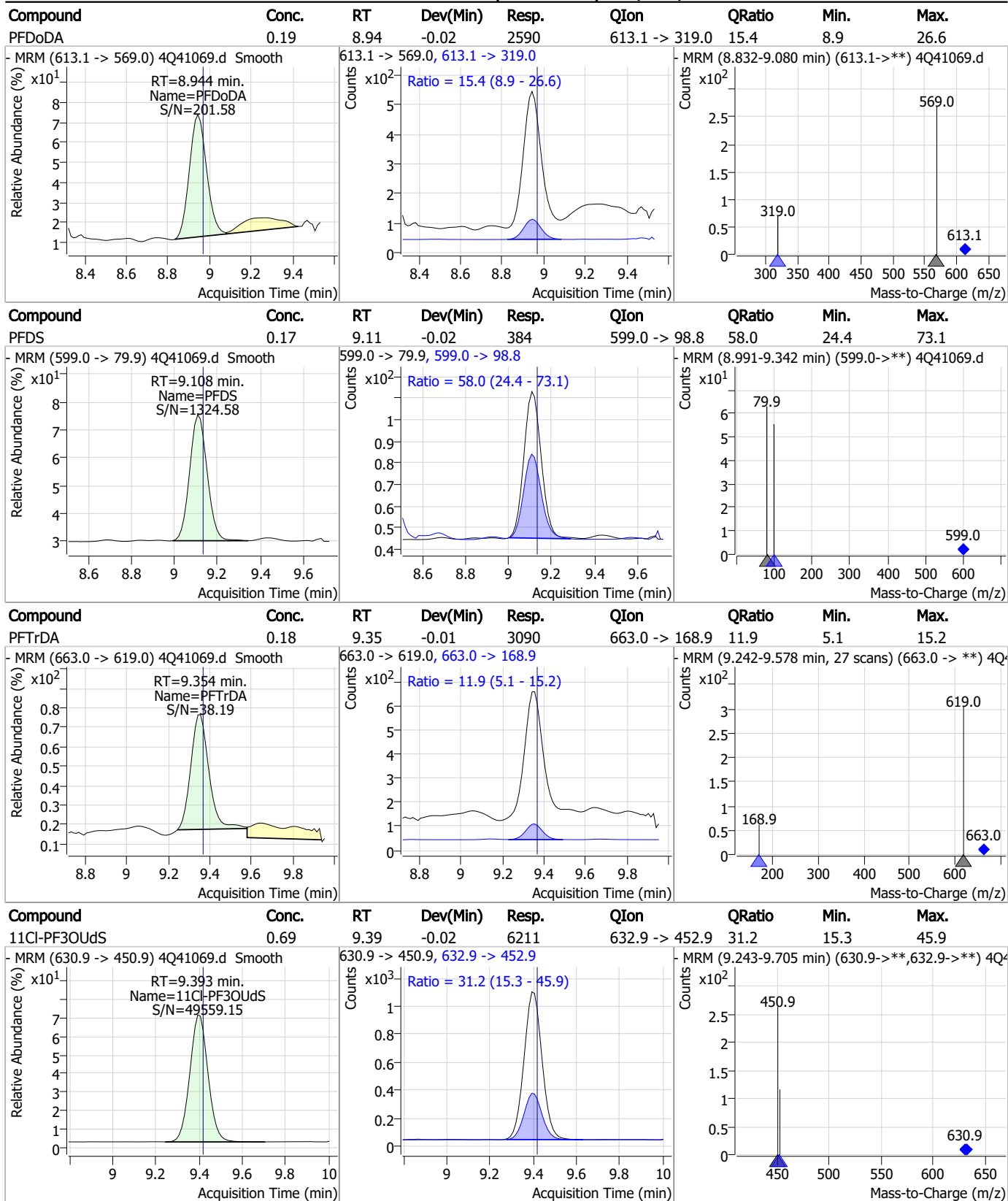
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7.6.13

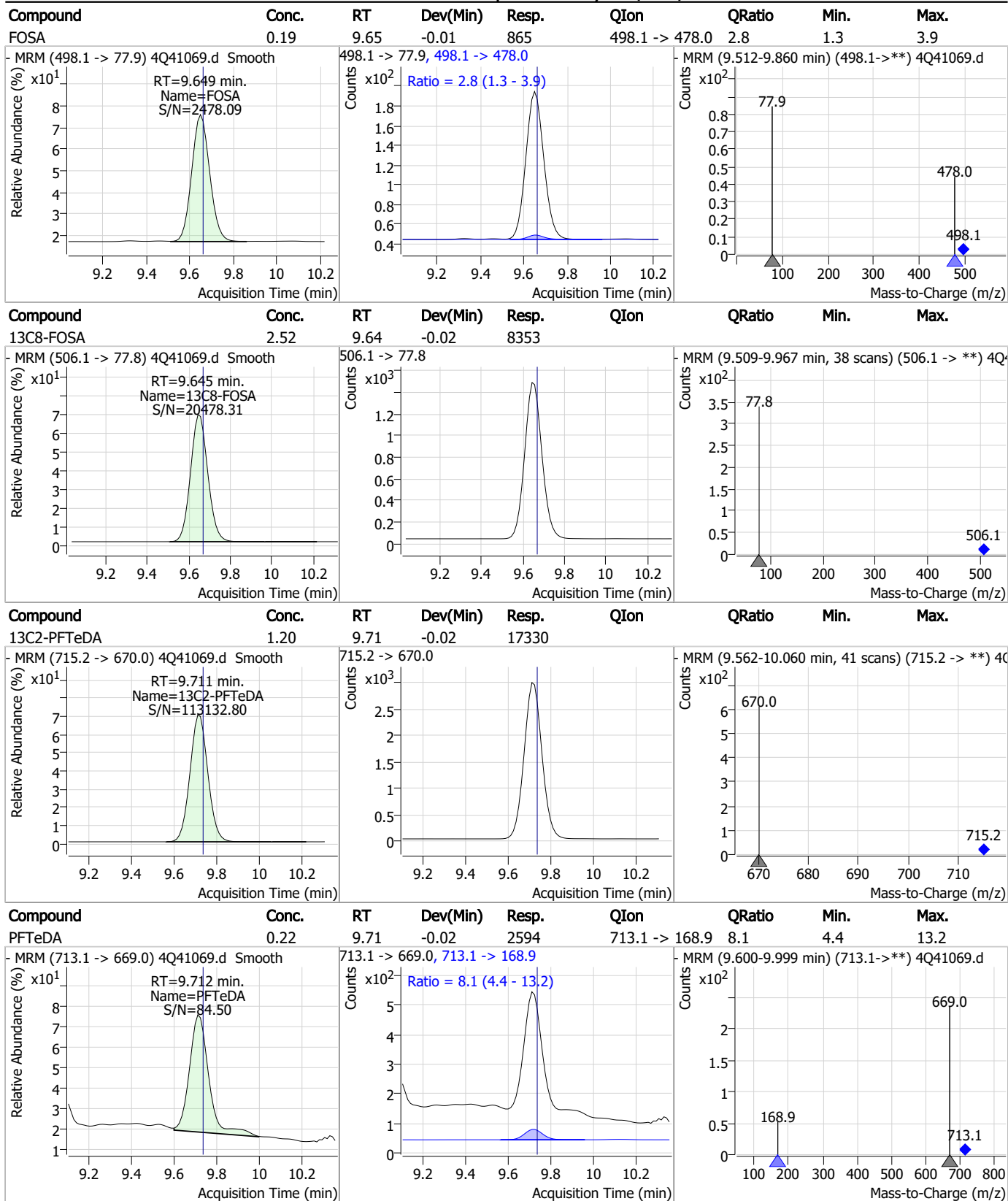
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Perfluorinated Compounds by LC/MS/MS



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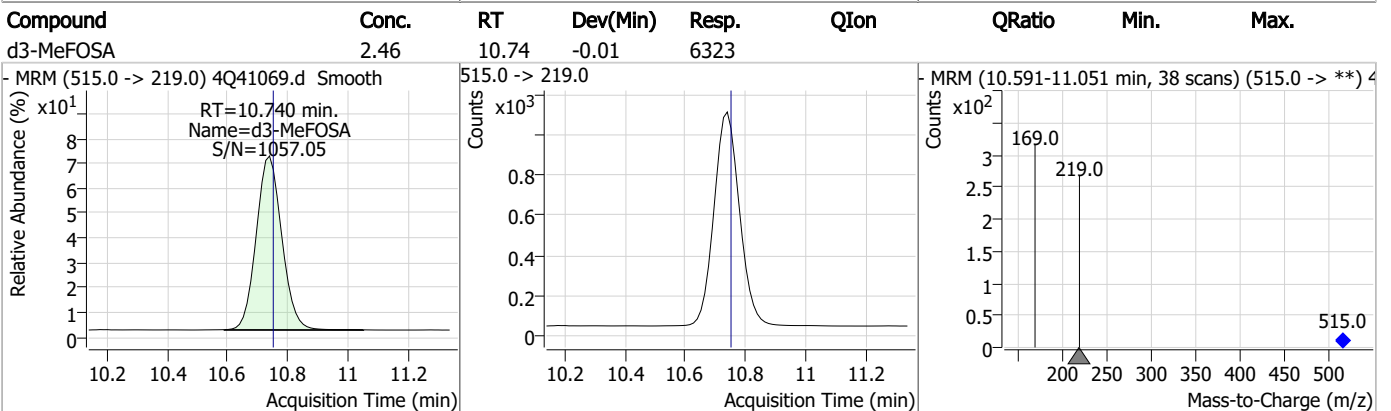
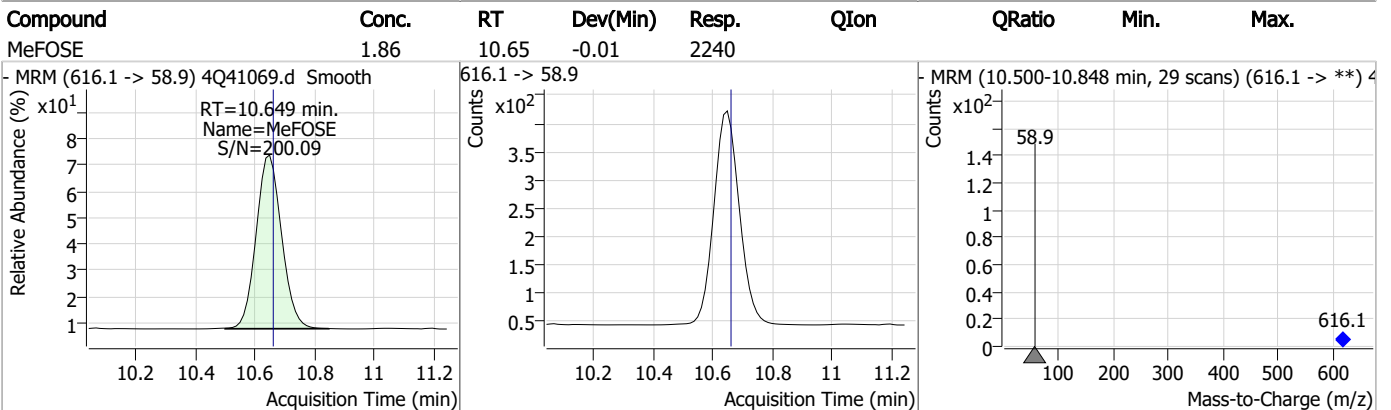
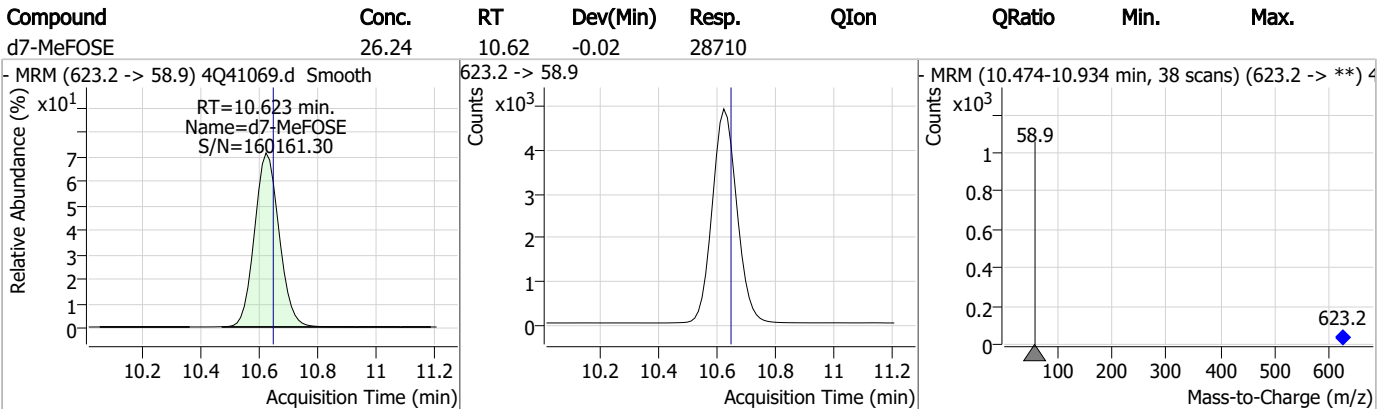
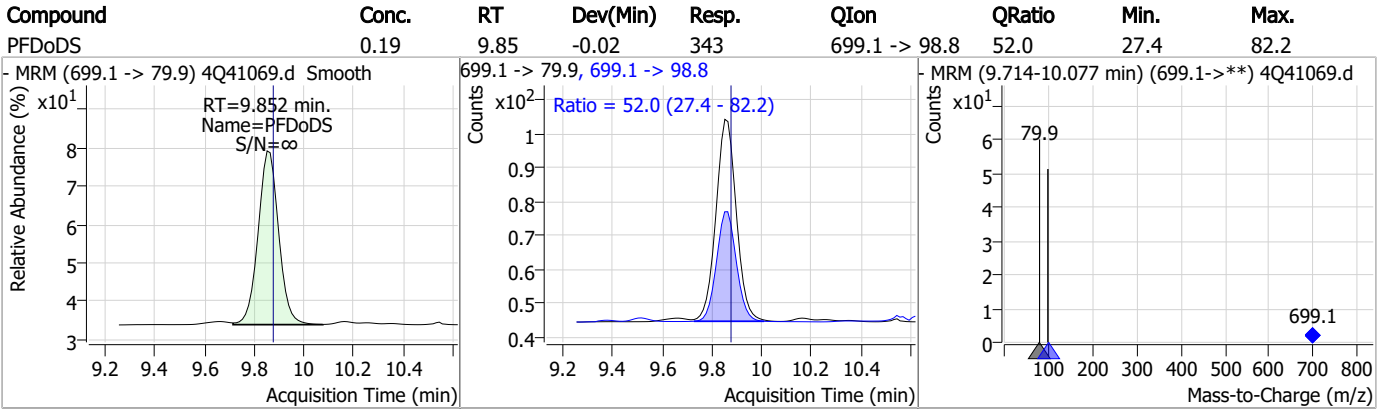
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

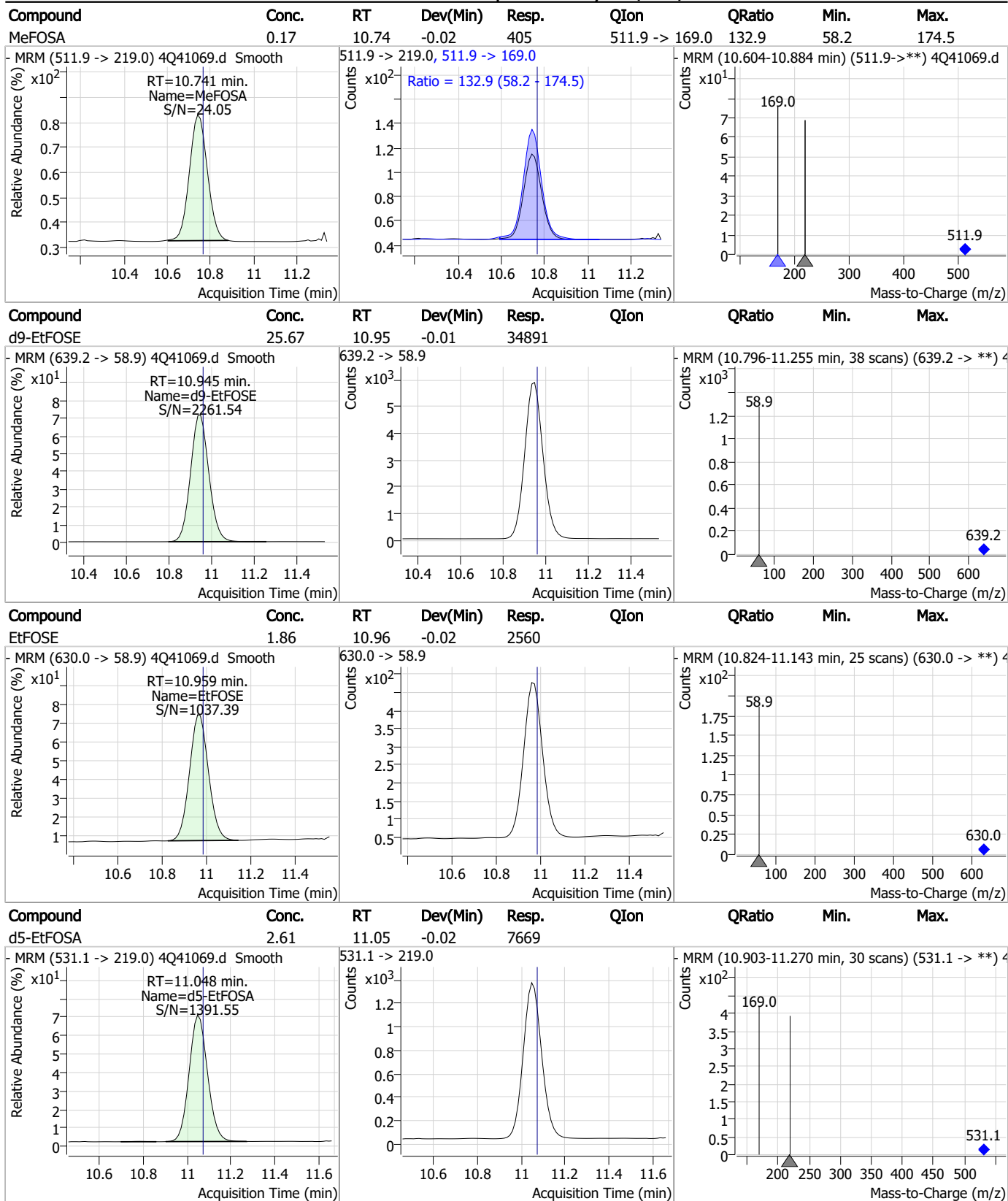


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Perfluorinated Compounds by LC/MS/MS

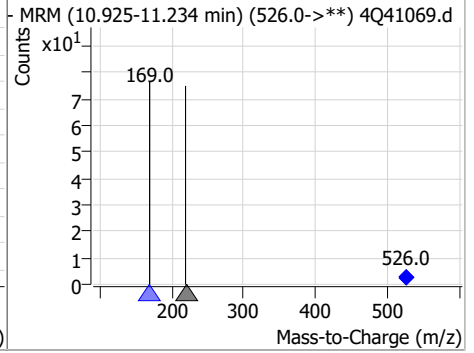
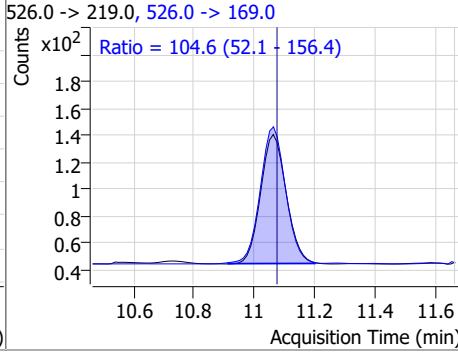
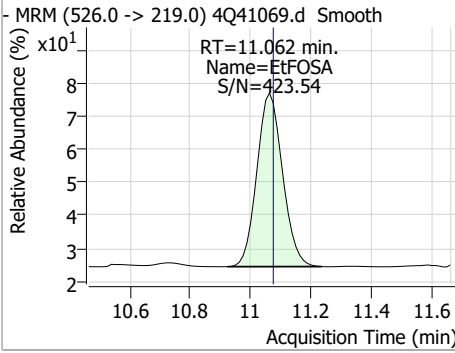


7.6.13

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.18	11.06	-0.01	565	526.0 -> 169.0	104.6	52.1	156.4



7.6.13
7

Manual Integration Approval Summary

Sample Number: S4Q587-CC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41069.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 19:12 Supervisor approved: 02/24/23 10:47 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.12	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.22	Split peak
EtFOSAA	2991-50-6		8.34	Split peak

7.6.13.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41072.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 7:54:38 PM
 Sample Name : cc587-4
 Vial : P1-A5
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.164	216.8 -> 171.9	155911	10.00 µg/L	0.012
M5-PFPeA	4.512	268.3 -> 223.0	80075	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	63014	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	35670	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	43407	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	18572	1.25 µg/L	0.000
M6-PFDA	8.066	519.1 -> 474.1	16865	1.25 µg/L	-0.013
M7-PFUnDA	8.536	570.0 -> 525.1	23662	1.25 µg/L	0.000
M2-PFDoDA	8.968	615.1 -> 570.0	22122	1.25 µg/L	0.000
M2-PFTeDA	9.724	715.2 -> 670.0	18043	1.25 µg/L	-0.012
M8-FOSA	9.670	506.1 -> 77.8	8853	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12946	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7573	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9531	2.50 µg/L	-0.012
M2-4:2FTS	5.272	329.1 -> 80.9	1605	5.00 µg/L	0.012
M2-6:2FTS	6.836	429.1 -> 80.9	2357	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3266	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	22208	5.00 µg/L	-0.012
M3-HFPO-DA	5.889	286.9 -> 168.9	37297	10.00 µg/L	0.012
M5-EtFOSAA	8.346	589.2 -> 419.0	17577	5.00 µg/L	0.000
M7-MeFOSE	10.636	623.2 -> 58.9	30139	25.00 µg/L	-0.012
M9-EtFOSE	10.958	639.2 -> 58.9	37688	25.00 µg/L	0.000
M5-EtFOSA	11.060	531.1 -> 219.0	7833	2.50 µg/L	-0.012
M3-MeFOSA	10.752	515.0 -> 219.0	6411	2.50 µg/L	0.000
13C4-PFOS	8.230	502.8 -> 79.9	10449	2.50 µg/L	-0.012
13C3-PFBA	3.168	216.0 -> 172.0	92462	5.00 µg/L	0.012
18O2-PFHxS	7.178	403.0 -> 83.9	5436	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	52038	2.50 µg/L	0.000
13C2-PFDA	8.066	515.1 -> 470.1	17282	1.25 µg/L	-0.013
13C5-PFNA	7.596	468.0 -> 423.0	23131	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	57455	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	1605	5.45 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.0%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2357	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3266	4.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C2-PFDoDA	8.968	615.1 -> 570.0	22122	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C2-PFTeDA	9.724	715.2 -> 670.0	18043	1.15 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.9%		
13C3-PFBS	5.501	302.1 -> 79.9	12946	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C3-PFHxS	7.179	402.1 -> 79.9	7573	2.48 µg/L	0.000

7.6.14
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C4-PFBA	3.164	216.8 -> 171.9	155911	10.18 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C4-PFHpA	6.417	367.1 -> 322.0	35670	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	63014	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.512	268.3 -> 223.0	80075	4.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C6-PFDA	8.066	519.1 -> 474.1	16865	1.18 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C7-PFUnDA	8.536	570.0 -> 525.1	23662	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C8-FOSA	9.670	506.1 -> 77.8	8853	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.8%	
13C8-PFOA	7.062	421.1 -> 376.0	43407	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-PFOS	8.230	507.1 -> 79.9	9531	2.28 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.2%	
13C9-PFNA	7.596	472.1 -> 427.0	18572	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.3%	
d3-MeFOSAA	8.136	573.2 -> 419.0	22208	4.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	37297	9.98 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
d3-MeFOSA	10.752	515.0 -> 219.0	6411	2.14 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.6%	
d5-EtFOSAA	8.346	589.2 -> 419.0	17577	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d7-MeFOSE	10.636	623.2 -> 58.9	30139	23.66 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.6%	
d9-EtFOSE	10.958	639.2 -> 58.9	37688	23.81 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
d5-EtFOSA	11.060	531.1 -> 219.0	7833	2.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.4%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	22221	8.70 µg/L	99
		327.1 -> 80.9	8623		
6:2FTS	6.836	427.1 -> 407.0	21092	9.99 µg/L	99
		427.1 -> 80.9	7862		
8:2FTS	7.866	527.1 -> 507.0	16460	9.75 µg/L	94
		527.1 -> 80.8	5190		
EtFOSAA	8.347	584.2 -> 419.1	6686	2.24 µg/L	m 98
		584.2 -> 526.0	2566		
FOSA	9.661	498.1 -> 77.9	11045	2.35 µg/L	98
		498.1 -> 478.0	364		
MeFOSAA	8.137	570.1 -> 419.0	6700	2.21 µg/L	m 85
		570.1 -> 483.0	1390		
PFBA	3.171	212.8 -> 168.9	34074	9.22 µg/L	100
PFBS	5.502	298.7 -> 79.9	11086	2.14 µg/L	99
		298.7 -> 98.8	4163		
PFDA	8.079	512.9 -> 469.0	27723	2.41 µg/L	96
		512.9 -> 219.0	5357		
PFDODA	8.968	613.1 -> 569.0	35856	2.39 µg/L	96
		613.1 -> 319.0	5680		
PFDS	9.121	599.0 -> 79.9	5487	2.31 µg/L	98

7.6.14
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2747			
PFHpA	6.417	363.1 -> 319.0	44341	2.34	µg/L	97
		363.1 -> 169.0	8017			
PFHpS	7.736	449.0 -> 79.9	6883	2.35	µg/L	95
		449.0 -> 98.9	4022			
PFHxA	5.562	313.0 -> 269.0	54518	2.50	µg/L	99
		313.0 -> 118.9	1645			
PFHxS	7.180	398.7 -> 79.9	6600	2.11	µg/L	m 95
		398.7 -> 98.9	3438			
PFNA	7.596	463.0 -> 419.0	25788	2.28	µg/L	96
		463.0 -> 219.0	6628			
PFNS	8.699	548.8 -> 79.9	4679	2.28	µg/L	100
		548.8 -> 98.9	2749			
PFOA	7.063	413.0 -> 369.0	48684	2.37	µg/L	100
		413.0 -> 169.0	9474			
PFOS	8.231	498.9 -> 79.9	9313	2.16	µg/L	m 89
		498.9 -> 98.8	4648			
PFPeA	4.514	263.0 -> 219.0	90309	4.80	µg/L	100
PFPeS	6.484	349.1 -> 79.9	5302	2.21	µg/L	99
		349.1 -> 98.9	2495			
PFTeDA	9.725	713.1 -> 669.0	30036	2.39	µg/L	99
		713.1 -> 168.9	2484			
PFTrDA	9.366	663.0 -> 619.0	43931	2.36	µg/L	100
		663.0 -> 168.9	4376			
PFUnDA	8.536	563.1 -> 519.0	29233	2.22	µg/L	100
		563.1 -> 269.1	6274			
11CI-PF3OUdS	9.418	630.9 -> 450.9	88716	9.17	µg/L	99
		632.9 -> 452.9	26737			
9CI-PF3ONS	8.563	530.8 -> 351.0	108513	9.25	µg/L	99
		532.8 -> 353.0	32855			
ADONA	6.668	376.9 -> 250.9	193311	9.00	µg/L	98
		376.9 -> 84.8	34951			
HFPO-DA	5.890	284.9 -> 168.9	29203	9.54	µg/L	99
		284.9 -> 184.9	3365			
3:3FTCA	4.167	241.0 -> 177.0	12621	11.38	µg/L	98
		241.0 -> 117.0	1021			
5:3FTCA	6.345	341.0 -> 237.1	196858	59.65	µg/L	99
		341.0 -> 217.0	142090			
7:3FTCA	7.723	441.0 -> 316.9	81252	61.17	µg/L	98
		441.0 -> 336.9	190470			
EtFOSA	11.074	526.0 -> 219.0	7842	2.39	µg/L	98
		526.0 -> 169.0	8306			
EtFOSE	10.971	630.0 -> 58.9	36070	24.27	µg/L	100
MeFOSA	10.754	511.9 -> 219.0	6001	2.54	µg/L	99
		511.9 -> 169.0	7064			
MeFOSE	10.661	616.1 -> 58.9	30816	24.36	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	4523	2.39	µg/L	94
		699.1 -> 98.8	2271			
NFDHA	5.465	295.0 -> 201.0	4356	5.26	µg/L	89
		295.0 -> 84.9	829			
PFMBA	4.881	279.0 -> 85.1	48136	4.81	µg/L	100
PFMPA	3.740	229.0 -> 84.9	36203	4.56	µg/L	100
PFEESA	5.983	314.8 -> 134.9	60298	4.10	µg/L	99
		314.8 -> 82.9	2000			

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



7.6.14
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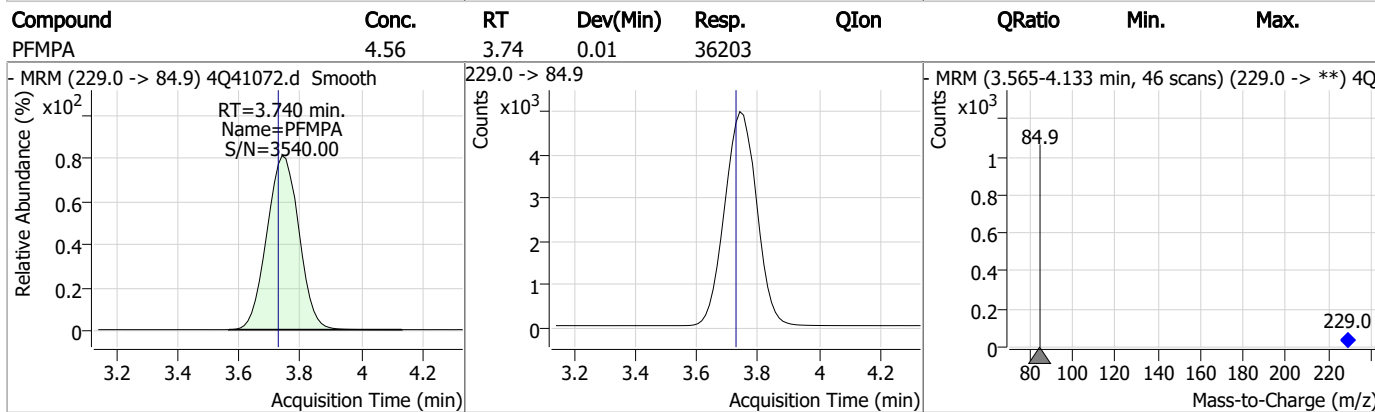
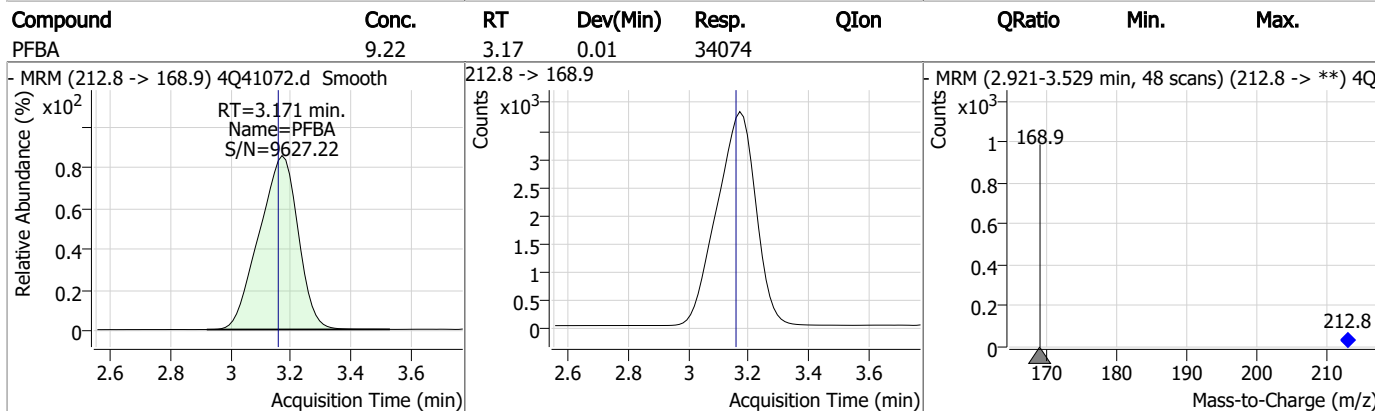
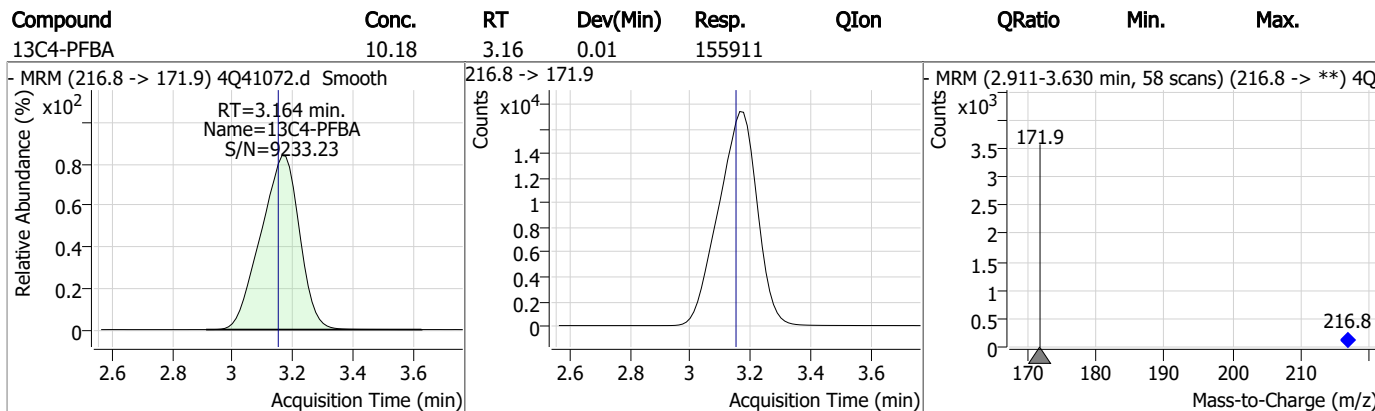
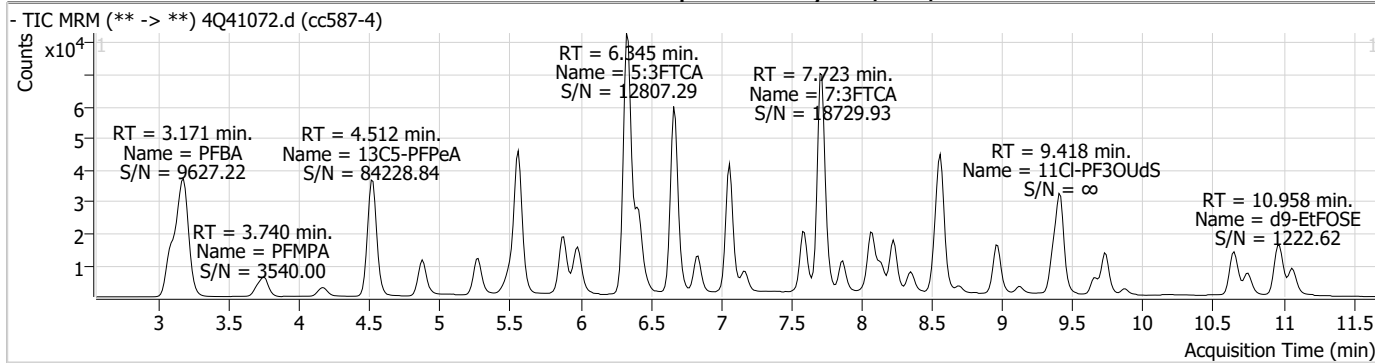
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.14

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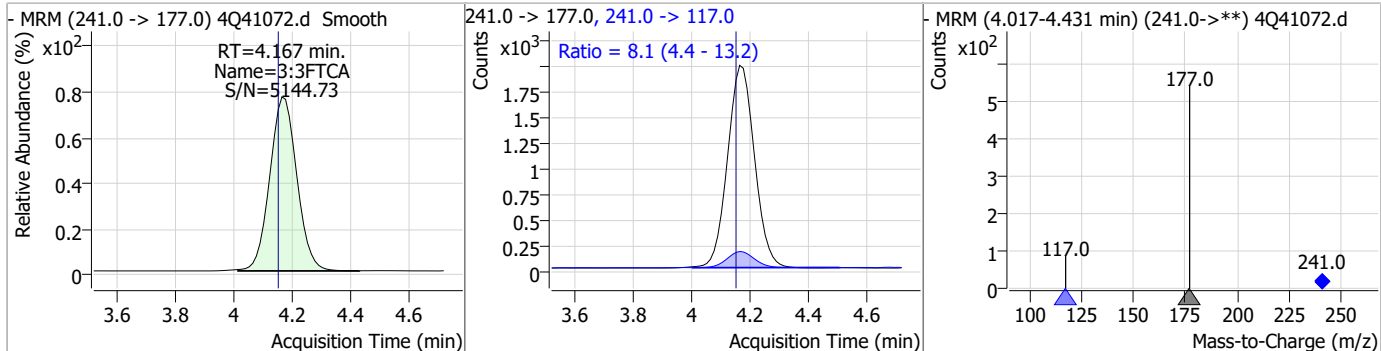
Perfluorinated Compounds by LC/MS/MS



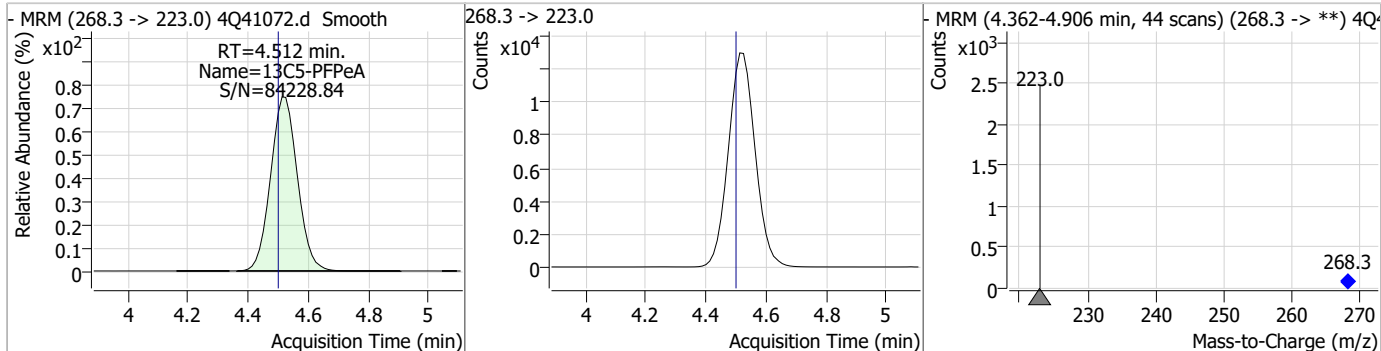
7.6.14
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Perfluorinated Compounds by LC/MS/MS

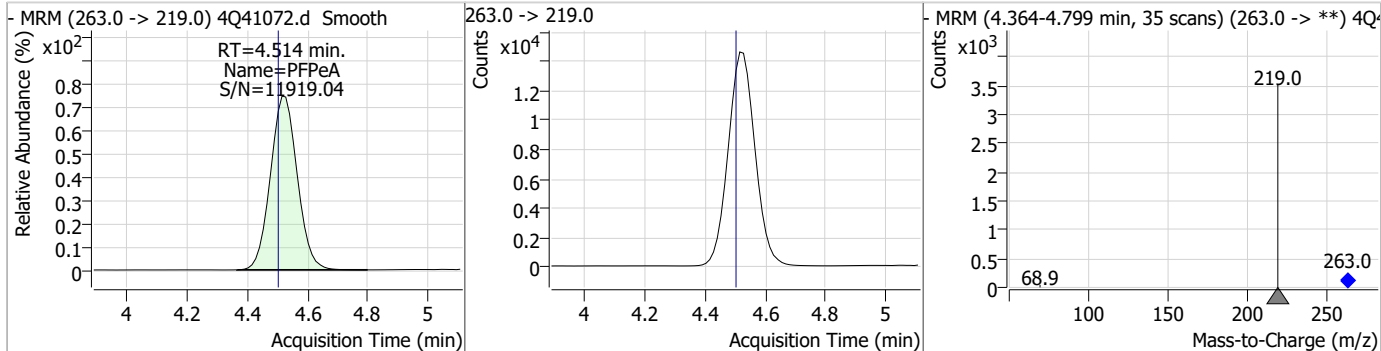
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.38	4.17	0.01	12621	241.0 -> 117.0	8.1	4.4	13.2



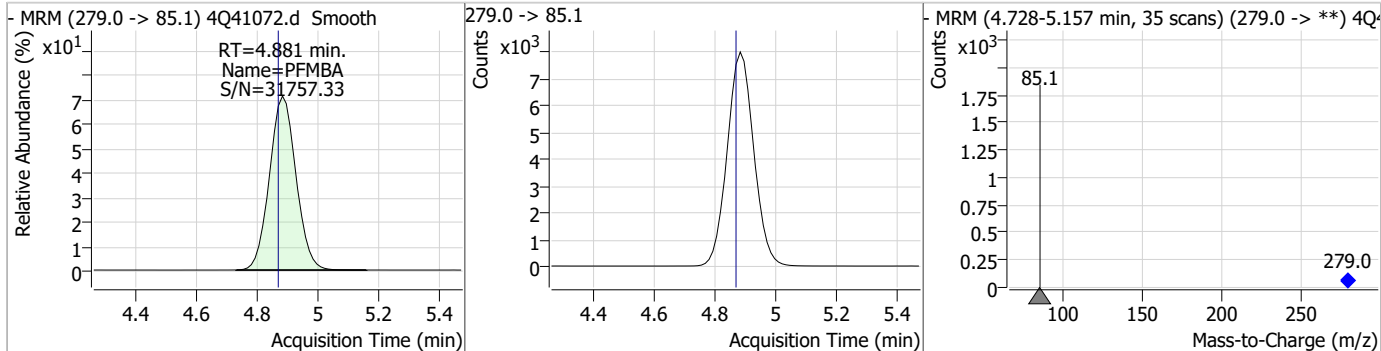
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.93	4.51	0.01	80075	268.3 -> 223.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.80	4.51	0.01	90309	263.0 -> 219.0			

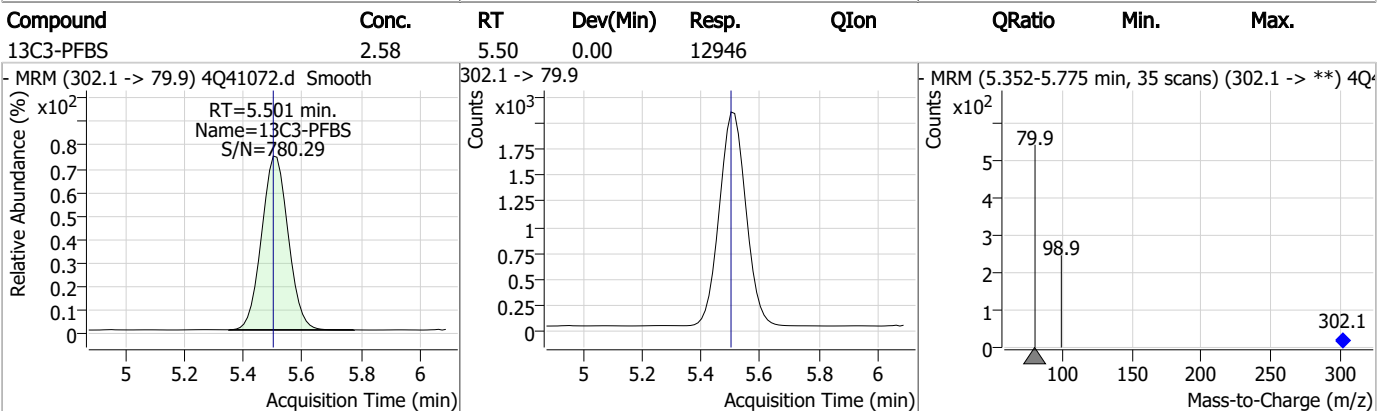
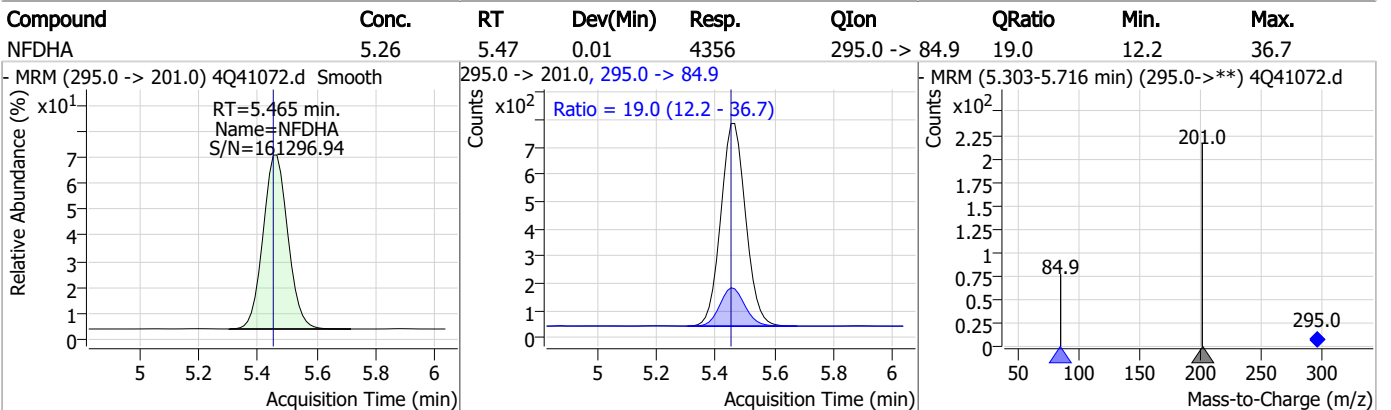
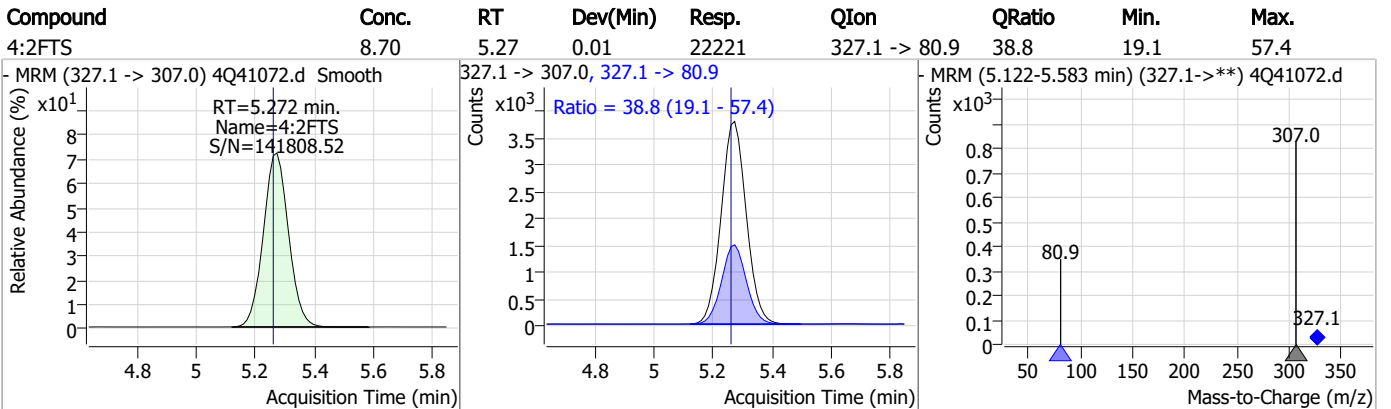
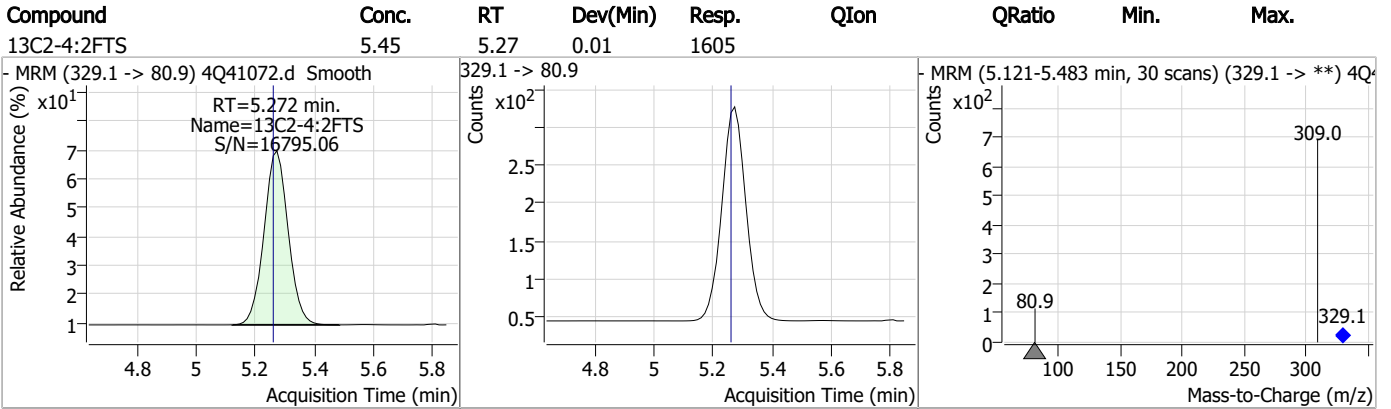


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.81	4.88	0.01	48136	279.0 -> 85.1			

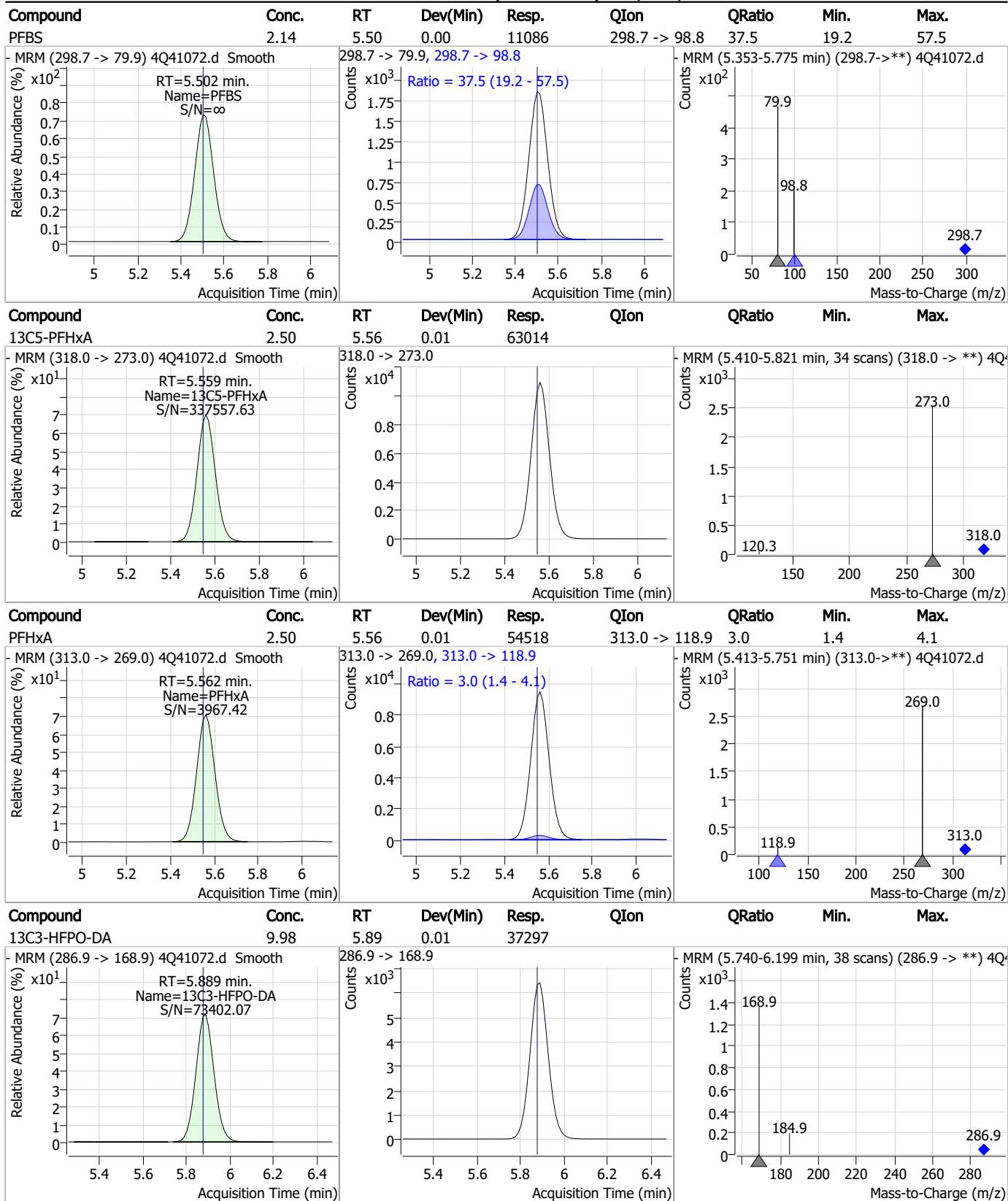


7.6.14
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Perfluorinated Compounds by LC/MS/MS



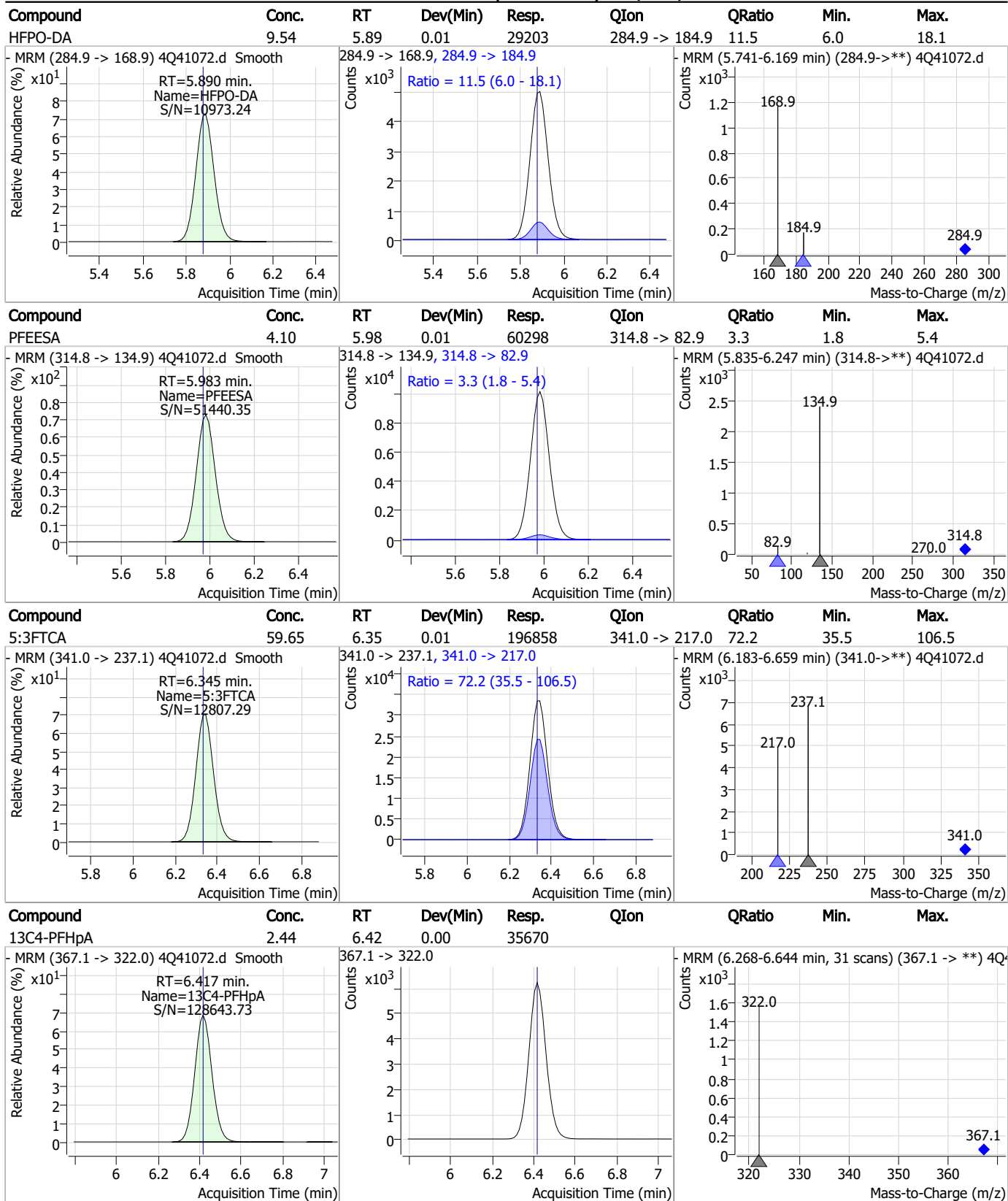
Perfluorinated Compounds by LC/MS/MS



7.6.14

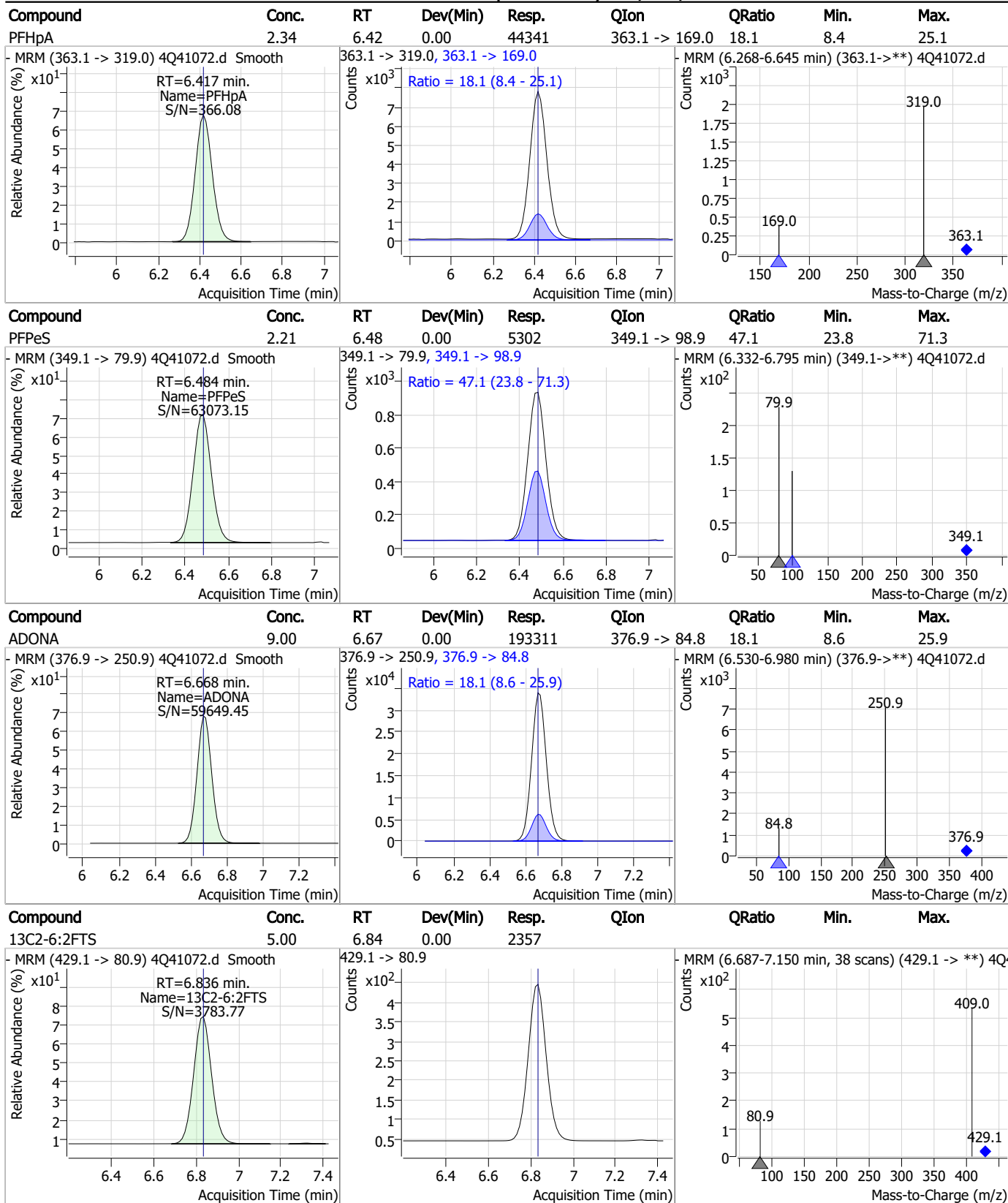
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Perfluorinated Compounds by LC/MS/MS



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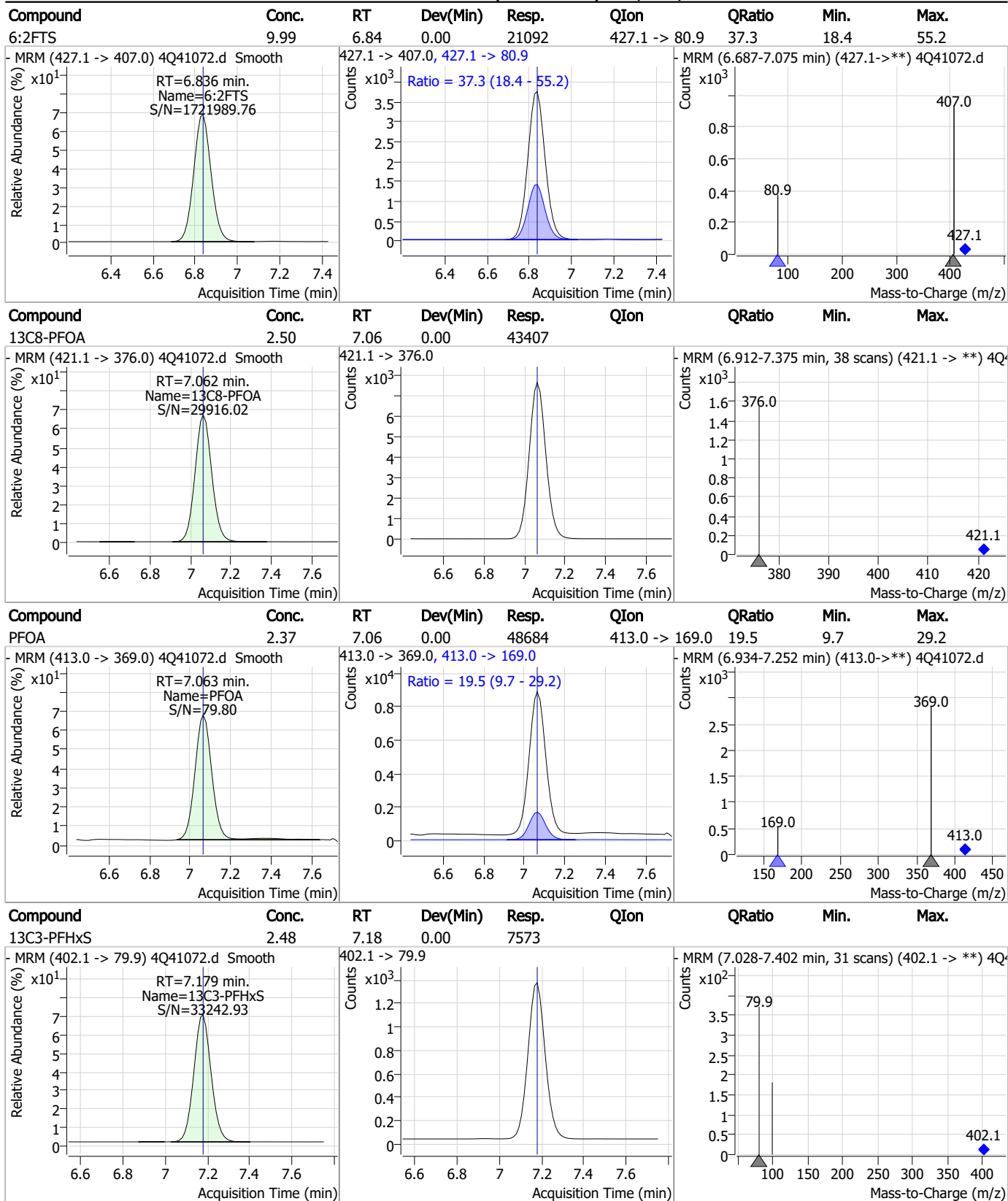
Perfluorinated Compounds by LC/MS/MS



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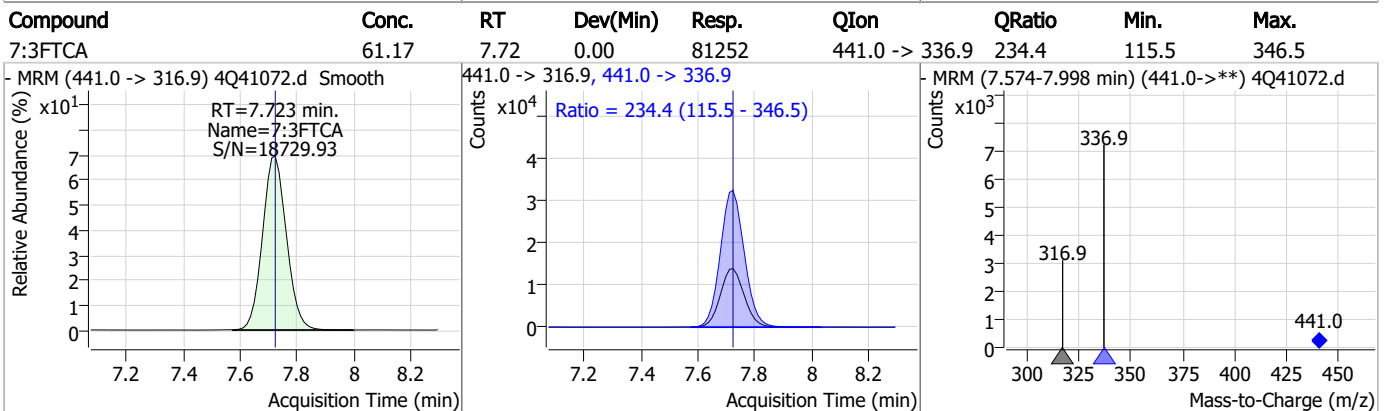
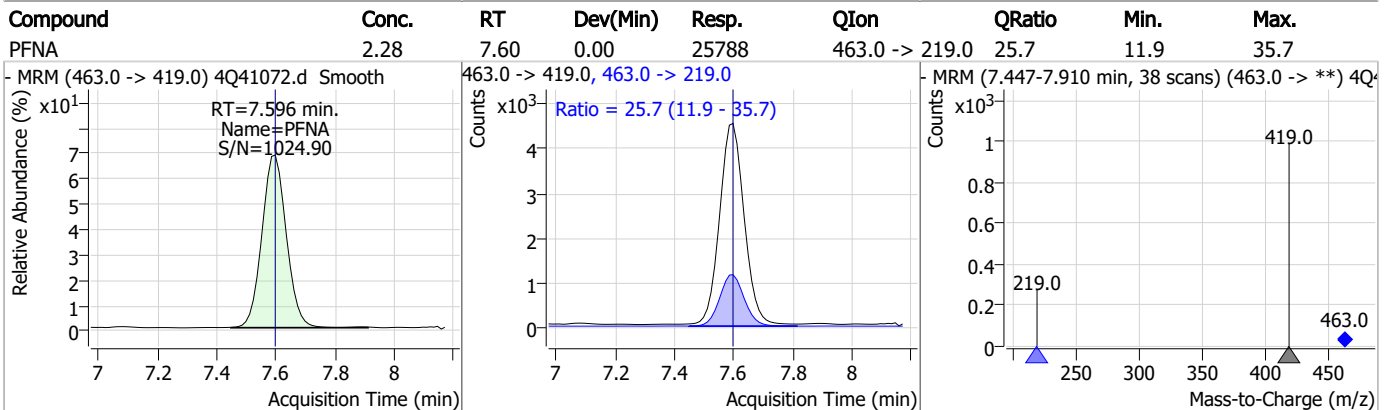
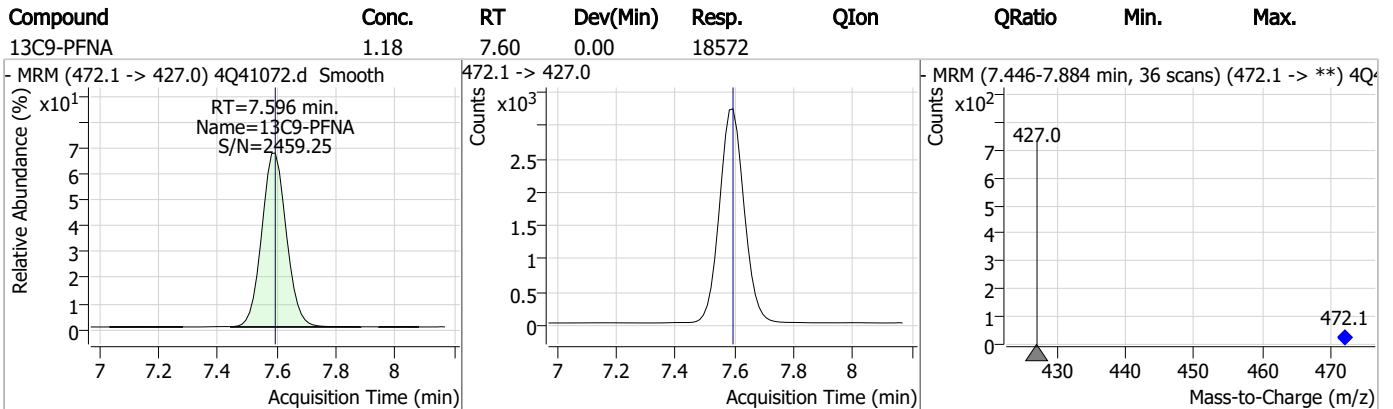
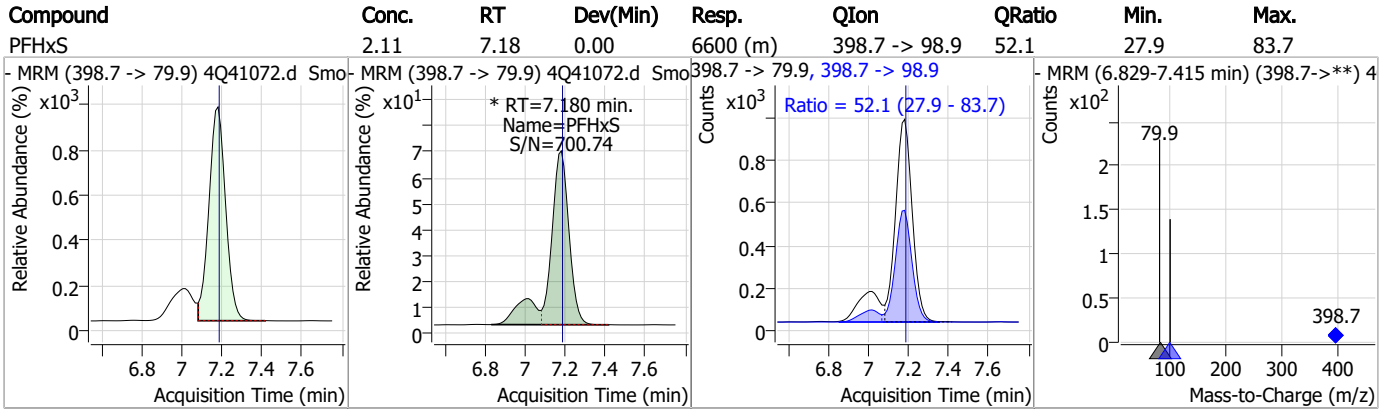
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Perfluorinated Compounds by LC/MS/MS

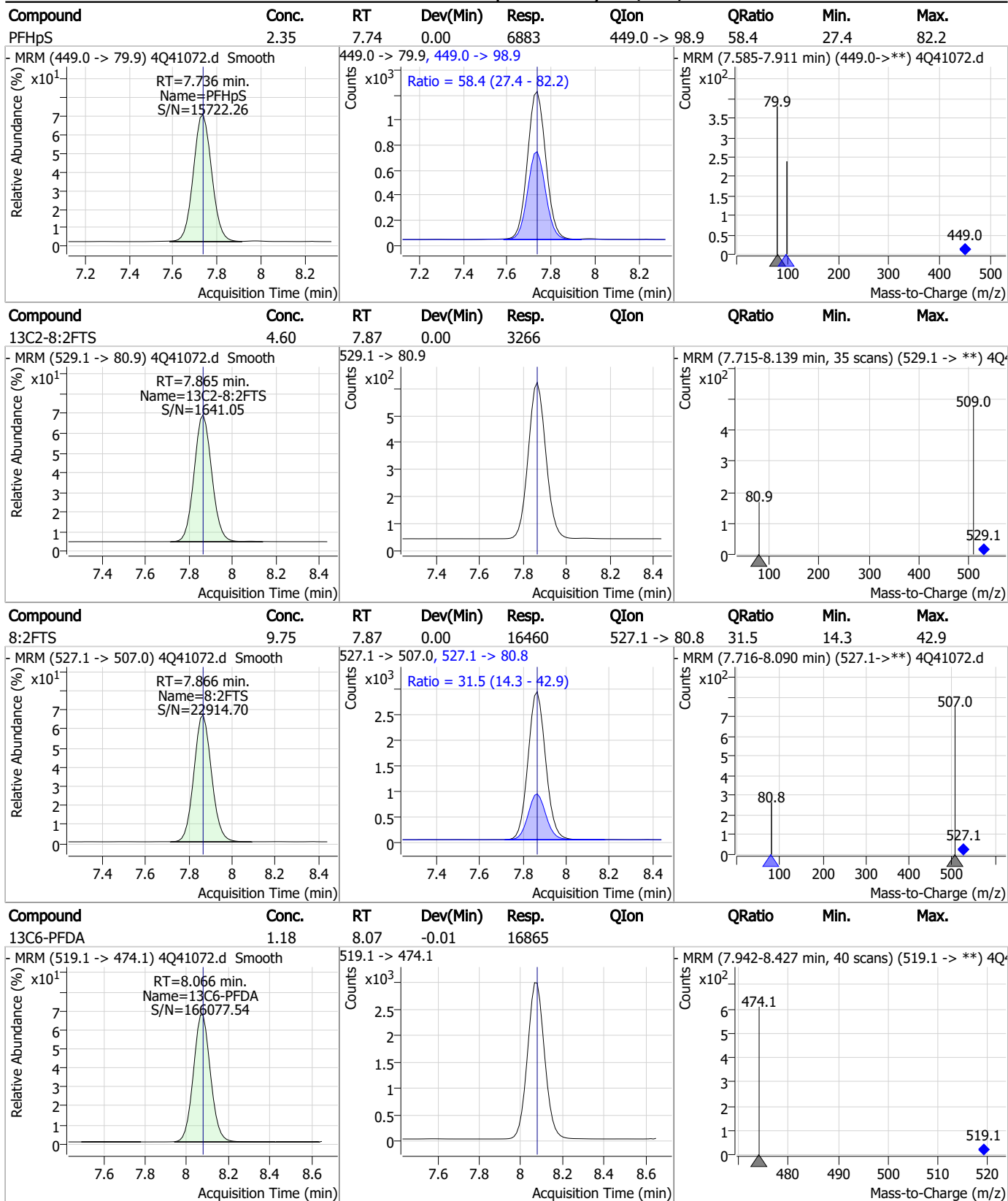


7.6.14

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

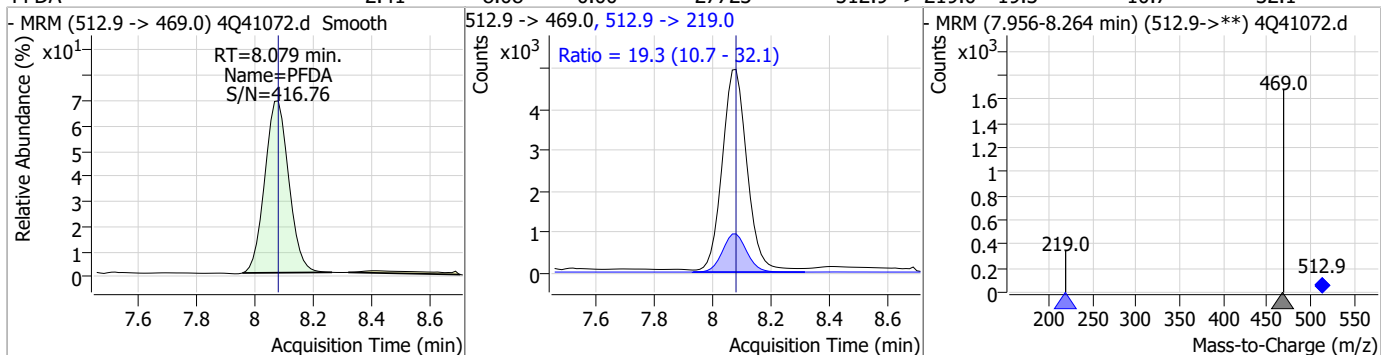


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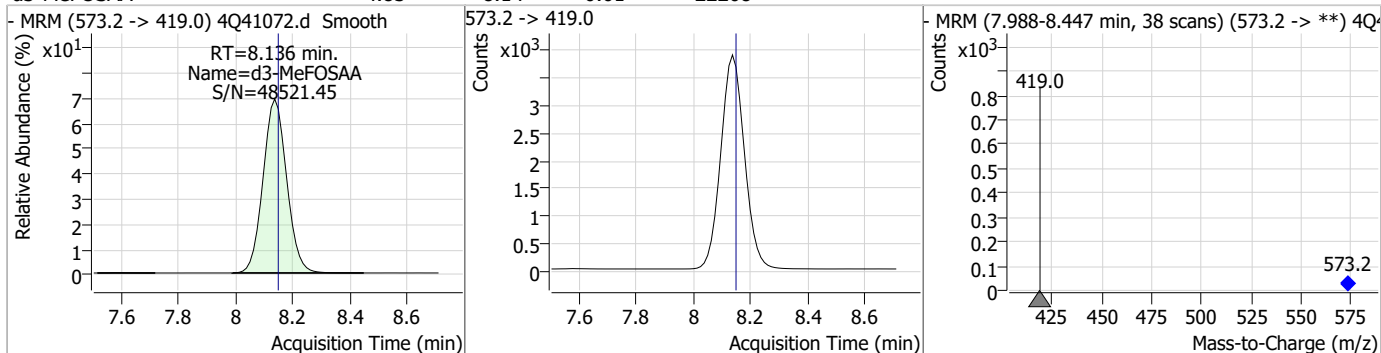
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Perfluorinated Compounds by LC/MS/MS

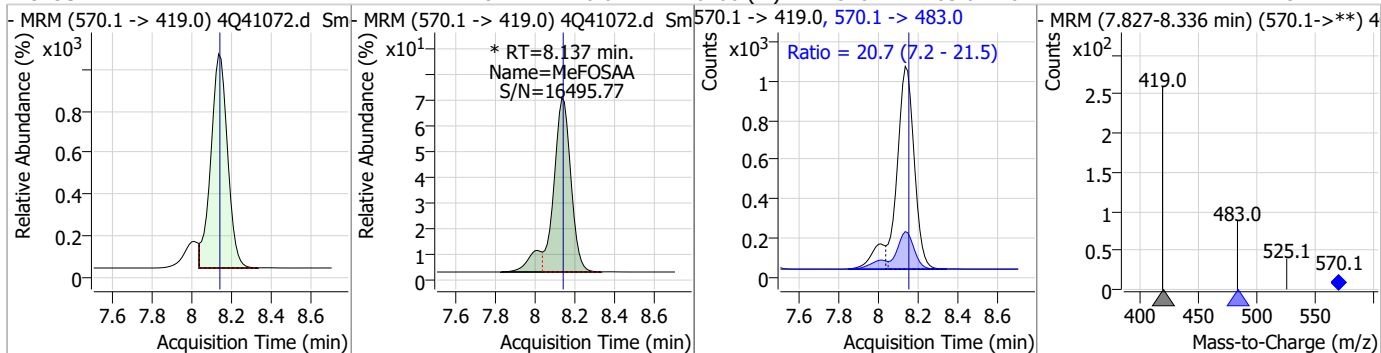
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.41	8.08	0.00	27723	512.9 -> 219.0	19.3	10.7	32.1



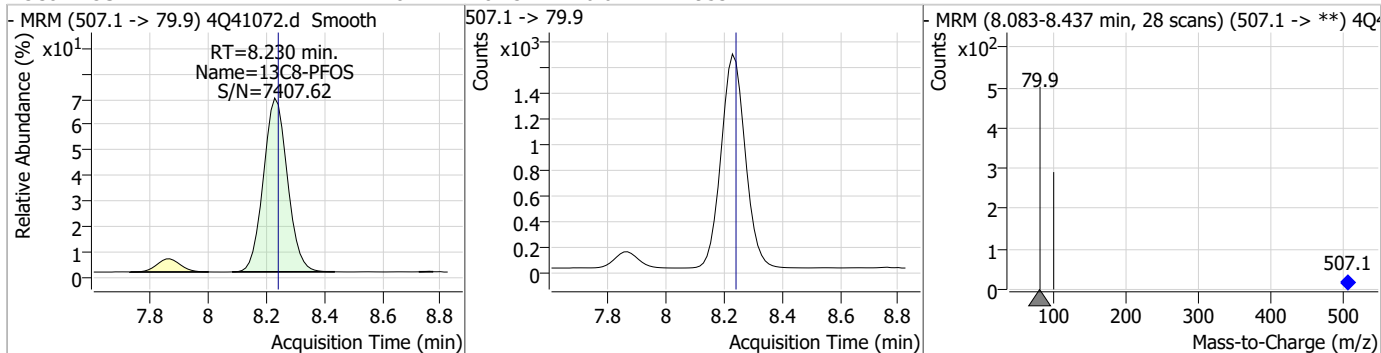
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.83	8.14	-0.01	22208				



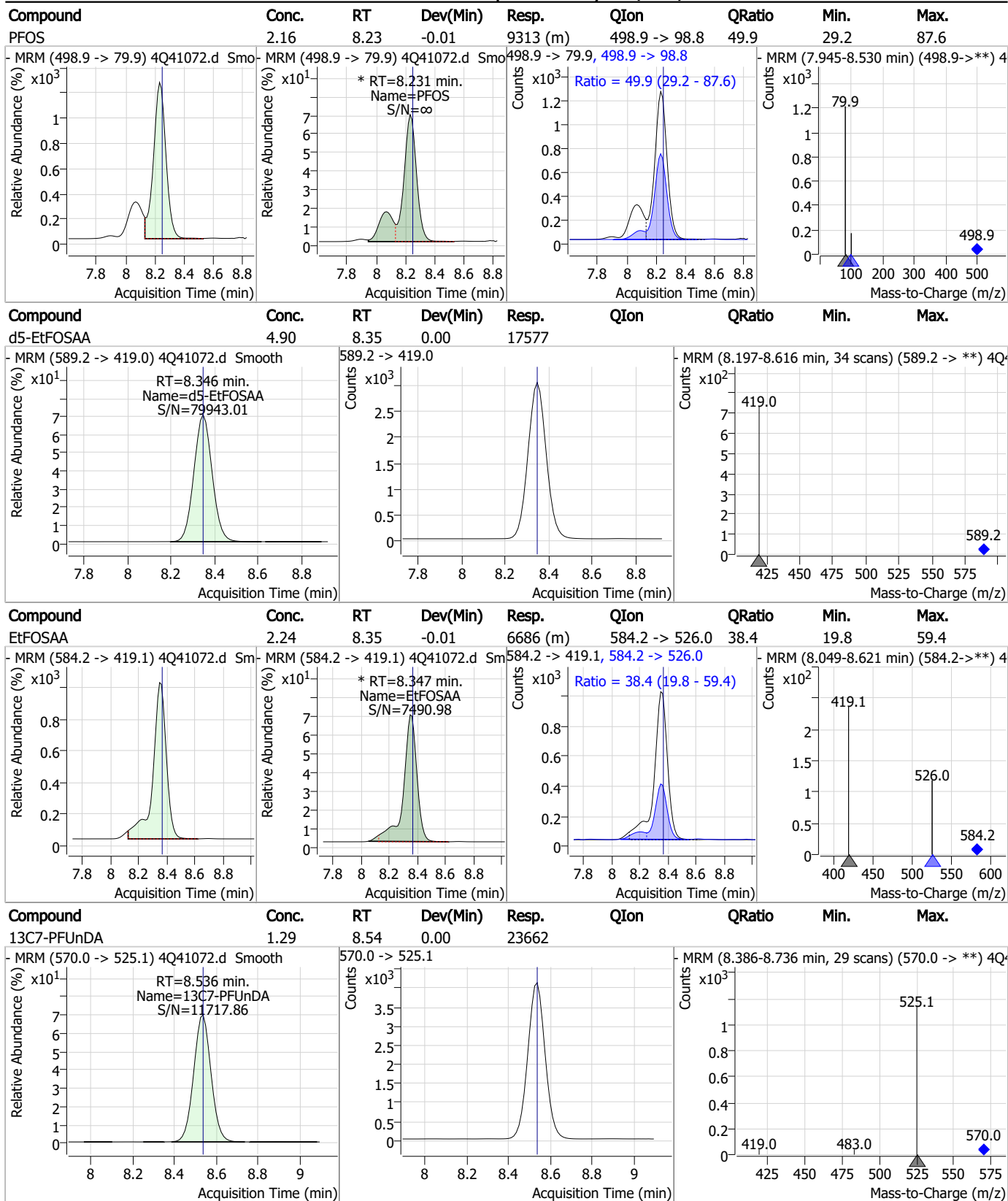
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.21	8.14	-0.01	6700 (m)	570.1 -> 483.0	20.7	7.2	21.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.28	8.23	-0.01	9531				



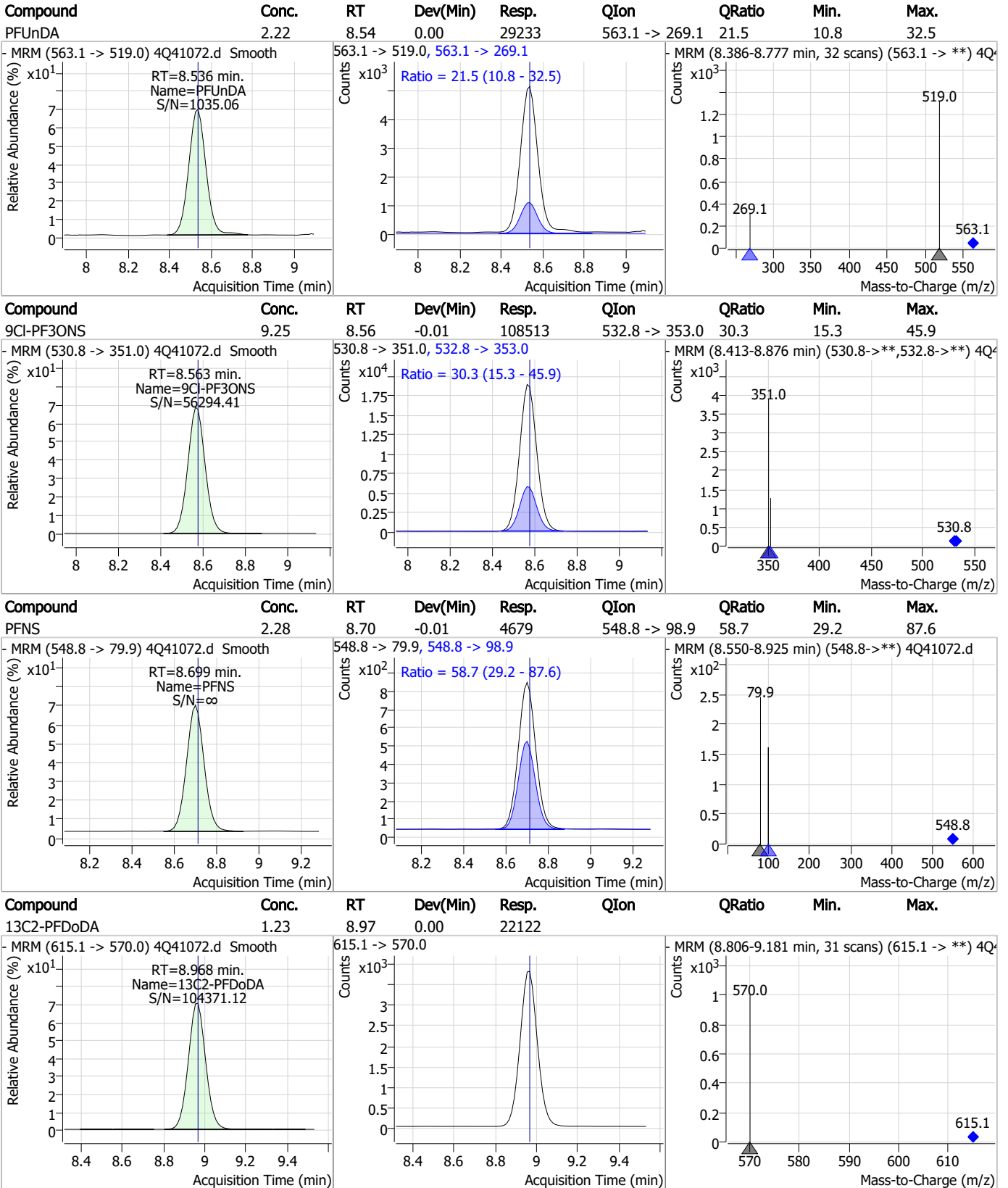
Perfluorinated Compounds by LC/MS/MS



7.6.14

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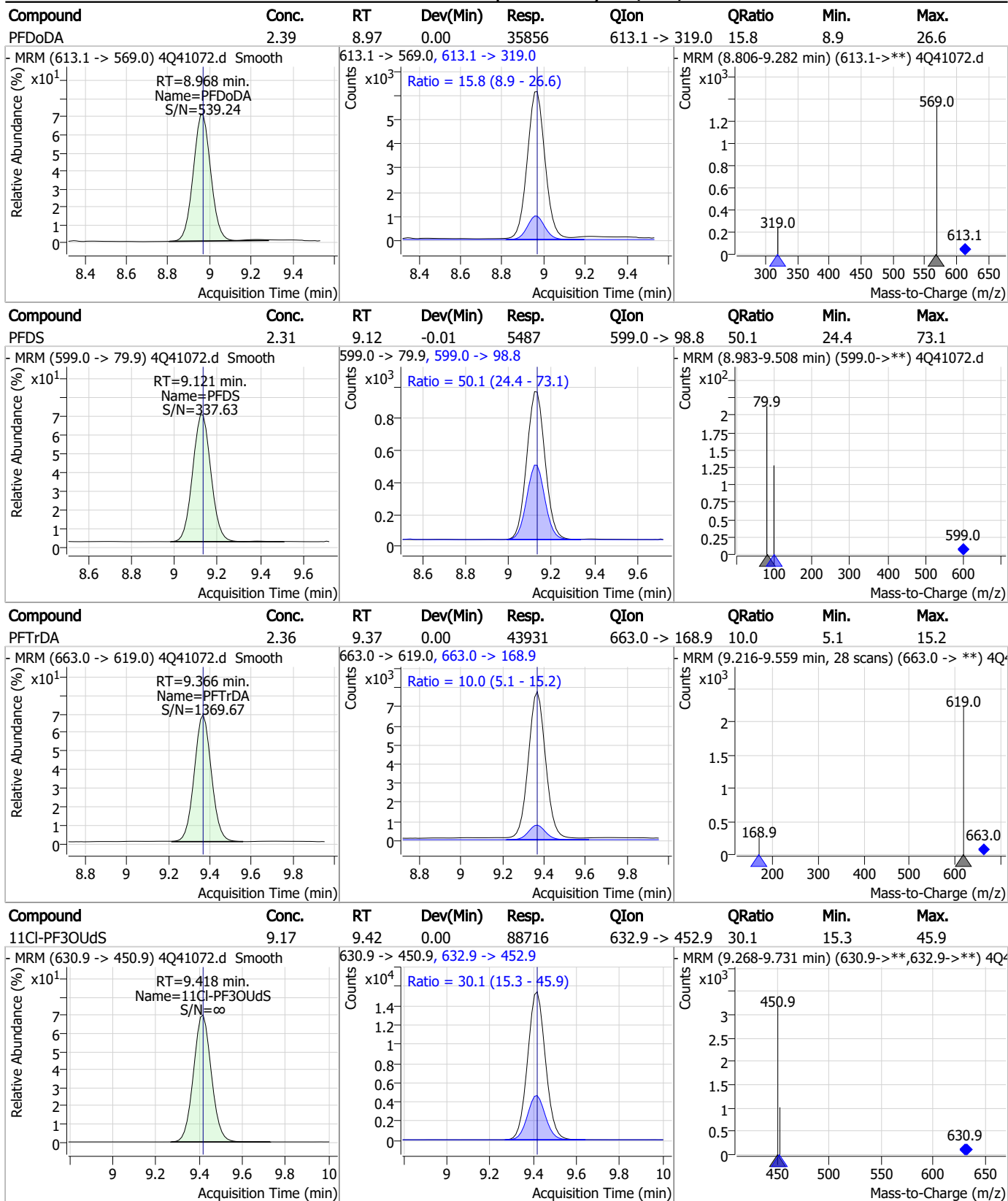
Perfluorinated Compounds by LC/MS/MS



7.6.14 7



Perfluorinated Compounds by LC/MS/MS



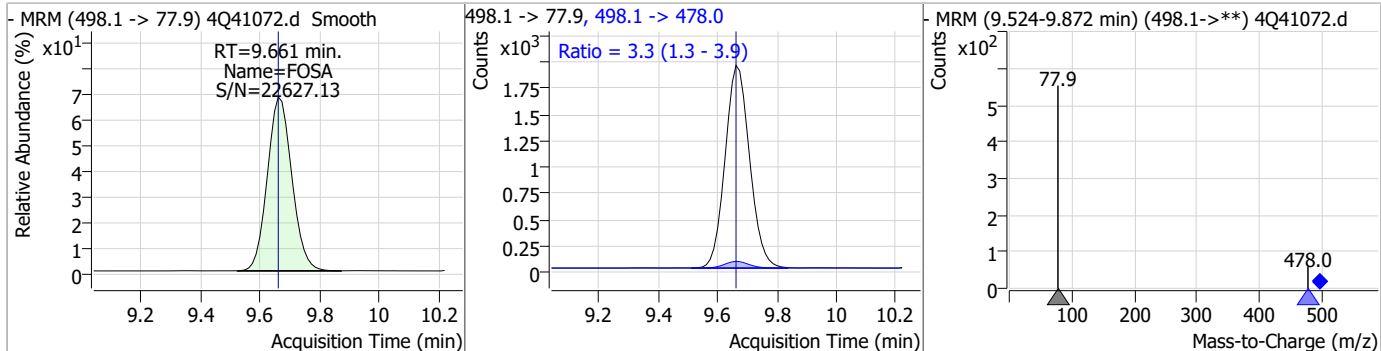
7.6.14

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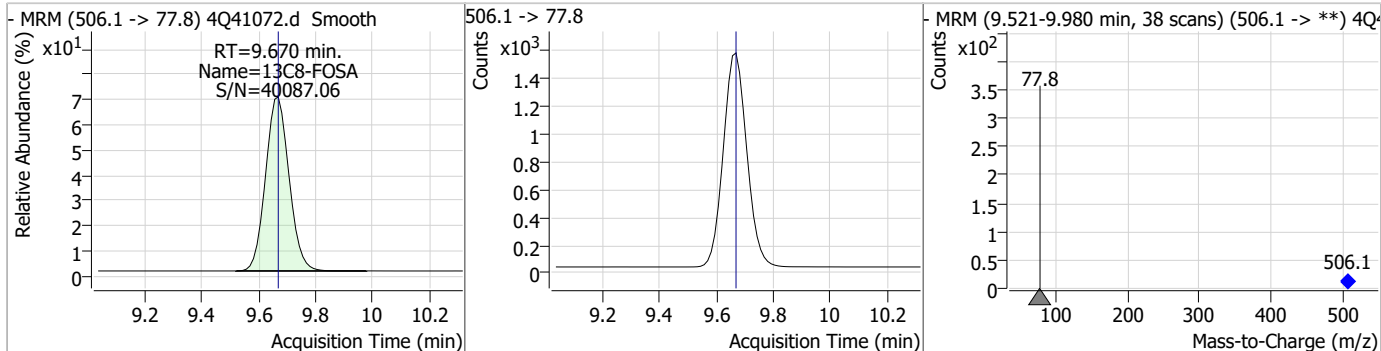


Perfluorinated Compounds by LC/MS/MS

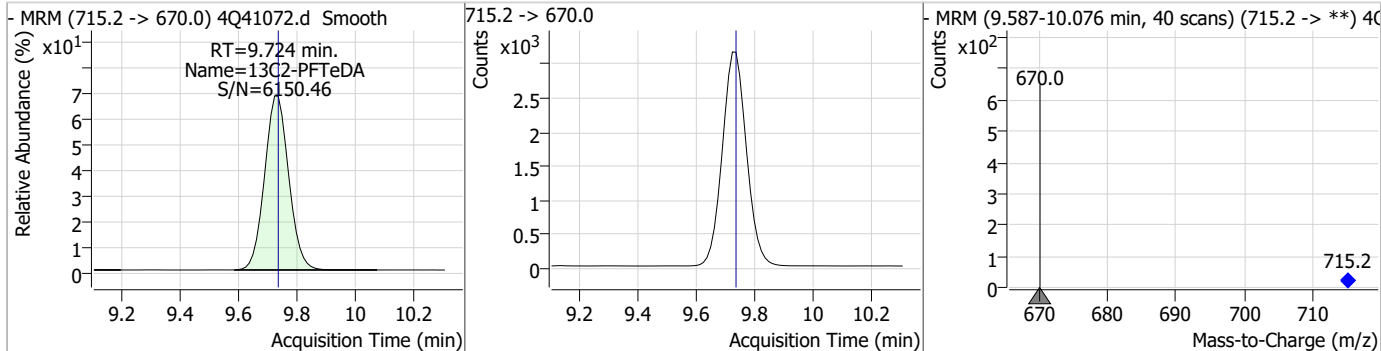
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.35	9.66	0.00	11045	498.1 -> 478.0	3.3	1.3	3.9



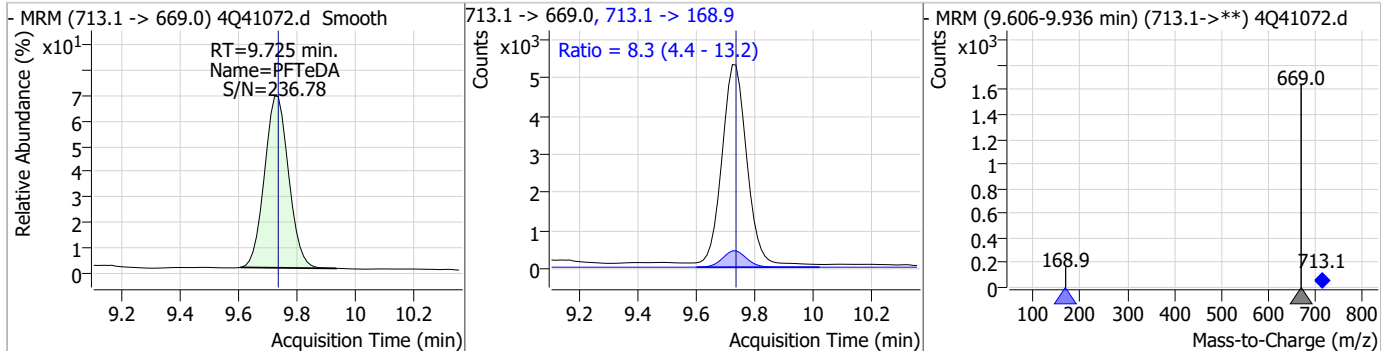
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.29	9.67	0.00	8853				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.15	9.72	-0.01	18043				



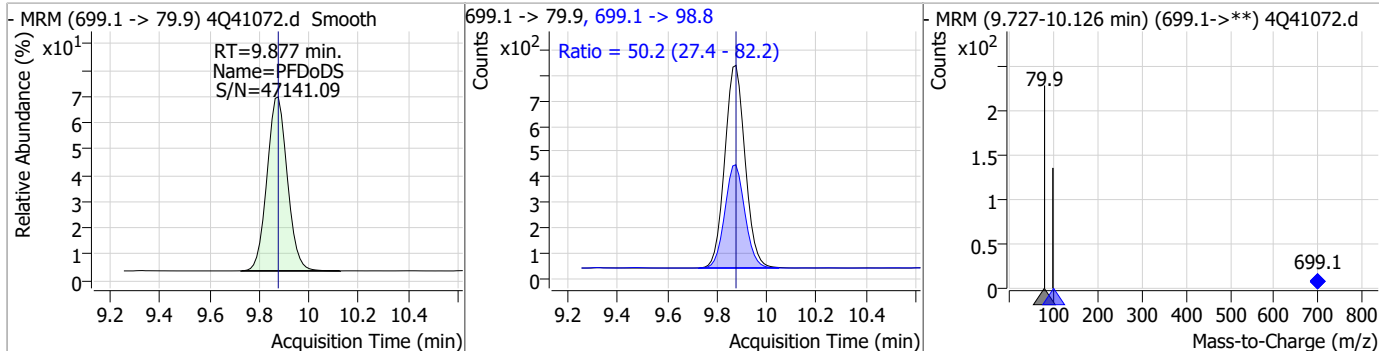
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.39	9.72	-0.01	30036	713.1 -> 168.9	8.3	4.4	13.2



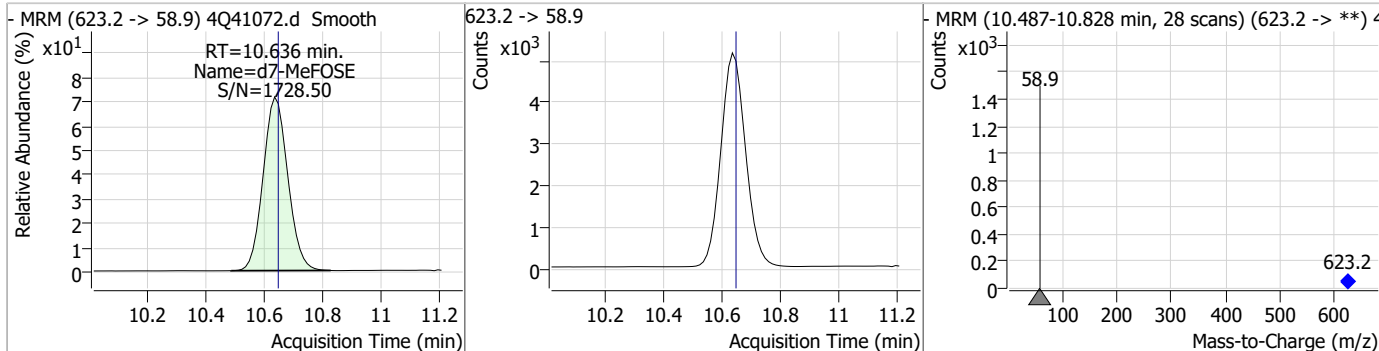
7.6.14 7

Perfluorinated Compounds by LC/MS/MS

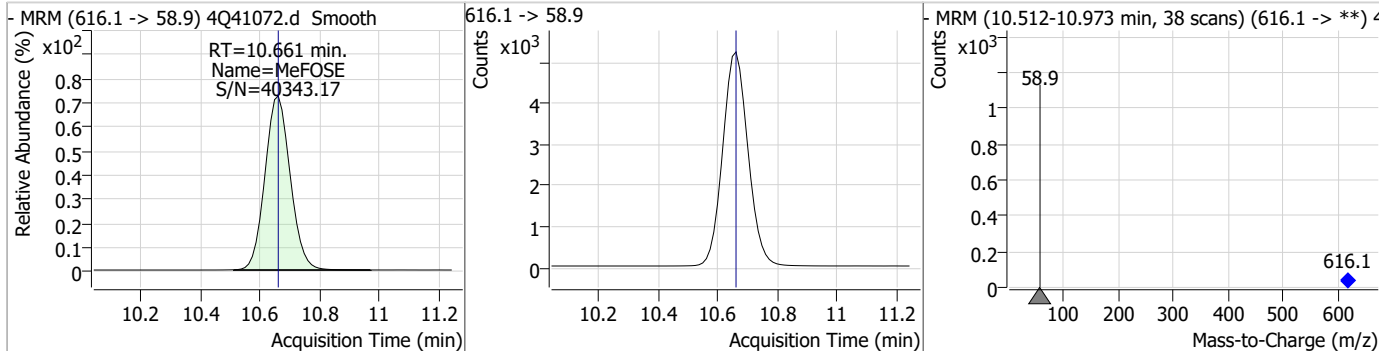
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.39	9.88	0.00	4523	699.1 -> 98.8	50.2	27.4	82.2



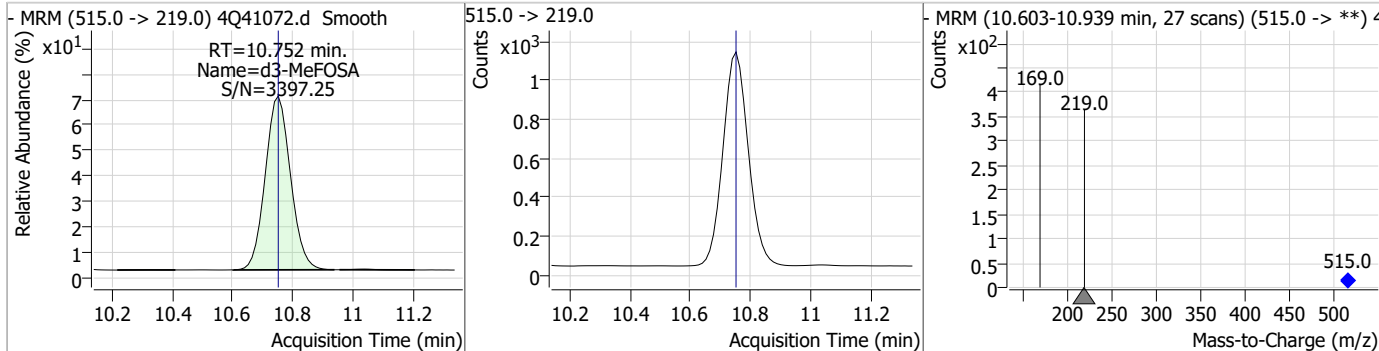
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.66	10.64	-0.01	30139				



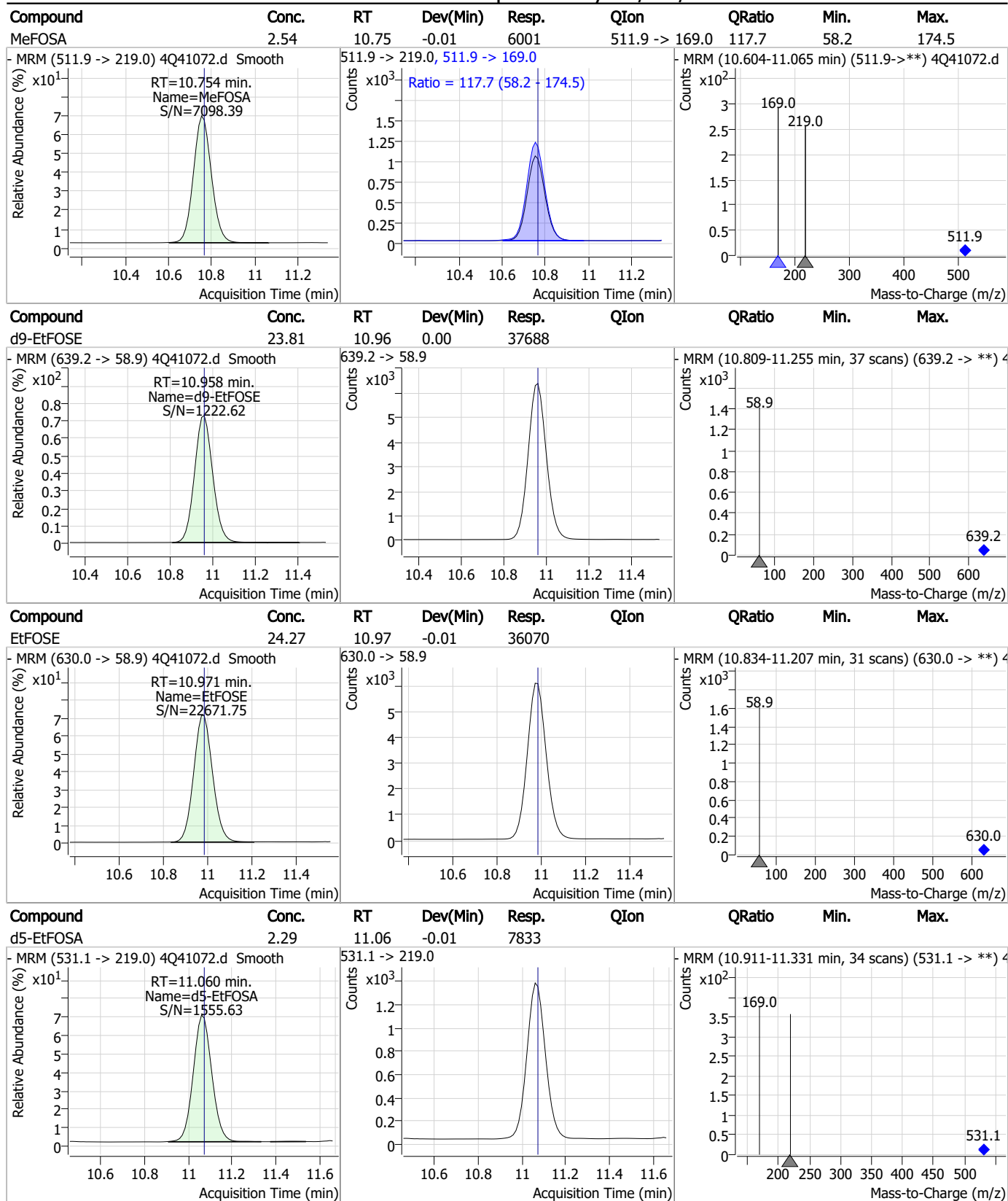
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	24.36	10.66	0.00	30816				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.14	10.75	0.00	6411				



Perfluorinated Compounds by LC/MS/MS

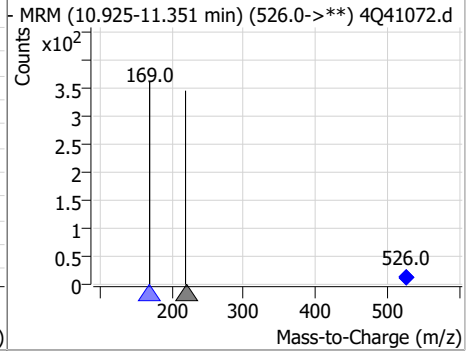
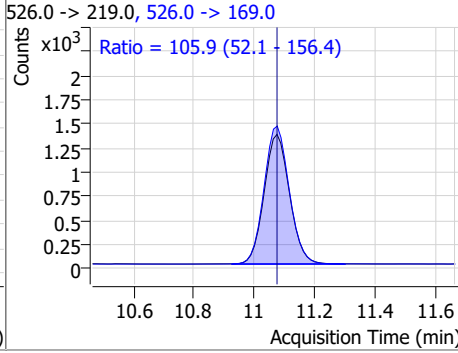
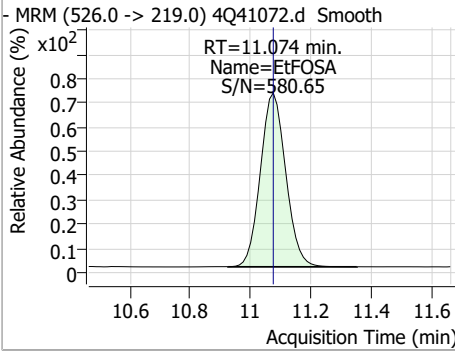


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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.39	11.07	0.00	7842	526.0 -> 169.0	105.9	52.1	156.4



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Manual Integration Approval Summary

Sample Number: S4Q587-CC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41072.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 19:54 Supervisor approved: 02/24/23 10:54 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.14	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41082.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/22/2023 10:14:58 PM
 Sample Name : cc587-4
 Vial : P1-A5
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	152770	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	78718	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	62982	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	36076	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	44379	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	18620	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	18069	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	23480	1.25 µg/L	-0.012
M2-PFDoDA	8.968	615.1 -> 570.0	21999	1.25 µg/L	0.000
M2-PFTeDA	9.736	715.2 -> 670.0	18137	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	9307	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12869	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7531	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9872	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1701	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2513	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3270	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	22708	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	36469	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	17254	5.00 µg/L	0.000
M7-MeFOSE	10.661	623.2 -> 58.9	30561	25.00 µg/L	0.012
M9-EtFOSE	10.970	639.2 -> 58.9	37980	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	7727	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	6468	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	10346	2.50 µg/L	-0.012
13C3-PFBA	3.155	216.0 -> 172.0	91372	5.00 µg/L	0.000
18O2-PFHxS	7.178	403.0 -> 83.9	5288	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	50708	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	17641	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	22499	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	57748	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1701	5.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.8%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2513	5.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3270	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C2-PFDoDA	8.968	615.1 -> 570.0	21999	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C2-PFTeDA	9.736	715.2 -> 670.0	18137	1.13 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C3-PFBS	5.501	302.1 -> 79.9	12869	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C3-PFHxS	7.179	402.1 -> 79.9	7531	2.54 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 = 101.6%	
13C4-PFBA	3.152	216.8 -> 171.9	152770	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.417	367.1 -> 322.0	36076	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C5-PFHxA	5.559	318.0 -> 273.0	62982	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C5-PFPeA	4.500	268.3 -> 223.0	78718	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C6-PFDA	8.079	519.1 -> 474.1	18069	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C7-PFUnDA	8.523	570.0 -> 525.1	23480	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C8-FOSA	9.670	506.1 -> 77.8	9307	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C8-PFOA	7.062	421.1 -> 376.0	44379	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C8-PFOS	8.230	507.1 -> 79.9	9872	2.39 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C9-PFNA	7.596	472.1 -> 427.0	18620	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.2%	
d3-MeFOSAA	8.136	573.2 -> 419.0	22708	4.99 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	36469	9.71 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d3-MeFOSA	10.765	515.0 -> 219.0	6468	2.18 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.2%	
d5-EtFOSAA	8.346	589.2 -> 419.0	17254	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
d7-MeFOSE	10.661	623.2 -> 58.9	30561	24.23 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d9-EtFOSE	10.970	639.2 -> 58.9	37980	24.24 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d5-EtFOSA	11.085	531.1 -> 219.0	7727	2.28 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.1%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	22965	8.48 µg/L	99
		327.1 -> 80.9	8601		
6:2FTS	6.836	427.1 -> 407.0	21933	9.75 µg/L	99
		427.1 -> 80.9	8165		
8:2FTS	7.866	527.1 -> 507.0	16866	9.98 µg/L	96
		527.1 -> 80.8	5179		
EtFOSAA	8.347	584.2 -> 419.1	6688	2.28 µg/L	m 88
		584.2 -> 526.0	3133		
FOSA	9.661	498.1 -> 77.9	11504	2.33 µg/L	100
		498.1 -> 478.0	313		
MeFOSAA	8.137	570.1 -> 419.0	7335	2.37 µg/L	m 88
		570.1 -> 483.0	1425		
PFBA	3.158	212.8 -> 168.9	33826	9.34 µg/L	100
PFBS	5.502	298.7 -> 79.9	10864	2.11 µg/L	98
		298.7 -> 98.8	4025		
PFDA	8.079	512.9 -> 469.0	28455	2.31 µg/L	97
		512.9 -> 219.0	5629		
PFDoDA	8.968	613.1 -> 569.0	35336	2.37 µg/L	97
		613.1 -> 319.0	5836		
PFDS	9.133	599.0 -> 79.9	5679	2.31 µg/L	93

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.417	599.0 -> 98.8	2478	2.36	µg/L	98
		363.1 -> 319.0	45289			
PFHpS	7.736	363.1 -> 169.0	8004	2.17	µg/L	90
		449.0 -> 79.9	6594			
PFHxA	5.562	449.0 -> 98.9	4101	2.54	µg/L	98
		313.0 -> 269.0	55269			
PFHxS	7.180	313.0 -> 118.9	1815	2.19	µg/L	94
		398.7 -> 79.9	6805			
PFNA	7.596	398.7 -> 98.9	3524	2.33	µg/L	98
		463.0 -> 419.0	26426			
PFNS	8.686	463.0 -> 219.0	6486	2.39	µg/L	91
		548.8 -> 79.9	5074			
PFOA	7.063	548.8 -> 98.9	2607	2.20	µg/L	98
		413.0 -> 369.0	46203			
PFOS	8.231	413.0 -> 169.0	9519	2.09	µg/L	84
		498.9 -> 79.9	9345			
PFPeA	4.502	498.9 -> 98.8	4322	4.92	µg/L	100
		263.0 -> 219.0	91094			
PFPeS	6.470	349.1 -> 79.9	5163	2.16	µg/L	98
		349.1 -> 98.9	2385			
PFTeDA	9.737	713.1 -> 669.0	30869	2.45	µg/L	100
		713.1 -> 168.9	2721			
PFTrDA	9.366	663.0 -> 619.0	43471	2.35	µg/L	97
		663.0 -> 168.9	4825			
PFUnDA	8.524	563.1 -> 519.0	28922	2.22	µg/L	99
		563.1 -> 269.1	6049			
11CI-PF3OUdS	9.418	630.9 -> 450.9	88272	9.33	µg/L	99
		632.9 -> 452.9	26563			
9CI-PF3ONS	8.563	530.8 -> 351.0	107768	9.40	µg/L	98
		532.8 -> 353.0	33864			
ADONA	6.668	376.9 -> 250.9	192316	9.15	µg/L	99
		376.9 -> 84.8	34267			
HFPO-DA	5.878	284.9 -> 168.9	29153	9.73	µg/L	100
		284.9 -> 184.9	3564			
3:3FTCA	4.154	241.0 -> 177.0	12641	11.60	µg/L	99
		241.0 -> 117.0	1051			
5:3FTCA	6.333	341.0 -> 237.1	198716	60.24	µg/L	99
		341.0 -> 217.0	142490			
7:3FTCA	7.723	441.0 -> 316.9	80264	60.46	µg/L	96
		441.0 -> 336.9	190768			
EtFOSA	11.087	526.0 -> 219.0	8094	2.50	µg/L	95
		526.0 -> 169.0	8820			
EtFOSE	10.996	630.0 -> 58.9	36321	24.25	µg/L	100
		511.9 -> 219.0	5965			
MeFOSA	10.779	511.9 -> 169.0	6914	2.51	µg/L	100
		616.1 -> 58.9	30635			
MeFOSE	10.674	699.1 -> 79.9	4272	23.88	µg/L	100
		699.1 -> 98.8	2260			
PFDoDS	9.877	295.0 -> 201.0	4133	5.00	µg/L	97
		295.0 -> 84.9	938			
NFDHA	5.453	279.0 -> 85.1	47792	4.86	µg/L	100
		229.0 -> 84.9	37128			
PFMBA	4.867	314.8 -> 134.9	61949	4.75	µg/L	100
		314.8 -> 82.9	1910			
PFMPA	3.727			4.21	µg/L	98
PFEESA	5.983					

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



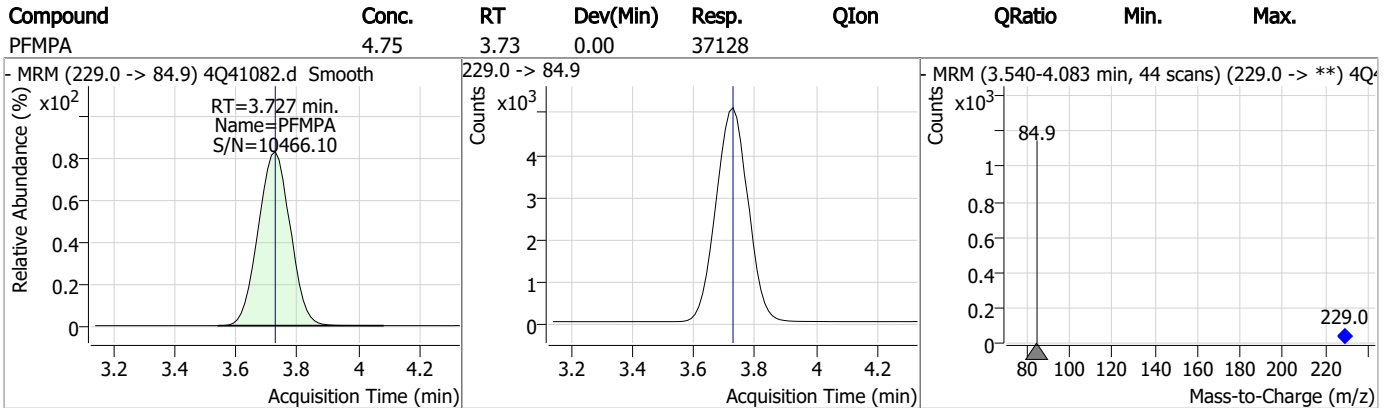
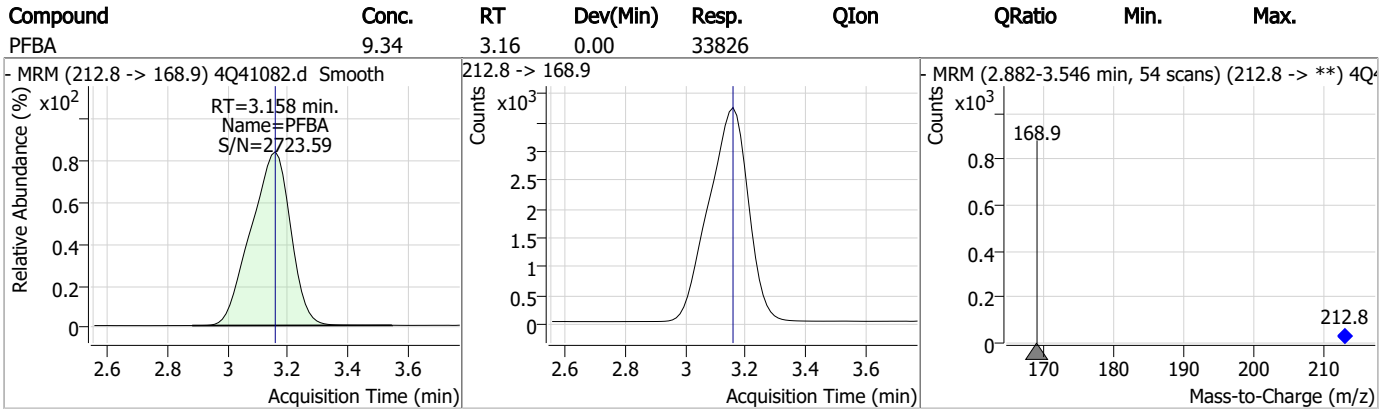
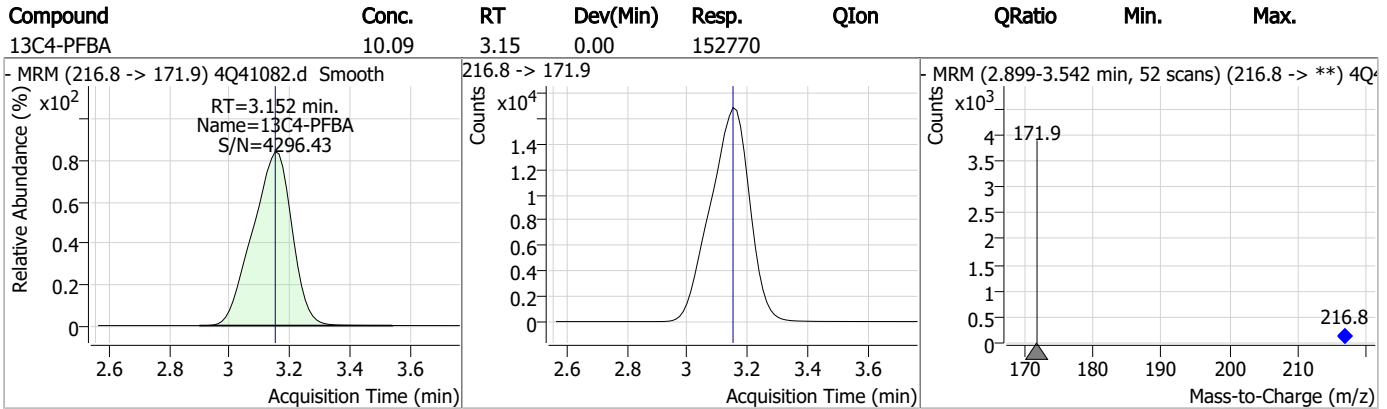
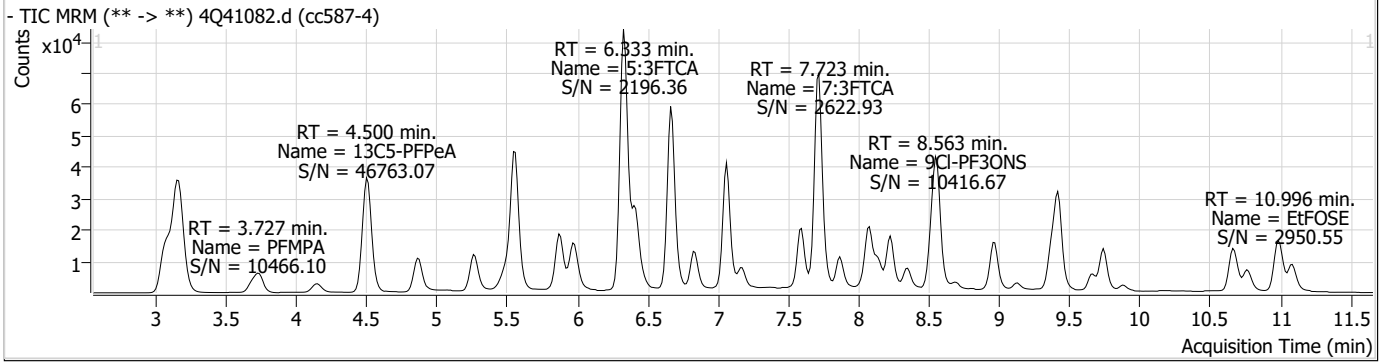
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.15

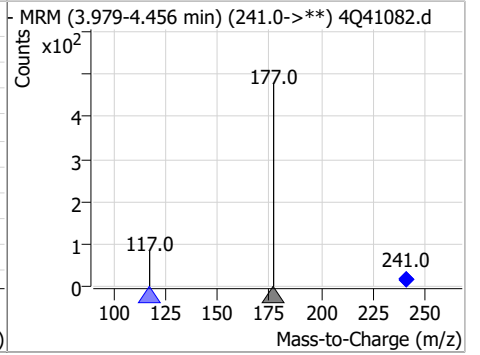
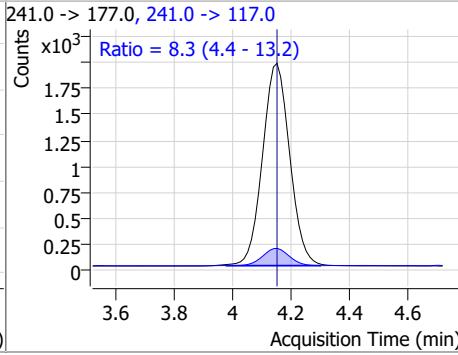
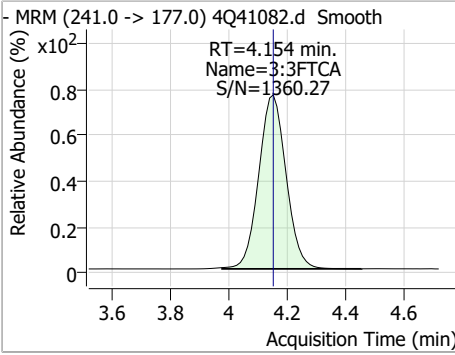
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Perfluorinated Compounds by LC/MS/MS

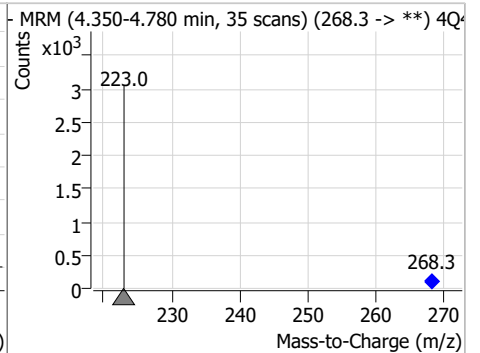
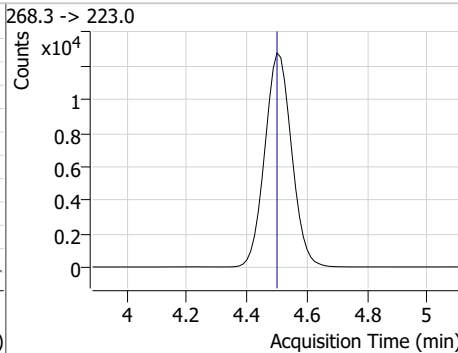
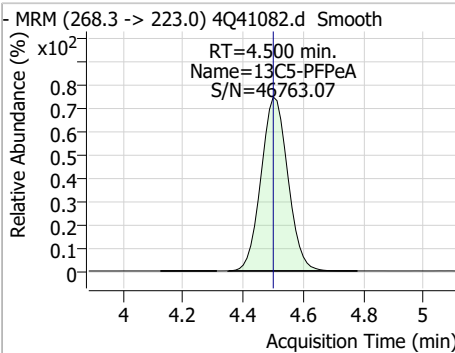


Perfluorinated Compounds by LC/MS/MS

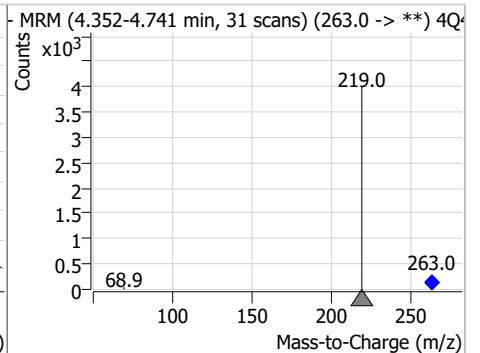
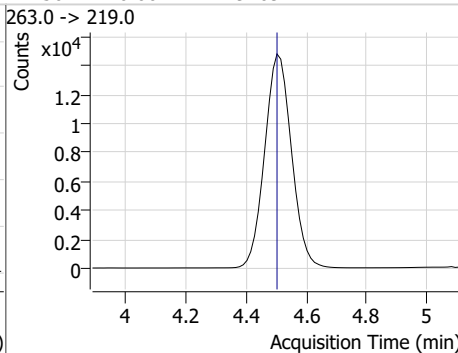
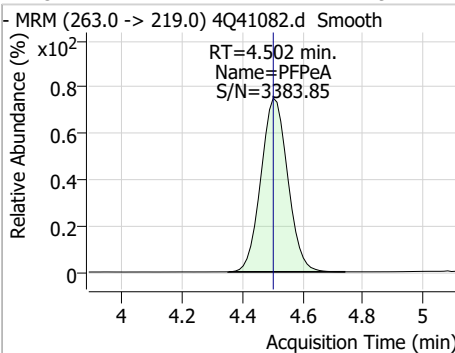
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.60	4.15	0.00	12641	241.0 -> 117.0	8.3	4.4	13.2



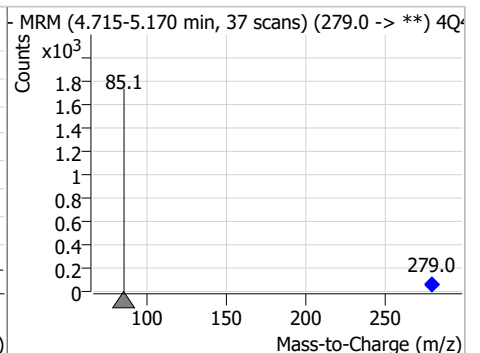
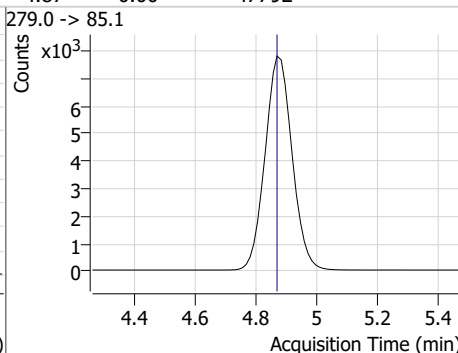
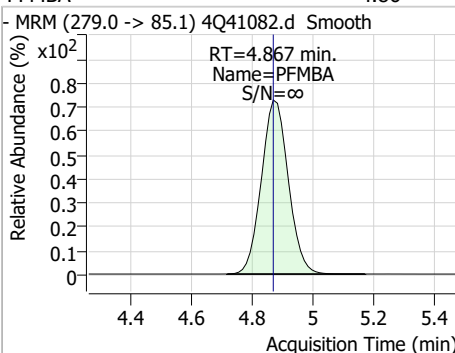
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.83	4.50	0.00	78718				



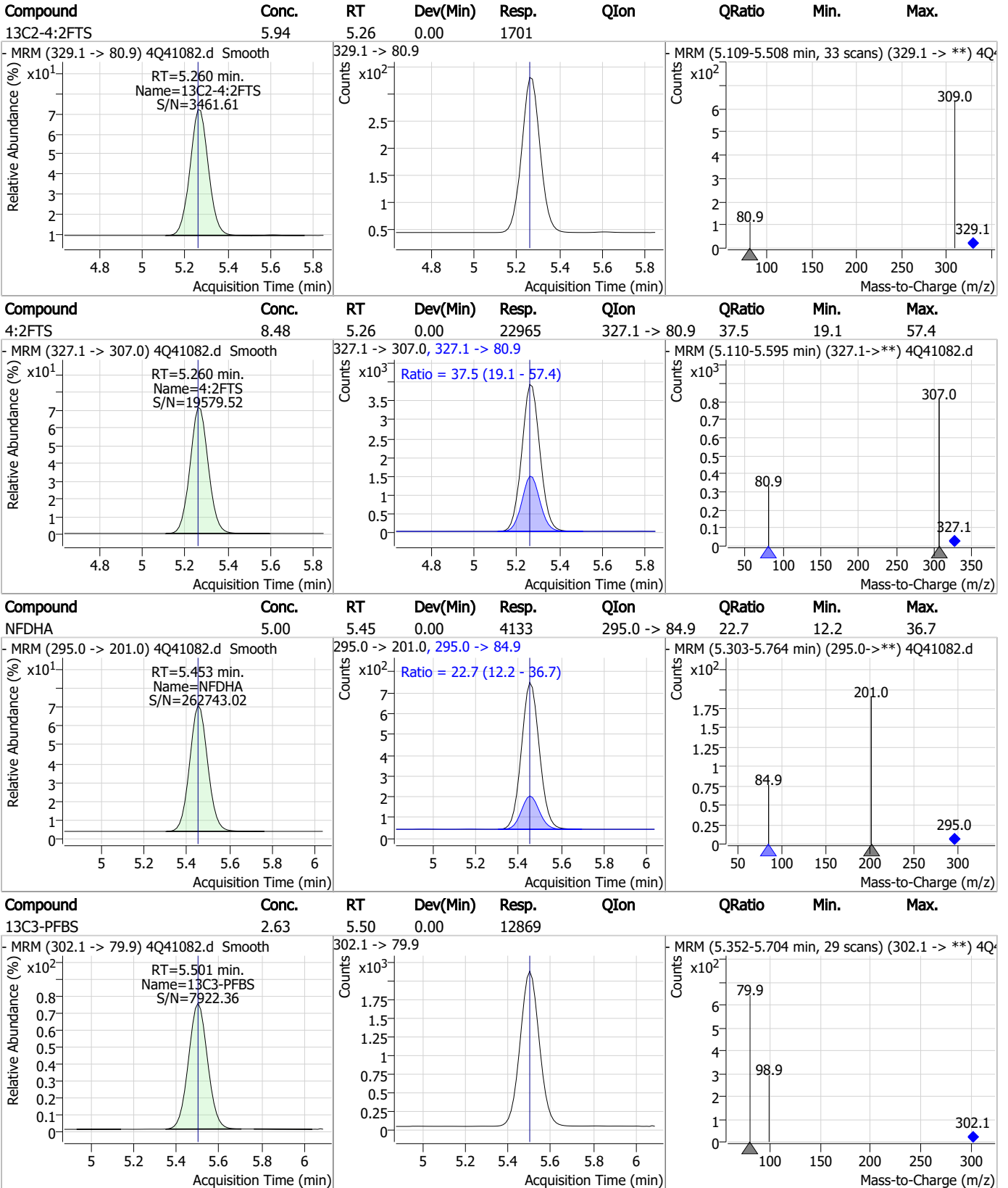
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.92	4.50	0.00	91094				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.86	4.87	0.00	47792				



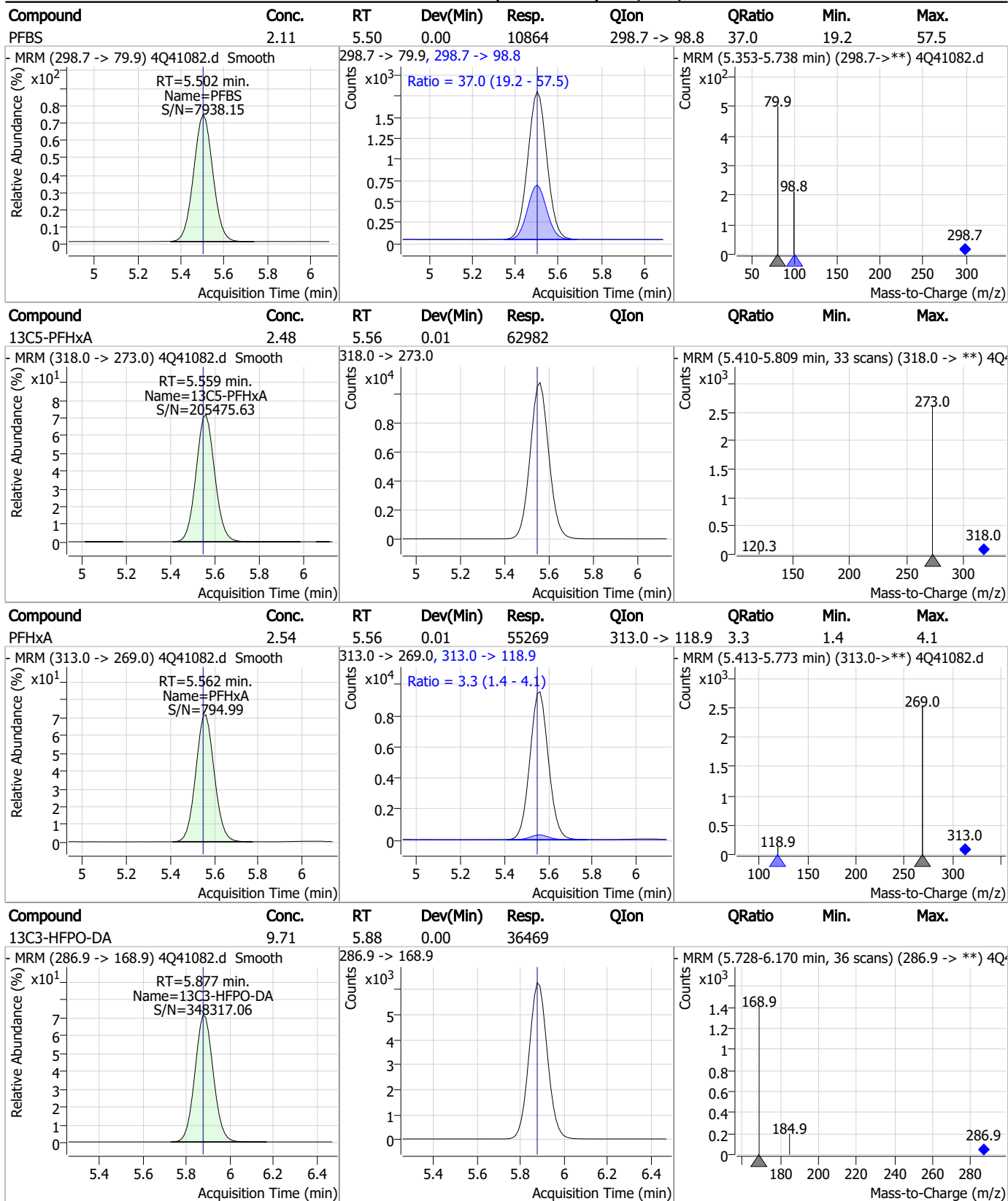
Perfluorinated Compounds by LC/MS/MS



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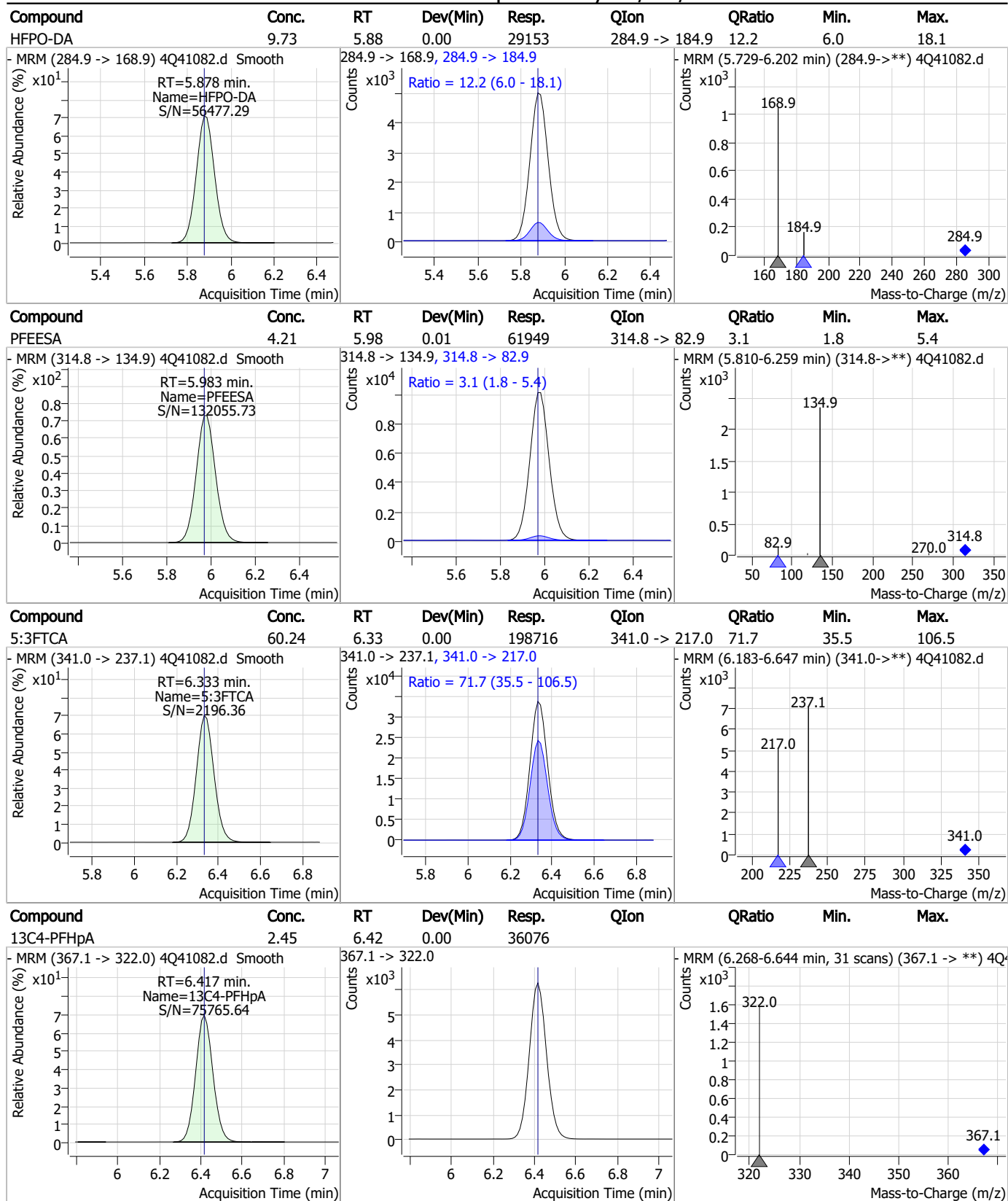
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Perfluorinated Compounds by LC/MS/MS



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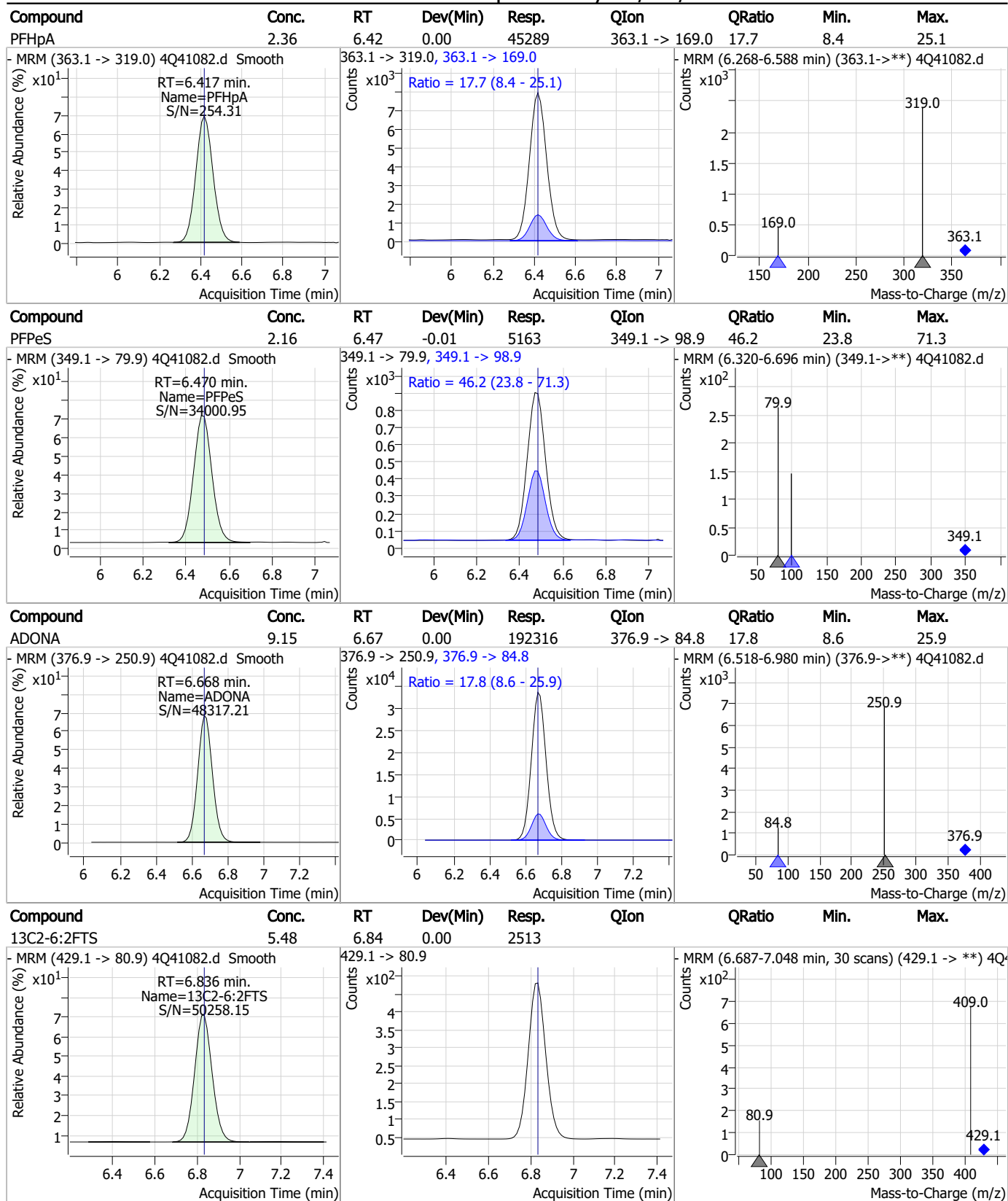
Perfluorinated Compounds by LC/MS/MS



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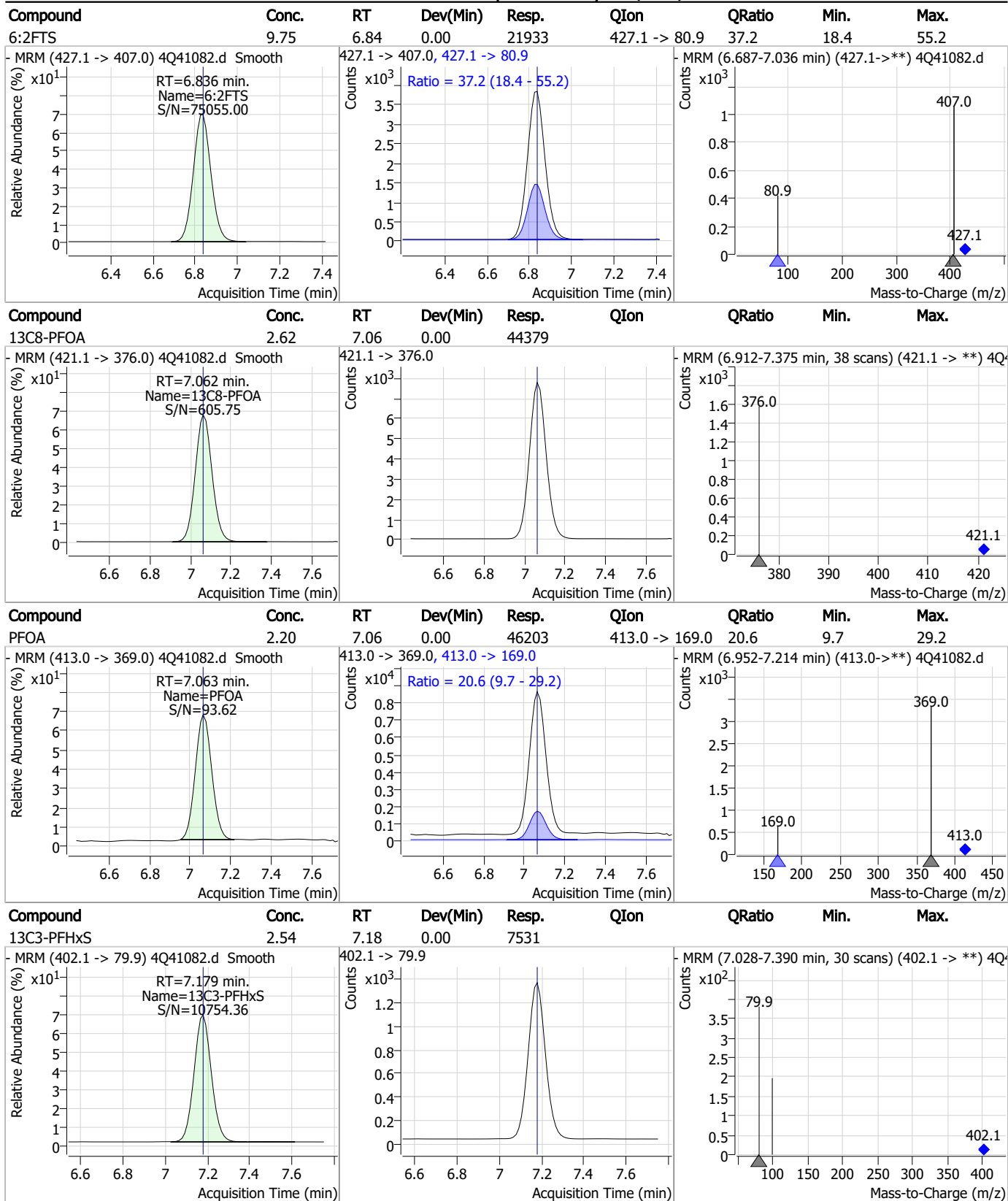
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Perfluorinated Compounds by LC/MS/MS



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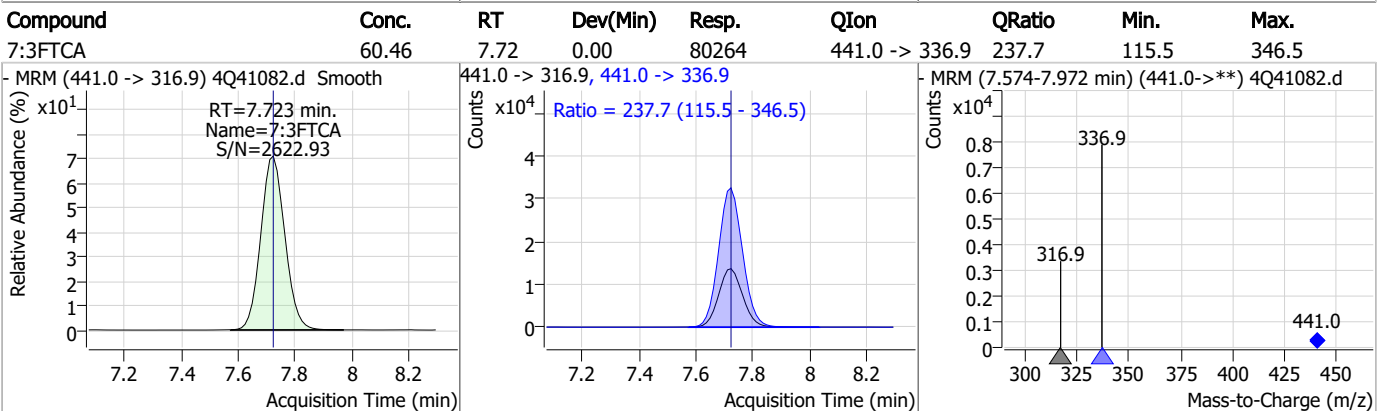
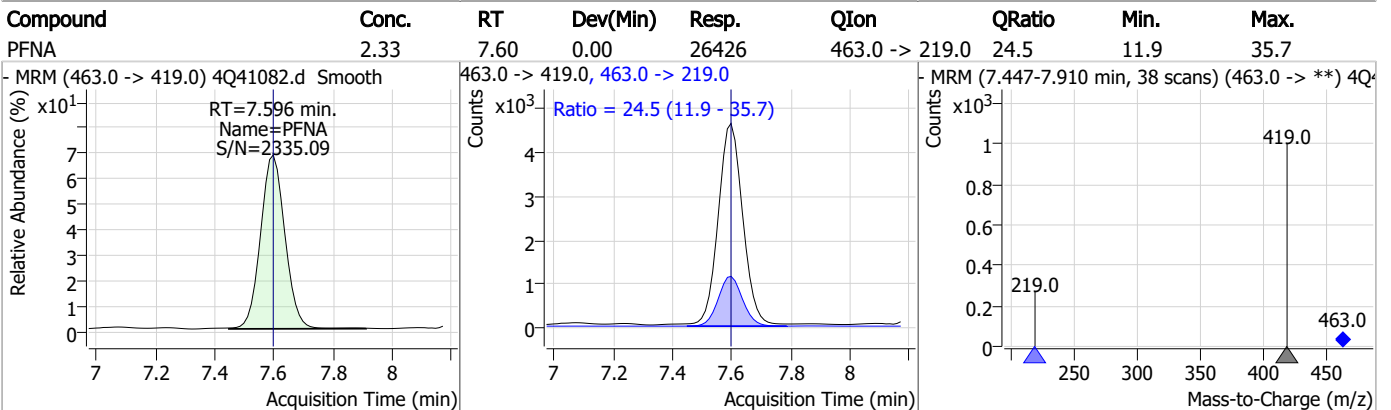
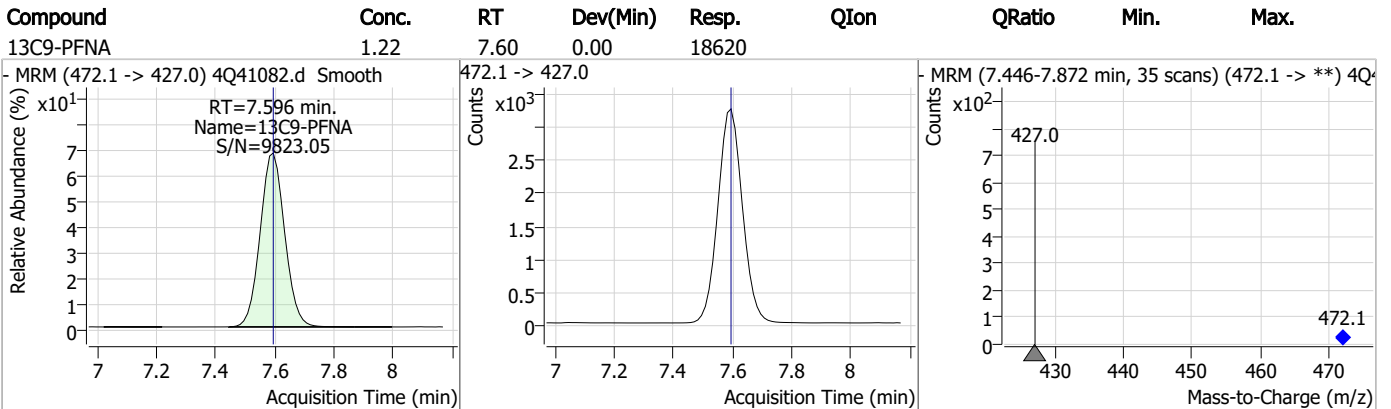
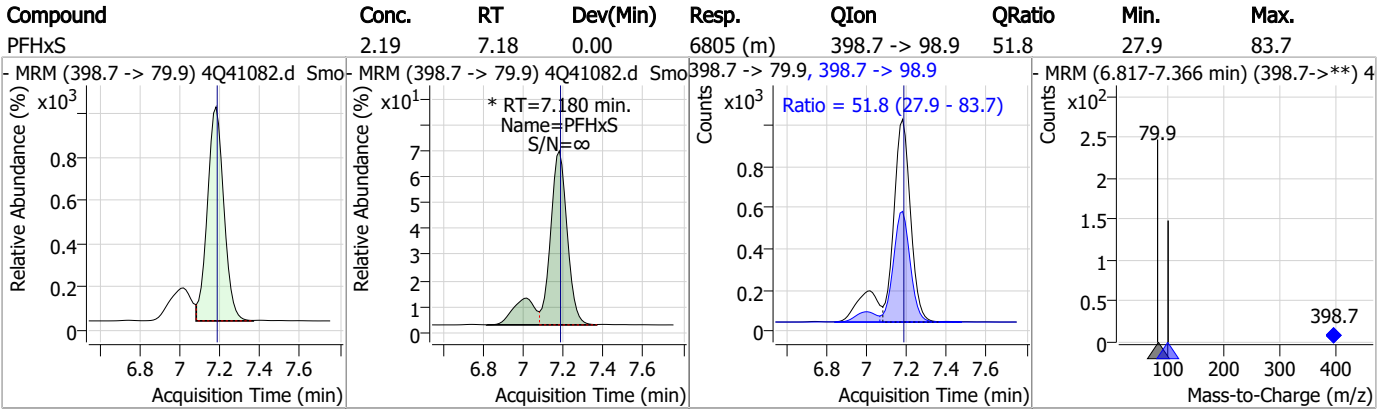
Perfluorinated Compounds by LC/MS/MS



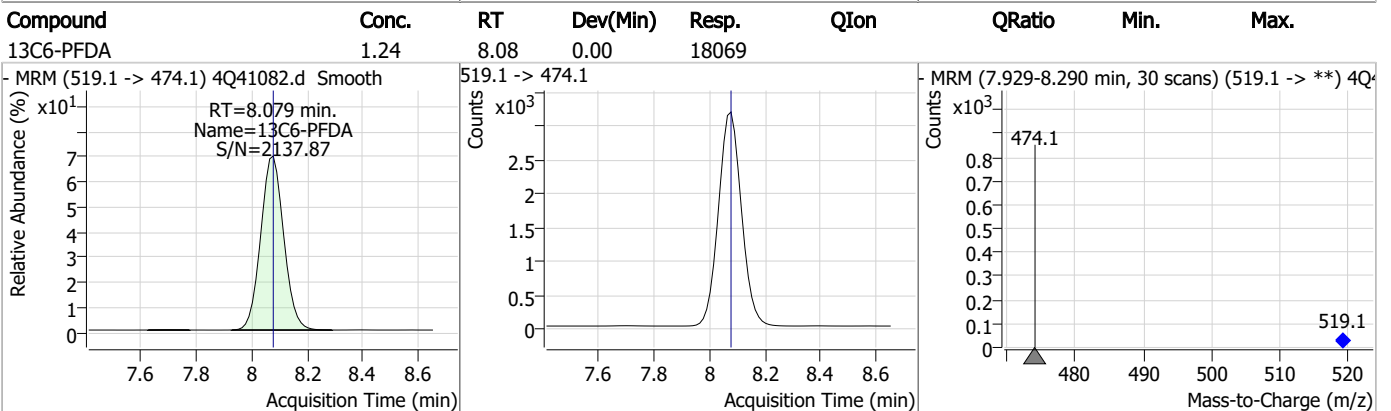
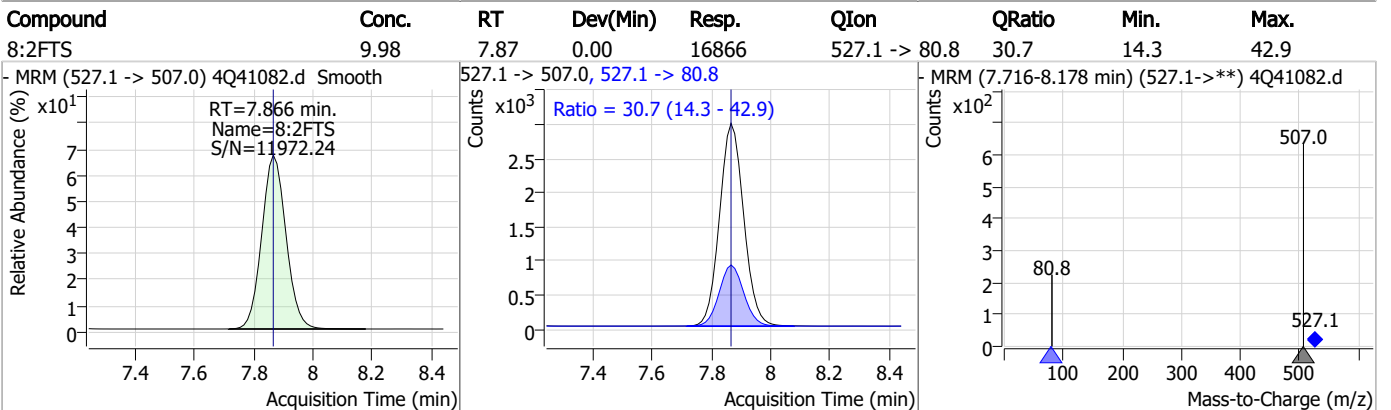
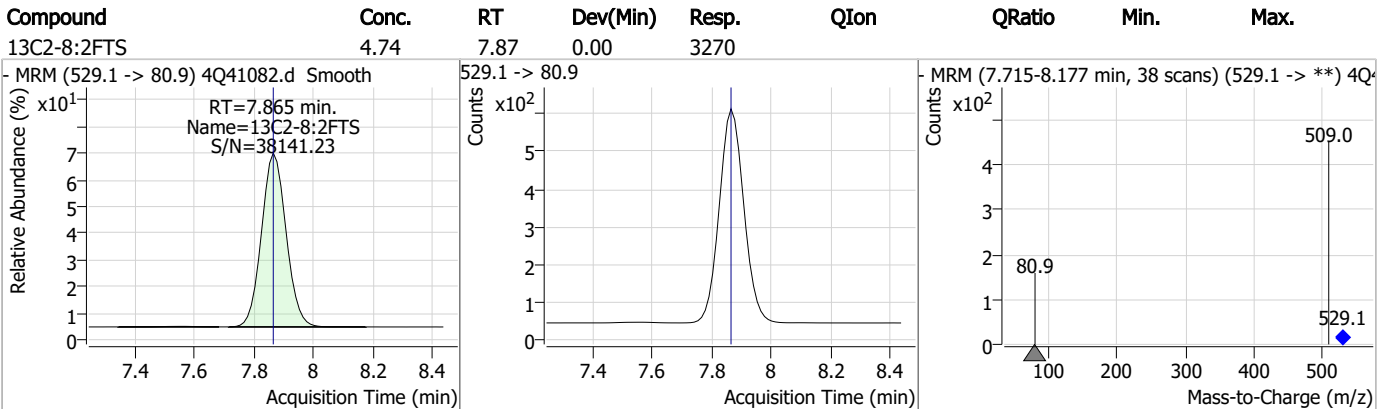
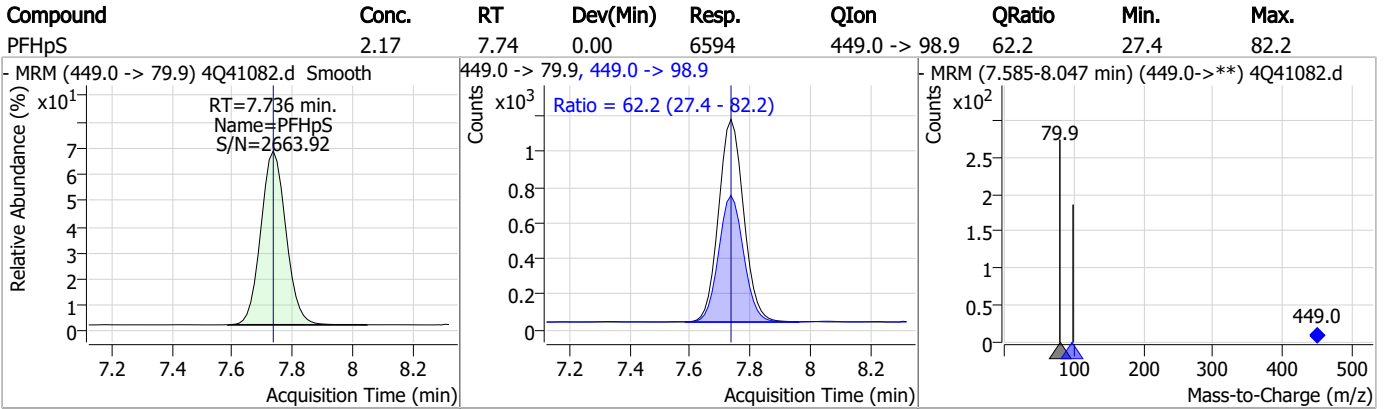
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

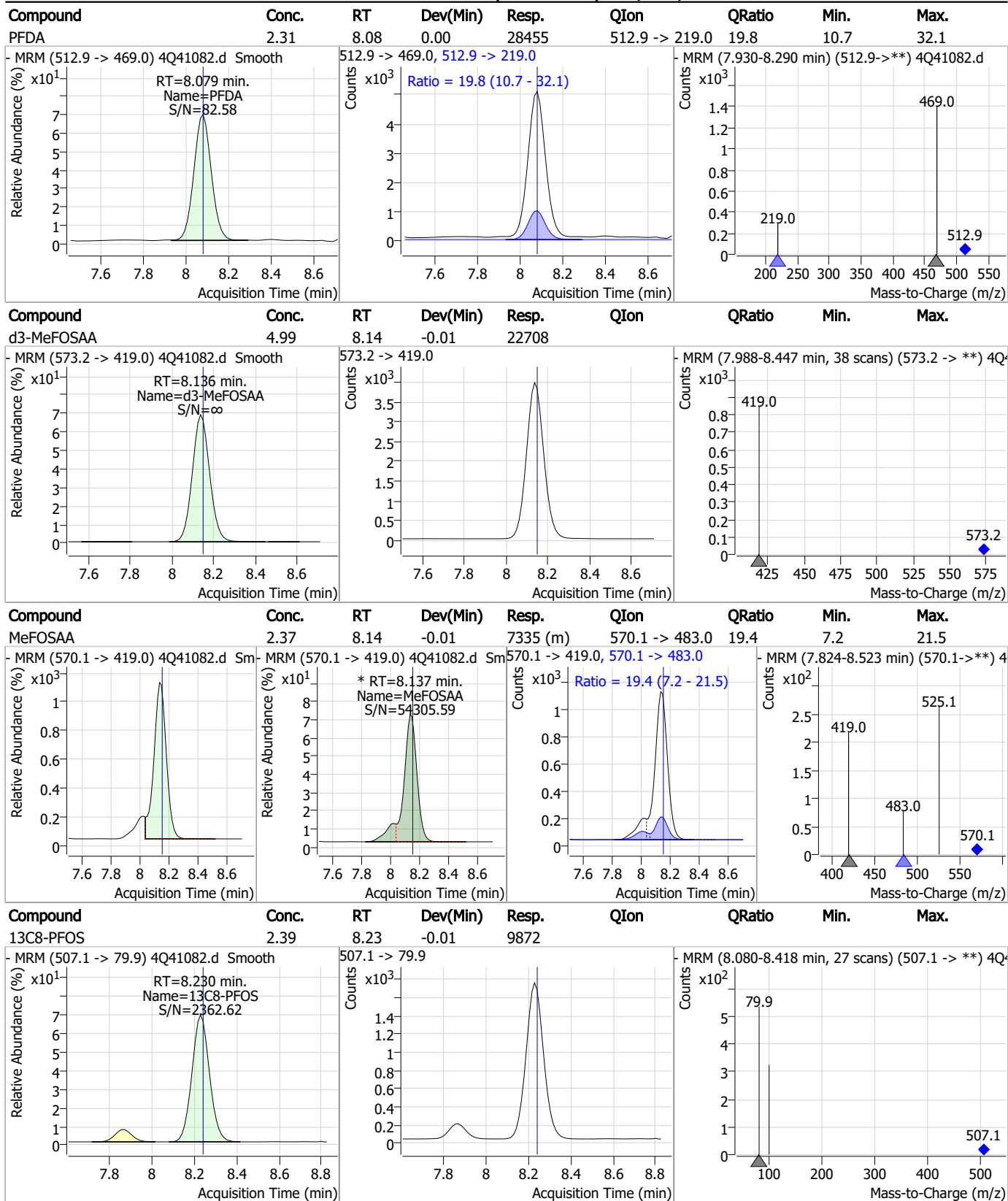


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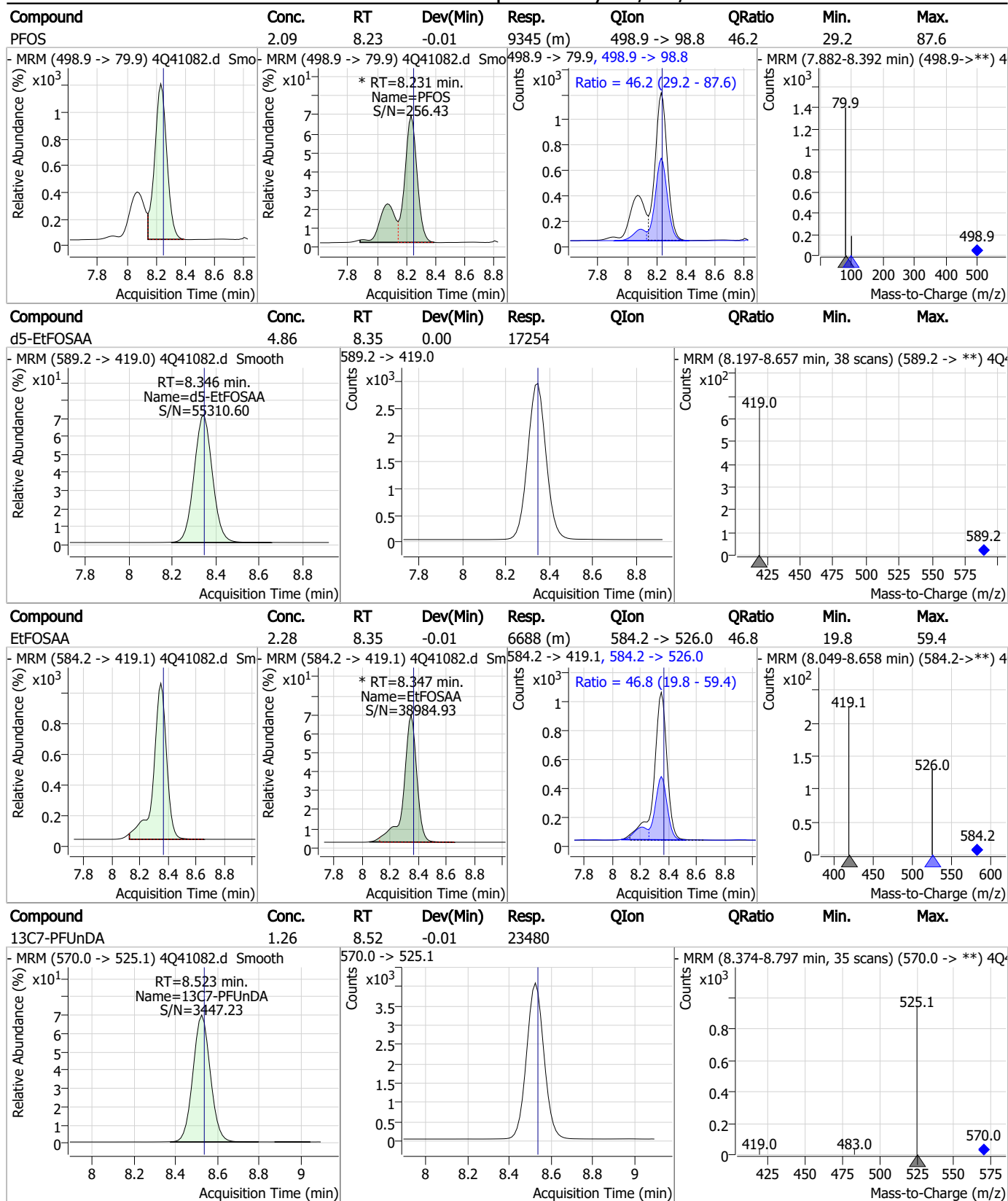
Perfluorinated Compounds by LC/MS/MS



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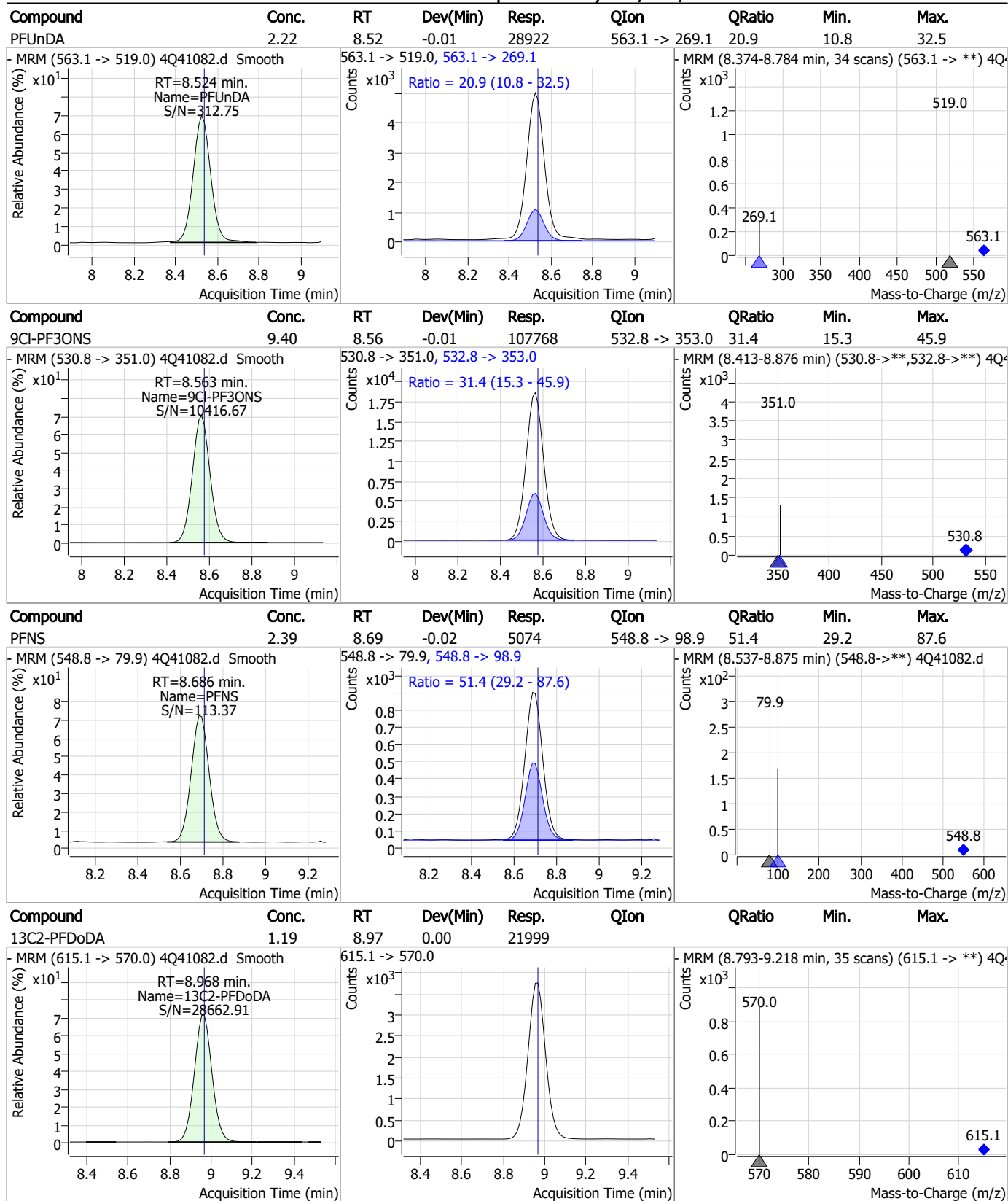
Perfluorinated Compounds by LC/MS/MS



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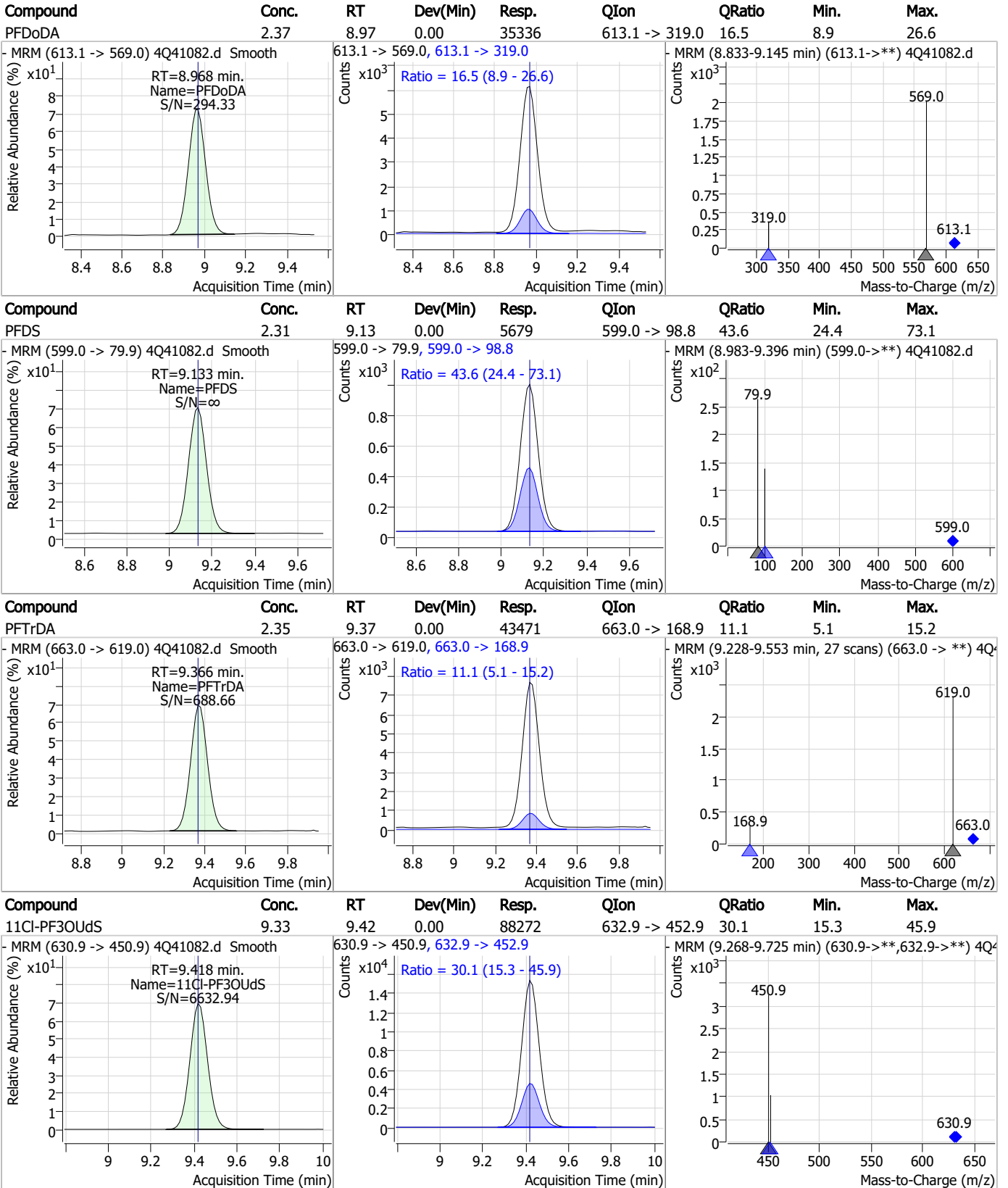
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

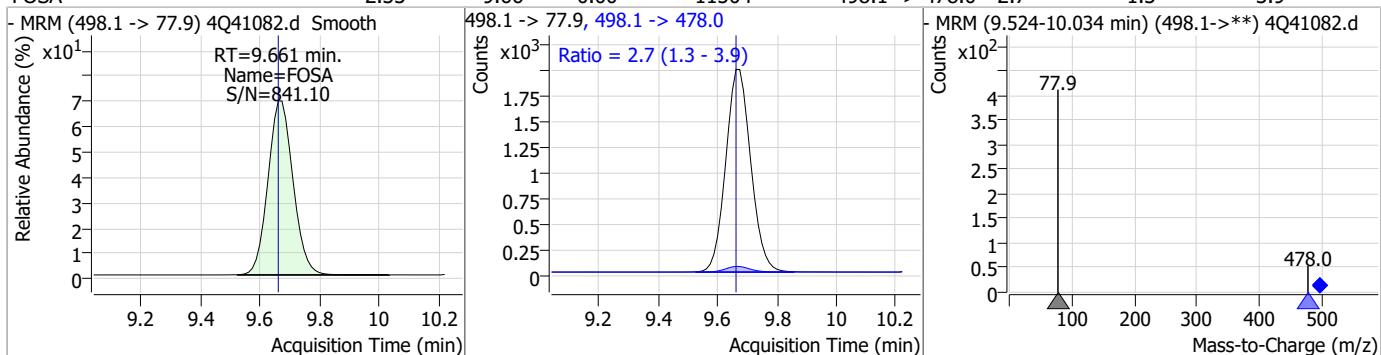


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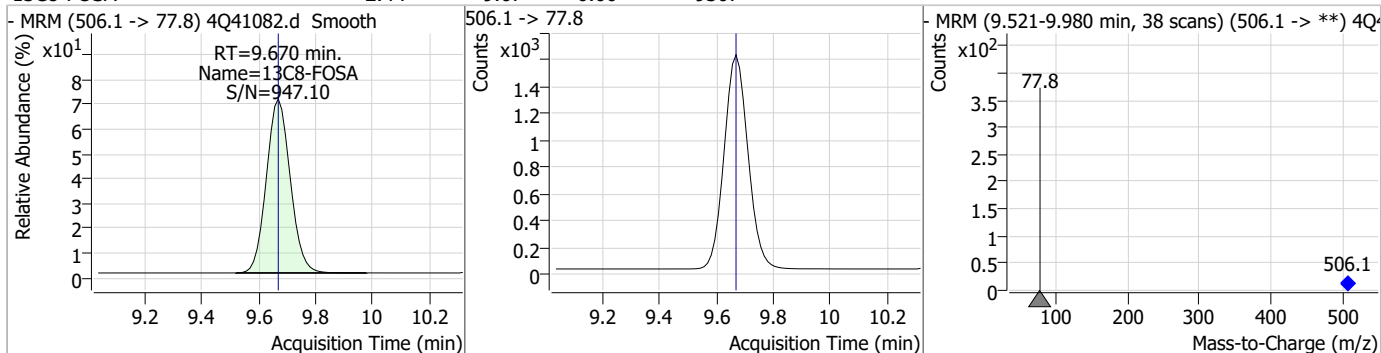


Perfluorinated Compounds by LC/MS/MS

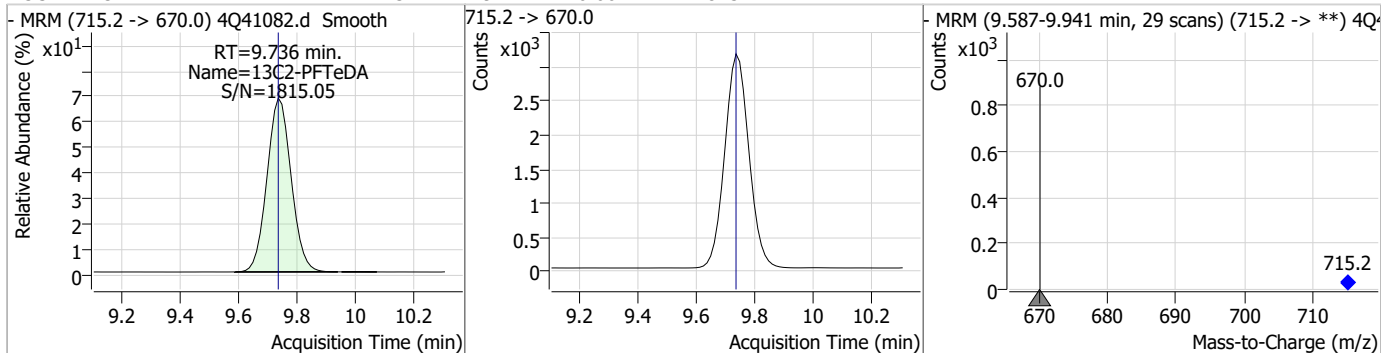
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.33	9.66	0.00	11504	498.1 -> 478.0	2.7	1.3	3.9



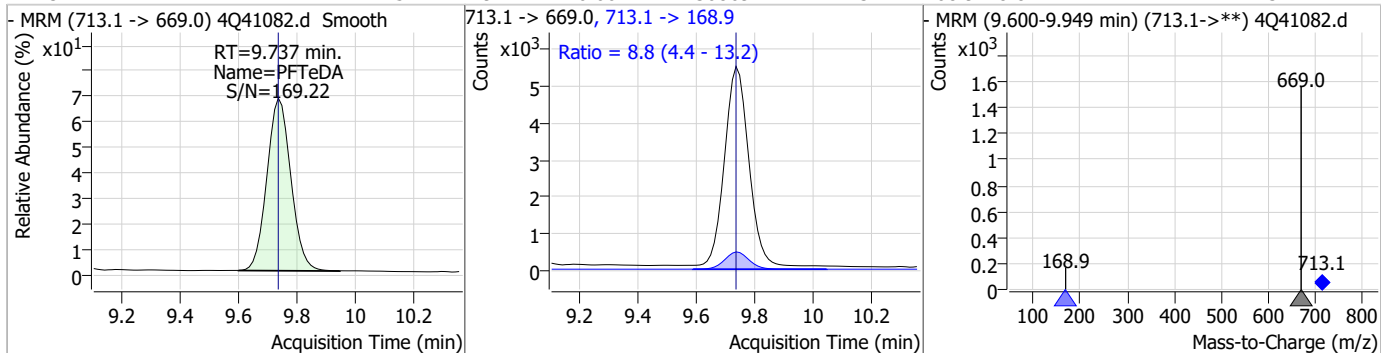
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.44	9.67	0.00	9307				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.13	9.74	0.00	18137				



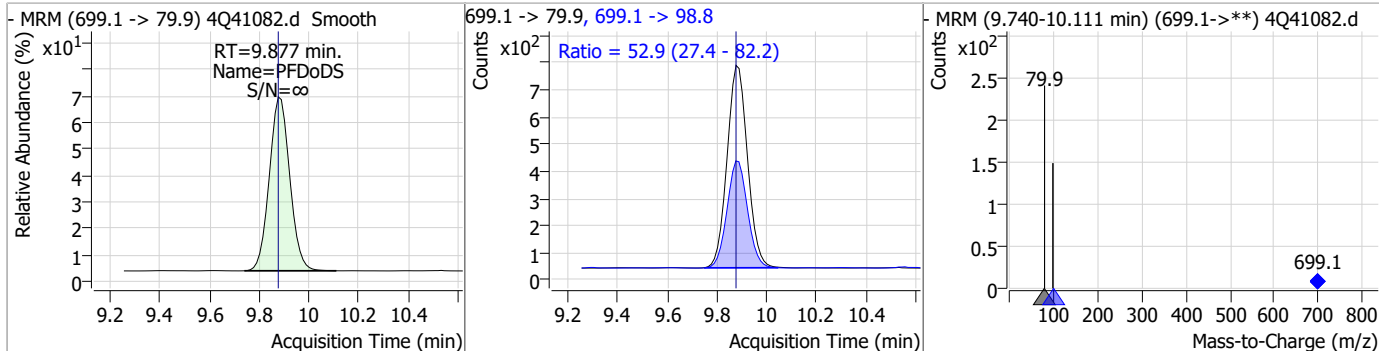
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.45	9.74	0.00	30869	713.1 -> 168.9	8.8	4.4	13.2



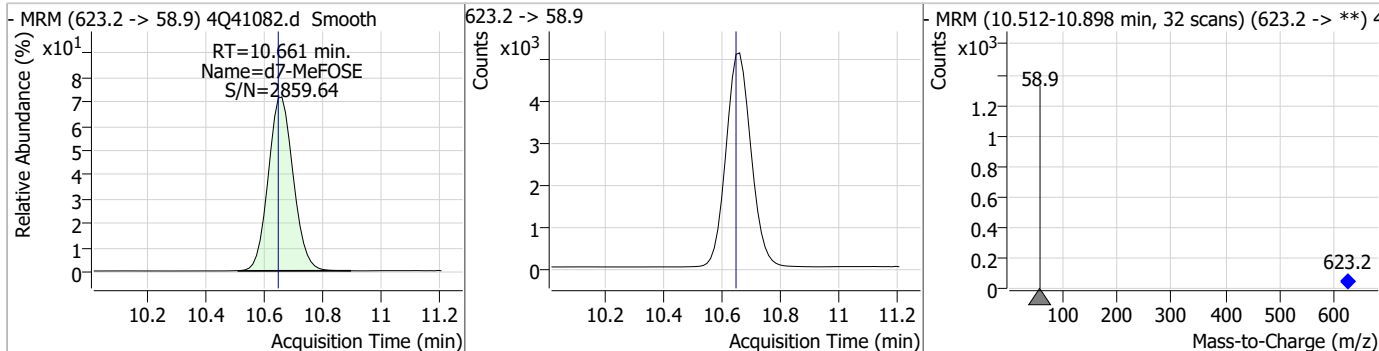
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Perfluorinated Compounds by LC/MS/MS

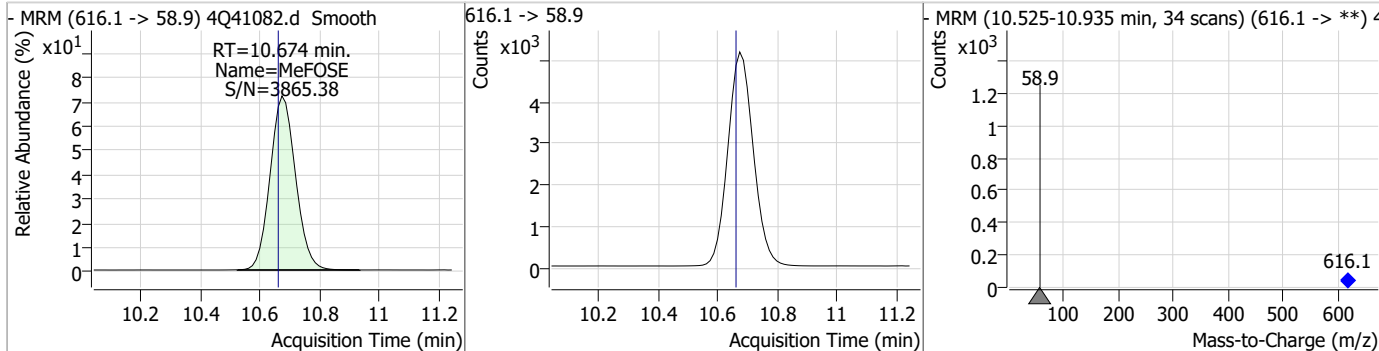
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.18	9.88	0.00	4272	699.1 -> 98.8	52.9	27.4	82.2



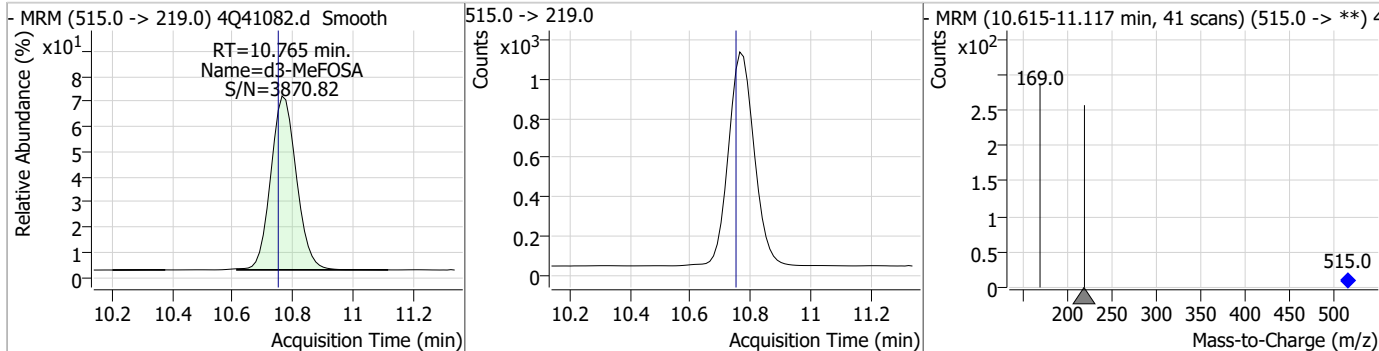
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.23	10.66	0.01	30561				



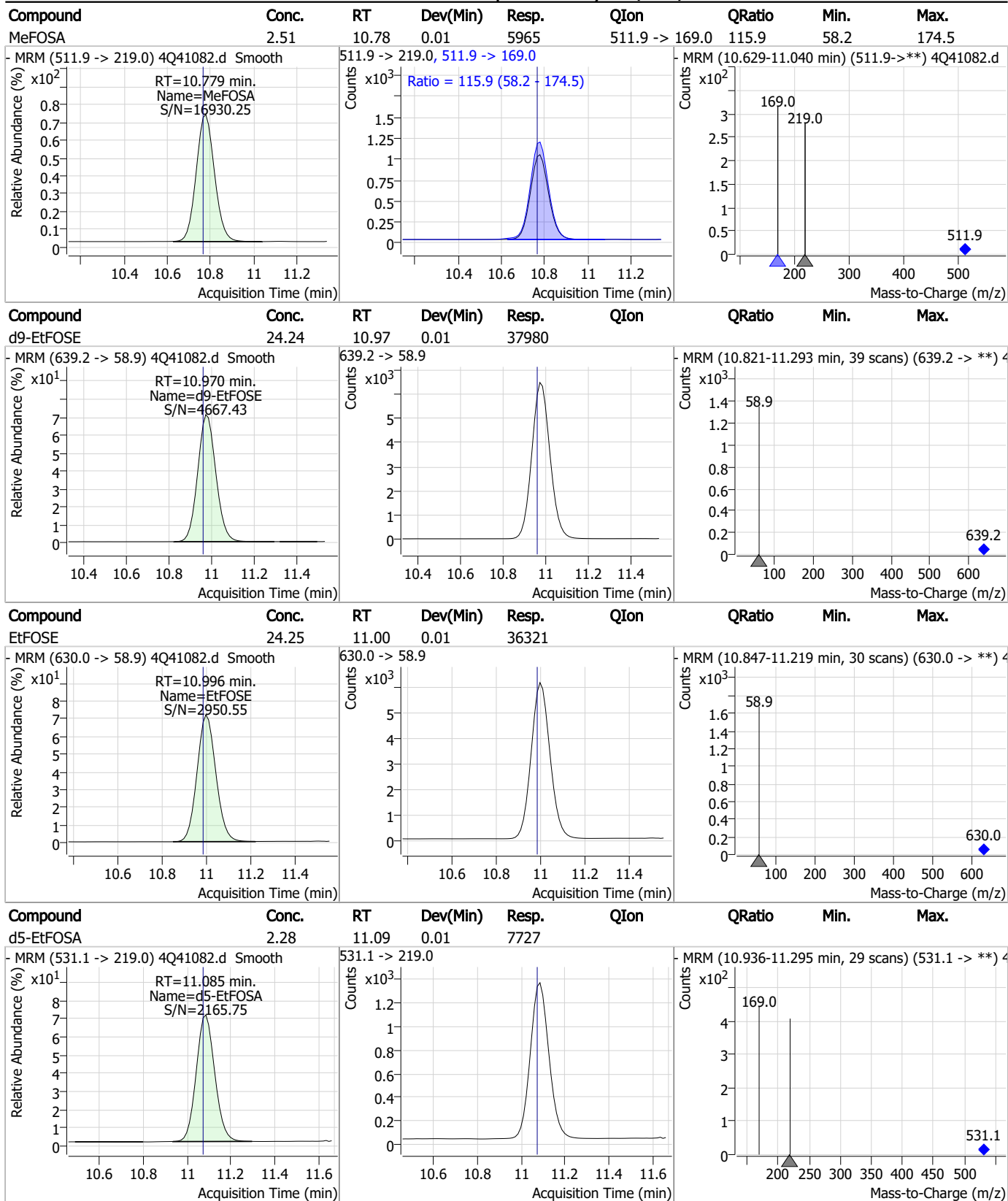
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.88	10.67	0.01	30635				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.18	10.76	0.01	6468				



Perfluorinated Compounds by LC/MS/MS

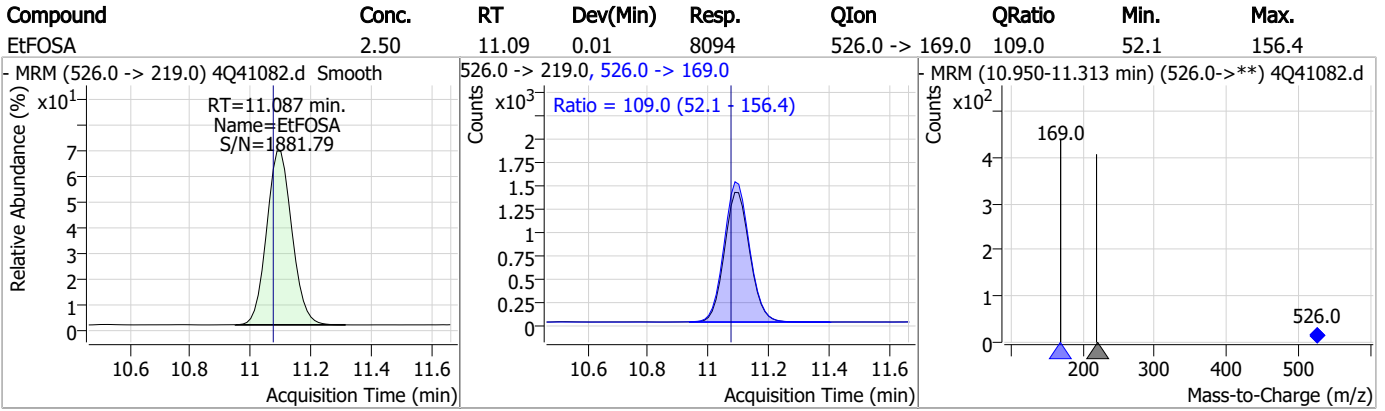


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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q587-CC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41082.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/22/23 22:14 Supervisor approved: 02/24/23 10:54 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.14	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

7.6.15.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41091.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/23/2023 12:21:23 AM
 Sample Name : cc587-4
 Vial : P1-A5
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	148809	10.00 µg/L	-0.013
M5-PFPeA	4.500	268.3 -> 223.0	78900	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	63028	2.50 µg/L	0.012
M4-PFHpA	6.417	367.1 -> 322.0	35943	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	44090	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	19141	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	17022	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	22650	1.25 µg/L	-0.012
M2-PFDoDA	8.955	615.1 -> 570.0	21977	1.25 µg/L	-0.012
M2-PFTeDA	9.736	715.2 -> 670.0	19042	1.25 µg/L	0.000
M8-FOSA	9.657	506.1 -> 77.8	9606	2.50 µg/L	-0.012
M3-PFBS	5.501	302.1 -> 79.9	12811	2.50 µg/L	0.000
M3-PFHxS	7.179	402.1 -> 79.9	7680	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	10042	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1584	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2402	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	3436	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	21779	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	38698	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	16662	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	30778	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	36507	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	7479	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	6604	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	9710	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	90542	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	5139	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	54028	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	17118	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	21882	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	56317	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1584	5.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2402	5.39 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.8%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3436	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-PFDoDA	8.955	615.1 -> 570.0	21977	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-PFTeDA	9.736	715.2 -> 670.0	19042	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C3-PFBS	5.501	302.1 -> 79.9	12811	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.9%		
13C3-PFHxS	7.179	402.1 -> 79.9	7680	2.66 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C4-PFBA	3.139	216.8 -> 171.9	148809	9.92 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.417	367.1 -> 322.0	35943	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFHxA	5.559	318.0 -> 273.0	63028	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C5-PFPeA	4.500	268.3 -> 223.0	78900	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C6-PFDA	8.079	519.1 -> 474.1	17022	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C7-PFUnDA	8.523	570.0 -> 525.1	22650	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-FOSA	9.657	506.1 -> 77.8	9606	2.68 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C8-PFOA	7.062	421.1 -> 376.0	44090	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-PFOS	8.230	507.1 -> 79.9	10042	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C9-PFNA	7.596	472.1 -> 427.0	19141	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
d3-MeFOSAA	8.136	573.2 -> 419.0	21779	5.09 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	38698	10.56 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.6%	
d3-MeFOSA	10.765	515.0 -> 219.0	6604	2.37 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.8%	
d5-EtFOSAA	8.346	589.2 -> 419.0	16662	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
d7-MeFOSE	10.648	623.2 -> 58.9	30778	26.00 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d9-EtFOSE	10.970	639.2 -> 58.9	36507	24.82 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
d5-EtFOSA	11.085	531.1 -> 219.0	7479	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.9%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	23674	9.39 µg/L	97
		327.1 -> 80.9	8609		
6:2FTS	6.836	427.1 -> 407.0	21333	9.92 µg/L	100
		427.1 -> 80.9	7883		
8:2FTS	7.866	527.1 -> 507.0	16522	9.30 µg/L	98
		527.1 -> 80.8	4868		
EtFOSAA	8.347	584.2 -> 419.1	6570	2.32 µg/L	m 92
		584.2 -> 526.0	2929		
FOSA	9.661	498.1 -> 77.9	11593	2.27 µg/L	98
		498.1 -> 478.0	369		
MeFOSAA	8.137	570.1 -> 419.0	7046	2.37 µg/L	83
		570.1 -> 483.0	1512		
PFBA	3.146	212.8 -> 168.9	33158	9.40 µg/L	100
PFBS	5.502	298.7 -> 79.9	11119	2.17 µg/L	97
		298.7 -> 98.8	4037		
PFDA	8.079	512.9 -> 469.0	27559	2.37 µg/L	100
		512.9 -> 219.0	5892		
PFDODA	8.956	613.1 -> 569.0	34841	2.34 µg/L	96
		613.1 -> 319.0	5574		
PFDS	9.121	599.0 -> 79.9	5324	2.13 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	2603			
PFHpA	6.417	363.1 -> 319.0	44461	2.33	µg/L	99
		363.1 -> 169.0	7609			
PFHpS	7.736	449.0 -> 79.9	7038	2.28	µg/L	98
		449.0 -> 98.9	3776			
PFHxA	5.549	313.0 -> 269.0	56420	2.59	µg/L	99
		313.0 -> 118.9	1701			
PFHxS	7.180	398.7 -> 79.9	6414	2.02	µg/L	m 98
		398.7 -> 98.9	3687			
PFNA	7.596	463.0 -> 419.0	26243	2.26	µg/L	100
		463.0 -> 219.0	6227			
PFNS	8.686	548.8 -> 79.9	5027	2.33	µg/L	95
		548.8 -> 98.9	2745			
PFOA	7.063	413.0 -> 369.0	47248	2.27	µg/L	100
		413.0 -> 169.0	9291			
PFOS	8.231	498.9 -> 79.9	9490	2.09	µg/L	m 87
		498.9 -> 98.8	4594			
PFPeA	4.502	263.0 -> 219.0	90920	4.90	µg/L	100
PFPeS	6.484	349.1 -> 79.9	5228	2.14	µg/L	94
		349.1 -> 98.9	2697			
PFTeDA	9.737	713.1 -> 669.0	31102	2.35	µg/L	100
		713.1 -> 168.9	2709			
PFTrDA	9.366	663.0 -> 619.0	44326	2.40	µg/L	98
		663.0 -> 168.9	4790			
PFUnDA	8.524	563.1 -> 519.0	29620	2.35	µg/L	97
		563.1 -> 269.1	5947			
11CI-PF3OUdS	9.418	630.9 -> 450.9	87778	8.74	µg/L	99
		632.9 -> 452.9	26189			
9CI-PF3ONS	8.563	530.8 -> 351.0	110772	9.10	µg/L	99
		532.8 -> 353.0	33074			
ADONA	6.681	376.9 -> 250.9	196985	8.83	µg/L	98
		376.9 -> 84.8	35547			
HFPO-DA	5.878	284.9 -> 168.9	30348	9.55	µg/L	100
		284.9 -> 184.9	3650			
3:3FTCA	4.142	241.0 -> 177.0	12532	11.47	µg/L	100
		241.0 -> 117.0	1093			
5:3FTCA	6.333	341.0 -> 237.1	198077	60.00	µg/L	100
		341.0 -> 217.0	140509			
7:3FTCA	7.723	441.0 -> 316.9	79610	59.92	µg/L	97
		441.0 -> 336.9	187880			
EtFOSA	11.087	526.0 -> 219.0	7810	2.49	µg/L	92
		526.0 -> 169.0	8807			
EtFOSE	10.996	630.0 -> 58.9	35658	24.77	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	6145	2.53	µg/L	99
		511.9 -> 169.0	7189			
MeFOSE	10.674	616.1 -> 58.9	30574	23.67	µg/L	100
PFDoDS	9.864	699.1 -> 79.9	4340	2.17	µg/L	98
		699.1 -> 98.8	2308			
NFDHA	5.453	295.0 -> 201.0	4131	4.99	µg/L	98
		295.0 -> 84.9	1051			
PFMBA	4.867	279.0 -> 85.1	47117	4.78	µg/L	100
PFMPA	3.715	229.0 -> 84.9	37235	4.76	µg/L	100
PFEESA	5.983	314.8 -> 134.9	60252	4.09	µg/L	99
		314.8 -> 82.9	2012			

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



7.6.16
7

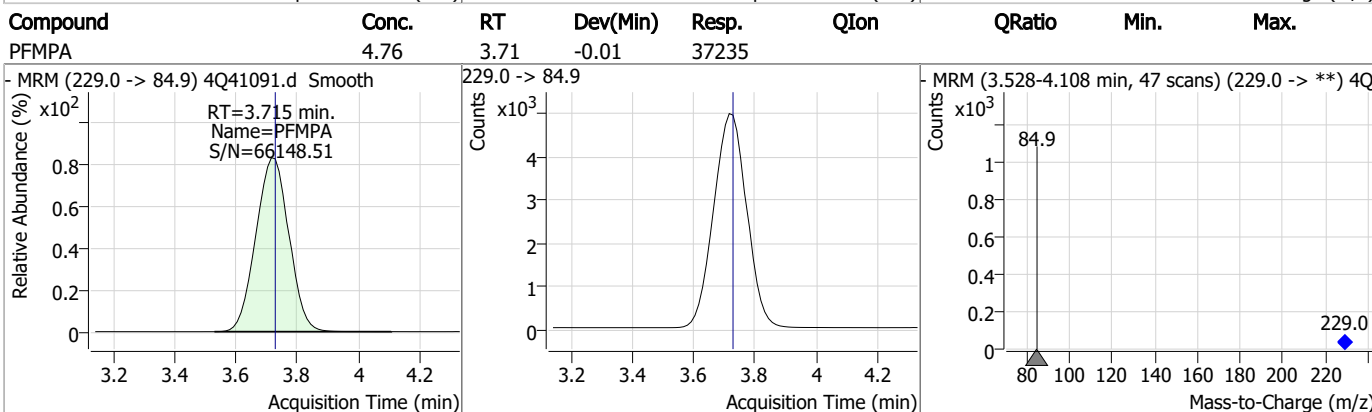
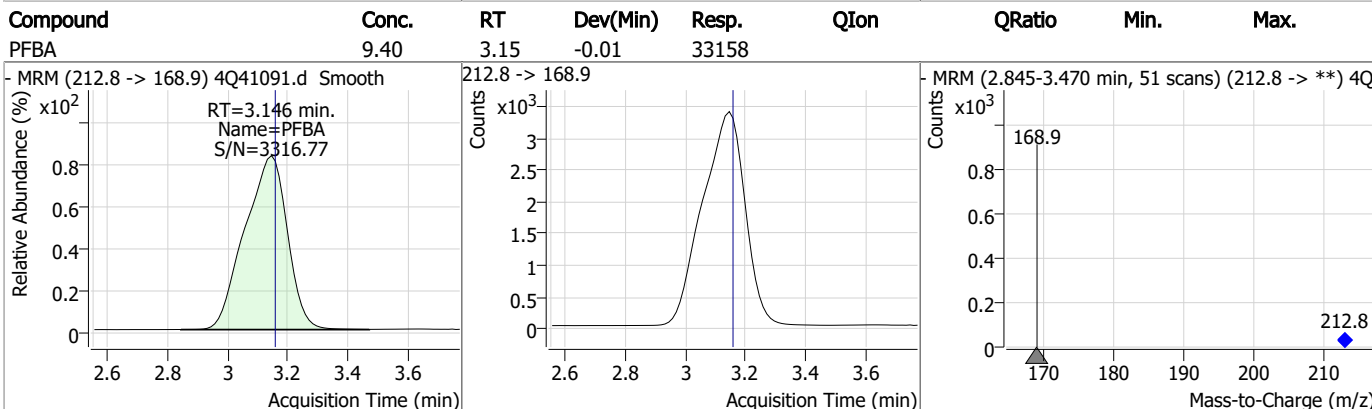
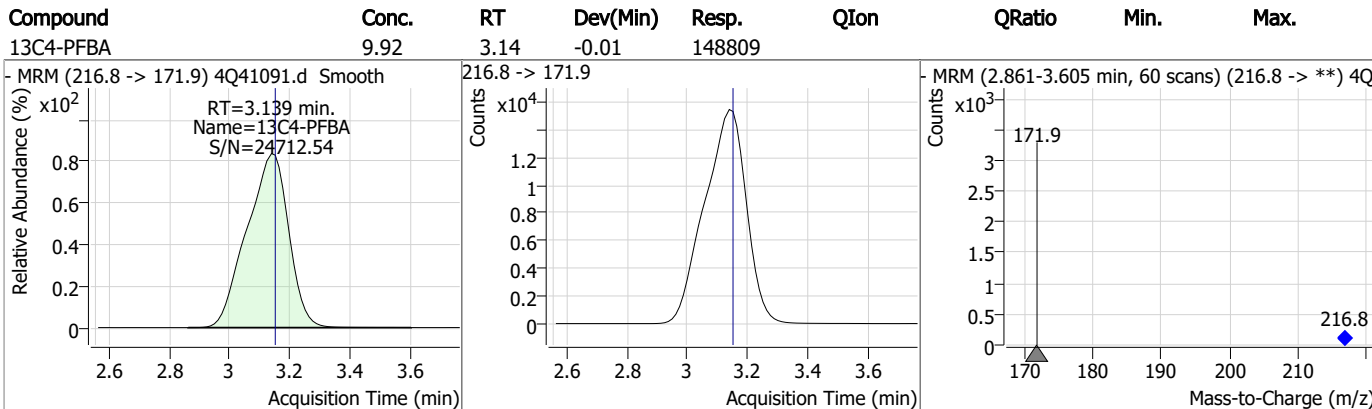
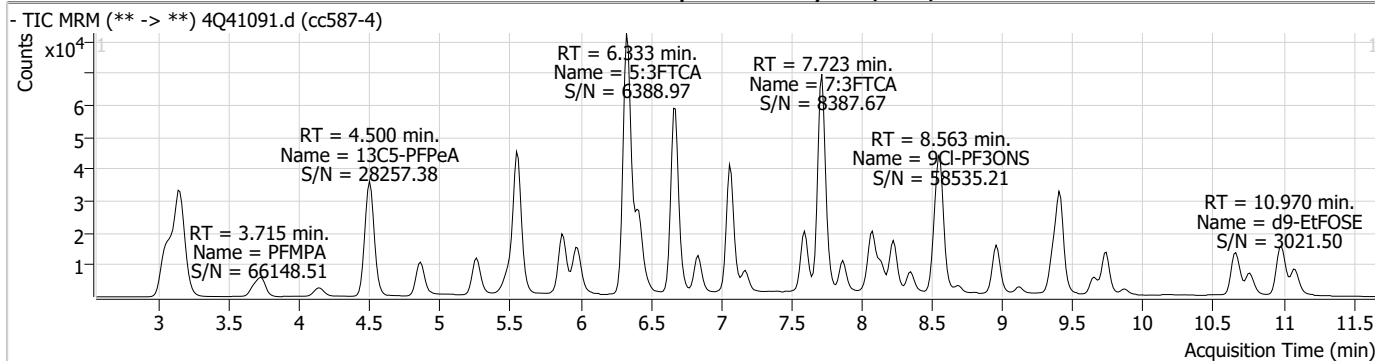
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.16

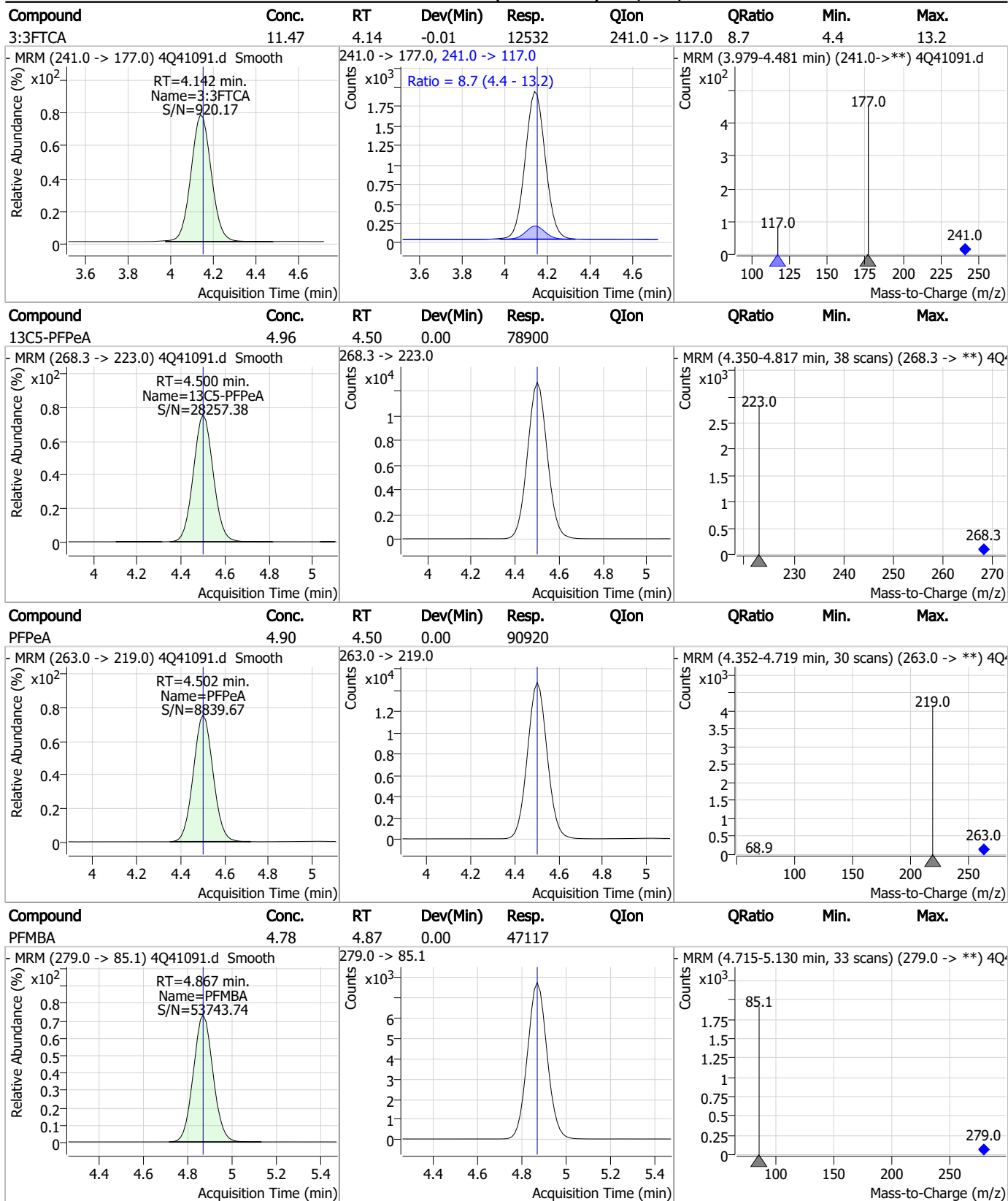
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Perfluorinated Compounds by LC/MS/MS



7.6.16
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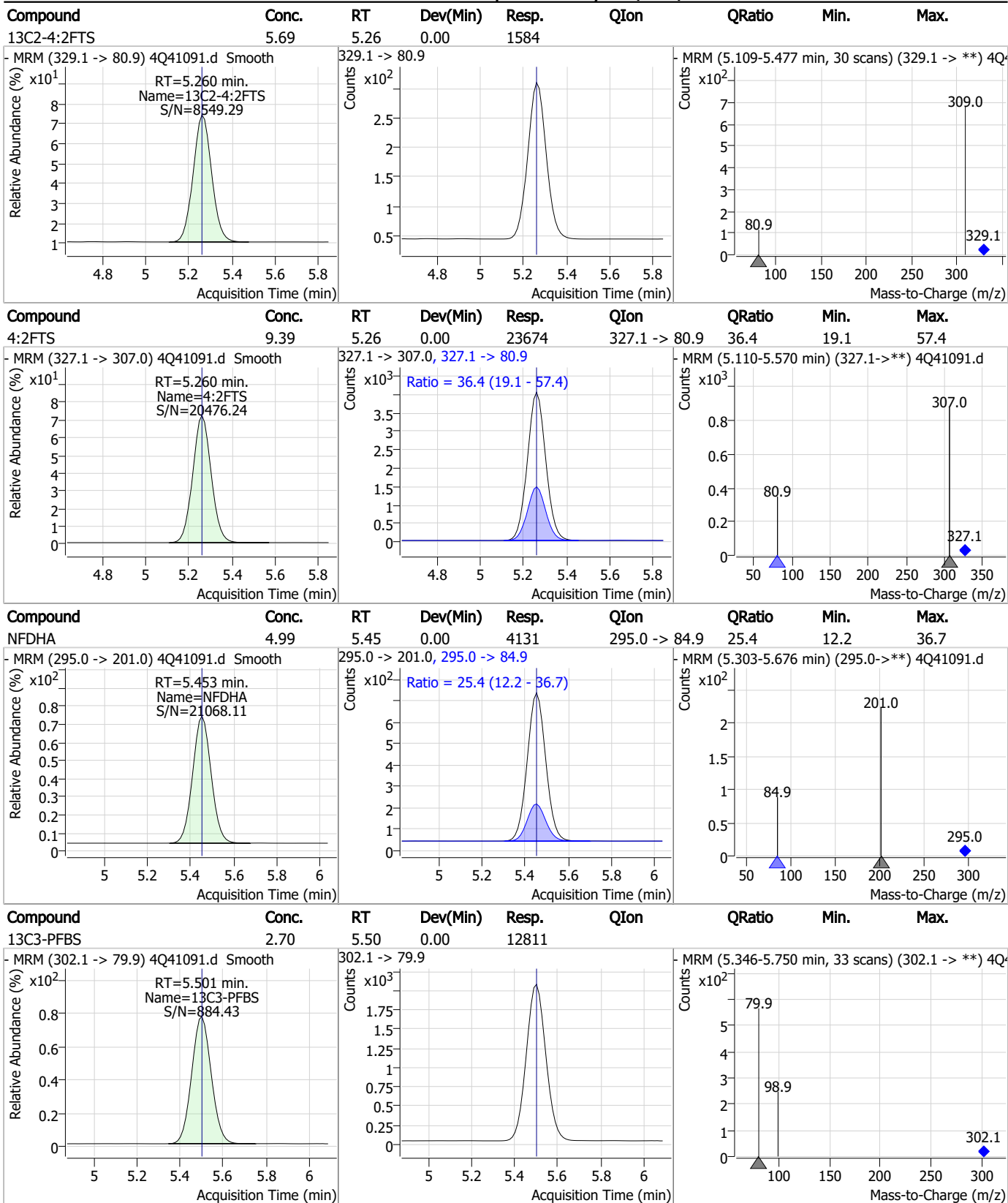
Perfluorinated Compounds by LC/MS/MS



7.6.16

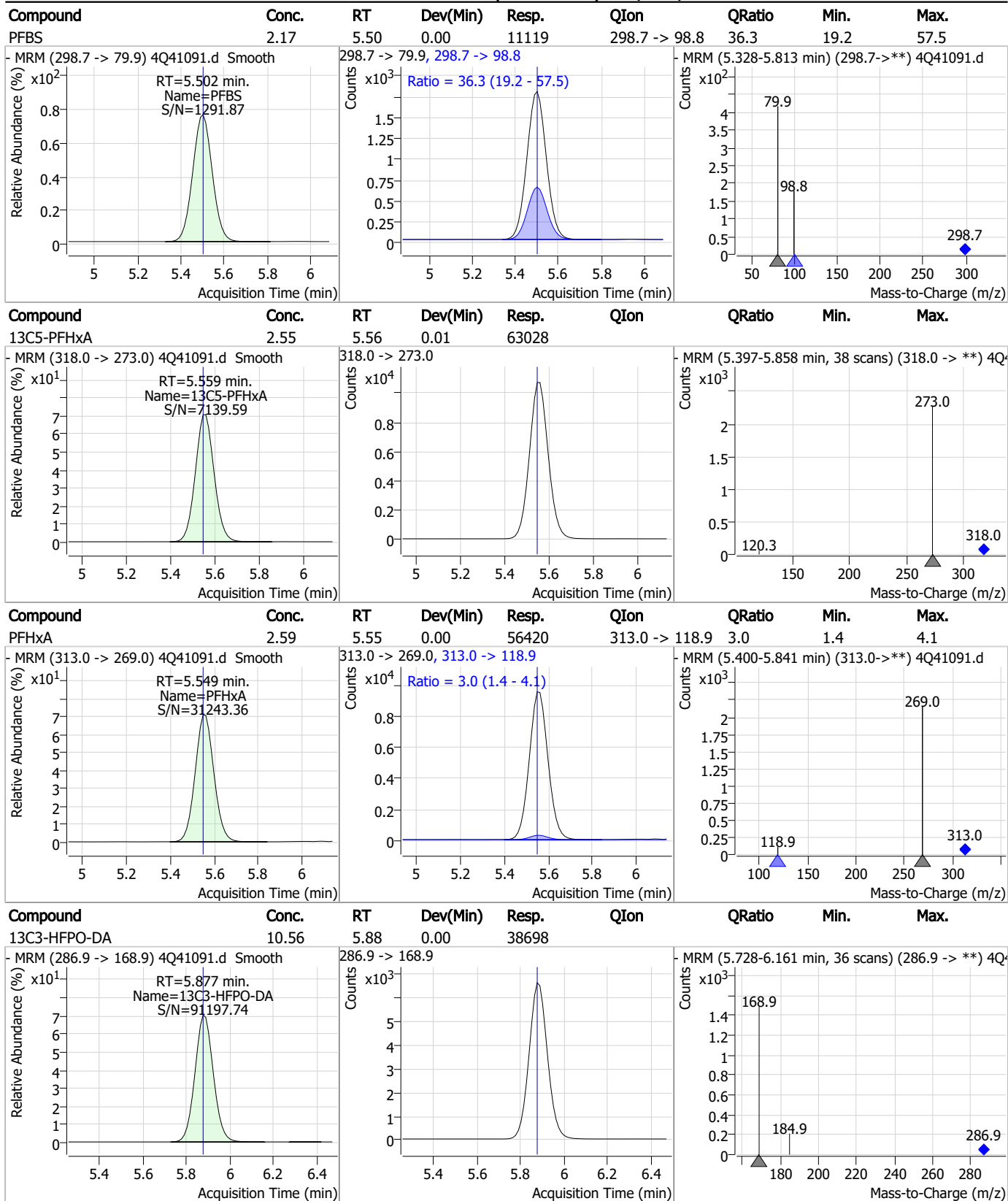
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Perfluorinated Compounds by LC/MS/MS



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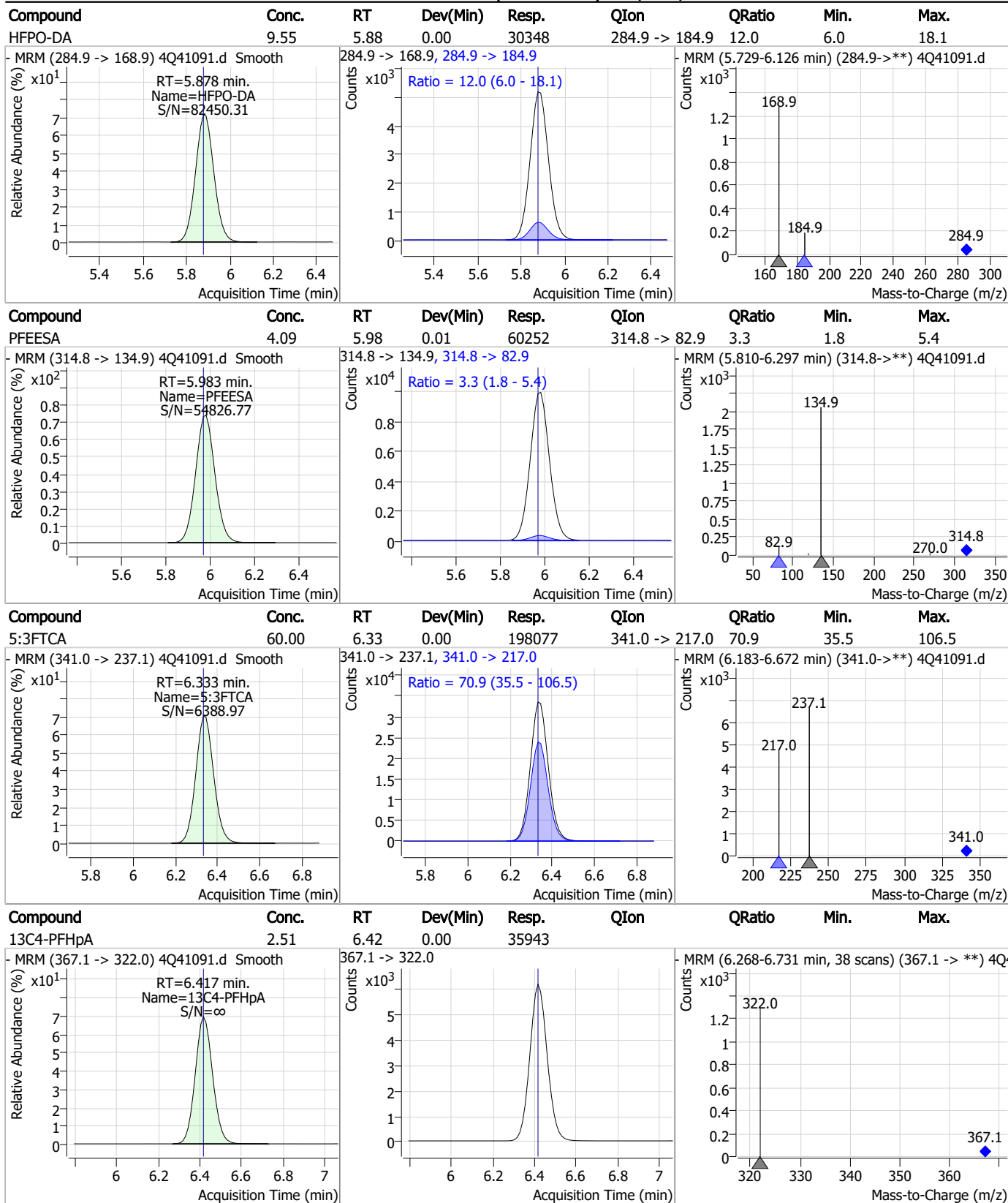
Perfluorinated Compounds by LC/MS/MS



7.6.16

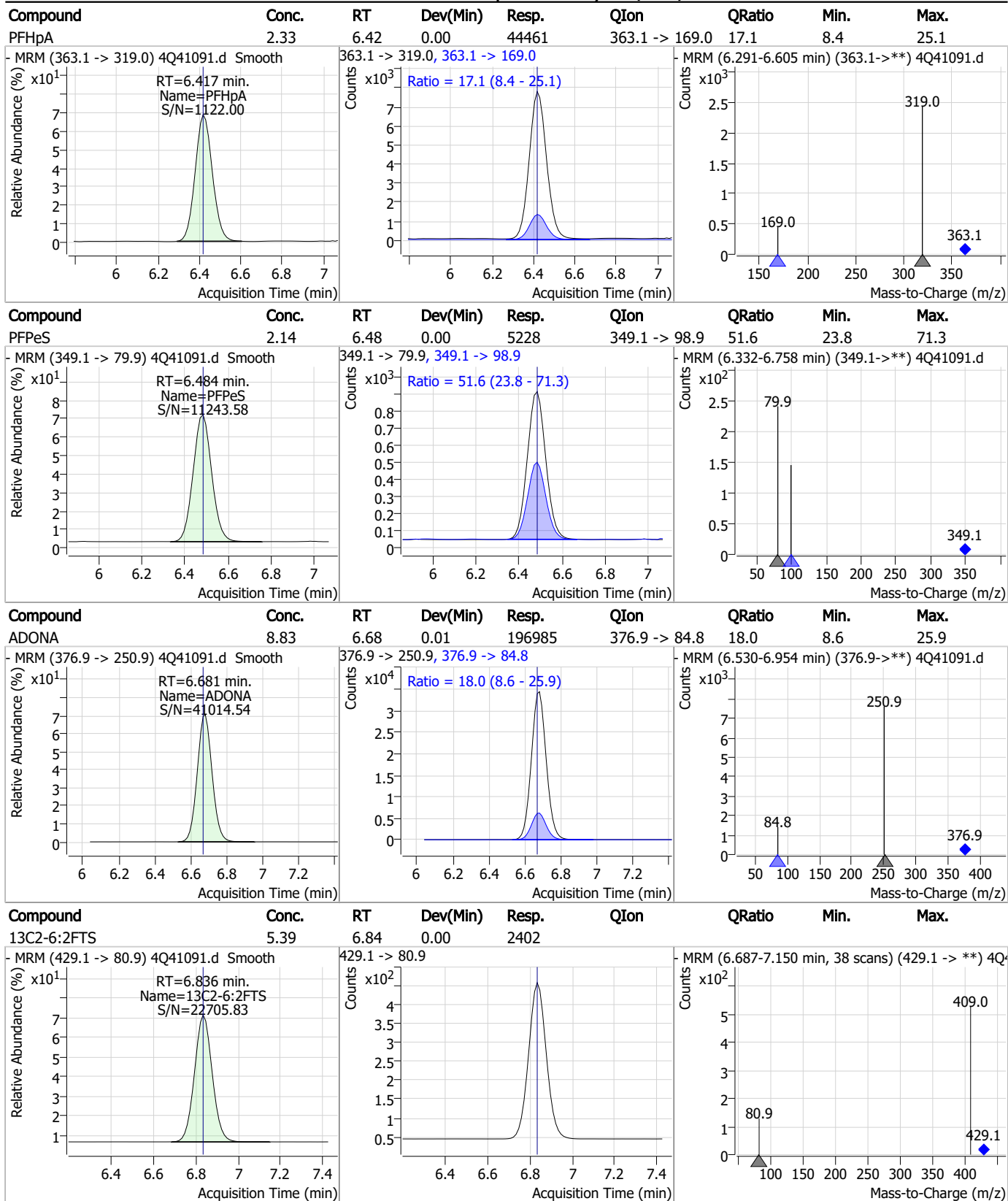
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Perfluorinated Compounds by LC/MS/MS



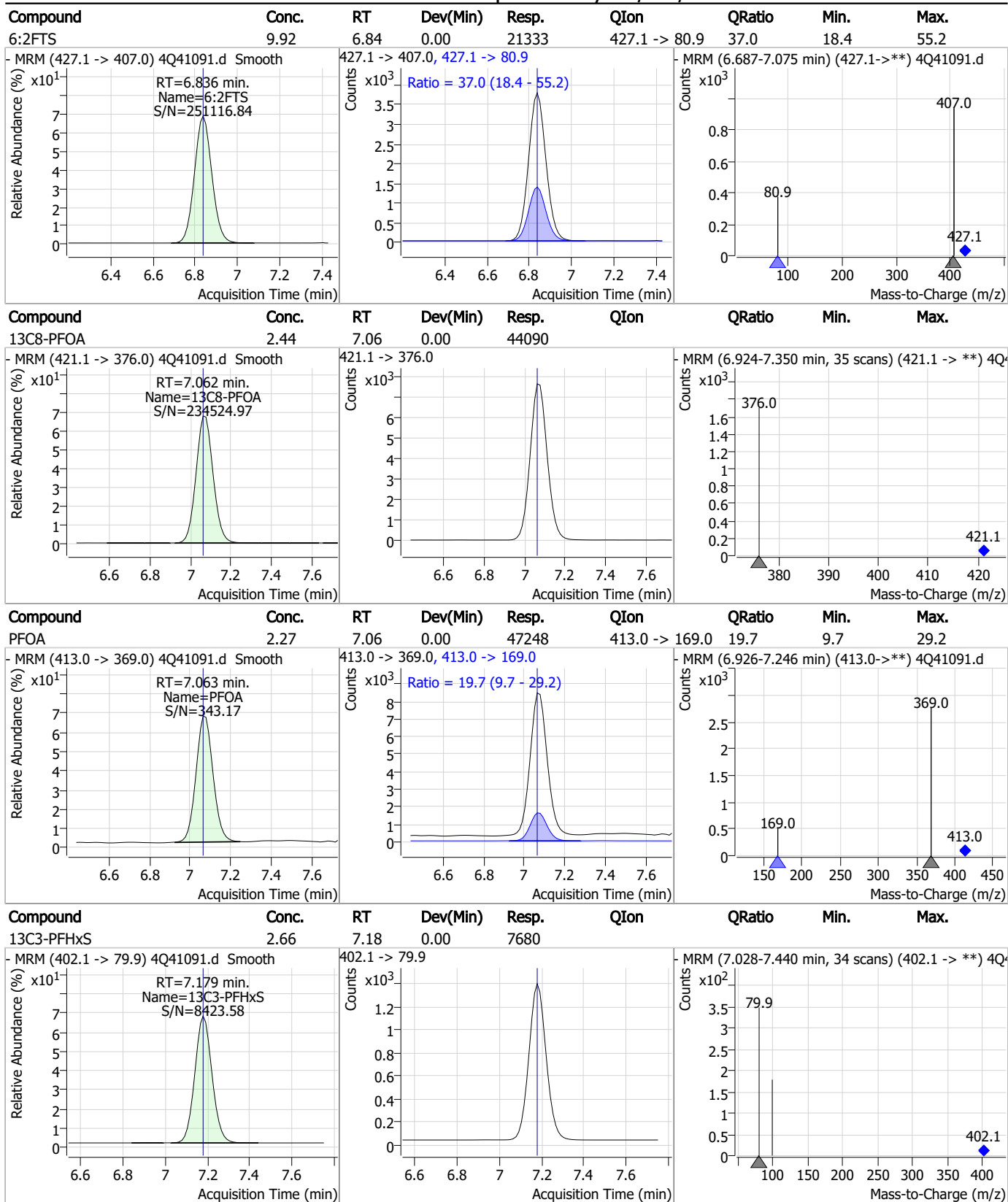
7.6.16
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Perfluorinated Compounds by LC/MS/MS



7.6.16
7

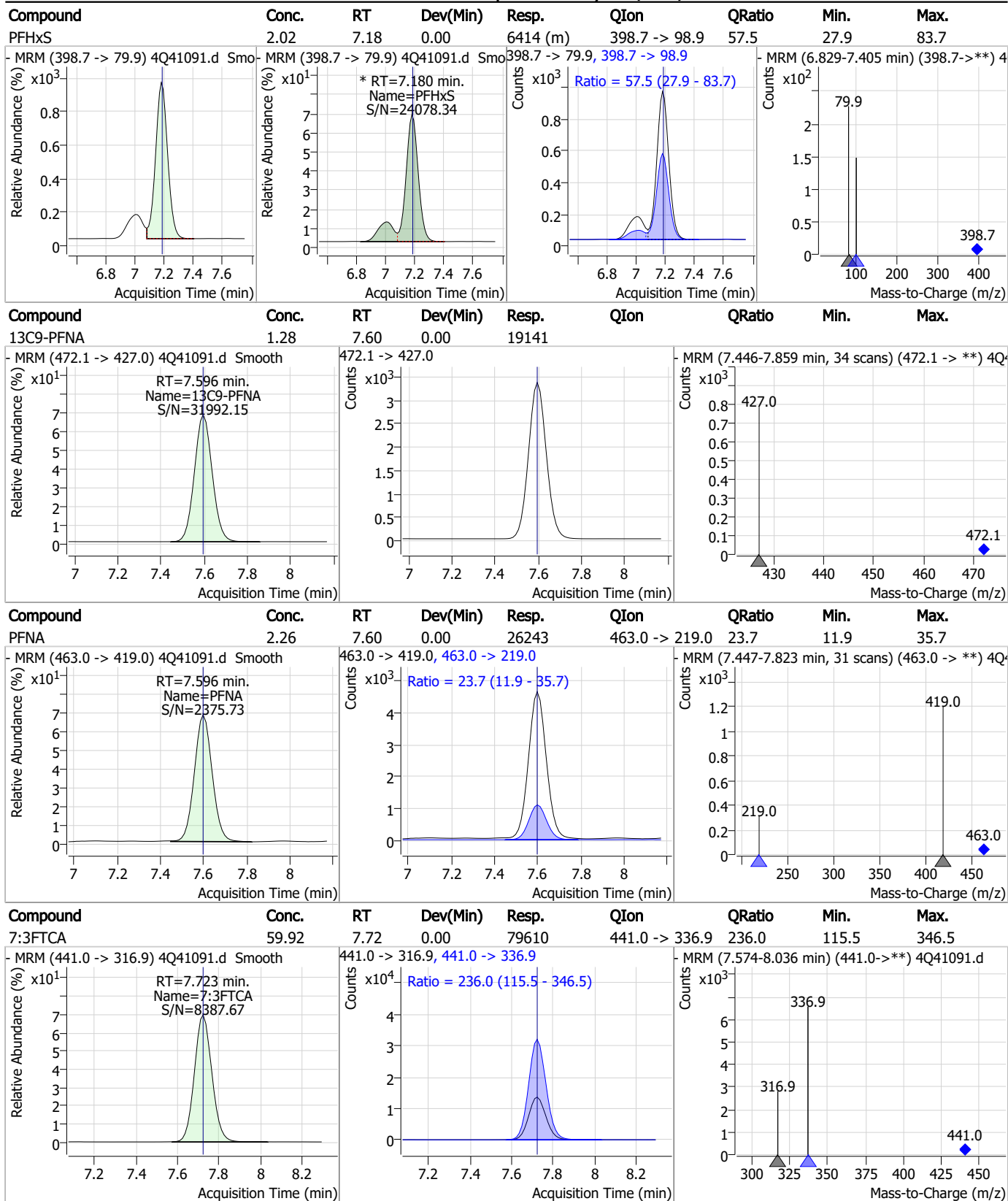
Perfluorinated Compounds by LC/MS/MS



7.6.16

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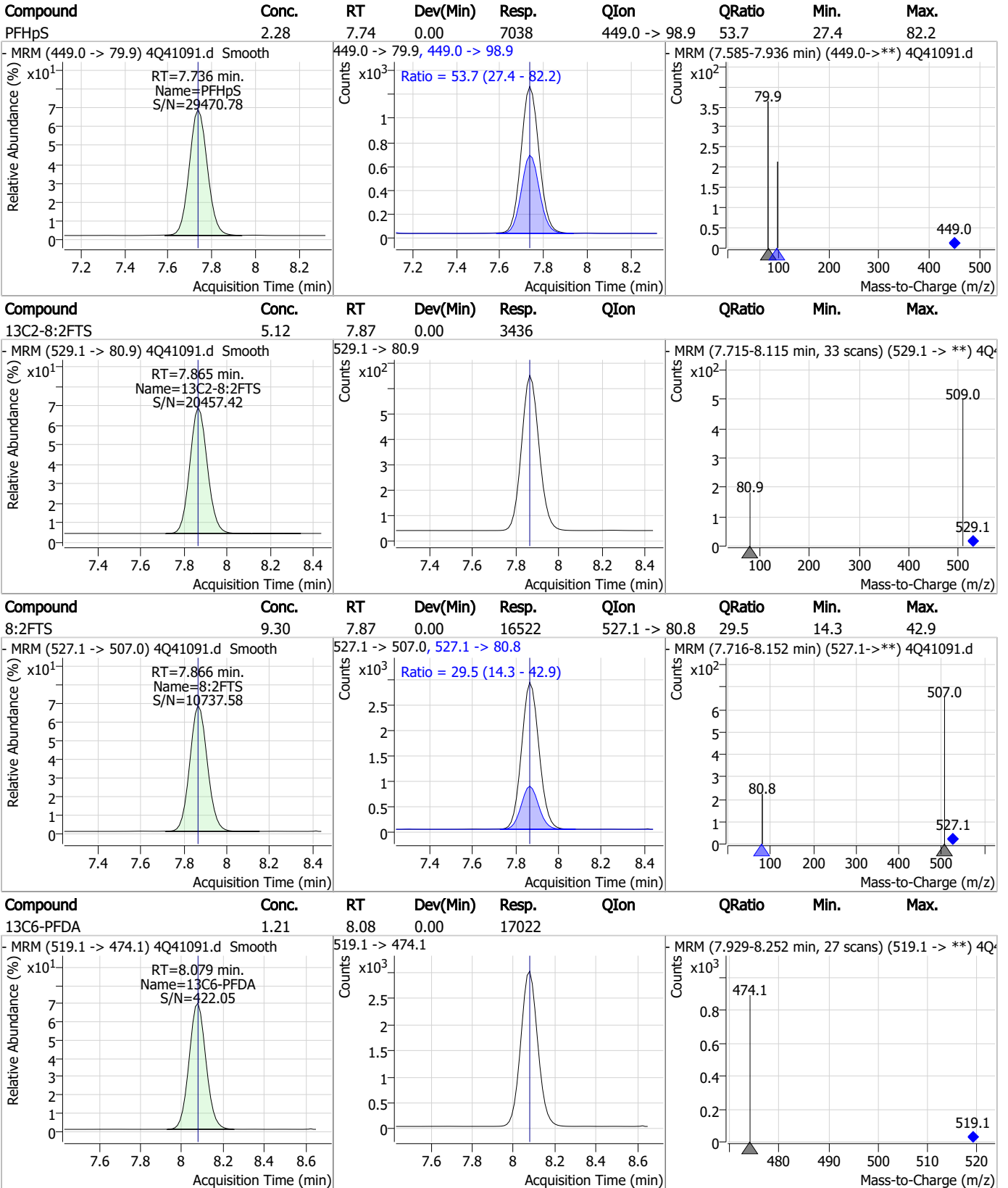
Perfluorinated Compounds by LC/MS/MS



7.6.16

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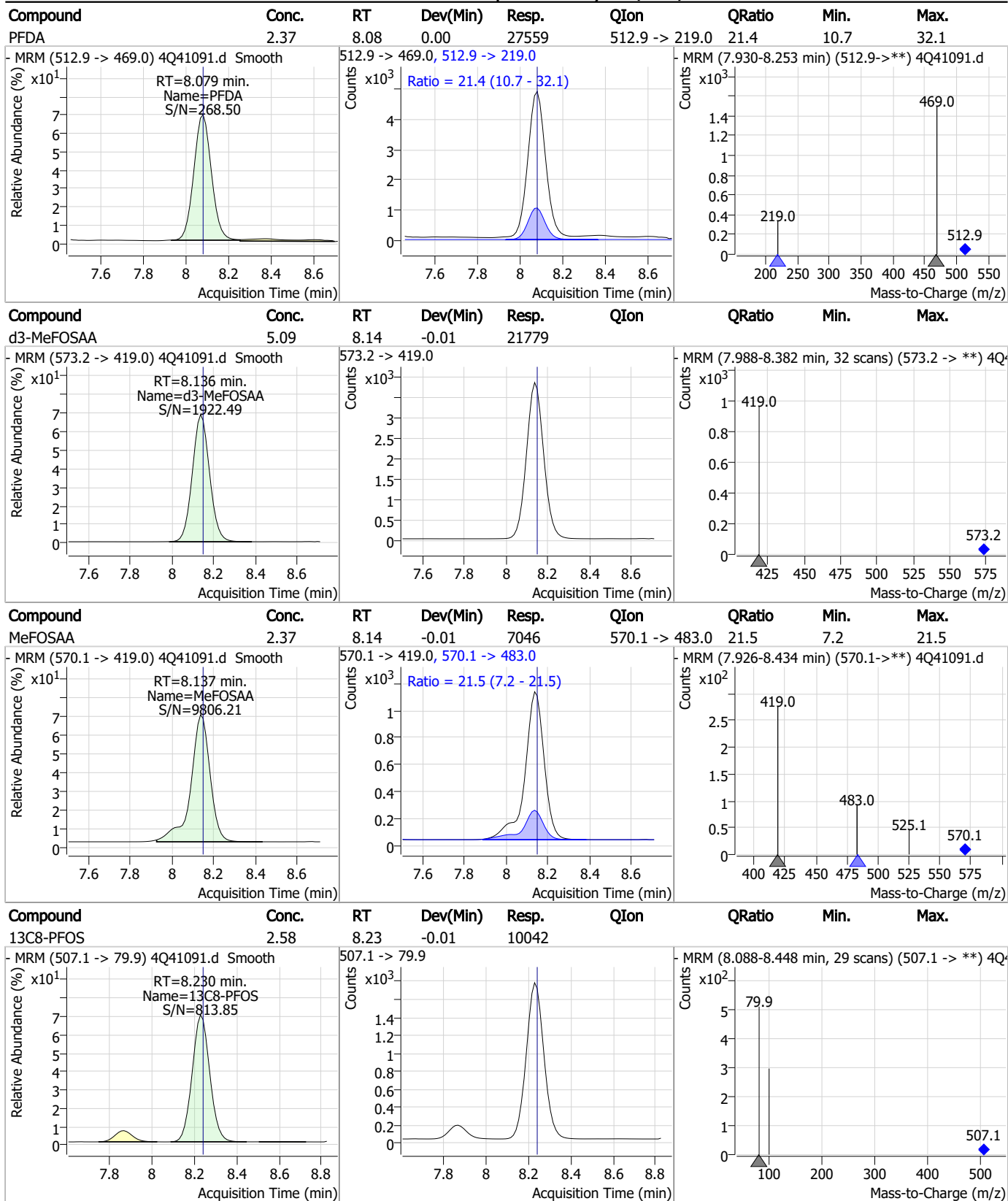
Perfluorinated Compounds by LC/MS/MS



7.6.16 7



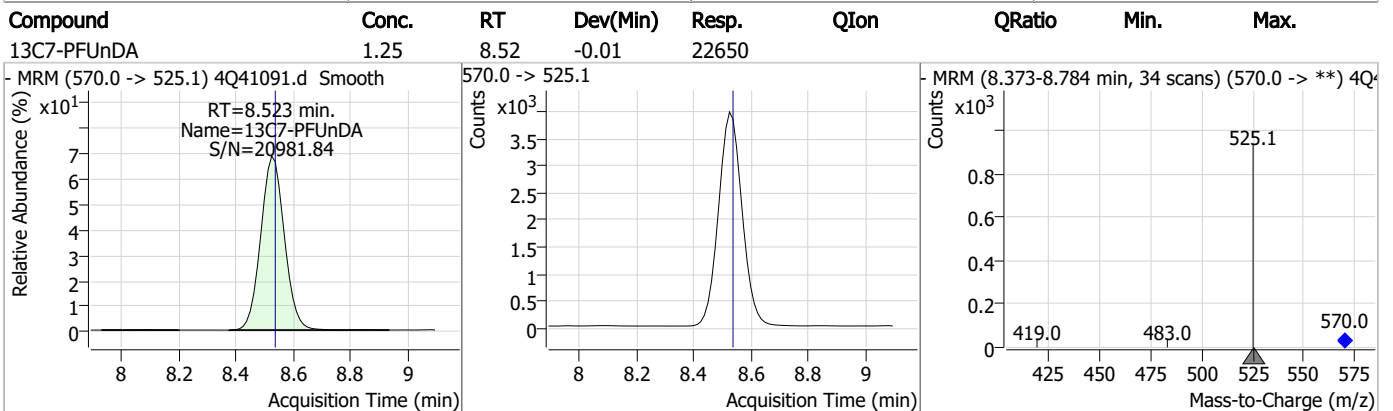
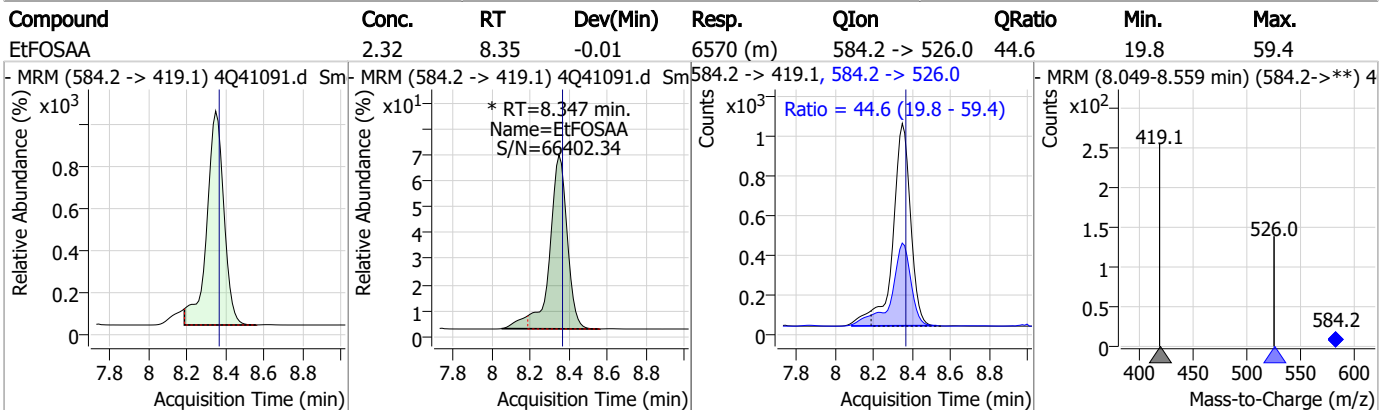
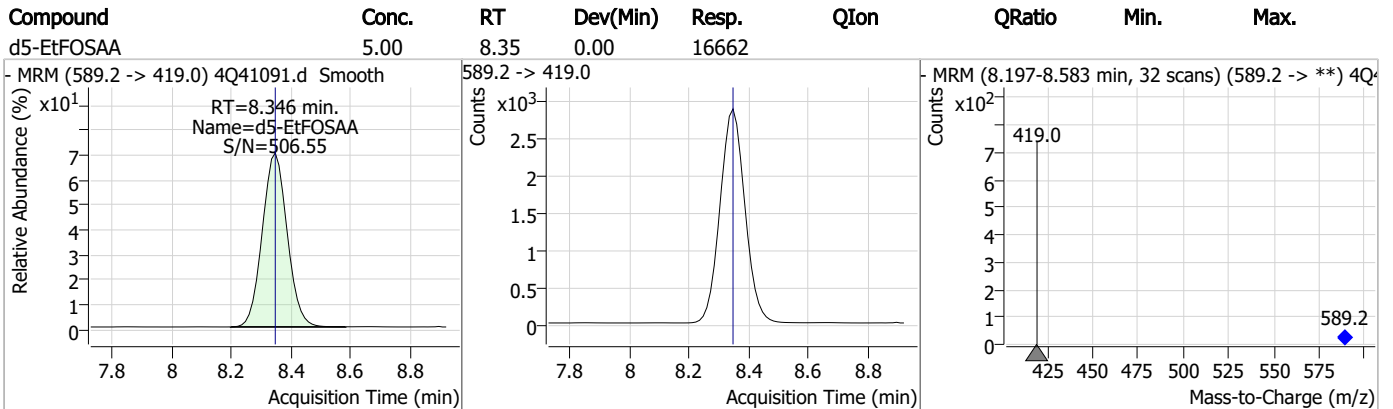
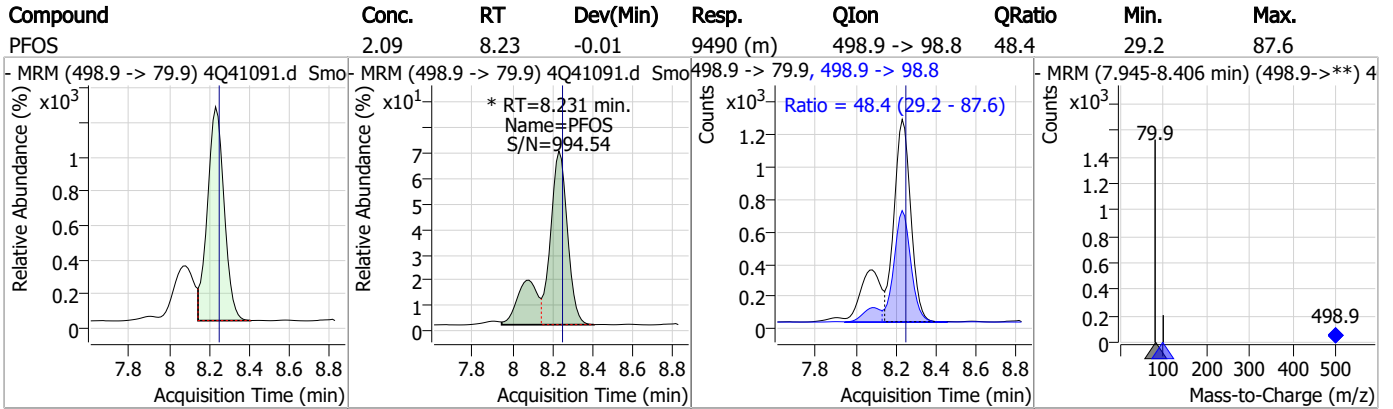
Perfluorinated Compounds by LC/MS/MS



7.6.16

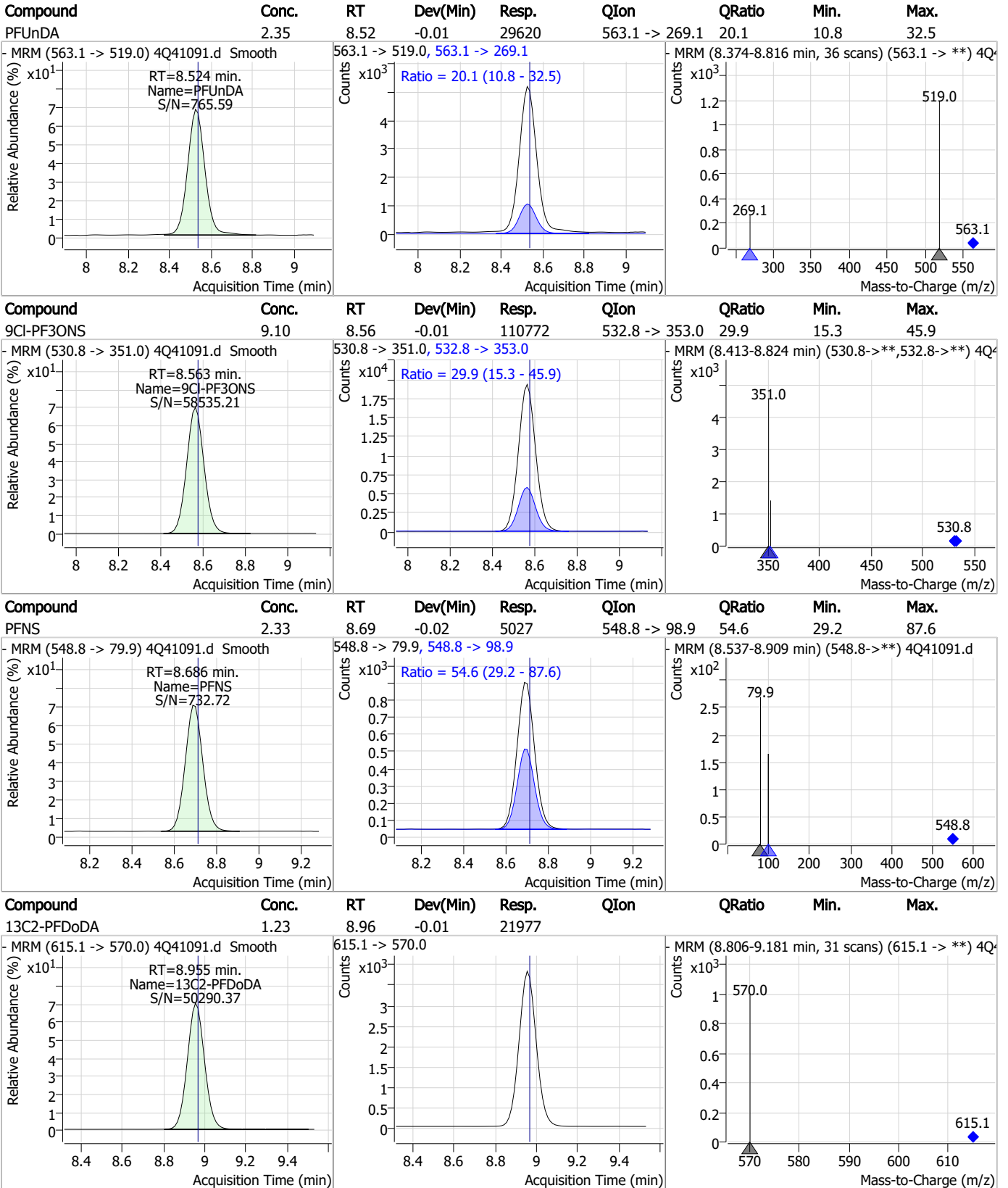
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Perfluorinated Compounds by LC/MS/MS



7.6.16 7

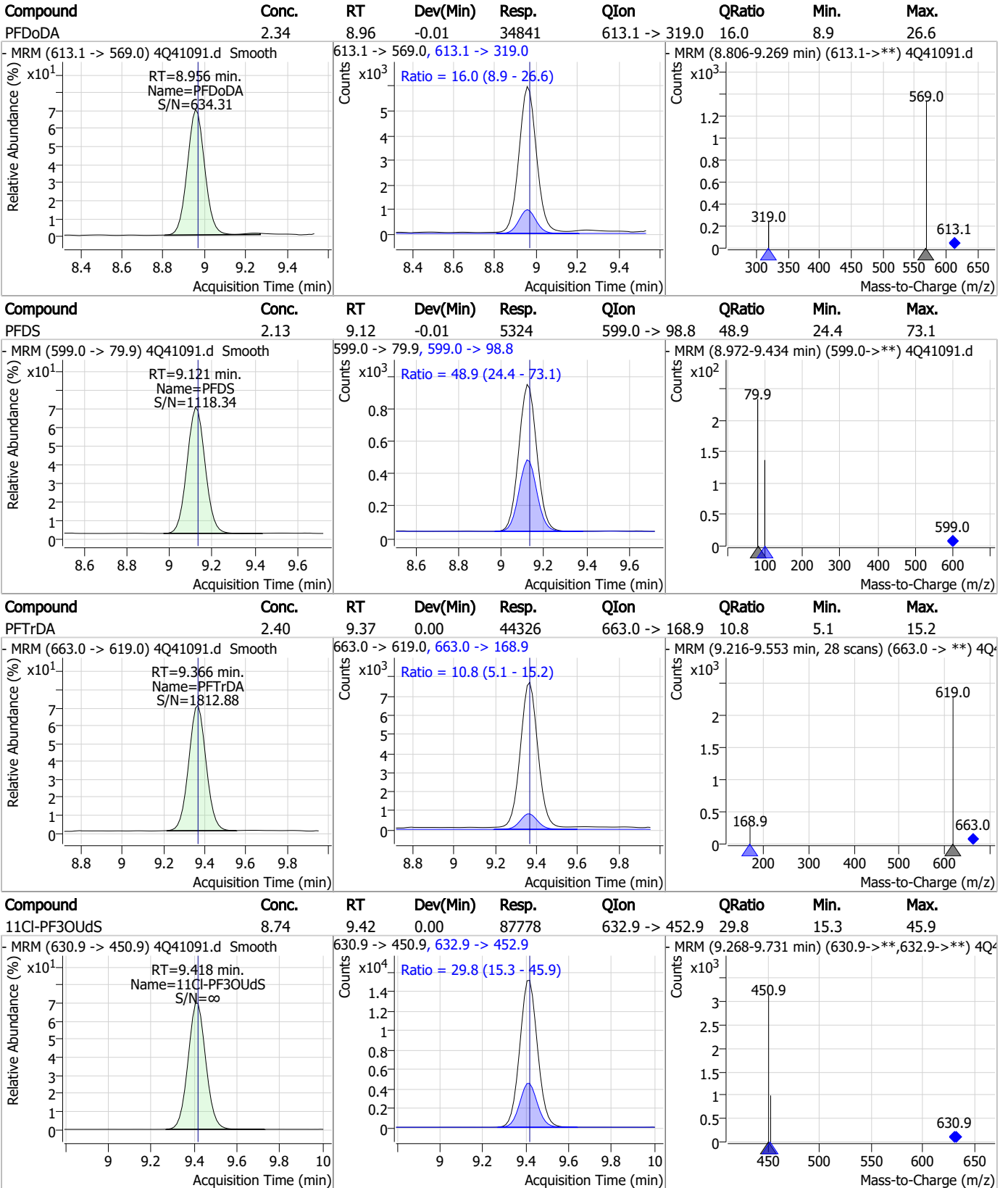
Perfluorinated Compounds by LC/MS/MS



7.6.16 7



Perfluorinated Compounds by LC/MS/MS

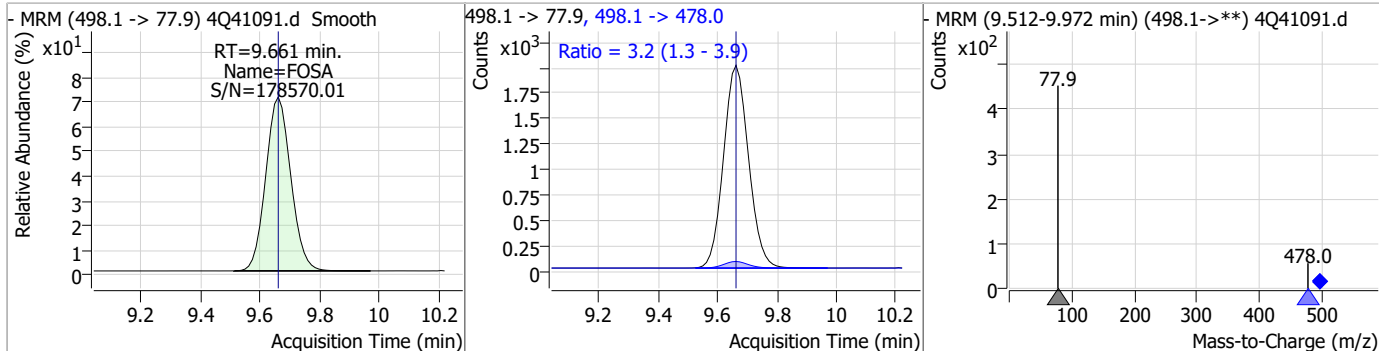


7.6.16
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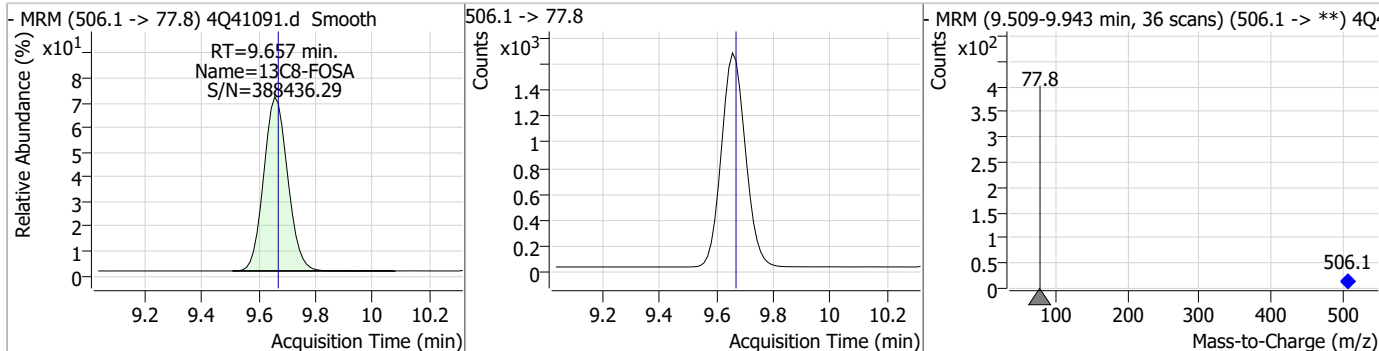


Perfluorinated Compounds by LC/MS/MS

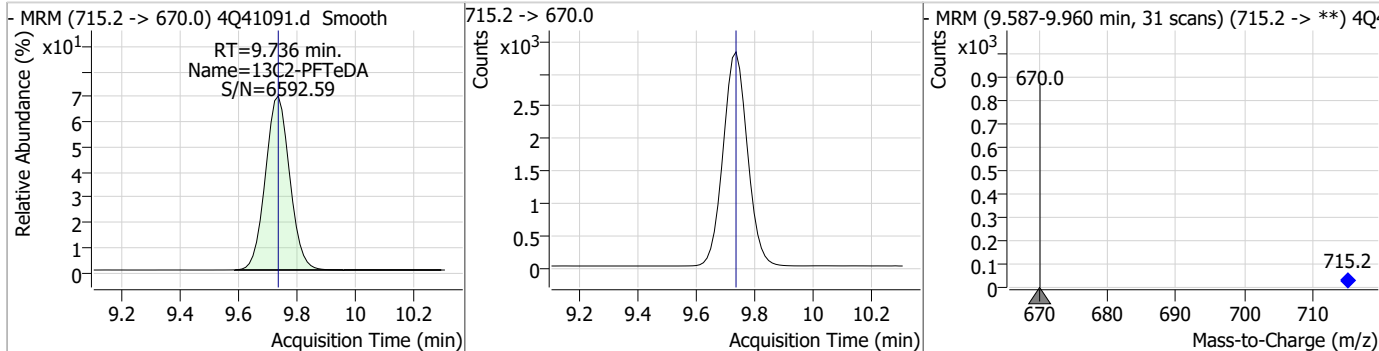
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.27	9.66	0.00	11593	498.1 -> 478.0	3.2	1.3	3.9



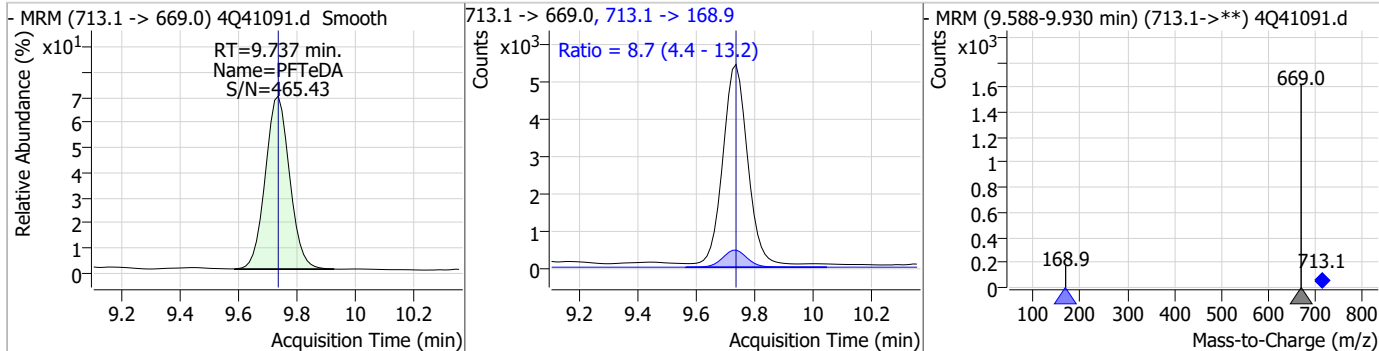
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.68	9.66	-0.01	9606				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.22	9.74	0.00	19042				



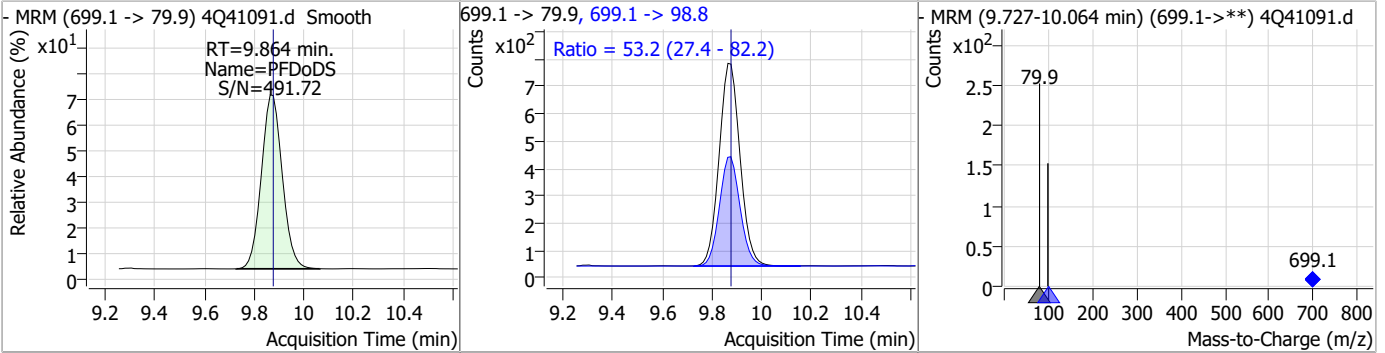
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.35	9.74	0.00	31102	713.1 -> 168.9	8.7	4.4	13.2



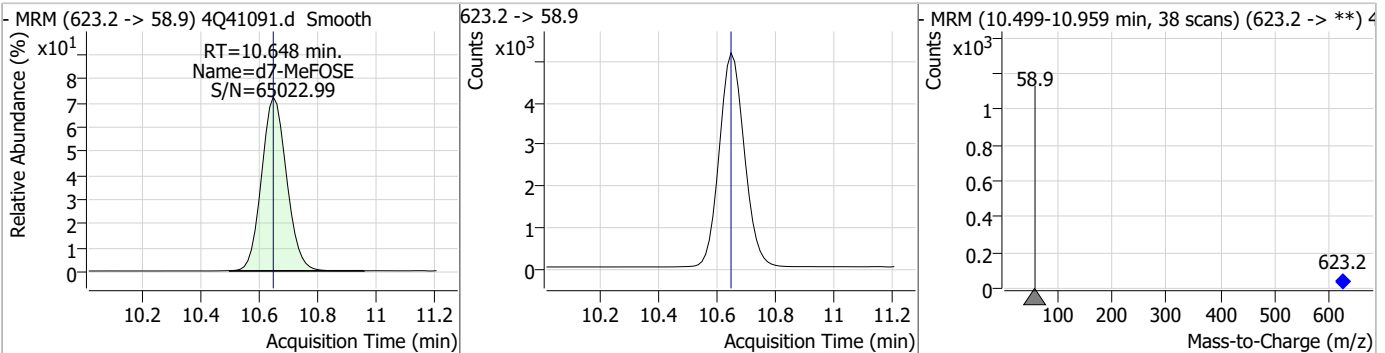
7.6.16 7

Perfluorinated Compounds by LC/MS/MS

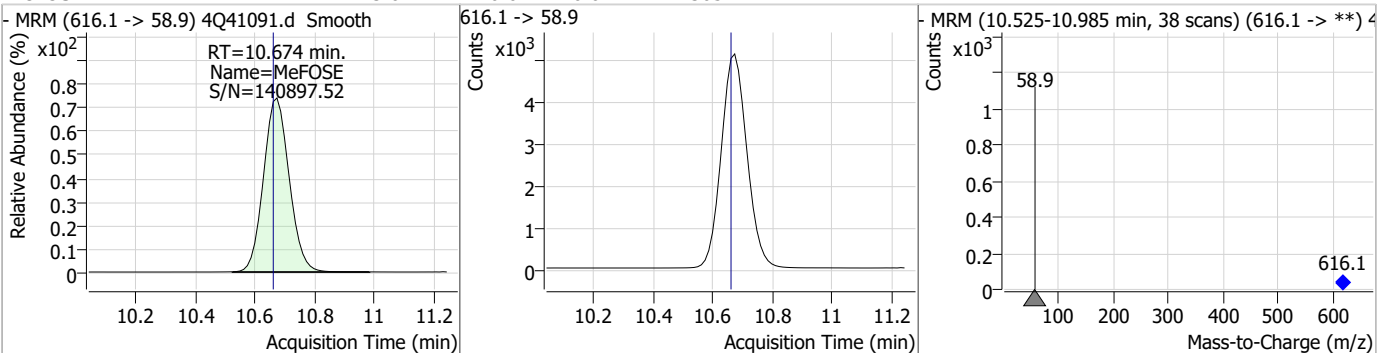
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDS	2.17	9.86	-0.01	4340	699.1 -> 98.8	53.2	27.4	82.2



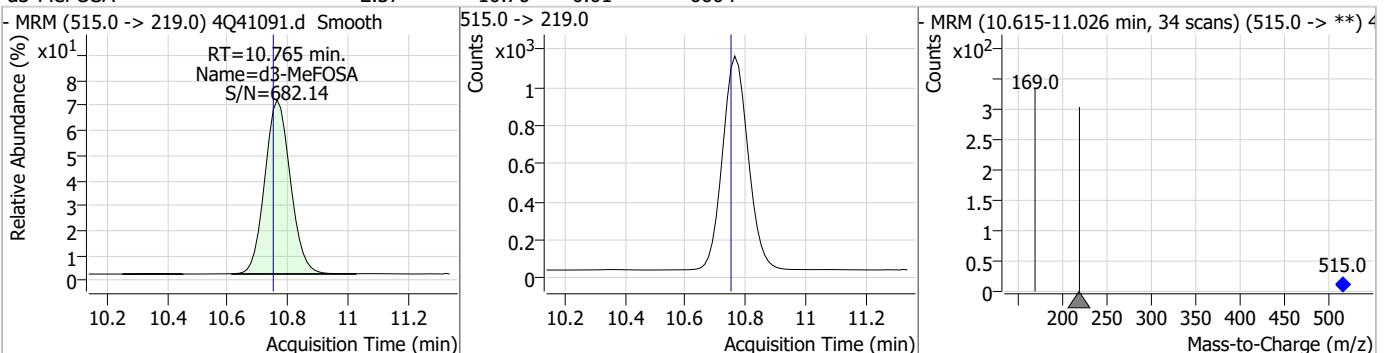
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.00	10.65	0.00	30778				



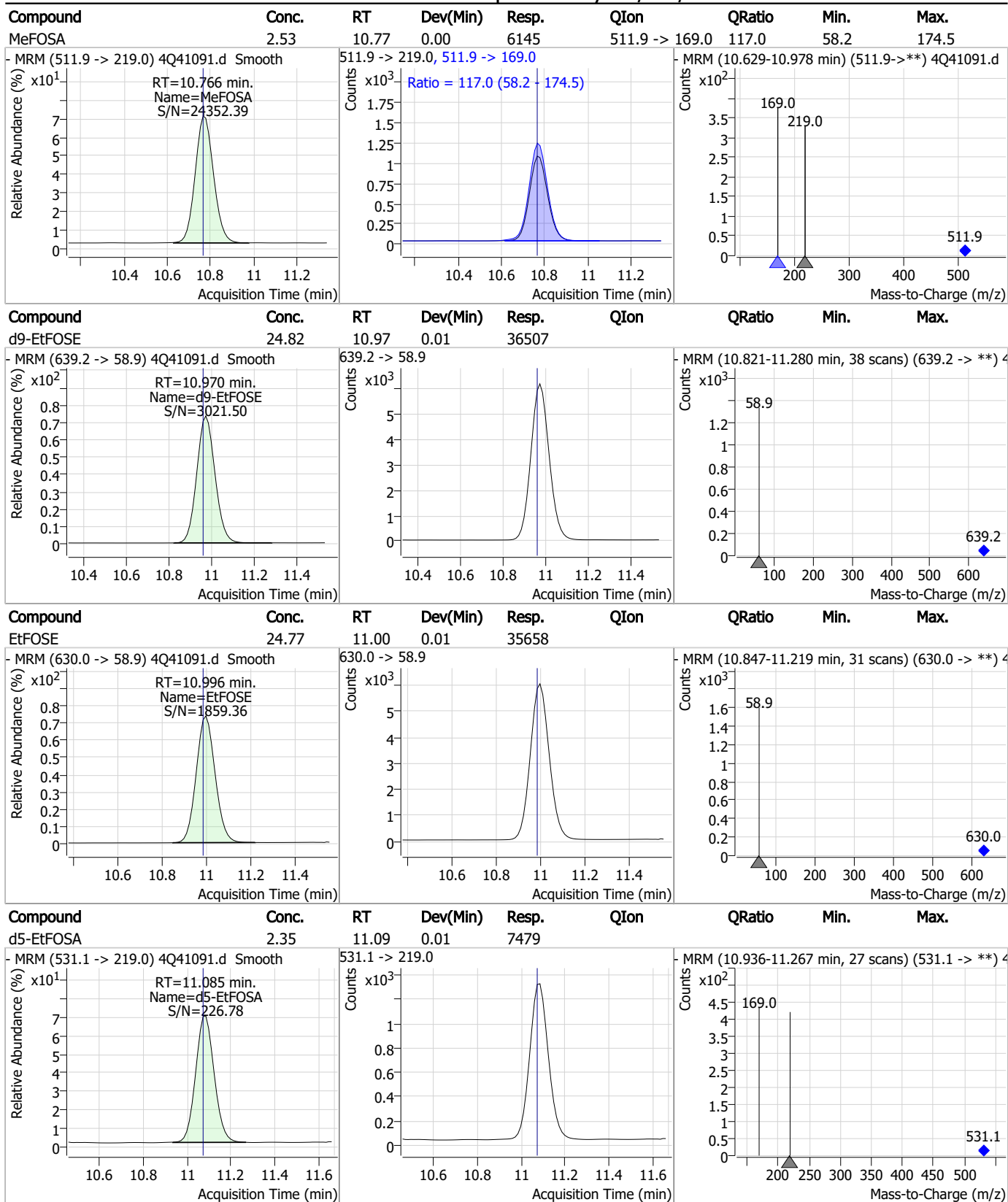
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.67	10.67	0.01	30574				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.37	10.76	0.01	6604				



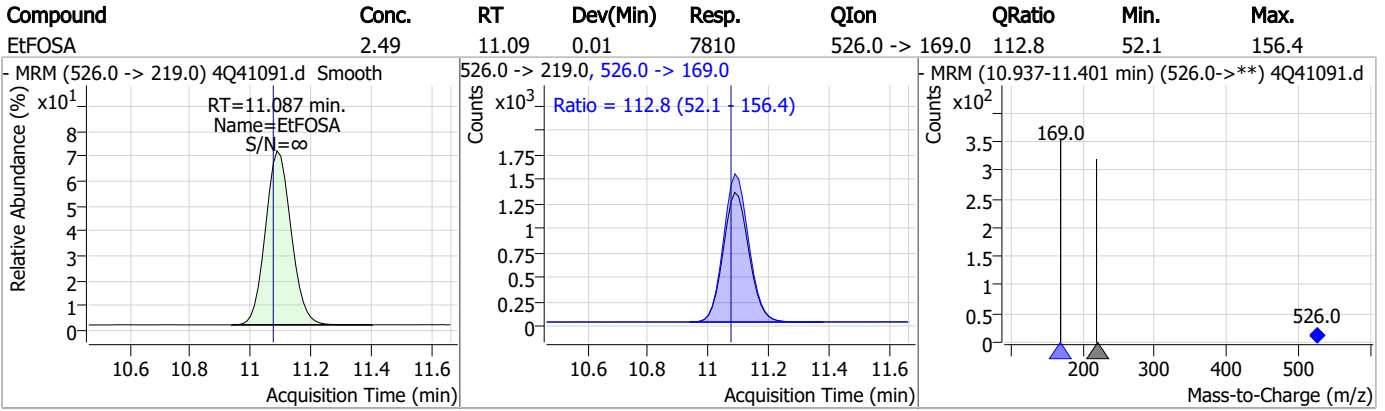
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q587-CC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41091.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/23/23 00:21 Supervisor approved: 02/24/23 11:00 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41097.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/23/2023 1:45:40 AM
 Sample Name : cc587-4
 Vial : P1-A5
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.139	216.8 -> 171.9	148741	10.00 µg/L	-0.013
M5-PFPeA	4.487	268.3 -> 223.0	81348	5.00 µg/L	-0.012
M5-PFHxA	5.546	318.0 -> 273.0	61565	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	36393	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	43465	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	19640	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	17070	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	23474	1.25 µg/L	-0.012
M2-PFDoDA	8.968	615.1 -> 570.0	22294	1.25 µg/L	0.000
M2-PFTeDA	9.749	715.2 -> 670.0	19427	1.25 µg/L	0.012
M8-FOSA	9.670	506.1 -> 77.8	9467	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	12730	2.50 µg/L	-0.012
M3-PFHxS	7.179	402.1 -> 79.9	7288	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	10003	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1632	5.00 µg/L	0.000
M2-6:2FTS	6.823	429.1 -> 80.9	2313	5.00 µg/L	-0.012
M2-8:2FTS	7.865	529.1 -> 80.9	3458	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	23092	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	38116	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	17693	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	31074	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	37489	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	7775	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	6355	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	10216	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	90410	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	5071	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	52643	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	17331	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	22483	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	57264	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1632	5.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.9%		
13C2-6:2FTS	6.823	429.1 -> 80.9	2313	5.26 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.2%		
13C2-8:2FTS	7.865	529.1 -> 80.9	3458	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C2-PFDoDA	8.968	615.1 -> 570.0	22294	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-PFTeDA	9.749	715.2 -> 670.0	19427	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-PFBS	5.489	302.1 -> 79.9	12730	2.72 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.6%		
13C3-PFHxS	7.179	402.1 -> 79.9	7288	2.56 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C4-PFBA	3.139	216.8 -> 171.9	148741	9.93 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C4-PFHpA	6.417	367.1 -> 322.0	36393	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFHxA	5.546	318.0 -> 273.0	61565	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C5-PFPeA	4.487	268.3 -> 223.0	81348	5.03 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C6-PFDA	8.079	519.1 -> 474.1	17070	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.7%	
13C7-PFUnDA	8.523	570.0 -> 525.1	23474	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-FOSA	9.670	506.1 -> 77.8	9467	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-PFOA	7.062	421.1 -> 376.0	43465	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOS	8.230	507.1 -> 79.9	10003	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C9-PFNA	7.596	472.1 -> 427.0	19640	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.136	573.2 -> 419.0	23092	5.13 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	38116	10.23 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
d3-MeFOSA	10.765	515.0 -> 219.0	6355	2.17 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.7%	
d5-EtFOSAA	8.346	589.2 -> 419.0	17693	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d7-MeFOSE	10.648	623.2 -> 58.9	31074	24.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
d9-EtFOSE	10.970	639.2 -> 58.9	37489	24.23 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d5-EtFOSA	11.085	531.1 -> 219.0	7775	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	23865	9.19 µg/L	98
		327.1 -> 80.9	8838		
6:2FTS	6.824	427.1 -> 407.0	22724	10.97 µg/L	96
		427.1 -> 80.9	7812		
8:2FTS	7.866	527.1 -> 507.0	18186	10.18 µg/L	98
		527.1 -> 80.8	4966		
EtFOSAA	8.347	584.2 -> 419.1	6833	2.27 µg/L	m 91
		584.2 -> 526.0	3069		
FOSA	9.661	498.1 -> 77.9	11576	2.30 µg/L	99
		498.1 -> 478.0	331		
MeFOSAA	8.137	570.1 -> 419.0	7006	2.22 µg/L	m 86
		570.1 -> 483.0	1411		
PFBA	3.146	212.8 -> 168.9	32936	9.34 µg/L	100
PFBS	5.490	298.7 -> 79.9	10606	2.08 µg/L	100
		298.7 -> 98.8	4073		
PFDA	8.079	512.9 -> 469.0	28266	2.43 µg/L	99
		512.9 -> 219.0	6122		
PFDODA	8.968	613.1 -> 569.0	34331	2.27 µg/L	97
		613.1 -> 319.0	5625		
PFDS	9.133	599.0 -> 79.9	5514	2.21 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.417	599.0 -> 98.8	2555	2.36	µg/L	98
		363.1 -> 319.0	45669			
PFHpS	7.736	363.1 -> 169.0	8032	2.13	µg/L	93
		449.0 -> 79.9	6533			
PFHxA	5.549	449.0 -> 98.9	3887	2.59	µg/L	99
		313.0 -> 269.0	55014			
PFHxS	7.180	313.0 -> 118.9	1683	2.10	µg/L	99
		398.7 -> 79.9	6331			
PFNA	7.596	398.7 -> 98.9	3565	2.23	µg/L	95
		463.0 -> 419.0	26637			
PFNS	8.699	463.0 -> 219.0	6943	2.31	µg/L	93
		548.8 -> 79.9	4965			
PFOA	7.063	548.8 -> 98.9	2632	2.35	µg/L	99
		413.0 -> 369.0	48384			
PFOS	8.231	413.0 -> 169.0	9559	2.09	µg/L	82
		498.9 -> 79.9	9469			
PFPeA	4.489	498.9 -> 98.8	4233	4.82	µg/L	100
		263.0 -> 219.0	92198			
PFPeS	6.470	349.1 -> 79.9	5508	2.38	µg/L	98
		349.1 -> 98.9	2687			
PFTeDA	9.750	713.1 -> 669.0	32795	2.43	µg/L	99
		713.1 -> 168.9	2770			
PFTrDA	9.366	663.0 -> 619.0	45559	2.43	µg/L	99
		663.0 -> 168.9	4784			
PFUnDA	8.524	563.1 -> 519.0	29153	2.24	µg/L	96
		563.1 -> 269.1	5730			
11CI-PF3OUdS	9.418	630.9 -> 450.9	87608	8.86	µg/L	99
		632.9 -> 452.9	27113			
9CI-PF3ONS	8.563	530.8 -> 351.0	106162	8.86	µg/L	98
		532.8 -> 353.0	33849			
ADONA	6.668	376.9 -> 250.9	196501	8.95	µg/L	99
		376.9 -> 84.8	35120			
HFPO-DA	5.878	284.9 -> 168.9	29422	9.40	µg/L	99
		284.9 -> 184.9	3493			
3:3FTCA	4.142	241.0 -> 177.0	12700	11.27	µg/L	98
		241.0 -> 117.0	1035			
5:3FTCA	6.333	341.0 -> 237.1	199712	61.93	µg/L	99
		341.0 -> 217.0	140960			
7:3FTCA	7.723	441.0 -> 316.9	79488	61.25	µg/L	95
		441.0 -> 336.9	190113			
EtFOSA	11.087	526.0 -> 219.0	8111	2.49	µg/L	96
		526.0 -> 169.0	8757			
EtFOSE	10.996	630.0 -> 58.9	34970	23.65	µg/L	100
		511.9 -> 219.0	6467			
MeFOSA	10.766	511.9 -> 169.0	7240	2.77	µg/L	96
		616.1 -> 58.9	30538			
MeFOSE	10.674	699.1 -> 79.9	4116	23.41	µg/L	100
		699.1 -> 98.8	2180			
PFDoDS	9.877	295.0 -> 201.0	4498	2.07	µg/L	97
		295.0 -> 84.9	889			
NFDHA	5.440	279.0 -> 85.1	48575	5.56	µg/L	91
		229.0 -> 84.9	37831			
PFMBA	4.854	314.8 -> 134.9	60438	4.69	µg/L	100
		314.8 -> 82.9	2174			
PFMPA	3.715			4.20	µg/L	100
PFEESA	5.971			4.20	µg/L	100

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



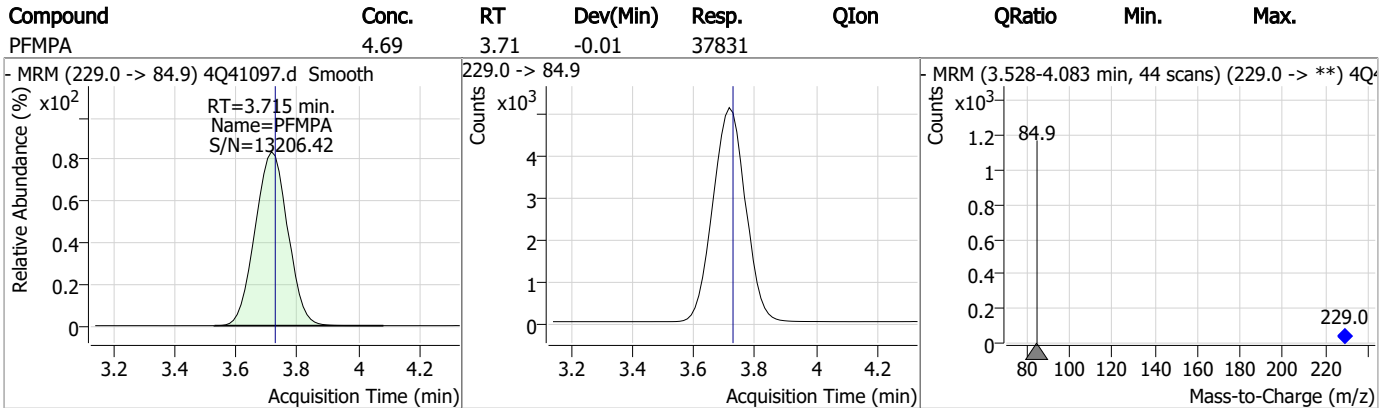
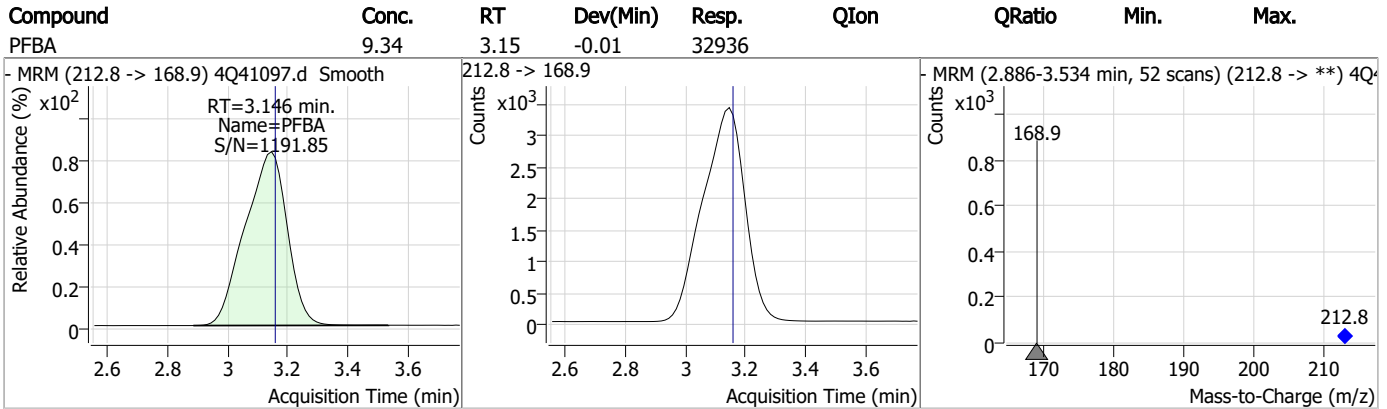
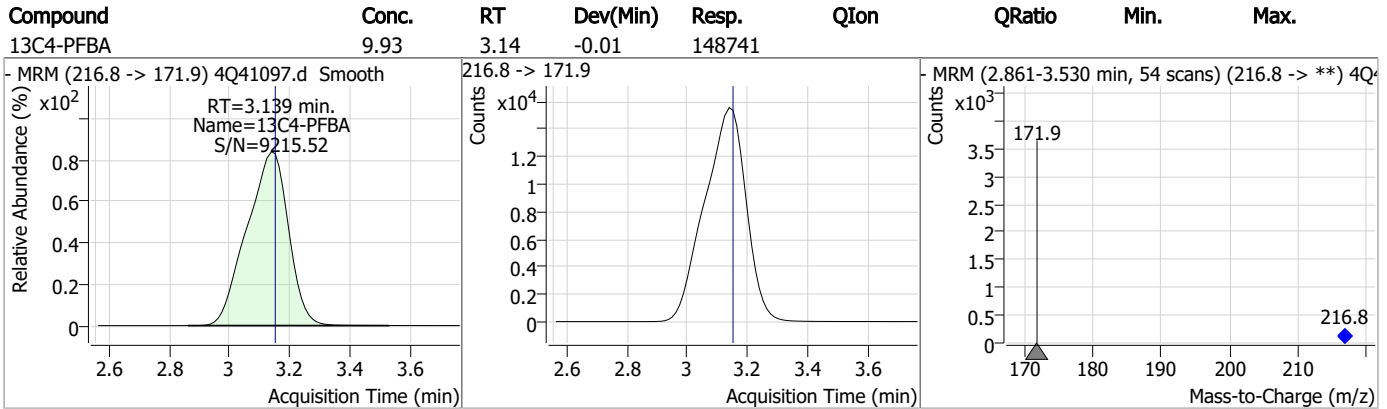
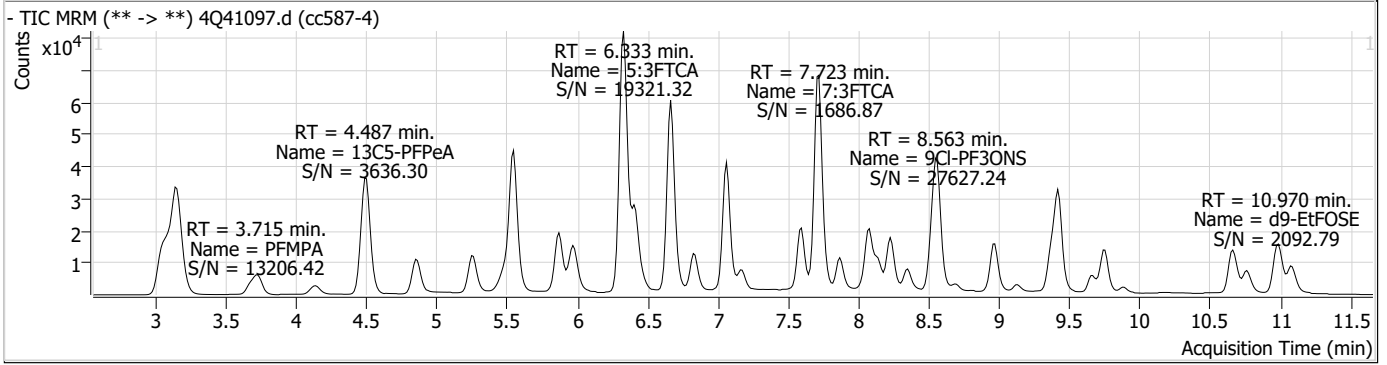
Perfluorinated Compounds by LC/MS/MS

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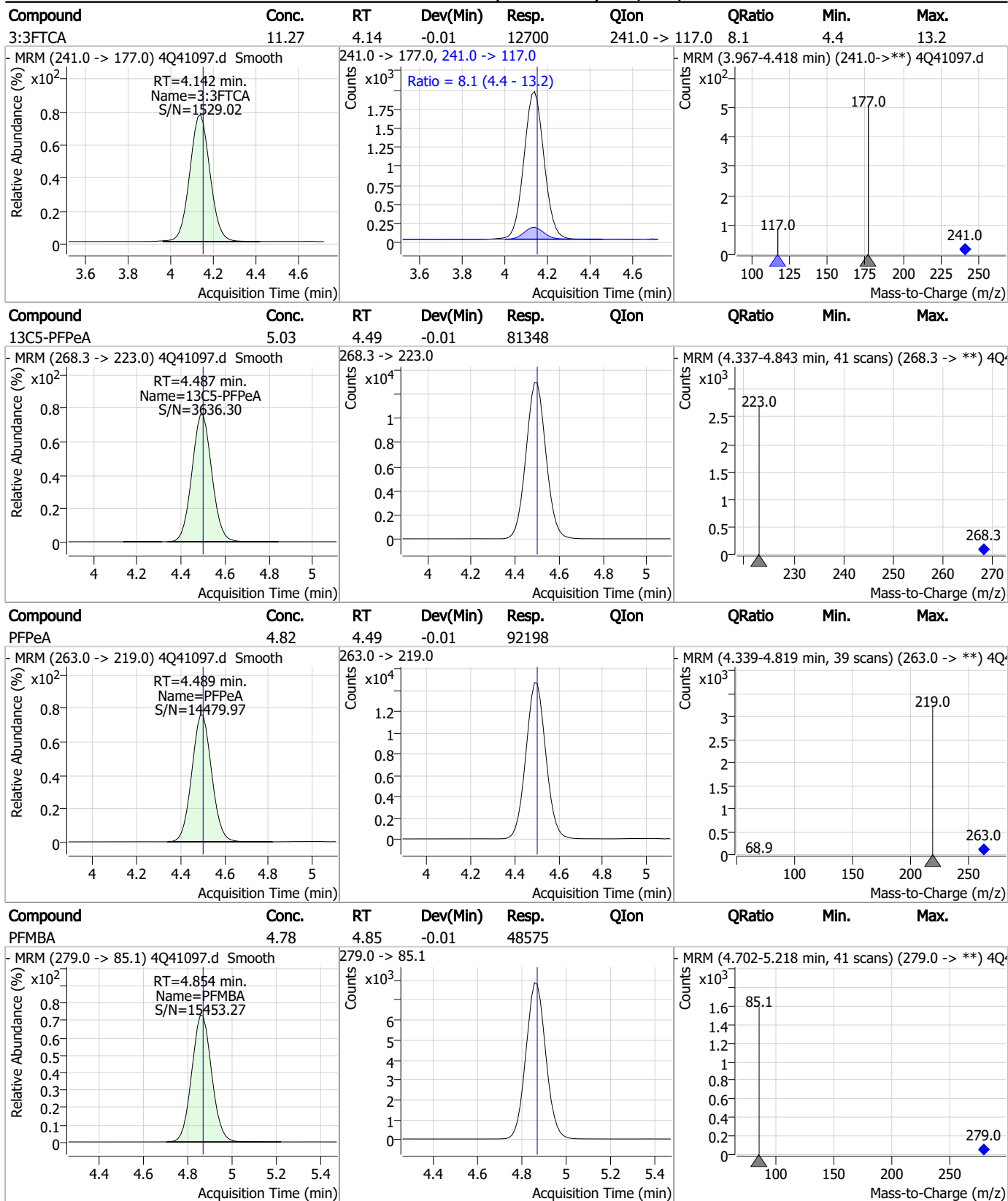
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Perfluorinated Compounds by LC/MS/MS

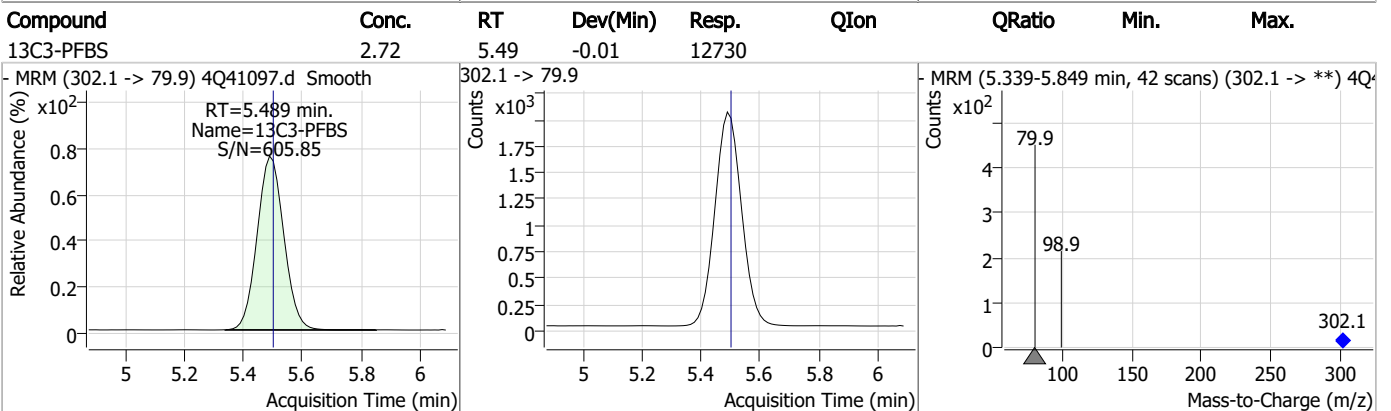
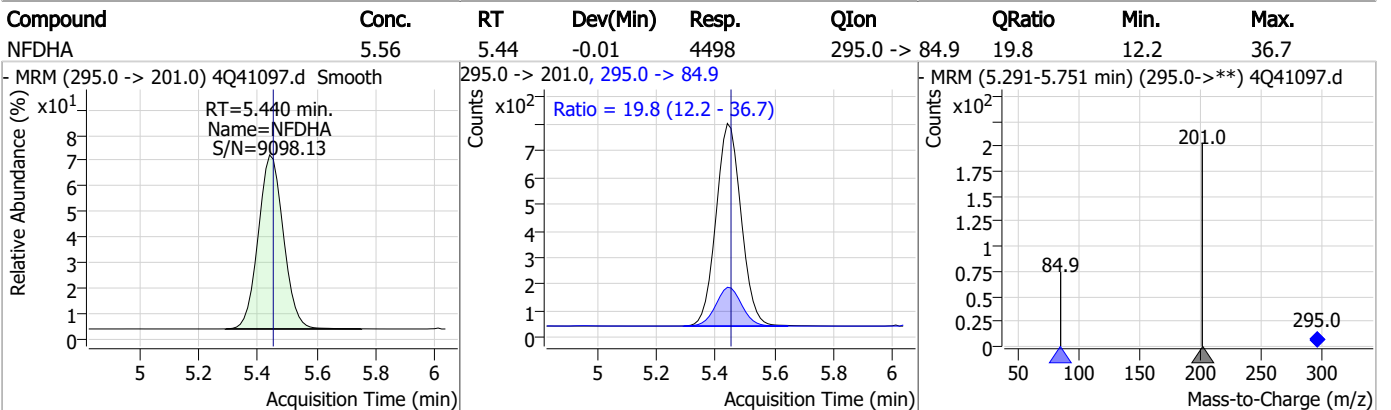
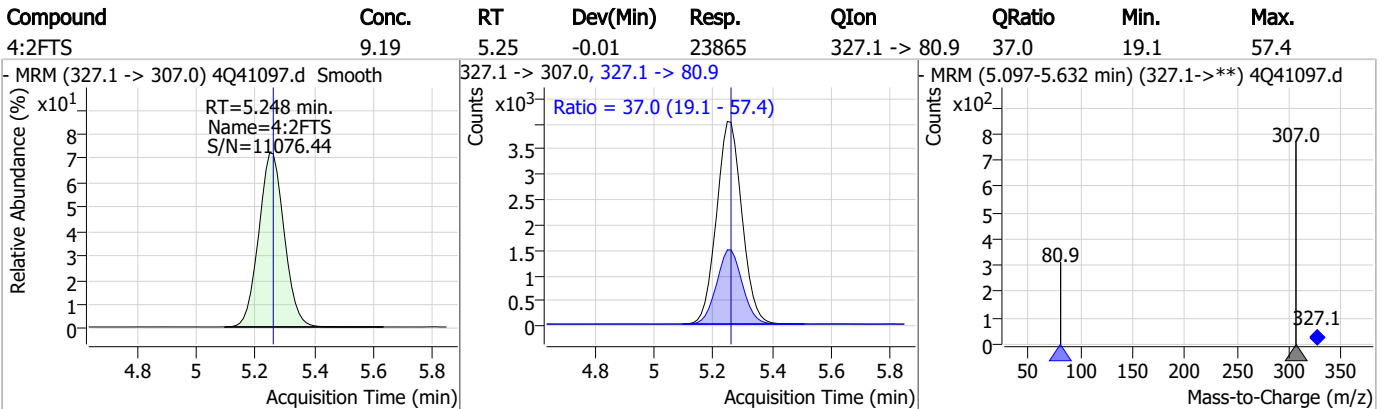
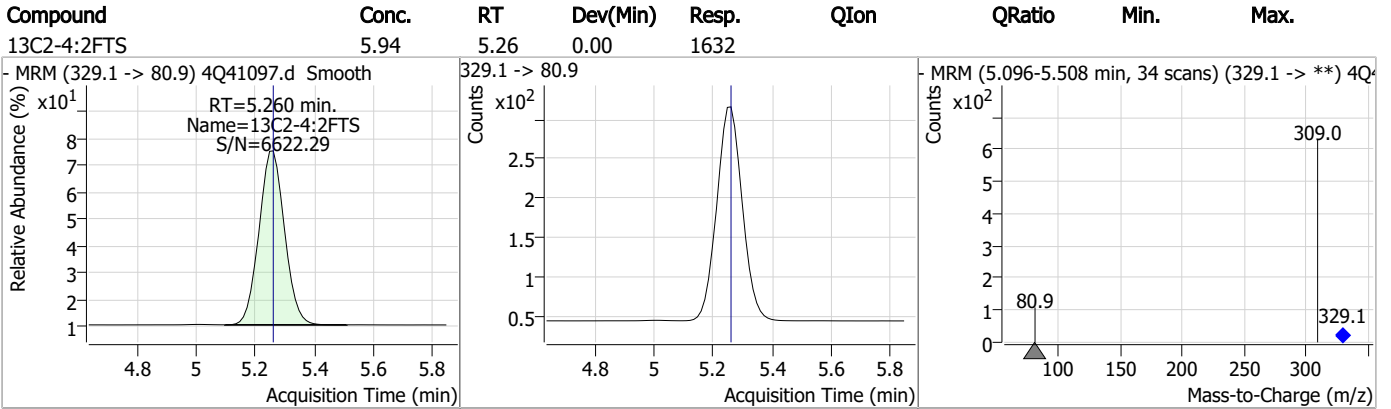


Perfluorinated Compounds by LC/MS/MS

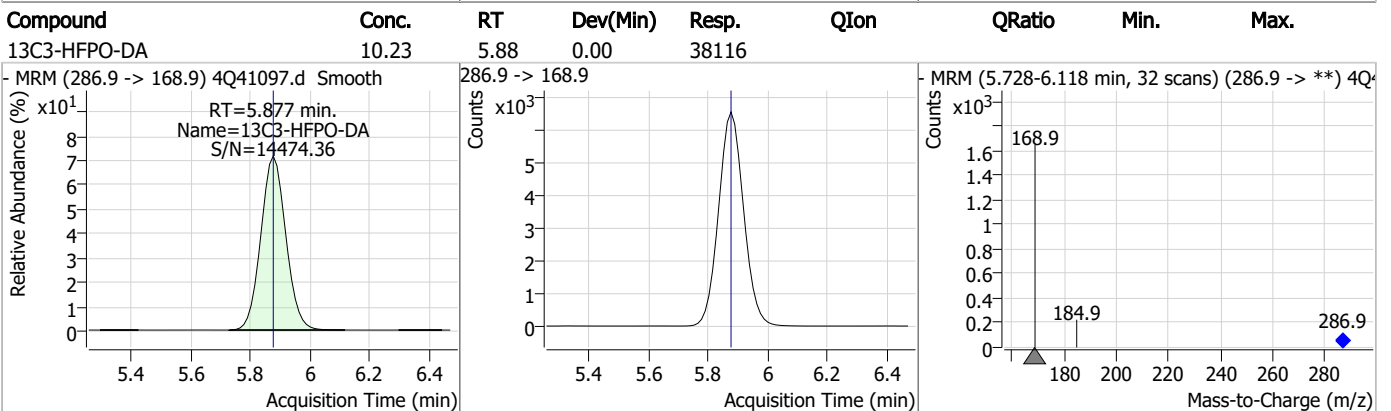
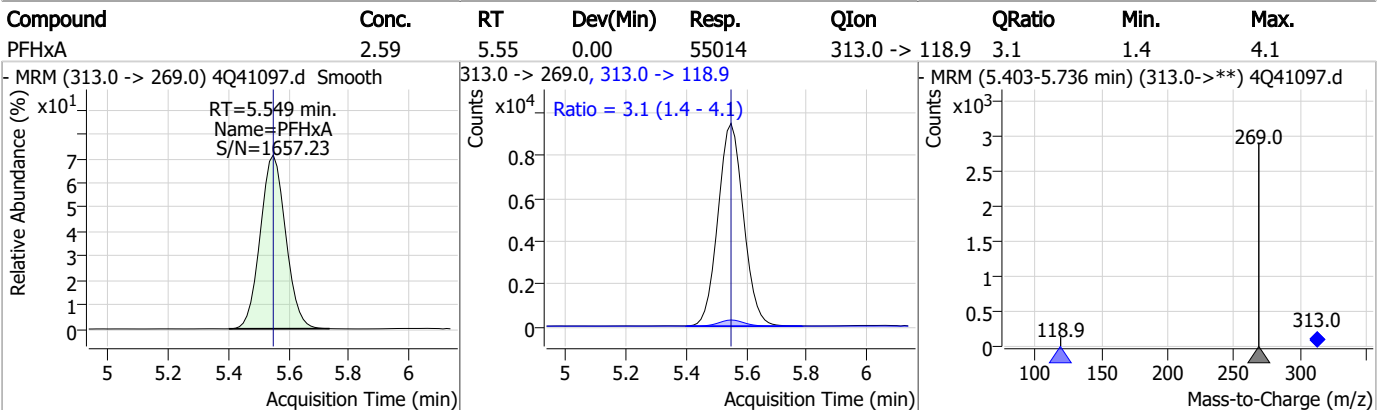
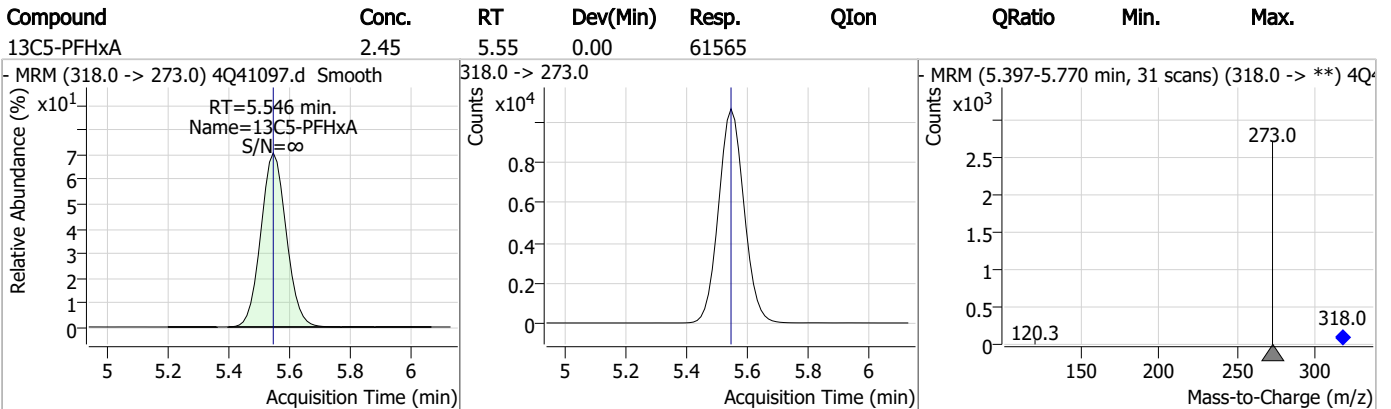
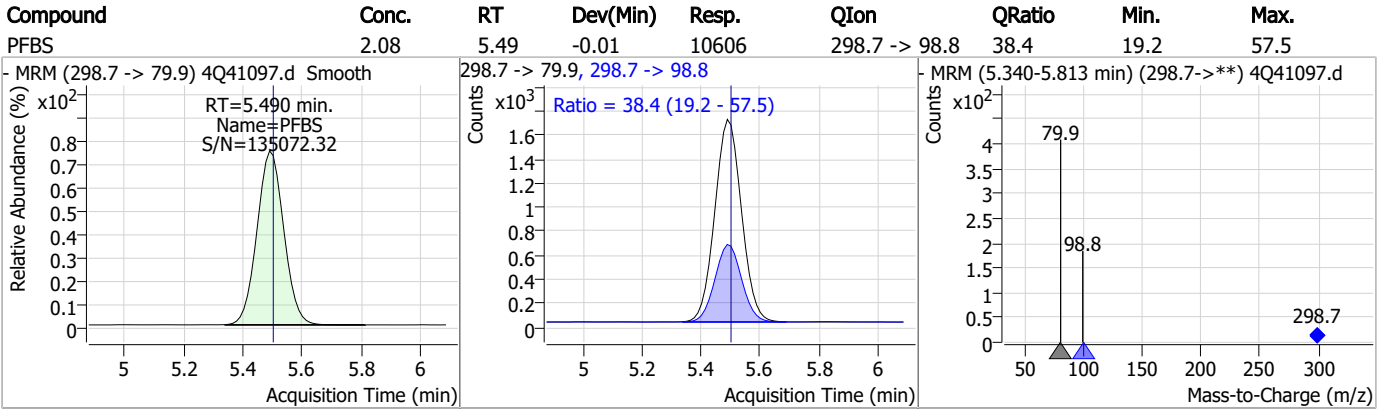


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Perfluorinated Compounds by LC/MS/MS

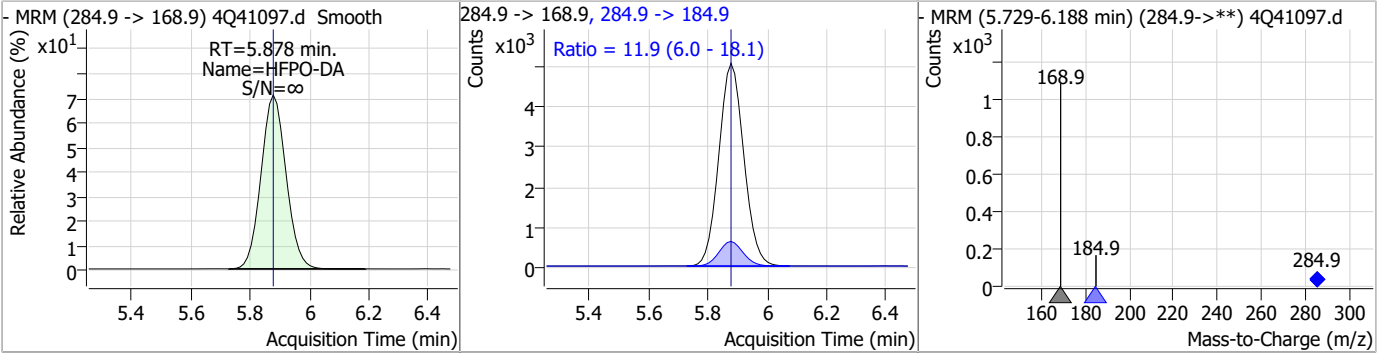


Perfluorinated Compounds by LC/MS/MS

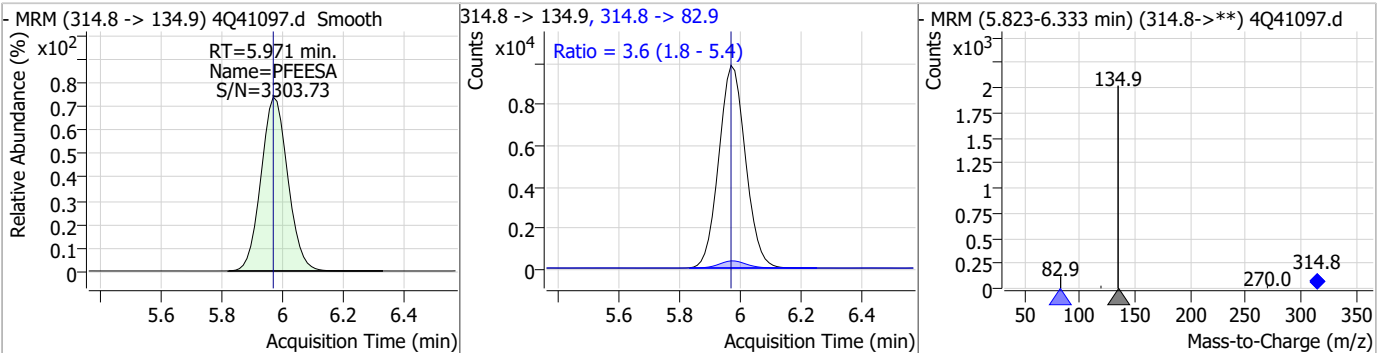


Perfluorinated Compounds by LC/MS/MS

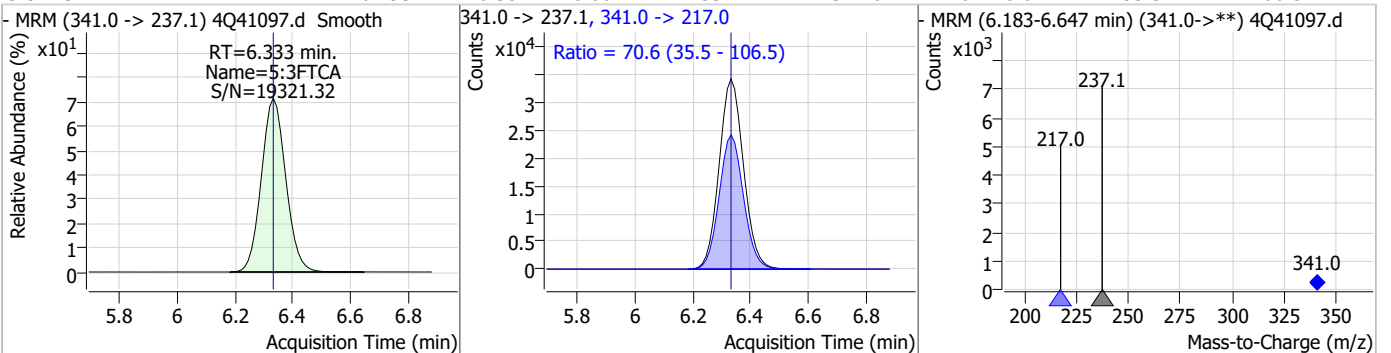
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.40	5.88	0.00	29422	284.9 -> 184.9	11.9	6.0	18.1



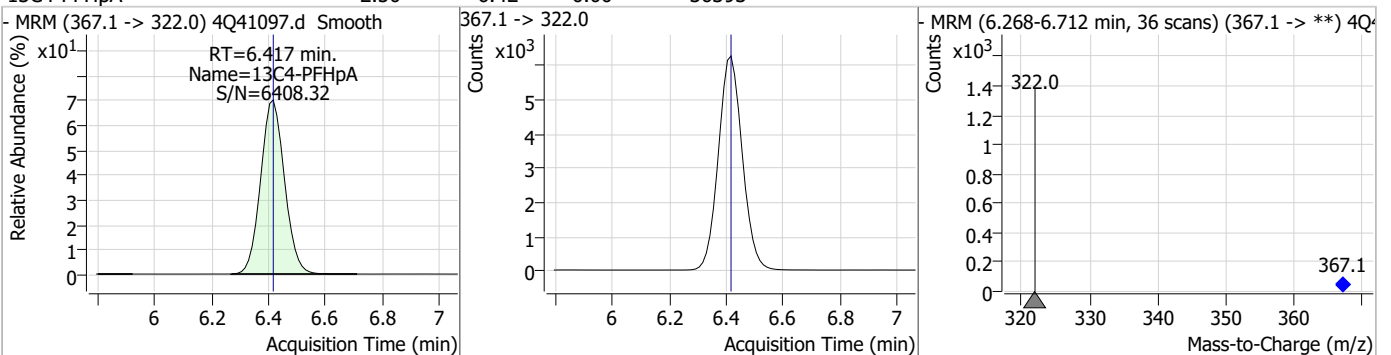
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.20	5.97	0.00	60438	314.8 -> 82.9	3.6	1.8	5.4



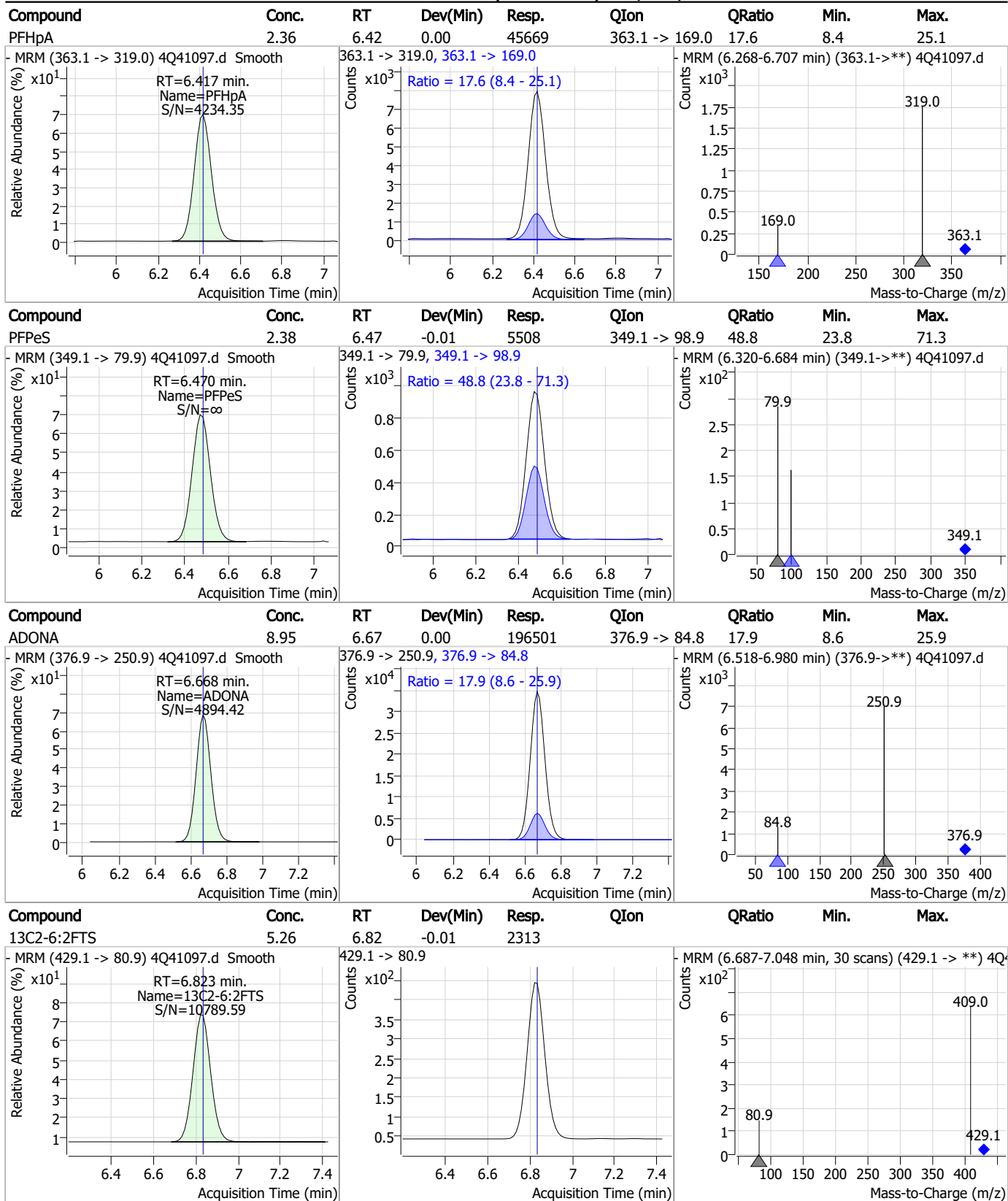
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	61.93	6.33	0.00	199712	341.0 -> 217.0	70.6	35.5	106.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.50	6.42	0.00	36393	367.1 -> 322.0	-	-	-

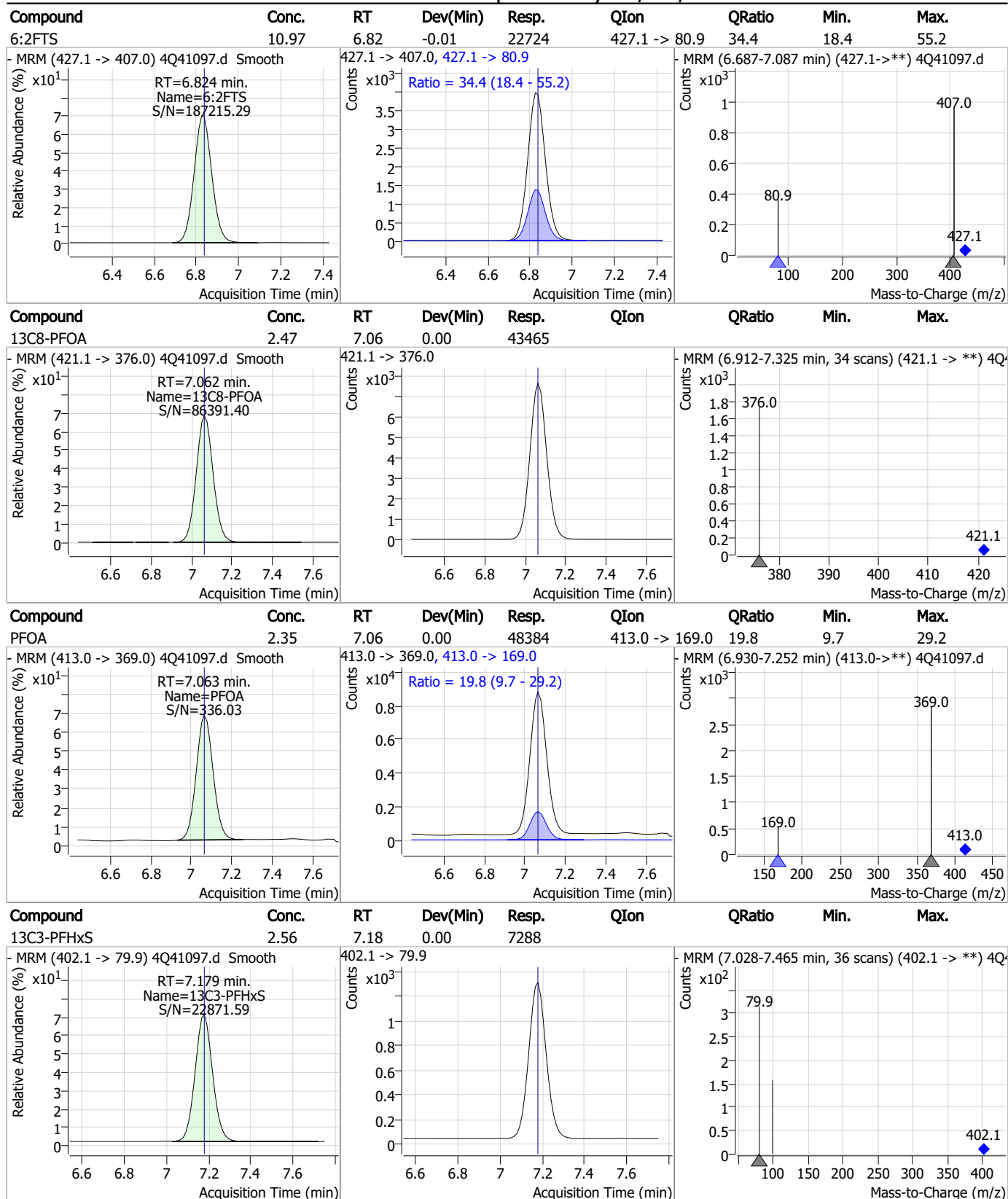


Perfluorinated Compounds by LC/MS/MS



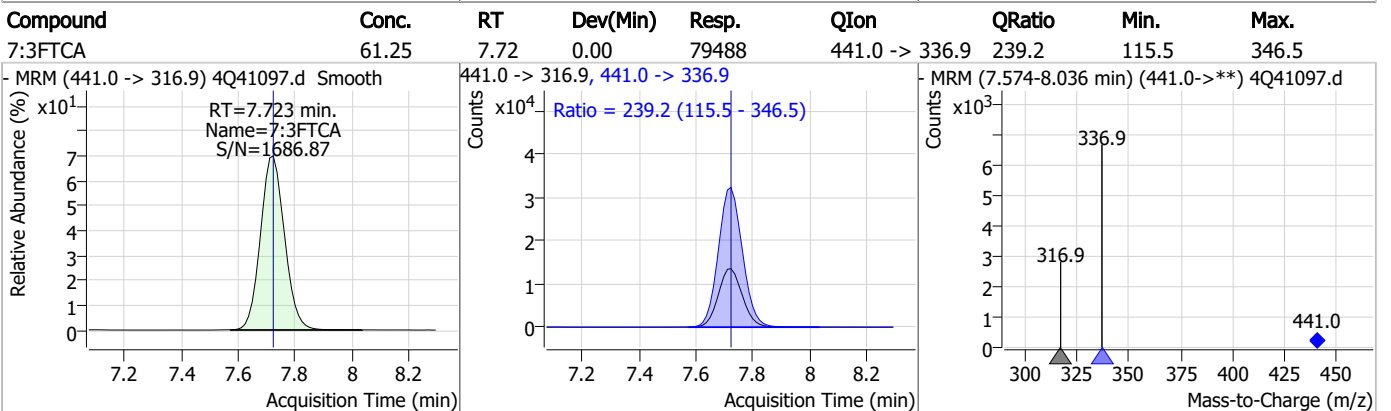
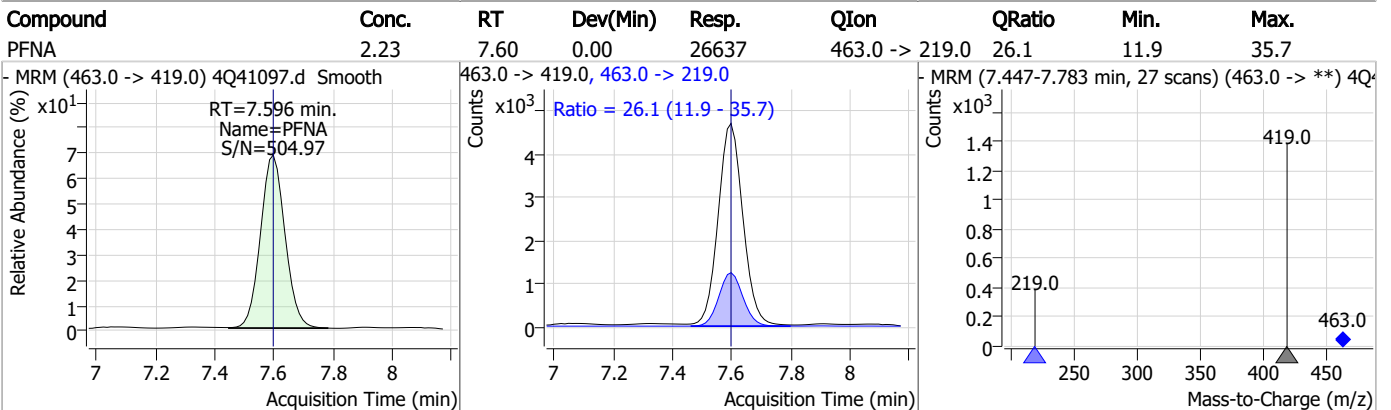
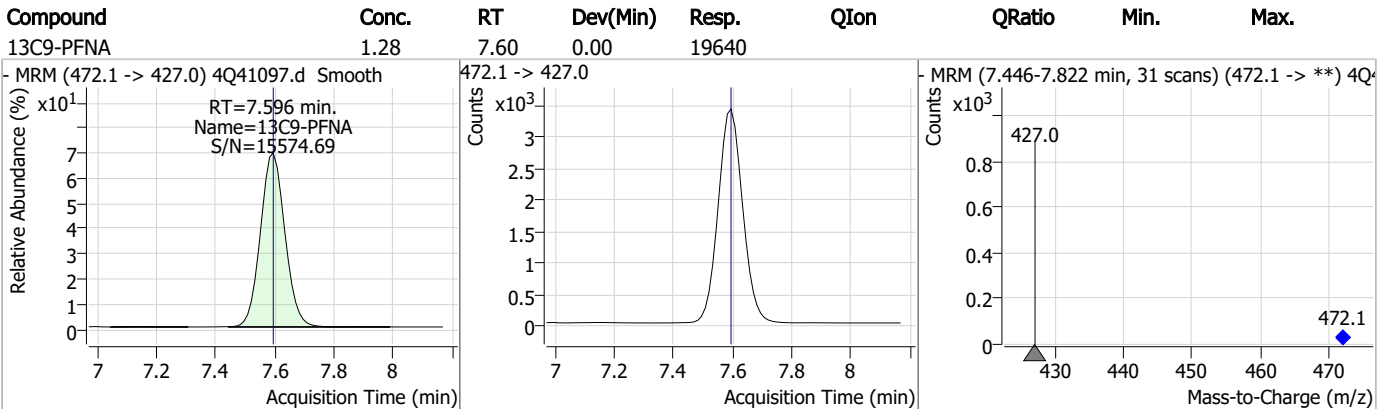
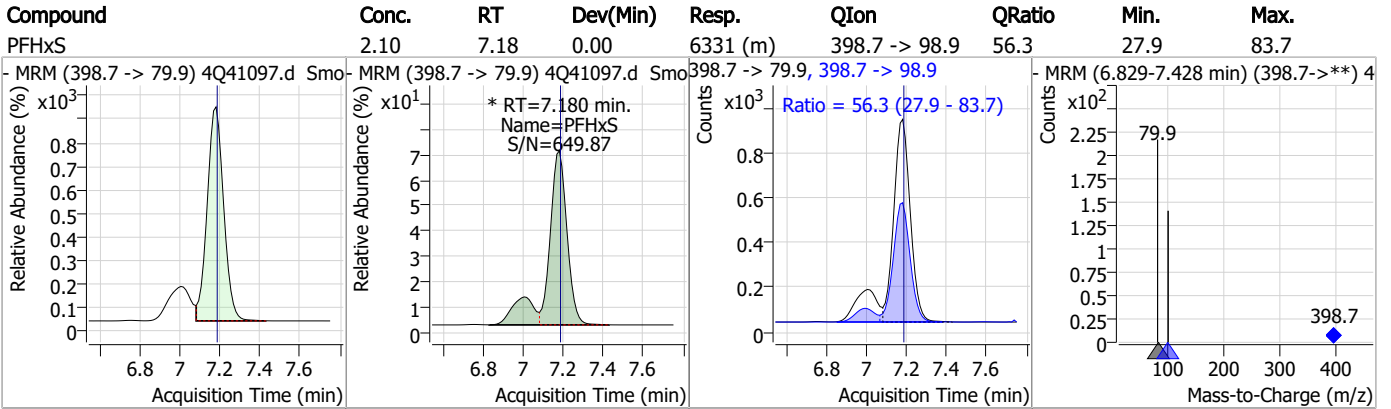
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Perfluorinated Compounds by LC/MS/MS



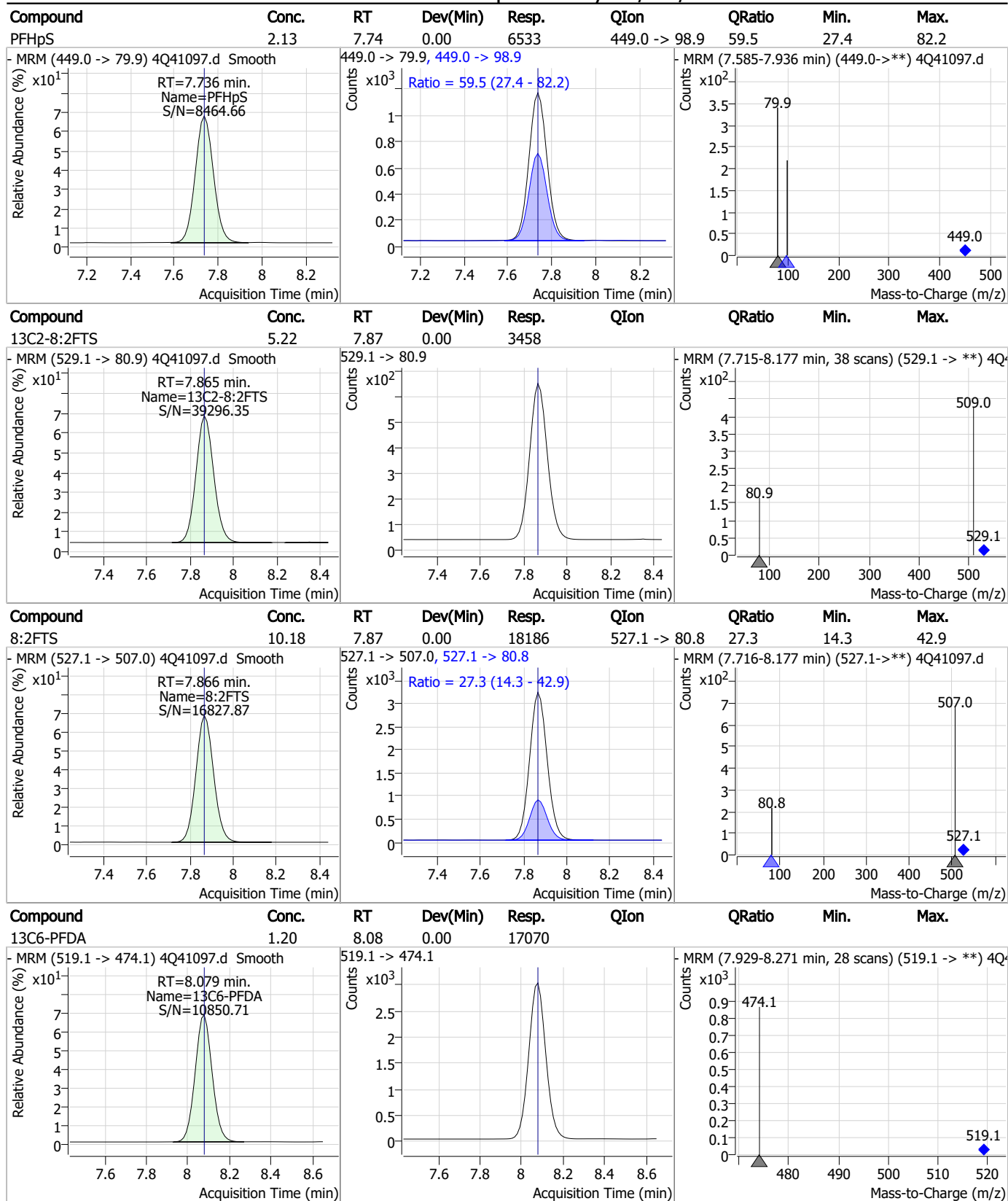
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Perfluorinated Compounds by LC/MS/MS



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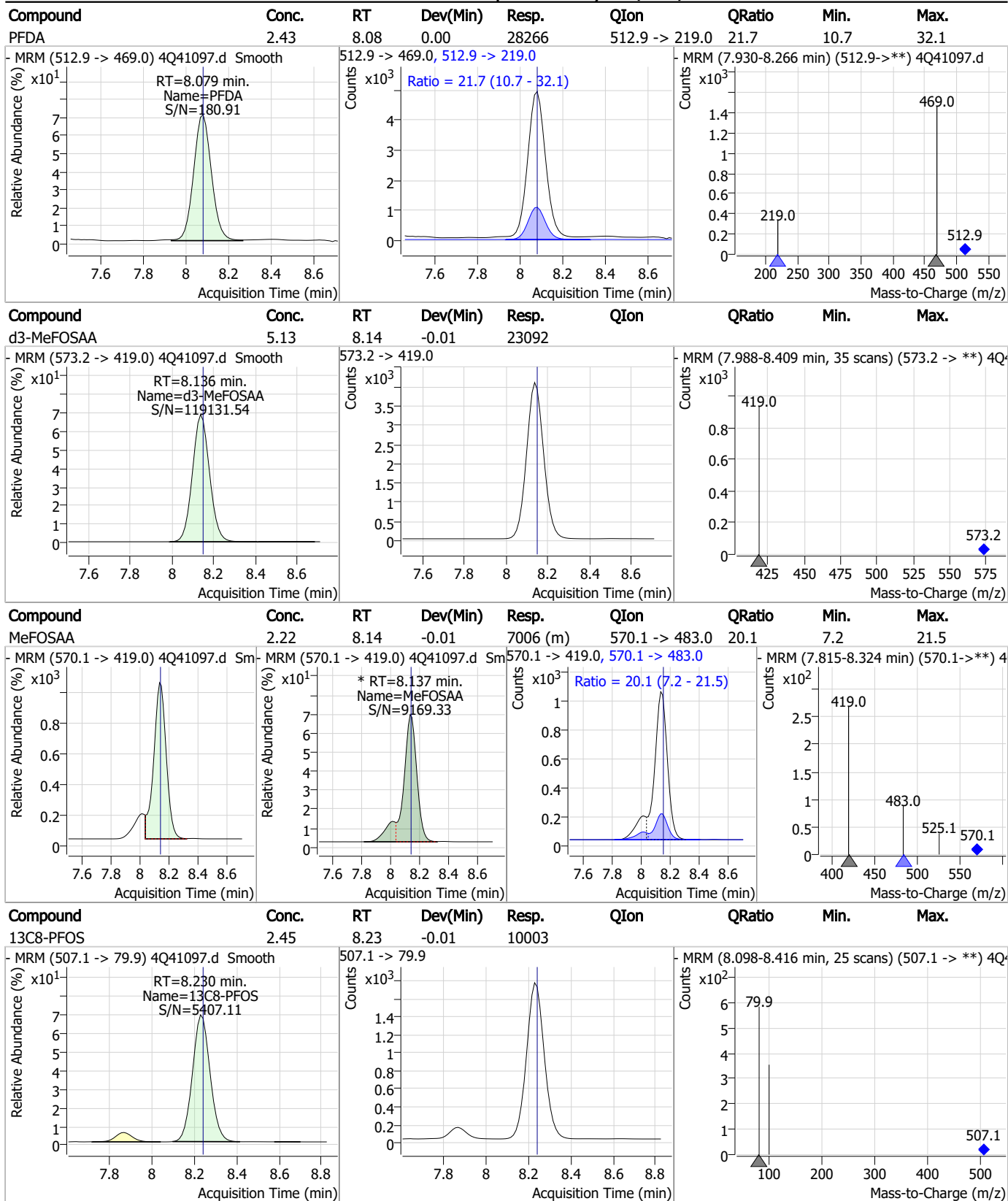
Perfluorinated Compounds by LC/MS/MS



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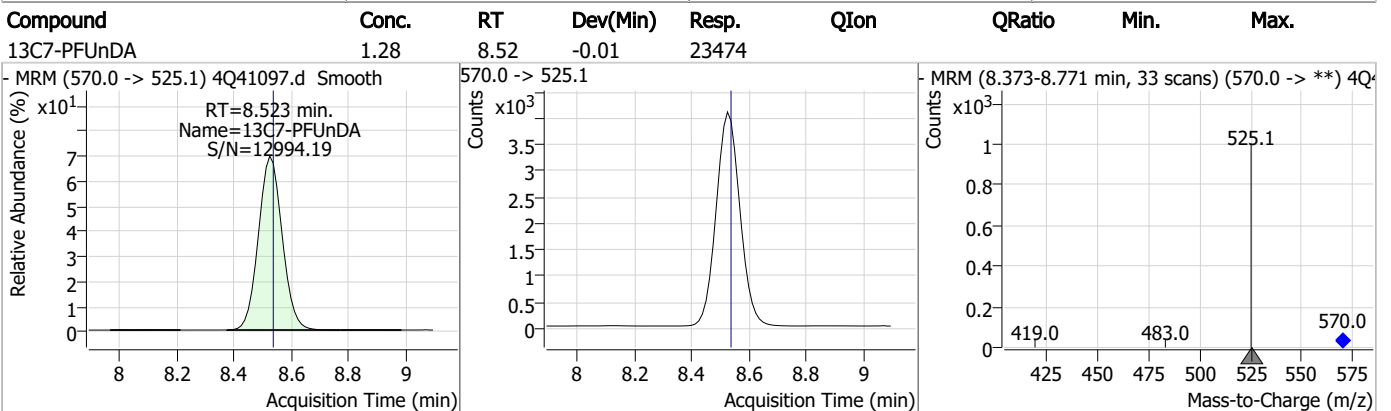
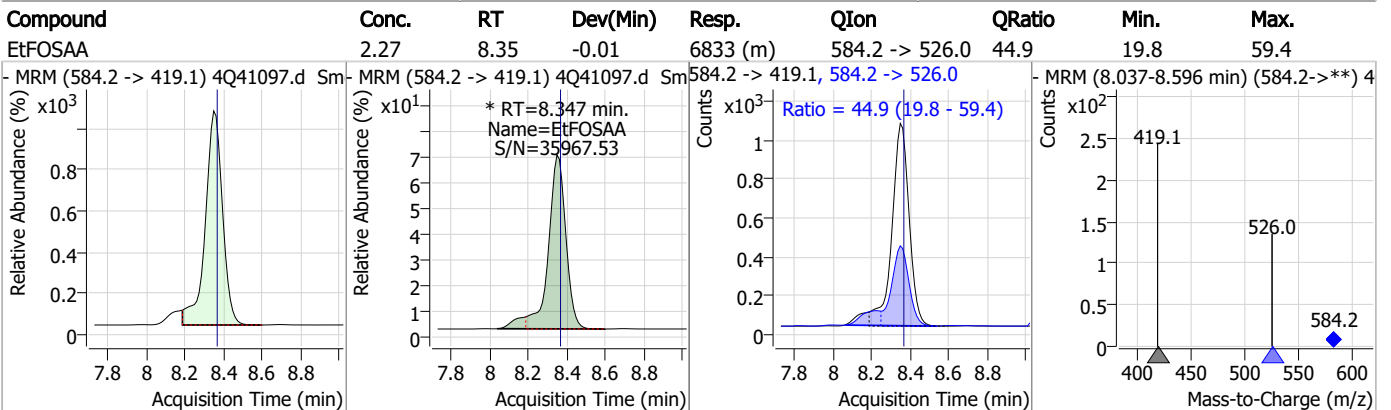
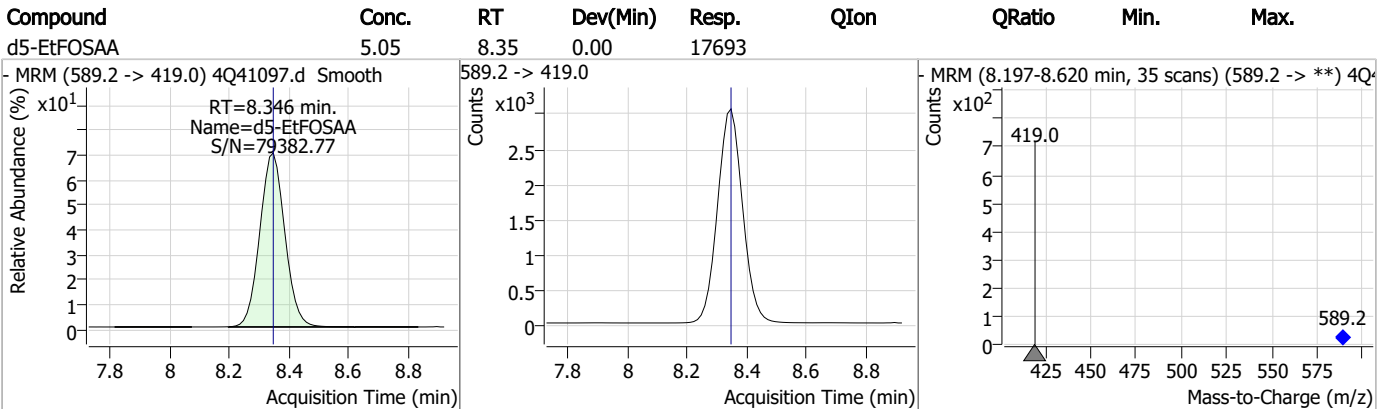
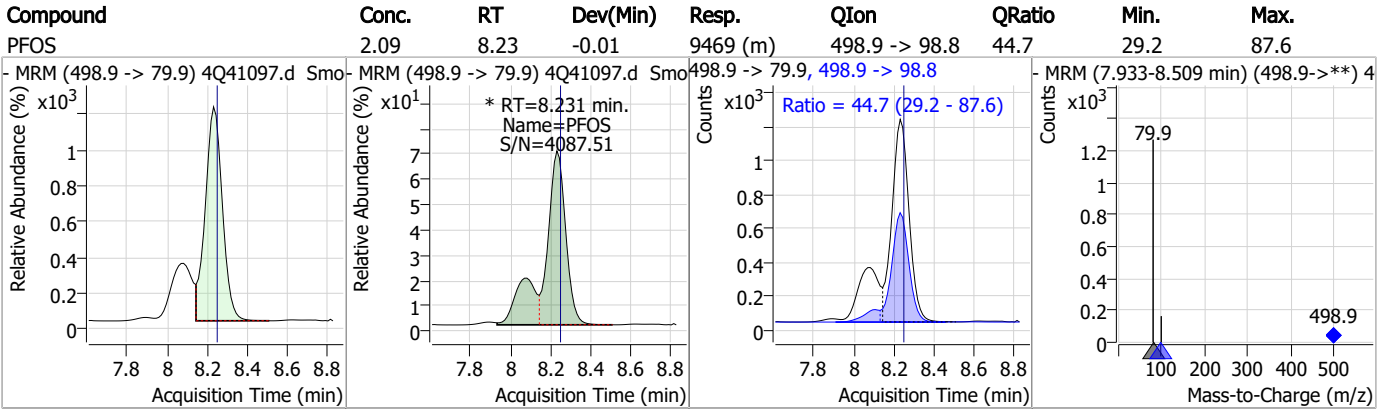
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Perfluorinated Compounds by LC/MS/MS



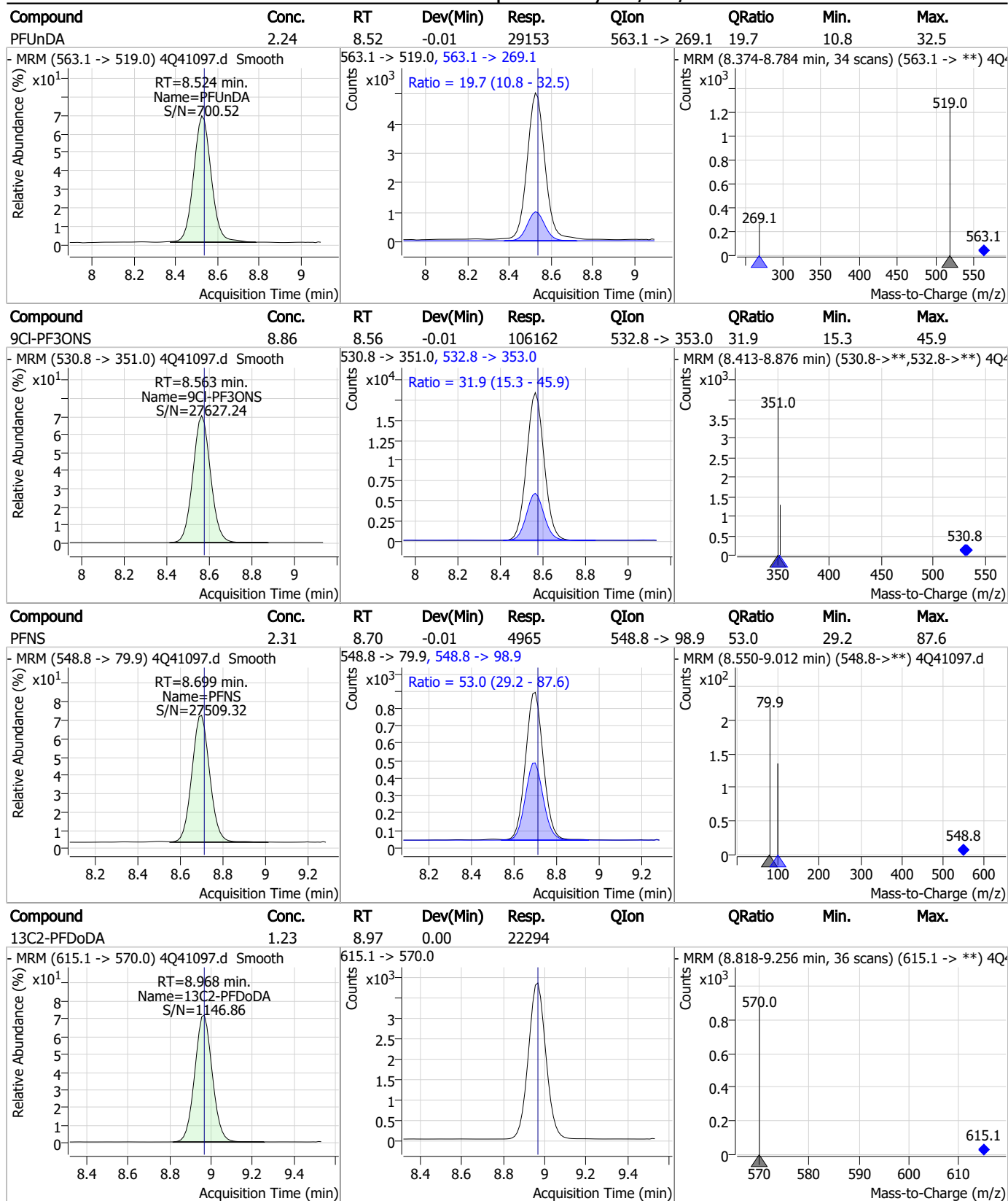
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Perfluorinated Compounds by LC/MS/MS



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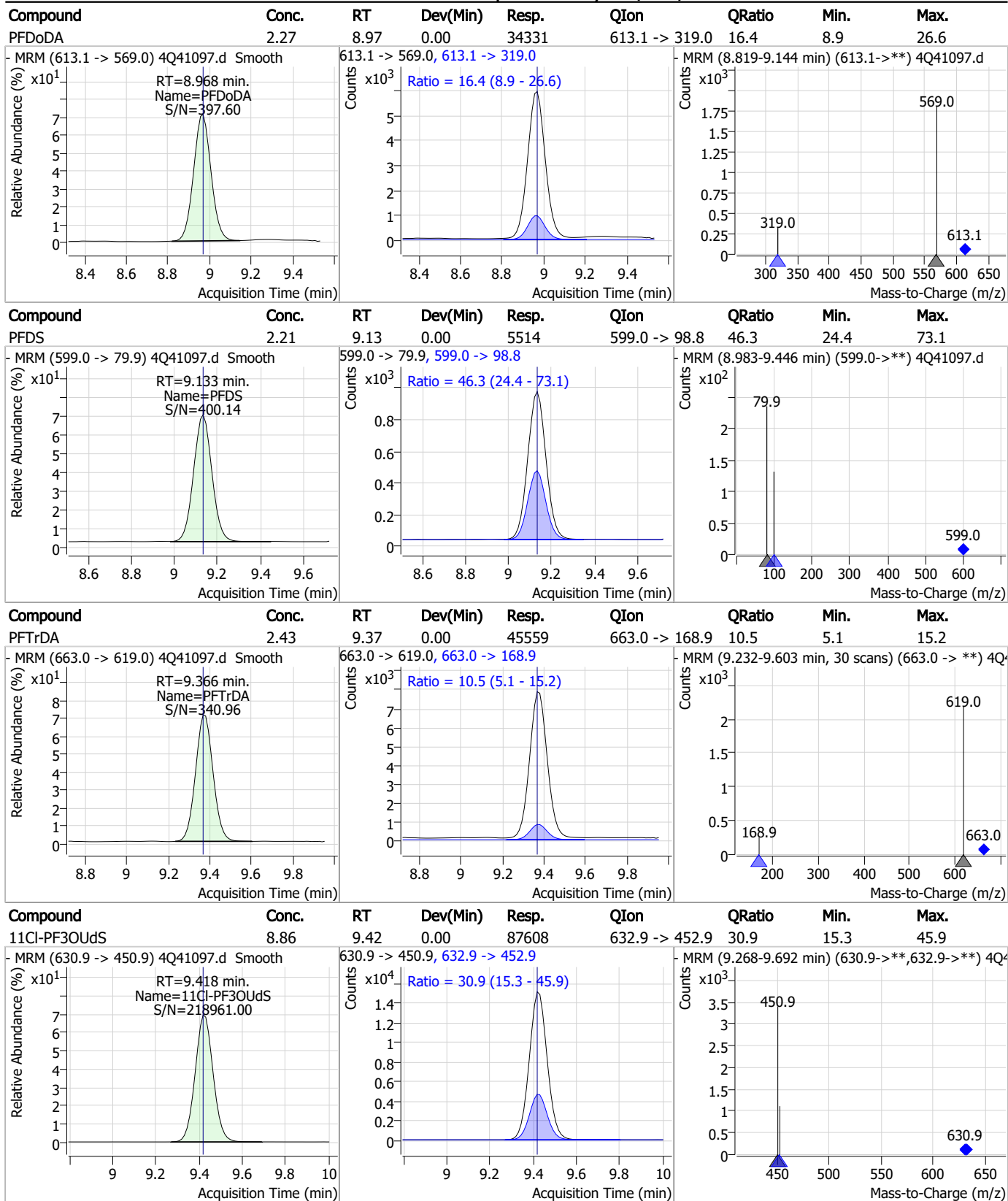
Perfluorinated Compounds by LC/MS/MS



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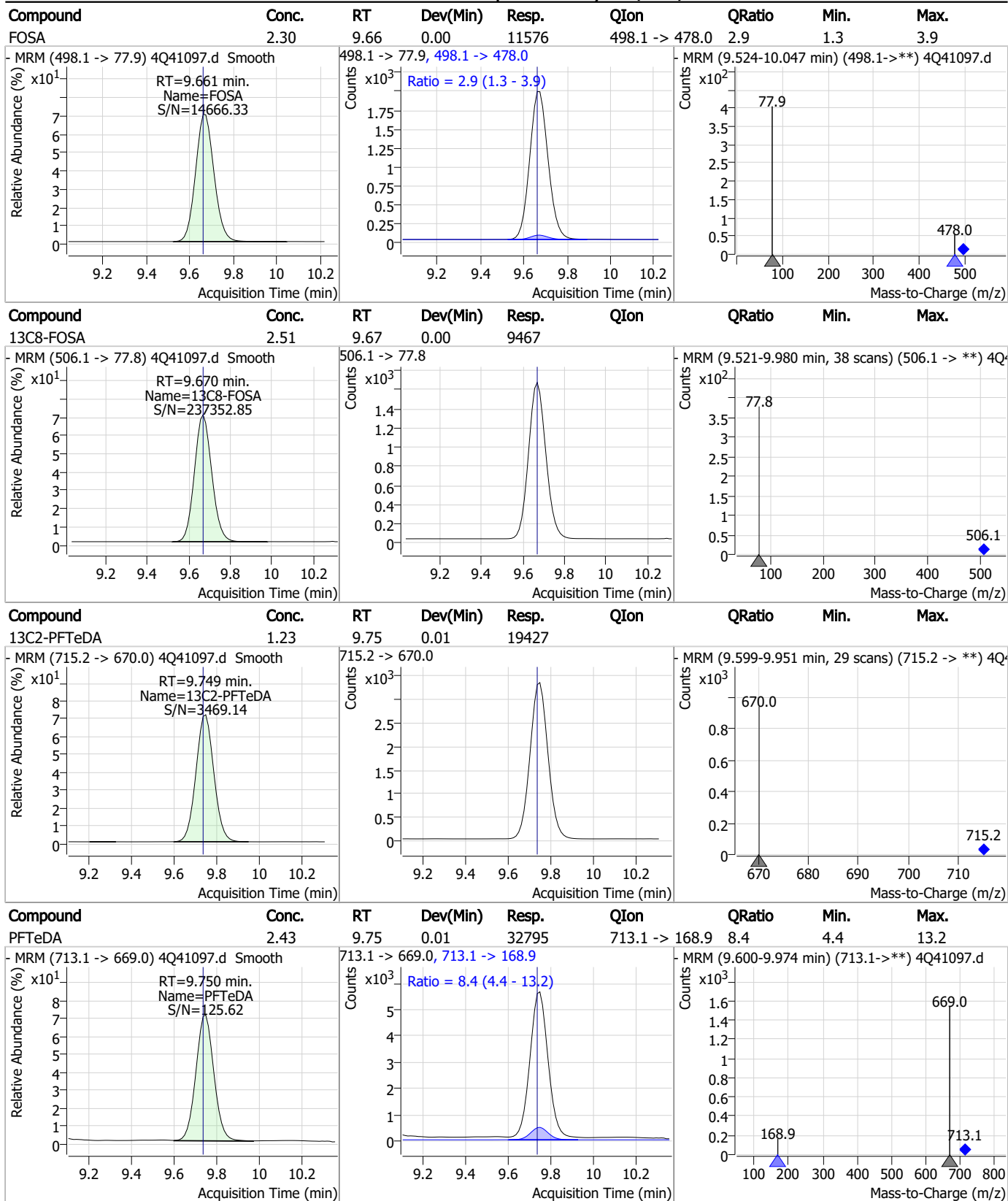
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Perfluorinated Compounds by LC/MS/MS



7.6.17

Perfluorinated Compounds by LC/MS/MS

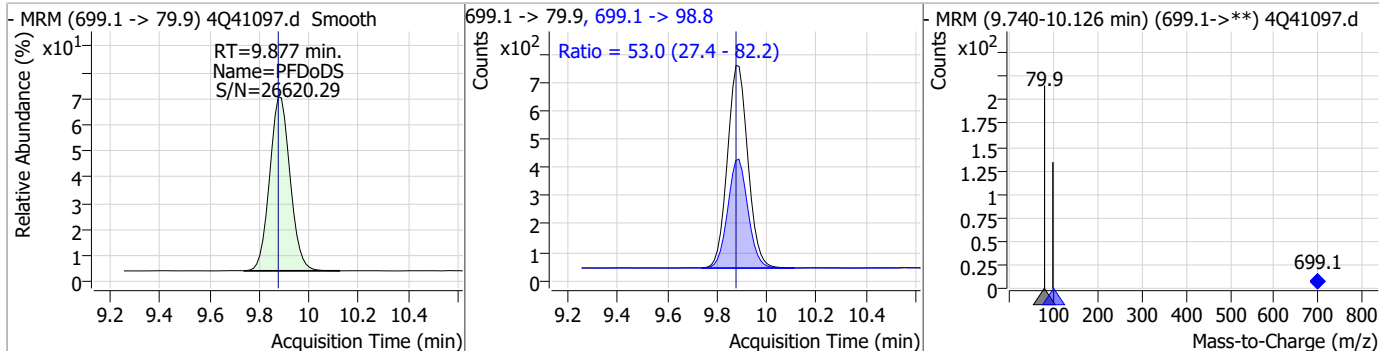


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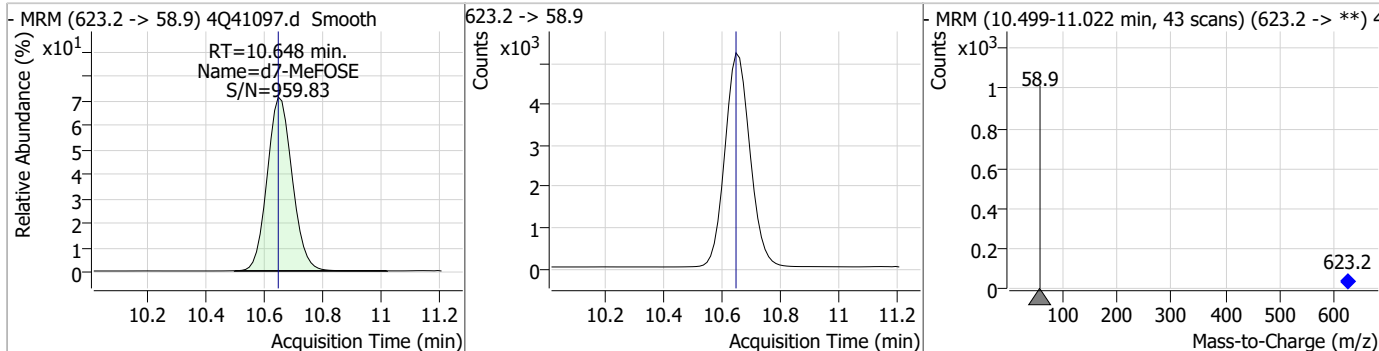


Perfluorinated Compounds by LC/MS/MS

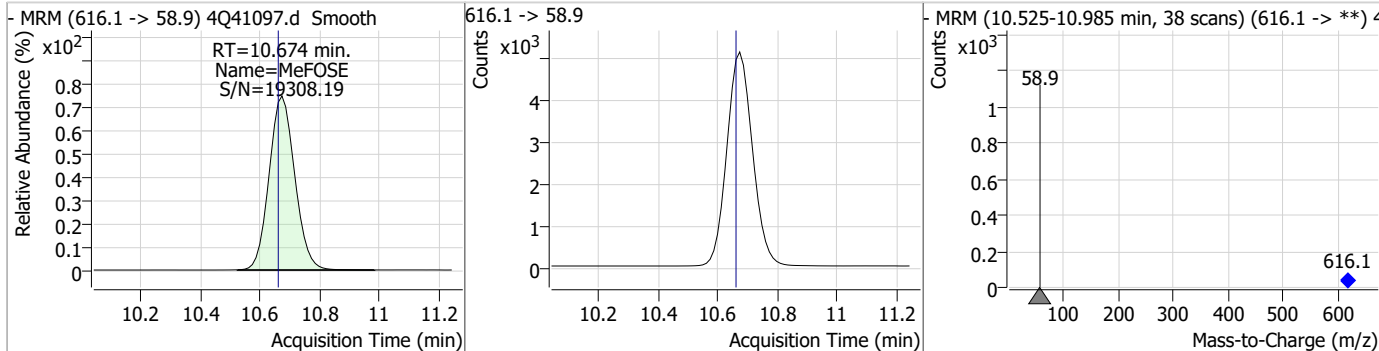
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.07	9.88	0.00	4116	699.1 -> 98.8	53.0	27.4	82.2



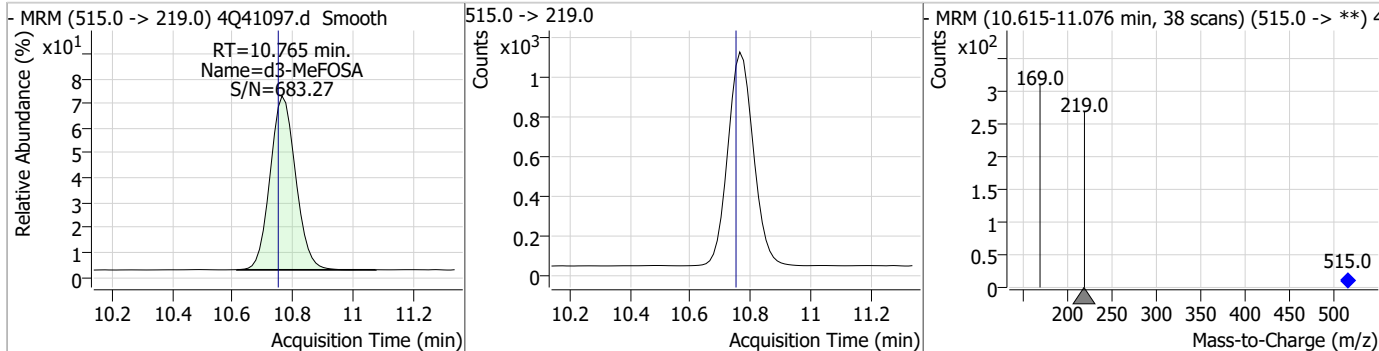
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.95	10.65	0.00	31074				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	23.41	10.67	0.01	30538				

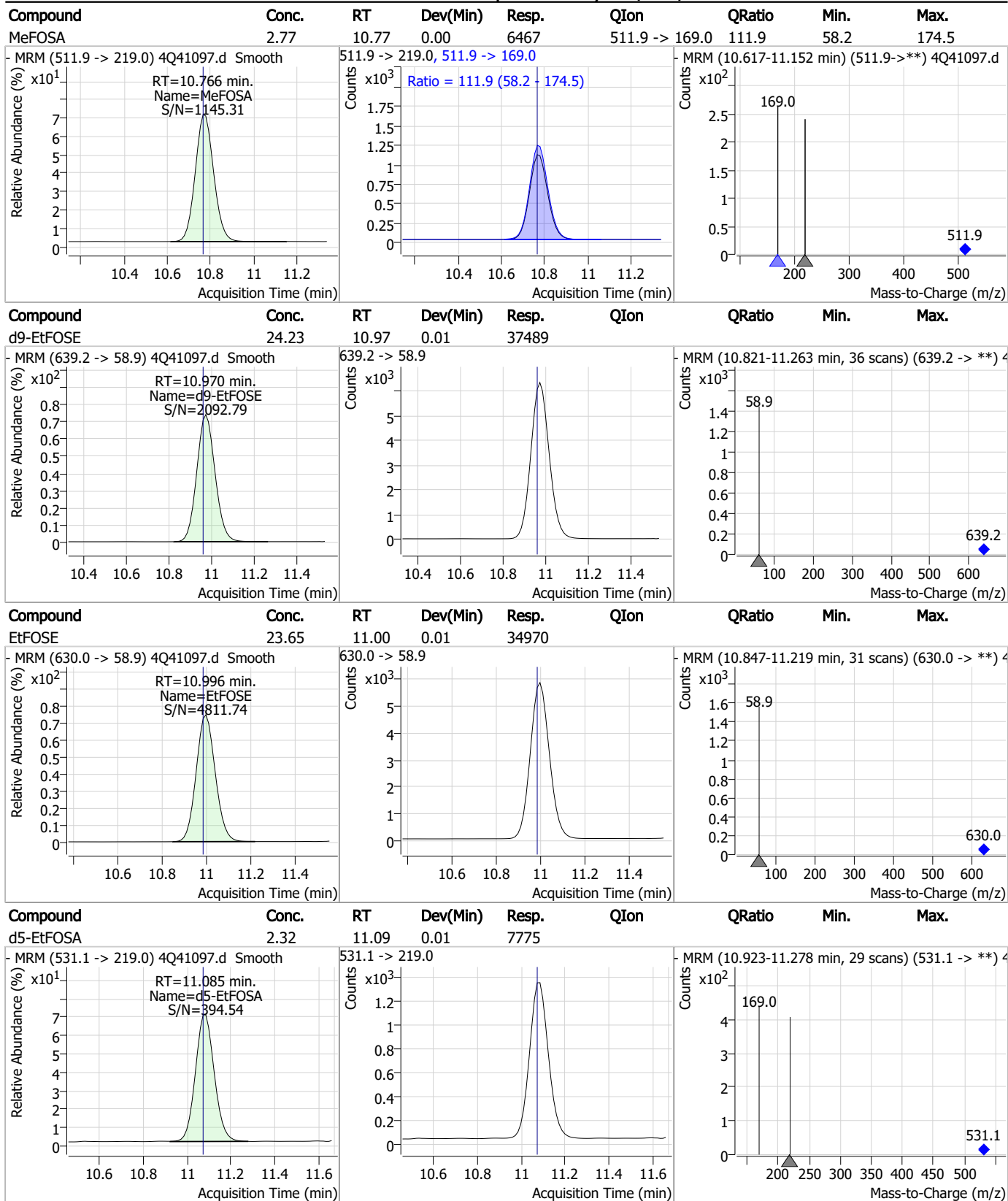


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.17	10.76	0.01	6355				



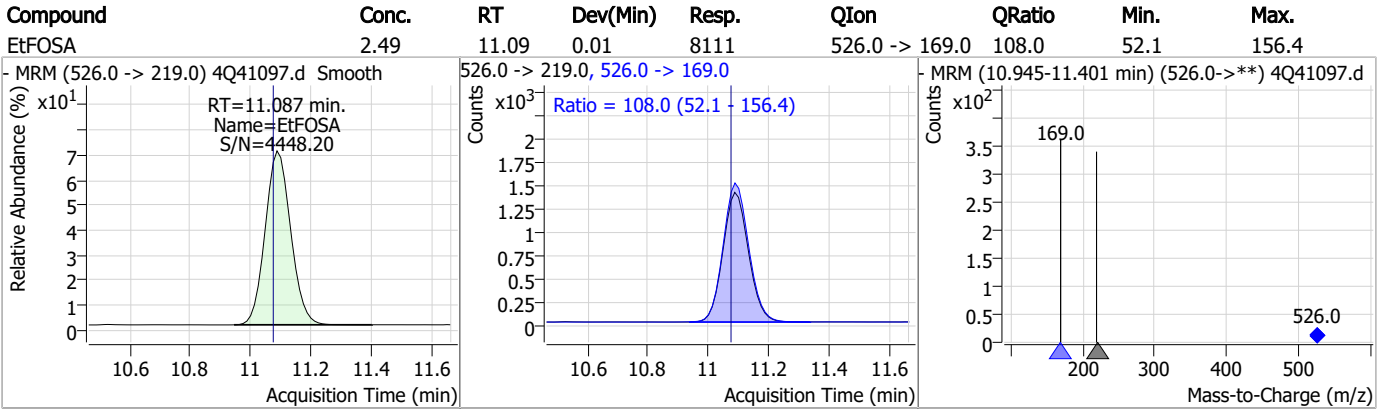
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q587-CC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41097.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/23/23 01:45 Supervisor approved: 02/24/23 11:00 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.14	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41098.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/23/2023 1:59:43 AM
 Sample Name : cc587-1.0LL
 Vial : P1-A2
 DA Method File : 1633_022223_S4Q587.quantmethod.xml
 Batch Name : s4q587.batch.bin
 Sample Information : op95462,S4Q587,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	139904	10.00 µg/L	0.000
M5-PFPeA	4.500	268.3 -> 223.0	75116	5.00 µg/L	0.000
M5-PFHxA	5.546	318.0 -> 273.0	56893	2.50 µg/L	0.000
M4-PFHpA	6.417	367.1 -> 322.0	33581	2.50 µg/L	0.000
M8-PFOA	7.062	421.1 -> 376.0	41699	2.50 µg/L	0.000
M9-PFNA	7.596	472.1 -> 427.0	16831	1.25 µg/L	0.000
M6-PFDA	8.079	519.1 -> 474.1	16978	1.25 µg/L	0.000
M7-PFUnDA	8.523	570.0 -> 525.1	21846	1.25 µg/L	-0.012
M2-PFDoDA	8.968	615.1 -> 570.0	19558	1.25 µg/L	0.000
M2-PFTeDA	9.749	715.2 -> 670.0	18087	1.25 µg/L	0.012
M8-FOSA	9.670	506.1 -> 77.8	8550	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	11653	2.50 µg/L	-0.012
M3-PFHxS	7.179	402.1 -> 79.9	7198	2.50 µg/L	0.000
M8-PFOS	8.230	507.1 -> 79.9	9440	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1584	5.00 µg/L	0.000
M2-6:2FTS	6.836	429.1 -> 80.9	2531	5.00 µg/L	0.000
M2-8:2FTS	7.865	529.1 -> 80.9	4017	5.00 µg/L	0.000
M3-MeFOSAA	8.136	573.2 -> 419.0	20777	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	34119	10.00 µg/L	0.000
M5-EtFOSAA	8.346	589.2 -> 419.0	16022	5.00 µg/L	0.000
M7-MeFOSE	10.648	623.2 -> 58.9	28200	25.00 µg/L	0.000
M9-EtFOSE	10.970	639.2 -> 58.9	34405	25.00 µg/L	0.012
M5-EtFOSA	11.085	531.1 -> 219.0	7744	2.50 µg/L	0.012
M3-MeFOSA	10.765	515.0 -> 219.0	6215	2.50 µg/L	0.012
13C4-PFOS	8.230	502.8 -> 79.9	9477	2.50 µg/L	-0.012
13C3-PFBA	3.143	216.0 -> 172.0	83585	5.00 µg/L	-0.013
18O2-PFHxS	7.178	403.0 -> 83.9	5155	2.50 µg/L	0.000
13C4-PFOA	7.062	417.1 -> 372.0	47858	2.50 µg/L	0.000
13C2-PFDA	8.079	515.1 -> 470.1	17003	1.25 µg/L	0.000
13C5-PFNA	7.596	468.0 -> 423.0	20262	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	52488	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1584	5.67 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C2-6:2FTS	6.836	429.1 -> 80.9	2531	5.66 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.2%		
13C2-8:2FTS	7.865	529.1 -> 80.9	4017	5.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.4%		
13C2-PFDoDA	8.968	615.1 -> 570.0	19558	1.10 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.1%		
13C2-PFTeDA	9.749	715.2 -> 670.0	18087	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C3-PFBS	5.489	302.1 -> 79.9	11653	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C3-PFHxS	7.179	402.1 -> 79.9	7198	2.49 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C4-PFBA	3.152	216.8 -> 171.9	139904	10.10 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.417	367.1 -> 322.0	33581	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C5-PFHxA	5.546	318.0 -> 273.0	56893	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C5-PFPeA	4.500	268.3 -> 223.0	75116	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C6-PFDA	8.079	519.1 -> 474.1	16978	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C7-PFUnDA	8.523	570.0 -> 525.1	21846	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C8-FOSA	9.670	506.1 -> 77.8	8550	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C8-PFOA	7.062	421.1 -> 376.0	41699	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C8-PFOS	8.230	507.1 -> 79.9	9440	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C9-PFNA	7.596	472.1 -> 427.0	16831	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSAA	8.136	573.2 -> 419.0	20777	4.98 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	34119	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d3-MeFOSA	10.765	515.0 -> 219.0	6215	2.29 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.4%	
d5-EtFOSAA	8.346	589.2 -> 419.0	16022	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
d7-MeFOSE	10.648	623.2 -> 58.9	28200	24.41 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
d9-EtFOSE	10.970	639.2 -> 58.9	34405	23.97 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
d5-EtFOSA	11.085	531.1 -> 219.0	7744	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	1555	0.62 µg/L	98
		327.1 -> 80.9	617		
6:2FTS	6.824	427.1 -> 407.0	1624	0.72 µg/L	98
		427.1 -> 80.9	574		
8:2FTS	7.866	527.1 -> 507.0	1475	0.71 µg/L	77
		527.1 -> 80.8	603		
EtFOSAA	8.347	584.2 -> 419.1	525	0.19 µg/L	m 80
		584.2 -> 526.0	142		
FOSA	9.661	498.1 -> 77.9	960	0.21 µg/L	# 95
		498.1 -> 478.0	42		
MeFOSAA	8.149	570.1 -> 419.0	514	0.18 µg/L	#m 79
		570.1 -> 483.0	118		
PFBA	3.146	212.8 -> 168.9	2429	0.73 µg/L	100
PFBS	5.490	298.7 -> 79.9	819	0.18 µg/L	95
		298.7 -> 98.8	339		
PFDA	8.079	512.9 -> 469.0	2098	0.18 µg/L	98
		512.9 -> 219.0	432		
PFDODA	8.968	613.1 -> 569.0	2447	0.18 µg/L	94
		613.1 -> 319.0	369		
PFDS	9.133	599.0 -> 79.9	366	0.16 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	179			
PFHpA	6.417	363.1 -> 319.0	2926	0.16	µg/L	94
		363.1 -> 169.0	560			
PFHpS	7.736	449.0 -> 79.9	676	0.23	µg/L	76
		449.0 -> 98.9	253			
PFHxA	5.549	313.0 -> 269.0	3745	0.19	µg/L	100
		313.0 -> 118.9	105			
PFHxS	7.180	398.7 -> 79.9	468	0.16	µg/L	m 92
		398.7 -> 98.9	287			
PFNA	7.596	463.0 -> 419.0	1983	0.19	µg/L	92
		463.0 -> 219.0	397			
PFNS	8.699	548.8 -> 79.9	307	0.15	µg/L	99
		548.8 -> 98.9	178			
PFOA	7.063	413.0 -> 369.0	3983	0.20	µg/L	96
		413.0 -> 169.0	704			
PFOS	8.231	498.9 -> 79.9	920	0.22	µg/L	m 96
		498.9 -> 98.8	562			
PFPeA	4.502	263.0 -> 219.0	6412	0.36	µg/L	100
PFPeS	6.484	349.1 -> 79.9	399	0.17	µg/L	76
		349.1 -> 98.9	255			
PFTeDA	9.737	713.1 -> 669.0	2056	0.16	µg/L	96
		713.1 -> 168.9	154			
PFTrDA	9.379	663.0 -> 619.0	3064	0.19	µg/L	97
		663.0 -> 168.9	341			
PFUnDA	8.524	563.1 -> 519.0	2408	0.20	µg/L	94
		563.1 -> 269.1	453			
11Cl-PF3OUdS	9.418	630.9 -> 450.9	5817	0.66	µg/L	94
		632.9 -> 452.9	1975			
9Cl-PF3ONS	8.563	530.8 -> 351.0	7793	0.73	µg/L	99
		532.8 -> 353.0	2330			
ADONA	6.668	376.9 -> 250.9	12661	0.64	µg/L	94
		376.9 -> 84.8	2516			
HFPO-DA	5.878	284.9 -> 168.9	2235	0.80	µg/L	95
		284.9 -> 184.9	313			
3:3FTCA	4.142	241.0 -> 177.0	886	0.85	µg/L	96
		241.0 -> 117.0	64			
5:3FTCA	6.333	341.0 -> 237.1	13878	4.66	µg/L	98
		341.0 -> 217.0	9614			
7:3FTCA	7.723	441.0 -> 316.9	6019	5.02	µg/L	88
		441.0 -> 336.9	12721			
EtFOSA	11.099	526.0 -> 219.0	657	0.20	µg/L	94
		526.0 -> 169.0	648			
EtFOSE	10.996	630.0 -> 58.9	2561	1.89	µg/L	100
MeFOSA	10.766	511.9 -> 219.0	443	0.19	µg/L	95
		511.9 -> 169.0	540			
MeFOSE	10.674	616.1 -> 58.9	2187	1.85	µg/L	100
PFDoDS	9.877	699.1 -> 79.9	343	0.18	µg/L	91
		699.1 -> 98.8	166			
NFDHA	5.440	295.0 -> 201.0	292	0.39	µg/L	86
		295.0 -> 84.9	52			
PFMBA	4.867	279.0 -> 85.1	3428	0.37	µg/L	100
PFMPA	3.727	229.0 -> 84.9	2627	0.35	µg/L	100
PFEESA	5.971	314.8 -> 134.9	3993	0.30	µg/L	100
		314.8 -> 82.9	147			

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

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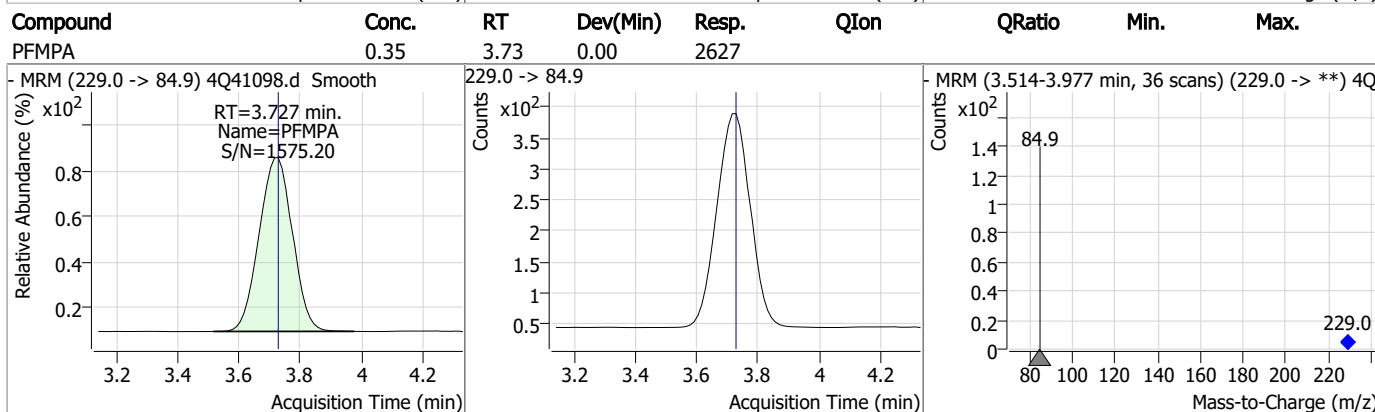
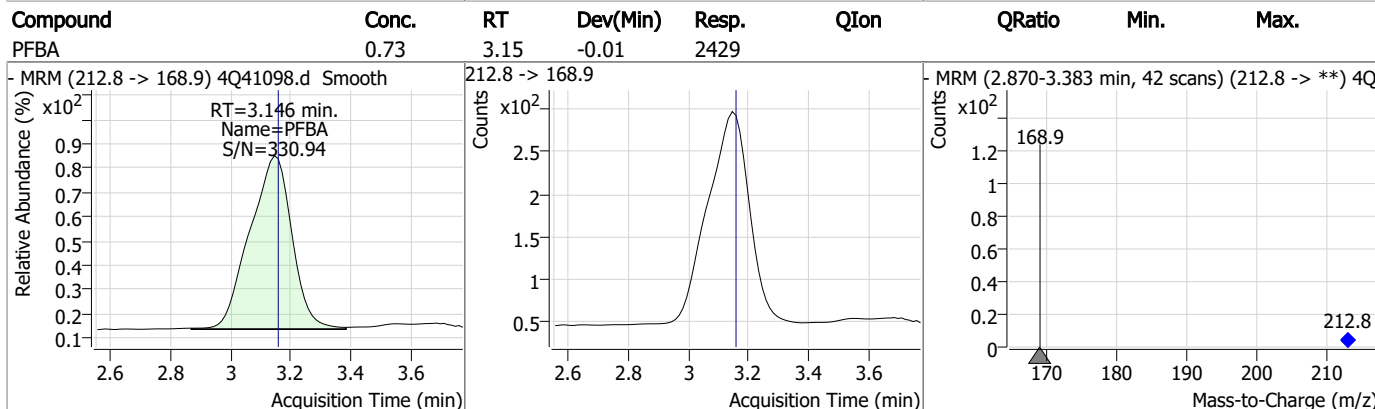
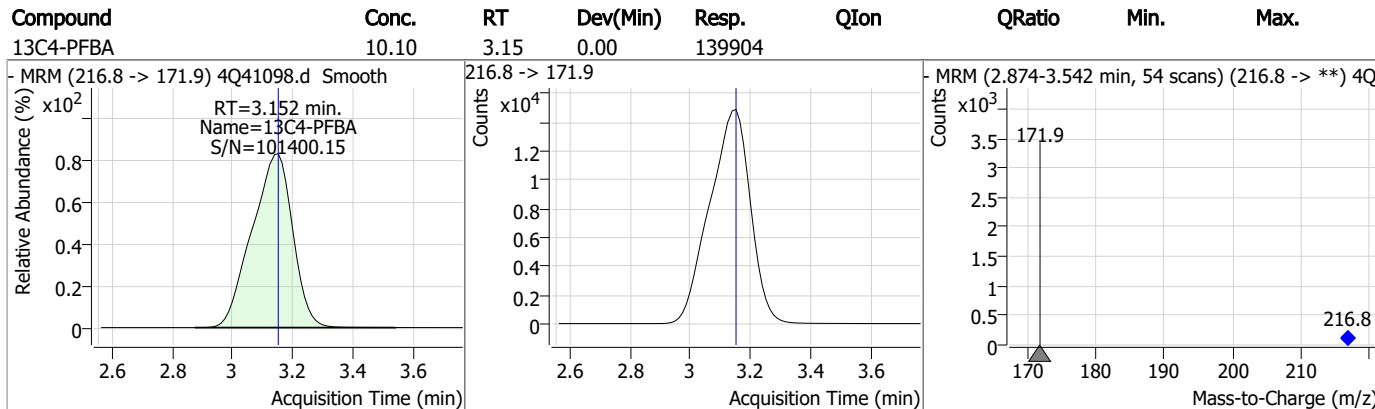
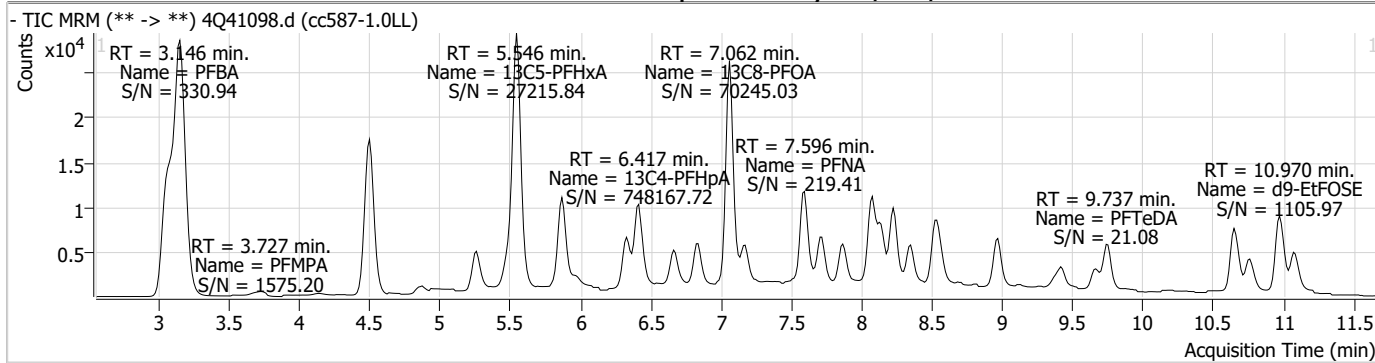
Perfluorinated Compounds by LC/MS/MS

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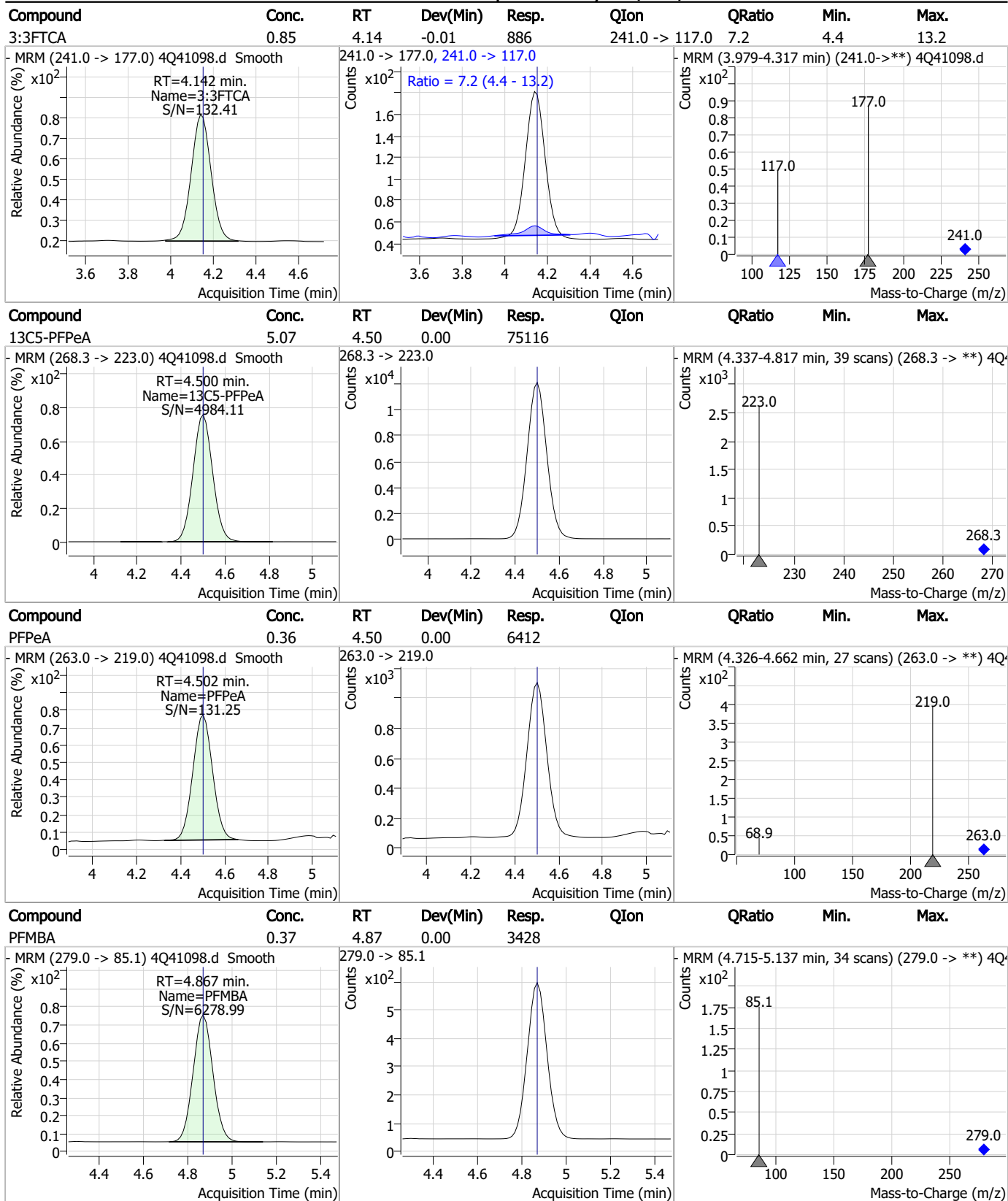
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Perfluorinated Compounds by LC/MS/MS



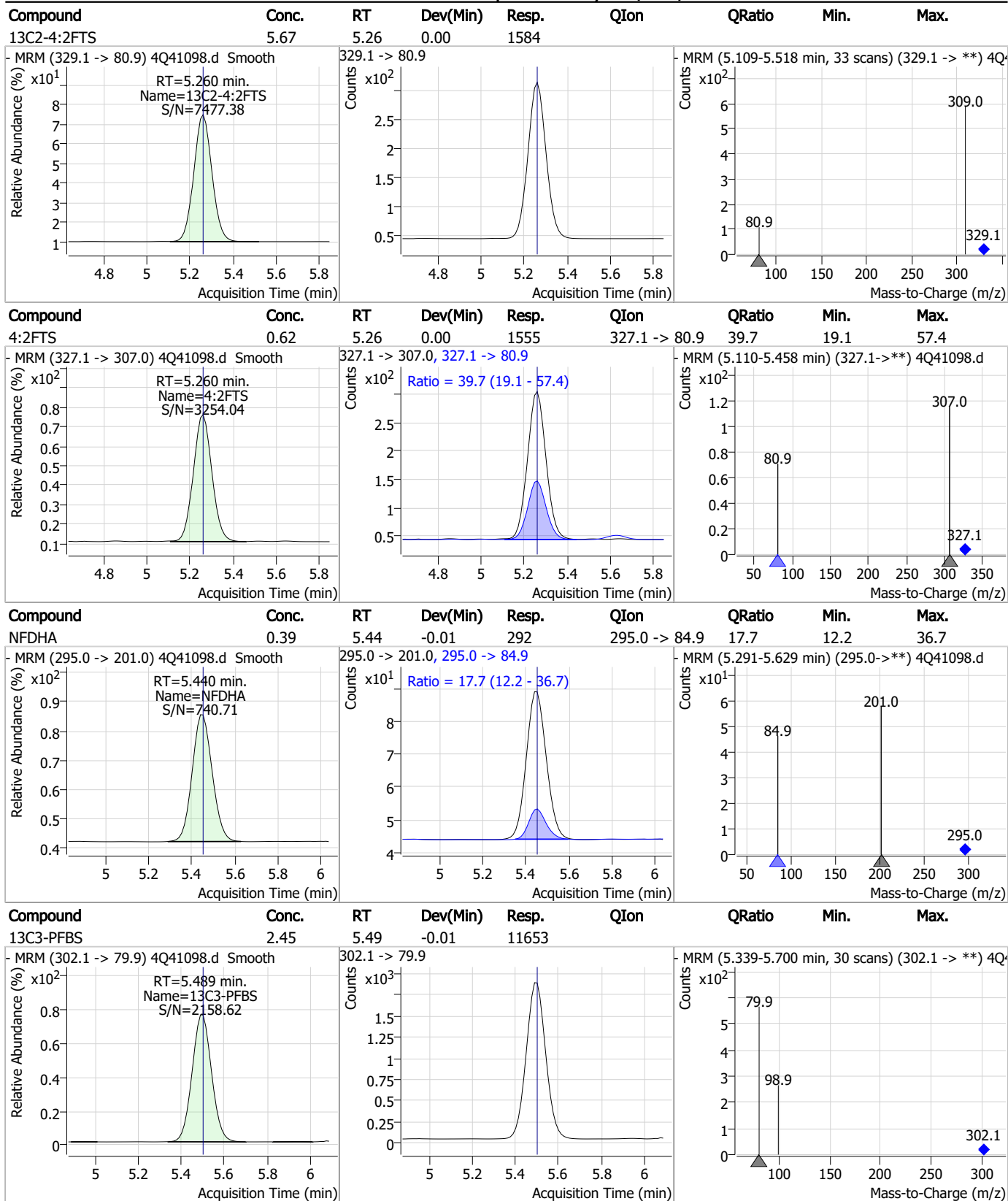
Perfluorinated Compounds by LC/MS/MS



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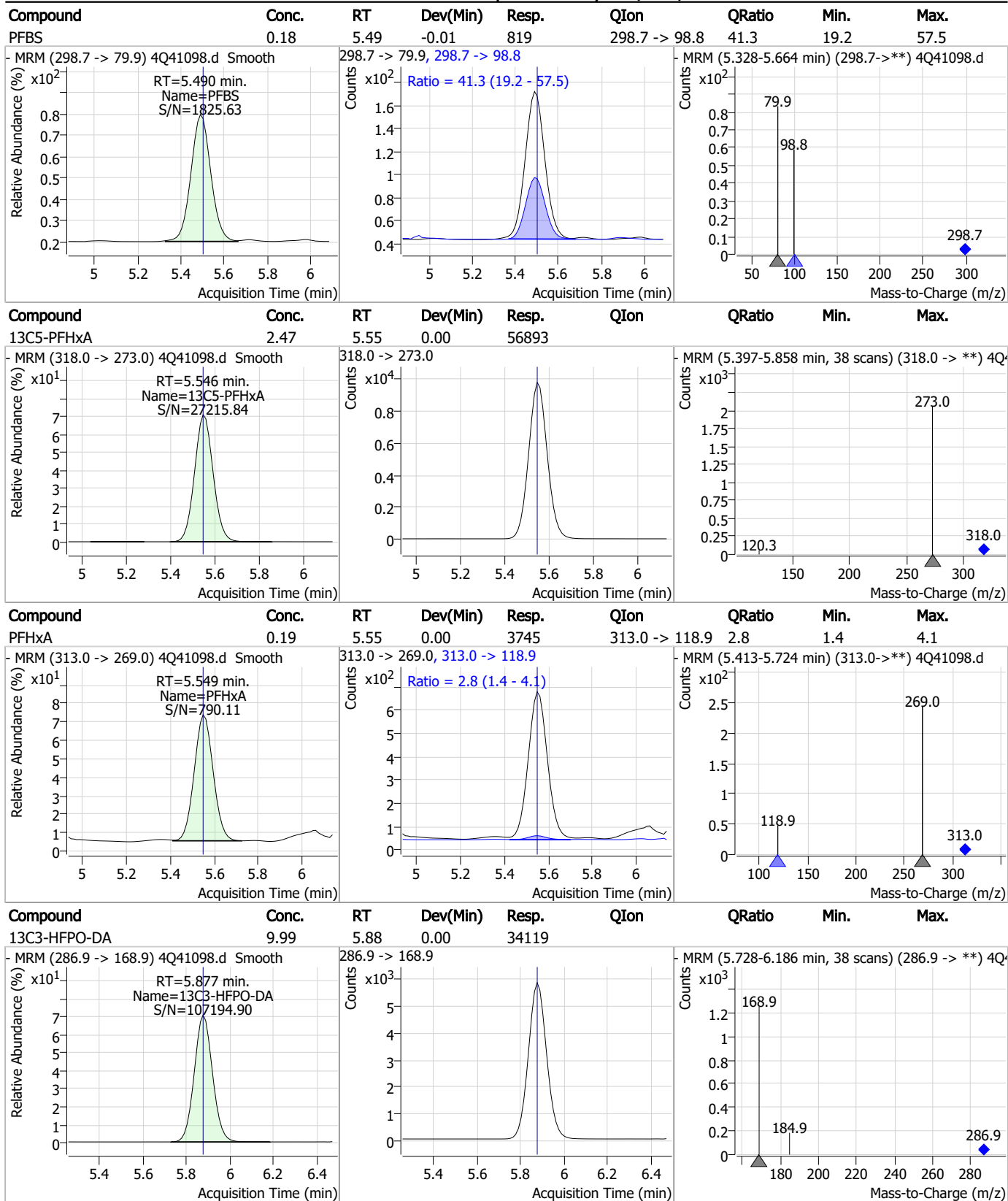
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

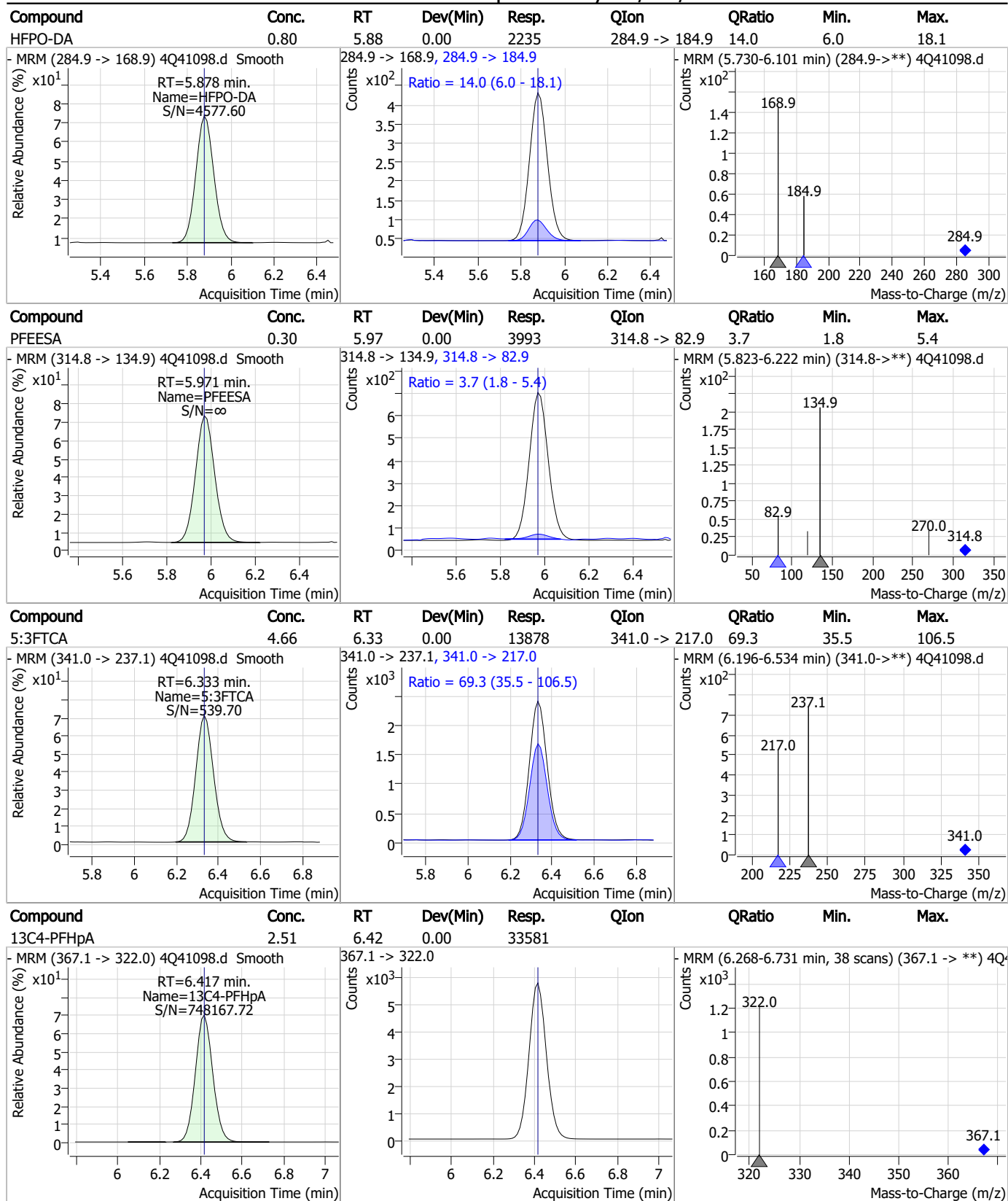


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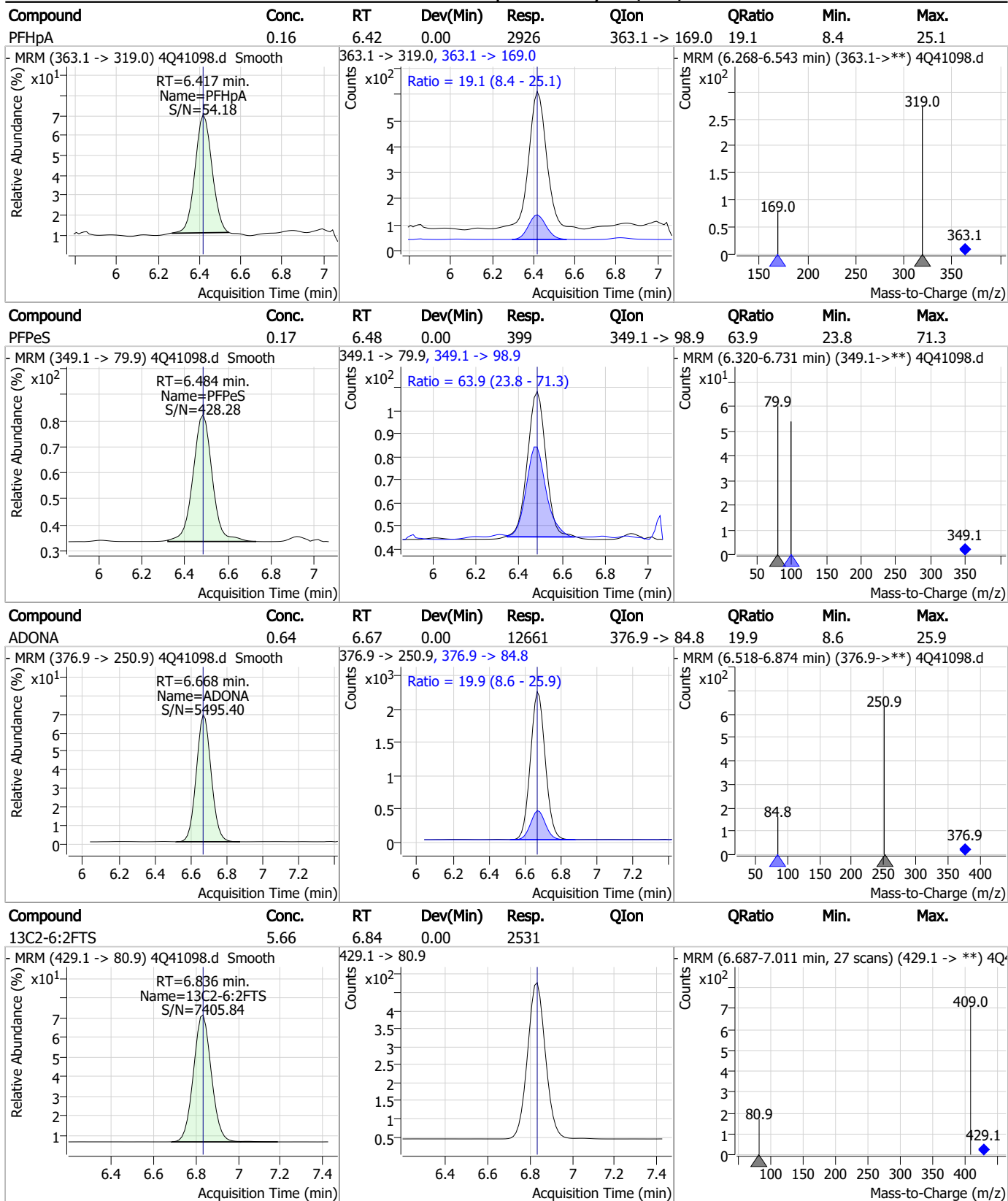
Perfluorinated Compounds by LC/MS/MS



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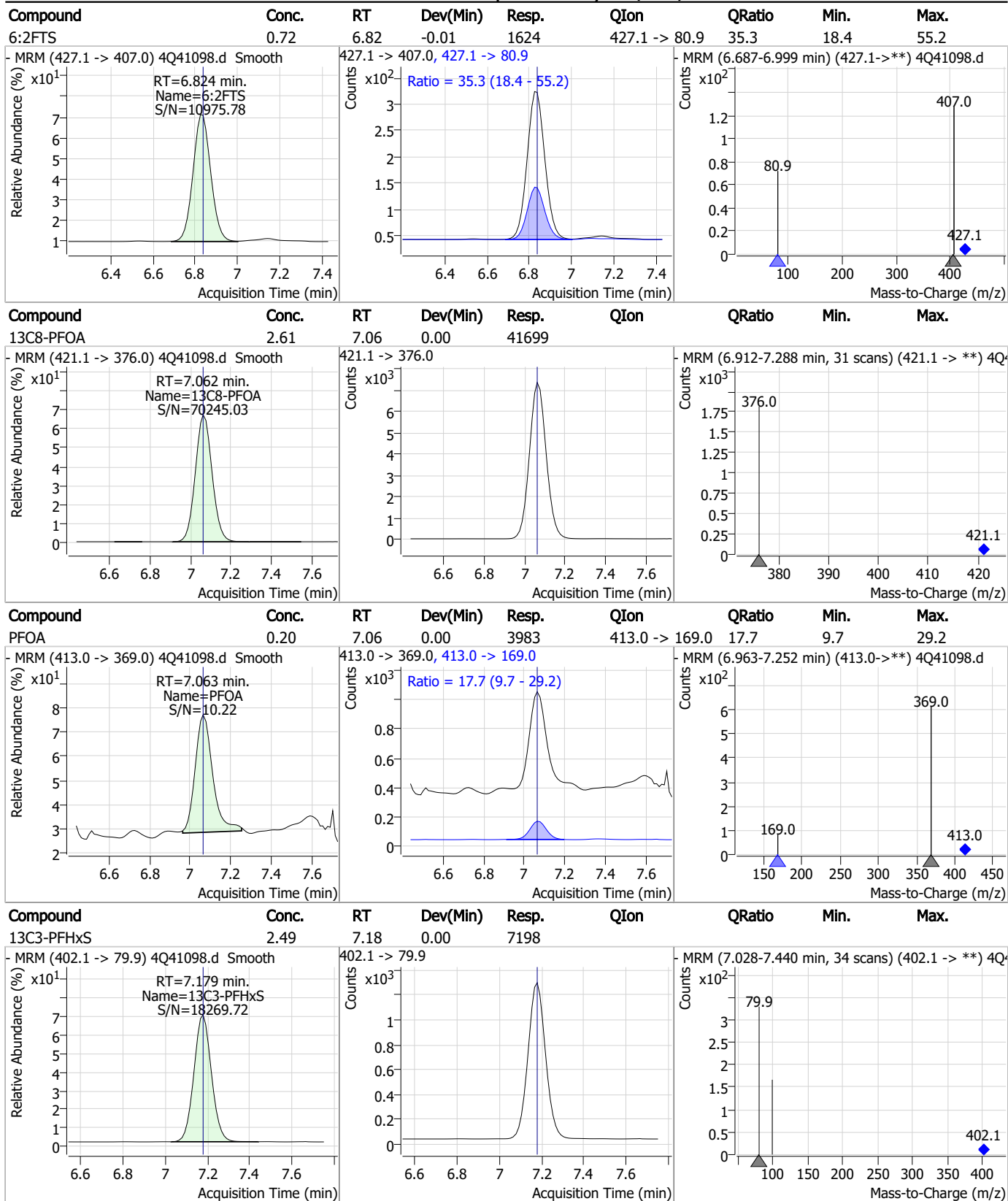
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Perfluorinated Compounds by LC/MS/MS



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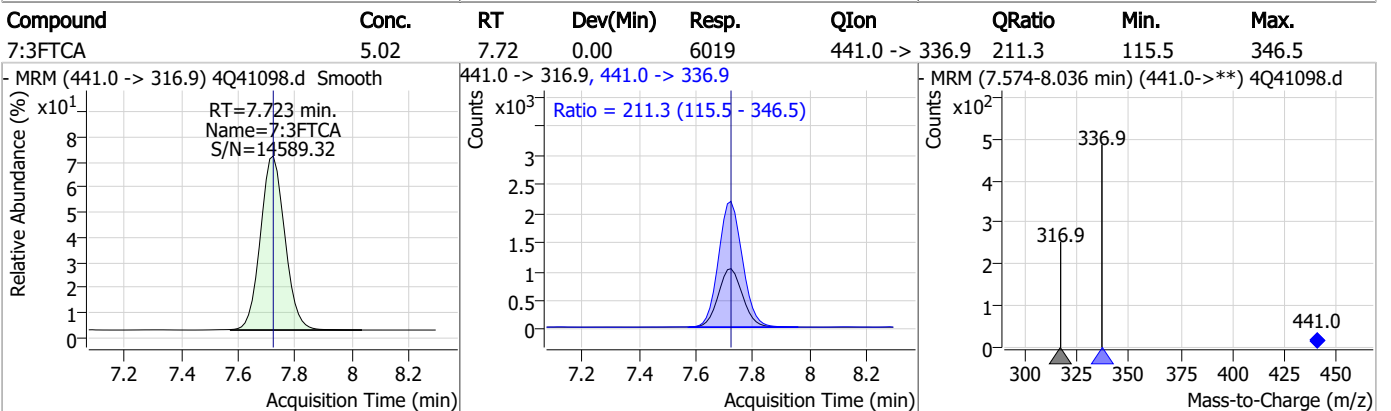
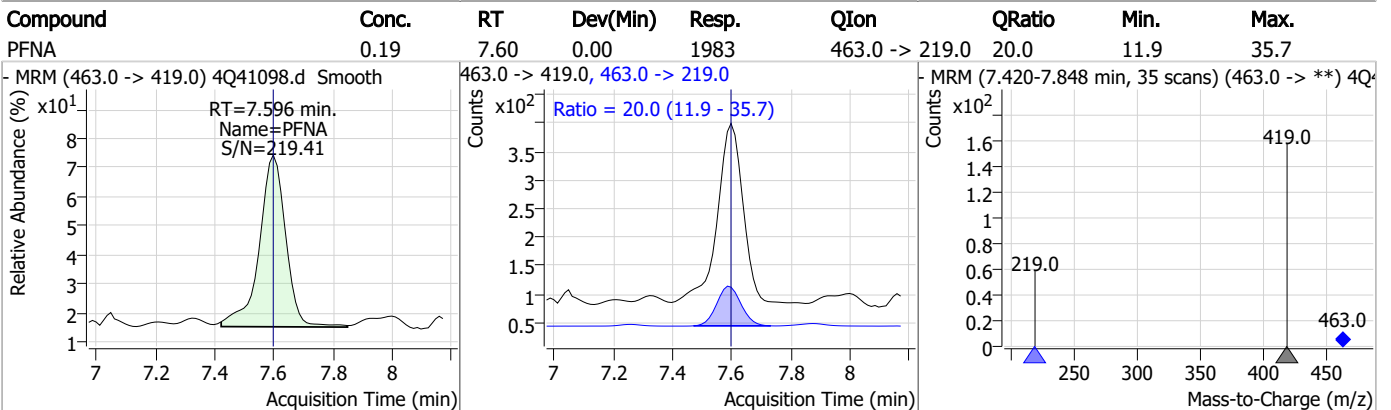
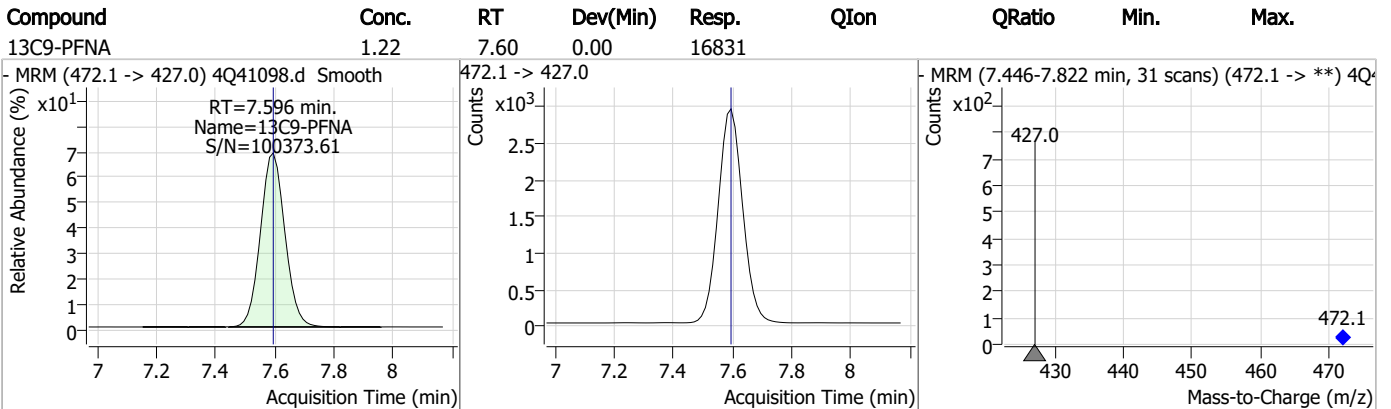
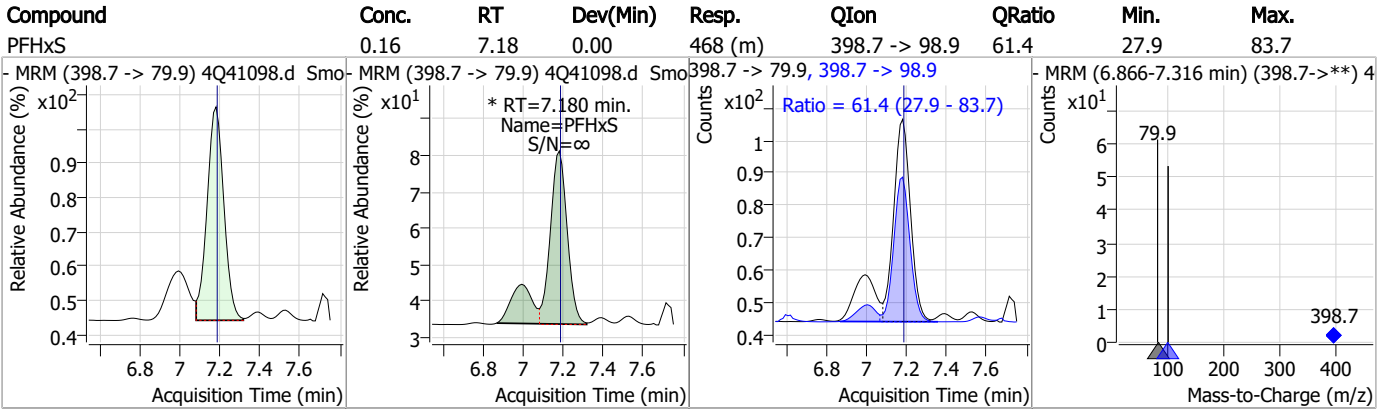
Perfluorinated Compounds by LC/MS/MS



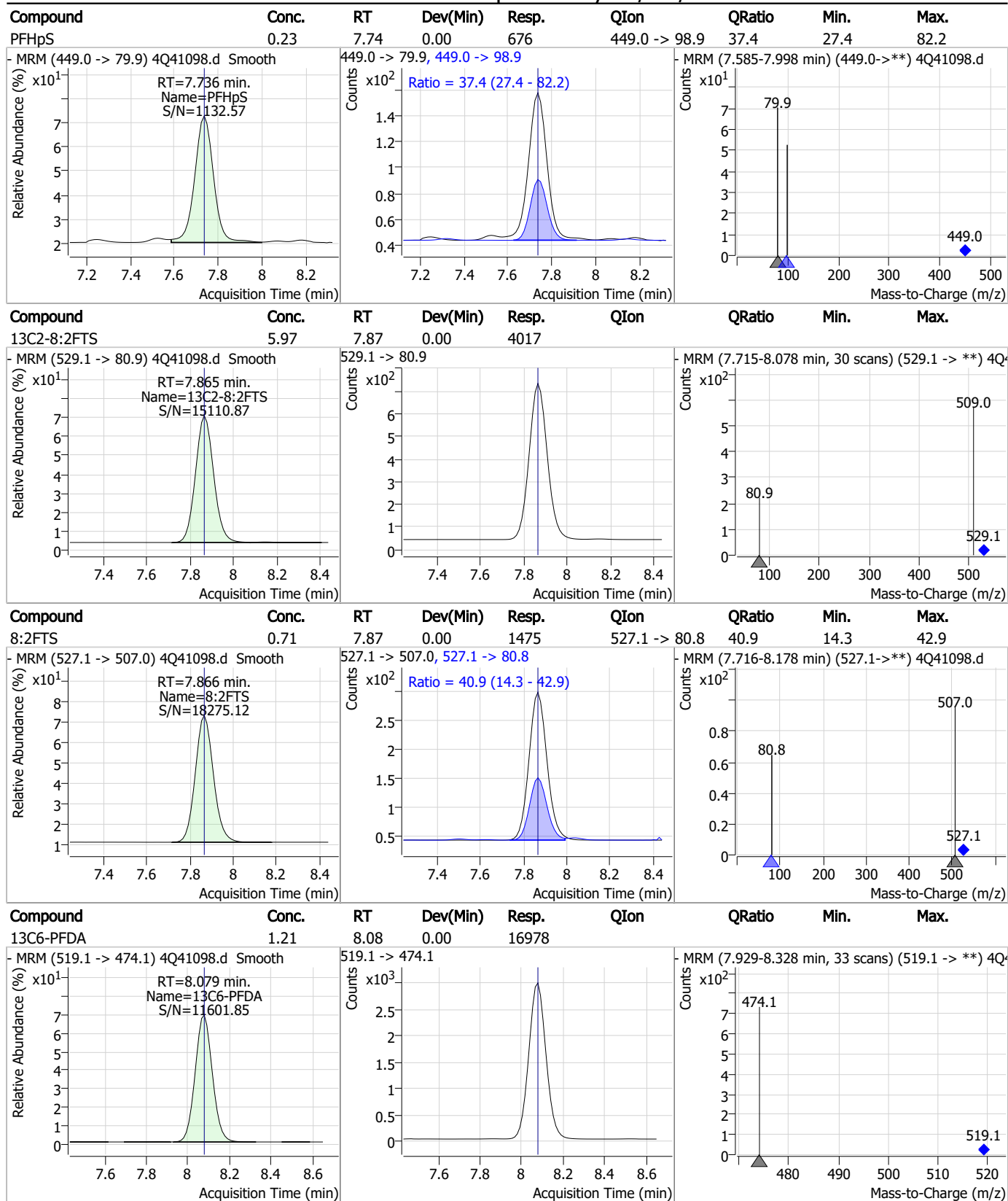
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

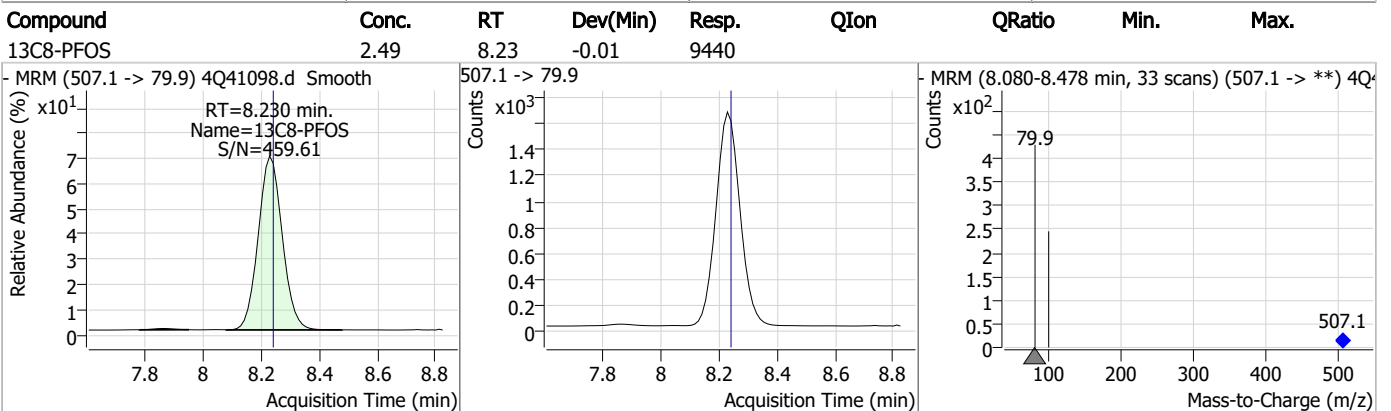
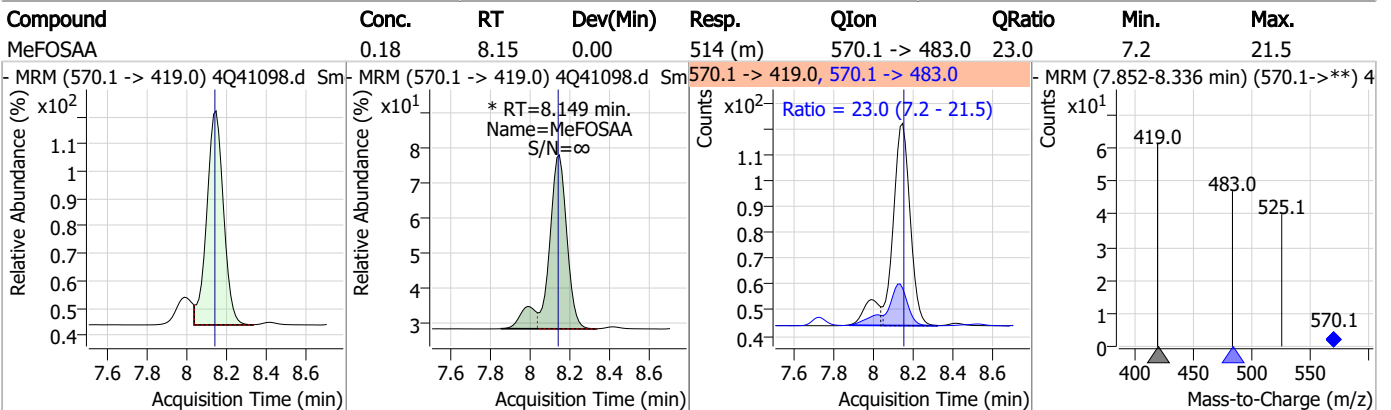
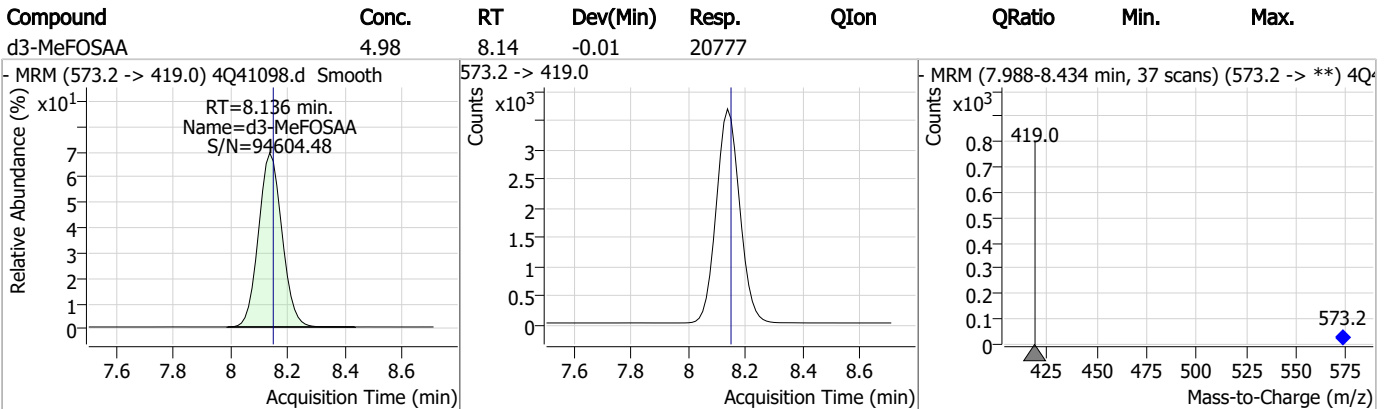
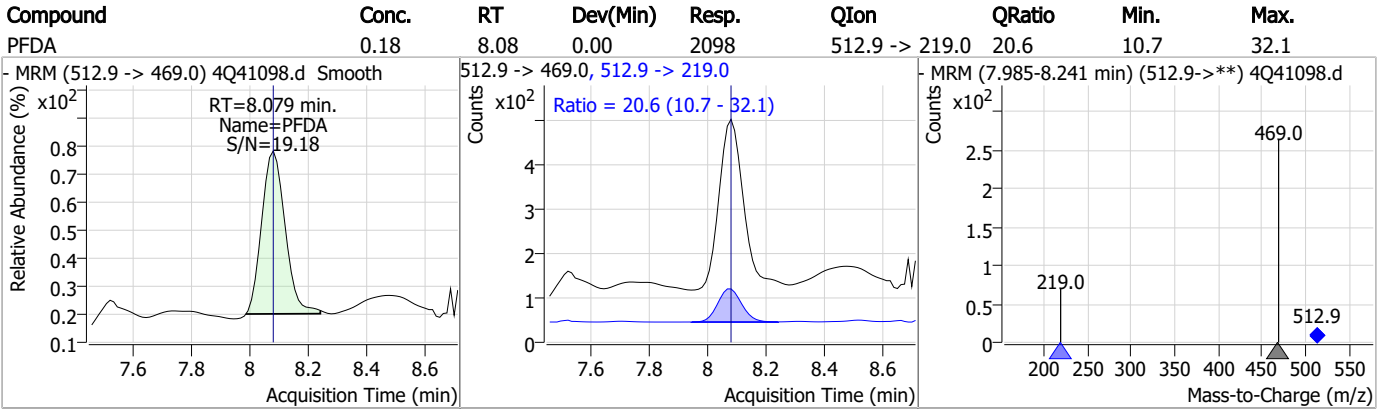


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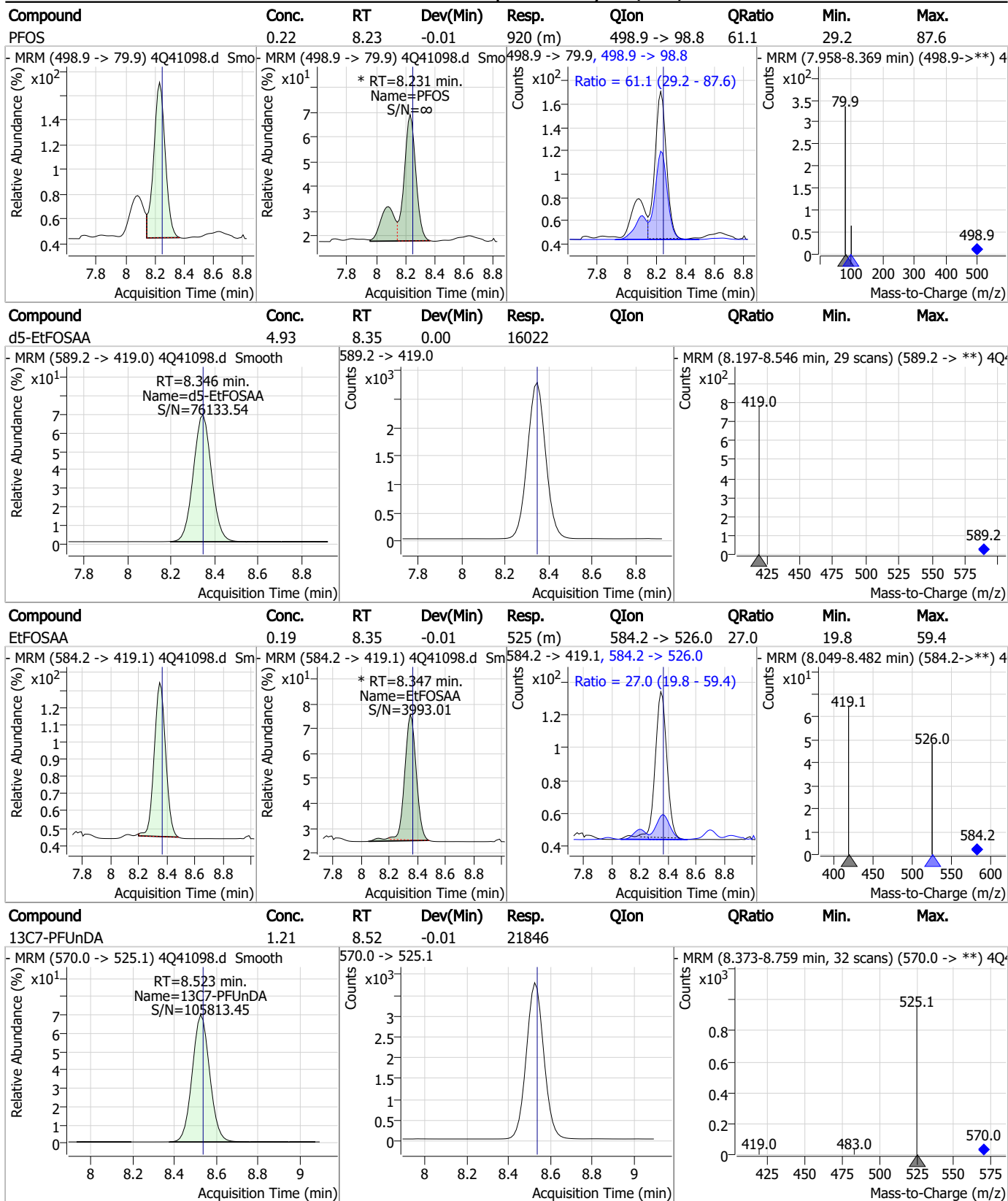
Perfluorinated Compounds by LC/MS/MS



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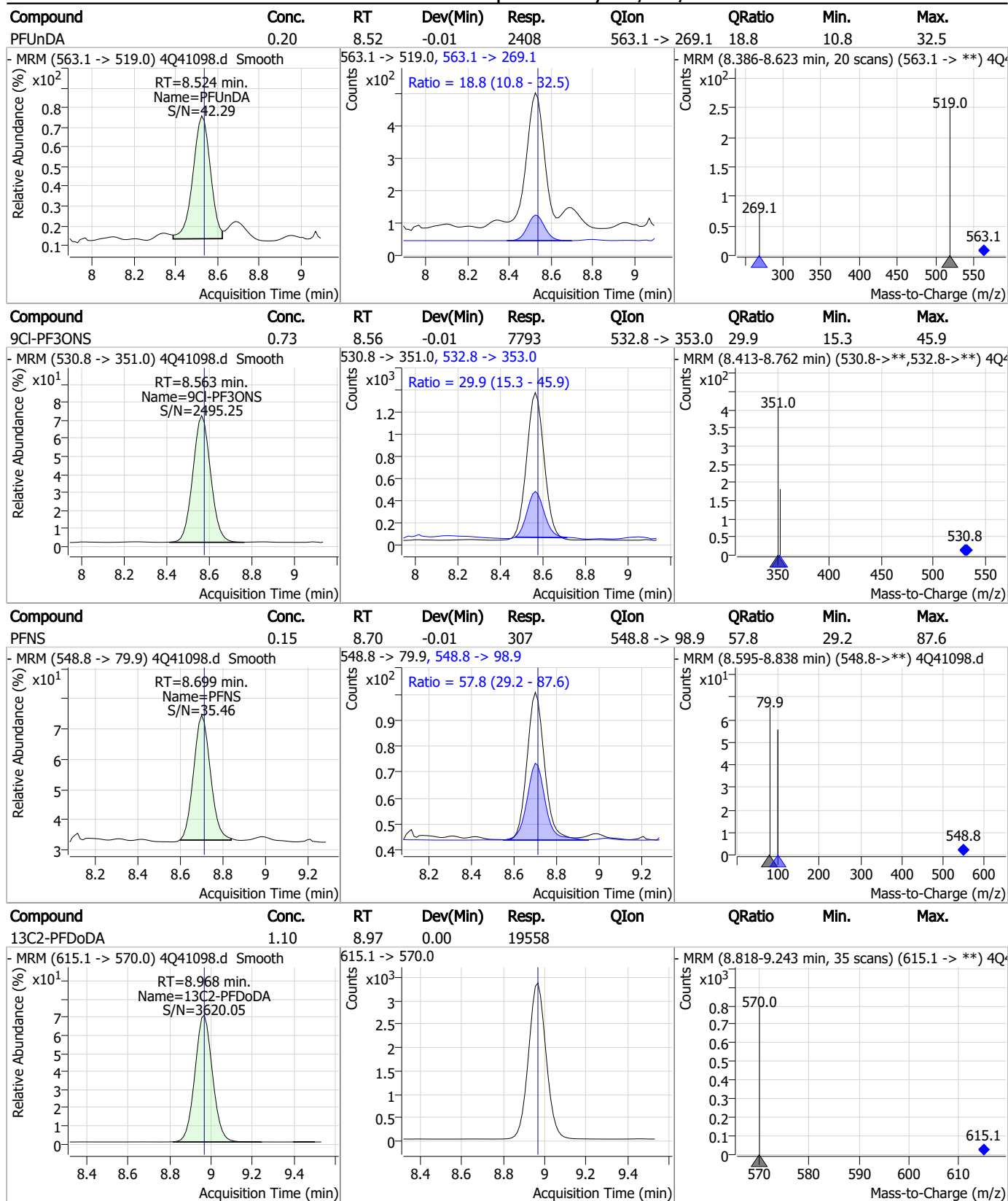
Perfluorinated Compounds by LC/MS/MS



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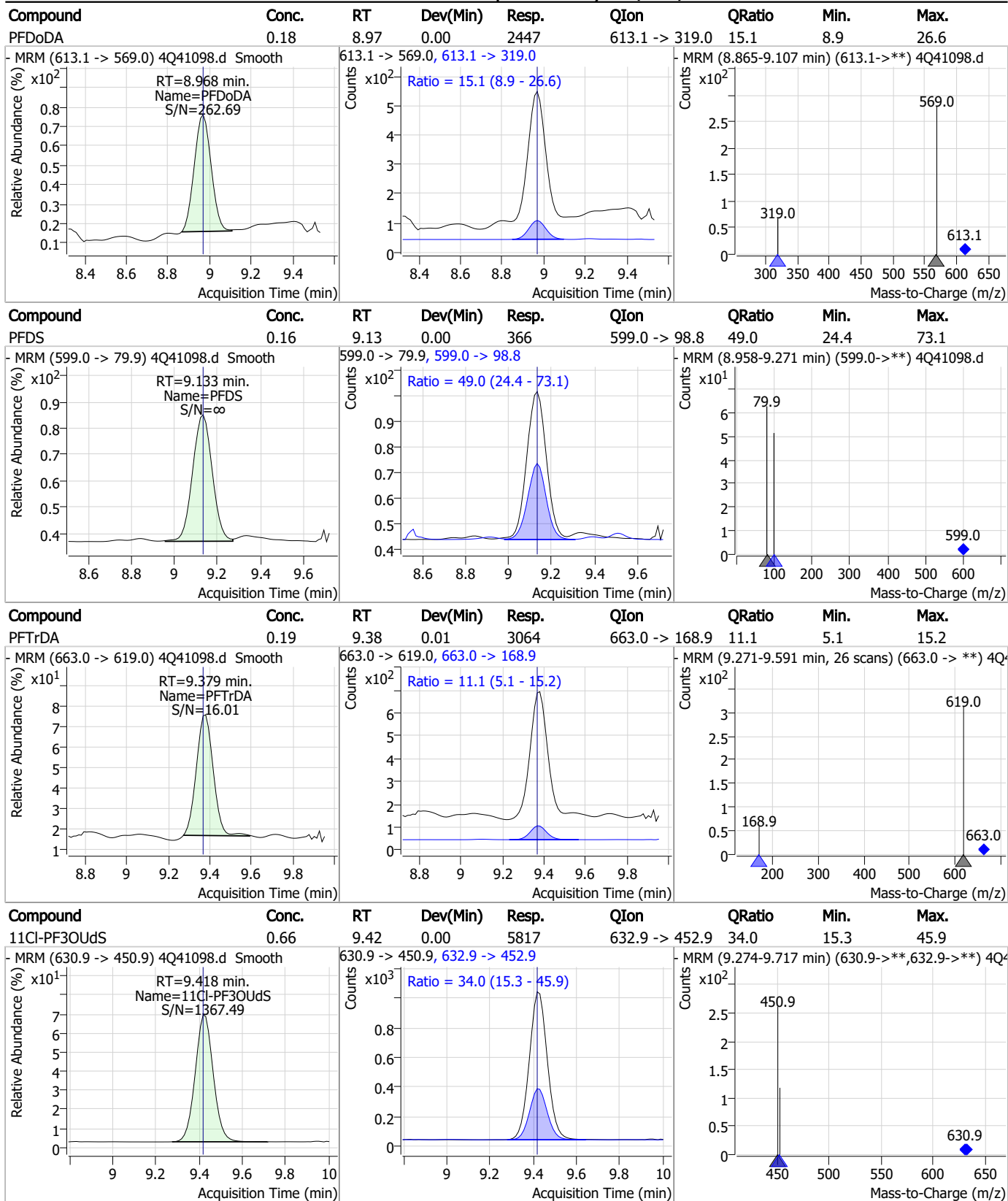
Perfluorinated Compounds by LC/MS/MS



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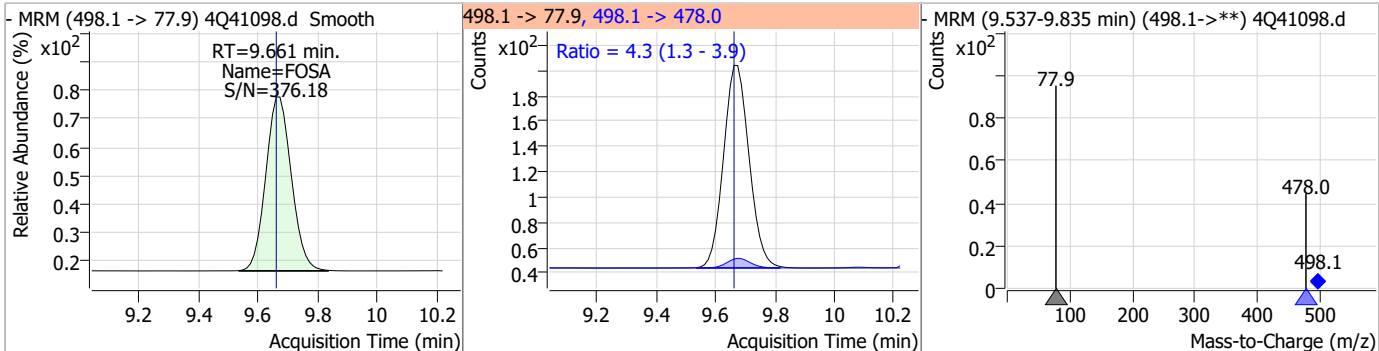
Perfluorinated Compounds by LC/MS/MS



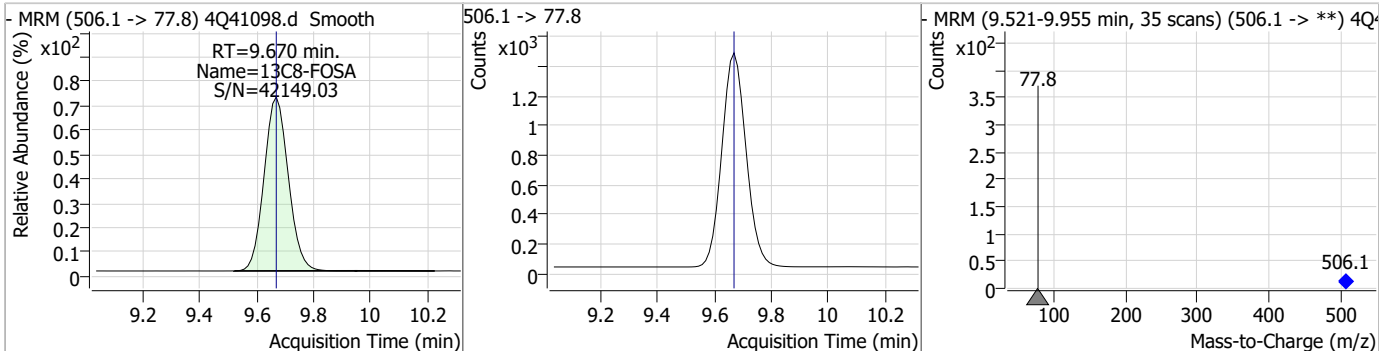
7.6.18 7

Perfluorinated Compounds by LC/MS/MS

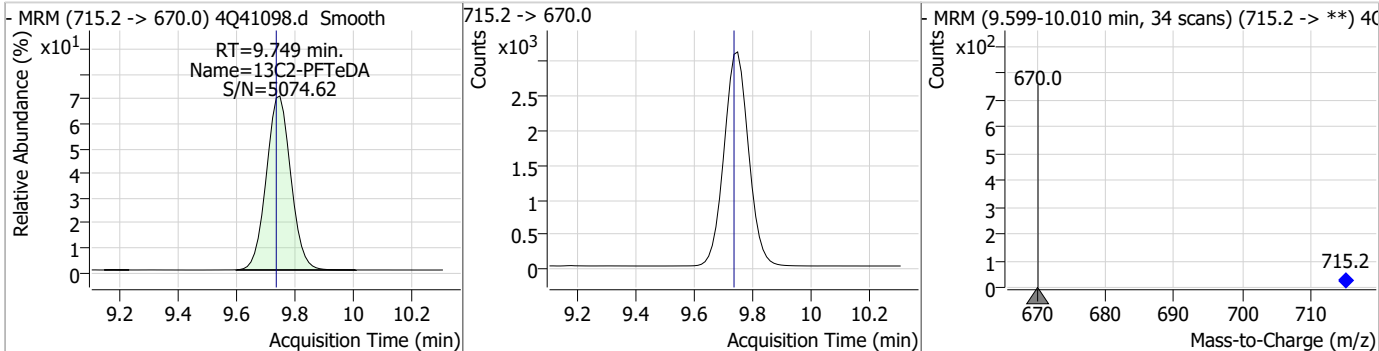
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.21	9.66	0.00	960	498.1 -> 478.0	4.3	1.3	3.9



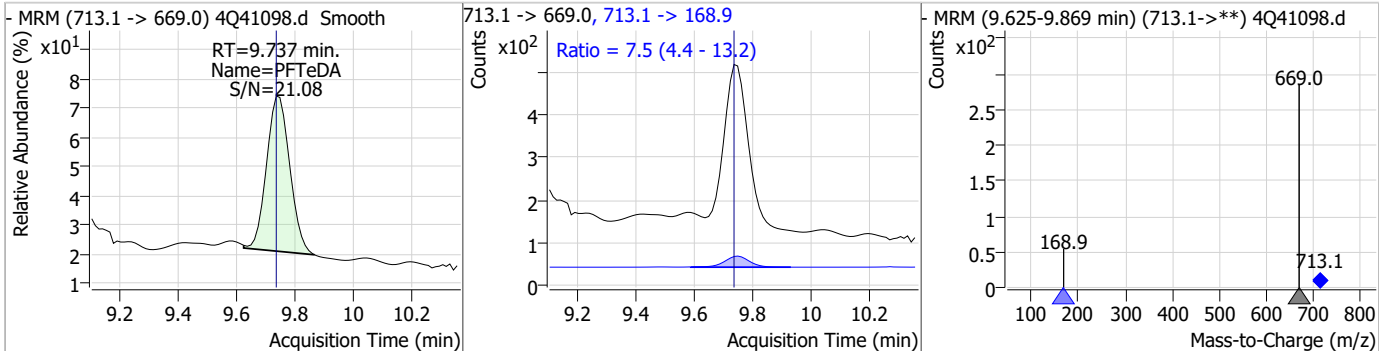
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.44	9.67	0.00	8550				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.17	9.75	0.01	18087				



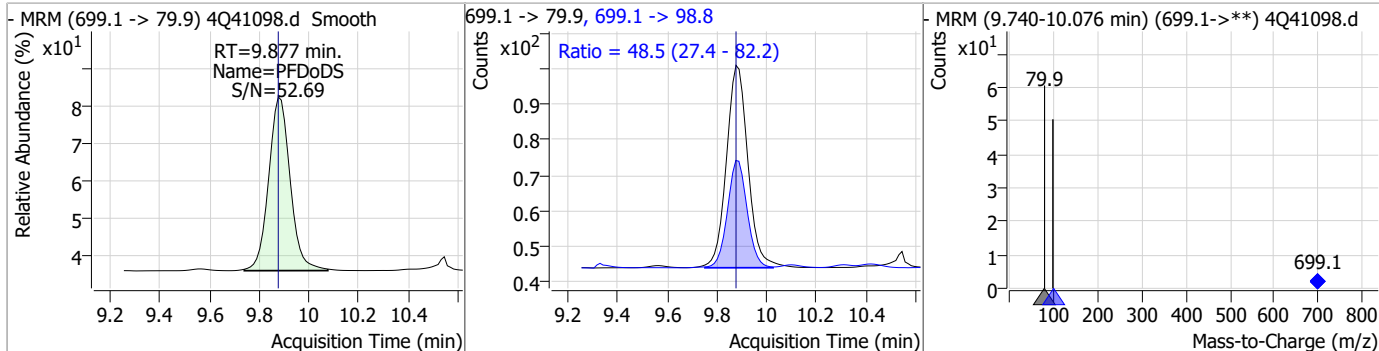
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.16	9.74	0.00	2056	713.1 -> 168.9	7.5	4.4	13.2



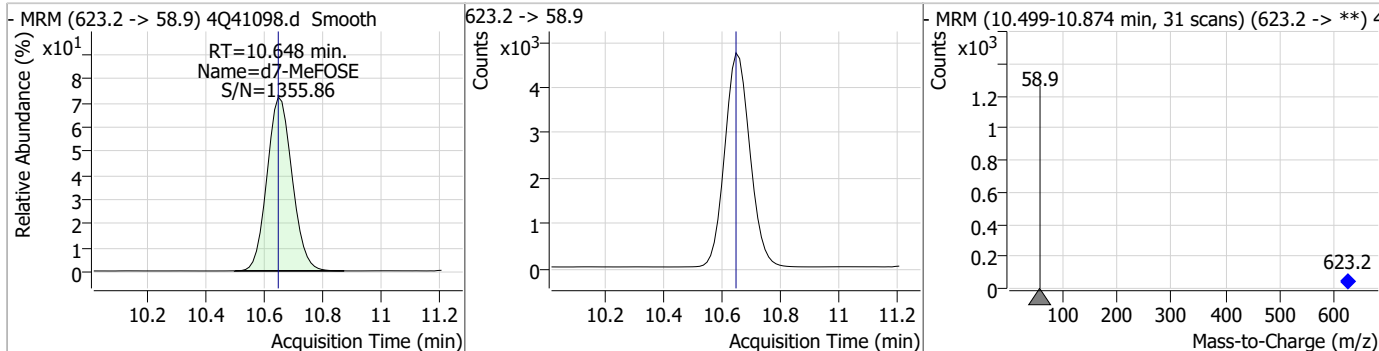
7.6.18
7

Perfluorinated Compounds by LC/MS/MS

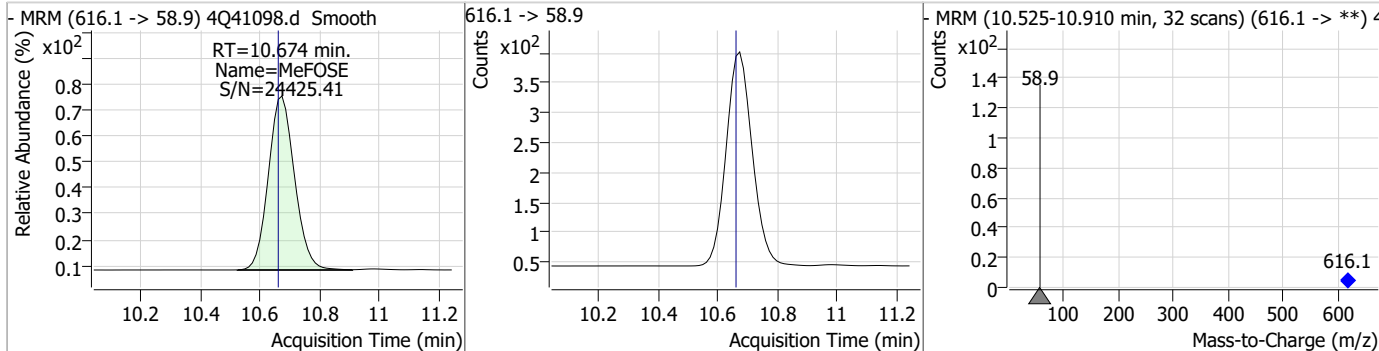
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.18	9.88	0.00	343	699.1 -> 98.8	48.5	27.4	82.2



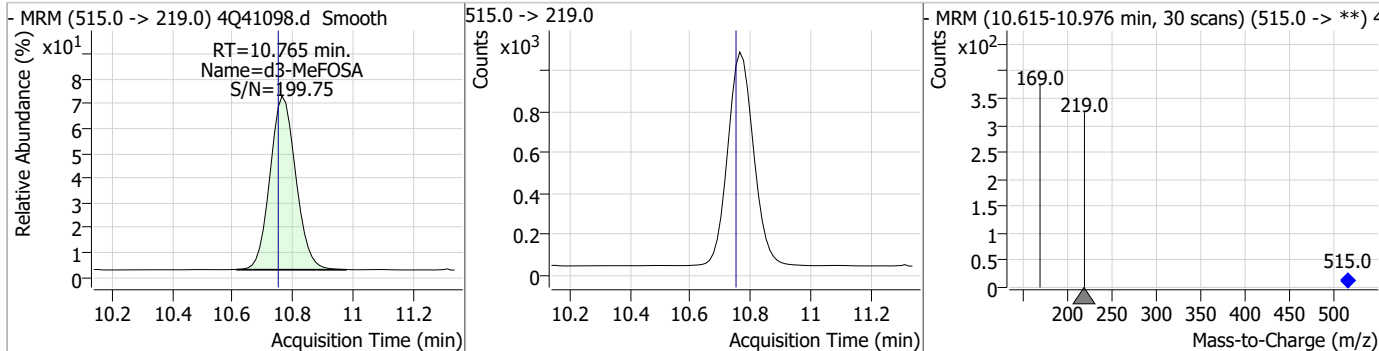
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.41	10.65	0.00	28200				



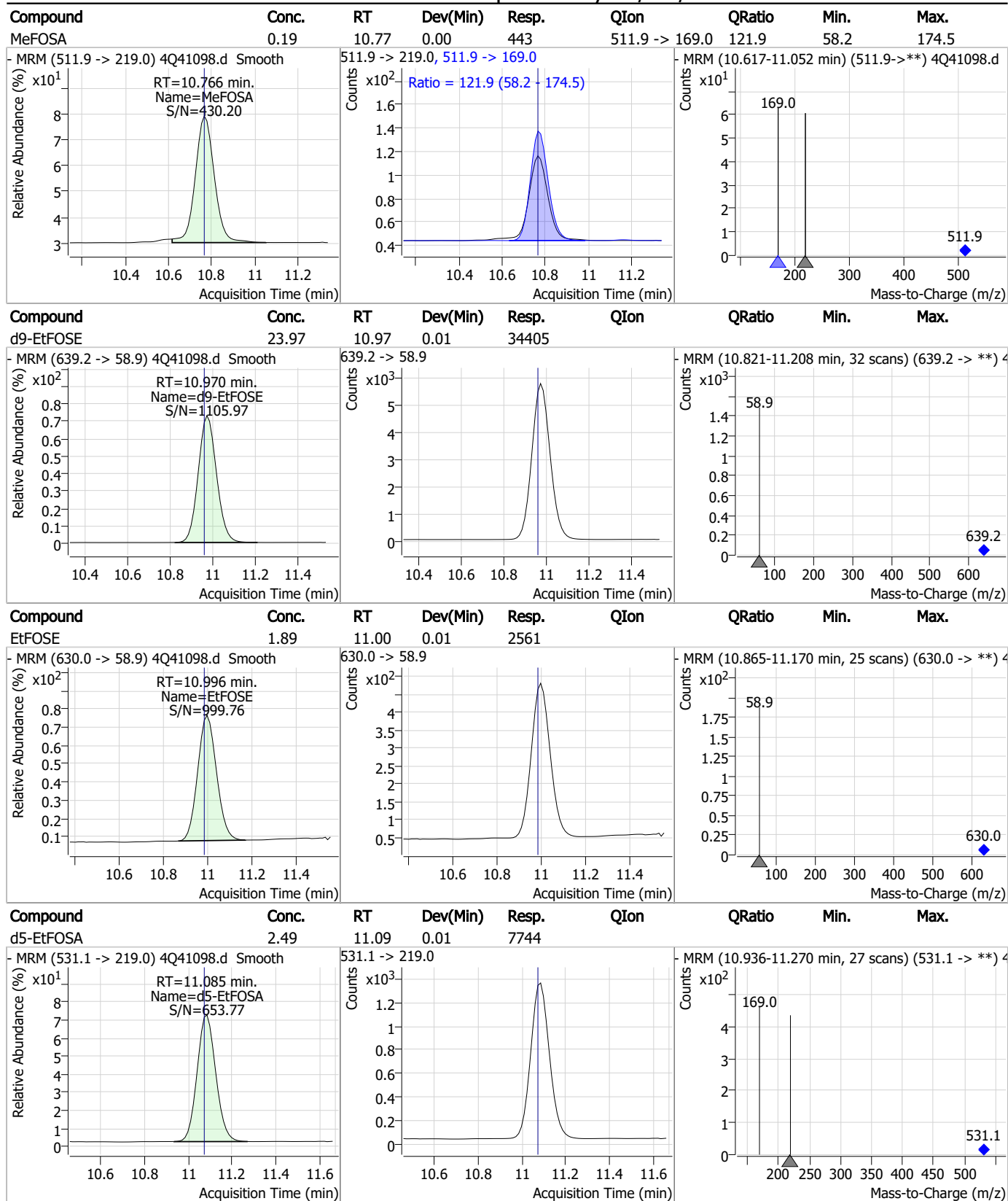
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.85	10.67	0.01	2187				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.29	10.76	0.01	6215				



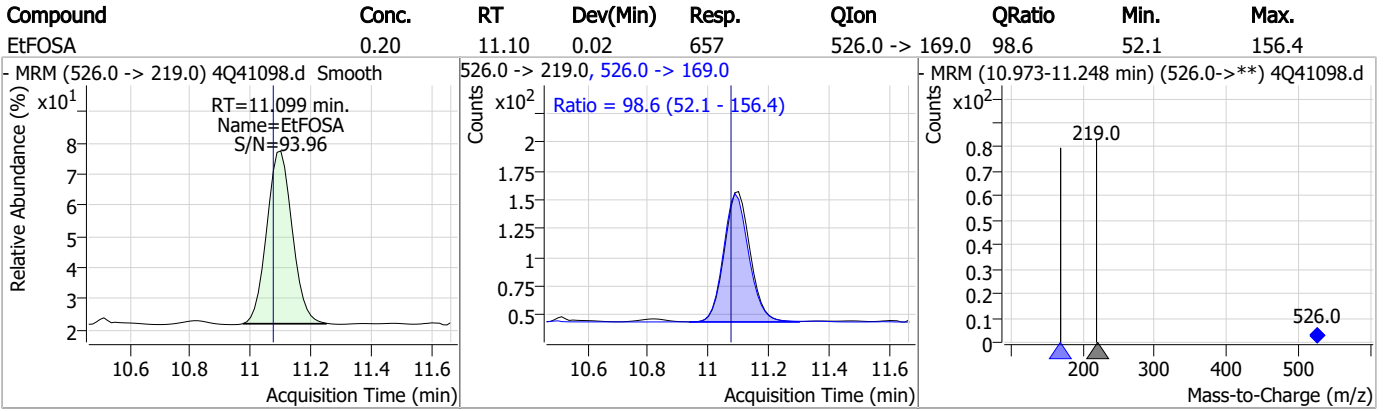
Perfluorinated Compounds by LC/MS/MS



7.6.18

7

Perfluorinated Compounds by LC/MS/MS



7.6.18

7

Manual Integration Approval Summary

Sample Number: S4Q587-CC587 Method: EPA DRAFT 1633
Lab FileID: 4Q41098.D Analyst approved: 02/23/23 14:24 Anna Ludwig
Injection Time: 02/23/23 01:59 Supervisor approved: 02/24/23 11:00 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.18	Split peak
MeFOSAA	2355-31-9		8.15	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.23	Split peak
EtFOSAA	2991-50-6		8.35	Split peak

7.6.18.1
7

SGS ORLANDO

DATE:	02/22/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	ID_022223_S4Q587
CAL DATE:	02/22/23
ANALYST:	AL
RUN BATCH:	S4Q587

ELUENT A LOT #:	224863 W5%ACN 214785 2mmMAMAC.11387
ELUENT B LOT #:	ACN 214785
IC/CC STD LOT #:	LCMS 2055
ICV STD LOT #:	LCMS 2055/2026
ISTD/ID STD LOT #:	11384/11383

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q41053.d	P1-A1	ccb	1633fult2.m	Sample		op95462,S4Q587,500,,5.0.1,water	nd
2	4Q41054.d	P1-B3	RT tdca	1633fult2.m	Sample		op95462,S4Q587,500,,5.0.1,water	pass
3	4Q41055.d	P1-B4	RT br. In	1633fult2.m	Sample		op95462,S4Q587,500,,5.0.1,water	pass
4	4Q41056.d	P1-A1	ic587-0	1633fult2.m	Sample		op95462,S4Q587,500,,5.0.1,water	check tune file
5	4Q41057.d	P1-A2	ic587-1	1633fult2.m	Calibration	1.6/500	op95462,S4Q587,500,,5.0.1,water	pass
6	4Q41058.d	P1-A3	ic587-2	1633fult2.m	Calibration	4/500	op95462,S4Q587,500,,5.0.1,water	pass
7	4Q41059.d	P1-A4	ic587-3	1633fult2.m	Calibration	10/500	op95462,S4Q587,500,,5.0.1,water	pass
8	4Q41060.d	P1-A5	icc587-4	1633fult2.m	Calibration	20/500	op95462,S4Q587,500,,5.0.1,water	pass
9	4Q41061.d	P1-A6	ic587-5	1633fult2.m	Calibration	40/500	op95462,S4Q587,500,,5.0.1,water	pass
10	4Q41062.d	P1-A7	ic587-6	1633fult2.m	Calibration	100/500	op95462,S4Q587,500,,5.0.1,water	pass
11	4Q41063.d	P1-A8	ic587-7	1633fult2.m	Calibration	200/500	op95462,S4Q587,500,,5.0.1,water	pass
12	4Q41064.d	P1-A9	ic587-8	1633fult2.m	Calibration	1x	op95462,S4Q587,500,,5.0.1,water	pass
13	4Q41065.d	P1-A1	iblk	1633fult2.m	Sample		op95462,S4Q587,500,,5.0.1,water	nd
14	4Q41066.d	P1-B1	icv587-20	1633fult2.m	QC	20/500	op95462,S4Q587,500,,5.0.1,water	prepped by NG-pass
15	4Q41067.d	P1-B2	icv587-20	1633fult2.m	QC	100/500	op95462,S4Q587,500,,5.0.1,water	pass
16	4Q41068.d	P1-A5	cc587-4	1633fult2.m	QC	20/500	op95462,S4Q587,500,,5.0.1,water	pass
17	4Q41069.d	P1-A2	cc587-1,0LL	1633fult2.m	QC	1.6/500	op95462,S4Q587,500,,5.0.1,water	pass
18	4Q41070.d	P4-B8	fc2143-7	1633fult2.m	Sample	100/500	op95295,S4Q587,570,,5.0.5,water	✓
19	4Q41071.d	P4-B9	fc2143-7	1633fult2.m	Sample	50/500	op95295,S4Q587,570,,5.0.10,water	✓
20	4Q41072.d	P1-A5	cc587-4	1633fult2.m	QC	20/500	op95462,S4Q587,500,,5.0.1,water	pass
21	4Q41073.d	P1-A1	iccb	1633fult2.m	Sample		op95462,S4Q587,500,,5.0.1,water	nd
22	4Q41074.d	P4-C1	op95527-bs	1633fult2.m	Sample		op95527,S4Q587,500,,5.0.1,water	✓
23	4Q41075.d	P4-C2	op95527-llbs:3	1633fult2.m	Sample		op95527,S4Q587,500,,5.0.1,water	✓
24	4Q41076.d	P4-C3	op95527-mb	1633fult2.m	Sample		op95527,S4Q587,500,,5.0.1,water	✓
25	4Q41077.d	P4-C4	fc2520-1	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
26	4Q41078.d	P4-C5	fc2520-2	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
27	4Q41079.d	P4-C6	fc2520-3	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
28	4Q41080.d	P4-C7	fc2520-4	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
29	4Q41081.d	P4-C8	fc2520-5	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
30	4Q41082.d	P1-A5	cc587-4	1633fult2.m	QC	20/500	op95462,S4Q587,500,,5.0.1,water	pass
31	4Q41083.d	P1-A1	iccb	1633fult2.m	Sample		op95462,S4Q587,500,,5.0.1,water	nd
32	4Q41084.d	P4-C9	fc2520-6	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
33	4Q41085.d	P4-D1	op95527-ms	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
34	4Q41086.d	P4-D2	op95527-msd	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓
35	4Q41087.d	P4-D3	fc2520-7	1633fult2.m	Sample		op95527,S4Q587,570,,5.0.1,water	✓

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LCMS4-4Q ANALYSIS LOG

SGS ORLANDO

36	4Q41088.d	P4-D4	fc2520-8	1633ful21.m	Sample	op95527,S4Q587,570,,5.0.1,water	rr 2x e flag
37	4Q41089.d	P4-D5	fc2520-9	1633ful21.m	Sample	op95527,S4Q587,570,,5.0.1,water	✓
38	4Q41090.d	P4-D6	fc2520-10	1633ful21.m	Sample	op95527,S4Q587,570,,5.0.1,water	✓
39	4Q41091.d	P1-A5	cc587-4	1633ful21.m	QC	20/500	pass
40	4Q41092.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q587,500,,5.0.1,water	nd
41	4Q41093.d	P4-D7	fc2520-11	1633ful21.m	Sample	op95527,S4Q587,570,,5.0.1,water	✓
42	4Q41094.d	P4-D8	fc2520-12	1633ful21.m	Sample	op95527,S4Q587,570,,5.0.1,water	✓
43	4Q41095.d	P4-D9	fc2520-13	1633ful21.m	Sample	op95527,S4Q587,570,,5.0.1,water	✓
44	4Q41096.d	P4-E1	fc2741-1	1633ful21.m	Sample	op95527,S4Q587,540,,5.0.1,water	✓
45	4Q41097.d	P1-A5	cc587-4	1633ful21.m	QC	20/500	pass
46	4Q41098.d	P1-A2	cc587-1,0LL	1633ful21.m	QC	1.6/500	pass
47	4Q41099.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q587,500,,5.0.1,water	nd
48	4Q41100.d	P4-E2	op95538-bs	1633ful21.m	Sample	op95538,S4Q587,500,,5.0.1,water	✓
49	4Q41101.d	P4-E3	op95538-llbs	1633ful21.m	Sample	op95538,S4Q587,500,,5.0.1,water	✓
50	4Q41102.d	P4-E4	op95538-mb	1633ful21.m	Sample	op95538,S4Q587,500,,5.0.1,water	✓
51	4Q41103.d	P4-E5	fc2076-15	1633ful21.m	Sample	op95538,S4Q587,535,,5.0.1,water	CF
52	4Q41104.d	P4-E6	fc2074-10	1633ful21.m	Sample	op95538,S4Q587,565,,5.0.1,water	CF
53	4Q41105.d	P4-E7	fc2264-10	1633ful21.m	Sample	op95538,S4Q587,565,,5.0.1,water	CF
54	4Q41106.d	P4-E8	fc2155-14	1633ful21.m	Sample	op95538,S4Q587,565,,5.0.1,water	CF
55	4Q41107.d	P4-E9	fc2155-15	1633ful21.m	Sample	op95538,S4Q587,565,,5.0.1,water	CF
56	4Q41108.d	P1-A5	RT CHECK	1633ful21.m	Sample	op95462,S4Q587,500,,5.0.1,water	CF
57	4Q41109.d	P1-A5	cc587-4	1633ful21.m	QC	20/500	pass
58	4Q41110.d	P1-A2	cc587-1,0LL	1633ful21.m	QC	1.6/500	pass
59	4Q41111.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q587,500,,5.0.1,water	nd
60	4Q41112.d	P5-A2	op95477-bs	1633ful21.m	Sample	op95477,S4Q587,500,,5.0.1,water	✓
61	4Q41113.d	P5-A3	op95477-llbs:3	1633ful21.m	Sample	op95477,S4Q587,500,,5.0.1,water	✓
62	4Q41114.d	P5-A4	op95477-mb	1633ful21.m	Sample	op95477,S4Q587,500,,5.0.1,water	✓
63	4Q41115.d	P5-A5	fc2453-1	1633ful21.m	Sample	op95477,S4Q587,560,,5.0.1,water	✓
64	4Q41116.d	P5-A6	fc2453-2	1633ful21.m	Sample	op95477,S4Q587,570,,5.0.1,water	✓
65	4Q41117.d	P5-A7	fc2453-3	1633ful21.m	Sample	op95477,S4Q587,570,,5.0.1,water	✓
66	4Q41118.d	P5-A8	fc2453-4	1633ful21.m	Sample	op95477,S4Q587,530,,5.0.1,water	✓
67	4Q41119.d	P5-A9	fc2453-5	1633ful21.m	Sample	op95477,S4Q587,570,,5.0.1,water	✓
68	4Q41120.d	P5-B1	op95477-ms	1633ful21.m	Sample	op95477,S4Q587,500,,5.0.1,water	✓
69	4Q41121.d	P1-A5	cc587-4	1633ful21.m	QC	20/500	pass
70	4Q41122.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q587,500,,5.0.1,water	nd
71	4Q41123.d	P5-B2	fc2453-6	1633ful21.m	Sample	op95477,S4Q587,570,,5.0.1,water	✓
72	4Q41124.d	P5-B3	op95477-dup	1633ful21.m	Sample	op95477,S4Q587,560,,5.0.1,water	✓
73	4Q41125.d	P5-B4	fc2453-7	1633ful21.m	Sample	op95477,S4Q587,550,,5.0.1,water	rr 10x 8:2 sur hi
74	4Q41126.d	P5-B5	fc2453-8	1633ful21.m	Sample	op95477,S4Q587,570,,5.0.1,water	✓
75	4Q41127.d	P5-B6	fc2453-9	1633ful21.m	Sample	op95477,S4Q587,560,,5.0.1,water	✓
76	4Q41128.d	P5-B7	fc2453-10	1633ful21.m	Sample	op95477,S4Q587,570,,5.0.1,water	✓
77	4Q41129.d	P5-C1	fc2216-14	1633ful21.m	Sample	op95374,S4Q587,565,,5.0.1,water	✓
78	4Q41130.d	P5-C7	fc2386-1	1633ful21.m	Sample	op95331,S4Q587,465,,5.0.10,water	✓

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SGS ORLANDO LCMS4-4Q ANALYSIS LOG

79	4Q41131.d	P5-C8	op95331.ms	1633fuj21.m	Sample	50/500	op95331,S4Q587,465,,5.0,10,water	✓
80	4Q41132.d	P1-A5	ecc587-4	1633fuj21.m	QC	20/500	op95462,S4Q587,500,,5.0,1,water	pass
81	4Q41133.d	P1-A1	iccb	1633fuj21.m	Sample		op95462,S4Q587,500,,5.0,1,water	nd

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%	92mL	100mL	92%	N/A	1/9/23	2/9/23	NV
		Lot: 219481	NH4OH		—	9/19/23	100%	3.3mL		1%				
		Lot: 224863	H2O		—	1/17/24	100%	1.7mL		4%				
		Lot: 224297	Acetic Acid		—	6/24	99.7%	0.625mL		0.625%				
LCMS 2053	(spike) Full 1st std	11568	POA Dop 28	SGS Standards	11/9/27	1/10/24	1.0ppm	400uL	4.0mL	100ppb	95% MeOH 5% H2O	12/23	3/21/23	NV
		LCMS 1987	40 1st Addon #1		—	3/21/23	1.0ppm	400uL						
		LCMS 1986	40 1st Addon #2		—	4/8/23	1.0ppm	400uL						
		LCMS 2054	FOSC Std.		—	7/27/23	5.0ppm	400uL		500ppb				
LCMS 2054	FOSC std.	11336	N-Et-FOSE	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% MeOH 5% H2O	12/23	7/24/23	NV
		11338	N-Me FOSE		5/13/27	9/19/23	50ppm	200uL						
LCMS 2055	1633 Cal std.	10855	PEAC-MxH	Wellington	9/14/26	1/17/24	1-4 ppm	250uL	4mL	62.5 125 250ppb	1633 Nix	1/24/23	7/24/23	NV
		108531	PEAC-		9/14/26	1/11/24	1-10 ppm	250uL		62.5 125 250ppb				
		108535	PEAC-		9/14/26	1/24/24	ppm	250uL		62.5 125 250ppb				
		115798	PEAC-MxH		1/11/25	1/11/24	2ppm	500uL		250ppb				
		116094	PEAC-MxH		3/4/25	1/24/24	2ppm	250uL		125ppb				
		108541	PEAC-MxG		9/14/26	1/11/24	4-20 ppm	312uL		312/100 ppb				
		11492	PEAC-MxJ		9/14/26	1/24/24	ppm							

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



Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2025	List 40 (GUR) ADD-ON ISOTOPIC MILK	11333	d7-N- MeFosc	Wellington Labs	01/27/27	10/12/23	50ppm	200uL	2.0 mL	1/5 ppm	95% MeOH 5% H2O	12/17/22	6/7/23	MJ
		11460	D9-N- EtFosc		01/27/27	12/07/23		200uL						
		11339	EtFosc		01/27/27	10/12/23		200uL						
		11115	M2- PEHXDA		11/23/28	08/23/23		40uL						
		10836	D-N- EtFosc		12/30/25	08/23/23		40uL						
LCMS 2026	(Spike) Full list std.	11447	PROA- meolax	Absolute	08/16/27	11/29/23	100ppm	400uL	4.0 mL	100ppb	95% MeOH 5% H2O	12/08/22	12/13/22	NS
		1987	40List Addon #1			02/21/23	100ppm	400uL		100ppb				NS
		1986	40List Addon #2			04/18/23	100ppm	400uL		100ppb				NS
		LCMS 2012	FOSC Std.			05/11/23	500ppm	400uL		500ppb				NS
LCMS 2021	(Spike) CAL Std.	10855F	PFAC- MxH	Wellington Labs	09/14/26	11/04/23	1-4 ppm	250uL	4 mL	625/1050 ppb	16033 MxH	12/12/22	05/01/23	NS
		10853F	PFAC- MxT		09/14/26	11/22/23	1-10 ppm	250uL		625/1050 ppb				NS
		11403A	PFAC- MxT		05/01/23	11/29/23	2 ppm	500uL		250ppb				NS
		10854F	PFAC- MxG		03/04/25	11/22/23	2 ppm	250uL		125ppb				NS
		10857E	PFAC- MxS		10/10/23	11/22/23	4-20 ppm	32uL		312/1160 ppb				NS
LCMS 2028	5371 DU Std.	11447	PROA-DU (Acromax)	Absolute	08/16/27	11/29/23	1.0 ppm	400uL	4 mL	100ppb	95% MeOH 5% H2O	12/15/22	02/14/23	NS
		1950	5371 DU SURT			02/14/23	10120 ppm	400uL		100120 ppb				NS

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

Mx Conc find next page SURT 12/13/22



Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 1987	40 List Std ADD-ON #1	10726A	10:2 PES	Wilmington Labs	03/03/23	03/21/23	50ppm	80uL	4.0mL	1ppm	05/11/23 S/142D	10/18/22	03/21/23	NS
		10810	PFDOS		07/01/26	10/18/23								
		10829	N-1189SA		06/23/26	08/23/23								
		10837	N-ETROSA		08/23/26	08/23/23								
		10842	PFHADA	NS PFDOS	03/09/26	10/18/23								
		10841	PEOSA		05/01/26	10/18/23								
		10814	3:3-FTCA PFPRPA		11/18/25	03/21/23								
		10685A	5:3-FTCA PFPRPA		11/18/25	08/23/23								
		10683A	7:3-FTCA FHPFA		11/18/25	03/21/23								
		11117	PFECHS		10/14/26	06/23/23								
		10702B	PFEESA		05/12/25	10/18/23								
		10703B	PNBA PFSCADA		03/21/25	10/18/23								
		10704A	PFMRA PFUCOPEA		03/21/25	03/21/23								
		10705B	PFHDA 3:6-OPFA		03/21/25	10/18/23								

10/18/22

* based on date opened as specified in each SGS - Orlando SOP.
ORLD-QAC-0017-6-03-FORM-icms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS A 2009 &	PFC SPIKE	11483	PROA-DOD (Spike)	Wellington Labs	08/05/27	11/08/23	1.0ppm	2mL	5mL	400ppb	951/1607	11/08/22	05/10/23	NS
		10829	N-ME-ROSA-M		08/23/26	09/12/23	50ppm	40uL						NS
		11024	ROSA-1		11/10/26	06/23/23								NS
		11249	FluXSA-1		12/22/26	11/23/23								NS
		11332	PFCCHS		03/28/27	10/18/23								NS
LCMS A-B 2010	(Spike) 1033 CAL. Std.	10855F	PFAC-NX4	Wellington Labs	09/14/26	11/04/23	1-H ppm	250uL	4mL	42.5/125/250 ppb	1033	11/09/22	05/10/23	NS
		10853E	PFAC-NX1		09/14/26	11/04/23	1-H ppm	250uL		42.5/125 ppb				NS
		10856I	PFAC-NX2		05/12/23	05/10/23	2ppm	500uL		250ppb				NS
		10854E	PFAC-NX3		03/10/23	11/04/23	2ppm	250uL		125ppb				NS
		10857D	PFAC-NX5		10/12/23	11/08/23	4-20 ppm	32uL		21/11/60 ppb				NS
LCMS 2011	(Spike) Full List Std.	11440	PROA-DOD (Spike)		08/05/27	10/12/23	1.0ppm	400uL	4.0mL	100ppb	951/1607	11/12/22	02/12/23	NS
		10851	NO List ADD-01			03/21/23	1.0ppm	400uL		100ppb				NS
		10852	NO List ADD-02			01/18/23	1.0ppm	400uL		100ppb				NS
		10853	NO List ADD-03			05/11/23	50ppm	400uL		500ppb				NS
LCMS 2012	F05E Std.	11336	N-ME-F05E	Wellington Labs	05/13/27	09/19/23	50ppm	200uL	2.0mL	5ppm	951/1607	11/12/22	05/11/23	NS
		11338	N-ME-F05E		05/13/27	10/19/23	50ppm	200uL		5ppm	951/1607	11/12/22	05/11/23	NS

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

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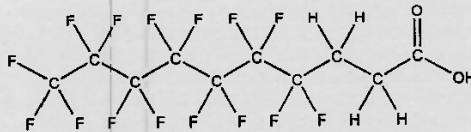
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FHpPA
COMPOUND: 3-Perfluoroheptyl propanoic acid

LOT NUMBER: FHpPA1020

STRUCTURE:

CAS #: 812-70-4



MOLECULAR FORMULA: C₁₀H₉F₁₅O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/12/2020
EXPIRY DATE: (mm/dd/yyyy) 11/12/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 442.12
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

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

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

FHpPA1020 (1 of 4)
rev0

7.8.1

7

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPrPA

LOT NUMBER:

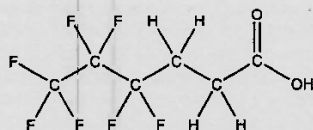
FPrPA1020

COMPOUND:

3-Perfluoropropyl propanoic acid

STRUCTURE:**CAS #:**

356-02-5

**MOLECULAR FORMULA:** $C_6H_5F_7O_2$ **MOLECULAR WEIGHT:**

242.09

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

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid ($C_8H_5F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

(mm/dd/yyyy)

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10685A



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

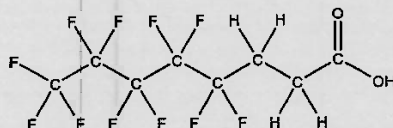
FPePA1120

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.

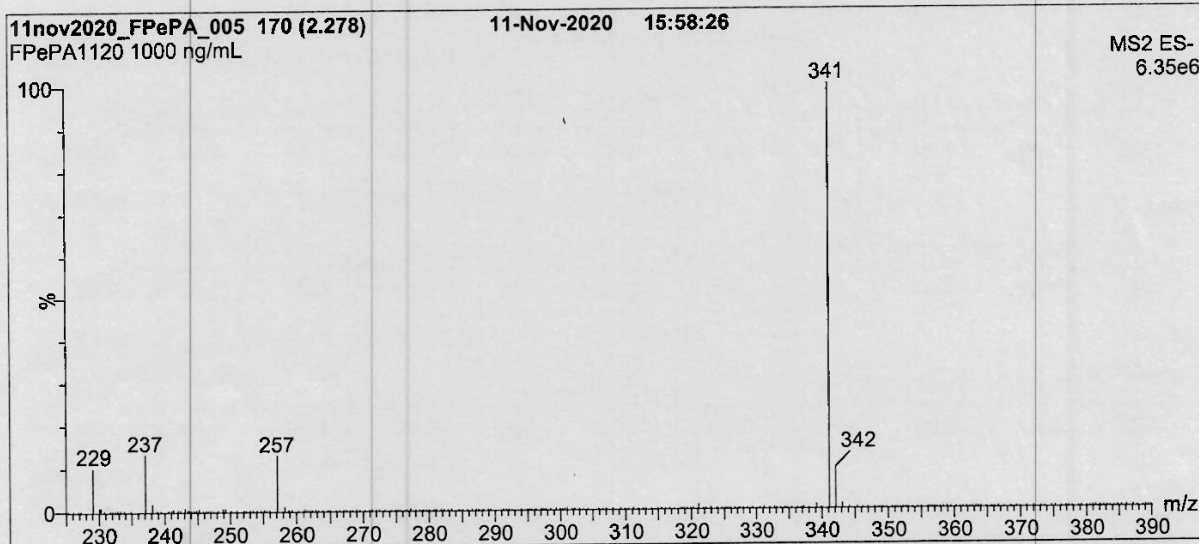
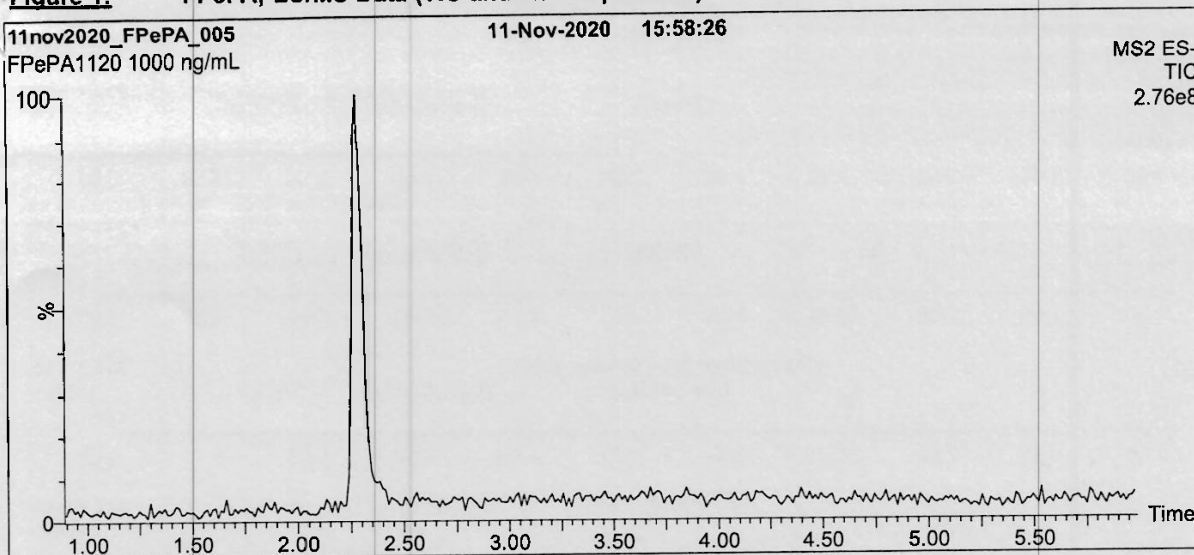
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

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

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



Conditions for Figure 1:

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

Chromatographic Conditions:

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

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

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

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

10726 A

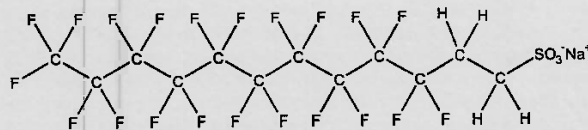


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
48.3 ± 2.4 µg/mL (10:2FTS acid)
48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 03/03/2021
EXPIRY DATE: (mm/dd/yyyy) 03/03/2026
RECOMMENDED STORAGE: Refrigerate ampoule

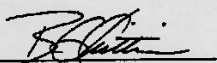
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

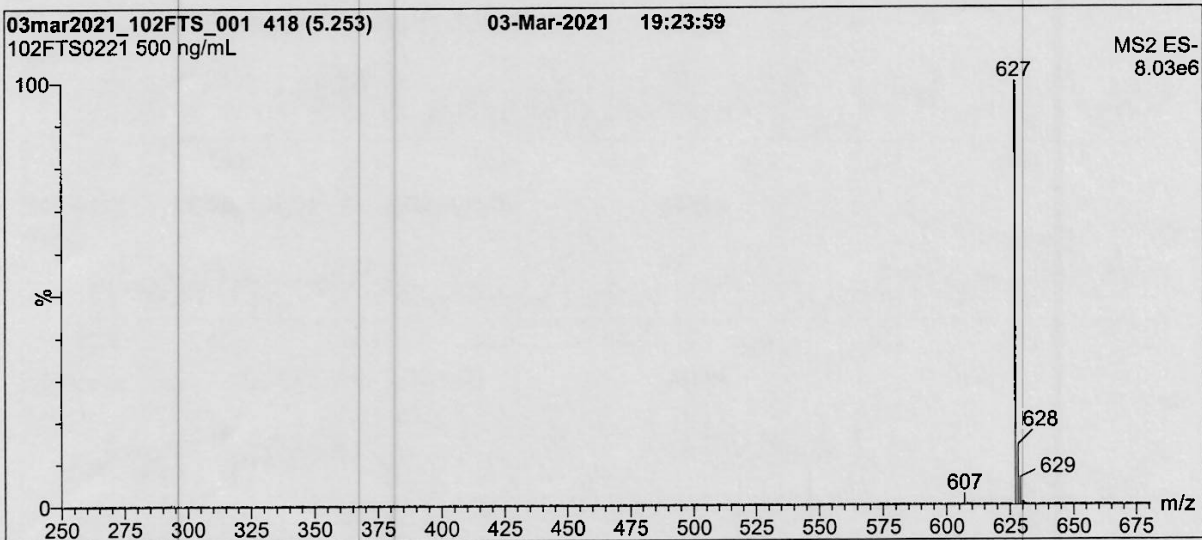
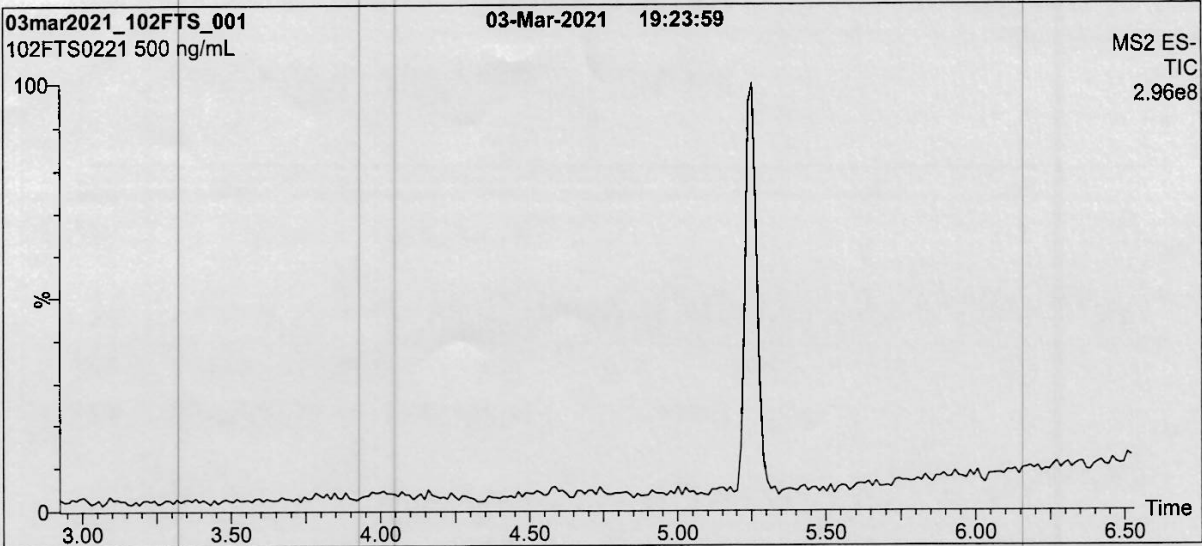
- See page 2 for further details.

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

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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

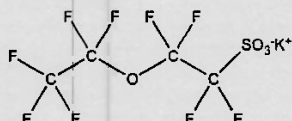
LOT NUMBER:

PFEESA0520

COMPOUND:

Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE:



CAS #:

117205-07-9

MOLECULAR FORMULA:

$C_4F_9SO_4K$

MOLECULAR WEIGHT:

354.19

CONCENTRATION:

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

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2020

EXPIRY DATE: (mm/dd/yyyy)

05/13/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

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

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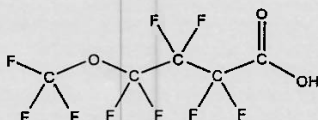
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-5-oxahexanoic acid

SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

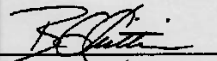
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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

PF5OHxA0320 (1 of 4)
rev1

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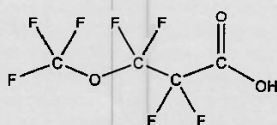
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

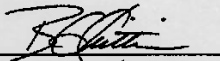
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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

PF4OPeA0320 (1 of 4)
rev1

7.8.1

7

10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

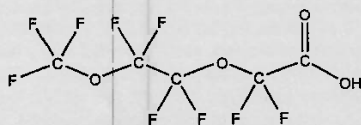
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

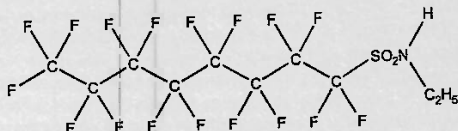
LOT NUMBER: NEtFOSA0821M

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)

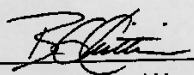
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

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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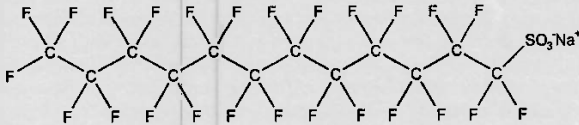
CERTIFICATE OF ANALYSIS DOCUMENTATION

10840

PRODUCT CODE: L-PFDoS **LOT NUMBER:** LPFDoS0721

COMPOUND: Sodium perfluoro-1-dodecanesulfonate

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



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na **MOLECULAR WEIGHT:** 722.14

CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 48.5 ± 2.4 µg/mL (PFDoS acid)
 48.4 ± 2.4 µg/mL (PFDoS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 07/09/2021

EXPIRY DATE: (mm/dd/yyyy) 07/09/2026

RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/16/2021
(mm/dd/yyyy)
 B.G. Chittim, General Manager

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

LPFDoS0721 (1 of 4)
 rev0

7.8.1

7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

10847 NS 01/18/23

LOT NUMBER:

PFODA0821

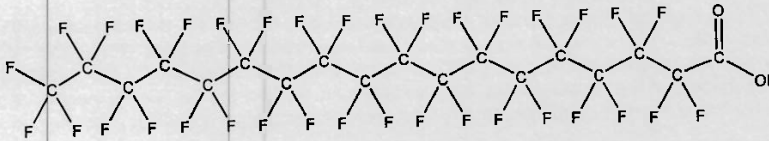
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoules at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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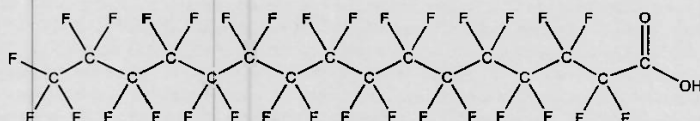
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



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

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

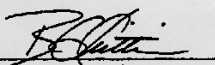
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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10853



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXI

**Native Perfluorooctanesulfonamide
and Perfluorooctanesulfonamidoethanol
Solution/Mixture**

PRODUCT CODE: PFAC-MXI
LOT NUMBER: PFACMXI0921
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 09/08/2021
LAST TESTED: (mm/dd/yyyy) 09/14/2021
EXPIRY DATE: (mm/dd/yyyy) 09/14/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXI is a solution/mixture of two native perfluorooctanesulfonamides (FOSAs) and two native perfluorooctanesulfonamidoethanols (FOSEs). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Form#: 13, Issued 2004-11-10
Revision#: 3, Revised 2020-12-23


PFACMXI0921 (1 of 5)
rev0

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Table A: PFAC-MXI; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)	Peak Assignment in Figure 1
N-methylperfluoro-1-octanesulfonamide	N-MeFOSA	1.00	B
N-ethylperfluoro-1-octanesulfonamide	N-EtFOSA	1.00	D
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	N-MeFOSE	10.0	A
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	N-EtFOSE	10.0	C

Certified By: 
 B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

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 Revision#: 9, Revised 2020-12-23

PFACMXI0921 (3 of 5)
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

**Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXG
<u>LOT NUMBER:</u>	PFACMXG1219
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	12/03/2019
<u>LAST TESTED:</u> (mm/dd/yyyy)	05/04/2020
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	05/04/2025
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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PFACMXG1219 (1 of 5)
rev2

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INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) is designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).




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

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 07/30/2021
(mm/dd/yyyy)

10899



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXH

**Native Per- and Poly-fluoroalkyl Substance
Solution/Mixture**

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0921
SOLVENT(S): Methanol / Isopropanol (2%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 09/09/2021
LAST TESTED: (mm/dd/yyyy) 09/14/2021
EXPIRY DATE: (mm/dd/yyyy) 09/14/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

PFACMXH0921 (1 of 11)
 rev0

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INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

x_1, x_2, \dots, x_n on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).



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

Compound	Acronym	Concentration* (µg/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4.00		1
Perfluoro-n-pentanoic acid	PFPeA	2.00		2
Perfluoro-n-hexanoic acid	PFHxA	1.00		5
Perfluoro-n-heptanoic acid	PFHpA	1.00		7
Perfluoro-n-octanoic acid	PFOA	1.00		11
Perfluoro-n-nonanoic acid	PFNA	1.00		14
Perfluoro-n-decanoic acid	PFDA	1.00		18
Perfluoro-n-undecanoic acid	PFUdA	1.00		23
Perfluoro-n-dodecanoic acid	PFDoA	1.00		26
Perfluoro-n-tridecanoic acid	PFTrDA	1.00		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1.00		29
Perfluoro-1-octanesulfonamide	FOSA	1.00		25
N-methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	0.760		20
	N-MeFOSAA: ∑ branched isomers	0.240		17
N-ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	0.775		22
	N-EtFOSAA: ∑ branched isomers	0.225		21
Compound	Acronym	Concentration* (µg/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanefulfonate	L-PFBS	1.00	0.887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1.00	0.941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	0.811	0.741	9
	PFHxSK: ∑ branched isomers	0.189	0.173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1.00	0.953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	0.788	0.732	15
	PFOSK: ∑ branched isomers	0.211	0.196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1.00	0.962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1.00	0.965	24
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1.00	0.970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4.00	3.75	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4.00	3.80	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4.00	3.84	16

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

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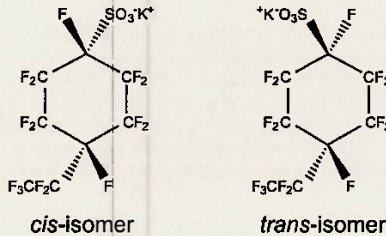


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFECHS **LOT NUMBER:** PFECHS1021
COMPOUND: Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE: **CAS #:** 335-24-0



MOLECULAR FORMULA: C₈F₁₆SO₃K **MOLECULAR WEIGHT:** 500.22
CONCENTRATION: 50.0 ± 2.5 µg/mL (K salt) **SOLVENT(S):** Methanol
 46.2 ± 2.3 µg/mL (PFECHS acid)
 46.1 ± 2.3 µg/mL (PFECHS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/14/2021
EXPIRY DATE: (mm/dd/yyyy) 10/14/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

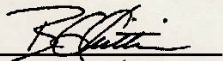
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: 
 B.G. Chittim, General Manager **Date:** 10/15/2021
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

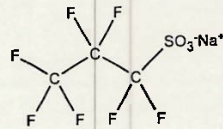
COMPOUND:

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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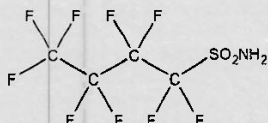
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FBSA-I
COMPOUND: Perfluoro-1-butanesulfonamide

LOT NUMBER: FBSA11211

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA: C₄H₂F₉NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/10/2021
EXPIRY DATE: (mm/dd/yyyy) 11/10/2026
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 299.11
SOLVENT(S): Isopropanol

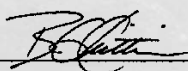
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 11/10/2021
(mm/dd/yyyy)

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

FBSA11211 (1 of 4)
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

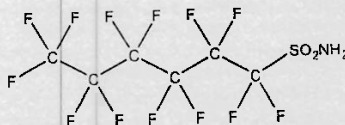
LOT NUMBER: FHxSA12211

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA: C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION: 50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 12/29/2021

EXPIRY DATE: (mm/dd/yyyy) 12/29/2026

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

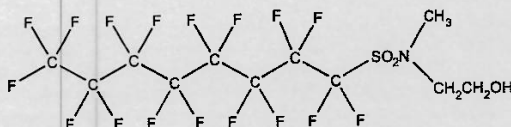
NMeFOSE0522M

COMPOUND:

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

STRUCTURE:**CAS #:**

24448-09-7

**MOLECULAR FORMULA:**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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CERTIFICATE OF ANALYSIS
DOCUMENTATION

MPFAC-HIF-ES
Mass-Labelled PFAS Extraction
Standard Solution/Mixture

PRODUCT CODE:	MPFAC-HIF-ES
LOT NUMBER:	MPFACHIFES0822
SOLVENT(S):	Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	07/20/2022
LAST TESTED: (mm/dd/yyyy)	08/02/2022
EXPIRY DATE: (mm/dd/yyyy)	08/02/2025
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

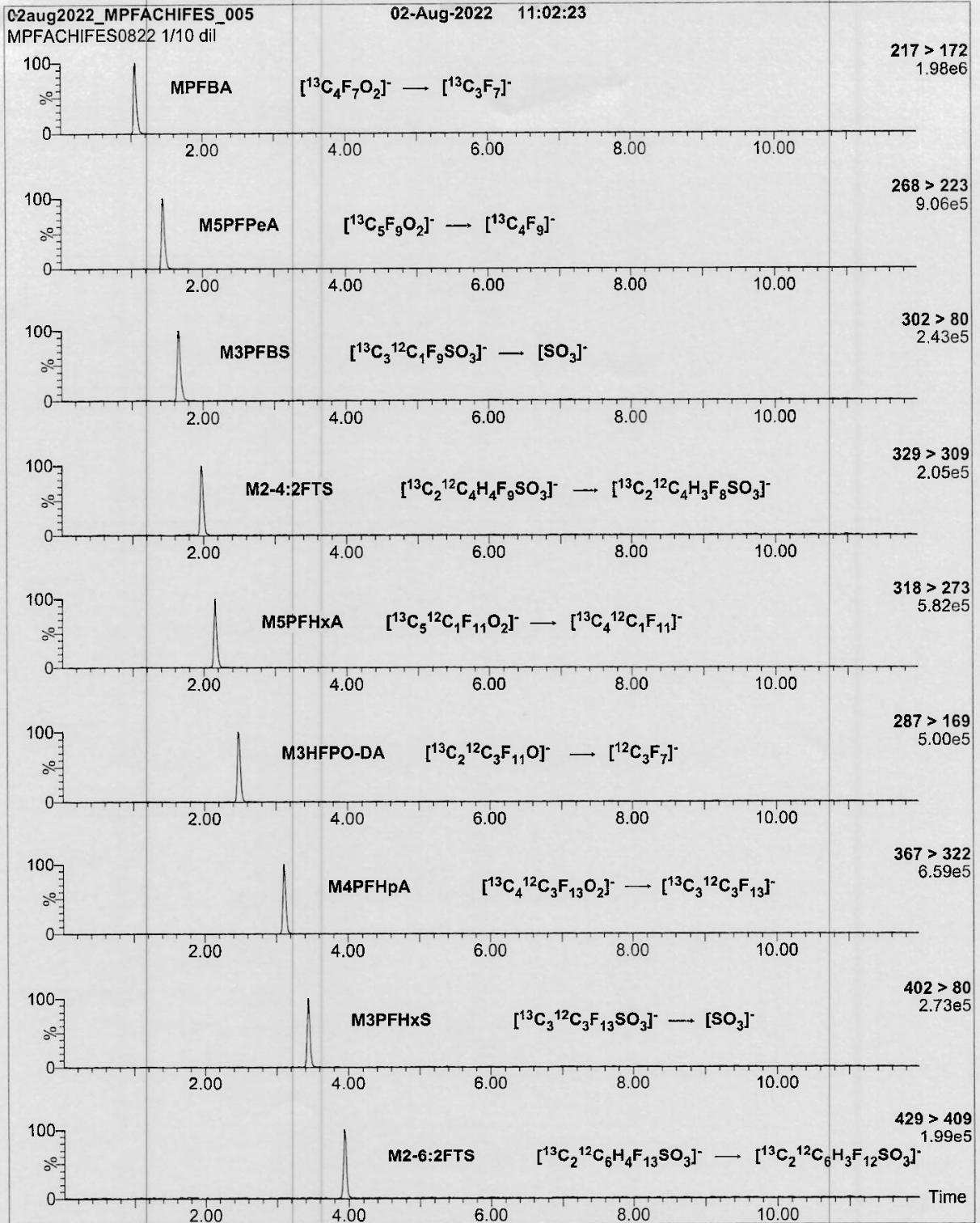
Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₅)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₆)heptanoic acid	M4PFHpA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

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 08/02/2022
(mm/dd/yyyy)

Figure 2: MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)



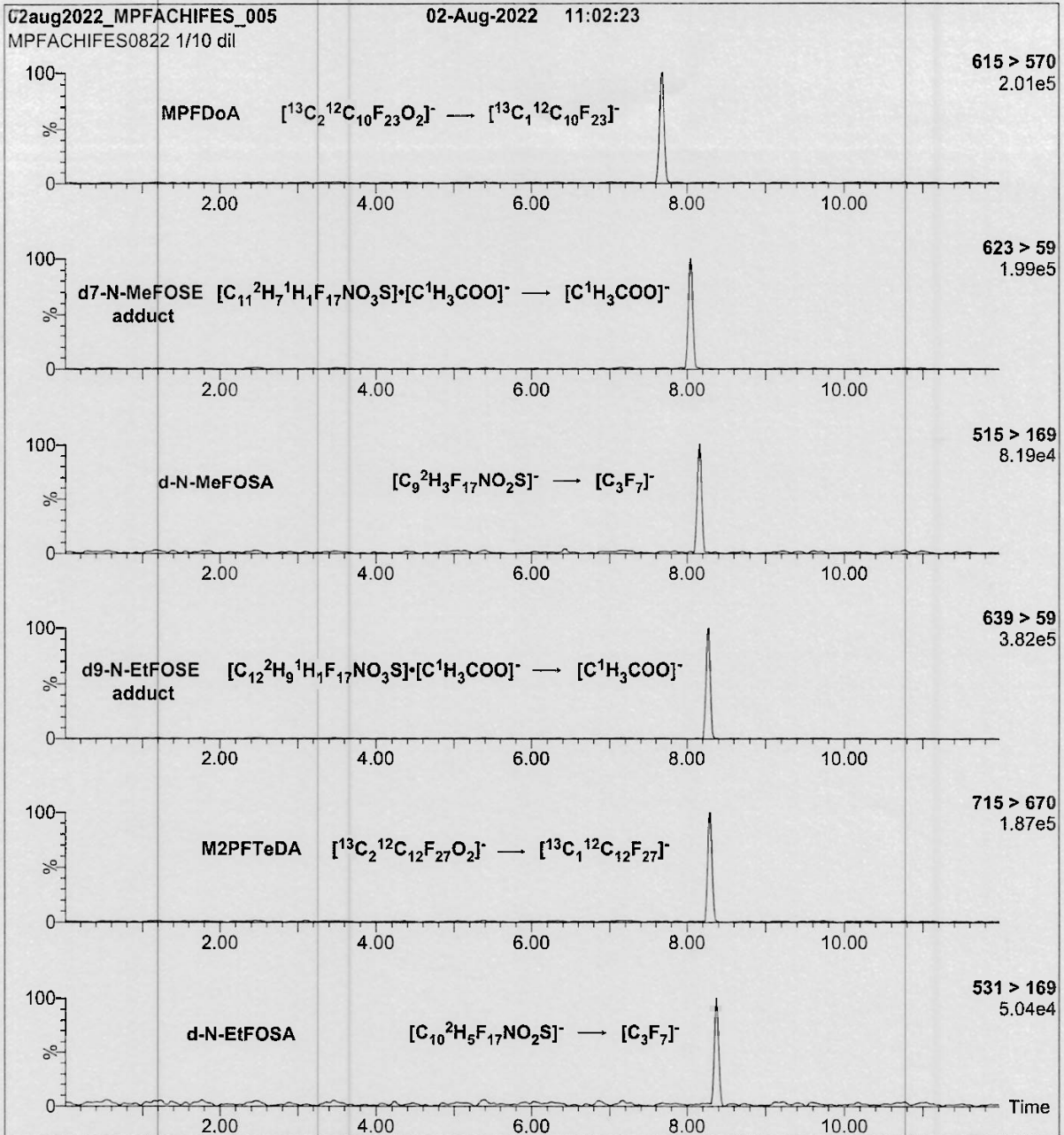
Form# 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFES0822 (5 of 7)
rev0

7.8.1

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Figure 2: MPFAC-HIF-ES; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-ES)
 Mobile phase: Same as Figure 1
 Flow: 300 $\mu\text{L}/\text{min}$

MS Parameters:

Collision Gas (mbar) = 3.24e-3
 Collision Energy (eV) = 4-64 (variable)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled Perfluoroalkyl Substance
Injection Standard Solution/Mixture

<u>PRODUCT CODE:</u>	MPFAC-HIF-IS
<u>LOT NUMBER:</u>	MPFACHIFIS0921
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/07/2021
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/07/2021
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	09/07/2026
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₈ and C₉). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

MPFACHIFIS0921 (1 of 5)
rev1


7.8.1

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

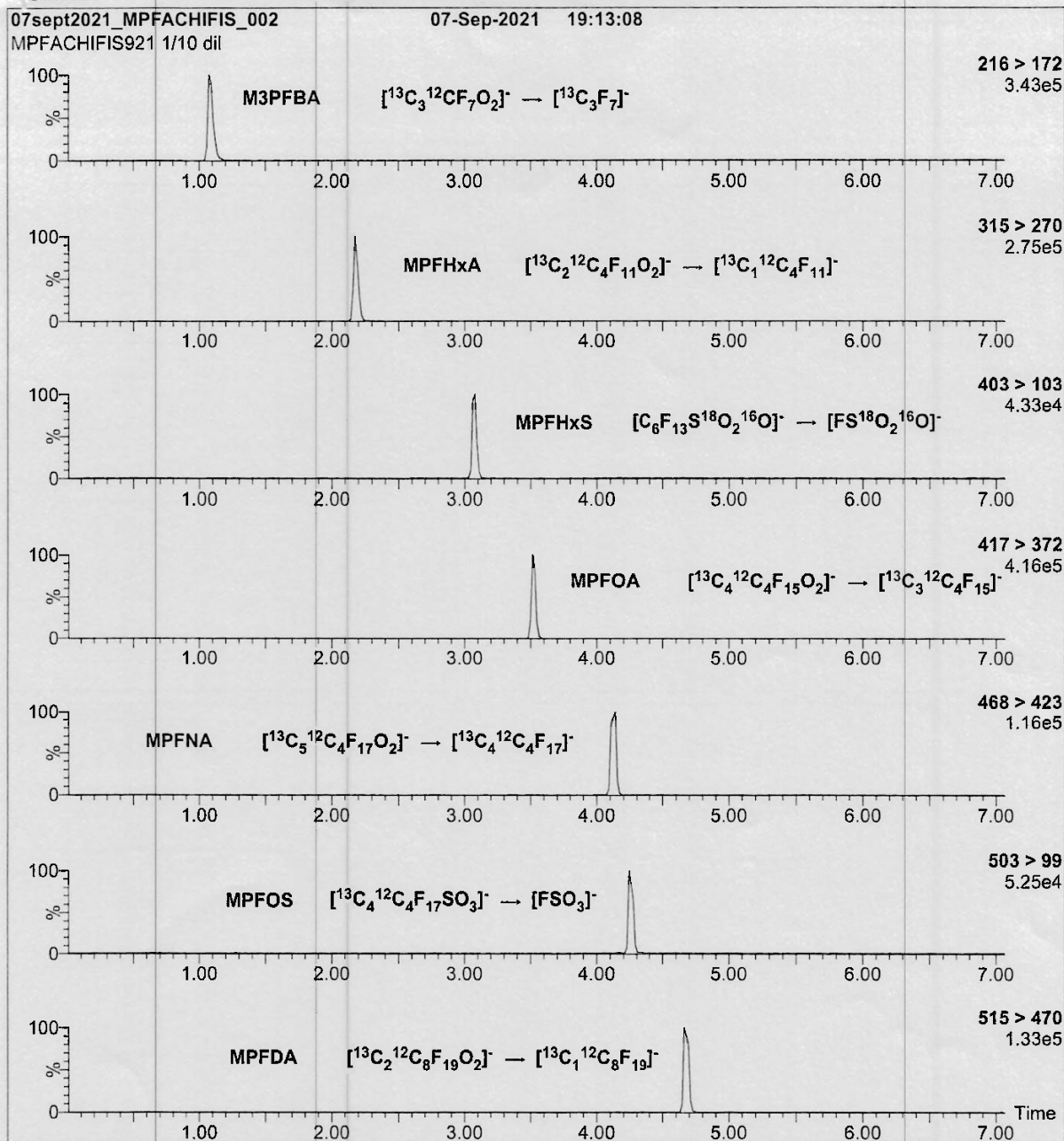
Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid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

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 10/13/2021
(mm/dd/yyyy)

Figure 2: MPFAC-HIF-IS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (MPFAC-HIF-IS)

Mobile phase: Same as Figure 1

Flow: 300 $\mu\text{L}/\text{min}$

MS Parameters:

Collision Gas (mbar) = 3.18e-3

Collision Energy (eV) = 4-64 (variable)



Certified Reference Material CRM

11447



ANAB ISO 17034 Accredited
AR-15391 Certificate Number
https://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

Part Number: 64029A
Lot Number: 080522
Description: LSCA-1000
28 components
Material Concentration (ppm): 98577
Purity (ppm): 110
6078

Method: 1 (ml NDA)
2-Propagated
Balance Uncertainty: 0.012
Full Uncertainty: 0.012

Lab: 042722 (98%)
25314 (7%)
Prepared By: [Signature]
Checked By: [Signature]
Purity: L. Ferris
DATE: 08/03/22

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

Component	Part Number	Lot	Purity	Method	Uncertainty	Concentration (ppm)	Purity (%)	Expanded Uncertainty (k=2)	90% Information (Solvant Safety Info. On Attached Pk.)	LOD
1. Perfluorobutanoic acid (PFBA)	98542	021022	0.02	2.00	0.017	50.1	1.00	0.02	375-23-4	N/A
2. Perfluoropentanoic acid (PFPA)	98543	060222	0.02	2.00	0.017	50.3	1.01	0.02	2706-90-3	N/A
3. Perfluorhexanoic acid (PFHA)	98189	071122	0.02	2.00	0.017	50.2	1.00	0.02	307-24-4	N/A
4. Perfluorheptanoic acid (PFHA)	98187	040522	0.02	2.00	0.017	50.1	1.00	0.02	375-85-9	N/A
5. Perfluoroctanoic acid (PFHOA)	98502	060522	0.02	2.00	0.017	50.2	1.00	0.02	335-67-1 (L)	N/A
6. Perfluorononanoic acid (PFNOA)	98500	050222	0.02	2.00	0.017	50.1	1.00	0.02	375-95-1	N/A
7. Perfluordecanoic acid (PFDA)	98195	041822	0.02	2.00	0.017	50.0	1.00	0.02	335-78-2	N/A
8. Perfluorundecanoic acid (PFUA)	98505	071522	0.02	2.00	0.017	50.2	1.00	0.02	2056-84-6	N/A
9. Perfluorododecanoic acid (PFDOA)	98198	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A
10. Perfluortridecanoic acid (PFTOA)	98504	021022	0.02	2.00	0.017	50.1	1.00	0.02	7829-94-8	N/A
11. Perfluortetradecanoic acid (PFTDA)	98503	030222	0.02	2.00	0.017	50.1	1.00	0.02	378-06-7	N/A
12. Perfluorpentadecanoic acid (PFPOA)	9877	F05A0221	0.02	2.00	0.017	50.0	1.00	0.05	784-91-6	N/A
13. Hexafluoroisopropylamine (HFIPA)	98184	060522	0.02	2.00	0.017	50.0	1.00	0.05	2365-31-9 (L)	N/A
14. Hexafluoroisobutylamine (HFIBA)	98184	060522	0.02	2.00	0.017	50.0	1.00	0.05	2891-50-6 (L)	N/A
15. Perfluorundecylamine (PFUA)	98544	024222	0.02	2.00	0.017	50.1	1.00	0.02	375-73-5	N/A
16. Perfluorododecylamine (PFDA)	98188	071522	0.02	2.00	0.017	50.2	1.00	0.02	2706-91-4	N/A
17. Perfluortridecylamine (PFTDA)	9872	LFH9S012	0.021	2.10	0.017	47.6	1.00	0.05	335-48-4 (L)	N/A
18. Perfluortetradecylamine (PFTDA)	98501	030222	0.02	2.00	0.017	50.1	1.00	0.02	1783-23-1 (L)	N/A
19. Hexafluoroisopropylamine (HFIPA)	9857	LFH9S042	0.021	2.10	0.017	48.0	1.01	0.05	68269-12-1	N/A
20. Perfluorundecylamine (PFUA)	9871	LFH9S022	0.021	2.10	0.017	48.2	1.01	0.05	335-73-5	N/A
21. Perfluorododecylamine (PFDA)	9871	LFH9S022	0.021	2.10	0.017	48.2	1.01	0.05	335-73-5	N/A
22. Hexafluoroisopropylamine (HFIPA)	98572	060522	0.02	2.00	0.017	50.2	1.00	0.05	757134-72-4	N/A
23. Hexafluoroisobutylamine (HFIBA)	98572	071522	0.02	2.00	0.017	50.2	1.00	0.05	2719-97-2	N/A
24. Hexafluoroisopropylamine (HFIPA)	9858	82713012	0.021	2.10	0.017	47.9	1.01	0.05	39108-34-4	N/A
25. Hexafluoroisobutylamine (HFIBA)	9858	82713012	0.021	2.10	0.017	47.9	1.01	0.05	39108-34-4	N/A
26. Hexafluoroisopropylamine (HFIPA)	9858	000422	0.02	2.00	0.017	50.1	1.00	0.02	13386-13-6	N/A
27. Hexafluoroisobutylamine (HFIBA)	9858	11C9C3A022	0.021	2.10	0.017	47.1	1.00	0.05	736031-82-6	N/A
28. Hexafluoroisopropylamine (HFIPA)	418	907F03S022	0.021	2.14	0.017	46.8	2.14	0.05	75645-59-1	N/A
29. Hexafluoroisobutylamine (HFIBA)	418	NA00A0422	0.021	2.12	0.017	47.1	1.00	0.05	819005-14-4	N/A

Perfluorooctanoic acid (linear)*	98502	060522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A
Perfluorooctanoic acid (branched isomer)*	98502	060522	0.02	2.00	0.004	0.6	0.01	0.001	335-67-1 (L)	Special Handling
Perfluorodecanoic acid (linear)*	98198	071522	0.02	2.00	0.017	44.2	0.88	0.02	335-48-4 (L)	N/A
Perfluorodecanoic acid (branched isomer)*	98198	071522	0.02	2.00	0.017	6.0	0.12	0.001	335-48-4 (L)	N/A
Perfluorundecanoic acid (linear)*	98501	030222	0.02	2.00	0.017	38.1	0.76	0.02	1783-23-1 (L)	N/A
Perfluorundecanoic acid (branched isomer)*	98501	030222	0.02	2.00	0.017	7.5	0.15	0.003	1783-23-1 (L)	N/A
Perfluorododecanoic acid (linear)*	98501	030222	0.02	2.00	0.017	4.0	0.08	0.002	1783-23-1 (L)	N/A
Perfluorododecanoic acid (branched isomer)*	98501	030222	0.02	2.00	0.017	0.5	0.010	0.0002	1783-23-1 (L)	N/A
Hexafluoroisopropylamine (HFIPA)	4182	HMHF03A021	0.02	2.00	0.017	96.0	0.72	0.04	2365-31-9 (L)	N/A
Hexafluoroisobutylamine (HFIBA)	4182	HMHF03A021	0.02	2.00	0.017	6.5	0.13	0.011	2365-31-9 (L)	N/A
Hexafluoroisopropylamine (HFIPA)	4182	HMHF03A021	0.02	2.00	0.017	5.0	0.10	0.005	2365-31-9 (L)	N/A
Hexafluoroisobutylamine (HFIBA)	4182	HMHF03A021	0.02	2.00	0.017	2.5	0.05	0.003	2365-31-9 (L)	N/A
Hexafluoroisopropylamine (HFIPA)	4183	HMHF03A111	0.02	2.00	0.017	96.6	0.73	0.04	2365-31-9 (L)	N/A
Hexafluoroisobutylamine (HFIBA)	4183	HMHF03A111	0.02	2.00	0.017	7.7	0.15	0.009	2365-31-9 (L)	N/A
Hexafluoroisopropylamine (HFIPA)	4183	HMHF03A111	0.02	2.00	0.017	6.3	0.11	0.005	2365-31-9 (L)	N/A
Hexafluoroisobutylamine (HFIBA)	4183	HMHF03A111	0.02	2.00	0.017	0.4	0.07	0.0008	2365-31-9 (L)	N/A

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

A qualitative standard (Spec. 3.1.9) is available for PFDA that contains the linear and branched isomers (Waterson Labs Cat. No. T-PQ4) or equivalent. This qualitative PFDA standard must be purchased and used to identify the presence of the linear and PFDA isomers, but the linear only PFDA standard must be used for quantitation (Sect. 12.2) until a quantitative PFDA standard containing the branched and linear isomers becomes commercially available. 1

1. The official value is the concentration established from gravimetric and volumetric measurements under laboratory conditions.
2. Standard error from the measurement method.
3. Standard deviation from the measurement method.
4. Relative standard deviation (RSD) of the standard value, unless otherwise stated.
5. A balance with 0.01 mg readability and a volumetric flask with a tolerance of 0.05 mL are used.
6. The uncertainty is calculated using the Guide to the Expression of the Uncertainty of Measurement (GUM).
7. The uncertainty is calculated using the Guide to the Expression of the Uncertainty of Measurement (GUM).
8. The uncertainty is calculated using the Guide to the Expression of the Uncertainty of Measurement (GUM).
9. The uncertainty is calculated using the Guide to the Expression of the Uncertainty of Measurement (GUM).
10. The uncertainty is calculated using the Guide to the Expression of the Uncertainty of Measurement (GUM).

rec'd 10/31/22 11492



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PFAC-MXJ

**Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture**

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

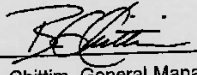
Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0921 (1 of 5)
rev1

7.8.1
7

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

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

Certified By: 
 B.G. Chittim, General Manager

Date: 10/02/2021
(mm/dd/yyyy)

11579 A-B
rec'd 12/27/22



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

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

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

PFACMXF0122 (1 of 5)
rev0

7.8.1
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Table A: PFAC-MXF; Components and Concentrations (ng/mL; \pm 5% in Methanol/Water (<1%))

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

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

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

11603
rec'd: 01/10/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

PFACMXJ0921 (1 of 5)
rev1

7.8.1
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Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

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

Certified By: 
B.G. Chittim, General Manager

Date: 10/02/2021
(mm/dd/yyyy)

11617 A-B rec'd 01/19/23



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXF

**Native Replacement PFAS
Solution/Mixture**

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

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUdS), and GenX (HFPO-DA). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

PFACMXF0122 (1 of 5)
revD

7.8.1

7

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-dioxanonanoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

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

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 02/20/23 09:00
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (QSM)

Date/Time: 02/21/23 10:00
Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP95527 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
OP95527 MB		500	7	N/A	25		5	E	
OP95527 BS		500							
OP95527 LLBS		500				200			
FC2520-1	1	570				60			
2	1	570							
3	1	570							
4	1	570							
5	1	570							
6	1	570							
7	1	570							
8	1	570						E	
9	1	570						F	
10	1	570							
11	1	570							
12	1	570							
13	1	570							
FC2741-1	2	540	7	N/A	25		5	F	
OPFC2520 WMS	3	570	7	N/A	25	200	5	E	
OPFC2520 W MSD	4	570	7	N/A	25	200	5	F	
OP DUP									2022A

Comments:

EIS (SURR) ID: 11636C-E Conc: 250-50000 ng/mL Exp. Date: 02/20/24 Inj. By: GH Ver. By: CM
 SPIKE.1 ID: LEMS 2022C Conc: VARIED Exp. Date: 08/07/23 Inj. By: GH Ver. By: CM
 SPIKE.2 ID: LEMS 2022A Conc: VARIED Exp. Date: 08/20/23 Inj. By: GH Ver. By: CM
 NIS (ISTD) ID: 11631F-H Conc: 250-1000 ng/mL Exp. Date: 02/15/24 Inj. By: UR Ver. By: JL

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

Methanol Lot # 224267 1% NH4OH MeOH PF283 SPE Lot # 0664244-03
 Water Lot# OP95448 0.3M Formic Acid PF280 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF279 5% Formic Acid _____ Carbon Lot# 160898

Relinquished By: *Valmieda*

Date: 02/20/23
Date: 02/21/23

Accepted By: *AR*

7.9.1
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